

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/2

Report No.: SZCR260100002311

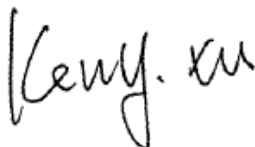
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SAR TEST REPORT

Application No.: SZCR2601000023AT
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 Name: Android POS Terminal
Model No.: A99
Trade Mark: 
FCC ID: OWL-A99-C
Standards: FCC 47CFR §2.1093
Date of Receipt: 2026-01-04
Date of Test: 2026-01-13 to 2026-01-21
Date of Issue: 2026-02-04

Test Result :	PASS *
----------------------	---------------

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



Keny Xu
EMC Laboratory Manager



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Revision Record			
Version	Description	Date	Remark
01		2026-02-04	Original

Authorized for issue by:				
		Calvin Weng		
		Calvin Weng/Project Engineer		
		Roman Pan		
		Roman Pan / Reviewer		



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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)
	Extremity
GSM850	0.93
GSM1900	1.74
WCDMA Band II	2.45
WCDMA Band IV	1.79
WCDMA Band V	0.54
LTE Band 2	2.28
LTE Band 4	2.57
LTE Band 5	0.63
LTE Band 7	2.60
LTE Band 38	1.67
WI-FI (2.4GHz)	0.23
WI-FI (5GHz)	0.45
BT	0.12
SAR Limited(W/kg)	4.0
Maximum Simultaneous Transmission SAR (W/kg)	
Scenario	Extremity
Sum SAR	2.71
SPLSR	/
SPLSR Limited	0.1



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1 General Information

1.1 General Description of EUT

Product Name:	Android POS Terminal		
Model No.:	A99		
Trade Mark:			
Product Phase:	production unit		
Device Type:	portable device		
Exposure Category:	uncontrolled environment / general population		
SN:	62600208		
Hardware Version:	V1.00		
Software Version:	V1.00		
Antenna Type:	PIFA Antenna		
Device Operating Configurations:			
Test Mode Configuration:	GSM: GMSK,8PSK; WCDMA: QPSK,16QAM LTE: QPSK,16QAM WIFI: DSSS,OFDM; BT: GFSK, π/4DQPSK,8DPSK NFC: ASK		
GPRS Multi-slots Class:	12	EGPRS Multi-slots Class:	12
HSDPA UE Category:	14	HSUPA UE Category:	6
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)	
	GSM850	824~849	
	GSM1900	1850~1910	
	WCDMA Band II	1850~1910	
	WCDMA Band IV	1710~1755	
	WCDMA Band V	824~849	
	LTE Band 2	1850 ~1910	
	LTE Band 4	1710~1755	
	LTE Band 5	824~849	

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	LTE Band 7	2500~2570
	LTE Band 38	2570~2620
	WIFI 2.4G	2412~2462
	WIFI 5G	5150~5250
		5250~5350
		5470~5725
		5725~5850
BT	2402~2480	
NFC	13.56	
RF Cable:	☒ Provided by applicant ☐ Provided by the laboratory	
Battery Information:	Model:	BT-991
	Normal Voltage:	DC7.60V
	Rated capacity:	3000mAh
	Manufacturer:	Hunan Gaoyuan Battery Co.,Ltd.
Note: Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion. Please refer to an separate test report for NFC MPE evaluation.		



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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
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 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



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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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Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

1.5 Test Engineer

Test Engineer: Messi Chen, Vito Wang, Grace Li

1.6 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 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.

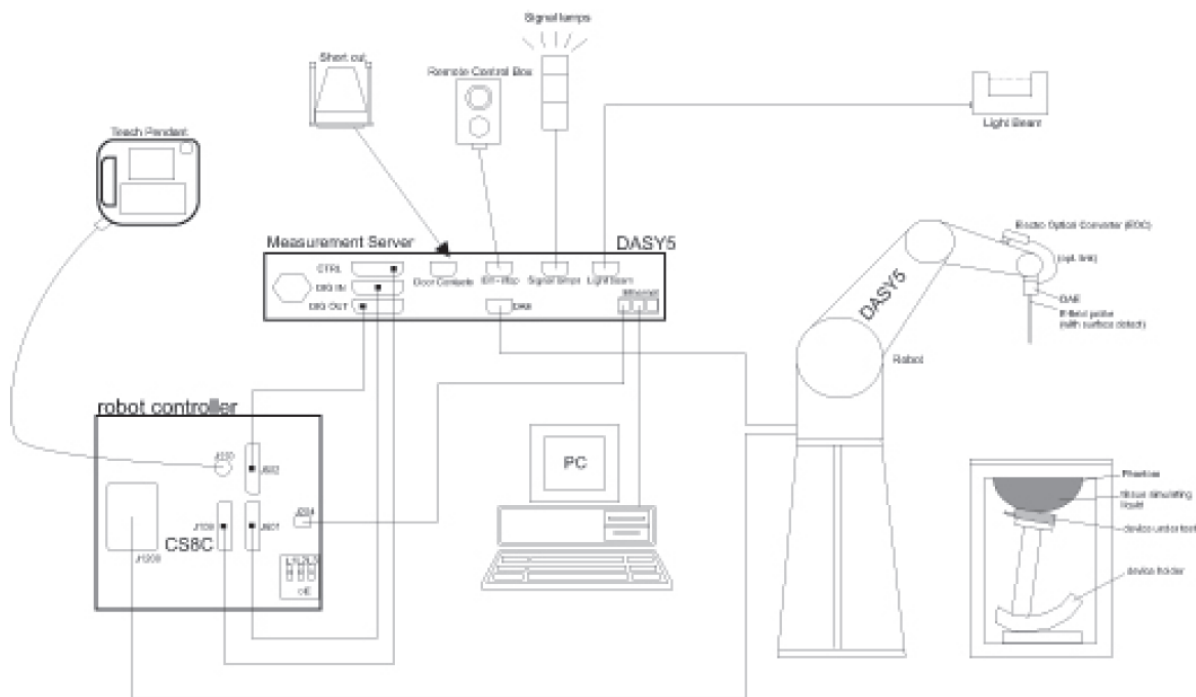
The DASY system for performing compliance tests consists of the following items:

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

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- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 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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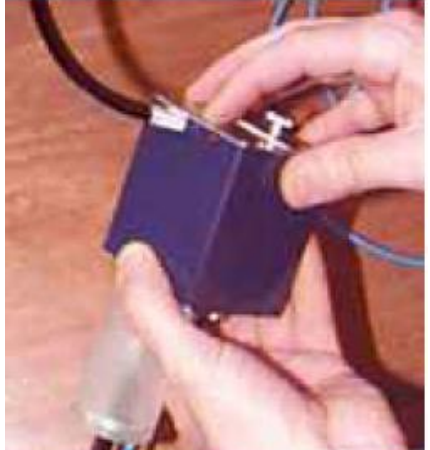
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3.2 Isotropic E-field Probe EX3DV4

	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	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY52 SAR and higher, EASY4/MRI

3.3 Data Acquisition Electronics (DAE)

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

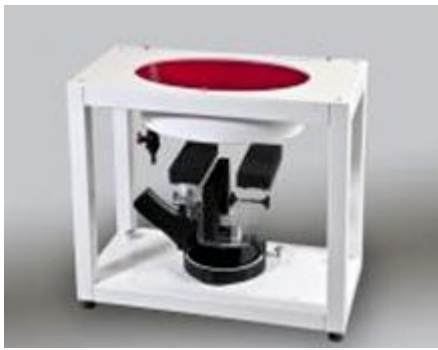
3.4 SAM Twin Phantom

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

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 has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles. ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4 but has reinforced top structure.

3.6 Device Holder for Transmitters



F-2. Device Holder for Transmitters

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

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.

		$\leq 3 \text{ GHz}$	$> 3 \text{ GHz}$
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 $\pm 5\%$.

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:



$$E_i = (V_i / \text{Norm}_i \cdot \text{ConvF})^{1/2}$$

H-field probes:

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

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

Norm_i = sensor sensitivity of channel I (I = x, y, z)

[mV/(V/m)²] for E-field Probes

ConvF = sensitivity enhancement in solution

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

f = carrier frequency [GHz]

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

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

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

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

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

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

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.

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

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

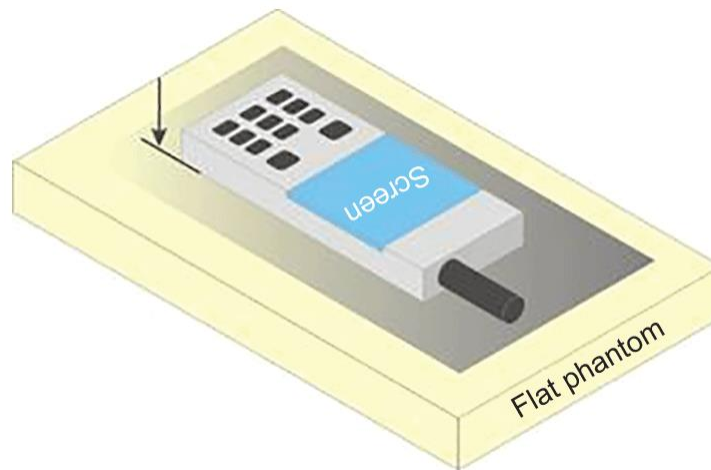
Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6)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



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 following 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

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 $22 \pm 2^\circ\text{C}$.

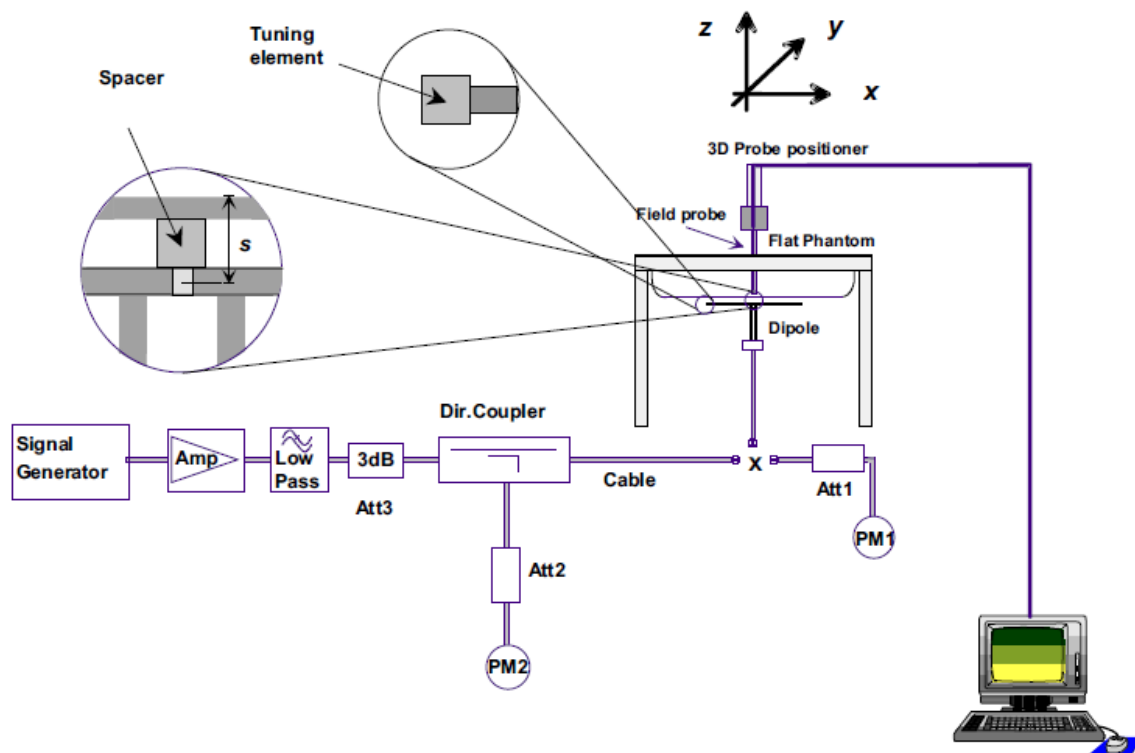
6.1.3 SAR Result of Liquid

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	42.348	0.927	41.50	0.90	2.04%	3.00%	22.0	2026/1/13
1750 Head	1750	40.331	1.386	40.10	1.37	0.58%	1.17%	21.9	2026/1/21
1900 Head	1900	40.233	1.401	40.00	1.40	0.58%	0.07%	22.1	2026/1/20
2450 Head	2450	38.525	1.809	39.20	1.80	-1.72%	0.50%	22.0	2026/1/17
2600 Head	2600	38.347	1.902	39.00	1.96	-1.67%	-2.96%	21.8	2026/1/19
5250 Head	5250	36.906	4.748	35.90	4.71	2.80%	0.81%	21.7	2026/1/18
5600 Head	5600	35.954	5.137	35.50	5.07	1.28%	1.32%	21.9	2026/1/16
5750 Head	5750	35.590	5.308	35.40	5.22	0.54%	1.69%	22.2	2026/1/15

Table 2 : Measurement result of Tissue electric parameters

6.2 SAR System Check

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



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

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)

6.2.3 SAR Result of Systemcheck

Validation Kit	Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (°C)	Test Date
	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1-g(W/kg)	10- g(W/kg)		
D835V2_Head	2.59	1.68	10.36	6.72	9.67	6.43	7.14%	4.51%	22.0	2026/1/13
D1750V2_Head	9.45	4.95	37.80	19.80	36.20	19.10	4.42%	3.66%	21.9	2026/1/21
D1900V2_Head	10.4	5.37	41.60	21.48	39.90	21.10	4.26%	1.80%	22.1	2026/1/20
D2450V2_Head	12.00	5.78	48.00	23.12	51.90	24.50	-7.51%	-5.63%	22.0	2026/1/17
D2600V2_Head	13.40	5.95	53.60	23.80	55.30	24.70	-3.07%	-3.64%	21.8	2026/1/19
Validation Kit	Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (°C)	Test Date
	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1-g(W/kg)	10- g(W/kg)		
D5GHzV2_5.25G_Head	7.84	2.25	78.40	22.50	79.00	21.80	-0.76%	3.21%	21.7	2026/1/18
D5GHzV2_5.6G_Head	8.46	2.41	84.60	24.10	81.60	22.50	3.68%	7.11%	21.9	2026/1/16
D5GHzV2_5.75G_Head	7.95	2.25	79.50	22.50	78.30	21.30	1.53%	5.63%	22.2	2026/1/15

Table 3 : SAR System Check Result

6.2.4 Detailed System Check Results

Please see the Appendix A



7 Test Configuration

7.1 Operation Configurations

7.1.1 GSM Test Configuration

SAR tests for GSM frequency band, a communication link is set up with a base station by air link. Using Radio Communication Analyzer, the power lever is set to “5” or “0” in SAR of GSM frequency band. The tests in the GSM frequency band are performed in the mode of GPRS/EGPRS function.

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.

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

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).

7.1.2 WCDMA Test Configuration

1) Output Power Verification

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

2) Head SAR

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

3) Body SAR



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

4) HSDPA / HSUPA

RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power for production units in HSDPA / HSUPA is $\leq \frac{1}{4}$ 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 (β_c , β_d), and HS-DPCCH power offset parameters (Δ_{ACK} , Δ_{NACK} , Δ_{CQI}) are set according to values indicated in the following table. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

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

Note1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8$ Ahs = $\beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1.A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 8$ (Ahs = 30/15) with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta_{CQI} = 7$ (Ahs = 24/15) with $\beta_{hs} = 24/15 * \beta_c$.

Note3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.



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

Note 1: ΔACK , $\Delta NACK$ and $\Delta CQI=8$ $A_{hs} = \beta_{hs}/\beta_e = 30/15$ $\beta_{hs} = 30/15 * \beta_{e\downarrow}$
 Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_e = 24/15$. 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 $\beta_e = 10/15$ 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 $\beta_e = 14/15$ 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 6: Subtests for UMTS Release 6 HSUPA

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

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

Table 7: HSUPA UE category

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 8 : settings of required H-Set 12 QPSK acc. To 3GPP 34.121

Note:

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



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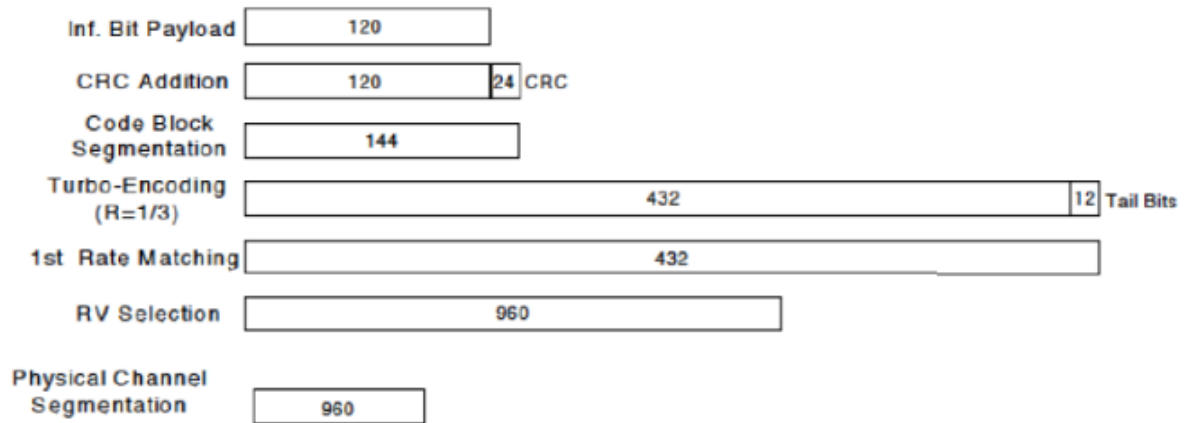


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

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

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

Note:

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

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_{cs} (Note 3)	β_d	β_{HS} (Note 1)	β_{ec}	β_{ed1} (2xSF2) (Note 4)	β_{ed3} (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	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

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 $\beta_d = 0$ 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.

5) 3G SAR Test Reduction Procedure

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

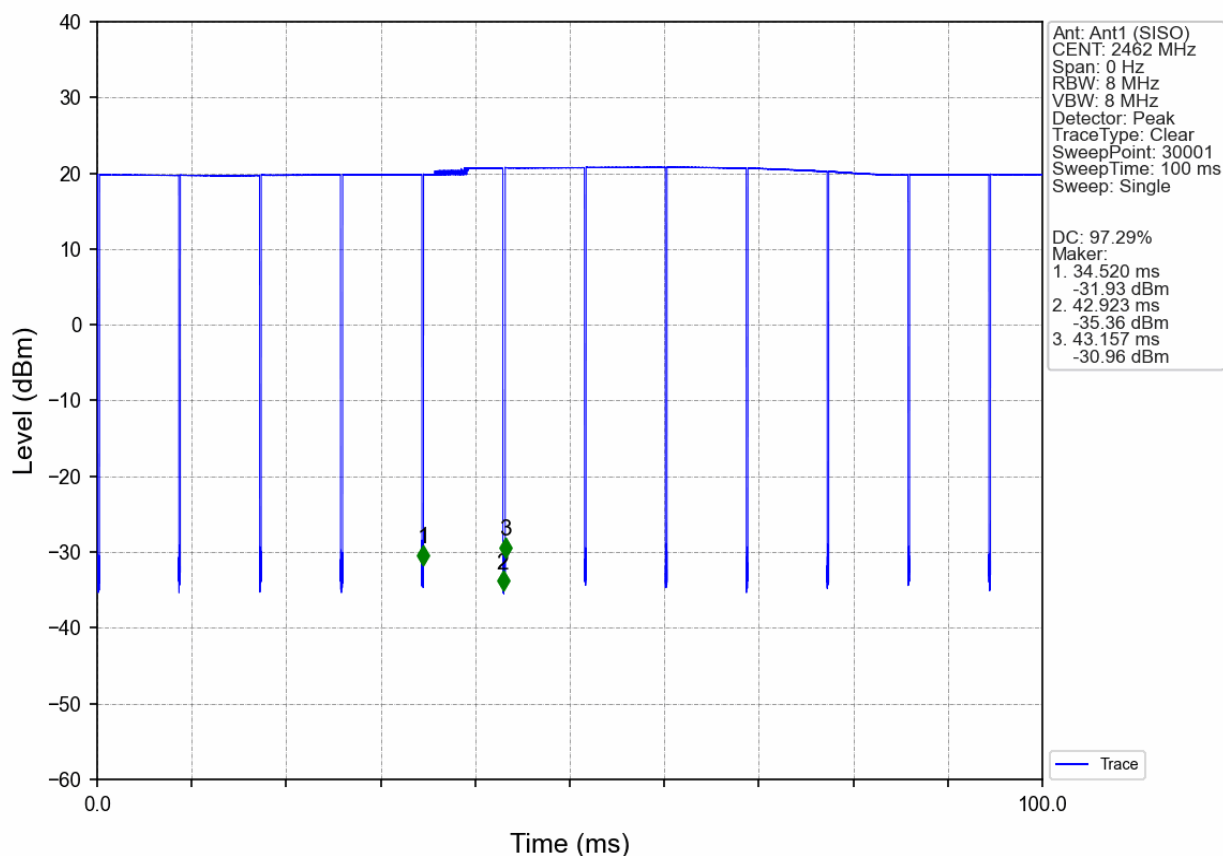
7.1.3 WIFI Test Configuration

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

7.1.3.1 Duty cycle

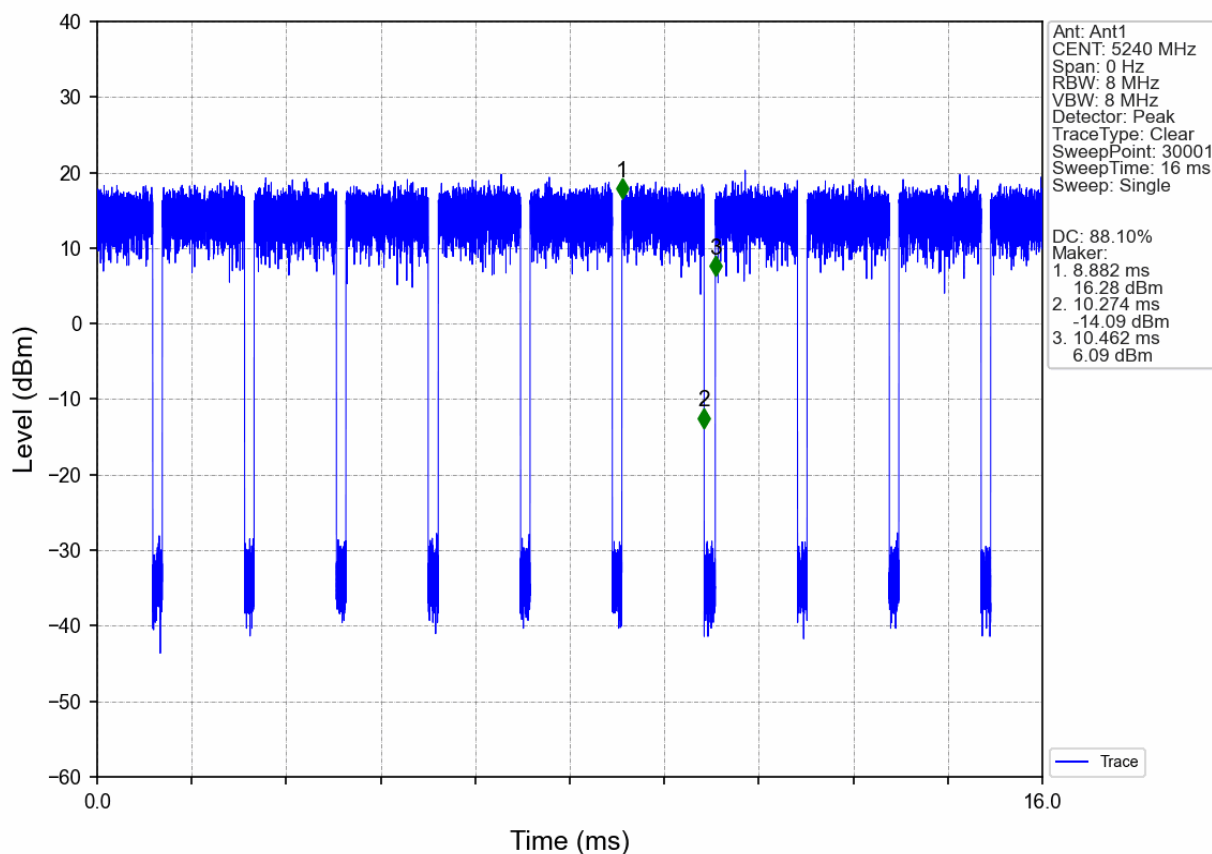
1) Wi-Fi 2.4GHz 802.11b:

Duty cycle= 97.29%



2) Wi-Fi 5GHz 802.11a:

Duty cycle= 88.1%



7.1.3.2 Initial Test Position SAR Test Reduction Procedure

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

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

7.1.3.3 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"

7.1.3.4 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.

7.1.3.5 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.



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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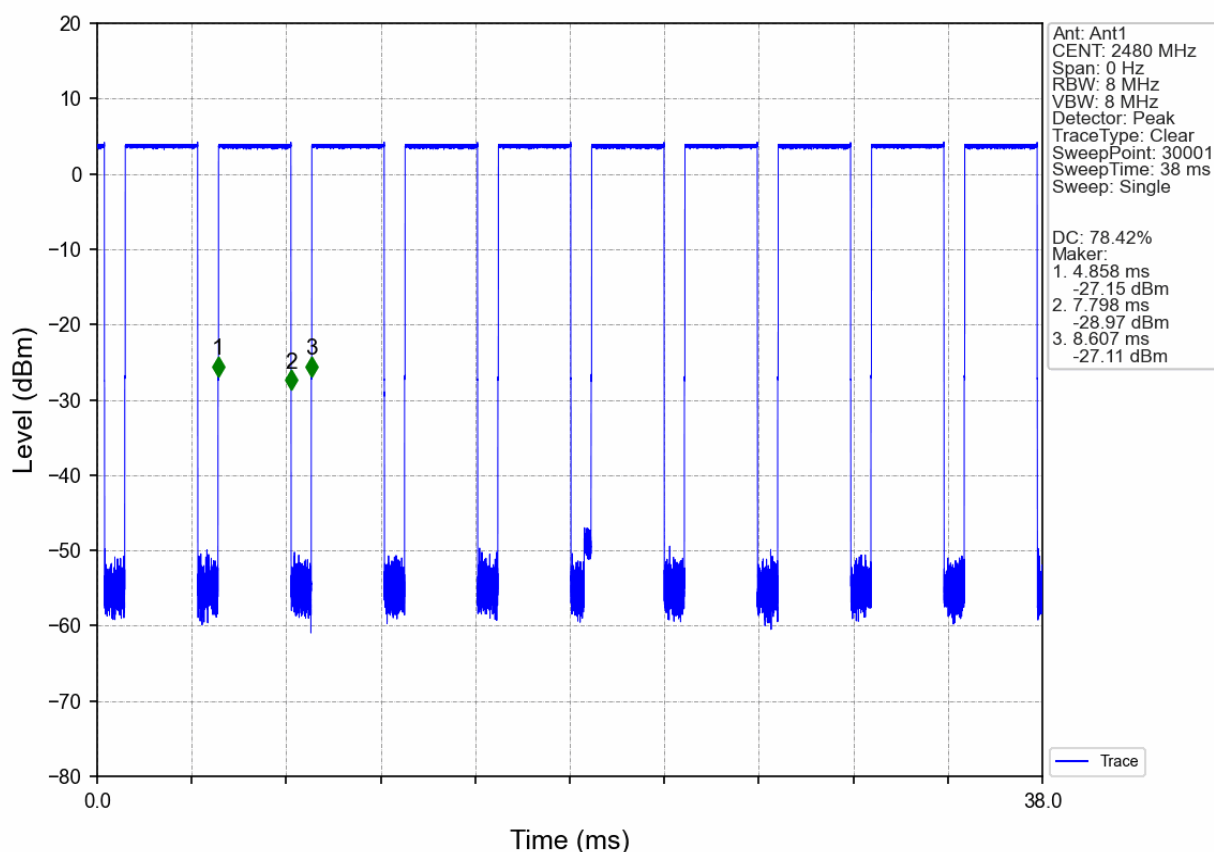
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7.1.4 BT Test Configuration

For the Bluetooth SAR tests, a communication link is set up with the test mode software for BT mode test. Bluetooth USES frequency hopping technology to divide the transmitted data into packets and transmit the packets respectively through 79 designated Bluetooth channels, frequency hops at 1600 hops/second per the Bluetooth standard, the EUT is operated at the RF continuous emission mode.

BT DH5 Duty Cycle= 78.42%



7.1.5 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:

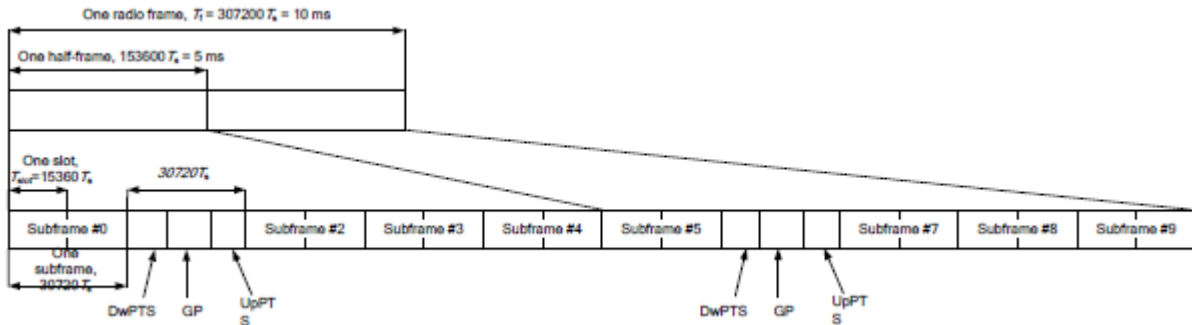


Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

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		

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 (dB)
	1.4	3	5	10	15	20	



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	MHz	MHz	MHz	MHz	MHz	MHz	
QPSK	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	0
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2
64QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	2
64QAM	> 5	> 4	> 8	> 12	> 16	> 18	3
256QAM	≥ 1						5

C) A-MPR

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

D) Largest channel bandwidth standalone SAR test requirements

1) QPSK with 1 RB allocation

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

2) QPSK with 50% RB allocation

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

3) QPSK with 100% RB allocation

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

4) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is $> \frac{1}{2}$ 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 Conducted Power of GSM 850

GSM 850										
Burst Output Power(dBm)						Division Factors	Frame-Average Output Power(dBm)			
Channel	128	190	251	Tune up			128	190	251	Tune up
GPRS (GMSK)	1 TX Slot	32.78	32.60	32.60	33.00	-9.19	23.59	23.41	23.41	23.81
	2 TX Slots	31.31	31.29	31.20	32.00	-6.18	25.13	25.11	25.02	25.82
	3 TX Slots	29.75	29.74	29.68	30.50	-4.42	25.33	25.32	25.26	26.08
	4 TX Slots	29.01	29.02	28.94	29.50	-3.17	25.84	25.85	25.77	26.33
EGPRS (GMSK)	1 TX Slot	32.84	32.69	32.64	33.00	-9.19	23.65	23.50	23.45	23.81
	2 TX Slots	31.30	31.23	31.20	32.00	-6.18	25.12	25.05	25.02	25.82
	3 TX Slots	29.80	29.79	29.61	30.50	-4.42	25.38	25.37	25.19	26.08
	4 TX Slots	28.98	29.12	28.84	29.50	-3.17	25.81	25.95	25.67	26.33
EGPRS (8PSK)	1 TX Slot	27.80	29.44	27.54	29.50	-9.19	18.61	20.25	18.35	20.31
	2 TX Slots	27.56	27.31	27.23	28.50	-6.18	21.38	21.13	21.05	22.32
	3 TX Slots	25.34	25.20	25.16	26.00	-4.42	20.92	20.78	20.74	21.58
	4 TX Slots	24.34	24.17	24.13	25.00	-3.17	21.17	21.00	20.96	21.83

8.2.2 Conducted Power of GSM 1900

GSM 1900										
Burst Output Power(dBm)						Division Factors	Frame-Average Output Power(dBm)			
Channel		512	661	810	Tune up		512	661	810	Tune up
GPRS (GMSK)	1 TX Slot	29.50	29.53	29.54	30.00	-9.19	20.31	20.34	20.35	20.81
	2 TX Slots	28.37	28.35	28.30	29.00	-6.18	22.19	22.17	22.12	22.82
	3 TX Slots	27.08	27.00	26.90	28.00	-4.42	22.66	22.58	22.48	23.58
	4 TX Slots	26.05	26.17	25.92	27.50	-3.17	22.88	23.00	22.75	24.33
EGPRS (GMSK)	1 TX Slot	29.52	29.53	29.60	30.00	-9.19	20.33	20.34	20.41	20.81
	2 TX Slots	28.44	28.38	28.30	29.00	-6.18	22.26	22.20	22.12	22.82
	3 TX Slots	27.09	26.91	26.92	28.00	-4.42	22.67	22.49	22.50	23.58
	4 TX Slots	26.07	26.01	25.90	27.50	-3.17	22.90	22.84	22.73	24.33
EGPRS (8PSK)	1 TX Slot	26.53	27.19	25.81	27.50	-9.19	17.34	18.00	16.62	18.31
	2 TX Slots	25.88	25.91	25.31	26.50	-6.18	19.70	19.73	19.13	20.32
	3 TX Slots	23.69	23.44	23.08	24.50	-4.42	19.27	19.02	18.66	20.08
	4 TX Slots	22.60	22.54	22.08	23.50	-3.17	19.43	19.37	18.91	20.33

8.2.3 Conducted Power of WCDMA Band II

WCDMA Band II					
Average Conducted Power(dBm)					
Channel		9262	9400	9538	Tune up
WCDMA	12.2kbps RMC	22.39	22.69	22.54	23.00
HSDPA	Subtest 1	21.93	22.39	22.10	23.00
	Subtest 2	21.94	22.41	22.10	23.00
	Subtest 3	21.94	22.41	22.09	23.00
	Subtest 4	21.94	22.38	22.06	23.00
HSUPA	Subtest 1	19.96	20.48	19.99	21.00
	Subtest 2	20.12	20.47	19.80	21.00
	Subtest 3	19.65	20.32	19.98	21.00
	Subtest 4	20.27	20.47	19.49	21.00
	Subtest 5	20.07	19.92	20.00	21.00
DC-HSDPA	Subtest 1	21.94	22.33	22.12	23.00
	Subtest 2	21.88	22.44	22.17	23.00
	Subtest 3	21.97	22.44	22.03	23.00
	Subtest 4	21.94	22.31	22.11	23.00
HSPA+	16QAM	21.94	22.27	22.06	23.00

8.2.4 Conducted Power of WCDMA Band IV

WCDMA Band IV					
Average Conducted Power(dBm)					
Channel		1312	1412	1513	Tune up
WCDMA	12.2kbps RMC	22.21	22.73	22.55	23.00
HSDPA	Subtest 1	21.66	21.65	21.57	22.00
	Subtest 2	21.72	21.65	21.57	22.00
	Subtest 3	21.74	21.61	21.54	22.00
	Subtest 4	21.71	21.64	21.56	22.00
HSUPA	Subtest 1	19.64	19.65	19.06	20.00
	Subtest 2	19.75	19.90	19.61	20.00
	Subtest 3	19.65	19.68	19.34	20.00
	Subtest 4	19.65	19.45	19.67	20.00
	Subtest 5	19.10	19.68	19.16	20.00
DC-HSDPA	Subtest 1	21.73	21.58	21.53	22.00
	Subtest 2	21.79	21.71	21.49	22.00
	Subtest 3	21.66	21.63	21.47	22.00
	Subtest 4	21.63	21.56	21.57	22.00
HSPA+	16QAM	21.56	21.55	21.60	22.00

8.2.5 Conducted Power of WCDMA Band V

WCDMA Band V					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	22.45	22.46	22.25	23.00
HSDPA	Subtest 1	21.70	21.92	21.56	22.00
	Subtest 2	21.67	21.94	21.56	22.00
	Subtest 3	21.66	21.97	21.57	22.00
	Subtest 4	21.67	21.93	21.52	22.00
HSUPA	Subtest 1	19.59	19.75	19.32	20.00
	Subtest 2	19.73	19.47	19.85	20.00
	Subtest 3	19.02	19.76	19.83	20.00
	Subtest 4	19.19	19.31	19.77	20.00
	Subtest 5	19.52	19.94	19.25	20.00
DC-HSDPA	Subtest 1	21.67	21.87	21.52	22.00
	Subtest 2	21.69	21.98	21.59	22.00
	Subtest 3	21.72	22.00	21.59	22.00
	Subtest 4	21.74	21.93	21.58	22.00
HSPA+	16QAM	21.72	21.87	21.61	22.00

8.2.6 Conducted Power of LTE Band 2

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	22.26	22.44	22.67	23.00
		1	2	22.30	22.42	22.67	23.00
		1	5	22.30	22.50	22.64	23.00
		3	0	22.45	22.53	22.62	23.00
		3	2	22.41	22.58	22.73	23.00
		3	3	22.37	22.50	22.63	23.00
		6	0	21.31	21.52	21.68	22.00
	16QAM	1	0	21.51	21.84	21.16	22.00
		1	2	21.47	21.93	21.14	22.00
		1	5	21.46	21.85	21.17	22.00
		3	0	21.36	21.79	21.62	22.00
		3	2	21.39	21.84	21.62	22.00
		3	3	21.29	21.80	21.57	22.00
		6	0	20.48	20.71	20.83	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18615	18900	19185	
3MHz	QPSK	1	0	22.31	22.56	22.59	23.00
		1	7	22.32	22.50	22.60	23.00
		1	14	22.25	22.54	22.56	23.00
		8	0	21.35	21.51	21.56	22.00
		8	4	21.37	21.55	21.62	22.00
		8	7	21.40	21.51	21.64	22.00
		15	0	21.33	21.51	21.68	22.00
	16QAM	1	0	21.89	21.84	21.12	22.00
		1	7	21.86	21.92	21.11	22.00
		1	14	21.91	21.92	21.17	22.00



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		8	0	20.74	20.86	20.79	21.00
		8	4	20.85	20.75	21.00	21.00
		8	7	20.77	20.72	20.77	21.00
		15	0	20.60	20.77	20.88	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18625	18900	19175	
5MHz	QPSK	1	0	22.37	22.70	22.66	23.00
		1	13	22.34	22.58	22.43	23.00
		1	24	22.38	22.59	22.51	23.00
		12	0	21.42	21.60	21.65	22.00
		12	6	21.44	21.53	21.69	22.00
		12	13	21.46	21.59	21.64	22.00
		25	0	21.35	21.62	21.68	22.00
		25	0	21.35	21.62	21.68	22.00
	16QAM	1	0	20.45	21.59	21.78	22.00
		1	13	20.46	21.60	21.79	22.00
		1	24	20.45	21.56	21.89	22.00
		12	0	20.53	20.59	20.76	21.00
		12	6	20.52	20.68	20.76	21.00
		12	13	20.51	20.72	20.85	21.00
		25	0	20.57	20.69	20.85	21.00
		25	0	20.57	20.69	20.85	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18650	18900	19150	
10MHz	QPSK	1	0	22.19	22.50	22.50	23.00
		1	25	22.30	22.44	22.50	23.00
		1	49	22.34	22.41	22.58	23.00
		25	0	21.44	21.64	21.61	22.00
		25	13	21.49	21.57	21.58	22.00
		25	25	21.39	21.49	21.69	22.00
		50	0	21.38	21.50	21.54	22.00
		50	0	21.38	21.50	21.54	22.00
	16QAM	1	0	21.96	21.73	21.06	22.00
		1	25	21.97	21.59	21.39	22.00
		1	49	21.79	21.68	21.52	22.00
		1	49	21.79	21.68	21.52	22.00



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		25	0	20.59	20.82	20.88	21.00
		25	13	20.59	20.82	20.92	21.00
		25	25	20.58	20.79	20.95	21.00
		50	0	20.58	20.78	20.76	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18675	18900	19125	
15MHz	QPSK	1	0	22.21	22.49	22.30	23.00
		1	38	22.36	22.48	22.34	23.00
		1	74	22.52	22.35	22.39	23.00
		36	0	21.44	21.58	21.53	22.00
		36	18	21.47	21.52	21.59	22.00
		36	39	21.55	21.55	21.61	22.00
		75	0	21.50	21.56	21.54	22.00
		75	0	21.50	21.56	21.54	22.00
	16QAM	1	0	21.74	21.76	21.65	22.00
		1	38	21.74	21.69	21.76	22.00
		1	74	21.77	21.57	21.81	22.00
		36	0	20.73	20.86	20.73	21.00
		36	18	20.69	20.80	20.77	21.00
		36	39	20.74	20.78	20.77	21.00
		75	0	20.65	20.74	20.70	21.00
		75	0	20.65	20.74	20.70	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18700	18900	19100	
20MHz	QPSK	1	0	22.43	22.65	22.45	23.00
		1	50	22.66	22.69	22.59	23.00
		1	99	22.63	22.62	22.58	23.00
		50	0	21.40	21.59	21.50	22.00
		50	25	21.55	21.61	21.60	22.00
		50	50	21.52	21.47	21.58	22.00
		100	0	21.51	21.66	21.61	22.00
		100	0	21.51	21.66	21.61	22.00
	16QAM	1	0	21.55	21.62	21.58	22.00
		1	50	21.68	21.60	21.73	22.00
		1	99	21.73	21.61	21.62	22.00
		1	99	21.73	21.61	21.62	22.00



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		50	0	20.68	20.78	20.65	21.00
		50	25	20.70	20.77	20.64	21.00
		50	50	20.96	20.72	20.69	21.00
		100	0	20.69	20.74	20.75	21.00



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8.2.7 Conducted Power of LTE Band 4

LTE Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19957	20175	20393	
1.4MHz	QPSK	1	0	23.96	24.06	24.06	25.00
		1	2	24.20	24.16	24.08	25.00
		1	5	23.97	24.00	24.05	25.00
		3	0	23.56	23.66	23.74	25.00
		3	2	23.53	23.59	23.63	25.00
		3	3	23.63	23.65	23.60	25.00
		6	0	22.61	22.64	22.73	24.00
	16QAM	1	0	23.74	23.80	23.88	24.00
		1	2	23.68	23.76	23.78	24.00
		1	5	23.20	23.23	23.27	24.00
		3	0	22.94	22.93	22.88	24.00
		3	2	22.90	22.91	22.84	24.00
		3	3	22.95	22.93	23.00	24.00
		6	0	21.89	21.84	21.88	23.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19965	20175	20385	
3MHz	QPSK	1	0	24.10	24.04	24.02	25.00
		1	7	24.08	24.15	24.24	25.00
		1	14	23.94	23.90	23.85	25.00
		8	0	22.69	22.62	22.59	24.00
		8	4	22.56	22.65	22.60	24.00
		8	7	22.72	22.75	22.72	24.00
		15	0	22.70	22.74	22.80	24.00
	16QAM	1	0	23.83	23.80	23.80	24.00
		1	7	23.72	23.78	23.69	24.00
		1	14	23.23	23.27	23.20	24.00



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		8	0	21.78	21.87	21.87	23.00
		8	4	21.88	21.98	21.95	23.00
		8	7	21.92	21.95	21.99	23.00
		15	0	21.84	21.83	21.82	23.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19975	20175	20375	
5MHz	QPSK	1	0	24.03	23.97	24.02	25.00
		1	13	24.01	24.08	24.06	25.00
		1	24	23.75	23.80	23.90	25.00
		12	0	22.69	22.64	22.74	24.00
		12	6	22.66	22.72	22.71	24.00
		12	13	22.76	22.83	22.80	24.00
		25	0	22.60	22.66	22.62	24.00
		25	0	22.60	22.66	22.62	24.00
	16QAM	1	0	23.89	23.86	23.86	24.00
		1	13	23.80	23.73	23.77	24.00
		1	24	23.30	23.24	23.15	24.00
		12	0	21.82	21.84	21.80	23.00
		12	6	22.01	21.92	21.82	23.00
		12	13	21.81	21.85	21.93	23.00
		25	0	21.70	21.75	21.76	23.00
		25	0	21.70	21.75	21.76	23.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20000	20175	20350	
10MHz	QPSK	1	0	24.01	23.93	24.02	25.00
		1	25	23.95	24.04	24.00	25.00
		1	49	23.83	23.76	23.73	25.00
		25	0	22.70	22.65	22.57	24.00
		25	13	22.85	22.77	22.72	24.00
		25	25	22.76	22.74	22.82	24.00
		50	0	22.71	22.67	22.77	24.00
		50	0	22.71	22.67	22.77	24.00
	16QAM	1	0	23.83	23.80	23.75	24.00
		1	25	23.58	23.66	23.75	24.00
		1	49	23.14	23.24	23.23	24.00
		1	49	23.14	23.24	23.23	24.00



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		25	0	21.89	21.83	21.85	23.00
		25	13	21.90	21.92	22.00	23.00
		25	25	21.89	21.88	21.96	23.00
		50	0	21.73	21.81	21.71	23.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20025	20175	20325	
15MHz	QPSK	1	0	23.88	23.88	23.95	25.00
		1	38	23.91	23.97	24.07	25.00
		1	74	23.69	23.77	23.68	25.00
		36	0	22.64	22.63	22.71	24.00
		36	18	22.70	22.78	22.88	24.00
		36	39	22.60	22.66	22.58	24.00
		75	0	22.72	22.77	22.84	24.00
		75	0	22.72	22.77	22.84	24.00
	16QAM	1	0	23.75	23.74	23.76	24.00
		1	38	23.52	23.61	23.68	24.00
		1	74	23.24	23.24	23.22	24.00
		36	0	21.68	21.78	21.73	23.00
		36	18	21.86	21.96	21.86	23.00
		36	39	21.93	21.98	22.01	23.00
		75	0	21.82	21.82	21.84	23.00
		75	0	21.82	21.82	21.84	23.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				/	20175	/	
20MHz	QPSK	1	0	/	23.86	/	25.00
		1	50	/	23.94	/	25.00
		1	99	/	23.86	/	25.00
		50	0	/	22.71	/	24.00
		50	25	/	22.73	/	24.00
		50	50	/	22.67	/	24.00
		100	0	/	22.82	/	24.00
		100	0	/	22.82	/	24.00
	16QAM	1	0	/	23.67	/	24.00
		1	50	/	23.68	/	24.00
		1	99	/	23.34	/	24.00
		1	99	/	23.34	/	24.00



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		50	0	/	21.85	/	23.00
		50	25	/	21.96	/	23.00
		50	50	/	21.88	/	23.00
		100	0	/	21.83	/	23.00



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8.2.8 Conducted Power of LTE Band 5

LTE Band 5				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20407	20525	20643	
1.4MHz	QPSK	1	0	22.93	23.02	23.07	24.00
		1	2	22.99	22.94	22.89	24.00
		1	5	22.65	22.73	22.78	24.00
		3	0	22.84	22.84	22.74	24.00
		3	2	23.06	23.11	23.09	24.00
		3	3	23.00	22.95	22.89	24.00
		6	0	22.09	22.17	22.09	23.00
	16QAM	1	0	22.94	22.86	22.87	23.00
		1	2	22.42	22.50	22.51	23.00
		1	5	22.96	22.91	22.84	23.00
		3	0	22.39	22.45	22.47	23.00
		3	2	22.17	22.08	22.06	23.00
		3	3	22.08	22.13	22.10	23.00
		6	0	21.06	21.11	21.04	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20415	20525	20635	
3MHz	QPSK	1	0	23.08	23.03	23.12	24.00
		1	7	22.95	22.92	22.90	24.00
		1	14	22.78	22.74	22.73	24.00
		8	0	21.93	21.93	21.88	23.00
		8	4	22.04	22.03	22.06	23.00
		8	7	21.91	21.99	21.96	23.00
		15	0	22.01	22.08	22.02	23.00
	16QAM	1	0	22.68	22.78	22.75	23.00
		1	7	22.53	22.55	22.54	23.00
		1	14	22.78	22.81	22.73	23.00

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		8	0	21.40	21.35	21.42	22.00
		8	4	21.07	21.02	21.06	22.00
		8	7	21.08	21.16	21.10	22.00
		15	0	21.23	21.14	21.23	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20425	20525	20625	
5MHz	QPSK	1	0	23.15	23.10	23.18	24.00
		1	13	22.84	22.86	22.85	24.00
		1	24	22.81	22.79	22.89	24.00
		12	0	21.96	22.01	21.97	23.00
		12	6	21.95	22.00	22.06	23.00
		12	13	22.11	22.02	22.11	23.00
		25	0	22.06	22.12	22.22	23.00
	16QAM	1	0	22.70	22.69	22.76	23.00
		1	13	22.58	22.64	22.71	23.00
		1	24	22.76	22.72	22.72	23.00
		12	0	21.22	21.29	21.24	22.00
		12	6	21.15	21.11	21.09	22.00
		12	13	21.11	21.19	21.25	22.00
		25	0	21.12	21.08	21.04	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				/	20525	/	
10MHz	QPSK	1	0	/	22.97	/	24.00
		1	25	/	23.03	/	24.00
		1	49	/	22.87	/	24.00
		25	0	/	22.11	/	23.00
		25	13	/	22.12	/	23.00
		25	25	/	22.08	/	23.00
		50	0	/	22.06	/	23.00
	16QAM	1	0	/	22.76	/	23.00
		1	25	/	22.62	/	23.00
		1	49	/	22.64	/	23.00



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		25	0	/	21.31	/	22.00
		25	13	/	21.15	/	22.00
		25	25	/	21.20	/	22.00
		50	0	/	21.17	/	22.00



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8.2.9 Conducted Power of LTE Band 7

LTE Band 7				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20775	21100	21425	
5MHz	QPSK	1	0	22.76	22.86	22.84	24.00
		1	13	22.54	23.01	22.79	24.00
		1	24	22.39	23.28	23.03	24.00
		12	0	21.50	21.71	21.94	23.00
		12	6	21.55	21.90	22.22	23.00
		12	13	21.40	21.84	22.32	23.00
		25	0	21.44	21.78	22.04	23.00
	16QAM	1	0	21.86	22.47	22.60	23.00
		1	13	21.81	22.58	22.62	23.00
		1	24	21.71	22.60	22.52	23.00
		12	0	20.86	21.11	21.25	22.00
		12	6	21.01	21.33	21.23	22.00
		12	13	20.78	20.98	21.27	22.00
		25	0	20.92	20.97	21.43	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20800	21100	21400	
10MHz	QPSK	1	0	22.67	22.88	22.89	24.00
		1	25	22.49	23.07	22.85	24.00
		1	49	22.43	23.37	23.10	24.00
		25	0	21.43	21.76	21.96	23.00
		25	13	21.47	21.99	22.18	23.00
		25	25	21.48	21.94	22.22	23.00
		50	0	21.46	21.81	22.08	23.00
	16QAM	1	0	21.80	22.46	22.52	23.00
		1	25	21.85	22.61	22.68	23.00
		1	49	21.81	22.60	22.57	23.00



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		25	0	20.80	21.17	21.34	22.00
		25	13	20.95	21.29	21.29	22.00
		25	25	20.84	21.08	21.31	22.00
		50	0	20.83	20.99	21.36	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20825	21100	21375	
15MHz	QPSK	1	0	22.62	22.95	22.91	24.00
		1	38	22.56	23.14	22.93	24.00
		1	74	22.49	23.31	23.15	24.00
		36	0	21.52	21.80	21.98	23.00
		36	18	21.56	21.97	22.08	23.00
		36	39	21.54	21.92	22.12	23.00
		75	0	21.50	21.79	22.09	23.00
		75	0	21.50	21.79	22.09	23.00
	16QAM	1	0	21.85	22.56	22.49	23.00
		1	38	21.94	22.57	22.67	23.00
		1	74	21.84	22.66	22.53	23.00
		36	0	20.89	21.14	21.24	22.00
		36	18	20.89	21.22	21.19	22.00
		36	39	20.78	21.15	21.31	22.00
		75	0	20.91	21.04	21.28	22.00
		75	0	20.91	21.04	21.28	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20850	21100	21350	
20MHz	QPSK	1	0	22.70	23.01	22.95	24.00
		1	50	22.73	23.27	23.23	24.00
		1	99	22.49	23.26	22.97	24.00
		50	0	21.60	21.78	22.05	23.00
		50	25	21.61	22.10	22.09	23.00
		50	50	21.46	21.91	22.08	23.00
		100	0	21.47	22.06	22.05	23.00
		100	0	21.47	22.06	22.05	23.00
	16QAM	1	0	21.91	22.53	22.58	23.00
		1	50	22.04	22.62	22.67	23.00
		1	99	21.86	22.73	22.46	23.00
		1	99	21.86	22.73	22.46	23.00



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		50	0	20.96	21.06	21.24	22.00
		50	25	20.83	21.23	21.20	22.00
		50	50	20.83	21.12	21.23	22.00
		100	0	20.82	21.07	21.34	22.00



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8.2.10 Conducted Power of LTE Band 38

LTE Band 38				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				37775	38000	38225	
5MHz	QPSK	1	0	23.28	23.26	23.32	24.50
		1	13	23.55	23.45	23.44	24.50
		1	24	23.42	23.49	23.54	24.50
		12	0	22.84	22.83	22.73	23.50
		12	6	22.47	22.54	22.51	23.50
		12	13	22.73	22.78	22.76	23.50
		25	0	22.28	22.35	22.42	23.50
	16QAM	1	0	22.78	22.80	22.80	23.50
		1	13	23.12	23.05	23.08	23.50
		1	24	22.77	22.70	22.80	23.50
		12	0	21.82	21.81	21.88	22.50
		12	6	21.91	21.98	21.90	22.50
		12	13	21.63	21.68	21.77	22.50
		25	0	21.91	21.82	21.92	22.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				37800	38000	38200	
10MHz	QPSK	1	0	23.27	23.30	23.27	24.50
		1	25	23.45	23.42	23.51	24.50
		1	49	23.51	23.42	23.48	24.50
		25	0	22.82	22.79	22.80	23.50
		25	13	22.66	22.56	22.58	23.50
		25	25	22.76	22.81	22.90	23.50
		50	0	22.24	22.28	22.26	23.50
	16QAM	1	0	22.80	22.84	22.90	23.50
		1	25	23.13	23.04	23.12	23.50
		1	49	22.81	22.78	22.80	23.50



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		25	0	21.90	21.85	21.86	22.50
		25	13	21.89	21.89	21.79	22.50
		25	25	21.85	21.75	21.68	22.50
		50	0	21.72	21.78	21.75	22.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				37825	38000	38175	
15MHz	QPSK	1	0	23.41	23.36	23.35	24.50
		1	38	23.40	23.47	23.53	24.50
		1	74	23.40	23.41	23.40	24.50
		36	0	22.82	22.73	22.79	23.50
		36	18	22.63	22.59	22.68	23.50
		36	39	22.74	22.72	22.63	23.50
		75	0	22.30	22.30	22.31	23.50
	16QAM	1	0	22.82	22.78	22.81	23.50
		1	38	23.14	23.06	22.98	23.50
		1	74	22.75	22.81	22.90	23.50
		36	0	21.78	21.79	21.85	22.50
		36	18	21.84	21.85	21.94	22.50
		36	39	21.83	21.85	21.82	22.50
		75	0	21.75	21.69	21.77	22.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				/	38000	/	
20MHz	QPSK	1	0	/	23.28	/	24.50
		1	50	/	23.51	/	24.50
		1	99	/	23.42	/	24.50
		50	0	/	22.61	/	23.50
		50	25	/	22.63	/	23.50
		50	50	/	22.62	/	23.50
		100	0	/	22.28	/	23.50
	16QAM	1	0	/	22.82	/	23.50
		1	50	/	22.97	/	23.50
		1	99	/	22.85	/	23.50



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		50	0	/	21.74	/	22.50
		50	25	/	21.80	/	22.50
		50	50	/	21.76	/	22.50
		100	0	/	21.75	/	22.50



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8.2.11 Conducted Power of WIFI 2.4G

WIFI 2.4G					
Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11b	1	2412	1	12.99	14.00
	6	2437		12.74	14.00
	11	2462		13.35	14.00
802.11g	1	2412	6	11.29	13.00
	6	2437		11.92	13.00
	11	2462		9.97	11.00
802.11n HT20	1	2412	6.5	11.10	12.00
	6	2437		11.88	13.00
	11	2462		9.77	11.00
802.11n HT40	3	2422	13.5	7.21	9.00
	6	2437		12.99	13.00
	9	2452		3.74	5.00

8.2.12 Conducted Power of WIFI 5G

WIFI 5G					
5GHz	Channel	Frequency(MHz)	Average Power (dBm)	Tune up	
5GHz U-NII-1	802.11a	36	13.56	14.00	
		40	13.07	14.00	
		48	13.64	14.00	
	802.11n HT20	36	12.13	13.00	
		40	11.55	13.00	
		48	12.76	13.00	
	802.11n HT40	38	8.54	10.00	
		46	12.79	13.00	
	802.11ac VHT20	36	11.31	12.00	
		40	10.71	12.00	
		48	11.58	12.00	
	802.11ac VHT40	38	11.39	12.00	
		46	11.46	12.00	
	802.11ac VHT80	42	8.24	10.00	
5GHz U-NII-2A	802.11a	52	12.71	13.00	
		60	12.41	13.00	
		64	12.87	13.00	
	802.11n HT20	52	12.12	13.00	
		60	12.08	13.00	
		64	11.72	13.00	
	802.11n HT40	54	12.50	13.00	
		62	7.16	8.00	
	802.11ac VHT20	52	11.07	12.00	
		60	10.99	12.00	
		64	10.42	12.00	
	802.11ac VHT40	54	11.31	12.00	
		62	7.00	8.00	
	802.11ac VHT80	58	8.11	10.00	
5GHz UNII-2C	802.11a	100	8.90	10.00	
		116	11.87	12.00	
		140	4.07	5.00	
	802.11n HT20	100	11.60	12.00	
		116	11.49	12.00	
		140	4.16	5.00	
	802.11n HT40	102	2.52	4.00	
		110	10.87	12.00	
		134	11.50	12.00	
	802.11ac VHT20	100	10.71	12.00	
		116	11.42	12.00	
		140	4.13	6.00	
	802.11ac VHT40	102	2.24	4.00	
		110	10.61	11.00	
		134	9.86	11.00	
	802.11ac VHT80	106	2.72	4.00	
		122	10.28	12.00	
	802.11a	149	11.68	13.00	
		157	12.40	13.00	
		165	13.01	14.00	
5GHz UNII-3	802.11n HT20	149	11.82	13.00	
		157	12.30	13.00	
		165	12.95	13.00	
	802.11n HT40	151	12.03	13.00	
		159	12.53	13.00	
		159	12.53	13.00	

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	802.11ac VHT20	149	5745	11.31	12.00
		157	5785	11.59	12.00
		165	5825	10.61	12.00
	802.11ac VHT40	151	5755	10.79	12.00
		159	5795	11.61	12.00
	802.11ac VHT80	155	5775	11.49	12.00

8.2.13 Conducted Power of BT

BT		Average Conducted Power(dBm)			Tune up
Band	Channel	0	39	78	
BT	GFSK	2.80	2.62	3.41	4.00
	$\pi/4$ DQPSK	1.58	0.90	1.57	2.00
	8DPSK	1.56	0.90	1.52	2.00
Band	Channel	0	19	39	Tune up
BLE 1M	GFSK	-5.50	-5.22	-4.82	-4.00



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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) Per KDB 447498 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:
 - $\leq 0.8\text{W/kg}$ 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 LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing; therefore, the requirement for H, M, and L channels may not fully apply.
- 4) For WiFi SAR test, as the highest reported SAR is smaller than 1.2 W/kg , and the tune-up of the other 802.11 modes are not higher than SAR measurement mode, therefore the adjusted SAR is $\leq 1.2\text{ W/kg}$ for other 802.11 modes, SAR test for the other 802.11 modes are not required. For Product specific 10gSAR the highest reported SAR is smaller than 3.0 W/kg , SAR test for the other 802.11 modes are also not required.

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8.3.1 SAR Result of GSM850

GSM850 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm)											
Front side	GPRS 4TS	190/836.6	1:2.075	0.495	0.288	0.16	29.02	29.50	1.117	0.322	22.0
Back side	GPRS 4TS	190/836.6	1:2.075	1.640	0.836	-0.08	29.02	29.50	1.117	0.934	22.0
Left side	GPRS 4TS	190/836.6	1:2.075	0.429	0.261	-0.16	29.02	29.50	1.117	0.292	22.0
Right side	GPRS 4TS	190/836.6	1:2.075	0.646	0.370	0.08	29.02	29.50	1.117	0.413	22.0
Top side	GPRS 4TS	190/836.6	1:2.075	0.907	0.501	-0.17	29.02	29.50	1.117	0.560	22.0
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.041	0.019	-0.15	29.02	29.50	1.117	0.021	22.0



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8.3.2 SAR Result of GSM1900

GSM1900 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm)											
Front side	GPRS 4TS	661/1880	1:2.075	0.222	0.122	0.13	26.17	27.50	1.358	0.166	22.1
Back side	GPRS 4TS	661/1880	1:2.075	2.590	1.280	0.08	26.17	27.50	1.358	1.738	22.1
Left side	GPRS 4TS	661/1880	1:2.075	0.477	0.252	0.06	26.17	27.50	1.358	0.342	22.1
Right side	GPRS 4TS	661/1880	1:2.075	0.271	0.140	0.16	26.17	27.50	1.358	0.190	22.1
Top side	GPRS 4TS	661/1880	1:2.075	0.410	0.234	-0.09	26.17	27.50	1.358	0.318	22.1
Bottom side	GPRS 4TS	661/1880	1:2.075	0.056	0.023	-0.02	26.17	27.50	1.358	0.031	22.1



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8.3.3 SAR Result of WCDMA Band II

WB2 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm)											
Front side	RMC	9400/1880	1:1	0.359	0.194	-0.14	22.69	23.00	1.074	0.208	22.1
Back side	RMC	9400/1880	1:1	3.910	1.920	0.00	22.69	23.00	1.074	2.062	22.1
Left side	RMC	9400/1880	1:1	0.462	0.241	0.12	22.69	23.00	1.074	0.259	22.1
Right side	RMC	9400/1880	1:1	0.728	0.377	0.00	22.69	23.00	1.074	0.405	22.1
Top side	RMC	9400/1880	1:1	0.696	0.388	-0.02	22.69	23.00	1.074	0.417	22.1
Bottom side	RMC	9400/1880	1:1	0.050	0.025	-0.10	22.69	23.00	1.074	0.027	22.1
Back side	RMC	9262/1852.4	1:1	3.480	1.780	0.15	22.39	23.00	1.151	2.049	22.1
Back side	RMC	9538/1907.6	1:1	4.620	2.200	-0.03	22.54	23.00	1.112	2.446	22.1
Back side with Repeated	RMC	9538/1907.6	1:1	4.230	2.060	-0.06	22.54	23.00	1.112	2.291	22.1

Test Position	Test ch./Freq.	Measured SAR (W/kg)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
Back side	9538/1907.6	2.200	2.060	1.068	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						
5) 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. The repeated measurement results must be clearly identified in the SAR report.						

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8.3.4 SAR Result of WCDMA Band IV

WB4 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm)											
Front side	RMC	1412/1732.4	1:1	0.349	0.191	0.12	22.73	23.00	1.064	0.203	21.9
Back side	RMC	1412/1732.4	1:1	3.540	1.680	-0.12	22.73	23.00	1.064	1.788	21.9
Left side	RMC	1412/1732.4	1:1	0.644	0.362	-0.04	22.73	23.00	1.064	0.385	21.9
Right side	RMC	1412/1732.4	1:1	0.687	0.356	0.09	22.73	23.00	1.064	0.379	21.9
Top side	RMC	1412/1732.4	1:1	0.708	0.393	0.05	22.73	23.00	1.064	0.418	21.9
Bottom side	RMC	1412/1732.4	1:1	0.039	0.019	-0.12	22.73	23.00	1.064	0.020	21.9



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8.3.5 SAR Result of WCDMA Band V

WB5 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm)											
Front side	RMC	4182/836.4	1:1	0.203	0.118	0.11	22.46	23.00	1.132	0.134	22.0
Back side	RMC	4182/836.4	1:1	0.908	0.473	-0.05	22.46	23.00	1.132	0.535	22.0
Left side	RMC	4182/836.4	1:1	0.192	0.112	-0.03	22.46	23.00	1.132	0.127	22.0
Right side	RMC	4182/836.4	1:1	0.323	0.180	-0.06	22.46	23.00	1.132	0.204	22.0
Top side	RMC	4182/836.4	1:1	0.432	0.244	0.09	22.46	23.00	1.132	0.276	22.0
Bottom side	RMC	4182/836.4	1:1	0.041	0.023	0.09	22.46	23.00	1.132	0.026	22.0



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8.3.6 SAR Result of LTE Band 2

LTE Band 2 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm 1RB)												
Front side	20	QPSK 1 50	18900/1880	1:1	0.347	0.188	-0.16	22.69	23.00	1.074	0.202	22.1
Back side	20	QPSK 1 50	18900/1880	1:1	4.090	1.940	-0.10	22.69	23.00	1.074	2.084	22.1
Left side	20	QPSK 1 50	18900/1880	1:1	0.723	0.379	-0.04	22.69	23.00	1.074	0.407	22.1
Right side	20	QPSK 1 50	18900/1880	1:1	0.472	0.249	0.16	22.69	23.00	1.074	0.267	22.1
Top side	20	QPSK 1 50	18900/1880	1:1	0.567	0.337	0.03	22.69	23.00	1.074	0.362	22.1
Bottom side	20	QPSK 1 50	18900/1880	1:1	0.023	0.011	-0.07	22.69	23.00	1.074	0.012	22.1
Back side	20	QPSK 1 50	18700/1860	1:1	3.560	1.740	-0.01	22.66	23.00	1.081	1.881	22.1
Back side	20	QPSK 1 50	19100/1900	1:1	4.260	2.070	0.01	22.59	23.00	1.099	2.275	22.1
Back side with Repeated	20	QPSK 1 50	19100/1900	1:1	4.010	1.940	0.01	22.59	23.00	1.099	2.132	22.1
Extremity Test data (Separate 0mm 50%RB)												
Front side	20	QPSK 50 25	18900/1880	1:1	0.278	0.150	-0.17	21.61	22.00	1.094	0.164	22.1
Back side	20	QPSK 50 25	18900/1880	1:1	3.320	1.590	0.07	21.61	22.00	1.094	1.739	22.1
Left side	20	QPSK 50 25	18900/1880	1:1	0.567	0.297	-0.13	21.61	22.00	1.094	0.325	22.1
Right side	20	QPSK 50 25	18900/1880	1:1	0.384	0.200	-0.01	21.61	22.00	1.094	0.219	22.1
Top side	20	QPSK 50 25	18900/1880	1:1	0.616	0.343	-0.07	21.61	22.00	1.094	0.375	22.1
Bottom side	20	QPSK 50 25	18900/1880	1:1	0.019	0.009	-0.07	21.61	22.00	1.094	0.010	22.1
Extremity Test data (Separate 0mm 100%RB)												
Back side	20	QPSK 100 0	18900/1880	1:1	3.040	1.430	-0.09	21.66	22.00	1.081	1.546	22.1

Test Position	Test ch./Freq.	Measured SAR (W/kg)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
Back side	19100/1900	2.070	1.940	1.067	N/A	N/A

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



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8.3.7 SAR Result of LTE Band 4

LTE Band 4 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm 1RB)												
Front side	20	QPSK 1 50	20175/1732.5	1:1	0.408	0.223	0.19	23.94	25.00	1.276	0.285	22
Back side	20	QPSK 1 50	20175/1732.5	1:1	4.200	2.010	0.07	23.94	25.00	1.276	2.565	22
Left side	20	QPSK 1 50	20175/1732.5	1:1	0.842	0.450	0.13	23.94	25.00	1.276	0.574	22
Right side	20	QPSK 1 50	20175/1732.5	1:1	0.850	0.432	-0.12	23.94	25.00	1.276	0.551	22
Top side	20	QPSK 1 50	20175/1732.5	1:1	0.730	0.415	-0.01	23.94	25.00	1.276	0.530	22
Bottom side	20	QPSK 1 50	20175/1732.5	1:1	0.041	0.023	0.08	23.94	25.00	1.276	0.029	22
Back side with Repeated	20	QPSK 1 50	20175/1732.5	1:1	4.030	1.940	0.01	23.94	25.00	1.276	2.475	22
Extremity Test data (Separate 0mm 50%RB)												
Front side	20	QPSK 50 25	20175/1732.5	1:1	0.345	0.189	0.13	22.73	24.00	1.340	0.253	22
Back side	20	QPSK 50 25	20175/1732.5	1:1	3.330	1.560	-0.12	22.73	24.00	1.340	2.090	22
Left side	20	QPSK 50 25	20175/1732.5	1:1	0.648	0.365	-0.01	22.73	24.00	1.340	0.489	22
Right side	20	QPSK 50 25	20175/1732.5	1:1	0.707	0.363	0.08	22.73	24.00	1.340	0.486	22
Top side	20	QPSK 50 25	20175/1732.5	1:1	0.568	0.327	-0.19	22.73	24.00	1.340	0.438	22
Bottom side	20	QPSK 50 25	20175/1732.5	1:1	0.044	0.022	0.16	22.73	24.00	1.340	0.029	22
Extremity Test data (Separate 0mm 100%RB)												
Back side	20	QPSK 100 0	20175/1732.5	1:1	3.230	1.540	0.15	22.82	24.00	1.312	2.020	22

Test Position	Test ch./Freq.	Measured SAR (W/kg)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
Back side	20175/1732.5	2.010	1.940	1.036	N/A	N/A

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



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8.3.8 SAR Result of LTE Band 5

LTE Band 5 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm 1RB)												
Front side	10	QPSK 1_25	20525/836.5	1:1	0.217	0.126	0.09	23.03	24.00	1.250	0.158	22.0
Back side	10	QPSK 1_25	20525/836.5	1:1	0.953	0.504	0.12	23.03	24.00	1.250	0.630	22.0
Left side	10	QPSK 1_25	20525/836.5	1:1	0.249	0.125	-0.02	23.03	24.00	1.250	0.156	22.0
Right side	10	QPSK 1_25	20525/836.5	1:1	0.356	0.196	0.10	23.03	24.00	1.250	0.245	22.0
Top side	10	QPSK 1_25	20525/836.5	1:1	0.377	0.215	0.02	23.03	24.00	1.250	0.269	22.0
Bottom side	10	QPSK 1_25	20525/836.5	1:1	0.043	0.021	-0.06	23.03	24.00	1.250	0.026	22.0
Extremity Test data (Separate 0mm 50%RB)												
Front side	10	QPSK 25_13	20525/836.5	1:1	0.184	0.107	-0.18	22.12	23.00	1.225	0.131	22.0
Back side	10	QPSK 25_13	20525/836.5	1:1	0.599	0.305	0.06	22.12	23.00	1.225	0.374	22.0
Left side	10	QPSK 25_13	20525/836.5	1:1	0.205	0.108	0.13	22.12	23.00	1.225	0.132	22.0
Right side	10	QPSK 25_13	20525/836.5	1:1	0.279	0.161	0.19	22.12	23.00	1.225	0.197	22.0
Top side	10	QPSK 25_13	20525/836.5	1:1	0.389	0.219	-0.11	22.12	23.00	1.225	0.268	22.0
Bottom side	10	QPSK 25_13	20525/836.5	1:1	0.041	0.020	-0.05	22.12	23.00	1.225	0.025	22.0



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8.3.9 SAR Result of LTE Band 7

LTE Band 7 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm 1RB)												
Front side	20	QPSK 1 50	21100/2535	1:1	0.124	0.067	0.16	23.27	24.00	1.183	0.079	21.8
Back side	20	QPSK 1 50	21100/2535	1:1	4.840	2.200	0.15	23.27	24.00	1.183	2.603	21.8
Left side	20	QPSK 1 50	21100/2535	1:1	0.204	0.110	-0.15	23.27	24.00	1.183	0.130	21.8
Right side	20	QPSK 1 50	21100/2535	1:1	0.605	0.313	-0.19	23.27	24.00	1.183	0.370	21.8
Top side	20	QPSK 1 50	21100/2535	1:1	0.413	0.222	0.18	23.27	24.00	1.183	0.263	21.8
Bottom side	20	QPSK 1 50	21100/2535	1:1	0.043	0.021	-0.16	23.27	24.00	1.183	0.025	21.8
Back side	20	QPSK 1 50	20850/2510	1:1	4.060	1.880	-0.06	22.73	24.00	1.340	2.519	21.8
Back side	20	QPSK 1 50	21350/2560	1:1	4.130	1.830	0.09	23.23	24.00	1.194	2.185	21.8
Back side with Repeated	20	QPSK 1 50	21100/2535	1:1	4.630	2.110	-0.09	23.27	24.00	1.183	2.496	21.8
Extremity Test data (Separate 0mm 50%RB)												
Front side	20	QPSK 50 25	21100/2535	1:1	0.099	0.053	0.06	22.10	23.00	1.230	0.065	21.8
Back side	20	QPSK 50 25	21100/2535	1:1	3.640	1.700	-0.01	22.10	23.00	1.230	2.091	21.8
Left side	20	QPSK 50 25	21100/2535	1:1	0.160	0.086	0.17	22.10	23.00	1.230	0.106	21.8
Right side	20	QPSK 50 25	21100/2535	1:1	0.481	0.252	0.16	22.10	23.00	1.230	0.310	21.8
Top side	20	QPSK 50 25	21100/2535	1:1	0.317	0.171	0.05	22.10	23.00	1.230	0.210	21.8
Bottom side	20	QPSK 50 25	21100/2535	1:1	0.042	0.021	-0.18	22.10	23.00	1.230	0.026	21.8
Back side	20	QPSK 50 25	20850/2510	1:1	3.960	1.700	0.14	21.61	23.00	1.377	2.341	21.8
Back side	20	QPSK 50 25	21350/2560	1:1	3.920	1.550	-0.15	22.09	23.00	1.233	1.911	21.8
Extremity Test data (Separate 0mm 100%RB)												
Back side	20	QPSK 100 0	21100/2535	1:1	3.450	1.580	-0.01	22.06	23.00	1.242	1.962	21.8

Test Position	Test ch./Freq.	Measured SAR (W/kg)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
Back side	21100/2535	2.200	2.110	1.043	N/A	N/A

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

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

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

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

5) 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. The repeated measurement results must be clearly identified in the SAR report.

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8.3.10 SAR Result of LTE Band 38

LTE Band 38 SAR 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 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm 1RB)												
Front side	20	QPSK 1_50	38000/2595	1:1.58	0.110	0.060	-0.17	23.51	24.50	1.256	0.075	21.8
Back side	20	QPSK 1_50	38000/2595	1:1.58	3.270	1.330	0.04	23.51	24.50	1.256	1.670	21.8
Left side	20	QPSK 1_50	38000/2595	1:1.58	0.177	0.098	-0.02	23.51	24.50	1.256	0.123	21.8
Right side	20	QPSK 1_50	38000/2595	1:1.58	0.498	0.245	0.06	23.51	24.50	1.256	0.308	21.8
Top side	20	QPSK 1_50	38000/2595	1:1.58	0.413	0.190	0.17	23.51	24.50	1.256	0.239	21.8
Bottom side	20	QPSK 1_50	38000/2595	1:1.58	0.042	0.022	-0.10	23.51	24.50	1.256	0.028	21.8
Extremity Test data (Separate 0mm 50%RB)												
Front side	20	QPSK 50_25	38000/2595	1:1.58	0.091	0.050	0.08	22.63	23.50	1.222	0.061	21.8
Back side	20	QPSK 50_25	38000/2595	1:1.58	2.660	0.949	-0.14	22.63	23.50	1.222	1.160	21.8
Left side	20	QPSK 50_25	38000/2595	1:1.58	0.143	0.080	-0.12	22.63	23.50	1.222	0.098	21.8
Right side	20	QPSK 50_25	38000/2595	1:1.58	0.313	0.168	-0.14	22.63	23.50	1.222	0.205	21.8
Top side	20	QPSK 50_25	38000/2595	1:1.58	0.321	0.155	0.17	22.63	23.50	1.222	0.189	21.8
Bottom side	20	QPSK 50_25	38000/2595	1:1.58	0.041	0.021	0.09	22.63	23.50	1.222	0.026	21.8



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8.3.11 SAR Result of WiFi 2.4G

Wi-Fi 2.4G SAR Test Record												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	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)
Extremity Test data (Separate 0mm)												
Front side	802.11b	1/2412	97.29%	1.028	0.083	0.039	0.14	12.99	14.00	1.262	0.051	22.0
Back side	802.11b	1/2412	97.29%	1.028	0.088	0.037	0.17	12.99	14.00	1.262	0.048	22.0
Left side	802.11b	1/2412	97.29%	1.028	0.144	0.063	-0.06	12.99	14.00	1.262	0.082	22.0
Right side	802.11b	1/2412	97.29%	1.028	0.422	0.176	0.03	12.99	14.00	1.262	0.228	22.0
Top side	802.11b	1/2412	97.29%	1.028	0.044	0.021	0.10	12.99	14.00	1.262	0.027	22.0
Bottom side	802.11b	1/2412	97.29%	1.028	0.016	0.008	-0.13	12.99	14.00	1.262	0.010	22.0



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8.3.12 SAR Result of WiFi 5G

Wi-Fi 5G SAR Test Record												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	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)
Extremity Test data U-NII-1 (Separate 0mm)												
Front side	802.11a	48/5240	88.10%	1.135	0.279	0.100	0.02	13.64	14.00	1.086	0.123	21.7
Back side	802.11a	48/5240	88.10%	1.135	0.137	0.046	0.07	13.64	14.00	1.086	0.057	21.7
Left side	802.11a	48/5240	88.10%	1.135	0.444	0.122	0.16	13.64	14.00	1.086	0.150	21.7
Right side	802.11a	48/5240	88.10%	1.135	1.240	0.332	-0.03	13.64	14.00	1.086	0.409	21.7
Top side	802.11a	48/5240	88.10%	1.135	0.064	0.016	-0.03	13.64	14.00	1.086	0.020	21.7
Bottom side	802.11a	48/5240	88.10%	1.135	0.023	0.011	0.15	13.64	14.00	1.086	0.014	21.7
Extremity Test data U-NII-2A (Separate 0mm)												
Front side	802.11ac VHT80	58/5290	88.10%	1.135	0.304	0.097	0.16	8.11	10.00	1.545	0.170	21.7
Back side	802.11ac VHT80	58/5290	88.10%	1.135	0.115	0.039	-0.04	8.11	10.00	1.545	0.068	21.7
Left side	802.11ac VHT80	58/5290	88.10%	1.135	0.293	0.092	-0.19	8.11	10.00	1.545	0.161	21.7
Right side	802.11ac VHT80	58/5290	88.10%	1.135	0.733	0.229	-0.19	8.11	10.00	1.545	0.402	21.7
Top side	802.11ac VHT80	58/5290	88.10%	1.135	0.064	0.017	-0.15	8.11	10.00	1.545	0.030	21.7
Bottom side	802.11ac VHT80	58/5290	88.10%	1.135	0.016	0.009	-0.11	8.11	10.00	1.545	0.016	21.7
Extremity Test data U-NII-2C (Separate 0mm)												
Front side	802.11ac VHT80	122/5610	88.10%	1.135	0.291	0.084	-0.17	11.07	12.00	1.239	0.118	21.9
Back side	802.11ac VHT80	122/5610	88.10%	1.135	0.157	0.057	0.03	11.07	12.00	1.239	0.080	21.9
Left side	802.11ac VHT80	122/5610	88.10%	1.135	0.444	0.122	-0.04	11.07	12.00	1.239	0.172	21.9
Right side	802.11ac VHT80	122/5610	88.10%	1.135	1.460	0.319	0.09	11.07	12.00	1.239	0.449	21.9
Top side	802.11ac VHT80	122/5610	88.10%	1.135	0.080	0.018	-0.15	11.07	12.00	1.239	0.025	21.9
Bottom side	802.11ac VHT80	122/5610	88.10%	1.135	0.023	0.011	0.11	11.07	12.00	1.239	0.015	21.9
Extremity Test data U-NII-3 (Separate 0mm)												
Front side	802.11a	165/5825	88.10%	1.135	0.108	0.035	-0.09	13.01	14.00	1.256	0.050	22.2
Back side	802.11a	165/5825	88.10%	1.135	0.095	0.038	0.12	13.01	14.00	1.256	0.054	22.2
Left side	802.11a	165/5825	88.10%	1.135	0.199	0.061	0.02	13.01	14.00	1.256	0.087	22.2
Right side	802.11a	165/5825	88.10%	1.135	0.558	0.162	0.04	13.01	14.00	1.256	0.231	22.2
Top side	802.11a	165/5825	88.10%	1.135	0.068	0.034	0.06	13.01	14.00	1.256	0.048	22.2
Bottom side	802.11a	165/5825	88.10%	1.135	0.023	0.013	0.06	13.01	14.00	1.256	0.019	22.2



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8.3.13 SAR Result of BT

Bluetooth SAR Test Record												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	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)
Extremity Test data (Separate 0mm)												
Front side	DH5	78/2480	78.42%	1.275	0.063	0.033	0.19	3.41	4.00	1.146	0.048	22.0
Back side	DH5	78/2480	78.42%	1.275	0.042	0.021	-0.08	3.41	4.00	1.146	0.031	22.0
Left side	DH5	78/2480	78.42%	1.275	0.033	0.015	0.06	3.41	4.00	1.146	0.022	22.0
Right side	DH5	78/2480	78.42%	1.275	0.200	0.081	0.08	3.41	4.00	1.146	0.118	22.0
Top side	DH5	78/2480	78.42%	1.275	0.023	0.011	0.15	3.41	4.00	1.146	0.016	22.0
Bottom side	DH5	78/2480	78.42%	1.275	0.015	0.009	-0.11	3.41	4.00	1.146	0.013	22.0



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8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR test evaluation

No.	Simultaneous Tx Combination	Extremity
1	WWAN+WIFI2.4G	Yes
2	WWAN+WIFI5G	Yes
3	WWAN+BT	Yes
4	WWAN+WIFI 5G + Bluetooth	Yes



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8.4.2 Simultaneous Transmission SAR Summation Scenario

Sum_0mm:

Test position		SARmax (W/kg)			Summed SAR
		WiFi 2.4G	WiFi 5G	BT	
		1	2	3	
WLAN	Front side	0.051	0.170	0.048	0.218
	Back side	0.048	0.080	0.031	0.111
	Left side	0.082	0.172	0.022	0.194
	Right side	0.228	0.449	0.118	0.567
	Top side	0.027	0.048	0.016	0.064
	Bottom side	0.010	0.019	0.013	0.032

Test position		SARmax (W/kg)				Summed SAR			
		WWAN MAX SAR	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
GSM850	Front side	0.322	0.051	0.170	0.048	0.373	0.492	0.370	0.540
	Back side	0.934	0.048	0.080	0.031	0.982	1.014	0.965	1.045
	Left side	0.292	0.082	0.172	0.022	0.374	0.464	0.314	0.486
	Right side	0.413	0.228	0.449	0.118	0.641	0.862	0.531	0.980
	Top side	0.560	0.027	0.048	0.016	0.587	0.608	0.576	0.624
	Bottom side	0.021	0.010	0.019	0.013	0.031	0.040	0.034	0.053
GSM1900	Front side	0.166	0.051	0.170	0.048	0.217	0.336	0.214	0.384
	Back side	1.738	0.048	0.080	0.031	1.786	1.818	1.769	1.849
	Left side	0.342	0.082	0.172	0.022	0.424	0.514	0.364	0.536
	Right side	0.190	0.228	0.449	0.118	0.418	0.639	0.308	0.757
	Top side	0.318	0.027	0.048	0.016	0.345	0.366	0.334	0.382
	Bottom side	0.031	0.010	0.019	0.013	0.041	0.050	0.044	0.063
WB2	Front side	0.208	0.051	0.170	0.048	0.259	0.378	0.256	0.426
	Back side	2.446	0.048	0.080	0.031	2.494	2.526	2.477	2.557
	Left side	0.259	0.082	0.172	0.022	0.341	0.431	0.281	0.453
	Right side	0.405	0.228	0.449	0.118	0.633	0.854	0.523	0.972
	Top side	0.417	0.027	0.048	0.016	0.444	0.465	0.433	0.481
	Bottom side	0.027	0.010	0.019	0.013	0.037	0.046	0.040	0.059
WB4	Front side	0.203	0.051	0.170	0.048	0.254	0.373	0.251	0.421
	Back side	1.788	0.048	0.080	0.031	1.836	1.868	1.819	1.899
	Left side	0.385	0.082	0.172	0.022	0.467	0.557	0.407	0.579
	Right side	0.379	0.228	0.449	0.118	0.607	0.828	0.497	0.946
	Top side	0.418	0.027	0.048	0.016	0.445	0.466	0.434	0.482
	Bottom side	0.020	0.010	0.019	0.013	0.030	0.039	0.033	0.052
WB5	Front side	0.134	0.051	0.170	0.048	0.185	0.304	0.182	0.352
	Back side	0.535	0.048	0.080	0.031	0.583	0.615	0.566	0.646
	Left side	0.127	0.082	0.172	0.022	0.209	0.299	0.149	0.321
	Right side	0.204	0.228	0.449	0.118	0.432	0.653	0.322	0.771
	Top side	0.276	0.027	0.048	0.016	0.303	0.324	0.292	0.340
	Bottom side	0.026	0.010	0.019	0.013	0.036	0.045	0.039	0.058



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LTE B2	Front side	0.202	0.051	0.170	0.048	0.253	0.372	0.250	0.420
	Back side	2.275	0.048	0.080	0.031	2.323	2.355	2.306	2.386
	Left side	0.407	0.082	0.172	0.022	0.489	0.579	0.429	0.601
	Right side	0.267	0.228	0.449	0.118	0.495	0.716	0.385	0.834
	Top side	0.375	0.027	0.048	0.016	0.402	0.423	0.391	0.439
	Bottom side	0.012	0.010	0.019	0.013	0.022	0.031	0.025	0.044
LTE B4	Front side	0.285	0.051	0.170	0.048	0.336	0.455	0.333	0.503
	Back side	2.565	0.048	0.080	0.031	2.613	2.645	2.596	2.676
	Left side	0.574	0.082	0.172	0.022	0.656	0.746	0.596	0.768
	Right side	0.551	0.228	0.449	0.118	0.779	1.000	0.669	1.118
	Top side	0.530	0.027	0.048	0.016	0.557	0.578	0.546	0.594
	Bottom side	0.029	0.010	0.019	0.013	0.039	0.048	0.042	0.061
LTE B5	Front side	0.158	0.051	0.170	0.048	0.209	0.328	0.206	0.376
	Back side	0.630	0.048	0.080	0.031	0.678	0.710	0.661	0.741
	Left side	0.156	0.082	0.172	0.022	0.238	0.328	0.178	0.350
	Right side	0.245	0.228	0.449	0.118	0.473	0.694	0.363	0.812
	Top side	0.269	0.027	0.048	0.016	0.296	0.317	0.285	0.333
	Bottom side	0.026	0.010	0.019	0.013	0.036	0.045	0.039	0.058
LTE B7	Front side	0.079	0.051	0.170	0.048	0.130	0.249	0.127	0.297
	Back side	2.603	0.048	0.080	0.031	2.651	2.683	2.634	2.714
	Left side	0.130	0.082	0.172	0.022	0.212	0.302	0.152	0.324
	Right side	0.370	0.228	0.449	0.118	0.598	0.819	0.488	0.937
	Top side	0.263	0.027	0.048	0.016	0.290	0.311	0.279	0.327
	Bottom side	0.026	0.010	0.019	0.013	0.036	0.045	0.039	0.058
LTE B38	Front side	0.075	0.051	0.170	0.048	0.126	0.245	0.123	0.293
	Back side	1.670	0.048	0.080	0.031	1.718	1.750	1.701	1.781
	Left side	0.123	0.082	0.172	0.022	0.205	0.295	0.145	0.317
	Right side	0.308	0.228	0.449	0.118	0.536	0.757	0.426	0.875
	Top side	0.239	0.027	0.048	0.016	0.266	0.287	0.255	0.303
	Bottom side	0.028	0.010	0.019	0.013	0.038	0.047	0.041	0.060



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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	SZ-WSR-A-020	NCR	NCR
☒	DAE	SPEAG	DAE4	SZ-WSR-M-081	2025/08/29	2026/08/28
☒	E-Field Probe	SPEAG	EX3DV4	SZ-WSR-M-082	2025/12/19	2026/12/18
☒	Validation Kits	SPEAG	D835V2	SZ-WSR-M-033	2025/10/14	2028/10/13
☒	Validation Kits	SPEAG	D1750V2	SZ-WSR-M-035	2025/6/18	2028/6/17
☒	Validation Kits	SPEAG	D1900V2	SZ-WSR-M-036	2025/10/13	2028/10/12
☒	Validation Kits	SPEAG	D2450V2	SZ-WSR-M-039	2025/10/15	2028/10/14
☒	Validation Kits	SPEAG	D2600V2	SZ-WSR-M-040	2025/6/17	2028/6/16
☒	Validation Kits	SPEAG	D5GHzV2	SZ-WSR-M-046	2025/10/14	2028/10/13
☒	Dielectric parameter probes	SPEAG	DAKS-3.5	SZ-WSR-M-053	2025/06/15	2026/06/14
☒	Vector Network Analyzer and Vector Reflectometer	SPEAG	DAKS_VNA R140	SZ-WSR-M-054	2025/06/15	2026/06/14
☒	Radio Communication Analyzer	Anritsu	MT8820C	SZ-WSR-M-018	2025/05/22	2026/05/21
☒	Radio Communication Analyzer	Anritsu	MT8820C	SZ-WSR-M-020	2025/08/14	2026/08/13
☒	RF Bi-Directional Coupler	Agilent	86205-60001	SZ-WSR-A-004	NCR	NCR
☒	Signal Generator	Agilent	N5171B	SZ-WSR-M-006	2025/12/16	2026/12/15
☒	Preamplifier	Mini-Circuits	ZHL-42W	SZ-WSR-A-001	NCR	NCR
☒	Preamplifier	Compliance Directions Systems Inc.	AMP28-3W	SZ-WSR-A-002	NCR	NCR
☒	Power Meter	Agilent	E4416A	SZ-WSR-M-007	2025/12/16	2026/12/15
☒	Power Sensor	Agilent	8481H	SZ-WSR-M-008	2025/12/16	2026/12/15
☒	Power Sensor	R&S	NRP-Z92	SZ-WSR-M-009	2025/12/16	2026/12/15
☒	Attenuator	SHX	TS2-3dB	SZ-WSR-A-012	NCR	NCR
☒	Speed reading thermometer	Zhengzhou Boyang Instrument	TP3001	SZ-WSR-M-014	2025/05/19	2026/05/18
☒	Temperature	MingGao	T809	SZ-WSR-M-015	2025/05/19	2026/05/18
☒	Temperature	MingGao	T809	SZ-WSR-M-016	2025/05/19	2026/05/18
☒	Humidity and Temperature Indicator	CHIGAO	HTC-1	SZ-WSR-M-012	2025/05/16	2026/05/15



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☒	Humidity and Temperature Indicator	CHIGAO	HTC-1	SZ-WSR-M-011	2025/05/19	2026/05/18
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Note: All the equipment are within the valid period when the tests are performed.



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10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D

Appendix A: Detailed System Check Results

Appendix B: Detailed Test Results

Appendix C: Calibration certificate

Appendix D: Photographs

--- End of report ---