



Test report No:

2680235R.703A

FCC TEST REPORT

Product Name	Cleco Connected Electronic Torque Wrench
Trademark	NA
Model and /or type reference	ETWC25IC-NA, ETWC100IC-NA, ETWC340IC-NA
FCC ID	2BGBLETW01
Applicant's name / address	Apex Tool Group 670 Industrial Drive Lexington, SC 29072, USA
Test method requested, standard	47 CFR FCC Part 2 (Section 2.1093) IEEE Std 1528-2013 ANSI C95.1-2019
Verdict Summary	IN COMPLIANCE
Documented by (name / position & signature)	Tim Cao / Project Manager 
Approved by (name / position & signature)	Frank He / Technical Manager 
Date of issue	2026-10-26
Report Version	V1.0
Report template No	Template_FCC SAR-RF-V1.0



INDEX

	page
General conditions	3
Document History.....	4
Statement of Compliance	5
Used Equipment.....	6
Uncertainty	7
1 General Information	9
2 SAR Measurements System Configuration	13
3 Tissue Simulating Liquid	23
4 System Check	25
5 Description of Test Position	28
6 Test Result	30
7 SAR Validation Data	34
8 SAR Test Data	38
9 Calibration Certificate.....	42
10 Test Setup Photo	43

COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

Test Location	No. 668, Jiangling Nanxiang Road, Wujiang District, Suzhou City, Jiangsu Province, 215200 People's Republic of China
Test Facility	A2LA (Certificate No. 3235.01) CNAS (Certificate No. L5313) FCC - Designation Number: CN1199 Test Firm Registration Number: 566524 ISED - CAB identifier: CN0040 IC#: 4075B
Date (receive sample)	Aug. 08, 2026
Date (start test)	Sep. 02, 2026
Date (finish test)	Sep. 08, 2026

1. The test results presented in this report relate only to the object tested.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
5. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, it is not necessary to account the uncertainty associated with the measurement result.



DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
2680235R.703A	V1.0	Initial issue of report.	2026-10-26

STATEMENT OF COMPLIANCE

The maximum results of Specific Absorption Rate (SAR) found during testing for Cleco Connected Electronic Torque Wrench, are as follows.

Frequency Band	Maximum Reported SAR(W/kg)
	Limbs SAR
WLAN 2.4G	3.467
WLAN 5.2G	1.549
WLAN 5.6G	1.894
WLAN 5.8G	2.254
SAR Limited(W/kg)	4.00

USED EQUIPMENT

SAR Test

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Stäubli Robot TX90L	Stäubli	TX2-90XL	F10/5C90A1/A/01	N/A	N/A
Controller	Stäubli	SP2	D21144508C	N/A	N/A
Dipole Validation Kits	Speag	D2450V2	839	2025.03.18	2028.03.17
Dipole Validation Kits	Speag	D5GHzV2	1078	2025.03.13	2028.03.12
ELI4 Phantom V8.0	Speag	ELI4	TP-2232	N/A	N/A
Device Holder	Speag	SD 000 H01 HA	N/A	N/A	N/A
Data Acquisition Electronic	Speag	DAE4	1854	2026.03.23	2027.03.22
E-Field Probe	Speag	EX3DV4	7761	2026.04.08	2027.04.07
SAR Software	Speag	DASY8	V5.2 Build 162	N/A	N/A
Power Amplifier	MVE	MPC1018.50	C30002D	2025.09.17	2026.09.16
Dual Directional Coupler	woken	0110A05A82Z-20	CMLC66W1A1	2026.03.24	2027.03.23
Tissue fluid test probe	SPEAG	DAK 3.5	1308	N/A	N/A
Vector Network	Agilent	E5071C	MY46108153	2026.03.13	2027.03.12
Signal Generator	R&S	SMBV100A	263697	2026.04.26	2027.04.25
PSG Analog Signal Generator	Agilent	E8257D	MY44321116	2026.04.26	2027.04.25
Power Meter	Keysight	N1912A	MY60300004	2026.03.21	2027.03.20
Temperature/Humidity Meter	Rites	RTS-1909	2980	2026.02.05	2027.02.04
Temperature/Humidity Meter	Rites	RTS-1909	2981	2026.02.05	2027.02.04
Temperature	LKM	DTM3000	3777	2026.05.06	2027.05.05

UNCERTAINTY

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

DASY8 SAR Uncertainty								
Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram / 10 gram.								
Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(vi) v _{eff}
Measurement System								
Probe Calibration	±5.5%	N	1	1	1	±5.5%	±5.5%	∞
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.4%	R	$\sqrt{3}$	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Max. SAR Eval.	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Setup								
Phantom Uncertainty	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Liquid Conductivity (meas.)	±2.5%	N	1	0.78	0.71	±2.0%	±1.8%	∞
Liquid Permittivity (meas.)	±2.5%	N	1	0.26	0.26	±0.6%	±0.7%	∞
Combined Std. Uncertainty						±10.6%	±10.5%	361
Expanded STD Uncertainty						±21.2%	±21.1%	

DASY8 SAR Uncertainty								
Measurement uncertainty for 3 GHz to 6 GHz averaged over 1 gram / 10 gram.								
Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(vi) v _{eff}
Measurement System								
Probe Calibration	±6.65%	N	1	1	1	±6.65%	±6.65%	∞
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±2.0%	R	$\sqrt{3}$	1	1	±1.2%	±1.2%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Probe Positioning	±6.7%	R	$\sqrt{3}$	1	1	±3.9%	±3.9%	∞
Max. SAR Eval.	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Setup								
Phantom Uncertainty	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Liquid Conductivity (meas.)	±2.5%	N	1	0.78	0.71	±2.0%	±1.8%	∞
Liquid Permittivity (meas.)	±2.5%	N	1	0.26	0.26	±0.6%	±0.7%	∞
Combined Std. Uncertainty						±12.0%	±12.0%	784
Expanded STD Uncertainty						±24.0%	±23.9%	

1 GENERAL INFORMATION

Product Name	Cleco Connected Electronic Torque Wrench
Model No.	ETWC25IC-NA, ETWC100IC-NA, ETWC340IC-NA
Trademark.	NA
FCC ID.....	2BGBLETW01
Hardware Version.....	NA
Software Version	NA
Model Differences	Differences of the three models are the torque head dimensions and the length of mechanical part. (The ETWC25IC-NA and ETWC100IC-NA have the same length, though the ETWC100IC-NA is thicker; the ETWC340IC-NA features a longer handle. The ETWC25IC-NA—being the shortest—was selected for primary testing, while the ETWC100IC-NA and ETWC340IC-NA was used to verify the worst-case scenario.)
Manufacturer	Apex Tool Group
Manufacturer Address	670 Industrial Drive Lexington, SC 29072, USA
Factory.....	Jacobs Chuck Manufacturing (Suzhou) Co., Ltd.
Factory Address	No. 26, Baiyu Road, S.I.P. Suzhou, China
Power Supply	3.6 Vdc, EUT is equipped with an adapter to power it via AC/DC.
Wireless specification	802.11b / g / n
Operating frequency	2412~2462MHz
Type of Modulation	DSSS / OFDM
Wireless specification	802.11a / n
Frequency Range	U-NII-1: 5150 MHz to 5250 MHz
	U-NII-2A: 5250 MHz to 5350 MHz
	U-NII-2C: 5470 MHz to 5725 MHz
	U-NII-3: 5725 MHz to 5850 MHz
Channel Bandwidth	802.11a 20 MHz
	802.11n 20 MHz, 40 MHz
Modulation technology	OFDM
Smart System	SISO
Remark: As above information is provided and confirmed by the applicant. DEKRA is not liable to the accuracy, suitability, reliability or/and integrity of the information.	

1.1 DUT Antenna Locations



According to the distance between Wi-Fi antennas and the sides of the EUT we can draw the conclusion that:

EUT Sides for SAR Testing							
Mode	Exposure Condition	Front	Back	Left	Right	Top	Bottom
WLAN Antenna	Product specific 10g SAR	Yes	Yes	Yes	Yes	Yes	Yes

Note:

- 1) When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

1.2 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radio frequency Radiation Exposure Evaluation: Portable Devices
ANSI/IEEE C95.1-2019	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.
IEEE 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
EN IEC/IEEE 62209-1528	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz) (IEC/IEEE 62209-1528)
KDB 447498 D02	The procedures in this attachment are intended for USB dongle transmitters with internal antennas.
--	--

1.3 RF exposure limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimetres of the body of the user.

Limit for General Population/Uncontrolled exposure should be applied for this device; it is 1.6 W/kg as averaged over any 1 gram of tissue.

SAR Exposure Limit		
	General Population / Uncontrolled Exposure ¹ (W/kg)	Occupational / Controlled Exposure ² (W/kg)
Spatial Peak SAR ³ (head or Body)	1.60	8.00
Spatial Peak SAR ⁴ (Whole Body)	0.08	0.40
Spatial Peak SAR ⁵ (Hands / Feet / Ankle / Wrist)	4.00	20.00
Power Density Exposure Limit (1,500 - 100,000 MHz)		
	General Population / Uncontrolled Exposure (mW/cm²) ⁶	Occupational / Controlled Exposure (mW/cm²)
Power Density (S)	1.0	5.0

Notes:

1. **General Population / Uncontrolled Environments** are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.
2. **Occupational / 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).
3. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
4. The Spatial Average value of the SAR averaged over the whole body.
5. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

2 SAR MEASUREMENTS SYSTEM CONFIGURATION

SAR Definition

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 (p). The equation description is as below:

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

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

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

Where:

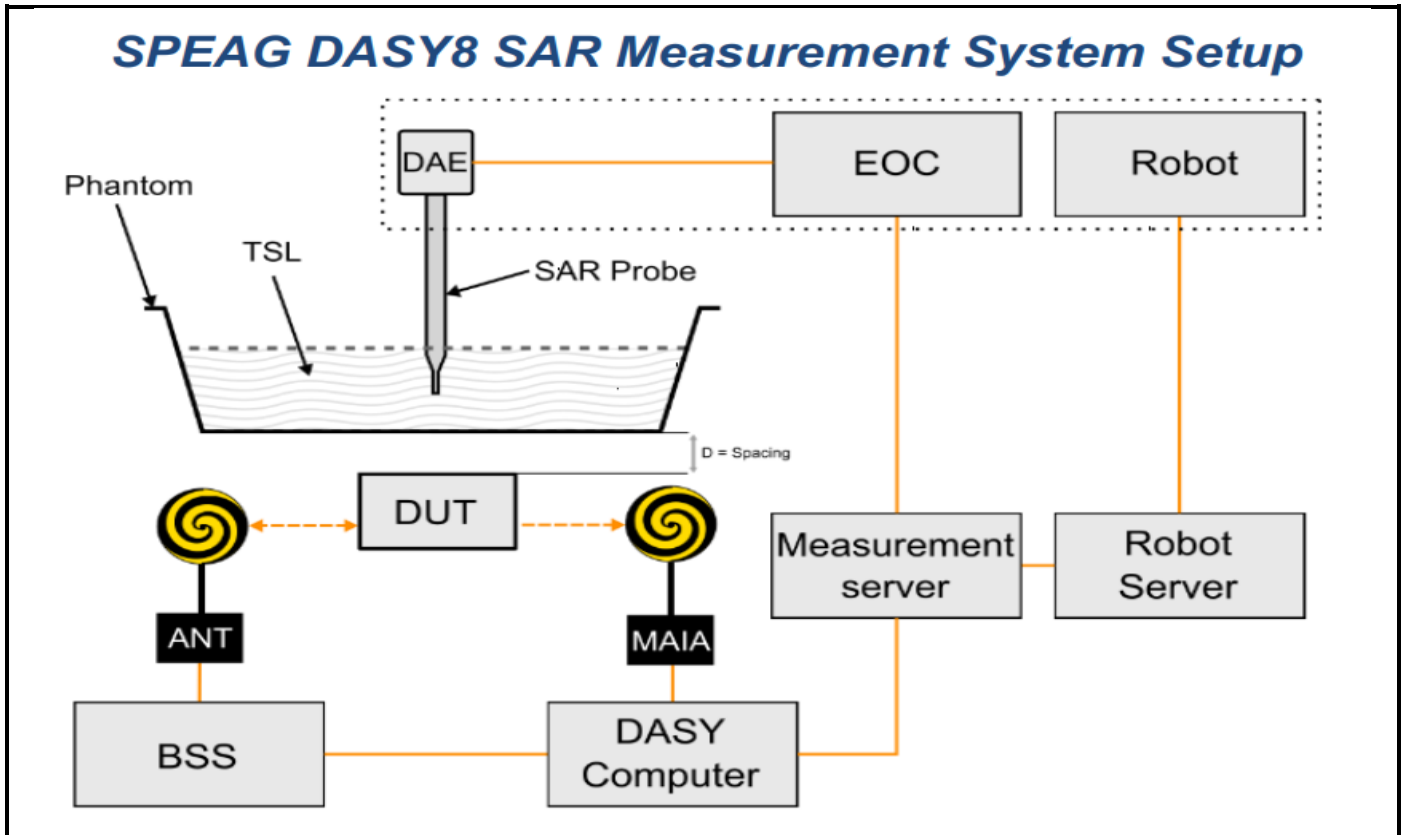
σ = conductivity of the tissue (S/m)

ρ = mass density of the tissue (kg/m³)

E = RMS electric field strength (V/m)

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

2.1 DASY8 SAR System Description



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

1. A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. 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.
3. 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.
4. The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
5. A computer running Windows 11 and the DASY8 software.
6. Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
7. The phantom, the device holder and other accessories according to the targeted measurement.

2.2 Applications

Predefined procedures and evaluations for automated compliance testing with all worldwide standards, e.g., IEC/IEEE 62209-1528 others.

2.3 Area & Zoom Scan Procedures

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 measures points and step size follow as below. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution. The measure settings are referred in IEEE Std 1528-2013.

			≤3GHz	>3GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5±1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30°±1°	20°±1°
Maximum area scan spatial resolution: Δx Area , Δy Area			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3–4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx Zoom , Δy Zoom			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3–4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: Δz Zoom (n)		≤ 5 mm	3–4 GHz: ≤ 4 mm
				4–5 GHz: ≤ 3 mm
				5–6 GHz: ≤ 2 mm
	graded grid	Δz Zoom (1): between 1st two points closest to phantom surface	≤ 4 mm	3–4 GHz: ≤ 3 mm
				4–5 GHz: ≤ 2.5 mm
				5–6 GHz: ≤ 2 mm
	Δz Zoom (n>1): between subsequent points		≤ 1.5·Δz Zoom (n-1)	
Minimum zoom scan volume	x, y, z		≥30 mm	3–4 GHz: ≥ 28 mm
				4–5 GHz: ≥ 25 mm
				5–6 GHz: ≥ 22 mm

Note:

1. δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
2. * When zoom scan is required and the reported SAR from the area scan based 1 g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

2.4 Uncertainty of Inter-/Extrapolation and Averaging

To evaluate the uncertainty of the interpolation, extrapolation and averaged SAR calculation algorithms of the Postprocessor, DASY8 allows the generation of measurement grids which are artificially predefined by analytically based test functions. Therefore, the grids of area scans and zoom scans can be filled with uncertainty test data, according to the SAR benchmark functions of IEC/IEEE 62209-1528. The three analytical functions shown in equations as below are used to describe the possible range of the expected SAR distributions for the tested handsets. The field gradients are covered by the spatially flat distribution f1, the spatially steep distribution f3 and f2 accounts for H-field cancellation on the phantom/tissue surface.

$$f_1(x, y, z) = Ae^{-\frac{z}{2a}} \cos^2 \left(\frac{\pi}{2} \frac{\sqrt{x'^2 + y'^2}}{5a} \right)$$

$$f_2(x, y, z) = Ae^{-\frac{z}{a}} \frac{a^2}{a^2 + x'^2} \left(3 - e^{-\frac{2z}{a}} \right) \cos^2 \left(\frac{\pi}{2} \frac{y'}{3a} \right)$$

$$f_3(x, y, z) = A \frac{a^2}{\frac{a^2}{4} + x'^2 + y'^2} \left(e^{-\frac{2z}{a}} + \frac{a^2}{2(a + 2z)^2} \right)$$

2.5 DASY8 E-Field Probe

The SAR measurement is conducted with the dosimetric probe manufactured by SPEAG. 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.

SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEC/IEEE 62209-1528, etc.) under ISO 17025. The calibration data are in Appendix D.

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 (30 MHz to 10 GHz)
Directivity	±0.1 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)
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
Calibration	ISO/IEC 17025 calibration service available
	
	
EX3DV4 E-Field Probe	
Probe setup on robot	

2.6 Boundary Detection Unit and Probe Mounting Device

The DASY probes use a precise connector and an additional holder for the probe, consisting of a plastic tube and a flexible silicon ring to center the probe. The connector at the DAE is flexibly mounted and held in the default position with magnets and springs. Two switching systems in the connector mount detect frontal and lateral probe collisions and trigger the necessary software response.

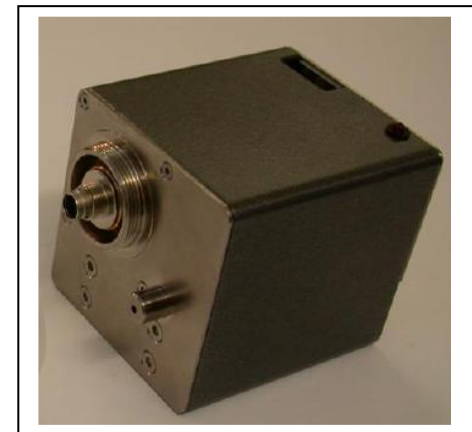


2.7 DATA Acquisition Electronics (DAE) and Measurement Server

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit.

Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE4 is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.



2.8 Robot

The DASY8 system uses the high precision robots TX60 XL type out of the newer series from Stäubli SA (France). For the 6-axis controller DASY8 system, the CS8C robot controller version from Stäubli is used. The XL robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller



2.9 Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.

The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.



2.10 Device Holder

The DASY8 device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR).

Thus the device needs no repositioning when changing the angles.

The DASY8 device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon_r = 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

The DASY8 device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon_r = 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



2.11 SAM Phantom

SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

- Left head
- Right head
- Flat phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.



ELI Phantom

The SAM phantom is a fiberglass shell phantom with 2mm shell thickness. It has one measurement areas:

- ELI phantom

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.



3 TISSUE SIMULATING LIQUID

3.1 The composition of the tissue simulating liquid

Simulate 600MHz~10000MHz liquid, manufactured by SPEAG

Table F.1 – Suggested recipes for achieving target dielectric properties, 30 MHz to 900 MHz

Frequency (MHz)	30	50		144		450		835	900	
Recipe source number	3	3	2	2	3	2	4	2	2	4
Ingredients (% by weight)										
De-ionized water	48,30	48,30	53,53	55,12	48,30	48,53	56	50,36	50,31	56
Tween 20			44,70	43,31		49,51		48,39	48,34	
Oxidized mineral oil							44			44
Diethylenglycol monohexylether										
Triton X-100										
Diacetin	50,00	50,00			50,00					
DGBE										
NaCl	1,60	1,60	1,77	1,57	1,60	1,96		1,25	1,35	
Additives and salt	0,10	0,10			0,10					
Measured temperature dependence										
Temp. (°C)			21	21		21	20	21	21	20
$\epsilon_{\text{liquid temp. unc.}}$ (%)	0,8	0,1			0,1	0,1		0,04	0,04	
$\sigma_{\text{liquid temp. unc.}}$ (%)	2,8	2,8			2,6	4,2		1,6	1,6	

Table F.2 – Suggested recipes for achieving target dielectric properties, 1 800 MHz to 10 000 MHz

Frequency (MHz)	1 800		2 450	4 000	5 000	5 200	5 800	6 000	8 000	10 000
Recipe source number	2	4	4	4	4	1	1	4	5	5
Ingredients (% by weight)										
De-ionized water	54,23	56	56	56	56	65,53	65,53	56	67,8	66,0
Tween	45,27								31,1	33,0
Oxidized mineral oil		44	44	44	44			44		
Diethylenglycol monohexylether						17,24	17,24			
Triton X-100						17,24	17,24			
Diacetin										
DGBE										
NaCl	0,50									
Additives and salt										
Measured temperature dependence										
Temp. (°C)	21	20	20	20	20	22	22	20	20	20
$\epsilon_{\text{liquid temp. unc.}}$ (%)	0,4					1,7	1,8			
$\sigma_{\text{liquid temp. unc.}}$ (%)	2,3					2,7	2,6			

NOTE 1 Multiple columns under a single frequency indicate optional recipes.

NOTE 2 Recipe source numbers: 1 verified by different labs, 2 Reference [59], 3 developed by IT'IS Foundation, 4 developed by IT'IS Foundation, 5 Reference [60].

NOTE 3 The values of $\epsilon_{\text{liquid temp. unc.}}$ and $\sigma_{\text{liquid temp. unc.}}$ are liquid temperature uncertainties described in O.9.6, based on measurements of the applicable liquid recipes given above. These are not part of the original publications but have been subsequently developed by the project team.

NOTE 4 The recipes at 8 000 MHz and 10 000 MHz are sufficiently broadband that they cover the frequency range of 6 000 MHz to 10 000 MHz within a tolerance of ± 10 % for permittivity and conductivity.

3.2 Measurement for Tissue Simulate Liquid

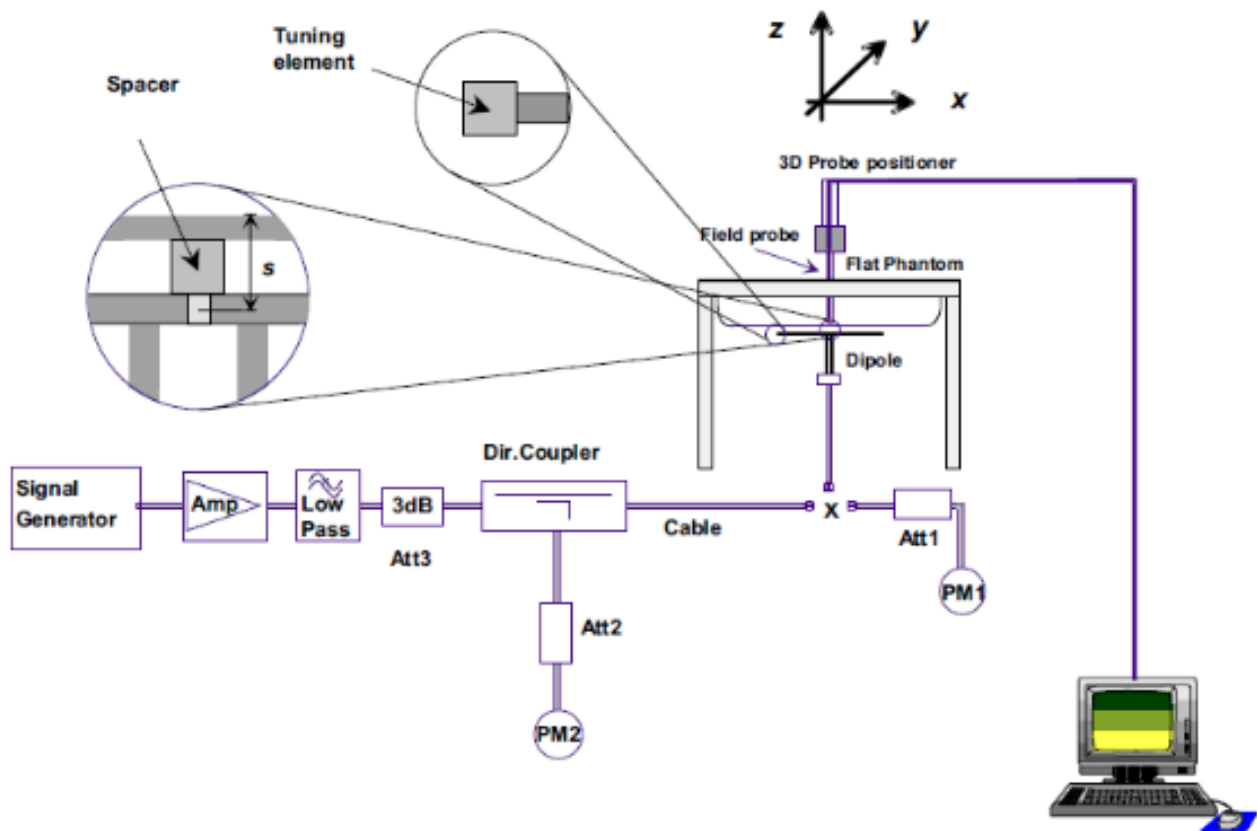
The dielectric properties for this Tissue Simulate Liquids were measured by using the Agilent E5071C Network Analyzer (600 KHz-10000 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was 22 ± 2 °C.

Measured Frequency (MHz)	Target Tissue ($\pm 5\%$)		Measured Tissue		Liquid Temp.(°C)	Measured Date
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)		
2450	39.2 (37.24~41.16)	1.80 (1.71~1.89)	40.70	1.78	22.50	2026.09.02
5250	35.9 (34.11~37.70)	4.71 (4.47~4.95)	36.40	4.58	22.50	2026.09.04
5600	35.5 (33.73~37.28)	5.07 (4.82~5.32)	35.20	5.22	22.50	2026.09.06
5750	35.4 (33.63~37.17)	5.22 (4.96~5.48)	34.90	5.30	22.50	2026.09.08

Tissue Verification							
Frequency (MHz)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)
2412	1.73	40.90	1.77	39.27	-2.26	4.07	± 5
2437	1.75	40.80	1.79	39.22	-2.23	4.08	± 5
2462	1.79	40.60	1.81	39.18	-1.10	3.57	± 5
5260	4.58	36.40	4.72	35.94	-2.97	1.39	± 5
5280	4.59	36.30	4.74	35.92	-3.16	1.11	± 5
5320	4.61	36.10	4.78	35.87	-3.56	0.56	± 5
5500	5.20	35.30	4.97	35.63	4.63	-0.84	± 5
5580	5.21	35.20	5.05	35.53	3.17	-0.85	± 5
5700	5.28	35.00	5.17	35.40	2.13	-1.13	± 5
5745	5.30	34.90	5.22	35.36	1.53	-1.41	± 5
5785	5.31	34.80	5.26	35.32	0.95	-1.42	± 5
5825	5.33	34.70	5.30	35.28	0.57	-1.70	± 5

4 SYSTEM CHECK

The microwave circuit arrangement for system Check is sketched in F-12. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within $\pm 10\%$ from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table (A power level of 250mW (below 3GHz) or 100mW (3-6GHz) was input to the dipole antenna). During the tests, the ambient temperature of the laboratory was in the range $22\pm 2^\circ\text{C}$, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 ± 0.5 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



F-1. the microwave circuit arrangement used for SAR system check

4.1 Justification for Extended Dipole Calibrations

Return loss:

Dipole Kit	Measured (dB)	Target (dB)	Deviation
D2450V2	-24.747	-24.513	Within $\pm 10\%$
D5GHzV2 5.25GHz	-23.998	-24.403	Within $\pm 10\%$
D5GHzV2 5.60GHz	-22.508	-22.555	Within $\pm 10\%$
D5GHzV2 5.75GHz	-26.581	-27.217	Within $\pm 10\%$

Impedance:

Dipole Kit	Measured (Ω)	Target (Ω)	Deviation
D2450V2	52.436	52.305	Within $\pm 5\Omega$
D5GHzV2 5.25GHz	51.774	50.631	Within $\pm 5\Omega$
D5GHzV2 5.60GHz	56.792	56.729	Within $\pm 5\Omega$
D5GHzV2 5.75GHz	54.646	54.549	Within $\pm 5\Omega$

1) Referring to IEC IEEE 62209-1528 requirements for dipole calibration, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval.

- a) There is no physical damage on the dipole;
- b) System check with specific dipole is within 10% of calibrated value;
- c) Return-loss is within 10% of calibrated measurement;
- d) Impedance is within 5Ω from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

4.2 Measurement for System Check

Validation Kit	Measured SAR 250mW		Measured SAR 1W		Normalized to 1W Target ($\pm 10\%$)		Liquid Temp.(°C)	Measured Date
	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)		
D2450V2	12.60	5.95	50.40	23.80	52.80 (47.52~58.08)	24.60 (22.14~27.06)	22.50	2026.09.02
Validation Kit	Measured SAR 100mW		Measured SAR 1W		Normalized to 1W Target ($\pm 10\%$)		Liquid Temp.(°C)	Measured Date
	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)		
D5GHzV2 5.25GHz	7.12	2.03	71.20	20.30	77.60 (69.84~85.36)	21.60 (19.44~23.76)	22.50	2026.09.04
D5GHzV2 5.60GHz	8.37	2.35	83.70	23.50	81.30 (73.17~89.43)	22.60 (20.34~24.86)	22.50	2026.09.06
D5GHzV2 5.75GHz	7.43	2.13	74.30	21.30	77.40 (69.66~85.14)	21.30 (19.17~23.43)	22.50	2026.09.08

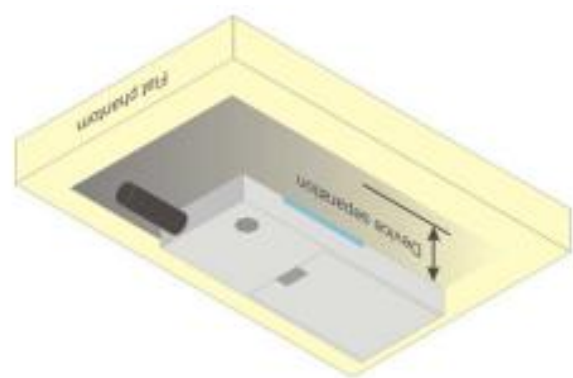
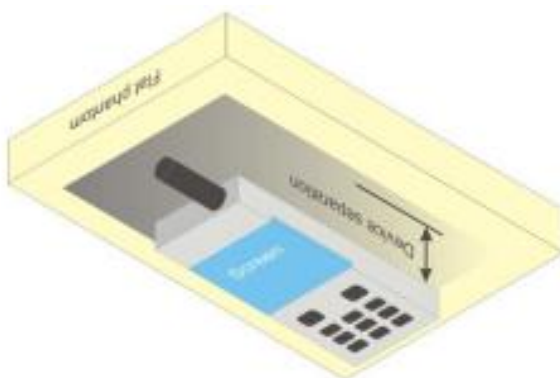
5 DESCRIPTION OF TEST POSITION

Body-worn Test Position Conditions

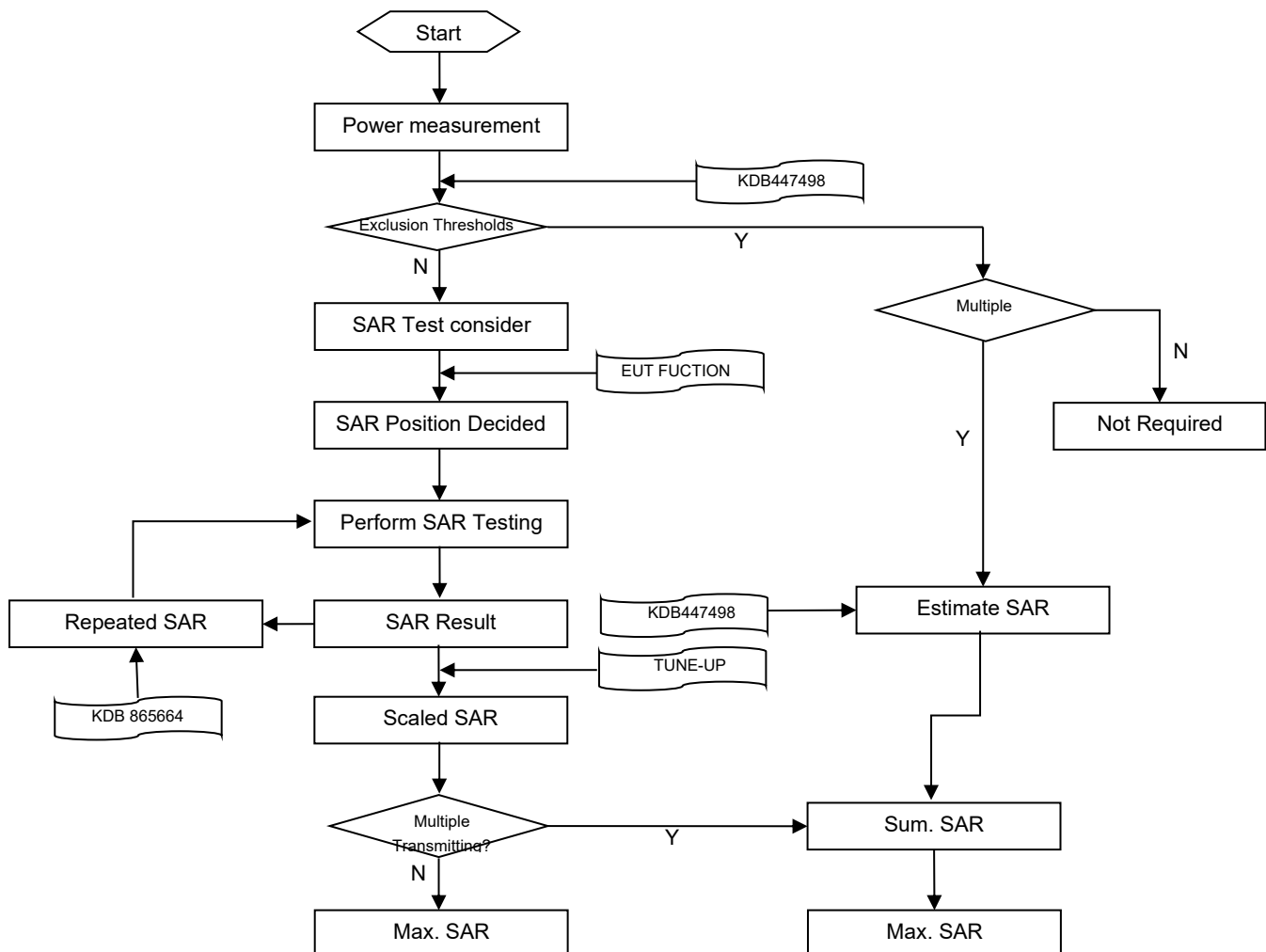
Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB 447498 are used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode. When the reported SAR for a body-worn accessory.

Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics. All body-worn accessories containing metallic components are tested in conjunction with the host device.

Body-worn accessory SAR compliance is based on a single minimum test separation distance for all wireless and operating modes applicable to each body-worn accessory used by the host, and according to the relevant voice and/or data mode transmissions and operations. If a body-worn accessory supports voice only operations in its normal and expected use conditions, testing of data mode for body-worn compliance is not required. A conservative minimum test separation distance for supporting off-the-shelf body-worn accessories that may be acquired by users of consumer handsets is used to test for body-worn accessory SAR compliance. This distance is determined by the handset manufacturer, according to the requirements of Supplement C 01-01. Devices that are designed to operate on the body of users using lanyards and straps, or without requiring additional body-worn accessories, will be tested using a conservative minimum test separation distance ≤ 5 mm to support compliance.



5.1 Measurement Process Diagram



6 TEST RESULT

6.1 Measurement of RF conducted Power

	Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune up Power (dBm)	Duty Cycle (%)
2.4GHz WLAN	802.11b 1Mbps	1	2412	18.33	19.50	100
		6	2437	18.51	19.50	100
		11	2462	18.44	19.50	100
	802.11g 6Mbps	1	2412	16.94	18.50	100
		6	2437	16.51	18.50	100
		11	2462	16.73	18.50	100
	802.11n-HT20 MCS0	1	2412	16.45	18.50	100
		6	2437	16.53	18.50	100
		11	2462	16.69	18.50	100
	802.11n-HT40 MCS0	3	2422	16.44	18.50	100
		6	2437	16.25	18.50	100
		9	2452	16.19	18.50	100

5GHz WLAN	Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune up Power (dBm)	Duty Cycle (%)
	802.11a 6Mbps	36	5180	15.22	16.00	100
		40	5200	15.31	16.00	100
		48	5240	15.25	16.00	100
		52	5260	15.41	16.00	100
		56	5280	15.52	16.00	100
		64	5320	15.37	16.00	100
		100	5500	18.38	19.00	100
		116	5580	18.85	19.00	100
		140	5700	17.23	19.00	100
		149	5745	16.52	18.00	100
		157	5785	16.85	18.00	100
		165	5825	16.47	18.00	100
	802.11n-HT20 MCS0	36	5180	14.98	16.00	100
		40	5200	15.35	16.00	100
		48	5240	15.58	16.00	100
		52	5260	14.86	16.00	100
		56	5280	15.75	16.00	100
		64	5320	15.64	16.00	100
		100	5500	16.94	19.00	100
		116	5580	16.05	19.00	100
		140	5700	16.74	19.00	100
		149	5745	16.67	18.00	100
		157	5785	16.47	18.00	100
		165	5825	16.53	18.00	100
	802.11n-HT40 MCS0	38	5190	14.21	16.00	100
		46	5230	14.97	16.00	100
		54	5270	14.26	16.00	100
		62	5310	15.46	16.00	100
		102	5510	17.86	18.00	100
		110	5550	17.19	18.00	100
		134	5670	16.84	18.00	100
		151	5755	16.26	17.00	100
		159	5795	16.32	17.00	100

6.2 Measurement of SAR Test Results

Test position	Test mode	Test ch./Freq.	Duty Cycle factor	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR 10-g(W/kg)
Limbs SAR Test data(Separate 0mm)									
Front Side	802.11b	6/2437	1.00	2.760	0.08	18.51	19.50	1.256	3.467
Back Side	802.11b	6/2437	1.00	0.165	0.02	18.51	19.50	1.256	0.207
Left Edge	802.11b	6/2437	1.00	0.091	0.05	18.51	19.50	1.256	0.114
Right Edge	802.11b	6/2437	1.00	0.183	0.03	18.51	19.50	1.256	0.230
Top Side	802.11b	6/2437	1.00	0.000	0.00	18.51	19.50	1.256	0.000
Bottom Side	802.11b	6/2437	1.00	0.708	-0.04	18.51	19.50	1.256	0.889
Front Side	802.11b	1/2412	1.00	2.630	0.06	18.33	19.50	1.309	3.443
Front Side	802.11b	11/2462	1.00	2.710	0.09	18.44	19.50	1.276	3.459

Test position	Test mode	Test ch./Freq.	Duty Cycle factor	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR 10-g(W/kg)
Limbs SAR Test data(Separate 0mm)									
Front Side	802.11a	56/5280	1.00	1.030	0.05	15.52	16.00	1.117	1.150
Back Side	802.11a	56/5280	1.00	0.057	0.01	15.52	16.00	1.117	0.064
Left Edge	802.11a	56/5280	1.00	0.101	0.09	15.52	16.00	1.117	0.113
Right Edge	802.11a	56/5280	1.00	0.168	0.03	15.52	16.00	1.117	0.188
Top Side	802.11a	56/5280	1.00	0.000	0.00	15.52	16.00	1.117	0.000
Bottom Side	802.11a	56/5280	1.00	0.794	-0.08	15.52	16.00	1.117	0.887
Front Side	802.11a	52/5260	1.00	1.290	0.06	15.41	16.00	1.146	1.478
Front Side	802.11a	64/5320	1.00	1.340	0.04	15.37	16.00	1.156	1.549

Test position	Test mode	Test ch./Freq.	Duty Cycle factor	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR 10-g(W/kg)
Limbs SAR Test data(Separate 0mm)									
Front Side	802.11a	116/5580	1.00	0.926	-0.04	18.85	19.00	1.035	0.959
Back Side	802.11a	116/5580	1.00	0.051	0.09	18.85	19.00	1.035	0.053
Left Edge	802.11a	116/5580	1.00	0.082	0.04	18.85	19.00	1.035	0.085
Right Edge	802.11a	116/5580	1.00	0.125	0.06	18.85	19.00	1.035	0.129
Top Side	802.11a	116/5580	1.00	0.000	0.00	18.85	19.00	1.035	0.000
Bottom Side	802.11a	116/5580	1.00	0.508	0.07	18.85	19.00	1.035	0.526
Front Side	802.11a	100/5500	1.00	1.160	0.02	18.38	19.00	1.153	1.338
Front Side	802.11a	140/5700	1.00	1.260	0.08	17.23	19.00	1.503	1.894

Test position	Test mode	Test ch./Freq.	Duty Cycle factor	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR 10-g(W/kg)
Limbs SAR Test data(Separate 0mm)									
Front Side	802.11a	157/5785	1.00	1.730	0.09	16.85	18.00	1.303	2.254
Back Side	802.11a	157/5785	1.00	0.105	-0.04	16.85	18.00	1.303	0.137
Left Edge	802.11a	157/5785	1.00	0.141	0.05	16.85	18.00	1.303	0.184
Right Edge	802.11a	157/5785	1.00	0.279	0.10	16.85	18.00	1.303	0.364
Top Side	802.11a	157/5785	1.00	0.000	0.00	16.85	18.00	1.303	0.000
Bottom Side	802.11a	157/5785	1.00	0.964	0.07	16.85	18.00	1.303	1.256
Front Side	802.11a	149/5745	1.00	1.590	0.03	16.52	18.00	1.406	2.236
Front Side	802.11a	165/5825	1.00	1.570	0.06	16.47	18.00	1.422	2.233

Worst-case channel verification:

Test position	Test mode	Test ch./Freq.	Duty Cycle factor	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power (dBm)	Tune up Limit (dBm)	Scaled factor	Scaled SAR 10-g(W/kg)
Limbs SAR Test data(Separate 0mm) For ETWC25IC-NA									
Front Side	802.11b	6/2437	1.00	2.760	0.08	18.51	19.50	1.256	3.467
Limbs SAR Test data(Separate 0mm) For ETWC100IC-NA									
Front Side	802.11b	6/2437	1.00	2.030	0.01	18.51	19.50	1.256	2.549
Limbs SAR Test data(Separate 0mm) For ETWC340IC-NA									
Front Side	802.11b	6/2437	1.00	2.19	-0.03	18.51	19.50	1.256	2.751

SAR Test Note:

1. The Wi-Fi duty cycle is 95~100%, Wi-Fi SAR scaling need further consideration and the theoretical duty cycle is 100%, therefore the actual duty cycle will be scaled up to the theoretical value of Wi-Fi reported SAR calculation.
2. The ratio is the difference in percentage between original and repeated measured SAR.
3. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

7 SAR VALIDATION DATA

Measurement Report for Device, CW, Channel 0 (2450MHz)

Exposure Conditions

Phantom Section, TSL	Frequency [MHz], Channel Number	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	2450, 0	1.78	40.7

Hardware Setup

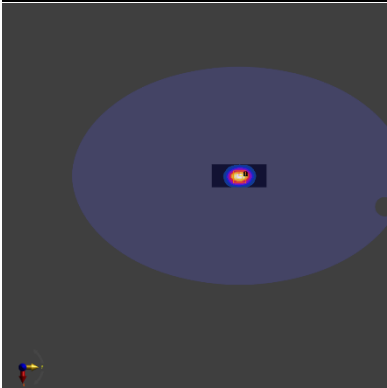
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	HBBL-600-10000	EX3DV4 - SN7761, 2026-04-08	DAE4ip Sn1854, 2026-03-23

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 96.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 12.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2026-09-02	2026-09-02
psSAR1g [W/Kg]	11.8	12.6
psSAR10g [W/Kg]	5.89	5.95
Power Drift [dB]	0.03	-0.07
M2/M1 [%]		81.5
Dist 3dB Peak [mm]		9.5



Measurement Report for Device, CW, Channel 0 (5250MHz)

Exposure Conditions

Phantom Section, TSL	Frequency [MHz], Channel Number	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	5250, 0	4.58	36.4

Hardware Setup

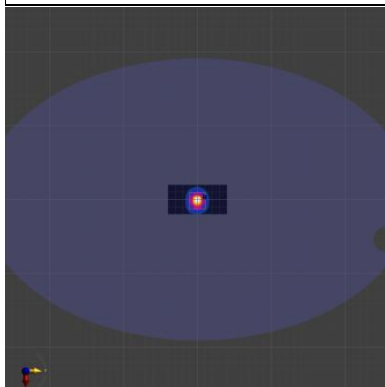
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	HBBL-600-10000	EX3DV4 - SN7761, 2026-04-08	DAE4ip Sn1854, 2026-03-23

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2026-09-04	2026-09-04
psSAR1g [W/Kg]	6.67	7.12
psSAR10g [W/Kg]	1.94	2.03
Power Drift [dB]	0.04	0.08
M2/M1 [%]		66.0
Dist 3dB Peak [mm]		7.4



Measurement Report for Device, CW, Channel 0 (5600MHz)

Exposure Conditions

Phantom Section, TSL	Frequency [MHz], Channel Number	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	5600, 0	5.22	35.2

Hardware Setup

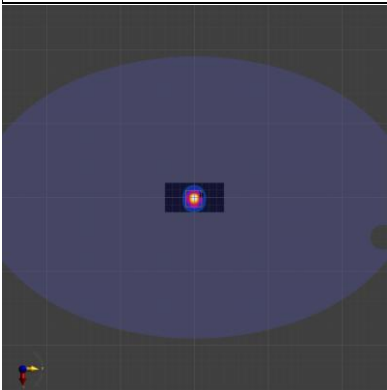
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	HBBL-600-10000	EX3DV4 - SN7761, 2026-04-08	DAE4ip Sn1854, 2026-03-23

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2026-09-06	2026-09-06
psSAR1g [W/Kg]	7.82	8.37
psSAR10g [W/Kg]	2.25	2.35
Power Drift [dB]	0.04	-0.09
M2/M1 [%]		64.2
Dist 3dB Peak [mm]		7.4



Measurement Report for Device, CW, Channel 0 (5750MHz)

Exposure Conditions

Phantom Section, TSL	Frequency [MHz], Channel Number	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	5750, 0	5.30	34.9

Hardware Setup

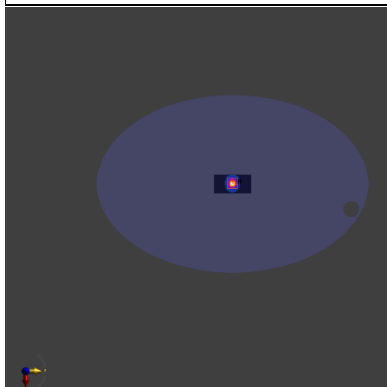
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	HBBL-600-10000	EX3DV4 - SN7761, 2026-04-08	DAE4ip Sn1854, 2026-03-23

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2026-09-08	2026-09-08
psSAR1g [W/Kg]	7.06	7.43
psSAR10g [W/Kg]	2.00	2.13
Power Drift [dB]	0.02	0.05
M2/M1 [%]		62.2
Dist 3dB Peak [mm]		7.6



8 SAR TEST DATA

Measurement Report for Device, FRONT, WLAN 2.4GHz, IEEE 802.11b (1 Mbps), Channel 6 (2437MHz)

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 0.00	2437, 6	1.75	40.8

Hardware Setup

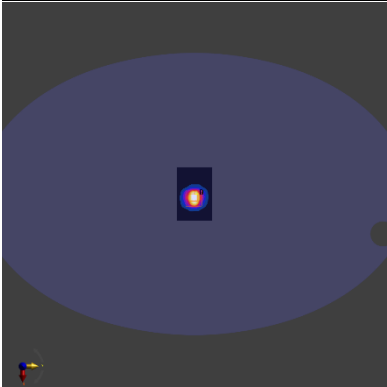
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	HBBL-600-10000	EX3DV4 - SN7761, 2026-04-08	DAE4ip Sn1854, 2026-03-23

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	72.0 x 48.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2026-09-02	2026-09-02
psSAR1g [W/Kg]	6.11	7.56
psSAR10g [W/Kg]	2.53	2.76
Power Drift [dB]	0.06	0.08
M2/M1 [%]		76.3
Dist 3dB Peak [mm]		7.0



Measurement Report for Device, FRONT, WLAN 5GHz, IEEE 802.11a (OFDM, 6 Mbps), Channel 64 (5320MHz)

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 0.00	5320, 64	4.61	36.1

Hardware Setup

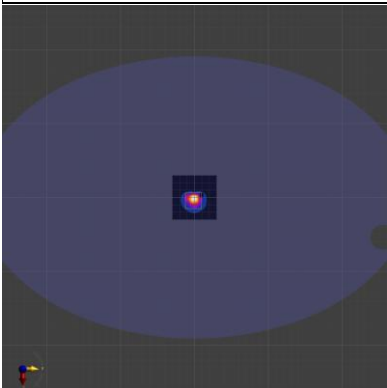
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	HBBL-600-10000	EX3DV4 - SN7761, 2026-04-08	DAE4ip Sn1854, 2026-03-23

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	60.0 x 60.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2026-09-04	2026-09-04
psSAR1g [W/Kg]	4.79	5.38
psSAR10g [W/Kg]	1.21	1.34
Power Drift [dB]	0.03	0.04
M2/M1 [%]		63.2
Dist 3dB Peak [mm]		4.9



Measurement Report for Device, FRONT, WLAN 5GHz, IEEE 802.11a (OFDM, 6 Mbps), Channel 140 (5700MHz)

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 0.00	5700, 140	5.28	35.0

Hardware Setup

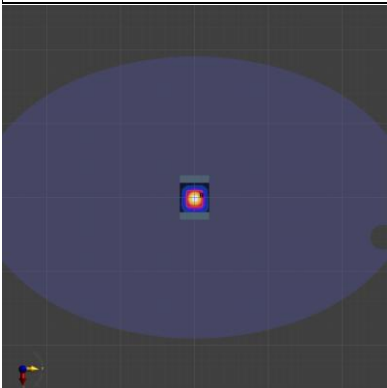
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	HBBL-600-10000	EX3DV4 - SN7761, 2026-04-08	DAE4ip Sn1854, 2026-03-23

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 40.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	20.0 x 20.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2026-09-06	2026-09-06
psSAR1g [W/Kg]	5.09	5.26
psSAR10g [W/Kg]	1.14	1.26
Power Drift [dB]	0.02	0.08
M2/M1 [%]		60.6
Dist 3dB Peak [mm]		5.4



Measurement Report for Device, FRONT, WLAN 5GHz, IEEE 802.11a (OFDM, 6 Mbps), Channel 157 (5785MHz)

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Frequency [MHz], Channel Number	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 0.00	5785, 157	5.31	34.8

Hardware Setup

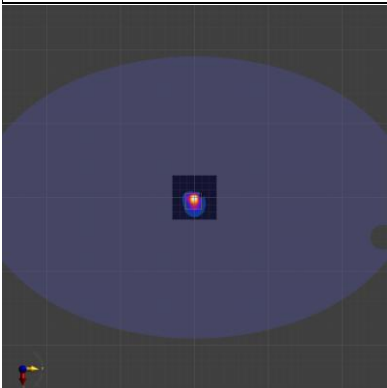
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0	HBBL-600-10000	EX3DV4 - SN7761, 2026-04-08	DAE4ip Sn1854, 2026-03-23

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	60.0 x 60.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2026-09-08	2026-09-08
psSAR1g [W/Kg]	6.29	7.43
psSAR10g [W/Kg]	1.68	1.73
Power Drift [dB]	-0.11	0.09
M2/M1 [%]		59.7
Dist 3dB Peak [mm]		4.8



9 CALIBRATION CERTIFICATE

Note: The detailed calibration certificate can refer to Appendix.

10 TEST SETUP PHOTO

Note: The test setup photo please see appendix.

_____ The End _____