

Prüfbericht-Nr.: <i>Test report no.:</i>	CN26ZWAR 001	Auftrags-Nr.: <i>Order no.:</i>	48305795	Seite 1 von 34 Page 1 of 34
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2026-05-22	
Auftraggeber: <i>Client:</i>	Morse Micro Pty. Ltd. Level 8, 10-14 Waterloo Street, Surry Hills, NSW 2010 AUSTRALIA			
Prüfgegenstand: <i>Test item:</i>	HaLow Dongle			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	MM-U0-C, MM-U0-C-XX(X= A-Z, a-z, for market segmentation purpose only)			
Auftrags-Inhalt: <i>Order content:</i>	FCC Certification			
Prüfgrundlage: <i>Test specification:</i>	FCC 47 CFR § 2.1093 IEEE Std 1528-2013 IEC/IEEE 62209-1528:2020 Published RF exposure KDB procedures			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2026-06-01			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A004295373-005			
Prüfzeitraum: <i>Testing period:</i>	2026-07-15 - 2026-07-24			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland Taiwan Ltd. New Taipei Branch			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland Taiwan Ltd. Taipei Testing Laboratories			
Prüfergebnis*: <i>Test result*:</i>	Pass			
zusammengestellt von: <i>compiled by:</i>	 Ryan Chen Senior Project Manager		genehmigt von: <i>authorized by:</i>	 Morrison Huang Project Engineer
Datum: <i>Date:</i>	2026-08-03	Ausstellungsdatum: <i>Issue date:</i>	2026-08-03	
Stellung / Position:		Stellung / Position:		
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
<p>* 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</p> <p>* 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</p>				
<p>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. <i>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.</i></p>				

1	<p>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.</p> <p>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system.</i></p> <p><i>Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p>
2	<p>Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature</p> <p><i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature</i></p>
3	<p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.</p> <p>Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i></p> <p><i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>
4	<p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2023, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>

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	7
2 TEST SITES	8
2.1 TEST LABORATORY	8
2.2 TEST FACILITIES	8
2.3 LIST OF TEST AND MEASUREMENT INSTRUMENTS	9
3 MEASUREMENT UNCERTAINTY	10
4 TEST SPECIFICATION, METHODS AND PROCEDURES	12
5. RF EXPOSURE LIMITS	13
5.1 UNCONTROLLED ENVIRONMENT	13
5.2 CONTROLLED ENVIRONMENT	13
6 SAR MEASUREMENT SYSTEM.....	14
6.1 DEFINITION OF SPECIFIC ABSORPTION RATE (SAR)	14
6.2 SPEAG DASY SYSTEM	14
6.2.1 Robot.....	15
6.2.2 Probes	16
6.2.3 Data Acquisition Electronics (DAE).....	16
6.2.4 Phantoms	17
6.2.5 Device Holder.....	18
6.2.6 System Validation Dipoles	18
6.2.7 Tissue Simulating Liquids	19
7 SAR MEASUREMENT PROCEDURE	21
7.1 AREA & ZOOM SCAN PROCEDURE	21
7.2 VOLUME SCAN PROCEDURE.....	21
7.3 POWER DRIFT MONITORING	22
7.4 SPATIAL PEAK SAR EVALUATION	22
7.5 SAR AVERAGED METHODS.....	22
8 SAR MEASUREMENT EVALUATION	23
8.1 EUT TESTING POSITION	23
8.2.1 Body Exposure Conditions.....	23
8.2 ANTENNA LOCATION	24
8.3 SIMULTANEOUS TRANSMISSION POSSIBILITIES	25
8.4 TISSUE VERIFICATION	26
8.5 SYSTEM VALIDATION.....	27

SYSTEM CHECK PROCEDURE	27
8.6 SYSTEM VERIFICATION.....	28
8.7 DUTY CYCLE FACTOR CALCULATING	29
8.7.1 Scaling Factor	29
8.8 MAXIMUM OUTPUT POWER.....	30
8.8.1 Measured Conducted Power Result	30
8.9 SAR TESTING RESULTS	31
8.9.1 SAR Test Reduction Considerations	31
8.9.2 SAR Results for Body Exposure Condition (Separation Distance is 0.5 cm Gap)	31
8.9.3 SAR Measurement Variability	32
8.9.4 DUT Holder Perturbations.....	33
9. APPENDIXES	34

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

Prüfbericht - Nr.:
Test Report No.

CN26ZWAR 001

Seite 5 von 34
Page 5 of 34

HISTORY OF THIS TEST REPORT

Revision	Description	Date Issued
R01	Original Release	2026-08-03

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:

RF Transmitter	Frequency Band		Highest SAR Summary
			Body (Separation 5mm)
			1g SAR (W/kg)
802.11ah	WIFI HaLow	900MHz	1.575

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.

Prüfbericht - Nr.:
Test Report No.

CN26ZWAR 001

Seite 7 von 34
Page 7 of 34

1.2 Equipment Under Test (EUT) Information

1.2.1 General Information

EUT Type	HaLow Dongle
Model Name	MM-U0-C, MM-U0-C-XX(X= A-Z, a-z, for market segmentation purpose only)
FCC ID	2A74O-737B5B
Antenna Information	Dipole Antenna with 1 dBi (model no. ALA26B-121030-00) Dipole Antenna with 0.9 dBi (model no. AOA26B-021011-00)
Hardware Version	V3.2
Firmware Version	FW 1.15.4

1.2.2 Wireless Technologies

Tx Frequency Bands (Unit: MHz)	902 MHz ~ 928 MHz
Uplink Modulations	OFDM

1.3 Maximum Conducted Power

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

Mode	900 MHz
WIFI HaLow	25.10

2. Test Sites

2.1 Test Laboratory

Taipei Testing Laboratories

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

2.2 Test Facilities

Taipei Testing Laboratories

No.458-18, 458-19, Sec. 2, Fenliao Rd., Linkou Dist.,

New Taipei City 244

Taiwan (R.O.C.)

FCC Registration No.: 180491 (TW3567)

ISED Registration No.: 25563 (TW3567)

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

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	D900V2	1d062	2026/3/16	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
Signal Generator	R&S	SMB100A03	263681	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
ELI Phantom	SPEAG	QDOVA002AA	TP-1153	N/A	N/A

3. Measurement Uncertainty

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A 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.

Uncertainty budget for frequency range 4 MHz to 10 GHz

SAR Uncertainty Budget According to IEC/IEEE 62209-1528 (Frequency band: 4MHz - 10GHz range)								
Symbol	Input quantity X_i (source of uncertainty)	Unc. Value	Prob. Dist.	Div.	ci (1g)	ci (10g)	Std.Unc. (1g) (±%)	Std.Unc. (10g) (±%)
Measurement system errors								
CF	Probe calibration(±%) (K=1)	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								
$LIQ(\sigma)$	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 Modulationm(±%)	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								
$C(e', \sigma)$	Deviation to Target(±%)	1.9	N	1	1	0.84	1.9	1.6
$C(R)$	SAR scaling(±%)	0	R	$\sqrt{3}$	1	1	0.0	0.0
$u(\Delta SAR)$	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 Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB, IEC/IEEE.

- KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- KDB 865664 D02 RF Exposure Reporting v01r02
- KDB 447498 D02 SAR Procedures for Dongle Xmtr v02r01
- KDB 447498 D04 Interim General RF Exposure Guidance v01

In addition to the above, the following information was used:

- [TCB workshop](#) October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- [TCB workshop](#) October, 2014; Page 37, LTE Considerations (LTE Band 41 Test Channels)

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:

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

SAR is expressed in units of Watts per kilogram (W/kg)

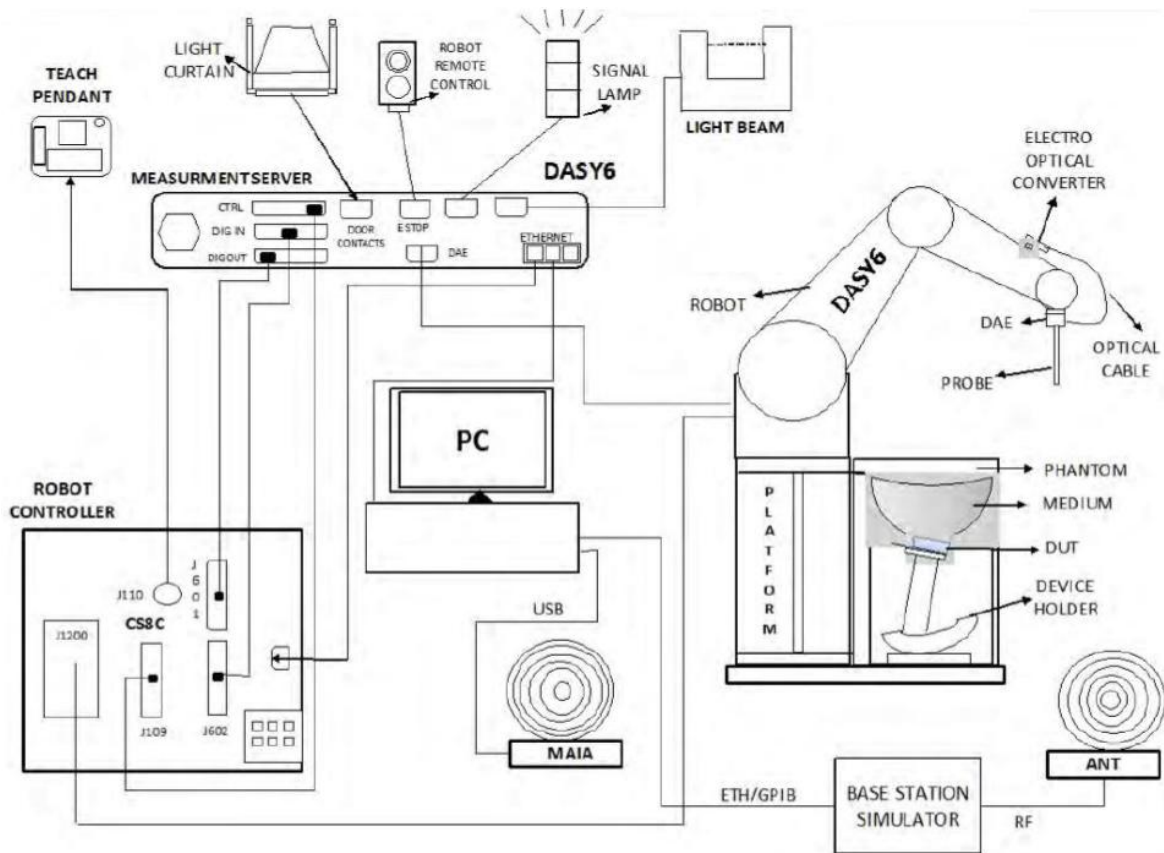
SAR measurement can be related to the electrical field in the tissue by

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

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 from 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 (DASY6: 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.

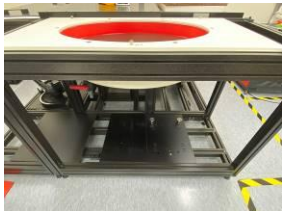
Model	EX3DV4	
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB	
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μ W/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/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	$< 5\mu$ V (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	

Prüfbericht - Nr.:
Test Report No.

CN26ZWAR 001

Seite 18 von 34
Page 18 of 34

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 1/4 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 ($f < 1\text{GHz}$), > 40 W ($f > 1\text{GHz}$)	

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.

Prüfbericht - Nr.:
Test Report No.

CN26ZWAR 001

Seite 20 von 34
Page 20 of 34

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:

- Power reference measurement
- Area scan
- Zoom scan
- Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:

- Make EUT to transmit maximum output power
- Measure conducted output power through RF cable
- Place the EUT in the specific position of phantom
- Perform SAR testing steps on the DASY system
- 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	<= 2 GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan ($\Delta x, \Delta y$)	<= 15 mm	<= 12 mm	<= 12 mm	<= 10 mm	<= 10 mm
Zoom Scan ($\Delta x, \Delta y$)	<= 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 $\Delta x / \Delta y$ (2-3GHz: <= 8 mm, 3-4GHz: <= 7 mm, 4-6GHz: <= 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 from 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 EUT Testing Position

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

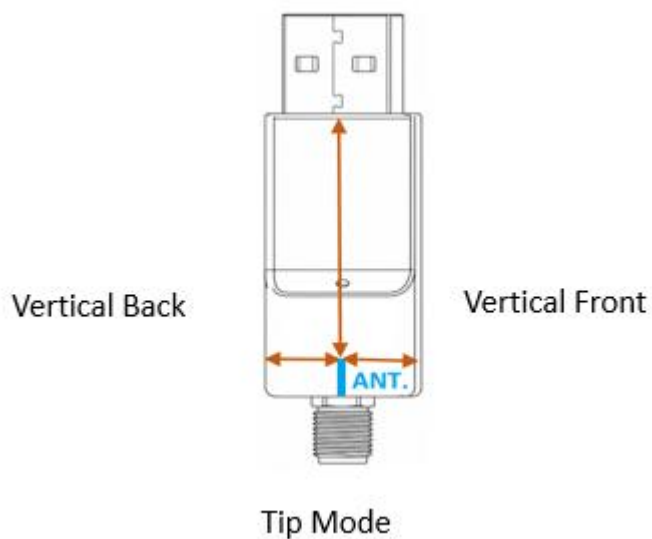
8.2.1 Body Exposure Conditions

For USB dongle transmitter, according to KDB 447498 D02, SAR evaluation is required for all USB orientations illustrated as below with a device-to-phantom separation distance of 5 mm or less. The typical Horizontal-Up USB connection, found in the majority of host computers, must be tested using an appropriate host computer. A host computer with either Vertical-Front or Vertical-Back USB connection should be used to test one of the vertical USB orientations. If a suitable host computer is not available for testing the Horizontal-Down or the remaining Vertical USB orientation, a high quality USB cable, 12 inches or less, may be used for testing these other orientations.

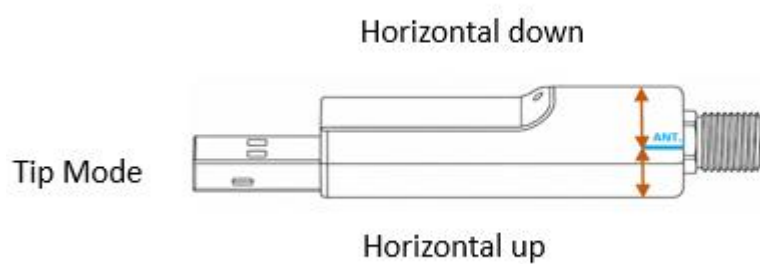
			
USB Orientation 1 (Horizontal-Up)	USB Orientation 2 (Horizontal-Down)	USB Orientation 3 (Vertical-Front)	USB Orientation 4 (Vertical-Back)

Illustration for USB Connector Orientations

8.2 Antenna Location



To Tip Mode	To Vertical Back	To Vertical Front
(mm)	(mm)	(mm)
20.90	8.00	8.00



To Horizontal down	To Horizontal up
(mm)	(mm)
5.53	6.57

8.3 Simultaneous Transmission Possibilities

There is no simultaneous transmission configuration in this device.

8.4 Tissue Verification

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

The following materials are used for producing the tissue-equivalent materials.

Recipes of Tissue Simulating Liquid

Tissue Type	Oxidized mineral oil	Tween20	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	44	-	0.2	-	56.0	-	42.1	-
H835	44	48.4	0.2	1.3	57.0	-	41.1	-
H900	44	48.4	0.2	1.4	58.0	-	40.2	-
H1450	44	-	-	0.6	-	-	56.1	-
H1640	44	-	-	0.5	-	-	53.7	-
H1750	44	45.3	-	0.4	-	-	52.6	-
H1800	44	45.3	-	0.5	-	-	55.2	-
H1900	44	45.3	-	0.2	-	-	55.3	-
H2000	44	45.3	-	0.1	-	-	55.4	-
H2300	44	-	-	0.1	-	-	55.0	-
H2450	44	-	-	0.1	-	-	54.9	-
H2600	44	-	-	0.1	-	-	54.8	-
H3500	44	-	-	0.2	-	20.0	71.8	-
H4000	44	-	-	-	-	-	56.0	-
H5G	44	-	-	-	-	17.2	65.5	17.2
H6G	44	-	-	-	-	-	56.0	-

Salt: 99+% Pure Sodium Chloride; Sugar: 98+% Pure Sucrose; Water: De-ionized, 16M +resistivity

HEC: Hydroxyethyl Cellulose; Sorbitan monolaurate (Tween 20); Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]; Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether.

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

Test Date	Tissue Type	Frequency (MHz)	Measured Conductivity (σ)	Measured Permittivity (ϵ_r)	Target Conductivity (σ)	Target Permittivity (ϵ_r)	Conductivity Deviation (%)	Permittivity Deviation (%)
2026/07/15	Head	900	0.966	42.823	0.97	41.5	-0.41	3.19
2026/07/24	Head	900	0.965	42.818	0.97	41.5	-0.52	3.18

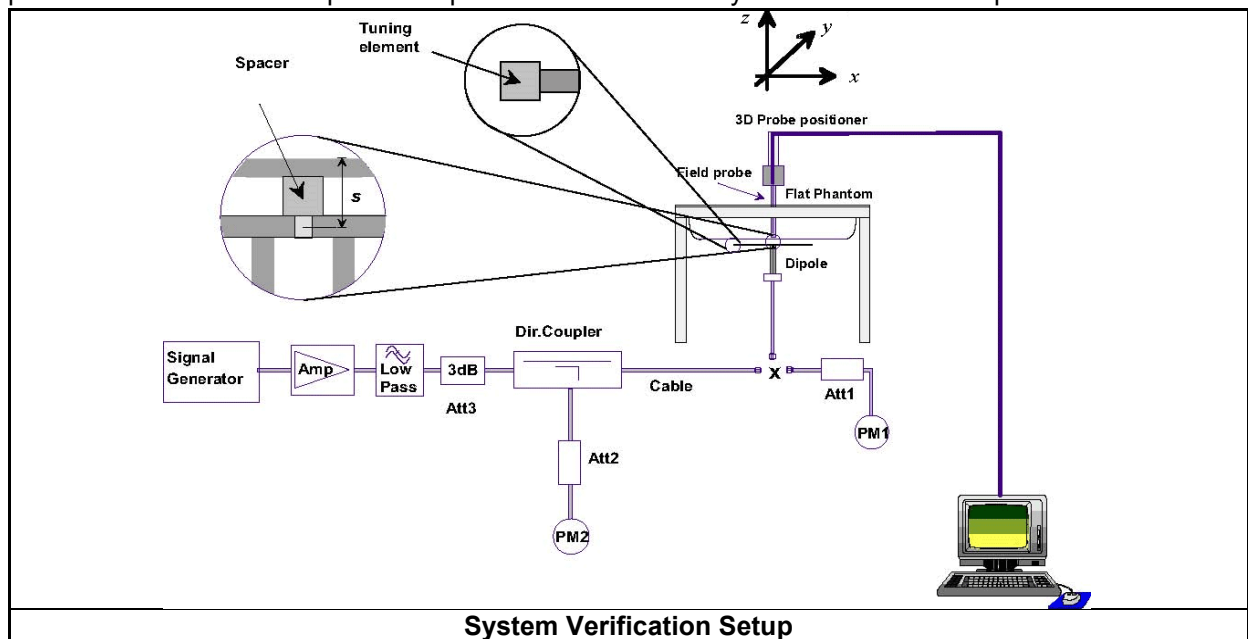
Note:

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within $\pm 5\%$ of the target values. Liquid temperature during the SAR testing must be within $\pm 2^\circ\text{C}$.

8.5 System Validation

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.



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 System Verification

The measuring result for system verification is tabulated as below.

Test Date	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
2026/07/15	900	11.1	2.68	10.72	-3.42	1d062	7400	855
2026/07/24	900	11.1	2.64	10.56	-4.86	1d062	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 Duty Cycle Factor Calculating

Here is the mathematical formula for calculating the Duty Factor (DF), which is commonly used in SAR testing:

Duty Factor Formula:

$$\text{Duty Factor (DF)} = \frac{T_{\text{on}}}{T_{\text{period}}} \times 100\%$$

For technologies capable of continuous transmission (e.g., Wi-Fi, LTE FDD), the benchmark assessment is standardized at a 100% transmission duty cycle. When a Device Under Test (DUT) cannot sustain absolute 100% emission during laboratory testing, a mathematical Scaling Factor must be applied to linearly extrapolate the measured SAR data to the 100% target baseline.

8.7.1 Scaling Factor

$$\text{Scaling Factor}_{\text{Duty Cycle}} = \frac{\text{Target Duty Cycle (\%)}}{\text{Measured Duty Cycle (\%)}} = \frac{100\%}{\text{Measured Duty Cycle (\%)}}$$

Mathematical Formulation	
Scaling Factor (Duty Cycle) = Target Duty Cycle (%) / Measured Duty Cycle (%)	
Scaling Factor = 100% / Measured Duty Cycle (%)	100(%) / 98(%)=1.019dB

8.8 Maximum Output Power

8.8.1 Measured Conducted Power Result

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

802.11ah					
902-928MHz	Mode	Channel	Frequency (MHz)	AVG Power (dBm)	AVG Tune-up (dBm)
	802.11ah OFDM 1Mbps	3	903.5	25.06	25.50
		25	914.5	25.08	25.50
		49	926.5	25.10	25.50
	802.11ah OFDM 2Mbps	2	903	7.95	8.00
		26	915	24.51	25.00
		50	927	6.49	6.50
	802.11ah OFDM 4Mbps	8	906	22.41	22.50
		32	918	22.45	22.50
		48	926	21.71	22.00
	802.11ah OFDM 8Mbps	12	908	21.63	22.00
		28	916	20.57	21.00
		44	924	19.91	20.00

1. SAR testing was performed on the maximum frame-averaged power mode.
2. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:
Frame-averaged power = $10 \times \log (\text{Burst-averaged power mW} \times \text{Slot used} / 8)$

8.9 SAR Testing Results

8.9.1 SAR Test Reduction Considerations

<KDB 447498 D04 Interim General RF Exposure Guidance v01>

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

8.9.2 SAR Results for Body Exposure Condition (Separation Distance is 0.5 cm Gap)

Antenna Model	Antenna Dgress	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	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
ALA26B-121030-00	0	1	802.11ah	1Mbps	Horizontal Up	49	926.5	25.10	25.50	1.096	1.019	0.09	1.240	1.385
	0		802.11ah	1Mbps	Horizontal Down	49	926.5	25.10	25.50	1.096	1.019	-0.09	1.190	1.330
	0		802.11ah	1Mbps	Vertical Front	49	926.5	25.10	25.50	1.096	1.019	0.08	0.878	0.981
	0		802.11ah	1Mbps	Vertical Back	49	926.5	25.10	25.50	1.096	1.019	0.05	0.904	1.010
	90		802.11ah	1Mbps	Horizontal Up	49	926.5	25.10	25.50	1.096	1.019	0.03	0.418	0.467
	90		802.11ah	1Mbps	Horizontal Down	49	926.5	25.10	25.50	1.096	1.019	-0.01	0.437	0.488
	90		802.11ah	1Mbps	Vertical Front	49	926.5	25.10	25.50	1.096	1.019	-0.15	0.547	0.611
	90		802.11ah	1Mbps	Vertical Back	49	926.5	25.10	25.50	1.096	1.019	0.09	0.539	0.602
	0		802.11ah	1Mbps	Horizontal Up	3	903.5	25.06	25.50	1.107	1.019	0.11	1.090	1.229
	0		802.11ah	1Mbps	Horizontal Up	25	914.5	25.08	25.50	1.102	1.019	0.07	1.080	1.212
AOA26B-021011-00	0	11	802.11ah	1Mbps	Horizontal Up	49	926.5	25.10	25.50	1.096	1.019	-0.05	1.410	1.575
	0		802.11ah	1Mbps	Horizontal Down	49	926.5	25.10	25.50	1.096	1.019	-0.05	1.290	1.441
	0		802.11ah	1Mbps	Vertical Front	49	926.5	25.10	25.50	1.096	1.019	0.07	1.310	1.464
	0		802.11ah	1Mbps	Vertical Back	49	926.5	25.10	25.50	1.096	1.019	0.03	1.340	1.497
	90		802.11ah	1Mbps	Horizontal Up	49	926.5	25.10	25.50	1.096	1.019	-0.11	0.931	1.040
	90		802.11ah	1Mbps	Horizontal Down	49	926.5	25.10	25.50	1.096	1.019	-0.06	0.862	0.963
	90		802.11ah	1Mbps	Vertical Front	49	926.5	25.10	25.50	1.096	1.019	-0.02	0.990	1.106
	90		802.11ah	1Mbps	Vertical Back	49	926.5	25.10	25.50	1.096	1.019	0.06	0.724	0.809
	0		802.11ah	1Mbps	Horizontal Up	3	903.5	25.06	25.50	1.107	1.019	0.08	1.230	1.387
	0		802.11ah	1Mbps	Horizontal Up	25	914.5	25.08	25.50	1.102	1.019	0.16	1.250	1.403

Note: "<0.01" means the SAR value is too low to be measured.

8.9.3 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.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3. 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, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 , and the original, first or second repeated measurement is ≥ 1.5 W/kg, perform a third repeated measurement.

Antenna Model	Antenna Dgress	Plot No.	Band	Mode	Test Position	Ch.	Frequency (MHz)	Original Measured SAR-1g (W/kg)	1st Repeated SAR-1g (W/kg)	L/S Ratio	2nd Repeated SAR-1g (W/kg)	L/S Ratio	3rd Repeated SAR-1g (W/kg)	L/S Ratio
ALA26B-121030-00	0	1	802.11ah	1Mbps	Horizontal Up	49	926.5	1.24	-	-	-	-	-	-
	0	37	802.11ah	1Mbps	Horizontal Up	49	926.5	-	1.21	1.02	-	-	-	-
AOA26B-021011-00	0	11	802.11ah	1Mbps	Horizontal Up	49	926.5	1.41	-	-	-	-	-	-
	0	38	802.11ah	1Mbps	Horizontal Up	49	926.5	-	1.36	1.04	-	-	-	-

8.9.4 DUT Holder Perturbations

Depending on antenna locations, buttons locations on phones or device, form factor (e.g. dongles etc.), the measured SAR could be influenced by the relative positions of the test device and its holder.

When the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification is required, using the highest SAR configuration among all applicable frequency bands with and without the device holder.

All the measured SAR are less than 1.2 W/kg, so the holder perturbation verification is required.

Holder Perturbation Verification Data					
Measurement Metric	With Holder (Measure Maximum SAR)	Without Holder (Measure Maximum SAR)	Absolute Delta (Δ)	Acceptance Limit	Verdict
1g SAR (W/kg)	1.41	1.39	-0.014%	< 5% or per KDB	PASS

9. Appendixes

Refer to separated files for the following appendixes.

- Appendix A. SAR Plots of System Verification
- Appendix B. SAR Plots of SAR Measurement
- Appendix C. Cablibration Certificate for Probe and Dipole
- Appendix D. Photographs of EUT and Setup

---END--