

Report No.: SEWM2307000261RG09

Rev.: 01

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FCC SAR REPORT_Part1

Application No.: SEWM2307000261RG
Applicant: Xiaomi Communications Co., Ltd.
Manufacturer: Xiaomi Communications Co., Ltd.
Product Name: Mobile Phone
Model No.(EUT): 2312DRA50G
Trade Mark: Redmi
FCC ID: 2AFZZRA50G
Standards: FCC 47CFR §2.1093
Date of Receipt: 2023-07-23
Date of Test: 2023-07-23 to 2023-08-30
Date of Issue: 2023-09-04
Test conclusion: **PASS ***

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

Authorized Signature:

Well Wei

Well Wei

Wireless Laboratory Manager



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REVISION HISTORY

Report Number	Revision	Description	Issue Date
SEWM2307000261RG09	01	Original	2023-09-04



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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)			
	Head	Body-worn	Hotspot	Product specific 10g SAR
GSM850	0.78	0.82	0.85	1.54
GSM1900	1.04	0.34	0.61	/
WCDMA Band II	1.03	0.69	1.01	/
WCDMA Band IV	1.07	1.03	1.08	/
WCDMA Band V	0.92	0.69	0.98	1.33
LTE Band 2	1.05	0.80	0.98	/
LTE Band 4	1.08	0.92	0.75	/
LTE Band 5	0.76	0.74	0.89	1.99
LTE Band 7	1.09	0.73	0.79	/
LTE Band 12	0.74	0.36	0.86	/
LTE Band 13	1.03	0.84	1.09	1.66
LTE Band 17	0.74	0.36	0.86	/
LTE Band 26	0.76	0.74	0.89	1.99
LTE Band 38	1.09	0.43	0.83	/
LTE Band 41	1.09	0.43	0.83	/
LTE Band 66	0.98	0.62	1.01	/
NR Band n5	0.80	0.37	0.84	/
NR Band n7	1.05	0.67	0.86	1.10
NR Band n38	0.99	0.49	0.78	1.06
NR Band n41	0.99	0.49	0.78	1.06
NR Band n66	1.09	0.73	0.85	/
NR Band n77	0.90	0.70	1.09	/
NR Band n78	0.90	0.70	1.09	/
Wi-Fi (2.4GHz)	1.08	0.24	0.65	/
Wi-Fi (5GHz)	1.09	0.34	0.97	2.00
BT	0.14	<0.10	0.16	/
NFC	/	/	/	<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	1.55	1.44	1.58	2.79
SPLSR	/	/	/	/
SPLSR Limited	0.04			0.1
Note: 1) According to TCB workshop October,2014 RF Exposure Procedures Update (Overlapping Bands): SAR for LTE Band 5 (Frequency range:824 - 849 MHz)/ LTE Band 17 (Frequency range:704-716 MHz)/LTE Band 38 (Frequency range:2570 - 2620 MHz)/ n78 (Frequency range:3450 – 3550/3700 - 3800 MHz is respectively covered by LTE Band 26 (Frequency range:814 - 849 MHz)/ LTE Band 12 (Frequency range:699-716 MHz)/LTE Band41 (Frequency range:2496 - 2690 MHz)/ n77 (Frequency range: 3450 – 3550/3700 - 3980 MHz) due to similar frequency range, same maximum tune up limit and same channel bandwidth. 2) For LTE band 4/5/12/13/26 and n7/n41/n66/n77 that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.				

Reviewed by

Nick Hu

Nick Hu

Prepared by

Leon Xu

Leon Xu



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1 General Information

1.1 Details of Client

Applicant:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

1.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
Address:	South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code:	215000
Test Engineer:	Alan-Zhang, Leon-Xu



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1.3 Test Facility

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

- **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

- **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327



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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):	2312DRA50G		
FCC ID:	2AFZZRA50G		
Trade Mark:	Redmi		
Product Phase:	Identical Prototype		
IMEI:	1# 860949060049068/860949060049076 2# 860949060048862/860949060048870 3# 860949060053961/860949060053979		
Hardware Version:	P2		
Software Version:	MIUI14		
Device Operating Configurations :			
Modulation Mode:	GSM: GMSK, 8PSK; WCDMA: QPSK,16QAM; LTE: QPSK,16QAM,64QAM,256QAM; 5G NR: DFT-s-OFDM (PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM), CP-OFDM (QPSK, 16QAM, 64QAM, 256QAM) WIFI: DSSS, OFDM; BT: GFSK, π/4DQPSK,8DPSK		
Device Class:	B		
GPRS Multi-slots Class:	33	EGPRS Multi-slots Class:	33
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 13	777~787	746~756
	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 n5	824~849	869~894



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	NR Band n7	2500~2570	2620~2690
	NR Band n38	2570~2620	2570~2620
	NR Band n41	2496~2690	2496~2690
	NR Band n66	1710~1780	2110~2200
	NR Band n77	3450~3550	3450~3550
		3700~3980	3700~3980
	NR Band n78	3450~3550	3450~3550
		3700~3800	3700~3800
	Bluetooth	2400~2483.5	2400~2483.5
	Wi-Fi 2.4G	2402~2462	2402~2462
Wi-Fi 5G	5150~5250	5150~5250	
	5250~5350	5250~5350	
	5470~5725	5470~5725	
	5725~5850	5725~5850	
NFC	Wireless Technology and Frequency Range		13.56MHz
	mode		ASK
RF Cable:	☒ Provided by the applicant ☐ Provided by the laboratory		
1# Battery Information:	Model:	BM5V	
	Normal Voltage:	+3.91V	
	Rated capacity:	5020mAh	
	Manufacturer:	NVT	
2# Battery Information:	Model:	BM5V	
	Normal Voltage:	+3.91V	
	Rated capacity:	5020mAh	
	Manufacturer:	Sunwoda	
Note: *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.			
Remark: As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.			



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1.4.1 DUT Antenna Locations (Back View)

The DUT Antenna Locations (Back View) can refer to Appendix D.

Note:

- 1) The test device is a smart phone. The overall diagonal dimension of this device is 178 mm. Per KDB 648474 D04, because the diagonal distance of this device is $\geq 160\text{mm}$, so it is a phablet.
- 2) Ant 4 is sensor pad 1
Ant 3/7 is sensor pad 2

According to the distance between 5G NR/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
Ant 0	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	No	Yes
Ant 1	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	No	No
Ant 2	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	No	No
Ant 3	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	Yes	No
Ant 4	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	No	Yes
Ant 5	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	Yes	No
Ant 6	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	Yes	No
Ant 7	Hotspot/Product specific 10g SAR	Yes	Yes	No	No	Yes	No
Ant 8	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	Yes	No
Ant 10	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	Yes	No
Ant 11	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	Yes	No
Ant 12	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	No	No

Table 1: EUT Sides for SAR Testing

Note:

- 1) 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.

- Intra-band carrier aggregation requirements for uplink.
- 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_7C	7	2502.5 MHz	–	2567.5 MHz	2620 MHz	–	2690 MHz	FDD
CA_38C	38	2572.5 MHz	–	2617.5 MHz	2572.5MHz	–	2617.5 MHz	TDD



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- c) The device supports Inter-band uplink LTE CA for CA_2A-4A,CA_4A-7A with two component carriers in the uplink.

Band/Antenna		LTE Band 2	LTE Band 7	
		Ant5	Ant2	Ant5
LTE Band5	Ant0	✓	×	×
	Ant1	✓	×	×
LTE Band4	Ant3	×	✓	✓
	Ant4	×	✓	✓

- For Inter-band uplink LTE CA 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 LTE CA SAR from standalone SAR test results of each LTE component band and the conservative “max + max” multi-Tx method to combine the scaled SAR value from each Inter-band uplink LTE CA component band as the inter-band Uplink LTE CA SAR. All Simultaneous Transmission Scenarios will be evaluated independently in the final SAR report. Since the maximum output power of the LTE Inter-band uplink band is ≤ the LTE Band, the SAR data of the LTE Band is used instead of the SAR data of the LTE Inter-band uplink band.

2CC Downlink Carrier Aggregation	DL 4x4 MIMO	3CC Downlink Carrier Aggregation	DL 4x4 MIMO
CA_2C	-	CA_2A-4A-5A	-
CA_2A-2A	-	CA_2A-4A-7A	7A
CA_2A-4A	-	CA_2A-5A-7A	7A
CA_2A-5A	-	CA_2A-5A-66A	66A
CA_2A-7A	7A	CA_2A-7A-7A	7A, 7A-7A
CA_2A-26A	-	CA_2A-7C	7C
CA_2A-66A	66A	CA_2A-7A-66A	7A
CA_4A-4A	4A-4A	CA_4A-7C	4A,7C
CA_4A-5A	4A	CA_5A-7A-7A	7A, 7A-7A
CA_4A-7A	4A-7A	CA_5A-7C	7C
CA_5A-7A	7A	CA_5A-66A-66A	66A, 66A-66A
CA_5A-66A	66A	CA_7A-66A-66A	7A
CA_7A-7A	7A-7A	CA_41A-41A-41A	41A-41A
CA_7C	7C	CA_41D	-
CA_7A-26A	7A		
CA_7A-66A	7A,66A		
CA_12A-66A	66A		
CA_26A-41A	41A		
CA_38C	38C		
CA_41C	41C		
CA_41A-41A	41A-41A		
CA_66A-66A	66A-66A		
CA_66C	66C		
CA_66B	66B		



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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 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
- 2) 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.
- 3) 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 detailed power reduction information can be referred to Appendix E.



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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
IEC/IEEE 62209-1528:2020	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)
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 447498 D04	Interim General RF Exposure Guidance v01
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 $SAR = \sigma (|E|^2) / \rho$ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

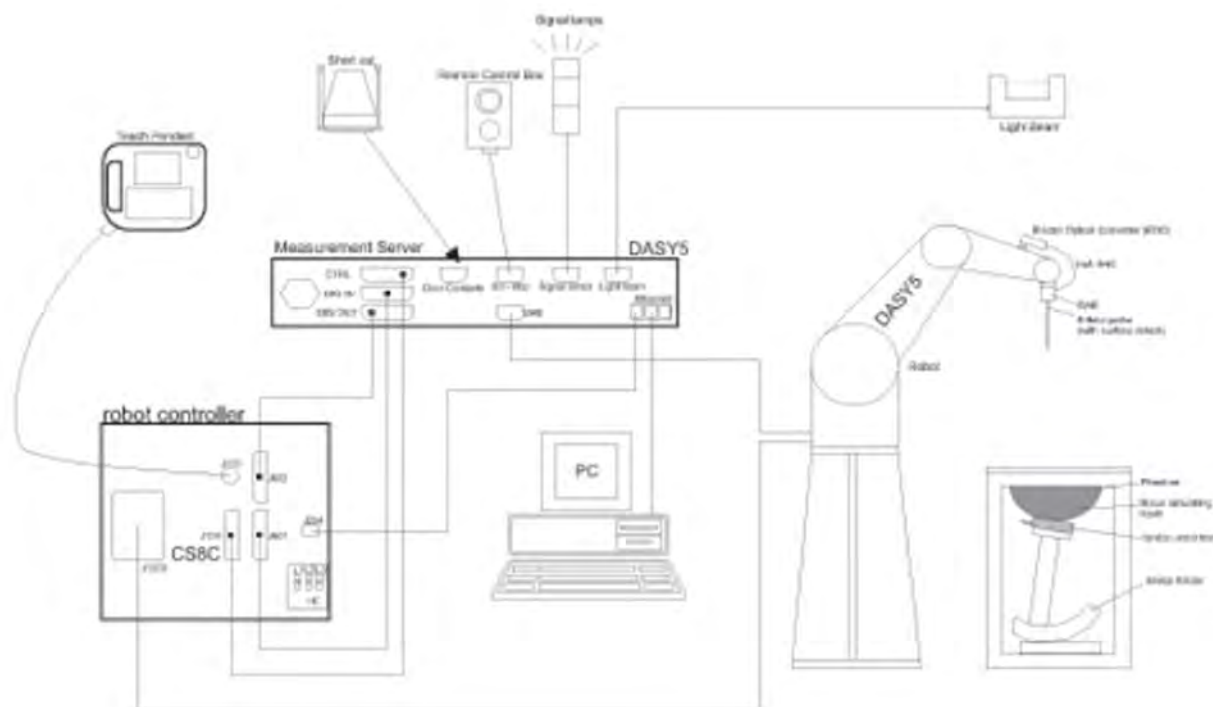
The DASY5 system for performing compliance tests consists of the following items:

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

	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in 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	

The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. ELI is fully compatible with the IEC/IEEE 62209-1528 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 of SPEAG's dosimetric probes and dipoles.

ELI V5.0 and higher has the same shell geometry and is manufactured from the same material as ELI V4.0 but has a 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-axes. 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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		$\leq 3 \text{ GHz}$	$\geq 3 \text{ GHz}$
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		$5 \pm 1 \text{ mm}$	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
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: $\Delta x_{\text{Area}}, \Delta y_{\text{Area}}$		$\leq 2 \text{ GHz}: \leq 15 \text{ mm}$ $2 - 3 \text{ GHz}: \leq 12 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 12 \text{ mm}$ $4 - 6 \text{ GHz}: \leq 10 \text{ mm}$
		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: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$		$\leq 2 \text{ GHz}: \leq 8 \text{ mm}$ $2 - 3 \text{ GHz}: \leq 5 \text{ mm}^*$	$3 - 4 \text{ GHz}: \leq 5 \text{ mm}^*$ $4 - 6 \text{ GHz}: \leq 4 \text{ mm}^*$
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{\text{Zoom}}(n)$	$\leq 5 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 4 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 3 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
	graded grid: $\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	$\leq 4 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 3 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 2.5 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
	graded grid: $\Delta z_{\text{Zoom}}(n-1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
Minimum zoom scan volume	x, y, z	$\geq 30 \text{ mm}$	$3 - 4 \text{ GHz}: \geq 28 \text{ mm}$ $4 - 5 \text{ GHz}: \geq 25 \text{ mm}$ $5 - 6 \text{ GHz}: \geq 22 \text{ mm}$

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], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

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 ($i = x, y, z$)

Normi = 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.

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

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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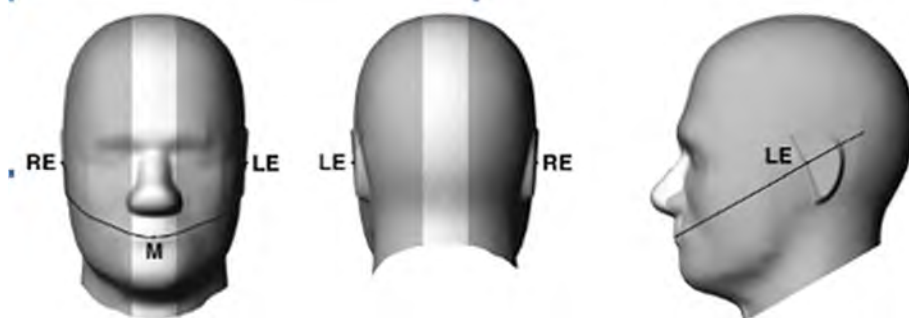
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5 Description of Test Position

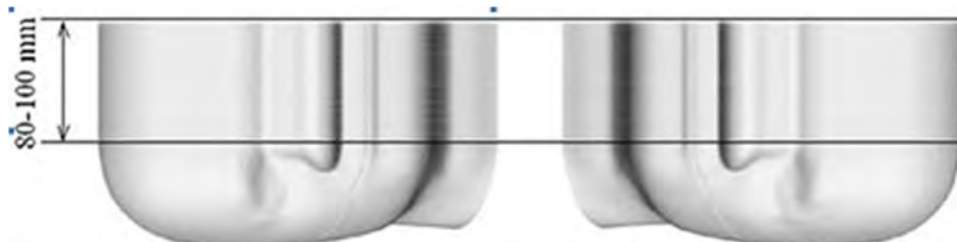
5.1 Head Exposure Condition

5.1.1 SAM Phantom Shape

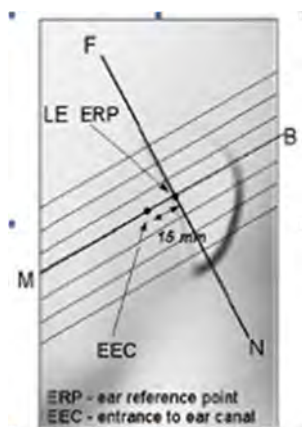


F-3. Front, back, and side views of SAM (model for the phantom shell). Full-head model is for illustration purposes only-procedures in this recommended practice are intended primarily for the phantom setup.

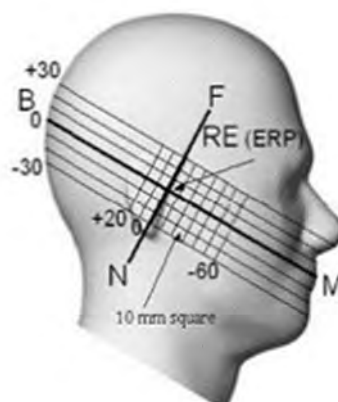
Note: The centre strip including the nose region has a different thickness tolerance.



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



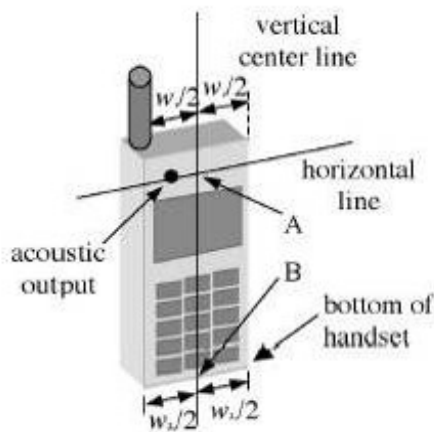
F-6. Side view of the phantom showing relevant markings and seven cross-sectional plane locations



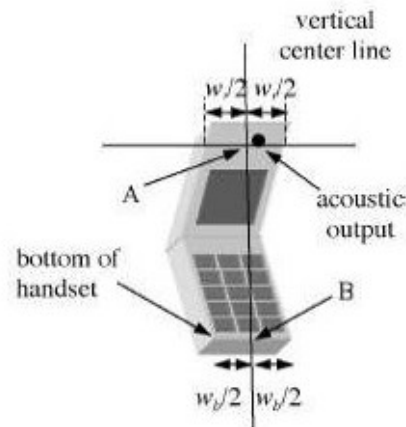
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5.1.2 EUT constructions



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

a) 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.

b) 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.



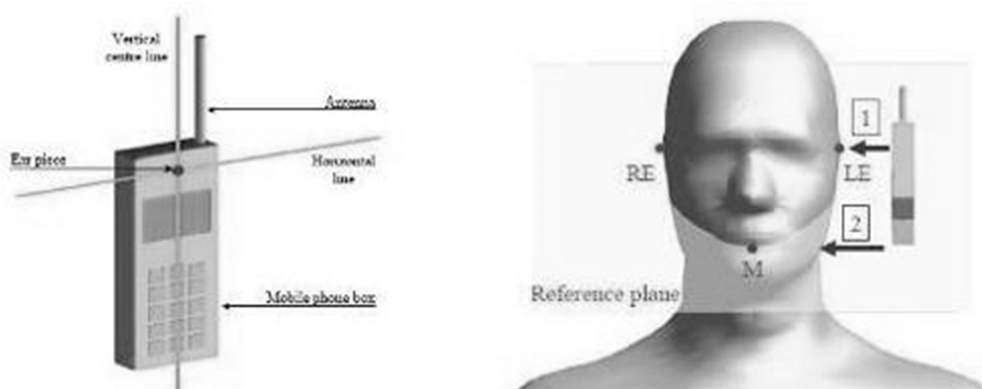
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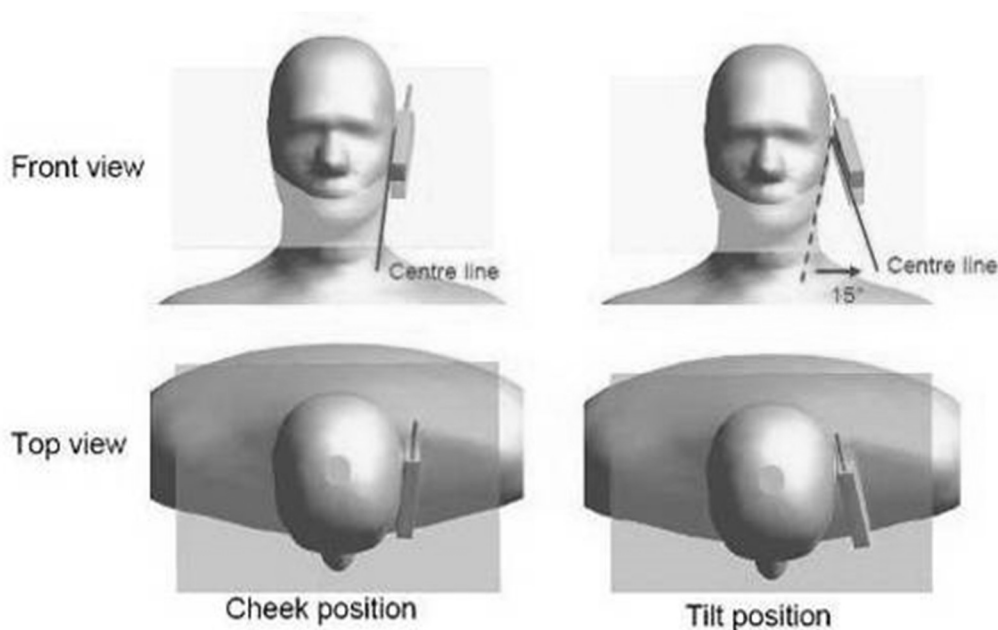
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5.1.4 Definition of the “tilted” position

- Position the device in the “cheek” position described above;
- 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

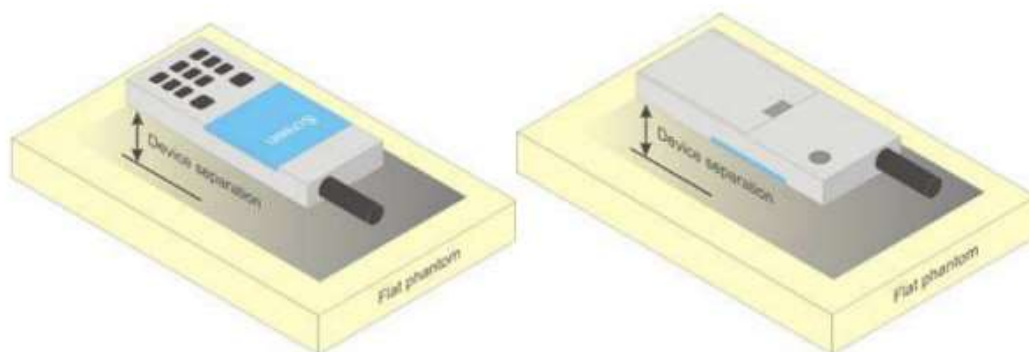
5.2.1 Body-worn accessory exposure conditions

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 $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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 ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) 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 $9 \text{ cm} \times 5 \text{ cm}$, a test separation distance of 5 mm is required.

5.3 Extremity exposure conditions

Per FCC KDB 648474 D04, for smart phones with a display diagonal dimension $> 15.0 \text{ cm}$ or an overall diagonal dimension $> 16.0 \text{ cm}$ that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the device is marketed as "Phablet". The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at $\leq 25 \text{ mm}$ from that surface or edge, in direct contact with a flat phantom, for Product Specific 10-g SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR $> 1.2 \text{ W/kg}$; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.

When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5

Due to the SAR result, the hotspot power levels scaled to Handheld Power Level, the SAR value is not greater than 1.2 W/Kg , no frequency bands need to test with 0mm for the Product Specific 10-g SAR are not required.

Antenna 0/3/4/7 refer to detailed conducted power DSI 3, and antenna 1/2/5/6/8 refer to detailed conducted power DSI 3, the detailed conducted power table can refer to Appendix E. only the following frequency bands need to test with 0mm for the Product Specific 10-g SAR, the others are not required.

GSM850

Ant 1 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 1-g (W/kg)	Product Specific 10-g SAR SAR Exclusion
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.302	0.02	23.55	27.80	2.661	0.804	No
Back side	GPRS 4TS	190/836.6	1:2.075	0.442	-0.08	23.55	27.80	2.661	1.176	No
Left side	GPRS 4TS	190/836.6	1:2.075	0.618	0.18	23.55	27.80	2.661	1.644	Yes
Left side	GPRS 4TS	128/824.2	1:2.075	0.472	-0.03	23.49	27.80	2.698	1.273	Yes
Left side	GPRS 4TS	251/848.8	1:2.075	0.612	0.11	23.37	27.80	2.773	1.697	Yes

WCDMA V

Ant 1 Test Record



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Report No.: SEWM2307000261RG09

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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 1-g (W/kg)	Product Specific 10-g SAR SAR Excluse
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.346	0.19	21.07	23.00	1.560	0.540	No
Back side	RMC	4182/836.4	1:1	0.520	-0.09	21.07	23.00	1.560	0.811	No
Left side	RMC	4182/836.4	1:1	0.708	0.01	21.07	23.00	1.560	1.104	No
Left side	RMC	4132/826.4	1:1	0.621	0.03	21.03	23.00	1.574	0.977	No
Left side	RMC	4233/846.6	1:1	0.782	0.09	21.02	23.00	1.578	1.234	Yes

LTE Band 13

Ant 1 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 1-g (W/kg)	Product Specific 10-g SAR SAR Excluse
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_0	23230/782	1:1	0.427	0.02	22.87	25.70	1.919	0.819	No
Back side	10	QPSK 1_0	23230/782	1:1	0.645	-0.70	22.87	25.70	1.919	1.238	Yes
Left side	10	QPSK 1_0	23230/782	1:1	0.881	0.08	22.87	25.70	1.919	1.690	Yes

LTE Band 26

Ant 1 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 1-g (W/kg)	Product Specific 10-g SAR SAR Excluse
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1_0	26865/831.5	1:1	0.245	-0.14	22.16	25.70	2.259	0.554	No
Back side	15	QPSK 1_0	26865/831.5	1:1	0.389	0.12	22.16	25.70	2.259	0.879	No
Left side	15	QPSK 1_0	26865/831.5	1:1	0.589	0.11	22.16	25.50	2.158	1.271	Yes

FR1 N7

Ant2 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Product Specific 10-g SAR SAR Excluse
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1_1	507000/2535	1:1	0.237	0.19	17.98	20.50	1.786	0.423	No
Back side	40	QPSK 1_1	507000/2535	1:1	0.382	-0.06	17.98	20.50	1.786	0.682	No
Right side	40	QPSK 1_1	507000/2535	1:1	0.680	-0.02	17.98	20.50	1.786	1.215	Yes

FR1 N41

Ant2 Test Record											
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Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.99	1:1	0.248	-0.08	18.45	21.50	2.018	0.501	No
Back side	100	QPSK 1_1	518598/2592.99	1:1	0.436	0.12	18.45	21.50	2.018	0.880	No
Right side	100	QPSK 1_1	518598/2592.99	1:1	0.614	-0.08	18.45	21.50	2.018	1.239	Yes



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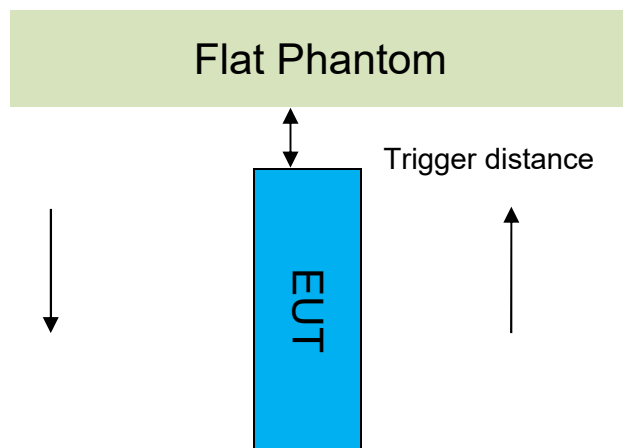
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5.4 Proximity Sensor Triggering Test

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)				
Ant4				
Position	Front	Back	Right Side	Bottom Side
Minimum	16	16	16	16
Required SAR Test	15	15	15	15
Ant3/7				
Position	Front	Back	Top Side	
Minimum	6	6	6	
Required SAR Test	5	5	5	

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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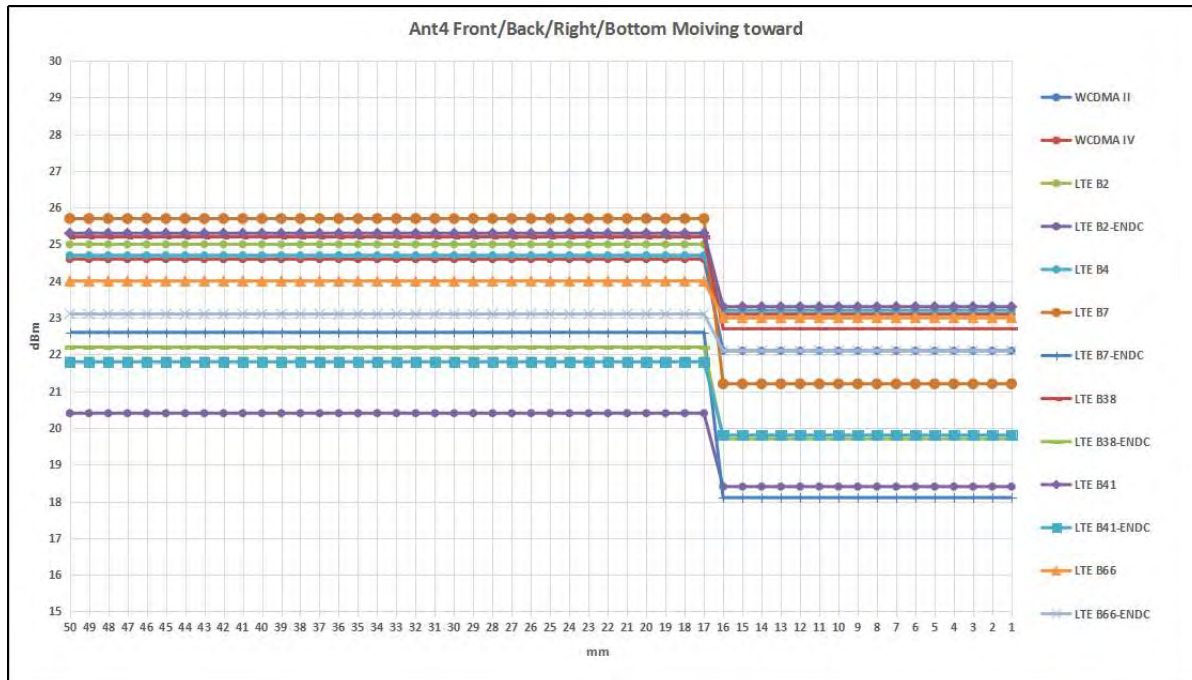
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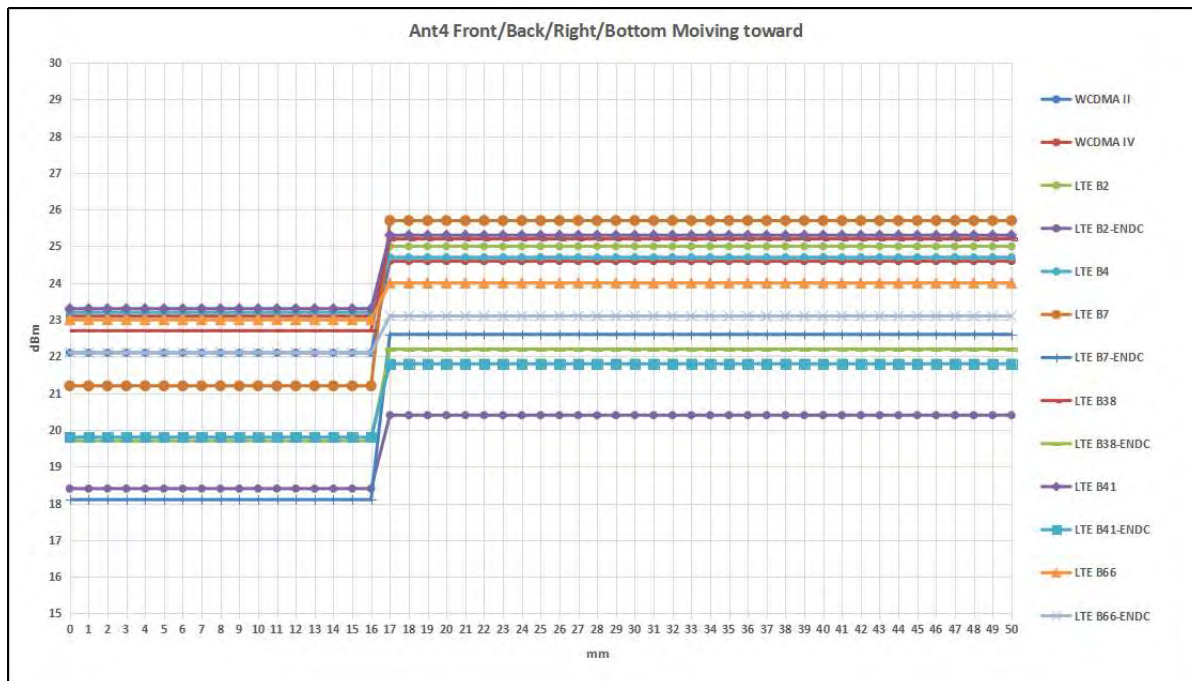
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● Ant 4 DUT Moving Toward(Trigger)the Phantom



● Ant 4 DUT Moving Away(Release) from the Phantom



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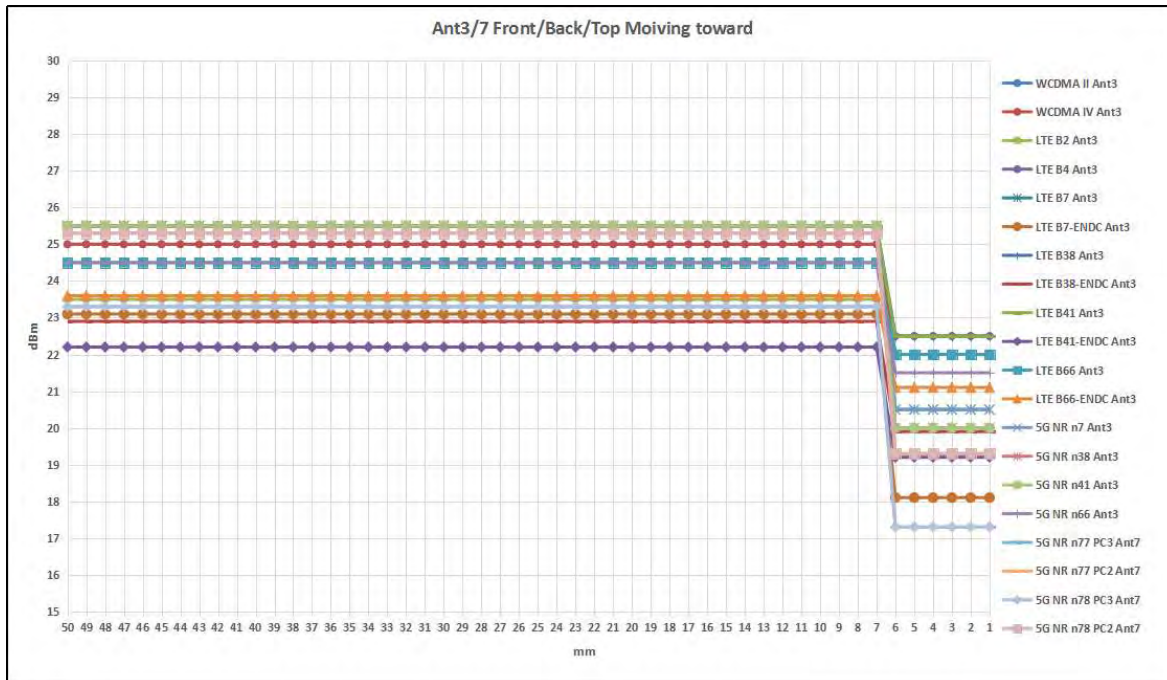
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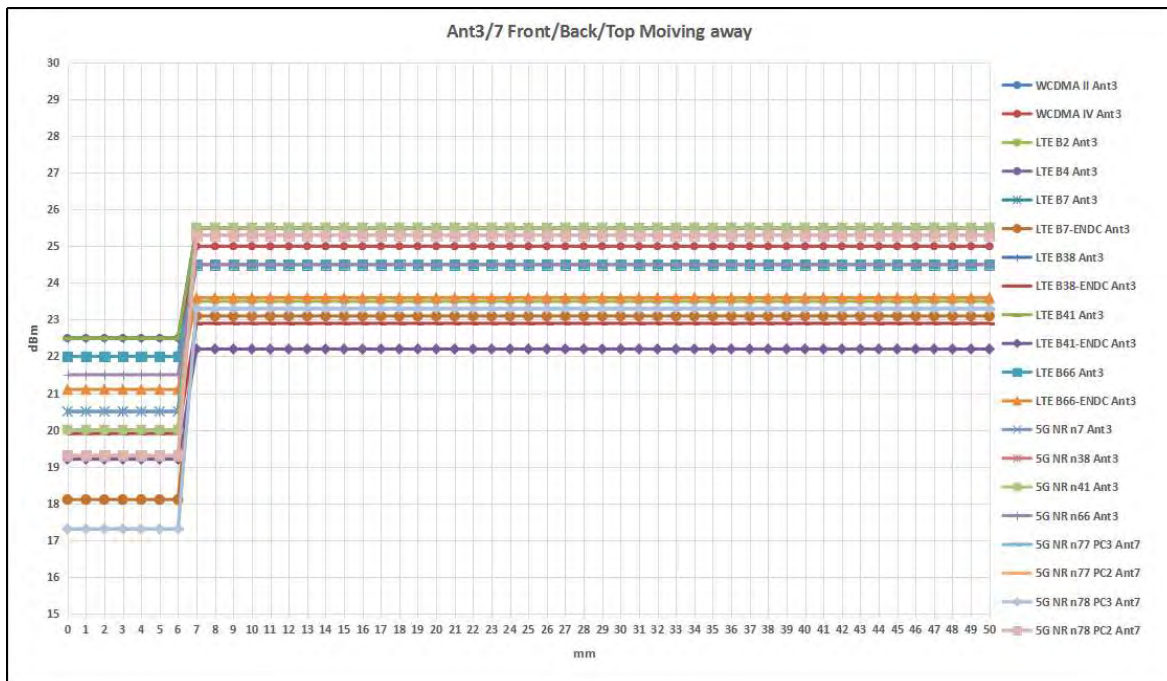
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● Ant 3/7 DUT Moving Toward(Trigger)the Phantom



● Ant 3/7 DUT Moving Away(Release) from the Phantom



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Proximity sensor coverage

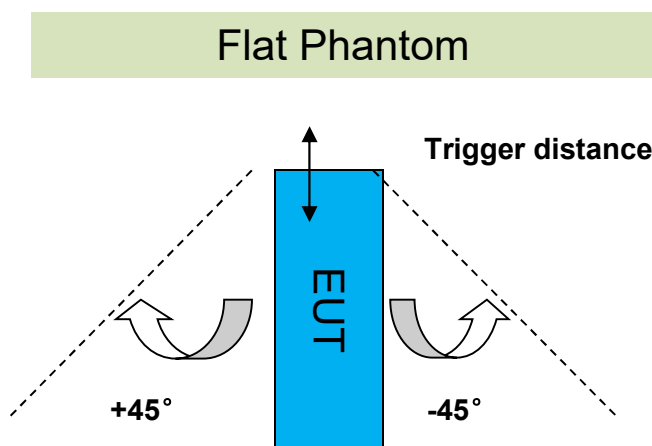
If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, 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°
Ant4	Bottom side:16mm	Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on
Ant3/7	Top side:6mm	Top side:6mm	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:

HSL13MHz is composed of the following ingredients:
Water: 50-90%
Non-ionic detergents: 5-50%
NaCl: 0-2%
Preservative: 0.03-0.1%
HSL600-10GHz 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 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 $22 \pm 2^\circ\text{C}$.

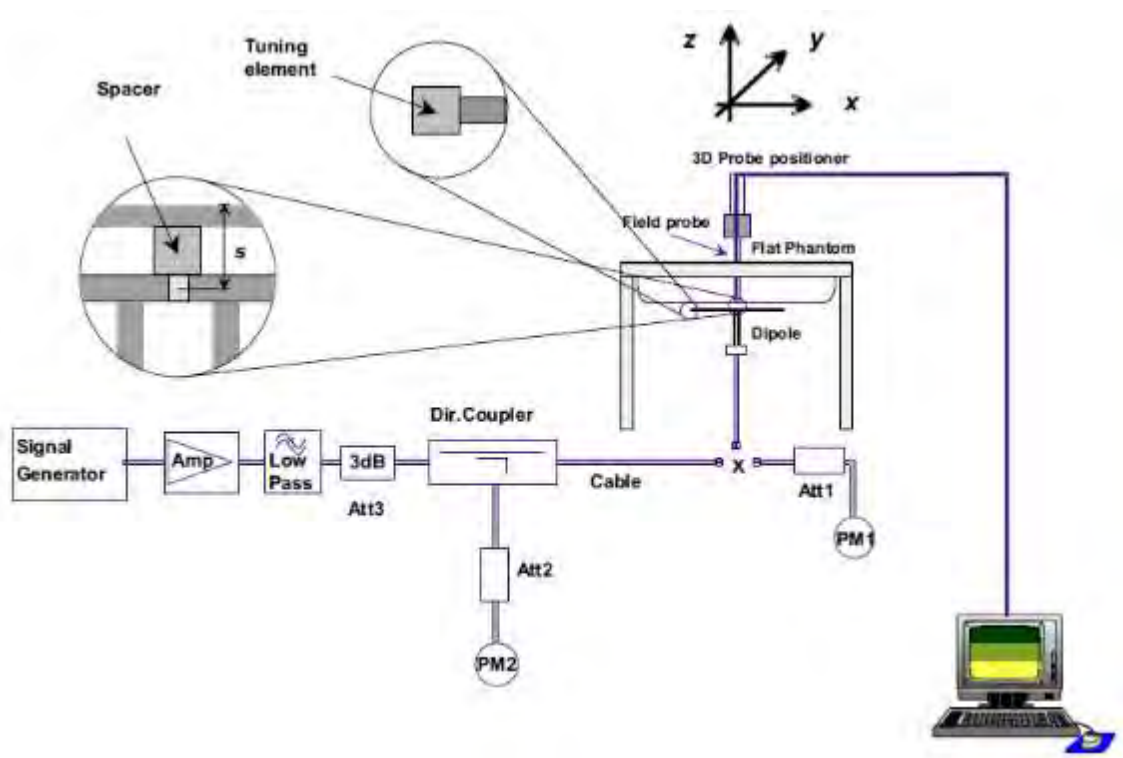
Tissue Type	Measured Frequency (MHz)	Target Tissue ($\pm 5\%$)		Measured Tissue		Deviation (Within $\pm 5\%$)		Liquid Temp. ($^\circ\text{C}$)	Test Date
		ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$		
13 Head	13	55.00	0.75	54.100	0.753	-1.64%	0.40%	22.5	2023-08-30
750 Head	750	41.90	0.89	43.127	0.876	2.93%	-1.57%	22.2	2023-07-24
835 Head	835	41.50	0.90	42.990	0.891	3.59%	-1.00%	22.1	2023-07-26
835 Head	835	41.50	0.90	43.006	0.889	3.63%	-1.22%	22.2	2023-07-28
1750 Head	1750	40.10	1.37	40.325	1.311	0.56%	-4.31%	22.1	2023-08-01
1750 Head	1750	40.10	1.37	40.071	1.324	-0.07%	-3.36%	22.1	2023-08-03
1750 Head	1750	40.10	1.37	40.453	1.304	0.88%	-4.82%	22.1	2023-08-05
1750 Head	1750	40.10	1.37	40.222	1.319	0.30%	-3.72%	22.5	2023-08-07
1900 Head	1900	40.00	1.40	38.839	1.435	-2.90%	2.50%	22.1	2023-08-09
1900 Head	1900	40.00	1.40	39.073	1.424	-2.32%	1.71%	22.3	2023-08-11
2450 Head	2450	39.20	1.80	38.336	1.769	-2.20%	-1.72%	22.1	2023-08-20
2600 Head	2600	39.00	1.96	37.878	2.014	-2.88%	2.76%	22.2	2023-08-13
2600 Head	2600	39.00	1.96	37.852	2.016	-2.94%	2.86%	22.2	2023-08-15
2600 Head	2600	39.00	1.96	37.757	2.017	-3.19%	2.91%	22.4	2023-08-09
2600 Head	2600	39.00	1.96	38.083	1.996	-2.35%	1.84%	22.2	2023-08-11
3500 Head	3500	37.90	2.91	38.134	3.010	0.62%	3.44%	22.2	2023-08-13
3500 Head	3500	37.90	2.91	37.010	3.025	-2.35%	3.95%	22.3	2023-08-15
3900 Head	3900	37.50	3.32	36.949	3.457	-1.47%	4.13%	22.1	2023-08-17
3900 Head	3900	37.50	3.32	37.099	3.440	-1.07%	3.61%	22.2	2023-08-19
5250 Head	5250	35.90	4.66	35.590	4.618	-0.86%	-0.90%	22.3	2023-08-21
5600 Head	5600	35.50	5.07	34.918	5.084	-1.64%	0.28%	22.5	2023-08-22
5750 Head	5750	35.40	5.22	34.546	5.265	-2.41%	0.86%	22.3	2023-08-22

Table 4: Measurement result of Tissue electric parameters.



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 $\pm 10\%$ 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 $22\pm 2^{\circ}\text{C}$, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above $15\pm 0.5\text{ cm}$ 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)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (°C)	Test Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1-g(W/kg)	10-g(W/kg)		
CLA13	Head	0.111	0.069	0.44	0.28	0.421	0.266	5.46%	3.76%	22.5	2023-08-30
D750V3	Head	2.05	1.36	8.20	5.44	8.48	5.56	-3.30%	-2.16%	22.2	2023-07-24
D835V2	Head	2.37	1.56	9.48	6.24	9.65	6.33	-1.76%	-1.42%	22.1	2023-07-26
D835V2	Head	2.38	1.55	9.52	6.20	9.65	6.33	-1.35%	-2.05%	22.2	2023-07-28
D1750V2	Head	9.02	4.79	36.08	19.16	35.30	18.70	2.21%	2.46%	22.1	2023-08-01
D1750V2	Head	9.18	4.89	36.72	19.56	35.30	18.70	4.02%	4.60%	22.1	2023-08-03
D1750V2	Head	9.06	4.82	36.24	19.28	35.30	18.70	2.66%	3.10%	22.1	2023-08-05
D1750V2	Head	9.15	4.87	36.60	19.48	35.30	18.70	3.68%	4.17%	22.5	2023-08-07
D1900V2	Head	10.60	5.48	42.40	21.92	39.70	20.30	6.80%	7.98%	22.1	2023-08-09
D1900V2	Head	10.50	5.44	42.00	21.76	39.70	20.30	5.79%	7.19%	22.3	2023-08-11
D2450V2	Head	13.50	6.33	54.00	25.32	51.90	23.70	4.05%	6.84%	22.1	2023-08-20
D2600V2	Head	15.10	6.76	60.40	27.04	57.10	25.40	5.78%	6.46%	22.2	2023-08-13
D2600V2	Head	14.10	6.27	56.40	25.08	57.10	25.40	-1.23%	-1.26%	22.2	2023-08-15
D2600V2	Head	13.60	6.04	54.40	24.16	57.10	25.40	-4.73%	-4.88%	22.4	2023-08-09
D2600V2	Head	13.90	6.21	55.60	24.84	57.10	25.40	-2.63%	-2.20%	22.2	2023-08-11
Validation Kit		Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (°C)	Test Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1-g(W/kg)	10-g(W/kg)		
D3500V2	Head(3.5GHz)	6.88	2.61	68.80	26.10	66.60	24.90	3.30%	4.82%	22.2	2023-08-13
D3500V2	Head(3.5GHz)	6.73	2.56	67.30	25.60	66.60	24.90	1.05%	2.81%	22.3	2023-08-15
D3900V2	Head(3.9GHz)	7.25	2.58	72.50	25.80	69.70	24.00	4.02%	7.50%	22.1	2023-08-17
D3900V2	Head(3.9GHz)	7.33	2.61	73.30	26.10	69.70	24.00	5.16%	8.75%	22.2	2023-08-19
D5GHzV2	Head(5.25GHz)	7.39	2.13	73.90	21.30	78.00	21.80	-5.26%	-2.29%	22.3	2023-08-21
	Head(5.6GHz)	7.76	2.21	77.60	22.10	79.90	22.50	-2.88%	-1.78%	22.5	2023-08-22
	Head(5.75GHz)	7.68	2.09	76.80	20.90	76.40	21.20	0.52%	-1.42%	22.3	2023-08-22

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 33 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 33 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	β_c	Bd	$\beta_d(\text{SF})$	β_c/β_d	β_{hs}	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 , ΔNACK and $\Delta\text{CQI} = 8$ 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 $\Delta\text{NACK} = 8$ (Ahs = 30/15) with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta\text{CQI} = 7$ (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 HS-DSCH Transport Block Bits/HS-DSCH TTI	Total Soft Channel Bits
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

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

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, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference^a

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

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

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^a

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

Table 8: Subtests for UMTS Release 6 HSUPA

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

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

Table 9: HSUPA UE category



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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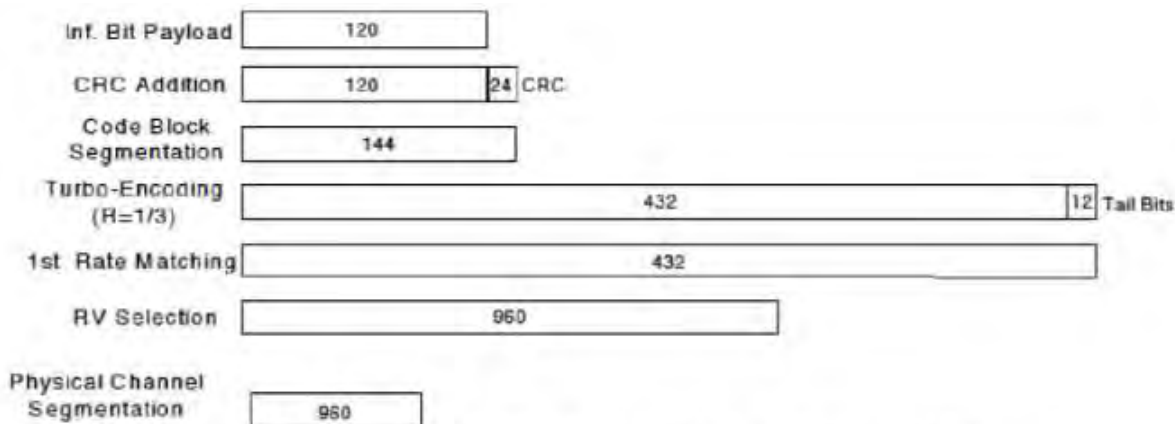


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
 Note 2: CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH 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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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

Wi-Fi 2.4GHz 802.11b:

Duty cycle=98.81%



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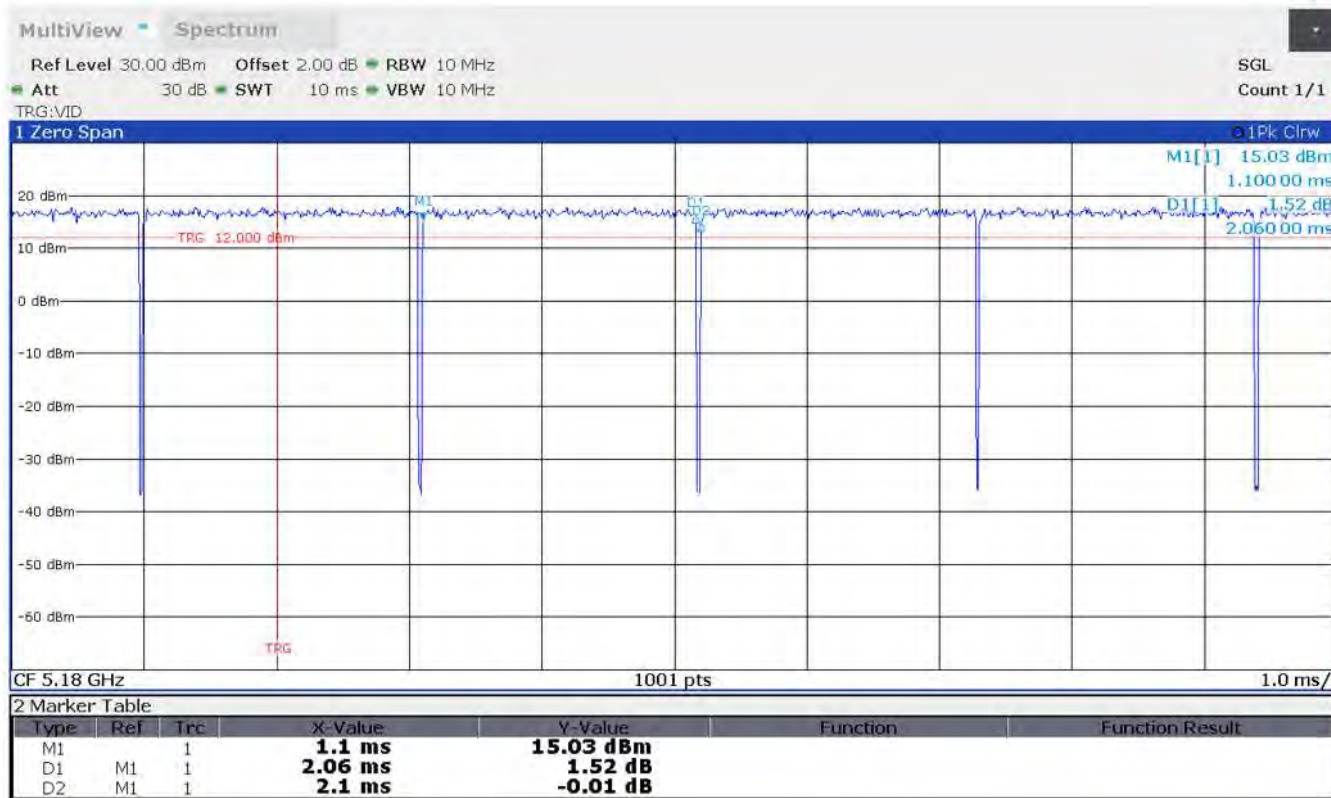
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Wi-Fi 5GHz 802.11a:

Duty cycle=98.1%



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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



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band and exposure configuration.

- 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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7.2.4 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 MT8820C 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.

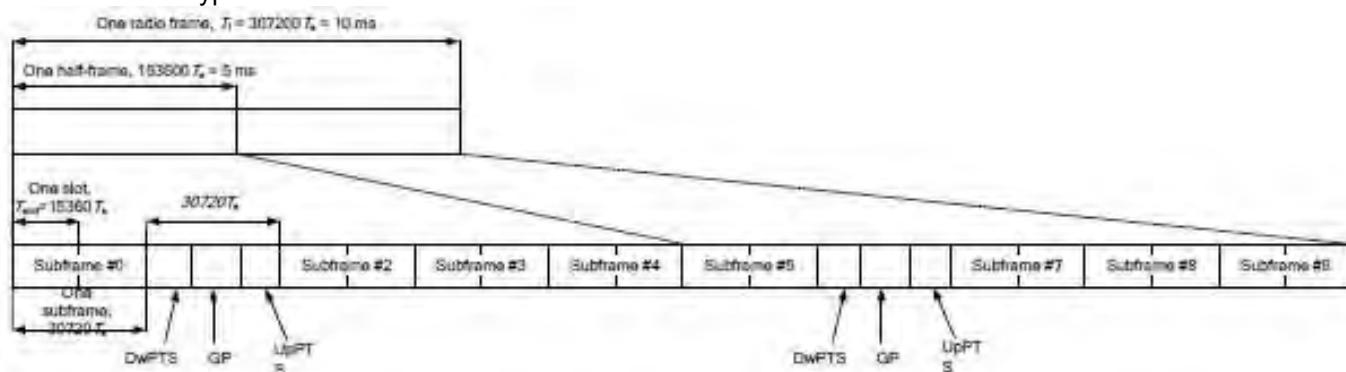
TDD LTE test consideration

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			7680.Ts		
5	6592.Ts	4384.Ts	5120.Ts	20480.Ts	4384.Ts	5120.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 (N_{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
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3

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 NR Band Test Configuration

1. NR Band n5/n7/n38/n41/n66/n77/n78 support SA mode and n5/n7/n38/n41/n66/n78 support NSA mode. LTE+NR Band operations are possible only with LTE under EN-DC mode and the operations are possible as following table:

Band/Antenna		LTE Band 2		LTE Band 5		LTE Band 12		LTE Band 26		LTE Band 7				LTE Band 66				LTE Band 38				LTE Band 41			
		Ant4	Ant5	Ant0	Ant1	Ant0	Ant1	Ant0	Ant1	Ant2	Ant3	Ant4	Ant5	Ant2	Ant3	Ant4	Ant5	Ant2	Ant3	Ant4	Ant5	Ant2	Ant3	Ant4	Ant5
n5	Ant0	x	x	x	x	x	x	x	x	√	√	√	√	x	x	x	x	x	x	x	x	x	x	x	x
	Ant1	x	x	x	x	x	x	x	x	√	√	√	√	x	x	x	x	x	x	x	x	x	x	x	x
n7	Ant2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	√	x	x	x	x	x	x	x	x
	Ant3	x	x	x	x	x	x	x	x	x	x	x	x	√	x	x	√	x	x	x	x	x	x	x	x
	Ant4	x	x	x	x	x	x	x	x	x	x	x	x	√	x	x	√	x	x	x	x	x	x	x	x
	Ant5	x	x	x	x	x	x	x	x	x	x	x	x	√	x	x	x	x	x	x	x	x	x	x	x
N66	Ant2	√	√	√	√	√	√	x	x	x	x	x	√	x	x	x	x	x	x	x	x	x	x	x	x
	Ant3	√	√	√	√	√	√	x	x	√	x	x	√	x	x	x	x	x	x	x	x	x	x	x	x
	Ant4	x	√	x	√	√	√	x	x	√	x	x	√	x	x	x	x	x	x	x	x	x	x	x	x
	Ant5	√	x	√	x	√	√	x	x	√	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
n38	Ant2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	√	x	x	x	x	x	x	x	x
	Ant3	x	x	x	x	x	x	x	x	x	x	x	x	√	x	x	√	x	x	x	x	x	x	x	x
	Ant4	x	x	x	x	x	x	x	x	x	x	x	x	√	x	x	√	x	x	x	x	x	x	x	x
	Ant5	x	x	x	x	x	x	x	x	x	x	x	x	√	x	x	x	x	x	x	x	x	x	x	x
n41	Ant2	x	x	x	x	x	x	√	√	x	x	x	x	x	x	x	√	x	x	x	x	x	x	x	x
	Ant3	x	x	x	x	x	x	√	√	x	x	x	x	√	x	x	√	x	x	x	x	x	x	x	x
	Ant4	x	x	x	x	x	x	√	√	x	x	x	x	√	x	x	√	x	x	x	x	x	x	x	x
	Ant5	x	x	x	x	x	x	√	√	x	x	x	x	√	x	x	x	x	x	x	x	x	x	x	x
n78	Ant1	√	√	√	x	x	x	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	Ant6	√	√	√	√	x	x	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	Ant7	√	√	√	√	x	x	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	Ant8	√	√	√	√	x	x	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√



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

Band			n5	n7	n38	n41	n66	n77 CP3	n77 CP2	n78 CP3	n78 CP2
Modulation	DFT-s-OFDM	PI/2 BPSK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		QPSK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		16QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		64QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		256QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CP-OFDM	QPSK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		16QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		64QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		256QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Duty Cycle			100%	100%	100%	100%	100%	100%	50%	100%	50%

Band	SCS	Bandwidth												
		5Mhz	10Mhz	15Mhz	20Mhz	25Mhz	30Mhz	40Mhz	50Mhz	60Mhz	70Mhz	80Mhz	90Mhz	100Mhz
N5	15KHZ	Yes	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N7	15KHZ	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
N66	15KHZ	Yes	Yes	Yes	Yes	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
N38	30KHZ	N/A	Yes	Yes	Yes	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
N41	30KHZ	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
n77	30KHZ	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
n78	30KHZ	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



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3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
- 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 $> \frac{1}{2}$ 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.
 - 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 $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth.
 - 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.
 - 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
 - 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.
 - PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not $\frac{1}{2}$ 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.
 - Smaller SCS/bandwidth output power for each RB allocation configuration for this device will not $\frac{1}{2}$ 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 n41, n77, n78. 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 n41, n77, n78 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 n41, n77, n78.

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

The detailed conducted power table can refer to Appendix E.

Note:

- 1) . For GSM 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:
Frame-averaged power = 10 x log (Burst-averaged power mW x Slot used / 8
- 3) . When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used
- 4) . 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.
- 5) . 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.
- 6) . Maximum output power measurement is required for each UL CA configuration for the required test channels described in KDB 941225 D05.
- 7) . Conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion per KDB 941225 D05A. Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive, therefore SAR evaluation with downlink carrier aggregation can be excluded.
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 Appendix E conducted RF output power, so the downlink only carrier aggregation conditions for this device can be excluded from SAR testing
- 8) . For conducted power of WIFI must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band. 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. Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.



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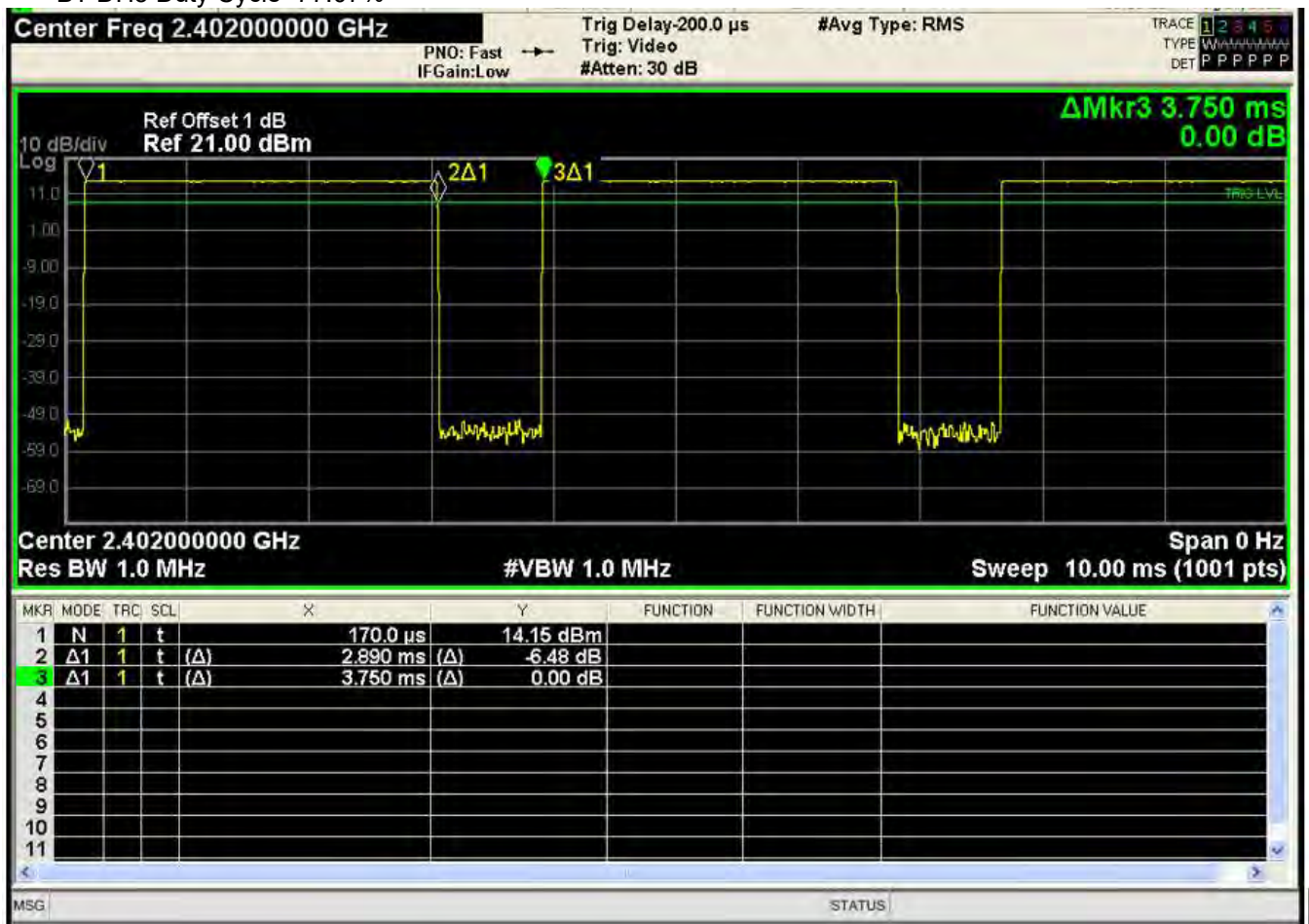
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- 1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.
- 2) When the same highest maximum 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.

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

BT DH5 Duty Cycle=77.07%



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8.2 Measurement of SAR Data

Note:

- 1) The maximum Scaled SAR value is select the worst presentation. 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) Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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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8.2.1 SAR Result of GSM850

GSM850 SAR Test Record										
Ant 0 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	GPRS 4TS	190/836.6	1:2.075	0.161	-0.01	25.83	27.50	1.469	0.236	22.1
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.079	-0.06	25.83	27.50	1.469	0.116	22.1
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.149	0.07	25.83	27.50	1.469	0.219	22.1
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.098	0.01	25.83	27.50	1.469	0.144	22.1
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.141	-0.09	25.83	27.50	1.469	0.207	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.177	0.19	25.83	27.50	1.469	0.260	22.1
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.148	0.16	25.83	27.50	1.469	0.217	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.236	-0.11	25.83	27.50	1.469	0.347	22.1
Right side	GPRS 4TS	190/836.6	1:2.075	0.194	0.01	25.83	27.50	1.469	0.285	22.1
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.160	-0.11	25.83	27.50	1.469	0.235	22.1
Ant 1 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	GPRS 4TS	190/836.6	1:2.075	0.586	-0.05	23.55	24.80	1.334	0.781	22.1
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.238	0.11	23.55	24.80	1.334	0.317	22.1
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.051	-0.12	23.55	24.80	1.334	0.068	22.1
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.000	-0.18	23.55	24.80	1.334	0.000	22.1
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.416	0.12	26.31	27.80	1.409	0.586	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.578	-0.13	26.31	27.80	1.409	0.815	22.1
Back side	GPRS 4TS	128/824.2	1:2.075	0.455	0.11	26.24	27.80	1.432	0.652	22.1
Back side	GPRS 4TS	251/848.8	1:2.075	0.537	-0.13	26.18	27.80	1.452	0.780	22.1
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.302	0.02	23.55	24.80	1.334	0.403	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.442	-0.08	23.55	24.80	1.334	0.589	22.1
Left side	GPRS 4TS	190/836.6	1:2.075	0.618	0.18	23.55	24.80	1.334	0.824	22.1
Left side	GPRS 4TS	128/824.2	1:2.075	0.472	-0.03	23.49	24.80	1.352	0.638	22.1
Left side	GPRS 4TS	251/848.8	1:2.075	0.612	0.18	23.37	24.80	1.390	0.851	22.1
Test position	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 10-g (W/kg)	Liquid Temp.(°C)
Product specific 10g SAR Test Date(Separate 0mm)										
Left side	GPRS 4TS	190/836.6	1:2.075	1.090	0.05	26.31	27.80	1.409	1.536	22.1

Table 11: SAR of GSM850 for Head and Body.



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8.2.2 SAR Result of GSM1900

GSM1900 SAR Test Record										
Ant 3 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	GPRS 4TS	661/1880	1:2.075	0.434	0.12	22.22	23.50	1.343	0.583	22.1
Left tilted	GPRS 4TS	661/1880	1:2.075	0.513	-0.09	22.22	23.50	1.343	0.689	22.1
Right cheek	GPRS 4TS	661/1880	1:2.075	0.704	0.13	22.22	23.50	1.343	0.945	22.1
Right cheek	GPRS 4TS	512/1850.2	1:2.075	0.637	-0.15	22.18	23.50	1.355	0.863	22.1
Right cheek	GPRS 4TS	810/1909.8	1:2.075	0.658	0.02	22.15	23.50	1.365	0.898	22.1
Right tilted	GPRS 4TS	661/1880	1:2.075	0.775	0.07	22.22	23.50	1.343	1.041	22.1
Right tilted	GPRS 4TS	512/1850.2	1:2.075	0.709	-0.19	22.18	23.50	1.355	0.961	22.1
Right tilted	GPRS 4TS	810/1909.8	1:2.075	0.726	-0.07	22.15	23.50	1.365	0.991	22.1
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.103	-0.04	22.59	24.50	1.552	0.160	22.1
Back side	GPRS 4TS	661/1880	1:2.075	0.221	-0.09	22.59	24.50	1.552	0.343	22.1
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.138	-0.05	22.22	23.50	1.343	0.185	22.1
Back side	GPRS 4TS	661/1880	1:2.075	0.343	0.11	22.22	23.50	1.343	0.461	22.1
Left side	GPRS 4TS	661/1880	1:2.075	0.057	0.08	22.22	23.50	1.343	0.077	22.1
Top side	GPRS 4TS	661/1880	1:2.075	0.349	0.02	22.22	23.50	1.343	0.469	22.1
Ant 4 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	GPRS 4TS	661/1880	1:2.075	0.052	-0.13	22.29	24.00	1.483	0.077	22.1
Left tilted	GPRS 4TS	661/1880	1:2.075	0.003	0.06	22.29	24.00	1.483	0.004	22.1
Right cheek	GPRS 4TS	661/1880	1:2.075	0.059	0.08	22.29	24.00	1.483	0.087	22.1
Right tilted	GPRS 4TS	661/1880	1:2.075	0.003	-0.07	22.29	24.00	1.483	0.004	22.1
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.115	-0.10	22.29	24.00	1.483	0.170	22.1
Back side	GPRS 4TS	661/1880	1:2.075	0.151	0.04	22.29	24.00	1.483	0.224	22.1
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.194	-0.10	22.29	24.00	1.483	0.288	22.1
Back side	GPRS 4TS	661/1880	1:2.075	0.236	-0.03	22.29	24.00	1.483	0.350	22.1
Left side	GPRS 4TS	661/1880	1:2.075	0.074	0.06	22.29	24.00	1.483	0.110	22.1
Bottom side	GPRS 4TS	661/1880	1:2.075	0.412	-0.04	22.29	24.00	1.483	0.611	22.1

Table 12: SAR of GSM1900 for Head and Body.



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8.2.3 SAR Result of WCDMA Band II

WCDMA Band II SAR Test Record										
Ant 3 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	RMC	9400/1880	1:1	0.358	-0.15	17.89	19.50	1.449	0.519	22.1
Left tilted	RMC	9400/1880	1:1	0.424	0.04	17.89	19.50	1.449	0.614	22.1
Right cheek	RMC	9400/1880	1:1	0.596	-0.13	17.89	19.50	1.449	0.863	22.1
Right cheek	RMC	9262/1852.4	1:1	0.480	-0.08	17.86	19.50	1.459	0.700	22.1
Right cheek	RMC	9538/1907.6	1:1	0.491	0.11	17.86	19.50	1.459	0.716	22.1
Right tilted	RMC	9400/1880	1:1	0.648	0.02	17.89	19.50	1.449	0.939	22.1
Right tilted	RMC	9262/1852.4	1:1	0.705	0.09	17.86	19.50	1.459	1.028	22.1
Right tilted	RMC	9538/1907.6	1:1	0.708	-0.05	17.86	19.50	1.459	1.033	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.213	0.03	23.31	25.00	1.476	0.314	22.1
Back side	RMC	9400/1880	1:1	0.466	-0.10	23.31	25.00	1.476	0.688	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.163	-0.01	17.89	19.50	1.449	0.236	22.1
Back side	RMC	9400/1880	1:1	0.332	-0.11	17.89	19.50	1.449	0.481	22.1
Left side	RMC	9400/1880	1:1	0.067	0.14	17.89	19.50	1.449	0.097	22.1
Top side	RMC	9400/1880	1:1	0.341	0.11	17.89	19.50	1.449	0.494	22.1
Ant 4 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	RMC	9400/1880	1:1	0.143	0.05	22.91	24.60	1.476	0.211	22.1
Left tilted	RMC	9400/1880	1:1	0.095	-0.09	22.91	24.60	1.476	0.140	22.1
Right cheek	RMC	9400/1880	1:1	0.178	-0.01	22.91	24.60	1.476	0.263	22.1
Right tilted	RMC	9400/1880	1:1	0.070	0.16	22.91	24.60	1.476	0.103	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.322	-0.06	22.91	24.60	1.476	0.475	22.1
Back side	RMC	9400/1880	1:1	0.405	-0.10	22.91	24.60	1.476	0.598	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.353	0.19	20.48	22.10	1.452	0.513	22.1
Back side	RMC	9400/1880	1:1	0.436	-0.02	20.48	22.10	1.452	0.633	22.1
Left side	RMC	9400/1880	1:1	0.139	0.11	20.48	22.10	1.452	0.202	22.1
Bottom side	RMC	9400/1880	1:1	0.672	0.06	20.48	22.10	1.452	0.976	22.1
Bottom side	RMC	9262/1852.4	1:1	0.697	0.17	20.47	22.10	1.455	1.014	22.1
Bottom side	RMC	9538/1907.6	1:1	0.635	0.14	20.38	22.10	1.486	0.944	22.1

Table 13: SAR of WCDMA Band II for Head and Body.



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8.2.4 SAR Result of WCDMA Band IV

WCDMA Band IV SAR Test Record										
Ant 2 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	RMC	1412/1732.4	1:1	0.567	-0.01	19.53	20.70	1.309	0.742	22.1
Left tilted	RMC	1412/1732.4	1:1	0.141	-0.05	19.53	20.70	1.309	0.185	22.1
Right cheek	RMC	1412/1732.4	1:1	0.456	0.17	19.53	20.70	1.309	0.597	22.1
Right tilted	RMC	1412/1732.4	1:1	0.093	-0.07	19.53	20.70	1.309	0.122	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.092	-0.01	19.53	20.70	1.309	0.120	22.1
Back side	RMC	1412/1732.4	1:1	0.142	0.03	19.53	20.70	1.309	0.186	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.182	-0.13	19.53	20.70	1.309	0.238	22.1
Back side	RMC	1412/1732.4	1:1	0.283	0.08	19.53	20.70	1.309	0.370	22.1
Right side	RMC	1412/1732.4	1:1	0.507	0.13	19.53	20.70	1.309	0.664	22.1
Ant 3 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	RMC	1412/1732.4	1:1	0.464	0.14	18.22	19.50	1.343	0.623	22.1
Left tilted	RMC	1412/1732.4	1:1	0.558	-0.07	18.22	19.50	1.343	0.749	22.1
Right cheek	RMC	1412/1732.4	1:1	0.740	0.16	18.22	19.50	1.343	0.994	22.1
Right cheek	RMC	1312/1712.4	1:1	0.679	0.05	18.21	19.50	1.346	0.914	22.1
Right cheek	RMC	1513/1752.6	1:1	0.685	-0.11	18.09	19.50	1.384	0.948	22.1
Right tilted	RMC	1412/1732.4	1:1	0.796	-0.17	18.22	19.50	1.343	1.069	22.1
Right tilted	RMC	1312/1712.4	1:1	0.706	0.04	18.21	19.50	1.346	0.950	22.1
Right tilted	RMC	1513/1752.6	1:1	0.715	-0.14	18.09	19.50	1.384	0.989	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.397	-0.02	23.32	25.00	1.472	0.585	22.1
Back side	RMC	1412/1732.4	1:1	0.655	0.04	23.32	25.00	1.472	0.964	22.1
Back side	RMC	1312/1712.4	1:1	0.595	0.01	23.24	25.00	1.500	0.892	22.1
Back side	RMC	1513/1752.6	1:1	0.682	-0.03	23.23	25.00	1.503	1.025	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.189	-0.10	18.22	19.50	1.343	0.254	22.1
Back side	RMC	1412/1732.4	1:1	0.358	0.05	18.22	19.50	1.343	0.481	22.1
Left side	RMC	1412/1732.4	1:1	0.087	0.19	18.22	19.50	1.343	0.117	22.1
Top side	RMC	1412/1732.4	1:1	0.367	-0.05	18.22	19.50	1.343	0.493	22.1
Ant 4 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	RMC	1412/1732.4	1:1	0.125	-0.12	23.00	24.60	1.445	0.181	22.1
Left tilted	RMC	1412/1732.4	1:1	0.078	-0.09	23.00	24.60	1.445	0.113	22.1
Right cheek	RMC	1412/1732.4	1:1	0.171	-0.08	23.00	24.60	1.445	0.247	22.1
Right tilted	RMC	1412/1732.4	1:1	0.069	0.04	23.00	24.60	1.445	0.100	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.319	0.13	23.00	24.60	1.445	0.461	22.1



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Back side	RMC	1412/1732.4	1:1	0.364	-0.07	23.00	24.60	1.445	0.526	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.392	0.15	21.54	23.10	1.432	0.561	22.1
Back side	RMC	1412/1732.4	1:1	0.456	0.02	21.54	23.10	1.432	0.653	22.1
Left side	RMC	1412/1732.4	1:1	0.139	0.12	21.54	23.10	1.432	0.199	22.1
Bottom side	RMC	1412/1732.4	1:1	0.701	0.12	21.54	23.10	1.432	1.004	22.1
Bottom side	RMC	1312/1712.4	1:1	0.591	0.03	21.49	23.10	1.449	0.856	22.1
Bottom side	RMC	1513/1752.6	1:1	0.754	0.06	21.53	23.10	1.435	1.082	22.1
Ant 5 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	RMC	1412/1732.4	1:1	0.170	-0.08	19.66	20.60	1.242	0.211	22.1
Left tilted	RMC	1412/1732.4	1:1	0.109	0.04	19.66	20.60	1.242	0.135	22.1
Right cheek	RMC	1412/1732.4	1:1	0.683	0.02	19.66	20.60	1.242	0.848	22.1
Right cheek	RMC	1312/1712.4	1:1	0.571	0.08	19.58	20.60	1.265	0.722	22.1
Right cheek	RMC	1513/1752.6	1:1	0.825	0.01	19.61	20.60	1.256	1.036	22.1
Right cheek-repeated	RMC	1513/1752.6	1:1	0.811	0.09	19.61	20.60	1.256	1.019	22.1
Right tilted	RMC	1412/1732.4	1:1	0.260	-0.16	19.66	20.60	1.242	0.323	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.073	0.09	20.29	21.60	1.352	0.099	22.1
Back side	RMC	1412/1732.4	1:1	0.108	0.03	20.29	21.60	1.352	0.146	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.170	0.17	19.66	20.60	1.242	0.211	22.1
Back side	RMC	1412/1732.4	1:1	0.256	0.05	19.66	20.60	1.242	0.318	22.1
Left side	RMC	1412/1732.4	1:1	0.373	-0.08	19.66	20.60	1.242	0.463	22.1
Top side	RMC	1412/1732.4	1:1	0.042	0.14	19.66	20.60	1.242	0.052	22.1

Table 14: SAR of WCDMA Band IV for Head and Body.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right cheek	1513/1752.6	0.825	0.811	1.017262639	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.

2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg


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8.2.5 SAR Result of WCDMA Band V

WCDMA Band V SAR Test Record										
Ant 0 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	RMC	4182/836.4	1:1	0.219	0.19	23.50	25.00	1.413	0.309	22.1
Left tilted	RMC	4182/836.4	1:1	0.094	-0.15	23.50	25.00	1.413	0.133	22.1
Right cheek	RMC	4182/836.4	1:1	0.207	-0.08	23.50	25.00	1.413	0.292	22.1
Right tilted	RMC	4182/836.4	1:1	0.125	-0.02	23.50	25.00	1.413	0.177	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.161	-0.13	23.50	25.00	1.413	0.227	22.1
Back side	RMC	4182/836.4	1:1	0.210	0.14	23.50	25.00	1.413	0.297	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.214	-0.04	23.50	25.00	1.413	0.302	22.1
Back side	RMC	4182/836.4	1:1	0.294	-0.19	23.50	25.00	1.413	0.415	22.1
Right side	RMC	4182/836.4	1:1	0.263	0.06	23.50	25.00	1.413	0.371	22.1
Bottom side	RMC	4182/836.4	1:1	0.196	-0.02	23.50	25.00	1.413	0.277	22.1
Ant 1 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	RMC	4182/836.4	1:1	0.739	0.06	21.07	22.00	1.239	0.915	22.1
Left cheek	RMC	4132/826.4	1:1	0.655	-0.07	21.03	22.00	1.250	0.819	22.1
Left cheek	RMC	4233/846.6	1:1	0.728	-0.18	21.02	22.00	1.253	0.912	22.1
Left tilted	RMC	4182/836.4	1:1	0.103	0.16	21.07	22.00	1.239	0.128	22.1
Right cheek	RMC	4182/836.4	1:1	0.317	0.06	21.07	22.00	1.239	0.393	22.1
Right tilted	RMC	4182/836.4	1:1	0.079	-0.12	21.07	22.00	1.239	0.098	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.327	0.09	21.38	23.00	1.452	0.475	22.1
Back side	RMC	4182/836.4	1:1	0.474	-0.14	21.38	23.00	1.452	0.688	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.346	0.19	21.07	22.00	1.239	0.429	22.1
Back side	RMC	4182/836.4	1:1	0.520	-0.09	21.07	22.00	1.239	0.644	22.1
Left side	RMC	4182/836.4	1:1	0.708	0.01	21.07	22.00	1.239	0.877	22.1
Left side	RMC	4132/826.4	1:1	0.621	0.03	21.03	22.00	1.250	0.776	22.1
Left side	RMC	4233/846.6	1:1	0.782	0.09	21.02	22.00	1.253	0.980	22.1
Test position	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 10-g (W/kg)	Liquid Temp.(°C)
Product specific 10g SAR Test Date(Separate 0mm)										
Left side	RMC	4182/836.4	1:1	0.916	0.18	21.38	23.00	1.452	1.330	22.1

Table 15: SAR of WCDMA Band V for Head and Body.



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8.2.6 SAR Result of LTE Band 2

LTE Band 2 SAR Test Record											
Ant 3 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	18900/1880	1:1	0.385	-0.05	18.88	20.00	1.294	0.498	22.3
Left tilted	20	QPSK 1_0	18900/1880	1:1	0.459	0.18	18.88	20.00	1.294	0.594	22.3
Right cheek	20	QPSK 1_0	18900/1880	1:1	0.650	-0.06	18.88	20.00	1.294	0.841	22.3
Right cheek	20	QPSK 1_0	18700/1860	1:1	0.676	0.14	18.77	20.00	1.327	0.897	22.3
Right cheek	20	QPSK 1_0	19100/1900	1:1	0.608	0.04	18.79	20.00	1.321	0.803	22.3
Right tilted	20	QPSK 1_0	18900/1880	1:1	0.750	-0.05	18.88	20.00	1.294	0.971	22.3
Right tilted	20	QPSK 1_0	18700/1860	1:1	0.792	-0.07	18.77	20.00	1.327	1.051	22.3
Right tilted	20	QPSK 1_0	19100/1900	1:1	0.690	0.03	18.79	20.00	1.321	0.912	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	18900/1880	1:1	0.429	-0.05	18.84	20.00	1.306	0.560	22.3
Left tilted	20	QPSK 50_0	18900/1880	1:1	0.514	0.09	18.84	20.00	1.306	0.671	22.3
Right cheek	20	QPSK 50_0	18900/1880	1:1	0.655	0.14	18.84	20.00	1.306	0.856	22.3
Right cheek	20	QPSK 50_0	18700/1860	1:1	0.683	0.12	18.73	20.00	1.340	0.915	22.3
Right cheek	20	QPSK 50_0	19100/1900	1:1	0.624	-0.14	18.72	20.00	1.343	0.838	22.3
Right tilted	20	QPSK 50_0	18900/1880	1:1	0.735	-0.07	18.84	20.00	1.306	0.960	22.3
Right tilted	20	QPSK 50_0	18700/1860	1:1	0.783	-0.01	18.73	20.00	1.340	1.049	22.3
Right tilted	20	QPSK 50_0	19100/1900	1:1	0.692	-0.16	18.72	20.00	1.343	0.929	22.3
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	18900/1880	1:1	0.429	0.01	18.77	20.00	1.327	0.569	22.3
Right tilted	20	QPSK 100_0	18900/1880	1:1	0.514	-0.09	18.77	20.00	1.327	0.682	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.277	0.03	23.85	25.50	1.462	0.405	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.545	-0.04	23.85	25.50	1.462	0.797	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.244	0.07	22.80	24.50	1.479	0.361	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.494	0.16	22.80	24.50	1.479	0.731	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.164	0.02	18.88	20.00	1.294	0.212	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.373	-0.18	18.88	20.00	1.294	0.483	22.3
Left side	20	QPSK 1_0	18900/1880	1:1	0.071	0.02	18.88	20.00	1.294	0.092	22.3
Top side	20	QPSK 1_0	18900/1880	1:1	0.379	0.17	18.88	20.00	1.294	0.491	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.135	-0.16	18.84	20.00	1.306	0.176	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.290	0.04	18.84	20.00	1.306	0.379	22.3
Left side	20	QPSK 50_0	18900/1880	1:1	0.058	0.03	18.84	20.00	1.306	0.076	22.3
Top side	20	QPSK 50_0	18900/1880	1:1	0.316	0.14	18.84	20.00	1.306	0.413	22.3
Ant 4 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	18900/1880	1:1	0.135	-0.08	23.79	25.00	1.321	0.178	22.3
Left tilted	20	QPSK 1_0	18900/1880	1:1	0.094	0.16	23.79	25.00	1.321	0.124	22.3
Right cheek	20	QPSK 1_0	18900/1880	1:1	0.156	-0.07	23.79	25.00	1.321	0.206	22.3
Right cheek-ENDC	20	QPSK 1_0	18900/1880	1:1	0.073	0.02	19.37	20.40	1.268	0.093	22.3
Right tilted	20	QPSK 1_0	18900/1880	1:1	0.069	0.07	23.79	25.00	1.321	0.091	22.3
Head Test Data(50%RB)											



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Left cheek	20	QPSK 50_0	18900/1880	1:1	0.119	0.12	22.77	24.00	1.327	0.158	22.3
Left tilted	20	QPSK 50_0	18900/1880	1:1	0.081	0.02	22.77	24.00	1.327	0.108	22.3
Right cheek	20	QPSK 50_0	18900/1880	1:1	0.131	0.07	22.77	24.00	1.327	0.174	22.3
Right tilted	20	QPSK 50_0	18900/1880	1:1	0.057	-0.01	22.77	24.00	1.327	0.076	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.332	-0.19	23.79	25.00	1.321	0.439	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.419	0.03	23.79	25.00	1.321	0.554	22.3
Back side-ENDC	20	QPSK 1_0	18900/1880	1:1	0.205	0.05	19.37	20.40	1.268	0.260	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.272	0.09	22.77	24.00	1.327	0.361	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.342	0.18	22.77	24.00	1.327	0.454	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.348	-0.19	22.02	23.00	1.253	0.436	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.440	0.10	22.02	23.00	1.253	0.551	22.3
Left side	20	QPSK 1_0	18900/1880	1:1	0.135	0.16	22.02	23.00	1.253	0.169	22.3
Bottom side	20	QPSK 1_0	18900/1880	1:1	0.784	-0.01	22.02	23.00	1.253	0.982	22.3
Bottom side-ENDC	20	QPSK 1_0	18900/1880	1:1	0.401	-0.13	17.48	18.40	1.236	0.496	22.3
Bottom side	20	QPSK 1_0	18700/1860	1:1	0.764	0.12	21.95	23.00	1.274	0.973	22.3
Bottom side	20	QPSK 1_0	19100/1900	1:1	0.744	-0.13	21.94	23.00	1.276	0.950	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.285	0.10	22.01	23.00	1.256	0.358	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.350	-0.01	22.01	23.00	1.256	0.440	22.3
Left side	20	QPSK 50_0	18900/1880	1:1	0.103	-0.05	22.01	23.00	1.256	0.129	22.3
Bottom side	20	QPSK 50_0	18900/1880	1:1	0.632	0.08	22.01	23.00	1.256	0.794	22.3
Hotspot Test data(Separate 10mm 100%RB)											
Bottom side	20	QPSK 100_0	18900/1880	1:1	0.618	-0.10	21.89	23.00	1.291	0.798	22.3
Ant 5 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	18900/1880	1:1	0.145	-0.09	16.17	17.50	1.358	0.197	22.3
Left tilted	20	QPSK 1_0	18900/1880	1:1	0.065	0.04	16.17	17.50	1.358	0.088	22.3
Right cheek	20	QPSK 1_0	18900/1880	1:1	0.475	0.02	16.17	17.50	1.358	0.645	22.3
Right tilted	20	QPSK 1_0	18900/1880	1:1	0.158	0.08	16.17	17.50	1.358	0.215	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	18900/1880	1:1	0.134	0.01	15.91	17.50	1.442	0.193	22.3
Left tilted	20	QPSK 50_0	18900/1880	1:1	0.061	0.06	15.91	17.50	1.442	0.088	22.3
Right cheek	20	QPSK 50_0	18900/1880	1:1	0.448	0.02	15.91	17.50	1.442	0.646	22.3
Right tilted	20	QPSK 50_0	18900/1880	1:1	0.151	-0.05	15.91	17.50	1.442	0.218	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.094	-0.13	20.63	21.50	1.222	0.115	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.128	-0.17	20.63	21.50	1.222	0.156	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.083	0.15	20.49	21.50	1.262	0.105	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.124	-0.09	20.49	21.50	1.262	0.156	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.094	-0.04	16.17	17.50	1.358	0.128	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.121	-0.03	16.17	17.50	1.358	0.164	22.3
Left side	20	QPSK 1_0	18900/1880	1:1	0.182	0.01	16.17	17.50	1.358	0.247	22.3
Top side	20	QPSK 1_0	18900/1880	1:1	0.041	0.08	16.17	17.50	1.358	0.056	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.080	0.08	15.91	17.50	1.442	0.115	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.119	0.03	15.91	17.50	1.442	0.172	22.3
Left side	20	QPSK 50_0	18900/1880	1:1	0.164	-0.01	15.91	17.50	1.442	0.237	22.3



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Top side	20	QPSK 50_0	18900/1880	1:1	0.044	-0.07	15.91	17.50	1.442	0.063	22.3
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Table 16: SAR of LTE Band 2 for Head and Body.



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8.2.7 SAR Result of LTE Band 4

LTE Band 4 SAR Test Record											
Ant 2 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	20175/1732.5	1:1	0.586	0.01	20.57	21.80	1.327	0.778	22.1
Left tilted	20	QPSK 1_0	20175/1732.5	1:1	0.125	0.09	20.57	21.80	1.327	0.166	22.1
Right cheek	20	QPSK 1_0	20175/1732.5	1:1	0.431	-0.04	20.57	21.80	1.327	0.572	22.1
Right tilted	20	QPSK 1_0	20175/1732.5	1:1	0.106	0.06	20.57	21.80	1.327	0.141	22.1
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	20175/1732.5	1:1	0.483	-0.01	19.70	20.80	1.288	0.622	22.1
Left tilted	20	QPSK 50_0	20175/1732.5	1:1	0.101	0.06	19.70	20.80	1.288	0.130	22.1
Right cheek	20	QPSK 50_0	20175/1732.5	1:1	0.345	0.03	19.70	20.80	1.288	0.444	22.1
Right tilted	20	QPSK 50_0	20175/1732.5	1:1	0.082	-0.01	19.70	20.80	1.288	0.106	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.086	0.06	20.57	21.80	1.327	0.114	22.1
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.126	0.01	20.57	21.80	1.327	0.167	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.074	0.05	19.70	20.80	1.288	0.095	22.1
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.103	-0.01	19.70	20.80	1.288	0.133	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.086	0.09	20.57	21.80	1.327	0.114	22.1
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.130	0.03	20.57	21.80	1.327	0.173	22.1
Right side	20	QPSK 1_0	20175/1732.5	1:1	0.202	0.02	20.57	21.80	1.327	0.268	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.068	0.05	19.70	20.80	1.288	0.088	22.1
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.107	0.07	19.70	20.80	1.288	0.138	22.1
Right side	20	QPSK 50_0	20175/1732.5	1:1	0.169	0.06	19.70	20.80	1.288	0.218	22.1
Ant 3 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	20175/1732.5	1:1	0.575	0.02	18.73	20.00	1.340	0.770	22.1
Left tilted	20	QPSK 1_0	20175/1732.5	1:1	0.664	0.06	18.73	20.00	1.340	0.890	22.1
Right cheek	20	QPSK 1_0	20175/1732.5	1:1	0.806	-0.02	18.73	20.00	1.340	1.080	22.1
Right cheek-repeated	20	QPSK 1_0	20175/1732.5	1:1	0.801	0.09	18.73	20.00	1.340	1.073	22.1
Right tilted	20	QPSK 1_0	20175/1732.5	1:1	0.752	0.03	18.73	20.00	1.340	1.007	22.1
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	20175/1732.5	1:1	0.532	0.08	18.68	20.00	1.355	0.721	22.1
Left tilted	20	QPSK 50_0	20175/1732.5	1:1	0.580	0.09	18.68	20.00	1.355	0.786	22.1
Right cheek	20	QPSK 50_0	20175/1732.5	1:1	0.753	0.00	18.68	20.00	1.355	1.020	22.1
Right tilted	20	QPSK 50_0	20175/1732.5	1:1	0.712	0.01	18.68	20.00	1.355	0.965	22.1
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	20175/1732.5	1:1	0.728	0.03	18.64	20.00	1.368	0.996	22.1
Right tilted	20	QPSK 100_0	20175/1732.5	1:1	0.703	0.07	18.64	20.00	1.368	0.962	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.386	0.03	23.77	25.50	1.489	0.575	22.1
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.620	-0.08	23.77	25.50	1.489	0.923	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.335	0.07	22.75	24.50	1.496	0.501	22.1
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.525	0.04	22.75	24.50	1.496	0.786	22.1



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Body worn Test data(Separate 15mm 100%RB)											
Back side	20	QPSK 100_0	20175/1732.5	1:1	0.511	0.15	22.68	24.50	1.521	0.777	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.063	-0.04	13.97	15.50	1.422	0.090	22.1
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.135	-0.02	13.97	15.50	1.422	0.192	22.1
Left side	20	QPSK 1_0	20175/1732.5	1:1	0.005	0.16	13.97	15.50	1.422	0.007	22.1
Top side	20	QPSK 1_0	20175/1732.5	1:1	0.141	0.08	13.97	15.50	1.422	0.201	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.065	-0.02	13.95	15.50	1.429	0.093	22.1
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.138	0.07	13.95	15.50	1.429	0.197	22.1
Left side	20	QPSK 50_0	20175/1732.5	1:1	0.004	-0.02	13.95	15.50	1.429	0.006	22.1
Top side	20	QPSK 50_0	20175/1732.5	1:1	0.147	0.10	13.95	15.50	1.429	0.210	22.1
Ant 4 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	20175/1732.5	1:1	0.112	0.01	23.41	24.70	1.346	0.151	22.1
Left tilted	20	QPSK 1_0	20175/1732.5	1:1	0.080	0.10	23.41	24.70	1.346	0.108	22.1
Right cheek	20	QPSK 1_0	20175/1732.5	1:1	0.164	0.04	23.41	24.70	1.346	0.221	22.1
Right tilted	20	QPSK 1_0	20175/1732.5	1:1	0.088	-0.03	23.41	24.70	1.346	0.118	22.1
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	20175/1732.5	1:1	0.097	0.05	22.27	23.70	1.390	0.135	22.1
Left tilted	20	QPSK 50_0	20175/1732.5	1:1	0.067	-0.01	22.27	23.70	1.390	0.093	22.1
Right cheek	20	QPSK 50_0	20175/1732.5	1:1	0.141	-0.04	22.27	23.70	1.390	0.196	22.1
Right tilted	20	QPSK 50_0	20175/1732.5	1:1	0.076	-0.02	22.27	23.70	1.390	0.106	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.298	0.03	23.41	24.70	1.346	0.401	22.1
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.371	0.08	23.41	24.70	1.346	0.499	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.255	0.03	22.27	23.70	1.390	0.354	22.1
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.317	0.03	22.27	23.70	1.390	0.441	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.318	0.09	22.03	23.20	1.309	0.416	22.1
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.423	0.03	22.03	23.20	1.309	0.554	22.1
Left side	20	QPSK 1_0	20175/1732.5	1:1	0.108	0.06	22.03	23.20	1.309	0.141	22.1
Bottom side	20	QPSK 1_0	20175/1732.5	1:1	0.535	0.03	22.03	23.20	1.309	0.700	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.328	0.02	21.99	23.20	1.321	0.433	22.1
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.450	0.04	21.99	23.20	1.321	0.595	22.1
Left side	20	QPSK 50_0	20175/1732.5	1:1	0.112	0.07	21.99	23.20	1.321	0.148	22.1
Bottom side	20	QPSK 50_0	20175/1732.5	1:1	0.571	0.01	21.99	23.20	1.321	0.754	22.1
Ant 5 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	20175/1732.5	1:1	0.136	-0.02	19.10	20.40	1.349	0.183	22.1
Left tilted	20	QPSK 1_0	20175/1732.5	1:1	0.062	0.06	19.10	20.40	1.349	0.084	22.1
Right cheek	20	QPSK 1_0	20175/1732.5	1:1	0.425	0.10	19.10	20.40	1.349	0.573	22.1
Right tilted	20	QPSK 1_0	20175/1732.5	1:1	0.145	-0.02	19.10	20.40	1.349	0.196	22.1
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	20175/1732.5	1:1	0.146	-0.03	19.06	20.40	1.361	0.199	22.1
Left tilted	20	QPSK 50_0	20175/1732.5	1:1	0.067	-0.03	19.06	20.40	1.361	0.091	22.1
Right cheek	20	QPSK 50_0	20175/1732.5	1:1	0.457	0.06	19.06	20.40	1.361	0.622	22.1



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Right tilted	20	QPSK 50_0	20175/1732.5	1:1	0.144	0.01	19.06	20.40	1.361	0.196	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.048	-0.04	20.24	21.40	1.306	0.063	22.1
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.064	0.00	20.24	21.40	1.306	0.084	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.051	0.04	20.17	21.40	1.327	0.068	22.1
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.067	0.05	20.17	21.40	1.327	0.089	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.083	0.06	19.10	20.40	1.349	0.112	22.1
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.101	0.02	19.10	20.40	1.349	0.136	22.1
Left side	20	QPSK 1_0	20175/1732.5	1:1	0.205	-0.04	19.10	20.40	1.349	0.277	22.1
Top side	20	QPSK 1_0	20175/1732.5	1:1	0.004	-0.03	19.10	20.40	1.349	0.005	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.089	0.08	19.06	20.40	1.361	0.121	22.1
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.109	0.06	19.06	20.40	1.361	0.148	22.1
Left side	20	QPSK 50_0	20175/1732.5	1:1	0.219	0.08	19.06	20.40	1.361	0.298	22.1
Top side	20	QPSK 50_0	20175/1732.5	1:1	0.005	0.10	19.06	20.40	1.361	0.007	22.1

Table 17: SAR of LTE Band 4 for Head and Body.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right cheek	20175/1732.5	0.806	0.801	1.006242197	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.

2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg



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8.2.8 SAR Result of LTE Band 7

LTE Band 7 SAR Test Record											
Ant 2 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 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.487	0.12	17.85	18.80	1.245	0.606	22.2
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.148	-0.08	17.85	18.80	1.245	0.184	22.2
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.612	0.15	17.85	18.80	1.245	0.762	22.2
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.086	0.05	17.85	18.80	1.245	0.107	22.2
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.492	-0.09	17.67	18.80	1.297	0.638	22.2
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.146	0.03	17.67	18.80	1.297	0.189	22.2
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.609	0.19	17.67	18.80	1.297	0.790	22.2
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.082	0.03	17.67	18.80	1.297	0.106	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.103	0.06	18.21	19.30	1.285	0.132	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.159	-0.13	18.21	19.30	1.285	0.204	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.098	-0.06	18.11	19.30	1.315	0.129	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.167	-0.15	18.11	19.30	1.315	0.220	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.207	-0.07	17.85	18.80	1.245	0.258	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.318	0.13	17.85	18.80	1.245	0.396	22.2
Right side	20	QPSK 1_0	21100/2535	1:1	0.612	-0.08	17.85	18.80	1.245	0.762	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.202	-0.10	17.67	18.80	1.297	0.262	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.348	0.04	17.67	18.80	1.297	0.451	22.2
Right side	20	QPSK 50_0	21100/2535	1:1	0.610	0.03	17.67	18.80	1.297	0.791	22.2
Ant 3 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 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.392	0.11	17.99	19.00	1.262	0.495	22.2
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.471	0.07	17.99	19.00	1.262	0.594	22.2
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.730	0.12	17.99	19.00	1.262	0.921	22.2
Right cheek	20	QPSK 1_0	20850/2510	1:1	0.716	0.02	17.96	19.00	1.271	0.910	22.2
Right cheek	20	QPSK 1_0	21350/2560	1:1	0.658	-0.07	17.90	19.00	1.288	0.848	22.2
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.864	-0.03	17.99	19.00	1.262	1.090	22.2
Right tilted-repeated	20	QPSK 1_0	21100/2535	1:1	0.859	0.04	17.99	19.00	1.262	1.084	22.2
Right tilted-ENDC	20	QPSK 1_0	21100/2535	1:1	0.440	0.01	15.78	16.60	1.208	0.531	22.2
Right tilted CA_7C	20	QPSK 1_0	21100+20902/2535+2515.2	1:1	0.831	0.01	17.85	19.00	1.303	1.083	22.2
Right tilted	20	QPSK 1_0	20850/2510	1:1	0.848	0.12	17.96	19.00	1.271	1.077	22.2
Right tilted	20	QPSK 1_0	21350/2560	1:1	0.765	0.10	17.90	19.00	1.288	0.986	22.2
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.393	-0.07	17.96	19.00	1.271	0.499	22.2
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.488	0.14	17.96	19.00	1.271	0.620	22.2
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.745	-0.16	17.96	19.00	1.271	0.947	22.2
Right cheek	20	QPSK 50_0	20850/2510	1:1	0.722	0.03	17.87	19.00	1.297	0.937	22.2



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Right cheek	20	QPSK 50_0	21350/2560	1:1	0.669	0.01	17.80	19.00	1.318	0.882	22.2
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.833	-0.17	17.96	19.00	1.271	1.058	22.2
Right tilted	20	QPSK 50_0	20850/2510	1:1	0.818	0.14	17.87	19.00	1.297	1.061	22.2
Right tilted	20	QPSK 50_0	21350/2560	1:1	0.784	0.17	17.80	19.00	1.318	1.034	22.2
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	21100/2535	1:1	0.739	0.03	17.85	19.00	1.303	0.963	22.2
Right tilted	20	QPSK 100_0	21100/2535	1:1	0.824	-0.04	17.85	19.00	1.303	1.074	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.368	-0.15	24.29	25.50	1.321	0.486	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.551	0.03	24.29	25.50	1.321	0.728	22.2
Back side-ENDC	20	QPSK 1_0	21100/2535	1:1	0.307	0.02	22.06	23.10	1.271	0.390	22.2
Back side CA_7C	20	QPSK 1_0	21100+20902/2535+2515.2	1:1	0.527	0.09	24.16	25.50	1.361	0.717	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.276	-0.04	23.37	24.50	1.297	0.358	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.473	0.09	23.37	24.50	1.297	0.614	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.148	0.16	17.99	19.00	1.262	0.187	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.273	-0.17	17.99	19.00	1.262	0.344	22.2
Back side-ENDC	20	QPSK 1_0	21100/2535	1:1	0.186	0.07	15.78	16.60	1.208	0.225	22.2
Back side CA_7C	20	QPSK 1_0	21100+20902/2535+2515.2	1:1	0.260	0.08	17.85	19.00	1.303	0.339	22.2
Left side	20	QPSK 1_0	21100/2535	1:1	0.077	0.06	17.99	19.00	1.262	0.097	22.2
Top side	20	QPSK 1_0	21100/2535	1:1	0.233	0.12	17.99	19.00	1.262	0.294	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.097	-0.07	17.96	19.00	1.271	0.123	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.221	0.17	17.96	19.00	1.271	0.281	22.2
Left side	20	QPSK 50_0	21100/2535	1:1	0.046	0.03	17.96	19.00	1.271	0.058	22.2
Top side	20	QPSK 50_0	21100/2535	1:1	0.179	0.12	17.96	19.00	1.271	0.227	22.2
Ant 4 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.294	-0.03	23.82	25.70	1.542	0.453	22.2
Left cheek-ENDC	20	QPSK 1_0	21100/2535	1:1	0.155	0.01	21.63	22.60	1.250	0.194	22.2
Left cheek CA_7C	20	QPSK 1_0	21100+20902/2535+2515.2	1:1	0.246	0.05	23.64	25.70	1.607	0.395	22.2
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.111	0.13	23.82	25.70	1.542	0.171	22.2
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.208	-0.02	23.82	25.70	1.542	0.321	22.2
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.126	0.08	23.82	25.70	1.542	0.194	22.2
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.246	0.06	22.95	24.70	1.496	0.368	22.2
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.094	0.10	22.95	24.70	1.496	0.141	22.2
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.172	0.09	22.95	24.70	1.496	0.257	22.2
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.098	0.01	22.95	24.70	1.496	0.147	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.360	-0.13	23.82	25.70	1.542	0.555	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.468	0.04	23.82	25.70	1.542	0.722	22.2
Back side-ENDC	20	QPSK 1_0	21100/2535	1:1	0.212	0.01	21.63	22.60	1.250	0.265	22.2
Back side CA_7C	20	QPSK 1_0	21100+20902/2535+2515.2	1:1	0.411	0.09	23.64	25.70	1.607	0.660	22.2
Body worn Test data(Separate 15mm 50%RB)											



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Front side	20	QPSK 50_0	21100/2535	1:1	0.285	-0.15	22.95	24.70	1.496	0.426	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.370	0.05	22.95	24.70	1.496	0.554	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.287	0.15	19.71	21.20	1.409	0.404	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.373	-0.19	19.71	21.20	1.409	0.526	22.2
Left side	20	QPSK 1_0	21100/2535	1:1	0.097	-0.13	19.71	21.20	1.409	0.137	22.2
Bottom side	20	QPSK 1_0	21100/2535	1:1	0.412	0.09	19.71	21.20	1.409	0.581	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.266	-0.01	19.66	21.20	1.426	0.379	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.369	0.04	19.66	21.20	1.426	0.526	22.2
Left side	20	QPSK 50_0	21100/2535	1:1	0.097	-0.17	19.66	21.20	1.426	0.138	22.2
Bottom side	20	QPSK 50_0	21100/2535	1:1	0.414	-0.07	19.66	21.20	1.426	0.590	22.2
Bottom side-ENDC	20	QPSK 50_0	21100/2535	1:1	0.228	-0.11	17.16	18.10	1.242	0.283	22.2
Bottom side CA_7C	20	QPSK 50_0	21100+20902/2535+2515 .2	1:1	0.362	0.04	19.48	21.20	1.486	0.538	22.2
Ant 5 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.102	0.01	16.59	18.00	1.384	0.141	22.2
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.093	-0.19	16.59	18.00	1.384	0.129	22.2
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.439	-0.04	16.59	18.00	1.384	0.607	22.2
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.242	-0.01	16.59	18.00	1.384	0.335	22.2
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.141	-0.14	16.53	18.00	1.403	0.198	22.2
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.095	-0.16	16.53	18.00	1.403	0.133	22.2
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.560	-0.04	16.53	18.00	1.403	0.786	22.2
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.253	0.11	16.53	18.00	1.403	0.355	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.130	0.18	19.13	20.50	1.371	0.178	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.244	-0.02	19.13	20.50	1.371	0.334	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.128	-0.03	19.11	20.50	1.377	0.176	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.247	0.10	19.11	20.50	1.377	0.340	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.154	0.06	16.59	18.00	1.384	0.213	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.314	0.01	16.59	18.00	1.384	0.434	22.2
Left side	20	QPSK 1_0	21100/2535	1:1	0.342	0.07	16.59	18.00	1.384	0.473	22.2
Top side	20	QPSK 1_0	21100/2535	1:1	0.072	0.10	16.59	18.00	1.384	0.100	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.159	0.04	16.53	18.00	1.403	0.223	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.312	0.12	16.53	18.00	1.403	0.438	22.2
Left side	20	QPSK 50_0	21100/2535	1:1	0.322	-0.15	16.53	18.00	1.403	0.452	22.2
Top side	20	QPSK 50_0	21100/2535	1:1	0.078	0.08	16.53	18.00	1.403	0.109	22.2

Table 18: SAR of LTE Band 7 for Head and Body.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right tilted	21100/2535	0.864	0.859	1.005820722	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).

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- 3) A third repeated measurement was preformed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- 4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg



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8.2.9 SAR Result of LTE Band 12

LTE Band 12 SAR Test Record											
Ant 0 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	10	QPSK 1_0	23095/707.5	1:1	0.102	0.09	23.55	25.00	1.396	0.142	22.2
Left tilted	10	QPSK 1_0	23095/707.5	1:1	0.057	0.06	23.55	25.00	1.396	0.080	22.2
Right cheek	10	QPSK 1_0	23095/707.5	1:1	0.091	0.14	23.55	25.00	1.396	0.127	22.2
Right tilted	10	QPSK 1_0	23095/707.5	1:1	0.063	0.09	23.55	25.00	1.396	0.088	22.2
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_0	23095/707.5	1:1	0.088	0.07	22.63	24.00	1.371	0.121	22.2
Left tilted	10	QPSK 25_0	23095/707.5	1:1	0.046	-0.01	22.63	24.00	1.371	0.063	22.2
Right cheek	10	QPSK 25_0	23095/707.5	1:1	0.075	-0.19	22.63	24.00	1.371	0.103	22.2
Right tilted	10	QPSK 25_0	23095/707.5	1:1	0.053	-0.01	22.63	24.00	1.371	0.073	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_0	23095/707.5	1:1	0.134	-0.11	23.55	25.00	1.396	0.187	22.2
Back side	10	QPSK 1_0	23095/707.5	1:1	0.168	0.18	23.55	25.00	1.396	0.235	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_0	23095/707.5	1:1	0.112	0.04	22.63	24.00	1.371	0.154	22.2
Back side	10	QPSK 25_0	23095/707.5	1:1	0.140	0.18	22.63	24.00	1.371	0.192	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_0	23095/707.5	1:1	0.156	-0.07	23.55	25.00	1.396	0.218	22.2
Back side	10	QPSK 1_0	23095/707.5	1:1	0.209	0.12	23.55	25.00	1.396	0.292	22.2
Right side	10	QPSK 1_0	23095/707.5	1:1	0.246	0.13	23.55	25.00	1.396	0.344	22.2
Bottom side	10	QPSK 1_0	23095/707.5	1:1	0.087	0.05	23.55	25.00	1.396	0.121	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_0	23095/707.5	1:1	0.135	-0.10	22.63	24.00	1.371	0.185	22.2
Back side	10	QPSK 25_0	23095/707.5	1:1	0.175	-0.02	22.63	24.00	1.371	0.240	22.2
Right side	10	QPSK 25_0	23095/707.5	1:1	0.198	0.11	22.63	24.00	1.371	0.271	22.2
Bottom side	10	QPSK 25_0	23095/707.5	1:1	0.075	-0.19	22.63	24.00	1.371	0.103	22.2
Ant 1 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	10	QPSK 1_0	23095/707.5	1:1	0.485	-0.08	23.57	25.40	1.524	0.739	22.2
Left tilted	10	QPSK 1_0	23095/707.5	1:1	0.068	0.15	23.57	25.40	1.524	0.104	22.2
Right cheek	10	QPSK 1_0	23095/707.5	1:1	0.327	-0.05	23.57	25.40	1.524	0.498	22.2
Right tilted	10	QPSK 1_0	23095/707.5	1:1	0.060	0.12	23.57	25.40	1.524	0.091	22.2
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_0	23095/707.5	1:1	0.367	-0.18	22.55	24.40	1.531	0.562	22.2
Left tilted	10	QPSK 25_0	23095/707.5	1:1	0.060	0.15	22.55	24.40	1.531	0.092	22.2
Right cheek	10	QPSK 25_0	23095/707.5	1:1	0.281	-0.08	22.55	24.40	1.531	0.430	22.2
Right tilted	10	QPSK 25_0	23095/707.5	1:1	0.054	-0.19	22.55	24.40	1.531	0.083	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_0	23095/707.5	1:1	0.159	-0.01	23.57	25.40	1.524	0.242	22.2
Back side	10	QPSK 1_0	23095/707.5	1:1	0.235	-0.09	23.57	25.40	1.524	0.358	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_0	23095/707.5	1:1	0.158	-0.11	22.55	24.40	1.531	0.242	22.2
Back side	10	QPSK 25_0	23095/707.5	1:1	0.229	0.02	22.55	24.40	1.531	0.351	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_0	23095/707.5	1:1	0.212	0.06	23.57	25.40	1.524	0.323	22.2



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Back side	10	QPSK 1_0	23095/707.5	1:1	0.322	0.02	23.57	25.40	1.524	0.491	22.2
Left side	10	QPSK 1_0	23095/707.5	1:1	0.566	0.11	23.57	25.40	1.524	0.863	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_0	23095/707.5	1:1	0.207	0.13	22.55	24.40	1.531	0.317	22.2
Back side	10	QPSK 25_0	23095/707.5	1:1	0.321	-0.02	22.55	24.40	1.531	0.491	22.2
Left side	10	QPSK 25_0	23095/707.5	1:1	0.534	-0.03	22.55	24.40	1.531	0.818	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Left side	10	QPSK 50_0	23095/707.5	1:1	0.537	0.01	22.58	24.40	1.521	0.817	22.2

Table 19: SAR of LTE Band 12 for Head and Body.



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8.2.10 SAR Result of LTE Band 13

LTE Band 13 SAR Test Record											
Ant 0 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	10	QPSK 1_0	23230/782	1:1	0.169	-0.10	23.91	25.50	1.442	0.244	22.2
Left tilted	10	QPSK 1_0	23230/782	1:1	0.101	0.08	23.91	25.50	1.442	0.146	22.2
Right cheek	10	QPSK 1_0	23230/782	1:1	0.202	0.01	23.91	25.50	1.442	0.291	22.2
Right tilted	10	QPSK 1_0	23230/782	1:1	0.140	-0.09	23.91	25.50	1.442	0.202	22.2
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_0	23230/782	1:1	0.141	-0.04	22.99	24.50	1.416	0.200	22.2
Left tilted	10	QPSK 25_0	23230/782	1:1	0.079	0.05	22.99	24.50	1.416	0.112	22.2
Right cheek	10	QPSK 25_0	23230/782	1:1	0.167	0.09	22.99	24.50	1.416	0.236	22.2
Right tilted	10	QPSK 25_0	23230/782	1:1	0.118	-0.05	22.99	24.50	1.416	0.167	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_0	23230/782	1:1	0.211	-0.04	23.91	25.50	1.442	0.304	22.2
Back side	10	QPSK 1_0	23230/782	1:1	0.257	0.18	23.91	25.50	1.442	0.371	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_0	23230/782	1:1	0.173	0.07	22.99	24.50	1.416	0.245	22.2
Back side	10	QPSK 25_0	23230/782	1:1	0.209	0.11	22.99	24.50	1.416	0.296	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_0	23230/782	1:1	0.238	0.01	23.91	25.50	1.442	0.343	22.2
Back side	10	QPSK 1_0	23230/782	1:1	0.309	-0.19	23.91	25.50	1.442	0.446	22.2
Right side	10	QPSK 1_0	23230/782	1:1	0.340	0.07	23.91	25.50	1.442	0.490	22.2
Bottom side	10	QPSK 1_0	23230/782	1:1	0.172	0.12	23.91	25.50	1.442	0.248	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_0	23230/782	1:1	0.191	-0.07	22.99	24.50	1.416	0.270	22.2
Back side	10	QPSK 25_0	23230/782	1:1	0.246	0.04	22.99	24.50	1.416	0.348	22.2
Right side	10	QPSK 25_0	23230/782	1:1	0.271	0.05	22.99	24.50	1.416	0.384	22.2
Bottom side	10	QPSK 25_0	23230/782	1:1	0.143	0.09	22.99	24.50	1.416	0.202	22.2
Ant 1 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	10	QPSK 1_0	23230/782	1:1	0.854	0.09	22.87	23.70	1.211	1.034	22.2
Left tilted	10	QPSK 1_0	23230/782	1:1	0.130	0.05	22.87	23.70	1.211	0.157	22.2
Right cheek	10	QPSK 1_0	23230/782	1:1	0.512	0.09	22.87	23.70	1.211	0.620	22.2
Right tilted	10	QPSK 1_0	23230/782	1:1	0.109	0.05	22.87	23.70	1.211	0.132	22.2
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_0	23230/782	1:1	0.772	-0.07	22.84	23.70	1.219	0.941	22.2
Left tilted	10	QPSK 25_0	23230/782	1:1	0.120	-0.18	22.84	23.70	1.219	0.146	22.2
Right cheek	10	QPSK 25_0	23230/782	1:1	0.468	0.16	22.84	23.70	1.219	0.570	22.2
Right tilted	10	QPSK 25_0	23230/782	1:1	0.100	0.06	22.84	23.70	1.219	0.122	22.2
Head Test Data(100%RB)											
Left cheek	10	QPSK 50_0	23230/782	1:1	0.742	-0.07	22.71	23.70	1.256	0.932	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_0	23230/782	1:1	0.396	-0.02	24.06	25.70	1.459	0.578	22.2
Back side	10	QPSK 1_0	23230/782	1:1	0.575	0.14	24.06	25.70	1.459	0.839	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_0	23230/782	1:1	0.308	-0.07	23.21	24.70	1.409	0.434	22.2
Back side	10	QPSK 25_0	23230/782	1:1	0.452	0.15	23.21	24.70	1.409	0.637	22.2



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Body worn Test data(Separate 15mm 50%RB)											
Back side	10	QPSK 50_0	23230/782	1:1	0.441	-0.09	23.04	24.70	1.466	0.646	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_0	23230/782	1:1	0.427	0.02	22.87	23.70	1.211	0.517	22.2
Back side	10	QPSK 1_0	23230/782	1:1	0.645	-0.70	22.87	23.70	1.211	0.781	22.2
Left side	10	QPSK 1_0	23230/782	1:1	0.898	0.08	22.87	23.70	1.211	1.087	22.2
Left side-repeat SAR	10	QPSK 1_0	23230/782	1:1	0.898	0.01	22.87	23.70	1.211	1.067	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_0	23230/782	1:1	0.408	0.06	22.84	23.70	1.219	0.497	22.2
Back side	10	QPSK 25_0	23230/782	1:1	0.627	0.07	22.84	23.70	1.219	0.764	22.2
Left side	10	QPSK 25_0	23230/782	1:1	0.881	-0.10	22.84	23.70	1.219	1.074	22.2
Hotspot Test data(Separate 10mm 100%RB)											
Left side	10	QPSK 50_0	23230/782	1:1	0.846	0.02	22.71	23.70	1.256	1.063	22.2
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 10-g (W/kg)	Liquid Temp.(°C)
Product specific 10g SAR Test Date(Separate 0mm 1RB)											
Back side	10	QPSK 1_0	23230/782	1:1	1.140	-0.08	24.06	25.70	1.459	1.663	22.2
Left side	10	QPSK 1_0	23230/782	1:1	0.969	0.01	24.06	25.70	1.459	1.414	22.2
Product specific 10g SAR Test Date(Separate 0mm 50%RB)											
Back side	10	QPSK 25_0	23230/782	1:1	0.873	0.09	23.21	24.70	1.409	1.230	22.2
Left side	10	QPSK 25_0	23230/782	1:1	0.766	0.10	23.21	24.70	1.409	1.080	22.2

Table 20: SAR of LTE Band 13 for Head and Body.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Left side	23230/782	0.898	0.881	1.019	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.

2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was preformed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg



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8.2.11 SAR Result of LTE Band 26

LTE Band 26 SAR Test Record											
Ant 0 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	15	QPSK 1_0	26865/831.5	1:1	0.225	-0.02	24.43	25.50	1.279	0.288	22.2
Left tilted	15	QPSK 1_0	26865/831.5	1:1	0.130	0.04	24.43	25.50	1.279	0.166	22.2
Right cheek	15	QPSK 1_0	26865/831.5	1:1	0.229	0.16	24.43	25.50	1.279	0.293	22.2
Right cheek-ENDC	15	QPSK 1_0	26865/831.5	1:1	0.169	0.01	24.05	25.00	1.245	0.210	22.2
Right tilted	15	QPSK 1_0	26865/831.5	1:1	0.145	0.04	24.43	25.50	1.279	0.186	22.2
Head Test Data(50%RB)											
Left cheek	15	QPSK 36_0	26865/831.5	1:1	0.185	-0.15	23.49	24.50	1.262	0.233	22.2
Left tilted	15	QPSK 36_0	26865/831.5	1:1	0.091	-0.14	23.49	24.50	1.262	0.115	22.2
Right cheek	15	QPSK 36_0	26865/831.5	1:1	0.175	0.14	23.49	24.50	1.262	0.221	22.2
Right tilted	15	QPSK 36_0	26865/831.5	1:1	0.115	-0.05	23.49	24.50	1.262	0.145	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1_0	26865/831.5	1:1	0.087	-0.11	24.43	25.50	1.279	0.111	22.2
Back side	15	QPSK 1_0	26865/831.5	1:1	0.111	-0.02	24.43	25.50	1.279	0.142	22.2
Back side-ENDC	15	QPSK 1_0	26865/831.5	1:1	0.108	0.09	24.05	25.00	1.245	0.134	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	15	QPSK 36_0	26865/831.5	1:1	0.071	0.10	23.49	24.50	1.262	0.090	22.2
Back side	15	QPSK 36_0	26865/831.5	1:1	0.095	-0.01	23.49	24.50	1.262	0.120	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1_0	26865/831.5	1:1	0.110	-0.06	24.43	25.50	1.279	0.141	22.2
Back side	15	QPSK 1_0	26865/831.5	1:1	0.310	0.13	24.43	25.50	1.279	0.397	22.2
Back side-ENDC	15	QPSK 1_0	26865/831.5	1:1	0.250	-0.04	24.05	25.00	1.245	0.311	22.2
Right side	15	QPSK 1_0	26865/831.5	1:1	0.170	0.01	24.43	25.50	1.279	0.217	22.2
Bottom side	15	QPSK 1_0	26865/831.5	1:1	0.118	-0.07	24.43	25.50	1.279	0.151	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	15	QPSK 36_0	26865/831.5	1:1	0.092	0.14	23.49	24.50	1.262	0.116	22.2
Back side	15	QPSK 36_0	26865/831.5	1:1	0.253	0.16	23.49	24.50	1.262	0.319	22.2
Right side	15	QPSK 36_0	26865/831.5	1:1	0.135	-0.15	23.49	24.50	1.262	0.170	22.2
Bottom side	15	QPSK 36_0	26865/831.5	1:1	0.100	0.17	23.49	24.50	1.262	0.126	22.2
Ant 1 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	15	QPSK 1_0	26865/831.5	1:1	0.597	-0.19	22.16	23.20	1.271	0.759	22.2
Left cheek-ENDC	15	QPSK 1_0	26865/831.5	1:1	0.490	0.05	21.97	23.00	1.268	0.621	22.2
Left tilted	15	QPSK 1_0	26865/831.5	1:1	0.077	-0.11	22.16	23.20	1.271	0.098	22.2
Right cheek	15	QPSK 1_0	26865/831.5	1:1	0.367	0.03	22.16	23.20	1.271	0.466	22.2
Right tilted	15	QPSK 1_0	26865/831.5	1:1	0.072	-0.18	22.16	23.20	1.271	0.091	22.2
Head Test Data(50%RB)											
Left cheek	15	QPSK 36_0	26865/831.5	1:1	0.555	0.07	22.12	23.20	1.282	0.712	22.2
Left tilted	15	QPSK 36_0	26865/831.5	1:1	0.080	0.11	22.12	23.20	1.282	0.103	22.2
Right cheek	15	QPSK 36_0	26865/831.5	1:1	0.379	0.05	22.12	23.20	1.282	0.486	22.2
Right tilted	15	QPSK 36_0	26865/831.5	1:1	0.068	0.06	22.12	23.20	1.282	0.087	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1_0	26865/831.5	1:1	0.447	0.04	24.45	25.70	1.334	0.596	22.2
Back side	15	QPSK 1_0	26865/831.5	1:1	0.556	0.02	24.45	25.70	1.334	0.741	22.2



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Back side-ENDC	15	QPSK 1_0	26865/831.5	1:1	0.324	0.03	24.48	25.50	1.265	0.410	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	15	QPSK 36_0	26865/831.5	1:1	0.406	0.12	23.44	24.70	1.337	0.543	22.2
Back side	15	QPSK 36_0	26865/831.5	1:1	0.511	0.15	23.44	24.70	1.337	0.683	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1_0	26865/831.5	1:1	0.245	-0.14	22.16	23.20	1.271	0.311	22.2
Back side	15	QPSK 1_0	26865/831.5	1:1	0.389	0.12	22.16	23.20	1.271	0.494	22.2
Left side	15	QPSK 1_0	26865/831.5	1:1	0.589	0.11	22.16	23.20	1.271	0.748	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	15	QPSK 36_0	26865/831.5	1:1	0.279	0.15	22.12	23.20	1.282	0.358	22.2
Back side	15	QPSK 36_0	26865/831.5	1:1	0.419	-0.11	22.12	23.20	1.282	0.537	22.2
Left side	15	QPSK 36_0	26865/831.5	1:1	0.697	0.06	22.12	23.20	1.282	0.894	22.2
Left side-ENDC	15	QPSK 36_0	26865/831.5	1:1	0.517	0.03	21.94	23.00	1.276	0.660	22.2
Hotspot Test data(Separate 10mm 100%RB)											
Left side	15	QPSK 75_0	26865/831.5	1:1	0.655	-0.09	22.13	23.20	1.279	0.838	22.2
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 10-g (W/kg)	Liquid Temp.(°C)
Product specific 10g SAR Test Date(Separate 0mm 1RB)											
Left side	15	QPSK 1_0	26865/831.5	1:1	1.490	0.09	24.45	25.70	1.334	1.987	22.2
Left side-ENDC	15	QPSK 1_0	26865/831.5	1:1	0.931	0.05	24.48	25.50	1.265	1.177	22.2
Product specific 10g SAR Test Date(Separate 0mm 50%RB)											
Left side	15	QPSK 36_0	26865/831.5	1:1	1.220	0.03	23.44	24.70	1.337	1.631	22.2

Table 21: SAR of LTE Band 26 for Head and Body.



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8.2.12SAR Result of LTE Band 41

LTE Band 41 SAR Test Record											
Ant 2 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	40620/2593	1:1.58	0.302	0.13	17.23	18.70	1.403	0.424	22.2
Left tilted	20	QPSK 1_0	40620/2593	1:1.58	0.084	-0.02	17.23	18.70	1.403	0.118	22.2
Right cheek	20	QPSK 1_0	40620/2593	1:1.58	0.426	0.11	17.23	18.70	1.403	0.598	22.2
Right tilted	20	QPSK 1_0	40620/2593	1:1.58	0.051	-0.11	17.23	18.70	1.403	0.072	22.2
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	40620/2593	1:1.58	0.305	-0.04	17.13	18.70	1.435	0.438	22.2
Left tilted	20	QPSK 50_0	40620/2593	1:1.58	0.085	0.19	17.13	18.70	1.435	0.122	22.2
Right cheek	20	QPSK 50_0	40620/2593	1:1.58	0.417	-0.06	17.13	18.70	1.435	0.599	22.2
Right tilted	20	QPSK 50_0	40620/2593	1:1.58	0.049	0.08	17.13	18.70	1.435	0.070	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.090	-0.17	18.66	20.20	1.426	0.128	22.2
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.120	0.17	18.66	20.20	1.426	0.171	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.079	-0.13	18.57	20.20	1.455	0.115	22.2
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.120	-0.16	18.57	20.20	1.455	0.175	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.119	0.07	17.23	18.70	1.403	0.167	22.2
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.190	-0.01	17.23	18.70	1.403	0.267	22.2
Right side	20	QPSK 1_0	40620/2593	1:1.58	0.277	0.04	17.23	18.70	1.403	0.389	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.118	-0.02	17.13	18.70	1.435	0.169	22.2
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.189	-0.11	17.13	18.70	1.435	0.271	22.2
Right side	20	QPSK 50_0	40620/2593	1:1.58	0.275	0.08	17.13	18.70	1.435	0.395	22.2
Ant 3 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	40620/2593	1:1.58	0.358	0.07	19.75	20.50	1.189	0.425	22.2
Left tilted	20	QPSK 1_0	40620/2593	1:1.58	0.429	-0.11	19.75	20.50	1.189	0.510	22.2
Right cheek	20	QPSK 1_0	40620/2593	1:1.58	0.683	0.08	19.75	20.50	1.189	0.812	22.2
Right cheek	20	QPSK 1_0	39750/2506	1:1.58	0.688	-0.15	19.71	20.50	1.199	0.825	22.2
Right cheek	20	QPSK 1_0	40185/2549.5	1:1.58	0.631	0.02	19.68	20.50	1.208	0.762	22.2
Right cheek	20	QPSK 1_0	41055/2636.5	1:1.58	0.639	0.07	19.66	20.50	1.213	0.775	22.2
Right cheek	20	QPSK 1_0	41490/2680	1:1.58	0.603	-0.03	19.68	20.50	1.208	0.728	22.2
Right tilted	20	QPSK 1_0	40620/2593	1:1.58	0.881	0.07	19.75	20.50	1.189	1.047	22.2
Right tilted	20	QPSK 1_0	39750/2506	1:1.58	0.912	-0.01	19.71	20.50	1.199	1.094	22.2
Right tilted-repeated	20	QPSK 1_0	39750/2506	1:1.58	0.905	0.03	19.71	20.50	1.199	1.086	22.2
Right tilted-ENDC	20	QPSK 1_0	39750/2506	1:1.58	0.658	0.01	16.02	17.20	1.312	0.863	22.2
Right tilted CA_38C	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.834	0.09	19.35	20.50	1.303	1.087	22.2
Right tilted	20	QPSK 1_0	40185/2549.5	1:1.58	0.818	0.02	19.68	20.50	1.208	0.988	22.2
Right tilted	20	QPSK 1_0	41055/2636.5	1:1.58	0.849	0.01	19.66	20.50	1.213	1.030	22.2
Right tilted	20	QPSK 1_0	41490/2680	1:1.58	0.784	-0.07	19.68	20.50	1.208	0.947	22.2
Head Test Data(50%RB)											



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Left cheek	20	QPSK 50_0	40620/2593	1:1.58	0.370	0.08	19.65	20.50	1.216	0.450	22.2
Left tilted	20	QPSK 50_0	40620/2593	1:1.58	0.432	-0.16	19.65	20.50	1.216	0.525	22.2
Right cheek	20	QPSK 50_0	40620/2593	1:1.58	0.686	0.03	19.65	20.50	1.216	0.834	22.2
Right cheek	20	QPSK 50_0	39750/2506	1:1.58	0.735	0.01	19.61	20.50	1.227	0.902	22.2
Right cheek	20	QPSK 50_0	40185/2549.5	1:1.58	0.658	-0.17	19.61	20.50	1.227	0.808	22.2
Right cheek	20	QPSK 50_0	41055/2636.5	1:1.58	0.698	-0.02	19.62	20.50	1.225	0.855	22.2
Right cheek	20	QPSK 50_0	41490/2680	1:1.58	0.653	0.11	19.62	20.50	1.225	0.800	22.2
Right tilted	20	QPSK 50_0	40620/2593	1:1.58	0.829	-0.11	19.65	20.50	1.216	1.008	22.2
Right tilted	20	QPSK 50_0	39750/2506	1:1.58	0.887	0.12	19.61	20.50	1.227	1.089	22.2
Right tilted	20	QPSK 50_0	40185/2549.5	1:1.58	0.796	0.03	19.61	20.50	1.227	0.977	22.2
Right tilted	20	QPSK 50_0	41055/2636.5	1:1.58	0.843	0.06	19.62	20.50	1.225	1.032	22.2
Right tilted	20	QPSK 50_0	41490/2680	1:1.58	0.790	0.01	19.62	20.50	1.225	0.967	22.2
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	40620/2593	1:1.58	0.667	-0.11	19.64	20.50	1.219	0.813	22.2
Right tilted	20	QPSK 100_0	40620/2593	1:1.58	0.802	0.08	19.64	20.50	1.219	0.978	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.160	-0.18	23.81	25.50	1.476	0.236	22.2
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.276	0.04	23.81	25.50	1.476	0.407	22.2
Back side-ENDC	20	QPSK 1_0	40620/2593	1:1.58	0.209	0.05	21.23	22.20	1.250	0.261	22.2
Back side CA_38C	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.211	0.01	23.78	25.50	1.486	0.314	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.130	-0.03	22.87	24.50	1.455	0.189	22.2
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.220	-0.18	22.87	24.50	1.455	0.320	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.129	-0.17	19.75	20.50	1.189	0.153	22.2
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.258	0.12	19.75	20.50	1.189	0.307	22.2
Back side-ENDC	20	QPSK 1_0	40620/2593	1:1.58	0.186	0.03	16.17	17.20	1.268	0.236	22.2
Back side CA_38C	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.193	0.02	19.35	20.50	1.303	0.252	22.2
Left side	20	QPSK 1_0	40620/2593	1:1.58	0.073	-0.13	19.75	20.50	1.189	0.087	22.2
Top side	20	QPSK 1_0	40620/2593	1:1.58	0.216	-0.12	19.75	20.50	1.189	0.257	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.112	-0.16	19.65	20.50	1.216	0.136	22.2
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.199	0.15	19.65	20.50	1.216	0.242	22.2
Left side	20	QPSK 50_0	40620/2593	1:1.58	0.060	-0.12	19.65	20.50	1.216	0.073	22.2
Top side	20	QPSK 50_0	40620/2593	1:1.58	0.166	0.08	19.65	20.50	1.216	0.202	22.2
Ant 4 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	40620/2593	1:1.58	0.194	-0.02	23.59	25.30	1.483	0.288	22.2
Left cheek-ENDC	20	QPSK 1_0	40620/2593	1:1.58	0.111	0.03	20.77	21.80	1.268	0.141	22.2
Left cheek CA_38C	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.166	0.09	23.22	25.20	1.578	0.262	22.2
Left tilted	20	QPSK 1_0	40620/2593	1:1.58	0.072	-0.18	23.59	25.30	1.483	0.107	22.2
Right cheek	20	QPSK 1_0	40620/2593	1:1.58	0.169	-0.14	23.59	25.30	1.483	0.251	22.2
Right tilted	20	QPSK 1_0	40620/2593	1:1.58	0.051	-0.08	23.59	25.30	1.483	0.076	22.2
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	40620/2593	1:1.58	0.166	-0.17	22.68	24.30	1.452	0.241	22.2
Left tilted	20	QPSK 50_0	40620/2593	1:1.58	0.052	-0.01	22.68	24.30	1.452	0.076	22.2
Right cheek	20	QPSK 50_0	40620/2593	1:1.58	0.082	-0.19	22.68	24.30	1.452	0.119	22.2
Right tilted	20	QPSK 50_0	40620/2593	1:1.58	0.043	0.09	22.68	24.30	1.452	0.062	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.238	-0.04	23.59	25.30	1.483	0.353	22.2



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Back side	20	QPSK 1_0	40620/2593	1:1.58	0.288	-0.04	23.59	25.30	1.483	0.427	22.2
Back side-ENDC	20	QPSK 1_0	40620/2593	1:1.58	0.157	0.05	20.77	21.80	1.268	0.199	22.2
Back side CA_38C	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.257	0.01	23.22	25.20	1.578	0.405	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.175	-0.06	22.68	24.30	1.452	0.254	22.2
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.236	0.02	22.68	24.30	1.452	0.343	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.355	0.10	21.97	23.30	1.358	0.482	22.2
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.469	0.11	21.97	23.30	1.358	0.637	22.2
Back side	20	QPSK 1_0	39750/2506	1:1.58	0.466	0.01	21.88	23.30	1.387	0.646	22.2
Back side	20	QPSK 1_0	40185/2549.5	1:1.58	0.444	0.12	21.94	23.30	1.368	0.607	22.2
Back side	20	QPSK 1_0	41055/2636.5	1:1.58	0.450	0.17	21.86	23.30	1.393	0.627	22.2
Back side	20	QPSK 1_0	41490/2680	1:1.58	0.454	0.19	21.87	23.30	1.390	0.631	22.2
Left side	20	QPSK 1_0	40620/2593	1:1.58	0.121	-0.09	21.97	23.30	1.358	0.164	22.2
Bottom side	20	QPSK 1_0	40620/2593	1:1.58	0.601	0.09	21.97	23.30	1.358	0.816	22.2
Bottom side	20	QPSK 1_0	39750/2506	1:1.58	0.600	0.06	21.88	23.30	1.387	0.832	22.2
Bottom side-ENDC	20	QPSK 1_0	39750/2506	1:1.58	0.471	0.09	18.76	19.80	1.271	0.598	22.2
Bottom side CA_38C	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.571	0.02	21.11	22.70	1.442	0.823	22.2
Bottom side	20	QPSK 1_0	40185/2549.5	1:1.58	0.561	0.07	21.94	23.30	1.368	0.767	22.2
Bottom side	20	QPSK 1_0	41055/2636.5	1:1.58	0.571	0.11	21.86	23.30	1.393	0.795	22.2
Bottom side	20	QPSK 1_0	41490/2680	1:1.58	0.576	0.08	21.87	23.30	1.390	0.801	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.349	0.14	21.96	23.30	1.361	0.475	22.2
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.459	-0.10	21.96	23.30	1.361	0.625	22.2
Back side	20	QPSK 50_0	39750/2506	1:1.58	0.458	0.06	21.96	23.30	1.361	0.624	22.2
Back side	20	QPSK 50_0	40185/2549.5	1:1.58	0.431	0.19	21.86	23.30	1.393	0.600	22.2
Back side	20	QPSK 50_0	41055/2636.5	1:1.58	0.442	-0.08	21.91	23.30	1.377	0.609	22.2
Back side	20	QPSK 50_0	41490/2680	1:1.58	0.450	-0.09	21.91	23.30	1.377	0.620	22.2
Left side	20	QPSK 50_0	40620/2593	1:1.58	0.108	0.09	21.88	23.30	1.387	0.150	22.2
Bottom side	20	QPSK 50_0	40620/2593	1:1.58	0.590	0.15	21.96	23.30	1.361	0.803	22.2
Bottom side	20	QPSK 50_0	39750/2506	1:1.58	0.588	0.12	21.86	23.30	1.393	0.819	22.2
Bottom side	20	QPSK 50_0	40185/2549.5	1:1.58	0.566	-0.13	21.91	23.30	1.377	0.780	22.2
Bottom side	20	QPSK 50_0	41055/2636.5	1:1.58	0.571	-0.10	21.91	23.30	1.377	0.786	22.2
Bottom side	20	QPSK 50_0	41490/2680	1:1.58	0.578	-0.10	21.88	23.30	1.387	0.802	22.2
Hotspot Test data(Separate 10mm 100%RB)											
Back side	20	QPSK 100_0	40620/2593	1:1.58	0.454	-0.04	21.96	23.30	1.361	0.618	22.2
Bottom side	20	QPSK 100_0	40620/2593	1:1.58	0.579	-0.14	21.96	23.30	1.361	0.788	22.2
Ant 5 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 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	40620/2593	1:1.58	0.057	-0.19	15.77	17.00	1.327	0.076	22.2
Left tilted	20	QPSK 1_0	40620/2593	1:1.58	0.052	-0.06	15.77	17.00	1.327	0.069	22.2
Right cheek	20	QPSK 1_0	40620/2593	1:1.58	0.235	0.05	15.77	17.00	1.327	0.312	22.2
Right tilted	20	QPSK 1_0	40620/2593	1:1.58	0.111	-0.15	15.77	17.00	1.327	0.147	22.2
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	40620/2593	1:1.58	0.071	0.15	15.73	17.00	1.340	0.095	22.2
Left tilted	20	QPSK 50_0	40620/2593	1:1.58	0.049	-0.13	15.73	17.00	1.340	0.066	22.2
Right cheek	20	QPSK 50_0	40620/2593	1:1.58	0.284	-0.11	15.73	17.00	1.340	0.380	22.2
Right tilted	20	QPSK 50_0	40620/2593	1:1.58	0.124	-0.02	15.73	17.00	1.340	0.166	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.069	0.12	19.27	20.50	1.327	0.092	22.2



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Back side	20	QPSK 1_0	40620/2593	1:1.58	0.135	0.04	19.27	20.50	1.327	0.179	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.052	-0.19	19.24	20.50	1.337	0.070	22.2
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.116	-0.14	19.24	20.50	1.337	0.155	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.049	0.14	15.77	17.00	1.327	0.065	22.2
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.139	0.02	15.77	17.00	1.327	0.185	22.2
Left side	20	QPSK 1_0	40620/2593	1:1.58	0.123	0.01	15.77	17.00	1.327	0.163	22.2
Top side	20	QPSK 1_0	40620/2593	1:1.58	0.000	0.11	15.77	17.00	1.327	0.000	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.060	-0.01	15.73	17.00	1.340	0.080	22.2
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.114	0.12	15.73	17.00	1.340	0.153	22.2
Left side	20	QPSK 50_0	40620/2593	1:1.58	0.128	-0.18	15.73	17.00	1.340	0.171	22.2
Top side	20	QPSK 50_0	40620/2593	1:1.58	0.000	-0.10	15.73	17.00	1.340	0.000	22.2

Table 22: SAR of LTE Band 41 for Head and Body.



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8.2.1 SAR Result of LTE Band 66

LTE Band 66 SAR Test Record											
Ant 2 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	132322/1745	1:1	0.697	-0.16	21.54	22.70	1.306	0.910	22.1
Left cheek	20	QPSK 1_0	132072/1720	1:1	0.577	0.04	21.45	22.70	1.334	0.769	22.1
Left cheek	20	QPSK 1_0	132572/1770	1:1	0.741	0.08	21.49	22.70	1.321	0.979	22.1
Left cheek-DL CA	20	QPSK 1_0	132572/1770	1:1	0.631	0.05	19.31	20.70	1.377	0.869	22.1
Left tilted	20	QPSK 1_0	132322/1745	1:1	0.177	0.13	21.54	22.70	1.306	0.231	22.1
Right cheek	20	QPSK 1_0	132322/1745	1:1	0.586	0.08	21.54	22.70	1.306	0.765	22.1
Right tilted	20	QPSK 1_0	132322/1745	1:1	0.122	-0.18	21.54	22.70	1.306	0.159	22.1
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	132322/1745	1:1	0.614	0.02	20.59	21.70	1.291	0.793	22.1
Left tilted	20	QPSK 50_0	132322/1745	1:1	0.123	-0.19	20.59	21.70	1.291	0.159	22.1
Right cheek	20	QPSK 50_0	132322/1745	1:1	0.469	-0.12	20.59	21.70	1.291	0.606	22.1
Right tilted	20	QPSK 50_0	132322/1745	1:1	0.083	-0.04	20.59	21.70	1.291	0.107	22.1
Head Test Data(100%RB)											
Left cheek	20	QPSK 100_0	132322/1745	1:1	0.599	-0.06	20.45	21.70	1.334	0.799	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	132322/1745	1:1	0.104	-0.02	21.54	22.70	1.306	0.136	22.1
Back side	20	QPSK 1_0	132322/1745	1:1	0.152	-0.05	21.54	22.70	1.306	0.199	22.1
Back side-DL CA	20	QPSK 1_0	132322/1745	1:1	0.121	0.03	19.48	20.70	1.324	0.160	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	132322/1745	1:1	0.084	0.05	20.59	21.70	1.291	0.108	22.1
Back side	20	QPSK 50_0	132322/1745	1:1	0.122	-0.04	20.59	21.70	1.291	0.158	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	132322/1745	1:1	0.225	-0.16	21.54	22.70	1.306	0.294	22.1
Back side	20	QPSK 1_0	132322/1745	1:1	0.358	-0.06	21.54	22.70	1.306	0.468	22.1
Right side	20	QPSK 1_0	132322/1745	1:1	0.516	0.19	21.54	22.70	1.306	0.674	22.1
Right side-DL CA	20	QPSK 1_0	132322/1745	1:1	0.433	0.01	19.48	20.70	1.324	0.573	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	132322/1745	1:1	0.180	-0.06	20.59	21.70	1.291	0.232	22.1
Back side	20	QPSK 50_0	132322/1745	1:1	0.270	0.15	20.59	21.70	1.291	0.349	22.1
Right side	20	QPSK 50_0	132322/1745	1:1	0.416	0.09	20.59	21.70	1.291	0.537	22.1
Ant 3 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	132322/1745	1:1	0.360	-0.12	17.56	19.00	1.393	0.502	22.1
Left tilted	20	QPSK 1_0	132322/1745	1:1	0.406	-0.03	17.56	19.00	1.393	0.566	22.1
Right cheek	20	QPSK 1_0	132322/1745	1:1	0.555	-0.01	17.56	19.00	1.393	0.773	22.1
Right tilted	20	QPSK 1_0	132322/1745	1:1	0.571	0.16	17.56	19.00	1.393	0.795	22.1
Right tilted-ENDC	20	QPSK 1_0	132322/1745	1:1	0.553	0.03	17.15	18.10	1.245	0.688	22.1
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	132322/1745	1:1	0.350	0.08	17.43	19.00	1.435	0.502	22.1
Left tilted	20	QPSK 50_0	132322/1745	1:1	0.383	0.15	17.43	19.00	1.435	0.550	22.1
Right cheek	20	QPSK 50_0	132322/1745	1:1	0.545	-0.11	17.43	19.00	1.435	0.782	22.1
Right tilted	20	QPSK 50_0	132322/1745	1:1	0.546	-0.01	17.43	19.00	1.435	0.784	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	132322/1745	1:1	0.252	-0.06	22.88	24.50	1.452	0.366	22.1



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Back side	20	QPSK 1_0	132322/1745	1:1	0.427	-0.04	22.88	24.50	1.452	0.620	22.1
Back side-ENDC	20	QPSK 1_0	132322/1745	1:1	0.414	-0.05	22.68	23.60	1.236	0.512	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	132322/1745	1:1	0.200	0.04	21.83	23.50	1.469	0.294	22.1
Back side	20	QPSK 50_0	132322/1745	1:1	0.359	-0.17	21.83	23.50	1.469	0.527	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	132322/1745	1:1	0.151	0.09	17.56	19.00	1.393	0.210	22.1
Back side	20	QPSK 1_0	132322/1745	1:1	0.324	0.17	17.56	19.00	1.393	0.451	22.1
Left side	20	QPSK 1_0	132322/1745	1:1	0.059	-0.02	17.56	19.00	1.393	0.082	22.1
Top side	20	QPSK 1_0	132322/1745	1:1	0.330	0.02	17.56	19.00	1.393	0.460	22.1
Top side-ENDC	20	QPSK 1_0	132322/1745	1:1	0.318	0.01	17.15	18.10	1.245	0.396	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	132322/1745	1:1	0.118	-0.19	17.43	19.00	1.435	0.169	22.1
Back side	20	QPSK 50_0	132322/1745	1:1	0.257	-0.10	17.43	19.00	1.435	0.369	22.1
Left side	20	QPSK 50_0	132322/1745	1:1	0.050	-0.06	17.43	19.00	1.435	0.072	22.1
Top side	20	QPSK 50_0	132322/1745	1:1	0.265	-0.17	17.43	19.00	1.435	0.380	22.1
Ant 4 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 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	132322/1745	1:1	0.100	0.18	22.49	24.00	1.416	0.142	22.1
Left tilted	20	QPSK 1_0	132322/1745	1:1	0.064	-0.05	22.49	24.00	1.416	0.091	22.1
Right cheek	20	QPSK 1_0	132322/1745	1:1	0.137	0.15	22.49	24.00	1.416	0.194	22.1
Right cheek-ENDC	20	QPSK 1_0	132322/1745	1:1	0.104	0.03	22.09	23.10	1.262	0.131	22.1
Right tilted	20	QPSK 1_0	132322/1745	1:1	0.051	-0.09	22.49	24.00	1.416	0.072	22.1
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	132322/1745	1:1	0.070	0.02	21.52	23.00	1.406	0.098	22.1
Left tilted	20	QPSK 50_0	132322/1745	1:1	0.043	-0.07	21.52	23.00	1.406	0.060	22.1
Right cheek	20	QPSK 50_0	132322/1745	1:1	0.100	-0.16	21.52	23.00	1.406	0.141	22.1
Right tilted	20	QPSK 50_0	132322/1745	1:1	0.077	0.10	21.52	23.00	1.406	0.108	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	132322/1745	1:1	0.250	-0.09	22.49	24.00	1.416	0.354	22.1
Back side	20	QPSK 1_0	132322/1745	1:1	0.317	0.01	22.49	24.00	1.416	0.449	22.1
Back side-ENDC	20	QPSK 1_0	132322/1745	1:1	0.246	0.05	22.09	23.10	1.262	0.310	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	132322/1745	1:1	0.209	0.12	21.52	23.00	1.406	0.294	22.1
Back side	20	QPSK 50_0	132322/1745	1:1	0.266	0.04	21.52	23.00	1.406	0.374	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	132322/1745	1:1	0.351	0.12	21.62	23.00	1.374	0.482	22.1
Back side	20	QPSK 1_0	132322/1745	1:1	0.400	0.16	21.62	23.00	1.374	0.550	22.1
Left side	20	QPSK 1_0	132322/1745	1:1	0.122	-0.17	21.62	23.00	1.374	0.168	22.1
Bottom side	20	QPSK 1_0	132322/1745	1:1	0.623	-0.01	21.62	23.00	1.374	0.856	22.1
Bottom side	20	QPSK 1_0	132072/1720	1:1	0.500	0.02	21.52	23.00	1.406	0.703	22.1
Bottom side	20	QPSK 1_0	132572/1770	1:1	0.705	0.04	21.49	23.00	1.416	0.998	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	132322/1745	1:1	0.350	-0.06	21.51	23.00	1.409	0.493	22.1
Back side	20	QPSK 50_0	132322/1745	1:1	0.433	-0.07	21.51	23.00	1.409	0.610	22.1
Left side	20	QPSK 50_0	132322/1745	1:1	0.132	-0.14	21.51	23.00	1.409	0.186	22.1
Bottom side	20	QPSK 50_0	132322/1745	1:1	0.646	-0.03	21.51	23.00	1.409	0.910	22.1
Bottom side	20	QPSK 50_0	132072/1720	1:1	0.528	0.04	21.44	23.00	1.432	0.756	22.1
Bottom side	20	QPSK 50_0	132572/1770	1:1	0.713	0.04	21.47	23.00	1.422	1.014	22.1
Bottom side-ENDC	20	QPSK 50_0	132572/1770	1:1	0.595	0.01	21.13	22.10	1.250	0.744	22.1
Hotspot Test data(Separate 10mm 100%RB)											
Bottom side	20	QPSK 100_0	132322/1745	1:1	0.639	0.16	21.45	23.00	1.429	0.913	22.1



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Ant 5 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 1-g (W/kg)	Liquid Temp.(℃)	
Head Test Data(1RB)												
Left cheek	20	QPSK 1_0	132322/1745	1:1	0.117	-0.15	20.18	21.50	1.355	0.159	22.1	
Left tilted	20	QPSK 1_0	132322/1745	1:1	0.065	0.04	20.18	21.50	1.355	0.088	22.1	
Right cheek	20	QPSK 1_0	132322/1745	1:1	0.508	-0.06	20.18	21.50	1.355	0.688	22.1	
Right cheek-DL CA	20	QPSK 1_0	132322/1745	1:1	0.445	0.05	17.80	19.20	1.380	0.614	22.1	
Right tilted	20	QPSK 1_0	132322/1745	1:1	0.162	-0.02	20.18	21.50	1.355	0.220	22.1	
Head Test Data(50%RB)												
Left cheek	20	QPSK 50_0	132322/1745	1:1	0.145	-0.03	20.17	21.50	1.358	0.197	22.1	
Left tilted	20	QPSK 50_0	132322/1745	1:1	0.065	-0.10	20.17	21.50	1.358	0.088	22.1	
Right cheek	20	QPSK 50_0	132322/1745	1:1	0.495	-0.08	20.17	21.50	1.358	0.672	22.1	
Right tilted	20	QPSK 50_0	132322/1745	1:1	0.167	0.12	20.17	21.50	1.358	0.227	22.1	
Body worn Test data(Separate 15mm 1RB)												
Front side	20	QPSK 1_0	132322/1745	1:1	0.061	0.08	21.27	22.50	1.327	0.081	22.1	
Back side	20	QPSK 1_0	132322/1745	1:1	0.087	0.07	21.27	22.50	1.327	0.115	22.1	
Body worn Test data(Separate 15mm 50%RB)												
Front side	20	QPSK 50_0	132322/1745	1:1	0.062	0.11	21.21	22.50	1.346	0.083	22.1	
Back side	20	QPSK 50_0	132322/1745	1:1	0.089	-0.11	21.21	22.50	1.346	0.120	22.1	
Back side-DL CA	20	QPSK 50_0	132322/1745	1:1	0.067	0.03	18.79	20.20	1.384	0.093	22.1	
Hotspot Test data(Separate 10mm 1RB)												
Front side	20	QPSK 1_0	132322/1745	1:1	0.111	0.11	20.18	21.50	1.355	0.150	22.1	
Back side	20	QPSK 1_0	132322/1745	1:1	0.178	0.18	20.18	21.50	1.355	0.241	22.1	
Left side	20	QPSK 1_0	132322/1745	1:1	0.243	0.11	20.18	21.50	1.355	0.329	22.1	
Top side	20	QPSK 1_0	132322/1745	1:1	0.000	0.07	20.18	21.50	1.355	0.000	22.1	
Hotspot Test data(Separate 10mm 50%RB)												
Front side	20	QPSK 50_0	132322/1745	1:1	0.113	0.18	20.17	21.50	1.358	0.153	22.1	
Back side	20	QPSK 50_0	132322/1745	1:1	0.166	-0.18	20.17	21.50	1.358	0.225	22.1	
Left side	20	QPSK 50_0	132322/1745	1:1	0.246	0.19	20.17	21.50	1.358	0.334	22.1	
Left side-DL CA	20	QPSK 50_0	132322/1745	1:1	0.221	0.01	17.50	19.20	1.479	0.327	22.1	
Top side	20	QPSK 50_0	132322/1745	1:1	0.000	0.02	20.17	21.50	1.358	0.000	22.1	

Table 23: SAR of LTE Band 66 for Head and Body.



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8.2.1 SAR Result of 5G NR n5

SA N5 SAR Test Record											
Ant0 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	20	QPSK 1_1	167300/836.5	1:1	0.252	-0.06	24.64	25.50	1.219	0.307	22.2
Left tilted	20	QPSK 1_1	167300/836.5	1:1	0.133	-0.01	24.64	25.50	1.219	0.162	22.2
Right cheek	20	QPSK 1_1	167300/836.5	1:1	0.253	0.08	24.64	25.50	1.219	0.308	22.2
Right tilted	20	QPSK 1_1	167300/836.5	1:1	0.158	-0.06	24.64	25.50	1.219	0.193	22.2
Head Test data(50%RB)											
Left cheek	20	QPSK 50_28	167300/836.5	1:1	0.216	0.15	24.61	25.50	1.227	0.265	22.2
Left tilted	20	QPSK 50_28	167300/836.5	1:1	0.094	0.01	24.61	25.50	1.227	0.115	22.2
Right cheek	20	QPSK 50_28	167300/836.5	1:1	0.203	0.17	24.61	25.50	1.227	0.249	22.2
Right tilted	20	QPSK 50_28	167300/836.5	1:1	0.130	0.03	24.61	25.50	1.227	0.160	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_1	167300/836.5	1:1	0.225	0.01	24.64	25.50	1.219	0.274	22.2
Back side	20	QPSK 1_1	167300/836.5	1:1	0.288	-0.06	24.64	25.50	1.219	0.351	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_28	167300/836.5	1:1	0.173	-0.06	24.61	25.50	1.227	0.212	22.2
Back side	20	QPSK 50_28	167300/836.5	1:1	0.223	0.04	24.61	25.50	1.227	0.274	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_1	167300/836.5	1:1	0.262	0.05	24.64	25.50	1.219	0.319	22.2
Back side	20	QPSK 1_1	167300/836.5	1:1	0.356	-0.04	24.64	25.50	1.219	0.434	22.2
Right side	20	QPSK 1_1	167300/836.5	1:1	0.366	0.06	24.64	25.50	1.219	0.446	22.2
Bottom side	20	QPSK 1_1	167300/836.5	1:1	0.251	0.12	24.64	25.50	1.219	0.306	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50_28	167300/836.5	1:1	0.200	-0.16	24.61	25.50	1.227	0.245	22.2
Back side	20	QPSK 50_28	167300/836.5	1:1	0.282	0.07	24.61	25.50	1.227	0.346	22.2
Right side	20	QPSK 50_28	167300/836.5	1:1	0.280	0.11	24.61	25.50	1.227	0.344	22.2
Bottom side	20	QPSK 50_28	167300/836.5	1:1	0.199	0.05	24.61	25.50	1.227	0.244	22.2
Ant1 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	20	QPSK 1_1	167300/836.5	1:1	0.651	0.09	22.22	22.70	1.117	0.727	22.2
Left tilted	20	QPSK 1_1	167300/836.5	1:1	0.084	-0.10	22.22	22.70	1.117	0.094	22.2
Right cheek	20	QPSK 1_1	167300/836.5	1:1	0.357	0.08	22.22	22.70	1.117	0.399	22.2
Right tilted	20	QPSK 1_1	167300/836.5	1:1	0.063	0.05	22.22	22.70	1.117	0.070	22.2
Head Test data(50%RB)											
Left cheek	20	QPSK 50_28	167300/836.5	1:1	0.709	0.07	22.20	22.70	1.122	0.796	22.2
Left tilted	20	QPSK 50_28	167300/836.5	1:1	0.081	0.03	22.20	22.70	1.122	0.091	22.2
Right cheek	20	QPSK 50_28	167300/836.5	1:1	0.414	-0.16	22.20	22.70	1.122	0.465	22.2
Right tilted	20	QPSK 50_28	167300/836.5	1:1	0.085	0.07	22.20	22.70	1.122	0.095	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_1	167300/836.5	1:1	0.209	-0.06	22.67	23.20	1.130	0.236	22.2
Back side	20	QPSK 1_1	167300/836.5	1:1	0.316	0.01	22.67	23.20	1.130	0.357	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50_28	167300/836.5	1:1	0.233	0.08	22.66	23.20	1.132	0.264	22.2
Back side	20	QPSK 50_28	167300/836.5	1:1	0.328	-0.07	22.66	23.20	1.132	0.371	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_1	167300/836.5	1:1	0.334	0.06	22.22	22.70	1.117	0.373	22.2



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Back side	20	QPSK 1_1	167300/836.5	1:1	0.499	-0.01	22.22	22.70	1.117	0.557	22.2
Left side	20	QPSK 1_1	167300/836.5	1:1	0.711	0.07	22.22	22.70	1.117	0.794	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50_28	167300/836.5	1:1	0.346	0.06	22.20	22.70	1.122	0.388	22.2
Back side	20	QPSK 50_28	167300/836.5	1:1	0.550	-0.16	22.20	22.70	1.122	0.617	22.2
Left side	20	QPSK 50_28	167300/836.5	1:1	0.752	-0.02	22.20	22.70	1.122	0.844	22.2
Hotspot Test data (Separate 10mm 100%RB)											
Left side	20	QPSK 100_0	167300/836.5	1:1	0.733	0.08	22.13	22.70	1.140	0.836	22.2

Table 24: SAR of 5G NR n5 for Head and Body.



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8.2.2 SAR Result of 5G NR n7

SA N7 SAR Test Record											
Ant2 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	40	QPSK 1_1	507000/2535	1:1	0.351	0.12	17.98	19.00	1.265	0.444	22.4
Left tilted	40	QPSK 1_1	507000/2535	1:1	0.109	-0.11	17.98	19.00	1.265	0.138	22.4
Right cheek	40	QPSK 1_1	507000/2535	1:1	0.612	0.01	17.98	19.00	1.265	0.774	22.4
Right tilted	40	QPSK 1_1	507000/2535	1:1	0.071	0.01	17.98	19.00	1.265	0.090	22.4
Head Test data(50%RB)											
Left cheek	40	QPSK 108_54	507000/2535	1:1	0.369	0.08	17.96	19.00	1.271	0.469	22.4
Left tilted	40	QPSK 108_54	507000/2535	1:1	0.109	0.06	17.96	19.00	1.271	0.138	22.4
Right cheek	40	QPSK 108_54	507000/2535	1:1	0.572	0.08	17.96	19.00	1.271	0.727	22.4
Right tilted	40	QPSK 108_54	507000/2535	1:1	0.055	0.09	17.96	19.00	1.271	0.070	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	40	QPSK 1_1	507000/2535	1:1	0.158	0.08	19.43	20.50	1.278	0.202	22.4
Back side	40	QPSK 1_1	507000/2535	1:1	0.253	-0.06	19.43	20.50	1.278	0.323	22.4
Body worn Test data(Separate 15mm 50%RB)											
Front side	40	QPSK 108_54	507000/2535	1:1	0.167	0.01	19.41	20.50	1.285	0.215	22.4
Back side	40	QPSK 108_54	507000/2535	1:1	0.267	0.07	19.41	20.50	1.285	0.343	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1_1	507000/2535	1:1	0.237	0.19	17.98	19.00	1.265	0.300	22.4
Back side	40	QPSK 1_1	507000/2535	1:1	0.382	-0.06	17.98	19.00	1.265	0.483	22.4
Right side	40	QPSK 1_1	507000/2535	1:1	0.680	-0.02	17.98	19.00	1.265	0.860	22.4
Hotspot Test data (Separate 10mm 50%RB)											
Front side	40	QPSK 108_54	507000/2535	1:1	0.227	0.06	17.96	19.00	1.271	0.288	22.4
Back side	40	QPSK 108_54	507000/2535	1:1	0.357	0.05	17.96	19.00	1.271	0.454	22.4
Right side	40	QPSK 108_54	507000/2535	1:1	0.673	0.04	17.96	19.00	1.271	0.855	22.4
Hotspot Test data (Separate 10mm 100%RB)											
Right side	40	QPSK 216_0	507000/2535	1:1	0.652	0.10	17.86	19.00	1.300	0.848	22.4
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Product specific 10g SAR Test Date(Separate 0mm 1RB)											
Right side	40	QPSK 1_1	507000/2535	1:1	0.831	0.04	19.43	20.50	1.278	1.062	22.4
Product specific 10g SAR Test Date (Separate 0mm 50%RB)											
Right side	40	QPSK 108_54	507000/2535	1:1	0.852	-0.03	19.41	20.50	1.285	1.095	22.4
Ant3 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	40	QPSK 1_1	507000/2535	1:1	0.419	0.14	18.48	19.00	1.127	0.472	22.4
Left tilted	40	QPSK 1_1	507000/2535	1:1	0.540	0.08	18.48	19.00	1.127	0.609	22.4



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Right cheek	40	QPSK 1_1	507000/2535	1:1	0.834	0.19	18.48	19.00	1.127	0.940	22.4
Right tilted	40	QPSK 1_1	507000/2535	1:1	0.909	0.04	18.48	19.00	1.127	1.025	22.4
Head Test data(50%RB)											
Left cheek	40	QPSK 108_54	507000/2535	1:1	0.406	0.14	18.41	19.00	1.146	0.465	22.4
Left tilted	40	QPSK 108_54	507000/2535	1:1	0.497	-0.14	18.41	19.00	1.146	0.569	22.4
Right cheek	40	QPSK 108_54	507000/2535	1:1	0.821	-0.02	18.41	19.00	1.146	0.940	22.4
Right tilted	40	QPSK 108_54	507000/2535	1:1	0.918	-0.07	18.41	19.00	1.146	1.052	22.4
Right tilted-repeated	40	QPSK 108_54	507000/2535	1:1	0.903	0.01	18.41	19.00	1.146	1.034	22.4
Head Test data(100%RB)											
Right cheek	40	QPSK 216_0	507000/2535	1:1	0.807	0.10	18.30	19.00	1.175	0.948	22.4
Right tilted	40	QPSK 216_0	507000/2535	1:1	0.891	-0.17	18.30	19.00	1.175	1.047	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	40	QPSK 1_1	507000/2535	1:1	0.279	0.15	24.76	25.50	1.186	0.331	22.4
Back side	40	QPSK 1_1	507000/2535	1:1	0.561	-0.02	24.76	25.50	1.186	0.665	22.4
Body worn Test data(Separate 15mm 50%RB)											
Front side	40	QPSK 108_54	507000/2535	1:1	0.274	-0.19	24.75	25.50	1.189	0.326	22.4
Back side	40	QPSK 108_54	507000/2535	1:1	0.556	0.01	24.75	25.50	1.189	0.661	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1_1	507000/2535	1:1	0.147	-0.11	18.48	19.00	1.127	0.166	22.4
Back side	40	QPSK 1_1	507000/2535	1:1	0.320	-0.15	18.48	19.00	1.127	0.361	22.4
Left side	40	QPSK 1_1	507000/2535	1:1	0.070	-0.15	18.48	19.00	1.127	0.079	22.4
Top side	40	QPSK 1_1	507000/2535	1:1	0.246	-0.01	18.48	19.00	1.127	0.277	22.4
Hotspot Test data (Separate 10mm 50%RB)											
Front side	40	QPSK 108_54	507000/2535	1:1	0.139	-0.01	18.41	19.00	1.146	0.159	22.4
Back side	40	QPSK 108_54	507000/2535	1:1	0.331	0.08	18.41	19.00	1.146	0.379	22.4
Left side	40	QPSK 108_54	507000/2535	1:1	0.072	0.07	18.41	19.00	1.146	0.082	22.4
Top side	40	QPSK 108_54	507000/2535	1:1	0.245	0.06	18.41	19.00	1.146	0.281	22.4
Ant4 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test data(1RB)											
Left cheek	40	QPSK 1_1	507000/2535	1:1	0.322	0.07	24.97	25.70	1.183	0.381	22.4
Left tilted	40	QPSK 1_1	507000/2535	1:1	0.119	-0.11	24.97	25.70	1.183	0.141	22.4
Right cheek	40	QPSK 1_1	507000/2535	1:1	0.176	-0.17	24.97	25.70	1.183	0.208	22.4
Right tilted	40	QPSK 1_1	507000/2535	1:1	0.114	-0.01	24.97	25.70	1.183	0.135	22.4
Head Test data(50%RB)											
Left cheek	40	QPSK 108_54	507000/2535	1:1	0.240	0.08	24.95	25.70	1.189	0.285	22.4
Left tilted	40	QPSK 108_54	507000/2535	1:1	0.100	-0.08	24.95	25.70	1.189	0.119	22.4
Right cheek	40	QPSK 108_54	507000/2535	1:1	0.139	0.19	24.95	25.70	1.189	0.165	22.4
Right tilted	40	QPSK 108_54	507000/2535	1:1	0.086	-0.01	24.95	25.70	1.189	0.102	22.4
Body worn Test data(Separate 15mm 1RB)											



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Front side	40	QPSK 1_1	507000/2535	1:1	0.376	0.01	24.97	25.70	1.183	0.445	22.4
Back side	40	QPSK 1_1	507000/2535	1:1	0.519	-0.12	24.97	25.70	1.183	0.614	22.4
Body worn Test data (Separate 15mm 50%RB)											
Front side	40	QPSK 108_54	507000/2535	1:1	0.376	-0.09	24.95	25.70	1.189	0.447	22.4
Back side	40	QPSK 108_54	507000/2535	1:1	0.522	0.01	24.95	25.70	1.189	0.620	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1_1	507000/2535	1:1	0.250	-0.18	20.23	20.70	1.114	0.279	22.4
Back side	40	QPSK 1_1	507000/2535	1:1	0.342	0.08	20.23	20.70	1.114	0.381	22.4
Left side	40	QPSK 1_1	507000/2535	1:1	0.093	-0.05	20.23	20.70	1.114	0.104	22.4
Bottom side	40	QPSK 1_1	507000/2535	1:1	0.395	-0.15	20.23	20.70	1.114	0.440	22.4
Hotspot Test data (Separate 10mm 50%RB)											
Front side	40	QPSK 108_54	507000/2535	1:1	0.245	-0.14	20.21	20.70	1.119	0.274	22.4
Back side	40	QPSK 108_54	507000/2535	1:1	0.333	0.19	20.21	20.70	1.119	0.373	22.4
Left side	40	QPSK 108_54	507000/2535	1:1	0.096	0.03	20.21	20.70	1.119	0.107	22.4
Bottom side	40	QPSK 108_54	507000/2535	1:1	0.387	-0.13	20.21	20.70	1.119	0.433	22.4
Ant5 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	40	QPSK 1_1	507000/2535	1:1	0.214	0.06	17.93	18.70	1.194	0.256	22.4
Left tilted	40	QPSK 1_1	507000/2535	1:1	0.145	-0.12	17.93	18.70	1.194	0.173	22.4
Right cheek	40	QPSK 1_1	507000/2535	1:1	0.735	-0.07	17.93	18.70	1.194	0.878	22.4
Right tilted	40	QPSK 1_1	507000/2535	1:1	0.394	-0.08	17.93	18.70	1.194	0.470	22.4
Head Test data(50%RB)											
Left cheek	40	QPSK 108_54	507000/2535	1:1	0.212	0.03	17.91	18.70	1.199	0.254	22.4
Left tilted	40	QPSK 108_54	507000/2535	1:1	0.152	-0.15	17.91	18.70	1.199	0.182	22.4
Right cheek	40	QPSK 108_54	507000/2535	1:1	0.753	-0.05	17.91	18.70	1.199	0.903	22.4
Right tilted	40	QPSK 108_54	507000/2535	1:1	0.340	0.19	17.91	18.70	1.199	0.408	22.4
Head Test data(100%RB)											
Right cheek	40	QPSK 216_0	507000/2535	1:1	0.830	-0.11	17.76	18.70	1.242	1.031	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	40	QPSK 1_1	507000/2535	1:1	0.121	-0.03	19.89	20.70	1.205	0.146	22.4
Back side	40	QPSK 1_1	507000/2535	1:1	0.220	-0.01	19.89	20.70	1.205	0.265	22.4
Body worn Test data (Separate 15mm 50%RB)											
Front side	40	QPSK 108_54	507000/2535	1:1	0.116	0.10	19.88	20.70	1.208	0.140	22.4
Back side	40	QPSK 108_54	507000/2535	1:1	0.214	-0.09	19.88	20.70	1.208	0.258	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1_1	507000/2535	1:1	0.187	0.02	17.93	18.70	1.194	0.223	22.4
Back side	40	QPSK 1_1	507000/2535	1:1	0.325	-0.19	17.93	18.70	1.194	0.388	22.4
Left side	40	QPSK 1_1	507000/2535	1:1	0.409	0.11	17.93	18.70	1.194	0.488	22.4
Top side	40	QPSK 1_1	507000/2535	1:1	0.097	-0.15	17.93	18.70	1.194	0.116	22.4
Hotspot Test data (Separate 10mm 50%RB)											



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Front side	40	QPSK 108_54	507000/2535	1:1	0.178	-0.04	17.91	18.70	1.199	0.214	22.4
Back side	40	QPSK 108_54	507000/2535	1:1	0.321	-0.04	17.91	18.70	1.199	0.385	22.4
Left side	40	QPSK 108_54	507000/2535	1:1	0.383	0.10	17.91	18.70	1.199	0.459	22.4
Top side	40	QPSK 108_54	507000/2535	1:1	0.090	-0.14	17.91	18.70	1.199	0.108	22.4

Table 25: SAR of 5G NR n7 for Head and Body.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
			SAR (1g)		SAR (1g)	SAR (1g)
Right tilted	507000/2535	0.918	0.903	1.016611296	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.

2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg



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8.2.3 SAR Result of 5G NR n41

SA N41 SAR Test Record											
Ant2 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	518598/2592.9 g	1:1	0.455	0.12	18.45	19.50	1.274	0.579	22.2
Left tilted	100	QPSK 1_1	518598/2592.9 g	1:1	0.129	-0.14	18.45	19.50	1.274	0.164	22.2
Right cheek	100	QPSK 1_1	518598/2592.9 g	1:1	0.758	-0.13	18.45	19.50	1.274	0.965	22.2
Right tilted	100	QPSK 1_1	518598/2592.9 g	1:1	0.069	0.05	18.45	19.50	1.274	0.088	22.2
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	518598/2592.9 g	1:1	0.407	0.10	18.42	19.50	1.282	0.522	22.2
Left tilted	100	QPSK 135_69	518598/2592.9 g	1:1	0.124	-0.07	18.42	19.50	1.282	0.159	22.2
Right cheek	100	QPSK 135_69	518598/2592.9 g	1:1	0.771	0.04	18.42	19.50	1.282	0.989	22.2
Right tilted	100	QPSK 135_69	518598/2592.9 g	1:1	0.071	-0.18	18.42	19.50	1.282	0.091	22.2
Head Test data(100%RB)											
Right cheek	100	QPSK 270_0	518598/2592.9 g	1:1	0.749	-0.09	18.38	19.50	1.294	0.969	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.9 g	1:1	0.127	0.19	20.43	21.50	1.279	0.162	22.2
Back side	100	QPSK 1_1	518598/2592.9 g	1:1	0.191	-0.03	20.43	21.50	1.279	0.244	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.9 g	1:1	0.139	0.09	20.37	21.50	1.297	0.180	22.2
Back side	100	QPSK 135_69	518598/2592.9 g	1:1	0.225	-0.05	20.37	21.50	1.297	0.292	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.9 g	1:1	0.248	-0.08	18.45	19.50	1.274	0.316	22.2
Back side	100	QPSK 1_1	518598/2592.9 g	1:1	0.436	0.12	18.45	19.50	1.274	0.555	22.2
Right side	100	QPSK 1_1	518598/2592.9 g	1:1	0.614	-0.08	18.45	19.50	1.274	0.782	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.9 g	1:1	0.251	0.06	18.42	19.50	1.282	0.322	22.2
Back side	100	QPSK 135_69	518598/2592.9 g	1:1	0.404	0.13	18.42	19.50	1.282	0.518	22.2
Right side	100	QPSK 135_69	518598/2592.9 g	1:1	0.565	0.16	18.42	19.50	1.282	0.725	22.2
Hotspot Test data (Separate 10mm 100%RB)											
Right side	100	QPSK 270_0	518598/2592.9 g	1:1	0.538	0.12	18.38	19.50	1.294	0.696	22.2
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)



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Product specific 10g SAR Test Date(Separate 0mm 1RB)											
Right side	100	QPSK 1_1	518598/2592.9 g	1:1	0.804	0.01	20.43	21.50	1.279	1.029	22.2
Product specific 10g SAR Test Date(Separate 0mm 50%RB)											
Right side	100	QPSK 135_69	518598/2592.9 g	1:1	0.816	-0.02	20.37	21.50	1.297	1.058	22.2
Ant3 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	518598/2592.9 g	1:1	0.261	-0.11	16.81	17.50	1.172	0.306	22.2
Left tilted	100	QPSK 1_1	518598/2592.9 g	1:1	0.343	-0.11	16.81	17.50	1.172	0.402	22.2
Right cheek	100	QPSK 1_1	518598/2592.9 g	1:1	0.538	-0.09	16.81	17.50	1.172	0.631	22.2
Right tilted	100	QPSK 1_1	518598/2592.9 g	1:1	0.641	-0.03	16.81	17.50	1.172	0.751	22.2
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	518598/2592.9 g	1:1	0.254	-0.14	16.78	17.50	1.180	0.300	22.2
Left tilted	100	QPSK 135_69	518598/2592.9 g	1:1	0.316	0.11	16.78	17.50	1.180	0.373	22.2
Right cheek	100	QPSK 135_69	518598/2592.9 g	1:1	0.581	-0.08	16.78	17.50	1.180	0.686	22.2
Right tilted	100	QPSK 135_69	518598/2592.9 g	1:1	0.600	0.18	16.78	17.50	1.180	0.708	22.2
Head Test data(100%RB)											
Right cheek	100	QPSK 270_0	518598/2592.9 g	1:1	0.547	-0.12	16.68	17.50	1.208	0.661	22.2
Right tilted	100	QPSK 270_0	518598/2592.9 g	1:1	0.583	0.14	16.68	17.50	1.208	0.704	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.9 g	1:1	0.157	0.10	23.99	25.50	1.416	0.222	22.2
Back side	100	QPSK 1_1	518598/2592.9 g	1:1	0.345	-0.08	23.99	25.50	1.416	0.488	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.9 g	1:1	0.146	-0.12	23.98	25.50	1.419	0.207	22.2
Back side	100	QPSK 135_69	518598/2592.9 g	1:1	0.292	0.01	23.98	25.50	1.419	0.414	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.9 g	1:1	0.116	0.09	16.81	17.50	1.172	0.136	22.2
Back side	100	QPSK 1_1	518598/2592.9 g	1:1	0.259	-0.05	16.81	17.50	1.172	0.304	22.2
Left side	100	QPSK 1_1	518598/2592.9 g	1:1	0.056	0.01	16.81	17.50	1.172	0.066	22.2
Top side	100	QPSK 1_1	518598/2592.9 g	1:1	0.179	0.08	16.81	17.50	1.172	0.210	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.9 g	1:1	0.107	0.06	16.78	17.50	1.180	0.126	22.2
Back side	100	QPSK 135_69	518598/2592.9 g	1:1	0.215	-0.02	16.78	17.50	1.180	0.254	22.2



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Left side	100	QPSK 135_69	518598/2592.9 g	1:1	0.078	-0.13	16.78	17.50	1.180	0.092	22.2
Top side	100	QPSK 135_69	518598/2592.9 g	1:1	0.157	0.12	16.78	17.50	1.180	0.185	22.2
Ant4 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	518598/2592.9 g	1:1	0.255	-0.17	24.89	25.70	1.205	0.307	22.2
Left tilted	100	QPSK 1_1	518598/2592.9 g	1:1	0.095	0.05	24.89	25.70	1.205	0.114	22.2
Right cheek	100	QPSK 1_1	518598/2592.9 g	1:1	0.157	-0.12	24.89	25.70	1.205	0.189	22.2
Right tilted	100	QPSK 1_1	518598/2592.9 g	1:1	0.109	0.04	24.89	25.70	1.205	0.131	22.2
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	518598/2592.9 g	1:1	0.228	-0.09	24.82	25.70	1.225	0.279	22.2
Left tilted	100	QPSK 135_69	518598/2592.9 g	1:1	0.090	-0.18	24.82	25.70	1.225	0.110	22.2
Right cheek	100	QPSK 135_69	518598/2592.9 g	1:1	0.149	-0.09	24.82	25.70	1.225	0.182	22.2
Right tilted	100	QPSK 135_69	518598/2592.9 g	1:1	0.083	-0.13	24.82	25.70	1.225	0.102	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.9 g	1:1	0.244	-0.05	24.89	25.70	1.205	0.294	22.2
Back side	100	QPSK 1_1	518598/2592.9 g	1:1	0.341	-0.02	24.89	25.70	1.205	0.411	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.9 g	1:1	0.238	0.05	24.82	25.70	1.225	0.291	22.2
Back side	100	QPSK 135_69	518598/2592.9 g	1:1	0.327	0.06	24.82	25.70	1.225	0.400	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.9 g	1:1	0.262	-0.07	20.77	20.70	0.984	0.258	22.2
Back side	100	QPSK 1_1	518598/2592.9 g	1:1	0.354	-0.01	20.77	20.70	0.984	0.348	22.2
Left side	100	QPSK 1_1	518598/2592.9 g	1:1	0.104	-0.14	20.77	20.70	0.984	0.102	22.2
Bottom side	100	QPSK 1_1	518598/2592.9 g	1:1	0.435	0.17	20.77	20.70	0.984	0.428	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.9 g	1:1	0.228	-0.15	20.69	20.70	1.002	0.229	22.2
Back side	100	QPSK 135_69	518598/2592.9 g	1:1	0.361	0.08	20.69	20.70	1.002	0.362	22.2
Left side	100	QPSK 135_69	518598/2592.9 g	1:1	0.082	0.05	20.69	20.70	1.002	0.082	22.2
Bottom side	100	QPSK 135_69	518598/2592.9 g	1:1	0.415	0.03	20.69	20.70	1.002	0.416	22.2
Ant5 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)



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Head Test data(1RB)											
Left cheek	100	QPSK 1_1	518598/2592.9 g	1:1	0.121	0.16	17.26	18.30	1.271	0.154	22.2
Left tilted	100	QPSK 1_1	518598/2592.9 g	1:1	0.097	-0.16	17.26	18.30	1.271	0.123	22.2
Right cheek	100	QPSK 1_1	518598/2592.9 g	1:1	0.562	0.13	17.26	18.30	1.271	0.714	22.2
Right tilted	100	QPSK 1_1	518598/2592.9 g	1:1	0.253	-0.06	17.26	18.30	1.271	0.321	22.2
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	518598/2592.9 g	1:1	0.109	0.10	17.23	18.30	1.279	0.139	22.2
Left tilted	100	QPSK 135_69	518598/2592.9 g	1:1	0.089	-0.19	17.23	18.30	1.279	0.114	22.2
Right cheek	100	QPSK 135_69	518598/2592.9 g	1:1	0.470	0.16	17.23	18.30	1.279	0.601	22.2
Right tilted	100	QPSK 135_69	518598/2592.9 g	1:1	0.217	0.09	17.23	18.30	1.279	0.278	22.2
Head Test data(100%RB)											
Right cheek	100	QPSK 270_0	518598/2592.9 g	1:1	0.476	0.01	17.19	18.30	1.291	0.615	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.9 g	1:1	0.107	0.15	20.21	21.30	1.285	0.138	22.2
Back side	100	QPSK 1_1	518598/2592.9 g	1:1	0.184	0.17	20.21	21.30	1.285	0.236	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.9 g	1:1	0.093	0.06	20.19	21.30	1.291	0.120	22.2
Back side	100	QPSK 135_69	518598/2592.9 g	1:1	0.158	-0.13	20.19	21.30	1.291	0.204	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.9 g	1:1	0.136	-0.13	17.26	18.30	1.271	0.173	22.2
Back side	100	QPSK 1_1	518598/2592.9 g	1:1	0.244	-0.06	17.26	18.30	1.271	0.310	22.2
Left side	100	QPSK 1_1	518598/2592.9 g	1:1	0.325	0.09	17.26	18.30	1.271	0.413	22.2
Top side	100	QPSK 1_1	518598/2592.9 g	1:1	0.066	-0.10	17.26	18.30	1.271	0.084	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.9 g	1:1	0.112	-0.08	17.23	18.30	1.279	0.143	22.2
Back side	100	QPSK 135_69	518598/2592.9 g	1:1	0.212	0.15	17.23	18.30	1.279	0.271	22.2
Left side	100	QPSK 135_69	518598/2592.9 g	1:1	0.258	-0.16	17.23	18.30	1.279	0.330	22.2
Top side	100	QPSK 135_69	518598/2592.9 g	1:1	0.057	0.15	17.23	18.30	1.279	0.073	22.2

Table 26: SAR of 5G NR n41 for Head and Body.



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8.2.4 SAR Result of 5G NR n66

SA N66 SAR Test Record											
Ant2 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	40	QPSK 1_1	349000/1745	1:1	0.552	-0.04	19.53	20.50	1.250	0.690	22.5
Left tilted	40	QPSK 1_1	349000/1745	1:1	0.148	-0.11	19.53	20.50	1.250	0.185	22.5
Right cheek	40	QPSK 1_1	349000/1745	1:1	0.419	-0.07	19.53	20.50	1.250	0.524	22.5
Right tilted	40	QPSK 1_1	349000/1745	1:1	0.086	-0.17	19.53	20.50	1.250	0.108	22.5
Head Test data(50%RB)											
Left cheek	40	QPSK 108_54	349000/1745	1:1	0.425	-0.11	19.42	20.50	1.282	0.545	22.5
Left tilted	40	QPSK 108_54	349000/1745	1:1	0.100	0.03	19.42	20.50	1.282	0.128	22.5
Right cheek	40	QPSK 108_54	349000/1745	1:1	0.317	-0.08	19.42	20.50	1.282	0.406	22.5
Right tilted	40	QPSK 108_54	349000/1745	1:1	0.062	-0.09	19.42	20.50	1.282	0.080	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	40	QPSK 1_1	349000/1745	1:1	0.081	0.04	19.53	20.50	1.250	0.101	22.5
Back side	40	QPSK 1_1	349000/1745	1:1	0.127	0.03	19.53	20.50	1.250	0.159	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	40	QPSK 108_54	349000/1745	1:1	0.057	0.04	19.42	20.50	1.282	0.073	22.5
Back side	40	QPSK 108_54	349000/1745	1:1	0.086	0.05	19.42	20.50	1.282	0.110	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1_1	349000/1745	1:1	0.170	-0.04	19.53	20.50	1.250	0.213	22.5
Back side	40	QPSK 1_1	349000/1745	1:1	0.259	-0.07	19.53	20.50	1.250	0.324	22.5
Right side	40	QPSK 1_1	349000/1745	1:1	0.461	0.10	19.53	20.50	1.250	0.576	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	40	QPSK 108_54	349000/1745	1:1	0.117	-0.03	19.42	20.50	1.282	0.150	22.5
Back side	40	QPSK 108_54	349000/1745	1:1	0.182	-0.01	19.42	20.50	1.282	0.233	22.5
Right side	40	QPSK 108_54	349000/1745	1:1	0.307	-0.11	19.42	20.50	1.282	0.394	22.5
Ant3 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	40	QPSK 1_1	349000/1745	1:1	0.538	0.07	18.37	19.00	1.156	0.622	22.5
Left tilted	40	QPSK 1_1	349000/1745	1:1	0.624	-0.01	18.37	19.00	1.156	0.721	22.5
Right cheek	40	QPSK 1_1	349000/1745	1:1	0.855	-0.11	18.37	19.00	1.156	0.988	22.5
Right tilted	40	QPSK 1_1	349000/1745	1:1	0.945	-0.14	18.37	19.00	1.156	1.093	22.5
Right tilted-repeated	40	QPSK 1_1	349000/1745	1:1	0.941	0.02	18.37	19.00	1.156	1.088	22.5
Head Test data(50%RB)											
Left cheek	40	QPSK 108_54	349000/1745	1:1	0.479	-0.03	18.36	19.00	1.159	0.555	22.5
Left tilted	40	QPSK 108_54	349000/1745	1:1	0.603	0.13	18.36	19.00	1.159	0.699	22.5
Right cheek	40	QPSK 108_54	349000/1745	1:1	0.826	-0.11	18.36	19.00	1.159	0.957	22.5
Right tilted	40	QPSK 108_54	349000/1745	1:1	0.907	-0.07	18.36	19.00	1.159	1.051	22.5
Head Test data(100%RB)											
Right cheek	40	QPSK 216_0	349000/1745	1:1	0.818	0.19	18.32	19.00	1.169	0.957	22.5
Right tilted	40	QPSK 216_0	349000/1745	1:1	0.879	-0.19	18.32	19.00	1.169	1.028	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	40	QPSK 1_1	349000/1745	1:1	0.391	-0.19	23.75	24.50	1.189	0.465	22.5
Back side	40	QPSK 1_1	349000/1745	1:1	0.613	0.11	23.75	24.50	1.189	0.729	22.5
Body worn Test data (Separate 15mm 50%RB)											
Front side	40	QPSK 108_54	349000/1745	1:1	0.381	-0.11	23.73	24.50	1.194	0.455	22.5
Back side	40	QPSK 108_54	349000/1745	1:1	0.581	0.08	23.73	24.50	1.194	0.694	22.5



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Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1_1	349000/1745	1:1	0.179	0.11	18.37	19.00	1.156	0.207	22.5
Back side	40	QPSK 1_1	349000/1745	1:1	0.401	0.05	18.37	19.00	1.156	0.464	22.5
Left side	40	QPSK 1_1	349000/1745	1:1	0.079	-0.14	18.37	19.00	1.156	0.091	22.5
Top side	40	QPSK 1_1	349000/1745	1:1	0.427	0.09	18.37	19.00	1.156	0.494	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	40	QPSK 108_54	349000/1745	1:1	0.183	-0.06	18.36	19.00	1.159	0.212	22.5
Back side	40	QPSK 108_54	349000/1745	1:1	0.381	-0.10	18.36	19.00	1.159	0.441	22.5
Left side	40	QPSK 108_54	349000/1745	1:1	0.078	-0.19	18.36	19.00	1.159	0.090	22.5
Top side	40	QPSK 108_54	349000/1745	1:1	0.419	-0.04	18.36	19.00	1.159	0.486	22.5
Ant4 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	40	QPSK 1_1	349000/1745	1:1	0.110	-0.19	23.29	23.80	1.125	0.124	22.5
Left tilted	40	QPSK 1_1	349000/1745	1:1	0.074	0.03	23.29	23.80	1.125	0.083	22.5
Right cheek	40	QPSK 1_1	349000/1745	1:1	0.162	-0.03	23.29	23.80	1.125	0.182	22.5
Right tilted	40	QPSK 1_1	349000/1745	1:1	0.083	-0.10	23.29	23.80	1.125	0.093	22.5
Head Test data(50%RB)											
Left cheek	40	QPSK 108_54	349000/1745	1:1	0.088	0.08	23.28	23.80	1.127	0.099	22.5
Left tilted	40	QPSK 108_54	349000/1745	1:1	0.058	-0.08	23.28	23.80	1.127	0.065	22.5
Right cheek	40	QPSK 108_54	349000/1745	1:1	0.125	0.02	23.28	23.80	1.127	0.141	22.5
Right tilted	40	QPSK 108_54	349000/1745	1:1	0.063	-0.03	23.28	23.80	1.127	0.071	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	40	QPSK 1_1	349000/1745	1:1	0.283	0.01	23.29	23.80	1.125	0.318	22.5
Back side	40	QPSK 1_1	349000/1745	1:1	0.343	-0.18	23.29	23.80	1.125	0.386	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	40	QPSK 108_54	349000/1745	1:1	0.228	0.17	23.28	23.80	1.127	0.257	22.5
Back side	40	QPSK 108_54	349000/1745	1:1	0.286	-0.16	23.28	23.80	1.127	0.322	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1_1	349000/1745	1:1	0.446	0.12	22.94	23.30	1.086	0.485	22.5
Back side	40	QPSK 1_1	349000/1745	1:1	0.591	-0.09	22.94	23.30	1.086	0.642	22.5
Left side	40	QPSK 1_1	349000/1745	1:1	0.170	-0.16	22.94	23.30	1.086	0.185	22.5
Bottom side	40	QPSK 1_1	349000/1745	1:1	0.786	-0.02	22.94	23.30	1.086	0.854	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	40	QPSK 108_54	349000/1745	1:1	0.362	0.17	22.87	23.30	1.104	0.400	22.5
Back side	40	QPSK 108_54	349000/1745	1:1	0.451	0.06	22.87	23.30	1.104	0.498	22.5
Left side	40	QPSK 108_54	349000/1745	1:1	0.141	0.17	22.87	23.30	1.104	0.156	22.5
Bottom side	40	QPSK 108_54	349000/1745	1:1	0.637	0.14	22.87	23.30	1.104	0.703	22.5
Hotspot Test data (Separate 10mm 100%RB)											
Bottom side	40	QPSK 216_0	349000/1745	1:1	0.622	-0.02	22.11	22.80	1.172	0.729	22.5
Ant5 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	40	QPSK 1_1	349000/1745	1:1	0.266	-0.09	21.98	22.70	1.180	0.314	22.5
Left tilted	40	QPSK 1_1	349000/1745	1:1	0.153	0.04	21.98	22.70	1.180	0.181	22.5
Right cheek	40	QPSK 1_1	349000/1745	1:1	0.902	0.08	21.98	22.70	1.180	1.065	22.5
Right tilted	40	QPSK 1_1	349000/1745	1:1	0.399	0.02	21.98	22.70	1.180	0.471	22.5
Head Test data(50%RB)											
Left cheek	40	QPSK 108_54	349000/1745	1:1	0.228	0.16	21.96	22.70	1.186	0.270	22.5
Left tilted	40	QPSK 108_54	349000/1745	1:1	0.121	0.11	21.96	22.70	1.186	0.143	22.5
Right cheek	40	QPSK 108_54	349000/1745	1:1	0.872	0.08	21.96	22.70	1.186	1.034	22.5



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Right tilted	40	QPSK 108_54	349000/1745	1:1	0.349	0.14	21.96	22.70	1.186	0.414	22.5
Head Test data(100%RB)											
Right cheek	40	QPSK 216_0	349000/1745	1:1	0.849	0.12	20.67	21.70	1.268	1.076	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	40	QPSK 1_1	349000/1745	1:1	0.064	-0.13	20.89	21.70	1.205	0.077	22.5
Back side	40	QPSK 1_1	349000/1745	1:1	0.116	-0.06	20.89	21.70	1.205	0.140	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	40	QPSK 108_54	349000/1745	1:1	0.050	-0.10	20.86	21.70	1.213	0.061	22.5
Back side	40	QPSK 108_54	349000/1745	1:1	0.096	-0.03	20.86	21.70	1.213	0.116	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1_1	349000/1745	1:1	0.165	-0.19	20.89	21.70	1.205	0.199	22.5
Back side	40	QPSK 1_1	349000/1745	1:1	0.274	-0.11	20.89	21.70	1.205	0.330	22.5
Left side	40	QPSK 1_1	349000/1745	1:1	0.404	0.06	20.89	21.70	1.205	0.487	22.5
Top side	40	QPSK 1_1	349000/1745	1:1	0.044	0.13	20.89	21.70	1.205	0.053	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	40	QPSK 108_54	349000/1745	1:1	0.175	0.15	20.86	21.70	1.213	0.212	22.5
Back side	40	QPSK 108_54	349000/1745	1:1	0.284	-0.03	20.86	21.70	1.213	0.345	22.5
Left side	40	QPSK 108_54	349000/1745	1:1	0.415	-0.04	20.86	21.70	1.213	0.504	22.5
Top side	40	QPSK 108_54	349000/1745	1:1	0.042	0.14	20.86	21.70	1.213	0.051	22.5

Table 27: SAR of 5G NR n66 for Head and Body.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
			SAR (1g)		SAR (1g)	SAR (1g)
Right tilted	349000/1745	0.945	0.941	1.004250797	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.

2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg



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8.2.5 SAR Result of 5G NR n77(3450~3550)

SA N77 SAR Test Record											
Ant1 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.153	0.04	20.09	21.10	1.262	0.193	22.2
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.052	-0.03	20.09	21.10	1.262	0.066	22.2
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.284	-0.12	20.09	21.10	1.262	0.358	22.2
Right cheek - PC2	100	QPSK 1_1	633334/3500	1:2	0.245	0.08	21.73	23.10	1.371	0.336	22.2
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.102	0.12	20.09	21.10	1.262	0.129	22.2
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.127	-0.08	20.04	21.10	1.276	0.162	22.2
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.049	-0.01	20.04	21.10	1.276	0.063	22.2
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.208	0.07	20.04	21.10	1.276	0.265	22.2
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.080	-0.02	20.04	21.10	1.276	0.102	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.098	0.14	18.66	19.60	1.242	0.122	22.2
Back side	100	QPSK 1_1	633334/3500	1:1	0.201	-0.10	18.66	19.60	1.242	0.250	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.110	0.17	18.65	19.60	1.245	0.137	22.2
Back side	100	QPSK 135_69	633334/3500	1:1	0.212	0.14	18.65	19.60	1.245	0.264	22.2
Back side - PC2	100	QPSK 135_69	633334/3500	1:2	0.178	0.06	20.24	21.60	1.368	0.243	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.272	0.13	18.66	19.60	1.242	0.338	22.2
Back side	100	QPSK 1_1	633334/3500	1:1	0.604	0.05	18.66	19.60	1.242	0.750	22.2
Left side	100	QPSK 1_1	633334/3500	1:1	0.858	-0.07	18.66	19.60	1.242	1.065	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.289	0.07	18.65	19.60	1.245	0.360	22.2
Back side	100	QPSK 135_69	633334/3500	1:1	0.575	0.00	18.65	19.60	1.245	0.716	22.2
Left side	100	QPSK 135_69	633334/3500	1:1	0.873	0.06	18.65	19.60	1.245	1.086	22.2
Left side - PC2	100	QPSK 135_69	633334/3500	1:2	0.769	0.07	20.24	21.60	1.368	1.052	22.2
Hotspot Test data (Separate 10mm 100%RB)											
Left side	100	QPSK 270_0	633334/3500	1:1	0.842	0.01	18.58	19.60	1.265	1.065	22.2
Ant6 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.202	0.05	15.90	16.20	1.072	0.216	22.2
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.219	-0.02	15.90	16.20	1.072	0.235	22.2
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.770	-0.01	15.90	16.20	1.072	0.825	22.2
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.609	-0.06	15.90	16.20	1.072	0.653	22.2
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.205	-0.11	15.89	16.20	1.074	0.220	22.2
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.213	0.17	15.89	16.20	1.074	0.229	22.2
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.836	0.08	15.89	16.20	1.074	0.898	22.2
Right cheek - PC2	100	QPSK 135_69	633334/3500	1:2	0.697	0.03	17.85	18.50	1.161	0.810	22.2
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.711	-0.14	15.89	16.20	1.074	0.764	22.2
Head Test data(100%RB)											
Right cheek	100	QPSK 270_0	633334/3500	1:1	0.792	0.05	15.77	16.20	1.104	0.874	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.105	0.07	17.37	17.70	1.079	0.113	22.2



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Back side	100	QPSK 1_1	633334/3500	1:1	0.213	-0.12	17.37	17.70	1.079	0.230	22.2
Back side - PC2	100	QPSK 1_1	633334/3500	1:2	0.162	0.04	19.33	20.00	1.167	0.189	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.113	0.09	17.31	17.70	1.094	0.124	22.2
Back side	100	QPSK 135_69	633334/3500	1:1	0.214	-0.18	17.31	17.70	1.094	0.234	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.155	0.16	15.90	16.20	1.072	0.166	22.2
Back side	100	QPSK 1_1	633334/3500	1:1	0.270	-0.18	15.90	16.20	1.072	0.289	22.2
Left side	100	QPSK 1_1	633334/3500	1:1	0.385	-0.08	15.90	16.20	1.072	0.413	22.2
Top side	100	QPSK 1_1	633334/3500	1:1	0.266	0.19	15.90	16.20	1.072	0.285	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.143	-0.05	15.89	16.20	1.074	0.154	22.2
Back side	100	QPSK 135_69	633334/3500	1:1	0.279	-0.06	15.89	16.20	1.074	0.300	22.2
Left side	100	QPSK 135_69	633334/3500	1:1	0.391	0.07	15.89	16.20	1.074	0.420	22.2
Left side - PC2	100	QPSK 135_69	633334/3500	1:2	0.344	0.04	17.85	18.50	1.161	0.400	22.2
Top side	100	QPSK 135_69	633334/3500	1:1	0.274	0.13	15.89	16.20	1.074	0.294	22.2
Ant7 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.621	0.07	16.76	17.30	1.132	0.703	22.3
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.768	0.15	16.76	17.30	1.132	0.870	22.3
Left tilted - PC2	100	QPSK 1_1	633334/3500	1:2	0.682	0.01	18.72	19.30	1.143	0.779	22.3
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.502	0.08	16.76	17.30	1.132	0.568	22.3
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.704	0.10	16.76	17.30	1.132	0.797	22.3
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.586	-0.14	16.66	17.30	1.159	0.679	22.3
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.743	0.07	16.66	17.30	1.159	0.861	22.3
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.571	0.11	16.66	17.30	1.159	0.662	22.3
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.632	-0.02	16.66	17.30	1.159	0.732	22.3
Head Test data(100%RB)											
Left tilted	100	QPSK 270_0	633334/3500	1:1	0.728	0.09	16.60	17.30	1.175	0.855	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.210	0.14	22.06	23.30	1.330	0.279	22.3
Back side	100	QPSK 1_1	633334/3500	1:1	0.403	0.02	22.06	23.30	1.330	0.536	22.3
Back side - PC2	100	QPSK 1_1	633334/3500	1:2	0.336	0.07	24.39	25.30	1.233	0.414	22.3
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.181	0.08	22.01	23.30	1.346	0.244	22.3
Back side	100	QPSK 135_69	633334/3500	1:1	0.348	0.02	22.01	23.30	1.346	0.468	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.172	-0.01	16.76	17.30	1.132	0.195	22.3
Back side	100	QPSK 1_1	633334/3500	1:1	0.397	-0.10	16.76	17.30	1.132	0.450	22.3
Top side	100	QPSK 1_1	633334/3500	1:1	0.436	-0.05	16.76	17.30	1.132	0.494	22.3
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.171	0.19	16.66	17.30	1.159	0.198	22.3
Back side	100	QPSK 135_69	633334/3500	1:1	0.390	0.02	16.66	17.30	1.159	0.452	22.3
Top side	100	QPSK 135_69	633334/3500	1:1	0.428	-0.02	16.66	17.30	1.159	0.496	22.3
Top side - PC2	100	QPSK 135_69	633334/3500	1:2	0.372	0.02	18.71	19.30	1.146	0.426	22.3
Ant8 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.599	0.02	17.36	18.10	1.186	0.710	22.3



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Left cheek - PC2	100	QPSK 1_1	633334/3500	1:2	0.528	0.09	19.13	20.10	1.250	0.660	22.3
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.235	0.17	17.36	18.10	1.186	0.279	22.3
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.135	-0.07	17.36	18.10	1.186	0.160	22.3
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.101	0.02	17.36	18.10	1.186	0.120	22.3
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.576	-0.09	17.32	18.10	1.197	0.689	22.3
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.241	-0.02	17.32	18.10	1.197	0.288	22.3
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.144	0.04	17.32	18.10	1.197	0.172	22.3
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.103	0.13	17.32	18.10	1.197	0.123	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.076	-0.07	18.49	19.60	1.291	0.098	22.3
Back side	100	QPSK 1_1	633334/3500	1:1	0.198	0.05	18.49	19.60	1.291	0.256	22.3
Back side - PC2	100	QPSK 1_1	633334/3500	1:2	0.155	-0.11	20.39	21.60	1.321	0.205	22.3
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.073	-0.18	18.40	19.60	1.318	0.096	22.3
Back side	100	QPSK 135_69	633334/3500	1:1	0.192	0.14	18.40	19.60	1.318	0.253	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.124	0.05	17.36	18.10	1.186	0.147	22.3
Back side	100	QPSK 1_1	633334/3500	1:1	0.256	-0.18	17.36	18.10	1.186	0.304	22.3
Right side	100	QPSK 1_1	633334/3500	1:1	0.382	-0.19	17.36	18.10	1.186	0.453	22.3
Top side	100	QPSK 1_1	633334/3500	1:1	0.076	0.11	17.36	18.10	1.186	0.090	22.3
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.127	-0.15	17.32	18.10	1.197	0.152	22.3
Back side	100	QPSK 135_69	633334/3500	1:1	0.319	-0.01	17.32	18.10	1.197	0.382	22.3
Right side	100	QPSK 135_69	633334/3500	1:1	0.384	-0.02	17.32	18.10	1.197	0.460	22.3
Right side - PC2	100	QPSK 135_69	633334/3500	1:2	0.343	0.12	19.12	20.10	1.253	0.430	22.3
Top side	100	QPSK 135_69	633334/3500	1:1	0.081	0.19	17.32	18.10	1.197	0.097	22.3

Table 28: SAR of 5G NR n77(3450~3550) for Head and Body.



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8.2.6 SAR Result of 5G NR n77(3700~3980)

SA N77 SAR Test Record											
Ant1 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	656000/3840	1:1	0.146	0.14	19.83	21.10	1.340	0.196	22.1
Left tilted	100	QPSK 1_1	656000/3840	1:1	0.048	-0.03	19.83	21.10	1.340	0.064	22.1
Right cheek	100	QPSK 1_1	656000/3840	1:1	0.276	0.17	19.83	21.10	1.340	0.370	22.1
Right cheek - PC2	100	QPSK 1_1	656000/3840	1:2	0.233	0.01	21.71	23.10	1.377	0.321	22.1
Right tilted	100	QPSK 1_1	656000/3840	1:1	0.096	-0.10	19.83	21.10	1.340	0.129	22.1
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	656000/3840	1:1	0.116	-0.07	19.81	21.10	1.346	0.156	22.1
Left tilted	100	QPSK 135_69	656000/3840	1:1	0.045	0.06	19.81	21.10	1.346	0.061	22.1
Right cheek	100	QPSK 135_69	656000/3840	1:1	0.197	-0.05	19.81	21.10	1.346	0.265	22.1
Right tilted	100	QPSK 135_69	656000/3840	1:1	0.071	-0.03	19.81	21.10	1.346	0.096	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.031	-0.14	18.31	19.60	1.346	0.042	22.1
Back side	100	QPSK 1_1	656000/3840	1:1	0.063	0.09	18.31	19.60	1.346	0.085	22.1
Back side - PC2	100	QPSK 1_1	656000/3840	1:2	0.041	-0.11	20.29	21.60	1.352	0.055	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.037	0.10	18.29	19.60	1.352	0.050	22.1
Back side	100	QPSK 135_69	656000/3840	1:1	0.048	-0.09	18.29	19.60	1.352	0.065	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.070	0.04	18.31	19.60	1.346	0.094	22.1
Back side	100	QPSK 1_1	656000/3840	1:1	0.146	0.04	18.31	19.60	1.346	0.196	22.1
Left side	100	QPSK 1_1	656000/3840	1:1	0.261	0.17	18.31	19.60	1.346	0.351	22.1
Left side - PC2	100	QPSK 1_1	656000/3840	1:2	0.230	-0.08	20.29	21.60	1.352	0.311	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.055	0.01	18.29	19.60	1.352	0.074	22.1
Back side	100	QPSK 135_69	656000/3840	1:1	0.121	-0.10	18.29	19.60	1.352	0.164	22.1
Left side	100	QPSK 135_69	656000/3840	1:1	0.197	-0.10	18.29	19.60	1.352	0.266	22.1
Ant6 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	656000/3840	1:1	0.131	-0.06	15.87	16.20	1.079	0.141	22.1
Left tilted	100	QPSK 1_1	656000/3840	1:1	0.112	0.17	15.87	16.20	1.079	0.121	22.1
Right cheek	100	QPSK 1_1	656000/3840	1:1	0.610	0.04	15.87	16.20	1.079	0.658	22.1
Right cheek - PC2	100	QPSK 1_1	656000/3840	1:2	0.528	0.01	17.86	18.50	1.159	0.612	22.1
Right tilted	100	QPSK 1_1	656000/3840	1:1	0.474	0.11	15.87	16.20	1.079	0.511	22.1
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	656000/3840	1:1	0.150	-0.12	15.83	16.20	1.089	0.163	22.1
Left tilted	100	QPSK 135_69	656000/3840	1:1	0.135	-0.06	15.83	16.20	1.089	0.147	22.1
Right cheek	100	QPSK 135_69	656000/3840	1:1	0.570	0.13	15.83	16.20	1.089	0.621	22.1
Right tilted	100	QPSK 135_69	656000/3840	1:1	0.448	-0.14	15.83	16.20	1.089	0.488	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.097	0.06	17.33	17.70	1.089	0.106	22.1
Back side	100	QPSK 1_1	656000/3840	1:1	0.141	-0.10	17.33	17.70	1.089	0.154	22.1
Back side - PC2	100	QPSK 1_1	656000/3840	1:2	0.103	-0.04	19.26	20.00	1.186	0.122	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.090	0.03	17.30	17.70	1.096	0.099	22.1



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Back side	100	QPSK 135_69	656000/3840	1:1	0.136	-0.02	17.30	17.70	1.096	0.149	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.120	0.03	15.87	16.20	1.079	0.129	22.1
Back side	100	QPSK 1_1	656000/3840	1:1	0.191	0.19	15.87	16.20	1.079	0.206	22.1
Left side	100	QPSK 1_1	656000/3840	1:1	0.346	-0.07	15.87	16.20	1.079	0.373	22.1
Top side	100	QPSK 1_1	656000/3840	1:1	0.165	0.12	15.87	16.20	1.079	0.178	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.119	-0.02	15.83	16.20	1.089	0.130	22.1
Back side	100	QPSK 135_69	656000/3840	1:1	0.202	0.05	15.83	16.20	1.089	0.220	22.1
Left side	100	QPSK 135_69	656000/3840	1:1	0.345	0.15	15.83	16.20	1.089	0.376	22.1
Left side - PC2	100	QPSK 135_69	656000/3840	1:2	0.307	-0.07	17.85	18.50	1.161	0.357	22.1
Top side	100	QPSK 135_69	656000/3840	1:1	0.156	-0.06	15.83	16.20	1.089	0.170	22.1
Ant7 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	656000/3840	1:1	0.647	-0.08	16.87	17.30	1.104	0.714	22.2
Left tilted	100	QPSK 1_1	656000/3840	1:1	0.746	0.01	16.87	17.30	1.104	0.824	22.2
Left tilted - PC2	100	QPSK 1_1	656000/3840	1:2	0.672	0.03	18.86	19.30	1.107	0.744	22.2
Right cheek	100	QPSK 1_1	656000/3840	1:1	0.559	-0.02	16.87	17.30	1.104	0.617	22.2
Right tilted	100	QPSK 1_1	656000/3840	1:1	0.686	0.03	16.87	17.30	1.104	0.757	22.2
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	656000/3840	1:1	0.532	0.01	16.84	17.30	1.112	0.591	22.2
Left tilted	100	QPSK 135_69	656000/3840	1:1	0.674	-0.05	16.84	17.30	1.112	0.749	22.2
Right cheek	100	QPSK 135_69	656000/3840	1:1	0.520	-0.07	16.84	17.30	1.112	0.578	22.2
Right tilted	100	QPSK 135_69	656000/3840	1:1	0.658	0.05	16.84	17.30	1.112	0.732	22.2
Head Test data(100%RB)											
Left tilted	100	QPSK 270_0	656000/3840	1:1	0.669	-0.09	16.70	17.30	1.148	0.768	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.172	-0.04	22.01	23.30	1.346	0.231	22.2
Back side	100	QPSK 1_1	656000/3840	1:1	0.521	0.02	22.01	23.30	1.346	0.701	22.2
Back side - PC2	100	QPSK 1_1	656000/3840	1:2	0.483	-0.08	24.31	25.30	1.256	0.607	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.164	0.06	21.99	23.30	1.352	0.222	22.2
Back side	100	QPSK 135_69	656000/3840	1:1	0.513	-0.07	21.99	23.30	1.352	0.694	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.096	0.16	16.87	17.30	1.104	0.106	22.2
Back side	100	QPSK 1_1	656000/3840	1:1	0.256	-0.01	16.87	17.30	1.104	0.283	22.2
Top side	100	QPSK 1_1	656000/3840	1:1	0.393	-0.16	16.87	17.30	1.104	0.434	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.093	-0.01	16.84	17.30	1.112	0.103	22.2
Back side	100	QPSK 135_69	656000/3840	1:1	0.253	-0.08	16.84	17.30	1.112	0.281	22.2
Top side	100	QPSK 135_69	656000/3840	1:1	0.400	0.14	16.84	17.30	1.112	0.445	22.2
Top side - PC2	100	QPSK 135_69	656000/3840	1:2	0.332	0.05	18.82	19.30	1.117	0.371	22.2
Ant8 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data(1RB)											
Left cheek	100	QPSK 1_1	656000/3840	1:1	0.670	0.02	17.26	18.10	1.213	0.813	22.2
Left cheek - PC2	100	QPSK 1_1	656000/3840	1:2	0.623	0.02	19.39	20.10	1.178	0.734	22.2
Left tilted	100	QPSK 1_1	656000/3840	1:1	0.274	0.08	17.26	18.10	1.213	0.332	22.2
Right cheek	100	QPSK 1_1	656000/3840	1:1	0.154	-0.04	17.26	18.10	1.213	0.187	22.2
Right tilted	100	QPSK 1_1	656000/3840	1:1	0.139	-0.18	17.26	18.10	1.213	0.169	22.2



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Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	656000/3840	1:1	0.611	0.07	17.24	18.10	1.219	0.745	22.2
Left tilted	100	QPSK 135_69	656000/3840	1:1	0.284	0.19	17.24	18.10	1.219	0.346	22.2
Right cheek	100	QPSK 135_69	656000/3840	1:1	0.150	0.03	17.24	18.10	1.219	0.183	22.2
Right tilted	100	QPSK 135_69	656000/3840	1:1	0.133	-0.13	17.24	18.10	1.219	0.162	22.2
Head Test data(100%RB)											
Left cheek	100	QPSK 270_0	656000/3840	1:1	0.608	0.17	17.22	18.10	1.225	0.745	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.085	-0.08	18.42	19.60	1.312	0.112	22.2
Back side	100	QPSK 1_1	656000/3840	1:1	0.311	-0.10	18.42	19.60	1.312	0.408	22.2
Back side - PC2	100	QPSK 1_1	656000/3840	1:2	0.258	-0.06	20.44	21.60	1.306	0.337	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.084	-0.09	18.39	19.60	1.321	0.111	22.2
Back side	100	QPSK 135_69	656000/3840	1:1	0.308	0.10	18.39	19.60	1.321	0.407	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.124	0.15	17.26	18.10	1.213	0.150	22.2
Back side	100	QPSK 1_1	656000/3840	1:1	0.321	-0.15	17.26	18.10	1.213	0.389	22.2
Right side	100	QPSK 1_1	656000/3840	1:1	0.340	-0.04	17.26	18.10	1.213	0.413	22.2
Right side - PC2	100	QPSK 1_1	656000/3840	1:2	0.291	0.07	19.39	20.10	1.178	0.343	22.2
Top side	100	QPSK 1_1	656000/3840	1:1	0.109	0.16	17.26	18.10	1.213	0.132	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.119	-0.01	17.24	18.10	1.219	0.145	22.2
Back side	100	QPSK 135_69	656000/3840	1:1	0.297	0.05	17.24	18.10	1.219	0.362	22.2
Right side	100	QPSK 135_69	656000/3840	1:1	0.337	0.18	17.24	18.10	1.219	0.411	22.2
Top side	100	QPSK 135_69	656000/3840	1:1	0.093	-0.01	17.24	18.10	1.219	0.113	22.2

Table 29: SAR of 5G NR n77(3700~3980) for Head and Body.



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8.2.7 SAR Result of WIFI 2.4G

Wi-Fi 2.4G SAR Test Record											
MIMO Test Record											
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 1-g (W/kg)	Liquid Temp.(°C)
Head Test data For Receiver on Standalone											
Left cheek	802.11b	6/2437	98.81%	1.012	0.947	-0.04	19.49	20.00	1.125	1.078	22.1
Left cheek-repeated	802.11b	6/2437	98.81%	1.012	0.942	0.08	19.49	20.00	1.125	1.072	22.1
Left cheek	802.11b	1/2412	98.81%	1.012	0.666	0.02	19.45	20.00	1.136	0.766	22.1
Left cheek	802.11b	11/2462	98.81%	1.012	0.919	0.07	19.38	20.00	1.155	1.074	22.1
Left tilted	802.11b	6/2437	98.81%	1.012	0.627	-0.16	19.49	20.00	1.125	0.714	22.1
Right cheek	802.11b	6/2437	98.81%	1.012	0.343	0.05	19.49	20.00	1.125	0.390	22.1
Right tilted	802.11b	6/2437	98.81%	1.012	0.312	0.07	19.49	20.00	1.125	0.355	22.1
Head Test data For Receiver on Simultaneous											
Left cheek	802.11b	6/2437	98.81%	1.012	0.382	-0.16	12.51	13.50	1.257	0.486	22.1
Left tilted	802.11b	6/2437	98.81%	1.012	0.230	0.02	12.51	13.50	1.257	0.293	22.1
Right cheek	802.11b	6/2437	98.81%	1.012	0.125	-0.06	12.51	13.50	1.257	0.159	22.1
Right tilted	802.11b	6/2437	98.81%	1.012	0.114	0.01	12.51	13.50	1.257	0.145	22.1
Body worn Test data(Separate 15mm)											
Front side	802.11b	6/2437	98.81%	1.012	0.106	0.02	19.49	20.00	1.125	0.121	22.1
Back side	802.11b	6/2437	98.81%	1.012	0.211	0.04	19.49	20.00	1.125	0.240	22.1
Hotspot Test data (Separate 10mm)											
Front side	802.11b	6/2437	98.81%	1.012	0.233	0.01	19.49	20.00	1.125	0.265	22.1
Back side	802.11b	6/2437	98.81%	1.012	0.462	0.14	19.49	20.00	1.125	0.526	22.1
Right side	802.11b	6/2437	98.81%	1.012	0.568	-0.03	19.49	20.00	1.125	0.646	22.1
Top side	802.11b	6/2437	98.81%	1.012	0.173	-0.16	19.49	20.00	1.125	0.197	22.1

Table 30: SAR of WIFI 2.4G for Head and Body.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Left cheek	6/2437	0.947	0.942	1.005307856	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.

2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).

3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

Note: 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 ≤ 1.2 W/kg, SAR test for the other 802.11 modes are not required.



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8.2.1 SAR Result of WIFI 5G

Wi-Fi 5G SAR Test Record											
MIMO Test Record											
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 1-g (W/kg)	Liquid Temp.(°C)
Head Test data of U-NII-2A For Receiver on Standalone											
Left cheek	802.11a	52/5260	98.10%	1.019	0.604	0.12	17.08	18.00	1.237	0.762	22.3
Left tilted	802.11a	52/5260	98.10%	1.019	0.726	0.03	17.08	18.00	1.237	0.916	22.3
Left tilted	802.11a	60/5300	98.10%	1.019	0.703	-0.02	16.48	18.00	1.420	1.017	22.3
Left tilted	802.11a	64/5320	98.10%	1.019	0.804	0.08	16.54	17.50	1.249	1.023	22.3
Left tilted-repeated	802.11a	64/5320	98.10%	1.019	0.801	0.03	16.54	17.50	1.249	1.020	22.3
Right cheek	802.11a	52/5260	98.10%	1.019	0.443	0.05	17.08	18.00	1.237	0.559	22.3
Right tilted	802.11a	52/5260	98.10%	1.019	0.496	-0.10	17.08	18.00	1.237	0.626	22.3
Head Test data of U-NII-2C For Receiver on Standalone											
Left cheek	802.11a	140/5700	98.10%	1.019	0.804	-0.05	17.89	18.50	1.151	0.944	22.5
Left cheek	802.11a	100/5500	98.10%	1.019	0.737	0.19	16.35	17.00	1.161	0.872	22.5
Left cheek	802.11a	116/5580	98.10%	1.019	0.745	0.16	17.28	18.00	1.182	0.897	22.5
Left tilted	802.11a	140/5700	98.10%	1.019	0.927	0.05	17.89	18.50	1.151	1.088	22.5
Left tilted-repeated	802.11a	140/5700	98.10%	1.019	0.923	0.04	17.89	18.50	1.151	1.083	22.5
Left tilted	802.11a	100/5500	98.10%	1.019	0.853	0.11	16.35	17.00	1.161	1.009	22.5
Left tilted	802.11a	116/5580	98.10%	1.019	0.866	0.03	17.28	18.00	1.182	1.043	22.5
Right cheek	802.11a	140/5700	98.10%	1.019	0.567	-0.03	17.89	18.50	1.151	0.665	22.5
Right tilted	802.11a	140/5700	98.10%	1.019	0.682	0.14	17.89	18.50	1.151	0.800	22.5
Head Test data of U-NII-3 For Receiver on Standalone											
Left cheek	802.11a	149/5745	98.10%	1.019	0.643	-0.13	16.19	17.00	1.205	0.790	22.3
Left tilted	802.11a	149/5745	98.10%	1.019	0.755	-0.14	16.19	17.00	1.205	0.927	22.3
Left tilted	802.11a	157/5785	98.10%	1.019	0.794	-0.13	15.76	16.50	1.187	0.960	22.3
Left tilted	802.11a	165/5825	98.10%	1.019	0.867	0.03	16.10	17.00	1.229	1.086	22.3
Left tilted-repeated	802.11a	165/5825	98.10%	1.019	0.861	0.01	16.10	17.00	1.229	1.079	22.3
Right cheek	802.11a	149/5745	98.10%	1.019	0.467	-0.15	16.19	17.00	1.205	0.573	22.3
Right tilted	802.11a	149/5745	98.10%	1.019	0.564	-0.19	16.19	17.00	1.205	0.693	22.3
Head Test data of U-NII-2A For Receiver on Simultaneous											
Left cheek	802.11a	52/5260	98.10%	1.019	0.231	0.07	12.95	14.00	1.272	0.300	22.3
Left tilted	802.11a	52/5260	98.10%	1.019	0.270	0.05	12.95	14.00	1.272	0.350	22.3
Right cheek	802.11a	52/5260	98.10%	1.019	0.163	-0.11	12.95	14.00	1.272	0.211	22.3
Right tilted	802.11a	52/5260	98.10%	1.019	0.185	-0.03	12.95	14.00	1.272	0.240	22.3
Head Test data of U-NII-2C For Receiver on Simultaneous											
Left cheek	802.11a	140/5700	98.10%	1.019	0.297	0.10	14.02	14.50	1.116	0.338	22.5
Left tilted	802.11a	140/5700	98.10%	1.019	0.333	0.09	14.02	14.50	1.116	0.379	22.5
Right cheek	802.11a	140/5700	98.10%	1.019	0.210	-0.13	14.02	14.50	1.116	0.239	22.5
Right tilted	802.11a	140/5700	98.10%	1.019	0.251	0.06	14.02	14.50	1.116	0.286	22.5
Head Test data of U-NII-3 For Receiver on Simultaneous											
Left cheek	802.11a	149/5745	98.10%	1.019	0.304	-0.06	13.67	14.50	1.210	0.375	22.3
Left tilted	802.11a	149/5745	98.10%	1.019	0.345	0.01	13.67	14.50	1.210	0.425	22.3
Right cheek	802.11a	149/5745	98.10%	1.019	0.225	0.13	13.67	14.50	1.210	0.277	22.3
Right tilted	802.11a	149/5745	98.10%	1.019	0.264	0.19	13.67	14.50	1.210	0.326	22.3
Body worn Test data of U-NII-2A (Separate 15mm)											
Front side	802.11a	52/5260	98.10%	1.019	0.124	0.09	19.96	21.00	1.272	0.161	22.3
Back side	802.11a	52/5260	98.10%	1.019	0.178	0.08	19.96	21.00	1.272	0.231	22.3
Body worn Test data of U-NII-2C (Separate 15mm)											
Front side	802.11a	140/5700	98.10%	1.019	0.185	-0.07	19.86	20.50	1.159	0.219	22.5
Back side	802.11a	140/5700	98.10%	1.019	0.218	0.09	19.86	20.50	1.159	0.258	22.5



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Body worn Test data of U-NII-3(Separate 15mm)											
Front side	802.11a	149/5745	98.10%	1.019	0.246	-0.09	20.59	21.50	1.233	0.309	22.3
Back side	802.11a	149/5745	98.10%	1.019	0.272	0.16	20.59	21.50	1.233	0.342	22.3
Hotspot Test data of U-NII-1(Separate 10mm)											
Front side	802.11a	40/5200	98.10%	1.019	0.150	-0.11	20.14	21.00	1.220	0.186	22.3
Back side	802.11a	40/5200	98.10%	1.019	0.243	0.07	20.14	21.00	1.220	0.302	22.3
Right side	802.11a	40/5200	98.10%	1.019	0.299	-0.16	20.14	21.00	1.220	0.372	22.3
Top side	802.11a	40/5200	98.10%	1.019	0.377	-0.14	20.14	21.00	1.220	0.469	22.3
Hotspot Test data of U-NII-3 (Separate 10mm)											
Front side	802.11a	149/5745	98.10%	1.019	0.284	0.16	20.59	21.50	1.233	0.357	22.3
Back side	802.11a	149/5745	98.10%	1.019	0.347	-0.03	20.59	21.50	1.233	0.436	22.3
Right side	802.11a	149/5745	98.10%	1.019	0.486	-0.11	20.59	21.50	1.233	0.611	22.3
Top side	802.11a	149/5745	98.10%	1.019	0.659	0.16	20.59	21.50	1.233	0.828	22.3
Top side	802.11a	161/5805	98.10%	1.019	0.663	0.15	20.58	21.50	1.236	0.835	22.3
Top side	802.11a	165/5825	98.10%	1.019	0.766	-0.04	20.55	21.50	1.245	0.972	22.3
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 10-g (W/kg)	Liquid Temp.(°C)
Product specific 10gSAR Test data of U-NII-2A(Separate 0mm)											
Front side	802.11a	52/5260	98.10%	1.019	0.323	-0.19	19.96	21.00	1.272	0.419	22.3
Back side	802.11a	52/5260	98.10%	1.019	0.244	0.03	19.96	21.00	1.272	0.316	22.3
Right side	802.11a	52/5260	98.10%	1.019	0.956	0.09	19.96	21.00	1.272	1.239	22.3
Top side	802.11a	52/5260	98.10%	1.019	0.889	0.17	19.96	21.00	1.272	1.153	22.3
Product specific 10gSAR Test data of U-NII-2C(Separate 0mm)											
Front side	802.11a	140/5700	98.10%	1.019	0.485	-0.04	19.86	20.50	1.159	0.573	22.5
Back side	802.11a	140/5700	98.10%	1.019	0.376	-0.17	19.86	20.50	1.159	0.444	22.5
Right side	802.11a	140/5700	98.10%	1.019	1.430	0.07	19.86	20.50	1.159	1.690	22.5
Top side	802.11a	140/5700	98.10%	1.019	1.690	-0.02	19.86	20.50	1.159	1.997	22.5

Table 31: SAR of WIFI 5G for Head and Body.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
			SAR (1g)		SAR (1g)	SAR (1g)
Left tilted	64/5320	0.804	0.801	1.003745318	N/A	N/A
Left tilted	140/5700	0.927	0.923	1.004333694	N/A	N/A
Left tilted	165/5825	0.867	0.861	1.006968641	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

Note:

- 1) As the 802.11a highest reported SAR is smaller than 1.2 W/kg, and the tune-up of the other 802.11 modes are not higher than 802.11a, therefore the adjusted SAR is ≤ 1.2 W/kg for other 802.11 modes, SAR test for the other 802.11 modes are not required. For Product specific 10gSAR the highest reported SAR is smaller than 3.0 W/kg, SAR test for the other 802.11 modes are also not required.



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8.2.2 SAR Result of BT

Bluetooth SAR Test Record											
Ant10 Test Record											
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 1-g (W/kg)	Liquid Temp.(°C)
Head Test data Receiver on											
Left cheek	DH5	39/2441	77.07%	1.298	0.083	-0.07	10.82	12.00	1.314	0.141	22.1
Left tilted	DH5	39/2441	77.07%	1.298	0.070	0.07	10.82	12.00	1.314	0.119	22.1
Right cheek	DH5	39/2441	77.07%	1.298	0.036	0.01	10.82	12.00	1.314	0.061	22.1
Right tilted	DH5	39/2441	77.07%	1.298	0.042	0.05	10.82	12.00	1.314	0.072	22.1
Body worn Test data (Separate 15mm)											
Front side	DH5	39/2441	77.07%	1.298	0.019	0.01	14.76	16.00	1.332	0.033	22.1
Back side	DH5	39/2441	77.07%	1.298	0.043	0.04	14.76	16.00	1.332	0.074	22.1
Hotspot Test data (Separate 10mm)											
Front side	DH5	39/2441	77.07%	1.298	0.034	-0.04	14.76	16.00	1.332	0.059	22.1
Back side	DH5	39/2441	77.07%	1.298	0.091	0.02	14.76	16.00	1.332	0.157	22.1
Right side	DH5	39/2441	77.07%	1.298	0.029	0.09	14.76	16.00	1.332	0.050	22.1
Top side	DH5	39/2441	77.07%	1.298	0.064	0.16	14.76	16.00	1.332	0.111	22.1

Table 32: SAR of BT for Head and Body.



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8.2.3 SAR Result of NFC

NFC SAR Test Record									
Test position	Test mode	Test /Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 10-g	Power drift (dB)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Body Test data (Separate 0mm)									
Front side	NFC	13.56MHz	100.00%	1.000	0.002	0.06	1.000	0.002	22.5
Back side	NFC	13.56MHz	100.00%	1.000	0.039	-0.02	1.000	0.039	22.5
Left side	NFC	13.56MHz	100.00%	1.000	0.001	0.13	1.000	0.001	22.5
Right side	NFC	13.56MHz	100.00%	1.000	0.001	0.02	1.000	0.001	22.5
Top side	NFC	13.56MHz	100.00%	1.000	0.001	0.11	1.000	0.001	22.5
Bottom side	NFC	13.56MHz	100.00%	1.000	0.001	-0.08	1.000	0.001	22.5

Table 33: SAR of NFC for Body.

Note:

- 1) NFC mainly operate in hand-held extremity exposure conditions and NFC sensing distance with other device or reading tag is about 20cm, therefore Standalone 10-g extremity SAR testing for NFC will be performed with active mode and max power mode, with 100% duty cycle at 0mmseparation distance.
- 2) NFC SAR is measured for all edges and surfaces of the device.
- 3) NFC 13.56MHz antenna por is not available on the device to support conducted power measurement, therefore the measured results are referred to as reported SAR.



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8.3 Multiple Transmitter Evaluation

8.3.1 Simultaneous SAR test evaluation

• Simultaneous Transmission Possibilities

NO	Simultaneous Tx Combination	Head	Body- worn	Hotspot	Product Specific 10-g (0mm)
1	WWAN + WIFI2.4G MIMO	Y	Y	Y	Y
2	WWAN + WIFI5G MIMO	Y	Y	Y	Y
3	WIFI5G MIMO + BT	Y	Y	Y	Y
4	WWAN + BT	Y	Y	Y	Y
5	WWAN + WIFI5G MIMO + BT	Y	Y	Y	Y

Note:

- 1) The device 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.
- 3) NFC is different from the working scenario of WWAN/WIFI(Head/Body-worn/Hotspot) and does not participate in the simultaneous transmission.
- 4) Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required it wireless router 1g SAR(Scaled to the maximum output power ,including tolerance) < 1.2 W/Kg. Therefore, no further analysis beyond tables included in this section was required to determine that possible Simultaneous transmission scenarios would not exceed the SAR limit.



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8.3.2 Simultaneous Transmission SAR Summation Scenario

Simultaneous Transmission SAR Summation Scenario for WLAN Head:

Test position		SARmax (W/kg)				Summed SAR	
		Main Ant0	WiFi 2.4G MIMO	WiFi 5G MIMO	BT		
		1	2	3	4	1+2	1+3+4
GSM850	Left cheek	0.781	0.486	0.375	0.141	1.267	1.297
	Left tilted	0.317	0.000	0.425	0.119	0.317	0.861
	Right cheek	0.219	0.159	0.277	0.061	0.378	0.557
	Right tilted	0.144	0.145	0.326	0.072	0.289	0.542
GSM1900	Left cheek	0.583	0.486	0.375	0.141	1.069	1.099
	Left tilted	0.689	0.000	0.425	0.119	0.689	1.233
	Right cheek	0.945	0.159	0.277	0.061	1.104	1.283
	Right tilted	1.041	0.145	0.326	0.072	1.186	1.439
WCDMA Band II	Left cheek	0.519	0.486	0.375	0.141	1.005	1.035
	Left tilted	0.614	0.000	0.425	0.119	0.614	1.158
	Right cheek	0.863	0.159	0.277	0.061	1.022	1.201
	Right tilted	1.033	0.145	0.326	0.072	1.178	1.431
WCDMA Band IV	Left cheek	0.742	0.486	0.375	0.141	1.228	1.258
	Left tilted	0.749	0.000	0.425	0.119	0.749	1.293
	Right cheek	1.036	0.159	0.277	0.061	1.195	1.374
	Right tilted	1.069	0.145	0.326	0.072	1.214	1.467
WCDMA Band V	Left cheek	0.915	0.486	0.375	0.141	1.401	1.431
	Left tilted	0.133	0.000	0.425	0.119	0.133	0.677
	Right cheek	0.393	0.159	0.277	0.061	0.552	0.731
	Right tilted	0.177	0.145	0.326	0.072	0.322	0.575
LTE Band 2	Left cheek	0.560	0.486	0.375	0.141	1.046	1.076
	Left tilted	0.671	0.000	0.425	0.119	0.671	1.215
	Right cheek	0.915	0.159	0.277	0.061	1.074	1.253
	Right tilted	1.051	0.145	0.326	0.072	1.196	1.449
LTE Band 4	Left cheek	0.778	0.486	0.375	0.141	1.264	1.294
	Left tilted	0.890	0.000	0.425	0.119	0.890	1.434
	Right cheek	1.080	0.159	0.277	0.061	1.239	1.418
	Right tilted	1.007	0.145	0.326	0.072	1.152	1.405
LTE Band 7	Left cheek	0.638	0.486	0.375	0.141	1.124	1.154
	Left tilted	0.620	0.000	0.425	0.119	0.620	1.164
	Right cheek	0.963	0.159	0.277	0.061	1.122	1.301
	Right tilted	1.090	0.145	0.326	0.072	1.235	1.488
LTE Band 12	Left cheek	0.739	0.486	0.375	0.141	1.225	1.255
	Left tilted	0.104	0.000	0.425	0.119	0.104	0.648
	Right cheek	0.498	0.159	0.277	0.061	0.657	0.836
	Right tilted	0.091	0.145	0.326	0.072	0.236	0.489
LTE Band 13	Left cheek	1.034	0.486	0.375	0.141	1.520	1.550
	Left tilted	0.157	0.000	0.425	0.119	0.157	0.701



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	Right cheek	0.620	0.159	0.277	0.061	0.779	0.958
	Right tilted	0.202	0.145	0.326	0.072	0.347	0.600
LTE Band 26	Left cheek	0.759	0.486	0.375	0.141	1.245	1.275
	Left tilted	0.166	0.000	0.425	0.119	0.166	0.710
	Right cheek	0.486	0.159	0.277	0.061	0.645	0.824
	Right tilted	0.186	0.145	0.326	0.072	0.331	0.584
LTE Band 41	Left cheek	0.450	0.486	0.375	0.141	0.936	0.966
	Left tilted	0.525	0.000	0.425	0.119	0.525	1.069
	Right cheek	0.902	0.159	0.277	0.061	1.061	1.240
	Right tilted	1.094	0.145	0.326	0.072	1.239	1.492
LTE Band 66	Left cheek	0.979	0.486	0.375	0.141	1.465	1.495
	Left tilted	0.566	0.000	0.425	0.119	0.566	1.110
	Right cheek	0.782	0.159	0.277	0.061	0.941	1.120
	Right tilted	0.795	0.145	0.326	0.072	0.940	1.193
5G NR n5	Left cheek	0.796	0.486	0.375	0.141	1.282	1.312
	Left tilted	0.162	0.000	0.425	0.119	0.162	0.706
	Right cheek	0.465	0.159	0.277	0.061	0.624	0.803
	Right tilted	0.193	0.145	0.326	0.072	0.338	0.591
5G NR n7	Left cheek	0.472	0.486	0.375	0.141	0.958	0.988
	Left tilted	0.609	0.000	0.425	0.119	0.609	1.153
	Right cheek	1.031	0.159	0.277	0.061	1.190	1.369
	Right tilted	1.052	0.145	0.326	0.072	1.197	1.450
5G NR n41	Left cheek	0.579	0.486	0.375	0.141	1.065	1.095
	Left tilted	0.402	0.000	0.425	0.119	0.402	0.946
	Right cheek	0.989	0.159	0.277	0.061	1.148	1.327
	Right tilted	0.751	0.145	0.326	0.072	0.896	1.149
5G NR n66	Left cheek	0.690	0.486	0.375	0.141	1.176	1.206
	Left tilted	0.721	0.000	0.425	0.119	0.721	1.265
	Right cheek	1.076	0.159	0.277	0.061	1.235	1.414
	Right tilted	1.093	0.145	0.326	0.072	1.238	1.491
5G NR n77 Part27Q	Left cheek	0.710	0.486	0.375	0.141	1.196	1.226
	Left tilted	0.870	0.000	0.425	0.119	0.870	1.414
	Right cheek	0.898	0.159	0.277	0.061	1.057	1.236
	Right tilted	0.797	0.145	0.326	0.072	0.942	1.195
5G NR n77 Part27O	Left cheek	0.813	0.486	0.375	0.141	1.299	1.329
	Left tilted	0.824	0.000	0.425	0.119	0.824	1.368
	Right cheek	0.658	0.159	0.277	0.061	0.817	0.996
	Right tilted	0.757	0.145	0.326	0.072	0.902	1.155



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Simultaneous Transmission SAR Summation Scenario for WLAN Body: Body-worn:

Test position		SARmax (W/kg)				Summed SAR	
		Main Ant0	WiFi 2.4G MIMO	WiFi 5G MIMO	BT		
		1	2	3	4	1+2	1+3+4
GSM850	Front side	0.586	0.121	0.309	0.033	0.895	0.928
	Back side	0.815	0.240	0.342	0.074	1.157	1.231
GSM1900	Front side	0.170	0.121	0.309	0.033	0.479	0.512
	Back side	0.343	0.240	0.342	0.074	0.685	0.759
WCDMA Band II	Front side	0.475	0.121	0.309	0.033	0.784	0.817
	Back side	0.688	0.240	0.342	0.074	1.030	1.104
WCDMA Band IV	Front side	0.585	0.121	0.309	0.033	0.894	0.927
	Back side	1.025	0.240	0.342	0.074	1.367	1.441
WCDMA Band V	Front side	0.475	0.121	0.309	0.033	0.784	0.817
	Back side	0.688	0.240	0.342	0.074	1.030	1.104
LTE Band 2	Front side	0.439	0.121	0.309	0.033	0.748	0.781
	Back side	0.797	0.240	0.342	0.074	1.139	1.213
LTE Band 4	Front side	0.575	0.121	0.309	0.033	0.884	0.917
	Back side	0.923	0.240	0.342	0.074	1.265	1.339
LTE Band 7	Front side	0.555	0.121	0.309	0.033	0.864	0.897
	Back side	0.728	0.240	0.342	0.074	1.070	1.144
LTE Band 12	Front side	0.242	0.121	0.309	0.033	0.551	0.584
	Back side	0.358	0.240	0.342	0.074	0.700	0.774
LTE Band 13	Front side	0.578	0.121	0.309	0.033	0.887	0.920
	Back side	0.839	0.240	0.342	0.074	1.181	1.255
LTE Band 26	Front side	0.596	0.121	0.309	0.033	0.905	0.938
	Back side	0.741	0.240	0.342	0.074	1.083	1.157
LTE Band 41	Front side	0.353	0.121	0.309	0.033	0.662	0.695
	Back side	0.427	0.240	0.342	0.074	0.769	0.843
LTE Band 66	Front side	0.366	0.121	0.309	0.033	0.675	0.708
	Back side	0.620	0.240	0.342	0.074	0.962	1.036
5G NR n5	Front side	0.274	0.121	0.309	0.033	0.583	0.616
	Back side	0.371	0.240	0.342	0.074	0.713	0.787
5G NR n7	Front side	0.447	0.121	0.309	0.033	0.756	0.789
	Back side	0.665	0.240	0.342	0.074	1.007	1.081
5G NR n41	Front side	0.294	0.121	0.309	0.033	0.603	0.636
	Back side	0.488	0.240	0.342	0.074	0.830	0.904
5G NR n66	Front side	0.465	0.121	0.309	0.033	0.774	0.807
	Back side	0.729	0.240	0.342	0.074	1.071	1.145
5G NR n77 Part27Q	Front side	0.279	0.121	0.309	0.033	0.588	0.621
	Back side	0.536	0.240	0.342	0.074	0.878	0.952
5G NR n77 Part27O	Front side	0.231	0.121	0.309	0.033	0.540	0.573
	Back side	0.701	0.240	0.342	0.074	1.043	1.117



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Hotspot:

Test position		SARmax (W/kg)				Summed SAR	
		Main Ant0	WiFi 2.4G MIMO	WiFi 5G MIMO	BT		
		1	2	3	4	1+2	1+3+4
GSM850	Front side	0.403	0.265	0.357	0.059	0.668	0.819
	Back side	0.589	0.526	0.436	0.157	1.115	1.182
	Left side	0.851	0.000	0.000	0.000	0.851	0.851
	Right side	0.285	0.646	0.611	0.050	0.931	0.946
	Top side	0.000	0.197	0.972	0.111	0.197	1.083
	Bottom side	0.235	0.000	0.000	0.000	0.235	0.235
GSM1900	Front side	0.288	0.265	0.357	0.059	0.553	0.704
	Back side	0.461	0.526	0.436	0.157	0.987	1.054
	Left side	0.110	0.000	0.000	0.000	0.110	0.110
	Right side	0.000	0.646	0.611	0.050	0.646	0.661
	Top side	0.469	0.197	0.972	0.111	0.666	1.552
	Bottom side	0.611	0.000	0.000	0.000	0.611	0.611
WCDMA Band II	Front side	0.513	0.265	0.357	0.059	0.778	0.929
	Back side	0.633	0.526	0.436	0.157	1.159	1.226
	Left side	0.202	0.000	0.000	0.000	0.202	0.202
	Right side	0.000	0.646	0.611	0.050	0.646	0.661
	Top side	0.494	0.197	0.972	0.111	0.691	1.577
	Bottom side	1.014	0.000	0.000	0.000	1.014	1.014
WCDMA Band IV	Front side	0.561	0.265	0.357	0.059	0.826	0.977
	Back side	0.653	0.526	0.436	0.157	1.179	1.246
	Left side	0.463	0.000	0.000	0.000	0.463	0.463
	Right side	0.664	0.646	0.611	0.050	1.310	1.325
	Top side	0.493	0.197	0.972	0.111	0.690	1.576
	Bottom side	1.082	0.000	0.000	0.000	1.082	1.082
WCDMA Band V	Front side	0.429	0.265	0.357	0.059	0.694	0.845
	Back side	0.644	0.526	0.436	0.157	1.170	1.237
	Left side	0.980	0.000	0.000	0.000	0.980	0.980
	Right side	0.371	0.646	0.611	0.050	1.017	1.032
	Top side	0.000	0.197	0.972	0.111	0.197	1.083
	Bottom side	0.277	0.000	0.000	0.000	0.277	0.277
LTE Band 2	Front side	0.436	0.265	0.357	0.059	0.701	0.852
	Back side	0.551	0.526	0.436	0.157	1.077	1.144
	Left side	0.247	0.000	0.000	0.000	0.247	0.247
	Right side	0.000	0.646	0.611	0.050	0.646	0.661
	Top side	0.491	0.197	0.972	0.111	0.688	1.574
	Bottom side	0.982	0.000	0.000	0.000	0.982	0.982
LTE Band 4	Front side	0.433	0.265	0.357	0.059	0.698	0.849
	Back side	0.595	0.526	0.436	0.157	1.121	1.188
	Left side	0.298	0.000	0.000	0.000	0.298	0.298
	Right side	0.268	0.646	0.611	0.050	0.914	0.929
	Top side	0.210	0.197	0.972	0.111	0.407	1.293
	Bottom side	0.754	0.000	0.000	0.000	0.754	0.754
LTE Band 7	Front side	0.404	0.265	0.357	0.059	0.669	0.820
	Back side	0.526	0.526	0.436	0.157	1.052	1.119
	Left side	0.473	0.000	0.000	0.000	0.473	0.473
	Right side	0.791	0.646	0.611	0.050	1.437	1.452
	Top side	0.294	0.197	0.972	0.111	0.491	1.377
	Bottom side	0.590	0.000	0.000	0.000	0.590	0.590



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LTE Band 12	Front side	0.323	0.265	0.357	0.059	0.588	0.739
	Back side	0.491	0.526	0.436	0.157	1.017	1.084
	Left side	0.863	0.000	0.000	0.000	0.863	0.863
	Right side	0.344	0.646	0.611	0.050	0.990	1.005
	Top side	0.000	0.197	0.972	0.111	0.197	1.083
	Bottom side	0.121	0.000	0.000	0.000	0.121	0.121
LTE Band 13	Front side	0.517	0.265	0.357	0.059	0.782	0.933
	Back side	0.781	0.526	0.436	0.157	1.307	1.374
	Left side	1.087	0.000	0.000	0.000	1.087	1.087
	Right side	0.490	0.646	0.611	0.050	1.136	1.151
	Top side	0.000	0.197	0.972	0.111	0.197	1.083
	Bottom side	0.248	0.000	0.000	0.000	0.248	0.248
LTE Band 26	Front side	0.358	0.265	0.357	0.059	0.623	0.774
	Back side	0.537	0.526	0.436	0.157	1.063	1.130
	Left side	0.894	0.000	0.000	0.000	0.894	0.894
	Right side	0.217	0.646	0.611	0.050	0.863	0.878
	Top side	0.000	0.197	0.972	0.111	0.197	1.083
	Bottom side	0.151	0.000	0.000	0.000	0.151	0.151
LTE Band 41	Front side	0.482	0.265	0.357	0.059	0.747	0.898
	Back side	0.646	0.526	0.436	0.157	1.172	1.239
	Left side	0.171	0.000	0.000	0.000	0.171	0.171
	Right side	0.395	0.646	0.611	0.050	1.041	1.056
	Top side	0.257	0.197	0.972	0.111	0.454	1.340
	Bottom side	0.832	0.000	0.000	0.000	0.832	0.832
LTE Band 66	Front side	0.493	0.265	0.357	0.059	0.758	0.909
	Back side	0.610	0.526	0.436	0.157	1.136	1.203
	Left side	0.334	0.000	0.000	0.000	0.334	0.334
	Right side	0.674	0.646	0.611	0.050	1.320	1.335
	Top side	0.460	0.197	0.972	0.111	0.657	1.543
	Bottom side	1.014	0.000	0.000	0.000	1.014	1.014
5G NR n5	Front side	0.388	0.265	0.357	0.059	0.653	0.804
	Back side	0.617	0.526	0.436	0.157	1.143	1.210
	Left side	0.844	0.000	0.000	0.000	0.844	0.844
	Right side	0.446	0.646	0.611	0.050	1.092	1.107
	Top side	0.000	0.197	0.972	0.111	0.197	1.083
	Bottom side	0.306	0.000	0.000	0.000	0.306	0.306
5G NR n7	Front side	0.300	0.265	0.357	0.059	0.565	0.716
	Back side	0.483	0.526	0.436	0.157	1.009	1.076
	Left side	0.488	0.000	0.000	0.000	0.488	0.488
	Right side	0.860	0.646	0.611	0.050	1.506	1.521
	Top side	0.281	0.197	0.972	0.111	0.478	1.364
	Bottom side	0.440	0.000	0.000	0.000	0.440	0.440
5G NR n41	Front side	0.322	0.265	0.357	0.059	0.587	0.738
	Back side	0.555	0.526	0.436	0.157	1.081	1.148
	Left side	0.413	0.000	0.000	0.000	0.413	0.413
	Right side	0.782	0.646	0.611	0.050	1.428	1.443
	Top side	0.210	0.197	0.972	0.111	0.407	1.293
	Bottom side	0.428	0.000	0.000	0.000	0.428	0.428
5G NR n66	Front side	0.485	0.265	0.357	0.059	0.750	0.901
	Back side	0.642	0.526	0.436	0.157	1.168	1.235
	Left side	0.504	0.000	0.000	0.000	0.504	0.504
	Right side	0.576	0.646	0.611	0.050	1.222	1.237
	Top side	0.494	0.197	0.972	0.111	0.691	1.577
	Bottom side	0.854	0.000	0.000	0.000	0.854	0.854



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5G NR n77 Part27Q	Front side	0.360	0.265	0.357	0.059	0.625	0.776
	Back side	0.750	0.526	0.436	0.157	1.276	1.343
	Left side	1.086	0.000	0.000	0.000	1.086	1.086
	Right side	0.460	0.646	0.611	0.050	1.106	1.121
	Top side	0.496	0.197	0.972	0.111	0.693	1.579
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
5G NR n77 Part27O	Front side	0.150	0.265	0.357	0.059	0.415	0.566
	Back side	0.389	0.526	0.436	0.157	0.915	0.982
	Left side	0.376	0.000	0.000	0.000	0.376	0.376
	Right side	0.413	0.646	0.611	0.050	1.059	1.074
	Top side	0.445	0.197	0.972	0.111	0.642	1.528
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000

Product specific 10g SAR:

Test position		SARmax (W/kg)		Summed SAR
		Main Ant0	WiFi 5G MIMO	
		1	2	1+2
GSM850	Front side	0.000	0.573	0.573
	Back side	0.000	0.444	0.444
	Left side	1.536	0.000	1.536
	Right side	0.000	1.690	1.690
	Top side	0.000	1.997	1.997
	Bottom side	0.000	0.000	0.000
WCDMA V	Front side	0.000	0.573	0.573
	Back side	0.000	0.444	0.444
	Left side	1.330	0.000	1.330
	Right side	0.000	1.690	1.690
	Top side	0.000	1.997	1.997
	Bottom side	0.000	0.000	0.000
LTE Band 13	Front side	0.000	0.573	0.573
	Back side	1.663	0.444	2.107
	Left side	1.414	0.000	1.414
	Right side	0.000	1.690	1.690
	Top side	0.000	1.997	1.997
	Bottom side	0.000	0.000	0.000
LTE Band 26	Front side	0.000	0.573	0.573
	Back side	0.000	0.444	0.444
	Left side	1.987	0.000	1.987
	Right side	0.000	1.690	1.690
	Top side	0.000	1.997	1.997
	Bottom side	0.000	0.000	0.000
5G NR n7	Front side	0.000	0.573	0.573
	Back side	0.000	0.444	0.444
	Left side	0.000	0.000	0.000
	Right side	1.095	1.690	2.785
	Top side	0.000	1.997	1.997
	Bottom side	0.000	0.000	0.000
5G NR n41	Front side	0.000	0.573	0.573
	Back side	0.000	0.444	0.444



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	Left side	0.000	0.000	0.000
	Right side	1.058	1.690	2.748
	Top side	0.000	1.997	1.997
	Bottom side	0.000	0.000	0.000



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9 Equipment list

Test Platform		SPEAG DASY8 Professional				
Description		SAR Test System (Frequency range 10MHz-10GHz)				
Software Reference		DASY8 Module SAR V16.2.0.1425				
Hardware Reference						
Equipment		Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	Twin Phantom	SPEAG	SAM 1	1769	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 3	1770	NCR	NCR
☒	Twin Phantom	SPEAG	EL4	1143	NCR	NCR
☒	DAE	SPEAG	DAE4	1374	2023-06-05	2024-06-04
☒	DAE	SPEAG	DAE4	1324	2022-10-17	2023-10-16
☒	E-Field Probe	SPEAG	EX3DV4	3793	2022-09-30	2023-09-29
☒	E-Field Probe	SPEAG	EX3DV4	3789	2022-09-30	2023-09-29
☒	Validation Kits	SPEAG	CLA13	1032	2023-02-09	2024-02-08
☒	Validation Kits	SPEAG	D750V3	1210	2021-09-08	2024-09-07
☒	Validation Kits	SPEAG	D835V2	4d161	2020-08-28	2023-08-27
☒	Validation Kits	SPEAG	D1750V2	1105	2020-08-29	2023-08-28
☒	Validation Kits	SPEAG	D1900V2	5d114	2020-08-27	2023-08-26
☒	Validation Kits	SPEAG	D2450V2	922	2020-08-27	2023-08-26
☒	Validation Kits	SPEAG	D2600V2	1180	2021-05-12	2024-05-11
☒	Validation Kits	SPEAG	D3500V2	1124	2021-05-17	2024-05-16
☒	Validation Kits	SPEAG	D3900V2	1071	2021-05-20	2024-05-19
☒	Validation Kits	SPEAG	D5GHzV2	1313	2022-01-25	2025-01-24
☒	Dielectric parameter probes	SPEAG	DAKS-3.5	1120	2023-06-06	2024-06-05
☒	Vector Network Analyzer and Vector Reflectometer	SPEAG	DAKS_VNA R140	0050920	2023-06-06	2024-06-05
☒	Universal Radio Communication Tester	R&S	CMW500	111637	2022-09-26	2023-09-26
☒	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
☒	Signal Generator	R&S	SMB100A	182393	2023-02-06	2024-02-05
☒	Preamplifier	Qiji	YX28980933	202104001	NCR	NCR
☒	Power Sensor	Keysight	U2002H	MY5639004	2022-09-16	2023-09-15
☒	Power Sensor	Keysight	U2002H	MY48200110	2022-12-23	2023-12-22
☒	Attenuator	SHX	TS2-3dB	30704	NCR	NCR
☒	Coaxial low pass filter	Mini-Circuits	VLF-2500(+)	NA	NCR	NCR
☒	Coaxial low pass filter	Microlab Fxr	LA-F13	NA	NCR	NCR
☒	DC POWER SUPPLY	SAKO	SK1730SL5A	NA	NCR	NCR
☒	Speed reading thermometer	LKM	DTM3000	SUW201-30-01	2022-09-19	2023-09-18
☒	Humidity and Temperature Indicator	MingGao	MingGao	NA	2022-09-19	2023-09-18

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

---END---



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