

SAR EVALUATION REPORT

**RSS-102 ISSUE 6
IEC/IEEE 62209-1528:2020**

For
BLUETOOTH HEADSET

MODEL NUMBER: TUNE 680NC

REPORT NUMBER: 4791825534-1-SAR-2

ISSUE DATE: July 26, 2025

IC: 6132A-JBLT680NC

Prepared for

**HARMAN INTERNATIONAL INDUSTRIES INC
8500 Balboa Blvd Nothridge CA 91329, UNITED STATES**

Prepared by

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch

Room 101, Building 2, No.4, Information Road, Songshan Lake, Dongguan, Guangdong, China

Tel: +86 769 22038881

Fax: +86 769 33244054

Website: www.ul.com

Website: www.ul.com

Revision History

Rev.	Issue Date	Revisions	Revised By
V0	July 26, 2025	Initial Issue	\

Note:

- 1) This test report is only published to and used by the applicant, and it is not for evidence purpose in China.
- 2) The measurement result for the sample received is <Pass> according to < RSS-102 Issue 6>when <Simple Acceptance> decision rule is applied.

Table of Contents

1.	Attestation of Test Results.....	4
2.	Test Specification, Methods and Procedures	5
3.	Facilities and Accreditation.....	6
4.	SAR Measurement System & Test Equipment.....	7
4.1.	SAR Measurement System.....	7
4.2.	SAR Scan Procedures	8
4.3.	Test Equipment.....	10
5.	Measurement Uncertainty	11
5.1.	<i>Uncertainty budget list (4MHz to 10GHz).....</i>	<i>11</i>
6.	Device Under Test (DUT) Information.....	12
6.1.	DUT Description.....	12
6.2.	Wireless Technology.....	12
6.1.	<i>Antenna Gain</i>	<i>12</i>
7.	Conducted Output Power Measurement and tune-up tolerance	13
7.1.	Test Results of BT	13
7.2.	Duty Cycle	14
8.	Test Configuration	15
8.1.	<i>2.4GHz BT SAR Test Requirements.....</i>	<i>15</i>
9.	RF Exposure Conditions	16
10.	Dielectric Property Measurements & System Check.....	17
10.1.	<i>Dielectric Property Measurements</i>	<i>17</i>
10.2.	<i>System Check.....</i>	<i>19</i>
11.	Measured and Reported (Scaled) SAR Results	20
11.1.	<i>SAR Test Results.....</i>	<i>21</i>
12.	Simultaneous Transmission SAR Analysis	22
	Appendixes	23
	<i>4791825534-1-SAR-2_App A Photo.....</i>	<i>23</i>
	<i>4791825534-1-SAR-2_App B System Check Plots</i>	<i>23</i>
	<i>4791825534-1-SAR-2_App C Highest Test Plots</i>	<i>23</i>
	<i>4791825534-1-SAR-2_App D Cal. Certificates.....</i>	<i>23</i>

1. Attestation of Test Results

Applicant Name	HARMAN INTERNATIONAL INDUSTRIES INC	
Address	8500 Balboa Blvd Nothridge CA 91329, UNITED STATES	
Manufacturer	HARMAN INTERNATIONAL INDUSTRIES INC	
Address	8500 Balboa Blvd Nothridge CA 91329, UNITED STATES	
EUT Name	BLUETOOTH HEADSET	
Brand	JBL	
Model	TUNE 680NC	
Sample Received Date	June 30, 2025	
Sample Status	Normal	
Sample ID	/	
Date of Tested	July 16, 2025	
Applicable Standards	RSS-102 ISSUE 6 KDB publication IEC/IEEE 62209-1528:2020	
SAR Limits (W/Kg)		
Exposure Category	Peak spatial-average (1g of tissue)	Extremities (hands, wrists, ankles, etc.) (10g of tissue)
General population / Uncontrolled exposure	1.6	4
Occupational / Controlled exposure	8	20
The Highest Reported SAR (W/kg)		
RF Exposure Conditions	Equipment Class	
	DSS	
Head 1-g (0 mm)	0.039	
Simultaneous Transmission (1-g)	/	
Test Results	Pass	
Prepared By: <i>Burt Hu</i> Burt Hu Laboratory Engineer	Reviewed By: <i>Kebo Zhang</i> Kebo Zhang Operations Leader	Approved By: <i>Stephen Guo</i> Stephen Guo Laboratory Manager

2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with IEC/IEEE 62209-1528:2020, the following FCC Published RF exposure KDB procedures:

- 447498 D01 General RF Exposure Guidance v06

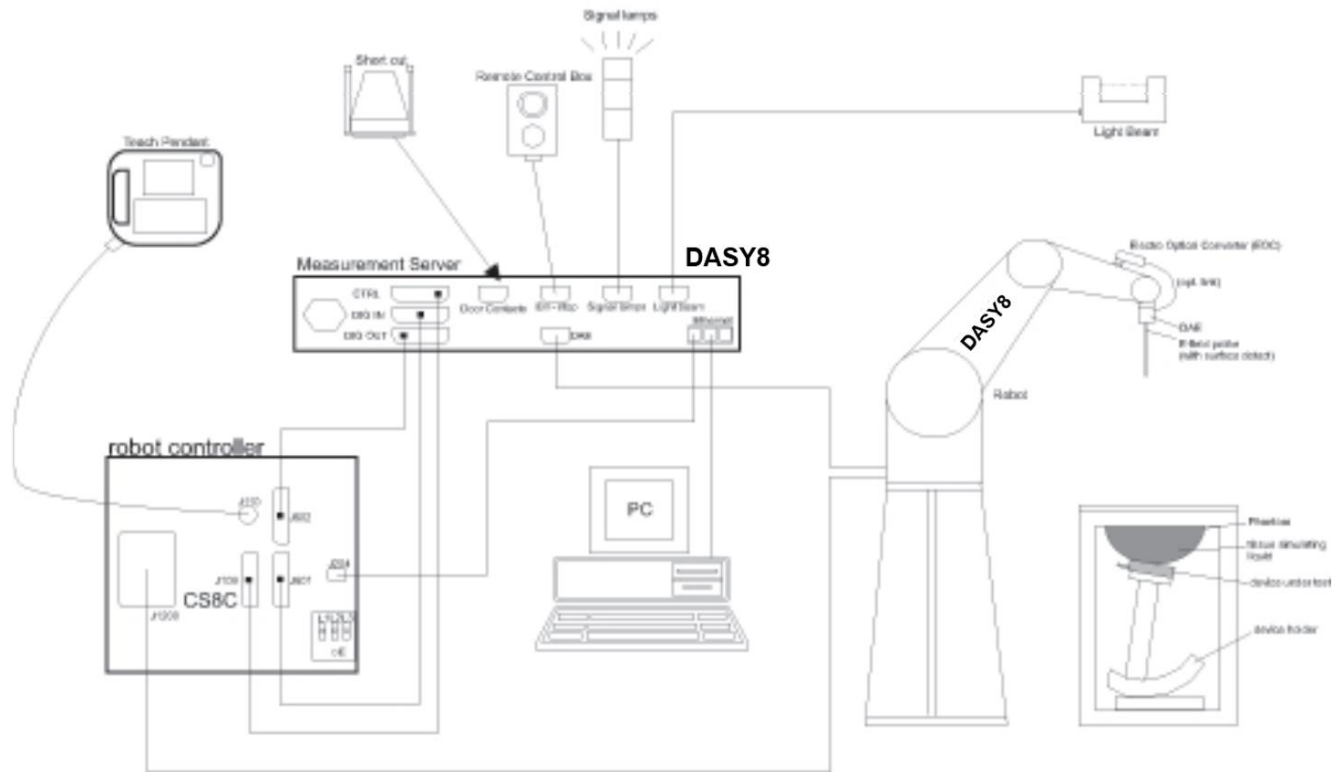
3. Facilities and Accreditation

Test Location	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
Address	Room 101, Building 2, No.4, Information Road, Songshan Lake, Dongguan, Guangdong, China
Accreditation Certificate	<p>A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.</p> <p>ISED (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p>VCCI (Registration No.: C-20202, G-20240, R-20248 and T-20202) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber E, the VCCI registration No. is G-20240 and R-20248 Shielding Room F, the VCCI registration No. is C-20202 and T-20202</p>
Description	All measurement facilities use to collect the measurement data are located at Room 101, Building 2, No.4, Information Road, Songshan Lake, Dongguan, Guangdong, China

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY8 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot 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 amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- 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 Win 10 and the DASY8 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.

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEC/IEEE 62209-1528:2020. If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from IEC/IEEE 62209-1528:2020:

Table 3 – Area scan parameters

Parameter	DUT transmit frequency being tested	
	$f \leq 3 \text{ GHz}$	$3 \text{ GHz} < f \leq 10 \text{ GHz}$
Maximum distance between the measured points (geometric centre of the sensors) and the inner phantom surface (z_{M1} in Figure 20 in mm)	5 ± 1	$\delta \ln(2)/2 \pm 0,5^a$
Maximum spacing between adjacent measured points in mm (see O.8.3.1) ^b	20, or half of the corresponding zoom scan length, whichever is smaller	$60/f$, or half of the corresponding zoom scan length, whichever is smaller
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20) ^c	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Tolerance in the probe angle	1°	1°
<p>^a δ is the penetration depth for a plane-wave incident normally on a planar half-space.</p> <p>^b See Clause O.8 on how Δx and Δy may be selected for individual area scan requirements.</p> <p>^c The probe angle relative to the phantom surface normal is restricted due to the degradation in the measurement accuracy in fields with steep spatial gradients. The measurement accuracy decreases with increasing probe angle and increasing frequency. This is the reason for the tighter probe angle restriction at frequencies above 3 GHz.</p>		

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from IEC/IEEE 62209-1528:2020:

Parameter	DUT transmit frequency being tested	
	$f \leq 3 \text{ GHz}$	$3 \text{ GHz} < f \leq 10 \text{ GHz}$
Maximum distance between the closest measured points and the phantom surface (z_{M1} in Figure 20 and Table 3, in mm)	5	$\delta \ln(2)/2^a$
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20)	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Maximum spacing between measured points in the x - and y -directions (Δx and Δy , in mm)	8	$24/f^b$
For uniform grids: Maximum spacing between measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	5	$10/(f - 1)$
For graded grids: Maximum spacing between the two closest measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	4	$12/f$
For graded grids: Maximum incremental increase in the spacing between measured points in the direction normal to the phantom shell ($R_z = \Delta z_2/\Delta z_1$ in Figure 20)	1,5	1,5
Minimum edge length of the zoom scan volume in the x - and y -directions (L_z in O.8.3.2, in mm)	30	22
Minimum edge length of the zoom scan volume in the direction normal to the phantom shell (L_h in O.8.3.2 in mm)	30	22
Tolerance in the probe angle	1°	1°
^a δ is the penetration depth for a plane-wave incident normally on a planar half-space.		
^b This is the maximum spacing allowed, which might not work for all circumstances.		

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan (FCC only)

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction.

4.3. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations and is traceable to recognized national standards.

Name of equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
ENA Network Analyzer	Keysight	E5080A	MY55100583	2025.09.27
Dielectric Probe kit	SPEAG	SM DAK 040 SA	1155	2028.02.26
DC power supply	Keysight	E36103A	MY55350020	2025.09.27
Signal Generator	Rohde & Schwarz	SME06	837633\001	2025.08.05
BI-Directional Coupler	KRYTAR	1850	54733	2025.09.27
Peak and Average Power Sensor	Keysight	E9325A	MY62220002	2025.09.27
Peak and Average Power Sensor	Keysight	E9325A	MY62220003	2025.09.27
Dual Channel PK Power Meter	Keysight	N1912A	MY55416024	2025.09.27
Amplifier	CORAD TECHNOLOGY LTD	AMF-4D-00400600-50-30P	1983561	NCR
Dosimetric E-Field Probe	SPEAG	EX3DV4	7383	2026.03.13
Data Acquisition Electronic	SPEAG	DAE4	1318	2025.10.08
Dipole Kit 2450 MHz	SPEAG	D2450V2	977	2027.12.25
Software	SPEAG	DASY8	N/A	NCR
Phantom	SPEAG	SAM V8.0	2100	NCR
Thermometer	/	GX-138	150709653	2025.10.7
Thermometer	VICTOR	ITHX-SD-5	18470005	2025.10.7

Note:

- 1) The probe shall be calibrated in a tissue-equivalent medium required for the calibration frequency and temperature range, according to the methodology specified in Annex E of IEC/IEEE 62209-1528:2020. Calibration of the probe separately from the measurement system is allowed, provided that the same electrical interface characteristics specified for the probe and readout electronics are used during measurements. The probe(s) shall be calibrated together with an identical amplifier, measurement device, and data acquisition system.
 - a) There is no physical damage on the dipole;
 - b) System check with specific dipole is within 10% of calibrated value;
 - c) The most recent return-loss result, measured at least annually, deviates by no more than 20% from the previous measurement.
 - d) The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the previous measurement.
- 2) Dielectric assessment kit is calibrated against air, distilled water and a shorting block performed before measuring liquid parameters.
- 3) NCR is short for "No Calibration Requirement".

5. Measurement Uncertainty

5.1. Uncertainty budget list (4MHz to 10GHz)

Symbol	Input quantity X_i (source of uncertainty)	Unc. (\pm)	Prob. Dist. PDF _i	Unc. a(x_i)	c_i (1g)	c_i (10g)	u_i (1g) (%)	u_i (10g) (%)
Measurement system errors								
CF	Probe calibration	18.6	N (k = 2)	2	1	1	9.3	9.3
CF _{drift}	Probe calibration drift	1.7	R	$\sqrt{3}$	1	1	1.0	1.0
LIN	Probe linearity and detection limit	0.6	R	$\sqrt{3}$	1	1	0.3	0.3
BBS	Broadband signal	0.5	R	$\sqrt{3}$	1	1	0.3	0.3
ISO	Probe isotropy	0.5	R	$\sqrt{3}$	1	1	0.3	0.3
DAE	Other probe and data acquisition errors	2.4	N	1	1	1	2.4	2.4
AMB	RF ambient and noise	3.0	R	$\sqrt{3}$	1	1	1.7	1.7
Δ_{xyz}	Probe positioning errors	0.5	N	1	0.33	0.33	0.2	0.2
DAT	Data processing errors	4.0	R	$\sqrt{3}$	1	1	2.3	2.3
Phantom and device (DUT or validation antenna) errors								
LIQ(σ)	Measurement of phantom conductivity(σ)	2.5	N	1	0.78	0.71	2.0	1.8
LIQ(Tc)	Temperature effects (medium)	2.7	R	$\sqrt{3}$	0.78	0.71	1.2	1.1
EPS	Shell permittivity	14.0	R	$\sqrt{3}$	0.5	0.5	4.0	4.0
DIS	Distance between the radiating element of the DUT and the phantom medium	2.0	N	1	2	2	4.0	4.0
Dxyz	Repeatability of positioning the DUT or source against the phantom	2.9	N	1	1	1	2.9	2.9
H	Device holder effects	3.6	N	1	1	1	3.6	3.6
MOD	Effect of operating mode on probe sensitivity	2.4	R	$\sqrt{3}$	1	1	1.4	1.4
TAS	Time-average SAR	0.0	R	$\sqrt{3}$	1	1	0.0	0.0
RF _{drift}	Variation in SAR due to drift in output of DUT	2.5	N	1	1	1	2.5	2.5
VAL	Validation antenna uncertainty (validation measurement only)	0.0	N	1	1	1	0.0	0.0
P _{in}	Uncertainty in accepted power (validation measurement only)	0.0	N	1	1	1	0.0	0.0
Corrections to the SAR result (if applied)								
C(ϵ' , σ)	Phantom deviation from target (ϵ' , σ)	1.9	N	1	1	0.84	1.9	1.6
C(R)	SAR scaling	0.0	R	$\sqrt{3}$	1	1	0.0	0.0
u(Δ SAR)	Combined uncertainty	\					14.36	14.26
U	Expanded uncertainty and effective degrees of freedom (k = 2)	\					28.73	28.53

6. Device Under Test (DUT) Information

6.1. DUT Description

DUT is a wireless Bluetooth Headset with BT/BLE capabilities.	
DUT Dimension	Overall (Length x Width x Height): 180.83 mm x 134.73 mm x 73.6 mm

6.2. Wireless Technology

Wireless technology	Frequency band
BT/BLE	2.4 GHz

6.1. Antenna Gain

Frequency band	Antenna Type	Maximum Antenna Gain (dBi)
2.4 GHz	PCB Antenna	1.12

7. Conducted Output Power Measurement and tune-up tolerance

7.1. Test Results of BT

Mode	Frequency (MHz)	AV Power (dBm)	Tune-up Limit (dBm)
DH5	2402	5.99	7.0
	2441	5.68	
	2480	5.39	
3DH5	2402	3.45	4.5
	2441	3.38	
	2480	3.24	
BLE_1M	2402	3.78	4.5
	2440	3.41	
	2480	3.36	
BLE_2M	2404	3.72	4.5
	2440	3.52	
	2478	3.33	

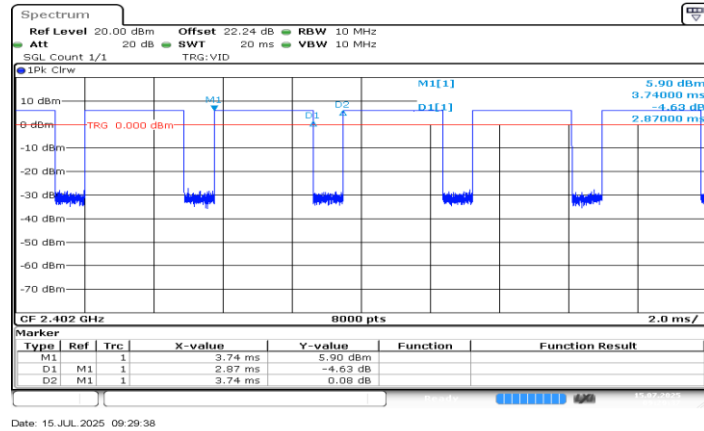
Note:

- 1) The output power of the device was set to transmit at maximum power for all tests.
- 2) As per KDB 447498 D01 sec.4.1.d) at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit.
- 3) The maximum output power mode DH5 was selected as the primary mode to test SAR for Bluetooth mode. SAR measurement is not required for the other modes, when the secondary mode is ≤ 0.25 dB higher than the primary mode.

7.2. Duty Cycle

Test Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)
DH5	2.87	3.74	0.7674	76.74

DH5 2402MHz



8. Test Configuration

8.1.2.4GHz BT SAR Test Requirements

2.4GHz BT operating modes are tested independently according to the service requirements in each frequency band for each antenna. DH5/2DH5/3DH5/1M/2M SISO modes are tested on the maximum average output power mode.

9. RF Exposure Conditions

Wireless technologies	RF Exposure Conditions	DUT-to-User Separation
BT	Head	0 mm

Refer to the "4791825534-1-SAR-2_App A Photo" for the antenna location diagram.

Note:

- 1) As the EUT is headphones, so only the side facing the ear needs to be tested.

10. Dielectric Property Measurements & System Check

10.1. Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within $\pm 2^\circ\text{C}$ of the temperature when the tissue parameters are characterized.

The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series. Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

IEC/IEEE 62209-1528:2020

Tissue Dielectric Parameters

Frequency MHz	Real part of the complex relative permittivity, ϵ_r'	Conductivity, σ S/m	Penetration depth (E-field), δ mm
4	55,0	0,75	293,0
13	55,0	0,75	165,5
30	55,0	0,75	112,8
150	52,3	0,76	62,0
300	45,3	0,87	46,1
450	43,5	0,87	43,0
750	41,9	0,89	39,8
835	41,5	0,90	39,0
900	41,5	0,97	36,2
1 450	40,5	1,20	28,6
1 800	40,0	1,40	24,3
1 900	40,0	1,40	24,3
1 950	40,0	1,40	24,3
2 000	40,0	1,40	24,3
2 100	39,8	1,49	22,8
2 450	39,2	1,80	18,7
2 600	39,0	1,96	17,2
3 000	38,5	2,40	14,0
3 500	37,9	2,91	11,4
4 000	37,4	3,43	10,0
4 500	36,8	3,94	9,7

Frequency MHz	Real part of the complex relative permittivity, ϵ_r'	Conductivity, σ S/m	Penetration depth (E-field), δ mm
5 000	36,2	4,45	1,5
5 200	36,0	4,66	8,4
5 400	35,8	4,86	8,1
5 600	35,5	5,07	7,5
5 800	35,3	5,27	7,3
6 000	35,1	5,48	7,0
6 500	34,5	6,07	6,7
7 000	33,9	6,65	6,4
7 500	33,3	7,24	6,1
8 000	32,7	7,84	5,9
8 500	32,1	8,46	5,3
9 000	31,6	9,08	4,8
9 500	31,0	9,71	4,4
10 000	30,4	10,40	4,0

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.

IEC/IEEE 62209-1528:2020

Refer to Table 3 within the IEC/IEEE 62209-1528:2020 Dielectric Property Measurements Results:

Freq.	Liquid Parameters				Deviation(%)		Limit (%)	Temp. (°C)	Test Date
	Measured		Target						
	ϵ _r	σ	ϵ _r	σ	ϵ _r	σ			
2400	39.20	1.77	39.29	1.86	-0.23	-4.84	±5	21.4	July 16, 2025
2450	39.50	1.84	39.20	1.80	0.77	2.22			
2500	39.20	1.84	39.13	1.85	0.18	-0.54			

10.2. System Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ± 0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1GHz) and 15 mm (below 1GHz) from dipole center to the simulating liquid surface.
- For area scan, standard grid spacing for head measurements is 15 mm in x- and y- dimension (≤ 2 GHz), 12 mm in x- and y-dimension (2-4 GHz) and 10 mm in x- and y- dimension (4-6GHz).
- For zoom scan, $\Delta x_{\text{zoom}}, \Delta y_{\text{zoom}} \leq 2$ GHz - ≤ 8 mm, 2-4 GHz - ≤ 5 mm and 4-6 GHz - ≤ 4 mm; $\Delta z_{\text{zoom}} \leq 3$ GHz - ≤ 5 mm, 3-4 GHz - ≤ 4 mm and 4-6 GHz - ≤ 2 mm.
- Distance between probe sensors and phantom surface was set to 3 mm except for 5 GHz band. For 5 GHz band, Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was set to 100 mW or 250 mW depend on the certificate of the dipoles.
- The results are normalized to 1 W input power.

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within 10% of the manufacturer calibrated dipole SAR target.

T.S. Liquid		Measured Results		Target (Ref. value)	Delta (%)	Limit (%)	Temp. (°C)	Test Date
		Zoom Scan (W/Kg)	Normalize to 1W (W/Kg)					
Head 2450	1-g	5.240	52.40	52.80	-0.76	± 10	21.4	July 16, 2025
	10-g	2.420	24.20	24.40	-0.82			

11. Measured and Reported (Scaled) SAR Results

- Reported SAR(W/kg) = Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor

SAR Test Reduction criteria are as follows:

KDB 447498 D01 General RF Exposure Guidance:

A) Per KDB447498 D01, all SAR measurement results are scaled to the maximum tune-up tolerance limit to demonstrate SAR compliance.

B) Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

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

11.1.SAR Test Results

Test Position (Head 0mm)	Test Mode	Channel/ Frequency	Power (dBm)		Measured SAR Value	Power Drift	Duty Cycle (%)	Scaled (W/Kg)
			Tune-up	Meas.	1-g (W/Kg)			
Back side	DH5	0/2402	7.00	5.99	0.024	0.08	76.74	0.039
Back side	DH5	39/2441	7.00	5.68	0.021	-0.03	76.74	0.037
Back side	DH5	78/2480	7.00	5.39	0.011	0.04	76.74	0.021

Note:

- 1) The SAR testing was set to transmit at maximum power for all tests.

12. Simultaneous Transmission SAR Analysis

There is only one antenna, so simultaneous transmission does not exist.

Appendixes

Refer to separated files for the following appendixes.

4791825534-1-SAR-2_App A Photo

4791825534-1-SAR-2_App B System Check Plots

4791825534-1-SAR-2_App C Highest Test Plots

4791825534-1-SAR-2_App D Cal. Certificates

-----End of Report-----