FCC SAR TEST REPORT

Application No.:	ZR/2021/A0024
Applicant:	Great Talent Technology Limited
Manufacturer:	Great Talent Technology Limited
Product Name:	Smart Phone
Model No.(EUT):	TW102
Trade Mark:	Treswave
FCC ID:	2ALZM-TW102
Standards:	FCC 47CFR §2.1093
Date of Receipt:	2021-11-18
Date of Test:	2021-11-21 to 2021-12-02
Date of Issue:	2021-12-28
Test conclusion:	**PASS ***

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

Authorized Signature:

Panta Sun

Panta Sun

Wireless Laboratory Manager

REVISION HISTORY

Report Number	Revision	Description	Issue Date
SUZR/2021/A002406	01	Original	2021-12-28

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone 215000 t (86-512) 62992980 www.sgsgroup.com.cn
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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)			
	Head	Body-worn	Hotspot	Product specific 10g SAR
WCDMA Band II	<0.10	0.37	0.72	/
WCDMA Band IV	0.33	0.49	1.15	/
WCDMA Band V	0.38	0.38	0.57	/
LTE Band 12	0.29	0.48	0.58	/
LTE Band 2/25	<0.10	0.25	0.43	/
LTE Band 5/26	0.32	0.45	0.51	/
LTE Band 41	0.59	0.47	0.88	/
LTE Band 4/66	0.39	0.67	1.04	/
LTE Band 71	0.21	0.29	0.43	/
WI-FI (2.4GHz)	0.23	0.13	0.28	/
BT	<0.10	<0.10	<0.10	/
SAR Limited(W/kg)	1.6			4.0
Maximum Simultaneous Transmission SAR (W/kg)				
Scenario	Head	Body-worn	Hotspot	Product specific 10g SAR
Sum SAR	0.82	0.80	1.43	/
SPLSR	N/A	N/A	N/A	N/A
SPLSR Limited	0.04			0.1

Note:
1) The Simultaneous transmission SAR is the same test position of the WWAN antenna + WiFi/BT antenna.
2) According to TCB workshop October,2014 RF Exposure Procedures Update(Overlapping LTE Bands), When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range. For This device, LTE band 2/4/5 SAR test was covered by Band 25/66/26.

Reviewed by

Well Wei

Well Wei

Prepared by

Nature Shen

Nature Shen

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1 General Information

1.1 Details of Client

Applicant:	Great Talent Technology Limited
Address:	35F,HBC HuiLong Center Building-II Minzhi Street,Longhua, Shenzhen, P.R. China
Manufacturer:	Great Talent Technology Limited
Address:	35F,HBC HuiLong Center Building-II Minzhi Street,Longhua, Shenzhen, P.R. China

1.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
Address:	South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code:	215000
Test Engineer:	Nature Shen, KING-P li

1.3 Test Facility

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

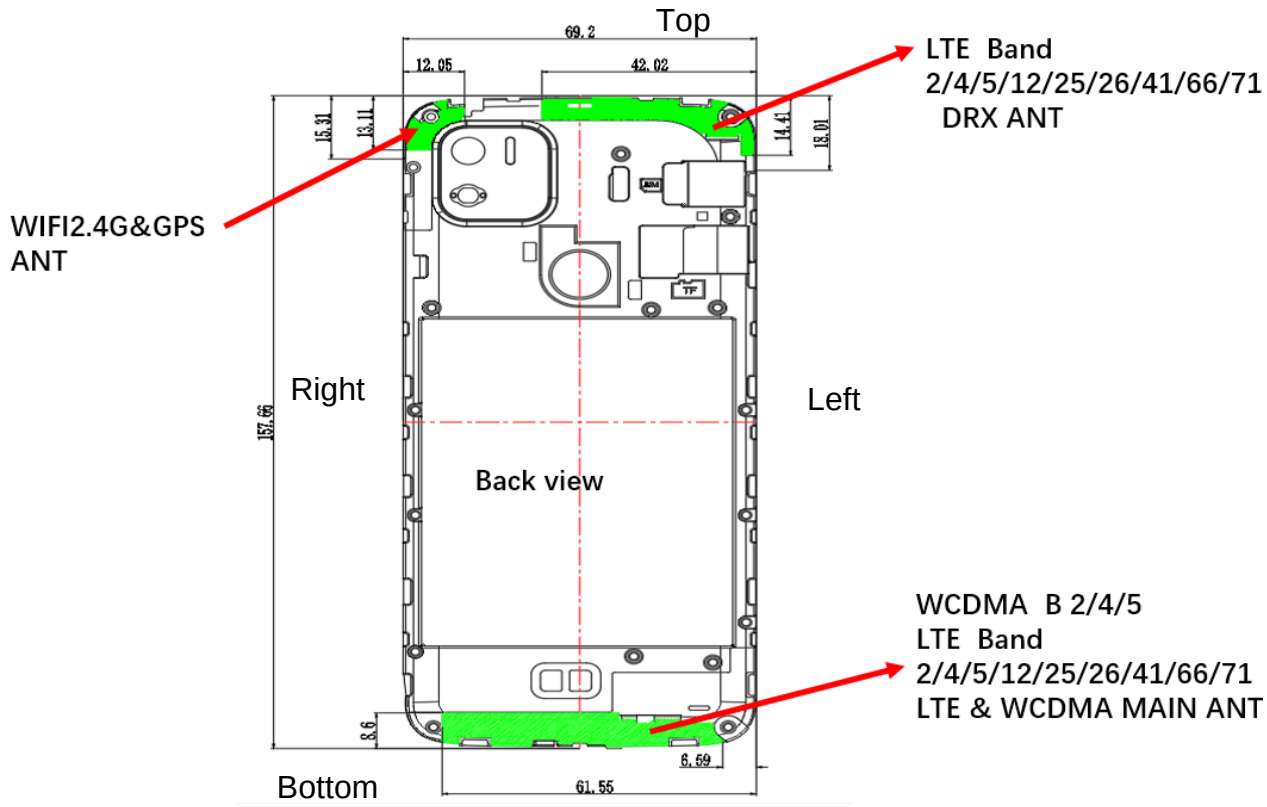
• **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

1.4 General Description of EUT

Device Type :	portable device		
Exposure Category:	uncontrolled environment / general population		
Product Name:	Smart Phone		
Model No.(EUT):	TW102		
FCC ID:	2ALZM-TW102		
Trade Mark:	Treswave		
Product Phase:	Identical Prototype		
IMEI:	990019130002373/990019130002381/990019130002399/990019130002407		
Hardware Version:	Q6005_V1.0		
Software Version:	TW102.00.02.105404		
Antenna Type:	Integrated		
Device Operating Configurations :			
Modulation Mode:	**GSM:** GMSK, 8PSK; **WCDMA:** QPSK; **LTE:** QPSK,16QAM **WIFI:** DSSS, OFDM; **BT:** GFSK, π/4DQPSK,8DPSK		
HSDPA UE Category:	14	HSUPA UE Category	6
DC-HSDPA UE Category:	24		
Power Class	3, tested with power control “all 1”(WCDMA Band)		
	3, tested with power control Max Power(LTE Band)		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	LTE Band 2	1850 ~1910	1930 ~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869-894
	LTE Band 12	699~716	729~746
	LTE Band 25	1850~1915	1930~1995
	LTE Band 26	814~849	859~894
	LTE Band 41 (Class 2/3)	2496~2690	2496~2690
	LTE Band 66	1710~1780	2110~2200
	LTE Band 71	663~698	617~652
	Bluetooth	2400~2483.5	2400~2483.5
	Wi-Fi 2.4G	2412~2472	2412~2472
RF Cable:	☒ Provided by the aplicant ☐ Provided by the laboratory		
Battery Information:	Model:	BTE-3402	
	Normal Voltage:	3.8V	
	Rated capacity:	3400mAh	
	Manufacturer:	Phenix New Energy (Huizhou) Co., Ltd.	

1.4.1 DUT Antenna Locations(Back View)



Note:
1) The test device is a smart phone. The overall diagonal dimension of this device is 168 mm. Per KDB 648474 D04, because the diagonal distance of this device is ≥160mm, so it is a phablet.
2) DRX Antenna does not support transmitter function.

According to the distance between antennas and the sides of the EUT we can draw the conclusion that:

EUT Sides for SAR Testing							
Mode	Exposure Condition	Front	Back	Left	Right	Top	Bottom
Main Ant	Hotspot/Product specific 10g SAR	Yes	Yes	Yes	Yes	No	Yes
WIFI/BT Ant	Hotspot/Product specific 10g SAR	Yes	Yes	No	Yes	Yes	No

Table 1： EUT Sides for SAR Testing
Note: When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

1.5 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
ANSI/IEEE C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.
IEEE 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB 941225 D01	3G SAR Measurement Procedures v03r01
KDB 941225 D05	SAR for LTE Devices v02r05
KDB 941225 D06	Hotspot Mode SAR v02r01
KDB 248227 D01	SAR Guidance for IEEE 802 11 Wi-Fi SAR v02r02
KDB 648474 D04	Handset SAR v01r03
KDB 447498 D01	General RF Exposure Guidance v06
KDB 865664 D01	SAR Measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02	RF Exposure Reporting v01r02
KDB 690783 D01	SAR Listings on Grants v01r03

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1.6 RF exposure limits

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

Notes:

* The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time

** The Spatial Average value of the SAR averaged over the whole body.

*** The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation.)

2 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

Table 2： The Ambient Conditions

3 SAR Measurements System Configuration

3.1 The SAR Measurement System

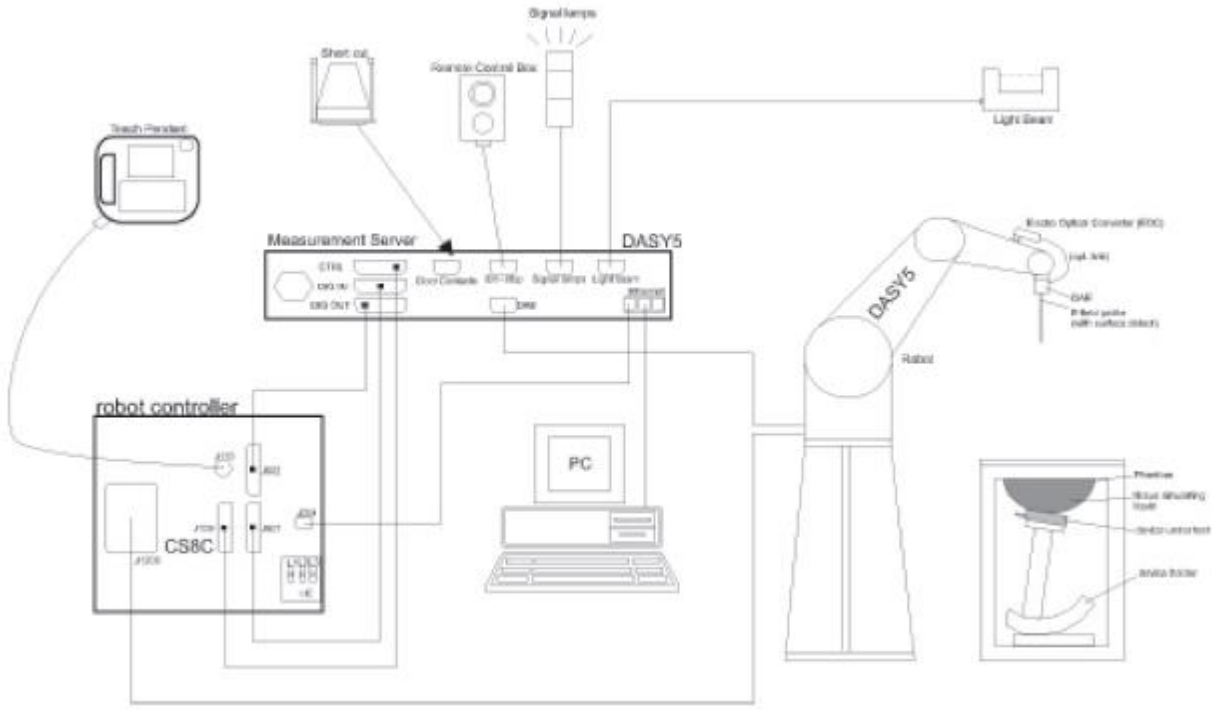
This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the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

The DASY5 system for performing compliance tests consists of the following items:
A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software .An arm extension for accommodation the data acquisition electronics (DAE).

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

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

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



F-1. SAR Measurement System Configuration

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

3.2 Isotropic E-field Probe EX3DV4

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

3.3 Data Acquisition Electronics (DAE)

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

3.4 SAM Twin Phantom

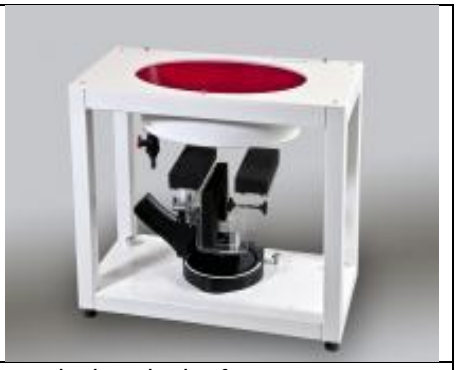
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx.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

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

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

3.5 ELI Phantom

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



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

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

3.6 Device Holder for Transmitters

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

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

3.7 Measurement procedure

3.7.1 Scanning procedure

Step 1: Power reference measurement

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

Step 2: *Area scan*

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

Step 3: *Zoom scan*

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

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

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

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

Step 4: Power reference measurement (drift)

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

3.7.2 Data Storage

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

3.7.3 Data Evaluation by SEMCAD

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

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

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

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

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

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

With 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.

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

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

4 SAR measurement variability and uncertainty

4.1 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.

4.2 SAR measurement uncertainty

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

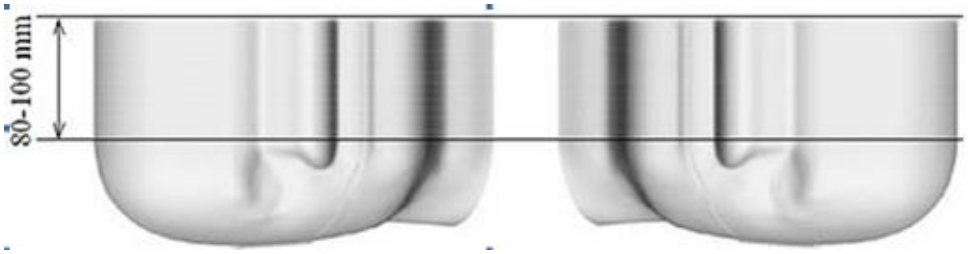
5 Description of Test Position

5.1 Head Exposure Condition

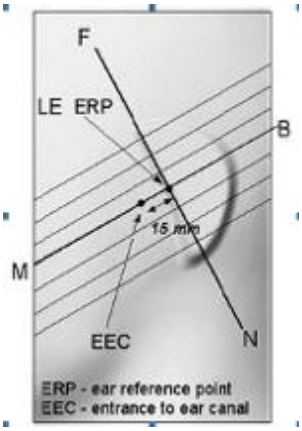
5.1.1 SAM Phantom Shape

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

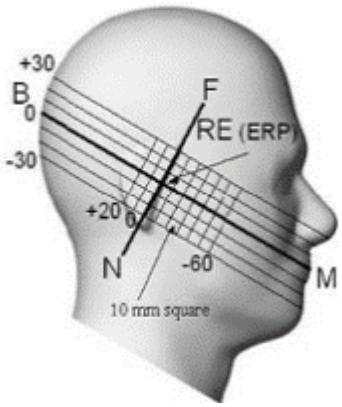
Note: The centre strip including the nose region has a different thickness tolerance.



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

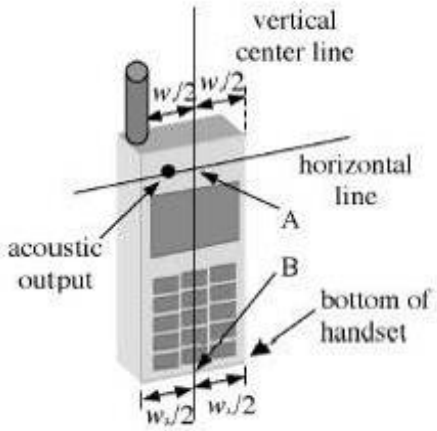


F-5. Close-up side view of phantom, showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations

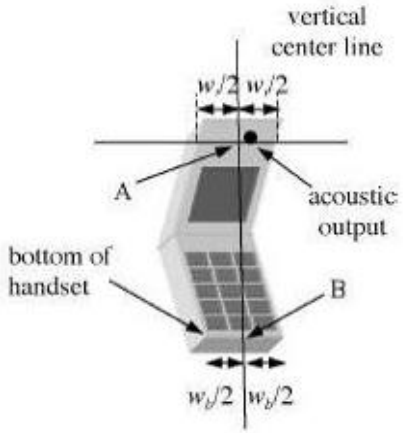


F-6. Side view of the phantom showing relevant markings and seven cross-sectional plane locations

5.1.2 EUT constructions



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



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

5.1.3 Definition of the “cheek” position

a) Position the device with the vertical centre line of the body of the device and the horizontal line crossing the centre of the ear piece in a plane parallel to the sagittal plane of the phantom ("initial position"). While maintaining the device in this plane, align the vertical centre line with the reference plane containing the three ear and mouth reference points (M, RE and LE) and align the centre of the ear piece with the line RE-LE.
b) Translate the mobile phone box towards the phantom with the ear piece aligned with the line LE-RE until telephone touches the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the box until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost.

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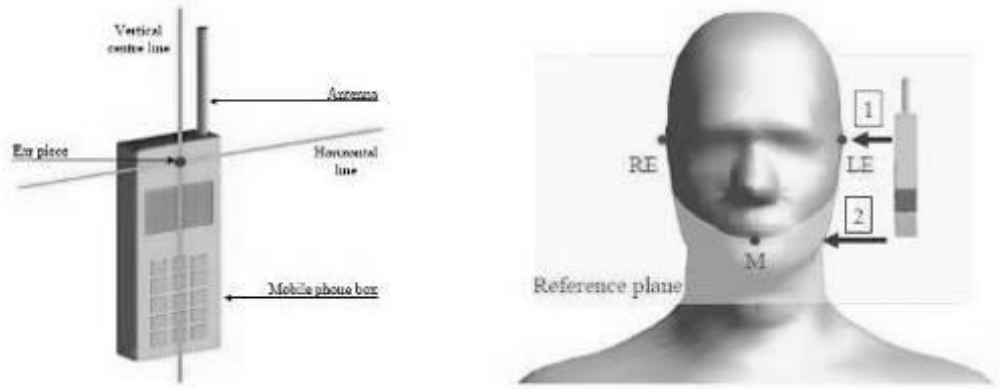
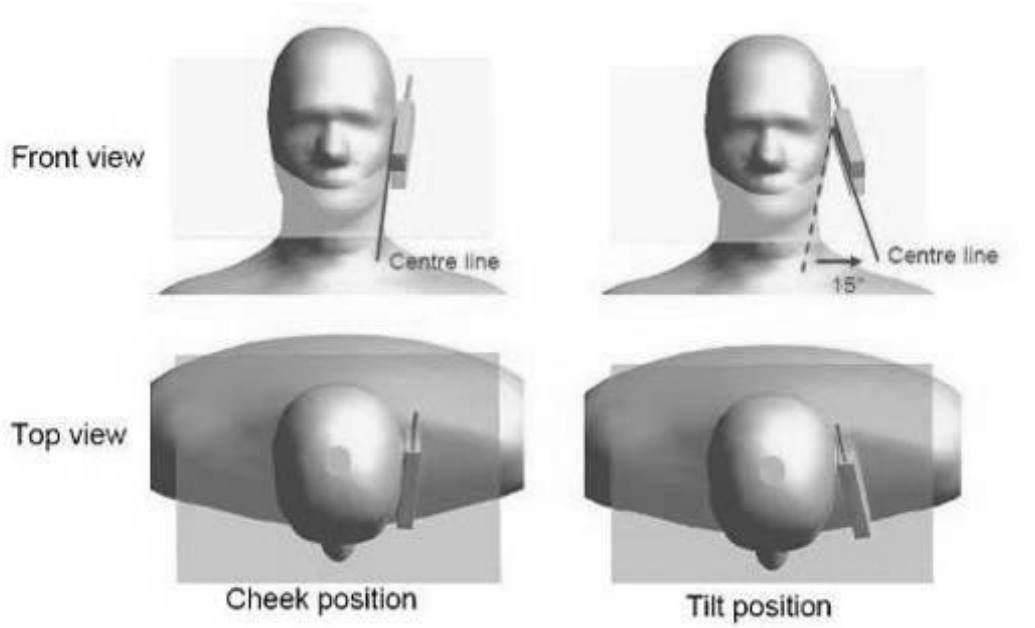
5.1.4 Definition of the "tilted" position

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



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



F-10. **"Cheek" and "tilt" positions of the mobile phone on the left side**

5.2 Body Exposure Condition

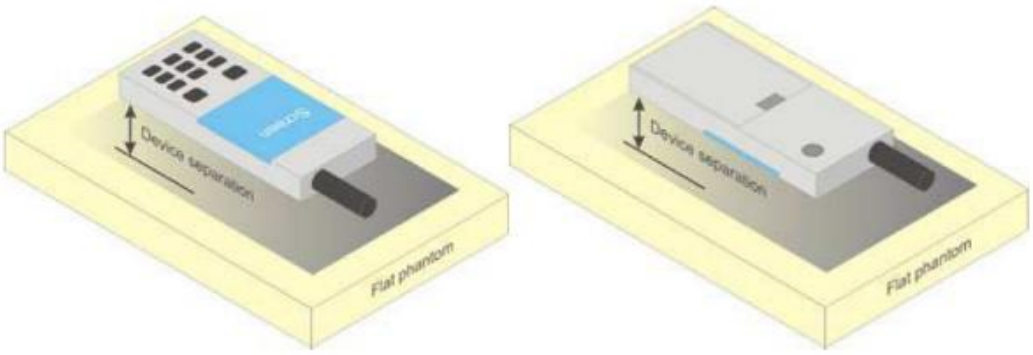
5.2.1 Body-worn accessory exposure conditions

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations.

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. Per FCC KDB Publication 648474 D04, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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

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



F-11. **Test positions for body-worn devices**

5.2.2 Wireless Router exposure conditions

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

5.3 Extremity exposure conditions

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

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

6 SAR System Verification Procedure

6.1 Tissue Simulate Liquid

6.1.1 Recipes for Tissue Simulate Liquid

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

Ingredients (% by weight)	Frequency (MHz)				
	450	700-900	1750-2000	2300-2500	2500-2700
Water	38.56	40.30	55.24	55.00	54.92
Salt (NaCl)	3.95	1.38	0.31	0.2	0.23
Sucrose	56.32	57.90	0	0	0
HEC	0.98	0.24	0	0	0
Bactericide	0.19	0.18	0	0	0
Tween	0	0	44.45	44.80	44.85
Salt: 99⁺% Pure Sodium Chloride Water: De-ionized, 16 MΩ⁺ resistivity Tween: Polyoxyethylene (20) sorbitan monolaurate			Sucrose: 98⁺% Pure Sucrose HEC: Hydroxyethyl Cellulose		
HSL5GHz is composed of the following ingredients： Water：50-65% Mineral oil：10-30% Emulsifiers：8-25% Sodium salt：0-1.5%					

Table 3： Recipe of Tissue Simulate Liquid

6.1.2 Measurement for Tissue Simulate Liquid

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.

Tissue Type	Measured Frequency (MHz)	Target Tissue (±5%)		Measured Tissue		Liquid Temp.(℃)	Measured Date
		ε_r	σ(S/m)	ε_r	σ(S/m)		
750 Head	750	41.9 (39.81~44)	0.89 (0.85~0.94)	41.605	0.883	22.3	2021-11-22
835 Head	835	41.5 (39.43~43.58)	0.90 (0.86~0.95)	41.485	0.936	22.0	2021-11-21
1750 Head	1750	40.1 (38.10~42.11)	1.37 (1.30~1.44)	39.162	1.390	22.0	2021-11-23
1900 Head	1900	40.0 (38.00~42.00)	1.40 (1.33~1.47)	39.136	1.432	21.9	2021-11-22
2450 Head	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	38.440	1.793	22.1	2021-12-01
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	38.193	1.987	22.1	2021-12-02

Table 4： Measurement result of Tissue electric parameters

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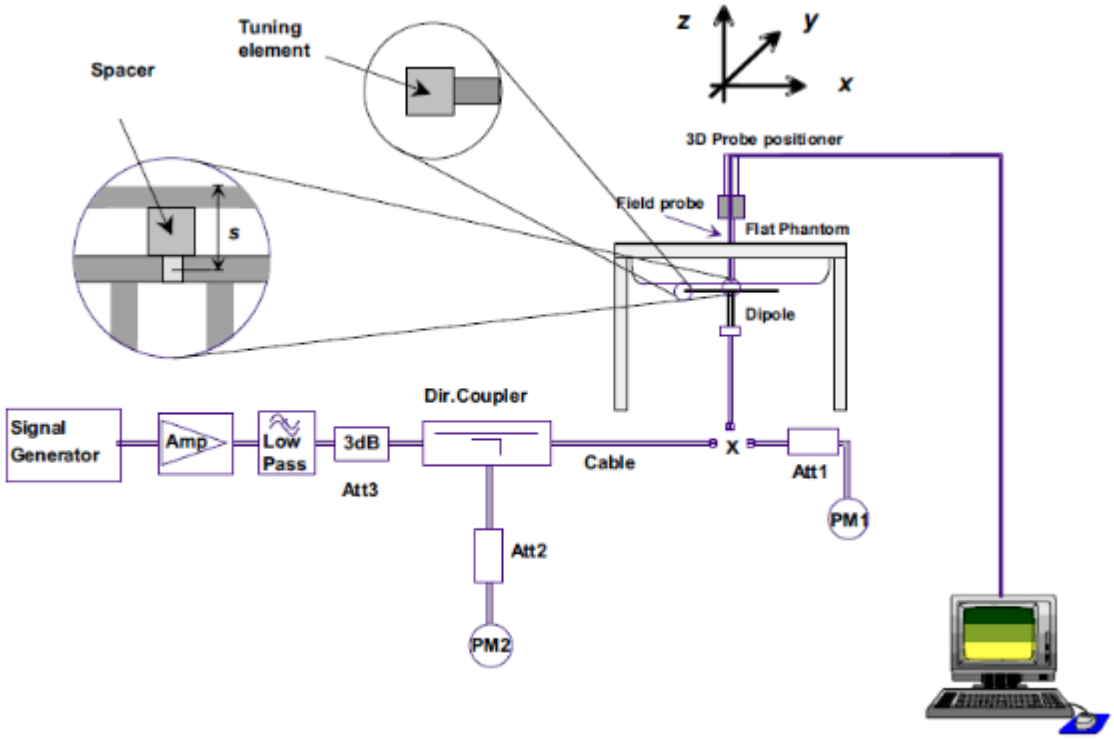
6.2 SAR System Check

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



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

6.2.1 Justification for Extended SAR Dipole Calibrations

1) Referring to KDB865664 D01 requirements for dipole calibration, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.
a) There is no physical damage on the dipole;
b) System check with specific dipole is within 10% of calibrated value;
c) Return-loss is within 10% of calibrated measurement;
d) Impedance is within 5Ω from the previous measurement.

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

6.2.2 Summary System Check Result(s)

Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W) (±10%)	Target SAR (normalized to 1W) (±10%)	Liquid Temp. (℃)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D750V3	Head	2.30	1.52	9.20	6.08	8.48 (7.63~9.33)	5.56 (5.00~6.12)	22.3	2021-11-22
D835V2	Head	2.34	1.52	9.36	6.08	9.52 (8.57~10.47)	6.17 (5.55~6.79)	22.0	2021-11-21
D1750V2	Head	9.09	4.82	36.36	19.28	35.3 (31.77~38.83)	18.7 (16.83~20.57)	22.0	2021-11-23
D1900V2	Head	9.52	4.96	38.08	19.84	39.7 (35.73~43.67)	20.3 (18.27~22.33)	21.9	2021-11-22
D2450V2	Head	12.40	5.76	49.60	23.04	52.2 (46.98~57.42)	24.5 (22.05~26.95)	22.1	2021-12-01
D2600V2	Head	13.60	6.04	54.40	24.16	57.1 (51.39~62.81)	25.4 (22.86~27.94)	22.1	2021-12-02

Table 5： SAR System Check Result

6.2.3 Detailed System Check Results

Please see the Appendix A

7 Test Configuration

7.1 3G SAR Test Reduction Procedure

According to KDB 941225D01, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

7.2 Operation Configurations

7.2.1 WCDMA Test Configuration

1）. Output Power Verification

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

2）. Head SAR

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

3）. Body SAR

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

4）. HSDPA / HSUPA / DC-HSDPA

According to KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

a) HSDPA

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

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

Note1: △ACK, △NACK and △CQI= 8 Ahs = βhs/βc=30/15 βhs=30/15*βc
Note2:For the HS-DPCCH power mask requirement test in clause 5.2C,5.7A,and the Error Vector Magnitude(EVM) with HS-DPCCH test in clause 5.13.1.A,and HSDPA EVM with phase discontinuity in clause 5.13.1AA, △ACK and △NACK= 8 (Ahs=30/15) with βhs=30/15*βc,and △CQI=
7 (Ahs=24/15) with βhs=24/15*βc.
Note3: CM=1 forβc/βd =12/15, βhs/βc=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

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

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

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

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	MaximumH S-DSCH Transport BlockBits/HS-DSCH TTI	Total Soft Channel Bits
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

Table 7： HSDPA UE category

b) HSUPA

Due to inner loop power control requirements in HSUPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSUPA should be configured according to the values indicated below as well as other applicable procedures described in the „WCDMA Handset" and „Release 5 HSUPA Data Device" sections of 3G device.

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

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference

Note 3 : For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$

Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$

Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Table 8： Subtests for UMTS Release 6 HSUPA

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

Table 9： HSUPA UE category

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone 215000 t (86-512) 62992980 www.sgsgroup.com.cn
中国·苏州·中国（江苏）自由贸易试验区苏州片区苏州工业园区润胜路1号的6号厂房南部 邮编：215000 t (86-512) 62992980 sgs.china@sgs.com

c) DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a Second serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.
The following tests were completed according to procedures in section 7.3.13 of 3GPP TS 34.108 v9.5.0.
A summary of these settings are illustrated below:
Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

Table E.5.0: Levels for HSDPA connection setup

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

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13.
The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.
The measurements were performed with a Fixed Reference Channel (FRC) H-Set 12 with QPSK.

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

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

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

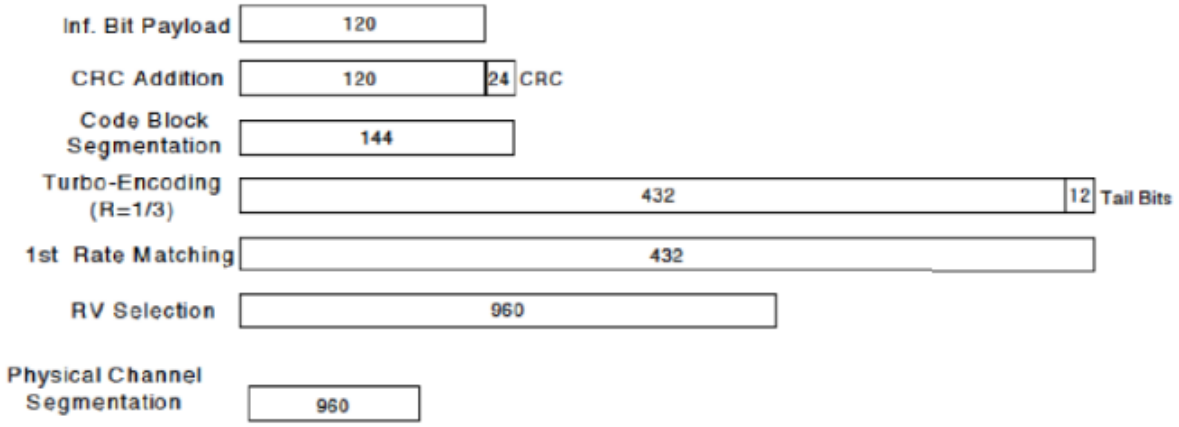


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

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

Note:

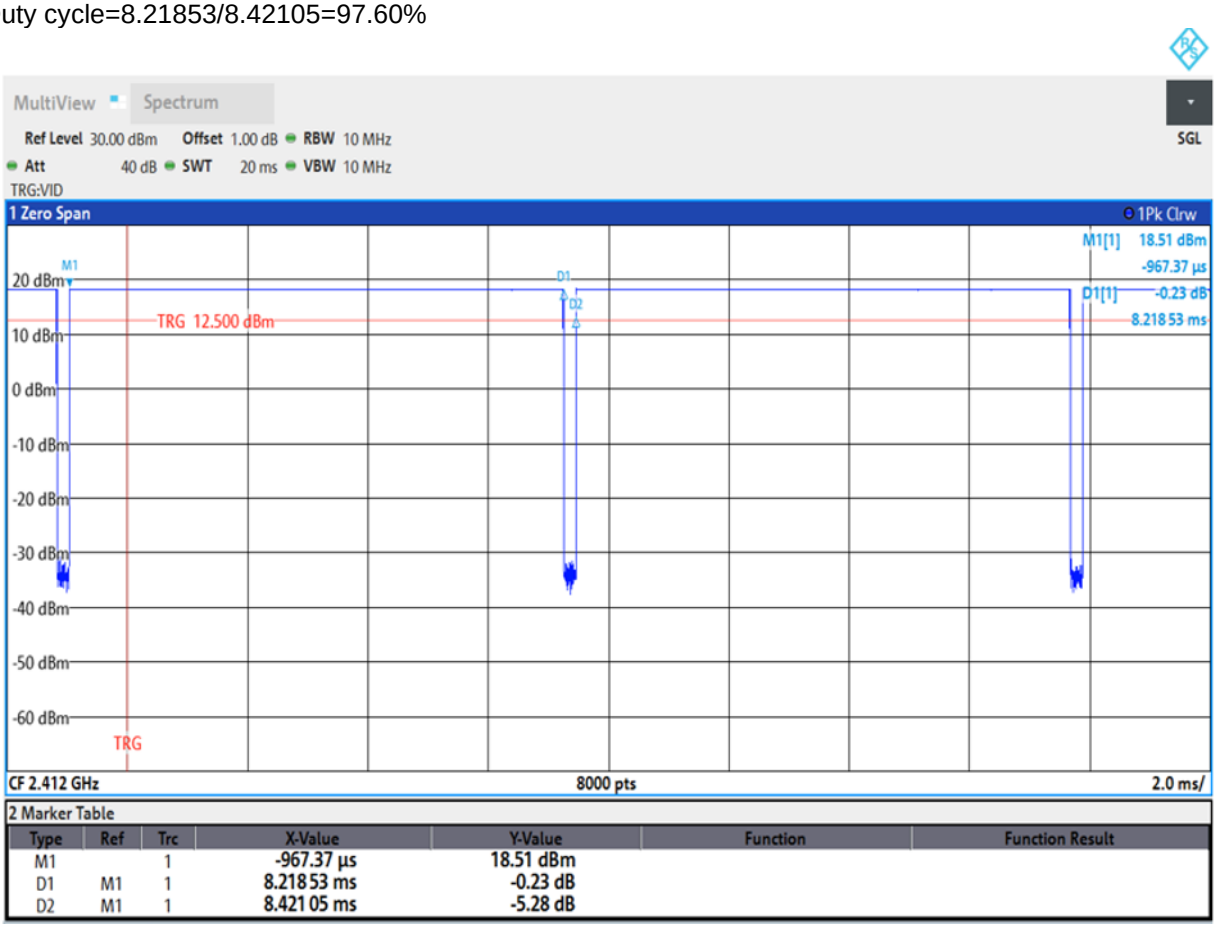
1. The Dual Carriers transmission only applies to HSDPA physical channels
2. The Dual Carriers belong to the same Node and are on adjacent carriers.
3. The Dual Carriers do not support MIMO to serve UEs configured for dual cell operation
4. The Dual Carriers operate in the same frequency band.
5. The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

7.2.2 WiFi Test Configuration

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

7.2.2.1 Duty cycle

Wi-Fi 2.4GHz 802.11b:
Duty cycle=8.21853/8.42105=97.60%



2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	-967.37 µs	18.51 dBm		
D1	M1	1	8.218 53 ms	-0.23 dB		
D2	M1	1	8.421 05 ms	-5.28 dB		

7.2.2.2 Initial Test Position SAR Test Reduction Procedure

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

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

7.2.2.3 Initial Test Configuration Procedures

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required. SAR test reduction for subsequent highest output test channels is determined according to *reported* SAR of the initial test configuration.
For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.
When the *reported* SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

7.2.2.4 Subsequent Test Configuration Procedures

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

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

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

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

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

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

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

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

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

7.2.2.5 2.4 GHz WiFi SAR Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in following.

- **802.11b DSSS SAR Test Requirements**

SAR is measured for 2.4 GHz 802.11b DSSS using either a fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1）. When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2）. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

- **2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements**

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3, including sub-sections). SAR is not required for the following 2.4 GHz OFDM conditions.

1）. When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.

2）. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

- **SAR Test Requirements for OFDM configurations**

When SAR measurement is required for 802.11 g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

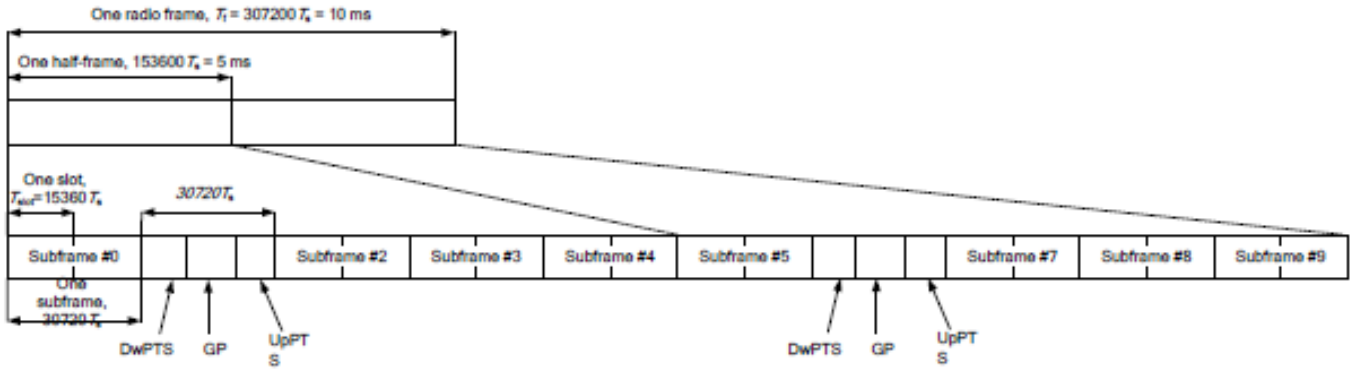
7.2.3 LTE Test Configuration

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The Anritsu MT8820C 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:



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			-	-	-

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
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3

C) A-MPR

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

D) Largest channel bandwidth standalone SAR test requirements

1) QPSK with 1 RB allocation

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

2) QPSK with 50% RB allocation

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

3) QPSK with 100% RB allocation

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

4) Higher order modulations

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

E) Other channel bandwidth standalone SAR test requirements

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

8 Test Result

8.1 Measurement of RF conducted Power

8.1.1 Conducted Power of WCDMA

WCDMA Band II					
Average Conducted Power(dBm)					
Channel		9262	9400	9538	Tune up
WCDMA	12.2kbps RMC	22.02	22.23	22.09	23.70
	12.2kbps AMR	22.03	22.12	22.10	23.70
HSDPA	Subtest 1	21.21	21.44	21.35	22.90
	Subtest 2	21.19	21.42	21.31	22.90
	Subtest 3	20.21	20.44	20.30	21.90
	Subtest 4	20.23	20.45	20.31	21.90
HSUPA	Subtest 1	19.74	19.95	19.83	21.40
	Subtest 2	19.73	19.96	19.80	21.40
	Subtest 3	19.75	19.95	19.81	21.40
	Subtest 4	19.74	19.95	19.80	21.40
	Subtest 5	21.20	21.47	21.31	22.90
DC-HSDPA	Subtest 1	21.23	21.46	21.32	22.90
	Subtest 2	21.21	21.41	21.30	22.90
	Subtest 3	20.25	20.43	20.32	21.90
	Subtest 4	20.20	20.44	20.29	21.90
WCDMA Band IV					
Average Conducted Power(dBm)					
Channel		1312	1412	1513	Tune up
WCDMA	12.2kbps RMC	22.48	22.58	22.49	23.70
	12.2kbps AMR	22.49	22.51	22.52	23.70
HSDPA	Subtest 1	21.69	21.88	21.76	22.90
	Subtest 2	21.68	21.83	21.74	22.90
	Subtest 3	20.69	20.79	20.74	21.90
	Subtest 4	20.73	20.81	20.73	21.90
HSUPA	Subtest 1	20.21	20.28	20.19	21.40
	Subtest 2	20.21	20.29	20.24	21.40
	Subtest 3	20.23	20.32	20.22	21.40
	Subtest 4	20.22	20.31	20.19	21.40
	Subtest 5	21.73	21.79	21.72	22.90
DC-HSDPA	Subtest 1	21.68	21.82	21.74	22.90
	Subtest 2	21.61	21.80	21.72	22.90
	Subtest 3	20.73	20.80	20.69	21.90
	Subtest 4	20.70	20.80	20.69	21.90

WCDMA Band V					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	22.12	22.25	22.19	23.70
	12.2kbps AMR	22.22	22.18	22.21	23.70
HSDPA	Subtest 1	21.37	21.47	21.43	22.90
	Subtest 2	21.31	21.45	21.40	22.90
	Subtest 3	20.36	20.48	20.40	21.90
	Subtest 4	20.35	20.46	20.42	21.90
HSUPA	Subtest 1	19.84	19.97	19.94	21.40
	Subtest 2	19.87	19.96	19.89	21.40
	Subtest 3	19.84	19.95	19.91	21.40
	Subtest 4	19.86	19.99	19.90	21.40
	Subtest 5	21.34	21.48	21.39	22.90
DC-HSDPA	Subtest 1	21.33	21.49	21.41	22.90
	Subtest 2	21.30	21.47	21.40	22.90
	Subtest 3	20.33	20.50	20.39	21.90
	Subtest 4	20.37	20.47	20.39	21.90

Note:
1) when the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.

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8.1.2 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	23.31	23.16	23.14	23.50
		1	2	23.37	23.25	23.28	23.50
		1	5	23.25	23.27	23.26	23.50
		3	0	23.30	23.49	23.40	23.50
		3	2	23.35	23.21	23.43	23.50
		3	3	23.41	23.36	23.35	23.50
		6	0	22.30	22.33	22.34	22.50
	16QAM	1	0	22.06	21.89	22.19	22.50
		1	2	22.46	22.47	22.46	22.50
		1	5	22.17	22.14	21.55	22.50
		3	0	22.14	22.20	22.20	22.50
		3	2	22.14	22.11	22.18	22.50
		3	3	22.28	22.23	22.01	22.50
		6	0	21.07	21.20	21.12	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18615	Channel 18900	Channel 19185	Tune up
3MHz	QPSK	1	0	23.05	22.97	23.19	23.50
		1	7	23.20	23.31	23.26	23.50
		1	14	23.11	23.13	22.99	23.50
		8	0	22.25	22.21	22.35	22.50
		8	4	22.30	22.32	22.31	22.50
		8	7	22.32	22.28	22.24	22.50
		15	0	22.32	22.29	22.30	22.50
	16QAM	1	0	22.10	22.03	22.32	22.50
		1	7	22.28	21.66	22.45	22.50
		1	14	21.50	22.14	22.43	22.50
		8	0	21.14	21.13	21.42	21.50
		8	4	21.23	21.03	21.41	21.50
		8	7	21.20	21.12	21.48	21.50
		15	0	21.26	21.23	21.36	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18625	Channel 18900	Channel 19175	Tune up
5MHz	QPSK	1	0	22.90	23.15	23.28	23.50
		1	13	23.34	23.00	23.15	23.50
		1	24	23.22	23.08	23.07	23.50
		12	0	22.24	22.25	22.35	22.50
		12	6	22.30	22.23	22.30	22.50
		12	13	22.36	22.22	22.30	22.50
		25	0	22.20	22.23	22.39	22.50
	16QAM	1	0	22.25	21.52	21.67	22.50
		1	13	22.43	21.50	21.98	22.50
		1	24	21.75	21.74	21.99	22.50
		12	0	21.37	21.08	21.41	21.50
		12	6	21.46	21.10	21.32	21.50

		12	13	21.46	21.07	21.37	21.50
		25	0	21.33	21.12	21.45	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18650	Channel 18900	Channel 19150	Tune up
10MHz	QPSK	1	0	23.16	22.96	23.07	23.50
		1	25	23.50	23.28	23.36	23.50
		1	49	23.29	23.00	22.95	23.50
		25	0	22.31	22.30	22.29	22.50
		25	13	22.32	22.35	22.27	22.50
		25	25	22.30	22.22	22.30	22.50
		50	0	22.38	22.25	22.26	22.50
	16QAM	1	0	22.28	21.45	21.91	22.50
		1	25	22.41	21.98	22.26	22.50
		1	49	22.39	21.81	21.59	22.50
		25	0	21.25	21.19	21.22	21.50
		25	13	21.41	21.40	21.30	21.50
		25	25	21.28	21.22	21.27	21.50
		50	0	21.38	21.32	21.40	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18675	Channel 18900	Channel 19125	Tune up
15MHz	QPSK	1	0	23.17	23.03	23.07	23.50
		1	38	23.48	23.14	23.28	23.50
		1	74	23.30	22.97	23.26	23.50
		36	0	22.29	22.35	22.24	22.50
		36	18	22.40	22.27	22.32	22.50
		36	39	22.45	22.25	22.23	22.50
		75	0	22.30	22.30	22.31	22.50
	16QAM	1	0	21.47	21.62	21.49	22.50
		1	38	21.67	21.63	22.02	22.50
		1	74	22.19	21.58	21.59	22.50
		36	0	21.43	21.30	21.23	21.50
		36	18	21.48	21.34	21.30	21.50
		36	39	21.40	21.16	21.27	21.50
		75	0	21.42	21.24	21.29	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18700	Channel 18900	Channel 19100	Tune up
20MHz	QPSK	1	0	23.24	23.10	23.11	23.50
		1	50	23.46	23.22	23.32	23.50
		1	99	23.15	22.99	23.12	23.50
		50	0	22.41	22.33	22.43	22.50
		50	25	22.44	22.25	22.33	22.50
		50	50	22.29	22.31	22.30	22.50
		100	0	22.37	22.36	22.28	22.50
	16QAM	1	0	21.43	22.28	21.54	22.50
		1	50	22.12	22.40	22.10	22.50
		1	99	21.86	21.80	21.31	22.50
		50	0	21.42	21.38	21.44	21.50
		50	25	21.48	21.43	21.35	21.50
		50	50	21.36	21.29	21.09	21.50
		100	0	21.48	21.28	21.16	21.50

LTE Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 19957	Channel 20175	Channel 20393	Tune up
1.4MHz	QPSK	1	0	22.98	23.09	22.86	24.50
		1	2	22.95	23.15	22.62	24.50
		1	5	22.88	23.03	22.61	24.50
		3	0	23.06	23.19	22.90	24.50
		3	2	23.11	23.12	23.00	24.50
		3	3	23.09	23.18	22.93	24.50
		6	0	22.08	22.08	21.98	23.50
	16QAM	1	0	22.20	22.38	21.50	23.50
		1	2	22.53	21.87	21.83	23.50
		1	5	22.47	21.83	21.72	23.50
		3	0	22.07	22.05	21.58	23.50
		3	2	21.96	22.14	21.63	23.50
		3	3	22.01	21.99	22.24	23.50
		6	0	21.01	20.91	21.06	22.50
Bandwidth	Modulation	RB size	RB offset	Channel 19965	Channel 20175	Channel 20385	Tune up
3MHz	QPSK	1	0	22.85	23.01	23.04	24.50
		1	7	23.08	23.09	23.12	24.50
		1	14	22.69	23.04	23.10	24.50
		8	0	21.97	22.08	21.90	23.50
		8	4	22.06	22.09	21.93	23.50
		8	7	22.06	22.03	21.93	23.50
		15	0	22.01	22.06	21.92	23.50
	16QAM	1	0	21.96	22.29	22.12	23.50
		1	7	21.81	22.27	22.25	23.50
		1	14	21.90	22.38	22.08	23.50
		8	0	21.06	21.11	20.83	22.50
		8	4	21.03	21.08	20.97	22.50
		8	7	21.04	21.06	21.10	22.50
		15	0	20.89	21.15	21.07	22.50
Bandwidth	Modulation	RB size	RB offset	Channel 19975	Channel 20175	Channel 20375	Tune up
5MHz	QPSK	1	0	22.76	23.05	23.11	24.50
		1	13	22.72	22.94	23.25	24.50
		1	24	22.71	22.85	22.91	24.50
		12	0	21.92	22.02	22.03	23.50
		12	6	22.01	21.99	22.03	23.50
		12	13	22.00	22.02	22.03	23.50
		25	0	22.01	22.06	22.04	23.50
	16QAM	1	0	22.31	22.44	22.32	23.50
		1	13	22.16	21.78	21.57	23.50
		1	24	21.88	21.59	21.59	23.50
		12	0	20.88	21.04	20.92	22.50
		12	6	20.94	21.21	20.88	22.50
		12	13	20.79	21.15	21.00	22.50

		25	0	20.94	20.91	20.95	22.50
Bandwidth	Modulation	RB size	RB offset	Channel 20000	Channel 20175	Channel 20350	Tune up
10MHz	QPSK	1	0	22.96	22.97	23.02	24.50
		1	25	23.19	23.13	23.16	24.50
		1	49	22.78	22.78	23.06	24.50
		25	0	22.14	22.14	22.15	23.50
		25	13	22.11	22.15	22.14	23.50
		25	25	22.10	22.15	22.10	23.50
		50	0	22.18	22.05	22.03	23.50
	16QAM	1	0	21.63	21.59	22.00	23.50
		1	25	22.71	22.18	22.31	23.50
		1	49	21.60	21.54	21.68	23.50
		25	0	21.06	21.09	20.94	22.50
		25	13	21.15	21.16	20.93	22.50
		25	25	21.09	21.05	20.96	22.50
		50	0	21.23	21.06	21.04	22.50
Bandwidth	Modulation	RB size	RB offset	Channel 20025	Channel 20175	Channel 20325	Tune up
15MHz	QPSK	1	0	23.07	23.15	23.12	24.50
		1	38	23.21	23.02	23.05	24.50
		1	74	23.07	22.85	23.10	24.50
		36	0	22.14	22.17	22.29	23.50
		36	18	22.19	22.18	22.11	23.50
		36	39	22.11	22.05	22.08	23.50
		75	0	22.16	22.04	22.10	23.50
	16QAM	1	0	21.72	21.95	21.80	23.50
		1	38	21.62	22.19	21.89	23.50
		1	74	21.55	21.66	21.61	23.50
		36	0	21.05	21.26	21.20	22.50
		36	18	21.21	21.12	21.02	22.50
		36	39	21.14	21.12	20.98	22.50
		75	0	21.15	21.04	21.14	22.50
Bandwidth	Modulation	RB size	RB offset	Channel 20050	Channel 20175	Channel 20300	Tune up
20MHz	QPSK	1	0	22.82	23.09	23.28	24.50
		1	50	23.14	23.13	23.35	24.50
		1	99	22.76	22.81	23.03	24.50
		50	0	22.19	22.13	22.28	23.50
		50	25	22.12	22.05	22.25	23.50
		50	50	22.19	22.02	22.11	23.50
		100	0	22.21	22.15	22.11	23.50
	16QAM	1	0	22.17	21.82	22.19	23.50
		1	50	22.63	22.24	21.53	23.50
		1	99	22.10	21.54	21.72	23.50
		50	0	21.20	21.21	21.31	22.50
		50	25	21.17	21.13	21.07	22.50
		50	50	20.99	21.11	21.15	22.50
		100	0	21.16	21.00	21.14	22.50

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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	22.58	22.62	22.71	23.50
		1	2	22.64	22.72	22.74	23.50
		1	5	22.60	22.58	22.68	23.50
		3	0	22.69	22.67	22.90	23.50
		3	2	22.81	22.77	22.81	23.50
		3	3	22.78	22.74	22.79	23.50
		6	0	21.79	21.72	21.65	22.50
	16QAM	1	0	21.14	21.14	21.29	22.50
		1	2	21.35	21.34	21.75	22.50
		1	5	21.06	21.20	21.43	22.50
		3	0	21.52	21.79	21.46	22.50
		3	2	21.70	21.82	21.64	22.50
		3	3	21.58	21.72	21.38	22.50
		6	0	20.75	20.50	20.44	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 20415	Channel 20525	Channel 20635	Tune up
3MHz	QPSK	1	0	22.48	22.70	22.66	23.50
		1	7	22.42	22.61	22.66	23.50
		1	14	22.61	22.55	22.39	23.50
		8	0	21.85	21.66	21.95	22.50
		8	4	21.83	21.71	21.78	22.50
		8	7	21.80	21.63	21.73	22.50
		15	0	21.70	21.65	21.76	22.50
	16QAM	1	0	21.20	21.77	21.87	22.50
		1	7	21.71	21.66	21.89	22.50
		1	14	21.71	21.72	21.54	22.50
		8	0	20.90	20.77	20.64	21.50
		8	4	20.64	20.87	20.61	21.50
		8	7	20.49	20.64	20.68	21.50
		15	0	20.45	20.72	20.70	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 20425	Channel 20525	Channel 20625	Tune up
5MHz	QPSK	1	0	22.70	22.43	22.70	23.50
		1	13	22.69	22.59	22.75	23.50
		1	24	22.58	22.51	22.46	23.50
		12	0	21.74	21.62	21.85	22.50
		12	6	21.74	21.65	21.69	22.50
		12	13	21.76	21.55	21.64	22.50
		25	0	21.81	21.60	21.82	22.50
	16QAM	1	0	20.93	22.02	21.64	22.50
		1	13	21.57	21.61	21.75	22.50
		1	24	20.78	22.05	21.04	22.50
		12	0	20.72	20.73	20.65	21.50
		12	6	20.51	20.76	20.60	21.50
		12	13	20.60	20.71	20.60	21.50

		25	0	20.71	20.68	20.64	21.50

Bandwidth	Modulation	RB size	RB offset	Channel 20450	Channel 20525	Channel 20600	Tune up
10MHz	QPSK	1	0	22.57	22.54	22.37	23.50
		1	25	22.70	22.87	22.86	23.50
		1	49	22.37	22.34	22.39	23.50
		25	0	21.77	21.78	21.73	22.50
		25	13	21.86	21.71	21.79	22.50
		25	25	21.84	21.68	21.72	22.50
		50	0	21.86	21.70	21.62	22.50
	16QAM	1	0	20.78	20.80	21.55	22.50
		1	25	21.42	22.09	22.02	22.50
		1	49	20.82	21.44	21.35	22.50
		25	0	20.67	20.60	20.67	21.50
		25	13	20.68	20.67	20.65	21.50
		25	25	20.59	20.58	20.60	21.50
		50	0	20.73	20.64	20.71	21.50

LTE FDD Band 12				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 23017	Channel 23095	Channel 23173	Tune up
1.4MHz	QPSK	1	0	23.05	23.48	23.17	23.50
		1	2	23.21	23.37	23.22	23.50
		1	5	22.99	23.19	23.18	23.50
		3	0	23.23	23.41	23.31	23.50
		3	2	23.33	23.47	23.31	23.50
		3	3	23.31	23.45	23.25	23.50
		6	0	22.22	22.31	22.28	22.50
	16QAM	1	0	22.22	22.23	22.35	22.50
		1	2	22.11	22.31	21.92	22.50
		1	5	22.46	22.25	22.23	22.50
		3	0	22.18	22.10	22.12	22.50
		3	2	22.07	22.06	22.14	22.50
		3	3	22.26	22.18	22.17	22.50
		6	0	21.17	21.26	21.02	21.50
Bandwidth	**Modulation**	**RB size**	**RB offset**	**Channel 23025**	**Channel 23095**	**Channel 23165**	**Tune up**
3MHz	QPSK	1	0	23.02	22.93	23.04	23.50
		1	7	23.14	23.25	23.27	23.50
		1	14	23.19	23.28	23.18	23.50
		8	0	22.27	22.34	22.21	22.50
		8	4	22.31	22.40	22.28	22.50
		8	7	22.29	22.43	22.20	22.50
		15	0	22.24	22.41	22.24	22.50
	16QAM	1	0	21.82	22.12	22.15	22.50
		1	7	21.73	22.32	21.95	22.50

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		1	14	22.20	22.16	21.75	22.50
		8	0	21.23	21.15	21.35	21.50
		8	4	21.24	21.36	21.26	21.50
		8	7	21.15	21.47	21.27	21.50
		15	0	21.18	21.43	21.33	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 23035	Channel 23095	Channel 23155	Tune up
5MHz	QPSK	1	0	22.95	23.23	23.28	23.50
		1	13	23.27	23.44	23.04	23.50
		1	24	23.19	23.26	22.99	23.50
		12	0	22.16	22.27	22.31	22.50
		12	6	22.21	22.38	22.22	22.50
		12	13	22.15	22.40	22.12	22.50
		25	0	22.24	22.31	22.16	22.50
	16QAM	1	0	21.72	21.66	22.20	22.50
		1	13	22.00	22.24	21.98	22.50
		1	24	22.17	22.50	21.82	22.50
		12	0	21.04	21.13	21.18	21.50
		12	6	21.26	21.20	21.12	21.50
		12	13	21.15	21.30	20.93	21.50
		25	0	21.33	21.42	21.30	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 23060	Channel 23095	Channel 23130	Tune up
10MHz	QPSK	1	0	22.87	22.99	23.14	23.50
		1	25	**23.43**	23.41	23.22	23.50
		1	49	23.20	22.95	22.84	23.50
		25	0	22.22	22.30	22.38	22.50
		25	13	22.32	22.36	22.30	22.50
		25	25	22.20	**22.41**	22.21	22.50
		50	0	22.31	22.30	22.36	22.50
	16QAM	1	0	21.59	22.12	21.64	22.50
		1	25	22.38	22.22	22.38	22.50
		1	49	21.92	21.72	21.82	22.50
		25	0	21.10	21.29	21.43	21.50
		25	13	21.27	21.50	21.41	21.50
		25	25	21.17	21.37	21.32	21.50
		50	0	21.14	21.29	21.36	21.50

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LTE Band 25				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 26047	Channel 26365	Channel 26683	Tune up
1.4MHz	QPSK	1	0	22.95	22.77	22.85	23.50
		1	2	22.94	22.87	22.93	23.50
		1	5	22.98	22.89	22.87	23.50
		3	0	22.96	22.81	22.93	23.50
		3	2	23.06	22.84	22.91	23.50
		3	3	23.03	23.00	23.00	23.50
		6	0	21.91	21.92	21.87	22.50
	16QAM	1	0	22.09	21.49	21.13	22.50
		1	2	22.10	21.80	21.51	22.50
		1	5	21.90	21.92	21.26	22.50
		3	0	21.82	21.75	21.88	22.50
		3	2	21.71	21.78	21.99	22.50
		3	3	21.74	21.84	21.79	22.50
		6	0	20.80	20.83	20.75	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 26055	Channel 26365	Channel 26675	Tune up
3MHz	QPSK	1	0	22.87	22.88	22.77	23.50
		1	7	22.89	23.06	22.65	23.50
		1	14	22.75	22.84	22.74	23.50
		8	0	21.91	21.89	21.83	22.50
		8	4	21.93	21.92	21.89	22.50
		8	7	21.90	21.99	22.03	22.50
		15	0	21.90	21.89	21.98	22.50
	16QAM	1	0	21.57	22.23	22.24	22.50
		1	7	21.42	22.34	21.72	22.50
		1	14	21.93	22.10	21.56	22.50
		8	0	20.68	20.77	20.77	21.50
		8	4	20.70	20.79	20.66	21.50
		8	7	20.79	20.75	20.75	21.50
		15	0	20.78	20.94	20.72	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 26052	Channel 26365	Channel 26665	Tune up
5MHz	QPSK	1	0	22.92	22.71	22.63	23.50
		1	13	22.59	22.75	22.56	23.50
		1	24	22.58	22.87	22.61	23.50
		12	0	21.78	21.79	21.84	22.50
		12	6	21.76	21.89	21.85	22.50
		12	13	21.70	21.88	21.85	22.50
		25	0	21.85	21.88	21.84	22.50
	16QAM	1	0	22.04	21.59	21.34	22.50
		1	13	21.67	21.86	21.42	22.50
		1	24	21.34	21.41	21.31	22.50
		12	0	20.67	20.74	20.83	21.50
		12	6	20.69	20.69	20.86	21.50
		12	13	20.64	20.77	20.72	21.50
		25	0	20.79	20.91	20.63	21.50

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Bandwidth	Modulation	RB size	RB offset	Channel 26090	Channel 26365	Channel 26640	Tune up
10MHz	QPSK	1	0	22.82	22.66	22.53	23.50
		1	25	22.78	23.05	22.90	23.50
		1	49	22.58	22.57	23.19	23.50
		25	0	21.83	21.94	21.93	22.50
		25	13	21.83	21.94	21.85	22.50
		25	25	21.82	21.96	21.78	22.50
		50	0	21.92	21.96	21.90	22.50
	16QAM	1	0	21.55	21.16	21.66	22.50
		1	25	22.15	21.54	21.72	22.50
		1	49	21.81	21.14	21.29	22.50
		25	0	20.78	21.04	21.05	21.50
		25	13	20.92	21.10	21.14	21.50
		25	25	20.97	21.13	20.98	21.50
		50	0	20.84	21.02	20.82	21.50

Bandwidth	Modulation	RB size	RB offset	Channel 26115	Channel 26365	Channel 26615	Tune up
15MHz	QPSK	1	0	22.70	22.67	22.35	23.50
		1	38	22.89	22.93	22.87	23.50
		1	74	22.47	22.82	22.68	23.50
		36	0	22.02	21.95	21.96	22.50
		36	18	21.98	21.97	21.91	22.50
		36	39	21.85	21.98	21.84	22.50
		75	0	21.88	21.98	21.92	22.50
	16QAM	1	0	21.90	21.67	21.42	22.50
		1	38	22.01	22.34	22.25	22.50
		1	74	21.40	21.64	21.87	22.50
		36	0	20.82	20.96	21.03	21.50
		36	18	20.91	20.98	20.94	21.50
		36	39	20.78	21.02	20.90	21.50
		75	0	20.90	20.98	20.93	21.50

Bandwidth	Modulation	RB size	RB offset	Channel 26140	Channel 26365	Channel 26590	Tune up
20MHz	QPSK	1	0	**22.92**	22.81	22.68	23.50
		1	50	22.78	22.61	22.57	23.50
		1	99	22.54	22.81	22.36	23.50
		50	0	21.57	21.61	21.65	22.50
		50	25	**21.74**	21.47	21.45	22.50
		50	50	21.63	21.51	21.38	22.50
		100	0	21.73	21.52	21.56	22.50
	16QAM	1	0	21.32	21.67	21.48	22.50
		1	50	21.53	21.32	21.62	22.50
		1	99	20.99	21.39	21.07	22.50
		50	0	20.61	20.57	20.62	21.50
		50	25	20.63	20.45	20.58	21.50
		50	50	20.57	20.33	20.48	21.50
		100	0	20.62	20.53	20.46	21.50

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LTE Band 26				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 26697	Channel 26865	Channel 27033	Tune up
1.4MHz	QPSK	1	0	22.69	22.82	22.85	23.50
		1	2	22.78	22.67	22.82	23.50
		1	5	22.62	22.85	22.70	23.50
		3	0	22.79	22.89	23.02	23.50
		3	2	22.77	22.86	22.91	23.50
		3	3	22.82	22.84	22.76	23.50
		6	0	21.86	21.83	21.81	22.50
	16QAM	1	0	21.82	21.78	22.16	22.50
		1	2	21.90	22.00	21.70	22.50
		1	5	21.83	22.06	21.12	22.50
		3	0	21.77	22.03	21.68	22.50
		3	2	21.91	21.83	21.55	22.50
		3	3	21.85	21.78	21.47	22.50
		6	0	20.73	20.83	20.72	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 26705	Channel 26865	Channel 27025	Tune up
3MHz	QPSK	1	0	22.66	22.69	22.93	23.50
		1	7	22.73	22.67	22.81	23.50
		1	14	22.72	22.66	22.47	23.50
		8	0	21.80	21.69	21.98	22.50
		8	4	21.85	21.80	21.65	22.50
		8	7	21.79	21.81	21.70	22.50
		15	0	21.81	21.76	21.81	22.50
	16QAM	1	0	22.04	21.36	21.20	22.50
		1	7	21.98	21.55	21.51	22.50
		1	14	21.34	21.39	21.18	22.50
		8	0	20.81	20.62	20.80	21.50
		8	4	20.84	20.96	20.61	21.50
		8	7	20.95	20.93	20.74	21.50
		15	0	20.80	20.86	20.43	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 26715	Channel 26865	Channel 27015	Tune up
5MHz	QPSK	1	0	22.42	22.27	22.58	23.50
		1	13	22.64	22.71	22.46	23.50
		1	24	22.48	22.68	22.42	23.50
		12	0	21.78	21.74	21.74	22.50
		12	6	21.83	21.90	21.75	22.50
		12	13	21.79	21.79	21.72	22.50
		25	0	21.79	21.76	21.74	22.50
	16QAM	1	0	21.86	22.08	21.29	22.50
		1	13	21.68	21.73	21.63	22.50
		1	24	22.03	21.52	21.32	22.50
		12	0	20.76	20.74	20.77	21.50
		12	6	20.74	20.74	20.50	21.50
		12	13	20.68	20.71	20.58	21.50

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		25	0	20.91	20.70	20.71	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 26750	Channel 26865	Channel 26990	Tune up
10MHz	QPSK	1	0	22.61	22.56	22.50	23.50
		1	25	22.71	22.66	22.96	23.50
		1	49	22.49	22.74	22.52	23.50
		25	0	21.86	21.85	21.90	22.50
		25	13	21.83	21.81	21.89	22.50
		25	25	21.80	21.77	21.68	22.50
		50	0	21.79	21.77	21.82	22.50
	16QAM	1	0	21.71	20.81	21.32	22.50
		1	25	22.25	21.57	21.39	22.50
		1	49	21.66	22.29	20.85	22.50
		25	0	20.75	20.81	20.85	21.50
		25	13	20.78	20.85	20.72	21.50
		25	25	20.75	20.83	20.79	21.50
		50	0	20.79	20.70	20.77	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 26775	Channel 26865	Channel 26965	Tune up
15MHz	QPSK	1	0	22.72	22.58	22.51	23.50
		1	38	**22.96**	22.77	22.83	23.50
		1	74	22.72	22.73	22.47	23.50
		36	0	**21.90**	21.81	21.86	22.50
		36	18	21.89	21.81	21.83	22.50
		36	39	21.78	21.90	21.78	22.50
		75	0	21.84	21.79	21.89	22.50
	16QAM	1	0	21.99	21.37	21.69	22.50
		1	38	21.91	21.06	21.38	22.50
		1	74	21.29	21.04	20.75	22.50
		36	0	20.68	20.68	20.90	21.50
		36	18	20.89	20.81	20.86	21.50
		36	39	20.72	20.77	20.62	21.50
		75	0	20.80	20.70	20.75	21.50

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LTE Band 66				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 131979	Channel 132322	Channel 132665	Tune up
1.4MHz	QPSK	1	0	23.26	23.56	23.46	24.50
		1	2	23.57	23.65	23.61	24.50
		1	5	23.31	23.46	23.27	24.50
		3	0	22.57	22.60	22.59	24.50
		3	1	22.75	22.57	22.70	24.50
		3	3	22.71	22.68	22.57	24.50
		6	0	22.51	22.65	22.33	23.50
	16QAM	1	0	22.07	23.12	22.97	23.50
		1	2	22.99	22.56	22.72	23.50
		1	5	22.87	22.05	22.50	23.50
		3	0	21.66	21.60	21.58	23.50
		3	1	21.60	21.61	21.55	23.50
		3	3	21.65	21.63	21.58	23.50
		6	0	21.51	21.59	21.46	22.50
Bandwidth	Modulation	RB size	RB offset	Channel 131987	Channel 132322	Channel 132657	Tune up
3MHz	QPSK	1	0	23.29	23.65	23.37	24.50
		1	7	23.60	23.82	23.62	24.50
		1	14	23.39	23.49	23.24	24.50
		8	0	22.47	22.57	22.50	23.50
		8	4	22.67	22.66	22.54	23.50
		8	7	22.77	22.57	22.54	23.50
		15	0	22.52	22.60	22.33	23.50
	16QAM	1	0	22.07	23.21	22.97	23.50
		1	7	22.95	22.42	22.70	23.50
		1	14	22.91	22.02	22.52	23.50
		8	0	21.49	21.57	21.62	22.50
		8	4	21.65	21.55	21.43	22.50
		8	7	21.46	21.61	21.57	22.50
		15	0	21.75	21.61	21.47	22.50
Bandwidth	Modulation	RB size	RB offset	Channel 131997	Channel 132322	Channel 132647	Tune up
5MHz	QPSK	1	0	23.25	23.59	23.55	24.50
		1	13	23.62	23.72	23.83	24.50
		1	24	23.44	23.64	23.14	24.50
		12	0	22.41	22.70	22.63	23.50
		12	6	22.63	22.65	22.56	23.50
		12	13	22.60	22.70	22.37	23.50
		25	0	22.73	22.62	22.48	23.50
	16QAM	1	0	22.16	23.04	23.09	23.50
		1	13	22.94	22.59	22.77	23.50
		1	24	22.77	22.06	22.50	23.50
		12	0	21.74	21.54	21.73	22.50
		12	6	21.65	21.38	21.51	22.50
		12	13	21.69	21.71	21.48	22.50
		25	0	21.51	21.67	21.46	22.50

Bandwidth	Modulation	RB size	RB offset	Channel 132022	Channel 132322	Channel 132622	Tune up
10MHz	QPSK	1	0	23.37	23.70	23.37	24.50
		1	25	23.53	23.85	23.85	24.50
		1	49	23.37	23.44	23.17	24.50
		25	0	22.42	22.78	22.51	23.50
		25	13	22.65	22.69	22.66	23.50
		25	25	22.68	22.63	22.41	23.50
		50	0	22.63	22.69	22.45	23.50
	16QAM	1	0	22.16	23.11	22.97	23.50
		1	25	22.97	22.44	22.80	23.50
		1	49	22.84	22.03	22.65	23.50
		25	0	21.53	21.74	21.63	22.50
		25	13	21.64	21.53	21.63	22.50
		25	25	21.64	21.80	21.60	22.50
		50	0	21.62	21.67	21.53	22.50

Bandwidth	Modulation	RB size	RB offset	Channel 132047	Channel 132322	Channel 132597	Tune up
15MHz	QPSK	1	0	23.29	23.76	23.39	24.50
		1	38	23.60	23.84	23.72	24.50
		1	74	23.46	23.63	23.32	24.50
		36	0	22.55	22.67	22.56	23.50
		36	18	22.68	22.70	22.65	23.50
		36	39	22.70	22.61	22.45	23.50
		75	0	22.57	22.65	22.49	23.50
	16QAM	1	0	22.03	23.06	23.05	23.50
		1	38	22.79	22.44	22.86	23.50
		1	74	22.72	22.04	22.42	23.50
		36	0	21.66	21.56	21.80	22.50
		36	18	21.58	21.59	21.60	22.50
		36	39	21.62	21.64	21.39	22.50
		75	0	21.71	21.43	21.60	22.50

Bandwidth	Modulation	RB size	RB offset	Channel 132072	Channel 132322	Channel 132572	Tune up
20MHz	QPSK	1	0	23.32	23.66	23.47	24.50
		1	50	**23.60**	**23.77**	**23.76**	24.50
		1	99	23.43	23.54	23.28	24.50
		50	0	22.56	**22.72**	22.58	23.50
		50	25	22.71	22.63	22.62	23.50
		50	50	22.70	22.65	22.52	23.50
		100	0	22.66	**22.67**	22.48	23.50
	16QAM	1	0	22.14	23.13	23.10	23.50
		1	50	22.94	22.52	22.84	23.50
		1	99	22.87	22.05	22.57	23.50
		50	0	21.64	21.68	21.71	22.50
		50	25	21.65	21.53	21.58	22.50
		50	50	21.60	21.71	21.53	22.50
		100	0	21.65	21.57	21.51	22.50

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LTE Band 71				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 133147	Channel 133322	Channel 133447	Tune up
5MHz	QPSK	1	0	23.21	23.44	23.20	24.50
		1	13	23.74	23.59	23.40	24.50
		1	24	23.48	23.35	22.91	24.50
		12	0	22.56	22.49	22.49	23.50
		12	6	22.48	22.36	22.55	23.50
		12	13	22.50	22.30	22.45	23.50
		25	0	22.45	22.41	22.34	23.50
	16QAM	1	0	21.99	22.48	22.84	23.50
		1	13	22.64	22.86	23.08	23.50
		1	24	22.10	22.72	22.54	23.50
		12	0	21.34	21.46	21.51	22.50
		12	6	21.36	21.47	21.15	22.50
		12	13	21.30	21.28	21.49	22.50
		25	0	21.30	21.31	21.37	22.50
Bandwidth	Modulation	RB size	RB offset	Channel 133172	Channel 133322	Channel 133422	Tune up
10MHz	QPSK	1	0	23.16	23.40	23.22	24.50
		1	25	23.66	23.53	23.39	24.50
		1	49	23.61	23.24	22.94	24.50
		25	0	22.54	22.47	22.33	23.50
		25	13	22.61	22.49	22.53	23.50
		25	25	22.61	22.43	22.37	23.50
		50	0	22.60	22.55	22.51	23.50
	16QAM	1	0	21.81	22.42	22.81	23.50
		1	25	22.63	22.98	22.92	23.50
		1	49	22.07	22.58	22.47	23.50
		25	0	21.46	21.47	21.43	22.50
		25	13	21.39	21.27	21.09	22.50
		25	25	21.27	21.29	21.33	22.50
		50	0	21.29	21.32	21.43	22.50
Bandwidth	Modulation	RB size	RB offset	Channel 133197	Channel 133322	Channel 133397	Tune up
15MHz	QPSK	1	0	23.27	23.59	23.19	24.50
		1	38	23.89	23.51	23.58	24.50
		1	74	23.67	23.23	23.07	24.50
		36	0	22.48	22.48	22.48	23.50
		36	18	22.46	22.48	22.55	23.50
		36	39	22.45	22.54	22.48	23.50
		75	0	22.41	22.50	22.39	23.50
	16QAM	1	0	21.95	22.29	22.79	23.50
		1	38	22.64	22.93	22.87	23.50
		1	74	22.01	22.65	22.44	23.50
		36	0	21.34	21.58	21.46	22.50
		36	18	21.34	21.27	21.24	22.50
		36	39	21.35	21.48	21.39	22.50
		75	0	21.37	21.33	21.35	22.50

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Bandwidth	Modulation	RB size	RB offset	Channel 133222	Channel 133322	Channel 133372	Tune up
20MHz	QPSK	1	0	23.26	23.51	23.20	24.50
		1	50	**23.80**	23.59	23.49	24.50
		1	99	23.63	23.30	23.06	24.50
		50	0	22.56	22.51	22.39	23.50
		50	25	**22.57**	22.46	22.47	23.50
		50	50	22.55	22.44	22.43	23.50
		100	0	22.56	22.49	22.43	23.50
	16QAM	1	0	21.95	22.41	22.77	23.50
		1	50	22.56	22.96	22.98	23.50
		1	99	22.14	22.68	22.52	23.50
		50	0	21.38	21.50	21.45	22.50
		50	25	21.49	21.39	21.23	22.50
		50	50	21.39	21.38	21.39	22.50
		100	0	21.43	21.36	21.33	22.50

LTE Band 41 Full power (Class 2)				Conducted Power(dBm)					
Bandwidth	Modulation	RB size	RB offset	Channel 39675	Channel 40148	Channel 40620	Channel 41093	Channel 41565	Tune up
5MHz	QPSK	1	0	25.98	25.54	25.79	25.58	25.73	26.00
		1	13	25.64	25.87	25.73	25.78	25.84	26.00
		1	24	25.79	25.72	25.72	25.94	25.85	26.00
		12	0	24.90	24.84	24.89	24.99	25.00	25.00
		12	6	24.89	24.75	24.97	24.92	24.92	25.00
		12	13	24.79	24.75	24.77	24.69	24.83	25.00
		25	0	24.71	24.77	24.73	24.82	24.81	25.00
	16QAM	1	0	24.97	25.00	24.82	24.95	24.90	25.00
		1	13	24.81	24.88	24.84	24.86	24.72	25.00
		1	24	24.72	24.90	24.80	24.79	24.90	25.00
		12	0	23.90	23.93	23.80	23.61	23.78	24.00
		12	6	23.89	23.64	23.82	23.61	23.78	24.00
		12	13	23.69	23.59	23.77	23.79	23.60	24.00
		25	0	23.87	23.69	23.80	23.79	23.87	24.00
Bandwidth	Modulation	RB size	RB offset	Channel 39700	Channel 40160	Channel 40620	Channel 41080	Channel 41540	Tune up
10MHz	QPSK	1	0	25.95	25.62	25.86	25.64	25.74	26.00
		1	25	25.82	25.76	25.86	25.78	25.72	26.00
		1	49	25.80	25.80	25.85	25.89	25.88	26.00
		25	0	24.97	24.80	24.96	24.90	24.87	25.00
		25	13	24.96	24.84	24.89	24.87	24.99	25.00
		25	25	24.65	24.82	24.78	24.75	24.76	25.00
		50	0	24.68	24.78	24.85	24.76	24.73	25.00
	16QAM	1	0	24.94	24.92	24.86	24.97	24.93	25.00
		1	25	24.88	24.89	24.82	24.95	24.70	25.00
		1	49	24.68	24.75	24.71	24.67	24.88	25.00
		25	0	23.80	23.81	23.81	23.69	23.80	24.00

		25	13	23.76	23.58	23.76	23.72	23.72	24.00
		25	25	23.79	23.68	23.79	23.68	23.72	24.00
		50	0	23.92	23.63	23.83	23.74	23.83	24.00
Bandwidth	Modulation	RB size	RB offset	Channel 39725	Channel 40173	Channel 40620	Channel 41068	Channel 41515	Tune up
15MHz	QPSK	1	0	25.97	25.66	25.89	25.54	25.66	26.00
		1	38	25.72	25.70	25.84	25.85	25.72	26.00
		1	74	25.85	25.67	25.89	25.75	25.87	26.00
		36	0	24.91	24.90	24.94	24.96	24.91	25.00
		36	18	24.85	24.83	24.83	24.89	24.88	25.00
		36	39	24.82	24.82	24.82	24.72	24.66	25.00
		75	0	24.74	24.66	24.81	24.79	24.89	25.00
	16QAM	1	0	24.87	24.90	24.95	24.95	24.95	25.00
		1	38	24.75	24.77	24.71	24.87	24.84	25.00
		1	74	24.64	24.73	24.79	24.76	24.88	25.00
		36	0	23.83	23.78	23.79	23.77	23.93	24.00
		36	18	23.89	23.55	23.74	23.79	23.69	24.00
		36	39	23.78	23.66	23.76	23.69	23.65	24.00
		75	0	23.86	23.64	23.79	23.78	23.80	24.00
Bandwidth	Modulation	RB size	RB offset	Channel 39750	Channel 40185	Channel 40620	Channel 41055	Channel 41490	Tune up
20MHz	QPSK	1	0	25.84	25.64	25.83	25.57	25.85	26.00
		1	50	25.73	25.79	25.81	25.76	25.81	26.00
		1	99	25.80	25.74	25.79	25.84	25.82	26.00
		50	0	24.86	24.89	24.89	24.86	24.90	25.00
		50	25	24.88	24.83	24.88	24.87	24.89	25.00
		50	50	24.73	24.84	24.78	24.72	24.74	25.00
		100	0	24.71	24.73	24.75	24.81	24.79	25.00
	16QAM	1	0	24.90	24.96	24.88	24.96	24.92	25.00
		1	50	24.84	24.84	24.81	24.87	24.80	25.00
		1	99	24.70	24.81	24.79	24.70	24.85	25.00
		50	0	23.86	23.84	23.77	23.68	23.87	24.00
		50	25	23.84	23.65	23.75	23.70	23.78	24.00
		50	50	23.77	23.64	23.71	23.71	23.62	24.00
		100	0	23.86	23.73	23.76	23.81	23.85	24.00

LTE Band 41 Full power (Class 3)				Conducted Power(dBm)					
Bandwidth	Modulation	RB size	RB offset	Channel 39675	Channel 40148	Channel 40620	Channel 41093	Channel 41565	Tune up
5MHz	QPSK	1	0	23.51	23.44	23.24	23.35	23.49	24.70
		1	13	23.00	23.01	23.05	23.01	23.07	24.70
		1	24	23.21	23.18	23.11	23.11	23.16	24.70
		12	0	22.56	22.61	22.59	22.56	22.76	23.70
		12	6	22.39	22.58	22.48	22.67	22.50	23.70
		12	13	22.52	22.53	22.62	22.53	22.47	23.70
		25	0	22.50	22.59	22.48	22.54	22.49	23.70
	16QAM	1	0	22.34	22.43	22.57	22.39	22.62	23.70
		1	13	22.65	22.63	22.46	22.45	22.68	23.70
		1	24	22.53	22.37	22.43	22.47	22.46	23.70
		12	0	21.76	21.82	21.82	21.90	21.88	22.70
		12	6	21.56	21.70	21.84	21.74	21.71	22.70
		12	13	21.78	21.72	21.79	21.67	21.73	22.70
		25	0	21.71	21.70	21.77	21.58	21.71	22.70
Bandwidth	Modulation	RB size	RB offset	Channel 39700	Channel 40160	Channel 40620	Channel 41080	Channel 41540	Tune up
10MHz	QPSK	1	0	23.49	23.42	23.28	23.30	23.51	24.70
		1	25	23.07	23.16	23.09	23.00	23.13	24.70
		1	49	23.18	23.07	23.09	23.05	23.26	24.70
		25	0	22.61	22.72	22.64	22.62	22.65	23.70
		25	13	22.39	22.62	22.50	22.64	22.37	23.70
		25	25	22.57	22.48	22.60	22.58	22.48	23.70
		50	0	22.65	22.43	22.58	22.60	22.44	23.70
	16QAM	1	0	22.37	22.32	22.43	22.36	22.60	23.70
		1	25	22.56	22.73	22.46	22.42	22.68	23.70
		1	49	22.52	22.42	22.42	22.48	22.34	23.70
		25	0	21.68	21.77	21.86	21.90	21.78	22.70
		25	13	21.66	21.59	21.65	21.80	21.75	22.70
		25	25	21.83	21.69	21.74	21.72	21.62	22.70
		50	0	21.74	21.69	21.73	21.71	21.71	22.70
Bandwidth	Modulation	RB size	RB offset	Channel 39725	Channel 40173	Channel 40620	Channel 41068	Channel 41515	Tune up
15MHz	QPSK	1	0	23.37	23.34	23.36	23.32	23.62	24.70
		1	38	23.06	23.17	23.10	23.19	23.17	24.70
		1	74	23.14	23.19	23.08	23.01	23.21	24.70
		36	0	22.69	22.69	22.56	22.62	22.61	23.70
		36	18	22.49	22.51	22.49	22.68	22.38	23.70
		36	39	22.47	22.61	22.58	22.58	22.63	23.70
		75	0	22.47	22.53	22.57	22.51	22.56	23.70
	16QAM	1	0	22.31	22.43	22.50	22.36	22.53	23.70
		1	38	22.60	22.69	22.48	22.42	22.58	23.70
		1	74	22.45	22.47	22.46	22.39	22.48	23.70
		36	0	21.69	21.77	21.86	21.91	21.85	22.70
		36	18	21.56	21.75	21.71	21.87	21.74	22.70
		36	39	21.80	21.68	21.62	21.72	21.69	22.70
		75	0	21.68	21.70	21.79	21.63	21.85	22.70

Bandwidth	Modulation	RB size	RB offset	Channel 39750	Channel 40185	Channel 40620	Channel 41055	Channel 41490	Tune up
20MHz	QPSK	1	0	**23.44**	**23.38**	**23.27**	**23.33**	**23.56**	24.70
		1	50	23.08	23.10	23.09	23.10	23.15	24.70
		1	99	23.19	23.14	23.11	23.09	23.20	24.70
		50	0	**22.63**	**22.71**	**22.61**	22.55	**22.72**	23.70
		50	25	22.45	22.59	22.55	22.57	22.45	23.70
		50	50	22.50	22.58	22.60	**22.58**	22.56	23.70
		100	0	**22.55**	22.53	22.51	22.52	22.49	23.70
	16QAM	1	0	22.39	22.39	22.49	22.42	22.58	23.70
		1	50	22.59	22.65	22.55	22.51	22.64	23.70
		1	99	22.54	22.40	22.48	22.41	22.41	23.70
		50	0	21.71	21.80	21.76	21.83	21.79	22.70
		50	25	21.64	21.67	21.74	21.82	21.76	22.70
		50	50	21.76	21.63	21.69	21.65	21.67	22.70
		100	0	21.72	21.79	21.70	21.63	21.78	22.70

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone 215000 t (86-512) 62992980 www.sgsgroup.com.cn
中国·苏州·中国（江苏）自由贸易试验区苏州片区苏州工业园区润胜路1号的6号厂房南部 邮编：215000 t (86-512) 62992980 sgs.china@sgs.com

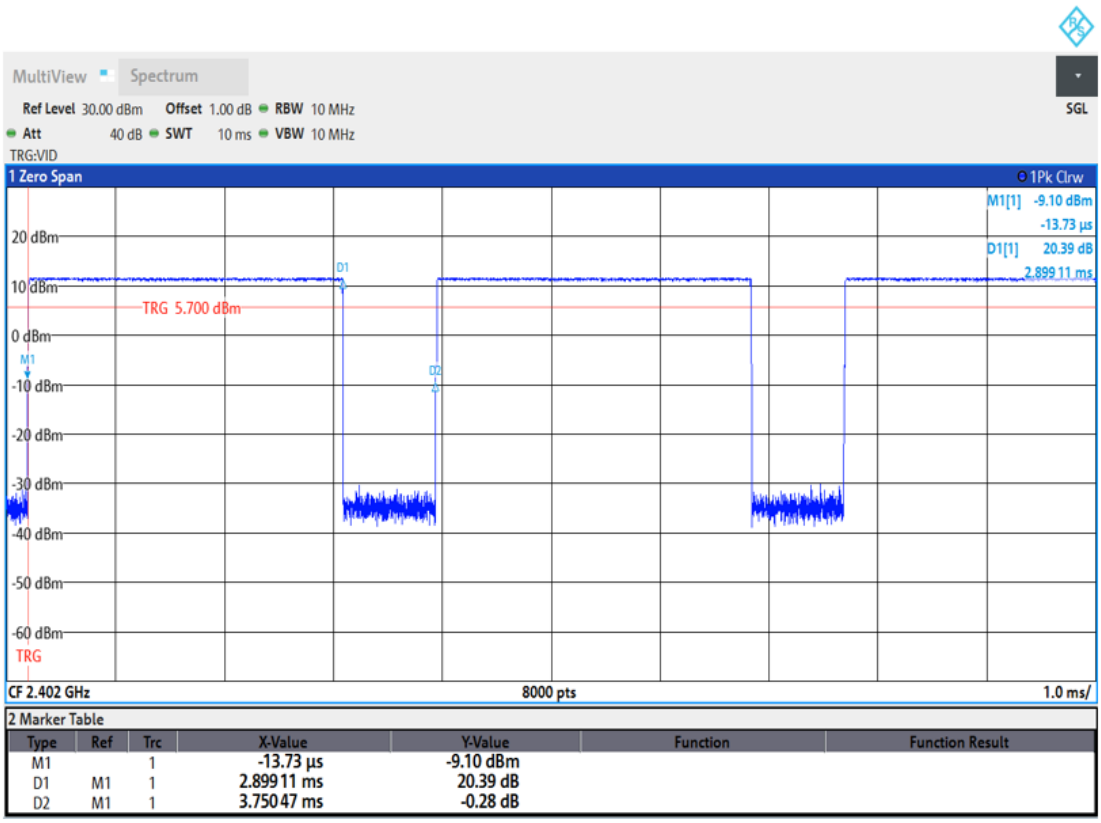
8.1.3 Conducted Power of WIFI

Wi-Fi	Average Power (dBm) for Data Rates (Mbps)		
2450MHz	Channel	1	Tune up
802.11b	1	15.35	17.00
	6	15.26	17.00
	11	16.56	17.00
802.11g	Channel	6	Tune up
	1	12.00	14.00
	6	12.20	14.00
	11	13.40	14.00
802.11n HT20	Channel	6.5	Tune up
	1	12.07	14.00
	6	12.14	14.00
	11	13.00	14.00
802.11n HT40	Channel	13.5	Tune up
	3	13.63	14.00
	6	13.75	14.00
	9	13.80	14.00

Note:
a) Power must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band.
b) Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.
1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.
2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.
c) For each transmission mode configuration, power must be measured for the highest and lowest channels; and at the mid-band channel(s) when there are at least 3 channels. For configurations with multiple mid-band channels, due to an even number of channels, both channels should be measured.

8.1.4 Conducted Power of BT

BT DH5 Duty Cycle=2.89911/3.75047=77.30%



BT			Tune up (dBm)
Modulation	Channel	Frequency (MHz)	
GFSK	0	2402	12.00
	39	2441	12.00
	78	2480	12.00
π/4DQPSK	0	2402	11.00
	39	2441	11.00
	78	2480	11.00
8DPSK	0	2402	11.00
	39	2441	11.00
	78	2480	11.00
BLE	0	2402	1.50
	19	2420	1.50
	39	2441	1.50

Note:
1)The conducted power of BT is measured with RMS detector.

8.2 Measurement of SAR Data

Note:

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

2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

- ≤ 0.8W/kg for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is ≤ 100MHz.
- ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz.

3) For WIFI2.4G SAR test when the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR test for the other 802.11 modes are not required.

8.2.1 SAR Result of WCDMA Band II

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.(℃)
Head Test Data										
Left cheek	RMC	9400/1880	1:1	0.051	0.17	22.23	23.70	1.403	**0.072**	21.9
Left tilted	RMC	9400/1880	1:1	0.036	0.05	22.23	23.70	1.403	0.050	21.9
Right cheek	RMC	9400/1880	1:1	0.045	0.01	22.23	23.70	1.403	0.063	21.9
Right tilted	RMC	9400/1880	1:1	0.047	0.19	22.23	23.70	1.403	0.066	21.9
Body worn Test data(Separate 15mm)										
Front side	RMC	9400/1880	1:1	0.110	0.11	22.23	23.70	1.403	0.154	21.9
Back side	RMC	9400/1880	1:1	0.262	-0.01	22.23	23.70	1.403	**0.368**	21.9
Hotspot Test data(Separate 10mm)										
Front side	RMC	9400/1880	1:1	0.180	-0.02	22.23	23.70	1.403	0.253	21.9
Back side	RMC	9400/1880	1:1	0.512	-0.04	22.23	23.70	1.403	**0.718**	21.9
Left side	RMC	9400/1880	1:1	0.086	0.03	22.23	23.70	1.403	0.120	21.9
Right side	RMC	9400/1880	1:1	0.060	0.08	22.23	23.70	1.403	0.084	21.9
Bottom side	RMC	9400/1880	1:1	0.480	0.02	22.23	23.70	1.403	0.673	21.9

Table 11： SAR of WCDMA Band II for Head and Body.

8.2.2 SAR Result of WCDMA Band IV

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.(℃)
Head Test Data										
Left cheek	RMC	1412/1732.4	1:1	0.225	0.10	22.58	23.70	1.294	0.291	22.0
Left tilted	RMC	1412/1732.4	1:1	0.147	0.12	22.58	23.70	1.294	0.190	22.0
Right cheek	RMC	1412/1732.4	1:1	0.258	0.02	22.58	23.70	1.294	**0.334**	22.0
Right tilted	RMC	1412/1732.4	1:1	0.168	0.09	22.58	23.70	1.294	0.217	22.0
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.288	0.19	22.58	23.70	1.294	0.373	22.0
Back side	RMC	1412/1732.4	1:1	0.379	-0.02	22.58	23.70	1.294	**0.491**	22.0
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.500	0.19	22.58	23.70	1.294	0.647	22.0
Back side	RMC	1412/1732.4	1:1	0.804	0.01	22.58	23.70	1.294	1.041	22.0
Left side	RMC	1412/1732.4	1:1	0.320	0.10	22.58	23.70	1.294	0.414	22.0
Right side	RMC	1412/1732.4	1:1	0.195	0.11	22.58	23.70	1.294	0.252	22.0
Bottom side	RMC	1412/1732.4	1:1	0.409	0.14	22.58	23.70	1.294	0.529	22.0
Back side	RMC	1312/1712.4	1:1	0.845	0.05	22.48	23.70	1.324	1.119	22.0
Back side	RMC	1513/1752.6	1:1	0.867	-0.02	22.49	23.70	1.321	**1.146**	22.0
Back side-Repeated	RMC	1513/1752.6	1:1	0.805	0.08	22.49	23.70	1.321	1.064	22.0

Table 12： SAR of WCDMA Band IV for Head and Body.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Back side	1513/1752.6	0.867	0.805	1.077	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						

8.2.3 SAR Result of WCDMA Band V

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.(℃)
Head Test Data										
Left cheek	RMC	4182/836.4	1:1	0.242	-0.12	22.25	23.70	1.396	0.338	22.0
Left tilted	RMC	4182/836.4	1:1	0.128	0.19	22.25	23.70	1.396	0.179	22.0
Right cheek	RMC	4182/836.4	1:1	0.274	0.15	22.25	23.70	1.396	**0.383**	22.0
Right tilted	RMC	4182/836.4	1:1	0.148	-0.04	22.25	23.70	1.396	0.207	22.0
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.233	0.04	22.25	23.70	1.396	0.325	22.0
Back side	RMC	4182/836.4	1:1	0.272	-0.01	22.25	23.70	1.396	**0.380**	22.0
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.226	0.04	22.25	23.70	1.396	0.316	22.0
Back side	RMC	4182/836.4	1:1	0.406	0.06	22.25	23.70	1.396	**0.567**	22.0
Left side	RMC	4182/836.4	1:1	0.253	0.04	22.25	23.70	1.396	0.353	22.0
Right side	RMC	4182/836.4	1:1	0.335	0.01	22.25	23.70	1.396	0.468	22.0
Bottom side	RMC	4182/836.4	1:1	0.174	0.18	22.25	23.70	1.396	0.243	22.0

Table 13： SAR of WCDMA Band V for Head and Body.

8.2.4 SAR Result of LTE Band 12

Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek	10	QPSK 1_25	23060/704	1:1	0.260	0.10	23.43	23.50	1.016	0.264	22.3
Left tilted	10	QPSK 1_25	23060/704	1:1	0.159	0.05	23.43	23.50	1.016	0.162	22.3
Right cheek	10	QPSK 1_25	23060/704	1:1	0.286	0.09	23.43	23.50	1.016	**0.291**	22.3
Right tilted	10	QPSK 1_25	23060/704	1:1	0.136	0.17	23.43	23.50	1.016	0.138	22.3
Head Test Data(50%RB)											
Left cheek	10	QPSK 25_25	23095/707.5	1:1	0.188	0.17	22.41	22.50	1.021	0.192	22.3
Left tilted	10	QPSK 25_25	23095/707.5	1:1	0.125	0.12	22.41	22.50	1.021	0.128	22.3
Right cheek	10	QPSK 25_25	23095/707.5	1:1	0.214	0.16	22.41	22.50	1.021	0.218	22.3
Right tilted	10	QPSK 25_25	23095/707.5	1:1	0.107	0.19	22.41	22.50	1.021	0.109	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1_25	23060/704	1:1	0.158	0.04	23.43	23.50	1.016	0.161	22.3
Back side	10	QPSK 1_25	23060/704	1:1	0.467	0.02	23.43	23.50	1.016	**0.475**	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	10	QPSK 25_25	23095/707.5	1:1	0.130	0.06	22.41	22.50	1.021	0.133	22.3
Back side	10	QPSK 25_25	23095/707.5	1:1	0.360	0.03	22.41	22.50	1.021	0.368	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	10	QPSK 1_25	23060/704	1:1	0.160	0.04	23.43	23.50	1.016	0.163	22.3
Back side	10	QPSK 1_25	23060/704	1:1	0.568	-0.01	23.43	23.50	1.016	**0.577**	22.3
Left side	10	QPSK 1_25	23060/704	1:1	0.191	0.19	23.43	23.50	1.016	0.194	22.3
Right side	10	QPSK 1_25	23060/704	1:1	0.281	0.04	23.43	23.50	1.016	0.286	22.3
Bottom side	10	QPSK 1_25	23060/704	1:1	0.040	0.19	23.43	23.50	1.016	0.040	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	10	QPSK 25_25	23095/707.5	1:1	0.125	0.06	22.41	22.50	1.021	0.128	22.3
Back side	10	QPSK 25_25	23095/707.5	1:1	0.412	0.02	22.41	22.50	1.021	0.421	22.3
Left side	10	QPSK 25_25	23095/707.5	1:1	0.153	0.03	22.41	22.50	1.021	0.156	22.3
Right side	10	QPSK 25_25	23095/707.5	1:1	0.218	0.02	22.41	22.50	1.021	0.223	22.3
Bottom side	10	QPSK 25_25	23095/707.5	1:1	0.034	0.19	22.41	22.50	1.021	0.035	22.3

Table 14：SAR of LTE Band 12 for Head and Body.

8.2.5 SAR Result of LTE Band 25

Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_0	26140/1860	1:1	0.056	0.06	22.92	23.50	1.143	**0.064**	21.9
Left tilted	20	QPSK 1_0	26140/1860	1:1	0.036	0.01	22.92	23.50	1.143	0.041	21.9
Right cheek	20	QPSK 1_0	26140/1860	1:1	0.051	0.01	22.92	23.50	1.143	0.058	21.9
Right tilted	20	QPSK 1_0	26140/1860	1:1	0.051	0.08	22.92	23.50	1.143	0.058	21.9
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_25	26140/1860	1:1	0.050	0.05	21.74	22.50	1.191	0.060	21.9
Left tilted	20	QPSK 50_25	26140/1860	1:1	0.029	0.06	21.74	22.50	1.191	0.035	21.9
Right cheek	20	QPSK 50_25	26140/1860	1:1	0.049	-0.09	21.74	22.50	1.191	0.058	21.9
Right tilted	20	QPSK 50_25	26140/1860	1:1	0.037	0.03	21.74	22.50	1.191	0.044	21.9
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_0	26140/1860	1:1	0.092	0.06	22.92	23.50	1.143	0.106	21.9
Back side	20	QPSK 1_0	26140/1860	1:1	0.222	0.12	22.92	23.50	1.143	**0.254**	21.9
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_25	26140/1860	1:1	0.073	-0.03	21.74	22.50	1.191	0.086	21.9
Back side	20	QPSK 50_25	26140/1860	1:1	0.171	0.13	21.74	22.50	1.191	0.204	21.9
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_0	26140/1860	1:1	0.169	0.06	22.92	23.50	1.143	0.193	21.9
Back side	20	QPSK 1_0	26140/1860	1:1	0.376	0.04	22.92	23.50	1.143	**0.430**	21.9
Left side	20	QPSK 1_0	26140/1860	1:1	0.085	0.04	22.92	23.50	1.143	0.097	21.9
Right side	20	QPSK 1_0	26140/1860	1:1	0.068	0.06	22.92	23.50	1.143	0.077	21.9
Bottom side	20	QPSK 1_0	26140/1860	1:1	0.357	0.07	22.92	23.50	1.143	0.408	21.9
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_25	26140/1860	1:1	0.128	0.04	21.74	22.50	1.191	0.152	21.9
Back side	20	QPSK 50_25	26140/1860	1:1	0.275	0.02	21.74	22.50	1.191	0.328	21.9
Left side	20	QPSK 50_25	26140/1860	1:1	0.059	0.02	21.74	22.50	1.191	0.070	21.9
Right side	20	QPSK 50_25	26140/1860	1:1	0.052	0.08	21.74	22.50	1.191	0.062	21.9
Bottom side	20	QPSK 50_25	26140/1860	1:1	0.295	0.05	21.74	22.50	1.191	0.351	21.9

Table 15：SAR of LTE Band 25 for Head and Body.

8.2.6 SAR Result of LTE Band 26

Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek	15	QPSK 1_38	26775/822.5	1:1	0.281	-0.12	22.96	23.50	1.132	**0.318**	22.0
Left tilted	15	QPSK 1_38	26775/822.5	1:1	0.150	0.14	22.96	23.50	1.132	0.170	22.0
Right cheek	15	QPSK 1_38	26775/822.5	1:1	0.255	0.17	22.96	23.50	1.132	0.289	22.0
Right tilted	15	QPSK 1_38	26775/822.5	1:1	0.177	-0.03	22.96	23.50	1.132	0.200	22.0
Head Test Data(50%RB)											
Left cheek	15	QPSK 36_0	26775/822.5	1:1	0.211	0.02	21.90	22.50	1.148	0.242	22.0
Left tilted	15	QPSK 36_0	26775/822.5	1:1	0.116	0.12	21.90	22.50	1.148	0.133	22.0
Right cheek	15	QPSK 36_0	26775/822.5	1:1	0.229	0.18	21.90	22.50	1.148	0.263	22.0
Right tilted	15	QPSK 36_0	26775/822.5	1:1	0.133	0.18	21.90	22.50	1.148	0.153	22.0
Body worn Test data(Separate 15mm 1RB)											
Front side	15	QPSK 1_38	26775/822.5	1:1	0.341	0.00	22.96	23.50	1.132	0.386	22.0
Back side	15	QPSK 1_38	26775/822.5	1:1	0.396	0.06	22.96	23.50	1.132	**0.448**	22.0
Body worn Test data(Separate 15mm 50%RB)											
Front side	15	QPSK 36_0	26775/822.5	1:1	0.265	0.01	21.90	22.50	1.148	0.304	22.0
Back side	15	QPSK 36_0	26775/822.5	1:1	0.319	0.02	21.90	22.50	1.148	0.366	22.0
Hotspot Test data(Separate 10mm 1RB)											
Front side	15	QPSK 1_38	26775/822.5	1:1	0.336	0.00	22.96	23.50	1.132	0.380	22.0
Back side	15	QPSK 1_38	26775/822.5	1:1	0.384	0.04	22.96	23.50	1.132	0.435	22.0
Left side	15	QPSK 1_38	26775/822.5	1:1	0.352	0.00	22.96	23.50	1.132	0.399	22.0
Right side	15	QPSK 1_38	26775/822.5	1:1	0.453	-0.05	22.96	23.50	1.132	**0.513**	22.0
Bottom side	15	QPSK 1_38	26775/822.5	1:1	0.171	0.19	22.96	23.50	1.132	0.194	22.0
Hotspot Test data(Separate 10mm 50%RB)											
Front side	15	QPSK 36_0	26775/822.5	1:1	0.260	0.01	21.90	22.50	1.148	0.299	22.0
Back side	15	QPSK 36_0	26775/822.5	1:1	0.295	0.06	21.90	22.50	1.148	0.339	22.0
Left side	15	QPSK 36_0	26775/822.5	1:1	0.266	0.02	21.90	22.50	1.148	0.305	22.0
Right side	15	QPSK 36_0	26775/822.5	1:1	0.345	-0.02	21.90	22.50	1.148	0.396	22.0
Bottom side	15	QPSK 36_0	26775/822.5	1:1	0.119	0.12	21.90	22.50	1.148	0.137	22.0

Table 16：SAR of LTE Band 26 for Head and Body.

8.2.7 SAR Result of LTE Band 41

Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek class3	20	QPSK 1_0	41490/2680	1:1.58	0.452	-0.03	23.56	24.70	1.300	**0.588**	22.1
Left cheek class2	20	QPSK 1_0	41490/2680	1:2.31	0.475	0.01	25.85	26.00	1.035	0.492	22.1
Left tilted class3	20	QPSK 1_0	41490/2680	1:1.58	0.184	-0.18	23.56	24.70	1.300	0.239	22.1
Right cheek class3	20	QPSK 1_0	41490/2680	1:1.58	0.276	-0.14	23.56	24.70	1.300	0.359	22.1
Right tilted class3	20	QPSK 1_0	41490/2680	1:1.58	0.293	0.18	23.56	24.70	1.300	0.381	22.1
Head Test Data(50%RB)											
Left cheek class3	20	QPSK 50_0	41490/2680	1:1.58	0.346	0.08	22.72	23.70	1.253	0.434	22.1
Left tilted class3	20	QPSK 50_0	41490/2680	1:1.58	0.154	-0.03	22.72	23.70	1.253	0.193	22.1
Right cheek class3	20	QPSK 50_0	41490/2680	1:1.58	0.210	0.04	22.72	23.70	1.253	0.263	22.1
Right tilted class3	20	QPSK 50_0	41490/2680	1:1.58	0.286	0.12	22.72	23.70	1.253	0.358	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side class3	20	QPSK 1_0	41490/2680	1:1.58	0.306	-0.06	23.56	24.70	1.300	0.398	22.1
Back side class3	20	QPSK 1_0	41490/2680	1:1.58	0.358	0.02	23.56	24.70	1.300	**0.465**	22.1
Back side class2	20	QPSK 1_0	41490/2680	1:2.31	0.416	0.01	25.85	26.00	1.035	0.431	22.1
Body worn Test data(Separate 15mm 50%RB)											
Front side class3	20	QPSK 50_0	41490/2680	1:1.58	0.265	0.02	22.72	23.70	1.253	0.332	22.1
Back side class3	20	QPSK 50_0	41490/2680	1:1.58	0.314	0.17	22.72	23.70	1.253	0.393	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side class3	20	QPSK 1_0	41490/2680	1:1.58	0.586	0.06	23.56	24.70	1.300	0.762	22.1
Front side class3	20	QPSK 1_0	39750/2506	1:1.58	0.334	0.19	23.44	24.70	1.337	0.446	22.1
Front side class3	20	QPSK 1_0	40185/2549.5	1:1.58	0.408	0.19	23.38	24.70	1.355	0.553	22.1
Front side class3	20	QPSK 1_0	40620/2593	1:1.58	0.468	0.04	23.27	24.70	1.390	0.650	22.1
Front side class3	20	QPSK 1_0	41055/2636.5	1:1.58	0.498	0.19	23.33	24.70	1.371	0.683	22.1
Back side class3	20	QPSK 1_0	41490/2680	1:1.58	0.634	0.17	23.56	24.70	1.300	0.824	22.1
Back side class3	20	QPSK 1_0	39750/2506	1:1.58	0.367	-0.14	23.44	24.70	1.337	0.491	22.1
Back side class3	20	QPSK 1_0	40185/2549.5	1:1.58	0.437	-0.03	23.38	24.70	1.355	0.592	22.1
Back side class3	20	QPSK 1_0	40620/2593	1:1.58	0.545	-0.09	23.27	24.70	1.390	0.758	22.1
Back side class3	20	QPSK 1_0	41055/2636.5	1:1.58	0.584	-0.16	23.33	24.70	1.371	0.801	22.1
Left side class3	20	QPSK 1_0	41490/2680	1:1.58	0.476	0.10	23.56	24.70	1.300	0.619	22.1
Left side class3	20	QPSK 1_0	39750/2506	1:1.58	0.238	0.20	23.44	24.70	1.337	0.318	22.1
Left side class3	20	QPSK 1_0	40185/2549.5	1:1.58	0.224	0.19	23.38	24.70	1.355	0.304	22.1
Left side class3	20	QPSK 1_0	40620/2593	1:1.58	0.286	0.10	23.27	24.70	1.390	0.398	22.1
Left side class3	20	QPSK 1_0	41055/2636.5	1:1.58	0.365	0.17	23.33	24.70	1.371	0.500	22.1
Right side class3	20	QPSK 1_0	41490/2680	1:1.58	0.096	-0.02	23.56	24.70	1.300	0.125	22.1
Bottom side class3	20	QPSK 1_0	41490/2680	1:1.58	0.397	0.10	23.56	24.70	1.300	0.516	22.1
Hotspot Test data(Separate 10mm 50%RB)											
Front side class3	20	QPSK 50_0	41490/2680	1:1.58	0.498	0.13	22.72	23.70	1.253	0.624	22.1
Front side class3	20	QPSK 50_0	39750/2506	1:1.58	0.279	0.19	22.63	23.70	1.279	0.357	22.1
Front side class3	20	QPSK 50_0	40185/2549.5	1:1.58	0.336	0.16	22.71	23.70	1.256	0.422	22.1
Front side class3	20	QPSK 50_0	40620/2593	1:1.58	0.383	-0.02	22.61	23.70	1.285	0.492	22.1
Front side class3	20	QPSK 50_50	41055/2636.5	1:1.58	0.450	0.05	22.58	23.70	1.294	0.582	22.1
Back side class3	20	QPSK 50_0	41490/2680	1:1.58	0.700	-0.07	22.72	23.70	1.253	**0.877**	22.1
Back side class2	20	QPSK 50_0	41490/2680	1:2.31	0.714	0.01	24.90	25.00	1.023	0.731	22.1
Back side class3	20	QPSK 50_0	39750/2506	1:1.58	0.394	-0.07	22.63	23.70	1.279	0.504	22.1
Back side class3	20	QPSK 50_0	40185/2549.5	1:1.58	0.475	-0.10	22.71	23.70	1.256	0.597	22.1
Back side class3	20	QPSK 50_0	40620/2593	1:1.58	0.593	-0.18	22.61	23.70	1.285	0.762	22.1
Back side class3	20	QPSK 50_50	41055/2636.5	1:1.58	0.497	-0.19	22.58	23.70	1.294	0.643	22.1
Left side class3	20	QPSK 50_0	41490/2680	1:1.58	0.391	0.08	22.72	23.70	1.253	0.490	22.1
Right side class3	20	QPSK 50_0	41490/2680	1:1.58	0.077	0.00	22.72	23.70	1.253	0.097	22.1
Bottom side class3	20	QPSK 50_0	41490/2680	1:1.58	0.329	0.07	22.72	23.70	1.253	0.412	22.1
Hotspot Test data(Separate 10mm 100%RB)											
Back side class3	20	QPSK 100_0	39750/2506	1:1.58	0.659	0.18	22.55	23.70	1.303	0.859	22.1
Front side class3	20	QPSK 100_0	39750/2506	1:1.58	0.352	0.09	22.55	23.70	1.303	0.459	22.1
Left side class3	20	QPSK 100_0	39750/2506	1:1.58	0.321	0.07	22.55	23.70	1.303	0.418	22.1

Table 17：SAR of LTE Band 41 for Head and Body.

8.2.8 SAR Result of LTE Band 66

Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_50	132322/1745	1:1	0.286	-0.09	23.77	24.50	1.183	0.338	22.0
Left tilted	20	QPSK 1_50	132322/1745	1:1	0.187	0.09	23.77	24.50	1.183	0.221	22.0
Right cheek	20	QPSK 1_50	132322/1745	1:1	0.333	0.08	23.77	24.50	1.183	**0.394**	22.0
Right tilted	20	QPSK 1_50	132322/1745	1:1	0.159	-0.18	23.77	24.50	1.183	0.188	22.0
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_0	132322/1745	1:1	0.255	-0.08	22.72	23.50	1.197	0.305	22.0
Left tilted	20	QPSK 50_0	132322/1745	1:1	0.146	0.12	22.72	23.50	1.197	0.175	22.0
Right cheek	20	QPSK 50_0	132322/1745	1:1	0.247	0.10	22.72	23.50	1.197	0.296	22.0
Right tilted	20	QPSK 50_0	132322/1745	1:1	0.123	0.07	22.72	23.50	1.197	0.147	22.0
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	132322/1745	1:1	0.350	0.19	23.77	24.50	1.183	0.414	22.0
Back side	20	QPSK 1_50	132322/1745	1:1	0.565	-0.09	23.77	24.50	1.183	**0.668**	22.0
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_0	132322/1745	1:1	0.291	-0.08	22.72	23.50	1.197	0.348	22.0
Back side	20	QPSK 50_0	132322/1745	1:1	0.471	0.16	22.72	23.50	1.197	0.564	22.0
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	132322/1745	1:1	0.776	0.12	23.77	24.50	1.183	0.918	22.0
Front side	20	QPSK 1_50	132072/1720	1:1	0.724	0.02	23.60	24.50	1.230	0.891	22.0
Front side	20	QPSK 1_50	132572/1770	1:1	0.729	-0.11	23.76	24.50	1.186	0.864	22.0
Back side	20	QPSK 1_50	132322/1745	1:1	0.875	0.08	23.77	24.50	1.183	**1.035**	22.0
Back side-Repeated	20	QPSK 1_50	132322/1745	1:1	0.812	0.03	23.77	24.50	1.183	0.961	22.0
Back side	20	QPSK 1_50	132072/1720	1:1	0.788	0.08	23.60	24.50	1.230	0.969	22.0
Back side	20	QPSK 1_50	132572/1770	1:1	0.674	0.13	23.76	24.50	1.186	0.799	22.0
Left side	20	QPSK 1_50	132322/1745	1:1	0.419	0.19	23.77	24.50	1.183	0.496	22.0
Right side	20	QPSK 1_50	132322/1745	1:1	0.247	0.17	23.77	24.50	1.183	0.292	22.0
Bottom side	20	QPSK 1_50	132322/1745	1:1	0.038	-0.06	23.77	24.50	1.183	0.045	22.0
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_0	132322/1745	1:1	0.573	-0.08	22.72	23.50	1.197	0.686	22.0
Back side	20	QPSK 50_0	132322/1745	1:1	0.616	0.08	22.72	23.50	1.197	0.737	22.0
Left side	20	QPSK 50_0	132322/1745	1:1	0.408	0.19	22.72	23.50	1.197	0.488	22.0
Right side	20	QPSK 50_0	132322/1745	1:1	0.186	0.18	22.72	23.50	1.197	0.223	22.0
Bottom side	20	QPSK 50_0	132322/1745	1:1	0.039	0.19	22.72	23.50	1.197	0.046	22.0
Hotspot Test data(Separate 10mm 100%RB)											
Front side	20	QPSK 100_0	132322/1745	1:1	0.579	0.08	22.67	23.50	1.211	0.701	22.0
Back side	20	QPSK 100_0	132322/1745	1:1	0.669	0.17	22.67	23.50	1.211	0.810	22.0

Table 18：SAR of LTE Band 66 for Head and Body.

8.2.9 SAR Result of LTE Band 71

Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(℃)
Head Test Data(1RB)											
Left cheek	20	QPSK 1_50	133222/673	1:1	0.149	0.15	23.80	24.50	1.175	0.175	22.3
Left tilted	20	QPSK 1_50	133222/673	1:1	0.082	0.04	23.80	24.50	1.175	0.096	22.3
Right cheek	20	QPSK 1_50	133222/673	1:1	0.176	-0.03	23.80	24.50	1.175	**0.207**	22.3
Right tilted	20	QPSK 1_50	133222/673	1:1	0.088	-0.19	23.80	24.50	1.175	0.104	22.3
Head Test Data(50%RB)											
Left cheek	20	QPSK 50_25	133222/673	1:1	0.109	0.09	22.57	23.50	1.239	0.135	22.3
Left tilted	20	QPSK 50_25	133222/673	1:1	0.064	0.15	22.57	23.50	1.239	0.080	22.3
Right cheek	20	QPSK 50_25	133222/673	1:1	0.126	-0.14	22.57	23.50	1.239	0.156	22.3
Right tilted	20	QPSK 50_25	133222/673	1:1	0.067	-0.12	22.57	23.50	1.239	0.082	22.3
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1_50	133222/673	1:1	0.165	-0.08	23.80	24.50	1.175	0.194	22.3
Back side	20	QPSK 1_50	133222/673	1:1	0.245	-0.06	23.80	24.50	1.175	**0.288**	22.3
Body worn Test data(Separate 15mm 50%RB)											
Front side	20	QPSK 50_25	133222/673	1:1	0.127	0.05	22.57	23.50	1.239	0.157	22.3
Back side	20	QPSK 50_25	133222/673	1:1	0.187	0.01	22.57	23.50	1.239	0.232	22.3
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1_50	133222/673	1:1	0.171	0.07	23.80	24.50	1.175	0.201	22.3
Back side	20	QPSK 1_50	133222/673	1:1	0.363	0.00	23.80	24.50	1.175	**0.426**	22.3
Left side	20	QPSK 1_50	133222/673	1:1	0.224	0.07	23.80	24.50	1.175	0.263	22.3
Right side	20	QPSK 1_50	133222/673	1:1	0.308	0.07	23.80	24.50	1.175	0.362	22.3
Bottom side	20	QPSK 1_50	133222/673	1:1	0.068	0.19	23.80	24.50	1.175	0.080	22.3
Hotspot Test data(Separate 10mm 50%RB)											
Front side	20	QPSK 50_25	133222/673	1:1	0.132	0.02	22.57	23.50	1.239	0.164	22.3
Back side	20	QPSK 50_25	133222/673	1:1	0.244	0.02	22.57	23.50	1.239	0.302	22.3
Left side	20	QPSK 50_25	133222/673	1:1	0.173	0.09	22.57	23.50	1.239	0.214	22.3
Right side	20	QPSK 50_25	133222/673	1:1	0.241	0.07	22.57	23.50	1.239	0.299	22.3
Bottom side	20	QPSK 50_25	133222/673	1:1	0.049	0.19	22.57	23.50	1.239	0.060	22.3

Table 19：SAR of LTE Band 71 for Head and Body.

8.2.10 SAR Result of WIFI 2.4G

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.(℃)
Head Test data											
Left cheek	802.11b	11/2462	97.60%	1.025	0.209	0.07	16.56	17.00	1.107	**0.237**	22.1
Left tilted	802.11b	11/2462	97.60%	1.025	0.207	0.10	16.56	17.00	1.107	0.235	22.1
Right cheek	802.11b	11/2462	97.60%	1.025	0.126	0.03	16.56	17.00	1.107	0.143	22.1
Right tilted	802.11b	11/2462	97.60%	1.025	0.102	-0.06	16.56	17.00	1.107	0.116	22.1
Body worn Test data(Separate 15mm)											
Front side	802.11b	11/2462	97.60%	1.025	0.017	-0.09	16.56	17.00	1.107	0.019	22.1
Back side	802.11b	11/2462	97.60%	1.025	0.114	-0.05	16.56	17.00	1.107	**0.129**	22.1
Hotspot Test data (Separate 10mm)											
Front side	802.11b	11/2462	97.60%	1.025	0.055	0.08	16.56	17.00	1.107	0.063	22.1
Back side	802.11b	11/2462	97.60%	1.025	0.247	-0.06	16.56	17.00	1.107	**0.280**	22.1
Left side	802.11b	11/2462	97.60%	1.025	0.027	0.09	16.56	17.00	1.107	0.030	22.1
Right side	802.11b	11/2462	97.60%	1.025	0.130	0.00	16.56	17.00	1.107	0.147	22.1
Top side	802.11b	11/2462	97.60%	1.025	0.075	0.17	16.56	17.00	1.107	0.085	22.1

Table 20：SAR of WIFI 2.4G for Head and Body.

Note:

1) When the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR test for the other 802.11 modes are not required.

Mode	Tune-up (dBm)	Tune-up (mw)	Hightest Reported SAR1-g(W/kg)	Adjusted SAR1-g(W/kg)	SAR test
Head					
802.11b	17.00	50.12	0.237	/	Yes
802.11g	14.00	25.12	/	0.119	No
802.1n 20M	14.00	25.12	/	0.119	No
802.1n 40M	14.00	25.12	/	0.119	No
Body worn Test data(Separate 15mm)					
802.11b	17.00	50.12	0.129	/	Yes
802.11g	14.00	25.12	/	0.065	No
802.1n 20M	14.00	25.12	/	0.065	No
802.1n 40M	14.00	25.12	/	0.065	No
Hotspot Test data (Separate 10mm)					
802.11b	17.00	50.12	0.280	/	Yes
802.11g	14.00	25.12	/	0.140	No
802.1n 20M	14.00	25.12	/	0.140	No
802.1n 40M	14.00	25.12	/	0.140	No

8.2.11 SAR Result of BT

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.(℃)
Head Test data											
Left cheek	DH5	39/2441	77.30%	1.294	0.064	-0.12	11.90	12.00	1.023	**0.085**	22.1
Left tilted	DH5	39/2441	77.30%	1.294	0.052	0.17	11.90	12.00	1.023	0.069	22.1
Right cheek	DH5	39/2441	77.30%	1.294	0.033	0.19	11.90	12.00	1.023	0.044	22.1
Right tilted	DH5	39/2441	77.30%	1.294	0.027	-0.02	11.90	12.00	1.023	0.036	22.1
Body worn Test data(Separate 15mm)											
Front side	DH5	39/2441	77.30%	1.294	0.008	0.04	11.90	12.00	1.023	0.010	22.1
Back side	DH5	39/2441	77.30%	1.294	0.017	0.02	11.90	12.00	1.023	**0.023**	22.1
Hotspot Test data (Separate 10mm)											
Front side	DH5	39/2441	77.30%	1.294	0.015	0.17	11.90	12.00	1.023	0.020	22.1
Back side	DH5	39/2441	77.30%	1.294	0.026	0.19	11.90	12.00	1.023	**0.035**	22.1
Right side	DH5	39/2441	77.30%	1.294	0.026	0.07	11.90	12.00	1.023	0.034	22.1
Top side	DH5	39/2441	77.30%	1.294	0.017	0.01	11.90	12.00	1.023	0.023	22.1

Table 21：SAR of BT for Head and Body.

8.3 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per May 2017 TCB Workshop Notes based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR for each exposure condition. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear.

Per May 2017 TCB Workshop, no additional SAR measurements were required since the linearity between power classes was < 10% and all reported SAR values were < 1.4 W/kg for 1g and < 3.5 W/kg for 10g.

LTE Band 41 SAR testing with power class 2 at the highest power and available duty factor was additionally performed for the power class 3 configuration with the highest SAR for each exposure condition.

LTE Band 41 Head Linearity Data:

	Power Class 3	Power Class 2
Tune-up(dBm)	24.70	26.00
Measured power(dBm)	23.56	25.85
Measured SAR(W/kg)	0.452	0.475
Measured power(mw)	226.99	384.59
Duty Cycle	63.3%	43.3%
Frame Average power(mw)	143.68	166.53
% deviation from expected linearity		-9.33%

LTE Band 41 Body-Worn Linearity Data:

	Power Class 3	Power Class 2
Tune-up(dBm)	24.70	26.00
Measured power(dBm)	23.56	25.85
Measured SAR(W/kg)	0.358	0.416
Measured power(mw)	226.99	384.59
Duty Cycle	63.3%	43.3%
Frame Average power(mw)	143.68	166.53
% deviation from expected linearity		0.26%

LTE Band 41 Hotspot Linearity Data:

	Power Class 3	Power Class 2
Tune-up(dBm)	23.70	25.00
Measured power(dBm)	22.72	24.90
Measured SAR(W/kg)	0.7	0.714
Measured power(mw)	187.07	309.03
Duty Cycle	63.3%	43.3%
Frame Average power(mw)	118.41	133.81
% deviation from expected linearity		-9.74%

8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR SAR test evaluation

- **Simultaneous Transmission Possibilities**

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

Note:
1) The device does not support DTM function.

8.4.2 Simultaneous Transmission SAR Summation Scenario

Simultaneous Transmission SAR Summation Scenario for WLAN Head:

Test position		SARmax (W/kg)			Summed SAR	
		Main	WiFi 2.4G	BT		
		1	2	3	1+2	1+3
WCDMA B2	Left cheek	0.072	0.237	0.085	0.309	0.157
	Left tilted	0.050	0.235	0.069	0.285	0.119
	Right cheek	0.063	0.143	0.044	0.206	0.107
	Right tilted	0.066	0.116	0.036	0.182	0.102
WCDMA B4	Left cheek	0.291	0.237	0.085	0.528	0.376
	Left tilted	0.190	0.235	0.069	0.425	0.259
	Right cheek	0.334	0.143	0.044	0.477	0.378
	Right tilted	0.217	0.116	0.036	0.333	0.253
WCDMA B5	Left cheek	0.338	0.237	0.085	0.575	0.423
	Left tilted	0.179	0.235	0.069	0.414	0.248
	Right cheek	0.383	0.143	0.044	0.526	0.427
	Right tilted	0.207	0.116	0.036	0.323	0.243
LTE B12	Left cheek	0.264	0.237	0.085	0.501	0.349
	Left tilted	0.162	0.235	0.069	0.397	0.231
	Right cheek	0.291	0.143	0.044	0.434	0.335
	Right tilted	0.138	0.116	0.036	0.254	0.174
LTE B25	Left cheek	0.064	0.237	0.085	0.301	0.149
	Left tilted	0.041	0.235	0.069	0.276	0.110
	Right cheek	0.058	0.143	0.044	0.201	0.102
	Right tilted	0.058	0.116	0.036	0.174	0.094
LTE B26	Left cheek	0.318	0.237	0.085	0.555	0.403
	Left tilted	0.170	0.235	0.069	0.405	0.239
	Right cheek	0.289	0.143	0.044	0.432	0.333
	Right tilted	0.200	0.116	0.036	0.316	0.236
LTE B41(Class 3)	Left cheek	0.588	0.237	0.085	0.825	0.673
	Left tilted	0.239	0.235	0.069	0.474	0.308
	Right cheek	0.359	0.143	0.044	0.502	0.403
	Right tilted	0.381	0.116	0.036	0.497	0.417
LTE B66	Left cheek	0.338	0.237	0.085	0.575	0.423
	Left tilted	0.221	0.235	0.069	0.456	0.290
	Right cheek	0.394	0.143	0.044	0.537	0.438
	Right tilted	0.188	0.116	0.036	0.304	0.224
LTE B71	Left cheek	0.175	0.237	0.085	0.412	0.260
	Left tilted	0.096	0.235	0.069	0.331	0.165
	Right cheek	0.207	0.143	0.044	0.350	0.251
	Right tilted	0.104	0.116	0.036	0.220	0.140

Simultaneous Transmission SAR Summation Scenario for WLAN Body:
Body-worn:

Test position		SARmax (W/kg)			Summed SAR	
		Main	WiFi 2.4G	BT		
		1	2	3	1+2	1+3
WCDMA B2	Front side	0.154	0.019	0.010	0.173	0.164
	Back side	0.368	0.129	0.023	0.497	0.391
WCDMA B4	Front side	0.373	0.019	0.010	0.392	0.383
	Back side	0.491	0.129	0.023	0.620	0.514
WCDMA B5	Front side	0.325	0.019	0.010	0.344	0.335
	Back side	0.380	0.129	0.023	0.509	0.403
LTE B12	Front side	0.161	0.019	0.010	0.180	0.171
	Back side	0.475	0.129	0.023	0.604	0.498
LTE B25	Front side	0.106	0.019	0.010	0.125	0.116
	Back side	0.254	0.129	0.023	0.383	0.277
LTE B26	Front side	0.386	0.019	0.010	0.405	0.396
	Back side	0.448	0.129	0.023	0.577	0.471
LTE B41(Class 3)	Front side	0.398	0.019	0.010	0.417	0.408
	Back side	0.465	0.129	0.023	0.594	0.488
LTE B66	Front side	0.414	0.019	0.010	0.433	0.424
	Back side	0.668	0.129	0.023	0.797	0.691
LTE B71	Front side	0.194	0.019	0.010	0.213	0.204
	Back side	0.288	0.129	0.023	0.417	0.311

Hotspot:

Test position		SARmax (W/kg)			Summed SAR	
		Main	WiFi 2.4G	BT		
		1	2	3	1+2	1+3
WCDMA B2	Front side	0.253	0.063	0.020	0.316	0.273
	Back side	0.718	0.280	0.035	0.998	0.753
	Left side	0.120	0.030	/	0.150	0.120
	Right side	0.084	0.147	0.034	0.231	0.118
	Top side	/	0.085	0.023	0.085	0.023
	Bottom side	0.673	/	/	0.673	0.673
WCDMA B4	Front side	0.647	0.063	0.020	0.710	0.667
	Back side	1.146	0.280	0.035	1.426	1.181
	Left side	0.414	0.030	/	0.444	0.414
	Right side	0.252	0.147	0.034	0.399	0.286
	Top side	/	0.085	0.023	0.085	0.023
	Bottom side	0.529	/	/	0.529	0.529
WCDMA B5	Front side	0.316	0.063	0.020	0.379	0.336
	Back side	0.567	0.280	0.035	0.847	0.602
	Left side	0.353	0.030	/	0.383	0.353
	Right side	0.468	0.147	0.034	0.615	0.502
	Top side	/	0.085	0.023	0.085	0.023
	Bottom side	0.567	/	/	0.567	0.567
LTE B12	Front side	0.163	0.063	0.020	0.226	0.183
	Back side	0.577	0.280	0.035	0.857	0.612
	Left side	0.194	0.030	/	0.224	0.194
	Right side	0.286	0.147	0.034	0.433	0.320
	Top side	/	0.085	0.023	0.085	0.023
	Bottom side	0.040	/	/	0.040	0.040
LTE B25	Front side	0.193	0.063	0.020	0.256	0.213
	Back side	0.430	0.280	0.035	0.710	0.465
	Left side	0.097	0.030	/	0.127	0.097
	Rightt side	0.077	0.147	0.034	0.224	0.111
	Top side	/	0.085	0.023	0.085	0.023
	Bottom side	0.408	/	/	0.408	0.408
LTE B26	Front side	0.380	0.063	0.020	0.443	0.400
	Back side	0.435	0.280	0.035	0.715	0.470
	Left side	0.399	0.030	/	0.429	0.399
	Right side	0.513	0.147	0.034	0.660	0.547
	Top side	/	0.085	0.023	0.085	0.023
	Bottom side	0.194	/	/	0.194	0.194
LTE B41(Class 3)	Front side	0.762	0.063	0.020	0.825	0.782
	Back side	0.877	0.280	0.035	1.157	0.912
	Left side	0.619	0.030	/	0.649	0.619
	Right side	0.125	0.147	0.034	0.272	0.159
	Top side	/	0.085	0.023	0.085	0.023
	Bottom side	0.516	/	/	0.516	0.516
LTE B66	Front side	0.918	0.063	0.020	0.981	0.938
	Back side	1.035	0.280	0.035	1.315	1.070
	Left side	0.496	0.030	/	0.526	0.496
	Right side	0.292	0.147	0.034	0.439	0.326
	Top side	/	0.085	0.023	0.085	0.023
	Bottom side	0.046	/	/	0.046	0.046
LTE B71	Front side	0.201	0.063	0.020	0.264	0.221
	Back side	0.426	0.280	0.035	0.706	0.461
	Left side	0.263	0.030	/	0.293	0.263
	Right side	0.362	0.147	0.034	0.509	0.396
	Top side	/	0.085	0.023	0.085	0.023
	Bottom side	0.080	/	/	0.080	0.080

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9 Equipment list

Test Platform	SPEAG DASY5 Professional
Description	SAR Test System (Frequency range 300MHz-6GHz)
Software Reference	DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Hardware Reference

	Equipment	Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	Twin Phantom	SPEAG	SAM 2	1563	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 6	1824	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 5	1481	NCR	NCR
☒	DAE	SPEAG	DAE3	414	2020-12-30	2021-12-29
☒	DAE	SPEAG	DAE4	1428	2021-04-09	2022-04-08
☒	DAE	SPEAG	DAE4	896	2021-02-05	2022-02-04
☒	E-Field Probe	SPEAG	EX3DV4	3789	2021-08-12	2022-08-11
☒	E-Field Probe	SPEAG	EX3DV4	3962	2021-04-26	2022-04-25
☒	E-Field Probe	SPEAG	EX3DV4	7620	2021-08-24	2022-08-23
☒	Validation Kits	SPEAG	D750V3	1210	2021-09-08	2024-09-07
☒	Validation Kits	SPEAG	D835V2	4d256	2020-04-15	2023-04-14
☒	Validation Kits	SPEAG	D1750V2	1105	2020-08-29	2023-08-28
☒	Validation Kits	SPEAG	D1900V2	5d114	2020-08-27	2023-08-26
☒	Validation Kits	SPEAG	D2450V2	1038	2020-04-08	2023-04-07
☒	Validation Kits	SPEAG	D2600V2	1180	2021-05-12	2024-05-11
☒	Dielectric parameter probes	SPEAG	DAKS-3.5	1120	2021-02-24	2022-02-23
☒	Vector Network Analyzer and Vector Reflectometer	SPEAG	DAKS_VNA R140	0050920	2021-03-02	2022-03-01
☒	Universal Radio Communication Tester	R&S	CMW500	111637	2021-09-29	2022-09-28
☒	Radio Communication Analyzer	Anritsu	MT8820C	6201010267	2021-04-01	2022-03-31
☒	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
☒	Signal Generator	R&S	SMB100A	182393	2021-02-20	2022-02-19
☒	Preamplifier	Qiji	YX28980933	202104001	NCR	NCR
☒	Power Meter	Aglient	E4419B	6843318103	2021-06-08	2022-06-07
☒	Power Sensor	Aglient	E9301A	MY41496508	2021-09-09	2022-09-08
☒	Power Sensor	Aglient	E9301H	MY41495605	2021-06-08	2022-06-07
☒	Attenuator	SHX	TS2-3dB	30704	NCR	NCR

☒	Coaxial low pass filter	Mini-Circuits	VLF-2500(+)	NA	NCR	NCR
☒	Coaxial low pass filter	Microlab Fxr	LA-F13	NA	NCR	NCR
☒	DC POWER SUPPLY	SAKO	SK1730SL5A	NA	NCR	NCR
☒	Speed reading thermometer	LKM	DTM3000	SUW201-30-01	2021-10-09	2022-10-08
☒	Humidity and Temperature Indicator	MingGao	MingGao	NA	2021-06-16	2022-06-15

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

10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D

Appendix A: Detailed System Check Results

Appendix B: Detailed Test Results

Appendix C: Calibration certificate

Appendix D: Photographs

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