

Compliance Certification Services (Kunshan) Inc. Shenzhen Branch

SZCCS-TRF-02 Rev. A/1

Report No.: FYCR260700029604

Page: 1 of 53

SAR TEST REPORT

Application No.: FYCR2607000296AT
Applicant: Vanstone Electronic (Beijing) Co., Ltd.
Address of Applicant: 3F No.2 Building, Aisino Corporation Park 18A, Xingshikou Road, Haidian District, Beijing, China 100195
Manufacturer: Vanstone Electronic (Beijing) Co., Ltd.
Address of Manufacturer: 3F No.2 Building, Aisino Corporation Park 18A, Xingshikou Road, Haidian District, Beijing, China 100195
EUT Description: SoundBox
Model No.: Q191
Trade Mark: 
FCC ID: OWL-Q191
Standards: FCC 47CFR §2.1093
Date of Receipt: 2026-07-13
Date of Test: 2026-08-11 to 2026-08-15
Date of Issue: 2026-09-04

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



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Revision Record

Version	Description	Date	Remark
01		2026-09-04	Original

Authorized for issue by:				
		Byron Liang		
		Byron Liang/ Project Engineer		
		Tree Zhan		
		Tree Zhan / Reviewer		



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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)
	Extremity
LTE Band 2	2.24
LTE Band 4	0.90
LTE Band 5	0.64
LTE Band 7	0.82
Wi-Fi (2.4GHz)	0.36
SAR Limited(W/kg)	4.0
Maximum Simultaneous Transmission SAR (W/kg)	
Scenario	Extremity
Sum SAR	2.26
SPLSR	/
SPLSR Limited	0.10



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1 General Information

1.1 General Description of EUT

Product Name:	SoundBox	
Model No.:	Q191	
Trade Mark:		
Product Phase:	production unit	
Device Type:	portable device	
Exposure Category:	uncontrolled environment / general population	
IMEI:	865632079948554, 865632079947564, 865632079948307	
Hardware Version:	V1.00	
Software Version:	V1.00	
Antenna Type:	FPC antenna for LTE, PCB antenna for WIFI	
Device Operating Configurations:		
Test Mode Configuration:	LTE: QPSK,16QAM WIFI: DSSS,OFDM	
Power Class:	3, tested with power control "max power"(LTE Band)	
Frequency Bands:	Band	Tx(MHz)
	LTE Band 2	1850 ~1910
	LTE Band 4	1710~1755
	LTE Band 5	824~849
	LTE Band 7	2500~2570
	WIFI 2.4G	2412~2462
RF Cable:	☒ Provided by applicant ☐ Provided by the laboratory	
Battery Information:	Model:	18650 2000mAh
	Normal Voltage:	DC3.7V
	Rated capacity:	2000mAh
	Manufacturer:	MEI ZHOU BO FU NENG TECHNOLOGY CO.,LTD
Note: Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, CCS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.		



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1.2 Test Specification

Identity	Document Title
47 CFR § 2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
ANSI/IEEE C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.
IEEE 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB 941225 D05	SAR for LTE Devices v02r05
KDB 248227 D01	SAR Guidance for IEEE 802.11 Wi-Fi SAR v02r02
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

Remark: FCC 47CFR §2.1093, ANSI/IEEE C95.1-1992, KDB 248227 D01, KDB 447498 D04, KDB 865664 D02, KDB 690783 D01 are not accredited by A2LA.



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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).



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1.4 Test Location

All tests were performed at:

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Fuyong lab. Xinlong TechnoPark, Fengtang Road, Fuyong Subdistrict, Bao'an, Shenzhen, China

Tel: +86 755 8866 3988 Fax: +86 755 2671 0594

No tests were sub-contracted.

1.5 Test Engineer

Test Engineer: Jim Wang

1.6 Test Facility

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

• **A2LA (Certificate No. 6606.01)**

Compliance Certification Services (Kunshan) Inc. Shenzhen branch is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 6606.01.

• **FCC –Designation Number: CN1322**

Compliance Certification Services (Kunshan) Inc. Shenzhen branch has been recognized as an accredited testing laboratory.

Designation Number: CN1322. Test Firm Registration Number: 718073

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

Compliance Certification Services (Kunshan) Inc. Shenzhen branch has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0129.

IC#: 28189



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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 Configuration

3.1 The SAR Measurement System

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

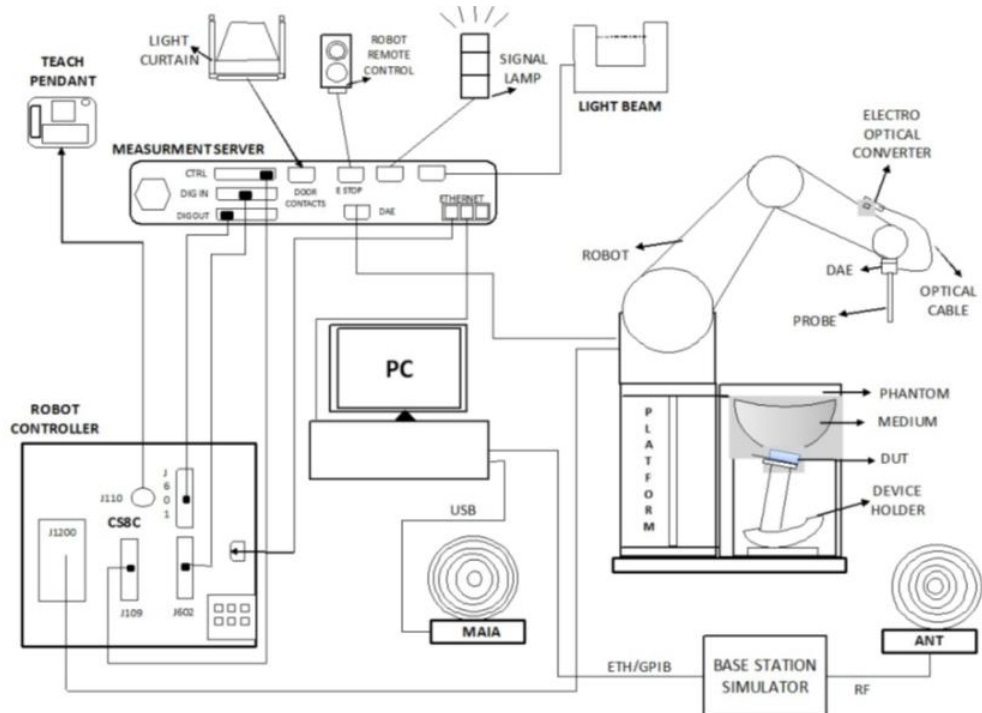
The DASY system for performing compliance tests consists of the following items:

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,

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control of the robot operation and fast movement interrupts.

- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows system.
- DASY 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 Probe EX3DV4

	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	4 MHz - 10 GHz Linearity: ± 0.2 dB (30 MHz - 10 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μ W/g - 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 9 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 10 GHz with precision of better 30%.
Compatibility	DASY52 SAR and higher, EASY4/MRI



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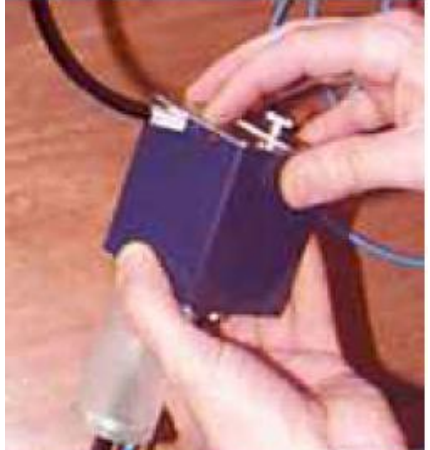
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3.3 Data Acquisition Electronics (DAE)

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

3.4 SAM Twin Phantom

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

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

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



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3.5 ELI Phantom

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

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles. ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4 but has reinforced top structure.



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3.6 Device Holder for Transmitters



F-2. Device Holder for Transmitters

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

3.7 Measurement Procedure

3.7.1 Scanning procedure

Step 1: Power reference measurement

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

Step 2: Area scan

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

Step 3: Zoom scan

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

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

If the zoom scan measured as specified in the preceding paragraphs complies with both i) and ii), or if the psSAR is below 0,1 W/kg, no additional measurements are needed.

i) The smallest horizontal distance from the local SAR peaks to all points 3 dB below the SAR peak shall be larger than the horizontal grid steps in both x- and y-directions (Δx , Δy). This shall be checked for the measured zoom scan plane conformal to the phantom at the distance zM1. The minimum distance shall be recorded in the SAR test report.

ii) The ratio of the SAR at the second measured point (M2) to the SAR at the closest measured point (M1) at the x-y location of the measured maximum SAR value shall be at least 30 %. This ratio (in %) shall be recorded in the SAR test report.



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

Step 4: Power reference measurement (drift)

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



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3.7.2 Data storage

The DASY software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension "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 V_i = compensated signal of channel I (I = x, y, z)

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

cf = crest factor of exciting field (DASY parameter)

dcp I = diode compression point (DASY parameter)

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

E-field probes:

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



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H-field probes:

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

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

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

[mV/(V/m)²] for E-field Probes

ConvF = sensitivity enhancement in solution

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

f = carrier frequency [GHz]

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

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

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

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

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

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

with SAR = local specific absorption rate in mW/g

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

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

ϵ = equivalent tissue density in g/cm³

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

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

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

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

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



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4 SAR measurement variability and uncertainty

4.1 SAR measurement variability

Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

4.2 SAR measurement uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.



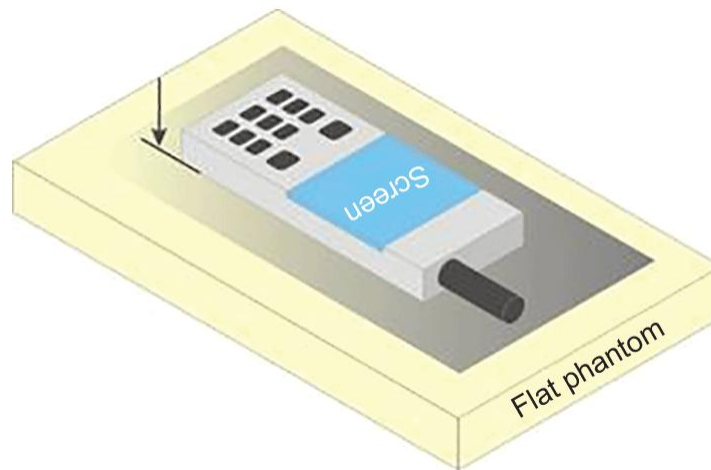
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5 Description of Test Position

5.1 Hand-held usage of the device, not at the head or torso

When SAR measurement is necessary for hand-held devices that do not transmit while at the head or torso, a flat phantom may be used. To assess this type of device, the device shall be placed directly against the flat phantom as shown in the below Figure, for the sides of the device that are in contact with the hand for the intended use.



a) Test position for hand-held devices, not used at the head or torso

6 SAR System Verification Procedure

6.1 Tissue Simulate Liquid

6.1.1 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 MQ+ resistivity Tween: Polyoxyethylene (20) sorbitan monolaurate Sucrose: 98+% Pure Sucrose HEC: Hydroxyethyl Cellulose					
Head Tissue Simulate Liquid (HBBL600-10000V6) 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 1 : Recipe of Tissue Simulate Liquid

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6.1.2 Measurement for Tissue Simulate Liquid

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

The temperature variation of the Tissue Simulate Liquids was $22 \pm 2^\circ\text{C}$.

Measurement for Tissue Simulate Liquid for System check									
Tissue Type	Measured Frequency (MHz)	Measured Tissue		Target Tissue ($\pm 5\%$)		Deviation (Within $\pm 5\%$)		Liquid Temp. ($^\circ\text{C}$)	Test Date
		ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$		
835 Head	835	43.424	0.900	41.50	0.90	4.64%	0.00%	21.6	2026/8/14
1750 Head	1750	40.559	1.355	40.10	1.37	1.14%	-1.09%	22.2	2026/8/13
1950 Head	1950	40.380	1.368	40.00	1.40	0.95%	-2.29%	22.4	2026/8/11
2450 Head	2450	40.399	1.795	39.20	1.80	3.06%	-0.28%	21.5	2026/8/15
2600 Head	2600	38.198	1.892	39.00	1.96	-2.06%	-3.47%	21.8	2026/8/12

Table 2 : Measurement result of Tissue electric parameters



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6.2.1 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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6.2.2 Summary System Check Result(s)

Validation Kit	Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within $\pm 10\%$)		Liquid Temp. (°C)	Test Date
	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1-g(W/kg)	10- g(W/kg)		
D835V2_Head	2.50	1.64	10.00	6.56	9.52	6.14	5.04%	6.84%	21.6	2026/8/14
D1750V2_Head	8.82	4.55	35.28	18.20	36.20	19.10	-2.54%	-4.71%	22.2	2026/8/13
D1950V3_Head	9.69	5.05	38.76	20.20	41.90	21.30	-7.49%	-5.16%	22.4	2026/8/11
D2450V2_Head	13.00	6.03	52.00	24.12	52.70	24.30	-1.33%	-0.74%	21.5	2026/8/15
D2600V2_Head	13.30	5.95	53.20	23.80	55.30	24.70	-3.80%	-3.64%	21.8	2026/8/12

Table 3 : SAR System Check Result

6.2.3 Detailed System Check Results

Please see the Appendix A



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7 Test Configuration

7.1 Operation Configurations

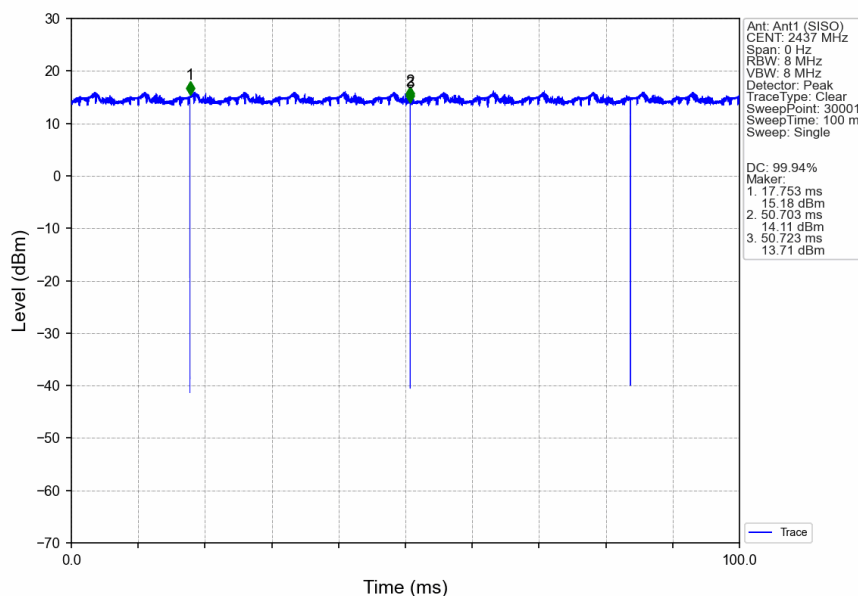
7.1.1 WIFI Test Configuration

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

7.1.1.1 Duty cycle

1) Wi-Fi 2.4GHz 802.11b:

Duty cycle=99.94%



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7.1.1.2 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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7.1.1.3 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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7.1.1.4 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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7.1.2 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:

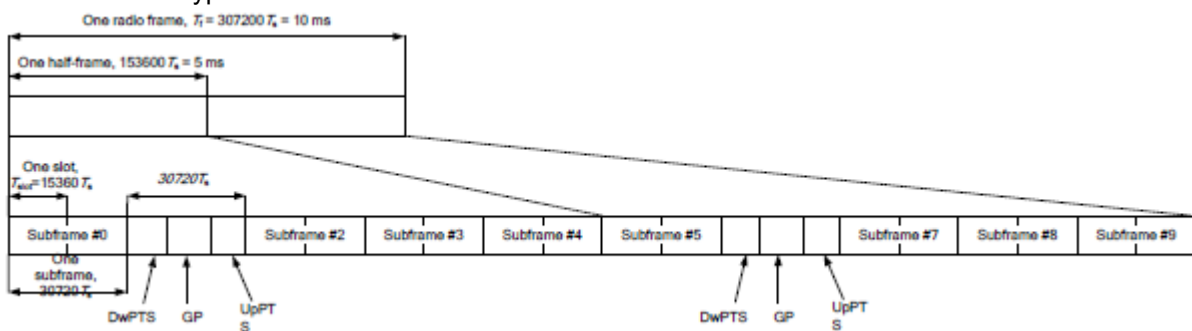


Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

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	4384.Ts	5120.Ts	7680.Ts	4384.Ts	5120.Ts
5	6592.Ts			20480.Ts		
6	19760.Ts			23040.Ts		

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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 (dB)
	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	0



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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 $> \frac{1}{2}$ 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 $> \frac{1}{2}$ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.



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8 Test Result

8.1 DUT Antenna Locations (Back View)

The DUT Antenna Locations can be referred to Appendix D



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8.2 Measurement of RF Conducted Power

8.2.1 RF Conducted Power Data of Legacy

LTE Band 2				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18607	18900	19193	
1.4MHz	QPSK	1	0	23.13	23.10	22.96	24.00
		1	2	23.10	23.17	22.83	24.00
		1	5	22.91	22.93	22.80	24.00
		3	0	23.25	22.95	22.92	24.00
		3	2	23.15	22.68	23.09	24.00
		3	3	23.17	22.75	22.97	24.00
		6	0	22.25	21.80	22.10	23.00
	16QAM	1	0	22.23	22.20	21.89	23.00
		1	2	22.41	22.02	21.87	23.00
		1	5	22.45	22.04	22.03	23.00
		3	0	22.20	21.80	22.12	23.00
		3	2	22.21	21.70	22.03	23.00
		3	3	22.14	21.93	22.14	23.00
		6	0	21.10	20.83	21.11	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18615	18900	19185	
3MHz	QPSK	1	0	23.44	23.20	22.51	24.00
		1	7	23.21	22.98	22.56	24.00
		1	14	23.17	23.25	22.56	24.00
		8	0	22.45	22.31	21.15	23.00
		8	4	22.27	22.15	21.97	23.00
		8	7	22.32	22.20	21.90	23.00
		15	0	22.28	22.18	21.82	23.00
	16QAM	1	0	22.21	22.34	21.82	23.00
		1	7	22.34	22.30	21.57	23.00
		1	14	22.43	22.22	21.08	23.00
		8	0	21.01	21.37	20.70	22.00
		8	4	21.37	21.14	20.61	22.00
		8	7	21.29	21.08	20.39	22.00
		15	0	21.02	21.29	20.53	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18625	18900	19175	
5MHz	QPSK	1	0	23.33	23.63	22.67	24.00
		1	13	22.86	23.27	22.88	24.00
		1	24	23.35	23.09	22.83	24.00
		12	0	22.51	22.26	21.86	23.00
		12	6	22.28	22.30	21.83	23.00
		12	13	22.42	22.11	21.72	23.00
		25	0	22.50	22.05	21.84	23.00
	16QAM	1	0	21.48	22.41	22.39	23.00
		1	13	21.65	22.12	21.96	23.00
		1	24	21.66	22.20	21.75	23.00
		12	0	20.99	21.04	21.04	22.00
		12	6	20.79	21.06	20.91	22.00
		12	13	20.63	21.02	20.58	22.00



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Bandwidth	Modulation	25	0	20.75	21.06	20.64	22.00
		RB size	RB offset	Channel	Channel	Channel	Tune up
				18650	18900	19150	
10MHz	QPSK	1	0	23.65	23.49	23.13	24.00
		1	25	23.05	22.99	22.89	24.00
		1	49	23.31	23.03	23.42	24.00
		12	0	22.62	21.91	21.87	23.00
		25	6	22.69	22.04	21.93	23.00
		25	13	22.29	21.93	22.01	23.00
		50	0	22.21	21.86	21.91	23.00
	16QAM	1	0	21.78	22.41	22.51	23.00
		1	25	21.85	21.91	22.06	23.00
		1	49	21.89	22.39	22.48	23.00
		12	0	21.01	21.21	21.58	22.00
		12	19	21.68	21.51	21.43	22.00
		12	38	21.69	21.49	21.15	22.00
		27	0	21.64	21.44	21.32	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18675	18900	19125	
15MHz	QPSK	1	0	23.73	23.34	22.62	24.00
		1	38	23.47	22.96	22.70	24.00
		1	74	23.21	22.96	22.76	24.00
		36	0	22.43	22.22	21.59	23.00
		36	18	22.52	22.11	21.71	23.00
		36	39	22.28	22.18	21.98	23.00
		75	0	22.33	22.23	21.55	23.00
	16QAM	1	0	22.88	22.85	22.23	23.00
		1	38	22.93	22.96	22.35	23.00
		1	74	22.61	22.66	22.09	23.00
		12	0	21.33	21.46	21.79	22.00
		12	31	21.06	21.26	21.87	22.00
		12	63	20.97	21.29	21.84	22.00
		27	0	21.35	21.33	21.24	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18700	18900	19100	
20MHz	QPSK	1	0	23.31	23.35	22.81	24.00
		1	50	23.29	23.19	22.48	24.00
		1	99	23.33	22.83	22.86	24.00
		50	0	22.24	22.31	21.60	23.00
		50	25	22.54	22.28	21.80	23.00
		50	50	22.74	22.08	21.72	23.00
		100	0	22.45	22.04	21.64	23.00
	16QAM	1	0	22.99	22.65	22.75	23.00
		1	50	22.78	22.70	22.45	23.00
		1	99	22.51	22.31	22.58	23.00
		12	0	21.30	21.30	21.51	22.00
		12	44	21.29	21.49	21.38	22.00
		12	88	21.28	21.93	21.67	22.00
		27	0	21.40	21.25	20.99	22.00



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LTE Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 19957	Channel 20175	Channel 20393	Tune up
1.4MHz	QPSK	1	0	22.84	22.21	22.85	23.50
		1	2	22.68	22.20	22.78	23.50
		1	5	22.49	23.07	22.67	23.50
		3	0	22.37	22.76	22.79	23.50
		3	2	22.45	22.62	22.91	23.50
		3	3	22.06	22.40	22.76	23.50
	16QAM	6	0	22.01	21.49	21.74	22.50
		1	0	22.05	21.53	21.85	22.50
		1	2	22.01	21.56	21.72	22.50
		1	5	21.74	21.47	21.64	22.50
		3	0	21.61	21.18	21.69	22.50
		3	2	21.70	21.24	21.72	22.50
		3	3	21.47	22.28	21.67	22.50
		6	0	20.31	20.74	20.86	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 19965	Channel 20175	Channel 20385	Tune up
3MHz	QPSK	1	0	22.73	22.54	21.61	23.50
		1	7	22.55	22.55	21.63	23.50
		1	14	22.63	22.24	21.58	23.50
		8	0	21.70	21.42	21.49	22.50
		8	4	21.70	21.28	21.54	22.50
		8	7	21.83	21.30	21.30	22.50
	16QAM	15	0	21.89	21.40	21.32	22.50
		1	0	22.43	21.49	21.25	22.50
		1	7	22.46	21.45	21.23	22.50
		1	14	22.19	21.34	21.36	22.50
		8	0	20.95	20.48	21.12	21.50
		8	4	20.71	20.47	21.17	21.50
		8	7	20.63	20.33	21.15	21.50
		15	0	20.74	20.39	21.10	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 19975	Channel 20175	Channel 20375	Tune up
5MHz	QPSK	1	0	22.67	23.11	23.08	23.50
		1	13	22.61	22.77	22.79	23.50
		1	24	22.99	22.91	22.88	23.50
		12	0	21.57	21.62	21.91	22.50
		12	6	21.82	21.73	21.91	22.50
		12	13	21.86	21.49	21.63	22.50
	16QAM	25	0	21.71	21.41	21.63	22.50
		1	0	21.86	21.75	22.28	22.50
		1	13	21.75	21.70	22.13	22.50
		1	24	21.93	21.68	22.17	22.50
		12	0	20.54	20.51	20.86	21.50
		12	6	20.50	20.41	20.79	21.50
		12	13	20.34	21.13	20.88	21.50
		25	0	20.41	20.77	20.76	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 20000	Channel 20175	Channel 20350	Tune up
10MHz	QPSK	1	0	23.03	23.16	23.22	23.50
		1	25	22.76	22.45	22.91	23.50



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		1	49	23.27	22.77	23.05	23.50
		12	0	21.95	21.43	21.68	22.50
		25	6	22.11	21.44	21.80	22.50
		25	13	22.07	21.40	21.60	22.50
		50	0	21.94	21.22	21.75	22.50
	16QAM	1	0	21.80	22.08	22.38	22.50
		1	25	21.72	21.31	21.96	22.50
		1	49	21.73	21.88	22.46	22.50
		12	0	21.12	21.48	21.23	21.50
		12	19	21.44	21.12	21.29	21.50
		12	38	21.19	21.14	21.18	21.50
		27	0	20.54	21.05	20.80	21.50
				Channel	Channel	Channel	Tune up
				20025	20175	20325	
		1	0	22.94	23.03	22.67	23.50
		1	38	22.89	22.94	22.84	23.50
		1	74	22.82	22.91	22.87	23.50
		36	0	21.96	21.66	21.88	22.50
15MHz	QPSK	36	18	21.97	21.90	21.84	22.50
		36	39	22.03	21.81	21.80	22.50
		75	0	21.96	21.84	21.77	22.50
		1	0	22.38	22.35	22.22	22.50
		1	38	22.43	22.36	22.23	22.50
		1	74	22.30	22.41	21.95	22.50
		12	0	21.17	21.21	21.47	21.50
	16QAM	12	31	21.30	21.24	21.26	21.50
		12	63	21.29	21.39	21.25	21.50
		27	0	20.67	20.90	20.67	21.50
				Channel	Channel	Channel	Tune up
				20050	20175	20300	
		1	0	22.83	22.93	22.90	23.50
		1	50	22.79	22.79	22.94	23.50
		1	99	22.68	22.82	22.69	23.50
20MHz	QPSK	50	0	21.70	21.70	21.82	22.50
		50	25	21.49	21.86	21.78	22.50
		50	50	21.77	21.84	21.79	22.50
		100	0	21.37	21.60	21.59	22.50
		1	0	22.16	22.27	22.08	22.50
		1	50	21.84	22.31	21.99	22.50
		1	99	22.07	22.13	22.09	22.50
	16QAM	12	0	21.35	21.00	21.28	21.50
		12	44	21.28	21.27	21.30	21.50
		12	88	21.19	21.43	21.23	21.50
		27	0	20.90	20.96	20.57	21.50



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LTE Band 5				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
1.4MHz	QPSK	1	0	20407	20525	20643	
		1	0	23.59	22.71	22.61	24.00
		1	2	23.39	22.45	22.56	24.00
		1	5	23.56	22.75	22.46	24.00
		3	0	23.73	22.61	22.77	24.00
		3	2	23.27	22.67	22.61	24.00
		3	3	23.55	22.77	22.32	24.00
		6	0	22.47	21.63	21.49	23.00
	16QAM	1	0	22.73	21.66	21.47	23.00
		1	2	22.49	21.43	21.63	23.00
		1	5	22.57	21.82	21.50	23.00
		3	0	22.67	21.67	21.45	23.00
		3	2	22.71	21.75	21.35	23.00
		3	3	22.69	21.80	21.46	23.00
		6	0	21.57	20.68	20.33	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
3MHz	QPSK	1	0	20415	20525	20635	
		1	0	23.82	23.21	23.46	24.00
		1	7	23.36	22.59	22.57	24.00
		1	14	23.22	22.94	22.46	24.00
		8	0	22.48	21.70	21.57	23.00
		8	4	22.35	21.65	21.26	23.00
		8	7	22.26	21.71	21.16	23.00
		15	0	22.22	21.81	21.53	23.00
	16QAM	1	0	22.99	21.98	22.09	23.00
		1	7	22.50	21.60	21.32	23.00
		1	14	22.58	22.16	21.27	23.00
		8	0	21.56	20.68	20.49	22.00
		8	4	21.51	20.45	20.25	22.00
		8	7	21.40	20.85	20.29	22.00
		15	0	21.40	20.91	20.55	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
5MHz	QPSK	1	0	20425	20525	20625	
		1	0	23.88	22.94	23.71	24.00
		1	13	23.38	22.30	22.14	24.00
		1	24	23.13	22.97	22.14	24.00
		12	0	22.26	21.25	21.82	23.00
		12	6	22.30	21.39	21.62	23.00
		12	13	22.02	21.42	21.35	23.00
		25	0	21.89	21.41	21.46	23.00
	16QAM	1	0	22.37	22.08	22.31	23.00
		1	13	21.78	21.48	21.41	23.00
		1	24	21.86	22.37	21.35	23.00
		12	0	21.01	20.57	21.09	22.00
		12	6	21.26	20.60	20.88	22.00
		12	13	21.03	20.57	20.08	22.00
		25	0	20.89	20.71	20.67	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
10MHz	QPSK	1	0	20450	20525	20600	
		1	0	23.61	23.85	23.30	24.50
		1	25	22.89	22.69	23.12	24.50



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		1	49	22.52	23.78	22.54	24.50
		12	0	22.14	21.68	21.55	23.00
		25	6	22.13	21.46	21.58	23.00
		25	13	22.01	21.63	21.82	23.00
		50	0	21.85	21.55	22.28	23.00
	16QAM	1	0	21.56	22.83	22.02	23.00
		1	25	21.57	21.94	22.20	23.00
		1	49	21.65	21.86	21.87	23.00
		12	0	21.65	21.90	21.89	22.00
		12	19	21.56	21.87	21.96	22.00
		12	38	21.87	21.96	21.65	22.00
		27	0	21.83	20.80	21.59	22.00



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LTE Band 7				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
5MHz	QPSK	1	0	20775	21100	21425	23.00
		1	13	21.50	21.84	22.68	23.00
		1	24	21.41	21.65	22.07	23.00
		12	0	21.46	21.19	21.89	23.00
		12	6	20.47	20.27	21.48	22.00
		12	13	20.15	20.71	21.15	22.00
		25	0	20.46	20.63	20.80	22.00
	16QAM	1	0	20.60	20.84	21.31	22.00
		1	13	20.40	21.15	21.27	22.00
		1	24	20.24	20.73	21.24	22.00
		12	0	20.18	20.61	20.82	22.00
		12	6	19.34	20.01	20.44	21.00
		12	13	19.19	20.09	20.08	21.00
		25	0	19.52	19.83	19.73	21.00
10MHz	QPSK	1	0	20800	21100	21400	23.00
		1	25	21.73	22.24	22.92	23.00
		1	49	21.80	22.46	22.66	23.00
		25	0	21.59	21.62	21.76	23.00
		25	13	20.64	21.57	21.74	22.00
		25	25	20.63	20.73	21.61	22.00
		50	0	21.29	20.62	21.27	22.00
	16QAM	1	0	20.70	20.75	21.51	22.00
		1	25	20.77	21.05	21.49	22.00
		1	49	20.67	21.04	21.52	22.00
		12	0	21.68	20.76	21.11	22.00
		12	19	20.76	20.88	20.85	21.00
		12	38	20.42	20.46	20.92	21.00
		27	0	20.63	20.22	20.54	21.00
15MHz	QPSK	1	0	20825	21100	21375	23.00
		1	38	21.58	22.75	22.05	23.00
		1	74	22.72	21.97	22.66	23.00
		36	0	22.56	21.64	21.44	23.00
		36	18	20.83	21.01	20.98	22.00
		36	39	21.35	20.55	21.74	22.00
		75	0	21.12	20.25	21.74	22.00
	16QAM	1	0	21.20	20.37	21.52	22.00
		1	38	20.27	21.70	21.10	22.00
		1	74	21.01	21.23	21.75	22.00
		12	0	21.55	20.86	21.27	22.00
		12	31	20.67	20.91	20.05	21.00
		12	63	20.69	20.47	20.83	21.00
		12	63	20.80	20.42	20.31	21.00



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8.2.2 RF Conducted Power Data of WIFI 2.4G

Mode	Channel	Frequency (MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11b	1	2412	1	8.91	10
	6	2437		8.87	10
	11	2462		8.96	10
802.11g	1	2412	6	8.56	10
	6	2437		8.61	10
	11	2462		8.71	10
802.11n HT20 SISO	1	2412	6.5	9.05	10
	6	2437		9.12	10
	11	2462		9.21	10



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8.3 Measurement of SAR Data

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.
- 3) For WiFi SAR test, as the highest reported SAR is smaller than 3.0 W/kg , and the tune-up of the other 802.11 modes are not higher than SAR measurement mode, therefore the adjusted SAR is $\leq 3.0\text{ W/kg}$ for other 802.11 modes, SAR test for the other 802.11 modes are not required.



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8.3.1 SAR Result of LTE Band 2

Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Exetremity Test data (Separate 0mm 1RB)											
Front side	20	QPSK 1 0	18900/1880	1:1	0.171	-0.04	23.35	24.00	1.161	0.199	22.4
Back side	20	QPSK 1 0	18900/1880	1:1	0.694	0.09	23.35	24.00	1.161	0.806	22.4
Left side	20	QPSK 1 0	18900/1880	1:1	1.770	-0.14	23.35	24.00	1.161	2.055	22.4
Right side	20	QPSK 1 0	18900/1880	1:1	0.207	0.02	23.35	24.00	1.161	0.240	22.4
Top side	20	QPSK 1 0	18900/1880	1:1	0.451	-0.06	23.35	24.00	1.161	0.524	22.4
Bottom side	20	QPSK 1 0	18900/1880	1:1	0.046	0.07	23.35	24.00	1.161	0.053	22.4
Left side	20	QPSK 1 0	18700/1860	1:1	1.910	-0.09	23.31	24.00	1.172	2.239	22.4
Left side	20	QPSK 1 0	19100/1900	1:1	1.450	-0.08	22.81	24.00	1.315	1.907	22.4
Exetremity Test data (Separate 0mm 50%RB)											
Front side	20	QPSK 25 0	18900/1880	1:1	0.130	-0.12	22.31	23.00	1.172	0.152	22.4
Back side	20	QPSK 25 0	18900/1880	1:1	0.472	-0.05	22.31	23.00	1.172	0.553	22.4
Left side	20	QPSK 25 0	18900/1880	1:1	1.520	-0.08	22.31	23.00	1.172	1.781	22.4
Right side	20	QPSK 25 0	18900/1880	1:1	0.033	0.02	22.31	23.00	1.172	0.039	22.4
Top side	20	QPSK 25 0	18900/1880	1:1	0.369	-0.07	22.31	23.00	1.172	0.432	22.4
Bottom side	20	QPSK 25 0	18900/1880	1:1	0.038	0.17	22.31	23.00	1.172	0.045	22.4
Exetremity Test data (Separate 0mm 100%RB)											
Left side	20	QPSK 25 0	18625/1852.5	1:1	1.420	0.15	21.72	23.00	1.343	1.907	22.4



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8.3.2 SAR Result of LTE Band 4

Ant 0 Test Record											
Test position	BW	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Exetremity Test data (Separate 0mm 1RB)											
Front side	20	QPSK 1 0	20175/1732.5	1:1	0.203	-0.12	22.93	23.50	1.140	0.231	22.2
Back side	20	QPSK 1 0	20175/1732.5	1:1	0.770	0.09	22.93	23.50	1.140	0.878	22.2
Left side	20	QPSK 1 0	20175/1732.5	1:1	0.790	-0.06	22.93	23.50	1.140	0.901	22.2
Right side	20	QPSK 1 0	20175/1732.5	1:1	0.083	0.05	22.93	23.50	1.140	0.095	22.2
Top side	20	QPSK 1 0	20175/1732.5	1:1	0.399	-0.13	22.93	23.50	1.140	0.455	22.2
Bottom side	20	QPSK 1 0	20175/1732.5	1:1	0.096	0.17	22.93	23.50	1.140	0.109	22.2
Exetremity Test data (Separate 0mm 50%RB)											
Front side	20	QPSK 12 0	20300/1745	1:1	0.148	-0.12	21.82	22.50	1.169	0.173	22.2
Back side	20	QPSK 12 0	20300/1745	1:1	0.450	0.16	21.82	22.50	1.169	0.526	22.2
Left side	20	QPSK 12 0	20300/1745	1:1	0.605	-0.09	21.82	22.50	1.169	0.707	22.2
Right side	20	QPSK 12 0	20300/1745	1:1	0.058	-0.07	21.82	22.50	1.169	0.068	22.2
Top side	20	QPSK 12 0	20300/1745	1:1	0.274	0.13	21.82	22.50	1.169	0.320	22.2
Bottom side	20	QPSK 12 0	20300/1745	1:1	0.071	0.02	21.82	22.50	1.169	0.083	22.2



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8.3.3 SAR Result of LTE Band 5

Ant 0 Test Record											
Test position	BW	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Exetremity Test data (Separate 0mm 1RB)											
Front side	10	QPSK 1 0	20525/836.5	1:1	0.117	0.19	23.85	24.50	1.161	0.136	21.6
Back side	10	QPSK 1 0	20525/836.5	1:1	0.555	0.13	23.85	24.50	1.161	0.644	21.6
Left side	10	QPSK 1 0	20525/836.5	1:1	0.092	0.10	23.85	24.50	1.161	0.107	21.6
Right side	10	QPSK 1 0	20525/836.5	1:1	0.326	0.16	23.85	24.50	1.161	0.378	21.6
Top side	10	QPSK 1 0	20525/836.5	1:1	0.188	0.02	23.85	24.50	1.161	0.218	21.6
Bottom side	10	QPSK 1 0	20525/836.5	1:1	0.019	0.06	23.85	24.50	1.161	0.022	21.6
Exetremity Test data (Separate 0mm 50%RB)											
Front side	10	QPSP 12 0	20525/836.5	1:1	0.087	-0.18	22.13	23.00	1.222	0.106	21.6
Back side	10	QPSP 12 0	20525/836.5	1:1	0.362	0.13	22.13	23.00	1.222	0.442	21.6
Left side	10	QPSP 12 0	20525/836.5	1:1	0.061	-0.16	22.13	23.00	1.222	0.075	21.6
Right side	10	QPSP 12 0	20525/836.5	1:1	0.221	0.13	22.13	23.00	1.222	0.270	21.6
Top side	10	QPSP 12 0	20525/836.5	1:1	0.134	0.09	22.13	23.00	1.222	0.164	21.6
Bottom side	10	QPSP 12 0	20525/836.5	1:1	0.024	-0.11	22.13	23.00	1.222	0.029	21.6



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8.3.4 SAR Result of LTE Band 7

Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Exetremity Test data (Separate 0mm 1RB)											
Front side	20	QPSK 1 0	21100/2535	1:1	0.18	0.19	22.65	23.00	1.084	0.197	21.8
Back side	20	QPSK 1 0	21100/2535	1:1	0.752	-0.04	22.65	23.00	1.084	0.815	21.8
Left side	20	QPSK 1 0	21100/2535	1:1	0.032	0.07	22.65	23.00	1.084	0.035	21.8
Right side	20	QPSK 1 0	21100/2535	1:1	0.445	0.04	22.65	23.00	1.084	0.482	21.8
Top side	20	QPSK 1 0	21100/2535	1:1	0.550	0.08	22.65	23.00	1.084	0.596	21.8
Bottom side	20	QPSK 1 0	21100/2535	1:1	0.018	0.00	22.65	23.00	1.084	0.020	21.8
Exetremity Test data (Separate 0mm 50%RB)											
Front side	20	QPSP 1 12	21100/2535	1:1	0.134	-0.17	20.84	21.00	1.038	0.139	21.8
Back side	20	QPSP 1 12	21100/2535	1:1	0.546	0.09	20.84	21.00	1.038	0.567	21.8
Left side	20	QPSP 1 12	21100/2535	1:1	0.014	-0.04	20.84	21.00	1.038	0.015	21.8
Right side	20	QPSP 1 12	21100/2535	1:1	0.175	0.18	20.84	21.00	1.038	0.182	21.8
Top side	20	QPSP 1 12	21100/2535	1:1	0.343	0.18	20.84	21.00	1.038	0.356	21.8
Bottom side	20	QPSP 1 12	21100/2535	1:1	0.015	-0.09	20.84	21.00	1.038	0.016	21.8



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8.3.5 SAR Result of WiFi 2.4G

Ant0 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Exetremity Test data (Separate 0mm)											
Front side	802.11b	11/2462	99.94%	1.001	0.081	-0.12	8.96	10.00	1.271	0.103	21.5
Back side	802.11b	11/2462	99.94%	1.001	0.039	0.05	8.96	10.00	1.271	0.050	21.5
Left side	802.11b	11/2462	99.94%	1.001	0.016	0.18	8.96	10.00	1.271	0.020	21.5
Right side	802.11b	11/2462	99.94%	1.001	0.279	-0.03	8.96	10.00	1.271	0.355	21.5
Top side	802.11b	11/2462	99.94%	1.001	0.091	0.08	8.96	10.00	1.271	0.116	21.5
Bottom side	802.11b	11/2462	99.94%	1.001	0.011	0.16	8.96	10.00	1.271	0.014	21.5



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8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR test evaluation

No.	Simultaneous Tx Combination	Extremity
1	WWAN + WIFI 2.4G	Yes



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8.4.2 Simultaneous Transmission SAR Summation Scenario

Test position		10g SAR _{max} (W/kg)		Summed SAR
		WWAN MAX SAR	WiFi 2.4G	
		1	2	
LTE B2	Front side	0.199	0.103	0.302
	Back side	0.806	0.050	0.856
	Left side	2.239	0.020	2.259
	Right side	0.240	0.355	0.595
	Top side	0.524	0.116	0.640
	Bottom side	0.053	0.014	0.067
LTE B4	Front side	0.231	0.103	0.334
	Back side	0.878	0.050	0.928
	Left side	0.901	0.020	0.921
	Right side	0.095	0.355	0.450
	Top side	0.455	0.116	0.571
	Bottom side	0.109	0.014	0.123
LTE B5	Front side	0.136	0.103	0.239
	Back side	0.644	0.050	0.694
	Left side	0.107	0.020	0.127
	Right side	0.378	0.355	0.733
	Top side	0.218	0.116	0.334
	Bottom side	0.029	0.014	0.043
LTE B7	Front side	0.197	0.103	0.300
	Back side	0.815	0.050	0.865
	Left side	0.035	0.020	0.055
	Right side	0.482	0.355	0.837
	Top side	0.596	0.116	0.712
	Bottom side	0.020	0.014	0.034



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9 Equipment list

Test Platform		SPEAG DASY Professional				
Software Reference		DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)				
Hardware Reference						
Equipment		Manufacturer	Model	Inventory No.	Calibration Date	Due date of calibration
☒	Test Phantom	SPEAG	SAM Twin	SEM060-24	NCR	NCR
☒	DAE	SPEAG	DAE4	SEM060-48	2026/2/2	2027/2/1
☒	E-Field Probe	SPEAG	EX3DV4	SEM060-65	2025/10/14	2026/10/13
☒	Validation Kits	SPEAG	D835V2	SEM060-08	2025/6/19	2028/6/18
☒	Validation Kits	SPEAG	D1750V2	SEM060-69	2025/6/18	2028/6/17
☒	Validation Kits	SPEAG	D1950V3	SEM060-11	2025/6/18	2028/6/17
☒	Validation Kits	SPEAG	D2450V2	SEM060-14	2025/6/18	2028/6/17
☒	Validation Kits	SPEAG	D2600V2	SEM060-41	2025/6/17	2028/6/16
☒	Dielectric parameter probes	SPEAG	DAK-3.5	SEM060-59	2025/11/16	2026/11/15
☒	Agilent Network Analyzer	SPEAG	E5071C	SEM060-70	2026/7/29	2027/7/28
☒	Radio Communication Analyzer	Rohde & Schwarz	CMW 500	SEM010-08	2026/2/3	2027/2/2
☒	Radio Communication Analyzer	Anritsu	MT8820C	SEM010-04	2026/2/4	2027/2/3
☒	Radio Communication Analyzer	Anritsu	MT8820C	SEM060-55	2026/4/1	2027/3/31
☒	Signal Generator	Agilent	N5171B	SEM060-33	2026/3/20	2027/3/19
☒	Preamplifier	Shanghai Qiji Automation Instruments Co., Ltd.	YX28982108	SEM060-51	2026/5/15	2027/5/14
☒	Power Meter	Agilent	E4416A	SEM060-35	2026/3/20	2027/3/19
☒	Power Sensor	Agilent	8481H	SEM060-36	2026/3/20	2027/3/19
☒	Electro Thermometer	MITIR	TP3001	SEM002-30	2026/3/16	2027/3/15
☒	Humidity and Temperature Indicator	deli	8838	SEM002-43	2026/07/08	2027/07/07
☒	Speed reading thermometer	LKM electronic GmbH	DTM 3000	SEM060-49	2026/4/3	2027/4/2
☒	Humidity and Temperature Indicator	AS ONE	THA-02L	SEM060-50	2026/4/1	2027/3/31

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10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D

Appendix A: Detailed System Check Results

Appendix B: Detailed Test Results

Appendix C: Calibration certificate

Appendix D: Photographs

--- End of report ---



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