Prüfbericht-Nr.: *Test report no.:*	CN269T5F 001	**Auftrags-Nr.:** *Order no.:*	48308082	
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2026-07-20	
Auftraggeber: *Client:*	Panasonic Corporation of North America Two Riverfront Plaza, 9th Floor Newark,New Jersey 07102-5490 United States			
Prüfgegenstand: *Test item:*	Digital Wireless Stereo Headphones			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	RB-HJ800			
Auftrags-Inhalt: *Order content:*	Test Report for FCC SAR			
Prüfgrundlage: *Test specification:*	FCC 47 CFR §2.1093 IEEE Std 1528-2013 IEC/IEEE 62209-1528:2020 Published RF exposure KDB procedures			
Wareneingangsdatum: *Date of sample receipt:*	2026-08-21			
Prüfmuster-Nr.: *Test sample no:*	A004371329-001			
Prüfzeitraum: *Testing period:*	2026-09-02			
Ort der Prüfung: *Place of testing:*	TÜV Rheinland Taiwan Ltd. New Taipei Branch			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland Taiwan Ltd. Taipei Testing Laboratories			
Prüfergebnis*: *Test result*:*	Pass			

überprüft von: *compiled by:*		**genehmigt von:** authorized by:	
Datum: *Date:* 2026-09-14	Ryan Chen	**Ausstellungsdatum:** *Issue date:* 2026-09-14	Flight Hsieh
Stellung / *Position:*	Senior Project Manager	**Stellung** / *Position:*	Project Engineer

Sonstiges / *Other:*

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

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

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.

Anmerkungen
Remarks

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CONTENTS

HISTORY OF THIS TEST REPORT **5**

1. GENERAL INFORMATION **6**

1.1 STATEMENT OF COMPLIANCE 6
1.2 EQUIPMENT UNDER TEST (EUT) INFORMATION 7
1.2.1 GENERAL INFORMATION 7
1.2.2 WIRELESS TECHNOLOGIES 7
1.3 MAXIMUM CONDUCTED POWER 8

2. TEST SITES **9**

2.1 TEST LABORATORY 9
2.2 TEST FACILITIES 9
2.3 LIST OF TEST AND MEASUREMENT INSTRUMENTS 10

3. MEASUREMENT UNCERTAINTY **11**

4. TEST SPECIFICATION, METHODS AND PROCEDURES **13**

5. RF EXPOSURE LIMITS **14**

5.1 UNCONTROLLED ENVIRONMENT 14
5.2 CONTROLLED ENVIRONMENT 14

6. SAR MEASUREMENT SYSTEM **15**

6.1 DEFINITION OF SPECIFIC ABSORPTION RATE (SAR) 15
6.2 SPEAG DASY SYSTEM 15
6.2.1 ROBOT 16
6.2.2 PROBES 17
6.2.3 DATA ACQUISITION ELECTRONICS (DAE) 17
6.2.4 PHANTOMS 18
6.2.5 DEVICE HOLDER 19
6.2.6 SYSTEM VALIDATION DIPOLES 19
6.2.7 TISSUE SIMULATING LIQUIDS 20

7. SAR MEASUREMENT PROCEDURE **22**

7.1 AREA & ZOOM SCAN PROCEDURE 22
7.2 VOLUME SCAN PROCEDURE 22
7.3 POWER DRIFT MONITORING 23
7.4 SPATIAL PEAK SAR EVALUATION 23
7.5 SAR AVERAGED METHODS 23

8. SAR MEASUREMENT EVALUATION **24**

8.1 TECHNICAL SPECIFICATION 24
8.2 EUT TESTING POSITION 25
8.2.1 HEAD EXPOSURE CONDITIONS 25
8.3 ANTENNA LOCATION 25

8.4 SIMULTANEOUS TRANSMISSION POSSIBILITIES 25
8.5 TISSUE VERIFICATION 26
8.6 SYSTEM VALIDATION.....27
8.6.1 SYSTEM CHECK PROCEDURE.....27
8.6.2 SYSTEM VERIFICATION 28
8.7 MAXIMUM OUTPUT POWER.....29
8.7.1 MEASURED CONDUCTED POWER RESULT 29
8.8 SAR TESTING RESULTS.....30
8.8.1 SAR TEST REDUCTION CONSIDERATIONS 30
8.8.2 SAR RESULTS FOR HEAD EXPOSURE CONDITION (SEPARATION DISTANCE IS 0CM GAP)..30
8.8.3 SAR MEASUREMENT VARIABILITY.....30
9. APPENDIXES 31

APPENDIX A – SAR PLOTS OF SYSTEM VERIFICATION
APPENDIX B – SAR PLOTS OF SAR MEASUREMENT
APPENDIX C – CALIBRATION CERTIFICATE FOR PROBE AND DIPOLE
APPENDIX D – PHOTOGRAPHS OF THE TEST SET-UP

HISTORY OF THIS TEST REPORT

Revision	Description	Date Issued
R01	Original Release	2026-09-14

1. General Information

1.1 Statement of Compliance

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

Equipment Class	Operating Mode	Highest Head SAR_{1g} (W/kg)
DSS	Bluetooth	0.112

Note:
This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue; 10-gram SAR for Product Specific 10g SAR, limit: 4.0W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

1.2 Equipment Under Test (EUT) Information

1.2.1 General Information

EUT Type	Digital Wireless Stereo Headphones
Model Name	RB-HJ800
FCC ID	ACJ-RB-HJ800
Antenna Type	Meander Line PCB Antenna
Antenna Gain	-4.76 dBi

1.2.2 Wireless Technologies

Tx Frequency Bands (Unit: MHz)	Bluetooth: 2400 MHz ~ 2483.5 MHz
Uplink Modulations	Bluetooth: GFSK/π/4 QPSK/8 DPSK Bluetooth LE: GFSK

1.3 Maximum Conducted Power

The maximum conducted average power (Unit: dBm) including tune-up tolerance is shown as below.

Mode	2.4G Bluetooth
GFSK	10.5
π/4-DQPSK	8.0
8DPSK	8.5
LE	1.0

2. Test Sites

2.1 Test Laboratory

TÜV Rheinland Taiwan Ltd. Taipei Testing Laboratories

11F., No. 758, Sec. 4, Bade Rd., Songshan Dist., Taipei City 105 Taiwan (R.O.C.)

2.2 Test Facilities

TÜV Rheinland Taiwan Ltd. Taipei Testing Laboratories

No. 458-18, 458-19, Sec. 2, Fenliao Rd., Linkou Dist., New Taipei City 244 Taiwan (R.O.C.)

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

FCC Registration No.: 180491 (TW3567)

ISED Registration No.: 25563 (TW3567)

2.3 List of Test and Measurement Instruments

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
E-field probes	SPEAG	EX3DV4	7400	2026/4/23	1 Year
Data Acquisition Electronics	SPEAG	DAE4	855	2026/4/20	1 Year
System Validation Dipole	SPEAG	D2450V2	804	2026/3/10	1 Year
Dielectric Assessment Kit	SPEAG	DAK-3.5	1292	2026/4/21	1 Year
ENA	Agilent	E5080A	MY55200677	2026/1/15	1 Year
Power Meter	Anritsu	ML2495A	1901008	2026/2/24	1 Year
Power Sensor	Anritsu	MA2411B	1725269	2026/2/24	1 Year
Power Sensor	R&S	NRP33S	101622	2026/3/18	1 Year
Power Sensor	R&S	NRP33S	101623	2026/3/11	1 Year
Signal Analyzer	R&S	FSV40	101512	2026/2/24	1 Year
Signal Generator	R&S	SMB100A03	181334	2026/2/3	1 Year
Digital Thermometer	Testo	608-H1	45197174	2025/11/21	1 Year
Directional coupler	Fairview Microwave	FMCP1025-20	A000553136-001	N/A	N/A
Power Amplifier	EMCI	EMC2830P	980352	N/A	N/A
Power Amplifier	mini-circuits	ZHL-42W	SN002101809	N/A	N/A
Twin Sam Phantom	SPEAG	QD000P40CD	TP-1806	N/A	N/A

3. Measurement Uncertainty

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor(a)	1/k(b)	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity
(b) κ is the coverage factor

Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

SAR Uncertainty Budget According to IEC/IEEE 62209-1528 (Frequency band: 4MHz - 10GHz range)								
Symbol	Input quantity *Xi* (source of uncertainty)	Unc. Value	Prob. Dist.	Div.	ci (1g)	ci (10g)	Std.Unc. (1g) (±%)	Std.Unc. (10g) (±%)
Measurement system errors								
CF	Probe calibration (±%)	9.3	N	2	1	1	4.65	4.65
CF_{drift}	Probe calibration drift (±%)	1.0	N	1	1	1	1.0	1.0
LIN	Probe linearity and detection limit (±%)	4.7	R	1.732	1	1	2.7	2.7
BBS	Broadband signal (±%)	3.0	N	1	1	1	3.0	3.0
ISO	Probe isotropy (±%)	7.6	R	2	1	1	3.8	3.8
DAE	Other probe and data acquisition errors (±%)	0.3	N	1.732	1	1	0.17	0.17
AMB	RF ambient and noise (±%)	1.8	N	1	1	1	1.8	1.8
Δ_{xyz}	Probe positioning errors (± mm)	0.20	N	1	0.33	0.33	0.07	0.07
DAT	Data processing errors (±%)	3.5	N	1	1	1	3.5	3.5
Phantom and device (DUT or validation antenna) errors								
LIQ(σ)	Conductivity (meas.) DAK (±%)	3.5	N	1	0.78	0.71	2.73	2.49
LIQ(*T*c)	Conductivity (temp.)(±%)	3	R	1	0.78	0.71	1.35	1.23
EPS	Phantom Permittivity (±%)	14	R	1.732	0.5	0.5	4.0	4.0
DIS	Distance DUT – TSL (±%)	2	N	1	2	2	4.0	4.0
D_{xyz}	Device Positioning (±%)	2	N	1	1	1	2.2	2.2
H	Device Holder (±%)	3.4	N	1	1	1	3.2	3.2
MOD	DUT Modulation (±%)	2.4	R	1.732	1	1	1.39	1.39
TAS	Time-average SAR (±%)	2.4	R	1.732	1	1	1.39	1.39
RF_{drift}	DUT drift (±%)	5	N	1	1	1	5.0	5.0
VAL	Val Antenna Unc. (±%)	0	N	1	1	1	0.0	0.0
*P*in	Unc. Input Power (±%)	0	N	1	1	1	0.0	0.0
Corrections to the SAR result								
C(ε',σ)	Deviation to Target (±%)	1.9	N	1	1	0.84	1.9	1.6
C(*R*)	SAR scaling (±%)	0	R	√3	1	1	0.0	0.0
u(Δ*SAR*)	Combined uncertainty						12.57	12.47
	Coverage Factor for 95%						K=2	K=2
U	Expanded uncertainty					U =	±25.14	±24.94

Uncertainty budget for frequency range 4 MHz to 10 GHz

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

4. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR §2.1093, IEEE STD 1528-2013, the following FCC Published RF exposure KDB procedures & manufacturer KDB inquiries:

- KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- KDB 865664 D02 RF Exposure Reporting v01r02
- KDB 447498 D04 Interim General RF Exposure Guidance v01

5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is average over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. SAR Measurement System

6.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

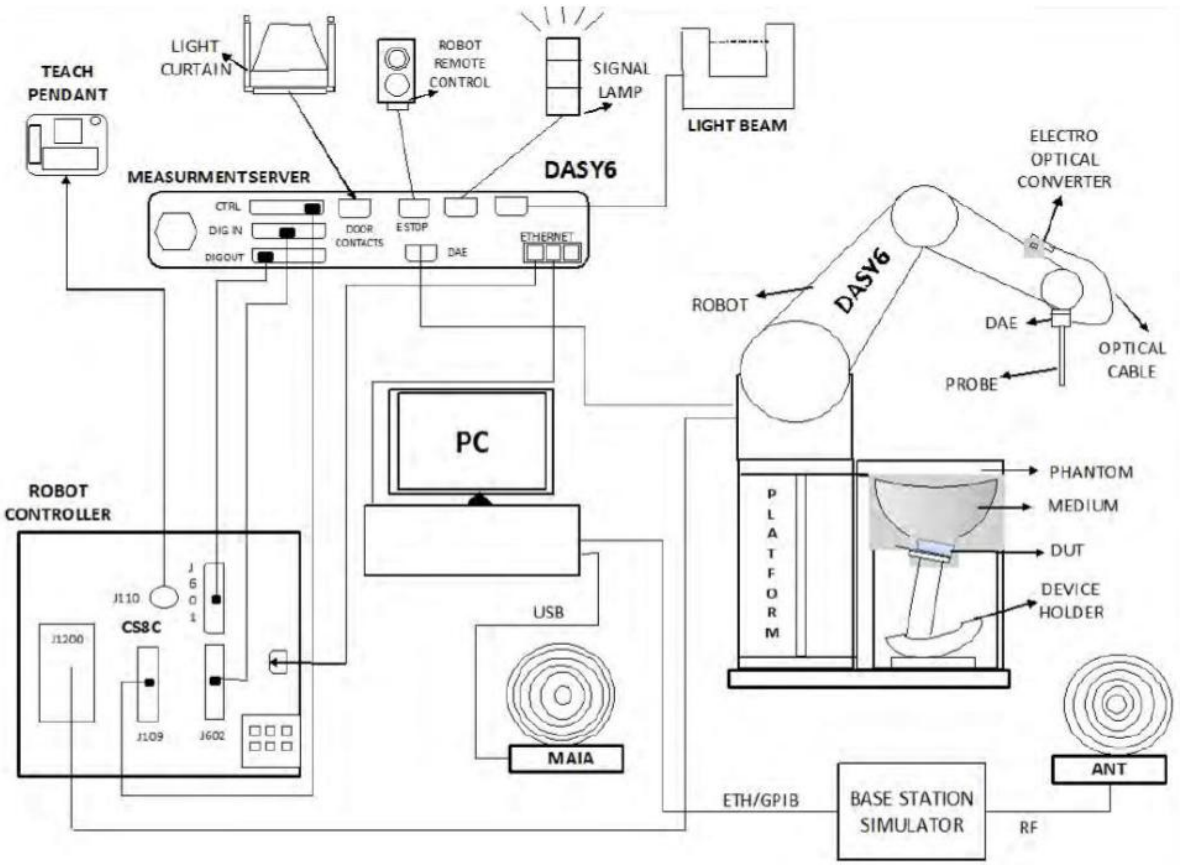
SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be related to the electrical field in the tissue by

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

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

6.2 SPEAG DASY System

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY6 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.



DASY System Setup

6.2.1 Robot

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

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

DASY6

6.2.2 Probes

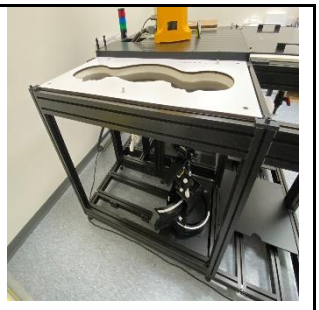
The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

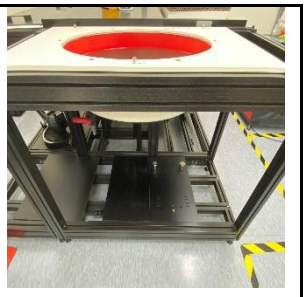
Model	EX3DV4	
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB	
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (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	

6.2.3 Data Acquisition Electronics (DAE)

Model	DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)	
Input Offset Voltage	< 5µV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

6.2.4 Phantoms

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

Model	ELI	
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. ELI is fully compatible with the IEC/IEEE 62209-1528 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2.0 ± 0.2 mm (bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	approx. 30 liters	

6.2.5 Device Holder

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

Model	Laptop Extensions Kit	
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC/IEEE 62209-1528 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.	
Material	POM, Acrylic glass, Foam	

6.2.6 System Validation Dipoles

Model	D-Serial	
Construction	Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.	
Frequency	300 MHz to 10 GHz	
Return Loss	> 20 dB	
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)	

6.2.7 Tissue Simulating Liquids

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

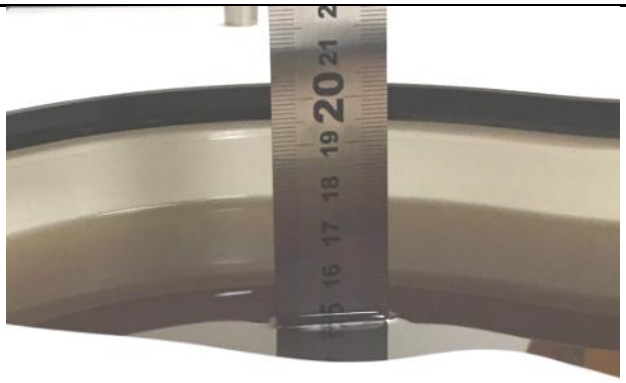


Photo of Liquid Height for Head Position

The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528 Appendix A.
The workshop effective February 19, 2019, FCC has permitted the use of single head tissue simulating liquid specified in IEC 62209 1 for all SAR tests.
The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of ±5%	Target Conductivity	Range of ±5%
For Head				
4	55	52.3 ~ 57.8	0.75	0.71 ~ 0.79
13	55	52.3 ~ 57.8	0.75	0.71 ~ 0.79
30	55	52.3 ~ 57.8	0.75	0.71 ~ 0.79
150	52.3	49.7 ~ 54.9	0.76	0.72 ~ 0.80
300	45.3	43.0 ~ 47.6	0.87	0.83 ~ 0.91
450	43.5	41.3 ~ 45.7	0.87	0.83 ~ 0.91
750	41.9	39.8 ~ 44.0	0.89	0.85 ~ 0.93
835	41.5	39.4 ~ 43.6	0.90	0.86 ~ 0.95
900	41.5	39.4 ~ 43.6	0.97	0.92 ~ 1.02
1450	40.5	38.5 ~ 42.5	1.20	1.14 ~ 1.26
1800	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
1900	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
1950	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2000	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2100	39.8	37.5 ~ 41.5	1.49	1.42 ~ 1.56
2450	39.2	37.2 ~ 41.2	1.80	1.71 ~ 1.89
2600	39.0	37.1 ~ 41.0	1.96	1.86 ~ 2.06
3000	38.5	36.6 ~ 40.4	2.40	2.28 ~ 2.52
3500	37.9	36.0 ~ 39.8	2.91	2.76 ~ 3.06
4000	37.4	35.5 ~ 39.3	3.43	3.26 ~ 3.60
4500	36.8	35.0 ~ 38.6	3.94	3.74 ~ 4.14
5000	36.2	34.4 ~ 38.0	4.45	4.23 ~ 4.67
5200	36.0	34.2 ~ 37.8	4.66	4.43 ~ 4.89
5400	35.8	34.0 ~ 37.6	4.86	4.62 ~ 5.10
5600	35.5	33.7 ~ 37.3	5.07	4.82 ~ 5.32
5800	35.3	33.5 ~ 37.1	5.27	5.01 ~ 5.53
6000	35.1	33.3 ~ 36.9	5.48	5.21 ~ 5.75
6500	34.5	32.8 ~ 36.2	6.07	5.77 ~ 6.37
7000	33.9	32.2 ~ 35.6	6.65	6.32 ~ 6.98
7500	33.3	31.6 ~ 35	7.24	6.88 ~ 7.6
8000	32.7	31.1 ~ 34.3	7.84	7.45 ~ 8.23
8500	32.1	30.5 ~ 33.7	8.46	8.04 ~ 8.88
9000	31.6	30 ~ 33.2	9.08	8.63 ~ 9.53
9500	31.0	29.5 ~ 32.6	9.71	9.22 ~ 10.2
10000	30.4	28.9 ~ 31.9	10.40	9.88 ~ 10.92

7. SAR Measurement Procedure

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:
(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:
(a) Make EUT to transmit maximum output power
(b) Measure conducted output power through RF cable
(c) Place the EUT in the specific position of phantom
(d) Perform SAR testing steps on the DASY system
(e) Record the SAR value

7.1 Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. According to KDB 865664 D01, the resolution for Area and Zoom scan is specified in the table below.

Items	≤ 2GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan (Δx, Δy)	≦15mm	≦12 mm	≦12 mm	≦10 mm	≦10 mm
Zoom Scan (Δx, Δy)	≦8 mm	≦5 mm	≦5 mm	≦4 mm	≦4 mm
Zoom Scan (Δz)	≦5 mm	≦5 mm	≦4 mm	≦3 mm	≦2 mm
Zoom Scan Volume	≧30 mm	≧30 mm	≧28 mm	≧25 mm	≧22 mm

Note:
When zoom scan is required and report SAR is ≦1.4 W/kg, the zoom scan resolution of Δx / Δy (2-3 GHz): ≦8 mm, 3-4 GHz: ≦7 mm, 4-6 GHz: ≦5 mm) may be applied.

7.2 Volume Scan Procedure

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

7.3 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

7.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

7.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

8. SAR Measurement Evaluation

8.1 Technical Specification

<Considerations Related to Bluetooth for Setup and Testing>

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

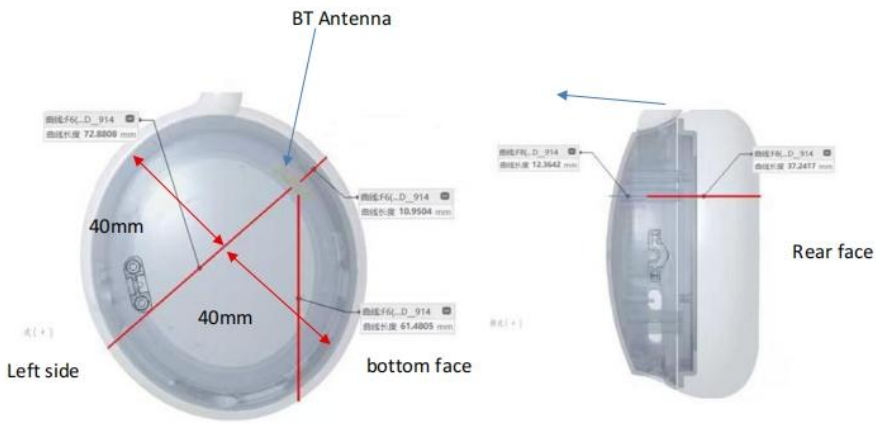
8.2 EUT Testing Position

According to technical standards, handsets are tested for SAR compliance in the use configurations described in the following subsections.

8.2.1 Head Exposure Conditions

The EUT was tested for the surface of earbuds. The separation distance between the EUT and phantom is 0 mm.

8.3 Antenna Location



8.4 Simultaneous Transmission Possibilities

There is no simultaneous transmission configuration in this device.

8.5 Tissue Verification

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectic parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ± 5% of the target values.

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

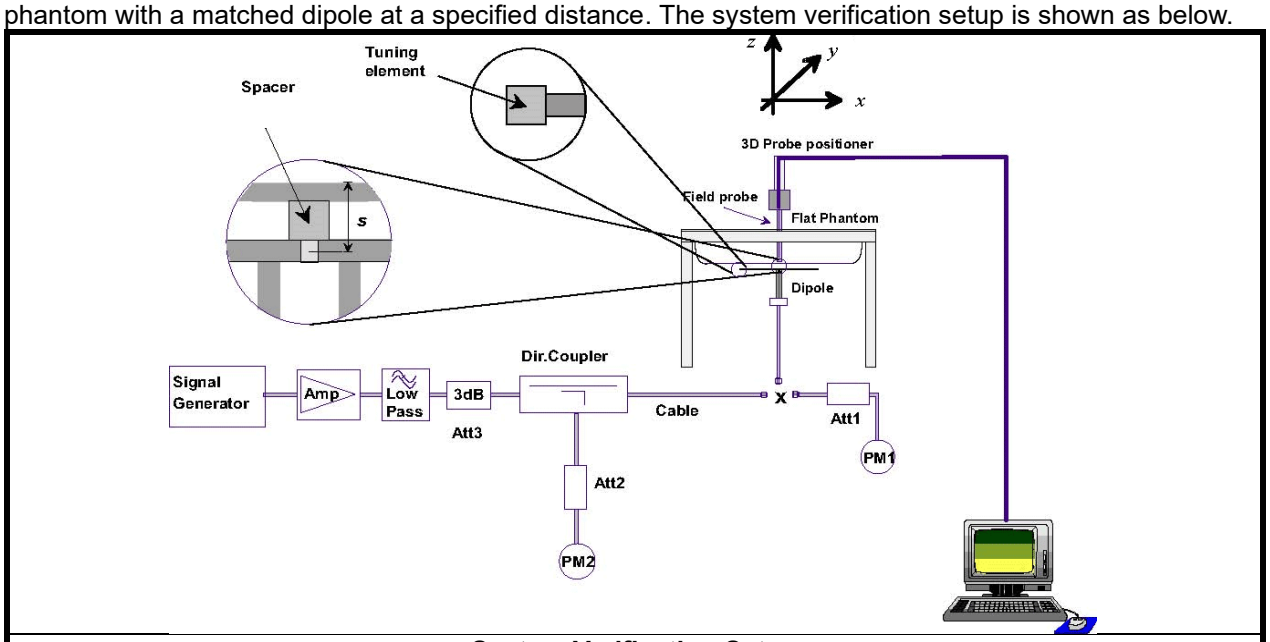
Tissue Type	Frequency (MHz)	Ambient Temp. (℃)	Liquid Temp. (℃)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)	Test Date
Head	2450	23.5	22.4	1.812	39.95	1.8	39.2	0.67	1.91	2026/9/2

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

8.6 System Validation

8.6.1 System check Procedure

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



System Verification Setup

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The spectrum analyzer measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (1W is used for 13MHz, 250 mW is used for 450 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter.

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

8.6.2 System Verification

The measuring results for system check are shown as below.

Frequency (MHz)	Measured SAR 1g(W/kg)	normalized SAR 1g(W/kg)	Targeted SAR 1g(W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
2450	12.500	50	52.6	-4.94	804	7400	855

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

8.7 Maximum Output Power

8.7.1 Measured Conducted Power Result

All Rate have been tested, the Worst average power (Unit: dBm) is shown as below.

<Bluetooth>

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			DH5	2DH5	3DH5
BR / EDR	CH 00	2402	9.47	6.88	8.16
	CH 39	2441	9.92	7.35	6.37
	CH 78	2480	10.37	7.83	6.87
Tune-up Limit			10.50	8.00	8.50

Mode	Channel	Frequency (MHz)	Average power (dBm)
			1Mbps
LE	CH 00	2402	-0.24
	CH 19	2440	-5.30
	CH 39	2480	0.81
Tune-up Limit			1.00

8.8 SAR Testing Results

8.8.1 SAR Test Reduction Considerations

<KDB 447498 D01, General RF Exposure Guidance>

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

(1) ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz

(2) ≤ 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

(3) ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

8.8.2 SAR Results for Head Exposure Condition (Separation Distance is 0cm Gap)

Plot No.	Band	Mode	Test Position	Ch.	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
1	Bluetooth	BR-1DH5	Left ear	78	2480	10.37	10.50	1.030	1.296	0.002	0.003
2	Bluetooth	BR-1DH5	Right ear	78	2480	10.37	10.50	1.030	1.296	0.048	0.064
3	Bluetooth	BR-1DH5	Right ear	0	2402	9.47	10.50	1.268	1.296	0.068	**0.112**
4	Bluetooth	BR-1DH5	Right ear	39	2441	9.92	10.50	1.143	1.296	0.056	0.083

Test Engineer: Apollo Lo

8.8.3 SAR Measurement Variability

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

Since all the measured SAR are less than 0.8 W/kg, the repeated measurement is not required.

9. Appendixes

Appendix A – SAR Plots of System Verification

Appendix B – SAR Plots of SAR Measurement

Appendix C – Calibration Certificate for Probe and Dipole

Appendix D – Photographs of the Test Set-Up

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