TEST REPORT

EUT Description	**Wireless Module installed in Notebook PC**
Brand Name	**Intel®**
Model Name	**BE201D2W**
FCC ID	**PD9BE201D2**
Date of Test Start/End	**2025-06-14 / 2025-06-18**
Date of Issue:	**2025-08-15**
Features	**2x2 Wi-Fi + Bluetooth®** (see section 5)
Description	**Platform: ThinkBook Plus G6 Rollable + Luxshare-ict / Inpaq antennas**

Applicant	**Intel Corporation SAS**
Address	**425 Rue de Goa – Le Cargo B6 – 06600 Antibes, FRANCE**
Contact Person	**Benjamin Lavenant**
Telephone/Fax/ Email	**Benjamin.lavenant@intel.com**

Reference Standards	**FCC 47 CFR Part §2.1093** (see section 1)	
RF Exposure Environment	**Portable devices - General population/uncontrolled exposure**	
	Testing Result	Limit
Maximum Power Density Result & Limit	**7.03 W/m² (4cm²)**	**10 W/m² (4cm²)**
Maximum SAR Result & Limit	**Body: 1.11 W/kg (1g)**	**1.6 W/kg (1g)**
	Limbs: 0.99 W/kg (10g)	**4.0 W/kg (10g)**
Min. test separation distance	**0mm to phantom, 0.65 mm to antenna edge (SAR), 2mm to probe tip (PD)**	

Test Report identification	**BL-SZ2530119-703**
Revision Control	**Rev. 00** **This test report revision replaces any previous test report revision.** (see section 8)

The test results relate only to the samples tested.

ISSUED BY:
Shenzhen BALUN Technology Co., Ltd.

Tested by: Xu Rui

Checked by: Zong Liyao

Approved by: Tolan Tu (Testing Director)

Table of Contents

1. Standards, reference documents and applicable test methods

FCC	1. FCC 47 CFR Part §2.1093 – Radiofrequency radiation exposure evaluation: portable devices. 2021-10-01 Edition 2. FCC 47 CFR Part §1.1310 – Radiofrequency radiation exposure limits. Edition October 2021 3. FCC OET KDB 248227 D01 v02r02 - SAR guidance for IEEE 802.11 (Wi-Fi) transmitters. 4. FCC OET KDB 447498 D04 v01 General RF Exposure Guidance v01– RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices 5. FCC OET KDB 616217 D04 v01r02 - SAR Evaluation Considerations for Laptop, Convertible PC, Netbook and Tablet Computers. 6. FCC OET KDB 865664 D01 v01r04 - SAR Measurement Requirements for 100 MHz to 6 GHz. 7. FCC OET KDB 865664 D02 v01r02 - RF Exposure Compliance Reporting and Documentation Considerations. 8. IEEE Std 1528-2013 - IEEE Recommended Practice Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques… 9. RF Exposure Policies and Procedures: TCB Workshop – October 2020 10. IEC/IEEE 62209-1528:2020 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) 11. 987594 D04 UN6GHZ Pre-Approval Guidance Checklist v01 12. SPEAG Application Note – 5G Compliance Testing with DASY8 (5GModule V1.0Beta) 13. SPEAG Application Note – 5G Compliance Testing with DASY8/8 (5GModule V5.0)

2. General conditions, competences and guarantees

- ✓ Shenzhen BALUN Technology Co., Ltd. (BALUN Lab) is an Accredited Test Firm recognized by the FCC, with Designation Number CN1196.
- ✓ Shenzhen BALUN Technology Co., Ltd. (BALUN Lab) only provides testing services and is committed to providing reliable, unbiased test results and interpretations.
- ✓ Shenzhen BALUN Technology Co., Ltd. (BALUN Lab) guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
- ✓ This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the “inspection and testing dedicated stamp” or test report stamp.
- ✓ The test data and results are only valid for the tested samples provided by the customer.
- ✓ This report shall not be partially reproduced without the written permission of the laboratory.
- ✓ Any objection shall be raised to the laboratory within 30 days after receiving the report.

3. Environmental Conditions

✓ At the site where the measurements were performed the following limits were not exceeded during the tests:

Temperature	22.3ºC
Humidity	47.5% ~ 62.5%
Liquid Temperature	21.3ºC ~ 21.4C

4. Test samples

Sample	Control #	Description	Model	Serial #	Date of receipt	Note
#01	SC-SZ2530097-S01	Wireless Module installed in Notebook PC	ThinkBook Plus G6 Rollable	2080993400100	2025-3-4	Luxshare-ict antenna
#02	SC-SZ2530097-S05	Wireless Module installed in Notebook PC	ThinkBook Plus G6 Rollable	2080993400020	2025-5-30	Inpaq antenna

5. EUT Features

The herein information is provided by the customer.

Intel WRF Lab declines any responsibility for the accuracy of the stated customer provided information, especially if it has any impact on the correctness of test results presented in this report.

<table>
<tr><td>Brand Name</td><td>Intel®</td></tr>
<tr><td>Model Name</td><td>BE201D2W</td></tr>
<tr><td>Software Version</td><td>[DRTU.07983.23.120.0]</td></tr>
<tr><td>Driver Version</td><td>23.60.5.4</td></tr>
<tr><td>Prototype / Production</td><td>Production</td></tr>
<tr><td>Host Identification</td><td>ThinkBook Plus G6 Rollable</td></tr>
<tr><td>Supported Radios</td><td>
<table>
<tr><td>802.11b/g/n/ax/be</td><td>2.4GHz (2400.0 – 2483.5 MHz)</td></tr>
<tr><td>802.11a/n/ac/ax/be</td><td>5.2GHz (5150.0 – 5350.0 MHz)
5.6GHz (5470.0 – 5725.0 MHz)
5.8GHz (5725.0 – 5850.0 MHz)</td></tr>
<tr><td>802.11ax/be</td><td>5.9GHz (5850.0 – 5895.0 MHz)
6.0GHz (5925.0 – 7125.0 MHz) *</td></tr>
<tr><td>Bluetooth</td><td>2.4GHz (2400.0 – 2483.5 MHz)</td></tr>
</table>
</td></tr>
<tr><td>Antenna Information</td><td>
<table>
<tr><th>Transmitter</th><th>Aux (Ant 1/Tx1)</th><th>Main (Ant 2/Tx2)</th></tr>
<tr><td>Manufacturer</td><td>Luxshare-ict</td><td>Luxshare-ict</td></tr>
<tr><td>Antenna type</td><td>PIFA</td><td>PIFA</td></tr>
<tr><td>Part number</td><td>DC330028M10</td><td>DC330028M00</td></tr>
</table>
<table>
<tr><th>Transmitter</th><th>Aux (Ant 1/Tx1)</th><th>Main (Ant 2/Tx2)</th></tr>
<tr><td>Manufacturer</td><td>Inpaq</td><td>Inpaq</td></tr>
<tr><td>Antenna type</td><td>PIFA</td><td>PIFA</td></tr>
<tr><td>Part number</td><td>DC330028L10</td><td>DC330028L00</td></tr>
</table>
See Annex G for more details on antennas location.
</td></tr>
<tr><td>Simultaneous Transmission Configurations</td><td>WLAN 6GHz Main + BT Aux*
WLAN 6GHz Main + WLAN 6GHz Aux*
WLAN 6GHz Main + WLAN 6GHz Aux + BT Aux*
WLAN 2.4GHz Main + BT Aux
WLAN 2.4GHz Main + WLAN 2.4GHz Aux
WLAN 5GHz Main + BT Aux
WLAN 5GHz Main + WLAN 5GHz Aux
WLAN 5GHz Main + WLAN 5GHz Aux + BT Aux</td></tr>
<tr><td rowspan="3">Additional Information</td><td>No WWAN transmitter is considered in this report</td></tr>
<tr><td>5.60-5.65 GHz band (TDWR) is supported by the device</td></tr>
<tr><td>Band gap is supported by the device</td></tr>
</table>

*Only these combinations are treated on this document since this report is limited to WiFi 6E capabilities

Supported Radios

Mode	Duty Cycle	Modulation	Band	UL Freq Range (MHz)	Measured Max. Conducted Power (dBm)
802.11ax/be	100%	BPSK QPSK 16QAM 64QAM 256QAM 1024QAM 4096QAM	6.2GHz	5955-6415	15.51
802.11ax/be	100%	BPSK QPSK 16QAM 64QAM 256QAM 1024QAM 4096QAM	6.5GHz	6435-6515	15.60
802.11ax/be	100%	BPSK QPSK 16QAM 64QAM 256QAM 1024QAM 4096QAM	6.7GHz	6535-6855	15.54
802.11ax/be	100%	BPSK QPSK 16QAM 64QAM 256QAM 1024QAM 4096QAM	7.0GHz	6875-7125	15.57

NM: Not Measured

Maximum Output power specification + Tune up tolerance limit, specified by the client

<table>
<tr><th rowspan="2">Equipment Class</th><th rowspan="2">Mode</th><th rowspan="2">BW (MHz)</th><th colspan="2">Notebook</th></tr>
<tr><th>Main (dBm)</th><th>Aux (dBm)</th></tr>
<tr><td rowspan="5">U-NII-5</td><td rowspan="5">802.11/ax20/be</td><td rowspan="5">20
40
80
160
320</td><td>6.00</td><td>6.00</td></tr>
<tr><td>9.00</td><td>9.00</td></tr>
<tr><td>12.00</td><td>12.00</td></tr>
<tr><td>14.50</td><td>14.50</td></tr>
<tr><td>15.50</td><td>15.50</td></tr>
<tr><td rowspan="5">U-NII-6</td><td rowspan="5">802.11/ax20/be</td><td rowspan="5">20
40
80
160
320</td><td>6.00</td><td>6.00</td></tr>
<tr><td>9.00</td><td>9.00</td></tr>
<tr><td>12.00</td><td>12.00</td></tr>
<tr><td>14.50</td><td>14.50</td></tr>
<tr><td>15.50</td><td>15.50</td></tr>
<tr><td rowspan="5">U-NII-7</td><td rowspan="5">802.11/ax20/be</td><td rowspan="5">20
40
80
160
320</td><td>6.00</td><td>6.00</td></tr>
<tr><td>9.00</td><td>9.00</td></tr>
<tr><td>12.00</td><td>12.00</td></tr>
<tr><td>14.50</td><td>14.50</td></tr>
<tr><td>15.50</td><td>15.50</td></tr>
<tr><td rowspan="5">U-NII-8</td><td rowspan="5">802.11/ax20/be</td><td rowspan="5">20
40
80
160
320</td><td>6.00</td><td>6.00</td></tr>
<tr><td>9.00</td><td>9.00</td></tr>
<tr><td>12.00</td><td>12.00</td></tr>
<tr><td>14.50</td><td>14.50</td></tr>
<tr><td>15.50</td><td>15.50</td></tr>
</table>

*The SAR measurement was perfomed at a high-power setting for Notebook mode, which is higher than the actual power settingreported in the technical documentation

6. Remarks and comments

1. This report is limited to WiFi 6E capabilities. For all the modes, DTS, UNII-1, UNII-2A, UNII-2C, UNII-3 and BT refer to: BL-SZ2530119-701
2. The conducted values are obtained by applying the available power table to the BE201D2W Intel module installed in the ThinkBook Plus G6 Rollable identified in this report, as requested by the customer.
3. Only the plots for the test positions with the highest measured SAR/PD per band/mode are included in Annex C
4. On both samples the same conducted power measurements was used as we swapped the module on the second sample during SAR testing.

7. Test Verdicts summary

The statement of conformity to applicable standards in the table below are based on the measured values, without taking into account the measurement uncertainties.

Standard	Band	Highest Reported PS_{tot} avg [W/m^2] 4cm^2	Verdict
802.11ax/be	6GHz	7.03	P

Standard	Band	Highest Reported SAR [W/kg]		Verdict
		Body	Limbs	
802.11ax/be	6GHz	1.11	0.99	P

P: Pass
F: Fail
NM: Not Measured
NA: Not Applicable

According to the FCC OET KDB 690783 D01, this is the summary of the values for the Grant Listing:

Exposure Condition	Highest Reported SAR (1g) (W/kg)		Highest Reported SAR (10g) (W/kg)	
	Body		Limbs	
	Equipment Class		Equipment Class	
	DSS	UNII	DSS	UNII
Body Worn	0.23	1.11	0.28	0.99
Simultaneous Tx	Sum-SAR:1.33 SPLSR: 0.01		Sum-SAR: 0.99	

Considering the results of the performed test according to FCC 47CFR Part 2.1093 the item under test is in compliance with the requested specifications specified in Section1. Standards, reference documents and applicable test methods

8. Document Revision History

Revision #	Modified by	Revision Details
Rev. 00	Xu Rui	First Issue

Annex A. PD Test & System Description

A.1 Power Density Definition

The power density for an electromagnetic field represents the rate of energy transfer per unit area.
The local power density (i.e. Poynting vector) at a given spatial point is deduced from electromagnetic fields by the following formula:

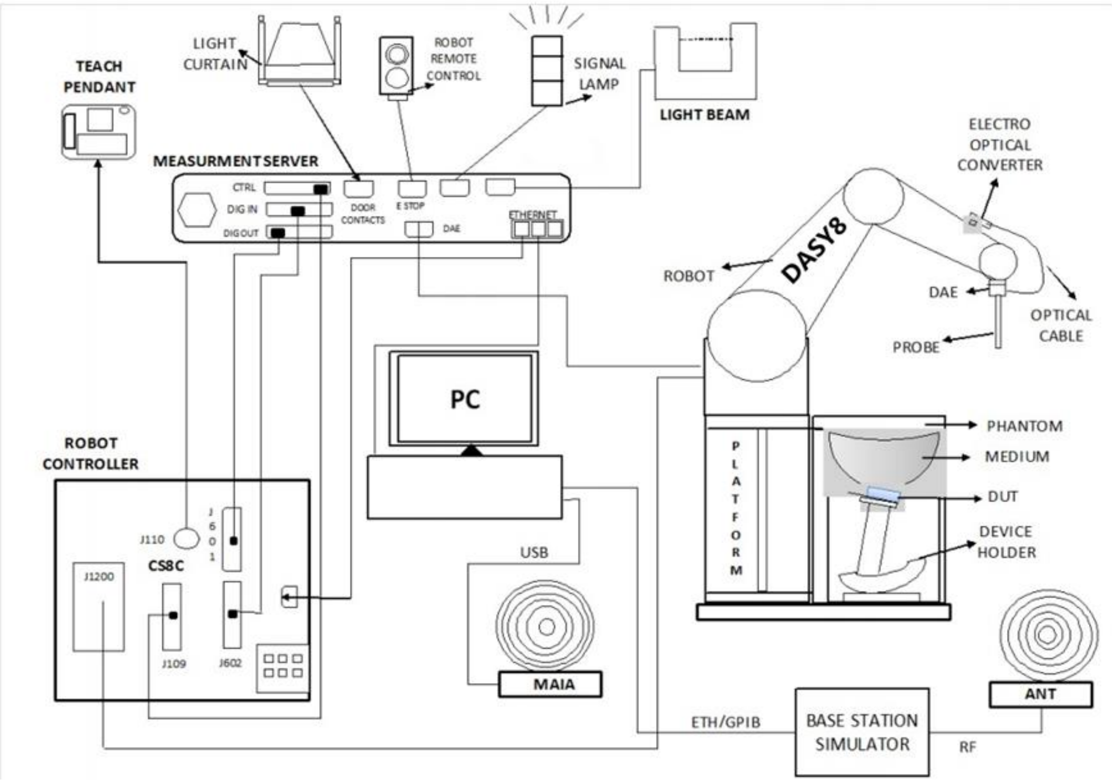
$$\overrightarrow{P_{local}} = \frac{1}{2}\mathrm{Re}\left(\vec{E} \times \vec{H}^{*}\right)$$

Where $\vec{E}$ is the complex electric field peak phasor and $\vec{H}^{*}$ is the complex conjugate magnetic field peak phasor.
This power density is also called "single-point" or "spot power density".
Considering that the FCC's Maximum Permissible Exposure (MPE) limit is applicable on the average power density inside $1cm^2$ area, the single point power densities in the evaluation plane should be averaged inside the $1cm^2$ area.

A.2 SPEAG free space Measurement System

A.2.1 Measurement Setup

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

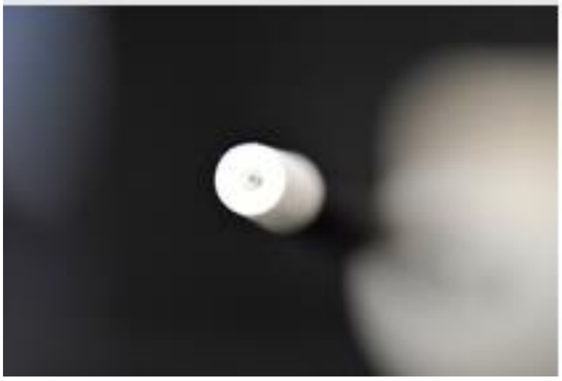


- ✓ A standard high precision 6-axis robot (Staübli TX/RX family) with controller, teach pendant and software. It includes an arm extension for accommodating the data acquisition electronics (DAE)
- ✓ An mm-wave E-field probe optimized and calibrated for the targeted measurements.
- ✓ A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The signal is optically transmitted to the EOC.
- ✓ The Electro-optical Converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. The EOC signal is transmitted to the measurement server.
- ✓ The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movements interrupts.
- ✓ The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- ✓ A computer running Windows professional operating system and the cDASY8 software.
- ✓ Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.

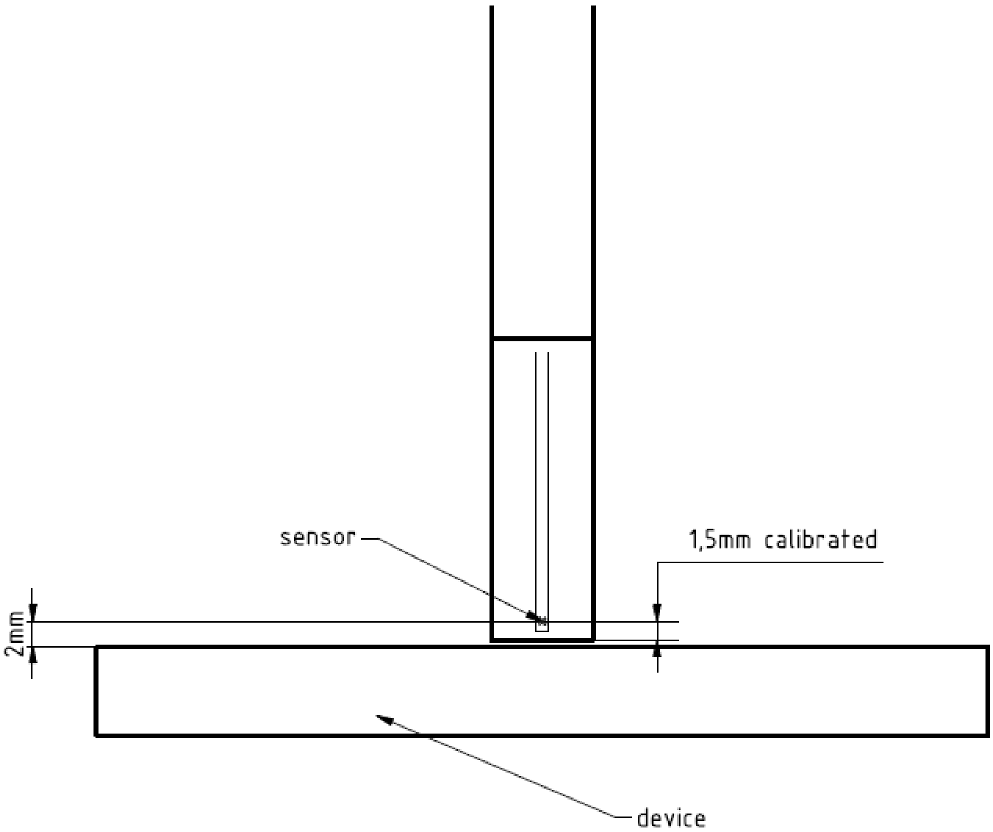
A.2.2 E-Field Measurement Probe

The probe consists of two dipoles (0.8 mm length) optimally arranged with different angles (γ_1 and γ_2) to obtain pseudo-vector information, printed on glass substrate protected by high density foam that allows low perturbation of the measured field.
Three or more measurements are taken for different probe rotational angles, deriving the amplitude and polarization information.

The probe's characteristics are:



Frequency Range	750 MHz – 110 GHz
Length	320 mm
Probe tip external diameter	8 mm
Probe's two dipoles length	0.9mm – Diode loaded
Probe's substrate	Quartz 0.9 x 20 x 0.18mm (εr=3.8)
Distance between diode sensors and probe's tip	1.5 mm
Axial Isotropy	±0.6 dB
Maximum operating E-field	3000 V/m
Lower E-field detection threshold	5 V/m @ 60 GHz
Minimum Mechanical separation between probe tip and a Surface	0.5mm
Calibration reference point	Diode Sensor



A.2.3 Worst Case Linearization Error

For continuously transmitting signals (100% duty cycle), the worst case linearization error is given by the difference between non linearized voltage and linearized voltage using CW parameters. The error is increasing with the voltage levels. In our particular case, the measured voltages averaged over the signal period are below 1mV. We use 1mV in the below calculation to have the worst case condition. The signal PAR (Peak to Average Ratio) is 6dB and the diode compression point 100mV.

The maximum voltage through the diode is given by:

$$\text{vpeak} = \text{vmeas avg} \times \text{PARlinear}$$
$$vpeak = 1*4 = 4\ mV$$

The linearized voltage using CW parameter is given by:

$$vlin\ peak = vpeak + \frac{v_{peak}^2}{diode\ compression\ point}$$
$$vlin\ peak = 4 + \frac{4^2}{100} = 4.16\ mV$$

The worst case linearization error is:

$$lin\ error = \frac{vlin\ peak}{v\ peak} = \frac{4.16}{4} = 1.04 = 4\%$$

A.2.4 Data Evaluation

A.2.4.1 Scan

The scan involves the measurement of two planes with three different probe rotations. The grid steps are optimized by the software based on the test frequency. The location of the lowest measurement plane is defined by the distance of first measurement layer from device under test (DUT) entered by the user. The DUT location settings can be used to offset the center of the grid.

A.2.4.2 Total Field and Power Flux Density Reconstruction

Computation of the power density in general requires knowledge of the electric (E-) and magnetic (H-) field amplitudes and phases in the plane of incidence. Reconstruction of these quantities from pseudo-vector E-field measurements is feasible, as they are constrained by Maxwell's equations.
The reconstruction algorithm developed by the system manufacturer, together with the ability of the probe to measure extremely close to the source without perturbing the field, permits reconstruction of the E- and H-fields, as well as of the power density, on measurement planes located as near as 0.5mm away in the frequency band of 60 GHz.

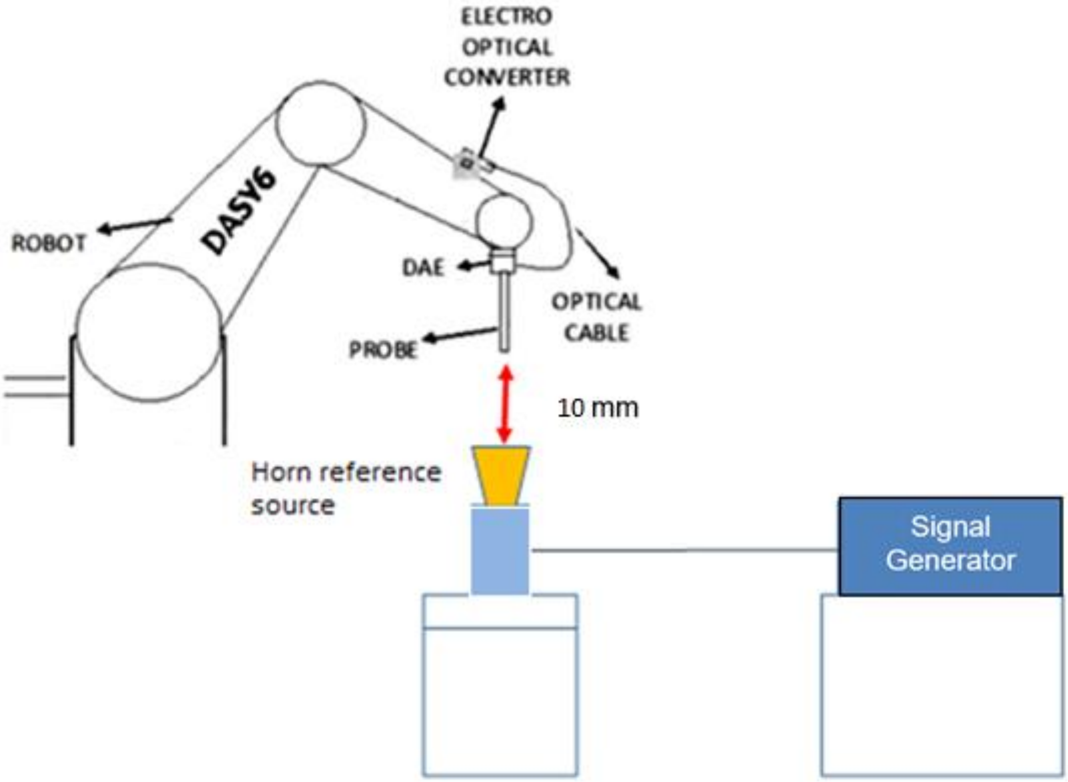
The average of the reconstructed power density is evaluated over a circular area in each measurement plane. The area of the circle is defined by the user; the default is 1 cm^2.

A.3 System Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal Power Density measurements in a simplified setup with a well characterized source.This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

Perform a system performance check at 10 GHz. The system was verified to be within ±0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check.

The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.



The output power on the reference source is set to 22.0 dBm (158.49 mW) and the measurement results Avg PD for 4cm^2 are compared with the power density targets on the calibration certificate.

A.4 Test Equipment List

SAR system #4

Device	Type/Model	Serial Number	Manufacturer	Cal. Date	Cal. Due Date
E-Field probe 750MHz-110GHz	EUmmWV4	9565	SPEAG	2025/01/15	2026/01/14
Data Acquisition Electronics	DAE4	878	SPEAG	2025/03/05	2026/03/04
Data Acquisition Electronics	DAE4	540	SPEAG	2025/04/21	2026/04/20
6-axis Robot	TX290L Speag	F/21/0032513/A/001	STAÜBLI	N/A	N/A
Robot Controller	CSE9spe-TX2-90	F/21/0032513/C/001	STAÜBLI	N/A	N/A
Measurement Server	DASY8	N/A	SPEAG	N/A	N/A
Light Beam Unit	SE UKS 032 AA	2076	Di-soric	N/A	N/A
5G Phantom	mmWave	NA	SPEAG	N/A	N/A
Measurement Software	DASYmmW v3.2	9-1798AA01_D8	SPEAG	N/A	N/A
Thermometer	RC-4HC	EF7216002985	Elitech	2024/10/31	2025/10/30

Shared equipment

Device	Type/Model	Serial Number	Manufacturer	Cal. Date	Cal. Due Date
PC	N/A	N/A	Dell	N/A	N/A
Test System	DASY8 mmWave	V2.4.0.44	Speag	N/A	N/A
Verification Source	10GHz	SN: 2010	Speag	2024/06/19	2025/06/18
Signal Generator	N5173B	MY62150163	Keysight	2024/08/12	2025/08/11
Power Meter	NRVD-B2	835843/014	R&S	2024/08/08	2025/08/07
Power Sensor	NRV-Z4	100381	R&S	2024/08/08	2025/08/07
Power Sensor	NRV-Z2	100211	R&S	2024/08/08	2025/08/07
Thermometer	RC-4HC	EF7239002655	Elitech	2024/10/31	2025/10/30
Thermometer	RC-4HC	EF7216002974	Elitech	2024/10/31	2025/10/30
Power Amplifier	6552B	22374	SATIMO	N/A	N/A

A.5 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the table below with a coverage factor of k = 2 to indicate a 95% level of confidence:

DASY8 Uncertainty Budget for PD (avg ≥1 cm2) Evaluation Distances to the Antennas ≥ λ/5 in Compliance with IEC/IEEE 63195							
Error Description		Unc. Value (±dB)	Probab. Distri.	Div.	(c_i)	Std. Unc. (±dB)	(vi) veff
Uncertainty terms dependent on the measurement system							
CAL	Calibration	0.49	N	1	1	0.49	∞
COR	Probe correction	0	R	1.732	1	0	∞
FRS	Frequency response (BW ≤ 1 GHz)	0.2	R	1.732	1	0.12	∞
SCC	Sensor cross coupling	0	R	1.732	1	0	∞
ISO	Isotropy	0.5	R	1.732	1	0.29	∞
LIN	Linearity	0.2	R	1.732	1	0.12	∞
PSC	Probe scattering	0	R	1.732	1	0	∞
PPO	Probe positioning offset	0.3	R	1.732	1	0.17	∞
PPR	Probe positioning repeatability	0.04	R	1.732	1	0.02	∞
SMO	Sensor mechanical offset	0	R	1.732	1	0	∞
PSR	Probe spatial resolution	0	R	1.732	1	0	∞
FLD	Field impedance dependence	0	R	1.732	1	0	∞
APD	Amplitude and phase drift	0	R	1.732	1	0	∞
APN	Amplitude and phase noise	0.04	R	1.732	1	0.02	∞
TR	Measurement area truncation	0	R	1.732	1	0	∞
DAQ	Data acquisition	0.03	N	1	1	0.03	∞
SMP	Sampling	0	R	1.732	1	0	∞
REC	Field reconstruction	0.6	R	1.732	1	0.35	∞
TRA	FTE/MEO	0 (0.7)	R	1.732	1	0 (0.4)	∞
SCA	Power density scaling	–	R	1.732	1	–	∞
SAV	Spatial averaging	0.1	R	1.732	1	0.06	∞
SDL	System detection limit	0.04	R	1.732	1	0.02	∞
Uncertainty terms dependent on the DUT and environmental factors							
PC	Probe coupling with DUT	0	R	1.732	1	0	∞
MOD	Modulation response	0.4	R	1.732	1	0.23	∞
IT	Integration time	0	R	1.732	1	0	∞
RT	Response time	0	R	1.732	1	0	∞

DH	Device holder influence	0.14	R	1.732	1	0.08	∞
DA	DUT alignment	0	R	1.732	1	0	∞
AC	RF ambient conditions	0.04	R	1.732	1	0.02	∞
AR	Ambient reflections	0.04	R	1.732	1	0.02	∞
MSI	Immunity / secondary reception	0	R	1.732	1	0	∞
DRI	Drift of the DUT	–	R	1.732	1	–	∞
Combined Std Uncertainty (w/ FTE/MEO)			–	–	–	0.75	∞
Expanded Std Uncertainty (w/ FTE/MEO)			–	–	–	**1.50 (1.71)**	–

The REC at distance d must be modified as follows:

1

$$unc_{\text{REC}}\text{dB} = \begin{cases} 2.35 - 8.75d/\lambda & \text{for } d = 0.04\ldots0.2\lambda \\ 0.6 & \text{for } d \geq 0.2\lambda \end{cases}$$

The minimal distance is 2mm, and the minimal frequency tested is 6 GHz. This corresponds to an MU value of (2.35-8.75*0.04 =2 dB) -- Ref: Speag, DASY6 Module mmWave Manual, February 2022.

A.6 RF Exposure Limits

Power density assessments have been made in line with the requirements of FCC 47CFR Part 2.1093, in particular chapter 1.1150 specifying the MPE limits, on the limitation of exposure of the general population / uncontrolled exposure for portable devices.

Exposure Type	Power density (S)
Limits for Occupational/Controlled Exposure. 1.5GHz – 100GHz	**50.0 W/m^2**
Limits for General Population/ Uncontrolled Exposure. 1.5GHz – 100GHz	**10.0 W/m^2**

Annex B. SAR Test & System Description

B.1 SAR Definition

Specific Absorption rate is defined as the time derivative of the incremental energy (dW) absorbed by (dissipated in) and incremental mass (dm) contained in a volume element (dV) of a given density (ρ).

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

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

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

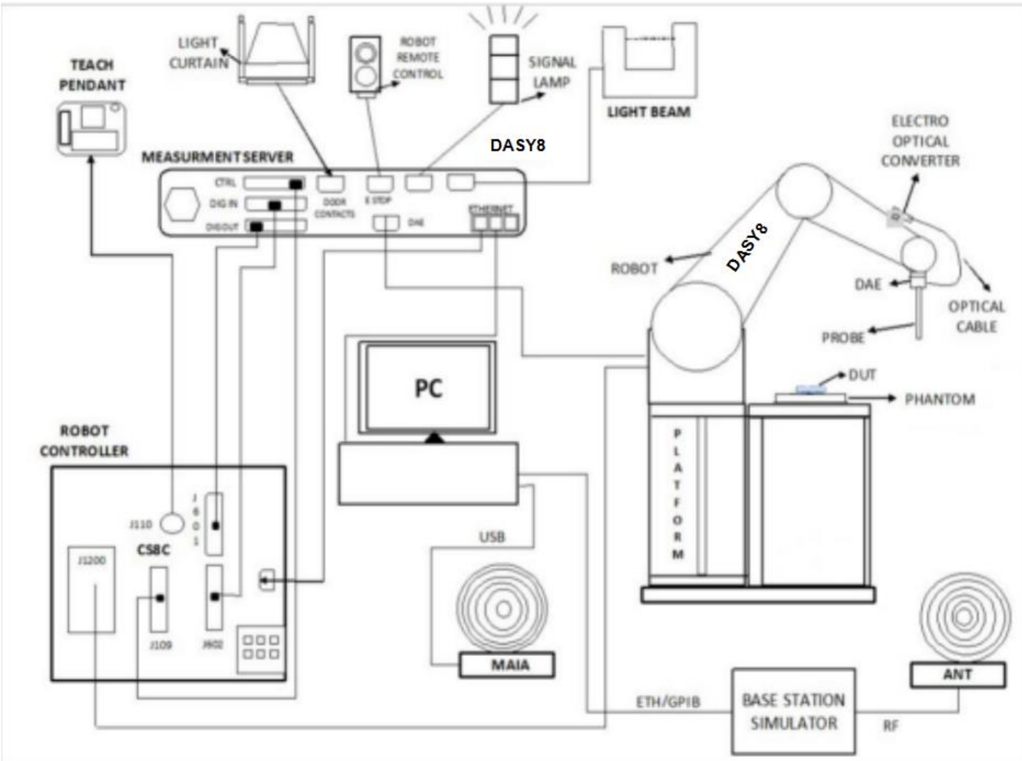
Where:

σ = Conductivity of the tissue (S/m)
ρ = Mass density of the tissue (kg/m3)
E = RMS electric field strength (V/m)

B.2 SPEAG SAR Measurement System

B.2.1 SAR Measurement Setup

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



- ✓ A standard high precision 6-axis robot (Staübli TX/RX family) with controller, teach pendant and software. It includes an arm extension for accommodating the data acquisition electronics (DAE)
- ✓ An isotropic field probe optimized and calibrated for the targeted measurements.
- ✓ A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The signal is optically transmitted to the EOC.
- ✓ The Electro-optical Converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. The EOC signal is transmitted to the measurement server.
- ✓ The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movements interrupts.
- ✓ The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- ✓ A computer running Windows professional operating system and the DASY8 software.
- ✓ Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- ✓ The phantom, the device holder and other accessories according to the targeted measurement.
- ✓ MAIA is a hardware interface (Antenna) used to evaluate the modulation and audio interference characteristics of RF signals.
- ✓ ANT is an ultra-wideband antenna for use with the base station simulators over 698 MHz to 6GHz for SAR cellular testing (not used for WLAN testing).
- ✓ The base station simulator is an equipment used for SAR cellular tests in order to emulate the cellular signals characteristics and behavior between a regular base station and the equipment under test.
- ✓ Tissue simulating liquid.
- ✓ System Validation dipoles.
- ✓ Network emulator or RF test tool

B.2.2 E-Field Measurement Probe

The probe is constructed using three orthogonal dipole sensors arranged on an interlocking, triangular prism core. The probe has built-in shielding against static charges and is contained within a PEEK cylindrical enclosure material at the tip.

The probe's characteristics are:

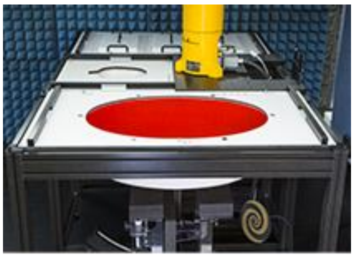
Frequency Range	4MHz – 10GHz
Length	337 mm
Probe tip external diameter	2.5 mm
Typical distance between dipoles and the probe tip	1 mm
Axial Isotropy (in human-equivalent liquids)	±0.3 dB
Hemispherical Isotropy (in human-equivalent liquids)	±0.5 dB
Linearity	±0.2 dB
Maximum operating SAR	100 W/kg
Lower SAR detection threshold	0.001 W/kg

B.2.3 Flat Phantom

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.

The phantom's characteristics are:

Material	Vinylester, glass fiber reinforced (VE-GF)
Shell thickness	2 mm ± 0.2 mm
Filling volume	30 Liters approx.
Dimensions	Major axis: 600mm / Minor axis: 400mm



B.2.4 Device Positioner

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of 0.5 mm would produce a SAR uncertainty of 20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ=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.

A simple but effective and easy-to-use extension for the Mounting Device; facilitates testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.); lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin SAM, ELI and other Flat Phantoms.

B.3 Data Evaluation

- **Power Reference measurement**

The robot measures the E field in a specified reference position that can be either the selected section's grid reference point or a user point in this section at 4mm of the inner surface of the phantom, 2mm for frequencies above 3GHz.

- **Area Scan**

Measurement procedures for evaluating SAR from wireless handsets typically start with a coarse measurement grid to determine the approximate location of the local peak SAR values. This is known as the area-scan procedure. The SAR distribution is scanned along the inside surface of one side of the phantom head, at least for an area larger than the projection of the handset and antenna. The distance between the measured points and phantom surface should be less than 8 mm, and should remain constant (with variation less than ± 1 mm) during the entire scan in order to determine the locations of the local peak SAR with sufficient accuracy. The angle between the probe axis and the surface normal line is recommended but not required to be less than 30°. If this angle is larger than 30° and the closest point on the probe-tip housing to the phantom surface is closer than a probe diameter, the boundary effect may become larger and polarization dependent. This additional uncertainty needs to be analyzed and accounted for. To achieve this, modified test procedures and additional uncertainty analyses not described in this recommended practice may be required. The measurement and interpolation point spacing should be chosen such as to allow identification of the local peak locations to within one-half of the linear dimension of a side of the zoom-scan volume. Because a local peak having specific amplitude and steep gradients may produce a lower peak spatial-average SAR compared to peaks with slightly lower amplitude and less steep gradients, it is necessary to evaluate these other peaks as well. However, since the spatial gradients of local SAR peaks are a function of the wavelength inside the tissue-equivalent liquid and the incident magnetic field strength, it is not necessary to evaluate local peaks that are less than 2 dB or more below the global maximum peak. Two-dimensional spline algorithms (Brishoual et al. 2001; Press et al., 1996) are typically used to determine the peaks and gradients within the scanned area. If a peak is found at a distance from the scan border of less than one-half the edge dimension of the desired 1 g or 10 g cube, the measurement area should be enlarged if possible.

- **Zoom Scan**

To evaluate the peak spatial-average SAR values for 1 g or 10 g cubes, fine resolution volume scans, called zoom scans, are performed at the peak SAR locations identified during the area scan. The minimum zoom scan volume size should extend at least 1.5 times the edge dimension of a 1 g cube in all directions from the center of the scan volume, for both 1 g and 10 g peak spatial-average SAR evaluations. Along the phantom curved surfaces, the front face of the volume facing the tissue/liquid interface conforms to the curved boundary, to ensure that all SAR peaks are captured. The back face should be equally distorted to maintain the correct averaging mass. The flatness and orientation of the four side faces are unchanged from that of a cube whose orientation is within ± 30° of the line normal to the phantom at the center of the cube face next to the phantom surface. The peak local SAR locations that were determined in the area scan (interpolated values) should be used for the centers of the zoom scans. If a scan volume cannot be centered due to proximity of a phantom shape feature, the probe should be tilted to allow scan volume enlargement. If probe tilt is not feasible, the zoom-scan origin may be shifted, but not by more than half of the 1 g or 10 g cube edge dimension.

After the zoom-scan measurement, extrapolations from the closest measured points to the surface, for example along lines parallel to the zoom-scan centerline, and interpolations to a finer resolution between all measured and extrapolated points are performed. Extrapolation algorithm considerations are described in 6.5.3, and 3-D spline methods (Brishoual et al., 2001; Kreyszig, 1983; Press et al., 1996) can be used for interpolation. The peak spatial-average SAR is finally determined by a numerical averaging of the local SAR values in the interpolation grid, using for example a trapezoidal algorithm for the integration (averaging).

In some areas of the phantom, such as the jaw and upper head regions, the angle of the probe with respect to the line normal to the surface may be relatively large, e.g., greater than ± 30º, which could increase the boundary effect error to a larger level. In these cases, during the zoom scan a change in the orientation of the probe, the phantom, or both is recommended but not required for the duration of the zoom scan, so that the angle between the probe axis and the line normal to the surface is within 30º for all measurement points.

- **Power Drift measurement**

The robot re-measures the E-Field in the same reference location measured at the Power Reference. The drift measurement gives the field difference in dB from the first to the last reference reading. This allows a user to monitor the power drift of the device under test that must remain within a maximum variation of ±5%.

- **Post-processing**

The procedure for spatial peak SAR evaluation has been implemented according to the IEEE1528 and IEC 62209-1/2 standards. It can be conducted for 1g and 10g.

The software allows evaluations that combine measured data and robot positions, such as:

- ✓ Maximum search
- ✓ Extrapolation
- ✓ Boundary correction
- ✓ Peak search for averaged SAR

Interpolation between the measured points is performed when the resolution of the grid is not fine enough to compute the average SAR over a given mass.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation.

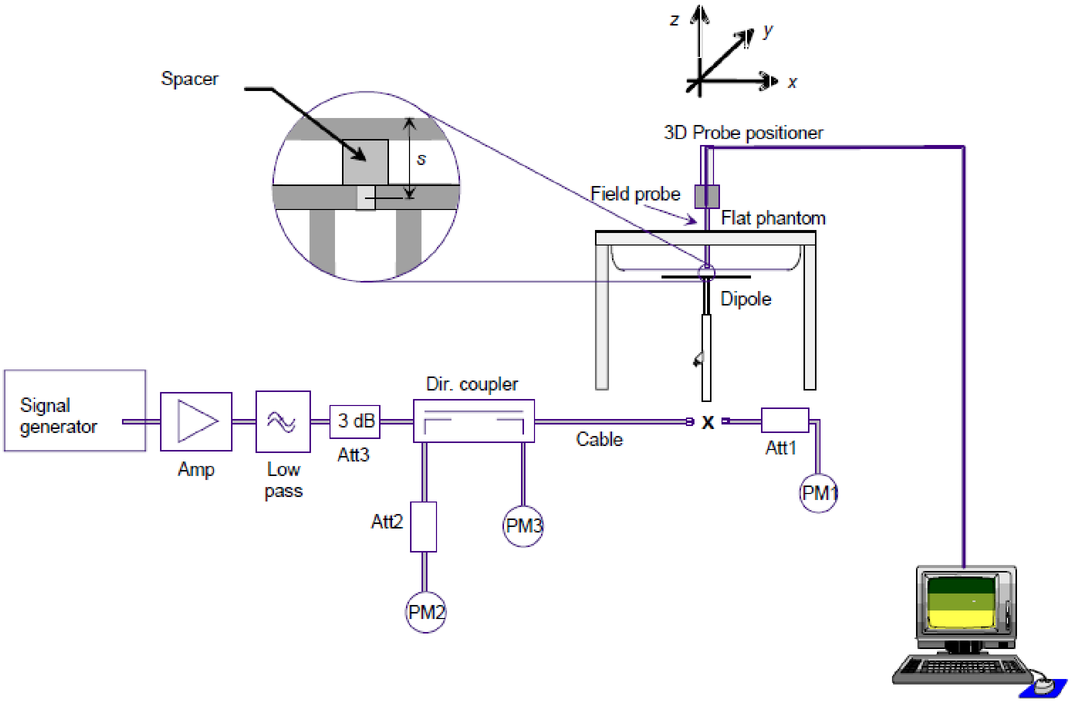
B.4 System and Liquid Check

B.4.1 System Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results.

The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

In the simplified setup for system check, the EUT is replaced by a calibrated dipole and the power source is replaced by a controlled continuous wave generated by a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the phantom at the correct distance.



The equipment setup is shown below:

- ✓ Signal Generator
- ✓ Amplifier
- ✓ Directional coupler
- ✓ Power meter
- ✓ Calibrated dipole

First, the power meter PM1 (including attenuator Att1) is connected to the cable to measure the forward power at the location of the connector (x) to the system check source. The signal generator is adjusted for the desired forward power at the connector as read by power meter PM1 after attenuation Att1 and also as coupled through Att2 to PM2. After connecting the cable to the source, the signal generator is readjusted for the same reading at power meter PM2.

SAR results are normalized to a forward power of 1W to compare the values with the calibration reports results as described at IEC/IEEE 62209-1528:2020 standards.

B.4.2 Liquid Check

The dielectric parameters check is done prior to the use of the tissue simulating liquid. The verification is made by comparing the relative permittivity and conductivity to the values recommended by the applicable standards.

The liquid verification was performed using the following test setup:

- ✓ VNA (Vector Network Analyzer)
- ✓ Open-Short-Load calibration kit
- ✓ RF Cable
- ✓ Open-Ended Coaxial probe
- ✓ DAK software tool
- ✓ SAR Liquid
- ✓ De-ionized water
- ✓ Thermometer

These are the target dielectric properties of the tissue-equivalent liquid material according to the manufacturer's datasheet:

Frequency	Head Tissue Simulating Media	
(MHz)	ε_r (F/m)	σ (S/m)
6000	35.07	5.48
6500	34.46	6.07
7000	33.88	6.65

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m3)

The measurement system implements a SAR error compensation algorithm as documented IEC/IEEE 62209-1528:2020 to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters (applied to only scale up the measured SAR, and not downward) so, according to FCC OET KDB 865664 D01, the tolerance for ε_r and σ may be relaxed to ± 10%.

B.5 Test Equipment List

SAR system #4

Device	Type/Model	Serial Number	Manufacturer	Cal. Date	Cal. Due Date
6-Axis Robot	TX260L Speag	F/21/0032513/A/001	STAÜBLI	NA	NA
Robot Controller	CSE9spe-TX2-60	F/21/0032513/A/001	STAÜBLI	NA	NA
Measurement Server	DASY8 MS	NA	SPEAG	NA	NA
Electro Optical Converter	EOC8-90	1025	SPEAG	NA	NA
Light Beam Unit	LB-85	2076	Di-soric	NA	NA
Oval Flat Phantom	ELI V8.0	2162	SPEAG	NA	NA
Measurement Software	DASY8 v16.2	9-1798AA01_D8	SPEAG	NA	NA
Data Acquisition Electronics	DAE	878	SPEAG	2025/03/05	2026/03/04
Dosimetric E-Field probe	EX3DV4	7893	SPEAG	2024/09/05	2025/09/04
Thermometer	RC-4HC	EF7216002985	Elitech	2024/10/31	2025/10/30
Thermometer	RC-4HC	EF720B004811	Elitech	2024/10/31	2025/10/30

Shared equipment

Device	Type/Model	Serial Number	Manufacturer	Cal. Date	Cal. Due Date
PC	N/A	N/A	Dell	NA	NA
2450MHz Validation Dipole	D2450V2	SN: 952	Speag	2024/05/07	2027/05/06
5GHz Validation Dipole	D5GHzV2	SN: 1200	Speag	2024/05/09	2027/05/08
Signal Generator	Keysight	N5173B	MY62150163	2024/08/12	2025/08/11
Power Meter	NRVD-B2	835843/014	R&S	2024/08/08	2025/08/07
Power Sensor	NRV-Z4	100381	R&S	2024/08/08	2025/08/07
Power Sensor	NRV-Z2	100211	R&S	2024/08/08	2025/08/07
Network Analyzer	E5071C	MY46103472	Agilent	2024/09/11	2025/09/10
Power Amplifier	ZVA-183W-S+	932502132	Mini-Circuits	N/A	N/A
Dielectric Probe Kit	DAK3.5	SN: 1312	Speag	NA	NA
Attenuator	ZA-S1-31	1305003187	COM-MW	N/A	N/A
Directional coupler	AAMCS-UDC	000272	AA-MCS	N/A	N/A

B.5.1 Tissue Simulant Liquid

TSL	Manufacturer / Model	Freq Range (MHz)	Main Ingredients
Head WideBand	SPEAG HBBL600-10000	600-10000	Ethanediol, Sodium petroleum sulfonate, Hexylene Glycol / 2-Methyl-pentane-2.4-diol, Alkoxylated alcohol

B.6 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the table below with a coverage factor of k = 2 to indicate a 95% level of confidence:

DASY8 Uncertainty Budget (Frequency band: 6 GHz–10 GHz range)								
Symbol	Error Description	Uncert. value	Prob.Dist.	Div.	(ci)(1 g)	(ci)(10 g)	Std. Unc. (1 g)	Std. Unc. (10 g)
Measurement System Errors								
CF	Probe Calibration	±18.6%	N	2	1	1	±9.3%	±9.3%
CF_{drift}	Probe Calibration Drift	±1.7%	R	√3	1	1	±1.0%	±1.0%
LIN	Probe Linearity	±4.7%	R	√3	1	1	±2.7%	±2.7%
BBS	Broadband Signal	±2.8%	R	√3	1	1	±1.6%	±1.6%
ISO	Probe Isotropy	±7.6%	R	√3	1	1	±4.4%	±4.4%
DAE	Other Probe+Electronic	±2.4%	N	1	1	1	±2.4%	±2.4%
AMB	RF Ambient	±1.8%	N	1	1	1	±1.8%	±1.8%
Δ_{sys}	Probe Positioning	±0.005 mm	N	1	0.5	0.5	±0.25%	±0.25%
DAT	Data Processing	±3.5%	N	1	1	1	±3.5%	±3.5%
Phantom and Device Errors								
LIQ(σ)	Conductivity (meas.)^{DAK}	±2.5%	N	1	0.78	0.71	±2.0%	±1.8%
LIQ(T_{σ})	Conductivity (temp.)^{BB}	±2.4%	R	√3	0.78	0.71	±1.1%	±1.0%
EPS	Phantom Permittivity	±14.0%	R	√3	0.5	0.5	±4.0%	±4.0%
DIS	Distance DUT – TSL	±2.0%	N	1	2	2	±4.0%	±4.0%
D_{xyz}	Device Positioning	±1.0%	N	1	1	1	±1.0%	±1.0%
H	Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%
MOD	DUT Modulation^{m}	±2.4%	R	√3	1	1	±1.4%	±1.4%
TAS	Time-average SAR	±1.7%	R	√3	1	1	±1.0%	±1.0%
RF_{drift}	DUT drift	±2.5%	N	1	1	1	±2.5%	±2.5%
VAL	Val Antenna Unc.^{val}	±0.0%	N	1	1	1	±0%	±0%
RF_{in}	Unc. Input Power^{val}	±0.0%	N	1	1	1	±0%	±0%
Correction to the SAR results								
C(ε, σ)	Deviation to Target	±1.9%	N	1	1	0.84	±1.9%	±1.6%
C(R)	SAR scaling^{p}	±0%	R	√3	1	1	±0%	±0%
u(ΔSAR)	Combined Uncertainty						±14.2%	±13.9%
U	**Expanded Uncertainty**						±28.4%	±27.9%

B.7 RF Exposure Limits

SAR assessments have been made in line with the requirements of FCC 47CFR Part 2.1093 on the limitation of exposure of the general population / uncontrolled exposure for portable devices.

Exposure Type	General Population / Uncontrolled Environment
Peak spatial-average SAR (averaged over any 1 gram of tissue)	**1.6 W/kg**
Whole body average SAR	**0.08 W/kg**
Peak spatial-average SAR (extremities) (averaged over any 10 grams of tissue)	**4.0 W/kg**

Annex C. Test Results

The herein test results were performed by:

Test case measurement	Test Personnel
Conducted measurement	Xiong Lining
SAR/PD measurement	Xiong Lining

C.1 Test Conditions

C.1.1 Test positions relative to the phantom

The device under test was an Intel® Wi-Fi 6 BE201D2W card inside an extender host platform (ThinkBook Plus G6 Rollable) using a set of PIFA antennas. The card was operated utilizing proprietary software (DRTU version [DRTU.07983.23.120.0]) and each channel was measured using a broadband power meter to determine the maximum average power.

As per the Interim Procedures for UNII 6-7GHz RF Exposure, explained in *RF Exposure Policies and Procedures: TCB Workshop – October 2020*, the testing has been performed on SAR following IEC/IEEE 62209-1528:2020 and then on Power Density for the highest SAR test configurations.

Considering the antenna location diagrams in Annex G and the test exclusions described before, the surfaces/edges to be measured for each antenna are:

Antenna	Aux	Main
Position	• Bottom Side • Front Edge • Left Edge • Right Edge • Keyboard Side	• Bottom Side • Front Edge • Left Edge • Right Edge • Keyboard Side

See *G.2 SAR/PD Test* positions section for more information on the tested positions.

C.1.2 Test signal, Output power and Test Frequencies

For 802.11 transmission modes the device was put into operation by using an own control software to program the test mode required to select the continuous transmission with 100% duty cycle.

The output power of the device was set to transmit at maximum power for all tests.

C.1.3 Evaluation Exclusion and Test Reductions

For FCC:

According with FCC KDB 447498 D04, Appendix B, The SAR-based exemption formula applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold Pth (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). The following table shows the power threshold from 5mm to 50mm.

SAR evaluation — Exemption limits for routine evaluation based on frequency and separation distance					
Frequency	Exemption Limits (mW)				
(MHz)	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
300	39 mW	65 mW	88 mW	110 mW	129 mW
450	22 mW	44 mW	67 mW	89 mW	112 mW
835	9 mW	25 mW	44 mW	66 mW	90 mW
1900	3 mW	12 mW	26 mW	44 mW	66 mW
2450	3 mW	10 mW	22 mW	38 mW	59 mW
3600	2 mW	8 mW	18 mW	32 mW	49 mW
5800	1 mW	6 mW	14 mW	25 mW	40 mW
Frequency	Exemption Limits (mW)				
(MHz)	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
300	148 mW	166 mW	184 mW	201 mW	217 mW
450	135 mW	158 mW	180 mW	203 mW	226 mW
835	116 mW	145 mW	175 mW	207 mW	240 mW
1900	92 mW	122 mW	157 mW	195 mW	236 mW
2450	83 mW	111 mW	143 mW	179 mW	219 mW
3600	71 mW	96 mW	125 mW	158 mW	195 mW
5800	58 mW	80 mW	106 mW	136 mW	169 mW

LAN Antenna	Band Name	Output power Notebook		Bottom Side	Front Edge	Left Edge	Right Edge	Keyboard Side	Bottom Side	Front Edge	Left Edge	Right Edge	Keyboard Side
		dBm	mW										
Aux	U-NII-5	16	39.81	**<50**	**<50**	**>50**	**<50**	**<50**	T	T	R	T	T
	U-NII-6	14.5	28.18	**<50**	**<50**	**>50**	**<50**	**<50**	T	T	R	T	T
	U-NII-7	16	39.81	**<50**	**<50**	**>50**	**<50**	**<50**	T	T	R	T	T
	U-NII-8	16	39.81	**<50**	**<50**	**>50**	**<50**	**<50**	T	T	R	T	T
Main	U-NII-5	15.5	35.48	**<50**	**<50**	**<50**	**>50**	**<50**	T	T	T	R	T
	U-NII-6	14.5	28.18	**<50**	**<50**	**<50**	**>50**	**<50**	T	T	T	R	T
	U-NII-7	15.5	35.48	**<50**	**<50**	**<50**	**>50**	**<50**	T	T	T	R	T
	U-NII-8	15.5	35.48	**<50**	**<50**	**<50**	**>50**	**<50**	T	T	T	R	T

T: Tested position
R: Reduced

See Annex *G* for a more detailed explanation of the separation distance related to the platform.

C.2 Conducted Power Measurements

C.2.1 WLAN 6-7GHz (U-NII)

C.2.1.1 6.2GHz (U-NII-5) -Notebook mode

Band	Mode	Data Rate	Ch #	Freq (MHz)	Average power (dBm) -Main	Tune-up Pwr (dBm)	Average power (dBm) -Aux	Tune-up Pwr (dBm)	SAR Test?
6GHz	802.11ax20/be	MCS0	1	5955	NR[1]	6.00	NR[1]	6.00	No[2]
			45	6175		6.00		6.00	
			93	6415		6.00		6.00	
			97	6435		6.00		6.00	
			105	6475		6.00		6.00	
			113	6515		6.00		6.00	
			117	6535		6.00		6.00	
			153	6715		6.00		6.00	
			181	6855		6.00		6.00	
			185	6875		6.00		6.00	
			213	7015		6.00		6.00	
			233	7115		6.00		6.00	
	802.11ax40/be		3	5965		9.00		9.00	
			43	6165		9.00		9.00	
			91	6405		9.00		9.00	
			99	6445		9.00		9.00	
			107	6485		9.00		9.00	
			115	6525		9.00		9.00	
			123	6565		9.00		9.00	
			155	6725		9.00		9.00	
			179	6845		9.00		9.00	
			187	6885		9.00		9.00	
			211	7005		9.00		9.00	
			227	7085		9.00		9.00	
	802.11ax80/be		7	5985		12.00		12.00	
			39	6145		12.00		12.00	
			87	6385		12.00		12.00	
			103	6465		12.00		12.00	
			119	6545		12.00		12.00	
			135	6625		12.00		12.00	
			151	6705		12.00		12.00	
			167	6785		12.00		12.00	
			183	6865		12.00		12.00	
			199	6945		12.00		12.00	
			215	7025		12.00		12.00	
	802.11ax160/be		15	6025		14.50		14.50	
			47	6185		14.50		14.50	

			79	6345		14.50		14.50	
			111	6505	14.21	14.50	14.44	14.50	Yes[2]
			143	6665	NR[1]	14.50	NR[1]	14.50	No
			175	6825		14.50		14.50	
			207	6985		14.50		14.50	
	802.11be320		31	6105	15.11	15.50	15.51	15.50	Yes
			63	6265	**15.46**	15.50	15.26	15.50	
			95	6425	15.41	15.50	**15.60**	15.50	
			127	6585	14.92	15.50	15.54	15.50	
			159	6745	15.33	15.50	15.56	15.50	
			191	6905	15.22	15.50	15.57	15.50	

Initial test configuration

1. NR: Not Required
2. All bandwidths of 6GHz have the same Tune up, and 6.5GHz has no corresponding channel in 320M bandwidth, so channel 111 in 160M bandwidth is selected for SAR test.

C.3 Tissue Parameters Measurement

Head TSL

Freq. (MHz)	Target Parameters		Measured TSL Parameters		Deviation (%)		Date
	ε' (F/m)	σ (S/m)	ε' (F/m)	σ (S/m)	ε'	σ	
6500.0	34.46	6.07	33.22	6.14	-3.60	1.15	2025.06.14
6500.0	34.46	6.07	33.74	6.09	-2.09	0.33	2025.06.15

See *Annex E* for more details.

C.4 System Check Measurements

C.4.1 E-Field

Frequency	Signal Type	Target E-field (V/m)	Measured E-field Normalized to 22dBm (V/m)	Deviation (dB)	Date
10 GHz	Continuous Wave	296.00	281.60	-0.22	2025.06.17
10 GHz	Continuous Wave	296.00	288.40	-0.11	2025.06.18

The E-fields presented in the System Check Measurements table are Peak values. The target E-field value is obtained by simulation. The maximum target E-field value at 10 mm with 22.0 dBm (158.49 mW) source power is 296 V/m.

C.4.2 Averaged Power Density

Frequency	Signal Type	Target Spatially Averaged Power Density (W/m2)	Measured Spatially Averaged Power Density Normalized to 22dBm (W/m2)	Deviation (dB)	Date
10 GHz	Continuous Wave	183.00	184.0	0.02	2025.06.17
10 GHz	Continuous Wave	183.00	196.4	0.31	2025.06.18

The Local Power Density presented in the System Check Measurements table are average values. The target Local Power Density value is obtained by calibration certificate. The target Local Power Density value at 10 mm with 22.0 dBm (158.49 mW) source power is 183.0 W/m^2.

See *Annex D* for more details.

C.4.3 SAR

Head Measurements

Frequency (MHz)	Average	Target SAR (W/kg)	Measured SAR Normalized to 1W (W/kg)	Forwarded Power (mW)	Deviation to target (%)	Limit (%)	Date
6500	1g	299.00	293.00	100	-2.01	±10	2025.06.14
6500	1g	299.00	305.00	100	2.01		2025.06.15
6500	10g	55.20	53.50	100	-3.08		2025.06.14
6500	10g	55.20	54.10	100	-1.99		2025.06.15

C.5 Test Results

C.5.1 SAR - 802.11ax – 6.GHz

Antenna Manufacturer	Mode Data rate	BW (MHz)	Channel Number	Freq (MHz)	Test state	Test position	Antenna	Scaling Factor (dB).	Duty cycle Factor	Measured SAR 1g. (W/kg)	Reported SAR 1g (W/kg)	Measured APD (W/m2) *	Reported C-APD (W/m2) *	No Plot
Body														
Luxshare-ict	802.11 be MCS0	320	95	6425	Laptop	Bottom Side	Aux.	1.096	1.015	0.845	0.940	3.910	4.350	/
INPAQ	802.11 be MCS0	320	31	6105		Bottom Side	Aux.	1.119	1.015	0.863	0.980	3.990	4.532	/
INPAQ	802.11 be MCS0	320	63	6266		Bottom Side	Aux.	1.186	1.015	0.812	0.977	3.750	4.514	/
INPAQ	802.11 be MCS0	320	95	6425		Bottom Side	Aux.	1.096	1.015	0.886	0.986	4.090	4.550	/
INPAQ	802.11 be MCS0	320	127	6585		Bottom Side	Aux.	1.112	1.015	0.932	1.052	4.300	4.853	/
INPAQ	802.11 be MCS0	320	159	6745		Bottom Side	Aux.	1.107	1.015	0.989	**1.111**	4.560	**5.124**	2#
INPAQ	802.11 be MCS0	320	191	6905		Bottom Side	Aux.	1.104	1.015	0.912	1.022	4.210	4.718	/
Luxshare-ict	802.11 ax MCS0	160	111	6505		Bottom Side	Aux.	1.014	1.015	0.723	0.744	3.340	3.438	/
Luxshare-ict	802.11 be MCS0	320	95	6425		Front Edge	Aux.	1.096	1.015	0.035	0.039	0.162	0.180	/
INPAQ	802.11 be MCS0	320	95	6425		Front Edge	Aux.	1.096	1.015	0.023	0.026	0.106	0.118	/
Luxshare-ict	802.11 be MCS0	320	31	6105		Bottom Side	Main	1.094	1.015	0.903	1.003	4.170	4.630	/
Luxshare-ict	802.11 be MCS0	320	63	6266		Bottom Side	Main	1.009	1.015	0.932	0.954	4.310	4.414	/
Luxshare-ict	802.11 be MCS0	320	95	6425		Bottom Side	Main	1.021	1.015	0.951	0.986	4.390	4.549	/
Luxshare-ict	802.11 be MCS0	320	127	6585		Bottom Side	Main	1.143	1.015	0.864	1.002	3.990	4.629	/
Luxshare-ict	802.11 be MCS0	320	159	6745		Bottom Side	Main	1.040	1.015	0.883	0.932	4.080	4.307	/
Luxshare-ict	802.11 be MCS0	320	191	6905		Bottom Side	Main	1.067	1.015	1.010	**1.094**	4.650	**5.036**	1#
INPAQ	802.11 be MCS0	320	191	6905		Bottom Side	Main	0.993	1.015	0.858	0.865	3.960	3.991	/
Luxshare-ict	802.11 ax MCS0	160	111	6505		Bottom Side	Main	1.069	1.015	0.721	0.782	3.330	3.613	/
Luxshare-ict	802.11 be MCS0	320	63	6266		Front Edge	Main	1.009	1.015	0.038	0.039	0.176	0.180	/
INPAQ	802.11 be MCS0	320	63	6266		Front Edge	Main	1.009	1.015	0.026	0.027	0.121	0.124	/

Antenna Manufacturer	Mode Data rate	BW (MHz)	Channel Number	Freq (MHz)	Test state	Test position	Antenna	Scaling Factor (dB).	Duty cycle Factor	Measured SAR 10g. (W/kg)	Reported SAR 1g (W/kg)	Measured APD (W/m2)*	Reported C-APD (W/m2)*	No Plot
Limbs														
Luxshare-ict	802.11 be MCS0	320	95	6425	Laptop	Right edge	Aux.	1.096	1.015	0.201	0.224	3.650	4.060	/
INPAQ	802.11 be MCS0	320	31	6105		Right edge	Aux.	1.119	1.015	0.331	0.376	6.010	6.826	/
INPAQ	802.11 be MCS0	320	63	6266		Right edge	Aux.	1.186	1.015	0.226	0.272	4.110	4.948	/
INPAQ	802.11 be MCS0	320	95	6425		Right edge	Aux.	1.096	1.015	0.231	0.257	4.210	4.683	/
INPAQ	802.11 be MCS0	320	127	6585		Right edge	Aux.	1.112	1.015	0.256	0.289	4.660	5.260	/
INPAQ	802.11 be MCS0	320	159	6745		Right edge	Aux.	1.107	1.015	0.348	**0.391**	**6.330**	**7.112**	4#
INPAQ	802.11 be MCS0	320	191	6905		Right edge	Aux.	1.104	1.015	0.226	0.253	4.120	4.617	/
Luxshare-ict	802.11 ax MCS0	160	111	6505		Right edge	Aux.	1.014	1.015	0.202	0.208	3.680	3.787	/
Luxshare-ict	802.11 be MCS0	320	95	6425		Keyboard Side	Aux.	1.096	1.015	0.157	0.175	3.720	4.138	/
INPAQ	802.11 be MCS0	320	95	6425		Keyboard Side	Aux.	1.096	1.015	0.177	0.197	3.220	3.582	/
Luxshare-ict	802.11 be MCS0	320	31	6105		Left edge	Main	1.094	1.015	0.803	0.892	14.600	16.212	/
Luxshare-ict	802.11 be MCS0	320	63	6266		Left edge	Main	1.009	1.015	0.725	0.742	13.200	13.519	/
Luxshare-ict	802.11 be MCS0	320	95	6425		Left edge	Main	1.021	1.015	0.613	0.635	11.200	11.607	/
Luxshare-ict	802.11 be MCS0	320	127	6585		Left edge	Main	1.143	1.015	0.712	0.826	12.800	14.850	/
Luxshare-ict	802.11 be MCS0	320	159	6745		Left edge	Main	1.040	1.015	0.703	0.742	12.500	13.195	/
Luxshare-ict	802.11 be MCS0	320	191	6905		Left edge	Main	1.067	1.015	0.913	**0.989**	**16.500**	**17.870**	3#
INPAQ	802.11 be MCS0	320	191	6905		Left edge	Main	0.993	1.015	0.821	0.827	14.900	14.900	/
Luxshare-ict	802.11 ax MCS0	160	111	6505		Left edge	Main	1.069	1.015	0.662	0.718	12.000	11.800	/
Luxshare-ict	802.11 be MCS0	320	63	6266		Keyboard Side	Main	1.009	1.015	0.157	0.161	2.860	2.830	/
INPAQ	802.11 be MCS0	320	63	6266		Keyboard Side	Main	1.009	1.015	0.208	0.213	3.790	3.760	/

* For reference purposes only, not specifically for compliance, the estimated absorbed (epithelial) power density derived from the measured SAR is shown

Power Density General Note:

1. The reported PD is the measured Total PD value adjusted for maximum tune-up tolerance and duty cycle factor.
    a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
    b. For PD testing of WIFI signal with non-100% duty cycle, the measured PD is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)".
2. The most conservative test distance of 2mm was applied to PD measurement.
3. Power density was calculated by repeated E-field measurements on two measurement planes separated by λ/4.
4. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools.
5. Per FCC guidance and equipment manufacturer guidance, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 2.66 dB (84.5%) was used to determine the psPD measurement scaling factor.
6. According to TCBC workshop in October 2018 that $4cm^2$averaging area may now be considered.
7. The measurement procedure consists of measuring the PDinc at two different distances: 2 mm (compliance distance) and λ/5. The grid extents should be large enough to fully capture the transmitted energy. The grid step should be fine enough to demonstrate that the integrated Power Density iPDn fulfill the criterion described below. Since iPD ratio between the two distances is ≥-1dB, the grid step (0.0625) was sufficient for determining compliance at d = 2mm.

$$10 \cdot log_{10} \frac{iPD_n(2mm)}{iPD_n(\lambda/5)} \geq -1$$

C.5.2 Power Density - 802.11ax – 6.2 GHz – U-NII-5

Ant.	Mode Data rate	BW (MHz)	Position	Dist. (mm)	Ch.	Freq. (MHz)	IPDn	IPD ratio (≥-1)
Aux.	802.11be MCS0	320	Bottom Side	2	159	6745	37.1	0.37
Aux.	802.11be MCS0	320	Bottom Side	8.9	159	6745	34.1	

Ant.	Mode Data rate	BW (MHz)	Ch #	Freq (MHz)	Test state	Test position	*Uncertainty Cor. Factor	PStot avg $[W/m^2]$ $4cm^2$	Tune-up Scaling Factor	Duty cycle Factor	Meas. uncertainty Scaling Factor	C-PStot avg $[W/m^2]$ $4cm^2$	Plot #
Aux.	802.11be MCS0	320	95	6425	Laptop	Bottom Side	1.545	3.260	1.096	1.015	1.545	5.603	/
Aux.			95	6425		Front edge	1.545	0.537	1.096	1.015	1.545	0.923	/
Main			159	6745		Bottom Side	1.545	4.050	1.107	1.015	1.545	**7.031**	5#
Main			191	6905		Bottom Side	1.545	3.510	1.104	1.015	1.545	6.077	/
Main		160	111	6505		Bottom Side	1.545	2.570	1.014	1.015	1.545	4.087	/
Main		320	63	6265		Bottom Side	1.545	3.510	1.009	1.015	1.545	5.554	/
Main			63	6265		Front edge	1.545	0.477	1.009	1.015	1.545	0.755	/

* The correction factor uncertainty in dB corresponds to the difference between the actual uncertainty and the 30% target value, as per the TCB Workshop Oct 20

**C-PStot = Compensated PStot

C.5.3 Measurement Variability

According to FCC OET KDB 865664, SAR Measurement variability is assessed when the maximum initial measured SAR is ≥0.8 W/kg for a certain band/mode. If the measured SAR value of the initial repeated measurement is <1.45 W/kg with <20% variation, only one repeated measurement is required to confirm that the results are not expected to have substantial variations.

A second repeated measurement is required only if the measured results for the initial repeated measurement are within 10% of the SAR limit or vary by more than 20%.

A third repeated measurement is required only if the original, first or second repeated measurement ≥1.5W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurement is > 1.2.

Band / Mode	Position	Ch #	Freq. (MHz)	Measured SAR 1g (W/kg)	1st Repeated SAR 1g (W/kg)	2nd Repeated SAR 1g (W/kg)	Highest Ratio
802.11EHT320	Bottom Side	191	6905	1.01	0.988		1.02

C.5.4 Simultaneous Transmission Evaluation – SAR

According to FCC OET KDB 447498, when the sum of 1g SAR for all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration.

All the values stated in the table below are the worst case found for standalone measurement with disregard of the transmission mode or channel where the worst case was found.

Antenna	Position	Highest Reported SAR (1g) (W/kg) Body	
		WLAN 6GHz	Bluetooth*
Main	Bottom Side	1.094	/
Aux		1.111	0.234
Main	Front Edge	0.040	/
Aux		0.041	0.106

Antenna	Position	Highest Reported SAR (10g) (W/kg) Limbs	
		WLAN 6GHz	Bluetooth*
Main	Keyboard Side	0.213	/
Aux		0.197	0.152
Main	Left Edge	0.989	/
Aux		0.000	/
Main	Right Edge	0.000	/
Aux		0.391	0.282

* For Bluetooth values refer to test report BL-SZ2530119-701
** CH79 and CH207 was considered for Back position as the highest standalone measurement on UNII-5 for Aux and UNII-8 Main transmitters for the simultaneous transmission with MIMO power.
***This combination requires SISO value for simultaneous considerations.

Position	Simultaneous Tx Antenna Combination		Σ SAR 1g (W/kg)	Limit (W/kg)
	Main	Aux		
Bottom Side	WLAN 6 GHz	BT	1.328	1.6
	WLAN 6 GHz	WLAN 6 GHz	**2.205**1#	
	WLAN 6GHz	WLAN 6GHz + BT	**2.439**2#	
Front Edge	WLAN 6 GHz	BT	0.145	
	WLAN 6 GHz	WLAN 6 GHz	0.078	
	WLAN 6GHz	WLAN 6GHz + BT	0.184	

Position	Simultaneous Tx Antenna Combination		Σ SAR 10g (W/kg)	Limit (W/kg)
	Main	Aux		
Keyboard Side	WLAN 6 GHz	BT	0.365	4.0
	WLAN 6 GHz	WLAN 6 GHz	0.410	
	WLAN 6GHz	WLAN 6GHz + BT	0.562	
Left Edge	WLAN 6 GHz	BT	0.989	
	WLAN 6 GHz	WLAN 6 GHz	0.989	
	WLAN 6GHz	WLAN 6GHz + BT	0.989	
Right Edge	WLAN 6 GHz	BT	0.282	
	WLAN 6 GHz	WLAN 6 GHz	0.391	
	WLAN 6GHz	WLAN 6GHz + BT	0.673	

In case the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio:

Case No.	Position	Antenna	Reported SAR 1g (W/kg)	Σ SAR 1g (W/kg)	Peak Location (mm) (x,y,z)	SAR to peak location separation ratio	Limit
1#	Bottom Side	WLAN6G Ant.Aux	1.111	2.21	(-8.1 ;-151.9 ;-175.6)	0.01	0.04
		WLAN6G Ant.Main	1.094		(-21.7 ;153.6 ;-175.6)		

Case No.	Position	Antenna	Reported SAR 1g (W/kg)	Σ SAR 1g (W/kg)	Peak Location (mm) (x,y,z)	SAR to peak location separation ratio	Limit
2#	Bottom Side	BT+WLAN6G Ant.Aux	1.345	2.44	(-8.1 ;-151.9;-175.6)	0.01	0.04
		WLAN6G Ant.Main	1.094		(-21.7 ;153.6 ;-175.6)		

Considering the results described above and according to the simultaneous transmission evaluation exclusions described in FCC OET KDB 447498, no enlarged zoom scan measurements are required

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Annex D. Test System Plots

1. U-NII-8 - 802.11be320, CH191, Main Antenna –Bottom Side

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [℃]	Liquid Temperature [℃]
Flat, HSL	BOTTOM, 0.00	U-NII-7	WLAN, 11026-AAB	6905.0, 191	5.11	6.67	32.3	22.3	21.4

Hardware Setup

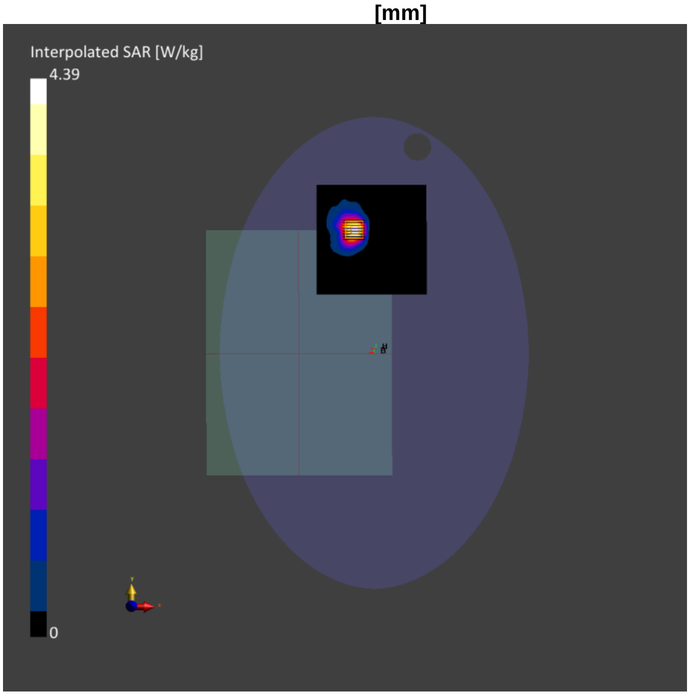
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2162	HBBL-600-10000 2025-06-14	EX3DV4 - SN7893, 2024-09-05	DAE4 Sn878, 2025-03-05

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	136.0 x 136.0	23.8 x 23.8 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	Y	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-06-14	2025-06-14
psSAR1g [W/kg]	1.02	1.01
psSAR10g [W/kg]	0.384	0.383
APD4cm^2 [W/m^2]		4.65
Power Drift [dB]	-0.09	-0.15
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		55.8
Dist 3dB Peak [mm]		10.6



2. U-NII-7 - 802.11be320, CH159, Aux Antenna–Bottom Side

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [℃]	Liquid Temperature [℃]
Flat, HSL	BOTTOM, 0.00	U-NII-7	WLAN, 11026-AAB	6745.0, 159	5.11	6.36	32.8	22.3	21.4

Hardware Setup

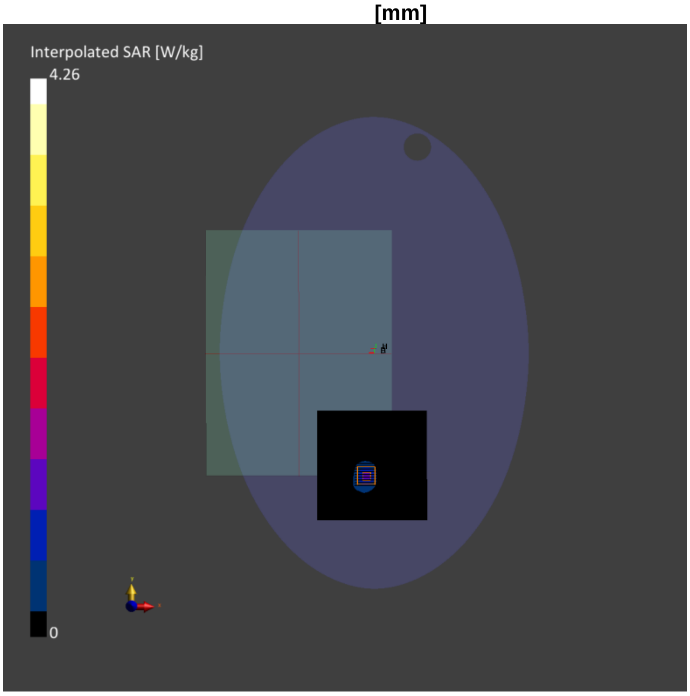
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2162	HBBL-600-10000 2025-06-14	EX3DV4 - SN7893, 2024-09-05	DAE4 Sn878, 2025-03-05

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	136.0 x 136.0	23.8 x 23.8 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	Y	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-06-14	2025-06-14
psSAR1g [W/kg]	0.971	0.989
psSAR10g [W/kg]	0.350	0.355
APD4cm^2 [W/m^2]		4.56
Power Drift [dB]	0.08	0.11
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		55.6
Dist 3dB Peak [mm]		9.1



3. U-NII-7 - 802.11be320, CH191, Main Antenna–Left Edge

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [℃]	Liquid Temperature [℃]
Flat, HSL	EDGE LEFT, 0.00	U-NII-7	WLAN, 11013-AAB	6905.0, 191	5.11	6.67	32.3	22.3	21.4

Hardware Setup

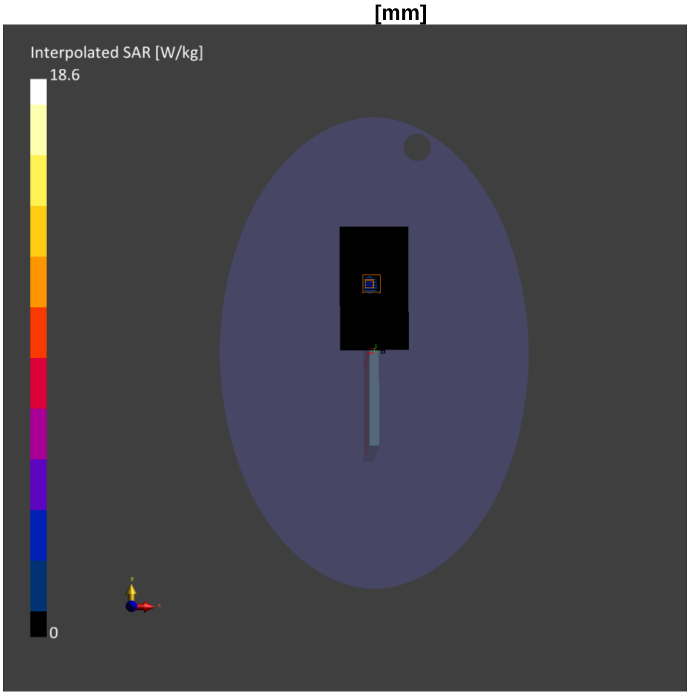
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2162	HBBL-600-10000 2025-06-14	EX3DV4 - SN7893, 2024-09-05	DAE4 Sn878, 2025-03-05

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	85.0 x 153.0	23.8 x x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-06-14	2025-06-14
psSAR1g [W/kg]	3.25	3.60
psSAR10g [W/kg]	0.890	0.913
APD4cm^2 [W/m^2]		16.50
Power Drift [dB]	-0.02	0.11
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		56.0
Dist 3dB Peak [mm]		4.3



4. U-NII-5 - 802.11be320, CH159, Aux Antenna–Right Edge

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [℃]	Liquid Temperature [℃]
Flat, HSL	EDGE RIGHT, 0.00	U-NII-5	WLAN, 11013-AAB	6745.0, 159	5.11	6.36	32.8	22.3	21.4

Hardware Setup

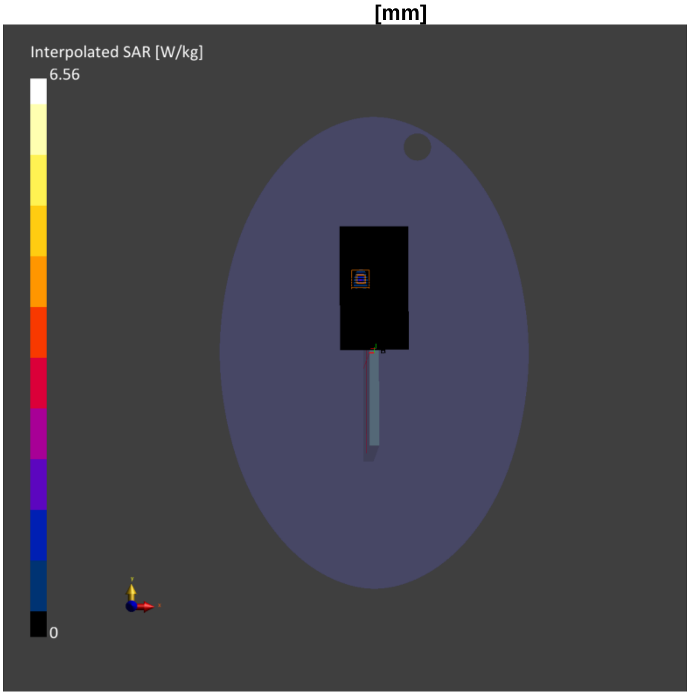
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2162	HBBL-600-10000 2025-06-14	EX3DV4 - SN7893, 2024-09-05	DAE4 Sn878, 2025-03-05

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	85.0 x 153.0	23.8 x 23.8 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-06-14	2025-06-14
psSAR1g [W/kg]	1.17	1.29
psSAR10g [W/kg]	0.323	0.348
APD4cm^2 [W/m^2]		6.33
Power Drift [dB]	-0.09	-0.18
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		56.5
Dist 3dB Peak [mm]		5.0



5. U-NII-7 - 802.11be320, CH159, Aux Antenna –Bottom Side(PD)

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G Air	BACK, 2.00	U-NII-7	WLAN, 11026-AAA	6745.0, 159	1.0

Hardware Setup

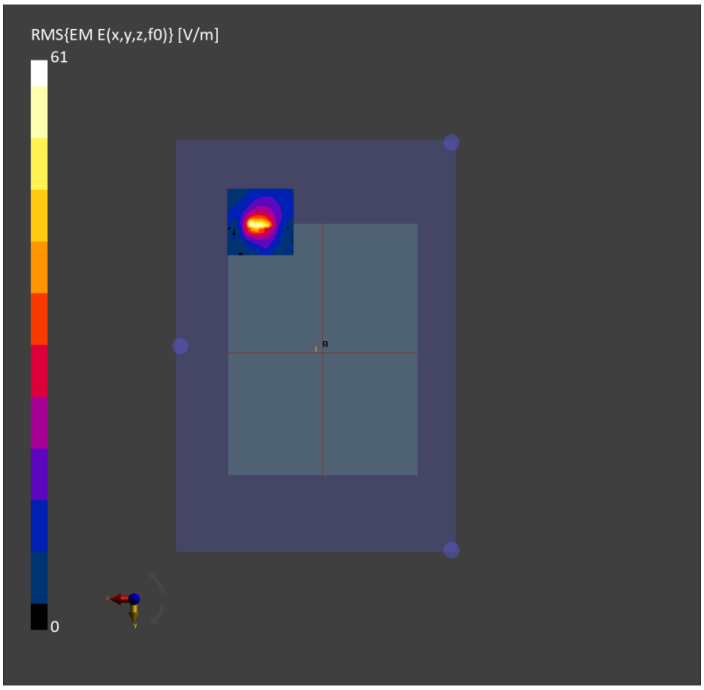
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave- 1083	Air---	EUmmWV4 - SN9565_F1-55GHz, 2025-01-15	DAE4 Sn540, 2025-04-21

Scan Setup

	5G Scan
Grid Extents [mm]	80.0 x 80.0
Grid Steps [lambda]	0.0625 x 0.0625
Sensor Surface [mm]	3.5
MAIA	Y

Measurement Results

	5G Scan
Date	2025-06-18
Avg. Area [cm^2]	4.00
psPDn+ [W/m^2]	2.99
psPDtot+ [W/m^2]	4.05
psPDmod+ [W/m^2]	4.47
E_{max} [V/m]	61.0
Power Drift [dB]	-0.14



6. SAR System Check From6500MHz

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [℃]	Liquid Temperature [℃]
Flat, HSL		Validation band	CW, 0--	6500.0, 6500	5.11	6.14	33.2	22.3	21.4

Hardware Setup

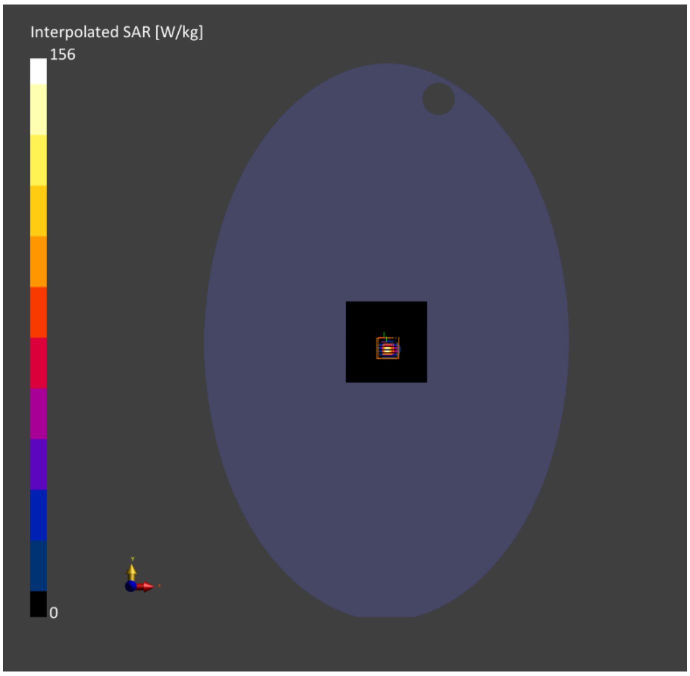
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2162	HBBL-600-10000 2025-06-14	EX3DV4 - SN7893, 2024-09-05	DAE4 Sn878, 2025-03-05

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	85.0 x 85.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	All points	All points
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-06-14	2025-06-14
psSAR1g [W/kg]	19.9	29.3
psSAR10g [W/kg]	4.06	5.35
APD4cm^2 [W/m^2]		132
Power Drift [dB]	0.01	0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		49.6
Dist 3dB Peak [mm]		4.5



7. SAR System Check From6500MHz

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [℃]	Liquid Temperature [℃]
Flat, HSL		Validation band	CW, 0--	6500.0, 6500	5.11	6.09	33.7	22.3	21.3

Hardware Setup

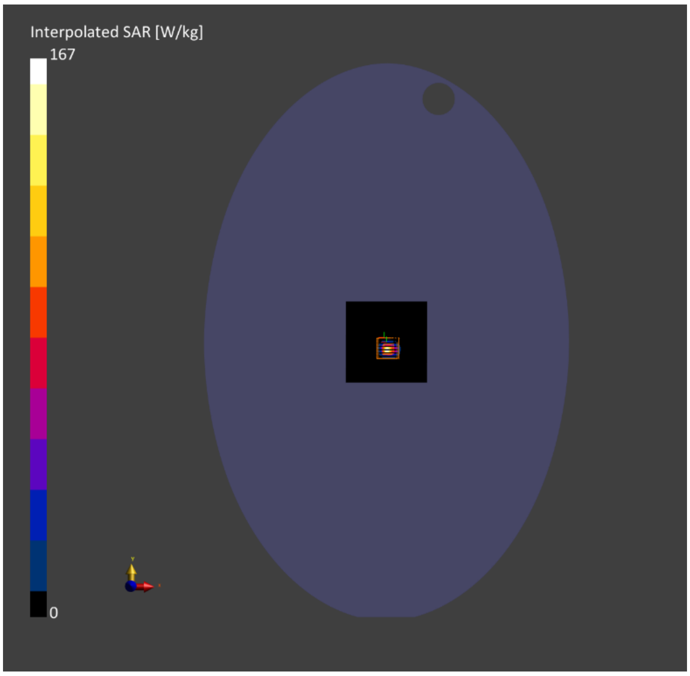
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2162	HBBL-600-10000 2025-06-15	EX3DV4 - SN7893, 2024-09-05	DAE4 Sn878, 2025-03-05

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	85.0 x 85.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	All points	All points
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-06-15	2025-06-15
psSAR1g [W/kg]	29.3	30.5
psSAR10g [W/kg]	5.39	5.41
APD4cm^2 [W/m^2]		139
Power Drift [dB]	0.01	0.07
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		49.5
Dist 3dB Peak [mm]		4.4



8. Power Density System Check From 10000MHz

Measurement Report for Device

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G Air	EDGE TOP, 10.00	Validation band	CW, 0--	10000.0, 10000	1.0

Hardware Setup

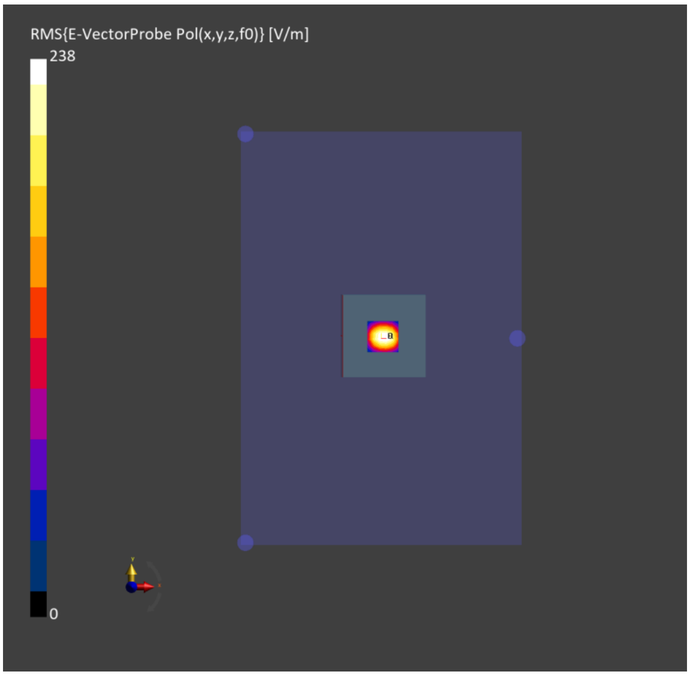
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave- 1083	Air---	EUmmWV4 - SN9565_F1-55GHz, 2025-01-15	DAE4 Sn540, 2025-04-21

Scan Setup

	5G Scan
Grid Extents [mm]	25.0 x 25.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	10.0
MAIA	N/A

Measurement Results

	5G Scan
Date	2025-06-17
Avg. Area [cm^2]	4.00
psPDn+ [W/m^2]	161
psPDtot+ [W/m^2]	164
psPDmod+ [W/m^2]	162
E_{max} [V/m]	251
Power Drift [dB]	0.08



9. Power Density System Check From 10000MHz

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G Air	EDGE TOP, 10.00	Validation band	CW, 0--	10000.0, 10000	1.0

Hardware Setup

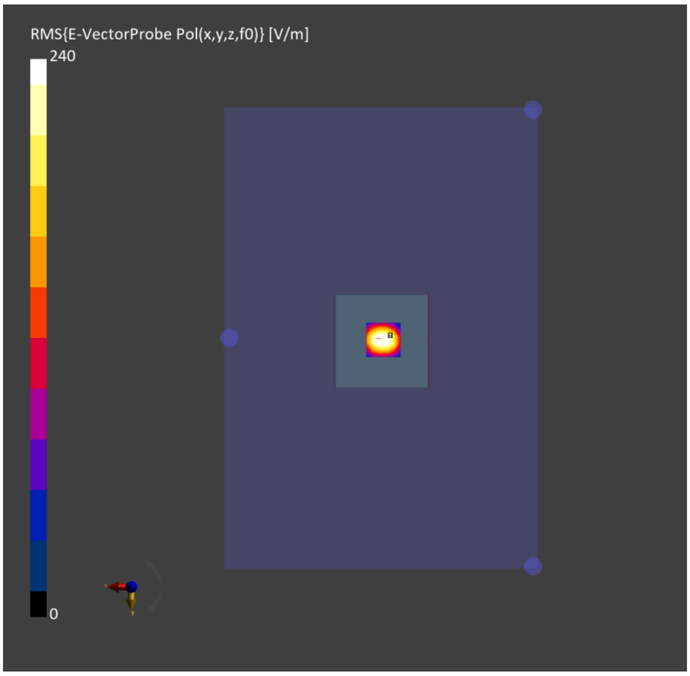
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave- 1083	Air---	EUmmWV4 - SN9565_F1-55GHz, 2025-01-15	DAE4 Sn540, 2025-04-21

Scan Setup

	5G Scan
Grid Extents [mm]	25.0 x 25.0
Grid Steps [lambda]	0.25 x 0.25
Sensor Surface [mm]	10.0
MAIA	N/A

Measurement Results

	5G Scan
Date	2025-06-18
Avg. Area [cm^2]	4.00
psPDn+ [W/m^2]	163
psPDtot+ [W/m^2]	175
psPDmod+ [W/m^2]	167
E_{max} [V/m]	257
Power Drift [dB]	-0.01



Annex E. TSL Dielectric Parameters

E.1 Head WiFi 6E 7000MHz

Freq.(MHz)	Target		2025.06.14	
	ε’(F/m)	σ(S/m)	ε’1(F/m)	σ1(S/m)
5900	35.18	5.37	35.781	5.123
5950	35.13	5.43	35.713	5.181
6000	35.07	5.48	35.692	5.233
6050	35.01	5.54	35.569	5.313
6100	34.95	5.59	35.474	5.383
6150	34.89	5.65	35.379	5.425
6200	34.83	5.71	35.206	5.457
6250	34.77	5.77	33.753	5.813
6300	34.70	5.83	33.664	5.865
6350	34.64	5.89	33.544	5.960
6400	34.58	5.95	33.489	6.016
6450	34.52	6.01	33.351	6.092
6500	34.46	6.07	33.219	6.136
6550	34.40	6.13	33.101	6.196
6600	34.34	6.19	33.044	6.251
6650	34.29	6.25	32.966	6.326
6700	34.23	6.30	32.807	6.358
6750	34.17	6.36	32.643	6.448
6800	34.11	6.42	32.571	6.517
6850	34.05	6.48	32.437	6.594
6900	33.99	6.53	32.322	6.669
6950	33.94	6.59	32.294	6.679
7000	33.88	6.65	32.265	6.655
7050	33.82	6.71	32.247	6.666
7100	33.76	6.77	32.189	6.694
7150	33.70	6.83	32.103	6.608
7200	33.64	6.89	32.045	6.629

Freq.(MHz)	Target		2025.06.15	
	ε'(F/m)	σ(S/m)	ε'1(F/m)	σ1(S/m)
5900	35.18	5.37	34.797	5.417
5950	35.13	5.43	34.669	5.522
6000	35.07	5.48	34.555	5.522
6050	35.01	5.54	34.544	5.595
6100	34.95	5.59	34.487	5.674
6150	34.89	5.65	34.270	5.739
6200	34.83	5.71	34.217	5.759
6250	34.77	5.77	34.199	5.783
6300	34.70	5.83	34.134	5.891
6350	34.64	5.89	33.998	5.890
6400	34.58	5.95	33.961	5.972
6450	34.52	6.01	33.895	6.052
6500	34.46	6.07	33.739	6.092
6550	34.40	6.13	33.575	6.118
6600	34.34	6.19	33.520	6.203
6650	34.29	6.25	33.474	6.282
6700	34.23	6.30	33.267	6.302
6750	34.17	6.36	33.131	6.404
6800	34.11	6.42	33.051	6.473
6850	34.05	6.48	32.961	6.550
6900	33.99	6.53	32.870	6.625
6950	33.94	6.59	32.787	6.635
7000	33.88	6.65	32.653	6.611
7050	33.82	6.71	32.583	6.622
7100	33.76	6.77	32.465	6.650
7150	33.70	6.83	32.361	6.626
7200	33.64	6.89	32.330	6.673