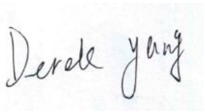
FCC SAR TEST REPORT

Application No:	ZR/2020/B0016
Applicant:	SMT TELECOMM HK LIMITED
Manufacturer:	SMT TELECOMM HK LIMITED
Product Name:	tablet
Model No.(EUT):	Inspire 4.0
Trade Mark:	GTL
FCC ID:	2AIMEI40
Standards:	FCC 47CFR §2.1093
Date of Receipt:	2020-11-17
Date of Test:	2020-11-27 to 2020-12-11
Date of Issue:	2020-12-21
Test Result:	**PASS ***

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

Authorized Signature:



Derek Yang

Wireless Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

REVISION HISTORY

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020-12-21		Original

TEST SUMMARY

Frequency Band	Max Report SAR1-g (W/kg)
	Body
LTE Band 48	0.90
WI-FI (2.4GHz)	0.58
WI-FI (5GHz)	**0.98**
BT	/
SAR Limited(w/kg)	1.6

Approved & Released by

Simon Ling

SAR Manager

Tested by

Jackson Li

SAR Engineer

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1 General Information

1.1 Details of Client

Applicant:	SMT TELECOMM HK LIMITED
Address:	UNIT C 8/F CHARMHILL CTR 50 HILLWOOD RD TST KL
Manufacturer:	SMT TELECOMM HK LIMITED
Address:	UNIT C 8/F CHARMHILL CTR 50 HILLWOOD RD TST KL

1.2 Test Location

Company: SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

Address: No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China

Post code: 518057

Telephone: +86 (0) 755 2601 2053

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E-mail: ee.shenzhen@sgs.com

1.3 Test Facility

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

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 3816.01)

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

• VCCI

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• FCC –Designation Number: CN1178

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

Designation Number: CN1178. Test Firm Registration Number: 406779.

• Industry Canada (IC)

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

CAB identifier: CN0006

IC#: 4620C.

1.4 General Description of EUT

Product Name:	tablet		
Model No.(EUT):	Inspire 4.0		
Trade Mark:	GTL		
Product Phase:	production unit		
Device Type:	portable device		
Exposure Category:	uncontrolled environment / general population		
SN:	IP0120133985		
FCC ID:	2AIMEI40		
Hardware Version:	P3		
Software Version:	Inspire 4.0_09162020		
Antenna Type:	Inner Antenna		
Device Operating Configurations:			
Modulation Mode:	**LTE:** QPSK,16QAM,64QAM **WIFI:** DSSS, OFDM **BT:** GFSK, π/4DQPSK,8DPSK		
Power Class	3, tested with power control Max Power(LTE Band 48)		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	LTE Band 48	3550~3700	3550~3700
	WIFI(2.4GHz)	2412-2462	2412-2462
	WIFI(5GHz)	5150-5250 5250-5350 5470-5725 5725-5850	5150-5250 5250-5350 5470-5725 5725-5850
	BT	2402-2480	2402-2480
Battery Information:	Battery Model:	GSP27103107	
	Nominal Voltage:	3.8V	
	Rated capacity:	8000mAh	
	Manufacture	ZHUHAI GREAT POWER ENERGY CO., LTD	

1.4.1 1.3.5 Downlink LTE CA additional specification

The device supports downlink LTE Carrier Aggregation (CA). When carrier aggregation applies, implementation and measurement details for the following are necessary.

a) Intra-band carrier aggregation requirements for downlink.

b) Support of contiguous and non-contiguous component carriers for intra-band aggregation requirements for downlink.

The possible downlink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V15.0.0. The conducted power measurement results of downlink LTE CA are provided in Section 8 of this report per 3GPP TS 36.521-1 V14.4.0. According to KDB 941225 D05A, the downlink LTE CA SAR test is not required.

LTE CA+DL 4*4 MIMO:

Model Name	**Inspire 4.0**
LTE Band support DL 4*4MIMO	B48
Intra-band contiguous CA with DL 4*4MIMO	**4*4MIMO Band**
CA_48C	B48

Intra-band contiguous CA operating bands：

E-UTRA CA Band	**E-UTRA Band**	**Uplink (UL) operating band BS receive / UE transmit F_{UL_low} – F_{UL_high}**			**Downlink (DL) operating band BS transmit / UE receive F_{DL_low} – F_{DL_high}**			**Duplex Mode**
CA_48	48	3550 MHz	–	3700 MHz	3550 MHz	–	3700 MHz	TDD

The following conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion per KDB 941225 D05A.Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive, therefore SAR evaluation with downlink carrier aggregation can be excluded.

1 Band / 2CC	1 Bands / 3CC
CA_48C	
CA_48A-48A	
	CA_48C-48A
	CA_48A-48C
	CA_48D

Conducted Power of Downlink LTE CA:

DL LTE CA Class	PCC							SCC1				SCC2				Power(dBm)		
	LTE Band	BW (MHz)	Modulation	UL Freq. (MHz)	UL Channel	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	DL LTE CA Tx.Power	LTE Rel 8 Tx.Power	Tune-up
CA_48C	Band 48	20M	QPSK	3690	56640	1	0	Band 48	20M	3670.2	56442	/	/	/	/	23.82	23.91	24.00
CA_48A-48A	Band 48	20M	QPSK	3619.4	55934	1	0	Band 48	20M	3560	55340	/	/	/	/	23.79	23.91	24.00
CA_48C-48A	Band 48	20M	QPSK	3579.8	55538	1	0	Band 48	20M	3560	55340	Band 48	20M	3619.4	55934	23.83	23.91	24.00
CA_48A-48C	Band 48	20M	QPSK	3619.4	55934	1	0	Band 48	20M	3579.8	55538	Band 48	20M	3560	55340	23.77	23.91	24.00
CA_48D	Band 48	20M	QPSK	3619.4	55934	1	0	Band 48	20M	3599.6	55736	Band 48	20M	3579.8	55538	23.80	23.91	24.00

4*4 MIMO Main Antenna:

LTE Band	BW (MHz)	Modulation	Freq. (MHz)	Channel	UL# RB	UL RB Offset	With DL 4*4 MIMO Tx.Power (dBm)	Without DL 4*4 MIMO Tx.Power (dBm)	Tune-up
Band 48	20M	QPSK	3690	56640	1	0	23.85	23.91	24.00

Note:
The downlink LTE CA SAR test is not required since the maximum output power for downlink LTE CA was not more than 0.25dB higher than the maximum output power for without downlink LTE CA.

1.5 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
ANSI/IEEE Std 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 248227 D01 v02r02	802.11 Wi-Fi SAR
KDB 616217 D04 v01r02	SAR for laptop and tablets
KDB 648474 D04	Handset SAR v01r03
KDB 447498 D01 v06	General RF Exposure Guidance
KDB 447498 D03 v01	Supplement C Cross-Reference
KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
KDB 865664 D02 v01r02	RF Exposure Reporting

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 SAR Measurements System Configuration

2.1 The SAR Measurement System

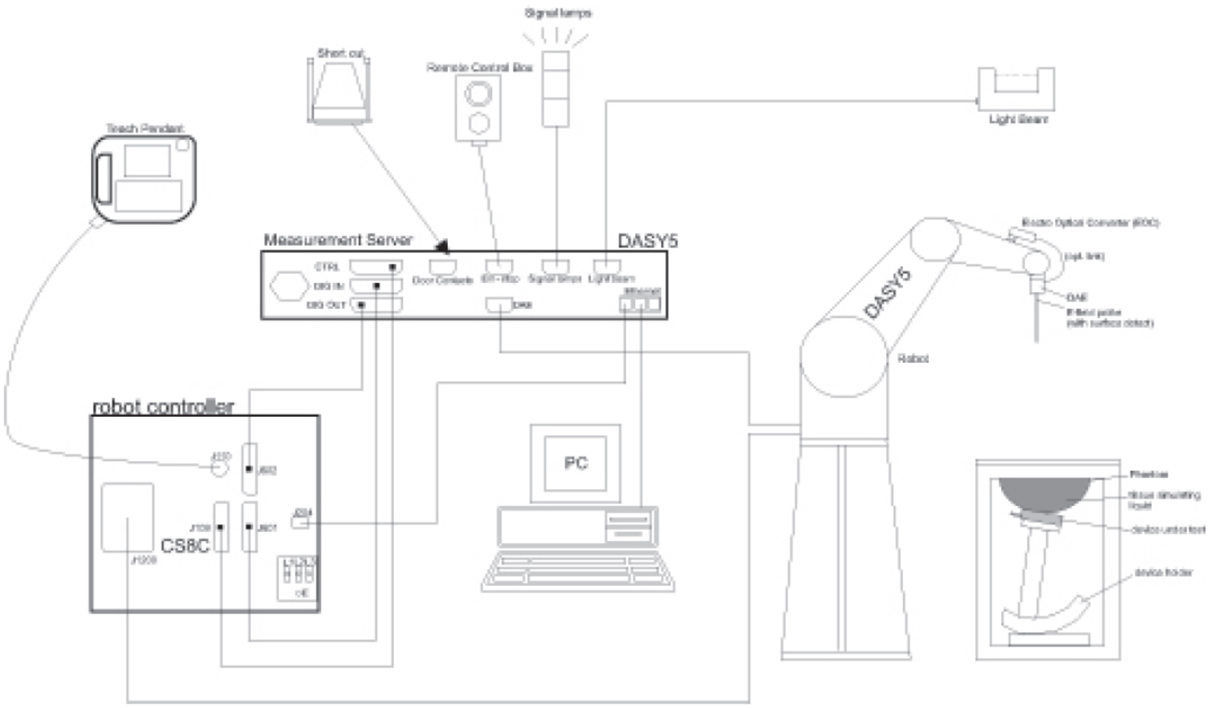
This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the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

2.2 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

2.3 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

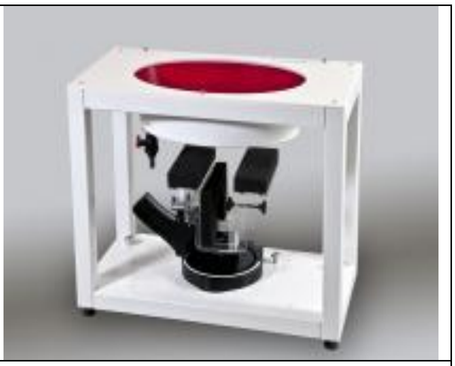
2.4 SAM Twin Phantom

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.

2.5 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.

2.6 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.

2.7 Measurement procedure

2.7.1 Scanning procedure

Step 1: Power reference measurement

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

Step 2: *Area scan*

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

Step 3: *Zoom scan*

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

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

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

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<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

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 %

2.7.2 Data Storage

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

2.7.3 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)

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

E-field probes:

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

H-field probes:

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

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

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

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

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

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

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

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

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

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

3 Description of Test Position

3.1 The Body Test Position

The overall diagonal dimension of the display section of a tablet is > 20 cm, Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. SAR evaluation for the front surface of tablet display screens are generally not necessary. The SAR Exclusion Threshold in KDB 447498 D01 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

4 SAR System Verification Procedure

4.1 Tissue Simulate Liquid

4.1.1 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	1800-2000	2300-2500	2500-3700
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
Sucrose: 98⁺% Pure Sucrose
Water: De-ionized, 16 MΩ⁺ resistivity
HEC: Hydroxyethyl Cellulose
Tween: Polyoxyethylene (20) sorbitan monolaurate

HSL5GHz is composed of the following ingredients：
Water：50-65%
Mineral oil：10-30%
Emulsifiers：8-25%
Sodium salt：0-1.5%

Table 1： Recipe of Tissue Simulate Liquid

4.1.2 Measurement for Tissue Simulate Liquid

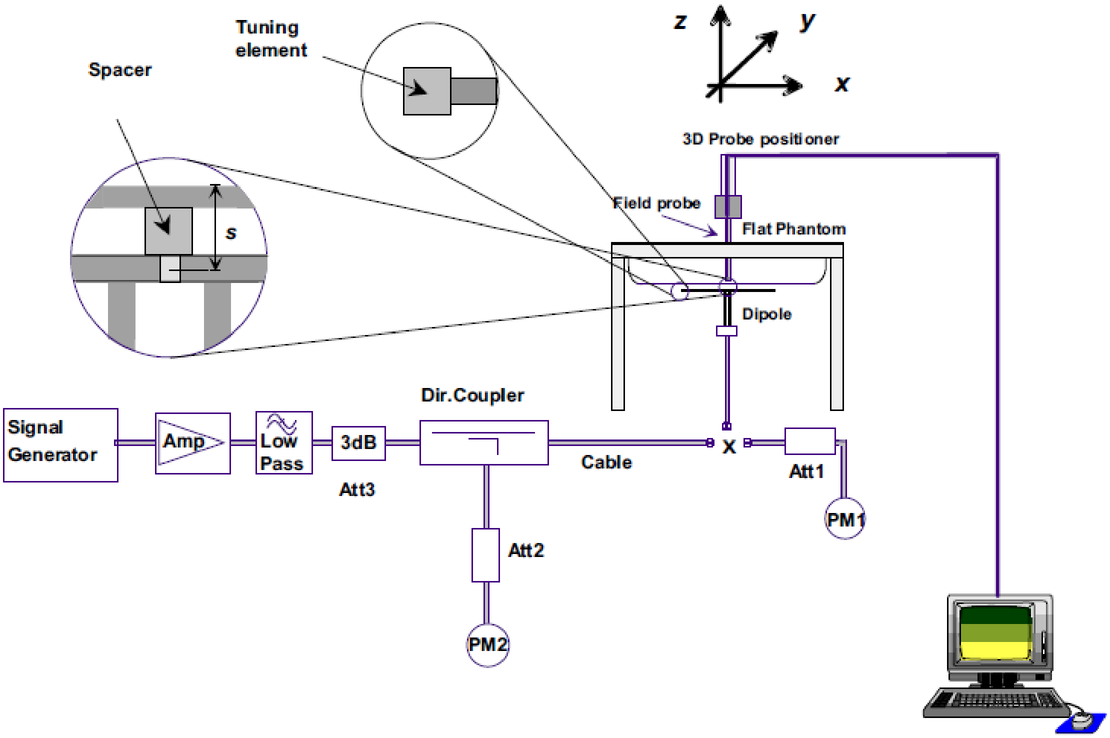
The dielectric properties for this Tissue Simulate Liquids were measured by using the Agilent Model 85070E Dielectric Probe in conjunction with Agilent E5071C Network Analyzer (300 KHz-8500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in Table 2. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was 22±2°C.

Tissue Type	Measured Frequency （MHz）	Target Tissue (±5%)		Measured Tissue		Liquid Temp.	Measured Date
		ε_r	σ(S/m)	ε_r	σ(S/m)	(℃)	
2450 Head	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	40.320	1.797	22.0	2020/11/27
3500 Head	3500	37.9 (36.01~39.8)	2.91 (2.76~3.06)	38.224	2.993	22.0	2020/12/1
3700 Head	3700	37.7 (35.82~39.59)	3.12 (2.96~3.28)	37.590	3.227	21.9	2020/12/1
5250Head	5250	35.9 (34.11~37.70)	4.71 (4.47~4.95)	35.566	4.629	22.2	2020/12/6
5600 Head	5600	35.5 (33.73~37.28)	5.07 (4.82~5.32)	34.894	5.096	22.2	2020/12/8
5750 Head	5750	35.4 (33.63~37.17)	5.22 (4.96~5.48)	34.522	5.277	22.2	2020/12/11

Table 2： Measurement result of Tissue electric parameters

4.2 SAR System Check

The microwave circuit arrangement for system Check is sketched in F-3. 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-3. the microwave circuit arrangement used for SAR system check

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4.2.1 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.

4.2.2 Summary System Validation Result(s)

Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W) (±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)		
D2450V2	Head	13.40	6.29	53.60	25.16	51.9 (46.71~57.09)	23.8 (21.42~26.18)	22.0	2020/11/27
Validation Kit		**Measured SAR 100mW**	**Measured SAR 100mW**	**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)**		
D3500V2	Head(3.5GHz)	6.28	2.39	62.80	23.90	66.5 (59.85~73.15)	25.1 (22.59~27.61)	22.0	2020/12/1
D3700V2	Head(3.7GHz)	6.35	2.32	63.50	23.20	67.8 (61.02~74.58)	24.7 (22.23~27.17)	21.9	2020/12/1
D5GHzV2	Head (5.25GHz)	7.64	2.11	76.40	21.10	75.2 (67.68~82.72)	21.5 (19.35~23.65)	22.2	2020/12/6
	Head (5.6GHz)	8.49	2.29	84.90	22.90	80 (72~88)	22.7 (20.43~24.97)	22.2	2020/12/8
	Head (5.75GHz)	8.41	2.31	84.10	23.10	78.7 (70.83~86.57)	22.3 (20.07~24.53)	22.2	2020/12/11

Table 3： SAR System Check Result

4.2.3 Detailed System Check Results

Please see the Appendix A

5 Test results and Measurement Data

5.1 Operation Configurations

5.1.1 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 MT8821C was used for LTE output power measurements and SAR testing. Max power control was used so the UE transmits with maximum output power during SAR testing. SAR must be measured with the maximum TTI (transmit time interval) supported by the device in each LTE configuration.

TDD LTE test consideration

For Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.

LTE TDD Band support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Frame structure type 2:

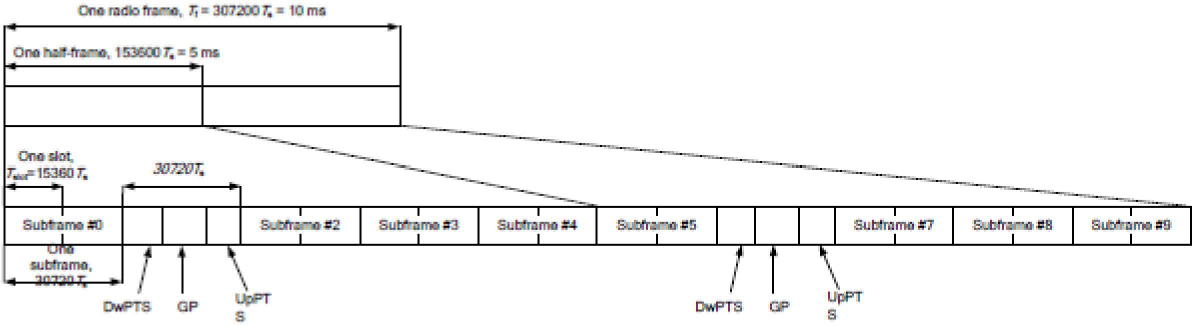


Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	6592.Ts	2192.Ts	2560.Ts	7680.Ts	2192.Ts	2560.Ts
1	19760.Ts			20480.Ts		
2	21952.Ts			23040.Ts		
3	24144.Ts			25600.Ts		
4	26336.Ts			7680.Ts	4384.Ts	5120.Ts
5	6592.Ts	4384.Ts	5120.Ts	20480.Ts		
6	19760.Ts			23040.Ts		
7	21952.Ts			25600.Ts		
8	24144.Ts			-	-	-
9	13168.Ts			-	-	-

Table 4.2-2: Uplink-downlink configurations.

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

Calculated Duty Cycle=[Extended cyclic prefix in uplink x (Ts) x # of S + # of U]/10ms

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

A) Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

B) MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3

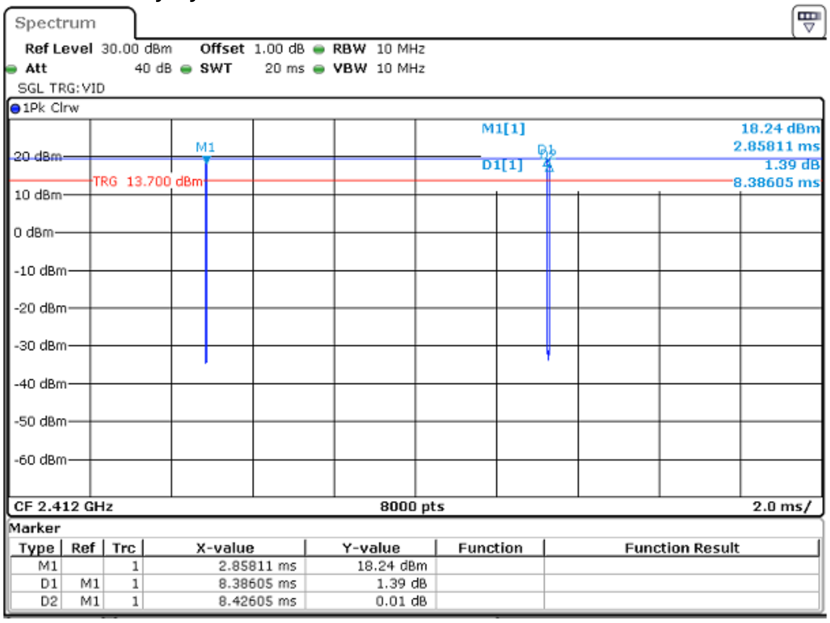
C) A-MPR
A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.
D) Largest channel bandwidth standalone SAR test requirements
1) QPSK with 1 RB allocation
Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using 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.

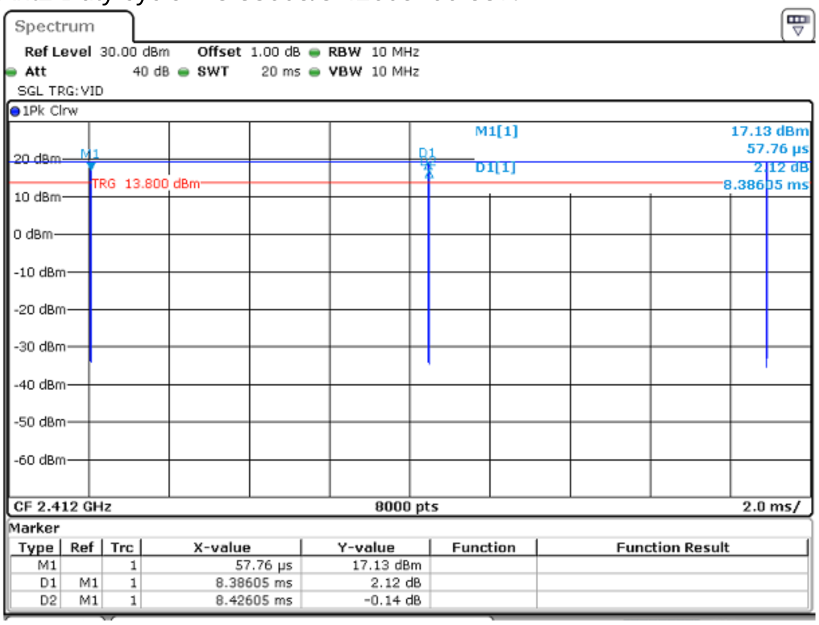
5.1.2 WiFi Test Configuration

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.

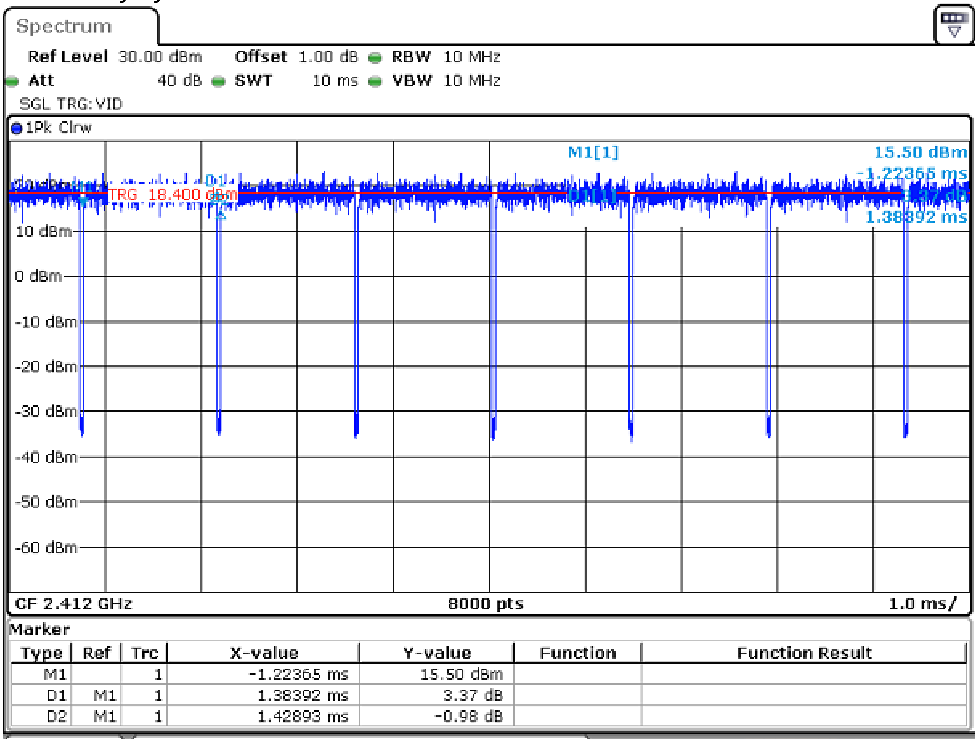
- 2.4G WIFI 802.11b
  Ant1 Duty cycle= 8.38605/8.42605=99.53%



Ant2 Duty cycle= 8.38605/8.42605=99.53%

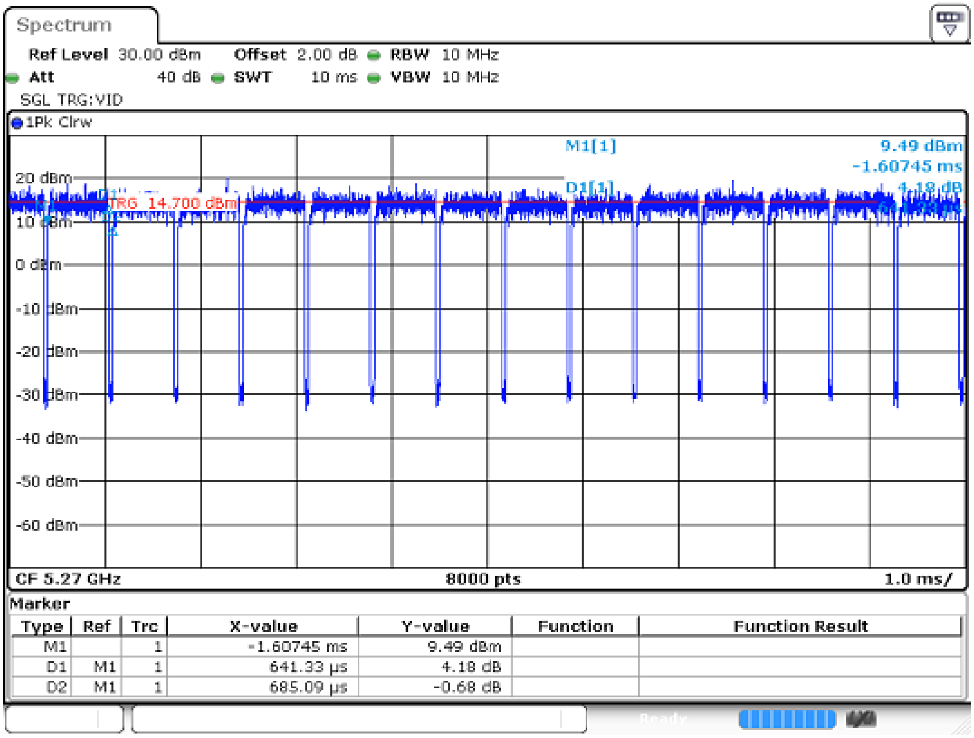


MIMO Duty cycle= 1.38392/1.42893=96.85%

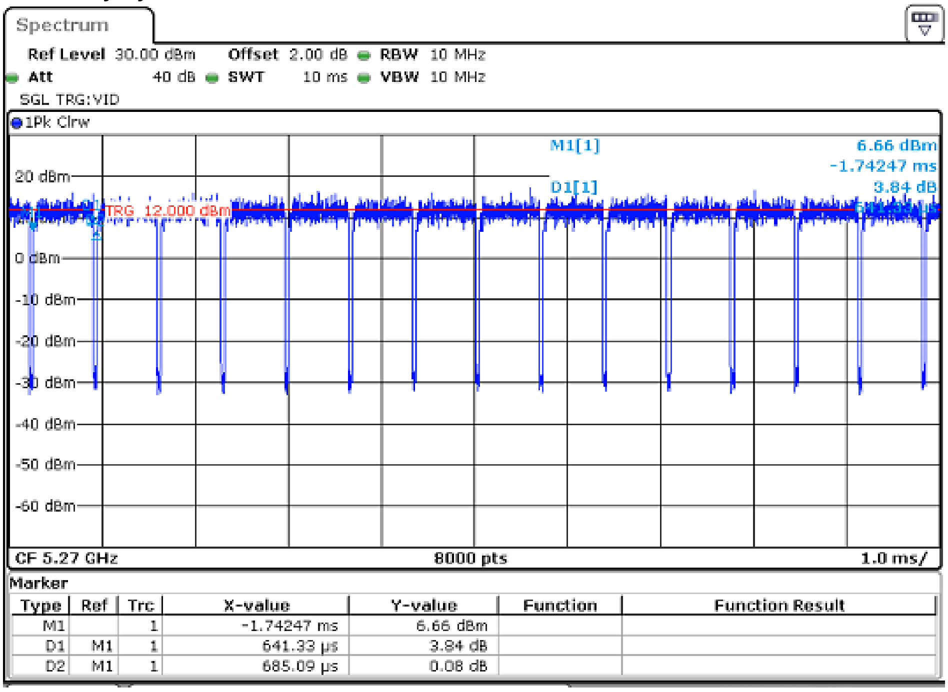


- 5G WIFI 802.11a

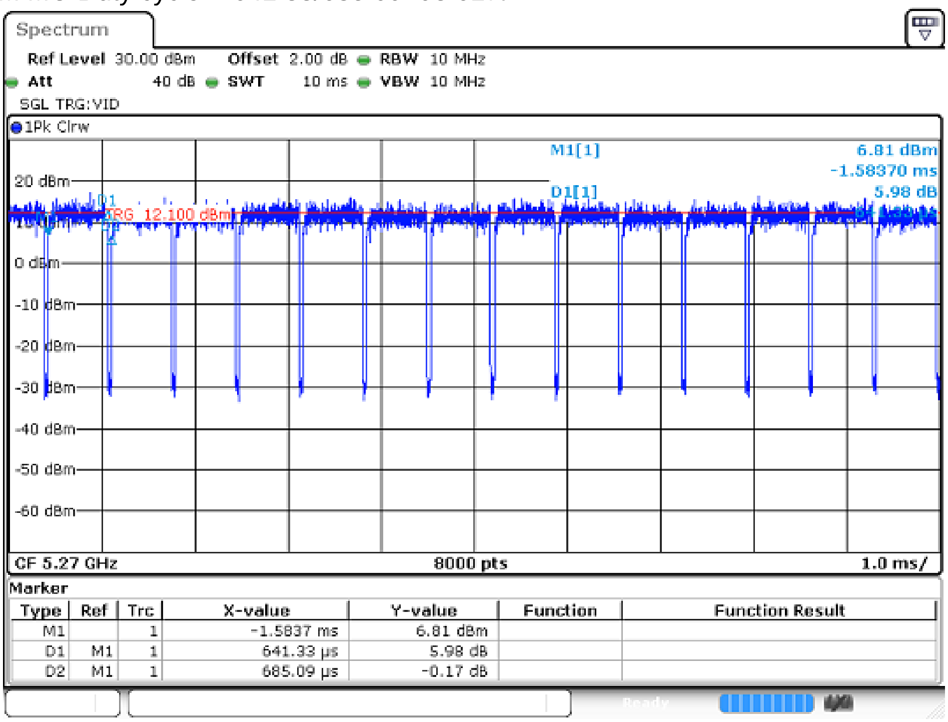
Ant1 Duty cycle= 641.33/685.09=93.61%



Ant2 Duty cycle= 641.33/685.09=93.61%



MIMO Duty cycle= 641.33/685.09=93.61%



5.1.2.1 Initial Test Position SAR Test Reduction Procedure

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

1）. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).

2）. When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and edges) are tested.

3）. For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested. a) Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

5.1.2.2 Initial Test Configuration Procedures

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

5.1.2.3 Subsequent Test Configuration Procedures

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

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

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

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

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

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

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

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

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

5.1.2.4 2.4 GHz 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.

5.1.2.5 WiFi 5G SAR Test Procedures

5.1.2.5.1 U-NII-1 and U-NII-2A Bands

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following：

1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest *reported* SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest *reported* SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.
3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest *reported* SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

5.1.2.5.2 U-NII-2C and U-NII-3 Bands

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. when Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

5.1.2.5.3 OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

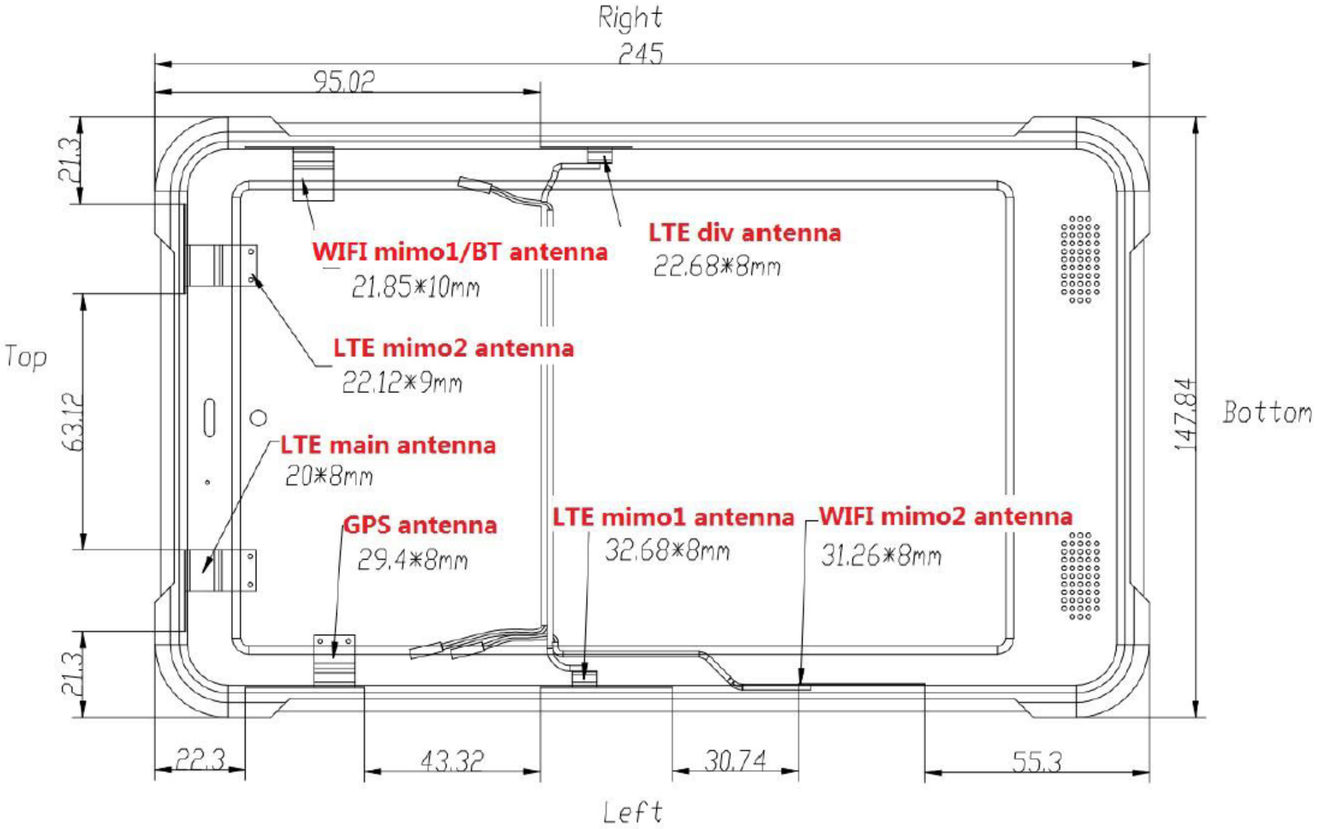
1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.

4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n. After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.
   - The channel closest to mid-band frequency is selected for SAR measurement.
   - For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

5.1.2.5.4 SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

5.1.3 DUT Antenna Locations



Note:

1) Per KDB 616217, the diagonal length is > 200mm, the device is considered a “tablet” device and needed to test 0mm 1-g body SAR.
2) The div antenna and LTE mimo1/2 antenna only for RX.

5.1.4 EUT side for SAR Testing

- **Stand-alone SAR test evaluation**

1) Per FCC KDB 447498D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:
• f(GHz) is the RF channel transmit frequency in GHz
• Power and distance are rounded to the nearest mW and mm before calculation
• The result is rounded to one decimal place for comparison
When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
2) At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following:
a) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
b) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

1) Standalone SAR exclusion calculation (Antenna to adjacent sides<50mm)

Bnad	Exposure Condition	f (GHz)	Pmax	Pmax	separation distance(mm)					Calculated Value					SAR Test（Yes or No）				
			(dBm)	(mw)	Back side	Left side	Right side	Top side	Bottom side	Back side	Left side	Right side	Top side	Bottom side	Back side	Left side	Right side	Top side	Bottom side
LTE B48	Body 0mm	3.7	24.00	251.19	5	21.3	106.54	5	222.7	96.634	22.684	>50mm	96.634	>50mm	Yes	Yes	>50mm	Yes	>50mm
WIFI 2.4G Ant1	Body 0mm	2.462	16.00	39.81	5	126.54	5	20	200.58	12.493	>50mm	12.493	3.123	>50mm	Yes	>50mm	Yes	Yes	>50mm
WIFI 2.4G Ant2	Body 0mm	2.462	15.00	31.62	5	5	139.84	158.44	55.3	9.924	9.924	>50mm	>50mm	>50mm	Yes	Yes	>50mm	>50mm	>50mm
WIFI 2.4G MIMO	Body 0mm	2.462	17.00	50.12	5	5	5	20	55.3	15.728	15.728	15.728	3.932	>50mm	Yes	Yes	Yes	Yes	>50mm
WIFI 5G Ant1	Body 0mm	5.850	13.00	19.95	5	126.54	5	20	200.58	9.652	>50mm	9.652	2.413	>50mm	Yes	>50mm	Yes	No	>50mm
WIFI 5G Ant2	Body 0mm	5.850	11.00	12.59	5	5	139.84	158.44	55.3	6.090	6.090	>50mm	>50mm	>50mm	Yes	Yes	>50mm	>50mm	>50mm
WIFI 5G MIMO	Body 0mm	5.850	13.00	19.95	5	5	5	20	55.3	9.652	9.652	9.652	2.413	>50mm	Yes	Yes	Yes	No	>50mm
BT	Body 0mm	2.480	4.50	2.82	5	126.54	5	20	200.58	0.888	>50mm	0.888	0.222	>50mm	No	>50mm	No	No	>50mm

2) Standalone SAR exclusion calculation (Antenna to adjacent sides>50mm)

Bnad	Exposure Condition	f (GHz)	Pmax	Pmax	separation distance(mm)					Calculated Value					SAR Test（Yes or No）				
			(dBm)	(mw)	Back side	Left side	Right side	Top side	Bottom side	Back side	Left side	Right side	Top side	Bottom side	Back side	Left side	Right side	Top side	Bottom side
LTE B48	Body 0mm	3.7	24.00	251.19	5	21.3	106.54	5	222.7	<50mm	<50mm	644.47	<50mm	1820.03	<50mm	<50mm	No	<50mm	No
WIFI 2.4G Ant1	Body 0mm	2.462	16.00	39.81	5	126.54	5	20	200.58	<50mm	861.23	<50mm	<50mm	1598.83	<50mm	No	<50mm	<50mm	No
WIFI 2.4G Ant2	Body 0mm	2.462	15.00	31.62	5	5	139.84	158.44	55.3	<50mm	<50mm	994.23	1180.23	148.83	<50mm	<50mm	No	No	No
WIFI 2.4G MIMO	Body 0mm	2.462	17.00	50.12	5	5	5	20	55.3	<50mm	<50mm	<50mm	<50mm	118.78	<50mm	<50mm	<50mm	<50mm	No
WIFI 5G Ant1	Body 0mm	5.850	13.00	19.95	5	126.54	5	20	200.58	<50mm	831.18	<50mm	<50mm	1570.96	<50mm	No	<50mm	<50mm	No
WIFI 5G Ant2	Body 0mm	5.850	11.00	12.59	5	5	139.84	158.44	55.3	<50mm	<50mm	964.18	1150.18	116.96	<50mm	<50mm	No	No	No
WIFI 5G MIMO	Body 0mm	5.850	13.00	19.95	5	5	5	20	55.3	<50mm	<50mm	<50mm	<50mm	115.29	<50mm	<50mm	<50mm	<50mm	No
BT	Body 0mm	2.480	4.50	2.82	5	126.54	5	20	200.58	<50mm	861.40	<50mm	<50mm	1601.63	<50mm	No	<50mm	<50mm	No

According to the table above, the standalone test configurations required for this device are as below:

Test configurations	Front side	Back side	Left side	Right side	Top side	Bottom side
LTE B48	No	Yes	Yes	No	Yes	No
WIFI 2.4G Ant1	No	Yes	No	Yes	Yes	No
WIFI 2.4G Ant2	No	Yes	Yes	No	No	No
WIFI 2.4G MIMO	No	Yes	Yes	Yes	Yes	No
WIFI 5G Ant1	No	Yes	No	Yes	No	No
WIFI 5G Ant2	No	Yes	Yes	No	No	No
WIFI 5G MIMO	No	Yes	Yes	Yes	No	No
BT	No	No	No	No	No	No

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

1) (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]· [√f(GHz)/x] W/kg for test separation distances ≤ 50 mm,where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

2) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distance is > 50 mm.

Mode	Position	Pmax (dBm)	Pmax (mw)	test separation distance(mm)					f(GHz)	X	Estimated SAR(W/Kg)				
				Back side	Left side	Right side	Top side	Bottom side			Back side	Left side	Right side	Top side	Bottom side
LTE B48	Body 0mm	24.00	251.19	5	21.3	106.54	5	222.7	3.7	7.5	measure	measure	0.400	measure	0.400
WIFI 2.4G Ant1	Body 0mm	16.00	39.81	5	126.54	5	20	200.58	2.462	7.5	measure	0.400	measure	measure	0.400
WIFI 2.4G Ant2	Body 0mm	15.00	31.62	5	5	139.84	158.44	55.3	2.462	7.5	measure	measure	0.400	0.400	0.400
WIFI 2.4G MIMO	Body 0mm	17.00	50.12	5	5	5	20	55.3	2.462	7.5	measure	measure	measure	measure	0.400
WIFI 5G Ant1	Body 0mm	13.00	19.95	5	126.54	5	20	200.58	5.850	7.5	measure	0.400	measure	0.322	0.400
WIFI 5G Ant2	Body 0mm	11.00	12.59	5	5	139.84	158.44	55.3	5.850	7.5	measure	measure	0.400	0.400	0.400
WIFI 5G MIMO	Body 0mm	13.00	19.95	5	5	5	20	55.3	5.850	7.5	measure	measure	measure	No	0.400
BT	Body 0mm	4.50	2.82	5	126.54	5	20	200.58	2.480	7.5	0.118	0.400	0.118	0.030	0.400

Table 4： Estimated SAR calculation for the device.

Note:

1) * - maximum possible output power declared by manufacturer

5.2 Measurement of RF conducted Power

5.2.1 Conducted Power of LTE

LTE Band 48								
Bandwidth	Modulation	RB size	RB offset	Channel 55265	Channel 55748	Chanel 56232	Chanel 56715	Tune up
5MHz	QPSK	1	0	23.50	23.57	23.45	23.49	24.00
		1	13	23.35	23.21	23.38	23.31	24.00
		1	24	23.19	23.30	23.11	23.29	24.00
		12	0	22.34	22.28	22.32	22.37	23.00
		12	6	22.43	22.33	22.25	22.27	23.00
		12	13	22.14	22.31	22.09	22.07	23.00
		25	0	22.13	22.26	22.21	22.27	23.00
	16QAM	1	0	22.59	22.63	22.71	22.72	23.00
		1	13	22.48	22.58	22.43	22.42	23.00
		1	24	22.55	22.44	22.45	22.33	23.00
		12	0	21.41	21.48	21.31	21.29	22.00
		12	6	21.24	21.23	21.48	21.36	22.00
		12	13	21.18	21.12	21.34	21.16	22.00
		25	0	21.33	21.39	21.28	21.36	22.00
	64QAM	1	0	21.25	21.30	21.49	21.43	22.00
		1	13	21.17	21.20	21.35	21.76	22.00
		1	24	21.06	21.13	21.26	21.66	22.00
		12	0	20.73	20.67	20.41	20.69	21.00
		12	6	20.68	20.76	20.32	20.62	21.00
		12	13	20.61	20.75	20.40	20.70	21.00
		25	0	20.54	20.62	20.75	20.60	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 55290	Channel 55757	Chanel 56223	Chanel 56690	Tune up
10MHz	QPSK	1	0	23.67	23.70	23.51	23.61	24.00
		1	25	23.15	23.22	23.19	23.22	24.00
		1	49	23.22	23.24	23.34	23.24	24.00
		25	0	22.22	22.18	22.47	22.32	23.00
		25	13	22.29	22.38	22.15	22.32	23.00
		25	25	22.04	22.17	22.02	22.28	23.00
		50	0	22.06	22.24	22.26	22.18	23.00
	16QAM	1	0	22.62	22.83	22.79	22.56	23.00
		1	25	22.45	22.49	22.32	22.52	23.00
		1	49	22.44	22.48	22.39	22.32	23.00
		25	0	21.44	21.39	21.49	21.48	22.00
		25	13	21.52	21.47	21.29	21.34	22.00
		25	25	21.30	21.41	21.15	21.27	22.00
		50	0	21.35	21.45	21.37	21.38	22.00
	64QAM	1	0	21.33	21.37	21.53	21.46	22.00
		1	25	21.23	21.22	21.42	21.84	22.00
		1	49	21.12	21.15	21.35	21.71	22.00
		25	0	20.74	20.77	20.44	20.73	21.00
		25	13	20.76	20.76	20.41	20.67	21.00
		25	25	20.69	20.79	20.46	20.79	21.00
		50	0	20.60	20.68	20.76	20.61	21.00

Bandwidth	Modulation	RB size	RB offset	Channel 55315	Channel 55765	Chanel 56215	Chanel 56665	Tune up
15MHz	QPSK	1	0	23.46	23.45	23.52	23.64	24.00
		1	38	23.27	23.38	23.15	23.25	24.00
		1	74	23.14	23.24	23.23	23.14	24.00
		36	0	22.27	22.36	22.39	22.18	23.00
		36	18	22.27	22.17	22.18	22.16	23.00
		36	39	22.25	22.25	22.30	22.20	23.00
		75	0	22.24	22.23	22.19	22.21	23.00
	16QAM	1	0	22.77	22.83	22.75	22.55	23.00
		1	38	22.47	22.46	22.51	22.49	23.00
		1	74	22.25	22.38	22.46	22.36	23.00
		36	0	21.34	21.43	21.32	21.39	22.00
		36	18	21.51	21.29	21.52	21.34	22.00
		36	39	21.38	21.38	21.24	21.41	22.00
		75	0	21.42	21.23	21.18	21.30	22.00
	64QAM	1	0	21.43	21.44	21.58	21.47	22.00
		1	38	21.28	21.28	21.52	21.90	22.00
		1	74	21.18	21.23	21.40	21.80	22.00
		36	0	20.80	20.84	20.51	20.81	21.00
		36	18	20.77	20.82	20.49	20.77	21.00
		36	39	20.78	20.88	20.54	20.80	21.00
		75	0	20.68	20.75	20.83	20.67	21.00
Bandwidth	Modulation	RB size	RB offset	Channel 55340	Channel 55773	Chanel 56207	Chanel 56640	Tune up
20MHz	QPSK	1	0	**23.52**	**23.54**	**23.61**	**23.91**	24.00
		1	50	23.19	23.08	23.42	23.78	24.00
		1	99	23.14	23.13	23.49	23.80	24.00
		50	0	**22.27**	**22.26**	**22.43**	22.80	23.00
		50	25	22.24	22.21	22.40	**22.86**	23.00
		50	50	22.12	22.14	22.41	22.74	23.00
		100	0	22.15	22.21	22.39	**22.84**	23.00
	16QAM	1	0	22.65	22.84	22.97	22.88	23.00
		1	50	22.38	22.58	22.74	22.71	23.00
		1	99	22.35	22.63	22.85	23.00	23.00
		50	0	21.39	21.40	21.55	21.96	22.00
		50	25	21.33	21.35	21.50	21.94	22.00
		50	50	21.21	21.28	21.49	21.82	22.00
		100	0	21.25	21.29	21.48	21.88	22.00
	64QAM	1	0	21.44	21.48	21.67	21.57	22.00
		1	50	21.33	21.37	21.56	21.96	22.00
		1	99	21.26	21.30	21.49	21.89	22.00
		50	0	20.87	20.91	20.55	20.90	21.00
		50	25	20.81	20.85	20.54	20.84	21.00
		50	50	20.84	20.88	20.57	20.87	21.00
		100	0	20.74	20.78	20.87	20.77	21.00

Table 5： Conducted Power of LTE.

5.2.2 Conducted Power of WIFI and BT

WiFi 2.4G Ant1						
Mode 2.4G	Channel	Frequency(MHz)	Data Rate(Mbps)	tune up	Average Power (dBm)	SAR Test
802.11b	1	2412	1	16.00	15.87	No
	6	2437		16.00	**15.89**	Yes
	11	2462		16.00	15.28	No
802.11g	1	2412	6	15.00	14.56	No
	6	2437		15.00	14.39	No
	11	2462		15.00	13.96	No
802.11n HT20	1	2412	MCS0	14.00	13.68	No
	6	2437		14.00	13.59	No
	11	2462		14.00	13.05	No

WiFi 2.4G Ant2						
Mode 2.4G	Channel	Frequency(MHz)	Data Rate(Mbps)	tune up	Average Power (dBm)	SAR Test
802.11b	1	2412	1	15.00	**14.23**	No
	6	2437		15.00	14.03	Yes
	11	2462		15.00	13.51	No
802.11g	1	2412	6	14.00	13.43	No
	6	2437		14.00	13.06	No
	11	2462		14.00	12.58	No
802.11n HT20	1	2412	MCS0	13.00	12.47	No
	6	2437		13.00	12.04	No
	11	2462		13.00	11.59	No

WiFi 2.4G MIMO						
Mode 2.4G	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	tune up	SAR Test
802.11g	1	2412	6	15.93	17.00	No
	6	2437		**16.23**	17.00	Yes
	11	2462		15.79	17.00	No
802.11n HT20	1	2412	MCS0	13.63	14.00	No
	6	2437		13.53	14.00	No
	11	2462		12.89	14.00	No

WiFi 5G Ant1						
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11a	U-NII-1	36	5180	12.00	11.31	No
		40	5200	12.00	11.27	No
		44	5220	12.00	11.20	No
		48	5240	12.00	11.21	No
	U-NII-2A	52	5260	12.00	11.27	No
		56	5280	12.00	11.24	No
		60	5300	12.00	11.25	No
		64	5320	12.00	11.19	No
	U-NII-2C	100	5500	12.00	11.73	No
		104	5520	12.00	11.81	No
		108	5540	12.00	11.84	No
		112	5560	12.00	11.99	No
		116	5580	12.00	11.88	No
		120	5600	12.00	11.98	No
		124	5620	12.00	11.99	No
		128	5640	12.00	11.14	No
		132	5660	12.00	11.20	No
		136	5680	12.00	11.15	No
		140	5700	12.00	11.34	No
	U-NII-3	149	5745	12.00	11.37	No
		153	5765	12.00	11.54	No
		157	5785	12.00	11.69	No
		161	5805	12.00	11.70	No
		165	5825	12.00	11.46	No
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11n-HT20	U-NII-1	36	5180	13.00	12.17	No
		40	5200	13.00	12.12	No
		44	5220	13.00	12.11	No
		48	5240	13.00	12.09	No
	U-NII-2A	52	5260	13.00	12.05	No
		56	5280	13.00	12.04	No
		60	5300	13.00	12.13	No
		64	5320	13.00	12.14	No
	U-NII-2C	100	5500	13.00	12.76	No
		104	5520	13.00	12.75	No
		106	5540	13.00	12.82	No
		112	5560	13.00	12.85	No
		116	5580	13.00	12.93	No
		120	5600	13.00	12.90	No
		124	5620	13.00	11.93	No
		128	5640	13.00	12.07	No
		132	5660	13.00	12.00	No
		136	5680	13.00	12.13	No
		140	5700	13.00	12.11	No
	U-NII-3	149	5745	13.00	12.54	No
		153	5765	13.00	12.45	No
		157	5785	13.00	12.43	No

		161	5805	13.00	12.44	No
		165	5825	13.00	12.63	No
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11n-HT40	U-NII-1	38	5190	13.00	12.69	No
		46	5230	13.00	12.61	No
	U-NII-2A	54	5270	13.00	**12.65**	Yes
		62	5310	13.00	12.64	No
	U-NII-2C	102	5510	13.00	**12.76**	Yes
		110	5550	13.00	12.72	No
		118	5590	13.00	12.64	No
		126	5630	13.00	12.58	No
		134	5670	13.00	12.59	No
	U-NII-3	151	5755	13.00	**12.75**	Yes
		159	5795	13.00	12.73	No
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11ac 20M	U-NII-1	36	5180	10.00	9.23	No
		40	5200	10.00	9.21	No
		44	5220	10.00	9.23	No
		48	5240	10.00	9.15	No
	U-NII-2A	52	5260	10.00	9.31	No
		56	5280	10.00	9.19	No
		60	5300	10.00	9.32	No
		64	5320	10.00	9.29	No
	U-NII-2C	100	5500	10.00	9.79	No
		104	5520	10.00	9.82	No
		108	5540	10.00	9.94	No
		112	5560	10.00	9.99	No
		116	5580	10.00	9.98	No
		120	5600	10.00	9.04	No
		124	5620	10.00	9.06	No
		128	5640	10.00	9.22	No
		132	5660	10.00	9.17	No
		136	5680	10.00	9.30	No
		140	5700	10.00	9.31	No
	U-NII-3	149	5745	10.00	9.47	No
		153	5765	10.00	9.61	No
		157	5785	10.00	9.58	No
		161	5805	10.00	9.55	No
		165	5825	10.00	9.63	No
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11ac 40M	U-NII-1	38	5190	10.00	9.98	No
		46	5230	10.00	9.95	No
	U-NII-2A	54	5270	10.00	9.12	No
		62	5310	10.00	9.09	No
	U-NII-2C	102	5510	10.00	9.12	No
		110	5550	10.00	9.10	No
		118	5590	10.00	9.13	No
		126	5630	10.00	9.10	No
		134	5670	10.00	9.09	No

	U-NII-3	151	5755	10.00	9.17	No
		159	5795	10.00	9.13	No
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11ac 80M	U-NII-1	42	5210	10.00	9.65	No
	U-NII-2A	58	5290	10.00	9.70	No
	U-NII-2C	106	5530	10.00	9.68	No
		122	5610	10.00	9.71	No
	U-NII-3	155	5775	10.00	9.84	No

WiFi 5G Ant2						
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11a	U-NII-1	36	5180	11.00	9.96	No
		40	5200	11.00	10.22	No
		44	5220	11.00	10.01	No
		48	5240	11.00	10.31	No
	U-NII-2A	52	5260	11.00	10.24	No
		56	5280	11.00	10.27	No
		60	5300	11.00	10.29	No
		64	5320	11.00	10.12	No
	U-NII-2C	100	5500	11.00	9.88	No
		104	5520	11.00	9.77	No
		108	5540	11.00	9.58	No
		112	5560	11.00	9.35	No
		116	5580	11.00	9.34	No
		120	5600	11.00	10.08	No
		124	5620	11.00	9.85	No
		128	5640	11.00	9.57	No
		132	5660	11.00	9.46	No
		136	5680	11.00	9.05	No
		140	5700	11.00	9.93	No
	U-NII-3	149	5745	11.00	9.62	No
		153	5765	11.00	9.42	No
		157	5785	11.00	10.05	No
		161	5805	11.00	9.74	No
		165	5825	11.00	9.52	No
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11n-HT20	U-NII-1	36	5180	11.00	10.08	No
		40	5200	11.00	9.87	No
		44	5220	11.00	10.13	No
		48	5240	11.00	9.98	No
	U-NII-2A	52	5260	11.00	9.97	No
		56	5280	11.00	10.13	No
		60	5300	11.00	10.15	No
		64	5320	11.00	10.17	No
	U-NII-2C	100	5500	11.00	9.84	No
		104	5520	11.00	9.76	No
		108	5540	11.00	9.32	No
		112	5560	11.00	9.33	No
		116	5580	11.00	9.03	No

		120	5600	11.00	10.02	No
		124	5620	11.00	9.58	No
		128	5640	11.00	9.56	No
		132	5660	11.00	9.35	No
		136	5680	11.00	10.08	No
		140	5700	11.00	9.93	No
	U-NII-3	149	5745	11.00	9.44	No
		153	5765	11.00	9.06	No
		157	5785	11.00	9.84	No
		161	5805	11.00	9.64	No
		165	5825	11.00	9.09	No
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11n-HT40	U-NII-1	38	5190	11.00	9.31	No
		46	5230	11.00	9.35	No
	U-NII-2A	54	5270	11.00	**9.39**	Yes
		62	5310	11.00	**9.35**	Yes
	U-NII-2C	102	5510	11.00	**9.66**	Yes
		110	5550	11.00	9.37	No
		118	5590	11.00	9.39	No
		126	5630	11.00	9.41	No
		134	5670	11.00	**9.79**	Yes
	U-NII-3	151	5755	11.00	**9.64**	Yes
		159	5795	11.00	**9.61**	Yes
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11ac 20M	U-NII-1	36	5180	10.00	8.61	No
		40	5200	10.00	8.76	No
		44	5220	10.00	8.64	No
		48	5240	10.00	8.64	No
	U-NII-2A	52	5260	10.00	8.82	No
		56	5280	10.00	8.91	No
		60	5300	10.00	8.85	No
		64	5320	10.00	9.03	No
	U-NII-2C	100	5500	10.00	8.45	No
		104	5520	10.00	8.22	No
		108	5540	10.00	9.11	No
		112	5560	10.00	8.93	No
		116	5580	10.00	8.52	No
		120	5600	10.00	8.55	No
		124	5620	10.00	8.31	No
		128	5640	10.00	8.08	No
		132	5660	10.00	8.83	No
		136	5680	10.00	8.45	No
		140	5700	10.00	8.41	No
	U-NII-3	149	5745	10.00	9.41	No
		153	5765	10.00	8.95	No
		157	5785	10.00	8.82	No
		161	5805	10.00	8.71	No
		165	5825	10.00	8.69	No
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test

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802.11ac 40M	U-NII-1	38	5190	10.00	8.53	No
		46	5230	10.00	8.53	No
	U-NII-2A	54	5270	10.00	8.65	No
		62	5310	10.00	8.73	No
	U-NII-2C	102	5510	10.00	8.59	No
		110	5550	10.00	8.65	No
		118	5590	10.00	8.58	No
		126	5630	10.00	8.62	No
		134	5670	10.00	8.61	No
	U-NII-3	151	5755	10.00	8.72	No
		159	5795	10.00	8.68	No
5GHz	mode	Channel	Frequency(MHz)	tune up	Average Power (dBm)	SAR Test
802.11ac 80M	U-NII-1	42	5210	10.00	8.54	No
	U-NII-2A	58	5290	10.00	8.64	No
	U-NII-2C	106	5530	10.00	8.66	No
		122	5610	10.00	8.53	No
	U-NII-3	155	5775	10.00	8.63	No

WiFi 5G MIMO						
5GHz	mode	Channel	Frequency(MHz)	Average Power (dBm)	tune up	SAR Test
802.11a	U-NII-1	36	5180	11.65	12.00	No
		40	5200	11.51	12.00	No
		44	5220	11.57	12.00	No
		48	5240	11.59	12.00	Yes
	U-NII-2A	52	5260	11.76	12.00	Yes
		56	5280	11.67	12.00	No
		60	5300	11.52	12.00	No
		64	5320	11.63	12.00	No
	U-NII-2C	100	5500	11.52	12.00	No
		104	5520	11.49	12.00	No
		108	5540	11.51	12.00	No
		112	5560	11.53	12.00	No
		116	5580	11.42	12.00	No
		120	5600	11.37	12.00	No
		124	5620	11.46	12.00	No
		128	5640	11.57	12.00	No
		132	5660	11.38	12.00	No
		136	5680	11.44	12.00	No
		140	5700	11.43	12.00	No
	U-NII-3	149	5745	11.35	12.00	No
		153	5765	11.45	12.00	No
		157	5785	11.59	12.00	Yes
		161	5805	11.51	12.00	No
		165	5825	11.56	12.00	No
5GHz	mode	Channel	Frequency(MHz)	Average Power (dBm)	tune up	SAR Test
802.11n-HT20	U-NII-1	36	5180	12.45	13.00	No
		40	5200	12.39	13.00	No
		44	5220	12.43	13.00	No
		48	5240	12.45	13.00	No

	U-NII-2A	52	5260	12.55	13.00	No
		56	5280	12.58	13.00	No
		60	5300	12.46	13.00	No
		64	5320	12.41	13.00	No
	U-NII-2C	100	5500	12.34	13.00	No
		104	5520	12.37	13.00	No
		108	5540	12.25	13.00	No
		112	5560	12.21	13.00	No
		116	5580	12.22	13.00	No
		120	5600	12.23	13.00	No
		124	5620	12.25	13.00	No
		128	5640	12.23	13.00	No
		132	5660	12.29	13.00	No
		136	5680	12.37	13.00	No
		140	5700	12.41	13.00	No
	U-NII-3	149	5745	12.44	13.00	No
		153	5765	12.50	13.00	No
		157	5785	12.43	13.00	No
		161	5805	12.33	13.00	No
		165	5825	12.36	13.00	No
5GHz	mode	Channel	Frequency(MHz)	Average Power (dBm)	tune up	SAR Test
802.11n-HT40	U-NII-1	38	5190	12.35	13.00	No
		46	5230	12.43	13.00	No
	U-NII-2A	54	5270	**12.39**	13.00	Yes
		62	5310	12.38	13.00	No
	U-NII-2C	102	5510	12.37	13.00	No
		110	5550	12.34	13.00	No
		118	5590	12.36	13.00	No
		126	5630	**12.42**	13.00	Yes
		134	5670	12.29	13.00	No
	U-NII-3	151	5755	**12.45**	13.00	Yes
		159	5795	12.42	13.00	No
5GHz	mode	Channel	Frequency(MHz)	Average Power (dBm)	tune up	SAR Test
802.11ac 20M	U-NII-1	36	5180	9.24	10.00	No
		40	5200	9.18	10.00	No
		44	5220	9.11	10.00	No
		48	5240	9.08	10.00	No
	U-NII-2A	52	5260	9.00	10.00	No
		56	5280	9.16	10.00	No
		60	5300	9.08	10.00	No
		64	5320	9.06	10.00	No
	U-NII-2C	100	5500	9.07	10.00	No
		104	5520	9.05	10.00	No
		108	5540	8.85	10.00	No
		112	5560	9.02	10.00	No
		116	5580	9.01	10.00	No
		120	5600	8.93	10.00	No
		124	5620	8.95	10.00	No
		128	5640	9.03	10.00	No
		132	5660	9.02	10.00	No

		136	5680	8.98	10.00	No
		140	5700	8.99	10.00	No
	U-NII-3	149	5745	8.72	10.00	No
		153	5765	8.79	10.00	No
		157	5785	8.91	10.00	No
		161	5805	8.74	10.00	No
		165	5825	8.82	10.00	No
5GHz	mode	Channel	Frequency(MHz)	Average Power (dBm)	tune up	SAR Test
802.11ac 40M	U-NII-1	38	5190	8.88	10.00	No
		46	5230	8.67	10.00	No
	U-NII-2A	54	5270	8.70	10.00	No
		62	5310	8.79	10.00	No
	U-NII-2C	102	5510	8.75	10.00	No
		110	5550	8.96	10.00	No
		118	5590	8.68	10.00	No
		126	5630	8.68	10.00	No
		134	5670	8.78	10.00	No
	U-NII-3	151	5755	8.86	10.00	No
		159	5795	8.74	10.00	No
5GHz	mode	Channel	Frequency(MHz)	Average Power (dBm)	tune up	SAR Test
802.11ac 80M	U-NII-1	42	5210	8.86	10.00	No
	U-NII-2A	58	5290	8.83	10.00	No
	U-NII-2C	106	5530	8.45	10.00	No
		122	5610	8.44	10.00	No
	U-NII-3	155	5775	8.86	10.00	No

Table 6： Conducted Power of WIFI.

BT		Average Conducted Power(dBm)			
Band	Channel	0	39	78	Tune up
BT	GFSK	4.20	4.03	3.08	4.50
	π/4DQPSK	4.34	3.99	2.91	4.50
	8DPSK	4.31	4.10	2.80	4.50
Band	Channel	0	19	39	Tune up
BLE 1M	GFSK	3.71	3.26	2.32	4.00
BLE 2M	GFSK	1.01	0.78	0.23	4.00

Table 7： Conducted Power of BT.

5.3 Measurement of SAR Data

5.3.1 SAR Result of LTE Band 48

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(W/kg)	Liquid Temp.
Body Test data (Separate 0mm 1RB)											
Back side	20	QPSK 1RB_0	56640/3690	1:1.58	0.881	-0.03	23.91	24.00	1.021	0.899	22.1
Back side-repeat	20	QPSK 1RB_0	56640/3690	1:1.58	0.873	-0.03	23.91	24.00	1.021	0.891	22.1
Left side	20	QPSK 1RB_0	56640/3690	1:1.58	0.560	-0.07	23.91	24.00	1.021	0.572	22.1
Top side	20	QPSK 1RB_0	56640/3690	1:1.58	0.550	-0.08	23.91	24.00	1.021	0.562	22.1
Back side	20	QPSK 1RB_0	55340/3560	1:1.58	0.725	0.15	23.52	24.00	1.117	0.810	22.1
Back side	20	QPSK 1RB_0	55773/3603.33	1:1.58	0.706	0.06	23.54	24.00	1.112	0.785	22.1
Back side	20	QPSK 1RB_0	56207/3646.67	1:1.58	0.742	0.09	23.61	24.00	1.094	0.812	22.1
Body Test data (Separate 0mm 50%RB)											
Back side	20	QPSK 50RB_25	56640/3690	1:1.58	0.871	0.09	22.86	23.00	1.033	**0.900**	22.1
Left side	20	QPSK 50RB_25	56640/3690	1:1.58	0.587	0.11	22.86	23.00	1.033	0.606	22.1
Top side	20	QPSK 50RB_25	56640/3690	1:1.58	0.497	-0.06	22.86	23.00	1.033	0.513	22.1
Back side	20	QPSK 50RB_0	55340/3560	1:1.58	0.694	-0.01	22.27	23.00	1.183	0.821	22.1
Back side	20	QPSK 50RB_0	55773/3603.33	1:1.58	0.727	-0.02	22.26	23.00	1.186	0.862	22.1
Back side	20	QPSK 50RB_0	56207/3646.67	1:1.58	0.751	0.03	22.43	23.00	1.140	0.856	22.1
Body Test data (Separate 0mm 100%RB)											
Back side	20	QPSK 100RB_0	56640/3690	1:1.58	0.863	0.19	22.84	23.00	1.038	0.895	22.1

Table 8： SAR of LTE Band 48

Note:

1) The maximum Scaled SAR value are 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.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Back side	56640/3690	0.881	0.873	1.009	N/A	N/A
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 performed only if the original, first or second repeated measurement was≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

5.3.2 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(W/kg)	Liquid Temp.
Wi-Fi 2.4G SAR Test Record(Chain 1)											
Body Test data (Separate 0mm)											
Back side	802.11b	6/2437	99.53%	1.005	0.250	0.05	15.89	16.00	1.026	0.258	22.0
Right side	802.11b	6/2437	99.53%	1.005	0.290	0.04	15.89	16.00	1.026	0.299	22.0
Top side	802.11b	6/2437	99.53%	1.005	0.348	0.01	15.89	16.00	1.026	**0.359**	22.0
Wi-Fi 2.4G SAR Test Record(Chain 2)											
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(W/kg)**	**Liquid Temp.**
Body Test data (Separate 0mm)											
Back side	802.11b	1/2412	99.53%	1.005	0.087	0.16	14.23	15.00	1.194	0.104	22.0
Left side	802.11b	1/2412	99.53%	1.005	0.250	0.09	14.23	15.00	1.194	**0.300**	22.0
Wi-Fi 2.4G SAR Test Record(MIMO)											
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(W/kg)**	**Liquid Temp.**
Body Test data (Separate 0mm)											
Back side	802.11g	6/2437	96.85%	1.033	0.469	0.15	16.23	17.00	1.194	**0.578**	22.0
Left side	802.11g	6/2437	96.85%	1.033	0.146	0.03	16.23	17.00	1.194	0.180	22.0
Right side	802.11g	6/2437	96.85%	1.033	0.209	0.01	16.23	17.00	1.194	0.258	22.0
Top side	802.11g	6/2437	96.85%	1.033	0.167	0.06	16.23	17.00	1.194	0.206	22.0

Table 9： SAR of WIFI 2.4G.

Note:

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

2) If the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) Per KDB248227D01, for Body SAR test of WiFi 2.4G, SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure. The highest reported SAR for DSSS is adjusted by the ratio of OFDM 802.11g/n to DSSS specified maximum output power and the adjusted SAR is < 1.2 W/kg, so SAR for 802.11g/n is not required.

5.3.3 SAR Result of WIFI 5G

Wi-Fi 5G SAR Test Record (Chain 1)											
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(W/kg)**	**Liquid Temp.**
Body Test data of U-NII-2A(Separate 0mm)											
Back side	802.11n 40M	54/5270	93.61%	1.068	0.462	0.02	12.65	13.00	1.084	0.535	22.2
Right side	802.11n 40M	54/5270	93.61%	1.068	0.611	0.04	12.65	13.00	1.084	0.707	22.2
Test data of U-NII-2C(Separate 0mm)											
Back side	802.11n 40M	102/5510	93.61%	1.068	0.526	0.09	12.76	13.00	1.057	0.594	22.2
Right side	802.11n 40M	102/5510	93.61%	1.068	0.699	0.03	12.76	13.00	1.057	0.789	22.2
Test data of U-NII-3(Separate 0mm)											
Back side	802.11n 40M	151/5755	93.61%	1.068	0.548	0.04	12.75	13.00	1.059	0.620	22.2
Right side	802.11n 40M	151/5755	93.61%	1.068	0.699	0.05	12.75	13.00	1.059	**0.791**	22.2
Wi-Fi 5G SAR Test Record (Chain 2)											
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(W/kg)**	**Liquid Temp.**
Body Test data of U-NII-2A(Separate 0mm)											
Back side	802.11n 40M	54/5270	93.61%	1.068	0.440	-0.05	9.39	11.00	1.449	0.681	22.2
Left side	802.11n 40M	54/5270	93.61%	1.068	0.568	0.09	9.39	11.00	1.449	0.879	22.2
Left side	802.11n 40M	62/5310	93.61%	1.068	0.561	-0.09	9.35	11.00	1.462	0.876	22.2
Body Test data of U-NII-2C(Separate 0mm)											
Back side	802.11n 40M	134/5670	93.61%	1.068	0.394	0.13	9.79	11.00	1.321	0.556	22.2
Left side	802.11n 40M	134/5670	93.61%	1.068	0.693	0.09	9.79	11.00	1.321	**0.978**	22.2
Left side	802.11n 40M	102/5510	93.61%	1.068	0.656	0.19	9.66	11.00	1.361	0.954	22.2
Body Test data of U-NII-3(Separate 0mm)											
Back side	802.11n 40M	151/5755	93.61%	1.068	0.397	0.05	9.64	11.00	1.368	0.580	22.2
Left side	802.11n 40M	151/5755	93.61%	1.068	0.666	0.06	9.64	11.00	1.368	0.973	22.2
Left side	802.11n 40M	159/5795	93.61%	1.068	0.658	0.16	9.61	11.00	1.377	0.968	22.2

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Wi-Fi 5G SAR Test Record (MIMO)											
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(W/kg)**	**Liquid Temp.**
Body Test data of U-NII-2A(Separate 0mm)											
Back side	802.11n 40M	54/5270	93.61%	1.068	0.188	0.00	12.39	13.00	1.150	0.231	22.2
Left side	802.11n 40M	54/5270	93.61%	1.068	0.230	0.00	12.39	13.00	1.150	0.283	22.2
Right side	802.11n 40M	54/5270	93.61%	1.068	0.379	-0.09	12.39	13.00	1.150	0.466	22.2
Body Test data of U-NII-2C(Separate 0mm)											
Back side	802.11n 40M	126/5630	93.61%	1.068	0.220	0.09	12.42	13.00	1.144	0.269	22.2
Left side	802.11n 40M	126/5630	93.61%	1.068	0.328	0.02	12.42	13.00	1.144	0.401	22.2
Right side	802.11n 40M	126/5630	93.61%	1.068	0.507	-0.04	12.42	13.00	1.144	**0.620**	22.2
Body Test data of U-NII-3(Separate 0mm)											
Back side	802.11n 40M	151/5755	93.61%	1.068	0.225	-0.09	12.45	13.00	1.135	0.273	22.2
Left side	802.11n 40M	151/5755	93.61%	1.068	0.334	-0.09	12.45	13.00	1.135	0.405	22.2
Right side	802.11n 40M	151/5755	93.61%	1.068	0.505	0.00	12.45	13.00	1.135	0.612	22.2

Table 10： SAR of WIFI 5G.

Note:

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

2) If the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s).

3) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. As the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration;

4) Per KDB248227D01,as 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.

5.4 Multiple Transmitter Evaluation

5.4.1 Simultaneous SAR SAR test evaluation

1) Simultaneous Transmission

NO.	Simultaneous Transmission Configuration	Body
1	LTE + WiFi 2.4G Ant1	No
2	LTE + WiFi 2.4G Ant2	No
3	LTE + WiFi 2.4G MIMO	No
4	LTE + WiFi 5G Ant1	No
5	LTE + WiFi 5G Ant2	No
6	LTE + WiFi 5G MIMO	No
7	WiFi 2.4G/5G+BT	No
8	WiFi 2.4G+WiFi 5G	No

Equipment list

Test Platform		SPEAG DASY5 Professional				
Location		SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch				
Description		SAR Test System (Frequency range 300MHz-6GHz)				
Software Reference		DASY52; SEMCAD				
Hardware Reference						
Equipment		Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	Twin Phantom	SPEAG	SAM 3	1912	NCR	NCR
☒	Twin Phantom	SPEAG	ELI v5.0	1123	NCR	NCR
☒	DAE	SPEAG	DAE4	1428	2020-03-03	2021-03-02
☒	E-Field Probe	SPEAG	EX3DV4	3962	2020-04-01	2021-03-31
☒	Validation Kits	SPEAG	D2450V2	733	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D3500V2	1082	2019-09-06	2022-09-05
☒	Validation Kits	SPEAG	D3700V2	1046	2019-09-06	2022-09-05
☒	Validation Kits	SPEAG	D5GHzV2	1165	2019-12-20	2022-12-19
☒	Agilent Network Analyzer	Agilent	E5071C	MY46523591	2020-04-16	2021-04-15
☒	Dielectric Probe Kit	Agilent	85070E	US01440210	NCR	NCR
☒	Universal Radio Communication Tester	R & S	CMW500	111637	2020-04-16	2021-04-15
☒	Radio Communication Analyzer	Anritsu Corporation	MT8821C	6201502984	2020-06-11	2021-06-10
☒	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
☒	Signal Generator	Agilent	N5171B	MY53050736	2020-04-15	2021-04-14
☒	Preamplifier	Mini-Circuits	ZHL-42W	15542	NCR	NCR
☒	Preamplifier	Compliance Directions Systems Inc.	AMP28-3W	073501433	NCR	NCR
☒	Power Meter	Agilent	E4416A	GB41292095	2020-04-15	2021-04-14
☒	Power Sensor	Agilent	8481H	MY41091234	2020-04-15	2021-04-14
☒	Power Sensor	R&S	NRP-Z92	100025	2020-04-16	2021-04-15
☒	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	MingGao	T809	NA	2020-04-21	2021-04-20
☒	Humidity and Temperature Indicator	KIMTOKA	KIMTOKA	NA	2020-04-21	2021-04-20

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

6 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.

7 Calibration certificate

Please see the Appendix C

8 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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