

TEST REPORT

of the accredited test laboratory

TÜV Nr.: 2023-IN-AT-TICL-E-EX-0-000175-EMV-001

about

the following EMC - test/- research

Applicant: LIQUIDTOOL Systems AG
Winterseistrasse 22
3415 Hasle-Rüegsau
Switzerland

Product Name: Liquidtool Extender (LTE)

Model: LTE-01 extender

FCC ID: 2A2LQ-LTE-1-00

Accredited Standards: FCC Part 15 (eCFR September 28th, 2023)

Testing Laboratory,
Inspection Body,
Certification Body,
Calibration Laboratory,
Verifizierungsstelle**Notified Body 0408**
IC 2932K-1**Non-executive**
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Wenninger**Registered Office:**
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1230 Vienna/Austria**Branch Offices:**
www.tuv.at/standorte**Company Register**
Court / - Number:
Vienna / FN 288476 f**Bank Details:**
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DVR 3002476**TÜV AUSTRIA GMBH**
Test laboratory for EMC

Ing. Andreas Malek

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02.11.2023

Ing. Michael Emminger

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The results of this test report only refer to the provided equipment.

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1. Applicant

Company: LIQUIDTOOL Systems AG

Department: ---

Address: Winterseistrasse 22
3415 Hasle-Rüegsau
Switzerland

Contact person : Mr. Philipp Müller

EUT received on: 28.09.2023

Tests were performed on: 28.09.2023 to 29.09.2023

2. Description of EUT

EUT: Liquidtool Extender (LTE)

SN: LTE-1-00-000299

Manufacturer: LIQUIDTOOL Systems AG
Winterseistrasse 22
3415 Hasle-Rüegsau
Switzerland

Description: Liquidtool Systems AG provided the following configuration for the measurements:

The Liquidtool Extender (LTE) is a Class A unintentional radiator. It is connected to a water bucket from and to which it pumps water. The LTE has an ultrasonic sensor that is placed on the table during tests. The extender does not work on its own, it requires a Liquidtool LTS-01 coolant sensor (FCC ID: 2A2LQ-LTS-1-00) device to operate. An LTS is connected as auxiliary equipment and used with minimal operation to control the LTE during tests. The LTS pump is disabled during tests.

Operating mode: The measurements were carried out at the following running states:

Airpump running, magnetic valve operating, ultrasonic sensor measuring

The pump of the auxiliary LTS is disabled during tests. The LTS contains a radio module (FCC ID: 2AL6KBL-M8821CU1). The LTS was either configured through the radio module or ethernet during tests, but the LTS radio was not used during the tests of the LTE.

Power supply: Manufacturer: Yinghui Yuan Electronics Co., LTD
Model: YHY-24002500
P/N: WL240060CH-MY
Input 100-240V~ 50-60 Hz, 1.5A
Output 24V 2.5A

Climatic conditions in the emc laboratory: Relative humidity: 54 %
Temperature: 24 °C

3. Standards / Final result

Name	Title	Deviation	Result
FCC Part 15 (eCFR September 28 th 2023)	Radio Frequency Devices	none	OK
Result: Opinions and interpretation of testing laboratory OK EUT passed NOK EUT failed			

4. Test results

4.1.) Conducted emission on the DC supply-line according to FCC part 15.107(b)

Limits Class A

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	79	66
0.5-30	73	60

Remark: Quasi Peak and Average limits must be both met

Measuring apparatus parameters

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	150 kHz	150 kHz	Detector	QP/Cispr AV	QP/Cispr AV
Stop frequency	30 MHz	30 MHz	Measuring time	1 s	1 s
Stepsize	2,25 kHz	2,25 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	9 kHz	9 kHz	Preamplifier	20 dB	20 dB

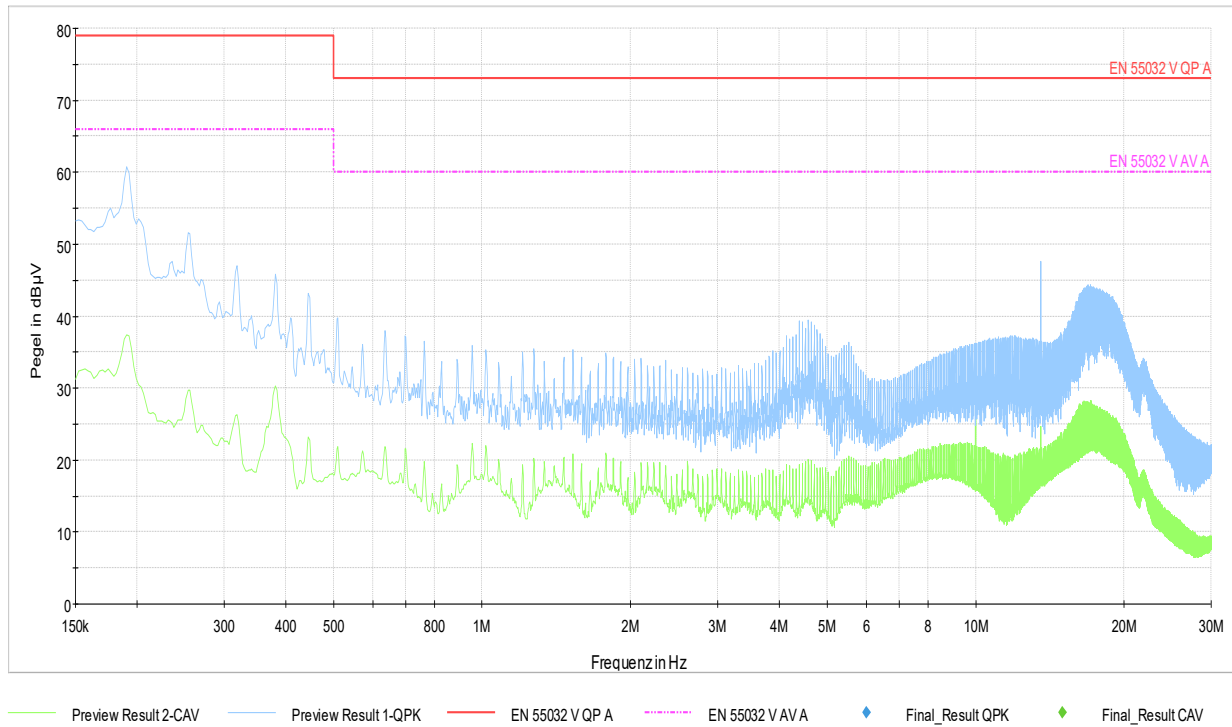
Measurement uncertainty

Expanded uncertainty $U_c = 2,98$ dB (Uncertainty budget = 3,6 dB)

Operating mode	Measuring result
Normal operating	OK

Test result

4.1.1.) Measurement



Due to the large margin to the limit, no final measurement was performed.

4.2.) Radiated emission according to FCC Part 15.109 (unintentional radiator)

Class B Limits

$\leq 1 \text{ GHz} \rightarrow$ Quasi Peak Limit $> 1 \text{ GHz} \rightarrow$ Average Limit (Peak Limit 20 dB above average Limit)			
Frequency range	Limit	Bandwidth	Measurement distance
9 kHz – 490 kHz	$2400/f \text{ (kHz)} \mu\text{V/m}$	9 kHz	300 m
490 kHz – 1705 kHz	$24000/f \text{ (kHz)} \mu\text{V/m}$	9 kHz	30 m
1,705 – 30 MHz	29,5 dB $\mu\text{V/m}$	9 kHz	30 m
30 – 88 MHz	40,0 dB $\mu\text{V/m}$	120 kHz	3 m
88 – 216 MHz	43,5 dB $\mu\text{V/m}$	120 kHz	3 m
216 – 960 MHz	46,0 dB $\mu\text{V/m}$	120 kHz	3 m
960 MHz - 1000 MHz	54,0 dB $\mu\text{V/m}$	120 kHz	3 m
Above 1000 MHz	54,0 dB $\mu\text{V/m}$	1 MHz	3 m

Class A Limits

$\leq 1 \text{ GHz} \rightarrow$ Quasi Peak Limit $> 1 \text{ GHz} \rightarrow$ Average Limit (Peak Limit 20 dB above average Limit)			
Frequency range	Limit	Bandwidth	Measurement distance
30 – 88 MHz	39,0 dB $\mu\text{V/m}$	120 kHz	10 m
88 – 216 MHz	43,5 dB $\mu\text{V/m}$	120 kHz	10 m
216 – 960 MHz	46,4 dB $\mu\text{V/m}$	120 kHz	10 m
960 MHz - 1000 MHz	49,5 dB $\mu\text{V/m}$	120 kHz	10 m
Above 1000 MHz	49,5 dB $\mu\text{V/m}$	1 MHz	10 m

Measuring apparatus parameters 9 kHz to 30 MHz

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	9 kHz	9 kHz	Detector	Quasi Peak	Quasi Peak
Stop frequency	30 MHz	30 MHz	Measuring time	1 s	1 s
Stepsize	2,25 kHz	2,25 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	9 kHz	9 kHz	Preamplifier	20 dB	20 dB

Measuring apparatus parameters 30 MHz to 1000 MHz

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	30 MHz	30 MHz	Detector	Quasi Peak	Quasi Peak
Stop frequency	1000 MHz	1000 MHz	Measuring time	1 s	1 s
Stepsize	30 kHz	30 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	120 kHz	120 kHz	Preamplifier	20 dB	20 dB

Measuring apparatus parameters 1 GHz to 18 GHz

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	1 GHz	1 GHz	Detector	Max Peak / Average	Max Peak / Average
Stop frequency	18 GHz	18 GHz	Measuring time	100 ms	100 ms
Stepsize	250 kHz	250 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	1 MHz	1 MHz	Preamplifier	20 dB	20 dB

Measurement uncertainty

30-200 MHz horizontal: Expanded uncertainty $U_c = 3,64$ dB (Uncertainty budget = 5,06 dB)

30-200 MHz vertical: Expanded uncertainty $U_c = 4,32$ dB (Uncertainty budget = 5,17 dB)

0,2-1 GHz horizontal: Expanded uncertainty $U_c = 3,73$ dB (Uncertainty budget = 5,45 dB)

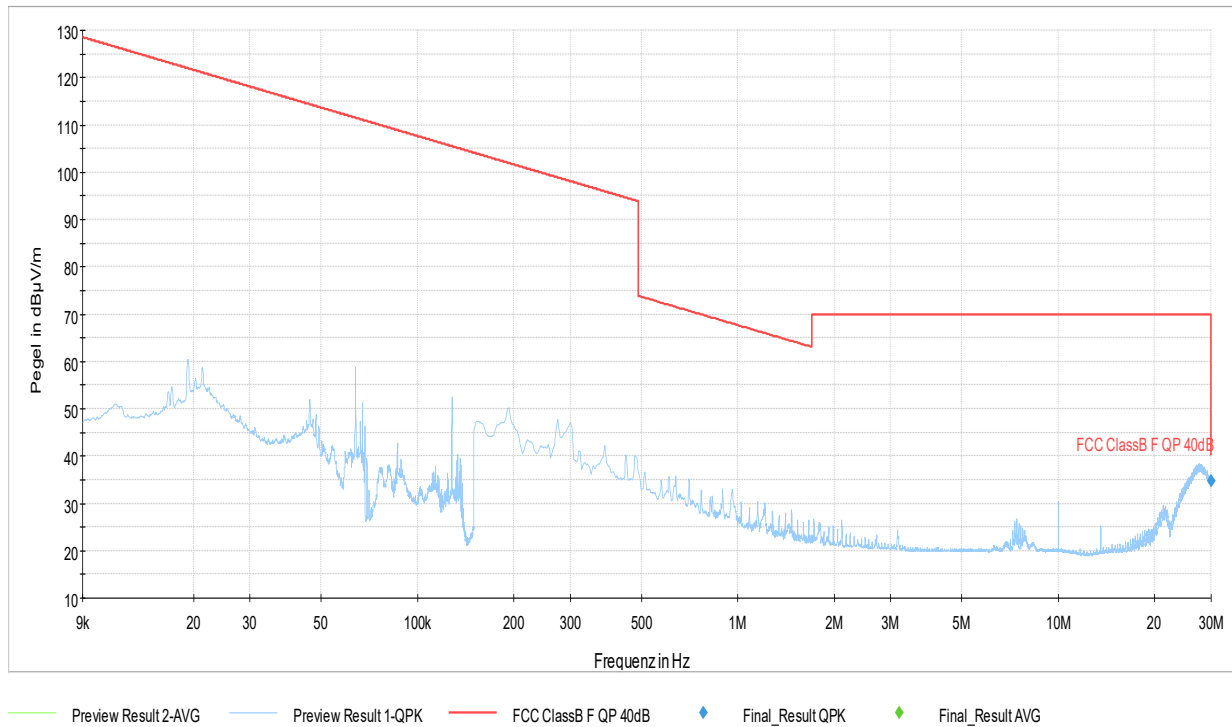
0,2-1 GHz vertical: Expanded uncertainty $U_c = 5,36$ dB (Uncertainty budget = 6,47 dB)

1-26,5 GHz: Expanded uncertainty $U_c = 5,14$ dB (Uncertainty budget = 5,17 dB)

Operating mode	Measuring result
Normal operating	OK

Test result

4.2.1.) Measurement with QP-Detector (9 kHz - 30 MHz)

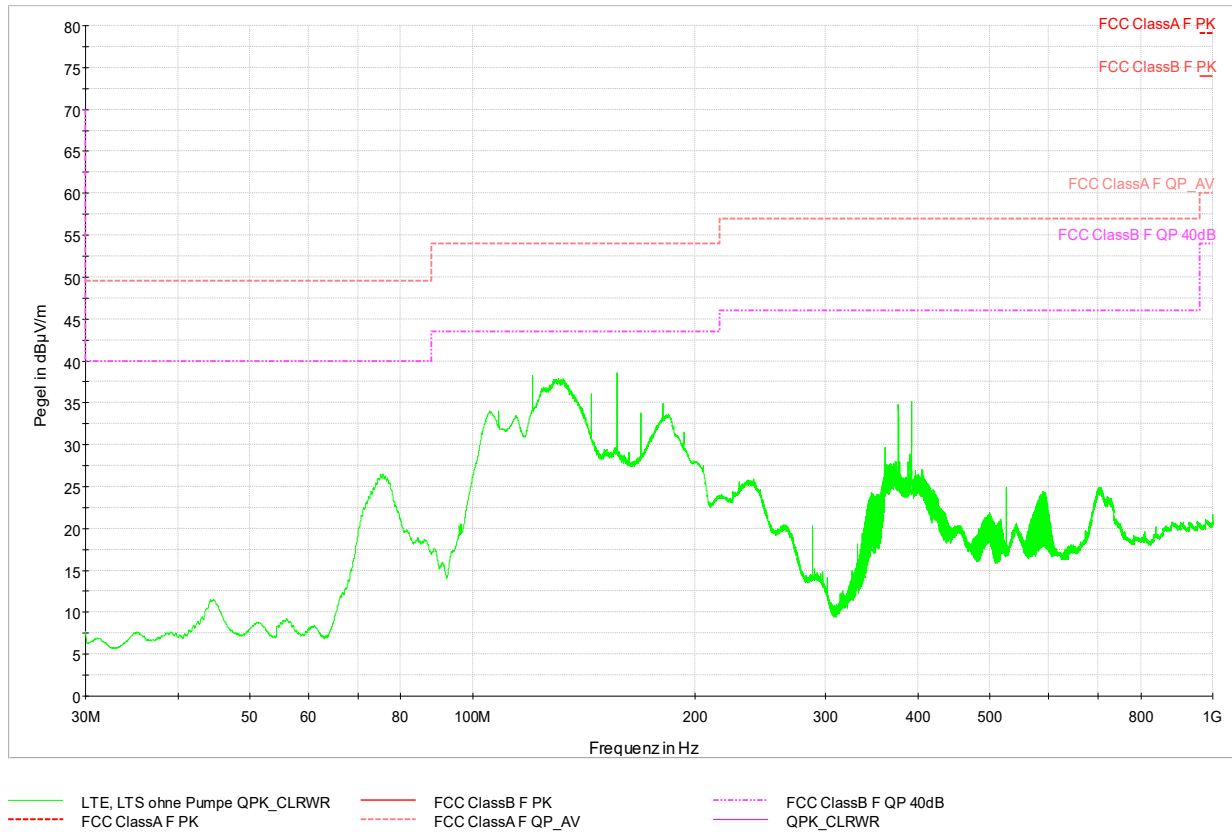


Measurement below 30 MHz are not required, the result is informal.

Due to the large margin to the limit, no final measurement was performed.

Test result

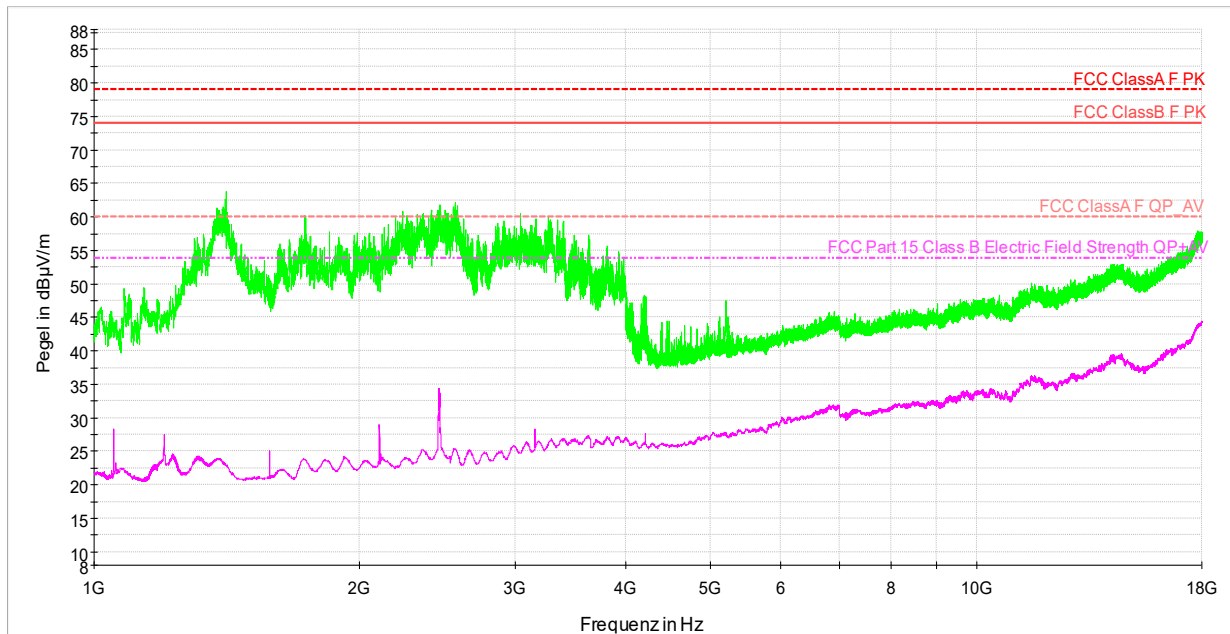
4.2.2.) Measurement with QP-Detector (30 MHz - 1000 MHz)



Due to the large margin to the limit, no final measurement was performed.

4.2.3.) Measurement with Peak- and Average Detector (1 GHz - 18 GHz)

Frequency range 1 – 18 GHz



- LTE, LTS ohne Pumpe BLE oder Wifi, 1000-18000 Endergebnis PK+ _MAXH
- LTE, LTS ohne Pumpe BLE oder Wifi, 1000-18000 Endergebnis AVG _MAXH
- PK+ _CLRWR
- PK+ _MAXH
- FCC ClassB F PK
- FCC Part 15 Class B Electric Field Strength QP+AV
- FCC ClassA F PK
- FCC ClassA F QP _AV
- AVG _CLRWR
- AVG _MAXH

Due to the large margin to the limit, no final measurement was performed.

4.3.) RF Exposure, §1.1307

Referring to April 2023 TCB Workshop on unintentional radiator sources:

For Unintentional Radiator Sources that are Part 15 B-compliant there are no identified cases where the power increase leads to a level such that the 1 mWRFX test exemption no longer applies

The device is an Part 15 B unintentional radiator.

Compliance to Part 15 B imposes limits to the maximum radiated emissions that corresponds to negligible radiated power levels.

The measured radiated fields in Sec. 4.2 are well below the radiated emission limits of Part 15 B.

Unusual non-compliance scenarios were not identified.

The device is therefore considered to be 1 mW test exempt.

Referring to October 2023 TCB Workshop unintentional radiator sources:

The results in 4.2.1 indicate no relevant magnetic type sources in the tens of kHz range.

Appendix 1

Test equipment used

<input type="checkbox"/>	Anechoic Chamber with 3m measurement distance	NT-100	<input type="checkbox"/>	Ant. tripod for EN61000-4-3 Model TP1000A	NT-156
<input type="checkbox"/>	Stripline according to ISO 11452-5	NT-108	<input type="checkbox"/>	Power quality analyzer Fluke 1760 (complete set)	NT-160 - NT-173
<input type="checkbox"/>	MA4000 - Antenna mast 1 - 4 m height	NT-110/1	<input type="checkbox"/>	Spectrum analyzer – FSP7 9 kHz – 7 GHz	NT-200
<input type="checkbox"/>	DS - Turntable 0 - 400 ° Azimuth	NT-111/1	<input type="checkbox"/>	ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1
<input type="checkbox"/>	CO3000 Controller Mast+Turntable	NT-112/1	<input type="checkbox"/>	ESR – Test receiver 20 Hz – 26,5 GHz	NT-207/1
<input type="checkbox"/>	HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	<input type="checkbox"/>	Digital Radio Tester CMW500	NT-208/1
<input type="checkbox"/>	FMZB1513 - Loop Antenna 9 kHz - 30 MHz	NT-122/1	<input type="checkbox"/>	Noise-gen., ITU-R 559-2 20 Hz – 20 kHz	NT-209
<input type="checkbox"/>	HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	<input type="checkbox"/>	CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz	NT-210
<input type="checkbox"/>	Dipole Antenna VHA9103 30 - 300 MHz	NT-124/1a	<input type="checkbox"/>	3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211
<input type="checkbox"/>	Dipole Antenna UHA9105 300 - 1000 MHz	NT-124/1b	<input type="checkbox"/>	Digital Radio Tester Aeroflex 3920	NT-212/1
<input type="checkbox"/>	3115 - Horn Antenna 1 - 18 GHz (immunity)	NT-125	<input type="checkbox"/>	Mixer M28HW 26,5 GHz - 40 GHz	NT-214
<input type="checkbox"/>	3116 - Horn Antenna 18 - 40 GHz	NT-126	<input type="checkbox"/>	RubiSource T&M Timing reference	NT-216
<input type="checkbox"/>	SAS-200/543 - Bicon. Antenna 20 MHz - 300 MHz	NT-127	<input type="checkbox"/>	Radiocommunication analyzer SWR 1180 MD	NT-217
<input type="checkbox"/>	AT-1080 - Log. Per. Antenna 80 - 1000 MHz	NT-128	<input type="checkbox"/>	Mixer FS-Z60 40 GHz – 60 GHz	NT-218/1
<input type="checkbox"/>	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-129	<input type="checkbox"/>	Mixer FS-Z90 60 GHz – 90 GHz	NT-219/1
<input type="checkbox"/>	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-130	<input type="checkbox"/>	DSO9104 Digital scope	NT-220/1
<input type="checkbox"/>	3146 - Log. Per. Antenna 200 – 1000 MHz	NT-131	<input type="checkbox"/>	TPS 2014 Digital scope	NT-222
<input type="checkbox"/>	VULB 9163 Trilog Antenna 30 – 3000 MHz	NT-131/1	<input type="checkbox"/>	Artificial Ear according to IEC 60318	NT-224
<input type="checkbox"/>	Loop Antenna H-Field	NT-132	<input type="checkbox"/>	1 kHz Sound calibrator	NT-225
<input type="checkbox"/>	Horn Antenna 500 MHz - 2900 MHz	NT-133	<input type="checkbox"/>	SRM-3006 Spectrum analyzer	NT-233/1a
<input type="checkbox"/>	Horn Antenna 500 MHz - 6000 MHz	NT-133/1	<input type="checkbox"/>	E-field probe SRM 75 MHz – 3 GHz	NT-234
<input type="checkbox"/>	Log. per. Antenna 800 MHz - 2500 MHz	NT-134	<input type="checkbox"/>	Field Meter NBM-500 incl. E- and H-Field probes	NT-240a-e
<input type="checkbox"/>	Log. per. Antenna 800 MHz - 2500 MHz	NT-135	<input type="checkbox"/>	Magnetometer HP-01	NT-241/1
<input type="checkbox"/>	BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	<input type="checkbox"/>	EFA-3 H-field- / E-field probe	NT-243
<input type="checkbox"/>	Conical Dipol Antenna PCD8250	NT-138	<input type="checkbox"/>	EHP-50F H-field- / E-field probe	NT-243/1
<input type="checkbox"/>	HF 906 - Horn Antenna 1 - 18 GHz (emission)	NT-139	<input type="checkbox"/>	Field Meter EMR-200 100 kHz – 3 GHz	NT-244
<input type="checkbox"/>	HZ-1 Antenna tripod	NT-150	<input type="checkbox"/>	E-field probe 100 kHz – 3 GHz	NT-245
<input type="checkbox"/>	BN 1500 Antenna tripod	NT-151	<input type="checkbox"/>	H-field probe 300 kHz – 30 MHz	NT-246

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Appendix 1 (continued)

Test equipment used

<input type="checkbox"/>	E-field probe 3 MHz – 18 GHz	NT-247	<input type="checkbox"/>	Prana N-MT 500 - RF-Amplifier 80 - 1000 MHz / 500 W	NT-332/1
<input type="checkbox"/>	H-field probe 27 MHz – 1 GHz	NT-248	<input type="checkbox"/>	BBA150 RF-Amplifier 1 GHz - 6 GHz	NT-333/1
<input type="checkbox"/>	ELT-400 1 Hz – 400 kHz	NT-249	<input type="checkbox"/>	APA01 – RF-Amplifier 0,5 GHz – 2,5 GHz	NT-334
<input type="checkbox"/>	MDS 21 - Absorbing clamp 30 - 1000 MHz	NT-250	<input type="checkbox"/>	Preamplifier 1 GHz - 4 GHz	NT-335
<input type="checkbox"/>	FCC-203I EM Injection clamp	NT-251	<input type="checkbox"/>	Preamplifier for GPS MKU 152 A	NT-336
<input type="checkbox"/>	FCC-203I-DCN Ferrite decoupling network	NT-252	<input type="checkbox"/>	Preamplifier 1 GHz – 18 GHz	NT-337/1
<input type="checkbox"/>	PR50 Current Probe	NT-253	<input type="checkbox"/>	DC Block 10 MHz – 18 GHz Model 8048	NT-338
<input type="checkbox"/>	i310s Current Probe	NT-254/1	<input type="checkbox"/>	2-97201 Electronic load	NT-341
<input type="checkbox"/>	Fluke 87 V True RMS Multimeter	NT-260	<input type="checkbox"/>	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-344
<input type="checkbox"/>	Model 2000 Digital Multimeter	NT-261	<input type="checkbox"/>	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-345
<input type="checkbox"/>	Fluke 87 V Digital Multimeter	NT-262/1	<input type="checkbox"/>	VDS 200 Mobil-impuls-generator	NT-350
<input type="checkbox"/>	ESH2-Z5-U1 Artificial mains network 4x25A	NT-300	<input type="checkbox"/>	LD 200 Mobil-impuls-generator	NT-351
<input type="checkbox"/>	ESH3-Z5-U1 Artificial mains network 2x10A	NT-301	<input type="checkbox"/>	MPG 200 Mobil-Impuls-Generators	NT-352
<input type="checkbox"/>	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302	<input type="checkbox"/>	EFT 200 Mobil-impuls-generator	NT-353
<input type="checkbox"/>	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302a	<input type="checkbox"/>	AN 200 S1 Artificial Network	NT-354
<input type="checkbox"/>	EZ10 T-Artificial Network	NT-305	<input type="checkbox"/>	FP-EFT 32M 3 ph. Coupling filter (Burst)	NT-400/1
<input type="checkbox"/>	SMG - Signal generator 0,1 - 1000 MHz	NT-310	<input type="checkbox"/>	PHE 4500 - Mains impedance network	NT-401
<input type="checkbox"/>	SMA100A - Signal generator 9 kHz - 6 GHz	NT-310/1	<input type="checkbox"/>	IP 6.2 Coupling filter for data lines (Surge)	NT-403
<input type="checkbox"/>	RefRad Reference generator	NT-312	<input type="checkbox"/>	TK 9421 High Power Volt. Probe 150 kHz - 30 MHz	NT-409
<input type="checkbox"/>	SMP 02 Signal generator 10 MHz - 20 GHz	NT-313	<input type="checkbox"/>	ESH2-Z3 - Probe 9 kHz - 30 MHz	NT-410
<input type="checkbox"/>	40 MHz Arbitrary Generator TGA1241	NT-315	<input type="checkbox"/>	CN-EFT1000 - Capacitive clamp (Burst)	NT-411/1
<input type="checkbox"/>	Artificial mains network NSLK 8127-PLC	NT-316	<input type="checkbox"/>	Highpass-Filter 100 MHz – 3 GHz	NT-412
<input type="checkbox"/>	PSURGE 4.1 Surge generator	NT-324	<input type="checkbox"/>	Highpass-Filter 600 MHz – 4 GHz	NT-413
<input type="checkbox"/>	IMU4000 Immunity test system	NT-325/1a-e	<input type="checkbox"/>	Highpass-Filter 1250 MHz – 4 GHz	NT-414
<input type="checkbox"/>	VCS 500-M6 Surge-Generator	NT-326	<input type="checkbox"/>	Highpass-Filter 1800 MHz – 16 GHz	NT-415
<input type="checkbox"/>	Oscillatory Wave Simulator incl. Coupling networks	NT-328a+b+c			
<input type="checkbox"/>	BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W	NT-330			

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<input type="checkbox"/>	RF-Attenuator 10 dB DC – 18 GHz / 50 W	NT-417/1	<input type="checkbox"/>	SW 9605 - Current probe 150 kHz – 30 MHz	NT-465/1
<input type="checkbox"/>	RF-Attenuator 6 dB DC – 18 GHz / 50 W	NT-418	<input type="checkbox"/>	95242-1 – Current probe 1 MHz – 400 MHz	NT-468
<input type="checkbox"/>	RF-Attenuator 3 dB DC – 18 GHz / 50 W	NT-419	<input type="checkbox"/>	94106-1L-1 – Current probe 100 kHz – 450 MHz	NT-471
<input type="checkbox"/>	RF-Attenuator 20 dB DC - 1000 MHz / 25 W	NT-421	<input type="checkbox"/>	WHKX12-2700-3000-18000 3 GHz Highpass filter	NT-472
<input type="checkbox"/>	RF-Attenuator 30 dB DC - 1000 MHz / 1 W	NT-423	<input type="checkbox"/>	WHKX10-3870-4500-18000 4,5 GHz Highpass filter	NT-473
<input type="checkbox"/>	RF-Attenuator 30 dB	NT-424	<input type="checkbox"/>	CDN S9 USB3.0 Coupling decoupling network	NT-474
<input type="checkbox"/>	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-425	<input type="checkbox"/>	CDN S2 XLR3-1 Coupling decoupling network	NT-475
<input type="checkbox"/>	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-426	<input type="checkbox"/>	CDN S8 RJ45 Coupling decoupling network	NT-476
<input type="checkbox"/>	RF-Attenuator 6 dB	NT-428	<input type="checkbox"/>	GA 1240 Power amplifier according to EN 61000-4-16	NT-480
<input type="checkbox"/>	RF-Attenuator 0 dB - 81 dB	NT-429	<input type="checkbox"/>	Coupling networks according to EN 61000-4-16	NT-481 - NT-483
<input type="checkbox"/>	WRU 27 - Band blocking 27 MHz	NT-430	<input type="checkbox"/>	Van der Hoofden Test Head	NT-484
<input type="checkbox"/>	WHJ450C9 AA - High pass 450 MHz	NT-431	<input type="checkbox"/>	WRCJV12-5820-5850-5950-5980 5,9 GHz Band Reject Filter	NT-490
<input type="checkbox"/>	WHJ250C9 AA - High pass 250 MHz	NT-432	<input type="checkbox"/>	WHKX10-5670-6300-18000 6 GHz Highpass filter	NT-491
<input type="checkbox"/>	RF-Load 150 W	NT-433	<input type="checkbox"/>	WHK12-935-1000-7000 1 GHz Highpass filter	NT-492
<input type="checkbox"/>	Impedance transducer 1:4 ; 1:9 ; 1:16	NT-435	<input type="checkbox"/>	EMC Video/Audiosystem	NT-511/1
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 6 dB	NT-436	<input type="checkbox"/>	EMC32 Version 10.60.20 Test software	NT-520/1
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 6 dB	NT-437	<input type="checkbox"/>	SRM-TS Version 1.3 software for SRM-3000	NT-522
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 10 dB	NT-438	<input type="checkbox"/>	SRM-TS Version 1.3.1 software for SRM-3006	NT-522/1
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 20 dB	NT-439	<input type="checkbox"/>	Spitzenberger und Spies Test software V4.1	NT-525
<input type="checkbox"/>	I+P 7780 Directional coupler 100 - 2000 MHz	NT-440	<input type="checkbox"/>	Vertical coupling plane (ESD)	NT-531
<input type="checkbox"/>	ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz	NT-441	<input type="checkbox"/>	Test cable #4 for EN 61000-4-6	NT-553
<input type="checkbox"/>	Power Divider 6 dB/1 W/50 Ohm	NT-443	<input type="checkbox"/>	Test cable #3 for conducted emission	NT-554
<input type="checkbox"/>	Directional coupler 0,1 MHz – 70 MHz	NT-444	<input type="checkbox"/>	Test cable #5+#6 ESD-cable (2x470k)	NT-555 + NT-556
<input type="checkbox"/>	Directional coupler 0,1 MHz – 70 MHz	NT-445	<input type="checkbox"/>	Test cable #8 Sucoflex 104EA	NT-559
<input type="checkbox"/>	Tube imitations according to EN 55015	NT-450	<input type="checkbox"/>	Test cable #9 (for outdoor measurements)	NT-580
<input type="checkbox"/>	FCC-801-M3-16A Coupling decoupling network	NT-458	<input type="checkbox"/>	Test cable #10 (for outdoor measurements)	NT-581
<input type="checkbox"/>	FCC-801-M2-50A Coupling decoupling network	NT-459	<input type="checkbox"/>	Test cable #13 Sucoflex 104PE	NT-584
<input type="checkbox"/>	FCC-801-M5-25 Coupling decoupling network	NT-460	<input type="checkbox"/>	Test cable #21 for SRM-3000	NT-592
<input type="checkbox"/>	FCC-801-T4 Coupling decoupling network	NT-463	<input type="checkbox"/>	Shield chamber	NT-600
<input type="checkbox"/>	FCC-801-C1 Coupling decoupling network	NT-464	<input type="checkbox"/>	Climatic chamber	M-1200

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Test equipment used

<input type="checkbox"/>	Anechoic Chamber 3 m / 5 m measuring distance	EMV-100	<input type="checkbox"/>	HF- Amplifier 9 kHz-225 MHz BBL200	EMV-300/1
<input type="checkbox"/>	Turntabel 6 m diameter	EMV-101	<input type="checkbox"/>	HF- Amplifier 80 -1000 MHz BBA150	EMV-301
<input type="checkbox"/>	Antenna mast + controller	EMV-102+ EMV-103	<input type="checkbox"/>	HF- Amplifier 0,8 - 6 GHz BBA150	EMV-302
<input type="checkbox"/>	EMC Video/Audiosystem	EMV-104	<input type="checkbox"/>	High Power Ant. 20-200 MHz HPBA-2510	EMV-303/1
<input type="checkbox"/>	EMC Software EMC32 Version 10.60.20	EMV-105	<input type="checkbox"/>	High Power Ant. 20-200 MHz S12018-21	EMV-303/2
<input type="checkbox"/>	Hornantenna 1 – 18 GHz HF 907	EMV-110	<input type="checkbox"/>	Log.per Antenna 80-2700 MHz STLP 9128 E special	EMV-304
<input type="checkbox"/>	Antennapre.amp. 1 – 18 GHz BBV 9718 D	EMV-111/1	<input type="checkbox"/>	Log.per Antenna 0,7 – 9 GHz STLP9149	EMV-305
<input type="checkbox"/>	Trilog Antenna 30-3000 MHz VULB9163	EMV-112	<input type="checkbox"/>	HF- Amplifier 9 kHz-250 MHz BBA150 (low noise)	EMV-306
<input type="checkbox"/>	Monopol 9 kHz – 30 MHz VAMP 9243	EMV-113	<input type="checkbox"/>	ISO11451-2 TLS 10 kHz – 30 MHz	EMV-307
<input type="checkbox"/>	Antennapre.amp 18 – 40 GHz BBV 9721	EMV-114	<input type="checkbox"/>	Load Dump Generator LD 200N	EMV-350
<input type="checkbox"/>	Hornantenna 200 – 2000 MHz AH-220	EMV-115	<input type="checkbox"/>	Ultra Compact Symulator UCS 200N100	EMV-351
<input type="checkbox"/>	DC Artificial Network PVDC 8300	EMV-150	<input type="checkbox"/>	Automotive Power fail module PFM 200N100.1	EMV-352
<input type="checkbox"/>	AC Artificial Network NNLK 8121 RC	EMV-151	<input type="checkbox"/>	Voltage Drop Symulator VDS 200Q100	EMV-353
<input type="checkbox"/>	AC Artificial Network NNLK 140	EMV- 153a-d	<input type="checkbox"/>	Arb. Generator AutoWave	EMV-354
<input type="checkbox"/>	EMI Receiver ESW44	EMV-200/1	<input type="checkbox"/>	Ultra Compact Symulator UCS 500N7	EMV-355
<input type="checkbox"/>	Signalgenerator 9 kHz – 40 GHz N5173B	EMV-201	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 32 A	EMV-356
<input type="checkbox"/>	GPS Frequency normal B-88	EMV-202	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 63 A	EMV-357
<input type="checkbox"/>	DC Power supply N5745A	EMV-203	<input type="checkbox"/>	Telecom Surge Generator TSurge 7	EMV-358
<input type="checkbox"/>	Spektrum Analyzator FSV40	EMV-205	<input type="checkbox"/>	Coupling decoupling network CNI 508N2	EMV-359
<input type="checkbox"/>	Thd Multimeter Model 2015	EMV-206	<input type="checkbox"/>	Coupling decoupling network CNV 504N2.2	EMV-360
<input type="checkbox"/>	Poweramplifier PAS15000	EMV- 207/abc	<input type="checkbox"/>	Immunity generator NSG4060/NSG4060-1	EMV-361
<input type="checkbox"/>	Inrush Current Source	EMV- 208/abc	<input type="checkbox"/>	Coupling network CDND M316-2	EMV-362
<input type="checkbox"/>	Arb.-generator Sycore	EMV-209	<input type="checkbox"/>	Coupling network CT419-5	EMV-363
<input type="checkbox"/>	Harmonics/Flicker analyzer ARS 16/3	EMV-210	<input type="checkbox"/>	ESD Generator NSG 437	EMV-364
<input type="checkbox"/>	Power Supply Regatron AC	EMV-214	<input type="checkbox"/>	Pulse Limiter VTSD 9561-F BNC	EMV-405
<input type="checkbox"/>	Power Supply Regatron DC	EMV-215	<input type="checkbox"/>	Transient emission BSM200N40+BS200N100	EMV- 450+451
<input type="checkbox"/>	Harmonics/Flicker analyser Zimmer	EMV-216	<input type="checkbox"/>	Cap. Coupling Clamp HFK	EMV-455
<input type="checkbox"/>	Flicker Impedanz Newtons4th 753	EMV-218	<input type="checkbox"/>	Mag. Field System MS100N+MC26100+MC2630	EMV- 456-458
<input type="checkbox"/>	Comemso	EMV-219			

Division:
Industry & Energy

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Appendix 1 (continued)

Test equipment used

<input type="checkbox"/>	Coupling network CDN M2-100A	EMV-459
<input type="checkbox"/>	Coupling network CDN M3-32A	EMV-460
<input type="checkbox"/>	Coupling network CDN M5-100A	EMV-461
<input type="checkbox"/>	Current Clamp CIP 9136A	EMV-462
<input type="checkbox"/>	DC Artificial Network HV-AN 150	EMV-464+465
<input type="checkbox"/>	Coupling Clamp EM 101	EMV-466
<input type="checkbox"/>	Decoupling Clamp FTC 101	EMV-467
<input type="checkbox"/>	Power attenuator 10 dB / 250 Watt	EMV-469/2
<input type="checkbox"/>	HV AMN NNHV 8123 800A	EMV-472
<input type="checkbox"/>	HV AMN NNHV 8123 800A	EMV-473

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Appendix 2 Photodocumentation

Division:
Industry & Energy

Description: Liquidtool extender with LTS auxiliary
equipment, top view

Test report reference:
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Appendix 2 Photodocumentation

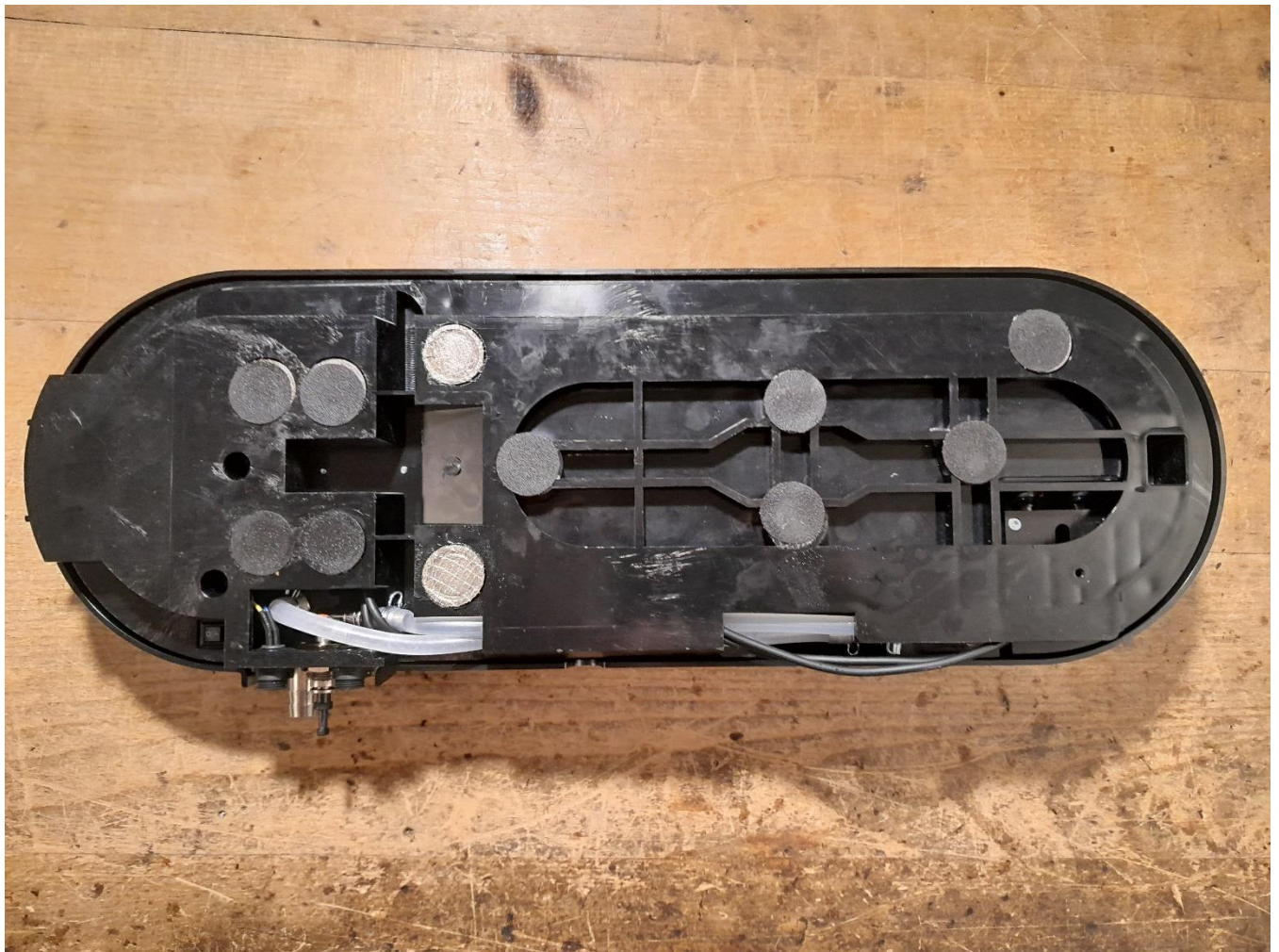
Division:
Industry & Energy

Description: Liquidtool extender with LTS auxiliary
equipment, bottom view

Test report reference:
2023-IN-AT-TICL-E-EX-0-
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Appendix 2 Photodocumentation

Division:
Industry & Energy

Description: Liquidtool extender with LTS auxiliary
equipment, side view #1

Test report reference:
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Appendix 2 Photodocumentation

Division:
Industry & Energy

Description: Liquidtool extender with LTS auxiliary
equipment, side view #2

Test report reference:
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Appendix 2 Photodocumentation

Division:
Industry & Energy

Description: Liquidtool extender with LTS auxiliary
equipment, cover removed

Test report reference:
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Appendix 2 Photodocumentation

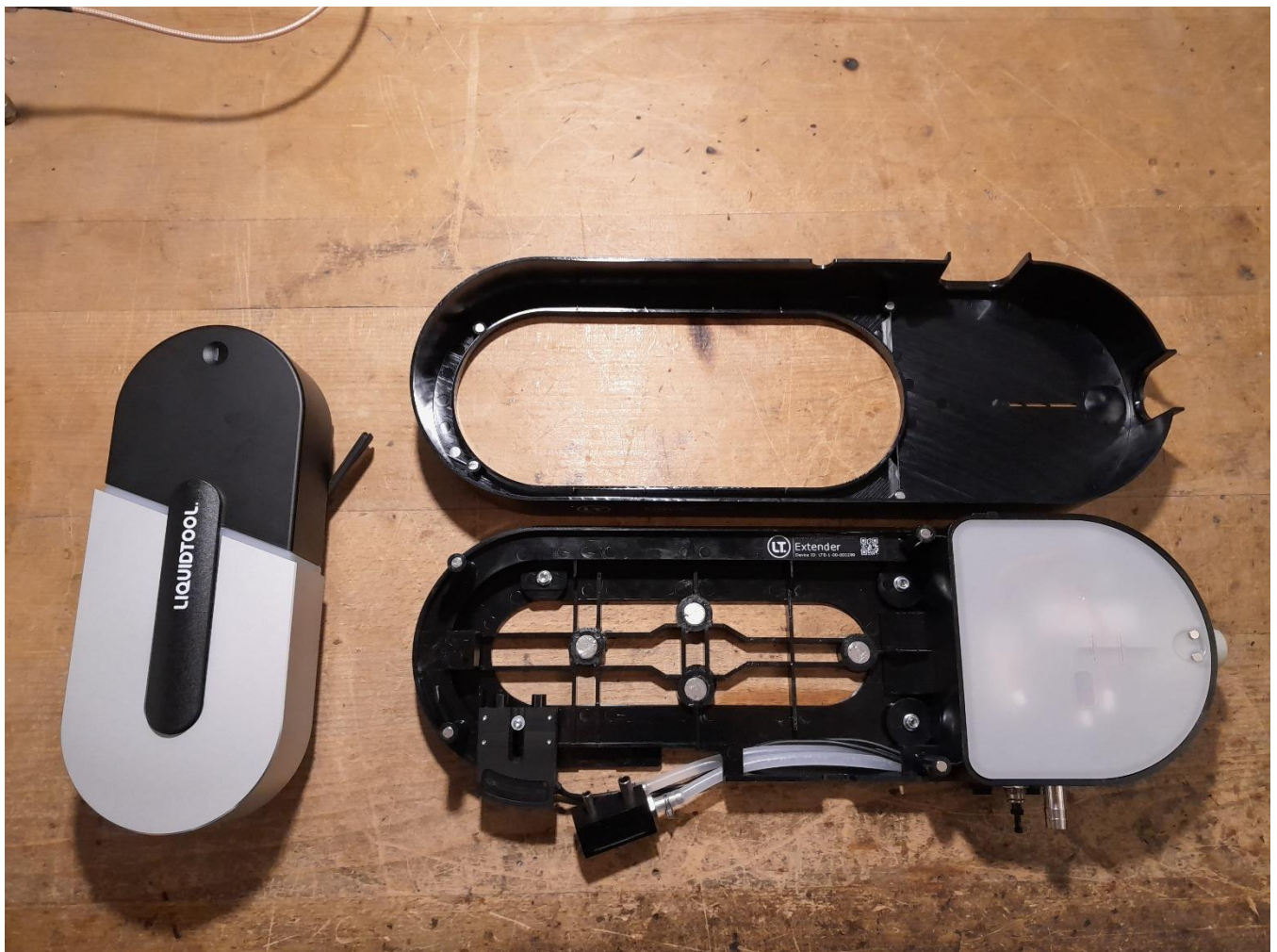
Division:
Industry & Energy

Description: Liquidtool extender with LTS auxiliary
equipment removed

Test report reference:
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Appendix 2 Photodocumentation

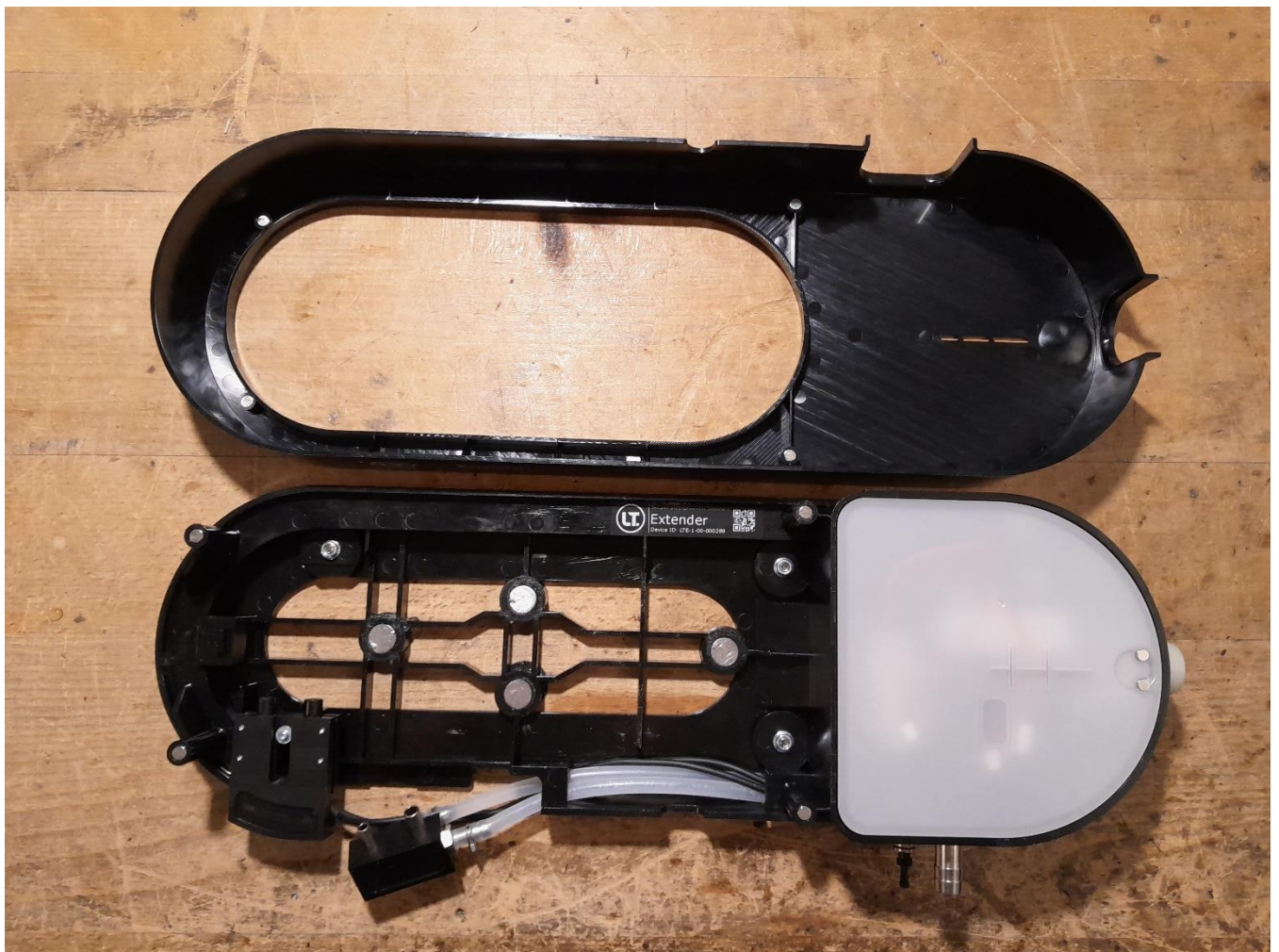
Division:
Industry & Energy

Description: Liquidtool extender without auxiliary equipment

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Appendix 2 Photodocumentation

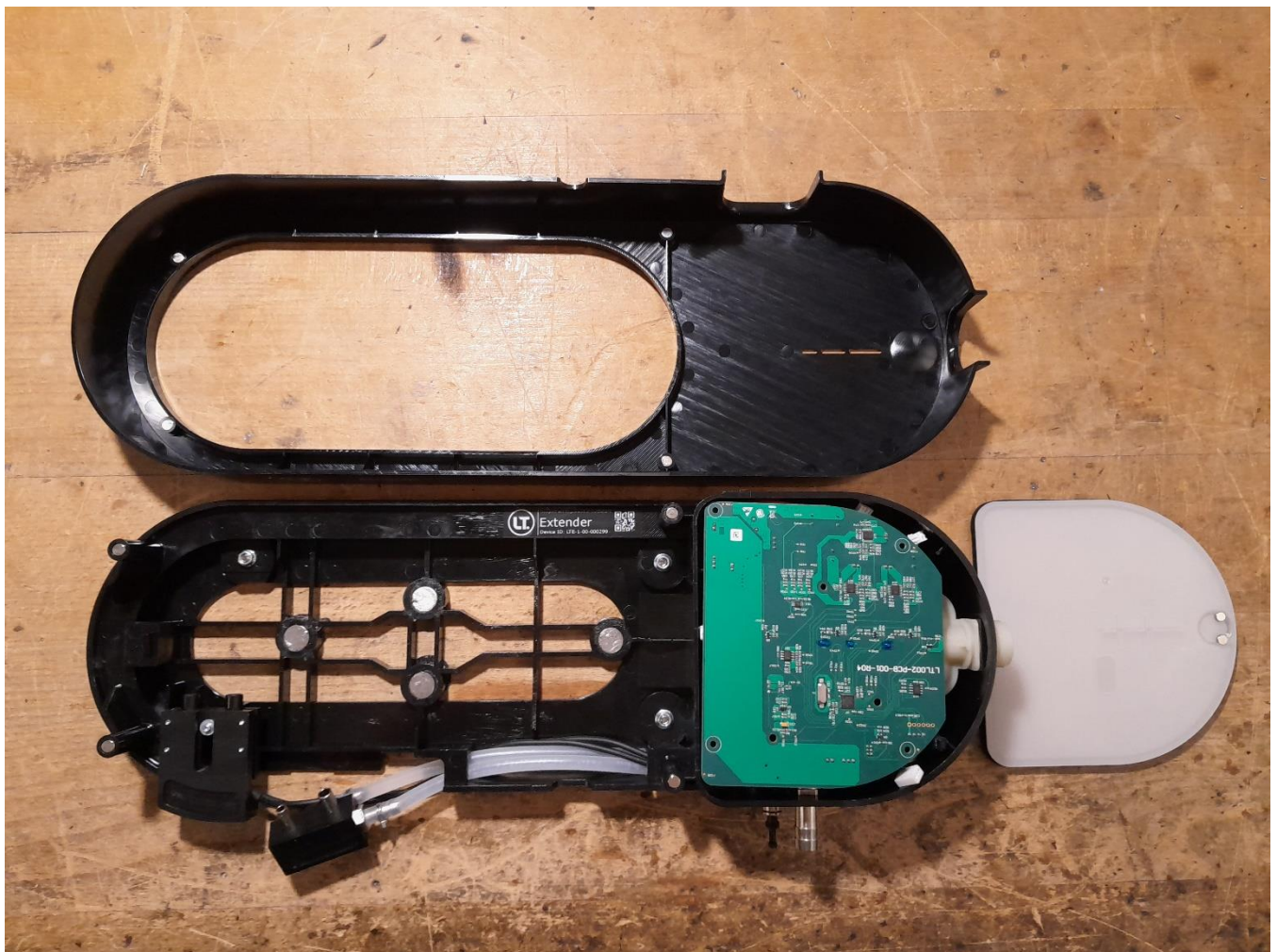
Division:
Industry & Energy

Description: White cover removed

Test report reference:
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Appendix 2 Photodocumentation

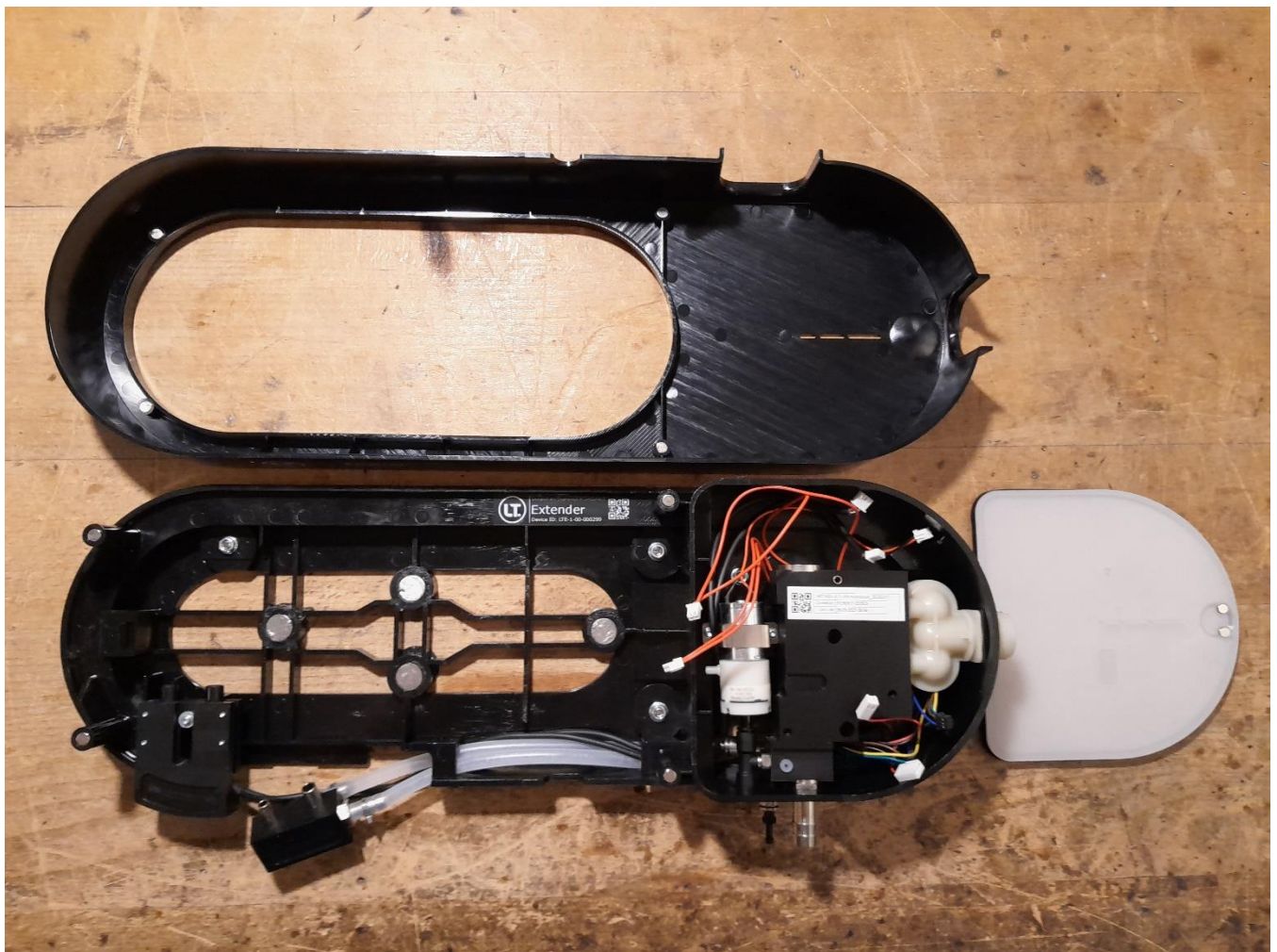
Division:
Industry & Energy

Description: Exploded view, PCB removed

Test report reference:
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Appendix 2 Photodocumentation

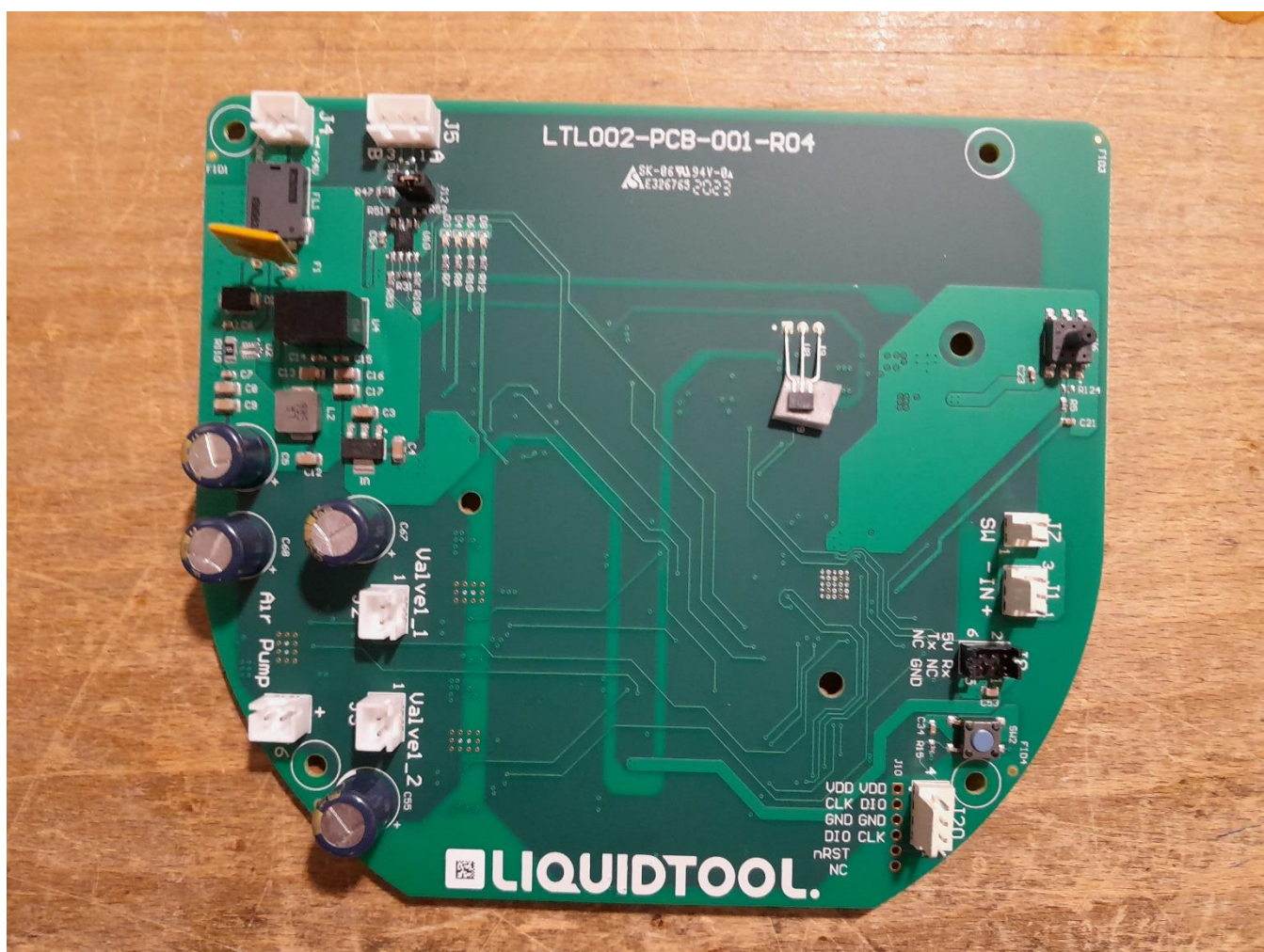
Division:
Industry & Energy

Description: PCB view #1

Test report reference:
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Appendix 2 Photodocumentation

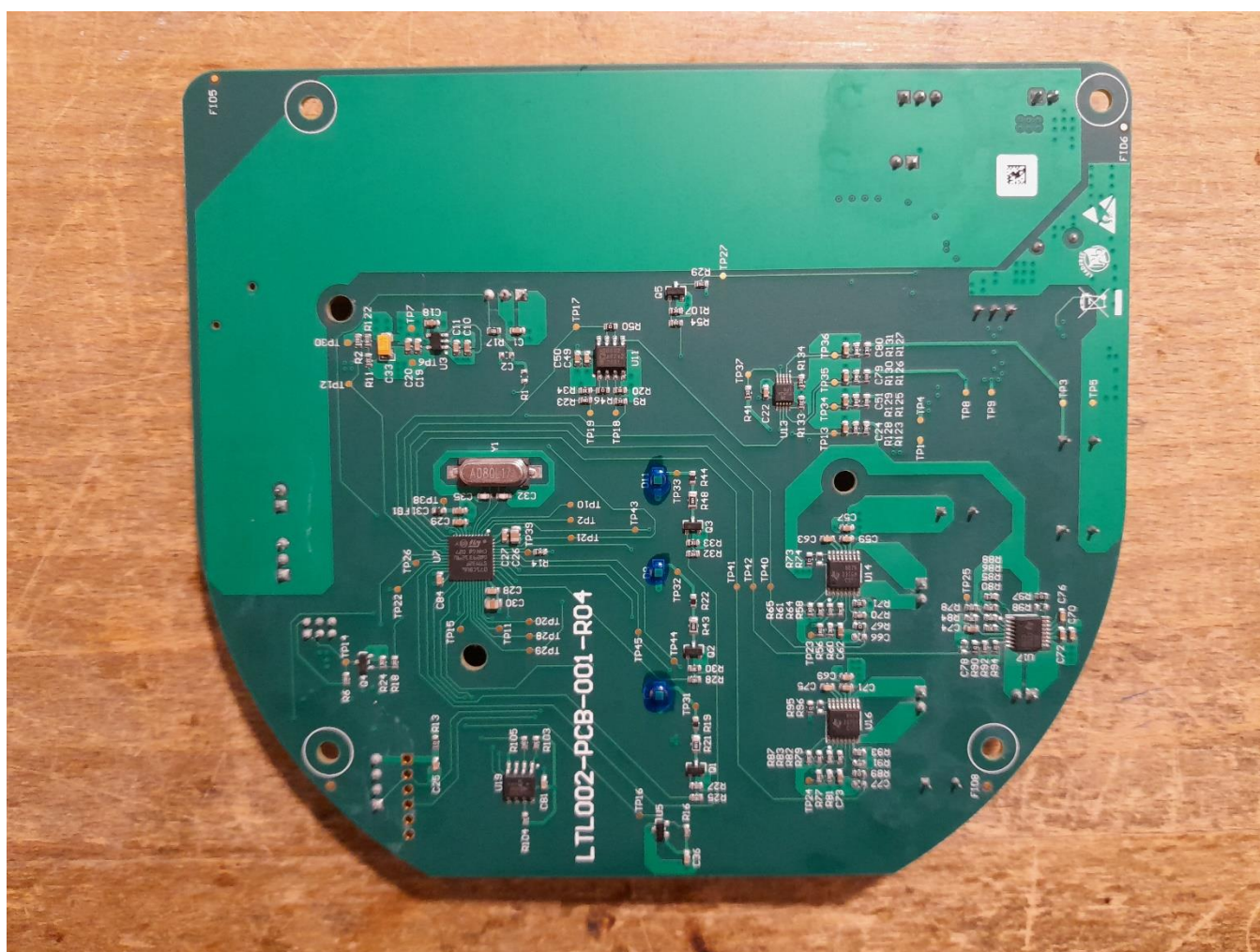
Division:
Industry & Energy

Description: PCB View #2

Test report reference:
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Appendix 2 Photodocumentation

Division:
Industry & Energy

Description: Ultrasonic sensor, top view

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Appendix 2 Photodocumentation

Division:
Industry & Energy

Description: Ultrasonic sensor, bottom view

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Appendix 2 Photodocumentation

Division:
Industry & Energy

Description: Ultrasonic sensor, cover removed

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Appendix 2 Photodocumentation

Division:
Industry & Energy

Description: Test setup below 30 MHz

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Appendix 2 Photodocumentation

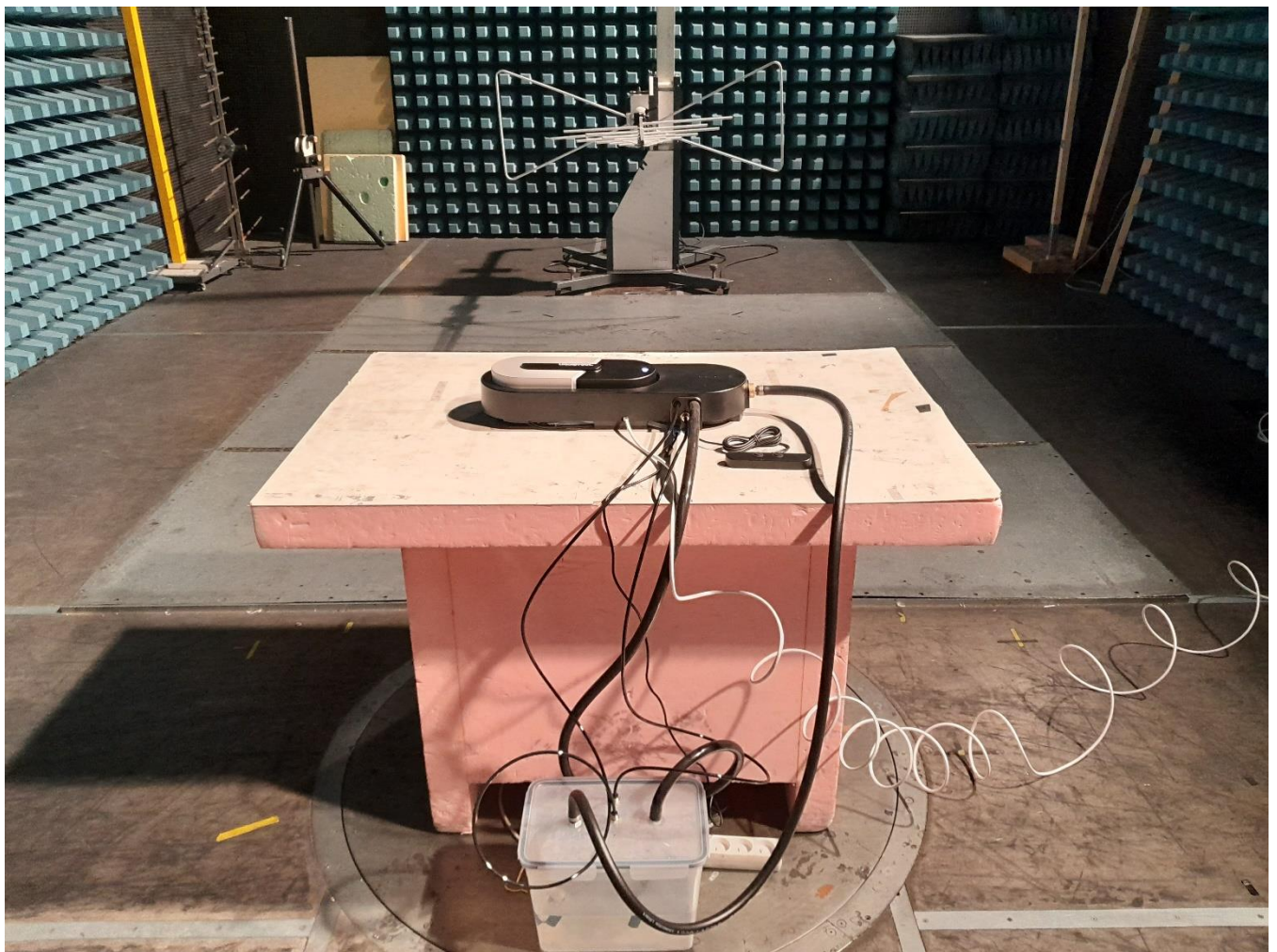
Division:
Industry & Energy

Description: Test setup 30 MHz - 1 GHz

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Appendix 2 Photodocumentation

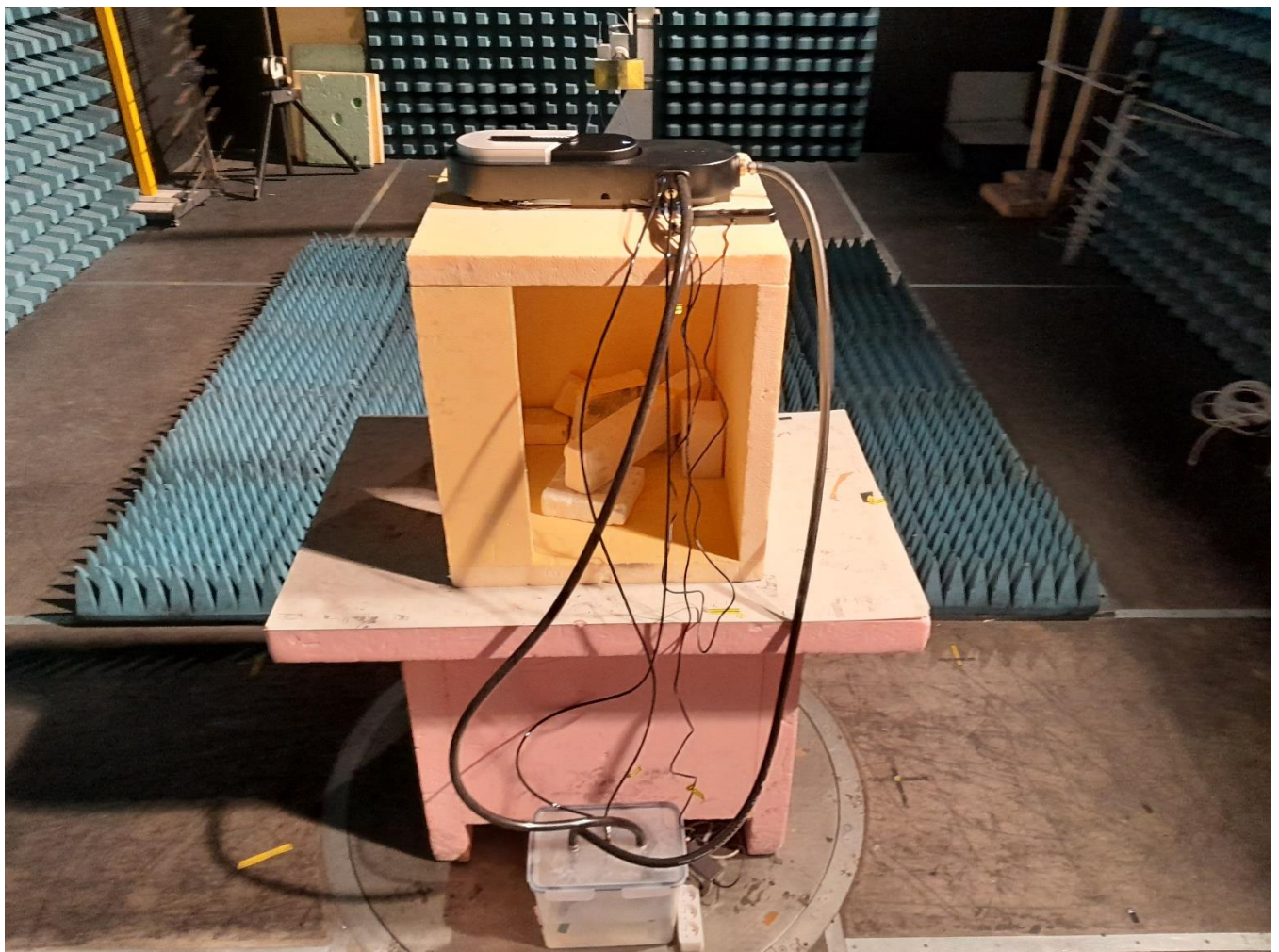
Division:
Industry & Energy

Description: Test setup above 1 GHz

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--- END OF TEST REPORT ---

