Test Report

Applicant	:	Getac Technology Corporation
Applicant Address	:	5F.,Building A,No.209,Sec.1 Nangang.,Rd., Taipei City, 11568, Taiwan
Product Name	:	Wireless Module
Trade Name	:	Getac
Model Number	:	WLAN: AX211NGW WWAN: EM7511U
Applicable Standard	:	47 CFR §2.1093
Received Date	:	Oct. 13, 2022
Test Period	:	Nov. 06 ~ Nov. 17, 2022
Issued Date	:	Jan. 10, 2023

Issued by

Approved By : Kyus Pan

Eurofins E&E Wireless Taiwan Co., Ltd.
No. 140-1, Changan Street, Bade District,
Taoyuan City 334025, Taiwan (R.O.C.)
Tel：+886-3-2710188 / Fax：+886-3-2710190

Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Note:
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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Dec. 23, 2022	Initial Issue	Nicole Chu
01	Jan. 03, 2023	Revised 2 chapter (P.8) Revised 10.2.4 chapter (P.38~P.39)	Nicole Chu
02	Jan. 10, 2023	Revised 10.2.4 chapter (P.38)	Nicole Chu

Contents

1. General Information

1.1 Reference Testing Standards

Standard	Description	Version
47 CFR §2.1093	Radiofrequency radiation exposure evaluation: portable devices	-
IEC/IEEE 62209-1528	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)	2020
IEEE 1528	Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques	2013
IEEE C95.1	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz	1992
KDB 248227 D01	SAR guidance for IEEE 802.11 (Wi-Fi) transmitters	v02r02
KDB 447498 D04	RF exposure procedures and equipment authorization policies for mobile and portable devices	v01
KDB 616217 D04	SAR evaluation considerations for laptop, notebook and tablet computers	v01r02
KDB 865664 D01	SAR measurement requirement for 100 MHz to 6 GHz	v01r04
KDB 865664 D02	RF exposure compliance reporting and documentation considerations	v01r02
KDB 941225 D01	3G SAR measurement procedures	v03r01
KDB 941225 D05	SAR evaluation considerations for LTE devices	v02r05
KDB 941225 D05A	REL. 10 LTE SAR test guidance and KDB inquiries	v01r02

1.2 Testing Location

Site Name: Site Name: Eurofins E&E Wireless Taiwan Co., Ltd.

Site Address: ■ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: ☐ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

2. Description of Device Under Test (DUT)

Applicant	Getac Technology Corporation 5F.,Building A,No.209,Sec.1 Nangang.,Rd., Taipei City, 11568, Taiwan
Product Name	Wireless Module
Trade Name	Getac
Model Number	WLAN: AX211NGW WWAN: EM7511U
SN No.	WLAN: 351664100383536 / WWAN: RN9XXU0110
FCC ID	WLAN: QYLAX211NG WWAN: QYLEM7511U
Host Information	Product Name: Tablet Trade Name: Getac Model Name: UX10, UX10G3, UX10-301, UX10-321, UX10-Ex, UX10Y(Y= 10 characters, Y can be 0 to 9, A to Z, a to z, "/", "\", "-", "_" or blank for marketing purpose)
Frequency Range	WCDMA Band II: 1852.4 - 1907.6 MHz WCDMA Band IV: 1712.4 - 1752.6 MHz WCDMA Band V: 826.4 - 846.6 MHz LTE Band 2: 1850.7 - 1909.3 MHz LTE Band 4: 1710.7 - 1754.3 MHz LTE Band 5: 824.7 - 848.3 MHz LTE Band 7: 2502.5 - 2567.5 MHz LTE Band 12: 699.7 - 715.3 MHz LTE Band 13: 779.5 - 784.5 MHz LTE Band 14: 790.5 - 795.5 MHz LTE Band 26: 814.7 - 848.3 MHz LTE Band 41: 2498.5 - 2687.5 MHz LTE Band 66: 1710.7 - 1779.3 MHz WLAN 2.4 GHz Band：2412 - 2472 MHz WLAN 5.2 GHz Band：5180 - 5240 MHz WLAN 5.3 GHz Band：5260 - 5320 MHz WLAN 5.6 GHz Band：5500 - 5720 MHz WLAN 5.8 GHz Band：5745 - 5825 MHz WLAN 6.2 GHz Band：5955 - 6415 MHz WLAN 6.5 GHz Band：6435 - 6515 MHz WLAN 6.7 GHz Band：6535 - 6855 MHz WLAN 7.0 GHz Band：6875 - 7115 MHz Bluetooth：2402 - 2480 MHz
Supported Modulations	WCDMA: RMC 12.2Kbps / HSDPA / HSUPA / HSPA+
	LTE: QPSK / 16QAM / 64QAM
	WLAN 2.4 GHz : 802.11 b / g / n / ax HT20 / HT40 / HE20 / HE40
	WLAN 5 GHz : 802.11 a / n / ac / ax HT20 / HT40 / VHT20 / VHT40 / VHT80 / VHT160 / HE20 / HE40 / HE80 / HE160
	WLAN 6 GHz : 802.11ax HE20 / HE40 / HE80 / HE160
	Bluetooth : BR / EDR / LE
Device Category	Portable

Battery Information	Standard
	Trade Name: Getace Model: BP3S3P3450P-03 Spec: DC 10.8 V / 9240 mAh

Note: The above information of DUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Antenna list:

ANT	Manufacturer	Type	Band	Max. Gain(dBi)
WCDMA/LTE Antenna (Main)	UX10G3 WWAN MAIN ANT	FPC Antenna	WCDMA B2	2.76
			WCDMA B4	2.00
			WCDMA B5	0.08
			LTE B2	2.73
			LTE B4	2.00
			LTE B5	0.08
			LTE B7	2.73
			LTE B12	0.43
			LTE B13	0.51
			LTE B14	0.73
			LTE B26	0.37
			LTE B41	2.93
			LTE B66	2.16
WCDMA/LTE Antenna (AUX)	UX10G3 WWAN AUX ANT	FPC Antenna	WCDMA B2	-3.29
			WCDMA B4	-0.57
			WCDMA B5	1.65
			LTE B2	-3.29
			LTE B4	-0.57
			LTE B5	1.65
			LTE B7	1.03
			LTE B12	0.93
			LTE B13	1.36
			LTE B14	1.01
			LTE B26	1.31
			LTE B41	1.02
			LTE B66	-0.36

ANT	Manufacturer	Type	Frequency(MHz)	Max. Gain(dBi)
WLAN (Main)	UX10G3 WIFI MAIN ANT	PIFA Antenna	2400-2483.5	0.95
			5150-5250	2.42
			5250-5350	3.16
			5470-5725	3.06
			5725-5850	2.89
			5925-6425	1.86
			6425-6525	0.76
			6525-6875	1.11
			6875-7125	1.56
WLAN (AUX)	UX10G3 AUXWIFI ANT	PIFA Antenna	2400-2483.5	1.19
			5150-5250	0.95
			5250-5350	1.55
			5470-5725	-0.44
			5725-5850	0.45
			5925-6425	-0.13
			6425-6525	0.37
			6525-6875	0.51
			6875-7125	1.22

3. Summary of Maximum Value

Equipment Class	Mode	Highest Reported SAR	Highest Reported SAR
		Body standalone SAR_{1g} (W/kg)	Simultaneous Transmission SAR (W/kg)
Licensed	WCDMA Band II	1.03	1.46
	WCDMA Band IV	1.05	
	WCDMA Band V	1.04	
	LTE Band 2	1.03	
	LTE Band 5	0.95	
	LTE Band 7	1.01	
	LTE Band 12	1.04	
	LTE Band 13	0.98	
	LTE Band 14	0.94	
	LTE Band 26	0.97	
	LTE Band 41	1.03	
	LTE Band 66/4	1.00	
DTS	WLAN 2.4 GHz ANT Main	0.96	1.23
	WLAN 2.4 GHz ANT Aux	0.67	
NII	WLAN 5 GHz ANT Main	1.01	1.31
	WLAN 5 GHz ANT Aux	1.11	
6XD	WLAN 6 GHz ANT Main	0.39	1.46
	WLAN 6 GHz ANT Aux	0.16	
DSS / DTS	Bluetooth ANT Aux	0.05	1.46

Equipment Class	Mode	Highest Standalone Transmission	Highest Simultaneous Transmission
		Averaging Area [4 cm^2] Total PD (mW/cm^2)	Total Exposure Ratio
6XD	WLAN 6 GHz	0.33	0.99

Note:

1. The SAR limit for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.
2. The test procedures, as described in American National Standards, Institute ANSI/IEEE C95.1 were employed and they specify the maximum exposure limit of tissue for portable devices being used within 20 cm between user and EUT in the uncontrolled environment. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the equipment used are included within this test report.
3. The evaluation requirements, as described in 47 CFR Part §1.310 were employed and they specify the maximum exposure limit for general population / uncontrolled exposure is 1.0 mW/cm^2 (equal to 10 W/m^2) for 1.5 GHz to 100 GHz.

4. Introduction

4.1 SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy (dw) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\text{SAR} = \frac{d}{dt}\left(\frac{dw}{dm}\right) = \frac{d}{dt}\left(\frac{dw}{\rho dv}\right)$$

SAR measurement can be related to the electrical field in the tissue by

$$\text{SAR} = \frac{\sigma|E|^2}{\rho}$$

Where：

σ = conductivity of the tissue (S/m)

ρ = mass density of the tissue (kg/m^3)

E = RMS electric field strength (V/m)

SAR is expressed in units of Watts per kilogram (W/kg).

4.2 RF Exposure Limits

Table 1 Safety Limits for Controlled / Uncontrolled Environment Exposure

SAR Exposure Limit		
	General Population / Uncontrolled Exposure [1] (W/kg)	**Occupational / Controlled Exposure [2] (W/kg)**
Spatial Peak SAR [3] (head or Body)	1.60	8.00
Spatial Peak SAR [4] (Whole Body)	0.08	0.40
Spatial Peak SAR [5] (Hands / Feet / Ankle / Wrist)	4.00	20.00

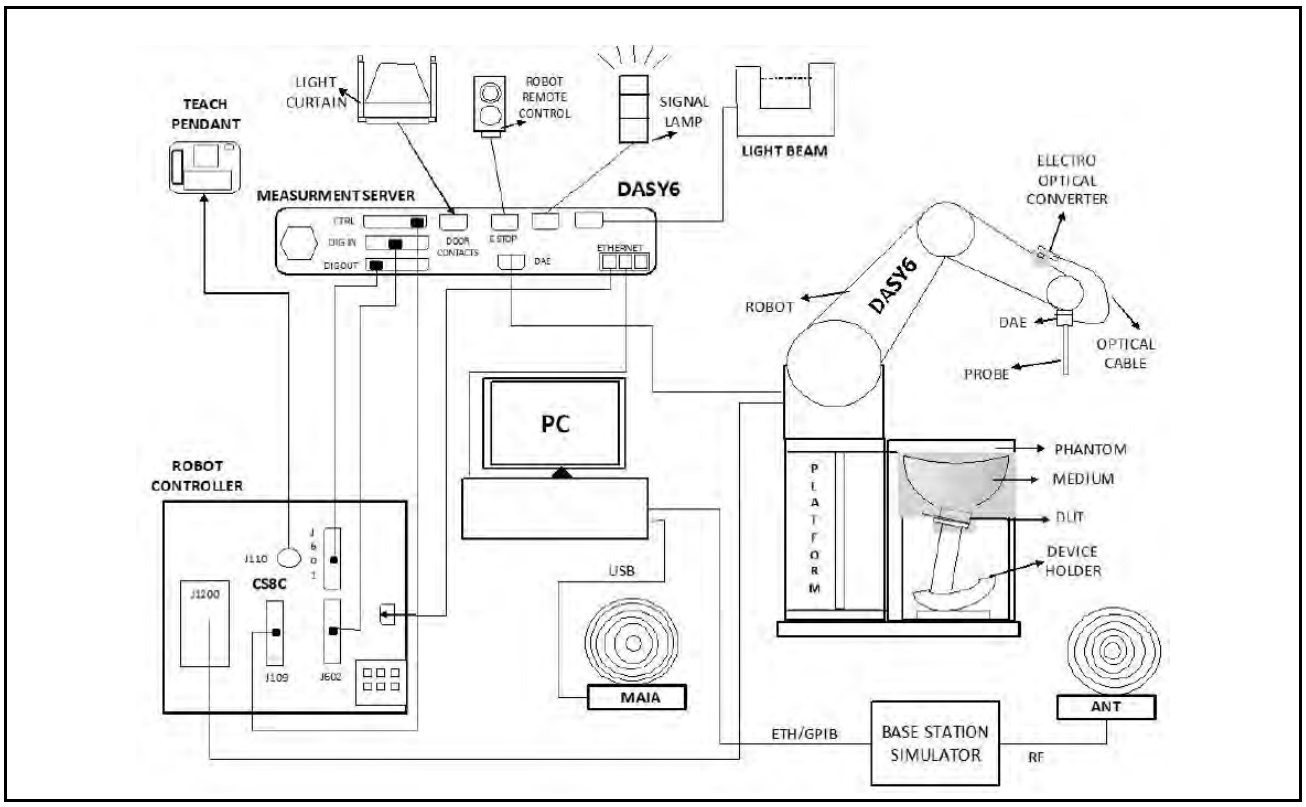
Notes：

1. **General Population / Uncontrolled Environments** are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.
2. **Occupational / 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).
3. 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.
4. The Spatial Average value of the SAR averaged over the whole body.
5. 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.

5. System Describtion

5.1 SAR Measurement System

The DASY system in SAR Configuration is shown below:



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

1. A standard high precision 6-axis robot (Stäubli TX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. An isotropic field probe optimized and calibrated for the targeted measurements.
3. 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.
4. The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
5. 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.
6. The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
7. A computer running Win7/Win8/Win10 professional operating system and DASY software.
8. Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
9. The phantom, the device holder and other accessories according to the targeted measurement.
10. Tissue simulating liquid mixed according to the given recipes.
11. The validation dipole has been calibrated within and the system performance check has been successful.

<DASY E-Field Probe System>

The SAR measurements were conducted with the dosimetric probe (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probes is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped when reaching the maximum.

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB (30 MHz to 10 GHz)
Directivity	±0.1 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)
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
Calibration	ISO/IEC 17025 calibration service available

EX3DV4 E-Field Probe

Probe setup on robot

<Data Acquisition Electronic (DAE) System>

Model	DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY 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: 4 mV, 400 mV)	
Input Offset Voltage	< 5 µV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

<Robot>

Positioner	Stäubli Unimation Corp.	
Robot Model	TX90XL	
Number of Axes	6	
Nominal Load	5 kg	
Reach	1450 mm	
Repeatability	± 0.035 mm	

<Device Holder>

The DASY device holder is constructed 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.

	
Device Holder 1	Device Holder 2

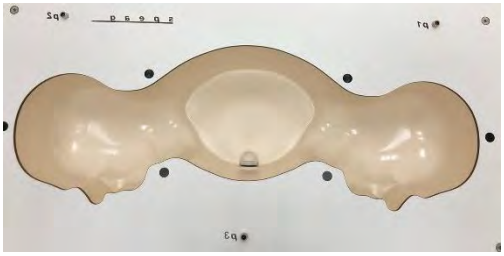
<Oval Flat Phantom – ELI>

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (Oval Flat) phantom defined in IEEE 1528, IEC 62209-2 and IEC/IEEE 62209-1528. It enables the dosimetric evaluation of wireless portable device 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 manually teaching three points with the robot.

Shell Thickness	2 ±0.2 mm	
Filling Volume	Approx. 30 liters	
Dimensions	190×600×400 mm (H × L × W)	

<SAM Phantom>

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528, IEC 62209-1 and IEC/IEEE 62209-1528. 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.

Shell Thickness	2 ±0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	

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5.2 Tissue Simulating Liquids (TSL)

<Tissue Dielectric Parameters in IEEE 1528-2013 and IEC/IEEE 62209-1528>

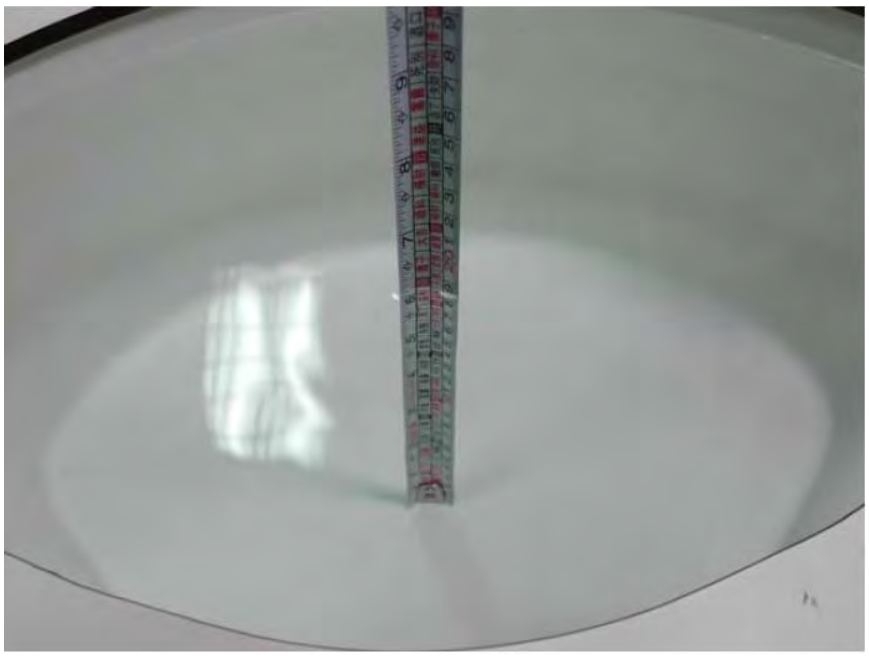
The following table incorporates the tissue dielectric parameters of head recommended by IEEE 1528-2013 and IEC/IEEE 62209-1528. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in human head. Other head and body tissue parameters that have not been specified are derived from the tissue dielectric parameters which computed by the 4-Cole-Cole equation according to the above-mentioned standards.

Table 2 Dielectric properties of the tissue-equivalent liquid material

Frequency (MHz)	Relative Permittivity (ε_r)	Conductivity (σ)
30	55.0	0.75
150	52.3	0.76
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800	40.0	1.40
1900	40.0	1.40
1950	40.0	1.40
2000	40.0	1.40
2100	39.8	1.49
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5400	35.8	4.86
5600	35.5	5.07
5800	35.3	5.27
6000	35.1	5.48
6500	34.5	6.07
7000	33.9	6.65
7500	33.3	7.24
8000	32.7	7.84
8500	32.1	8.46
9000	31.6	9.08
9500	31.0	9.71
10000	30.4	10.4

<Liquid Depth>

The depth of tissue-equivalent liquid in a phantom must be ≧ 15.0 cm to ensure that the probe is immersed sufficiently in the tissue medium.



Tissue-equivalent Liquid Height

<Test Site Environment>

Item	Requirement	Actual
Temperature (°C)	18 - 25	21 - 23

<Liquid Check>

1. The dielectric parameters of the liquids were verified prior to the SAR evaluation using a DAKS 3.5 Probe Kit.
2. The SAR testing with IEC tissue parameters as an alternative option to Head and body parameters. The head TSL were applied to body SAR tests with restrictions below:

Tissue Temp (°C)	Head / Body	Frequency	Cond. σ	Perm. εr	target Cond. σ	target Perm. εr	σ (Delta)(%)	εr (Delta)(%)	Limit (%)	Date
22.4	Head	704 MHz	0.86	43.13	0.89	42.15	-3.09	2.32	±5	Nov. 06, 2022
22.4	Head	707.5 MHz	0.86	43.07	0.89	42.12	-2.79	2.26	±5	Nov. 06, 2022
22.4	Head	711 MHz	0.87	43.02	0.89	42.11	-2.28	2.17	±5	Nov. 06, 2022
22.4	Head	782 MHz	0.92	42.03	0.89	41.75	2.35	0.67	±5	Nov. 06, 2022
22.4	Head	793 MHz	0.93	41.89	0.90	41.70	3.35	0.45	±5	Nov. 06, 2022
22.3	Head	826.4 MHz	0.90	41.46	0.90	41.54	0.07	-0.19	±5	Nov. 07, 2022
22.3	Head	836.4 MHz	0.91	41.33	0.90	41.50	0.78	-0.42	±5	Nov. 07, 2022
22.3	Head	846.6 MHz	0.92	41.19	0.91	41.50	0.56	-0.76	±5	Nov. 07, 2022
22.3	Head	829 MHz	0.90	41.43	0.90	41.53	0.35	-0.25	±5	Nov. 07, 2022
22.3	Head	836.5 MHz	0.91	41.32	0.90	41.50	0.79	-0.42	±5	Nov. 07, 2022
22.3	Head	844 MHz	0.92	41.24	0.91	41.50	0.65	-0.63	±5	Nov. 07, 2022
22.3	Head	821.5 MHz	0.90	41.53	0.90	41.57	-0.32	-0.11	±5	Nov. 07, 2022
22.3	Head	831.5 MHz	0.90	41.40	0.90	41.51	0.50	-0.27	±5	Nov. 07, 2022
22.3	Head	841.5 MHz	0.91	41.26	0.91	41.50	0.79	-0.57	±5	Nov. 07, 2022
22.5	Head	1712.4 MHz	1.31	39.56	1.35	40.13	-3.10	-1.43	±5	Nov. 08, 2022
22.5	Head	1732.6 MHz	1.33	39.51	1.36	40.10	-2.65	-1.47	±5	Nov. 08, 2022
22.5	Head	1752.6 MHz	1.34	39.44	1.37	40.07	-2.40	-1.58	±5	Nov. 08, 2022
22.5	Head	1720 MHz	1.32	39.54	1.35	40.11	-2.79	-1.43	±5	Nov. 08, 2022
22.5	Head	1732.5 MHz	1.33	39.51	1.36	40.10	-2.65	-1.47	±5	Nov. 08, 2022
22.5	Head	1745 MHz	1.33	39.46	1.37	40.08	-2.57	-1.55	±5	Nov. 08, 2022
22.5	Head	1720 MHz	1.32	39.54	1.35	40.11	-2.85	-1.43	±5	Nov. 08, 2022
22.5	Head	1745 MHz	1.33	39.46	1.37	40.08	-2.57	-1.55	±5	Nov. 08, 2022
22.5	Head	1770 MHz	1.35	39.36	1.38	40.04	-2.13	-1.70	±5	Nov. 08, 2022
22.2	Head	1852.4 MHz	1.38	40.76	1.40	40.00	-1.45	1.89	±5	Nov. 09, 2022
22.2	Head	1880 MHz	1.39	40.60	1.40	40.00	-0.85	1.49	±5	Nov. 09, 2022
22.2	Head	1907.6 MHz	1.40	40.48	1.40	40.00	-0.27	1.20	±5	Nov. 09, 2022
22.2	Head	1860 MHz	1.38	40.71	1.40	40.00	-1.29	1.78	±5	Nov. 09, 2022
22.2	Head	1880 MHz	1.39	40.60	1.40	40.00	-0.85	1.49	±5	Nov. 09, 2022
22.2	Head	1900 MHz	1.39	40.52	1.40	40.00	-0.43	1.29	±5	Nov. 09, 2022
22.4	Head	2510 MHz	1.88	39.15	1.86	39.12	0.70	0.07	±5	Nov. 10, 2022
22.4	Head	2535 MHz	1.91	39.12	1.89	39.09	0.72	0.06	±5	Nov. 10, 2022
22.4	Head	2560 MHz	1.93	39.03	1.92	39.05	0.67	-0.04	±5	Nov. 10, 2022
22.3	Head	2506 Mhz	1.87	39.10	1.86	39.13	0.47	-0.08	±5	Nov. 11, 2022
22.3	Head	2510 Mhz	1.87	39.09	1.86	39.12	0.51	-0.07	±5	Nov. 11, 2022

Tissue Temp (°C)	Head / Body	Frequency	Cond. σ	Perm. εr	target Cond. σ	target Perm. εr	σ (Delta)(%)	εr (Delta)(%)	Limit (%)	Date
22.3	Head	2549.5 Mhz	1.91	39.03	1.91	39.07	0.43	-0.12	±5	Nov. 11, 2022
22.3	Head	2593 Mhz	1.97	38.86	1.95	39.01	0.86	-0.39	±5	Nov. 11, 2022
22.3	Head	2636.5 Mhz	2.02	38.74	2.00	38.96	1.17	-0.56	±5	Nov. 11, 2022
22.3	Head	2680 Mhz	2.08	38.62	2.05	38.90	1.48	-0.72	±5	Nov. 11, 2022
22.2	Head	2412 MHz	1.76	39.34	1.77	39.27	-0.45	0.17	±5	Nov. 12, 2022
22.2	Head	2422 MHz	1.77	39.29	1.78	39.25	-0.33	0.10	±5	Nov. 12, 2022
22.2	Head	2437 MHz	1.79	39.25	1.79	39.22	-0.15	0.07	±5	Nov. 12, 2022
22.2	Head	2452 MHz	1.80	39.20	1.80	39.20	-0.03	0.00	±5	Nov. 12, 2022
22.2	Head	2462 MHz	1.81	39.17	1.81	39.18	0.00	-0.02	±5	Nov. 12, 2022
22.2	Head	2467 MHz	1.82	39.16	1.82	39.18	0.04	-0.06	±5	Nov. 12, 2022
22.2	Head	2472 MHz	1.83	39.14	1.82	39.17	0.09	-0.07	±5	Nov. 12, 2022
22.2	Head	2402 MHz	1.75	39.38	1.76	39.28	-0.59	0.24	±5	Nov. 12, 2022
22.2	Head	2441 MHz	1.79	39.24	1.79	39.22	-0.13	0.04	±5	Nov. 12, 2022
22.2	Head	2480 MHz	1.83	39.12	1.83	39.16	0.13	-0.10	±5	Nov. 12, 2022
22.5	Head	5180 MHz	4.55	36.20	4.64	36.02	-2.00	0.50	±5	Nov. 13, 2022
22.5	Head	5190 MHz	4.57	36.17	4.65	36.01	-1.80	0.44	±5	Nov. 13, 2022
22.5	Head	5200 MHz	4.58	36.13	4.66	36.00	-1.69	0.35	±5	Nov. 13, 2022
22.5	Head	5220 MHz	4.61	36.09	4.68	35.98	-1.49	0.32	±5	Nov. 13, 2022
22.5	Head	5230 MHz	4.63	36.06	4.69	35.97	-1.39	0.26	±5	Nov. 13, 2022
22.5	Head	5240 MHz	4.63	36.05	4.70	35.96	-1.39	0.26	±5	Nov. 13, 2022
22.5	Head	5250 MHz	4.65	36.05	4.71	35.95	-1.31	0.27	±5	Nov. 13, 2022
22.5	Head	5260 MHz	4.66	36.01	4.72	35.94	-1.30	0.19	±5	Nov. 13, 2022
22.5	Head	5270 MHz	4.66	36.00	4.73	35.93	-1.46	0.20	±5	Nov. 13, 2022
22.5	Head	5280 MHz	4.67	36.01	4.74	35.92	-1.46	0.26	±5	Nov. 13, 2022
22.5	Head	5290 MHz	4.67	36.03	4.75	35.91	-1.63	0.34	±5	Nov. 13, 2022
22.5	Head	5300 MHz	4.68	36.04	4.76	35.90	-1.68	0.38	±5	Nov. 13, 2022
22.5	Head	5310 MHz	4.70	36.05	4.77	35.89	-1.52	0.45	±5	Nov. 13, 2022
22.5	Head	5320 MHz	4.72	36.06	4.78	35.88	-1.36	0.51	±5	Nov. 13, 2022
22.4	Head	5500 MHz	4.91	35.76	4.97	35.65	-1.10	0.30	±5	Nov. 14, 2022
22.4	Head	5510 MHz	4.92	35.74	4.98	35.64	-1.23	0.27	±5	Nov. 14, 2022
22.4	Head	5530 MHz	4.93	35.69	5.00	35.61	-1.41	0.23	±5	Nov. 14, 2022
22.4	Head	5550 MHz	4.94	35.61	5.02	35.58	-1.60	0.09	±5	Nov. 14, 2022
22.4	Head	5570 MHz	4.94	35.55	5.04	35.55	-1.93	0.01	±5	Nov. 14, 2022
22.4	Head	5580 MHz	4.95	35.53	5.05	35.53	-2.00	-0.01	±5	Nov. 14, 2022

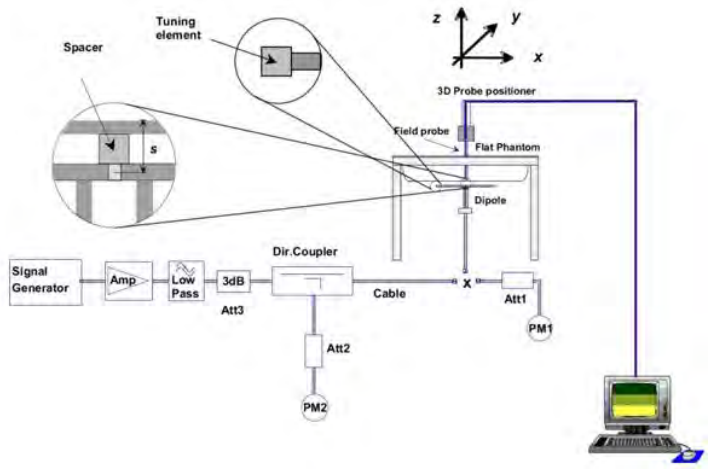
Tissue Temp (°C)	Head / Body	Frequency	Cond. σ	Perm. εr	target Cond. σ	target Perm. εr	σ (Delta)(%)	εr (Delta)(%)	Limit (%)	Date
22.4	Head	5610 MHz	4.96	35.44	5.08	35.49	-2.31	-0.15	±5	Nov. 14, 2022
22.4	Head	5620 MHz	4.98	35.41	5.09	35.48	-2.22	-0.20	±5	Nov. 14, 2022
22.4	Head	5630 MHz	4.99	35.38	5.10	35.47	-2.08	-0.25	±5	Nov. 14, 2022
22.4	Head	5660 MHz	5.08	35.25	5.13	35.44	-1.04	-0.54	±5	Nov. 14, 2022
22.4	Head	5670 MHz	5.11	35.20	5.14	35.43	-0.62	-0.65	±5	Nov. 14, 2022
22.4	Head	5690 MHz	5.18	35.09	5.16	35.41	0.30	-0.91	±5	Nov. 14, 2022
22.4	Head	5700 MHz	5.21	35.06	5.17	35.40	0.68	-0.97	±5	Nov. 14, 2022
22.4	Head	5710 MHz	5.23	35.06	5.18	35.39	0.89	-0.94	±5	Nov. 14, 2022
22.4	Head	5720 MHz	5.24	35.06	5.19	35.38	0.90	-0.91	±5	Nov. 14, 2022
22.4	Head	5745 MHz	5.24	35.08	5.22	35.36	0.49	-0.79	±5	Nov. 15, 2022
22.4	Head	5755 MHz	5.21	35.09	5.23	35.35	-0.23	-0.74	±5	Nov. 15, 2022
22.4	Head	5775 MHz	5.20	35.12	5.25	35.33	-0.80	-0.60	±5	Nov. 15, 2022
22.4	Head	5785 MHz	5.20	35.11	5.26	35.32	-1.11	-0.61	±5	Nov. 15, 2022
22.4	Head	5795 MHz	5.19	35.09	5.27	35.31	-1.44	-0.63	±5	Nov. 15, 2022
22.4	Head	5825 MHz	5.16	35.02	5.30	35.28	-2.66	-0.74	±5	Nov. 15, 2022
22.4	Head	6025 MHz	5.55	34.37	5.51	35.07	0.64	-2.00	±5	Nov. 16, 2022
22.4	Head	6185 MHz	5.63	34.38	5.70	34.88	-1.11	-1.44	±5	Nov. 16, 2022
22.4	Head	6345 MHz	5.97	33.81	5.89	34.69	1.47	-2.52	±5	Nov. 16, 2022
22.4	Head	6465 MHz	6.12	33.77	6.03	34.54	1.47	-2.23	±5	Nov. 16, 2022
22.4	Head	6505 MHz	6.13	33.58	6.08	34.49	0.86	-2.65	±5	Nov. 16, 2022
22.4	Head	6545 MHz	6.20	33.40	6.12	34.45	1.23	-3.05	±5	Nov. 16, 2022
22.4	Head	6665 MHz	6.31	33.14	6.26	34.30	0.79	-3.37	±5	Nov. 16, 2022
22.4	Head	6825 MHz	6.52	33.05	6.45	34.11	1.14	-3.10	±5	Nov. 16, 2022
22.4	Head	6945 MHz	6.62	32.69	6.59	33.97	0.54	-3.76	±5	Nov. 16, 2022
22.4	Head	6985 MHz	6.66	32.54	6.63	33.92	0.35	-4.07	±5	Nov. 16, 2022
22.4	Head	7025 MHz	6.73	32.59	6.68	33.87	0.70	-3.77	±5	Nov. 16, 2022

6. System Verification

6.1 SAR System Verification

<Symmetric Dipoles for SAR System Verification>

Construction	Symmetrical dipole with λ/4 balun enables measurement of feed point impedance with NWA matched for use near flat phantoms filled with head simulating solutions Includes distance holder and tripod adaptor Calibration Calibrated SAR value for specified position and input power at the flat phantom in head simulating solutions.
Return Loss	> 20 dB at specified verification position.
Options	Dipoles for other frequencies or solutions and other calibration conditions are available upon request.



System Verification Setup Diagram

Validation Kit

6.1.1 SAR Verification Summary

Prior to the assessment, the validation data compared to the original value provided by SPEAG should be within its specifications of ±10%. The measured SAR will be normalized to 1 W input power. The result indicates the system check can meet the variation criterion and plots can be referred to Appendix B of this report.

Mixture Type	Frequency (MHz)	Power	Probe Model / Serial No.	Dipole Model / Serial No.	$SAR_{1\,g}$ (W/kg)	1 W Normalize $SAR_{1\,g}$ (W/kg)	1 W Target SAR1 g (W/kg)	$SAR_{10\,g}$ (W/kg)	1 W Normalize $SAR_{10\,g}$ (W/kg)	1 W Target $SAR_{10\,g}$ (W/kg)	Deviation 1 g (%)	Deviation 10 g (%)	Date
Head	750	17 dBm	EX3DV4 – SN3847	D750V3 – SN1004	0.417	8.32	8.44	0.285	5.69	5.53	-1.4%	2.9%	Nov. 06, 2022
Head	835	17 dBm	EX3DV4 – SN3847	D835V2 – SN4d082	0.481	9.60	9.67	0.32	6.38	6.29	-0.7%	1.4%	Nov. 07, 2022
Head	900	17 dBm	EX3DV4 – SN3847	D900V2 – SN073	0.541	10.79	11.00	0.354	7.06	7.03	-1.9%	0.4%	Nov. 07, 2022
Head	1800	17 dBm	EX3DV4 – SN3847	D1800V2 – SN265	1.82	36.31	39.20	0.971	19.37	20.40	-7.4%	-5.0%	Nov. 08, 2022
Head	2000	17 dBm	EX3DV4 – SN3847	D2000V2 – SN1008	1.98	39.51	41.20	1.03	20.55	20.70	-4.1%	-0.7%	Nov. 09, 2022
Head	2450	17 dBm	EX3DV4 – SN3977	D2450V2 – SN712	2.62	52.28	52.80	1.23	24.54	24.40	-1.0%	0.6%	Nov. 12, 2022
Head	2600	17 dBm	EX3DV4 – SN3847	D2600V2 – SN1007	2.74	54.67	55.70	1.26	25.14	25.20	-1.8%	-0.2%	Nov. 10, 2022
Head	2600	17 dBm	EX3DV4 – SN3847	D2600V2 – SN1007	2.73	54.47	55.70	1.26	25.14	25.20	-2.2%	-0.2%	Nov. 11, 2022
Head	5250	17 dBm	EX3DV4 – SN3977	D5250V2 – SN1021	3.77	75.22	78.10	1.1	21.95	22.10	-3.7%	-0.7%	Nov. 13, 2022
Head	5600	17 dBm	EX3DV4 – SN3977	D5600V2 – SN1021	4.04	80.61	82.00	1.17	23.34	23.20	-1.7%	0.6%	Nov. 14, 2022
Head	5750	17 dBm	EX3DV4 – SN3977	D5750V2 – SN1021	3.8	75.82	77.30	1.09	21.75	21.50	-1.9%	1.2%	Nov. 15, 2022
Head	6500	20 dBm	EX3DV4 – SN3847	D6500V2 – SN1016	27.8	278.00	291.00	5.22	52.20	53.70	-4.5%	-2.8%	Nov. 16, 2022

Mixture Type	Frequency (MHz)	Power	Probe Model / Serial No.	Dipole Model / Serial No.	1 W Normalize Meas. 4 cm^2 APD (W/m^2)	Target 4 cm^2 APD (W/m^2)	APD Deviation (%)	Date
APD	6500	20 dBm	EX3DV4 – SN3847	D6500V2 – SN1016	1250.00	1310.00	-4.6%	Nov. 16, 2022

1.1 Power Density System Verification

The system performance check verifies that the system operates within its specifications.

The system check is successful if the difference between the normalized measured local power density and the numerically validated target value is within the reported expanded uncertainty of the measurement system.

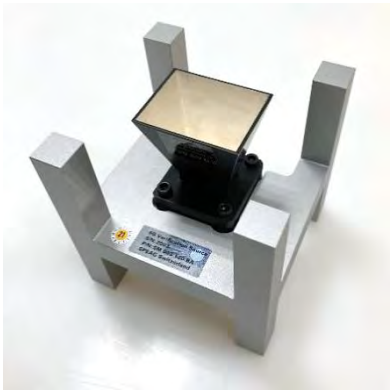
The recommended settings for measurement of verification sources are listed in the following:

Settings for Measurement of Verification Sources			
Frequency[GHz]	**Grid step**	**Grid extent X/Y [mm]**	**Measurement points**
10	0.125 (λ/8)	60 / 60	18 × 18
30	0.25 (λ/4)	60 / 60	26 × 26
45	0.25 (λ/4)	42 / 42	28 × 28
60	0.25 (λ/4)	32.5 / 32.5	28 × 28
90	0.25 (λ/4)	30 / 30	38 × 38

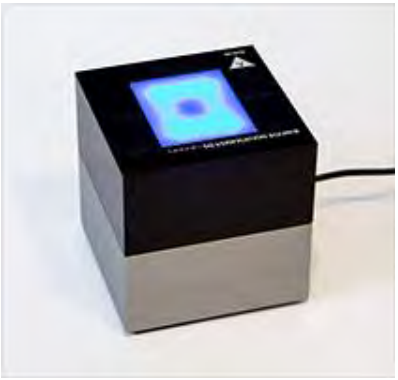
<System Varification Souce>

The verification sources apply to system check or verification at specific mmWave frequencies. The sources comprise horn-antennas and very stable signal generators.

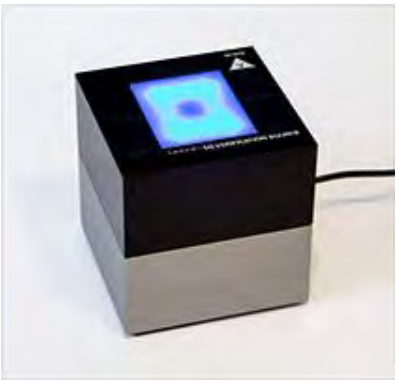
Frequency accuracy	10 GHz at 10 mm from the antenna
E-field polarization	Linear
Input Power	Max. 20 W
Conector	SMA
Weight	700 g
Operation	requires a stable source with known forward power to perform system performance check or validation



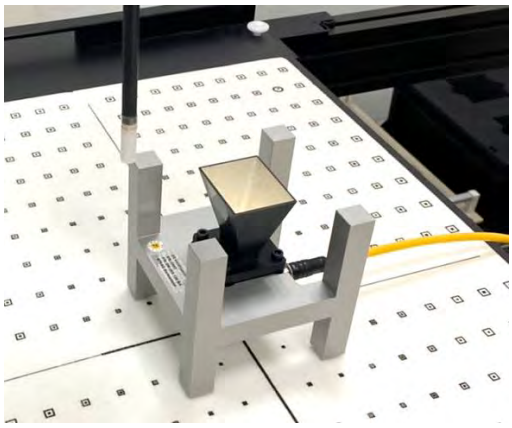
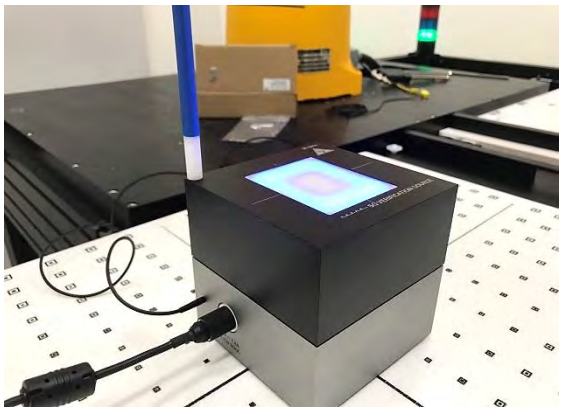
Calibrated Frequency	30 GHz at 10mm from the antenna (5.55 mm from the case surface)
Frequency accuracy	± 100 MHz
E-field polarization	Linear
Harmonics	-20 dBc
Total radiated power	14 dBm
Power stability	0.05 dB
Power consumption	5 W
Size	100 × 100 × 100 mm
Weight	1 kg



Calibrated Frequency	60 GHz at 10mm from the antenna (5.55 mm from the case surface)
Frequency accuracy	± 100 MHz
E-field polarization	± 100 MHz
Harmonics	Linear
Total radiated power	-20 dBc
Harmonics	14 dBm
Power stability	0.1 dB
Power consumption	5 W
Size	100 × 100 × 100 mm
Weight	1 kg



1.1.1 Power Density Verification Summary

System Verification Setup photo

Prior to the assessment, the validation data compared to the original value provided by SPEAG should be within its specifications of ± 0.66 dB. The ± 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The power density distribution was verified through visual inspection as per Nov. 2017 TCBC Workshop Notes, both spatially (shape) and numerically (level) have no noticeable differences. The following result indicates the system check can meet the variation criterion and plots can be referred to Appendix B of this report.

Frequency (MHz)	Probe Model / Serial No.	Dipole Model / Serial No.	Averaging Area [4 cm²] Measured Total PD (W/m²)	Averaging Area [4 cm²] Target Total PD (W/m²)	PD Deviation (%)	Date
10G	EUmmWV3 – SN9639	5G Verification Source 10 GHz – 2003	150.33	153.00	-1.7%	Nov. 17, 2022

Note:

The measured total PD was the average of psPDn+, psPDtot+ and psPDmod+, which refers to the demonstration from calibration certificate.

7. Test Equipment List

7.1 SAR Test Equipment List

SAR02-BD test site					
Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Cal. Date	Cal.Period
SPEAG	750 MHz System Validation Kit	D750V3	1004	Sep. 21, 2022	1 year
SPEAG	835 MHz System Validation Kit	D835V2	4d082	Sep. 21, 2022	1 year
SPEAG	900 MHz System Validation Kit	D900V2	073	Jun. 30, 2022	1 year
SPEAG	1800 MHz System Validation Kit	D1800V2	265	Jun. 30, 2022	1 year
SPEAG	2000 MHz System Validation Kit	D2000V2	1008	Jul. 01, 2022	1 year
SPEAG	2450 MHz System Validation Kit	D2450V2	712	Jun. 30, 2022	1 year
SPEAG	2600 MHz System Validation Kit	D2600V2	1007	Sep. 22, 2022	1 year
SPEAG	5 GHz System Validation Kit	D5GHzV2	1021	Jun. 30, 2022	1 year
SPEAG	6.5 GHz System Validation Kit	D6.5GHzV2	1016	Aug. 23, 2022	1 year
SPEAG	5G Verification Source	10 GHz	2003	Feb. 28, 2022	1 year
SPEAG	Dosimetric E-Field Probe	EUmmWV4	9639	Aug. 24, 2022	1 year
SPEAG	Dosimetric E-Field Probe	EX3DV4	3977	Jul. 26, 2022	1 year
SPEAG	Dosimetric E-Field Probe	EX3DV4	3847	Mar. 24, 2022	1 year
SPEAG	Data Acquisition Electronics	DAE4	779	Jul. 19, 2022	1 year
SPEAG	Data Acquisition Electronics	DAE4	541	Mar. 23, 2022	1 year
SPEAG	Measurement Server	SE UMS 028 BB	1488	NCR	
SPEAG	Measurement Server	SE UMS 011 BB	1241	NCR	
SPEAG	Device Holder	N/A	N/A	NCR	
SPEAG	Phantom	ELI V4.0	1036	NCR	
SPEAG	Phantom	ELI V5.0	1175	NCR	
SPEAG	5G Phantom	5G	OX-030	NCR	
SPEAG	Robot	Staubli TX90XL	F16/54FTA1/A/01	NCR	
SPEAG	Robot	Staubli TX90XL	F11/5G9EA1/A/01	NCR	
SPEAG	Software	cDASY6	N/A	NCR	
		V16.0.0.116			
SPEAG	Software	DASY52	N/A	NCR	
		V52.10.4.1535			
SPEAG	Software	SEMCAD X	N/A	NCR	
		V14.6.14(7501)			
SPEAG	Software	cDASY8	N/A	NCR	
		SAR V16.0.2.83			

SAR02-BD test site					
Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Cal. Date	Cal.Period
R&S	Wireless Communication Test Set	CMU200	112387	Feb. 27, 2022	1 year
Anritsu	Radio Communication Analyzer	MT8821C	6272374573	Jan. 13, 2022	1 year
Keysight	UXM 5G Wireless Test Platform	E7515B	MY59321574	Jul. 05, 2021	2 year
R&S	Bluetooth Tester	CBT	100350	Mar. 17, 2021	2 year
SPEAG	Network Analyzer	DAKS_VNA R140	0010318	May. 23, 2022	1 year
SPEAG	Dielectric Probe Kit	DAKS-3.5	1101	May. 23, 2022	1 year
HILA	Digital Thermometer	TM-906A	1500033	Nov. 03, 2022	1 year
Agilent	Power Sensor	8481H	3318A20779	May. 26, 2022	1 year
Agilent	Power Meter	EDM Series E4418B	GB40206143	May. 26, 2022	1 year
R&S	Power Sensor	NRP50S	101511	Dec. 22, 2021	1 year
Agilent	Signal Generator	E8257D	MY44320425	Feb. 15, 2022	1 year
Keysight	Spectrum Analyzer	N9010B	MY59071418	Mar. 16, 2022	1 year
Mini-Circuits	Dual Directional Coupler	ZCDC20-5R263-S+	E69806	NCR	
Mini-Circuits	Power Amplifier	EMC014225P	980292	NCR	
Mini-Circuits	Power Amplifier	EMC2830P	980293	NCR	
EMCI	Power Amplifier	EMC0618-P	980833	NCR	
EMCI	Power Amplifier	EMC2830-P	980880	NCR	
Attenuator	INMET	18AH-03	S180301	NCR	
Attenuator	INMET	18AH-10	S181001	NCR	
Attenuator	INMET	18AH-20	S182001	NCR	

Testing Engineer: Ted hsieh / Rocky Wang

8. Measurement Procedure

8.1 SAR Measurement Procedure

The measurement procedures are as follows:

1. The DUT is installed engineering testing software that provides continuous transmitting signal.
2. Measure output power through RF cable and power meter
3. Set scan area, grid size and other setting on the DASY software
4. Find out the largest SAR result on these testing positions of each band
5. Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

1. Power reference measurement
2. Area scan
3. Zoom scan
4. Power drift measurement

8.1.1 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures points and step size follow as below. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution.

The measure settings are referred to KDB 865664 D01v01r04 :

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 mm ± 1 mm</td><td>½·δ·ln(2) mm ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">Graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

8.1.2 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1 g aggregate SAR, the DUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.1.3 Power Drift Monitoring

All SAR testing is under the DUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of DUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5 %, the SAR will be retested.

8.1.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1 g and 10 g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.
The base for the evaluation is a "cube" measurement. The measured volume must include the 1 g and 10 g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.
The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. Extraction of the measured data (grid and values) from the Zoom Scan
2. Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. Generation of a high-resolution mesh within the measured volume
4. Interpolation of all measured values form the measurement grid to the high-resolution grid
5. Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. Calculation of the averaged SAR within masses of 1 g and 10 g

1.2 Power Density Measurement Procedure

1.2.1 Power Density Assessment Based on E-field

According to the IEEE/IEC 63195-1, within a short distance from the transmitting source, power density is determined based on both electric and magnetic fields. Generally, the magnitude and phase of two components of either the E-field or H-field are needed on a sufficiently large surface to fully characterize the total E-field and H-field distributions. The measurement points are chosen according to the requirements of the methodology used. The following procedure was used:

(1) Measure the E-field on the measurement surface at a reference location where the field is well above the noise level. This reference level will be used at the end of this procedure to assess output power drift of the DUT during the measurement.

(2) Scan the electric field on the measurement surface. The requirements of measurement surface dimensions and spatial resolution are dependent on the measurement system and assessment methodology applied. Measurements are therefore conducted according to the instructions provided by SPEAG user's mannual.

(3) Measurement spatial resolution can depend on the measured field characteristic and measurement methodology used by the system. Planar scanners typically require a step size of less than λ /2.

(4) Calculated H-field from measured field by using reconstruction algorithm since only E-field is directly measured on the evaluation surface. Reconstruction algorithms can also be used to obtain field information from the measured data. In substance, reconstruction algorithms are the set of algorithms, mathematical techniques and procedures that are applied to the measured field on the measurement surface to determine E- and H-field (amplitude and phase) on the evaluation surface.

(5) Determine the spatial-average power density distribution on the evaluation surface by the following formula. The spatial averaging area, A, is specified by the applicable exposure limits or regulatory requirements. The average area was specified according to regulatory requirements.

$$\mathbf{S}_{\mathbf{av}} = \frac{\mathbf{1}}{\mathbf{2}\boldsymbol{A}} \Re \cdot \left(\int \mathbf{E} \times \mathbf{H} \cdot \hat{\mathbf{n}}\, \mathbf{dA} \right)$$

(6) The maximum spatial-average and/or local power density on the evaluation surface is the final quantity to determine compliance against applicable limits. The spatial averaging area, 4cm^2, is specified by the Oct. 2018 TCB Workshop notes requirements.

(7) Measure the E-field on the measurement surface position at the reference location chosen in step A). The power drift of the DUT is estimated as the difference between the squared amplitude of the field values taken in steps a) and g). When the drift is smaller than ± 5 %, this term should be considered in the uncertainty budget. Drifts larger than 5 % due to the design and operating characteristics of the device should be accounted for or addressed according to regulatory requirements to determine compliance.

1.2.2 Total Field and Power Density Reconstruction

Computation of the power density in general requires knowledge of the electric (E-) and magnetic (H-) field amplitudes and phases in the plane of incidence. Reconstruction of these quantities from pseudo-vector E-field measurements is feasible, as they are constrained by Maxwell's equations. The manufacturer SPEAG have developed a reconstruction approach based on the Gerchberg-Saxton algorithm, which benefits from the availability of the E-field polarization ellipse information obtained with the EUmmWV3 probe. This reconstruction algorithm, together with the ability of the probe to measure extremely close to the source without perturbing the field, permits reconstruction of the E- and H-fields, as well as of the power density, on measurement planes located as near as λ/5 away.

9. Measurement Uncertainty

9.1 SAR Measurement Uncertainty

Measurement Uncertainty (0.3-6 GHz)								
Uncertainty Component	**Tol.**	**Prob. Dist.**	**Div.**	**Ci - 1g**	**Ci - 10g**	**ui - 1g (%)**	**ui - 10g (%)**	**vi**
Measurement System								
Probe calibration	12.0	N	2	1	1	6.0	6.0	∞
Probe Calibration Drift	1.7	R	1.732	1	1	1.0	1.0	∞
Other Probe+Electronic	0.7	N	1	1	1	0.7	0.7	∞
Probe Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
Broadband Signal	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Isotropy	7.6	R	1.732	1	1	4.4	4.4	∞
RF Ambient	1.8	N	1	1	1	1.8	1.8	∞
Probe Positioning	0.006 mm	N	1	0.14	0.14	0.1	0.1	∞
Data Processing	1.2	N	1	1	1	1.2	1.2	∞
Phantom and Device Errors								
Conductivity (meas.)DAK	2.5	N	1	0.78	0.71	2.0	1.8	∞
Conductivity (temp.)	3.3	R	1.732	0.78	0.71	1.5	1.4	∞
Phantom Shell Permittivity	14	R	1.732	0	0	0.0	0.0	∞
Distance DUT - TSL	2	N	1	2	2	4.0	4.0	∞
Device Positioning	1	N	1	1	1	1.0	1.0	∞
Device Holder	3.6	N	1	1	1	3.6	3.6	∞
DUT Modulation	2.4	R	1.732	1	1	1.4	1.4	∞
Time-average SAR	1.7	R	1.732	1	1	1.0	1.0	∞
DUT Drift	2.5	N	1	1	1	2.5	2.5	∞
Correction to the SAR Results								
Deviation to Target	1.9	N	1	1	0.84	1.9	1.6	∞
SAR scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Combined Standard Uncertainty					RSS	11.0	10.9	
Expanded Uncertainty (95% confidence interval)					k =2	21.9	21.7	

Measurement Uncertainty (3-6 GHz)								
Uncertainty Component	**Tol.**	**Prob. Dist.**	**Div.**	**Ci - 1g**	**Ci - 10g**	**ui - 1g (%)**	**ui - 10g (%)**	**vi**
Measurement System								
Probe Calibration	13.1	N	2	1	1	6.55	6.55	∞
Probe Calibration Drift	1.7	R	1.732	1	1	1.0	1.0	∞
Other Probe+Electronic	1.2	N	1	1	1	1.2	1.2	∞
Probe Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
Broadband Signal	2.6	R	1.732	1	1	1.5	1.5	∞
Probe Isotropy	7.6	R	1.732	1	1	4.4	4.4	∞
RF Ambient	1.8	N	1	1	1	1.8	1.8	∞
Probe Positioning	0.005 mm	N	1	0.29	0.29	0.15	0.15	∞
Data Processing	2.3	N	1	1	1	2.3	2.3	∞
Phantom and Device Errors								
Conductivity (meas.)DAK	2.5	N	1	0.78	0.71	2.0	1.8	∞
Conductivity (temp.)	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Phantom Shell Permittivity	14	R	1.732	0.25	0.25	2.0	2.0	∞
Distance DUT - TSL	2	N	1	2	2	4.0	4.0	∞
Device Positioning	1	N	1	1	1	1.0	1.0	∞
Device Holder	3.6	N	1	1	1	3.6	3.6	∞
DUT Modulation	2.4	R	1.732	1	1	1.4	1.4	∞
Time-average SAR	1.7	R	1.732	1	1	1.0	1.0	∞
DUT Drift	2.5	N	1	1	1	2.5	2.5	∞
Correction to the SAR Results								
Deviation to Target	1.9	N	1	1	0.84	1.9	1.6	∞
SAR scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Combined Standard Uncertainty					RSS	11.6	11.6	
Expanded Uncertainty (95% confidence interval)					k =2	23.2	23.0	

Measurement Uncertainty (6-10 GHz)								
Uncertainty Component	**Tol.**	**Prob. Dist.**	**Div.**	**Ci - 1g**	**Ci - 10g**	**ui - 1g (%)**	**ui - 10g (%)**	**vi**
Measurement System								
Probe calibration	18.6	N	2	1	1	9.3	9.3	∞
Probe Calibration Drift	1.7	R	1.732	1	1	1.0	1.0	∞
Other Probe+Electronic	2.4	N	1	1	1	2.4	2.4	∞
Probe Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
Broadband Signal	2.8	R	1.732	1	1	1.6	1.6	∞
Probe Isotropy	7.6	R	1.732	1	1	4.4	4.4	∞
RF Ambient Condition	1.8	N	1	1	1	1.8	1.8	∞
Probe Positioning	0.005mm	N	1	0.50	0.50	0.25	0.25	∞
Data Processing	3.5	N	1	1	1	3.5	3.5	∞
Phantom and Device Errors								
Conductivity (meas.)DAK	2.5	N	1	0.78	0.71	2.0	1.8	∞
Conductivity (temp.)	2.4	R	1.732	0.78	0.71	1.1	1.0	∞
Phantom Shell Permittivity	14.0	R	1.732	0.5	0.5	4.0	4.0	∞
Distance DUT - TSL	2	N	1	2	2	4.0	4.0	∞
Device Positioning	1	N	1	1	1	1.0	1.0	∞
Device Holder	3.6	N	1	1	1	3.6	3.6	∞
DUT Modulation	2.4	R	1.732	1	1	1.4	1.4	∞
Time-average SAR	1.7	R	1.732	1	1	1.0	1.0	∞
DUT Drift	2.5	N	1	1	1	2.5	2.5	∞
Correction to the SAR Results								
Deviation to Target	1.9	N	1	1	0.84	1.9	1.6	∞
SAR scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Combined Standard Uncertainty					RSS	14.2	14.1	
Expanded Uncertainty (95% confidence interval)					k =2	28.4	28.3	

10. Measurement Evaluation

10.1 Positioning of the DUT in Relation to the Phantom

According to KDB 616217 D04:

1. SAR evaluation is required for back (bottom) surface and side edges of the devices.
2. Some 2-in-1 tablets may operate with the display folded on top of the keyboard. Most recent tablets are designed with an interactive display that may not require a physical keyboard. Both configurations are used in similar manners and require SAR evaluation for the back surface and edges of the tablet. For keyboards that can be unfolded like a laptop, SAR evaluation is required for the bottom surface of the keyboard.
3. SAR evaluation for the front surface of tablet display screens are generally not necessary, except for tablets that are designed to require continuous operations with the hand(s) next to the antenna.
4. When voice mode is supported on a tablet and it is limited to speaker mode or headset operations only, additional SAR testing for this type of voice use is not required.

10.2 SAR Testing Consideration

10.2.1 SAT Testing with GSM & UMTS

<KDB 941225 D01 General Requirement>

According to 3G SAR test reduction procedure in KDB 941225 D01, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ 0.25 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.

WCDMA SAR Measurement

Head SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode.

Body-Worn Accessory SAR for body-worn accessory 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 $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode.

Rel. 5 HSDPA SAR Measurement

When voice transmission in next to the ear head exposure conditions is according to the "Haed SAR" part in "WCDMA SAR Measurement" of this document. SAR for body exposure configurations is according to the "Body-Worn Accessory SAR" part in "WCDMA SAR Measurement" of this document. The 3G SAR test reduction procedure is applied to HSDPA body SAR with 12.2 kbps RMC as the primary mode. Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA.

Rel. 6 HSPA (HSDPA/HSUPA) SAR Measurement

When voice transmission in next to the ear head exposure conditions is according to the "Haed SAR" part in "WCDMA SAR Measurement" of this document. SAR for body exposure configurations is according to the the "Body-Worn Accessory SAR" part in "WCDMA SAR Measurement" of this document. The 3G SAR test reduction procedure is applied to HSPA body SAR with 12.2 kbps RMC as the primary mode. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

Rel. 8 DC-HSDPA SAR Measurement

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.

10.2.2 SAT Testing with LTE

<KDB 941225 D05 General requirements>

1. 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.
2. 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.
3. When the highest reported SAR for 1 RB and 50% RB allocation are > 0.8 W/kg, SAR is measured for the highest output power channel in 100%RB.
4. 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.
5. The procedures required for 1 RB allocation are applied to measure the SAR for QPSK with 50% RB allocation.
6. 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 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.
7. 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.
8. According to 5.3 of KDB 941225 D05, that about the test reduction for other channel bandwidth, if the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > 0.5 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, then SAR need to test.
9. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing; therefore, the requirement for H, M, and L channels may not fully apply.
10. According to Apr. 2015 TCB workshop, for device supports overlapping bands, and both bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range. This device supports the following bands with overlapping transmission frequency ranges.:
    LTE band 4 and band 66, and LTE Band 4 is covered by LTE Band 66.

10.2.3 SAR Testing with WLAN

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. The test frequencies established using test mode must correspond to the actualchannel frequencies.
For WLAN SAR testing, the DUT has installed WLAN engineering testing software which can provide continuous transmitting RF signal. And the RF signal utilized in SAR measurement has almost 100 % duty cycle and crest factor is 1.

- The cards was operated utilizing proprietary software (DRTU) and each channel was measured using a broadband power meter to determine the maximum average power.

<KDB 248227 D01 General requirements>

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the initial test position(s) by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The initial test position(s) is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the reported SAR for the initial test position is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions are tested.
  ※ For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
  ※ When it is unclear, all equivalent conditions must be tested.

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

- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.

- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the initial test position, Area Scans were performed to determine the position with the Maximum Value of SAR (measured). The position that produced the highest Maximum Value of SAR is considered as the worst case position; thus used as the initial test position.

- 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:
  (1) The channel closest to mid-band frequency is selected for SAR measurement.
  (2) 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.

These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s) selection.

<IEEE 802.11ax RU SAR Testing Consideration>

According to TCB workshop Apr.2019, 802.11 ax is considered as the highest 802.11 mode for OFDM mode selection in KDB248227. Per TCB workshop guidance, if SAR testing for 802.11ax is required (e.g. maximum output power is highest for OFDMA scenarios), the maximum number of tones and the highest maximum output power should be selected. Otherwise, consider the fully allocated channel for SAR testing.

10.2.4 Proximity Sensor Consideration

10.2.4.1 Proximity Sensor Evaluation and Test

The device supports WWAN capabilities. It is designed with a proximity sensor which can trigger/not trigger power reduction for WCDMA and LTE on Side 1 of DUT for SAR compliance. The power reduction is not implemented in the other RF capability.

Due to the proximity sensor and antenna are colloacted, the procedure for determining antenna and proximity sensor coverage described in KDB 616217 is not required.

The design theory for software portion is to read the different capacitance between sensor path and PCB. Then the proximity sensor IC sends a trigger signal to modem base on the difference of capacitance. If sensor is abnormal, device will transmit with reduce power, press the power key to restart the host and sensor will re-calibration again.

10.2.4.2 Procedures for determining proximity sensor triggering distances

The proximity sensor triggering distance was determined per KDB 616217 for rear face and applicable edge.

Summary for power verification per distance is tabulated in the below table.

Side 1 (Near to Far)											
Gap (mm)	6	7	8	9	10	11	12	13	14	15	16
Band	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
WCDMA Band II	19.00	19.00	19.00	19.00	19.00	19.00	24.00	24.00	24.00	24.00	24.00
WCDMA Band IV	22.50	22.50	22.50	22.50	22.50	22.50	24.00	24.00	24.00	24.00	24.00
WCDMA Band V	22.00	22.00	22.00	22.00	22.00	22.00	24.00	24.00	24.00	24.00	24.00
LTE Band2	20.00	20.00	20.00	20.00	20.00	20.00	24.00	24.00	24.00	24.00	24.00
LTE Band4	23.00	23.00	23.00	23.00	23.00	23.00	24.00	24.00	24.00	24.00	24.00
LTE Band5	22.50	22.50	22.50	22.50	22.50	22.50	24.00	24.00	24.00	24.00	24.00
LTE Band7	18.00	18.00	18.00	18.00	18.00	18.00	23.00	23.00	23.00	23.00	23.00
LTE Band13	23.00	23.00	23.00	23.00	23.00	23.00	24.00	24.00	24.00	24.00	24.00
LTE Band14	22.50	22.50	22.50	22.50	22.50	22.50	24.00	24.00	24.00	24.00	24.00
LTE Band26	22.50	22.50	22.50	22.50	22.50	22.50	24.00	24.00	24.00	24.00	24.00
LTE Band41	17.50	17.50	17.50	17.50	17.50	17.50	23.00	23.00	23.00	23.00	23.00
LTE Band66	23.00	23.00	23.00	23.00	23.00	23.00	24.00	24.00	24.00	24.00	24.00

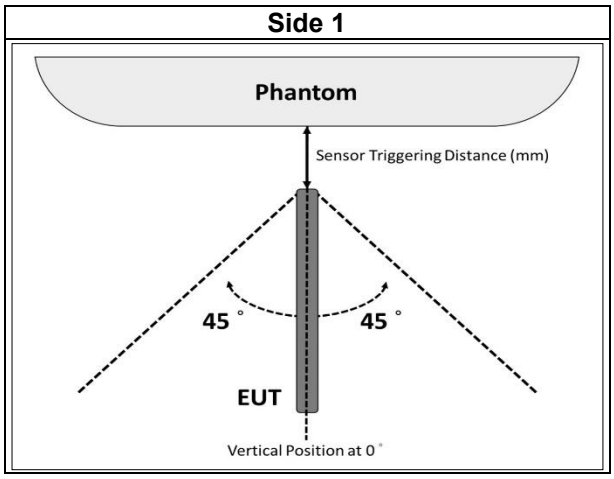
Test position :	Side 1
Trigger distance:	11
Test distance:	10

<A> At least 20 mm away from the Phantom, moved toward the phantom in 3 mm steps until the sensor triggers.																				
<B> Moved back from the phantom by at least 5 mm, and again moved toward the phantom in 1 mm steps until it touches the phantom.																				
<C> Moving away from the phantom in 3 mm steps until the sensor release.																				
<D> Moved back from he phantom by at least 5 mm, and again moved away the phantom in 1 mm steps until it is at least 10 mm beyond the point.																				
Distance (mm)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Trigger	O	O	O	O	O	O	O	O	O	O	O	O	X	X	X	X	X	X	X	X	X

Note : “O” denotes that the proximity sensor is triggered.

10.2.4.3 Procedures for determining tablet tilt angle influences to proximity sensor triggering

The influence of table tilt angles to proximity sensor triggering is determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom, at the smallest sensor triggering test distance determined in KDB 616217. Summary for proximity sensor tilt angle influence is shown in below table.



Test position :	Side 1
Test distance:	10

Rotating the tablet around the edge next to the phantom in ≤ 10 degree increments until the tablet is ± 45 degree											
Distance (mm)	-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
Trigger	O	O	O	O	O	O	O	O	O	O	O

Note : “O” denotes that the proximity sensor is triggered.

10.2.4.4 Proximity sensor triggering testing summary

The smallest power sensor triggering distance is 11 mm for DUT.

For the influence of tilt angle, test performed at the above separation distance untill proximity sensor no longer release and the output power remained in reduced mode. The smallest separation distancce for tilt angle influence is 11 mm consequently, and then subtract 1 mm for SAR measurement.

Considering SAR compliance and the conservative distance for sensor triggering, SAR test with power reduction was performed at 0 mm for Side 1, and performed without power reduciton at 8 mm.

The power reduction is determinded by proximity sensor input, and the proximity sensor function is set by manual operation with engineering testing software during SAR measurement.

10.3 Conducted Power Measurements

Refer to Appendix A.

10.4 Antenna location

Refer to Appendix E.

10.5 Test Results

10.5.1 SAR Test Result

Index.	Band	Modulation	Channel	Frequency (MHz)	Bandwidth	RB Size	RB Offset	Test Position	Spacing (mm)	SAR_{1g} (W/kg)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Reported SAR_{1g} (W/kg)	Antenna	Power State
	WCDMA Band II	RMC12.2Kbps	9400	1880	-	-	-	Bottom Face	0	0.305	23.99	24	0.31	WWAN ANT	
	WCDMA Band II	RMC12.2Kbps	9400	1880	-	-	-	Side 1	0	0.8	18.66	19	0.87	WWAN ANT	Power Reduce
	WCDMA Band II	RMC12.2Kbps	9262	1852.4	-	-	-	Side 1	0	0.628	18.58	19	0.69	WWAN ANT	Power Reduce
4	WCDMA Band II	RMC12.2Kbps	9538	1907.6	-	-	-	Side 1	0	0.905	18.42	19	1.03	WWAN ANT	Power Reduce
	WCDMA Band II	RMC12.2Kbps	9400	1880	-	-	-	Side 1	8	0.482	23.99	24	0.48	WWAN ANT	
	WCDMA Band II	RMC12.2Kbps	9400	1880	-	-	-	Side 2	0	0.057	23.99	24	0.06	WWAN ANT	
	WCDMA Band II	RMC12.2Kbps	9400	1880	-	-	-	Side 3	0	0.01	23.99	24	0.01	WWAN ANT	
	WCDMA Band II	RMC12.2Kbps	9400	1880	-	-	-	Side 4	0	0.01	23.99	24	0.01	WWAN ANT	
	WCDMA Band IV	RMC12.2Kbps	1413	1732.6	-	-	-	Bottom Face	0	0.35	23.98	24	0.35	WWAN ANT	
	WCDMA Band IV	RMC12.2Kbps	1413	1732.6	-	-	-	Side 1	0	0.938	22.29	22.5	0.98	WWAN ANT	Power Reduce
	WCDMA Band IV	RMC12.2Kbps	1312	1712.4	-	-	-	Side 1	0	0.892	22.21	22.5	0.95	WWAN ANT	Power Reduce
13	WCDMA Band IV	RMC12.2Kbps	1513	1752.6	-	-	-	Side 1	0	0.947	22.07	22.5	1.05	WWAN ANT	Power Reduce
	WCDMA Band IV	RMC12.2Kbps	1413	1732.6	-	-	-	Side 1	8	0.423	23.98	24	0.42	WWAN ANT	
	WCDMA Band IV	RMC12.2Kbps	1413	1732.6	-	-	-	Side 2	0	0.061	23.98	24	0.06	WWAN ANT	
	WCDMA Band IV	RMC12.2Kbps	1413	1732.6	-	-	-	Side 3	0	0.01	23.98	24	0.01	WWAN ANT	
	WCDMA Band IV	RMC12.2Kbps	1413	1732.6	-	-	-	Side 4	0	0.01	23.98	24	0.01	WWAN ANT	
	WCDMA Band V	RMC12.2Kbps	4182	836.4	-	-	-	Bottom Face	0	0.356	23.94	24	0.36	WWAN ANT	
	WCDMA Band V	RMC12.2Kbps	4182	836.4	-	-	-	Side 1	0	0.878	21.42	22	1.00	WWAN ANT	Power Reduce
21	WCDMA Band V	RMC12.2Kbps	4132	826.4	-	-	-	Side 1	0	0.885	21.28	22	1.04	WWAN ANT	Power Reduce
	WCDMA Band V	RMC12.2Kbps	4233	846.6	-	-	-	Side 1	0	0.866	21.38	22	1.00	WWAN ANT	Power Reduce
	WCDMA Band V	RMC12.2Kbps	4182	836.4	-	-	-	Side 1	8	0.475	23.94	24	0.48	WWAN ANT	
	WCDMA Band V	RMC12.2Kbps	4182	836.4	-	-	-	Side 2	0	0.174	23.94	24	0.18	WWAN ANT	
	WCDMA Band V	RMC12.2Kbps	4182	836.4	-	-	-	Side 3	0	0.01	23.94	24	0.01	WWAN ANT	
	WCDMA Band V	RMC12.2Kbps	4182	836.4	-	-	-	Side 4	0	0.01	23.94	24	0.01	WWAN ANT	

Index.	Band	Modulation	Channel	Frequency (MHz)	Bandwidth	RB Size	RB Offset	Test Position	Spacing (mm)	SAR1 g (W/kg)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Reported SAR1 g (W/kg)	Antenna	Power State
	LTE Band 2	QPSK	19100	1900	20M	1	0	Bottom Face	0	0.296	23.22	24	0.35	WWAN ANT	
	LTE Band 2	QPSK	19100	1900	20M	50	0	Bottom Face	0	0.233	22.15	23	0.28	WWAN ANT	
30	LTE Band 2	QPSK	19100	1900	20M	1	0	Side 1	0	0.924	19.54	20	1.03	WWAN ANT	Power Reduce
	LTE Band 2	QPSK	18700	1860	20M	1	0	Side 1	0	0.633	19.32	20	0.74	WWAN ANT	Power Reduce
	LTE Band 2	QPSK	18900	1880	20M	1	0	Side 1	0	0.718	19.32	20	0.84	WWAN ANT	Power Reduce
	LTE Band 2	QPSK	19100	1900	20M	50	0	Side 1	0	0.862	19.29	20	1.02	WWAN ANT	Power Reduce
	LTE Band 2	QPSK	18700	1860	20M	50	0	Side 1	0	0.654	19.03	20	0.82	WWAN ANT	Power Reduce
	LTE Band 2	QPSK	18900	1880	20M	50	0	Side 1	0	0.75	19.05	20	0.93	WWAN ANT	Power Reduce
	LTE Band 2	QPSK	19100	1900	20M	100	0	Side 1	0	0.836	19.25	20	0.99	WWAN ANT	Power Reduce
	LTE Band 2	QPSK	19100	1900	20M	1	0	Side 1	8	0.514	23.22	24	0.62	WWAN ANT	
	LTE Band 2	QPSK	19100	1900	20M	50	0	Side 1	8	0.459	22.15	23	0.56	WWAN ANT	
	LTE Band 2	QPSK	19100	1900	20M	1	0	Side 2	0	0.042	23.22	24	0.05	WWAN ANT	
	LTE Band 2	QPSK	19100	1900	20M	50	0	Side 2	0	0.01	22.15	23	0.01	WWAN ANT	
	LTE Band 2	QPSK	19100	1900	20M	1	0	Side 3	0	0.01	23.22	24	0.01	WWAN ANT	
	LTE Band 2	QPSK	19100	1900	20M	50	0	Side 3	0	0.01	22.15	23	0.01	WWAN ANT	
	LTE Band 2	QPSK	19100	1900	20M	1	0	Side 4	0	0.01	23.22	24	0.01	WWAN ANT	
	LTE Band 2	QPSK	19100	1900	20M	50	0	Side 4	0	0.01	22.15	23	0.01	WWAN ANT	
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Bottom Face	0	0.763	23.23	24	0.91	WWAN ANT	
	LTE Band 5	QPSK	20450	829	10M	1	0	Bottom Face	0	0.742	23.08	24	0.92	WWAN ANT	
	LTE Band 5	QPSK	20600	844	10M	1	0	Bottom Face	0	0.731	23.03	24	0.91	WWAN ANT	
	LTE Band 5	QPSK	20525	836.5	10M	25	0	Bottom Face	0	0.586	22.2	23	0.70	WWAN ANT	
50	LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 1	0	0.896	22.24	22.5	0.95	WWAN ANT	Power Reduce
	LTE Band 5	QPSK	20450	829	10M	1	0	Side 1	0	0.86	22.22	22.5	0.92	WWAN ANT	Power Reduce
	LTE Band 5	QPSK	20600	844	10M	1	0	Side 1	0	0.869	22.15	22.5	0.94	WWAN ANT	Power Reduce
	LTE Band 5	QPSK	20525	836.5	10M	25	0	Side 1	0	0.795	21.98	22.5	0.90	WWAN ANT	Power Reduce
	LTE Band 5	QPSK	20450	829	10M	25	0	Side 1	0	0.815	21.9	22.5	0.94	WWAN ANT	Power Reduce
	LTE Band 5	QPSK	20600	844	10M	25	0	Side 1	0	0.811	21.93	22.5	0.92	WWAN ANT	Power Reduce
	LTE Band 5	QPSK	20525	836.5	10M	50	0	Side 1	0	0.82	21.94	22.5	0.93	WWAN ANT	Power Reduce
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 1	8	0.5	23.23	24	0.60	WWAN ANT	
	LTE Band 5	QPSK	20525	836.5	10M	25	0	Side 1	8	0.427	22.2	23	0.51	WWAN ANT	
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 2	0	0.146	23.23	24	0.17	WWAN ANT	
	LTE Band 5	QPSK	20525	836.5	10M	25	0	Side 2	0	0.12	22.2	23	0.14	WWAN ANT	
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 3	0	0.01	23.23	24	0.01	WWAN ANT	
	LTE Band 5	QPSK	20525	836.5	10M	25	0	Side 3	0	0.01	22.2	23	0.01	WWAN ANT	
	LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 4	0	0.144	23.23	24	0.17	WWAN ANT	
	LTE Band 5	QPSK	20525	836.5	10M	25	0	Side 4	0	0.118	22.2	23	0.14	WWAN ANT	

Index.	Band	Modulation	Channel	Frequency (MHz)	Bandwidth	RB Size	RB Offset	Test Position	Spacing (mm)	SAR1 g (W/kg)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Reported SAR1 g (W/kg)	Antenna	Power State
	LTE Band 7	QPSK	21100	2535	20M	1	0	Bottom Face	0	0.235	22.22	23	0.28	WWAN ANT	
	LTE Band 7	QPSK	21100	2535	20M	50	0	Bottom Face	0	0.185	21.28	22	0.22	WWAN ANT	
71	LTE Band 7	QPSK	21100	2535	20M	1	0	Side 1	0	0.917	17.58	18	1.01	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	20850	2510	20M	1	0	Side 1	0	0.377	17.43	18	0.43	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	21350	2560	20M	1	0	Side 1	0	0.557	17.42	18	0.64	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	21100	2535	20M	50	0	Side 1	0	0.831	17.27	18	0.98	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	20850	2510	20M	50	25	Side 1	0	0.372	17.1	18	0.46	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	21350	2560	20M	50	0	Side 1	0	0.551	17.11	18	0.68	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	21100	2535	20M	100	0	Side 1	0	0.647	17.24	18	0.77	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	PCC:21100 SCC:21298	PCC:2535 SCC:2554.8	20M	PCC:1 SCC:1	PCC:99 SCC:0	Side 1	0	0.824	17.27	18	0.97	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	PCC:20850 SCC:21048	PCC:2510 SCC:2529.8	20M	PCC:1 SCC:1	PCC:99 SCC:0	Side 1	0	0.811	17.16	18	0.98	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	PCC:21152 SCC:21350	PCC:2540.2 SCC:2560	20M	PCC:1 SCC:1	PCC:99 SCC:0	Side 1	0	0.804	17.2	18	0.97	WWAN ANT	Power Reduce
	LTE Band 7	QPSK	21100	2535	20M	1	0	Side 1	8	0.507	22.22	23	0.61	WWAN ANT	
	LTE Band 7	QPSK	21100	2535	20M	50	0	Side 1	8	0.408	21.28	22	0.48	WWAN ANT	
	LTE Band 7	QPSK	21100	2535	20M	1	0	Side 2	0	0.032	22.22	23	0.04	WWAN ANT	
	LTE Band 7	QPSK	21100	2535	20M	50	0	Side 2	0	0.01	21.28	22	0.01	WWAN ANT	
	LTE Band 7	QPSK	21100	2535	20M	1	0	Side 3	0	0.01	22.22	23	0.01	WWAN ANT	
	LTE Band 7	QPSK	21100	2535	20M	50	0	Side 3	0	0.01	21.28	22	0.01	WWAN ANT	
	LTE Band 7	QPSK	21100	2535	20M	1	0	Side 4	0	0.01	22.22	23	0.01	WWAN ANT	
	LTE Band 7	QPSK	21100	2535	20M	50	0	Side 4	0	0.01	21.28	22	0.01	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Bottom Face	0	0.175	23.25	24	0.21	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Bottom Face	0	0.15	22.3	23	0.18	WWAN ANT	
86	LTE Band 12	QPSK	23095	707.5	10M	1	0	Side 1	0	0.879	23.25	24	1.04	WWAN ANT	
	LTE Band 12	QPSK	23060	704	10M	1	0	Side 1	0	0.844	23.22	24	1.01	WWAN ANT	
	LTE Band 12	QPSK	23130	711	10M	1	0	Side 1	0	0.827	23.18	24	1.00	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Side 1	0	0.756	22.3	23	0.89	WWAN ANT	
	LTE Band 12	QPSK	23060	704	10M	25	0	Side 1	0	0.719	22.28	23	0.85	WWAN ANT	
	LTE Band 12	QPSK	23130	711	10M	25	12	Side 1	0	0.719	22.24	23	0.86	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	50	0	Side 1	0	0.699	22.28	23	0.83	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Side 2	0	0.01	23.25	24	0.01	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Side 2	0	0.01	22.3	23	0.01	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Side 3	0	0.01	23.25	24	0.01	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Side 3	0	0.01	22.3	23	0.01	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	1	0	Side 4	0	0.01	23.25	24	0.01	WWAN ANT	
	LTE Band 12	QPSK	23095	707.5	10M	25	0	Side 4	0	0.01	22.3	23	0.01	WWAN ANT	

Index.	Band	Modulation	Channel	Frequency (MHz)	Bandwidth	RB Size	RB Offset	Test Position	Spacing (mm)	SAR1 g (W/kg)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Reported SAR1 g (W/kg)	Antenna	Power State
	LTE Band 13	QPSK	23230	782	10M	1	0	Bottom Face	0	0.286	23.24	24	0.34	WWAN ANT	
	LTE Band 13	QPSK	23230	782	10M	25	0	Bottom Face	0	0.238	22.31	23	0.28	WWAN ANT	
102	LTE Band 13	QPSK	23230	782	10M	1	0	Side 1	0	0.937	22.81	23	0.98	WWAN ANT	Power Reduce
	LTE Band 13	QPSK	23230	782	10M	25	0	Side 1	0	0.881	22.56	23	0.97	WWAN ANT	Power Reduce
	LTE Band 13	QPSK	23230	782	10M	50	0	Side 1	0	0.865	22.49	23	0.97	WWAN ANT	Power Reduce
	LTE Band 13	QPSK	23230	782	10M	1	0	Side 1	8	0.4	23.24	24	0.48	WWAN ANT	
	LTE Band 13	QPSK	23230	782	10M	25	0	Side 1	8	0.344	22.31	23	0.40	WWAN ANT	
	LTE Band 13	QPSK	23230	782	10M	1	0	Side 2	0	0.01	23.24	24	0.01	WWAN ANT	
	LTE Band 13	QPSK	23230	782	10M	25	0	Side 2	0	0.01	22.31	23	0.01	WWAN ANT	
	LTE Band 13	QPSK	23230	782	10M	1	0	Side 3	0	0.01	23.24	24	0.01	WWAN ANT	
	LTE Band 13	QPSK	23230	782	10M	25	0	Side 3	0	0.01	22.31	23	0.01	WWAN ANT	
	LTE Band 13	QPSK	23230	782	10M	1	0	Side 4	0	0.01	23.24	24	0.01	WWAN ANT	
	LTE Band 13	QPSK	23230	782	10M	25	0	Side 4	0	0.01	22.31	23	0.01	WWAN ANT	
	LTE Band 14	QPSK	23330	793	10M	1	0	Bottom Face	0	0.317	23.25	24	0.38	WWAN ANT	
	LTE Band 14	QPSK	23330	793	10M	25	0	Bottom Face	0	0.254	22.31	23	0.30	WWAN ANT	
116	LTE Band 14	QPSK	23330	793	10M	1	0	Side 1	0	0.895	22.31	22.5	0.94	WWAN ANT	Power Reduce
	LTE Band 14	QPSK	23330	793	10M	25	0	Side 1	0	0.843	22.07	22.5	0.93	WWAN ANT	Power Reduce
	LTE Band 14	QPSK	23330	793	10M	50	0	Side 1	0	0.842	22.06	22.5	0.93	WWAN ANT	Power Reduce
	LTE Band 14	QPSK	23330	793	10M	1	0	Side 1	8	0.398	23.25	24	0.47	WWAN ANT	
	LTE Band 14	QPSK	23330	793	10M	25	0	Side 1	8	0.341	22.31	23	0.40	WWAN ANT	
	LTE Band 14	QPSK	23330	793	10M	1	0	Side 2	0	0.01	23.25	24	0.01	WWAN ANT	
	LTE Band 14	QPSK	23330	793	10M	25	0	Side 2	0	0.01	22.31	23	0.01	WWAN ANT	
	LTE Band 14	QPSK	23330	793	10M	1	0	Side 3	0	0.01	23.25	24	0.01	WWAN ANT	
	LTE Band 14	QPSK	23330	793	10M	25	0	Side 3	0	0.01	22.31	23	0.01	WWAN ANT	
	LTE Band 14	QPSK	23330	793	10M	1	0	Side 4	0	0.01	23.25	24	0.01	WWAN ANT	
	LTE Band 14	QPSK	23330	793	10M	25	0	Side 4	0	0.01	22.31	23	0.01	WWAN ANT	

Index.	Band	Modulation	Channel	Frequency (MHz)	Bandwidth	RB Size	RB Offset	Test Position	Spacing (mm)	SAR1 g (W/kg)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Reported SAR1 g (W/kg)	Antenna	Power State
	LTE Band 26	QPSK	26865	831.5	15M	1	0	Bottom Face	0	0.299	23.4	24	0.34	WWAN ANT	
	LTE Band 26	QPSK	26865	831.5	15M	36	0	Bottom Face	0	0.243	22.48	23	0.27	WWAN ANT	
	LTE Band 26	QPSK	26865	831.5	15M	1	0	Side 1	0	0.846	22.39	22.5	0.87	WWAN ANT	Power Reduce
131	LTE Band 26	QPSK	26765	821.5	15M	1	0	Side 1	0	0.899	22.19	22.5	0.97	WWAN ANT	Power Reduce
	LTE Band 26	QPSK	26965	841.5	15M	1	0	Side 1	0	0.851	22.34	22.5	0.88	WWAN ANT	Power Reduce
	LTE Band 26	QPSK	26865	831.5	15M	36	0	Side 1	0	0.867	22.1	22.5	0.95	WWAN ANT	Power Reduce
	LTE Band 26	QPSK	26765	821.5	15M	36	0	Side 1	0	0.854	22	22.5	0.96	WWAN ANT	Power Reduce
	LTE Band 26	QPSK	26965	841.5	15M	36	0	Side 1	0	0.859	22.09	22.5	0.94	WWAN ANT	Power Reduce
	LTE Band 26	QPSK	26865	831.5	15M	75	0	Side 1	0	0.85	21.96	22.5	0.96	WWAN ANT	Power Reduce
	LTE Band 26	QPSK	26865	831.5	15M	1	0	Side 1	8	0.429	23.4	24	0.49	WWAN ANT	
	LTE Band 26	QPSK	26865	831.5	15M	36	0	Side 1	8	0.404	22.48	23	0.46	WWAN ANT	
	LTE Band 26	QPSK	26865	831.5	15M	1	0	Side 2	0	0.01	23.4	24	0.01	WWAN ANT	
	LTE Band 26	QPSK	26865	831.5	15M	36	0	Side 2	0	0.01	22.48	23	0.01	WWAN ANT	
	LTE Band 26	QPSK	26865	831.5	15M	1	0	Side 3	0	0.01	23.4	24	0.01	WWAN ANT	
	LTE Band 26	QPSK	26865	831.5	15M	36	0	Side 3	0	0.01	22.48	23	0.01	WWAN ANT	
	LTE Band 26	QPSK	26865	831.5	15M	1	0	Side 4	0	0.01	23.4	24	0.01	WWAN ANT	
	LTE Band 26	QPSK	26865	831.5	15M	36	0	Side 4	0	0.01	22.48	23	0.01	WWAN ANT	

Index.	Band	Modulation	Channel	Frequency (MHz)	Bandwidth	RB Size	RB Offset	Test Position	Spacing (mm)	SAR1 g (W/kg)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Duty Cycle (%)	Reported SAR1 g (W/kg)	Antenna	Power State
	LTE Band 41	QPSK	40620	2593	20M	1	0	Bottom Face	0	0.525	22.54	23	62.90	0.59	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	50	0	Bottom Face	0	0.465	21.45	22	62.90	0.53	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	1	0	Side 1	0	0.917	17.26	17.5	62.90	0.97	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	39750	2506	20M	1	0	Side 1	0	0.296	17.02	17.5	62.90	0.33	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	39790	2510	20M	1	0	Side 1	0	0.313	17.01	17.5	62.90	0.35	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	40185	2549.5	20M	1	0	Side 1	0	0.426	17.17	17.5	62.90	0.46	WWAN ANT	Power Reduce
152	LTE Band 41	QPSK	41055	2636.5	20M	1	0	Side 1	0	0.934	17.11	17.5	62.90	1.03	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	41490	2680	20M	1	0	Side 1	0	0.743	17.14	17.5	62.90	0.81	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	40620	2593	20M	50	0	Side 1	0	0.739	16.92	17.5	62.90	0.85	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	39750	2506	20M	50	0	Side 1	0	0.254	16.68	17.5	62.90	0.31	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	39790	2510	20M	50	0	Side 1	0	0.255	16.71	17.5	62.90	0.31	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	40185	2549.5	20M	50	0	Side 1	0	0.388	16.8	17.5	62.90	0.46	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	41055	2636.5	20M	50	0	Side 1	0	0.686	16.77	17.5	62.90	0.82	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	41490	2680	20M	50	0	Side 1	0	0.616	16.78	17.5	62.90	0.73	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	40620	2593	20M	100	0	Side 1	0	0.782	16.81	17.5	62.90	0.92	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	PCC:40620 SCC:40818	PCC:2593 SCC:2612.8	20M	PCC:1 SCC:1	PCC:99 SCC:0	Side 1	0	0.698	17.02	17.5	62.90	0.78	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	PCC:39750 SCC:39948	PCC:2506 SCC:2525.8	20M	PCC:1 SCC:1	PCC:99 SCC:0	Side 1	0	0.264	16.67	17.5	62.90	0.32	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	PCC:40185 SCC:40383	PCC:2549.5 SCC:2569.3	20M	PCC:1 SCC:1	PCC:99 SCC:0	Side 1	0	0.389	16.78	17.5	62.90	0.46	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	PCC:41055 SCC:41253	PCC:2636.5 SCC:2656.3	20M	PCC:1 SCC:1	PCC:99 SCC:0	Side 1	0	0.863	16.84	17.5	62.90	1.01	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	PCC:41292 SCC:41490	PCC:2660.2 SCC:2680	20M	PCC:1 SCC:1	PCC:99 SCC:0	Side 1	0	0.668	16.77	17.5	62.90	0.80	WWAN ANT	Power Reduce
	LTE Band 41	QPSK	40620	2593	20M	1	0	Side 1	8	0.883	22.54	23	62.90	0.99	WWAN ANT	
	LTE Band 41	QPSK	39750	2506	20M	1	0	Side 1	8	0.285	22.34	23	62.90	0.33	WWAN ANT	
	LTE Band 41	QPSK	39790	2510	20M	1	0	Side 1	8	0.302	22.34	23	62.90	0.35	WWAN ANT	
	LTE Band 41	QPSK	40185	2549.5	20M	1	0	Side 1	8	0.41	22.5	23	62.90	0.46	WWAN ANT	
	LTE Band 41	QPSK	41055	2636.5	20M	1	0	Side 1	8	0.896	22.49	23	62.90	1.01	WWAN ANT	
	LTE Band 41	QPSK	41490	2680	20M	1	0	Side 1	8	0.733	22.35	23	62.90	0.86	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	50	0	Side 1	8	0.712	21.45	22	62.90	0.81	WWAN ANT	
	LTE Band 41	QPSK	39750	2506	20M	50	0	Side 1	8	0.245	21.42	22	62.90	0.28	WWAN ANT	
	LTE Band 41	QPSK	39790	2510	20M	50	0	Side 1	8	0.246	21.34	22	62.90	0.29	WWAN ANT	
	LTE Band 41	QPSK	40185	2549.5	20M	50	0	Side 1	8	0.374	21.35	22	62.90	0.44	WWAN ANT	
	LTE Band 41	QPSK	41055	2636.5	20M	50	0	Side 1	8	0.661	21.34	22	62.90	0.77	WWAN ANT	
	LTE Band 41	QPSK	41490	2680	20M	50	0	Side 1	8	0.593	21.28	22	62.90	0.70	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	100	0	Side 1	8	0.753	21.37	22	62.90	0.88	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	1	0	Side 2	0	0.01	22.54	23	62.90	0.01	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	50	0	Side 2	0	0.01	21.45	22	62.90	0.01	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	1	0	Side 3	0	0.01	22.54	23	62.90	0.01	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	50	0	Side 3	0	0.01	21.45	22	62.90	0.01	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	1	0	Side 4	0	0.01	22.54	23	62.90	0.01	WWAN ANT	
	LTE Band 41	QPSK	40620	2593	20M	50	0	Side 4	0	0.01	21.45	22	62.90	0.01	WWAN ANT	

Index.	Band	Modulation	Channel	Frequency (MHz)	Bandwidth	RB Size	RB Offset	Test Position	Spacing (mm)	SAR1 g (W/kg)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Duty Cycle (%)	Reported SAR1 g (W/kg)	Antenna	Power State
	LTE Band 66	QPSK	132322	1745	20M	1	0	Bottom Face	0	0.32	23.37	24	-	0.37	WWAN ANT	
	LTE Band 66	QPSK	132322	1745	20M	50	0	Bottom Face	0	0.244	22.22	23	-	0.29	WWAN ANT	
223	LTE Band 66	QPSK	132322	1745	20M	1	0	Side 1	0	0.934	22.71	23	-	1.00	WWAN ANT	Power Reduce
	LTE Band 66	QPSK	132072	1720	20M	1	0	Side 1	0	0.904	22.69	23	-	0.97	WWAN ANT	Power Reduce
	LTE Band 66	QPSK	132572	1770	20M	1	0	Side 1	0	0.921	22.69	23	-	0.99	WWAN ANT	Power Reduce
	LTE Band 66	QPSK	132322	1745	20M	50	50	Side 1	0	0.843	22.36	23	-	0.98	WWAN ANT	Power Reduce
	LTE Band 66	QPSK	132072	1720	20M	50	50	Side 1	0	0.829	22.35	23	-	0.96	WWAN ANT	Power Reduce
	LTE Band 66	QPSK	132572	1770	20M	50	50	Side 1	0	0.84	22.31	23	-	0.98	WWAN ANT	Power Reduce
	LTE Band 66	QPSK	132322	1745	20M	100	0	Side 1	0	0.827	22.25	23	-	0.98	WWAN ANT	Power Reduce
238	LTE Band 4	QPSK	20300	1745	20M	1	0	Side 1	0	0.911	22.68	23	-	0.98	WWAN ANT	Power Reduce
	LTE Band 66	QPSK	132322	1745	20M	1	0	Side 1	8	0.409	23.37	24	-	0.47	WWAN ANT	
	LTE Band 66	QPSK	132322	1745	20M	50	0	Side 1	8	0.316	22.22	23	-	0.38	WWAN ANT	
	LTE Band 66	QPSK	132322	1745	20M	1	0	Side 2	0	0.01	23.37	24	-	0.01	WWAN ANT	
	LTE Band 66	QPSK	132322	1745	20M	50	0	Side 2	0	0.01	22.22	23	-	0.01	WWAN ANT	
	LTE Band 66	QPSK	132322	1745	20M	1	0	Side 3	0	0.01	23.37	24	-	0.01	WWAN ANT	
	LTE Band 66	QPSK	132322	1745	20M	50	0	Side 3	0	0.01	22.22	23	-	0.01	WWAN ANT	
	LTE Band 66	QPSK	132322	1745	20M	1	0	Side 4	0	0.01	23.37	24	-	0.01	WWAN ANT	
	LTE Band 66	QPSK	132322	1745	20M	50	0	Side 4	0	0.01	22.22	23	-	0.01	WWAN ANT	
	WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Bottom Face	0	0.091	18.39	18.5	99.44	0.09	ANT Main	
1002	WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Side 1	0	0.934	18.39	18.5	99.44	0.96	ANT Main	
	WLAN 2.4 GHz	802.11b	1	2412	-	-	-	Side 1	0	0.882	18.22	18.5	99.44	0.95	ANT Main	
	WLAN 2.4 GHz	802.11b	11	2462	-	-	-	Side 1	0	0.841	18.43	18.5	99.44	0.86	ANT Main	
	WLAN 2.4 GHz	802.11b	12	2467	-	-	-	Side 1	0	0.497	18.44	18.5	99.44	0.51	ANT Main	
	WLAN 2.4 GHz	802.11b	13	2472	-	-	-	Side 1	0	0.223	15.13	15.5	99.44	0.24	ANT Main	
	WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Side 2	0	0.01	18.39	18.5	99.44	0.01	ANT Main	
	WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Side 3	0	0.01	18.39	18.5	99.44	0.01	ANT Main	
	WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Side 4	0	0.057	18.39	18.5	99.44	0.06	ANT Main	
	WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Bottom Face	0	0.211	20.93	21	99.41	0.22	ANT Aux	
	WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Side 1	0	0.01	20.93	21	99.41	0.01	ANT Aux	
	WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Side 2	0	0.441	20.93	21	99.41	0.45	ANT Aux	
1014	WLAN 2.4 GHz	802.11b	6	2437				Side 3	0	0.656	20.93	21	99.41	0.67	ANT Aux	
	WLAN 2.4 GHz	802.11b	1	2412	-	-	-	Side 3	0	0.577	20.42	21	99.41	0.66	ANT Aux	
	WLAN 2.4 GHz	802.11b	11	2462	-	-	-	Side 3	0	0.56	20.43	21	99.41	0.64	ANT Aux	
	WLAN 2.4 GHz	802.11b	12	2467	-	-	-	Side 3	0	0.351	18.47	18.5	99.41	0.36	ANT Aux	
	WLAN 2.4 GHz	802.11b	13	2472	-	-	-	Side 3	0	0.158	15.24	15.5	99.41	0.17	ANT Aux	
	WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Side 4	0	0.01	20.93	21	99.41	0.01	ANT Aux	

Index.	Band	Modulation	Channel	Frequency (MHz)	Test Position	Spacing (mm)	SAR1 g (W/kg)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Duty Cycle (%)	Reported SAR1 g (W/kg)	Antenna
	Bluetooth	GFSK	78	2480	Bottom Face	0	0.01	10.12	10.5	77.60	0.01	ANT Aux
	Bluetooth	GFSK	78	2480	Side 1	0	0.01	10.12	10.5	77.60	0.01	ANT Aux
	Bluetooth	GFSK	78	2480	Side 2	0	0.01	10.12	10.5	77.60	0.01	ANT Aux
1024	Bluetooth	GFSK	78	2480	Side 3	0	0.035	10.12	10.5	77.60	0.05	ANT Aux
	Bluetooth	GFSK	0	2402	Side 3	0	0.027	9.39	10.5	77.60	0.04	ANT Aux
	Bluetooth	GFSK	39	2441	Side 3	0	0.029	9.51	10.5	77.60	0.05	ANT Aux
	Bluetooth	GFSK	78	2480	Side 4	0	0.01	10.12	10.5	77.60	0.01	ANT Aux
	WLAN 5 GHz	802.11n HT40	54	5270	Bottom Face	0	0.028	14.87	15.5	99.35	0.03	ANT Main
1030	WLAN 5 GHz	802.11n HT40	54	5270	Side 1	0	0.813	14.87	15.5	99.35	0.95	ANT Main
	WLAN 5 GHz	802.11n HT40	62	5310	Side 1	0	0.355	14.92	15.5	99.35	0.41	ANT Main
	WLAN 5 GHz	802.11n HT40	54	5270	Side 2	0	0.01	14.87	15.5	99.35	0.01	ANT Main
	WLAN 5 GHz	802.11n HT40	54	5270	Side 3	0	0.01	14.87	15.5	99.35	0.01	ANT Main
	WLAN 5 GHz	802.11n HT40	54	5270	Side 4	0	0.142	14.87	15.5	99.35	0.17	ANT Main
	WLAN 5 GHz	802.11n HT40	54	5270	Bottom Face	0	0.099	19.23	19.5	99.33	0.11	ANT Aux
	WLAN 5 GHz	802.11n HT40	54	5270	Side 1	0	0.073	19.23	19.5	99.33	0.08	ANT Aux
	WLAN 5 GHz	802.11n HT40	54	5270	Side 2	0	0.843	19.23	19.5	99.33	0.90	ANT Aux
1039	WLAN 5 GHz	802.11n HT40	54	5270	Side 3	0	0.919	19.23	19.5	99.33	0.98	ANT Aux
	WLAN 5 GHz	802.11n HT40	62	5310	Side 3	0	0.443	17.78	18	99.33	0.47	ANT Aux
	WLAN 5 GHz	802.11n HT40	54	5270	Side 4	0	0.01	19.23	19.5	99.33	0.01	ANT Aux
	WLAN 5 GHz	802.11ac VHT80	122	5610	Bottom Face	0	0.076	15.82	16.5	99.35	0.09	ANT Main
	WLAN 5 GHz	802.11ac VHT80	122	5610	Side 1	0	0.852	15.82	16.5	99.35	1.00	ANT Main
	WLAN 5 GHz	802.11ac VHT80	106	5530	Side 1	0	0.535	15.93	16.5	99.35	0.61	ANT Main
1046	WLAN 5 GHz	802.11ac VHT80	138	5690	Side 1	0	0.885	15.96	16.5	99.35	1.01	ANT Main
	WLAN 5 GHz	802.11ac VHT80	122	5610	Side 2	0	0.01	15.82	16.5	99.35	0.01	ANT Main
	WLAN 5 GHz	802.11ac VHT80	122	5610	Side 3	0	0.01	15.82	16.5	99.35	0.01	ANT Main
	WLAN 5 GHz	802.11ac VHT80	122	5610	Side 4	0	0.079	15.82	16.5	99.35	0.09	ANT Main
	WLAN 5 GHz	802.11ac VHT80	122	5610	Bottom Face	0	0.147	19.33	19.5	99.33	0.15	ANT Aux
	WLAN 5 GHz	802.11ac VHT80	122	5610	Side 1	0	0.01	19.33	19.5	99.33	0.01	ANT Aux
1053	WLAN 5 GHz	802.11ac VHT80	122	5610	Side 2	0	0.964	19.33	19.5	99.33	1.01	ANT Aux
	WLAN 5 GHz	802.11ac VHT80	106	5530	Side 2	0	0.665	19.27	19.5	99.33	0.71	ANT Aux
	WLAN 5 GHz	802.11ac VHT80	138	5690	Side 2	0	0.912	19.32	19.5	99.33	0.96	ANT Aux
	WLAN 5 GHz	802.11ac VHT80	122	5610	Side 3	0	0.543	19.33	19.5	99.33	0.57	ANT Aux
	WLAN 5 GHz	802.11ac VHT80	122	5610	Side 4	0	0.01	19.33	19.5	99.33	0.01	ANT Aux

Index.	Band	Modulation	Channel	Frequency (MHz)	Test Position	Spacing (mm)	SAR1 g (W/kg)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Duty Cycle (%)	Reported SAR1 g (W/kg)	Antenna	APD W/m2 (4cm2)	Reported APD W/m2 (4cm2)
	WLAN 5 GHz	802.11n HT40	159	5795	Bottom Face	0	0.063	14.98	15.5	99.35	0.07	ANT Main	-	-
1074	WLAN 5 GHz	802.11n HT40	159	5795	Side 1	0	0.867	14.98	15.5	99.35	0.98	ANT Main	-	-
	WLAN 5 GHz	802.11n HT40	151	5755	Side 1	0	0.853	14.92	15.5	99.35	0.98	ANT Main	-	-
	WLAN 5 GHz	802.11n HT40	159	5795	Side 2	0	0.01	14.98	15.5	99.35	0.01	ANT Main		
	WLAN 5 GHz	802.11n HT40	159	5795	Side 3	0	0.01	14.98	15.5	99.35	0.01	ANT Main	-	-
	WLAN 5 GHz	802.11n HT40	159	5795	Side 4	0	0.122	14.98	15.5	99.35	0.14	ANT Main	-	-
	WLAN 5 GHz	802.11n HT40	159	5795	Bottom Face	0	0.168	19.83	20.5	99.33	0.20	ANT Aux		
	WLAN 5 GHz	802.11n HT40	159	5795	Side 1	0	0.01	19.83	20.5	99.33	0.01	ANT Aux	-	-
1082	WLAN 5 GHz	802.11n HT40	159	5795	Side 2	0	0.942	19.83	20.5	99.33	1.11	ANT Aux		
	WLAN 5 GHz	802.11n HT40	151	5755	Side 2	0	0.906	19.89	20.5	99.33	1.05	ANT Aux	-	-
	WLAN 5 GHz	802.11n HT40	159	5795	Side 3	0	0.381	19.83	20.5	99.33	0.45	ANT Aux	-	-
	WLAN 5 GHz	802.11n HT40	159	5795	Side 4	0	0.01	19.83	20.5	99.33	0.01	ANT Aux	-	-
	WLAN 6 GHz	802.11ax HE160	111	6505	Bottom Face	0	0.01	12.98	13	99.24	0.01	ANT Main	0.01	0.01
88	WLAN 6 GHz	802.11ax HE160	111	6505	Side 1	0	0.335	12.98	13	99.24	0.34	ANT Main	2.22	2.25
92	WLAN 6 GHz	802.11ax HE160	15	6025	Side 1	0	0.363	12.77	13	99.24	0.39	ANT Main	2.42	2.57
	WLAN 6 GHz	802.11ax HE160	47	6185	Side 1	0	0.199	12.67	13	99.24	0.22	ANT Main	1.31	1.42
94	WLAN 6 GHz	802.11ax HE160	79	6345	Side 1	0	0.256	12.37	13	99.24	0.30	ANT Main	1.72	2.00
95	WLAN 6 GHz	802.11ax HE160	143	6665	Side 1	0	0.33	12.39	12.5	99.24	0.34	ANT Main	2.16	2.23
	WLAN 6 GHz	802.11ax HE160	175	6825	Side 1	0	0.171	12.5	12.5	99.24	0.17	ANT Main	1.11	1.12
97	WLAN 6 GHz	802.11ax HE160	207	6985	Side 1	0	0.253	12.79	13	99.24	0.27	ANT Main	1.56	1.65
	WLAN 6 GHz	802.11ax HE160	111	6505	Side 2	0	0.01	12.98	13	99.24	0.01	ANT Main	0.01	0.01
	WLAN 6 GHz	802.11ax HE160	111	6505	Side 3	0	0.01	12.98	13	99.24	0.01	ANT Main	0.01	0.01
	WLAN 6 GHz	802.11ax HE160	111	6505	Side 4	0	0.01	12.98	13	99.24	0.01	ANT Main	0.01	0.01
	WLAN 6 GHz	802.11ax HE160	207	6985	Bottom Face	0	0.01	12.73	13	99.21	0.01	ANT Aux	0.01	0.01
	WLAN 6 GHz	802.11ax HE160	207	6985	Side 1	0	0.01	12.73	13	99.21	0.01	ANT Aux	0.01	0.01
101	WLAN 6 GHz	802.11ax HE160	207	6985	Side 2	0	0.078	12.73	13	99.21	0.08	ANT Aux	0.035	0.04
104	WLAN 6 GHz	802.11ax HE160	15	6025	Side 2	0	0.134	12.61	13	99.21	0.15	ANT Aux	1.22	1.35
	WLAN 6 GHz	802.11ax HE160	47	6185	Side 2	0	0.112	12.56	13	99.21	0.12	ANT Aux	1.02	1.14
106	WLAN 6 GHz	802.11ax HE160	79	6345	Side 2	0	0.138	12.27	13	99.21	0.16	ANT Aux	1.21	1.44
107	WLAN 6 GHz	802.11ax HE160	111	6505	Side 2	0	0.125	12.71	13	99.21	0.13	ANT Aux	1.1	1.19
108	WLAN 6 GHz	802.11ax HE160	143	6665	Side 2	0	0.138	12.25	12.5	99.21	0.15	ANT Aux	1.19	1.27
	WLAN 6 GHz	802.11ax HE160	175	6825	Side 2	0	0.097	12.2	12.5	99.21	0.10	ANT Aux	0.894	0.97
	WLAN 6 GHz	802.11ax HE160	207	6985	Side 3	0	0.01	12.73	13	99.21	0.01	ANT Aux	0.01	0.01
	WLAN 6 GHz	802.11ax HE160	207	6985	Side 4	0	0.01	12.73	13	99.21	0.01	ANT Aux	0.01	0.01

10.5.2 Power Density Test Result

Index.	Band	Modulation	Channel	Frequency (MHz)	Test Position	Spacing (mm)	sPDtot 4 cm² (W/m²)	E peak (V/m)	H peak (A/m)	Meas. Conducted Power (dBm)	Tune-up (dBm)	Tune-up Scaling Factor	Duty Cycle (%)	Duty Cycle Scaling Factor	Scaling sPDtot 4 cm² (W/m²)	Antenna
110	WLAN 6 GHz	802.11ax HE160	15	6025	Side 1	2	3.11	70.3	0.322	12.77	13	1.054	99.24	1.008	3.31	ANT Main
111	WLAN 6 GHz	802.11ax HE160	79	6345	Side 1	2	2.81	56.6	0.373	12.37	13	1.156	99.24	1.008	3.27	ANT Main
112	WLAN 6 GHz	802.11ax HE160	111	6505	Side 1	2	3.21	57.7	0.392	12.98	13	1.005	99.24	1.008	3.25	ANT Main
113	WLAN 6 GHz	802.11ax HE160	143	6665	Side 1	2	3.16	54.5	0.393	12.39	12.5	1.026	99.24	1.008	3.27	ANT Main
114	WLAN 6 GHz	802.11ax HE160	207	6985	Side 1	2	2.11	49.8	0.472	12.79	13	1.050	99.24	1.008	2.23	ANT Main
115	WLAN 6 GHz	802.11ax HE160	15	6025	Side 2	2	2.43	42.6	0.43	12.61	13	1.094	99.21	1.008	2.68	ANT Aux
116	WLAN 6 GHz	802.11ax HE160	79	6345	Side 2	2	2.21	30.6	0.24	12.27	13	1.183	99.21	1.008	2.64	ANT Aux
117	WLAN 6 GHz	802.11ax HE160	111	6505	Side 2	2	1.63	29.9	0.19	12.71	13	1.069	99.21	1.008	1.76	ANT Aux
118	WLAN 6 GHz	802.11ax HE160	143	6665	Side 2	2	2.16	33.3	0.242	12.28	12.5	1.052	99.21	1.008	2.29	ANT Aux
119	WLAN 6 GHz	802.11ax HE160	207	6985	Side 2	2	1.32	28.3	0.22	12.73	13	1.064	99.21	1.008	1.42	ANT Aux

Note:

1. The test spacing is the distance between probe sensor and DUT surface.
2. The test duty cycle was approached 100 % to facilitate test measurements only. It was confirmed by the manufacturer that the device was not over driven at this test duty cycle, to facilitate linear scaling in the test report.
3. 1.0 W/m^2 = 0.1 mW/cm^2.

10.6 Measurement Variability

According to KDB 865664 D01v01r04, 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. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required:

1. The original highest measured Reported SAR 1-g is ≧ 0.80 W/kg, repeated that measurement once.
2. Perform a second repeated measurement the ratio of the largest to the smallest SAR for the original and first repeated measurements is <1.2 W/kg, or when the original or repeated measurement is ≧ 1.45 W/kg (~10% from the 1-g SAR limit).

Band	Modulation	Channel	Frequency (MHz)	Bandwidth	RB Size	RB Offset	Test Position	Spacing (mm)	Note	Original SAR_{1g} (W/kg)	First SAR_{1g} (W/kg)	First Ratio SAR_{1g}
WCDMA Band II	RMC12.2Kbps	9538	1907.6	-	-	-	Side 1	0	Index. #4_once	0.905	0.883	2.43%
WCDMA Band IV	RMC12.2Kbps	1513	1752.6	-	-	-	Side 1	0	Index. #13_once	0.947	0.928	2.01%
WCDMA Band V	RMC12.2Kbps	4132	826.4	-	-	-	Side 1	0	Index. #21_once	0.885	0.866	2.15%
LTE Band 2	QPSK	19100	1900	20M	1	0	Side 1	0	Index. #30_once	0.924	0.911	1.41%
LTE Band 5	QPSK	20525	836.5	10M	1	0	Side 1	0	Index. #50_once	0.896	0.879	1.90%
LTE Band 7	QPSK	21350	2560	20M	1	0	Side 1	0	Index. #71_once	0.917	0.893	2.62%
LTE Band 12	QPSK	23095	707.5	10M	1	0	Side 1	0	Index. #86_once	0.879	0.852	3.07%
LTE Band 13	QPSK	23230	782	10M	1	0	Side 1	0	Index. #102_once	0.937	0.924	1.39%
LTE Band 14	QPSK	23330	793	10M	1	0	Side 1	0	Index. #116_once	0.895	0.888	0.78%
LTE Band 26	QPSK	26765	821.5	15M	1	0	Side 1	0	Index. #131_once	0.899	0.897	0.22%
LTE Band 41	QPSK	41055	2636.5	20M	1	0	Side 1	0	Index. #152_once	0.934	0.918	1.71%
LTE Band 66	QPSK	132322	1745	20M	1	0	Side 1	0	Index. #223_once	0.934	0.921	1.39%
LTE Band 4	QPSK	20300	1745	20M	1	0	Side 1	0	Index. #38_once	0.911	0.899	1.32%
WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Side 1	0	Index. #1002_once	0.934	0.922	1.28%
WLAN 2.4 GHz	802.11b	6	2437	-	-	-	Side 3	0	Index. #1014_once	0.656	0.634	3.35%
WLAN 5 GHz	802.11n HT40	54	5270	-	-	-	Side 3	0	Index. #1039_once	0.919	0.911	0.87%
WLAN 5 GHz	802.11ac VHT80	138	5690	-	-	-	Side 1	0	Index. #1046_once	0.885	0.876	1.02%
WLAN 5 GHz	802.11ac VHT80	122	5610	-	-	-	Side 2	0	Index. #1053_once	0.964	0.954	1.04%
WLAN 5 GHz	802.11n HT40	159	5795	-	-	-	Side 1	0	Index. #1074_once	0.867	0.856	1.27%
WLAN 5 GHz	802.11n HT40	159	5795	-	-	-	Side 2	0	Index. #1082_once	0.942	0.938	0.42%

10.7 Simultaneous Transmission Evaluation

10.7.1 Simultaneous Transmission Configurations

Condition(s)	Band							
	WWAN	WLAN 2.4 GHz ANT Main	WLAN 2.4 GHz ANT Aux	WLAN 5 GHz ANT Main	WLAN 5 GHz ANT Aux	WLAN 6 GHz ANT Main	WLAN 6 GHz ANT Aux	Bluetooth
1	V	V	-	-	-	-	-	-
2	V	-	V	-	-	-	-	-
3	V	V	V	-	-	-	-	-
4	V	V	-	-	-	-	-	V
5	V	-	-	-	-	-	-	V
6	V	-	-	V	-	-	-	-
7	V	-	-	-	V	-	-	-
8	V	-	-	V	-	-	-	V
9	V	-	-	-	V	-	-	V
10	V	-	-	V	V	-	-	-
11	V	-	-	V	V	-	-	V
12	V	-	-	-	-	V	-	-
13	V	-	-	-	-	-	V	-
13	V	-	-	-	-	V	-	V
13	V	-	-	-	-	-	V	V
14	V	-	-	-	-	V	V	
15	V	-	-	-	-	V	V	V

<Total Exposure Ratio (TER)>

According to IEC TR 63170 and TCBC workshop, total Exposure Ratio (TER) is calculated by taking ratio of reported SAR divided by SAR limit and adding it to measured power density divided by power density limit.

$$\text{TER} = \sum_{n=1}^{N} \frac{SAR_n}{SAR_n\ ,\ limit} + \sum_{m=1}^{M} \frac{S_{m,avg}}{S_{lim}\ ,\ limit} < 1$$

Numerical sum of the two ratios should be less than 1.

The worst-case power density results for each test configuration among all antenna arrays were considered for Total Exposure Ratio (TER) analysis. The sum of TER were listed in the following subclause.

10.7.2 Simultaneous Transmission Result

When the sum of SAR_{1g} of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration.

The sum of SAR_{1g} results is shown as below.

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+2+8	1+2+3	1+4+5+8	1+6+7+8
		WWAN	WLAN 2.4 GHz ANT Main	WLAN 2.4 GHz ANT Aux	WLAN 5 GHz ANT Main	WLAN 5 GHz ANT Aux	WLAN 6 GHz ANT Main	WLAN 6 GHz ANT Aux	Bluetooth ANT Aux	∑SAR_{1g} (W/kg)	∑SAR_{1g} (W/kg)	∑SAR_{1g} (W/kg)	∑SAR_{1g} (W/kg)
		SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)				
WCDMA Band II	side 1 at 8 mm	0.48	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.45	1.45	1.58	0.89
WCDMA Band IV	side 1 at 8 mm	0.42	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.39	1.39	1.52	0.83
WCDMA Band V	side 1 at 8 mm	0.48	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.45	1.45	1.58	0.89
LTE Band 2	side 1 at 8 mm	0.62	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.59	1.59	1.72	1.03
LTE Band 5	side 1 at 8 mm	0.60	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.57	1.57	1.70	1.01
LTE Band 7	side 1 at 8 mm	0.61	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.58	1.58	1.71	1.02
LTE Band 13	side 1 at 8 mm	0.48	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.45	1.45	1.58	0.89
LTE Band 14	side 1 at 8 mm	0.47	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.44	1.44	1.57	0.88
LTE Band 26	side 1 at 8 mm	0.49	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.46	1.46	1.59	0.90
LTE Band 41	side 1 at 8 mm	1.01	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.98	1.98	2.11	1.42
LTE Band 66	side 1 at 8 mm	0.47	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.44	1.44	1.57	0.88

Note. The most conservative of WLAN configuration at 0 mm were applied.

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+2+8	1+2+3	1+4+5+8	1+6+7+8
		WWAN	WLAN 2.4 GHz ANT Main	WLAN 2.4 GHz ANT Aux	WLAN 5 GHz ANT Main	WLAN 5 GHz ANT Aux	WLAN 6 GHz ANT Main	WLAN 6 GHz ANT Aux	Bluetooth ANT Aux	∑SAR_{1g} (W/kg)	∑SAR_{1g} (W/kg)	∑SAR_{1g} (W/kg)	∑SAR_{1g} (W/kg)
		SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)	SAR_{1g} (W/kg)				
WCDMA Band II	Bottom Face at 0 mm	0.31	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.41	0.62	0.61	0.34
	side 1 at 0 mm	1.03	0.96	0.01	1.01	0.08	0.39	0.01	0.01	2.00	2.00	2.13	1.44
	side 2 at 0 mm	0.06	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.08	0.52	1.19	0.24
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04
WCDMA Band IV	Bottom Face at 0 mm	0.35	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.45	0.66	0.65	0.38
	side 1 at 0 mm	1.05	0.96	0.01	1.01	0.08	0.39	0.01	0.01	2.02	2.02	2.15	1.46
	side 2 at 0 mm	0.06	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.08	0.52	1.19	0.24
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04
WCDMA Band V	Bottom Face at 0 mm	0.36	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.46	0.67	0.66	0.39
	side 1 at 0 mm	1.04	0.96	0.01	1.01	0.08	0.39	0.01	0.01	2.01	2.01	2.14	1.45
	side 2 at 0 mm	0.18	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.20	0.64	1.31	0.36
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+2+8	1+2+3	1+4+5+8	1+6+7+8
		WWAN	WLAN 2.4 GHz ANT Main	WLAN 2.4 GHz ANT Aux	WLAN 5 GHz ANT Main	WLAN 5 GHz ANT Aux	WLAN 6 GHz ANT Main	WLAN 6 GHz ANT Aux	Bluetooth ANT Aux	∑SAR1g (W/kg)	∑SAR1g (W/kg)	∑SAR1g (W/kg)	∑SAR1g (W/kg)
		SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)				
LTE Band 2	Bottom Face at 0 mm	0.35	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.45	0.66	0.65	0.38
	side 1 at 0 mm	1.03	0.96	0.01	1.01	0.08	0.39	0.01	0.01	2.00	2.00	2.13	1.44
	side 2 at 0 mm	0.05	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.07	0.51	1.18	0.23
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04
LTE Band 5	Bottom Face at 0 mm	0.92	0.09	0.22	0.09	0.20	0.01	0.01	0.01	1.02	1.23	1.22	0.95
	side 1 at 0 mm	0.95	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.92	1.92	2.05	1.36
	side 2 at 0 mm	0.17	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.19	0.63	1.30	0.35
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.17	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.24	0.24	0.36	0.20
LTE Band 7	Bottom Face at 0 mm	0.28	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.38	0.59	0.58	0.31
	side 1 at 0 mm	1.01	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.98	1.98	2.11	1.42
	side 2 at 0 mm	0.04	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.06	0.50	1.17	0.22
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04
LTE Band 12	Bottom Face at 0 mm	0.21	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.31	0.52	0.51	0.24
	side 1 at 0 mm	1.04	0.96	0.01	1.01	0.08	0.39	0.01	0.01	2.01	2.01	2.14	1.45
	side 2 at 0 mm	0.01	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.03	0.47	1.14	0.19
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04
LTE Band 13	Bottom Face at 0 mm	0.34	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.44	0.65	0.64	0.37
	side 1 at 0 mm	0.98	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.95	1.95	2.08	1.39
	side 2 at 0 mm	0.01	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.03	0.47	1.14	0.19
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04
LTE Band 14	Bottom Face at 0 mm	0.38	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.48	0.69	0.68	0.41
	side 1 at 0 mm	0.94	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.91	1.91	2.04	1.35
	side 2 at 0 mm	0.01	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.03	0.47	1.14	0.19
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04
LTE Band 26	Bottom Face at 0 mm	0.34	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.44	0.65	0.64	0.37
	side 1 at 0 mm	0.97	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.94	1.94	2.07	1.38
	side 2 at 0 mm	0.01	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.03	0.47	1.14	0.19
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+2+8	1+2+3	1+4+5+8	1+6+7+8
		WWAN	WLAN 2.4 GHz ANT Main	WLAN 2.4 GHz ANT Aux	WLAN 5 GHz ANT Main	WLAN 5 GHz ANT Aux	WLAN 6 GHz ANT Main	WLAN 6 GHz ANT Aux	Bluetooth ANT Aux	∑SAR1g (W/kg)	∑SAR1g (W/kg)	∑SAR1g (W/kg)	∑SAR1g (W/kg)
		SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)	SAR1g (W/kg)				
LTE Band 41	Bottom Face at 0 mm	0.59	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.69	0.90	0.89	0.62
	side 1 at 0 mm	1.03	0.96	0.01	1.01	0.08	0.39	0.01	0.01	2.00	2.00	2.13	1.44
	side 2 at 0 mm	0.01	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.03	0.47	1.14	0.19
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04
LTE Band 66	Bottom Face at 0 mm	0.37	0.09	0.22	0.09	0.20	0.01	0.01	0.01	0.47	0.68	0.67	0.40
	side 1 at 0 mm	1.00	0.96	0.01	1.01	0.08	0.39	0.01	0.01	1.97	1.97	2.10	1.41
	side 2 at 0 mm	0.01	0.01	0.45	0.01	1.11	0.01	0.16	0.01	0.03	0.47	1.14	0.19
	side 3 at 0 mm	0.01	0.01	0.67	0.01	0.98	0.01	0.01	0.05	0.07	0.69	1.05	0.08
	side 4 at 0 mm	0.01	0.06	0.01	0.17	0.01	0.01	0.01	0.01	0.08	0.08	0.20	0.04

<Total Exposure Ratio (TER) Results>

WWAN Band	Exposure Position	9	10	11	12	9+10	9+11	9+10+11	9+10+12
		WWAN	WLAN 6 GHz ANT Main	WLAN 6 GHz ANT Aux	Bluetooth ANT Aux	Total Exposure Ratio	Total Exposure Ratio	Total Exposure Ratio	Total Exposure Ratio
		1g SAR (W/kg)	Total PD (W/m²)	Total PD (W/m²)	1g SAR (W/kg)				
WCDMA Band II	side 1 at 0 mm	1.03	3.31	0.01	0.01	0.97	0.64	0.98	0.98
	side 2 at 0 mm	0.06	0.01	2.68	0.01	0.04	0.31	0.31	0.04
WCDMA Band IV	side 1 at 0 mm	1.05	3.31	0.01	0.01	0.99	0.66	0.99	0.99
	side 2 at 0 mm	0.06	0.01	2.68	0.01	0.04	0.31	0.31	0.04
WCDMA Band V	side 1 at 0 mm	1.04	3.31	0.01	0.01	0.98	0.65	0.98	0.99
	side 2 at 0 mm	0.18	0.01	2.68	0.01	0.11	0.38	0.38	0.12
LTE 2	side 1 at 0 mm	1.03	3.31	0.01	0.01	0.97	0.64	0.98	0.98
	side 2 at 0 mm	0.05	0.01	2.68	0.01	0.03	0.30	0.30	0.04
LTE 5	side 1 at 0 mm	0.95	3.31	0.01	0.01	0.92	0.59	0.93	0.93
	side 2 at 0 mm	0.17	0.01	2.68	0.01	0.11	0.37	0.38	0.11
LTE 7	side 1 at 0 mm	1.01	3.31	0.01	0.01	0.96	0.63	0.96	0.97
	side 2 at 0 mm	0.04	0.01	2.68	0.01	0.03	0.29	0.29	0.03
LTE 12	side 1 at 0 mm	1.04	3.31	0.01	0.01	0.98	0.65	0.98	0.99
	side 2 at 0 mm	0.01	0.01	2.68	0.01	0.01	0.27	0.28	0.01
LTE 13	side 1 at 0 mm	0.98	3.31	0.01	0.01	0.94	0.61	0.94	0.95
	side 2 at 0 mm	0.01	0.01	2.68	0.01	0.01	0.27	0.28	0.01
LTE 14	side 1 at 0 mm	0.94	3.31	0.01	0.01	0.92	0.59	0.92	0.92
	side 2 at 0 mm	0.01	0.01	2.68	0.01	0.01	0.27	0.28	0.01
LTE 26	side 1 at 0 mm	0.97	3.31	0.01	0.01	0.94	0.61	0.94	0.94
	side 2 at 0 mm	0.01	0.01	2.68	0.01	0.01	0.27	0.28	0.01
LTE 41	side 1 at 0 mm	1.03	3.31	0.01	0.01	0.97	0.64	0.98	0.98
	side 2 at 0 mm	0.01	0.01	2.68	0.01	0.01	0.27	0.28	0.01
LTE 66	side 1 at 0 mm	1.00	3.31	0.01	0.01	0.96	0.63	0.96	0.96
	side 2 at 0 mm	0.01	0.01	2.68	0.01	0.01	0.27	0.28	0.01

Note: 1.0 W/m^2 = 0.1 mW/cm^2.

10.7.3 SAR to peak location separation (SPLSR)

According to KDB 447498, when the sum of SAR is greater than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio (SPLSR), and the simultaneously transmitting antennas must be considered one pair at a time. The ratio is determined by **(SAR1+SAR2)$^{1.5}$ / (separation distance between the peak SAR locations for the antenna pair, mm)**, round to two decimal digits, and must be ≦ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

The Hybrid SPLSR procedure in Nov. 2019 TCB workshop and the guidance in Apr. 2022 TCB workshop were applied to the circumstance that simultaneous transmission SAR is > 1.6 W/kg and antenna pair is co-located.

The WLAN ANT Aux is far enough from the edge that the actual measured SAR cannot scan any field and is excluded from the synchronous transmission calculation.

LTE Band 41 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			165	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 41	QPSK	2636.5	Side 1	WWAN ANT	1.01	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.98		-6.78	70.10	-2.81	188.48	
ANT Main			7.80	-117.80	-0.71		

WCDMA Band II WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			4	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
WCDMA Band II	RMC12.2Kbps	1907.6	Side 1	WWAN ANT	1.03	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.00		3.10	56.70	-2.84	174.58	
ANT Main			7.80	-117.80	-0.71		

WCDMA Band IV WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			13	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
WCDMA Band IV	RMC12.2Kbps	1752.6	Side 1	WWAN ANT	1.05	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.02		3.10	49.90	-2.85	167.78	
ANT Main			7.80	-117.80	-0.71		

WCDMA Band V WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			21	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
WCDMA Band V	RMC12.2Kbps	826.4	Side 1	WWAN ANT	1.04	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.01		0.00	69.10	-2.83	187.07	
ANT Main			7.80	-117.80	-0.71		

LTE Band 2 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			30	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 2	QPSK	1900	Side 1	WWAN ANT	1.03	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.00		3.10	58.40	-2.81	176.28	
ANT Main			7.80	-117.80	-0.71		

LTE Band 5 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			50	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 5	QPSK	836.5	Side 1	WWAN ANT	0.95	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Reported SAR1 g (W/kg)	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.92		0.00	70.60	-3.12	188.58	
ANT Main			7.80	-117.80	-0.71		

LTE Band 7 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			71	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 7	QPSK	2535	Side 1	WWAN ANT	1.01	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.98		-6.40	67.80	-3.01	186.16	
ANT Main			7.80	-117.80	-0.71		

LTE Band 12 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			86	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 12	QPSK	707.5	Side 1	WWAN ANT	1.04	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Reported SAR1 g (W/kg)	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.01		3.00	69.00	-3.26	186.88	
ANT Main			7.80	-117.80	-0.71		

LTE Band 13 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			102	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 13	QPSK	782	Side 1	WWAN ANT	0.98	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.95		-0.10	65.90	-3.05	183.88	
ANT Main			7.80	-117.80	-0.71		

LTE Band 14 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			116	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 14	QPSK	793	Side 1	WWAN ANT	0.94	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Reported SAR1 g (W/kg)	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.91		-0.10	67.60	-3.03	185.58	
ANT Main			7.80	-117.80	-0.71		

LTE Band 26 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			131	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 26	QPSK	821.5	Side 1	WWAN ANT	0.97	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.94		0.00	70.60	-3.09	188.58	
ANT Main			7.80	-117.80	-0.71		

LTE Band 41 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			152	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 41	QPSK	2636.5	Side 1	WWAN ANT	1.03	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.00		-6.60	69.20	-2.80	187.57	
ANT Main			7.80	-117.80	-0.71		

LTE Band 66 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			223	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 66	QPSK	1745	Side 1	WWAN ANT	1	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.97		3.10	49.90	-2.87	167.78	
ANT Main			7.80	-117.80	-0.71		

LTE Band 4 WWAN ANT + WLAN 2.4 GHz ANT Main + Bluetooth ANT Aux							
Index.			238	+	1002	+	1022
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 4	QPSK	1745	Side 1	WWAN ANT	0.98	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
Bluetooth	GFSK	2480	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.95		3.10	50.00	-2.70	167.88	
ANT Main			7.80	-117.80	-0.71		

LTE Band 2 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			37	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 2	QPSK	1900	Side 1	WWAN ANT	0.62	0.01	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.72		3.10	58.80	-2.80	186.92	
ANT Main			9.40	-128.00	-0.22		

LTE Band 5 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			57	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 5	QPSK	836.5	Side 1	WWAN ANT	0.6	0.01	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.70		0.10	69.60	-3.02	197.84	
ANT Main			9.40	-128.00	-0.22		

LTE Band 7 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			76	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 7	QPSK	2535	Side 1	WWAN ANT	0.61	0.01	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.71		-6.68	68.60	-2.97	197.28	
ANT Main			9.40	-128.00	-0.22		

LTE Band 41 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			165	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 41	QPSK	2636.5	Side 1	WWAN ANT	1.01	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.11		-6.78	70.10	-2.81	198.78	
ANT Main			9.40	-128.00	-0.22		

WCDMA Band II WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			4	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
WCDMA Band II	RMC12.2Kbps	1907.6	Side 1	WWAN ANT	1.03	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.13		3.10	56.70	-2.84	184.83	
ANT Main			9.40	-128.00	-0.22		

WCDMA Band IV WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			13	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
WCDMA Band IV	RMC12.2Kbps	1752.6	Side 1	WWAN ANT	1.05	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.15		3.10	49.90	-2.85	178.03	
ANT Main			9.40	-128.00	-0.22		

WCDMA Band V WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			21	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
WCDMA Band V	RMC12.2Kbps	826.4	Side 1	WWAN ANT	1.04	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.14		0.00	69.10	-2.83	197.34	
ANT Main			9.40	-128.00	-0.22		

LTE Band 2 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			30	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 2	QPSK	1900	Side 1	WWAN ANT	1.03	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.13		3.10	58.40	-2.81	186.52	
ANT Main			9.40	-128.00	-0.22		

LTE Band 5 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			50	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 5	QPSK	836.5	Side 1	WWAN ANT	0.95	0.01	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.05		0.00	70.60	-3.12	198.84	
ANT Main			9.40	-128.00	-0.22		

LTE Band 7 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			71	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 7	QPSK	2535	Side 1	WWAN ANT	1.01	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.11		-6.40	67.80	-3.01	196.46	
ANT Main			9.40	-128.00	-0.22		

LTE Band 12 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			86	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 12	QPSK	707.5	Side 1	WWAN ANT	1.04	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.14		3.00	69.00	-3.26	197.13	
ANT Main			9.40	-128.00	-0.22		

LTE Band 13 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			102	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 13	QPSK	782	Side 1	WWAN ANT	0.98	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.08		-0.10	65.90	-3.05	194.15	
ANT Main			9.40	-128.00	-0.22		

LTE Band 14 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			116	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 14	QPSK	793	Side 1	WWAN ANT	0.94	0.01	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.04		-0.10	67.60	-3.03	195.85	
ANT Main			9.40	-128.00	-0.22		

LTE Band 26 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			131	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 26	QPSK	821.5	Side 1	WWAN ANT	0.97	0.01	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.07		0.00	70.60	-3.09	198.84	
ANT Main			9.40	-128.00	-0.22		

LTE Band 41 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			152	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 41	QPSK	2636.5	Side 1	WWAN ANT	1.03	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.13		-6.60	69.20	-2.80	197.86	
ANT Main			9.40	-128.00	-0.22		

LTE Band 66 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			223	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 66	QPSK	1745	Side 1	WWAN ANT	1	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported $SAR_{1\,g}$ (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.10		3.10	49.90	-2.87	178.03	
ANT Main			9.40	-128.00	-0.22		

LTE Band 4 WWAN ANT + WLAN 5 GHz ANT Main + WLAN 5 GHz + Bluetooth ANT Aux							
Index.			238	+	1046	+	1022+1037
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 4	QPSK	1745	Side 1	WWAN ANT	0.98	0.02	
WLAN 5 GHz	802.11ac VHT80	5690	Side 1	ANT Main	1.01		
WLAN 5 GHz + Bluetooth	802.11ac VHT80+GFSK	2480+5270	Side 1	ANT Aux	0.09		
Antenna	∑ Reported $SAR_{1\,g}$ (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.08		3.10	50.00	-2.70	178.13	
ANT Main			9.40	-128.00	-0.22		

LTE Band 41 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			165	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 41	QPSK	2636.5	Side 1	WWAN ANT	1.01	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.98		-6.78	70.10	-2.81	188.48	
ANT Main			7.80	-117.80	-0.71		

WCDMA Band II WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			4	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
WCDMA Band II	RMC12.2Kbps	1907.6	Side 1	WWAN ANT	1.03	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.00		3.10	56.70	-2.84	174.58	
ANT Main			7.80	-117.80	-0.71		

WCDMA Band IV WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			13	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
WCDMA Band IV	RMC12.2Kbps	1752.6	Side 1	WWAN ANT	1.05	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.02		3.10	49.90	-2.85	167.78	
ANT Main			7.80	-117.80	-0.71		

WCDMA Band V WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			21	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
WCDMA Band V	RMC12.2Kbps	826.4	Side 1	WWAN ANT	1.04	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.01		0.00	69.10	-2.83	187.07	
ANT Main			7.80	-117.80	-0.71		

LTE Band 2 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			30	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 2	QPSK	1900	Side 1	WWAN ANT	1.03	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.00		3.10	58.40	-2.81	176.28	
ANT Main			7.80	-117.80	-0.71		

LTE Band 5 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			50	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 5	QPSK	836.5	Side 1	WWAN ANT	0.95	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.92		0.00	70.60	-3.12	188.58	
ANT Main			7.80	-117.80	-0.71		

LTE Band 7 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			71	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 7	QPSK	2535	Side 1	WWAN ANT	1.01	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.98		-6.40	67.80	-3.01	186.16	
ANT Main			7.80	-117.80	-0.71		

LTE Band 12 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			86	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 12	QPSK	707.5	Side 1	WWAN ANT	1.04	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.01		3.00	69.00	-3.26	186.88	
ANT Main			7.80	-117.80	-0.71		

LTE Band 13 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			102	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 13	QPSK	782	Side 1	WWAN ANT	0.98	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.95		-0.10	65.90	-3.05	183.88	
ANT Main			7.80	-117.80	-0.71		

LTE Band 14 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			116	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 14	QPSK	793	Side 1	WWAN ANT	0.94	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.91		-0.10	67.60	-3.03	185.58	
ANT Main			7.80	-117.80	-0.71		

LTE Band 26 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			131	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 26	QPSK	821.5	Side 1	WWAN ANT	0.97	0.01	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.94		0.00	70.60	-3.09	188.58	
ANT Main			7.80	-117.80	-0.71		

LTE Band 41 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			152	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 41	QPSK	2636.5	Side 1	WWAN ANT	1.03	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	2.00		-6.60	69.20	-2.80	187.57	
ANT Main			7.80	-117.80	-0.71		

LTE Band 66 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			223	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 66	QPSK	1745	Side 1	WWAN ANT	1	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.97		3.10	49.90	-2.87	167.78	
ANT Main			7.80	-117.80	-0.71		

LTE Band 4 WWAN ANT + WLAN 2.4 GHz ANT Main + WLAN 2.4 GHz ANT Aux							
Index.			238	+	1002	+	1012
Band	Modulation	Frequency (MHz)	Test Position	Antenna	Reported SAR1 g (W/kg)	Peak location separation ratio	
LTE Band 4	QPSK	1745	Side 1	WWAN ANT	0.98	0.02	
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Main	0.96		
WLAN 2.4 GHz	802.11b	2437	Side 1	ANT Aux	0.01		
Antenna	∑ Reported SAR_{1g} (W/Kg)		X (mm)	Y (mm)	Z (mm)	Antenna pair (mm)	
WWAN ANT	1.95		3.10	50.00	-2.70	167.88	
ANT Main			7.80	-117.80	-0.71		

10.8 Requirements on the Uncertainty Evaluation

Decision Rule

■ Uncertainty is not included.

☐ Uncertainty is included.

The highest measured 1-g SAR is less than 1.5 W/kg and the highest measured 10-g SAR is less than 3.75 W/kg. Therefore, per KDB Publication 865664 D01, the extended measurement uncertainty analysis described in IEEE 1528-2013 and IEC/IEEE 62209-1528 is not required.

11. Conclusion

The SAR test values found for the device are below the maximum limit of 1.6 W/kg.

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