TEST REPORT N°: CPXU-ESH-P24071992B

EMC TEST REPORT

Applicant :	**Jiangsu Skyworth New Energy Technology Co.,Ltd**
Address :	3F South, Plant 4, No.599 Taishan Road, High-tech Zone, Suzhou City
Manufacturer :	Jiangsu Skyworth New Energy Technology Co.,Ltd
Address :	3F South, Plant 4, No.599 Taishan Road, High-tech Zone, Suzhou City
Factory :	Jiangsu Skyworth New Energy Technology Co.,Ltd
Address :	3F South, Plant 4, No.599 Taishan Road, High-tech Zone, Suzhou City
This document includes : 92 pages	

Product :	Hybrid Inverter
Model name :	SWH005KH-T1, SWH008KH-T1, SWH010KH-T1, SWH012KH-T1, SWH015KH-T1
Trade mark :	Solavita
Rated voltage :	See 3.1 rating label for details
Rated input power :	See 3.1 rating label for details
Highest clock frequency :	≤108 MHz
Protection class :	I
Tests realised :	On one sample of SWH010KH-T1 and SWH015KH-T1
Test date :	Aug.7 to 14, 2024

Standards used (date) :	EN IEC 61000-6-3:2021 EN IEC 61000-6-1:2019
Clauses examined :	All Clauses Relevant.

CONCLUSION :The sample does satisfy the clauses examined .

Test done by:	Approved by:
Name : Able ZHAO Date : Sep.5, 2024	Name : Wen ZHU Date : Sep.5, 2024

BV ADT (SHANGHAI) CORPORATION 必维诚科技（上海）有限公司

TEST REPORT N°: CPXU-ESH-P24071992B

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Release control record

Report No.	Description	Date Issued
CPXU-ESH-P24071992B	Original release	05/09/2024

1 Summary of test results

No.	Item	Standards (Referenced standards)	Result
Emission part: EN IEC 61000-6-3:2021			
1	Continuous disturbances	EN IEC 61000-6-3:2021	PASS
2	Discontinuous disturbances	EN IEC 55014-1:2021	N/A
3	Radiated emission	EN IEC 61000-6-3:2021	PASS
4	Harmonic current emission	EN IEC 61000-3-2:2019+A1:2021 EN 61000-3-12:2011	PASS
5	Voltage fluctuation and flicker	EN 61000-3-3:2013+A1:2019+A2:2021 EN IEC 61000-3-11:2019	PASS
Immunity part: EN IEC 61000-6-1:2019			
6	Electrostatic discharge	IEC 61000-4-2:2008 EN 61000-4-2:2009	PASS
7	RF electromagnetic fields	IEC 61000-4-3:2020 EN IEC 61000-4-3:2020	PASS
8	Electrical fast transient/Burst	IEC 61000-4-4:2012 EN 61000-4-4:2012	PASS
9	Surge	IEC 61000-4-5:2014+A1:2017 EN 61000-4-5:2014+A1:2017	PASS
10	Immunity to conducted disturbances induced by RF fields	IEC 61000-4-6:2013 EN 61000-4-6:2014	PASS
11	Power frequency magnetic field	IEC 61000-4-8:2009 EN IEC 61000-4-8:2010	PASS
12	Voltage dips and short interruptions	IEC 61000-4-11:2020 EN IEC 61000-4-11:2020 IEC 61000-4-34:2005+A1:2009 EN 61000-4-34:2007+A1:2009	PASS

2 General information of laboratory

2.1 Test facility

☒ **Laboratory name:** BUREAU VERITAS ADT (Shanghai) Corporation
Testing location: Building C, No. 829, Xinzhuan Road, Shanghai, P.R.China (201612)

2.2 Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

This lab's measurement uncertainty ULab, is low than UCispr, Table 1 – Values of UCispr of CISPR 16-4-2, therefore compliance is deemed to occur if no measured disturbance exceeds the disturbance limit.

Measurement		Value
Disturbance voltage		2.56 dB
Disturbance voltage at wired network port		2.60 dB
Disturbance power		3.69 dB
Radiated disturbance	30 MHz-1GHz	3.72 dB
	Above 1GHz	4.58 dB

3 General product information

3.1 Specification of product

Operating modes:

☒ Mode A: Input: PV port, Output: AC grid port
☒ Mode B: Input: PV port, battery port, Output: AC load port
☒ Mode C: Intput: battery port, Output: AC load port

Types of port:

☒ AC power port: AC grid port, AC load port
☒ DC power port: PV port, battery port
☐ wired network port
☒ signal/control port: signal port
☒ enclosure port

Special comments:

All models are similar as each other except the rated parameter. So all EMC tests were performed on model SWH015KH-T1, harmonic (EN IEC 61000-3-2:2019+A1:2021) and flicker (EN 61000-3-3:2013+A1:2019+A2:2021) tests were performed on SWH010KH-T1. Harmonic (EN 61000-3-12:2011) and flicker (EN IEC 61000-3-11:2019) tests on were performed on SWH015KH-T1, the test result is applicable to all models.

Rating label:

Model: SWH005KH-T1 Hybrid Inverter	Solavita
PV INPUT	
Max. voltage	1000Vdc
MPPT voltage range	180~950Vdc
Nominal operating voltage	600Vdc
Max. input current(input A/input B)	15A/15A
Max. short circuit current(input A/input B)	18A/18A
Max. input power	6500W
BATTERY	
Battery type	Lithium-ion
Battery voltage operation range	180~750Vdc
Max. charge and discharge current	25A
Max. charge and discharge power	6500W
AC INPUT & AC OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. input/output current	8A
Max. apparent power	5500VA
Nominal power	5000W
Power factor	1(±0. 8 adjustable)
EPS OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. output current	8A
Nominal power	5000W
OTHERS	
Operating temperature range	-25℃~60℃
Ingress rotection	IP 66
Ingress topology	non-isolated
Protective class	Class I
Over voltage category	III (AC), II (DC)

IEC62109-1/2 IEC61000-6-1/2/3/4 IEC62477-1 VDE 4105

Jiangsu Skyworth New Energy Technology Co., Ltd.
Add :No. 599, Taishan Road, Suzhou, Jiangsu, China
Web:www.solavita-ess.com
Made in China
N046113-000007-000

Model: SWH008KH-T1 Hybrid Inverter	Solavita
PV INPUT	
Max. voltage	1000Vdc
MPPT voltage range	180~950Vdc
Nominal operating voltage	600Vdc
Max. input current(input A/input B)	15A/15A
Max. short circuit current(input A/input B)	18A/18A
Max. input power	10400W
BATTERY	
Battery type	Lithium-ion
Battery voltage operation range	180~750Vdc
Max. charge and discharge current	25A
Max. charge and discharge power	6500W
AC INPUT & AC OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. input/output current	13A
Max. apparent power	8800VA
Nominal power	8000W
Power factor	1(±0. 8 adjustable)
EPS OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. output current	13A
Nominal power	8000W
OTHERS	
Operating temperature range	-25℃~60℃
Ingress rotection	IP 66
Ingress topology	non-isolated
Protective class	Class I
Over voltage category	III (AC), II (DC)

IEC62109-1/2 IEC61000-6-1/2/3/4 IEC62477-1 VDE 4105

Jiangsu Skyworth New Energy Technology Co., Ltd.
Add :No. 599, Taishan Road, Suzhou, Jiangsu, China
Web:www.solavita-ess.com
Made in China
N046113-000006-000

Model:SWH010KH-T1
Hybrid Inverter

Solavita

PV INPUT	
Max. voltage	1000Vdc
MPPT voltage range	180~950Vdc
Nominal operating voltage	600Vdc
Max. input current(input A/input B)	30A/15A
Max. short circuit current(input A/input B)	36A/18A
Max. input power	13000W
BATTERY	
Battery type	Lithium-ion
Battery voltage operation range	180~750Vdc
Max. charge and discharge current	25A
Max. charge and discharge power	6500W
AC INPUT & AC OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. input/output current	16A
Max. apparent power	11000VA
Nominal power	10000W
Power factor	1(±0. 8 adjustable)
EPS OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. output current	16A
Nominal power	10000W
OTHERS	
Operating temperature range	-25℃~60℃
Ingress rotection	IP 66
Ingress topology	non-isolated
Protective class	Class I
Over voltage category	III (AC), II (DC)

IEC62109-1/2 IEC61000-6-1/2/3/4 IEC62477-1 VDE 4105

Jiangsu Skyworth New Energy Technology Co., Ltd.
Add :No. 599, Taishan Road, Suzhou, Jiangsu, China
Web:www.solavita-ess.com

Made in China
N046113-000005-000

Model:SWH012KH-T1
Hybrid Inverter

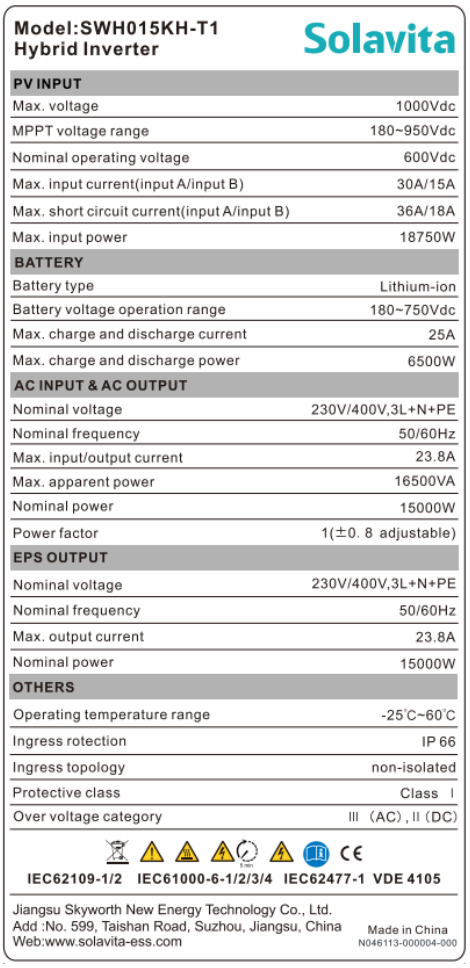
Solavita

PV INPUT	
Max. voltage	1000Vdc
MPPT voltage range	180~950Vdc
Nominal operating voltage	600Vdc
Max. input current(input A/input B)	30A/15A
Max. short circuit current(input A/input B)	36A/18A
Max. input power	15600W
BATTERY	
Battery type	Lithium-ion
Battery voltage operation range	180~750Vdc
Max. charge and discharge current	25A
Max. charge and discharge power	6500W
AC INPUT & AC OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. input/output current	19A
Max. apparent power	13200VA
Nominal power	12000W
Power factor	1(±0. 8 adjustable)
EPS OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. output current	19A
Nominal power	12000W
OTHERS	
Operating temperature range	-25℃~60℃
Ingress rotection	IP 66
Ingress topology	non-isolated
Protective class	Class I
Over voltage category	III (AC), II (DC)

IEC62109-1/2 IEC61000-6-1/2/3/4 IEC62477-1 VDE 4105

Jiangsu Skyworth New Energy Technology Co., Ltd.
Add :No. 599, Taishan Road, Suzhou, Jiangsu, China
Web:www.solavita-ess.com

Made in China
N046113-000009-000



Model:SWH015KH-T1
Hybrid Inverter

Solavita

PV INPUT	
Max. voltage	1000Vdc
MPPT voltage range	180~950Vdc
Nominal operating voltage	600Vdc
Max. input current(input A/input B)	30A/15A
Max. short circuit current(input A/input B)	36A/18A
Max. input power	18750W
BATTERY	
Battery type	Lithium-ion
Battery voltage operation range	180~750Vdc
Max. charge and discharge current	25A
Max. charge and discharge power	6500W
AC INPUT & AC OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. input/output current	23.8A
Max. apparent power	16500VA
Nominal power	15000W
Power factor	1(±0. 8 adjustable)
EPS OUTPUT	
Nominal voltage	230V/400V,3L+N+PE
Nominal frequency	50/60Hz
Max. output current	23.8A
Nominal power	15000W
OTHERS	
Operating temperature range	-25℃~60℃
Ingress rotection	IP 66
Ingress topology	non-isolated
Protective class	Class Ⅰ
Over voltage category	Ⅲ（AC）, Ⅱ（DC）

IEC62109-1/2 IEC61000-6-1/2/3/4 IEC62477-1 VDE 4105

Jiangsu Skyworth New Energy Technology Co., Ltd.
Add :No. 599, Taishan Road, Suzhou, Jiangsu, China
Web:www.solavita-ess.com

Made in China
N046113-000004-000

3.2 Description of auxiliary equipment and associated equipment

N/A

3.3 Operation conditions

The EUT operating and testing at below conditions:

Ambient conditions:	Temperature	:	21.0-24.0 °C
	Relative humidity	:	48.0-55.0 %
	Atmospheric pressure	:	101.0 kPa

3.4 Photograph of test setup

Refer to Appendix A

3.5 Photograph of sample

Refer to Appendix B

4 Test instruments

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
AMN	Schwarzbeck	NNLK 8130	E1L1014	2024-07-02	2025-07-01
AMN	Schwarzbeck	PVDC 8301	E1L1018	2024-08-12	2025-08-11
EMI Test Receiver	R&S	ESR7	E1R1005	2024-02-18	2025-02-17
EMI Test Receiver	R&S	ESR7	E1R1006	2024-02-18	2025-02-17
Pre-Amplifier (0.1GHz~8GHz)	R&S	SCU08F1	E1A2010	2024-05-31	2025-05-30
Pre-Amplifier(9kHz~2GHz)	Shcwarzbeck	BBV 9745	E1A2016	2024-04-24	2025-04-23
Hybrid Antenna	Schwarzbeck	VULB 9162	E1A1043	2024-03-07	2026-03-06
Hybrid Antenna	Schwarzbeck	VULB 9162	E1A1044	2024-03-07	2026-03-06
ESD simulator	AMETEK	dito	E1ES027	2024-05-10	2025-05-09
Signal Generator	Anritsu	MG3692B	E1S9006	2024-05-31	2025-05-30
Logarithmic Periodic Antenna	Schwarzbeck	VULP 9118E	E1A1037	NCR	NCR
Horn Antenna	Schwarzbeck	STLP 9149	E1A1038	NCR	NCR
Power Amplifier	AMETEK	80RF 1000-175	E1P4004	2024-03-19	2025-03-18
Power Amplifier	AMETEK	AS0102-65	E1P4005	2024-03-19	2025-03-18
Power Amplifier	AMETEK	AS1860-50	E1P4006	2024-03-19	2025-03-18
Compact RF Generator	FRANKONIA	CIT-10-75	E1ES026	2024-02-19	2025-02-18
CDN	Schwarzbeck	CDN M2 63A 1000V	E1C4030	2024-08-13	2025-08-12
CDN	FRANKONIA	CDN-M5-63A-HV	E1C4028	2024-02-19	2025-02-18
EFT/SurgeTest System	TESEQ	NSG3060 & CDN3063	E1ES021	2024-02-19	2025-02-18
Capacitor Clamp	KeyTek	CM & CCL	E1C3001	2024-06-06	2025-06-05
PFM system	Prima	PFM 61008TM & PRM-COIL1150	E1M6005	2023-08-26	2024-08-25
Harmonic system	EM TEST	Netwave 30 & DPA503N	E1HF003	2024-02-19	2025-02-18

5 Test procedure and results for emission

5.1 Continuous disturbances, AC mains port (150kHz – 30 MHz)

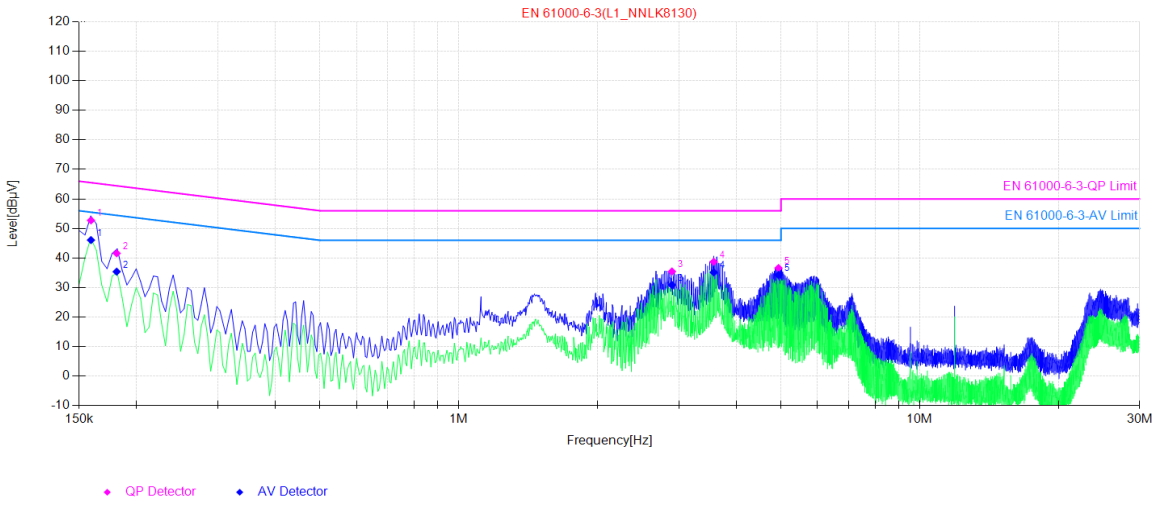
5.1.1 Test condition

Applicable Standard:	**EN IEC 61000-6-3:2021**	
Test setup description:	☒	Setup Type A (40 cm distance to vertical ground plane, 80 cm over ground plane)
	☐	Setup Type B (40 cm distance to horizontal ground plane)
	☐	Floor standing equipment setup (10 cm over ground plane)
	☐	Other: --
	☐	Artificial hand applied
Test method applied:	☒	Artificial mains network
	☐	Other: --
Remark:	--	

Limits for conducted emissions - low voltage AC mains port		
Frequency range (MHz)	**Quasi-peak (dBµV)**	**Average (dBµV)**
0.15-0.5	66-56	56-46
0.5-5	56	46
5-30	60	50

5.1.2 Test results

Model:	SWH015KH-T1
Test mode:	Mode A (PV 700V)
Test voltage:	AC 380V
Remark:	L1

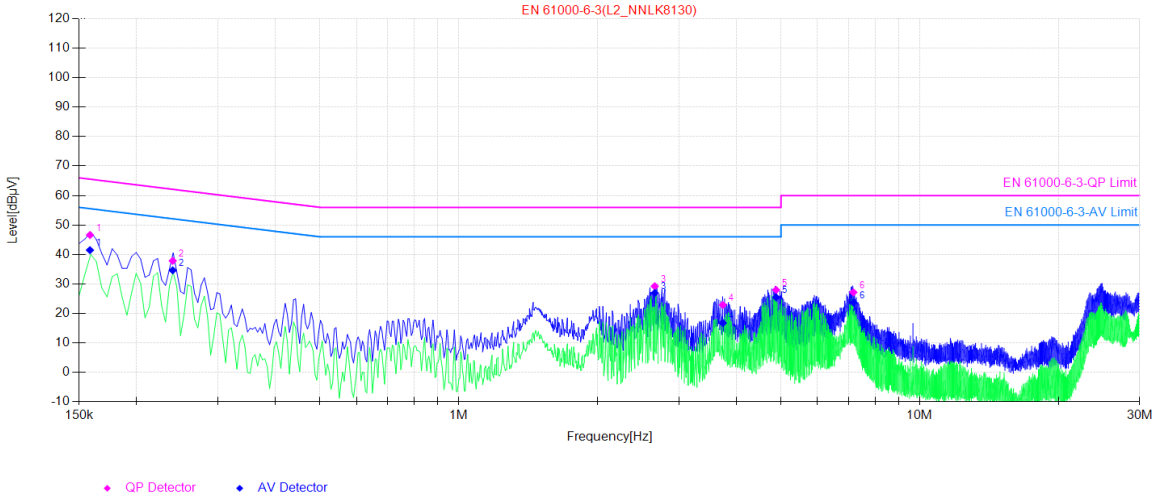


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.05	52.78	52.73	65.51	12.78	46.12	46.07	55.51	9.44
2	0.18	-0.01	41.61	41.60	64.44	22.84	35.39	35.38	54.44	19.06
3	2.90	-0.19	35.63	35.44	56.00	20.56	31.07	30.88	46.00	15.12
4	3.57	-0.24	38.96	38.72	56.00	17.28	35.40	35.16	46.00	10.84
5	4.94	-0.35	36.97	36.62	56.00	19.38	34.61	34.26	46.00	11.74

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A (PV 700V)
Test voltage:	AC 380V
Remark:	L2

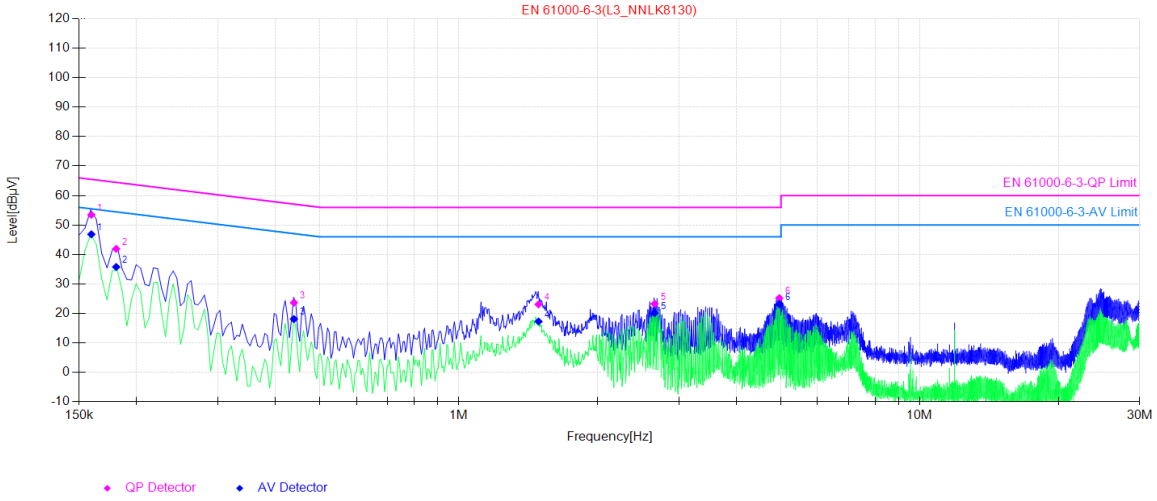


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.06	46.66	46.60	65.55	18.95	41.54	41.48	55.55	14.07
2	0.24	-0.02	37.87	37.85	62.11	24.26	34.66	34.64	52.11	17.47
3	2.66	-0.18	29.41	29.23	56.00	26.77	27.12	26.94	46.00	19.06
4	3.74	-0.23	23.12	22.89	56.00	33.11	17.02	16.79	46.00	29.21
5	4.88	-0.28	28.26	27.98	56.00	28.02	25.76	25.48	46.00	20.52
6	7.18	-0.24	27.41	27.17	60.00	32.83	23.98	23.74	50.00	26.26

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A (PV 700V)
Test voltage:	AC 380V
Remark:	L3

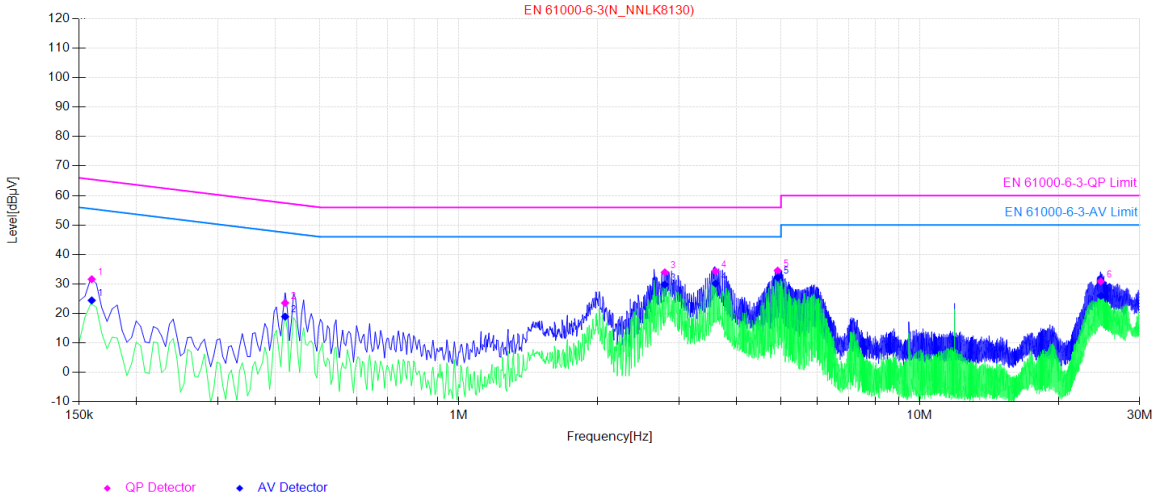


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.03	53.49	53.46	65.49	12.03	46.88	46.85	55.49	8.64
2	0.18	-0.03	41.96	41.93	64.46	22.53	35.80	35.77	54.46	18.69
3	0.44	-0.03	23.70	23.67	57.08	33.41	18.14	18.11	47.08	28.97
4	1.49	-0.23	23.32	23.09	56.00	32.91	17.51	17.28	46.00	28.72
5	2.66	-0.22	23.50	23.28	56.00	32.72	20.37	20.15	46.00	25.85
6	4.96	-0.28	25.48	25.20	56.00	30.80	23.46	23.18	46.00	22.82

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A (PV 700V)
Test voltage:	AC 380V
Remark:	N

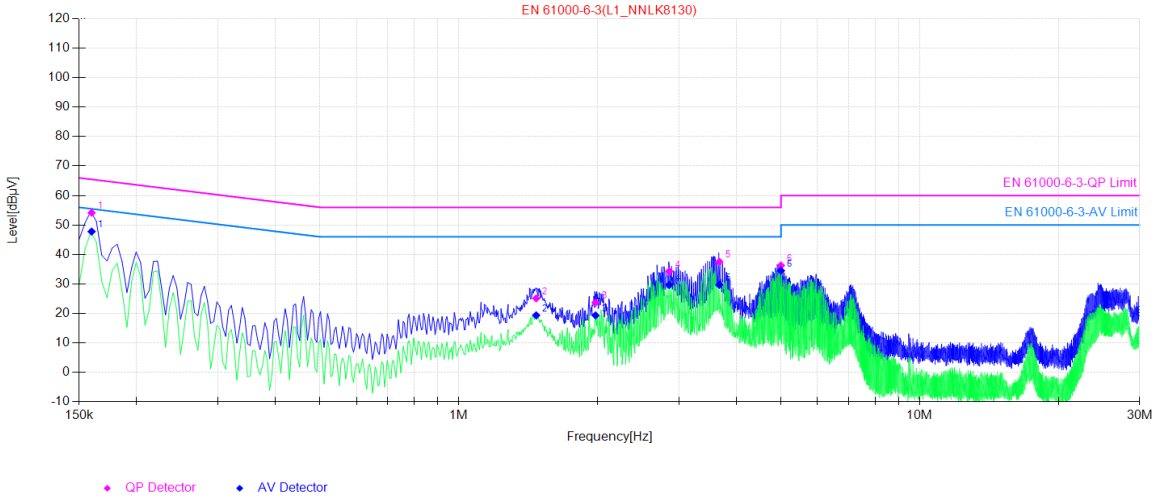


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.04	31.66	31.62	65.48	33.86	24.47	24.43	55.48	31.05
2	0.42	-0.10	23.67	23.57	57.45	33.88	19.03	18.93	47.45	28.52
3	2.80	-0.22	34.19	33.97	56.00	22.03	30.03	29.81	46.00	16.19
4	3.61	-0.25	34.56	34.31	56.00	21.69	30.42	30.17	46.00	15.83
5	4.92	-0.31	34.86	34.55	56.00	21.45	32.53	32.22	46.00	13.78
6	24.71	-0.34	31.24	30.90	60.00	29.10	26.37	26.03	50.00	23.97

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A (PV 450V)
Test voltage:	AC 380V
Remark:	L1

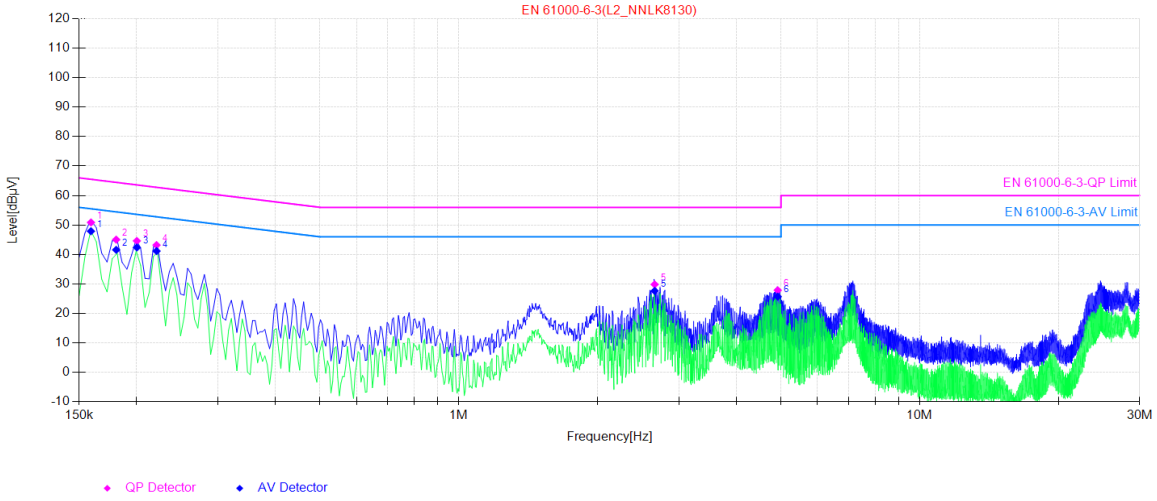


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.05	54.21	54.16	65.48	11.32	47.84	47.79	55.48	7.69
2	1.47	-0.20	25.32	25.12	56.00	30.88	19.57	19.37	46.00	26.63
3	1.98	-0.20	23.86	23.66	56.00	32.34	19.55	19.35	46.00	26.65
4	2.86	-0.19	34.47	34.28	56.00	21.72	29.91	29.72	46.00	16.28
5	3.67	-0.25	37.80	37.55	56.00	18.45	29.94	29.69	46.00	16.31
6	5.00	-0.35	36.64	36.29	56.00	19.71	34.88	34.53	46.00	11.47

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A (PV 450V)
Test voltage:	AC 380V
Remark:	L2

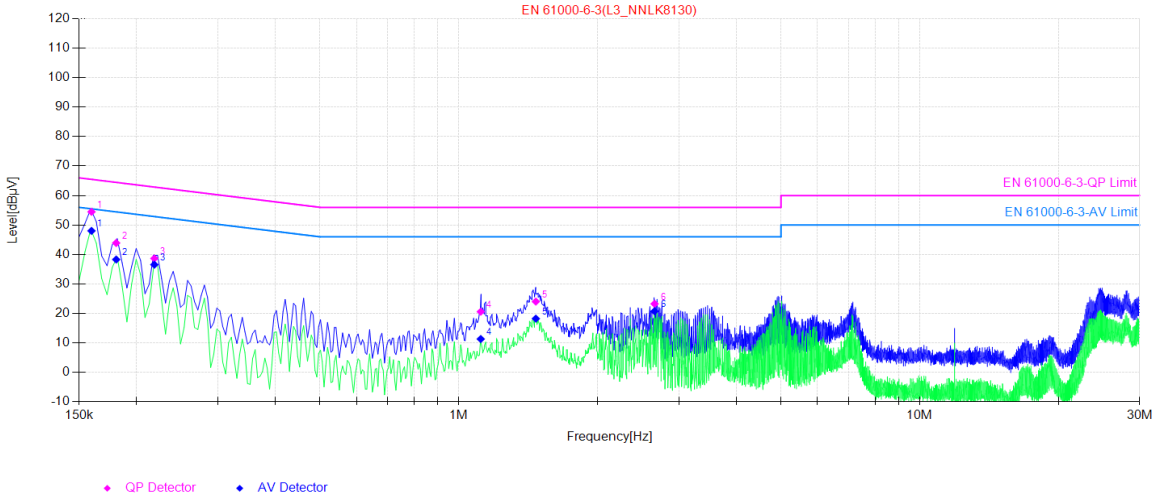


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.06	50.93	50.87	65.51	14.64	47.96	47.90	55.51	7.61
2	0.18	-0.02	45.07	45.05	64.46	19.41	41.60	41.58	54.46	12.88
3	0.20	0.00	44.61	44.61	63.60	18.99	42.38	42.38	53.60	11.22
4	0.22	-0.01	43.21	43.20	62.78	19.58	41.18	41.17	52.78	11.61
5	2.66	-0.18	30.04	29.86	56.00	26.14	27.83	27.65	46.00	18.35
6	4.92	-0.29	28.18	27.89	56.00	28.11	26.00	25.71	46.00	20.29

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A (PV 450V)
Test voltage:	AC 380V
Remark:	L3

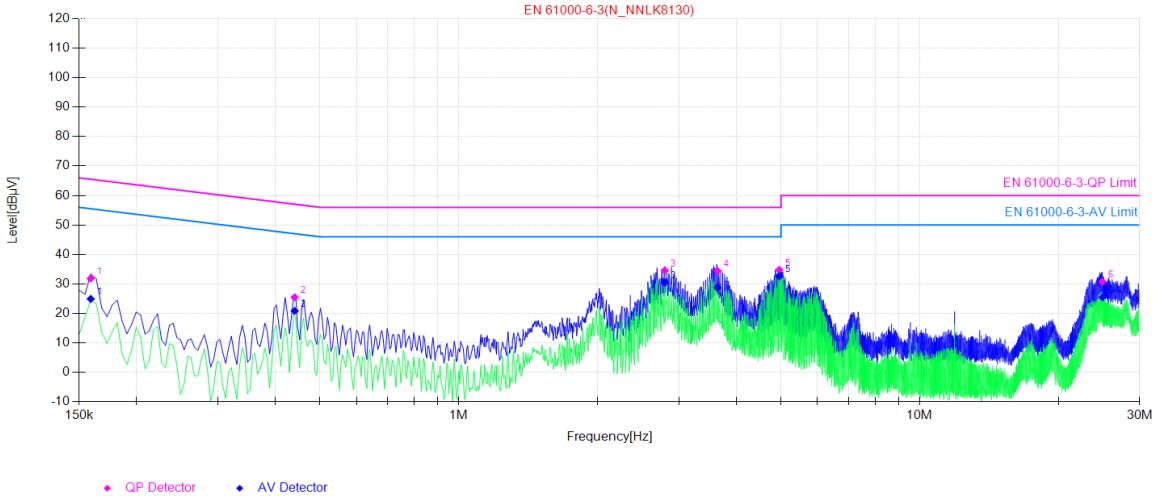


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.03	54.51	54.48	65.49	11.01	48.04	48.01	55.49	7.48
2	0.18	-0.03	43.93	43.90	64.46	20.56	38.33	38.30	54.46	16.16
3	0.22	-0.03	38.70	38.67	62.88	24.21	36.58	36.55	52.88	16.33
4	1.12	-0.23	20.84	20.61	56.00	35.39	11.58	11.35	46.00	34.65
5	1.47	-0.23	24.27	24.04	56.00	31.96	18.49	18.26	46.00	27.74
6	2.66	-0.22	23.50	23.28	56.00	32.72	20.99	20.77	46.00	25.23

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A (PV 450V)
Test voltage:	AC 380V
Remark:	N

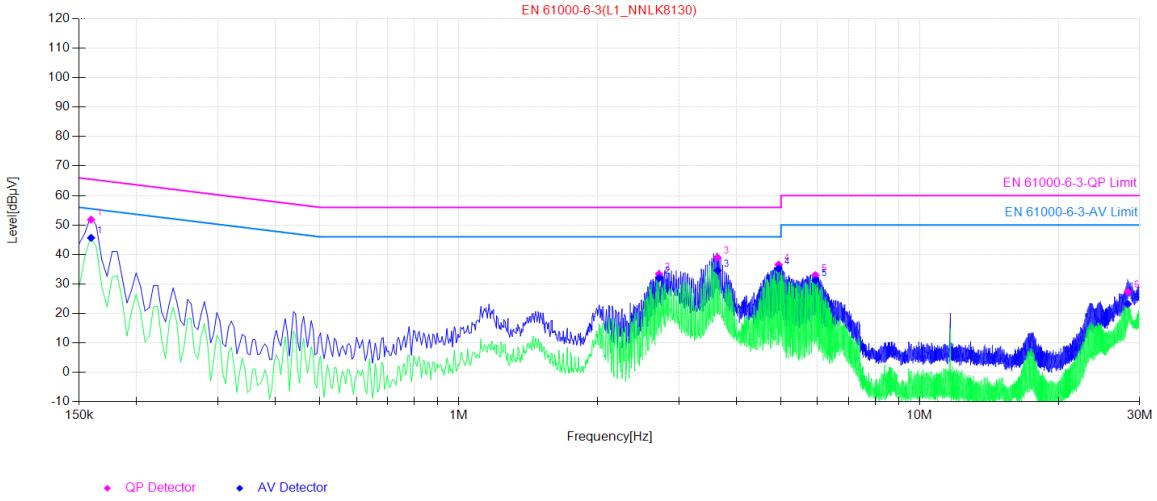


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.04	31.92	31.88	65.52	33.64	24.98	24.94	55.52	30.58
2	0.44	-0.10	25.59	25.49	57.05	31.56	20.97	20.87	47.05	26.18
3	2.80	-0.22	34.81	34.59	56.00	21.41	30.65	30.43	46.00	15.57
4	3.64	-0.25	34.70	34.45	56.00	21.55	29.00	28.75	46.00	17.25
5	4.96	-0.31	35.13	34.82	56.00	21.18	32.88	32.57	46.00	13.43
6	24.91	-0.36	31.13	30.77	60.00	29.23	25.85	25.49	50.00	24.51

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B (PV 700V)
Test voltage:	AC 380V
Remark:	L1

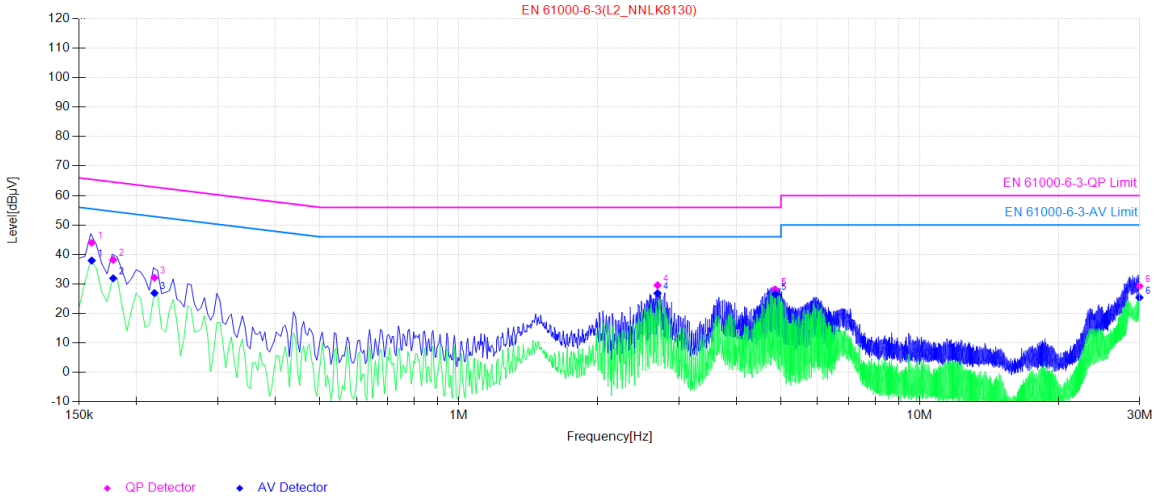


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.05	51.86	51.81	65.50	13.69	45.69	45.64	55.50	9.86
2	2.72	-0.19	33.57	33.38	56.00	22.62	32.24	32.05	46.00	13.95
3	3.64	-0.25	39.24	38.99	56.00	17.01	34.80	34.55	46.00	11.45
4	4.94	-0.35	36.93	36.58	56.00	19.42	35.59	35.24	46.00	10.76
5	5.94	-0.29	33.30	33.01	60.00	26.99	31.51	31.22	50.00	18.78
6	28.28	-0.36	27.74	27.38	60.00	32.62	23.59	23.23	50.00	26.77

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B (PV 700V)
Test voltage:	AC 380V
Remark:	L2

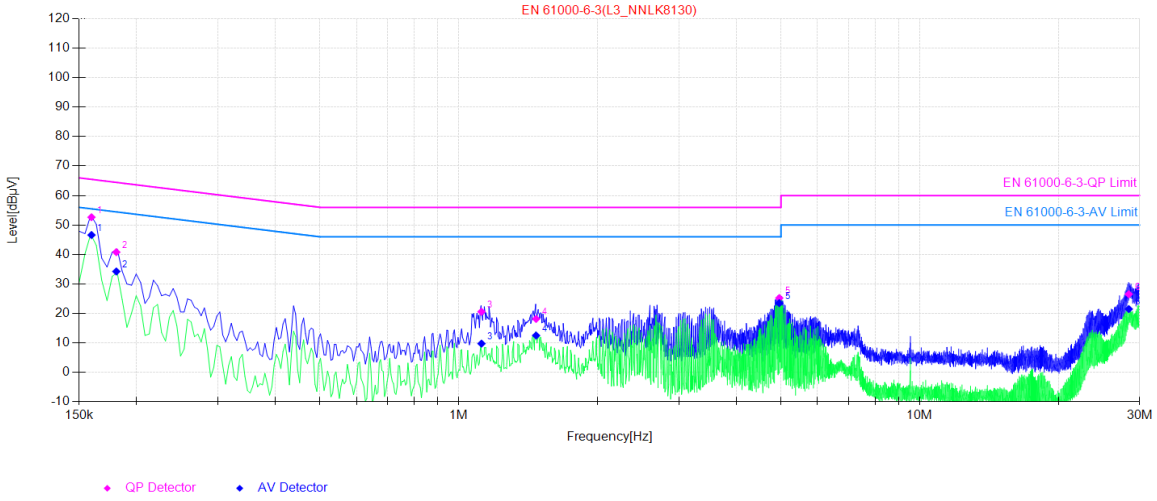


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.06	44.03	43.97	65.47	21.50	38.01	37.95	55.47	17.52
2	0.18	-0.03	38.21	38.18	64.58	26.40	31.97	31.94	54.58	22.64
3	0.22	-0.01	32.15	32.14	62.87	30.73	26.95	26.94	52.87	25.93
4	2.70	-0.18	29.75	29.57	56.00	26.43	27.03	26.85	46.00	19.15
5	4.86	-0.28	28.41	28.13	56.00	27.87	26.87	26.59	46.00	19.41
6	29.97	-0.38	29.71	29.33	60.00	30.67	25.77	25.39	50.00	24.61

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B (PV 700V)
Test voltage:	AC 380V
Remark:	L3

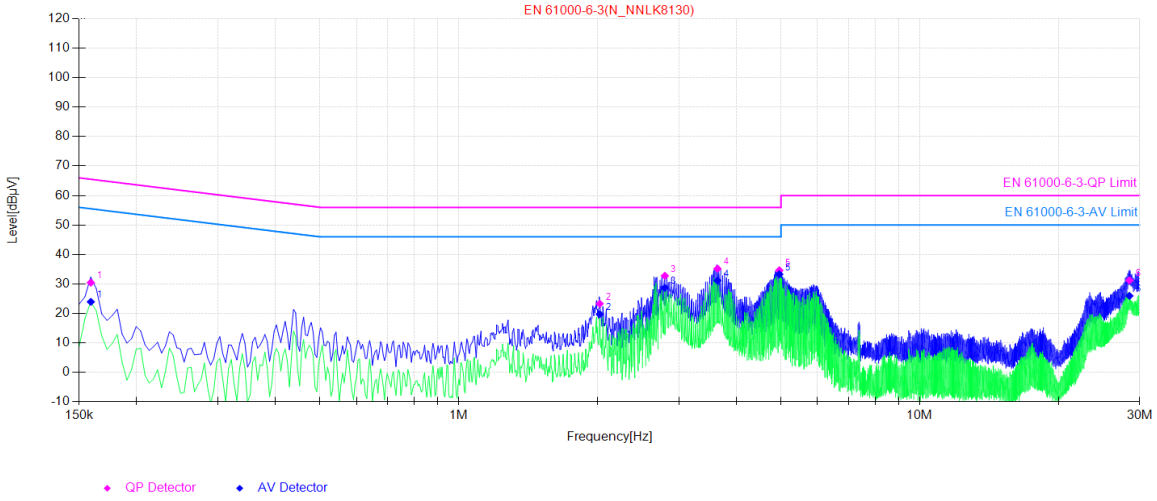


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.03	52.68	52.65	65.49	12.84	46.63	46.60	55.49	8.89
2	0.18	-0.03	40.83	40.80	64.45	23.65	34.27	34.24	54.45	20.21
3	1.12	-0.23	20.82	20.59	56.00	35.41	10.02	9.79	46.00	36.21
4	1.47	-0.23	18.39	18.16	56.00	37.84	12.76	12.53	46.00	33.47
5	4.96	-0.28	25.52	25.24	56.00	30.76	23.79	23.51	46.00	22.49
6	28.42	-0.39	26.92	26.53	60.00	33.47	21.90	21.51	50.00	28.49

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B (PV 700V)
Test voltage:	AC 380V
Remark:	N

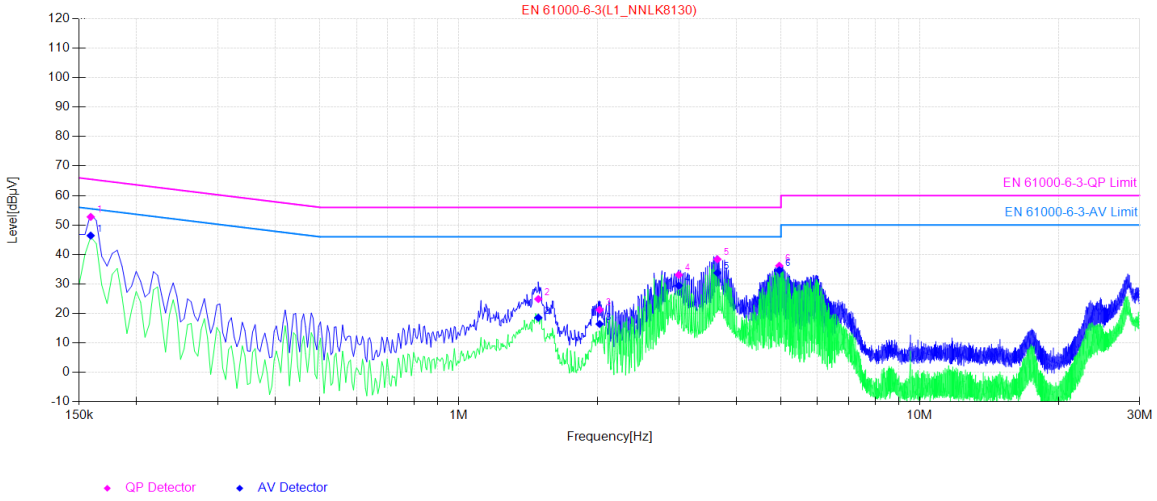


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.04	30.50	30.46	65.51	35.05	23.99	23.95	55.51	31.56
2	2.02	-0.28	23.59	23.31	56.00	32.69	20.05	19.77	46.00	26.23
3	2.80	-0.22	32.99	32.77	56.00	23.23	28.91	28.69	46.00	17.31
4	3.64	-0.25	35.43	35.18	56.00	20.82	31.41	31.16	46.00	14.84
5	4.96	-0.31	34.95	34.64	56.00	21.36	33.59	33.28	46.00	12.72
6	28.52	-0.42	31.65	31.23	60.00	28.77	26.39	25.97	50.00	24.03

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B (PV 450V)
Test voltage:	AC 380V
Remark:	L1

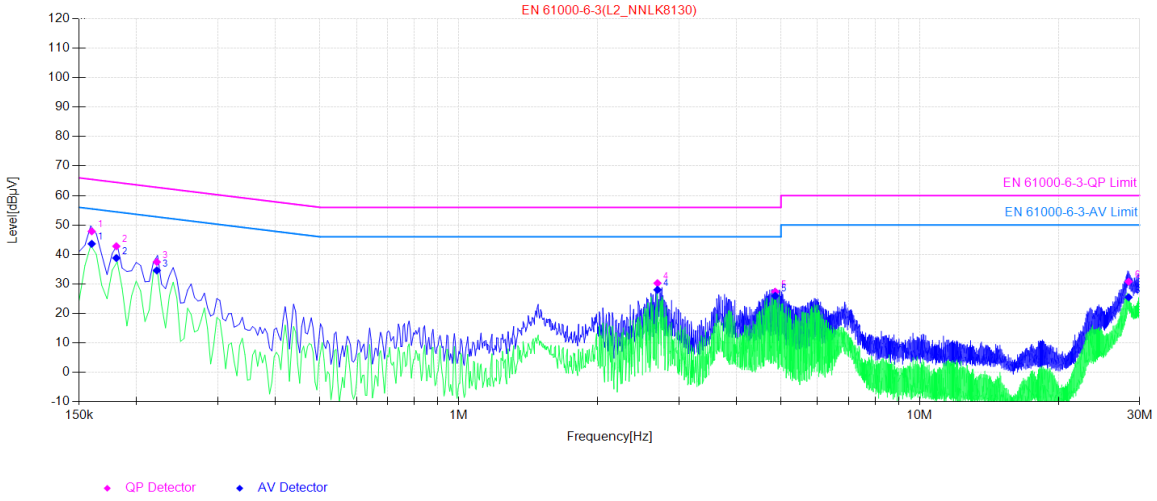


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.05	52.80	52.75	65.52	12.77	46.46	46.41	55.52	9.11
2	1.49	-0.20	25.10	24.90	56.00	31.10	18.77	18.57	46.00	27.43
3	2.02	-0.20	21.46	21.26	56.00	34.74	16.62	16.42	46.00	29.58
4	3.00	-0.19	33.29	33.10	56.00	22.90	29.64	29.45	46.00	16.55
5	3.64	-0.25	38.63	38.38	56.00	17.62	34.02	33.77	46.00	12.23
6	4.96	-0.35	36.54	36.19	56.00	19.81	35.00	34.65	46.00	11.35

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B (PV 450V)
Test voltage:	AC 380V
Remark:	L2

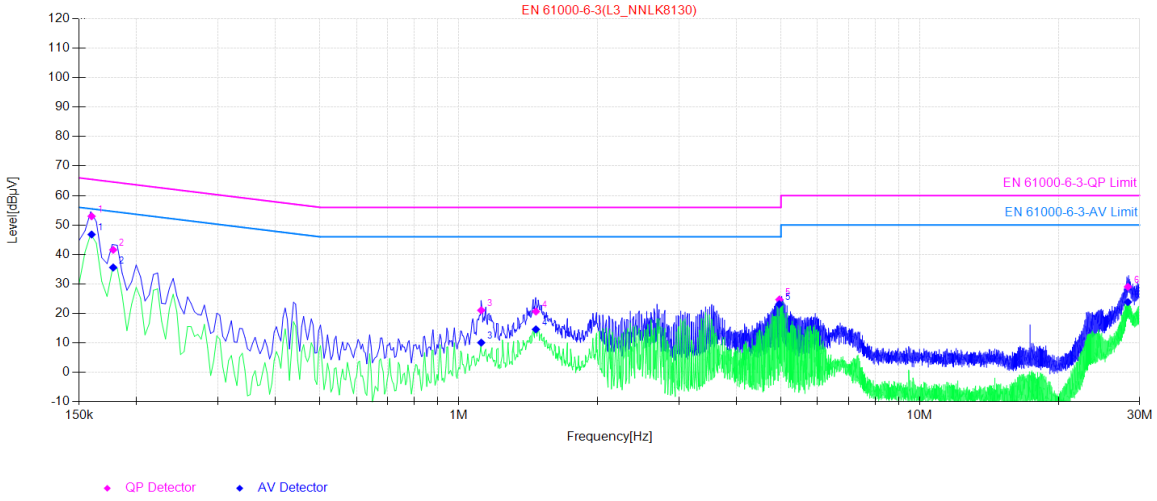


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.06	47.92	47.86	65.48	17.62	43.67	43.61	55.48	11.87
2	0.18	-0.02	42.82	42.80	64.45	21.65	38.82	38.80	54.45	15.65
3	0.22	-0.01	37.49	37.48	62.77	25.29	34.61	34.60	52.77	18.17
4	2.70	-0.18	30.46	30.28	56.00	25.72	28.22	28.04	46.00	17.96
5	4.86	-0.28	27.66	27.38	56.00	28.62	26.26	25.98	46.00	20.02
6	28.39	-0.34	31.14	30.80	60.00	29.20	25.83	25.49	50.00	24.51

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B (PV 450V)
Test voltage:	AC 380V
Remark:	L3

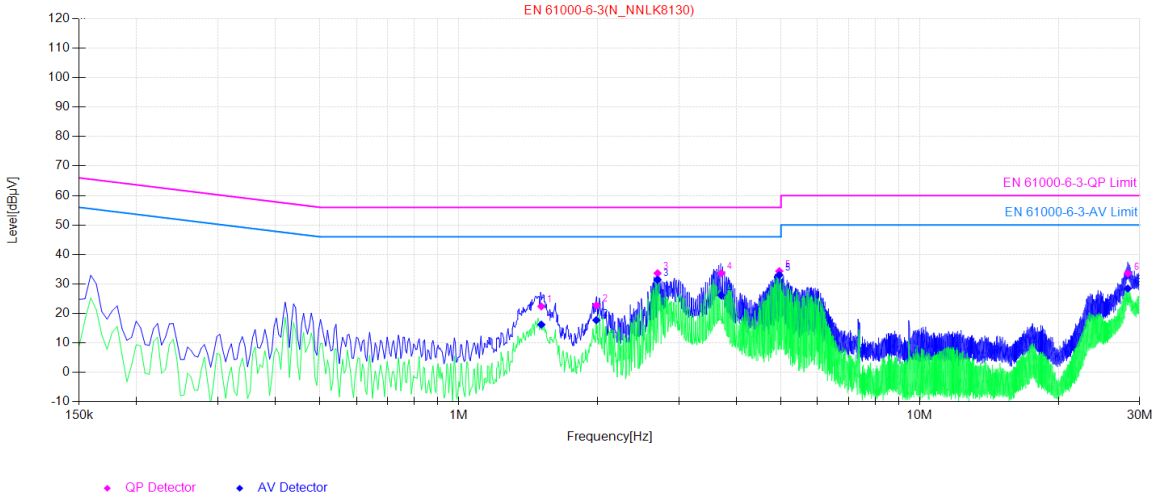


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	-0.03	53.00	52.97	65.48	12.51	46.81	46.78	55.48	8.70
2	0.18	-0.03	41.61	41.58	64.58	23.00	35.62	35.59	54.58	18.99
3	1.12	-0.23	21.31	21.08	56.00	34.92	10.35	10.12	46.00	35.88
4	1.47	-0.23	20.90	20.67	56.00	35.33	14.85	14.62	46.00	31.38
5	4.96	-0.28	25.01	24.73	56.00	31.27	23.43	23.15	46.00	22.85
6	28.29	-0.39	29.43	29.04	60.00	30.96	24.25	23.86	50.00	26.14

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B (PV 450V)
Test voltage:	AC 380V
Remark:	N



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	1.51	-0.21	22.61	22.40	56.00	33.60	16.44	16.23	46.00	29.77
2	1.99	-0.28	23.05	22.77	56.00	33.23	18.02	17.74	46.00	28.26
3	2.70	-0.23	33.88	33.65	56.00	22.35	31.68	31.45	46.00	14.55
4	3.71	-0.25	33.91	33.66	56.00	22.34	26.42	26.17	46.00	19.83
5	4.96	-0.31	34.66	34.35	56.00	21.65	33.35	33.04	46.00	12.96
6	28.27	-0.41	33.97	33.56	60.00	26.44	28.87	28.46	50.00	21.54

5.2 Continuous disturbances, DC power port (150kHz – 30 MHz)

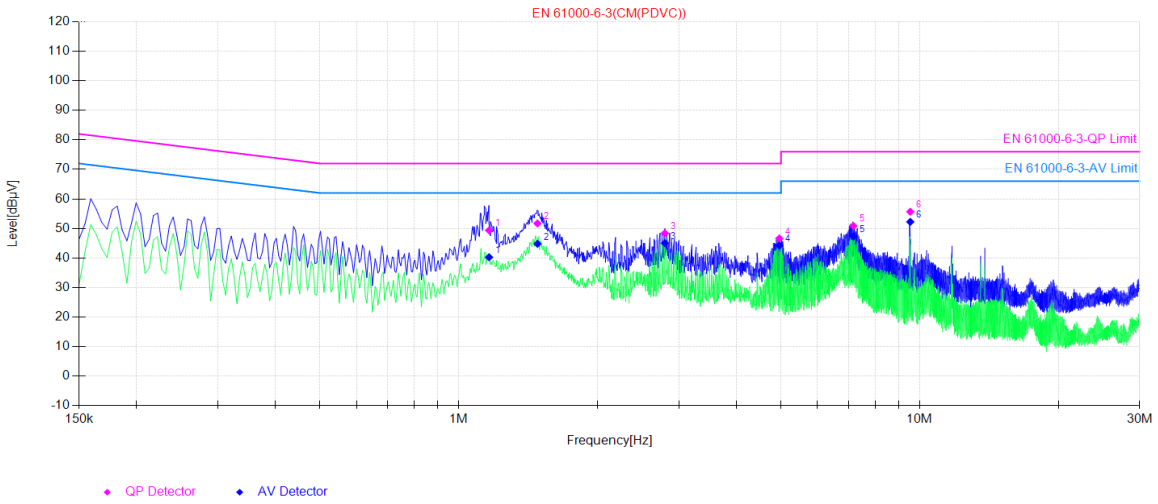
5.2.1 Test condition

Applicable Standard:	**EN IEC 61000-6-3:2021**	
Test setup description:	☒	Setup Type A (40 cm distance to vertical ground plane, 80 cm over ground plane)
	☐	Setup Type B (40 cm distance to horizontal ground plane)
	☐	Floor standing equipment setup (10 cm over ground plane)
	☐	Other: --
	☐	Artificial hand applied
Test method applied:	☐	Artificial mains V-network
	☐	Artificial Δ-network
	☒	DC-AN contains a Δ-AN and a V-AN in one unit.
Remark:	Connect the battery cable whose total length according to the manufacturer's functional specification does not exceed 3 m.	

Limits for conducted emissions - DC power port		
Measurement network: DC-AN		
Frequency range (MHz)	**Quasi-peak (dBµV)**	**Average (dBµV)**
0.15-0.5	82-72	72-62
0.5-5	72	62
5-30	76	66

5.2.2 Test results

Model:	SWH015KH-T1
Test mode:	Mode A
Test voltage:	DC 700V
Remark:	CM

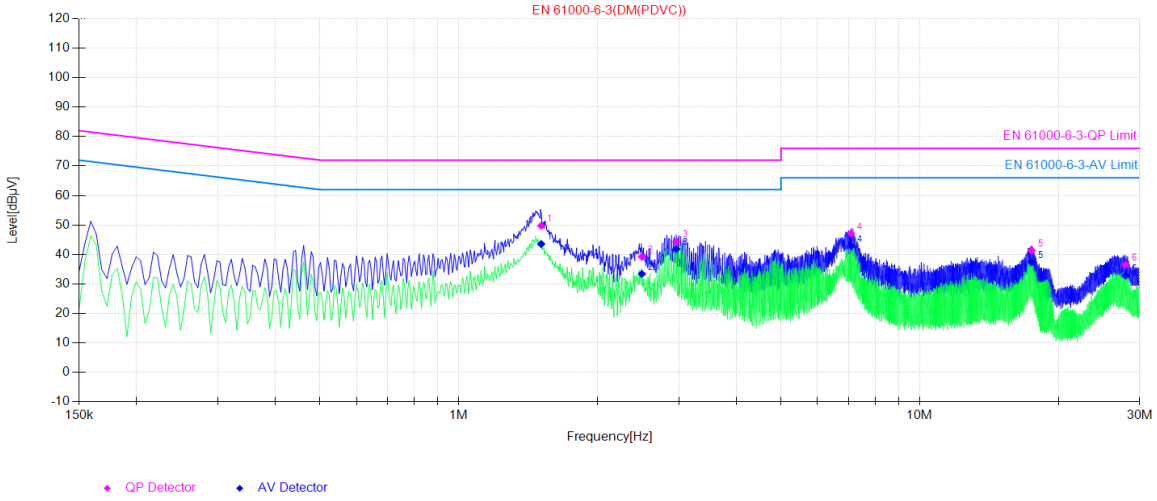


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	1.16	18.44	30.92	49.36	72.00	22.64	21.83	40.27	62.00	21.73
2	1.48	18.43	33.27	51.70	72.00	20.30	26.38	44.81	62.00	17.19
3	2.80	18.46	29.92	48.38	72.00	23.62	26.55	45.01	62.00	16.99
4	4.96	18.49	28.11	46.60	72.00	25.40	25.74	44.23	62.00	17.77
5	7.18	18.64	32.24	50.88	76.00	25.12	28.65	47.29	66.00	18.71
6	9.54	18.75	36.91	55.66	76.00	20.34	33.49	52.24	66.00	13.76

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A
Test voltage:	DC 700V
Remark:	DM

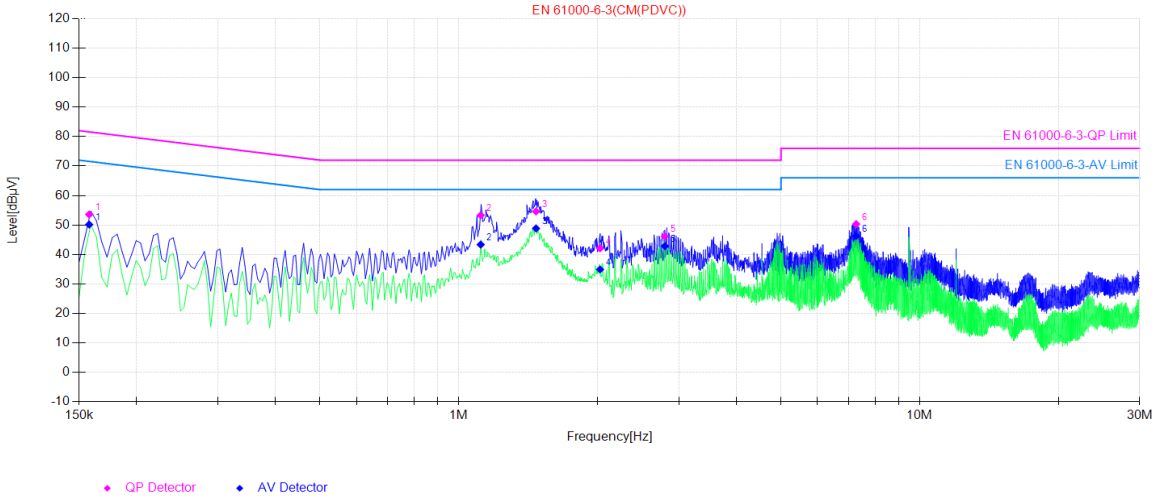


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	1.51	18.96	30.75	49.71	72.00	22.29	24.60	43.56	62.00	18.44
2	2.50	18.94	20.31	39.25	72.00	32.75	14.48	33.42	62.00	28.58
3	2.97	18.94	25.44	44.38	72.00	27.62	22.92	41.86	62.00	20.14
4	7.10	19.02	28.13	47.15	76.00	28.85	23.92	42.94	66.00	23.06
5	17.50	17.14	24.27	41.41	76.00	34.59	20.22	37.36	66.00	28.64
6	27.95	20.17	16.33	36.50	76.00	39.50	12.69	32.86	66.00	33.14

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A
Test voltage:	DC 450V
Remark:	CM

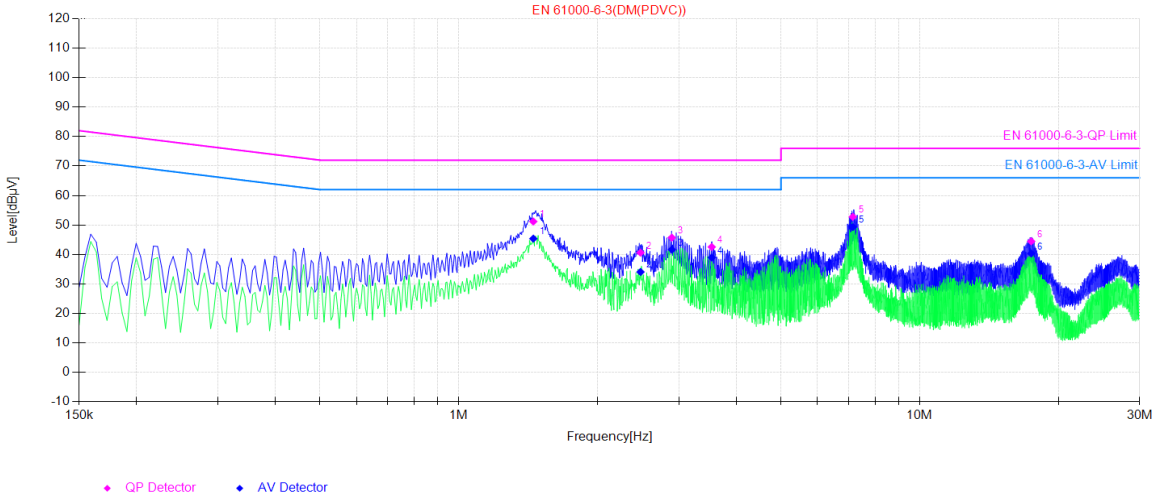


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	19.33	34.25	53.58	81.58	28.00	30.82	50.15	71.58	21.43
2	1.12	18.44	34.87	53.31	72.00	18.69	24.92	43.36	62.00	18.64
3	1.47	18.43	36.17	54.60	72.00	17.40	30.42	48.85	62.00	13.15
4	2.03	18.43	23.67	42.10	72.00	29.90	16.50	34.93	62.00	27.07
5	2.80	18.46	27.70	46.16	72.00	25.84	24.40	42.86	62.00	19.14
6	7.28	18.64	31.67	50.31	76.00	25.69	27.65	46.29	66.00	19.71

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode A
Test voltage:	DC 450V
Remark:	DM

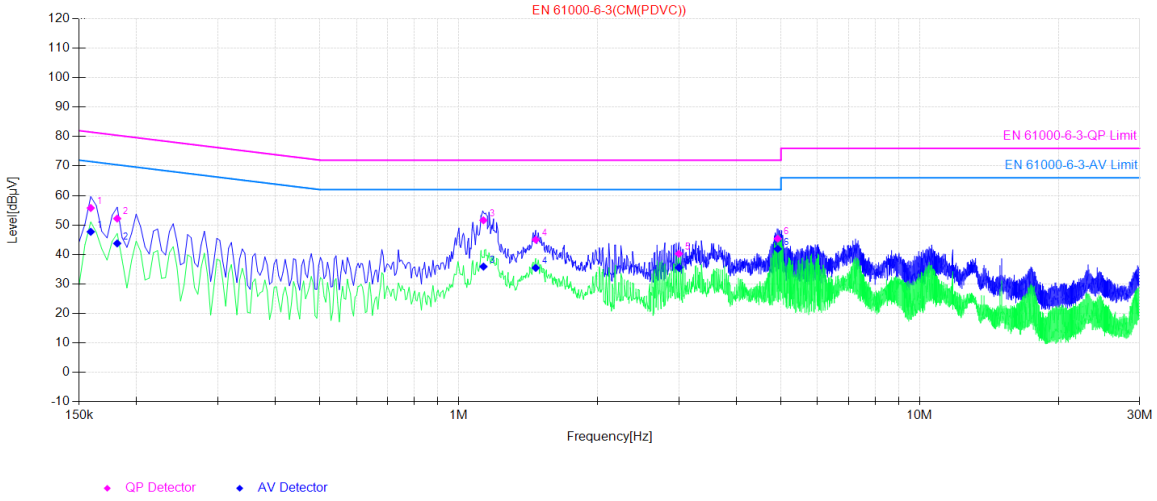


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	1.45	18.95	32.24	51.19	72.00	20.81	26.43	45.38	62.00	16.62
2	2.48	18.94	21.68	40.62	72.00	31.38	15.15	34.09	62.00	27.91
3	2.90	18.94	26.78	45.72	72.00	26.28	22.72	41.66	62.00	20.34
4	3.54	18.93	23.63	42.56	72.00	29.44	20.04	38.97	62.00	23.03
5	7.16	19.02	33.76	52.78	76.00	23.22	30.30	49.32	66.00	16.68
6	17.46	17.14	27.33	44.47	76.00	31.53	23.20	40.34	66.00	25.66

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B
Test voltage:	DC 700V
Remark:	CM

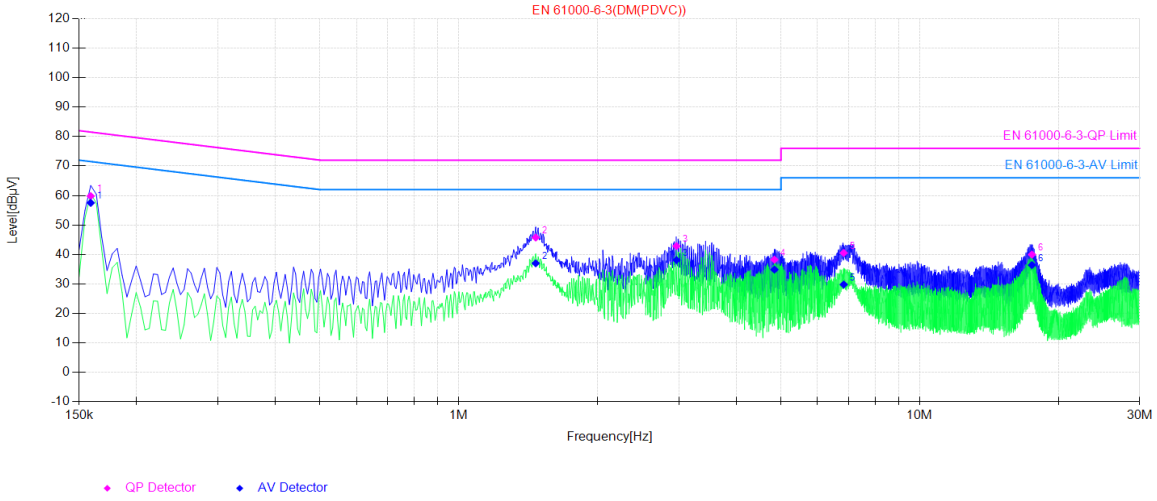


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	19.32	36.45	55.77	81.52	25.75	28.38	47.70	71.52	23.82
2	0.18	19.20	32.99	52.19	80.42	28.23	24.56	43.76	70.42	26.66
3	1.13	18.44	33.16	51.60	72.00	20.40	17.46	35.90	62.00	26.10
4	1.47	18.43	26.59	45.02	72.00	26.98	17.03	35.46	62.00	26.54
5	3.00	18.46	21.79	40.25	72.00	31.75	17.09	35.55	62.00	26.45
6	4.92	18.49	26.88	45.37	72.00	26.63	23.42	41.91	62.00	20.09

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B
Test voltage:	DC 700V
Remark:	DM

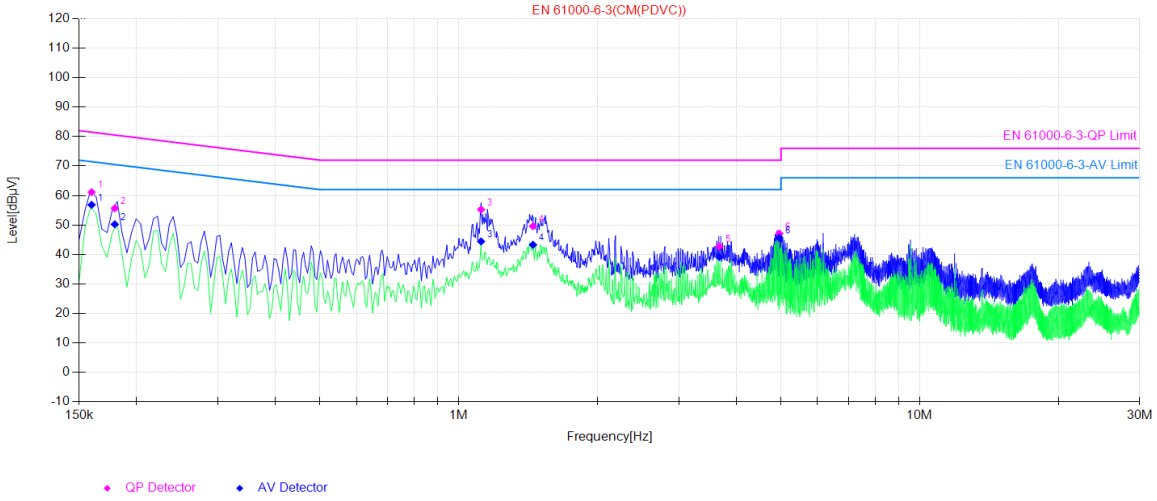


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	19.82	40.00	59.82	81.52	21.70	37.69	57.51	71.52	14.01
2	1.47	18.96	26.80	45.76	72.00	26.24	18.05	37.01	62.00	24.99
3	2.97	18.93	23.93	42.86	72.00	29.14	19.18	38.11	62.00	23.89
4	4.84	18.92	19.33	38.25	72.00	33.75	15.96	34.88	62.00	27.12
5	6.84	19.03	21.50	40.53	76.00	35.47	10.79	29.82	66.00	36.18
6	17.52	17.14	22.84	39.98	76.00	36.02	19.28	36.42	66.00	29.58

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B
Test voltage:	DC 450V
Remark:	CM

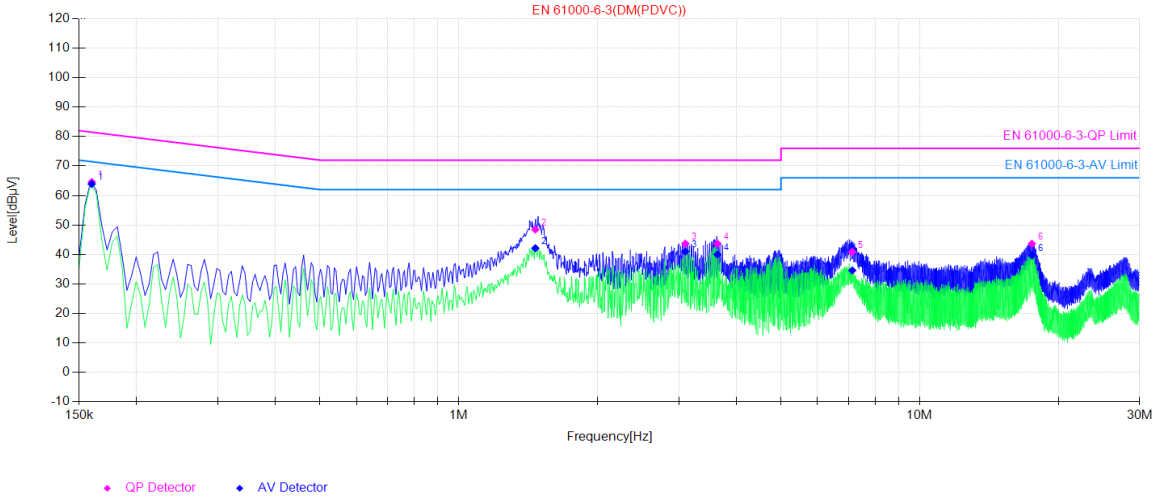


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	19.32	41.83	61.15	81.48	20.33	37.51	56.83	71.48	14.65
2	0.18	19.21	36.47	55.68	80.52	24.84	31.03	50.24	70.52	20.28
3	1.12	18.44	36.82	55.26	72.00	16.74	25.99	44.43	62.00	17.57
4	1.45	18.43	31.17	49.60	72.00	22.40	24.87	43.30	62.00	18.70
5	3.67	18.46	24.29	42.75	72.00	29.25	20.68	39.14	62.00	22.86
6	4.96	18.49	28.63	47.12	72.00	24.88	27.19	45.68	62.00	16.32

TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH015KH-T1
Test mode:	Mode B
Test voltage:	DC 450V
Remark:	DM



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.16	19.81	44.81	64.62	81.47	16.85	44.10	63.91	71.47	7.56
2	1.47	18.95	29.52	48.47	72.00	23.53	23.18	42.13	62.00	19.87
3	3.10	18.94	24.75	43.69	72.00	28.31	22.05	40.99	62.00	21.01
4	3.64	18.93	24.73	43.66	72.00	28.34	21.06	39.99	62.00	22.01
5	7.14	19.02	21.85	40.87	76.00	35.13	15.58	34.60	66.00	31.40
6	17.52	17.14	26.50	43.64	76.00	32.36	22.58	39.72	66.00	26.28

5.3 Continuous disturbances, other wired ports (150kHz – 30 MHz)

5.3.1 Test condition

Applicable Standard:	EN IEC 61000-6-3:2021	
Test setup description:	☐	Setup Type A (40 cm distance to vertical ground plane, 80 cm over ground plane)
	☐	Setup Type B (40 cm distance to horizontal ground plane)
	☐	Floor standing equipment setup (10 cm over ground plane)
	☐	Other: --
	☐	Artificial hand applied
Test method applied:	☐	Current probe
	☐	Capacitive voltage probe (CVP)
	☐	ISN
	☐	Other: --
Remark:	The signal cables whose total length according to the manufacturer's functional specification does not exceed 3 m.	

Limits for conducted emissions - other wired ports				
Frequency range (MHz)	Voltage limits		Current limits	
	Quasi-peak (dBµV)	Average (dBµV)	Quasi-peak (dBµA)	Average (dBµA)
0.15-0.5	84-74	74-64	40-30	30-20
0.5-30	74	64	30	20

5.3.2 Test results

N/A

5.4 Discontinuous disturbances (9 kHz – 30 MHz)

5.4.1 Test condition

Applicable Standard:	EN IEC 61000-6-3:2021 / EN IEC 55014-1:2021	
Test setup description:	☐	Setup Type A (40 cm distance to vertical ground plane, 80 cm over ground plane)
	☐	Setup Type B (40 cm distance to horizontal ground plane)
	☐	Floor standing equipment setup (10 cm over ground plane)
	☐	Other: --
	☐	Artificial hand applied
CDN applied:	☐	Artificial mains network
	☐	Other: --
Applied method for discontinuous disturbances:	☐	Click rate determined on base of switching operations
	☐	Click rate determined on base of clicks measurements
	☐	Other: --
Remark:	According to the construction, electrical characteristics and intended use of the equipment, the EUT will not produce discontinuous disturbances.	

5.4.2 Test results

N/A

5.5 Radiated emission (below 1GHz)

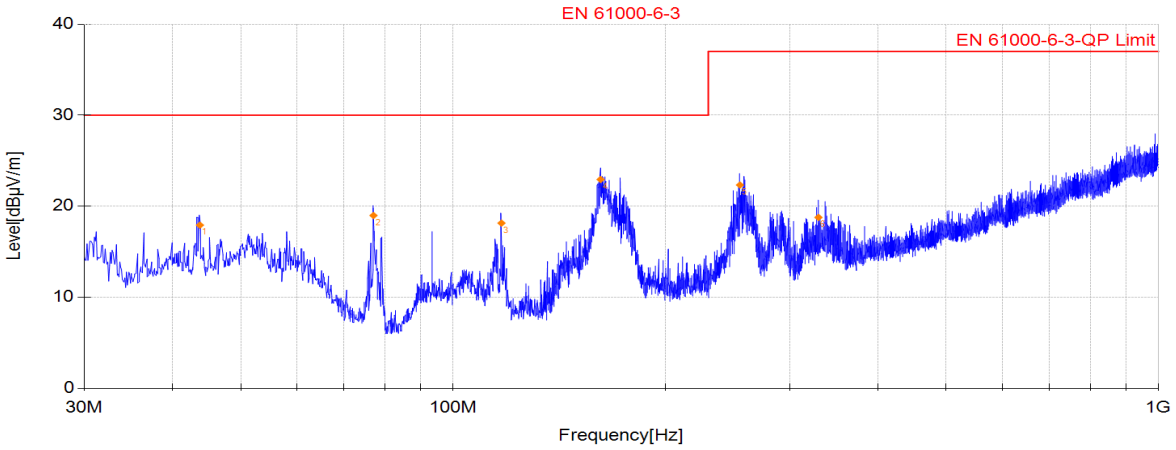
5.5.1 Test condition

Applicable Standard:	EN IEC 61000-6-3:2021	
Test set up description:	☒	Equipment on a table of 80 cm height
	☐	Equipment on the floor (isolated from ground plane)
	☐	Other (e.g. height of pallet):
Supplementary test set-up description for **SAC**:	Measurements were made in semi-anechoic chamber that complies to CISPR 16. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements with quasi-peak detector for below 1GHz were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.	
Test method applied (30 MHz to 1000 MHz):	☒	OATS or SAC with measurement distance [m]: 10 m
	☐	TEM Waveguide according to IEC 61000-4-20
	☐	FAR with measurement distance [m]: 3 m
Remark:	--	

Limits for SAC 10 m distance	
Frequency range (MHz)	**Quasi-peak (dBµV/m)**
30-230	30
230-1000	37

5.5.2 Test results

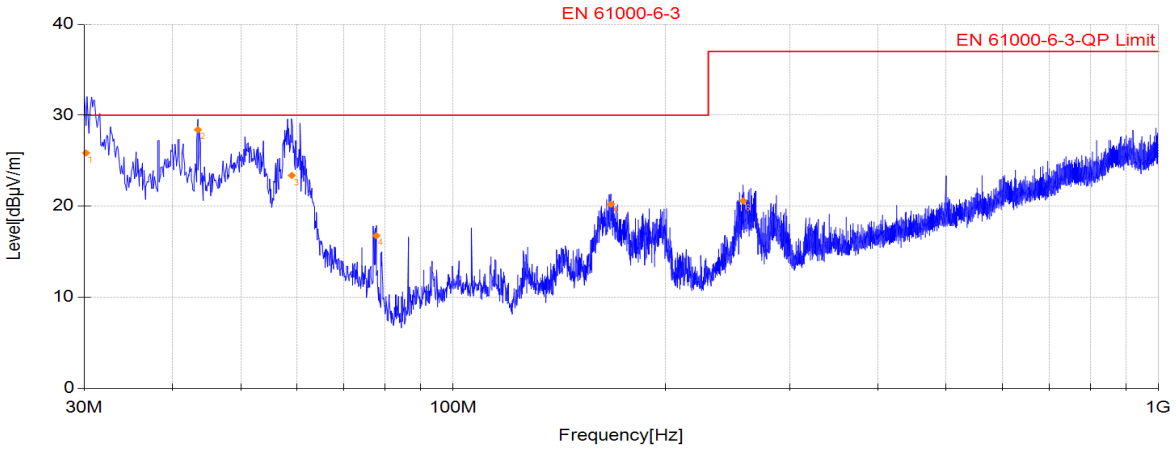
Model:	SWH015KH-T1
Test mode:	Mode A
Test voltage:	DC 700V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	43.77	29.3	-11.3	17.9	30.00	12.1	QP	356	181	Horizontal
2	77.12	36.5	-17.5	19.0	30.00	11.0	QP	212	14	Horizontal
3	117.12	32.6	-14.5	18.1	30.00	11.9	QP	321	297	Horizontal
4	161.84	39.0	-16.0	22.9	30.00	7.1	QP	125	349	Horizontal
5	255.06	34.3	-12.0	22.3	37.00	14.7	QP	267	266	Horizontal
6	329.53	29.4	-10.6	18.8	37.00	18.2	QP	318	53	Horizontal

Model:	SWH015KH-T1
Test mode:	Mode A
Test voltage:	DC 700V

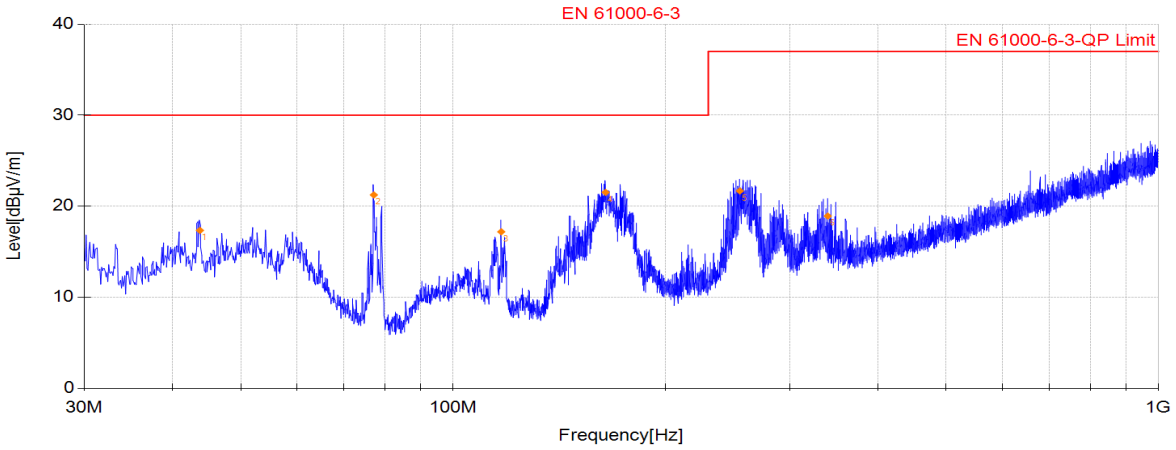


Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	30.18	41.4	-15.6	25.9	30.00	4.2	QP	189	1	Vertical
2	43.48	40.2	-11.8	28.4	30.00	1.6	QP	289	0	Vertical
3	59.07	35.6	-12.2	23.4	30.00	6.6	QP	112	26	Vertical
4	77.86	34.7	-17.9	16.8	30.00	13.2	QP	322	75	Vertical
5	167.38	36.1	-15.9	20.2	30.00	9.8	QP	105	346	Vertical
6	257.74	32.2	-11.6	20.6	37.00	16.4	QP	109	286	Vertical

TEST REPORT N°: CPXU-ESH-P24071992B

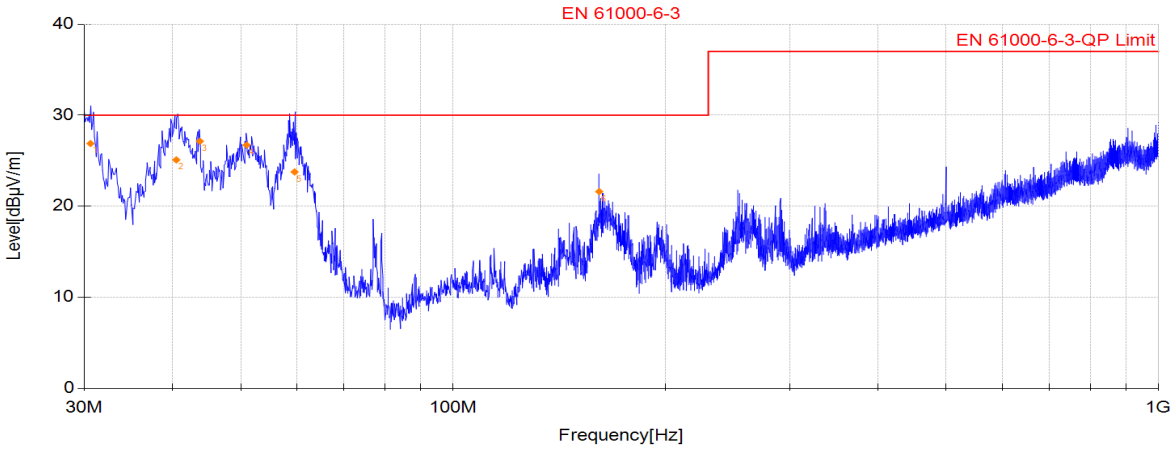
Model:	SWH015KH-T1
Test mode:	Mode A
Test voltage:	DC 450V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	43.77	28.7	-11.3	17.3	30.00	12.7	QP	343	161	Horizontal
2	77.21	38.7	-17.5	21.2	30.00	8.8	QP	236	1	Horizontal
3	117.03	31.7	-14.5	17.2	30.00	12.8	QP	258	64	Horizontal
4	164.52	37.5	-15.9	21.5	30.00	8.5	QP	278	357	Horizontal
5	254.97	33.7	-12.0	21.7	37.00	15.3	QP	179	286	Horizontal
6	339.69	29.0	-10.1	18.9	37.00	18.1	QP	298	73	Horizontal

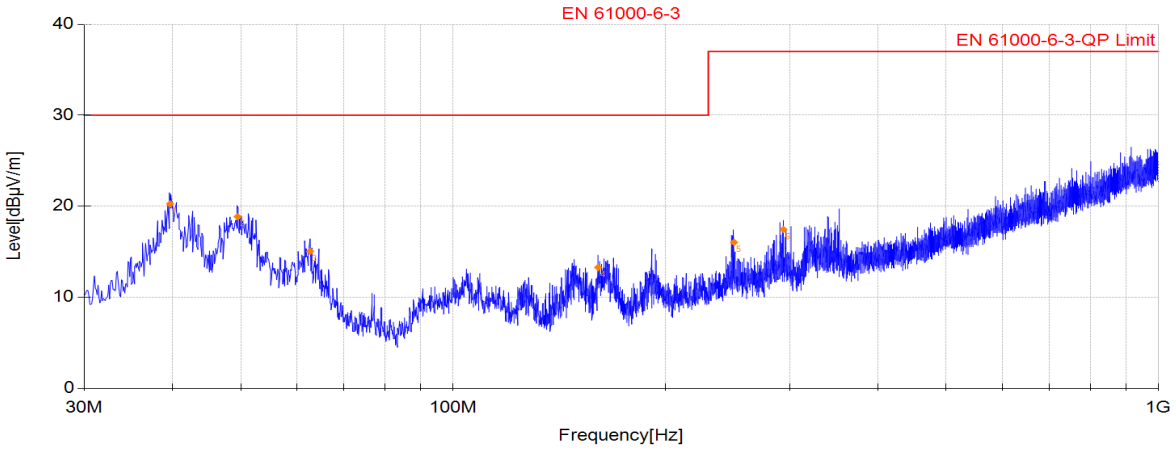
Model:	SWH015KH-T1
Test mode:	Mode A
Test voltage:	DC 450V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	30.62	42.3	-15.4	26.9	30.00	3.1	QP	106	145	Vertical
2	40.52	37.5	-12.4	25.1	30.00	4.9	QP	216	193	Vertical
3	43.77	38.9	-11.7	27.1	30.00	2.9	QP	355	190	Vertical
4	50.97	38.0	-11.3	26.7	30.00	3.3	QP	200	122	Vertical
5	59.61	36.1	-12.4	23.8	30.00	6.2	QP	189	15	Vertical
6	161.10	37.8	-16.2	21.6	30.00	8.4	QP	100	345	Vertical

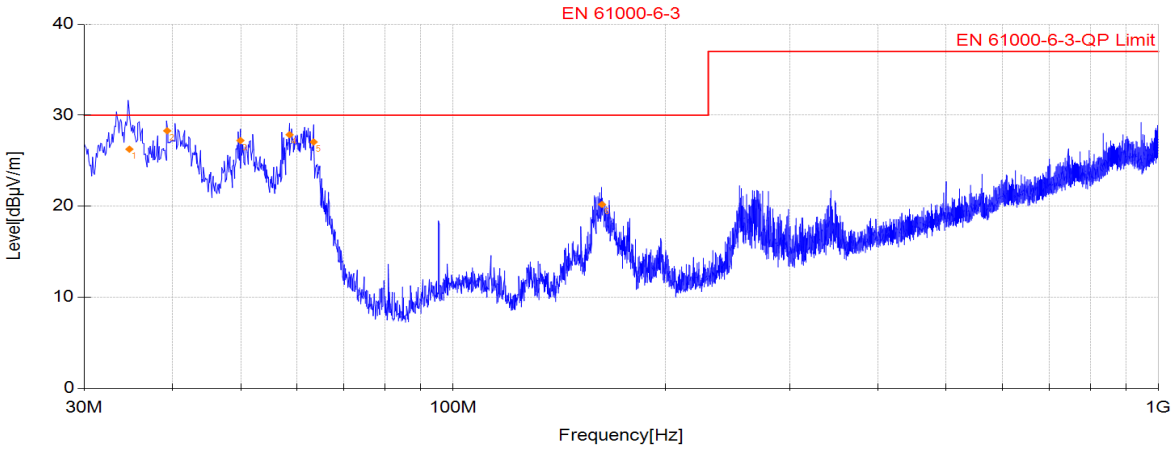
Model:	SWH015KH-T1
Test mode:	Mode B
Test voltage:	DC 700V+Battery 600V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	39.70	32.6	-12.3	20.3	30.00	9.7	QP	121	299	Horizontal
2	49.49	29.7	-10.9	18.9	30.00	11.2	QP	102	46	Horizontal
3	62.71	27.8	-12.7	15.0	30.00	15.0	QP	112	360	Horizontal
4	160.55	29.4	-16.1	13.3	30.00	16.7	QP	103	346	Horizontal
5	250.16	28.1	-12.1	16.0	37.00	21.0	QP	134	279	Horizontal
6	293.96	29.0	-11.5	17.4	37.00	19.6	QP	154	76	Horizontal

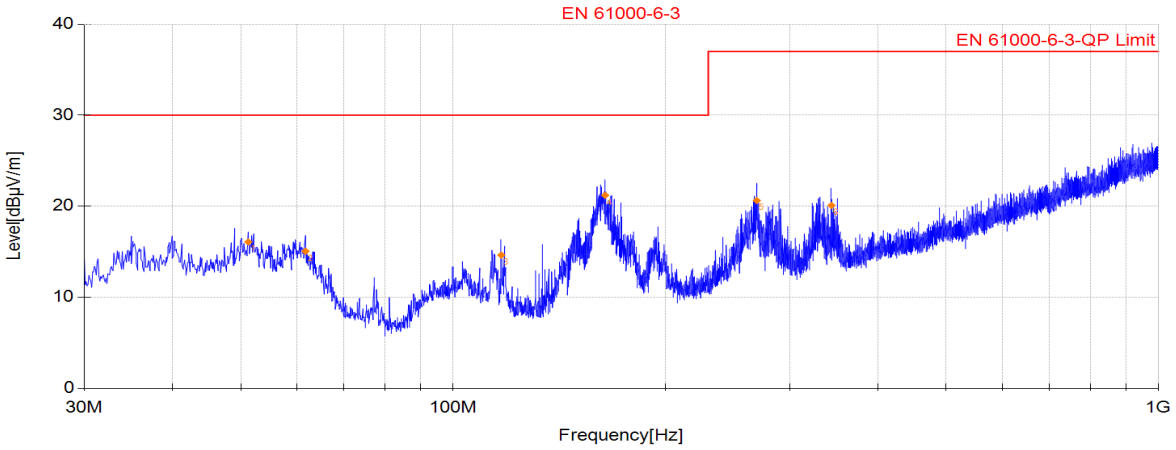
Model:	SWH015KH-T1
Test mode:	Mode B
Test voltage:	DC 700V+Battery 600V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	34.77	40.6	-14.3	26.3	30.00	3.7	QP	193	60	Vertical
2	39.33	41.1	-12.8	28.3	30.00	1.7	QP	200	248	Vertical
3	49.96	38.5	-11.2	27.2	30.00	2.8	QP	289	196	Vertical
4	58.64	40.0	-12.1	27.9	30.00	2.1	QP	156	326	Vertical
5	63.45	40.4	-13.3	27.1	30.00	2.9	QP	245	0	Vertical
6	162.58	36.3	-16.2	20.2	30.00	9.8	QP	367	360	Vertical

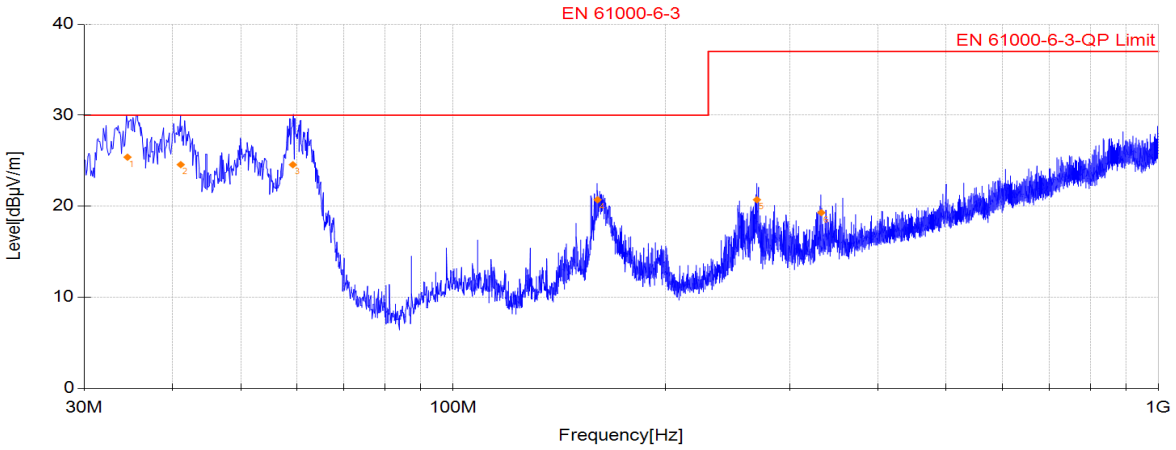
Model:	SWH015KH-T1
Test mode:	Mode B
Test voltage:	DC 450V+Battery 400V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	51.25	27.0	-10.9	16.1	30.00	13.9	QP	223	180	Horizontal
2	61.78	27.5	-12.5	15.1	30.00	15.0	QP	165	119	Horizontal
3	117.03	29.1	-14.5	14.6	30.00	15.4	QP	123	0	Horizontal
4	164.24	37.1	-15.9	21.2	30.00	8.8	QP	323	337	Horizontal
5	269.47	32.6	-12.0	20.6	37.00	16.4	QP	311	352	Horizontal
6	343.85	30.0	-9.9	20.1	37.00	16.9	QP	200	248	Horizontal

Model:	SWH015KH-T1
Test mode:	Mode B
Test voltage:	DC 450V+Battery 400V

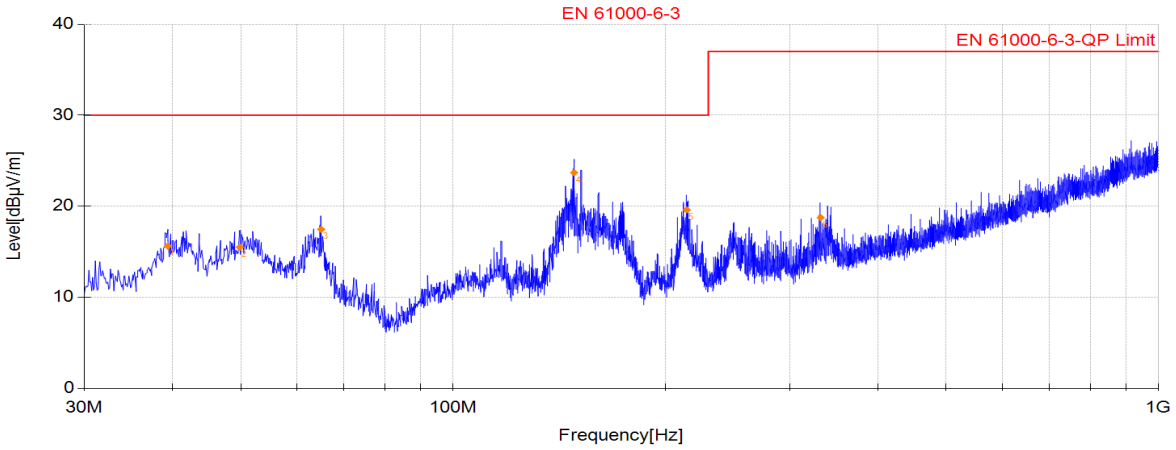


Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	34.55	39.7	-14.4	25.4	30.00	4.6	QP	385	126	Vertical
2	41.11	36.9	-12.3	24.6	30.00	5.4	QP	289	138	Vertical
3	59.28	36.8	-12.3	24.6	30.00	5.4	QP	106	346	Vertical
4	160.27	37.0	-16.3	20.7	30.00	9.3	QP	121	357	Vertical
5	269.57	32.4	-11.7	20.7	37.00	16.3	QP	105	304	Vertical
6	332.67	29.1	-9.8	19.3	37.00	17.7	QP	165	0	Vertical

TEST REPORT N°: CPXU-ESH-P24071992B

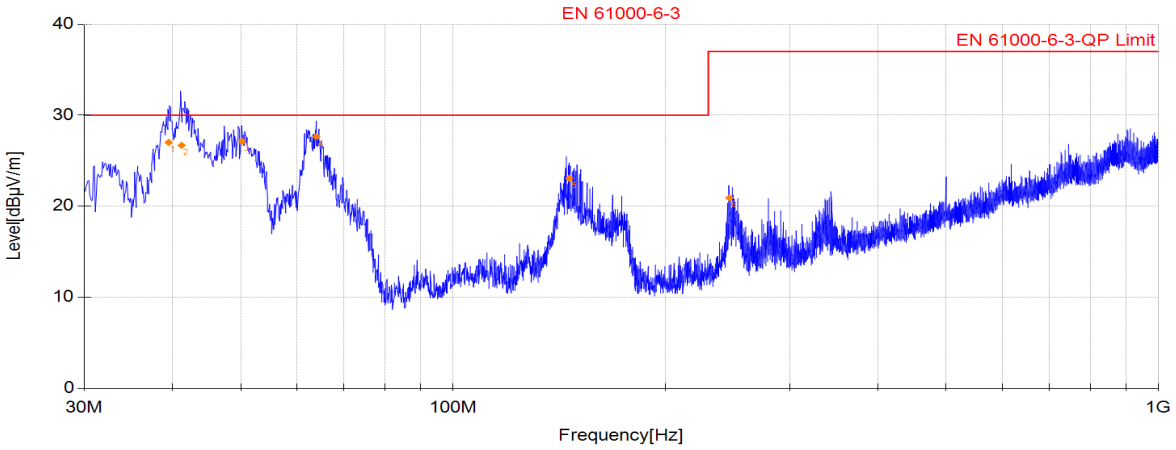
Model:	SWH015KH-T1
Test mode:	Mode C
Test voltage:	Battery 600V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	39.42	28.0	-12.4	15.6	30.00	14.4	QP	300	288	Horizontal
2	49.86	26.4	-10.9	15.5	30.00	14.5	QP	200	110	Horizontal
3	65.02	31.0	-13.5	17.5	30.00	12.5	QP	100	183	Horizontal
4	148.44	40.3	-16.6	23.7	30.00	6.3	QP	245	93	Horizontal
5	214.41	33.3	-13.7	19.6	30.00	10.4	QP	232	0	Horizontal
6	331.93	29.3	-10.5	18.8	37.00	18.3	QP	312	145	Horizontal

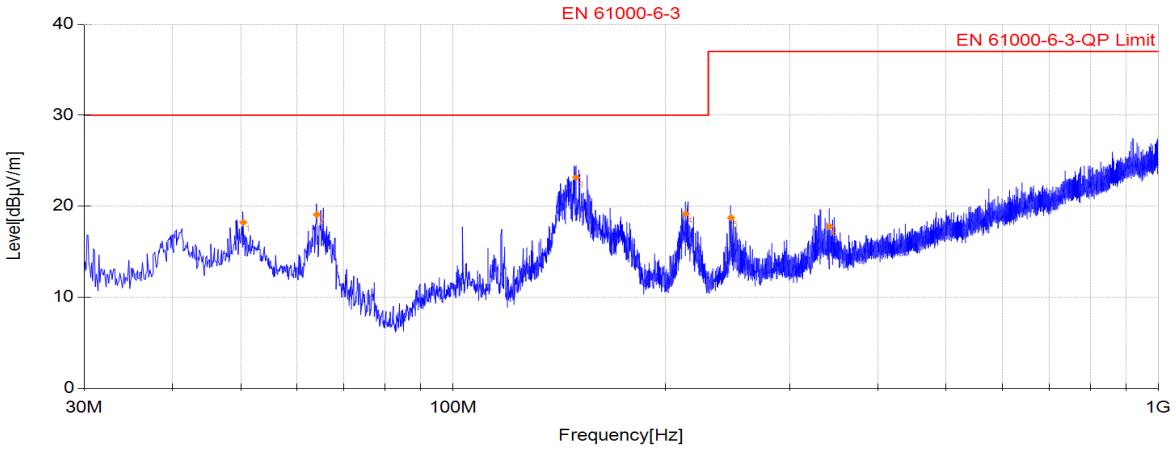
Model:	SWH015KH-T1
Test mode:	Mode C
Test voltage:	Battery 600V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	39.52	39.7	-12.7	27.0	30.00	3.0	QP	106	293	Vertical
2	41.23	39.0	-12.3	26.7	30.00	3.3	QP	220	295	Vertical
3	50.23	38.4	-11.2	27.1	30.00	2.9	QP	400	286	Vertical
4	64.00	41.2	-13.5	27.7	30.00	2.4	QP	354	193	Vertical
5	146.13	39.9	-16.8	23.1	30.00	6.9	QP	200	7	Vertical
6	246.47	32.6	-11.7	20.9	37.00	16.1	QP	100	261	Vertical

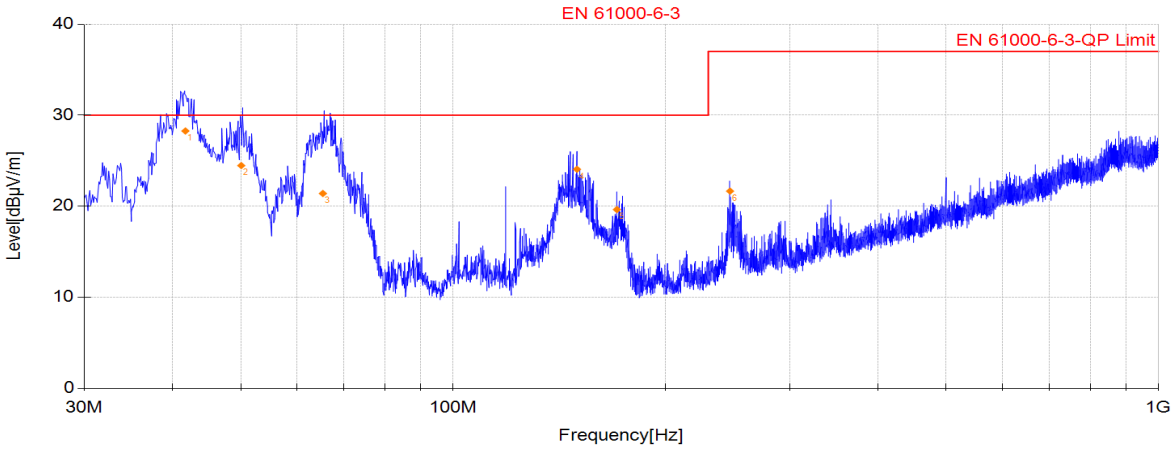
Model:	SWH015KH-T1
Test mode:	Mode C
Test voltage:	Battery 400V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	50.42	29.1	-10.9	18.2	30.00	11.8	QP	143	27	Horizontal
2	64.09	32.3	-13.2	19.1	30.00	10.9	QP	100	243	Horizontal
3	149.46	39.7	-16.6	23.2	30.00	6.9	QP	400	0	Horizontal
4	213.67	32.9	-13.7	19.2	30.00	10.8	QP	276	78	Horizontal
5	247.67	30.8	-12.1	18.7	37.00	18.3	QP	265	298	Horizontal
6	341.82	27.8	-10.0	17.8	37.00	19.2	QP	178	7	Horizontal

Model:	SWH015KH-T1
Test mode:	Mode C
Test voltage:	Battery 400V



Final Data List

NO.	Freq. [MHz]	Reading [dBµV]	Factor[dB/m]	Value [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	41.74	40.5	-12.2	28.3	30.00	1.7	QP	211	213	Vertical
2	50.09	35.7	-11.3	24.5	30.00	5.5	QP	100	195	Vertical
3	65.38	35.5	-14.1	21.4	30.00	8.6	QP	120	195	Vertical
4	149.83	40.7	-16.7	24.1	30.00	5.9	QP	278	7	Vertical
5	170.71	35.3	-15.7	19.6	30.00	10.4	QP	100	282	Vertical
6	246.93	33.3	-11.6	21.7	37.00	15.3	QP	143	264	Vertical

5.6 Radiated emission (above 1GHz)

5.6.1 Test condition

Applicable Standard:	**EN IEC 61000-6-3:2021**	
Test set up description:	☐	Equipment on a table of 80 cm height
	☐	Equipment on the floor (isolated from ground plane)
	☐	Other:
Supplementary test set-up description for **SAC**:	Measurements were made in semi-anechoic chamber with RF absorber on the RGP which complies to CISPR 16. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements with peak and average detector were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.	
Test method applied (1000 MHz to 6000 MHz):	☐	FSOATS with measurement distance [m]: 3 m
	☐	OATS with measurement distance [m]: 3 m
	☐	FAR with measurement distance [m]: 3 m
	☐	SAC with measurement distance [m]: 3 m
Remark:	The highest operation frequency is below 108MHz.	

Limits for 3 m distance		
Frequency range (MHz)	**Peak (dBµV/m)**	**Average (dBµV/m)**
1000 – 3000	70	50
3000 – 6000	74	54

5.6.2 Test results

N/A

5.7 Harmonics current emissions

5.7.1 Test condition

Applicable Standard:	**EN 61000-3-12:2011**	
Test set up description:	Floor standing equipment set-up (10 cm over ground plane)	
Test method	☒	Direct measurement: Rsce 33
	☐	Calculation by validated simulation
Limit classification in accordance with the standard	☐	Nonsymmetrical equipment (Table 2)
	☒	Symmetrical 3-phase equipment (Table 3)
	☐	Symmetrical 3-phase equipment under special conditions (Table 4)
		☐ Condition a)
		☐ Condition b)
		☐ Condition c)
	☐	Symmetrical 3-phase equipment under special conditions (Table 5)
		☐ Condition d)
		☐ Condition e)
		☐ Condition f)
Observation period	2.5 min	
Remark:	--	

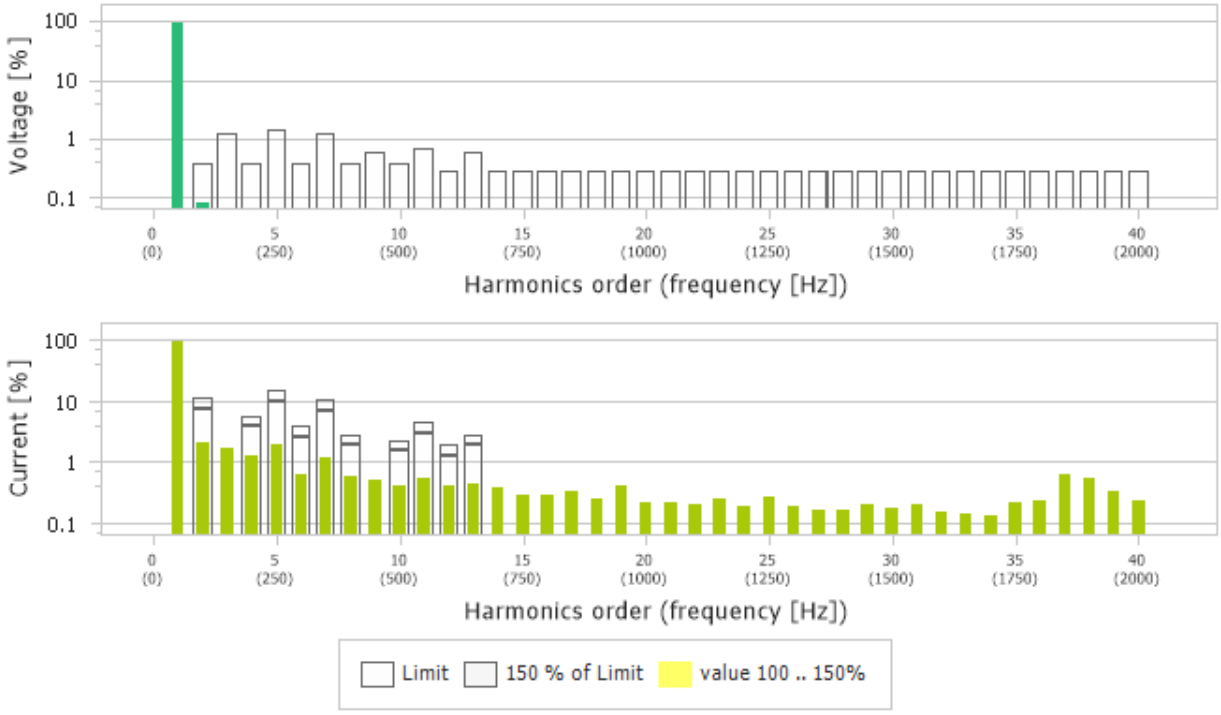
5.7.2 Test results

Model:	SWH015KH-T1
Test mode:	Mode A
Test voltage:	AC 380V
Remark:	EN 61000-3-12:2011

Maximum Harmonics

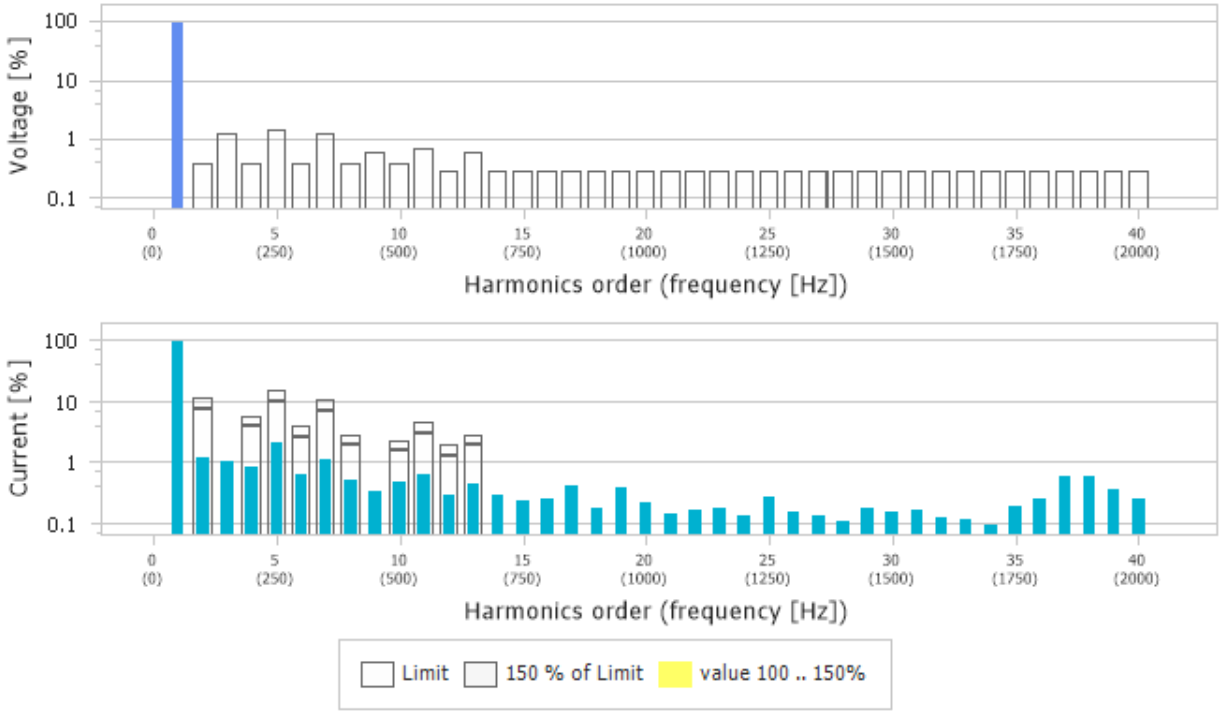
Maximum Harmonics (Line 1)

Hn	Frequency	Voltage					Current				
	[Hz]	eff [V]	eff [%]	of Limit [%]	Limit [%]	Time Window	eff [A]	eff[%]	of Limit [%]	Limit [%]	Time Window
1	50.0	231.568	100.68	-	-	49	21.395	102.07	-	-	206
2	100.0	0.189	0.08	20.53	0.40	29	0.449	2.14	17.86	12.00	1
3	150.0	0.081	0.04	2.80	1.25	59	0.369	1.76	-	-	1
4	200.0	0.073	0.03	7.93	0.40	876	0.290	1.38	23.07	6.00	1
5	250.0	0.060	0.03	1.73	1.50	156	0.433	2.06	12.86	16.05	45
6	300.0	0.062	0.03	6.69	0.40	44	0.143	0.68	17.03	4.00	1
7	350.0	0.067	0.03	2.33	1.25	148	0.270	1.29	11.94	10.80	91
8	400.0	0.044	0.02	4.75	0.40	107	0.125	0.60	19.86	3.00	45
9	450.0	0.054	0.02	3.90	0.60	29	0.109	0.52	-	-	1
10	500.0	0.040	0.02	4.39	0.40	14	0.093	0.45	18.56	2.40	1
11	550.0	0.042	0.02	2.61	0.70	402	0.124	0.59	12.67	4.65	1
12	600.0	0.031	0.01	4.54	0.30	59	0.088	0.42	20.99	2.00	1
13	650.0	0.041	0.02	2.97	0.60	191	0.097	0.46	15.43	3.00	78
14	700.0	0.029	0.01	4.13	0.30	29	0.082	0.39	-	-	45
15	750.0	0.020	0.01	2.95	0.30	236	0.063	0.30	-	-	1
16	800.0	0.036	0.02	5.25	0.30	94	0.063	0.30	-	-	45
17	850.0	0.030	0.01	4.30	0.30	21	0.076	0.36	-	-	45
18	900.0	0.032	0.01	4.63	0.30	81	0.054	0.26	-	-	1
19	950.0	0.025	0.01	3.56	0.30	120	0.088	0.42	-	-	45
20	1000.0	0.024	0.01	3.43	0.30	11	0.050	0.24	-	-	1
21	1050.0	0.026	0.01	3.81	0.30	99	0.048	0.23	-	-	1
22	1100.0	0.026	0.01	3.80	0.30	328	0.044	0.21	-	-	1
23	1150.0	0.022	0.01	3.12	0.30	1	0.056	0.27	-	-	1
24	1200.0	0.037	0.02	5.39	0.30	105	0.041	0.19	-	-	1
25	1250.0	0.029	0.01	4.24	0.30	44	0.058	0.28	-	-	45
26	1300.0	0.034	0.01	4.93	0.30	43	0.041	0.20	-	-	1
27	1350.0	0.024	0.01	3.42	0.30	82	0.037	0.18	-	-	1
28	1400.0	0.034	0.01	4.90	0.30	45	0.036	0.17	-	-	1
29	1450.0	0.027	0.01	3.98	0.30	59	0.046	0.22	-	-	30
30	1500.0	0.020	0.01	2.94	0.30	41	0.039	0.19	-	-	45
31	1550.0	0.019	0.01	2.77	0.30	27	0.045	0.21	-	-	1
32	1600.0	0.036	0.02	5.16	0.30	59	0.033	0.16	-	-	45
33	1650.0	0.029	0.01	4.19	0.30	772	0.032	0.15	-	-	1
34	1700.0	0.023	0.01	3.28	0.30	28	0.029	0.14	-	-	1
35	1750.0	0.036	0.02	5.24	0.30	44	0.049	0.23	-	-	45
36	1800.0	0.035	0.02	5.05	0.30	41	0.050	0.24	-	-	45
37	1850.0	0.081	0.04	11.73	0.30	103	0.134	0.64	-	-	112
38	1900.0	0.059	0.03	8.59	0.30	41	0.122	0.58	-	-	125
39	1950.0	0.032	0.01	4.68	0.30	645	0.072	0.34	-	-	126
40	2000.0	0.030	0.01	4.30	0.30	92	0.053	0.25	-	-	100


Voltage [%]
100
10
1
0.1
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Current [%]
100
10
1
0.1
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Limit
150 % of Limit
value 100 .. 150%

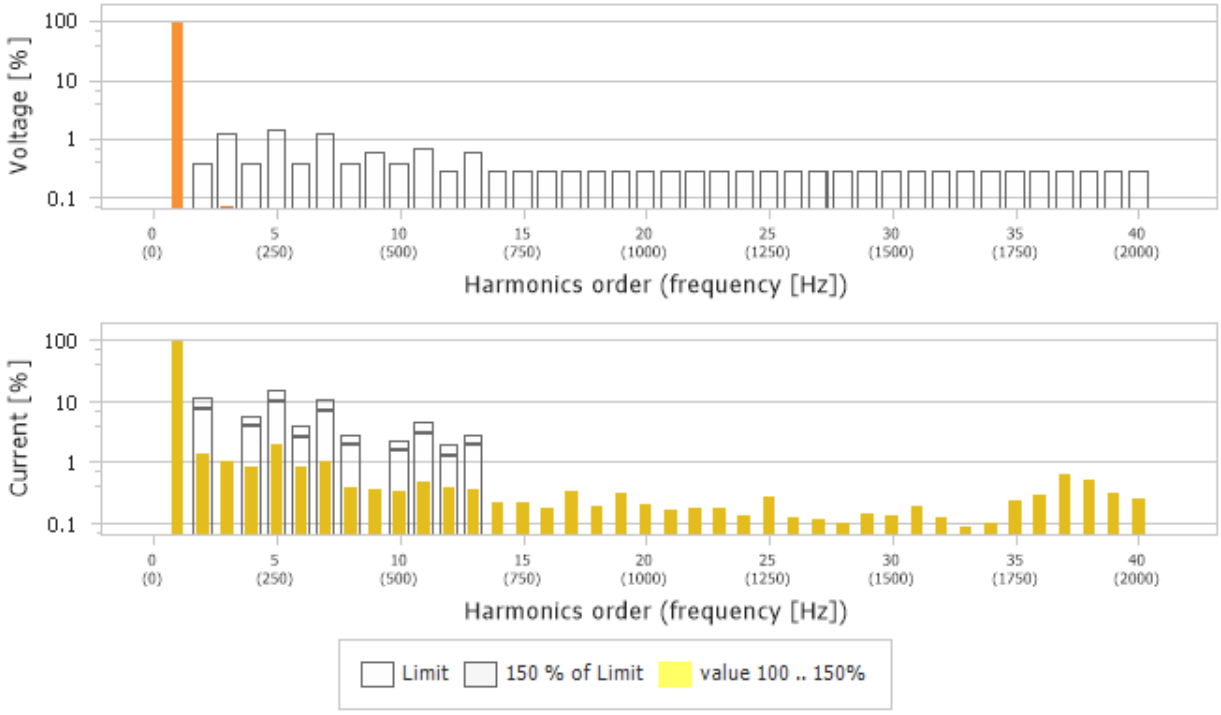
Maximum Harmonics (Line 2)

Hn	Frequency	Voltage					Current				
	[Hz]	eff [V]	eff [%]	of Limit [%]	Limit [%]	Time Window	eff [A]	eff[%]	of Limit [%]	Limit [%]	Time Window
1	50.0	231.103	100.48	-	-	361	21.434	102.10	-	-	461
2	100.0	0.140	0.06	15.24	0.40	829	0.257	1.22	10.19	12.00	1
3	150.0	0.102	0.04	3.53	1.25	464	0.228	1.09	-	-	45
4	200.0	0.048	0.02	5.25	0.40	29	0.179	0.85	14.22	6.00	30
5	250.0	0.037	0.02	1.06	1.50	86	0.464	2.21	13.77	16.05	92
6	300.0	0.032	0.01	3.51	0.40	59	0.144	0.68	17.09	4.00	30
7	350.0	0.042	0.02	1.45	1.25	799	0.245	1.17	10.79	10.80	87
8	400.0	0.023	0.01	2.52	0.40	44	0.109	0.52	17.27	3.00	45
9	450.0	0.024	0.01	1.72	0.60	44	0.075	0.36	-	-	30
10	500.0	0.026	0.01	2.81	0.40	36	0.102	0.49	20.22	2.40	30
11	550.0	0.041	0.02	2.57	0.70	386	0.139	0.66	14.23	4.65	193
12	600.0	0.020	0.01	2.92	0.30	28	0.064	0.30	15.17	2.00	30
13	650.0	0.035	0.02	2.57	0.60	345	0.098	0.47	15.51	3.00	76
14	700.0	0.027	0.01	3.87	0.30	291	0.064	0.31	-	-	45
15	750.0	0.023	0.01	3.36	0.30	105	0.050	0.24	-	-	30
16	800.0	0.023	0.01	3.34	0.30	9	0.057	0.27	-	-	30
17	850.0	0.047	0.02	6.74	0.30	120	0.093	0.44	-	-	30
18	900.0	0.023	0.01	3.29	0.30	44	0.039	0.19	-	-	30
19	950.0	0.033	0.01	4.78	0.30	17	0.082	0.39	-	-	45
20	1000.0	0.025	0.01	3.62	0.30	97	0.048	0.23	-	-	45
21	1050.0	0.042	0.02	6.12	0.30	29	0.032	0.15	-	-	45
22	1100.0	0.021	0.01	3.00	0.30	44	0.035	0.17	-	-	45
23	1150.0	0.029	0.01	4.20	0.30	60	0.040	0.19	-	-	82
24	1200.0	0.018	0.01	2.62	0.30	814	0.030	0.14	-	-	45
25	1250.0	0.035	0.02	5.12	0.30	53	0.058	0.28	-	-	45
26	1300.0	0.034	0.01	4.97	0.30	45	0.033	0.16	-	-	30
27	1350.0	0.020	0.01	2.93	0.30	59	0.029	0.14	-	-	45
28	1400.0	0.017	0.01	2.40	0.30	110	0.025	0.12	-	-	45
29	1450.0	0.018	0.01	2.67	0.30	72	0.039	0.19	-	-	45
30	1500.0	0.015	0.01	2.14	0.30	41	0.033	0.16	-	-	45
31	1550.0	0.031	0.01	4.45	0.30	44	0.036	0.17	-	-	45
32	1600.0	0.017	0.01	2.50	0.30	29	0.028	0.14	-	-	45
33	1650.0	0.046	0.02	6.60	0.30	29	0.025	0.12	-	-	45
34	1700.0	0.023	0.01	3.30	0.30	94	0.021	0.10	-	-	30
35	1750.0	0.033	0.01	4.76	0.30	1	0.042	0.20	-	-	113
36	1800.0	0.024	0.01	3.47	0.30	96	0.055	0.26	-	-	106
37	1850.0	0.087	0.04	12.66	0.30	14	0.132	0.63	-	-	113
38	1900.0	0.050	0.02	7.21	0.30	55	0.126	0.60	-	-	125
39	1950.0	0.033	0.01	4.77	0.30	123	0.077	0.37	-	-	126
40	2000.0	0.030	0.01	4.30	0.30	108	0.055	0.26	-	-	101


Voltage [%]
100
10
1
0.1
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Current [%]
100
10
1
0.1
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Limit
150 % of Limit
value 100 .. 150%

Maximum Harmonics (Line 3)

Hn	Frequency	Voltage					Current				
	[Hz]	eff [V]	eff [%]	of Limit [%]	Limit [%]	Time Window	eff [A]	eff [%]	of Limit [%]	Limit [%]	Time Window
1	50.0	231.593	100.69	-	-	34	21.409	102.13	-	-	362
2	100.0	0.094	0.04	10.26	0.40	268	0.311	1.48	12.37	12.00	1
3	150.0	0.167	0.07	5.81	1.25	804	0.234	1.11	-	-	1
4	200.0	0.062	0.03	6.73	0.40	822	0.178	0.85	14.15	6.00	1
5	250.0	0.090	0.04	2.60	1.50	804	0.429	2.05	12.76	16.05	91
6	300.0	0.049	0.02	5.37	0.40	36	0.179	0.85	21.30	4.00	30
7	350.0	0.060	0.03	2.10	1.25	86	0.231	1.10	10.21	10.80	88
8	400.0	0.034	0.01	3.74	0.40	88	0.087	0.41	13.76	3.00	30
9	450.0	0.018	0.01	1.27	0.60	847	0.078	0.37	-	-	45
10	500.0	0.027	0.01	2.98	0.40	59	0.074	0.35	14.76	2.40	45
11	550.0	0.030	0.01	1.89	0.70	118	0.104	0.49	10.62	4.65	323
12	600.0	0.018	0.01	2.63	0.30	2	0.084	0.40	20.03	2.00	45
13	650.0	0.029	0.01	2.12	0.60	37	0.079	0.38	12.50	3.00	45
14	700.0	0.018	0.01	2.60	0.30	44	0.049	0.23	-	-	88
15	750.0	0.024	0.01	3.44	0.30	301	0.047	0.23	-	-	45
16	800.0	0.027	0.01	3.85	0.30	444	0.038	0.18	-	-	88
17	850.0	0.028	0.01	4.09	0.30	120	0.072	0.34	-	-	45
18	900.0	0.021	0.01	3.02	0.30	105	0.041	0.20	-	-	45
19	950.0	0.029	0.01	4.18	0.30	70	0.066	0.32	-	-	91
20	1000.0	0.015	0.01	2.13	0.30	584	0.044	0.21	-	-	45
21	1050.0	0.036	0.02	5.23	0.30	99	0.035	0.17	-	-	30
22	1100.0	0.023	0.01	3.32	0.30	44	0.039	0.19	-	-	30
23	1150.0	0.029	0.01	4.20	0.30	45	0.039	0.19	-	-	803
24	1200.0	0.021	0.01	3.05	0.30	232	0.030	0.14	-	-	45
25	1250.0	0.026	0.01	3.72	0.30	118	0.061	0.29	-	-	29
26	1300.0	0.029	0.01	4.25	0.30	8	0.027	0.13	-	-	45
27	1350.0	0.017	0.01	2.52	0.30	6	0.025	0.12	-	-	45
28	1400.0	0.022	0.01	3.17	0.30	45	0.022	0.10	-	-	45
29	1450.0	0.023	0.01	3.28	0.30	337	0.032	0.15	-	-	45
30	1500.0	0.017	0.01	2.49	0.30	45	0.030	0.14	-	-	45
31	1550.0	0.023	0.01	3.35	0.30	120	0.043	0.20	-	-	123
32	1600.0	0.018	0.01	2.59	0.30	98	0.027	0.13	-	-	45
33	1650.0	0.025	0.01	3.65	0.30	104	0.019	0.09	-	-	45
34	1700.0	0.022	0.01	3.12	0.30	70	0.022	0.10	-	-	97
35	1750.0	0.035	0.02	5.07	0.30	120	0.050	0.24	-	-	115
36	1800.0	0.043	0.02	6.26	0.30	92	0.063	0.30	-	-	106
37	1850.0	0.087	0.04	12.56	0.30	103	0.135	0.65	-	-	112
38	1900.0	0.048	0.02	6.96	0.30	41	0.113	0.54	-	-	44
39	1950.0	0.025	0.01	3.63	0.30	133	0.068	0.33	-	-	126
40	2000.0	0.032	0.01	4.69	0.30	14	0.054	0.26	-	-	100


Voltage [%]
100
10
1
0.1
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Current [%]
100
10
1
0.1
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Limit
150 % of Limit
value 100 .. 150%

TEST REPORT N°: CPXU-ESH-P24071992B

Applicable Standard:	**EN IEC 61000-3-2:2019+A1:2021**	
Test set up description:	Floor standing equipment set-up (10 cm over ground plane)	
Limit classification in accordance with the standard:	☒	Class A
	☐	Class B
	☐	Class C, rated power > 25 W
	☐	Class C, 5 W ≤ rated power ≤ 25 W
	☐	Class D
Observation period	2.5 min	
Remark:	--	

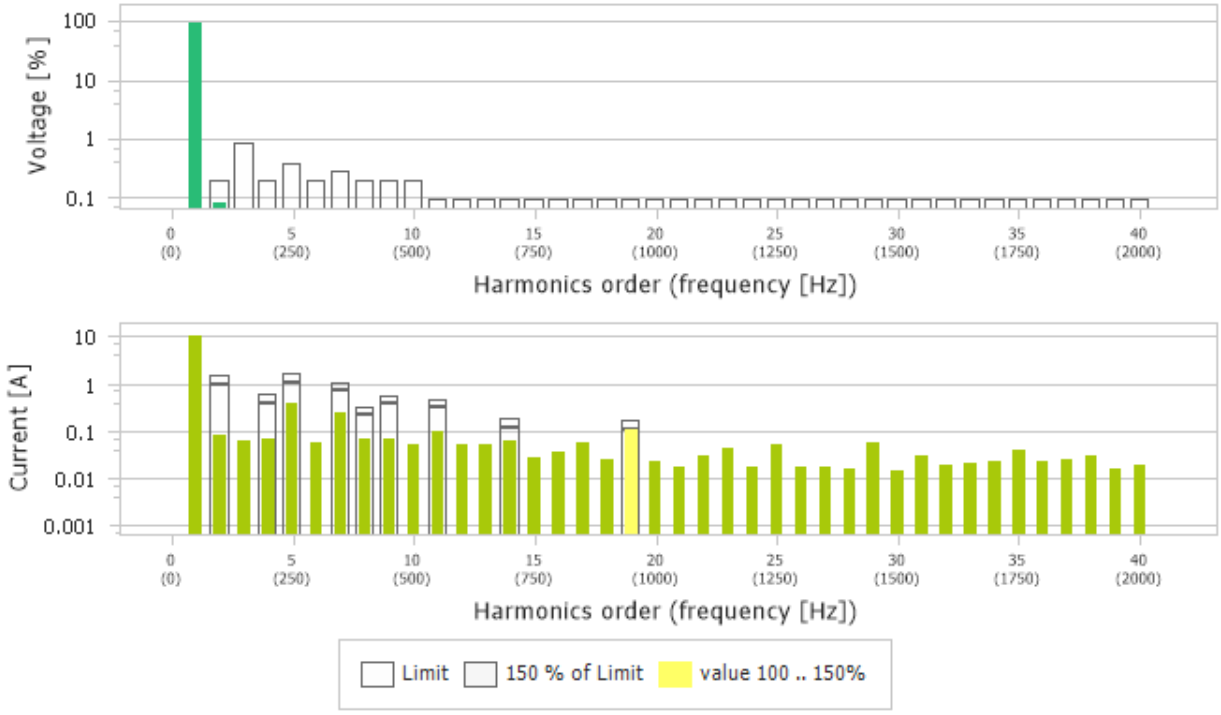
TEST REPORT N°: CPXU-ESH-P24071992B

Model:	SWH010KH-T1
Test mode:	Mode A
Test voltage:	AC 380V
Remark:	EN IEC 61000-3-2:2019+A1:2021

Current Test Result (Line1)

Average and Maximum harmonic current results									
Hn	Average				Maximum				Harmonic Result
	Ieff [A]	of Limit [%]	Limit [A]	Result	Ieff [A]	of Limit [%]	Limit [A]	Result	
1	10.785				10.804				
2	0.083	7.657	1.080	PASS	0.090	5.533	1.620	PASS	PASS
3	0.053	2.304	2.300	n/a	0.057	1.664	3.450	n/a	PASS
4	0.064	14.941	0.430	n/a	0.071	10.998	0.645	PASS	PASS
5	0.415	36.446	1.140	PASS	0.421	24.637	1.710	PASS	PASS
6	0.056	18.517	0.300	n/a	0.062	13.767	0.450	n/a	PASS
7	0.269	34.881	0.770	PASS	0.271	23.506	1.155	PASS	PASS
8	0.070	30.551	0.230	PASS	0.073	21.098	0.345	PASS	PASS
9	0.063	15.755	0.400	n/a	0.068	11.415	0.600	PASS	PASS
10	0.045	24.424	0.184	n/a	0.048	17.565	0.276	n/a	PASS
11	0.106	32.027	0.330	PASS	0.110	22.238	0.495	PASS	PASS
12	0.052	34.155	0.153	n/a	0.057	24.957	0.230	n/a	PASS
13	0.045	21.623	0.210	n/a	0.054	17.081	0.315	n/a	PASS
14	0.060	45.533	0.131	n/a	0.065	33.010	0.197	PASS	PASS
15	0.026	17.351	0.150	n/a	0.028	12.599	0.225	n/a	PASS
16	0.036	31.325	0.115	n/a	0.039	22.722	0.173	n/a	PASS
17	0.056	42.158	0.132	n/a	0.059	29.752	0.199	n/a	PASS
18	0.024	23.781	0.102	n/a	0.027	17.752	0.153	n/a	PASS
19	0.112	94.915	0.118	PASS	0.115	64.733	0.178	PASS	PASS
20	0.022	23.771	0.092	n/a	0.025	17.798	0.138	n/a	PASS
21	0.017	15.825	0.107	n/a	0.019	11.814	0.161	n/a	PASS
22	0.028	33.674	0.084	n/a	0.033	26.088	0.125	n/a	PASS
23	0.039	40.096	0.098	n/a	0.045	31.006	0.147	n/a	PASS
24	0.016	21.501	0.077	n/a	0.019	16.302	0.115	n/a	PASS
25	0.051	57.212	0.090	n/a	0.053	39.561	0.135	n/a	PASS
26	0.016	22.971	0.071	n/a	0.018	16.786	0.106	n/a	PASS
27	0.016	19.269	0.083	n/a	0.018	14.624	0.125	n/a	PASS
28	0.015	22.241	0.066	n/a	0.017	17.050	0.099	n/a	PASS
29	0.059	75.458	0.078	n/a	0.061	52.448	0.116	n/a	PASS
30	0.014	22.553	0.061	n/a	0.016	16.854	0.092	n/a	PASS
31	0.031	42.945	0.073	n/a	0.033	30.487	0.109	n/a	PASS
32	0.019	32.702	0.058	n/a	0.021	24.229	0.086	n/a	PASS
33	0.020	28.994	0.068	n/a	0.022	21.631	0.102	n/a	PASS
34	0.021	38.787	0.054	n/a	0.024	29.407	0.081	n/a	PASS
35	0.041	64.051	0.064	n/a	0.043	44.748	0.096	n/a	PASS
36	0.021	41.506	0.051	n/a	0.024	31.382	0.077	n/a	PASS
37	0.024	39.374	0.061	n/a	0.027	29.920	0.091	n/a	PASS
38	0.029	59.084	0.048	n/a	0.031	43.308	0.073	n/a	PASS
39	0.014	24.984	0.058	n/a	0.016	18.956	0.087	n/a	PASS
40	0.019	40.217	0.046	n/a	0.020	28.860	0.069	n/a	PASS

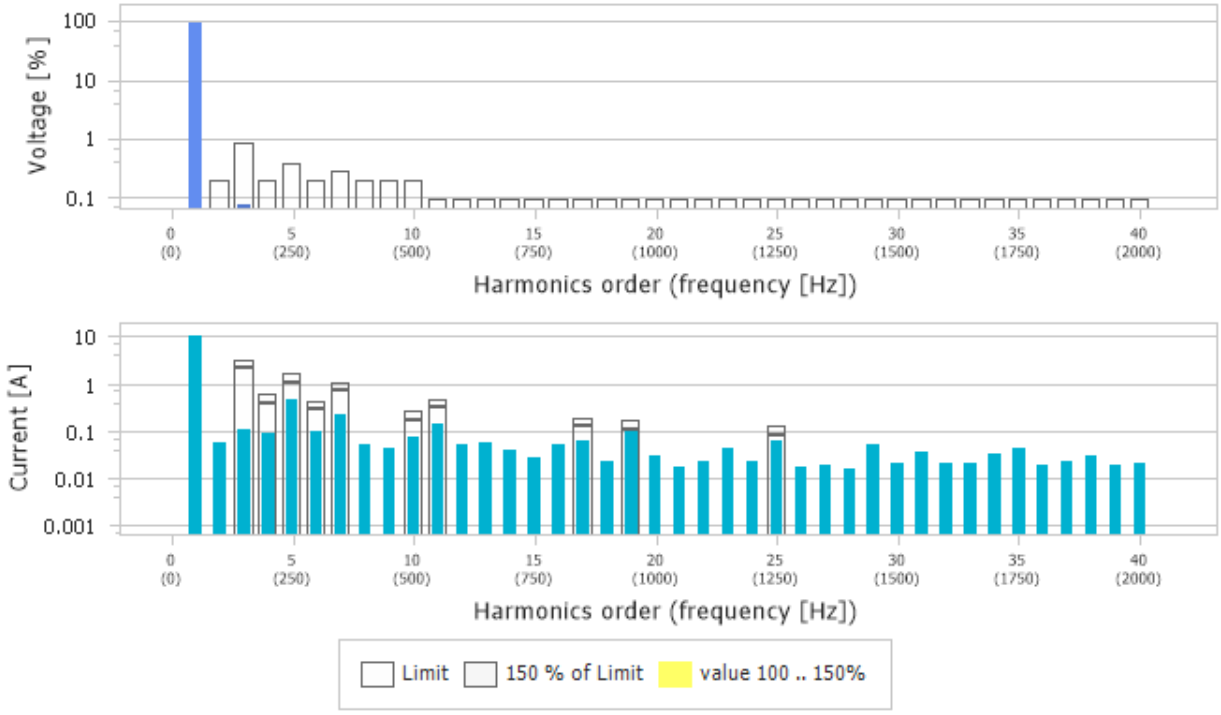
Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.


Voltage [%]
100
10
1
0.1
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Current [A]
10
1
0.1
0.01
0.001
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Limit
150 % of Limit
value 100 .. 150%

Current Test Result (Line2)

Average and Maximum harmonic current results									
Hn	Average				Maximum				Harmonic Result
	Ieff [A]	of Limit [%]	Limit [A]	Result	Ieff [A]	of Limit [%]	Limit [A]	Result	
1	10.732				10.748				
2	0.056	5.198	1.080	n/a	0.062	3.855	1.620	n/a	PASS
3	0.107	4.672	2.300	PASS	0.112	3.257	3.450	PASS	PASS
4	0.092	21.499	0.430	PASS	0.097	15.048	0.645	PASS	PASS
5	0.490	42.945	1.140	PASS	0.497	29.079	1.710	PASS	PASS
6	0.095	31.625	0.300	PASS	0.104	23.004	0.450	PASS	PASS
7	0.228	29.605	0.770	PASS	0.232	20.127	1.155	PASS	PASS
8	0.053	22.948	0.230	n/a	0.058	16.691	0.345	n/a	PASS
9	0.041	10.301	0.400	n/a	0.045	7.452	0.600	n/a	PASS
10	0.075	40.803	0.184	PASS	0.081	29.502	0.276	PASS	PASS
11	0.139	42.236	0.330	PASS	0.146	29.512	0.495	PASS	PASS
12	0.051	33.530	0.153	n/a	0.058	25.049	0.230	n/a	PASS
13	0.054	25.671	0.210	n/a	0.058	18.398	0.315	n/a	PASS
14	0.037	28.155	0.131	n/a	0.041	20.690	0.197	n/a	PASS
15	0.026	17.224	0.150	n/a	0.029	12.738	0.225	n/a	PASS
16	0.048	42.017	0.115	n/a	0.053	30.765	0.173	n/a	PASS
17	0.061	45.722	0.132	n/a	0.065	32.502	0.199	PASS	PASS
18	0.023	22.574	0.102	n/a	0.025	16.594	0.153	n/a	PASS
19	0.104	87.451	0.118	PASS	0.109	61.116	0.178	PASS	PASS
20	0.027	29.790	0.092	n/a	0.031	22.377	0.138	n/a	PASS
21	0.016	15.049	0.107	n/a	0.018	11.193	0.161	n/a	PASS
22	0.023	27.212	0.084	n/a	0.025	19.703	0.125	n/a	PASS
23	0.044	44.660	0.098	n/a	0.047	31.877	0.147	n/a	PASS
24	0.021	27.641	0.077	n/a	0.024	20.744	0.115	n/a	PASS
25	0.066	72.947	0.090	PASS	0.070	51.508	0.135	PASS	PASS
26	0.016	22.505	0.071	n/a	0.019	17.655	0.106	n/a	PASS
27	0.018	21.832	0.083	n/a	0.021	16.419	0.125	n/a	PASS
28	0.016	24.320	0.066	n/a	0.017	17.700	0.099	n/a	PASS
29	0.054	69.630	0.078	n/a	0.056	47.985	0.116	n/a	PASS
30	0.021	34.620	0.061	n/a	0.023	25.072	0.092	n/a	PASS
31	0.033	45.976	0.073	n/a	0.035	32.575	0.109	n/a	PASS
32	0.019	32.348	0.058	n/a	0.021	24.828	0.086	n/a	PASS
33	0.020	29.514	0.068	n/a	0.023	22.612	0.102	n/a	PASS
34	0.032	58.655	0.054	n/a	0.036	43.917	0.081	n/a	PASS
35	0.046	71.380	0.064	n/a	0.048	49.658	0.096	n/a	PASS
36	0.019	36.481	0.051	n/a	0.021	26.997	0.077	n/a	PASS
37	0.020	32.726	0.061	n/a	0.023	25.540	0.091	n/a	PASS
38	0.029	59.402	0.048	n/a	0.032	44.230	0.073	n/a	PASS
39	0.019	32.459	0.058	n/a	0.021	23.863	0.087	n/a	PASS
40	0.019	42.252	0.046	n/a	0.022	31.178	0.069	n/a	PASS

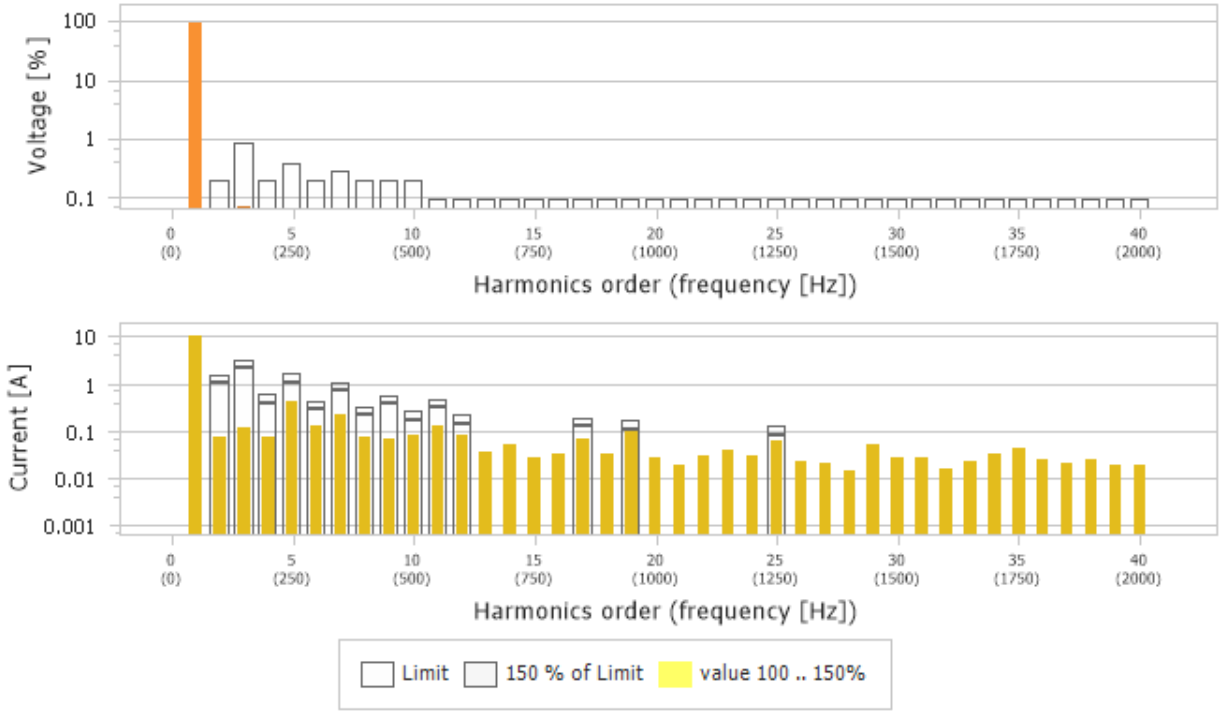
Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.


Voltage [%]
100
10
1
0.1
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Current [A]
10
1
0.1
0.01
0.001
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Limit
150 % of Limit
value 100 .. 150%

Current Test Result (Line3)

Average and Maximum harmonic current results									
Hn	Average				Maximum				Harmonic Result
	Ieff [A]	of Limit [%]	Limit [A]	Result	Ieff [A]	of Limit [%]	Limit [A]	Result	
1	10.699				10.716				
2	0.076	7.050	1.080	PASS	0.082	5.081	1.620	PASS	PASS
3	0.122	5.314	2.300	PASS	0.126	3.662	3.450	PASS	PASS
4	0.076	17.698	0.430	PASS	0.081	12.598	0.645	PASS	PASS
5	0.440	38.572	1.140	PASS	0.449	26.262	1.710	PASS	PASS
6	0.133	44.231	0.300	PASS	0.140	31.183	0.450	PASS	PASS
7	0.234	30.379	0.770	PASS	0.240	20.799	1.155	PASS	PASS
8	0.078	33.715	0.230	PASS	0.080	23.263	0.345	PASS	PASS
9	0.070	17.577	0.400	PASS	0.073	12.115	0.600	PASS	PASS
10	0.080	43.311	0.184	PASS	0.084	30.314	0.276	PASS	PASS
11	0.137	41.582	0.330	PASS	0.140	28.345	0.495	PASS	PASS
12	0.086	56.264	0.153	PASS	0.091	39.414	0.230	PASS	PASS
13	0.034	16.129	0.210	n/a	0.037	11.709	0.315	n/a	PASS
14	0.049	37.623	0.131	n/a	0.053	26.812	0.197	n/a	PASS
15	0.026	17.337	0.150	n/a	0.030	13.114	0.225	n/a	PASS
16	0.029	25.587	0.115	n/a	0.035	20.363	0.173	n/a	PASS
17	0.067	50.816	0.132	PASS	0.071	35.619	0.199	PASS	PASS
18	0.033	32.158	0.102	n/a	0.035	23.058	0.153	n/a	PASS
19	0.104	87.494	0.118	PASS	0.106	59.581	0.178	PASS	PASS
20	0.026	28.399	0.092	n/a	0.028	20.588	0.138	n/a	PASS
21	0.019	17.430	0.107	n/a	0.021	12.815	0.161	n/a	PASS
22	0.029	34.726	0.084	n/a	0.032	25.603	0.125	n/a	PASS
23	0.036	36.964	0.098	n/a	0.041	28.279	0.147	n/a	PASS
24	0.029	37.726	0.077	n/a	0.032	27.750	0.115	n/a	PASS
25	0.062	68.550	0.090	n/a	0.065	47.924	0.135	PASS	PASS
26	0.021	29.970	0.071	n/a	0.024	22.467	0.106	n/a	PASS
27	0.020	23.929	0.083	n/a	0.022	17.923	0.125	n/a	PASS
28	0.013	19.648	0.066	n/a	0.015	15.130	0.099	n/a	PASS
29	0.053	67.954	0.078	n/a	0.054	46.613	0.116	n/a	PASS
30	0.026	42.636	0.061	n/a	0.029	31.537	0.092	n/a	PASS
31	0.027	37.073	0.073	n/a	0.029	26.525	0.109	n/a	PASS
32	0.016	27.448	0.058	n/a	0.018	20.442	0.086	n/a	PASS
33	0.022	31.928	0.068	n/a	0.025	24.281	0.102	n/a	PASS
34	0.032	59.415	0.054	n/a	0.035	42.777	0.081	n/a	PASS
35	0.042	64.714	0.064	n/a	0.045	46.294	0.096	n/a	PASS
36	0.023	45.550	0.051	n/a	0.026	33.275	0.077	n/a	PASS
37	0.020	32.866	0.061	n/a	0.022	24.427	0.091	n/a	PASS
38	0.024	50.307	0.048	n/a	0.027	37.518	0.073	n/a	PASS
39	0.019	32.485	0.058	n/a	0.020	23.580	0.087	n/a	PASS
40	0.019	40.863	0.046	n/a	0.020	29.384	0.069	n/a	PASS

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.


Voltage [%]
100
10
1
0.1
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Current [A]
10
1
0.1
0.01
0.001
0 (0)
5 (250)
10 (500)
15 (750)
20 (1000)
25 (1250)
30 (1500)
35 (1750)
40 (2000)
Harmonics order (frequency [Hz])
Limit
150 % of Limit
value 100 .. 150%

5.8 Voltage fluctuation and flicker

5.8.1 Test condition

Applicable Standard:	**EN IEC 61000-3-11:2019**		
	The test item deems to be compliant with the applied standard, on condition the manufacturer meets his obligations regarding EN 61000-3-11:2000, Section 4 a) and 4 b). The result is regarded as PASS if all information requested by EN 61000-3-11 is published in the user manual.		
	Test impedance / maximum permissible system impedance	☐	Maximum permissible system impedance (Cl. 6.3):
		☐	Minimum permissible service current (6.4) >= 100 A / phase
Test set up description:	Floor standing equipment set-up (10 cm over ground plane)		
Test method:	☒	Flickermeter according to IEC 61000-4-15	
	☐	Simulation	
	☐	Analytical method	
	☒	Use of P_{st} = 1 curve	
	☒	Long-Term flicker value P_{lt}	
Observation time selected:	☐	10 Minutes	
	☒	120 Minutes	
	☐	24 times switching	
	☐	Other: --	
Limit for d_{max} applied:	☒	4 %	
	☐	6 %	
	☐	7 %	
Remark:	--		

5.8.2 Test results

Model:	SWH015KH-T1				
Test mode:	Mode A				
Test voltage:	AC 380V				
Parameter:	**P_{lt}**	**P_{st}**	**dt (ms)**	**dc (%)**	**d_{max} (%)**
Measured value: Line 1	0.08	0.092	0	0.162	0.722
Measured value: Line 2	0.071	0.092	0	0.146	1.097
Measured value: Line 3	0.08	0.087	0	0.172	0.219
Limit value:	0.65	1	0.50	3.3	4

TEST REPORT N°: CPXU-ESH-P24071992B

Applicable Standard:	**EN 61000-3-3:2013+A1:2019+A2:2021**	
Test set up description:	Floor standing equipment set-up (10 cm over ground plane)	
Test method:	☒	4.2.2 Flickermeter according to IEC 61000-4-15
	☐	4.2.3 Simulation
	☐	4.2.4 Analytical method
	☒	4.2.5 Use of P_{st} = 1 curve
	☒	4.3 Long-Term flicker value P_{lt}
Observation time selected:	☐	10 Minutes
	☒	120 Minutes
	☐	24 times switching
	☐	Other: --
Limit for d_{max} applied:	☒	4 %
	☐	6 %
	☐	7 %
Remark:	--	

Model:	SWH010KH-T1				
Test mode:	Mode A				
Test voltage:	AC 380V				
Parameter:	**P_{lt}**	**P_{st}**	**dt (ms)**	**dc (%)**	**d_{max} (%)**
Measured value: Line 1	0.031	0.051	0	0.164	0.484
Measured value: Line 2	0.029	0.042	0	0.156	0.205
Measured value: Line 3	0.032	0.055	0	0.178	0.794
Limit value:	0.65	1	0.50	3.3	4

6 Test condition and results for immunity

6.1 General information

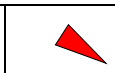
Performance criteria as defined by the standard EN IEC 61000-6-1:2019	
Criterion	**Description from standard**
A	The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
B	The EUT shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. However, during the test degradation of performance is allowed but no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
C	Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.
Other:	--

6.2 Electrostatic discharge immunity test (ESD)

6.2.1 Test condition

Basic standard:	**IEC 61000-4-2:2008 / EN 61000-4-2:2009**	
Test set up:	☐	Table-top equipment
	☐	Floor standing equipment
	☒	Wall or ceiling mounted equipment (Treated as table top)
Supplementary test set up description:	Measurements were made on a ground plane that extends 0.5 m minimum beyond all sides of the system under test and the minimum distance between the equipment under test and any laboratory walls or any other metallic surfaces shall be at least 1 m. Air discharges were applied to non-metallic parts of the system. Contact discharges were applied to all accessible metallic parts. Discharges were also applied to the Horizontal and Vertical Coupling Planes, where applicable.	
Discharge impedance:	330 ohm / 150 pF	
Size of horizontal coupling plate:	1.6 x 0.8 m	
Size of vertical coupling plate:	0.5 x 0.5 m	
Number of discharges for each test point:	10	
Discharge interval:	1 s	
Performance criterion:	B	
Remark:	--	

6.2.2 Test results

Operating mode:	Mode A, Mode B and Mode C			
Ambient temperature:	21.0 ℃			
Relative humidity:	53.1 %			
Atmospheric pressure:	101.0 kPa			
Supplementary information:	--			
Location of discharge	**Test level (kV)**	**Polarity**	**Type**	**Observations**
Vertical coupling plate	4	+	Contact discharge	Note 1
Vertical coupling plate	4	-	Contact discharge	Note 1
Horizontal coupling plate	4	+	Contact discharge	Note 1
Horizontal coupling plate	4	-	Contact discharge	Note 1
Points on conductive surface as indicated in the picture below	4	+	Contact discharge	Note 1
Points on conductive surface as indicated in the picture below	4	-	Contact discharge	Note 1
Points on non-conductive surface as indicated in the picture below	8	+	Air discharge	Note 1
Points on non-conductive surface as indicated in the picture below	8	-	Air discharge	Note 1
Note 1: EUT worked as intended during and after test.				
Photos of test points:				
Symbols identifying discharge applied:		Contact discharge		
		Air discharge		

6.3 Radiated, Radio-frequency, Electromagnetic field immunity test (RS)

6.3.1 Test condition

Basic standard:	**IEC 61000-4-3:2020 / EN IEC 61000-4-3:2020**	
Test setup:	☐	Table-top equipment
	☐	Floor standing equipment
	☒	Other: Wall or ceiling mounted equipment (Treated as table top)
Supplementary test set up description:	Measurements were made in a semi or full anechoic chamber or TEM or reverberation chamber and the indicated field strength was pre-calibrated prior to placement of the system under test. For semi or full anechoic chamber the tests were performed in both the horizontal and vertical polarities, where applicable. The antenna was placed between 1 and 3 m from the product under test.	
Antenna height:	1.5 m	
Distance antenna to EUT:	3 m	
Modulation:	80 % AM with 1 kHz	
Dwell time:	3 s	
Step size:	1%	
Applied testing method:	☒	IEC 61000-4-3 Radiated Field with Antenna
	☐	IEC 61000-4-22 Radiated emission and immunity measurements in fully anechoic rooms (FARs)
	☐	IEC 61000-4-20 Emission and immunity testing in transverse electromagnetic (TEM) waveguides
Performance criterion:	A	
Remark:	--	

6.3.2 Test results

Operating mode:	Mode A, Mode B and Mode C				
Supplementary information:	--				
Frequency range	**Test level (V/m)**	**Polarization**	**Azimuth**	**Modulation**	**Observations**
80 MHz – 1000 MHz	3	Horizontal/ Vertical	0°	AM 1 kHz, 80 %	Note 1
			90°		
			180°		
			270°		
1.4 GHz – 6 GHz	3	Horizontal/ Vertical	0°	AM 1 kHz, 80 %	Note 1
			90°		
			180°		
			270°		
Note 1: EUT worked as intended during and after test.					

6.4 Electrical fast transient/Burst immunity test (EFT)

6.4.1 Test condition

Basic standard:	**IEC 61000-4-4:2012 / EN 61000-4-4:2012**
Test setup:	☒ Table-top equipment
	☐ Floor standing equipment
	☐ Artificial hand applied
Supplementary test set up description:	The ground reference plane shall project beyond the EUT by at least 0.1 m on all sides. The minimum distance between the EUT and all other conductive structures (including the generator, AE and the walls of a shielded room), except the ground reference plane, shall be more than 0.5 m. All cables to the EUT shall be placed on the insulation support 0.1 m above the ground reference plane. Cables not subject to test shall be routed as far as possible from the cable under test to minimize the coupling between the cables. Either a direct coupling network or a capacitive clamp shall be used for the application of the test voltages.
Test time:	1 min
Repetition frequency:	5 kHz
Impulse wave shape:	5/50 ns
Burst duration:	15 ms for 5kHz repetition frequency
Burst period:	300 ms
Performance criterion:	B
Remark:	The signal cables whose total length according to the manufacturer's functional specification does not exceed 3 m.

6.4.2 Test results

Operating mode:	Mode A and Mode B				
Supplementary information:	--				
Port	**Test line**	**Test level (kV)**	**Polarity**	**Coupling method**	**Observations**
AC grid ports	L1+L2+L3+N+PE	1	+/-	CDN	Note 1
PV and battery port	Positive/ Negative polarity	0.5	+/-	Clamp	Note 1
Note 1: EUT worked as intended during and after test.					

6.5 Surges

6.5.1 Test condition

Basic Standard:	**IEC 61000-4-5:2014+A1:2017 / EN 61000-4-5:2014+A1:2017**
Test set up description:	Floor standing equipment set-up (10 cm over ground plane)
Supplementary test set up description:	Tests were conducted with the product connected to a Coupling/Decoupling Network (CDN)
Wave-Shape:	1.2/50 μs open circuit voltage, 8/20 μs short circuit current
Repetition rate:	60 s
Number of pulses for each coupling:	5 positive and 5 negative
Performance criterion:	B
Remark:	The signal cables and battery cable inside a building whose total length according to the manufacturer's functional specification does not exceed 3 m.

6.5.2 Test results

Operating mode:	Mode A				
Supplementary information:	--				
Port	**Coupling**	**Test level in kV**	**phase in degrees**	**Polarity**	**Observations**
AC grid ports	L1 – L2	1	0°, 90°,180°, 270°	+	Note 1
AC grid ports	L1 – L2	1	0°, 90°,180°, 270°	-	Note 1
AC grid ports	L1 – L3	1	0°, 90°,180°, 270°	+	Note 1
AC grid ports	L1 – L3	1	0°, 90°,180°, 270°	-	Note 1
AC grid ports	L2 – L3	1	0°, 90°,180°, 270°	+	Note 1
AC grid ports	L2 – L3	1	0°, 90°,180°, 270°	-	Note 1
AC grid ports	L1 – N	1	0°, 90°,180°, 270°	+	Note 1
AC grid ports	L1 – N	1	0°, 90°,180°, 270°	-	Note 1
AC grid ports	L2 – N	1	0°, 90°,180°, 270°	+	Note 1
AC grid ports	L2 – N	1	0°, 90°,180°, 270°	-	Note 1
AC grid ports	L3 – N	1	0°, 90°,180°, 270°	+	Note 1
AC grid ports	L3 – N	1	0°, 90°,180°, 270°	-	Note 1
AC grid ports	L1 - PE	2	0°, 90°,180°, 270°	+	Note 1
AC grid ports	L1 - PE	2	0°, 90°,180°, 270°	-	Note 1
AC grid ports	L2 - PE	2	0°, 90°,180°, 270°	+	Note 1
AC grid ports	L2 - PE	2	0°, 90°,180°, 270°	-	Note 1
AC grid ports	L3 - PE	2	0°, 90°,180°, 270°	+	Note 1
AC grid ports	L3 - PE	2	0°, 90°,180°, 270°	-	Note 1
AC grid ports	N - PE	2	0°, 90°,180°, 270°	+	Note 1
AC grid ports	N - PE	2	0°, 90°,180°, 270°	-	Note 1
PV input port	Line - PE	1	--	+	Note 1
PV input port	Line - PE	1	--	-	Note 1
Note 1: EUT worked as intended during and after test.					

6.6 Immunity to conducted disturbances induced by RF fields (CS), 0.15 MHz to 80 MHz

6.6.1 Test condition

Basic Standard:	**IEC 61000-4-6:2013 / EN 61000-4-6:2014**	
Test setup:	☒	Equipment located (0,1 ± 0,05) m above ground plane
	☐	Elevated ground plane.
	☐	Artificial hand applied.
Supplementary test set up description:	Measurements were made on a ground plane that extends 0.5 m minimum beyond all sides of the system under test. The EUT was located 0.1 m above the reference ground plane and any associated cables attached to the EUT were located between 30 - 50mm above the ground plane. The indicated field was pre-calibrated prior to placement of the system under test.	
Modulation:	80 % AM with 1 kHz	
Dwell time:	3 s	
Step size:	1%	
Performance criterion:	A	
Remark:	The signal cables and battery cable whose total length according to the manufacturer's functional specification does not exceed 3 m.	

6.6.2 Test results

Operating mode:	Mode A
Supplementary information:	--

Frequency range	Port	Test line	Test level (V)	CDN type	Observations
0.15 MHz – 80 MHz	Output AC power ports	AC grid line	3	M2	Note 1
0.15 MHz – 80 MHz	Input DC power ports	PV input line	3	M5	Note 1
Note 1: EUT worked as intended during and after test.					

6.7 Power frequency magnetic field

6.7.1 Test condition

Basic standard:	**IEC 61000-4-8:2009 / EN IEC 61000-4-8:2010**	
Test setup:	☒	Single Coil. Dimensions: 1 x 1 m
	☐	Single Coil. Dimensions: 1 x 2.6 m
	☒	0,1 m above metal surface
	☐	Homogeneous field (Helmholtz coil). Dimensions:
	☐	Radiating loop swept along test item surface
Supplementary test set up description:	All cables shall be exposed to the magnetic field for 1 m of their length.	
Performance criterion:	A	
Remark:	--	

6.7.2 Test results

Operating mode:	Mode A, Mode B and Mode C			
Supplementary information:	--			
Axis	**Test frequency (Hz)**	**Test level (A/m)**	**Duration (s)**	**Observations**
X	50	3	60	Note 1
Y	50	3	60	Note 1
Z	50	3	60	Note 1
Note 1: EUT worked as intended during and after test.				

6.8 Voltage dips and short interruptions

6.8.1 Test condition

Basic Standard:	**EN 61000-4-34:2007+A1:2009 / IEC 61000-4-34:2005+A1:2009**
Test set up description:	Floor standing equipment set-up (10 cm over ground plane)
Supplementary test set up description:	Testing was performed with the product connected directly to a generator capable of simulating the voltage drops.
Repetition rate:	10 s
Number of dips or interruptions:	3
Performance criterion:	B for voltage dips C for voltage interruptions
Remark:	--

6.8.2 Test results

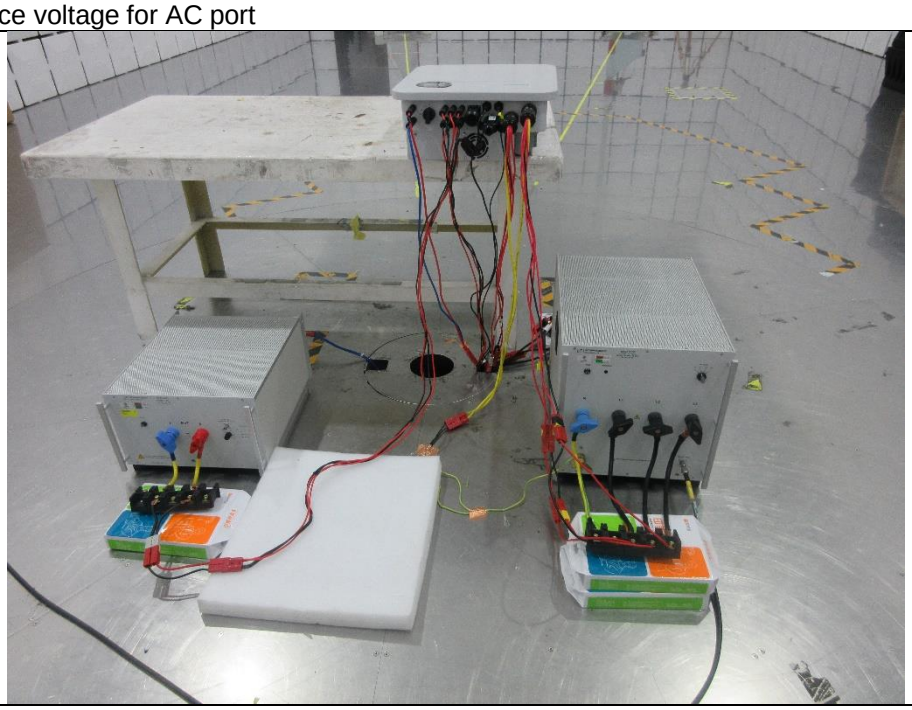
Operating mode:	Mode A			
Supplementary information:	--			
Applied mains voltage / frequency (U_N)	**Test level in % of U_N**	**Duration in cycles**	**Phase angle in degrees**	**Observations**
AC 380V, 50Hz	0	250	0°, 45°,90°, 135°, 180°, 225°, 270°, 315°	Note 2
AC 380V, 50Hz	0	0.5	0°, 45°,90°, 135°, 180°, 225°, 270°, 315°	Note 1
AC 380V, 50Hz	0	1	0°, 45°,90°, 135°, 180°, 225°, 270°, 315°	Note 1
AC 380V, 50Hz	70	25	0°, 45°,90°, 135°, 180°, 225°, 270°, 315°	Note 1
Note 1: EUT worked as intended during and after test. Note 2: During the test, there is loss of function. After the test, any changes were self-recoverable.				

7 Conclusion

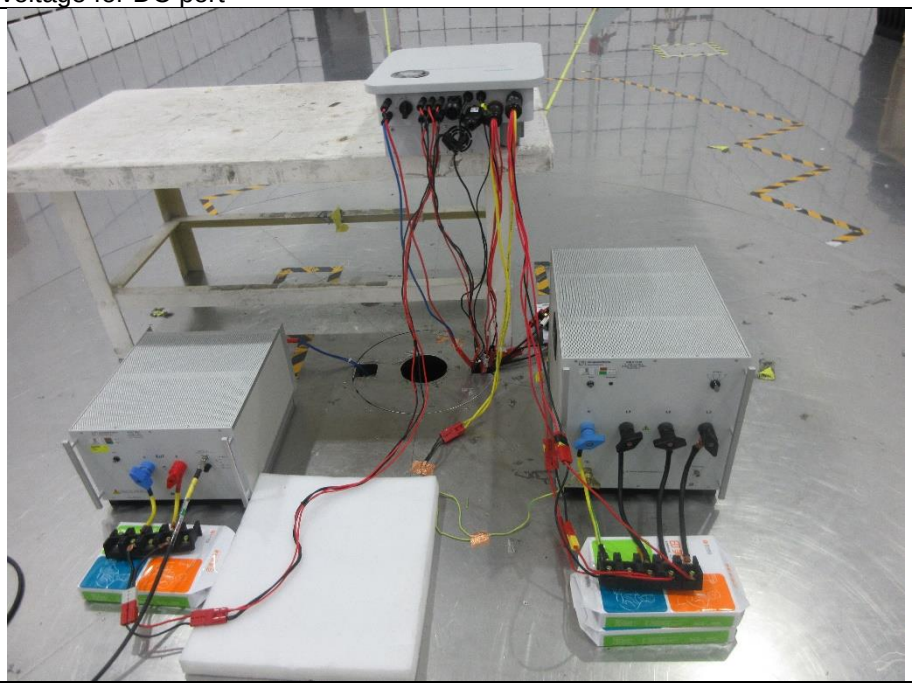
The apparatus Hybrid Inverter and models SWH005KH-T1, SWH008KH-T1, SWH010KH-T1, SWH012KH-T1, SWH015KH-T1 are in compliance with the requirements of the standards EN IEC 61000-6-3:2021, EN IEC 61000-6-1:2019.

Appendix A: Photograph of test setup

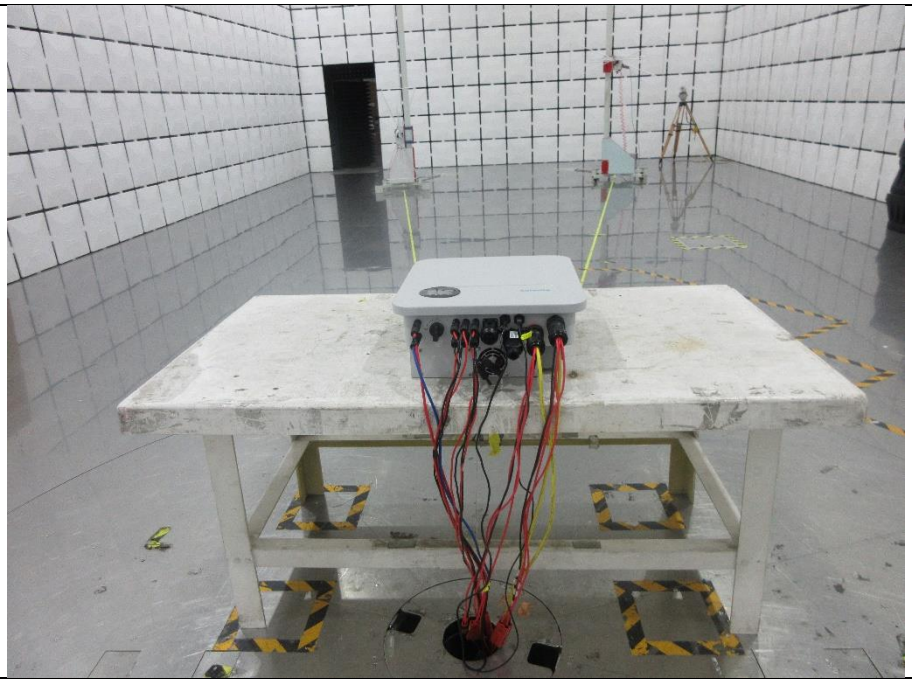
1. Disturbance voltage for AC port



Disturbance voltage for DC port



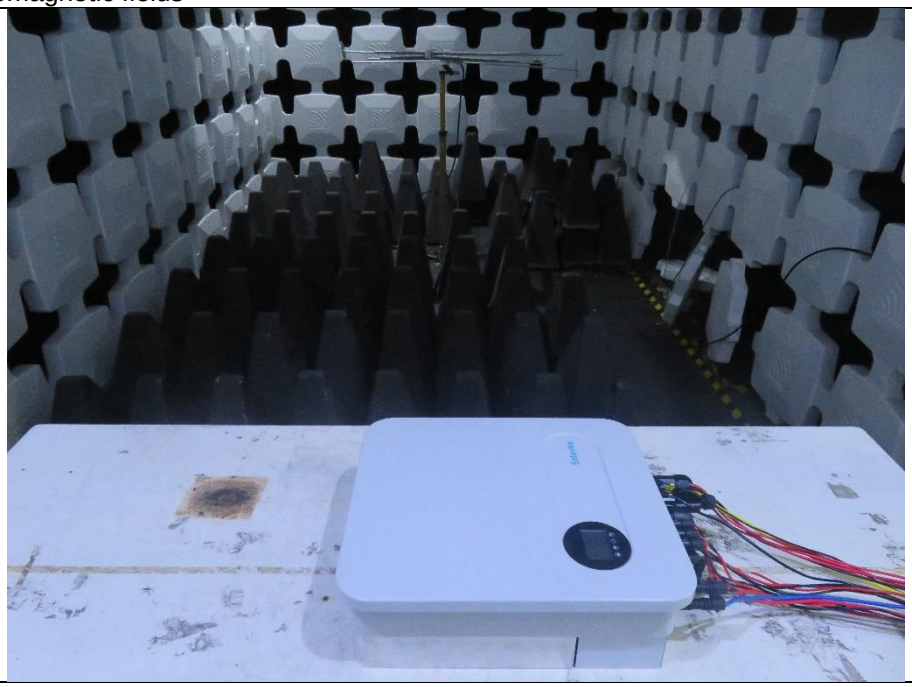
2. Radiated emission

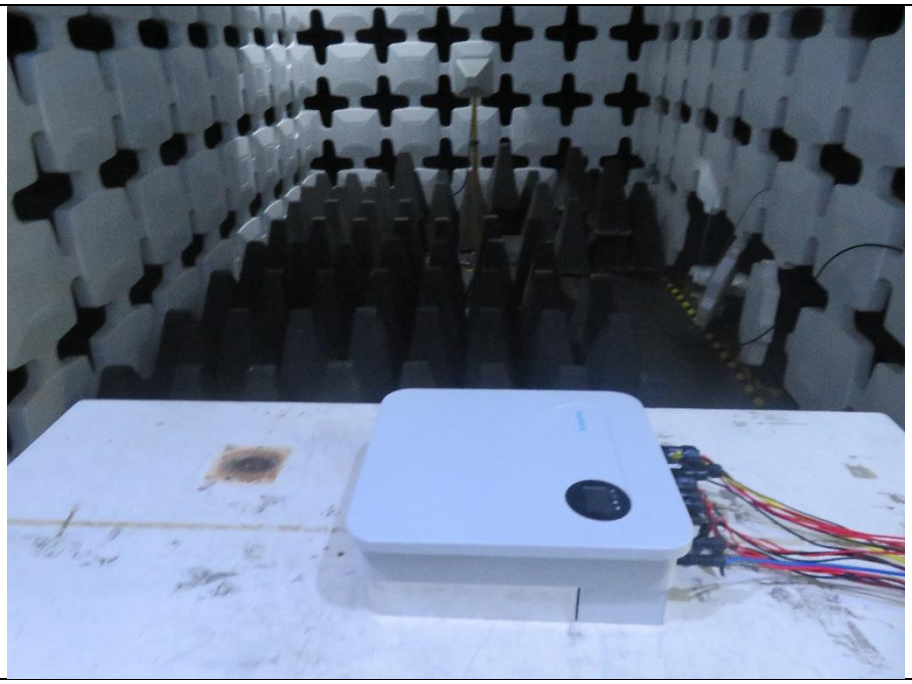


3. Harmonic current emission & Voltage fluctuation and flicker

4. Electrostatic discharge

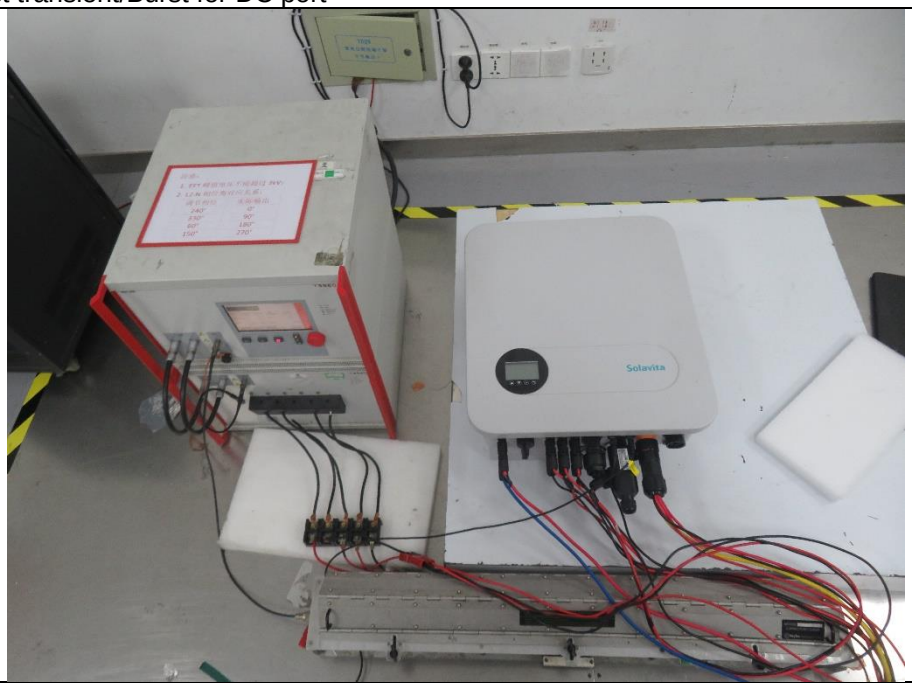
5. RF electromagnetic fields





6. Electrical fast transient/Burst for AC port

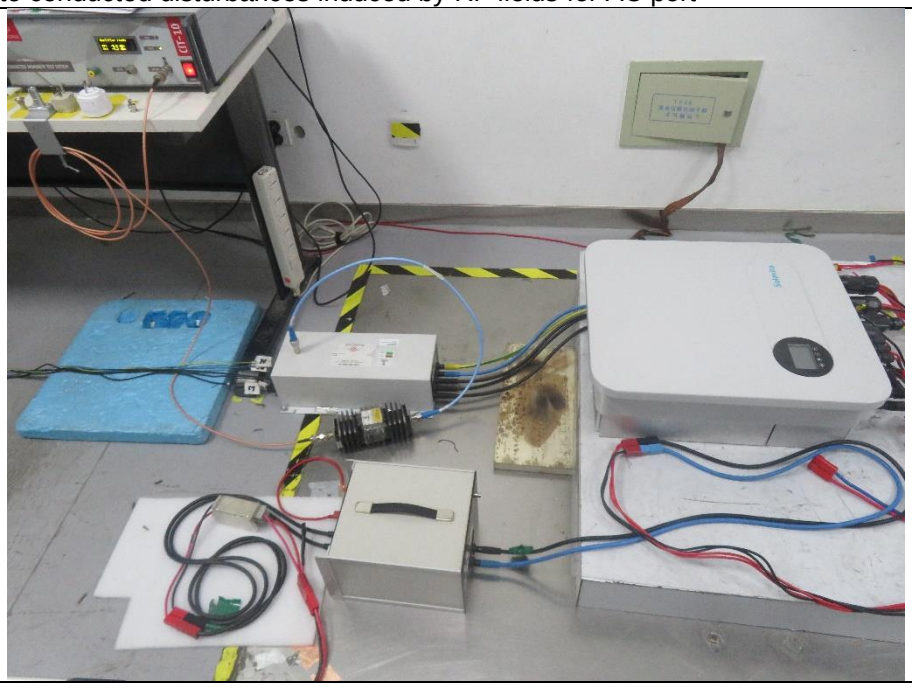
Electrical fast transient/Burst for DC port



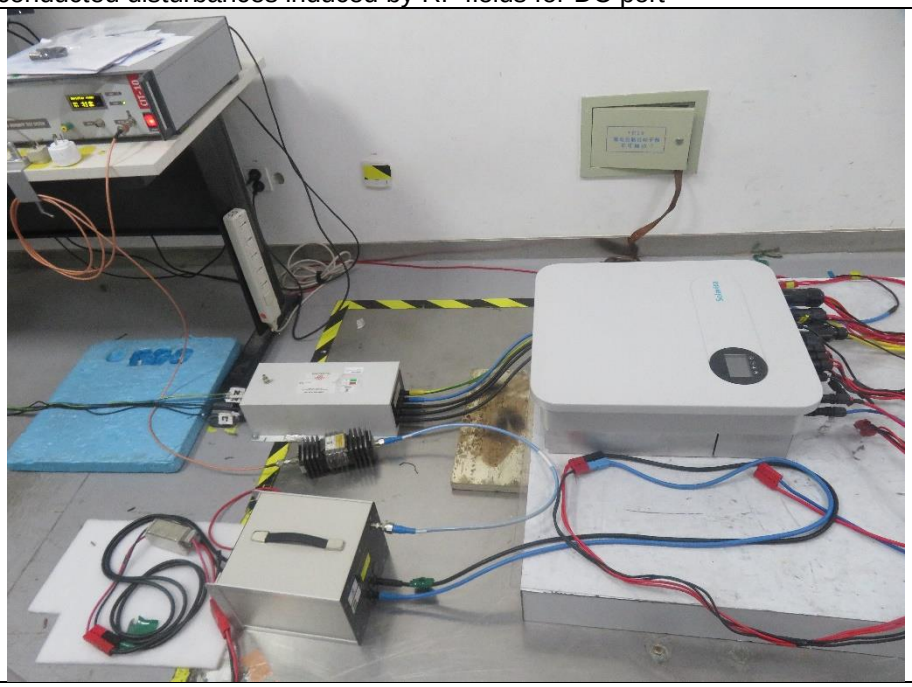
7. Surge for AC port

Surge for DC port

8. Immunity to conducted disturbances induced by RF fields for AC port



Immunity to conducted disturbances induced by RF fields for DC port



9. Power frequency magnetic field

10. Voltage dips and short interruptions

Appendix B: Photograph of sample