FCC

SAR EVALUATION REPORT

For

FCC ID：ZD3FTF20SC200RNA

Main Model : F20 FP / Serial Model : F20

Report Type：Original Report	**Product Name**：Android POS Terminal

Report Number：RXZ210922002SA01

Report Date：2021-11-04

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Statement of Compliance

Applicant (Certification Holder)	FEITIAN Technologies Co., Ltd.
	Floor 17th, Tower B, Huizhi Mansion, No.9 Xueqing Road, Haidian District, Beijing, China
Brand (Trade) Name	N/A
Product (Equipment) Name	Android POS Terminal
Main Model Name	F20 FP
Serial Model Name	F20
Serial number	RXZ210922002-01
Test Date	2021/10/04 ~ 2021/10/18

Measurement Procedures and Standards Used:

☒ IEEE1528:2013
☒ FCC 47 CFR part 2.1091
☒ FCC 47 CFR part 2.1093
☒ KDB 447498 D01 General RF Exposure Guidance v06
☒ KDB 648474 D04 Handset SAR v01r03
☒ KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
☒ KDB 865664 D02 RF Exposure Reporting v01r02
☒ KDB 941225 D01 3G SAR Procedures v03r01
☒ KDB 941225 D05 SAR for LTE Devices v02r05
☒ KDB 248227 D01 802 11 Wi-Fi SAR v02r02

The measurement results in this report were performed at Bay Area Compliance Laboratories Corp.
Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
The determination of the test results does not require consideration of the uncertainty of the measurement, unless the assessment is required by customer agreement, regulation or standard document specification.

Report Issued Date: 2021-11-04

Project Engineer: Anson Lu Anson Lu

Reviewed By: Gimmy Tsai Gimmy Tsai

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Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
0.0	RXZ210922002	RXZ210922002SA01	2021.11.04	Original Report	Anson Lu

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EUT RESULTS

Attestation of Test Results			
Frequency Band	**Max. SAR Level(s) Reported(W/kg)**		**Limit(W/kg)**
WCDMA Band II	1g Body SAR	0.138	**1.6**
WCDMA Band V	1g Body SAR	1.305	
LTE Band 7	1g Body SAR	0.553	
LTE Band 12 & LTE Band 17	1g Body SAR	0.727	
LTE Band 13	1g Body SAR	0.909	
LTE Band 14	1g Body SAR	0.730	
LTE Band 25 & LTE Band 2	1g Body SAR	0.132	
LTE Band 26 & LTE Band 5	1g Body SAR	0.894	
LTE Band 66 & LTE Band 4	1g Body SAR	0.150	
LTE Band 41	1g Body SAR	0.195	
LTE Band 71	1g Body SAR	0.308	
WLAN 2.4GHz	1g Body SAR	0.540	
WLAN 5.2GHz	1g Body SAR	0.924	
WLAN 5.8GHz	1g Body SAR	0.765	
Simultaneous	1g Body SAR	1.565	
Simultaneous(Hotspot)	1g Body SAR	1.401	
Note: This wireless device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Exposure limits specified in FCC 47 CFR part 2.1093 and has been tested in accordance with the measurement procedures specified in IEEE 1528-2013 and RF exposure KDB procedures. **The results and statements contained in this report pertain only to the device(s) evaluated.**			

Note:

1. *During SAR testing, model no: F20(Type 1) is worst model; model no: F20 FP is Type 2.*
2. *During SAR testing, test Body SAR distance is 0mm, test hotspot SAR distance is 10mm, so 0mm is worst distance mode.*

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EUT DESCRIPTION

Technical Specification

Applicant	FEITIAN Technologies Co., Ltd.
Exposure Category	Population / Uncontrolled
Antenna Type(s)	FPC Antenna
Modulation Type	WCDMA: BPSK,QPSK,16QAM; LTE: QPSK,16QAM 2.4G Wi-Fi: DSSS,OFDM; 5G Wi-Fi: OFDM BT3.0: GFSK,π/4-DQPSK,8DPSK; BLE: GFSK
Frequency Band	WCDMA Band II: 1850 ~ 1910 MHz(TX) WCDMA Band V: 824 ~ 849 MHz(TX) LTE Band 2: 1850 ~ 1910 MHz(TX) LTE Band 4: 1710 ~ 1755 MHz(TX) LTE Band 5: 824 ~ 849 MHz(TX) LTE Band 7: 2500 ~ 2570 MHz(TX) LTE Band 12: 699 ~ 716 MHz(TX) LTE Band 13: 777 ~ 787 MHz(TX) LTE Band 14: 788 ~ 798 MHz(TX) LTE Band 17: 704 ~ 716 MHz(TX) LTE Band 25: 1850 ~ 1915 MHz(TX) LTE Band 26: 814 ~ 849 MHz(TX) LTE Band 41: 2496 ~ 2690 MHz(TX) LTE Band 66: 1710 ~ 1780 MHz(TX) LTE Band 71: 663 ~ 698 MHz(TX) 2.4G Wi-Fi: 2412 ~ 2462 MHz(b/g/n20) ; 2422 ~ 2452 MHz(n40) BT/BLE: 2402 ~ 2480 MHz 5G Wi-Fi Band 1: 5150 ~ 5250 MHz, 5G Wi-Fi Band 4: 5725 ~ 5850 MHz

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Max. Output Power(Avg)	WCDMA Band II: 22.5 dBm WCDMA Band V: 22.5 dBm LTE Band 2: 22.5 dBm LTE Band 4: 23.0 dBm LTE Band 5: 23.0 dBm LTE Band 7: 22.5 dBm LTE Band 12: 23.0 dBm LTE Band 13: 23.0 dBm LTE Band 14: 23.0 dBm LTE Band 17: 23.0 dBm LTE Band 25: 22.5 dBm LTE Band 26: 23.0 dBm LTE Band 41: 22.0 dBm LTE Band 66: 23.0 dBm LTE Band 71: 24.0 dBm 2.4G Wi-Fi: 11.5 dBm BT: 8.0 dBm ; BLE: -0.5 dBm 5G Wi-Fi Band 1: 10.0 dBm ; 5G Wi-Fi Band 4: 10.0 dBm
Power Source	DC 7.6V/2500mAh from Rechargeable Li-ion Battery and DC 5V from Adapter
Normal Operation:	Body Supported

All measurement and test data in this report was gathered from production sample serial number：RXZ210922002-01(Model: F20), (Assigned by BACL).The EUT supplied by the applicant was received on 2021/09/22.

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REFERENCE, STANDARDS, AND GUIDELINES

FCC：

The Report and Order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g as recommended by the ANSI/IEEE standard C95.1 [6] for an uncontrolled environment (Paragraph 65). According to the Supplement C of OET Bulletin 65 “Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at maximum output power (radiated from the antenna) under “worst-case” conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in North America is 1.6 mW/g average over 1 gram of tissue mass.

CE：

The order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 2.0mW/g as recommended by EN62209-1 for an uncontrolled environment. According to the Standard, the device should be evaluated at maximum output power (radiated from the antenna) under “worst-case” conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in Europe is 2.0mW/g average over 10 gram of tissue mass.

The test configurations were laid out on a specially designed test fixture to ensure the reproducibility of measurements. Each configuration was scanned for SAR. Analysis of each scan was carried out to characterize the above effects in the device.

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SAR Limits

FCC Limit

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	**1.60**	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	**4.0**	20.0

CE Limit

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 10 g of tissue)	**2.0**	10
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

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

Occupational/Controlled Environments are defined as locations where there is exposure that maybe incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

General Population/Uncontrolled environments Spatial Peak limit 1.6W/kg (FCC) & 2.0 W/kg (CE) applied to the EUT.

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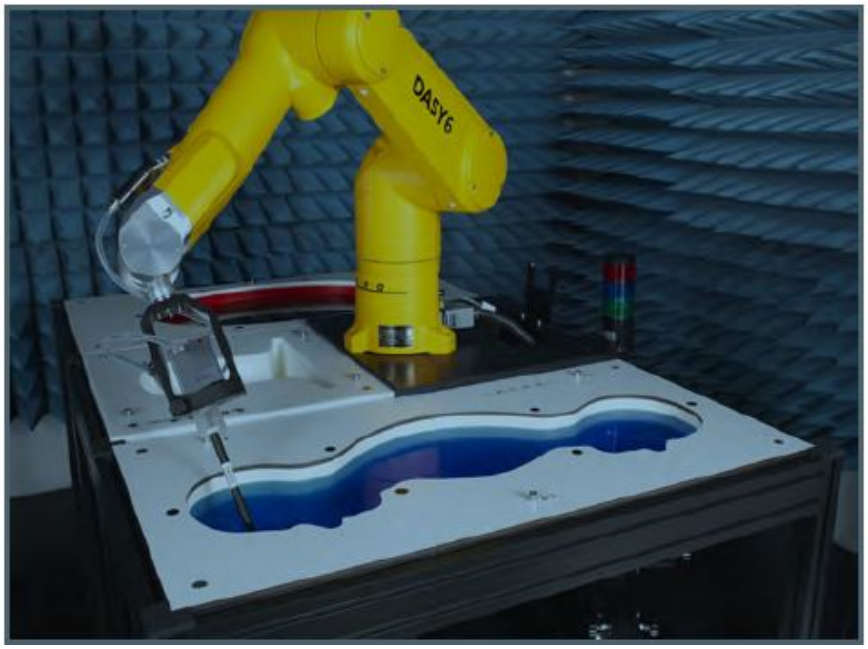
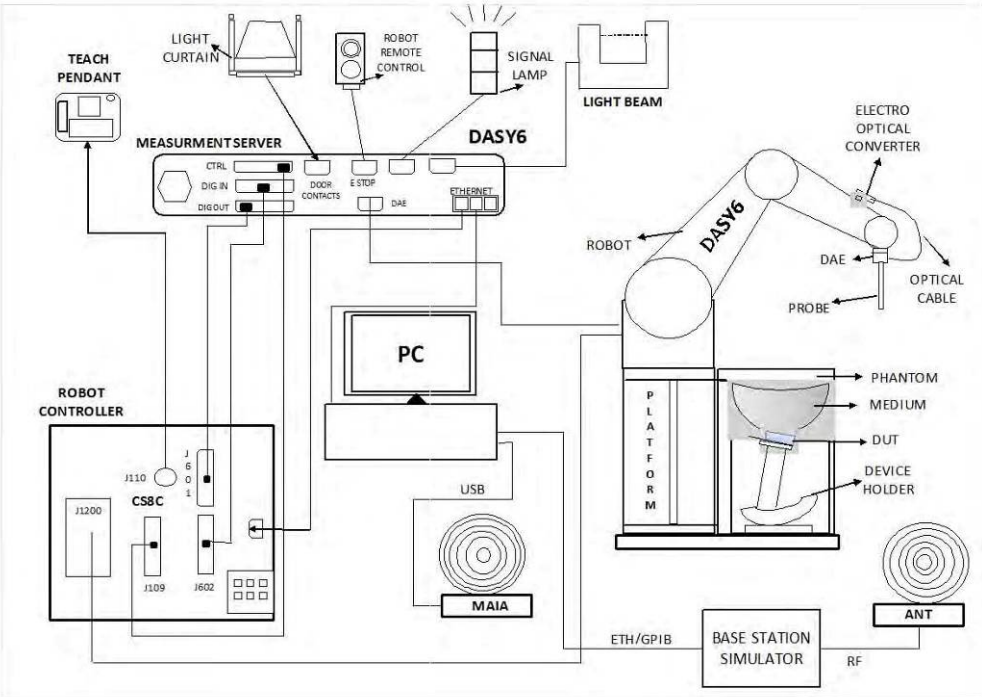
DESCRIPTION OF TEST SYSTEM

These measurements were performed with the automated near-field scanning system DASY6 from Schmid & Partner Engineering AG (SPEAG) which is the Fifth generation of the system shown in the figure hereinafter:



DASY6 System Description

The DASY6 system for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot (Staubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal application, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion 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.
- 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.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7 professional operating system and the DASY52 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

DASY6 Measurement Server

The DASY6 measurement server is based on a PC/104 CPU board with a 400 MHz Intel ULV Celeron, 128 MB chip-disk and 128 MB RAM. The necessary circuits for communication with the DAE4 (or DAE3) electronics box, as well as the 16-bit AD converter system for optical detection and digital I/O interface are contained on the DASY6 I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluations of field measurements and surface detection, controls robot movements, and handles safety operations. The PC operating system cannot interfere with these time-critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program- controlled robot movements. Furthermore, the measurement server is equipped with an expansion port, which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Connection of devices from any other supplier could seriously damage the measurement server.

Data Acquisition Electronics

The data acquisition electronics (DAE4) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

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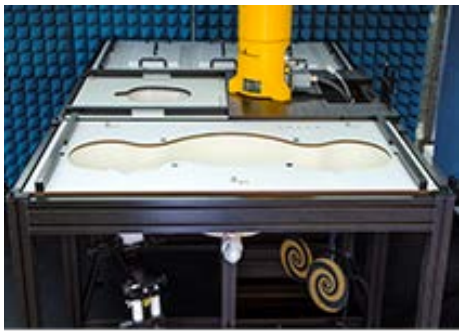
The input impedance of both the DAE4 as well as of the DAE3 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

EX3DV4 E-Field Probes

Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI



SAM Twin Phantom

The SAM Twin Phantom (shown in front of DASY6) is a fiberglass shell phantom with shell thickness 2 mm, except in the ear region where the thickness is increased to 6 mm. The phantom has three measurement areas: 1) Left Head, 2) Right Head, and 3) Flat Section. For larger devices, the use of the ELI-Phantom (shown behind DASY6) is required. For devices such as glasses with a wireless link, the Face Down Phantom is the most suitable (between the SAM Twin and ELI phantoms).

When the phantom is mounted inside allocated slot of the DASY6 platform, phantom reference points can be taught directly in the DASY5 V5.2 software. When the DASY6 platform is used to mount the

Phantom, some of the phantom teaching points cannot be reached by the robot in DASY5 V5.2. A special tool called P1a-P2aX-Former is provided to transform two of the three points, P1 and P2, to reachable locations. To use these new teaching points, a revised phantom configuration file is required.

In addition to our standard broadband liquids, the phantom can be used with the following tissue simulating liquids:

Sugar-water-based liquids can be left permanently in the phantom. Always cover the liquid when the system is not in use to prevent changes in liquid parameters due to water evaporation.

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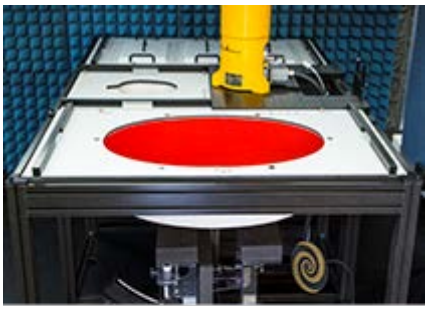
DGBE-based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom, and the phantom should be dried when the system is not in use (desirable at least once a week).

Do not use other organic solvents without previously testing the solvent resistivity of the phantom. Approximately 25 liters of liquid is required to fill the SAM Twin phantom.

ELI Phantom



The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6 GHz. ELI is fully compatible with the latest draft of the standard IEC 62209-2 and the use of all known tissue simulating liquids. ELI has been optimized for performance and can be integrated into a SPEAG standard phantom table. A cover is provided to prevent evaporation of water and changes in liquid parameters. 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 can be used with the following tissue simulating liquids:

- Sugar-water-based liquids can be left permanently in the phantom. Always cover the liquid when the system is not in use to prevent changes in liquid parameters due to water evaporation.

- DGBE-based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom, and the phantom should be dried when the system is not in use (desirable at least once a week).

- Do not use other organic solvents without previously testing the solvent resistivity of the phantom.

Approximately 25 liters of liquid is required to fill the ELI phantom

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Robots
The DASY6 system uses the high-precision industrial robots TX60L, TX90XL, and RX160L from StaubliSA (France). The TX robot family - the successor of the well-known RX robot family - continues to offer the features important for DASY6 applications:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchrony motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

The robots are controlled by the Staubli CS8c robot controllers. All information regarding the use and maintenance of the robot arm and the robot controller is provided

Area Scans
Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 15mm2 step integral, with 1.5mm interpolation used to locate the peak SAR area used for zoom scan assessments.

Where the system identifies multiple SAR peaks (which are within 25% of peak value) the system will provide the user with the option of assessing each peak location individually for zoom scan averaging.

Zoom Scan (Cube Scan Averaging)
The averaging zoom scan volume utilized in the DASY6 software is in the shape of a cube and the side dimension of a 1 g or 10 g mass is dependent on the density of the liquid representing the simulated tissue. A density of 1000 kg/m^3 is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 10mm, with the side length of the 10g cube is 21.5mm.

When the cube intersects with the surface of the phantom, it is oriented so that 3 vertices touch the surface of the shell or the center of a face is tangent to the surface. The face of the cube closest to the surface is modified in order to conform to the tangent surface.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 7 x7 x 7 (5mmx5mmx5mm) providing a volume of 30 mm in the X & Y & Z axis.

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Recommended Tissue Dielectric Parameters for Head and Body

Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEC 62209-1:2016

Recommended Tissue Dieletric Parameters for Head liquid

Table A.3 – Dielectric properties of the head tissue-equivalent liquid

Frequency MHz	Relative permittivity ε_r	Conductivity (σ) S/m
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
1 450	40,5	1,20
1 500	*40,4*	*1,23*
1 640	*40,2*	*1,31*
1 750	*40,1*	*1,37*
1 800	40,0	1,40
1 900	40,0	1,40
2 000	40,0	1,40
2 100	*39,8*	*1,49*
2 300	*39,5*	*1,67*
2 450	39,2	1,80
2 600	*39,0*	*1,96*
3 000	38,5	2,40
3 500	*37,9*	*2,91*
4 000	*37,4*	*3,43*
4 500	*36,8*	*3,94*
5 000	*36,2*	*4,45*
5 200	*36,0*	*4,66*
5 400	*35,8*	*4,86*
5 600	*35,5*	*5,07*
5 800	*35,3*	*5,27*
6 000	*35,1*	*5,48*

NOTE For convenience, permittivity and conductivity values at those frequencies which are not part of the original data provided by Drossos et al. [33] or the extension to 5 800 MHz are provided (i.e. the values shown *in italics*). These values were linearly interpolated between the values in this table that are immediately above and below these values, except the values at 6 000 MHz that were linearly extrapolated from the values at 3 000 MHz and 5 800 MHz.

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EQUIPMENT LIST AND CALIBRATION

Equipment's List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
Robot	TX90	5N26A1	N.C.R	N.C.R
DASY5 Test Software	DASY5.2	N/A	N.C.R	N.C.R
DASY6 Measurement Server	DASY 6.0	1588	N/A	N/A
Data Acquisition Electronics	DAE4	1561	2020/11/23	2021/11/22
E-Field Probe	EX3DV4	7520	2020/11/16	2021/11/15
Dipole, 750 MHz	D750V3	1079	2020/11/06	2023/11/05
Dipole, 835 MHz	D835V2	454	2020/11/18	2023/11/17
Dipole, 1800 MHz	D1800V2	2d207	2020/11/09	2023/11/08
Dipole,1900 MHz	D1900V2	5d207	2020/11/11	2023/11/10
Dipole,2450 MHz	D2450V2	835	2021/06/22	2024/06/21
Dipole,2600 MHz	D2600V2	1174	2020/11/18	2023/11/17
Dipole,5GHz	D5GHzV2	1040	2021/06/03	2024/06/02
Twin SAM	Twin SAM V5.0	1368	N/A	N/A
Twin SAM	Twin SAM V8.0	1953	N/A	N/A
Twin ELI	Twin ELI V8.0	2088	N/A	N/A
Simulated Tissue Head Liquid(0.6~6GHz)	TS-Head	/	Each Time	/
Wideband Radio Communication Tester	CMU-200	106868	2021/04/07	2022/04/06
Functional radio communication tester	CMW 290	101741	2021/08/07	2022/08/06
Mounting Device	N/A	SD 000 H01 KA	N/A	N/A
Network Analyzer	E5063A	MY54402093	2020/12/29	2021/12/28
Dielectric probe kit	85070B	50207	/	/
Signal Generator	8648C	3537A01745	2020/12/30	2021/12/29
Power Meter	E4418B	GB43312279	2020/12/30	2021/12/29
Power Sensor	E9300A	US39210953	2021/05/05	2022/05/04
Power Amplifier	ZVE-8G+	365701647	2021/1/8	2022/1/7
Power Amplifier	ZHL-42W+	329401642	2021/1/8	2022/1/7
Temperature and Humidity Recoder	HTC-1	005	2020/10/30	2021/10/29
Temperature and Humidity Recoder	HTC-1	005	2021/10/27	2022/10/26
Directional Coupler	488Z	810	N.C.R	N.C.R
Attenuator	20dB, 100W	1453	N.C.R	N.C.R

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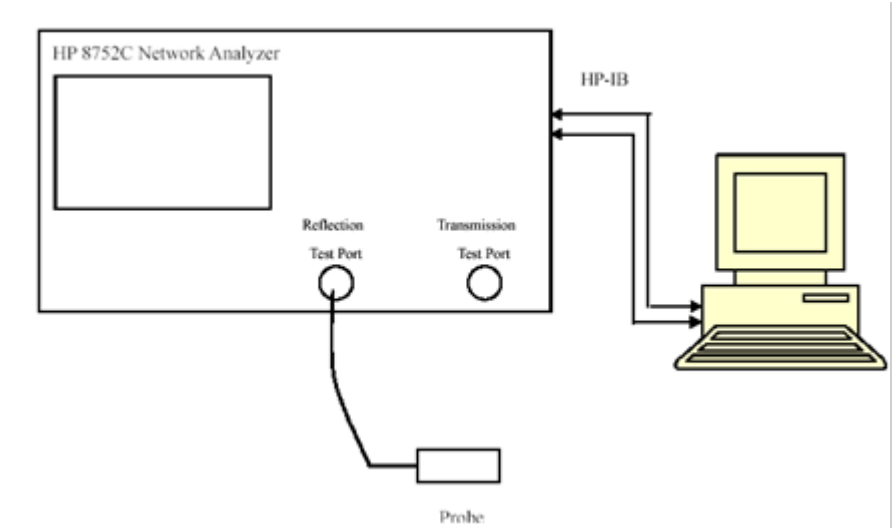
SAR MEASUREMENT SYSTEM VERIFICATION

Liquid Verification



Liquid Verification Setup Block Diagram

Liquid Verification Results

Test Date	Frequency (MHz)	Liquid Type	Liquid parameter		Target Value		Delta (%)		Tolerance (%)
			σ (S/m)	εr	σ (S/m)	εr	σ (S/m)	εr	
2021/10/04	835	HSL	0.917	40.087	0.90	41.5	1.89	-3.40	±5
	826.4	HSL	0.913	40.11	0.90	41.54	1.44	-3.44	±5
	836.6	HSL	0.917	40.056	0.90	41.50	1.89	-3.48	±5
	846.6	HSL	0.923	40.041	0.91	41.50	1.43	-3.52	±5
	821.5	HSL	0.911	40.10	0.90	41.56	1.22	-3.51	±5
	831	HSL	0.915	40.103	0.90	41.52	1.67	-3.41	±5
	841.5	HSL	0.918	40.058	0.91	41.50	0.88	-3.47	±5

Test Date	Frequency (MHz)	Liquid Type	Liquid parameter		Target Value		Delta (%)		Tolerance (%)
			σ (S/m)	εr	σ (S/m)	εr	σ (S/m)	εr	
2021/10/05	750	HSL	0.886	40.14	0.89	41.9	-0.45	-4.20	±5
	707.5	HSL	0.87	40.265	0.89	42.13	-2.25	-4.43	±5
	782	HSL	0.897	40.005	0.89	41.75	0.79	-4.18	±5
	793	HSL	0.902	40.007	0.90	41.70	0.22	-4.06	±5

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

Test Date	Frequency (MHz)	Liquid Type	Liquid parameter		Target Value		Delta (%)		Tolerance (%)
			σ (S/m)	εr	σ (S/m)	εr	σ (S/m)	εr	
2021/10/07	1800	HSL	1.384	40.594	1.40	40.0	-1.14	1.49	±5
	1745	HSL	1.344	40.77	1.37	40.08	-1.90	1.72	±5

Test Date	Frequency (MHz)	Liquid Type	Liquid parameter		Target Value		Delta (%)		Tolerance (%)
			σ (S/m)	εr	σ (S/m)	εr	σ (S/m)	εr	
2021/10/08	750	HSL	0.916	42.911	0.89	41.9	2.92	2.41	±5
	680.5	HSL	0.891	43.225	0.89	42.27	0.11	2.26	±5

Test Date	Frequency (MHz)	Liquid Type	Liquid parameter		Target Value		Delta (%)		Tolerance (%)
			σ (S/m)	εr	σ (S/m)	εr	σ (S/m)	εr	
2021/10/12	1900	HSL	1.396	38.488	1.40	40.0	-0.29	-3.78	±5
	1880	HSL	1.384	38.509	1.40	40.0	-1.14	-3.73	±5

Test Date	Frequency (MHz)	Liquid Type	Liquid parameter		Target Value		Delta (%)		Tolerance (%)
			σ (S/m)	εr	σ (S/m)	εr	σ (S/m)	εr	
2021/10/13	2600	HSL	1.949	39.395	1.96	39.0	-0.56	1.01	±5
	2595	HSL	1.945	39.381	1.95	39.01	-0.26	0.95	±5

Test Date	Frequency (MHz)	Liquid Type	Liquid parameter		Target Value		Delta (%)		Tolerance (%)
			σ (S/m)	εr	σ (S/m)	εr	σ (S/m)	εr	
2021/10/14	2450	HSL	1.819	39.633	1.80	39.2	1.06	1.10	±5
	2437	HSL	1.807	39.645	1.79	39.22	0.95	1.08	±5

Test Date	Frequency (MHz)	Liquid Type	Liquid parameter		Target Value		Delta (%)		Tolerance (%)
			σ (S/m)	εr	σ (S/m)	εr	σ (S/m)	εr	
2021/10/15	5200	HSL	4.645	35.807	4.66	36.0	-0.32	-0.54	±5
	5180	HSL	4.655	35.872	4.64	36.02	0.32	-0.41	±5
	5240	HSL	4.738	35.552	4.70	35.96	0.81	-1.13	±5

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Test Date	Frequency (MHz)	Liquid Type	Liquid parameter		Target Value		Delta (%)		Tolerance (%)
			σ (S/m)	εr	σ (S/m)	εr	σ (S/m)	εr	
2021/10/18	5800	HSL	5.379	34.47	5.27	35.3	2.07	-2.35	±5
	5745	HSL	5.396	34.498	5.22	35.36	3.37	-2.44	±5

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System Accuracy Verification

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

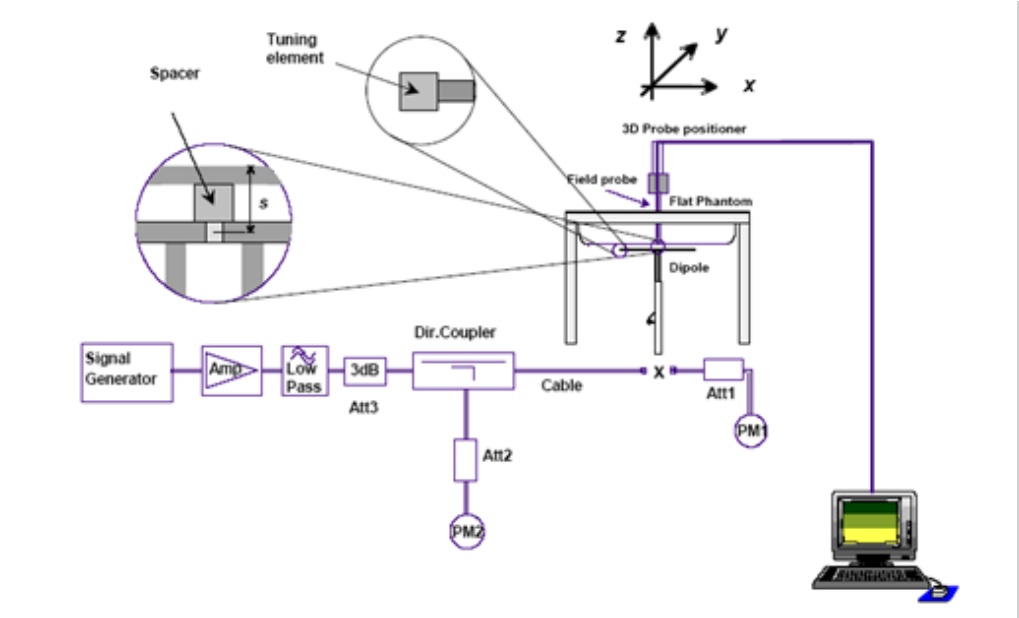
The spacing distances in the **System Verification Setup Block Diagram** is given by the following:

a) s = 15 mm ± 0,2 mm for 300 MHz ≤ f ≤ 1 000 MHz;

b) s = 10 mm ± 0,2 mm for 1 000 MHz < f ≤ 3 000 MHz;

c) s = 10 mm ± 0,2 mm for 3 000 MHz < f ≤ 6 000 MHz.

System Verification Setup Block Diagram



System Accuracy Check Results

Test Date	Frequency Band (MHz)	Liquid Type	Input Power (mW)	Measured SAR (W/kg)		Target Value (W/kg)		Normalized to 1W (W/kg)		Delta (%)	Tolerance (%)
2021/10/04	835	HSL	250	1g	2.47	1g	9.38	1g	9.88	5.3	±10
				10g	1.6	10g	6.06	10g	6.4	5.6	±10
2021/10/05	750	HSL	250	1g	2.2	1g	8.25	1g	8.8	6.67	±10
				10g	1.44	10g	5.38	10g	5.76	7.06	±10
2021/10/07	1800	HSL	250	1g	9.47	1g	38.90	1g	37.88	-2.62	±10
				10g	4.91	10g	20.3	10g	19.64	-3.25	±10
2021/10/08	750	HSL	250	1g	2.15	1g	8.25	1g	8.6	4.24	±10
				10g	1.41	10g	5.38	10g	5.64	4.83	±10
2021/10/12	1900	HSL	250	1g	11.0	1g	40.10	1g	44.0	9.73	±10
				10g	5.63	10g	20.8	10g	22.52	8.26	±10
2021/10/13	2600	HSL	250	1g	13.3	1g	55.3	1g	53.2	-3.8	±10
				10g	5.89	10g	24.6	10g	23.56	-4.23	±10
2021/10/14	2450	HSL	250	1g	12.9	1g	52.7	1g	51.6	-2.09	±10
				10g	5.98	10g	23.9	10g	23.92	0.08	±10
2021/10/15	5200	HSL	100	1g	7.05	1g	76.9	1g	70.5	-8.32	±10
				10g	2.05	10g	21.8	10g	20.5	-5.96	±10
2021/10/18	5800	HSL	100	1g	8.51	1g	77.5	1g	85.1	9.81	±10
				10g	2.33	10g	21.9	10g	23.3	6.39	±10

Note: *The power inputted to dipole is 0.25Watt; the SAR values are normalized to 1 Watt forward power by multiplying 4 times.*

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SAR SYSTEM VALIDATION DATA

Test Laboratory:BACL.SAR TestingLab

System Check_Head_835MHz

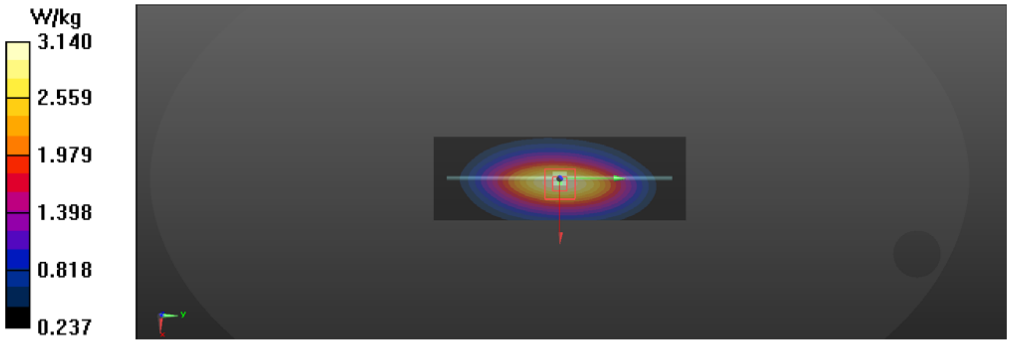
DUT: D835V2-454

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL835 Medium parameters used: f = 835 MHz; σ = 0.917 S/m; ε_r = 40.087; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(9.55, 9.55, 9.55) @ 835 MHz; Calibrated: 11/16/2020
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 11/23/2020
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (41x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.13 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 55.46 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.77 W/kg
SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.6 W/kg
Smallest distance from peaks to all points 3 dB below = 17.2 mm
Ratio of SAR at M2 to SAR at M1 = 65.5%
Maximum value of SAR (measured) = 3.14 W/kg



Test Laboratory:BACL.SAR TestingLab

System Check_Head_750MHz

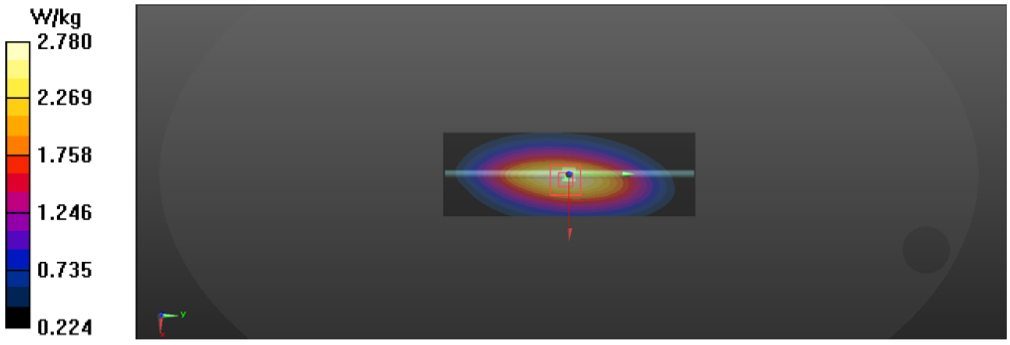
DUT: D750V3-1079

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL750 Medium parameters used: f = 750 MHz; σ = 0.886 S/m; ε_r = 40.14; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(9.81, 9.81, 9.81) @ 750 MHz; Calibrated: 11/16/2020
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 11/23/2020
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (41x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.78 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 53.41 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.30 W/kg
SAR(1 g) = 2.2 W/kg; SAR(10 g) = 1.44 W/kg
Smallest distance from peaks to all points 3 dB below = 17.6 mm
Ratio of SAR at M2 to SAR at M1 = 66.4%
Maximum value of SAR (measured) = 2.78 W/kg



Test Laboratory:BACL.SAR TestingLab

System Check_Head_1800MHz

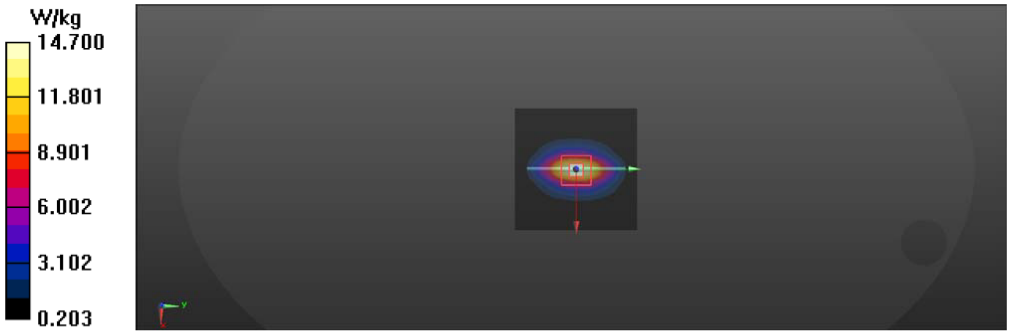
DUT: D1800V2-2d207

Communication System: UID 0, CW (0); Frequency: 1800 MHz;Duty Cycle: 1:1
Medium: HSL1800 Medium parameters used: f = 1800 MHz; σ = 1.384 S/m; ε_r = 40.594; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(8.66, 8.66, 8.66) @ 1800 MHz; Calibrated: 11/16/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 11/23/2020
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 15.0 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 109.1 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 9.47 W/kg; SAR(10 g) = 4.91 W/kg
Smallest distance from peaks to all points 3 dB below = 11.2 mm
Ratio of SAR at M2 to SAR at M1 = 52.8%
Maximum value of SAR (measured) = 14.7 W/kg



Test Laboratory:BACL.SAR TestingLab

System Check_Head_750MHz

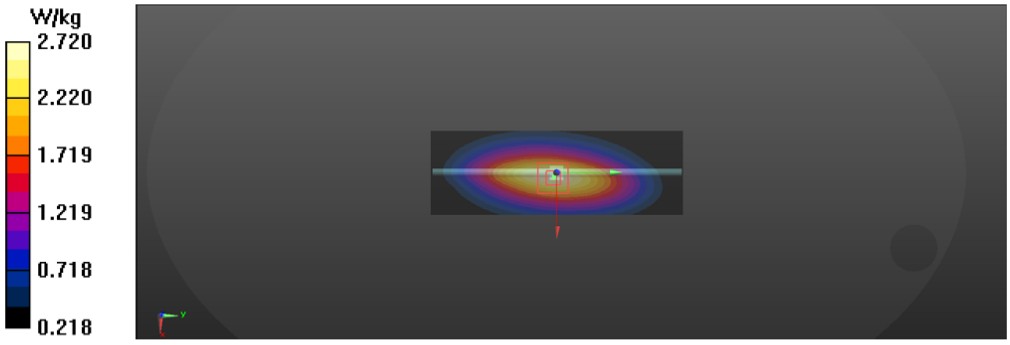
DUT: D750V3-1079

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL650 Medium parameters used: f = 750 MHz; σ = 0.916 S/m; ε_r = 42.911; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(9.81, 9.81, 9.81) @ 750 MHz; Calibrated: 11/16/2020
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 11/23/2020
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7483)

Pin=250mW 3/Area Scan (41x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.73 W/kg

Pin=250mW 3/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.00 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.22 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.41 W/kg
Smallest distance from peaks to all points 3 dB below = 17.6 mm
Ratio of SAR at M2 to SAR at M1 = 66.4%
Maximum value of SAR (measured) = 2.72 W/kg



Test Laboratory:BACL.SAR TestingLab

System Check_Head_1900MHz

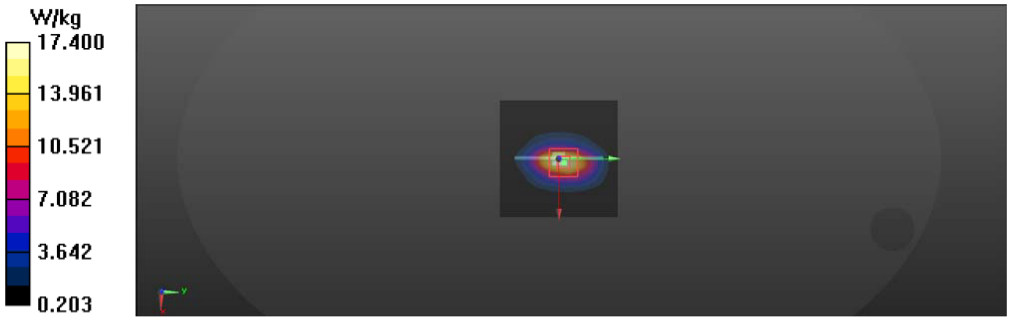
DUT: Dipole 1900 MHz D1900V2

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL1900 Medium parameters used: f = 1900 MHz; σ = 1.396 S/m; ε_r = 38.488; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(8.35, 8.35, 8.35) @ 1900 MHz; Calibrated: 11/16/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 11/23/2020
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 17.7 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 111.3 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 21.5 W/kg
SAR(1 g) = 11 W/kg; SAR(10 g) = 5.63 W/kg
Smallest distance from peaks to all points 3 dB below = 10.1 mm
Ratio of SAR at M2 to SAR at M1 = 50.8%
Maximum value of SAR (measured) = 17.4 W/kg



Test Laboratory:BACL.SAR TestingLab

System Check_Head_2600MHz

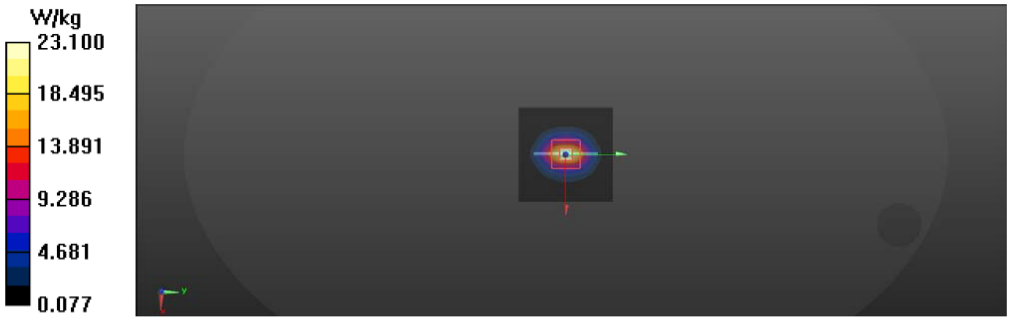
DUT: D2600V2-1073

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL2600 Medium parameters used: f = 2600 MHz; σ = 1.949 S/m; ε_r = 39.395; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(7.43, 7.43, 7.43) @ 2600 MHz; Calibrated: 11/16/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 11/23/2020
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 23.1 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 114.1 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 29.3 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 5.89 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 45.2%
Maximum value of SAR (measured) = 23.1 W/kg



Test Laboratory:BACL.SAR TestingLab

System Check_Head_2450MHz

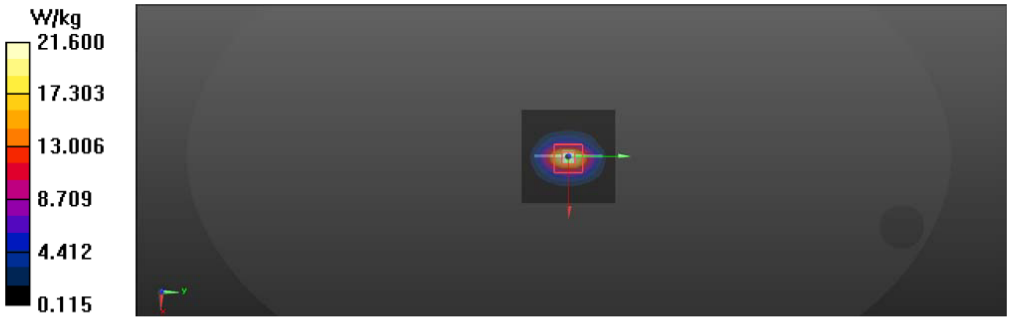
DUT: D2450V2-835

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL2450 Medium parameters used: f = 2450 MHz; σ = 1.819 S/m; ε_r = 39.633; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(7.57, 7.57, 7.57) @ 2450 MHz; Calibrated: 11/16/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 11/23/2020
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 21.6 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 114.2 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 26.9 W/kg
SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.98 W/kg
Smallest distance from peaks to all points 3 dB below = 9.2 mm
Ratio of SAR at M2 to SAR at M1 = 48%
Maximum value of SAR (measured) = 21.6 W/kg



Test Laboratory:BACL.SAR TestingLab

System Check_Head_5200MHz

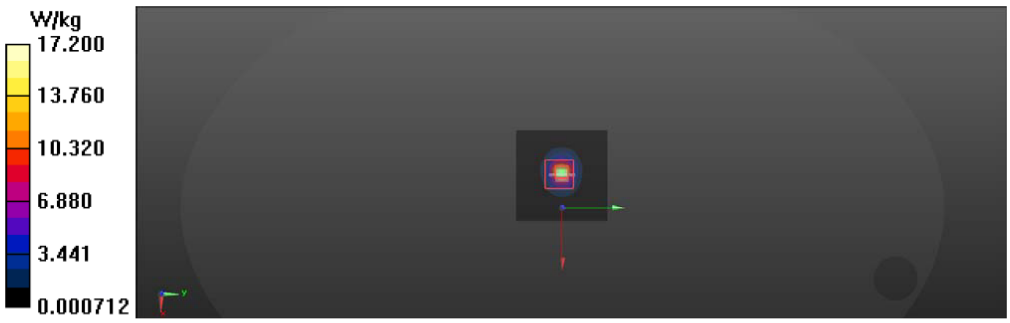
DUT: D5GHzV2-1040

Communication System: UID 0, CW (0); Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: HSL_5G Medium parameters used: f = 5200 MHz; σ = 4.645 S/m; ε_r = 35.807; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(5.61, 5.61, 5.61) @ 5200 MHz; Calibrated: 11/16/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 11/23/2020
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 17.4 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.03 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 28.1 W/kg
SAR(1 g) = 7.25 W/kg; SAR(10 g) = 2.05 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 66%
Maximum value of SAR (measured) = 17.2 W/kg



Test Laboratory:BACL.SAR TestingLab

System Check_Head_5800MHz

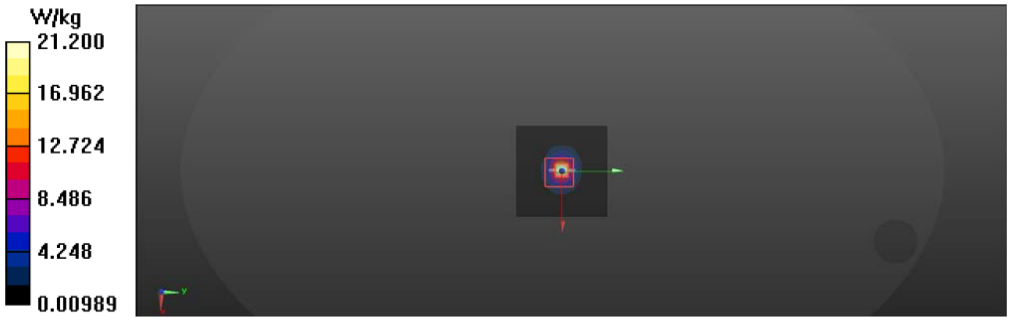
DUT: D5GHzV2 - 1040

Communication System: UID 0, CW (0); Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: HSL_5G Medium parameters used: f = 5800 MHz; σ = 5.379 S/m; ε_r = 34.47; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(5.08, 5.08, 5.08) @ 5800 MHz; Calibrated: 11/16/2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 11/23/2020
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: xxxx
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.9 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.59 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 37.2 W/kg
SAR(1 g) = 8.51 W/kg; SAR(10 g) = 2.33 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 62.8%
Maximum value of SAR (measured) = 21.2 W/kg

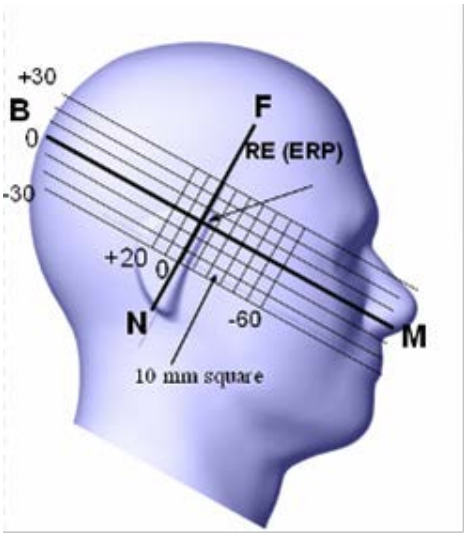


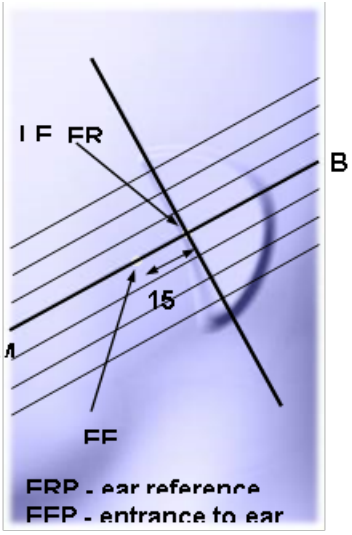
EUT TEST STRATEGY AND METHODOLOGY

Test Positions for Device Operating Next to a Person's Ear

This category includes most wireless handsets with fixed, retractable or internal antennas located toward the top half of the device, with or without a foldout, sliding or similar keypad cover. The handset should have its earpiece located within the upper ¼ of the device, either along the centerline or off-centered, as perceived by its users. This type of handset should be positioned in a normal operating position with the "test device reference point" located along the "vertical centerline" on the front of the device aligned to the "ear reference point". The "test device reference point" should be located at the same level as the center of the earpiece region. The "vertical centerline" should bisect the front surface of the handset at its top and bottom edges. A "ear reference point" is located on the outer surface of the head phantom on each ear spacer. It is located 1.5 cm above the center of the ear canal entrance in the "phantom reference plane" defined by the three lines joining the center of each "ear reference point" (left and right) and the tip of the mouth.

A handset should be initially positioned with the earpiece region pressed against the ear spacer of a head phantom. For the SCC-34/SC-2 head phantom, the device should be positioned parallel to the "N-F" line defined along the base of the ear spacer that contains the "ear reference point". For interim head phantoms, the device hould be positioned parallel to the cheek for maximum RF energy coupling. The "test device reference point" is aligned to the "ear reference point" on the head phantom and the "vertical centerline" is aligned to the "phantom reference plane". This is called the "initial ear position". While maintaining these three alignments, the body of the handset is gradually adjusted to each of the following positions for evaluating SAR:





Cheek/Touch Position

The device is brought toward the mouth of the head phantom by pivoting against the "ear reference point" or along the "N-F" line for the SCC-34/SC-2 head phantom.

This test position is established:

When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.

(or) When any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.

For existing head phantoms – when the handset loses contact with the phantom at the pivoting point, rotation should continue until the device touches the cheek of the phantom or breaks its last contact from the ear spacer.

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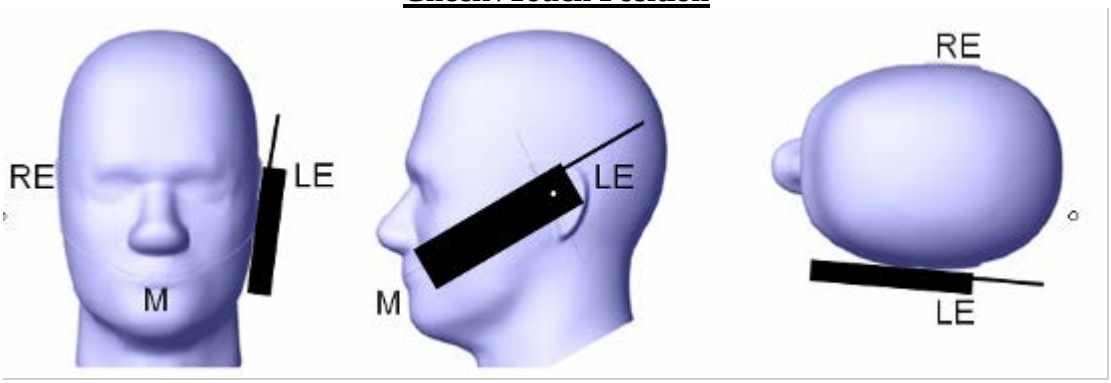
Cheek /Touch Position



Ear/Tilt Position

With the handset aligned in the "Cheek/Touch Position":

1) If the earpiece of the handset is not in full contact with the phantom's ear spacer (in the "Cheek/Touch position") and the peak SAR location for the "Cheek/Touch" position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device should be returned to the "initial ear position" by rotating it away from the mouth until the earpiece is in full contact with the ear spacer.

2) (otherwise) The handset should be moved (translated) away from the cheek perpendicular to the line passes through both "ear reference points" (note: one of these ear reference points may not physically exist on a split head model) for approximate 2-3 cm. While it is in this position, the device handset is tilted away from the mouth with respect to the "test device reference point" until the inside angle between the vertical centerline on the front surface of the phone and the horizontal line passing through the ear reference point is by 15 80°. After the tilt, it is then moved (translated) back toward the head perpendicular to the line passes through both "ear reference points" until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process should be repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously. This test position may require a device holder or positioner to achieve the translation and tilting with acceptable positioning repeatability.

If a device is also designed to transmit with its keypad cover closed for operating in the head position, such positions should also be considered in the SAR evaluation. The device should be tested on the left and right side of the head phantom in the "Cheek/Touch" and "Ear/Tilt" positions. When applicable, each configuration should be tested with the antenna in its fully extended and fully retracted positions. These test configurations should be tested at the high, middle and low frequency channels of each operating mode; for example, AMPS, CDMA, and TDMA. If the SAR measured at the middle channel for each test configuration (left, right, Cheek/Touch, Tilt/Ear, extended and retracted) is at least 2.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s). If the transmission band of the test device is less than 10 MHz, testing at the high and low frequency channels is optional.

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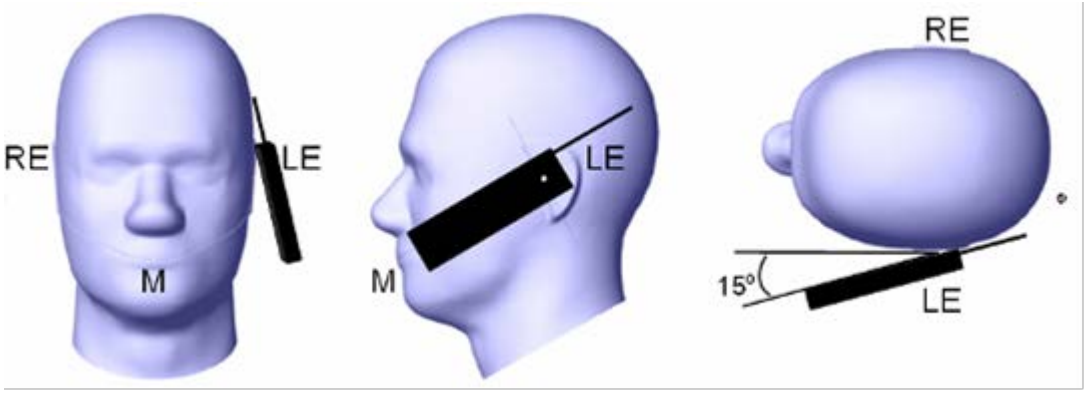
Ear /Tilt 15o Position



Test positions for body-worn and other configurations

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only the accessory that dictates the closest spacing to the body must be tested.

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distances may be used, but they should not exceed 2.5 cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.

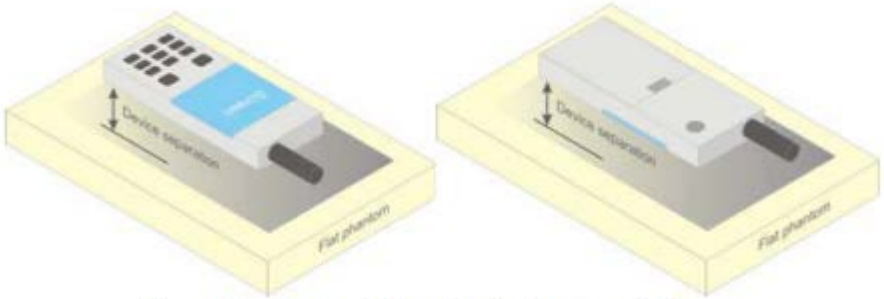


Figure 5 – Test positions for body-worn devices

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Test Distance for SAR Evaluation

For this case the EUT(Equipment Under Test) is set 10mm away from the phantom, the test distance is 10mm.

SAR Evaluation Procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the ear point or central position was used as a reference value for assessing the power drop. The SAR at this point is measured at the start of the test and then again at the end of the testing.

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the head or radiating structures of the EUT, the horizontal grid spacing was 15 mm x 15 mm, and the SAR distribution was determined by integrated grid of 1.5mm x 1.5mm. Based on these data, the area of the maximum absorption was determined by spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7x 7 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

1) The data at the surface were extrapolated, since the center of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

2) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the “Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the averages.

All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation was repeated.

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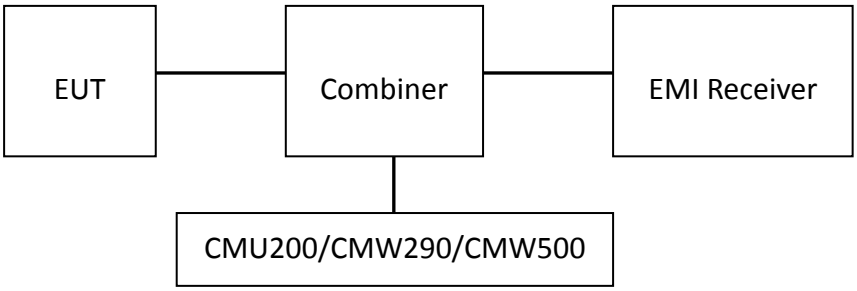
CONDUCTED OUTPUT POWER MEASUREMENT

Provision Applicable

The measured peak output power should be greater and within 5% than EMI measurement.

Test Procedure

The RF output of the transmitter was connected to the input of the EMI Test Receiver through sufficient attenuation.



GSM & 3G & LTE

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GSM/GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900
Press Connection control to choose the different menus
Press RESET > choose all the reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM + GPRS or GSM + EGSM
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting
> Slot configuration > Uplink/Gamma
> 33 dBm for GPRS 850
> 30 dBm for GPRS 1900
> 27 dBm for EGPRS 850
> 26 dBm for EGPRS 1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stabe)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off
P0 > 4 dB
Slot Config>Unchanged (if already set under MS signal)
TCH > choose desired test channel
Hopping > Off

Main Timeslot > 3
Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)
Bit Stream >2E9-1 PSR Bit Stream
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Signal on to turn on the signal and change settings

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WCDMA Release 99

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc / βd	8/15

HSDPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	**HSDPA**	**HSDPA**	**HSDPA**	**HSDPA**
	Subset	**1**	**2**	**3**	**4**
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR(dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs=βhs/ βc	30/15			

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HSUPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	**1**	**2**	**3**	**4**	**5**
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	-
	βhs	22/15	12/15	30/15	4/15	5/15
	CM(dB)	1.0	3.0	2.0	3.0	1.0
	MPR(dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	Ahs=βhs/ βc	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCls	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	

HSPA+

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	$\beta_{ed}1$: 30/15 $\beta_{ed}2$: 30/15	$\beta_{ed}3$: 24/15 $\beta_{ed}4$: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

The following tests were conducted according to the test requirements in Table C.11.1.4 of 3GPP TS 34.121-1

LTE

For UE Power Class 1 and 3, the allowed Maximum Power Reduction (MPR) for the maximum output power in Table6.2.2-1due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table6.2.3-1.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1 and 3

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

For UE Power Class 1 and 3 the specific requirements and identified sub clauses are specified in Table 6.2.4-1 along with the allowed A-MPR values that may be used to meet these requirements. The allowed A-MPR values specified below in Table 6.2.4.-1 to 6.2.4-15 are in addition to the allowed MPR requirements specified in sub clause

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	N/A
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	
NS_11	6.6.2.2.1	23	1.4, 3, 5, 10, 15, 20	Table 6.2.4-5	
NS_12	6.6.3.3.5	26	1.4, 3, 5	Table 6.2.4-6	
NS_13	6.6.3.3.6	26	5	Table 6.2.4-7	
NS_14	6.6.3.3.7	26	10, 15	Table 6.2.4-8	
NS_15	6.6.3.3.8	26	1.4, 3, 5, 10, 15	Table 6.2.4-9 Table 6.2.4-10	
NS_16	6.6.3.3.9	27	3, 5, 10	Table 6.2.4-11, Table 6.2.4-12, Table 6.2.4-13	
NS_17	6.6.3.3.10	28	5, 10	Table 5.6-1	N/A
NS_18	6.6.3.3.11	28	5	≥ 2	≤ 1
			10, 15, 20	≥ 1	≤ 4
NS_19	6.6.3.3.12	44	10, 15, 20	Table 6.2.4-14	
NS_20	6.2.2 6.6.2.2.1 6.6.3.2	23	5, 10, 15, 20	Table 6.2.4-15	
...					
NS_32	-	-	-	-	-

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Maximum Target Output Power

WWAN Antenna Full Power Target power

Max Target Power(dBm)			
Mode / Band	**Low Channel**	**Middle Channel**	**High Channel**
WCDMA Band 2	22.5	22.5	22.5
WCDMA Band 5	22.5	22.5	22.5
LTE Band 7	22.5	22.5	22.5
LTE Band 12 & 17	23.0	23.0	23.0
LTE Band 13	23.0	23.0	23.0
LTE Band 14	23.0	23.0	23.0
LTE Band 25 & 2	22.5	22.5	22.5
LTE Band 26 & 5	23.0	23.0	23.0
LTE Band 41	22.0	22.0	22.0
LTE Band 66 & 4	23.0	23.0	23.0
LTE Band 71	24.0	24.0	24.0
Bluetooth 1M	8	8	8
Bluetooth 2M	6	6	6
Bluetooth 3M	6	6	6
Bluetooth LE	-0.5	-0.5	-0.5
WiFi 2.4GHz 802.11b	9.5	9.5	9.5
WiFi 2.4GHz 802.11g	7.5	7.5	7.5
WiFi 2.4GHz 802.11n20	7.5	7.5	7.5
WiFi 2.4GHz 802.11n40	11.5	11.5	11.5
802.11a Band 1/Band4	10	10	10
802.11anHT20/ac20 Band 1/ Band 4	10	10	10
802.11anHT40/ac40 Band 1/ Band 4	8.5	8.5	8.5
802.11anHT40/ac40 Band 1/ Band 4	8	8	8

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Test Results:

Channel List:

WCDMA

WCDMA Band	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
II	1852.4	1880	1907.6
V	826.4	836.6	846.6

LTE

LTE Band	Operation Bandwidth (MHz)	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
7	1.4	2502.5	2535	2567.5
	3	2505	2535	2565
	5	2507.5	2535	2562.5
	10	2510	2535	2560
12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704	707.5	711

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LTE Band	Operation Bandwidth (MHz)	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
13	5	779.5	782	784.5
	10	-	782	-
17	5	706.5	710	713.5
	10	709	710	711
25	1.4	1850.7	1882.5	1914.3
	3	1851.5	1882.5	1913.5
	5	1852.5	1882.5	1912.5
	10	1855	1882.5	1910
	15	1857.5	1882.5	1907.5
	20	1860	1882.5	1905
66	1.4	1710.7	1745	1755
	3	1711.5	1745	1755
	5	1712.5	1745	1755
	10	1715	1745	1755
	15	1717.5	1745	1755
	20	1720	1745	1755
71	5	665.5	680.5	695.5
	10	668	680.5	693
	15	670.5	680.5	690.5
	20	673	680.5	688
14	5	790.5	793	795.5
	10		793	
26	1.4	814.7	831.5	848.3
	3	815.5	831.5	847.5
	5	816.5	831.5	846.5
	10	819	831.5	844
	15	821.5	831.5	841.5

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LTE Band	Operation Bandwidth (MHz)	Lowest Frequency (MHz)	Add Frequency (MHz)	Middle Frequency (MHz)	Add Frequency (MHz)	Highest Frequency (MHz)
41	5	2498.5	2545.8	2595	2640.3	2687.5
	10	2501	2547	2595	2639	2685
	15	2595	2548.3	2595	2637.8	2682.5
	20	2506	2549.5	2595	2636.5	2680

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WCDMA WWAN Antenna Full Power

WCDMA Band II

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Channel	Mid Channel	High Channel
Normal	Rel 99 RMC	1	22.16	22.28	22.14
	HSDPA	1	22.17	21.94	22.27
		2	22.27	21.93	22.06
		3	22.18	22.07	22.19
		4	22.16	21.98	22.22
	HSUPA	1	22.21	22.01	22.12
		2	22.25	21.92	22.20
		3	22.20	22.06	22.19
		4	22.18	22.08	22.16
		5	22.15	21.93	22.08
	HSPA+	1	22.18	22.03	22.06

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

WCDMA Band V

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Channel	Mid Channel	High Channel
Normal	Rel 99 RMC	1	22.02	22.24	22.10
	HSDPA	1	22.06	22.09	22.12
		2	22.06	22.09	22.10
		3	22.12	22.06	22.09
		4	22.03	21.97	22.23
	HSUPA	1	22.11	22.09	22.21
		2	22.06	22.13	22.09
		3	22.09	22.02	22.15
		4	21.98	21.98	22.22
		5	22.09	22.09	22.13
	HSPA+	1	22.05	22.12	22.23

Note:

1. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model 1.
2. KDB 941225 D01-Body SAR is not required for HSDPA/HSUPA/HSPA+ when the maximum average output of each RF channel is less than ¼ dB higher than measured 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE:
Full Power

LTE Band 2 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	21.99	21.66	21.80
		RB1#3	21.95	21.66	21.86
		RB1#5	21.97	21.63	21.78
		RB3#0	21.78	21.38	21.72
		RB3#3	21.82	21.69	21.68
		RB6#0	20.80	20.62	20.76
	16-QAM	RB1#0	20.86	20.61	20.64
		RB1#3	21.02	20.78	21.06
		RB1#5	20.97	20.85	21.14
		RB3#0	20.82	20.53	20.70
		RB3#1	20.86	20.36	20.89
		RB3#3	19.49	19.54	19.83
3M	QPSK	RB1#0	21.75	21.51	21.62
		RB1#8	21.41	21.48	21.61
		RB1#14	21.47	21.36	21.49
		RB6#0	21.34	21.22	21.25
		RB6#9	20.53	20.48	20.54
		RB15#0	20.49	20.38	20.34
	16-QAM	RB1#0	20.88	20.68	20.41
		RB1#8	20.85	20.97	20.41
		RB1#14	21.22	21.01	20.43
		RB6#0	19.65	19.59	19.42
		RB6#9	19.86	19.67	19.54
		RB15#0	19.56	19.31	19.42

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 2 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	21.61	21.45	21.35
		RB1#13	21.58	21.34	21.32
		RB1#24	21.49	21.33	21.28
		RB15#0	21.35	21.35	21.15
		RB15#10	20.85	20.39	20.50
		RB25#0	20.71	20.33	20.32
	16-QAM	RB1#0	20.21	20.82	20.24
		RB1#13	20.35	20.67	20.44
		RB1#24	20.34	20.73	20.41
		RB15#0	19.47	19.38	19.40
		RB15#10	19.63	19.34	19.68
		RB25#0	19.88	19.28	19.45
10M	QPSK	RB1#0	21.56	21.57	21.54
		RB1#25	21.42	21.47	21.53
		RB1#49	21.46	21.54	21.51
		RB25#0	21.36	21.27	21.21
		RB25#25	20.72	20.52	20.44
		RB50#0	20.52	20.34	20.37
	16-QAM	RB1#0	20.83	20.83	20.51
		RB1#25	21.46	20.80	20.46
		RB1#49	21.10	20.93	20.56
		RB25#0	19.80	19.63	19.54
		RB25#25	19.89	19.72	19.65
		RB50#0	19.59	19.57	19.45

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 2 part3:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	RB1#0	21.85	21.47	21.45
		RB1#38	21.52	21.41	21.26
		RB1#74	21.50	21.43	21.41
		RB36#0	21.36	21.27	21.22
		RB36#39	20.65	20.43	20.33
		RB75#0	20.51	20.33	20.44
	16-QAM	RB1#0	20.86	20.89	20.68
		RB1#38	20.88	20.72	19.95
		RB1#74	20.68	20.81	20.61
		RB36#0	19.53	19.53	19.42
		RB36#39	19.64	19.51	19.21
		RB75#0	19.54	19.43	19.52
20M	QPSK	RB1#0	22.02	22.07	21.90
		RB1#50	21.56	22.03	21.38
		RB1#99	21.41	21.74	21.46
		RB50#0	21.88	21.93	21.75
		RB50#50	20.71	20.71	20.69
		RB100#0	20.79	20.69	20.61
	16-QAM	RB1#0	21.31	20.72	21.32
		RB1#50	21.51	20.93	21.18
		RB1#99	21.09	20.70	21.53
		RB50#0	20.01	19.74	19.63
		RB50#50	19.82	19.92	19.69
		RB100#0	19.81	19.70	19.64

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 4 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	22.00	21.88	21.51
		RB1#3	21.93	21.87	21.45
		RB1#5	21.99	21.71	21.42
		RB3#0	21.75	21.84	21.43
		RB3#3	21.80	21.80	21.56
		RB6#0	20.87	21.03	20.57
	16-QAM	RB1#0	21.05	21.17	20.47
		RB1#3	21.17	21.49	20.56
		RB1#5	20.95	21.49	20.46
		RB3#0	20.89	20.84	20.59
		RB3#3	20.75	20.88	20.52
		RB6#0	20.03	19.84	19.63
3M	QPSK	RB1#0	22.01	21.94	21.56
		RB1#8	21.73	21.63	21.25
		RB1#14	21.95	21.91	21.37
		RB6#0	21.70	21.78	21.29
		RB6#9	20.79	20.83	20.33
		RB15#0	20.75	20.93	20.39
	16-QAM	RB1#0	21.10	21.43	20.32
		RB1#8	21.02	21.09	20.05
		RB1#14	21.10	21.24	20.51
		RB6#0	19.85	19.61	19.53
		RB6#9	20.04	19.90	19.45
		RB15#0	19.69	19.80	19.51

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 4 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	21.87	21.87	21.77
		RB1#13	21.82	21.80	21.37
		RB1#24	21.71	22.04	21.51
		RB15#0	21.67	21.72	21.35
		RB15#10	20.84	20.96	20.53
		RB25#0	20.79	21.03	20.51
	16-QAM	RB1#0	20.24	21.01	20.38
		RB1#13	20.26	20.86	20.16
		RB1#24	20.45	21.40	20.43
		RB15#0	19.53	19.83	19.45
		RB15#10	19.91	19.96	19.41
		RB25#0	19.76	19.93	19.41
10M	QPSK	RB1#0	22.04	22.03	21.71
		RB1#25	21.82	21.79	21.65
		RB1#49	22.01	22.14	21.62
		RB25#0	21.76	21.73	21.58
		RB25#25	20.96	20.97	20.47
		RB50#0	20.85	21.00	20.61
	16-QAM	RB1#0	21.28	21.18	20.51
		RB1#25	21.39	21.20	20.66
		RB1#49	21.27	21.81	20.36
		RB25#0	19.80	19.84	19.76
		RB25#25	19.97	20.14	19.71
		RB50#0	19.81	19.96	19.51

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 4 part3:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	RB1#0	22.02	21.97	21.55
		RB1#38	21.94	21.66	21.52
		RB1#74	21.84	21.78	21.49
		RB36#0	21.81	21.71	21.41
		RB36#39	20.96	21.02	20.41
		RB75#0	21.04	20.87	20.42
	16-QAM	RB1#0	21.05	21.55	20.86
		RB1#38	21.10	21.81	20.65
		RB1#74	21.17	21.78	20.57
		RB36#0	19.98	19.80	19.43
		RB36#39	19.98	20.06	19.51
		RB75#0	20.02	20.00	19.41
20M	QPSK	RB1#0	22.28	22.41	22.15
		RB1#50	21.89	22.19	21.55
		RB1#99	21.72	22.32	21.53
		RB50#0	22.21	22.33	21.91
		RB50#50	20.96	20.82	20.61
		RB100#0	21.03	20.99	20.59
	16-QAM	RB1#0	21.29	21.04	21.12
		RB1#50	21.80	20.71	21.56
		RB1#99	21.27	21.13	21.21
		RB50#0	20.10	19.73	19.58
		RB50#50	19.97	20.22	19.55
		RB100#0	20.22	20.01	19.58

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 5 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	22.72	22.49	22.41
		RB1#3	22.50	22.36	22.43
		RB1#5	22.51	22.19	22.40
		RB3#0	22.47	22.36	22.38
		RB3#3	22.41	22.39	22.36
		RB6#0	21.37	21.51	21.45
	16-QAM	RB1#0	21.66	21.79	21.52
		RB1#3	21.88	21.90	21.48
		RB1#5	21.85	21.73	21.40
		RB3#0	21.48	21.50	21.83
		RB3#3	21.39	21.42	21.26
		RB6#0	20.84	20.75	20.46
3M	QPSK	RB1#0	22.71	22.55	22.41
		RB1#8	22.68	22.39	22.34
		RB1#14	22.45	22.52	22.33
		RB6#0	22.34	22.45	22.37
		RB6#9	21.55	21.41	21.33
		RB15#0	21.56	21.49	21.52
	16-QAM	RB1#0	22.01	22.01	21.54
		RB1#8	22.19	21.94	21.14
		RB1#14	22.02	22.06	21.02
		RB6#0	20.38	20.81	20.43
		RB6#9	20.62	20.53	20.19
		RB15#0	20.52	20.64	20.51

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 5 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	22.47	22.52	22.38
		RB1#13	22.41	22.41	22.32
		RB1#24	22.40	22.49	22.32
		RB15#0	22.41	22.33	22.31
		RB15#10	21.54	21.40	21.38
		RB25#0	21.47	21.57	21.53
	16-QAM	RB1#0	20.96	21.73	21.29
		RB1#13	21.01	21.59	21.16
		RB1#24	21.09	21.87	21.17
		RB15#0	20.45	20.49	20.47
		RB15#10	20.61	20.32	20.38
		RB25#0	20.53	20.39	20.47
10M	QPSK	RB1#0	22.76	22.76	22.88
		RB1#25	22.51	22.57	22.53
		RB1#49	22.29	22.36	22.47
		RB25#0	22.59	22.61	22.65
		RB25#25	21.53	21.43	21.47
		RB50#0	21.48	21.52	21.39
	16-QAM	RB1#0	22.21	21.70	21.60
		RB1#25	21.92	21.96	21.64
		RB1#49	21.68	22.01	21.11
		RB25#0	20.51	20.62	20.64
		RB25#25	20.41	20.52	20.86
		RB50#0	20.48	20.54	20.50

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 7 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	21.55	21.71	21.82
		RB1#13	21.45	21.59	21.69
		RB1#24	21.42	21.58	21.52
		RB15#0	21.31	21.37	21.33
		RB15#10	20.52	20.72	20.72
		RB25#0	20.59	20.72	20.54
	16-QAM	RB1#0	20.07	21.04	20.32
		RB1#13	19.95	21.11	20.49
		RB1#24	20.17	21.14	20.55
		RB15#0	19.39	19.67	19.63
		RB15#10	19.38	19.52	19.86
		RB25#0	19.61	19.65	19.58
10M	QPSK	RB1#0	21.67	21.92	21.92
		RB1#25	21.60	21.76	21.82
		RB1#49	21.54	21.61	21.58
		RB25#0	21.52	21.59	21.47
		RB25#25	20.45	20.82	20.80
		RB50#0	20.64	20.87	20.58
	16-QAM	RB1#0	20.96	21.24	20.51
		RB1#25	20.92	21.19	20.88
		RB1#49	20.67	21.01	20.84
		RB25#0	19.78	19.93	19.67
		RB25#25	19.44	19.93	20.25
		RB50#0	19.63	19.91	19.65

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LTE Band 7 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	RB1#0	21.79	21.94	21.87
		RB1#38	21.53	21.76	21.63
		RB1#74	21.68	21.54	21.54
		RB36#0	21.65	21.59	21.45
		RB36#39	20.59	21.00	20.86
		RB75#0	20.61	20.87	20.62
	16-QAM	RB1#0	21.05	21.36	20.87
		RB1#38	20.75	21.29	20.70
		RB1#74	20.96	21.11	20.89
		RB36#0	19.61	19.80	19.73
		RB36#39	19.44	19.76	19.96
		RB75#0	19.65	19.93	19.78
20M	QPSK	RB1#0	22.03	22.47	22.01
		RB1#50	21.68	21.98	21.83
		RB1#99	21.51	21.68	21.91
		RB50#0	21.85	21.95	21.78
		RB50#50	20.77	20.90	20.74
		RB100#0	20.80	20.93	20.71
	16-QAM	RB1#0	21.25	21.04	21.46
		RB1#50	21.23	21.11	21.82
		RB1#99	20.74	20.71	21.98
		RB50#0	19.89	19.94	19.77
		RB50#50	19.64	19.82	19.94
		RB100#0	19.80	19.99	19.87

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LTE Band 12 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	22.61	22.49	22.71
		RB1#3	22.59	22.45	22.55
		RB1#5	22.45	22.25	22.41
		RB3#0	22.30	22.32	22.27
		RB3#3	22.28	22.31	22.58
		RB6#0	21.39	21.50	21.70
	16-QAM	RB1#0	21.70	21.60	21.63
		RB1#3	21.72	21.91	21.93
		RB1#5	21.46	21.71	21.88
		RB3#0	21.44	21.54	21.77
		RB3#3	21.36	21.40	22.20
		RB6#0	20.47	20.38	20.71
3M	QPSK	RB1#0	22.53	22.54	22.68
		RB1#8	22.40	22.49	22.57
		RB1#14	22.08	22.47	22.47
		RB6#0	22.47	22.43	22.57
		RB6#9	21.31	21.56	21.71
		RB15#0	21.33	21.48	21.62
	16-QAM	RB1#0	22.18	21.81	21.71
		RB1#8	21.94	22.06	21.45
		RB1#14	21.45	22.01	21.84
		RB6#0	20.52	20.49	20.51
		RB6#9	20.46	20.70	20.58
		RB15#0	20.53	20.56	20.69

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LTE Band 12 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	22.55	22.53	22.81
		RB1#13	22.34	22.49	22.41
		RB1#24	22.03	22.31	22.53
		RB15#0	22.42	22.25	22.38
		RB15#10	21.12	21.61	21.52
		RB25#0	21.28	21.49	21.65
	16-QAM	RB1#0	21.18	21.61	21.40
		RB1#13	20.53	22.22	21.19
		RB1#24	20.54	21.83	21.61
		RB15#0	20.50	20.38	20.69
		RB15#10	19.94	20.43	20.44
		RB25#0	20.41	20.33	20.79
10M	QPSK	RB1#0	22.76	22.72	22.83
		RB1#25	22.13	22.08	22.76
		RB1#49	22.22	22.31	22.53
		RB25#0	22.39	22.36	22.42
		RB25#25	21.21	21.22	21.59
		RB50#0	21.42	21.34	21.70
	16-QAM	RB1#0	21.73	21.46	21.31
		RB1#25	21.50	22.01	21.81
		RB1#49	21.73	22.19	21.33
		RB25#0	20.32	20.40	20.87
		RB25#25	20.46	20.62	20.68
		RB50#0	20.33	20.27	20.66

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 13 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	22.62	22.48	22.46
		RB1#13	22.58	22.27	22.53
		RB1#24	22.46	22.62	22.72
		RB15#0	22.51	22.34	22.24
		RB15#10	21.57	21.36	21.55
		RB25#0	21.58	21.69	21.64
	16-QAM	RB1#0	21.02	22.12	21.52
		RB1#13	21.01	21.34	21.50
		RB1#24	20.84	21.50	21.33
		RB15#0	20.65	20.70	20.25
		RB15#10	20.57	20.27	20.52
		RB25#0	20.71	20.44	20.50
10M	QPSK	RB1#0	/	22.86	/
		RB1#25	/	22.47	/
		RB1#49	/	22.43	/
		RB25#0	/	22.53	/
		RB25#25	/	21.32	/
		RB50#0	/	21.56	/
	16-QAM	RB1#0	/	21.77	/
		RB1#25	/	21.78	/
		RB1#49	/	21.90	/
		RB25#0	/	20.61	/
		RB25#25	/	20.40	/
		RB50#0	/	20.57	/

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 14 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	22.63	22.42	22.78
		RB1#12	22.44	22.35	22.62
		RB1#24	22.57	22.68	22.53
		RB12#0	22.35	22.18	22.52
		RB12#6	21.44	21.59	21.70
		RB12#11	21.43	21.52	21.74
		RB25#0	21.39	21.45	21.56
	16-QAM	RB1#0	21.28	21.31	21.05
		RB1#12	21.33	21.57	21.41
		RB1#24	21.31	21.42	21.06
		RB12#0	20.55	20.54	20.71
		RB12#6	20.65	20.72	20.63
		RB12#11	20.73	20.62	20.61
		RB25#0	20.93	20.82	20.79
10M	QPSK	RB1#0	/	22.83	/
		RB1#24	/	22.41	/
		RB1#49	/	22.52	/
		RB25#0	/	22.67	/
		RB25#12	/	21.65	/
		RB25#24	/	21.58	/
		RB50#0	/	21.64	/
	16-QAM	RB1#0	/	22.02	/
		RB1#24	/	22.25	/
		RB1#49	/	22.06	/
		RB25#0	/	20.72	/
		RB25#12	/	20.89	/
		RB25#24	/	20.92	/
		RB50#0	/	20.69	/

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 17 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	22.53	22.62	22.38
		RB1#13	22.19	22.49	22.45
		RB1#24	21.93	22.17	22.27
		RB15#0	22.12	22.21	21.85
		RB15#10	21.40	21.69	21.45
		RB25#0	21.18	21.58	21.72
	16-QAM	RB1#0	20.57	21.65	21.52
		RB1#13	20.89	22.25	21.31
		RB1#24	21.17	22.19	21.23
		RB15#0	20.05	20.36	20.72
		RB15#10	20.36	20.31	20.45
		RB25#0	20.27	20.38	20.71
10M	QPSK	RB1#0	22.67	22.68	22.78
		RB1#25	22.11	22.03	22.15
		RB1#49	22.65	22.33	22.41
		RB25#0	22.29	22.46	22.67
		RB25#25	21.82	21.85	21.67
		RB50#0	21.63	21.60	21.75
	16-QAM	RB1#0	21.49	21.42	20.88
		RB1#25	22.35	22.05	21.76
		RB1#49	22.05	22.07	21.01
		RB25#0	20.26	20.38	20.81
		RB25#25	20.85	20.81	20.80
		RB50#0	20.55	20.53	20.71

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 25 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	21.98	21.93	21.51
		RB1#3	21.82	21.80	21.40
		RB1#5	21.57	21.69	21.36
		RB3#0	21.85	21.64	21.47
		RB3#3	21.81	21.53	21.40
		RB6#0	20.73	20.65	20.63
	16-QAM	RB1#0	20.96	20.90	20.59
		RB1#3	21.16	21.18	20.57
		RB1#5	21.21	21.31	20.61
		RB3#0	20.85	21.03	20.84
		RB3#3	20.85	21.05	20.74
		RB6#0	20.08	19.81	19.81
3M	QPSK	RB1#0	21.94	21.84	21.58
		RB1#8	21.74	21.77	21.45
		RB1#14	21.91	21.81	21.54
		RB6#0	21.67	21.72	21.53
		RB6#9	20.89	20.75	20.45
		RB15#0	20.77	20.68	20.78
	16-QAM	RB1#0	21.19	21.12	20.53
		RB1#8	21.09	21.49	20.14
		RB1#14	21.18	20.94	20.16
		RB6#0	19.73	19.54	19.96
		RB6#9	19.85	19.61	19.47
		RB15#0	19.84	19.59	20.01

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 25 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	22.01	21.71	21.59
		RB1#13	21.68	21.62	21.50
		RB1#24	21.70	21.62	21.43
		RB15#0	21.55	21.45	21.23
		RB15#10	20.90	20.78	20.49
		RB25#0	20.86	20.80	20.69
	16-QAM	RB1#0	20.41	20.91	20.74
		RB1#13	20.41	21.02	20.26
		RB1#24	20.50	21.06	20.16
		RB15#0	19.70	19.62	19.73
		RB15#10	19.73	19.59	19.57
		RB25#0	19.99	19.80	19.77
10M	QPSK	RB1#0	21.98	21.86	21.58
		RB1#25	21.65	21.83	21.49
		RB1#49	21.79	21.73	21.39
		RB25#0	21.56	21.63	21.43
		RB25#25	20.90	20.81	20.75
		RB50#0	20.74	20.68	20.59
	16-QAM	RB1#0	21.16	21.03	20.61
		RB1#25	21.39	21.71	20.85
		RB1#49	21.08	21.51	20.12
		RB25#0	19.79	19.81	19.97
		RB25#25	19.92	19.85	20.08
		RB50#0	19.63	19.64	19.72

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 25 part3:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	RB1#0	21.92	21.78	21.67
		RB1#38	21.86	21.77	21.48
		RB1#74	21.65	21.69	21.38
		RB36#0	21.80	21.71	21.49
		RB36#39	20.79	20.78	20.77
		RB75#0	20.63	20.66	20.67
	16-QAM	RB1#0	21.01	20.98	20.76
		RB1#38	20.99	21.57	20.74
		RB1#74	20.91	21.45	20.36
		RB36#0	19.63	19.65	19.57
		RB36#39	19.70	19.83	19.74
		RB75#0	19.63	19.68	19.70
20M	QPSK	RB1#0	22.01	22.03	21.88
		RB1#50	21.90	21.85	21.43
		RB1#99	21.53	21.54	21.68
		RB50#0	21.74	21.61	21.55
		RB50#50	20.54	20.45	20.40
		RB100#0	20.69	20.43	20.45
	16-QAM	RB1#0	20.99	20.68	21.68
		RB1#50	21.53	20.34	21.11
		RB1#99	20.83	20.81	21.53
		RB50#0	19.90	19.57	19.67
		RB50#50	19.75	19.65	19.37
		RB100#0	19.90	19.50	19.50

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 26 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	22.24	22.67	22.69
		RB1#3	22.18	22.65	22.56
		RB1#5	22.22	22.52	22.61
		RB3#0	21.80	22.14	22.10
		RB3#1	21.60	21.93	21.91
		RB3#3	21.70	22.05	22.03
		RB6#0	21.45	21.85	21.87
	16-QAM	RB1#0	21.70	21.99	22.04
		RB1#3	21.63	21.93	22.20
		RB1#5	21.81	21.98	22.13
		RB3#0	21.06	21.02	21.28
		RB3#1	21.15	21.04	21.25
		RB3#3	21.01	21.27	21.15
		RB6#0	20.97	20.98	21.14
3M	QPSK	RB1#0	22.03	22.63	22.47
		RB1#7	22.01	22.44	21.91
		RB1#14	21.98	22.59	21.72
		RB8#0	21.78	22.04	22.21
		RB8#4	21.61	22.17	21.94
		RB8#7	21.70	22.12	21.93
		RB15#0	21.50	21.90	21.74
	16-QAM	RB1#0	21.87	21.84	21.98
		RB1#7	21.68	22.00	21.79
		RB1#14	21.92	21.75	22.07
		RB8#0	20.95	21.22	20.88
		RB8#4	20.91	21.30	21.06
		RB8#7	20.90	21.26	20.97
		RB15#0	20.70	21.08	20.87

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 26 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	22.09	22.41	22.67
		RB1#12	22.06	22.38	22.57
		RB1#24	21.88	22.31	22.53
		RB12#0	21.87	22.10	22.42
		RB12#6	21.81	22.07	22.18
		RB12#11	21.70	22.05	21.76
		RB25#0	21.64	21.91	21.74
	16-QAM	RB1#0	21.22	21.56	21.83
		RB1#12	21.30	21.51	21.65
		RB1#24	21.09	21.57	21.69
		RB12#0	20.79	21.00	21.13
		RB12#6	20.85	21.12	20.89
		RB12#11	21.03	21.05	21.01
		RB25#0	20.74	20.99	20.86
10M	QPSK	RB1#0	22.27	22.63	22.18
		RB1#24	22.25	22.44	22.16
		RB1#49	22.16	22.54	22.11
		RB25#0	21.87	22.13	21.98
		RB25#12	21.78	21.88	21.90
		RB25#24	21.75	22.04	22.01
		RB50#0	21.57	21.85	21.79
	16-QAM	RB1#0	21.71	22.13	21.89
		RB1#24	21.78	22.30	22.02
		RB1#49	21.52	22.31	21.97
		RB25#0	20.72	21.11	20.96
		RB25#12	20.89	21.16	20.79
		RB25#24	20.81	20.93	21.03
		RB50#0	20.68	20.92	20.77

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 26 part3:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	RB1#0	22.31	22.70	22.85
		RB1#37	22.13	22.55	22.66
		RB1#74	22.13	22.66	22.63
		RB36#0	21.68	21.93	22.15
		RB36#17	21.67	21.93	21.92
		RB36#35	21.64	21.89	21.87
		RB75#0	21.66	21.85	21.91
	16-QAM	RB1#0	21.22	21.65	22.57
		RB1#37	21.23	21.50	22.53
		RB1#74	21.18	21.56	22.55
		RB36#0	20.93	21.33	21.09
		RB36#17	20.96	21.11	21.00
		RB36#35	20.87	21.05	20.87
		RB75#0	20.70	21.04	20.85

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 41 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Add Channel (dBm)	Middle Channel (dBm)	Add Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	21.77	21.71	21.73	21.68	21.71
		RB1#13	21.73	21.62	21.60	21.72	21.92
		RB1#24	21.57	21.56	21.63	21.63	21.72
		RB15#0	21.70	21.66	21.70	21.64	21.67
		RB15#10	21.53	21.49	21.53	21.47	21.50
		RB25#0	20.67	20.66	20.74	20.70	20.74
	16-QAM	RB1#0	20.98	20.97	21.05	20.95	20.94
		RB1#13	20.96	20.92	20.96	20.71	20.55
		RB1#24	20.97	20.91	20.94	20.59	20.32
		RB15#0	20.77	20.71	20.74	20.61	20.56
		RB15#10	20.76	20.66	20.64	20.56	20.56
		RB25#0	19.65	19.65	19.73	19.69	19.72
Test Bandwidth	**Test Modulation**	**Resource Block & RB offset**	**Low Channel (dBm)**	**Add Channel (dBm)**	**Middle Channel (dBm)**	**Add Channel (dBm)**	**High Channel (dBm)**
10M	QPSK	RB1#0	21.92	21.83	21.82	21.83	21.93
		RB1#25	21.75	21.67	21.67	21.66	21.74
		RB1#49	21.77	21.73	21.77	21.65	21.62
		RB25#0	21.79	21.69	21.68	21.66	21.72
		RB25#25	20.86	20.77	20.76	20.77	20.86
		RB50#0	20.66	20.61	20.65	20.61	20.65
	16-QAM	RB1#0	21.02	20.98	21.02	20.97	21.01
		RB1#25	20.55	20.71	20.95	20.70	20.54
		RB1#49	20.32	20.61	20.99	20.60	20.30
		RB25#0	19.72	19.67	19.69	19.65	19.69
		RB25#25	19.62	19.59	19.64	19.74	19.92
		RB50#0	19.70	19.66	19.70	19.66	19.69

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 41 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Add Channel (dBm)	Middle Channel (dBm)	Add Channel (dBm)	High Channel (dBm)
15M	QPSK	RB1#0	21.72	21.68	21.72	21.68	21.72
		RB1#38	21.67	21.63	21.67	21.63	21.68
		RB1#74	21.62	21.58	21.63	21.61	21.68
		RB36#0	21.51	21.45	21.47	21.45	21.51
		RB36#39	20.80	20.76	20.80	20.75	20.79
		RB75#0	20.71	20.65	20.68	20.65	20.70
	16-QAM	RB1#0	21.01	20.96	21.00	20.95	20.99
		RB1#38	20.65	20.76	20.96	20.71	20.54
		RB1#74	20.97	20.92	20.96	20.58	20.28
		RB36#0	19.82	19.74	19.73	19.75	19.84
		RB36#39	19.94	19.89	19.91	19.87	19.91
		RB75#0	19.66	19.62	19.65	19.66	19.74
Test Bandwidth	**Test Modulation**	**Resource Block & RB offset**	**Low Channel (dBm)**	**Add Channel (dBm)**	**Middle Channel (dBm)**	**Add Channel (dBm)**	**High Channel (dBm)**
20M	QPSK	RB1#0	21.94	21.92	21.98	21.91	21.93
		RB1#50	21.92	21.78	21.72	21.67	21.71
		RB1#99	21.75	21.72	21.78	21.75	21.80
		RB50#0	21.78	21.76	21.82	21.74	21.75
		RB50#50	20.69	20.65	20.70	20.65	20.69
		RB100#0	20.63	20.63	20.71	20.67	20.72
	16-QAM	RB1#0	21.00	20.96	21.00	20.96	21.00
		RB1#50	21.00	20.96	21.01	20.97	21.02
		RB1#99	20.87	20.88	20.98	20.90	20.91
		RB50#0	19.84	19.80	19.84	19.80	19.83
		RB50#50	19.81	19.81	19.89	19.85	19.89
		RB100#0	19.77	19.73	19.76	19.67	19.66

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 66 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	22.05	21.81	21.32
		RB1#13	21.71	21.78	20.88
		RB1#5	21.95	21.69	20.77
		RB3#0	21.81	21.69	20.92
		RB3#3	21.78	21.65	20.88
		RB6#0	20.81	20.69	19.88
	16-QAM	RB1#0	20.71	20.99	19.69
		RB1#13	20.92	21.76	19.85
		RB1#5	20.93	21.54	19.79
		RB3#0	21.11	20.80	19.81
		RB3#3	20.79	20.78	20.02
		RB6#0	19.93	19.66	18.97
3M	QPSK	RB1#0	22.01	21.84	21.39
		RB1#8	21.87	21.77	21.12
		RB1#14	21.97	21.79	21.23
		RB6#0	21.76	21.66	21.31
		RB6#9	20.81	20.79	20.15
		RB15#0	20.69	20.69	20.19
	16-QAM	RB1#0	21.11	20.97	20.14
		RB1#8	20.95	21.23	20.28
		RB1#14	21.43	21.24	20.23
		RB6#0	19.95	19.70	20.19
		RB6#9	20.00	19.87	20.16
		RB15#0	19.88	19.69	19.28

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 66 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	21.74	21.77	21.32
		RB1#13	21.70	21.69	21.25
		RB1#24	21.69	21.70	21.27
		RB15#0	21.53	21.55	21.12
		RB15#10	20.88	20.79	20.89
		RB25#0	20.79	20.80	20.15
	16-QAM	RB1#0	20.34	21.04	20.31
		RB1#13	20.33	21.11	19.96
		RB1#24	20.37	21.10	20.15
		RB15#0	19.71	19.63	21.85
		RB15#10	19.91	19.71	21.81
		RB25#0	19.93	19.82	19.31
10M	QPSK	RB1#0	21.90	21.97	21.35
		RB1#25	21.66	21.95	21.29
		RB1#49	21.77	21.94	21.23
		RB25#0	21.72	21.65	21.07
		RB25#25	20.97	20.82	20.41
		RB50#0	20.76	20.71	20.33
	16-QAM	RB1#0	21.09	21.44	20.15
		RB1#25	21.74	21.33	20.57
		RB1#49	21.84	21.64	20.23
		RB25#0	19.89	19.73	19.50
		RB25#25	20.03	19.90	19.76
		RB50#0	19.88	19.84	19.49

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 66 part3:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	RB1#0	21.99	21.84	21.36
		RB1#38	21.82	21.81	21.09
		RB1#74	21.71	21.76	21.12
		RB36#0	21.83	21.71	21.25
		RB36#39	21.02	20.81	20.46
		RB75#0	20.79	20.71	20.41
	16-QAM	RB1#0	21.28	21.44	20.71
		RB1#38	21.96	21.23	20.13
		RB1#74	21.38	21.30	20.28
		RB36#0	19.97	19.89	20.41
		RB36#39	19.96	19.97	19.26
		RB75#0	19.84	19.68	19.33
20M	QPSK	RB1#0	22.38	22.71	22.31
		RB1#50	22.17	22.06	21.35
		RB1#99	21.65	22.10	21.32
		RB50#0	21.88	21.92	21.85
		RB50#50	20.86	20.80	20.53
		RB100#0	20.91	20.73	20.73
	16-QAM	RB1#0	20.78	21.08	21.29
		RB1#50	21.59	21.08	21.41
		RB1#99	20.77	20.96	21.33
		RB50#0	20.05	19.93	19.81
		RB50#50	20.00	19.85	19.46
		RB100#0	19.96	19.78	19.67

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 71 part1:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	22.83	22.85	22.76
		RB1#13	22.56	22.70	22.68
		RB1#24	22.29	22.61	22.72
		RB15#0	22.76	22.76	22.55
		RB15#10	22.64	22.64	22.35
		RB25#0	22.83	22.79	22.61
	16-QAM	RB1#0	22.55	22.76	22.51
		RB1#13	22.32	22.97	22.44
		RB1#24	22.49	22.86	22.24
		RB15#0	21.80	21.62	21.72
		RB15#10	21.96	21.62	21.64
		RB25#0	22.03	21.69	21.61
10M	QPSK	RB1#0	23.33	22.85	23.27
		RB1#25	23.21	22.68	23.31
		RB1#49	23.08	22.58	22.96
		RB25#0	23.11	22.75	22.91
		RB25#25	22.57	22.66	22.83
		RB50#0	22.49	22.55	22.71
	16-QAM	RB1#0	22.33	22.75	22.83
		RB1#25	22.29	22.94	22.60
		RB1#49	22.26	22.92	22.47
		RB25#0	21.55	21.84	21.86
		RB25#25	21.76	21.77	21.77
		RB50#0	21.75	21.77	21.77

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE Band 71 part2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	RB1#0	23.51	22.83	23.25
		RB1#13	23.17	22.67	23.11
		RB1#24	22.36	22.58	22.68
		RB15#0	23.26	22.67	23.13
		RB15#10	23.15	22.58	23.03
		RB25#0	23.44	22.93	23.00
	16-QAM	RB1#0	22.14	23.14	22.40
		RB1#13	22.07	23.09	22.76
		RB1#24	22.36	23.04	22.76
		RB15#0	22.16	23.15	22.59
		RB15#10	22.26	22.92	22.86
		RB25#0	22.16	22.85	22.59
20M	QPSK	RB1#0	23.54	23.16	23.32
		RB1#25	23.18	22.81	22.80
		RB1#49	23.22	22.75	23.02
		RB25#0	23.37	22.93	23.02
		RB25#25	23.22	22.76	22.67
		RB50#0	23.34	22.93	22.67
	16-QAM	RB1#0	22.18	22.84	22.43
		RB1#25	21.94	23.04	22.55
		RB1#49	22.48	23.04	22.65
		RB25#0	22.54	22.86	22.42
		RB25#25	21.96	23.04	22.84
		RB50#0	22.54	22.85	22.36

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

Bluetooth Power:

Mode	Channel	Freq.(MHz)	Conducted Power(Avg/dBm)
GFSK	Low	2402	7.54
	Middle	2441	6.66
	High	2480	7.49
π/4 DQPSK	Low	2402	5.62
	Middle	2441	4.77
	High	2480	5.58
8DPSK	Low	2402	5.61
	Middle	2441	4.73
	High	2480	5.53
LE 1M	Low	2402	-0.85
	High	2440	-1.49
	High	2480	-1.36

WiFi 2.4G Power:

Mode	Channel	Freq.(MHz)	Data Rate	Conducted Power(Avg/dBm)
802.11b	Low	2412	1Mbps	9.05
	Middle	2437		9.27
	High	2462		8.88
802.11g	Low	2412	6Mbps	6.64
	Middle	2437		7.01
	High	2462		6.42
802.11n20	Low	2412	MCS0	6.68
	Middle	2437		7.07
	High	2462		6.41
802.11n40	Low	2422	MCS0	10.41
	Middle	2437		11.33
	High	2452		9.57

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

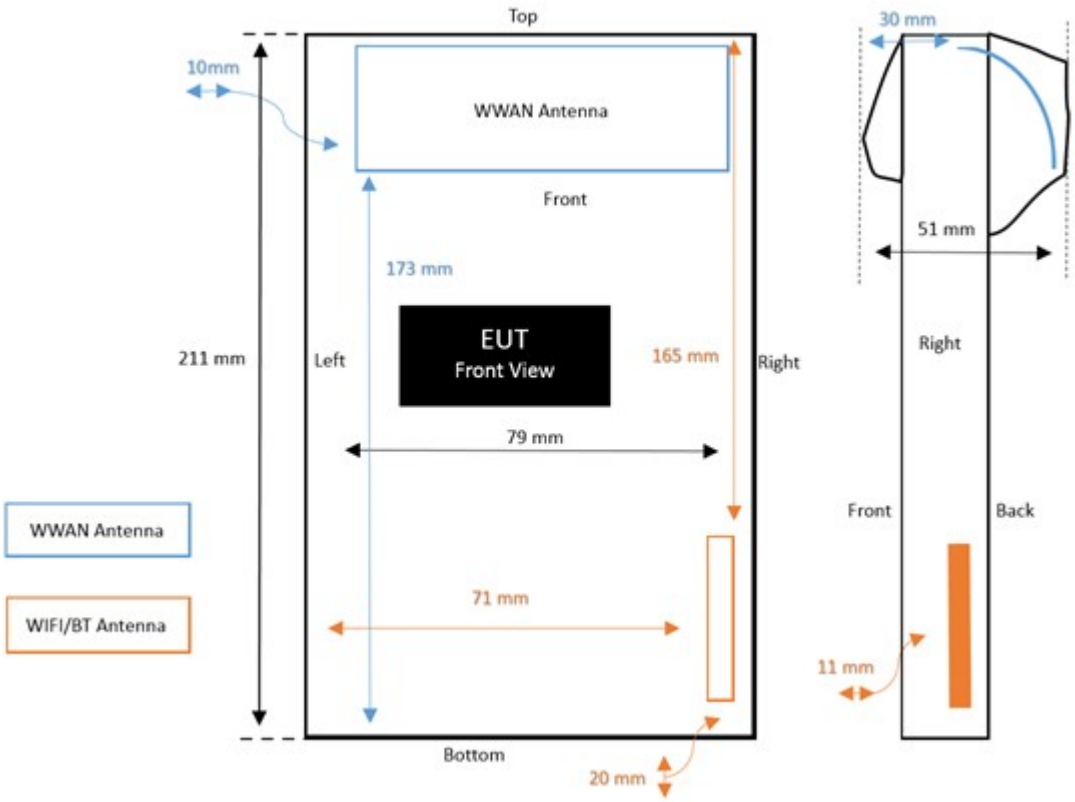
WiFi 5GHz Power:

Band	Mode	Channel	Freq.(MHz)	Conducted Power(Avg/dBm)
5.2GHz	802.11a	Low	5180	9.67
		Middle	5200	9.82
		High	5240	9.64
	802.11nHT20 / 802.11ac20	Low	5180	9.66
		Middle	5200	9.73
		High	5240	9.67
	802.11nHT40 / 802.11ac40	Low	5190	8.25
		High	5230	7.92
Mode	**Mode**	**Channel**	**Freq.(MHz)**	**Conducted Power(Avg/dBm)**
5.8GHz	802.11a	Low	5745	9.44
		Middle	5785	8.82
		High	5825	8.15
	802.11nHT20 / 802.11ac20	Low	5745	9.49
		Middle	5785	8.76
		High	5825	8.12
	802.11nHT40 / 802.11ac40	Low	5755	7.67
		High	5795	7.01

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

Antennas Location:



Antenna Distance To Edge

Antenna	Antenna Distance To Edge(mm)					
	Front	Back	Left	Right	Top	Bottom
WWAN	30	<5	10	<5	<5	173
WLAN/BT	11	<5	71	<5	165	20

NOTE:

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] · [$\sqrt{f_{(GHz)}}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,[16] where
   - $f_{(GHz)}$ is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation[17]
   - The result is rounded to one decimal place for comparison

   The test exclusions are applicable only when the minimum *test separation distance* is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
2) At 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B:[18]
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·($f_{(MHz)}$/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

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Standalone SAR test exclusion considerations

Mode	Frequency (MHz)	P_{avg} (dBm)	P_{avg} (mW)	Distance (mm)	Calculated value	Threshold (1g)	SAR Test Exclusion
WCDMA 2	1880	22.5	177.83	80	3.0	3	YES
WCDMA 5	836.6	22.5	177.83	55	3.0	3	YES
LTE Band 7	2535	22.5	177.83	95	3.0	3	YES
LTE Band 12 & 17	707.5	23	199.53	56	3.0	3	YES
LTE Band 13	782	23	199.53	58	3.0	3	YES
LTE Band 14	793	23	199.53	59	3.0	3	YES
LTE Band 25 & 2	1880	22.5	177.83	80	3.0	3	YES
LTE Band 26 & 5	821.5	23	199.53	60	3.0	3	YES
LTE Band 66 & 4	1745	23	199.53	87	3.0	3	YES
LTE Band 41	2565	22	158.49	85	3.0	3	YES
LTE Band 71	680.5	24	251.19	70	3.0	3	YES
WLAN 2.4G 11b	2437	9.5	8.91	4.6	3.0	3	YES
WLAN2.4G 11n40	2437	11.5	14.13	7.4	3.0	3	YES
802.11a/802.11anHT20/acHT20	5200	10	10.00	7.6	3.0	3	YES
802.11anHT40/acHT40	5190	8.5	7.08	5.3	3.0	3	YES
802.11a/802.11anHT20/acHT20	5745	10	10.00	7.9	3.0	3	YES
Bluetooth 1M	2402	8	6.31	5	2.0	3	YES
Bluetooth 2M/3M	2402	6	3.98	5	1.2	3	YES
Bluetooth LE	2402	-0.5	0.89	5	0.3	3	YES

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

SAR test exclusion for the EUT edge considerations Result (Required: O / Exclusion: X)

Mode	Back	Front	Left	Right	Top	Bottom
WCDMA 2	O	O	O	O	O	X
WCDMA 5	O	O	O	O	O	X
LTE Band 7	O	O	O	O	O	X
LTE Band 12 & 17	O	O	O	O	O	X
LTE Band 13	O	O	O	O	O	X
LTE Band 14	O	O	O	O	O	X
LTE Band 25 & 2	O	O	O	O	O	X
LTE Band 26 & 5	O	O	O	O	O	X
LTE Band 66 & 4	O	O	O	O	O	X
LTE Band 41	O	O	O	O	O	X
LTE Band 71	O	O	O	O	O	X
WLAN 2.4G 11b	O	X	X	O	X	X
WLAN2.4G 11n40	O	X	X	O	X	X
802.11a/802.11anHT20/acHT20 5.2GHz	O	X	X	O	X	X
802.11anHT40/acHT40 5.2GHz	O	X	X	O	X	X
802.11a/802.11anHT20/acHT20 5.8GHz	O	X	X	O	X	X
Bluetooth 1M	X	X	X	X	X	X
Bluetooth 2M/3M	X	X	X	X	X	X
Bluetooth LE	X	X	X	X	X	X

Note 1:

Required: The distance is less than Test Exclusion Distance, testing is required.
Exclusion*: SAR test exclusion evaluation has been done above.
Exclusion: **The distance is larger than Test Exclusion Distance, testing is not required.**

Note 2:

According KDB 248227 5.2.1 add 802.11b mode for SAR testing.

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed diametric evaluation.

SAR Test Data

Environmental Conditions

Test Date	2021/10/04	2021/10/05	2021/10/07	2021/10/08
Freq. Band(MHz)	835	750	1800	750
Temperature	23.5℃	20.3℃	19.7℃	19.5℃
Relative Humidity	53 %	67 %	70 %	67 %
Test Engineer	Nike Wu / Woods Chen	Nike Wu / Woods Chen	Nike Wu / Woods Chen	Nike Wu / Woods Chen

Test Date	2021/10/12	2021/10/13	2021/10/14	2021/10/15
Freq. Band(MHz)	1900	2600	2450	5200
Temperature	23.5℃	21.1℃	20.1℃	21.8℃
Relative Humidity	52 %	63 %	57 %	59 %
Test Engineer	Nike Wu / Woods Chen	Nike Wu / Woods Chen	Nike Wu / Woods Chen	Nike Wu / Woods Chen

Test Date	2021/10/18
Freq. Band(MHz)	5800
Temperature	22.6℃
Relative Humidity	63 %
Test Engineer	Nike Wu / Woods Chen

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

WCDMA Band 2：

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
					Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	1880	RMC	22.28	22.50	1.052	0.009	0.009	1.6	1
Body Back(0mm)	1880	RMC	22.28	22.50	1.052	0.131	0.138	1.6	2
Body Back(0mm)_Type2	1880	RMC	22.28	22.50	1.052	0.057	0.060	1.6	2-2
Body Left(0mm)	1880	RMC	22.28	22.50	1.052	0.005	0.005	1.6	3
Body Right(0mm)	1880	RMC	22.28	22.50	1.052	0.024	0.025	1.6	4
Body Top(0mm)	1880	RMC	22.28	22.50	1.052	0.052	0.054	1.6	5

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

WCDMA Band 5：

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
					Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	836.6	RMC	22.24	22.50	1.062	0.067	0.071	1.6	6
Body Back(0mm)	826.4	RMC	22.02	22.50	1.117	0.778	0.869	1.6	7-2
	836.6	RMC	22.24	22.50	1.062	0.936	0.994	1.6	7
	846.6	RMC	22.10	22.50	1.096	0.887	0.973	1.6	7-3
	826.4	RMC; Retest1	22.02	22.50	1.117	0.840	0.938	1.6	7-4
	836.6	RMC; Retest1	22.24	22.50	1.062	1.000	1.062	1.6	7-5
	846.6	RMC; Retest1	22.10	22.50	1.096	0.781	0.856	1.6	7-6
Body Left(0mm)	836.6	RMC	22.24	22.50	1.062	0.106	0.113	1.6	8
Body Right(0mm)	836.6	RMC	22.24	22.50	1.062	0.235	0.249	1.6	9
Body Top(0mm)	826.4	RMC	22.02	22.50	1.117	1.050	1.173	1.6	10-2
	836.6	RMC	22.24	22.50	1.062	1.110	1.178	1.6	10
	846.6	RMC	22.10	22.50	1.096	1.130	1.239	1.6	10-3
	826.4	RMC; Retest1	22.02	22.50	1.117	1.060	1.184	1.6	10-5
	836.6	RMC; Retest1	22.24	22.50	1.062	1.130	1.200	1.6	10-4
	846.6	RMC; Retest1	22.10	22.50	1.096	1.130	1.239	1.6	10-6
	846.6	RMC; Retest2	22.10	22.50	1.096	1.190	1.305	1.6	10-7
Body Top(0mm)_Type2	846.6	RMC	22.10	22.50	1.096	0.480	0.526	1.6	10-8

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE FDD Band 7：

EUT Position	Frequency (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
							Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	2535	QPSK	20	1	22.47	22.5	1.007	0.023	0.023	1.6	41
	2535	QPSK	20	50%	21.95	22.5	1.135	0.023	0.026	1.6	41-2
Body Back(0mm)	2535	QPSK	20	1	22.47	22.5	1.007	0.549	0.553	1.6	42
	2535	QPSK	20	50%	21.95	22.5	1.135	0.427	0.485	1.6	42-2
Body Back(0mm)_Type2	2535	QPSK	20	1	22.47	22.5	1.429	0.527	0.531	1.6	42-3
Body Left(0mm)	2535	QPSK	20	1	22.47	22.5	1.007	0.041	0.041	1.6	43
	2535	QPSK	20	50%	21.95	22.5	1.429	0.045	0.051	1.6	43-2
Body Right(0mm)	2535	QPSK	20	1	22.47	22.5	1.007	0.048	0.048	1.6	44
	2535	QPSK	20	50%	21.95	22.5	1.135	0.016	0.018	1.6	44-2
Body Top(0mm)	2535	QPSK	20	1	22.47	22.5	1.007	0.093	0.094	1.6	45
	2535	QPSK	20	50%	21.95	22.5	1.135	0.076	0.086	1.6	45-2

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE FDD Band 12 & Band 17：

EUT Position	Frequency (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
							Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	707.5	QPSK	10	1	22.72	23.00	1.067	0.008	0.009	1.6	11
	707.5	QPSK	10	50%	22.36	23.00	1.159	0.004	0.005	1.6	11-2
Body Back(0mm)	707.5	QPSK	10	1	22.72	23.00	1.067	0.604	0.644	1.6	12
	707.5	QPSK	10	50%	22.36	23.00	1.159	0.475	0.550	1.6	12-2
Body Left(0mm)	707.5	QPSK	10	1	22.72	23.00	1.067	0.029	0.031	1.6	13
	707.5	QPSK	10	50%	22.36	23.00	1.159	0.024	0.028	1.6	13-2
Body Right(0mm)	707.5	QPSK	10	1	22.72	23.00	1.067	0.075	0.080	1.6	14
	707.5	QPSK	10	50%	22.36	23.00	1.159	0.061	0.071	1.6	14-2
Body Top(0mm)	707.5	QPSK	10	1	22.72	23.00	1.067	0.682	0.727	1.6	15
	707.5	QPSK	10	50%	22.36	23.00	1.159	0.522	0.605	1.6	15-2
Body Top(0mm)_Type2	707.5	QPSK	10	1	22.34	23.00	1.164	0.133	0.142	1.6	15-3

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE FDD Band 13：

EUT Position	Frequency (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
							Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	782	QPSK	10	1	22.86	23.00	1.033	0.076	0.078	1.6	16
	782	QPSK	10	50%	22.53	23.00	1.140	0.066	0.073	1.6	16-2
Body Back(0mm)	782	QPSK	10	1	22.86	23.00	1.033	0.874	0.903	1.6	17
	782	QPSK	10	Retest1	22.86	23.00	1.033	0.880	0.909	1.6	17-4
	782	QPSK	10	50%	22.53	23.00	1.140	0.699	0.779	1.6	17-2
Body Back(0mm)_Type2	782	QPSK	10	100%	22.86	23.00	1.033	0.209	0.216	1.6	17-5
Body Left(0mm)	782	QPSK	10	1	22.86	23.00	1.033	0.075	0.077	1.6	18
	782	QPSK	10	50%	22.53	23.00	1.140	0.059	0.066	1.6	18-2
Body Right(0mm)	782	QPSK	10	1	22.86	23.00	1.033	0.462	0.477	1.6	19
	782	QPSK	10	50%	22.53	23.00	1.140	0.401	0.447	1.6	19-2
Body Top(0mm)	782	QPSK	10	1	22.86	23.00	1.033	0.864	0.892	1.6	20
	782	QPSK	10	Retest1	22.86	23.00	1.033	0.790	0.816	1.6	120-3
	782	QPSK	10	50%	22.53	23.00	1.140	0.667	0.743	1.6	20-2

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE FDD Band 14：

EUT Position	Frequency (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
							Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	793	QPSK	10	1	22.83	23.00	1.040	0.011	0.012	1.6	71
	793	QPSK	10	50%	22.67	23.00	1.079	0.009	0.010	1.6	71-2
Body Back(0mm)	793	QPSK	10	1	22.83	23.00	1.040	0.432	0.449	1.6	72
	793	QPSK	10	50%	22.67	23.00	1.079	0.344	0.371	1.6	72-2
Body Left(0mm)	793	QPSK	10	1	22.83	23.00	1.040	0.048	0.050	1.6	73
	793	QPSK	10	50%	22.67	23.00	1.079	0.044	0.047	1.6	73-2
Body Right(0mm)	793	QPSK	10	1	22.83	23.00	1.040	0.032	0.034	1.6	74
	793	QPSK	10	50%	22.67	23.00	1.079	0.030	0.032	1.6	74-2
Body Top(0mm)	793	QPSK	10	1	22.83	23.00	1.040	0.702	0.730	1.6	75
	793	QPSK	10	50%	22.67	23.00	1.079	0.590	0.637	1.6	75-2
Body Top(0mm)_Type2	793	QPSK	10	1	22.83	23.00	1.040	0.302	0.314	1.6	75-3

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE FDD Band 25 & Band 2：

EUT Position	Frequency (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
							Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	1880	QPSK	20	1	22.07	22.50	1.104	0.009	0.010	1.6	46
	1880	QPSK	20	50%	21.93	22.50	1.140	0.001	0.001	1.6	46-2
Body Back(0mm)	1880	QPSK	20	1	22.07	22.50	1.104	0.120	0.132	1.6	47
	1880	QPSK	20	50%	21.93	22.50	1.140	0.092	0.104	1.6	47-2
Body Back(0mm)_Type2	1880	QPSK	20	1	22.07	22.50	1.104	0.119	0.131	1.6	47-3
Body Left(0mm)	1880	QPSK	20	1	22.07	22.50	1.104	0.006	0.006	1.6	48
	1880	QPSK	20	50%	21.93	22.50	1.140	0.002	0.003	1.6	48-2
Body Right(0mm)	1880	QPSK	20	1	22.07	22.50	1.104	0.026	0.029	1.6	49
	1880	QPSK	20	50%	21.93	22.50	1.140	0.021	0.023	1.6	49-2
Body Top(0mm)	1880	QPSK	20	1	22.07	22.50	1.104	0.053	0.058	1.6	50
	1880	QPSK	20	50%	21.93	22.50	1.140	0.026	0.029	1.6	50-2

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE FDD Band 26 & 5：

EUT Position	Frequency (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
							Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	831	QPSK	15	1	22.70	23.00	1.072	0.063	0.067	1.6	21
	831	QPSK	15	50%	21.93	23.00	1.279	0.050	0.064	1.6	21-2
Body Back(0mm)	831	QPSK	15	1	22.70	23.00	1.072	0.717	0.758	1.6	122
	831	QPSK	15	50%	21.93	23.00	1.279	0.598	0.654	1.6	122-2
Body Left(0mm)	831	QPSK	15	1	22.70	23.00	1.072	0.071	0.076	1.6	23
	831	QPSK	15	50%	21.93	23.00	1.279	0.062	0.079	1.6	23-2
Body Right(0mm)	831	QPSK	15	1	22.70	23.00	1.072	0.223	0.239	1.6	24
	831	QPSK	15	50%	21.93	23.00	1.279	0.181	0.232	1.6	24-2
Body Top(0mm)	821.5	QPSK	15	1	22.31	23.00	1.172	0.731	0.857	1.6	125-2
	831	QPSK	15	1	22.70	23.00	1.072	0.776	0.831	1.6	125
	841.5	QPSK	15	1	22.85	23.00	1.035	0.864	0.894	1.6	125-3
	831	QPSK	15	50%	21.93	23.00	1.279	0.613	0.784	1.6	125-4
	841.5	QPSK	15	1	22.85	23.00	1.035	0.815	0.844	1.6	125-5
Body Top(0mm)_Type2	841.5	QPSK	15	1	22.88	23.00	1.035	0.404	0.418	1.6	125-13

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE FDD Band 66 & Band 4：

EUT Position	Frequency (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
							Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	1745	QPSK	20	1	22.71	23.00	1.069	0.031	0.033	1.6	51
	1745	QPSK	20	50%	21.92	23.00	1.282	0.029	0.037	1.6	51-2
Body Back(0mm)	1745	QPSK	20	1	22.71	23.00	1.069	0.140	0.150	1.6	52
	1745	QPSK	20	50%	21.92	23.00	1.282	0.101	0.130	1.6	52-2
Body Back(0mm)_Type2	1745	QPSK	20	1	22.71	23.00	1.069	0.132	0.141	1.6	52-3
Body Left(0mm)	1745	QPSK	20	1	22.71	23.00	1.069	0.013	0.014	1.6	53
	1745	QPSK	20	50%	21.92	23.00	1.282	0.011	0.014	1.6	53-2
Body Right(0mm)	1745	QPSK	20	1	22.71	23.00	1.069	0.007	0.008	1.6	54
	1745	QPSK	20	50%	21.92	23.00	1.282	0.012	0.015	1.6	54-2
Body Top(0mm)	1745	QPSK	20	1	22.71	23.00	1.069	0.060	0.064	1.6	55
	1745	QPSK	20	50%	21.92	23.00	1.282	0.049	0.063	1.6	55-2

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE TDD Band 41：

EUT Position	Frequency (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
							Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	2595	QPSK	20	1	21.98	22.00	1.005	0.027	0.027	1.6	36
	2595	QPSK	20	50%	21.82	22.00	1.042	0.025	0.026	1.6	36-2
Body Back(0mm)	2595	QPSK	20	1	21.98	22.00	1.005	0.193	0.194	1.6	37
	2595	QPSK	20	50%	21.82	22.00	1.042	0.160	0.167	1.6	37-2
Body Back(0mm)_Type2	2595	QPSK	20	1	21.98	22.00	1.005	0.191	0.192	1.6	37-3
Body Left(0mm)	2595	QPSK	20	1	21.98	22.00	1.005	0.015	0.015	1.6	38
	2595	QPSK	20	50%	21.82	22.00	1.042	0.015	0.016	1.6	38-2
Body Right(0mm)	2595	QPSK	20	1	21.98	22.00	1.005	0.028	0.028	1.6	39
	2595	QPSK	20	50%	21.82	22.00	1.042	0.025	0.026	1.6	39-2
Body Top(0mm)	2595	QPSK	20	1	21.98	22.00	1.005	0.036	0.036	1.6	40
	2595	QPSK	20	50%	21.82	22.00	1.042	0.030	0.032	1.6	40-2

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

LTE FDD Band 71：

EUT Position	Frequency (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
							Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Front(0mm)	680.5	QPSK	20	1	23.16	24.00	1.213	0.005	0.006	1.6	56
	680.5	QPSK	20	50%	22.93	24.00	1.279	0.003	0.004	1.6	56-2
Body Back(0mm)	680.5	QPSK	20	1	23.16	24.00	1.213	0.163	0.198	1.6	57
	680.5	QPSK	20	50%	22.93	24.00	1.279	0.136	0.174	1.6	57-2
Body Left(0mm)	680.5	QPSK	20	1	23.16	24.00	1.213	0.019	0.023	1.6	58
	680.5	QPSK	20	50%	22.93	24.00	1.279	0.015	0.019	1.6	58-2
Body Right(0mm)	680.5	QPSK	20	1	23.16	24.00	1.213	0.025	0.030	1.6	59
	680.5	QPSK	20	50%	22.93	24.00	1.279	0.022	0.028	1.6	59-2
Body Top(0mm)	680.5	QPSK	20	1	23.16	24.00	1.213	0.254	0.308	1.6	60
	680.5	QPSK	20	50%	22.93	24.00	1.279	0.204	0.261	1.6	60-2
Body Top(0mm)_Type2	680.5	QPSK	20	1	23.16	24.00	1.213	0.103	0.157	1.6	60-3

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

WiFi 2.4GHz：

EUT Position	Frequency (MHz)	Modulation Type	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
					Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Back(0mm)	2437	802.11b	9.27	9.50	1.054	0.072	0.076	1.6	27
Body Right(0mm)	2437	802.11b	9.27	9.50	1.054	0.512	0.540	1.6	29
Body Right(0mm)_Type2	2437	802.11b	9.27	9.50	1.054	0.501	0.528	1.6	29-2
Body Back(0mm)	2437	802.11n40	11.33	11.50	1.040	0.041	0.043	1.6	32
Body Right(0mm)	2437	802.11n40	11.33	11.50	1.040	0.304	0.316	1.6	34
Body Right(0mm)_Type2	2437	802.11n40	11.33	11.50	1.040	0.248	0.258	1.6	34-2

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WiFi 5.2GHz：

EUT Position	Frequency (MHz)	Modulation Type	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
					Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Back(0mm)	5180	802.11a	9.82	10.00	1.042	0.130	0.136	1.6	62
Body Right(0mm)	5180	802.11a	9.82	10.00	1.042	0.856	0.924	1.6	64-2
	5200	802.11a	9.82	10.00	1.042	0.824	0.859	1.6	64
	5240	802.11a	9.82	10.00	1.042	0.804	0.873	1.6	64-3
	5180	802.11a ; Retest	9.82	10.00	1.042	0.702	0.757	1.6	64-4
Body Right(0mm)_Type2	5180	802.11a	9.82	10.00	1.042	0.667	0.720	1.6	64-7

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WiFi 5.8GHz：

EUT Position	Frequency (MHz)	Modulation Type	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)				
					Scaled Factor	Meas. SAR	Scaled SAR	Limit	Plot
Body Back(0mm)	5745	802.11a	9.49	9.50	1.002	0.127	0.127	1.6	67
Body Right(0mm)	5745	802.11a	9.49	9.50	1.002	0.763	0.765	1.6	69
Body Right(0mm)_Type2	5745	802.11a	9.49	9.50	1.002	0.560	0.561	1.6	69-2

Note:

1. When the 1-g SAR is ≤ 0.8W/Kg, testing for other channels are optional.
2. SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices v02.
3. KDB941225D05-SAR for higher order modulation is required only when the highest maximum output power for the configuration in the higher order modulation is > 0.5 dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg
4. KDB941225D05-For QPSK with 100% RB allocation, when the reported SAR measured for the Highest output power channel is <1.45 W/kg, tests for the remaining required test channels are optional.
5 .KDB941225D05- 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.
6. KDB941225D05- 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 among RB offset the upper edge, middle and lower edge of each required test channel.
7. KDB941225D05- other channel bandwidths SAR test is required when 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.
8. Worst case SAR for 50% RB allocation is selected to be tested.
9. According KDB865664 D01 Repeated measurements are required only when the measured SAR is ≥ 0.80 W/kg. If the measured SAR value of the initial repeated measurement is < 1.45 W/kg with ≤ 20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations.
   A second repeated measurement is required only if the measured result for the initial repeated measurement is within 10% of the SAR limit and vary by more than 20%..

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SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	**Simultaneous?**	**Hotspot**
WWAN(GSM/WCDMA/LTE) + Bluetooth	√	×
WWAN(GSM/WCDMA/LTE) + WLAN 2.4G/5.2G/5.8G	√	√
WLAN + Bluetooth	×	×

Simultaneous Transmission Consideration Detail

Transmitter Combination	Position	Max SAR(W/kg)		∑SAR<1.6W/kg
		SAR1(WWAN)	SAR2(BT)	
WWAN+ Bluetooth	Body Front(0mm)	0.078	0.260	0.338
	Body Back(0mm)	1.062	0.260	1.322
	Body Left(0mm)	0.113	0.260	0.373
	Body Right(0mm)	0.477	0.260	0.737
	Body Top(0mm)	1.305	0.260	1.565
	Body Bottom (0mm)	---	0.260	0.260

Note: Bluetooth SAR not required for this case. Bluetooth SAR value follow KDB 447498 D01 V06 4.3.2 b) calc. is 0.26 W/kg.

Transmitter Combination	Position	Max SAR(W/kg)		∑SAR<1.6W/kg
		SAR1(WWAN)	SAR2(WLAN)	
WWAN+ WLAN 2.4G	Body Front(0mm)	0.078	---	0.078
	Body Back(0mm)	1.062	0.076	1.138
	Body Left(0mm)	0.113	---	0.113
	Body Right(0mm)	0.477	0.540	1.017
	Body Top(0mm)	1.305	---	1.305
	Body Bottom (0mm)	---	---	---

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Transmitter Combination	Position	Max SAR(W/kg)		∑SAR<1.6W/kg
		SAR1(WWAN)	SAR2(WLAN)	
WWAN+ WLAN 5.2G	Body Front(0mm)	0.078	---	0.078
	Body Back(0mm)	1.062	0.136	1.198
	Body Left(0mm)	0.113	---	0.113
	Body Right(0mm)	0.477	0.924	1.401
	Body Top(0mm)	1.305	---	1.305
	Body Bottom (0mm)	---	---	---

Transmitter Combination	Position	Max SAR(W/kg)		∑SAR<1.6W/kg
		SAR1(WWAN)	SAR2(WLAN)	
WWAN+ WLAN 5.8G	Body Front(0mm)	0.078	---	0.078
	Body Back(0mm)	1.062	0.127	1.062
	Body Left(0mm)	0.113	---	0.113
	Body Right(0mm)	0.477	0.765	1.242
	Body Top(0mm)	1.305	---	1.305
	Body Bottom (0mm)	---	---	---

Conclusion:

Sum of SAR: **ΣSAR ≤ 1.6 W/kg** for 1g Body SAR, therefore simultaneous transmission SAR with Volume Scans is **not required**.

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APPENDIX A MEASUREMENT UNCERTAINTY

The uncertainty budget has been determined for the measurement system and is given in the following Table.

Measurement uncertainty evaluation for IEEE1528 SAR test

Source of uncertainty	Tolerance/ uncertainty ± %	Probability distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty ± %, (1 g)	Standard uncertainty ± %, (10 g)
Measurement system							
Probe calibration	6.55	N	1	1	1	6.6	6.6
Axial Isotropy	4.7	R	√3	1	1	2.7	2.7
Hemispherical Isotropy	9.6	R	√3	0	0	0.0	0.0
Boundary effect	1.0	R	√3	1	1	0.6	0.6
Linearity	4.7	R	√3	1	1	2.7	2.7
Detection limits	1.0	R	√3	1	1	0.6	0.6
Readout electronics	0.3	N	1	1	1	0.3	0.3
Response time	0.0	R	√3	1	1	0.0	0.0
Integration time	0.0	R	√3	1	1	0.0	0.0
RF ambientconditions – noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions– reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech. Restrictions	0.8	R	√3	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	√3	1	1	3.9	3.9
Post-processing	2.0	R	√3	1	1	1.2	1.2
Test sample related							
Test sample positioning	2.8	N	1	1	1	2.8	2.8
Device holder uncertainty	6.3	N	1	1	1	6.3	6.3
Drift of output power	5.0	R	√3	1	1	2.9	2.9
Phantom and set-up							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	√3	1	1	2.3	2.3
Liquid conductivity target)	5.0	R	√3	0.64	0.43	1.8	1.2
Liquid conductivity meas.)	2.5	N	1	0.64	0.43	1.6	1.1
Liquid permittivity target)	5.0	R	√3	0.6	0.49	1.7	1.4
Liquid permittivity meas.)	2.5	N	1	0.6	0.49	1.5	1.2
Combined standard uncertainty		RSS				12.2	12.0
Expanded uncertainty 95 % confidence interval)						24.3	23.9

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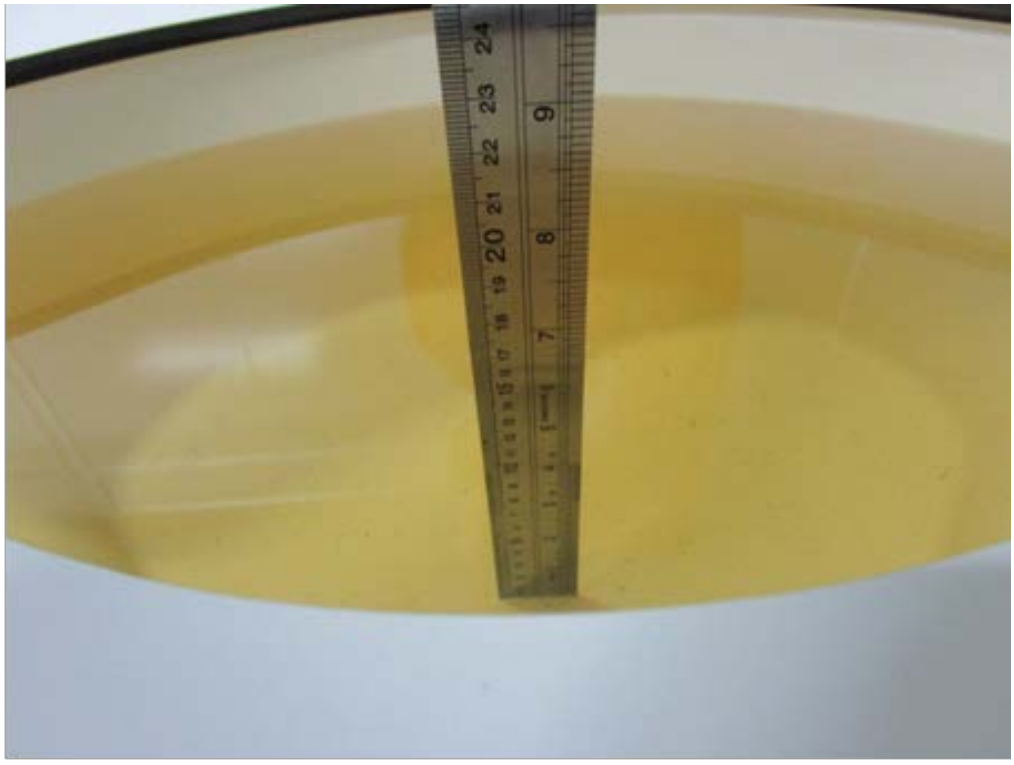
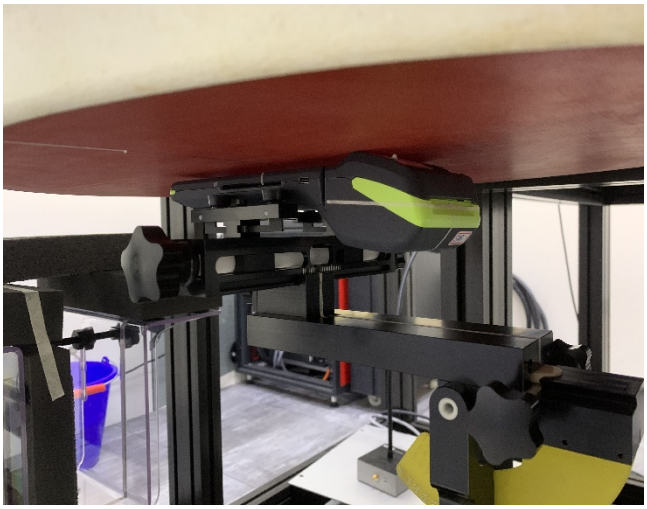
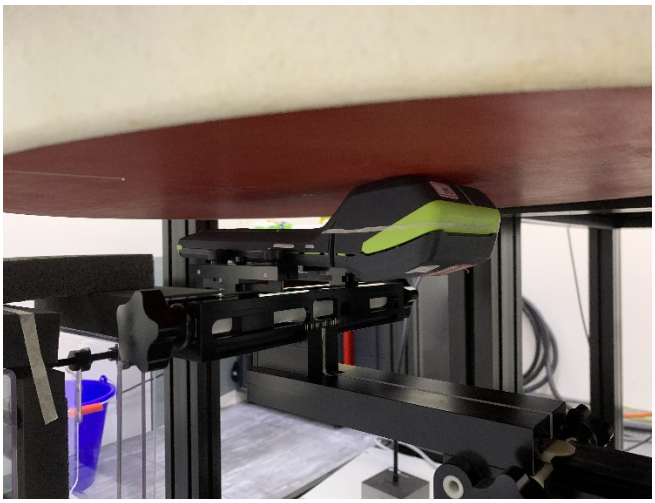
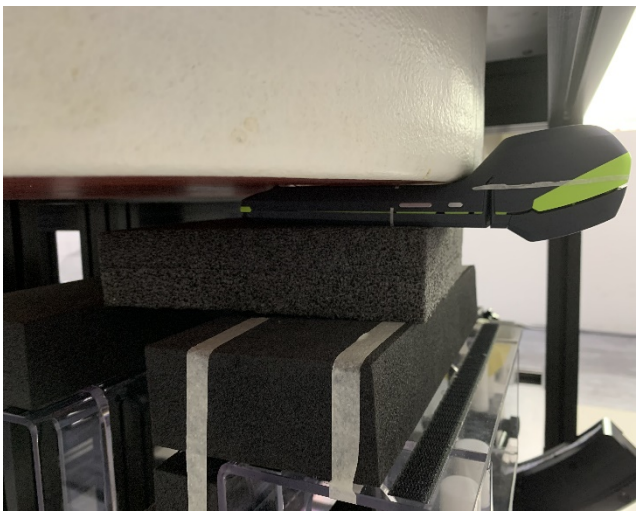
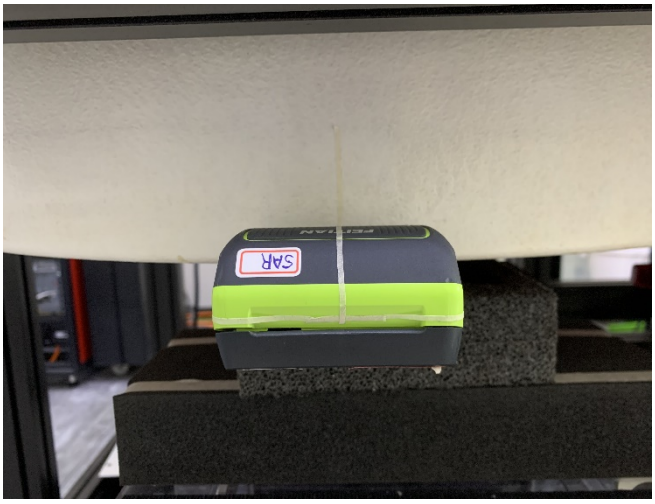
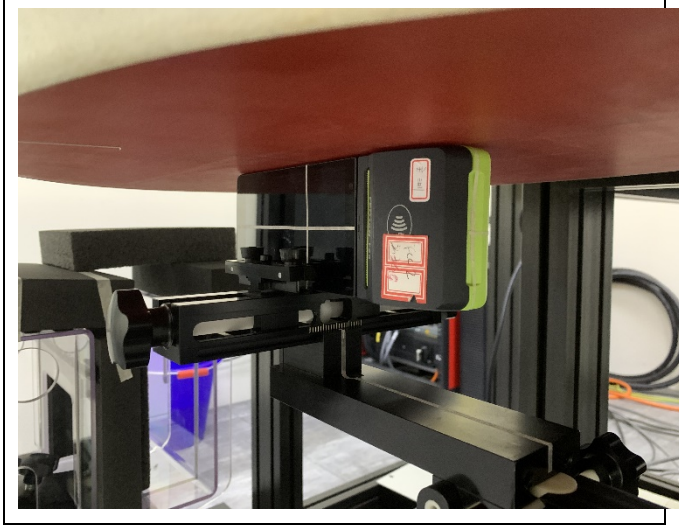
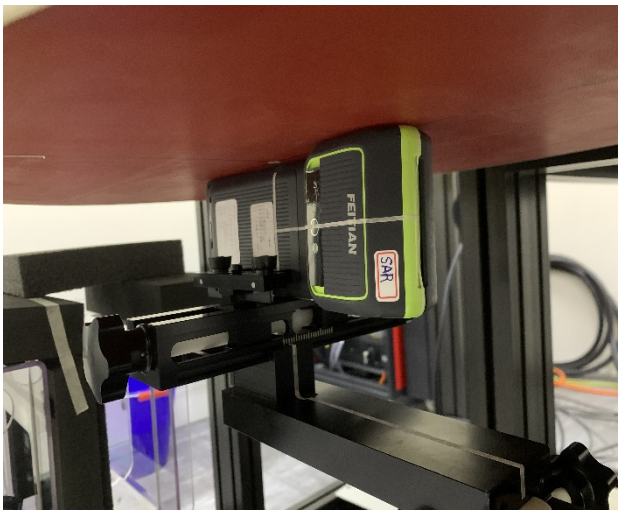
APPENDIX B EUT TEST POSITION PHOTOS

Liquid depth ≥ 15cm



SAR Setup Photo_Type 1

Body Front(0mm)_Type 1	Body Back (0mm) _Type 1 for WWAN
	
Body Back (0mm) _Type 1 for WLAN	**Body Back (0mm) _Type 1 for WLAN**
	

Body Left(0mm) _Type 1	Body Right(0mm) _Type 1
	

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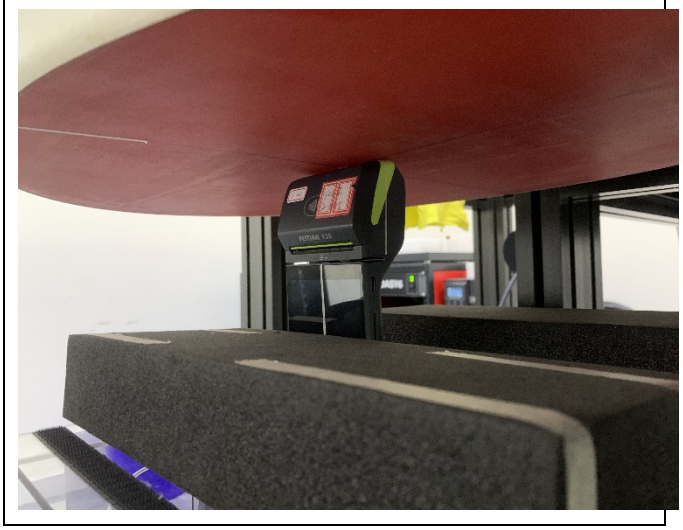
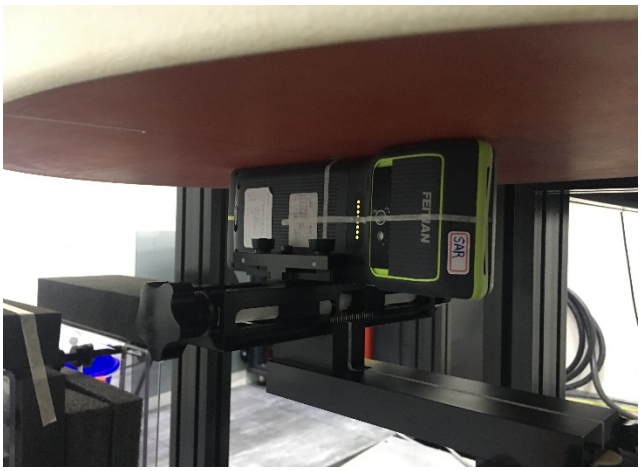
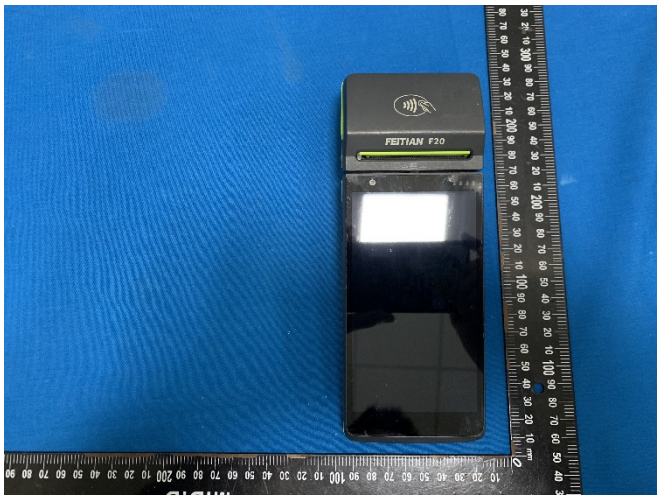
Body Top(0mm) _Type 1


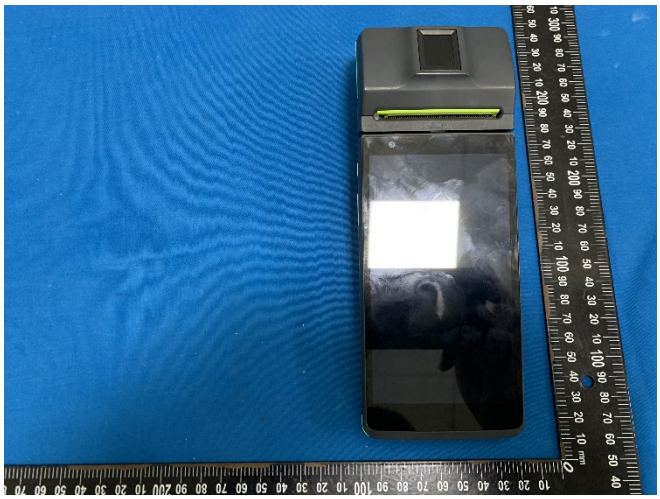
SAR Setup Photo_Type 2

Body Back (0mm) _Type 2 for WWAN	Body Back (0mm) _Type 2 for WWAN
Body Right (0mm) _Type 2 for WLAN	
	

SAR EUT Photo_Type 1



SAR EUT Photo_Type 2



APPENDIX C SAR PLOTS OF SAR MEASUREMENT

Please Refer to the Attachment APPENDIX C SAR PLOTS OF SAR MEASUREMENT

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APPENDIX D PROBE & DAE CALIBRATION CERTIFICATES

Please refer to the file document PROBE & DAE CALIBRATION CERTIFICATES

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APPENDIX E DIPOLE CALIBRATION CERTIFICATES

Please refer to the file document DIPOLE CALIBRATION CERTIFICATES

******* END OF REPORT *******

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