SAR TEST REPORT

Application No.:	SZCR2405001727AT
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
Product Name:	Android POS Terminal
Model No.(EUT):	A99 LITE
FCC ID:	OWLA99-LITE-A
Standard(s) :	FCC 47CFR §2.1093
Date of Receipt:	2024-06-03
Date of Test:	2024-06-04 to 2024-06-27
Date of Issue:	2024-07-03
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu
EMC Laboratory Manager

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Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2024-07-03	/

Authorized for issue by:				
		Roman Pan **Roman Pan/Project Engineer**		
		Eric Fu **Eric Fu/Reviewer**		

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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)
	Body
GSM850	0.304
GSM1900	1.417
WCDMA Band II	1.278
WCDMA Band V	0.411
LTE Band 2	1.361
LTE Band 4	0.959
LTE Band 5	0.251
LTE Band 7	1.436
LTE Band 38	1.419
LTE Band 40a	0.362
LTE Band 40b	0.408
LTE Band 41	1.171
WI-FI (2.4GHz)	0.041
WI-FI (5GHz)	0.272
BT	0.023
SAR Limited(W/kg)	1.6
Maximum Simultaneous Transmission SAR (W/kg)	
Scenario	Body
Sum SAR	1.57
SPLSR	/
SPLSR Limited	0.04

Remark: This device has dual SIM Card sockets. Both the SIM sockets have been tested. SIM1 was worst case, only record SIM1.

1 CONTENTS

2 General Information

2.1 General Description of EUT

Product Name:	Android POS Terminal		
Model No.(EUT):	A99 LITE		
Product Phase:	production unit		
Device Type:	portable device		
Exposure Category:	uncontrolled environment / general population		
Hardware Version:	V1.01		
Software Version:	V1.01		
IMEI/SN:	00074000031		
Antenna Type:	PIFA antenna		
Antenna Gain:	2.4G: 0.01dBi 5G: U-NII-1/2A: 4.25dBi; U-NII-2C/3: 3.31dBi 2G 850:-4.69dBi, 1900:0.64dBi, 3G B2:0.64dBi, 5:-4.69dBi, 4G B2:0.64dBi, B4:0.15dBi, B5:-4.69dBi, B7:3.18dBi, B38:1.41dBi, B40:2.02dBi; B41:3.18dBi		
Device Operating Configurations:			
Modulation Mode:	**GSM:**GMSK,8PSK;**WCDMA**:QPSK,16QAM; **LTE**:QPSK,16QAM; **WIFI**:DSSS,OFDM;**BT**: GFSK, π/4DQPSK,8DPSK		
Device Class:	B		
GPRS Multi-slots Class:	12	EGPRS Multi-slots Class:	12
HSDPA UE Category:	14	HSUPA UE Category:	6
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824-849	824-849
	GSM1900	1850-1910	1850-1910
	WCDMA B2	1850-1910	1850-1910
	WCDMA B5	824-849	824-849
	LTE Band 2	1850-1910	1850-1910
	LTE Band 4	1710-1755	1710-1755
	LTE Band 5	824-849	824-849
	LTE Band 7	2500-2570	2500-2570
	LTE Band 38	2570-2620	2570-2620
	LTE Band 40	2305-2315,2350-2360	2305-2315,2350-2360
	LTE Band 41	2496-2690	2496-2690
	WIFI(2.4GHz)	2412~2462	2412~2462

	WIFI(5GHz)	5180~5825	5180~5825
	BT/BLE	2402~2480	2402~2480
	NFC	13.56MHz	13.56MHz
	GPS	/	1575.42
Battery Information1#:	Model:	BT-99L1	
	Normal Voltage :	DC3.80V	
	Rated capacity :	4000mAh	
	Battery Type :	Rechargeable Li-polymer Battery	
	Manufacturer	Zhuhai Greaton Electronic Technology Co., Ltd.	

2.1.1 DUT Antenna Locations

Please see the Appendix D

2.2 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radio frequency Radiation Exposure Evaluation: Portable Devices
IEEE Std C95.1 – 1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz
IEEE Std 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 447498 D04v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
KDB 248227 D01	SAR Guidance for IEEE 802 11 Wi-Fi SAR v02r02
KDB 941225 D05 v02r05	SAR EVALUATION CONSIDERATIONS FOR LTE DEVICES
KDB 865664 D01 v01r04	SAR Measurement Requirements for 100 MHz to 6 GHz
KDB 865664 D01 v01r02	RF Exposure Compliance Reporting and Documentation Considerations

2.3 RF exposure limits

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

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.)

2.4 Test Location

All tests were performed at:

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

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China. 518057.

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

No tests were sub-contracted.

2.5 Test Facility

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

• A2LA (Certificate No. 3816.01)

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

• VCCI (Member No. 1937)

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

• FCC –Designation Number: CN1336

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

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

• Innovation, Science and Economic Development Canada

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

CAB identifier: CN0006.

IC#: 4620C.

3 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.	

4 SAR Measurements System Configuration

4.1 The SAR Measurement System

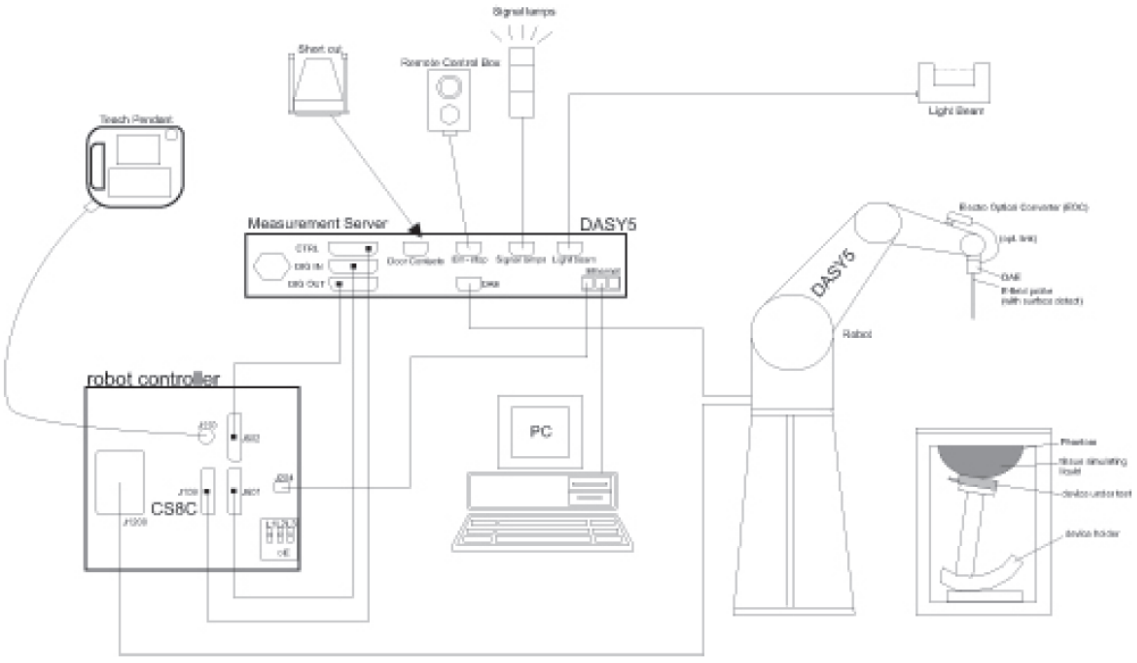
This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

The DASY system for performing compliance tests consists of the following items:
A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software .An arm extension for accommodation the data acquisition electronics (DAE).

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

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

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



F-1. SAR Measurement System Configuration

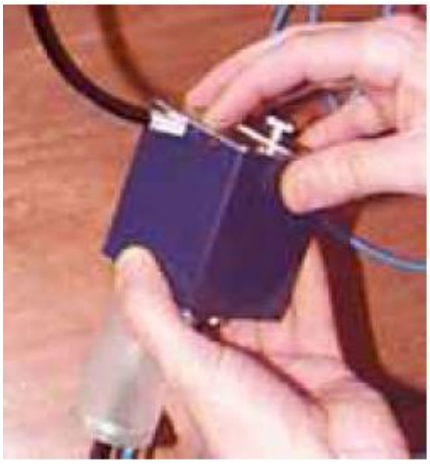
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows system.
- DASY 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 validat the proper functioning of the system.

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

4.3 Data Acquisition Electronics (DAE)

Model	DAE4
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



4.4 SAM Twin Phantom

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

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

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

4.5 ELI Phantom

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

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

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

4.6 Device Holder for Transmitters

F-2. **Device Holder for Transmitters**

- The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centres for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

- The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

4.7 Measurement procedure

4.7.1 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 30mm*30mm*30mm (fine resolution volume scan, zoom scan) was assessed by measuring 5x5x7 points (≤2GHz) and 7x7x7 points (≥2GHz). On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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

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

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

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

Step 4: Power reference measurement (drift)

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

4.7.2 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 ".DAE3". 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.

4.7.3 Data Evaluation by SEMCAD

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

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

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

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

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

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

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

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

cf = crest factor of exciting field (DASY parameter)
dcp i = diode compression point (DASY parameter)

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

E-field probes:

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

H-field probes:

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

With Vi = compensated signal of channel i (i = x, y, z)
Normi = sensor sensitivity of channel I (i = x, y, z)
[mV/(V/m)2] for E-field Probes
ConvF = sensitivity enhancement in solution
aij = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
Ei = electric field strength of channel i in V/m
Hi = magnetic field strength of channel i in A/m

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

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

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

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

With SAR = local specific absorption rate in mW/g
Etot = total field strength in V/m
σ= conductivity in [mho/m] or [Siemens/m]
ε= equivalent tissue density in g/cm3

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

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

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

5 SAR measurement variability and uncertainty

5.1 SAR measurement variability

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

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 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.

5.2 SAR measurement uncertainty

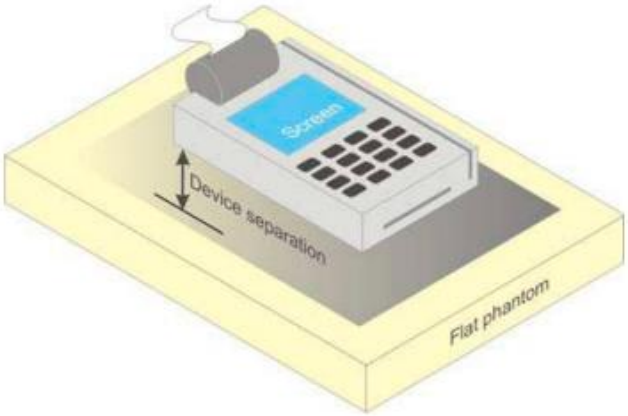
Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6)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

6 Description of Test Position

6.1 Extremity exposure conditions

Devices that are designed or intended for use on extremities, or mainly operated in extremity only exposure conditions, i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR Test Exclusion Thresholds in 8.2 should be applied to determine SAR test requirements. When extremity SAR testing is required, a flat phantom must be used if the exposure condition is more conservative than the actual use conditions; otherwise, a KDB inquiry is required to determine the phantom and test requirements. Body SAR compliance is also tested with a flat phantom. For devices with irregular shapes or form factors that do not conform to a flat phantom, and/or unusual operating configurations and exposure conditions, a KDB inquiry is also required to determine the appropriate SAR measurement procedures. Unless it is specified differently in the published RF exposure KDB procedures, when simultaneous transmission applies to extremity exposure, the simultaneous transmission SAR test exclusion provisions should be applied. When simultaneous transmission SAR measurement is required, the enlarged zoom scan and volume scan post-processing procedures in KDB Publication 865664 D01 should be applied.

SAR can test the sides near the antenna, the surface of the device should be tested for SAR compliance with the device touching the phantom. The SAR Exclusion Threshold in KDB 447498 D04 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent device surface is used to determine if SAR testing is required for the adjacent surfaces, with the adjacent surface positioned against the phantom and the surface containing the antenna positioned perpendicular to the phantom.



F-3. **Test positions for hand-held supported devices**

7 SAR System Verification Procedure

7.1 Tissue Simulate Liquid

7.1.1 Recipes for Tissue Simulate Liquid

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

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

HSL5GHz is composed of the following ingredients：

Water：50-65%

Mineral oil：10-30%

Emulsifiers：8-25%

Sodium salt：0-1.5%

MSL5GHz is composed of the following ingredients：

Water：64-78%

Mineral oil：11-18%

Emulsifiers：9-15%

Sodium salt：2-3%

7.1.2 Test Liquids Confirmation

Simulated tissue liquid parameter confirmation

The dielectric parameters were checked prior to assessment using the SPEAG DAK3.5 dielectric probe kit. The dielectric parameters measured are reported in each correspondent section.

IEEE SCC-34/SC-2 P1528 recommended tissue dielectric parameters

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in P1528

Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

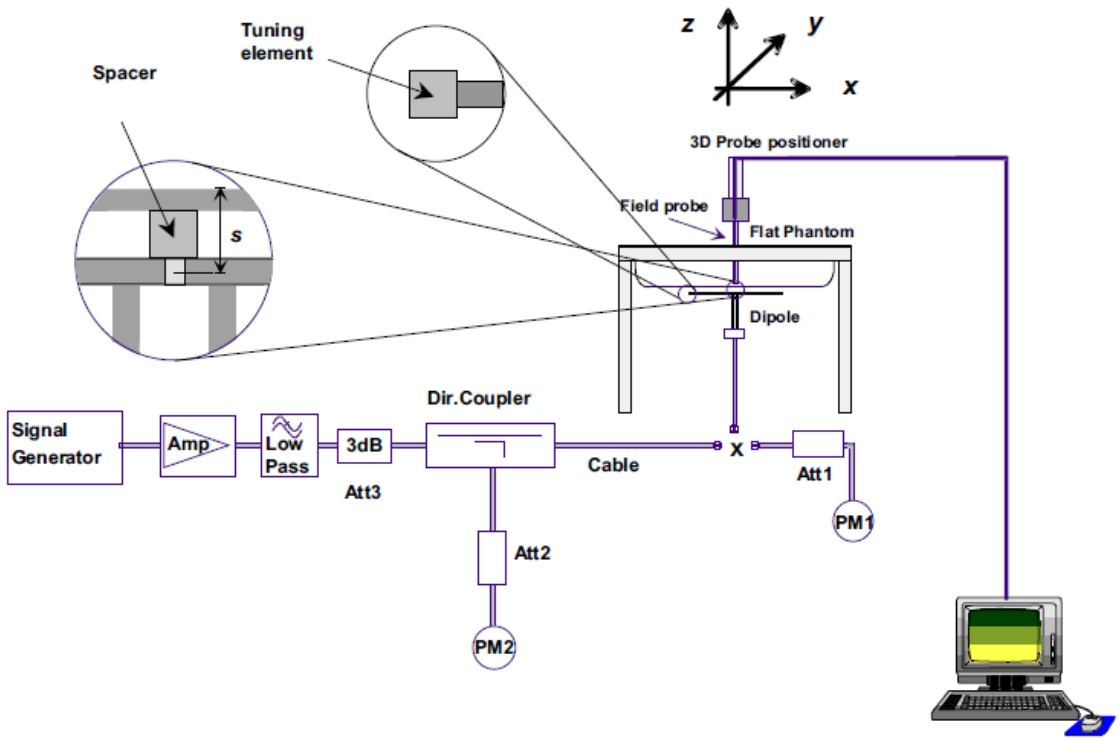
7.1.3 Measurement for Tissue Simulate Liquid

The dielectric properties for this Tissue Simulate Liquids were measured by using the SPEAG DAK3.5 dielectric probe kit in conjunction with Agilent Network Analyzer (300 KHz-8500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was 22±2°C.

Measurement for Tissue Simulate Liquid									
Tissue Type	Measured Frequency（MHz）	Measured Tissue		Target Tissue (±5%)		Deviation (Within ±5%)		Liquid Temp. (℃)	Test Date
		ε_r	σ(S/m)	ε_r	σ(S/m)	ε_r	σ(S/m)		
835 Head	835	41.930	0.907	41.50	0.90	1.04%	0.78%	22.3	2024/6/4
1750 Head	1750	40.394	1.317	40.10	1.37	0.73%	-3.87%	22.3	2024/6/6
1900 Head	1900	40.652	1.393	40.00	1.40	1.63%	-0.50%	22.1	2024/6/12
1900 Head	1900	40.259	1.388	40.00	1.40	0.65%	-0.86%	22.2	2024/6/27
2300 Head	2300	38.702	1.694	39.50	1.67	-2.02%	1.44%	22.4	2024/6/11
2450 Head	2450	39.842	1.806	39.20	1.80	1.64%	0.33%	22.3	2024/6/7
2600 Head	2600	40.207	1.951	39.00	1.96	3.09%	-0.46%	22.2	2024/6/13
2600 Head	2600	37.831	2.011	39.00	1.96	-3.00%	2.60%	22.2	2024/6/25
5250 Head	5250	36.011	4.767	35.90	4.66	0.31%	2.30%	22.4	2024/6/10
5600 Head	5600	35.059	5.157	35.50	5.07	-1.24%	1.72%	22.4	2024/6/10
5750 Head	5750	34.695	5.329	35.40	5.22	-1.99%	2.09%	22.4	2024/6/10

7.2 SAR System Check

The microwave circuit arrangement for system check is sketched in bellow figure. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table. During the tests, the ambient temperature of the laboratory was in the range 22±2°C, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 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-4. **the microwave circuit arrangement used for SAR system verification**

7.2.1 Justification for Extended SAR Dipole Calibrations

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

a) There is no physical damage on the dipole;

b) System check with specific dipole is within 10% of calibrated value;

c) Return-loss is within 10% of calibrated measurement;

d) Impedance is within 5Ω from the previous measurement.

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

7.2.2 Summary System Check Result(s)

SAR System Validation Result(s)											
Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (℃)	Test Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1-g(W/kg)	10-g(W/kg)		
D835V2	Head	2.29	1.49	9.16	5.96	9.53	6.29	-3.88%	-5.25%	22.3	2024/6/4
D1750V2	Head	8.76	4.71	35.04	18.84	36.60	19.30	-4.26%	-2.38%	22.3	2024/6/6
D1900V2	Head	10	5.21	40.00	20.84	39.50	20.60	1.27%	1.17%	22.1	2024/6/12
D1900V2	Head	10.3	5.51	41.20	22.04	39.50	20.60	4.30%	6.99%	22.2	2024/6/27
D2300V2	Head	12.70	6.09	50.80	24.36	48.70	23.30	4.31%	4.55%	22.4	2024/6/11
D2450V2	Head	13.80	6.41	55.20	25.64	52.20	24.30	5.75%	5.51%	22.3	2024/6/7
D2600V2	Head	14.00	6.38	56.00	25.52	57.70	25.80	-2.95%	-1.09%	22.2	2024/6/13
D2600V2	Head	15.00	6.72	60.00	26.88	57.70	25.80	3.99%	4.19%	22.2	2024/6/25
Validation Kit		Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (℃)	Test Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1-g(W/kg)	10-g(W/kg)		
D5GHzV2	Head(5.25GHz)	8.47	2.40	84.70	24.00	77.30	22.10	9.57%	8.60%	22.4	2024/6/8
	Head(5.6GHz)	8.83	2.51	88.30	25.10	81.30	23.10	8.61%	8.66%	22.4	2024/6/8
	Head(5.75GHz)	7.97	2.26	79.70	22.60	77.10	21.30	3.37%	6.10%	22.4	2024/6/9

7.2.3 Detailed System Check Results

Please see the Appendix A

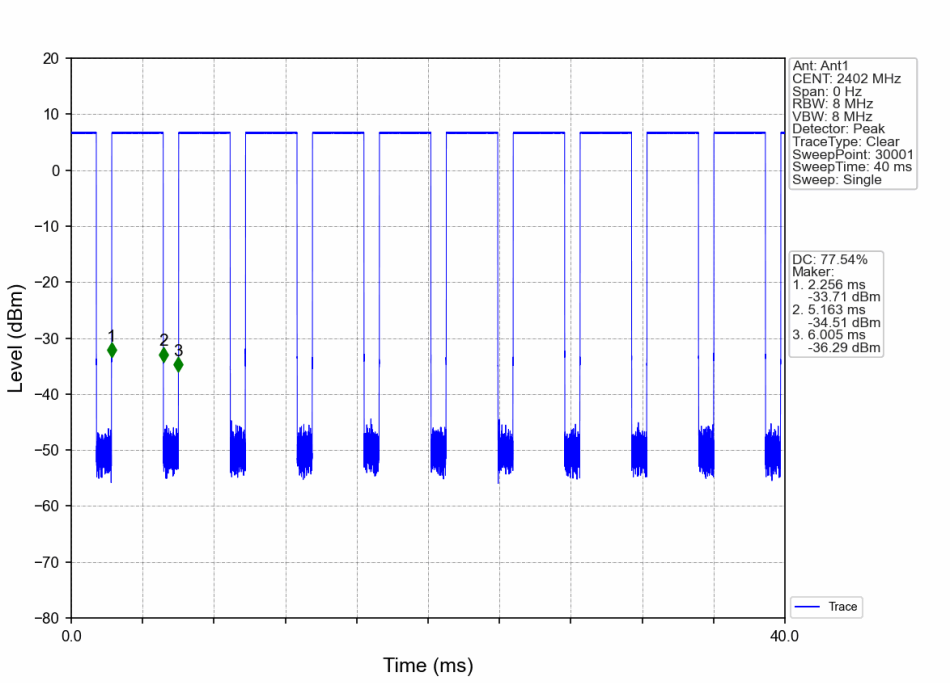
8 Test Configuration

8.1 BluetoothTest 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, 1MHz Bandwidth, frequency hops at 1600 hops/second per the Bluetooth standard. The Radio Frequency Channel Number (RFCN) is allocated to 0, 39 and 78 respectively in the case of 2402~2480 MHz during the test at each test frequency channel, the EUT is operated at the RF continuous emission mode.

8.1.1 Duty cycle

BT duty cycle: 77.54%

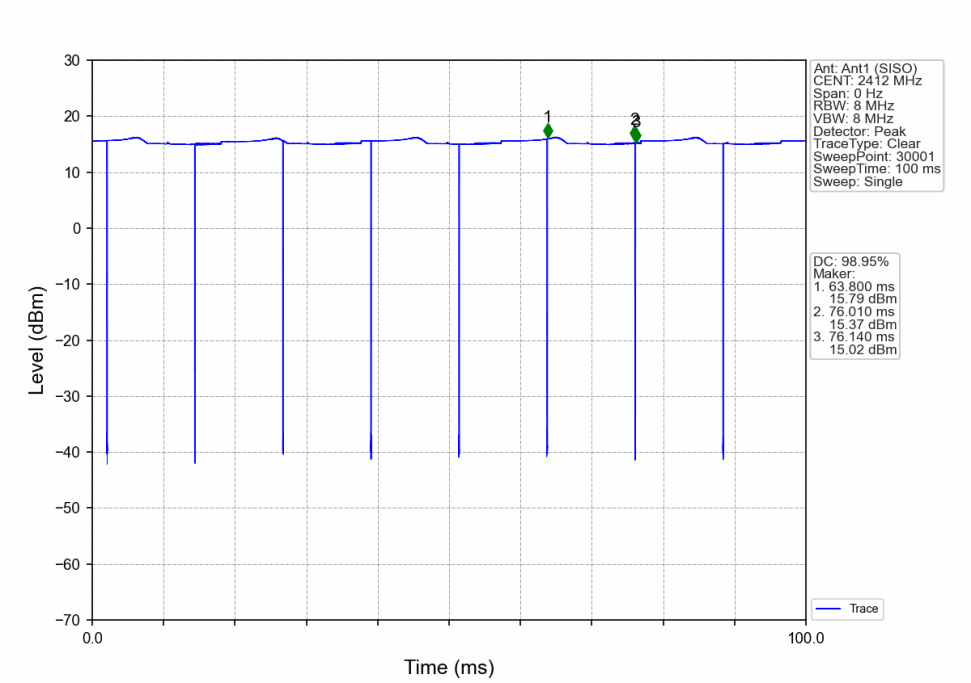


8.2 Wi-Fi Test Configuration

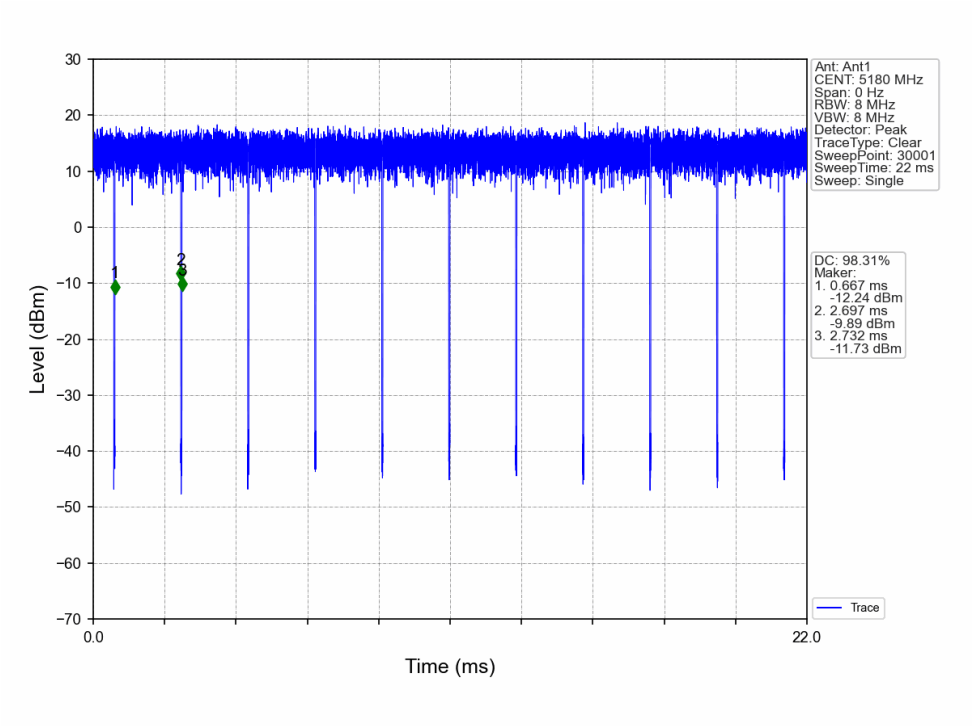
A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement.

8.2.1 Duty cycle

2.4GWLAN duty cycle: 98.95%



5GWLAN duty cycle: 98.31%



8.2.1.1 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.

8.2.1.2 Initial Test Configuration Procedures

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required. SAR test reduction for subsequent highest output test channels is determined according to *reported* SAR of the initial test configuration.

For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

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

8.2.1.3 Subsequent Test Configuration Procedures

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. The

initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

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

2）. When the highest *reported* SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

3）. The number of channels in the initial test configuration and subsequent test configuration can be different due to differences in channel bandwidth. When SAR measurement is required for a subsequent test configuration and the channel bandwidth is smaller than that in the initial test configuration, all channels in the subsequent test configuration that overlap with the larger bandwidth channel tested in the initial test configuration should be used to determine the highest maximum output power channel. This step requires additional power measurement to identify the highest maximum output power channel in the subsequent test configuration to determine SAR test reduction.

a) SAR should first be measured for the channel with highest measured output power in the subsequent test configuration.

b) SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the *reported* SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is > 1.2 W/kg or until all required channels are tested. i) For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration.

4）. SAR measurements for the remaining highest specified maximum output power OFDM transmission mode configurations that have not been tested in the initial test configuration (highest maximum output) or subsequent test configuration(s) (subsequent next highest maximum output power) is determined by recursively applying the subsequent test configuration procedures in this section to the remaining configurations according to the following:

a) replace “subsequent test configuration” with “next subsequent test configuration” (i.e., subsequent next highest specified maximum output power configuration)

b) replace “initial test configuration” with “all tested higher output power configurations”

8.2.1.4 2.4 GHz Wi-Fi 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.

8.2.1.5 5 GHz Wi-Fi 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.

8.2.2 LTE Test Configuration

Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR. The R&S CMW500 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:

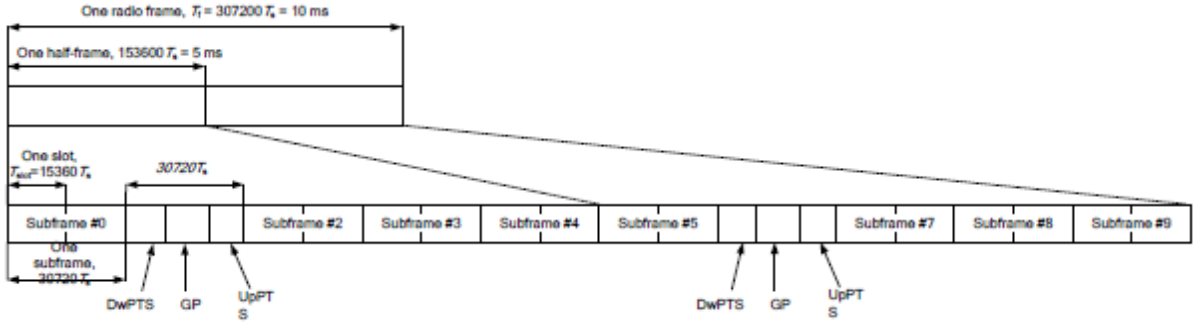


Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

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 (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

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 measured SAR is ≤ 1.0 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 measured SAR of a required test channel is > 1.80 W/kg, SAR is required for all three RB offset configurations for that required test channel.

2) QPSK with 50% RB allocation
For QPSK with 50% RB allocation, SAR is only required measure for the worst case of 1RB allocation used the highest maximum output power.

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 measured SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 1.0 W/kg. Otherwise, SAR is measured for the highest output power channel and if the measured SAR is > 1.80 W/kg, the remaining required test channels must also be tested.

4) Higher order modulations
For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the measured SAR for the QPSK configuration is > 1.80 W/kg.

E) Other channel bandwidth standalone SAR test requirements
For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the measured SAR of a configuration for the largest channel bandwidth is > 1.80 W/kg.

9 Measurement RF Conducted Power

9.1 Conducted Power Of Bluebooth

BT			Average Conducted Power (dBm)	Tune up
Modulation	Channel	Frequency(MHz)		
GFSK	0	2402	7.43	8
	39	2441	7.81	8
	78	2480	7.32	8
π/4DQPSK	0	2402	6.15	7
	39	2441	6.91	7
	78	2480	6.43	7
8DPSK	0	2402	6.33	7
	39	2441	6.96	7
	78	2480	6.78	7

BLE_1Mbps			Average Conducted Power (dBm)	Tune up
Modulation	Channel	Frequency(MHz)		
GFSK	0	2402	3.41	4
	19	2440	3.91	4
	39	2480	3.52	4

9.2 Conducted Power Of 2.4G Wifi

Mode	Channel	Frequency (MHz)	Data Rate(Mbps)	Average Power (dBm) Main Ant	Tune up
802.11b	1	2412	1	12.78	14
	6	2437		13.67	14
	11	2462		13.83	14
802.11g	1	2412	6	11.55	13
	6	2437		12.44	13
	11	2462		12.21	13
802.11n HT20 SISO	1	2412	6.5	11.41	13
	6	2437		12.93	13
	11	2462		12.10	13
802.11n HT40 SISO	1	2412	6.5	12.85	13
	6	2437		12.78	13
	11	2462		12.93	13

9.3 Conducted Power Of 5G Wifi

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11a	U-NII-1	36	5180	6	12.09	13
		42	5200		12.01	13
		48	5240		12.14	13
	U-NII-2A	52	5260		13.34	14
		60	5300		13.34	14
		64	5320		13.54	14
	U-NII-2C	100	5500		12.37	13
		116	5580		12.47	13
		140	5700		11.76	13
	U-NII-3	149	5745		9.83	10.5
		157	5785		8.57	10.5
		165	5825		8.53	10.5
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11n-HT20	U-NII-1	36	5180	MCS0	11.08	12
		42	5200		11.77	12
		48	5240		11.08	12
	U-NII-2A	52	5260		12.28	13
		60	5300		12.22	13
		64	5320		12.41	13
	U-NII-2C	100	5500		11.61	12
		116	5580		11.77	12
		140	5700		11.67	12
	U-NII-3	149	5745		9.88	10
		157	5785		8.45	10
		165	5825		8.32	10
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11n-HT40	U-NII-1	38	5190	MCS0	10.45	11
		46	5230		10.94	11
	U-NII-2A	54	5270		10.83	11
		62	5310		10.81	11
	U-NII-2C	102	5510		10.85	11

		110	5550		10.66	11
		134	5670		10.52	11
	U-NII-3	151	5755		9.34	10
		159	5795		8.94	10
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ac 20M	U-NII-1	36	5180	MCS0	10.99	11
		42	5200		10.54	11
		48	5240		10.94	11
	U-NII-2A	52	5260		12.19	13
		60	5300		12.16	13
		64	5320		12.41	13
	U-NII-2C	100	5500		11.53	12
		116	5580		11.73	12
		140	5700		11.64	12
	U-NII-3	149	5745		9.90	10
		157	5785		8.39	10
		165	5825		8.43	10
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ac 40M	U-NII-1	38	5190	MCS0	10.52	11
		46	5230		10.95	11
	U-NII-2A	54	5270		10.09	11
		62	5310		10.21	11
	U-NII-2C	102	5510		10.88	11
		110	5550		10.07	11
		134	5670		10.51	11
	U-NII-3	151	5755		9.44	10
		159	5795		9.07	10
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ac 80M	U-NII-1	42	5210	MCS0	10.34	11
	U-NII-2A	58	5290		10.21	11
	U-NII-2C	106	5530		10.95	11
		122	5610		10.49	11
	U-NII-3	155	5775		9.42	10

9.4 Conducted Power Of GSM

GSM 850										
Burst Output Power(dBm)					Tune up	Division Factors	Frame-Average Output Power(dBm)			Tune up
Channel		128	190	251			128	190	251	
GPRS/EGPRS (GMSK)	1 TX Slot	33.24	33.54	33.58	34.00	-9.03	24.21	24.51	24.55	24.97
	2 TX Slots	30.73	31.1	30.89	31.50	-6.02	24.71	25.08	24.87	25.48
	3 TX Slots	28.94	29.41	29.09	30.00	-4.26	24.68	25.15	24.83	25.74
	4 TX Slots	26.71	26.76	26.44	27.00	-3.01	23.7	23.75	23.43	23.99
EGPRS(8PSK)	1 TX Slot	25.66	26.07	25.83	26.50	-9.03	16.63	17.04	16.8	17.47
	2 TX Slots	25.5	25.87	26.24	27.00	-6.02	19.48	19.85	20.22	20.98
	3 TX Slots	24.31	24.58	24.43	25.00	-4.26	20.05	20.32	20.17	20.74
	4 TX Slots	23.29	23.64	23.2	24.00	-3.01	20.28	20.63	20.19	20.99
GSM 1900										
Burst Output Power(dBm)					Tune up	Division Factors	Frame-Average Output Power(dBm)			Tune up
Channel		512	661	810			512	661	810	
GPRS/EGPRS (GMSK)	1 TX Slot	26.18	27.08	27.31	28.00	-9.03	17.15	18.05	18.28	18.97
	2 TX Slots	26.04	26.94	27.14	28.00	-6.02	20.02	20.92	21.12	21.98
	3 TX Slots	25.27	26.35	26.32	27.00	-4.26	21.01	22.09	22.06	22.74
	4 TX Slots	22.48	23.01	23.25	24.00	-3.01	19.47	20	20.24	20.99
EGPRS(8PSK)	1 TX Slot	23.05	22.93	23.27	24.00	-9.03	14.02	13.9	14.24	14.97
	2 TX Slots	21.85	21.98	21.09	22.00	-6.02	15.83	15.96	15.07	15.98
	3 TX Slots	19.83	19.64	19.83	20.00	-4.26	15.57	15.38	15.57	15.74
	4 TX Slots	18.8	18.57	18.77	19.00	-3.01	15.79	15.56	15.76	15.99

9.5 Conducted Power Of WCDMA

WCDMA Band II					
Average Conducted Power(dBm)					
Channel		9262	9400	9538	Tune up
WCDMA	12.2kbps RMC	23.69	23.77	23.65	**24.00**
HSDPA	Subtest 1	22.39	22.08	22.06	23.00
	Subtest 2	22.36	22.09	22.10	23.00
	Subtest 3	22.34	22.10	22.03	23.00
	Subtest 4	22.43	22.13	22.14	23.00
HSUPA	Subtest 1	20.93	21.04	20.74	22.00
	Subtest 2	21.61	20.16	20.22	22.00
	Subtest 3	21.34	21.18	21.11	22.00
	Subtest 4	20.07	20.99	21.07	22.00
	Subtest 5	21.62	21.22	21.09	22.00

WCDMA Band V					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	23.17	23.19	23.16	**24.00**
HSDPA	Subtest 1	21.90	21.84	21.78	23.00
	Subtest 2	21.88	21.86	21.80	23.00
	Subtest 3	21.87	21.84	21.80	23.00
	Subtest 4	21.92	21.89	21.85	23.00
HSUPA	Subtest 1	19.72	19.48	19.49	20.00
	Subtest 2	19.94	19.93	19.70	20.00
	Subtest 3	19.71	19.85	19.92	20.00
	Subtest 4	19.94	19.97	19.76	20.00
	Subtest 5	19.92	19.66	19.93	20.00

9.6 Conducted Power Of LTE

LTE Band 2				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 18607	Channel 18900	Channel 19193	Tune up
1.4MHz	QPSK	1	0	23.05	23.15	23	24.00
		1	2	23.12	23.09	23.05	24.00
		1	5	23.02	23.2	23.02	24.00
		3	0	22.85	23.16	23.37	24.00
		3	2	23.25	23.12	23.11	24.00
		3	3	22.96	23.08	23.29	24.00
		6	0	22.01	22.1	22.22	23.00
	16QAM	1	0	22.18	22.18	22.8	23.00
		1	2	22.21	22.34	22.84	23.00
		1	5	22.23	22.24	22.78	23.00
		3	0	22.11	22.17	22.6	23.00
		3	2	22.17	22.31	22.61	23.00
		3	3	22.14	22.28	22.59	23.00
		6	0	21.22	21.03	21.38	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 18615	Channel 18900	Channel 19185	Tune up
3MHz	QPSK	1	0	23.09	23.09	22.96	24.00
		1	7	23.22	23.44	22.99	24.00
		1	14	22.93	23.09	23	24.00
		8	0	22.12	22.09	22.02	23.00
		8	4	22.12	22.12	22.12	23.00
		8	7	22.13	22.09	22.12	23.00
		15	0	22.1	22.17	22.24	23.00
	16QAM	1	0	22.62	22.31	22.38	23.00
		1	7	22.54	22.2	22.53	23.00
		1	14	22.46	22.42	22.49	23.00
		8	0	21.5	21.17	21.26	22.00
		8	4	21.17	21.16	21.41	22.00
		8	7	21.23	21.15	21.4	22.00
		15	0	21.08	21.06	21.14	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 18625	Channel 18900	Channel 19175	Tune up
5MHz	QPSK	1	0	22.92	22.84	22.7	24.00
		1	13	22.99	22.93	23	24.00
		1	24	22.93	22.98	23.04	24.00
		12	0	21.99	22.17	22.05	23.00
		12	6	22.23	22.22	22.09	23.00
		12	13	22.15	22.33	22.16	23.00
		25	0	22.12	22.2	22.08	23.00

		1	0	21.33	22.64	21.95	23.00
		1	13	21.74	22.76	22.29	23.00
		1	24	21.56	22.64	22.28	23.00
	16QAM	12	0	21.14	20.87	20.94	22.00
		12	6	21.2	21.08	21.21	22.00
		12	13	21.21	21.24	21.1	22.00
		25	0	21.03	21.23	21.21	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18650	18900	19150	
10MHz	QPSK	1	0	23.17	23.22	22.77	24.00
		1	25	23.18	22.94	23.16	24.00
		1	49	23.08	22.96	23.23	24.00
		25	0	22.21	22.21	21.83	23.00
		25	13	22.21	22.26	22.02	23.00
		25	25	22.18	22.19	22.11	23.00
		50	0	22.16	22.2	22	23.00
	16QAM	1	0	22.56	22.93	21.75	23.00
		1	25	22.29	22.6	21.94	23.00
		1	49	22.6	22.47	22.32	23.00
		25	0	21.26	21.12	20.78	22.00
		25	13	21.27	21.35	21.14	22.00
		25	25	21.28	21.26	21.23	22.00
		50	0	21.03	21.2	20.9	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18675	18900	19125	
15MHz	QPSK	1	0	23.12	22.85	22.65	24.00
		1	38	23.18	23.2	22.69	24.00
		1	74	23.15	23.03	23.07	24.00
		36	0	22.21	22.28	21.74	23.00
		36	18	22.18	22.27	21.84	23.00
		36	39	22.2	22.24	21.9	23.00
		75	0	22.22	22.21	21.8	23.00
	16QAM	1	0	22.61	22.48	22.43	23.00
		1	38	22.71	22.64	22.28	23.00
		1	74	22.38	22.59	22.49	23.00
		36	0	21.29	20.99	20.69	22.00
		36	18	21.26	21.3	20.83	22.00
		36	39	21.12	21.15	20.9	22.00
		75	0	21.32	21.18	20.76	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18700	18900	19100	
20MHz	QPSK	1	0	23.11	23.02	23.2	24.00
		1	50	23.56	23.58	23.07	24.00
		1	99	23.25	23.41	23.44	24.00

		50	0	22.43	22.54	22.51	23.00
		50	25	22.36	22.44	22.44	23.00
		50	50	22.39	22.32	22.35	23.00
		100	0	22.43	22.56	22.46	23.00
	16QAM	1	0	22.47	22.35	22.65	23.00
		1	50	22.09	22.24	22.36	23.00
		1	99	22.64	22.06	22.15	23.00
		50	0	21.13	21.21	21.21	22.00
		50	25	21.29	21.26	21.16	22.00
		50	50	21.22	21.2	21.3	22.00
		100	0	21.25	21.23	21.39	22.00

LTE Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 19957	Channel 20175	Channel 20393	Tune up
1.4MHz	QPSK	1	0	23.11	23.19	23.01	23.50
		1	2	23.22	23.18	22.92	23.50
		1	5	22.98	23.04	22.85	23.50
		3	0	22.93	22.93	22.87	23.50
		3	2	22.88	23.08	22.95	23.50
		3	3	22.94	22.88	22.84	23.50
		6	0	21.84	22.10	21.99	22.50
	16QAM	1	0	22.09	21.95	22.13	22.50
		1	2	22.10	21.99	22.28	22.50
		1	5	21.99	21.92	22.00	22.50
		3	0	21.77	22.14	21.80	22.50
		3	2	21.82	22.26	22.06	22.50
		3	3	21.79	22.06	22.00	22.00
		6	0	20.77	20.84	20.84	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 19965	Channel 20175	Channel 20385	Tune up
3MHz	QPSK	1	0	22.99	23.16	22.58	23.50
		1	7	22.93	23.24	22.87	23.50
		1	14	22.88	23.02	22.77	23.50
		8	0	22.08	22.19	21.80	22.50
		8	4	21.94	22.22	21.89	22.50
		8	7	22.10	22.10	21.81	22.50
		15	0	22.11	22.24	21.81	22.50
	16QAM	1	0	22.65	22.15	22.34	22.50
		1	7	22.78	22.41	22.70	22.50
		1	14	22.59	21.90	22.24	22.50
		8	0	21.16	21.11	20.98	22.50
		8	4	21.12	20.96	20.71	22.50
		8	7	21.22	21.35	20.73	22.00
		15	0	20.93	21.36	20.53	22.00

Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19975	20175	20375	
5MHz	QPSK	1	0	22.67	22.79	22.55	23.50
		1	13	22.72	23.03	22.69	23.50
		1	24	22.83	22.65	22.60	23.50
		12	0	21.80	22.24	21.79	22.50
		12	6	22.01	22.15	21.83	22.50
		12	13	21.94	22.09	21.91	22.50
		25	0	21.84	22.15	21.86	22.50
	16QAM	1	0	21.46	21.95	22.26	22.50
		1	13	21.63	22.19	22.53	22.50
		1	24	21.45	21.82	22.42	22.50
		12	0	20.86	21.29	20.73	22.50
		12	6	20.97	21.42	20.81	22.50
		12	13	21.00	20.99	20.87	22.00
		25	0	20.83	21.28	20.90	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20000	20175	20350	
10MHz	QPSK	1	0	22.90	23.20	22.70	23.50
		1	25	23.08	23.33	23.29	23.50
		1	49	22.89	22.75	22.89	23.50
		25	0	21.93	22.18	21.87	22.50
		25	13	22.06	22.03	21.92	22.50
		25	25	21.95	22.03	21.86	22.50
		50	0	21.99	22.15	21.78	22.50
	16QAM	1	0	22.34	22.31	21.94	22.50
		1	25	22.24	22.24	22.08	22.50
		1	49	22.46	21.76	22.31	22.50
		25	0	20.89	21.52	20.97	22.50
		25	13	21.14	21.38	20.99	22.50
		25	25	20.93	21.12	21.01	22.00
		50	0	20.95	21.19	20.85	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20025	20175	20325	
15MHz	QPSK	1	0	22.83	23.06	22.12	23.50
		1	38	22.96	22.93	22.80	23.50
		1	74	23.13	22.19	22.79	23.50
		36	0	22.02	22.06	21.87	22.50
		36	18	21.97	22.14	21.82	22.50
		36	39	22.12	22.04	21.65	22.50
		75	0	22.00	22.04	21.76	22.50
	16QAM	1	0	22.34	22.49	21.53	22.50
		1	38	22.46	22.19	22.42	22.50
		1	74	22.74	21.48	22.04	22.50
		36	0	20.92	21.11	20.78	22.50
		36	18	21.06	21.13	20.84	22.50
		36	39	21.09	20.86	20.80	22.00

		75	0	21.08	21.15	20.88	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 20050	Channel 20175	Channel 20300	Tune up
20MHz	QPSK	1	0	22.7	22.97	22.32	23.50
		1	50	23.12	23.13	22.99	23.50
		1	99	22.88	22.17	22.78	23.50
		50	0	21.99	22.21	22.04	22.50
		50	25	21.98	22.06	21.78	22.50
		50	50	21.86	22.19	21.72	22.50
		100	0	21.99	22.04	21.89	22.50
	16QAM	1	0	21.78	22.01	21.54	22.50
		1	50	22.15	22.19	21.85	22.50
		1	99	22.10	22.01	21.96	22.50
		50	0	21.06	21.14	21.04	22.50
		50	25	21.12	21.14	20.89	22.50
		50	50	21.29	20.81	20.80	22.00
		100	0	21.08	21.06	20.93	22.00

LTE Band 5				**Conducted Power(dBm)**			
Bandwidth	Modulation	RB size	RB offset	Channel 20407	Channel 20525	Channel 20643	Tune up
1.4MHz	QPSK	1	0	22.34	22.64	22.64	23.50
		1	2	22.76	22.61	22.71	23.50
		1	5	22.50	22.62	22.68	23.50
		3	0	22.46	22.79	22.64	22.50
		3	2	22.69	22.52	22.65	22.50
		3	3	22.79	22.63	22.58	22.50
		6	0	21.74	21.73	21.66	22.50
	16QAM	1	0	21.68	22.37	21.95	22.50
		1	2	21.55	22.32	21.93	22.50
		1	5	21.35	22.37	21.78	22.50
		3	0	21.92	22.00	21.65	22.50
		3	2	21.85	21.69	21.77	22.50
		3	3	21.72	21.65	21.72	22.00
		6	0	20.49	20.70	20.51	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 20415	Channel 20525	Channel 20635	Tune up
3MHz	QPSK	1	0	22.49	22.59	22.47	23.50
		1	7	22.72	22.74	22.65	23.50
		1	14	22.55	22.70	22.54	23.50
		8	0	21.69	21.75	21.57	22.50
		8	4	21.78	21.64	21.68	22.50
		8	7	21.77	21.68	21.63	22.50
		15	0	21.89	21.75	21.53	22.50
	16QAM	1	0	21.98	21.76	21.98	22.50
		1	7	22.25	21.50	22.27	22.50

		1	14	21.92	21.56	22.02	22.50
		8	0	20.86	20.70	20.50	22.50
		8	4	20.88	20.69	20.61	22.50
		8	7	21.17	20.73	20.57	22.00
		15	0	20.81	20.72	20.53	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 20425	Channel 20525	Channel 20625	Tune up
5MHz	QPSK	1	0	22.25	22.34	22.27	23.50
		1	13	22.41	22.58	22.56	23.50
		1	24	22.56	22.45	22.29	23.50
		12	0	21.76	21.71	21.68	22.50
		12	6	21.72	21.69	21.62	22.50
		12	13	21.72	21.69	21.70	22.50
		25	0	21.70	21.70	21.61	22.50
	16QAM	1	0	20.75	21.55	22.07	22.50
		1	13	20.81	21.54	22.38	22.50
		1	24	21.10	21.57	22.07	22.50
		12	0	20.80	20.77	20.60	22.50
		12	6	20.75	20.85	20.59	22.50
		12	13	20.66	20.58	20.57	22.00
		25	0	20.88	20.74	20.62	22.00
Bandwidth	Modulation	RB size	RB offset	Channel 20450	Channel 20525	Channel 20600	Tune up
10MHz	QPSK	1	0	22.56	22.69	22.78	23.50
		1	25	22.63	22.83	23.06	23.50
		1	49	22.55	22.74	22.5	23.50
		25	0	21.81	21.76	21.77	22.50
		25	13	21.76	21.74	21.7	22.50
		25	25	21.76	21.76	21.7	22.50
		50	0	21.74	21.72	21.71	22.50
	16QAM	1	0	22.13	21.63	22.20	22.50
		1	25	22.21	21.59	22.13	22.50
		1	49	21.38	21.49	22.04	22.50
		25	0	20.89	21.00	20.93	22.50
		25	13	20.86	20.99	20.93	22.50
		25	25	20.78	21.00	20.81	22.00
		50	0	20.72	20.72	20.65	22.00

LTE Band 7				**Conducted Power(dBm)**			
Bandwidth	Modulation	RB size	RB offset	Channel 20775	Channel 21100	Channel 21425	Tune up
5MHz	QPSK	1	0	19.25	19.09	18.97	20.00
		1	13	19.07	19.38	19.17	20.00
		1	24	19.10	19.32	18.21	20.00
		12	0	18.21	18.57	18.12	19.00
		12	6	18.11	18.61	18.33	19.00

		12	13	18.05	18.63	18.28	19.00
		25	0	18.12	18.53	18.23	19.00
	16QAM	1	0	18.22	18.92	17.84	19.00
		1	13	18.26	18.85	18.01	19.00
		1	24	18.01	18.92	17.44	19.00
		12	0	17.24	17.61	17.19	18.00
		12	6	17.39	17.51	17.22	18.00
		12	13	17.24	17.46	17.29	18.00
		25	0	17.24	17.47	17.17	18.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20800	21100	21400	
10MHz	QPSK	1	0	19.31	19.43	19.30	20.00
		1	25	19.25	19.89	19.05	20.00
		1	49	18.97	19.53	18.21	20.00
		25	0	18.21	18.52	18.32	19.00
		25	13	18.15	18.63	18.32	19.00
		25	25	18.08	18.62	18.30	19.00
		50	0	18.10	18.74	18.21	19.00
	16QAM	1	0	18.95	18.44	18.81	19.00
		1	25	19.00	18.67	18.63	19.00
		1	49	18.25	18.52	17.65	19.00
		25	0	17.46	17.71	17.50	18.00
		25	13	17.27	17.96	17.45	18.00
		25	25	17.05	17.73	17.10	18.00
		50	0	17.22	17.70	17.23	18.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20825	21100	21375	
15MHz	QPSK	1	0	19.23	19.47	19.13	20.00
		1	38	18.88	19.57	19.46	20.00
		1	74	18.84	19.17	18.07	20.00
		36	0	18.15	18.52	18.38	19.00
		36	18	18.01	18.67	18.41	19.00
		36	39	17.93	18.57	18.16	19.00
		75	0	18.00	18.52	18.34	19.00
	16QAM	1	0	18.75	18.65	18.89	19.00
		1	38	18.81	18.89	18.90	19.00
		1	74	18.23	18.53	17.59	19.00
		36	0	17.23	17.62	17.25	18.00
		36	18	17.15	17.75	17.31	18.00
		36	39	16.94	17.52	17.06	18.00
		75	0	17.11	17.50	17.49	18.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20850	21100	21350	
20MHz	QPSK	1	0	19.61	19.5	18.42	20.00
		1	50	19.63	19.76	19.89	20.00
		1	99	18.88	18.55	18.48	20.00
		50	0	18.46	18.74	18.48	19.00

		50	25	18.53	18.78	18.52	19.00
		50	50	18.33	18.71	18.42	19.00
		100	0	17.97	18.64	18.33	19.00
	16QAM	1	0	18.69	18.58	17.53	19.00
		1	50	18.55	18.72	18.56	19.00
		1	99	18.35	18.10	17.02	19.00
		50	0	17.25	17.46	17.37	18.00
		50	25	17.09	17.69	17.47	18.00
		50	50	16.94	17.57	17.43	18.00
		100	0	17.02	17.70	17.36	18.00

LTE Band 38				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				37775	38000	38225	
5MHz	QPSK	1	0	21.95	21.91	22.07	23.00
		1	13	21.96	21.92	22.37	23.00
		1	24	21.87	21.88	22.04	23.00
		12	0	21.16	21.06	21.18	22.00
		12	6	21.08	21.20	20.98	22.00
		12	13	21.16	21.19	20.97	22.00
		25	0	21.09	21.08	21.18	22.00
	16QAM	1	0	21.47	20.85	21.36	22.00
		1	13	21.82	20.92	21.21	22.00
		1	24	21.43	20.85	21.05	22.00
		12	0	19.87	20.04	20.17	21.00
		12	6	19.98	20.05	20.02	21.00
		12	13	20.02	20.22	20.28	21.00
		25	0	20.11	20.04	20.34	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				37800	38000	38200	
10MHz	QPSK	1	0	21.98	21.91	22.57	23.00
		1	25	22.35	22.29	22.24	23.00
		1	49	22.04	22.03	21.94	23.00
		25	0	21.11	21.07	21.37	22.00
		25	13	21.24	21.20	21.35	22.00
		25	25	21.17	21.18	21.23	22.00
		50	0	21.19	21.23	21.25	22.00
	16QAM	1	0	20.83	21.76	22.04	22.00
		1	25	21.08	21.57	21.95	22.00
		1	49	20.83	21.73	21.63	22.00
		25	0	20.34	20.49	20.37	21.00
		25	13	20.05	20.55	20.20	21.00
		25	25	20.07	20.33	20.15	21.00
		50	0	20.08	20.17	20.30	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				37825	38000	38175	

15MHz	QPSK	1	0	21.95	21.82	22.52	23.00
		1	38	21.91	22.11	22.30	23.00
		1	74	21.97	22.08	22.08	23.00
		36	0	21.30	21.06	21.45	22.00
		36	18	21.10	21.17	21.42	22.00
		36	39	21.13	21.23	21.09	22.00
		75	0	21.09	21.17	21.21	22.00
	16QAM	1	0	20.58	21.35	21.83	22.00
		1	38	20.71	21.52	21.69	22.00
		1	74	20.84	21.23	21.60	22.00
		36	0	20.26	20.21	20.50	21.00
		36	18	20.04	20.19	20.27	21.00
		36	39	20.18	20.12	20.18	21.00
		75	0	20.20	20.13	20.16	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				37850	38000	38150	
20MHz	QPSK	1	0	22.29	22.18	22.59	23.00
		1	50	22.73	22.75	22.82	23.00
		1	99	22.5	22.44	21.91	23.00
		50	0	21.37	21.39	21.62	22.00
		50	25	21.39	21.4	21.67	22.00
		50	50	21.37	21.29	21.51	22.00
		100	0	21.33	21.34	21.63	22.00
	16QAM	1	0	21.62	21.65	21.08	22.00
		1	50	21.75	21.86	21.46	22.00
		1	99	20.89	21.76	20.71	22.00
		50	0	20.19	20.28	20.33	21.00
		50	25	20.17	20.26	20.54	21.00
		50	50	20.35	20.32	20.32	21.00
		100	0	20.22	20.30	20.57	21.00

LTE FDD Band 40a				**Conducted Power(dBm)**			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				38725	38750	38785	
5MHz	QPSK	1	0	21.46	21.48	21.64	22.50
		1	13	21.88	21.69	21.72	22.50
		1	24	21.43	21.35	21.73	22.50
		12	0	20.50	20.76	20.89	21.50
		12	6	21.08	20.67	20.79	21.50
		12	13	20.69	20.70	20.89	21.50
		25	0	20.54	20.51	20.52	21.50
	16QAM	1	0	20.56	20.70	21.33	21.50
		1	13	20.87	20.94	20.78	21.50
		1	24	20.75	21.27	20.45	21.50
		12	0	19.60	19.56	19.76	20.50
		12	6	19.89	19.65	19.85	20.50

		12	13	19.54	19.73	19.70	20.50
		25	0	19.87	19.78	19.60	20.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				\	38750	\	
10MHz	QPSK	1	0	\	21.88	\	22.50
		1	25	\	21.79	\	22.50
		1	49	\	21.37	\	22.50
		25	0	\	20.61	\	21.50
		25	13	\	20.81	\	21.50
		25	25	\	21.14	\	21.50
		50	0	\	20.78	\	21.50
	16QAM	1	0	\	21.15	\	21.50
		1	25	\	21.40	\	21.50
		1	49	\	20.53	\	21.50
		25	0	\	19.91	\	20.50
		25	13	\	19.80	\	20.50
		25	25	\	19.69	\	20.50
		50	0	\	19.80	\	20.50

LTE FDD Band 40b				**Conducted Power(dBm)**			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				39175	39200	39225	
5MHz	QPSK	1	0	21.87	21.87	21.90	
		1	13	21.95	21.86	21.95	
		1	24	21.83	21.87	21.72	
		12	0	20.96	20.92	20.87	
		12	6	20.92	21.26	21.22	
		12	13	21.13	21.44	21.43	
		25	0	20.91	21.20	21.13	
	16QAM	1	0	21.15	21.50	20.56	
		1	13	21.40	21.16	21.55	
		1	24	20.82	20.68	21.22	
		12	0	19.83	20.03	20.06	
		12	6	19.92	20.63	20.24	
		12	13	20.29	20.23	20.38	
		25	0	20.01	20.45	20.30	
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				\	39200	\	
10MHz	QPSK	1	0	\	21.73	\	22.50
		1	25	\	21.94	\	22.50
		1	49	\	21.93	\	22.50
		25	0	\	21.32	\	21.50
		25	13	\	21.28	\	21.50
		25	25	\	21.13	\	21.50
		50	0	\	21.19	\	21.50
	16QAM	1	0	\	20.80	\	21.50

		1	25	\	21.56	\	21.50
		1	49	\	21.76	\	21.50
		25	0	\	20.30	\	20.50
		25	13	\	20.18	\	20.50
		25	25	\	20.37	\	20.50
		50	0	\	20.06	\	20.50

LTE Band 41				Conducted Power(dBm)					Tune up
Bandwidth	Modulation	RB size	RB offset	Channel 39675	Channel 40620	Channel 40147	Channel 41092	Channel 41565	
5MHz	QPSK	1	0	19.53	19.72	19.68	19.53	19.89	21.00
		1	13	19.56	19.99	19.82	19.9	19.91	21.00
		1	24	19.47	19.81	19.87	19.65	19.83	20.00
		12	0	18.71	19.09	19.09	19.18	19.29	20.00
		12	6	18.63	19.06	19.23	18.97	19.34	20.00
		12	13	18.65	19.16	19.14	19.22	19.23	20.00
		25	0	18.67	19.11	19.08	19.06	19.4	20.00
	16QAM	1	0	18.34	18.68	18.68	18.79	19	20.00
		1	13	18.62	19.75	19.88	19.69	19.29	20.00
		1	24	18.55	19.71	19.9	19.54	18.96	20.00
		12	0	17.44	17.97	17.99	17.93	18.32	19.00
		12	6	17.3	17.87	17.83	17.85	18.31	19.00
		12	13	17.32	18.1	17.96	18.15	18.29	19.00
		25	0	17.54	18.12	17.94	18.17	18.3	19.00
Bandwidth	Modulation	RB size	RB offset	Channel 39700	Channel 40620	Channel 40160	Channel 41080	Channel 41540	Tune up
10MHz	QPSK	1	0	19.44	20.08	20	19.97	20.26	21.00
		1	25	19.3	20.28	20.12	20.05	20.14	21.00
		1	49	19.3	19.95	19.85	19.99	19.91	20.00
		25	0	18.68	19.07	19.22	18.91	19.34	20.00
		25	13	18.54	19.11	19.11	19.04	19.37	20.00
		25	25	18.33	19.16	19.11	18.96	19.21	20.00
		50	0	18.52	19.11	19.28	19.24	19.27	20.00
	16QAM	1	0	18.63	19.12	19.02	19.18	19.27	20.00
		1	25	18.46	19.59	19.78	19.7	19.16	20.00
		1	49	18.06	19.51	19.52	19.56	19.43	20.00
		25	0	17.79	18.39	18.57	18.43	18.37	19.00
		25	13	17.62	18.48	18.25	18.49	18.4	19.00
		25	25	17.63	18.33	18.57	18.47	18.27	19.00
		50	0	17.6	18.18	18.24	18.21	18.33	19.00
Bandwidth	Modulation	RB size	RB offset	Channel 39725	Channel 40620	Channel 40172	Channel 41067	Channel 41515	Tune up
15MHz	QPSK	1	0	19.48	20.31	20.27	20.06	20.18	21.00
		1	38	19.13	19.8	19.69	19.92	20.12	21.00
		1	74	19.04	19.88	19.89	19.9	19.92	20.00
		36	0	18.43	19.03	18.95	18.89	19.56	20.00

		36	18	18.47	18.96	19.08	19.01	19.35	20.00
		36	39	18.29	19.11	19.2	19.14	19.35	20.00
		75	0	18.38	19.08	19.25	19.11	19.24	20.00
	16QAM	1	0	18.09	19.31	19.05	19.21	19.31	20.00
		1	38	18.14	18.85	18.86	18.81	19.92	20.00
		1	74	17.75	19.14	19.32	19.02	19.65	20.00
		36	0	17.45	17.99	18.22	17.89	18.43	19.00
		36	18	17.48	18.16	18.03	18.13	18.4	19.00
		36	39	17.12	18.02	17.98	18.24	18.38	19.00
		75	0	17.42	18.13	18.27	18.29	18.39	19.00
Bandwidth	Modulation	RB size	RB offset	Channel 39750	Channel 40620	Channel 40185	Channel 41055	Channel 41490	Tune up
20MHz	QPSK	1	0	19.45	19.73	19.6	20	20.56	21.00
		1	50	19.45	20.38	20.4	20.45	20.22	21.00
		1	99	19.07	19.88	19.97	19.99	20.03	20.00
		50	0	18.46	19.08	19.06	19.23	19.46	20.00
		50	25	18.67	19.09	19.17	18.85	19.23	20.00
		50	50	18.24	19.1	19.16	19.14	19.29	20.00
		100	0	18.23	19.03	19.2	19.21	19.35	20.00
	16QAM	1	0	19.03	19.55	19.61	19.48	19.27	20.00
		1	50	19.06	19.37	19.4	19.34	19.32	20.00
		1	99	18.49	19.33	19.26	19.39	19.32	20.00
		50	0	17.45	18.16	17.97	18.06	18.68	19.00
		50	25	17.54	18.16	18.21	18.28	18.39	19.00
		50	50	17.19	18.1	17.99	17.94	18.44	19.00
		100	0	17.33	18.24	18.16	18.14	18.13	19.00

9.7 Measurement of SAR Data

Note:

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

2) Per FCC KDB Publication 447498 D04, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg (2.0W/kg for 10g) then testing at the other channels is not required for such test configuration(s).

3) "*" is repeated measurement.

9.7.1 SAR Result Of GSM850

GSM850 SAR Test Record										
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data(Separate 10mm)										
Front side	GPRS 3TS	190/836.6	1:2.77	0.046	0.09	29.41	30.00	1.146	0.053	22.3
Back side	GPRS 3TS	190/836.6	1:2.77	0.265	0.01	29.41	30.00	1.146	**0.304**	22.3
Left side	GPRS 3TS	190/836.6	1:2.77	0.093	0.04	29.41	30.00	1.146	0.107	22.3
Right side	GPRS 3TS	190/836.6	1:2.77	0.045	0.06	29.41	30.00	1.146	0.052	22.3
Top side	GPRS 3TS	190/836.6	1:2.77	0.001	0.01	29.41	30.00	1.146	0.001	22.3
Bottom side	GPRS 3TS	190/836.6	1:2.77	0.100	0.09	29.41	30.00	1.146	0.115	22.3

9.7.2 SAR Result Of GSM1900

GSM1900 SAR Test Record										
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data(Separate 10mm)										
Front side	GPRS 3TS	661/1880	1:2.77	0.079	0.09	26.35	27.00	1.161	0.092	22.2
Back side	GPRS 3TS	661/1880	1:2.77	1.220	0.06	26.35	27.00	1.161	**1.417**	22.2
Back side-Repeated	GPRS 3TS	661/1880	1:2.77	1.130	0.09	26.35	27.00	1.161	1.312	22.2
Left side	GPRS 3TS	661/1880	1:2.77	0.066	0.06	26.35	27.00	1.161	0.076	22.2
Right side	GPRS 3TS	661/1880	1:2.77	0.198	0.04	26.35	27.00	1.161	0.230	22.2
Top side	GPRS 3TS	661/1880	1:2.77	0.013	0.06	26.35	27.00	1.161	0.015	22.2
Bottom side	GPRS 3TS	661/1880	1:2.77	0.433	0.04	26.35	27.00	1.161	0.503	22.2
Back side	GPRS 3TS	512/1850.2	1:2.77	0.818	0.19	25.27	27.00	1.489	1.218	22.2
Back side	GPRS 3TS	810/1909.8	1:2.77	0.800	0.02	26.32	27.00	1.169	0.936	22.2

Test Position	Channel/ Frequency	Measured SAR (1g)	1st Repeated	Ratio	2nd Repeated	3rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back side	661/1880	1.22	1.13	1.079646018	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).						
3) A third repeated measurement was preformed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						
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.						

9.7.3 SAR Result Of WCMDA Ⅱ

WB2 SAR Test Record										
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.087	0.09	23.77	24.00	1.054	0.092	22.1
Back side	RMC	9400/1880	1:1	0.999	0.04	23.77	24.00	1.054	1.053	22.1
Left side	RMC	9400/1880	1:1	0.090	-0.01	23.77	24.00	1.054	0.095	22.1
Right side	RMC	9400/1880	1:1	0.116	0.02	23.77	24.00	1.054	0.122	22.1
Top side	RMC	9400/1880	1:1	0.009	0.06	23.77	24.00	1.054	0.009	22.1
Bottom side	RMC	9400/1880	1:1	0.331	0.07	23.77	24.00	1.054	0.349	22.1
Back side	RMC	9262/1852.4	1:1	1.190	0.03	23.69	24.00	1.074	**1.278**	22.1
Back side	RMC	9538/1907.6	1:1	0.912	0.02	23.65	24.00	1.084	0.989	22.1

9.7.4 SAR Result Of WCMDA V

WB5 SAR Test Record										
Test position	**Test mode**	**Test ch./Freq.**	**Duty Cycle**	**SAR (W/kg) 1-g**	**Power drift (dB)**	**Conducted Power(dBm)**	**Tune up Limit(dBm)**	**Scaled factor**	**Scaled SAR 1-g (W/kg)**	**Liquid Temp.(℃)**
Body Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.071	-0.13	23.19	24.00	1.205	0.086	22.3
Back side	RMC	4182/836.4	1:1	0.341	0.11	23.19	24.00	1.205	**0.411**	22.3
Left side	RMC	4182/836.4	1:1	0.125	-0.06	23.19	24.00	1.205	0.151	22.3
Right side	RMC	4182/836.4	1:1	0.068	0.01	23.19	24.00	1.205	0.082	22.3
Top side	RMC	4182/836.4	1:1	0.006	-0.08	23.19	24.00	1.205	0.007	22.3
Bottom side	RMC	4182/836.4	1:1	0.108	0.04	23.19	24.00	1.205	0.130	22.3

9.7.5 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	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data (Separate 10mm 1RB)											
Front side	20	QPSK 1_50	18900/1880	1:1	0.075	-0.04	23.58	24.00	1.102	0.083	22.1
Back side	20	QPSK 1_50	18900/1880	1:1	0.946	-0.19	23.58	24.00	1.102	1.042	22.1
Left side	20	QPSK 1_50	18900/1880	1:1	0.096	0.13	23.58	24.00	1.102	0.106	22.1
Right side	20	QPSK 1_50	18900/1880	1:1	0.095	0.18	23.58	24.00	1.102	0.105	22.1
Top side	20	QPSK 1_50	18900/1880	1:1	0.009	0.05	23.58	24.00	1.102	0.010	22.1
Bottom side	20	QPSK 1_50	18900/1880	1:1	0.319	-0.12	23.58	24.00	1.102	0.351	22.1
Back side	20	QPSK 1_50	18700/1860	1:1	1.230	0.17	23.56	24.00	1.107	**1.361**	22.1
Back side-Repeated	20	QPSK 1_50	18700/1860	1:1	1.090	-0.09	23.56	24.00	1.107	1.206	22.1
Back side	20	QPSK 1_99	19100/1900	1:1	0.940	-0.04	23.44	24.00	1.138	1.069	22.1
Body Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	18900/1880	1:1	0.058	0.09	22.54	23.00	1.112	0.064	22.1
Back side	20	QPSK 50_0	18900/1880	1:1	0.842	-0.08	22.54	23.00	1.112	0.936	22.1
Left side	20	QPSK 50_0	18900/1880	1:1	0.071	0.05	22.54	23.00	1.112	0.079	22.1
Right side	20	QPSK 50_0	18900/1880	1:1	0.082	0.10	22.54	23.00	1.112	0.091	22.1
Top side	20	QPSK 50_0	18900/1880	1:1	0.006	-0.13	22.54	23.00	1.112	0.007	22.1
Bottom side	20	QPSK 50_0	18900/1880	1:1	0.275	0.10	22.54	23.00	1.112	0.306	22.1
Back side	20	QPSK 50_0	18700/1860	1:1	0.910	-0.09	22.43	23.00	1.140	1.038	22.1
Back side	20	QPSK 50_0	19100/1900	1:1	0.670	-0.11	22.51	23.00	1.119	0.750	22.1
Body Test data (Separate 10mm 100%RB)											
Back side	20	QPSK 100_0	18900/1880	1:1	0.857	-0.14	22.56	23.00	1.107	0.948	22.1

9.7.6 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	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data (Separate 10mm 1RB)											
Front side	20	QPSK 1_50	20175/1732.5	1:1	0.129	0.02	23.13	23.50	1.089	0.140	22.3
Back side	20	QPSK 1_50	20175/1732.5	1:1	0.730	-0.07	23.13	23.50	1.089	0.795	22.3
Left side	20	QPSK 1_50	20175/1732.5	1:1	0.106	-0.05	23.13	23.50	1.089	0.115	22.3
Right side	20	QPSK 1_50	20175/1732.5	1:1	0.250	-0.01	23.13	23.50	1.089	0.272	22.3
Top side	20	QPSK 1_50	20175/1732.5	1:1	0.086	-0.05	23.13	23.50	1.089	0.094	22.3
Bottom side	20	QPSK 1_50	20175/1732.5	1:1	0.305	-0.02	23.13	23.50	1.089	0.332	22.3
Back side	20	QPSK 1_50	20050/1720	1:1	0.879	0.05	23.12	23.50	1.091	**0.959**	22.3
Back side-Repeated	20	QPSK 1_50	20050/1720	1:1	0.834	-0.01	23.12	23.50	1.091	0.910	22.3
Back side	20	QPSK 1_50	20300/1745	1:1	0.827	0.10	22.99	23.50	1.125	0.930	22.3
Body Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	20175/1732.5	1:1	0.131	0.17	22.21	22.50	1.069	0.140	22.3
Back side	20	QPSK 50_0	20175/1732.5	1:1	0.692	0.02	22.21	22.50	1.069	0.740	22.3
Left side	20	QPSK 50_0	20175/1732.5	1:1	0.104	-0.10	22.21	22.50	1.069	0.111	22.3
Right side	20	QPSK 50_0	20175/1732.5	1:1	0.255	-0.11	22.21	22.50	1.069	0.273	22.3
Top side	20	QPSK 50_0	20175/1732.5	1:1	0.077	-0.14	22.21	22.50	1.069	0.082	22.3
Bottom side	20	QPSK 50_0	20175/1732.5	1:1	0.298	-0.02	22.21	22.50	1.069	0.319	22.3
Back side	20	QPSK 50_0	20050/1720	1:1	0.766	-0.19	21.99	22.50	1.125	0.861	22.3
Back side	20	QPSK 50_0	20300/1745	1:1	0.799	0.13	22.04	22.50	1.112	0.888	22.3
Body Test data (Separate 10mm 100%RB)											
Back side	20	QPSK 100_0	20175/1732.5	1:1	0.769	-0.01	22.04	22.50	1.112	0.855	22.3

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Back side	20050/1720	0.879	0.834	1.053956835	N/A	N/A

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

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

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

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

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.

9.7.7 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	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data (Separate 10mm 1RB)											
Front side	10	QPSK 1_25	20600/844	1:1	0.063	-0.15	23.06	23.50	1.107	0.070	22.3
Back side	10	QPSK 1_25	20600/844	1:1	0.227	0.03	23.06	23.50	1.107	**0.251**	22.3
Left side	10	QPSK 1_25	20600/844	1:1	0.116	-0.06	23.06	23.50	1.107	0.128	22.3
Right side	10	QPSK 1_25	20600/844	1:1	0.056	0.12	23.06	23.50	1.107	0.062	22.3
Top side	10	QPSK 1_25	20600/844	1:1	0.001	-0.12	23.06	23.50	1.107	0.001	22.3
Bottom side	10	QPSK 1_25	20600/844	1:1	0.115	0.06	23.06	23.50	1.107	0.127	22.3
Body Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25_0	20450/829	1:1	0.048	-0.19	21.81	22.50	1.172	0.056	22.3
Back side	10	QPSK 25_0	20450/829	1:1	0.205	0.05	21.81	22.50	1.172	0.240	22.3
Left side	10	QPSK 25_0	20450/829	1:1	0.097	-0.18	21.81	22.50	1.172	0.114	22.3
Right side	10	QPSK 25_0	20450/829	1:1	0.049	0.02	21.81	22.50	1.172	0.057	22.3
Top side	10	QPSK 25_0	20450/829	1:1	0.001	0.13	21.81	22.50	1.172	0.001	22.3
Bottom side	10	QPSK 25_0	20450/829	1:1	0.079	0.01	21.81	22.50	1.172	0.093	22.3

9.7.8 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	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data (Separate 10mm 1RB)											
Front side	20	QPSK 1_50	21350/2560	1:1	0.056	0.01	19.89	20.00	1.026	0.058	22.2
Back side	20	QPSK 1_50	21350/2560	1:1	1.400	-0.08	19.89	20.00	1.026	**1.436**	22.2
Back side-Repeated	20	QPSK 1_50	21350/2560	1:1	1.320	0.05	19.89	20.00	1.026	1.354	22.2
Left side	20	QPSK 1_50	21350/2560	1:1	0.033	0.10	19.89	20.00	1.026	0.034	22.2
Right side	20	QPSK 1_50	21350/2560	1:1	0.023	0.05	19.89	20.00	1.026	0.023	22.2
Top side	20	QPSK 1_50	21350/2560	1:1	0.009	0.01	19.89	20.00	1.026	0.009	22.2
Bottom side	20	QPSK 1_50	21350/2560	1:1	0.646	0.01	19.89	20.00	1.026	0.663	22.2
Back side	20	QPSK 1_50	20850/2510	1:1	1.050	0.04	19.63	20.00	1.089	1.143	22.2
Back side	20	QPSK 1_50	21100/2535	1:1	1.310	0.04	19.76	20.00	1.057	1.384	22.2
Body Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50_25	21100/2535	1:1	0.055	0.02	18.78	19.00	1.052	0.058	22.2
Back side	20	QPSK 50_25	21100/2535	1:1	1.110	0.01	18.78	19.00	1.052	1.168	22.2
Left side	20	QPSK 50_25	21100/2535	1:1	0.025	0.04	18.78	19.00	1.052	0.026	22.2
Right side	20	QPSK 50_25	21100/2535	1:1	0.025	0.02	18.78	19.00	1.052	0.026	22.2
Top side	20	QPSK 50_25	21100/2535	1:1	0.011	0.03	18.78	19.00	1.052	0.012	22.2
Bottom side	20	QPSK 50_25	21100/2535	1:1	0.609	0.09	18.78	19.00	1.052	0.641	22.2
Back side	20	QPSK 50_25	20850/2510	1:1	0.872	-0.08	18.53	19.00	1.114	0.972	22.2
Back side	20	QPSK 50_25	21350/2560	1:1	1.030	0.04	18.52	19.00	1.117	1.150	22.2
Body Test data (Separate 10mm 100%RB)											
Back side	20	QPSK 100_0	21100/2535	1:1	1.010	0.09	18.64	19.00	1.086	1.097	22.2

Test Position	Channel/ Frequency	Measured SAR (1g)	1st Repeated	Ratio	2nd Repeated	3rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back side	21350/2560	1.4	1.32	1.060606061	N/A	N/A

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

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

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

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

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.

9.7.9 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	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data (Separate 10mm 1RB)											
Front side	20	QPSK 1_50	38150/2610	1:1.58	0.059	-0.11	22.82	23.00	1.042	0.061	22.2
Back side	20	QPSK 1_50	38150/2610	1:1.58	1.160	-0.05	22.82	23.00	1.042	1.209	22.2
Left side	20	QPSK 1_50	38150/2610	1:1.58	0.044	0.11	22.82	23.00	1.042	0.046	22.2
Right side	20	QPSK 1_50	38150/2610	1:1.58	0.001	0.06	22.82	23.00	1.042	0.001	22.2
Top side	20	QPSK 1_50	38150/2610	1:1.58	0.001	-0.14	22.82	23.00	1.042	0.001	22.2
Bottom side	20	QPSK 1_50	38150/2610	1:1.58	0.473	0.12	22.82	23.00	1.042	0.493	22.2
Back side	20	QPSK 1_50	37850/2580	1:1.58	1.140	0.17	22.73	23.00	1.064	1.213	22.2
Back side	20	QPSK 1_50	38000/2595	1:1.58	1.340	0.05	22.75	23.00	1.059	**1.419**	22.2
Body Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50_25	38150/2610	1:1.58	0.052	0.03	21.67	22.00	1.079	0.056	22.2
Back side	20	QPSK 50_25	38150/2610	1:1.58	0.986	-0.02	21.67	22.00	1.079	1.064	22.2
Left side	20	QPSK 50_25	38150/2610	1:1.58	0.001	0.10	21.67	22.00	1.079	0.001	22.2
Right side	20	QPSK 50_25	38150/2610	1:1.58	0.001	0.14	21.67	22.00	1.079	0.001	22.2
Top side	20	QPSK 50_25	38150/2610	1:1.58	0.001	0.18	21.67	22.00	1.079	0.001	22.2
Bottom side	20	QPSK 50_25	38150/2610	1:1.58	0.431	0.04	21.67	22.00	1.079	0.465	22.2
Back side	20	QPSK 50_25	37850/2580	1:1.58	0.972	-0.19	21.39	22.00	1.151	1.119	22.2
Back side	20	QPSK 50_25	38000/2595	1:1.58	1.020	0.04	21.40	22.00	1.148	1.171	22.2
Body Test data (Separate 10mm 100%RB)											
Back side	20	QPSK 100_0	38150/2610	1:1.58	1.150	0.19	21.63	22.00	1.089	1.252	22.2

9.7.10 SAR Result Of LTE Band 40a

LTE Band 40 SAR Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data (Separate 10mm 1RB)											
Front side	10	QPSK 1_0	38750/2310	1:1.58	0.008	0.05	21.88	22.50	1.153	0.009	22.4
Back side	10	QPSK 1_0	38750/2310	1:1.58	0.314	0.07	21.88	22.50	1.153	**0.362**	22.4
Left side	10	QPSK 1_0	38750/2310	1:1.58	0.001	-0.14	21.88	22.50	1.153	0.001	22.4
Right side	10	QPSK 1_0	38750/2310	1:1.58	0.093	0.16	21.88	22.50	1.153	0.107	22.4
Top side	10	QPSK 1_0	38750/2310	1:1.58	0.001	-0.01	21.88	22.50	1.153	0.001	22.4
Bottom side	10	QPSK 1_0	38750/2310	1:1.58	0.168	0.12	21.88	22.50	1.153	0.194	22.4
Body Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25_25	38750/2310	1:1.58	0.001	0.18	21.14	21.50	1.086	0.001	22.4
Back side	10	QPSK 25_25	38750/2310	1:1.58	0.291	0.19	21.14	21.50	1.086	**0.316**	22.4
Left side	10	QPSK 25_25	38750/2310	1:1.58	0.001	0.06	21.14	21.50	1.086	0.001	22.4
Right side	10	QPSK 25_25	38750/2310	1:1.58	0.062	0.04	21.14	21.50	1.086	0.067	22.4
Top side	10	QPSK 25_25	38750/2310	1:1.58	0.001	0.10	21.14	21.50	1.086	0.001	22.4
Bottom side	10	QPSK 25_25	38750/2310	1:1.58	0.138	0.16	21.14	21.50	1.086	0.150	22.4

9.7.11 SAR Result Of LTE Band 40b

LTE Band 40 SAR Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data (Separate 10mm 1RB)											
Front side	10	QPSK 1_25	39200/2355	1:1.58	0.009	-0.01	21.94	22.50	1.138	0.010	22.4
Back side	10	QPSK 1_25	39200/2355	1:1.58	0.359	0.10	21.94	22.50	1.138	**0.408**	22.4
Left side	10	QPSK 1_25	39200/2355	1:1.58	0.001	-0.02	21.94	22.50	1.138	0.001	22.4
Right side	10	QPSK 1_25	39200/2355	1:1.58	0.091	-0.04	21.94	22.50	1.138	0.104	22.4
Top side	10	QPSK 1_25	39200/2355	1:1.58	0.001	0.13	21.94	22.50	1.138	0.001	22.4
Bottom side	10	QPSK 1_25	39200/2355	1:1.58	0.208	0.08	21.94	22.50	1.138	0.237	22.4
Body Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25_0	39200/2355	1:1.58	0.001	0.14	21.32	21.50	1.042	0.001	22.4
Back side	10	QPSK 25_0	39200/2355	1:1.58	0.309	0.04	21.32	21.50	1.042	**0.322**	22.4
Left side	10	QPSK 25_0	39200/2355	1:1.58	0.001	0.13	21.32	21.50	1.042	0.001	22.4
Right side	10	QPSK 25_0	39200/2355	1:1.58	0.067	-0.19	21.32	21.50	1.042	0.070	22.4
Top side	10	QPSK 25_0	39200/2355	1:1.58	0.001	0.13	21.32	21.50	1.042	0.001	22.4
Bottom side	10	QPSK 25_0	39200/2355	1:1.58	0.153	-0.02	21.32	21.50	1.042	0.159	22.4

9.7.12 SAR Result Of LTE Band 41

LTE Band 41 SAR Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(℃)
Body Test data (Separate 10mm 1RB)											
Front side	20	QPSK 1_0	41490/2680	1:1.58	0.036	0.010	20.56	21.00	1.107	0.040	22.2
Back side	20	QPSK 1_0	41490/2680	1:1.58	0.871	0.09	20.56	21.00	1.107	0.964	22.2
Left side	20	QPSK 1_0	41490/2680	1:1.58	0.026	0.02	20.56	21.00	1.107	0.028	22.2
Right side	20	QPSK 1_0	41490/2680	1:1.58	0.007	0.03	20.56	21.00	1.107	0.008	22.2
Top side	20	QPSK 1_0	41490/2680	1:1.58	0.006	0.02	20.56	21.00	1.107	0.007	22.2
Bottom side	20	QPSK 1_0	41490/2680	1:1.58	0.347	0.01	20.56	21.00	1.107	0.384	22.2
Back side	20	QPSK 1_0	39750/2506	1:1.58	0.604	0.02	19.45	21.00	1.429	0.863	22.2
Back side	20	QPSK 1_50	40185/2549.5	1:1.58	1.020	0.04	20.40	21.00	1.148	**1.171**	22.2
Back side	20	QPSK 1_50	40620/2593	1:1.58	0.920	0.07	20.38	21.00	1.153	1.061	22.2
Back side	20	QPSK 1_50	41055/2636.5	1:1.58	0.824	0.01	20.45	21.00	1.135	0.935	22.2
Body Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	41490/2680	1:1.58	0.030	0.02	19.46	20.00	1.132	0.034	22.2
Back side	20	QPSK 50_0	41490/2680	1:1.58	0.706	0.03	19.46	20.00	1.132	0.799	22.2
Left side	20	QPSK 50_0	41490/2680	1:1.58	0.021	0.02	19.46	20.00	1.132	0.024	22.2
Right side	20	QPSK 50_0	41490/2680	1:1.58	0.006	0.03	19.46	20.00	1.132	0.007	22.2
Top side	20	QPSK 50_0	41490/2680	1:1.58	0.003	0.05	19.46	20.00	1.132	0.004	22.2
Bottom side	20	QPSK 50_0	41490/2680	1:1.58	0.275	0.10	19.46	20.00	1.132	0.311	22.2
Back side	20	QPSK 50_25	39750/2506	1:1.58	0.578	-0.03	18.67	20.00	1.358	0.785	22.2
Back side	20	QPSK 50_25	40185/2549.5	1:1.58	0.795	-0.16	19.17	20.00	1.211	0.962	22.2
Back side	20	QPSK 50_50	40620/2593	1:1.58	0.731	0.07	19.10	20.00	1.230	0.899	22.2
Back side	20	QPSK 50_0	41055/2636.5	1:1.58	0.665	0.09	19.23	20.00	1.194	0.794	22.2
Body Test data (Separate 10mm 100%RB)											
Back side	20	QPSK 100_0	41490/2680	1:1.58	0.687	0.08	19.21	19.35	1.033	0.710	22.2

9.7.13 SAR Result Of 2.4G wifi

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	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test Data(Separate 10mm)											
Front side	802.11b	11/2462	98.95%	1.011	0.003	0.16	13.83	14.00	1.040	0.003	22.3
Back side	802.11b	11/2462	98.95%	1.011	0.012	-0.16	13.83	14.00	1.040	0.013	22.3
Left side	802.11b	11/2462	98.95%	1.011	0.001	0.04	13.83	14.00	1.040	0.001	22.3
Right side	802.11b	11/2462	98.95%	1.011	0.039	0.04	13.83	14.00	1.040	**0.041**	22.3
Top side	802.11b	11/2462	98.95%	1.011	0.001	-0.18	13.83	14.00	1.040	0.001	22.3
Bottom side	802.11b	11/2462	98.95%	1.011	0.003	-0.11	13.83	14.00	1.040	0.003	22.3

9.7.14 SAR Result Of 5G wifi

Wi-Fi 5G SAR Test Record											
Ant6 Test Record chain0											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data of U-NII-2A (Separate 10mm)											
Front side	802.11a	64/5320	97.08%	1.030	0.071	-0.05	13.54	14.00	1.112	0.081	22.4
Back side	802.11a	64/5320	97.08%	1.030	0.111	0.13	13.54	14.00	1.112	0.127	22.4
Left side	802.11a	64/5320	97.08%	1.030	0.050	0.07	13.54	14.00	1.112	0.057	22.4
Right side	802.11a	64/5320	97.08%	1.030	0.231	-0.11	13.54	14.00	1.112	**0.265**	22.4
Top side	802.11a	64/5320	97.08%	1.030	0.072	-0.17	13.54	14.00	1.112	0.082	22.4
Bottom side	802.11a	64/5320	97.08%	1.030	0.081	-0.15	13.54	14.00	1.112	0.093	22.4
Body Test data of U-NII-2C (Separate 10mm)											
Front side	802.11a	116/5580	97.08%	1.030	0.068	0.07	12.47	13.00	1.130	0.079	22.4
Back side	802.11a	116/5580	97.08%	1.030	0.071	-0.15	12.47	13.00	1.130	0.083	22.4
Left side	802.11a	116/5580	97.08%	1.030	0.073	0.02	12.47	13.00	1.130	0.085	22.4
Right side	802.11a	116/5580	97.08%	1.030	0.119	-0.03	12.47	13.00	1.130	0.138	22.4
Top side	802.11a	116/5580	97.08%	1.030	0.080	-0.19	12.47	13.00	1.130	0.093	22.4
Bottom side	802.11a	116/5580	97.08%	1.030	0.071	0.00	12.47	13.00	1.130	0.083	22.4
Body Test data of U-NII-3 (Separate 10mm)											
Front side	802.11a	149/5745	97.08%	1.030	0.073	-0.10	9.83	10.5	1.167	0.088	22.4
Back side	802.11a	149/5745	97.08%	1.030	0.100	-0.11	9.83	10.5	1.167	0.120	22.4
Left side	802.11a	149/5745	97.08%	1.030	0.063	0.07	9.83	10.5	1.167	0.076	22.4
Right side	802.11a	149/5745	97.08%	1.030	0.226	-0.03	9.83	10.5	1.167	**0.272**	22.4
Top side	802.11a	149/5745	97.08%	1.030	0.078	0.13	9.83	10.5	1.167	0.094	22.4
Bottom side	802.11a	149/5745	97.08%	1.030	0.094	-0.17	9.83	10.5	1.167	0.113	22.4

9.7.15 SAR Result Of BT

Bluetooth SAR Test Record											
Ant9 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Body Test data (Separate 10mm)											
Front side	DH5	39/2441	77.54%	1.290	0.003	0.02	7.81	8.00	1.045	0.004	22.3
Back side	DH5	39/2441	77.54%	1.290	0.006	0.05	7.81	8.00	1.045	0.009	22.3
Left side	DH5	39/2441	77.54%	1.290	0.003	0.02	7.81	8.00	1.045	0.004	22.3
Right side	DH5	39/2441	77.54%	1.290	0.017	0.08	7.81	8.00	1.045	**0.023**	22.3
Top side	DH5	39/2441	77.54%	1.290	0.001	0.01	7.81	8.00	1.045	0.001	22.3
Bottom side	DH5	39/2441	77.54%	1.290	0.007	0.03	7.81	8.00	1.045	0.010	22.3

9.8 Multiple Transmitter Evaluation

9.8.1 Simultaneous SAR SAR test evaluation

Simultaneous Transmission

NO.	Simultaneous Transmission Configuration	**Body**
1	WWAN + WIFI 2.4GHz	Yes
2	WWAN + WIFI 5GHz	Yes
3	WWAN + BT	Yes
4	WWAN + WIFI 5GHz + BT	Yes

Simultaneous Transmission SAR Summation Scenario for body

Test position		SARmax (W/kg)				Summed SAR			
		Main	WiFi 2.4G	WiFi 5G	BT				
		1	2	3	4	1+2	1+3	1+4	1+3+4
GSM850	Front side	0.053	0.003	0.088	0.004	0.056	0.141	0.057	0.145
	Back side	0.304	0.013	0.127	0.009	0.317	0.431	0.313	0.440
	Left side	0.107	0.001	0.085	0.004	0.108	0.192	0.111	0.196
	Right side	0.052	0.041	0.272	0.023	0.093	0.324	0.075	0.347
	Top side	0.001	0.001	0.094	0.001	0.002	0.095	0.002	0.096
	Bottom side	0.115	0.003	0.113	0.010	0.118	0.228	0.125	0.238
GSM1900	Front side	0.092	0.003	0.088	0.004	0.095	0.180	0.096	0.184
	Back side	1.417	0.013	0.127	0.009	1.430	1.544	1.426	1.553
	Left side	0.076	0.001	0.085	0.004	0.077	0.161	0.080	0.165
	Right side	0.230	0.041	0.272	0.023	0.271	0.502	0.253	0.525
	Top side	0.015	0.001	0.094	0.001	0.016	0.109	0.016	0.110
	Bottom side	0.503	0.003	0.113	0.010	0.506	0.616	0.513	0.626
W B2	Front side	0.092	0.003	0.088	0.004	0.095	0.180	0.096	0.184
	Back side	1.278	0.013	0.127	0.009	1.291	1.405	1.287	1.414
	Left side	0.095	0.001	0.085	0.004	0.096	0.180	0.099	0.184
	Right side	0.122	0.041	0.272	0.023	0.163	0.394	0.145	0.417
	Top side	0.009	0.001	0.094	0.001	0.010	0.103	0.010	0.104
	Bottom side	0.349	0.003	0.113	0.010	0.352	0.462	0.359	0.472
W B5	Front side	0.086	0.003	0.088	0.004	0.089	0.174	0.090	0.178
	Back side	0.411	0.013	0.127	0.009	0.424	0.538	0.420	0.547
	Left side	0.151	0.001	0.085	0.004	0.152	0.236	0.155	0.240
	Right side	0.082	0.041	0.272	0.023	0.123	0.354	0.105	0.377
	Top side	0.007	0.001	0.094	0.001	0.008	0.101	0.008	0.102
	Bottom side	0.130	0.003	0.113	0.010	0.133	0.243	0.140	0.253
LTE B2	Front side	0.083	0.003	0.088	0.004	0.086	0.171	0.087	0.175
	Back side	1.361	0.013	0.127	0.009	1.374	1.488	1.370	1.497
	Left side	0.106	0.001	0.085	0.004	0.107	0.191	0.110	0.195
	Right side	0.105	0.041	0.272	0.023	0.146	0.377	0.128	0.400

	Top side	0.010	0.001	0.094	0.001	0.011	0.104	0.011	0.105
	Bottom side	0.351	0.003	0.113	0.010	0.354	0.464	0.361	0.474
LTE B4	Front side	0.140	0.003	0.088	0.004	0.143	0.228	0.144	0.232
	Back side	0.959	0.013	0.127	0.009	0.972	1.086	0.968	1.095
	Left side	0.115	0.001	0.085	0.004	0.116	0.200	0.119	0.204
	Right side	0.273	0.041	0.272	0.023	0.314	0.545	0.296	0.568
	Top side	0.094	0.001	0.094	0.001	0.095	0.188	0.095	0.189
	Bottom side	0.332	0.003	0.113	0.010	0.335	0.445	0.342	0.455
LTE B5	Front side	0.070	0.003	0.088	0.004	0.073	0.158	0.074	0.162
	Back side	0.251	0.013	0.127	0.009	0.264	0.378	0.260	0.387
	Left side	0.128	0.001	0.085	0.004	0.129	0.213	0.132	0.217
	Right side	0.062	0.041	0.272	0.023	0.103	0.334	0.085	0.357
	Top side	0.001	0.001	0.094	0.001	0.002	0.095	0.002	0.096
	Bottom side	0.127	0.003	0.113	0.010	0.130	0.240	0.137	0.250
LTE B7	Front side	0.058	0.003	0.088	0.004	0.061	0.146	0.062	0.150
	Back side	1.436	0.013	0.127	0.009	1.449	1.563	1.445	1.572
	Left side	0.034	0.001	0.085	0.004	0.035	0.119	0.038	0.123
	Right side	0.026	0.041	0.272	0.023	0.067	0.298	0.049	0.321
	Top side	0.012	0.001	0.094	0.001	0.013	0.106	0.013	0.107
	Bottom side	0.663	0.003	0.113	0.010	0.666	0.776	0.673	0.786
LTE B38	Front side	0.061	0.003	0.088	0.004	0.064	0.149	0.065	0.153
	Back side	1.419	0.013	0.127	0.009	1.432	1.546	1.428	1.555
	Left side	0.046	0.001	0.085	0.004	0.047	0.131	0.050	0.135
	Right side	0.001	0.041	0.272	0.023	0.042	0.273	0.024	0.296
	Top side	0.001	0.001	0.094	0.001	0.002	0.095	0.002	0.096
	Bottom side	0.493	0.003	0.113	0.010	0.496	0.606	0.503	0.616
LTE B40a	Front side	0.009	0.003	0.088	0.004	0.012	0.097	0.013	0.101
	Back side	0.362	0.013	0.127	0.009	0.375	0.489	0.371	0.498
	Left side	0.001	0.001	0.085	0.004	0.002	0.086	0.005	0.090
	Right side	0.107	0.041	0.272	0.023	0.148	0.379	0.130	0.402
	Top side	0.001	0.001	0.094	0.001	0.002	0.095	0.002	0.096
	Bottom side	0.194	0.003	0.113	0.010	0.197	0.307	0.204	0.317
LTE B40b	Front side	0.010	0.003	0.088	0.004	0.013	0.098	0.014	0.102
	Back side	0.408	0.013	0.127	0.009	0.421	0.535	0.417	0.544
	Left side	0.001	0.001	0.085	0.004	0.002	0.086	0.005	0.090
	Right side	0.104	0.041	0.272	0.023	0.145	0.376	0.127	0.399
	Top side	0.001	0.001	0.094	0.001	0.002	0.095	0.002	0.096
	Bottom side	0.237	0.003	0.113	0.010	0.240	0.350	0.247	0.360
LTE B41	Front side	0.040	0.003	0.088	0.004	0.043	0.128	0.044	0.132
	Back side	1.171	0.013	0.127	0.009	1.184	1.298	1.180	1.307
	Left side	0.028	0.001	0.085	0.004	0.029	0.113	0.032	0.117
	Right side	0.008	0.041	0.272	0.023	0.049	0.280	0.031	0.303
	Top side	0.007	0.001	0.094	0.001	0.008	0.101	0.008	0.102
	Bottom side	0.384	0.003	0.113	0.010	0.387	0.497	0.394	0.507

10 Equipment list

Test Platform	SPEAG DASY Professional
Description	SAR Test System (Frequency range 300MHz-6GHz)
Software Reference	DASY52 52.10.4(1527)

Hardware Reference

Equipment		Manufacturer	Model	Inventory no	Calibration Date	Due date of calibration
☒	DAE	SPEAG	DAE4	SZ-WSR-M-028	2024/4/16	2025/4/15
☒	E-Field Probe	SPEAG	EX3DV4	SZ-WSR-M-079	2023/9/11	2024/9/10
☒	Validation Kits	SPEAG	D835V2	SZ-WSR-M-033	2022/11/2	2025/11/1
☒	Validation Kits	SPEAG	D1750V2	SZ-WSR-M-035	2022/06/17	2025/06/16
☒	Validation Kits	SPEAG	D1900V2	SZ-WSR-M-036	2022/11/2	2025/11/1
☒	Validation Kits	SPEAG	D2300V2	SZ-WSR-M-038	2022/6/16	2025/6/15
☒	Validation Kits	SPEAG	D2450V2	SZ-WSR-M-039	2022/11/02	2025/11/01
☒	Validation Kits	SPEAG	D2600V2	SZ-WSR-M-040	2022/6/14	2025/6/13
☒	Validation Kits	SPEAG	D5GHZV2	SZ-WSR-M-046	2022/11/1	2025/10/31
☒	Test software	SPEAG	DASY5	SZ-WSR-S-001	NCR	NCR
☒	Dielectric parameter probes	SPEAG	DAKS-12	SZ-WSR-M-090	2023/7/31	2024/7/30
☒	Vector Network Analyzer and Vector Reflectometer	SPEAG	DAKS_VNA R60	SZ-WSR-M-091	2023/7/31	2024/7/30
☒	Radio Communication Analyzer	Anritsu	MT8820C	SZ-WSR-M-005	2024/01/30	2025/01/29
☒	RF Bi-Directional Coupler	Agilent	86205-60001	SZ-WSR-A-004	NCR	NCR
☒	Signal Generator	Agilent	N5171B	SZ-WSR-M-006	2024/1/30	2025/1/29
☒	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	2024/01/30	2025/01/29
☒	Power Sensor	Agilent	8481H	SZ-WSR-M-008	2024/01/30	2025/01/29
☒	Power Sensor	R&S	NRP-Z92	SZ-WSR-M-009	2024/01/30	2025/01/29
☒	Attenuator	SHX	TS2-3dB	SZ-WSR-A-012	NCR	NCR
☒	Humidity and Temperature Indicator	CHIGAO	HTC-1	SZ-WSR-M-011	2024/5/28	2025/5/27

Note: All the equipments are within the valid period when the tests are performed.

11 Calibration certificate

Please see the Appendix C

12 Photographs

Please see the Appendix D

Appendix A: Detailed System Check Results

Appendix B: Detailed Test Results

Appendix C: Calibration certificate

Appendix D: Photographs

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