Prüfbericht-Nr.: *Test report no.:*	**60415352 002**	**Auftrags-Nr.:** *Order no.:*	168279564	Seite 1 von 28 *Page 1 of 28*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2020-11-01	
Auftraggeber: *Client:*	SPECTRA Technologies Holdings Co., Ltd. Unit 1301-09, 19-20, Tower II, Grand Century Place, Kowloon, Hong Kong			
Prüfgegenstand: *Test item:*	Android POS			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	APOLLO			
Auftrags-Inhalt: *Order content:*	Test Report			
Prüfgrundlage: *Test specification:*	CFR47 FCC Part 2: Section 2.1093 IEEE Std 1528-2013 KDB 447498 D01 v06 KDB 865664 D01 v01r04 KDB 865664 D02 v01r02 KDB 690783 D01 v01r03	KDB 248227 D01 v02r02 KDB 616217 D04 v01r02 KDB 648474 D04 v01r03 KDB 941225 D01 v03r01 KDB 941225 D05 v02r05 KDB 941225 D07 v01r02		
Wareneingangsdatum: *Date of sample receipt:*	2020-11-01	Refer to Product Photos		
Prüfmuster-Nr.: *Test sample no:*	A002920755-005			
Prüfzeitraum: *Testing period:*	2020-11-01 – 2020-12-12			
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: *Test result*:*	Pass			

geprüft von: *tested by:*	Lin Lin	**genehmigt von:** *authorized by:*	Winnie Hou
Datum: *Date:* 2020-12-15		**Ausstellungsdatum:** *Issue date:* 2020-12-15	
Stellung / *Position:*	Senior Project Manager	**Stellung** / *Position:*	Technical Certifier

Sonstiges / *Other:*

FCC ID: VWZTA10Q

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*	**Prüfmuster vollständig und unbeschädigt** ***Test item complete and undamaged***

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Table of Contents

1 General Information

1.1 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for the EUT are as follows:

Equipment Class	Mode / Band	Highest Reported Body SAR-1g (0cm Gap) (W/Kg)
PCB	GSM850	1.25
	GSM1900	0.53
	WCDMA II	0.26
	WCDMA IV	0.61
	WCDMA V	0.47
	LTE 2	0.24
	LTE 4	0.72
	LTE 5	0.41
	LTE 7	0.15
	LTE 12	0.74
	LTE 13	0.74
	LTE 25	0.18
	LTE 26	0.35
DTS	2.4GHz WLAN	0.13
NII	5.2GHz & 5.3GHz WLAN	0.78
	5.6GHz WLAN	1.17
	5.8GHz WLAN	0.76
DSS	Bluetooth	*N/A
DTS	Bluetooth	*N/A
Max. SAR		1.25

Note:
1. The WLAN and Bluetooth cannot transmit simultaneously.
2. The WWAN and WLAN cannot transmit simultaneously, detail refer to file “Declaration on user access to WiFi and/or cellular network.
3. *According to KDB 447498 D01, the Bluetooth output power is less than 10mW, the SAR Testing exclusion is applied.

1.2 EUT Description

1.2.1 General Description

Product Name	Android POS
Model No.(EUT)	APOLLO
FCC ID	VWZTA10Q
Device Dimension	Overall (Length x Width x High): 175 x 80 x 60 mm
	Overall Diagonal: 204 mm
	Display Diagonal: 140 mm
HW Version	msm8909
SW Version	7.1.2.01.001
Tx Frequency Bands	GSM850: 824.2 to 848.8 MHz PCS1900: 1850.2 to 1909.8 MHz WCDMA850: 826.4 to 846.6 MHz WCDMA1700: 1712.4 to 1752.6 MHz WCDMA1900: 1852.4 to 1907.6 MHz LTE BAND2: 1850.7 to 1909.3 MHz

	LTE BAND4: 1710.7 to 1754.3 MHz LTE BAND5: 824.7 to 848.3 MHz LTE BAND7: 2502.5 to 2567.5 MHz LTE BAND12: 699.7 to 715.3 MHz LTE BAND13: 779.5 to 784.5 MHz LTE BAND25: 1850.7 to 1914.3 MHz LTE band 26: 814.7 to 848.3 MHz WLAN: 2412 to 2462MHz, 5180 to 5240MHz, 5260 to 5320MHz, 5500 to 5700MHz, 5745 to 5825MHz Bluetooth: 2402 to 2480MHz NFC: 13.56MHz
Rx Frequency Bands	GSM850: 869.2 to 893.8 MHz PCS1900: 1930.2 to 1989.8 MHz WCDMA850: 871.4 to 891.6 MHz WCDMA1700: 1932.4 to 1987.6 MHz WCDMA1900: 2112.4 to 2152.6 MHz LTE BAND2: 1930.7 to 1989.3 MHz LTE BAND4: 2110.7 to 2154.3 MHz LTE BAND5: 869.7 to 893.3 MHz LTE BAND7: 2622.5 to 2687.5 MHz LTE BAND12: 729.7 to 745.3 MHz LTE BAND13: 748.5 to 753.5 MHz LTE BAND25: 1930.7 to 1994.3 MHz LTE band 26: 859.7 to 893.3 MHz WLAN: 2412 to 2462MHz, 5180 to 5240MHz, 5260 to 5320MHz, 5500 to 5700MHz, 5745 to 5825MHz Bluetooth: 2402 to 2480MHz NFC: 13.56MHz
Bandwidth	GSM850: 200KHz PCS1900: 200KHz WCDMA850: 200KHz WCDMA1700: 200KHz WCDMA1900: 200KHz LTE BAND2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE BAND4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE BAND5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE BAND7: 5MHz, 10MHz, 15MHz, 20MHz LTE BAND12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE BAND13: 5MHz, 10MHz LTE BAND25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz WLAN: 20MHz, 40MHz Bluetooth: 1MHz, 2MHz NFC: 13.56MHz
Modulation	GSM & GPRS: GMSK EDGE: GMSK/8PSK WCDMA: QPSK LTE: QPSK, 16QAM 802.11b: DSSS 802.11a/g/n: OFDM Bluetooth: GFSK, PI/4-DQPSK, 8-DPSK NFC: ASK
Power Class	4,tested with power level 5(GSM850) 1,tested with power level 0(GSM1900) 3, tested with power control “all 1”(UMTS Bands) 3, tested with power control all Max.(LTE Bands) Max output power for WLAN and Bluetooth
Device Class	B

Wireless Router (Hotspot)	Not Support
VOIP	Not Support
Antenna Type	WWAN: Dipole Antenna WLAN/Bluetooth: PIFA Antenna
EUT Stage	Identical Prototype

1.2.2 List of Accessory

Battery	**Model Name**	LARGE18650
	Power Rating	7.2Vdc, 2600mAh
	Type	Li-ion
AC/DC Adapter	**Model Name**	UWP-10W-0520S
	Rating	Input: 100-240Vac, 50/60Hz Output: 5Vdc, 2A
Earphone		3.5mm Earphone
USB-C Cable		Shielding, Length: 1m

1.3 Other Information

Sample Received Date:	2020-11-01
Sample tested Date:	2020-11-01 ~ 2020-12-12

1.4 Testing Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.
362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China

A2LA Cert. No.: 5162.01
FCC Registration No.: CN1260

1.5 Guidance Standards

The tests documented in this report were performed in accordance with FCC 47 CFR Part 2 §2.1093, IEEE Std 1528-2013, ANSI/IEEE C95.1-1992, the following FCC Published RF exposure KDB procedures:

CFR47 FCC Part 2: Section 2.1093
IEEE Std 1528-2013
KDB 447498 D01 v06
KDB 865664 D01 v01r04
KDB 865664 D02 v01r02
KDB 690783 D01 v01r03
KDB 248227 D01 v02r02
KDB 616217 D04 v01r02
KDB 648474 D04 v01r03
KDB 941225 D01 v03r01
KDB 941225 D05 v02r05
KDB 941225 D07 v01r02

The equipment have been tested by TÜV Rheinland (Shenzhen) Co., Ltd., and found compliance with the requirement of the above standards.

2 Specific Absorption Rate (SAR)

2.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling, by appropriate techniques, to produce specific absorption rates (SARs) as averaged over the whole-body, any 1 g or any 10 g of tissue (defined as a tissue volume in the shape of a cube). All SAR values are to be averaged over any six-minute period. When portable device was used within 20 cm of the user's body, SAR evaluation of the device will be required. The SAR limit in chapter 2.3.

2.2 SAR Definition

The SAR definition is 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:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

2.3 SAR Limits

(A) Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

(B) Limits for General Population/Uncontrolled Exposure (W/kg)

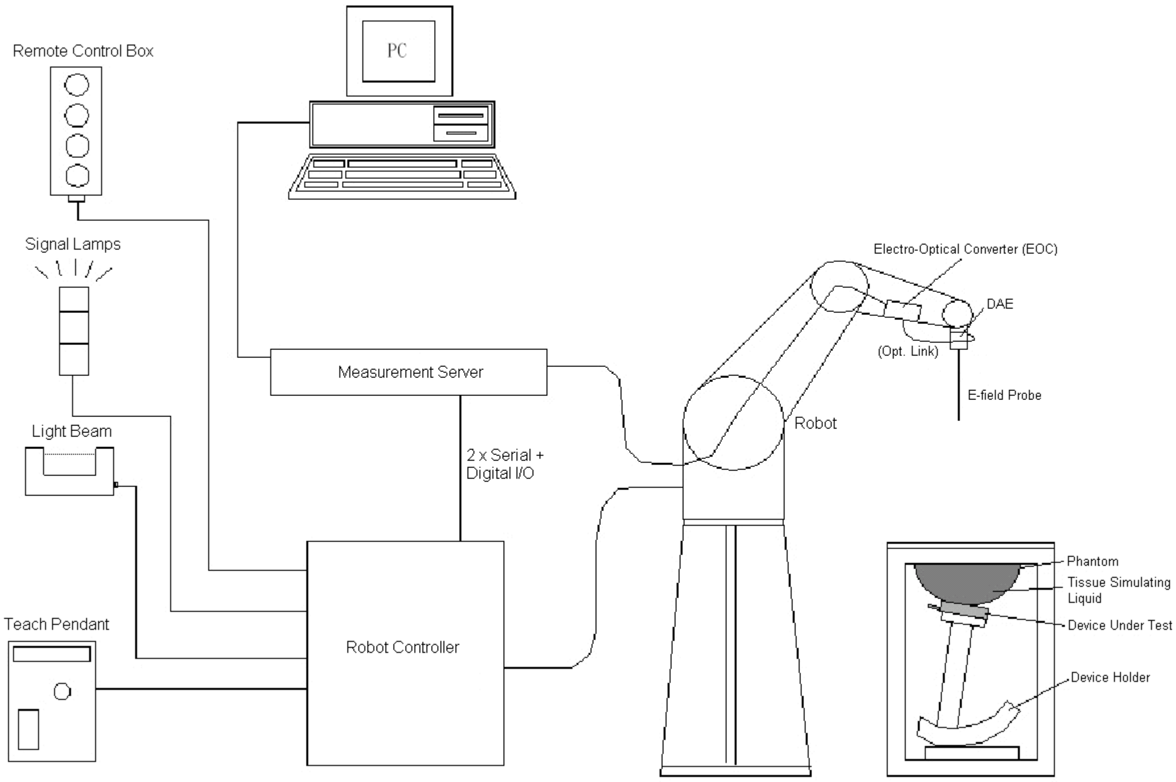
Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Note:
1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.
2. At frequencies above 6.0 GHz, SAR limits are not applicable and MPE limits for power density should be applied at 5 cm or more from the transmitting device.
3. The SAR limit is specified in FCC 47 CFR Part 2 §2.1093, ANSI/IEEE C95.1-1992.

3 SAR Measurement System

3.1 SPEAG DASY System

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY5 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

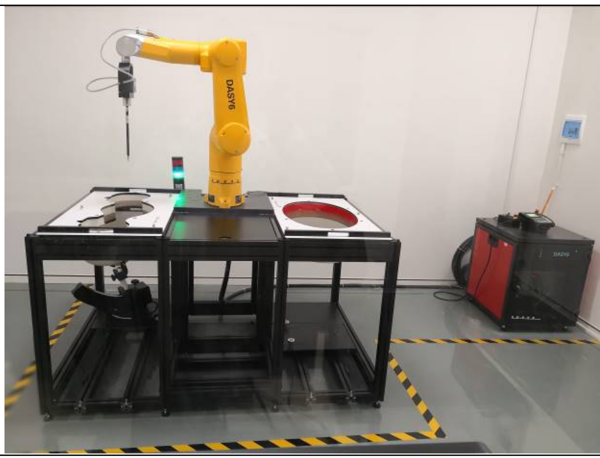


DASY Measurement System

Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)



DASY6

3.1.2 Probe

The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

Model	EX3DV4	
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

3.1.3 Data Acquisition Electronics (DAE)

Model	DAE3, 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: 4mV, 400mV)	
Input Offset Voltage	< 5µV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

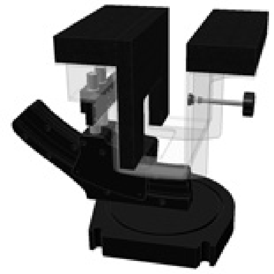
3.1.4 Phantom

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	approx. 25 liters	

Model	ELI	
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2.0 ± 0.2 mm (bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	approx. 30 liters	

3.1.5 Device Holder

Model	Mounting Device	
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).	
Material	POM	

Model	Laptop Extensions Kit	
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.	
Material	POM, Acrylic glass, Foam	

3.1.6 System Validation Dipoles

Model	D-Serial	
Construction	Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.	
Frequency	750 MHz to 5800 MHz	
Return Loss	> 20 dB	
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)	

3.2 SAR Scan Procedure

3.2.1 SAR Reference Measurement (drift)

Prior to the SAR test, local SAR shall be measured at a stationary reference point where the SAR exceeds the lower detection limit of the measurement system.

3.2.2 Area Scan

Measurement procedures for evaluating the SAR of wireless device start with a coarse measurement grid to determine the approximate location of the local peak SAR values. This is known as the area-scan procedure. All antennas and radiating structures that may contribute to the measured SAR or influence the SAR distribution must be included in the area scan. The area scan measurement resolution must enable the extrapolation algorithms of the SAR system to correctly identify the peak SAR location(s) for subsequent zoom scan measurements to correctly determine the 1-g SAR. Area scans are performed at a constant distance from the phantom surface, determined by the measurement frequencies. When a measured peak is closer than ½ the zoom scan volume dimension (x, y) from the edge of the area scan region, unless the entire peak and gram-averaging volume are both captured within the zoom scan volume, the area scan must be repeated by shifting and expanding the area scan region to ensure all peaks are away from the area scan boundary. The area scan resolutions specified in the table below must be applied to the SAR measurements.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 mm ± 1 mm	½·δ·ln(2) mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution	

	must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.

3.2.3 Zoom Scan

To evaluate the peak spatial-average SAR values with respect to 1 g or 10 g cubes, fine resolution volume scans, called zoom scans, are performed at the peak SAR locations identified during the area scan. If the cube volume within the zoom scan chosen to calculate the peak spatial-average SAR touches any boundary of the zoom-scan volume, the zoom scan shall be repeated with the center of the zoom-scan volume shifted to the new maximum SAR location. For any secondary peaks found in the area scan that are within 2 dB of the maximum peak and are not within this zoom scan, the zoom scan shall be performed for such peaks, unless the peak spatial-average SAR at the location of the maximum peak is more than 2 dB below the applicable SAR limit (i.e., 1 W/kg for a 1.6 W/kg 1 g limit, or 1.26 W/kg for a 2 W/kg 10 g limit). The zoom scan resolutions specified in the table below must be applied to the SAR measurements.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom Scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1^{ST} two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see 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.				

3.2.4 SAR Drift Measurement

The local SAR (or conducted power) shall be measured at exactly the same location as in 3.2.1 section. The absolute value of the measurement drift (the difference between the SAR measured in 3.2.1 and 3.2.4 section) shall be recorded. The SAR drift shall be kept within ± 5%.

3.3 Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Data	Cal. interval
System Validation Dipole	SPEAG	D750V3	1109	Jun. 25, 2018	3 years
System Validation Dipole	SPEAG	D835V2	4d242	Jun. 06, 2018	3 years
System Validation Dipole	SPEAG	D900V2	1d200	Jun. 06, 2018	3 years
System Validation Dipole	SPEAG	D1750V2	1166	Jun. 11, 2018	3 years
System Validation Dipole	SPEAG	D1800V2	2d219	Jun. 11, 2018	3 years
System Validation Dipole	SPEAG	D1900V2	5d229	Jun. 12, 2018	3 years
System Validation Dipole	SPEAG	D2000V2	1089	Jun. 07, 2018	3 years
System Validation Dipole	SPEAG	D2300V2	1087	Jun. 07, 2018	3 years
System Validation Dipole	SPEAG	D2450V2	1014	Jun. 07, 2018	3 years
System Validation Dipole	SPEAG	D2600V2	1153	Jun. 07, 2018	3 years
System Validation Dipole	SPEAG	D3500V2	1063	Jun. 08, 2018	3 years
System Validation Dipole	SPEAG	D3700V2	1020	Jun. 06, 2018	3 years
System Validation Dipole	SPEAG	D5GHzV2	1280	May. 26, 2020	1 year

Dosimetric E-Field Probe	SPEAG	EX3DV4	7506	May. 29, 2020	1 year
Data Acquisition Electronics	SPEAG	DAE4	1557	May. 27, 2020	1 year
Wideband Radio Communication Tester	R&S	CMW500	166305	Sep. 29, 2020	1 year
Signal Analyzer	R&S	FSV 7	103665	Aug. 22, 2020	1 year
Vector Network Analyzer	R&S	ZNB 8	107040	Aug. 22, 2020	1 year
Dielectric assessment Kit	SPEAG	DAK-3.5	1269	May. 19, 2020	1 year
Signal Generator	R&S	SMB 100A	180840	Aug. 22, 2020	1 year
EPM Series Power Meter	Keysight	N1914A	MY58240005	Dec. 20, 2018	2 years
Power Sensor	Keysight	N8481H	MY58250002	Dec. 19, 2019	1 year
Power Sensor	Keysight	N8481H	MY58250006	Dec. 19, 2019	1 year
DC Power Supply	Topward	3303D	809332	Dec. 19, 2019	1 year
Coaxial Directional Couper	Keysight	773D	MY52180552	Dec. 19, 2019	1 year
Coaxial Directional Couper	shhuaxiang	DTO-0.4/3.9-10	18052101	Dec. 19, 2019	1 year
Coaxial attenuator	Keysight	8491A	MY52463219	Dec. 24, 2019	1 year
Coaxial attenuator	Keysight	8491A	MY52463210	Dec. 24, 2019	1 year
Coaxial attenuator	Keysight	8491A	MY52463222	Dec. 24, 2019	1 year
Digital Thermometer	LKM	DTM3000	3116	Dec. 19, 2019	1 year
Power Amplifier Mini circuit	mini-circuits	ZHL-42W	SN002101809	N/A	N/A
Power Amplifier Mini circuit	mini-circuits	ZVE-8G	SN070501814	N/A	N/A
PHANTOM	SPEAG	ELI V8.0	2094	N/A	N/A
PHANTOM	SPEAG	SAM-Twin V8.0	1961	N/A	N/A

3.4 Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

3.5 Tissue Dielectric Parameter Measurement & System Verification

3.5.1 Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed.

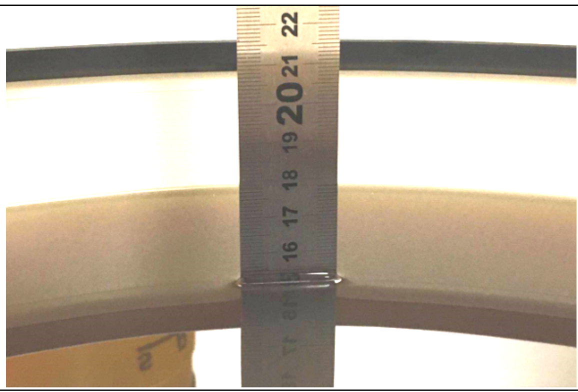


Photo of Liquid Height for Body Position

The body tissue simulating liquids, the dielectric properties are defined in KDB 865664 D01 Appendix A. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

Table-3.1 Tissue Dielectric Parameters for Body

Frequency (MHz)	Target Permittivity	Range of ±5%	Target Conductivity	Range of ±5%
For Body				
750	55.5	52.7 ~ 58.3	0.96	0.91 ~ 1.01
835	55.2	52.4 ~ 58.0	0.97	0.92 ~ 1.02

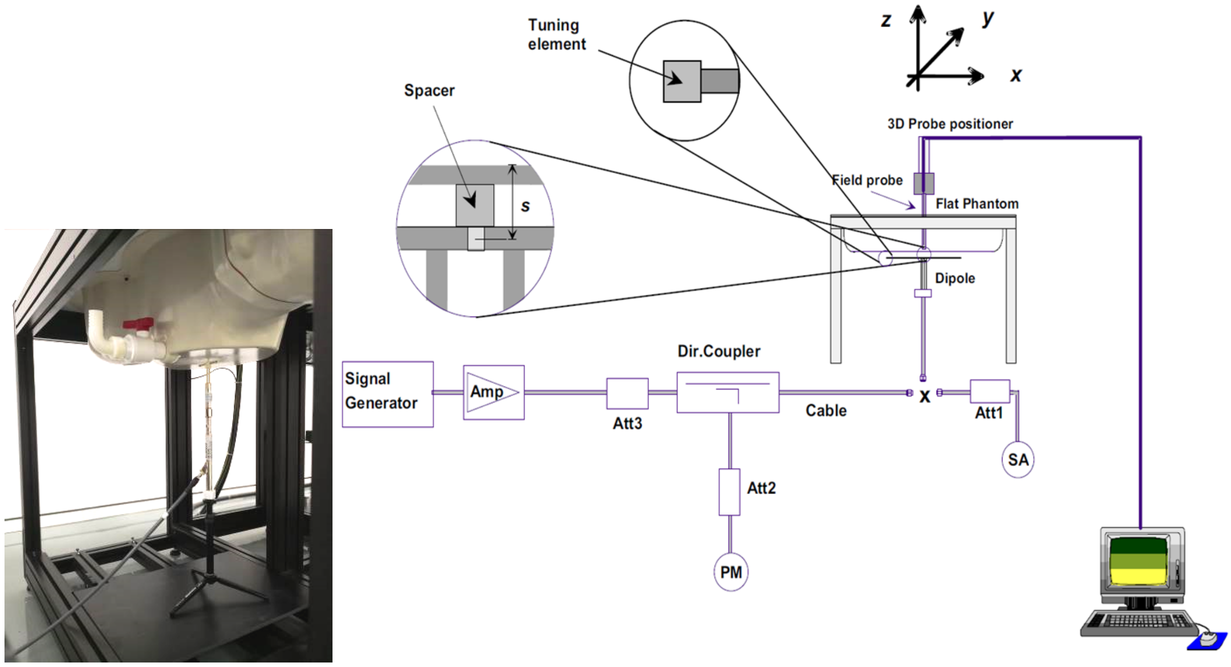
900	55.0	52.3 ~ 57.8	1.05	1.00 ~ 1.10
1450	54.0	51.3 ~ 56.7	1.30	1.24 ~ 1.37
1640	53.8	51.1 ~ 56.5	1.40	1.33 ~ 1.47
1750	53.4	50.7 ~ 56.1	1.49	1.42 ~ 1.56
1800	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60
1900	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60
2000	53.3	50.6 ~ 56.0	1.52	1.44 ~ 1.60
2300	52.9	50.3 ~ 55.5	1.81	1.72 ~ 1.90
2450	52.7	50.1 ~ 55.3	1.95	1.85 ~ 2.05
2600	52.5	49.9 ~ 55.1	2.16	2.05 ~ 2.27
3500	51.3	48.7 ~ 53.9	3.31	3.14 ~ 3.48
5200	49.0	46.6 ~ 51.5	5.30	5.04 ~ 5.57
5300	48.9	46.5 ~ 51.3	5.42	5.15 ~ 5.69
5500	48.6	46.2 ~ 51.0	5.65	5.37 ~ 5.93
5600	48.5	46.1 ~ 50.9	5.77	5.48 ~ 6.06
5800	48.2	45.8 ~ 50.6	6.00	5.70 ~ 6.30

Table-3.2 Recipes of Tissue Simulating Liquid

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	0.2	-	0.2	1.5	56.0	-	42.1	-
H835	0.2	-	0.2	1.5	57.0	-	41.1	-
H900	0.2	-	0.2	1.4	58.0	-	40.2	-
H1450	-	43.3	-	0.6	-	-	56.1	-
H1640	-	45.8	-	0.5	-	-	53.7	-
H1750	-	47.0	-	0.4	-	-	52.6	-
H1800	-	44.5	-	0.3	-	-	55.2	-
H1900	-	44.5	-	0.2	-	-	55.3	-
H2000	-	44.5	-	0.1	-	-	55.4	-
H2300	-	44.9	-	0.1	-	-	55.0	-
H2450	-	45.0	-	0.1	-	-	54.9	-
H2600	-	45.1	-	0.1	-	-	54.8	-
H3500	-	8.0	-	0.2	-	20.0	71.8	-
H5G	-	-	-	-	-	17.2	65.5	17.3
B750	0.2	-	0.2	0.8	48.8	-	50.0	-
B835	0.2	-	0.2	0.9	48.5	-	50.2	-
B900	0.2	-	0.2	0.9	48.2	-	50.5	-
B1450	-	34.0	-	0.3	-	-	65.7	-
B1640	-	32.5	-	0.3	-	-	67.2	-
B1750	-	31.0	-	0.2	-	-	68.8	-
B1800	-	29.5	-	0.4	-	-	70.1	-
B1900	-	29.5	-	0.3	-	-	70.2	-
B2000	-	30.0	-	0.2	-	-	69.8	-
B2300	-	31.0	-	0.1	-	-	68.9	-
B2450	-	31.4	-	0.1	-	-	68.5	-
B2600	-	31.8	-	0.1	-	-	68.1	-
B3500	-	28.8	-	0.1	-	-	71.1	-
B5G	-	-	-	-	-	10.7	78.6	10.7

3.5.2 System Check Verification

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.



System Verification Setup

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The spectrum analyzer measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter.

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

3.5.3 Tissue Verification

The measuring results for tissue simulating liquid are shown as below.

Tissue Verification								
Tissue Type	Frequency (MHz)	Conductivity (σ)	Permittivity (εr)	Targeted Conductivity (σ)	Targeted Permittivity (εr)	Deviation Conductivity (σ)	Deviation Permittivity (εr)	Date
B750	750	0.963	53.779	0.96	55.50	0.31	-3.10	Nov. 27, 2020
B835	835	0.954	56.029	0.97	55.20	-1.65	1.50	Dec. 01, 2020
B1750	1750	1.439	53.695	1.49	53.40	-3.42	0.55	Dec. 02, 2020
B1900	1900	1.585	53.657	1.52	53.30	4.28	0.67	Nov. 30, 2020
B2450	2450	1.957	51.763	1.95	52.70	0.36	-1.78	Dec. 03, 2020
B2600	2600	2.117	51.117	2.16	52.50	-1.99	-2.63	Dec. 02, 2020
B5G	5250	5.494	48.293	5.36	48.90	2.50	-1.24	Nov. 04, 2020
B5G	5600	5.957	47.703	5.77	48.50	3.24	-1.64	Nov. 04, 2020
B5G	5750	6.221	47.400	6.00	48.20	3.68	-1.66	Nov. 04, 2020

Note:
The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ± 5% of the target values. The variation of the liquid temperature must be within ± 2 °C during the test.

3.5.4 System Verification

The measuring result for system verification is tabulated as below.

System Validation									
Frequency (MHz)	Targeted SAR 1g (W/kg)	Targeted SAR 10g (W/kg)	Measured SAR 1g (W/kg)	Measured SAR 10g (W/kg)	normalized SAR 1g (W/kg)	normalized SAR 10g (W/kg)	SAR 1g Deviation (%)	SAR 10g Deviation (%)	Date
750	8.51	5.64	2.17	1.41	8.68	5.64	2.00	0.00	Nov. 27, 2020
835	9.59	6.31	2.41	1.56	9.64	6.24	0.52	-1.11	Dec. 01, 2020
1750	35.90	19.20	8.84	4.66	35.36	18.64	-1.50	-2.92	Dec. 02, 2020
1900	40.20	21.30	9.69	4.99	38.76	19.96	-3.58	-6.29	Nov. 30, 2020
2450	50.50	23.80	12.90	5.94	51.60	23.76	2.18	-0.17	Dec. 03, 2020
2600	54.80	24.50	14.20	6.21	56.80	24.84	3.65	1.39	Dec. 02, 2020
5250	75.60	21.00	7.61	2.15	76.10	21.50	0.66	2.38	Nov. 04, 2020
5600	78.40	21.50	7.96	2.22	79.60	22.20	1.53	3.26	Nov. 04, 2020
5750	73.90	20.20	7.72	2.16	77.20	21.60	4.47	6.93	Nov. 04, 2020

Note:
Comparing to the reference SAR value, the validation data should be within its specification of 10%. The result indicates the system check can meet the variation criterion and the plots can be referred Appendix A: SAR Plots of System Verification.

4 SAR Measurement Evaluation and Test Results

4.1 EUT Configuration and Setting

Connections between EUT and System Simulator
For WWAN SAR testing, the EUT was linked and controlled by base station emulator. Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during SAR testing.

The device supports WWAN, WLAN, and Bluetooth capabilities.

4.1.1 GSM Configuration and Testing

GSM (GMSK: CS1) voice mode transmits with 1 time slot. GPRS (GMSK: CS1) and EDGE (GMSK: MCS1, 8PSK: MCS9) may transmit up to 4 time slots in the 8 time-slot frame according to the multislot class implemented in a device.

4.1.2 WCDMA Configuration and Testing

WCDMA Handsets Body-worn SAR
SAR for body-worn 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.

Handsets with Release 5 HSDPA
The 3G SAR test reduction procedure is applied to HSDPA body-worn configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures in the “Release 5 HSDPA Data Devices”, for the highest reported SAR body-worn exposure configuration in 12.2 kbps RMC. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

Handsets with Release 6 HSUPA
The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body-worn configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures in the “Release 6 HSPA Data Devices”, for the highest reported body-worn exposure SAR configuration in 12.2 kbps RMC. When VOIP is applicable for next to the ear head exposure in HSPA, the 3G SAR test reduction procedure is applied to HSPA with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body-worn measurements is tested for next to the ear head exposure.

Release 5 HSDPA Data Devices
The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, 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. HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH / HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors (β_c, β_d), and HS-DPCCH power offset parameters (Δ_{ACK}, Δ_{NACK}, Δ_{CQI}) are set according to values indicated in below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

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

3	15 / 15	8 / 15	64	15 / 8	30 / 15	1.5	0.5
4	15 / 15	4 / 15	64	15 / 4	30 / 15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 8 ⇔ A_{hs} = β_{hs} / β_c = 30 / 15 ⇔ β_{hs} = 30 / 15 * β_c.
Note 2: CM = 1 for β_c / β_d = 12 / 15, β_{hs} / β_c = 24 / 15.
Note 3: For subtest 2 the β_c / β_d ratio of 12 / 15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 11 / 15 and β_d = 15 / 15.

Release 6 HSUPA Data Devices
The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, 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. Due to inner loop power control requirements in HSPA, a communication test set is required for output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA are configured according to the β values indicated in below.

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

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 8 ⇔ A_{hs} = β_{hs} / β_c = 30 / 15 ⇔ β_{hs} = 30 / 15 * β_c.
Note 2: CM = 1 for β_c / β_d = 12 / 15, β_{hs} / β_c = 24 / 15. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c / β_d ratio of 11 / 15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 10 / 15 and β_d = 15 / 15.
Note 4: For subtest 5 the β_c / β_d ratio of 15 / 15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 14 / 15 and β_d = 15 / 15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
Note 6: β_{ed} cannot be set directly; it is set by Absolute Grant Value.

DC-HSDPA SAR Guidance
The 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Otherwise, when SAR is required for Rel. 5 HSDPA, SAR is required for Rel. 8 DC-HSDPA. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

4.1.3 LTE Configuration and Testing

UE power class is category 3. The LTE maximum power reduction (MPR) in accordance with 3GPP TS 36.101 is active all times during LTE operation. The allowed MPR for the maximum output power is specified in below.

Modulation	**Channel Bandwidth / RB Configurations**						**LTE MPR**
	BW 1.4	**BW 3 MHz**	**BW 5 MHz**	**BW 10**	**BW 15**	**BW 20**	

	MHz			MHz	MHz	MHz	Setting (dB)
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16QAM	<= 5	<= 4	<= 8	<= 12	<= 16	<= 18	1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2
64 QAM	<= 5	<= 4	<= 8	<= 12	<= 16	<= 18	2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	3

In addition, the device is compliant with additional maximum power reduction (A-MPR) requirements defined in 3GPP TS 36.101 section 6.2.4 that was disabled for all FCC compliance testing.

A properly configured base station simulator is used for the SAR and power measurements, so spectrum plots for each RB allocation and offset configuration are not included in the SAR report to demonstrate that the tested RB allocations have been correctly established at the maximum output power conditions.

4.1.4 WLAN Configuration and Testing

In general, various vendor specific external test software and chipset based internal test modes are typically used for SAR measurement. These chipset based test mode utilities are generally hardware and manufacturer dependent, and often include substantial flexibility to reconfigure or reprogram a device. 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 actual channel frequencies. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. In addition, a periodic transmission duty factor is required for current generation SAR systems to measure SAR correctly. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

According to KDB 248227 D01, this device has installed WLAN engineering testing software which can provide continuous transmitting RF signal. During WLAN SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

Initial Test Configuration
An initial test configuration is determined for OFDM transmission modes in 2.4 GHz and 5 GHz bands according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.

Subsequent Test Configuration
SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. When the highest reported SAR for the initial test configuration according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

SAR Test Configuration and Channel Selection
When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is using largest channel bandwidth, lowest order modulation, lowest data rate, and lowest order 802.11 mode (i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen

over 802.11n). After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following.
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.

Test Reduction for U-NII-1 (5.2 GHz) and U-NII-2A (5.3 GHz) Bands
For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following.
1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition).
2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements
When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined by applying the following steps sequentially.

1) The largest channel bandwidth configuration is selected among the multiple configurations in a frequency band with the same specified maximum output power.
2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.

4.2 EUT Testing Position

4.2.1 EUT Antenna Location

<EUT Front View>

Antenna to	overall	display	Left Side	Right Side	Top Side	Bottom Side

edge (mm)	diagonal	diagonal				
WWAN Ant-0	204mm	140mm	13	6	30	142
WLAN / BT			78	5	21	142

4.2.2 Body-worn Exposure Conditions

RF Exposure Conditions	Test Position	Separation Distance	SAR test exclusion
Body-worn	Front Face	0mm (Touching the phantom)	N
	Rear Face		Y
	Top Side		Y
	Right Side		Y
	Left Side		Y
	Bottom Side		N

1. The normal tablet procedures in KDB 616217 are required when the over diagonal dimension of the device is > 20 cm. Hotspot mode SAR is not required when normal tablet procedures are applied. Extremity 10-g SAR is also not required for the front (top) surface of large form factor full size tablets. The more conservative tablet SAR results can be used to support the 10-g extremity SAR for phablet mode.

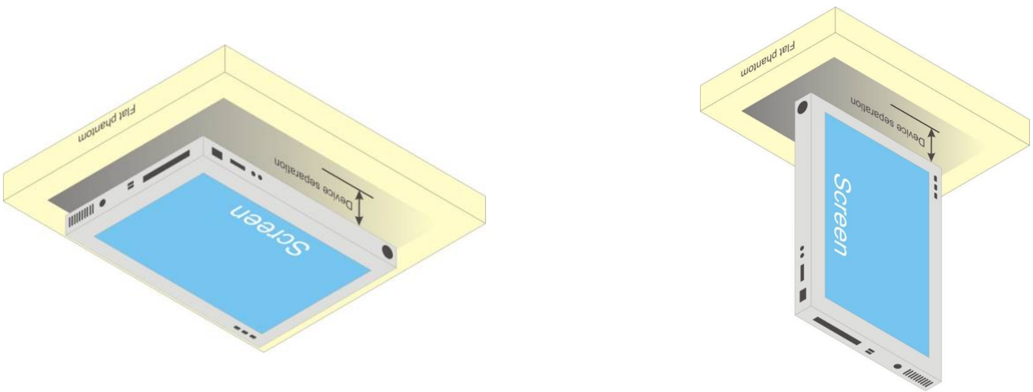


Fig-4.1 Body Worn Position

4.3 Measured Conducted Power Result

4.3.1 Conducted Power of GSM Bands

Refer to Appendix C

4.3.2 Conducted Power of WCDMA Bands

Refer to Appendix C

4.3.3 Conducted Power of LTE Bands

Refer to Appendix C

4.3.4 Conducted Power of WLAN

Refer to Appendix C

4.3.5 Conducted Power of BT

Refer to Appendix C

4.4 SAR Test Exclusion Evaluations

4.4.1 Standalone SAR Test Exclusion Considerations

According to KDB 447498 D01, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The 1-g and 10-g *SAR test exclusion thresholds* are determined by the following:

a) For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm:

$$\frac{Max.Tune\ up\ Power_{(mW)}}{Min.Test\ Separation\ Distance_{(mm)}} \times \sqrt{f_{(GHz)}} \leq 3.0 \text{ for SAR - 1g}, \leq 7.5 \text{ for SAR - 10g}$$

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

b) For 100 MHz to 1500 MHz and *test separation distances* > 50 mm:

{[Threshold for 50 mm in step a)] + [(test separation distance – 50 mm) · ($f_{(MHz)}$/150)]} mW

c) For > 1500 MHz and ≤ 6 GHz and *test separation distances* > 50 mm:

{[Threshold for 50 mm in step a)] + [(test separation distance – 50 mm) ·10]} mW

When the calculated result in step a) is <= 3.0 for SAR-1g exposure condition, or <= 7.5 for SAR-10g exposure condition, the SAR testing exclusion is applied.

When the device output power is less than the calculated result (power threshold, mW) shown in in step b) and c), the SAR testing exclusion is applied.

Remark: As described above, the Bluetooth output power is less than 10mW, so the SAR Testing exclusion is applied.

4.5 SAR Testing Results

4.5.1 SAR Test Reduction Considerations

KDB 447498 D01 General RF Exposure Guidance
Testing of other required channels within the operating mode of a frequency band is not required when the *reported* SAR for the mid-band or highest output power channel is:

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

KDB 941225 D01 3G SAR Procedures

a) GSM SAR Test Reduction
SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. The GMSK EDGE configurations are grouped with GPRS and considered with respect to time-averaged maximum output power to determine compliance. The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode.

b) 3G SAR Test Reduction Procedure
The mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ 1/4 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.

KDB 941225 D05 SAR for LTE Devices

a) QPSK with 1 RB and 50% RB allocation
Start with the largest channel bandwidth and measure SAR, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

b) 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.

c) Higher order modulations
SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > 1/2 dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

d) Other channel bandwidth
SAR is required when the highest maximum output power of the smaller channel bandwidth is > 1/2 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.

KDB 248227 D01 Wi-Fi SAR

a) For handsets operating next to ear, hotspot mode or mini-tablet configurations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When the reported SAR of initial test position is <= 0.4 W/kg, SAR testing for remaining test positions is not required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is <= 0.8 W/kg or all test positions are measured.

b) For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg.

c) For WLAN 5 GHz, the initial test configuration was selected according to the transmission mode with the highest maximum output power. When the reported SAR of initial test configuration is > 0.8 W/kg, SAR is required for the subsequent highest measured output power channel until the reported SAR result is <= 1.2 W/kg or all required channels are measured. For other transmission modes, SAR is not required when the highest reported SAR for initial test configuration is adjusted by the ratio of subsequent test configuration to initial test configuration specified maximum output power and it is <= 1.2 W/kg.

d) For WLAN MIMO mode, the power-based standalone SAR test exclusion or the sum of SAR provision in KDB 447498 to determine simultaneous transmission SAR test exclusion should be applied. Otherwise, SAR for MIMO mode will be measured with all applicable antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

e) Duty Cycle
For SAR test, the correct crest factor parameter in the SAR measurement system software was set.
The duty cycle as below table.

Band	Duty Cycle
2.4G WLAN	98.2%
5G WLAN	95.8%

Note: Crest Factor = 1 / Duty Cycle

4.5.2 SAR Results for Body-worn Exposure Condition

GSM SAR Test Results

System & Position												
Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Channel	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaling Factor	Scaled 1g SAR
	GSM850	GPRS11	Rear Face	0	128	29.5	28.57	0.09	0.413	0.2	1.24	0.51
1	GSM850	GPRS11	Rear Face-1	0	128	29.5	28.57	-0.12	**1.01**	0.571	1.24	**1.25**
	GSM850	GPRS11	Left Side	0	128	29.5	28.57	0.06	0.165	0.097	1.24	0.20
	GSM850	GPRS11	Right Side	0	128	29.5	28.57	0.05	0.07	0.042	1.24	0.09
	GSM850	GPRS11	Rear Face-1	0	189	29.5	28.48	-0.03	0.918	0.511	1.26	1.16
	GSM850	GPRS11	Rear Face-1	0	251	29.5	28.41	-0.07	0.938	0.522	1.29	1.21
	GSM850	GPRS11	Rear Face-1	0	128	29.5	28.57	0.06	0.982	0.556	1.24	1.22

System & Position												
Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Channel	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaling Factor	Scaled 1g SAR
	GSM1900	GPRS12	Rear Face	0	661	28.5	27.57	0.09	0.215	0.105	1.24	0.27
2	GSM1900	GPRS12	Rear Face-1	0	661	28.5	27.57	0.12	**0.424**	0.202	1.24	**0.53**
	GSM1900	GPRS12	Left Side	0	661	28.5	27.57	0.02	0.01	0.00305	1.24	0.01
	GSM1900	GPRS12	Right Side	0	661	28.5	27.57	0.04	0.087	0.045	1.24	0.11

WCDMA SAR Test Results

System & Position												
Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Channel	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaling Factor	Scaled 1g SAR
	WCDMA II	RMC12.2K	Rear Face	0	9538	22.0	20.98	0.08	0.115	0.052	1.26	0.15
3	WCDMA II	RMC12.2K	Rear Face-1	0	9538	22.0	20.98	0.00	**0.203**	0.095	1.26	**0.26**
	WCDMA II	RMC12.2K	Left Side	0	9538	22.0	20.98	-0.06	0.00492	0.00143	1.26	0.01
	WCDMA II	RMC12.2K	Right Side	0	9538	22.0	20.98	0.05	0.043	0.022	1.26	0.05
	WCDMA IV	RMC12.2K	Rear Face	0	1413	22.0	20.98	0.05	0.241	0.114	1.26	0.30
4	WCDMA IV	RMC12.2K	Rear Face-1	0	1413	22.0	20.92	0.00	**0.476**	0.22	1.28	**0.61**
	WCDMA IV	RMC12.2K	Left Side	0	1413	22.0	20.92	0.09	0.029	0.015	1.28	0.04
	WCDMA IV	RMC12.2K	Right Side	0	1413	22.0	20.92	-0.05	0.037	0.019	1.28	0.05
	WCDMA V	RMC12.2K	Rear Face	0	4132	22.0	21.26	-0.01	0.187	0.099	1.19	0.22
5	WCDMA V	RMC12.2K	Rear Face-1	0	4132	22.0	21.26	0.02	**0.395**	0.224	1.19	**0.47**
	WCDMA V	RMC12.2K	Left Side	0	4132	22.0	21.26	0.06	0.075	0.048	1.19	0.09
	WCDMA V	RMC12.2K	Right Side	0	4132	22.0	21.26	0.04	0.032	0.021	1.19	0.04

LTE SAR Test Results

System & Position														
Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Channel	RB	offset	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaling Factor	Scaled 1g SAR
	LTE 2	QPSK20M	Rear Face	0	19100	1	0	22.0	21.39	0.09	0.117	0.052	1.15	0.13
6	LTE 2	QPSK20M	Rear Face-1	0	19100	1	0	22.0	21.39	0.00	**0.207**	0.096	1.15	**0.24**
	LTE 2	QPSK20M	Left Side	0	19100	1	0	22.0	21.39	0.02	0.00502	0.00145	1.15	0.01
	LTE 2	QPSK20M	Right Side	0	19100	1	0	22.0	21.39	0.05	0.044	0.022	1.15	0.05
	LTE 2	QPSK20M	Rear Face	0	19100	50	0	21.0	20.18	0.03	0.085	0.038	1.21	0.10
	LTE 2	QPSK20M	Rear Face-1	0	19100	50	0	21.0	20.18	-0.09	0.151	0.07	1.21	0.18
	LTE 2	QPSK20M	Left Side	0	19100	50	0	21.0	20.18	0.05	0.00366	0.00106	1.21	0.00
	LTE 2	QPSK20M	Right Side	0	19100	50	0	21.0	20.18	0.01	0.032	0.016	1.21	0.04
	LTE 4	QPSK20M	Rear Face	0	20050	1	99	22.5	21.07	0.02	0.261	0.121	1.39	0.36
7	LTE 4	QPSK20M	Rear Face-1	0	20050	1	99	22.5	21.07	0.00	**0.516**	0.234	1.39	**0.72**
	LTE	QPSK20	Left	0	20050	1	99	22.5	21.07	-0.01	0.031	0.016	1.39	0.04

	4	M	Side											
	LTE 4	QPSK20 M	Right Side	0	20050	1	99	22.5	21.07	0.09	0.04	0.02	1.39	0.06
	LTE 4	QPSK20 M	Rear Face	0	20175	50	0	21.5	20.13	0.09	0.176	0.082	1.37	0.24
	LTE 4	QPSK20 M	Rear Face-1	0	20175	50	0	21.5	20.13	0.03	0.347	0.158	1.37	0.48
	LTE 4	QPSK20 M	Left Side	0	20175	50	0	21.5	20.13	0.05	0.02	0.011	1.37	0.03
	LTE 4	QPSK20 M	Right Side	0	20175	50	0	21.5	20.13	0.05	0.026	0.014	1.37	0.04
	LTE 5	QPSK10 M	Rear Face	0	20450	1	49	22.5	21.09	0.08	0.153	0.078	1.38	0.21
8	LTE 5	QPSK10 M	Rear Face-1	0	20450	1	49	22.5	21.09	0.15	**0.293**	0.158	1.38	**0.41**
	LTE 5	QPSK10 M	Left Side	0	20450	1	49	22.5	21.09	0.06	0.051	0.024	1.38	0.07
	LTE 5	QPSK10 M	Right Side	0	20450	1	49	22.5	21.09	0.05	0.027	0.016	1.38	0.04
	LTE 5	QPSK10 M	Rear Face	0	20450	25	25	21.5	20.06	0.08	0.121	0.061	1.39	0.17
	LTE 5	QPSK10 M	Rear Face-1	0	20450	25	25	21.5	20.06	0.06	0.232	0.123	1.39	0.32
	LTE 5	QPSK10 M	Left Side	0	20450	25	25	21.5	20.06	0.05	0.04	0.019	1.39	0.06
	LTE 5	QPSK10 M	Right Side	0	20450	25	25	21.5	20.06	0.04	0.021	0.013	1.39	0.03
	LTE 7	QPSK20 M	Rear Face	0	21350	1	50	22.5	21.38	0.06	0.034	0.013	1.29	0.04
9	LTE 7	QPSK20 M	Rear Face-1	0	21350	1	50	22.5	21.38	-0.01	**0.115**	0.047	1.29	**0.15**
	LTE 7	QPSK20 M	Left Side	0	21350	1	50	22.5	21.38	0.05	0.00755	0.00325	1.29	0.01
	LTE 7	QPSK20 M	Right Side	0	21350	1	50	22.5	21.38	0.01	0.00615	0.00118	1.29	0.01
	LTE 7	QPSK20 M	Rear Face	0	20850	50	0	21.5	20.17	0.09	0.028	0.00998	1.36	0.04
	LTE 7	QPSK20 M	Rear Face-1	0	20850	50	0	21.5	20.17	0.00	0.094	0.038	1.36	0.13
	LTE 7	QPSK20 M	Left Side	0	20850	50	0	21.5	20.17	0.00	0.00614	0.00259	1.36	0.01
	LTE 7	QPSK20 M	Right Side	0	20850	50	0	21.5	20.17	-0.09	0.00496	0.000912	1.36	0.01
	LTE 12	QPSK10 M	Rear Face	0	23095	1	24	22.0	21.64	-0.15	0.399	0.212	1.09	0.43
10	LTE 12	QPSK10 M	Rear Face-1	0	23095	1	24	22.0	21.64	0.02	**0.685**	0.355	1.09	**0.74**
	LTE 12	QPSK10 M	Left Side	0	23095	1	24	22.0	21.64	0.00	0.148	0.086	1.09	0.16
	LTE 12	QPSK10 M	Right Side	0	23095	1	24	22.0	21.64	0.02	0.239	0.156	1.09	0.26
	LTE 12	QPSK10 M	Rear Face	0	23095	25	0	21.0	20.51	0.06	0.322	0.167	1.12	0.36
	LTE 12	QPSK10 M	Rear Face-1	0	23095	25	0	21.0	20.51	-0.01	0.55	0.278	1.12	0.62
	LTE 12	QPSK10 M	Left Side	0	23095	25	0	21.0	20.51	0.08	0.119	0.067	1.12	0.13
	LTE 12	QPSK10 M	Right Side	0	23095	25	0	21.0	20.51	0.05	0.192	0.122	1.12	0.21
	LTE 13	QPSK10 M	Rear Face	0	23230	1	24	22.0	21.14	0.00	0.311	0.163	1.22	0.38
11	LTE 13	QPSK10 M	Rear Face-1	0	23230	1	24	22.0	21.14	-0.13	**0.604**	0.303	1.22	**0.74**
	LTE 13	QPSK10 M	Left Side	0	23230	1	24	22.0	21.14	0.13	0.109	0.063	1.22	0.13
	LTE 13	QPSK10 M	Right Side	0	23230	1	24	22.0	21.14	0.01	0.056	0.034	1.22	0.07
	LTE 13	QPSK10 M	Rear Face	0	23230	25	25	21.0	20.16	-0.04	0.235	0.126	1.21	0.29
	LTE 13	QPSK10 M	Rear Face-1	0	23230	25	25	21.0	20.16	-0.14	0.456	0.234	1.21	0.55
	LTE 13	QPSK10 M	Left Side	0	23230	25	25	21.0	20.16	0.05	0.083	0.049	1.21	0.10
	LTE 13	QPSK10 M	Right Side	0	23230	25	25	21.0	20.16	0.01	0.043	0.026	1.21	0.05
	LTE 25	QPSK20 M	Rear Face	0	26140	1	50	22.0	21.42	0.00	0.068	0.034	1.14	0.08
12	LTE 25	QPSK20 M	Rear Face-1	0	26140	1	50	22.0	21.42	-0.09	**0.159**	0.076	1.14	**0.18**
	LTE 25	QPSK20 M	Left Side	0	26140	1	50	22.0	21.42	0.00	0.00398	0.00133	1.14	0.00
	LTE 25	QPSK20 M	Right Side	0	26140	1	50	22.0	21.42	0.09	0.047	0.02	1.14	0.05
	LTE 25	QPSK20 M	Rear Face	0	26590	50	0	21.0	20.24	-0.09	0.057	0.029	1.19	0.07
	LTE 25	QPSK20 M	Rear Face-1	0	26590	50	0	21.0	20.24	-0.09	0.134	0.064	1.19	0.16
	LTE 25	QPSK20 M	Left Side	0	26590	50	0	21.0	20.24	0.04	0.00335	0.00112	1.19	0.00
	LTE 25	QPSK20 M	Right Side	0	26590	50	0	21.0	20.24	0.08	0.041	0.017	1.19	0.05
	LTE 26	QPSK15 M	Rear Face	0	26765	1	0	22.0	21.29	0.09	0.177	0.103	1.18	0.21
13	LTE	QPSK15	Rear	0	26765	1	0	22.0	21.29	0.18	**0.294**	0.15	1.18	**0.35**

	26	M	Face-1											
	LTE 26	QPSK15 M	Left Side	0	26765	1	0	22.0	21.29	0.07	0.048	0.023	1.18	0.06
	LTE 26	QPSK15 M	Right Side	0	26765	1	0	22.0	21.29	0.03	0.024	0.016	1.18	0.03
	LTE 26	QPSK15 M	Rear Face	0	26765	36	0	21.0	20.31	-0.05	0.139	0.082	1.17	0.16
	LTE 26	QPSK15 M	Rear Face-1	0	26765	36	0	21.0	20.31	-0.08	0.231	0.118	1.17	0.27
	LTE 26	QPSK15 M	Left Side	0	26765	36	0	21.0	20.31	0.05	0.038	0.018	1.17	0.04
	LTE 26	QPSK15 M	Right Side	0	26765	36	0	21.0	20.31	0.06	0.019	0.012	1.17	0.02

WiFi SAR Test Results

System & Position												
Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Channel	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaling Factor	Scaled 1g SAR
	802.11b	-	Rear Face	0	1	15.5	15.42	-0.09	0.075	0.031	1.02	0.08
	802.11b	-	Rear Face-1	0	1	15.5	15.42	0.05	0.101	0.041	1.02	0.10
14	802.11b	-	Right Side	0	1	15.5	15.42	0.00	0.127	0.057	1.02	**0.13**
	802.11b	-	Top Side	0	1	15.5	15.42	0.09	0.02	0.011	1.02	0.02
	802.11n	HT20	Rear Face	0	56	14.0	13.72	0.02	0.159	0.059	1.07	0.17
	802.11n	HT20	Rear Face-1	0	56	14.0	13.72	-0.09	0.214	0.077	1.07	0.23
15	802.11n	HT20	Right Side	0	56	14.0	13.72	0.00	**0.734**	0.212	1.07	**0.78**
	802.11n	HT20	Top Side	0	56	14.0	13.72	0.08	0.019	0.00736	1.07	0.02
	802.11a	-	Rear Face	0	120	13.0	12.66	0.06	0.251	0.091	1.08	0.27
	802.11a	-	Rear Face-1	0	120	13.0	12.66	0.05	0.319	0.114	1.08	0.34
16	802.11a	-	Right Side	0	120	13.0	12.66	0.06	**1.08**	0.344	1.08	**1.17**
	802.11a	-	Top Side	0	120	13.0	12.66	0.09	0.031	0.014	1.08	0.03
	802.11a	-	Right Side	0	140	13.0	12.65	0.05	0.975	0.311	1.08	1.06
	802.11a	-	Right Side	0	120	13.0	12.66	0.00	1.03	0.328	1.08	1.11
	802.11n	HT40	Rear Face	0	159	12.0	10.59	0.09	0.162	0.062	1.38	0.22
	802.11n	HT40	Rear Face-1	0	159	12.0	10.59	-0.07	0.212	0.075	1.38	0.29
17	802.11n	HT40	Right Side	0	159	12.0	10.59	-0.13	**0.547**	0.166	1.38	**0.76**
	802.11n	HT40	Top Side	0	159	12.0	10.59	0.09	0.014	0.00576	1.38	0.02

4.6 SAR Measurement Variability

4.6.1 Repeated Measurement

According to KDB 865664 D01, SAR measurement variability was 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. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is >= 0.80 W/kg, repeat that measurement once.

3. If the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20, or when the original or repeated measurement is >= 1.45 W/kg, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20, and the original, first or second repeated measurement is >= 1.5 W/kg, perform a third repeated measurement.

Note: All the measured SAR < 0.8w/kg, no repeated measurement is required.

4.7 Simultaneous Multi-band Transmission Evaluation

Note:
1. The WLAN and Bluetooth cannot transmit simultaneously.
2. The WWAN and WLAN cannot transmit simultaneously, detail refer to file “Declaration on user access to WiFi and/or cellular network.

Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following Appendix:
Appendix A: SAR Plots of System Verification
Appendix B: Highest SAR Test Plots
Appendix C: Measured Conducted Power Result
Appendix D: SAR Setup Photos
Appendix E: Calibration Certificated of Probe and Dipole