



FCC SAR TEST REPORT

Application No.: ZEWM2306000762RG
Applicant: Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Manufacturer: Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Product Name: Mobile Phone
Model No.(EUT): CPH2579
Trade Mark: OPPO
FCC ID: R9C-CPH2579
Standards: FCC 47CFR §2.1093
Date of Receipt: 2023/06/08
Date of Test: 2023/06/16 to 2023/07/11
Date of Issue: 2023/07/11
Test conclusion: **PASS ***

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

Authorized Signature:

Ervin Li

Regulatory Manager



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REVISION HISTORY

Report Number	Revision	Description	Issue Date
ZEWM2306000762RG01	01	Original	2023/07/11

Prepared By	<i>Vito Wang</i> Vito Wang
Checked By	<i>Roman Pan</i> Roman Pan



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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)			
	Head	Body-worn	Hotspot	Product specific 10g SAR
GSM850	0.73	0.37	0.57	/
GSM1900	1.16	0.18	0.68	/
WCDMA Band II	0.98	0.34	0.50	/
WCDMA Band IV	0.87	0.32	0.46	/
WCDMA Band V	0.74	0.28	0.38	/
LTE Band 2	1.13	0.36	0.52	/
LTE Band 4	0.98	0.29	0.48	/
LTE Band 7	0.92	0.47	0.90	2.46
LTE Band 12/17	0.81	0.23	0.28	/
LTE Band 13	0.69	0.20	0.19	/
LTE Band 26/5	0.81	0.28	0.33	/
LTE Band 38	0.76	0.48	1.10	1.69
LTE Band 41	0.90	0.33	0.58	/
LTE Band 66	1.00	0.32	0.55	/
WI-FI (2.4GHz)	0.49	0.10	0.22	/
WI-FI (5GHz)	1.18	0.68	0.96	1.49
BT	0.41	<0.10	<0.10	/
SAR Limited(W/kg)	1.6			4.0
Maximum Simultaneous Transmission SAR (W/kg)				
Scenario	Head	Body-worn	Hotspot	Product specific 10g SAR
Sum SAR	1.57	1.21	1.58	2.77
SPLSR	/	/	/	/
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 (Overlapping LTE Bands): SAR in LTE band 5 (frequency range: 824-849 MHz) is covered by LTE band 26 (frequency range: 814-849 MHz). The SAR in LTE Band 17 (Frequency range:704-716 MHz) is covered by LTE Band 12 (Frequency range:699-716 MHz).Because the frequency range is similar, the maximum tuning limit is the same, and the channel bandwidth and other operating parameters for the smaller band is fully supported by the larger band.



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1 General Information

1.1 Details of Client

Applicant:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address:	NO.18 Haibin Road, Wusha Village, Chang'an Town, Dongguan City, Guangdong, China
Manufacturer:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address:	NO.18 Haibin Road, Wusha Village, Chang'an Town, Dongguan City, Guangdong, China

1.2 Test Location

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China
Post code:	518057
Test engineer:	Lyons Liang, Charley Yi, Mike Li, Durant Lin, Bernie Zhuang, Messi Chen, James Zheng, Ethan Li



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1.3 Test Facility

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

- **A2LA (Certificate No. 3816.01)**

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

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

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

CAB identifier: CN0006.

IC#: 4620C.

- **FCC –Designation Number: CN1336**

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

Designation Number: CN1336. Test Firm Registration Number: 787754.



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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):	CPH2579		
FCC ID:	R9C-CPH2579		
Trade Mark:	OPPO		
Product Phase:	Identical Prototype		
IMEI:	867723060020897, 867723060021150, 867723060021093, 867723060020376, 867723060021432		
Hardware Version:	11		
Software Version:	ColorOS 13.1		
Antenna Type:	Fixed Internal Antenna		
Device Operating Configurations :			
Modulation Mode:	GSM: GMSK, 8PSK; WCDMA: QPSK, 16QAM(HSPA+); LTE: QPSK,16QAM,64QAM; WIFI: DSSS, OFDM; BT: GFSK, $\pi/4$ DQPSK,8DPSK		
Device Class:	B		
GPRS Multi-slots Class:	12	EGPRS Multi-slots Class:	12
HSDPA UE Category:	24	HSUPA UE Category	7
DC-HSDPA UE Category:	24		
Power Class:	4,tested with power level 5(GSM850)		
	1,tested with power level 0(GSM1900)		
	3, tested with power control “all 1”(WCDMA Band)		
	3, tested with power control Max Power(LTE Band)		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	LTE Band 2	1850 ~1910	1930 ~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869~894
	LTE Band 7	2500~2570	2620~2690
	LTE Band 12	699~716	729~746
	LTE Band 13	777~787	746~756
	LTE Band 17	704~716	734~746
	LTE Band 26	814~849	859~894
	LTE Band 38	2570~2620	2570~2620
	LTE Band 41	2535~2655	2535~2655
	LTE Band 66	1710~1780	2110~2180
	Bluetooth	2400~2483.5	2400~2483.5
	Wi-Fi 2.4G	2412~2462	2412~2462
	Wi-Fi 5G	5150~5250	5150~5250



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		5250~5350	5250~5350
		5470~5725	5470~5725
		5725~5850	5725~5850
RF Cable:	☒ Provided by the applicant ☐ Provided by the laboratory		
Battery Information:	Model:	BLPA19	
	Normal Voltage:	+3.91V	
	Rated capacity:	4880mAh	
	Manufacturer:	Chongqing CosMX Battery Co., Ltd.	
Note: *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion. Remark: As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.			



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1.4.1 DUT Antenna Locations (Back View)

The DUT Antenna Locations can be referred to Appendix F

Note:

- 1) The test device is a smart phone. The overall diagonal dimension of this device is 173.95 mm. Per KDB 648474 D04, because the diagonal distance of this device is ≥ 160 mm, so it is a phablet.

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

Distance of the Antenna to the EUT surface/edge						
Mode	Front	Back	Left	Right	Top	Bottom
Ant0	≤ 25 mm	≤ 25 mm	≤ 25 mm	≤ 25 mm	> 25 mm	≤ 25 mm
Ant1	≤ 25 mm	≤ 25 mm	≤ 25 mm	> 25 mm	≤ 25 mm	> 25 mm
Ant2(WIFI & BT)	≤ 25 mm	≤ 25 mm	> 25 mm	≤ 25 mm	≤ 25 mm	> 25 mm

Table 1: Distance of the Antenna to the EUT surface/edge

Note:

- 1) When the antenna-to-edge distance is greater than 25mm, such position does not need to be tested.



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1.4.2 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.
- 3) This device uses the receiver to indicate whether the user is making a voice call in head scenario or not. The selection between head and body power levels is based on the receiver detection mechanism. A fixed level power reduction is applied for some frequency bands when the audio receiver is on.

The detailed power reduction information can be referred to Appendix E (Conducted RF Output Power).



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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.

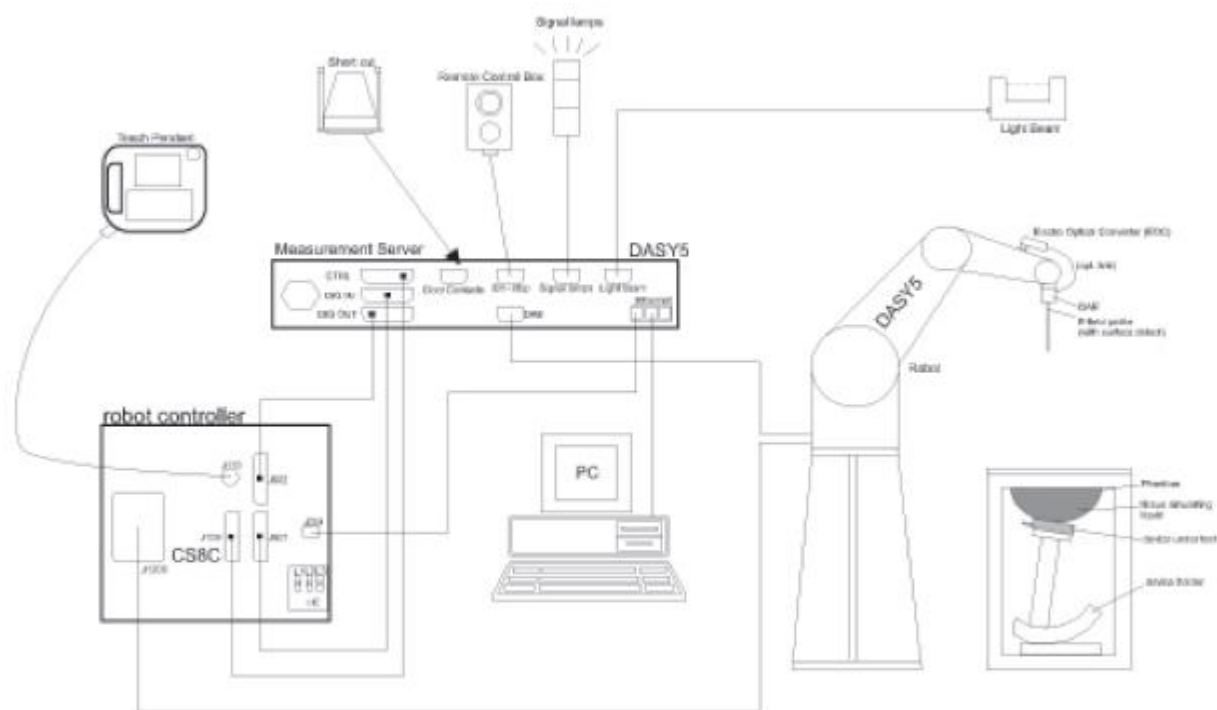
The DASY5 system for performing compliance tests consists of the following items:

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.



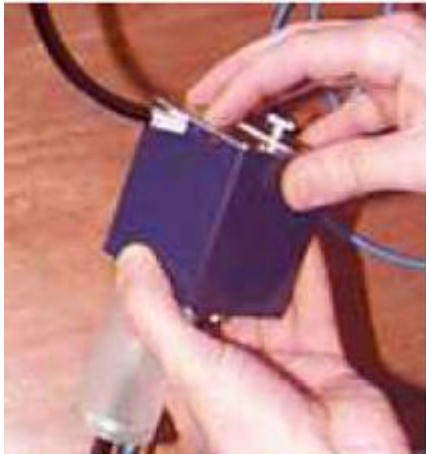
F-1. SAR Measurement System Configuration

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

3.2 Isotropic E-field Probe EX3DV4

	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 <u>calibration service</u> available.
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

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.

3.5 ELI Phantom

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

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

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



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3.6 Device Holder for Transmitters



F-2. Device Holder for Transmitters

- The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centres for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.
- The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon=3$ and loss tangent $\delta=0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

3.7 Measurement procedure

3.7.1 Scanning procedure

Step 1: Power reference measurement

The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure.

Step 2: Area scan

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

Step 3: Zoom scan

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

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

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



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

Step 4: Power reference measurement (drift)

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



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3.7.2 Data Storage

The DASY software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DAE4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated. The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [m W/g], [m W/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

3.7.3 Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Normi, ai0, ai1, ai2
- Conversion factor	ConvFi	
- Diode compression point	Dcpi	
Device parameters:	- Frequency	f
- Crest factor	cf	
Media parameters:	- Conductivity	ε
- Density	ρ	

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

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

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

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

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

U_i = input signal of channel i (i = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcp i = diode compression point (DASY parameter)

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

E-field probes:

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



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H-field probes:

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

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

Normi = sensor sensitivity of channel i ($i = x, y, z$)

[mV/(V/m)²] for E-field Probes

ConvF = sensitivity enhancement in solution

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

f = carrier frequency [GHz]

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

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

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

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

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

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

with SAR = local specific absorption rate in mW/g

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

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

ϵ = equivalent tissue density in g/cm³

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

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

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

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

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



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4 SAR measurement variability and uncertainty

4.1 SAR measurement variability

Per KDB 865664 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

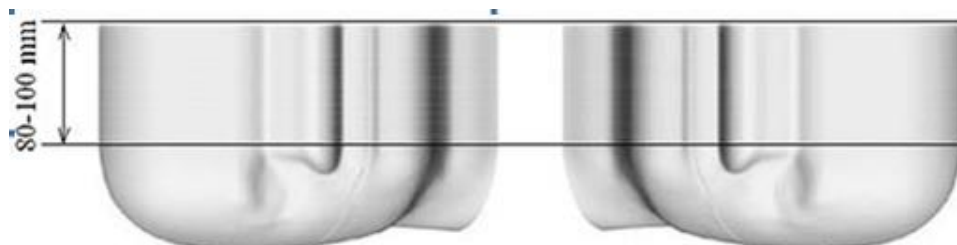
5.1 Head Exposure Condition

5.1.1 SAM Phantom Shape

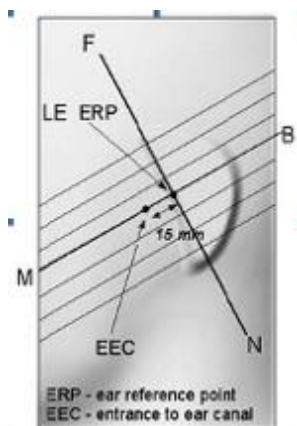


F-3. Front, back, and side views of SAM (model for the phantom shell). Full-head model is for illustration purposes only-procedures in this recommended practice are intended primarily for the phantom setup.

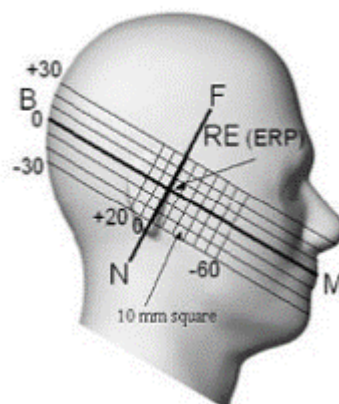
Note: The centre strip including the nose region has a different thickness tolerance.



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

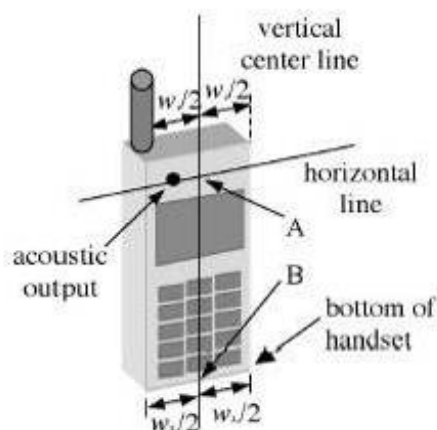


F-5. Close-up side view of phantom, showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations

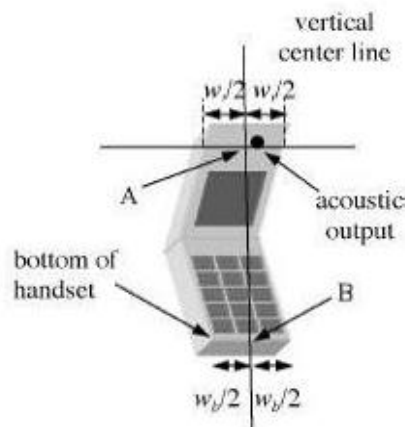


F-6. Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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.



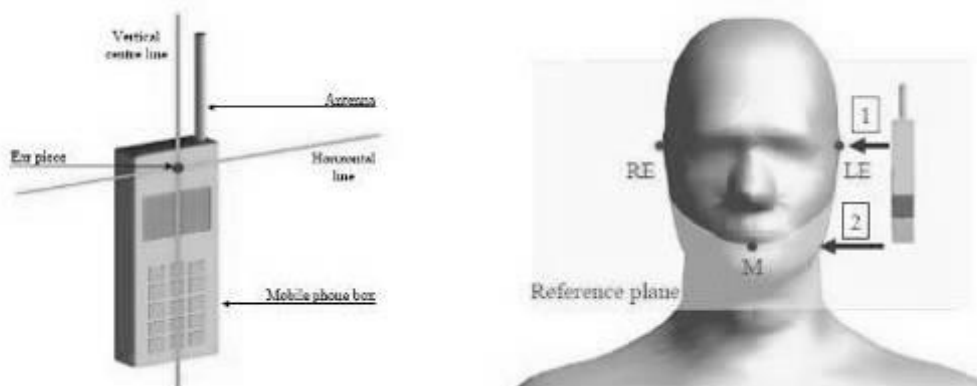
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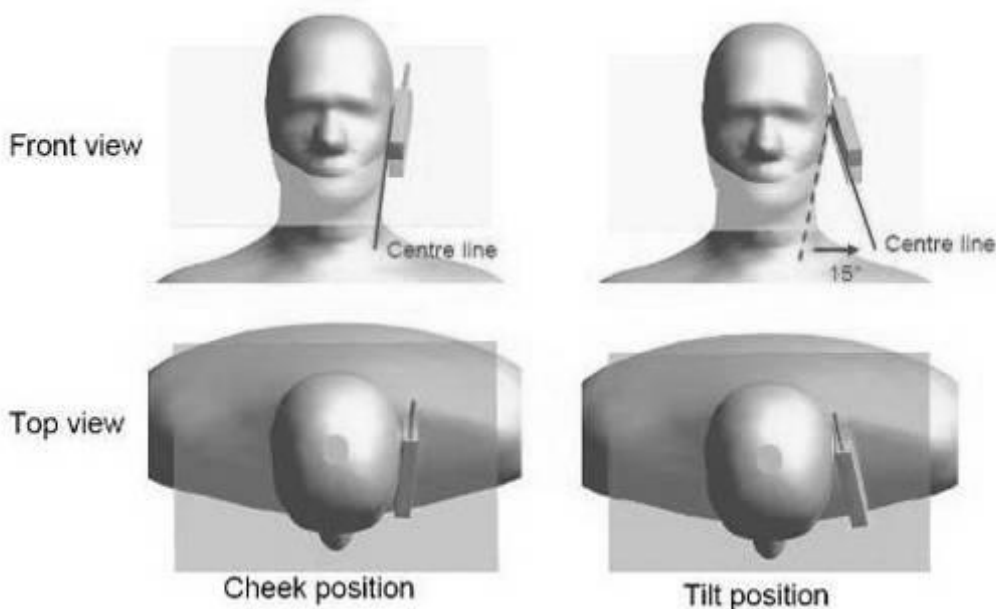
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5.1.4 Definition of the “tilted” position

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



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



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

5.2 Body Exposure Condition

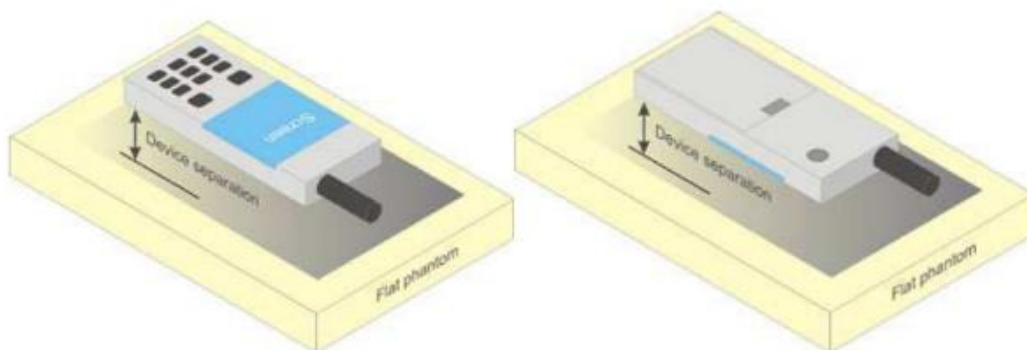
5.2.1 Body-worn accessory exposure conditions

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

5.2.2 Wireless Router exposure conditions

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

5.3 Extremity exposure conditions

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

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

LTE Band 7(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 1-g (W/kg)	Product Specific 10-g SAR Exclusion
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	21350/2560	1:1	0.249	0.06	18.59	21.50	1.954	0.487	Yes
Back side	20	QPSK 1_50	21350/2560	1:1	0.495	-0.01	18.59	21.50	1.954	0.967	Yes
Left side	20	QPSK 1_50	21350/2560	1:1	0.222	0.06	18.59	21.50	1.954	0.434	Yes
Top side	20	QPSK 1_50	21350/2560	1:1	0.814	0.10	18.59	21.50	1.954	1.591	No
Top side-Repeated	20	QPSK 1_50	21350/2560	1:1	0.752	0.02	18.59	21.50	1.954	1.470	No
Top side	20	QPSK 1_50	20850/2510	1:1	0.658	0.01	18.58	21.50	1.959	1.289	No
Top side	20	QPSK 1_50	21100/2535	1:1	0.755	0.02	18.43	21.50	2.028	1.531	No
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	21350/2560	1:1	0.238	-0.07	18.66	21.50	1.923	0.458	Yes
Back side	20	QPSK 50_0	21350/2560	1:1	0.507	-0.09	18.66	21.50	1.923	0.975	Yes
Left side	20	QPSK 50_0	21350/2560	1:1	0.208	-0.03	18.66	21.50	1.923	0.400	Yes
Top side	20	QPSK 50_0	21350/2560	1:1	0.783	0.04	18.66	21.50	1.923	1.506	No
Top side	20	QPSK 50_50	20850/2510	1:1	0.637	0.00	18.49	21.50	2.000	1.274	No
Top side	20	QPSK 50_50	21100/2535	1:1	0.741	-0.03	18.64	21.50	1.932	1.432	No
Hotspot Test data(Separate 10mm 100%RB)											
Top side	20	QPSK 100_0	21350/2560	1:1	0.787	0.06	18.65	21.50	1.928	1.517	No



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LTE Band 38(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 1-g (W/kg)	Product Specific 10-g SAR Exclusion
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	38000/2595	1:1.58	0.267	0.06	20.38	24.30	2.466	0.658	Yes
Back side	20	QPSK 1_50	38000/2595	1:1.58	0.456	0.05	20.38	24.30	2.466	1.125	Yes
Left side	20	QPSK 1_50	38000/2595	1:1.58	0.283	0.07	20.38	24.30	2.466	0.698	Yes
Top side	20	QPSK 1_50	38000/2595	1:1.58	0.831	0.01	20.38	24.30	2.466	2.049	No
Top side	20	QPSK 1_50	37850/2580	1:1.58	0.884	0.08	20.36	24.30	2.477	2.190	No
Top side-Repeated	20	QPSK 1_50	37850/2580	1:1.58	0.883	0.05	20.36	24.30	2.477	2.188	No
Top side	20	QPSK 1_50	38150/2610	1:1.58	0.707	0.08	20.35	24.30	2.483	1.756	No
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_50	38000/2595	1:1.58	0.246	0.09	20.25	24.30	2.541	0.625	Yes
Back side	20	QPSK 50_50	38000/2595	1:1.58	0.417	0.05	20.25	24.30	2.541	1.060	Yes
Left side	20	QPSK 50_50	38000/2595	1:1.58	0.271	0.02	20.25	24.30	2.541	0.689	Yes
Top side	20	QPSK 50_50	38000/2595	1:1.58	0.732	0.09	20.25	24.30	2.541	1.860	No
Top side	20	QPSK 50_50	37850/2580	1:1.58	0.797	0.07	20.11	24.30	2.624	2.092	No
Top side	20	QPSK 50_50	38150/2610	1:1.58	0.650	0.05	20.24	24.30	2.547	1.655	No
Hotspot Test data(Separate 10mm 100%RB)											
Top side	20	QPSK 100_0	38000/2595	1:1.58	0.754	0.04	20.28	24.30	2.523	1.903	No



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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 Sucrose: 98+% Pure Sucrose Water: De-ionized, 16 MΩ ⁺ resistivity HEC: Hydroxyethyl Cellulose Tween: Polyoxyethylene (20) sorbitan monolaurate					
HSL5GHz is composed of the following ingredients: (Manufactured by SPEAG) 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 (ϵ_r) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was $22 \pm 2^\circ\text{C}$.

Tissue Type	Measured Frequency (MHz)	Target Tissue ($\pm 5\%$)		Measured Tissue		Deviation (Within $\pm 5\%$)		Liquid Temp. ($^\circ\text{C}$)	Test Date
		ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$		
750 Head	750	41.90	0.89	42.786	0.879	2.11%	-1.24%	22.3	2023/6/16
750 Head	750	41.90	0.89	42.609	0.858	1.69%	-3.60%	22.1	2023/6/18
835 Head	835	41.50	0.90	42.113	0.905	1.48%	0.56%	22.2	2023/6/20
835 Head	835	41.50	0.90	42.422	0.898	2.22%	-0.22%	22.4	2023/6/26
1750 Head	1750	40.10	1.37	40.138	1.342	0.09%	-2.04%	22.3	2023/6/20
1750 Head	1750	40.10	1.37	39.801	1.331	-0.75%	-2.85%	22.2	2023/6/21
1750 Head	1750	40.10	1.37	40.044	1.414	-0.14%	3.21%	22.1	2023/7/11
1900 Head	1900	40.00	1.40	40.040	1.361	0.10%	-2.79%	22.4	2023/6/22
1900 Head	1900	40.00	1.40	40.490	1.420	1.23%	1.43%	22.5	2023/6/23
1900 Head	1900	40.00	1.40	39.946	1.432	-0.14%	2.29%	22.1	2023/7/11
2450 Head	2450	39.20	1.80	38.941	1.740	-0.66%	-3.33%	22.2	2023/6/27
2600 Head	2600	39.00	1.96	39.672	1.965	1.72%	0.26%	22.3	2023/7/10
2600 Head	2600	39.00	1.96	39.708	1.955	1.82%	-0.26%	22.3	2023/7/11
5250 Head	5250	35.90	4.66	36.389	4.719	1.36%	1.27%	22.1	2023/6/28
5600 Head	5600	35.50	5.07	35.521	5.102	0.06%	0.63%	22.1	2023/6/29
5750 Head	5750	35.40	5.22	35.340	5.295	-0.17%	1.44%	22.1	2023/6/30

Table 4: Measurement result of Tissue electric parameters



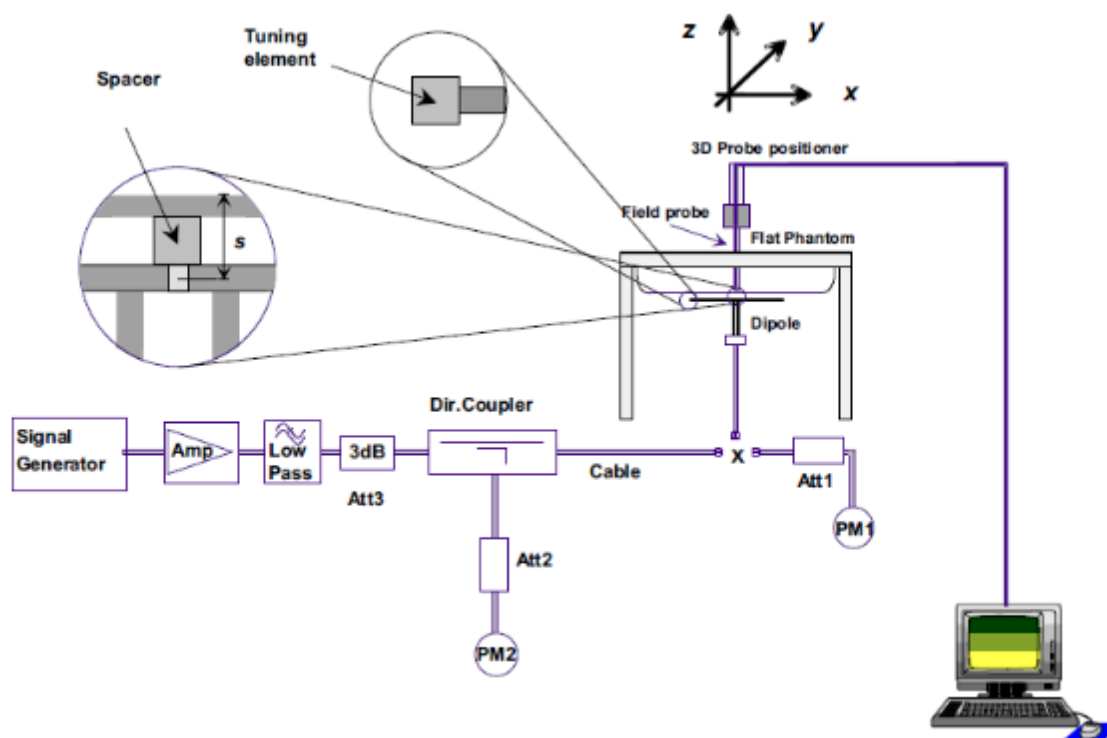
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6.2 SAR System Check

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 $\pm 10\%$ from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table (A power level of 250mW (below 3GHz) or 100mW (3-6GHz) was input to the dipole antenna). During the tests, the ambient temperature of the laboratory was in the range $22\pm 2^{\circ}\text{C}$, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above $15\pm 0.5\text{ cm}$ in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



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

6.2.1 Justification for Extended SAR Dipole Calibrations

1) Referring to KDB865664 D01 requirements for dipole calibration, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

- a) There is no physical damage on the dipole;
- b) System check with specific dipole is within 10% of calibrated value;
- c) Return-loss is within 10% of calibrated measurement;
- d) Impedance is within 5Ω from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.



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6.2.2 Summary System Check Result(s)

Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (°C)	Test Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1- g(W/kg)	10- g(W/kg)		
D750V3	Head	2.03	1.34	8.12	5.36	8.37	5.53	-2.99%	-3.07%	22.3	2023/6/16
D750V3	Head	2.01	1.33	8.04	5.32	8.37	5.53	-3.94%	-3.80%	22.1	2023/6/18
D835V2	Head	2.34	1.52	9.36	6.08	9.53	6.29	-1.78%	-3.34%	22.2	2023/6/20
D835V2	Head	2.55	1.68	10.20	6.72	9.53	6.29	7.03%	6.84%	22.4	2023/6/26
D1750V2	Head	8.97	4.78	35.88	19.12	36.60	19.30	-1.97%	-0.93%	22.3	2023/6/20
D1750V2	Head	8.63	4.61	34.52	18.44	36.60	19.30	-5.68%	-4.46%	22.2	2023/6/21
D1750V2	Head	9.60	5.11	38.40	20.44	36.60	19.30	4.92%	5.91%	22.1	2023/7/11
D1900V2	Head	9.02	4.67	36.08	18.68	39.50	20.60	-8.66%	-9.32%	22.4	2023/6/22
D1900V2	Head	9.48	4.91	37.92	19.64	39.50	20.60	-4.00%	-4.66%	22.5	2023/6/23
D1900V2	Head	10.3	5.35	41.20	21.40	39.50	20.60	4.30%	3.88%	22.1	2023/7/11
D2450V2	Head	12.60	5.81	50.40	23.24	52.20	24.30	-3.45%	-4.36%	22.2	2023/6/27
D2600V2	Head	14.80	6.51	59.20	26.04	57.70	25.80	2.60%	0.93%	22.3	2023/7/10
D2600V2	Head	14.70	6.48	58.80	25.92	57.70	25.80	1.91%	0.47%	22.3	2023/7/11
Validation Kit		Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (°C)	Test Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1- g(W/kg)	10- g(W/kg)		
D5GHzV2	Head(5.25GHz)	7.96	2.27	79.60	22.70	77.30	22.10	2.98%	2.71%	22.1	2023/6/28
	Head(5.6GHz)	8.12	2.29	81.20	22.90	81.30	23.10	-0.12%	-0.87%	22.1	2023/6/29
	Head(5.75GHz)	7.75	2.21	77.50	22.10	77.10	21.30	0.52%	3.76%	22.1	2023/6/30

Table 5: SAR System Check Result

6.2.3 Detailed System Check Results

Please see the Appendix A



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7 Test Configuration

7.1 3G SAR Test Reduction Procedure

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

7.2 Operation Configurations

7.2.1 GSM Test Configuration

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

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

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



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7.2.2 WCDMA Test Configuration

1) . Output Power Verification

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

2) . Head SAR

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

3) . Body SAR

SAR for body configurations is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When more than 2 DPDCHn are supported by the handset, it may be necessary to configure additional DPDCHn using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

4) . HSDPA / HSUPA / DC-HSDPA

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

a) HSDPA

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



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Sub-test	β_c	Bd	$\beta_d(\text{SF})$	β_c/β_d	β_{hs}	CM(dB)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5
Note1: ΔACK, ΔNACK and $\Delta\text{CQI} = 8$ Ahs = $\beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$ Note2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1.A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, ΔACK and $\Delta\text{NACK} = 8$ (Ahs = $30/15$) with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta\text{CQI} = 7$ (Ahs = $24/15$) with $\beta_{hs} = 24/15 * \beta_c$. Note3: CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.							

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

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

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



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HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	MaximumH S-DSCH Transport BlockBits/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 (SF) ^⓪	β_{ed} (code) ^⓪	CM ⁽²⁾ (dB) ^⓪	MP R ^⓪ (dB) ^⓪	AG ⁽⁴⁾ Index ^⓪	E-TFC I ^⓪
1 ^⓪	11/15 ⁽³⁾	15/15 ⁽³⁾	64 ^⓪	11/15 ⁽³⁾	22/15 ^⓪	209/225 ^⓪	1039/225 ^⓪	4 ^⓪	1 ^⓪	1.0 ^⓪	0.0 ^⓪	20 ^⓪	75 ^⓪
2 ^⓪	6/15 ^⓪	15/15 ^⓪	64 ^⓪	6/15 ^⓪	12/15 ^⓪	12/15 ^⓪	94/75 ^⓪	4 ^⓪	1 ^⓪	3.0 ^⓪	2.0 ^⓪	12 ^⓪	67 ^⓪
3 ^⓪	15/15 ^⓪	9/15 ^⓪	64 ^⓪	15/9 ^⓪	30/15 ^⓪	30/15 ^⓪	$\beta_{ed1}:47/15$ $\beta_{ed2}:47/15$	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⁾	15/15 ⁽⁴⁾	64 ^⓪	15/15 ⁽⁴⁾	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. Note 3 : For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$. Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$. Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g. Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.													

Table 8: Subtests for UMTS Release 6 HSUPA

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Spreading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF	11484	5.76
	4	4	2	4	20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF	22996	?
	4	4	10	4	20000	?
NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4. UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM. (TS25.306-7.3.0).						

Table 9: HSUPA UE category



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c) DC-HSDPA

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

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

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

Table E.5.0: Levels for HSDPA connection setup

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

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

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

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

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

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

Note:

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



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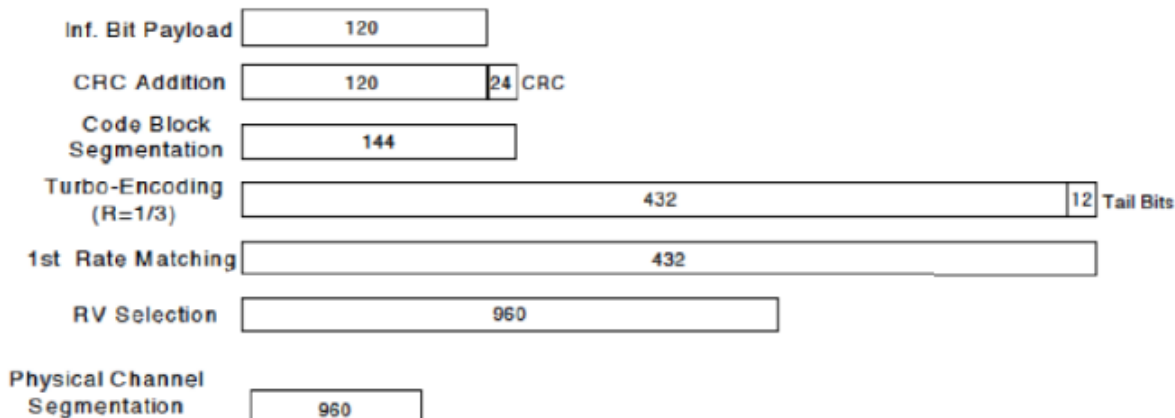


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

Sub-test ^o	β_c ^o	β_d ^o	$\beta_d \cdot (SF)$ ^o	β_c / β_d ^o	$\beta_{hs}(1)$ ^o	CM(dB)(2) ^o	MPR ^o (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

Note1: ΔACK , $\Delta NACK$ and $\Delta CQI=8$ $A_{hs} = \beta_{hs} / \beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
 Note2: CM=1 for $\beta_c / \beta_d = 12/15$, $\beta_{hs} / \beta_c = 24/15$. For all other combinations of DPDCH, DPCCCH 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.
 Note3: For subtest 2 the β_c / β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

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

Note:

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



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d) HSPA+

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

■ Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM⁴⁾

Sub-test ⁴⁾	$\beta_{\text{c}}^{4)}$ (Note 3) ⁴⁾	$\beta_{\text{d}}^{4)}$	$\beta_{\text{HS}}^{4)}$ (Note 1) ⁴⁾	$\beta_{\text{ec}}^{4)}$	$\beta_{\text{ed1}}^{4)}$ (2xSF2) ⁴⁾ (Note 4) ⁴⁾	$\beta_{\text{ed3}}^{4)}$ (2xSF4) ⁴⁾ (Note 4) ⁴⁾	CM ⁴⁾ (dB) ⁴⁾ (Note 2) ⁴⁾	MPR ⁴⁾ (dB) ⁴⁾ (Note 2) ⁴⁾	AG ⁴⁾ Index ⁴⁾ (Note 4) ⁴⁾	E-TFCI (Note 5) ⁴⁾	E-TFCI (boost) ⁴⁾
1 ⁴⁾	1 ⁴⁾	0 ⁴⁾	30/15 ⁴⁾	30/15 ⁴⁾	$\beta_{\text{ed1}}: 30/15^{4)}$ $\beta_{\text{ed2}}: 30/15^{4)}$	$\beta_{\text{ed3}}: 24/15^{4)}$ $\beta_{\text{ed4}}: 24/15^{4)}$	3.5 ⁴⁾	2.5 ⁴⁾	14 ⁴⁾	105 ⁴⁾	105 ⁴⁾
Note 1: $\Delta_{\text{ACK}}, \Delta_{\text{NACK}}$ and $\Delta_{\text{CQI}} = 30/15$ with $\beta_{\text{HS}} = 30/15 * \beta_{\text{c}}$.⁴⁾ Note 2: CM = 3.5 and the MPR is based on the relative CM difference, $\text{MPR} = \text{MAX}(\text{CM}-1, 0)$.⁴⁾ Note 3: DPDCH is not configured, therefore the β_{c} is set to 1 and $\beta_{\text{d}} = 0$ by default.⁴⁾ Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.⁴⁾ Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.⁴⁾											



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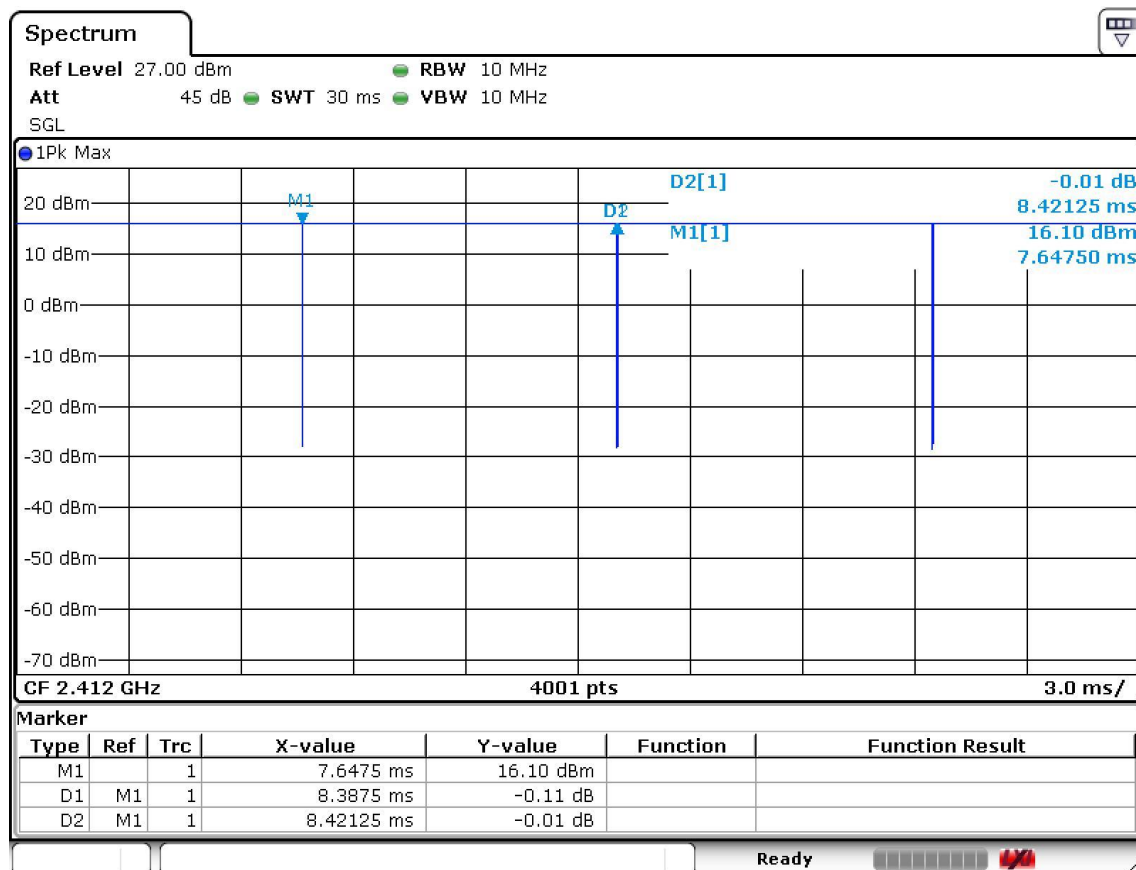
7.2.3 WiFi Test Configuration

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

7.2.3.1 Duty cycle

1) Wi-Fi 2.4GHz 802.11b:

Duty cycle=8.3875/8.42125=99.60%



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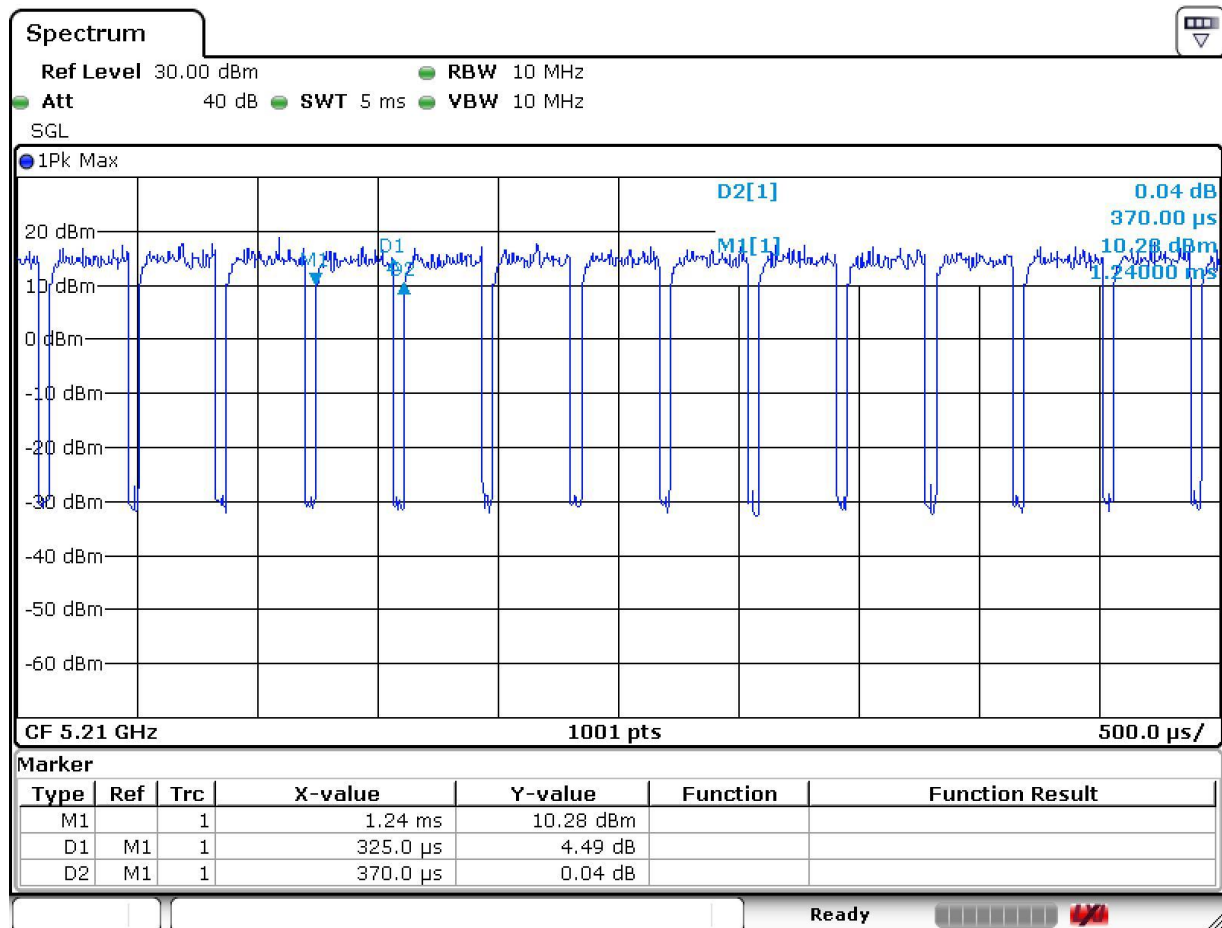
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2) Wi-Fi 5GHz 802.11ac 80M:
Duty cycle=325.0/370.0=87.84%

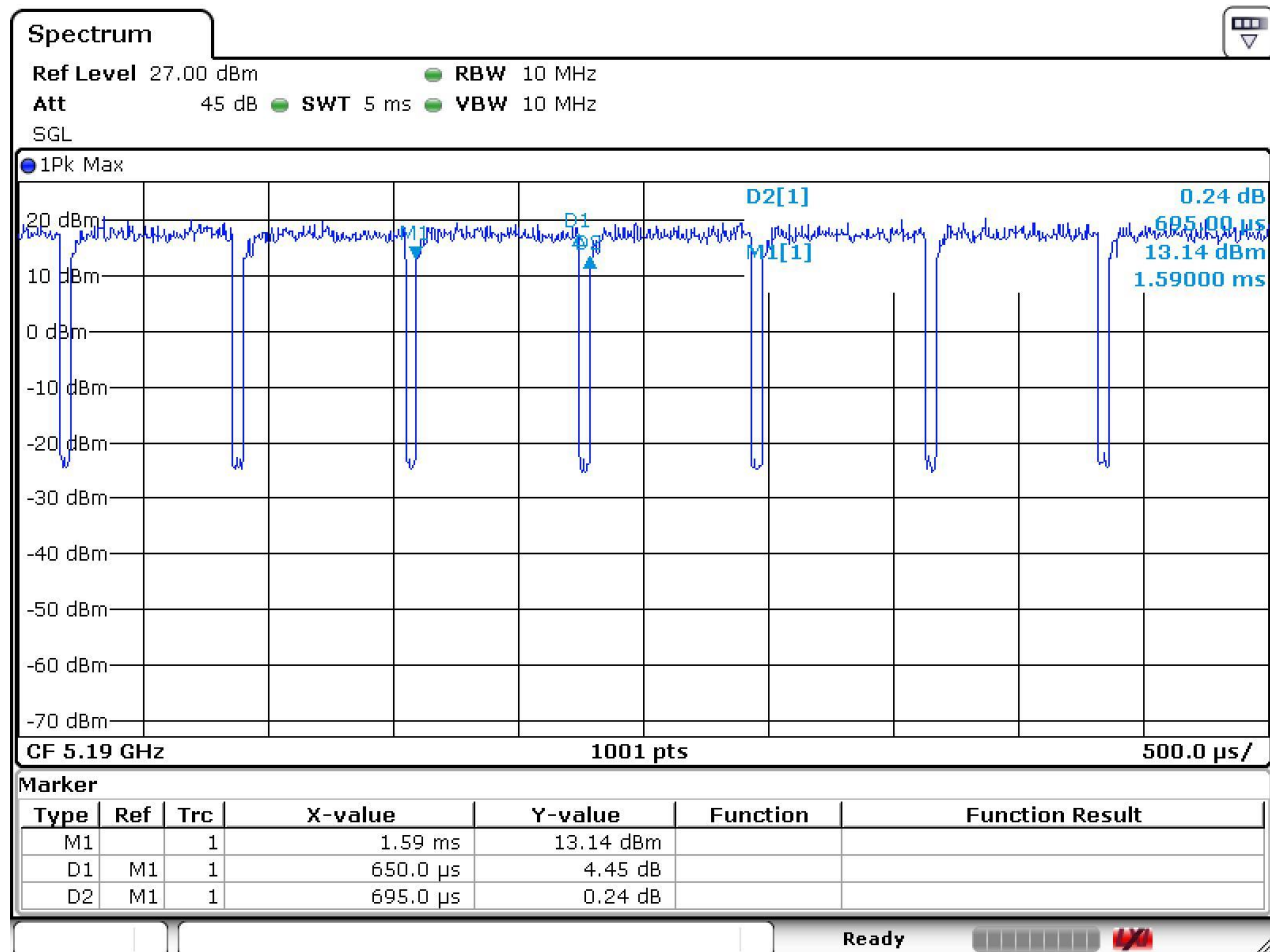


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Wi-Fi 5GHz 802.11n HT40:
Duty cycle=650.0/695.0=93.53%



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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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7.2.3.6 5 GHz WiFi SAR Procedures

- **U-NII-1 and U-NII-2A Bands**

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following:

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
- 2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.
- 3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

- **U-NII-2C and U-NII-3 Bands**

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.



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- **OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements**

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

- 1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
 - 2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
 - 3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
 - 4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.
- After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.
- a) The channel closest to mid-band frequency is selected for SAR measurement.
 - b) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

- **SAR Test Requirements for OFDM configurations**

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.



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7.2.4 LTE Test Configuration

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

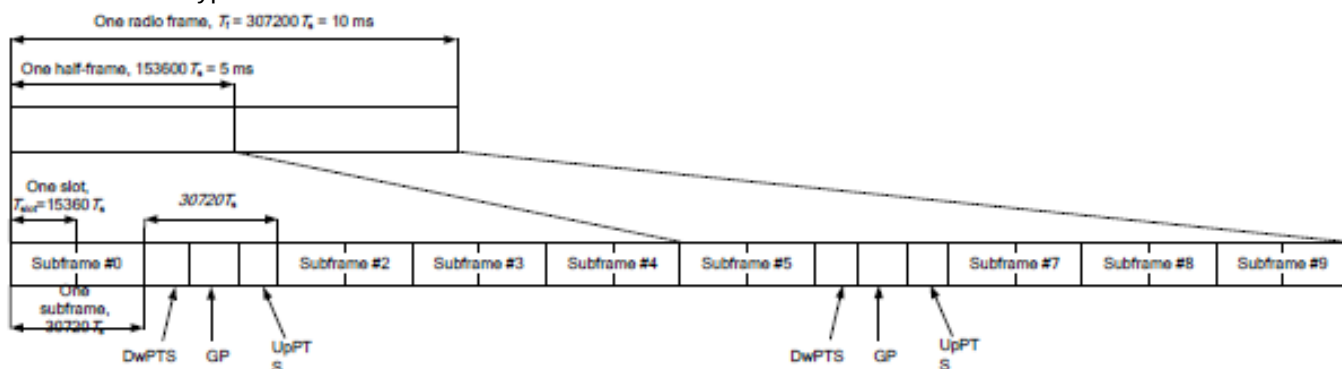
TDD LTE test consideration

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

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

LTE TDD Band support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Frame structure type 2:



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Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	6592.Ts	2192.Ts	2560.Ts	7680.Ts	2192.Ts	2560.Ts
1	19760.Ts			20480.Ts		
2	21952.Ts			23040.Ts		
3	24144.Ts			25600.Ts		
4	26336.Ts	4384.Ts	5120.Ts	7680.Ts	4384.Ts	5120.Ts
5	6592.Ts			20480.Ts		
6	19760.Ts			23040.Ts		
7	21952.Ts			25600.Ts		
8	24144.Ts			-	-	-
9	13168.Ts			-	-	-

Uplink-downlink configurations.

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

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

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



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A) Spectrum Plots for RB Configurations

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

B) MPR

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

Modulation	Channel bandwidth/Transmission bandwidth						MPR (dB)
	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	0
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2
64QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	2
64QAM	> 5	> 4	> 8	> 12	> 16	> 18	3
256QAM	≥ 1						5

C) A-MPR

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

D) Largest channel bandwidth standalone SAR test requirements

1) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

2) QPSK with 50% RB allocation

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

3) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

4) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

E) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.



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8 Test Result

8.1 Measurement of RF conducted Power

The detailed conducted power can refer to Appendix E.

Note:

- 1) . For SAR the time based average power is relevant. The difference in between depends on the duty cycle of the TDMA signal:

No. of timeslots	1	2	3	4
Duty Cycle	1:8.3	1:4.15	1:2.77	1:2.075
Time based avg. power compared to slotted avg. power	-9.19	-6.18	-4.42	-3.17

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



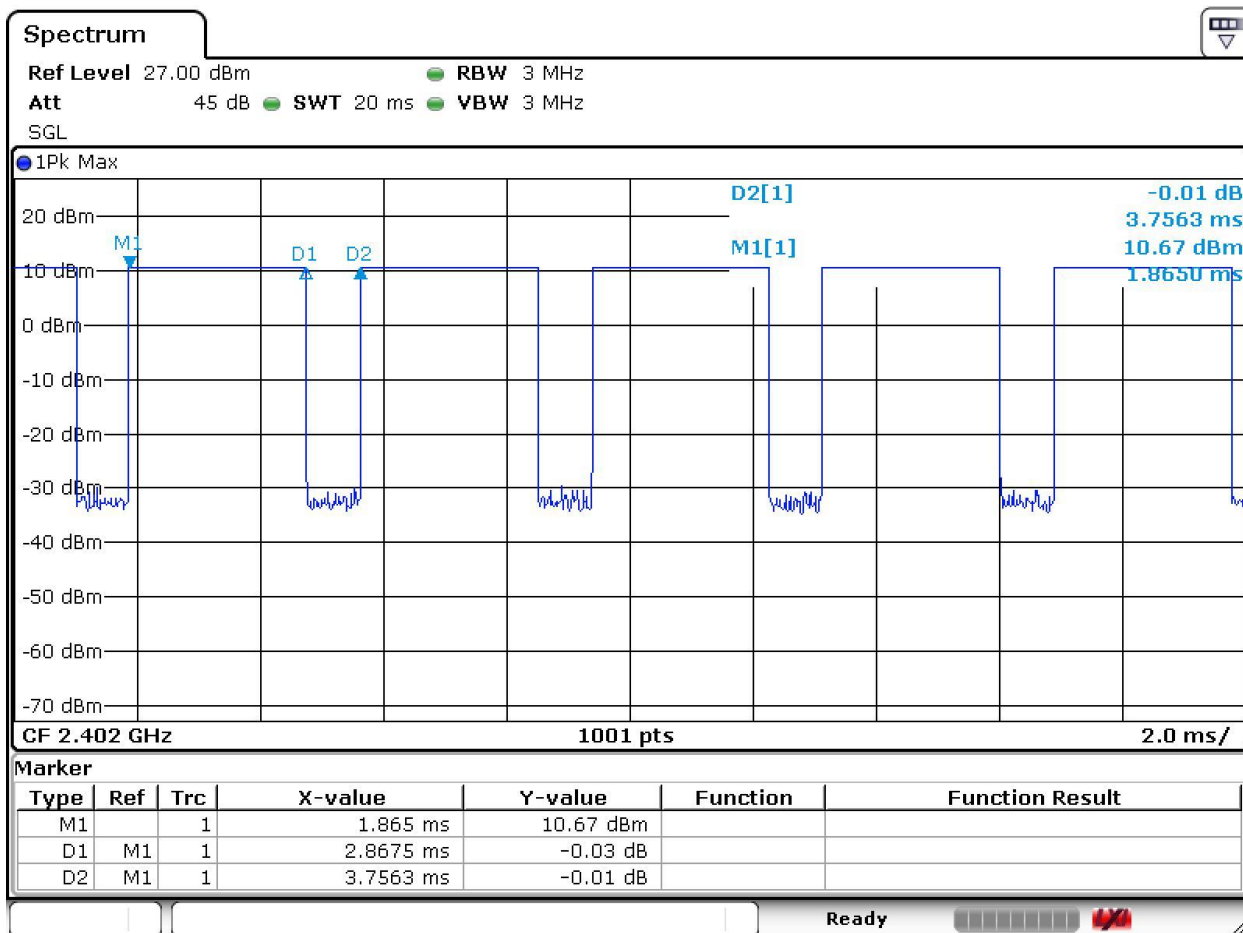
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2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.

9) . The conducted power of BT is measured with RMS detector. BT DH5 Duty Cycle=2.8675/3.7563=76.34%



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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 $\geq 200\text{ MHz}$.

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.

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.

The simultaneous transmission is reduced by XdB (the detailed power reduced can be referred to Conducted Power Appendix E), therefore, those SAR of simultaneous transmission mode are scaled based on standalone SAR results.



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8.2.1 SAR Result of GSM850

Ant 1 Test Record										
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data										
Left cheek	GPRS 4TS	190/836.6	1:2.075	0.471	-0.04	22.84	23.70	1.219	0.574	22.4
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.367	0.05	22.84	23.70	1.219	0.447	22.4
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.596	-0.08	22.84	23.70	1.219	0.727	22.4
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.546	0.01	22.84	23.70	1.219	0.666	22.4
Body worn Test data(Separate 15mm)										
Front side	GSM	190/836.6	1:8.3	0.226	0.12	32.50	33.70	1.318	0.298	22.4
Back side	GSM	190/836.6	1:8.3	0.273	0.11	32.50	33.70	1.318	0.360	22.4
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.310	0.08	26.62	27.70	1.282	0.398	22.4
Back side	GPRS 4TS	190/836.6	1:2.075	0.418	0.05	26.62	27.70	1.282	0.536	22.4
Left side	GPRS 4TS	190/836.6	1:2.075	0.247	0.06	26.62	27.70	1.282	0.317	22.4
Top side	GPRS 4TS	190/836.6	1:2.075	0.311	0.07	26.62	27.70	1.282	0.399	22.4
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	0.260	0.02	26.67	27.70	1.268	0.330	22.4
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.130	0.04	26.67	27.70	1.268	0.165	22.4
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.261	0.06	26.67	27.70	1.268	0.331	22.4
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.126	-0.04	26.67	27.70	1.268	0.160	22.4
Body worn Test data(Separate 15mm)										
Front side	GSM	190/836.6	1:8.3	0.242	-0.08	32.54	33.70	1.306	0.316	22.4
Back side	GSM	190/836.6	1:8.3	0.284	-0.04	32.54	33.70	1.306	0.371	22.4
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.254	-0.03	26.67	27.70	1.268	0.322	22.4
Back side	GPRS 4TS	190/836.6	1:2.075	0.450	-0.01	26.67	27.70	1.268	0.570	22.4
Left side	GPRS 4TS	190/836.6	1:2.075	0.330	-0.08	26.67	27.70	1.268	0.418	22.4
Right side	GPRS 4TS	190/836.6	1:2.075	0.233	-0.08	26.67	27.70	1.268	0.295	22.4
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.324	-0.05	26.67	27.70	1.268	0.411	22.4

Table 11: SAR of GSM850 for Head and Body.



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8.2.2 SAR Result of GSM1900

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	661/1880	1:2.075	0.413	-0.02	21.00	21.70	1.175	0.485	22.1
Left tilted	GPRS 4TS	661/1880	1:2.075	0.460	0.05	21.00	21.70	1.175	0.540	22.1
Right cheek	GPRS 4TS	661/1880	1:2.075	0.690	0.06	21.00	21.70	1.175	0.811	22.1
Right tilted	GPRS 4TS	661/1880	1:2.075	0.789	0.00	21.00	21.70	1.175	0.927	22.1
Right cheek	GPRS 4TS	512/1850.2	1:2.075	0.887	0.02	20.95	21.70	1.189	1.054	22.1
Right cheek	GPRS 4TS	810/1909.8	1:2.075	0.653	0.11	21.05	21.70	1.161	0.758	22.1
Right tilted	GPRS 4TS	512/1850.2	1:2.075	0.972	0.04	20.95	21.70	1.189	1.155	22.1
Right tilted-Repeated	GPRS 4TS	512/1850.2	1:2.075	0.969	0.05	20.95	21.70	1.189	1.152	22.1
Right tilted	GPRS 4TS	810/1909.8	1:2.075	0.683	-0.02	21.05	21.70	1.161	0.793	22.1
Body worn Test data(Separate 15mm)										
Front side	GSM	661/1880	1:8.3	0.114	0.05	29.42	30.20	1.197	0.136	22.4
Back side	GSM	661/1880	1:8.3	0.154	-0.05	29.42	30.20	1.197	0.184	22.4
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.248	0.15	23.42	24.70	1.343	0.333	22.4
Back side	GPRS 4TS	661/1880	1:2.075	0.316	-0.07	23.42	24.70	1.343	0.424	22.4
Left side	GPRS 4TS	661/1880	1:2.075	0.070	0.11	23.42	24.70	1.343	0.093	22.4
Top side	GPRS 4TS	661/1880	1:2.075	0.372	0.08	23.42	24.70	1.343	0.500	22.4
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	661/1880	1:2.075	0.042	-0.01	23.57	25.00	1.390	0.058	22.4
Left tilted	GPRS 4TS	661/1880	1:2.075	0.033	0.01	23.57	25.00	1.390	0.046	22.4
Right cheek	GPRS 4TS	661/1880	1:2.075	0.037	0.06	23.57	25.00	1.390	0.051	22.4
Right tilted	GPRS 4TS	661/1880	1:2.075	0.034	0.11	23.57	25.00	1.390	0.047	22.4
Body worn Test data(Separate 15mm)										
Front side	GSM	661/1880	1:8.3	0.080	-0.02	29.37	30.50	1.297	0.104	22.4
Back side	GSM	661/1880	1:8.3	0.141	0.12	29.37	30.50	1.297	0.183	22.4
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.163	0.09	23.57	25.00	1.390	0.227	22.4
Back side	GPRS 4TS	661/1880	1:2.075	0.329	-0.01	23.57	25.00	1.390	0.457	22.4
Left side	GPRS 4TS	661/1880	1:2.075	0.058	-0.12	23.57	25.00	1.390	0.081	22.4
Right side	GPRS 4TS	661/1880	1:2.075	0.095	-0.07	23.57	25.00	1.390	0.132	22.4
Bottom side	GPRS 4TS	661/1880	1:2.075	0.488	-0.15	23.57	25.00	1.390	0.678	22.4

Table 12: SAR of GSM1900 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)
Right tilted	512/1850.2	0.972	0.969	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 ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						



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8.2.3 SAR Result of WCDMA Band II

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	9400/1880	1:1	0.461	-0.05	17.47	18.00	1.130	0.521	22.5
Left tilted	RMC	9400/1880	1:1	0.583	0.01	17.47	18.00	1.130	0.659	22.5
Right cheek	RMC	9400/1880	1:1	0.739	-0.03	17.47	18.00	1.130	0.835	22.5
Right tilted	RMC	9400/1880	1:1	0.853	0.16	17.47	18.00	1.130	0.964	22.5
Right cheek	RMC	9262/1852.4	1:1	0.661	0.07	17.41	18.00	1.146	0.757	22.5
Right cheek	RMC	9538/1907.6	1:1	0.626	0.02	17.56	18.00	1.107	0.693	22.5
Right tilted	RMC	9262/1852.4	1:1	0.856	-0.03	17.41	18.00	1.146	0.980	22.5
Right tilted-repeated	RMC	9262/1852.4	1:1	0.822	-0.01	17.41	18.00	1.146	0.942	22.5
Right tilted	RMC	9538/1907.6	1:1	0.818	0.00	17.56	18.00	1.107	0.905	22.5
Body worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.228	0.13	21.52	22.00	1.117	0.255	22.5
Back side	RMC	9400/1880	1:1	0.303	0.07	21.52	22.00	1.117	0.338	22.5
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.306	0.09	19.98	20.50	1.127	0.345	22.5
Back side	RMC	9400/1880	1:1	0.418	0.05	19.98	20.50	1.127	0.471	22.5
Left side	RMC	9400/1880	1:1	0.082	0.03	19.98	20.50	1.127	0.092	22.5
Top side	RMC	9400/1880	1:1	0.447	0.18	19.98	20.50	1.127	0.504	22.5
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	9400/1880	1:1	0.062	0.07	23.54	24.30	1.191	0.073	22.5
Left tilted	RMC	9400/1880	1:1	0.053	0.19	23.54	24.30	1.191	0.063	22.5
Right cheek	RMC	9400/1880	1:1	0.045	0.03	23.54	24.30	1.191	0.053	22.5
Right tilted	RMC	9400/1880	1:1	0.048	0.05	23.54	24.30	1.191	0.057	22.5
Body worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.089	0.02	22.08	22.80	1.180	0.105	22.5
Back side	RMC	9400/1880	1:1	0.181	0.00	22.08	22.80	1.180	0.214	22.5
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.109	0.17	20.56	21.30	1.186	0.129	22.5
Back side	RMC	9400/1880	1:1	0.242	0.06	20.56	21.30	1.186	0.287	22.5
Left side	RMC	9400/1880	1:1	0.039	0.05	20.56	21.30	1.186	0.046	22.5
Right side	RMC	9400/1880	1:1	0.066	-0.09	20.56	21.30	1.186	0.078	22.5
Bottom side	RMC	9400/1880	1:1	0.353	0.03	20.56	21.30	1.186	0.419	22.5

Table 13: SAR of WCDMA Band II 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)
Right tilted	9262/1852.4	0.856	0.822	1.041	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was preformed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						



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8.2.4 SAR Result of WCDMA Band IV

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	1412/1732.4	1:1	0.426	0.02	17.34	17.50	1.038	0.442	22.2
Left tilted	RMC	1412/1732.4	1:1	0.547	0.01	17.34	17.50	1.038	0.568	22.2
Right cheek	RMC	1412/1732.4	1:1	0.761	-0.01	17.34	17.50	1.038	0.790	22.2
Right tilted	RMC	1412/1732.4	1:1	0.814	-0.04	17.34	17.50	1.038	0.845	22.2
Right tilted	RMC	1312/1712.4	1:1	0.768	-0.06	17.41	17.50	1.020	0.783	22.2
Right tilted	RMC	1513/1752.6	1:1	0.840	-0.04	17.35	17.50	1.035	0.870	22.2
Right tilted-Repeated	RMC	1513/1752.6	1:1	0.838	-0.01	17.35	17.50	1.035	0.867	22.2
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.253	0.05	21.83	22.00	1.040	0.263	22.2
Back side	RMC	1412/1732.4	1:1	0.308	0.01	21.83	22.00	1.040	0.320	22.2
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.349	0.06	20.32	20.50	1.042	0.364	22.2
Back side	RMC	1412/1732.4	1:1	0.441	0.01	20.32	20.50	1.042	0.460	22.2
Left side	RMC	1412/1732.4	1:1	0.098	0.18	20.32	20.50	1.042	0.102	22.2
Top side	RMC	1412/1732.4	1:1	0.406	0.11	20.32	20.50	1.042	0.423	22.2
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	1412/1732.4	1:1	0.133	-0.11	23.51	24.30	1.199	0.160	22.2
Left tilted	RMC	1412/1732.4	1:1	0.058	0.19	23.51	24.30	1.199	0.070	22.2
Right cheek	RMC	1412/1732.4	1:1	0.083	0.03	23.51	24.30	1.199	0.100	22.2
Right tilted	RMC	1412/1732.4	1:1	0.074	0.15	23.51	24.30	1.199	0.089	22.2
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.140	0.07	20.41	21.30	1.227	0.172	22.2
Back side	RMC	1412/1732.4	1:1	0.205	-0.12	20.41	21.30	1.227	0.252	22.2
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.170	0.04	19.02	19.80	1.197	0.203	22.2
Back side	RMC	1412/1732.4	1:1	0.266	0.08	19.02	19.80	1.197	0.318	22.2
Left side	RMC	1412/1732.4	1:1	0.055	0.16	19.02	19.80	1.197	0.065	22.2
Right side	RMC	1412/1732.4	1:1	0.091	0.09	19.02	19.80	1.197	0.109	22.2
Bottom side	RMC	1412/1732.4	1:1	0.365	0.08	19.02	19.80	1.197	0.437	22.2

Table 14: SAR of WCDMA Band IV 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)
Right tilted	1513/1752.6	0.840	0.838	1.002	N/A	N/A

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



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8.2.5 SAR Result of WCDMA Band V

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	0.414	-0.04	20.63	21.50	1.222	0.506	22.4
Left tilted	RMC	4182/836.4	1:1	0.404	-0.06	20.63	21.50	1.222	0.494	22.4
Right cheek	RMC	4182/836.4	1:1	0.606	-0.06	20.63	21.50	1.222	0.740	22.4
Right tilted	RMC	4182/836.4	1:1	0.563	-0.14	20.63	21.50	1.222	0.688	22.4
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.179	-0.06	23.63	24.50	1.222	0.219	22.4
Back side	RMC	4182/836.4	1:1	0.230	-0.06	23.63	24.50	1.222	0.281	22.4
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.256	0.10	22.65	23.50	1.216	0.311	22.4
Back side	RMC	4182/836.4	1:1	0.309	-0.01	22.65	23.50	1.216	0.376	22.4
Left side	RMC	4182/836.4	1:1	0.174	0.00	22.65	23.50	1.216	0.212	22.4
Top side	RMC	4182/836.4	1:1	0.249	-0.16	22.65	23.50	1.216	0.303	22.4
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	0.191	-0.13	23.77	24.80	1.268	0.242	22.4
Left tilted	RMC	4182/836.4	1:1	0.093	-0.05	23.77	24.80	1.268	0.118	22.4
Right cheek	RMC	4182/836.4	1:1	0.190	0.15	23.77	24.80	1.268	0.241	22.4
Right tilted	RMC	4182/836.4	1:1	0.091	-0.04	23.77	24.80	1.268	0.115	22.4
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.165	-0.15	23.77	24.80	1.268	0.209	22.4
Back side	RMC	4182/836.4	1:1	0.194	-0.05	23.77	24.80	1.268	0.246	22.4
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.142	0.00	23.27	24.30	1.268	0.180	22.4
Back side	RMC	4182/836.4	1:1	0.274	-0.01	23.27	24.30	1.268	0.347	22.4
Left side	RMC	4182/836.4	1:1	0.214	-0.05	23.27	24.30	1.268	0.271	22.4
Right side	RMC	4182/836.4	1:1	0.145	-0.05	23.27	24.30	1.268	0.184	22.4
Bottom side	RMC	4182/836.4	1:1	0.211	-0.04	23.27	24.30	1.268	0.267	22.4

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 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	20	QPSK 1_50	18700/1860	1:1	0.492	-0.05	17.93	19.00	1.279	0.629	22.5
Left tilted	20	QPSK 1_50	18700/1860	1:1	0.512	0.09	17.93	19.00	1.279	0.655	22.5
Right cheek	20	QPSK 1_50	18700/1860	1:1	0.829	0.01	17.93	19.00	1.279	1.061	22.5
Right tilted	20	QPSK 1_50	18700/1860	1:1	0.849	-0.05	17.93	19.00	1.279	1.086	22.5
Right cheek	20	QPSK 1_50	18900/1880	1:1	0.799	0.00	17.73	19.00	1.340	1.070	22.5
Right cheek	20	QPSK 1_50	19100/1900	1:1	0.784	-0.04	17.85	19.00	1.303	1.022	22.5
Right tilted	20	QPSK 1_50	18900/1880	1:1	0.846	0.14	17.73	19.00	1.340	1.133	22.5
Right tilted	20	QPSK 1_50	19100/1900	1:1	0.831	-0.02	17.85	19.00	1.303	1.083	22.5
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	19100/1900	1:1	0.432	-0.07	18.08	19.00	1.236	0.534	22.5
Left tilted	20	QPSK 50_0	19100/1900	1:1	0.485	0.00	18.08	19.00	1.236	0.599	22.5
Right cheek	20	QPSK 50_0	19100/1900	1:1	0.753	-0.06	18.08	19.00	1.236	0.931	22.5
Right tilted	20	QPSK 50_0	19100/1900	1:1	0.805	0.06	18.08	19.00	1.236	0.995	22.5
Right cheek	20	QPSK 50_50	18700/1860	1:1	0.819	0.06	17.82	19.00	1.312	1.075	22.5
Right cheek	20	QPSK 50_0	18900/1880	1:1	0.785	-0.03	17.86	19.00	1.300	1.021	22.5
Right tilted	20	QPSK 50_50	18700/1860	1:1	0.851	0.02	17.82	19.00	1.312	1.117	22.5
Right tilted -Repeated	20	QPSK 50_50	18700/1860	1:1	0.819	-0.04	17.82	19.00	1.312	1.075	22.5
Right tilted	20	QPSK 50_0	18900/1880	1:1	0.828	-0.04	17.86	19.00	1.300	1.077	22.5
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	19100/1900	1:1	0.746	0.02	17.81	19.00	1.315	0.981	22.5
Right tilted	20	QPSK 100_0	19100/1900	1:1	0.796	0.09	17.81	19.00	1.315	1.047	22.5
Head Test Data(1RB) with Simultaneous transmission											
Left cheek	20	QPSK 1_50	18700/1860	1:1	0.492	-0.05	17.93	17.00	0.807	0.397	22.5
Left tilted	20	QPSK 1_50	18700/1860	1:1	0.512	0.09	17.93	17.00	0.807	0.413	22.5
Right cheek	20	QPSK 1_50	18700/1860	1:1	0.829	0.01	17.93	17.00	0.807	0.669	22.5
Right tilted	20	QPSK 1_50	18700/1860	1:1	0.849	-0.05	17.93	17.00	0.807	0.685	22.5
Right cheek	20	QPSK 1_50	18900/1880	1:1	0.799	0.00	17.73	17.00	0.845	0.675	22.5
Right cheek	20	QPSK 1_50	19100/1900	1:1	0.784	-0.04	17.85	17.00	0.822	0.645	22.5
Right tilted	20	QPSK 1_50	18900/1880	1:1	0.846	0.14	17.73	17.00	0.845	0.715	22.5
Right tilted	20	QPSK 1_50	19100/1900	1:1	0.831	-0.02	17.85	17.00	0.822	0.683	22.5
Head Test Data(50%RB) with Simultaneous transmission											
Left cheek	20	QPSK 50_0	19100/1900	1:1	0.432	-0.07	18.08	17.00	0.780	0.337	22.5
Left tilted	20	QPSK 50_0	19100/1900	1:1	0.485	0.00	18.08	17.00	0.780	0.378	22.5
Right cheek	20	QPSK 50_0	19100/1900	1:1	0.753	-0.06	18.08	17.00	0.780	0.587	22.5
Right tilted	20	QPSK 50_0	19100/1900	1:1	0.805	0.06	18.08	17.00	0.780	0.628	22.5
Right cheek	20	QPSK 50_50	18700/1860	1:1	0.819	0.06	17.82	17.00	0.828	0.678	22.5
Right cheek	20	QPSK 50_0	18900/1880	1:1	0.785	-0.03	17.86	17.00	0.820	0.644	22.5
Right tilted	20	QPSK 50_50	18700/1860	1:1	0.851	0.02	17.82	17.00	0.828	0.705	22.5



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Right tilted – Repeated	20	QPSK 50_50	18700/1860	1:1	0.819	-0.04	17.82	17.00	0.828	0.678	22.5
Right tilted	20	QPSK 50_0	18900/1880	1:1	0.828	-0.04	17.86	17.00	0.820	0.679	22.5
Head Test Data(100%RB) with Simultaneous transmission											
Right cheek	20	QPSK 100_0	19100/1900	1:1	0.746	0.02	17.81	17.00	0.830	0.619	22.5
Right tilted	20	QPSK 100_0	19100/1900	1:1	0.796	0.09	17.81	17.00	0.830	0.661	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	18900/1880	1:1	0.227	0.04	21.83	22.50	1.167	0.265	22.5
Back side	20	QPSK 1_50	18900/1880	1:1	0.310	0.04	21.83	22.50	1.167	0.362	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	19100/1900	1:1	0.214	0.01	22.05	22.50	1.109	0.237	22.5
Back side	20	QPSK 50_0	19100/1900	1:1	0.299	-0.04	22.05	22.50	1.109	0.332	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	18900/1880	1:1	0.292	0.04	20.40	21.00	1.148	0.335	22.5
Back side	20	QPSK 1_50	18900/1880	1:1	0.404	-0.04	20.40	21.00	1.148	0.464	22.5
Left side	20	QPSK 1_50	18900/1880	1:1	0.089	-0.09	20.40	21.00	1.148	0.102	22.5
Top side	20	QPSK 1_50	18900/1880	1:1	0.450	-0.04	20.40	21.00	1.148	0.517	22.5
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	19100/1900	1:1	0.277	0.04	20.63	21.00	1.089	0.302	22.5
Back side	20	QPSK 50_0	19100/1900	1:1	0.382	0.00	20.63	21.00	1.089	0.416	22.5
Left side	20	QPSK 50_0	19100/1900	1:1	0.084	0.03	20.63	21.00	1.089	0.091	22.5
Top side	20	QPSK 50_0	19100/1900	1:1	0.412	-0.06	20.63	21.00	1.089	0.449	22.5
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	20	QPSK 1_50	18900/1880	1:1	0.064	-0.08	23.38	23.80	1.102	0.070	22.5
Left tilted	20	QPSK 1_50	18900/1880	1:1	0.048	0.07	23.38	23.80	1.102	0.053	22.5
Right cheek	20	QPSK 1_50	18900/1880	1:1	0.041	0.01	23.38	23.80	1.102	0.045	22.5
Right tilted	20	QPSK 1_50	18900/1880	1:1	0.040	0.09	23.38	23.80	1.102	0.044	22.5
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	19100/1900	1:1	0.041	0.07	22.40	22.80	1.096	0.045	22.5
Left tilted	20	QPSK 50_0	19100/1900	1:1	0.039	0.02	22.40	22.80	1.096	0.043	22.5
Right cheek	20	QPSK 50_0	19100/1900	1:1	0.034	0.01	22.40	22.80	1.096	0.037	22.5
Right tilted	20	QPSK 50_0	19100/1900	1:1	0.035	0.09	22.40	22.80	1.096	0.038	22.5
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	19100/1900	1:1	0.073	0.15	21.41	21.80	1.094	0.080	22.5
Back side	20	QPSK 1_50	19100/1900	1:1	0.157	-0.01	21.41	21.80	1.094	0.172	22.5
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	19100/1900	1:1	0.094	-0.19	21.57	21.80	1.054	0.099	22.5
Back side	20	QPSK 50_0	19100/1900	1:1	0.148	0.14	21.57	21.80	1.054	0.156	22.5
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	18900/1880	1:1	0.086	-0.01	19.85	20.30	1.109	0.096	22.5
Back side	20	QPSK 1_0	18900/1880	1:1	0.183	0.02	19.85	20.30	1.109	0.203	22.5
Left side	20	QPSK 1_0	18900/1880	1:1	0.033	0.04	19.85	20.30	1.109	0.036	22.5



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Right side	20	QPSK 1_0	18900/1880	1:1	0.056	0.05	19.85	20.30	1.109	0.062	22.5
Bottom side	20	QPSK 1_0	18900/1880	1:1	0.245	0.10	19.85	20.30	1.109	0.272	22.5
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_25	18700/1860	1:1	0.094	0.03	19.83	20.30	1.114	0.105	22.5
Back side	20	QPSK 50_25	18700/1860	1:1	0.196	-0.13	19.83	20.30	1.114	0.218	22.5
Left side	20	QPSK 50_25	18700/1860	1:1	0.052	0.08	19.83	20.30	1.114	0.058	22.5
Right side	20	QPSK 50_25	18700/1860	1:1	0.061	0.02	19.83	20.30	1.114	0.068	22.5
Bottom side	20	QPSK 50_25	18700/1860	1:1	0.265	0.07	19.83	20.30	1.114	0.295	22.5

Table 16: SAR of LTE Band 2 for Head and Body.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right tilted	18700/1860	0.851	0.819	1.039	N/A	N/A

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

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

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

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



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8.2.7 SAR Result of LTE Band 4

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	20	QPSK 1_50	20300/1745	1:1	0.413	-0.01	20.32	21.00	1.169	0.483	22.2
Left tilted	20	QPSK 1_50	20300/1745	1:1	0.467	0.00	20.32	21.00	1.169	0.546	22.2
Right cheek	20	QPSK 1_50	20300/1745	1:1	0.699	-0.02	20.32	21.00	1.169	0.817	22.2
Right tilted	20	QPSK 1_50	20300/1745	1:1	0.758	0.01	20.32	21.00	1.169	0.886	22.2
Right cheek	20	QPSK 1_50	20050/1720	1:1	0.734	0.14	20.26	21.00	1.186	0.870	22.2
Right cheek	20	QPSK 1_50	20175/1732.5	1:1	0.731	0.13	20.26	21.00	1.186	0.867	22.2
Right tilted	20	QPSK 1_50	20050/1720	1:1	0.822	0.05	20.26	21.00	1.186	0.975	22.2
Right tilted-Repeated	20	QPSK 1_50	20050/1720	1:1	0.776	-0.07	20.26	21.00	1.186	0.920	22.2
Right tilted	20	QPSK 1_50	20175/1732.5	1:1	0.760	0.06	20.26	21.00	1.186	0.901	22.2
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_25	20300/1745	1:1	0.403	0.00	20.28	21.00	1.180	0.476	22.2
Left tilted	20	QPSK 50_25	20300/1745	1:1	0.455	0.03	20.28	21.00	1.180	0.537	22.2
Right cheek	20	QPSK 50_25	20300/1745	1:1	0.727	-0.16	20.28	21.00	1.180	0.858	22.2
Right tilted	20	QPSK 50_25	20300/1745	1:1	0.746	0.01	20.28	21.00	1.180	0.881	22.2
Right cheek	20	QPSK 50_0	20050/1720	1:1	0.695	0.10	20.22	21.00	1.197	0.832	22.2
Right cheek	20	QPSK 50_25	20175/1732.5	1:1	0.733	0.09	20.20	21.00	1.202	0.881	22.2
Right tilted	20	QPSK 50_0	20050/1720	1:1	0.700	0.01	20.22	21.00	1.197	0.838	22.2
Right tilted	20	QPSK 50_25	20175/1732.5	1:1	0.762	0.02	20.20	21.00	1.202	0.916	22.2
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	20175/1732.5	1:1	0.753	0.17	20.28	21.00	1.180	0.889	22.2
Right tilted	20	QPSK 100_0	20175/1732.5	1:1	0.774	0.16	20.28	21.00	1.180	0.914	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	20300/1745	1:1	0.101	0.04	21.92	22.50	1.143	0.115	22.2
Back side	20	QPSK 1_50	20300/1745	1:1	0.130	0.01	21.92	22.50	1.143	0.149	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20300/1745	1:1	0.099	0.07	21.86	22.00	1.033	0.102	22.2
Back side	20	QPSK 50_0	20300/1745	1:1	0.130	0.08	21.86	22.00	1.033	0.134	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	20300/1745	1:1	0.140	0.06	20.32	21.00	1.169	0.164	22.2
Back side	20	QPSK 1_50	20300/1745	1:1	0.190	0.14	20.32	21.00	1.169	0.222	22.2
Left side	20	QPSK 1_50	20300/1745	1:1	0.041	0.04	20.32	21.00	1.169	0.048	22.2
Top side	20	QPSK 1_50	20300/1745	1:1	0.179	-0.06	20.32	21.00	1.169	0.209	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_25	20300/1745	1:1	0.138	0.02	20.28	21.00	1.180	0.163	22.2
Back side	20	QPSK 50_25	20300/1745	1:1	0.188	0.06	20.28	21.00	1.180	0.222	22.2
Left side	20	QPSK 50_25	20300/1745	1:1	0.040	0.03	20.28	21.00	1.180	0.047	22.2
Top side	20	QPSK 50_25	20300/1745	1:1	0.174	-0.09	20.28	21.00	1.180	0.205	22.2



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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_50	20050/1720	1:1	0.108	0.09	22.94	23.30	1.086	0.117	22.2
Left tilted	20	QPSK 1_50	20050/1720	1:1	0.049	0.04	22.94	23.30	1.086	0.053	22.2
Right cheek	20	QPSK 1_50	20050/1720	1:1	0.058	0.01	22.94	23.30	1.086	0.063	22.2
Right tilted	20	QPSK 1_50	20050/1720	1:1	0.065	0.14	22.94	23.30	1.086	0.071	22.2
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_25	20050/1720	1:1	0.072	0.08	22.08	22.30	1.052	0.076	22.2
Left tilted	20	QPSK 50_25	20050/1720	1:1	0.034	0.08	22.08	22.30	1.052	0.036	22.2
Right cheek	20	QPSK 50_25	20050/1720	1:1	0.045	0.03	22.08	22.30	1.052	0.047	22.2
Right tilted	20	QPSK 50_25	20050/1720	1:1	0.051	0.05	22.08	22.30	1.052	0.054	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	20175/1732.5	1:1	0.153	-0.08	21.45	21.80	1.084	0.166	22.2
Back side	20	QPSK 1_50	20175/1732.5	1:1	0.234	0.00	21.45	21.80	1.084	0.254	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.155	0.04	21.50	21.80	1.072	0.166	22.2
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.271	-0.01	21.50	21.80	1.072	0.290	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_99	20175/1732.5	1:1	0.176	0.11	19.82	20.30	1.117	0.197	22.2
Back side	20	QPSK 1_99	20175/1732.5	1:1	0.288	-0.15	19.82	20.30	1.117	0.322	22.2
Left side	20	QPSK 1_99	20175/1732.5	1:1	0.068	-0.08	19.82	20.30	1.117	0.076	22.2
Right side	20	QPSK 1_99	20175/1732.5	1:1	0.100	0.18	19.82	20.30	1.117	0.111	22.2
Bottom side	20	QPSK 1_99	20175/1732.5	1:1	0.402	0.12	19.82	20.30	1.117	0.449	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	20300/1745	1:1	0.188	0.19	19.91	20.30	1.094	0.206	22.2
Back side	20	QPSK 50_0	20300/1745	1:1	0.311	-0.07	19.91	20.30	1.094	0.340	22.2
Left side	20	QPSK 50_0	20300/1745	1:1	0.074	0.03	19.91	20.30	1.094	0.081	22.2
Right side	20	QPSK 50_0	20300/1745	1:1	0.109	0.03	19.91	20.30	1.094	0.119	22.2
Bottom side	20	QPSK 50_0	20300/1745	1:1	0.440	0.09	19.91	20.30	1.094	0.481	22.2

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

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right tilted	20050/1720	0.822	0.776	1.059	N/A	N/A

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



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8.2.8 SAR Result of LTE Band 7

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	20	QPSK 1_50	20850/2510	1:1	0.245	-0.05	14.22	14.50	1.067	0.261	22.3
Left tilted	20	QPSK 1_50	20850/2510	1:1	0.322	0.05	14.22	14.50	1.067	0.343	22.3
Right cheek	20	QPSK 1_50	20850/2510	1:1	0.621	0.01	14.22	14.50	1.067	0.662	22.3
Right tilted	20	QPSK 1_50	20850/2510	1:1	0.858	0.05	14.22	14.50	1.067	0.915	22.3
Right tilted-Repeated	20	QPSK 1_50	20850/2510	1:1	0.733	0.08	14.22	14.50	1.067	0.782	22.3
Right tilted	20	QPSK 1_50	21100/2535	1:1	0.754	0.09	14.11	14.50	1.094	0.825	22.3
Right tilted	20	QPSK 1_50	21350/2560	1:1	0.698	0.03	14.15	14.50	1.084	0.757	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_25	20850/2510	1:1	0.237	0.05	14.28	14.50	1.052	0.249	22.3
Left tilted	20	QPSK 50_25	20850/2510	1:1	0.309	0.09	14.28	14.50	1.052	0.325	22.3
Right cheek	20	QPSK 50_25	20850/2510	1:1	0.570	0.05	14.28	14.50	1.052	0.600	22.3
Right tilted	20	QPSK 50_25	20850/2510	1:1	0.825	0.06	14.28	14.50	1.052	0.868	22.3
Right tilted	20	QPSK 50_50	21100/2535	1:1	0.738	0.03	14.15	14.50	1.084	0.800	22.3
Right tilted	20	QPSK 50_25	21350/2560	1:1	0.682	0.05	14.25	14.50	1.059	0.722	22.3
Head Test Data(100%RB)											
Right tilted	20	QPSK 100_0	20850/2510	1:1	0.705	0.04	14.27	14.50	1.054	0.743	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	20850/2510	1:1	0.175	-0.02	20.62	21.50	1.225	0.214	22.3
Back side	20	QPSK 1_50	20850/2510	1:1	0.328	0.14	20.62	21.50	1.225	0.402	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_25	21350/2560	1:1	0.185	0.06	20.74	21.50	1.191	0.220	22.3
Back side	20	QPSK 50_25	21350/2560	1:1	0.373	-0.08	20.74	21.50	1.191	0.444	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	21350/2560	1:1	0.249	0.06	18.59	19.00	1.099	0.274	22.3
Back side	20	QPSK 1_50	21350/2560	1:1	0.495	-0.01	18.59	19.00	1.099	0.544	22.3
Left side	20	QPSK 1_50	21350/2560	1:1	0.222	0.06	18.59	19.00	1.099	0.244	22.3
Top side	20	QPSK 1_50	21350/2560	1:1	0.814	0.10	18.59	19.00	1.099	0.895	22.3
Top side-Repeated	20	QPSK 1_50	21350/2560	1:1	0.752	0.02	18.59	19.00	1.099	0.826	22.3
Top side	20	QPSK 1_50	20850/2510	1:1	0.658	0.01	18.58	19.00	1.102	0.725	22.3
Top side	20	QPSK 1_50	21100/2535	1:1	0.755	0.02	18.43	19.00	1.140	0.861	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	21350/2560	1:1	0.238	-0.07	18.66	19.00	1.081	0.257	22.3
Back side	20	QPSK 50_0	21350/2560	1:1	0.507	-0.09	18.66	19.00	1.081	0.548	22.3
Left side	20	QPSK 50_0	21350/2560	1:1	0.208	-0.03	18.66	19.00	1.081	0.225	22.3
Top side	20	QPSK 50_0	21350/2560	1:1	0.783	0.04	18.66	19.00	1.081	0.847	22.3
Top side	20	QPSK 50_50	20850/2510	1:1	0.637	0.00	18.49	19.00	1.125	0.716	22.3
Top side	20	QPSK 50_50	21100/2535	1:1	0.741	-0.03	18.64	19.00	1.086	0.805	22.3
Hotspot Test data(Separate 10mm 100%RB)											



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Top side	20	QPSK 100_0	21350/2560	1:1	0.787	0.06	18.65	19.00	1.084	0.853	22.3
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)10-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Product specific 10g SAR Test data(Separate 0mm 1RB)											
Top side	20	QPSK 1_50	20850/2510	1:1	2.010	0.07	20.62	21.50	1.225	2.461	22.3
Top side-Repeated	20	QPSK 1_50	20850/2510	1:1	1.970	-0.05	20.62	21.50	1.225	2.412	22.3
Top side	20	QPSK 1_50	21100/2535	1:1	1.780	-0.06	20.40	21.50	1.288	2.293	22.3
Top side	20	QPSK 1_99	21350/2560	1:1	1.280	0.06	20.52	21.50	1.253	1.604	22.3
Product specific 10g SAR Test data (Separate 0mm 50%RB)											
Top side	20	QPSK 50_25	21350/2560	1:1	1.520	0.03	20.74	21.50	1.191	1.811	22.3
Product specific 10g SAR Test data (Separate 0mm 100%RB)											
Top side	20	QPSK 100_0	21350/2560	1:1	1.440	0.05	20.74	21.50	1.191	1.715	22.3
Product specific 10g SAR Test data(Separate 0mm 1RB) with Simultaneous transmission											
Top side	20	QPSK 1_50	20850/2510	1:1	2.010	0.07	20.62	19.00	0.689	1.384	22.3
Top side-Repeated	20	QPSK 1_50	20850/2510	1:1	1.970	-0.05	20.62	19.00	0.689	1.357	22.3
Top side	20	QPSK 1_50	21100/2535	1:1	1.780	-0.06	20.40	19.00	0.724	1.289	22.3
Top side	20	QPSK 1_99	21350/2560	1:1	1.280	0.06	20.52	19.00	0.705	0.902	22.3
Product specific 10g SAR Test data (Separate 0mm 50%RB) with Simultaneous transmission											
Top side	20	QPSK 50_25	21350/2560	1:1	1.520	0.03	20.74	19.00	0.670	1.018	22.3
Product specific 10g SAR Test data (Separate 0mm 100%RB) with Simultaneous transmission											
Top side	20	QPSK 100_0	21350/2560	1:1	1.440	0.05	20.74	19.00	0.670	0.965	22.3
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_50	21350/2560	1:1	0.154	0.01	23.63	23.80	1.040	0.160	22.3
Left tilted	20	QPSK 1_50	21350/2560	1:1	0.172	0.04	23.63	23.80	1.040	0.179	22.3
Right cheek	20	QPSK 1_50	21350/2560	1:1	0.334	0.02	23.63	23.80	1.040	0.347	22.3
Right tilted	20	QPSK 1_50	21350/2560	1:1	0.215	0.06	23.63	23.80	1.040	0.224	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	21350/2560	1:1	0.103	0.01	22.68	22.80	1.028	0.106	22.3
Left tilted	20	QPSK 50_0	21350/2560	1:1	0.137	0.05	22.68	22.80	1.028	0.141	22.3
Right cheek	20	QPSK 50_0	21350/2560	1:1	0.274	0.00	22.68	22.80	1.028	0.282	22.3
Right tilted	20	QPSK 50_0	21350/2560	1:1	0.178	0.01	22.68	22.80	1.028	0.183	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	21350/2560	1:1	0.395	0.06	23.63	23.80	1.040	0.411	22.3
Back side	20	QPSK 1_50	21350/2560	1:1	0.451	0.09	23.63	23.80	1.040	0.469	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	21350/2560	1:1	0.285	-0.08	22.68	22.80	1.028	0.293	22.3
Back side	20	QPSK 50_0	21350/2560	1:1	0.341	0.08	22.68	22.80	1.028	0.351	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	21350/2560	1:1	0.505	-0.01	22.52	22.80	1.067	0.539	22.3
Back side	20	QPSK 1_50	21350/2560	1:1	0.638	0.03	22.52	22.80	1.067	0.680	22.3
Left side	20	QPSK 1_50	21350/2560	1:1	0.065	0.01	22.52	22.80	1.067	0.069	22.3



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Right side	20	QPSK 1_50	21350/2560	1:1	0.293	-0.10	22.52	22.80	1.067	0.313	22.3
Bottom side	20	QPSK 1_50	21350/2560	1:1	0.246	-0.01	22.52	22.80	1.067	0.262	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_50	20850/2510	1:1	0.391	0.15	22.51	22.80	1.069	0.418	22.3
Back side	20	QPSK 50_50	20850/2510	1:1	0.525	-0.08	22.51	22.80	1.069	0.561	22.3
Left side	20	QPSK 50_50	20850/2510	1:1	0.046	0.05	22.51	22.80	1.069	0.049	22.3
Right side	20	QPSK 50_50	20850/2510	1:1	0.220	-0.09	22.51	22.80	1.069	0.235	22.3
Bottom side	20	QPSK 50_50	20850/2510	1:1	0.234	-0.02	22.51	22.80	1.069	0.250	22.3

Table 18: SAR of LTE Band 7 for Head and Body and Product specific 10g SAR.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right tilted	20850/2510	0.858	0.733	1.170	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was preformed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Top side	21350/2560	0.814	0.752	1.082	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was preformed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Top side	20850/2510	2.010	1.970	1.020	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was preformed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						
5) The same procedures should be adapted for measurements according to extremity exposure limits by applying a factor of 2.5 for extremity exposure.						



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8.2.9 SAR Result of LTE Band 12

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_25	23130/711	1:1	0.458	0.06	23.36	23.80	1.107	0.507	22.3
Left tilted	10	QPSK 1_25	23130/711	1:1	0.354	0.02	23.36	23.80	1.107	0.392	22.3
Right cheek	10	QPSK 1_25	23130/711	1:1	0.732	-0.12	23.36	23.80	1.107	0.810	22.3
Right tilted	10	QPSK 1_25	23130/711	1:1	0.618	-0.03	23.36	23.80	1.107	0.684	22.3
Right cheek	10	QPSK 1_25	23060/704	1:1	0.677	-0.03	23.27	23.80	1.130	0.765	22.3
Right cheek	10	QPSK 1_25	23095/707.5	1:1	0.719	0.00	23.26	23.80	1.132	0.814	22.3
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_25	23095/707.5	1:1	0.350	0.01	22.41	22.80	1.094	0.383	22.3
Left tilted	10	QPSK 25_25	23095/707.5	1:1	0.264	0.05	22.41	22.80	1.094	0.289	22.3
Right cheek	10	QPSK 25_25	23095/707.5	1:1	0.508	0.06	22.41	22.80	1.094	0.556	22.3
Right tilted	10	QPSK 25_25	23095/707.5	1:1	0.396	0.02	22.41	22.80	1.094	0.433	22.3
Head Test Data(100%RB)											
Right cheek	10	QPSK 50_0	23060/704	1:1	0.497	0.04	22.47	22.80	1.079	0.536	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_25	23130/711	1:1	0.165	-0.10	23.36	23.80	1.107	0.183	22.3
Back side	10	QPSK 1_25	23130/711	1:1	0.205	0.10	23.36	23.80	1.107	0.227	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_25	23095/707.5	1:1	0.128	0.18	22.41	22.80	1.094	0.140	22.3
Back side	10	QPSK 25_25	23095/707.5	1:1	0.157	0.01	22.41	22.80	1.094	0.172	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_25	23130/711	1:1	0.154	-0.02	23.36	23.80	1.107	0.170	22.3
Back side	10	QPSK 1_25	23130/711	1:1	0.211	0.04	23.36	23.80	1.107	0.233	22.3
Left side	10	QPSK 1_25	23130/711	1:1	0.257	-0.13	23.36	23.80	1.107	0.284	22.3
Top side	10	QPSK 1_25	23130/711	1:1	0.103	0.09	23.36	23.80	1.107	0.114	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_25	23095/707.5	1:1	0.123	0.05	22.41	22.80	1.094	0.135	22.3
Back side	10	QPSK 25_25	23095/707.5	1:1	0.161	0.02	22.41	22.80	1.094	0.176	22.3
Left side	10	QPSK 25_25	23095/707.5	1:1	0.195	-0.07	22.41	22.80	1.094	0.213	22.3
Top side	10	QPSK 25_25	23095/707.5	1:1	0.111	0.04	22.41	22.80	1.094	0.121	22.3
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_25	23095/707.5	1:1	0.015	-0.02	23.40	23.80	1.096	0.016	22.3
Left tilted	10	QPSK 1_25	23095/707.5	1:1	0.006	0.05	23.40	23.80	1.096	0.007	22.3
Right cheek	10	QPSK 1_25	23095/707.5	1:1	0.016	0.01	23.40	23.80	1.096	0.017	22.3



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Right tilted	10	QPSK 1_25	23095/707.5	1:1	0.008	-0.09	23.40	23.80	1.096	0.009	22.3
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_13	23095/707.5	1:1	0.012	0.08	22.35	22.80	1.109	0.013	22.3
Left tilted	10	QPSK 25_13	23095/707.5	1:1	0.006	0.01	22.35	22.80	1.109	0.006	22.3
Right cheek	10	QPSK 25_13	23095/707.5	1:1	0.012	0.03	22.35	22.80	1.109	0.013	22.3
Right tilted	10	QPSK 25_13	23095/707.5	1:1	0.004	0.04	22.35	22.80	1.109	0.005	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_25	23095/707.5	1:1	0.018	-0.02	23.40	23.80	1.096	0.020	22.3
Back side	10	QPSK 1_25	23095/707.5	1:1	0.024	0.11	23.40	23.80	1.096	0.027	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_13	23095/707.5	1:1	0.014	-0.04	22.35	22.80	1.109	0.015	22.3
Back side	10	QPSK 25_13	23095/707.5	1:1	0.018	0.07	22.35	22.80	1.109	0.019	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_25	23060/704	1:1	0.017	-0.13	22.77	23.30	1.130	0.019	22.3
Back side	10	QPSK 1_25	23060/704	1:1	0.025	-0.03	22.77	23.30	1.130	0.029	22.3
Left side	10	QPSK 1_25	23060/704	1:1	0.017	-0.05	22.77	23.30	1.130	0.019	22.3
Right side	10	QPSK 1_25	23060/704	1:1	0.017	0.00	22.77	23.30	1.130	0.019	22.3
Bottom side	10	QPSK 1_25	23060/704	1:1	0.009	0.15	22.77	23.30	1.130	0.010	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_25	23060/704	1:1	0.015	-0.02	22.36	22.80	1.107	0.017	22.3
Back side	10	QPSK 25_25	23060/704	1:1	0.024	-0.01	22.36	22.80	1.107	0.026	22.3
Left side	10	QPSK 25_25	23060/704	1:1	0.015	0.05	22.36	22.80	1.107	0.017	22.3
Right side	10	QPSK 25_25	23060/704	1:1	0.015	0.09	22.36	22.80	1.107	0.017	22.3
Bottom side	10	QPSK 25_25	23060/704	1:1	0.009	0.02	22.36	22.80	1.107	0.010	22.3

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



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8.2.10 SAR Result of LTE Band 13

Ant 1 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek	10	QPSK 1_25	23230/782	1:1	0.400	0.06	22.45	23.00	1.135	0.454	22.1
Left tilted	10	QPSK 1_25	23230/782	1:1	0.366	0.02	22.45	23.00	1.135	0.415	22.1
Right cheek	10	QPSK 1_25	23230/782	1:1	0.611	-0.13	22.45	23.00	1.135	0.693	22.1
Right tilted	10	QPSK 1_25	23230/782	1:1	0.574	-0.01	22.45	23.00	1.135	0.651	22.1
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_0	23230/782	1:1	0.313	0.00	22.11	22.50	1.094	0.342	22.1
Left tilted	10	QPSK 25_0	23230/782	1:1	0.287	0.05	22.11	22.50	1.094	0.314	22.1
Right cheek	10	QPSK 25_0	23230/782	1:1	0.508	-0.14	22.11	22.50	1.094	0.556	22.1
Right tilted	10	QPSK 25_0	23230/782	1:1	0.480	-0.05	22.11	22.50	1.094	0.525	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_25	23230/782	1:1	0.138	0.02	22.95	23.50	1.135	0.157	22.1
Back side	10	QPSK 1_25	23230/782	1:1	0.163	0.07	22.95	23.50	1.135	0.185	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_13	23230/782	1:1	0.109	0.06	22.15	22.50	1.084	0.118	22.1
Back side	10	QPSK 25_13	23230/782	1:1	0.112	0.15	22.15	22.50	1.084	0.121	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_49	23230/782	1:1	0.119	0.05	22.05	22.50	1.109	0.132	22.1
Back side	10	QPSK 1_49	23230/782	1:1	0.171	0.09	22.05	22.50	1.109	0.190	22.1
Left side	10	QPSK 1_49	23230/782	1:1	0.098	0.05	22.05	22.50	1.109	0.109	22.1
Top side	10	QPSK 1_49	23230/782	1:1	0.113	-0.11	22.05	22.50	1.109	0.125	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_25	23230/782	1:1	0.118	0.02	22.15	22.50	1.084	0.128	22.1
Back side	10	QPSK 25_25	23230/782	1:1	0.170	0.06	22.15	22.50	1.084	0.184	22.1
Left side	10	QPSK 25_25	23230/782	1:1	0.101	0.08	22.15	22.50	1.084	0.109	22.1
Top side	10	QPSK 25_25	23230/782	1:1	0.113	0.09	22.15	22.50	1.084	0.122	22.1
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.(℃)
Head Test Data(1RB)											
Left cheek	10	QPSK 1_25	23230/782	1:1	0.112	0.00	23.27	23.80	1.130	0.127	22.1
Left tilted	10	QPSK 1_25	23230/782	1:1	0.059	-0.12	23.27	23.80	1.130	0.067	22.1
Right cheek	10	QPSK 1_25	23230/782	1:1	0.094	0.06	23.27	23.80	1.130	0.106	22.1
Right tilted	10	QPSK 1_25	23230/782	1:1	0.049	0.12	23.27	23.80	1.130	0.055	22.1
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_13	23230/782	1:1	0.091	0.03	22.23	22.80	1.140	0.104	22.1
Left tilted	10	QPSK 25_13	23230/782	1:1	0.046	-0.05	22.23	22.80	1.140	0.052	22.1
Right cheek	10	QPSK 25_13	23230/782	1:1	0.074	0.04	22.23	22.80	1.140	0.085	22.1



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Right tilted	10	QPSK 25_13	23230/782	1:1	0.038	0.09	22.23	22.80	1.140	0.044	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_25	23230/782	1:1	0.159	-0.18	23.27	23.80	1.130	0.180	22.1
Back side	10	QPSK 1_25	23230/782	1:1	0.176	0.10	23.27	23.80	1.130	0.199	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_13	23230/782	1:1	0.127	0.01	22.23	22.80	1.140	0.145	22.1
Back side	10	QPSK 25_13	23230/782	1:1	0.136	-0.04	22.23	22.80	1.140	0.155	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_25	23230/782	1:1	0.133	0.01	23.27	23.80	1.130	0.150	22.1
Back side	10	QPSK 1_25	23230/782	1:1	0.172	0.06	23.27	23.80	1.130	0.194	22.1
Left side	10	QPSK 1_25	23230/782	1:1	0.158	-0.09	23.27	23.80	1.130	0.179	22.1
Right side	10	QPSK 1_25	23230/782	1:1	0.113	0.01	23.27	23.80	1.130	0.128	22.1
Bottom side	10	QPSK 1_25	23230/782	1:1	0.084	-0.01	23.27	23.80	1.130	0.095	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_13	23230/782	1:1	0.102	-0.01	22.23	22.80	1.140	0.116	22.1
Back side	10	QPSK 25_13	23230/782	1:1	0.132	0.07	22.23	22.80	1.140	0.151	22.1
Left side	10	QPSK 25_13	23230/782	1:1	0.120	-0.08	22.23	22.80	1.140	0.137	22.1
Right side	10	QPSK 25_13	23230/782	1:1	0.097	0.01	22.23	22.80	1.140	0.110	22.1
Bottom side	10	QPSK 25_13	23230/782	1:1	0.074	0.02	22.23	22.80	1.140	0.085	22.1

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



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8.2.11 SAR Result of LTE Band 26

Ant 1 Test Record											
Test position	BW	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	15	QPSK 1_38	26765/821.5	1:1	0.479	0.00	21.11	21.50	1.094	0.524	22.2
Left tilted	15	QPSK 1_38	26765/821.5	1:1	0.407	0.01	21.11	21.50	1.094	0.445	22.2
Right cheek	15	QPSK 1_38	26765/821.5	1:1	0.740	-0.10	21.11	21.50	1.094	0.810	22.2
Right tilted	15	QPSK 1_38	26765/821.5	1:1	0.500	0.05	21.11	21.50	1.094	0.547	22.2
Right cheek	15	QPSK 1_38	26865/831.5	1:1	0.716	-0.10	20.97	21.50	1.130	0.809	22.2
Right cheek	15	QPSK 1_38	26965/841.5	1:1	0.723	0.01	21.00	21.50	1.122	0.811	22.2
Head Test Data(50%RB)											
Left cheek	15	QPSK 36_0	26765/821.5	1:1	0.471	0.05	21.23	21.50	1.064	0.501	22.2
Left tilted	15	QPSK 36_0	26765/821.5	1:1	0.403	0.08	21.23	21.50	1.064	0.429	22.2
Right cheek	15	QPSK 36_0	26765/821.5	1:1	0.750	-0.03	21.23	21.50	1.064	0.798	22.2
Right tilted	15	QPSK 36_0	26765/821.5	1:1	0.501	0.02	21.23	21.50	1.064	0.533	22.2
Head Test Data(100%RB)											
Right cheek	15	QPSK 75_0	26765/821.5	1:1	0.701	0.06	21.17	21.50	1.079	0.756	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1_38	26765/821.5	1:1	0.187	-0.04	24.09	24.50	1.099	0.206	22.2
Back side	15	QPSK 1_38	26765/821.5	1:1	0.251	0.05	24.09	24.50	1.099	0.276	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	15	QPSK 36_18	26765/821.5	1:1	0.151	-0.02	23.13	23.50	1.089	0.164	22.2
Back side	15	QPSK 36_18	26765/821.5	1:1	0.194	0.04	23.13	23.50	1.089	0.211	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1_38	26765/821.5	1:1	0.196	-0.03	23.05	23.50	1.109	0.217	22.2
Back side	15	QPSK 1_38	26765/821.5	1:1	0.298	-0.04	23.05	23.50	1.109	0.331	22.2
Left side	15	QPSK 1_38	26765/821.5	1:1	0.161	-0.08	23.05	23.50	1.109	0.179	22.2
Top side	15	QPSK 1_38	26765/821.5	1:1	0.238	-0.06	23.05	23.50	1.109	0.264	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	15	QPSK 36_39	26765/821.5	1:1	0.207	-0.03	23.16	23.50	1.081	0.224	22.2
Back side	15	QPSK 36_39	26765/821.5	1:1	0.296	-0.04	23.16	23.50	1.081	0.320	22.2
Left side	15	QPSK 36_39	26765/821.5	1:1	0.175	-0.06	23.16	23.50	1.081	0.189	22.2
Top side	15	QPSK 36_39	26765/821.5	1:1	0.224	-0.06	23.16	23.50	1.081	0.242	22.2



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Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test Data(1RB)											
Left cheek	15	QPSK 1_38	26765/821.5	1:1	0.217	0.02	24.29	24.80	1.125	0.244	22.2
Left tilted	15	QPSK 1_38	26765/821.5	1:1	0.106	-0.08	24.29	24.80	1.125	0.119	22.2
Right cheek	15	QPSK 1_38	26765/821.5	1:1	0.183	0.05	24.29	24.80	1.125	0.206	22.2
Right tilted	15	QPSK 1_38	26765/821.5	1:1	0.086	-0.05	24.29	24.80	1.125	0.096	22.2
Head Test Data(50%RB)											
Left cheek	15	QPSK 36_39	26765/821.5	1:1	0.172	0.05	23.32	23.80	1.117	0.192	22.2
Left tilted	15	QPSK 36_39	26765/821.5	1:1	0.076	-0.11	23.32	23.80	1.117	0.085	22.2
Right cheek	15	QPSK 36_39	26765/821.5	1:1	0.141	0.03	23.32	23.80	1.117	0.157	22.2
Right tilted	15	QPSK 36_39	26765/821.5	1:1	0.061	-0.06	23.32	23.80	1.117	0.068	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1_38	26765/821.5	1:1	0.179	-0.07	24.29	24.80	1.125	0.201	22.2
Back side	15	QPSK 1_38	26765/821.5	1:1	0.212	0.04	24.29	24.80	1.125	0.238	22.2
Body worn Test data(Separate 15mm 50%RB)											
Front side	15	QPSK 36_39	26765/821.5	1:1	0.154	-0.06	23.32	23.80	1.117	0.172	22.2
Back side	15	QPSK 36_39	26765/821.5	1:1	0.179	0.07	23.32	23.80	1.117	0.200	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1_0	26865/831.5	1:1	0.153	0.01	23.71	24.30	1.146	0.175	22.2
Back side	15	QPSK 1_0	26865/831.5	1:1	0.273	-0.02	23.71	24.30	1.146	0.313	22.2
Left side	15	QPSK 1_0	26865/831.5	1:1	0.210	0.01	23.71	24.30	1.146	0.241	22.2
Right side	15	QPSK 1_0	26865/831.5	1:1	0.147	0.04	23.71	24.30	1.146	0.168	22.2
Bottom side	15	QPSK 1_0	26865/831.5	1:1	0.181	-0.18	23.71	24.30	1.146	0.207	22.2
Hotspot Test data(Separate 10mm 50%RB)											
Front side	15	QPSK 36_39	26765/821.5	1:1	0.137	0.03	23.36	23.80	1.107	0.152	22.2
Back side	15	QPSK 36_39	26765/821.5	1:1	0.235	0.09	23.36	23.80	1.107	0.260	22.2
Left side	15	QPSK 36_39	26765/821.5	1:1	0.173	0.03	23.36	23.80	1.107	0.191	22.2
Right side	15	QPSK 36_39	26765/821.5	1:1	0.115	0.03	23.36	23.80	1.107	0.127	22.2
Bottom side	15	QPSK 36_39	26765/821.5	1:1	0.172	-0.03	23.36	23.80	1.107	0.190	22.2

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



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8.2.12 SAR Result of LTE Band 38

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	20	QPSK 1_99	38150/2610	1:1.58	0.131	0.06	16.78	17.80	1.265	0.166	22.3
Left tilted	20	QPSK 1_99	38150/2610	1:1.58	0.178	0.09	16.78	17.80	1.265	0.225	22.3
Right cheek	20	QPSK 1_99	38150/2610	1:1.58	0.424	0.03	16.78	17.80	1.265	0.536	22.3
Right tilted	20	QPSK 1_99	38150/2610	1:1.58	0.507	0.03	16.78	17.80	1.265	0.641	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_25	38150/2610	1:1.58	0.153	0.01	16.65	17.80	1.303	0.199	22.3
Left tilted	20	QPSK 50_25	38150/2610	1:1.58	0.212	0.08	16.65	17.80	1.303	0.276	22.3
Right cheek	20	QPSK 50_25	38150/2610	1:1.58	0.461	0.03	16.65	17.80	1.303	0.601	22.3
Right tilted	20	QPSK 50_25	38150/2610	1:1.58	0.585	0.06	16.65	17.80	1.303	0.762	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	38150/2610	1:1.58	0.255	-0.03	23.79	24.30	1.125	0.287	22.3
Back side	20	QPSK 1_50	38150/2610	1:1.58	0.428	-0.04	23.79	24.30	1.125	0.481	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_50	38150/2610	1:1.58	0.193	-0.07	22.69	23.30	1.151	0.222	22.3
Back side	20	QPSK 50_50	38150/2610	1:1.58	0.309	-0.03	22.69	23.30	1.151	0.356	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	38000/2595	1:1.58	0.267	0.06	20.38	21.30	1.236	0.330	22.3
Back side	20	QPSK 1_50	38000/2595	1:1.58	0.456	0.05	20.38	21.30	1.236	0.564	22.3
Left side	20	QPSK 1_50	38000/2595	1:1.58	0.283	0.07	20.38	21.30	1.236	0.350	22.3
Top side	20	QPSK 1_50	38000/2595	1:1.58	0.831	0.01	20.38	21.30	1.236	1.027	22.3
Top side	20	QPSK 1_50	37850/2580	1:1.58	0.884	0.08	20.36	21.30	1.242	1.098	22.3
Top side-Repeated	20	QPSK 1_50	37850/2580	1:1.58	0.883	0.05	20.36	21.30	1.242	1.096	22.3
Top side	20	QPSK 1_50	38150/2610	1:1.58	0.707	0.08	20.35	21.30	1.245	0.880	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_50	38000/2595	1:1.58	0.246	0.09	20.25	21.30	1.274	0.313	22.3
Back side	20	QPSK 50_50	38000/2595	1:1.58	0.417	0.05	20.25	21.30	1.274	0.531	22.3
Left side	20	QPSK 50_50	38000/2595	1:1.58	0.271	0.02	20.25	21.30	1.274	0.345	22.3
Top side	20	QPSK 50_50	38000/2595	1:1.58	0.732	0.09	20.25	21.30	1.274	0.932	22.3
Top side	20	QPSK 50_50	37850/2580	1:1.58	0.797	0.07	20.11	21.30	1.315	1.048	22.3
Top side	20	QPSK 50_50	38150/2610	1:1.58	0.650	0.05	20.24	21.30	1.276	0.830	22.3
Hotspot Test data(Separate 10mm 100%RB)											
Top side	20	QPSK 100_0	38000/2595	1:1.58	0.754	0.04	20.28	21.30	1.265	0.954	22.3
Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Product specific 10g SAR Test data(Separate 0mm 1RB)											
Top side	20	QPSK 1_50	38150/2610	1:1.58	1.500	0.18	23.79	24.30	1.125	1.687	22.3
Product specific 10g SAR Test data (Separate 0mm 50%RB)											
Top side	20	QPSK 50_50	38150/2610	1:1.58	1.150	-0.04	22.69	23.30	1.151	1.323	22.3



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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_50	37850/2580	1:1.58	0.090	0.00	23.79	24.30	1.125	0.101	22.3
Left tilted	20	QPSK 1_50	37850/2580	1:1.58	0.124	0.06	23.79	24.30	1.125	0.139	22.3
Right cheek	20	QPSK 1_50	37850/2580	1:1.58	0.252	0.00	23.79	24.30	1.125	0.283	22.3
Right tilted	20	QPSK 1_50	37850/2580	1:1.58	0.137	0.04	23.79	24.30	1.125	0.154	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	37850/2580	1:1.58	0.066	0.00	22.73	23.30	1.140	0.075	22.3
Left tilted	20	QPSK 50_0	37850/2580	1:1.58	0.092	0.07	22.73	23.30	1.140	0.104	22.3
Right cheek	20	QPSK 50_0	37850/2580	1:1.58	0.209	0.00	22.73	23.30	1.140	0.238	22.3
Right tilted	20	QPSK 50_0	37850/2580	1:1.58	0.138	0.04	22.73	23.30	1.140	0.157	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	37850/2580	1:1.58	0.127	-0.04	21.74	22.30	1.138	0.144	22.3
Back side	20	QPSK 1_50	37850/2580	1:1.58	0.137	-0.06	21.74	22.30	1.138	0.156	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	37850/2580	1:1.58	0.116	-0.07	21.68	22.30	1.153	0.134	22.3
Back side	20	QPSK 50_0	37850/2580	1:1.58	0.129	-0.01	21.68	22.30	1.153	0.149	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	38000/2595	1:1.58	0.151	-0.01	20.31	20.80	1.119	0.169	22.3
Back side	20	QPSK 1_50	38000/2595	1:1.58	0.180	-0.05	20.31	20.80	1.119	0.201	22.3
Left side	20	QPSK 1_50	38000/2595	1:1.58	0.024	0.08	20.31	20.80	1.119	0.026	22.3
Right side	20	QPSK 1_50	38000/2595	1:1.58	0.088	0.11	20.31	20.80	1.119	0.099	22.3
Bottom side	20	QPSK 1_50	38000/2595	1:1.58	0.081	0.07	20.31	20.80	1.119	0.091	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	37850/2580	1:1.58	0.145	-0.07	20.25	20.80	1.135	0.165	22.3
Back side	20	QPSK 50_0	37850/2580	1:1.58	0.178	-0.03	20.25	20.80	1.135	0.202	22.3
Left side	20	QPSK 50_0	37850/2580	1:1.58	0.022	0.07	20.25	20.80	1.135	0.025	22.3
Right side	20	QPSK 50_0	37850/2580	1:1.58	0.092	0.02	20.25	20.80	1.135	0.104	22.3
Bottom side	20	QPSK 50_0	37850/2580	1:1.58	0.088	0.02	20.25	20.80	1.135	0.100	22.3

Table 22: SAR of LTE Band 38 for Head and Body and Product specific 10g SAR.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Top side	37850/2580	0.884	0.883	1.001	N/A	N/A

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



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8.2.13 SAR Result of LTE Band 41

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	20	QPSK 1_50	40473/2578.3	1:1.58	0.181	0.09	16.84	17.80	1.247	0.226	22.3
Left tilted	20	QPSK 1_50	40473/2578.3	1:1.58	0.276	0.02	16.84	17.80	1.247	0.344	22.3
Right cheek	20	QPSK 1_50	40473/2578.3	1:1.58	0.531	0.09	16.84	17.80	1.247	0.662	22.3
Right tilted	20	QPSK 1_50	40473/2578.3	1:1.58	0.725	0.01	16.84	17.80	1.247	0.904	22.3
Right tilted	20	QPSK 50_50	40140/2545	1:1.58	0.714	0.04	16.78	17.80	1.265	0.903	22.3
Right tilted	20	QPSK 50_50	40807/2611.7	1:1.58	0.570	0.04	16.78	17.80	1.265	0.721	22.3
Right tilted	20	QPSK 50_50	41140/2645	1:1.58	0.386	0.18	16.78	17.80	1.265	0.488	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_50	41140/2645	1:1.58	0.094	0.04	16.78	17.80	1.265	0.119	22.3
Left tilted	20	QPSK 50_50	41140/2645	1:1.58	0.113	0.05	16.78	17.80	1.265	0.143	22.3
Right cheek	20	QPSK 50_50	41140/2645	1:1.58	0.293	0.02	16.78	17.80	1.265	0.371	22.3
Right tilted	20	QPSK 50_50	41140/2645	1:1.58	0.346	0.07	16.78	17.80	1.265	0.438	22.3
Head Test Data(100%RB)											
Right tilted	20	QPSK 100_0	41140/2645	1:1.58	0.367	0.08	16.76	17.80	1.271	0.466	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	40807/2611.7	1:1.58	0.163	-0.05	22.34	23.30	1.247	0.203	22.3
Back side	20	QPSK 1_50	40807/2611.7	1:1.58	0.268	-0.06	22.34	23.30	1.247	0.334	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	40807/2611.7	1:1.58	0.160	0.04	22.26	22.80	1.132	0.181	22.3
Back side	20	QPSK 50_0	40807/2611.7	1:1.58	0.269	-0.09	22.26	22.80	1.132	0.305	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	41140/2645	1:1.58	0.182	-0.13	20.78	21.80	1.265	0.230	22.3
Back side	20	QPSK 1_50	41140/2645	1:1.58	0.337	-0.08	20.78	21.80	1.265	0.426	22.3
Left side	20	QPSK 1_50	41140/2645	1:1.58	0.268	0.01	20.78	21.80	1.265	0.339	22.3
Top side	20	QPSK 1_50	41140/2645	1:1.58	0.460	-0.02	20.78	21.80	1.265	0.582	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_50	41140/2645	1:1.58	0.165	-0.06	20.70	21.80	1.288	0.213	22.3
Back side	20	QPSK 50_50	41140/2645	1:1.58	0.298	0.08	20.70	21.80	1.288	0.384	22.3
Left side	20	QPSK 50_50	41140/2645	1:1.58	0.244	-0.03	20.70	21.80	1.288	0.314	22.3
Top side	20	QPSK 50_50	41140/2645	1:1.58	0.375	0.17	20.70	21.80	1.288	0.483	22.3



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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_50	41140/2645	1:1.58	0.064	0.00	23.61	23.80	1.045	0.067	22.3
Left tilted	20	QPSK 1_50	41140/2645	1:1.58	0.079	-0.02	23.61	23.80	1.045	0.083	22.3
Right cheek	20	QPSK 1_50	41140/2645	1:1.58	0.203	0.00	23.61	23.80	1.045	0.212	22.3
Right tilted	20	QPSK 1_50	41140/2645	1:1.58	0.107	0.00	23.61	23.80	1.045	0.112	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	41140/2645	1:1.58	0.048	0.05	22.53	22.80	1.064	0.051	22.3
Left tilted	20	QPSK 50_0	41140/2645	1:1.58	0.063	0.11	22.53	22.80	1.064	0.067	22.3
Right cheek	20	QPSK 50_0	41140/2645	1:1.58	0.180	0.03	22.53	22.80	1.064	0.192	22.3
Right tilted	20	QPSK 50_0	41140/2645	1:1.58	0.074	0.09	22.53	22.80	1.064	0.078	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	40807/2611.7	1:1.58	0.183	-0.10	22.59	22.80	1.050	0.192	22.3
Back side	20	QPSK 1_50	40807/2611.7	1:1.58	0.191	0.16	22.59	22.80	1.050	0.200	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	41140/2645	1:1.58	0.152	0.05	22.55	22.80	1.059	0.161	22.3
Back side	20	QPSK 50_0	41140/2645	1:1.58	0.155	0.03	22.55	22.80	1.059	0.164	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	41140/2645	1:1.58	0.175	0.06	20.95	21.30	1.084	0.190	22.3
Back side	20	QPSK 1_50	41140/2645	1:1.58	0.215	0.01	20.95	21.30	1.084	0.233	22.3
Left side	20	QPSK 1_50	41140/2645	1:1.58	0.021	0.03	20.95	21.30	1.084	0.022	22.3
Right side	20	QPSK 1_50	41140/2645	1:1.58	0.095	0.04	20.95	21.30	1.084	0.103	22.3
Bottom side	20	QPSK 1_50	41140/2645	1:1.58	0.092	0.16	20.95	21.30	1.084	0.099	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	41140/2645	1:1.58	0.168	0.01	20.98	21.30	1.076	0.181	22.3
Back side	20	QPSK 50_0	41140/2645	1:1.58	0.217	0.07	20.98	21.30	1.076	0.234	22.3
Left side	20	QPSK 50_0	41140/2645	1:1.58	0.021	0.01	20.98	21.30	1.076	0.022	22.3
Right side	20	QPSK 50_0	41140/2645	1:1.58	0.086	0.03	20.98	21.30	1.076	0.093	22.3
Bottom side	20	QPSK 50_0	41140/2645	1:1.58	0.083	0.10	20.98	21.30	1.076	0.089	22.3

Table 23: SAR of LTE Band 41 for Head and Body.



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8.2.14 SAR Result of LTE Band 66

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	20	QPSK 1_50	132322/1745	1:1	0.560	-0.06	17.18	17.30	1.028	0.576	22.1
Left tilted	20	QPSK 1_50	132322/1745	1:1	0.550	0.02	17.18	17.30	1.028	0.565	22.1
Right cheek	20	QPSK 1_50	132322/1745	1:1	0.787	0.13	17.18	17.30	1.028	0.809	22.1
Right tilted	20	QPSK 1_50	132322/1745	1:1	0.875	0.06	17.18	17.30	1.028	0.900	22.1
Right cheek	20	QPSK 1_50	132072/1720	1:1	0.771	-0.08	17.10	17.30	1.047	0.807	22.1
Right cheek	20	QPSK 1_50	132572/1770	1:1	0.796	-0.02	17.10	17.30	1.047	0.834	22.1
Right tilted	20	QPSK 1_50	132072/1720	1:1	0.844	0.13	17.10	17.30	1.047	0.884	22.1
Right tilted	20	QPSK 1_50	132572/1770	1:1	0.930	0.10	17.10	17.30	1.047	0.974	22.1
Head Test Data(50RB)											
Left cheek	20	QPSK 50_25	132322/1745	1:1	0.547	0.01	17.11	17.30	1.045	0.571	22.1
Left tilted	20	QPSK 50_25	132322/1745	1:1	0.544	0.00	17.11	17.30	1.045	0.568	22.1
Right cheek	20	QPSK 50_25	132322/1745	1:1	0.781	0.04	17.11	17.30	1.045	0.816	22.1
Right tilted	20	QPSK 50_25	132322/1745	1:1	0.866	0.06	17.11	17.30	1.045	0.905	22.1
Right cheek	20	QPSK 50_25	132072/1720	1:1	0.751	-0.05	17.07	17.30	1.054	0.792	22.1
Right cheek	20	QPSK 50_25	132572/1770	1:1	0.791	0.02	17.06	17.30	1.057	0.836	22.1
Right tilted	20	QPSK 50_25	132072/1720	1:1	0.822	-0.03	17.07	17.30	1.054	0.867	22.1
Right tilted	20	QPSK 50_25	132572/1770	1:1	0.943	0.10	17.06	17.30	1.057	0.997	22.1
Right tilted-Repeated	20	QPSK 50_25	132572/1770	1:1	0.927	0.06	17.06	17.30	1.057	0.980	22.1
Head Test Data(100%RB)											
Right cheek	20	QPSK 100_0	132322/1745	1:1	0.795	0.08	17.17	17.30	1.030	0.819	22.1
Right tilted	20	QPSK 100_0	132322/1745	1:1	0.923	0.09	17.17	17.30	1.030	0.951	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	132072/1720	1:1	0.172	0.07	20.99	21.30	1.074	0.185	22.3
Back side	20	QPSK 1_50	132072/1720	1:1	0.211	-0.04	20.99	21.30	1.074	0.227	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_25	132072/1720	1:1	0.168	0.17	20.93	21.30	1.089	0.183	22.3
Back side	20	QPSK 50_25	132072/1720	1:1	0.208	-0.05	20.93	21.30	1.089	0.226	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	132072/1720	1:1	0.231	-0.01	19.28	19.80	1.127	0.260	22.3
Back side	20	QPSK 1_50	132072/1720	1:1	0.290	0.05	19.28	19.80	1.127	0.327	22.3
Left side	20	QPSK 1_50	132072/1720	1:1	0.063	-0.03	19.28	19.80	1.127	0.071	22.3
Top side	20	QPSK 1_50	132072/1720	1:1	0.261	-0.07	19.28	19.80	1.127	0.294	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_25	132322/1745	1:1	0.254	-0.02	19.30	19.80	1.122	0.285	22.3
Back side	20	QPSK 50_25	132322/1745	1:1	0.305	-0.04	19.30	19.80	1.122	0.342	22.3
Left side	20	QPSK 50_25	132322/1745	1:1	0.068	-0.03	19.30	19.80	1.122	0.076	22.3
Top side	20	QPSK 50_25	132322/1745	1:1	0.265	0.01	19.30	19.80	1.122	0.297	22.3



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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_50	132322/1745	1:1	0.122	0.06	22.88	23.30	1.102	0.134	22.3
Left tilted	20	QPSK 1_50	132322/1745	1:1	0.066	0.07	22.88	23.30	1.102	0.073	22.3
Right cheek	20	QPSK 1_50	132322/1745	1:1	0.069	0.10	22.88	23.30	1.102	0.075	22.3
Right tilted	20	QPSK 1_50	132322/1745	1:1	0.063	0.16	22.88	23.30	1.102	0.069	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	132322/1745	1:1	0.083	0.06	21.95	22.30	1.084	0.090	22.3
Left tilted	20	QPSK 50_0	132322/1745	1:1	0.047	0.05	21.95	22.30	1.084	0.051	22.3
Right cheek	20	QPSK 50_0	132322/1745	1:1	0.055	0.09	21.95	22.30	1.084	0.060	22.3
Right tilted	20	QPSK 50_0	132322/1745	1:1	0.045	0.09	21.95	22.30	1.084	0.049	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	132572/1770	1:1	0.168	0.06	21.91	22.30	1.094	0.184	22.3
Back side	20	QPSK 1_50	132572/1770	1:1	0.281	0.03	21.91	22.30	1.094	0.307	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_50	132572/1770	1:1	0.169	0.02	21.94	22.30	1.086	0.184	22.3
Back side	20	QPSK 50_50	132572/1770	1:1	0.298	-0.08	21.94	22.30	1.086	0.324	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	132322/1745	1:1	0.203	0.05	20.38	20.80	1.102	0.224	22.3
Back side	20	QPSK 1_0	132322/1745	1:1	0.331	0.02	20.38	20.80	1.102	0.365	22.3
Left side	20	QPSK 1_0	132322/1745	1:1	0.077	-0.13	20.38	20.80	1.102	0.084	22.3
Right side	20	QPSK 1_0	132322/1745	1:1	0.108	0.16	20.38	20.80	1.102	0.119	22.3
Bottom side	20	QPSK 1_0	132322/1745	1:1	0.452	-0.06	20.38	20.80	1.102	0.498	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	132322/1745	1:1	0.218	0.06	20.44	20.80	1.086	0.237	22.3
Back side	20	QPSK 50_0	132322/1745	1:1	0.350	-0.01	20.44	20.80	1.086	0.380	22.3
Left side	20	QPSK 50_0	132322/1745	1:1	0.083	-0.12	20.44	20.80	1.086	0.090	22.3
Right side	20	QPSK 50_0	132322/1745	1:1	0.115	-0.02	20.44	20.80	1.086	0.125	22.3
Bottom side	20	QPSK 50_0	132322/1745	1:1	0.508	-0.06	20.44	20.80	1.086	0.552	22.3

Table 24: SAR of LTE Band 66 for Head and Body.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right tilted	132572/1770	0.943	0.927	1.017	N/A	N/A

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

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

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

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



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8.2.15 SAR Result of WIFI 2.4G

Ant2 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	11/2462	99.60%	1.004	0.387	0.00	13.50	14.50	1.259	0.489	22.2
Left tilted	802.11b	11/2462	99.60%	1.004	0.344	0.11	13.50	14.50	1.259	0.435	22.2
Right cheek	802.11b	11/2462	99.60%	1.004	0.182	0.06	13.50	14.50	1.259	0.230	22.2
Right tilted	802.11b	11/2462	99.60%	1.004	0.164	0.09	13.50	14.50	1.259	0.207	22.2
Body worn Test data(Separate 15mm)											
Front side	802.11b	11/2462	99.60%	1.004	0.066	-0.03	15.63	16.50	1.222	0.081	22.2
Back side	802.11b	11/2462	99.60%	1.004	0.082	0.02	15.63	16.50	1.222	0.101	22.2
Hotspot Test data (Separate 10mm)											
Front side	802.11b	11/2462	99.60%	1.004	0.134	0.06	15.63	16.50	1.222	0.164	22.2
Back side	802.11b	11/2462	99.60%	1.004	0.181	-0.01	15.63	16.50	1.222	0.222	22.2
Right side	802.11b	11/2462	99.60%	1.004	0.127	0.09	15.63	16.50	1.222	0.156	22.2
Top side	802.11b	11/2462	99.60%	1.004	0.101	0.08	15.63	16.50	1.222	0.124	22.2

Table 25: SAR of WIFI 2.4G for Head and Body.

Note:

1) 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.



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8.2.16 SAR Result of WIFI 5G

Ant2 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head Test data of U-NII-2A											
Left cheek	802.11ac 80M	58/5290	87.84%	1.138	0.746	0.01	12.08	13.50	1.387	1.178	22.1
Left tilted	802.11ac 80M	58/5290	87.84%	1.138	0.571	0.03	12.08	13.50	1.387	0.901	22.1
Right cheek	802.11ac 80M	58/5290	87.84%	1.138	0.229	-0.08	12.08	13.50	1.387	0.362	22.1
Right tilted	802.11ac 80M	58/5290	87.84%	1.138	0.202	0.08	12.08	13.50	1.387	0.319	22.1
Head Test data of U-NII-2C											
Left cheek	802.11n HT40	126/5630	93.53%	1.069	0.560	0.00	12.49	13.50	1.262	0.756	22.1
Left tilted	802.11n HT40	126/5630	93.53%	1.069	0.490	0.05	12.49	13.50	1.262	0.661	22.1
Right cheek	802.11n HT40	126/5630	93.53%	1.069	0.325	0.06	12.49	13.50	1.262	0.438	22.1
Right tilted	802.11n HT40	126/5630	93.53%	1.069	0.283	0.01	12.49	13.50	1.262	0.382	22.1
Head Test data of U-NII-3											
Left cheek	802.11ac 80M	155/5775	87.84%	1.138	0.384	0.05	11.98	13.50	1.419	0.620	22.1
Left tilted	802.11ac 80M	155/5775	87.84%	1.138	0.351	0.02	11.98	13.50	1.419	0.567	22.1
Right cheek	802.11ac 80M	155/5775	87.84%	1.138	0.236	-0.18	11.98	13.50	1.419	0.381	22.1
Right tilted	802.11ac 80M	155/5775	87.84%	1.138	0.253	0.08	11.98	13.50	1.419	0.409	22.1
Head Test data of U-NII-2A with Simultaneous transmission											
Left cheek	802.11ac 80M	58/5290	87.84%	1.138	0.746	0.01	12.08	10.50	0.695	0.590	22.1
Left tilted	802.11ac 80M	58/5290	87.84%	1.138	0.571	0.03	12.08	10.50	0.695	0.452	22.1
Right cheek	802.11ac 80M	58/5290	87.84%	1.138	0.229	-0.08	12.08	10.50	0.695	0.181	22.1
Right tilted	802.11ac 80M	58/5290	87.84%	1.138	0.202	0.08	12.08	10.50	0.695	0.160	22.1
Head Test data of U-NII-2C with Simultaneous transmission											
Left cheek	802.11n HT40	126/5630	93.53%	1.069	0.560	0.00	12.49	10.50	0.632	0.379	22.1
Left tilted	802.11n HT40	126/5630	93.53%	1.069	0.490	0.05	12.49	10.50	0.632	0.331	22.1
Right cheek	802.11n HT40	126/5630	93.53%	1.069	0.325	0.06	12.49	10.50	0.632	0.220	22.1
Right tilted	802.11n HT40	126/5630	93.53%	1.069	0.283	0.01	12.49	10.50	0.632	0.191	22.1
Head Test data of U-NII-3 with Simultaneous transmission											
Left cheek	802.11ac 80M	155/5775	87.84%	1.138	0.384	0.05	11.98	10.50	0.711	0.311	22.1
Left tilted	802.11ac 80M	155/5775	87.84%	1.138	0.351	0.02	11.98	10.50	0.711	0.284	22.1
Right cheek	802.11ac 80M	155/5775	87.84%	1.138	0.236	-0.18	11.98	10.50	0.711	0.191	22.1
Right tilted	802.11ac 80M	155/5775	87.84%	1.138	0.253	0.08	11.98	10.50	0.711	0.205	22.1
Body worn Test data of U-NII-2A(Separate 15mm)											
Front side	802.11ac 80M	58/5290	87.84%	1.138	0.158	0.01	14.10	15.50	1.380	0.248	22.1
Back side	802.11ac 80M	58/5290	87.84%	1.138	0.307	0.10	14.10	15.50	1.380	0.482	22.1
Body worn Test data of U-NII-2C(Separate 15mm)											
Front side	802.11n HT40	126/5630	93.53%	1.069	0.138	0.01	14.39	15.50	1.291	0.191	22.1
Back side	802.11n HT40	126/5630	93.53%	1.069	0.481	0.00	14.39	15.50	1.291	0.664	22.1
Body worn Test data of U-NII-3(Separate 15mm)											
Front side	802.11ac 80M	155/5775	87.84%	1.138	0.113	0.01	14.25	15.50	1.334	0.172	22.1
Back side	802.11ac 80M	155/5775	87.84%	1.138	0.449	0.05	14.25	15.50	1.334	0.682	22.1



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Hotspot Test data of U-NII-1(Separate 10mm)											
Front side	802.11ac 80M	42/5210	87.84%	1.138	0.202	0.07	14.13	15.50	1.371	0.315	22.1
Back side	802.11ac 80M	42/5210	87.84%	1.138	0.502	0.09	14.13	15.50	1.371	0.783	22.1
Right side	802.11ac 80M	42/5210	87.84%	1.138	0.416	-0.08	14.13	15.50	1.371	0.649	22.1
Top side	802.11ac 80M	42/5210	87.84%	1.138	0.423	0.03	14.13	15.50	1.371	0.660	22.1
Hotspot Test data of U-NII-3(Separate 10mm)											
Front side	802.11ac 80M	155/5775	87.84%	1.138	0.175	0.02	14.25	15.50	1.334	0.266	22.1
Back side	802.11ac 80M	155/5775	87.84%	1.138	0.630	0.00	14.25	15.50	1.334	0.956	22.1
Right side	802.11ac 80M	155/5775	87.84%	1.138	0.316	0.04	14.25	15.50	1.334	0.480	22.1
Top side	802.11ac 80M	155/5775	87.84%	1.138	0.381	0.05	14.25	15.50	1.334	0.578	22.1
Hotspot Test data of U-NII-1(Separate 10mm) with Simultaneous transmission											
Front side	802.11ac 80M	42/5210	87.84%	1.138	0.202	0.07	14.13	13.50	0.865	0.199	22.1
Back side	802.11ac 80M	42/5210	87.84%	1.138	0.502	0.09	14.13	13.50	0.865	0.494	22.1
Right side	802.11ac 80M	42/5210	87.84%	1.138	0.416	-0.08	14.13	13.50	0.865	0.410	22.1
Top side	802.11ac 80M	42/5210	87.84%	1.138	0.423	0.03	14.13	13.50	0.865	0.417	22.1
Hotspot Test data of U-NII-3(Separate 10mm) with Simultaneous transmission											
Front side	802.11ac 80M	155/5775	87.84%	1.138	0.175	0.02	14.25	13.50	0.841	0.168	22.1
Back side	802.11ac 80M	155/5775	87.84%	1.138	0.630	0.00	14.25	13.50	0.841	0.603	22.1
Right side	802.11ac 80M	155/5775	87.84%	1.138	0.316	0.04	14.25	13.50	0.841	0.303	22.1
Top side	802.11ac 80M	155/5775	87.84%	1.138	0.381	0.05	14.25	13.50	0.841	0.365	22.1
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	802.11ac 80M	58/5290	87.84%	1.138	0.662	0.10	14.10	15.50	1.380	1.040	22.1
Back side	802.11ac 80M	58/5290	87.84%	1.138	0.774	0.09	14.10	15.50	1.380	1.216	22.1
Right side	802.11ac 80M	58/5290	87.84%	1.138	0.917	0.09	14.10	15.50	1.380	1.441	22.1
Top side	802.11ac 80M	58/5290	87.84%	1.138	0.689	0.04	14.10	15.50	1.380	1.083	22.1
Product specific 10gSAR Test data of U-NII-2C(Separate 0mm)											
Front side	802.11n HT40	126/5630	93.53%	1.069	0.600	0.00	14.39	15.50	1.291	0.828	22.1
Back side	802.11n HT40	126/5630	93.53%	1.069	0.963	0.09	14.39	15.50	1.291	1.329	22.1
Right side	802.11n HT40	126/5630	93.53%	1.069	1.080	-0.08	14.39	15.50	1.291	1.491	22.1
Top side	802.11n HT40	126/5630	93.53%	1.069	0.592	0.03	14.39	15.50	1.291	0.817	22.1

Table 26: SAR of WIFI 5G for Head, Body and Product specific 10g SAR.

Note:

1) As the highest reported SAR is smaller than 1.2 W/kg, and the tune-up of the other 802.11 modes are not higher than SAR test mode, 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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8.2.17 SAR Result of BT

Ant2 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	76.34%	1.310	0.231	-0.02	12.23	13.50	1.340	0.405	22.2
Left tilted	DH5	39/2441	76.34%	1.310	0.198	0.14	12.23	13.50	1.340	0.347	22.2
Right cheek	DH5	39/2441	76.34%	1.310	0.101	0.04	12.23	13.50	1.340	0.177	22.2
Right tilted	DH5	39/2441	76.34%	1.310	0.099	0.12	12.23	13.50	1.340	0.174	22.2
Body worn Test data(Separate 15mm)											
Front side	DH5	39/2441	76.34%	1.310	0.023	0.04	12.23	13.50	1.340	0.041	22.2
Back side	DH5	39/2441	76.34%	1.310	0.026	-0.06	12.23	13.50	1.340	0.045	22.2
Hotspot Test data (Separate 10mm)											
Front side	DH5	39/2441	76.34%	1.310	0.044	0.06	12.23	13.50	1.340	0.076	22.2
Back side	DH5	39/2441	76.34%	1.310	0.056	-0.04	12.23	13.50	1.340	0.099	22.2
Right side	DH5	39/2441	76.34%	1.310	0.040	-0.17	12.23	13.50	1.340	0.069	22.2
Top side	DH5	39/2441	76.34%	1.310	0.038	0.18	12.23	13.50	1.340	0.066	22.2

Table 27: SAR of BT for Head and Body.



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8.3 Multiple Transmitter Evaluation

8.3.1 Simultaneous SAR test evaluation

- Simultaneous Transmission Possibilities

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

Note:

- 1) The device does not support DTM function.



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8.3.2 Simultaneous Transmission SAR Summation Scenario

Head:

Test position		SARmax (W/kg)				Summed SAR				
		Main Ant1	WiFi 2.4G Ant2	WiFi 5G Ant2	BT					
		1	2	3	4	1+2	1+3	1+4	1+3+4	3+4
GSM850	Left cheek	0.574	0.489	0.590	0.405	1.063	1.164	0.979	1.569	0.995
	Left tilted	0.447	0.435	0.452	0.347	0.882	0.899	0.794	1.246	0.799
	Right cheek	0.727	0.230	0.220	0.177	0.957	0.947	0.904	1.124	0.397
	Right tilted	0.666	0.207	0.205	0.174	0.873	0.871	0.840	1.045	0.379
GSM1900	Left cheek	0.485	0.489	0.590	0.405	0.974	1.075	0.890	1.480	
	Left tilted	0.540	0.435	0.452	0.347	0.975	0.992	0.887	1.339	
	Right cheek	1.054	0.230	0.220	0.177	1.284	1.274	1.231	1.451	
	Right tilted	1.155	0.207	0.205	0.174	1.362	1.360	1.329	1.534	
WCDMA B2	Left cheek	0.521	0.489	0.590	0.405	1.010	1.111	0.926	1.516	
	Left tilted	0.659	0.435	0.452	0.347	1.094	1.111	1.006	1.458	
	Right cheek	0.835	0.230	0.220	0.177	1.065	1.055	1.012	1.232	
	Right tilted	0.980	0.207	0.205	0.174	1.187	1.185	1.154	1.359	
WCDMA B4	Left cheek	0.442	0.489	0.590	0.405	0.931	1.032	0.847	1.437	
	Left tilted	0.568	0.435	0.452	0.347	1.003	1.020	0.915	1.367	
	Right cheek	0.790	0.230	0.220	0.177	1.020	1.010	0.967	1.187	
	Right tilted	0.870	0.207	0.205	0.174	1.077	1.075	1.044	1.249	
WCDMA B5	Left cheek	0.506	0.489	0.590	0.405	0.995	1.096	0.911	1.501	
	Left tilted	0.494	0.435	0.452	0.347	0.929	0.946	0.841	1.293	
	Right cheek	0.740	0.230	0.220	0.177	0.970	0.960	0.917	1.137	
	Right tilted	0.688	0.207	0.205	0.174	0.895	0.893	0.862	1.067	
LTE B2	Left cheek	0.397	0.489	0.590	0.405	0.886	0.987	0.802	1.392	
	Left tilted	0.413	0.435	0.452	0.347	0.848	0.865	0.760	1.212	
	Right cheek	0.678	0.230	0.220	0.177	0.908	0.898	0.855	1.075	
	Right tilted	0.715	0.207	0.205	0.174	0.922	0.920	0.889	1.094	
LTE B4	Left cheek	0.483	0.489	0.590	0.405	0.972	1.073	0.888	1.478	
	Left tilted	0.546	0.435	0.452	0.347	0.981	0.998	0.893	1.345	
	Right cheek	0.889	0.230	0.220	0.177	1.119	1.109	1.066	1.286	
	Right tilted	0.975	0.207	0.205	0.174	1.182	1.180	1.149	1.354	
LTE B7	Left cheek	0.261	0.489	0.590	0.405	0.750	0.851	0.666	1.256	
	Left tilted	0.343	0.435	0.452	0.347	0.778	0.795	0.690	1.142	
	Right cheek	0.662	0.230	0.220	0.177	0.892	0.882	0.839	1.059	
	Right tilted	0.915	0.207	0.205	0.174	1.122	1.120	1.089	1.294	
LTE B12	Left cheek	0.507	0.489	0.590	0.405	0.996	1.097	0.912	1.502	
	Left tilted	0.392	0.435	0.452	0.347	0.827	0.844	0.739	1.191	
	Right cheek	0.814	0.230	0.220	0.177	1.044	1.034	0.991	1.211	
	Right tilted	0.684	0.207	0.205	0.174	0.891	0.889	0.858	1.063	
LTE B13	Left cheek	0.454	0.489	0.590	0.405	0.943	1.044	0.859	1.449	
	Left tilted	0.415	0.435	0.452	0.347	0.850	0.867	0.762	1.214	



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	Right cheek	0.693	0.230	0.220	0.177	0.923	0.913	0.870	1.090
	Right tilted	0.651	0.207	0.205	0.174	0.858	0.856	0.825	1.030
LTE B26	Left cheek	0.524	0.489	0.590	0.405	1.013	1.114	0.929	1.519
	Left tilted	0.445	0.435	0.452	0.347	0.880	0.897	0.792	1.244
	Right cheek	0.811	0.230	0.220	0.177	1.041	1.031	0.988	1.208
	Right tilted	0.547	0.207	0.205	0.174	0.754	0.752	0.721	0.926
LTE B38	Left cheek	0.199	0.489	0.590	0.405	0.688	0.789	0.604	1.194
	Left tilted	0.276	0.435	0.452	0.347	0.711	0.728	0.623	1.075
	Right cheek	0.601	0.230	0.220	0.177	0.831	0.821	0.778	0.998
	Right tilted	0.762	0.207	0.205	0.174	0.969	0.967	0.936	1.141
LTE B41	Left cheek	0.226	0.489	0.590	0.405	0.715	0.816	0.631	1.221
	Left tilted	0.344	0.435	0.452	0.347	0.779	0.796	0.691	1.143
	Right cheek	0.662	0.230	0.220	0.177	0.892	0.882	0.839	1.059
	Right tilted	0.904	0.207	0.205	0.174	1.111	1.109	1.078	1.283
LTE B66	Left cheek	0.576	0.489	0.590	0.405	1.065	1.166	0.981	1.571
	Left tilted	0.568	0.435	0.452	0.347	1.003	1.020	0.915	1.367
	Right cheek	0.836	0.230	0.220	0.177	1.066	1.056	1.013	1.233
	Right tilted	0.997	0.207	0.205	0.174	1.204	1.202	1.171	1.376

Test position		SARmax (W/kg)				Summed SAR			
		Main Ant0	WiFi 2.4G Ant2	WiFi 5G Ant2	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
GSM850	Left cheek	0.330	0.489	0.590	0.405	0.819	0.920	0.735	1.325
	Left tilted	0.165	0.435	0.452	0.347	0.600	0.617	0.512	0.964
	Right cheek	0.331	0.230	0.220	0.177	0.561	0.551	0.508	0.728
	Right tilted	0.160	0.207	0.205	0.174	0.367	0.365	0.334	0.539
GSM1900	Left cheek	0.058	0.489	0.590	0.405	0.547	0.648	0.463	1.053
	Left tilted	0.046	0.435	0.452	0.347	0.481	0.498	0.393	0.845
	Right cheek	0.051	0.230	0.220	0.177	0.281	0.271	0.228	0.448
	Right tilted	0.047	0.207	0.205	0.174	0.254	0.252	0.221	0.426
WCDMA B2	Left cheek	0.073	0.489	0.590	0.405	0.562	0.663	0.478	1.068
	Left tilted	0.063	0.435	0.452	0.347	0.498	0.515	0.410	0.862
	Right cheek	0.053	0.230	0.220	0.177	0.283	0.273	0.230	0.450
	Right tilted	0.057	0.207	0.205	0.174	0.264	0.262	0.231	0.436
WCDMA B4	Left cheek	0.160	0.489	0.590	0.405	0.649	0.750	0.565	1.155
	Left tilted	0.070	0.435	0.452	0.347	0.505	0.522	0.417	0.869
	Right cheek	0.100	0.230	0.220	0.177	0.330	0.320	0.277	0.497
	Right tilted	0.089	0.207	0.205	0.174	0.296	0.294	0.263	0.468
WCDMA B5	Left cheek	0.242	0.489	0.590	0.405	0.731	0.832	0.647	1.237
	Left tilted	0.118	0.435	0.452	0.347	0.553	0.570	0.465	0.917
	Right cheek	0.241	0.230	0.220	0.177	0.471	0.461	0.418	0.638
	Right tilted	0.115	0.207	0.205	0.174	0.322	0.320	0.289	0.494
LTE B2	Left cheek	0.070	0.489	0.590	0.405	0.559	0.660	0.475	1.065



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	Left tilted	0.053	0.435	0.452	0.347	0.488	0.505	0.400	0.852
	Right cheek	0.045	0.230	0.220	0.177	0.275	0.265	0.222	0.442
	Right tilted	0.044	0.207	0.205	0.174	0.251	0.249	0.218	0.423
LTE B4	Left cheek	0.117	0.489	0.590	0.405	0.606	0.707	0.522	1.112
	Left tilted	0.053	0.435	0.452	0.347	0.488	0.505	0.400	0.852
	Right cheek	0.063	0.230	0.220	0.177	0.293	0.283	0.240	0.460
	Right tilted	0.071	0.207	0.205	0.174	0.278	0.276	0.245	0.450
LTE B7	Left cheek	0.160	0.489	0.590	0.405	0.649	0.750	0.565	1.155
	Left tilted	0.179	0.435	0.452	0.347	0.614	0.631	0.526	0.978
	Right cheek	0.347	0.230	0.220	0.177	0.577	0.567	0.524	0.744
	Right tilted	0.224	0.207	0.205	0.174	0.431	0.429	0.398	0.603
LTE B12	Left cheek	0.016	0.489	0.590	0.405	0.505	0.606	0.421	1.011
	Left tilted	0.007	0.435	0.452	0.347	0.442	0.459	0.354	0.806
	Right cheek	0.017	0.230	0.220	0.177	0.247	0.237	0.194	0.414
	Right tilted	0.009	0.207	0.205	0.174	0.216	0.214	0.183	0.388
LTE B13	Left cheek	0.127	0.489	0.590	0.405	0.616	0.717	0.532	1.122
	Left tilted	0.067	0.435	0.452	0.347	0.502	0.519	0.414	0.866
	Right cheek	0.106	0.230	0.220	0.177	0.336	0.326	0.283	0.503
	Right tilted	0.055	0.207	0.205	0.174	0.262	0.260	0.229	0.434
LTE B26	Left cheek	0.244	0.489	0.590	0.405	0.733	0.834	0.649	1.239
	Left tilted	0.119	0.435	0.452	0.347	0.554	0.571	0.466	0.918
	Right cheek	0.206	0.230	0.220	0.177	0.436	0.426	0.383	0.603
	Right tilted	0.096	0.207	0.205	0.174	0.303	0.301	0.270	0.475
LTE B38	Left cheek	0.101	0.489	0.590	0.405	0.590	0.691	0.506	1.096
	Left tilted	0.139	0.435	0.452	0.347	0.574	0.591	0.486	0.938
	Right cheek	0.283	0.230	0.220	0.177	0.513	0.503	0.460	0.680
	Right tilted	0.157	0.207	0.205	0.174	0.364	0.362	0.331	0.536
LTE B41	Left cheek	0.067	0.489	0.590	0.405	0.556	0.657	0.472	1.062
	Left tilted	0.083	0.435	0.452	0.347	0.518	0.535	0.430	0.882
	Right cheek	0.212	0.230	0.220	0.177	0.442	0.432	0.389	0.609
	Right tilted	0.112	0.207	0.205	0.174	0.319	0.317	0.286	0.491
LTE B66	Left cheek	0.134	0.489	0.590	0.405	0.623	0.724	0.539	1.129
	Left tilted	0.073	0.435	0.452	0.347	0.508	0.525	0.420	0.872
	Right cheek	0.075	0.230	0.220	0.177	0.305	0.295	0.252	0.472
	Right tilted	0.069	0.207	0.205	0.174	0.276	0.274	0.243	0.448



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Body-worn:

Test position		SARmax (W/kg)				Summed SAR				
		Main Ant1	WiFi 2.4G Ant2	WiFi 5G Ant2	BT					
		1	2	3	4	1+2	1+3	1+4	1+3+4	3+4
GSM850	Front side	0.298	0.081	0.248	0.041	0.379	0.546	0.339	0.587	0.289
	Back side	0.360	0.101	0.682	0.045	0.461	1.042	0.405	1.087	0.727
GSM1900	Front side	0.136	0.081	0.248	0.041	0.217	0.384	0.177	0.425	
	Back side	0.184	0.101	0.682	0.045	0.285	0.866	0.229	0.911	
WCDMA B2	Front side	0.255	0.081	0.248	0.041	0.336	0.503	0.296	0.544	
	Back side	0.338	0.101	0.682	0.045	0.439	1.020	0.383	1.065	
WCDMA B4	Front side	0.263	0.081	0.248	0.041	0.344	0.511	0.304	0.552	
	Back side	0.320	0.101	0.682	0.045	0.421	1.002	0.365	1.047	
WCDMA B5	Front side	0.219	0.081	0.248	0.041	0.300	0.467	0.260	0.508	
	Back side	0.281	0.101	0.682	0.045	0.382	0.963	0.326	1.008	
LTE B2	Front side	0.265	0.081	0.248	0.041	0.346	0.513	0.306	0.554	
	Back side	0.362	0.101	0.682	0.045	0.463	1.044	0.407	1.089	
LTE B4	Front side	0.115	0.081	0.248	0.041	0.196	0.363	0.156	0.404	
	Back side	0.149	0.101	0.682	0.045	0.250	0.831	0.194	0.876	
LTE B7	Front side	0.220	0.081	0.248	0.041	0.301	0.468	0.261	0.509	
	Back side	0.444	0.101	0.682	0.045	0.545	1.126	0.489	1.171	
LTE B12	Front side	0.183	0.081	0.248	0.041	0.264	0.431	0.224	0.472	
	Back side	0.227	0.101	0.682	0.045	0.328	0.909	0.272	0.954	
LTE B13	Front side	0.157	0.081	0.248	0.041	0.238	0.405	0.198	0.446	
	Back side	0.185	0.101	0.682	0.045	0.286	0.867	0.230	0.912	
LTE B26	Front side	0.206	0.081	0.248	0.041	0.287	0.454	0.247	0.495	
	Back side	0.276	0.101	0.682	0.045	0.377	0.958	0.321	1.003	
LTE B38	Front side	0.287	0.081	0.248	0.041	0.368	0.535	0.328	0.576	
	Back side	0.481	0.101	0.682	0.045	0.582	1.163	0.526	1.208	
LTE B41	Front side	0.203	0.081	0.248	0.041	0.284	0.451	0.244	0.492	
	Back side	0.334	0.101	0.682	0.045	0.435	1.016	0.379	1.061	
LTE B66	Front side	0.185	0.081	0.248	0.041	0.266	0.433	0.226	0.474	
	Back side	0.227	0.101	0.682	0.045	0.328	0.909	0.272	0.954	



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Test position		SARmax (W/kg)				Summed SAR			
		Main Ant0	WiFi 2.4G Ant2	WiFi 5G Ant2	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
GSM850	Front side	0.316	0.081	0.248	0.041	0.397	0.564	0.357	0.605
	Back side	0.371	0.101	0.682	0.045	0.472	1.053	0.416	1.098
GSM1900	Front side	0.104	0.081	0.248	0.041	0.185	0.352	0.145	0.393
	Back side	0.183	0.101	0.682	0.045	0.284	0.865	0.228	0.910
WCDMA B2	Front side	0.105	0.081	0.248	0.041	0.186	0.353	0.146	0.394
	Back side	0.214	0.101	0.682	0.045	0.315	0.896	0.259	0.941
WCDMA B4	Front side	0.172	0.081	0.248	0.041	0.253	0.420	0.213	0.461
	Back side	0.252	0.101	0.682	0.045	0.353	0.934	0.297	0.979
WCDMA B5	Front side	0.209	0.081	0.248	0.041	0.290	0.457	0.250	0.498
	Back side	0.246	0.101	0.682	0.045	0.347	0.928	0.291	0.973
LTE B2	Front side	0.099	0.081	0.248	0.041	0.180	0.347	0.140	0.388
	Back side	0.172	0.101	0.682	0.045	0.273	0.854	0.217	0.899
LTE B4	Front side	0.166	0.081	0.248	0.041	0.247	0.414	0.207	0.455
	Back side	0.290	0.101	0.682	0.045	0.391	0.972	0.335	1.017
LTE B7	Front side	0.411	0.081	0.248	0.041	0.492	0.659	0.452	0.700
	Back side	0.469	0.101	0.682	0.045	0.570	1.151	0.514	1.196
LTE B12	Front side	0.020	0.081	0.248	0.041	0.101	0.268	0.061	0.309
	Back side	0.027	0.101	0.682	0.045	0.128	0.709	0.072	0.754
LTE B13	Front side	0.180	0.081	0.248	0.041	0.261	0.428	0.221	0.469
	Back side	0.199	0.101	0.682	0.045	0.300	0.881	0.244	0.926
LTE B26	Front side	0.201	0.081	0.248	0.041	0.282	0.449	0.242	0.490
	Back side	0.238	0.101	0.682	0.045	0.339	0.920	0.283	0.965
LTE B38	Front side	0.144	0.081	0.248	0.041	0.225	0.392	0.185	0.433
	Back side	0.156	0.101	0.682	0.045	0.257	0.838	0.201	0.883
LTE B41	Front side	0.192	0.081	0.248	0.041	0.273	0.440	0.233	0.481
	Back side	0.200	0.101	0.682	0.045	0.301	0.882	0.245	0.927
LTE B66	Front side	0.184	0.081	0.248	0.041	0.265	0.432	0.225	0.473
	Back side	0.324	0.101	0.682	0.045	0.425	1.006	0.369	1.051



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Hotspot:

Test position		SARmax (W/kg)				Summed SAR				
		Main Ant1	WiFi 2.4G Ant2	WiFi 5G Ant2	BT					
		1	2	3	4	1+2	1+3	1+4	1+3+4	3+4
GSM850	Front side	0.398	0.164	0.199	0.076	0.562	0.597	0.474	0.673	0.275
	Back side	0.536	0.222	0.603	0.099	0.758	1.139	0.635	1.238	0.702
	Left side	0.317	/	/	/	0.317	0.317	0.317	0.317	/
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479	0.479
	Top side	0.399	0.124	0.417	0.066	0.523	0.816	0.465	0.882	0.483
	Bottom side	/	/	/	/	/	/	/	/	/
GSM1900	Front side	0.333	0.164	0.199	0.076	0.497	0.532	0.409	0.608	
	Back side	0.424	0.222	0.603	0.099	0.646	1.027	0.523	1.126	
	Left side	0.093	/	/	/	0.093	0.093	0.093	0.093	
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479	
	Top side	0.500	0.124	0.417	0.066	0.624	0.917	0.566	0.983	
	Bottom side	/	/	/	/	/	/	/	/	
WCDMA B2	Front side	0.345	0.164	0.199	0.076	0.509	0.544	0.421	0.620	
	Back side	0.471	0.222	0.603	0.099	0.693	1.074	0.570	1.173	
	Left side	0.092	/	/	/	0.092	0.092	0.092	0.092	
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479	
	Top side	0.504	0.124	0.417	0.066	0.628	0.921	0.570	0.987	
	Bottom side	/	/	/	/	/	/	/	/	
WCDMA B4	Front side	0.364	0.164	0.199	0.076	0.528	0.563	0.440	0.639	
	Back side	0.460	0.222	0.603	0.099	0.682	1.063	0.559	1.162	
	Left side	0.102	/	/	/	0.102	0.102	0.102	0.102	
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479	
	Top side	0.423	0.124	0.417	0.066	0.547	0.840	0.489	0.906	
	Bottom side	/	/	/	/	/	/	/	/	
WCDMA B5	Front side	0.311	0.164	0.199	0.076	0.475	0.510	0.387	0.586	
	Back side	0.376	0.222	0.603	0.099	0.598	0.979	0.475	1.078	
	Left side	0.212	/	/	/	0.212	0.212	0.212	0.212	
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479	
	Top side	0.303	0.124	0.417	0.066	0.427	0.720	0.369	0.786	
	Bottom side	/	/	/	/	/	/	/	/	
LTE B2	Front side	0.335	0.164	0.199	0.076	0.499	0.534	0.411	0.610	
	Back side	0.464	0.222	0.603	0.099	0.686	1.067	0.563	1.166	
	Left side	0.102	/	/	/	0.102	0.102	0.102	0.102	
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479	
	Top side	0.517	0.124	0.417	0.066	0.641	0.934	0.583	1.000	
	Bottom side	/	/	/	/	/	/	/	/	
LTE B4	Front side	0.164	0.164	0.199	0.076	0.328	0.363	0.240	0.439	
	Back side	0.222	0.222	0.603	0.099	0.444	0.825	0.321	0.924	
	Left side	0.048	/	/	/	0.048	0.048	0.048	0.048	
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479	
	Top side	0.209	0.124	0.417	0.066	0.333	0.626	0.275	0.692	
	Bottom side	/	/	/	/	/	/	/	/	
LTE B7	Front side	0.274	0.164	0.199	0.076	0.438	0.473	0.350	0.549	
	Back side	0.548	0.222	0.603	0.099	0.770	1.151	0.647	1.250	
	Left side	0.244	/	/	/	0.244	0.244	0.244	0.244	
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479	



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	Top side	0.895	0.124	0.417	0.066	1.019	1.312	0.961	1.378
	Bottom side	/	/	/	/	/	/	/	/
LTE B12	Front side	0.170	0.164	0.199	0.076	0.334	0.369	0.246	0.445
	Back side	0.233	0.222	0.603	0.099	0.455	0.836	0.332	0.935
	Left side	0.284	/	/	/	0.284	0.284	0.284	0.284
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479
	Top side	0.121	0.124	0.417	0.066	0.245	0.538	0.187	0.604
	Bottom side	/	/	/	/	/	/	/	/
LTE B13	Front side	0.132	0.164	0.199	0.076	0.296	0.331	0.208	0.407
	Back side	0.190	0.222	0.603	0.099	0.412	0.793	0.289	0.892
	Left side	0.109	/	/	/	0.109	0.109	0.109	0.109
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479
	Top side	0.125	0.124	0.417	0.066	0.249	0.542	0.191	0.608
	Bottom side	/	/	/	/	/	/	/	/
LTE B26	Front side	0.224	0.164	0.199	0.076	0.388	0.423	0.300	0.499
	Back side	0.331	0.222	0.603	0.099	0.553	0.934	0.430	1.033
	Left side	0.189	/	/	/	0.189	0.189	0.189	0.189
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479
	Top side	0.264	0.124	0.417	0.066	0.388	0.681	0.330	0.747
	Bottom side	/	/	/	/	/	/	/	/
LTE B38	Front side	0.330	0.164	0.199	0.076	0.494	0.529	0.406	0.605
	Back side	0.564	0.222	0.603	0.099	0.786	1.167	0.663	1.266
	Left side	0.350	/	/	/	0.350	0.350	0.350	0.350
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479
	Top side	1.098	0.124	0.417	0.066	1.222	1.515	1.164	1.581
	Bottom side	/	/	/	/	/	/	/	/
LTE B41	Front side	0.230	0.164	0.199	0.076	0.394	0.429	0.306	0.505
	Back side	0.426	0.222	0.603	0.099	0.648	1.029	0.525	1.128
	Left side	0.339	/	/	/	0.339	0.339	0.339	0.339
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479
	Top side	0.582	0.124	0.417	0.066	0.706	0.999	0.648	1.065
	Bottom side	/	/	/	/	/	/	/	/
LTE B66	Front side	0.285	0.164	0.199	0.076	0.449	0.484	0.361	0.560
	Back side	0.342	0.222	0.603	0.099	0.564	0.945	0.441	1.044
	Left side	0.076	/	/	/	0.076	0.076	0.076	0.076
	Right side	/	0.156	0.410	0.069	0.156	0.410	0.069	0.479
	Top side	0.297	0.124	0.417	0.066	0.421	0.714	0.363	0.780
	Bottom side	/	/	/	/	/	/	/	/



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Test position		SARmax (W/kg)				Summed SAR			
		Main Ant0	WiFi 2.4G Ant2	WiFi 5G Ant2	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
GSM850	Front side	0.322	0.164	0.199	0.076	0.486	0.521	0.398	0.597
	Back side	0.570	0.222	0.603	0.099	0.792	1.173	0.669	1.272
	Left side	0.418	/	/	/	0.418	0.418	0.418	0.418
	Right side	0.295	0.156	0.410	0.069	0.451	0.705	0.364	0.774
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.411	/	/	/	0.411	0.411	0.411	0.411
GSM1900	Front side	0.227	0.164	0.199	0.076	0.391	0.426	0.303	0.502
	Back side	0.457	0.222	0.603	0.099	0.679	1.060	0.556	1.159
	Left side	0.081	/	/	/	0.081	0.081	0.081	0.081
	Right side	0.132	0.156	0.410	0.069	0.288	0.542	0.201	0.611
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.678	/	/	/	0.678	0.678	0.678	0.678
WCDMA B2	Front side	0.129	0.164	0.199	0.076	0.293	0.328	0.205	0.404
	Back side	0.287	0.222	0.603	0.099	0.509	0.890	0.386	0.989
	Left side	0.046	/	/	/	0.046	0.046	0.046	0.046
	Right side	0.078	0.156	0.410	0.069	0.234	0.488	0.147	0.557
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.419	/	/	/	0.419	0.419	0.419	0.419
WCDMA B4	Front side	0.203	0.164	0.199	0.076	0.367	0.402	0.279	0.478
	Back side	0.318	0.222	0.603	0.099	0.540	0.921	0.417	1.020
	Left side	0.065	/	/	/	0.065	0.065	0.065	0.065
	Right side	0.109	0.156	0.410	0.069	0.265	0.519	0.178	0.588
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.437	/	/	/	0.437	0.437	0.437	0.437
WCDMA B5	Front side	0.180	0.164	0.199	0.076	0.344	0.379	0.256	0.455
	Back side	0.347	0.222	0.603	0.099	0.569	0.950	0.446	1.049
	Left side	0.271	/	/	/	0.271	0.271	0.271	0.271
	Right side	0.184	0.156	0.410	0.069	0.340	0.594	0.253	0.663
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.267	/	/	/	0.267	0.267	0.267	0.267
LTE B2	Front side	0.105	0.164	0.199	0.076	0.269	0.304	0.181	0.380
	Back side	0.218	0.222	0.603	0.099	0.440	0.821	0.317	0.920
	Left side	0.058	/	/	/	0.058	0.058	0.058	0.058
	Right side	0.068	0.156	0.410	0.069	0.224	0.478	0.137	0.547
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.295	/	/	/	0.295	0.295	0.295	0.295
LTE B4	Front side	0.206	0.164	0.199	0.076	0.370	0.405	0.282	0.481
	Back side	0.340	0.222	0.603	0.099	0.562	0.943	0.439	1.042
	Left side	0.081	/	/	/	0.081	0.081	0.081	0.081
	Right side	0.119	0.156	0.410	0.069	0.275	0.529	0.188	0.598
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.481	/	/	/	0.481	0.481	0.481	0.481
LTE B7	Front side	0.539	0.164	0.199	0.076	0.703	0.738	0.615	0.814
	Back side	0.680	0.222	0.603	0.099	0.902	1.283	0.779	1.382
	Left side	0.069	/	/	/	0.069	0.069	0.069	0.069
	Right side	0.313	0.156	0.410	0.069	0.469	0.723	0.382	0.792
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483



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	Bottom side	0.262	/	/	/	0.262	0.262	0.262	0.262
LTE B12	Front side	0.019	0.164	0.199	0.076	0.183	0.218	0.095	0.294
	Back side	0.029	0.222	0.603	0.099	0.251	0.632	0.128	0.731
	Left side	0.019	/	/	/	0.019	0.019	0.019	0.019
	Right side	0.019	0.156	0.410	0.069	0.175	0.429	0.088	0.498
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.010	/	/	/	0.010	0.010	0.010	0.010
LTE B13	Front side	0.150	0.164	0.199	0.076	0.314	0.349	0.226	0.425
	Back side	0.194	0.222	0.603	0.099	0.416	0.797	0.293	0.896
	Left side	0.179	/	/	/	0.179	0.179	0.179	0.179
	Right side	0.128	0.156	0.410	0.069	0.284	0.538	0.197	0.607
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.095	/	/	/	0.095	0.095	0.095	0.095
LTE B26	Front side	0.175	0.164	0.199	0.076	0.339	0.374	0.251	0.450
	Back side	0.313	0.222	0.603	0.099	0.535	0.916	0.412	1.015
	Left side	0.241	/	/	/	0.241	0.241	0.241	0.241
	Right side	0.168	0.156	0.410	0.069	0.324	0.578	0.237	0.647
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.207	/	/	/	0.207	0.207	0.207	0.207
LTE B38	Front side	0.169	0.164	0.199	0.076	0.333	0.368	0.245	0.444
	Back side	0.202	0.222	0.603	0.099	0.424	0.805	0.301	0.904
	Left side	0.026	/	/	/	0.026	0.026	0.026	0.026
	Right side	0.104	0.156	0.410	0.069	0.260	0.514	0.173	0.583
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.100	/	/	/	0.100	0.100	0.100	0.100
LTE B41	Front side	0.190	0.164	0.199	0.076	0.354	0.389	0.266	0.465
	Back side	0.234	0.222	0.603	0.099	0.456	0.837	0.333	0.936
	Left side	0.022	/	/	/	0.022	0.022	0.022	0.022
	Right side	0.103	0.156	0.410	0.069	0.259	0.513	0.172	0.582
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.099	/	/	/	0.099	0.099	0.099	0.099
LTE B66	Front side	0.237	0.164	0.199	0.076	0.401	0.436	0.313	0.512
	Back side	0.380	0.222	0.603	0.099	0.602	0.983	0.479	1.082
	Left side	0.090	/	/	/	0.090	0.090	0.090	0.090
	Right side	0.125	0.156	0.410	0.069	0.281	0.535	0.194	0.604
	Top side	/	0.124	0.417	0.066	0.124	0.417	0.066	0.483
	Bottom side	0.552	/	/	/	0.552	0.552	0.552	0.552



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Product specific 10g SAR:

Test position		SARmax (W/kg)				Summed SAR				
		Main Ant1	WiFi 2.4G Ant2	WiFi 5G Ant2	BT					
		1	2	3	4	1+2	1+3	1+4	1+3+4	3+4
LTE B7	Front side	/	/	1.040	/	/	1.040	/	1.040	1.040
	Back side	/	/	1.329	/	/	1.329	/	1.329	1.329
	Left side	/	/	/	/	/	/	/	/	/
	Right side	/	/	1.491	/	/	1.491	/	1.491	1.491
	Top side	1.384	/	1.083	/	1.384	2.467	1.384	2.467	1.083
	Bottom side	/	/	/	/	/	/	/	/	/
LTE B38	Front side	/	/	1.040	/	/	1.040	/	1.040	
	Back side	/	/	1.329	/	/	1.329	/	1.329	
	Left side	/	/	/	/	/	/	/	/	
	Right side	/	/	1.491	/	/	1.491	/	1.491	
	Top side	1.687	/	1.083	/	1.687	2.770	1.687	2.770	
	Bottom side	/	/	/	/	/	/	/	/	



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9 Equipment list

Test Platform		SPEAG DASY Professional				
Description		SAR Test System (Frequency range 300MHz-6GHz)				
Software Reference		DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)				
Hardware Reference						
Equipment		Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	Twin Phantom	SPEAG	SAM 2	1640	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 3	2031	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 4	1913	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 6	1481	NCR	NCR
☒	DAE	SPEAG	DAE4	702	2022/11/09	2023/11/08
☒	DAE	SPEAG	DAE4	1267	2022/12/10	2023/12/09
☒	DAE	SPEAG	DAE4	896	2023/03/17	2024/03/16
☒	DAE	SPEAG	DAE4	1663	2023/03/27	2024/03/26
☒	E-Field Probe	SPEAG	EX3DV4	3789	2022/09/30	2023/09/29
☒	E-Field Probe	SPEAG	ES3DV3	3137	2022/09/16	2023/09/15
☒	E-Field Probe	SPEAG	EX3DV4	7620	2022/11/20	2023/11/19
☒	E-Field Probe	SPEAG	EX3DV4	7636	2023/06/05	2024/06/04
☒	Validation Kits	SPEAG	D750V3	1160	2022/06/06	2025/06/05
☒	Validation Kits	SPEAG	D835V2	4d105	2022/11/02	2025/11/01
☒	Validation Kits	SPEAG	D1750V2	1149	2022/06/17	2025/06/16
☒	Validation Kits	SPEAG	D1900V2	5d028	2022/11/02	2025/11/01
☒	Validation Kits	SPEAG	D2450V2	733	2022/11/02	2025/11/01
☒	Validation Kits	SPEAG	D2600V2	1125	2022/06/14	2025/06/13
☒	Validation Kits	SPEAG	D5GHzV2	1165	2022/11/01	2025/10/31
☒	Dielectric parameter probes	SPEAG	DAKS-3.5	1148	2023/03/20	2024/03/19
☒	Vector Network Analyzer and Vector Reflectometer	SPEAG	DAKS_VNA R140	21460031	2023/03/20	2024/03/19
☒	Radio Communication Analyzer	Anritsu	MT8820C	6201616273	2023/02/16	2024/02/15
☒	Radio Communication Analyzer	Anritsu	MT8820C	6201381734	2023/05/25	2024/05/24
☒	Radio Communication Analyzer	Anritsu	MT8820C	6201074424	2022/11/18	2023/11/17
☒	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
☒	Signal Generator	Agilent	N5171B	MY53050736	2023/02/16	2024/02/15
☒	Preamplifier	Mini-Circuits	ZHL-42W	15542	NCR	NCR
☒	Preamplifier	Compliance Directions Systems Inc.	AMP28-3W	073501433	NCR	NCR
☒	Power Meter	Agilent	E4416A	GB41292095	2023/02/16	2024/02/15
☒	Power Sensor	Agilent	8481H	MY41091234	2023/02/16	2024/02/15
☒	Power Sensor	R&S	NRP-Z92	100025	2023/02/16	2024/02/15
☒	Attenuator	SHX	TS2-3dB	30704	NCR	NCR
☒	Speed reading thermometer	MingGao	T809	NA	2023/05/26	2024/05/25
☒	Humidity and Temperature Indicator	KIMTOKA	KIMTOKA	NA	2023/02/17	2024/02/16
☒	Humidity and Temperature Indicator	CHIGAO	HTC-1	ZGL2020120550471	2023/05/26	2024/05/25
☒	Humidity and Temperature Indicator	CHIGAO	HTC-1	ZGL2020120550472	2023/05/26	2024/05/25

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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