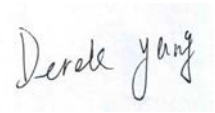
FCC SAR TEST REPORT

Report No:	ZR/2021/2004004
Applicant:	Wingtech Group (Hongkong) Limited
Manufacturer:	Wingtech Group (Hongkong) Limited
Product Name:	AIRSPEED MOBILE HOTSPOT
Model No.(EUT):	ASMHS01
Trade Mark:	AIRSPEED MOBILE HOTSPOT
Standards:	FCC 47CFR §2.1093
Date of Receipt:	2021-04-01
Date of Test:	2021-04-02 to 2021-04-17
Date of Issue:	2021-04-24
Test conclusion:	**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

Report Number	Revision	Description	Issue Date
ZR/2021/2004004	01	Original	2021-04-24

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch Testing Center EEC Laboratory.
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TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)
	Hotspot
WCDMA Band II	0.63
WCDMA Band V	0.41
LTE Band 2	1.12
LTE Band 4	0.95
LTE Band 5	1.09
LTE Band 7	0.74
LTE Band 12	0.74
LTE Band 13	0.96
LTE Band 66	0.79
WIFI 2.4G	0.55
WIFI 5G	1.18
SAR Limited(W/kg)	1.6
Maximum Simultaneous Transmission SAR (W/kg)	
Scenario	Hotspot
Sum SAR	1.54
SPLSR	NA
SPLSR Limited	0.04

Reviewed by

Jackson Li

Jackson Li

Prepared by

Roman Pan

Roman Pan

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1 General Information

1.1 Details of Client

Applicant:	Wingtech Group (Hongkong) Limited
Address:	Flat/RM 1903 ,19/F, Podium Plaza, 5 Hanoi Road, Tsim Sha Tsui, Kowloon, Hongkong
Manufacturer:	Wingtech Group (Hongkong) Limited
Address:	Flat/RM 1903 ,19/F, Podium Plaza, 5 Hanoi Road, Tsim Sha Tsui, Kowloon, Hongkong

1.2 Test Location

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

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

Post code: 518057

Telephone: +86 (0) 755 2601 2053

Fax: +86 (0) 755 2671 0594

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.

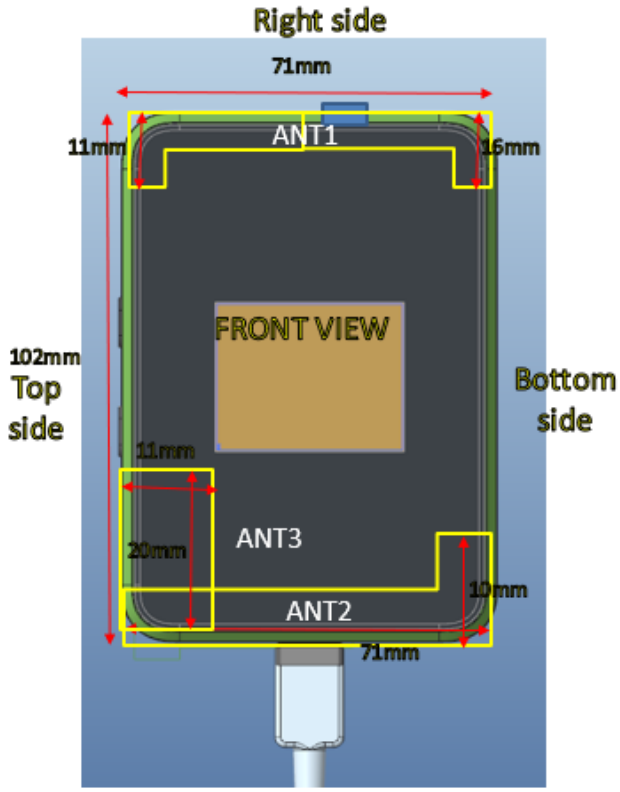
CAB identifier: CN0006

IC#: 4620C.

1.4 General Description of EUT

Device Type :	portable device		
Exposure Category:	uncontrolled environment / general population		
Product Name:	AIRSPEED MOBILE HOTSPOT		
Model No.(EUT):	ASMHS01		
Trade Mark:	AIRSPEED MOBILE HOTSPOT		
FCC ID:	2APXW-ASMHS01		
Product Phase:	production unit		
SN:	860550050004160 / 860550050005076		
Hardware Version:	DVT:89528_1_30		
Software Version:	Perdix_0.00.15		
Antenna Type:	Inner Antenna		
Device Operating Configurations :			
Modulation Mode:	**WCDMA:** QPSK; **LTE:** QPSK,16QAM; **WIFI:** DSSS, OFDM		
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 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 7	2500~2570	2620~2690
	LTE Band 12	699~716	729~746
	LTE Band 13	777~787	746~756
	LTE Band 66	1710~1780	2110~2200
	Wi-Fi 2.4G	2412~2462	2412~2462
	Wi-Fi 5G	5150~5250	5150~5250
		5250~5350	5250~5350
		5470~5725	5470~5725
		5725~5850	5725~5850
Battery Information:	Model:	MF01	
	Manufacturer:	Jiade Energy Technology(Zhuhai)Co.,Ltd.	

1.4.1 DUT Antenna Locations



Antenna	Mode	Band
1# (ANT1) TX/RX	WCDMA	2, 5
	LTE	2, 4, 5, 7, 12, 13, 66
2# (ANT2) RX	WCDMA	2, 5
	LTE	2, 4, 5, 7, 12, 13, 66
3# (ANT3) TX/RX	WIFI 2.4G&5G	2.4G&5G

Note: Ant2 only support RX.

According to the distance between LTE/WCDMA&WIFI 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	Body	Yes	Yes	No	Yes	Yes	Yes
WIFI Ant	Body	Yes	Yes	Yes	No	Yes	No

Table 1： EUT Sides for SAR Testing

Note:

1) When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

1.4.2 Power reduction specification

This device uses a single fixed level of power reduction through static table look-up for SAR compliance and it is triggered by a single event or operation

The proximity sensor is used to indicate when the device is held close to a user's body exposure condition. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes of main antenna to ensure SAR compliance(Refer to section 5.4 for detailed proximity Sensor information and validation data per KDB 616217).

The following tables summarize the key power reduction information. The detailed full power which is the Max. power the state can use and reduced tune-up specifications and conducted power measurement results are provided in Section 8 of this report.

Main Antenna Power Level(dBm)								
Power Reduction Scenario	WCDMA Band II	WCDMA Band V	LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 7	LTE Band 13	LTE Band 66
Sensor off	24.5	24.5	23.5	23.5	23.5	23.5	23.5	23.5
Sensor on	18.0	20.0	18.5	17.5	20.0	21.5	22.5	17.5

WIFI Antenna Power Level(dBm)		
Power Reduction Scenario	WIFI 2.4G	WIFI 5G
Sensor off	22.0	21.0
Sensor on&Simultaneous Transmission	17.0	14.5

1.5 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
IEEE Std C95.1 – 1991	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 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 616217 D04	SAR for laptop and tablets 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℃, Max. = 25 ℃
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

Table 2： The Ambient Conditions

3 SAR Measurements System Configuration

3.1 The SAR Measurement System

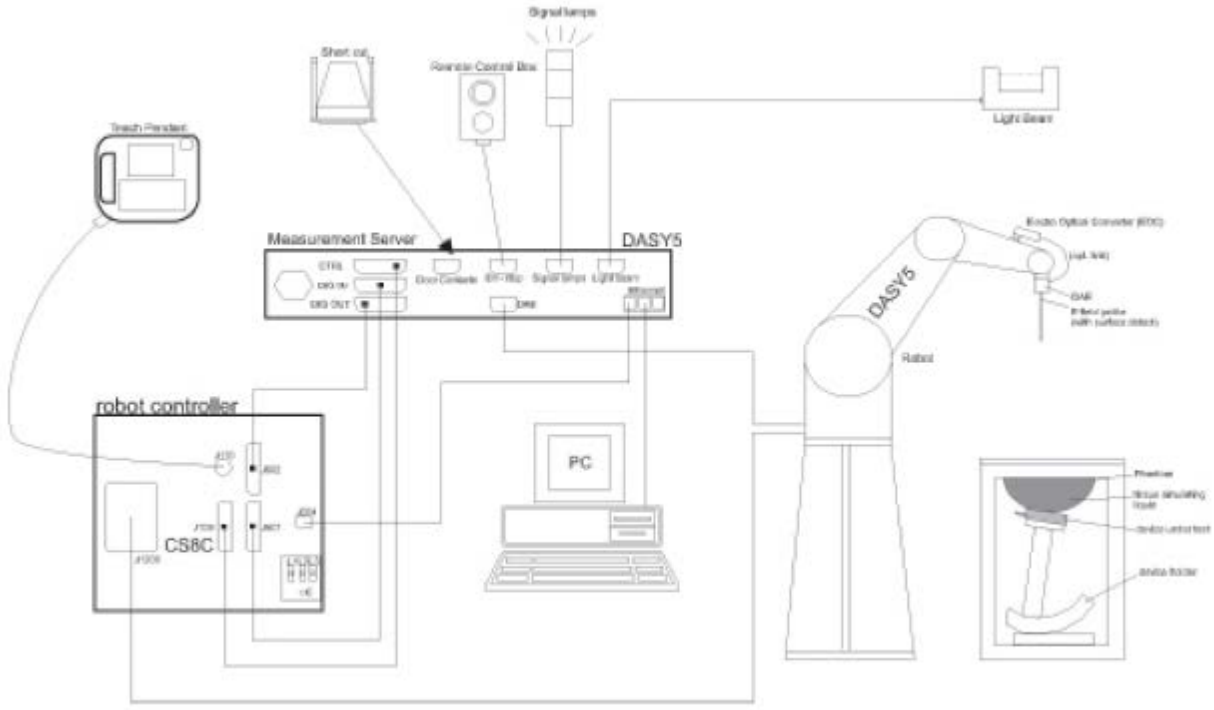
This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the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

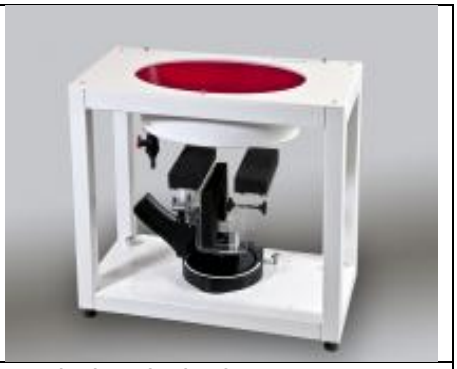
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx.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

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

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 Body Exposure Condition

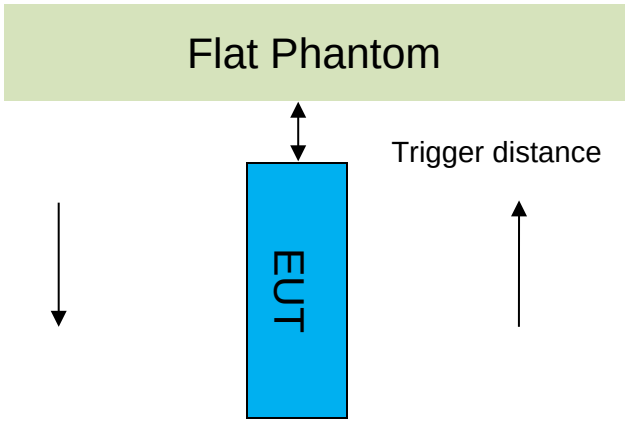
5.1.1 Wireless Router exposure conditions

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 this device with form factors greater than 9 cm x 5 cm, a test separation distance of 10 mm is required.

5.1.2 Proximity Sensor Triggering Test

Proximity sensor triggering distances:

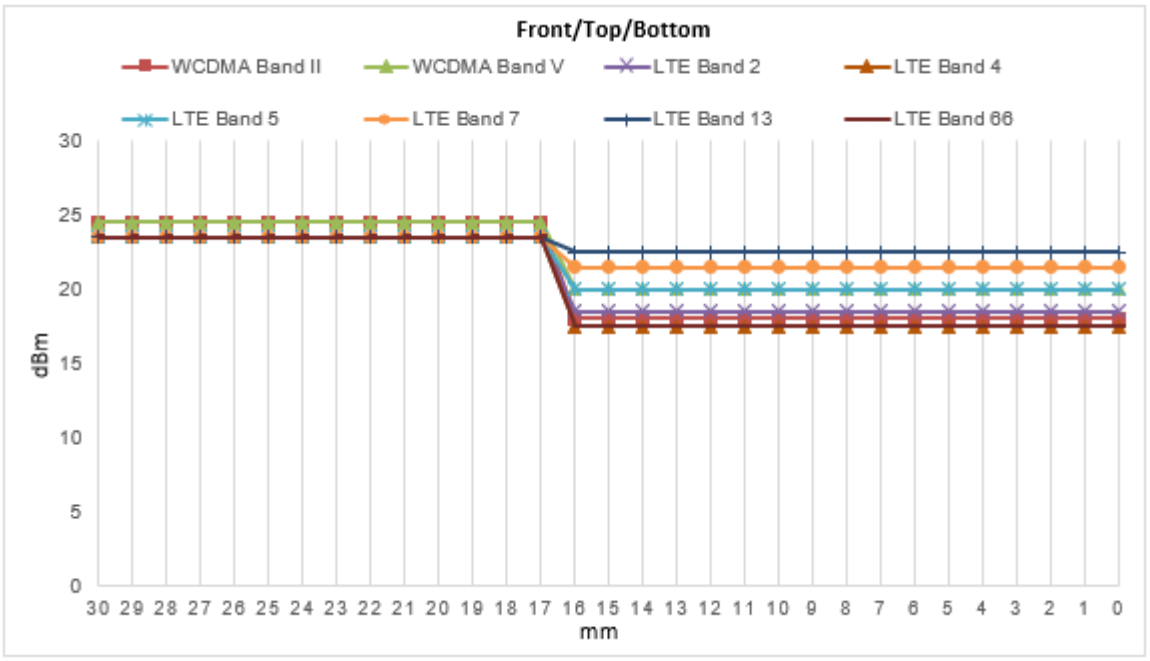
The Proximity sensor triggering was applied to WCDMA Band II/V, LTE Band 2/4/5/7/13/66. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed.

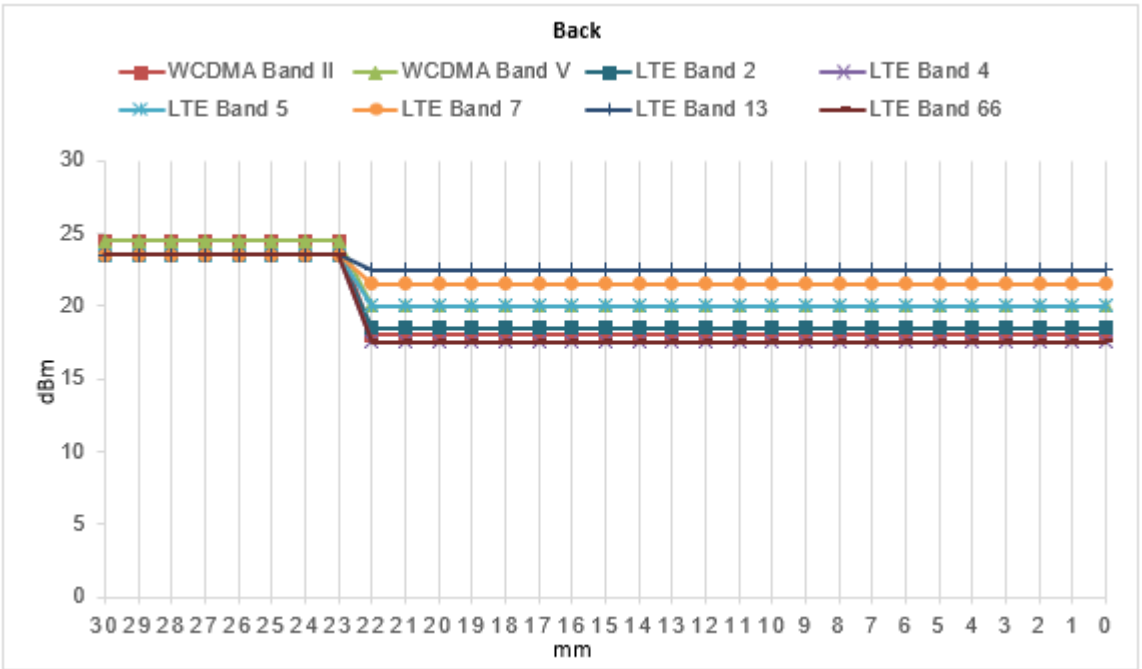


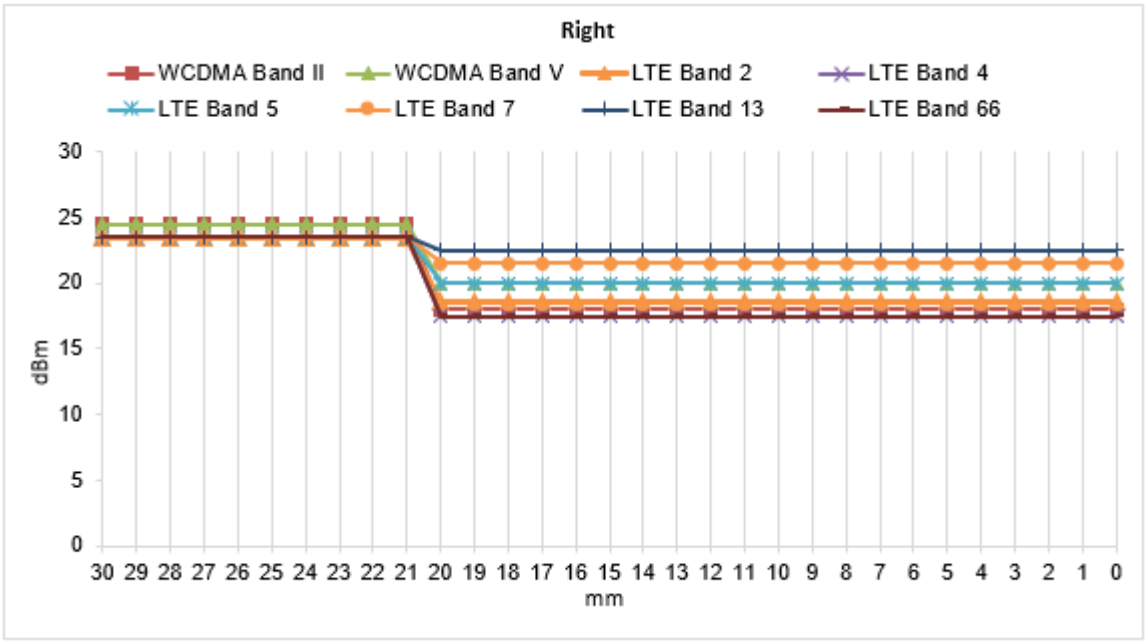
Antenna	Triggering Position	Proximity Sensor Triggering Distance(mm)	Required SAR Test Distance(mm)
Main Antenna(Ant1)	Front	16	15
	Back	22	21
	Right	20	19
	Top	16	15
	Bottom	16	15
WIFI Antenna(Ant3)	Front	16	15
	Back	16	15
	Top	16	15

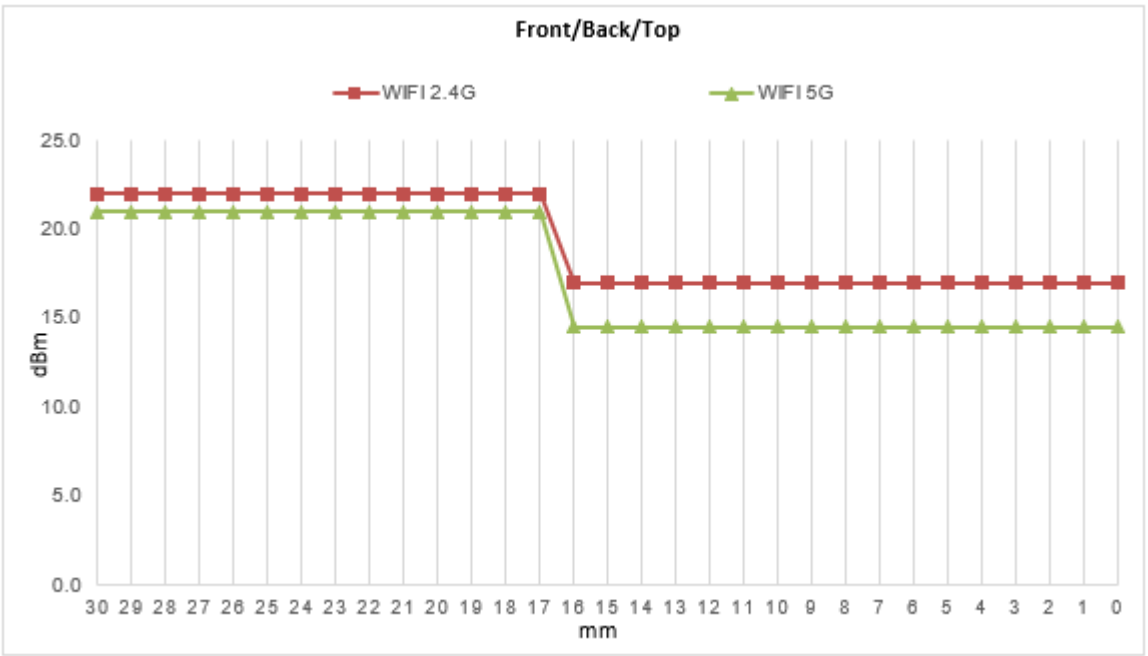
Note: SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.

- DUT Moving Toward(Trigger)the Phantom

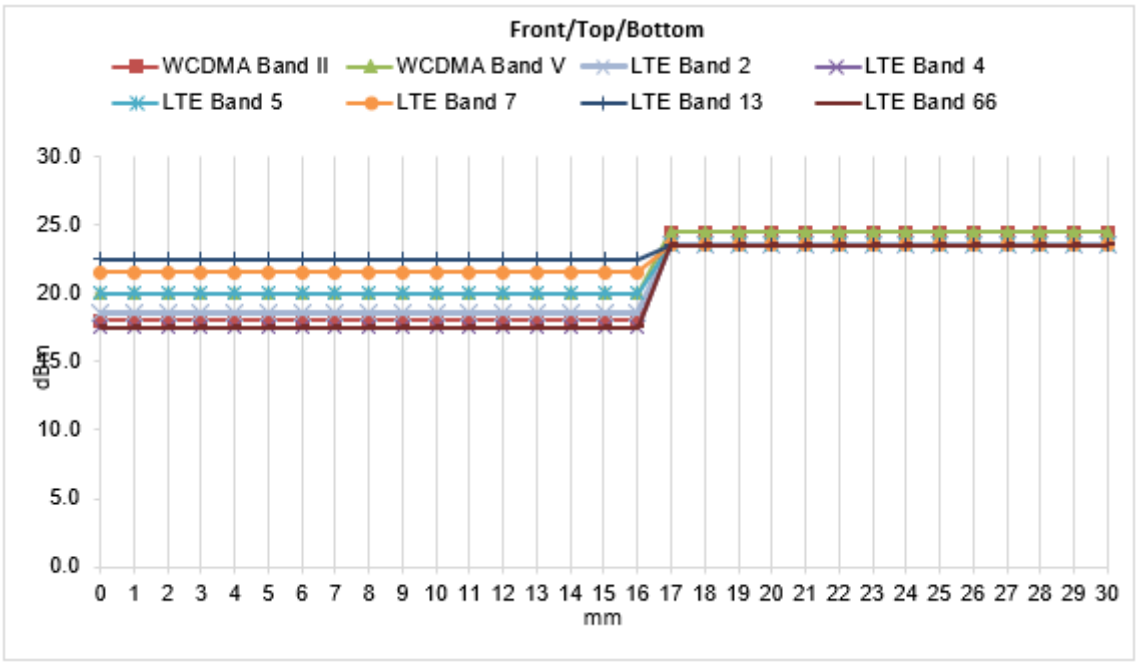


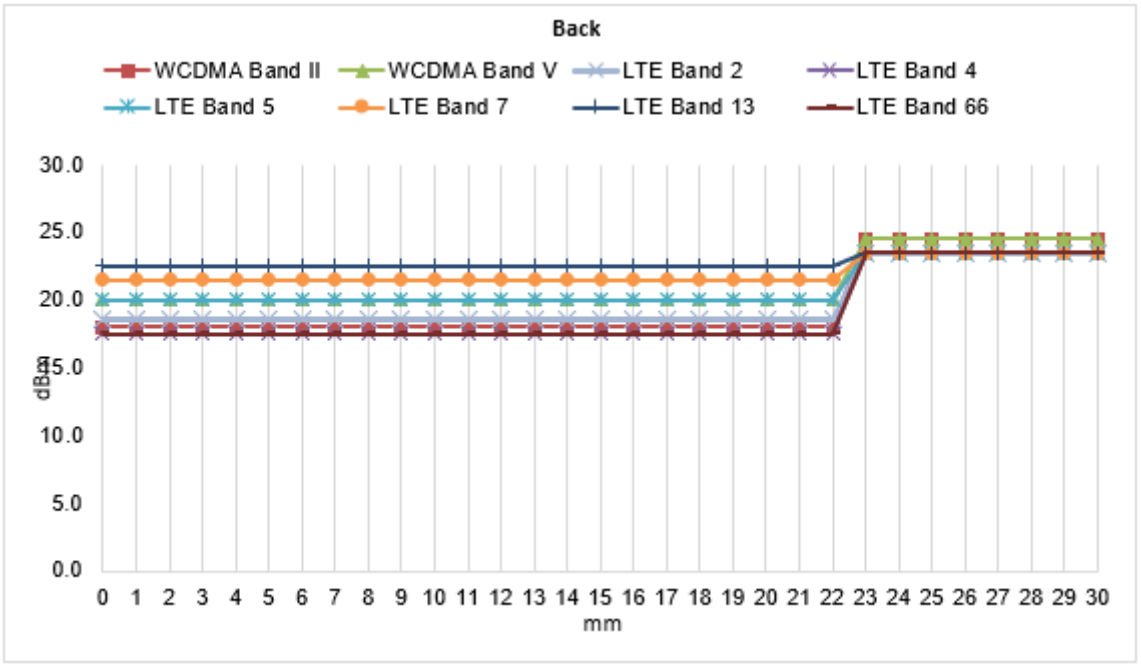


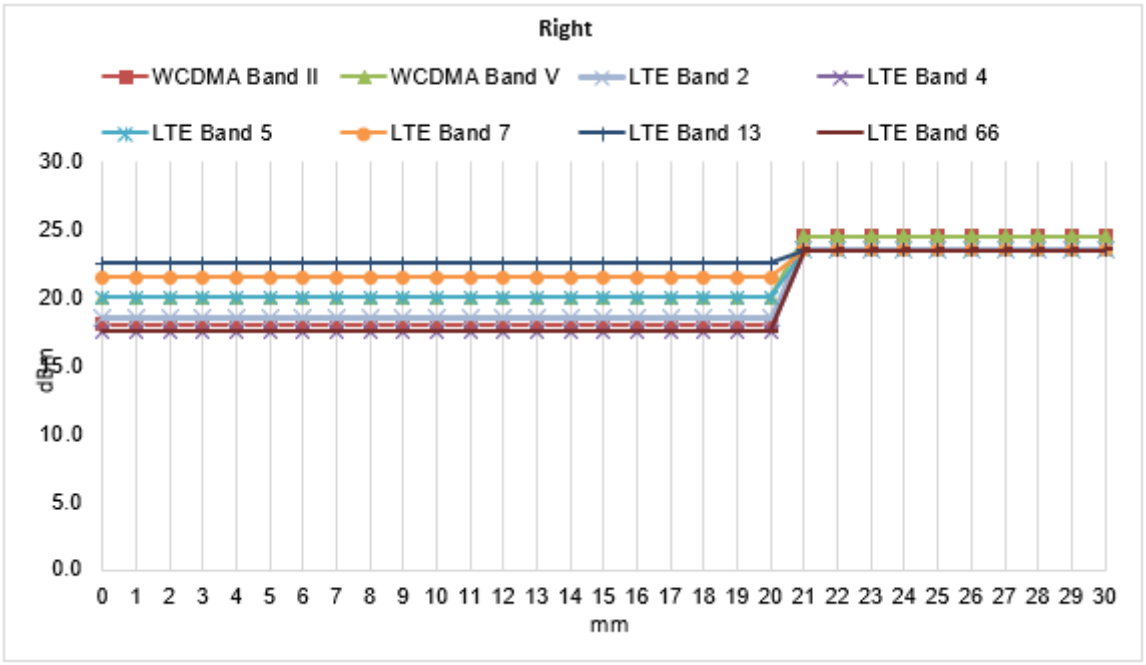


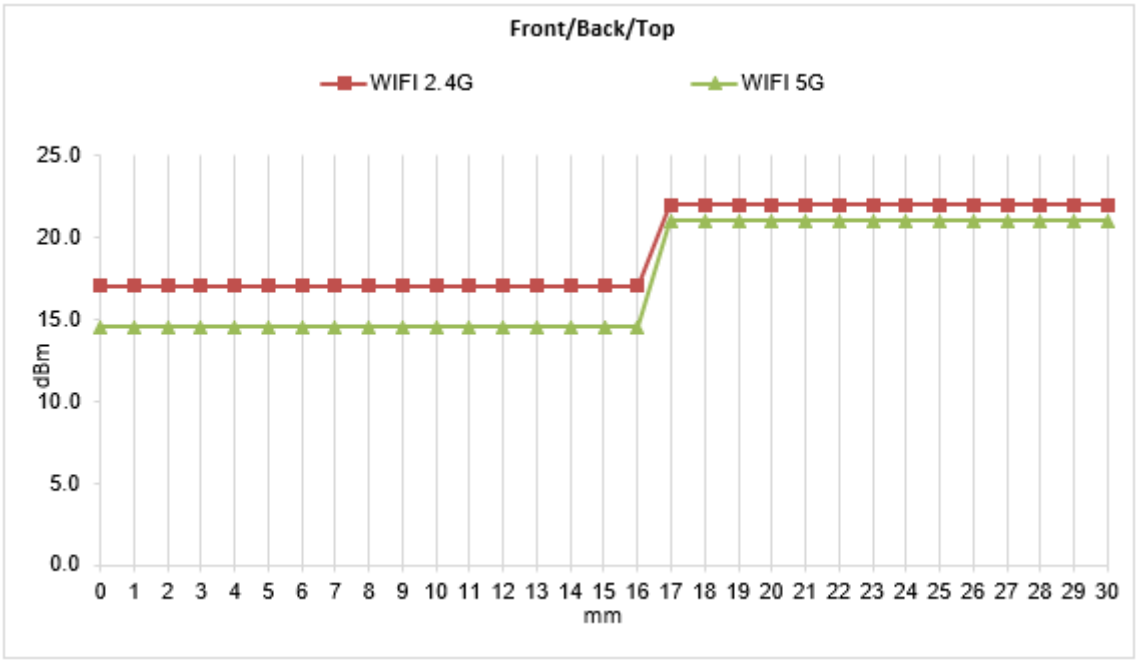


- DUT Moving Away(Release) from the Phantom









Proximity sensor coverage

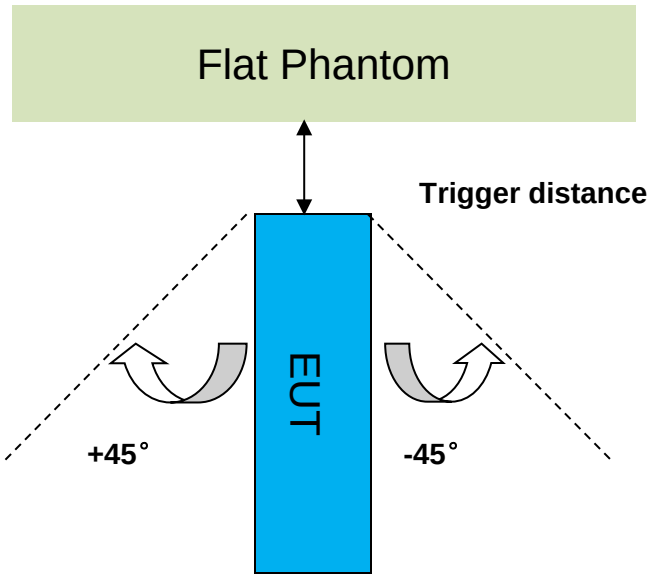
If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, the device is moved and “along the direction of maximum antenna and sensor offset”.

The proximity sensor and main antenna use same metallic electrode, so there is no spatial offset.

Device tilt angle influences to proximity sensor triggering

The influence of device tilt angles to proximity sensor triggering was determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom.

Rotating the tablet around the edge next to the phantom in ≤ 10° increments until the tablet is ± 45° from the vertical position at 0°, and the maximum output power remains in the reduced mode.



Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering for Top Side												
Band (MHz)	Minimum trigger distance Per KDB616217§6.2	Minimum trigger distance at which power reduction was maintained over ±45°	Power Reduction Status									
			-45°	-35°	-25°	-15°	-5°	0°	5°	15°	25°	35°	45°
WCDMA Band II	Right side:20mm Top side:16mm Bottom side:16mm	Right side:20mm Top side:16mm Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on
WCDMA Band V	Right side:20mm Top side:16mm Bottom side:16mm	Right side:20mm Top side:16mm Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 2	Right side:20mm Top side:16mm Bottom side:16mm	Right side:20mm Top side:16mm Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 4	Right side:20mm Top side:16mm Bottom side:16mm	Right side:20mm Top side:16mm Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 5	Right side:20mm Top side:16mm Bottom side:16mm	Right side:20mm Top side:16mm Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 7	Right side:20mm Top side:16mm Bottom side:16mm	Right side:20mm Top side:16mm Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 13	Right side:20mm Top side:16mm Bottom side:16mm	Right side:20mm Top side:16mm Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on
LTE Band 66	Right side:20mm Top side:16mm Bottom side:16mm	Right side:20mm Top side:16mm Bottom side:16mm	on	on	on	on	on	on	on	on	on	on	on

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

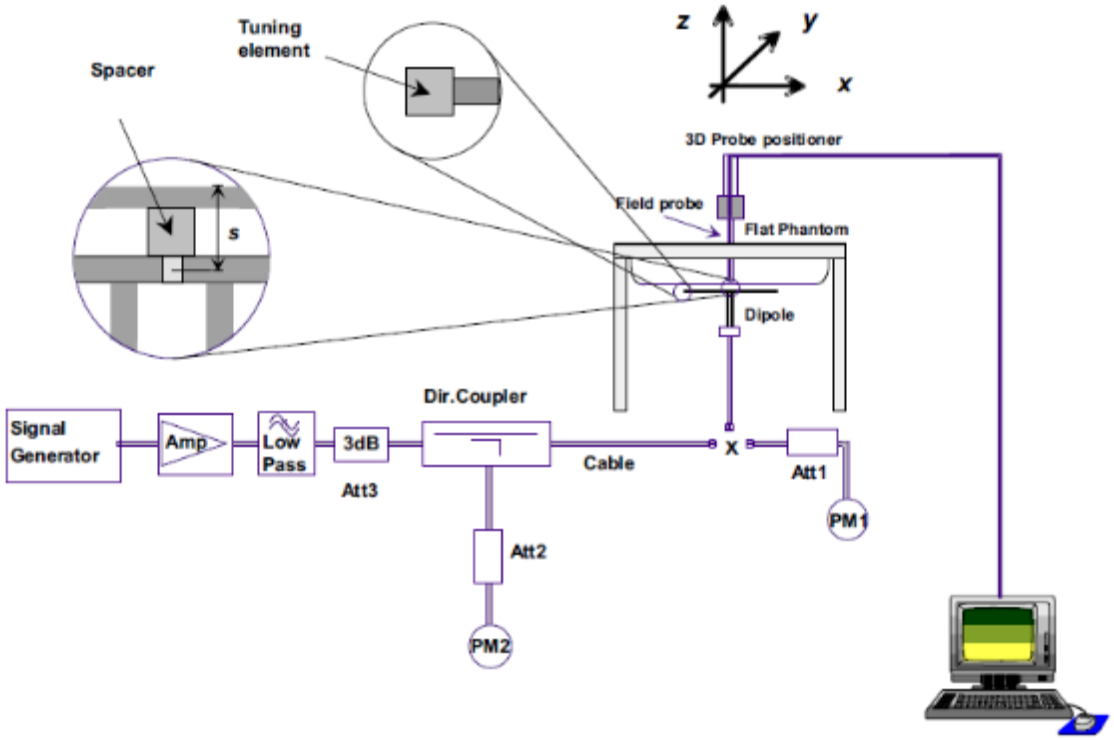
The dielectric properties for this Tissue Simulate Liquids were measured by using the Agilent Model 85070E Dielectric Probe in conjunction with Agilent E5071C Network Analyzer (300 KHz-8500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this 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)	41.539	0.898	22.1	2021-04-02
835 Head	835	41.5 (39.43~43.58)	0.90 (0.86~0.95)	41.372	0.903	22.1	2021-04-04
1750 Head	1750	40.1 (38.10~42.11)	1.37 (1.30~1.44)	40.679	1.336	22.2	2021-04-06
1900 Head	1900	40.0 (38.00~42.00)	1.40 (1.33~1.47)	39.817	1.363	22.3	2021-04-07
2450 Head	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	38.623	1.839	22.0	2021-04-10
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	37.735	1.969	22.1	2021-04-13
5250 Head	5250	35.9 (34.11~37.70)	4.71 (4.47~4.95)	35.666	4.675	22.2	2021-04-15
5600 Head	5600	35.5 (33.73~37.28)	5.07 (4.82~5.32)	34.994	5.145	22.2	2021-04-16
5750 Head	5750	35.4 (33.63~37.17)	5.22 (4.96~5.48)	34.622	5.328	22.2	2021-04-17

Table 4： Measurement result of Tissue electric parameters

6.2 SAR System Check

The microwave circuit arrangement for system Check is sketched in F-12. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 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

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.

1) 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)		
D750V2	Head	2.19	1.43	8.76	5.72	8.39 (7.55~9.23)	5.63 (5.07~6.19)	22.1	2021-04-02
D835V2	Head	2.51	1.64	10.04	6.56	9.64 (8.68~10.60)	6.29 (5.66~6.92)	22.1	2021-04-04
D1750V2	Head	9.54	5.06	38.16	20.24	36.3 (32.67~39.93)	19.2 (17.28~21.12)	22.2	2021-04-06
D1900V2	Head	10.10	5.21	40.40	20.84	39.3 (35.37~43.23)	20.2 (18.18~22.22)	22.3	2021-04-07
D2450V2	Head	13.50	6.22	54.00	24.88	51.9 (46.71~57.09)	23.8 (21.42~26.18)	22.0	2021-04-10
D2600V2	Head	14.00	6.17	56.00	24.68	56.8 (51.12~62.48)	24.9 (22.41~27.39)	22.1	2021-04-13
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)		
D5GHzV2	Head(5.25GHz)	7.03	2.00	70.30	20.00	75.2 (67.68~82.72)	21.5 (19.35~23.65)	22.2	2021-04-15
	Head(5.6GHz)	7.72	2.18	77.20	21.80	80.0 (72.0~88.0)	22.7 (20.43~24.97)	22.2	2021-04-16
	Head(5.75GHz)	8.46	2.41	84.60	24.10	78.7 (70.83~86.57)	22.3 (20.07~24.53)	22.2	2021-04-17

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）. 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.

3）. 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

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.

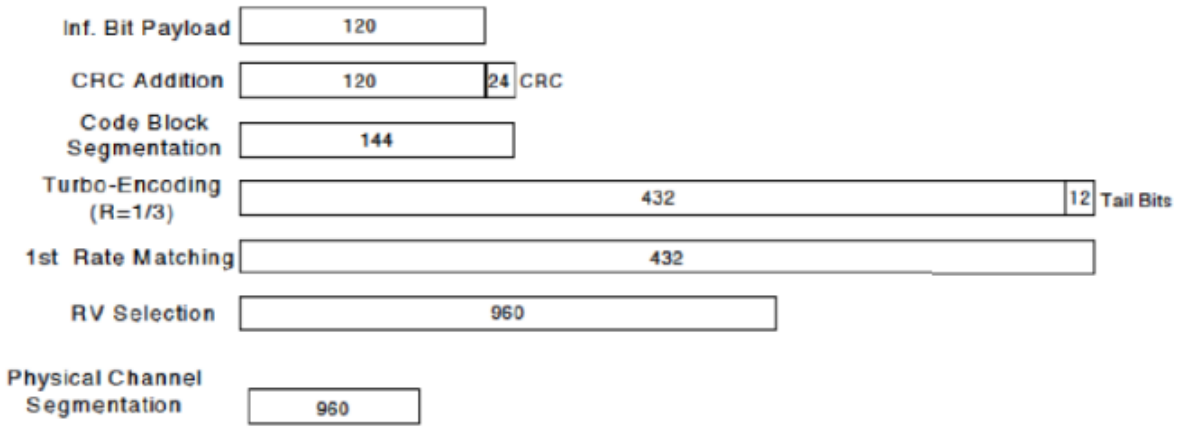


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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:

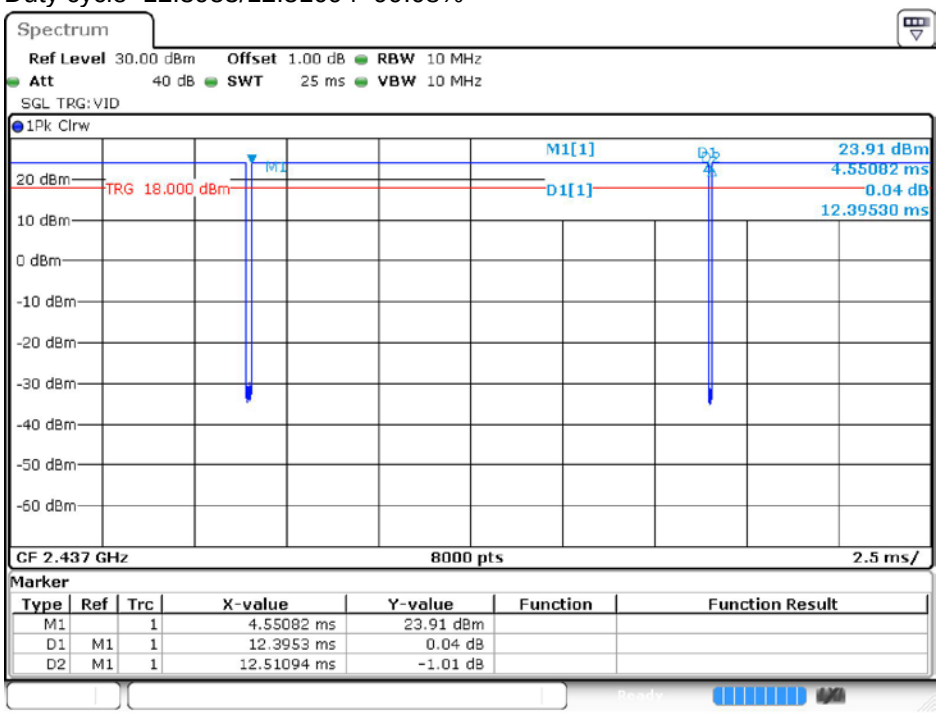
1. The Dual Carriers transmission only applies to HSDPA physical channels
2. The Dual Carriers belong to the same Node and are on adjacent carriers.
3. The Dual Carriers do not support MIMO to serve UEs configured for dual cell operation
4. The Dual Carriers operate in the same frequency band.
5. The 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.

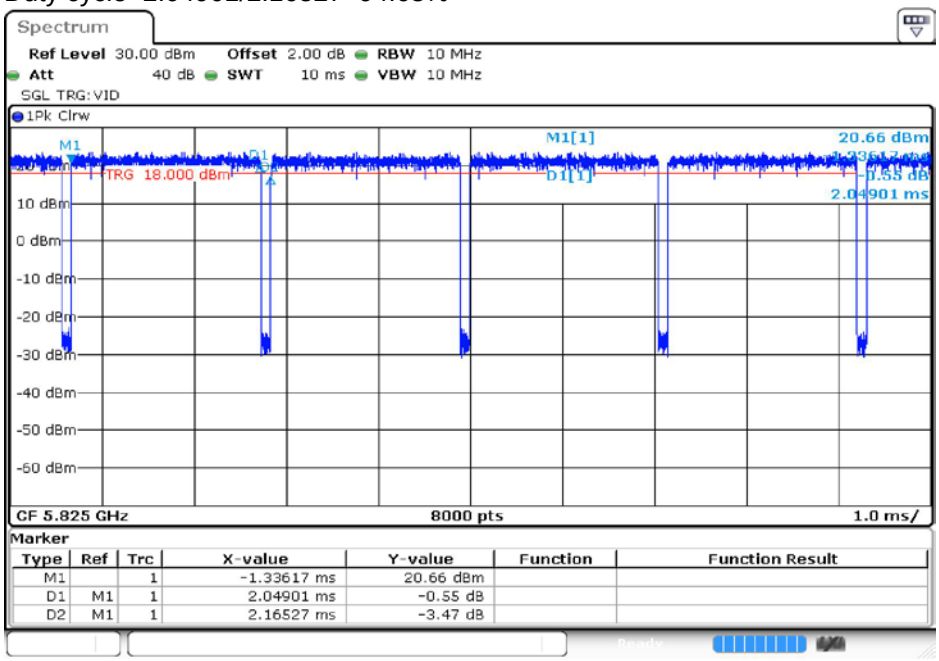
7.2.2.1 Duty cycle

2.4GHz Wi-Fi 802.11b:
Duty cycle=12.3953/12.51094=99.08%



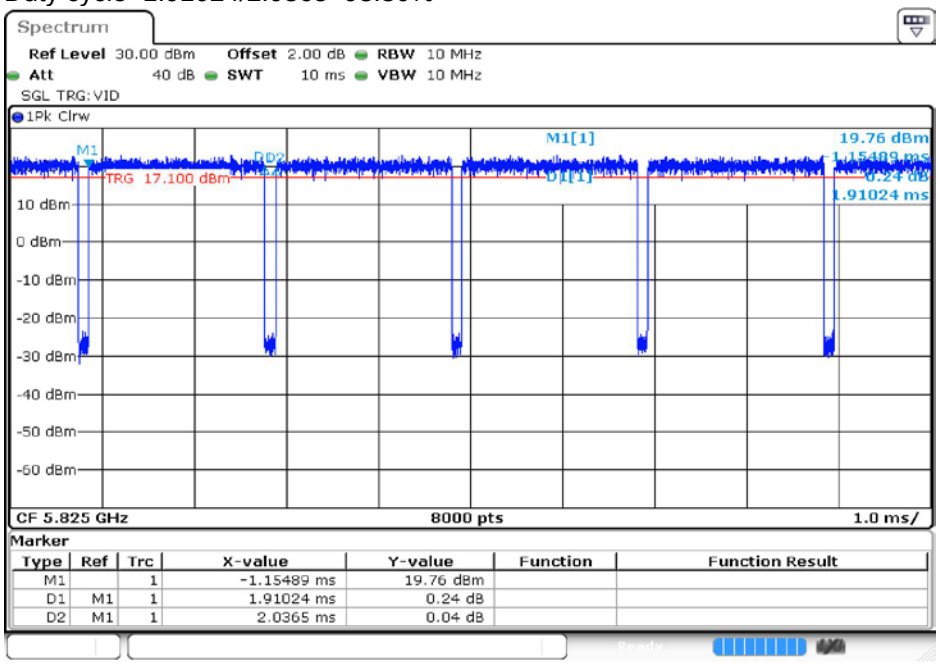
Date: 9.MAR.2021 15:56:11

5GHz Wi-Fi 802.11a:
Duty cycle=2.04901/2.16527=94.63%



Date: 9.MAR.2021 17:44:11

5GHz Wi-Fi 802.11n-HT20:
Duty cycle=1.91024/2.0365=93.80%



Date: 9.MAR.2021 19:17:46

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.

7.2.2.6 5 GHz WiFi SAR Procedures

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

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

- **U-NII-2C and U-NII-3 Bands**
  The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. when Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

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

- **OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements**

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

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

- **SAR Test Requirements for OFDM configurations**

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

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 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.

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 Main Antenna

8.1.1.1 Conducted Power of WCDMA

WCDMA Band II Sensor off					
Average Conducted Power(dBm)					
Channel		9262	9400	9538	Tune up
WCDMA	12.2kbps RMC	22.8	22.98	22.96	24.50
HSDPA	Subtest 1	22.78	22.74	22.81	23.30
	Subtest 2	22.58	22.88	22.80	23.30
	Subtest 3	22.32	22.37	22.31	22.80
	Subtest 4	22.41	22.36	22.30	22.80
HSUPA	Subtest 1	22.76	21.96	22.08	23.30
	Subtest 2	21.72	21.59	20.94	22.30
	Subtest 3	21.38	21.25	21.03	22.30
	Subtest 4	21.96	21.83	21.58	22.80
	Subtest 5	22.90	22.50	22.50	23.30

WCDMA Band II Sensor on					
Average Conducted Power(dBm)					
Channel		9262	9400	9538	Tune up
WCDMA	12.2kbps RMC	17.02	17.03	17.02	18.00
HSDPA	Subtest 1	16.68	16.64	16.70	17.30
	Subtest 2	16.48	16.73	16.69	17.30
	Subtest 3	16.19	16.23	16.17	16.80
	Subtest 4	16.31	16.25	16.19	16.80
HSUPA	Subtest 1	16.64	15.81	15.97	17.30
	Subtest 2	15.58	15.48	14.84	16.30
	Subtest 3	15.25	15.12	14.90	16.30
	Subtest 4	15.85	15.68	15.44	16.80
	Subtest 5	16.75	16.40	16.35	17.30

WCDMA Band V Sensor off					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	23.38	23.41	23.24	24.50
HSDPA	Subtest 1	22.85	22.75	22.85	23.30
	Subtest 2	22.60	22.90	22.85	23.30
	Subtest 3	22.35	22.41	22.37	22.80
	Subtest 4	22.38	22.35	22.34	22.80
HSUPA	Subtest 1	21.98	22.31	22.38	23.30
	Subtest 2	21.39	20.96	21.53	22.30
	Subtest 3	21.29	21.11	21.11	22.30
	Subtest 4	21.57	21.99	21.28	22.80
	Subtest 5	22.60	22.40	22.30	23.30

WCDMA Band V Sensor on					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	19.07	19.11	19.04	20.00
HSDPA	Subtest 1	18.75	18.64	18.72	19.30
	Subtest 2	18.45	18.79	18.74	19.30
	Subtest 3	18.22	18.28	18.22	18.80
	Subtest 4	18.27	18.20	18.24	18.80
HSUPA	Subtest 1	17.84	18.19	18.25	19.30
	Subtest 2	17.25	16.84	17.39	18.30
	Subtest 3	17.14	17.00	16.97	18.30
	Subtest 4	17.47	17.87	17.13	18.80
	Subtest 5	18.50	18.25	18.16	19.30

Table 11：Conducted Power of WCDMA

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.

8.1.1.2 Conducted Power of LTE

LTE Band 2 Sensor off				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 18607	Channel 18900	Channel 19193	Tune up
1.4MHz	QPSK	1	0	22.66	22.66	22.66	23.50
		1	2	22.78	22.61	22.82	23.50
		1	5	22.56	22.51	22.55	23.50
		3	0	22.59	22.7	22.48	23.50
		3	1	22.73	22.62	22.53	23.50
		3	3	22.57	22.65	22.56	23.50
		6	0	21.6	21.61	21.56	22.50
	16QAM	1	0	21.47	21.76	21.37	22.50
		1	2	22.19	21.85	21.83	22.50
		1	5	21.86	21.63	21.69	22.50
		3	0	21.69	21.52	21.48	22.50
		3	1	21.46	21.66	21.65	22.50
		3	3	21.48	21.44	21.46	22.50
		6	0	20.54	20.56	20.52	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18615	Channel 18900	Channel 19185	Tune up
3MHz	QPSK	1	0	22.46	22.6	22.68	23.50
		1	7	22.73	22.35	22.68	23.50
		1	14	22.75	22.35	22.5	23.50
		8	0	21.55	21.8	21.46	22.50
		8	4	21.61	21.56	21.53	22.50
		8	7	21.67	21.59	21.49	22.50
		15	0	21.56	21.6	21.48	22.50
	16QAM	1	0	21.41	21.46	21.67	22.50
		1	7	21.86	21.55	21.84	22.50
		1	14	21.42	21.48	22.02	22.50
		8	0	20.59	20.76	20.76	21.50
		8	4	20.68	20.61	20.55	21.50
		8	7	20.69	20.55	20.61	21.50
		15	0	20.69	20.59	20.58	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18625	Channel 18900	Channel 19175	Tune up
5MHz	QPSK	1	0	22.73	22.67	22.64	23.50
		1	13	22.55	22.42	22.46	23.50
		1	24	22.36	22.33	22.55	23.50
		12	0	21.63	21.81	21.84	22.50
		12	6	21.72	21.83	21.67	22.50
		12	13	21.69	21.64	21.71	22.50
		25	0	21.68	21.66	21.75	22.50
	16QAM	1	0	21.43	21.58	21.72	22.50
		1	13	22.2	21.72	21.65	22.50
		1	24	22.14	21.29	21.44	22.50
		12	0	20.88	20.65	20.85	21.50
		12	6	20.93	20.53	20.68	21.50
		12	13	20.91	20.46	20.68	21.50
		25	0	20.73	20.62	20.6	21.50

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Bandwidth	Modulation	RB size	RB offset	Channel 18650	Channel 18900	Channel 19150	Tune up
10MHz	QPSK	1	0	22.49	22.41	22.83	23.50
		1	50	22.83	22.51	22.61	23.50
		1	99	22.49	22.24	22.41	23.50
		50	0	21.62	21.6	21.84	22.50
		50	25	21.61	21.6	21.61	22.50
		50	50	21.58	21.56	21.62	22.50
		100	0	21.64	21.53	21.79	22.50
	16QAM	1	0	21.54	21.74	21.7	22.50
		1	50	21.67	21.43	21.55	22.50
		1	99	21.56	21.63	21.58	22.50
		50	0	20.51	20.72	20.82	21.50
		50	25	20.69	20.65	20.69	21.50
		50	50	20.65	20.45	20.56	21.50
		100	0	20.66	20.39	20.67	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18675	Channel 18900	Channel 19125	Tune up
15MHz	QPSK	1	0	22.59	22.5	22.77	23.50
		1	38	22.67	22.55	22.64	23.50
		1	74	22.64	22.59	22.46	23.50
		36	0	21.74	21.68	21.89	22.50
		36	18	21.7	21.61	21.75	22.50
		36	39	21.7	21.54	21.68	22.50
		75	0	21.67	21.64	21.77	22.50
	16QAM	1	0	21.72	21.65	21.95	22.50
		1	38	21.5	21.43	21.88	22.50
		1	74	21.27	21.59	21.06	22.50
		36	0	20.81	20.64	20.84	21.50
		36	18	20.77	20.59	20.63	21.50
		36	39	20.76	20.58	20.5	21.50
		75	0	20.7	20.64	20.65	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 18700	Channel 18900	Channel 19100	Tune up
20MHz	QPSK	1	0	22.33	22.43	22.37	23.50
		1	50	22.7	22.82	22.78	23.50
		1	99	22.54	22.36	22.35	23.50
		50	0	21.71	21.92	21.89	22.50
		50	25	21.65	21.51	21.72	22.50
		50	50	21.65	21.52	21.67	22.50
		100	0	21.65	21.9	21.57	22.50
	16QAM	1	0	21.46	21.58	21.78	22.50
		1	50	21.78	21.31	22.35	22.50
		1	99	21.88	21.21	21.3	22.50
		50	0	20.86	20.71	21	21.50
		50	25	20.72	20.38	20.97	21.50
		50	50	20.8	20.41	20.61	21.50
		100	0	20.69	20.43	21	21.50

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LTE Band 2 Sensor on				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 18607	Channel 18900	Channel 19193	Tune up
1.4MHz	QPSK	1	0	17.06	16.99	16.88	18.50
		1	2	17.13	16.98	17.04	18.50
		1	5	17.08	16.91	16.98	18.50
		3	0	17.06	16.93	16.87	18.50
		3	1	17.06	16.97	16.99	18.50
		3	3	17.05	16.89	16.93	18.50
		6	0	16.1	15.97	16.07	17.50
	16QAM	1	0	16.05	16.49	16.23	17.50
		1	2	16.14	16.19	15.98	17.50
		1	5	16.17	16.08	16.22	17.50
		3	0	16.22	15.96	16	17.50
		3	1	16.28	15.93	16.1	17.50
		3	3	16.09	15.98	16.29	17.50
		6	0	14.9	15.01	15.04	16.50
Bandwidth	Modulation	RB size	RB offset	Channel 18615	Channel 18900	Channel 19185	Tune up
3MHz	QPSK	1	0	17.33	16.96	17.01	18.50
		1	7	17.51	17.03	17.16	18.50
		1	14	17.25	16.85	16.85	18.50
		8	0	16.18	16.08	16.12	17.50
		8	4	16.15	16.01	16	17.50
		8	7	16.18	15.92	16.11	17.50
		15	0	16.1	16.07	16.01	17.50
	16QAM	1	0	15.86	16.22	15.72	17.50
		1	7	16.01	16.1	15.64	17.50
		1	14	15.94	15.9	16.09	17.50
		8	0	15.12	15.08	15.03	16.50
		8	4	15.1	15.04	15.28	16.50
		8	7	15.21	15.08	15.05	16.50
		15	0	14.99	14.82	15.19	16.50
Bandwidth	Modulation	RB size	RB offset	Channel 18625	Channel 18900	Channel 19175	Tune up
5MHz	QPSK	1	0	16.94	16.95	16.91	18.50
		1	13	17.13	16.95	16.88	18.50
		1	24	17.18	16.76	16.87	18.50
		12	0	16.05	16.06	15.97	17.50
		12	6	16.2	16.07	15.99	17.50
		12	13	16.18	16.01	15.93	17.50
		25	0	16.08	16.11	16.01	17.50
	16QAM	1	0	16.18	15.72	15.91	17.50
		1	13	16.02	15.71	16.14	17.50
		1	24	16.16	15.96	15.72	17.50
		12	0	15.08	14.98	14.92	16.50
		12	6	15.09	15.11	15.01	16.50
		12	13	15.1	15.1	15.01	16.50
		25	0	15.02	15.01	14.98	16.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

				18650	18900	19150	
10MHz	QPSK	1	0	16.78	17	17.03	18.50
		1	50	17.34	17.18	17.2	18.50
		1	99	17.17	16.64	16.76	18.50
		50	0	16.11	16.11	16.12	17.50
		50	25	16.13	16.13	15.98	17.50
		50	50	16.08	15.89	16.04	17.50
		100	0	16.05	16.04	16	17.50
	16QAM	1	0	15.58	15.95	15.99	17.50
		1	50	16.15	16.37	15.64	17.50
		1	99	15.96	15.6	15.61	17.50
		50	0	15.03	15.08	14.96	16.50
		50	25	15.11	15.25	15.01	16.50
		50	50	15.19	14.92	14.86	16.50
		100	0	15.07	15.08	14.98	16.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18675	18900	19125	
15MHz	QPSK	1	0	16.87	17.14	16.92	18.50
		1	38	17.1	17.08	16.81	18.50
		1	74	17.1	16.72	16.78	18.50
		36	0	16.24	16	15.86	17.50
		36	18	16.17	16.04	15.86	17.50
		36	39	16.2	15.93	16.04	17.50
		75	0	16.18	15.95	15.97	17.50
	16QAM	1	0	15.9	16.27	16.14	17.50
		1	38	16.04	15.62	15.82	17.50
		1	74	16.1	15.6	15.68	17.50
		36	0	14.91	14.99	15.59	16.50
		36	18	15.14	15.03	15.21	16.50
		36	39	15.15	14.79	14.77	16.50
		75	0	15.14	14.91	14.99	16.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18700	18900	19100	
20MHz	QPSK	1	0	16.89	17.04	16.89	18.50
		1	50	17.07	17.31	17.17	18.50
		1	99	17.11	16.57	16.64	18.50
		50	0	16.08	16.17	16.12	17.50
		50	25	16.06	16.01	16.08	17.50
		50	50	15.95	15.79	16	17.50
		100	0	16.09	16.01	16.11	17.50
	16QAM	1	0	15.81	16.25	15.92	17.50
		1	50	16.42	16.08	16.33	17.50
		1	99	15.84	15.69	15.69	17.50
		50	0	15.11	15.06	15.63	16.50
		50	25	15.09	15.12	15.67	16.50
		50	50	15.18	14.78	14.88	16.50
		100	0	15.07	14.77	15.1	16.50

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LTE Band 4 Sensor off				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 19957	Channel 20175	Channel 20393	Tune up
1.4MHz	QPSK	1	0	22.55	22.6	22.44	23.50
		1	2	22.42	22.6	22.36	23.50
		1	5	22.45	22.46	22.46	23.50
		3	0	22.39	22.49	22.35	23.50
		3	1	22.39	22.63	22.34	23.50
		3	3	22.35	22.6	22.36	23.50
		6	0	21.45	21.55	21.44	22.50
	16QAM	1	0	21.76	21.35	20.91	22.50
		1	2	21.95	21.71	21.14	22.50
		1	5	21.84	22	21.48	22.50
		3	0	21.52	21.41	21.4	22.50
		3	1	21.38	21.59	21.41	22.50
		3	3	21.44	21.48	21.35	22.50
		6	0	20.37	20.46	20.29	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 19965	Channel 20175	Channel 20385	Tune up
3MHz	QPSK	1	0	22.63	22.63	22.37	23.50
		1	7	22.55	22.57	22.25	23.50
		1	14	22.2	22.62	22.33	23.50
		8	0	21.69	21.54	21.44	22.50
		8	4	21.55	21.63	21.53	22.50
		8	7	21.49	21.56	21.29	22.50
		15	0	21.5	21.58	21.32	22.50
	16QAM	1	0	21.87	21.74	21.26	22.50
		1	7	21.61	21.23	21.78	22.50
		1	14	21.22	21.39	21.74	22.50
		8	0	20.39	20.54	20.57	21.50
		8	4	20.43	20.66	20.47	21.50
		8	7	20.24	20.7	20.34	21.50
		15	0	20.4	20.58	20.49	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 19975	Channel 20175	Channel 20375	Tune up
5MHz	QPSK	1	0	22.71	22.58	22.54	23.50
		1	13	22.56	22.65	22.49	23.50
		1	24	22.28	22.38	22.46	23.50
		12	0	21.61	21.62	21.6	22.50
		12	6	21.57	21.71	21.64	22.50
		12	13	21.47	21.6	21.55	22.50
		25	0	21.39	21.61	21.55	22.50
	16QAM	1	0	21.68	21.7	21.33	22.50
		1	13	21.29	21.86	21.53	22.50
		1	24	21.15	21.5	21.23	22.50
		12	0	20.47	20.52	20.7	21.50
		12	6	20.45	20.56	20.69	21.50
		12	13	20.31	20.85	20.66	21.50
		25	0	20.48	20.8	20.68	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

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				20000	20175	20350	
10MHz	QPSK	1	0	22.5	22.41	22.39	23.50
		1	50	22.82	22.79	22.65	23.50
		1	99	22.24	22.53	22.39	23.50
		50	0	21.69	21.73	21.72	22.50
		50	25	21.54	21.6	21.74	22.50
		50	50	21.51	21.64	21.6	22.50
		100	0	21.63	21.58	21.6	22.50
	16QAM	1	0	21.71	21.41	21.66	22.50
		1	50	21.81	21.95	21.79	22.50
		1	99	21.32	21.79	20.95	22.50
		50	0	20.59	20.83	20.74	21.50
		50	25	20.57	20.82	20.76	21.50
		50	50	20.64	20.72	20.66	21.50
		100	0	20.58	20.62	20.72	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20025	20175	20325	
15MHz	QPSK	1	0	22.48	22.56	22.74	23.50
		1	38	22.67	22.75	22.74	23.50
		1	74	22.62	22.66	22.6	23.50
		36	0	21.62	21.78	21.94	22.50
		36	18	21.61	21.71	21.79	22.50
		36	39	21.73	21.71	21.48	22.50
		75	0	21.77	21.72	21.68	22.50
	16QAM	1	0	21.45	21.29	21.74	22.50
		1	38	21.7	21.89	21.7	22.50
		1	74	21.71	21.39	21.24	22.50
		36	0	20.71	20.75	20.89	21.50
		36	18	20.68	20.78	20.78	21.50
		36	39	20.67	20.77	20.4	21.50
		75	0	20.84	20.78	20.75	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20050	20175	20300	
20MHz	QPSK	1	0	22.61	22.54	22.65	23.50
		1	50	22.86	22.97	22.87	23.50
		1	99	22.62	22.26	22.3	23.50
		50	0	21.67	21.87	21.8	22.50
		50	25	21.62	21.69	21.72	22.50
		50	50	21.64	21.59	21.5	22.50
		100	0	21.73	21.8	21.7	22.50
	16QAM	1	0	21.81	21.47	21.95	22.50
		1	50	21.38	21.88	22.31	22.50
		1	99	21.41	21.72	21.32	22.50
		50	0	20.77	20.72	21	21.50
		50	25	20.84	20.74	20.94	21.50
		50	50	20.82	20.78	20.52	21.50
		100	0	20.66	20.84	20.75	21.50

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LTE Band 4 Sensor on				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 19957	Channel 20175	Channel 20393	Tune up
1.4MHz	QPSK	1	0	15.83	16.06	15.9	17.50
		1	2	15.97	16.24	15.9	17.50
		1	5	15.79	16.18	15.76	17.50
		3	0	15.86	16.16	15.87	17.50
		3	1	15.84	16.34	15.91	17.50
		3	3	15.82	16.14	15.94	17.50
		6	0	14.87	15.19	14.85	16.50
	16QAM	1	0	15.3	15.47	15.22	16.50
		1	2	15.13	15.45	15.23	16.50
		1	5	15.18	15.43	14.93	16.50
		3	0	14.93	15.28	14.83	16.50
		3	1	14.98	15.29	14.9	16.50
		3	3	14.78	15.33	14.84	16.50
		6	0	13.82	15.21	13.72	15.50
Bandwidth	Modulation	RB size	RB offset	Channel 19965	Channel 20175	Channel 20385	Tune up
3MHz	QPSK	1	0	15.9	16.09	15.85	17.50
		1	7	15.83	16.18	15.82	17.50
		1	14	15.66	16.27	15.62	17.50
		8	0	14.91	15.17	15.02	16.50
		8	4	14.98	15.17	15.01	16.50
		8	7	14.83	15.22	14.88	16.50
		15	0	14.94	15.22	14.92	16.50
	16QAM	1	0	14.51	15.32	15.48	16.50
		1	7	15.06	15.66	15.06	16.50
		1	14	15.03	15.47	15.15	16.50
		8	0	13.89	15.18	13.98	15.50
		8	4	14.04	15.38	13.92	15.50
		8	7	13.83	15.31	13.79	15.50
		15	0	13.72	15.18	13.84	15.50
Bandwidth	Modulation	RB size	RB offset	Channel 19975	Channel 20175	Channel 20375	Tune up
5MHz	QPSK	1	0	15.92	16.09	16.15	17.50
		1	13	15.69	16.13	15.82	17.50
		1	24	15.65	16.2	15.73	17.50
		12	0	14.93	15.11	15.18	16.50
		12	6	14.81	15.27	15.07	16.50
		12	13	14.71	15.35	14.97	16.50
		25	0	14.81	15.23	15.02	16.50
	16QAM	1	0	15.28	15.14	15.13	16.50
		1	13	14.9	15.49	15.21	16.50
		1	24	15	15.66	14.74	16.50
		12	0	13.85	15.04	14.2	15.50
		12	6	13.76	15.23	14.13	15.50
		12	13	13.62	15.29	14.04	15.50
		25	0	13.88	15.18	14.12	15.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

				20000	20175	20350	
10MHz	QPSK	1	0	15.82	15.83	16.06	17.50
		1	50	16.22	16.45	16.14	17.50
		1	99	15.68	16.17	15.73	17.50
		50	0	15	15.15	15.18	16.50
		50	25	14.93	15.22	15.12	16.50
		50	50	14.86	15.17	14.97	16.50
		100	0	14.91	15.09	15.09	16.50
	16QAM	1	0	14.83	14.89	15.19	16.50
		1	50	14.83	15.22	15.09	16.50
		1	99	14.58	14.89	15.03	16.50
		50	0	13.91	14.68	14.39	15.50
		50	25	13.91	15.24	14.31	15.50
		50	50	13.93	15.16	13.99	15.50
		100	0	14.03	14.96	14.13	15.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20025	20175	20325	
15MHz	QPSK	1	0	15.82	15.93	16.29	17.50
		1	38	16.02	16.06	16.14	17.50
		1	74	15.71	15.96	15.91	17.50
		36	0	14.88	15.05	15.26	16.50
		36	18	14.87	15.11	15.02	16.50
		36	39	14.83	15.27	14.92	16.50
		75	0	14.87	14.97	15.07	16.50
	16QAM	1	0	15.08	15.16	15.36	16.50
		1	38	14.89	15.23	14.89	16.50
		1	74	15	15.14	14.67	16.50
		36	0	13.89	14.43	14.77	15.50
		36	18	13.84	15.07	14.61	15.50
		36	39	13.81	15.15	13.98	15.50
		75	0	13.91	14.76	14.35	15.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20050	20175	20300	
20MHz	QPSK	1	0	15.79	15.61	16.11	17.50
		1	50	16.27	16.37	16.3	17.50
		1	99	15.99	16.01	15.75	17.50
		50	0	15.03	15.22	15.08	16.50
		50	25	14.93	15.09	15.1	16.50
		50	50	14.91	14.94	14.98	16.50
		100	0	15.01	15.02	15.16	16.50
	16QAM	1	0	14.8	14.79	15.21	16.50
		1	50	14.76	15.29	15.37	16.50
		1	99	15.19	15.05	14.61	16.50
		50	0	14.08	14.24	14.94	15.50
		50	25	13.88	15.05	14.88	15.50
		50	50	14.09	14.97	14.04	15.50
		100	0	14.02	14.63	14.52	15.50

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LTE Band 5 Sensor off				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 20407	Channel 20525	Channel 20643	Tune up
1.4MHz	QPSK	1	0	22.79	22.6	22.64	23.50
		1	2	22.63	22.75	22.75	23.50
		1	5	22.72	22.65	22.52	23.50
		3	0	22.77	22.68	22.62	23.50
		3	2	22.77	22.75	22.68	23.50
		3	3	22.71	22.68	22.57	23.50
		6	0	21.62	21.72	21.67	22.50
	16QAM	1	0	21.45	22.28	21.96	22.50
		1	2	21.61	21.81	21.89	22.50
		1	5	21.4	21.47	22.15	22.50
		3	0	21.59	21.76	21.85	22.50
		3	2	21.76	21.87	21.7	22.50
		3	3	21.75	21.9	21.82	22.50
		6	0	20.6	20.73	20.63	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 20415	Channel 20525	Channel 20635	Tune up
3MHz	QPSK	1	0	22.57	22.62	22.33	23.50
		1	7	22.64	22.81	22.77	23.50
		1	14	22.48	22.49	22.44	23.50
		8	0	21.8	21.75	21.58	22.50
		8	4	21.78	21.74	21.71	22.50
		8	7	21.67	21.64	21.73	22.50
		15	0	21.74	21.78	21.53	22.50
	16QAM	1	0	21.71	21.53	21.2	22.50
		1	7	21.84	21.78	21.71	22.50
		1	14	21.23	21.48	21.66	22.50
		8	0	20.64	20.76	20.49	21.50
		8	4	20.84	20.45	20.85	21.50
		8	7	20.68	20.5	20.81	21.50
		15	0	20.49	20.88	20.62	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 20425	Channel 20525	Channel 20625	Tune up
5MHz	QPSK	1	0	22.64	22.54	22.36	23.50
		1	13	22.76	22.81	22.74	23.50
		1	24	22.52	22.29	22.77	23.50
		12	0	21.71	21.85	21.66	22.50
		12	6	21.76	21.82	21.74	22.50
		12	13	21.69	21.74	21.83	22.50
		25	0	21.78	21.7	21.65	22.50
	16QAM	1	0	21.62	21.89	21.31	22.50
		1	13	21.85	21.81	21.88	22.50
		1	24	21.45	21.91	21.82	22.50
		12	0	20.74	20.96	20.45	21.50
		12	6	20.83	21	20.54	21.50
		12	13	20.75	20.74	20.76	21.50
		25	0	20.7	20.87	20.85	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

				20450	20525	20600	
10MHz	QPSK	1	0	22.56	22.33	22.66	23.50
		1	25	22.91	22.95	22.8	23.50
		1	49	22.84	22.45	22.78	23.50
		25	0	21.83	21.84	21.67	22.50
		25	13	21.82	21.7	21.66	22.50
		25	25	21.82	21.56	21.61	22.50
		50	0	21.84	21.67	21.69	22.50
	16QAM	1	0	21.81	21.69	21.59	22.50
		1	25	21.75	21.81	21.98	22.50
		1	49	21.69	21.63	21.44	22.50
		25	0	20.89	20.79	20.55	21.50
		25	13	20.89	20.89	20.69	21.50
		25	25	20.97	20.38	20.68	21.50
		50	0	20.76	20.77	20.75	21.50

LTE Band 5 Sensor on				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 20407	Channel 20525	Channel 20643	Tune up
1.4MHz	QPSK	1	0	18.88	18.95	18.83	20.00
		1	2	18.7	18.89	18.84	20.00
		1	5	18.68	18.79	18.75	20.00
		3	0	18.6	18.98	18.8	20.00
		3	2	18.65	18.83	18.84	20.00
		3	3	18.68	18.78	18.77	20.00
		6	0	17.78	17.88	17.79	19.00
	16QAM	1	0	17.8	17.95	18.08	19.00
		1	2	17.31	18.32	17.89	19.00
		1	5	17.76	18.47	17.86	19.00
		3	0	17.22	17.9	17.76	19.00
		3	2	17.82	17.9	17.82	19.00
		3	3	17.67	17.85	17.81	19.00
		6	0	16.77	16.79	16.68	18.00
Bandwidth	Modulation	RB size	RB offset	Channel 20415	Channel 20525	Channel 20635	Tune up
3MHz	QPSK	1	0	19.06	18.88	18.64	20.00
		1	7	19.06	18.8	18.83	20.00
		1	14	18.7	18.82	18.75	20.00
		8	0	17.81	17.86	17.75	19.00
		8	4	17.8	17.86	17.76	19.00
		8	7	17.68	17.79	17.85	19.00
		15	0	17.77	17.83	17.69	19.00
	16QAM	1	0	17.82	17.95	17.3	19.00
		1	7	17.51	17.94	17.96	19.00
		1	14	17.91	17.86	17.48	19.00
		8	0	16.58	16.86	16.47	18.00
		8	4	16.71	16.85	16.64	18.00
		8	7	16.67	16.78	17.01	18.00
		15	0	16.73	16.82	16.73	18.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

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				20425	20525	20625	
5MHz	QPSK	1	0	18.83	18.8	18.39	20.00
		1	13	18.52	18.87	18.79	20.00
		1	24	18.32	18.66	18.74	20.00
		12	0	17.8	17.84	17.68	19.00
		12	6	17.85	17.87	17.75	19.00
		12	13	17.8	17.74	17.78	19.00
		25	0	17.8	17.91	17.67	19.00
	16QAM	1	0	17.35	17.52	17.39	19.00
		1	13	17.89	18.02	17.83	19.00
		1	24	17.53	17.63	17.52	19.00
		12	0	16.65	16.83	16.49	18.00
		12	6	16.66	16.83	16.66	18.00
		12	13	16.58	16.64	16.86	18.00
		25	0	16.57	16.93	16.76	18.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20450	20525	20600	
10MHz	QPSK	1	0	18.73	18.65	18.63	20.00
		1	25	19.04	19.07	18.88	20.00
		1	49	18.87	18.25	18.38	20.00
		25	0	17.82	17.94	17.73	19.00
		25	13	17.93	17.94	17.73	19.00
		25	25	17.85	17.79	17.78	19.00
		50	0	17.86	17.88	17.75	19.00
	16QAM	1	0	17.37	17.86	17.23	19.00
		1	25	18.2	17.74	17.68	19.00
		1	49	17.68	17.41	17.47	19.00
		25	0	16.87	16.91	16.94	18.00
		25	13	16.93	16.96	16.93	18.00
		25	25	17.21	16.97	16.87	18.00
		50	0	16.72	16.77	16.69	18.00

LTE Band 7 Sensor off				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20775	21100	21425	
5MHz	QPSK	1	0	22.96	22.70	22.33	23.50
		1	13	23.13	22.92	22.79	23.50
		1	24	23.00	22.74	22.16	23.50
		12	0	22.16	21.86	21.48	22.50
		12	6	22.11	21.77	21.44	22.50
		12	13	21.99	21.73	21.35	22.50
		25	0	22.15	21.77	21.46	22.50
	16QAM	1	0	22.37	21.54	21.24	22.50
		1	13	22.49	22.03	21.54	22.50
		1	24	21.55	21.40	20.91	22.50
		12	0	21.17	21.08	20.64	21.50
		12	6	21.04	20.97	20.53	21.50
		12	13	21.20	20.74	20.36	21.50
		25	0	21.26	20.80	20.60	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

				20800	21100	21400	
10MHz	QPSK	1	0	22.99	22.71	22.37	23.50
		1	25	23.16	22.95	22.81	23.50
		1	49	23.01	22.76	22.26	23.50
		25	0	22.24	21.86	21.57	22.50
		25	13	22.14	21.81	21.54	22.50
		25	25	22.06	21.79	21.44	22.50
		50	0	22.17	21.87	21.55	22.50
	16QAM	1	0	22.41	21.64	21.28	22.50
		1	25	21.56	22.03	21.59	22.50
		1	49	21.63	21.47	21	22.50
		25	0	21.24	21.18	20.65	21.50
		25	13	21.14	21.06	20.61	21.50
		25	25	21.23	20.83	20.45	21.50
		50	0	21.29	20.83	20.62	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20825	21100	21375	
15MHz	QPSK	1	0	23.11	22.96	22.65	23.50
		1	38	23.09	22.79	22.49	23.50
		1	74	22.81	22.65	22.44	23.50
		36	0	22.3	22.05	21.68	22.50
		36	18	22.17	21.85	21.66	22.50
		36	39	22.09	21.75	21.58	22.50
		75	0	22.23	21.87	21.58	22.50
	16QAM	1	0	22.25	22.27	21.44	22.50
		1	38	22.03	21.6	21.77	22.50
		1	74	21.77	21.57	21.09	22.50
		36	0	21.34	21.08	20.75	21.50
		36	18	21.27	20.87	20.73	21.50
		36	39	21.16	20.69	20.58	21.50
		75	0	21.28	20.86	20.51	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20850	21100	21350	
20MHz	QPSK	1	0	22.94	22.87	22.3	23.50
		1	50	22.95	23.13	22.85	23.50
		1	99	22.92	22.51	22.24	23.50
		50	0	22.27	22.28	21.79	22.50
		50	25	22.2	21.81	21.66	22.50
		50	50	22.08	21.75	21.52	22.50
		100	0	22.15	21.83	21.71	22.50
	16QAM	1	0	22.41	21.86	21.4	22.50
		1	50	22.47	21.97	21.75	22.50
		1	99	21.76	21.41	20.93	22.50
		50	0	21.27	21.07	20.95	21.50
		50	25	21.2	20.79	20.81	21.50
		50	50	21.15	20.71	20.79	21.50
		100	0	21.22	20.91	20.78	21.50

LTE Band 7 Sensor on				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 20775	Channel 21100	Channel 21425	Tune up
5MHz	QPSK	1	0	20.17	20.03	19.7	21.50
		1	13	20.24	20	19.51	21.50
		1	24	19.91	19.62	19.55	21.50
		12	0	19.31	19.16	18.63	20.50
		12	6	19.22	19.03	18.61	20.50
		12	13	19.13	19.05	18.62	20.50
		25	0	19.21	19.12	18.6	20.50
	16QAM	1	0	19.2	19.21	18.52	20.50
		1	13	18.82	18.92	18.51	20.50
		1	24	19.04	18.6	18.54	20.50
		12	0	18.12	18.13	17.54	19.50
		12	6	18.18	18.12	17.54	19.50
		12	13	17.99	18.23	17.52	19.50
		25	0	18.25	18.16	17.7	19.50
Bandwidth	Modulation	RB size	RB offset	Channel 20800	Channel 21100	Channel 21400	Tune up
10MHz	QPSK	1	0	20.49	20.17	19.79	21.50
		1	25	20.34	20.21	19.75	21.50
		1	49	20.02	19.85	19.54	21.50
		25	0	19.34	19.13	18.8	20.50
		25	13	19.24	18.96	18.76	20.50
		25	25	19.07	19.07	18.61	20.50
		50	0	19.18	19.08	18.79	20.50
	16QAM	1	0	19.39	19.17	19.1	20.50
		1	25	19.35	19.15	18.85	20.50
		1	49	18.6	18.51	18.52	20.50
		25	0	18.34	18.13	18.03	19.50
		25	13	18.28	17.95	17.92	19.50
		25	25	18.01	17.96	17.6	19.50
		50	0	18.25	18.08	17.84	19.50
Bandwidth	Modulation	RB size	RB offset	Channel 20825	Channel 21100	Channel 21375	Tune up
15MHz	QPSK	1	0	20.12	20.31	19.92	21.50
		1	38	20.14	20.08	19.88	21.50
		1	74	20.16	19.94	19.66	21.50
		36	0	19.18	19.17	18.95	20.50
		36	18	19.1	19.01	18.8	20.50
		36	39	19.02	18.97	18.59	20.50
		75	0	19.12	19	18.83	20.50
	16QAM	1	0	18.93	19.36	18.89	20.50
		1	38	18.94	18.86	18.89	20.50
		1	74	18.74	18.52	18.51	20.50
		36	0	18.19	18.14	17.99	19.50
		36	18	18.12	17.94	17.82	19.50
		36	39	17.9	17.91	17.64	19.50
		75	0	18.07	18.04	17.71	19.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

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				20850	21100	21350	
20MHz	QPSK	1	0	20.26	20.03	19.7	21.50
		1	50	20.4	20.59	20.33	21.50
		1	99	19.96	19.8	19.56	21.50
		50	0	19.37	19.49	19.13	20.50
		50	25	19.23	18.95	18.82	20.50
		50	50	19.11	18.79	18.7	20.50
		100	0	19.22	19.02	18.88	20.50
	16QAM	1	0	19.16	18.88	18.76	20.50
		1	50	19.42	19.07	18.97	20.50
		1	99	19.2	18.68	18.5	20.50
		50	0	18.14	18.22	18	19.50
		50	25	18.08	17.91	17.97	19.50
		50	50	18.05	17.76	17.83	19.50
		100	0	18.16	18.04	18.05	19.50

LTE Band 12				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 23017	Channel 23095	Channel 23173	Tune up
1.4MHz	QPSK	1	0	22.72	22.82	22.89	23.50
		1	2	22.73	22.91	22.95	23.50
		1	5	22.51	22.81	23.09	23.50
		3	0	22.81	23.01	22.75	23.50
		3	2	22.85	23.1	22.76	23.50
		3	3	22.76	22.84	22.81	23.50
		6	0	21.72	21.9	21.85	22.50
	16QAM	1	0	21.22	22.04	21.94	22.50
		1	2	21.55	21.9	22.31	22.50
		1	5	22.13	21.54	21.61	22.50
		3	0	21.69	22.02	21.76	22.50
		3	2	21.74	22.11	21.8	22.50
		3	3	21.55	22.19	21.83	22.50
		6	0	20.82	20.79	20.88	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 23025	Channel 23095	Channel 23165	Tune up
3MHz	QPSK	1	0	22.7	22.67	22.76	23.50
		1	7	22.82	22.88	22.92	23.50
		1	14	22.79	22.81	22.99	23.50
		8	0	21.77	22.05	21.92	22.50
		8	4	21.94	21.92	21.9	22.50
		8	7	21.88	21.87	21.96	22.50
		15	0	21.88	21.98	21.99	22.50
	16QAM	1	0	22	21.84	21.93	22.50
		1	7	21.65	21.82	21.65	22.50
		1	14	21.68	21.53	21.65	22.50
		8	0	20.92	20.96	20.82	21.50
		8	4	20.85	21.08	21	21.50
		8	7	20.87	20.83	21.09	21.50
		15	0	20.74	20.91	20.82	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

				23035	23095	23155	
5MHz	QPSK	1	0	22.62	22.55	22.72	23.50
		1	13	22.81	23	22.97	23.50
		1	24	22.6	22.62	22.66	23.50
		12	0	21.76	21.99	21.96	22.50
		12	6	21.87	22	21.98	22.50
		12	13	21.92	21.89	21.92	22.50
		25	0	21.94	21.88	21.83	22.50
	16QAM	1	0	21.94	21.71	21.92	22.50
		1	13	22.05	21.62	21.78	22.50
		1	24	21.96	21.74	21.8	22.50
		12	0	20.79	20.93	20.85	21.50
		12	6	21.05	20.97	20.91	21.50
		12	13	21.02	20.82	20.96	21.50
		25	0	21.06	20.94	20.94	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23060	23095	23130	
10MHz	QPSK	1	0	22.43	22.43	22.65	23.50
		1	25	22.84	22.91	22.89	23.50
		1	49	22.61	22.49	22.66	23.50
		25	0	21.84	21.89	21.88	22.50
		25	13	21.71	21.83	21.82	22.50
		25	25	21.83	21.66	21.78	22.50
		50	0	21.81	21.78	21.86	22.50
	16QAM	1	0	21.39	21.31	21.24	22.50
		1	25	21.76	21.5	22.11	22.50
		1	49	21.52	21.94	22.21	22.50
		25	0	20.89	20.64	20.86	21.50
		25	13	20.71	20.95	20.91	21.50
		25	25	20.82	20.69	20.78	21.50
		50	0	20.81	20.79	20.94	21.50

LTE Band 13 Sensor off				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23205	23230	23255	
5MHz	QPSK	1	0	23.09	22.93	23.02	23.50
		1	13	23.11	23.07	22.92	23.50
		1	24	23.41	22.91	22.79	23.50
		12	0	22.25	22.3	22.08	22.50
		12	6	22.38	22.26	22.1	22.50
		12	13	22.41	22.14	22.07	22.50
		25	0	22.35	22.11	22.13	22.50
	16QAM	1	0	22.18	22.3	22.41	22.50
		1	13	22.43	22.01	21.99	22.50
		1	24	21.74	21.65	21.66	22.50
		12	0	21.03	20.98	21.05	21.50
		12	6	21.14	21.11	21.02	21.50
		12	13	21.11	20.93	21.08	21.50
		25	0	21.16	21.19	21.17	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

				/	23230	/	
10MHz	QPSK	1	0	/	23	/	23.50
		1	25	/	23.37	/	23.50
		1	49	/	23.11	/	23.50
		25	0	/	22.22	/	22.50
		25	13	/	22.2	/	22.50
		25	25	/	22.02	/	22.50
		50	0	/	22.14	/	22.50
	16QAM	1	0	/	22.25	/	22.50
		1	25	/	22.18	/	22.50
		1	49	/	21.58	/	22.50
		25	0	/	21.19	/	21.50
		25	13	/	21.3	/	21.50
		25	25	/	21.08	/	21.50
		50	0	/	21.17	/	21.50

LTE Band 13 Sensor on				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 23205	Channel 23230	Channel 23255	Tune up
5MHz	QPSK	1	0	20.87	21.2	21.04	22.50
		1	13	20.97	21.3	21	22.50
		1	24	20.97	20.78	20.77	22.50
		12	0	20.01	20.11	20.21	21.50
		12	6	20.07	20.13	20.15	21.50
		12	13	20.04	20.04	20.06	21.50
		25	0	20.06	20.03	20.17	21.50
	16QAM	1	0	20.25	20.24	19.79	21.50
		1	13	20.05	20.03	19.89	21.50
		1	24	19.83	20.23	19.76	21.50
		12	0	18.94	19.11	19.34	20.50
		12	6	19.22	19.09	19.12	20.50
		12	13	18.95	19.09	18.88	20.50
		25	0	19.07	19.09	19.21	20.50
Bandwidth	Modulation	RB size	RB offset	Channel /	Channel 23230	Channel /	Tune up
10MHz	QPSK	1	0	/	21.06	/	22.50
		1	25	/	21.5	/	22.50
		1	49	/	20.94	/	22.50
		25	0	/	20.19	/	21.50
		25	13	/	20.17	/	21.50
		25	25	/	20.03	/	21.50
		50	0	/	20.16	/	21.50
	16QAM	1	0	/	19.79	/	21.50
		1	25	/	20.53	/	21.50
		1	49	/	19.64	/	21.50
		25	0	/	19.22	/	20.50
		25	13	/	19.39	/	20.50
		25	25	/	19.04	/	20.50
		50	0	/	19.06	/	20.50

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LTE Band 66 Sensor off				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 131979	Channel 132322	Channel 132665	Tune up
1.4MHz	QPSK	1	0	22.47	22.57	22.42	23.50
		1	2	22.33	22.54	22.27	23.50
		1	5	22.42	22.40	22.39	23.50
		3	0	22.35	22.42	22.26	23.50
		3	1	22.32	22.62	22.27	23.50
		3	3	22.27	22.52	22.28	23.50
		6	0	21.39	21.47	21.40	22.50
	16QAM	1	0	21.75	21.29	20.89	22.50
		1	2	21.89	21.69	21.09	22.50
		1	5	21.81	21.99	21.44	22.50
		3	0	21.49	21.36	21.32	22.50
		3	1	21.32	21.55	21.32	22.50
		3	3	21.35	21.46	21.34	22.50
		6	0	20.36	20.44	20.25	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 131987	Channel 132322	Channel 132657	Tune up
3MHz	QPSK	1	0	22.59	22.53	22.62	23.50
		1	7	22.78	22.80	22.88	23.50
		1	14	22.53	22.19	22.24	23.50
		8	0	21.55	21.65	21.80	22.50
		8	4	21.63	21.60	21.77	22.50
		8	7	21.59	21.52	21.43	22.50
		15	0	21.71	21.67	21.76	22.50
	16QAM	1	0	21.76	21.46	21.93	22.50
		1	7	21.37	21.80	22.29	22.50
		1	14	21.37	21.68	21.29	22.50
		8	0	20.70	20.66	20.92	21.50
		8	4	20.81	20.71	20.93	21.50
		8	7	20.73	20.74	20.43	21.50
		15	0	20.63	20.80	20.67	21.50
Bandwidth	Modulation	RB size	RB offset	Channel 131997	Channel 132322	Channel 132647	Tune up
5MHz	QPSK	1	0	22.54	22.54	22.34	23.50
		1	13	22.51	22.49	22.23	23.50
		1	24	22.14	22.56	22.25	23.50
		12	0	21.65	21.52	21.36	22.50
		12	6	21.50	21.58	21.47	22.50
		12	13	21.41	21.51	21.21	22.50
		25	0	21.46	21.57	21.31	22.50
	16QAM	1	0	21.84	21.67	21.18	22.50
		1	13	21.58	21.15	21.72	22.50
		1	24	21.16	21.36	21.68	22.50
		12	0	20.38	20.46	20.52	21.50
		12	6	20.42	20.64	20.42	21.50
		12	13	20.20	20.68	20.25	21.50
		25	0	20.31	20.57	20.48	21.50

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Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				132022	132322	132622	
10MHz	QPSK	1	0	22.43	22.47	22.65	23.50
		1	50	22.61	22.71	22.69	23.50
		1	99	22.58	22.65	22.59	23.50
		50	0	21.57	21.71	21.92	22.50
		50	25	21.57	21.63	21.75	22.50
		50	50	21.69	21.67	21.43	22.50
		100	0	21.68	21.65	21.65	22.50
	16QAM	1	0	21.39	21.28	21.73	22.50
		1	50	21.64	21.88	21.66	22.50
		1	99	21.64	21.34	21.18	22.50
		50	0	20.63	20.67	20.85	21.50
		50	25	20.60	20.76	20.74	21.50
		50	50	20.65	20.68	20.33	21.50
		100	0	20.76	20.71	20.70	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				132047	132322	132597	
15MHz	QPSK	1	0	22.69	22.53	22.50	23.50
		1	38	22.49	22.63	22.48	23.50
		1	74	22.26	22.37	22.37	23.50
		36	0	21.60	21.61	21.51	22.50
		36	18	21.53	21.63	21.60	22.50
		36	39	21.46	21.53	21.52	22.50
		75	0	21.33	21.57	21.54	22.50
	16QAM	1	0	21.61	21.69	21.32	22.50
		1	38	21.23	21.83	21.45	22.50
		1	74	21.14	21.42	21.19	22.50
		36	0	20.41	20.47	20.68	21.50
		36	18	20.42	20.48	20.60	21.50
		36	39	20.30	20.82	20.57	21.50
		75	0	20.47	20.79	20.60	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				132072	132322	132572	
20MHz	QPSK	1	0	22.44	22.33	22.33	23.50
		1	50	22.79	22.80	22.62	23.50
		1	99	22.16	22.45	22.37	23.50
		50	0	21.67	21.70	21.63	22.50
		50	25	21.47	21.59	21.65	22.50
		50	50	21.44	21.58	21.56	22.50
		100	0	21.49	21.66	21.52	22.50
	16QAM	1	0	21.67	21.38	21.57	22.50
		1	50	21.78	21.93	21.70	22.50
		1	99	21.24	21.72	20.92	22.50
		50	0	20.53	20.75	20.65	21.50
		50	25	20.51	20.74	20.69	21.50
		50	50	20.58	20.68	20.63	21.50
		100	0	20.57	20.59	20.70	21.50

LTE Band 66 Sensor on				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 131979	Channel 132322	Channel 132665	Tune up
1.4MHz	QPSK	1	0	15.77	16.04	15.85	17.50
		1	2	15.88	16.18	15.84	17.50
		1	5	15.72	16.16	15.73	17.50
		3	0	15.85	16.09	15.80	17.50
		3	1	15.77	16.28	15.88	17.50
		3	3	15.75	16.09	15.91	17.50
		6	0	14.83	15.14	14.76	16.50
	16QAM	1	0	15.27	15.42	15.14	16.50
		1	2	15.10	15.39	15.15	16.50
		1	5	15.13	15.34	14.92	16.50
		3	0	14.90	15.27	14.80	16.50
		3	1	14.90	15.27	14.86	16.50
		3	3	14.71	15.29	14.77	16.50
		6	0	13.73	15.14	13.69	15.50
Bandwidth	Modulation	RB size	RB offset	Channel 131987	Channel 132322	Channel 132657	Tune up
3MHz	QPSK	1	0	15.87	16.07	15.80	17.50
		1	7	15.75	16.11	15.81	17.50
		1	14	15.60	16.18	15.55	17.50
		8	0	14.84	15.16	15.00	16.50
		8	4	14.94	15.10	14.94	16.50
		8	7	14.78	15.14	14.81	16.50
		15	0	14.92	15.17	14.84	16.50
	16QAM	1	0	14.56	15.27	15.41	16.50
		1	7	14.98	15.59	15.04	16.50
		1	14	14.94	15.44	15.13	16.50
		8	0	13.85	15.11	13.91	15.50
		8	4	13.95	15.31	13.88	15.50
		8	7	13.81	15.25	13.72	15.50
		15	0	13.64	15.14	13.78	15.50
Bandwidth	Modulation	RB size	RB offset	Channel 131997	Channel 132322	Channel 132647	Tune up
5MHz	QPSK	1	0	15.86	16.08	16.06	17.50
		1	13	15.60	16.12	15.76	17.50
		1	24	15.64	16.11	15.67	17.50
		12	0	14.92	15.09	15.12	16.50
		12	6	14.80	15.20	15.06	16.50
		12	13	14.69	15.27	14.93	16.50
		25	0	14.78	15.20	15.00	16.50
	16QAM	1	0	15.23	15.05	15.10	16.50
		1	13	14.86	15.41	15.15	16.50
		1	24	14.97	15.65	14.72	16.50
		12	0	13.79	14.96	14.11	15.50
		12	6	13.75	15.20	14.12	15.50
		12	13	13.61	15.20	13.95	15.50
		25	0	13.87	15.12	14.07	15.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up

				132022	132322	132622	
10MHz	QPSK	1	0	15.74	15.74	15.98	17.50
		1	50	16.18	16.43	16.06	17.50
		1	99	15.64	16.09	15.66	17.50
		50	0	14.97	15.06	15.14	16.50
		50	25	14.92	15.17	15.03	16.50
		50	50	14.77	15.09	14.92	16.50
		100	0	14.87	15.02	15.04	16.50
	16QAM	1	0	14.76	14.87	15.11	16.50
		1	50	14.82	15.21	15.04	16.50
		1	99	14.57	14.86	14.97	16.50
		50	0	13.89	14.59	14.32	15.50
		50	25	13.89	15.18	14.27	15.50
		50	50	13.89	15.07	13.90	15.50
		100	0	14.02	14.93	14.12	15.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				132047	132322	132597	
15MHz	QPSK	1	0	15.76	15.84	16.21	17.50
		1	38	15.94	16.04	16.06	17.50
		1	74	15.67	15.93	15.88	17.50
		36	0	14.81	15.03	15.19	16.50
		36	18	14.78	15.04	14.96	16.50
		36	39	14.82	15.19	14.90	16.50
		75	0	14.83	14.90	15.05	16.50
	16QAM	1	0	15.04	15.13	15.35	16.50
		1	38	14.80	15.20	14.81	16.50
		1	74	14.92	15.07	14.62	16.50
		36	0	13.88	14.39	14.73	15.50
		36	18	13.83	15.05	14.53	15.50
		36	39	13.80	15.09	13.93	15.50
		75	0	13.86	14.67	14.26	15.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				132072	132322	132572	
20MHz	QPSK	1	0	15.70	15.59	16.06	17.50
		1	50	16.21	16.36	16.35	17.50
		1	99	15.93	15.93	15.73	17.50
		50	0	14.94	15.09	15.07	16.50
		50	25	14.89	15.05	15.00	16.50
		50	50	14.87	14.91	14.92	16.50
		100	0	14.92	14.97	15.10	16.50
	16QAM	1	0	14.78	14.72	15.17	16.50
		1	50	14.69	15.25	15.32	16.50
		1	99	15.12	14.97	14.56	16.50
		50	0	14.00	14.21	14.91	15.50
		50	25	13.85	15.01	14.79	15.50
		50	50	14.04	14.92	14.00	15.50
		100	0	13.98	14.61	14.50	15.50

Table 12：Conducted Power of LTE

8.1.2 Conducted Power of WIFI Antenna

Sensor off					
Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11b	1	2412	1	22.00	21.21
	6	2437		22.00	**21.95**
	11	2462		22.00	21.03
802.11g	1	2412	6	21.00	20.25
	6	2437		21.00	20.72
	11	2462		21.00	20.13
802.11n HT20	1	2412	6.5	21.00	20.05
	6	2437		21.00	20.42
	11	2462		21.00	20.02
802.11n HT40	3	2422	13.5	20.00	19.21
	6	2437		20.00	18.79
	9	2452		20.00	18.88

Sensor on					
Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11b	1	2412	1	17.00	16.25
	6	2437		17.00	**16.96**
	11	2462		17.00	15.98
802.11g	1	2412	6	17.00	16.13
	6	2437		17.00	16.54
	11	2462		17.00	16.05
802.11n HT20	1	2412	6.5	17.00	16.35
	6	2437		17.00	16.79
	11	2462		17.00	16.38
802.11n HT40	3	2422	13.5	17.00	16.35
	6	2437		17.00	16.41
	9	2452		17.00	16.80

Table 13：Conducted Power of WiFi 2.4G

Sensor off						
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11a	U-NII-1	36	5180	6	21.00	20.04
		40	5200		21.00	**20.35**
		44	5220		21.00	19.87
		48	5240		21.00	**20.34**
	U-NII-2A	52	5260		21.00	19.72
		56	5280		21.00	**20.31**
		60	5300		21.00	**20.21**
		64	5320		21.00	19.71
	U-NII-2C	100	5500		19.00	17.50
		104	5520		19.00	17.45
		108	5540		19.00	17.28
		112	5560		19.00	16.91
		116	5580		19.00	16.51
		120	5600		19.00	18.70
		124	5620		19.00	18.25
		128	5640		19.00	18.01
		132	5660		19.00	17.68
		136	5680		19.00	17.49
		140	5700		19.00	17.15
		144	5720		19.00	16.98
	U-NII-3	149	5745		19.00	16.65
		153	5765		19.00	17.85
		157	5785		19.00	17.95
		161	5805		19.00	18.11
		165	5825		19.00	18.37
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11n-HT20	U-NII-1	36	5180	MCS0	20.00	19.11
		40	5200		20.00	19.12
		44	5220		20.00	19.16
		48	5240		20.00	19.13
	U-NII-2A	52	5260		20.00	19.09
		56	5280		20.00	19.28
		60	5300		20.00	19.09
		64	5320		20.00	18.74
	U-NII-2C	100	5500		20.00	18.94
		104	5520		20.00	19.15
		108	5540		20.00	18.98
		112	5560		20.00	18.75
		116	5580		20.00	18.54
		120	5600		20.00	18.89
		124	5620		20.00	19.47
		128	5640		20.00	19.29
		132	5660		20.00	**19.49**
		136	5680		20.00	19.37
		140	5700		20.00	19.24
		144	5720		20.00	19.07
	U-NII-3	149	5745		20.00	18.85
		153	5765		20.00	19.54

		157	5785		20.00	19.68
		161	5805		20.00	19.61
		165	5825		20.00	**19.69**
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11n-HT40	U-NII-1	38	5190	MCS0	19.50	19.32
		46	5230		19.50	19.37
	U-NII-2A	54	5270		19.50	19.17
		62	5310		19.50	18.88
	U-NII-2C	102	5510		19.50	18.06
		110	5550		19.50	18.35
		118	5590		19.50	19.15
		126	5630		19.50	19.05
		134	5670		19.50	19.07
		142	5710		19.50	18.75
	U-NII-3	151	5755		19.50	18.67
		159	5795		19.50	19.38
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11ac 20M	U-NII-1	36	5180	MCS0	19.50	18.68
		40	5200		19.50	18.99
		44	5220		19.50	18.39
		48	5240		19.50	18.65
	U-NII-2A	52	5260		19.50	18.05
		56	5280		19.50	18.26
		60	5300		19.50	17.88
		64	5320		19.50	17.45
	U-NII-2C	100	5500		19.50	17.91
		104	5520		19.50	17.54
		108	5540		19.50	17.39
		112	5560		19.50	17.29
		116	5580		19.50	17.19
		120	5600		19.50	17.65
		124	5620		19.50	17.78
		128	5640		19.50	17.57
		132	5660		19.50	17.58
		136	5680		19.50	17.59
		140	5700		19.50	18.34
		144	5720		19.50	18.78
	U-NII-3	149	5745		19.50	18.88
		153	5765		19.50	19.11
		157	5785		19.50	19.37
		161	5805		19.50	19.27
		165	5825		19.50	19.34
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11ac 40M	U-NII-1	38	5190	MCS0	19.50	19.33
		46	5230		19.50	19.21
	U-NII-2A	54	5270		19.50	19.22
		62	5310		19.50	19.37
	U-NII-2C	102	5510		19.50	19.18
		110	5550		19.50	19.04

		118	5590		19.50	18.89
		126	5630		19.50	18.95
		134	5670		19.50	19.16
		142	5710		19.50	19.29
	U-NII-3	151	5755		19.50	19.04
		159	5795		19.50	18.94
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11ac 80M	U-NII-1	42	5210	MCS0	19.50	19.28
	U-NII-2A	58	5290		19.50	19.19
	U-NII-2C	106	5530		19.50	19.04
		122	5610		19.50	19.01
		138	5690		19.50	19.24
	U-NII-3	155	5775		19.50	19.34

Sensor on&Simultaneous Transmission						
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11a	U-NII-1	36	5180	6	14.50	13.62
		40	5200		14.50	**13.78**
		44	5220		14.50	13.74
		48	5240		14.50	13.68
	U-NII-2A	52	5260		14.50	13.48
		56	5280		14.50	**13.84**
		60	5300		14.50	13.18
		64	5320		14.50	12.86
	U-NII-2C	100	5500		14.50	**13.50**
		104	5520		14.50	13.32
		108	5540		14.50	13.27
		112	5560		14.50	13.02
		116	5580		14.50	12.94
		120	5600		14.50	11.10
		124	5620		14.50	12.39
		128	5640		14.50	11.96
		132	5660		14.50	12.14
		136	5680		14.50	11.91
		140	5700		14.50	12.07
		144	5720		14.50	12.12
	U-NII-3	149	5745		14.50	12.98
		153	5765		14.50	13.25
		157	5785		14.50	13.68
		161	5805		14.50	14.11
		165	5825		14.50	**14.27**
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11n-HT20	U-NII-1	36	5180	MCS0	14.50	13.56
		40	5200		14.50	13.39
		44	5220		14.50	13.49
		48	5240		14.50	13.37
	U-NII-2A	52	5260		14.50	13.78
		56	5280		14.50	13.56
		60	5300		14.50	13.37

		64	5320		14.50	13.03
	U-NII-2C	100	5500		14.50	13.92
		104	5520		14.50	13.87
		108	5540		14.50	13.78
		112	5560		14.50	13.65
		116	5580		14.50	13.47
		120	5600		14.50	13.32
		124	5620		14.50	13.15
		128	5640		14.50	12.72
		132	5660		14.50	13.62
		136	5680		14.50	13.67
		140	5700		14.50	13.82
		144	5720		14.50	13.84
	U-NII-3	149	5745		14.50	13.62
		153	5765		14.50	13.98
		157	5785		14.50	14.01
		161	5805		14.50	14.02
		165	5825		14.50	14.01
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11n-HT40	U-NII-1	38	5190	MCS0	14.00	13.57
		46	5230		14.00	13.45
	U-NII-2A	54	5270		14.00	13.47
		62	5310		14.00	12.86
	U-NII-2C	102	5510		14.00	13.21
		110	5550		14.00	13.49
		118	5590		14.00	13.19
		126	5630		14.00	13.17
		134	5670		14.00	13.02
		142	5710		14.00	13.08
	U-NII-3	151	5755		14.00	13.39
		159	5795		14.00	13.65
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11ac 20M	U-NII-1	36	5180	MCS0	14.00	13.81
		40	5200		14.00	13.85
		44	5220		14.00	13.82
		48	5240		14.00	13.75
	U-NII-2A	52	5260		14.00	13.31
		56	5280		14.00	13.28
		60	5300		14.00	13.32
		64	5320		14.00	13.34
	U-NII-2C	100	5500		14.00	13.12
		104	5520		14.00	13.40
		108	5540		14.00	13.24
		112	5560		14.00	13.07
		116	5580		14.00	12.96
		120	5600		14.00	12.05
		124	5620		14.00	12.95
		128	5640		14.00	12.89
		132	5660		14.00	13.28
		136	5680		14.00	13.21

		140	5700		14.00	13.44
		144	5720		14.00	13.48
	U-NII-3	149	5745		14.00	13.50
		153	5765		14.00	13.54
		157	5785		14.00	13.52
		161	5805		14.00	13.62
		165	5825		14.00	13.51
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11ac 40M	U-NII-1	38	5190	MCS0	14.00	13.51
		46	5230		14.00	13.49
	U-NII-2A	54	5270		14.00	13.67
		62	5310		14.00	13.90
	U-NII-2C	102	5510		14.00	13.67
		110	5550		14.00	13.28
		118	5590		14.00	13.06
		126	5630		14.00	13.04
		134	5670		14.00	13.42
		142	5710		14.00	12.08
	U-NII-3	151	5755		14.00	13.68
		159	5795		14.00	13.73
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Tune up	Average Power (dBm)
802.11ac 80M	U-NII-1	42	5210	MCS0	14.00	13.56
	U-NII-2A	58	5290		14.00	13.74
	U-NII-2C	106	5530		14.00	13.62
		122	5610		14.00	13.21
		138	5690		14.00	13.57
	U-NII-3	155	5775		14.00	13.71

Table 14：Conducted Power of WiFi 5G

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.

8.2 Stand-alone SAR test evaluation

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and Product specific 10g SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.

Freq. Band	Frequency (GHz)	Position	Average Power		Test Separation (mm)	Calculate Value	Exclusion Threshold	Exclusion (Y/N)
			dBm	mW				
Wi-Fi	2.45	hotspot	17.0	50.1	10	15.7	3	N
Wi-Fi	5	hotspot	14.5	28.2	10	12.6	3	N

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

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

8.3 Measurement of SAR Data

8.3.1 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(W/kg)	Liquid Temp
Hotspot Test data Sensor on										
Front side-10mm	RMC	9400/1880	1:1	0.424	0.16	17.03	18.00	1.250	0.530	22.3
Back side-10mm	RMC	9400/1880	1:1	0.277	0.11	17.03	18.00	1.250	0.346	22.3
Right side-10mm	RMC	9400/1880	1:1	0.210	-0.01	17.03	18.00	1.250	0.263	22.3
Top side-10mm	RMC	9400/1880	1:1	0.259	0.11	17.03	18.00	1.250	0.324	22.3
Bottom side-10mm	RMC	9400/1880	1:1	0.040	0.14	17.03	18.00	1.250	0.050	22.3
Hotspot Test data Sensor off										
Front side-15mm	RMC	9400/1880	1:1	0.444	0.08	22.98	24.50	1.419	**0.630**	22.3
Back side-21mm	RMC	9400/1880	1:1	0.410	0.15	22.98	24.50	1.419	0.582	22.3
Right side-19mm	RMC	9400/1880	1:1	0.387	-0.08	22.98	24.50	1.419	0.549	22.3
Top side-15mm	RMC	9400/1880	1:1	0.441	0.09	22.98	24.50	1.419	0.626	22.3
Bottom side-15mm	RMC	9400/1880	1:1	0.035	0.03	22.98	24.50	1.419	0.049	22.3

Table 15：SAR of WCDMA Band II for Body.

Note:

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

2)Per FCC KDB Publication 447498 D01, 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).

8.3.2 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(W/kg)	Liquid Temp
Hotspot Test data Sensor on										
Front side-10mm	RMC	4182/836.4	1:1	0.158	0.07	19.11	20.00	1.227	0.194	22.1
Back side-10mm	RMC	4182/836.4	1:1	0.133	0.04	19.11	20.00	1.227	0.163	22.1
Right side-10mm	RMC	4182/836.4	1:1	0.048	0.06	19.11	20.00	1.227	0.059	22.1
Top side-10mm	RMC	4182/836.4	1:1	0.082	0.06	19.11	20.00	1.227	0.101	22.1
Bottom side-10mm	RMC	4182/836.4	1:1	0.077	0.11	19.11	20.00	1.227	0.094	22.1
Hotspot Test data Sensor off										
Front side-15mm	RMC	4182/836.4	1:1	0.319	0.05	23.41	24.50	1.285	**0.410**	22.1
Back side-21mm	RMC	4182/836.4	1:1	0.113	0.05	23.41	24.50	1.285	0.145	22.1
Right side-19mm	RMC	4182/836.4	1:1	0.049	0.16	23.41	24.50	1.285	0.063	22.1
Top side-15mm	RMC	4182/836.4	1:1	0.191	0.07	23.41	24.50	1.285	0.245	22.1
Bottom side-15mm	RMC	4182/836.4	1:1	0.152	0.10	23.41	24.50	1.285	0.195	22.1

Table 16：SAR of WCDMA Band V for Body.
Note:

1)The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
2)Per FCC KDB Publication 447498 D01, 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).

8.3.3 SAR Result of LTE Band 2

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.
Hotspot Test data 1RB Sensor on											
Front side-10mm	20	QPSK 1RB_50	18900/1880	1:1	0.420	-0.05	17.31	18.50	1.315	0.552	22.3
Back side-10mm	20	QPSK 1RB_50	18900/1880	1:1	0.190	0.03	17.31	18.50	1.315	0.250	22.3
Right side-10mm	20	QPSK 1RB_50	18900/1880	1:1	0.162	0.02	17.31	18.50	1.315	0.213	22.3
Top side-10mm	20	QPSK 1RB_50	18900/1880	1:1	0.211	-0.04	17.31	18.50	1.315	0.278	22.3
Bottom side-10mm	20	QPSK 1RB_50	18900/1880	1:1	0.027	0.08	17.31	18.50	1.315	0.036	22.3
Hotspot Test data 50%RB Sensor on											
Front side-10mm	20	QPSK 50RB_0	18900/1880	1:1	0.291	0.11	16.17	17.50	1.358	0.395	22.3
Back side-10mm	20	QPSK 50RB_0	18900/1880	1:1	0.150	0.02	16.17	17.50	1.358	0.204	22.3
Right side-10mm	20	QPSK 50RB_0	18900/1880	1:1	0.131	0.01	16.17	17.50	1.358	0.178	22.3
Top side-10mm	20	QPSK 50RB_0	18900/1880	1:1	0.172	-0.05	16.17	17.50	1.358	0.234	22.3
Bottom side-10mm	20	QPSK 50RB_0	18900/1880	1:1	0.021	0.09	16.17	17.50	1.358	0.029	22.3
Hotspot Test data 1RB Sensor off											
Front side-15mm	20	QPSK 1RB_50	18900/1880	1:1	0.824	-0.03	22.82	23.50	1.169	0.964	22.3
Back side-21mm	20	QPSK 1RB_50	18900/1880	1:1	0.420	0.06	22.82	23.50	1.169	0.491	22.3
Right side-19mm	20	QPSK 1RB_50	18900/1880	1:1	0.366	0.13	22.82	23.50	1.169	0.428	22.3
Top side-15mm	20	QPSK 1RB_50	18900/1880	1:1	0.614	-0.02	22.82	23.50	1.169	0.718	22.3
Bottom side-15mm	20	QPSK 1RB_50	18900/1880	1:1	0.143	-0.02	22.82	23.50	1.169	0.167	22.3
Front side-15mm	20	QPSK 1RB_50	18700/1860	1:1	0.824	-0.09	22.70	23.50	1.202	0.991	22.3
Front side-15mm	20	QPSK 1RB_50	19100/1900	1:1	0.948	0.07	22.78	23.50	1.180	**1.119**	22.3
Front side-15mm Repeat	20	QPSK 1RB_50	19100/1900	1:1	0.935	-0.03	22.78	23.50	1.180	1.104	22.3
Hotspot Test data 50%RB Sensor off											
Front side-15mm	20	QPSK 50RB_0	18900/1880	1:1	0.717	0.06	21.92	22.50	1.143	0.819	22.3
Back side-21mm	20	QPSK 50RB_0	18900/1880	1:1	0.331	0.05	21.92	22.50	1.143	0.378	22.3
Right side-19mm	20	QPSK 50RB_0	18900/1880	1:1	0.291	0.07	21.92	22.50	1.143	0.333	22.3
Top side-15mm	20	QPSK 50RB_0	18900/1880	1:1	0.479	0.08	21.92	22.50	1.143	0.547	22.3
Bottom side-15mm	20	QPSK 50RB_0	18900/1880	1:1	0.105	0.12	21.92	22.50	1.143	0.120	22.3
Front side-15mm	20	QPSK 50RB_0	18700/1860	1:1	0.668	0.08	21.71	22.50	1.199	0.801	22.3
Front side-15mm	20	QPSK 50RB_0	19100/1900	1:1	0.748	0.08	21.89	22.50	1.151	0.861	22.3
Hotspot Test data 100%RB Sensor off											
Front side-15mm	20	QPSK 100RB_0	18900/1880	1:1	0.717	0.11	21.90	22.50	1.148	0.823	22.3

Table 17：SAR of LTE Band 2 for Body.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Front side-15mm	19100/1900	0.948	0.935	1.014	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						

Note:

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

2)Per FCC KDB Publication 447498 D01, 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).

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8.3.4 SAR Result of LTE Band 4

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.
Hotspot Test data 1RB Sensor on											
Front side-10mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.222	0.09	16.37	17.50	1.297	0.288	22.2
Back side-10mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.148	0.11	16.37	17.50	1.297	0.192	22.2
Right side-10mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.388	0.05	16.37	17.50	1.297	0.503	22.2
Top side-10mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.134	0.03	16.37	17.50	1.297	0.174	22.2
Bottom side-10mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.014	0.08	16.37	17.50	1.297	0.018	22.2
Hotspot Test data 50%RB Sensor on											
Front side-10mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.169	0.05	15.22	16.50	1.343	0.227	22.2
Back side-10mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.116	0.01	15.22	16.50	1.343	0.156	22.2
Right side-10mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.313	0.02	15.22	16.50	1.343	0.420	22.2
Top side-10mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.099	0.15	15.22	16.50	1.343	0.133	22.2
Bottom side-10mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.012	0.13	15.22	16.50	1.343	0.016	22.2
Hotspot Test data 1RB Sensor off											
Front side-15mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.838	0.02	22.97	23.50	1.130	**0.947**	22.2
Front side-15mm Repeat	20	QPSK 1RB_50	20175/1732.5	1:1	0.825	0.05	22.97	23.50	1.130	0.932	22.2
Back side-21mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.399	0.04	22.97	23.50	1.130	0.451	22.2
Right side-19mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.584	0.07	22.97	23.50	1.130	0.660	22.2
Top side-15mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.502	0.09	22.97	23.50	1.130	0.567	22.2
Bottom side-15mm	20	QPSK 1RB_50	20175/1732.5	1:1	0.061	0.01	22.97	23.50	1.130	0.068	22.2
Front side-15mm	20	QPSK 1RB_50	20050/1720	1:1	0.796	-0.10	22.86	23.50	1.159	0.922	22.2
Front side-15mm	20	QPSK 1RB_50	20300/1745	1:1	0.731	0.04	22.87	23.50	1.156	0.845	22.2
Hotspot Test data 50%RB Sensor off											
Front side-15mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.665	0.02	21.87	22.50	1.156	0.769	22.2
Back side-21mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.291	0.14	21.87	22.50	1.156	0.336	22.2
Right side-19mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.481	0.05	21.87	22.50	1.156	0.556	22.2
Top side-15mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.361	0.09	21.87	22.50	1.156	0.417	22.2
Bottom side-15mm	20	QPSK 50RB_0	20175/1732.5	1:1	0.044	0.08	21.87	22.50	1.156	0.050	22.2
Hotspot Test data 100%RB Sensor off											
Front side-15mm	20	QPSK 100RB_0	20175/1732.5	1:1	0.650	0.06	21.8	22.50	1.175	0.764	22.2

Table 18：SAR of LTE Band 4 for Body.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Front side-15mm	20175/1732.5	0.838	0.825	1.016	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						

Note:

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

2)Per FCC KDB Publication 447498 D01, 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).

8.3.5 SAR Result of LTE Band 5

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.
Hotspot Test data 1RB Sensor on											
Front side-10mm	10	QPSK 1RB_25	20525/836.5	1:1	0.495	0.02	19.07	20.00	1.239	0.613	22.1
Back side-10mm	10	QPSK 1RB_25	20525/836.5	1:1	0.396	0.08	19.07	20.00	1.239	0.491	22.1
Right side-10mm	10	QPSK 1RB_25	20525/836.5	1:1	0.058	0.11	19.07	20.00	1.239	0.071	22.1
Top side-10mm	10	QPSK 1RB_25	20525/836.5	1:1	0.199	0.05	19.07	20.00	1.239	0.247	22.1
Bottom side-10mm	10	QPSK 1RB_25	20525/836.5	1:1	0.168	0.09	19.07	20.00	1.239	0.208	22.1
Hotspot Test data 50%RB Sensor on											
Front side-10mm	10	QPSK 25RB_0	20525/836.5	1:1	0.387	0.05	17.94	19.00	1.276	0.494	22.1
Back side-10mm	10	QPSK 25RB_0	20525/836.5	1:1	0.323	0.04	17.94	19.00	1.276	0.412	22.1
Right side-10mm	10	QPSK 25RB_0	20525/836.5	1:1	0.045	0.01	17.94	19.00	1.276	0.057	22.1
Top side-10mm	10	QPSK 25RB_0	20525/836.5	1:1	0.162	0.09	17.94	19.00	1.276	0.207	22.1
Bottom side-10mm	10	QPSK 25RB_0	20525/836.5	1:1	0.167	0.06	17.94	19.00	1.276	0.213	22.1
Hotspot Test data 1RB Sensor off											
Front side-15mm	10	QPSK 1RB_25	20525/836.5	1:1	0.890	0.06	22.95	23.50	1.135	1.010	22.1
Back side-21mm	10	QPSK 1RB_25	20525/836.5	1:1	0.665	0.07	22.95	23.50	1.135	0.755	22.1
Right side-19mm	10	QPSK 1RB_25	20525/836.5	1:1	0.075	0.12	22.95	23.50	1.135	0.085	22.1
Top side-15mm	10	QPSK 1RB_25	20525/836.5	1:1	0.360	0.09	22.95	23.50	1.135	0.409	22.1
Bottom side-15mm	10	QPSK 1RB_25	20525/836.5	1:1	0.310	0.05	22.95	23.50	1.135	0.352	22.1
Front side-15mm	10	QPSK 1RB_25	20450/829	1:1	0.931	-0.10	22.91	23.50	1.146	1.066	22.1
Front side-15mm Repeat	10	QPSK 1RB_25	20450/829	1:1	0.923	0.03	22.91	23.50	1.146	1.057	22.1
Front side-15mm	10	QPSK 1RB_25	20600/844	1:1	0.925	0.00	22.80	23.50	1.175	**1.087**	22.1
Hotspot Test data 50%RB Sensor off											
Front side-15mm	10	QPSK 25RB_0	20525/836.5	1:1	0.723	-0.05	21.84	22.50	1.164	0.842	22.1
Back side-21mm	10	QPSK 25RB_0	20525/836.5	1:1	0.549	0.07	21.84	22.50	1.164	0.639	22.1
Right side-19mm	10	QPSK 25RB_0	20525/836.5	1:1	0.058	0.12	21.84	22.50	1.164	0.067	22.1
Top side-15mm	10	QPSK 25RB_0	20525/836.5	1:1	0.279	0.09	21.84	22.50	1.164	0.325	22.1
Bottom side-15mm	10	QPSK 25RB_0	20525/836.5	1:1	0.250	0.01	21.84	22.50	1.164	0.291	22.1
Front side-15mm	10	QPSK 25RB_0	20450/829	1:1	0.787	-0.10	21.83	22.50	1.167	0.918	22.1
Front side-15mm	10	QPSK 25RB_0	20600/844	1:1	0.773	0.04	21.67	22.50	1.211	0.936	22.1
Hotspot Test data 100%RB Sensor off											
Front side-15mm	10	QPSK 50RB_0	20450/829	1:1	0.779	-0.04	21.84	22.50	1.164	0.907	22.1

Table 19：SAR of LTE Band 5 for Body.

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Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Front side-15mm	20450/829	0.931	0.923	1.009	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						

Note:

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

2)Per FCC KDB Publication 447498 D01, 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).

8.3.6 SAR Result of LTE Band 7

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.
Hotspot Test data 1RB Sensor on											
Front side-10mm	20	QPSK 1RB_50	21100/2535	1:1	0.494	0.06	20.59	21.50	1.233	0.609	22.1
Back side-10mm	20	QPSK 1RB_50	21100/2535	1:1	0.249	0.01	20.59	21.50	1.233	0.307	22.1
Right side-10mm	20	QPSK 1RB_50	21100/2535	1:1	0.592	0.08	20.59	21.50	1.233	0.730	22.1
Top side-10mm	20	QPSK 1RB_50	21100/2535	1:1	0.104	0.14	20.59	21.50	1.233	0.128	22.1
Bottom side-10mm	20	QPSK 1RB_50	21100/2535	1:1	0.220	0.03	20.59	21.50	1.233	0.271	22.1
Hotspot Test data 50%RB Sensor on											
Front side-10mm	20	QPSK 50RB_0	21100/2535	1:1	0.539	0.12	19.49	20.50	1.262	0.680	22.1
Back side-10mm	20	QPSK 50RB_0	21100/2535	1:1	0.142	0.08	19.49	20.50	1.262	0.179	22.1
Right side-10mm	20	QPSK 50RB_0	21100/2535	1:1	0.455	0.01	19.49	20.50	1.262	0.574	22.1
Top side-10mm	20	QPSK 50RB_0	21100/2535	1:1	0.077	0.03	19.49	20.50	1.262	0.098	22.1
Bottom side-10mm	20	QPSK 50RB_0	21100/2535	1:1	0.171	0.08	19.49	20.50	1.262	0.216	22.1
Hotspot Test data 1RB Sensor off											
Front side-15mm	20	QPSK 1RB_50	21100/2535	1:1	0.681	-0.05	23.13	23.50	1.089	**0.742**	22.1
Back side-21mm	20	QPSK 1RB_50	21100/2535	1:1	0.166	0.09	23.13	23.50	1.089	0.181	22.1
Right side-19mm	20	QPSK 1RB_50	21100/2535	1:1	0.477	-0.07	23.13	23.50	1.089	0.519	22.1
Top side-15mm	20	QPSK 1RB_50	21100/2535	1:1	0.086	0.05	23.13	23.50	1.089	0.094	22.1
Bottom side-15mm	20	QPSK 1RB_50	21100/2535	1:1	0.198	0.03	23.13	23.50	1.089	0.216	22.1
Hotspot Test data 50%RB Sensor off											
Front side-15mm	20	QPSK 50RB_0	21100/2535	1:1	0.494	-0.06	22.28	22.50	1.052	0.520	22.1
Back side-21mm	20	QPSK 50RB_0	21100/2535	1:1	0.130	0.02	22.28	22.50	1.052	0.137	22.1
Right side-19mm	20	QPSK 50RB_0	21100/2535	1:1	0.364	0.01	22.28	22.50	1.052	0.383	22.1
Top side-15mm	20	QPSK 50RB_0	21100/2535	1:1	0.090	0.01	22.28	22.50	1.052	0.094	22.1
Bottom side-15mm	20	QPSK 50RB_0	21100/2535	1:1	0.201	0.02	22.28	22.50	1.052	0.211	22.1

Table 20：SAR of LTE Band 7 for Body.
Note:

1)The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
2)Per FCC KDB Publication 447498 D01, 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).

8.3.7 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(W/kg)	Liquid Temp.
Hotspot Test data (Separate 10mm 1RB)											
Front side	10	QPSK 1RB_25	23095/707.5	1:1	0.644	0.17	22.91	23.50	1.146	**0.738**	22.1
Back side	10	QPSK 1RB_25	23095/707.5	1:1	0.549	0.09	22.91	23.50	1.146	0.629	22.1
Left side	10	QPSK 1RB_25	23095/707.5	1:1	0.029	0.05	22.91	23.50	1.146	0.033	22.1
Right side	10	QPSK 1RB_25	23095/707.5	1:1	0.142	0.13	22.91	23.50	1.146	0.163	22.1
Bottom side	10	QPSK 1RB_25	23095/707.5	1:1	0.425	0.11	22.91	23.50	1.146	0.487	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_0	23095/707.5	1:1	0.588	0.13	21.89	22.50	1.151	0.677	22.1
Back side	10	QPSK 25RB_0	23095/707.5	1:1	0.471	-0.07	21.89	22.50	1.151	0.542	22.1
Left side	10	QPSK 25RB_0	23095/707.5	1:1	0.024	-0.10	21.89	22.50	1.151	0.027	22.1
Right side	10	QPSK 25RB_0	23095/707.5	1:1	0.115	0.09	21.89	22.50	1.151	0.132	22.1
Bottom side	10	QPSK 25RB_0	23095/707.5	1:1	0.399	0.05	21.89	22.50	1.151	0.459	22.1

Table 21：SAR of LTE Band 12 for Body.

Note:

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

2)Per FCC KDB Publication 447498 D01, 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).

8.3.8 SAR Result of LTE Band 13

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.
Hotspot Test data 1RB Sensor on											
Front side-10mm	10	QPSK 1RB_25	23230/782	1:1	0.571	0.99	21.50	22.50	1.259	0.719	22.1
Back side-10mm	10	QPSK 1RB_25	23230/782	1:1	0.587	0.02	21.50	22.50	1.259	0.739	22.1
Right side-10mm	10	QPSK 1RB_25	23230/782	1:1	0.083	0.03	21.50	22.50	1.259	0.104	22.1
Top side-10mm	10	QPSK 1RB_25	23230/782	1:1	0.277	0.09	21.50	22.50	1.259	0.349	22.1
Bottom side-10mm	10	QPSK 1RB_25	23230/782	1:1	0.238	0.07	21.50	22.50	1.259	0.300	22.1
Hotspot Test data 50%RB Sensor on											
Front side-10mm	10	QPSK 25RB_0	23230/782	1:1	0.568	-0.11	20.19	21.50	1.352	0.768	22.1
Back side-10mm	10	QPSK 25RB_0	23230/782	1:1	0.447	0.09	20.19	21.50	1.352	0.604	22.1
Right side-10mm	10	QPSK 25RB_0	23230/782	1:1	0.065	0.01	20.19	21.50	1.352	0.088	22.1
Top side-10mm	10	QPSK 25RB_0	23230/782	1:1	0.223	0.14	20.19	21.50	1.352	0.302	22.1
Bottom side-10mm	10	QPSK 25RB_0	23230/782	1:1	0.185	0.04	20.19	21.50	1.352	0.250	22.1
Hotspot Test data 1RB Sensor off											
Front side-15mm	10	QPSK 1RB_25	23230/782	1:1	0.929	0.01	23.37	23.50	1.030	**0.957**	22.1
Front side-15mm Repeat	10	QPSK 1RB_25	23230/782	1:1	0.917	0.04	23.37	23.50	1.030	0.945	22.1
Back side-21mm	10	QPSK 1RB_25	23230/782	1:1	0.581	0.02	23.37	23.50	1.030	0.599	22.1
Right side-19mm	10	QPSK 1RB_25	23230/782	1:1	0.072	0.03	23.37	23.50	1.030	0.074	22.1
Top side-15mm	10	QPSK 1RB_25	23230/782	1:1	0.374	0.04	23.37	23.50	1.030	0.385	22.1
Bottom side-15mm	10	QPSK 1RB_25	23230/782	1:1	0.272	0.05	23.37	23.50	1.030	0.280	22.1
Hotspot Test data 50%RB Sensor off											
Front side-15mm	10	QPSK 25RB_0	23230/782	1:1	0.728	0.02	22.22	22.50	1.067	0.776	22.1
Back side-21mm	10	QPSK 25RB_0	23230/782	1:1	0.486	0.04	22.22	22.50	1.067	0.518	22.1
Right side-19mm	10	QPSK 25RB_0	23230/782	1:1	0.072	0.04	22.22	22.50	1.067	0.077	22.1
Top side-15mm	10	QPSK 25RB_0	23230/782	1:1	0.394	0.14	22.22	22.50	1.067	0.420	22.1
Bottom side-15mm	10	QPSK 25RB_0	23230/782	1:1	0.286	0.04	22.22	22.50	1.067	0.305	22.1
Hotspot Test data 100%RB Sensor off											
Front side-15mm	10	QPSK 50RB_0	23230/782	1:1	0.739	0.05	22.14	22.50	1.086	0.803	22.1

Table 22：SAR of LTE Band 13 for Body.

Test Position	Channel/ Frequency (MHz)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	3rd Repeated SAR (1g)
Front side-15mm	23230/782	0.929	0.917	1.013	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						

Note:

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

2)Per FCC KDB Publication 447498 D01, 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).

8.3.9 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(W/kg)	Liquid Temp.
Hotspot Test data 1RB Sensor on											
Front side-10mm	20	QPSK 1RB_50	132322/1745	1:1	0.279	0.01	16.36	17.50	1.300	0.363	22.2
Back side-10mm	20	QPSK 1RB_50	132322/1745	1:1	0.185	0.05	16.36	17.50	1.300	0.241	22.2
Right side-10mm	20	QPSK 1RB_50	132322/1745	1:1	0.274	0.06	16.36	17.50	1.300	0.356	22.2
Top side-10mm	20	QPSK 1RB_50	132322/1745	1:1	0.180	0.08	16.36	17.50	1.300	0.234	22.2
Bottom side-10mm	20	QPSK 1RB_50	132322/1745	1:1	0.005	0.09	16.36	17.50	1.300	0.007	22.2
Hotspot Test data 50%RB Sensor on											
Front side-10mm	20	QPSK 50RB_0	132322/1745	1:1	0.214	0.09	15.09	16.50	1.384	0.296	22.2
Back side-10mm	20	QPSK 50RB_0	132322/1745	1:1	0.134	0.07	15.09	16.50	1.384	0.185	22.2
Right side-10mm	20	QPSK 50RB_0	132322/1745	1:1	0.215	-0.15	15.09	16.50	1.384	0.297	22.2
Top side-10mm	20	QPSK 50RB_0	132322/1745	1:1	0.137	0.03	15.09	16.50	1.384	0.190	22.2
Bottom side-10mm	20	QPSK 50RB_0	132322/1745	1:1	0.004	0.12	15.09	16.50	1.384	0.006	22.2
Hotspot Test data 1RB Sensor off											
Front side-15mm	20	QPSK 1RB_50	132322/1745	1:1	0.674	0.09	22.80	23.50	1.175	**0.792**	22.2
Back side-21mm	20	QPSK 1RB_50	132322/1745	1:1	0.490	0.07	22.80	23.50	1.175	0.576	22.2
Right side-19mm	20	QPSK 1RB_50	132322/1745	1:1	0.539	0.03	22.80	23.50	1.175	0.633	22.2
Top side-15mm	20	QPSK 1RB_50	132322/1745	1:1	0.491	0.02	22.80	23.50	1.175	0.577	22.2
Bottom side-15mm	20	QPSK 1RB_50	132322/1745	1:1	0.062	0.01	22.80	23.50	1.175	0.073	22.2
Hotspot Test data 50%RB Sensor off											
Front side-15mm	20	QPSK 50RB_0	132322/1745	1:1	0.574	0.12	21.70	22.50	1.202	0.690	22.2
Back side-21mm	20	QPSK 50RB_0	132322/1745	1:1	0.374	0.08	21.70	22.50	1.202	0.450	22.2
Right side-19mm	20	QPSK 50RB_0	132322/1745	1:1	0.435	0.01	21.70	22.50	1.202	0.523	22.2
Top side-15mm	20	QPSK 50RB_0	132322/1745	1:1	0.397	0.03	21.70	22.50	1.202	0.477	22.2
Bottom side-15mm	20	QPSK 50RB_0	132322/1745	1:1	0.048	0.08	21.70	22.50	1.202	0.057	22.2

Table 23：SAR of LTE Band 66 for Body.
Note:

1)The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
2)Per FCC KDB Publication 447498 D01, 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).

8.3.10 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(W/kg)	Liquid Temp.
Hotspot Test data Sensor on											
Front side-10mm	802.11b	6/2437	99.08%	1.009	0.185	0.01	16.96	17.00	1.009	0.188	22
Back side-10mm	802.11b	6/2437	99.08%	1.009	0.180	0.08	16.96	17.00	1.009	0.183	22
Top side-10mm	802.11b	6/2437	99.08%	1.009	0.118	-0.04	16.96	17.00	1.009	0.120	22
Hotspot Test data Sensor off											
Front side-15mm	802.11b	6/2437	99.08%	1.009	0.415	0.04	21.95	22.00	1.012	0.424	22
Back side-15mm	802.11b	6/2437	99.08%	1.009	0.427	0.18	21.95	22.00	1.012	0.436	22
Left side-10mm	802.11b	6/2437	99.08%	1.009	0.541	-0.06	21.95	22.00	1.012	**0.552**	22
Top side-15mm	802.11b	6/2437	99.08%	1.009	0.435	0.13	21.95	22.00	1.012	0.444	22

Table 24： SAR of WIFI 2.4G for Body.

Note:

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

2)Per FCC KDB Publication 447498 D01, 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)Each channel was tested at the lowest data rate.

Mode	Tune-up (dBm)	Tune-up (mW)	Max Reported SAR(W/kg)	Adjusted SAR(W/kg)	SAR Test (Yes/No)
802.11b	22.00	158.49	0.552	/	Yes
802.11g	21.00	125.89	/	0.438	No
802.11n-HT20	21.00	125.89	/	0.438	No
802.11n-HT40	20.00	100.00	/	0.348	No

Note: Per KDB248227D01, for SAR test of WiFi 2.4G,

1) SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure.

2) As 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.

8.3.11 SAR Result of WIFI 5G

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.
Hotspot Test data of U-NII-1 Sensor on											
Front side-10mm	802.11a	40/5200	94.63%	1.057	0.227	0.09	13.78	14.50	1.180	0.283	22.2
Back side-10mm	802.11a	40/5200	94.63%	1.057	0.090	0.03	13.78	14.50	1.180	0.112	22.2
Top side-10mm	802.11a	40/5200	94.63%	1.057	0.102	0.01	13.78	14.50	1.180	0.127	22.2
Hotspot Test data of U-NII-1 Sensor off											
Front side-15mm	802.11a	40/5200	94.63%	1.057	0.918	0.01	20.35	21.00	1.161	1.127	22.2
Back side-15mm	802.11a	40/5200	94.63%	1.057	0.362	0.08	20.35	21.00	1.161	0.444	22.2
Left side-10mm	802.11a	40/5200	94.63%	1.057	0.213	0.02	20.35	21.00	1.161	0.261	22.2
Top side-15mm	802.11a	40/5200	94.63%	1.057	0.897	0.01	20.35	21.00	1.161	1.101	22.2
Front side-15mm	802.11a	48/5240	94.63%	1.057	0.939	0.00	20.34	21.00	1.164	1.155	22.2
Top side-15mm	802.11a	48/5240	94.63%	1.057	0.913	0.03	20.34	21.00	1.164	1.123	22.2
Hotspot Test data of U-NII-2A Sensor on											
Front side-10mm	802.11a	56/5280	94.63%	1.057	0.256	0.01	13.84	14.50	1.164	0.315	22.2
Back side-10mm	802.11a	56/5280	94.63%	1.057	0.105	0.02	13.84	14.50	1.164	0.129	22.2
Top side-10mm	802.11a	56/5280	94.63%	1.057	0.359	0.03	13.84	14.50	1.164	0.442	22.2
Hotspot Test data of U-NII-2A Sensor off											
Front side-15mm	802.11a	56/5280	94.63%	1.057	0.949	0.10	20.31	21.00	1.172	**1.176**	22.2
Back side-15mm	802.11a	56/5280	94.63%	1.057	0.407	0.02	20.31	21.00	1.172	0.504	22.2
Left side-10mm	802.11a	56/5280	94.63%	1.057	0.221	0.01	20.31	21.00	1.172	0.274	22.2
Top side-15mm	802.11a	56/5280	94.63%	1.057	0.858	0.04	20.31	21.00	1.172	1.063	22.2
Front side-15mm	802.11a	60/5300	94.63%	1.057	0.915	0.01	20.21	21.00	1.199	1.160	22.2
Top side-15mm	802.11a	60/5300	94.63%	1.057	0.810	0.02	20.21	21.00	1.199	1.027	22.2
Hotspot Test data of U-NII-2C Sensor on											
Front side-10mm	802.11a	100/5500	94.63%	1.057	0.235	0.09	13.50	14.50	1.259	0.313	22.2
Back side-10mm	802.11a	100/5500	94.63%	1.057	0.077	0.02	13.50	14.50	1.259	0.102	22.2
Top side-10mm	802.11a	100/5500	94.63%	1.057	0.241	0.01	13.50	14.50	1.259	0.321	22.2
Hotspot Test data of U-NII-2C Sensor off											
Front side-15mm	802.11n-HT20	132/5660	93.80%	1.066	0.545	0.04	19.49	20.00	1.125	0.653	22.2
Back side-15mm	802.11n-HT20	132/5660	93.80%	1.066	0.164	0.02	19.49	20.00	1.125	0.197	22.2
Left side-10mm	802.11n-HT20	132/5660	93.80%	1.066	0.180	0.08	19.49	20.00	1.125	0.216	22.2
Top side-15mm	802.11n-HT20	132/5660	93.80%	1.066	0.453	0.02	19.49	20.00	1.125	0.543	22.2
Hotspot Test data of U-NII-3 Sensor on											
Front side-10mm	802.11a	165/5825	94.63%	1.057	0.145	0.09	14.27	14.50	1.054	0.162	22.2
Back side-10mm	802.11a	165/5825	94.63%	1.057	0.047	0.01	14.27	14.50	1.054	0.052	22.2
Top side-10mm	802.11a	165/5825	94.63%	1.057	0.120	0.09	14.27	14.50	1.054	0.134	22.2
Hotspot Test data of U-NII-3 Sensor off											
Front side-15mm	802.11n-HT20	165/5825	93.80%	1.066	0.449	0.08	19.69	20.00	1.074	0.514	22.2
Back side-15mm	802.11n-HT20	165/5825	93.80%	1.066	0.121	0.07	19.69	20.00	1.074	0.139	22.2
Left side-10mm	802.11n-HT20	165/5825	93.80%	1.066	0.114	0.01	19.69	20.00	1.074	0.131	22.2
Top side-15mm	802.11n-HT20	165/5825	93.80%	1.066	0.363	0.09	19.69	20.00	1.074	0.416	22.2

Table 25：SAR of WIFI 5G for Body.

Note:

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

2)Per FCC KDB Publication 447498 D01, 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)Each channel was tested at the lowest data rate.

8.4 Multiple Transmitter Evaluation

8.4.1 Simultaneous SAR test evaluation

1) Simultaneous Transmission Possibilities

NO.	Simultaneous Tx Combination	Body
1	UMTS/LTE + WiFi	Yes

8.4.2 Simultaneous Transmission SAR Summation Scenario

Test position		Main Antenna SARmax (W/kg)									WiFi Antenna SARmax (W/kg)			Summed 1g SARmax (W/kg)
		WCDMA Band II	WCDMA Band V	LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 7	LTE Band 12	LTE Band 13	LTE Band 66	WLAN 2.4G	WLAN 5G	WLAN 5G+WWAN	
Body	Front	0.630	0.410	1.119	0.947	1.087	0.742	0.738	0.957	0.792	0.424	1.176	0.315	1.543
	Back	0.582	0.163	0.491	0.451	0.755	0.307	0.629	0.739	0.576	0.436	0.504	0.129	1.191
	Left	/	/	/	/	/	/	/	/	/	0.552	0.274	0.274	0.552
	Right	0.549	0.063	0.428	0.660	0.085	0.730	0.033	0.104	0.633	/	/	/	0.730
	Top	0.626	0.245	0.718	0.567	0.409	0.128	0.163	0.420	0.577	0.444	1.123	0.442	1.162
	Bottom	0.050	0.195	0.167	0.068	0.352	0.271	0.487	0.305	0.073	/	/	/	0.487

9 Equipment list

Test Platform	SPEAG DASY5 Professional
Description	SAR Test System (Frequency range 300MHz-6GHz)
Software Reference	DASY52 52.8.8(1258); SEMCAD X 14.6.10(7331)

Hardware Reference

Equipment		Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	Twin Phantom	SPEAG	SAM 5	1481	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 6	1824	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 7	1702	NCR	NCR
☒	DAE	SPEAG	DAE4	1327	2020-10-20	2021-10-19
☒	DAE	SPEAG	DAE3	414	2020-12-30	2021-12-29
☒	E-Field Probe	SPEAG	EX3DV4	7620	2021-02-05	2022-02-04
☒	E-Field Probe	SPEAG	EX3DV4	3789	2020-06-16	2021-06-15
☒	E-Field Probe	SPEAG	EX3DV4	3982	2020-10-28	2021-10-27
☒	Validation Kits	SPEAG	D750V3	1160	2019-05-22	2022-05-21
☒	Validation Kits	SPEAG	D835V2	4d105	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D1750V2	1149	2019-05-21	2022-05-20
☒	Validation Kits	SPEAG	D1900V2	5d028	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D2450V2	733	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D2600V2	1125	2019-05-20	2022-05-19
☒	Validation Kits	SPEAG	D5GHzV2	1165	2019-12-20	2022-12-19
☒	Agilent Network Analyzer	Agilent	E5071C	MY46523591	2020-04-16	2021-04-15
					2021-04-14	2022-04-13
☒	Dielectric Probe Kit	Agilent	85070E	US01440210	NCR	NCR
☒	Radio Communication Analyzer	Anritsu	MT8820C	6200951859	2020-10-26	2021-10-25
☒	Radio Communication Analyzer	Anritsu	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
					2021-04-14	2022-04-13
☒	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
					2021-04-14	2022-04-13
☒	Power Sensor	Agilent	8481H	MY41091234	2020-04-15	2021-04-14
					2021-04-14	2022-04-13
☒	Power Sensor	R&S	NRP-Z92	100025	2020-04-16	2021-04-15
					2021-04-14	2022-04-13
☒	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
☒	50 Ω coaxial load	Mini-Circuits	KARN-50+	00850	NCR	NCR
☒	DC POWER SUPPLY	SAKO	SK1730SL5A	NA	NCR	NCR
☒	Speed reading thermometer	MingGao	T809	NA	2020-11-06	2021-11-05

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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