

📍 Kraków , 2025-02-28

EMC pre-compliance test report

Change log		
Version	Description	Date
V1.0	Initial radiation emission tests	28.02.2025
V2.0	More tests added	28.05.2025

Radiated emission 30MHz - 1GHz (PN-EN 55032)

RESULT: **PASS**

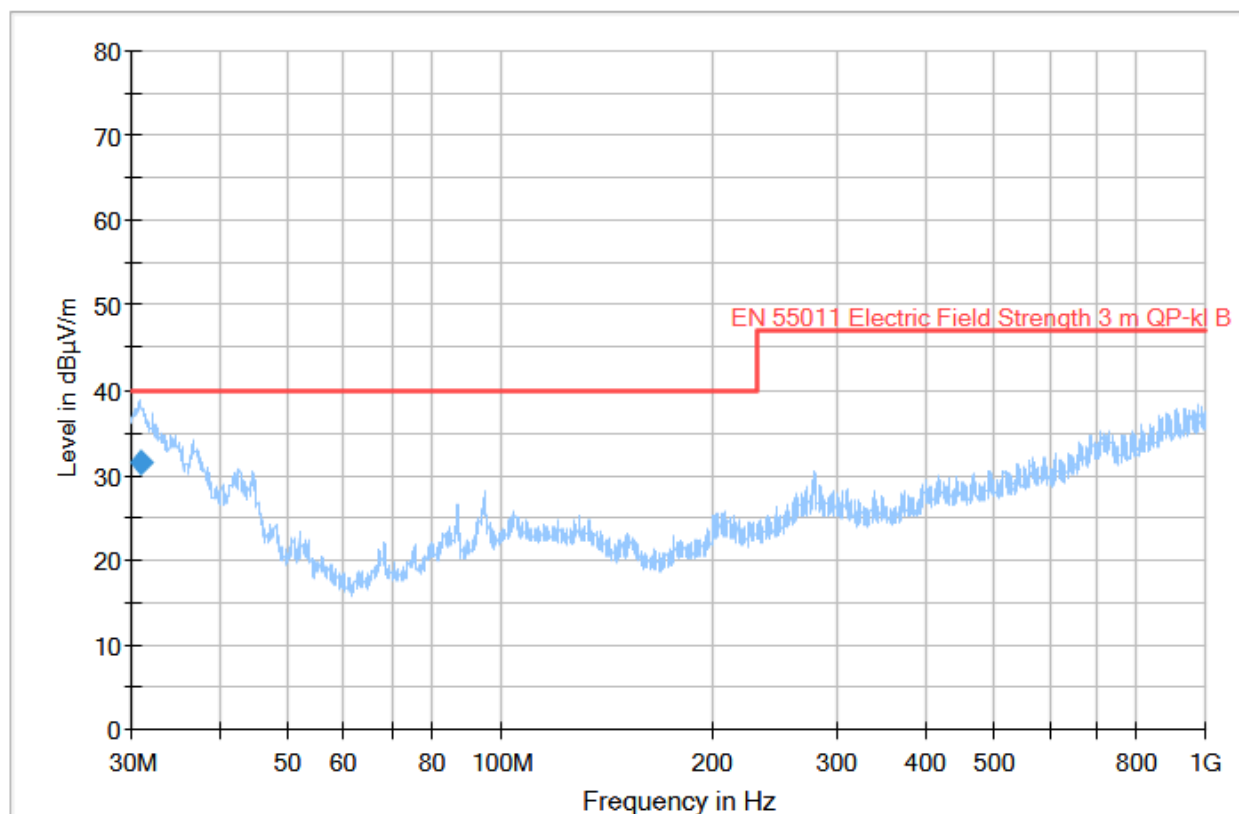
Frequency Range: 30 MHz - 1 GHz
Receiver: ESR 3 [ESR 3]
@ GPIB0 (ADR 18), SN 1316.3003K03/101634, FW 3.66
Signal Path: ESR 3-HL 562
Correction Table: sucoflex104-12m-SML-2.2
Correction Table: sucoflex104-3m-SML-2.2
Antenna: HL 562
Correction Table (vertical): HL562_vert
Correction Table (horizontal): HL562_hor
Antenna Tower: Inn-Co Antenna Tower [Inn-Co Antenna Tower]
@ GPIB0 (ADR 7)
Turntable: Inn-Co Turntable [Inn-Co Turntable]
@ GPIB0 (ADR 7)

EMI Auto Test Template: EMI Auto test rad 55011_B
Hardware Setup: HL562
Frequency Range: 30 MHz - 1 GHz
Graphics Level Range: 0 dBμV/m - 80 dBμV/m

Preview Measurements:
Scan Test Template: 55011_B HL562_pre

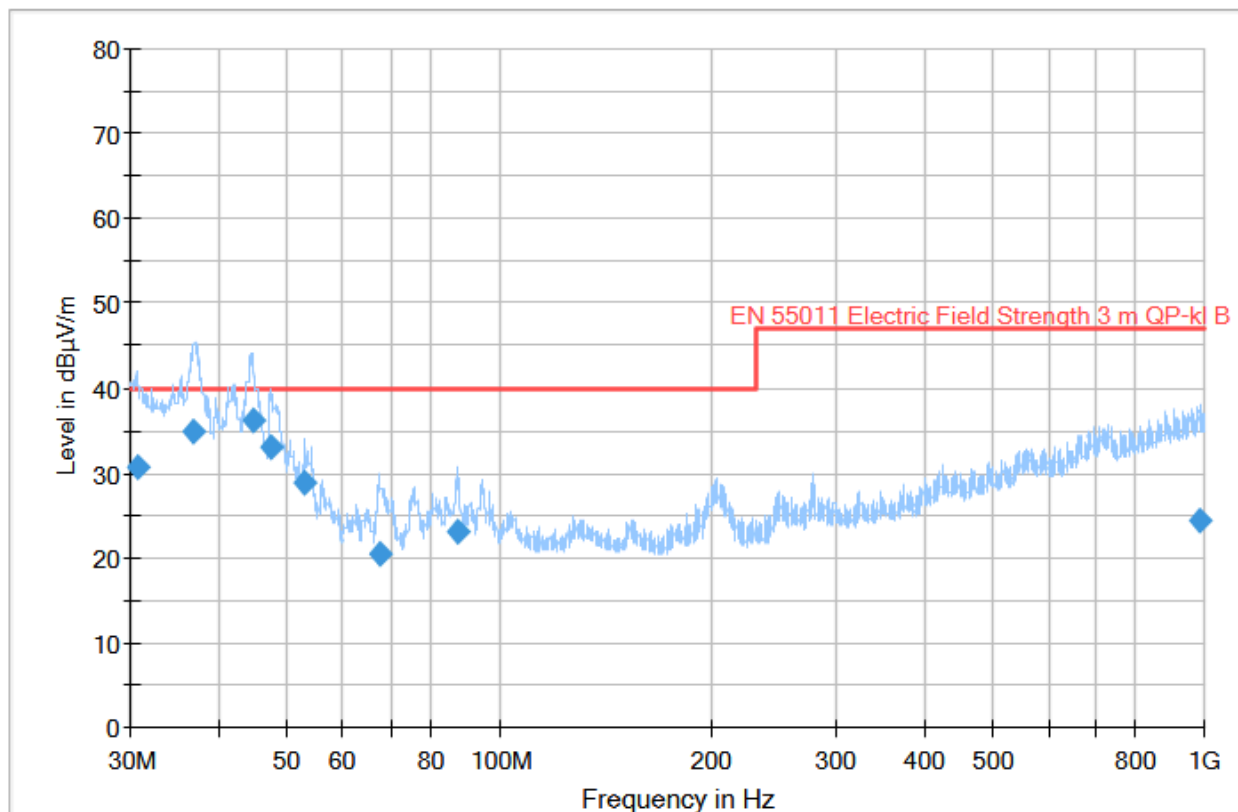
Data Reduction:
Limit Line #1: EN 55011 Electric Field Strength 3 m QP-kl B
Maximum Results: 20
Maxima per Subrange 1
Acceptance Offset: 0 dB

Polarization Horizontal

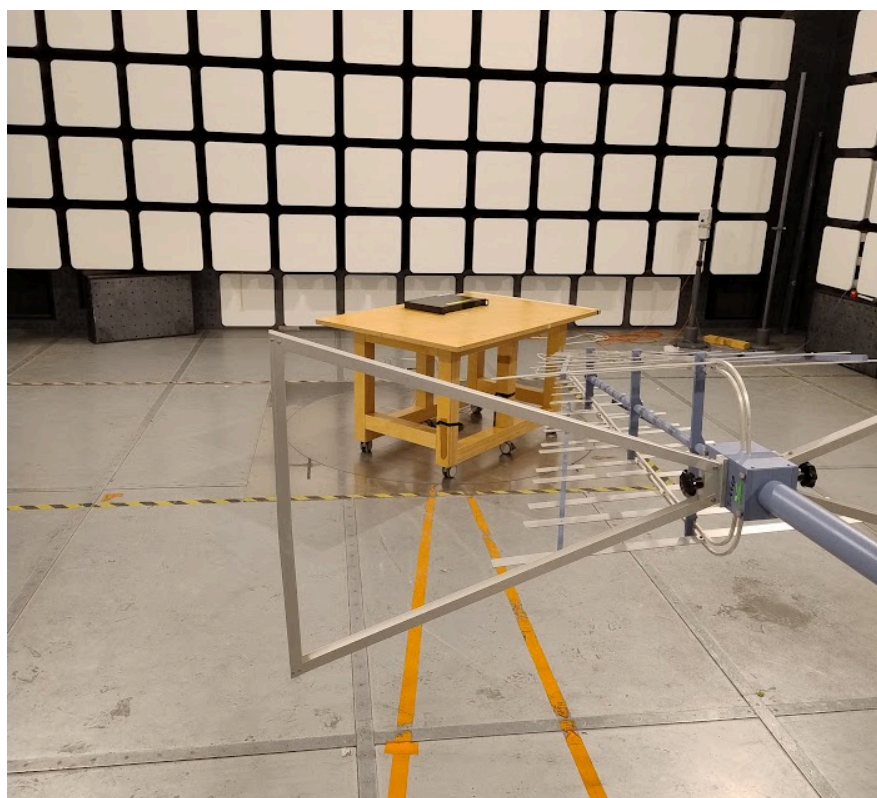
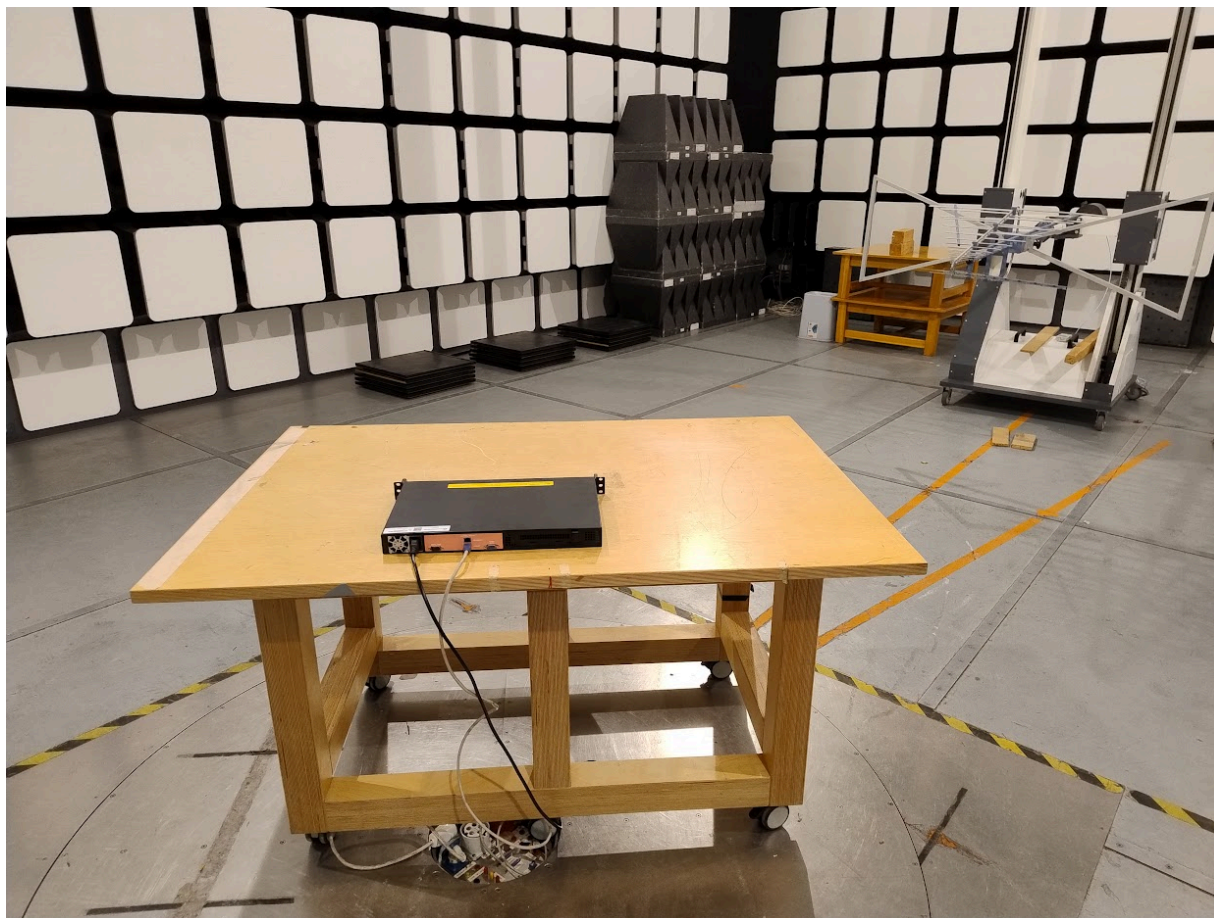


	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.960000	31.5	5000.0	120.000	282.0	H	252.0	21.7	8.5	40.0

Polarization Vertical



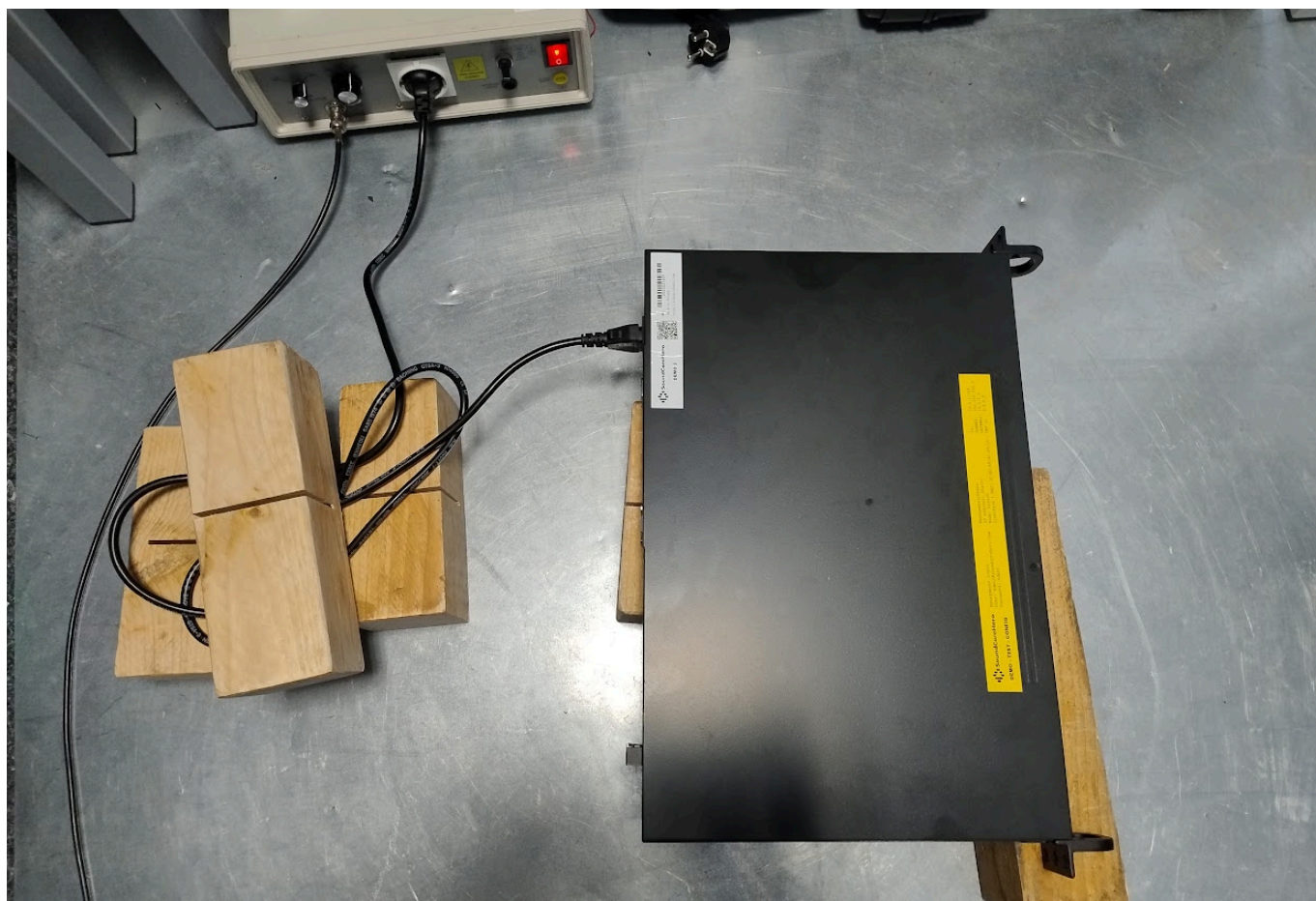
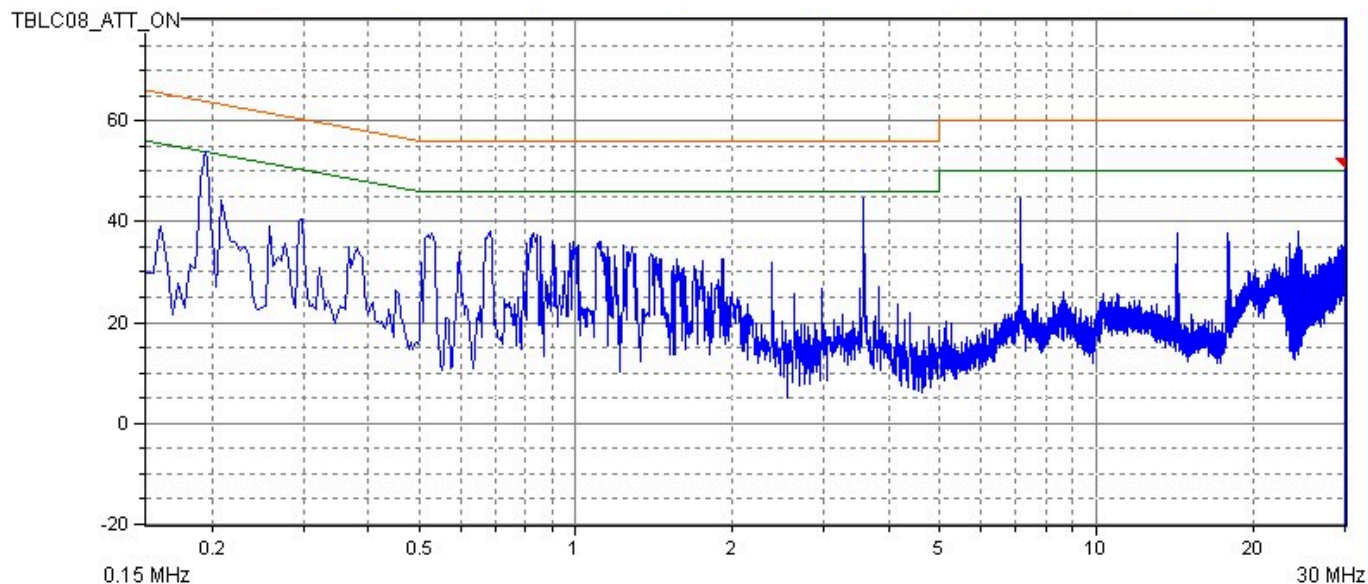
	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
30.655000	30.8	5000.0	120.000	100.0	V	203.0	21.1	9.2	40.0
36.895000	35.0	5000.0	120.000	100.0	V	78.0	18.3	5.0	40.0
44.615000	36.1	5000.0	120.000	100.0	V	112.0	14.2	3.9	40.0
47.365000	32.9	5000.0	120.000	100.0	V	67.0	12.4	7.1	40.0
53.025000	28.8	5000.0	120.000	150.0	V	29.0	9.9	11.2	40.0
67.515000	20.4	5000.0	120.000	117.0	V	315.0	9.4	19.6	40.0
86.950000	23.0	5000.0	120.000	100.0	V	16.0	11.9	17.0	40.0
984.600000	24.4	5000.0	120.000	267.0	V	22.0	25.3	22.6	47.0



Conducted emission 150 kHz - 30 MHz (PN-EN 55032)

RESULT: PASS

Limit lines: PN-EN 55032 class B



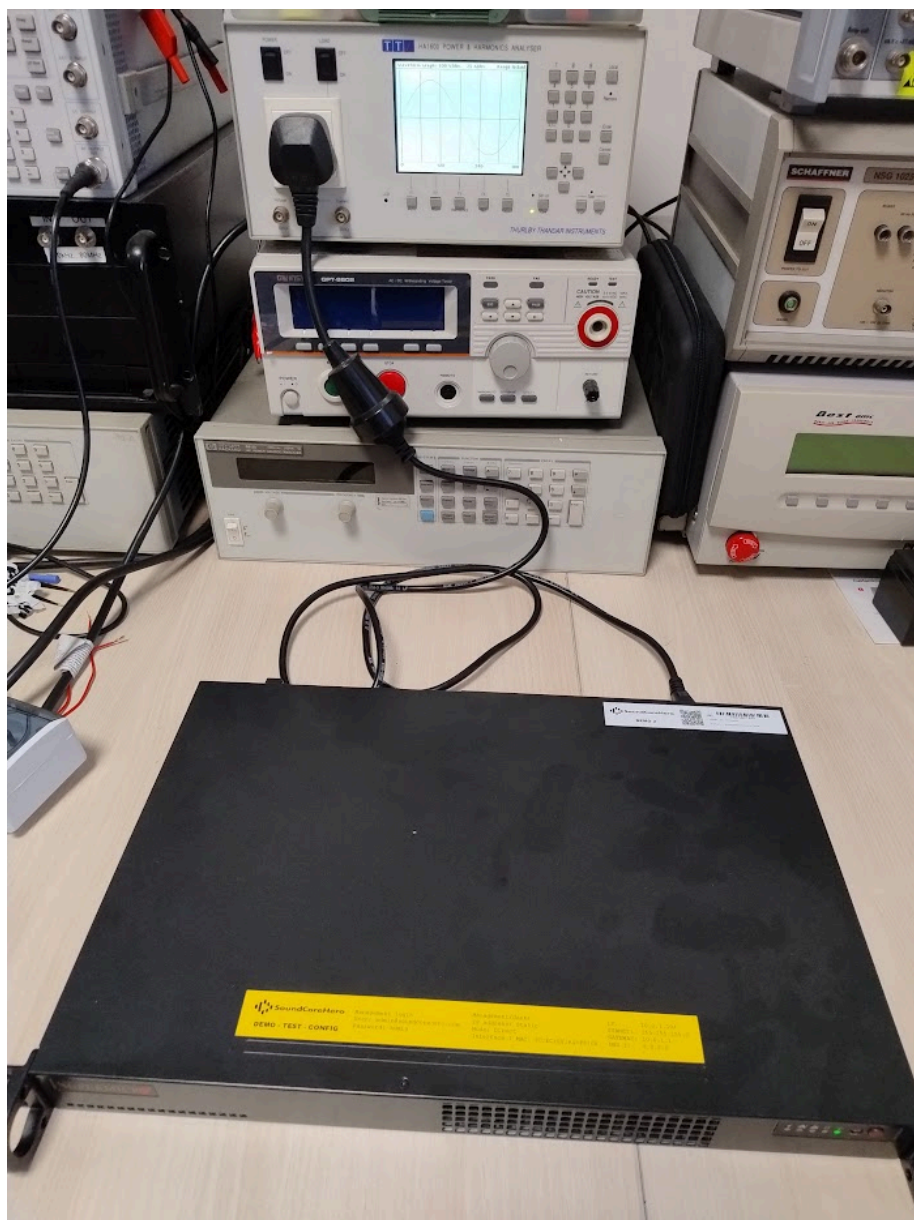
Harmonics (PN-EN 61000-3-2)

RESULT: **PASS**

N	Filtered	Limit	Avg.	%Limit	Max.	%Limit	N	Filtered	Limit	Avg.	%Limit	Max.	%Limit
1	288.69			-		-	2	0.20	1080.0	0.2	0.0	0.20	0.0
3	49.36	2300.0	49.3	2.1	49.40	2.1	4	0.06	430.0	0.1	0.0	0.08	0.0
5	19.12	1140.0	19.1	1.7	19.17	1.7	6	0.11	300.0	0.1	0.0	0.13	0.0
7	13.59	770.0	13.6	1.8	13.71	1.8	8	0.13	230.0	0.1	0.0	0.13	0.1
9	8.22	400.0	8.2	2.0	8.29	2.1	10	0.13	184.0	0.1	0.1	0.13	0.1
11	4.83	330.0	4.9	1.5	4.92	1.5	12	0.17	153.3	0.2	0.1	0.17	0.1
13	3.28	210.0	3.3	1.6	3.41	1.6	14	0.11	131.4	0.1	0.1	0.13	0.1
15	3.50	150.0	3.5	2.3	3.59	2.4	16	0.11	115.0	0.1	0.1	0.11	0.1
17	5.59	132.3	5.6	4.2	5.59	4.2	18	0.13	102.2	0.1	0.1	0.15	0.1
19	4.87	118.4	4.9	4.1	4.96	4.2	20	0.04	92.0	0.0	0.0	0.06	0.1
21	2.49	107.1	2.5	2.3	2.60	2.4	22	0.02	83.6	0.0	0.0	0.04	0.0
23	3.12	97.8	3.1	3.2	3.28	3.4	24	0.08	76.7	0.1	0.1	0.11	0.1
25	3.30	90.0	3.3	3.7	3.41	3.8	26	0.06	70.8	0.1	0.1	0.06	0.1
27	2.45	83.3	2.4	2.9	2.51	3.0	28	0.08	65.7	0.1	0.2	0.11	0.2
29	2.31	77.6	2.3	3.0	2.36	3.0	30	0.06	61.3	0.1	0.2	0.08	0.1
31	1.37	72.6	1.3	1.8	1.43	2.0	32	0.13	57.5	0.1	0.2	0.15	0.3
33	2.40	68.2	2.4	3.5	2.42	3.5	34	0.08	54.1	0.1	0.2	0.11	0.2
35	1.82	64.3	1.8	2.8	1.84	2.9	36	0.06	51.1	0.1	0.2	0.06	0.1
37	2.09	60.8	2.1	3.5	2.11	3.5	38	0.11	48.4	0.1	0.2	0.11	0.2
39	1.61	57.7	1.6	2.8	1.61	2.8	40	0.08	46.0	0.1	0.2	0.08	0.2
P	7.50	251.4	7.5	3.0	7.53	3.0	-	-	-	-	-	-	-

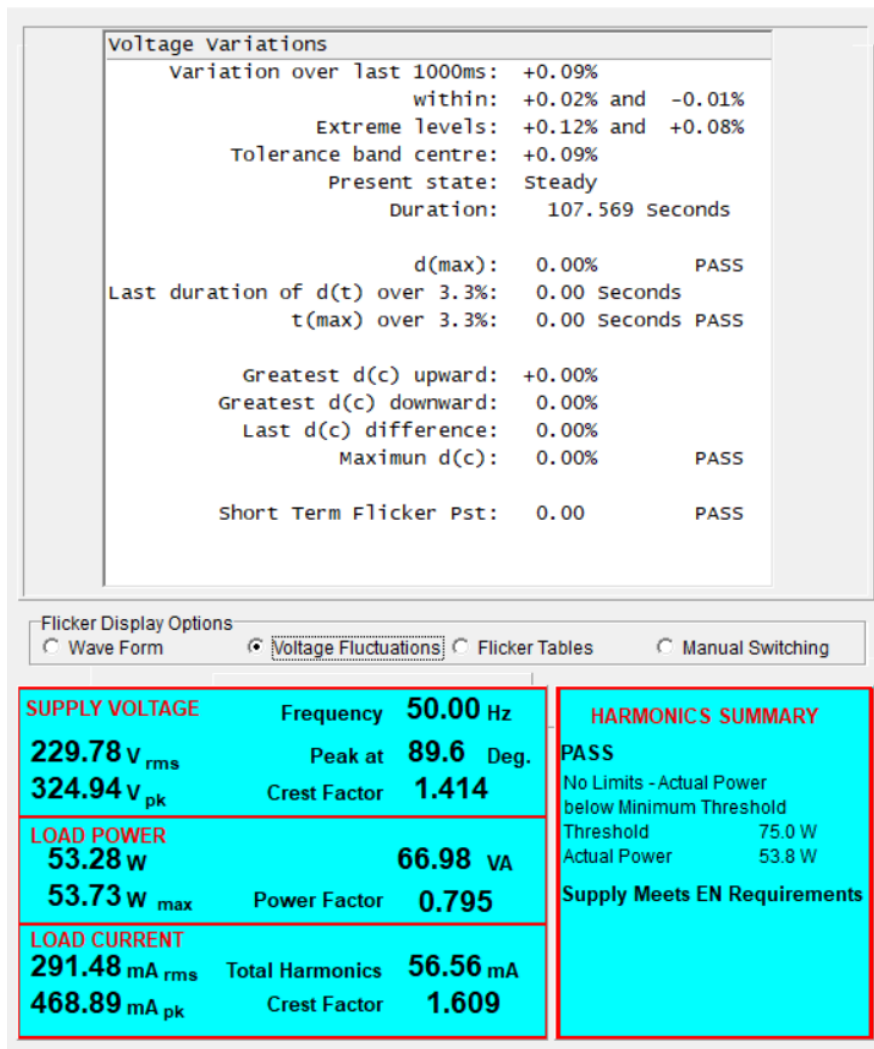
Harmonics Display Options
☐ Waveform ☐ Histogram ☒ Table

SUPPLY VOLTAGE Frequency 50.00 Hz 229.77 V _{rms} 324.91 V _{pk} Peak at 89.7 Deg. Crest Factor 1.414	HARMONICS SUMMARY PASS Class A Limits Apply. Actual Power 54.3 W Supply Meets EN Requirements
LOAD POWER 54.05 W 54.30 W _{max} Power Factor 0.799	
LOAD CURRENT 294.50 mA _{rms} 473.83 mA _{pk} Total Harmonics 56.69 mA Crest Factor 1.609	



Flickers (PN-EN 61000-3-3)

RESULT: **PASS**



Voltage dip and drops (PN-EN 61000-4-11)

RESULT: PASS

Voltage drop				
Power port	Test level % UT / voltage phase	Cycles	Number of pulses	Delay between pulses
AC plug 230V	0 % / 0°	0.5	3	10 s
AC plug 230V	0 % / 0°	1	3	10 s
AC plug 230V	70% / 0°	25	3	10 s

During the exposures, the device operated correctly and showed no reaction to the exposures.

Voltage dip			
Power port	Test level % UT / voltage phase	Cycles	Number of voltage dips
AC plug 230V	0 % / 0°	250	3

During the exposures, the device turned off and got back to the normal operation state..

Electrostatic discharge - ESD (PN-EN 61000-4-2)

RESULT: **PASS**

Air discharge test level: +/- 4kV

Direct discharge test level: +/- 8kV





During the exposures, the device operated correctly and showed no reaction to the exposures.

Electrical Fast Transients - EFT BURST (PN-EN 61000-4-4)

RESULT: PASS

Test parameters:

Repetition frequency: 100 kHz		Burst time : 15ms		
Duration time: 300 ms		Test time (s): 60s		
Power port	Line	Test level	Result	
			Polarization +	Polarization-
AC Plug 230V	L	1kV	A	A
	N	1kV	A	A
	L+N	1kV	A	A
	PE	1kV	A	A
	L+PE	1kV	A	A
	N+PE	1kV	A	A
	L+N+PE	1kV	A	A
Required criteria: B				

During the exposures, the device operated correctly and showed no reaction to the exposures.



Surge immunity test (PN-EN 61000-4-5)

RESULT: PASS

Test parameters:

Power port	Line	Test voltage	Result	
			angle 90°	angle 270°
AC Plug 230V	L-N	+1kV	A	-
		-1kV	-	A
	L-PE	+2kV	A	-
		-2kV	-	A
	N-PE	+2kV	A	-
		-2kV	-	A
	L+N-PE	+2kV	A	-
		-2kV	-	A
Required criteria: B				

During the exposures, the device operated correctly and showed no reaction to the exposures.