



FCC SAR TEST REPORT

Report No: ZR/2021/30014
Applicant: vivo Mobile Communication Co., Ltd.
Manufacturer: vivo Mobile Communication Co., Ltd.
Product Name: Mobile Phone
Model No.(EUT): V2050
Brand Name: vivo
FCC ID: 2AUCY-V2066
Standards: FCC 47CFR §2.1093
Date of Receipt: 2021-03-29
Date of Test: 2021-04-19 to 2021-05-05
Date of Issue: 2021-05-06
Test conclusion: **PASS ***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:

Derek Yang

Wireless Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



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REVISION HISTORY

Report Number	Revision	Description	Issue Date
ZR/2021/3001407	01	Original	2021-05-06



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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)			
	Head	Body-worn	Hotspot	Product specific 10g SAR
GSM850	0.79	0.40	0.76	/
GSM1900	0.79	0.44	0.98	/
WCDMA Band II	0.73	0.41	0.60	/
WCDMA Band IV	0.71	0.26	0.55	/
WCDMA Band V	0.62	0.29	0.50	/
LTE Band 2	0.72	0.43	0.47	/
LTE Band 4	0.70	0.39	0.71	/
LTE Band 5	0.51	0.19	0.33	/
LTE Band 7	0.62	0.94	0.53	2.30
LTE Band 12	0.42	0.23	0.43	/
LTE Band 17	0.45	0.24	0.43	/
LTE Band 26	0.57	0.20	0.33	/
LTE Band 38	0.62	0.86	0.35	1.89
LTE Band 41	0.56	0.74	0.34	1.55
LTE Band 66	0.73	0.74	0.77	/
5G NR N7	0.55	0.59	0.28	1.78
5G NR N41	0.37	0.54	0.28	1.70
WI-FI (2.4GHz)	0.29	0.28	0.71	/
WI-FI (5GHz)	0.26	0.45	0.95	1.33
BT	0.25	<0.10	<0.10	/
SAR Limited(W/kg)		1.6		4.0
Maximum Simultaneous Transmission SAR (W/kg)				
Scenario	Head	Body-worn	Hotspot	Product specific 10g SAR
Sum SAR	1.08	1.30	1.38	3.63
SPLSR	N/A	N/A	N/A	N/A
SPLSR Limited		0.04		0.1

Note:
The Simultaneous transmission SAR is the same test position of the WWAN antenna + WiFi/BT antenna.

Reviewed by

Jackson Li

Jackson Li

Prepared by

Roman Pan

Roman Pan



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1 General Information

1.1 Details of Client

Applicant:	vivo Mobile Communication Co., Ltd.
Address:	No.168 Jinghai East Rd., Chang'an, Dongguan, Guangdong, China
Manufacturer:	vivo Mobile Communication Co., Ltd.
Address:	No.168 Jinghai East Rd., Chang'an, Dongguan, Guangdong, China

1.2 Test Location

Company: SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab
 Address: No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
 Post code: 518057
 Telephone: +86 (0) 755 2601 2053
 Fax: +86 (0) 755 2671 0594
 E-mail: ee.shenzhen@sgs.com



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1.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Industry Canada (IC)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006

IC#: 4620C.



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1.4 General Description of EUT

Device Type :	portable device		
Exposure Category:	uncontrolled environment / general population		
Product Name:	Mobile Phone		
Model No.(EUT):	V2050		
FCC ID:	2AUCY-V2066		
Brand name:	vivo		
Product Phase:	Identical Prototype		
SN:	9585809014A0000/9585694883A0000		
Hardware Version:	MP_0.1		
Software Version:	PD2083CF_EX_A_3.6.2		
Antenna Type:	Internal Antenna		
Device Operating Configurations :			
Modulation Mode:	GSM: GMSK, 8PSK; WCDMA: QPSK, 16QAM(HSPA+); LTE: QPSK, 16QAM, 64QAM 5G NR: DFT-s-OFDM (PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM), CP-OFDM (QPSK, 16QAM, 64QAM, 256QAM) WIFI: DSSS, OFDM, OFDMA; BT: GFSK, π/4DQPSK, 8DPSK		
Device Class:	B		
GPRS Multi-slots Class:	12	EGPRS Multi-slots Class:	12
HSDPA UE Category:	24	HSUPA UE Category	7
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"(WCDMA Band)		
	3, tested with power control Max Power(LTE Band)		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	LTE Band 2	1850 ~1910	1930 ~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869~894
	LTE Band 7	2500~2570	2620~2690
	LTE Band 12	699~716	729~746
	LTE Band 17	704~716	734~746
	LTE Band 26	814~849	859~894
	LTE Band 38	2570~2620	2570~2620
	LTE Band 41	2496~2690	2496~2690
	LTE Band 66	1710~1780	2110~2200
NR Band n7	2500~2570	2620~2690	
NR Band n41	2496~2690	2496~2690	



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Frequency Bands:	Bluetooth	2400~2483.5	2400~2483.5	
	Wi-Fi 2.4G	2402~2472	2402~2472	
	Wi-Fi 5G		5150~5250	5150~5250
			5250~5350	5250~5350
			5470~5725	5470~5725
		5725~5850	5725~5850	
Battery Information:	Model:	B-P9		
	Normal Voltage:	+3.89V		
	Rated capacity:	3905mAh		
	Manufacturer:	Dongguan NVT Technology Co.,Ltd		

Remark:

Model No.: V2050, V2066

This test report (Ref. No.: ZR/2021/3001407) is based on the original test report (Ref. No.: ZR/2021/3001406) . Review this report and original report, this report just changing the parts according to the declaration letter from client.

NO	Initial	Variant	Difference Description
1	V2066	V2050	The hardware is the same, V2050 the software turn on the 5G band

Considering to the difference, pre-scan was performed on the sample in this report to find the items which can be influential to the result in the original test report for fully retest.

According to the declaration letter from manufacturer, in this report, the SAR test as below:

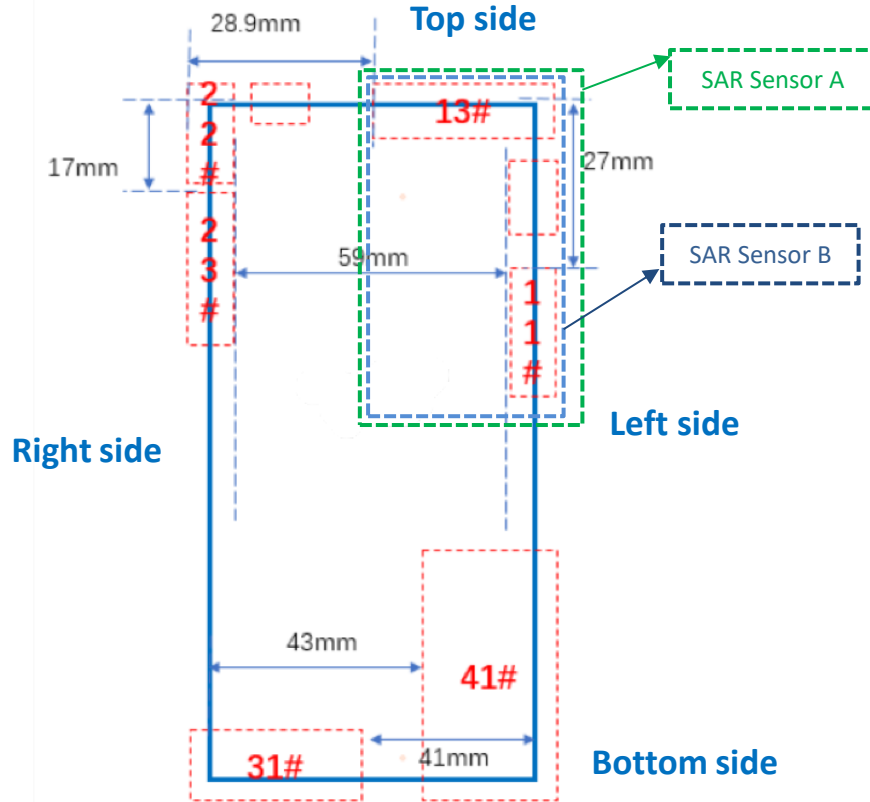
For 5G NR n7/41 are all test and for the other same bands are shares the same test data of original report ZR/2021/3001406.



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1.4.1 DUT Antenna Locations(Back View)



Note:

- 1) The test device is a smart phone. The overall diagonal dimension of this device is 170 mm. Per KDB 648474 D04, because the diagonal distance of this device is $\geq 160\text{mm}$, so it is a phablet.

According to the distance between LTE/WCDMA/GSM&WIFI&BT antennas and the sides of the EUT we can draw the conclusion that:

EUT Sides for SAR Testing							
Mode	Exposure Condition	Front	Back	Left	Right	Top	Bottom
Ant11	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	No	No
Ant13	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	Yes	No
Ant31	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	No	Yes
Ant41	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	No	Yes
Ant22	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	Yes	No

Table 1: EUT Sides for SAR Testing

Note: When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.



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1.4.2 LTE CA additional specification

The device supports downlink and intra-band contiguous uplink LTE Carrier Aggregation (CA). When carrier aggregation applies, implementation and measurement details for the following are necessary.

- a) Intra-band carrier aggregation requirements for uplink.
- b) Intra-band and inter-band carrier aggregation requirements for downlink.

The possible downlink and uplink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V15.4.0. The conducted power measurement results of downlink and uplink LTE CA are provided in Section 8 of this report per 3GPP TS 36.521-1 V14.4.0. The downlink LTE CA SAR test is not required since the maximum output power for downlink LTE CA was not more than 0.25dB higher than the maximum output power for without downlink LTE CA.

SAR test procedure for intra-band contiguous UL LTE CA is as below:

- 1) Maximum output power is measured for each UL CA configuration for the required test channels described in KDB 941225 D05
 - UL PCC configuration is determined by the required test channel
 - SCC and subsequent CCs are added alternatively to either side of the PCC or within the transmission band for channels at the ends of a frequency band.
- 2) SAR for UL CA is required in each exposure condition and frequency band combination
- 3) For this device, as the maximum output for Intra-band uplink LTE CA is \leq standalone LTE mode (without CA),
 - PCC is configured according to the highest standalone SAR configuration tested.
 - SCC and subsequent CCs are configured according to procedures used for power measurement and parameters (BW, RB etc.) similar to that used for the PCC
- 4) When the reported SAR for UL CA configuration, described above, is > 1.2 W/kg, UL CA SAR is also required for all required test channels (PCC based)
- 5) UL CA SAR is also required for standalone SAR configurations > 1.2 W/kg when they are scaled to the UL CA power level.

Intra-band contiguous CA operating bands:

E-UTRA CA Band	E-UTRA Band	Uplink (UL) operating band			Downlink (DL) operating band			Duplex Mode
		BS receive / UE transmit			BS transmit / UE receive			
		F _{UL_low} – F _{UL_high}			F _{DL_low} – F _{DL_high}			
CA_7	7	2500 MHz	–	2570 MHz	2620 MHz	–	2690 MHz	FDD
CA_38	38	2570 MHz	–	2620 MHz	2570 MHz	–	2620 MHz	TDD
CA_41	41	2496 MHz	–	2690 MHz	2496 MHz	–	2690 MHz	TDD



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1.4.3 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) A fixed level power reduction is applied for some frequency bands when handset operate "held to the ear" condition, the power reduction triggered by audio receiver detection. The audio receiver detection is used to determine head or body scenario.
- 4) The proximity sensor is used to indicate when the device is held close to a user's body exposure condition. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes of main antenna to ensure SAR compliance(Refer to section 5.4 for detailed proximity Sensor information and validation data per KDB 616217).

The following tables summarize the key power reduction information. The detailed full power which is the Max. power the state can use and reduced tune-up specifications and conducted power measurement results are provided in Section 8 of this report.

Ant13 Power Level(dBm)															
Power Reduction Scenario	GSM850	GSM1900	WCDMA B2	WCDMA B4	WCDMA B5	LTE B2	LTE B4	LTE B5	LTE B7	LTE B12	LTE B7	LTE B26	LTE B38	LTE B41	LTE B66
Sensor off	34.3	31.0	24.0	24.0	/	24.0	24.0	/	24.0	/	/	/	25.0	25.0	24.5
Sensor on	33.3	28.5	21.5	22.0	/	21.5	22.5	/	19.0	/	/	/	21.0	21.0	22.5
Sensor on+WLAN	31.8	26.5	18.5	21.5	/	18.5	21.0	/	14.0	/	/	/	16.0	16.5	21.5
Sensor off+WLAN	31.8	26.5	18.5	21.5	/	18.5	21.0	/	14.0	/	/	/	16.0	16.5	21.5
Receiver off	34.3	31.0	24.0	24.0	25.0	24.0	24.0	24.5	24.0	/	/	24.5	25.0	25.0	24.5
Receiver on	28.3	26.0	16.5	18.5	20.5	17.0	18.5	20.5	13.0	/	/	20.5	14.5	14.5	19.0
Receiver on+WLAN	28.3	26.0	16.5	18.5	20.5	17.0	18.5	20.5	13.0	/	/	20.5	14.5	14.5	19.0
Hotspot off	34.3	31.0	24.0	24.0	25.0	24.0	24.0	24.5	24.0	24.5	24.5	24.5	25.0	25.0	24.5
Hotspot on	31.8	26.5	18.5	21.5	24.0	18.5	21.0	23.5	14.0	23.5	23.5	23.5	16.0	16.5	21.5

Ant31 Power Level(dBm)						
Power Reduction Scenario	GSM1900	WCDMA B2	WCDMA B4	LTE B2	LTE B4	LTE B66
Receiver off	29.5	22.0	21.0	22.0	21.5	21.5
Receiver off+WLAN	29.5	21.0	20.0	20.0	21.5	21.5
Receiver on	31.0	24.0	24.0	24.0	24.5	24.5
Hotspot off	29.5	22.0	21.0	22.0	21.5	21.5
Hotspot on	29.5	21.0	20.0	20.0	21.5	21.5



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5G NR antenna(Ant11) Power Level(dBm)			
Power Reduction Scenario	n7	n41 SA	n41 NSA
Sensor off	24.0	23.0	23.0
Sensor on	20.0	19.0	19.0
Sensor on+WLAN	17.0	16.0	15.0
Sensor off+WLAN	17.0	23.0	15.0
Receiver off	24.0	23.0	23.0
Receiver on	17.0	15.0	15.0
Receiver on+WLAN	17.0	15.0	15.0
Hotspot off	24.0	23.0	23.0
Hotspot on	17.0	16.0	15.0

WIFI Power Level(dBm)				
Mode	Power Reduction Scenario	Receiver off	Receiver off+WWAN	Receiver on
WIFI 2.4G	802.11b	20.5	18.5	11.5
	802.11g	17.5	15.5	11.5
	802.11n 20M	16.5	14.5	11.5
WIFI 5G 802.11a	5150-5250	18.5	16.5	7.0
	5250-5350	18.5	16.0	7.0
	5470-5725	18.5	17.0	7.5
	5725-5850	18.5	17.0	7.5
WIFI 5G 802.11n 20M	5150-5250	16.5	14.5	7.0
	5250-5350	17.5	15.0	7.0
	5470-5725	17.5	16.0	7.5
	5725-5850	17.5	16.0	7.5
WIFI 5G 802.11n 40M	5150-5250	15.5	13.5	7.0
	5250-5350	17.5	15.0	7.0
	5470-5725	17.5	16.0	7.5
	5725-5850	17.5	16.0	7.5
WIFI 5G 802.11ac 20M	5150-5250	17.0	15.0	7.0
	5250-5350	17.0	14.5	7.0
	5470-5725	17.0	15.5	7.5
	5725-5850	17.0	15.5	7.5
WIFI 5G 802.11ac 40M	5150-5250	17.0	15.0	7.0
	5250-5350	17.0	14.5	7.0
	5470-5725	17.0	15.5	7.5
	5725-5850	17.0	15.5	7.5
WIFI 5G 802.11ac 80M	5150-5250	13.5	11.5	7.0
	5250-5350	13.5	11.0	7.0
	5470-5725	14.5	13.0	7.5
	5725-5850	14.5	13.0	7.5



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1.5 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
ANSI/IEEE C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.
IEEE 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB 941225 D01	3G SAR Measurement Procedures v03r01
KDB 941225 D05	SAR for LTE Devices v02r05
KDB 941225 D05A	LTE Rel.10 KDB Inquiry Sheet v01r02
KDB 941225 D06	Hotspot Mode SAR v02r01
KDB 248227 D01	SAR Guidance for IEEE 802 11 Wi-Fi SAR v02r02
KDB 648474 D04	Handset SAR v01r03
KDB 47498 D01	General RF Exposure Guidance v06
KDB 865664 D01	SAR Measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02	RF Exposure Reporting v01r02
KDB 690783 D01	SAR Listings on Grants v01r03
KDB 616217 D04	SAR for laptop and tablets v01r02



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1.6 RF exposure limits

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

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.)



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2 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ambient noise is checked and found very low and in compliance with requirement of standards.	
Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

Table 2: The Ambient Conditions



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3 SAR Measurements System Configuration

3.1 The SAR Measurement System

This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation $SAR = \sigma (|E_i|^2) / \rho$ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

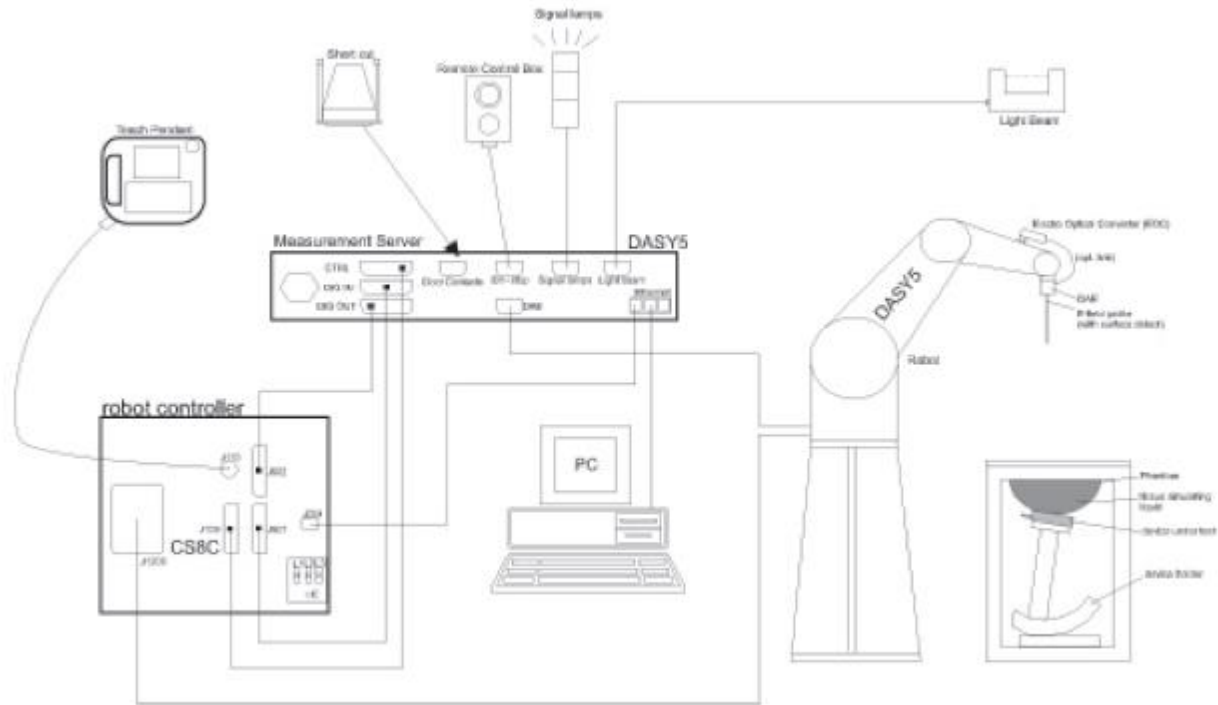
The DASY5 system for performing compliance tests consists of the following items:

A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software .An arm extension for accommodation 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 electronics (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.

The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.



F-1. SAR Measurement System Configuration




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- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 7.
- DASY5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and Body Worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validating the proper functioning of the system.

3.2 Isotropic E-field Probe EX3DV4


	<p>Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)</p>
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 TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI




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3.3 Data Acquisition Electronics (DAE)

Model	DAE	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV,400mV)	
Input Offset Voltage	< 5µV (with auto zero)	
Input Bias Current	< 50 f A	
Dimensions	60 x 60 x 68 mm	

3.4 SAM Twin Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)	
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	approx. 25 liters	
Wooden Support	SPEAG standard phantom table	


The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.



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3.5 ELI Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)	
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)	
Shell Thickness	2.0 ± 0.2 mm (bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	approx. 30 liters	
Wooden Support	SPEAG standard phantom table	

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.

ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure.



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3.6 Device Holder for Transmitters



F-2. Device Holder for Transmitters

- The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centres for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.
- The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon=3$ and loss tangent $\delta=0.02$. 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.



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3.7 Measurement procedure

3.7.1 Scanning procedure

Step 1: Power reference measurement

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.

Step 2: Area scan

The SAR distribution at the exposed side of the head was measured at a distance of 4mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 15mm*15mm or 12mm*12mm or 10mm*10mm. Based on the area scan data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Zoom scan

Around this point, a volume of 32mm*32mm*30mm ($f \leq 2\text{GHz}$), 30mm*30mm*30mm (f for 2-3GHz) and 24mm*24mm*22mm (f for 5-6GHz) was assessed by measuring 5x5x7 points ($f \leq 2\text{GHz}$), 7x7x7 points (f for 2-3GHz) and 7x7x12 points (f for 5-6GHz). On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

The data at the surface was extrapolated, since the centre of the dipoles is 2.0mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2mm. (This can be variable. Refer to the probe specification). The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axis. This polynomial was then used to evaluate the points between the surface and the probe tip. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The volume was integrated with the trapezoidal algorithm. One thousand points were interpolated to calculate the average. All neighbouring volumes were evaluated until no neighboring volume with a higher average value was found.

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std. 1528-2013.



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		≤ 3 GHz	> 3 GHz	
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm	
Maximum probe angle from probe axis to phantom surface normal at the measurement location		$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$	
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}		≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm	
		When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be \leq the corresponding x or y dimension of the test device with at least one measurement point on the test device.		
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm	
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	

Step 4: Power reference measurement (drift)

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The indicated drift is mainly the variation of the DUT's output power and should vary max. $\pm 5\%$



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3.7.2 Data Storage

The DASY 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], [m W/g], [m W/cm²], [dBre], 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.

3.7.3 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	Normi, ai0, ai1, ai2
- Conversion factor	ConvFi	
- Diode compression point	Dcpi	
Device parameters:	- Frequency	f
- Crest factor	cf	
Media parameters:	- Conductivity	ε
- 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 DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

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

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

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

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:

$$E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$$



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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.

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

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]

ϵ = equivalent tissue density in g/cm³

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

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

with P_{pwe} = equivalent power density of a plane wave in mW/cm²

E_{tot} = total electric field strength in V/m

H_{tot} = total magnetic field strength in A/m



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4 SAR measurement variability and uncertainty

4.1 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 ($\sim 10\%$ 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.

4.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, 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.



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5 Description of Test Position

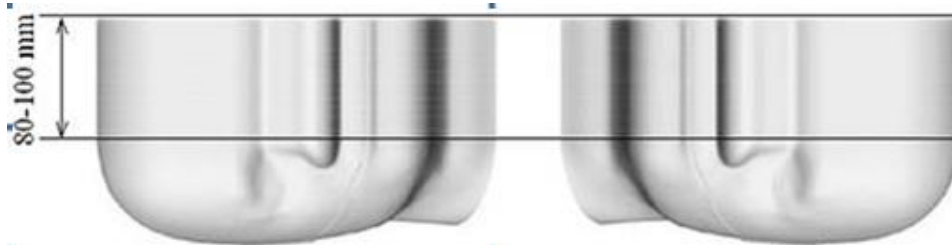
5.1 Head Exposure Condition

5.1.1 SAM Phantom Shape

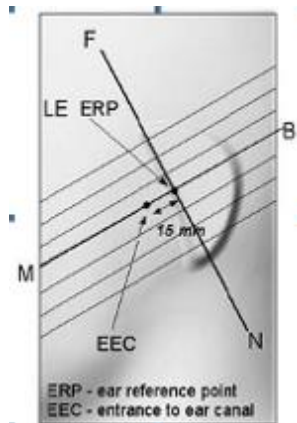


F-3. Front, back, and side views of SAM (model for the phantom shell). Full-head model is for illustration purposes only-procedures in this recommended practice are intended primarily for the phantom setup.

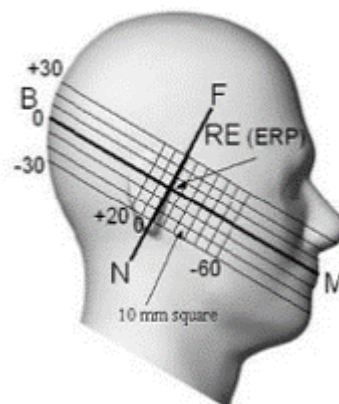
Note: The centre strip including the nose region has a different thickness tolerance.



F-4. Sagittally bisected phantom with extended perimeter (shown placed on its side as used for SAR measurements)



F-5. Close-up side view of phantom, showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations

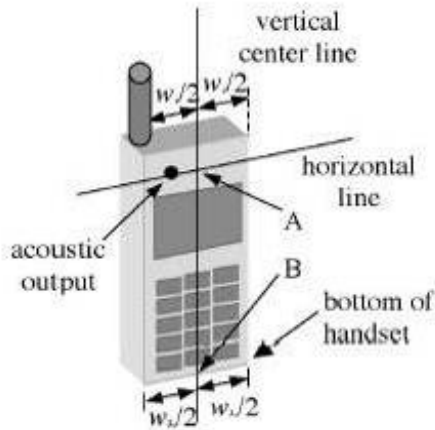


F-6. Side view of the phantom showing relevant markings and seven cross-sectional plane locations

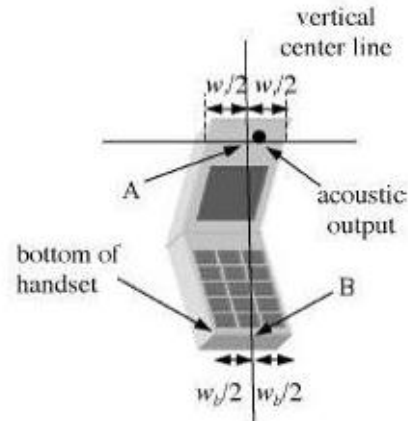


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5.1.2 EUT constructions



F-7. Handset vertical and horizontal reference lines-“fixed case”



F-8. Handset vertical and horizontal reference lines-“clam-shell case”

5.1.3 Definition of the “cheek” position

- Position the device with the vertical centre line of the body of the device and the horizontal line crossing the centre of the ear piece in a plane parallel to the sagittal plane of the phantom (“initial position”). While maintaining the device in this plane, align the vertical centre line with the reference plane containing the three ear and mouth reference points (M, RE and LE) and align the centre of the ear piece with the line RE-LE.
- Translate the mobile phone box towards the phantom with the ear piece aligned with the line LE-RE until telephone touches the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the box until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost.

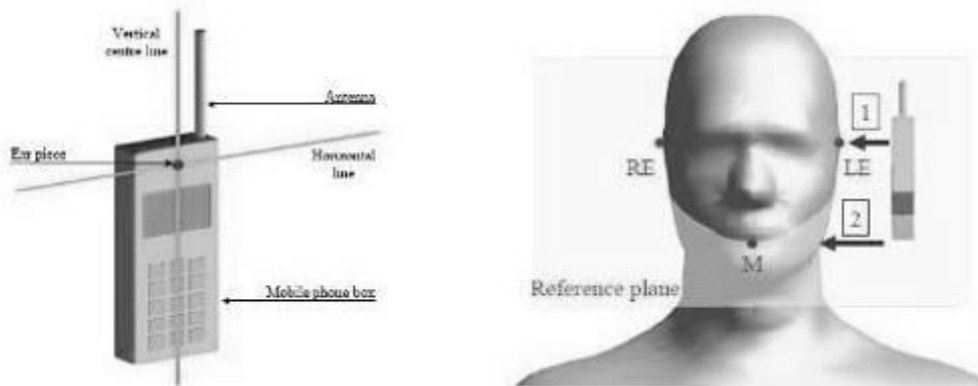


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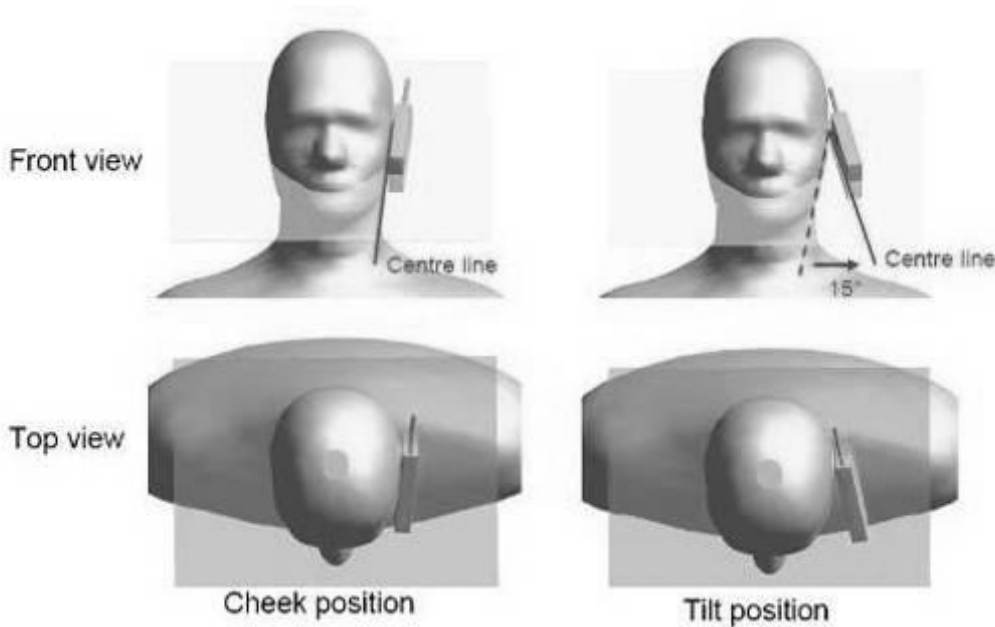
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5.1.4 Definition of the “tilted” position

- a) Position the device in the “cheek” position described above;
- b) While maintaining the device in the reference plane described above and pivoting against the ear, move it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost.



F-9. Definition of the reference lines and points, on the phone and on the phantom and initial position



F-10. “Cheek” and “tilt” positions of the mobile phone on the left side



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5.2 Body Exposure Condition

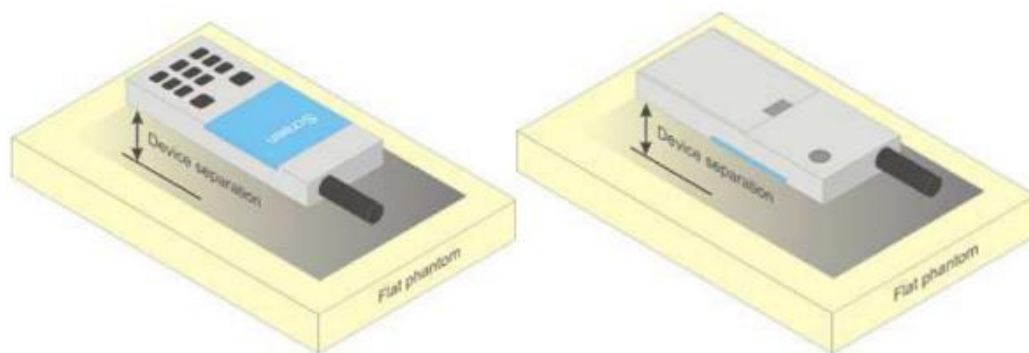
5.2.1 Body-worn accessory exposure conditions

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations.

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. Per FCC KDB Publication 648474 D04, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented. Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.



F-11. Test positions for body-worn devices



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5.2.2 Wireless Router exposure conditions

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. For devices with form factors smaller than 9 cm x 5 cm, a test separation distance of 5 mm is required.

5.3 Extremity exposure conditions

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

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

Due to the SAR result, only the following frequency bands need to test with 0mm for the Product Specific 10-g SAR, the others are not required.

LTE B7(Ant13):

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Product Specific 10-g SAR SAR Exclusion
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	20850/2510	1:1	0.078	0.17	12.82	24.00	13.122	1.024	Yes
Back side	20	QPSK 1RB_0	20850/2510	1:1	0.150	0.19	12.82	24.00	13.122	1.968	No
Left side	20	QPSK 1RB_0	20850/2510	1:1	0.027	0.06	12.82	24.00	13.122	0.354	Yes
Right side	20	QPSK 1RB_0	20850/2510	1:1	0.020	0.09	12.82	24.00	13.122	0.262	Yes
Top side	20	QPSK 1RB_0	20850/2510	1:1	0.188	-0.15	12.82	24.00	13.122	2.467	No
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	20850/2510	1:1	0.079	-0.11	12.88	23.00	10.280	0.812	Yes
Back side	20	QPSK 50RB_25	20850/2510	1:1	0.155	-0.07	12.88	23.00	10.280	1.593	No
Left side	20	QPSK 50RB_25	20850/2510	1:1	0.040	-0.17	12.88	23.00	10.280	0.411	Yes
Right side	20	QPSK 50RB_25	20850/2510	1:1	0.021	0.07	12.88	23.00	10.280	0.216	Yes
Top side	20	QPSK 50RB_25	20850/2510	1:1	0.254	0.01	12.88	23.00	10.280	2.611	No
Top side	20	QPSK PCC 1_99	20850/2510	1:1	0.231	-0.06	12.76	23.00	10.568	2.441	No
	20	QPSK SCC 1_0	21048/2529.8								



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LTE B38(Ant13):

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Product Specific 10-g SAR SAR Exclusion
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_50	38000/2595	1:1.58	0.078	0.05	14.32	25.00	11.695	0.912	Yes
Back side	20	QPSK 1RB_50	38000/2595	1:1.58	0.175	0.05	14.32	25.00	11.695	2.047	No
Left side	20	QPSK 1RB_50	38000/2595	1:1.58	0.054	-0.19	14.32	25.00	11.695	0.632	Yes
Right side	20	QPSK 1RB_50	38000/2595	1:1.58	0.031	-0.04	14.32	25.00	11.695	0.363	Yes
Top side	20	QPSK 1RB_50	38000/2595	1:1.58	0.226	-0.11	14.32	25.00	11.695	2.643	No
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	38000/2595	1:1.58	0.081	-0.12	14.39	24.00	9.141	0.740	Yes
Back side	20	QPSK 50RB_0	38000/2595	1:1.58	0.174	0.07	14.39	24.00	9.141	1.591	No
Left side	20	QPSK 50RB_0	38000/2595	1:1.58	0.054	0.18	14.39	24.00	9.141	0.494	Yes
Right side	20	QPSK 50RB_0	38000/2595	1:1.58	0.028	0.17	14.39	24.00	9.141	0.256	Yes
Top side	20	QPSK 50RB_0	38000/2595	1:1.58	0.242	0.03	14.39	24.00	9.141	2.212	No
Top side	20	QPSK PCC 1_99	37850/2580	1:1.58	0.211	0.15	14.25	24.00	9.441	1.992	No
	20	QPSK SCC 1_0	38048/2599.8								

LTE B41(Ant13):

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Product Specific 10-g SAR SAR Exclusion
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.085	-0.05	15.19	25.00	9.572	0.814	Yes
Back side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.181	0.03	15.19	25.00	9.572	1.733	No
Left side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.056	-0.10	15.19	25.00	9.572	0.536	Yes
Right side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.036	0.01	15.19	25.00	9.572	0.345	Yes
Top side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.236	0.06	15.19	25.00	9.572	2.259	No
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.086	0.00	15.20	24.00	7.586	0.652	Yes
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.181	0.12	15.20	24.00	7.586	1.373	No
Left side	20	QPSK 50RB_0	40620/2593	1:1.58	0.059	0.14	15.20	24.00	7.586	0.448	Yes
Right side	20	QPSK 50RB_0	40620/2593	1:1.58	0.034	-0.01	15.20	24.00	7.586	0.258	Yes
Top side	20	QPSK 50RB_0	40620/2593	1:1.58	0.254	0.18	15.20	24.00	7.586	1.927	No
Top side	20	QPSK PCC 1_0	40620/2593	1:1.58	0.237	0.11	15.03	24.00	7.889	1.870	No
	20	QPSK SCC 1_99	40422/2573.2								

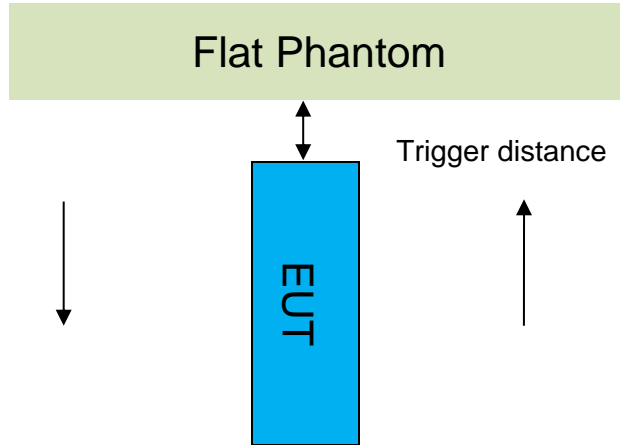


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5.1 Proximity Sensor Triggering Test

Proximity sensor triggering distances:

The Proximity sensor triggering was applied to WWAN antenna. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed.



Proximity Sensor Triggering Distance(mm)							
Antenna	Ant13				Ant11		
Band	GSM850/1900 WCDMA B2/4 LTE B2/4/7/38/41/66		LTE B7	5G NR n7/41			
Position	Front	Back	Top	Left	Front	Back	Left
Minimum	6	9	10	9	6	9	9
Required SAR Test	5	8	9	8	5	8	8

Note:

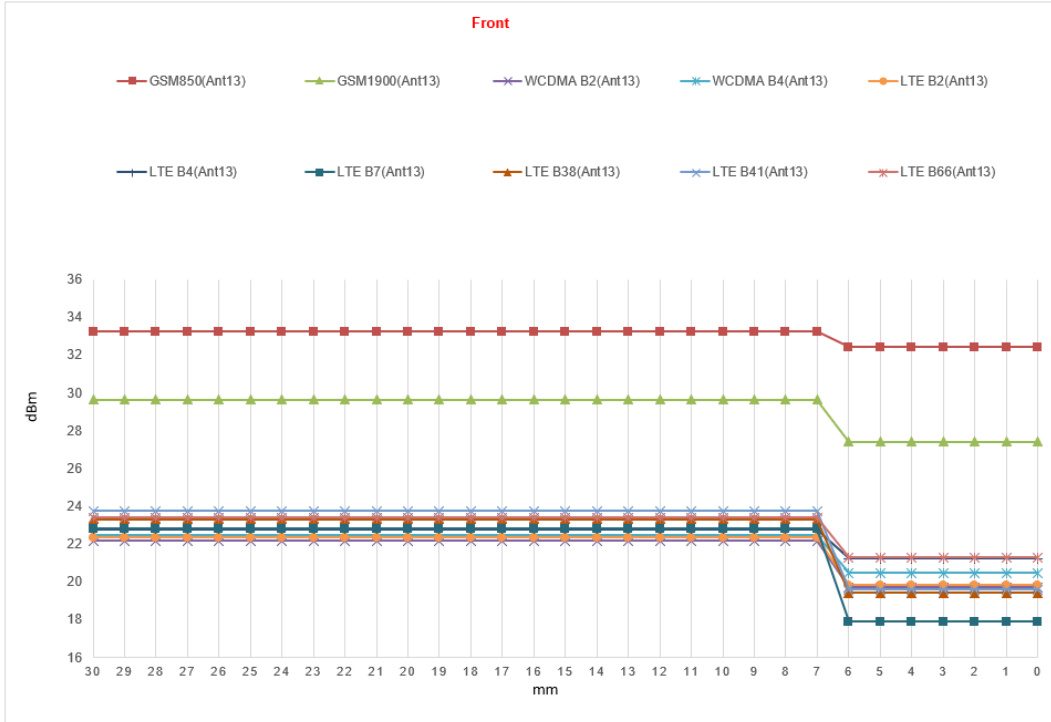
SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.



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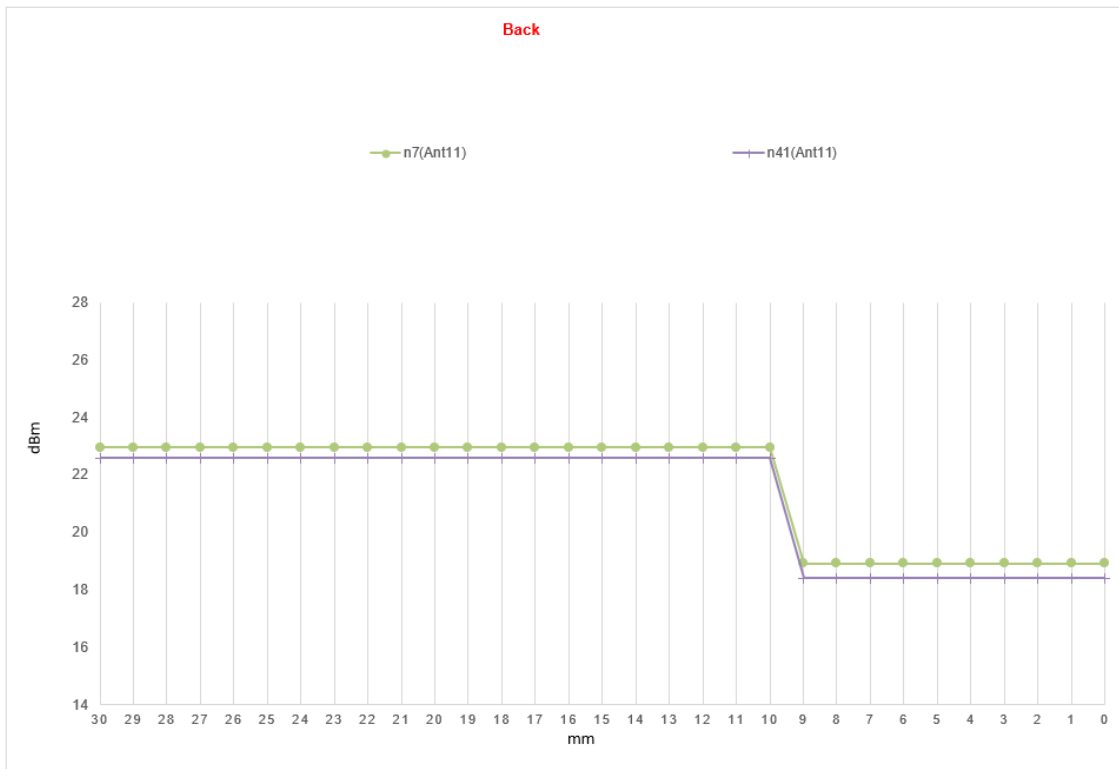
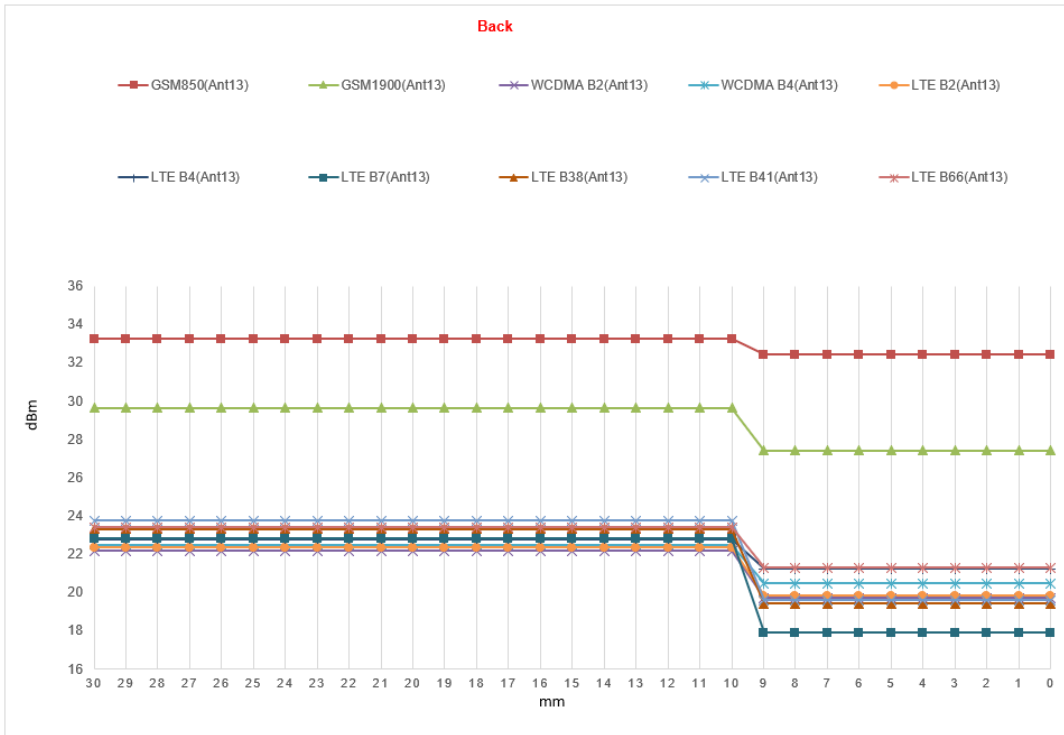
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● DUT Moving Toward(Trigger)the Phantom

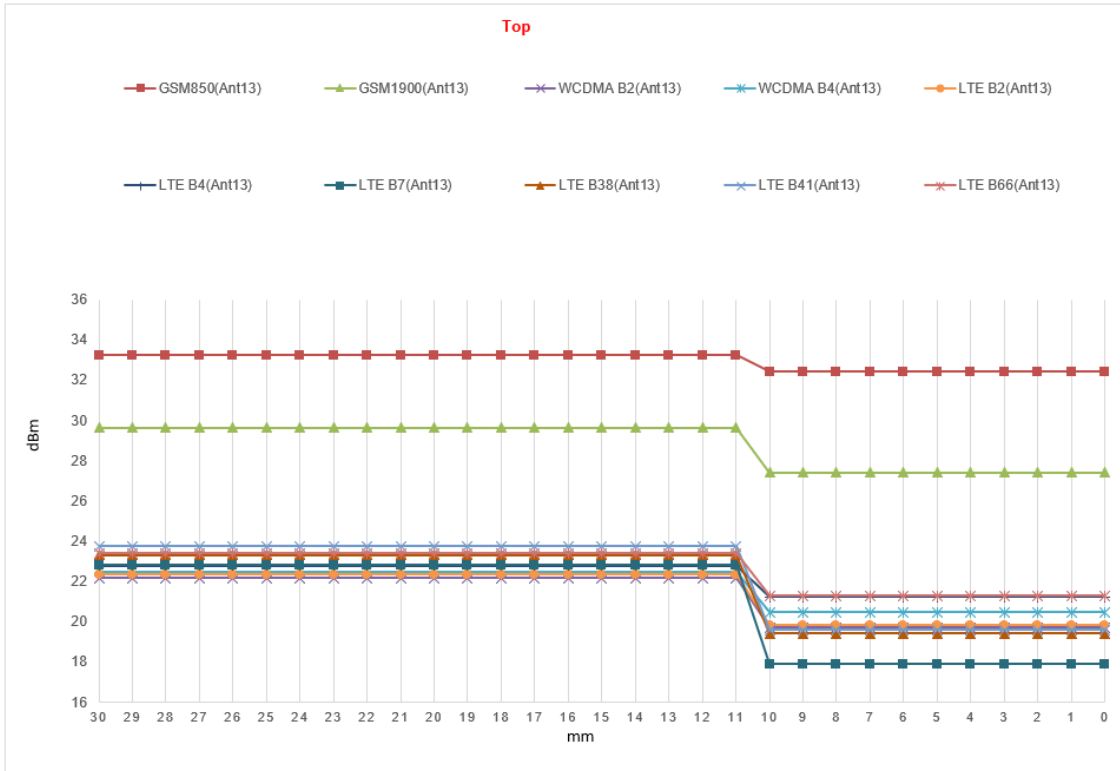


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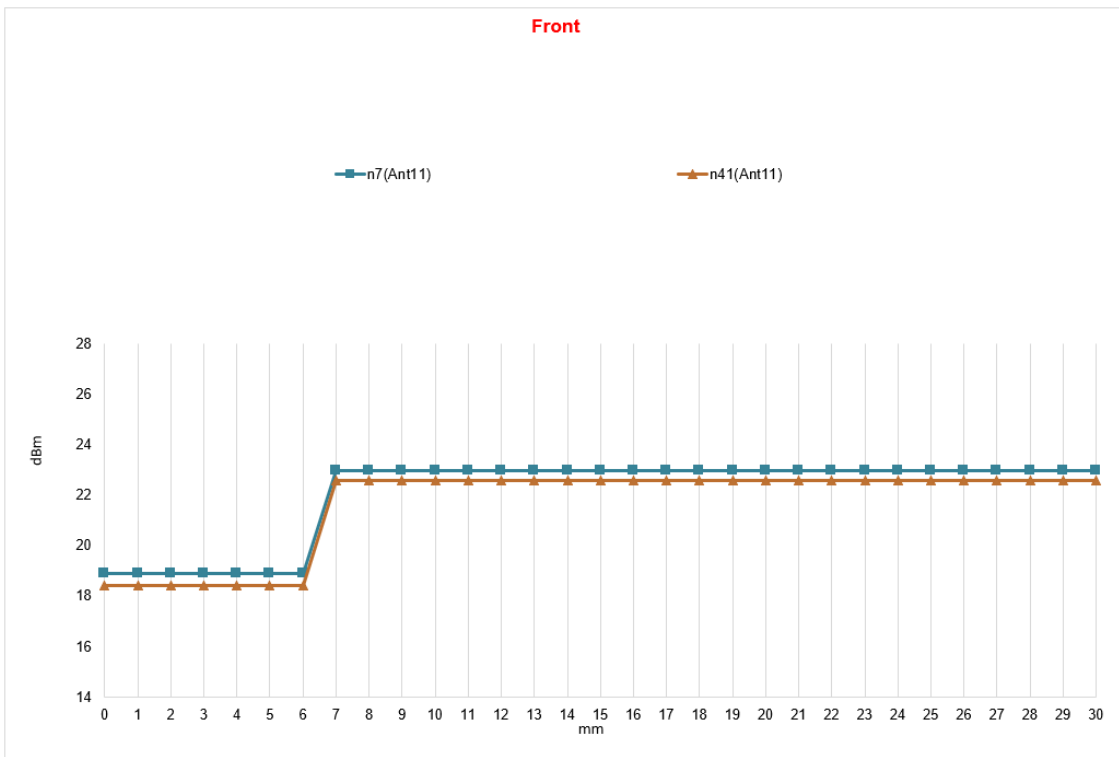
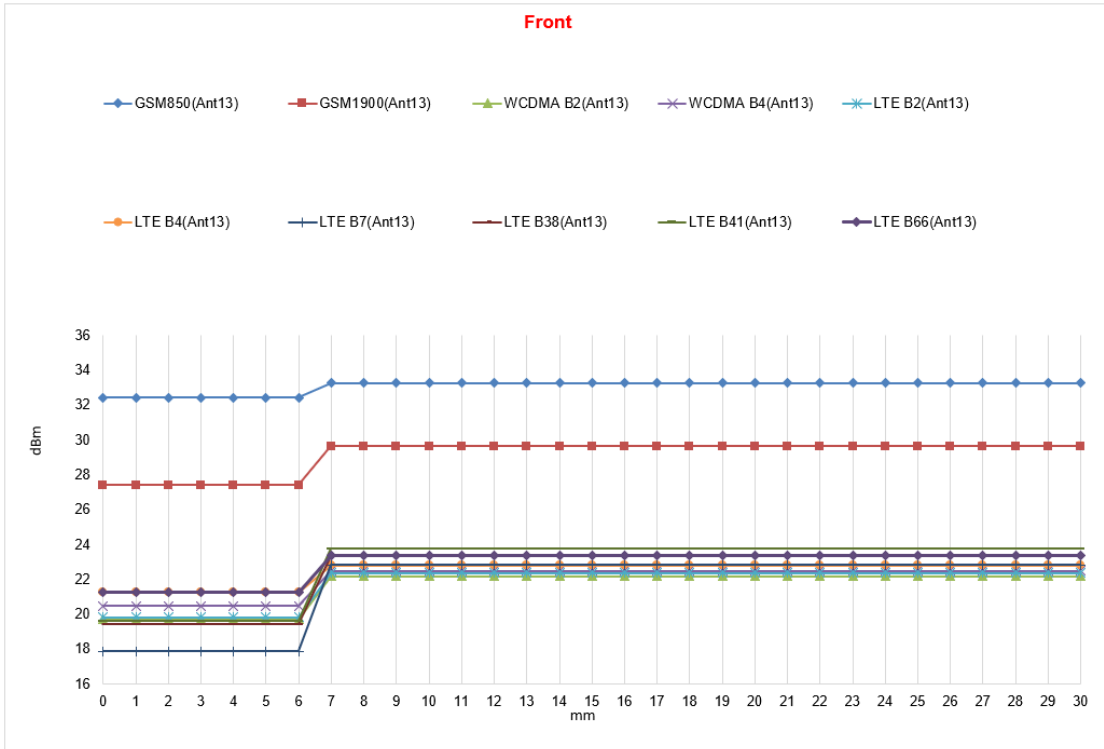


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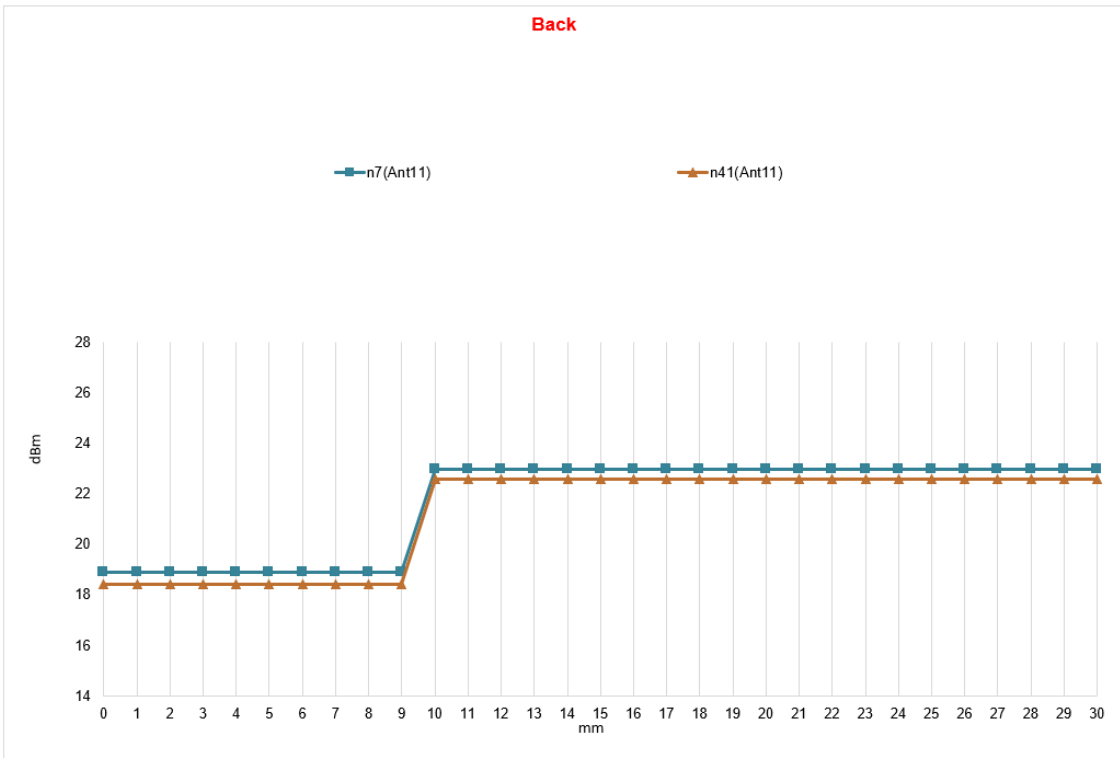
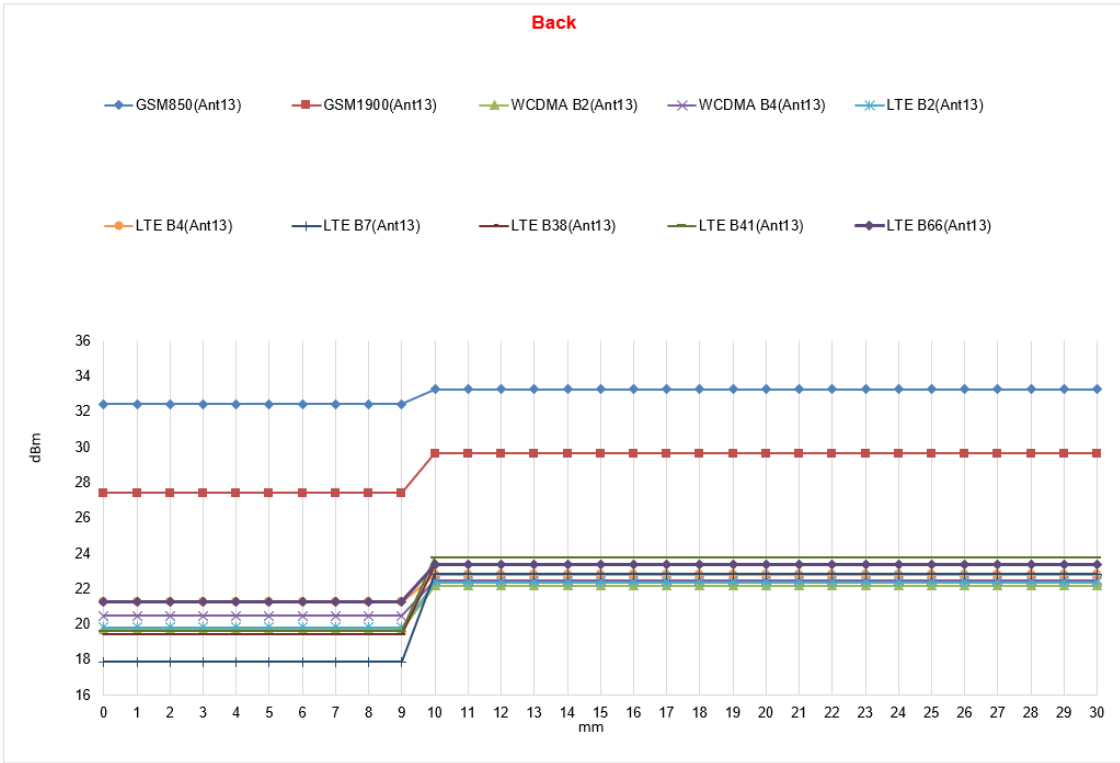


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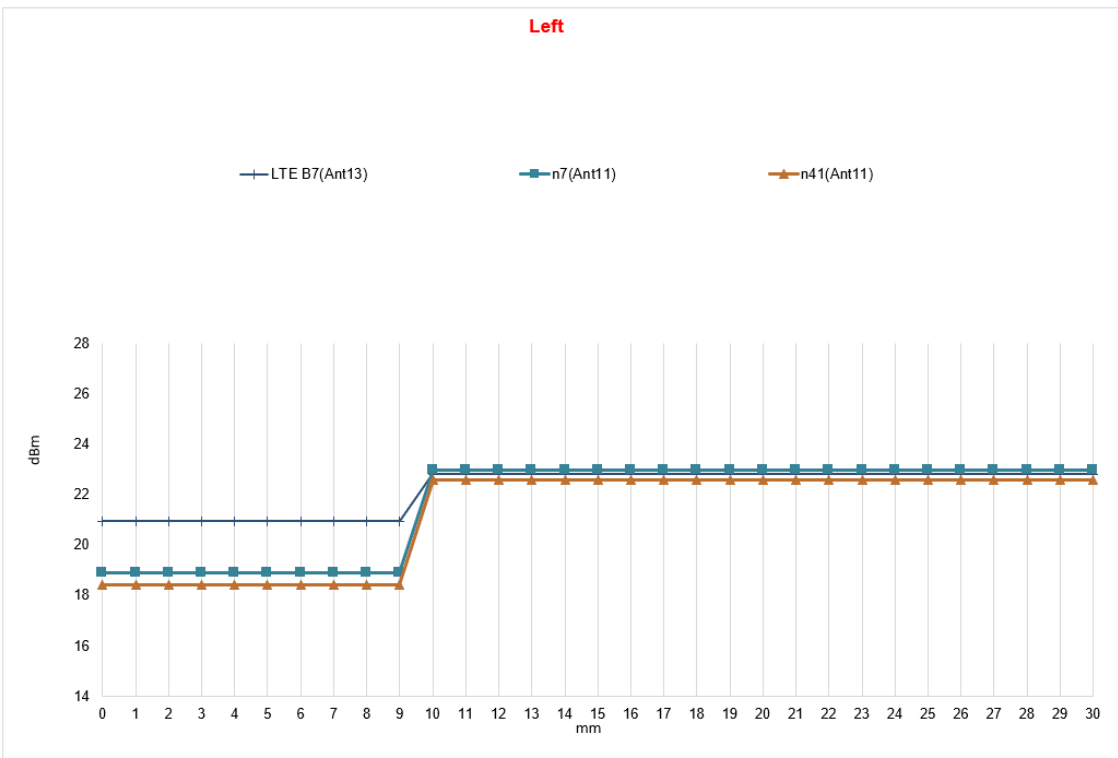
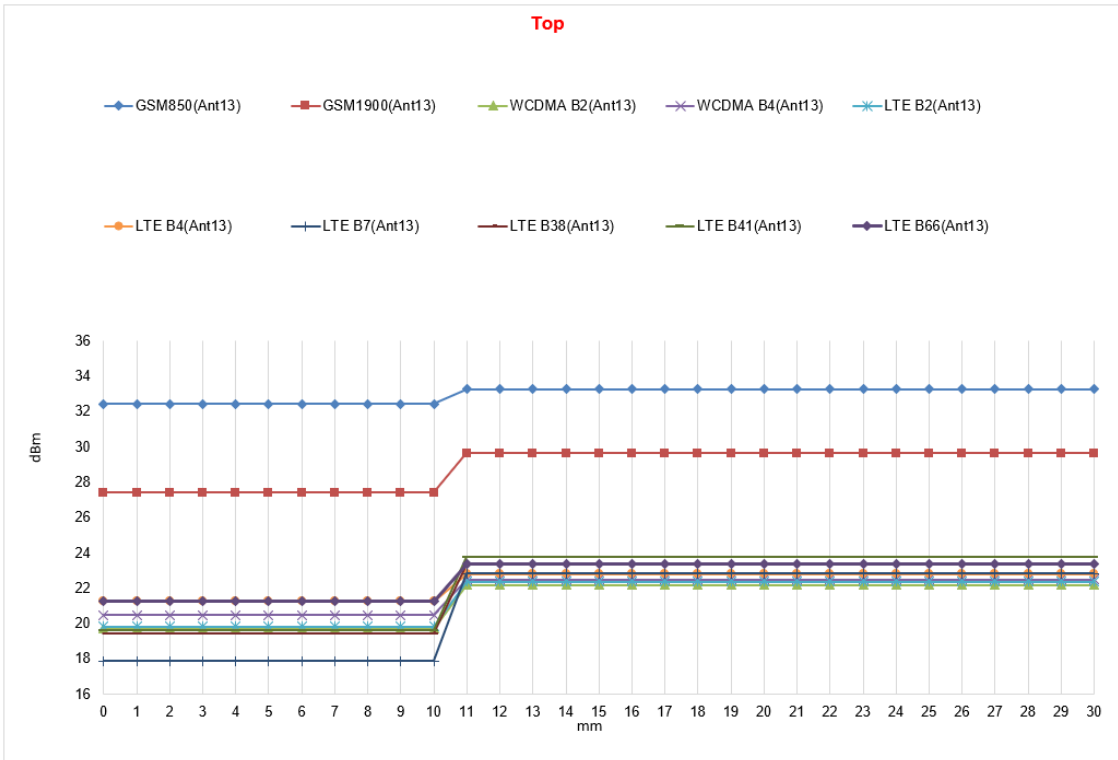
● DUT Moving Away(Release) from the Phantom



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Proximity sensor coverage

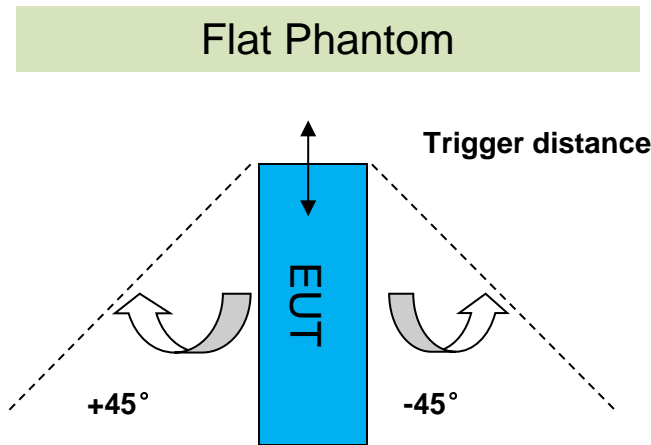
If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, the device is moved and “along the direction of maximum antenna and sensor offset”.

The proximity sensor and main antenna use same metallic electrode, so there is no spatial offset.

Device tilt angle influences to proximity sensor triggering

The influence of device tilt angles to proximity sensor triggering was determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom.

Rotating the tablet around the edge next to the phantom in $\leq 10^\circ$ increments until the tablet is $\pm 45^\circ$ from the vertical position at 0° , and the maximum output power remains in the reduced mode.



Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering for Top Side													
Band (MHz)	Minimum trigger distance Per KDB616217§6.2	Minimum trigger distance at which power reduction was maintained over $\pm 45^\circ$	Power Reduction Status										
			-45°	-35°	-25°	-15°	-5°	0°	5°	15°	25°	35°	45°
Ant11	Left side:9mm	Left side:9mm	on	on	on	on	on	on	on	on	on	on	on
Ant13	Top side:10mm Left side:9mm	Top side:10mm Left side:9mm	on	on	on	on	on	on	on	on	on	on	on



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6 SAR System Verification Procedure

6.1 Tissue Simulate Liquid

6.1.1 Recipes for Tissue Simulate Liquid

The following tables give the recipes for tissue simulating liquids to be used in different frequency bands:

Ingredients (% by weight)	Frequency (MHz)				
	450	700-900	1750-2000	2300-2500	2500-2700
Water	38.56	40.30	55.24	55.00	54.92
Salt (NaCl)	3.95	1.38	0.31	0.2	0.23
Sucrose	56.32	57.90	0	0	0
HEC	0.98	0.24	0	0	0
Bactericide	0.19	0.18	0	0	0
Tween	0	0	44.45	44.80	44.85
Salt: 99+% Pure Sodium Chloride Water: De-ionized, 16 MΩ ⁺ resistivity Tween: Polyoxyethylene (20) sorbitan monolaurate			Sucrose: 98+% Pure Sucrose HEC: Hydroxyethyl Cellulose		
HSL5GHz is composed of the following ingredients: Water: 50-65% Mineral oil: 10-30% Emulsifiers: 8-25% Sodium salt: 0-1.5%					

Table 3: Recipe of Tissue Simulate Liquid



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6.1.2 Measurement for Tissue Simulate Liquid

The dielectric properties for this Tissue Simulate Liquids were measured by using the Agilent Model 85070E Dielectric Probe in conjunction with Agilent E5071C Network Analyzer (300 KHz-8500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was $22\pm 2^{\circ}\text{C}$.

Tissue Type	Measured Frequency (MHz)	Target Tissue ($\pm 5\%$)		Measured Tissue		Liquid Temp.($^{\circ}\text{C}$)	Measured Date
		ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$		
2600 Head	2600	39.0 (37.05-40.95)	1.96 (1.86-2.06)	39.725	1.967	22.1	2021/4/19
2600 Head	2600	39.0 (37.05-40.95)	1.96 (1.86-2.06)	37.928	2.051	22.1	2021/5/5

Table 4: Measurement result of Tissue electric parameters

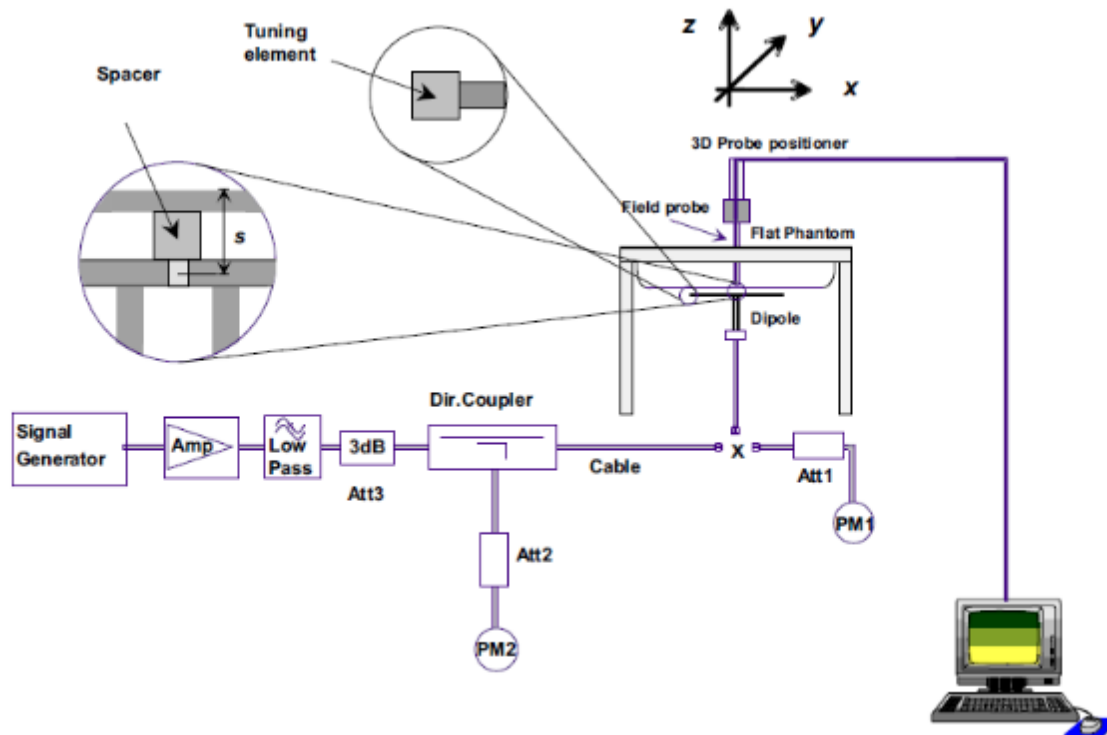


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6.2 SAR System Check

The microwave circuit arrangement for system Check is sketched in F-12. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table (A power level of 250mW (below 3GHz) or 100mW (3-6GHz) was input to the dipole antenna). During the tests, the ambient temperature of the laboratory was in the range 22±2°C, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15±0.5 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



F-12. the microwave circuit arrangement used for SAR system check



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6.2.1 Justification for Extended SAR Dipole Calibrations

1) Referring to KDB865664 D01 requirements for dipole calibration, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. 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) Return-loss is within 10% of calibrated measurement;
- d) Impedance 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.



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6.2.2 Summary System Check Result(s)

Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W) (±10%)	Target SAR (normalized to 1W) (±10%)	Liquid Temp. (°C)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D2600V2	Head	13.90	6.26	55.60	25.04	56.8 (51.12~62.48)	24.9 (22.41~27.39)	22.1	2021/4/19
D2600V2	Head	14.40	6.67	57.60	26.68	56.8 (51.12~62.48)	24.9 (22.41~27.39)	22.1	2021/5/5

Table 5: SAR System Check Result

6.2.3 Detailed System Check Results

Please see the Appendix A



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7 Test Configuration

7.1 3G SAR Test Reduction Procedure

According to KDB 941225D01, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

7.2 Operation Configurations

7.2.1 GSM Test Configuration

SAR tests for GSM 850 and GSM 1900, a communication link is set up with a base station by air link. Using CMW500 the power lever is set to “5” and “0” in SAR of GSM 850 and GSM 1900. The tests in the band of GSM 850 and GSM 1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. The EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink, and at most 4 timeslots in downlink, the maximum total timeslot is 5.

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.

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.

The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode



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7.2.2 WCDMA Test Configuration

1) . Output Power Verification

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

2) . Head SAR

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure

3) . Body SAR

SAR for body 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. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When more than 2 DPDCHn are supported by the handset, it may be necessary to configure additional DPDCHn using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

4) . HSDPA / HSUPA / DC-HSDPA

According to KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

a) HSDPA

HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors (β_c , β_d), and HS-DPCCH power offset parameters (Δ_{ACK} , Δ_{NACK} , Δ_{CQI}) are set according to values indicated in the following table. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.



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Sub-test	βc	Bd	$\beta d(SF)$	$\beta c/\beta d$	βhs	CM(dB)	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

Note1: ΔACK , $\Delta NACK$ and $\Delta CQI = 8$ Ahs = $\beta hs/\beta c = 30/15$ $\beta hs = 30/15 * \beta c$
Note2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1.A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, ΔACK and $\Delta NACK = 8$ (Ahs=30/15) with $\beta hs = 30/15 * \beta c$, and $\Delta CQI = 7$ (Ahs=24/15) with $\beta hs = 24/15 * \beta c$.
Note3: CM=1 for $\beta c/\beta d = 12/15$, $\beta hs/\beta c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

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



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HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	Maximum H S-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 7: HSDPA UE category

b) HSUPA

Due to inner loop power control requirements in HSUPA, 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 HSUPA should be configured according to the values indicated below as well as other applicable procedures described in the „WCDMA Handset“ and „Release 5 HSUPA Data Device“ sections of 3G device.



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Sub-test ^⓪	$\beta_{\text{c}}^{\text{⓪}}$	$\beta_{\text{d}}^{\text{⓪}}$	β_{d} (SF) ^⓪	$\beta_{\text{c}}/\beta_{\text{d}}^{\text{⓪}}$	$\beta_{\text{hs}}^{\text{⓪}}$ ⁽¹⁾	$\beta_{\text{ec}}^{\text{⓪}}$	$\beta_{\text{ed}}^{\text{⓪}}$	β_{c} ^⓪ (SF) ^⓪	$\beta_{\text{ed}}^{\text{⓪}}$ ^⓪ (code) ^⓪	CM ⁽²⁾ ^⓪ (dB) ^⓪	MP R ^⓪ (dB) ^⓪	AG ⁽⁴⁾ ^⓪ Inde ^⓪ x ^⓪	E-TFC I ^⓪
1 ^⓪	11/15 ⁽³⁾ ^⓪	15/15 ⁽³⁾ ^⓪	64 ^⓪	11/15 ⁽³⁾ ^⓪	22/15 ^⓪	209/225 ^⓪	1039/225 ^⓪	4 ^⓪	1 ^⓪	1.0 ^⓪	0.0 ^⓪	20 ^⓪	75 ^⓪
2 ^⓪	6/15 ^⓪	15/15 ^⓪	64 ^⓪	6/15 ^⓪	12/15 ^⓪	12/15 ^⓪	94/75 ^⓪	4 ^⓪	1 ^⓪	3.0 ^⓪	2.0 ^⓪	12 ^⓪	67 ^⓪
3 ^⓪	15/15 ^⓪	9/15 ^⓪	64 ^⓪	15/9 ^⓪	30/15 ^⓪	30/15 ^⓪	$\beta_{\text{ed1}}:47/15^{\text{⓪}}$ $\beta_{\text{ed2}}:47/15^{\text{⓪}}$	4 ^⓪	2 ^⓪	2.0 ^⓪	1.0 ^⓪	15 ^⓪	92 ^⓪
4 ^⓪	2/15 ^⓪	15/15 ^⓪	64 ^⓪	2/15 ^⓪	4/15 ^⓪	2/15 ^⓪	56/75 ^⓪	4 ^⓪	1 ^⓪	3.0 ^⓪	2.0 ^⓪	17 ^⓪	71 ^⓪
5 ^⓪	15/15 ⁽⁴⁾ ^⓪	15/15 ⁽⁴⁾ ^⓪	64 ^⓪	15/15 ⁽⁴⁾ ^⓪	30/15 ^⓪	24/15 ^⓪	134/15 ^⓪	4 ^⓪	1 ^⓪	1.0 ^⓪	0.0 ^⓪	21 ^⓪	81 ^⓪

Note 1: ΔACK , ΔNACK and $\Delta \text{CQI} = 8$ $A_{\text{hs}} = \beta_{\text{hs}}/\beta_{\text{c}} = 30/15$ $\beta_{\text{hs}} = 30/15 * \beta_{\text{c}}^{\text{⓪}}$
 Note 2: CM = 1 for $\beta_{\text{c}}/\beta_{\text{d}} = 12/15$, $\beta_{\text{hs}}/\beta_{\text{c}} = 24/15$. For all other combinations of DPDCH, DPCCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference^⓪
 Note 3 : For subtest 1 the $\beta_{\text{c}}/\beta_{\text{d}}$ 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 $\beta_{\text{c}} = 10/15$ and $\beta_{\text{d}} = 15/15^{\text{⓪}}$
 Note 4 : For subtest 5 the $\beta_{\text{c}}/\beta_{\text{d}}$ 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 $\beta_{\text{c}} = 14/15$ and $\beta_{\text{d}} = 15/15^{\text{⓪}}$
 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^⓪
 Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.^⓪

Table 8: Subtests for UMTS Release 6 HSUPA

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

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

Table 9: HSUPA UE category



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c) 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 10: 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.



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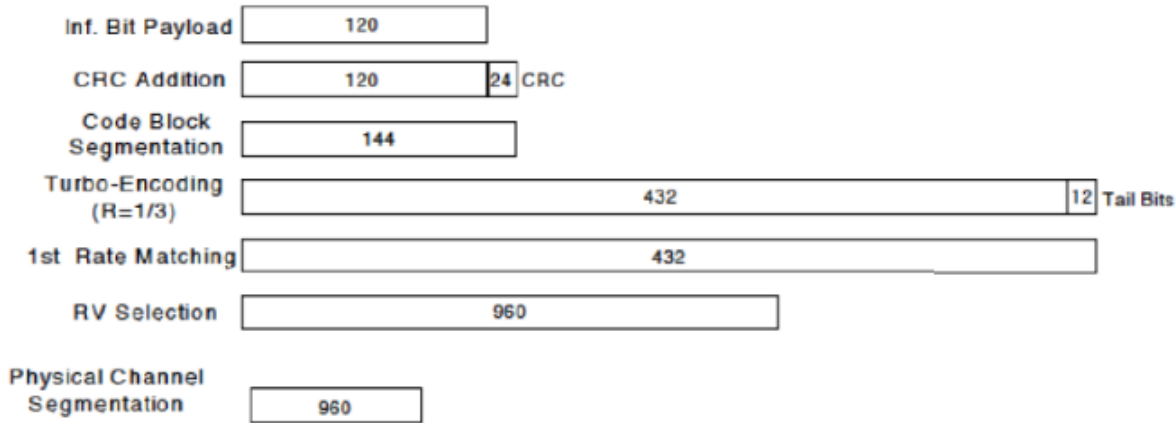


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

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

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

Note:

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



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d) HSPA+

Per KDB941225D01, SAR is required for Rel. 7 HSPA+ when SAR is required for Rel. 6 HSPA; otherwise, the 3G SAR test reduction procedure is applied to (uplink) HSPA+ with 12.2 kbps RMC as the primary mode. Power is measured for HSPA+ that supports uplink 16 QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1 to determine SAR test reduction.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS+} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{nr} = 30/15 * \beta_c$

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0)

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.



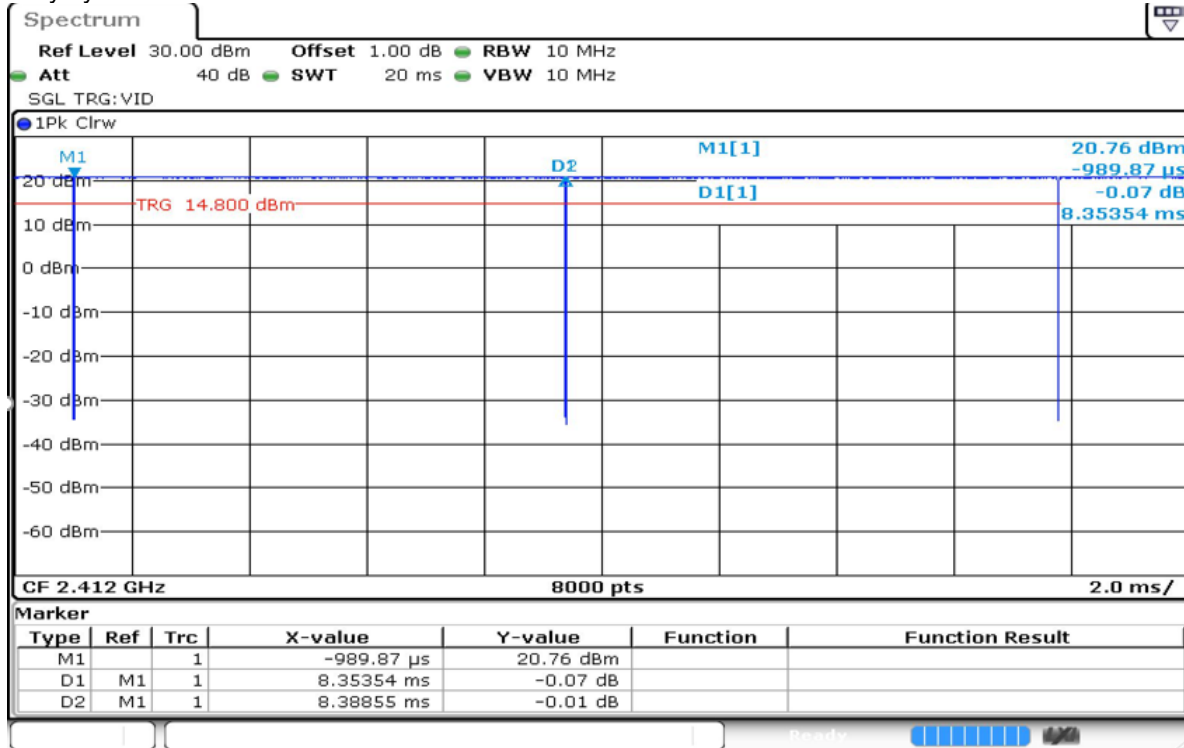
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7.2.3 WiFi Test Configuration

A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement.

7.2.3.1 Duty cycle

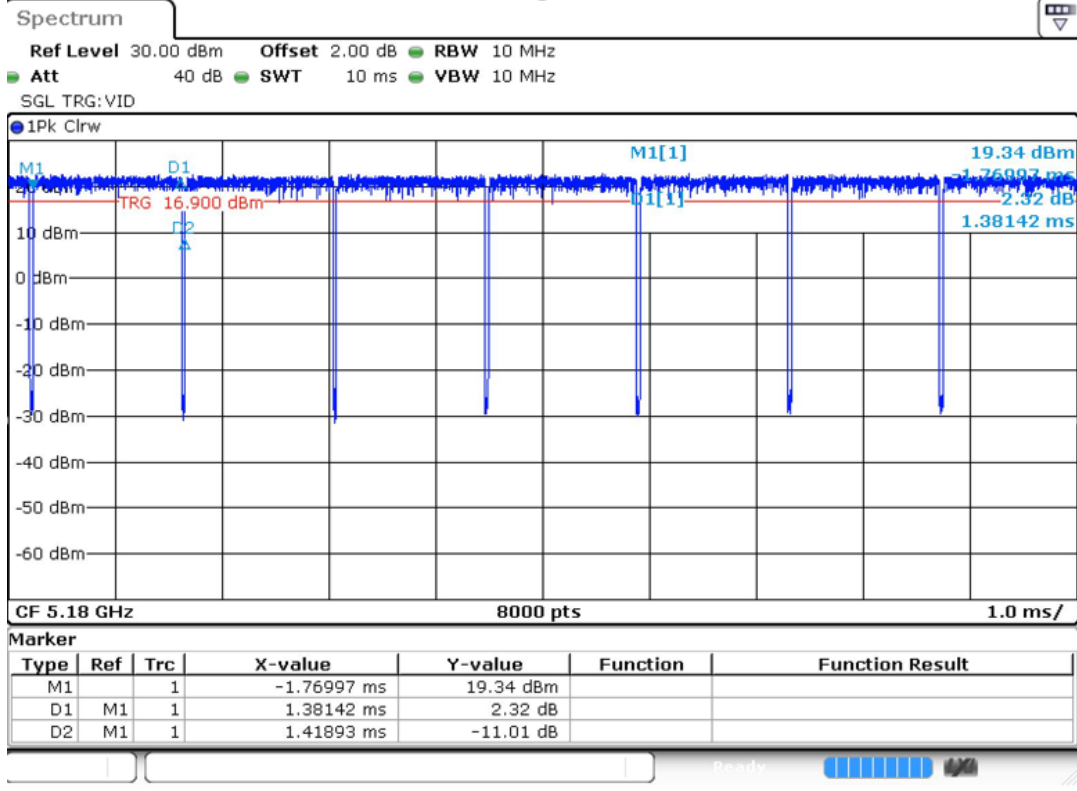
1) Wi-Fi 2.4GHz 802.11b:
 Duty cycle= $8.35354/8.38855=99.58\%$



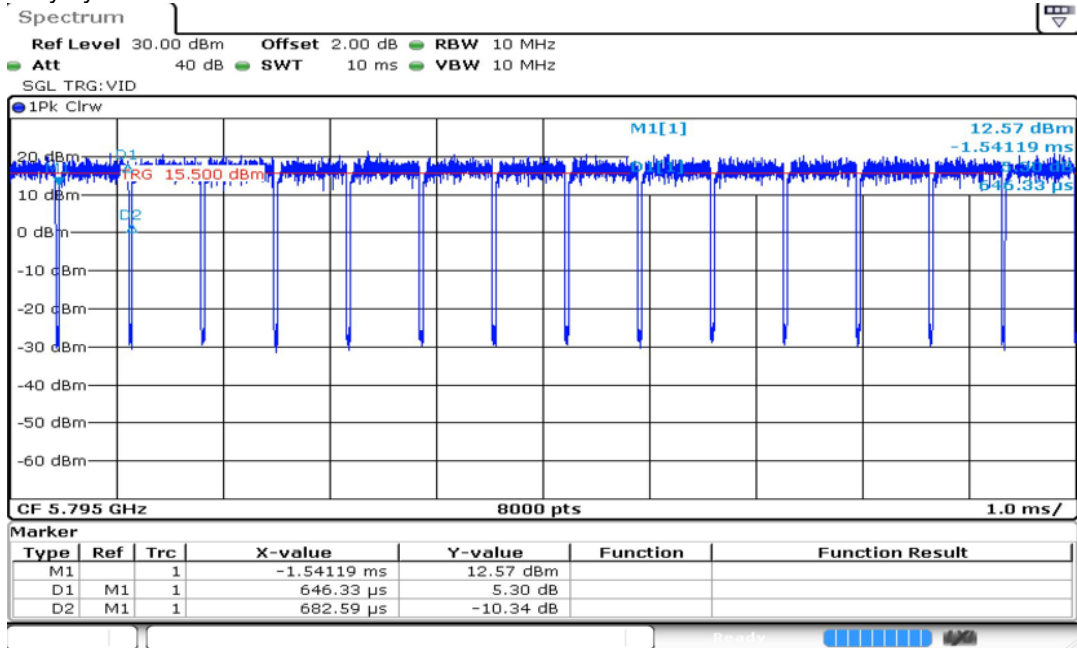
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2) Wi-Fi 5GHz 802.11a:
Duty cycle=1.38142/1.41893=97.36%



3) Wi-Fi 5GHz 802.11ac 80M:
Duty cycle=646.33/682.59=94.69%



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7.2.3.2 Initial Test Position SAR Test Reduction Procedure

DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. The initial test position procedure is described in the following:

- 1) . When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).
- 2) . When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and edges) are tested.
- 3) . 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. a) Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

7.2.3.3 Initial Test Configuration Procedures

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. SAR test reduction for subsequent highest output test channels is determined according to *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 subsequent next highest measured output power channel(s) in the initial test configuration until *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

7.2.3.4 Subsequent Test Configuration Procedures

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. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

- 1) . When SAR test exclusion provisions of KDB Publication 447498 are applicable and SAR measurement is not required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.



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- 2) . When the highest *reported* SAR for the initial test configuration (when applicable, include subsequent highest output channels), 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.
- 3) . The number of channels in the initial test configuration and subsequent test configuration can be different due to differences in channel bandwidth. When SAR measurement is required for a subsequent test configuration and the channel bandwidth is smaller than that in the initial test configuration, all channels in the subsequent test configuration that overlap with the larger bandwidth channel tested in the initial test configuration should be used to determine the highest maximum output power channel. This step requires additional power measurement to identify the highest maximum output power channel in the subsequent test configuration to determine SAR test reduction.
 - a) SAR should first be measured for the channel with highest measured output power in the subsequent test configuration.
 - b) SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the *reported* SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is > 1.2 W/kg or until all required channels are tested. i) For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration.
- 4) . SAR measurements for the remaining highest specified maximum output power OFDM transmission mode configurations that have not been tested in the initial test configuration (highest maximum output) or subsequent test configuration(s) (subsequent next highest maximum output power) is determined by recursively applying the subsequent test configuration procedures in this section to the remaining configurations according to the following:
 - a) replace “subsequent test configuration” with “next subsequent test configuration” (i.e., subsequent next highest specified maximum output power configuration)
 - b) replace “initial test configuration” with “all tested higher output power configurations”



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7.2.3.5 2.4 GHz WiFi SAR 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. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in following.

- **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 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.

- **2.4 GHz 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, including sub-sections). 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.

- **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.



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7.2.3.6 5 GHz WiFi SAR Procedures

- **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.

- **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.



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- **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.
 - a) The channel closest to mid-band frequency is selected for SAR measurement.
 - b) 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.

- **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.



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7.2.4 LTE Test Configuration

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The Anritsu MT8821C was used for LTE output power measurements and SAR testing. Max power control was used so the UE transmits with maximum output power during SAR testing. SAR must be measured with the maximum TTI (transmit time interval) supported by the device in each LTE configuration.

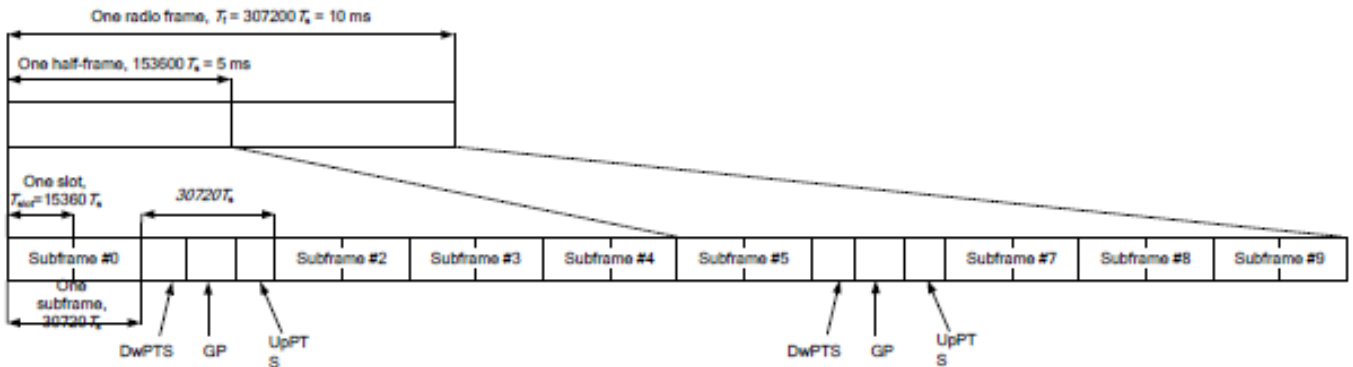
TDD LTE test consideration

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

SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.

LTE TDD Band support 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.

Frame structure type 2:



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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.Ts	2192.Ts	2560.Ts	7680.Ts	2192.Ts	2560.Ts
1	19760.Ts			20480.Ts		
2	21952.Ts			23040.Ts		
3	24144.Ts			25600.Ts		
4	26336.Ts	4384.Ts	5120.Ts	7680.Ts	4384.Ts	5120.Ts
5	6592.Ts			20480.Ts		
6	19760.Ts			23040.Ts		
7	21952.Ts			25600.Ts		
8	24144.Ts			-		-
9	13168.Ts			-		-

Uplink-downlink configurations.

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

Calculated Duty Cycle=[Extended cyclic prefix in uplink x (Ts) x # of S + # of U]/10ms

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33



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A) Spectrum Plots for RB Configurations

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

B) MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

Modulation	Channel bandwidth / Transmission bandwidth configuration [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
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

C) A-MPR

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

D) Largest channel bandwidth standalone SAR test requirements

1) 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.

2) QPSK with 50% RB allocation

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

3) 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 1) and 2) 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.

4) 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.

E) 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.



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7.2.5 5G NR Test Configuration

1. NR Band n7 support SA mode, n41 support NSA and SA mode. NSA mode operations are possible only with LTE under EN-DC mode and the operations are possible as following table:

Band/Antenna		n41
		Ant11
LTE B5	Ant13	v
	Ant41	v

2. The general information supported by the NR band is as following table:

Band		n7	n41
NR mode	SA	Yes	Yes
	NSA	N/A	Yes
Modulation	DFT-s-OFDM	PI/2 BPSK	Yes
		QPSK	Yes
		16QAM	Yes
		64QAM	Yes
		256QAM	Yes
	CP-OFDM	QPSK	Yes
		16QAM	Yes
		64QAM	Yes
		256QAM	Yes
		Duty Cycle	100%

Band	SCS	Bandwidth												
		5Mhz	10Mhz	15Mhz	20Mhz	25Mhz	30Mhz	40Mhz	50Mhz	60Mhz	70Mhz	80Mhz	90Mhz	100Mhz
n7	15KHZ	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A
	30KHZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n41	15KHZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30KHZ	N/A	Yes	Yes	Yes	N/A	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes



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3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
- a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 3GPP 38.101 maximum power reduction for power class 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-QPSK and the reported SAR for the DFT-QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
 - b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, for PI/2 BPSK/16QAM/64QMA/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the PI/2 BPSK/16QAM/64QMA/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
 - c. SAR testing start with the largest SCS and 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.
 - d. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
 - e. 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 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.
 - f. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - g. Smaller SCS/bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device



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4. MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS 38.101-1 Section 6.2.2 under Table 6.2.2 -1.

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	PI/2 BPSK	$\leq 3.5^1$	$\leq 1.2^1$	$\leq 0.2^1$
		$\leq 0.5^2$	$\leq 0.5^2$	0^2
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM		≤ 2.5	
CP-OFDM	256 QAM		≤ 4.5	
	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM		≤ 3.5	
	256 QAM		≤ 6.5	

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability powerBoosting-pi2BPSK and if the IE powerBoostPi2BPSK is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE powerBoostPi2BPSK is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

5. For FDD NR Band operation does not have the fixed UL/DL frame structure, but during the transmitting/receiving it can be operated in the slot structure of 100% UL duty cycle, we are proposing the conservative way to evaluate SAR at 100% duty cycle. For the purpose of test NR Band standalone SAR, and also test SAR level at 100% TX duty cycle.

6. For 5G NR Sub6GHz SISO Mode, SAR Test plan as below:

1) For 5G NR NSA mode with the same UL EN_DC combination but different DL EN_DC combinations, eg: EN-DC configuration: UL DC_7A_n5 (UL two bands) with DL DC_7C_n5 (DL two bands)

a) The UL EN-DC configuration, including the Tx antenna configuration, RF path, the channel bandwidth and other operating parameters are the same.

b) The maximum output power, including tolerance, for the UL EN-DC configuration with DL two or more bands must be \leq the same UL EN-DC configuration with DL two bands only to qualify for the SAR test exclusion.

7. For EN-DC SAR, as the existing SAR test system cannot test the multiple different frequency bands simultaneous Transmission SAR at the same time, we suggest that the conservative “max + max” multi-Tx and SAR scaling method can be used to evaluate the inter-band Uplink EN-DC SAR from standalone SAR test results of each LTE and NR EN-DC component band and the conservative “max + max” multi-Tx method to combine the scaled SAR value from each EN-DC component band as the inter-band Uplink EN-DC SAR. All Simultaneous Transmission Scenarios will be evaluated independently in the final SAR report.

8. When the reported SAR for and EN DC configuration is greater than 1.2 W/kg, EN DC SAR is also required for other NR based test channels.

9. EN DC SAR is also required for standalone NR configurations greater than 1.2 W/kg when scaled to the EN DC power level.



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8 Test Result

8.1 Measurement of RF conducted Power

Note: The detailed conducted power table can refer to Appendix E.

8.1.1 Conducted Power of GSM

Note:

1) . CMW500 measures GSM peak and average output power for active timeslots. For SAR the time based 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	1:4.15	1:2.77	1:2.075
Time based avg. power compared to slotted avg. power	-9.19	-6.18	-4.42	-3.17

2) . The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:

$$\text{Frame-averaged power} = 10 \times \log (\text{Burst-averaged power mW} \times \text{Slot used} / 8)$$

3) . When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel must be used

8.1.2 Conducted Power of WCDMA

Note:

1) when the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel must be used.

8.1.3 Conducted Power of LTE



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8.1.4 Conducted Power of Uplink & Downlink LTE CA

The following conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion. Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

Power test equipment: Anritsu Radio Communication Analyzer MT8821C were used.

8.1.4.1 Conducted Power of uplink LTE CA

Note:

- 1) This device supports uplink carrier aggregation for LTE CA_7C, CA_38C, CA_41C with a maximum of two 20MHz component carriers.
- 2) According to FCC guidance, the output power with uplink CA active was measured for the high / middle / low channel configuration with the highest reported SAR for each exposure condition, the power was measured with wideband signal integration over both component carriers.
- 3) In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the subset in each row with the largest combination of frequency bands and CCs.
- 4) Maximum output power measurement is required for each UL CA configuration for the required test channels described in KDB 941225 D05.



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8.1.4.2 Conducted Power of Downlink LTE CA

In this section, the following conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion per KDB 941225 D05A. Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation is inactive, therefore SAR evaluation with downlink carrier aggregation can be excluded.

Power test equipment: Anritsu Radio Communication Analyzer MT8821C

The possible downlink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V15.4.0. The detailed conducted power measurement results of downlink LTE CA are provided in the SAR report per 3GPP TS 36.521-1 V14.4.0. According to KDB 941225 D05A, the downlink only carrier aggregation conditions for this device can be excluded from SAR testing.

The conducted power measurement results of downlink LTE CA Conducted Power are as below, so the downlink only carrier aggregation conditions for this device can be excluded from SAR testing

In applying the existing power measurement procedures for DL CA SAR test exclusion, the configurations that require power measurements are highlighted in the table as below:

1 Band / 2CC	1 Band / 3CC	1 Bands / 4CC	2 Bands / 2CC
CA_7C			
CA_7A-7A			
CA_38C			
CA_41C			
CA_41A-41A			
CA_66A-66A			
CA_66C			
CA_66B			
	CA_41D		
		CA_41E	
			CA_2A-4A
			CA_2A-7A
			CA_4A-7A

Note:

The downlink LTE CA SAR test is not required since the maximum output power for downlink LTE CA was not more than 0.25dB higher than the maximum output power for without downlink LTE CA.



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8.1.5 Conducted Power of WIFI

Note:

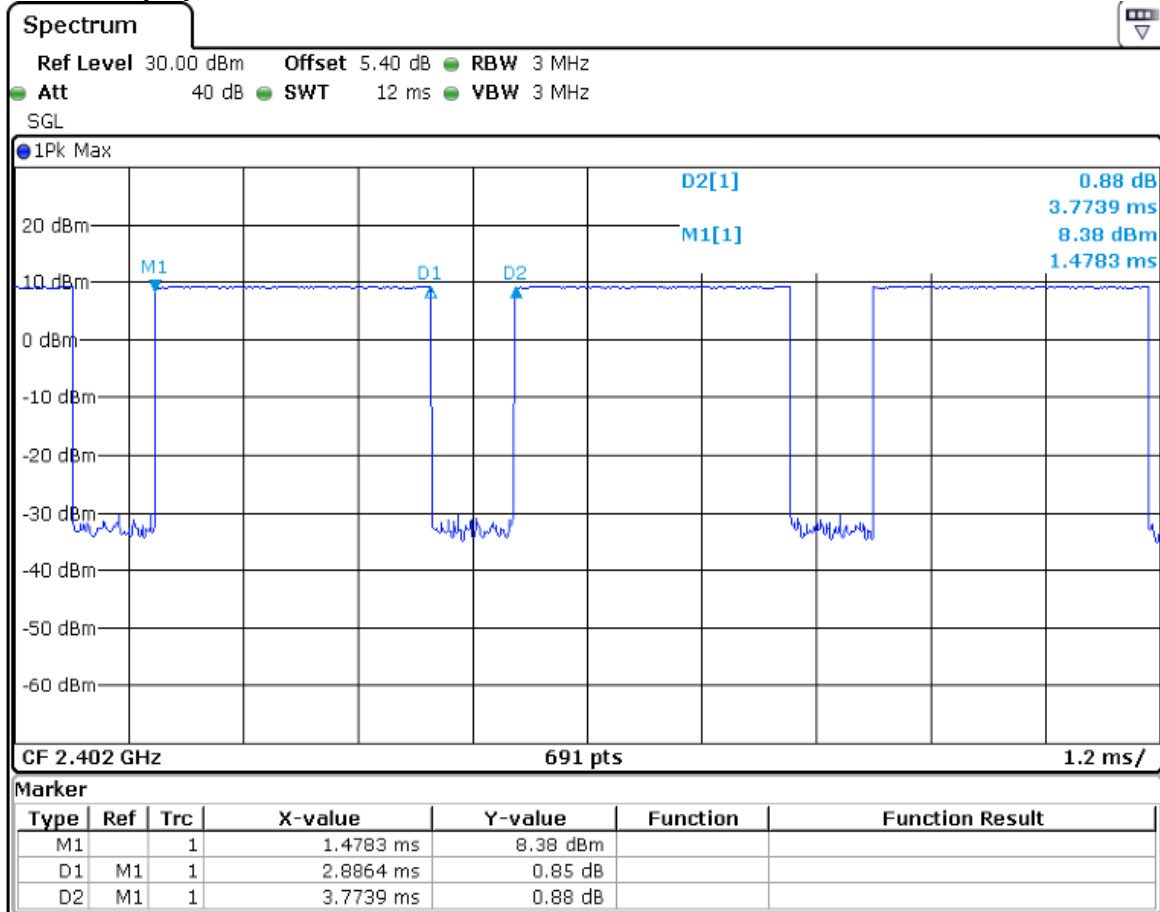
- a) Power must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band.
- b) Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.
 - 1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.
 - 2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.
- c) For each transmission mode configuration, power must be measured for the highest and lowest channels; and at the mid-band channel(s) when there are at least 3 channels. For configurations with multiple mid-band channels, due to an even number of channels, both channels should be measured.



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8.1.6 Conducted Power of BT

BT DH5 Duty Cycle=2.8864/3.7739 =76.48%



Note:

1)The conducted power of BT is measured with RMS detector.



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8.2 Stand-alone SAR test evaluation

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and Product specific 10g SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.

Freq. Band	Frequency (GHz)	Position	Average Power		Test Separation (mm)	Calculate Value	Exclusion Threshold	Exclusion (Y/N)
			dBm	mW				
Wi-Fi 2.4G	2.472	Head	11.5	14.13	5	4.44	3	N
		Body-worn	20.5	112.20	15	11.76	3	N
		Hotspot	20.5	112.20	10	17.64	3	N
Wi-Fi 5G	5.850	Head	7.5	5.62	5	2.72	3	Y
		Body-worn	18.5	70.79	15	11.42	3	N
		Hotspot	18.5	70.79	10	17.12	3	N
Bluetooth	2.48	Head	11.0	12.59	5	3.97	3	N
		Body-worn	11.0	12.59	15	1.32	3	Y
		Hotspot	11.0	12.59	10	1.98	3	Y

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$

for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

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

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.



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8.3 Measurement of SAR Data

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.
- 3) The Simultaneous is reduced by XdB therefore power(the power reduced refer to section 1.4.3) and SAR was estimated based on standalone results.

WiFi 2.4G:

- 1) When the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is $\leq 1.2\text{ W/kg}$, SAR test for the other 802.11 modes are not required.

WiFi 5G:

- 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. As the highest reported SAR for a test configuration is $\leq 1.2\text{ W/kg}$, SAR is not required for U-NII-1 band for that configuration.
- 2) For Wi-Fi 5G, U-NII-2A (5250-5350 MHz) and U-NII-2C (5470-5725 MHz) bands does not support hotspot function.
- 3) When the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is $\leq 1.2\text{ W/kg}$, SAR test for the other 802.11 modes are not required.



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8.3.1 SAR Result of GSM850

Ant41 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	GPRS 4TS	190/836.6	1:2.075	0.347	0.08	28.86	30.40	1.426	0.495	22.1
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.120	0.09	28.86	30.40	1.426	0.171	22.1
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.210	0.06	28.86	30.40	1.426	0.299	22.1
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.104	0.02	28.86	30.40	1.426	0.148	22.1
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.196	0.02	28.86	30.40	1.426	0.279	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.277	-0.05	28.86	30.40	1.426	0.395	22.1
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.328	-0.11	28.86	30.40	1.426	0.468	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.532	-0.08	28.86	30.40	1.426	0.758	22.1
Left side	GPRS 4TS	190/836.6	1:2.075	0.475	0.00	28.86	30.40	1.426	0.677	22.1
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.126	0.09	28.86	30.40	1.426	0.180	22.1
Ant13 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	GPRS 4TS	190/836.6	1:2.075	0.324	0.07	23.35	24.40	1.274	0.413	22.1
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.315	0.05	23.35	24.40	1.274	0.401	22.1
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.622	0.03	23.35	24.40	1.274	0.792	22.1
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.538	0.04	23.35	24.40	1.274	0.685	22.1
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.187	-0.11	29.22	30.40	1.312	0.245	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.244	0.00	29.22	30.40	1.312	0.320	22.1
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.212	0.19	26.92	27.90	1.253	0.266	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.231	-0.09	26.92	27.90	1.253	0.289	22.1
Left side	GPRS 4TS	190/836.6	1:2.075	0.099	0.10	26.92	27.90	1.253	0.124	22.1
Top side	GPRS 4TS	190/836.6	1:2.075	0.232	-0.08	26.92	27.90	1.253	0.291	22.1

Table 11: SAR of GSM850 for Head and Body(Original report: ZR/2021/3001406)



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8.3.2 SAR Result of GSM1900

Ant31 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	GPRS 4TS	661/1880	1:2.075	0.117	0.04	25.93	27.50	1.435	0.168	22.3
Left tilted	GPRS 4TS	661/1880	1:2.075	0.066	-0.02	25.93	27.50	1.435	0.095	22.3
Right cheek	GPRS 4TS	661/1880	1:2.075	0.092	0.01	25.93	27.50	1.435	0.133	22.3
Right tilted	GPRS 4TS	661/1880	1:2.075	0.094	0.18	25.93	27.50	1.435	0.135	22.3
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.221	0.10	24.60	26.00	1.380	0.305	22.3
Back side	GPRS 4TS	661/1880	1:2.075	0.315	0.06	24.60	26.00	1.380	0.435	22.3
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.311	0.06	24.60	26.00	1.380	0.429	22.3
Back side	GPRS 4TS	661/1880	1:2.075	0.516	-0.08	24.60	26.00	1.380	0.712	22.3
Right side	GPRS 4TS	661/1880	1:2.075	0.142	-0.07	24.60	26.00	1.380	0.196	22.3
Bottom side	GPRS 4TS	661/1880	1:2.075	0.605	-0.09	24.60	26.00	1.380	0.835	22.3
Bottom side	GPRS 4TS	512/1850.2	1:2.075	0.750	0.02	24.83	26.00	1.309	0.982	22.3
Bottom side	GPRS 4TS	810/1909.8	1:2.075	0.618	-0.01	24.68	26.00	1.355	0.838	22.3
Ant13 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	GPRS 4TS	661/1880	1:8.3	0.256	0.01	20.99	22.50	1.416	0.362	22.3
Left tilted	GPRS 4TS	661/1880	1:8.3	0.304	0.02	20.99	22.50	1.416	0.430	22.3
Right cheek	GPRS 4TS	661/1880	1:8.3	0.429	0.03	20.99	22.50	1.416	0.607	22.3
Right tilted	GPRS 4TS	661/1880	1:8.3	0.561	-0.06	20.99	22.50	1.416	0.794	22.3
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	661/1880	1:8.3	0.140	0.02	25.71	27.50	1.510	0.211	22.3
Back side	GPRS 4TS	661/1880	1:8.3	0.149	0.04	25.71	27.50	1.510	0.225	22.3
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.145	-0.02	21.32	23.00	1.472	0.213	22.3
Back side	GPRS 4TS	661/1880	1:2.075	0.174	0.03	21.32	23.00	1.472	0.256	22.3
Left side	GPRS 4TS	661/1880	1:2.075	0.044	0.03	21.32	23.00	1.472	0.064	22.3
Top side	GPRS 4TS	661/1880	1:2.075	0.252	0.03	21.32	23.00	1.472	0.371	22.3

Table 12: SAR of GSM1900 for Head and Body(Original report: ZR/2021/3001406).



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8.3.3 SAR Result of WCDMA Band II

Ant31 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	9400/1880	1:1	0.142	-0.07	23.02	24.00	1.253	0.178	22.3
Left tilted	RMC	9400/1880	1:1	0.077	-0.13	23.02	24.00	1.253	0.096	22.3
Right cheek	RMC	9400/1880	1:1	0.120	-0.10	23.02	24.00	1.253	0.150	22.3
Right tilted	RMC	9400/1880	1:1	0.110	0.14	23.02	24.00	1.253	0.138	22.3
Body worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.229	0.04	21.06	22.00	1.242	0.284	22.3
Back side	RMC	9400/1880	1:1	0.328	-0.12	21.06	22.00	1.242	0.407	22.3
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.302	0.09	20.17	21.00	1.211	0.366	22.3
Back side	RMC	9400/1880	1:1	0.463	0.18	20.17	21.00	1.211	0.561	22.3
Right side	RMC	9400/1880	1:1	0.132	0.00	20.17	21.00	1.211	0.160	22.3
Bottom side	RMC	9400/1880	1:1	0.492	-0.04	20.17	21.00	1.211	0.596	22.3
Ant13 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	9400/1880	1:1	0.225	0.11	14.71	16.50	1.510	0.340	22.3
Left tilted	RMC	9400/1880	1:1	0.276	0.04	14.71	16.50	1.510	0.417	22.3
Right cheek	RMC	9400/1880	1:1	0.415	0.10	14.71	16.50	1.510	0.627	22.3
Right tilted	RMC	9400/1880	1:1	0.486	0.03	14.71	16.50	1.510	0.734	22.3
Body worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.206	-0.07	22.18	24.00	1.521	0.313	22.3
Back side	RMC	9400/1880	1:1	0.257	-0.01	22.18	24.00	1.521	0.391	22.3
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.120	0.02	16.69	18.50	1.517	0.182	22.3
Back side	RMC	9400/1880	1:1	0.120	-0.11	16.69	18.50	1.517	0.182	22.3
Left side	RMC	9400/1880	1:1	0.042	0.07	16.69	18.50	1.517	0.064	22.3
Top side	RMC	9400/1880	1:1	0.183	0.02	16.69	18.50	1.517	0.278	22.3

Table 13: SAR of WCDMA Band II for Head and Body(Original report: ZR/2021/3001406).



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8.3.4 SAR Result of WCDMA Band IV

Ant31 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	1412/1732.4	1:1	0.121	0.02	23.30	24.00	1.175	0.142	22.2
Left tilted	RMC	1412/1732.4	1:1	0.056	-0.18	23.30	24.00	1.175	0.066	22.2
Right cheek	RMC	1412/1732.4	1:1	0.090	-0.10	23.30	24.00	1.175	0.106	22.2
Right tilted	RMC	1412/1732.4	1:1	0.059	0.11	23.30	24.00	1.175	0.069	22.2
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.120	0.09	20.14	21.00	1.219	0.146	22.2
Back side	RMC	1412/1732.4	1:1	0.151	0.00	20.14	21.00	1.219	0.184	22.2
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.255	-0.16	19.08	20.00	1.236	0.315	22.2
Back side	RMC	1412/1732.4	1:1	0.353	0.04	19.08	20.00	1.236	0.436	22.2
Right side	RMC	1412/1732.4	1:1	0.061	0.18	19.08	20.00	1.236	0.075	22.2
Bottom side	RMC	1412/1732.4	1:1	0.442	0.06	19.08	20.00	1.236	0.546	22.2
Ant13 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	1412/1732.4	1:1	0.259	0.13	17.18	18.50	1.355	0.351	22.2
Left tilted	RMC	1412/1732.4	1:1	0.306	0.09	17.18	18.50	1.355	0.415	22.2
Right cheek	RMC	1412/1732.4	1:1	0.437	0.15	17.18	18.50	1.355	0.592	22.2
Right tilted	RMC	1412/1732.4	1:1	0.521	-0.15	17.18	18.50	1.355	0.706	22.2
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.142	-0.15	22.55	24.00	1.396	0.198	22.2
Back side	RMC	1412/1732.4	1:1	0.183	0.04	22.55	24.00	1.396	0.256	22.2
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.170	0.12	20.05	21.50	1.396	0.237	22.2
Back side	RMC	1412/1732.4	1:1	0.167	-0.17	20.05	21.50	1.396	0.233	22.2
Left side	RMC	1412/1732.4	1:1	0.043	0.01	20.05	21.50	1.396	0.060	22.2
Top side	RMC	1412/1732.4	1:1	0.251	0.18	20.05	21.50	1.396	0.350	22.2

Table 14: SAR of WCDMA Band IV for Head and Body(Original report: ZR/2021/3001406).



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8.3.5 SAR Result of WCDMA Band V

Ant41 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	4182/836.4	1:1	0.209	0.14	23.63	25.00	1.371	0.287	22.1
Left tilted	RMC	4182/836.4	1:1	0.087	-0.14	23.63	25.00	1.371	0.119	22.1
Right cheek	RMC	4182/836.4	1:1	0.115	0.14	23.63	25.00	1.371	0.158	22.1
Right tilted	RMC	4182/836.4	1:1	0.059	-0.09	23.63	25.00	1.371	0.081	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.107	0.02	23.63	25.00	1.371	0.147	22.1
Back side	RMC	4182/836.4	1:1	0.211	0.01	23.63	25.00	1.371	0.289	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.188	-0.15	23.63	25.00	1.371	0.258	22.1
Back side	RMC	4182/836.4	1:1	0.366	-0.01	23.63	25.00	1.371	0.502	22.1
Left side	RMC	4182/836.4	1:1	0.293	-0.08	23.63	25.00	1.371	0.402	22.1
Bottom side	RMC	4182/836.4	1:1	0.076	0.07	23.63	25.00	1.371	0.104	22.1
Ant13 Test Record										
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	4182/836.4	1:1	0.327	-0.09	19.10	20.50	1.380	0.451	22.1
Left tilted	RMC	4182/836.4	1:1	0.309	-0.14	19.10	20.50	1.380	0.427	22.1
Right cheek	RMC	4182/836.4	1:1	0.452	0.03	19.10	20.50	1.380	0.624	22.1
Right tilted	RMC	4182/836.4	1:1	0.415	-0.09	19.10	20.50	1.380	0.573	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.159	-0.13	23.68	25.00	1.355	0.215	22.1
Back side	RMC	4182/836.4	1:1	0.184	-0.10	23.68	25.00	1.355	0.249	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.069	0.16	22.69	24.00	1.352	0.093	22.1
Back side	RMC	4182/836.4	1:1	0.199	0.17	22.69	24.00	1.352	0.269	22.1
Left side	RMC	4182/836.4	1:1	0.099	0.19	22.69	24.00	1.352	0.134	22.1
Top side	RMC	4182/836.4	1:1	0.214	0.00	22.69	24.00	1.352	0.289	22.1

Table 15: SAR of WCDMA Band V for Head and Body(Original report: ZR/2021/3001406).



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8.3.6 SAR Result of LTE Band 2

Ant31 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	18900/1880	1:1	0.146	0.01	23.38	24.00	1.153	0.168	22.3
Left tilted	20	QPSK 1RB_0	18900/1880	1:1	0.084	0.16	23.38	24.00	1.153	0.097	22.3
Right cheek	20	QPSK 1RB_0	18900/1880	1:1	0.132	-0.12	23.38	24.00	1.153	0.152	22.3
Right tilted	20	QPSK 1RB_0	18900/1880	1:1	0.117	0.13	23.38	24.00	1.153	0.135	22.3
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_50	18700/1860	1:1	0.126	0.01	22.37	23.00	1.156	0.146	22.3
Left tilted	20	QPSK 50RB_50	18700/1860	1:1	0.065	0.01	22.37	23.00	1.156	0.075	22.3
Right cheek	20	QPSK 50RB_50	18700/1860	1:1	0.118	-0.08	22.37	23.00	1.156	0.136	22.3
Right tilted	20	QPSK 50RB_50	18700/1860	1:1	0.097	-0.03	22.37	23.00	1.156	0.112	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_50	18700/1860	1:1	0.203	0.20	20.99	22.00	1.262	0.256	22.3
Back side	20	QPSK 1RB_50	18700/1860	1:1	0.338	-0.04	20.99	22.00	1.262	0.426	22.3
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.212	0.13	21.06	22.00	1.242	0.263	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.337	-0.08	21.06	22.00	1.242	0.418	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_50	18900/1880	1:1	0.205	-0.03	19.11	20.00	1.227	0.252	22.3
Back side	20	QPSK 1RB_50	18900/1880	1:1	0.323	-0.18	19.11	20.00	1.227	0.396	22.3
Right side	20	QPSK 1RB_50	18900/1880	1:1	0.078	0.13	19.11	20.00	1.227	0.096	22.3
Bottom side	20	QPSK 1RB_50	18900/1880	1:1	0.378	0.04	19.11	20.00	1.227	0.464	22.3
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	18900/1880	1:1	0.221	-0.14	19.21	20.00	1.199	0.265	22.3
Back side	20	QPSK 50RB_0	18900/1880	1:1	0.342	0.12	19.21	20.00	1.199	0.410	22.3
Right side	20	QPSK 50RB_0	18900/1880	1:1	0.091	0.17	19.21	20.00	1.199	0.109	22.3
Bottom side	20	QPSK 50RB_0	18900/1880	1:1	0.394	0.02	19.21	20.00	1.199	0.473	22.3
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_50	18900/1880	1:1	0.224	0.14	15.29	17.00	1.483	0.332	22.3
Left tilted	20	QPSK 1RB_50	18900/1880	1:1	0.290	0.16	15.29	17.00	1.483	0.430	22.3
Right cheek	20	QPSK 1RB_50	18900/1880	1:1	0.415	-0.03	15.29	17.00	1.483	0.615	22.3
Right tilted	20	QPSK 1RB_50	18900/1880	1:1	0.439	0.01	15.29	17.00	1.483	0.651	22.3
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_25	18900/1880	1:1	0.230	-0.02	15.46	17.00	1.426	0.328	22.3
Left tilted	20	QPSK 50RB_25	18900/1880	1:1	0.293	0.07	15.46	17.00	1.426	0.418	22.3
Right cheek	20	QPSK 50RB_25	18900/1880	1:1	0.428	0.07	15.46	17.00	1.426	0.610	22.3
Right tilted	20	QPSK 50RB_25	18900/1880	1:1	0.507	0.10	15.46	17.00	1.426	0.723	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_50	18900/1880	1:1	0.192	0.10	22.36	24.00	1.459	0.280	22.3
Back side	20	QPSK 1RB_50	18900/1880	1:1	0.242	0.11	22.36	24.00	1.459	0.353	22.3
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	19100/1900	1:1	0.157	-0.19	21.41	23.00	1.442	0.226	22.3
Back side	20	QPSK 50RB_0	19100/1900	1:1	0.185	0.08	21.41	23.00	1.442	0.267	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_50	18700/1860	1:1	0.091	0.09	16.83	18.50	1.469	0.134	22.3
Back side	20	QPSK 1RB_50	18700/1860	1:1	0.111	0.09	16.83	18.50	1.469	0.163	22.3



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Left side	20	QPSK 1RB_50	18700/1860	1:1	0.003	0.00	16.83	18.50	1.469	0.004	22.3
Top side	20	QPSK 1RB_50	18700/1860	1:1	0.141	-0.08	16.83	18.50	1.469	0.207	22.3
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	18900/1880	1:1	0.105	-0.10	16.89	18.50	1.449	0.152	22.3
Back side	20	QPSK 50RB_25	18900/1880	1:1	0.127	-0.04	16.89	18.50	1.449	0.184	22.3
Left side	20	QPSK 50RB_25	18900/1880	1:1	0.009	-0.18	16.89	18.50	1.449	0.013	22.3
Top side	20	QPSK 50RB_25	18900/1880	1:1	0.156	0.05	16.89	18.50	1.449	0.226	22.3

Table 16: SAR of LTE Band 2 for Head and Body(Original report: ZR/2021/3001406).



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8.3.7 SAR Result of LTE Band 4

Ant31 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	20175/1732.5	1:1	0.111	0.05	23.46	24.50	1.271	0.141	22.2
Left tilted	20	QPSK 1RB_0	20175/1732.5	1:1	0.057	0.15	23.46	24.50	1.271	0.072	22.2
Right cheek	20	QPSK 1RB_0	20175/1732.5	1:1	0.073	-0.08	23.46	24.50	1.271	0.093	22.2
Right tilted	20	QPSK 1RB_0	20175/1732.5	1:1	0.063	-0.06	23.46	24.50	1.271	0.080	22.2
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_25	20175/1732.5	1:1	0.091	-0.06	22.44	23.50	1.276	0.116	22.2
Left tilted	20	QPSK 50RB_25	20175/1732.5	1:1	0.045	0.17	22.44	23.50	1.276	0.057	22.2
Right cheek	20	QPSK 50RB_25	20175/1732.5	1:1	0.062	-0.18	22.44	23.50	1.276	0.079	22.2
Right tilted	20	QPSK 50RB_25	20175/1732.5	1:1	0.049	0.02	22.44	23.50	1.276	0.063	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_99	20300/1745	1:1	0.227	0.17	20.88	21.50	1.153	0.262	22.2
Back side	20	QPSK 1RB_99	20300/1745	1:1	0.340	-0.07	20.88	21.50	1.153	0.392	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_50	20175/1732.5	1:1	0.177	0.15	20.91	21.50	1.146	0.203	22.2
Back side	20	QPSK 50RB_50	20175/1732.5	1:1	0.252	0.06	20.91	21.50	1.146	0.289	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_99	20300/1745	1:1	0.284	0.02	20.88	21.50	1.153	0.328	22.2
Back side	20	QPSK 1RB_99	20300/1745	1:1	0.408	0.14	20.88	21.50	1.153	0.471	22.2
Right side	20	QPSK 1RB_99	20300/1745	1:1	0.115	0.07	20.88	21.50	1.153	0.133	22.2
Bottom side	20	QPSK 1RB_99	20300/1745	1:1	0.614	0.05	20.88	21.50	1.153	0.708	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_50	20175/1732.5	1:1	0.281	0.07	20.91	21.50	1.146	0.322	22.2
Back side	20	QPSK 50RB_50	20175/1732.5	1:1	0.381	0.05	20.91	21.50	1.146	0.436	22.2
Right side	20	QPSK 50RB_50	20175/1732.5	1:1	0.113	0.30	20.91	21.50	1.146	0.129	22.2
Bottom side	20	QPSK 50RB_50	20175/1732.5	1:1	0.568	0.03	20.91	21.50	1.146	0.651	22.2
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_50	20175/1732.5	1:1	0.244	0.06	17.23	18.50	1.340	0.327	22.2
Left tilted	20	QPSK 1RB_50	20175/1732.5	1:1	0.306	-0.18	17.23	18.50	1.340	0.410	22.2
Right cheek	20	QPSK 1RB_50	20175/1732.5	1:1	0.424	0.15	17.23	18.50	1.340	0.568	22.2
Right tilted	20	QPSK 1RB_50	20175/1732.5	1:1	0.519	0.05	17.23	18.50	1.340	0.695	22.2
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_50	20050/1720	1:1	0.234	0.03	17.25	18.50	1.334	0.312	22.2
Left tilted	20	QPSK 50RB_50	20050/1720	1:1	0.302	-0.19	17.25	18.50	1.334	0.403	22.2
Right cheek	20	QPSK 50RB_50	20050/1720	1:1	0.421	0.14	17.25	18.50	1.334	0.561	22.2
Right tilted	20	QPSK 50RB_50	20050/1720	1:1	0.458	0.06	17.25	18.50	1.334	0.611	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_50	20175/1732.5	1:1	0.148	0.11	22.79	24.00	1.321	0.196	22.2
Back side	20	QPSK 1RB_50	20175/1732.5	1:1	0.166	0.11	22.79	24.00	1.321	0.219	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_50	20050/1720	1:1	0.113	0.04	21.82	23.00	1.312	0.148	22.2
Back side	20	QPSK 50RB_50	20050/1720	1:1	0.129	0.03	21.82	23.00	1.312	0.169	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_50	20175/1732.5	1:1	0.154	-0.15	19.77	21.00	1.327	0.204	22.2
Back side	20	QPSK 1RB_50	20175/1732.5	1:1	0.180	-0.14	19.77	21.00	1.327	0.239	22.2



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Left side	20	QPSK 1RB_50	20175/1732.5	1:1	0.041	-0.14	19.77	21.00	1.327	0.054	22.2
Top side	20	QPSK 1RB_50	20175/1732.5	1:1	0.215	0.04	19.77	21.00	1.327	0.285	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	20050/1720	1:1	0.132	-0.16	19.80	21.00	1.318	0.174	22.2
Back side	20	QPSK 50RB_0	20050/1720	1:1	0.168	0.18	19.80	21.00	1.318	0.221	22.2
Left side	20	QPSK 50RB_0	20050/1720	1:1	0.043	0.01	19.80	21.00	1.318	0.057	22.2
Top side	20	QPSK 50RB_0	20050/1720	1:1	0.208	-0.05	19.80	21.00	1.318	0.274	22.2

Table 17: SAR of LTE Band 4 for Head and Body(Original report: ZR/2021/3001406).



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8.3.8 SAR Result of LTE Band 5

Ant41 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_25	20450/829	1:1	0.157	0.03	23.46	24.50	1.271	0.199	22.1
Left tilted	10	QPSK 1RB_25	20450/829	1:1	0.073	-0.08	23.46	24.50	1.271	0.093	22.1
Right cheek	10	QPSK 1RB_25	20450/829	1:1	0.088	0.13	23.46	24.50	1.271	0.112	22.1
Right tilted	10	QPSK 1RB_25	20450/829	1:1	0.047	0.18	23.46	24.50	1.271	0.060	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_0	20600/844	1:1	0.123	0.05	22.37	23.50	1.297	0.160	22.1
Left tilted	10	QPSK 25RB_0	20600/844	1:1	0.058	-0.10	22.37	23.50	1.297	0.075	22.1
Right cheek	10	QPSK 25RB_0	20600/844	1:1	0.068	-0.07	22.37	23.50	1.297	0.088	22.1
Right tilted	10	QPSK 25RB_0	20600/844	1:1	0.031	-0.03	22.37	23.50	1.297	0.040	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_25	20450/829	1:1	0.085	-0.07	23.46	24.50	1.271	0.108	22.1
Back side	10	QPSK 1RB_25	20450/829	1:1	0.152	0.01	23.46	24.50	1.271	0.193	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_0	20600/844	1:1	0.067	0.13	22.37	23.50	1.297	0.087	22.1
Back side	10	QPSK 25RB_0	20600/844	1:1	0.099	0.12	22.37	23.50	1.297	0.128	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_25	20450/829	1:1	0.170	0.06	23.46	24.50	1.271	0.216	22.1
Back side	10	QPSK 1RB_25	20450/829	1:1	0.257	0.01	23.46	24.50	1.271	0.327	22.1
Left side	10	QPSK 1RB_25	20450/829	1:1	0.193	-0.02	23.46	24.50	1.271	0.245	22.1
Bottom side	10	QPSK 1RB_25	20450/829	1:1	0.054	-0.12	23.46	24.50	1.271	0.069	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	20600/844	1:1	0.141	0.04	22.37	23.50	1.297	0.183	22.1
Back side	10	QPSK 25RB_0	20600/844	1:1	0.189	0.12	22.37	23.50	1.297	0.245	22.1
Left side	10	QPSK 25RB_0	20600/844	1:1	0.156	0.08	22.37	23.50	1.297	0.202	22.1
Bottom side	10	QPSK 25RB_0	20600/844	1:1	0.045	-0.08	22.37	23.50	1.297	0.058	22.1
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_0	20450/829	1:1	0.264	-0.17	19.43	20.50	1.279	0.338	22.1
Left tilted	10	QPSK 1RB_0	20450/829	1:1	0.202	-0.08	19.43	20.50	1.279	0.258	22.1
Right cheek	10	QPSK 1RB_0	20450/829	1:1	0.400	-0.08	19.43	20.50	1.279	0.512	22.1
Right tilted	10	QPSK 1RB_0	20450/829	1:1	0.367	-0.06	19.43	20.50	1.279	0.470	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_0	20450/829	1:1	0.259	-0.17	19.47	20.50	1.268	0.328	22.1
Left tilted	10	QPSK 25RB_0	20450/829	1:1	0.233	-0.14	19.47	20.50	1.268	0.295	22.1
Right cheek	10	QPSK 25RB_0	20450/829	1:1	0.405	-0.14	19.47	20.50	1.268	0.513	22.1
Right tilted	10	QPSK 25RB_0	20450/829	1:1	0.394	0.19	19.47	20.50	1.268	0.499	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_25	20450/829	1:1	0.125	-0.16	23.40	24.50	1.288	0.161	22.1
Back side	10	QPSK 1RB_25	20450/829	1:1	0.143	0.00	23.40	24.50	1.288	0.184	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_25	20525/836.5	1:1	0.104	-0.17	22.42	23.50	1.282	0.133	22.1
Back side	10	QPSK 25RB_25	20525/836.5	1:1	0.115	-0.19	22.42	23.50	1.282	0.147	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_0	20450/829	1:1	0.166	0.18	22.42	23.50	1.282	0.213	22.1
Back side	10	QPSK 1RB_0	20450/829	1:1	0.189	0.16	22.42	23.50	1.282	0.242	22.1



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Left side	10	QPSK 1RB_0	20450/829	1:1	0.086	-0.13	22.42	23.50	1.282	0.110	22.1
Top side	10	QPSK 1RB_0	20450/829	1:1	0.168	-0.15	22.42	23.50	1.282	0.215	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	20450/829	1:1	0.178	-0.19	22.43	23.50	1.279	0.228	22.1
Back side	10	QPSK 25RB_0	20450/829	1:1	0.194	0.01	22.43	23.50	1.279	0.248	22.1
Left side	10	QPSK 25RB_0	20450/829	1:1	0.092	0.19	22.43	23.50	1.279	0.118	22.1
Top side	10	QPSK 25RB_0	20450/829	1:1	0.173	0.19	22.43	23.50	1.279	0.221	22.1

Table 18: SAR of LTE Band 5 for Head and Body(Original report: ZR/2021/3001406).



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8.3.9 SAR Result of LTE Band 7

Ant31 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_50	20850/2510	1:1	0.125	-0.18	22.74	24.00	1.337	0.167	22.1
Left tilted	20	QPSK 1RB_50	20850/2510	1:1	0.083	-0.16	22.74	24.00	1.337	0.111	22.1
Right cheek	20	QPSK 1RB_50	20850/2510	1:1	0.182	-0.07	22.74	24.00	1.337	0.243	22.1
Right cheek	20	QPSK PCC 1_99	20850/2510	1:1	0.173	-0.07	22.65	24.00	1.365	0.236	22.1
	20	QPSK SCC 1_0	21048/2529.8								
Right tilted	20	QPSK 1RB_50	20850/2510	1:1	0.092	0.10	22.74	24.00	1.337	0.123	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_50	20850/2510	1:1	0.100	0.12	21.85	23.00	1.303	0.130	22.1
Left tilted	20	QPSK 50RB_50	20850/2510	1:1	0.072	0.15	21.85	23.00	1.303	0.094	22.1
Right cheek	20	QPSK 50RB_50	20850/2510	1:1	0.173	-0.08	21.85	23.00	1.303	0.225	22.1
Right tilted	20	QPSK 50RB_50	20850/2510	1:1	0.077	0.02	21.85	23.00	1.303	0.100	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_50	20850/2510	1:1	0.131	-0.09	22.74	24.00	1.337	0.175	22.1
Back side	20	QPSK 1RB_50	20850/2510	1:1	0.150	0.00	22.74	24.00	1.337	0.200	22.1
Back side	20	QPSK PCC 1_99	20850/2510	1:1	0.142	-0.01	22.65	24.00	1.365	0.194	22.1
	20	QPSK SCC 1_0	21048/2529.8								
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_50	20850/2510	1:1	0.127	0.02	21.85	23.00	1.303	0.166	22.1
Back side	20	QPSK 50RB_50	20850/2510	1:1	0.133	0.18	21.85	23.00	1.303	0.173	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_50	20850/2510	1:1	0.336	0.08	22.74	24.00	1.337	0.449	22.1
Back side	20	QPSK 1RB_50	20850/2510	1:1	0.337	-0.18	22.74	24.00	1.337	0.450	22.1
Right side	20	QPSK 1RB_50	20850/2510	1:1	0.293	0.16	22.74	24.00	1.337	0.392	22.1
Bottom side	20	QPSK 1RB_50	20850/2510	1:1	0.395	-0.06	22.74	24.00	1.337	0.528	22.1
Bottom side	20	QPSK PCC 1_99	20850/2510	1:1	0.381	-0.06	22.65	24.00	1.365	0.520	22.1
	20	QPSK SCC 1_0	21048/2529.8								
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_50	20850/2510	1:1	0.268	0.02	21.85	23.00	1.303	0.349	22.1
Back side	20	QPSK 50RB_50	20850/2510	1:1	0.267	-0.14	21.85	23.00	1.303	0.348	22.1
Right side	20	QPSK 50RB_50	20850/2510	1:1	0.241	0.17	21.85	23.00	1.303	0.314	22.1
Bottom side	20	QPSK 50RB_50	20850/2510	1:1	0.300	0.05	21.85	23.00	1.303	0.391	22.1
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	20850/2510	1:1	0.148	0.10	11.84	13.00	1.306	0.193	22.1
Left tilted	20	QPSK 1RB_0	20850/2510	1:1	0.189	0.05	11.84	13.00	1.306	0.247	22.1
Right cheek	20	QPSK 1RB_0	20850/2510	1:1	0.376	0.17	11.84	13.00	1.306	0.491	22.1
Right tilted	20	QPSK 1RB_0	20850/2510	1:1	0.444	0.12	11.84	13.00	1.306	0.580	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_0	20850/2510	1:1	0.153	-0.01	11.87	13.00	1.297	0.198	22.1
Left tilted	20	QPSK 50RB_0	20850/2510	1:1	0.202	-0.15	11.87	13.00	1.297	0.262	22.1
Right cheek	20	QPSK 50RB_0	20850/2510	1:1	0.382	-0.10	11.87	13.00	1.297	0.496	22.1
Right tilted	20	QPSK 50RB_0	20850/2510	1:1	0.478	0.02	11.87	13.00	1.297	0.620	22.1
Right tilted	20	QPSK PCC 1_99	20850/2510	1:1	0.453	0.12	11.76	13.00	1.330	0.603	22.1
	20	QPSK SCC 1_0	21048/2529.8								
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	20850/2510	1:1	0.325	0.16	23.06	24.00	1.242	0.404	22.1
Back side	20	QPSK 1RB_0	20850/2510	1:1	0.714	0.03	23.06	24.00	1.242	0.887	22.1
Back side	20	QPSK 1RB_99	21100/2535.5	1:1	0.743	0.08	22.97	24.00	1.268	0.942	22.1
	20	QPSK PCC 1_99	21100/2535.5								
Back side	20	QPSK SCC 1_0	21298/2555.3	1:1	0.698	0.15	22.88	24.00	1.294	0.903	22.1
	20	QPSK 1RB_50	21350/2560								
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_50	21350/2560	1:1	0.341	0.07	21.99	23.00	1.262	0.430	22.1



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Back side	20	QPSK 50RB_50	21350/2560	1:1	0.657	0.04	21.99	23.00	1.262	0.829	22.1
Back side	20	QPSK 50RB_25	20850/2510	1:1	0.529	0.05	21.97	23.00	1.268	0.671	22.1
Back side	20	QPSK 50RB_25	21100/2535.5	1:1	0.646	0.31	21.82	23.00	1.312	0.848	22.1
Body worn Test data (Separate 15mm 100%RB)											
Back side	20	QPSK 100RB_0	20850/2510	1:1	0.521	0.07	21.89	23.00	1.291	0.673	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	20850/2510	1:1	0.078	0.17	12.82	14.00	1.312	0.102	22.1
Back side	20	QPSK 1RB_0	20850/2510	1:1	0.150	0.19	12.82	14.00	1.312	0.197	22.1
Left side	20	QPSK 1RB_0	20850/2510	1:1	0.027	0.06	12.82	14.00	1.312	0.035	22.1
Top side	20	QPSK 1RB_0	20850/2510	1:1	0.188	-0.15	12.82	14.00	1.312	0.247	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	20850/2510	1:1	0.079	-0.11	12.88	14.00	1.294	0.102	22.1
Back side	20	QPSK 50RB_25	20850/2510	1:1	0.155	-0.07	12.88	14.00	1.294	0.201	22.1
Left side	20	QPSK 50RB_25	20850/2510	1:1	0.040	-0.17	12.88	14.00	1.294	0.052	22.1
Top side	20	QPSK 50RB_25	20850/2510	1:1	0.254	0.01	12.88	14.00	1.294	0.329	22.1
Top side	20	QPSK PCC 1_99	20850/2510	1:1	0.231	-0.06	12.76	14.00	1.330	0.307	22.1
	20	QPSK SCC 1_0	21048/2529.8								
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Product specific 10g SAR Test data(Separate 0mm 1RB) Sensor on											
Back side	20	QPSK 1RB_99	21100/2535.5	1:1	1.430	0.03	17.97	19.00	1.268	1.813	22.3
Top side	20	QPSK 1RB_99	21100/2535.5	1:1	1.620	-0.03	17.97	19.00	1.268	2.054	22.3
Top side	20	QPSK 1RB_50	20850/2510	1:1	1.600	-0.06	17.89	19.00	1.291	2.066	22.3
Top side	20	QPSK 1RB_99	21350/2560	1:1	1.640	0.00	17.96	19.00	1.271	2.084	22.3
Product specific 10g SAR Test data(1RB) Sensor off											
Back side-8mm	20	QPSK 1RB_0	20850/2510	1:1	1.080	-0.09	23.06	24.00	1.242	1.341	22.3
Top side-9mm	20	QPSK 1RB_0	20850/2510	1:1	0.987	0.02	23.06	24.00	1.242	1.226	22.3
Product specific 10g SAR Test data(Separate 0mm 50%RB) Sensor on											
Back side	20	QPSK 50RB_50	20850/2510	1:1	1.400	0.03	17.90	19.00	1.288	1.804	22.3
Top side	20	QPSK 50RB_50	20850/2510	1:1	1.650	-0.03	17.90	19.00	1.288	2.126	22.3
Top side	20	QPSK 50RB_50	21100/2535.5	1:1	1.710	-0.05	17.72	19.00	1.343	2.296	22.3
Top side	20	QPSK PCC 1_99	21100/2535.5	1:1	1.590	0.11	17.69	19.00	1.352	2.150	22.1
	20	QPSK SCC 1_0	21298/2555.3								
Top side	20	QPSK 50RB_50	21350/2560	1:1	1.670	-0.10	17.88	19.00	1.294	2.161	22.3
Product specific 10g SAR Test data(50%RB) Sensor off											
Back side-8mm	20	QPSK 50RB_50	21350/2560	1:1	0.958	-0.02	21.99	23.00	1.262	1.209	22.3
Top side-9mm	20	QPSK 50RB_50	21350/2560	1:1	1.080	0.03	21.99	23.00	1.262	1.363	22.3
Product specific 10g SAR Test data(Separate 0mm 100%RB) Sensor on											
Top side	20	QPSK 50RB_50	20850/2510	1:1	1.660	-0.05	17.91	19.00	1.285	2.134	22.3

Table 19: SAR of LTE Band 7 for Head, Body and Product specific 10g SAR(Original report: ZR/2021/3001406).



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8.3.10 SAR Result of LTE Band 12

Ant41 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_25	23095/707.5	1:1	0.131	0.03	23.47	24.50	1.268	0.166	22.1
Left tilted	10	QPSK 1RB_25	23095/707.5	1:1	0.074	-0.15	23.47	24.50	1.268	0.094	22.1
Right cheek	10	QPSK 1RB_25	23095/707.5	1:1	0.080	-0.07	23.47	24.50	1.268	0.101	22.1
Right tilted	10	QPSK 1RB_25	23095/707.5	1:1	0.045	0.12	23.47	24.50	1.268	0.057	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_25	23060/704	1:1	0.099	-0.19	22.36	23.50	1.300	0.129	22.1
Left tilted	10	QPSK 25RB_25	23060/704	1:1	0.060	-0.09	22.36	23.50	1.300	0.078	22.1
Right cheek	10	QPSK 25RB_25	23060/704	1:1	0.065	0.00	22.36	23.50	1.300	0.085	22.1
Right tilted	10	QPSK 25RB_25	23060/704	1:1	0.037	-0.18	22.36	23.50	1.300	0.048	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_25	23095/707.5	1:1	0.136	-0.02	23.47	24.50	1.268	0.172	22.1
Back side	10	QPSK 1RB_25	23095/707.5	1:1	0.183	-0.04	23.47	24.50	1.268	0.232	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_25	23060/704	1:1	0.111	-0.13	22.36	23.50	1.300	0.144	22.1
Back side	10	QPSK 25RB_25	23060/704	1:1	0.125	-0.10	22.36	23.50	1.300	0.163	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_25	23095/707.5	1:1	0.140	0.01	23.47	24.50	1.268	0.177	22.1
Back side	10	QPSK 1RB_25	23095/707.5	1:1	0.207	0.18	23.47	24.50	1.268	0.262	22.1
Left side	10	QPSK 1RB_25	23095/707.5	1:1	0.335	-0.02	23.47	24.50	1.268	0.425	22.1
Bottom side	10	QPSK 1RB_25	23095/707.5	1:1	0.058	-0.11	23.47	24.50	1.268	0.074	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_25	23060/704	1:1	0.107	-0.19	22.36	23.50	1.300	0.139	22.1
Back side	10	QPSK 25RB_25	23060/704	1:1	0.160	0.17	22.36	23.50	1.300	0.208	22.1
Left side	10	QPSK 25RB_25	23060/704	1:1	0.286	-0.13	22.36	23.50	1.300	0.372	22.1
Bottom side	10	QPSK 25RB_25	23060/704	1:1	0.140	0.03	22.36	23.50	1.300	0.182	22.1
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_0	23095/707.5	1:1	0.203	0.16	23.67	24.50	1.211	0.246	22.1
Left tilted	10	QPSK 1RB_0	23095/707.5	1:1	0.209	0.17	23.67	24.50	1.211	0.253	22.1
Right cheek	10	QPSK 1RB_0	23095/707.5	1:1	0.310	-0.17	23.67	24.50	1.211	0.375	22.1
Right tilted	10	QPSK 1RB_0	23095/707.5	1:1	0.349	-0.01	23.67	24.50	1.211	0.422	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_25	23095/707.5	1:1	0.155	0.06	22.49	23.50	1.262	0.196	22.1
Left tilted	10	QPSK 25RB_25	23095/707.5	1:1	0.173	0.13	22.49	23.50	1.262	0.218	22.1
Right cheek	10	QPSK 25RB_25	23095/707.5	1:1	0.272	0.14	22.49	23.50	1.262	0.343	22.1
Right tilted	10	QPSK 25RB_25	23095/707.5	1:1	0.307	-0.14	22.49	23.50	1.262	0.387	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_0	23095/707.5	1:1	0.065	0.12	23.67	24.50	1.211	0.079	22.1
Back side	10	QPSK 1RB_0	23095/707.5	1:1	0.076	-0.04	23.67	24.50	1.211	0.092	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_25	23095/707.5	1:1	0.059	-0.12	22.49	23.50	1.262	0.074	22.1
Back side	10	QPSK 25RB_25	23095/707.5	1:1	0.069	-0.01	22.49	23.50	1.262	0.087	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_49	23130/711	1:1	0.033	-0.13	22.59	23.50	1.233	0.041	22.1
Back side	10	QPSK 1RB_49	23130/711	1:1	0.051	0.06	22.59	23.50	1.233	0.063	22.1



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Left side	10	QPSK 1RB_49	23130/711	1:1	0.023	0.01	22.59	23.50	1.233	0.028	22.1
Top side	10	QPSK 1RB_49	23130/711	1:1	0.013	-0.04	22.59	23.50	1.233	0.016	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_25	23095/707.5	1:1	0.046	-0.12	22.49	23.50	1.262	0.058	22.1
Back side	10	QPSK 25RB_25	23095/707.5	1:1	0.062	0.00	22.49	23.50	1.262	0.078	22.1
Left side	10	QPSK 25RB_25	23095/707.5	1:1	0.037	0.10	22.49	23.50	1.262	0.047	22.1
Top side	10	QPSK 25RB_25	23095/707.5	1:1	0.016	-0.19	22.49	23.50	1.262	0.020	22.1

Table 20: SAR of LTE Band 12 for Head and Body(Original report: ZR/2021/3001406).



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8.3.11 SAR Result of LTE Band 17

Ant41 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_49	23790/710	1:1	0.131	0.07	23.37	24.50	1.297	0.170	22.1
Left tilted	10	QPSK 1RB_49	23790/710	1:1	0.073	0.18	23.37	24.50	1.297	0.095	22.1
Right cheek	10	QPSK 1RB_49	23790/710	1:1	0.079	-0.11	23.37	24.50	1.297	0.102	22.1
Right tilted	10	QPSK 1RB_49	23790/710	1:1	0.046	-0.03	23.37	24.50	1.297	0.060	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_13	23800/711	1:1	0.103	-0.08	22.19	23.50	1.352	0.139	22.1
Left tilted	10	QPSK 25RB_13	23800/711	1:1	0.062	0.02	22.19	23.50	1.352	0.084	22.1
Right cheek	10	QPSK 25RB_13	23800/711	1:1	0.062	0.04	22.19	23.50	1.352	0.084	22.1
Right tilted	10	QPSK 25RB_13	23800/711	1:1	0.035	-0.07	22.19	23.50	1.352	0.047	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_49	23790/710	1:1	0.136	-0.15	23.37	24.50	1.297	0.176	22.1
Back side	10	QPSK 1RB_49	23790/710	1:1	0.183	0.00	23.37	24.50	1.297	0.237	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_13	23800/711	1:1	0.108	0.09	22.19	23.50	1.352	0.146	22.1
Back side	10	QPSK 25RB_13	23800/711	1:1	0.133	-0.12	22.19	23.50	1.352	0.180	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1RB_49	23790/710	1:1	0.142	-0.13	23.37	24.50	1.297	0.184	22.1
Back side	10	QPSK 1RB_49	23790/710	1:1	0.210	0.13	23.37	24.50	1.297	0.272	22.1
Left side	10	QPSK 1RB_49	23790/710	1:1	0.333	0.01	23.37	24.50	1.297	0.432	22.1
Bottom side	10	QPSK 1RB_49	23790/710	1:1	0.057	-0.03	23.37	24.50	1.297	0.074	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_13	23800/711	1:1	0.113	-0.18	22.19	23.50	1.352	0.153	22.1
Back side	10	QPSK 25RB_13	23800/711	1:1	0.166	0.09	22.19	23.50	1.352	0.224	22.1
Left side	10	QPSK 25RB_13	23800/711	1:1	0.294	0.06	22.19	23.50	1.352	0.398	22.1
Bottom side	10	QPSK 25RB_13	23800/711	1:1	0.046	-0.09	22.19	23.50	1.352	0.062	22.1
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_49	23790/710	1:1	0.225	-0.08	23.58	24.50	1.236	0.278	22.1
Left tilted	10	QPSK 1RB_49	23790/710	1:1	0.242	0.15	23.58	24.50	1.236	0.299	22.1
Right cheek	10	QPSK 1RB_49	23790/710	1:1	0.341	-0.14	23.58	24.50	1.236	0.421	22.1
Right tilted	10	QPSK 1RB_49	23790/710	1:1	0.367	-0.01	23.58	24.50	1.236	0.454	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_13	23790/710	1:1	0.180	-0.17	22.43	23.50	1.279	0.230	22.1
Left tilted	10	QPSK 25RB_13	23790/710	1:1	0.194	0.08	22.43	23.50	1.279	0.248	22.1
Right cheek	10	QPSK 25RB_13	23790/710	1:1	0.306	-0.14	22.43	23.50	1.279	0.391	22.1
Right tilted	10	QPSK 25RB_13	23790/710	1:1	0.328	0.08	22.43	23.50	1.279	0.420	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_49	23790/710	1:1	0.067	0.11	23.58	24.50	1.236	0.083	22.1
Back side	10	QPSK 1RB_49	23790/710	1:1	0.080	0.06	23.58	24.50	1.236	0.099	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_13	23790/710	1:1	0.055	0.04	22.43	23.50	1.279	0.070	22.1
Back side	10	QPSK 25RB_13	23790/710	1:1	0.061	-0.02	22.43	23.50	1.279	0.078	22.1
Hotspot Test data(Separate 10mm 1RB)											



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Front side	10	QPSK 1RB_49	23800/711	1:1	0.048	-0.03	22.57	23.50	1.239	0.059	22.1
Back side	10	QPSK 1RB_49	23800/711	1:1	0.061	0.14	22.57	23.50	1.239	0.076	22.1
Left side	10	QPSK 1RB_49	23800/711	1:1	0.058	0.03	22.57	23.50	1.239	0.072	22.1
Top side	10	QPSK 1RB_49	23800/711	1:1	0.023	-0.02	22.57	23.50	1.239	0.028	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_13	23790/710	1:1	0.050	-0.08	22.43	23.50	1.279	0.064	22.1
Back side	10	QPSK 25RB_13	23790/710	1:1	0.064	0.01	22.43	23.50	1.279	0.082	22.1
Left side	10	QPSK 25RB_13	23790/710	1:1	0.061	-0.11	22.43	23.50	1.279	0.078	22.1
Top side	10	QPSK 25RB_13	23790/710	1:1	0.028	-0.16	22.43	23.50	1.279	0.036	22.1

Table 21: SAR of LTE Band 17 for Head and Body(Original report: ZR/2021/3001406).



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8.3.12 SAR Result of LTE Band 26

Ant41 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	15	QPSK 1RB_74	26865/831.5	1:1	0.156	0.00	23.40	24.50	1.288	0.201	22.1
Left tilted	15	QPSK 1RB_74	26865/831.5	1:1	0.072	-0.16	23.40	24.50	1.288	0.093	22.1
Right cheek	15	QPSK 1RB_74	26865/831.5	1:1	0.087	0.08	23.40	24.50	1.288	0.112	22.1
Right tilted	15	QPSK 1RB_74	26865/831.5	1:1	0.047	0.13	23.40	24.50	1.288	0.061	22.1
Head Test data(50%RB)											
Left cheek	15	QPSK 36RB_39	26865/831.5	1:1	0.126	0.11	22.31	23.50	1.315	0.166	22.1
Left tilted	15	QPSK 36RB_39	26865/831.5	1:1	0.057	0.05	22.31	23.50	1.315	0.075	22.1
Right cheek	15	QPSK 36RB_39	26865/831.5	1:1	0.069	0.08	22.31	23.50	1.315	0.091	22.1
Right tilted	15	QPSK 36RB_39	26865/831.5	1:1	0.038	-0.06	22.31	23.50	1.315	0.050	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1RB_74	26865/831.5	1:1	0.085	0.10	23.40	24.50	1.288	0.110	22.1
Back side	15	QPSK 1RB_74	26865/831.5	1:1	0.152	0.02	23.40	24.50	1.288	0.196	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	15	QPSK 36RB_39	26865/831.5	1:1	0.071	0.12	22.31	23.50	1.315	0.093	22.1
Back side	15	QPSK 36RB_39	26865/831.5	1:1	0.101	-0.09	22.31	23.50	1.315	0.133	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1RB_74	26865/831.5	1:1	0.139	-0.15	23.40	24.50	1.288	0.179	22.1
Back side	15	QPSK 1RB_74	26865/831.5	1:1	0.256	0.02	23.40	24.50	1.288	0.330	22.1
Left side	15	QPSK 1RB_74	26865/831.5	1:1	0.191	-0.16	23.40	24.50	1.288	0.246	22.1
Bottom side	15	QPSK 1RB_74	26865/831.5	1:1	0.057	-0.09	23.40	24.50	1.288	0.073	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	15	QPSK 36RB_39	26865/831.5	1:1	0.120	-0.05	22.31	23.50	1.315	0.158	22.1
Back side	15	QPSK 36RB_39	26865/831.5	1:1	0.191	-0.12	22.31	23.50	1.315	0.251	22.1
Left side	15	QPSK 36RB_39	26865/831.5	1:1	0.160	0.13	22.31	23.50	1.315	0.210	22.1
Bottom side	15	QPSK 36RB_39	26865/831.5	1:1	0.046	-0.13	22.31	23.50	1.315	0.061	22.1
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	15	QPSK 1RB_38	26865/831.5	1:1	0.311	-0.15	19.65	20.50	1.216	0.378	22.1
Left tilted	15	QPSK 1RB_38	26865/831.5	1:1	0.299	0.01	19.65	20.50	1.216	0.364	22.1
Right cheek	15	QPSK 1RB_38	26865/831.5	1:1	0.427	0.14	19.65	20.50	1.216	0.519	22.1
Right tilted	15	QPSK 1RB_38	26865/831.5	1:1	0.448	-0.18	19.65	20.50	1.216	0.545	22.1
Head Test data(50%RB)											
Left cheek	15	QPSK 36RB_18	26865/831.5	1:1	0.317	-0.15	19.55	20.50	1.245	0.395	22.1
Left tilted	15	QPSK 36RB_18	26865/831.5	1:1	0.308	0.11	19.55	20.50	1.245	0.383	22.1
Right cheek	15	QPSK 36RB_18	26865/831.5	1:1	0.438	0.05	19.55	20.50	1.245	0.545	22.1
Right tilted	15	QPSK 36RB_18	26865/831.5	1:1	0.459	-0.03	19.55	20.50	1.245	0.571	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1RB_74	26865/831.5	1:1	0.125	-0.15	23.59	24.50	1.233	0.154	22.1
Back side	15	QPSK 1RB_74	26865/831.5	1:1	0.143	-0.01	23.59	24.50	1.233	0.176	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	15	QPSK 36RB_39	26865/831.5	1:1	0.105	-0.07	22.46	23.50	1.271	0.133	22.1
Back side	15	QPSK 36RB_39	26865/831.5	1:1	0.114	-0.07	22.46	23.50	1.271	0.145	22.1
Hotspot Test data(Separate 10mm 1RB)											



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Front side	15	QPSK 1RB_38	26865/831.5	1:1	0.149	-0.10	22.51	23.50	1.256	0.187	22.1
Back side	15	QPSK 1RB_38	26865/831.5	1:1	0.197	-0.18	22.51	23.50	1.256	0.247	22.1
Left side	15	QPSK 1RB_38	26865/831.5	1:1	0.072	-0.02	22.51	23.50	1.256	0.090	22.1
Top side	15	QPSK 1RB_38	26865/831.5	1:1	0.153	-0.19	22.51	23.50	1.256	0.192	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	15	QPSK 36RB_39	26865/831.5	1:1	0.160	-0.17	22.46	23.50	1.271	0.203	22.1
Back side	15	QPSK 36RB_39	26865/831.5	1:1	0.201	0.02	22.46	23.50	1.271	0.255	22.1
Left side	15	QPSK 36RB_39	26865/831.5	1:1	0.081	-0.10	22.46	23.50	1.271	0.103	22.1
Top side	15	QPSK 36RB_39	26865/831.5	1:1	0.163	0.06	22.46	23.50	1.271	0.207	22.1

Table 22: SAR of LTE Band 17 for Head and Body(Original report: ZR/2021/3001406).



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8.3.13 SAR Result of LTE Band 38

Ant31 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_50	38000/2595	1:1.58	0.059	-0.13	23.25	25.00	1.496	0.088	22.1
Left tilted	20	QPSK 1RB_50	38000/2595	1:1.58	0.045	-0.18	23.25	25.00	1.496	0.067	22.1
Right cheek	20	QPSK 1RB_50	38000/2595	1:1.58	0.085	0.07	23.25	25.00	1.496	0.127	22.1
Right cheek	20	QPSK PCC 1_99	37850/2580	1:1.58	0.077	0.06	23.16	25.00	1.528	0.118	22.1
	20	QPSK SCC 1_0	38048/2599.8								
Right tilted	20	QPSK 1RB_50	38000/2595	1:1.58	0.054	-0.14	23.25	25.00	1.496	0.081	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_25	38000/2595	1:1.58	0.057	-0.04	22.27	24.00	1.489	0.085	22.1
Left tilted	20	QPSK 50RB_25	38000/2595	1:1.58	0.043	-0.02	22.27	24.00	1.489	0.064	22.1
Right cheek	20	QPSK 50RB_25	38000/2595	1:1.58	0.081	-0.09	22.27	24.00	1.489	0.121	22.1
Right tilted	20	QPSK 50RB_25	38000/2595	1:1.58	0.038	-0.02	22.27	24.00	1.489	0.057	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_50	38000/2595	1:1.58	0.073	0.05	23.25	25.00	1.496	0.109	22.1
Back side	20	QPSK 1RB_50	38000/2595	1:1.58	0.078	0.09	23.25	25.00	1.496	0.117	22.1
Back side	20	QPSK PCC 1_99	37850/2580	1:1.58	0.071	-0.06	23.16	25.00	1.528	0.108	22.1
	20	QPSK SCC 1_0	38048/2599.8								
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_25	38000/2595	1:1.58	0.060	-0.01	22.27	24.00	1.489	0.089	22.1
Back side	20	QPSK 50RB_25	38000/2595	1:1.58	0.067	0.10	22.27	24.00	1.489	0.100	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_50	38000/2595	1:1.58	0.188	0.00	23.25	25.00	1.496	0.281	22.1
Back side	20	QPSK 1RB_50	38000/2595	1:1.58	0.194	0.14	23.25	25.00	1.496	0.290	22.1
Right side	20	QPSK 1RB_50	38000/2595	1:1.58	0.146	-0.02	23.25	25.00	1.496	0.218	22.1
Bottom side	20	QPSK 1RB_50	38000/2595	1:1.58	0.212	-0.09	23.25	25.00	1.496	0.317	22.1
Bottom side	20	QPSK PCC 1_99	37850/2580	1:1.58	0.176	0.11	23.16	25.00	1.528	0.269	22.1
	20	QPSK SCC 1_0	38048/2599.8								
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	38000/2595	1:1.58	0.161	-0.11	22.27	24.00	1.489	0.240	22.1
Back side	20	QPSK 50RB_25	38000/2595	1:1.58	0.159	0.10	22.27	24.00	1.489	0.237	22.1
Right side	20	QPSK 50RB_25	38000/2595	1:1.58	0.114	-0.12	22.27	24.00	1.489	0.170	22.1
Bottom side	20	QPSK 50RB_25	38000/2595	1:1.58	0.183	0.08	22.27	24.00	1.489	0.273	22.1
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_50	38000/2595	1:1.58	0.124	-0.13	12.83	14.50	1.469	0.182	22.1
Left tilted	20	QPSK 1RB_50	38000/2595	1:1.58	0.173	-0.17	12.83	14.50	1.469	0.254	22.1
Right cheek	20	QPSK 1RB_50	38000/2595	1:1.58	0.326	0.12	12.83	14.50	1.469	0.479	22.1
Right tilted	20	QPSK 1RB_50	38000/2595	1:1.58	0.421	0.02	12.83	14.50	1.469	0.618	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_25	38150/2610	1:1.58	0.124	0.16	12.93	14.50	1.435	0.178	22.1
Left tilted	20	QPSK 50RB_25	38150/2610	1:1.58	0.171	0.09	12.93	14.50	1.435	0.245	22.1
Right cheek	20	QPSK 50RB_25	38150/2610	1:1.58	0.334	-0.02	12.93	14.50	1.435	0.479	22.1
Right tilted	20	QPSK 50RB_25	38150/2610	1:1.58	0.435	0.01	12.93	14.50	1.435	0.624	22.1
Right tilted	20	QPSK PCC 1_0	38150/2610	1:1.58	0.395	0.16	12.77	14.50	1.489	0.588	22.1
	20	QPSK SCC 1_99	37952/2590.2								
Body worn Test data(Separate 15mm 1RB)											



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Front side	20	QPSK 1RB_0	38000/2595	1:1.58	0.250	0.02	23.39	25.00	1.449	0.362	22.1
Back side	20	QPSK 1RB_0	38000/2595	1:1.58	0.594	0.05	23.39	25.00	1.449	0.861	22.1
Back side	20	QPSK PCC 1_99	37850/2580	1:1.58	0.576	-0.03	23.32	25.00	1.472	0.848	22.1
	20	QPSK SCC 1_0	38048/2599.8								
Back side	20	QPSK 1RB_50	37850/2580	1:1.58	0.532	0.07	23.37	25.00	1.455	0.774	22.1
Back side	20	QPSK 1RB_50	38150/2610	1:1.58	0.475	0.24	23.39	25.00	1.449	0.688	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	38000/2595	1:1.58	0.244	0.12	22.51	24.00	1.409	0.344	22.1
Back side	20	QPSK 50RB_0	38000/2595	1:1.58	0.407	0.08	22.51	24.00	1.409	0.574	22.1
Body worn Test data (Separate 15mm 100%RB)											
Back side	20	QPSK 100RB_0	38000/2595	1:1.58	0.384	0.08	22.45	24.00	1.429	0.549	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_50	38000/2595	1:1.58	0.078	0.05	14.32	16.00	1.472	0.115	22.1
Back side	20	QPSK 1RB_50	38000/2595	1:1.58	0.175	0.05	14.32	16.00	1.472	0.258	22.1
Left side	20	QPSK 1RB_50	38000/2595	1:1.58	0.054	-0.19	14.32	16.00	1.472	0.080	22.1
Top side	20	QPSK 1RB_50	38000/2595	1:1.58	0.226	-0.11	14.32	16.00	1.472	0.333	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	38000/2595	1:1.58	0.081	-0.12	14.39	16.00	1.449	0.117	22.1
Back side	20	QPSK 50RB_0	38000/2595	1:1.58	0.174	0.07	14.39	16.00	1.449	0.252	22.1
Left side	20	QPSK 50RB_0	38000/2595	1:1.58	0.054	0.18	14.39	16.00	1.449	0.078	22.1
Top side	20	QPSK 50RB_0	38000/2595	1:1.58	0.242	0.03	14.39	16.00	1.449	0.351	22.1
Top side	20	QPSK PCC 1_99	37850/2580	1:1.58	0.211	0.15	14.25	16.00	1.496	0.316	22.1
	20	QPSK SCC 1_0	38048/2599.8								
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Product specific 10g SAR Test data(Separate 0mm 1RB) Sensor on											
Back side	20	QPSK 1RB_99	38000/2595	1:1.58	1.250	-0.06	19.42	21.00	1.439	1.798	22.3
Top side	20	QPSK 1RB_99	38000/2595	1:1.58	1.260	-0.04	19.42	21.00	1.439	1.813	22.3
Product specific 10g SAR Test data(1RB) Sensor off											
Back side -8mm	20	QPSK 1RB_0	38000/2595	1:1.58	0.797	-0.02	23.39	25.00	1.449	1.155	22.3
Top side -9mm	20	QPSK 1RB_0	38000/2595	1:1.58	0.324	-0.01	23.39	25.00	1.449	0.469	22.3
Product specific 10g SAR Test data(Separate 0mm 50%RB) Sensor on											
Back side	20	QPSK 50RB_0	38150/2610	1:1.58	1.020	0.08	19.48	21.00	1.419	1.447	22.3
Top side	20	QPSK 50RB_0	38150/2610	1:1.58	1.330	0.00	19.48	21.00	1.419	1.887	22.3
Top side	20	QPSK PCC 1_0	38150/2610	1:1.58	1.210	0.01	19.27	21.00	1.489	1.802	22.1
	20	QPSK SCC 1_99	37952/2590.2								
Product specific 10g SAR Test data(50%RB) Sensor off											
Back side -8mm	20	QPSK 50RB_0	38000/2595	1:1.58	0.687	-0.04	22.51	24.00	1.409	0.968	22.3
Top side -9mm	20	QPSK 50RB_0	38000/2595	1:1.58	0.718	0.00	22.51	24.00	1.409	1.012	22.3

Table 23: SAR of LTE Band 38 for Head, Body and Product specific 10g SAR(Original report: ZR/2021/3001406).



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8.3.14 SAR Result of LTE Band 41

Ant31 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	40620/2593	1:1.58	0.058	-0.01	23.03	24.00	1.250	0.073	22.1
Left tilted	20	QPSK 1RB_0	40620/2593	1:1.58	0.047	-0.16	23.03	24.00	1.250	0.059	22.1
Right cheek	20	QPSK 1RB_0	40620/2593	1:1.58	0.078	0.04	23.03	24.00	1.250	0.098	22.1
Right cheek	20	QPSK PCC 1_0	40620/2593	1:1.58	0.069	0.05	22.78	24.00	1.324	0.091	22.1
	20	QPSK SCC 1_99	40422/2573.2								
Right tilted	20	QPSK 1RB_0	40620/2593	1:1.58	0.050	-0.10	23.03	24.00	1.250	0.063	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_0	39750/2506	1:1.58	0.050	0.07	21.95	23.00	1.274	0.064	22.1
Left tilted	20	QPSK 50RB_0	39750/2506	1:1.58	0.039	0.00	21.95	23.00	1.274	0.050	22.1
Right cheek	20	QPSK 50RB_0	39750/2506	1:1.58	0.076	-0.03	21.95	23.00	1.274	0.097	22.1
Right tilted	20	QPSK 50RB_0	39750/2506	1:1.58	0.037	0.13	21.95	23.00	1.274	0.047	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.081	0.01	23.03	24.00	1.250	0.101	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.084	0.02	23.03	24.00	1.250	0.105	22.1
Back side	20	QPSK PCC 1_0	40620/2593	1:1.58	0.075	0.16	22.78	24.00	1.324	0.099	22.1
	20	QPSK SCC 1_99	40422/2573.2								
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	39750/2506	1:1.58	0.067	-0.09	21.95	23.00	1.274	0.085	22.1
Back side	20	QPSK 50RB_0	39750/2506	1:1.58	0.072	0.17	21.95	23.00	1.274	0.092	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.190	-0.11	23.03	24.00	1.250	0.238	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.186	0.19	23.03	24.00	1.250	0.233	22.1
Right side	20	QPSK 1RB_0	40620/2593	1:1.58	0.138	-0.06	23.03	24.00	1.250	0.173	22.1
Bottom side	20	QPSK 1RB_0	40620/2593	1:1.58	0.203	-0.09	23.03	24.00	1.250	0.254	22.1
Bottom side	20	QPSK PCC 1_0	40620/2593	1:1.58	0.181	-0.07	22.78	24.00	1.324	0.240	22.1
	20	QPSK SCC 1_99	40422/2573.2								
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	39750/2506	1:1.58	0.154	0.10	21.95	23.00	1.274	0.196	22.1
Back side	20	QPSK 50RB_0	39750/2506	1:1.58	0.152	0.11	21.95	23.00	1.274	0.194	22.1
Right side	20	QPSK 50RB_0	39750/2506	1:1.58	0.108	0.00	21.95	23.00	1.274	0.138	22.1
Bottom side	20	QPSK 50RB_0	39750/2506	1:1.58	0.176	0.15	21.95	23.00	1.274	0.224	22.1
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_50	40185/2549.5	1:1.58	0.117	-0.15	13.20	14.50	1.349	0.158	22.1
Left tilted	20	QPSK 1RB_50	40185/2549.5	1:1.58	0.163	-0.08	13.20	14.50	1.349	0.220	22.1
Right cheek	20	QPSK 1RB_50	40185/2549.5	1:1.58	0.315	-0.07	13.20	14.50	1.349	0.425	22.1
Right tilted	20	QPSK 1RB_50	40185/2549.5	1:1.58	0.406	0.13	13.20	14.50	1.349	0.548	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_50	40620/2593	1:1.58	0.114	-0.04	13.18	14.50	1.355	0.154	22.1
Left tilted	20	QPSK 50RB_50	40620/2593	1:1.58	0.157	0.01	13.18	14.50	1.355	0.213	22.1
Right cheek	20	QPSK 50RB_50	40620/2593	1:1.58	0.318	0.17	13.18	14.50	1.355	0.431	22.1
Right tilted	20	QPSK 50RB_50	40620/2593	1:1.58	0.412	-0.13	13.18	14.50	1.355	0.558	22.1
Right tilted	20	QPSK PCC 1_0	40620/2593	1:1.58	0.369	0.09	13.11	14.50	1.377	0.508	22.1
	20	QPSK SCC 1_99	40422/2573.2								
Body worn Test data(Separate 15mm 1RB)											



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Front side	20	QPSK 1RB_0	40620/2593	1:1.58	0.279	-0.09	23.76	25.00	1.330	0.371	22.1
Back side	20	QPSK 1RB_0	40620/2593	1:1.58	0.557	-0.02	23.76	25.00	1.330	0.741	22.1
Back side	20	QPSK PCC 1_0	40620/2593	1:1.58	0.524	0.14	23.67	25.00	1.358	0.712	22.1
	20	QPSK SCC 1_99	40422/2573.2								
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	41490/2680	1:1.58	0.225	0.19	22.81	24.00	1.315	0.296	22.1
Back side	20	QPSK 50RB_0	41490/2680	1:1.58	0.460	0.15	22.81	24.00	1.315	0.605	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.085	-0.05	15.19	16.50	1.352	0.115	22.1
Back side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.181	0.03	15.19	16.50	1.352	0.245	22.1
Left side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.056	-0.10	15.19	16.50	1.352	0.076	22.1
Top side	20	QPSK 1RB_0	41055/2636.5	1:1.58	0.236	0.06	15.19	16.50	1.352	0.319	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.086	0.00	15.20	16.50	1.349	0.116	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.181	0.12	15.20	16.50	1.349	0.244	22.1
Left side	20	QPSK 50RB_0	40620/2593	1:1.58	0.059	0.14	15.20	16.50	1.349	0.080	22.1
Top side	20	QPSK 50RB_0	40620/2593	1:1.58	0.254	0.18	15.20	16.50	1.349	0.343	22.1
Top side	20	QPSK PCC 1_0	40620/2593	1:1.58	0.237	0.11	15.03	16.50	1.403	0.332	22.1
	20	QPSK SCC 1_99	40422/2573.2								
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Product specific 10g SAR Test data(Separate 0mm 1RB) Sensor on											
Back side	20	QPSK 1RB_0	41490/2680	1:1.58	1.110	-0.04	19.72	21.00	1.343	1.490	22.3
Top side	20	QPSK 1RB_0	41490/2680	1:1.58	0.801	-0.09	19.72	21.00	1.343	1.076	22.3
Product specific 10g SAR Test data(1RB) Sensor off											
Back side -8mm	20	QPSK 1RB_0	40620/2593	1:1.58	0.793	-0.05	23.76	25.00	1.330	1.055	22.3
Top side -9mm	20	QPSK 1RB_0	40620/2593	1:1.58	0.803	0.05	23.76	25.00	1.330	1.068	22.3
Product specific 10g SAR Test data(Separate 0mm 50%RB) Sensor on											
Back side	20	QPSK 50RB_0	41490/2680	1:1.58	1.160	-0.07	19.75	21.00	1.334	1.547	22.3
Back side	20	QPSK PCC 1_0	41490/2680	1:1.58	1.050	0.11	19.67	21.00	1.358	1.426	22.1
	20	QPSK SCC 1_99	41292/2660.2								
Top side	20	QPSK 50RB_0	41490/2680	1:1.58	0.810	-0.07	19.75	21.00	1.334	1.080	22.3
Product specific 10g SAR Test data(50%RB) Sensor off											
Back side -8mm	20	QPSK 50RB_0	41490/2680	1:1.58	0.458	-0.05	22.81	24.00	1.315	0.602	22.3
Top side -9mm	20	QPSK 50RB_0	41490/2680	1:1.58	0.341	0.17	22.81	24.00	1.315	0.448	22.3

Table 24: SAR of LTE Band 41 for Head, Body and Product specific 10g SAR(Original report: ZR/2021/3001406).



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8.3.15 SAR Result of LTE Band 66

Ant31 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_50	132322/1745	1:1	0.114	-0.08	23.75	24.50	1.189	0.135	22.3
Left tilted	20	QPSK 1RB_50	132322/1745	1:1	0.055	0.11	23.75	24.50	1.189	0.065	22.3
Right cheek	20	QPSK 1RB_50	132322/1745	1:1	0.079	-0.06	23.75	24.50	1.189	0.094	22.3
Right tilted	20	QPSK 1RB_50	132322/1745	1:1	0.066	-0.08	23.75	24.50	1.189	0.078	22.3
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_50	132072/1720	1:1	0.096	-0.13	22.81	23.50	1.172	0.113	22.3
Left tilted	20	QPSK 50RB_50	132072/1720	1:1	0.044	-0.14	22.81	23.50	1.172	0.052	22.3
Right cheek	20	QPSK 50RB_50	132072/1720	1:1	0.063	0.00	22.81	23.50	1.172	0.074	22.3
Right tilted	20	QPSK 50RB_50	132072/1720	1:1	0.051	0.03	22.81	23.50	1.172	0.060	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_99	132072/1720	1:1	0.146	0.10	20.64	21.50	1.219	0.178	22.3
Back side	20	QPSK 1RB_99	132072/1720	1:1	0.197	-0.17	20.64	21.50	1.219	0.240	22.3
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	132572/1770	1:1	0.182	0.02	20.68	21.50	1.208	0.220	22.3
Back side	20	QPSK 50RB_0	132572/1770	1:1	0.252	-0.10	20.68	21.50	1.208	0.304	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_99	132072/1720	1:1	0.334	-0.06	20.64	21.50	1.219	0.407	22.3
Back side	20	QPSK 1RB_99	132072/1720	1:1	0.445	-0.12	20.64	21.50	1.219	0.542	22.3
Right side	20	QPSK 1RB_99	132072/1720	1:1	0.078	0.06	20.64	21.50	1.219	0.095	22.3
Bottom side	20	QPSK 1RB_99	132072/1720	1:1	0.617	-0.01	20.64	21.50	1.219	0.752	22.3
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	132572/1770	1:1	0.338	-0.16	20.68	21.50	1.208	0.408	22.3
Back side	20	QPSK 50RB_0	132572/1770	1:1	0.458	-0.14	20.68	21.50	1.208	0.553	22.3
Right side	20	QPSK 50RB_0	132572/1770	1:1	0.083	0.01	20.68	21.50	1.208	0.100	22.3
Bottom side	20	QPSK 50RB_0	132572/1770	1:1	0.639	0.06	20.68	21.50	1.208	0.772	22.3
Ant13 Test Record											
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	132072/1720	1:1	0.251	0.12	17.96	19.00	1.271	0.319	22.3
Left tilted	20	QPSK 1RB_0	132072/1720	1:1	0.300	-0.09	17.96	19.00	1.271	0.381	22.3
Right cheek	20	QPSK 1RB_0	132072/1720	1:1	0.435	-0.09	17.96	19.00	1.271	0.553	22.3
Right tilted	20	QPSK 1RB_0	132072/1720	1:1	0.461	0.19	17.96	19.00	1.271	0.586	22.3
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_50	132322/1745	1:1	0.258	0.07	17.91	19.00	1.285	0.332	22.3
Left tilted	20	QPSK 50RB_50	132322/1745	1:1	0.318	-0.16	17.91	19.00	1.285	0.409	22.3
Right cheek	20	QPSK 50RB_50	132322/1745	1:1	0.458	-0.17	17.91	19.00	1.285	0.589	22.3
Right tilted	20	QPSK 50RB_50	132322/1745	1:1	0.568	0.03	17.91	19.00	1.285	0.730	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_99	132322/1745	1:1	0.146	0.19	23.47	24.50	1.268	0.185	22.3
Back side	20	QPSK 1RB_99	132322/1745	1:1	0.170	0.10	23.47	24.50	1.268	0.216	22.3
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_25	132072/1720	1:1	0.120	0.13	22.47	23.50	1.268	0.152	22.3
Back side	20	QPSK 50RB_25	132072/1720	1:1	0.138	0.02	22.47	23.50	1.268	0.175	22.3
Hotspot Test data(Separate 10mm 1RB)											



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Front side	20	QPSK 1RB_0	132322/1745	1:1	0.153	0.03	20.35	21.50	1.303	0.199	22.3
Back side	20	QPSK 1RB_0	132322/1745	1:1	0.176	-0.03	20.35	21.50	1.303	0.229	22.3
Left side	20	QPSK 1RB_0	132322/1745	1:1	0.005	-0.06	20.35	21.50	1.303	0.007	22.3
Top side	20	QPSK 1RB_0	132322/1745	1:1	0.220	-0.05	20.35	21.50	1.303	0.287	22.3
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	132322/1745	1:1	0.163	-0.07	20.26	21.50	1.330	0.217	22.3
Back side	20	QPSK 50RB_0	132322/1745	1:1	0.191	-0.13	20.26	21.50	1.330	0.254	22.3
Left side	20	QPSK 50RB_0	132322/1745	1:1	0.003	-0.02	20.26	21.50	1.330	0.004	22.3
Top side	20	QPSK 50RB_0	132322/1745	1:1	0.219	0.05	20.26	21.50	1.330	0.291	22.3

Table 25: SAR of LTE Band 66 for Head and Body(Original report: ZR/2021/3001406).



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8.3.16 SAR Result of 5G NR N7

Ant11 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Head Test Data(1RB)											
Left cheek	50	QPSK 1RB_135	505000/2525	1:1	0.214	-0.05	16.11	17.00	1.227	0.263	22.1
Left tilted	50	QPSK 1RB_135	505000/2525	1:1	0.086	0.14	16.11	17.00	1.227	0.106	22.1
Right cheek	50	QPSK 1RB_135	505000/2525	1:1	0.441	-0.08	16.11	17.00	1.227	0.541	22.1
Right tilted	50	QPSK 1RB_135	505000/2525	1:1	0.173	0.04	16.11	17.00	1.227	0.212	22.1
Head Test Data(50%RB)											
Left cheek	50	QPSK 135RB_67	505000/2525	1:1	0.218	0.11	16.14	17.00	1.219	0.266	22.1
Left tilted	50	QPSK 135RB_67	505000/2525	1:1	0.099	-0.14	16.14	17.00	1.219	0.121	22.1
Right cheek	50	QPSK 135RB_67	505000/2525	1:1	0.450	-0.07	16.14	17.00	1.219	0.549	22.1
Right tilted	50	QPSK 135RB_67	505000/2525	1:1	0.193	-0.15	16.14	17.00	1.219	0.235	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	50	QPSK 1RB_135	507000/2535	1:1	0.313	0.07	22.96	24.00	1.271	0.398	22.1
Back side	50	QPSK 1RB_135	507000/2535	1:1	0.459	-0.13	22.96	24.00	1.271	0.583	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	50	QPSK 135RB_67	509000/2545	1:1	0.315	-0.16	23.05	24.00	1.245	0.392	22.1
Back side	50	QPSK 135RB_67	509000/2545	1:1	0.477	0.02	23.05	24.00	1.245	0.594	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	50	QPSK 1RB_135	509000/2545	1:1	0.122	-0.04	16.11	17.00	1.227	0.150	22.3
Back side	50	QPSK 1RB_135	509000/2545	1:1	0.228	-0.15	16.11	17.00	1.227	0.280	22.3
Left side	50	QPSK 1RB_135	507000/2535	1:1	0.212	0.06	16.11	17.00	1.227	0.260	22.3
Hotspot Test data (Separate 10mm 50%RB)											
Front side	50	QPSK 135RB_67	509000/2545	1:1	0.125	0.09	16.14	17.00	1.219	0.152	22.3
Back side	50	QPSK 135RB_67	509000/2545	1:1	0.231	0.07	16.14	17.00	1.219	0.282	22.3
Left side	50	QPSK 135RB_67	509000/2545	1:1	0.207	0.03	16.14	17.00	1.219	0.252	22.3
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
Product specific 10g SAR Test data(Separate 0mm 1RB) Sensor on											
Back side	50	QPSK 1RB_135	509000/2545	1:1	1.101	-0.03	19.05	20.00	1.245	1.370	22.3
Left side	50	QPSK 1RB_135	507000/2535	1:1	1.366	0.14	19.92	21.00	1.282	1.752	22.3
Product specific 10g SAR Test data (Separate 0mm 50%RB) Sensor on											
Back side	50	QPSK 135RB_67	509000/2545	1:1	1.192	-0.11	18.99	20.00	1.262	1.505	22.3
Left side	50	QPSK 135RB_67	507000/2535	1:1	1.450	-0.05	20.11	21.00	1.227	1.780	22.3
Product specific 10g SAR Test data(1RB) Sensor off											
Back side-9mm	50	QPSK 1RB_135	507000/2535	1:1	1.310	0.02	22.96	24.00	1.271	1.664	22.3
Left side-8mm	50	QPSK 1RB_135	507000/2535	1:1	0.642	0.01	22.96	24.00	1.271	0.816	22.3
Product specific 10g SAR Test data (50%RB) Sensor off											
Back side-9mm	50	QPSK 135RB_67	509000/2545	1:1	1.380	0.00	23.05	24.00	1.245	1.717	22.3
Left side-8mm	50	QPSK 135RB_67	509000/2545	1:1	0.685	-0.09	23.05	24.00	1.245	0.852	22.3

Table 26: SAR of 5G NR N7 for Head and Body(Variant).



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8.3.17 SAR Result of 5G NR N41

Ant11 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
SA/NSA Head Test Data(1RB)											
Left cheek	100	QPSK 1RB_137	513900/2569.5	1:1	0.151	0.15	14.36	15.00	1.159	0.175	22.1
Left tilted	100	QPSK 1RB_137	513900/2569.5	1:1	0.072	-0.12	14.36	15.00	1.159	0.083	22.1
Right cheek	100	QPSK 1RB_137	513900/2569.5	1:1	0.304	-0.05	14.36	15.00	1.159	0.352	22.1
Right tilted	100	QPSK 1RB_137	513900/2569.5	1:1	0.139	-0.05	14.36	15.00	1.159	0.161	22.1
SA/NSA Head Test Data(50%RB)											
Left cheek	100	QPSK 135RB_69	518598/2592.99	1:1	0.147	0.05	14.42	15.00	1.143	0.168	22.1
Left tilted	100	QPSK 135RB_69	518598/2592.99	1:1	0.065	0.04	14.42	15.00	1.143	0.074	22.1
Right cheek	100	QPSK 135RB_69	518598/2592.99	1:1	0.323	0.00	14.42	15.00	1.143	0.369	22.1
Right tilted	100	QPSK 135RB_69	518598/2592.99	1:1	0.128	-0.01	14.42	15.00	1.143	0.146	22.1
SA/NSA Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1RB_137	528000/2640	1:1	0.324	0.00	22.86	23.00	1.033	0.335	22.1
Back side	100	QPSK 1RB_137	528000/2640	1:1	0.482	0.04	22.86	23.00	1.033	0.498	22.1
SA/NSA Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135RB_69	523302/2616.51	1:1	0.365	0.05	22.81	23.00	1.045	0.381	22.1
Back side	100	QPSK 135RB_69	523302/2616.51	1:1	0.521	0.02	22.81	23.00	1.045	0.544	22.1
SA Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1RB_137	509202/2546.01	1:1	0.139	0.05	15.49	16.00	1.125	0.156	22.3
Back side	100	QPSK 1RB_137	509202/2546.01	1:1	0.225	0.12	15.49	16.00	1.125	0.253	22.3
Left side	100	QPSK 1RB_137	509202/2546.01	1:1	0.229	-0.12	15.49	16.00	1.125	0.258	22.3
SA Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135RB_0	513900/2569.5	1:1	0.133	0.12	15.48	16.00	1.127	0.150	22.3
Back side	100	QPSK 135RB_0	513900/2569.5	1:1	0.246	0.09	15.48	16.00	1.127	0.277	22.3
Left side	100	QPSK 135RB_0	513900/2569.5	1:1	0.212	-0.02	15.48	16.00	1.127	0.239	22.3
NSA Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1RB_137	509202/2546.01	1:1	0.109	-0.19	14.36	15.00	1.159	0.126	22.3
Back side	100	QPSK 1RB_137	509202/2546.01	1:1	0.179	-0.03	14.36	15.00	1.159	0.207	22.3
Left side	100	QPSK 1RB_137	509202/2546.01	1:1	0.182	-0.09	14.36	15.00	1.159	0.211	22.3
NSA Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135RB_69	513900/2569.5	1:1	0.104	0.18	14.42	15.00	1.143	0.119	22.3
Back side	100	QPSK 135RB_69	513900/2569.5	1:1	0.209	-0.11	14.42	15.00	1.143	0.239	22.3
Left side	100	QPSK 135RB_69	513900/2569.5	1:1	0.177	0.18	14.42	15.00	1.143	0.202	22.3
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR (W/kg)	Liquid Temp
SA/NSA Product specific 10g SAR Test data(Separate 0mm 1RB)											
Back side	100	QPSK 1RB_137	509202/2546.01	1:1	1.328	0.05	18.39	19.00	1.151	1.528	22.3
Left side	100	QPSK 1RB_137	509202/2546.01	1:1	1.246	0.08	18.39	19.00	1.151	1.434	22.3
SA/NSA Product specific 10g SAR Test data (Separate 0mm 50%RB)											
Back side	100	QPSK 135RB_69	513900/2569.5	1:1	1.385	-0.12	18.41	19.00	1.146	1.587	22.3
Left side	100	QPSK 135RB_69	513900/2569.5	1:1	1.480	0.03	18.41	19.00	1.146	1.695	22.3
SA/NSA Product specific 10g SAR Test data(1RB) Sensor off											
Back side-9mm	100	QPSK 1RB_137	528000/2640	1:1	1.110	0.10	22.86	23.00	1.033	1.146	22.3
Left side-8mm	100	QPSK 1RB_137	528000/2640	1:1	0.609	0.15	22.86	23.00	1.033	0.629	22.3
SA/NSA Product specific 10g SAR Test data (50%RB) Sensor off											
Back side-9mm	100	QPSK 135RB_69	523302/2616.51	1:1	1.210	-0.02	22.81	23.00	1.045	1.264	22.3
Left side-8mm	100	QPSK 135RB_69	523302/2616.51	1:1	0.665	-0.07	22.81	23.00	1.045	0.695	22.3

Table 27: SAR of 5G NR N41 for Head and Body(Variant).



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8.3.18 SAR Result of WIFI 2.4G

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data											
Left cheek	802.11b	11/2462	99.58%	1.004	0.184	0.02	9.58	11.50	1.556	0.287	22
Left tilted	802.11b	11/2462	99.58%	1.004	0.144	0.03	9.58	11.50	1.556	0.225	22
Right cheek	802.11b	11/2462	99.58%	1.004	0.061	0.13	9.58	11.50	1.556	0.096	22
Right tilted	802.11b	11/2462	99.58%	1.004	0.059	-0.17	9.58	11.50	1.556	0.093	22
Body worn Test data(Separate 15mm)											
Front side	802.11b	11/2462	99.58%	1.004	0.130	-0.12	18.78	20.50	1.486	0.194	22
Back side	802.11b	11/2462	99.58%	1.004	0.187	0.07	18.78	20.50	1.486	0.279	22
Hotspot Test data (Separate 10mm)											
Front side	802.11b	11/2462	99.58%	1.004	0.259	-0.02	18.78	20.50	1.486	0.386	22
Back side	802.11b	11/2462	99.58%	1.004	0.473	0.03	18.78	20.50	1.486	0.706	22
Right side	802.11b	11/2462	99.58%	1.004	0.195	0.04	18.78	20.50	1.486	0.291	22
Top side	802.11b	11/2462	99.58%	1.004	0.310	0.13	18.78	20.50	1.486	0.463	22
Simultaneous transmission with (WWAN+WiFi 2.4G) Hotspot Test data (Separate 10mm)											
Back side	802.11b	11/2462	99.58%	1.004	0.473	0.03	18.78	18.50	0.938	0.445	22

Table 28: SAR of WIFI 2.4G for Head and Body(Original report: ZR/2021/3001406).



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8.3.19 SAR Result of WIFI 5G

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data of U-NII-2A											
Left cheek	802.11ac 80M	58/5290	94.69%	1.056	0.134	0.08	5.83	7.00	1.309	0.185	22.2
Left tilted	802.11ac 80M	58/5290	94.69%	1.056	0.165	0.17	5.83	7.00	1.309	0.228	22.2
Right cheek	802.11ac 80M	58/5290	94.69%	1.056	0.075	0.09	5.83	7.00	1.309	0.103	22.2
Right tilted	802.11ac 80M	58/5290	94.69%	1.056	0.087	0.09	5.83	7.00	1.309	0.121	22.2
Head Test data of U-NII-2C											
Left cheek	802.11ac 80M	106/5530	94.69%	1.056	0.148	0.03	6.10	7.50	1.380	0.216	22.2
Left tilted	802.11ac 80M	106/5530	94.69%	1.056	0.177	0.09	6.10	7.50	1.380	0.258	22.2
Right cheek	802.11ac 80M	106/5530	94.69%	1.056	0.056	0.02	6.10	7.50	1.380	0.082	22.2
Right tilted	802.11ac 80M	106/5530	94.69%	1.056	0.077	0.05	6.10	7.50	1.380	0.112	22.2
Head Test data of U-NII-3											
Left cheek	802.11ac 80M	155/5775	94.69%	1.056	0.100	0.03	5.81	7.50	1.476	0.155	22.2
Left tilted	802.11ac 80M	155/5775	94.69%	1.056	0.153	0.06	5.81	7.50	1.476	0.238	22.2
Right cheek	802.11ac 80M	155/5775	94.69%	1.056	0.018	0.00	5.81	7.50	1.476	0.027	22.2
Right tilted	802.11ac 80M	155/5775	94.69%	1.056	0.081	0.06	5.81	7.50	1.476	0.126	22.2
Body worn Test data of U-NII-2A (Separate 15mm)											
Front side	802.11a	60/5300	97.36%	1.027	0.158	0.01	18.38	18.50	1.028	0.167	22.2
Back side	802.11a	60/5300	97.36%	1.027	0.260	0.12	18.38	18.50	1.028	0.275	22.2
Body worn Test data of U-NII-2C(Separate 15mm)											
Front side	802.11a	116/5580	97.36%	1.027	0.140	0.02	18.14	18.50	1.086	0.156	22.2
Back side	802.11a	116/5580	97.36%	1.027	0.214	0.04	18.14	18.50	1.086	0.239	22.2
Body worn Test data of U-NII-3(Separate 15mm)											
Front side	802.11a	149/5745	97.36%	1.027	0.152	0.03	17.89	18.50	1.151	0.180	22.2
Back side	802.11a	149/5745	97.36%	1.027	0.380	-0.07	17.89	18.50	1.151	0.449	22.2
Hotspot Test data of U-NII-1(Separate 10mm)											
Front side	802.11a	40/5200	97.36%	1.027	0.341	-0.05	18.13	18.50	1.089	0.381	22.2
Back side	802.11a	40/5200	97.36%	1.027	0.702	0.02	18.13	18.50	1.089	0.785	22.2
Right side	802.11a	40/5200	97.36%	1.027	0.492	-0.09	18.13	18.50	1.089	0.550	22.2
Top side	802.11a	40/5200	97.36%	1.027	0.691	-0.19	18.13	18.50	1.089	0.773	22.2
Hotspot Test data of U-NII-3 (Separate 10mm)											
Front side	802.11a	149/5745	97.36%	1.027	0.262	0.05	17.89	18.50	1.151	0.310	22.2
Back side	802.11a	149/5745	97.36%	1.027	0.710	0.04	17.89	18.50	1.151	0.839	22.2
Back side	802.11a	153/5765	97.36%	1.027	0.698	0.05	17.62	18.50	1.225	0.878	22.2
Right side	802.11a	149/5745	97.36%	1.027	0.779	0.02	17.89	18.50	1.151	0.921	22.2
Right side	802.11a	153/5765	97.36%	1.027	0.756	-0.15	17.62	18.50	1.225	0.951	22.2
Top side	802.11a	149/5745	97.36%	1.027	0.665	0.16	17.89	18.50	1.151	0.786	22.2
Simultaneous transmission with (WWAN+WiFi 5G/WWAN+WiFi 5G+BT) Body worn Test data of U-NII-2A (Separate 15mm)											
Back side	802.11a	60/5300	97.36%	1.027	0.260	0.12	18.38	16.00	0.578	0.154	22.2
Simultaneous transmission with (WWAN+WiFi 5G/WWAN+WiFi 5G+BT) Body worn Test data of U-NII-2C(Separate 15mm)											
Back side	802.11a	116/5580	97.36%	1.027	0.214	0.04	18.14	17.00	0.769	0.169	22.2
Simultaneous transmission with (WWAN+WiFi 5G/WWAN+WiFi 5G+BT) Body worn Test data of U-NII-3(Separate 15mm)											
Back side	802.11a	149/5745	97.36%	1.027	0.380	-0.07	17.89	17.00	0.815	0.318	22.2
Simultaneous transmission with (WWAN+WiFi 5G/WWAN+WiFi 5G+BT) Hotspot Test data of U-NII-1(Separate 10mm)											
Back side	802.11a	40/5200	97.36%	1.027	0.702	0.02	18.13	16.50	0.687	0.495	22.2
Simultaneous transmission with (WWAN+WiFi 5G/WWAN+WiFi 5G+BT) Hotspot Test data of U-NII-3 (Separate 10mm)											
Back side	802.11a	149/5745	97.36%	1.027	0.710	0.04	17.89	17.00	0.815	0.594	22.2



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Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)10-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Product specific 10g SAR Test data of U-NII-2A(Separate 0mm)											
Front side	802.11a	60/5300	97.36%	1.027	1.190	0.03	18.38	18.50	1.028	1.257	22.2
Back side	802.11a	60/5300	97.36%	1.027	0.786	-0.04	18.38	18.50	1.028	0.830	22.2
Right side	802.11a	60/5300	97.36%	1.027	0.600	0.09	18.38	18.50	1.028	0.634	22.2
Top side	802.11a	60/5300	97.36%	1.027	1.260	0.01	18.38	18.50	1.028	1.330	22.2
Product specific 10g SAR Test data of U-NII-2C(Separate 0mm)											
Front side	802.11a	116/5580	97.36%	1.027	0.899	0.00	18.14	18.50	1.086	1.003	22.2
Back side	802.11a	116/5580	97.36%	1.027	0.619	0.09	18.14	18.50	1.086	0.691	22.2
Right side	802.11a	116/5580	97.36%	1.027	1.150	0.03	18.14	18.50	1.086	1.283	22.2
Top side	802.11a	116/5580	97.36%	1.027	1.190	0.05	18.14	18.50	1.086	1.328	22.2

Table 29: SAR of WIFI 5G for Head, Body and Product specific 10g SAR(Original report: ZR/2021/3001406).



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8.3.20 SAR Result of BT

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data											
Left cheek	DH5	78/2480	76.48%	1.307	0.159	0.04	10.19	11.00	1.205	0.251	22
Left tilted	DH5	78/2480	76.48%	1.307	0.106	0.18	10.19	11.00	1.205	0.167	22
Right cheek	DH5	78/2480	76.48%	1.307	0.060	-0.11	10.19	11.00	1.205	0.095	22
Right tilted	DH5	78/2480	76.48%	1.307	0.058	-0.13	10.19	11.00	1.205	0.091	22
Body worn Test data(Separate 15mm)											
Front side	DH5	78/2480	76.48%	1.307	0.008	0.00	10.19	11.00	1.205	0.013	22
Back side	DH5	78/2480	76.48%	1.307	0.024	0.07	10.19	11.00	1.205	0.038	22
Hotspot Test data (Separate 10mm)											
Front side	DH5	78/2480	76.48%	1.307	0.016	0.08	10.19	11.00	1.205	0.025	22
Back side	DH5	78/2480	76.48%	1.307	0.020	-0.16	10.19	11.00	1.205	0.032	22
Right side	DH5	78/2480	76.48%	1.307	0.025	0.06	10.19	11.00	1.205	0.039	22
Top side	DH5	78/2480	76.48%	1.307	0.009	0.00	10.19	11.00	1.205	0.014	22

Table 30: SAR of BT for Head and Body(Original report: ZR/2021/3001406).



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8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR SAR test evaluation

- **Simultaneous Transmission Possibilities**

NO	Simultaneous TX Combination	Head	Body-worn	Hotspot	Product Specific 10-g SAR
1	WWAN+BT	Y	Y	Y	Y
2	WWAN+WIFI 2.4G	Y	Y	Y	Y
3	WWAN+WIFI 5G	Y	Y	Y	Y
4	WWAN+BT+WIFI 5G	Y	Y	Y	Y
5	BT+WIFI 5G	Y	Y	Y	Y
6	BT+WIFI 2.4G	N	N	N	N
7	WIFI 2.4G +WIFI 5G	N	N	N	N

Note:

- 1) The device does not support DTM function.
- 2) For Wi-Fi 5G, U-NII-2A (5250-5350 MHz) and U-NII-2C (5470-5725 MHz) bands does not support hotspot function.

Test Engineer: Dick Yan, Charley Yi, Vito Wang, Claire Shen, York Liu, Jack Huang



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8.4.2 Simultaneous Transmission SAR Summation Scenario

EN-DC SAR(Head)

LTE Band (EN_DC)	Exposure position	Ant13	Ant41	n41	EN_DC Summed SAR
				Ant11	
Band 5	Left cheek	0.338	0.199	0.175	0.513
	Left tilted	0.295	0.093	0.083	0.378
	Right cheek	0.513	0.112	0.369	0.882
	Right tilted	0.499	0.060	0.161	0.660

EN-DC SAR(Body-worn)

LTE Band (EN_DC)	Exposure position	Ant13	Ant41	n41	EN_DC Summed SAR
				Ant11	
Band 5	Front side	0.161	0.108	0.381	0.542
	Back side	0.184	0.193	0.544	0.737

EN-DC SAR(Hotspot)

LTE Band (EN_DC)	Exposure position	Ant13	Ant41	n41	EN_DC Summed SAR
				Ant11	
Band 5	Front side	0.228	0.216	0.126	0.354
	Back side	0.248	0.327	0.239	0.566
	Left side	0.118	0.245	0.211	0.456
	Right side	0.134	0.075	/	0.134
	Top side	0.221	/	/	0.221
	Bottom side	/	0.069	/	0.069

EN-DC SAR(Product Specific 10-g SAR)

LTE Band (EN_DC)	Exposure position	Ant13	Ant41	n41	EN_DC Summed SAR
				Ant11	
Band 5	Front side	/	/	/	/
	Back side	/	/	1.587	1.587
	Left side	/	/	1.695	1.695
	Right side	/	/	/	/
	Top side	/	/	/	/
	Bottom side	/	/	/	/



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Head:

Test position		SARmax (W/kg)				Summed SAR			
		Ant 13	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
GSM850	Left cheek	0.413	0.287	0.216	0.251	0.700	0.629	0.664	0.880
	Left tilted	0.401	0.225	0.258	0.167	0.626	0.659	0.568	0.826
	Right cheek	0.792	0.096	0.103	0.095	0.888	0.895	0.887	0.990
	Right tilted	0.685	0.093	0.126	0.091	0.778	0.811	0.776	0.902
GSM1900	Left cheek	0.362	0.287	0.216	0.251	0.649	0.578	0.613	0.829
	Left tilted	0.430	0.225	0.258	0.167	0.655	0.688	0.597	0.855
	Right cheek	0.607	0.096	0.103	0.095	0.703	0.710	0.702	0.805
	Right tilted	0.794	0.093	0.126	0.091	0.887	0.920	0.885	1.011
WCDMA B2	Left cheek	0.340	0.287	0.216	0.251	0.627	0.556	0.591	0.807
	Left tilted	0.417	0.225	0.258	0.167	0.642	0.675	0.584	0.842
	Right cheek	0.627	0.096	0.103	0.095	0.723	0.730	0.722	0.825
	Right tilted	0.734	0.093	0.126	0.091	0.827	0.860	0.825	0.951
WCDMA B4	Left cheek	0.351	0.287	0.216	0.251	0.638	0.567	0.602	0.818
	Left tilted	0.415	0.225	0.258	0.167	0.640	0.673	0.582	0.840
	Right cheek	0.592	0.096	0.103	0.095	0.688	0.695	0.687	0.790
	Right tilted	0.706	0.093	0.126	0.091	0.799	0.832	0.797	0.923
WCDMA B5	Left cheek	0.451	0.287	0.216	0.251	0.738	0.667	0.702	0.918
	Left tilted	0.427	0.225	0.258	0.167	0.652	0.685	0.594	0.852
	Right cheek	0.624	0.096	0.103	0.095	0.720	0.727	0.719	0.822
	Right tilted	0.573	0.093	0.126	0.091	0.666	0.699	0.664	0.790
LTE B2	Left cheek	0.332	0.287	0.216	0.251	0.619	0.548	0.583	0.799
	Left tilted	0.430	0.225	0.258	0.167	0.655	0.688	0.597	0.855
	Right cheek	0.615	0.096	0.103	0.095	0.711	0.718	0.710	0.813
	Right tilted	0.723	0.093	0.126	0.091	0.816	0.849	0.814	0.940
LTE B4	Left cheek	0.327	0.287	0.216	0.251	0.614	0.543	0.578	0.794
	Left tilted	0.410	0.225	0.258	0.167	0.635	0.668	0.577	0.835
	Right cheek	0.568	0.096	0.103	0.095	0.664	0.671	0.663	0.766
	Right tilted	0.695	0.093	0.126	0.091	0.788	0.821	0.786	0.912
LTE B5	Left cheek	0.338	0.287	0.216	0.251	0.625	0.554	0.589	0.805
	Left tilted	0.295	0.225	0.258	0.167	0.520	0.553	0.462	0.720
	Right cheek	0.513	0.096	0.103	0.095	0.609	0.616	0.608	0.711
	Right tilted	0.499	0.093	0.126	0.091	0.592	0.625	0.590	0.716
LTE B7	Left cheek	0.198	0.287	0.216	0.251	0.485	0.414	0.449	0.665
	Left tilted	0.262	0.225	0.258	0.167	0.487	0.520	0.429	0.687
	Right cheek	0.496	0.096	0.103	0.095	0.592	0.599	0.591	0.694
	Right tilted	0.620	0.093	0.126	0.091	0.713	0.746	0.711	0.837
LTE B12	Left cheek	0.246	0.287	0.216	0.251	0.533	0.462	0.497	0.713
	Left tilted	0.253	0.225	0.258	0.167	0.478	0.511	0.420	0.678
	Right cheek	0.375	0.096	0.103	0.095	0.471	0.478	0.470	0.573
	Right tilted	0.422	0.093	0.126	0.091	0.515	0.548	0.513	0.639
LTE B17	Left cheek	0.278	0.287	0.216	0.251	0.565	0.494	0.529	0.745
	Left tilted	0.299	0.225	0.258	0.167	0.524	0.557	0.466	0.724
	Right cheek	0.421	0.096	0.103	0.095	0.517	0.524	0.516	0.619
	Right tilted	0.454	0.093	0.126	0.091	0.547	0.580	0.545	0.671
LTE B26	Left cheek	0.395	0.287	0.216	0.251	0.682	0.611	0.646	0.862
	Left tilted	0.383	0.225	0.258	0.167	0.608	0.641	0.550	0.808
	Right cheek	0.545	0.096	0.103	0.095	0.641	0.648	0.640	0.743
	Right tilted	0.571	0.093	0.126	0.091	0.664	0.697	0.662	0.788
LTE B38	Left cheek	0.182	0.287	0.216	0.251	0.469	0.398	0.433	0.649
	Left tilted	0.254	0.225	0.258	0.167	0.479	0.512	0.421	0.679
	Right cheek	0.479	0.096	0.103	0.095	0.575	0.582	0.574	0.677
	Right tilted	0.624	0.093	0.126	0.091	0.717	0.750	0.715	0.841
LTE B41	Left cheek	0.158	0.287	0.216	0.251	0.445	0.374	0.409	0.625
	Left tilted	0.220	0.225	0.258	0.167	0.445	0.478	0.387	0.645
	Right cheek	0.431	0.096	0.103	0.095	0.527	0.534	0.526	0.629
	Right tilted	0.558	0.093	0.126	0.091	0.651	0.684	0.649	0.775
LTE B66	Left cheek	0.332	0.287	0.216	0.251	0.619	0.548	0.583	0.799
	Left tilted	0.409	0.225	0.258	0.167	0.634	0.667	0.576	0.834
	Right cheek	0.589	0.096	0.103	0.095	0.685	0.692	0.684	0.787
	Right tilted	0.730	0.093	0.126	0.091	0.823	0.856	0.821	0.947



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Test position		SARmax (W/kg)				Summed SAR			
		Ant 31	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
GSM1900	Left cheek	0.168	0.287	0.216	0.251	0.455	0.384	0.419	0.635
	Left tilted	0.095	0.225	0.258	0.167	0.320	0.353	0.262	0.520
	Right cheek	0.133	0.096	0.103	0.095	0.229	0.236	0.228	0.331
	Right tilted	0.135	0.093	0.126	0.091	0.228	0.261	0.226	0.352
WCDMA B2	Left cheek	0.178	0.287	0.216	0.251	0.465	0.394	0.429	0.645
	Left tilted	0.096	0.225	0.258	0.167	0.321	0.354	0.263	0.521
	Right cheek	0.150	0.096	0.103	0.095	0.246	0.253	0.245	0.348
	Right tilted	0.138	0.093	0.126	0.091	0.231	0.264	0.229	0.355
WCDMA B4	Left cheek	0.142	0.287	0.216	0.251	0.429	0.358	0.393	0.609
	Left tilted	0.066	0.225	0.258	0.167	0.291	0.324	0.233	0.491
	Right cheek	0.106	0.096	0.103	0.095	0.202	0.209	0.201	0.304
	Right tilted	0.069	0.093	0.126	0.091	0.162	0.195	0.160	0.286
LTE B2	Left cheek	0.168	0.287	0.216	0.251	0.455	0.384	0.419	0.635
	Left tilted	0.097	0.225	0.258	0.167	0.322	0.355	0.264	0.522
	Right cheek	0.152	0.096	0.103	0.095	0.248	0.255	0.247	0.350
	Right tilted	0.135	0.093	0.126	0.091	0.228	0.261	0.226	0.352
LTE B4	Left cheek	0.141	0.287	0.216	0.251	0.428	0.357	0.392	0.608
	Left tilted	0.072	0.225	0.258	0.167	0.297	0.330	0.239	0.497
	Right cheek	0.093	0.096	0.103	0.095	0.189	0.196	0.188	0.291
	Right tilted	0.080	0.093	0.126	0.091	0.173	0.206	0.171	0.297
LTE B7	Left cheek	0.167	0.287	0.216	0.251	0.454	0.383	0.418	0.634
	Left tilted	0.111	0.225	0.258	0.167	0.336	0.369	0.278	0.536
	Right cheek	0.243	0.096	0.103	0.095	0.339	0.346	0.338	0.441
	Right tilted	0.123	0.093	0.126	0.091	0.216	0.249	0.214	0.340
LTE B38	Left cheek	0.088	0.287	0.216	0.251	0.375	0.304	0.339	0.555
	Left tilted	0.067	0.225	0.258	0.167	0.292	0.325	0.234	0.492
	Right cheek	0.127	0.096	0.103	0.095	0.223	0.230	0.222	0.325
	Right tilted	0.081	0.093	0.126	0.091	0.174	0.207	0.172	0.298
LTE B41	Left cheek	0.073	0.287	0.216	0.251	0.360	0.289	0.324	0.540
	Left tilted	0.059	0.225	0.258	0.167	0.284	0.317	0.226	0.484
	Right cheek	0.098	0.096	0.103	0.095	0.194	0.201	0.193	0.296
	Right tilted	0.063	0.093	0.126	0.091	0.156	0.189	0.154	0.280
LTE B66	Left cheek	0.135	0.287	0.216	0.251	0.422	0.351	0.386	0.602
	Left tilted	0.065	0.225	0.258	0.167	0.290	0.323	0.232	0.490
	Right cheek	0.094	0.096	0.103	0.095	0.190	0.197	0.189	0.292
	Right tilted	0.078	0.093	0.126	0.091	0.171	0.204	0.169	0.295

Test position		SARmax (W/kg)				Summed SAR			
		Ant 41	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
GSM850	Left cheek	0.495	0.287	0.216	0.251	0.782	0.711	0.746	0.962
	Left tilted	0.171	0.225	0.258	0.167	0.396	0.429	0.338	0.596
	Right cheek	0.299	0.096	0.103	0.095	0.395	0.402	0.394	0.497
	Right tilted	0.148	0.093	0.126	0.091	0.241	0.274	0.239	0.365
WCDMA B5	Left cheek	0.287	0.287	0.216	0.251	0.574	0.503	0.538	0.754
	Left tilted	0.119	0.225	0.258	0.167	0.344	0.377	0.286	0.544
	Right cheek	0.158	0.096	0.103	0.095	0.254	0.261	0.253	0.356
	Right tilted	0.081	0.093	0.126	0.091	0.174	0.207	0.172	0.298
LTE B5	Left cheek	0.199	0.287	0.216	0.251	0.486	0.415	0.450	0.666
	Left tilted	0.093	0.225	0.258	0.167	0.318	0.351	0.260	0.518
	Right cheek	0.112	0.096	0.103	0.095	0.208	0.215	0.207	0.310
	Right tilted	0.060	0.093	0.126	0.091	0.153	0.186	0.151	0.277
LTE B12	Left cheek	0.166	0.287	0.216	0.251	0.453	0.382	0.417	0.633
	Left tilted	0.094	0.225	0.258	0.167	0.319	0.352	0.261	0.519
	Right cheek	0.101	0.096	0.103	0.095	0.197	0.204	0.196	0.299
	Right tilted	0.057	0.093	0.126	0.091	0.150	0.183	0.148	0.274
LTE B17	Left cheek	0.170	0.287	0.216	0.251	0.457	0.386	0.421	0.637
	Left tilted	0.095	0.225	0.258	0.167	0.320	0.353	0.262	0.520



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LTE B26	Right cheek	0.102	0.096	0.103	0.095	0.198	0.205	0.197	0.300
	Right tilted	0.060	0.093	0.126	0.091	0.153	0.186	0.151	0.277
	Left cheek	0.201	0.287	0.216	0.251	0.488	0.417	0.452	0.668
	Left tilted	0.093	0.225	0.258	0.167	0.318	0.351	0.260	0.518
	Right cheek	0.112	0.096	0.103	0.095	0.208	0.215	0.207	0.310
	Right tilted	0.061	0.093	0.126	0.091	0.154	0.187	0.152	0.278

Test position		SARmax (W/kg)				Summed SAR			
		Ant 1	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
n7 (SA)	Left cheek	0.266	0.287	0.216	0.251	0.553	0.482	0.517	0.733
	Left tilted	0.121	0.225	0.258	0.167	0.346	0.379	0.288	0.546
	Right cheek	0.549	0.096	0.103	0.095	0.645	0.652	0.644	0.747
	Right tilted	0.235	0.093	0.126	0.091	0.328	0.361	0.326	0.452

Test position		SARmax (W/kg)				Summed SAR			
		Ant 11	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
n41 (SA)	Left cheek	0.175	0.287	0.216	0.251	0.462	0.391	0.426	0.642
	Left tilted	0.083	0.225	0.258	0.167	0.308	0.341	0.250	0.508
	Right cheek	0.369	0.096	0.103	0.095	0.465	0.472	0.464	0.567
	Right tilted	0.161	0.093	0.126	0.091	0.254	0.287	0.252	0.378

Test position		SARmax (W/kg)				Summed SAR			
		ENDC	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
n41-B5	Left cheek	0.513	0.287	0.216	0.251	0.800	0.729	0.764	0.980
	Left tilted	0.378	0.225	0.258	0.167	0.603	0.636	0.545	0.803
	Right cheek	0.882	0.096	0.103	0.095	0.978	0.985	0.977	1.080
	Right tilted	0.660	0.093	0.126	0.091	0.753	0.786	0.751	0.877

Body-worn:

Test position		SARmax (W/kg)				Summed SAR			
		Ant 13	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
GSM850	Front side	0.245	0.194	0.180	0.013	0.439	0.425	0.258	0.438
	Back side	0.320	0.279	0.318	0.038	0.599	0.638	0.358	0.676
GSM1900	Front side	0.211	0.194	0.180	0.013	0.405	0.391	0.224	0.404
	Back side	0.225	0.279	0.318	0.038	0.504	0.543	0.263	0.581
WCDMA B2	Front side	0.313	0.194	0.180	0.013	0.507	0.493	0.326	0.506
	Back side	0.391	0.279	0.318	0.038	0.670	0.709	0.429	0.747
WCDMA B4	Front side	0.198	0.194	0.180	0.013	0.392	0.378	0.211	0.391
	Back side	0.256	0.279	0.318	0.038	0.535	0.574	0.294	0.612
WCDMA B5	Front side	0.215	0.194	0.180	0.013	0.409	0.395	0.228	0.408
	Back side	0.249	0.279	0.318	0.038	0.528	0.567	0.287	0.605
LTE B2	Front side	0.280	0.194	0.180	0.013	0.474	0.460	0.293	0.473
	Back side	0.353	0.279	0.318	0.038	0.632	0.671	0.391	0.709
LTE B4	Front side	0.196	0.194	0.180	0.013	0.390	0.376	0.209	0.389
	Back side	0.219	0.279	0.318	0.038	0.498	0.537	0.257	0.575
LTE B5	Front side	0.161	0.194	0.180	0.013	0.355	0.341	0.174	0.354
	Back side	0.184	0.279	0.318	0.038	0.463	0.502	0.222	0.540
LTE B7	Front side	0.430	0.194	0.180	0.013	0.624	0.610	0.443	0.623
	Back side	0.942	0.279	0.318	0.038	1.221	1.260	0.980	1.298
LTE B12	Front side	0.079	0.194	0.180	0.013	0.273	0.259	0.092	0.272
	Back side	0.092	0.279	0.318	0.038	0.371	0.410	0.130	0.448
LTE B17	Front side	0.083	0.194	0.180	0.013	0.277	0.263	0.096	0.276
	Back side	0.099	0.279	0.318	0.038	0.378	0.417	0.137	0.455



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LTE B26	Front side	0.154	0.194	0.180	0.013	0.348	0.334	0.167	0.347
	Back side	0.176	0.279	0.318	0.038	0.455	0.494	0.214	0.532
LTE B38	Front side	0.362	0.194	0.180	0.013	0.556	0.542	0.375	0.555
	Back side	0.861	0.279	0.318	0.038	1.140	1.179	0.899	1.217
LTE B41	Front side	0.371	0.194	0.180	0.013	0.565	0.551	0.384	0.564
	Back side	0.741	0.279	0.318	0.038	1.020	1.059	0.779	1.097
LTE B66	Front side	0.371	0.194	0.180	0.013	0.565	0.551	0.384	0.564
	Back side	0.741	0.279	0.318	0.038	1.020	1.059	0.779	1.097

Test position		SARmax (W/kg)				Summed SAR			
		Ant 31	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
GSM1900	Front side	0.305	0.194	0.180	0.013	0.499	0.485	0.318	0.498
	Back side	0.435	0.279	0.318	0.038	0.714	0.753	0.473	0.791
WCDMA B2	Front side	0.284	0.194	0.180	0.013	0.478	0.464	0.297	0.477
	Back side	0.407	0.279	0.318	0.038	0.686	0.725	0.445	0.763
WCDMA B4	Front side	0.146	0.194	0.180	0.013	0.340	0.326	0.159	0.339
	Back side	0.184	0.279	0.318	0.038	0.463	0.502	0.222	0.540
LTE B2	Front side	0.263	0.194	0.180	0.013	0.457	0.443	0.276	0.456
	Back side	0.426	0.279	0.318	0.038	0.705	0.744	0.464	0.782
LTE B4	Front side	0.262	0.194	0.180	0.013	0.456	0.442	0.275	0.455
	Back side	0.392	0.279	0.318	0.038	0.671	0.710	0.430	0.748
LTE B7	Front side	0.175	0.194	0.180	0.013	0.369	0.355	0.188	0.368
	Back side	0.200	0.279	0.318	0.038	0.479	0.518	0.238	0.556
LTE B38	Front side	0.109	0.194	0.180	0.013	0.303	0.289	0.122	0.302
	Back side	0.117	0.279	0.318	0.038	0.396	0.435	0.155	0.473
LTE B41	Front side	0.101	0.194	0.180	0.013	0.295	0.281	0.114	0.294
	Back side	0.105	0.279	0.318	0.038	0.384	0.423	0.143	0.461
LTE B66	Front side	0.220	0.194	0.180	0.013	0.414	0.400	0.233	0.413
	Back side	0.304	0.279	0.318	0.038	0.583	0.622	0.342	0.660

Test position		SARmax (W/kg)				Summed SAR			
		Ant 41	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
GSM850	Front side	0.279	0.194	0.180	0.013	0.473	0.459	0.292	0.472
	Back side	0.395	0.279	0.318	0.038	0.674	0.713	0.433	0.751
WCDMA B5	Front side	0.147	0.194	0.180	0.013	0.341	0.327	0.160	0.340
	Back side	0.289	0.279	0.318	0.038	0.568	0.607	0.327	0.645
LTE B5	Front side	0.108	0.194	0.180	0.013	0.302	0.288	0.121	0.301
	Back side	0.193	0.279	0.318	0.038	0.472	0.511	0.231	0.549
LTE B12	Front side	0.172	0.194	0.180	0.013	0.366	0.352	0.185	0.365
	Back side	0.232	0.279	0.318	0.038	0.511	0.550	0.270	0.588
LTE B17	Front side	0.176	0.194	0.180	0.013	0.370	0.356	0.189	0.369
	Back side	0.237	0.279	0.318	0.038	0.516	0.555	0.275	0.593
LTE B26	Front side	0.110	0.194	0.180	0.013	0.304	0.290	0.123	0.303
	Back side	0.196	0.279	0.318	0.038	0.475	0.514	0.234	0.552

Test position		SARmax (W/kg)				Summed SAR			
		Ant 1	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
n7 (SA)	Front side	0.398	0.194	0.180	0.013	0.592	0.578	0.411	0.591
	Back side	0.594	0.279	0.318	0.038	0.873	0.912	0.632	0.950

Test position		SARmax (W/kg)				Summed SAR			
		Ant 11	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
n41 (SA)	Front side	0.381	0.194	0.180	0.013	0.575	0.561	0.394	0.574
	Back side	0.544	0.279	0.318	0.038	0.823	0.862	0.582	0.900



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Test position		SARmax (W/kg)				Summed SAR			
		ENDC	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
n41-B5	Front side	0.542	0.194	0.180	0.013	0.736	0.722	0.555	0.735
	Back side	0.737	0.279	0.318	0.038	1.016	1.055	0.775	1.093

Hotspot:

Test position		SARmax (W/kg)				Summed SAR			
		Ant 13	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
GSM850	Front side	0.266	0.386	0.381	0.025	0.652	0.647	0.291	0.672
	Back side	0.289	0.445	0.594	0.032	0.734	0.883	0.321	0.915
	Left side	0.124	/	/	/	0.124	0.124	0.124	0.124
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.291	0.463	0.786	0.014	0.754	1.077	0.305	1.091
	Bottom side	/	/	/	/	/	/	/	/
GSM1900	Front side	0.213	0.386	0.381	0.025	0.599	0.594	0.238	0.619
	Back side	0.256	0.445	0.594	0.032	0.701	0.850	0.288	0.882
	Left side	0.064	/	/	/	0.064	0.064	0.064	0.064
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.371	0.463	0.786	0.014	0.834	1.157	0.385	1.171
	Bottom side	/	/	/	/	/	/	/	/
WCDMA B2	Front side	0.182	0.386	0.381	0.025	0.568	0.563	0.207	0.588
	Back side	0.182	0.445	0.594	0.032	0.627	0.776	0.214	0.808
	Left side	0.064	/	/	/	0.064	0.064	0.064	0.064
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.278	0.463	0.786	0.014	0.741	1.064	0.292	1.078
	Bottom side	/	/	/	/	/	/	/	/
WCDMA B4	Front side	0.237	0.386	0.381	0.025	0.623	0.618	0.262	0.643
	Back side	0.233	0.445	0.594	0.032	0.678	0.827	0.265	0.859
	Left side	0.060	/	/	/	0.060	0.060	0.060	0.060
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.350	0.463	0.786	0.014	0.813	1.136	0.364	1.150
	Bottom side	/	/	/	/	/	/	/	/
WCDMA B5	Front side	0.093	0.386	0.381	0.025	0.479	0.474	0.118	0.499
	Back side	0.269	0.445	0.594	0.032	0.714	0.863	0.301	0.895
	Left side	0.134	/	/	/	0.134	0.134	0.134	0.134
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.289	0.463	0.786	0.014	0.752	1.075	0.303	1.089
	Bottom side	/	/	/	/	/	/	/	/
LTE B2	Front side	0.152	0.386	0.381	0.025	0.538	0.533	0.177	0.558
	Back side	0.184	0.445	0.594	0.032	0.629	0.778	0.216	0.810
	Left side	0.013	/	/	/	0.013	0.013	0.013	0.013
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.226	0.463	0.786	0.014	0.689	1.012	0.240	1.026
	Bottom side	/	/	/	/	/	/	/	/
LTE B4	Front side	0.204	0.386	0.381	0.025	0.590	0.585	0.229	0.610
	Back side	0.239	0.445	0.594	0.032	0.684	0.833	0.271	0.865
	Left side	0.057	/	/	/	0.057	0.057	0.057	0.057
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.285	0.463	0.786	0.014	0.748	1.071	0.299	1.085
	Bottom side	/	/	/	/	/	/	/	/
LTE B5	Front side	0.228	0.386	0.381	0.025	0.614	0.609	0.253	0.634
	Back side	0.248	0.445	0.594	0.032	0.693	0.842	0.280	0.874
	Left side	0.118	/	/	/	0.118	0.118	0.118	0.118
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.221	0.463	0.786	0.014	0.684	1.007	0.235	1.021
	Bottom side	/	/	/	/	/	/	/	/
LTE B7	Front side	0.102	0.386	0.381	0.025	0.488	0.483	0.127	0.508
	Back side	0.201	0.445	0.594	0.032	0.646	0.795	0.233	0.827
	Left side	0.052	/	/	/	0.052	0.052	0.052	0.052
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990



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	Top side	0.329	0.463	0.786	0.014	0.792	1.115	0.343	1.129
	Bottom side	/	/	/	/	/	/	/	/
LTE B12	Front side	0.058	0.386	0.381	0.025	0.444	0.439	0.083	0.464
	Back side	0.078	0.445	0.594	0.032	0.523	0.672	0.110	0.704
	Left side	0.047	/	/	/	0.047	0.047	0.047	0.047
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.020	0.463	0.786	0.014	0.483	0.806	0.034	0.820
	Bottom side	/	/	/	/	/	/	/	/
LTE B17	Front side	0.064	0.386	0.381	0.025	0.450	0.445	0.089	0.470
	Back side	0.082	0.445	0.594	0.032	0.527	0.676	0.114	0.708
	Left side	0.078	/	/	/	0.078	0.078	0.078	0.078
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.036	0.463	0.786	0.014	0.499	0.822	0.050	0.836
	Bottom side	/	/	/	/	/	/	/	/
LTE B26	Front side	0.203	0.386	0.381	0.025	0.589	0.584	0.228	0.609
	Back side	0.255	0.445	0.594	0.032	0.700	0.849	0.287	0.881
	Left side	0.103	/	/	/	0.103	0.103	0.103	0.103
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.207	0.463	0.786	0.014	0.670	0.993	0.221	1.007
	Bottom side	/	/	/	/	/	/	/	/
LTE B38	Front side	0.117	0.386	0.381	0.025	0.503	0.498	0.142	0.523
	Back side	0.258	0.445	0.594	0.032	0.703	0.852	0.290	0.884
	Left side	0.080	/	/	/	0.080	0.080	0.080	0.080
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.351	0.463	0.786	0.014	0.814	1.137	0.365	1.151
	Bottom side	/	/	/	/	/	/	/	/
LTE B41	Front side	0.116	0.386	0.381	0.025	0.502	0.497	0.141	0.522
	Back side	0.245	0.445	0.594	0.032	0.690	0.839	0.277	0.871
	Left side	0.080	/	/	/	0.080	0.080	0.080	0.080
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.343	0.463	0.786	0.014	0.806	1.129	0.357	1.143
	Bottom side	/	/	/	/	/	/	/	/
LTE B66	Front side	0.217	0.386	0.381	0.025	0.603	0.598	0.242	0.623
	Back side	0.254	0.445	0.594	0.032	0.699	0.848	0.286	0.880
	Left side	0.007	/	/	/	0.007	0.007	0.007	0.007
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	0.291	0.463	0.786	0.014	0.754	1.077	0.305	1.091
	Bottom side	/	/	/	/	/	/	/	/

Test position	SARmax (W/kg)					Summed SAR			
	Ant 31	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4	
	1	2	3	4					
GSM1900	Front side	0.429	0.386	0.381	0.025	0.815	0.810	0.454	0.835
	Back side	0.712	0.445	0.594	0.032	1.157	1.306	0.744	1.338
	Left side	/	/	/	/	/	/	/	/
	Right side	0.196	0.291	0.951	0.039	0.487	1.147	0.235	1.186
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.982	/	/	/	0.982	0.982	0.982	0.982
WCDMA B2	Front side	0.366	0.386	0.381	0.025	0.752	0.747	0.391	0.772
	Back side	/	0.445	0.594	0.032	0.445	0.594	0.032	0.626
	Left side	/	/	/	/	/	/	/	/
	Right side	0.160	0.291	0.951	0.039	0.451	1.111	0.199	1.150
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.596	/	/	/	0.596	0.596	0.596	0.596
WCDMA B4	Front side	0.315	0.386	0.381	0.025	0.701	0.696	0.340	0.721
	Back side	0.436	0.445	0.594	0.032	0.881	1.030	0.468	1.062
	Left side	/	/	/	/	/	/	/	/
	Right side	0.075	0.291	0.951	0.039	0.366	1.026	0.114	1.065
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.546	/	/	/	0.546	0.546	0.546	0.546
LTE B2	Front side	0.265	0.386	0.381	0.025	0.651	0.646	0.290	0.671
	Back side	0.410	0.445	0.594	0.032	0.855	1.004	0.442	1.036
	Left side	/	/	/	/	/	/	/	/
	Right side	0.109	0.291	0.951	0.039	0.400	1.060	0.148	1.099



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LTE B4	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.473	/	/	/	0.473	0.473	0.473	0.473
	Front side	0.328	0.386	0.381	0.025	0.714	0.709	0.353	0.734
	Back side	0.471	0.445	0.594	0.032	0.916	1.065	0.503	1.097
	Left side	/	/	/	/	/	/	/	/
	Right side	0.133	0.291	0.951	0.039	0.424	1.084	0.172	1.123
LTE B7	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.708	/	/	/	0.708	0.708	0.708	0.708
	Front side	0.449	0.386	0.381	0.025	0.835	0.830	0.474	0.855
	Back side	0.450	0.445	0.594	0.032	0.895	1.044	0.482	1.076
	Left side	/	/	/	/	/	/	/	/
	Right side	0.392	0.291	0.951	0.039	0.683	1.343	0.431	1.382
LTE B38	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.528	/	/	/	0.528	0.528	0.528	0.528
	Front side	0.281	0.386	0.381	0.025	0.667	0.662	0.306	0.687
	Back side	0.290	0.445	0.594	0.032	0.735	0.884	0.322	0.916
	Left side	/	/	/	/	/	/	/	/
	Right side	0.218	0.291	0.951	0.039	0.509	1.169	0.257	1.208
LTE B41	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.317	/	/	/	0.317	0.317	0.317	0.317
	Front side	0.238	0.386	0.381	0.025	0.624	0.619	0.263	0.644
	Back side	0.233	0.445	0.594	0.032	0.678	0.827	0.265	0.859
	Left side	/	/	/	/	/	/	/	/
	Right side	0.173	0.291	0.951	0.039	0.464	1.124	0.212	1.163
LTE B66	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.254	/	/	/	0.254	0.254	0.254	0.254
	Front side	0.408	0.386	0.381	0.025	0.794	0.789	0.433	0.814
	Back side	0.553	0.445	0.594	0.032	0.998	1.147	0.585	1.179
	Left side	/	/	/	/	/	/	/	/
	Right side	0.100	0.291	0.951	0.039	0.391	1.051	0.139	1.090
LTE B66	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.772	/	/	/	0.772	0.772	0.772	0.772

Test position	SARmax (W/kg)				Summed SAR				
	Ant 41	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4	
	1	2	3	4					
GSM850	Front side	0.468	0.386	0.381	0.025	0.854	0.849	0.493	0.874
	Back side	0.758	0.445	0.594	0.032	1.203	1.352	0.790	1.384
	Left side	0.677	/	/	/	0.677	0.677	0.677	0.677
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.180	/	/	/	0.180	0.180	0.180	0.180
WCDMA B5	Front side	0.258	0.386	0.381	0.025	0.644	0.639	0.283	0.664
	Back side	0.502	0.445	0.594	0.032	0.947	1.096	0.534	1.128
	Left side	0.402	/	/	/	0.402	0.402	0.402	0.402
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.104	/	/	/	0.104	0.104	0.104	0.104
LTE B5	Front side	0.216	0.386	0.381	0.025	0.602	0.597	0.241	0.622
	Back side	0.327	0.445	0.594	0.032	0.772	0.921	0.359	0.953
	Left side	0.245	/	/	/	0.245	0.245	0.245	0.245
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.069	/	/	/	0.069	0.069	0.069	0.069
LTE B12	Front side	0.177	0.386	0.381	0.025	0.563	0.558	0.202	0.583
	Back side	0.262	0.445	0.594	0.032	0.707	0.856	0.294	0.888
	Left side	0.425	/	/	/	0.425	0.425	0.425	0.425
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.182	/	/	/	0.182	0.182	0.182	0.182
LTE B17	Front side	0.184	0.386	0.381	0.025	0.570	0.565	0.209	0.590
	Back side	0.272	0.445	0.594	0.032	0.717	0.866	0.304	0.898
	Left side	0.432	/	/	/	0.432	0.432	0.432	0.432
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990



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LTE B26	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.074	/	/	/	0.074	0.074	0.074	0.074
	Front side	0.179	0.386	0.381	0.025	0.565	0.560	0.204	0.585
	Back side	0.330	0.445	0.594	0.032	0.775	0.924	0.362	0.956
	Left side	0.246	/	/	/	0.246	0.246	0.246	0.246
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	0.073	/	/	/	0.073	0.073	0.073	0.073

Test position		SARmax (W/kg)				Summed SAR			
		Ant 1	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
n7	Front side	0.152	0.386	0.381	0.025	0.538	0.533	0.177	0.558
	Back side	0.282	0.445	0.594	0.032	0.727	0.876	0.314	0.908
	Left side	0.260	/	/	/	0.260	0.260	0.260	0.260
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	/	/	/	/	/	/	/	/

Test position		SARmax (W/kg)				Summed SAR			
		Ant 11	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
n41	Front side	0.156	0.386	0.381	0.025	0.542	0.537	0.181	0.562
	Back side	0.277	0.445	0.594	0.032	0.722	0.871	0.309	0.903
	Left side	0.258	/	/	/	0.258	0.258	0.258	0.258
	Right side	/	0.291	0.951	0.039	0.291	0.951	0.039	0.990
	Top side	/	0.463	0.786	0.014	0.463	0.786	0.014	0.800
	Bottom side	/	/	/	/	/	/	/	/

Test position		SARmax (W/kg)				Summed SAR			
		ENDC	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
n41-B5	Front side	0.354	0.386	0.381	0.025	0.740	0.735	0.379	0.760
	Back side	0.566	0.445	0.594	0.032	1.011	1.160	0.598	1.192
	Left side	0.456	/	/	/	0.456	0.456	0.456	0.456
	Right side	0.134	0.291	0.951	0.039	0.425	1.085	0.173	1.124
	Top side	0.221	0.463	0.786	0.014	0.684	1.007	0.235	1.021
	Bottom side	0.069	/	/	/	0.069	0.069	0.069	0.069



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Product Specific 10-g SAR:

Test position		SARmax (W/kg)				Summed SAR			
		Ant 13	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
LTE B7	Front side	/	/	1.257	/	/	1.257	/	1.257
	Back side	1.813	/	0.830	/	1.813	2.643	1.813	2.643
	Left side	/	/	/	/	/	/	/	/
	Right side	/	/	1.283	/	/	1.283	/	1.283
	Top side	2.296	/	1.330	/	2.296	3.626	2.296	3.626
	Bottom side	/	/	/	/	/	/	/	/
LTE B38	Front side	/	/	1.257	/	/	1.257	/	1.257
	Back side	1.798	/	0.830	/	1.798	2.628	1.798	2.628
	Left side	/	/	/	/	/	/	/	/
	Right side	/	/	1.283	/	/	1.283	/	1.283
	Top side	1.887	/	1.330	/	1.887	3.217	1.887	3.217
	Bottom side	/	/	/	/	/	/	/	/
LTE B41	Front side	/	/	1.257	/	/	1.257	/	1.257
	Back side	1.547	/	0.830	/	1.547	2.377	1.547	2.377
	Left side	/	/	/	/	/	/	/	/
	Right side	/	/	1.283	/	/	1.283	/	1.283
	Top side	1.080	/	1.330	/	1.080	2.410	1.080	2.410
	Bottom side	/	/	/	/	/	/	/	/

Test position		SARmax (W/kg)				Summed SAR			
		Ant 1	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
n7	Front side	/	/	1.257	/	0.000	1.257	/	1.257
	Back side	1.717	/	0.830	/	1.717	2.547	1.717	2.547
	Left side	1.780	/	/	/	1.780	1.780	1.780	1.780
	Right side	/	/	1.283	/	/	1.283	/	1.283
	Top side	/	/	1.330	/	/	1.330	/	1.330
	Bottom side	/	/	/	/	/	/	/	/

Test position		SARmax (W/kg)				Summed SAR			
		Ant 11	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
n41	Front side	/	/	1.257	/	/	1.257	/	1.257
	Back side	1.587	/	0.830	/	1.587	2.417	1.587	2.417
	Left side	1.695	/	/	/	1.695	1.695	1.695	1.695
	Right side	/	/	1.283	/	/	1.283	/	1.283
	Top side	/	/	1.330	/	/	1.330	/	1.330
	Bottom side	/	/	/	/	/	/	/	/

Test position		SARmax (W/kg)				Summed SAR			
		ENDC	WiFi 2.4G	WiFi 5G	BT	1+2	1+3	1+4	1+3+4
		1	2	3	4				
n41-B5	Front side	/	/	1.257	/	/	1.257	/	1.257
	Back side	1.587	/	0.830	/	1.587	2.417	1.587	2.417
	Left side	1.695	/	/	/	1.695	1.695	1.695	1.695
	Right side	/	/	1.283	/	/	1.283	/	1.283
	Top side	/	/	1.330	/	/	1.330	/	1.330
	Bottom side	/	/	/	/	/	/	/	/



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9 Equipment list

Test Platform		SPEAG DASY5 Professional				
Description		SAR Test System (Frequency range 300MHz-6GHz)				
Software Reference		DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)				
Hardware Reference						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration	
<input checked="" type="checkbox"/>	Twin Phantom	SPEAG	SAM 2	1913	NCR	NCR
<input checked="" type="checkbox"/>	DAE	SPEAG	DAE4	702	2020-08-13	2021-08-12
<input checked="" type="checkbox"/>	E-Field Probe	SPEAG	EX3DV4	3748	2020-07-29	2021-07-28
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D2600V2	1125	2019-05-20	2022-05-19
<input checked="" type="checkbox"/>	Agilent Network Analyzer	Agilent	E5071C	MY46523591	2020-04-16	2021-04-15
					2021-04-14	2022-04-13
<input checked="" type="checkbox"/>	Dielectric Probe Kit	Agilent	85070E	US01440210	NCR	NCR
<input checked="" type="checkbox"/>	Universal Radio Communication Tester	R&S	CMW500	111637	2020-04-16	2021-04-15
					2021-04-14	2022-04-13
<input checked="" type="checkbox"/>	Radio Communication Analyzer	Anritsu	MT8821C	6201502984	2020-06-11	2021-06-10
<input checked="" type="checkbox"/>	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
<input checked="" type="checkbox"/>	Signal Generator	Agilent	N5171B	MY53050736	2020-04-15	2021-04-14
					2021-04-14	2022-04-13
<input checked="" type="checkbox"/>	Preamplifier	Mini-Circuits	ZHL-42W	15542	NCR	NCR
<input checked="" type="checkbox"/>	Preamplifier	Compliance Directions Systems Inc.	AMP28-3W	073501433	NCR	NCR
<input checked="" type="checkbox"/>	Power Meter	Agilent	E4416A	GB41292095	2020-04-15	2021-04-14
					2021-04-14	2022-04-13
<input checked="" type="checkbox"/>	Power Sensor	Agilent	8481H	MY41091234	2020-04-15	2021-04-14
					2021-04-14	2022-04-13
<input checked="" type="checkbox"/>	Power Sensor	R&S	NRP-Z92	100025	2020-04-16	2021-04-15
					2021-04-14	2022-04-13
<input checked="" type="checkbox"/>	Coaxial low pass filter	Mini-Circuits	VLF-2500(+)	NA	NCR	NCR
<input checked="" type="checkbox"/>	Coaxial low pass filter	Microlab Fxr	LA-F13	NA	NCR	NCR
<input checked="" type="checkbox"/>	DC POWER SUPPLY	SAKO	SK1730SL5A	NA	NCR	NCR



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☒	Speed reading thermometer	MingGao	T809	NA	2020-04-21	2021-04-20
					2021-04-15	2022-04-14
☒	Humidity and Temperature Indicator	KIMTOKA	KIMTOKA	NA	2020-04-21	2021-04-20
					2021-04-15	2022-04-14

Note: All the equipments are within the valid period when the tests are performed.



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10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D

Appendix A: Detailed System Check Results

Appendix B: Detailed Test Results

Appendix C: Calibration certificate

Appendix D: Photographs

Appendix E: Conducted RF Output Power Table

---END---



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