FCC SAR AND PD TEST REPORT

Application No.:	SZCR2409003604WM
Applicant:	Guangdong OPPO Mobile Telecommunications Corp.,Ltd.
Address of Applicant:	NO.18 Haibin Road, Wusha, Chang'an Town, Dongguan City, Guangdong,China
Manufacturer:	Guangdong OPPO Mobile Telecommunications Corp.,Ltd.
Address of Manufacturer:	NO.18 Haibin Road, Wusha, Chang'an Town, Dongguan City, Guangdong,China
EUT Description:	Mobile Phone
Model No.:	CPH2697
Trade Mark:	OPPO
FCC ID:	R9C-OP24261
Standards:	FCC 47CFR §2.1093
Date of Receipt:	2024/10/21
Date of Test:	2024/10/30 to 2024/12/9
Date of Issue:	2024/12/9
Test Result :	**PASS ***

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

Keny. xu

Keny Xu
EMC Laboratory Manager

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Revision Record			
Version	**Description**	**Date**	**Remark**
01		2024/12/9	

Authorized for issue by:				
		Sherlock Fang		
		Sherlock Fang/Project Engineer		
		Eric Fu		
		Eric Fu/Reviewer		

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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)			
	Head	Body-worn	Hotspot	Product specific 10g SAR
GSM850	1.11	**0.53**	**1.00**	1.77
GSM1900	0.99	0.30	0.69	/
WCDMA Band II	1.18	0.28	0.54	/
WCDMA Band IV	0.78	0.31	0.47	/
WCDMA Band V	0.91	0.48	0.68	/
LTE Band 2	1.15	0.30	0.53	/
LTE Band 7	1.14	0.34	0.58	/
LTE Band 12/17	1.10	0.31	0.56	/
LTE Band 13	0.60	0.27	0.69	/
LTE Band 26/5	0.49	0.21	0.38	/
LTE Band 38	1.00	0.22	0.47	/
LTE Band 41	0.61	0.19	0.47	/
LTE Band 66/4	**1.19**	0.19	0.34	/
NR Band n2	1.12	0.26	0.50	/
NR Band n7	1.12	0.33	0.78	/
NR Band n12	1.18	0.50	0.97	1.40
NR Band n26/5	0.50	0.38	0.58	/
NR Band n38	1.18	0.26	0.76	/
NR Band n41	1.11	0.28	0.46	/
NR Band n66	0.79	0.25	0.35	/
WI-FI (2.4GHz)	0.82	0.30	0.85	/
WI-FI (5GHz)	0.98	0.21	0.73	**1.78**
WI-FI 6E	0.17	<0.10	/	0.25
BT	1.03	0.27	0.47	/
SAR Limited(W/kg)	1.6			4.0

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Maximum Simultaneous Transmission SAR (W/kg)				
Scenario	Head	Body-worn	Hotspot	Product specific 10g SAR
Sum SAR	1.58	1.20	1.57	1.78
SPLSR	/	/	/	/
SPLSR Limited	0.04			0.1

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 4 (frequency range: 1710-1755 MHz) is covered by LTE band 66 (frequency range: 1710-1780 MHz). SAR in LTE band 5 (frequency range: 824-849 MHz) are 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). SAR in NR N5 (frequency range: 824-849 MHz) are covered by NR N26 (frequency range: 814-849 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.

Frequency Band	**Reported Power Density (W/m²)**
WIFI 6E	**9.87**
PD Limited(W/m^2)	10.0

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1 General Information

1.1 General Description of EUT

Product Name:	Mobile Phone		
Model No.:	CPH2697		
Trade Mark:	OPPO		
Product Phase:	production unit		
Device Type:	portable device		
Exposure Category:	uncontrolled environment / general population		
IMEI:	864138070027894; 864138070027696 864138070027951; 864138070028058 864138070028090; 864138070027738 864138070023034		
Hardware Version:	11		
Software Version:	ColorOS 15.0		
Antenna Type:	Integrated		
Device Operating Configurations:			
Modulation Mode:	**GSM**:GMSK,8PSK; **WCDMA**:QPSK,16QAM **LTE**:QPSK,16QAM,64QAM **5G NR**:DFT-s-OFDM(PI/2 BPSK,QPSK,16QAM,64QAM,256QAM) CP-OFDM(QPSK,16QAM,64QAM,256QAM) **WIFI**:DSSS,OFDM,OFDMA; **BT**:GFSK, π/4DQPSK,8DPSK		
Device Class:	B		
GPRS Multi-slots Class:	12	EGPRS Multi-slots Class:	12
HSDPA UE Category:	24	HSUPA UE Category:	7
DC-HSDPA UE Category:	24		
Power Class:	4, tested with power level 5(GSM850)		
	1, tested with power level 0(GSM1900)		
	3, tested with power control “all 1”(WCDMA Band)		
	3, tested with power control “max power”(LTE Band)		
Frequency Bands:	Band	Tx(MHz)	Rx(MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990

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	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	LTE Band 2	1850 ~1910	1930 ~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869-894
	LTE Band 7	2500~2570	2620~2690
	LTE Band 12	699~716	729~746
	LTE Band 13	777~787	746~756
	LTE Band 17	704-716	734-746
	LTE Band 26	814~849	859~894
	LTE Band 38	2570~2620	2570~2620
	LTE Band 41	2496~2690	2496~2690
	LTE Band 66	1710~1780	2110~2180
	NR Band n2	1850 ~1910	1930 ~1990
	NR Band n5	824~849	869-894
	NR Band n7	2500~2570	2620~2690
	NR Band n12	699~716	729~746
	NR Band n26	814~849	859~894
	NR Band n38	2570~2620	2570~2620
	NR Band n41 (Class 2/3)	2496~2690	2496~2690
	NR Band n66	1710~1780	2110~2180
	WIFI 2.4G	2412~2462	2412~2462
	WIFI 5G	5150~5250	5150~5250
		5250~5350	5250~5350
		5470~5725	5470~5725
		5725~5850	5725~5850
	WIFI 6E	5925~6425	5925~6425
	BT	2402~2480	2402~2480
	NFC	13.56	13.56
RF Cable:	☒Provided by applicant ☐Provided by the laboratory		
Battery Information:	Model:	BLPB43	

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	Normal Voltage:	3.92V
	Rated capacity:	5640mAh
	Manufacturer:	Sunwoda Electronic CO.,LTD. Dongguan NVT Technology Co., Ltd

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1.1.1 DUT Antenna Locations (Back View)

The DUT Antenna Locations can be referred to Appendix D

Note:

1) The test device is a smart phone. The overall diagonal dimension of this device is 175mm. Per KDB 648474 D04, because the diagonal distance of this device is ≥160mm, so it is a phablet.

Please refer to Appendix D Photographs.

According to the distance between NR/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	≤25mm	≤25mm	≤25mm	>25mm	>25mm	>25mm
Ant1	≤25mm	≤25mm	>25mm	≤25mm	>25mm	≤25mm
Ant5	≤25mm	≤25mm	≤25mm	>25mm	>25mm	≤25mm
Ant6	≤25mm	≤25mm	≤25mm	>25mm	≤25mm	>25mm
Ant7	≤25mm	≤25mm	>25mm	≤25mm	≤25mm	>25mm
Ant8	≤25mm	≤25mm	>25mm	≤25mm	>25mm	>25mm
Ant9	≤25mm	≤25mm	>25mm	≤25mm	≤25mm	>25mm
Ant11	≤25mm	≤25mm	≤25mm	>25mm	≤25mm	>25mm
Ant12	≤25mm	≤25mm	>25mm	≤25mm	≤25mm	>25mm

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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1.1.2 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) 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.

2) A fixed level power reduction is applied for some frequency bands when simultaneously transmitting with the other antennas in certain simultaneous transmission conditions.

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

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1.2 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
ANSI/IEEE C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.
IEEE 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
IEC/IEEE 62209-1528:2020	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)
IEC/IEEE 63195-1:2022	Assessment of power density of human exposure to radio frequency fields from wireless devices in close proximity to the head and body (frequency range of 6 GHz to 300 GHz) – Part 1: Measurement procedure
KDB 941225 D01	3G SAR Measurement Procedures v03r01
KDB 941225 D05	SAR for LTE Devices v02r05
KDB 941225 D05A	LTE Rel.10 KDB Inquiry Sheet v01r02
KDB 941225 D06	Hotspot Mode SAR v02r01
KDB 248227 D01	SAR Guidance for IEEE 802 11 Wi-Fi SAR v02r02
KDB 648474 D04	Handset SAR v01r03
KDB 447498 D04	Interim General RF Exposure Guidance v01
KDB 865664 D01	SAR Measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02	RF Exposure Reporting v01r02
KDB 690783 D01	SAR Listings on Grants v01r03

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1.3 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.)

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm2 per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

Note: 1.0 mW/cm^2 is equal to 10 W/m^2

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1.4 Test Location

All tests were performed at:
SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China. 518057.
Tel: +86 755 2601 2053 Fax: +86 755 2671 0594
No tests were sub-contracted.

1.5 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 EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.
Designation Number: CN1336. Test Firm Registration Number: 787754.

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

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.
CAB identifier: CN0006.
IC#: 4620C.

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2 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
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.	

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3 SAR Measurements System Configuraion

3.1 The SAR Measurement System

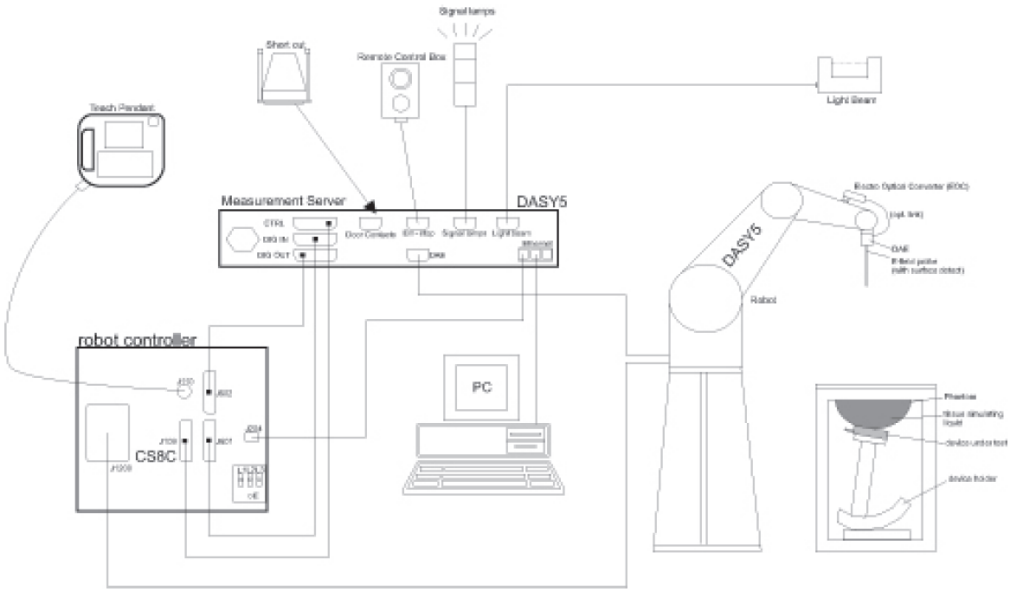
This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the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

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- 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.

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3.2 Isotropic E-field Proble EX3DV4

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

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3.3 Data Acquisition Electronics (DAE)

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

3.4 SAM Twin Phantom

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

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.
Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.

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3.5 ELI Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)	
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)	
Shell Thickness	2.0 ± 0.2 mm(bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	pprox.. 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 ε=3 and loss tangent δ=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

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3.7 Measurement Procedure

3.7.1 Scanning procedure

Step 1: Power reference measurement

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

Step 2: Area scan

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

Step 3: Zoom scan

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

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

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

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			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Step 4: Power reference measurement (drift)

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The indicated drift is mainly the variation of the DUT's output power and should vary max. ± 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 “DAE”. 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 Vi = compensated signal of channel I (I = x, y, z)
Ui = 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:

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

H-field probes:

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

With Vi = 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
aij = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
Ei = electric field strength of channel I in V/m
Hi = 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.

$$SAR = (Etot^2 \cdot \sigma) / (\varepsilon \cdot 1000)$$

with SAR = local specific absorption rate in mW/g
Etot = 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.

$$P_{pwe} = E_{tot}^2{}_2 / 3770 \quad \text{or} \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with Ppwe = equivalent power density of a plane wave in mW/cm2
Etot = total electric field strength in V/m
Htot = total magnetic field strength in A/m

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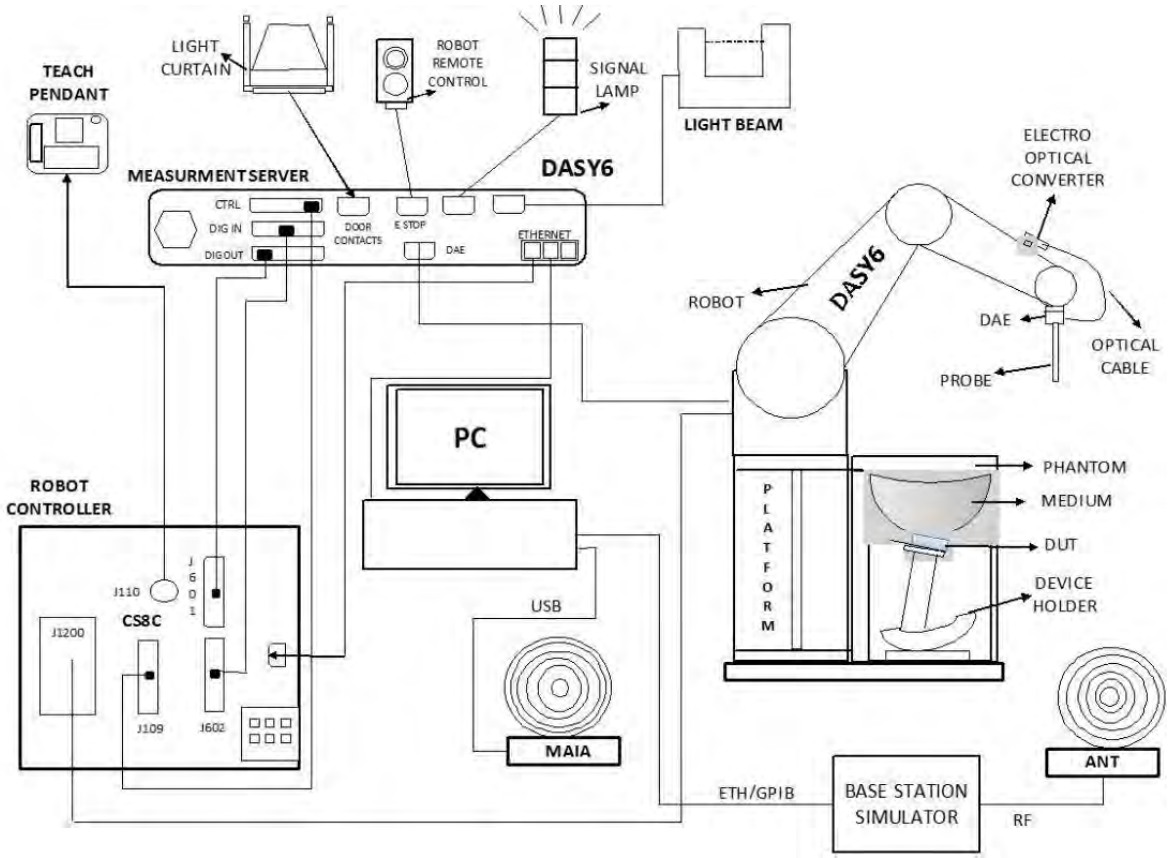
5 PD System Description and Setup

5.1 Power density measurement system

Power density measurements for mmWave frequencies were performed using SPEAG DASY6 with cDASY6 5G module. The DASY6 included a high precision robotics system (Staubli), robot controller, desktop computer, near-field probe, probe alignment sensor, and the 5G phantom cover.



Measurement System Configuration

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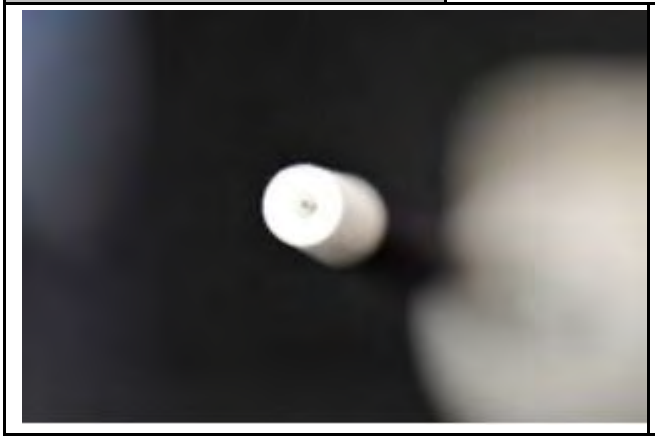
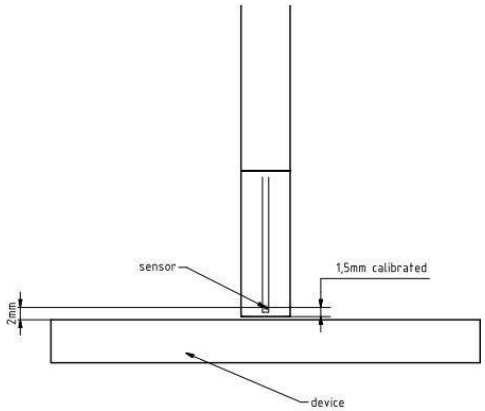
5.2 EUmmWaVe probe

Frequency	750 MHz – 110 GHz
Probe Overall Length	320 mm
Probe Body Diameter	8.0 mm
Tip Length	23.0 mm
Tip Diameter	8.0 mm
Probe's two dipoles length	0.9 mm – Diode loaded
Dynamic Range	< 20 V/m - 10000 V/m with PRE-10 (min < 50 V/m - 3000 V/m)
Position Precision	< 0.2 mm
Distance between diode sensors and probe's tip	1.5 mm
Minimum Mechanical separation between probe tip and a Surface	0.5 mm
Applications	E-field measurements of 5G devices and other mm-wave transmitters operating above 10GHz in < 2 mm distance from device (free-space) Power density, H-field and far-field analysis using total field reconstruction.
Compatibility	cDASY6 + 5G-Module SW1.0 and higher





The EUmmWaVe probe is based on the pseudo-vector probe design, which not only measures the field magnitude but also derives its polarization ellipse. The design entails two small 0.8mm dipole sensors mechanically protected by high-density foam, printed on both sides of a 0.9mm wide and 0.12mm thick glass substrate. The body of the probe is specifically constructed to minimize distortion by the scattered fields. The probe consists of two sensors with different angles (1 and 2) arranged in the same plane in the probe axis. Three or more measurements of the two sensors are taken for different probe rotational angles to derive the amplitude and polarization information. The probe design allows measurements at distances as small as 2mm from the sensors to the surface of the device under test (DUT). The typical sensor to probe tip distance is 1.5 mm. The exact distance is calibrated.

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5.3 Scan configuration

Fine-resolution scans on 2 different planes are performed to reconstruct the E- and H-fields as well as the power density; the z-distance between the 2 planes is set to λ/4. The (x, y) grid step is also setλ/4, the grid extent is set to sufficiently large to identify the field pattern and the peak.

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 (~ 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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Measurements and results are all in compliance with the standards listed. All measurements and results are recorded and maintained at the laboratory performing the tests and measurement uncertainties are taken into account when comparing measurements to pass/ fail criteria. The expanded uncertainty (95% CONFIDENCE INTERVAL) is 28.50%.

IEC/IEEE 62209-1528:2020 Input quantity X_i (source of uncertainty)	*Unc.* (±)	**Prob. Dist. PDF_i**	**Unc. $a(x_i)$**	c_i **(1g)**	c_i **(10g)**	u_i **(1g) (%)**	u_i **(10g) (%)**
Probe calibration	18.6	N (k = 2)	2	1	1	9.3	9.3
Probe calibration drift	1.7	R	√3	1	1	1.0	1.0
Probe linearity and detection limit	0.6	R	√3	1	1	0.3	0.3
Broadband signal	0.5	R	√3	1	1	0.3	0.3
Probe isotropy	2.6	R	√3	1	1	1.5	1.5
Other probe and data acquisition errors	0.6	N	1	1	1	0.6	0.6
RF ambient and noise	3.0	R	√3	1	1	1.7	1.7
Probe positioning errors	0.5	N	1	0.33	0.33	0.2	0.2
Data processing errors	4.0	R	√3	1	1	2.3	2.3
Measurement of phantom conductivity(σ)	2.5	N	1	0.78	0.71	2.0	1.8
Temperature effects (medium)	2.7	R	√3	0.78	0.71	1.2	1.1
Shell permittivity	14.0	R	√3	0.5	0.5	4.0	4.0
Distance between the radiating element of the DUT and the phantom medium	2.0	N	1	2	2	4.0	4.0
Repeatability of positioning the DUT or source against the phantom	2.9	N	1	1	1	2.9	2.9
Device holder effects	3.6	N	1	1	1	3.6	3.6
Effect of operating mode on probe sensitivity	2.4	R	√3	1	1	1.4	1.4
Time-average SAR	0.0	R	√3	1	1	0.0	0.0
Variation in SAR due to drift in output of DUT	2.5	N	1	1	1	2.5	2.5
Validation antenna uncertainty (validation measurement only)	0.0	N	1	1	1	0.0	0.0
Uncertainty in accepted power (validation measurement only)	0.0	N	1	1	1	0.0	0.0

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Phantom deviation from target (ε',σ)	1.9	N	1	1	0.84	1.9	1.6
SAR scaling	0.0	R	√3	1	1	0.0	0.0
Combined uncertainty	\					14.25	14.15
Expanded uncertainty and effective degrees of freedom（k = 2）	\					28.50	28.30

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5 PD Measurement Uncertainty

a	b	c	d	e	f=b*e/d	g
Error Description	**Uncertainty Value (±dB)**	**Probability**	**Div.**	**Ci**	**Standard Uncertainty (±dB)**	**Vi (Veff)**
Probe Calibration	0.49	N	1	1	0.49	∞
Probe correction	0.00	R	1.732	1	0.00	∞
Frequency response (BW ≤1 GHz)	0.20	R	1.732	1	0.12	∞
Sensor cross coupling	0.00	R	1.732	1	0.00	∞
Isotropy	0.50	R	1.732	1	0.29	∞
Linearity	0.20	R	1.732	1	0.12	∞
Probe scattering	0.00	R	1.732	1	0.00	∞
Probe positioning offset	0.30	R	1.732	1	0.17	∞
Probe positioning repeatability	0.04	R	1.732	1	0.02	∞
Sensor mechanical offset	0.00	R	1.732	1	0.00	∞
Probe spatial resolution	0.00	R	1.732	1	0.00	∞
Field impedance dependance	0.00	R	1.732	1	0.00	∞
Amplitude and phase drift	0.00	R	1.732	1	0.00	∞
Amplitude and phase noise	0.04	R	1.732	1	0.02	∞
Measurement area truncation	0.00	R	1.732	1	0.00	∞
Data acquisition	0.03	N	1	1	0.03	∞
Sampling	0.00	R	1.732	1	0.00	∞
Field reconstruction	2.00	R	1.732	1	1.15	∞
Forward transformation	0.00	R	1.732	1	0.00	∞
Power density scaling	0.00	R	1.732	1	0.00	∞
Spatial averaging	0.10	R	1.732	1	0.06	∞
System detection limit	0.04	R	1.732	1	0.02	∞
Probe coupling with DUT	0.00	R	1.732	1	0.00	∞
Modulation response	0.40	R	1.732	1	0.23	∞
Integration time	0.00	R	1.732	1	0.00	∞
Response time	0.00	R	1.732	1	0.00	∞
Device holder influence	0.10	R	1.732	1	0.06	∞
DUT alignment	0.00	R	1.732	1	0.00	∞
RF ambient conditions	0.04	R	1.732	1	0.02	∞
Ambient reflections	0.04	R	1.732	1	0.02	∞
Immunity / secondary reception	0.00	R	1.732	1	0.00	∞
Drift of the DUT		R	1.732	1	0.00	∞
Combined Std. Uncertainty					1.33	
Expanded STD Uncertainty (95%)，K=2					2.67	

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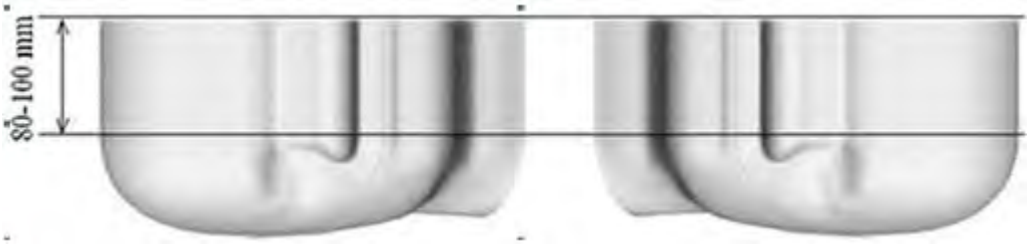
6 Desciption of Test Position

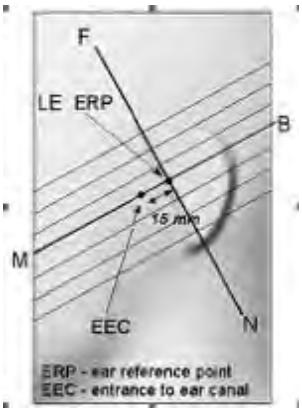
6.1 The Head Test Position

6.1.1 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

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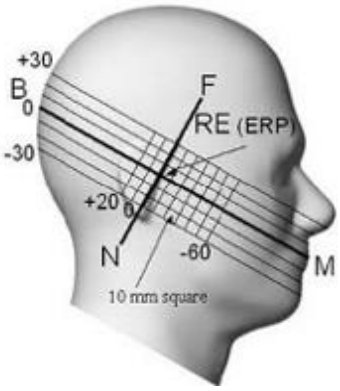
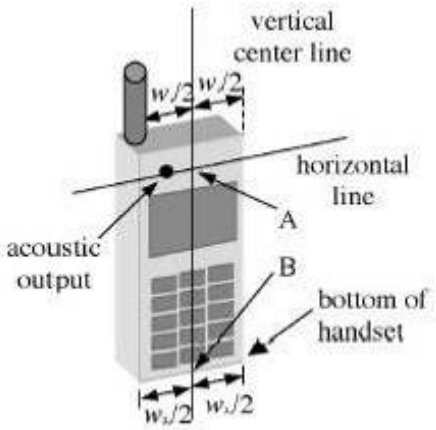
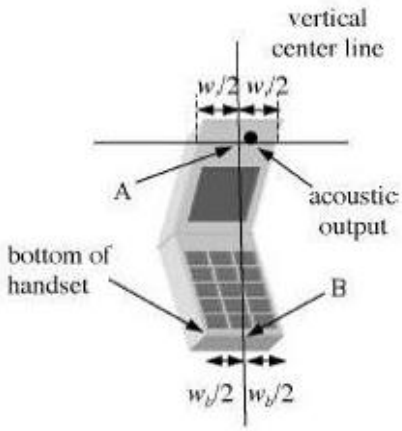


F-6.Side view of the phantom showing relevant markings and seven cross-sectional plane locations

6.1.2 EUT constructions



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



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

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6.1.3 Definition of the “check” position

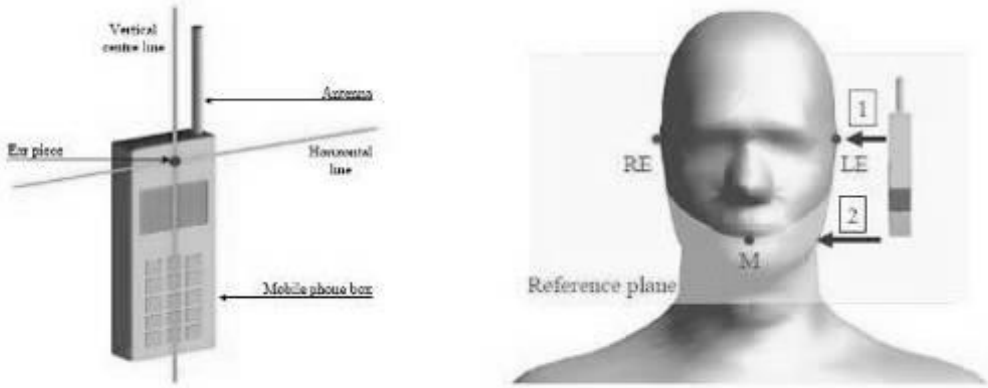
a) Position the device with the vertical centre line of the body of the device and the horizontal line crossing the centre of the ear piece in a plane parallel to the sagittal plane of the phantom (“initial position”). While maintaining the device in this plane, align the vertical centre line with the reference plane containing the three ear and mouth reference points (M, RE and LE) and align the centre of the ear piece with the line RE-LE.

b) Translate the mobile phone box towards the phantom with the ear piece aligned with the line LE-RE until telephone touches the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the box until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost.

6.1.4 Definition of the “tilted” position

a) Position the device in the “cheek” position described above.

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



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

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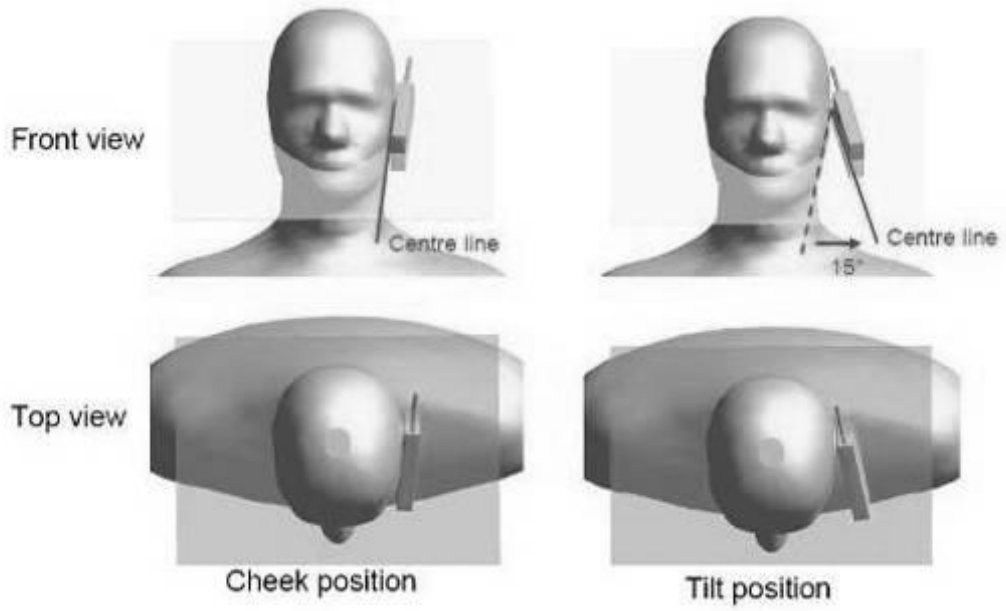

F-10. “Cheek” and “tilt” positions of the mobile phone on the left side

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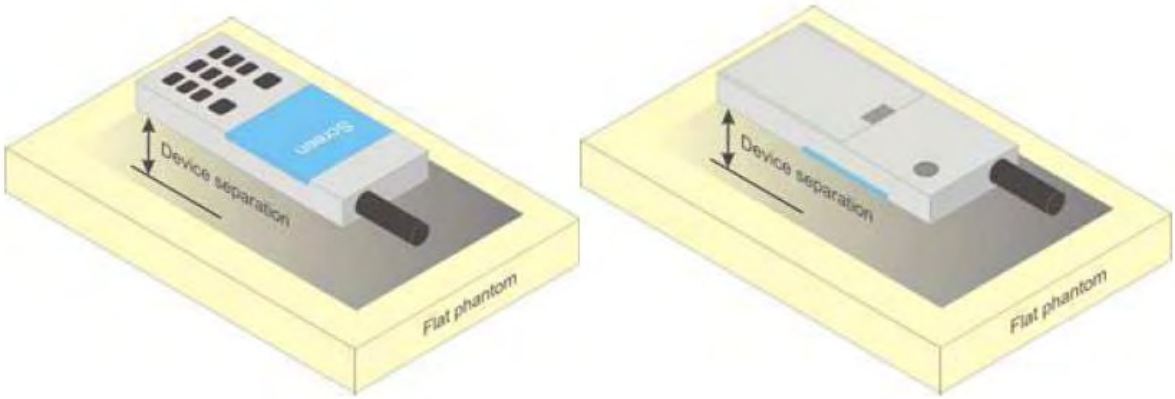
6.2 The Body Test Position

6.2.1 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 D04 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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

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



F-11.Test positions for body-worn devices

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6.2.2 Wireless Router exposure conditions

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

6.3 Extremity exposure conditions

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

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GSM850 SAR Test Record											
Ant 0 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Hotspot Test data(Separate 10mm) State 8											
Front side	GPRS 4TS	190/836.6	1:2.075	0.385	0.211	0.10	26.00	28.50	1.778	0.685	22.4
Back side	GPRS 4TS	190/836.6	1:2.075	0.530	0.290	0.04	26.00	28.50	1.778	0.942	22.4
Left side	GPRS 4TS	190/836.6	1:2.075	0.695	0.368	0.03	26.00	28.50	1.778	1.236	22.4
Left side	GPRS 4TS	128/824.2	1:2.075	0.757	0.432	-0.06	25.70	28.50	1.905	**1.442**	22.4
Left side	GPRS 4TS	251/848.8	1:2.075	0.705	0.371	-0.04	25.86	28.50	1.837	1.295	22.4

N12 SAR Test Record												
Ant 0 Test Record												
Test position	BW.	Modulation	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Hotspot Test data (Separate 10mm 1RB) State												
Front side	15	QPSK 1_77	141300/706.5	100%	0.328	0.187	0.01	21.03	24.50	2.223	0.729	22.3
Back side	15	QPSK 1_77	141300/706.5	100%	0.431	0.239	-0.14	21.03	24.50	2.223	0.958	22.3
Left side	15	QPSK 1_77	141300/706.5	100%	0.670	0.397	-0.02	21.03	24.50	2.223	1.490	22.3
Left side	15	QPSK 1_40	141500/707.5	100%	0.611	0.362	-0.06	20.84	24.50	2.323	1.419	22.3
Left side	15	QPSK 1_40	141700/708.5	100%	0.652	0.381	-0.05	20.86	24.50	2.312	1.507	22.3
Hotspot Test data (Separate 10mm 100%RB) State 8												
Left side	15	QPSK 75_0	141500/707.5	100%	0.600	0.352	-0.02	20.36	24.50	2.594	**1.557**	22.3

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7 SAR System Verificaion Procedure

7.1 Tissue Simulate Liquid

7.1.1 Recipes for Tissue Simulate Liquid

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

Ingredients (% by weight)	Frequency (MHz)				
	450	700-1000	1700-2000	2300-2500	2500-2700
Water	38.56	40.30	55.24	55.00	54.92
Salt (NaCl)	3.95	1.38	0.31	0.2	0.23
Sucrose	56.32	57.90	0	0	0
HEC	0.98	0.24	0	0	0
Bactericide	0.19	0.18	0	0	0
Tween	0	0	44.45	44.80	44.85
Salt: 99+% Pure Sodium Chloride Water: De-ionized, 16 MΩ+ resistivity Tween: Polyoxyethylene (20) sorbitan monolaurate			Sucrose: 98+% Pure Sucrose HEC: Hydroxyethyl Cellulose		
HSL5GHz is composed of the following ingredients: (Manufactured by SPEAG) Water: 50-65% Mineral oil: 10-30% Emulsifiers: 8-25% Sodium salt: 0-1.5%					

Table 2： Recipe of Tissue Simulate Liquid

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7.1.2 Measurement for Tissue Simulate Liquid

The Conductivity (σ) and Permittivity (εr) are listed in Table 2. For the SAR measurement given in this report.

The temperature variation of the Tissue Simulate Liquids was 22±2°C.

Measurement for Tissue Simulate Liquid									
Tissue Type	Measured Frequency (MHz)	Measured Tissue		Target Tissue (±5%)		Deviation (Within ±5%)		Liquid Temp. (℃)	Test Date
		ε_r	σ(S/m)	ε_r	σ(S/m)	ε_r	σ(S/m)		
750 Head	750	42.721	0.886	41.90	0.89	1.96%	-0.45%	22.2	2024/11/11
750 Head	750	42.697	0.885	41.90	0.89	1.90%	-0.56%	22.4	2024/11/15
835 Head	835	43.229	0.892	41.50	0.90	4.17%	-0.89%	22.3	2024/10/30
835 Head	835	43.214	0.891	41.50	0.90	4.13%	-1.00%	22.5	2024/11/4
835 Head	835	43.195	0.915	41.50	0.90	4.08%	1.67%	22.1	2024/11/22
1750 Head	1750	40.378	1.344	40.10	1.37	0.69%	-1.91%	22.3	2024/10/31
1750 Head	1750	40.628	1.335	40.10	1.37	1.32%	-2.54%	22.2	2024/11/9
1750 Head	1750	40.648	1.368	40.10	1.37	1.37%	-0.13%	22.5	2024/11/11
1900 Head	1900	39.952	1.434	40.00	1.40	-0.12%	2.42%	22.4	2024/11/22
1900 Head	1900	40.279	1.366	40.00	1.40	0.70%	-2.44%	22.2	2024/11/1
1900 Head	1900	40.141	1.373	40.00	1.40	0.35%	-1.93%	22.3	2024/11/12
1900 Head	1900	40.350	1.367	40.00	1.40	0.88%	-2.36%	22.4	2024/11/13
2450 Head	2450	38.43	1.79	39.20	1.80	-1.95%	-0.58%	22.2	2024/11/14
2600 Head	2600	37.889	1.986	39.00	1.96	-2.85%	1.35%	22.3	2024/11/19
2600 Head	2600	39.917	1.965	39.00	1.96	2.35%	0.26%	22.4	2024/11/1
2600 Head	2600	40.043	1.983	39.00	1.96	2.67%	1.17%	22.2	2024/11/3
2600 Head	2600	38.238	1.879	39.00	1.96	-1.95%	-4.13%	22.3	2024/11/5
2600 Head	2600	38.339	1.894	39.00	1.96	-1.69%	-3.37%	22.4	2024/11/7
2600 Head	2600	39.590	1.949	39.00	1.96	1.51%	-0.56%	22.3	2024/11/8
2600 Head	2600	39.366	1.917	39.00	1.96	0.94%	-2.19%	22.5	2024/11/9
2600 Head	2600	38.166	1.875	39.00	1.96	-2.14%	-4.34%	22.2	2024/11/15
2600 Head	2600	38.400	1.909	39.00	1.96	-1.54%	-2.60%	22.5	2024/11/18
2600 Head	2600	39.547	1.946	39.00	1.96	1.40%	-0.71%	22.2	2024/11/20
2600 Head	2600	39.673	1.965	39.00	1.96	1.73%	0.23%	22.2	2024/11/21
5250 Head	5250	34.946	4.719	35.90	4.66	-2.66%	1.27%	22.2	2024/11/10
5600 Head	5600	34.236	5.139	35.50	5.07	-3.56%	1.36%	22.2	2024/11/11
5750 Head	5750	33.924	5.321	35.40	5.22	-4.17%	1.93%	22.3	2024/11/12
6500 Head	6500	34.300	6.270	34.50	6.07	-0.58%	3.29%	22.2	2024/11/13

Table 3： Measurement result of Tissue electric parameters

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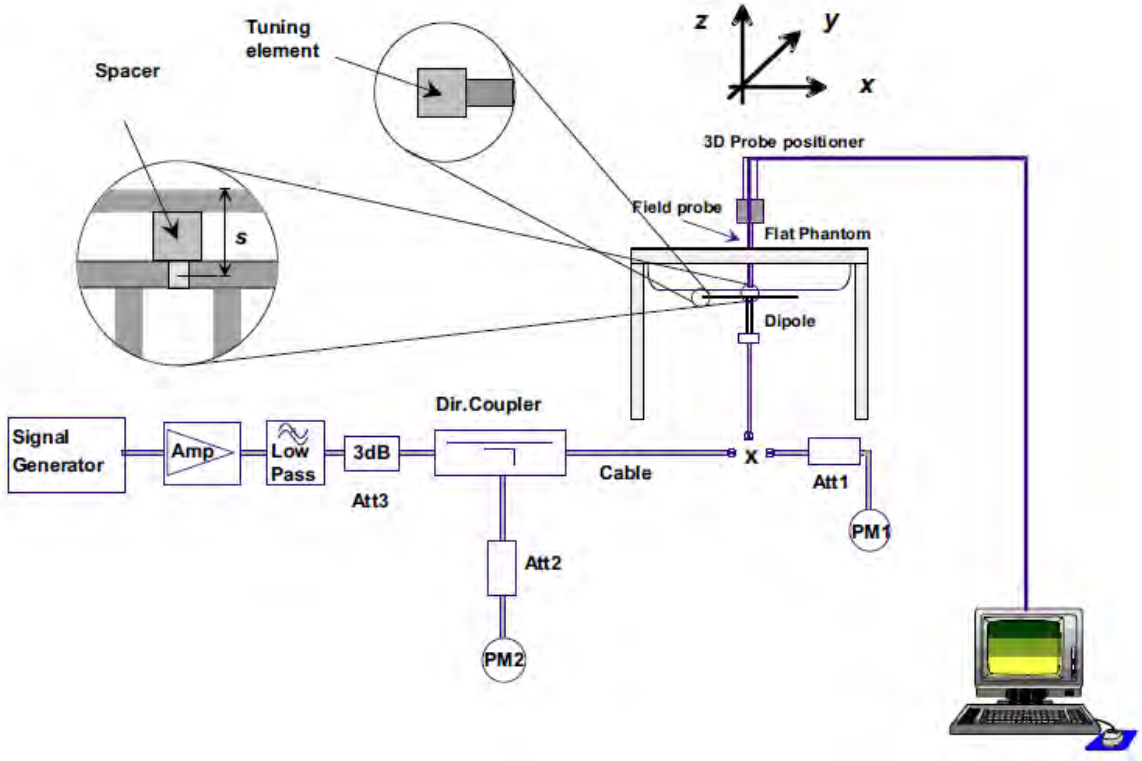
7.2 SAR System Check

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



F-12.The microwave circuit arrangement used for SAR system Check

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7.2.1 Justification for Extended SAR Dipole Calibrations

1) 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 20% 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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7.2.2 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. (℃)	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	2.21	1.46	8.84	5.84	8.37	5.53	5.62%	5.61%	22.2	2024/11/11
D750V3	Head	2.20	1.46	8.80	5.84	8.37	5.53	5.14%	5.61%	22.4	2024/11/15
D835V2	Head	2.44	1.58	9.76	6.32	9.53	6.29	2.41%	0.48%	22.3	2024/10/30
D835V2	Head	2.48	1.64	9.92	6.56	9.53	6.29	4.09%	4.29%	22.5	2024/11/4
D835V2	Head	2.40	1.54	9.60	6.16	9.53	6.29	0.73%	-2.07%	22.1	2024/11/22
D1750V2	Head	8.58	4.61	34.32	18.44	36.60	19.30	-6.23%	-4.46%	22.3	2024/10/31
D1750V2	Head	8.29	4.51	33.16	18.04	36.60	19.30	-9.40%	-6.53%	22.2	2024/11/9
D1750V2	Head	8.79	4.78	35.16	19.12	36.60	19.30	-3.93%	-0.93%	22.5	2024/11/11
D1900V2	Head	9.52	5.00	38.08	20.00	39.50	20.60	-3.59%	-2.91%	22.4	2024/11/22
D1900V2	Head	9.17	4.82	36.68	19.28	39.50	20.60	-7.14%	-6.41%	22.2	2024/11/1
D1900V2	Head	9.38	4.93	37.52	19.72	39.50	20.60	-5.01%	-4.27%	22.3	2024/11/12
D1900V2	Head	9.5	4.99	38.00	19.96	39.50	20.60	-3.80%	-3.11%	22.4	2024/11/13
D2450V2	Head	13.50	6.35	54.00	25.40	52.20	24.30	3.45%	4.53%	22.2	2024/11/14
D2600V2	Head	13.70	6.21	54.80	24.84	57.70	25.80	-5.03%	-3.72%	22.3	2024/11/19
D2600V2	Head	13.30	6.02	53.20	24.08	57.70	25.80	-7.80%	-6.67%	22.4	2024/11/1
D2600V2	Head	14.00	6.36	56.00	25.44	57.70	25.80	-2.95%	-1.40%	22.2	2024/11/3
D2600V2	Head	14.40	6.53	57.60	26.12	57.70	25.80	-0.17%	1.24%	22.3	2024/11/5
D2600V2	Head	14.20	6.46	56.80	25.84	57.70	25.80	-1.56%	0.16%	22.4	2024/11/7
D2600V2	Head	15.20	6.89	60.80	27.56	57.70	25.80	5.37%	6.82%	22.3	2024/11/8
D2600V2	Head	14.70	6.68	58.80	26.72	57.70	25.80	1.91%	3.57%	22.5	2024/11/9
D2600V2	Head	13.60	6.20	54.40	24.80	57.70	25.80	-5.72%	-3.88%	22.2	2024/11/15
D2600V2	Head	14.30	6.51	57.20	26.04	57.70	25.80	-0.87%	0.93%	22.5	2024/11/18
D2600V2	Head	13.40	6.08	53.60	24.32	57.70	25.80	-7.11%	-5.74%	22.2	2024/11/20
D2600V2	Head	13.10	5.99	52.40	23.96	57.70	25.80	-9.19%	-7.13%	22.2	2024/11/21
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. (℃)**	**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)	7.61	2.19	76.10	21.90	77.30	22.10	-1.55%	-0.90%	22.2	2024/11/10
	Head(5.6GHz)	8.15	2.31	81.50	23.10	81.30	23.10	0.25%	0.00%	22.2	2024/11/11
	Head(5.75GHz)	7.36	2.09	73.60	20.90	77.10	21.30	-4.54%	-1.88%	22.3	2024/11/12
D6500V2	Head(6.5GHz)	29.80	5.62	298.00	56.20	291.00	53.90	2.41%	4.27%	22.2	2024/11/13

Table 4： SAR System Check Result

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7.2.3 Detailed System Check Results

Please see the Appendix A

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8 PD System Verification Procedure

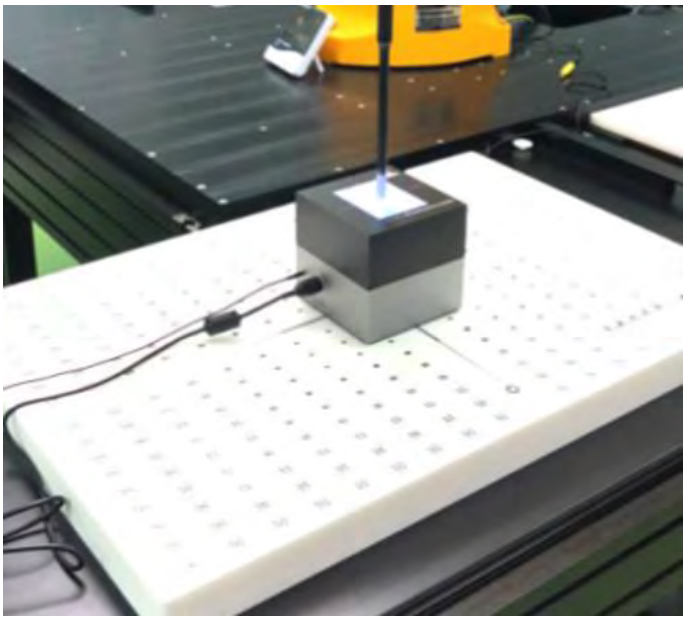
8.1 PD Test System Verification

The system was verified to be within ±0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check.

The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.

Frequency [GHz]	Grid step	Grid extent X/Y [mm]	Measurement points
10	0.25 ($\frac{\lambda}{4}$)	120/120	16 × 16
30	0.25 ($\frac{\lambda}{4}$)	60/60	24 × 24
60	0.25 ($\frac{\lambda}{4}$)	32.5/32.5	26 × 26
90	0.25 ($\frac{\lambda}{4}$)	30/30	36 × 36

Settings for measurement of verification sources



System Verification Setup Photo

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8.2 PD System Verification Results

Frequent	Measured PD W/m²	Target PD W/m²	Circular Deviation (Within ±0.66dB)	Test Date
	4cm²	4cm²	4cm²	
10G HZ Source	161.00	174	-0.34	2024/11/25
10G HZ Source	197.00	174	0.54	2024/11/26
10G HZ Source	164.00	174	-0.26	2024/12/8

8.3 Detailed System Check Results

Please see the Appendix A

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9 Test Configuration

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

9.2 Operation Configurations

9.2.1 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. 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, 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.

9.2.2 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

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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 spreaing 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

RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest measured SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.5 W/kg, SAR measurement is not required for HSDPA / HSUPA.

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 (βc, βd), and HS-DPCCH power offset parameters (ΔACK, ΔNACK, ΔCQI) 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.

Sub-test	βc	Bd	βd(SF)	βc/βd	βhs	CM(dB)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note1: △ACK, △NACK and △CQI= 8 Ahs = βhs/βc=30/15 βhs=30/15*βc

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, △ACK and △NACK= 8 (Ahs=30/15) with βhs=30/15*βc,and △CQI= 7 (Ahs=24/15) with βhs=24/15*βc.

Note3: CM=1 forβc/βd =12/15, βhs/βc=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.

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

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

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference
Note 3 : For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$
Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$
Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g
Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Table 7： Subtests for UMTS Release 6 HSUPA

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Speading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF4	11484	5.76
	4	4	2		20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF4	22996	?
	4	4	10		20000	?

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

Table 8： HSUPA UE category

c) DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS

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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 9： 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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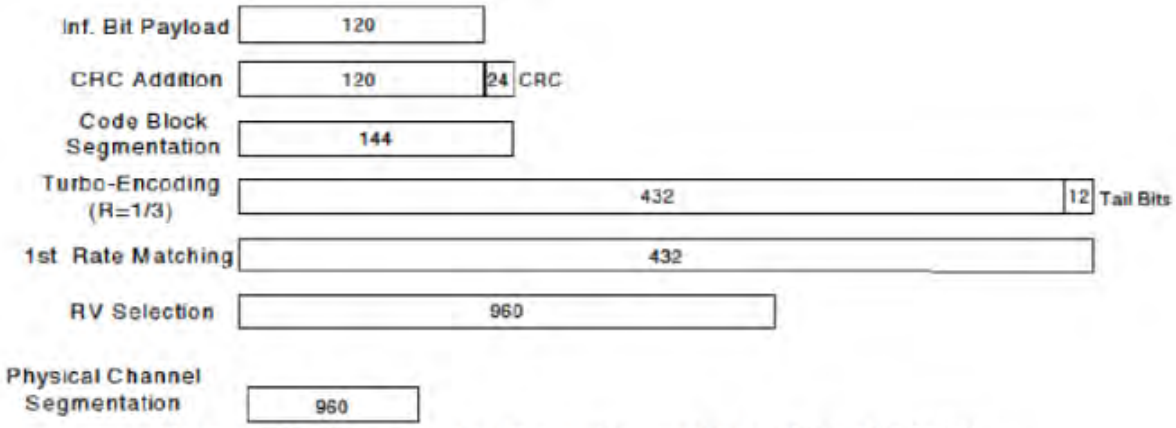

Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

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

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

Note:

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

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d) HSPA+

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

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

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	$\beta_{ed}1$: 30/15 $\beta_{ed}2$: 30/15	$\beta_{ed}3$: 24/15 $\beta_{ed}4$: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .

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

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

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

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

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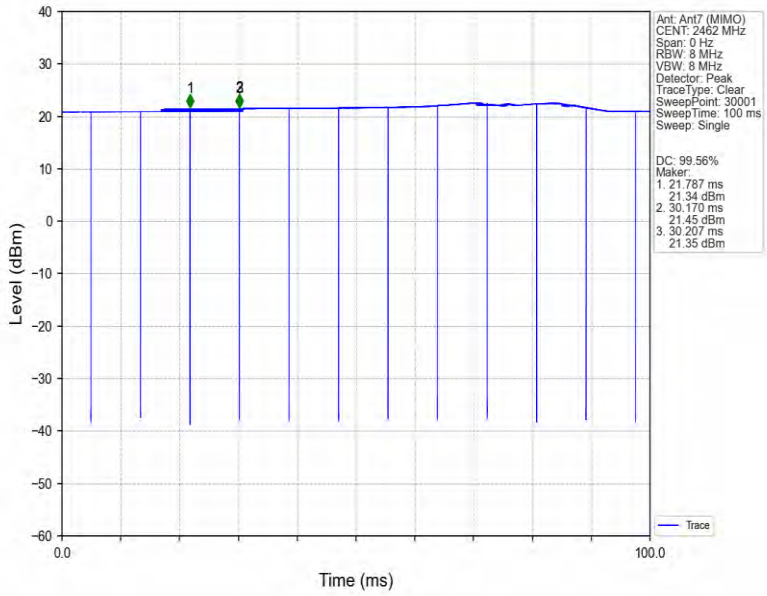
9.2.3 WIFI Test Configuration

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.

9.2.3.1 Duty cycle

1) Wi-Fi 2.4GHz 802.11b:

Duty cycle=99.56%



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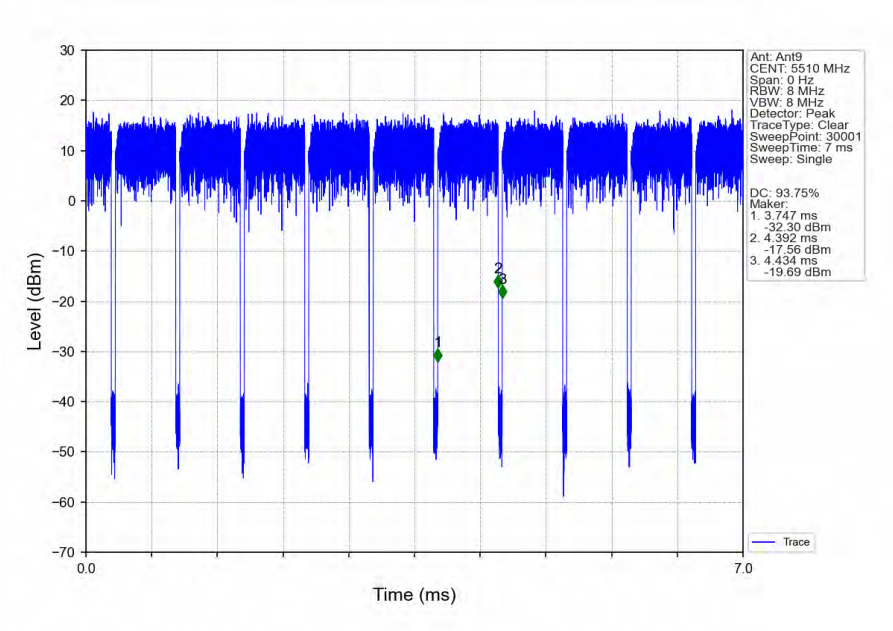
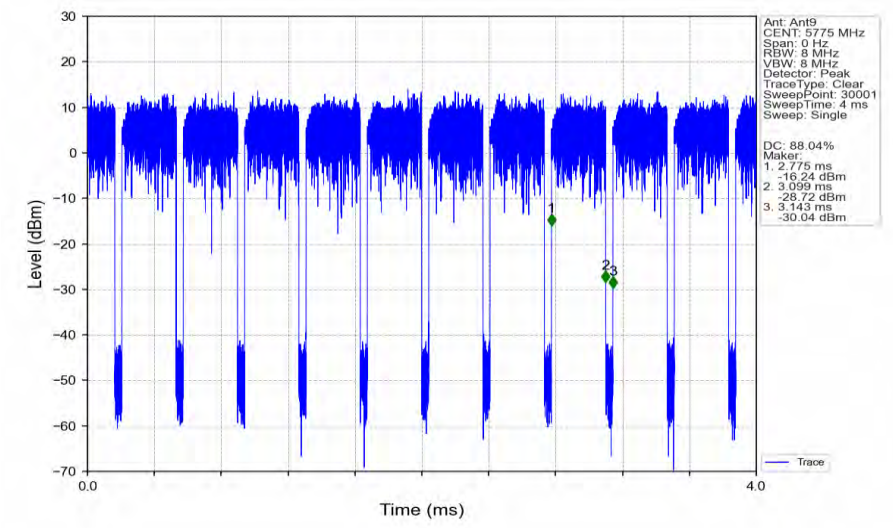
2) Wi-Fi 5GHz 802.11n40:

Duty cycle=93.75%



3) Wi-Fi 5GHz 802.11ac80:

Duty cycle=88.04%



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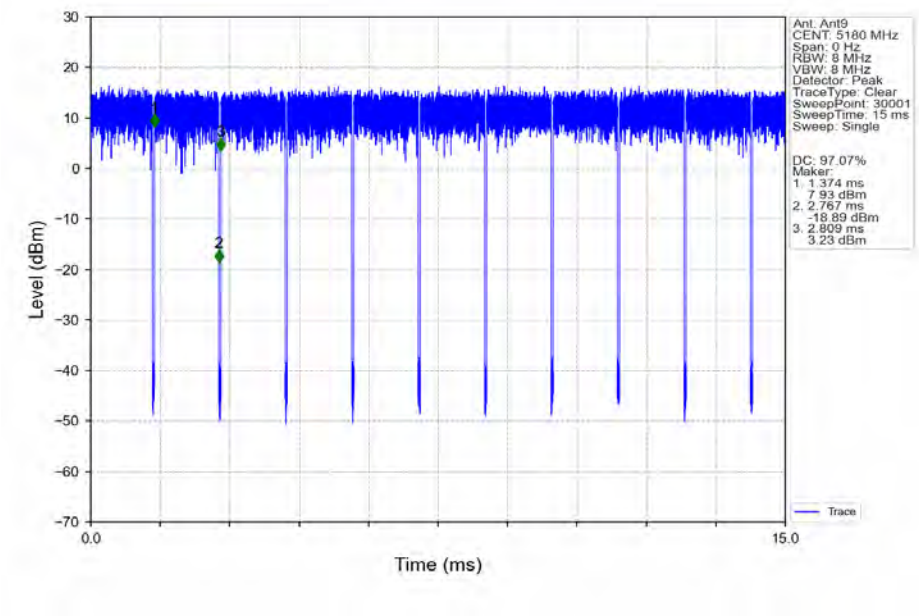
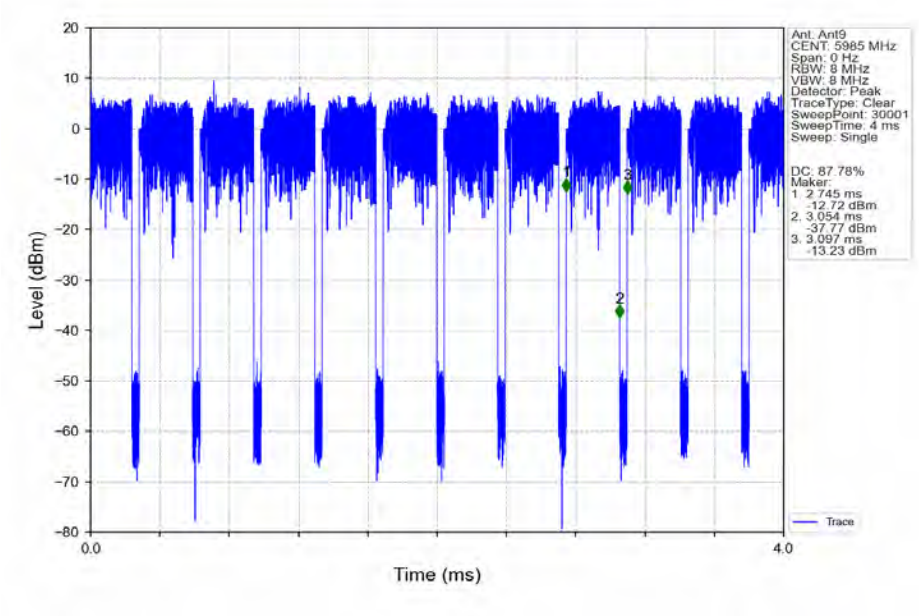
4) Wi-Fi 5GHz 802.11a:

Duty cycle=97.07%



5) Wi-Fi 6E 802.11ax:

Duty cycle=87.78%



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9.2.3.2 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.

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9.2.3.3 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.

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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9.2.3.4 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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9.2.3.5 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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9.2.4 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:

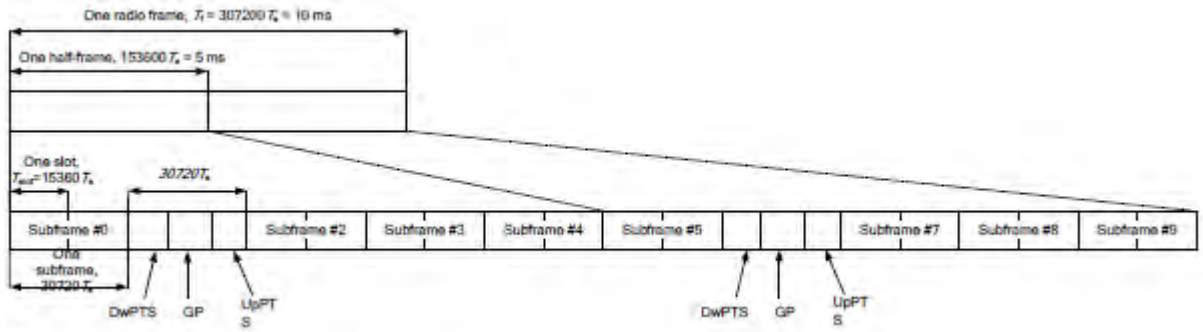

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

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

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6	19760.Ts			23040.Ts		
7	21952.Ts			25600.Ts		
8	24144.Ts			-	-	-
9	13168.Ts			-	-	-

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	(dB)
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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F) LTE CA additional specification

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

a) Intra-band carrier aggregation requirements for uplink.

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

The possible downlink and uplink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V15.4.0. The conducted power measurement results of downlink and uplink LTE CA are provided in Appendix E (Conducted RF Output Power). The downlink LTE CA SAR test is not required since the maximum output power for downlink LTE CA was not more than 0.25dB higher than the maximum output power for without downlink LTE CA.

Downlink LTE CA
2A-2A
2A-4A
2A-5A
2A-7A
2A-12A
2A-26A
2A-66A
4A-4A
4A-5A
4A-7A
4A-12A
5A-5A
5A-7A
5A-66A
7A-7A
7A-26A
7A-66A
12A-66A
66A-66A
5B
7C
38C
41C
66C
2A-4A-5A
2A-5A-7A
2A-5A-66A
2A-7A-7A
2A-7C
4A-5A-7A
4A-7C
5A-7A-66A
5A-66A-66A

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5A-7C
5A-66C
7A-7A-66A
7A-66A-66A
7C-26A
5A-7A-66A-66A
5A-7C-66A
7C-66A-66A
41C-41C
Uplink LTE CA
CA_7C
CA_38C

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

1)Maximum output power is measured for each UL CA configuration for the required test channels described in KDB 941225 D05

－UL PCC configuration is determined by the required test channel

－SCC and subsequent CCs are added alternatively to either side of the PCC or within the transmission band for channels at the ends of a frequency band.

2)SAR for UL CA is required in each exposure condition and frequency band combination

3)For this device , as the maximum output for Intra-band uplink LTE CA is ≤ standalone LTE mode (without CA),

- PCC is configured according to the highest standalone SAR configuration tested.

- SCC and subsequent CCs are configured according to procedures used for power measurement and parameters (BW, RB etc.) similar to that used for the PCC

4)When the reported SAR for UL CA configuration, described above, is > 1.2 W/kg, UL CA SAR is also required for all required test channels (PCC based)

5)UL CA SAR is also required for standalone SAR configurations > 1.2 W/kg when they are scaled to the UL CA power level.

6)General PCC and SCC configuration selection procedure
- PCC uplink channel, channel bandwidth, modulation and RB configurations were selected based on section C)3)b)ii) of KDB 941225 D05 V01r02. All LTE bandwidth conducted powers needed for PCC uplink configuration selection can be found in appendix E. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.

- To maximize aggregated bandwidth, highest channel bandwidth available for that CA combination was selected for SCC. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the

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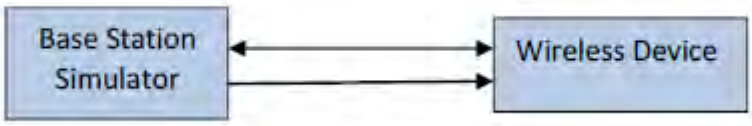
component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
All selected PCC and SCC(s) remained fully within the uplink/downlink transmission band of the respective component carrier.



DL CA Power Measurement Setup

c) Inter-band carrier aggregation requirements for uplink.

For Inter band Uplink CA SAR, as the existing SAR test system cannot test the multiple different frequency bands simultaneous Transmission SAR at the same time, we suggest that the conservative “max + max” multi-Tx and SAR scaling method can be used to evaluate the inter-band Uplink CA SAR from standalone SAR test results of each LTE component band and the conservative “max + max” multi-Tx method to combine the scaled SAR value from each Inter band Uplink CA component band as the inter-band Uplink CA SAR.

The Inter band Uplink CA as below table:

LTE Band/Antenna		B4				B5		B7				B66			
		ANT5	ANT6	ANT7	ANT11	Ant0	Ant1	ANT5	ANT6	ANT7	ANT11	ANT5	ANT6	ANT7	ANT11
B2	ANT5			√	√					√	√			√	√
	ANT6			√	√					√	√			√	√
B4	ANT5					√	√		√	√					
	ANT6					√	√	√		√					
	ANT7					√	√	√	√						
	ANT11					√	√	√	√	√					

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9.2.5 NR Band Test Configuration

1. NR Band n2/n5/n7/n12/n26/n38/n41/n66 support SA mode and n2/n5/n7/n12/n26/n38/n41/n66 support NSA mode. LTE+NR Band operations are possible only with LTE under EN-DC mode and the operations are possible as following table:

Band/Antenna		LTE Band 2		LTE Band 4				LTE Band 5		LTE Band 7				LTE Band 12		LTE Band 66			
		ANT5	ANT6	ANT5	ANT6	ANT7	ANT11	Ant0	Ant1	ANT5	ANT6	ANT7	ANT11	Ant0	Ant1	ANT5	ANT6	ANT7	ANT11
n2	ANT5										√	√	√				√	√	√
	ANT6									√		√	√			√		√	√
n5	ANT0									√	√	√	√			√	√	√	√
	ANT1									√	√	√	√			√	√	√	√
n7	ANT5		√		√	√		√	√								√	√	
	ANT6	√		√		√		√	√							√		√	
	ANT7	√	√	√	√			√	√							√	√		
	ANT11	√	√	√	√	√		√	√							√	√	√	
n26	ANT0									√	√	√	√						
	ANT1									√	√	√	√						
n38	ANT5		√		√	√		√	√								√	√	
	ANT6	√		√		√		√	√							√		√	
	ANT7	√	√	√	√			√	√							√	√		
	ANT11	√	√	√	√	√		√	√							√	√	√	
n41	ANT5		√		√	√											√	√	
	ANT6	√		√		√										√		√	
	ANT7	√	√	√	√											√	√		
	ANT11	√	√	√	√	√										√	√	√	
n66	ANT5		√					√	√		√	√	√	√	√				
	ANT6	√						√	√	√		√	√	√	√				
	ANT7	√	√					√	√	√	√		√	√	√				
	ANT11	√	√					√	√					√	√				

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

Band			n2	n5	n7	n12	n26	n38	n41	n66
NR mode		SA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		NSA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modulation	DFT-s-OFDM	PI/2 BPSK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		QPSK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		16QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		64QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		256QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CP-OFDM	QPSK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		16QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		64QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		256QAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Max Duty Cycle			100%	100%	100%	100%	100%	100%	100%	100%

Band	SCS	Bandwidth												
		5MHz	10MHz	15MHz	20MHz	25MHz	30MHz	40MHz	50MHz	60MHz	70MHz	80MHz	90MHz	100MHz
n2	15 kHz	Yes	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30 kHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n5	15 kHz	Yes	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30 kHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n7	15 kHz	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
	30 kHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n12	15 kHz	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30 kHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n26	15 kHz	Yes	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30 kHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n38	15 kHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30 kHz	N/A	Yes	Yes	Yes	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
n41	15 kHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30 kHz	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
n66	15 kHz	Yes	Yes	Yes	Yes	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
	30 kHz	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 3GPP 38.101 maximum power reduction for power class 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-QPSK and the reported SAR for the DFT-QPSK configuration is ⩽ 1.45 W/kg; CP-OFDM testing is not required.
b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, for PI/2 BPSK/16QAM/64QMA/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the PI/2 BPSK/16QAM/64QMA/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
c. SAR testing start with the largest SCS and largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
d. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
e. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ⩽ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
f. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK/16QAM/64QAM/256QAM SAR testing are not required.
g. Smaller SCS/bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ⩽ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device

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

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

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

5. For FDD NR Band operation does not have the fixed UL/DL frame structure, but during the transmitting/ receiving it can be operated in the slot structure of 100% UL duty cycle, we are proposing the conservative way to evaluate SAR at 100% duty cycle. For the purpose of test NR Band standalone SAR, and also test SAR level at 100% TX duty cycle.
6. For 5G NR Sub6GHz SISO Mode, SAR Test plan as below:
1) For 5G NR NSA mode with the same UL EN_DC combination but different DL EN_DC combinations, eg: EN-DC configuration: UL DC_7A_n5 (UL two bands) with DL DC_7C_n5 (DL two bands)
a) The UL EN-DC configuration, including the Tx antenna configuration, RF path, the channel bandwidth and other operating parameters are the same.
b) The maximum output power, including tolerance, for the UL EN-DC configuration with DL two or more bands must be ⩽ the same UL EN-DC configuration with DL two bands only to qualify for the SAR test exclusion.
7. For EN-DC SAR, as the existing SAR test system cannot test the multiple different frequency bands simultaneous Transmission SAR at the same time, we suggest that the conservative “max + max” multi-Tx and SAR scaling method can be used to evaluate the inter-band Uplink EN-DC SAR from standalone SAR test results of each LTE and NR EN-DC component band and the conservative “max + max” multi-Tx method to combine the scaled SAR value from each EN-DC component band as the inter-band Uplink EN-DC SAR. All Simultaneous Transmission Scenarios will be evaluated independently in the final SAR report.

8. When the reported SAR for and EN DC configuration is greater than 1.2 W/kg, EN DC SAR is also required for other NR based test channels.
9. EN DC SAR is also required for standalone NR configurations greater than 1.2 W/kg when scaled to the EN DC power level.

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10 Test Result

10.1 Measurement of RF Conducted Power

The detailed conducted power can be referred 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

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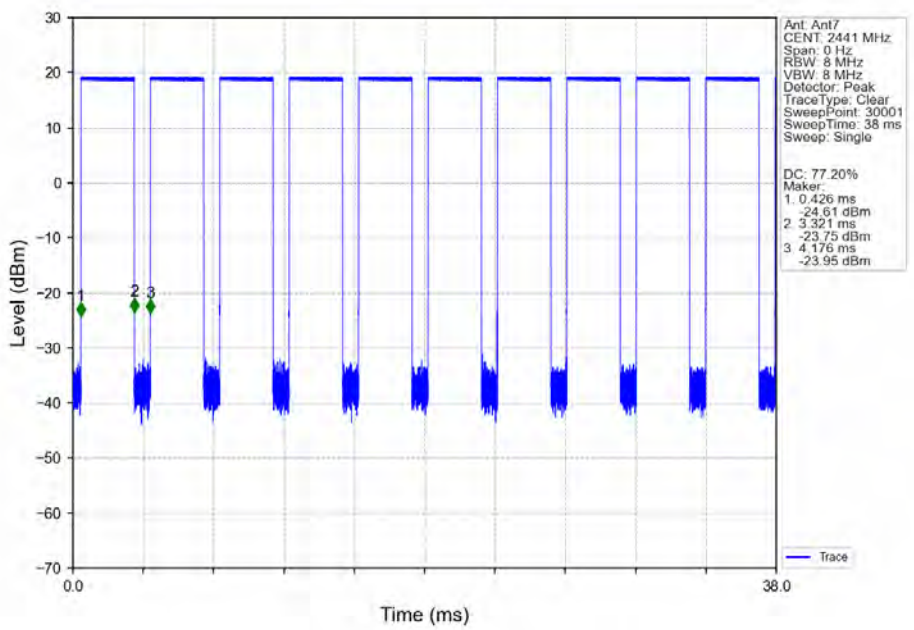
channels, due to an even number of channels, both channels should be measured. Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.

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.

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

9）. The conducted power of BT is measured with RMS detector.
BT DH5 Duty Cycle=77.20%



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10.2 Measurement of SAR Data

Note:

1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.

2) Per KDB447498 D04, 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:

- ≤ 0.8W/kg for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is ≤ 100MHz.
- ≤ 0.6 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.
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 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 ⩽ 1.2 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 ⩽ 1.2 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 ⩽ 1.2 W/kg, SAR test for the other 802.11 modes are not required.

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10.2.1 SAR Result of GSM850

GSM850 SAR Test Record											
Ant 0 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	GPRS 4TS	190/836.6	1:2.075	0.843	0.462	0.08	26.00	26.90	1.230	1.037	22.4
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.132	0.085	0.04	26.00	26.90	1.230	0.162	22.4
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.603	0.340	0.16	26.00	26.90	1.230	0.742	22.4
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.102	0.066	0.02	26.00	26.90	1.230	0.125	22.4
Left cheek	GPRS 4TS	128/824.2	1:2.075	0.757	0.414	0.14	25.70	26.90	1.318	0.998	22.4
Left cheek	GPRS 4TS	251/848.8	1:2.075	0.870	0.471	0.05	25.86	26.90	1.271	**1.105**	22.4
Left cheek- Repeated	GPRS 4TS	251/848.8	1:2.075	0.856	0.470	0.08	25.86	26.90	1.271	1.088	22.4
Head Test Data State 10											
Left cheek	GPRS 4TS	190/836.6	1:2.075	0.843	0.462	0.08	26.00	26.00	1.000	0.843	22.4
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.132	0.085	0.04	26.00	26.00	1.000	0.132	22.4
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.603	0.340	0.16	26.00	26.00	1.000	0.603	22.4
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.102	0.066	0.02	26.00	26.00	1.000	0.102	22.4
Left cheek	GPRS 4TS	128/824.2	1:2.075	0.757	0.414	0.14	25.70	26.00	1.072	0.811	22.4
Left cheek	GPRS 4TS	251/848.8	1:2.075	0.870	0.471	0.05	25.86	26.00	1.033	0.899	22.4
Body worn Test data(Separate 15mm) State 3											
Front side	GPRS 4TS	190/836.6	1:2.075	0.283	0.161	0.01	27.97	28.50	1.130	0.320	22.4
Back side	GPRS 4TS	190/836.6	1:2.075	0.469	0.305	-0.03	27.97	28.50	1.130	**0.530**	22.4
Hotspot Test data(Separate 10mm) State 8											
Front side	GPRS 4TS	190/836.6	1:2.075	0.385	0.211	0.10	26.00	26.90	1.230	0.474	22.4
Back side	GPRS 4TS	190/836.6	1:2.075	0.530	0.290	0.04	26.00	26.90	1.230	0.652	22.4
Left side	GPRS 4TS	190/836.6	1:2.075	0.695	0.368	0.03	26.00	26.90	1.230	0.855	22.4
Left side	GPRS 4TS	128/824.2	1:2.075	0.757	0.432	-0.06	25.70	26.90	1.318	**0.998**	22.4
Left side	GPRS 4TS	251/848.8	1:2.075	0.705	0.371	-0.04	25.86	26.90	1.271	0.896	22.4
Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	SAR (W/kg)10-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled 10-g SAR(W/kg)	Liquid Temp.
Product specific 10g SAR Test data (Separate 0mm) State 3											
Left side	GPRS 4TS	190/836.6	1:2.075	3.760	1.570	-0.09	27.97	28.50	1.130	**1.774**	22.3
Ant 1 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	GPRS 4TS	190/836.6	1:2.075	0.107	0.074	0.03	27.82	28.50	1.169	0.125	22.4
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.052	0.023	-0.13	27.82	28.50	1.169	0.061	22.4
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.276	0.156	0.10	27.82	28.50	1.169	0.323	22.4
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.091	0.066	-0.07	27.82	28.50	1.169	0.106	22.4

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Body worn Test data(Separate 15mm) State 3											
Front side	GPRS 4TS	190/836.6	1:2.075	0.111	0.075	-0.05	27.82	28.50	1.169	0.130	22.4
Back side	GPRS 4TS	190/836.6	1:2.075	0.135	0.084	0.08	27.82	28.50	1.169	0.158	22.4
Hotspot Test data(Separate 10mm) State 8											
Front side	GPRS 4TS	190/836.6	1:2.075	0.174	0.107	0.13	27.82	28.50	1.169	0.203	22.4
Back side	GPRS 4TS	190/836.6	1:2.075	0.258	0.154	0.10	27.82	28.50	1.169	0.302	22.4
Right side	GPRS 4TS	190/836.6	1:2.075	0.372	0.221	0.06	27.82	28.50	1.169	0.435	22.4
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.139	0.078	0.13	27.82	28.50	1.169	0.163	22.4

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10.2.2 SAR Result of GSM1900

GSM1900 SAR Test Record											
Ant 5 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	GPRS 4TS	661/1880	1:2.075	0.062	0.039	0.18	24.44	25.50	1.276	0.079	22.4
Left tilted	GPRS 4TS	661/1880	1:2.075	0.011	0.006	-0.13	24.44	25.50	1.276	0.014	22.4
Right cheek	GPRS 4TS	661/1880	1:2.075	0.069	0.041	0.19	24.44	25.50	1.276	0.088	22.4
Right tilted	GPRS 4TS	661/1880	1:2.075	0.009	0.004	0.16	24.44	25.50	1.276	0.011	22.4
Body worn Test data(Separate 15mm) State 3											
Front side	GPRS 4TS	661/1880	1:2.075	0.140	0.082	0.08	24.44	25.50	1.276	0.179	22.4
Back side	GPRS 4TS	661/1880	1:2.075	0.227	0.134	-0.08	24.44	25.50	1.276	0.290	22.4
Hotspot Test data(Separate 10mm) State 8											
Front side	GPRS 4TS	661/1880	1:2.075	0.193	0.103	0.17	22.75	24.30	1.429	0.276	22.4
Back side	GPRS 4TS	661/1880	1:2.075	0.304	0.160	-0.06	22.75	24.30	1.429	0.434	22.4
Left side	GPRS 4TS	661/1880	1:2.075	0.075	0.043	0.12	22.75	24.30	1.429	0.107	22.4
Bottom side	GPRS 4TS	661/1880	1:2.075	0.482	0.262	0.19	22.75	24.30	1.429	**0.689**	22.4
Ant 6 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	GPRS 4TS	661/1880	1:2.075	0.238	0.146	0.08	19.27	20.80	1.422	0.339	22.4
Left tilted	GPRS 4TS	661/1880	1:2.075	0.302	0.173	-0.12	19.27	20.80	1.422	0.430	22.4
Right cheek	GPRS 4TS	661/1880	1:2.075	0.599	0.315	-0.05	19.27	20.80	1.422	0.852	22.4
Right tilted	GPRS 4TS	661/1880	1:2.075	0.610	0.324	0.01	19.27	20.80	1.422	0.868	22.4
Right cheek	GPRS 4TS	512/1850.2	1:2.075	0.506	0.264	-0.10	19.16	20.80	1.459	0.738	22.4
Right cheek	GPRS 4TS	810/1909.8	1:2.075	0.665	0.357	0.13	19.15	20.80	1.462	0.972	22.4
Right tilted	GPRS 4TS	512/1850.2	1:2.075	0.515	0.268	0.03	19.16	20.80	1.459	0.751	22.4
Right tilted	GPRS 4TS	810/1909.8	1:2.075	0.677	0.365	0.05	19.15	20.80	1.462	**0.990**	22.4
Body worn Test data(Separate 15mm) State 3											
Front side	GPRS 4TS	661/1880	1:2.075	0.190	0.112	0.04	24.30	25.50	1.318	0.250	22.4
Back side	GPRS 4TS	661/1880	1:2.075	0.225	0.133	0.01	24.30	25.50	1.318	**0.297**	22.4
Hotspot Test data(Separate 10mm) State 8											
Front side	GPRS 4TS	661/1880	1:2.075	0.189	0.112	0.13	21.93	23.60	1.469	0.278	22.4
Back side	GPRS 4TS	661/1880	1:2.075	0.328	0.182	0.09	21.93	23.60	1.469	0.482	22.4
Left side	GPRS 4TS	661/1880	1:2.075	0.163	0.078	0.04	21.93	23.60	1.469	0.239	22.4
Top side	GPRS 4TS	661/1880	1:2.075	0.466	0.263	0.08	21.93	23.60	1.469	0.685	22.4

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10.2.3 SAR Result of WCDMA Band II

WB2 SAR Test Record											
Ant 5 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	RMC	9400/1880	1:1	0.102	0.065	0.18	24.15	25.00	1.216	0.124	22.2
Left tilted	RMC	9400/1880	1:1	0.074	0.044	-0.09	24.15	25.00	1.216	0.090	22.2
Right cheek	RMC	9400/1880	1:1	0.108	0.067	0.07	24.15	25.00	1.216	0.131	22.2
Right tilted	RMC	9400/1880	1:1	0.080	0.046	-0.09	24.15	25.00	1.216	0.097	22.2
Body worn Test data(Separate 15mm) State 3											
Front side	RMC	9400/1880	1:1	0.133	0.078	0.04	21.05	21.90	1.216	0.162	22.2
Back side	RMC	9400/1880	1:1	0.225	0.133	0.01	21.05	21.90	1.216	0.274	22.2
Hotspot Test data(Separate 10mm) State 8											
Front side	RMC	9400/1880	1:1	0.162	0.091	-0.03	18.85	19.70	1.216	0.197	22.2
Back side	RMC	9400/1880	1:1	0.266	0.141	0.05	18.85	19.70	1.216	0.324	22.2
Left side	RMC	9400/1880	1:1	0.072	0.040	0.11	18.85	19.70	1.216	0.088	22.2
Bottom side	RMC	9400/1880	1:1	0.393	0.217	0.09	18.85	19.70	1.216	0.478	22.2
Ant 6 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	RMC	9400/1880	1:1	0.307	0.189	-0.02	16.67	17.80	1.297	0.398	22.2
Left tilted	RMC	9400/1880	1:1	0.460	0.257	-0.06	16.67	17.80	1.297	0.597	22.2
Right cheek	RMC	9400/1880	1:1	0.615	0.358	0.02	16.67	17.80	1.297	0.798	22.2
Right tilted	RMC	9400/1880	1:1	0.899	0.428	0.01	16.61	17.80	1.315	**1.182**	22.2
Right tilted-Repeated	RMC	9400/1880	1:1	0.833	0.412	-0.15	16.61	17.80	1.315	1.096	22.2
Right tilted	RMC	9262/1852.4	1:1	0.772	0.386	0.18	16.58	17.80	1.324	1.022	22.2
Right tilted	RMC	9538/1907.6	1:1	0.801	0.390	0.03	16.56	17.80	1.330	1.066	22.2
Body worn Test data(Separate 15mm) State 3											
Front side	RMC	9400/1880	1:1	0.150	0.091	-0.11	20.01	21.10	1.285	0.193	22.2
Back side	RMC	9400/1880	1:1	0.214	0.127	0.00	20.01	21.10	1.285	**0.275**	22.2
Hotspot Test data(Separate 10mm) State 8											
Front side	RMC	9400/1880	1:1	0.160	0.096	-0.03	17.75	18.90	1.303	0.209	22.2
Back side	RMC	9400/1880	1:1	0.275	0.154	-0.13	17.75	18.90	1.303	0.358	22.2
Left side	RMC	9400/1880	1:1	0.143	0.069	0.19	17.75	18.90	1.303	0.186	22.2
Top side	RMC	9400/1880	1:1	0.414	0.233	0.05	17.75	18.90	1.303	**0.540**	22.2

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10.2.4 SAR Result of WCDMA Band IV

WB4 SAR Test Record											
Ant 5 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	RMC	1412/1732.4	1:1	0.091	0.058	0.04	23.96	25.00	1.271	0.116	22.3
Left tilted	RMC	1412/1732.4	1:1	0.066	0.039	0.14	23.96	25.00	1.271	0.084	22.3
Right cheek	RMC	1412/1732.4	1:1	0.122	0.075	-0.10	23.96	25.00	1.271	0.155	22.3
Right tilted	RMC	1412/1732.4	1:1	0.051	0.031	0.11	23.96	25.00	1.271	0.065	22.3
Body worn Test data(Separate 15mm) State 3											
Front side	RMC	1412/1732.4	1:1	0.153	0.090	-0.08	21.24	22.30	1.276	0.195	22.2
Back side	RMC	1412/1732.4	1:1	0.244	0.146	0.07	21.24	22.30	1.276	**0.311**	22.2
Hotspot Test data(Separate 10mm) State 8											
Front side	RMC	1412/1732.4	1:1	0.185	0.104	-0.19	19.11	20.10	1.256	0.232	22.2
Back side	RMC	1412/1732.4	1:1	0.275	0.148	0.13	19.11	20.10	1.256	0.345	22.2
Left side	RMC	1412/1732.4	1:1	0.080	0.043	0.11	19.11	20.10	1.256	0.100	22.2
Bottom side	RMC	1412/1732.4	1:1	0.373	0.207	0.05	19.11	20.10	1.256	**0.468**	22.2
Ant 6 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	RMC	1412/1732.4	1:1	0.213	0.137	-0.14	17.53	18.70	1.309	0.279	22.3
Left tilted	RMC	1412/1732.4	1:1	0.298	0.180	-0.11	17.53	18.70	1.309	0.390	22.3
Right cheek	RMC	1412/1732.4	1:1	0.594	0.342	0.05	17.53	18.70	1.309	**0.778**	22.3
Right tilted	RMC	1412/1732.4	1:1	0.468	0.257	-0.02	17.53	18.70	1.309	0.613	22.3
Body worn Test data(Separate 15mm) State 3											
Front side	RMC	1412/1732.4	1:1	0.110	0.070	0.11	20.53	21.80	1.340	0.147	22.2
Back side	RMC	1412/1732.4	1:1	0.181	0.117	0.09	20.53	21.80	1.340	0.242	22.2
Hotspot Test data(Separate 10mm) State 8											
Front side	RMC	1412/1732.4	1:1	0.122	0.076	0.11	18.43	19.60	1.309	0.160	22.2
Back side	RMC	1412/1732.4	1:1	0.215	0.121	-0.17	18.43	19.60	1.309	0.281	22.2
Left side	RMC	1412/1732.4	1:1	0.080	0.037	0.06	18.43	19.60	1.309	0.105	22.2
Top side	RMC	1412/1732.4	1:1	0.243	0.145	0.18	18.43	19.60	1.309	0.318	22.2

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10.2.5 SAR Result of WCDMA Band V

WB5 SAR Test Record											
Ant 0 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	RMC	4182/836.4	1:1	0.640	0.347	0.09	21.53	22.70	1.309	0.838	22.2
Left tilted	RMC	4182/836.4	1:1	0.080	0.049	0.11	21.53	22.70	1.309	0.105	22.2
Right cheek	RMC	4182/836.4	1:1	0.348	0.202	-0.14	21.53	22.70	1.309	0.456	22.2
Right tilted	RMC	4182/836.4	1:1	0.064	0.042	-0.01	21.53	22.70	1.309	0.084	22.2
Left cheek	RMC	4132/826.4	1:1	0.695	0.379	0.19	21.52	22.70	1.312	**0.912**	22.2
Left cheek	RMC	4233/846.6	1:1	0.546	0.296	0.04	21.48	22.70	1.324	0.723	22.2
Body worn Test data(Separate 15mm) State 3											
Front side	RMC	4182/836.4	1:1	0.225	0.136	-0.11	23.31	24.50	1.315	0.296	22.2
Back side	RMC	4182/836.4	1:1	0.364	0.234	-0.05	23.31	24.50	1.315	**0.479**	22.2
Hotspot Test data(Separate 10mm) State 8											
Front side	RMC	4182/836.4	1:1	0.237	0.132	-0.10	21.01	22.20	1.315	0.312	22.2
Back side	RMC	4182/836.4	1:1	0.311	0.170	0.07	21.01	22.20	1.315	0.409	22.2
Left side	RMC	4182/836.4	1:1	0.519	0.297	0.00	21.01	22.20	1.315	**0.683**	22.2
Ant 1 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data State 5											
Left cheek	RMC	4182/836.4	1:1	0.109	0.076	0.05	24.17	25.00	1.211	0.132	22.2
Left tilted	RMC	4182/836.4	1:1	0.058	0.045	0.13	24.17	25.00	1.211	0.070	22.2
Right cheek	RMC	4182/836.4	1:1	0.230	0.134	0.07	24.17	25.00	1.211	0.278	22.2
Right tilted	RMC	4182/836.4	1:1	0.094	0.069	0.19	24.17	25.00	1.211	0.114	22.2
Body worn Test data(Separate 15mm) State 3											
Front side	RMC	4182/836.4	1:1	0.118	0.084	0.17	24.17	25.00	1.211	0.143	22.2
Back side	RMC	4182/836.4	1:1	0.136	0.092	-0.14	24.17	25.00	1.211	0.165	22.2
Hotspot Test data(Separate 10mm) State 8											
Front side	RMC	4182/836.4	1:1	0.168	0.107	-0.07	24.17	25.00	1.211	0.203	22.2
Back side	RMC	4182/836.4	1:1	0.243	0.146	0.11	24.17	25.00	1.211	0.294	22.2
Right side	RMC	4182/836.4	1:1	0.346	0.208	0.10	24.17	25.00	1.211	0.419	22.2
Bottom side	RMC	4182/836.4	1:1	0.132	0.074	0.13	24.17	25.00	1.211	0.160	22.2

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10.2.6 SAR Result of LTE Band 2

LTE Band 2 SAR Test Record												
Ant 5 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_50	18700/1860	1:1	0.111	0.070	0.10	24.06	24.80	1.186	0.132	22.3
Left tilted	20	QPSK 1_50	18700/1860	1:1	0.080	0.048	0.08	24.06	24.80	1.186	0.095	22.3
Right cheek	20	QPSK 1_50	18700/1860	1:1	0.132	0.080	0.05	24.06	24.80	1.186	0.157	22.3
Right tilted	20	QPSK 1_50	18700/1860	1:1	0.077	0.045	-0.06	24.06	24.80	1.186	0.091	22.3
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_50	18700/1860	1:1	0.091	0.058	0.09	23.21	23.80	1.146	0.104	22.3
Left tilted	20	QPSK 50_50	18700/1860	1:1	0.063	0.037	-0.08	23.21	23.80	1.146	0.072	22.3
Right cheek	20	QPSK 50_50	18700/1860	1:1	0.102	0.062	0.17	23.21	23.80	1.146	0.117	22.3
Right tilted	20	QPSK 50_50	18700/1860	1:1	0.062	0.037	0.19	23.21	23.80	1.146	0.071	22.3
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_99	18700/1860	1:1	0.155	0.092	-0.10	21.15	21.80	1.161	0.180	22.3
Back side	20	QPSK 1_99	18700/1860	1:1	0.241	0.136	-0.13	21.15	21.80	1.161	0.280	22.3
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_50	18700/1860	1:1	0.169	0.099	-0.12	21.17	21.80	1.156	0.195	22.3
Back side	20	QPSK 50_50	18700/1860	1:1	0.246	0.140	0.03	21.17	21.80	1.156	0.284	22.3
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_99	18700/1860	1:1	0.228	0.127	-0.14	19.67	20.30	1.156	0.264	22.3
Back side	20	QPSK 1_99	18700/1860	1:1	0.356	0.186	0.02	19.67	20.30	1.156	0.412	22.3
Left side	20	QPSK 1_99	18700/1860	1:1	0.096	0.054	-0.14	19.67	20.30	1.156	0.111	22.3
Right side	20	QPSK 1_99	18700/1860	1:1	0.057	0.032	0.09	19.67	20.30	1.156	0.066	22.3
Bottom side	20	QPSK 1_99	18700/1860	1:1	0.457	0.252	-0.03	19.67	20.30	1.156	**0.528**	22.3
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	18900/1880	1:1	0.220	0.122	0.09	19.67	20.30	1.156	0.254	22.3
Back side	20	QPSK 50_0	18900/1880	1:1	0.348	0.182	-0.14	19.67	20.30	1.156	0.402	22.3
Left side	20	QPSK 50_0	18900/1880	1:1	0.095	0.053	0.15	19.67	20.30	1.156	0.110	22.3
Right side	20	QPSK 50_0	18900/1880	1:1	0.058	0.033	-0.11	19.67	20.30	1.156	0.067	22.3
Bottom side	20	QPSK 50_0	18900/1880	1:1	0.454	0.247	0.06	19.67	20.30	1.156	0.525	22.3

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Ant 6 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_99	18700/1860	1:1	0.321	0.198	0.09	17.35	18.30	1.245	0.399	22.3
Left tilted	20	QPSK 1_99	18700/1860	1:1	0.489	0.277	-0.19	17.35	18.30	1.245	0.609	22.3
Right cheek	20	QPSK 1_99	18700/1860	1:1	0.752	0.391	-0.03	17.35	18.30	1.245	0.936	22.3
Right tilted	20	QPSK 1_99	18700/1860	1:1	0.777	0.392	-0.07	17.35	18.30	1.245	0.967	22.3
Right cheek	20	QPSK 1_99	18900/1880	1:1	0.648	0.340	0.01	17.26	18.30	1.271	0.823	22.3
Right cheek	20	QPSK 1_99	19100/1900	1:1	0.656	0.345	0.01	17.23	18.30	1.279	0.839	22.3
Right tilted	20	QPSK 1_99	18900/1880	1:1	0.774	0.385	0.03	17.26	18.30	1.271	0.983	22.3
Right tilted	20	QPSK 1_99	19100/1900	1:1	0.795	0.387	0.04	17.23	18.30	1.279	1.017	22.3
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_50	18700/1860	1:1	0.313	0.194	-0.05	17.35	18.30	1.245	0.390	22.3
Left tilted	20	QPSK 50_50	18700/1860	1:1	0.481	0.272	0.00	17.35	18.30	1.245	0.599	22.3
Right cheek	20	QPSK 50_50	18700/1860	1:1	0.745	0.388	0.02	17.35	18.30	1.245	0.927	22.3
Right tilted	20	QPSK 50_50	18700/1860	1:1	0.780	0.398	0.08	17.35	18.30	1.245	0.971	22.3
Right cheek	20	QPSK 50_50	18900/1880	1:1	0.665	0.349	-0.01	17.28	18.30	1.265	0.841	22.3
Right cheek	20	QPSK 50_50	19100/1900	1:1	0.650	0.340	0.05	17.24	18.30	1.276	0.830	22.3
Right tilted	20	QPSK 50_50	18900/1880	1:1	0.888	0.441	0.04	17.28	18.30	1.265	1.123	22.3
Right tilted	20	QPSK 50_50	19100/1900	1:1	0.902	0.440	0.03	17.24	18.30	1.276	**1.151**	22.3
Head Test Data (100%RB) State 5												
Right cheek	20	QPSK 100_0	18900/1880	1:1	0.796	0.405	0.04	17.29	18.30	1.262	1.004	22.3
Right tilted	20	QPSK 100_0	18900/1880	1:1	0.907	0.473	-0.07	17.29	18.30	1.262	1.144	22.3
Right tilted -Repeated	20	QPSK 100_0	18900/1880	1:1	0.887	0.463	-0.13	17.29	18.30	1.262	1.119	22.3
Head Test Data (1RB) State 5 with ENDC&Inter-band_UL_CA												
Left cheek	20	QPSK 1_99	18700/1860	1:1	0.321	0.198	0.09	17.35	14.80	0.556	0.178	22.3
Left tilted	20	QPSK 1_99	18700/1860	1:1	0.489	0.277	-0.19	17.35	14.80	0.556	0.272	22.3
Right cheek	20	QPSK 1_99	18700/1860	1:1	0.752	0.391	-0.03	17.35	14.80	0.556	0.418	22.3
Right tilted	20	QPSK 1_99	18700/1860	1:1	0.777	0.392	-0.07	17.35	14.80	0.556	0.432	22.3
Right cheek	20	QPSK 1_99	18900/1880	1:1	0.648	0.340	0.01	17.26	14.80	0.568	0.368	22.3
Right cheek	20	QPSK 1_99	19100/1900	1:1	0.656	0.345	0.01	17.23	14.80	0.571	0.375	22.3
Right tilted	20	QPSK 1_99	18900/1880	1:1	0.774	0.385	0.03	17.26	14.80	0.568	0.439	22.3
Right tilted	20	QPSK 1_99	19100/1900	1:1	0.795	0.387	0.04	17.23	14.80	0.571	0.454	22.3
Head Test Data (50%RB) State 5 with ENDC&Inter-band_UL_CA												
Left cheek	20	QPSK 50_50	18700/1860	1:1	0.313	0.194	-0.05	17.35	14.80	0.556	0.174	22.3
Left tilted	20	QPSK 50_50	18700/1860	1:1	0.481	0.272	0.00	17.35	14.80	0.556	0.267	22.3
Right cheek	20	QPSK 50_50	18700/1860	1:1	0.745	0.388	0.02	17.35	14.80	0.556	0.414	22.3
Right tilted	20	QPSK 50_50	18700/1860	1:1	0.780	0.398	0.08	17.35	14.80	0.556	0.434	22.3
Right cheek	20	QPSK 50_50	18900/1880	1:1	0.665	0.349	-0.01	17.28	14.80	0.565	0.376	22.3
Right cheek	20	QPSK 50_50	19100/1900	1:1	0.650	0.340	0.05	17.24	14.80	0.570	0.371	22.3
Right tilted	20	QPSK 50_50	18900/1880	1:1	0.888	0.441	0.04	17.28	14.80	0.565	0.502	22.3
Right tilted	20	QPSK 50_50	19100/1900	1:1	0.902	0.440	0.03	17.24	14.80	0.570	0.514	22.3

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Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_0	18900/1880	1:1	0.174	0.105	0.11	20.78	21.80	1.265	0.220	22.2
Back side	20	QPSK 1_0	18900/1880	1:1	0.235	0.135	0.07	20.78	21.80	1.265	**0.297**	22.2
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_0	18900/1880	1:1	0.151	0.092	0.19	20.79	21.80	1.262	0.191	22.2
Back side	20	QPSK 50_0	18900/1880	1:1	0.231	0.137	-0.04	20.79	21.80	1.262	0.291	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_0	18900/1880	1:1	0.183	0.108	-0.19	18.62	19.30	1.169	0.214	22.2
Back side	20	QPSK 1_0	18900/1880	1:1	0.306	0.173	-0.06	18.62	19.30	1.169	0.358	22.2
Left side	20	QPSK 1_0	18900/1880	1:1	0.164	0.079	-0.18	18.62	19.30	1.169	0.192	22.2
Top side	20	QPSK 1_0	18900/1880	1:1	0.423	0.228	-0.16	18.62	19.30	1.169	0.495	22.2
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	18900/1880	1:1	0.193	0.115	-0.17	18.63	19.30	1.167	0.225	22.2
Back side	20	QPSK 50_0	18900/1880	1:1	0.326	0.178	0.02	18.63	19.30	1.167	0.380	22.2
Left side	20	QPSK 50_0	18900/1880	1:1	0.168	0.080	0.00	18.63	19.30	1.167	0.196	22.2
Top side	20	QPSK 50_0	18900/1880	1:1	0.441	0.249	0.01	18.63	19.30	1.167	0.515	22.2

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10.2.7 SAR Result of LTE Band 7

LTE Band 7 SAR Test Record												
Ant 5 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_50	20850/2510	1:1	0.135	0.075	0.03	23.97	25.00	1.268	0.171	22.2
Left tilted	20	QPSK 1_50	20850/2510	1:1	0.065	0.033	-0.10	23.97	25.00	1.268	0.082	22.2
Right cheek	20	QPSK 1_50	20850/2510	1:1	0.116	0.064	0.17	23.97	25.00	1.268	0.147	22.2
Right tilted	20	QPSK 1_50	20850/2510	1:1	0.092	0.049	0.07	23.97	25.00	1.268	0.117	22.2
Left cheek	20	QPSK 1_99	20850/2510	1:1	0.124	0.083	0.03	23.11	23.80	1.172	0.145	22.3
		QPSK 1_0	21048/2529.8									
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_50	20850/2510	1:1	0.128	0.072	0.07	23.34	24.00	1.164	0.149	22.2
Left tilted	20	QPSK 50_50	20850/2510	1:1	0.053	0.027	-0.09	23.34	24.00	1.164	0.062	22.2
Right cheek	20	QPSK 50_50	20850/2510	1:1	0.102	0.057	0.19	23.34	24.00	1.164	0.119	22.2
Right tilted	20	QPSK 50_50	20850/2510	1:1	0.077	0.041	-0.09	23.34	24.00	1.164	0.090	22.2
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_50	21100/2535	1:1	0.131	0.071	0.16	21.27	21.80	1.130	0.148	22.2
Back side	20	QPSK 1_50	21100/2535	1:1	0.253	0.131	0.01	21.27	21.80	1.130	0.286	22.2
Back side	20	QPSK 1_99	21100/2535	1:1	0.121	0.065	0.08	19.90	20.60	1.175	0.142	22.3
		QPSK 1_0	21298/2554.8									
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_0	21100/2535	1:1	0.135	0.071	0.13	21.28	21.80	1.127	0.152	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.305	0.163	-0.14	21.28	21.80	1.127	**0.344**	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_50	21100/2535	1:1	0.151	0.075	-0.08	19.04	19.60	1.138	0.172	22.2
Back side	20	QPSK 1_50	21100/2535	1:1	0.288	0.139	-0.14	19.04	19.60	1.138	0.328	22.2
Left side	20	QPSK 1_50	21100/2535	1:1	0.052	0.018	-0.13	19.04	19.60	1.138	0.059	22.2
Bottom side	20	QPSK 1_50	21100/2535	1:1	0.406	0.199	0.13	19.04	19.60	1.138	0.462	22.2
Bottom side	20	QPSK 1_99	21100/2535	1:1	0.391	0.187	-0.17	17.86	18.40	1.132	0.443	22.3
		QPSK 1_0	21298/2554.8									
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_25	21100/2535	1:1	0.150	0.078	-0.19	19.08	19.60	1.127	0.169	22.2
Back side	20	QPSK 50_25	21100/2535	1:1	0.282	0.141	-0.13	19.08	19.60	1.127	0.318	22.2
Left side	20	QPSK 50_25	21100/2535	1:1	0.054	0.017	0.14	19.08	19.60	1.127	0.061	22.2
Bottom side	20	QPSK 50_25	21100/2535	1:1	0.406	0.200	-0.16	19.08	19.60	1.127	0.458	22.2

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Ant 6 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.290	0.154	0.10	16.85	17.80	1.245	0.361	22.4
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.465	0.232	-0.15	16.85	17.80	1.245	0.579	22.4
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.532	0.244	0.01	16.85	17.80	1.245	0.662	22.4
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.480	0.211	0.08	16.85	17.80	1.245	0.597	22.4
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.562	0.294	0.10	15.72	16.30	1.143	0.642	22.3
		QPSK 1_99	20902/2515.2									
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.287	0.152	-0.16	16.88	17.80	1.236	0.355	22.4
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.457	0.227	-0.05	16.88	17.80	1.236	0.565	22.4
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.534	0.241	-0.14	16.88	17.80	1.236	0.660	22.4
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.483	0.213	0.06	16.88	17.80	1.236	0.597	22.4
Head Test Data (1RB) State 5 with Inter-band_UL_CA												
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.290	0.154	0.10	16.85	13.70	0.484	0.140	22.4
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.465	0.232	-0.15	16.85	13.70	0.484	0.225	22.4
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.532	0.244	0.01	16.85	13.70	0.484	0.258	22.4
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.480	0.211	0.08	16.85	13.70	0.484	0.232	22.4
Head Test Data (50%RB) State 5 with Inter-band_UL_CA												
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.287	0.152	-0.16	16.88	13.70	0.481	0.138	22.4
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.457	0.227	-0.05	16.88	13.70	0.481	0.220	22.4
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.534	0.241	-0.14	16.88	13.70	0.481	0.257	22.4
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.483	0.213	0.06	16.88	13.70	0.481	0.232	22.4
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_0	21100/2535	1:1	0.118	0.065	0.00	19.65	20.60	1.245	0.147	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.192	0.102	-0.13	19.65	20.60	1.245	0.239	22.2
Back side	20	QPSK 1_99	21100/2535	1:1	0.090	0.049	0.00	18.63	19.10	1.114	0.100	22.3
		QPSK 1_0	21298/2554.8									
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_0	21100/2535	1:1	0.115	0.064	0.14	19.69	20.60	1.233	0.142	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.190	0.101	0.06	19.69	20.60	1.233	0.234	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_0	21100/2535	1:1	0.124	0.065	-0.18	17.36	18.30	1.242	0.154	22.2
Back side	20	QPSK 1_0	21100/2535	1:1	0.216	0.109	-0.15	17.36	18.30	1.242	0.268	22.2
Left side	20	QPSK 1_0	21100/2535	1:1	0.114	0.049	-0.07	17.36	18.30	1.242	0.142	22.2
Top side	20	QPSK 1_0	21100/2535	1:1	0.466	0.231	0.09	17.36	18.30	1.242	**0.579**	21.9
Top side	20	QPSK 1_0	21100/2535	1:1	0.373	0.178	-0.14	16.11	16.80	1.172	0.437	22.3
		QPSK 1_99	20902/2515.2									

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Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	21100/2535	1:1	0.119	0.063	-0.07	17.35	18.30	1.245	0.148	22.2
Back side	20	QPSK 50_0	21100/2535	1:1	0.216	0.108	0.16	17.35	18.30	1.245	0.269	22.2
Left side	20	QPSK 50_0	21100/2535	1:1	0.104	0.049	0.10	17.35	18.30	1.245	0.129	22.2
Top side	20	QPSK 50_0	21100/2535	1:1	0.462	0.215	-0.01	17.35	18.30	1.245	0.575	22.2
Ant 7 Test Record												
Test position	**BW.**	**Test mode**	**Test ch./Freq.**	**Duty Cycle**	**SAR (W/kg) 1-g**	**SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.388	0.161	-0.01	13.27	13.80	1.130	0.438	22.4
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.149	0.069	0.11	13.27	13.80	1.130	0.168	22.4
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.067	0.034	-0.14	13.27	13.80	1.130	0.076	22.4
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.046	0.024	0.07	13.27	13.80	1.130	0.052	22.4
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.290	0.123	0.16	12.25	13.80	1.429	0.414	22.4
		QPSK 1_99	20902/2515.2									
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.321	0.137	0.11	13.26	13.80	1.132	0.364	22.4
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.165	0.074	-0.09	13.26	13.80	1.132	0.187	22.4
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.081	0.042	-0.03	13.26	13.80	1.132	0.092	22.4
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.058	0.031	0.00	13.26	13.80	1.132	0.066	22.4
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_0	21100/2535	1:1	0.089	0.047	0.11	18.91	19.30	1.094	0.097	22.4
Back side	20	QPSK 1_0	21100/2535	1:1	0.152	0.079	-0.10	18.91	19.30	1.094	0.166	22.4
Back side	20	QPSK 1_99	21100/2535	1:1	0.138	0.069	-0.13	17.72	19.30	1.439	0.199	22.3
		QPSK 1_0	21298/2554.8									
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_0	21100/2535	1:1	0.100	0.051	-0.14	18.95	19.30	1.084	0.108	22.4
Back side	20	QPSK 50_0	21100/2535	1:1	0.157	0.081	-0.19	18.95	19.30	1.084	0.170	22.4
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_0	21100/2535	1:1	0.142	0.070	-0.18	17.61	18.00	1.094	0.155	22.4
Back side	20	QPSK 1_0	21100/2535	1:1	0.243	0.115	-0.02	17.61	18.00	1.094	0.266	22.4
Right side	20	QPSK 1_0	21100/2535	1:1	0.322	0.152	0.05	17.61	18.00	1.094	0.352	22.4
Top side	20	QPSK 1_0	21100/2535	1:1	0.046	0.026	-0.10	17.61	18.00	1.094	0.050	22.4
Right side	20	QPSK 1_0	21100/2535	1:1	0.305	0.142	-0.12	16.29	18.00	1.483	0.452	22.3
		QPSK 1_99	20929/2517.9									
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	21100/2535	1:1	0.145	0.072	-0.08	17.65	18.00	1.084	0.157	22.4
Back side	20	QPSK 50_0	21100/2535	1:1	0.209	0.101	-0.08	17.65	18.00	1.084	0.227	22.4
Right side	20	QPSK 50_0	21100/2535	1:1	0.405	0.179	0.00	17.65	18.00	1.084	0.439	22.4
Top side	20	QPSK 50_0	21100/2535	1:1	0.051	0.028	-0.10	17.65	18.00	1.084	0.055	22.4

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Hotspot Test data (Separate 10mm 1RB) State 8 with ENDC												
Front side	20	QPSK 1_0	21100/2535	1:1	0.142	0.070	-0.18	17.61	15.20	0.574	0.082	22.4
Back side	20	QPSK 1_0	21100/2535	1:1	0.243	0.115	-0.02	17.61	15.20	0.574	0.140	22.4
Right side	20	QPSK 1_0	21100/2535	1:1	0.322	0.152	0.05	17.61	15.20	0.574	0.185	22.4
Top side	20	QPSK 1_0	21100/2535	1:1	0.046	0.026	-0.10	17.61	15.20	0.574	0.026	22.4
Hotspot Test data (Separate 10mm 50%RB) State 8 with ENDC												
Front side	20	QPSK 50_0	21100/2535	1:1	0.145	0.072	-0.08	17.65	15.20	0.569	0.082	22.4
Back side	20	QPSK 50_0	21100/2535	1:1	0.209	0.101	-0.08	17.65	15.20	0.569	0.119	22.4
Right side	20	QPSK 50_0	21100/2535	1:1	0.405	0.179	0.00	17.65	15.20	0.569	0.230	22.4
Top side	20	QPSK 50_0	21100/2535	1:1	0.051	0.028	-0.10	17.65	15.20	0.569	0.029	22.4
Ant 11 Test Record												
Test position	**BW.**	**Test mode**	**Test ch./Freq.**	**Duty Cycle**	**SAR (W/kg) 1-g**	**SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.198	0.107	-0.02	16.87	17.70	1.211	0.240	22.4
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.119	0.063	-0.18	16.87	17.70	1.211	0.144	22.4
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.936	0.377	-0.13	16.87	17.70	1.211	1.133	22.4
Right cheek-Repeated	20	QPSK 1_0	21100/2535	1:1	0.926	0.373	-0.11	16.87	17.70	1.211	1.121	22.4
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.402	0.183	0.03	16.87	17.70	1.211	0.487	21.9
Right cheek	20	QPSK 1_0	20850/2510	1:1	0.934	0.380	0.19	16.83	17.70	1.222	**1.141**	21.9
Right cheek	20	QPSK 1_0	21350/2560	1:1	0.899	0.363	0.05	16.72	17.70	1.253	1.127	21.9
Right cheek	20	QPSK 1_99	20850/2510	1:1	0.840	0.356	0.18	15.83	16.20	1.089	0.915	22.3
		QPSK 1_0	21048/2529.8									
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.197	0.108	-0.02	16.89	17.70	1.205	0.237	22.4
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.114	0.050	-0.11	16.89	17.70	1.205	0.137	22.4
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.908	0.369	0.07	16.89	17.70	1.205	1.094	21.9
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.346	0.160	0.17	16.89	17.70	1.205	0.417	21.9
Right cheek	20	QPSK 50_0	20850/2510	1:1	0.935	0.380	0.01	16.87	17.70	1.211	1.132	21.9
Right cheek	20	QPSK 50_0	21350/2560	1:1	0.825	0.334	0.07	16.68	17.70	1.265	1.043	21.9
Head Test Data (100%RB) State 5												
Right cheek	20	QPSK 100_0	21100/2535	1:1	0.899	0.366	0.07	16.80	17.70	1.230	1.106	21.9
Head Test Data (1RB) State 5 with ENDC&Inter-band_UL_CA												
Left cheek	20	QPSK 1_0	21100/2535	1:1	0.198	0.107	-0.02	16.87	13.60	0.471	0.093	22.4
Left tilted	20	QPSK 1_0	21100/2535	1:1	0.119	0.063	-0.18	16.87	13.60	0.471	0.056	22.4
Right cheek	20	QPSK 1_0	21100/2535	1:1	0.936	0.377	-0.13	16.87	13.60	0.471	0.441	22.4
Right tilted	20	QPSK 1_0	21100/2535	1:1	0.402	0.183	0.03	16.87	13.60	0.471	0.189	21.9
Right cheek	20	QPSK 1_0	20850/2510	1:1	0.934	0.380	0.19	16.83	13.60	0.475	0.444	21.9
Right cheek	20	QPSK 1_0	21350/2560	1:1	0.899	0.363	0.05	16.72	13.60	0.488	0.438	21.9

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Head Test Data (50%RB) State 5 with ENDC&Inter-band_UL_CA												
Left cheek	20	QPSK 50_0	21100/2535	1:1	0.197	0.108	-0.02	16.89	13.60	0.469	0.092	22.4
Left tilted	20	QPSK 50_0	21100/2535	1:1	0.114	0.050	-0.11	16.89	13.60	0.469	0.053	22.4
Right cheek	20	QPSK 50_0	21100/2535	1:1	0.908	0.369	0.07	16.89	13.60	0.469	0.426	21.9
Right tilted	20	QPSK 50_0	21100/2535	1:1	0.346	0.160	0.17	16.89	13.60	0.469	0.162	21.9
Right cheek	20	QPSK 50_0	20850/2510	1:1	0.935	0.380	0.01	16.87	13.60	0.471	0.440	21.9
Right cheek	20	QPSK 50_0	21350/2560	1:1	0.825	0.334	0.07	16.68	13.60	0.492	0.406	21.9
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_0	21100/2535	1:1	0.091	0.049	0.09	18.30	19.10	1.202	0.109	22.4
Back side	20	QPSK 1_0	21100/2535	1:1	0.160	0.079	-0.14	18.30	19.10	1.202	0.192	22.4
Back side	20	QPSK 1_0	21100/2535	1:1	0.079	0.037	-0.02	17.25	17.60	1.084	0.086	22.3
		QPSK 1_99	20929/2517.9									
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_0	21100/2535	1:1	0.091	0.049	0.15	18.29	19.10	1.205	0.110	22.4
Back side	20	QPSK 50_0	21100/2535	1:1	0.158	0.080	0.07	18.29	19.10	1.205	0.190	22.4
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_0	21100/2535	1:1	0.148	0.072	0.16	16.87	17.70	1.211	0.179	22.4
Back side	20	QPSK 1_0	21100/2535	1:1	0.242	0.117	0.14	16.87	17.70	1.211	0.293	22.4
Left side	20	QPSK 1_0	21100/2535	1:1	0.392	0.182	0.05	16.87	17.70	1.211	0.475	22.4
Top side	20	QPSK 1_0	21100/2535	1:1	0.045	0.025	0.06	16.87	17.70	1.211	0.054	22.4
Left side	20	QPSK 1_99	21100/2535	1:1	0.325	0.150	0.15	15.89	16.20	1.074	0.349	22.3
		QPSK 1_0	21298/2554.8									
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	21100/2535	1:1	0.150	0.073	-0.03	16.89	17.70	1.205	0.181	22.4
Back side	20	QPSK 50_0	21100/2535	1:1	0.244	0.116	-0.18	16.89	17.70	1.205	0.294	22.4
Left side	20	QPSK 50_0	21100/2535	1:1	0.398	0.185	-0.03	16.89	17.70	1.205	0.480	22.4
Top side	20	QPSK 50_0	21100/2535	1:1	0.049	0.026	-0.16	16.89	17.70	1.205	0.059	22.4

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10.2.8 SAR Result of LTE Band 12

LTE Band 12 SAR Test Record												
Ant 0 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	10	QPSK 1_49	23130/711	1:1	0.899	0.490	0.13	22.53	23.40	1.222	**1.098**	22.2
Left cheek-Repeated	10	QPSK 1_49	23130/711	1:1	0.879	0.479	0.13	22.53	23.40	1.222	1.074	22.2
Left tilted	10	QPSK 1_49	23130/711	1:1	0.150	0.100	-0.07	22.53	23.40	1.222	0.183	22.2
Right cheek	10	QPSK 1_49	23130/711	1:1	0.655	0.375	0.10	22.53	23.40	1.222	0.800	22.2
Right tilted	10	QPSK 1_49	23130/711	1:1	0.133	0.086	0.05	22.53	23.40	1.222	0.162	22.2
Left cheek	10	QPSK 1_49	23060/704	1:1	0.745	0.396	0.17	22.49	23.40	1.233	0.919	22.2
Left cheek	10	QPSK 1_49	23095/707.5	1:1	0.782	0.427	-0.15	22.47	23.40	1.239	0.969	22.2
Head Test Data (50%RB) State 5												
Left cheek	10	QPSK 25_25	23130/711	1:1	0.811	0.436	0.04	22.55	23.40	1.216	0.986	22.2
Left tilted	10	QPSK 25_25	23130/711	1:1	0.144	0.096	0.02	22.55	23.40	1.216	0.175	22.2
Right cheek	10	QPSK 25_25	23130/711	1:1	0.627	0.359	-0.14	22.55	23.40	1.216	0.763	22.2
Right tilted	10	QPSK 25_25	23130/711	1:1	0.126	0.082	-0.13	22.55	23.40	1.216	0.153	22.2
Left cheek	10	QPSK 25_25	23060/704	1:1	0.594	0.319	0.05	22.44	23.40	1.247	0.741	22.2
Left cheek	10	QPSK 25_25	23095/707.5	1:1	0.639	0.343	0.06	22.47	23.40	1.239	0.792	22.2
Head Test Data (100%RB) State 5												
Left cheek	10	QPSK 50_0	23130/711	1:1	0.702	0.375	0.06	22.53	23.40	1.222	0.858	22.2
Head Test Data (1RB) State 10												
Left cheek	10	QPSK 1_49	23130/711	1:1	0.899	0.490	0.13	22.53	22.70	1.040	0.935	22.2
Left tilted	10	QPSK 1_49	23130/711	1:1	0.150	0.100	-0.07	22.53	22.70	1.040	0.156	22.2
Right cheek	10	QPSK 1_49	23130/711	1:1	0.655	0.375	0.10	22.53	22.70	1.040	0.681	22.2
Right tilted	10	QPSK 1_49	23130/711	1:1	0.133	0.086	0.05	22.53	22.70	1.040	0.138	22.2
Left cheek	10	QPSK 1_49	23060/704	1:1	0.745	0.396	0.17	22.49	22.70	1.050	0.782	22.2
Left cheek	10	QPSK 1_49	23095/707.5	1:1	0.782	0.427	-0.15	22.47	22.70	1.054	0.825	22.2
Head Test Data (50%RB) State 10												
Left cheek	10	QPSK 25_25	23130/711	1:1	0.811	0.436	0.04	22.55	22.70	1.035	0.840	22.2
Left tilted	10	QPSK 25_25	23130/711	1:1	0.144	0.096	0.02	22.55	22.70	1.035	0.149	22.2
Right cheek	10	QPSK 25_25	23130/711	1:1	0.627	0.359	-0.14	22.55	22.70	1.035	0.649	22.2
Right tilted	10	QPSK 25_25	23130/711	1:1	0.126	0.082	-0.13	22.55	22.70	1.035	0.130	22.2
Left cheek	10	QPSK 25_25	23060/704	1:1	0.594	0.319	0.05	22.44	22.70	1.062	0.631	22.2
Left cheek	10	QPSK 25_25	23095/707.5	1:1	0.639	0.343	0.06	22.47	22.70	1.054	0.674	22.2
Head Test Data (100%RB) State 10												
Left cheek	10	QPSK 50_0	23130/711	1:1	0.702	0.375	0.06	22.53	22.70	1.040	0.730	22.2

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Head Test Data (1RB) State 5 with ENDC												
Left cheek	10	QPSK 1_49	23130/711	1:1	0.899	0.490	0.13	22.53	19.20	0.465	0.418	22.2
Left tilted	10	QPSK 1_49	23130/711	1:1	0.150	0.100	-0.07	22.53	19.20	0.465	0.070	22.2
Right cheek	10	QPSK 1_49	23130/711	1:1	0.655	0.375	0.10	22.53	19.20	0.465	0.304	22.2
Right tilted	10	QPSK 1_49	23130/711	1:1	0.133	0.086	0.05	22.53	19.20	0.465	0.062	22.2
Left cheek	10	QPSK 1_49	23060/704	1:1	0.745	0.396	0.17	22.49	19.20	0.469	0.349	22.2
Left cheek	10	QPSK 1_49	23095/707.5	1:1	0.782	0.427	-0.15	22.47	19.20	0.471	0.368	22.2
Head Test Data (50%RB) State 5 with ENDC												
Left cheek	10	QPSK 25_25	23130/711	1:1	0.811	0.436	0.04	22.55	19.20	0.462	0.375	22.2
Left tilted	10	QPSK 25_25	23130/711	1:1	0.144	0.096	0.02	22.55	19.20	0.462	0.067	22.2
Right cheek	10	QPSK 25_25	23130/711	1:1	0.627	0.359	-0.14	22.55	19.20	0.462	0.290	22.2
Right tilted	10	QPSK 25_25	23130/711	1:1	0.126	0.082	-0.13	22.55	19.20	0.462	0.058	22.2
Left cheek	10	QPSK 25_25	23060/704	1:1	0.594	0.319	0.05	22.44	19.20	0.474	0.282	22.2
Left cheek	10	QPSK 25_25	23095/707.5	1:1	0.639	0.343	0.06	22.47	19.20	0.471	0.301	22.2
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	10	QPSK 1_49	23130/711	1:1	0.172	0.105	-0.02	22.53	23.40	1.222	0.210	22.2
Back side	10	QPSK 1_49	23130/711	1:1	0.213	0.128	0.17	22.53	23.40	1.222	0.260	22.2
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	10	QPSK 25_25	23130/711	1:1	0.233	0.144	0.08	22.55	23.40	1.216	0.283	22.2
Back side	10	QPSK 25_25	23130/711	1:1	0.258	0.168	-0.11	22.55	23.40	1.216	**0.314**	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	10	QPSK 1_25	23095/707.5	1:1	0.179	0.102	0.16	20.34	21.10	1.191	0.213	22.2
Back side	10	QPSK 1_25	23095/707.5	1:1	0.241	0.134	0.07	20.34	21.10	1.191	0.287	22.2
Left side	10	QPSK 1_25	23095/707.5	1:1	0.377	0.205	-0.03	20.34	21.10	1.191	0.449	22.2
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	10	QPSK 25_25	23130/711	1:1	0.216	0.120	-0.18	20.33	21.10	1.194	0.258	22.2
Back side	10	QPSK 25_25	23130/711	1:1	0.291	0.161	0.09	20.33	21.10	1.194	0.347	22.2
Left side	10	QPSK 25_25	23130/711	1:1	0.467	0.275	-0.03	20.33	21.10	1.194	**0.558**	22.2
Ant 1 Test Record												
Test position	**BW.**	**Test mode**	**Test ch./Freq.**	**Duty Cycle**	**SAR (W/kg) 1-g**	**SAR (W/kg) 10-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) State 5												
Left cheek	10	QPSK 1_25	23130/711	1:1	0.124	0.084	-0.12	24.52	25.00	1.117	0.138	22.2
Left tilted	10	QPSK 1_25	23130/711	1:1	0.056	0.041	0.03	24.52	25.00	1.117	0.063	22.2
Right cheek	10	QPSK 1_25	23130/711	1:1	0.102	0.073	0.09	24.52	25.00	1.117	0.114	22.2
Right tilted	10	QPSK 1_25	23130/711	1:1	0.073	0.054	0.08	24.52	25.00	1.117	0.082	22.2
Head Test Data (50%RB) State 5												
Left cheek	10	QPSK 25_25	23130/711	1:1	0.099	0.067	0.13	23.60	24.00	1.096	0.109	22.2
Left tilted	10	QPSK 25_25	23130/711	1:1	0.044	0.032	-0.02	23.60	24.00	1.096	0.048	22.2
Right cheek	10	QPSK 25_25	23130/711	1:1	0.082	0.059	-0.19	23.60	24.00	1.096	0.090	22.2
Right tilted	10	QPSK 25_25	23130/711	1:1	0.058	0.043	-0.08	23.60	24.00	1.096	0.064	22.2

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Body worn Test data (Separate 15mm 1RB) State 3												
Front side	10	QPSK 1_25	23130/711	1:1	0.160	0.114	0.12	24.52	25.00	1.117	0.179	22.2
Back side	10	QPSK 1_25	23130/711	1:1	0.191	0.137	-0.15	24.52	25.00	1.117	0.213	22.2
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	10	QPSK 25_25	23130/711	1:1	0.125	0.090	-0.02	23.60	24.00	1.096	0.137	22.2
Back side	10	QPSK 25_25	23130/711	1:1	0.152	0.109	0.09	23.60	24.00	1.096	0.167	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	10	QPSK 1_49	23060/704	1:1	0.142	0.094	-0.14	22.94	23.30	1.086	0.154	22.2
Back side	10	QPSK 1_49	23060/704	1:1	0.180	0.122	0.18	22.94	23.30	1.086	0.196	22.2
Right side	10	QPSK 1_49	23060/704	1:1	0.222	0.144	-0.07	22.94	23.30	1.086	0.241	22.2
Bottom side	10	QPSK 1_49	23060/704	1:1	0.085	0.049	-0.13	22.94	23.30	1.086	0.092	22.2
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	10	QPSK 25_25	23130/711	1:1	0.155	0.102	-0.10	22.95	23.30	1.084	0.168	22.2
Back side	10	QPSK 25_25	23130/711	1:1	0.191	0.127	0.19	22.95	23.30	1.084	0.207	22.2
Right side	10	QPSK 25_25	23130/711	1:1	0.221	0.143	-0.16	22.95	23.30	1.084	0.240	22.2
Bottom side	10	QPSK 25_25	23130/711	1:1	0.090	0.052	-0.09	22.95	23.30	1.084	0.098	22.2

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10.2.9 SAR Result of LTE Band 13

LTE Band 13 SAR Test Record												
Ant 0 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	10	QPSK 1_49	23230/782	1:1	0.461	0.252	0.18	24.22	25.00	1.197	0.552	22.2
Left tilted	10	QPSK 1_49	23230/782	1:1	0.067	0.042	0.03	24.22	25.00	1.197	0.080	22.2
Right cheek	10	QPSK 1_49	23230/782	1:1	0.299	0.171	0.12	24.22	25.00	1.197	0.358	22.2
Right tilted	10	QPSK 1_49	23230/782	1:1	0.049	0.032	-0.03	24.22	25.00	1.197	0.059	22.2
Head Test Data (50%RB) State 5												
Left cheek	10	QPSK 25_0	23230/782	1:1	0.493	0.265	-0.09	23.13	24.00	1.222	**0.602**	22.2
Left tilted	10	QPSK 25_0	23230/782	1:1	0.060	0.038	-0.01	23.13	24.00	1.222	0.073	22.2
Right cheek	10	QPSK 25_0	23230/782	1:1	0.276	0.156	-0.11	23.13	24.00	1.222	0.337	22.2
Right tilted	10	QPSK 25_0	23230/782	1:1	0.046	0.030	0.17	23.13	24.00	1.222	0.056	22.2
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	10	QPSK 1_49	23230/782	1:1	0.108	0.065	0.04	24.22	25.00	1.197	0.129	22.2
Back side	10	QPSK 1_49	23230/782	1:1	0.152	0.098	-0.09	24.22	25.00	1.197	0.182	22.2
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	10	QPSK 25_0	23230/782	1:1	0.102	0.061	-0.01	23.13	24.00	1.222	0.125	22.2
Back side	10	QPSK 25_0	23230/782	1:1	0.129	0.076	0.11	23.13	24.00	1.222	0.158	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	10	QPSK 1_25	23230/782	1:1	0.194	0.110	-0.01	23.64	24.50	1.219	0.236	22.2
Back side	10	QPSK 1_25	23230/782	1:1	0.254	0.140	0.01	23.64	24.50	1.219	0.310	22.2
Left side	10	QPSK 1_25	23230/782	1:1	0.566	0.328	-0.02	23.64	24.50	1.219	**0.690**	22.2
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	10	QPSK 25_0	23230/782	1:1	0.194	0.110	-0.13	23.06	24.00	1.242	0.241	22.2
Back side	10	QPSK 25_0	23230/782	1:1	0.253	0.140	0.15	23.06	24.00	1.242	0.314	22.2
Left side	10	QPSK 25_0	23230/782	1:1	0.349	0.184	-0.14	23.06	24.00	1.242	0.433	22.2
Ant 1 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	10	QPSK 1_25	23230/782	1:1	0.132	0.099	0.17	24.39	25.00	1.151	0.152	22.2
Left tilted	10	QPSK 1_25	23230/782	1:1	0.093	0.070	-0.01	24.39	25.00	1.151	0.107	22.2
Right cheek	10	QPSK 1_25	23230/782	1:1	0.193	0.127	0.06	24.39	25.00	1.151	0.222	22.2
Right tilted	10	QPSK 1_25	23230/782	1:1	0.115	0.085	0.12	24.39	25.00	1.151	0.132	22.2

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Head Test Data (50%RB) State 5												
Left cheek	10	QPSK 25_0	23230/782	1:1	0.120	0.089	-0.08	23.32	24.00	1.169	0.140	22.2
Left tilted	10	QPSK 25_0	23230/782	1:1	0.086	0.064	0.03	23.32	24.00	1.169	0.101	22.2
Right cheek	10	QPSK 25_0	23230/782	1:1	0.173	0.115	0.19	23.32	24.00	1.169	0.202	22.2
Right tilted	10	QPSK 25_0	23230/782	1:1	0.105	0.077	0.11	23.32	24.00	1.169	0.123	22.2
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	10	QPSK 1_25	23230/782	1:1	0.170	0.123	0.08	24.39	25.00	1.151	0.196	22.2
Back side	10	QPSK 1_25	23230/782	1:1	0.236	0.183	-0.03	24.39	25.00	1.151	**0.272**	22.2
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	10	QPSK 25_0	23230/782	1:1	0.158	0.114	0.07	23.32	24.00	1.169	0.185	22.2
Back side	10	QPSK 25_0	23230/782	1:1	0.178	0.129	0.12	23.32	24.00	1.169	0.208	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	10	QPSK 1_0	23230/782	1:1	0.185	0.122	0.16	24.01	24.50	1.119	0.207	22.2
Back side	10	QPSK 1_0	23230/782	1:1	0.233	0.147	-0.08	24.01	24.50	1.119	0.261	22.2
Right side	10	QPSK 1_0	23230/782	1:1	0.402	0.254	0.05	24.01	24.50	1.119	0.450	22.2
Bottom side	10	QPSK 1_0	23230/782	1:1	0.149	0.087	0.07	24.01	24.50	1.119	0.167	22.2
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	10	QPSK 25_0	23230/782	1:1	0.164	0.106	-0.13	23.44	24.00	1.138	0.187	22.2
Back side	10	QPSK 25_0	23230/782	1:1	0.212	0.134	-0.11	23.44	24.00	1.138	0.241	22.2
Right side	10	QPSK 25_0	23230/782	1:1	0.340	0.214	0.17	23.44	24.00	1.138	0.387	22.2
Bottom side	10	QPSK 25_0	23230/782	1:1	0.132	0.078	-0.02	23.44	24.00	1.138	0.150	22.2

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10.2.10 SAR Result of LTE Band 26

LTE Band 26 SAR Test Record												
Ant 0 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	15	QPSK 1_38	26865/831.5	1:1	0.406	0.218	0.02	19.21	20.00	1.199	0.487	22.2
Left tilted	15	QPSK 1_38	26865/831.5	1:1	0.060	0.038	0.01	19.21	20.00	1.199	0.072	22.2
Right cheek	15	QPSK 1_38	26865/831.5	1:1	0.243	0.143	-0.15	19.21	20.00	1.199	0.291	22.2
Right tilted	15	QPSK 1_38	26865/831.5	1:1	0.049	0.033	0.08	19.21	20.00	1.199	0.059	22.2
Head Test Data (50%RB) State 5												
Left cheek	15	QPSK 36_18	26865/831.5	1:1	0.402	0.215	0.05	19.12	20.00	1.225	**0.492**	22.2
Left tilted	15	QPSK 36_18	26865/831.5	1:1	0.059	0.036	0.10	19.12	20.00	1.225	0.072	22.2
Right cheek	15	QPSK 36_18	26865/831.5	1:1	0.244	0.142	-0.16	19.12	20.00	1.225	0.299	22.2
Right tilted	15	QPSK 36_18	26865/831.5	1:1	0.048	0.032	0.04	19.12	20.00	1.225	0.059	22.2
Head Test Data (1RB) State 5 with ENDC&Inter-band_UL_CA												
Left cheek	15	QPSK 1_38	26865/831.5	1:1	0.406	0.218	0.02	19.21	15.80	0.456	0.185	22.2
Left tilted	15	QPSK 1_38	26865/831.5	1:1	0.060	0.038	0.01	19.21	15.80	0.456	0.027	22.2
Right cheek	15	QPSK 1_38	26865/831.5	1:1	0.243	0.143	-0.15	19.21	15.80	0.456	0.111	22.2
Right tilted	15	QPSK 1_38	26865/831.5	1:1	0.049	0.033	0.08	19.21	15.80	0.456	0.022	22.2
Head Test Data (50%RB) State 5 with ENDC&Inter-band_UL_CA												
Left cheek	15	QPSK 36_18	26865/831.5	1:1	0.402	0.215	0.05	19.12	15.80	0.466	0.187	22.2
Left tilted	15	QPSK 36_18	26865/831.5	1:1	0.059	0.036	0.10	19.12	15.80	0.466	0.027	22.2
Right cheek	15	QPSK 36_18	26865/831.5	1:1	0.244	0.142	-0.16	19.12	15.80	0.466	0.114	22.2
Right tilted	15	QPSK 36_18	26865/831.5	1:1	0.048	0.032	0.04	19.12	15.80	0.466	0.022	22.2
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	15	QPSK 1_38	26865/831.5	1:1	0.117	0.071	0.08	19.96	20.80	1.213	0.142	22.2
Back side	15	QPSK 1_38	26865/831.5	1:1	0.171	0.111	-0.09	19.96	20.80	1.213	**0.207**	22.2
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	15	QPSK 36_18	26965/841.5	1:1	0.097	0.058	0.14	19.86	20.80	1.242	0.120	22.2
Back side	15	QPSK 36_18	26965/841.5	1:1	0.118	0.070	0.07	19.86	20.80	1.242	0.147	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	15	QPSK 1_38	26965/841.5	1:1	0.122	0.070	0.17	18.64	19.30	1.164	0.142	22.2
Back side	15	QPSK 1_38	26965/841.5	1:1	0.150	0.083	-0.05	18.64	19.30	1.164	0.175	22.2
Left side	15	QPSK 1_38	26965/841.5	1:1	0.290	0.161	-0.19	18.64	19.30	1.164	0.338	22.2
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	15	QPSK 36_18	26965/841.5	1:1	0.124	0.071	0.04	18.57	19.30	1.183	0.147	22.2
Back side	15	QPSK 36_18	26965/841.5	1:1	0.163	0.090	-0.13	18.57	19.30	1.183	0.193	22.2
Left side	15	QPSK 36_18	26965/841.5	1:1	0.317	0.181	-0.04	18.57	19.30	1.183	**0.375**	22.2

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Ant 1 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	15	QPSK 1_0	26965/841.5	1:1	0.129	0.094	0.02	23.49	24.20	1.178	0.152	22.2
Left tilted	15	QPSK 1_0	26965/841.5	1:1	0.082	0.062	0.05	23.49	24.20	1.178	0.097	22.2
Right cheek	15	QPSK 1_0	26965/841.5	1:1	0.303	0.179	-0.05	23.49	24.20	1.178	0.357	22.2
Right tilted	15	QPSK 1_0	26965/841.5	1:1	0.123	0.090	0.16	23.49	24.20	1.178	0.145	22.2
Head Test Data (50%RB) State 5												
Left cheek	15	QPSK 36_18	26865/831.5	1:1	0.084	0.061	0.17	23.48	24.20	1.180	0.099	22.2
Left tilted	15	QPSK 36_18	26865/831.5	1:1	0.052	0.040	-0.19	23.48	24.20	1.180	0.061	22.2
Right cheek	15	QPSK 36_18	26865/831.5	1:1	0.191	0.114	-0.08	23.48	24.20	1.180	0.225	22.2
Right tilted	15	QPSK 36_18	26865/831.5	1:1	0.078	0.057	0.12	23.48	24.20	1.180	0.092	22.2
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	15	QPSK 1_0	26965/841.5	1:1	0.125	0.090	0.10	24.55	24.80	1.059	0.132	22.2
Back side	15	QPSK 1_0	26965/841.5	1:1	0.143	0.103	-0.09	24.55	24.80	1.059	0.151	22.2
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	15	QPSK 36_18	26865/831.5	1:1	0.085	0.061	0.16	23.62	24.30	1.169	0.099	22.2
Back side	15	QPSK 36_18	26865/831.5	1:1	0.096	0.069	-0.01	23.62	24.30	1.169	0.112	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	15	QPSK 1_38	26865/831.5	1:1	0.121	0.076	-0.10	22.16	22.80	1.159	0.140	22.2
Back side	15	QPSK 1_38	26865/831.5	1:1	0.183	0.109	0.17	22.16	22.80	1.159	0.212	22.2
Right side	15	QPSK 1_38	26865/831.5	1:1	0.287	0.172	-0.14	22.16	22.80	1.159	0.333	22.2
Bottom side	15	QPSK 1_38	26865/831.5	1:1	0.095	0.053	-0.16	22.16	22.80	1.159	0.110	22.2
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	15	QPSK 36_18	26865/831.5	1:1	0.115	0.072	-0.19	22.13	22.80	1.167	0.134	22.2
Back side	15	QPSK 36_18	26865/831.5	1:1	0.174	0.104	0.12	22.13	22.80	1.167	0.203	22.2
Right side	15	QPSK 36_18	26865/831.5	1:1	0.261	0.158	-0.15	22.13	22.80	1.167	0.305	22.2
Bottom side	15	QPSK 36_18	26865/831.5	1:1	0.088	0.050	-0.18	22.13	22.80	1.167	0.103	22.2

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10.2.11 SAR Result of LTE Band 38

LTE Band 38 SAR Test Record												
Ant 5 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_0	37850/2580	1:1.58	0.077	0.041	0.02	24.22	24.80	1.143	0.088	22.2
Left tilted	20	QPSK 1_0	37850/2580	1:1.58	0.052	0.015	0.08	24.22	24.80	1.143	0.059	22.2
Right cheek	20	QPSK 1_0	37850/2580	1:1.58	0.052	0.021	-0.11	24.22	24.80	1.143	0.059	22.2
Right tilted	20	QPSK 1_0	37850/2580	1:1.58	0.025	0.015	0.09	24.22	24.80	1.143	0.029	22.2
Left cheek	20	QPSK 1_99	37850/2580	1:1.58	0.071	0.038	-0.14	23.08	23.80	1.180	0.084	22.2
		QPSK 1_0	38048/2599.8									
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	37850/2580	1:1.58	0.076	0.041	0.07	23.20	23.80	1.148	0.087	22.2
Left tilted	20	QPSK 50_0	37850/2580	1:1.58	0.041	0.010	-0.01	23.20	23.80	1.148	0.047	22.2
Right cheek	20	QPSK 50_0	37850/2580	1:1.58	0.062	0.033	0.12	23.20	23.80	1.148	0.071	22.2
Right tilted	20	QPSK 50_0	37850/2580	1:1.58	0.035	0.022	-0.14	23.20	23.80	1.148	0.040	22.2
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_0	37850/2580	1:1.58	0.065	0.034	0.08	20.22	21.00	1.197	0.078	22.2
Back side	20	QPSK 1_0	37850/2580	1:1.58	0.127	0.066	0.14	20.22	21.00	1.197	0.152	22.2
Back side	20	QPSK 1_99	37850/2580	1:1.58	0.100	0.052	-0.07	19.16	20.00	1.213	0.121	22.2
		QPSK 1_0	38048/2599.8									
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_50	38150/2610	1:1.58	0.071	0.035	0.19	20.17	21.00	1.211	0.086	22.2
Back side	20	QPSK 50_50	38150/2610	1:1.58	0.124	0.062	0.09	20.17	21.00	1.211	0.150	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_0	38000/2595	1:1.58	0.071	0.036	0.06	17.85	18.80	1.245	0.088	22.4
Back side	20	QPSK 1_0	38000/2595	1:1.58	0.142	0.070	0.05	17.85	18.80	1.245	0.177	22.4
Left side	20	QPSK 1_0	38000/2595	1:1.58	0.005	0.002	0.12	17.85	18.80	1.245	0.006	22.4
Bottom side	20	QPSK 1_0	38000/2595	1:1.58	0.217	0.102	0.15	17.85	18.80	1.245	0.270	22.4
Bottom side	20	QPSK 1_99	37901/2585.1	1:1.58	0.208	0.099	0.06	17.09	17.80	1.178	0.245	22.2
		QPSK 1_0	38099/2604.9									
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	37850/2580	1:1.58	0.069	0.036	-0.13	17.84	18.80	1.247	0.086	22.4
Back side	20	QPSK 50_0	37850/2580	1:1.58	0.145	0.070	0.08	17.84	18.80	1.247	0.181	22.4
Left side	20	QPSK 50_0	37850/2580	1:1.58	0.007	0.003	0.10	17.84	18.80	1.247	0.009	22.4
Bottom side	20	QPSK 50_0	37850/2580	1:1.58	0.199	0.095	0.17	17.84	18.80	1.247	0.248	22.4

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Ant 6 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_0	38000/2595	1:1.58	0.153	0.082	0.02	17.12	17.90	1.197	0.183	22.4
Left tilted	20	QPSK 1_0	38000/2595	1:1.58	0.245	0.121	0.16	17.12	17.90	1.197	0.293	22.4
Right cheek	20	QPSK 1_0	38000/2595	1:1.58	0.520	0.241	0.07	17.12	17.90	1.197	0.622	22.4
Right tilted	20	QPSK 1_0	38000/2595	1:1.58	0.394	0.209	0.14	17.12	17.90	1.197	0.472	22.4
Right cheek	20	QPSK 1_0	38099/2604.9	1:1.58	0.387	0.184	0.17	16.25	16.90	1.161	0.449	22.2
		QPSK 1_99	37901/2585.1									
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	38000/2595	1:1.58	0.149	0.081	-0.05	17.07	17.90	1.211	0.180	22.4
Left tilted	20	QPSK 50_0	38000/2595	1:1.58	0.241	0.119	-0.13	17.07	17.90	1.211	0.292	22.4
Right cheek	20	QPSK 50_0	38000/2595	1:1.58	0.519	0.240	0.14	17.07	17.90	1.211	0.628	22.4
Right tilted	20	QPSK 50_0	38000/2595	1:1.58	0.378	0.203	0.05	17.07	17.90	1.211	0.458	22.4
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_0	38000/2595	1:1.58	0.082	0.045	0.05	20.72	21.50	1.197	0.098	22.2
Back side	20	QPSK 1_0	38000/2595	1:1.58	0.128	0.067	0.08	20.72	21.50	1.197	0.153	22.2
Back side	20	QPSK 1_0	38099/2604.9	1:1.58	0.096	0.050	-0.02	19.96	20.50	1.132	0.109	22.2
		QPSK 1_99	37901/2585.1									
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_0	37850/2580	1:1.58	0.082	0.045	-0.12	20.76	21.50	1.186	0.097	22.2
Back side	20	QPSK 50_0	37850/2580	1:1.58	0.121	0.064	0.08	20.76	21.50	1.186	0.143	22.2
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_0	38000/2595	1:1.58	0.087	0.046	0.16	18.58	19.30	1.180	0.103	22.2
Back side	20	QPSK 1_0	38000/2595	1:1.58	0.147	0.071	-0.08	18.58	19.30	1.180	0.174	22.2
Left side	20	QPSK 1_0	38000/2595	1:1.58	0.077	0.035	0.14	18.58	19.30	1.180	0.091	22.2
Top side	20	QPSK 1_0	38000/2595	1:1.58	0.291	0.137	0.10	18.58	19.30	1.180	0.343	22.2
Top side	20	QPSK 1_99	37901/2585.1	1:1.58	0.220	0.106	0.13	17.75	18.30	1.135	0.250	22.2
		QPSK 1_0	38099/2604.9									
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	37850/2580	1:1.58	0.083	0.043	0.12	18.56	19.30	1.186	0.098	22.2
Back side	20	QPSK 50_0	37850/2580	1:1.58	0.124	0.062	-0.12	18.56	19.30	1.186	0.147	22.2
Left side	20	QPSK 50_0	37850/2580	1:1.58	0.072	0.032	0.02	18.56	19.30	1.186	0.085	22.2
Top side	20	QPSK 50_0	37850/2580	1:1.58	0.282	0.135	0.08	18.56	19.30	1.186	0.334	22.2

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Ant 7 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_0	38000/2595	1:1.58	0.338	0.142	0.05	14.94	15.70	1.191	0.403	22.4
Left tilted	20	QPSK 1_0	38000/2595	1:1.58	0.167	0.077	-0.04	14.94	15.70	1.191	0.199	22.4
Right cheek	20	QPSK 1_0	38000/2595	1:1.58	0.078	0.040	0.18	14.94	15.70	1.191	0.093	22.4
Right tilted	20	QPSK 1_0	38000/2595	1:1.58	0.056	0.030	0.07	14.94	15.70	1.191	0.067	22.4
Left cheek	20	QPSK 1_0	38099/2604.9	1:1.58	0.326	0.157	-0.17	14.85	15.70	1.216	0.396	22.2
		QPSK 1_99	37901/2585.1									
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	38000/2595	1:1.58	0.345	0.145	0.18	14.87	15.70	1.211	0.418	22.4
Left tilted	20	QPSK 50_0	38000/2595	1:1.58	0.172	0.078	0.11	14.87	15.70	1.211	0.208	22.4
Right cheek	20	QPSK 50_0	38000/2595	1:1.58	0.077	0.040	-0.15	14.87	15.70	1.211	0.093	22.4
Right tilted	20	QPSK 50_0	38000/2595	1:1.58	0.056	0.030	0.14	14.87	15.70	1.211	0.068	22.4
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_0	38000/2595	1:1.58	0.067	0.034	-0.07	17.53	18.30	1.194	0.080	22.4
Back side	20	QPSK 1_0	38000/2595	1:1.58	0.109	0.055	0.04	17.53	18.30	1.194	0.130	22.4
Back side	20	QPSK 1_99	37901/2585.1	1:1.58	0.058	0.030	0.07	17.56	18.30	1.186	0.069	22.2
		QPSK 1_0	38099/2604.9									
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_0	38000/2595	1:1.58	0.066	0.034	0.12	17.44	18.30	1.219	0.080	22.4
Back side	20	QPSK 50_0	38000/2595	1:1.58	0.110	0.055	0.17	17.44	18.30	1.219	0.134	22.4
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_0	38000/2595	1:1.58	0.077	0.037	0.15	15.35	16.10	1.189	0.092	22.4
Back side	20	QPSK 1_0	38000/2595	1:1.58	0.136	0.063	0.17	15.35	16.10	1.189	0.162	22.4
Right side	20	QPSK 1_0	38000/2595	1:1.58	0.171	0.078	-0.07	15.35	16.10	1.189	0.203	22.4
Top side	20	QPSK 1_0	38000/2595	1:1.58	0.007	0.003	-0.02	15.35	16.10	1.189	0.008	22.4
Right side	20	QPSK 1_99	37901/2585.1	1:1.58	0.168	0.076	-0.04	15.31	16.10	1.199	0.202	22.2
		QPSK 1_0	38099/2604.9									
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	38000/2595	1:1.58	0.080	0.039	0.15	15.24	16.10	1.219	0.098	22.4
Back side	20	QPSK 50_0	38000/2595	1:1.58	0.136	0.064	0.17	15.24	16.10	1.219	0.166	22.4
Right side	20	QPSK 50_0	38000/2595	1:1.58	0.174	0.079	-0.08	15.24	16.10	1.219	0.212	22.4
Top side	20	QPSK 50_0	38000/2595	1:1.58	0.006	0.002	-0.06	15.24	16.10	1.219	0.007	22.4

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Ant 11 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_50	38000/2595	1:1.58	0.206	0.107	-0.05	19.54	20.10	1.138	0.234	22.4
Left tilted	20	QPSK 1_50	38000/2595	1:1.58	0.105	0.056	0.06	19.54	20.10	1.138	0.119	22.4
Right cheek	20	QPSK 1_50	38000/2595	1:1.58	0.772	0.316	0.08	19.54	20.10	1.138	0.878	22.4
Right tilted	20	QPSK 1_50	38000/2595	1:1.58	0.283	0.134	0.14	19.54	20.10	1.138	0.322	22.4
Right cheek	20	QPSK 1_50	37850/2580	1:1.58	0.837	0.343	0.15	19.53	20.10	1.140	0.954	22.4
Right cheek	20	QPSK 1_50	38150/2610	1:1.58	0.805	0.379	0.12	19.45	20.10	1.161	0.935	22.4
Right cheek	20	QPSK 1_99	37850/2580	1:1.58	0.773	0.315	-0.05	18.30	19.10	1.202	0.929	22.2
		QPSK 1_0	38048/2599.8									
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	38000/2595	1:1.58	0.207	0.107	0.17	19.51	20.10	1.146	0.237	22.4
Left tilted	20	QPSK 50_0	38000/2595	1:1.58	0.102	0.055	0.00	19.51	20.10	1.146	0.117	22.4
Right cheek	20	QPSK 50_0	38000/2595	1:1.58	0.834	0.339	0.11	19.51	20.10	1.146	0.955	22.4
Right tilted	20	QPSK 50_0	38000/2595	1:1.58	0.292	0.138	0.12	19.51	20.10	1.146	0.334	22.4
Right cheek	20	QPSK 50_0	37850/2580	1:1.58	0.874	0.356	-0.06	19.50	20.10	1.148	**1.003**	22.4
Right cheek-Repeated	20	QPSK 50_0	37850/2580	1:1.58	0.864	0.352	-0.06	19.50	20.10	1.148	0.992	22.4
Right cheek	20	QPSK 50_0	38150/2610	1:1.58	0.784	0.320	0.04	19.47	20.10	1.156	0.906	22.4
Head Test Data (100%RB) State 5												
Right cheek	20	QPSK 100_0	38000/2595	1:1.58	0.873	0.411	0.06	19.51	20.10	1.146	1.000	22.4
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_0	38000/2595	1:1.58	0.095	0.050	-0.05	21.17	21.70	1.130	0.107	22.4
Back side	20	QPSK 1_0	38000/2595	1:1.58	0.157	0.079	0.02	21.17	21.70	1.130	0.177	22.4
Back side	20	QPSK 1_0	38099/2604.9	1:1.58	0.145	0.074	-0.05	19.83	20.70	1.222	0.177	22.2
		QPSK 1_99	37901/2585.1									
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_0	38000/2595	1:1.58	0.099	0.051	0.14	21.15	21.70	1.135	0.112	22.4
Back side	20	QPSK 50_0	38000/2595	1:1.58	0.194	0.100	-0.05	21.15	21.70	1.135	**0.220**	22.4
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_50	38000/2595	1:1.58	0.152	0.074	0.14	18.95	19.50	1.135	0.173	22.4
Back side	20	QPSK 1_50	38000/2595	1:1.58	0.257	0.121	0.17	18.95	19.50	1.135	0.292	22.4
Left side	20	QPSK 1_50	38000/2595	1:1.58	0.395	0.179	-0.04	18.95	19.50	1.135	0.448	22.4
Top side	20	QPSK 1_50	38000/2595	1:1.58	0.048	0.017	-0.05	18.95	19.50	1.135	0.054	22.4
Left side	20	QPSK 1_99	37901/2585.1	1:1.58	0.282	0.132	-0.01	17.70	18.50	1.202	0.339	22.2
		QPSK 1_0	38099/2604.9									
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	38000/2595	1:1.58	0.153	0.073	-0.11	18.90	19.50	1.148	0.176	22.4
Back side	20	QPSK 50_0	38000/2595	1:1.58	0.224	0.106	0.18	18.90	19.50	1.148	0.257	22.4
Left side	20	QPSK 50_0	38000/2595	1:1.58	0.408	0.188	-0.06	18.90	19.50	1.148	**0.468**	22.4
Top side	20	QPSK 50_0	38000/2595	1:1.58	0.054	0.028	-0.18	18.90	19.50	1.148	0.062	22.4

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10.2.12 SAR Result of LTE Band 41

LTE Band 41 SAR Test Record												
Ant 5 Test Record												
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_0	41055/2636.5	1:1.58	0.083	0.043	-0.14	22.81	23.30	1.119	0.093	22.3
Left tilted	20	QPSK 1_0	41055/2636.5	1:1.58	0.005	0.003	0.02	22.81	23.30	1.119	0.006	22.3
Right cheek	20	QPSK 1_0	41055/2636.5	1:1.58	0.083	0.044	-0.11	22.81	23.30	1.119	0.093	22.3
Right cheek with HPUE	20	QPSK 1_0	41055/2636.5	1:2.31	0.118	0.063	0.06	25.70	26.80	1.288	0.152	22.3
Right tilted	20	QPSK 1_0	41055/2636.5	1:1.58	0.041	0.020	-0.04	22.81	23.30	1.119	0.046	22.3
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	41055/2636.5	1:1.58	0.065	0.034	0.07	21.70	22.30	1.148	0.075	22.3
Left tilted	20	QPSK 50_0	41055/2636.5	1:1.58	0.003	0.002	-0.16	21.70	22.30	1.148	0.003	22.3
Right cheek	20	QPSK 50_0	41055/2636.5	1:1.58	0.068	0.037	-0.08	21.70	22.30	1.148	0.078	22.3
Right tilted	20	QPSK 50_0	41055/2636.5	1:1.58	0.035	0.015	0.16	21.70	22.30	1.148	0.040	22.3
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_50	39750/2506	1:1.58	0.097	0.052	-0.04	21.20	21.30	1.023	0.099	22.3
Back side	20	QPSK 1_50	39750/2506	1:1.58	0.166	0.084	0.19	21.20	21.30	1.023	0.170	22.3
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_25	39750/2506	1:1.58	0.099	0.054	0.18	21.16	21.30	1.033	0.102	22.3
Back side	20	QPSK 50_25	39750/2506	1:1.58	0.182	0.100	0.04	21.16	21.30	1.033	**0.188**	22.3
Back side with HPUE	20	QPSK 50_25	39750/2506	1:2.31	0.088	0.048	0.09	22.56	23.30	1.186	0.104	22.3
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_50	41055/2636.5	1:1.58	0.098	0.049	-0.07	19.02	19.30	1.067	0.105	22.3
Back side	20	QPSK 1_50	41055/2636.5	1:1.58	0.218	0.103	0.02	19.02	19.30	1.067	0.233	22.3
Left side	20	QPSK 1_50	41055/2636.5	1:1.58	0.045	0.013	0.00	19.02	19.30	1.067	0.048	22.3
Bottom side	20	QPSK 1_50	41055/2636.5	1:1.58	0.303	0.138	0.13	19.02	19.30	1.067	0.323	22.3
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_0	41055/2636.5	1:1.58	0.104	0.051	-0.12	18.89	19.30	1.099	0.114	22.3
Back side	20	QPSK 50_0	41055/2636.5	1:1.58	0.228	0.109	0.17	18.89	19.30	1.099	0.251	22.3
Left side	20	QPSK 50_0	41055/2636.5	1:1.58	0.056	0.016	0.04	18.89	19.30	1.099	0.062	22.3
Bottom side	20	QPSK 50_0	41055/2636.5	1:1.58	0.314	0.144	-0.02	18.89	19.30	1.099	0.345	22.3
Bottom side with HPUE	20	QPSK 50_25	41055/2636.5	1:2.31	0.269	0.131	0.08	20.40	21.30	1.230	0.331	22.3

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Ant 6 Test Record												
Test position	**BW.**	**Test mode**	**Test ch./Freq.**	**Duty Cycle**	**SAR (W/kg) 1-g**	**SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_50	40185/2549.5	1:1.58	0.238	0.126	-0.14	18.11	18.30	1.045	0.249	22.3
Left tilted	20	QPSK 1_50	40185/2549.5	1:1.58	0.379	0.189	0.14	18.11	18.30	1.045	0.396	22.3
Right cheek	20	QPSK 1_50	40185/2549.5	1:1.58	0.415	0.218	0.15	18.11	18.30	1.045	0.434	22.3
Right tilted	20	QPSK 1_50	40185/2549.5	1:1.58	0.469	0.258	0.03	18.11	18.30	1.045	0.490	22.3
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	40185/2549.5	1:1.58	0.240	0.128	0.02	18.03	18.30	1.064	0.255	22.3
Left tilted	20	QPSK 50_0	40185/2549.5	1:1.58	0.382	0.191	-0.03	18.03	18.30	1.064	0.407	22.3
Right cheek	20	QPSK 50_0	40185/2549.5	1:1.58	0.416	0.219	0.03	18.03	18.30	1.064	0.443	22.3
Right tilted	20	QPSK 50_0	40185/2549.5	1:1.58	0.464	0.258	0.17	18.03	18.30	1.064	0.494	22.3
Right tilted with HPUE	20	QPSK 50_0	40185/2549.5	1:2.31	0.404	0.214	-0.02	19.26	19.80	1.132	0.457	22.3
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_50	39750/2506	1:1.58	0.068	0.038	-0.02	19.15	19.30	1.035	0.070	22.3
Back side	20	QPSK 1_50	39750/2506	1:1.58	0.116	0.062	-0.16	19.15	19.30	1.035	0.120	22.3
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_25	39750/2506	1:1.58	0.071	0.039	-0.18	19.02	19.30	1.067	0.076	22.3
Back side	20	QPSK 50_25	39750/2506	1:1.58	0.117	0.062	0.18	19.02	19.30	1.067	0.125	22.3
Back side with HPUE	20	QPSK 50_0	39750/2506	1:2.31	0.107	0.058	0.02	20.47	20.80	1.079	0.115	22.3
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_50	39750/2506	1:1.58	0.124	0.067	0.07	19.15	19.30	1.035	0.128	22.3
Back side	20	QPSK 1_50	39750/2506	1:1.58	0.223	0.113	0.19	19.15	19.30	1.035	0.231	22.3
Left side	20	QPSK 1_50	39750/2506	1:1.58	0.117	0.052	-0.14	19.15	19.30	1.035	0.121	22.3
Top side	20	QPSK 1_50	39750/2506	1:1.58	0.415	0.216	-0.18	19.15	19.30	1.035	0.430	22.3
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_25	39750/2506	1:1.58	0.126	0.068	-0.03	19.02	19.30	1.067	0.134	22.3
Back side	20	QPSK 50_25	39750/2506	1:1.58	0.228	0.115	-0.13	19.02	19.30	1.067	0.243	22.3
Left side	20	QPSK 50_25	39750/2506	1:1.58	0.098	0.046	0.18	19.02	19.30	1.067	0.105	22.3
Top side	20	QPSK 50_25	39750/2506	1:1.58	0.436	0.222	-0.04	19.02	19.30	1.067	**0.465**	22.3
Top side with HPUE	20	QPSK 50_0	39750/2506	1:2.31	0.406	0.201	0.13	20.47	20.80	1.079	0.438	22.3
Ant 7 Test Record												
Test position	**BW.**	**Test mode**	**Test ch./Freq.**	**Duty Cycle**	**SAR (W/kg) 1-g**	**SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_50	39750/2506	1:1.58	0.453	0.203	0.03	17.55	18.00	1.109	0.502	22.3
Left tilted	20	QPSK 1_50	39750/2506	1:1.58	0.232	0.109	-0.11	17.55	18.00	1.109	0.257	22.3
Right cheek	20	QPSK 1_50	39750/2506	1:1.58	0.118	0.061	-0.02	17.55	18.00	1.109	0.131	22.3
Right tilted	20	QPSK 1_50	39750/2506	1:1.58	0.075	0.039	0.10	17.55	18.00	1.109	0.083	22.3

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Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_50	39750/2506	1:1.58	0.459	0.204	-0.03	17.49	18.00	1.125	0.516	22.3
Left cheek with HPUE	20	QPSK 50_50	39750/2506	1:2.31	0.354	0.168	0.16	18.97	19.30	1.079	0.382	22.3
Left tilted	20	QPSK 50_50	39750/2506	1:1.58	0.234	0.109	0.19	17.49	18.00	1.125	0.263	22.3
Right cheek	20	QPSK 50_50	39750/2506	1:1.58	0.118	0.061	-0.19	17.49	18.00	1.125	0.133	22.3
Right tilted	20	QPSK 50_50	39750/2506	1:1.58	0.078	0.041	0.08	17.49	18.00	1.125	0.088	22.3
Body worn Test data (Separate 15mm 1RB) State 3												
Front side	20	QPSK 1_50	39750/2506	1:1.58	0.064	0.033	0.01	18.75	19.00	1.059	0.068	22.3
Back side	20	QPSK 1_50	39750/2506	1:1.58	0.105	0.055	0.11	18.75	19.00	1.059	0.111	22.3
Back side with HPUE	20	QPSK 1_50	39750/2506	1:2.31	0.117	0.060	-0.08	21.18	21.30	1.028	0.120	22.3
Body worn Test data (Separate 15mm 50%RB) State 3												
Front side	20	QPSK 50_50	39750/2506	1:1.58	0.051	0.026	0.01	17.68	18.00	1.076	0.055	22.3
Back side	20	QPSK 50_50	39750/2506	1:1.58	0.087	0.044	-0.04	17.68	18.00	1.076	0.094	22.3
Hotspot Test data (Separate 10mm 1RB) State 8												
Front side	20	QPSK 1_50	39750/2506	1:1.58	0.089	0.049	-0.15	17.55	18.00	1.109	0.099	22.3
Back side	20	QPSK 1_50	39750/2506	1:1.58	0.168	0.080	0.16	17.55	18.00	1.109	0.186	22.3
Right side	20	QPSK 1_50	39750/2506	1:1.58	0.281	0.126	0.08	17.55	18.00	1.109	0.312	22.3
Top side	20	QPSK 1_50	39750/2506	1:1.58	0.063	0.025	-0.07	17.55	18.00	1.109	0.070	22.3
Right side with HPUE	20	QPSK 1_50	39750/2506	1:2.31	0.235	0.110	0.05	19.16	19.30	1.033	0.243	22.3
Hotspot Test data (Separate 10mm 50%RB) State 8												
Front side	20	QPSK 50_50	39750/2506	1:1.58	0.094	0.046	0.09	17.49	18.00	1.125	0.106	22.3
Back side	20	QPSK 50_50	39750/2506	1:1.58	0.168	0.081	0.17	17.49	18.00	1.125	0.189	22.3
Right side	20	QPSK 50_50	39750/2506	1:1.58	0.240	0.113	0.10	17.49	18.00	1.125	0.270	22.3
Top side	20	QPSK 50_50	39750/2506	1:1.58	0.039	0.020	0.17	17.49	18.00	1.125	0.044	22.3
Ant 11 Test Record												
Test position	**BW.**	**Test mode**	**Test ch./Freq.**	**Duty Cycle**	**SAR (W/kg) 1-g**	**SAR (W/kg) 10-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) State 5												
Left cheek	20	QPSK 1_50	39750/2506	1:1.58	0.135	0.074	0.18	17.22	17.80	1.143	0.154	22.3
Left tilted	20	QPSK 1_50	39750/2506	1:1.58	0.068	0.035	0.19	17.22	17.80	1.143	0.078	22.3
Right cheek	20	QPSK 1_50	39750/2506	1:1.58	0.530	0.222	0.05	17.22	17.80	1.143	**0.606**	22.3
Right tilted	20	QPSK 1_50	39750/2506	1:1.58	0.189	0.091	0.00	17.22	17.80	1.143	0.216	22.3
Right cheek	20	QPSK 1_50	40185/2549.5	1:1.58	0.499	0.204	-0.03	17.09	17.80	1.178	0.588	22.3
Right cheek	20	QPSK 1_50	40620/2593	1:1.58	0.481	0.199	-0.07	17.18	17.80	1.153	0.555	22.3
Right cheek	20	QPSK 1_0	41055/2636.5	1:1.58	0.459	0.182	-0.10	17.11	17.80	1.172	0.538	22.3
Right cheek	20	QPSK 1_99	41490/2680	1:1.58	0.411	0.173	0.08	16.97	17.80	1.211	0.498	22.3
Right cheek with HPUE	20	QPSK 1_50	39750/2506	1:2.31	0.464	0.212	-0.11	18.50	18.80	1.072	0.497	22.3
Head Test Data (50%RB) State 5												
Left cheek	20	QPSK 50_0	39750/2506	1:1.58	0.133	0.073	-0.02	17.23	17.80	1.140	0.152	22.3
Left tilted	20	QPSK 50_0	39750/2506	1:1.58	0.063	0.033	0.02	17.23	17.80	1.140	0.072	22.3
Right cheek	20	QPSK 50_0	39750/2506	1:1.58	0.522	0.215	-0.19	17.23	17.80	1.140	0.595	22.3
Right tilted	20	QPSK 50_0	39750/2506	1:1.58	0.179	0.086	0.00	17.23	17.80	1.140	0.204	22.3

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