

FCC SAR TEST REPORT

Application No.: AR/2021/C0003
Applicant: Xiaomi Communications Co., Ltd.
Manufacturer: Xiaomi Communications Co., Ltd.
Product Name: Mobile Phone
Model No.(EUT): 22021211RG
Trade Mark: POCO
FCC ID: 2AFZZ211RG
Standards: FCC 47CFR §2.1093
Date of Receipt: 2022-01-17
Date of Test: 2022-01-19 to 2022-02-18
Date of Issue: 2022-02-24
Test conclusion: **PASS ***

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

Authorized Signature:


 Panta Sun

Wireless Laboratory Manager



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SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
 Wireless Laboratory Manager

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REVISION HISTORY

Report Number	Revision	Description	Issue Date
SUAR/2021/C000309	01	Original	2022-02-24



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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)			
	Head	Body-worn	Hotspot	Product specific 10g SAR
GSM850	1.01	0.29	1.05	2.52
GSM1900	1.07	0.31	0.64	/
WCDMA Band II	1.09	0.56	1.00	/
WCDMA Band IV	1.09	0.56	0.95	/
WCDMA Band V	0.69	0.42	0.93	/
LTE Band 2	1.09	0.70	0.78	/
LTE Band 4	1.05	0.57	1.04	/
LTE Band 5	0.44	0.34	0.55	/
LTE Band 7	1.01	0.65	0.61	/
LTE Band 12	0.96	0.33	0.93	/
LTE Band 17	0.96	0.33	0.93	/
LTE Band 26	0.83	0.68	1.05	2.63
LTE Band 38	0.54	0.54	0.55	/
LTE Band 41	0.54	0.54	0.55	/
NR Band 5	0.39	0.36	0.55	/
NR Band 7	0.90	0.56	0.63	/
NR Band 38	1.08	1.09	0.56	/
NR Band 41	1.08	1.09	0.56	/
NR Band 77	1.08	0.77	0.87	/
NR Band 78 (Class2/Class3)	1.08	0.54	0.80	/
WI-FI (2.4GHz)	1.04	0.27	0.49	/
WI-FI (5GHz)	1.04	0.42	0.84	2.65
BT	0.80	0.22	0.31	/
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	1.56	1.57	1.59	2.65
SPLSR	N/A	N/A	N/A	N/A
SPLSR Limited		0.04		0.1

Note:

1) The Simultaneous transmission SAR is the same test position of the WWAN antenna + WiFi/BT antenna.
 2) According to TCB workshop October,2014 RF Exposure Procedures Update (Overlapping Bands): SAR for LTE Band 17 (Frequency range:704-716 MHz)/LTE Band 38 (Frequency range:2570-2620 MHz)/n38 (Frequency range:2570-2620 MHz) is respectively covered by LTE Band 12 (Frequency range:699-716 MHz)/LTE Band 41 (Frequency range:2496-2690 MHz)/n41 (Frequency range:2496-2690 MHz) due to similar frequency range, same maximum tune up limit and same channel bandwidth.

Reviewed by

Well Wei

Well Wei

Prepared by

Nature Shen

Nature Shen



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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:	Nature Shen, KING-P li



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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):	22021211RG		
FCC ID:	2AFZZ211RG		
Trade Mark:	POCO		
Product Phase:	Identical Prototype		
IMEI:	865998060067385/865998060067047/865998060043261/865998060066809/ 865998060059341/865998060035226		
Hardware Version:	P2		
Software Version:	MIUI 13		
Device Operating Configurations :			
Modulation Mode:	GSM: GMSK, 8PSK; WCDMA: QPSK; 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, OFDMA; 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 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
	NR Band n5	824~849	869-894
NR Band n7	2500~2570	2620~2690	
NR Band n38	2570~2620	2570~2620	



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	NR Band n41	2496~2690	2496~2690
	NR Band n77	3450~3550	3450~3550
		3700~3980	3700~3980
	NR Band n78 (Class 2/3)	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	
RF Cable:	<input checked="" type="checkbox"/> Provided by the applicant <input type="checkbox"/> Provided by the laboratory		
Battery Information:	Model:	BP49	
	Normal Voltage:	+3.87V	
	Rated capacity:	4400mAh	
	Manufacturer:	Dongguan Amprerex Technology Limited	



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1.4.1 DUT Antenna Locations (Back View)

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

Note:

- 1) The test device is a smart phone. The overall diagonal dimension of this device is 173 mm. Per KDB 648474 D04, because the diagonal distance of this device is $\geq 160\text{mm}$, so it is a phablet.
- 2) DIV Antenna does not support transmitter function.

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	Yes	No	No	Yes
Ant 3	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	No	No
Ant 4	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	Yes	No
Ant 5	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	Yes	No
Ant 6	Hotspot/Product specific 10g SAR	Yes	Yes	No	No	Yes	No
Ant 7	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	Yes	No
Ant 8	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	No	Yes	No
Ant 16+18	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	Yes	No
Ant 17+18	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	Yes	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.

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

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

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

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

Intra-band contiguous CA operating bands:

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



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- c) The device supports Inter-band uplink LTE CA for CA_4A-7A with two component carriers in the uplink.
- 1. 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 \leq the LTE Band, the SAR data of the LTE Band is used instead of the SAR data of the LTE Inter-band uplink band.



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1.4.3 Power reduction specification

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

- 1) A fixed level power reduction is applied for some frequency bands when hotspot mode becomes active. When the hotspot is disabled, the power value will be recovered.
- 2) A fixed level power reduction is applied for some frequency bands when simultaneously transmitting with the other antennas in certain simultaneous transmission conditions. The standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction
- 3) A fixed level power reduction is applied for some frequency bands when handset operate "held to the ear" condition, the power reduction triggered by audio receiver detection. The audio receiver detection is used to determine head or body scenario.
- 4) The proximity sensor is used to indicate when the device is held close to a user's body exposure condition. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes of main antenna to ensure SAR compliance (Refer to section 5.4 for detailed proximity Sensor information and validation data per KDB 616217).

The 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
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 D01	General RF Exposure Guidance v06
KDB 865664 D01	SAR Measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02	RF Exposure Reporting v01r02
KDB 690783 D01	SAR Listings on Grants v01r03
KDB 616217 D04	SAR for laptop and tablets v01r02



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1.6 RF exposure limits

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

Notes:

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

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

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

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

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



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2 Laboratory Environment

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

Table 2: The Ambient Conditions



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3 SAR Measurements System Configuration

3.1 The SAR Measurement System

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

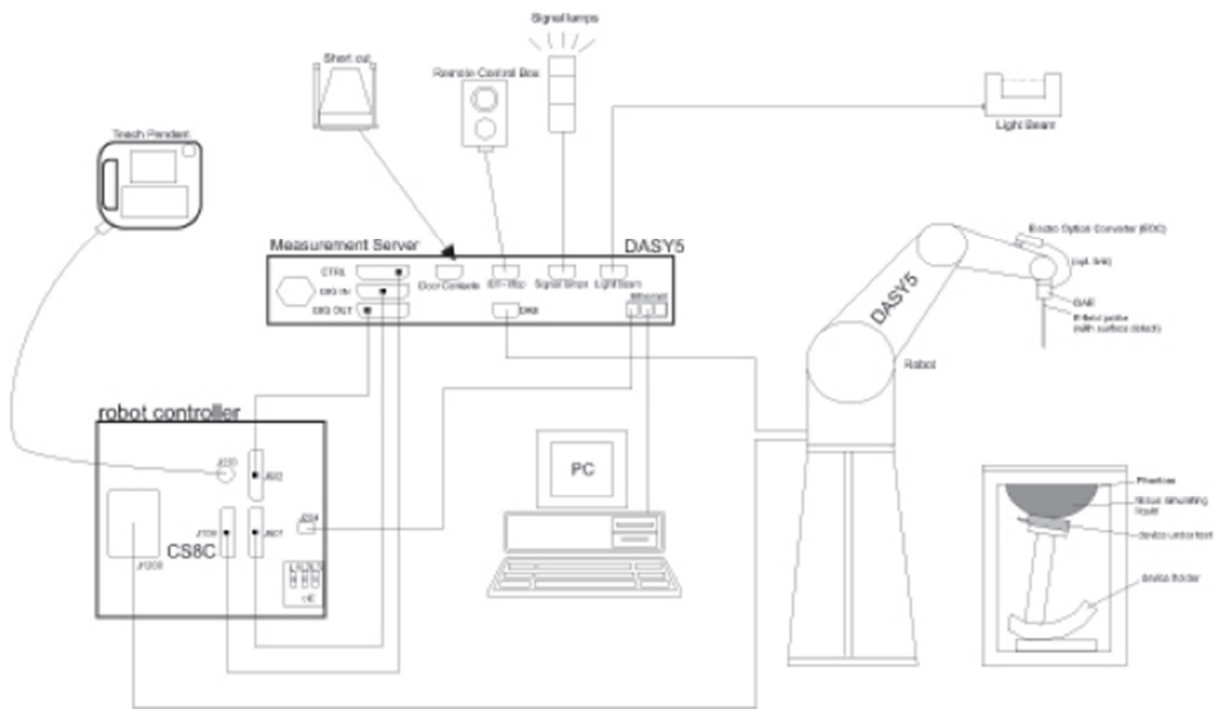
The DASY5 system for performing compliance tests consists of the following items:

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

A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

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



F-1. SAR Measurement System Configuration



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

3.2 Isotropic E-field Probe EX3DV4

	<p>Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)</p>
<p>Calibration</p>	<p>ISO/IEC 17025 calibration service available.</p>
<p>Frequency</p>	<p>10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)</p>
<p>Directivity</p>	<p>± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)</p>
<p>Dynamic Range</p>	<p>10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)</p>
<p>Dimensions</p>	<p>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</p>
<p>Application</p>	<p>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%.</p>
<p>Compatibility</p>	<p>DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI</p>



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3.3 Data Acquisition Electronics (DAE)

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

3.4 SAM Twin Phantom

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

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

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




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3.5 ELI Phantom

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

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

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



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<2GHz), 30mm*30mm*30mm (f for 2-3GHz) and 24mm*24mm*22mm (f for 5-6GHz) was assessed by measuring 5x5x7 points (f<2GHz), 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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		≤ 3 GHz	> 3 GHz	
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm	
Maximum probe angle from probe axis to phantom surface normal at the measurement location		$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$	
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}		≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm	
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be \leq the corresponding x or y dimension of the test device with at least one measurement point on the test device.			
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm	
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	

Step 4: Power reference measurement (drift)

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



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:

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

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

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

E-field probes:

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



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H-field probes:

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

With V_i = compensated signal of channel i ($i = x, y, z$)

Norm i = sensor sensitivity of channel i ($i = x, y, z$)
 [mV/(V/m)²] for E-field Probes

ConvF = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

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

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

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

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

with SAR = local specific absorption rate in mW/g

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

σ = conductivity in [mho/m] or [Siemens/m]

ϵ = equivalent tissue density in g/cm³

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

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

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

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

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



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4 SAR measurement variability and uncertainty

4.1 SAR measurement variability

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

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
 - 2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
 - 3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).
 - 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

4.2 SAR measurement uncertainty

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



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5 Description of Test Position

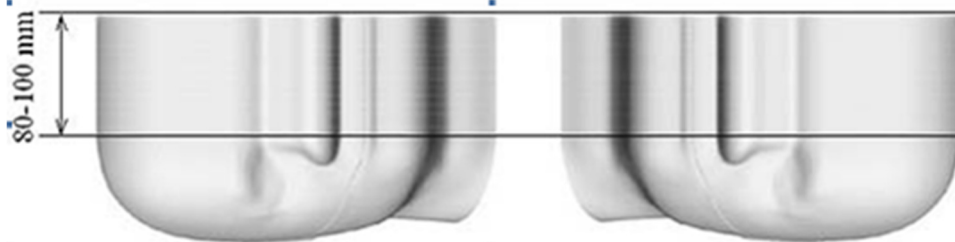
5.1 Head Exposure Condition

5.1.1 SAM Phantom Shape

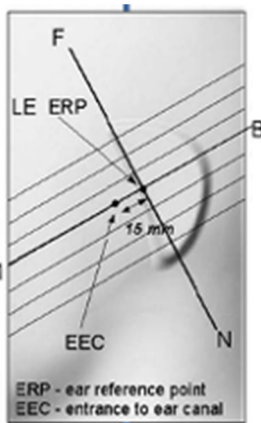


F-3. Front, back, and side views of SAM (model for the phantom shell). Full-head model is for illustration purposes only-procedures in this recommended practice are intended primarily for the phantom setup.

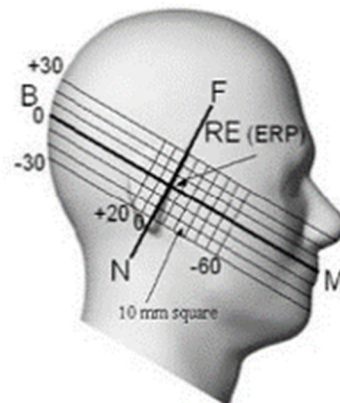
Note: The centre strip including the nose region has a different thickness tolerance.



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



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



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



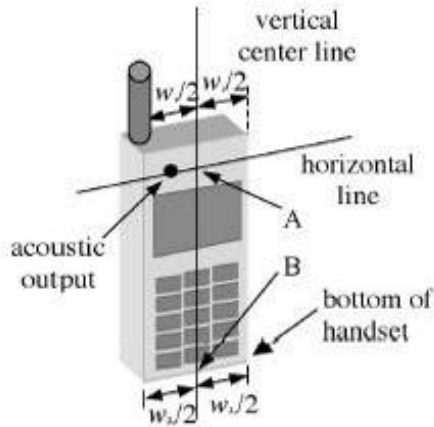
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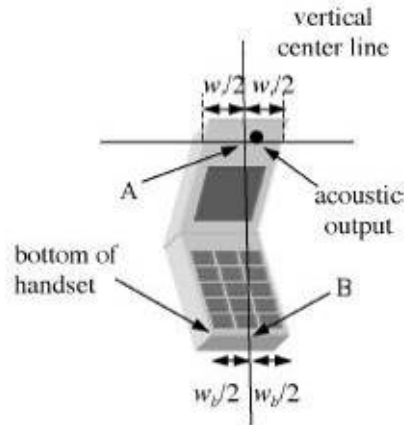
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5.1.2 EUT constructions



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



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

5.1.3 Definition of the “cheek” position

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



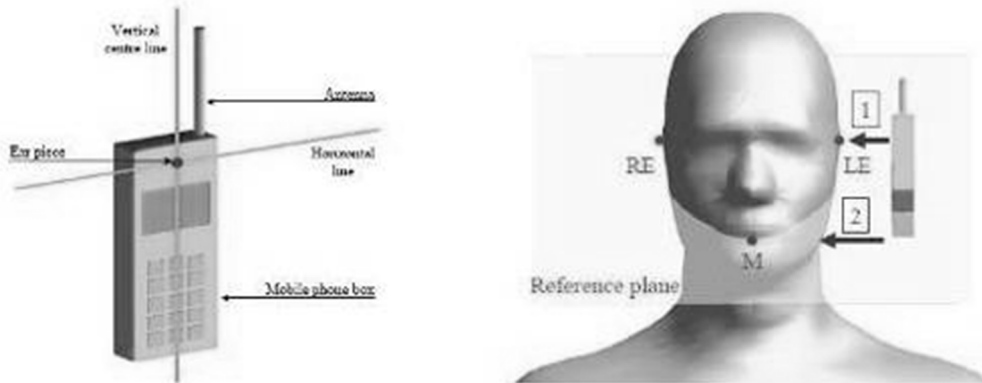
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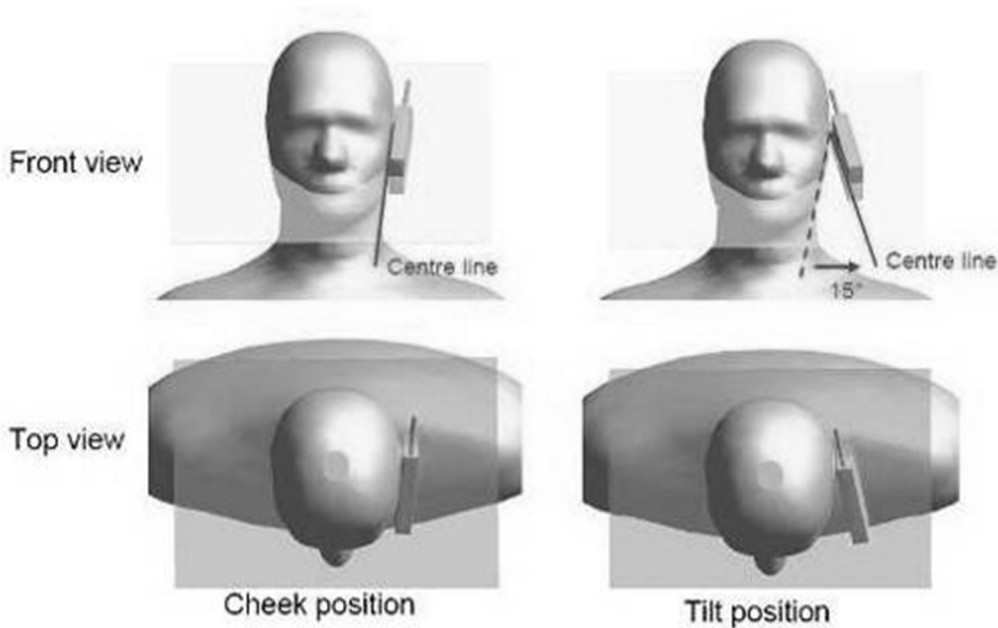
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5.1.4 Definition of the “tilted” position

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



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



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



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5.2 Body Exposure Condition

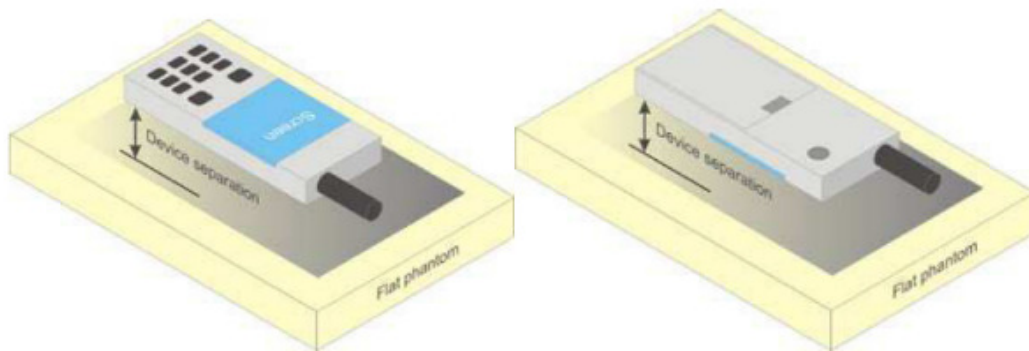
5.2.1 Body-worn accessory exposure conditions

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

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. Per FCC KDB Publication 648474 D04, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is $> 1.2 \text{ W/kg}$, 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 x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. For devices with form factors smaller than 9 cm x 5 cm, a test separation distance of 5 mm is required.

5.3 Extremity exposure conditions

Per FCC KDB 648474 D04, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the device is marketed as “Phablet”. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for Product Specific 10-g SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold. Due to the SAR result, only the following frequency bands need to test with 0mm for the Product Specific 10-g SAR, the others are not required.

GSM850 (Ant1)

Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Product Specific 10-g SAR SAR Exclusion
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.411	0.19	24.15	28.50	2.723	1.119	Yes
Back side	GPRS 4TS	190/836.6	1:2.075	0.506	0.03	24.15	28.50	2.723	1.378	No
Left side	GPRS 4TS	190/836.6	1:2.075	0.799	0.04	24.15	28.50	2.723	2.175	No
Left side	GPRS 4TS	128/824.2	1:2.075	0.860	0.01	24.12	28.50	2.742	2.358	No
Left side repeat	GPRS 4TS	128/824.2	1:2.075	0.783	0.01	24.12	28.50	2.742	2.147	No
Left side	GPRS 4TS	251/848.8	1:2.075	0.768	0.07	24.05	28.50	2.786	2.140	No

LTE B26 (Ant1)

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Product Specific 10-g SAR SAR Exclusion
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1 0	26865/831.5	1:1	0.490	0.01	22.34	24.70	1.722	0.844	Yes
Back side	15	QPSK 1 0	26865/831.5	1:1	0.482	0.11	22.34	24.70	1.722	0.830	Yes
Left side	15	QPSK 1 0	26865/831.5	1:1	0.887	0.05	22.34	24.70	1.722	1.527	No
Hotspot Test data (Separate 10mm 50%RB)											
Front side	15	QPSK 36 0	26865/831.5	1:1	0.489	0.13	22.21	24.70	1.774	0.868	Yes
Back side	15	QPSK 36 0	26865/831.5	1:1	0.487	0.18	22.21	24.70	1.774	0.864	Yes
Left side	15	QPSK 36 0	26865/831.5	1:1	0.936	0.11	22.21	24.70	1.774	1.661	No
Left side repeat	15	QPSK 36 0	26865/831.5	1:1	0.926	-0.02	22.21	24.70	1.774	1.643	No
Hotspot Test data (Separate 10mm 100%RB)											
Left side	15	QPSK 75 0	26865/831.5	1:1	0.889	0.03	21.94	24.70	1.888	1.678	No



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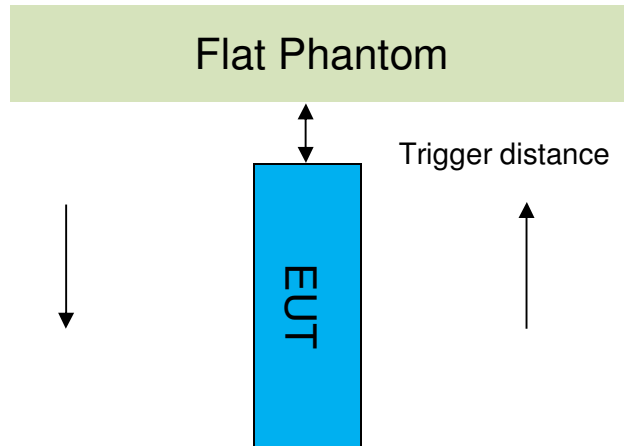
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5.4 Proximity Sensor Triggering Test

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)		
Antenna	Ant0/2	Ant3/4/5/6/8
Position	Front/Back/Right/Bottom side	Front/Back/Left/Top side
Minimum	16	6
Required SAR Test	15	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.

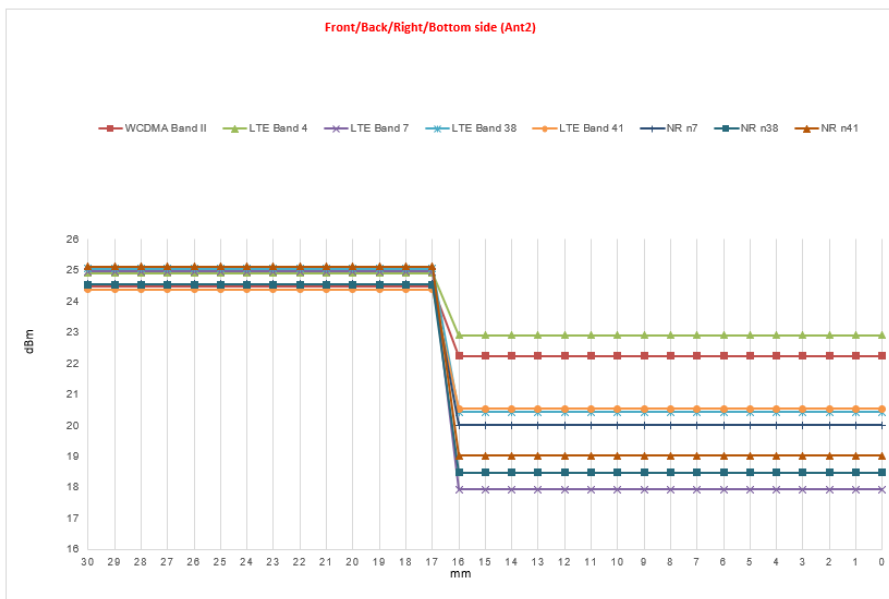
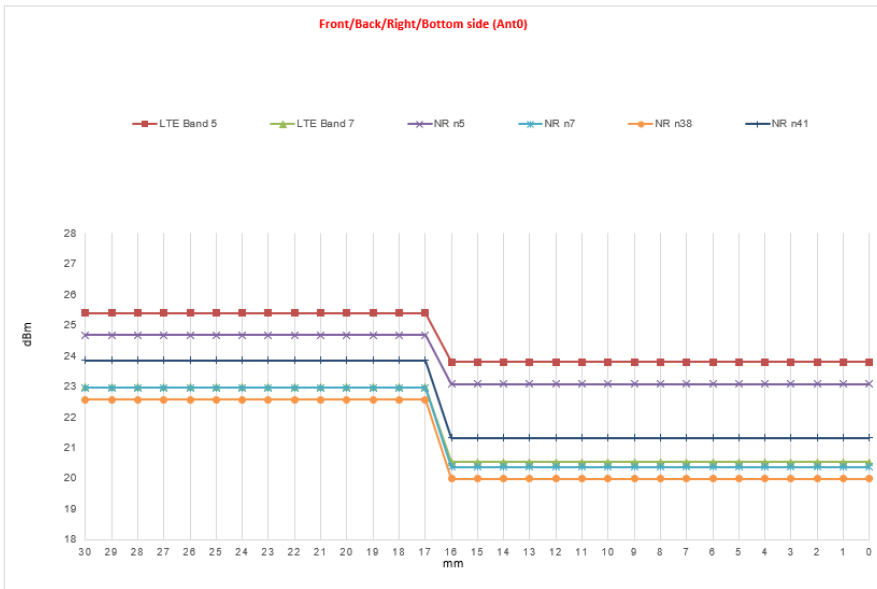


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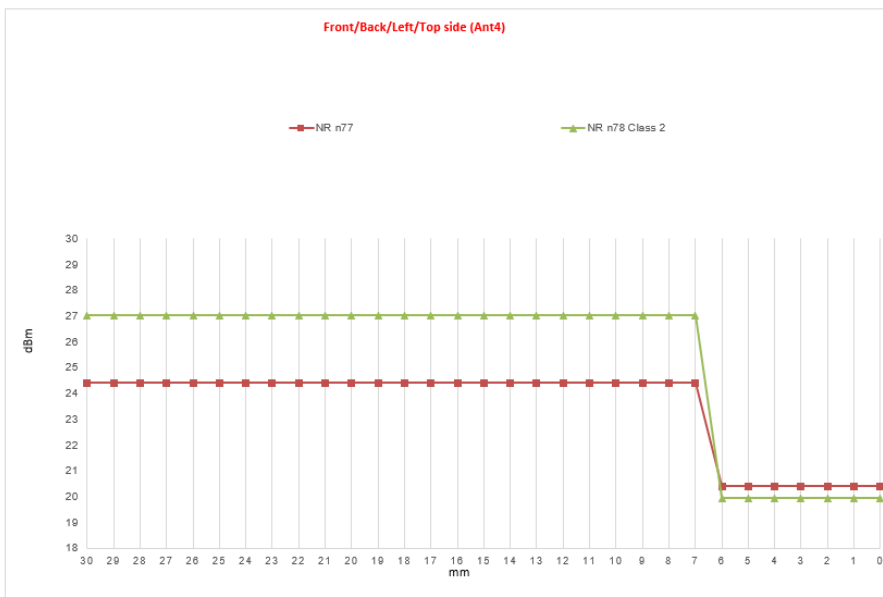
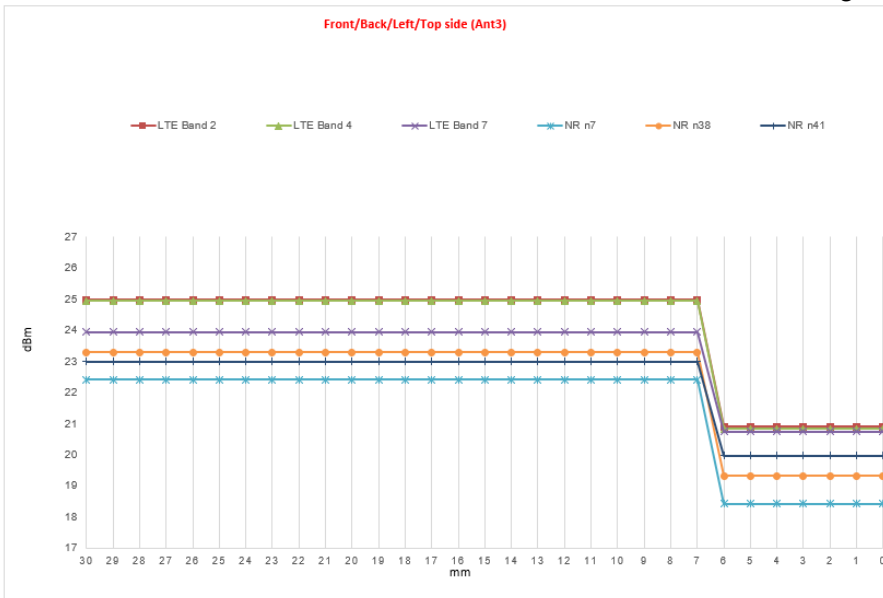
● DUT Moving Toward(Trigger)the Phantom



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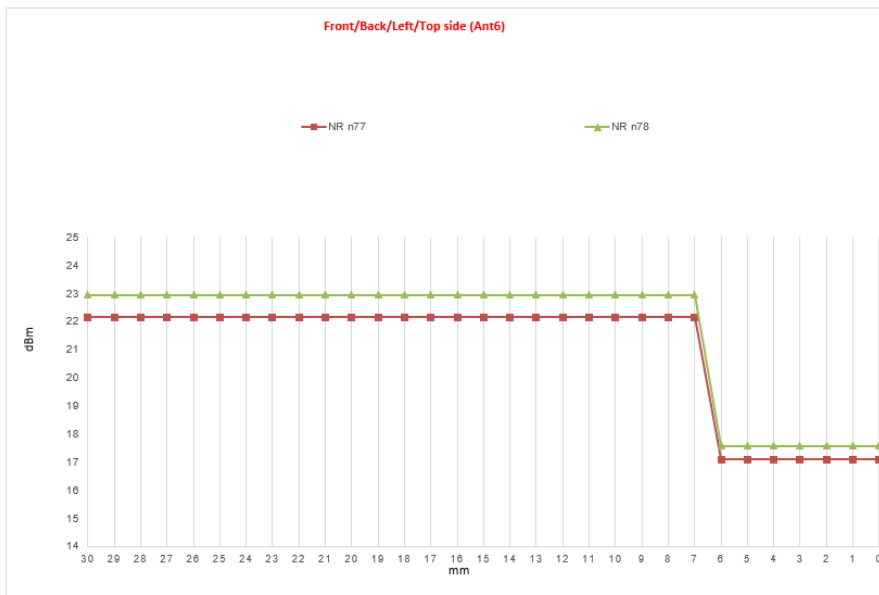
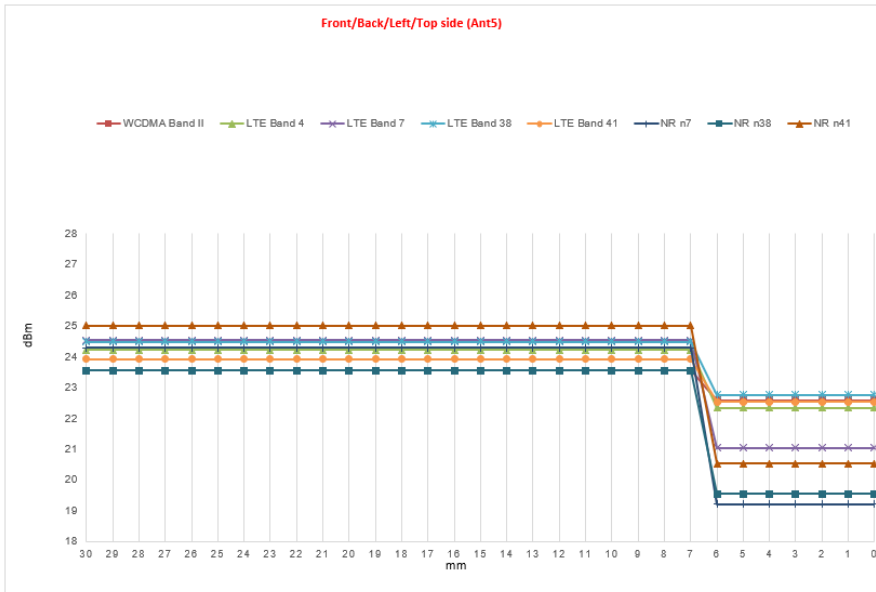
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● DUT Moving Away(Release) from the Phantom

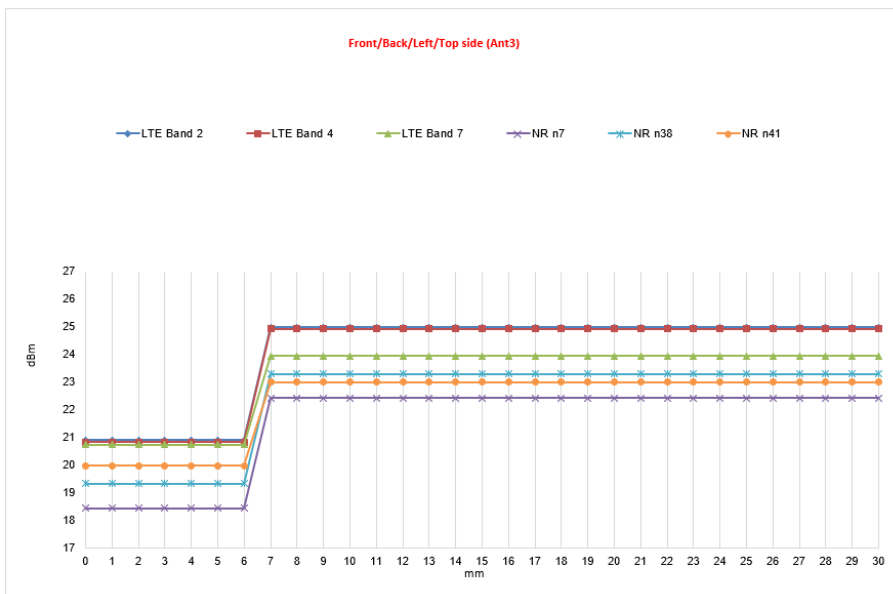
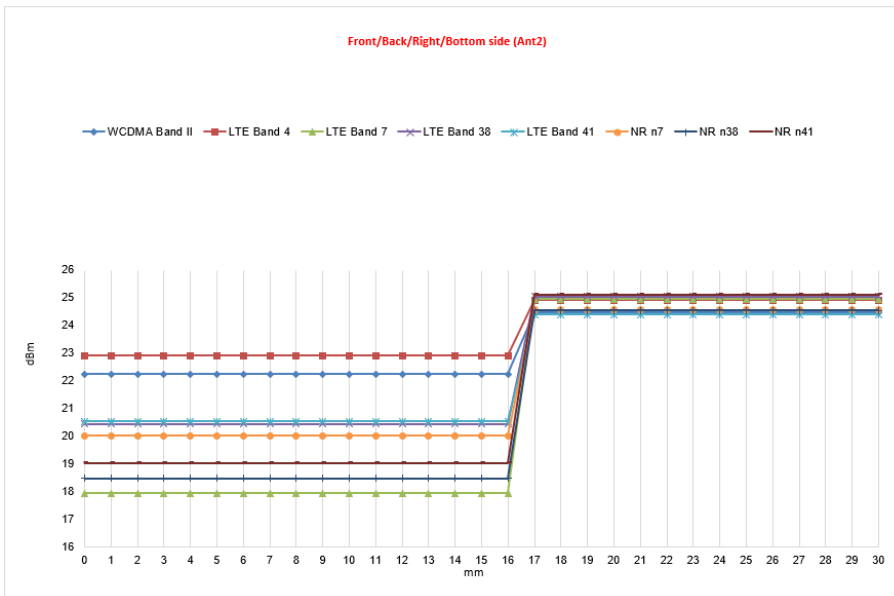


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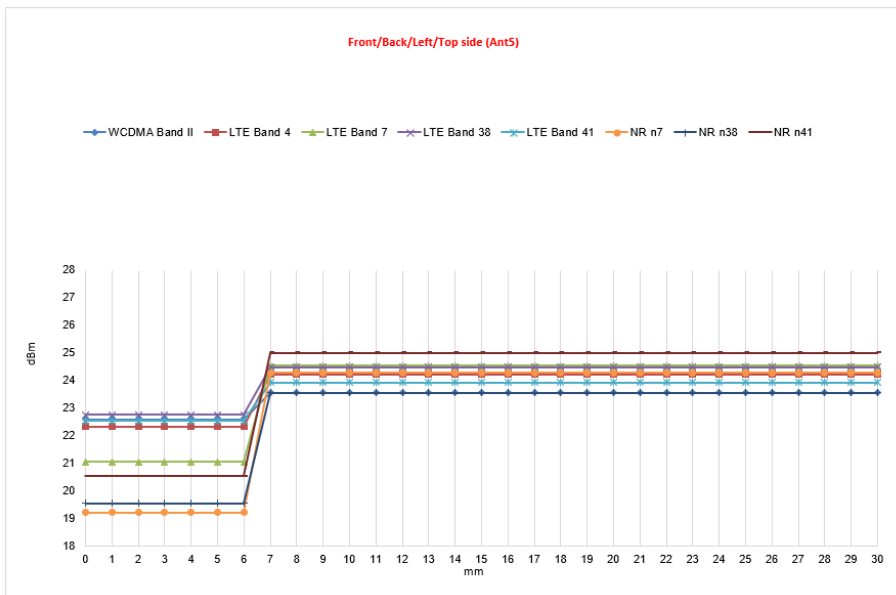
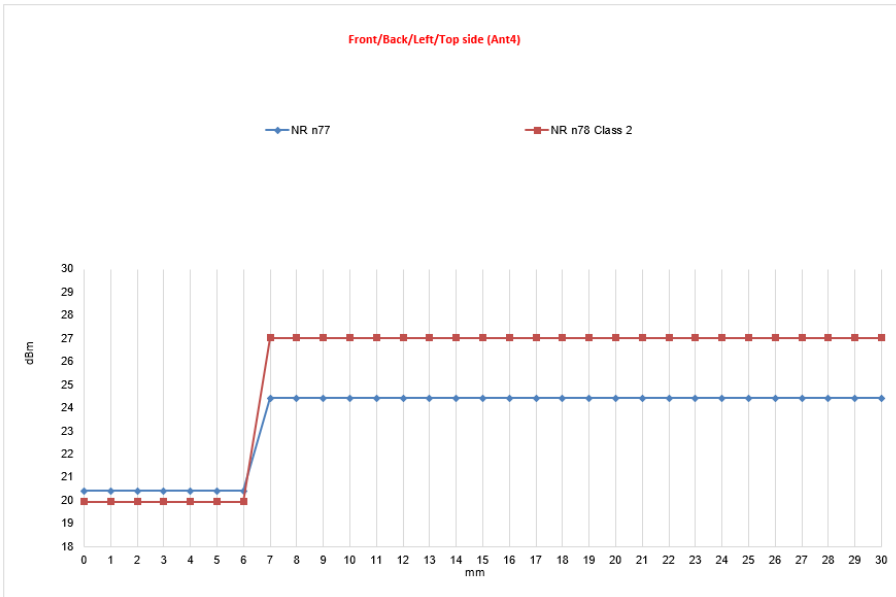


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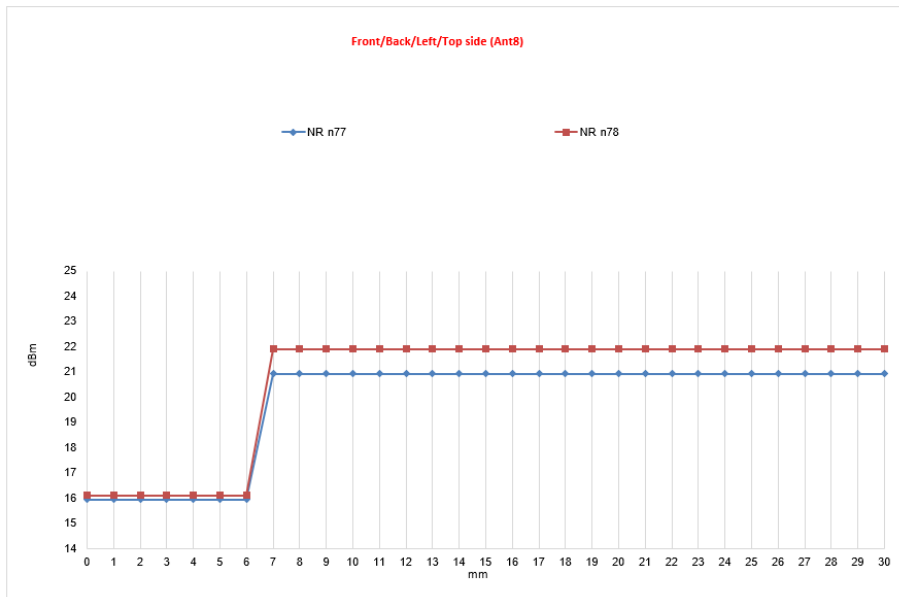
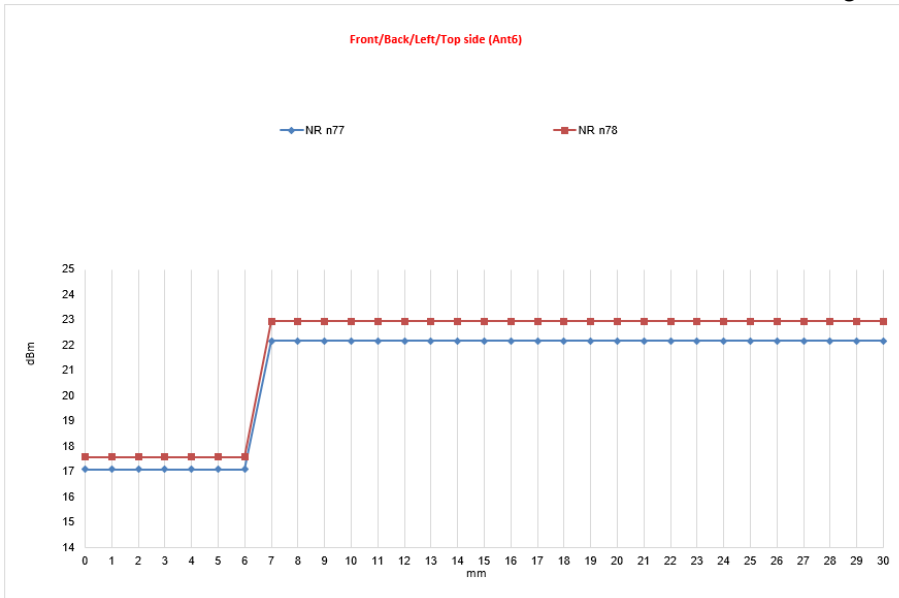
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Proximity sensor coverage

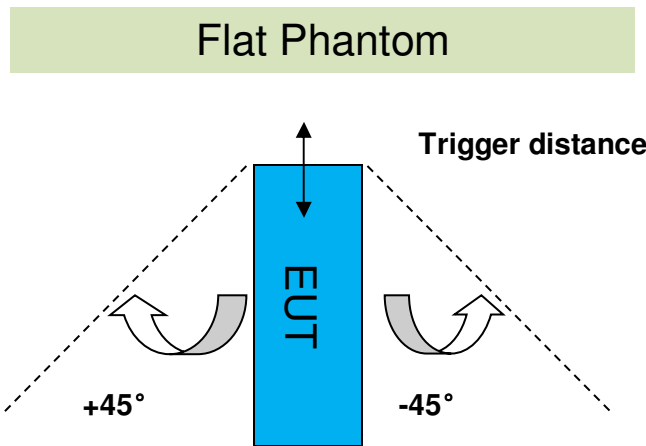
If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, 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°
Ant0/2	Right/Bottom side:16mm	Right/Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on
Ant3/4/5/6/8	Left/Top side:6mm	Left/Bottom 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:

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

Table 3: Recipe of Tissue Simulate Liquid



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6.1.2 Measurement for Tissue Simulate Liquid

The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was $22\pm 2^\circ\text{C}$.

Tissue Type	Measured Frequency (MHz)	Target Tissue ($\pm 5\%$)		Measured Tissue		Liquid Temp.($^\circ\text{C}$)	Measured Date
		ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$		
750 Head	750	41.9 (39.81~44)	0.89 (0.85~0.94)	41.662	0.875	22.2	2022/1/23
835 Head	835	41.5 (39.43~43.58)	0.90 (0.86~0.95)	40.652	0.905	22.6	2022/1/19
835 Head	835	41.5 (39.43~43.58)	0.90 (0.86~0.95)	41.687	0.901	22.3	2022/1/21
835 Head	835	41.5 (39.43~43.58)	0.90 (0.86~0.95)	40.944	0.890	22.4	2022/1/25
835 Head	835	41.5 (39.43~43.58)	0.90 (0.86~0.95)	40.958	0.890	22.1	2022/1/26
1750 Head	1750	40.1 (38.10~42.11)	1.37 (1.30~1.44)	40.721	1.336	22.5	2022/2/2
1750 Head	1750	40.1 (38.10~42.11)	1.37 (1.30~1.44)	38.751	1.331	22.6	2022/2/5
1900 Head	1900	40.0 (38.00~42.00)	1.40 (1.33~1.47)	38.765	1.397	22.5	2022/1/29
1900 Head	1900	40.0 (38.00~42.00)	1.40 (1.33~1.47)	40.060	1.401	22.3	2022/2/3
2450 Head	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	38.416	1.791	22.5	2022/2/7
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	39.407	2.008	22.3	2022/2/5
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	38.479	1.978	22.4	2022/2/6
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	38.010	1.985	22.2	2022/2/8
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	38.510	1.991	22.5	2022/2/9
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	38.101	1.959	22.4	2022/2/10
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	37.883	1.961	22.3	2022/2/11
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	37.881	1.960	22.5	2022/2/12
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	37.881	1.960	22.4	2022/2/13
3500 Head	3500	37.9 (36.01~39.8)	2.91 (2.76~3.06)	38.355	2.957	22.4	2022/2/8
3500 Head	3500	37.9 (36.01~39.8)	2.91 (2.76~3.06)	38.180	2.978	22.4	2022/2/12
3500 Head	3500	37.9 (36.01~39.8)	2.91 (2.76~3.06)	38.248	2.988	22.1	2022/2/13
3500 Head	3500	37.9 (36.01~39.8)	2.91 (2.76~3.06)	37.467	2.832	22.6	2022/2/13



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3700 Head	3700	37.7 (35.82~39.59)	3.12 (2.96~3.28)	36.717	3.045	22.1	2022/2/14
3700 Head	3700	37.7 (35.82~39.59)	3.12 (2.96~3.28)	36.150	3.032	22.1	2022/2/15
3900 Head	3900	37.5 (35.63~39.38)	3.32 (3.15~3.49)	37.015	3.451	22.5	2022/2/10
3900 Head	3900	37.5 (35.63~39.38)	3.32 (3.15~3.49)	36.495	3.283	22.1	2022/2/11
5250Head	5250	35.9 (34.11~37.70)	4.66 (4.47~4.95)	35.574	4.725	22.1	2022/2/17
5600 Head	5600	35.5 (33.73~37.30)	5.07 (4.82~5.32)	34.902	5.198	22.6	2022/2/18
5750 Head	5750	35.4 (33.63~37.17)	5.22 (4.96~5.48)	34.530	5.382	22.0	2022/2/18

Table 4: Measurement result of Tissue electric parameters

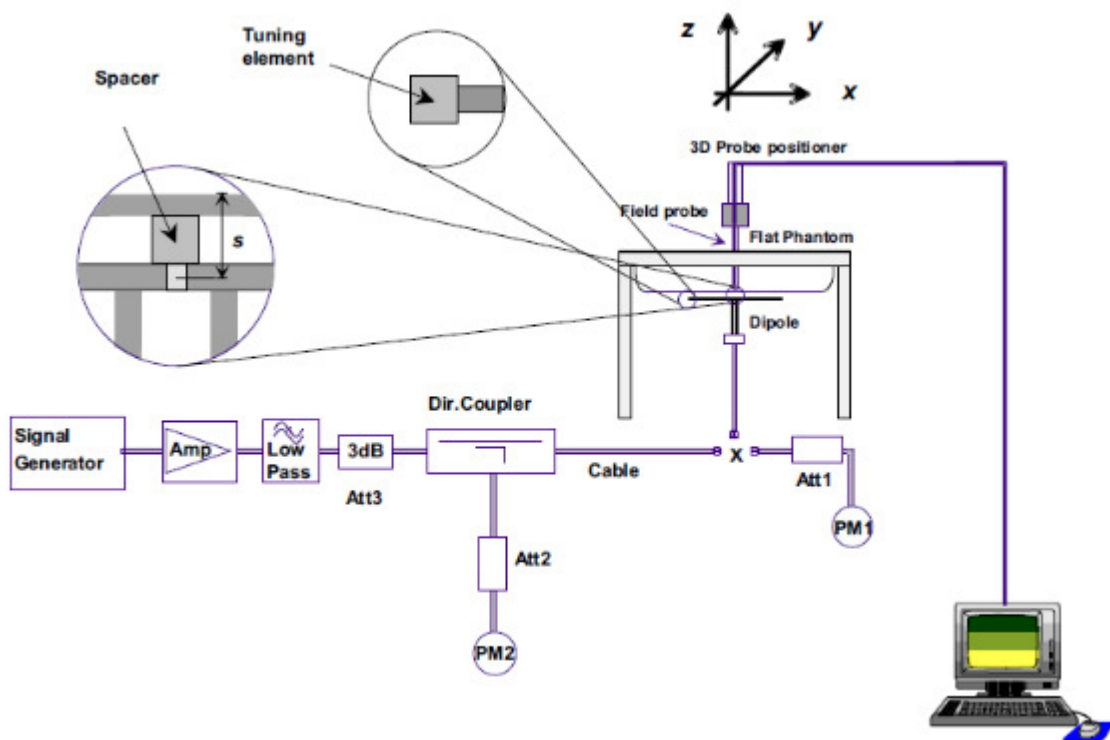


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6.2 SAR System Check

The microwave circuit arrangement for system Check is sketched in F-12. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table (A power level of 250mW (below 3GHz) or 100mW (3-6GHz) was input to the dipole antenna). During the tests, the ambient temperature of the laboratory was in the range $22\pm 2^{\circ}\text{C}$, 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) (±10%)	Target SAR (normalized to 1W) (±10%)	Liquid Temp. (°C)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D750V3	Head	2.28	1.50	9.12	6.00	8.48 (7.63~9.33)	5.56 (5.00~6.12)	22.2	2022/1/23
D835V2	Head	2.25	1.47	9.00	5.88	9.52 (8.57~10.47)	6.17 (5.55~6.79)	22.6	2022/1/19
D835V2	Head	2.24	1.46	8.96	5.84	9.52 (8.57~10.47)	6.17 (5.55~6.79)	22.3	2022/1/21
D835V2	Head	2.51	1.65	10.04	6.60	9.52 (8.57~10.47)	6.17 (5.55~6.79)	22.4	2022/1/25
D835V2	Head	2.58	1.61	10.32	6.44	9.52 (8.57~10.47)	6.17 (5.55~6.79)	22.1	2022/1/26
D1750V2	Head	8.74	4.64	35.36	18.56	35.3 (31.77~38.83)	18.7 (16.83~20.57)	22.5	2022/2/2
D1750V2	Head	8.71	4.62	34.84	18.48	35.3 (31.77~38.83)	18.7 (16.83~20.57)	22.6	2022/2/5
D1900V2	Head	9.63	4.92	38.52	19.68	39.7 (35.73~43.67)	20.3 (18.27~22.33)	22.5	2022/1/29
D1900V2	Head	9.66	4.94	38.64	19.76	39.7 (35.73~43.67)	20.3 (18.27~22.33)	22.3	2022/2/3
D2450V2	Head	13.40	6.27	53.60	25.08	52.2 (46.98~57.42)	24.5 (22.05~26.95)	22.5	2022/2/7
D2600V2	Head	14.20	6.35	56.80	25.40	57.1 (51.39~62.81)	25.4 (22.86~27.94)	22.3	2022/2/5
D2600V2	Head	14.50	6.82	58.00	27.28	57.1 (51.39~62.81)	25.4 (22.86~27.94)	22.4	2022/2/6
D2600V2	Head	14.10	6.30	56.40	25.20	57.1 (51.39~62.81)	25.4 (22.86~27.94)	22.2	2022/2/8
D2600V2	Head	14.10	6.33	56.40	25.32	57.1 (51.39~62.81)	25.4 (22.86~27.94)	22.5	2022/2/9
D2600V2	Head	13.80	6.20	55.20	24.80	57.1 (51.39~62.81)	25.4 (22.86~27.94)	22.4	2022/2/10
D2600V2	Head	13.90	6.23	55.60	24.92	57.1 (51.39~62.81)	25.4 (22.86~27.94)	22.3	2022/2/11
D2600V2	Head	14.00	6.27	56.00	25.08	57.1 (51.39~62.81)	25.4 (22.86~27.94)	22.5	2022/2/12
D2600V2	Head	13.90	6.22	55.60	24.88	57.1 (51.39~62.81)	25.4 (22.86~27.94)	22.4	2022/2/13
Validation Kit		Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W) (±10%)	Target SAR (normalized to 1W) (±10%)	Liquid Temp. (°C)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D3500V2	Head(3.5GHz)	6.31	2.40	63.10	24.00	66.6 (59.94~73.26)	24.9 (22.41~27.39)	22.4	2022/2/8
	Head(3.5GHz)	6.54	2.46	65.40	24.60	66.6 (59.94~73.26)	24.9 (22.41~27.39)	22.4	2022/2/12
	Head(3.5GHz)	6.56	2.47	65.60	24.70	66.6 (59.94~73.26)	24.9 (22.41~27.39)	22.1	2022/2/13
	Head(3.5GHz)	6.21	2.34	62.10	23.40	66.6 (59.94~73.26)	24.9 (22.41~27.39)	22.6	2022/2/13
D3700V2	Head(3.7GHz)	6.39	2.59	63.90	25.90	68 (61.20~74.80)	24.6 (22.14~27.06)	22.1	2022/2/14
	Head(3.7GHz)	6.73	2.52	67.30	25.20	68 (61.20~74.80)	24.6 (22.14~27.06)	22.5	2022/2/15
D3900V2	Head(3.9GHz)	7.48	2.58	74.80	25.80	69.7 (62.73~76.67)	24 (21.60~26.40)	22.5	2022/2/10
	Head(3.9GHz)	7.11	2.54	71.10	25.40	69.7 (62.73~76.67)	24 (21.60~26.40)	22.1	2022/2/11
D5GHzV2	Head(5.25GHz)	7.26	2.08	72.60	20.80	77.1 (69.39~84.81)	22.2 (19.98~24.42)	22.1	2022/2/17
	Head(5.6GHz)	8.63	2.46	86.30	24.60	80.2 (72.18~88.22)	23.1 (20.79~25.41)	22.6	2022/2/18
	Head(5.75GHz)	8.09	2.30	80.90	23.00	77.4 (69.66~85.14)	22.1 (19.89~24.31)	22.0	2022/2/18

Table 5: SAR System Check Result



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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 $\leq 1/4$ 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	$\beta_d(SF)$	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 , $\Delta NACK$ and $\Delta CQI = 8$ $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
 Note2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1.A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, ΔACK and $\Delta NACK = 8$ ($A_{hs} = 30/15$) with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta CQI = 7$ ($A_{hs} = 24/15$) with $\beta_{hs} = 24/15 * \beta_c$.
 Note3: $CM = 1$ for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

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

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

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



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

Table 7: HSDPA UE category

b) HSUPA

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



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

Note 1: ΔACK , $\Delta NACK$ 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^⓪
 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 $\beta_d = 15/15$ ^⓪
 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 $\beta_d = 15/15$ ^⓪
 Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g^⓪
 Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.^⓪

Table 8: Subtests for UMTS Release 6 HSUPA

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

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

Table 9: HSUPA UE category



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c) DC-HSDPA

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

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

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

Table E.5.0: Levels for HSDPA connection setup

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

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

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

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

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

Table 10: settings of required H-Set 12 QPSK acc. to 3GPP 34.121

Note:

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



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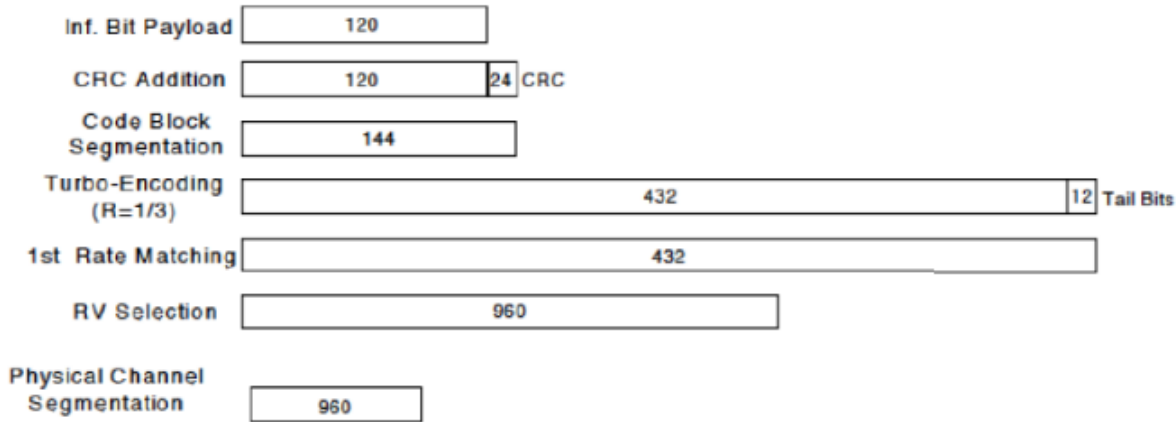


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

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

Note 2 : CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.^o

Note 3 : For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$ ^o

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

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



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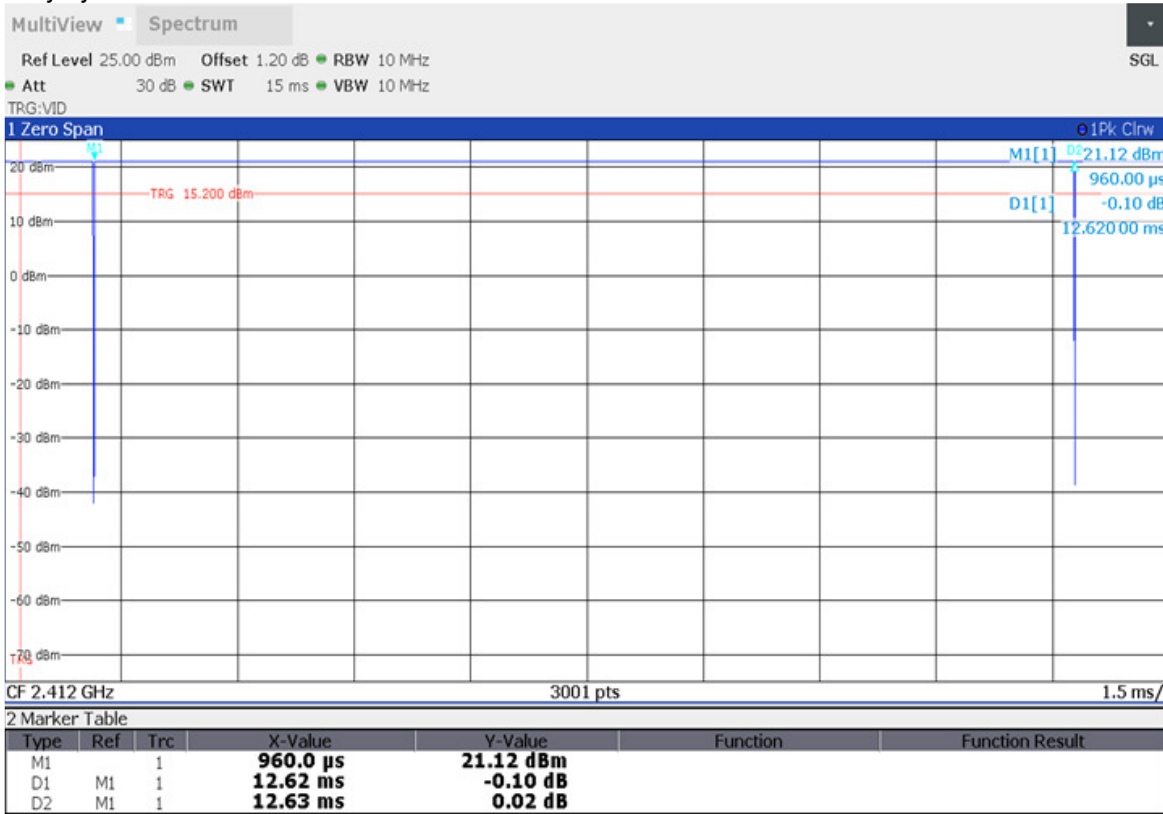
7.2.3 WiFi Test Configuration

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 MIMO:

Duty cycle=12.62/12.63=99.92%



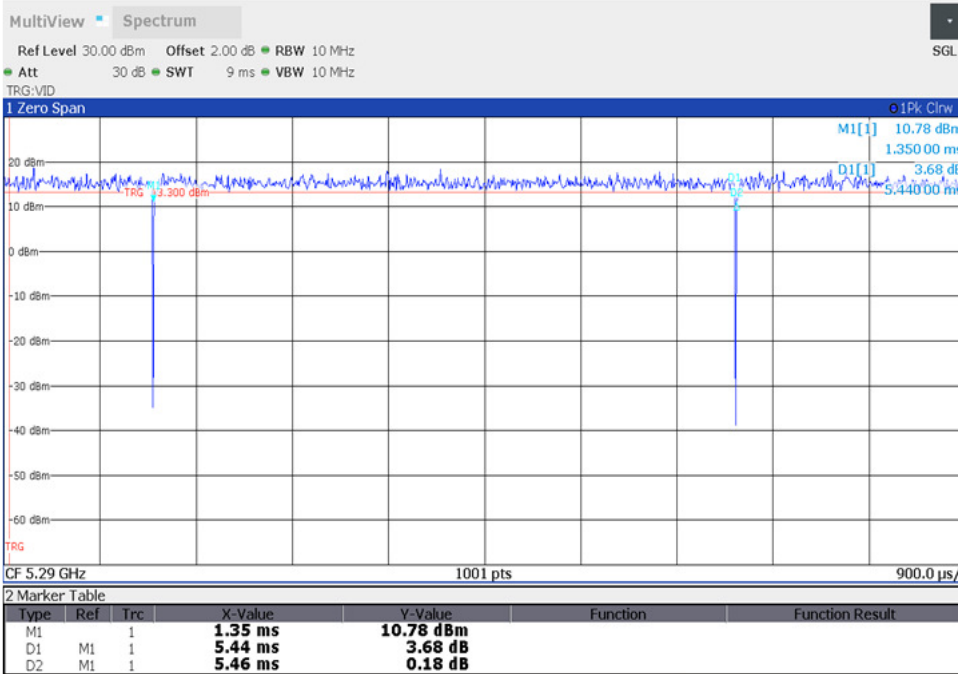
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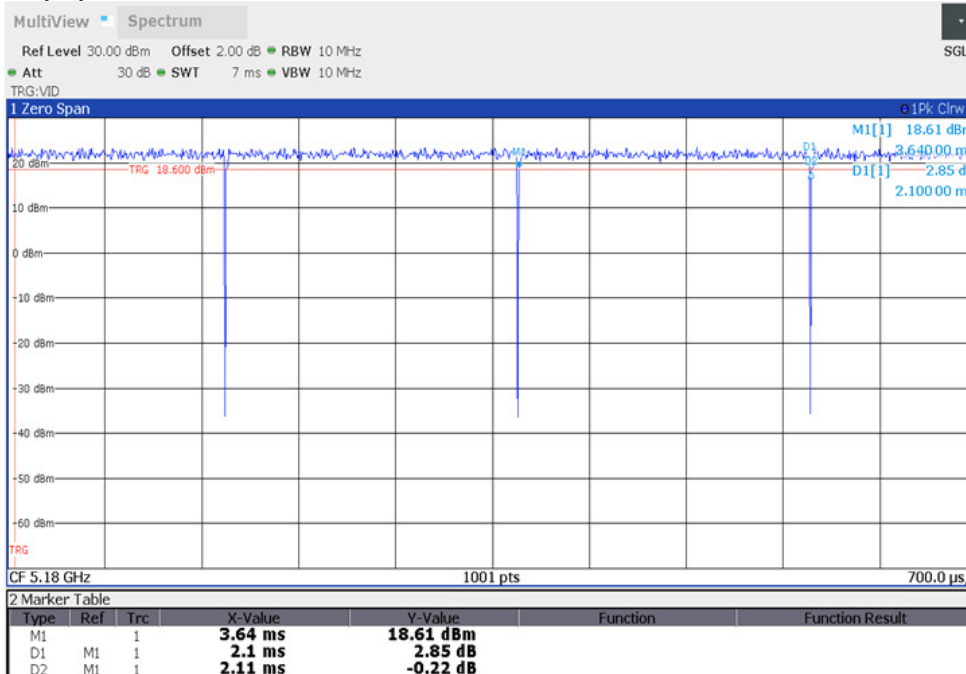
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Wi-Fi 5GHz 802.11ac VHT80 MIMO:
Duty cycle=99.63%



Wi-Fi 5GHz 802.11a MIMO:
Duty cycle=99.53%



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7.2.3.2 Initial Test Position SAR Test Reduction Procedure

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

- 1) . When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).
- 2) . When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and edges) are tested.
- 3) . For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested. a) Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

7.2.3.3 Initial Test Configuration Procedures

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required. SAR test reduction for subsequent highest output test channels is determined according to *reported* SAR of the initial test configuration. For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

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

7.2.3.4 Subsequent Test Configuration Procedures

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

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



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



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7.2.3.5 2.4 GHz WiFi SAR Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in following.

- **802.11b DSSS SAR Test Requirements**

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

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

- **2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements**

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3, including sub-sections). SAR is not required for the following 2.4 GHz OFDM conditions.

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

- **SAR Test Requirements for OFDM configurations**

When SAR measurement is required for 802.11 g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.



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7.2.4 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.

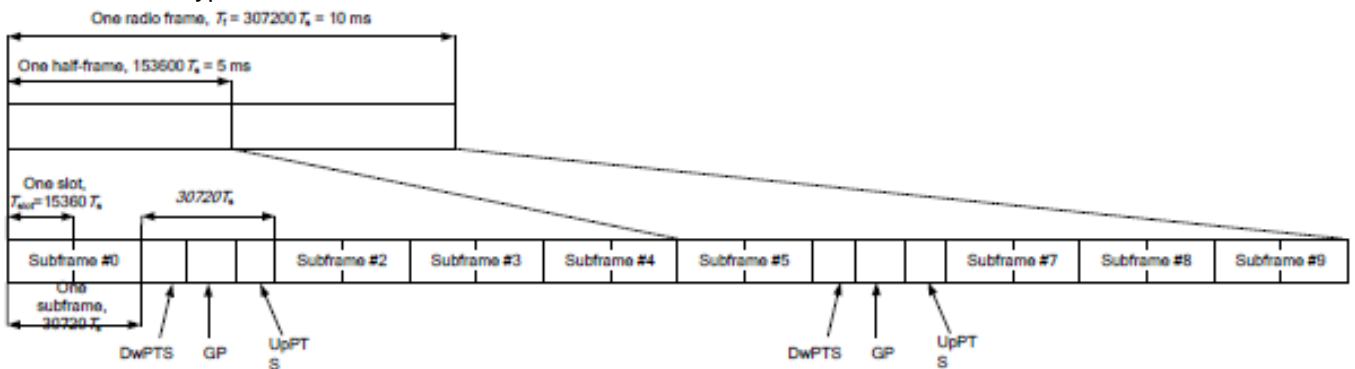
TDD LTE test consideration

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		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
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3

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/n77/n78 support SA mode and n5/n7/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 5		LTE Band 7				LTE Band 38				LTE Band 41			
	Ant0	Ant1	Ant0	Ant2	Ant3	Ant5	Ant0	Ant2	Ant3	Ant5	Ant0	Ant2	Ant3	Ant5
n5	Ant0		✓	✓	✓	✓								
	Ant1		✓	✓	✓	✓								
n7	Ant0	✓	✓											
	Ant2	✓	✓											
	Ant3	✓	✓											
	Ant5	✓	✓											
n78	Ant4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Ant6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Ant7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Ant8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

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

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
	30KHZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n7	15KHZ	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
	30KHZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n38	15KHZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30KHZ	N/A	N/A	N/A	Yes	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
n41	15KHZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30KHZ	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes
n77	15KHZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30KHZ	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
n78	15KHZ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30KHZ	N/A	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:
 - a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 3GPP 38.101 maximum power reduction for power class 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-QPSK and the reported SAR for the DFT-QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
 - b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, for PI/2 BPSK/16QAM/64QMA/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the PI/2 BPSK/16QAM/64QMA/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
 - c. SAR testing start with the largest SCS and largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
 - d. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
 - e. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
 - f. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - g. Smaller SCS/bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device



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4. MPR

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

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

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

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

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

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

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

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

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

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

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

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



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8 Test Result

8.1 Measurement of RF conducted Power

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.
- 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.



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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%



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8.2 Measurement of SAR Data

Note:

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

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	0.181	0.18	26.17	28.00	1.524	0.276	22.6
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.075	0.17	26.17	28.00	1.524	0.114	22.6
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.093	0.02	26.17	28.00	1.524	0.142	22.6
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.070	0.19	26.17	28.00	1.524	0.107	22.6
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.152	-0.18	26.17	28.00	1.524	0.232	22.6
Back side	GPRS 4TS	190/836.6	1:2.075	0.196	0.05	26.17	28.00	1.524	0.299	22.6
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.294	0.05	26.17	28.00	1.524	0.448	22.6
Back side	GPRS 4TS	190/836.6	1:2.075	0.322	-0.09	26.17	28.00	1.524	0.491	22.6
Right side	GPRS 4TS	190/836.6	1:2.075	0.178	0.02	26.17	28.00	1.524	0.271	22.6
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.148	-0.07	26.17	28.00	1.524	0.226	22.6
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	0.793	0.03	24.61	25.50	1.227	0.973	22.6
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.122	0.17	24.61	25.50	1.227	0.150	22.6
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.423	0.18	24.61	25.50	1.227	0.519	22.6
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.099	-0.20	24.61	25.50	1.227	0.122	22.6
Left cheek	GPRS 4TS	128/824.2	1:2.075	0.775	0.09	24.59	25.50	1.233	0.956	22.6
Left cheek	GPRS 4TS	251/848.8	1:2.075	0.809	0.19	24.55	25.50	1.245	1.007	22.6
Left cheek repeat	GPRS 4TS	251/848.8	1:2.075	0.782	0.03	24.55	25.50	1.245	0.973	22.6
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.192	0.12	26.67	28.50	1.524	0.293	22.6
Back side	GPRS 4TS	190/836.6	1:2.075	0.382	0.17	26.67	28.50	1.524	0.582	22.6
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.411	0.19	24.15	25.00	1.216	0.500	22.6
Back side	GPRS 4TS	190/836.6	1:2.075	0.506	0.03	24.15	25.00	1.216	0.615	22.6
Left side	GPRS 4TS	190/836.6	1:2.075	0.799	0.04	24.15	25.00	1.216	0.972	22.6
Left side	GPRS 4TS	128/824.2	1:2.075	0.860	0.01	24.12	25.00	1.225	1.053	22.6
Left side repeat	GPRS 4TS	128/824.2	1:2.075	0.783	0.01	24.12	25.00	1.225	0.959	22.6
Left side	GPRS 4TS	251/848.8	1:2.075	0.768	0.07	24.05	25.00	1.245	0.956	22.6
Product specific 10g SAR(Separate 0mm)										
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)
Back side	GPRS 4TS	190/836.6	1:2.075	0.674	0.01	26.67	28.50	1.524	1.027	22.6
Left side	GPRS 4TS	190/836.6	1:2.075	1.610	0.18	26.67	28.50	1.524	2.454	22.6
Left side	GPRS 4TS	128/824.2	1:2.075	1.580	0.08	26.66	28.50	1.528	2.414	22.6
Left side	GPRS 4TS	251/848.8	1:2.075	1.630	0.20	26.61	28.50	1.545	2.519	22.6

Table 11: SAR of GSM850 for Head and Body



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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	251/848.8	0.809	0.782	1.035	N/A	N/A
Left side	128/824.2	0.860	0.783	1.098	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 (~ 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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8.2.2 SAR Result of GSM1900

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	GPRS 4TS	661/1880	1:2.075	0.040	-0.09	23.08	25.00	1.556	0.061	22.5
Left tilted	GPRS 4TS	661/1880	1:2.075	0.024	0.12	23.08	25.00	1.556	0.038	22.5
Right cheek	GPRS 4TS	661/1880	1:2.075	0.034	0.09	23.08	25.00	1.556	0.053	22.5
Right tilted	GPRS 4TS	661/1880	1:2.075	0.023	0.02	23.08	25.00	1.556	0.035	22.5
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.166	0.07	23.08	25.00	1.556	0.258	22.5
Back side	GPRS 4TS	661/1880	1:2.075	0.197	0.03	23.08	25.00	1.556	0.307	22.5
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.250	0.07	23.08	25.00	1.556	0.389	22.5
Back side	GPRS 4TS	661/1880	1:2.075	0.217	0.07	23.08	25.00	1.556	0.338	22.5
Left side	GPRS 4TS	661/1880	1:2.075	0.077	0.01	23.08	25.00	1.556	0.119	22.5
Bottom side	GPRS 4TS	661/1880	1:2.075	0.353	0.10	23.08	25.00	1.556	0.549	22.5
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	GPRS 4TS	661/1880	1:2.075	0.409	0.17	21.24	23.20	1.570	0.642	22.5
Left tilted	GPRS 4TS	661/1880	1:2.075	0.563	0.14	21.24	23.20	1.570	0.884	22.5
Left tilted	GPRS 4TS	512/1850.2	1:2.075	0.550	0.03	21.22	23.20	1.578	0.868	22.5
Left tilted	GPRS 4TS	810/1909.8	1:2.075	0.582	0.14	21.21	23.20	1.581	0.920	22.5
Right cheek	GPRS 4TS	661/1880	1:2.075	0.337	0.08	21.24	23.20	1.570	0.529	22.5
Right tilted	GPRS 4TS	661/1880	1:2.075	0.643	0.11	21.24	23.20	1.570	1.010	22.5
Right tilted	GPRS 4TS	512/1850.2	1:2.075	0.581	0.07	21.22	23.20	1.578	0.917	22.5
Right tilted	GPRS 4TS	810/1909.8	1:2.075	0.677	-0.01	21.21	23.20	1.581	1.071	22.5
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.093	0.02	22.31	24.20	1.545	0.144	22.5
Back side	GPRS 4TS	661/1880	1:2.075	0.122	0.07	22.31	24.20	1.545	0.189	22.5
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.178	0.07	21.24	23.20	1.570	0.280	22.5
Back side	GPRS 4TS	661/1880	1:2.075	0.269	0.09	21.24	23.20	1.570	0.422	22.5
Left side	GPRS 4TS	661/1880	1:2.075	0.064	0.04	21.24	23.20	1.570	0.101	22.5
Top side	GPRS 4TS	661/1880	1:2.075	0.408	0.19	21.24	23.20	1.570	0.641	22.5

Table 12: SAR of GSM1900 for Head and Body.



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8.2.3 SAR Result of WCDMA Band II

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	9400/1880	1:1	0.124	-0.02	24.47	25.00	1.130	0.140	22.5
Left tilted	RMC	9400/1880	1:1	0.084	0.05	24.47	25.00	1.130	0.094	22.5
Right cheek	RMC	9400/1880	1:1	0.104	0.09	24.47	25.00	1.130	0.117	22.5
Right tilted	RMC	9400/1880	1:1	0.056	0.04	24.47	25.00	1.130	0.063	22.5
Body worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.421	0.01	24.47	25.00	1.130	0.476	22.5
Back side	RMC	9400/1880	1:1	0.495	0.15	24.47	25.00	1.130	0.559	22.5
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.466	0.20	22.24	23.00	1.191	0.555	22.5
Back side	RMC	9400/1880	1:1	0.593	0.10	22.24	23.00	1.191	0.706	22.5
Left side	RMC	9400/1880	1:1	0.156	0.15	22.24	23.00	1.191	0.186	22.5
Bottom side	RMC	9400/1880	1:1	0.693	0.10	22.24	23.00	1.191	0.826	22.5
Bottom side	RMC	9262/1852.4	1:1	0.606	0.06	22.12	23.00	1.225	0.742	22.5
Bottom side	RMC	9538/1907.6	1:1	0.809	0.10	22.10	23.00	1.230	0.995	22.5
Bottom side repeat	RMC	9538/1907.6	1:1	0.784	0.03	22.10	23.00	1.230	0.965	22.5
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 10-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	RMC	9400/1880	1:1	0.474	-0.12	19.20	20.00	1.202	0.570	22.5
Left tilted	RMC	9400/1880	1:1	0.489	0.04	19.20	20.00	1.202	0.588	22.5
Right cheek	RMC	9400/1880	1:1	0.904	0.09	19.20	20.00	1.202	1.087	22.5
Right cheek repeat	RMC	9400/1880	1:1	0.839	0.19	19.20	20.00	1.202	1.009	22.5
Right cheek	RMC	9262/1852.4	1:1	0.855	0.01	19.17	20.00	1.211	1.035	22.5
Right cheek	RMC	9538/1907.6	1:1	0.900	0.05	19.17	20.00	1.211	1.090	22.5
Right tilted	RMC	9400/1880	1:1	0.699	0.08	19.20	20.00	1.202	0.840	22.5
Right tilted	RMC	9262/1852.4	1:1	0.668	0.09	19.17	20.00	1.211	0.809	22.5
Right tilted	RMC	9538/1907.6	1:1	0.704	0.04	19.17	20.00	1.211	0.852	22.5
Body worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.259	0.01	23.55	24.50	1.245	0.322	22.5
Back side	RMC	9400/1880	1:1	0.362	0.05	23.55	24.50	1.245	0.451	22.5
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.162	0.15	19.20	20.00	1.202	0.195	22.5
Back side	RMC	9400/1880	1:1	0.266	0.18	19.20	20.00	1.202	0.320	22.5
Left side	RMC	9400/1880	1:1	0.167	0.07	19.20	20.00	1.202	0.201	22.5
Top side	RMC	9400/1880	1:1	0.331	0.04	19.20	20.00	1.202	0.398	22.5

Table 13: SAR of WCDMA Band II 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)
Bottom side	9538/1907.6	0.809	0.784	1.032	N/A	N/A
Right cheek	9400/1880	0.904	0.839	1.077	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 (~ 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



8.2.4 SAR Result of WCDMA Band IV

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	0.152	0.18	24.37	25.00	1.156	0.176	22.5
Left tilted	RMC	1412/1732.4	1:1	0.069	0.01	24.37	25.00	1.156	0.080	22.5
Right cheek	RMC	1412/1732.4	1:1	0.078	0.01	24.37	25.00	1.156	0.091	22.5
Right tilted	RMC	1412/1732.4	1:1	0.078	0.07	24.37	25.00	1.156	0.091	22.5
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.321	0.01	24.37	25.00	1.156	0.371	22.5
Back side	RMC	1412/1732.4	1:1	0.429	0.05	24.37	25.00	1.156	0.496	22.5
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.522	0.17	23.39	24.00	1.151	0.601	22.5
Back side	RMC	1412/1732.4	1:1	0.718	0.15	23.39	24.00	1.151	0.826	22.5
Back side	RMC	1312/1712.4	1:1	0.668	0.10	23.26	24.00	1.186	0.792	22.5
Back side	RMC	1513/1752.6	1:1	0.738	0.00	23.27	24.00	1.183	0.873	22.5
Left side	RMC	1412/1732.4	1:1	0.176	0.16	23.39	24.00	1.151	0.203	22.5
Bottom side	RMC	1412/1732.4	1:1	0.737	0.16	23.39	24.00	1.151	0.848	22.5
Bottom side	RMC	1312/1712.4	1:1	0.739	0.07	23.26	24.00	1.186	0.876	22.5
Bottom side	RMC	1513/1752.6	1:1	0.802	0.08	23.27	24.00	1.183	0.949	22.5
Bottom side Repeat	RMC	1513/1752.6	1:1	0.792	0.01	23.27	24.00	1.183	0.937	22.5
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)
Left cheek	RMC	1412/1732.4	1:1	0.392	0.10	18.01	19.50	1.409	0.552	22.5
Left tilted	RMC	1412/1732.4	1:1	0.418	0.01	18.01	19.50	1.409	0.589	22.5
Right cheek	RMC	1412/1732.4	1:1	0.713	0.10	18.01	19.50	1.409	1.005	22.5
Right cheek	RMC	1312/1712.4	1:1	0.593	0.03	17.95	19.50	1.429	0.847	22.5
Right cheek	RMC	1513/1752.6	1:1	0.758	0.05	17.94	19.50	1.432	1.086	22.5
Right tilted	RMC	1412/1732.4	1:1	0.720	0.00	18.01	19.50	1.409	1.015	22.5
Right tilted	RMC	1312/1712.4	1:1	0.626	0.09	17.95	19.50	1.429	0.894	22.5
Right tilted	RMC	1513/1752.6	1:1	0.736	0.02	17.94	19.50	1.432	1.054	22.5
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.275	0.01	23.69	25.00	1.352	0.372	22.5
Back side	RMC	1412/1732.4	1:1	0.417	0.15	23.69	25.00	1.352	0.564	22.5
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.134	0.19	18.01	19.50	1.409	0.189	22.5
Back side	RMC	1412/1732.4	1:1	0.256	-0.12	18.01	19.50	1.409	0.361	22.5
Left side	RMC	1412/1732.4	1:1	0.081	0.06	18.01	19.50	1.409	0.114	22.5
Top side	RMC	1412/1732.4	1:1	0.309	0.02	18.01	19.50	1.409	0.435	22.5

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

Test Position	Channel/Frequency (MHz)	Measured SAR (1g)	1 st Repeated SAR (1g)	Ratio	2 nd Repeated SAR (1g)	3 rd Repeated SAR (1g)
	1513/1752.6		0.792		1.013	N/A
Bottom side	1513/1752.6	0.802	0.792	1.013	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 (~ 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

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	0.174	0.16	24.17	25.00	1.211	0.211	22.6
Left tilted	RMC	4182/836.4	1:1	0.078	0.16	24.17	25.00	1.211	0.094	22.6
Right cheek	RMC	4182/836.4	1:1	0.176	-0.03	24.17	25.00	1.211	0.213	22.6
Right tilted	RMC	4182/836.4	1:1	0.087	-0.07	24.17	25.00	1.211	0.105	22.6
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.205	0.06	24.17	25.00	1.211	0.248	22.6
Back side	RMC	4182/836.4	1:1	0.271	-0.09	24.17	25.00	1.211	0.328	22.6
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.351	0.07	24.17	25.00	1.211	0.425	22.6
Back side	RMC	4182/836.4	1:1	0.457	-0.05	24.17	25.00	1.211	0.553	22.6
Right side	RMC	4182/836.4	1:1	0.195	0.02	24.17	25.00	1.211	0.236	22.6
Bottom side	RMC	4182/836.4	1:1	0.176	0.00	24.17	25.00	1.211	0.213	22.6
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	0.495	0.20	21.28	22.70	1.387	0.686	22.6
Left tilted	RMC	4182/836.4	1:1	0.072	0.04	21.28	22.70	1.387	0.100	22.6
Right cheek	RMC	4182/836.4	1:1	0.303	-0.10	21.28	22.70	1.387	0.420	22.6
Right tilted	RMC	4182/836.4	1:1	0.054	0.03	21.28	22.70	1.387	0.075	22.6
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.175	0.19	21.28	22.70	1.387	0.243	22.6
Back side	RMC	4182/836.4	1:1	0.302	-0.10	21.28	22.70	1.387	0.419	22.6
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.283	0.16	21.28	22.70	1.387	0.392	22.6
Back side	RMC	4182/836.4	1:1	0.395	0.05	21.28	22.70	1.387	0.548	22.6
Left side	RMC	4182/836.4	1:1	0.615	0.06	21.28	22.70	1.387	0.853	22.6
Left side	RMC	4132/826.4	1:1	0.606	0.12	21.06	22.70	1.459	0.884	22.6
Left side	RMC	4233/846.6	1:1	0.623	0.07	20.96	22.70	1.493	0.930	22.6

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



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8.2.6 SAR Result of LTE Band 2

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	18900/1880	1:1	0.160	0.19	25.06	25.70	1.159	0.185	22.3
Left tilted	20	QPSK 1_0	18900/1880	1:1	0.087	-0.14	25.06	25.70	1.159	0.101	22.3
Right cheek	20	QPSK 1_0	18900/1880	1:1	0.116	-0.09	25.06	25.70	1.159	0.134	22.3
Right tilted	20	QPSK 1_0	18900/1880	1:1	0.077	0.18	25.06	25.70	1.159	0.089	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	18900/1880	1:1	0.133	-0.01	23.91	24.70	1.199	0.160	22.3
Left tilted	20	QPSK 50_0	18900/1880	1:1	0.072	-0.04	23.91	24.70	1.199	0.086	22.3
Right cheek	20	QPSK 50_0	18900/1880	1:1	0.102	-0.20	23.91	24.70	1.199	0.122	22.3
Right tilted	20	QPSK 50_0	18900/1880	1:1	0.058	-0.17	23.91	24.70	1.199	0.070	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.412	0.09	25.06	25.70	1.159	0.477	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.604	0.02	25.06	25.70	1.159	0.700	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.364	0.03	23.91	24.70	1.199	0.437	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.481	0.18	23.91	24.70	1.199	0.577	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.386	0.09	22.06	22.70	1.159	0.447	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.499	0.03	22.06	22.70	1.159	0.578	22.3
Left side	20	QPSK 1_0	18900/1880	1:1	0.157	-0.02	22.06	22.70	1.159	0.182	22.3
Bottom side	20	QPSK 1_0	18900/1880	1:1	0.531	0.19	22.06	22.70	1.159	0.615	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.384	0.05	21.28	22.70	1.387	0.533	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.457	0.15	21.28	22.70	1.387	0.634	22.3
Left side	20	QPSK 50_0	18900/1880	1:1	0.168	0.05	21.28	22.70	1.387	0.233	22.3
Bottom side	20	QPSK 50_0	18900/1880	1:1	0.563	0.00	21.28	22.70	1.387	0.781	22.3
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	0.215	0.18	19.53	19.70	1.040	0.224	22.3
Left tilted	20	QPSK 1_0	18900/1880	1:1	0.105	0.17	19.53	19.70	1.040	0.109	22.3
Right cheek	20	QPSK 1_0	18900/1880	1:1	0.829	0.14	19.53	19.70	1.040	0.862	22.3
Right cheek	20	QPSK 1_0	18700/1860	1:1	0.940	0.01	19.16	19.70	1.132	1.064	22.3
Right cheek	20	QPSK 1_0	19100/1900	1:1	0.921	0.03	19.41	19.70	1.069	0.985	22.3
Right tilted	20	QPSK 1_0	18900/1880	1:1	0.357	0.12	19.53	19.70	1.040	0.371	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	18900/1880	1:1	0.228	0.18	19.36	19.70	1.081	0.247	22.3
Left tilted	20	QPSK 50_0	18900/1880	1:1	0.110	0.02	19.36	19.70	1.081	0.119	22.3
Right cheek	20	QPSK 50_0	18900/1880	1:1	1.010	0.16	19.36	19.70	1.081	1.092	22.3
Right cheek	20	QPSK 50_0	18700/1860	1:1	0.986	0.03	19.29	19.70	1.099	1.084	22.3
Right cheek	20	QPSK 50_0	19100/1900	1:1	0.949	-0.03	19.23	19.70	1.114	1.057	22.3
Right tilted	20	QPSK 50_0	18900/1880	1:1	0.384	0.10	19.36	19.70	1.081	0.415	22.3
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	18900/1880	1:1	1.040	0.13	19.51	19.70	1.045	1.087	22.3
Right cheek repeat	20	QPSK 100_0	18900/1880	1:1	0.967	0.04	19.52	19.70	1.042	1.008	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.347	0.17	25.18	25.70	1.127	0.391	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.564	-0.05	25.18	25.70	1.127	0.636	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.296	0.18	24.18	24.70	1.127	0.334	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.484	0.12	24.18	24.70	1.127	0.546	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.149	0.08	19.53	19.70	1.040	0.155	22.3
Back side	20	QPSK 1_0	18900/1880	1:1	0.297	0.04	19.53	19.70	1.040	0.309	22.3



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Left side	20	QPSK 1_0	18900/1880	1:1	0.389	0.13	19.53	19.70	1.040	0.405	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.158	0.03	19.36	19.70	1.081	0.171	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.319	0.05	19.36	19.70	1.081	0.345	22.3
Left side	20	QPSK 50_0	18900/1880	1:1	0.428	0.18	19.36	19.70	1.081	0.463	22.3

Table 16: SAR of LTE Band 2 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 cheek	18900/1880	1.04	0.967	1.075	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 (~ 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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8.2.1 SAR Result of LTE Band 4

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	20	QPSK 1_0	20175/1732.5	1:1	0.071	0.01	23.38	24.50	1.294	0.094	22.6
Left tilted	20	QPSK 1_0	20175/1732.5	1:1	0.038	0.03	23.38	24.50	1.294	0.049	22.6
Right cheek	20	QPSK 1_0	20175/1732.5	1:1	0.057	0.09	23.38	24.50	1.294	0.074	22.6
Right tilted	20	QPSK 1_0	20175/1732.5	1:1	0.061	0.02	23.38	24.50	1.294	0.078	22.6
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	20175/1732.5	1:1	0.057	0.04	22.26	23.50	1.330	0.075	22.6
Left tilted	20	QPSK 50_0	20175/1732.5	1:1	0.032	0.08	22.26	23.50	1.330	0.042	22.6
Right cheek	20	QPSK 50_0	20175/1732.5	1:1	0.064	0.00	22.26	23.50	1.330	0.085	22.6
Right tilted	20	QPSK 50_0	20175/1732.5	1:1	0.048	0.04	22.26	23.50	1.330	0.064	22.6
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.225	0.08	23.38	24.50	1.294	0.291	22.6
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.267	0.08	23.38	24.50	1.294	0.373	22.6
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.181	0.07	22.26	23.50	1.330	0.241	22.6
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.230	0.01	22.26	23.50	1.330	0.306	22.6
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.430	0.17	23.38	24.50	1.294	0.557	22.6
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.617	0.02	23.38	24.50	1.294	0.799	22.6
Back side with Inter-band CA	20	QPSK 1_0	20175/1732.5	1:1	0.617	0.02	23.38	21.50	0.649	0.400	22.6
Right side	20	QPSK 1_0	20175/1732.5	1:1	0.315	0.05	23.38	24.50	1.294	0.408	22.6
Bottom side	20	QPSK 1_0	20175/1732.5	1:1	0.336	0.11	23.38	24.50	1.294	0.435	22.6
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.350	0.05	22.26	23.50	1.330	0.466	22.6
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.522	0.02	22.26	23.50	1.330	0.694	22.6
Right side	20	QPSK 50_0	20175/1732.5	1:1	0.246	0.08	22.26	23.50	1.330	0.327	22.6
Bottom side	20	QPSK 50_0	20175/1732.5	1:1	0.272	0.12	22.26	23.50	1.330	0.362	22.6
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	0.228	-0.09	25.27	25.50	1.054	0.240	22.6
Left tilted	20	QPSK 1_0	20175/1732.5	1:1	0.098	0.20	25.27	25.50	1.054	0.103	22.6
Right cheek	20	QPSK 1_0	20175/1732.5	1:1	0.131	0.04	25.27	25.50	1.054	0.138	22.6
Right tilted	20	QPSK 1_0	20175/1732.5	1:1	0.100	0.08	25.27	25.50	1.054	0.105	22.6
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	20175/1732.5	1:1	0.126	0.09	23.94	24.50	1.138	0.143	22.6
Left tilted	20	QPSK 50_0	20175/1732.5	1:1	0.100	0.03	23.94	24.50	1.138	0.114	22.6
Right cheek	20	QPSK 50_0	20175/1732.5	1:1	0.108	0.09	23.94	24.50	1.138	0.123	22.6
Right tilted	20	QPSK 50_0	20175/1732.5	1:1	0.081	0.06	23.94	24.50	1.138	0.092	22.6
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.331	0.11	25.42	25.50	1.019	0.337	22.6
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.539	0.17	25.42	25.50	1.019	0.549	22.6
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.354	0.06	23.94	24.50	1.138	0.403	22.6
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.435	0.07	23.94	24.50	1.138	0.495	22.6
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.427	0.05	23.16	23.50	1.081	0.462	22.6
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.635	-0.20	23.16	23.50	1.081	0.687	22.6
Left side	20	QPSK 1_0	20175/1732.5	1:1	0.071	0.02	23.16	23.50	1.081	0.077	22.6
Bottom side	20	QPSK 1_0	20175/1732.5	1:1	0.779	0.15	23.16	23.50	1.081	0.842	22.6
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.448	0.05	22.97	23.50	1.130	0.506	22.6
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.573	0.20	22.97	23.50	1.130	0.647	22.6
Left side	20	QPSK 50_0	20175/1732.5	1:1	0.071	0.06	22.97	23.50	1.130	0.080	22.6



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Bottom side	20	QPSK 50_0	20175/1732.5	1:1	0.840	0.16	22.97	23.50	1.130	0.949	22.6
Bottom side repeat	20	QPSK 50_0	20175/1732.5	1:1	0.836	0.03	22.97	23.50	1.130	0.945	22.6
Hotspot Test data(Separate 10mm 100%RB)											
Bottom side	20	QPSK 100_0	20175/1732.5	1:1	0.822	0.02	22.48	23.50	1.265	1.040	22.6
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	0.191	-0.02	19.33	19.70	1.089	0.208	22.6
Left tilted	20	QPSK 1_0	20175/1732.5	1:1	0.107	0.04	19.33	19.70	1.089	0.117	22.6
Right cheek	20	QPSK 1_0	20175/1732.5	1:1	0.801	0.03	19.33	19.70	1.089	0.872	22.6
Right tilted	20	QPSK 1_0	20175/1732.5	1:1	0.207	0.05	19.33	19.70	1.089	0.225	22.6
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	20175/1732.5	1:1	0.201	0.06	19.38	19.70	1.076	0.216	22.6
Left tilted	20	QPSK 50_0	20175/1732.5	1:1	0.116	0.06	19.38	19.70	1.076	0.125	22.6
Right cheek	20	QPSK 50_0	20175/1732.5	1:1	0.850	0.04	19.38	19.70	1.076	0.915	22.6
Right cheek repeat	20	QPSK 50_0	20175/1732.5	1:1	0.847	-0.02	19.38	19.70	1.076	0.912	22.6
Right tilted	20	QPSK 50_0	20175/1732.5	1:1	0.218	0.06	19.38	19.70	1.076	0.235	22.6
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	20175/1732.5	1:1	0.813	0.10	19.03	19.70	1.167	0.949	22.6
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.200	0.02	25.13	25.70	1.140	0.228	22.6
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.292	0.10	25.13	25.70	1.140	0.333	22.6
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.164	0.05	23.92	24.70	1.197	0.196	22.6
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.226	0.14	23.92	24.70	1.197	0.270	22.6
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.137	0.08	19.33	19.70	1.089	0.149	22.6
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.211	0.02	19.33	19.70	1.089	0.230	22.6
Left side	20	QPSK 1_0	20175/1732.5	1:1	0.311	-0.10	19.33	19.70	1.089	0.339	22.6
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.144	0.01	19.38	19.70	1.076	0.155	22.6
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.240	0.07	19.38	19.70	1.076	0.258	22.6
Left side	20	QPSK 50_0	20175/1732.5	1:1	0.318	0.04	19.38	19.70	1.076	0.342	22.6
Ant 5 Test Record											
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)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	20175/1732.5	1:1	0.418	-0.06	18.93	20.00	1.279	0.535	22.6
Left tilted	20	QPSK 1_0	20175/1732.5	1:1	0.385	0.11	18.93	20.00	1.279	0.493	22.6
Right cheek	20	QPSK 1_0	20175/1732.5	1:1	0.780	0.07	18.93	20.00	1.279	0.998	22.6
Right tilted	20	QPSK 1_0	20175/1732.5	1:1	0.507	0.17	18.93	20.00	1.279	0.649	22.6
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	20175/1732.5	1:1	0.428	0.01	18.81	20.00	1.315	0.563	22.6
Left tilted	20	QPSK 50_0	20175/1732.5	1:1	0.396	0.12	18.81	20.00	1.315	0.521	22.6
Right cheek	20	QPSK 50_0	20175/1732.5	1:1	0.801	0.11	18.81	20.00	1.315	1.053	22.6
Right cheek with Inter-band CA	20	QPSK 50_0	20175/1732.5	1:1	0.801	0.11	18.81	18.00	0.830	0.665	22.6
Right cheek repeat	20	QPSK 50_0	20175/1732.5	1:1	0.798	-0.01	18.81	20.00	1.315	1.050	22.6
Right tilted	20	QPSK 50_0	20175/1732.5	1:1	0.532	0.15	18.81	20.00	1.315	0.700	22.6
Head Test Data(100%RB)											
Right cheek	20	QPSK 50_0	20175/1732.5	1:1	0.801	0.11	18.82	20.00	1.312	1.051	22.6
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	20175/1732.5	1:1	0.325	-0.06	24.43	25.50	1.279	0.416	22.6
Back side	20	QPSK 1_0	20175/1732.5	1:1	0.448	-0.08	24.43	25.50	1.279	0.573	22.6
Back side with Inter-band CA	20	QPSK 1_0	20175/1732.5	1:1	0.448	-0.08	24.43	24.50	1.016	0.455	22.6
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.273	-0.04	23.27	24.50	1.327	0.362	22.6
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.374	-0.10	23.27	24.50	1.327	0.496	22.6
Hotspot Test data(Separate 10mm 1RB)											



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Front side	20	QPSK 1 0	20175/1732.5	1:1	0.114	-0.14	18.93	20.00	1.279	0.146	22.6
Back side	20	QPSK 1 0	20175/1732.5	1:1	0.265	0.17	18.93	20.00	1.279	0.339	22.6
Left side	20	QPSK 1 0	20175/1732.5	1:1	0.092	0.09	18.93	20.00	1.279	0.118	22.6
Top side	20	QPSK 1 0	20175/1732.5	1:1	0.315	0.06	18.93	20.00	1.279	0.403	22.6
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50 0	20175/1732.5	1:1	0.116	0.12	18.81	20.00	1.315	0.153	22.6
Back side	20	QPSK 50 0	20175/1732.5	1:1	0.274	0.14	18.81	20.00	1.315	0.360	22.6
Left side	20	QPSK 50 0	20175/1732.5	1:1	0.095	-0.07	18.81	20.00	1.315	0.124	22.6
Top side	20	QPSK 50 0	20175/1732.5	1:1	0.344	0.08	18.81	20.00	1.315	0.452	22.6
Top side with Inter-band CA	20	QPSK 50 0	20175/1732.5	1:1	0.344	0.08	18.81	18.00	0.830	0.285	22.6

Table 17: SAR of LTE Band 4 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)
Bottom side	20175/1732.5	0.840	0.836	1.005	N/A	N/A
Right cheek	20175/1732.5	0.850	0.847	1.004	N/A	N/A
Right cheek	20175/1732.5	0.801	0.798	1.004	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 (~ 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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8.2.2 SAR Result of LTE Band 5

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	20525/836.5	1:1	0.235	0.05	25.47	25.50	1.007	0.237	22.3
Left tilted	10	QPSK 1_0	20525/836.5	1:1	0.098	0.08	25.47	25.50	1.007	0.099	22.3
Right cheek	10	QPSK 1_0	20525/836.5	1:1	0.209	0.17	25.47	25.50	1.007	0.210	22.3
Right tilted	10	QPSK 1_0	20525/836.5	1:1	0.090	0.06	25.47	25.50	1.007	0.091	22.3
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_0	20525/836.5	1:1	0.176	0.14	24.43	24.50	1.016	0.179	22.3
Left tilted	10	QPSK 25_0	20525/836.5	1:1	0.070	0.05	24.43	24.50	1.016	0.071	22.3
Right cheek	10	QPSK 25_0	20525/836.5	1:1	0.161	0.12	24.43	24.50	1.016	0.164	22.3
Right tilted	10	QPSK 25_0	20525/836.5	1:1	0.071	0.19	24.43	24.50	1.016	0.072	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_0	20525/836.5	1:1	0.243	-0.09	25.47	25.50	1.007	0.245	22.3
Back side	10	QPSK 1_0	20525/836.5	1:1	0.342	-0.11	25.47	25.50	1.007	0.344	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_0	20525/836.5	1:1	0.202	0.03	24.43	24.50	1.016	0.205	22.3
Back side	10	QPSK 25_0	20525/836.5	1:1	0.256	-0.09	24.43	24.50	1.016	0.260	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_0	20525/836.5	1:1	0.392	0.11	23.87	24.00	1.030	0.404	22.3
Back side	10	QPSK 1_0	20525/836.5	1:1	0.529	0.00	23.87	24.00	1.030	0.545	22.3
Right side	10	QPSK 1_0	20525/836.5	1:1	0.245	0.04	23.87	24.00	1.030	0.252	22.3
Bottom side	10	QPSK 1_0	20525/836.5	1:1	0.201	0.00	23.87	24.00	1.030	0.207	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_0	20525/836.5	1:1	0.400	0.10	23.60	24.00	1.096	0.439	22.3
Back side	10	QPSK 25_0	20525/836.5	1:1	0.423	0.00	23.60	24.00	1.096	0.464	22.3
Right side	10	QPSK 25_0	20525/836.5	1:1	0.247	0.03	23.60	24.00	1.096	0.271	22.3
Bottom side	10	QPSK 25_0	20525/836.5	1:1	0.199	0.04	23.60	24.00	1.096	0.218	22.3
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	20525/836.5	1:1	0.404	0.00	19.84	20.20	1.086	0.439	22.3
Left tilted	10	QPSK 1_0	20525/836.5	1:1	0.057	0.19	19.84	20.20	1.086	0.062	22.3
Right cheek	10	QPSK 1_0	20525/836.5	1:1	0.277	0.01	19.84	20.20	1.086	0.301	22.3
Right tilted	10	QPSK 1_0	20525/836.5	1:1	0.046	0.18	19.84	20.20	1.086	0.049	22.3
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_0	20525/836.5	1:1	0.402	0.09	19.79	20.20	1.099	0.442	22.3
Left tilted	10	QPSK 25_0	20525/836.5	1:1	0.043	0.16	19.79	20.20	1.099	0.047	22.3
Right cheek	10	QPSK 25_0	20525/836.5	1:1	0.275	0.15	19.79	20.20	1.099	0.302	22.3
Right tilted	10	QPSK 25_0	20525/836.5	1:1	0.044	0.13	19.79	20.20	1.099	0.048	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_0	20525/836.5	1:1	0.265	0.17	22.35	22.70	1.084	0.287	22.3
Back side	10	QPSK 1_0	20525/836.5	1:1	0.311	0.13	22.35	22.70	1.084	0.337	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_0	20525/836.5	1:1	0.265	0.13	22.26	22.70	1.107	0.293	22.3
Back side	10	QPSK 25_0	20525/836.5	1:1	0.310	-0.04	22.26	22.70	1.107	0.343	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_0	20525/836.5	1:1	0.252	0.16	19.24	19.70	1.112	0.280	22.3
Back side	10	QPSK 1_0	20525/836.5	1:1	0.308	0.15	19.24	19.70	1.112	0.342	22.3
Left side	10	QPSK 1_0	20525/836.5	1:1	0.416	-0.07	19.24	19.70	1.112	0.462	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_0	20525/836.5	1:1	0.253	0.06	19.18	19.70	1.127	0.285	22.3
Back side	10	QPSK 25_0	20525/836.5	1:1	0.306	0.10	19.18	19.70	1.127	0.345	22.3
Left side	10	QPSK 25_0	20525/836.5	1:1	0.416	-0.08	19.18	19.70	1.127	0.469	22.3

Table 18: SAR of LTE Band 5 for Head and Body.



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8.2.3 SAR Result of LTE Band 7

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	20	QPSK 1_0	21100/2535	1:1	0.061	0.05	23.18	23.50	1.076	0.065	22.3
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.018	0.01	23.18	23.50	1.076	0.020	22.3
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.070	0.03	23.18	23.50	1.076	0.075	22.3
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.086	0.02	23.18	23.50	1.076	0.092	22.3
Right tilted with Intra-band CA	20	QPSK 1_0	21099+21901/2412+2392.2	1:1	0.085	0.09	23.21	23.50	1.069	0.091	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.043	0.04	22.16	22.50	1.081	0.046	22.3
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.021	0.05	22.16	22.50	1.081	0.023	22.3
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.054	0.07	22.16	22.50	1.081	0.058	22.3
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.064	0.02	22.16	22.50	1.081	0.070	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.136	0.09	23.18	23.50	1.076	0.146	22.3
Back side	20	QPSK 1_0	21100/2535	1:1	0.147	0.08	23.18	23.50	1.076	0.158	22.3
Back side with Intra-band CA	20	QPSK 1_0	21099+21901/2412+2392.2	1:1	0.144	-0.03	23.21	23.50	1.069	0.154	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.110	0.04	22.16	22.50	1.081	0.119	22.3
Back side	20	QPSK 50_0	21100/2535	1:1	0.130	0.05	22.16	22.50	1.081	0.141	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.246	0.01	20.75	21.00	1.059	0.261	22.3
Back side	20	QPSK 1_0	21100/2535	1:1	0.345	0.08	20.75	21.00	1.059	0.365	22.3
Back side with Intra-band CA	20	QPSK 1_0	21099+21901/2412+2392.2	1:1	0.277	0.01	20.73	21.00	1.064	0.295	22.3
Right side	20	QPSK 1_0	21100/2535	1:1	0.155	0.06	20.75	21.00	1.059	0.164	22.3
Bottom side	20	QPSK 1_0	21100/2535	1:1	0.258	0.08	20.75	21.00	1.059	0.273	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.217	0.08	20.71	21.00	1.069	0.232	22.3
Back side	20	QPSK 50_0	21100/2535	1:1	0.238	0.02	20.71	21.00	1.069	0.254	22.3
Right side	20	QPSK 50_0	21100/2535	1:1	0.128	0.05	20.71	21.00	1.069	0.137	22.3
Bottom side	20	QPSK 50_0	21100/2535	1:1	0.211	-0.05	20.71	21.00	1.069	0.226	22.3
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	21100/2535	1:1	0.290	0.03	25.17	25.50	1.079	0.313	22.3
Left cheek with Intra-band CA	20	QPSK 1_0	21099+21901/2412+2392.2	1:1	0.282	-0.01	25.09	25.50	1.099	0.310	22.3
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.083	0.04	25.17	25.50	1.079	0.089	22.3
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.184	0.02	25.17	25.50	1.079	0.199	22.3
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.069	0.07	25.17	25.50	1.079	0.074	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.240	0.02	24.16	24.50	1.081	0.260	22.3
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.041	0.06	24.16	24.50	1.081	0.044	22.3
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.149	0.04	24.16	24.50	1.081	0.161	22.3
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.054	0.11	24.16	24.50	1.081	0.059	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.440	0.07	25.17	25.50	1.079	0.475	22.3
Back side	20	QPSK 1_0	21100/2535	1:1	0.464	-0.03	25.17	25.50	1.079	0.501	22.3
Back side with Intra-band CA	20	QPSK 1_0	21099+21901/2412+2392.2	1:1	0.454	0.09	25.09	25.50	1.099	0.499	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.395	0.01	24.16	24.50	1.081	0.427	22.3
Back side	20	QPSK 50_0	21100/2535	1:1	0.385	0.02	24.16	24.50	1.081	0.416	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.382	0.01	18.18	18.50	1.076	0.411	22.3
Back side	20	QPSK 1_0	21100/2535	1:1	0.432	0.02	18.18	18.50	1.076	0.465	22.3
Left side	20	QPSK 1_0	21100/2535	1:1	0.183	0.08	18.18	18.50	1.076	0.197	22.3
Bottom side	20	QPSK 1_0	21100/2535	1:1	0.432	-0.13	18.18	18.50	1.076	0.465	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.366	0.09	18.02	18.50	1.117	0.409	22.3



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Back side	20	QPSK 50_0	21100/2535	1:1	0.392	0.03	18.02	18.50	1.117	0.438	22.3
Left side	20	QPSK 50_0	21100/2535	1:1	0.168	0.11	18.02	18.50	1.117	0.188	22.3
Bottom side	20	QPSK 50_0	21100/2535	1:1	0.417	0.03	18.02	18.50	1.117	0.466	22.3
Bottom side with Intra-band CA	20	QPSK 1_0	21099+21901/2412+2392.2	1:1	0.409	0.06	18.15	18.50	1.084	0.443	22.3
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	21100/2535	1:1	0.278	0.01	18.81	19.00	1.045	0.290	22.4
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.139	0.07	18.81	19.00	1.045	0.145	22.4
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.798	0.02	18.81	19.00	1.045	0.834	22.4
Right cheek	20	QPSK 1_0	20850/2510	1:1	0.692	-0.02	18.71	19.00	1.069	0.740	22.4
Right cheek	20	QPSK 1_0	21350/2560	1:1	0.812	-0.07	18.75	19.00	1.059	0.860	22.4
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.312	0.04	18.81	19.00	1.045	0.326	22.4
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.299	0.04	18.62	19.00	1.091	0.326	22.4
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.155	0.09	18.62	19.00	1.091	0.169	22.4
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.855	0.19	18.62	19.00	1.091	0.933	22.4
Right cheek	20	QPSK 50_0	20850/2510	1:1	0.741	-0.07	18.44	19.00	1.138	0.843	22.4
Right cheek	20	QPSK 50_0	21350/2560	1:1	0.879	0.02	18.39	19.00	1.151	1.012	22.4
Right cheek repeat	20	QPSK 50_0	21350/2560	1:1	0.811	0.05	18.39	19.00	1.151	0.933	22.4
Right cheek with Intra-band CA	20	QPSK 1_0	21152+21350/2540.2+2560	1:1	0.833	0.01	18.76	19.00	1.057	0.880	22.4
Right cheek with EN-DC/Inter-band CA	20	QPSK 50_0	21350/2560	1:1	0.879	0.02	18.09	14.50	0.438	0.385	22.4
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.344	0.05	18.62	19.00	1.091	0.375	22.4
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	21350/2560	1:1	0.625	-0.01	18.66	19.00	1.081	0.676	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.243	0.01	24.35	24.50	1.035	0.252	22.4
Back side	20	QPSK 1_0	21100/2535	1:1	0.380	0.02	24.35	24.50	1.035	0.393	22.4
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.268	0.13	24.2	24.50	1.072	0.287	22.4
Back side	20	QPSK 50_0	21100/2535	1:1	0.425	0.03	24.2	24.50	1.072	0.455	22.4
Back side with Intra-band CA	20	QPSK 1_0	21099+21901/2412+2392.2	1:1	0.396	0.09	24.31	24.50	1.045	0.414	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	21100/2535	1:1	0.122	0.01	18.81	19.00	1.119	0.137	22.4
Back side	20	QPSK 1_0	21100/2535	1:1	0.242	0.05	18.81	19.00	1.119	0.271	22.4
Left side	20	QPSK 1_0	21100/2535	1:1	0.524	0.09	18.81	19.00	1.119	0.587	22.4
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	21100/2535	1:1	0.133	0.04	18.62	19.00	1.091	0.145	22.4
Back side	20	QPSK 50_0	21100/2535	1:1	0.229	-0.03	18.62	19.00	1.091	0.250	22.4
Left side	20	QPSK 50_0	21100/2535	1:1	0.555	0.13	18.62	19.00	1.091	0.606	22.4
Left side with Intra-band CA	20	QPSK 1_0	21099+21901/2412+2392.2	1:1	0.517	0.01	18.76	19.00	1.057	0.546	22.4
Left side with EN-DC/Inter-band CA	20	QPSK 50_0	21100/2535	1:1	0.555	0.13	18.32	14.50	0.415	0.230	22.4



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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.(°C)
Head Test Data(1RB)											
Left cheek	20	QPSK 1 0	21100/2535	1:1	0.348	0.1	17.15	17.50	1.084	0.377	22.4
Left tilted	20	QPSK 1 0	21100/2535	1:1	0.247	0.12	17.15	17.50	1.084	0.268	22.4
Right cheek	20	QPSK 1 0	21100/2535	1:1	0.528	0.06	17.15	17.50	1.084	0.572	22.4
Right tilted	20	QPSK 1 0	21100/2535	1:1	0.417	0.04	17.15	17.50	1.084	0.452	22.4
Head Test Data(50%RB)											
Left cheek	20	QPSK 50 0	21100/2535	1:1	0.238	0.02	16.87	17.50	1.156	0.275	22.4
Left tilted	20	QPSK 50 0	21100/2535	1:1	0.252	0.06	16.87	17.50	1.156	0.291	22.4
Right cheek	20	QPSK 50 0	21100/2535	1:1	0.561	0.11	16.87	17.50	1.156	0.649	22.4
Right cheek with EN-DC/Inter-band CA	20	QPSK 50_0	21100/2535	1:1	0.561	0.11	16.87	15.00	0.650	0.365	22.4
Right cheek Intra-band CA	20	QPSK 1 0	21099+21901/2412+2392.2	1:1	0.502	0.09	17.14	17.50	1.086	0.545	22.4
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.442	0.04	16.87	17.50	1.156	0.511	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1 0	21100/2535	1:1	0.422	0.03	24.65	25.00	1.084	0.457	22.4
Back side	20	QPSK 1 0	21100/2535	1:1	0.598	-0.05	24.65	25.00	1.084	0.648	22.4
Back side with Intra-band CA	20	QPSK 1 0	21099+21901/2412+2392.2	1:1	0.562	0.07	24.41	25.00	1.146	0.644	22.4
Back side with EN-DC/Inter-band CA	20	QPSK 1_0	21100/2535	1:1	0.598	-0.05	24.65	22.00	0.543	0.325	22.4
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50 0	21100/2535	1:1	0.354	0.03	23.55	24.00	1.109	0.393	22.4
Back side	20	QPSK 50 0	21100/2535	1:1	0.546	0.03	23.55	24.00	1.109	0.606	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1 0	21100/2535	1:1	0.122	0.04	17.15	17.50	1.084	0.132	22.4
Back side	20	QPSK 1 0	21100/2535	1:1	0.187	0.05	17.15	17.50	1.084	0.203	22.4
Left side	20	QPSK 1 0	21100/2535	1:1	0.270	0.04	17.15	17.50	1.084	0.293	22.4
Top side	20	QPSK 1 0	21100/2535	1:1	0.269	-0.11	17.15	17.50	1.084	0.292	22.4
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50 0	21100/2535	1:1	0.129	0.11	16.87	17.50	1.156	0.149	22.4
Back side	20	QPSK 50 0	21100/2535	1:1	0.190	-0.07	16.87	17.50	1.156	0.220	22.4
Left side	20	QPSK 50 0	21100/2535	1:1	0.283	0.07	16.87	17.50	1.156	0.327	22.4
Top side	20	QPSK 50 0	21100/2535	1:1	0.284	-0.04	16.87	17.50	1.156	0.328	22.4
Top side with Intra-band CA	20	QPSK 1 0	21099+21901/2412+2392.2	1:1	0.278	0.01	17.14	17.50	1.086	0.302	22.4
Top side with EN-DC/Inter-band CA	20	QPSK 50_0	21100/2535	1:1	0.284	-0.04	16.87	15.00	0.650	0.185	22.4

Table 19: SAR of LTE Band 7 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 cheek	21350/2560	0.879	0.811	1.084	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 (~ 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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8.2.4 SAR Result of LTE Band 12

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	0.118	0.15	25.18	25.70	1.127	0.133	22.2
Left tilted	10	QPSK 1 0	23095/707.5	1:1	0.034	0.14	25.18	25.70	1.127	0.038	22.2
Right cheek	10	QPSK 1 0	23095/707.5	1:1	0.097	-0.12	25.18	25.70	1.127	0.109	22.2
Right tilted	10	QPSK 1 0	23095/707.5	1:1	0.053	-0.14	25.18	25.70	1.127	0.060	22.2
Head Test Data(50%RB)											
Left cheek	10	QPSK 25 0	23095/707.5	1:1	0.099	-0.02	24.19	24.70	1.125	0.112	22.2
Left tilted	10	QPSK 25 0	23095/707.5	1:1	0.029	0.06	24.19	24.70	1.125	0.032	22.2
Right cheek	10	QPSK 25 0	23095/707.5	1:1	0.084	0.13	24.19	24.70	1.125	0.095	22.2
Right tilted	10	QPSK 25 0	23095/707.5	1:1	0.044	-0.15	24.19	24.70	1.125	0.049	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1 0	23095/707.5	1:1	0.119	0.08	25.18	25.70	1.127	0.134	22.2
Back side	10	QPSK 1 0	23095/707.5	1:1	0.262	-0.01	25.18	25.70	1.127	0.295	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25 0	23095/707.5	1:1	0.102	0.06	24.19	24.70	1.125	0.115	22.2
Back side	10	QPSK 25 0	23095/707.5	1:1	0.237	0.01	24.19	24.70	1.125	0.267	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1 0	23095/707.5	1:1	0.217	0.09	25.18	25.70	1.127	0.245	22.2
Back side	10	QPSK 1 0	23790/710	1:1	0.258	0.07	25.18	25.70	1.127	0.291	22.2
Right side	10	QPSK 1 0	23095/707.5	1:1	0.188	0.01	25.18	25.70	1.127	0.212	22.2
Bottom side	10	QPSK 1 0	23095/707.5	1:1	0.099	0.06	25.18	25.70	1.127	0.112	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25 0	23095/707.5	1:1	0.187	0.10	24.19	24.70	1.125	0.210	22.2
Back side	10	QPSK 25 0	23095/707.5	1:1	0.224	0.08	24.19	24.70	1.125	0.252	22.2
Right side	10	QPSK 25 0	23095/707.5	1:1	0.156	-0.01	24.19	24.70	1.125	0.175	22.2
Bottom side	10	QPSK 25 0	23095/707.5	1:1	0.086	0.02	24.19	24.70	1.125	0.097	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	0.857	0.02	25.23	25.70	1.114	0.955	22.2
Left cheek repeat	10	QPSK 1 0	23095/707.5	1:1	0.803	-0.02	25.23	25.70	1.114	0.895	22.2
Left tilted	10	QPSK 1 0	23095/707.5	1:1	0.137	0.07	25.23	25.70	1.114	0.153	22.2
Right cheek	10	QPSK 1 0	23095/707.5	1:1	0.576	-0.14	25.23	25.70	1.114	0.642	22.2
Right tilted	10	QPSK 1 0	23095/707.5	1:1	0.114	0.20	25.23	25.70	1.114	0.127	22.2
Head Test Data(50%RB)											
Left cheek	10	QPSK 25 0	23095/707.5	1:1	0.796	0.11	24.22	24.70	1.117	0.889	22.2
Left tilted	10	QPSK 25 0	23095/707.5	1:1	0.123	-0.09	24.22	24.70	1.117	0.137	22.2
Right cheek	10	QPSK 25 0	23095/707.5	1:1	0.519	0.17	24.22	24.70	1.117	0.580	22.2
Right tilted	10	QPSK 25 0	23095/707.5	1:1	0.103	0.18	24.22	24.70	1.117	0.115	22.2
Head Test Data(100%RB)											
Left cheek	10	QPSK 50 0	23095/707.5	1:1	0.754	0.01	24.23	24.70	1.114	0.840	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1 0	23095/707.5	1:1	0.240	0.03	25.23	25.70	1.114	0.267	22.2
Back side	10	QPSK 1 0	23095/707.5	1:1	0.295	0.07	25.23	25.70	1.114	0.329	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25 0	23095/707.5	1:1	0.216	0.02	24.22	24.70	1.117	0.241	22.2
Back side	10	QPSK 25 0	23095/707.5	1:1	0.266	0.01	24.22	24.70	1.117	0.297	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1 0	23095/707.5	1:1	0.375	0.03	24.17	24.70	1.130	0.424	22.2
Back side	10	QPSK 1 0	23095/707.5	1:1	0.512	0.03	24.17	24.70	1.130	0.578	22.2
Left side	10	QPSK 1 0	23095/707.5	1:1	0.827	0.06	24.17	24.70	1.130	0.934	22.2
Left side repeat	10	QPSK 1 0	23095/707.5	1:1	0.775	-0.01	24.17	24.70	1.130	0.876	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25 0	23095/707.5	1:1	0.336	0.02	24.12	24.70	1.143	0.384	22.2



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Back side	10	QPSK 25 0	23095/707.5	1:1	0.549	0.04	24.12	24.70	1.143	0.627	22.2
Left side	10	QPSK 25 0	23095/707.5	1:1	0.807	0.02	24.12	24.70	1.143	0.922	22.2

Table 20: SAR of LTE Band 12 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 cheek	23095/707.5	0.857	0.803	1.067	N/A	N/A
Left side	23095/707.5	0.827	0.775	1.067	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 (~ 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 LTE Band 26

Ant0 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	0.232	0.09	24.66	25.70	1.271	0.295	22.4
Left tilted	15	QPSK 1 0	26865/831.5	1:1	0.100	0.05	24.66	25.70	1.271	0.127	22.4
Right cheek	15	QPSK 1 0	26865/831.5	1:1	0.237	0.07	24.66	25.70	1.271	0.301	22.4
Right tilted	15	QPSK 1 0	26865/831.5	1:1	0.114	0.16	24.66	25.70	1.271	0.145	22.4
Head Test Data(50%RB)											
Left cheek	15	QPSK 36 0	26865/831.5	1:1	0.180	0.17	23.87	24.70	1.211	0.218	22.4
Left tilted	15	QPSK 36 0	26865/831.5	1:1	0.081	0.03	23.87	24.70	1.211	0.098	22.4
Right cheek	15	QPSK 36 0	26865/831.5	1:1	0.191	0.12	23.87	24.70	1.211	0.231	22.4
Right tilted	15	QPSK 36 0	26865/831.5	1:1	0.091	0.18	23.87	24.70	1.211	0.110	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1 0	26865/831.5	1:1	0.300	0.09	24.66	25.70	1.271	0.381	22.4
Back side	15	QPSK 1 0	26865/831.5	1:1	0.356	0.02	24.66	25.70	1.271	0.452	22.4
Body worn Test data(Separate 15mm 50%RB)											
Front side	15	QPSK 36 0	26865/831.5	1:1	0.241	0.08	23.87	24.70	1.211	0.292	22.4
Back side	15	QPSK 36 0	26865/831.5	1:1	0.275	0.05	23.87	24.70	1.211	0.333	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1 0	26865/831.5	1:1	0.509	0.06	24.66	25.70	1.271	0.647	22.4
Back side	15	QPSK 1 0	26865/831.5	1:1	0.566	-0.03	24.66	25.70	1.271	0.719	22.4
Right side	15	QPSK 1 0	26865/831.5	1:1	0.312	0.05	24.66	25.70	1.271	0.396	22.4
Bottom side	15	QPSK 1 0	26865/831.5	1:1	0.272	0.03	24.66	25.70	1.271	0.346	22.4
Hotspot Test data(Separate 10mm 50%RB)											
Front side	15	QPSK 36 0	26865/831.5	1:1	0.418	0.08	23.87	24.70	1.211	0.506	22.4
Back side	15	QPSK 36 0	26865/831.5	1:1	0.466	0.00	23.87	24.70	1.211	0.564	22.4
Right side	15	QPSK 36 0	26865/831.5	1:1	0.252	0.01	23.87	24.70	1.211	0.305	22.4
Bottom side	15	QPSK 36 0	26865/831.5	1:1	0.223	0.08	23.87	24.70	1.211	0.270	22.4
Ant1 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	0.723	0.12	22.34	22.70	1.086	0.785	22.4
Left tilted	15	QPSK 1 0	26865/831.5	1:1	0.097	0.07	22.34	22.70	1.086	0.106	22.4
Right cheek	15	QPSK 1 0	26865/831.5	1:1	0.567	0.08	22.34	22.70	1.086	0.616	22.4
Right tilted	15	QPSK 1 0	26865/831.5	1:1	0.191	0.06	22.34	22.70	1.086	0.208	22.4
Head Test Data(50%RB)											
Left cheek	15	QPSK 36 0	26865/831.5	1:1	0.742	0.13	22.21	22.70	1.119	0.831	22.4
Left tilted	15	QPSK 36 0	26865/831.5	1:1	0.098	-0.06	22.21	22.70	1.119	0.109	22.4
Right cheek	15	QPSK 36 0	26865/831.5	1:1	0.569	0.20	22.21	22.70	1.119	0.637	22.4
Right tilted	15	QPSK 36 0	26865/831.5	1:1	0.267	0.01	22.21	22.70	1.119	0.299	22.4
Head Test Data(100%RB)											
Right cheek	15	QPSK 36 0	26865/831.5	1:1	0.735	-0.01	21.94	22.70	1.191	0.876	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1 0	26865/831.5	1:1	0.431	0.02	24.24	24.70	1.112	0.479	22.4
Back side	15	QPSK 1 0	26865/831.5	1:1	0.610	0.09	24.24	24.70	1.112	0.678	22.4
Body worn Test data(Separate 15mm 50%RB)											
Front side	15	QPSK 36 0	26865/831.5	1:1	0.337	0.01	23.55	24.70	1.303	0.439	22.4
Back side	15	QPSK 36 0	26865/831.5	1:1	0.377	-0.04	23.55	24.70	1.303	0.491	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1 0	26865/831.5	1:1	0.490	0.01	22.34	22.70	1.086	0.532	22.4
Back side	15	QPSK 1 0	26865/831.5	1:1	0.482	0.11	22.34	22.70	1.086	0.524	22.4
Left side	15	QPSK 1 0	26865/831.5	1:1	0.887	0.05	22.34	22.70	1.086	0.964	22.4
Hotspot Test data(Separate 10mm 50%RB)											
Front side	15	QPSK 36 0	26865/831.5	1:1	0.489	0.13	22.21	22.70	1.119	0.547	22.4
Back side	15	QPSK 36 0	26865/831.5	1:1	0.487	0.18	22.21	22.70	1.119	0.545	22.4
Left side	15	QPSK 36 0	26865/831.5	1:1	0.936	0.11	22.21	22.70	1.119	1.048	22.4



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Left side repeat	15	QPSK 36_0	26865/831.5	1:1	0.926	-0.02	22.21	22.70	1.119	1.037	22.4
Hotspot Test data(Separate 10mm 100%RB)											
Left side	15	QPSK 75_0	26865/831.5	1:1	0.889	0.03	21.98	22.70	1.180	1.049	22.4
Product specific 10g SAR(Separate 0mm)											
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)
Left side	15	QPSK 1_0	26765/821.5	1:1	2.070	0.06	24.24	24.70	1.112	2.301	22.4
Left side	15	QPSK 36_0	26765/821.5	1:1	2.020	0.06	23.55	24.70	1.303	2.632	22.4
Left side	15	QPSK 75_0	26765/821.5	1:1	1.800	0.01	23.54	24.70	1.306	2.351	22.4

Table 21: SAR of LTE Band 26 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 side	26865/831.5	0.936	0.926	1.011	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 (~ 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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8.2.6 SAR Result of LTE Band 41

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	20	QPSK 1 0	40620/2593	1:1.58	0.033	0.02	22.96	24.00	1.271	0.042	22.2	
Left tilted	20	QPSK 1 0	40620/2593	1:1.58	0.015	0.05	22.96	24.00	1.271	0.018	22.2	
Right cheek	20	QPSK 1 0	40620/2593	1:1.58	0.038	-0.02	22.96	24.00	1.271	0.048	22.2	
Right cheek with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.035	-0.01	22.75	24.00	1.334	0.047	22.2	
Right tilted	20	QPSK 1 0	40620/2593	1:1.58	0.031	0.06	22.96	24.00	1.271	0.040	22.2	
Head Test Data(50%RB)												
Left cheek	20	QPSK 50 0	40620/2593	1:1.58	0.033	0.12	22.32	23.00	1.169	0.039	22.2	
Left tilted	20	QPSK 50 0	40620/2593	1:1.58	0.018	0.1	22.32	23.00	1.169	0.021	22.2	
Right cheek	20	QPSK 50 0	40620/2593	1:1.58	0.030	0	22.32	23.00	1.169	0.035	22.2	
Right tilted	20	QPSK 50 0	40620/2593	1:1.58	0.029	0.01	22.32	23.00	1.169	0.034	22.2	
Body worn Test data(Separate 15mm 1RB)												
Front side	20	QPSK 1 0	40620/2593	1:1.58	0.081	0.04	22.96	24.00	1.271	0.103	22.2	
Back side	20	QPSK 1 0	40620/2593	1:1.58	0.099	0.03	22.96	24.00	1.271	0.126	22.2	
Back side with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.081	-0.02	22.75	24.00	1.334	0.108	22.2	
Body worn Test data(Separate 15mm 50%RB)												
Front side	20	QPSK 50 0	40620/2593	1:1.58	0.064	0.05	22.32	23.00	1.169	0.075	22.2	
Back side	20	QPSK 50 0	40620/2593	1:1.58	0.089	0.05	22.32	23.00	1.169	0.104	22.2	
Hotspot Test data(Separate 10mm 1RB)												
Front side	20	QPSK 1 0	40620/2593	1:1.58	0.142	0.02	22.96	24.00	1.271	0.180	22.2	
Back side	20	QPSK 1 0	40620/2593	1:1.58	0.210	0.05	22.96	24.00	1.271	0.267	22.2	
Back side with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.189	-0.01	22.75	24.00	1.334	0.252	22.2	
Right side	20	QPSK 1 0	40620/2593	1:1.58	0.116	0.04	22.96	24.00	1.271	0.147	22.2	
Bottom side	20	QPSK 1 0	40620/2593	1:1.58	0.180	0.1	22.96	24.00	1.271	0.229	22.2	
Hotspot Test data(Separate 10mm 50%RB)												
Front side	20	QPSK 50 0	40620/2593	1:1.58	0.127	0.06	22.32	23.00	1.169	0.149	22.2	
Back side	20	QPSK 50 0	40620/2593	1:1.58	0.185	0.09	22.32	23.00	1.169	0.216	22.2	
Right side	20	QPSK 50 0	40620/2593	1:1.58	0.096	0.06	22.32	23.00	1.169	0.113	22.2	
Bottom side	20	QPSK 50 0	40620/2593	1:1.58	0.152	0.02	22.32	23.00	1.169	0.178	22.2	
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	0.115	0.09	24.50	25.70	1.318	0.152	22.2	
Left cheek with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.108	-0.02	25.16	25.70	1.132	0.122	22.2	
Left tilted	20	QPSK 1 0	40620/2593	1:1.58	0.015	0.06	24.50	25.70	1.318	0.020	22.2	
Right cheek	20	QPSK 1 0	40620/2593	1:1.58	0.050	0.03	24.50	25.70	1.318	0.066	22.2	
Right tilted	20	QPSK 1 0	40620/2593	1:1.58	0.032	0.14	24.50	25.70	1.318	0.043	22.2	
Head Test Data(50%RB)												
Left cheek	20	QPSK 50 0	40620/2593	1:1.58	0.118	0.06	24.05	24.70	1.161	0.137	22.2	
Left tilted	20	QPSK 50 0	40620/2593	1:1.58	0.015	0.04	24.05	24.70	1.161	0.018	22.2	
Right cheek	20	QPSK 50 0	40620/2593	1:1.58	0.052	0.03	24.05	24.70	1.161	0.061	22.2	
Right tilted	20	QPSK 50 0	40620/2593	1:1.58	0.031	0.13	24.05	24.70	1.161	0.036	22.2	
Body worn Test data(Separate 15mm 1RB)												
Front side	20	QPSK 1 0	40620/2593	1:1.58	0.143	0.01	24.50	25.70	1.318	0.189	22.2	
Back side	20	QPSK 1 0	40620/2593	1:1.58	0.158	0.05	24.50	25.70	1.318	0.208	22.2	
Back side with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.149	0.09	25.16	25.70	1.132	0.169	22.2	
Body worn Test data(Separate 15mm 50%RB)												
Front side	20	QPSK 50 0	40620/2593	1:1.58	0.150	0.06	24.05	24.70	1.161	0.174	22.2	
Back side	20	QPSK 50 0	40620/2593	1:1.58	0.163	0.19	24.05	24.70	1.161	0.189	22.2	
Hotspot Test data(Separate 10mm 1RB)												
Front side	20	QPSK 1 0	40620/2593	1:1.58	0.258	0.12	20.58	21.70	1.294	0.334	22.2	
Back side	20	QPSK 1 0	40620/2593	1:1.58	0.292	0.03	20.58	21.70	1.294	0.378	22.2	
Left side	20	QPSK 1 0	40620/2593	1:1.58	0.091	0.05	20.58	21.70	1.294	0.117	22.2	
Bottom side	20	QPSK 1 0	40620/2593	1:1.58	0.258	-0.14	20.58	21.70	1.294	0.334	22.2	



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Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.269	0.11	20.45	21.70	1.334	0.359	22.2
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.303	0.14	20.45	21.70	1.334	0.404	22.2
Back side with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.285	0.01	20.66	21.20	1.132	0.323	22.2
Left side	20	QPSK 50_0	40620/2593	1:1.58	0.092	0.08	20.45	21.70	1.334	0.122	22.2
Bottom side	20	QPSK 50_0	40620/2593	1:1.58	0.267	0.08	20.45	21.70	1.334	0.356	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	0.076	0.04	17.09	17.20	1.026	0.078	22.5
Left tilted	20	QPSK 1_0	40620/2593	1:1.58	0.041	0.13	17.09	17.20	1.026	0.042	22.5
Right cheek	20	QPSK 1_0	40620/2593	1:1.58	0.335	0.07	17.09	17.20	1.026	0.344	22.5
Right tilted	20	QPSK 1_0	40620/2593	1:1.58	0.173	0.04	17.09	17.20	1.026	0.177	22.5
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	40620/2593	1:1.58	0.074	0.01	17.04	17.20	1.038	0.077	22.5
Left tilted	20	QPSK 50_0	40620/2593	1:1.58	0.042	0.06	17.04	17.20	1.038	0.043	22.5
Right cheek	20	QPSK 50_0	40620/2593	1:1.58	0.337	0.04	17.04	17.20	1.038	0.350	22.5
Right cheek with LTE B38 Intra-band CA	20	QPSK 50_0	40620/2593	1:1.58	0.303	0.04	17.04	17.20	1.038	0.314	22.5
Right tilted	20	QPSK 50_0	40620/2593	1:1.58	0.192	0.11	17.04	17.20	1.038	0.199	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.278	0.04	22.91	23.20	1.069	0.297	22.5
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.441	0.07	22.91	23.20	1.069	0.471	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.267	0.01	22.84	23.20	1.086	0.290	22.5
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.501	0.05	22.84	23.20	1.086	0.544	22.5
Back side with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.450	-0.01	22.85	23.20	1.084	0.488	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.245	0.011	17.09	17.20	1.026	0.251	22.5
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.524	0.04	17.09	17.20	1.026	0.537	22.5
Left side	20	QPSK 1_0	40620/2593	1:1.58	0.487	0.04	17.09	17.20	1.026	0.499	22.5
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.242	0.12	17.05	17.20	1.035	0.251	22.5
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.530	0.04	17.05	17.20	1.035	0.549	22.5
Back side with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.503	0.07	17.04	17.20	1.038	0.522	22.5
Left side	20	QPSK 50_0	40620/2593	1:1.58	0.493	0.02	17.04	17.20	1.038	0.512	22.5
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	40620/2593	1:1.58	0.260	0.04	16.15	17.50	1.365	0.355	22.5
Left tilted	20	QPSK 1_0	40620/2593	1:1.58	0.206	0.05	16.15	17.50	1.365	0.281	22.5
Right cheek	20	QPSK 1_0	40620/2593	1:1.58	0.273	0.13	16.15	17.50	1.365	0.373	22.5
Right tilted	20	QPSK 1_0	40620/2593	1:1.58	0.323	0.1	16.15	17.50	1.365	0.441	22.5
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	40620/2593	1:1.58	0.204	0.11	15.82	17.50	1.472	0.300	22.5
Left tilted	20	QPSK 50_0	40620/2593	1:1.58	0.193	0.13	15.82	17.50	1.472	0.284	22.5
Right cheek	20	QPSK 50_0	40620/2593	1:1.58	0.249	0.08	15.82	17.50	1.472	0.367	22.5
Right cheek with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.386	0.01	16.58	17.50	1.236	0.477	22.5
Right tilted	20	QPSK 50_0	40620/2593	1:1.58	0.367	0.04	15.82	17.50	1.472	0.540	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.322	0.02	24.21	25.50	1.346	0.433	22.5
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.404	0.08	24.21	25.50	1.346	0.544	22.5
Back side with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.383	-0.02	24.33	25.50	1.309	0.501	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.263	0.01	23.42	24.50	1.282	0.337	22.5
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.363	0.02	23.42	24.50	1.282	0.465	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	40620/2593	1:1.58	0.093	0.02	16.15	17.50	1.365	0.127	22.5
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.295	0.06	16.15	17.50	1.365	0.403	22.5



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Left side	20	QPSK 1_0	40620/2593	1:1.58	0.179	0.06	16.15	17.50	1.365	0.244	22.5
Top side	20	QPSK 1_0	40620/2593	1:1.58	0.268	-0.04	16.15	17.50	1.365	0.366	22.5
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	40620/2593	1:1.58	0.096	0.04	15.82	17.50	1.472	0.141	22.5
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.304	0.06	15.82	17.50	1.472	0.448	22.5
Back side with LTE B38 Intra-band CA	20	QPSK 1_0	37901+38099/2585.1+2604.9	1:1.58	0.288	0.01	16.58	17.50	1.236	0.356	22.5
Left side	20	QPSK 50_0	40620/2593	1:1.58	0.183	0.12	17.32	19.00	1.472	0.269	22.5
Top side	20	QPSK 50_0	40620/2593	1:1.58	0.271	-0.03	17.32	19.00	1.472	0.399	22.5

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

Note: LTE B38 Intra-band U-L CA test at the worst case of LTE B41.



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8.2.7 SAR Result of 5G NR n5

Ant0 Test Record										
Test position	BW.	Modulation	Test ch./Freq.	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	0.271	0.06	24.71	25.50	1.199	0.325	22.1
Left tilted	20	QPSK 1 1	167300/836.5	0.128	0.03	24.71	25.50	1.199	0.154	22.1
Right cheek	20	QPSK 1 1	167300/836.5	0.247	0.08	24.71	25.50	1.199	0.296	22.1
Right tilted	20	QPSK 1 1	167300/836.5	0.125	0.14	24.71	25.50	1.199	0.150	22.1
Head Test data(50%RB)										
Left cheek	20	QPSK 50 28	167300/836.5	0.191	0.07	24.71	25.50	1.199	0.229	22.1
Left tilted	20	QPSK 50 28	167300/836.5	0.084	0.06	24.71	25.50	1.199	0.100	22.1
Right cheek	20	QPSK 50 28	167300/836.5	0.179	0.05	24.71	25.50	1.199	0.215	22.1
Right tilted	20	QPSK 50 28	167300/836.5	0.096	0.09	24.71	25.50	1.199	0.115	22.1
Body worn Test data(Separate 15mm 1RB)										
Front side	20	QPSK 1 1	167300/836.5	0.263	0.06	24.71	25.50	1.199	0.315	22.1
Back side	20	QPSK 1 1	167300/836.5	0.286	-0.01	24.71	25.50	1.199	0.343	22.1
Body worn Test data(Separate 15mm 50%RB)										
Front side	20	QPSK 50 28	167300/836.5	0.261	0.08	24.39	25.50	1.291	0.337	22.1
Back side	20	QPSK 50 28	167300/836.5	0.274	0.03	24.39	25.50	1.291	0.354	22.1
Hotspot Test data(Separate 10mm 1RB)										
Front side	20	QPSK 1 1	167300/836.5	0.411	0.07	23.42	24.00	1.143	0.470	22.1
Back side	20	QPSK 1 1	167300/836.5	0.480	0.01	23.42	24.00	1.143	0.549	22.1
Right side	20	QPSK 1 1	167300/836.5	0.244	0.03	23.42	24.00	1.143	0.279	22.1
Bottom side	20	QPSK 1 1	167300/836.5	0.215	0.04	23.42	24.00	1.143	0.246	22.1
Hotspot Test data (Separate 10mm 50%RB)										
Front side	20	QPSK 50 28	167300/836.5	0.431	0.10	23.35	24.00	1.161	0.501	22.1
Back side	20	QPSK 50 28	167300/836.5	0.467	-0.01	23.35	24.00	1.161	0.542	22.1
Right side	20	QPSK 50 28	167300/836.5	0.254	0.09	23.35	24.00	1.161	0.295	22.1
Bottom side	20	QPSK 50 28	167300/836.5	0.227	0.02	23.35	24.00	1.161	0.264	22.1
Ant1 Test Record										
Test position	BW.	Modulation	Test ch./Freq.	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	0.300	-0.13	18.27	19.20	1.239	0.372	22.1
Left tilted	20	QPSK 1 1	167300/836.5	0.045	0.05	18.27	19.20	1.239	0.056	22.1
Right cheek	20	QPSK 1 1	167300/836.5	0.200	-0.16	18.27	19.20	1.239	0.248	22.1
Right tilted	20	QPSK 1 1	167300/836.5	0.036	0.15	18.27	19.20	1.239	0.045	22.1
Head Test data(50%RB)										
Left cheek	20	QPSK 50 28	167300/836.5	0.263	-0.01	17.54	19.20	1.466	0.385	22.1
Left tilted	20	QPSK 50 28	167300/836.5	0.039	0.10	17.54	19.20	1.466	0.058	22.1
Right cheek	20	QPSK 50 28	167300/836.5	0.181	0.02	17.54	19.20	1.466	0.265	22.1
Right tilted	20	QPSK 50 28	167300/836.5	0.032	0.08	17.54	19.20	1.466	0.046	22.1
Body worn Test data(Separate 15mm 1RB)										
Front side	20	QPSK 1 1	167300/836.5	0.233	0.10	21.87	22.70	1.211	0.282	22.1
Back side	20	QPSK 1 1	167300/836.5	0.266	-0.07	21.87	22.70	1.211	0.322	22.1
Body worn Test data (Separate 15mm 50%RB)										
Front side	20	QPSK 50 28	167300/836.5	0.210	0.10	21.05	22.70	1.462	0.307	22.1
Back side	20	QPSK 50 28	167300/836.5	0.244	-0.04	21.05	22.70	1.462	0.357	22.1
Hotspot Test data(Separate 10mm 1RB)										
Front side	20	QPSK 1 1	167300/836.5	0.186	0.07	18.27	19.20	1.239	0.230	22.1
Back side	20	QPSK 1 1	167300/836.5	0.221	0.13	18.27	19.20	1.239	0.274	22.1
Left side	20	QPSK 1 1	167300/836.5	0.311	0.10	18.27	19.20	1.239	0.385	22.1
Hotspot Test data (Separate 10mm 50%RB)										
Front side	20	QPSK 50 28	167300/836.5	0.175	0.02	17.54	19.20	1.466	0.256	22.1
Back side	20	QPSK 50 28	167300/836.5	0.178	-0.13	17.54	19.20	1.466	0.261	22.1
Left side	20	QPSK 50 28	167300/836.5	0.287	0.04	17.54	19.20	1.466	0.421	22.1

Table 23: SAR of 5G NR n5 for Head and Body.



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8.2.1 SAR Result of 5G NR n7

Ant0 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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	0.040	0.04	22.96	24.00	1.271	0.050	22.4	
Left tilted	40	QPSK 1 1	507000/2535	0.055	0.01	22.96	24.00	1.271	0.070	22.4	
Right cheek	40	QPSK 1 1	507000/2535	0.125	0.09	22.96	24.00	1.271	0.159	22.4	
Right tilted	40	QPSK 1 1	507000/2535	0.020	0.05	22.96	24.00	1.271	0.025	22.4	
Head Test data(50%RB)											
Left cheek	40	QPSK 108 54	507000/2535	0.034	0.11	22.78	24.00	1.324	0.045	22.4	
Left tilted	40	QPSK 108 54	507000/2535	0.052	0.04	22.78	24.00	1.324	0.069	22.4	
Right cheek	40	QPSK 108 54	507000/2535	0.070	0.06	22.78	24.00	1.324	0.093	22.4	
Right tilted	40	QPSK 108 54	507000/2535	0.020	0.04	22.78	24.00	1.324	0.027	22.4	
Body worn Test data(Separate 15mm 1RB)											
Front side	40	QPSK 1 1	507000/2535	0.083	0.02	22.96	24.00	1.271	0.105	22.4	
Back side	40	QPSK 1 1	507000/2535	0.147	0.04	22.96	24.00	1.271	0.187	22.4	
Body worn Test data(Separate 15mm 50%RB)											
Front side	40	QPSK 108 54	507000/2535	0.060	-0.05	22.78	24.00	1.324	0.080	22.4	
Back side	40	QPSK 108 54	507000/2535	0.085	-0.06	22.78	24.00	1.324	0.113	22.4	
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1 1	507000/2535	0.108	0.02	20.38	21.50	1.294	0.140	22.4	
Back side	40	QPSK 1 1	507000/2535	0.281	0.05	20.38	21.50	1.294	0.364	22.4	
Right side	40	QPSK 1 1	507000/2535	0.135	0.01	20.38	21.50	1.294	0.175	22.4	
Bottom side	40	QPSK 1 1	507000/2535	0.132	0.01	20.38	21.50	1.294	0.171	22.4	
Hotspot Test data (Separate 10mm 50%RB)											
Front side	40	QPSK 108 54	507000/2535	0.117	0.02	20.21	21.50	1.346	0.157	22.4	
Back side	40	QPSK 108 54	507000/2535	0.163	0.05	20.21	21.50	1.346	0.219	22.4	
Right side	40	QPSK 108 54	507000/2535	0.136	0.04	20.21	21.50	1.346	0.183	22.4	
Bottom side	40	QPSK 108 54	507000/2535	0.136	0.01	20.21	21.50	1.346	0.183	22.4	
Ant2 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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	0.201	0.07	24.56	25.50	1.242	0.250	22.4	
Left tilted	40	QPSK 1 1	507000/2535	0.070	0.02	24.56	25.50	1.242	0.087	22.4	
Right cheek	40	QPSK 1 1	507000/2535	0.134	0.02	24.56	25.50	1.242	0.166	22.4	
Right tilted	40	QPSK 1 1	507000/2535	0.052	0.05	24.56	25.50	1.242	0.065	22.4	
Head Test data(50%RB)											
Left cheek	40	QPSK 108 54	507000/2535	0.224	0.05	24.45	25.50	1.274	0.285	22.4	
Left tilted	40	QPSK 108 54	507000/2535	0.070	0.01	24.45	25.50	1.274	0.089	22.4	
Right cheek	40	QPSK 108 54	507000/2535	0.155	0.04	24.45	25.50	1.274	0.197	22.4	
Right tilted	40	QPSK 108 54	507000/2535	0.061	0.01	24.45	25.50	1.274	0.077	22.4	
Body worn Test data(Separate 15mm 1RB)											
Front side	40	QPSK 1 1	507000/2535	0.252	0.06	24.56	25.50	1.242	0.313	22.4	
Back side	40	QPSK 1 1	507000/2535	0.277	-0.03	24.56	25.50	1.242	0.344	22.4	
Body worn Test data(Separate 15mm 50%RB)											
Front side	40	QPSK 108 54	507000/2535	0.291	0.08	24.45	25.50	1.274	0.371	22.4	
Back side	40	QPSK 108 54	507000/2535	0.271	-0.07	24.45	25.50	1.274	0.345	22.4	
Hotspot Test data(Separate 10mm 1RB)											
Front side	40	QPSK 1 1	507000/2535	0.384	0.05	20.01	21.00	1.256	0.482	22.4	
Back side	40	QPSK 1 1	507000/2535	0.448	-0.01	20.01	21.00	1.256	0.563	22.4	
Left side	40	QPSK 1 1	507000/2535	0.197	0.04	20.01	21.00	1.256	0.247	22.4	
Bottom side	40	QPSK 1 1	507000/2535	0.465	0.14	20.01	21.00	1.256	0.584	22.4	
Hotspot Test data (Separate 10mm 50%RB)											
Front side	40	QPSK 108 54	507000/2535	0.400	0.06	19.88	21.00	1.294	0.518	22.4	
Back side	40	QPSK 108 54	507000/2535	0.474	0.05	19.88	21.00	1.294	0.613	22.4	
Left side	40	QPSK 108 54	507000/2535	0.186	0.04	19.88	21.00	1.294	0.241	22.4	
Bottom side	40	QPSK 108 54	507000/2535	0.486	0.1	19.88	21.00	1.294	0.629	22.4	
Ant3 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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	40	QPSK 1 1	507000/2535	0.134	0.05	17.43	18.70	1.340	0.180	22.3
Left tilted	40	QPSK 1 1	507000/2535	0.060	0.01	17.43	18.70	1.340	0.080	22.3
Right cheek	40	QPSK 1 1	507000/2535	0.366	0.04	17.43	18.70	1.340	0.490	22.3
Right tilted	40	QPSK 1 1	507000/2535	0.159	0.01	17.43	18.70	1.340	0.213	22.3
Head Test data(50%RB)										
Left cheek	40	QPSK 108 54	507000/2535	0.183	0.01	17.12	18.70	1.439	0.263	22.3
Left tilted	40	QPSK 108 54	507000/2535	0.102	0.04	17.12	18.70	1.439	0.147	22.3
Right cheek	40	QPSK 108 54	507000/2535	0.504	-0.02	17.12	18.70	1.439	0.725	22.3
Right cheek with EN-DC	40	QPSK 108 54	507000/2535	0.504	-0.02	17.12	14.00	0.488	0.246	22.3
Right tilted	40	QPSK 108 54	507000/2535	0.236	0.02	17.12	18.70	1.439	0.340	22.3
Body worn Test data(Separate 15mm 1RB)										
Front side	40	QPSK 1 1	507000/2535	0.175	0.01	21.42	22.70	1.343	0.235	22.3
Back side	40	QPSK 1 1	507000/2535	0.337	0.07	21.42	22.70	1.343	0.453	22.3
Body worn Test data (Separate 15mm 50%RB)										
Front side	40	QPSK 108 54	507000/2535	0.215	0.13	21.11	22.70	1.442	0.310	22.3
Back side	40	QPSK 108 54	507000/2535	0.442	0.08	21.11	22.70	1.442	0.637	22.3
Back side with EN-DC	40	QPSK 108 54	507000/2535	0.442	0.08	21.11	20.00	0.774	0.342	22.3
Hotspot Test data(Separate 10mm 1RB)										
Front side	40	QPSK 1 1	507000/2535	0.093	0.17	17.43	18.70	1.340	0.125	22.3
Back side	40	QPSK 1 1	507000/2535	0.194	0.04	17.43	18.70	1.340	0.260	22.3
Left side	40	QPSK 1 1	507000/2535	0.215	0.11	17.43	18.70	1.340	0.288	22.3
Hotspot Test data (Separate 10mm 50%RB)										
Front side	40	QPSK 108 54	507000/2535	0.119	0.11	17.12	18.70	1.439	0.171	22.3
Back side	40	QPSK 108 54	507000/2535	0.268	0.05	17.12	18.70	1.439	0.386	22.3
Left side	40	QPSK 108 54	507000/2535	0.275	0.15	17.12	18.70	1.439	0.396	22.3
Ant5 Test Record										
Test position	BW.	Modulation	Test ch./Freq.	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	0.303	0.12	17.22	18.50	1.343	0.407	22.3
Left tilted	40	QPSK 1 1	507000/2535	0.324	0.13	17.22	18.50	1.343	0.435	22.3
Right cheek	40	QPSK 1 1	507000/2535	0.608	-0.02	17.22	18.50	1.343	0.816	22.3
Right tilted	40	QPSK 1 1	507000/2535	0.480	0.05	17.22	18.50	1.343	0.645	22.3
Head Test data(50%RB)										
Left cheek	40	QPSK 108 54	507000/2535	0.437	0.03	17.02	18.50	1.406	0.614	22.3
Left tilted	40	QPSK 108 54	507000/2535	0.390	0.02	17.02	18.50	1.406	0.548	22.3
Right cheek	40	QPSK 108 54	507000/2535	0.639	0.09	17.02	18.50	1.406	0.898	22.3
Right cheek with EN-DC	40	QPSK 108 54	507000/2535	0.639	0.09	17.02	13.00	0.396	0.253	22.3
Right tilted	40	QPSK 108 54	507000/2535	0.586	0.06	17.02	18.50	1.406	0.824	22.3
Head Test data(100%RB)										
Right cheek	40	QPSK 216 0	507000/2535	0.612	0.12	16.61	17.50	1.227	0.751	22.3
Body worn Test data(Separate 15mm 1RB)										
Front side	40	QPSK 1 1	507000/2535	0.323	0.02	24.29	25.50	1.321	0.427	22.3
Back side	40	QPSK 1 1	507000/2535	0.415	-0.09	24.29	25.50	1.321	0.548	22.3
Body worn Test data (Separate 15mm 50%RB)										
Front side	40	QPSK 108 54	507000/2535	0.314	0.01	24.10	25.50	1.380	0.433	22.3
Back side	40	QPSK 108 54	507000/2535	0.403	-0.04	24.10	25.50	1.380	0.556	22.3
Hotspot Test data(Separate 10mm 1RB)										
Front side	40	QPSK 1 1	507000/2535	0.146	0.09	15.72	17.00	1.343	0.196	22.3
Back side	40	QPSK 1 1	507000/2535	0.251	0.05	15.72	17.00	1.343	0.337	22.3
Left side	40	QPSK 1 1	507000/2535	0.117	-0.02	15.72	17.00	1.343	0.157	22.3
Top side	40	QPSK 1 1	507000/2535	0.141	0.02	15.72	17.00	1.343	0.189	22.3
Hotspot Test data (Separate 10mm 50%RB)										
Front side	40	QPSK 108 54	507000/2535	0.147	0.02	15.52	17.00	1.406	0.207	22.3
Back side	40	QPSK 108 54	507000/2535	0.268	0.04	15.52	17.00	1.406	0.377	22.3
Left side	40	QPSK 108 54	507000/2535	0.155	0.05	15.52	17.00	1.406	0.218	22.3
Top side	40	QPSK 108 54	507000/2535	0.140	-0.09	15.52	17.00	1.406	0.197	22.3

Table 24: SAR of 5G NR n7 for Head and Body.



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8.2.2 SAR Result of 5G NR n41

Ant0 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	518598/2592.99	1:1	0.031	0.00	23.85	24.50	1.161	0.036	22.5
Left tilted	100	QPSK 1_1	518598/2592.99	1:1	0.021	0.00	23.85	24.50	1.161	0.025	22.5
Right cheek	100	QPSK 1_1	518598/2592.99	1:1	0.063	0.11	23.85	24.50	1.161	0.074	22.5
Right tilted	100	QPSK 1_1	518598/2592.99	1:1	0.023	0.12	23.85	24.50	1.161	0.026	22.5
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	518598/2592.99	1:1	0.039	0.04	23.61	24.50	1.227	0.048	22.5
Left tilted	100	QPSK 135_69	518598/2592.99	1:1	0.030	0.01	23.61	24.50	1.227	0.037	22.5
Right cheek	100	QPSK 135_69	518598/2592.99	1:1	0.067	0.00	23.61	24.50	1.227	0.083	22.5
Right tilted	100	QPSK 135_69	518598/2592.99	1:1	0.018	0.05	23.61	24.50	1.227	0.022	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.99	1:1	0.092	0.01	23.85	24.50	1.161	0.107	22.5
Back side	100	QPSK 1_1	518598/2592.99	1:1	0.145	0.05	23.85	24.50	1.161	0.168	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.99	1:1	0.109	0.04	23.61	24.50	1.227	0.134	22.5
Back side	100	QPSK 135_69	518598/2592.99	1:1	0.178	0.01	23.61	24.50	1.227	0.218	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.99	1:1	0.186	0.01	21.32	22.00	1.169	0.218	22.5
Back side	100	QPSK 1_1	518598/2592.99	1:1	0.290	0.04	21.32	22.00	1.169	0.339	22.5
Right side	100	QPSK 1_1	518598/2592.99	1:1	0.141	0.03	21.32	22.00	1.169	0.165	22.5
Bottom side	100	QPSK 1_1	518598/2592.99	1:1	0.217	0.01	21.32	22.00	1.169	0.254	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.99	1:1	0.221	0.08	21.15	22.00	1.216	0.269	22.5
Back side	100	QPSK 135_69	518598/2592.99	1:1	0.429	0.03	21.15	22.00	1.216	0.522	22.5
Right side	100	QPSK 135_69	518598/2592.99	1:1	0.175	0.08	21.15	22.00	1.216	0.213	22.5
Bottom side	100	QPSK 135_69	518598/2592.99	1:1	0.252	0.11	21.15	22.00	1.216	0.306	22.5
Ant2 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	518598/2592.99	1:1	0.063	0.00	19.03	19.70	1.167	0.073	22.5
Left tilted	100	QPSK 1_1	518598/2592.99	1:1	0.020	0.12	19.03	19.70	1.167	0.023	22.5
Right cheek	100	QPSK 1_1	518598/2592.99	1:1	0.039	0.00	19.03	19.70	1.167	0.045	22.5
Right tilted	100	QPSK 1_1	518598/2592.99	1:1	0.020	-0.13	19.03	19.70	1.167	0.023	22.5
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	518598/2592.99	1:1	0.082	0.00	19.03	19.70	1.167	0.096	22.5
Left tilted	100	QPSK 135_69	518598/2592.99	1:1	0.024	-0.12	19.03	19.70	1.167	0.028	22.5
Right cheek	100	QPSK 135_69	518598/2592.99	1:1	0.051	0.00	19.03	19.70	1.167	0.060	22.5
Right tilted	100	QPSK 135_69	518598/2592.99	1:1	0.024	0.19	19.03	19.70	1.167	0.028	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.99	1:1	0.097	0.05	25.13	25.70	1.140	0.110	22.5
Back side	100	QPSK 1_1	518598/2592.99	1:1	0.099	0.08	25.13	25.70	1.140	0.113	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.99	1:1	0.132	0.04	25.12	25.70	1.143	0.151	22.5
Back side	100	QPSK 135_69	518598/2592.99	1:1	0.133	-0.16	25.12	25.70	1.143	0.152	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	518598/2592.99	1:1	0.191	0.15	19.03	19.70	1.167	0.223	22.5
Back side	100	QPSK 1_1	518598/2592.99	1:1	0.193	-0.18	19.03	19.70	1.167	0.225	22.5
Left side	100	QPSK 1_1	518598/2592.99	1:1	0.084	0.04	19.03	19.70	1.167	0.098	22.5
Bottom side	100	QPSK 1_1	518598/2592.99	1:1	0.176	0.10	19.03	19.70	1.167	0.205	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.99	1:1	0.253	0.20	19.03	19.70	1.167	0.295	22.5
Back side	100	QPSK 135_69	518598/2592.99	1:1	0.227	0.09	19.03	19.70	1.167	0.265	22.5



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Left side	100	QPSK 135 69	518598/2592.99	1:1	0.095	0.13	19.03	19.70	1.167	0.110	22.5
Bottom side	100	QPSK 135 69	518598/2592.99	1:1	0.221	-0.03	19.03	19.70	1.167	0.258	22.5
Ant3 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1 1	518598/2592.99	1:1	0.371	0.09	18.27	18.70	1.104	0.410	22.4
Left tilted	100	QPSK 1 1	518598/2592.99	1:1	0.195	0.01	18.27	18.70	1.104	0.215	22.4
Right cheek	100	QPSK 1 1	518598/2592.99	1:1	0.982	0.06	18.27	18.70	1.104	1.084	22.4
Right cheek Repeat	100	QPSK 1 1	518598/2592.99	1:1	0.978	-0.03	18.27	18.70	1.104	1.080	22.4
Right tilted	100	QPSK 1 1	518598/2592.99	1:1	0.446	0.03	18.27	18.70	1.104	0.492	22.4
Head Test data(50%RB)											
Left cheek	100	QPSK 135 69	518598/2592.99	1:1	0.260	0.06	17.90	18.70	1.202	0.313	22.4
Left tilted	100	QPSK 135 69	518598/2592.99	1:1	0.163	0.04	17.90	18.70	1.202	0.196	22.4
Right cheek	100	QPSK 135 69	518598/2592.99	1:1	0.702	0.01	17.90	18.70	1.202	0.844	22.4
Right tilted	100	QPSK 135 69	518598/2592.99	1:1	0.489	0.02	17.90	18.70	1.202	0.588	22.4
Head Test data(100%RB)											
Right cheek	100	QPSK 270 0	518598/2592.99	1:1	0.690	0.03	17.65	18.70	1.274	0.879	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1 1	518598/2592.99	1:1	0.526	-0.02	23.00	24.20	1.318	0.693	22.4
Back side	100	QPSK 1 1	518598/2592.99	1:1	0.823	0.08	23.00	24.20	1.318	1.085	22.4
Back side Repeat	100	QPSK 1 1	518598/2592.99	1:1	0.818	0.01	23.00	24.20	1.318	1.078	22.4
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135 69	518598/2592.99	1:1	0.476	0.02	22.91	24.20	1.346	0.641	22.4
Back side	100	QPSK 135 69	518598/2592.99	1:1	0.668	0.01	22.91	24.20	1.346	0.899	22.4
Body worn Test data (Separate 15mm 100%RB)											
Back side	100	QPSK 270 0	518598/2592.99	1:1	0.556	0.03	22.76	23.20	1.107	0.615	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1 1	518598/2592.99	1:1	0.257	-0.12	18.27	18.70	1.104	0.284	22.4
Back side	100	QPSK 1 1	518598/2592.99	1:1	0.484	0.03	18.27	18.70	1.104	0.534	22.4
Left side	100	QPSK 1 1	518598/2592.99	1:1	0.502	0.01	18.27	18.70	1.104	0.554	22.4
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135 69	518598/2592.99	1:1	0.242	0.05	17.90	18.70	1.202	0.291	22.4
Back side	100	QPSK 135 69	518598/2592.99	1:1	0.467	-0.06	17.90	18.70	1.202	0.561	22.4
Left side	100	QPSK 135 69	518598/2592.99	1:1	0.348	0.11	17.90	18.70	1.202	0.418	22.4
Ant5 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1 1	518598/2592.99	1:1	0.283	0.01	16.57	17.20	1.156	0.327	22.4
Left tilted	100	QPSK 1 1	518598/2592.99	1:1	0.389	0.09	16.57	17.20	1.156	0.450	22.4
Right cheek	100	QPSK 1 1	518598/2592.99	1:1	0.622	-0.01	16.57	17.20	1.156	0.719	22.4
Right tilted	100	QPSK 1 1	518598/2592.99	1:1	0.484	-0.02	16.57	17.20	1.156	0.560	22.4
Head Test data(50%RB)											
Left cheek	100	QPSK 135 69	518598/2592.99	1:1	0.365	0.03	16.22	17.20	1.253	0.457	22.4
Left tilted	100	QPSK 135 69	518598/2592.99	1:1	0.354	0.05	16.22	17.20	1.253	0.444	22.4
Right cheek	100	QPSK 135 69	518598/2592.99	1:1	0.580	0.02	16.22	17.20	1.253	0.727	22.4
Right tilted	100	QPSK 135 69	518598/2592.99	1:1	0.537	0.09	16.22	17.20	1.253	0.673	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1 1	518598/2592.99	1:1	0.385	0.04	25.02	25.70	1.169	0.450	22.4
Back side	100	QPSK 1 1	518598/2592.99	1:1	0.256	0.03	25.02	25.70	1.169	0.299	22.4
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135 69	518598/2592.99	1:1	0.363	0.06	24.71	25.70	1.256	0.456	22.4
Back side	100	QPSK 135 69	518598/2592.99	1:1	0.257	0.03	24.71	25.70	1.256	0.323	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1 1	518598/2592.99	1:1	0.106	0.06	16.57	17.20	1.156	0.123	22.4
Back side	100	QPSK 1 1	518598/2592.99	1:1	0.170	0.05	16.57	17.20	1.156	0.197	22.4
Left side	100	QPSK 1 1	518598/2592.99	1:1	0.140	-0.02	16.57	17.20	1.156	0.162	22.4



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Top side	100	QPSK 1_1	518598/2592.99	1:1	0.173	0.15	16.57	17.20	1.156	0.200	22.4
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	518598/2592.99	1:1	0.106	0.03	16.22	17.20	1.253	0.133	22.4
Back side	100	QPSK 135_69	518598/2592.99	1:1	0.172	0.05	16.22	17.20	1.253	0.216	22.4
Left side	100	QPSK 135_69	518598/2592.99	1:1	0.146	-0.02	16.22	17.20	1.253	0.183	22.4
Top side	100	QPSK 135_69	518598/2592.99	1:1	0.161	0.03	16.22	17.20	1.253	0.202	22.4

Table 25: SAR of 5G NR n41 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 cheek	518598/2592.99	0.982	0.978	1.004	N/A	N/A
Back side	518598/2592.99	0.823	0.818	1.006	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 (~ 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 n77

Ant4 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.350	0.02	16.00	16.50	1.122	0.393	22.4
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.474	-0.05	16.00	16.50	1.122	0.532	22.4
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.647	0.01	16.00	16.50	1.122	0.726	22.4
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.784	0.03	16.00	16.50	1.122	0.880	22.4
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.367	0.05	15.90	16.50	1.148	0.421	22.4
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.514	-0.02	15.90	16.50	1.148	0.590	22.4
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.774	0.09	15.90	16.50	1.148	0.889	22.4
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.898	0.17	15.90	16.50	1.148	1.031	22.4
Right tilted repeat	100	QPSK 135_69	633334/3500	1:1	0.883	0.01	15.90	16.50	1.148	1.014	22.4
Head Test data(100%RB)											
Right cheek	100	QPSK 270_0	633334/3500	1:1	0.628	-0.03	14.36	15.50	1.300	0.817	22.4
Right tilted	100	QPSK 270_0	633334/3500	1:1	0.570	-0.08	14.36	15.50	1.300	0.741	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.571	0.01	24.00	24.50	1.122	0.641	22.4
Back side	100	QPSK 1_1	633334/3500	1:1	0.655	-0.04	24.00	24.50	1.122	0.735	22.4
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.240	-0.02	23.89	24.50	1.151	0.276	22.4
Back side	100	QPSK 135_69	633334/3500	1:1	0.303	0.05	23.89	24.50	1.151	0.349	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.167	0.04	16.00	16.50	1.122	0.187	22.4
Back side	100	QPSK 1_1	633334/3500	1:1	0.222	0.08	16.00	16.50	1.122	0.249	22.4
Left side	100	QPSK 1_1	633334/3500	1:1	0.120	-0.01	16.00	16.50	1.122	0.135	22.4
Top side	100	QPSK 1_1	633334/3500	1:1	0.236	-0.03	16.00	16.50	1.122	0.265	22.4
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.153	0.08	15.90	16.50	1.148	0.176	22.4
Back side	100	QPSK 135_69	633334/3500	1:1	0.249	0.01	15.90	16.50	1.148	0.286	22.4
Left side	100	QPSK 135_69	633334/3500	1:1	0.113	0.09	15.90	16.50	1.148	0.130	22.4
Top side	100	QPSK 135_69	633334/3500	1:1	0.288	-0.03	15.90	16.50	1.148	0.331	22.4
Ant6 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.709	-0.02	14.75	15.50	1.189	0.843	22.4
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.870	-0.05	14.75	15.50	1.189	1.034	22.4
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.739	0.01	14.75	15.50	1.189	0.878	22.4
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.640	0.09	14.75	15.50	1.189	0.761	22.4
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.759	-0.08	14.72	15.50	1.197	0.908	22.4
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.903	0.05	14.72	15.50	1.197	1.081	22.4
Left tilted repeat	100	QPSK 135_69	633334/3500	1:1	0.877	0.05	14.72	15.50	1.197	1.050	22.4
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.830	0.08	14.72	15.50	1.197	0.993	22.4
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.637	-0.02	14.72	15.50	1.197	0.762	22.4
Head Test data(100%RB)											
Left cheek	100	QPSK 270_0	633334/3500	1:1	0.485	-0.02	13.54	14.50	1.247	0.605	22.4
Left tilted	100	QPSK 270_0	633334/3500	1:1	0.637	0.01	13.54	14.50	1.247	0.795	22.4
Right cheek	100	QPSK 270_0	633334/3500	1:1	0.502	0.09	13.54	14.50	1.247	0.626	22.4
Right tilted	100	QPSK 270_0	633334/3500	1:1	0.480	0.05	13.54	14.50	1.247	0.599	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.489	0.06	20.65	21.50	1.216	0.595	22.4
Back side	100	QPSK 1_1	633334/3500	1:1	0.583	0.07	20.65	21.50	1.216	0.709	22.4
Body worn Test data(Separate 15mm 50%RB)											



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Front side	100	QPSK 135_69	633334/3500	1:1	0.122	-0.03	20.62	21.50	1.225	0.149	22.4
Back side	100	QPSK 135_69	633334/3500	1:1	0.324	0.06	20.62	21.50	1.225	0.397	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.232	0.01	14.75	15.50	1.189	0.276	22.4
Back side	100	QPSK 1_1	633334/3500	1:1	0.466	0.08	14.75	15.50	1.189	0.554	22.4
Top side	100	QPSK 1_1	633334/3500	1:1	0.594	-0.03	14.75	15.50	1.189	0.706	22.4
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.241	-0.02	14.72	15.50	1.197	0.288	22.4
Back side	100	QPSK 135_69	633334/3500	1:1	0.459	0.08	14.72	15.50	1.197	0.549	22.4
Top side	100	QPSK 135_69	633334/3500	1:1	0.567	0.09	14.72	15.50	1.197	0.679	22.4
Ant7 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.933	0.02	14.38	15.00	1.153	1.076	22.4
Left cheek repeat	100	QPSK 1_1	633334/3500	1:1	0.902	-0.03	14.38	15.00	1.153	1.040	22.4
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.344	0.01	14.38	15.00	1.153	0.397	22.4
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.204	0.09	14.38	15.00	1.153	0.235	22.4
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.125	-0.02	14.38	15.00	1.153	0.144	22.4
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.763	0.05	14.10	15.00	1.230	0.939	22.4
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.337	-0.06	14.10	15.00	1.230	0.415	22.4
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.190	0.08	14.10	15.00	1.230	0.234	22.4
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.113	0.04	14.10	15.00	1.230	0.139	22.4
Head Test data(100%RB)											
Left cheek	100	QPSK 270_0	633334/3500	1:1	0.766	0.02	12.93	14.00	1.279	0.980	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.101	-0.01	15.18	16.00	1.208	0.122	22.4
Back side	100	QPSK 1_1	633334/3500	1:1	0.167	-0.06	15.18	16.00	1.208	0.202	22.4
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.087	0.03	15.12	16.00	1.225	0.107	22.4
Back side	100	QPSK 135_69	633334/3500	1:1	0.161	0.05	15.12	16.00	1.225	0.197	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.135	-0.05	14.38	15.00	1.153	0.156	22.4
Back side	100	QPSK 1_1	633334/3500	1:1	0.255	0.01	14.38	15.00	1.153	0.294	22.4
Right side	100	QPSK 1_1	633334/3500	1:1	0.324	-0.02	14.38	15.00	1.153	0.374	22.4
Top side	100	QPSK 1_1	633334/3500	1:1	0.090	0.09	14.38	15.00	1.153	0.104	22.4
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.128	-0.05	14.10	15.00	1.230	0.157	22.4
Back side	100	QPSK 135_69	633334/3500	1:1	0.230	0.01	14.10	15.00	1.230	0.283	22.4
Right side	100	QPSK 135_69	633334/3500	1:1	0.391	0.03	14.10	15.00	1.230	0.481	22.4
Top side	100	QPSK 135_69	633334/3500	1:1	0.086	0.06	14.10	15.00	1.230	0.106	22.4
Ant8 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.048	0.02	25.00	25.70	1.175	0.056	22.4
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.042	0.09	25.00	25.70	1.175	0.049	22.4
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.046	0.01	25.00	25.70	1.175	0.054	22.4
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.057	-0.02	25.00	25.70	1.175	0.067	22.4
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.040	0.05	24.84	25.70	1.219	0.049	22.4
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.050	0.07	24.84	25.70	1.219	0.061	22.4
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.056	0.05	24.84	25.70	1.219	0.068	22.4
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.109	-0.04	24.84	25.70	1.219	0.133	22.4
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.038	-0.02	20.94	21.70	1.191	0.045	22.4
Back side	100	QPSK 1_1	633334/3500	1:1	0.333	-0.09	20.94	21.70	1.191	0.397	22.4



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Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.036	0.01	20.78	21.70	1.236	0.044	22.4
Back side	100	QPSK 135_69	633334/3500	1:1	0.174	0.05	20.78	21.70	1.236	0.215	22.4
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.047	0.02	15.94	16.70	1.191	0.056	22.4
Back side	100	QPSK 1_1	633334/3500	1:1	0.654	0.00	15.94	16.70	1.191	0.779	22.4
Left side	100	QPSK 1_1	633334/3500	1:1	0.087	-0.02	15.94	16.70	1.191	0.104	22.4
Top side	100	QPSK 1_1	633334/3500	1:1	0.056	0.01	15.94	16.70	1.191	0.067	22.4
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.041	0.09	15.78	16.70	1.236	0.051	22.4
Back side	100	QPSK 135_69	633334/3500	1:1	0.452	0.04	15.78	16.70	1.236	0.559	22.4
Left side	100	QPSK 135_69	633334/3500	1:1	0.082	0.09	15.78	16.70	1.236	0.101	22.4
Top side	100	QPSK 135_69	633334/3500	1:1	0.049	-0.02	15.78	16.70	1.236	0.061	22.4

Table 26: SAR of 5G NR n77(3450MHz-3550MHz) 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	633334/3500	0.898	0.883	1.017	N/A	N/A
Left tilted	633334/3500	0.903	0.877	1.030	N/A	N/A
Left cheek	633334/3500	0.933	0.902	1.034	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 (~ 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

Ant4 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	656000/3840	1:1	0.331	-0.05	16.22	16.50	1.067	0.353	22.5
Left tilted	100	QPSK 1_1	656000/3840	1:1	0.491	0.01	16.22	16.50	1.067	0.524	22.5
Right cheek	100	QPSK 1_1	656000/3840	1:1	0.548	0.08	16.22	16.50	1.067	0.584	22.5
Right tilted	100	QPSK 1_1	656000/3840	1:1	0.466	0.02	16.22	16.50	1.067	0.497	22.5
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	656000/3840	1:1	0.352	0.16	15.80	16.50	1.175	0.414	22.5
Left tilted	100	QPSK 135_69	656000/3840	1:1	0.445	0.12	15.80	16.50	1.175	0.523	22.5
Right cheek	100	QPSK 135_69	656000/3840	1:1	0.801	-0.08	15.80	16.50	1.175	0.941	22.5
Right cheek Repeat	100	QPSK 135_69	656000/3840	1:1	0.792	-0.01	15.80	16.50	1.175	0.931	22.5
Right tilted	100	QPSK 135_69	656000/3840	1:1	0.733	0.09	15.80	16.50	1.175	0.861	22.5
Head Test data(100%RB)											
Right cheek	100	QPSK 270_0	656000/3840	1:1	0.586	-0.03	24.22	24.50	1.067	0.625	22.5
Right tilted	100	QPSK 270_0	656000/3840	1:1	0.687	0.05	24.22	24.50	1.067	0.733	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.402	0.05	24.22	24.50	1.067	0.429	22.5
Back side	100	QPSK 1_1	656000/3840	1:1	0.412	-0.08	24.22	24.50	1.067	0.439	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.421	0.11	23.77	24.50	1.183	0.498	22.5
Back side	100	QPSK 135_69	656000/3840	1:1	0.652	-0.01	23.77	24.50	1.183	0.771	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	656000/3840	1:1	0.113	0.01	16.22	16.50	1.067	0.121	22.5
Back side	100	QPSK 1_1	656000/3840	1:1	0.295	0.09	16.22	16.50	1.067	0.315	22.5
Left side	100	QPSK 1_1	656000/3840	1:1	0.085	0.15	16.22	16.50	1.067	0.090	22.5
Top side	100	QPSK 1_1	656000/3840	1:1	0.248	0.04	16.22	16.50	1.067	0.265	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	656000/3840	1:1	0.118	0.05	15.80	16.50	1.175	0.139	22.5



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Back side	100	QPSK 135 69	656000/3840	1:1	0.245	-0.07	15.80	16.50	1.175	0.288	22.5
Left side	100	QPSK 135 69	656000/3840	1:1	0.091	0.07	15.80	16.50	1.175	0.107	22.5
Top side	100	QPSK 135 69	656000/3840	1:1	0.237	-0.05	15.80	16.50	1.175	0.278	22.5
Ant6 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1 1	656000/3840	1:1	0.806	-0.06	16.36	17.00	1.159	0.934	22.5
Left tilted	100	QPSK 1 1	656000/3840	1:1	0.903	0.01	16.36	17.00	1.159	1.046	22.5
Right cheek	100	QPSK 1 1	656000/3840	1:1	0.911	-0.08	16.36	17.00	1.159	1.056	22.5
Right tilted	100	QPSK 1 1	656000/3840	1:1	0.772	-0.02	16.36	17.00	1.159	0.895	22.5
Head Test data(50%RB)											
Left cheek	100	QPSK 135 69	656000/3840	1:1	0.727	0.01	16.33	17.00	1.167	0.848	22.5
Left tilted	100	QPSK 135 69	656000/3840	1:1	0.917	0.04	16.33	17.00	1.167	1.070	22.5
Left tilted Repeat	100	QPSK 135 69	656000/3840	1:1	0.914	-0.02	16.33	17.00	1.167	1.066	22.5
Right cheek	100	QPSK 135 69	656000/3840	1:1	0.609	0.06	16.33	17.00	1.167	0.711	22.5
Right tilted	100	QPSK 135 69	656000/3840	1:1	0.766	-0.04	16.33	17.00	1.167	0.894	22.5
Head Test data(100%RB)											
Left cheek	100	QPSK 270 0	656000/3840	1:1	0.702	0.13	15.41	16.00	1.146	0.804	22.5
Left tilted	100	QPSK 270 0	656000/3840	1:1	0.683	0.02	15.41	16.00	1.146	0.782	22.5
Right cheek	100	QPSK 270 0	656000/3840	1:1	0.570	0.01	15.41	16.00	1.146	0.653	22.5
Right tilted	100	QPSK 270 0	656000/3840	1:1	0.675	0.09	15.41	16.00	1.146	0.773	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1 1	656000/3840	1:1	0.209	0.18	22.17	23.00	1.211	0.253	22.5
Back side	100	QPSK 1 1	656000/3840	1:1	0.303	0.09	22.17	23.00	1.211	0.367	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135 69	656000/3840	1:1	0.197	0.08	22.10	23.00	1.230	0.242	22.5
Back side	100	QPSK 135 69	656000/3840	1:1	0.328	0.15	22.10	23.00	1.230	0.404	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1 1	656000/3840	1:1	0.247	0.14	16.36	17.00	1.159	0.286	22.5
Back side	100	QPSK 1 1	656000/3840	1:1	0.513	0.13	16.36	17.00	1.159	0.594	22.5
Top side	100	QPSK 1 1	656000/3840	1:1	0.667	0.01	16.36	17.00	1.159	0.773	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135 69	656000/3840	1:1	0.237	-0.02	16.33	17.00	1.167	0.277	22.5
Back side	100	QPSK 135 69	656000/3840	1:1	0.472	0.01	16.33	17.00	1.167	0.551	22.5
Top side	100	QPSK 135 69	656000/3840	1:1	0.744	-0.01	16.33	17.00	1.167	0.868	22.5
Hotspot Test data(Separate 10mm 100%RB)											
Top side	100	QPSK 270 0	656000/3840	1:1	0.473	-0.09	15.41	16.00	1.146	0.542	22.5
Ant7 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1 1	656000/3840	1:1	0.775	0.01	15.26	15.50	1.057	0.819	22.1
Left tilted	100	QPSK 1 1	656000/3840	1:1	0.513	-0.02	15.26	15.50	1.057	0.542	22.1
Right cheek	100	QPSK 1 1	656000/3840	1:1	0.404	0.09	15.26	15.50	1.057	0.427	22.1
Right tilted	100	QPSK 1 1	656000/3840	1:1	0.215	0.01	15.26	15.50	1.057	0.227	22.1
Head Test data(50%RB)											
Left cheek	100	QPSK 135 69	656000/3840	1:1	0.770	0.09	15.26	15.50	1.057	0.814	22.1
Left tilted	100	QPSK 135 69	656000/3840	1:1	0.477	0.01	15.26	15.50	1.057	0.504	22.1
Right cheek	100	QPSK 135 69	656000/3840	1:1	0.360	0.05	15.26	15.50	1.057	0.380	22.1
Right tilted	100	QPSK 135 69	656000/3840	1:1	0.272	0.09	15.26	15.50	1.057	0.287	22.1
Head Test data(100%RB)											
Left cheek	100	QPSK 270 0	656000/3840	1:1	0.688	-0.07	14.02	14.50	1.117	0.768	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1 1	656000/3840	1:1	0.142	0.05	16.22	16.50	1.067	0.151	22.1
Back side	100	QPSK 1 1	656000/3840	1:1	0.199	0.07	16.22	16.50	1.067	0.212	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135 69	656000/3840	1:1	0.179	0.04	16.25	16.50	1.059	0.190	22.1



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Back side	100	QPSK 135 69	656000/3840	1:1	0.162	0.08	16.25	16.50	1.059	0.172	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1 1	656000/3840	1:1	0.275	0.04	15.26	15.50	1.057	0.291	22.1
Back side	100	QPSK 1 1	656000/3840	1:1	0.286	-0.06	15.26	15.50	1.057	0.302	22.1
Right side	100	QPSK 1 1	656000/3840	1:1	0.519	-0.09	15.26	15.50	1.057	0.548	22.1
Top side	100	QPSK 1_1	656000/3840	1:1	0.123	0.05	15.26	15.50	1.057	0.130	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135 69	656000/3840	1:1	0.197	0.05	15.26	15.50	1.057	0.208	22.1
Back side	100	QPSK 135 69	656000/3840	1:1	0.245	0.14	15.26	15.50	1.057	0.259	22.1
Right side	100	QPSK 135 69	656000/3840	1:1	0.519	-0.02	15.26	15.50	1.057	0.548	22.1
Top side	100	QPSK 135 69	656000/3840	1:1	0.131	0.04	15.26	15.50	1.057	0.138	22.1
Ant8 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1 1	656000/3840	1:1	0.015	-0.03	24.96	25.70	1.186	0.017	22.1
Left tilted	100	QPSK 1 1	656000/3840	1:1	0.140	0.01	24.96	25.70	1.186	0.166	22.1
Right cheek	100	QPSK 1 1	656000/3840	1:1	0.178	0.08	24.96	25.70	1.186	0.211	22.1
Right tilted	100	QPSK 1 1	656000/3840	1:1	0.116	0.02	24.96	25.70	1.186	0.138	22.1
Head Test data(50%RB)											
Left cheek	100	QPSK 135 69	656000/3840	1:1	0.108	-0.02	24.75	25.70	1.245	0.134	22.1
Left tilted	100	QPSK 135 69	656000/3840	1:1	0.129	0.01	24.75	25.70	1.245	0.161	22.1
Right cheek	100	QPSK 135 69	656000/3840	1:1	0.208	0.09	24.75	25.70	1.245	0.259	22.1
Right tilted	100	QPSK 135 69	656000/3840	1:1	0.235	0.08	24.75	25.70	1.245	0.293	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1 1	656000/3840	1:1	0.130	-0.03	20.90	21.70	1.202	0.156	22.1
Back side	100	QPSK 1 1	656000/3840	1:1	0.255	0.03	20.90	21.70	1.202	0.307	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135 69	656000/3840	1:1	0.077	0.08	20.69	21.70	1.262	0.097	22.1
Back side	100	QPSK 135 69	656000/3840	1:1	0.212	0.05	20.69	21.70	1.262	0.268	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1 1	656000/3840	1:1	0.044	-0.01	15.87	16.70	1.211	0.053	22.1
Back side	100	QPSK 1 1	656000/3840	1:1	0.495	0.01	15.87	16.70	1.211	0.599	22.1
Left side	100	QPSK 1 1	656000/3840	1:1	0.120	0.05	15.87	16.70	1.211	0.145	22.1
Top side	100	QPSK 1 1	656000/3840	1:1	0.132	0.01	15.87	16.70	1.211	0.160	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135 69	656000/3840	1:1	0.045	-0.05	15.70	16.70	1.260	0.057	22.1
Back side	100	QPSK 135 69	656000/3840	1:1	0.420	0.04	15.70	16.70	1.260	0.529	22.1
Left side	100	QPSK 135 69	656000/3840	1:1	0.106	0.02	15.70	16.70	1.260	0.134	22.1
Top side	100	QPSK 135 69	656000/3840	1:1	0.150	-0.03	15.70	16.70	1.260	0.189	22.1

Table 27: SAR of 5G NR n77(3700MHz -3980MHz) 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 cheek	656000/3840	0.801	0.792	1.011	N/A	N/A
Left tilted	656000/3840	0.917	0.914	1.003	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 (~ 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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8.2.4 SAR Result of 5G NR n78

Ant4 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.268	0.13	13.92	14.50	1.143	0.306	22.1
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.325	0.01	13.92	14.50	1.143	0.371	22.1
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.606	0.07	13.92	14.50	1.143	0.693	22.1
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.453	0.04	13.92	14.50	1.143	0.518	22.1
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.302	-0.02	13.89	14.50	1.151	0.348	22.1
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.402	0.01	13.89	14.50	1.151	0.463	22.1
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.743	0.12	13.89	14.50	1.151	0.855	22.1
Right cheek with EN-DC	100	QPSK 135_69	633334/3500	1:1	0.743	0.12	13.89	12.00	0.647	0.481	22.1
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.673	0.09	13.89	14.50	1.151	0.774	22.1
Head Test data(100%RB)											
Right cheek	100	QPSK 270_0	633334/3500	1:1	0.438	-0.05	12.78	13.50	1.180	0.517	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.155	-0.03	26.51	27.00	1.119	0.174	22.1
Back side	100	QPSK 1_1	633334/3500	1:1	0.220	0.02	26.51	27.00	1.119	0.246	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.162	-0.04	26.44	27.00	1.138	0.184	22.1
Back side	100	QPSK 135_69	633334/3500	1:1	0.381	-0.07	26.44	27.00	1.138	0.433	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.191	0.01	13.92	14.50	1.143	0.218	22.1
Back side	100	QPSK 1_1	633334/3500	1:1	0.291	0.07	13.92	14.50	1.143	0.333	22.1
Left side	100	QPSK 1_1	633334/3500	1:1	0.142	0.02	13.92	14.50	1.143	0.162	22.1
Top side	100	QPSK 1_1	633334/3500	1:1	0.349	0.09	13.92	14.50	1.143	0.399	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.208	0.01	13.89	14.50	1.151	0.239	22.1
Back side	100	QPSK 135_69	633334/3500	1:1	0.329	0.04	13.89	14.50	1.151	0.379	22.1
Left side	100	QPSK 135_69	633334/3500	1:1	0.141	0.01	13.89	14.50	1.151	0.162	22.1
Top side	100	QPSK 135_69	633334/3500	1:1	0.464	-0.04	13.89	14.50	1.151	0.534	22.1
Top side with EN-DC	100	QPSK 135_69	633334/3500	1:1	0.464	-0.04	13.89	12.00	0.647	0.300	22.1
Ant6 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.584	-0.02	15.57	16.50	1.239	0.723	22.1
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.732	0.08	15.57	16.50	1.239	0.907	22.1
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.802	-0.08	15.57	16.50	1.239	0.994	22.1
Right cheek Repeat	100	QPSK 1_1	633334/3500	1:1	0.800	0.02	15.57	16.50	1.239	0.991	22.1
Right cheek with EN-DC	100	QPSK 1_1	633334/3500	1:1	0.802	-0.08	15.57	13.50	0.621	0.498	22.1
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.618	0.03	15.57	16.50	1.239	0.766	22.1
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.648	-0.04	15.56	16.50	1.242	0.805	22.1
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.741	0.13	15.56	16.50	1.242	0.920	22.1
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.633	0.01	15.56	16.50	1.242	0.786	22.1
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.619	0.09	15.56	16.50	1.242	0.769	22.1
Head Test data(100%RB)											
Left cheek	100	QPSK 270_0	633334/3500	1:1	0.661	-0.02	14.75	15.50	1.189	0.786	22.1
Left tilted	100	QPSK 270_0	633334/3500	1:1	0.695	0.04	14.75	15.50	1.189	0.826	22.1
Right cheek	100	QPSK 270_0	633334/3500	1:1	0.590	0.01	14.75	15.50	1.189	0.701	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.243	0.02	22.95	23.50	1.135	0.276	22.1
Back side	100	QPSK 1_1	633334/3500	1:1	0.477	-0.03	22.95	23.50	1.135	0.541	22.1
Body worn Test data(Separate 15mm 50%RB)											



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Front side	100	QPSK 135_69	633334/3500	1:1	0.250	-0.01	22.91	23.50	1.146	0.286	22.1
Back side	100	QPSK 135_69	633334/3500	1:1	0.464	-0.02	22.91	23.50	1.146	0.532	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.154	0.09	15.57	16.50	1.239	0.191	22.1
Back side	100	QPSK 1_1	633334/3500	1:1	0.321	0.03	15.57	16.50	1.239	0.398	22.1
Top side	100	QPSK 1_1	633334/3500	1:1	0.374	-0.11	15.57	16.50	1.239	0.463	22.1
Top side with EN-DC	100	QPSK 1_1	633334/3500	1:1	0.374	-0.11	15.57	13.50	0.621	0.232	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.157	0.01	15.56	16.50	1.242	0.195	22.1
Back side	100	QPSK 135_69	633334/3500	1:1	0.312	0.04	15.56	16.50	1.242	0.387	22.1
Top side	100	QPSK 135_69	633334/3500	1:1	0.340	0.07	15.56	16.50	1.242	0.422	22.1
Ant7 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.726	-0.04	13.74	14.00	1.062	0.771	22.6
Left cheek with EN-DC	100	QPSK 1_1	633334/3500	1:1	0.726	-0.04	13.74	12.00	0.670	0.486	22.6
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.253	0.05	13.74	14.00	1.062	0.269	22.6
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.152	-0.01	13.74	14.00	1.062	0.161	22.6
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.103	0.09	13.74	14.00	1.062	0.109	22.6
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.553	0.02	13.76	14.00	1.057	0.584	22.6
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.238	-0.04	13.76	14.00	1.057	0.252	22.6
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.138	0.01	13.76	14.00	1.057	0.146	22.6
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.093	0.09	13.76	14.00	1.057	0.098	22.6
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.063	0.01	18.27	18.50	1.054	0.066	22.6
Back side	100	QPSK 1_1	633334/3500	1:1	0.120	0.02	18.27	18.50	1.054	0.127	22.6
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.077	0.05	18.26	18.50	1.057	0.081	22.6
Back side	100	QPSK 135_69	633334/3500	1:1	0.105	0.02	18.26	18.50	1.057	0.111	22.6
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.099	-0.01	13.74	14.00	1.062	0.105	22.6
Back side	100	QPSK 1_1	633334/3500	1:1	0.190	0.07	13.74	14.00	1.062	0.202	22.6
Right side	100	QPSK 1_1	633334/3500	1:1	0.221	-0.15	13.74	14.00	1.062	0.235	22.6
Top side	100	QPSK 1_1	633334/3500	1:1	0.069	-0.03	13.74	14.00	1.062	0.073	22.6
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.092	0.01	13.76	14.00	1.057	0.097	22.6
Back side	100	QPSK 135_69	633334/3500	1:1	0.179	0.07	13.76	14.00	1.057	0.189	22.6
Right side	100	QPSK 135_69	633334/3500	1:1	0.237	-0.02	13.76	14.00	1.057	0.250	22.6
Right side with EN-DC	100	QPSK 135_69	633334/3500	1:1	0.237	-0.02	13.76	12.00	0.667	0.158	22.6
Top side	100	QPSK 135_69	633334/3500	1:1	0.081	0.04	13.76	14.00	1.057	0.086	22.6
Ant8 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	633334/3500	1:1	0.068	0.09	27.00	27.50	1.122	0.076	22.6
Left tilted	100	QPSK 1_1	633334/3500	1:1	0.004	-0.07	27.00	27.50	1.122	0.005	22.6
Right cheek	100	QPSK 1_1	633334/3500	1:1	0.038	-0.01	27.00	27.50	1.122	0.043	22.6
Right tilted	100	QPSK 1_1	633334/3500	1:1	0.040	0.07	27.00	27.50	1.122	0.045	22.6
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	633334/3500	1:1	0.033	0.08	26.98	27.50	1.127	0.037	22.6
Left tilted	100	QPSK 135_69	633334/3500	1:1	0.029	0.03	26.98	27.50	1.127	0.033	22.6
Right cheek	100	QPSK 135_69	633334/3500	1:1	0.038	0.01	26.98	27.50	1.127	0.043	22.6
Right tilted	100	QPSK 135_69	633334/3500	1:1	0.035	-0.04	26.98	27.50	1.127	0.039	22.6
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.056	0.05	21.90	22.50	1.148	0.064	22.6
Back side	100	QPSK 1_1	633334/3500	1:1	0.293	0.03	21.90	22.50	1.148	0.336	22.6



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Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.048	-0.04	21.93	22.50	1.140	0.055	22.6
Back side	100	QPSK 135_69	633334/3500	1:1	0.377	-0.08	21.93	22.50	1.140	0.430	22.6
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	633334/3500	1:1	0.016	0.09	16.12	16.50	1.091	0.018	22.6
Back side	100	QPSK 1_1	633334/3500	1:1	0.568	-0.06	16.12	16.50	1.091	0.620	22.6
Left side	100	QPSK 1_1	633334/3500	1:1	0.010	-0.04	16.12	16.50	1.091	0.011	22.6
Top side	100	QPSK 1_1	633334/3500	1:1	0.010	0.05	16.12	16.50	1.091	0.011	22.6
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	633334/3500	1:1	0.041	0.03	16.10	16.50	1.096	0.045	22.6
Back side	100	QPSK 135_69	633334/3500	1:1	0.729	-0.06	16.10	16.50	1.096	0.799	22.6
Back side with EN-DC	100	QPSK 135_69	633334/3500	1:1	0.729	-0.06	16.10	14.50	0.692	0.504	22.6
Left side	100	QPSK 135_69	633334/3500	1:1	0.010	0.05	16.10	16.50	1.096	0.011	22.6
Top side	100	QPSK 135_69	633334/3500	1:1	0.011	-0.01	16.10	16.50	1.096	0.012	22.6

Table 28: SAR of 5G NR n78(3450MHz-3550MHz) for Head and Body.

Note: The power of class2 is larger than that of class3, so only the class2 was tested and class3 is not required.

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 cheek	633334/3500	0.802	0.800	1.003	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 (~ 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

Ant4 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	650000/3750	1:1	0.321	0.01	13.96	14.50	1.132	0.364	22.1
Left tilted	100	QPSK 1_1	650000/3750	1:1	0.385	0.07	13.96	14.50	1.132	0.436	22.1
Right cheek	100	QPSK 1_1	650000/3750	1:1	0.707	0.02	13.96	14.50	1.132	0.801	22.1
Right tilted	100	QPSK 1_1	650000/3750	1:1	0.869	0.09	13.96	14.50	1.132	0.984	22.1
Right tilted Repeat	100	QPSK 1_1	650000/3750	1:1	0.802	0.04	13.96	14.50	1.132	0.908	22.1
Right tilted with EN-DC	100	QPSK 1_1	650000/3750	1:1	0.869	-0.05	13.96	12.00	0.637	0.553	22.1
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	650000/3750	1:1	0.270	-0.03	13.87	14.50	1.156	0.312	22.1
Left tilted	100	QPSK 135_69	650000/3750	1:1	0.337	0.05	13.87	14.50	1.156	0.390	22.1
Right cheek	100	QPSK 135_69	650000/3750	1:1	0.519	0.01	13.87	14.50	1.156	0.600	22.1
Right tilted	100	QPSK 135_69	650000/3750	1:1	0.690	0.07	13.87	14.50	1.156	0.798	22.1
Head Test data(100%RB)											
Right cheek	100	QPSK 270_0	650000/3750	1:1	0.520	-0.03	12.81	13.50	1.172	0.610	22.1
Right tilted	100	QPSK 270_0	650000/3750	1:1	0.520	0.02	12.81	13.50	1.172	0.610	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	650000/3750	1:1	0.145	0.04	26.53	27.00	1.114	0.162	22.1
Back side	100	QPSK 1_1	650000/3750	1:1	0.399	0.18	26.53	27.00	1.114	0.445	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	650000/3750	1:1	0.153	0.04	26.46	27.00	1.132	0.173	22.1
Back side	100	QPSK 135_69	650000/3750	1:1	0.399	-0.02	26.46	27.00	1.132	0.452	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	650000/3750	1:1	0.056	0.06	13.96	14.50	1.132	0.063	22.1
Back side	100	QPSK 1_1	650000/3750	1:1	0.438	0.09	13.96	14.50	1.132	0.496	22.1
Left side	100	QPSK 1_1	650000/3750	1:1	0.166	-0.02	13.96	14.50	1.132	0.188	22.1
Top side	100	QPSK 1_1	650000/3750	1:1	0.577	0.09	13.96	14.50	1.132	0.653	22.1



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Table with multiple sections: Top side with EN-DC, Hotspot Test data (Separate 10mm 50%RB), Ant6 Test Record (Head Test data, Body worn Test data), Hotspot Test data (Separate 10mm 1RB), Ant7 Test Record (Head Test data, Body worn Test data). Columns include Test position, BW, Modulation, Test ch./Freq., 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), and Liquid Temp.(°C).



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Front side	100	QPSK 1_1	650000/3750	1:1	0.190	0.10	18.38	18.50	1.028	0.195	22.5
Back side	100	QPSK 1_1	650000/3750	1:1	0.133	-0.09	18.38	18.50	1.028	0.137	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	650000/3750	1:1	0.171	0.01	18.27	18.50	1.054	0.180	22.5
Back side	100	QPSK 135_69	650000/3750	1:1	0.126	0.02	18.27	18.50	1.054	0.133	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	650000/3750	1:1	0.160	0.05	13.87	14.00	1.030	0.165	22.5
Back side	100	QPSK 1_1	650000/3750	1:1	0.224	-0.04	13.87	14.00	1.030	0.231	22.5
Right side	100	QPSK 1_1	650000/3750	1:1	0.378	0.15	13.87	14.00	1.030	0.389	22.5
Top side	100	QPSK 1_1	650000/3750	1:1	0.127	-0.09	13.87	14.00	1.030	0.131	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	650000/3750	1:1	0.193	-0.04	13.76	14.00	1.057	0.204	22.5
Back side	100	QPSK 135_69	650000/3750	1:1	0.274	0.03	13.76	14.00	1.057	0.290	22.5
Right side	100	QPSK 135_69	650000/3750	1:1	0.381	0.14	13.76	14.00	1.057	0.403	22.5
Right side with EN-DC	100	QPSK 135_69	650000/3750	1:1	0.381	0.14	13.76	12.00	0.667	0.254	22.5
Top side	100	QPSK 135_69	650000/3750	1:1	0.186	0.01	13.76	14.00	1.057	0.197	22.5
Ant8 Test Record											
Test position	BW.	Modulation	Test ch./Freq.	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(1RB)											
Left cheek	100	QPSK 1_1	650000/3750	1:1	0.010	0.00	27.00	27.50	1.122	0.011	22.5
Left tilted	100	QPSK 1_1	650000/3750	1:1	0.004	0.04	27.00	27.50	1.122	0.005	22.5
Right cheek	100	QPSK 1_1	650000/3750	1:1	0.000	0.00	27.00	27.50	1.122	0.000	22.5
Right tilted	100	QPSK 1_1	650000/3750	1:1	0.017	0.00	27.00	27.50	1.122	0.019	22.5
Head Test data(50%RB)											
Left cheek	100	QPSK 135_69	650000/3750	1:1	0.055	0.00	26.98	27.50	1.127	0.062	22.5
Left tilted	100	QPSK 135_69	650000/3750	1:1	0.003	0.00	26.98	27.50	1.127	0.004	22.5
Right cheek	100	QPSK 135_69	650000/3750	1:1	0.014	-0.03	26.98	27.50	1.127	0.016	22.5
Right tilted	100	QPSK 135_69	650000/3750	1:1	0.203	0.02	26.98	27.50	1.127	0.229	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	100	QPSK 1_1	650000/3750	1:1	0.012	-0.09	21.90	22.50	1.148	0.013	22.5
Back side	100	QPSK 1_1	650000/3750	1:1	0.234	0.02	21.90	22.50	1.148	0.269	22.5
Body worn Test data (Separate 15mm 50%RB)											
Front side	100	QPSK 135_69	650000/3750	1:1	0.012	0.01	21.93	22.50	1.140	0.014	22.5
Back side	100	QPSK 135_69	650000/3750	1:1	0.207	0.04	21.93	22.50	1.140	0.236	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	100	QPSK 1_1	650000/3750	1:1	0.049	0.06	16.12	16.50	1.091	0.054	22.5
Back side	100	QPSK 1_1	650000/3750	1:1	0.403	-0.06	16.12	16.50	1.091	0.440	22.5
Left side	100	QPSK 1_1	650000/3750	1:1	0.174	0.05	16.12	16.50	1.091	0.190	22.5
Top side	100	QPSK 1_1	650000/3750	1:1	0.069	0.07	16.12	16.50	1.091	0.075	22.5
Hotspot Test data (Separate 10mm 50%RB)											
Front side	100	QPSK 135_69	650000/3750	1:1	0.035	-0.05	16.10	16.50	1.096	0.038	22.5
Back side	100	QPSK 135_69	650000/3750	1:1	0.356	0.01	16.10	16.50	1.096	0.390	22.5
Left side	100	QPSK 135_69	650000/3750	1:1	0.109	0.04	16.10	16.50	1.096	0.120	22.5
Top side	100	QPSK 135_69	650000/3750	1:1	0.081	0.09	16.10	16.50	1.096	0.089	22.5

Table 29: SAR of 5G NR n78(3700MHz-3800 MHz) for Head and Body.

Note:The power of class2 is larger than that of class3, so only the class2 was tested and class3 is not required.

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	650000/3750	0.869	0.802	1.084	N/A	N/A
Left tilted	650000/3750	0.863	0.858	1.006	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 (~ 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 WIFI 2.4G

(Ant16+Ant18)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											
Left cheek	802.11b	6/2437	99.92%	1.001	0.811	0.01	21.79	22.50	1.178	0.956	22.5
Left cheek	802.11b	1/2412	99.92%	1.001	0.859	-0.08	21.68	22.50	1.208	1.038	22.5
Left tilted	802.11b	6/2437	99.92%	1.001	0.801	0.03	21.79	22.50	1.178	0.944	22.5
Left tilted	802.11b	1/2412	99.92%	1.001	0.861	0.02	21.68	22.50	1.208	1.041	22.5
Left tilted Repeat	802.11b	1/2412	99.92%	1.001	0.856	0.09	21.68	22.50	1.208	1.035	22.5
Right cheek	802.11b	6/2437	99.92%	1.001	0.45	0.02	21.79	22.50	1.178	0.53	22.5
Right tilted	802.11b	6/2437	99.92%	1.001	0.332	0.05	21.79	22.50	1.178	0.391	22.5
Body worn Test data(Separate 15mm)											
Front side	802.11b	6/2437	99.92%	1.001	0.116	0.03	21.79	22.50	1.178	0.137	22.5
Back side	802.11b	6/2437	99.92%	1.001	0.230	0.01	21.79	22.50	1.178	0.271	22.5
Hotspot Test data (Separate 10mm)											
Front side	802.11b	6/2437	99.92%	1.001	0.242	0.05	21.79	22.50	1.178	0.285	22.5
Back side	802.11b	6/2437	99.92%	1.001	0.419	0.03	21.79	22.50	1.178	0.494	22.5
Right side	802.11b	6/2437	99.92%	1.001	0.362	0.05	21.79	22.50	1.178	0.427	22.5
Top side	802.11b	6/2437	99.92%	1.001	0.184	0.03	21.79	22.50	1.178	0.217	22.5
(Ant16+Ant18)MIMO simultaneous transmission with WWAN 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											
Left cheek	802.11b	6/2437	99.92%	1.001	0.811	0.01	21.79	16.00	0.264	0.214	22.5
Left cheek	802.11b	1/2412	99.92%	1.001	0.859	-0.08	21.68	16.00	0.270	0.232	22.5
Left tilted	802.11b	6/2437	99.92%	1.001	0.801	0.03	21.79	16.00	0.264	0.211	22.5
Left tilted	802.11b	1/2412	99.92%	1.001	0.861	0.02	21.68	16.00	0.270	0.233	22.5
Right cheek	802.11b	6/2437	99.92%	1.001	0.45	0.02	21.79	16.00	0.264	0.119	22.5
Right tilted	802.11b	6/2437	99.92%	1.001	0.332	0.05	21.79	16.00	0.264	0.088	22.5
Body worn Test data(Separate 15mm)											
Front side	802.11b	6/2437	99.92%	1.001	0.116	0.03	21.79	22.00	1.050	0.122	22.5
Back side	802.11b	6/2437	99.92%	1.001	0.23	0.01	21.79	22.00	1.050	0.242	22.5
Hotspot Test data (Separate 10mm)											
Front side	802.11b	6/2437	99.92%	1.001	0.242	0.05	21.79	19.50	0.590	0.143	22.5
Back side	802.11b	6/2437	99.92%	1.001	0.419	0.03	21.79	19.50	0.590	0.247	22.5
Right side	802.11b	6/2437	99.92%	1.001	0.362	0.05	21.79	19.50	0.590	0.214	22.5
Top side	802.11b	6/2437	99.92%	1.001	0.184	0.03	21.79	19.50	0.590	0.109	22.5

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

Note:

- As the 802.11b highest reported SAR is smaller than 1.2 W/kg , and the tune-up of the other 802.11 modes are not higher than 802.11b,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.



8.2.1 SAR Result of WIFI 5G

(Ant17+Ant18)MIMO Test Record 2											
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											
Left cheek	802.11ac VHT80 MCS0	58/5290	99.63%	1.004	0.761	0.07	15.68	17.00	1.355	1.035	22.1
Left tilted	802.11ac VHT80 MCS0	58/5290	99.63%	1.004	0.539	0.01	15.68	17.00	1.355	0.733	22.1
Right cheek	802.11ac VHT80 MCS0	58/5290	99.63%	1.004	0.264	0.06	15.68	17.00	1.355	0.359	22.1
Right tilted	802.11ac VHT80 MCS0	58/5290	99.63%	1.004	0.251	-0.02	15.68	17.00	1.355	0.341	22.1
Head Test data of U-NII-2C											
Left cheek	802.11ac VHT80 MCS0	138/5690	99.63%	1.004	0.714	0.09	16.54	17.50	1.247	0.894	22.6
Left cheek	802.11ac VHT80 MCS0	106/5530	99.63%	1.004	0.683	0.13	16.03	17.50	1.403	0.962	22.6
Left tilted	802.11ac VHT80 MCS0	138/5690	99.63%	1.004	0.762	0.06	16.54	17.50	1.247	0.954	22.6
Left tilted	802.11ac VHT80 MCS0	106/5530	99.63%	1.004	0.721	0.01	16.03	17.50	1.403	1.015	22.6
Right cheek	802.11ac VHT80 MCS0	138/5690	99.63%	1.004	0.401	-0.02	16.54	17.50	1.247	0.502	22.6
Right tilted	802.11ac VHT80 MCS0	138/5690	99.63%	1.004	0.467	0.01	16.54	17.50	1.247	0.585	22.6
Head Test data of U-NII-3											
Left cheek	802.11ac VHT80 MCS0	155/5775	99.63%	1.004	0.608	0.01	18.58	19.50	1.236	0.754	22.0
Left tilted	802.11ac VHT80 MCS0	155/5775	99.63%	1.004	0.825	0.03	18.58	19.50	1.236	1.023	22.0
Left tilted Repeat	802.11ac VHT80 MCS0	155/5775	99.63%	1.004	0.812	0.03	18.58	19.50	1.236	1.007	22.0
Right cheek	802.11ac VHT80 MCS0	155/5775	99.63%	1.004	0.293	0.06	18.58	19.50	1.236	0.363	22.0
Right tilted	802.11ac VHT80 MCS0	155/5775	99.63%	1.004	0.417	0.11	18.58	19.50	1.236	0.517	22.0
Body worn Test data of U-NII-1(Separate 15mm)											
Front side	802.11a	40/5200	99.53%	1.005	0.200	0.01	21.57	22.50	1.239	0.249	22.1
Back side	802.11a	40/5200	99.53%	1.005	0.169	0.02	21.57	22.50	1.239	0.210	22.1
Body worn Test data of U-NII-2C(Separate 15mm)											
Front side	802.11a	116/5580	99.53%	1.005	0.207	-0.07	18.84	19.00	1.038	0.216	22.6
Back side	802.11a	116/5580	99.53%	1.005	0.308	-0.17	18.84	19.00	1.038	0.321	22.6
Body worn Test data of U-NII-3(Separate 15mm)											
Front side	802.11a	157/5785	99.53%	1.005	0.165	0.11	21.44	21.50	1.014	0.168	22.0
Back side	802.11a	157/5785	99.53%	1.005	0.416	0.06	21.44	21.50	1.014	0.424	22.0
Hotspot Test data of U-NII-1(Separate 10mm)											
Front side	802.11a	40/5200	99.53%	1.005	0.365	0.09	21.40	22.50	1.288	0.472	22.1
Back side	802.11a	40/5200	99.53%	1.005	0.286	0.04	21.40	22.50	1.288	0.370	22.1
Right side	802.11a	40/5200	99.53%	1.005	0.368	0.01	21.40	22.50	1.288	0.476	22.1
Top side	802.11a	40/5200	99.53%	1.005	0.306	0.02	21.40	22.50	1.288	0.396	22.1
Hotspot Test data of U-NII-3 (Separate 10mm)											
Front side	802.11a	157/5785	99.53%	1.005	0.237	0.03	21.44	21.50	1.014	0.241	22.0
Back side	802.11a	157/5785	99.53%	1.005	0.422	0.09	21.44	21.50	1.014	0.430	22.0
Right side	802.11a	157/5785	99.53%	1.005	0.324	0.05	21.44	21.50	1.014	0.330	22.0
Top side	802.11a	157/5785	99.53%	1.005	0.827	-0.11	21.44	21.50	1.014	0.842	22.0
Top side Repeat	802.11a	157/5785	99.53%	1.005	0.823	0.01	21.44	21.50	1.014	0.838	22.0
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	60/5300	99.53%	1.005	0.940	0.07	19.75	21.50	1.496	1.413	22.1
Back side	802.11a	60/5300	99.53%	1.005	0.484	0.01	19.75	21.50	1.496	0.728	22.1
Right side	802.11a	60/5300	99.53%	1.005	1.310	0.05	19.75	21.50	1.496	1.969	22.1
Top side	802.11a	60/5300	99.53%	1.005	0.666	0.03	19.75	21.50	1.496	1.001	22.1
Product specific 10gSAR Test data of U-NII-2C(Separate 0mm)											
Front side	802.11a	116/5580	99.63%	1.004	1.210	0.01	18.84	19.00	1.038	1.261	22.6
Back side	802.11a	116/5580	99.63%	1.004	0.651	0.07	18.84	19.00	1.038	0.679	22.6
Right side	802.11a	116/5580	99.63%	1.004	1.530	0.03	18.84	19.00	1.038	1.595	22.6
Top side	802.11a	116/5580	99.63%	1.004	1.760	0.04	18.84	19.00	1.500	2.650	22.6
Top side	802.11a	140/5700	99.63%	1.004	1.320	0.08	18.78	19.00	1.500	1.987	22.6



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(Ant17+Ant18)MIMO simultaneous transmission with WWAN Test Record 2												
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												
Left cheek	802.11ac VHT80 MCS0	58/5290	99.63%	1.004	0.761	0.07	15.68	10.50	0.303	0.232	22.1	
Left tilted	802.11ac VHT80 MCS0	58/5290	99.63%	1.004	0.539	0.01	15.68	10.50	0.303	0.164	22.1	
Right cheek	802.11ac VHT80 MCS0	58/5290	99.63%	1.004	0.264	0.06	15.68	10.50	0.303	0.080	22.1	
Right tilted	802.11ac VHT80 MCS0	58/5290	99.63%	1.004	0.251	-0.02	15.68	10.50	0.303	0.076	22.1	
Head Test data of U-NII-2C												
Left cheek	802.11ac VHT80 MCS0	138/5690	99.63%	1.004	0.714	0.09	16.54	11.00	0.279	0.200	22.6	
Left cheek	802.11ac VHT80 MCS0	106/5530	99.63%	1.004	0.683	0.13	16.03	11.00	0.314	0.215	22.6	
Left tilted	802.11ac VHT80 MCS0	138/5690	99.63%	1.004	0.762	0.06	16.54	11.00	0.279	0.214	22.6	
Left tilted	802.11ac VHT80 MCS0	106/5530	99.63%	1.004	0.721	0.01	16.03	11.00	0.314	0.227	22.6	
Right cheek	802.11ac VHT80 MCS0	138/5690	99.63%	1.004	0.401	-0.02	16.54	11.00	0.279	0.112	22.6	
Right tilted	802.11ac VHT80 MCS0	138/5690	99.63%	1.004	0.467	0.01	16.54	11.00	0.279	0.131	22.6	
Head Test data of U-NII-3												
Left cheek	802.11ac VHT80 MCS0	155/5775	99.63%	1.004	0.608	0.01	18.58	13.00	0.277	0.169	22.0	
Left tilted	802.11ac VHT80 MCS0	155/5775	99.63%	1.004	0.825	0.03	18.58	13.00	0.277	0.229	22.0	
Right cheek	802.11ac VHT80 MCS0	155/5775	99.63%	1.004	0.293	0.06	18.58	13.00	0.277	0.081	22.0	
Right tilted	802.11ac VHT80 MCS0	155/5775	99.63%	1.004	0.417	0.11	18.58	13.00	0.277	0.116	22.0	
Body worn Test data of U-NII-1(Separate 15mm)												
Front side	802.11a	40/5200	99.53%	1.005	0.200	0.01	21.57	22.50	1.239	0.249	22.1	
Back side	802.11a	40/5200	99.53%	1.005	0.169	0.02	21.57	22.50	1.239	0.210	22.1	
Body worn Test data of U-NII-2C(Separate 15mm)												
Front side	802.11a	116/5580	99.53%	1.005	0.207	-0.07	18.84	17.00	0.655	0.136	22.6	
Back side	802.11a	116/5580	99.53%	1.005	0.308	-0.17	18.84	17.00	0.655	0.203	22.6	
Body worn Test data of U-NII-3(Separate 15mm)												
Front side	802.11a	157/5785	99.53%	1.005	0.165	0.11	21.44	19.00	0.570	0.095	22.0	
Back side	802.11a	157/5785	99.53%	1.005	0.416	0.06	21.44	19.00	0.570	0.238	22.0	
Hotspot Test data of U-NII-1(Separate 10mm)												
Front side	802.11a	40/5200	99.53%	1.005	0.365	0.09	21.40	19.50	0.646	0.237	22.1	
Back side	802.11a	40/5200	99.53%	1.005	0.286	0.04	21.40	19.50	0.646	0.186	22.1	
Right side	802.11a	40/5200	99.53%	1.005	0.368	0.01	21.40	19.50	0.646	0.239	22.1	
Top side	802.11a	40/5200	99.53%	1.005	0.306	0.02	21.40	19.50	0.646	0.199	22.1	
Hotspot Test data of U-NII-3 (Separate 10mm)												
Front side	802.11a	157/5785	99.53%	1.005	0.237	0.03	21.44	16.00	0.286	0.068	22.0	
Back side	802.11a	157/5785	99.53%	1.005	0.422	0.09	21.44	16.00	0.286	0.121	22.0	
Right side	802.11a	157/5785	99.53%	1.005	0.324	0.05	21.44	16.00	0.286	0.093	22.0	
Top side	802.11a	157/5785	99.53%	1.005	0.827	-0.11	21.44	16.00	0.286	0.237	22.0	

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

Note:

- 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

Ant18 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											
Left cheek	DH5	39/2441	77.00%	1.299	0.512	-0.09	18.25	19.00	1.189	0.790	22.5
Left tilted	DH5	39/2441	77.00%	1.299	0.447	0.03	18.25	19.00	1.189	0.690	22.5
Right cheek	DH5	39/2441	77.00%	1.299	0.344	0.04	18.25	19.00	1.189	0.531	22.5
Right tilted	DH5	39/2441	77.00%	1.299	0.056	0.02	18.25	19.00	1.189	0.087	22.5
Body worn Test data(Separate 15mm)											
Front side	DH5	39/2441	77.00%	1.299	0.091	0.04	18.25	17.00	0.750	0.088	22.5
Back side	DH5	39/2441	77.00%	1.299	0.111	0.08	18.25	17.00	0.750	0.108	22.5
Hotspot Test data (Separate 10mm)											
Front side	DH5	39/2441	77.00%	1.299	0.181	-0.02	18.25	17.00	0.750	0.176	22.5
Back side	DH5	39/2441	77.00%	1.299	0.227	0.12	18.25	17.00	0.750	0.221	22.5
Right side	DH5	39/2441	77.00%	1.299	0.239	0.01	18.25	17.00	0.750	0.233	22.5
Top side	DH5	39/2441	77.00%	1.299	0.026	0.09	18.25	17.00	0.750	0.026	22.5
Ant16 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											
Left cheek	DH5	39/2441	77.00%	1.299	0.507	0.03	18.19	19.00	1.205	0.793	22.5
Left tilted	DH5	39/2441	77.00%	1.299	0.510	0.01	18.19	19.00	1.205	0.798	22.5
Right cheek	DH5	39/2441	77.00%	1.299	0.261	0.03	18.19	19.00	1.205	0.408	22.5
Right tilted	DH5	39/2441	77.00%	1.299	0.329	0.02	18.19	19.00	1.205	0.515	22.5
Body worn Test data(Separate 15mm)											
Front side	DH5	39/2441	77.00%	1.299	0.077	0.01	18.19	19.00	1.205	0.121	22.5
Back side	DH5	39/2441	77.00%	1.299	0.138	0.04	18.19	19.00	1.205	0.216	22.5
Hotspot Test data (Separate 10mm)											
Front side	DH5	39/2441	77.00%	1.299	0.177	0.04	18.19	19.00	1.205	0.277	22.5
Back side	DH5	39/2441	77.00%	1.299	0.199	0.01	18.19	19.00	1.205	0.311	22.5
Right side	DH5	39/2441	77.00%	1.299	0.040	0.01	18.19	19.00	1.205	0.063	22.5
Top side	DH5	39/2441	77.00%	1.299	0.161	0.15	18.19	19.00	1.205	0.252	22.5
Ant18 simultaneous transmission with WWAN 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											
Left cheek	DH5	39/2441	77.00%	1.299	0.512	-0.09	18.25	13.50	0.335	0.223	22.5
Left tilted	DH5	39/2441	77.00%	1.299	0.447	0.03	18.25	13.50	0.335	0.194	22.5
Right cheek	DH5	39/2441	77.00%	1.299	0.344	0.04	18.25	13.50	0.335	0.150	22.5
Right tilted	DH5	39/2441	77.00%	1.299	0.056	0.02	18.25	13.50	0.335	0.024	22.5
Hotspot Test data (Separate 10mm)											
Front side	DH5	39/2441	77.00%	1.299	0.181	-0.02	18.25	17.00	0.750	0.176	22.5
Back side	DH5	39/2441	77.00%	1.299	0.227	0.12	18.25	17.00	0.750	0.221	22.5
Right side	DH5	39/2441	77.00%	1.299	0.239	0.01	18.25	17.00	0.750	0.233	22.5
Top side	DH5	39/2441	77.00%	1.299	0.026	0.09	18.25	17.00	0.750	0.026	22.5



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Ant16 simultaneous transmission with WWAN 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											
Left cheek	DH5	39/2441	77.00%	1.299	0.507	0.03	18.19	13.50	0.340	0.224	22.5
Left tilted	DH5	39/2441	77.00%	1.299	0.510	0.01	18.19	13.50	0.340	0.225	22.5
Right cheek	DH5	39/2441	77.00%	1.299	0.261	0.03	18.19	13.50	0.340	0.115	22.5
Right tilted	DH5	39/2441	77.00%	1.299	0.329	0.02	18.19	13.50	0.340	0.145	22.5
Hotspot Test data (Separate 10mm)											
Front side	DH5	39/2441	77.00%	1.299	0.177	0.04	18.19	17.00	0.760	0.175	22.5
Back side	DH5	39/2441	77.00%	1.299	0.199	0.01	18.19	17.00	0.760	0.196	22.5
Right side	DH5	39/2441	77.00%	1.299	0.040	0.01	18.19	17.00	0.760	0.039	22.5
Top side	DH5	39/2441	77.00%	1.299	0.161	0.15	18.19	17.00	0.760	0.159	22.5

Table 32: SAR of BT for Head and Body.



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8.3 Multiple Transmitter Evaluation

8.3.1 Simultaneous SAR SAR test evaluation

- Simultaneous Transmission Possibilities

NO	Simultaneous Tx Combination	Head	Body-worn	Hotspot	Product Specific 10-g (0mm)
1	WWAN + WIFI 5G MIMO + BT1	Y	Y	Y	Y
2	WWAN + WIFI 5G MIMO + BT2	Y	Y	Y	Y
3	WWAN + WIFI 2.4G MIMO + WIFI 5G MIMO	Y	Y	Y	Y
4	WWAN + WIFI 5G MIMO	Y	Y	Y	Y
5	WWAN + WIFI 2.4G MIMO	Y	Y	Y	Y

Note: BT1= BT ANT18 BT2=BT ANT16



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8.3.2 Simultaneous Transmission SAR Summation Scenario

Simultaneous Transmission SAR Summation Scenario for WLAN Head:

LTE Band (EN_DC)	Exposure position	LTE Band7 Ant0/2/3/5	n5	EN_DC Summed SAR
5N-7A	Left cheek	0.385	0.385	0.770
	Left tilted	0.385	0.154	0.539
	Right cheek	0.385	0.296	0.681
	Right tilted	0.385	0.150	0.535

LTE Band (EN_DC)	Exposure position	LTE Band5 Ant0/1	n7 Ant0/2/3/5	EN_DC Summed SAR
7N-5A	Left cheek	0.442	0.285	0.727
	Left tilted	0.099	0.253	0.352
	Right cheek	0.302	0.246	0.548
	Right tilted	0.091	0.253	0.344

LTE Band (EN_DC)	Exposure position	Ant0/1	Ant0/2/3/5	n78 Ant4/6/7/8	EN_DC Summed SAR
Band 5	Left cheek	0.442	/	0.553	0.995
	Left tilted	0.099	/	0.553	0.652
	Right cheek	0.302	/	0.553	0.855
	Right tilted	0.091	/	0.553	0.644
Band 7	Left cheek	/	0.385	0.553	0.938
	Left tilted	/	0.385	0.553	0.938
	Right cheek	/	0.385	0.553	0.938
	Right tilted	/	0.385	0.553	0.938
Band 38/41	Left cheek	/	0.355	0.553	0.908
	Left tilted	/	0.284	0.553	0.837
	Right cheek	/	0.477	0.553	1.030
	Right tilted	/	0.540	0.553	1.093

Test position	SARmax (W/kg)					Summed SAR			
	Main Ant	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2				
	1	2	3	4	5	1+2+3	1+3+5	1+3+4	
All ENDC	Left cheek	0.995	0.232	0.232	0.223	0.224	1.459	1.450	1.451
	Left tilted	0.938	0.232	0.229	0.194	0.225	1.399	1.361	1.392
	Right cheek	1.030	0.119	0.112	0.150	0.115	1.261	1.292	1.257
	Right tilted	1.093	0.088	0.131	0.024	0.145	1.312	1.248	1.369



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Test position		SARmax (W/kg)						Summed SAR		
		LTE Band4	LTE Band7	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2			
		1	2	3	4	5	6	1+2+3+4	1+3+4+5	1+3+4+6
UL CA 4A_7A	Left cheek	0.665	0.385	0.232	0.232	0.223	0.224	1.514	1.505	1.506
	Left tilted	0.665	0.385	0.232	0.229	0.194	0.225	1.511	1.473	1.504
	Right cheek	0.915	0.385	0.119	0.112	0.150	0.115	1.531	1.562	1.527
	Right tilted	0.665	0.385	0.088	0.131	0.024	0.145	1.269	1.205	1.326

Test position		SARmax (W/kg)					Summed SAR		
		Main Ant	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2			
		1	2	3	4	5	1+2+3	1+3+5	1+3+4
ALL WWAN Standalone	Left cheek	1.040	0.232	0.232	0.223	0.224	1.504	1.495	1.496
	Left tilted	1.081	0.232	0.229	0.194	0.225	1.542	1.504	1.535
	Right cheek	1.092	0.119	0.112	0.150	0.115	1.323	1.354	1.319
	Right tilted	1.071	0.088	0.131	0.024	0.145	1.290	1.226	1.347

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

LTE Band (EN_DC)	Exposure position	LTE Band7 Ant0/2/3/5	n5	EN_DC Summed SAR
5N-7A	Front side	0.475	0.337	0.812
	Back side	0.475	0.357	0.832

LTE Band (EN_DC)	Exposure position	LTE Band5 Ant0/1	n7	EN_DC Summed SAR
7N-5A	Front side	0.293	0.433	0.726
	Back side	0.344	0.556	0.900

LTE Band (EN_DC)	Exposure position	Ant0/1	Ant0/2/3/5	n7(3450-3550)	EN_DC Summed SAR
				Ant1	
Band 5	Front side	0.293	/	0.345	0.638
	Back side	0.344	/	0.541	0.885
Band 7	Front side	/	0.475	0.345	0.820
	Back side	/	0.475	0.541	1.016
Band 38/41	Front side	/	0.433	0.345	0.778
	Back side	/	0.544	0.541	1.085



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Test position		SARmax (W/kg)					Summed SAR		
		Main Ant	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2			
		1	2	4	6	7	1+2+3	1+3+5	1+3+4
All ENDC	Front side	0.820	0.122	0.249	0.088	0.121	1.191	1.157	1.190
	Back side	1.085	0.242	0.238	0.108	0.216	1.565	1.431	1.539

Test position		SARmax (W/kg)						Summed SAR		
		LTE Band4	LTE Band7	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2			
		1	2	3	4	5	6	1+2+3+4	1+3+4+5	1+3+4+6
UL CA 4A_7A	Front side	0.455	0.475	0.122	0.249	0.088	0.121	1.301	1.267	1.300
	Back side	0.549	0.501	0.242	0.238	0.108	0.216	1.530	1.396	1.504

Test position		SARmax (W/kg)					Summed SAR		
		Main Ant	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2			
		1	2	4	6	7	1+2+3	1+3+5	1+3+4
ALL WWAN Standalone	Front side	0.693	0.122	0.249	0.088	0.121	1.064	1.030	1.063
	Back side	1.085	0.242	0.238	0.108	0.216	1.565	1.431	1.539

Hotspot:

LTE Band (EN_DC)	Exposure position	LTE Band7 Ant0/2/3/5	n5	EN_DC Summed SAR
5N-7A	Front side	0.411	0.501	0.912
	Back side	0.411	0.549	0.960
	Left side	0.411	0.421	0.832
	Right side	0.411	0.295	0.706
	Top side	0.411	0.000	0.411
	Bottom side	0.411	0.264	0.675

LTE Band (EN_DC)	Exposure position	LTE Band5 Ant0/1	n7	EN_DC Summed SAR
7N-5A	Front side	0.439	0.518	0.957
	Back side	0.545	0.613	1.158
	Left side	0.469	0.396	0.865
	Right side	0.271	0.183	0.454
	Top side	0.000	0.197	0.197
	Bottom side	0.218	0.629	0.847



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LTE Band (EN_DC)	Exposure position	Ant0/1	Ant0/2/3/5	n78(3450-3550)	EN_DC Summed SAR
				Ant1	
Band 5	Front side	0.439	/	0.504	0.943
	Back side	0.545	/	0.504	1.049
	Left side	0.469	/	0.504	0.973
	Right side	0.271	/	0.504	0.775
	Top side	0.000	/	0.504	0.504
	Bottom side	0.218	/	0.504	0.722
Band 7	Front side	/	0.411	0.504	0.915
	Back side	/	0.411	0.504	0.915
	Left side	/	0.411	0.504	0.915
	Right side	/	0.411	0.504	0.915
	Top side	/	0.411	0.504	0.915
	Bottom side	/	0.411	0.504	0.915
Band 38/41	Front side	/	0.359	0.504	0.863
	Back side	/	0.549	0.504	1.053
	Left side	/	0.512	0.504	1.016
	Right side	/	0.512	0.504	1.016
	Top side	/	0.399	0.504	0.903
	Bottom side	/	0.356	0.504	0.860

Test position	SARmax (W/kg)						Summed SAR		
	Main Ant	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2				
	1	2	4	6	7	1+2+3	1+3+5	1+3+4	
All ENDC	Front side	0.957	0.143	0.237	0.176	0.175	1.337	1.370	1.369
	Back side	1.158	0.247	0.186	0.221	0.196	1.591	1.565	1.540
	Left side	1.016	/	/	/	/	1.016	1.016	1.016
	Right side	1.016	0.214	0.239	0.233	0.039	1.469	1.488	1.294
	Top side	0.915	0.109	0.237	0.026	0.159	1.261	1.178	1.311
	Bottom side	0.915	/	/	/	/	0.915	0.915	0.915

Test position	SARmax (W/kg)						Summed SAR			
	LTE Band4	LTE Band7	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2				
	1	2	3	4	5	6	1+2+3+4	1+3+4+5	1+3+4+6	
UL CA 4A_7A	Front side	0.506	0.411	0.143	0.237	0.176	0.175	1.297	1.330	1.329
	Back side	0.687	0.465	0.247	0.186	0.221	0.196	1.585	1.559	1.534
	Left side	0.408	0.230	/	/	/	/	0.638	0.638	0.638
	Right side	0.400	0.230	0.214	0.239	0.233	0.039	1.083	1.102	0.908
	Top side	0.285	0.230	0.109	0.237	0.026	0.159	0.861	0.778	0.911
	Bottom side	1.040	0.466	/	/	/	/	1.506	1.506	1.506



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Test position		SARmax (W/kg)					Summed SAR		
		Main Ant	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2			
		1	2	4	6	7	1+2+3	1+3+5	1+3+4
ALL WWAN Standalone	Front side	0.647	0.143	0.237	0.176	0.175	1.027	1.060	1.059
	Back side	0.799	0.247	0.186	0.221	0.196	1.232	1.206	1.181
	Left side	1.053	/	/	/	/	1.053	1.053	1.053
	Right side	0.548	0.214	0.239	0.233	0.039	1.001	1.020	0.826
	Top side	0.868	0.109	0.237	0.026	0.159	1.214	1.131	1.264
	Bottom side	1.040	/	/	/	/	1.040	1.040	1.040

Product specific 10g SAR:

Test position		SARmax (W/kg)					Summed SAR		
		Main Ant	WiFi 2.4G MIMO	WiFi 5G MIMO	BT 1	BT 2			
		1	2	4	6	7	1+2+3	1+3+5	1+3+4
ALL WWAN Standalone	Front side	0.969	/	1.413	/	/	2.382	2.382	2.382
	Back side	1.027	/	0.728	/	/	1.755	1.755	1.755
	Left side	2.584	/	/	/	/	2.584	2.584	2.584
	Right side	/	/	1.969	/	/	/	/	1.969
	Top side	/	/	2.650	/	/	/	/	2.650
	Bottom side	/	/	/	/	/	/	/	/



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9 Equipment list

Test Platform		SPEAG DASY Professional				
Description		SAR Test System				
Software Reference		DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)				
Hardware Reference						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration	
<input checked="" type="checkbox"/>	Twin Phantom	SPEAG	SAM1	1283	NCR	NCR
<input checked="" type="checkbox"/>	Twin Phantom	SPEAG	SAM2	1563	NCR	NCR
<input checked="" type="checkbox"/>	Twin Phantom	SPEAG	SAM3	1770	NCR	NCR
<input checked="" type="checkbox"/>	Twin Phantom	SPEAG	SAM5	1481	NCR	NCR
<input checked="" type="checkbox"/>	Twin Phantom	SPEAG	SAM6	1824	NCR	NCR
<input checked="" type="checkbox"/>	DAE	SPEAG	DAE4	1428	2021-04-09	2022-04-08
<input checked="" type="checkbox"/>	DAE	SPEAG	DAE4	1327	2021-11-05	2022-11-04
<input checked="" type="checkbox"/>	DAE	SPEAG	DAE4	1324	2021-06-22	2022-06-21
<input checked="" type="checkbox"/>	DAE	SPEAG	DAE4	1374	2021-11-05	2022-11-04
<input checked="" type="checkbox"/>	E-Field Probe	SPEAG	EX3DV4	3962	2021-04-26	2022-04-25
<input checked="" type="checkbox"/>	E-Field Probe	SPEAG	EX3DV4	7620	2021-08-24	2022-08-23
<input checked="" type="checkbox"/>	E-Field Probe	SPEAG	EX3DV4	3789	2021-08-12	2022-08-11
<input checked="" type="checkbox"/>	E-Field Probe	SPEAG	EX3DV4	3982	2021-12-29	2022-12-28
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D750V3	1210	2021-09-08	2024-09-07
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D835V2	4d256	2020-04-15	2023-04-14
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D1750V2	1105	2020-08-29	2023-08-28
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D1900V2	5d114	2020-08-27	2023-08-26
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D2450V2	1038	2020-04-08	2023-04-07
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D2600V2	1180	2021-05-12	2024-05-11
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D3500V2	1124	2021-05-17	2024-05-16
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D3700V2	1094	2021-05-17	2024-05-16
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D3900V2	1071	2021-05-20	2024-05-19
<input checked="" type="checkbox"/>	Validation Kits	SPEAG	D5GHzV2	1174	2020-08-27	2023-08-26
<input checked="" type="checkbox"/>	Dielectric parameter probes	SPEAG	DAKS-3.5	1120	2021-02-24	2022-02-23
<input checked="" type="checkbox"/>	Vector Network Analyzer and Vector Reflectometer	SPEAG	DAKS_VNA R140	0050920	2021-03-02	2022-03-01



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<input checked="" type="checkbox"/>	Universal Radio Communication Tester	R&S	CMW500	111637	2021-09-29	2022-09-28
<input checked="" type="checkbox"/>	Radio Communication Analyzer	Anritsu	MT8820C	6201010267	2021-04-01	2022-03-31
<input checked="" type="checkbox"/>	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
<input checked="" type="checkbox"/>	Signal Generator	R&S	SMB100A	182393	2021-02-20	2022-02-19
<input checked="" type="checkbox"/>	Preamplifier	Qiji	YX28980933	202104001	NCR	NCR
<input checked="" type="checkbox"/>	Power Meter	Aglient	E4419B	6843318103	2021-06-08	2022-06-07
<input checked="" type="checkbox"/>	Power Sensor	Aglient	E9301A	MY41496508	2021-09-09	2022-09-08
<input checked="" type="checkbox"/>	Power Sensor	Aglient	E9301H	MY41495605	2021-06-08	2022-06-07
<input checked="" type="checkbox"/>	Attenuator	SHX	TS2-3dB	30704	NCR	NCR
<input checked="" type="checkbox"/>	Coaxial low pass filter	Mini-Circuits	VLF-2500(+)	NA	NCR	NCR
<input checked="" type="checkbox"/>	Coaxial low pass filter	Microlab Fxr	LA-F13	NA	NCR	NCR
<input checked="" type="checkbox"/>	DC POWER SUPPLY	SAKO	SK1730SL5A	NA	NCR	NCR
<input checked="" type="checkbox"/>	Speed reading thermometer	LKM	DTM3000	SUW201-30-01	2021-10-09	2022-10-08
<input checked="" type="checkbox"/>	Humidity and Temperature Indicator	MingGao	MingGao	NA	2021-06-16	2022-06-15

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

Appendix F: Antenna Locations

---END---



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