RF Exposure report

The following samples were submitted and identified on behalf of the client as:

EUT Description	Bluetooth USB Adapter (BTD 700)
Brand Name	SENNHEISER
Model No.	BTD 700
Applicant	Sonova Consumer Hearing GmbH Am Labor 1, 30900 Wedemark, Germany
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013 / RSS102 Issue 6, IEC/IEEE 62209-1528:2020
FCC ID	2A3ULBTD700
IC	28115-BTD700
Date of EUT Receipt	Oct. 11, 2024
Date of Test(s)	Oct. 13, 2024 ~ Nov. 19, 2024
Date of Issue	Jan. 09, 2025

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Ltd. Central RF Lab or testing done by SGS Taiwan Ltd. Central RF Lab in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Ltd. Central RF Lab in writing.

Signed on behalf of SGS

Clerk / Cindy Chou	PM / Ruby Ou	Approved By / John Yeh
Cindy Chou	Ruby Ou	John Yeh

Date: Jan. 09, 2025

Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2410000640ES	00	Initial creation of document	Jan. 09, 2025	Cindy Chou	

Note:

1. The mark " * " is the revised version of the report due to comments submitted by the certification.

Contents

1 GENERAL INFORMATION

1.1 Test Methodology

The SAR testing method and procedure for this device is in accordance with the following standards:
IEEE/ANSI C95.1-1992
IEEE 1528-2013
KDB447498D01v06
KDB447498D02v06
KDB865664D01v01r04
KDB865664D02v01r02
RSS102 Issue 6
IEC/IEEE 62209-1528:2020
RSS-102.SAR.MEAS Issue 1

1.2 Description of EUT

EUT Description	Bluetooth USB Adapter (BTD 700)
Brand Name	SENNHEISER
Model No.	BTD 700
FCC ID	2A3ULBTD700
IC	28115-BTD700
Serial Number / Status of EUT	Engineering sample
Power Ratings	5Vdc, 100mA
Operating Temperature range	0°C - +40°C
Modulation Type	BDR & EDR: GFSK, π/4 DQPSK, 8DPSK, BLE 1M/2M: GFSK QHS: π/4 QPSK (2Mbps, 3Mbps), π/4 DQPSK (4Mbps), 8PSK (5Mbps), D8PSK(6Mbps)
Transmission Technology	BDR & EDR / QHS: FHSS, BLE 1M/2M: DSSS
Technology	Bluetooth, QHS (HSL-C or HSL-L)
Operating Frequency	BDR & EDR: 2402 - 2480MHz, BLE 1M: 2402 - 2480MHz, BLE 2M/QHS: 2404 - 2478MHz (for Frequency Band: 2400-2483.5MHz)
No. of channels	BDR & EDR: 79, BLE: 40, QHS: 38 (HSL-L excluding 2426MHz channel)
Channel Spacing	BDR & EDR: 1MHz, BLE/QHS: 2MHz
Channel Bandwidth	BDR & EDR: 79MHz, BLE: 80MHz, QHS: 76MHz
Data Transfer Rate	BDR: 1Mbps , EDR: 2Mbps/3Mbps BLE 4.0: 1Mbps , BLE 5.4: 2Mbps, QHS: 2/3/4/5/6Mbps
Antenna Type	Monopole
Antenna Gain	0.42dBi
Maximum Tune up power - conducted average	9.5dB
HW Version	R2
SW Version	V2.02.00
Cable supplied / Device ports	NA

Accessory Device	USB-C to USB-A Adapter	
Duty Cycle	Bluetooth	Please refer to section 7
Supported radios (TX Frequency Range, MHz)	Bluetooth	2.4GHz (2400.0 – 2483.5 MHz)

1.3 Maximum value

Summary of Maximum SAR	
Mode	Highest SAR 1g (W/kg)
Bluetooth/ QHS	0.18

2 MEASUREMENT SYSTEM

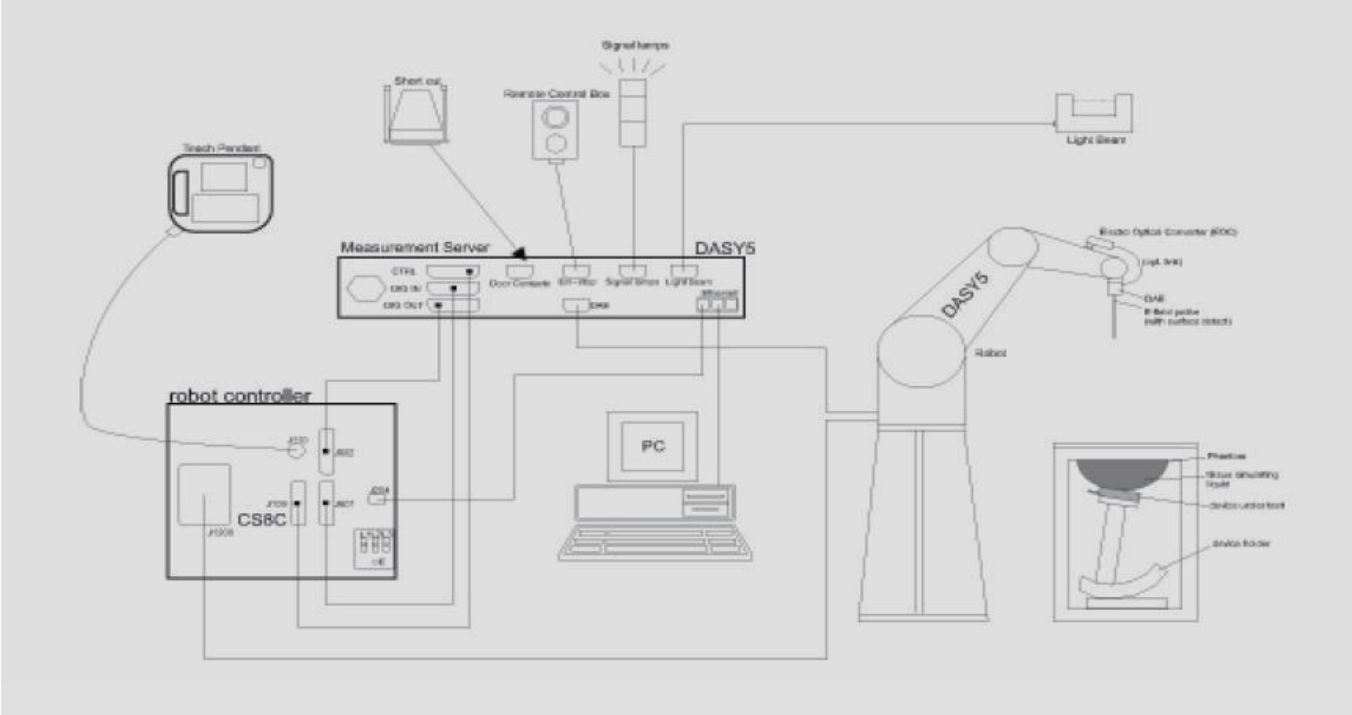
2.1 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	1F, No. 8, Alley 15, Lane 120, Sec. 1, NeiHu Road, Neihu District, Taipei City, 11493, Taiwan.	SAR 2	TW0029	TW3702
		SAR 6		
		SAR 8		
	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 33383, Taiwan	SAR 1	TW0028	
		SAR 4		
	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan	SAR 3	TW0027	
		SAR 7		
Note: Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.				

2.2 SAR System

Block Diagram (DASY5)

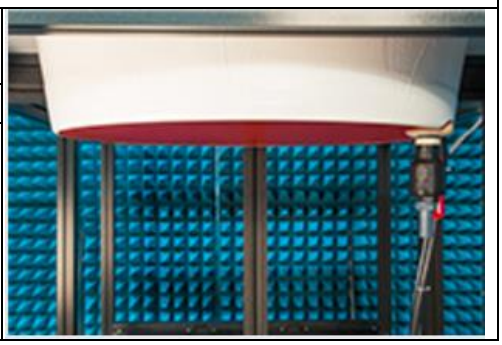
A block diagram of the SAR measurement System is given in below. This SAR measurement system uses a computer-controlled 3-D stepper motor system (SPEAG DASY 5 professional system). The model EX3DV4 field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ ($|Ei|^2$)/ ρ where σ and ρ are the conductivity and mass density of the tissue-simulant.



EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 2450 MHz Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Tip diameter: 2.5 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

PHANTOM (ELI)

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

DEVICE HOLDER

Construction	The device holder (Supporter) for Notebook is made by POM (polyoxymethylene resin) , which is non-metal and non-conductive. The height can be adjusted to fit varies kind of notebooks.	 Device Holder

3 SAR SYSTEM VERIFICATION

3.1 Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with homogeneous tissue simulating liquid. For head SAR testing, the liquid height from the ear rint (ERP) of the phantom to the liquid top surface is larger than 15cm. For body SAR testing, the liquid height fromeference po the center of the flat phantom to the liquid top surface is larger than 15cm.

3.2 Tissue Simulant Liquid measurement

The dielectric properties for this Head-simulant fluid were measured by using the SPEAG Dielectric Assessment Kit (DAKS-3.5)
All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The measured conductivity and permittivity are all within ± 5% of the target values.

3.3 Measurement results of Tissue Simulant Liquid

Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Limit	Measurement Date
2402	39.296	1.758	40.283	1.833	2.51%	4.24%	± 5%	Nov. 19, 2024
2441	39.218	1.792	40.203	1.871	2.51%	4.40%	± 5%	
2450	39.200	1.800	40.201	1.882	2.55%	4.56%	± 5%	
2480	39.160	1.832	40.141	1.906	2.51%	4.04%	± 5%	

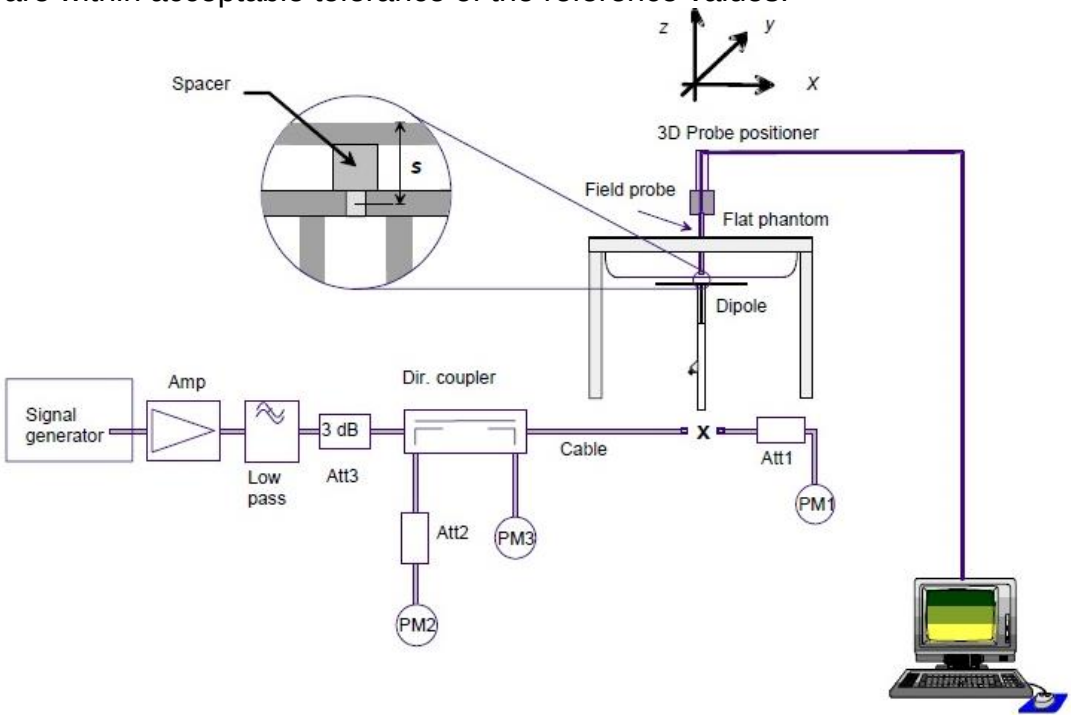
3.4 The composition of the tissue simulating liquid:

Simulating Liquids for 600 MHz -10 GHz, Manufactured by SPEAG:

Broad-band head tissue simulating liquids	SPEAG Product	Frequency range (MHz)	Main Ingredients
	HBBL600-10000V6	600 - 10000	Water, Oil

3.5 System check

The microwave circuit arrangement for system check is sketched in below. The daily system accuracy verification occurs within the flat section of the SAM phantom and ELI phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values.
The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed with SAR values normalized to 1W forward power delivered to the dipole.
During the tests, the liquid depth from the center of the flat phantom to the liquid top surface was 15 cm above in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



The block diagram of system check

3.6 System check results

Validation Kit	S/N	Frequency (MHz)	1W Target 1g-SAR (W/kg)	pin=250mW Measured 1g-SAR (W/kg)	Normalized to 1W 1g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D2450V2	727	2450	52.7	12.4	49.6	-5.88	± 10%	Nov.19,2024

4 TEST CONFIGURATIONS

4.1 Test Environment

Ambient Temperature: 22±2° C
Tissue Simulating Liquid: 22±2° C

4.2 Test Note

- **General:** Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s).
- **General:** The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.
- **General:** During the SAR testing, the DASY system checks power drift by comparing the e-field strength of one specific location measured at the beginning with that measured at the end of the SAR testing.
- **General:** According to KDB447498D01v06, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz.
- **General:** According to KDB865664D01v01r04, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4.3 Test position

SAR is measured for front, back, right, left and top with 5mm distance.

4.4 FCC Test limit

§ 2.1093(d)(1)

Applications for equipment authorization of portable RF sources subject to routine environmental evaluation must contain a statement confirming compliance with the limits specified in § 1.1310 as part of their application. Technical information showing the basis for this statement must be submitted to the Commission upon request. The SAR limits specified in § 1.1310(a) through (c) of this chapter shall be used for evaluation of portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz shall be evaluated in terms of the MPE limits specified in Table 1 to § 1.1310(e)(1). A minimum separation distance applicable to the operating configurations and exposure conditions of the device shall be used for the evaluation. In general, maximum time-averaged power levels must be used for evaluation. All unlicensed personal communications service (PCS) devices and unlicensed NII devices shall be subject to the limits for general population/uncontrolled exposure.

Radiofrequency radiation exposure limits.

§ 1.1310(a)

Specific absorption rate (SAR) shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b) within the frequency range of 100 kHz to 6 GHz (inclusive).

§ 1.1310(b)

The SAR limits for occupational/controlled exposure are 0.4 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 8 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit for occupational/controlled exposure is 20 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 6 minutes to determine compliance with occupational/controlled SAR limits.

§ 1.1310(c)

The SAR limits for general population/uncontrolled exposure are 0.08 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 1.6 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit is 4 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 30 minutes to determine compliance with general population/uncontrolled SAR limits.

Note to paragraphs (a) through (c):

SAR is a measure of the rate of energy absorption due to exposure to RF electromagnetic energy. These SAR limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized SAR in Section 4.2 of “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE Std C95.1-1992, copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” NCRP Report No. 86, Section 17.4.5, copyright 1986 by NCRP, Bethesda, Maryland 20814. Limits for whole body SAR and peak spatial-average SAR are based

on recommendations made in both of these documents. The MPE limits in Table 1 are based generally on criteria published by the NCRP in “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” NCRP Report No. 86, Sections 17.4.1, 17.4.1.1, 17.4.2 and 17.4.3, copyright 1986 by NCRP, Bethesda, Maryland 20814. In the frequency range from 100 MHz to 1500 MHz, these MPE exposure limits for field strength and power density are also generally based on criteria recommended by the ANSI in Section 4.1 of “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE Std C95.1-1992, copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

Portable devices that transmit at frequencies above 6 GHz shall be evaluated in terms of the MPE limits specified in Table 1 to § 1.1310(e)(1).
According to ANSI/IEEE C95.1-1992, the criteria listed in the following Table shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.
Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm2 per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*($900/f^2$)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*($180/f^2$)	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.
Table 1 to § 1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

4.5 ISED Test limit

The SAR limits are summarized in table 3.

Table 3: SAR basic restrictions limits (100 kHz to 6 GHz)

Body region	Uncontrolled environment average SAR (W/kg)	Controlled environment average SAR (W/kg)	Averaging time (minutes)	Averaging mass (g)
Whole body	0.08	0.4	6	whole body
Localized head, neck and trunk	1.6	8	6	1
Localized limbs	4	20	6	10

The localized APD limits are summarized in table 4.

Table 4: Localized APD basic restrictions limits (6 GHz-300 GHz)

Exposure scenario	Local APD (W/m^2)	Exposure duration (minutes)
Uncontrolled environment	20	6
Controlled environment	100	6

Local APD shall be averaged over a square 4 cm_2 surface area of the body.

5 MAXIMUM OUTPUT POWER

5.1 Bluetooth

Mode	Channel	Frequency (MHz)	1Mbps		2Mbps		3Mbps	
			Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
BR/EDR	CH 00	2402	9.50	8.93	7.00	6.93	7.00	6.96
	CH 39	2441		8.47		6.71		6.73
	CH 78	2480		8.75		6.86		6.89

5.2 BLE

Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_1M	CH 00	2402	9.50	8.89
	CH 19	2440		8.44
	CH 39	2480		8.81

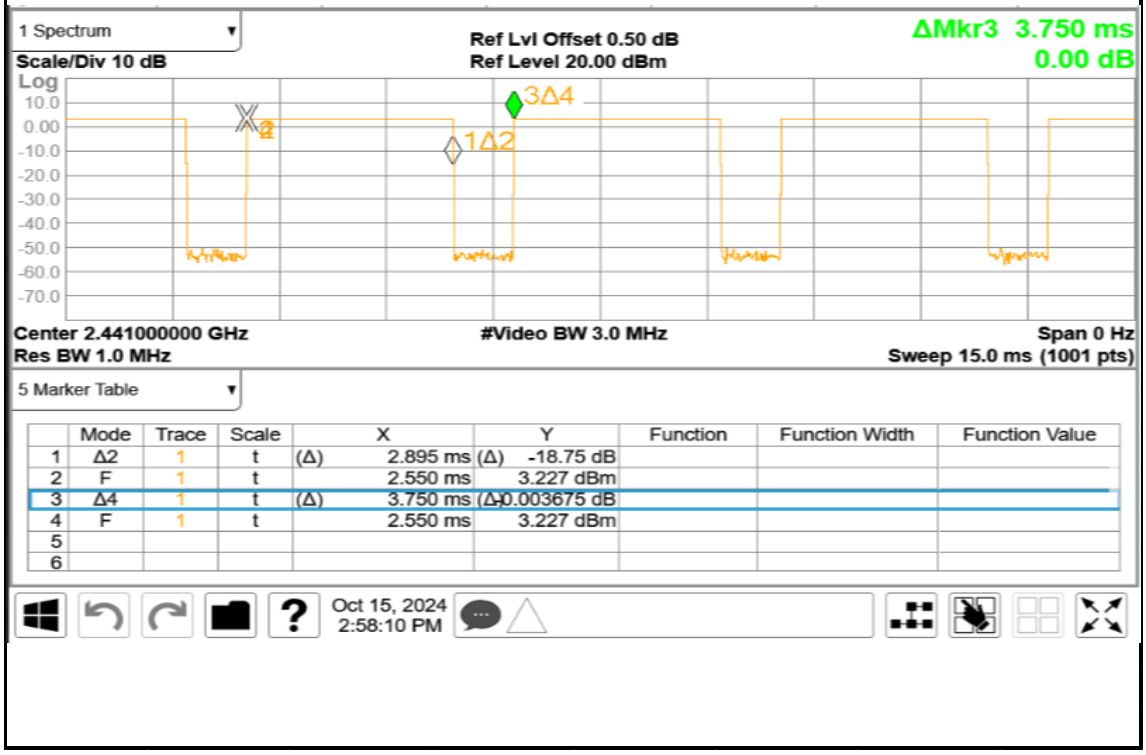
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_2M	CH 00	2402	9.50	8.64
	CH 19	2440		8.36
	CH 39	2480		8.51

5.3 QHS

Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
QHS(2Mbps)	CH 00	2402	8.5	8.05
	CH 19	2440		7.77
	CH 39	2480		7.95
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
QHS(3Mbps)	CH 00	2402	8.5	8.07
	CH 19	2440		7.90
	CH 39	2480		7.99
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
QHS(4Mbps)	CH 00	2402	8.5	8.07
	CH 19	2440		7.83
	CH 39	2480		8.04
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
QHS(5Mbps)	CH 00	2402	8.5	8.08
	CH 19	2440		7.86
	CH 39	2480		8.02
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
QHS(6Mbps)	CH 00	2402	8.5	8.09
	CH 19	2440		7.92
	CH 39	2480		8.06

6 DUTY CYCLE

BT duty	(2.895/3.750=0.772) Scaling Factor=1.295



	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	Δ2	1	t	(Δ) 2.895 ms	(Δ) -18.75 dB			
2	F	1	t	2.550 ms	3.227 dBm			
3	Δ4	1	t	(Δ) 3.750 ms	(Δ) 0.003675 dB			
4	F	1	t	2.550 ms	3.227 dBm			
5								
6								

7 SUMMARY OF RESULTS

7.1 Decision rules

Reported measurement data comply with Test Methodology in section 1.1.
Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

7.2 Summary of SAR Results

Band	Antenna	Position	Distance (mm)	Channel	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
										Measured	Reported	
Bluetooth(GFSK)	Antenna	Front Surface	5	00	2402	9.50	8.93	1.30	113.92%	0.121	0.179	001
Bluetooth(GFSK)	Antenna	Front Surface	5	39	2441	9.50	8.47	1.30	126.65%	0.093	0.153	-
Bluetooth(GFSK)	Antenna	Front Surface	5	78	2480	9.50	8.75	1.30	118.75%	0.103	0.158	-
Bluetooth(GFSK)	Antenna	Back Surface	5	00	2402	9.50	8.93	1.30	113.92%	0.101	0.149	-
Bluetooth(GFSK)	Antenna	Top Edge	5	00	2402	9.50	8.93	1.30	113.92%	0.018	0.027	-
Bluetooth(GFSK)	Antenna	Right Edge	5	00	2402	9.50	8.93	1.30	113.92%	0.062	0.091	-
Bluetooth(GFSK)	Antenna	Left Edge	5	00	2402	9.50	8.93	1.30	113.92%	0.086	0.127	-

Note:
Reported SAR = measured SAR * Power scaling * Duty cycle scaling

7.3 Reporting statements of conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

7.4 Conclusion

The device is compliant because all the standalone results are less than their corresponding criteria.

8 INSTRUMENTS LIST

Equipment List					
Manufacturer	**Device**	**Type**	**Serial number**	**Date of last calibration**	**Date of next calibration**
SPEAG	Data acquisition Electronics	DAE4	1665	Feb/15/2024	Feb/14/2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	7686	Oct/07/2024	Oct/06/2025
SPEAG	System Validation Dipole	D2450V2	727	Apr/22/2024	Apr/21/2025
SPEAG	Dielectric Assessment Kit	DAKS-3.5	1053	Feb/21/2024	Feb/20/2025
Keysight	EXA Signal Analyzer	N9010B	MY63440390	Feb/16/2024	Feb/15/2025
R&S	MXG Analog Signal Generator	SMB100A03	182012	May/21/2024	May/20/2025
Agilent	Dual-directional coupler	772D	MY52180142	Oct/30/2024	Oct/29/2025
Agilent	Dual-directional coupler	778D	MY52180302	Nov/06/2024	Nov/05/2025
EMCI	Amplifier	ZHL-42	980189	Calibration not required	Calibration not required
EMCI	Amplifier	ZVE-8G	980190	Calibration not required	Calibration not required
R&S	Power Sensor	NRP18S	101973	Feb/27/2024	Feb/26/2025
R&S	Power Meter	NRX	102191	Feb/27/2024	Feb/26/2025
R&S	Power Sensor	NRP18S	109065	Aug/28/2024	Aug/27/2025
SPEAG	Software	DASY 52 V52.10.4.1527	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
LKM	Digital thermometer	DTM3000	3896	Dec/26/2023	Dec/25/2024
TECPEL	Digital thermometer	DTM-303A	TP131515	May/23/2024	May/22/2025

9 UNCERTAINTY BUDGET

Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

A	c	D	e		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability Distributio	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	2.55%	N	1	1	0.64	0.43	1.63%	1.10%	M
Liquid Conductivity (mea.)	4.56%	N	1	1	0.6	0.49	2.74%	2.23%	M
Liquid conductivity σ — temperature uncertainty	2.60%	R	√3	1.732	0.78	0.71	1.17%	1.07%	∞
Liquid permittivity ε — temperature uncertainty	1.80%	R	√3	1.732	0.23	0.26	0.24%	0.27%	∞
Combined standard uncertainty		RSS					11.85%	11.68%	
Expant uncertainty (95% confidence interval), K=2							23.71%	23.35%	

10 SAR MEASUREMENT RESULTS

Date: 2024/11/19

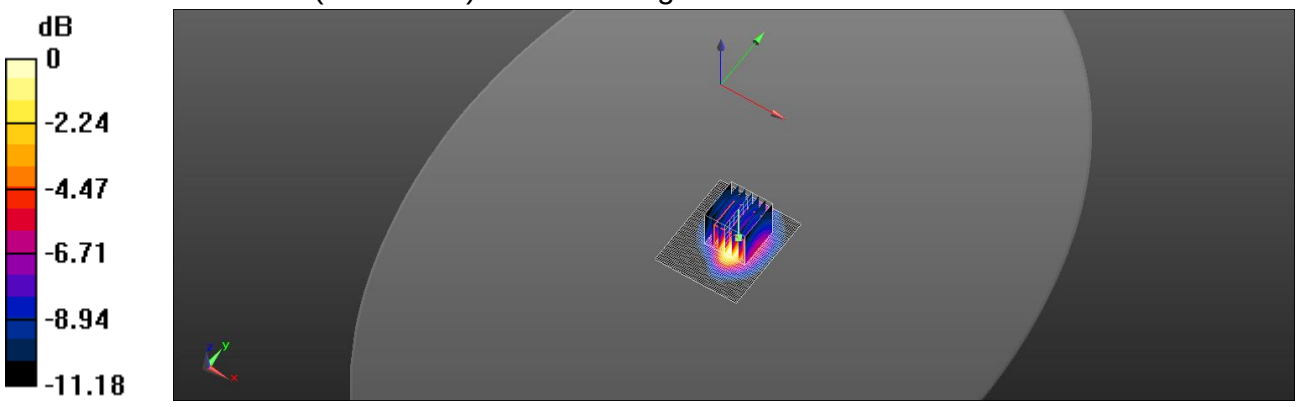
ID: 001
Report No. :TESA2410000640ES
Bluetooth(GFSK)_Body_Front Surface_CH 00_5mm
Communication System: Bluetooth; Frequency: 2402 MHz;Duty Cycle: 1:1.295
Medium parameters used: f = 2402 MHz; σ = 1.833 S/m; ε_r = 40.283; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.4°C; Liquid temperature: 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(7.73, 7.08, 7.39) @ 2402 MHz; Calibrated: 2024/10/07
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/02/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (51x61x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.188 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.572 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.199 W/kg
SAR(1 g) = 0.121 W/kg; SAR(10 g) = 0.065 W/kg
Smallest distance from peaks to all points 3 dB below = 10 mm
Ratio of SAR at M2 to SAR at M1 = 63.1%
Maximum value of SAR (measured) = 0.166 W/kg



0 dB = 0.166 W/kg = -7.80 dBW/kg

11 SAR SYSTEM CHECK RESULTS

Date: 2024/11/19

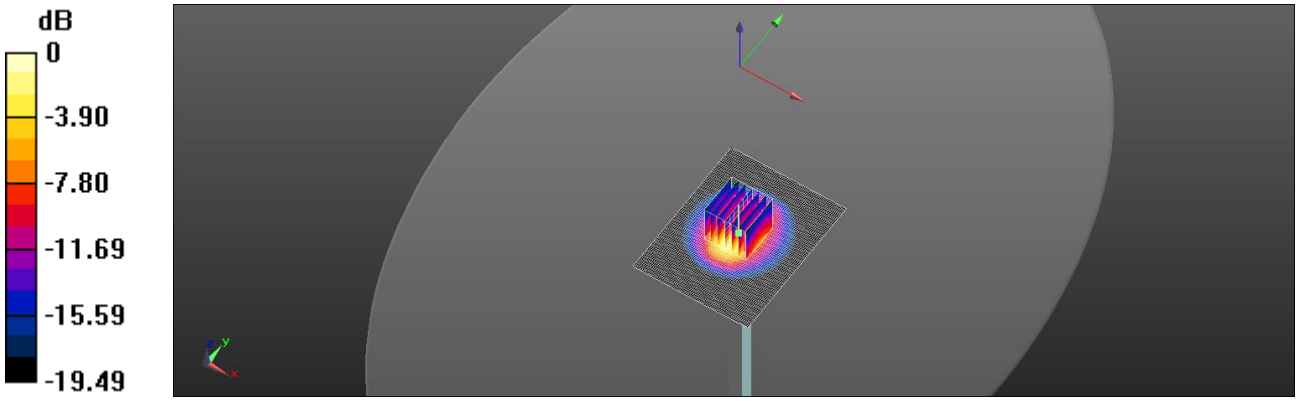
Report No. :TESA2410000640ES
Dipole 2450 MHz_SN:727
Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.882 S/m; ε_r = 40.201; ρ = 1090 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.4°C; Liquid temperature: 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7686; ConvF(7.73, 7.08, 7.39) @ 2450 MHz; Calibrated: 2024/10/07
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1665; Calibrated: 2024/02/15
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x91x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 17.5 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.11 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 21.5 W/kg
SAR(1 g) = 12.4 W/kg; SAR(10 g) = 5.99 W/kg
Smallest distance from peaks to all points 3 dB below = 9.6 mm
Ratio of SAR at M2 to SAR at M1 = 53.5%
Maximum value of SAR (measured) = 17.1 W/kg



0 dB = 17.1 W/kg = 12.76 dBW/kg

12 APPENDIXES

Refer to separated files for the following appendixes.

12.1 SAR_Appendix A Photographs

12.2 SAR_Appendix B DAE & Probe Cal. Certificate

12.3 SAR_Appendix C Phantom Description & Dipole Cal. Certificate

- End of report -