FCC

SAR EVALUATION REPORT

For

FCC ID：A4Z-B0046

Model : DrivePro Body 70	
Serial Model：	DPB70, DrivePro Body 7XXXXX, DPB7XXXXX, TSXXXXDPB7XXXXX, DrivePro Body 60, DPB60, DrivePro Body 6XXXXX, DPB6XXXXX, TSXXXXDPB6XXXXX (Multiple Listing: The "X" in the Model Number could be defined as A-Z, 0-9, -, _, or blank for marketing differentiation.)

Report Type：Original Report	**Product Name**：Body Camera

Report Number: RXZ22122003SA01

Report Date: 2023-03-02

Prepared By: **Bay Area Compliance Laboratories Corp. (New Taipei Laboratory)**
70, Lane 169, Sec. 2, Datong Road, Xizhi Dist.,
New Taipei City 22183, Taiwan, R.O.C.
Tel: +886 (2)2647 6898
Fax: +886 (2)2647 6895
www.bacl.com.tw

Facilities: **The test site used by Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) to collect test data is located on**
70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.

Statement of Compliance

Applicant (Certification Holder)	TRANSCEND INFORMATION INC.
	No.70, Xingzhong Rd., Neihu Dist., Taipei City 114, Taiwan, R.O.C.
Brand (Trade) Name	Transcend®
Product (Equipment) Name	Body Camera
Model Name	DrivePro Body 70
Serial Model Name	DPB70, DrivePro Body 7XXXXX, DPB7XXXXX, TSXXXXDPB7XXXXX, DrivePro Body 60, DPB60, DrivePro Body 6XXXXX, DPB6XXXXX, TSXXXXDPB6XXXXX (Multiple Listing: The "X" in the Model Number could be defined as A-Z, 0-9, -, _, or blank for marketing differentiation.)
Serial Number	RXZ230110032-01(DrivePro Body 70), RXZ230110032-02(DrivePro Body 60)
Test Date	2023/02/16

Measurement Procedures and Standards Used:

☒ IEC/IEEE62209-1528:2020
☒ IEEE 1528-2013
☒ FCC 47 CFR part 2.1093
☒ 447498 D04 Interim General RF Exposure Guidance v01
☒ KDB 648474 D04 Handset SAR v01r03
☒ KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
☒ KDB 248227 D01 802.11 Wi-Fi SAR v02r02

The measurement results in this report were performed at Bay Area Compliance Laboratories Corp. (New Taipei Laboratory)
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.
Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) is not responsible for the authenticity of the information provided by the applicant that affects the test results.

Report Issued Date: 2023-03-02

Project Engineer: Anson Lu *Anson Lu*

Reviewed By: Rory Cheng *Rory Cheng*

Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
0.0	RXZ22122003	RXZ22122003SA01	2023.03.02	Original Report	Anson Lu

Note:

A description of the differences between the tested model and those that are declared similar are as follows:

<table>
<tr><td>Model Name</td><td colspan="2">DrivePro Body 70</td></tr>
<tr><td>Serial Model Name</td><td>DPB70, DrivePro Body 7XXXXX, DPB7XXXXX, TSXXXXDPB7XXXXX,

(Multiple Listing: The "X" in the Model Number could be defined as A-Z, 0-9, -, _, or blank for marketing differentiation.)</td><td>DrivePro Body 60, DPB60, DrivePro Body 6XXXXX, DPB6XXXXX, TSXXXXDPB6XXXXX

(Multiple Listing: The "X" in the Model Number could be defined as A-Z, 0-9, -, _, or blank for marketing differentiation.)</td></tr>
<tr><td>Difference Description</td><td>F/W version is 0.9.12, camera outlook is round
</td><td>F/W version is 0.9.7 , camera outlook is square
</td></tr>
</table>

TABLE OF CONTENTS

EUT RESULTS 5

EUT DESCRIPTION 6

REFERENCE, STANDARDS, AND GUIDELINES 7

DESCRIPTION OF TEST SYSTEM 8

Recommended Tissue Dielectric Parameters for Head and Body 13

EQUIPMENT LIST AND CALIBRATION 15

SAR MEASUREMENT SYSTEM VERIFICATION 16

EUT TEST STRATEGY AND METHODOLOGY 20

CONDUCTED OUTPUT POWER MEASUREMENT 24

STANDALONE SAR TEST EXCLUSION CONSIDERATIONS 32

SAR MEASUREMENT RESULTS 34

SAR SIMULTANEOUS TRANSMISSION DESCRIPTION 36

APPENDIX A MEASUREMENT UNCERTAINTY 37

APPENDIX B EUT TEST POSITION PHOTOS 38

APPENDIX C SAR PLOTS OF SAR MEASUREMENT 39

APPENDIX D PROBE & DAE CALIBRATION CERTIFICATES 40

APPENDIX E DIPOLE CALIBRATION CERTIFICATES 41

EUT RESULTS

Attestation of Test Results for Body & Handheld SAR			
Frequency Band	Maxi. SAR Level(s) Reported(W/kg)		Limit(W/kg)
	Position	Maxi. SAR(W/kg)	
WLAN 2.4GHz	Body SAR(1g)	0.19	1.6
	Handheld SAR(10g)	0.085	4.0

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 IEC/IEEE 62209-1528-2020 and RF exposure KDB procedures.
The results and statements contained in this report pertain only to the device(s) evaluated.

EUT DESCRIPTION

Technical Specification

Applicant	TRANSCEND INFORMATION INC.
Exposure Category	Population / Uncontrolled
Antenna Type(s)	Chip Antenna for WLAN and Bluetooth
Modulation Type	IEEE 802.11b mode: DSSS IEEE 802.11g mode: OFDM IEEE 802.11n HT20 mode: OFDM IEEE 802.11n HT40 mode: OFDM BLE: GFSK BR Mode: GFSK EDR Mode: π/4-DQPSK, 8DPSK
Frequency Band	IEEE 802.11b/g/IEEE 802.11n HT20 mode: 2412 ~ 2462 MHz IEEE 802.11n HT40 mode: 2422 ~ 2452 MHz Bluetooth/BLE: 2402 ~ 2480 MHz
Conducted RF Power (Avg/Tune-Up)	Wi-Fi 2.4GHz: 13.5 dBm Bluetooth: 3.5 dBm Bluetooth(LE 1M): 3.0 dBm
Antenna Information	Antenna Gain: 2.64 dBi
Power Source	DC 3.6V from battery and DC 5V from external power supply
Normal Operation	Body-worn and Handheld mode

Note:

1) *All measurement and test data in this report was gathered from production sample serial number：RXZ22122003-01/02 (Assigned by BACL, (New Taipei Laboratory)). The EUT supplied by the applicant was received on 2023/02/07.*

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.

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

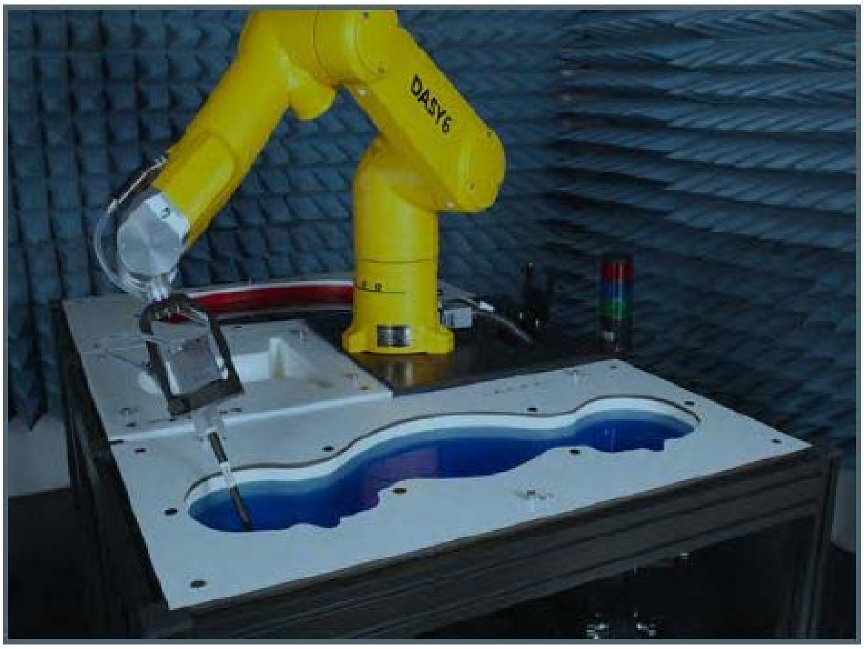
Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

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 employmentor occupation).

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

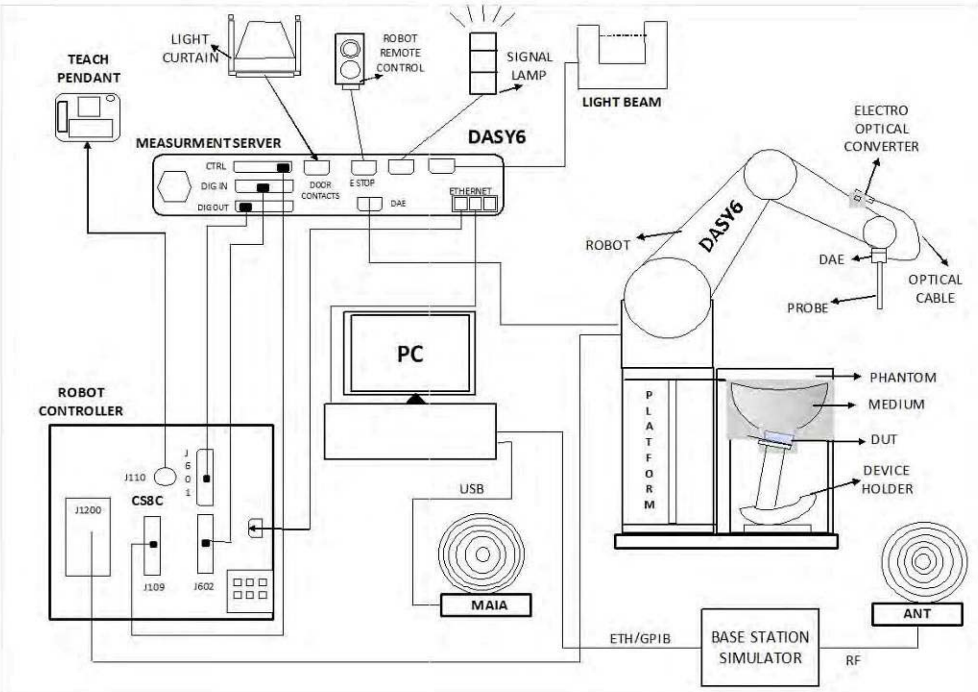
DESCRIPTION OF TEST SYSTEM

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.

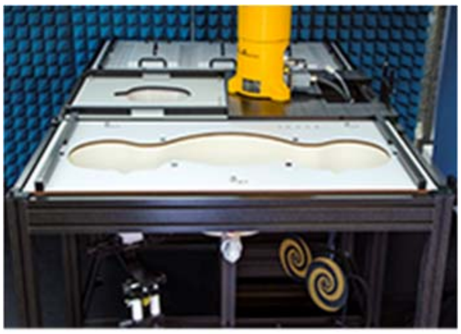
The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

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).

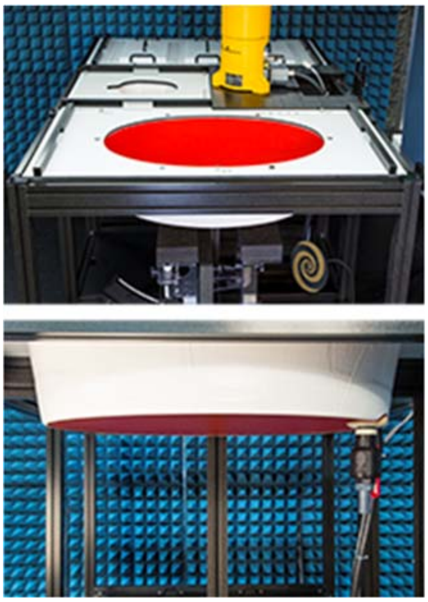
When the phantom is mounted inside allocated slot of the DASY6 platform, phantom reference points can be taught directly in the DASY5 V5.2 software. When the DASY6 platform is used to mount the

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.
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

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 $15mm^2$ 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.

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/IEEE 62209-1528

Recommended Tissue Dielectric Parameters for Head liquid

Table 2 – Dielectric properties of the tissue-equivalent medium

Frequency(MHz)	permittivity,(ε'r)	Conductivity, σ(S/m)
4	*55,0*	*0,75*
13	*55,0*	*0,75*
30	55,0	0,75
150	52,3	0,76
300	45,3	0,87
450	43,5	0,87
750	*41,9*	*0,89*
835	41,5	0,90
900	41,5	0,97
1450	40,5	1,20
1800	40,0	1,40
1900	40,0	1,40
1950	40,0	1,40
2000	40,0	1,40
2100	*39,8*	*1,49*
2450	39,2	1,80
2600	*39,0*	*1,96*
3000	38,5	2,40
3500	*37,9*	*2,91*
4000	*37,4*	*3,43*
4500	*36,8*	*3,94*
5000	*36,2*	*4,45*
5200	*36,0*	*4,66*
5400	*35,8*	*4,86*
5600	*35,5*	*5,07*
5800	35,3	5,27
6000	*35,1*	*5,48*
6500	*34,5*	*6,07*
7000	*33,9*	*6,65*

7500	*33,3*	*7,24*
8000	*32,7*	*7,84*
8500	*32,1*	*8,46*
9000	*31,6*	*9,08*
9500	*31,0*	*9,71*
10000	*30,4*	*10,40*

NOTE For convenience, permittivity and conductivity values are linearly interpolated for frequencies that are not a part of the original data from Drossos et al. [2]. They are shown in italics in Table 2. The italicized values are linearly interpolated (below 5800 MHz) or extrapolated (above 5800 MHz) from the non-italicized values that are immediately above and below these values.

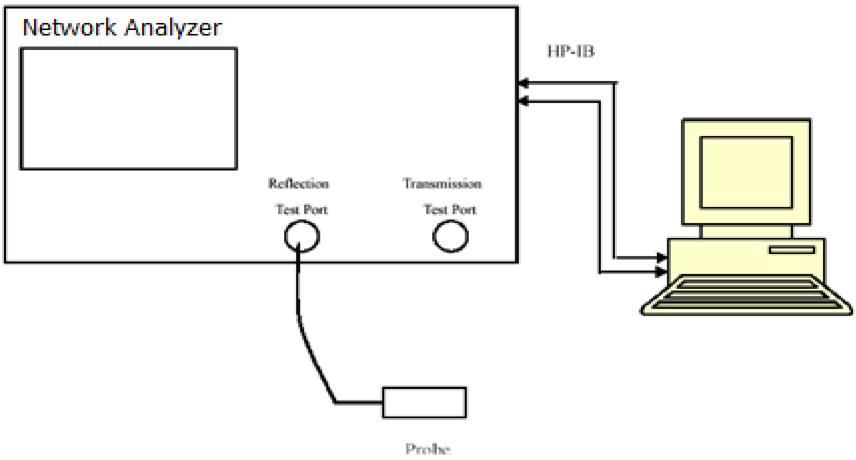
EQUIPMENT LIST AND CALIBRATION

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	DAE	1561	2022/12/15	2023/12/14
E-Field Probe	EX3DV4	7520	2022/12/12	2023/12/11
Dipole, 2450 MHz	D2450V2	1068	2021/10/11	2024/10/10
Twin SAM	Twin SAM V5.0	1368	N/A	N/A
Twin ELI	Twin ELI V8.0	2088	N/A	N/A
Simulated Tissue 0.6G~6GHz Head	TS-6GHz-H	N/A	Each Time/	
Mounting Device	N/A	SD 000 H01 KA	N/A	N/A
Network Analyzer	E5063A	MY54402093	2022/12/20	2023/12/19
Dielectric probe kit	85070B	50207	N/A	N/A
MXG Signal Generator	N5183A	MY50140407	2022/12/29	2023/12/28
EPM Series Power Meter	E4419B	GB43312279	2023/1/4	2024/1/3
Avg Power Sensor	E9304A H18	MZ54110016	2023/1/4	2024/1/3
Power Amplifier	ZVE-8G+	365701647	2023/1/11	2024/1/10
Power Amplifier	ZHL-42W+	329401642	2023/1/11	2024/1/10
Temperature and Humidity Recoder	HTC-1	005	2022/10/25	2023/10/24
Directional Coupler	488Z	810	N.C.R	N.C.R
Attenuator	20dB, 100W	1453	N.C.R	N.C.R

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 (%)
			Ơ (S/m)	εr	Ơ (S/m)	εr	Ơ (S/m)	εr	
2023/02/16	2450	HSL	1.8	39.726	1.80	39.20	0.00	1.34	±5
	2437	HSL	1.804	39.721	1.79	39.22	0.06	1.26	±5

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.

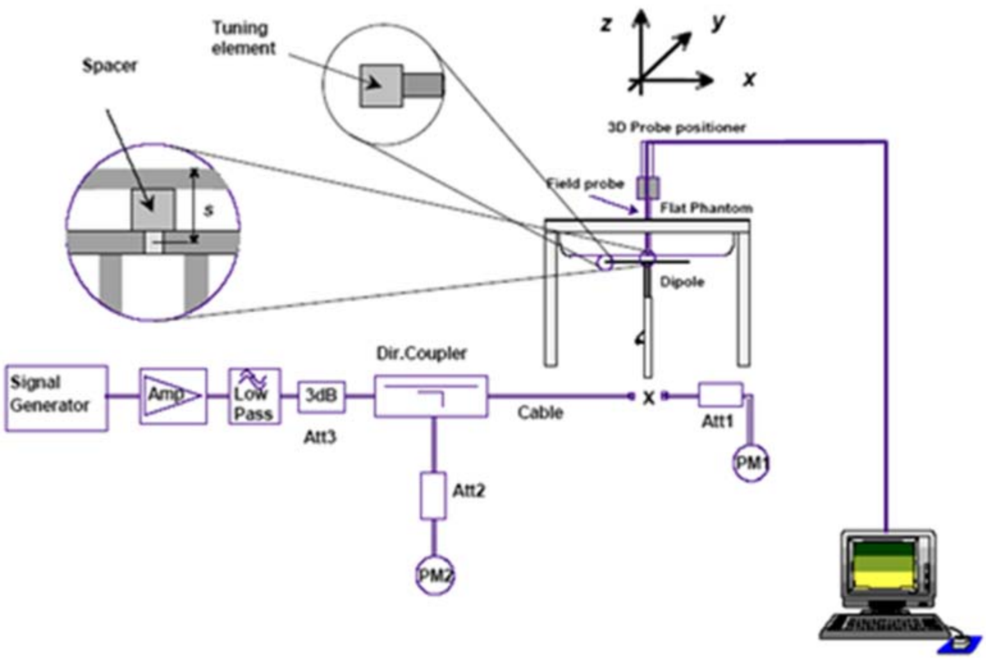
The spacing distance*s* in the **System Verification Setup Block Diagram** is given by the following:

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

System Check for 1g SAR

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 (%)
2023/02/16	2450	HSL	250	13.5	54.2	54	-0.37	±10

System Check for 10g SAR

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 (%)
2023/02/16	2450	HSL	250	6.37	25.30	25.48	0.71	±10

Note:

1) *Below 5GHz, The power inputted to dipole is 0.25Watt; the SAR values are normalized to 1 Watt forward power by multiplying 4 times.*

SAR SYSTEM VALIDATION DATA

Test Laboratory:BACL.SAR TestingLab

System Check_2450MHz_D2450V2

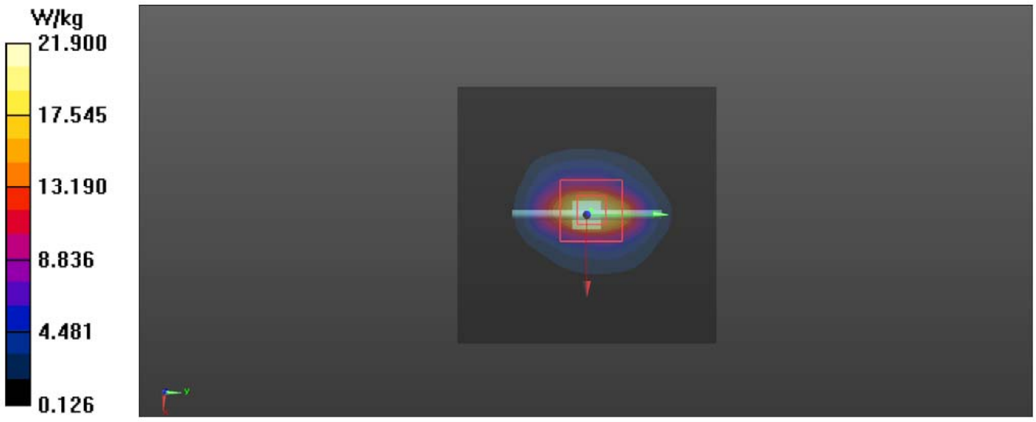
DUT: D2450V2-1068

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL 2450 Medium parameters used: f = 2450 MHz; σ = 1.8 S/m; ε_r = 39.726; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7520; ConvF(7.49, 7.49, 7.49) @ 2450 MHz; Calibrated: 12/12/2022
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1561; Calibrated: 12/15/2022
- Phantom: ELI-Righr-ELI V8.0 (20deg probe tilt); Type: QD OVA 004 Ax; Serial: 2088
- 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) = 22.0 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 115.3 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 26.9 W/kg
SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.37 W/kg
Smallest distance from peaks to all points 3 dB below = 8.6 mm
Ratio of SAR at M2 to SAR at M1 = 50.9%
Maximum value of SAR (measured) = 21.9 W/kg

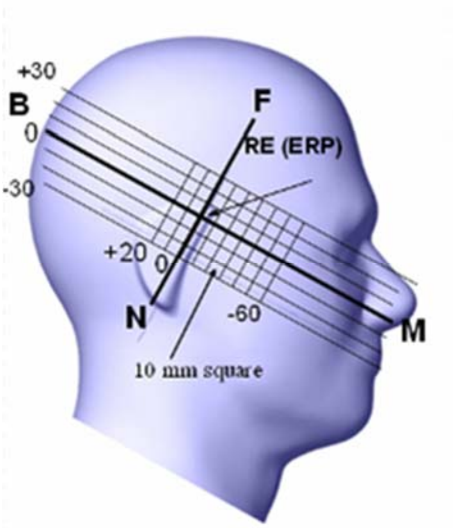


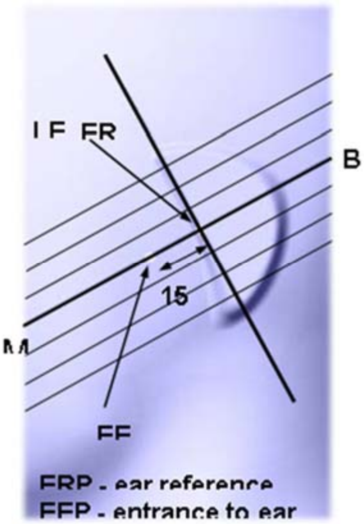
EUT TEST STRATEGY AND METHODOLOGY

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.

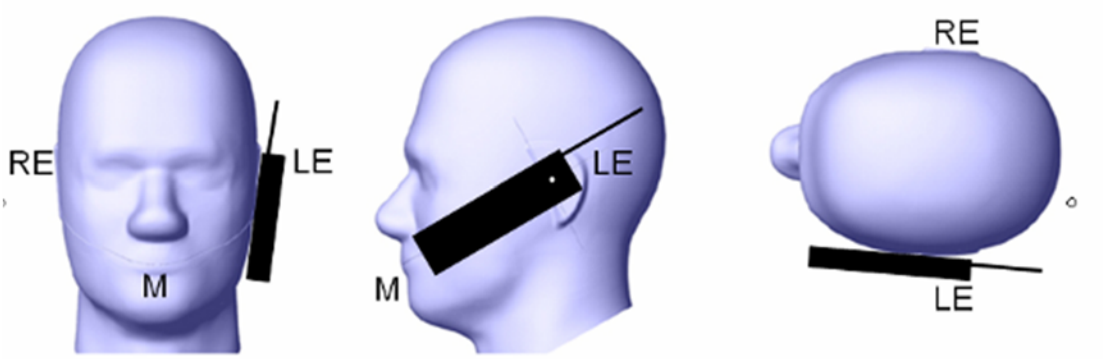
This test position is established:

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.

Cheek /Touch Position



Ear/Tilt Position

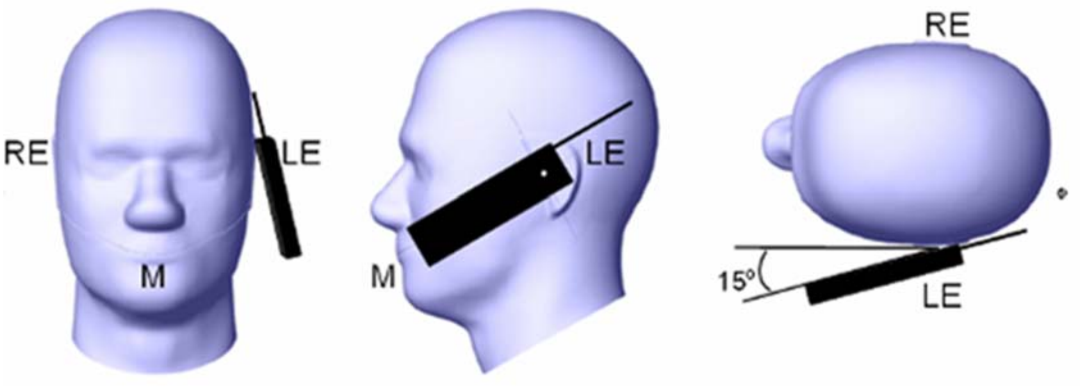
With the handset aligned in the "Cheek/Touch Position":

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.

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.

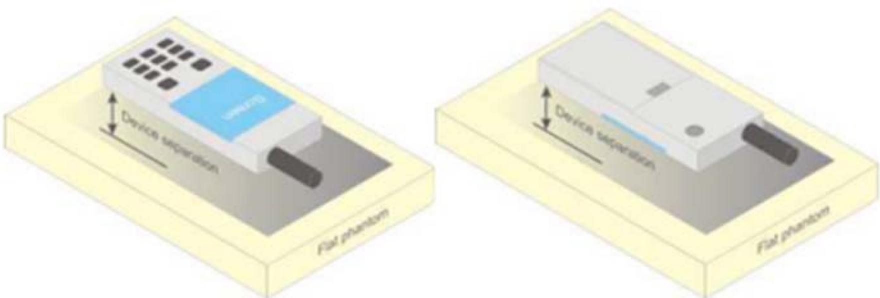


Figure 5 – Test positions for body-worn devices

Test Distance for SAR Evaluation

During SAR testing use type I to test six sides (or faces) first, and perform the test with type II for the worst position. Use 0mm spacing to test all faces (edges) Worst position use another EUT to test. For Back test , use 12mm pitch to perform test. If type I SAR higher than 0mm SAR , perform TYPE II 12mm test. For Bottom test , use 6mm pitch to perform test. If type I SAR higher than 0mm SAR , perform TYPE II 6mm test.

For this case the EUT(Equipment Under Test) in Back position, the test distance is 12mm between phantom and EUT, in Bottom position, the test distance is 6mm between phantom and EUT.

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.

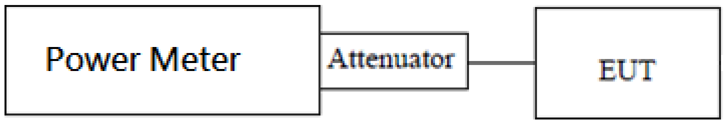
CONDUCTED OUTPUT POWER MEASUREMENT

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.



WiFi 2.4G & Bluetooth

Channel List

Bluetooth:

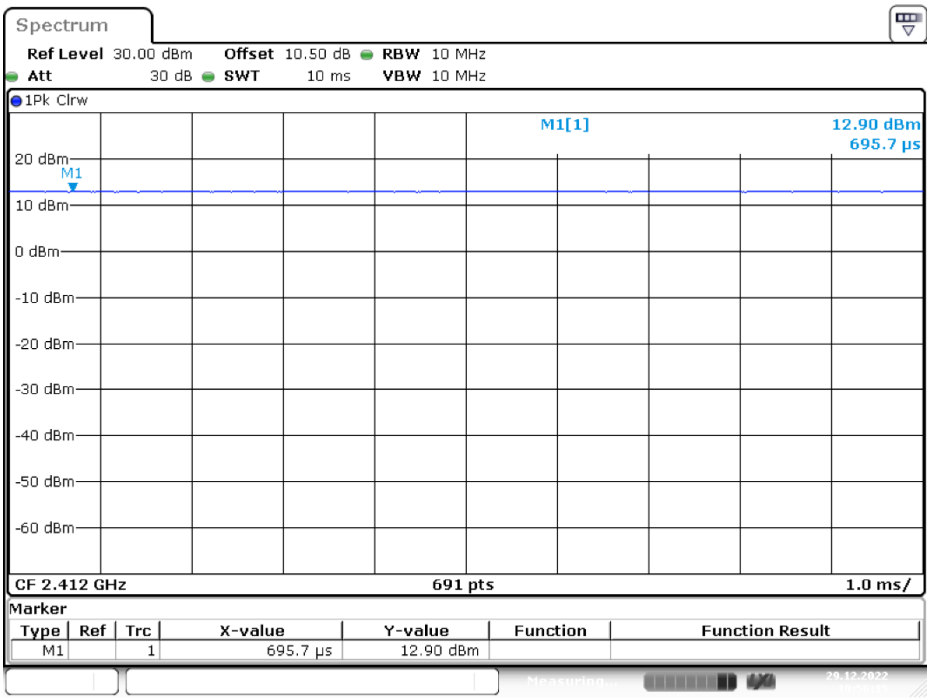
Mode	Channel	Freq.(MHz)
GFSK	Low	2402
	Middle	2441
	High	2480
π/4 DQPSK	Low	2402
	Middle	2441
	High	2480
8DPSK	Low	2402
	Middle	2441
	High	2480
LE 1M	Low	2402
	Middle	2440
	High	2480

WiFi 2.4G:

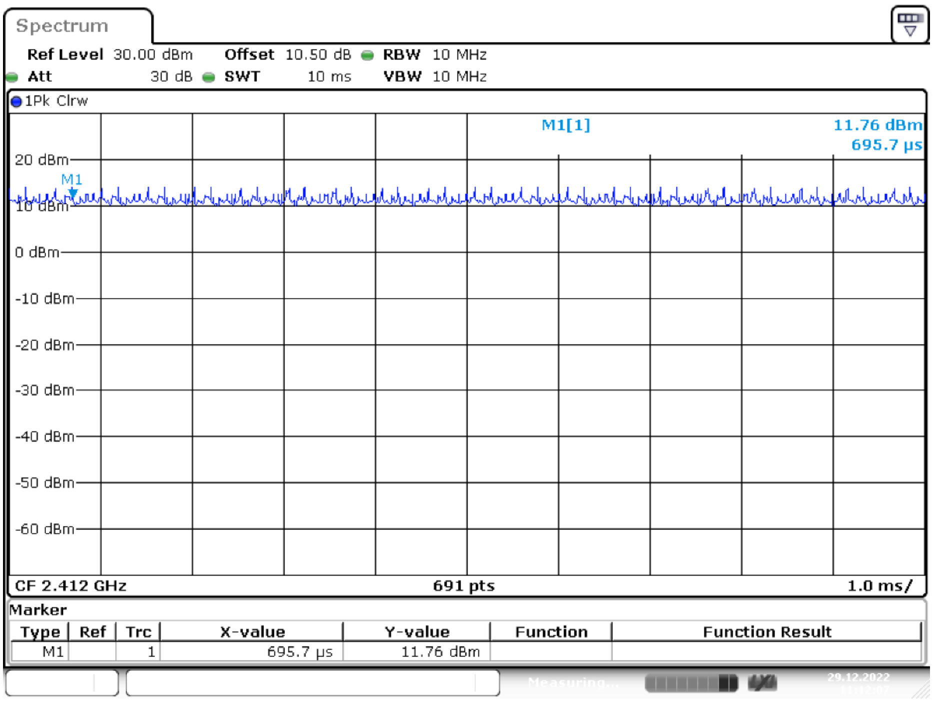
Mode	Channel	Freq.(MHz)	Data Rate
802.11b	Low	2412	1Mbps
	Middle	2437	
	High	2462	
802.11g	Low	2412	6Mbps
	Middle	2437	
	High	2462	
802.11n HT20	Low	2412	MCS0
	Middle	2437	
	High	2462	
802.11n HT40	Low	2422	MCS0
	Middle	2437	
	High	2452	

Duty Cycle:

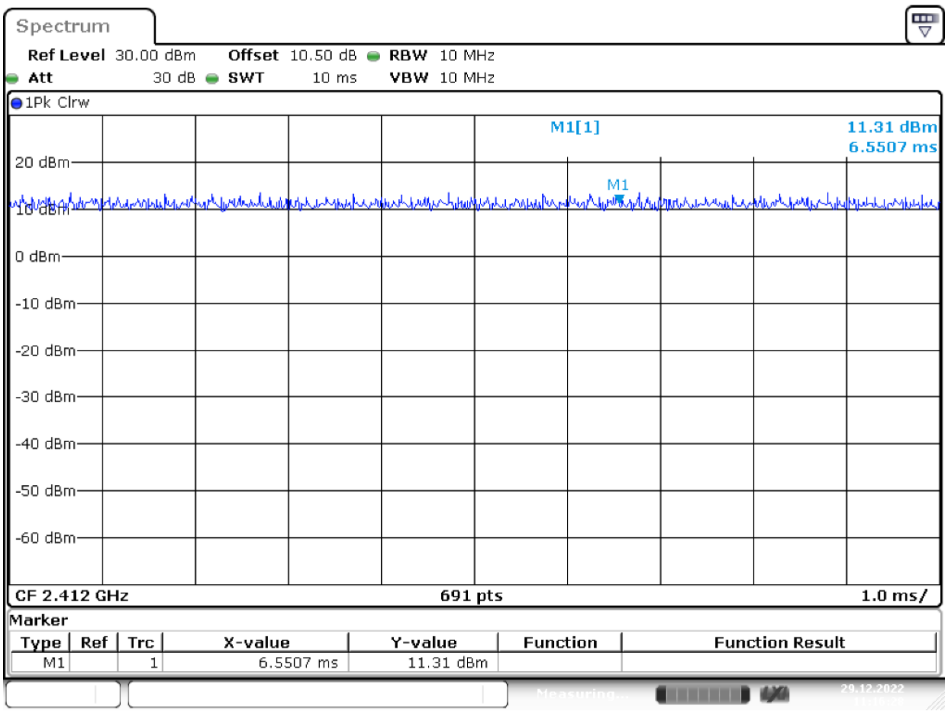
802.11b



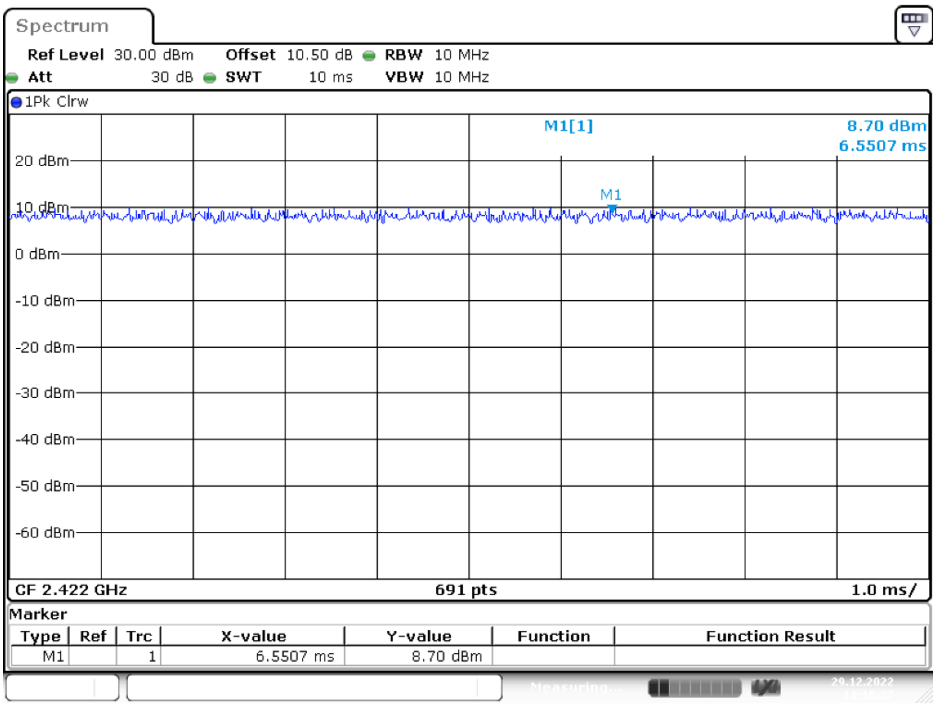
802.11g



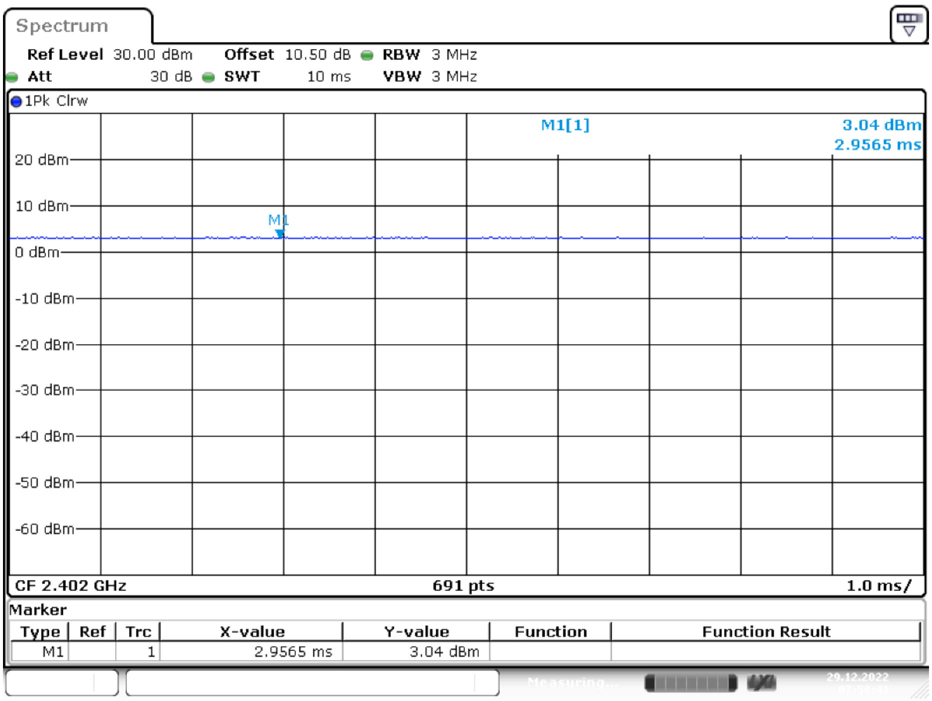
802.11n HT20



802.11n HT40

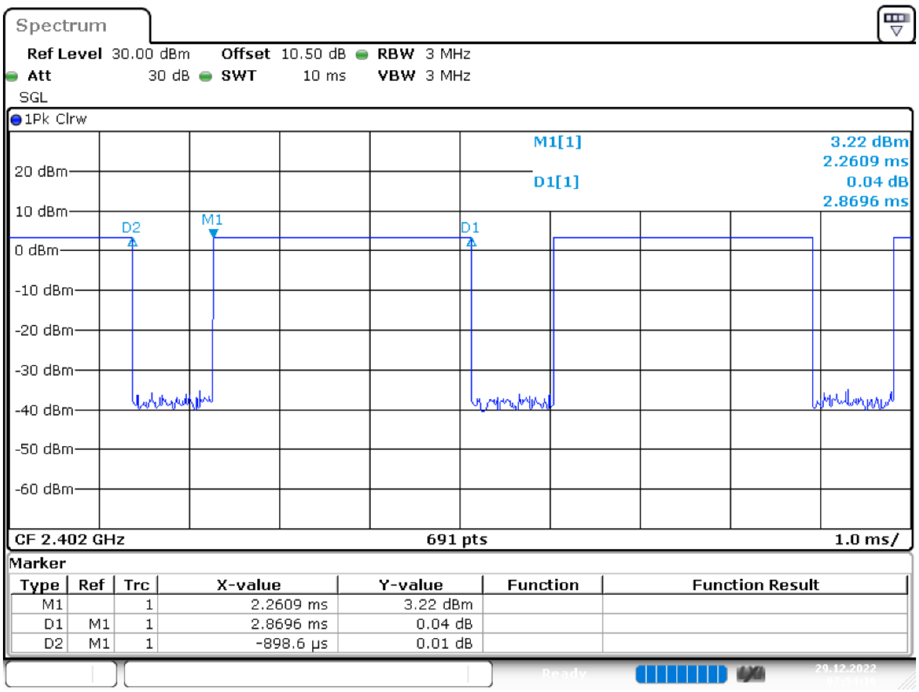


BLE

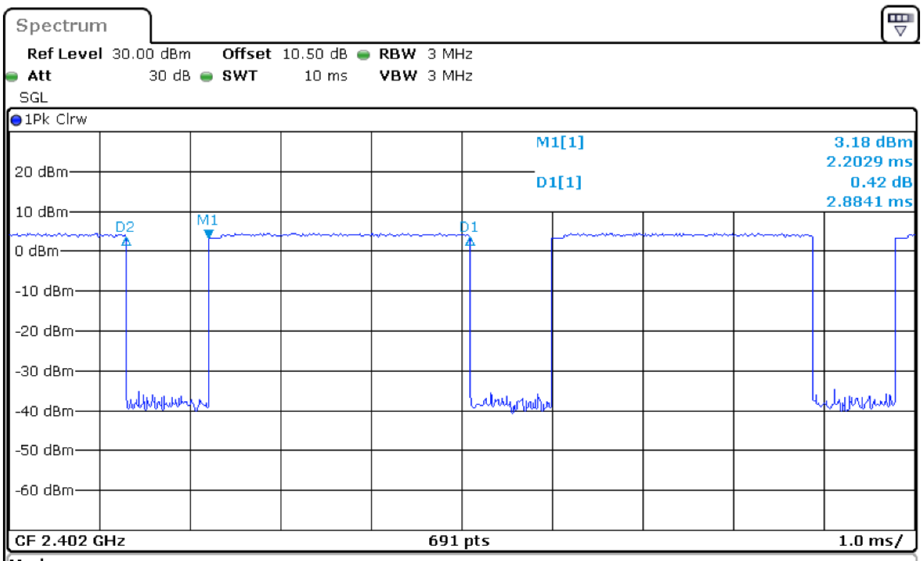


Test Modes	802.11b	802.11g	802.11n HT20	802.11n HT40	BLE
Duty Cycle(%)	100%	100%	100%	100%	100%

BT_ 1DH5

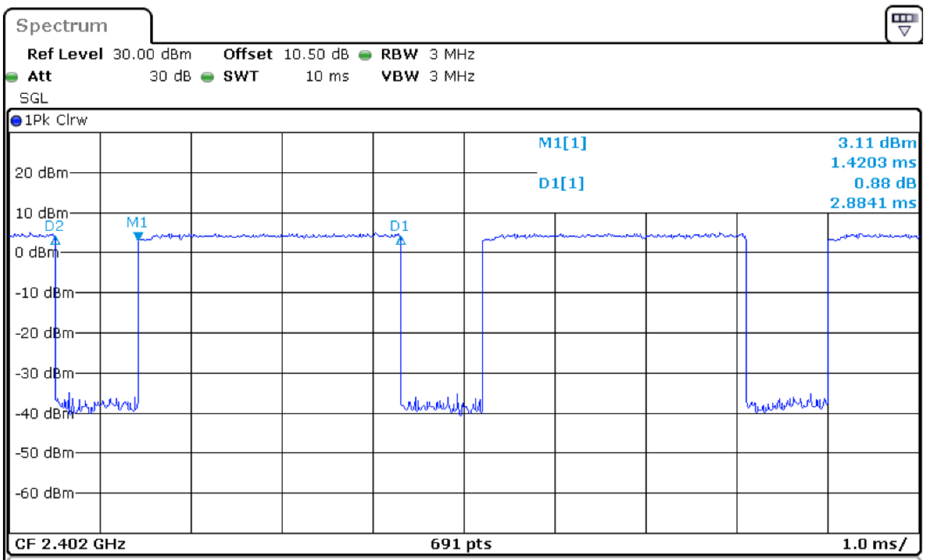


BT_ 2DH5



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.2029 ms	3.18 dBm		
D1	M1	1	2.8841 ms	0.42 dB		
D2	M1	1	-913.0 µs	0.52 dB		

BT_3DH5



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.4203 ms	3.11 dBm		
D1	M1	1	2.8841 ms	0.88 dB		
D2	M1	1	-913.0 µs	0.95 dB		

WiFi 2.4G Conducted Power Table:

Mode	Channel	Freq. (MHz)	Conducted Power(Avg/dBm) (DrivePro Body 70)	Conducted Power(Avg/dBm) (DrivePro Body 60)
802.11b	1	2412	12.75	12.55
	6	2437	13.42	13.18
	11	2462	12.89	12.55
802.11g	1	2412	5.83	5.83
	6	2437	5.81	5.72
	11	2462	5.65	5.55
802.11n HT20	1	2412	5.15	4.66
	6	2437	5.25	4.59
	11	2462	5.01	4.45
802.11n HT40	3	2422	6.09	5.45
	6	2437	6.07	5.61
	9	2452	6.08	5.46

Bluetooth Conducted Power Table:

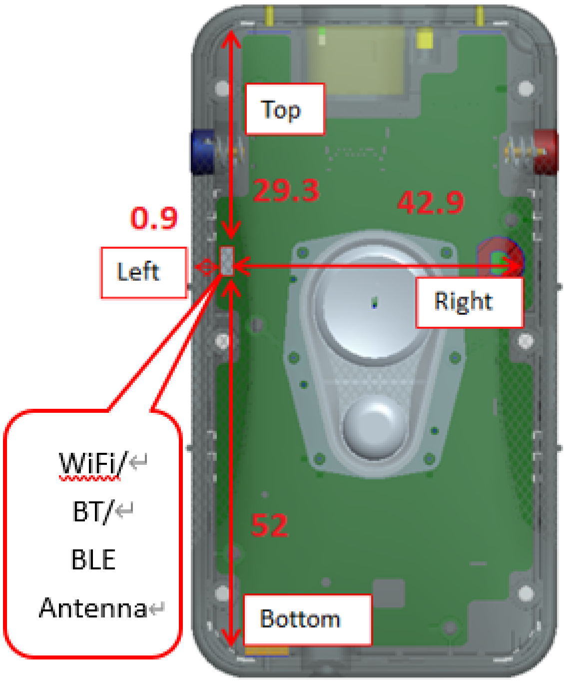
Mode	Channel	Freq. (MHz)	Conducted Power(Avg/dBm) (DrivePro Body 70)	Conducted Power(Avg/dBm) (DrivePro Body 60)
GFSK	0	2402	3.23	3.09
	39	2441	2.96	2.79
	78	2480	2.54	2.39
π/4 DQPSK	0	2402	2.30	2.21
	39	2441	1.98	1.77
	78	2480	1.60	1.48
8DPSK	0	2402	2.27	2.20
	39	2441	1.97	1.91
	78	2480	1.62	1.54
LE 1M	0	2402	2.87	2.61
	19	2440	2.51	2.35
	39	2480	2.14	2.01

Maximum Target Output Power:

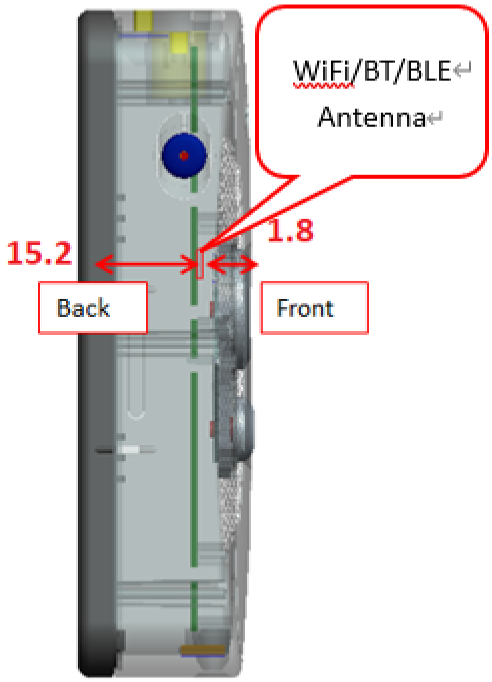
DrivePro Body 70 & DrivePro Body 60 Maxi. Target Power(Avg/dBm)			
Mode / Band	**Low Channel**	**Middle Channel**	**High Channel**
802.11b	13.50	13.50	13.50
802.11g	6.0	6.0	6.0
802.11n HT20	5.5	5.5	5.5
802.11n HT40	6.5	6.5	6.5
Bluetooth(GFSK)	3.5	3.5	3.5
Bluetooth(π/4 DQPSK)	2.5	2.5	2.5
Bluetooth(8DPSK)	2.5	2.5	2.5
Bluetooth(LE 1M)	3.0	3.0	3.0

STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

Antennas Location for EUT:



Front View



Left View

Antenna Distance To Edge for EUT (DrivePro Body 70 & DrivePro Body 60):

Antenna	To Top Side (mm)	To Bottom Side (mm)	To Left Side (mm)	To Right Side (mm)	To Front Side (mm)	To Back Side (mm)
WLAN/BT Ant	29.3	52	0.9	42.9	1.8	15.2

Band	Freq (MHz)	Turn-up (dBm)	Ant Gain (Peak/dBi)	Distances (mm)	Turn-up (mW)	ERP (dBm)	ERP (mW)
WLAN	2462	13.5	2.64	5	22.39	13.99	25.06
BLE	2480	3	2.64	5	2.00	3.49	2.23
BT	2480	3.5	2.64	5	2.24	3.99	2.51

Band	Freq.(MHz)	Pth(mW)	X	ERP 20cm(mW)	Result
WLAN	2462	2.73	1.903	3060	not exempt
BLE	2480	2.72	1.905	3060	exempt
BT	2480	2.72	1.905	3060	exempt

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\,cm}(d/20\text{ cm})^x & d \le 20\text{ cm} \\ ERP_{20\,cm} & 20\text{ cm} < d \le 40\text{ cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\,cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\,cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\text{ GHz} \le f < 1.5\text{ GHz} \\ 3060 & 1.5\text{ GHz} \le f \le 6\text{ GHz} \end{cases}$$

Bluetooth & BLE SAR testing is not required.

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed diametric evaluation.

SAR Test Data

Environmental Conditions

Test Date	2023/02/16
Freq. Band(MHz)	2450
Temperature	19.3℃
Relative Humidity	59%
Test Engineer	Anson Lu

WLAN 2.4GHz:

EUT Position	Freq. (MHz)	Test Mode	Maxi. Meas. Power (dBm)	Maxi. Rated Power (dBm)	SAR (W/Kg)							
					Scaled Factor	Meas. SAR(1g)	Scaled SAR(1g)	Limit SAR(1g)	Meas. SAR(10g)	Scaled SAR(10g)	Limit SAR(10g)	Plot
DrivePro Body 70 Body Front(0mm)	2437	802.11b	13.42	13.50	1.019	0.187	0.191	1.6	0.083	0.085	4.0	1
DrivePro Body 60 Body Front(0mm)	2437	802.11b	13.18	13.50	1.076	0.134	0.144	1.6	0.058	0.062	4.0	1-1
DrivePro Body 70 Body Back(0mm)	2437	802.11b	13.42	13.50	1.019	0.019	0.019	1.6	0.006	0.006	4.0	2
DrivePro Body 70 Body Left(0mm)	2437	802.11b	13.42	13.50	1.019	0.106	0.108	1.6	0.046	0.047	4.0	3
DrivePro Body 70 Body Right(0mm)	2437	802.11b	13.42	13.50	1.019	<0.01	<0.01	1.6	<0.01	<0.01	4.0	4
DrivePro Body 70 Body Top(0mm)	2437	802.11b	13.42	13.50	1.019	<0.01	<0.01	1.6	<0.01	<0.01	4.0	5
DrivePro Body 70 Body Bottom(0mm)	2437	802.11b	13.42	13.50	1.019	0.018	0.018	1.6	0.006	0.006	4.0	6

Note: 1) Maxi. meas. Power is using time based Avg power.

2) When the 1-g SAR is ≤ 0.8W/Kg, testing for other channels are optional.

3) 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%.

SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	**Simultaneous?**	**Hotspot**
WLAN(802.11b mode) + BLE/BT	×	×

Conclusion:

WLAN and BLE/BT can't simultaneous.

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

APPENDIX B EUT TEST POSITION PHOTOS

Please Refer to the Attachment APPENDIX B EUT TEST POSITION PHOTOS

APPENDIX C SAR PLOTS OF SAR MEASUREMENT

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

APPENDIX D PROBE & DAE CALIBRATION CERTIFICATES

Please refer to the file document APPENDIX D PROBE & DAE CALIBRATION CERTIFICATES

APPENDIX E DIPOLE CALIBRATION CERTIFICATES

Please refer to the file document APPENDIX E DIPOLE CALIBRATION CERTIFICATES

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