

FCC 47 CFR § 2.1093

RF EXPOSURE EVALUATION REPORT (Digitizer)

FOR

Tablet + BT/BLE, DTS/UNII a/b/g/n/ac/ax/be and Digitizer

MODEL NUMBER: SM-X940

FCC ID: A3LSMX940

REPORT NUMBER: S-4792232056-S2V1

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Prepared for

**SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, KOREA**

Prepared by

UL Korea, Ltd.

26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

**Suwon Test Site: UL Korea, Ltd. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433**



Testing Laboratory

TL-637

Revision History			
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1. Attestation of SAR Characterization

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.
FCC ID	A3LSMX940
Model Number	SM-X940
Applicable Standards	FCC 47 CFR § 2.1093
Exposure Category	1-g SAR limit (W/kg)
General population / Uncontrolled exposure	1.6
RF Exposure Conditions	The Highest Reported SAR (W/kg)
	< 0.10
Date Tested	2026-06-18 to 2026-06-19
Test Results	Pass
<p>UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.</p> <p>Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government</p>	
Approved & Released By:	Prepared By:
	
Justin Park Operations Leader UL Korea, Ltd. Suwon Laboratory	Taehun Kim Laboratory Engineer UL Korea, Ltd. Suwon Laboratory

2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093.

- 447498 D04 Interim General RF Exposure Guidance v01
- 680106 D01 Wireless Power Transfer v04

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

- [TCB workshop](#) October, 2023; 4.2 Wireless Power Transfer
- DASY6 MODULE WPT SYSTEM HANDBOOK
- DASY8/6 Module WPT and SAR Application note
- DASY8/6 Module WPT PIA Inquiry Compliance testing against SAR and MPE Limits (V1.2)

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

Suwon
SAR 1 Room

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.

The full scope of accreditation can be viewed at;

<https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf>.

4. H-field Measurement System & Test Equipment

4.1. H-field Measurement System

DASY system Module WPT - MAGPy Probe is optimized for evaluation of compliance for wireless power transfer (WPT) systems and any other sources operating in the 3 kHz - 10 MHz frequency range. Module WPT V2.8 is compatible with the DASY8/6 systems and in addition has been extended for easy evaluations of pulsed sources.

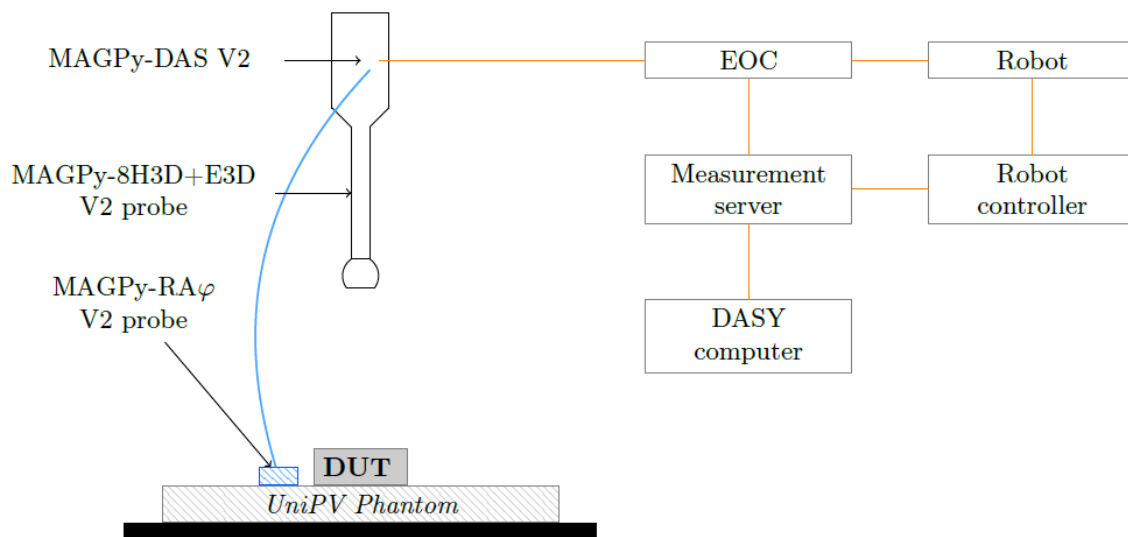


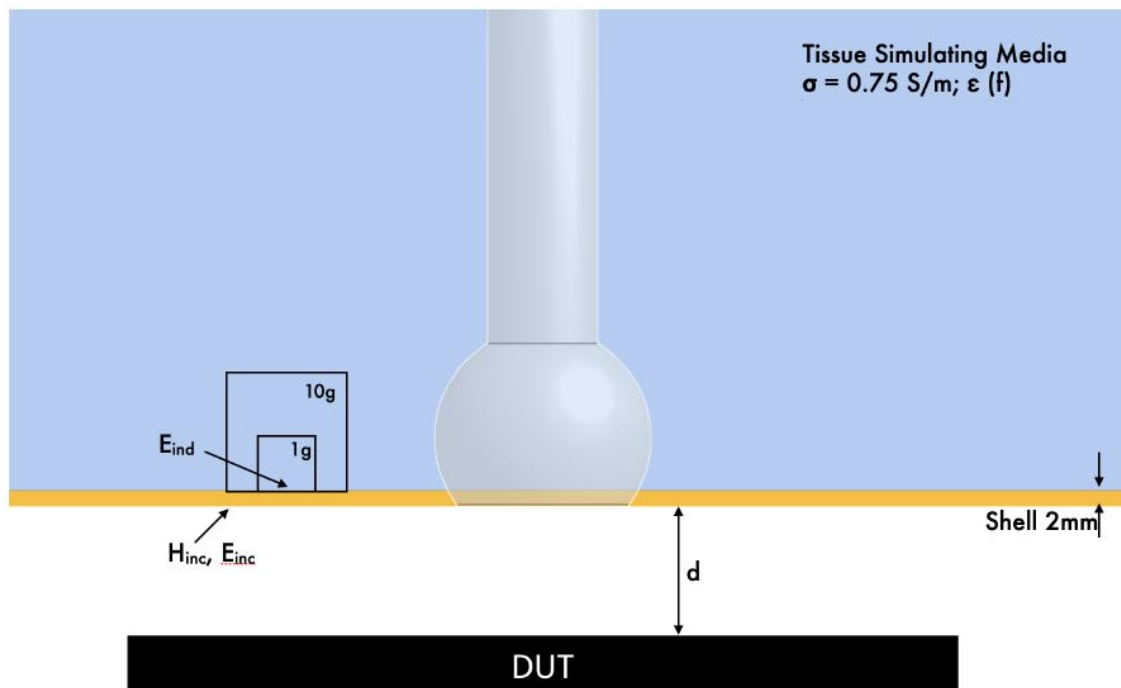
Figure : Typical measurement setup with DASY system Module WPT-MAGPy

DASYsystem Module WPT – MAGPy's Specifications

System	<p>DASY8/6 Module WPT is composed of the isotropic probe MAGPy-8H3D+E3D Version 2, the reference probe (MAGPy-RAφ), and the data acquisition system (MAGPy-DAS) mounted to the DASY8 robot via the emergency stop (MAGPy-ES). It measures the incident electric and magnetic fields (E-Field, H-Field) in a volume from the surface of the DUT using advanced field reconstructions to obtain a high-resolution (mm range) field distribution. The induced electric (E-) field distributions and specific absorption rate (SAR) are assessed with Sim4Life's Quasi-Static EM Solver (P-EM-QS) using only the measured data. At each probe location, eight sets of isotropic H-field values and one set of isotropic E-field values are acquired in parallel. The dedicated graphical user interface (GUI) fully automates the testing workflow.</p>
Applications	<p>Laboratory evaluation of WPT systems and any other local electromagnetic source not requiring magnetic (H-) field volume scans exceeding 2000 mm × 1000 mm × 1500 mm:</p> <ul style="list-style-type: none"> Assessment of high-resolution H-field distribution (3 kHz – 10 MHz) Assessment of high-resolution E-field distribution (3 kHz – 10 MHz) Determination of the induced field and SAR distribution in the standard phantom (3 kHz – 4 MHz) Demonstration of compliance (3 kHz – 4 MHz) with international standards and national regulations, e.g., ISED Canada SPR-002
Basic Components	<p>The basic components of DASY8/6 Module WPT are:</p> <p>Platform and DASY8/6 TX2-90XL Robot</p> <ul style="list-style-type: none"> DASY8/6 Measurement Server EOC8 Light-Beam Unit Quick Adapter Change System (QACSV1) DASY8/6 PC
MAGPy-DAS	<p>The MAGPy-DAS includes:</p> <ul style="list-style-type: none"> 27 14-bit ADC channels with 25 MSPs Peak detection stage Hardware supervising unit Data transfer to the backend 22 tap FIR filter
MAGPy-RAφV2	<p>Specifications of the MAGPy-RAφ reference amplitude and phase probe:</p> <ul style="list-style-type: none"> Frequency range: 3 kHz – 10 MHz Dynamic range: 0.1 A/m – 3200 A/m (0.12 μT – 4 mT) Loop coil area: 18.9 cm² Sensor size: 51 mm x 51 mm x 0.2 mm

MAGPy-8H3D+E3D V2	<p>The MAGPy-8H3D+E3D probe consists of eight isotropic H-field sensors and one isotropic E-field sensor:</p> <p>Probe design:</p> <ul style="list-style-type: none">• Probe length: 335 mm• Probe tip diameter: 60 mm• 8H3D: eight isotropic 1 cm²-H-field sensors, arranged at the corners of a 22 mm cube• First H-field sensor plane: 7.5 mm from the probe tip• E3D: one isotropic E-field sensor (dipole / monopole) (arm length: 50mm) <p>Sensor specifications:</p> <ul style="list-style-type: none">• Frequency range: 3 kHz – 10 MHz• H-field dynamic range: 0.1 A/m – 3200 A/m (0.12 μT – 4 mT)• H-field extrapolation uncertainty: 0.6 dB ($k = 2$)• E-field dynamic range: 0.08 V/m – 2000 V/m
Software	<p>Software components:</p> <ul style="list-style-type: none">• DASY8 Module WPT application programming interface (API)• WPT /6backend• Jupyter Notebook GUI• Sim4Life plugin (vector potential reconstruction, P-EM-QS solver)

4.2. Simulated SAR based on DASY module WPT S/W



Distance used in the tables for simulation and compliance evaluation results is defined as the spacing between the top surface of the DUT and the bottom surface of the fictive phantom shell (with a thickness of 2 mm). In this case, the evaluation is made at distance d . Typically $d = 0$, i.e., at the DUT surface. The evaluation locations of the incident E/H-fields as well as the SAR are also illustrated. Finally, 1-g_SAR is simulated through incident E/H-field. ($\sigma = 0.75 \text{ S/m}$, $\rho = 1000 \text{ Kg/m}^3$, $\epsilon_r = 55$)

4.3. Test Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal Date	Cal. Due Date
Probe	SPEAG	MAGPy-8H3D+E3D	3071	2025-08-12	2026-08-12
	SPEAG	MAGPy-DAS	2050	2025-08-12	2026-08-12
System verification Source	SPEAG	V-Coil50/400	1014	2025-08-15	2026-08-15

5. Measurement Uncertainty

5.1 Incident E/H-field Measurement Uncertainty

DASY8 Uncertainty Budget for Peak Incident <i>H</i> -field according to IEC/IEEE 63184						
Item	Error Description	Unc. Value (±dB)	Probab. Distr.	Div.	(c_i)	Std. Unc. (±dB)
Measurement system						
1	Amplitude calibration uncertainty	0.35	N	1	1	0.35
2	Probe anisotropy	0.6	R	$\sqrt{3}$	1	0.35
3	Probe dynamic linearity	0.2	R	$\sqrt{3}$	1	0.12
4	Probe frequency domain response	0.3	R	$\sqrt{3}$	1	0.17
5	Probe frequency linear interp. fit	0.15	R	$\sqrt{3}$	1	0.09
6	Spatial averaging	0.1	R	$\sqrt{3}$	1	0.06
7	Parasitic E-field sensitivity	0.1	R	$\sqrt{3}$	1	0.06
8	Detection limit	0.15	R	$\sqrt{3}$	1	0.09
9	Readout electronics	0	N	1	1	0
10	Probe positioning	0.19	N	1	1	0.19
11	Repeatability	0.1	N	1	1	0.10
12	Surface field reconstruction	0.3	N	1	1	0.3
Combined uncertainty ($k = 1$)						0.67
Expanded uncertainty ($k = 2$)						1.33 (16.6%)

DASY8 Uncertainty Budget for Incident <i>E</i> -field according to IEC/IEEE 63184						
Item	Error Description	Unc. Value (±dB)	Probab. Distr.	Div.	(c_i)	Std. Unc. (±dB)
Measurement system						
1	Amplitude calibration uncertainty	0.53	N	1	1	0.53
2	Probe anisotropy	0.8	R	$\sqrt{3}$	1	0.46
3	Probe dynamic linearity	1	R	$\sqrt{3}$	1	0.58
4	Probe frequency domain response	0.3	R	$\sqrt{3}$	1	0.17
5	Probe frequency linear interp. fit	0.15	R	$\sqrt{3}$	1	0.09
6	Parasitic H-field sensitivity	0.2	R	$\sqrt{3}$	1	0.12
7	Detection limit	0.15	R	$\sqrt{3}$	1	0.09
8	Readout electronics	0	N	1	1	0
9	Repeatability	0.1	N	1	1	0.10
Combined uncertainty ($k = 1$)						0.95
Expanded uncertainty ($k = 2$)						1.89 (24.4%)

Notes:

The uncertainties of Incident E/H-field used the data provided by Equipment manufacturer.

5.2 1-g SAR Simulation Uncertainty

DASY8 Uncertainty Budget for psSAR1 g according to IEC/IEEE 63184						
Item	Error Description	Unc. Value (±dB)	Probab. Distr.	Div.	(c_i)	Std. Unc. (±dB)
Measurement system						
1	Amplitude calibration uncertainty	0.35	N	1	1	0.35
2	Probe anisotropy	0.6	R	$\sqrt{3}$	1	0.35
3	Probe dynamic linearity	0.2	R	$\sqrt{3}$	1	0.12
4	Probe frequency domain response	0.3	R	$\sqrt{3}$	1	0.17
5	Probe frequency linear interp. fit	0.15	R	$\sqrt{3}$	1	0.09
6	Spatial averaging	0.1	R	$\sqrt{3}$	1	0.06
7	Parasitic E -field sensitivity	0.1	R	$\sqrt{3}$	1	0.06
8	Detection limit	0.15	R	$\sqrt{3}$	1	0.09
9	Readout electronics	0	N	1	1	0
10	Probe positioning	0.19	N	1	1	0.19
11	Repeatability	0.1	N	1	1	0.1
12	Surface field reconstruction	0.2	N	1	1	0.2
Numerical simulations						
13	Grid resolution	0.02	R	$\sqrt{3}$	1	0.01
14	Tissue parameters	0	R	$\sqrt{3}$	1	0
15	Exposure position	0	R	$\sqrt{3}$	1	0
16	Source representation	0.09	N	1	1	0.09
17	Convergence and power budget	0	R	$\sqrt{3}$	1	0
18	Boundary conditions	0.1	R	$\sqrt{3}$	1	0.06
19	Phantom loading/backscattering	0.1	R	$\sqrt{3}$	1	0.06
Combined uncertainty ($k = 1$)						0.63
Expanded uncertainty ($k = 2$)						1.27 (33.9%)

Notes:

The uncertainties of 1-g SAR used the data provided by Equipment manufacturer.

6. DUT Information

SUPPORT EQUIPMENTS & PERIPHERALS

Item	Description
Digitizer Mode(s)	Pen tip, Button, Erase, Keyboard cover closing detection
Operating Frequency	Pen tip – 562.5kHz Button – 531.25kHz Erase - 593.75kHz Keyboard cover closing detection – 656.25kHz

Notes:

- The test was performed using FTM mode.

7. RF Exposure Conditions (Test Configurations)

RF Exposure Conditions	Mode	Internal E-field and SAR evaluation distance	DUT test Position	Note
SAR	Pen tip	0 cm	Front	1
	Button	0 cm	Front	1
	Erase	0 cm	Front	1
	Keyboard cover closing detection	0 cm	Front	1

Notes:

- The test considered only the front side, where the sensor board is mounted..

8. System verification



System check performed using 400 kHz verification source according to test system and procedure Manufacturer guide(DASY8 Modules WPT System Handbook (SW Module WPT V2.8)). And The deviation of measured values from the target values of calibration report should be less than the expanded uncertainty.

Reference Target SAR Values

The reference SAR values can be obtained from the calibration certificate of system validation dipoles.

Verification Source	Serial No.	Cal. Date	Cal.due date	Target values at 0 mm distance	
				Measured/Extrapolated	Simulated (Local)
				H-field (A/m)	1-g SAR (W/kg)
V-coil50/400	1014	2025-08-15	2026-08-15	284.00	0.00782

System verification Results

SAR 1 Room

Date Tested	System Source		H-field (A/m) (Extrapolated at 0mm)		Deviation ($\pm 16.6\%$)	1-g SAR (Simulated at 0mm)			Deviation ($\pm 33.9\%$)	Plot No.
	Type	Serial #	Test results	Target		Test results (mW/kg)	Test results (W/kg)	Target		
2026-06-18	V-coil50/400	1014	258.00	284.00	-9.15	6.07	0.00607	0.00782	-22.38	1
2026-06-19	V-coil50/400	1014	255.00	284.00	-10.21	7.09	0.00709	0.00782	-9.34	

Notes:

The deviation of measured values from the target values of calibration report should be less than the expanded uncertainty

9. Incident H-field and 1-g SAR Results

Mode	Operating Freq. (kHz)	Test Position	Simulated Dist. (cm)	H-field strength (A/m)	1-g SAR result (mW/kg)	1-g SAR Result (W/kg)	Plot No.
Pen tip	562.5	Front	0.0	6.070	4.88E-03	0.00000488	
Button	531.25	Front	0.0	25.400	0.051	0.0000512	1
Erase	593.75	Front	0.0	5.280	2.64E-03	0.00000264	
Keyboard cover closing detection	656.25	Front	0.0	9.480	1.36E-02	0.0000136	

Note:

- Numerical modeling was considered for 1-g SAR according to KDB 680106 D01 and manufacturer guide.

Conclusion:

All of the test results are satisfied the FCC limit. (1.6 W/kg for 1-g SAR)

Appendixes

Refer to separated files for the following appendixes.

S-4792232056-S2 FCC Report RFx Digitizer App A Photos

S-4792232056-S2 FCC Report RFx Digitizer App B Test Plots

S-4792232056-S2 FCC Report RFx Digitizer App C System Plots

S-4792232056-S2 FCC Report RFx Digitizer App D Probe Certi

S-4792232056-S2 FCC Report RFx Digitizer App E Source Certi

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