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Test report No: 4390416.50

TEST REPORT

Electromagnetic Compatibility (EMC)

Identification of item tested	Split-Type Air-Conditioner
Trademark	TCL
Model and /or type reference	TAC-09CHSD/*I3A, TAC-12CHSD/*I3A, TAC-18CHSD/*I3A, TAC-24CHSD/*I3A (* = TP11, TP21, TP31, TP41, TP51, TP61, TP71, TP72, TP81, TP91, TPA1, TPB1, TPC1, TPC2, TPD1, TPD2, TPE1, TPE2, TPG11, TPG21, TPG31)
Features	220-240 V~, 50 Hz, Class I
Applicant´s name / address	TCL Air Conditioner (Zhong Shan) Co., Ltd. No.59 Nantou Road West, Nantou Town, Zhongshan City, Guangdong, China
Test method requested, standard	EN 55014-1:2017+A11:2020, EN 55014-2:2015, EN IEC 55014-1:2021; EN IEC 55014-2:2021; EN IEC 61000-3-2:2019+A1:2021; EN 61000-3-3:2013+A1:2019+A2:2021
Verdict Summary	COMPLIANCE
Tested by (name / signature)	Kenny Liang
Approved by (name / signature)	Tim Yan
Date of issue	2022-10-17
Report template No	TRF_EMC 2017-01-14

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GENERAL CONDITIONS

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
5. This report will not be used for social proof function in China market.

UNCERTAINTY

For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in EN 55016-4-2 (CISPR 16-4-2), EN/IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. Refer to the Annex 1 for furter information.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

☒ Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.				
☐ Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.				
Decimal separator used in this report	☒	Comma (,)	☐	Point (.)

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	:	Equipment Under Test
QP	:	Quasi-Peak
CAV	:	CISPR Average
AV	:	Average
CDN	:	Coupling Decoupling Network
SAC	:	Semi-Anechoic Chamber
OATS	:	Open Area Test Site
BW	:	Bandwidth
AM	:	Amplitude Modulation
PM	:	Pulse Modulation
HCP	:	Horizontal Coupling Plane
VCP	:	Vertical Coupling Plane
U_N	:	Nominal voltage

DOCUMENT HISTORY

Report nr.	Date	Description
4390416.50	2022-10-17	First release.

REMARKS AND COMMENTS

The equipment under test (EUT) does meet the requirements of the stated standard(s)/test(s).

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item .....:	Split-Type Air-Conditioner
Trademark .....:	TCL
Model / Type number .....:	TAC-09CHSD/*I3A, TAC-12CHSD/*I3A, TAC-18CHSD/*I3A, TAC-24CHSD/*I3A (* = TP11, TP21, TP31, TP41, TP51, TP61, TP71, TP72, TP81, TP91, TPA1, TPB1, TPC1, TPC2, TPD1, TPD2, TPE1, TPE2, TPG11, TPG21, TPG31)
Ratings .....:	220-240 V~, 50 Hz, Class I
Manufacturer.....:	Same as applicant
Factory .....:	TCL Air conditioner (Zhong Shan) Co., Ltd. No. 59, Nantou Road West, Nantou, Zhongshan, Guangdong, China

			Reference poles				
Rated power supply .....:	Voltage and Frequency		L1	L2	L3	N	PE
	☒	AC: 220-240 V, 50 Hz	☒	☐	☐	☒	☒
	☐	AC:	☐	☐	☐	☐	☐
	☐	DC:					
	☐	Battery:					
Clock frequencies .....:	Less than 15MHz						
Mounting position.....:	☐	Table top equipment					
	☐	Wall/Ceiling mounted equipment					
	☒	Floor standing equipment					
	☐	Hand-held equipment					
	☐	Other:					

According to customer's declaration, the products contain RF wireless module(WIFI+BLE) and the characteristics are:

For BLE characteristics:

Operating frequency range(s) – Tx :	2402-2480 MHz
Operating frequency range(s) – Rx :	2402-2480 MHz
Type of Modulation ..... :	GFSK
Maximum RF output power ..... :	6 dBm
Antenna type..... :	Integral Antenna
Antenna gain..... :	2,5 dBi
Adaptivity	Adaptive
Geo-location Capability ..... :	Not Support
Number of channel..... :	40
Operating Temperature Range..... :	-10 – +40 ℃

For WIFI characteristics:

Operating frequency range(s) – Tx :	2412-2472 MHz
Operating frequency range(s) – Rx :	2412-2472 MHz
Type of Modulation ..... :	IEEE 802.11b: DSSS(CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM(64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT20: OFDM(64-QAM, 16-QAM, QPSK, BPSK)
Data Rate ..... :	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS7
Geo-location Capability ..... :	Not Support
Adaptivity..... :	Adaptive
Maximum RF output power(EIRP). :	20 dBm
Antenna type..... :	Integral Antenna
Antenna gain..... :	2,5 dBi
Number of channel..... :	IEEE 802.11b: 13 IEEE 802.11g: 13 IEEE 802.11n-HT20: 13
Operating Temperature Range..... :	-10 – +40 ℃

Intended use of the Equipment Under Test (EUT)
The apparatus as supplied for the test are split type air conditioners which have cooling and heating functions and intended for residential use. The products contain electronic control circuitry and earth connection. Models TAC-09CHSD/*I3A, TAC-12CHSD/*I3A, TAC-18CHSD/*I3A, TAC-24CHSD/*I3A have similar construction except for the size and components. In the model name, * = TP11, TP21, TP31, TP41, TP51, TP61, TP71, TP72, TP81, TP91, TPA1, TPB1, TPC1, TPC2, TPD1, TPD2, TPE1, TPE2, TPG11, TPG21, TPG31 which indicates different panel of indoor unit. Hence, models TAC-09CHSD/ TP11I3A, TAC-12CHSD/ TP11I3A, TAC-18CHSD/ TP11I3A, TAC-24CHSD/ TP11I3A were chosen for full test and the corresponding data are also representative for other models as well.

No	Module/parts of test item	Type	Manufacturer

No	Documents as provided by the applicant - Description	File name	Issue date

Modifications to the test item during testing .....:	☒	N/A	☐	

Copy of marking plate:
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Not provided.

1.2 Environment

The requirements and standards apply to equipment intended for use in:

☒	Residential (domestic) environment.
☒	Commercial and light-industrial environment.
☐	Industrial environment.

1.3 Test data

Test Location	DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
Date of receipt of test item	2022-05-26
Date (s) of performance of tests	2022-05-26 to 2022-07-27

1.4 Classification of apparatus

The standard EN IEC 55014-2:2021 is subdivided in five categories. For each category, specific immunity requirements are formulated.

☐	**Category I:** Apparatus containing no electronic control circuitry. Examples: Motor operated appliances, lighting toys, track sets without electronic control units, tools, heating appliances, UV and IR radiators and apparatus containing components such as electromechanical switches and thermostats. Electric circuits consisting of passive components (such as radio interference suppression capacitors or inductors, mains transformers and mains frequency rectifiers) are not considered to be electronic control circuitry.
☒	**Category II:** Mains operated equipment containing electronic control circuitry with no clock frequency higher than 15 MHz.
☐	**Category III:** Battery operated equipment not included in Category I. EXAMPLES Appliances, tools and toys powered by batteries and that include a microprocessor to provide a selection of functions. NOTE The assignment to Category III is independent of the clock frequency.
☐	**Category IV:** Mains operated equipment containing electronic control circuitry with a highest clock frequency greater than 15 MHz but lower than or equal to 200 MHz.
☐	**Category V:** Mains operated equipment containing electronic control circuitry with a highest clock frequency greater than 200 MHz.
Clock frequency: Fundamental frequency of any signal used in the device, excluding those which are solely	

used inside integrated circuits (IC).

The standard EN 55014-2:2015 is subdivided in four categories. For each category, specific immunity requirements are formulated.

☐	**Category I:** Apparatus containing no electronic control circuitry. Examples: Motor operated appliances, lighting toys, track sets without electronic control units, tools, heating appliances, UV and IR radiators and apparatus containing components such as electromechanical switches and thermostats. Electric circuits consisting of passive components (such as radio interference suppression capacitors or inductors, mains transformers and mains frequency rectifiers) are not considered to be electronic control circuitry.
☒	**Category II:** Transformer toys, dual supply toys, mains powered motor operated appliances, tools, heating appliances and similar electric apparatus (for example – UV radiators, IR radiators and microwave ovens) containing electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15 MHz.
☐	**Category III:** Battery powered apparatus (with built-in batteries or external batteries), which in normal use is not connected to the mains, containing an electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15 MHz.
☐	**Category IV:** All other apparatus covered by the scope of the EN 55014-2 standard.
Clock frequency: Fundamental frequency of any signal used in the device, excluding those which are solely used inside integrated circuits (IC).	

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Operating mode	Operating mode description	Used for testing	
		Emission	Immunity
1	Cooling mode keep swinging at high speed and adjust the EUT temperature at the lowest temperature position	☒	☒
2	Heating mode keep swinging at high speed and adjust the EUT temperature at the highest temperature position	☒	☒
Supplemental information:			

2.2 Port(s) of the EUT

Port name and description	Connected to / Termination	Cable		
		Length used during test [m]	Attached during test	Shielded
AC mains	AC network	0,8	☒	☐
Signal	Indoor and outdoor	5	☒	☐
			☐	☐
Supplemental information:				

2.3 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment / unit / software	Type / Version	Manufacturer	Supplied by
Supplemental information: N/A			

2.4 Test Configuration / Block diagram used for tests

The following test setup / configuration / block diagram has been used during the tests:
N/A

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
EN 55014-1 +A11	2017 2020	Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission.
EN IEC 55014-1	2021	Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission.
EN 55016-2-1 +A1	2014 2017	Methods of measurement of disturbances and immunity - Conducted disturbance measurements.
EN 55016-2-2	2011	Methods of measurement of disturbances and immunity – Measurement of disturbance power.
EN 55016-2-3 +A1	2017 2019	Methods of measurement of disturbances and immunity - Radiated disturbance measurements.
EN IEC 61000-3-2 +A1	2019 2021	Limits for harmonic current emissions (equipment input current ≤ 16 A per phase).
EN 61000-3-3 +A1 +A2	2013 2019 2021	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.
EN 55014-2	2015	Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity – Product family standard.
EN IEC 55014-2	2021	Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity – Product family standard.
EN 61000-4-2	2009	Electrostatic discharge immunity test.
EN 61000-4-3 +A1 +A2	2006 2008 2010	Radiated, radio-frequency, electromagnetic field immunity test.
EN 61000-4-4	2012	Electrical fast transient/burst immunity test.
EN 61000-4-5 +A1	2014 2017	Surge immunity test.
EN 61000-4-6	2014	Immunity to conducted disturbances, induced by radio-frequency fields.
EN 61000-4-11	2020	Voltage dips, short interruptions and voltage variations immunity tests.

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards:
N/A.

3.3 Overview of results

EMISSION TESTS – EN 55014-1			
Requirement – Test case	**Basic standard(s)**	**Verdict**	**Remark**
Continuous disturbances (Induction cooking) (9 kHz to 30 MHz)	EN 55016-2-1	N/A	---
Magnetic field (Induction cooking) (9 kHz – 30 MHz)	EN 55016-2-3	N/A	
Conducted disturbance voltage at mains terminals (150 KHz – 30 MHz)	EN 55016-2-1	PASS	---
Conducted disturbance current at associated ports (150 KHz – 30 MHz)	EN 55016-2-1	PASS	---
Disturbance power (30 MHz to 300 MHz)	EN 55016-2-2	PASS	
Radiated electromagnetic disturbances (30 - 1000 MHz)	EN 55016-2-3	PASS	See 1)
Discontinuous disturbance (clicks) on AC power leads	EN 55014-1	PASS	
Supplementary information: 1) The EUT met the both conditions 1) and 2) of clause 4.3.4.2 procedure (a) of the standard, therefore the EUT is deemed to comply in the frequency range from 300 MHz to 1000 MHz without further measurements.			

EMISSION TESTS – EN IEC 61000-3-2, EN 61000-3-3			
Requirement – Test case	**Basic standard(s)**	**Verdict**	**Remark**
Control principle shall be allowed for the application according to the clause 6.1	EN 61000-3-2	PASS	---
Harmonic current emissions	EN 61000-3-2	PASS	---
Voltage changes, voltage fluctuations and flicker	EN 61000-3-3	PASS	---
Supplementary information:			

IMMUNITY TESTS – EN 55014-2			
Requirement – Test case	**Basic standard(s)**	**Verdict**	**Remark**
Electrostatic discharge	EN 61000-4-2	PASS	---
Radio-frequency electromagnetic fields	EN 61000-4-3	N/A	---
Fast transients	EN 61000-4-4	PASS	---
Surge transient	EN 61000-4-5	PASS	---
Injected currents (radio-frequency common mode)	EN 61000-4-6	PASS	---
Voltage dips and short interruptions	EN 61000-4-11	PASS	---
Supplementary information:			

The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result.

4 EMISSION TEST RESULTS

4.1	Conducted disturbance voltage - Mains	VERDICT: PASS

Standard	EN 55014-1
Basic standard	EN 55016-2-1

☐ **Limits for induction cooking appliance**

Frequency range [MHz]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]	IF BW	Detector(s)
0,009 - 0,050	110	---	200 Hz	QP
0,050 - 0,15	90 – 80 [2)]	---	200 Hz	QP
0,15 - 0,50	66 – 56 [2)]	56 - 46 [2)]	9 KHz	QP, AV
0,50 - 5,0	56	46	9 KHz	QP, AV
5,0 - 30	60	50	9 KHz	QP, AV

[1)] At the transition frequency, the lower limit applies.
[2)] The limit decreases linearly with the logarithm of the frequency.

☒ **Limits for appliance other than induction cooking.**

Frequency range [MHz]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]	IF BW	Detector(s)
0,15 - 0,50	66 – 56 [2)]	59 - 46 [2)]	9 KHz	QP, AV
0,50 - 5,0	56	46	9 KHz	QP, AV
5,0 - 30	60	50	9 KHz	QP, AV

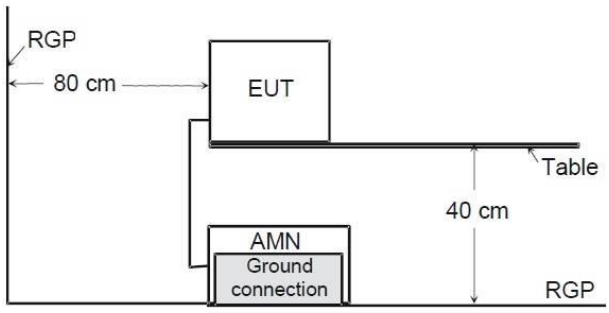
[1)] At the transition frequency, the lower limit applies.
[2)] The limit decreases linearly with the logarithm of the frequency.

Performed measurements

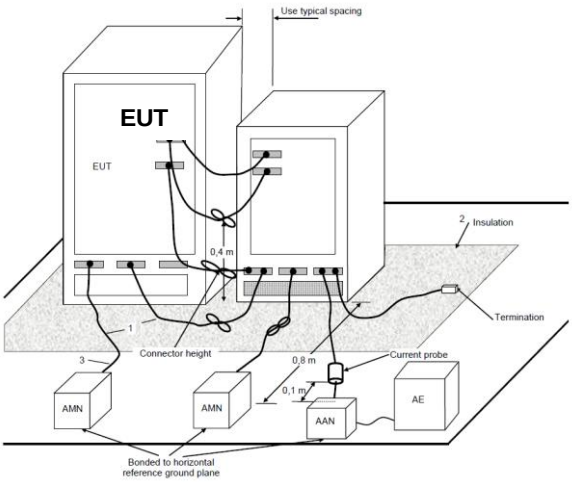
Tested terminal(s) / port	☒	AC mains input power	☒	N	☒	L1	☐	L2	☐	L3
	☐	DC mains input power	☐	Positive (+)			☐	Negative (-)		
Voltage – Mains [V]	230 Vac									
Frequency – Mains [Hz]	50 Hz									
Test method applied	☒	Artificial mains network								
	☐	Voltage probe								
Test setup	☐	Table top	☐	Artificial hand applied						
	☒	Floor standing	☐	Other:						
	Refer to the Annex 3 for test setup photo(s).									
Operating mode(s) used	Mode 1 and 2									
Remark	---									

See next page.

Test Configuration



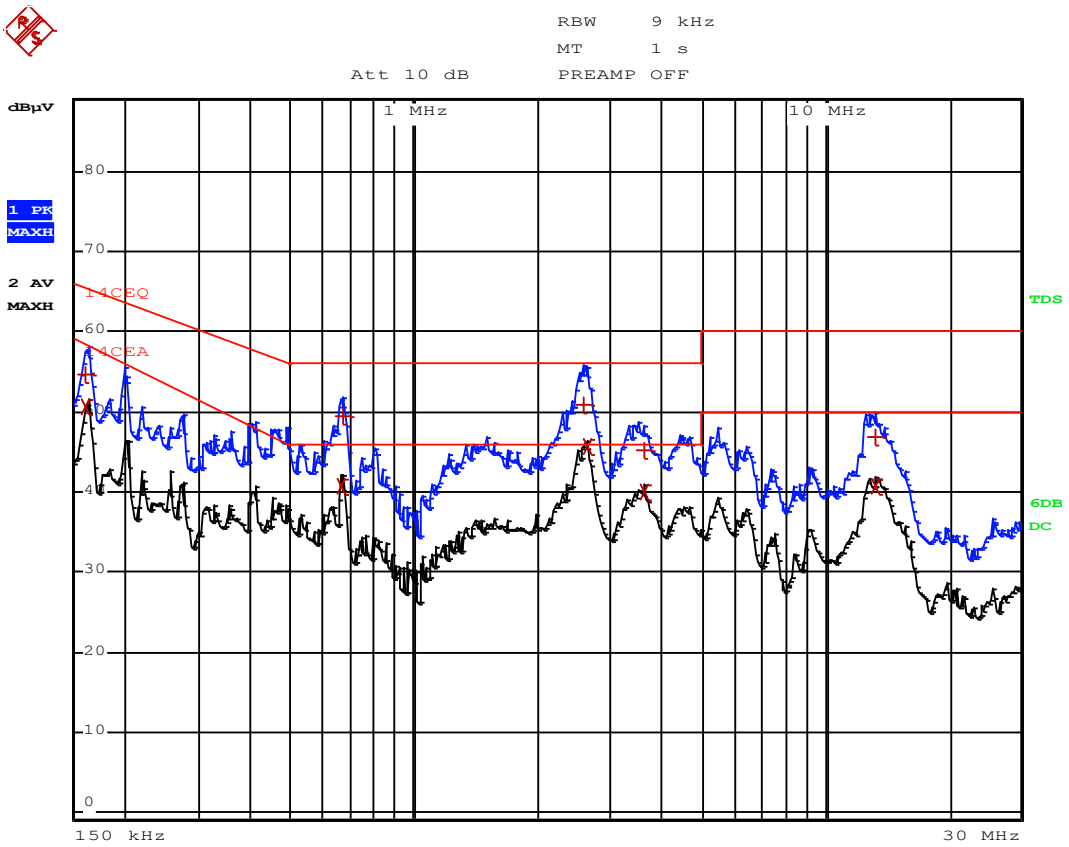
Test setup for “Table-top” DUT.



Test setup for “Floor-standing” DUT.

Measurement data of TAC-09CHSD/ TP11I3A	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 2 / 230 Vac / 50 Hz – worst case

Live



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14CEQ
Trace2:	14CEA
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	2.634 MHz	45.65	-0.34
1 Quasi Peak	2.602 MHz	50.95	-5.04
2 Average	662 kHz	40.78	-5.21
2 Average	3.63 MHz	39.94	-6.05
1 Quasi Peak	670 kHz	49.54	-6.45
2 Average	162 kHz	50.63	-7.53
2 Average	13.274 MHz	40.69	-9.30
1 Quasi Peak	162 kHz	54.71	-10.64
1 Quasi Peak	3.63 MHz	45.14	-10.85
1 Quasi Peak	13.274 MHz	46.89	-13.10

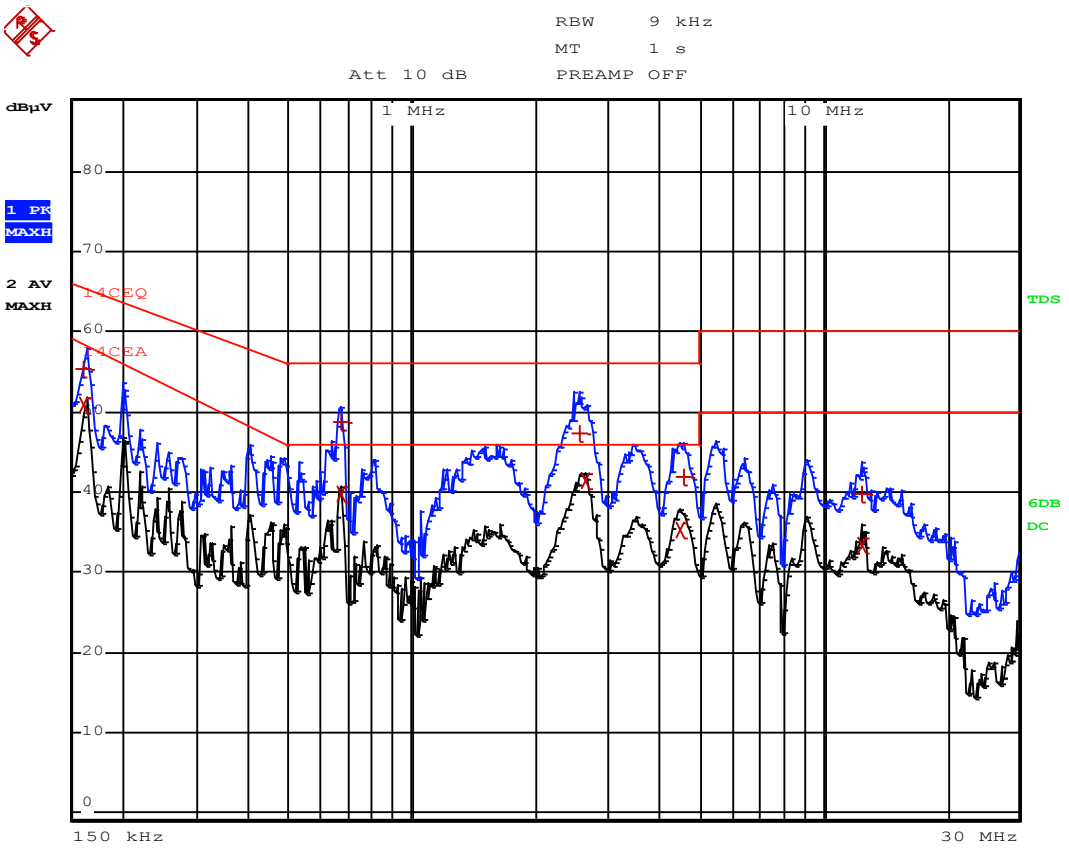
Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-09CHSD/ TP11I3A	Port under test	AC mains power input

Neutral



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14CEQ
Trace2:	14CEA
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	2.654 MHz	41.30	-4.69
2 Average	670 kHz	39.76	-6.23
1 Quasi Peak	670 kHz	48.77	-7.23
2 Average	162 kHz	50.84	-7.32
1 Quasi Peak	2.554 MHz	47.29	-8.70
1 Quasi Peak	162 kHz	55.24	-10.11
2 Average	4.518 MHz	35.32	-10.67
1 Quasi Peak	4.57 MHz	41.76	-14.23
2 Average	12.434 MHz	33.32	-16.67
1 Quasi Peak	12.474 MHz	39.81	-20.18

Remarks:

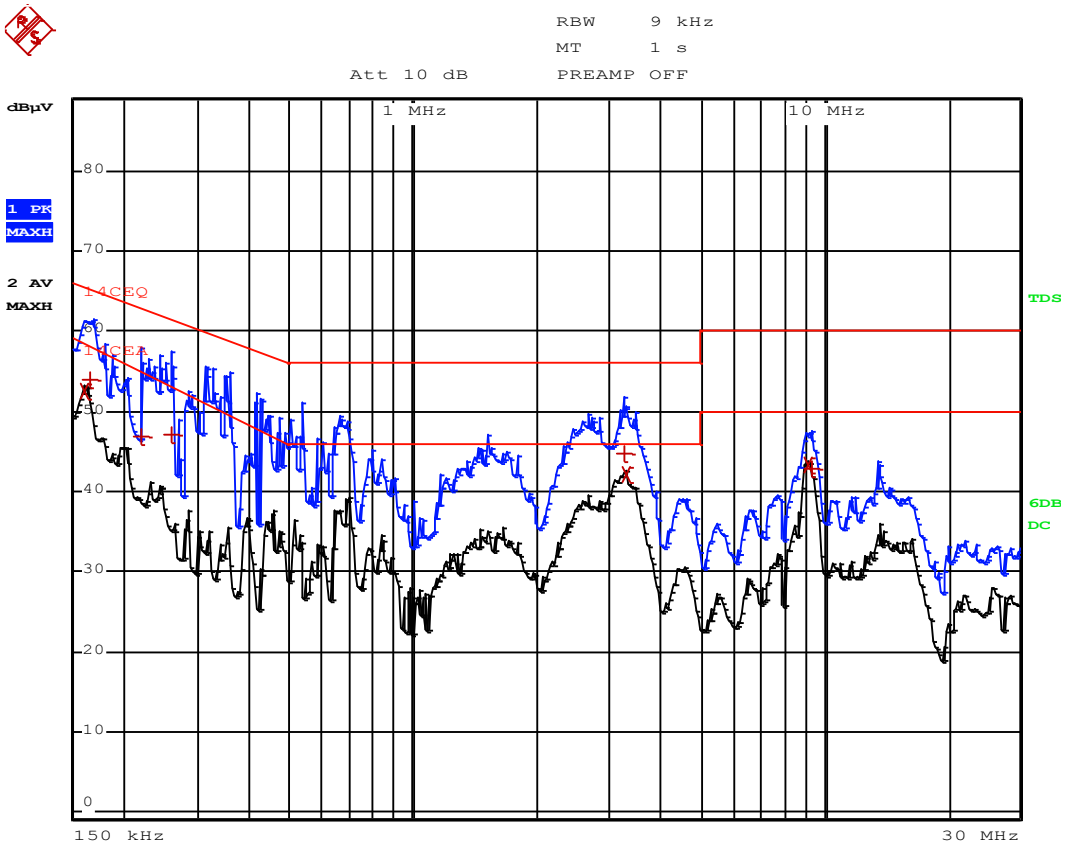
1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Live



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14CEQ		
Trace2:	14CEA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	3.302 MHz	42.11	-3.88
2 Average	162 kHz	52.53	-5.63
2 Average	9.194 MHz	43.38	-6.61
1 Quasi Peak	166 kHz	53.90	-11.25
1 Quasi Peak	3.27 MHz	44.67	-11.32
1 Quasi Peak	258 kHz	47.15	-14.33
1 Quasi Peak	218 kHz	46.93	-15.95
1 Quasi Peak	9.354 MHz	42.77	-17.22

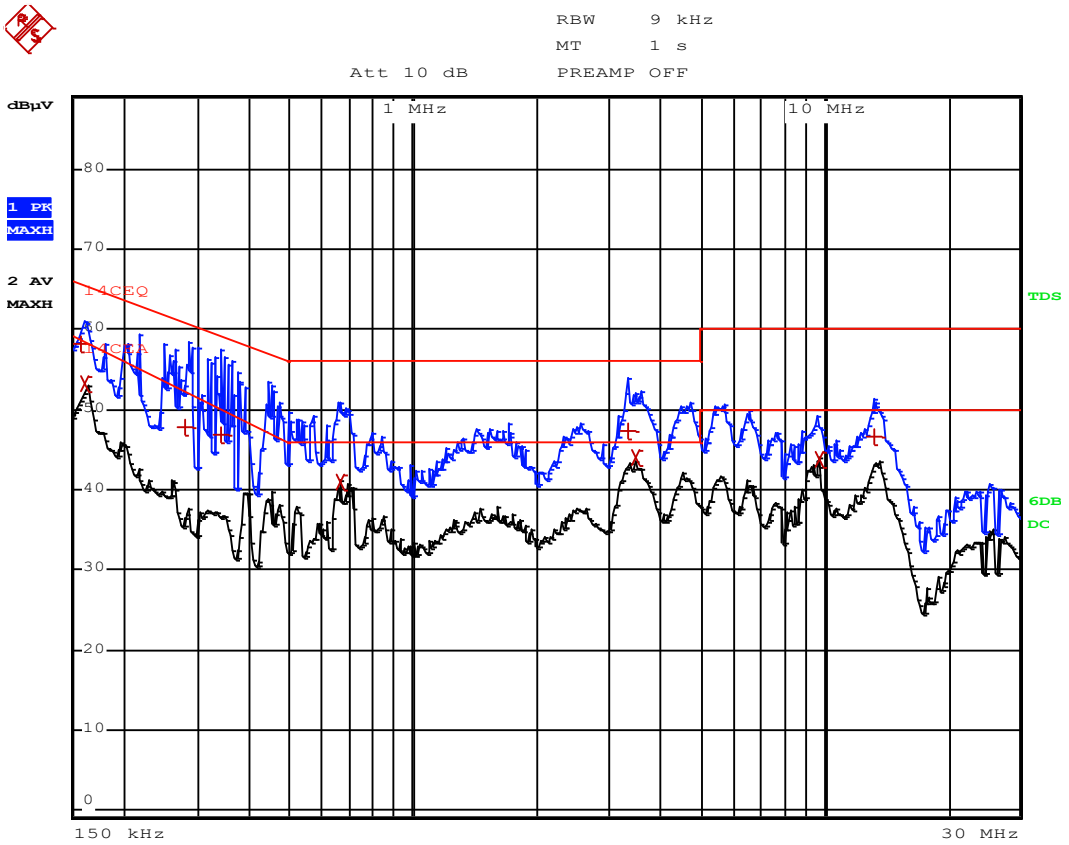
Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	AC mains power input

Neutral



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14CEQ
Trace2:	14CEA
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	3.478 MHz	43.90	-2.09
2 Average	162 kHz	53.27	-4.89
2 Average	666 kHz	40.85	-5.14
2 Average	9.714 MHz	43.85	-6.14
1 Quasi Peak	158 kHz	58.20	-7.35
1 Quasi Peak	3.338 MHz	47.39	-8.60
1 Quasi Peak	337.6 kHz	46.72	-12.53
1 Quasi Peak	282 kHz	47.84	-12.91
1 Quasi Peak	13.314 MHz	46.56	-13.43

Remarks:

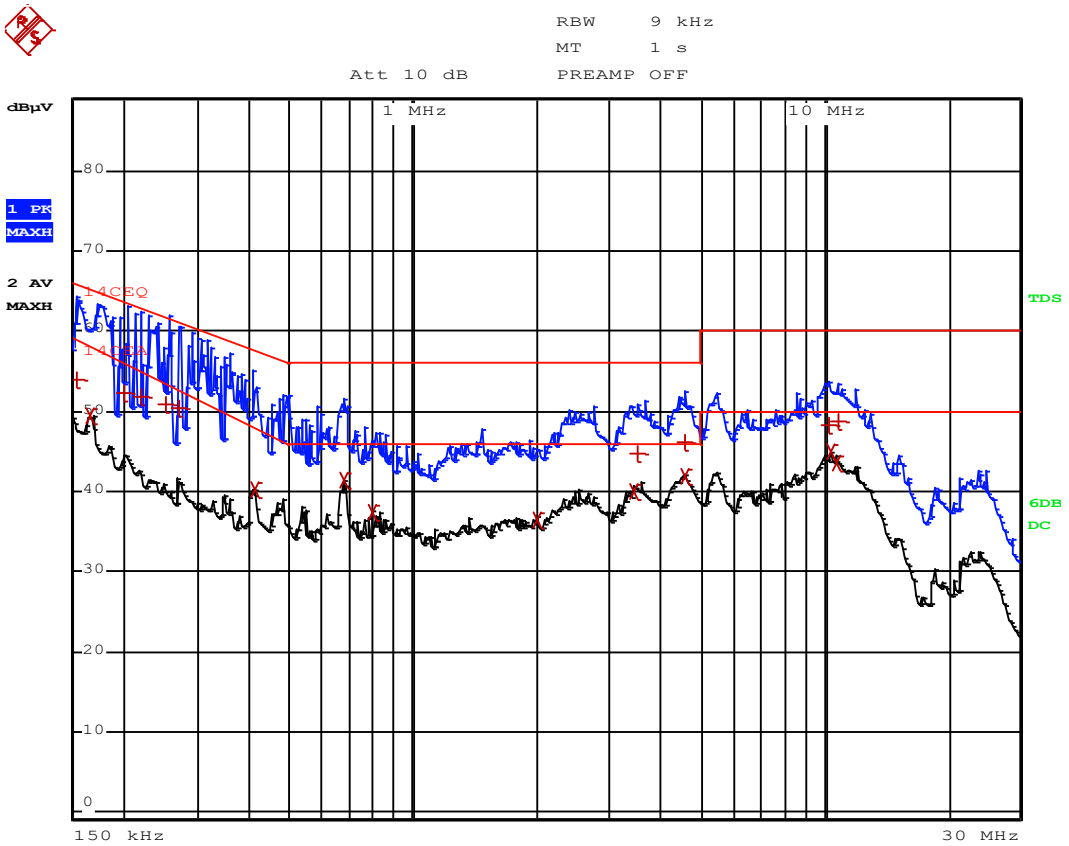
1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Live



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14CEQ		
Trace2:	14CEA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	4.57 MHz	41.78	-4.21
2 Average	682 kHz	41.29	-4.70
2 Average	10.37 MHz	44.84	-5.15
2 Average	3.446 MHz	39.97	-6.02
2 Average	10.734 MHz	43.50	-6.49
2 Average	410 kHz	40.33	-7.80
2 Average	166 kHz	49.49	-8.41
2 Average	798 kHz	37.34	-8.66
2 Average	2.006 MHz	36.52	-9.47
1 Quasi Peak	4.59 MHz	46.04	-9.95
1 Quasi Peak	270 kHz	50.45	-10.66
1 Quasi Peak	254 kHz	50.94	-10.67
1 Quasi Peak	218 kHz	51.75	-11.13
1 Quasi Peak	202 kHz	52.32	-11.20

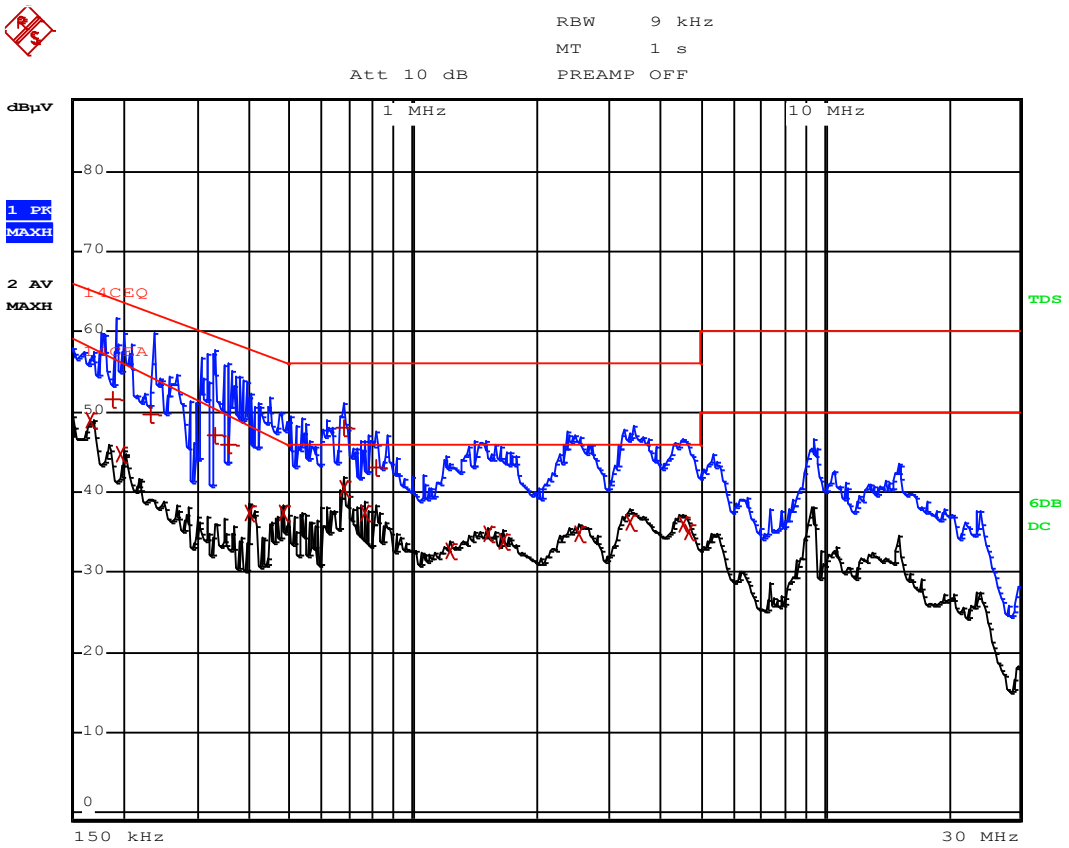
Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	AC mains power input

Neutral



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14CEQ		
Trace2:	14CEA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	678 kHz	40.49	-5.50
1 Quasi Peak	678 kHz	48.00	-7.99
2 Average	762 kHz	37.47	-8.52
2 Average	166 kHz	48.92	-8.97
2 Average	482 kHz	37.30	-9.09
2 Average	3.394 MHz	36.11	-9.88
2 Average	4.522 MHz	36.06	-9.94
2 Average	4.702 MHz	35.12	-10.87
2 Average	398 kHz	37.47	-10.98
2 Average	1.526 MHz	34.79	-11.20
2 Average	2.534 MHz	34.78	-11.21
2 Average	198 kHz	44.64	-11.36
2 Average	1.662 MHz	33.93	-12.06
1 Quasi Peak	330 kHz	47.16	-12.28

Remarks:

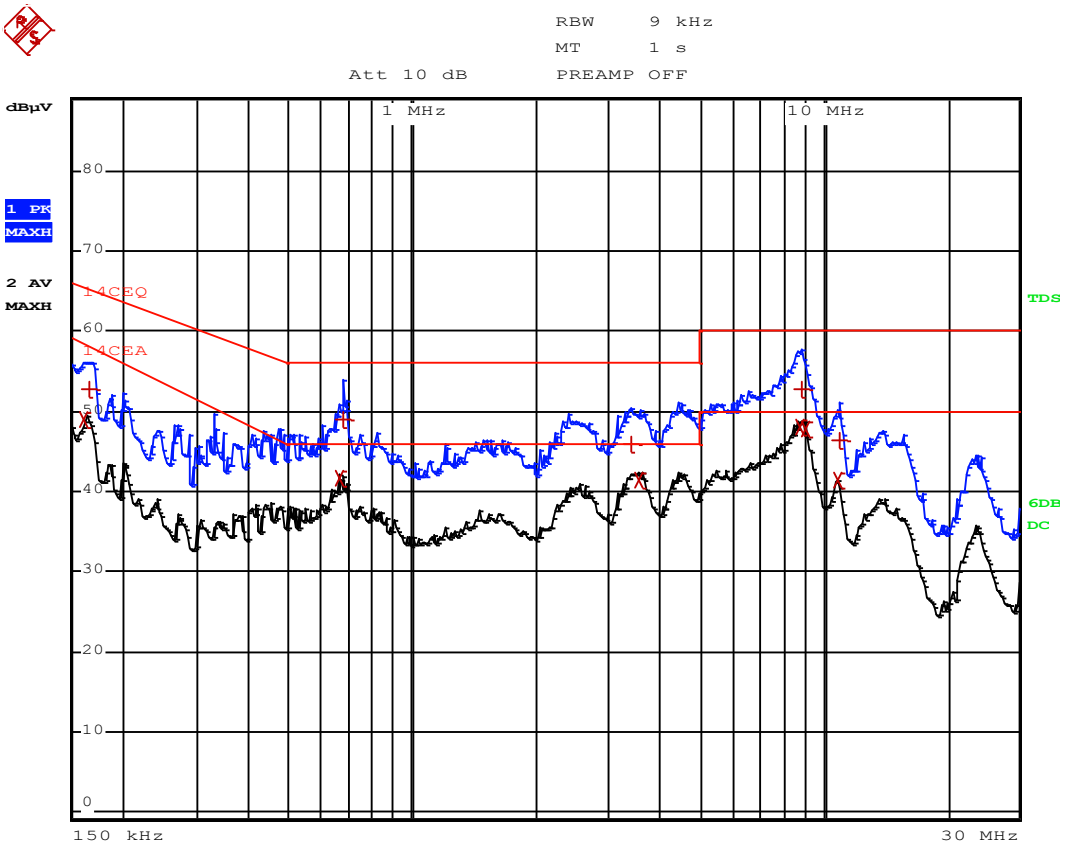
1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Live



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14CEQ		
Trace2:	14CEA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	8.818 MHz	48.09	-1.90
2 Average	9.042 MHz	47.77	-2.22
2 Average	666 kHz	41.66	-4.33
2 Average	3.554 MHz	41.34	-4.65
1 Quasi Peak	682 kHz	48.86	-7.13
1 Quasi Peak	8.882 MHz	52.83	-7.16
2 Average	10.802 MHz	41.28	-8.71
2 Average	162 kHz	48.85	-9.31
1 Quasi Peak	3.414 MHz	45.99	-10.00
1 Quasi Peak	166 kHz	52.71	-12.44
1 Quasi Peak	10.998 MHz	46.28	-13.71

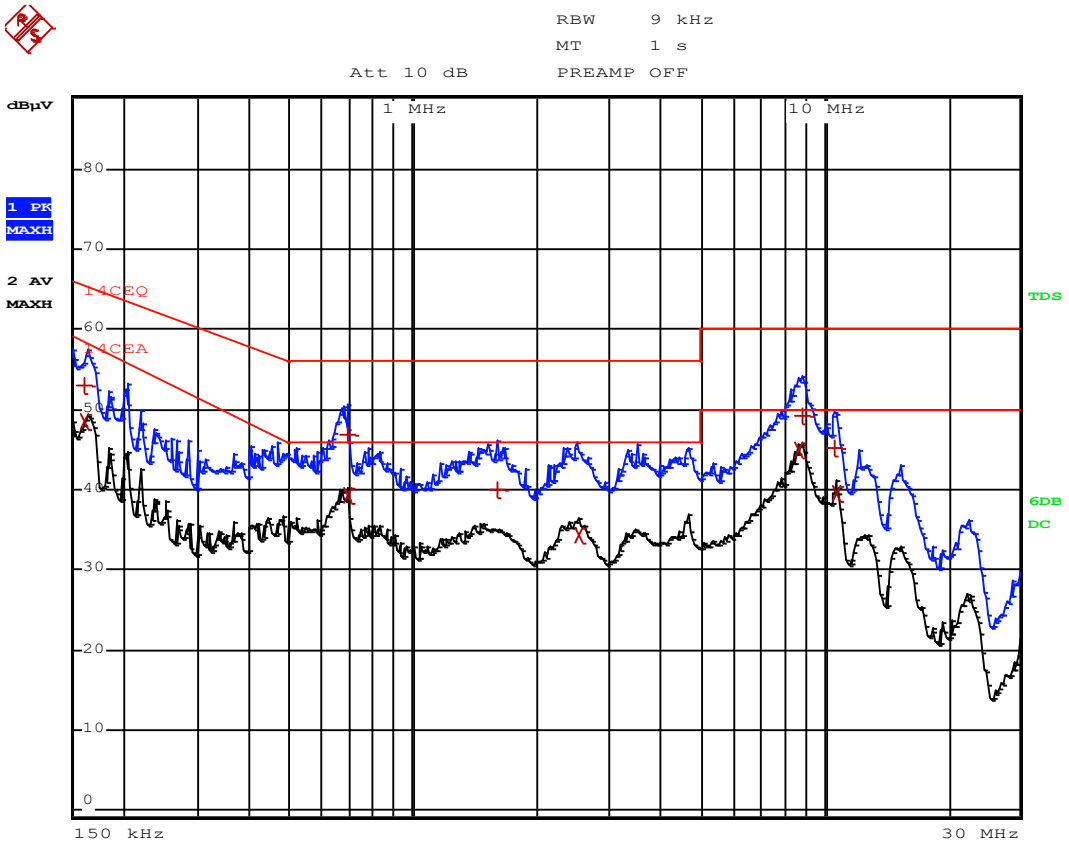
Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	AC mains power input

Neutral



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14CEQ
Trace2:	14CEA
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	8.718 MHz	44.98	-5.02
2 Average	690 kHz	39.17	-6.82
1 Quasi Peak	690 kHz	46.83	-9.16
2 Average	162 kHz	48.51	-9.65
2 Average	10.682 MHz	39.44	-10.55
1 Quasi Peak	8.882 MHz	49.25	-10.74
2 Average	2.53 MHz	34.25	-11.74
1 Quasi Peak	162 kHz	52.87	-12.48
1 Quasi Peak	10.642 MHz	45.24	-14.75
1 Quasi Peak	1.598 MHz	40.05	-15.94

Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

4.2	Magnetic field induced current (9 KHz – 30 MHz)	VERDICT: N/A

Standard	EN 55014-1
Basic standard	EN 55016-2-3
Test method	Large Loop Antenna (LLA)

Limits

Frequency range [MHz]	Limit: QP [dB(μA)[1)]]		IF BW	Detector
	Horizontal component	Vertical component		
0,009 - 0,07	88	106 ---	200 Hz	QP
0,07 - 0,15	88 - 58	106 - 76	200 Hz	QP
0,15 - 30	58 - 22	76 - 40	9 KHz	QP

[1)] At the transition frequency, the lower limit applies.
[2)] The limit decreases linearly with the logarithm of the frequency.

~~Performed measurements~~

~~Port under test~~	~~Enclosure~~
~~Test method applied~~	~~Large Loop Antenna (LLA) with 2 meters diameter.~~
~~Test setup~~	~~Equipment placed in the centre of the LLA.~~ ~~Refer to the Annex 3 for test setup photo(s).~~
~~Operating mode(s) used~~	~~--~~
~~Remark~~	~~---~~

4.3	Conducted Disturbance current–associated ports	VERDICT:	PASS

Standard	EN 55014-1
Basic standard	EN 55016-2-1

☐ **Disturbance voltage limits**

Frequency range [MHz]	Limit: QP [dB(µV)[1)]]	Limit: AV [dB(µV) [1)]]	IF BW	Detector(s)
0,15 - 0,50	80	70	9 KHz	QP, AV
0,50 5,0	74	64	9 KHz	QP, AV
5,0 - 30	74	64	9 KHz	QP, AV
[1)] At the transition frequency, the lower limit applies.				

☒ **Disturbance current limits**

Frequency range [MHz]	Limit: QP [dB(µA)]	Limit: AV [dB(µA)]	IF BW	Detector(s)
0,15 - 0,50	40 to 30[1)]	30 to 20[1)]	9 KHz	QP, AV
0,50 30	30	20	9 KHz	QP, AV
[1)] Decreasing linearly with the logarithm.				

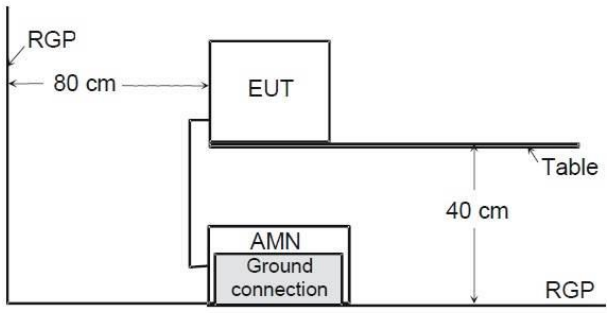
Performed measurements

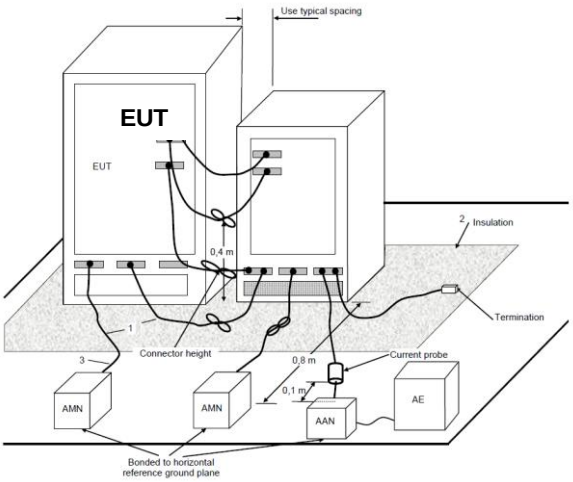
Port(s) / Terminal(s) under test			
☒	Signal ports	☐	Other:
☐	Other:	☐	Other:

Voltage – Mains [V]	230 Vac			
Frequency – Mains [Hz]	50 Hz			
Test method applied	☐	CDN according to EN / IEC 61000-4-6		
	☐	ISN – Impedance Stabilisation Network		
	☐	Voltage probe		
	☒	Current probe		
	☐	Artificial mains network		
	☐	Other:		
Test setup	☐	Table top	☐	Artificial hand applied
	☒	Floor standing	☐	Other:
	Refer to the Annex 3 for test setup photo(s).			
Operating mode(s) used	Mode 1, 2			
Remark	---			

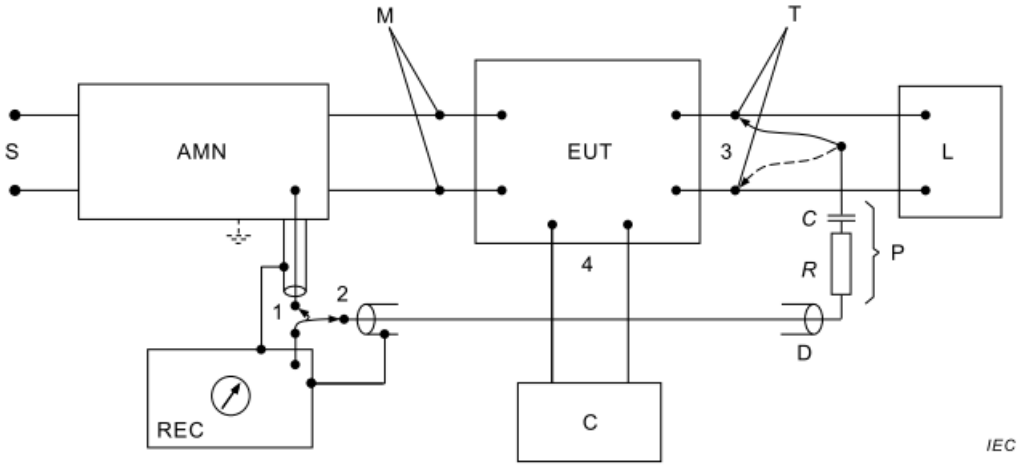
See next page.

Test Configuration



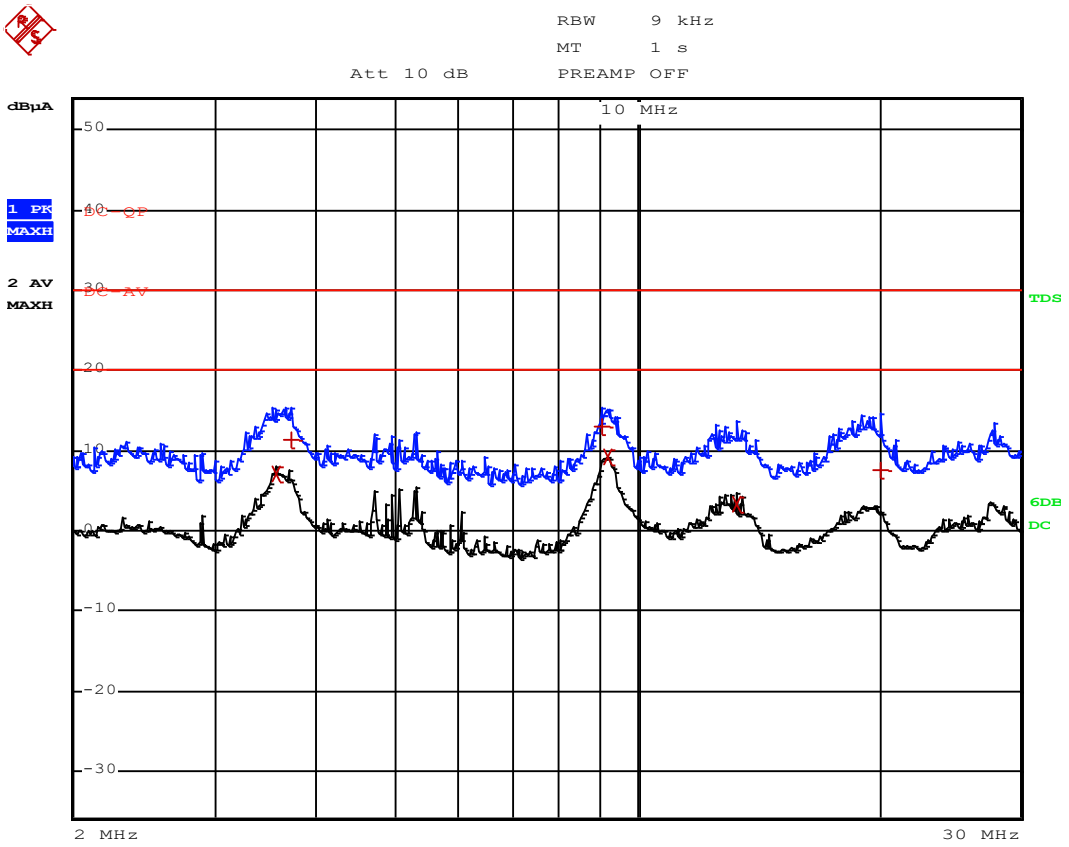


Test setup for "Table-top" DUT. | **Test setup for "Floor-standing" DUT.**



Measurement data of TAC-09CHSD/ TP11I3A	Port under test	Associated ports
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Result for interconnection line close to indoor unit:



EDIT PEAK LIST (Final Measurement Results)

Trace1:	DC-QP
Trace2:	DC-AV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµA	DELTA LIMIT dB
2 Average	9.196 MHz	9.34	-10.65
2 Average	3.572 MHz	7.16	-12.83
2 Average	13.276 MHz	3.26	-16.73
1 Quasi Peak	9.076 MHz	13.01	-16.98
1 Quasi Peak	3.72 MHz	11.26	-18.73
1 Quasi Peak	20.06 MHz	7.49	-22.50

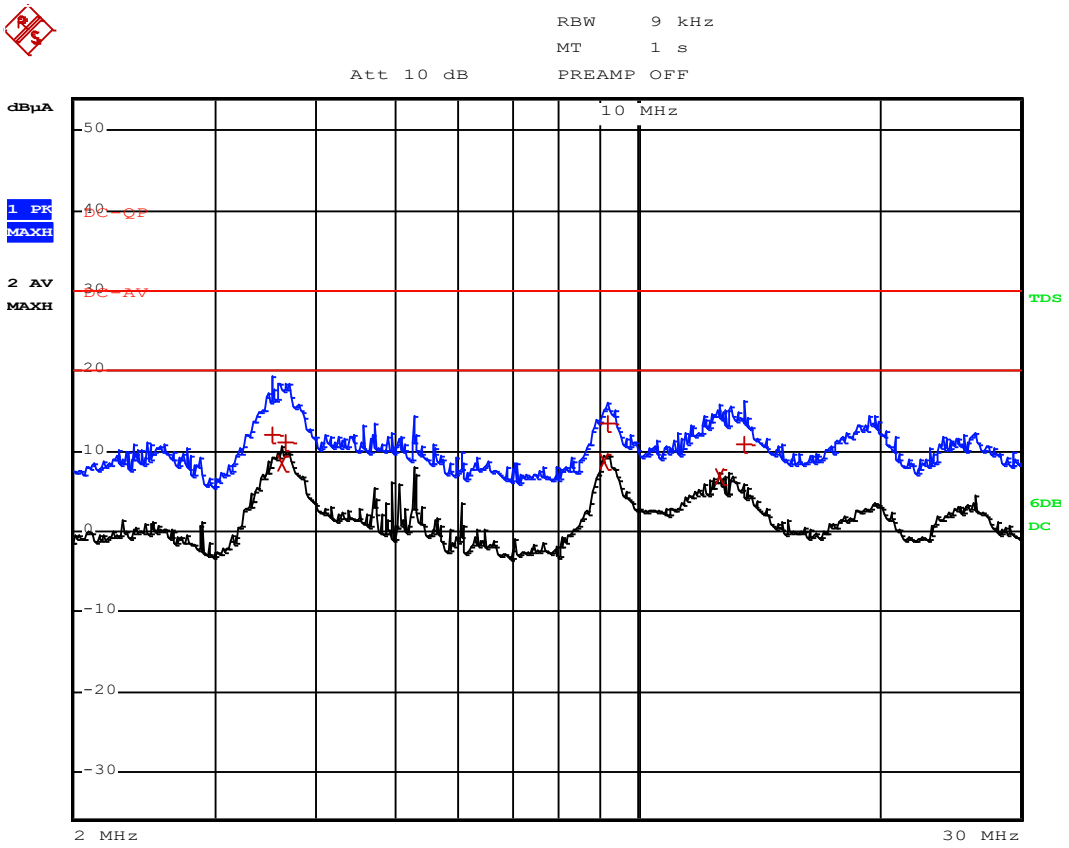
Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-09CHSD/ TP11I3A	Port under test	Associated ports

Result for interconnection line close to outdoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	DC-QP		
Trace2:	DC-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµA	DELTA LIMIT dB
2 Average	9.116 MHz	8.87	-11.12
2 Average	3.628 MHz	8.56	-11.43
2 Average	12.676 MHz	6.94	-13.05
1 Quasi Peak	9.196 MHz	13.47	-16.52
1 Quasi Peak	3.536 MHz	12.02	-17.97
1 Quasi Peak	3.668 MHz	11.22	-18.77
1 Quasi Peak	13.636 MHz	10.97	-19.02

Remarks:

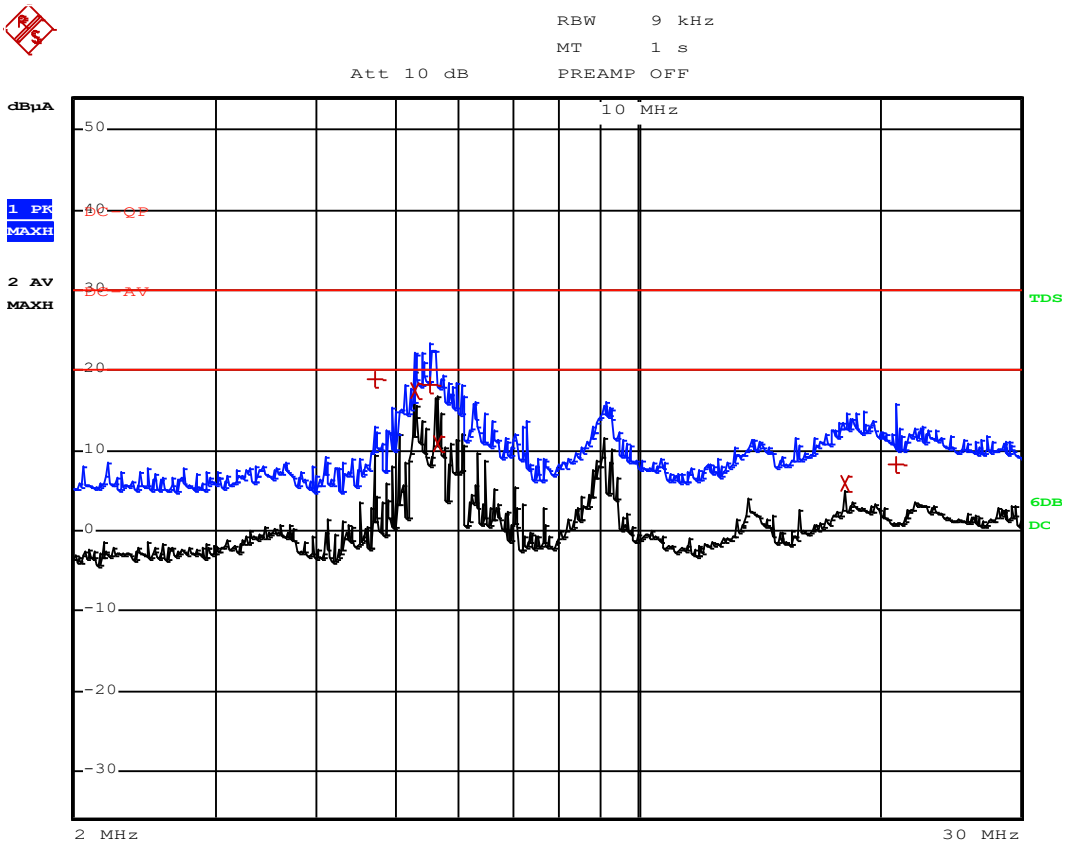
1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	Associated ports
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Result for interconnection line close to indoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	DC-QP		
Trace2:	DC-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµA	DELTA LIMIT dB
2 Average	5.313 MHz	17.54	-2.45
2 Average	5.66 MHz	10.83	-9.16
1 Quasi Peak	4.716 MHz	18.81	-11.18
1 Quasi Peak	5.532 MHz	18.22	-11.77
2 Average	18.14 MHz	5.93	-14.06
1 Quasi Peak	20.996 MHz	8.39	-21.60

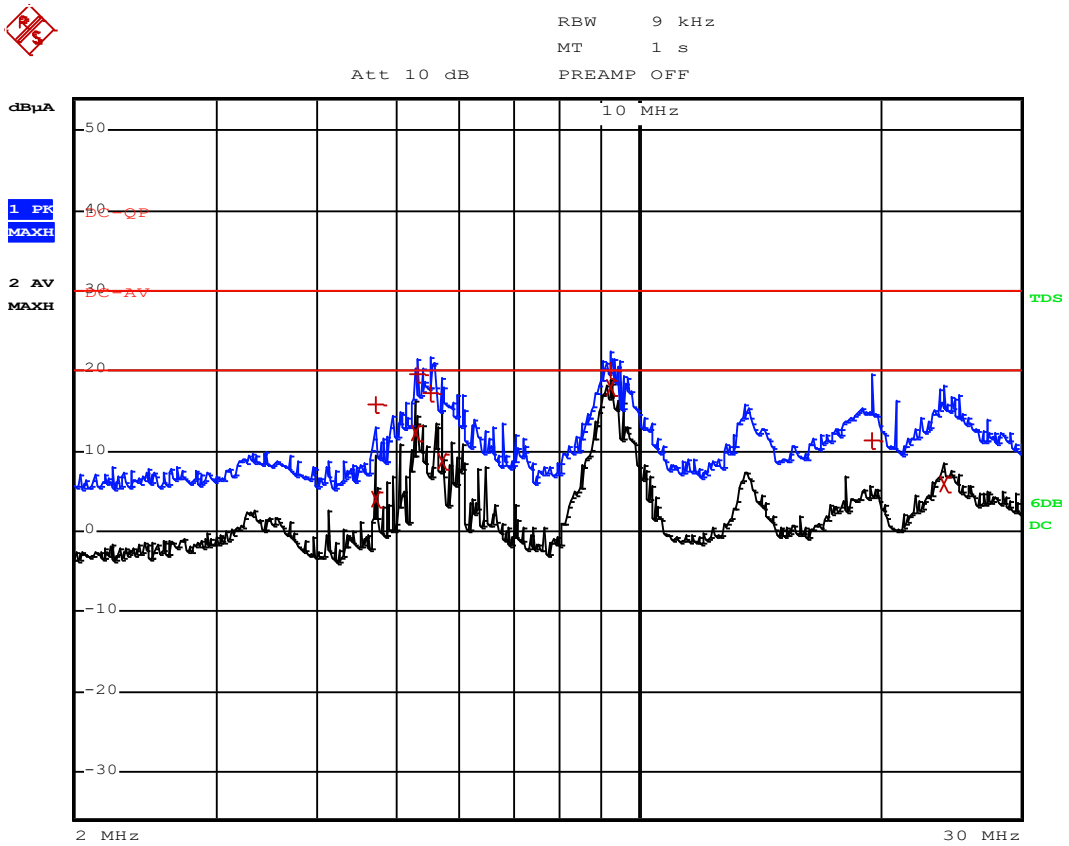
Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	Associated ports

Result for interconnection line close to outdoor unit:



EDIT PEAK LIST (Final Measurement Results)

Trace1:	DC-QP
Trace2:	DC-AV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµA	DELTA LIMIT dB
2 Average	9.276 MHz	17.92	-2.07
2 Average	5.312 MHz	12.36	-7.63
1 Quasi Peak	9.276 MHz	20.07	-9.92
1 Quasi Peak	5.316 MHz	19.66	-10.33
2 Average	5.724 MHz	8.81	-11.18
1 Quasi Peak	5.532 MHz	17.25	-12.74
2 Average	24.072 MHz	5.95	-14.04
1 Quasi Peak	4.716 MHz	15.79	-14.21
2 Average	4.716 MHz	4.08	-15.91
1 Quasi Peak	19.508 MHz	11.26	-18.73

Remarks:

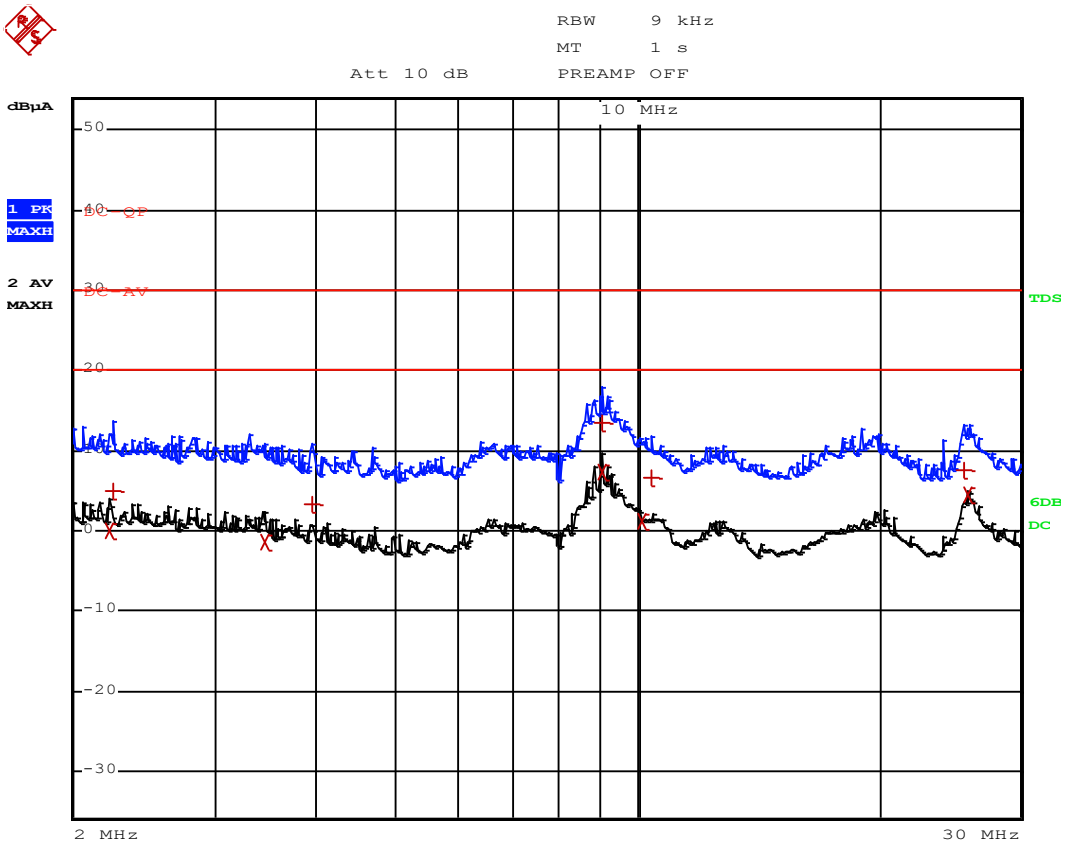
1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	Associated ports
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Result for interconnection line close to indoor unit:



EDIT PEAK LIST (Final Measurement Results)

Trace1:	DC-QP
Trace2:	DC-AV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµA	DELTA LIMIT dB
2	Average	9.048 MHz	7.37	-12.62
2	Average	25.78 MHz	4.41	-15.58
1	Quasi Peak	9.048 MHz	13.50	-16.49
2	Average	10.172 MHz	1.19	-18.80
2	Average	2.208 MHz	0.13	-19.86
2	Average	3.456 MHz	-1.42	-21.42
1	Quasi Peak	25.5 MHz	7.61	-22.38
1	Quasi Peak	10.412 MHz	6.70	-23.29
1	Quasi Peak	2.232 MHz	4.94	-25.05
1	Quasi Peak	3.964 MHz	3.25	-26.74

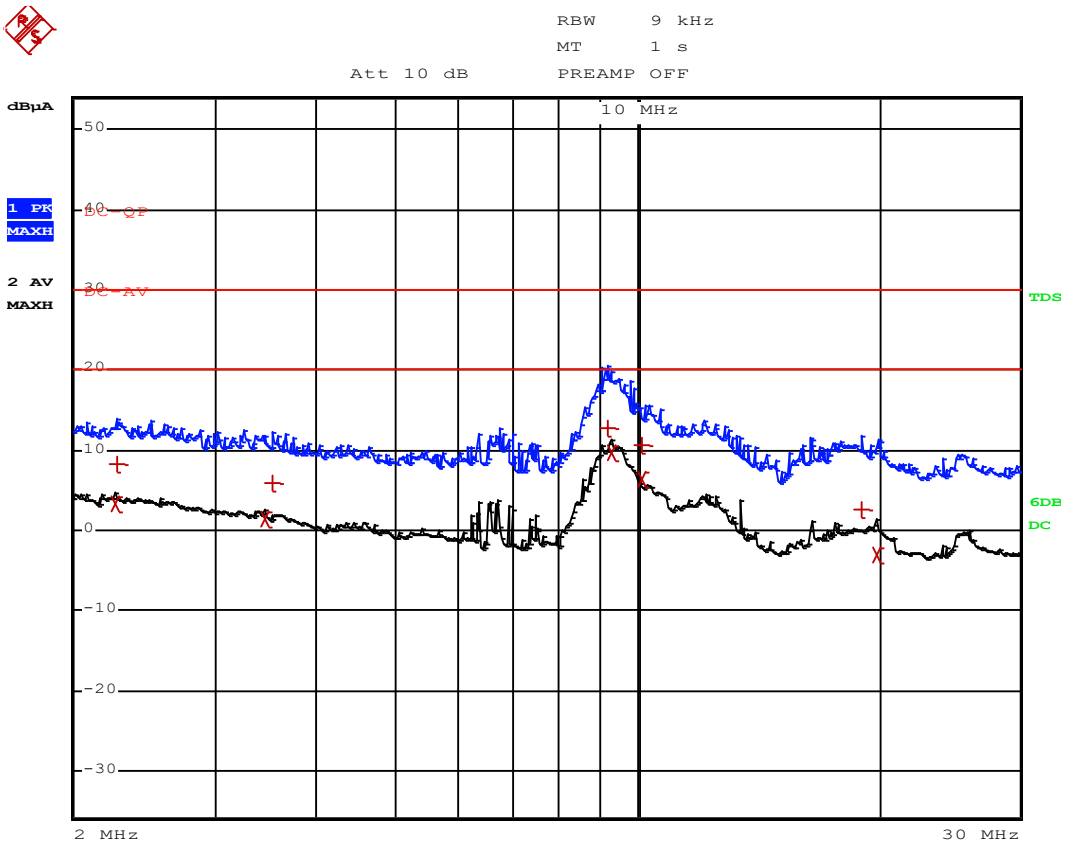
Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	Associated ports

Result for interconnection line close to outdoor unit:



EDIT PEAK LIST (Final Measurement Results)

Trace1:	DC-QP
Trace2:	DC-AV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµA	DELTA LIMIT dB
2 Average	9.288 MHz	9.75	-10.24
2 Average	10.172 MHz	6.28	-13.71
2 Average	2.252 MHz	3.30	-16.69
1 Quasi Peak	9.204 MHz	12.69	-17.31
2 Average	3.448 MHz	1.46	-18.53
1 Quasi Peak	10.168 MHz	10.65	-19.34
1 Quasi Peak	2.256 MHz	8.27	-21.72
2 Average	19.872 MHz	-3.02	-23.02
1 Quasi Peak	3.528 MHz	5.93	-24.06
1 Quasi Peak	19.02 MHz	2.71	-27.28

Remarks:

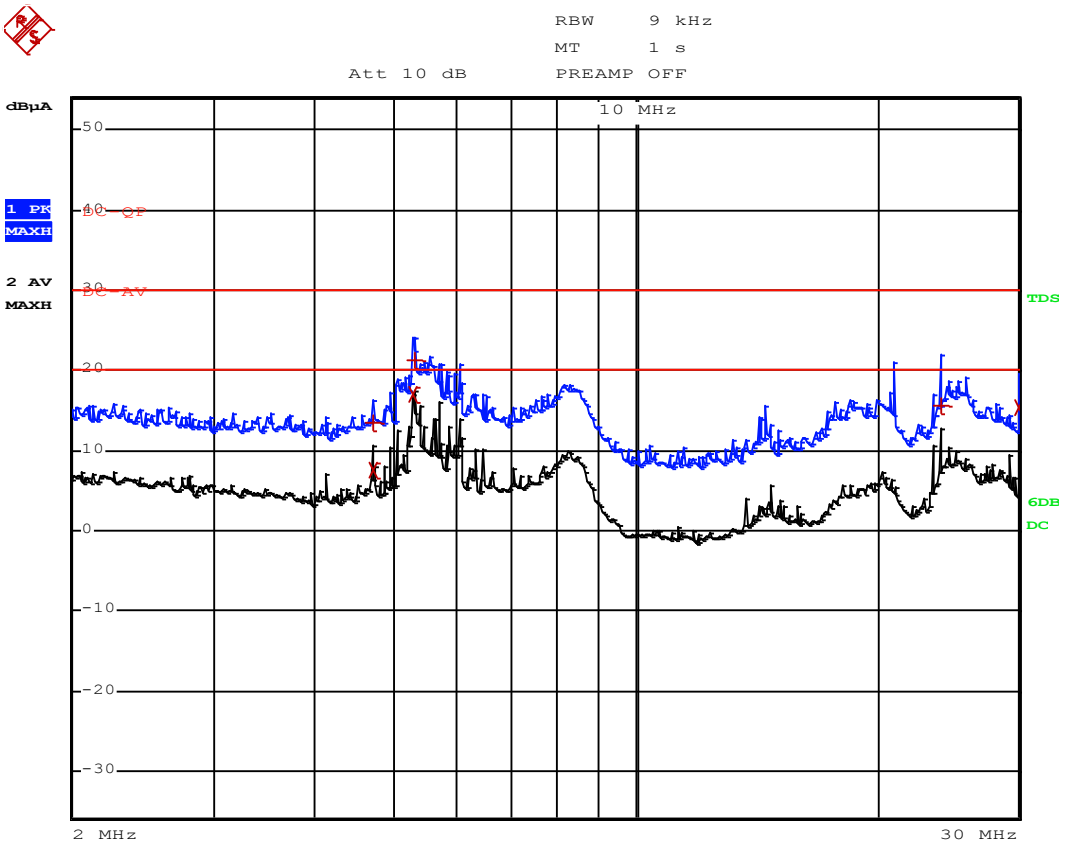
1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	Associated ports
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Result for interconnection line close to indoor unit:



EDIT PEAK LIST (Final Measurement Results)

Trace1:	DC-QP
Trace2:	DC-AV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµA	DELTA LIMIT dB
2 Average	5.313 MHz	17.12	-2.88
2 Average	30 MHz	15.37	-4.62
1 Quasi Peak	5.316 MHz	21.37	-8.62
2 Average	4.716 MHz	7.59	-12.40
1 Quasi Peak	23.996 MHz	15.60	-14.39
1 Quasi Peak	4.716 MHz	13.43	-16.56

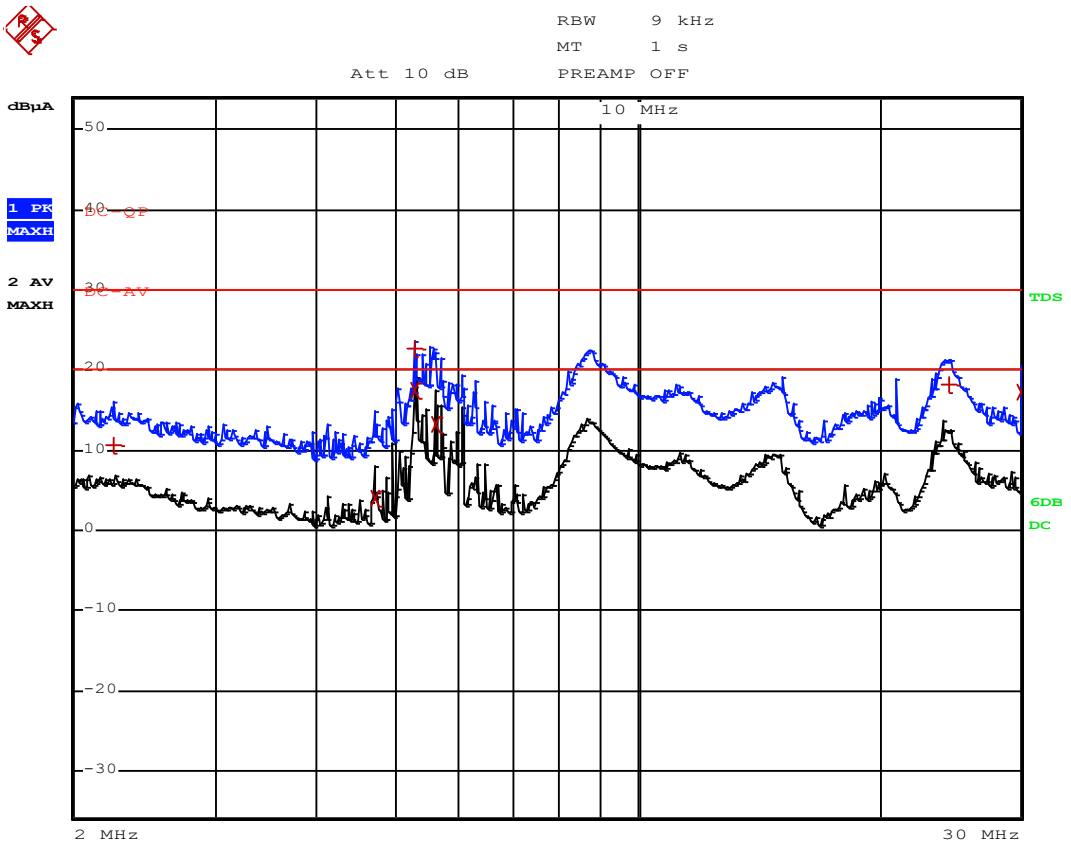
Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	Associated ports

Result for interconnection line close to outdoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	DC-QP		
Trace2:	DC-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµA	DELTA LIMIT dB
2 Average	5.313 MHz	17.57	-2.42
2 Average	30 MHz	17.17	-2.83
2 Average	5.628 MHz	13.32	-6.67
1 Quasi Peak	5.312 MHz	22.64	-7.35
1 Quasi Peak	24.404 MHz	18.16	-11.83
2 Average	4.72 MHz	3.94	-16.05
1 Quasi Peak	2.24 MHz	10.63	-19.36

Remarks:

1) Level (Final measurement) = received value + transducer (Lisn + cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

4.4	Disturbance power (30 MHz – 300 MHz)	VERDICT: PASS

Standard	EN 55014-1
Basic standard	EN 55016-2-2

Limits

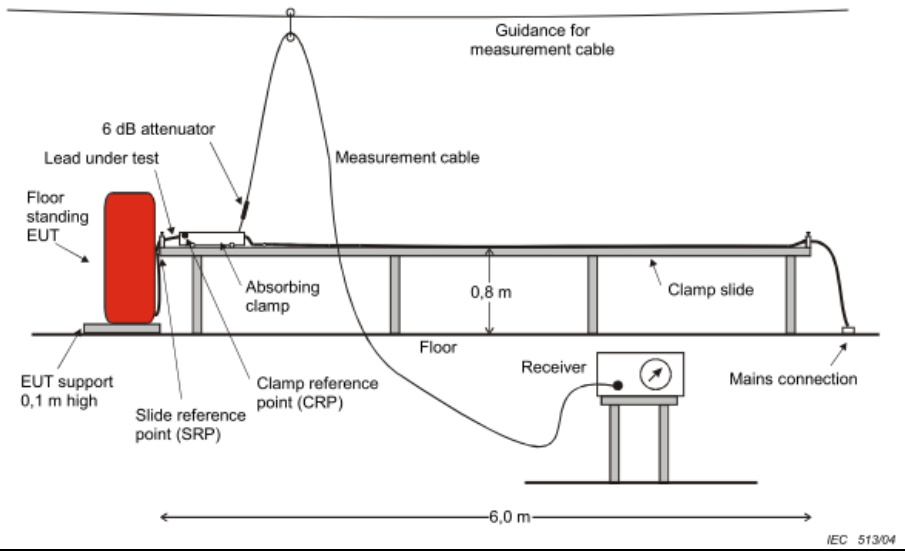
Frequency range [MHz]	Limit: QP [dB(pW)]	Limit: AV [dB(pW)]	IF BW	Detector(s)
30 - 300	45 – 55 [1)]	35 – 45 [1)]	120 KHz	QP, AV
Margin				
200 - 300	0 – 10 [1)]	---	120 KHz	QP, AV
[1)] The limit increases linearly with the frequency.				

Performed measurements

Port(s) under test					
☒	AC mains input power	☐	Load	☐	Control
☒	Other:Signal port	☐	Other:	☐	Other:

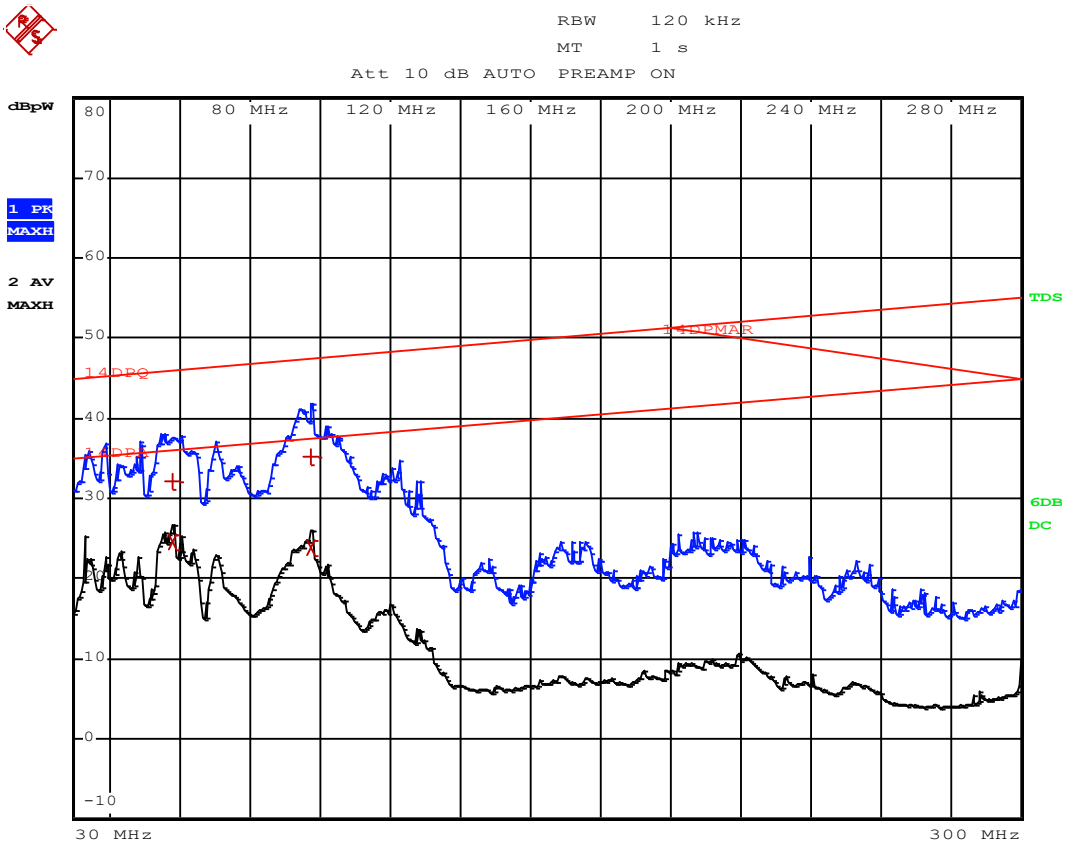
Test setup	☐	Table top	☒	Floor standing
	☐	Other:		
	Refer to the Annex 3 for test setup photo(s).			
Conditions for exemption from measurements above 300 MHz	☒	“Limits” reduced by “Margin” applied and passed		
	☒	Maximum clock frequency < 30 MHz		
Operating mode(s) used	Mode 1, 2			
Remark	---			

Test Configuration



Measurement data of TAC-09CHSD/ TP11I3A	Port under test	AC mains
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Results



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	58.28 MHz	24.57	-11.47
1 Quasi Peak	97.36 MHz	35.14	-12.35
2 Average	97.36 MHz	23.86	-13.63
1 Quasi Peak	58.04 MHz	32.26	-13.76

Remarks:

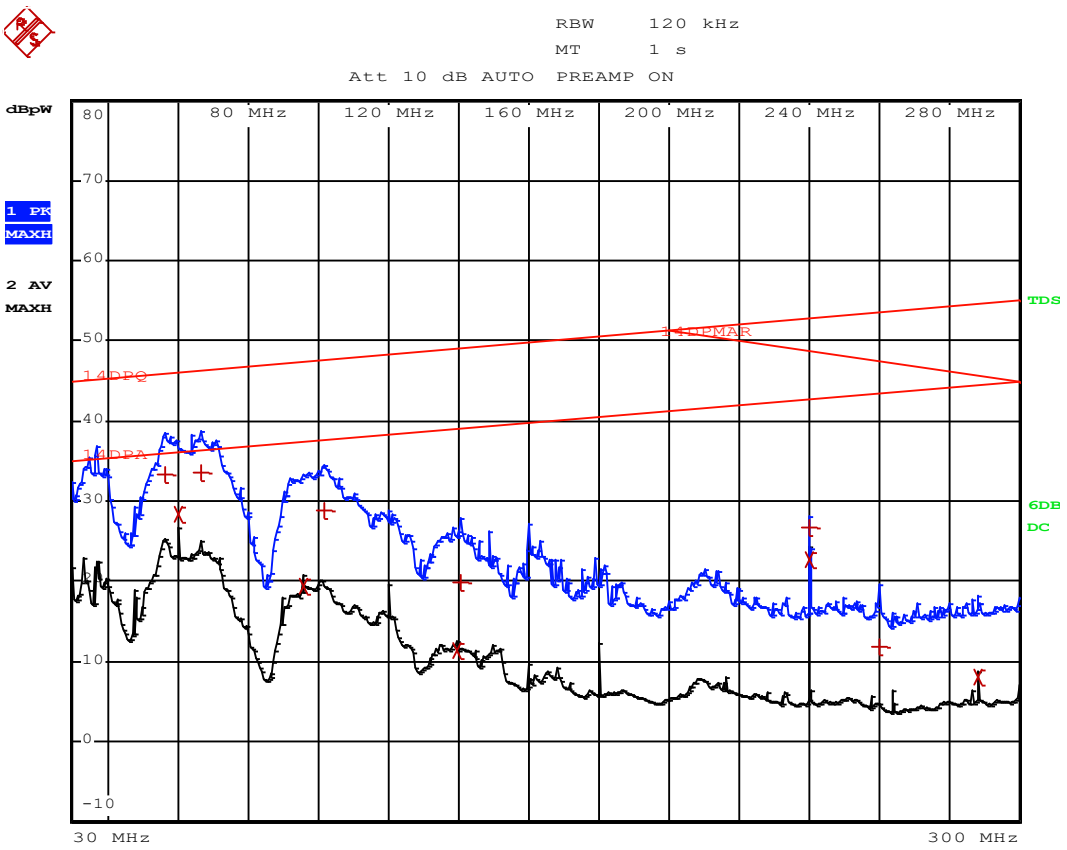
1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	AC mains
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Results



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	60 MHz	28.45	-7.66
1 Quasi Peak	56.52 MHz	33.45	-12.52
1 Quasi Peak	66.76 MHz	33.67	-12.69
2 Average	96 MHz	19.50	-17.94
1 Quasi Peak	101.96 MHz	28.89	-18.77
2 Average	240.04 MHz	22.71	-20.06
1 Quasi Peak	239.96 MHz	26.77	-25.99
2 Average	139.6 MHz	11.45	-27.60
1 Quasi Peak	140.88 MHz	19.86	-29.24

Remarks:

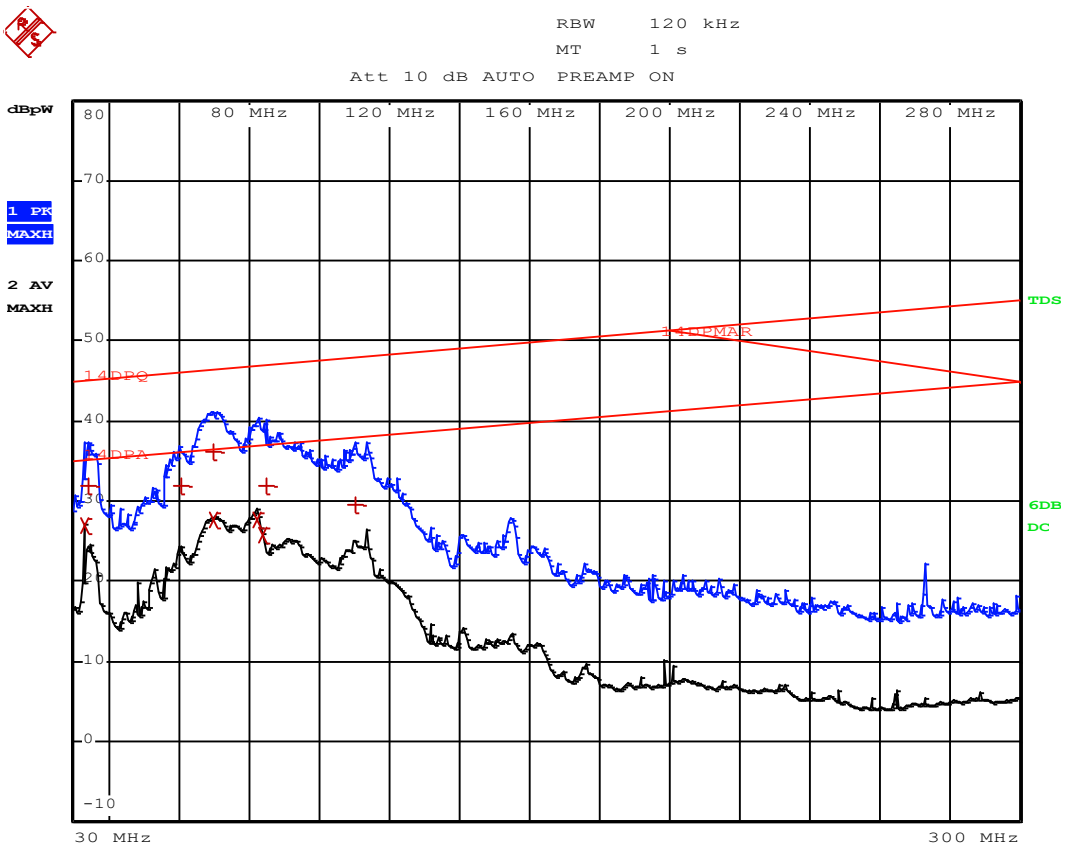
1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	AC mains
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Results



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	33.32 MHz	27.02	-8.09
2 Average	69.72 MHz	27.57	-8.89
2 Average	82.6 MHz	27.56	-9.38
1 Quasi Peak	69.72 MHz	36.14	-10.33
2 Average	84.08 MHz	25.73	-11.27
1 Quasi Peak	34.48 MHz	32.04	-13.12
1 Quasi Peak	60.6 MHz	31.84	-14.29
1 Quasi Peak	84.88 MHz	31.82	-15.20
1 Quasi Peak	110.68 MHz	29.56	-18.42

Remarks:

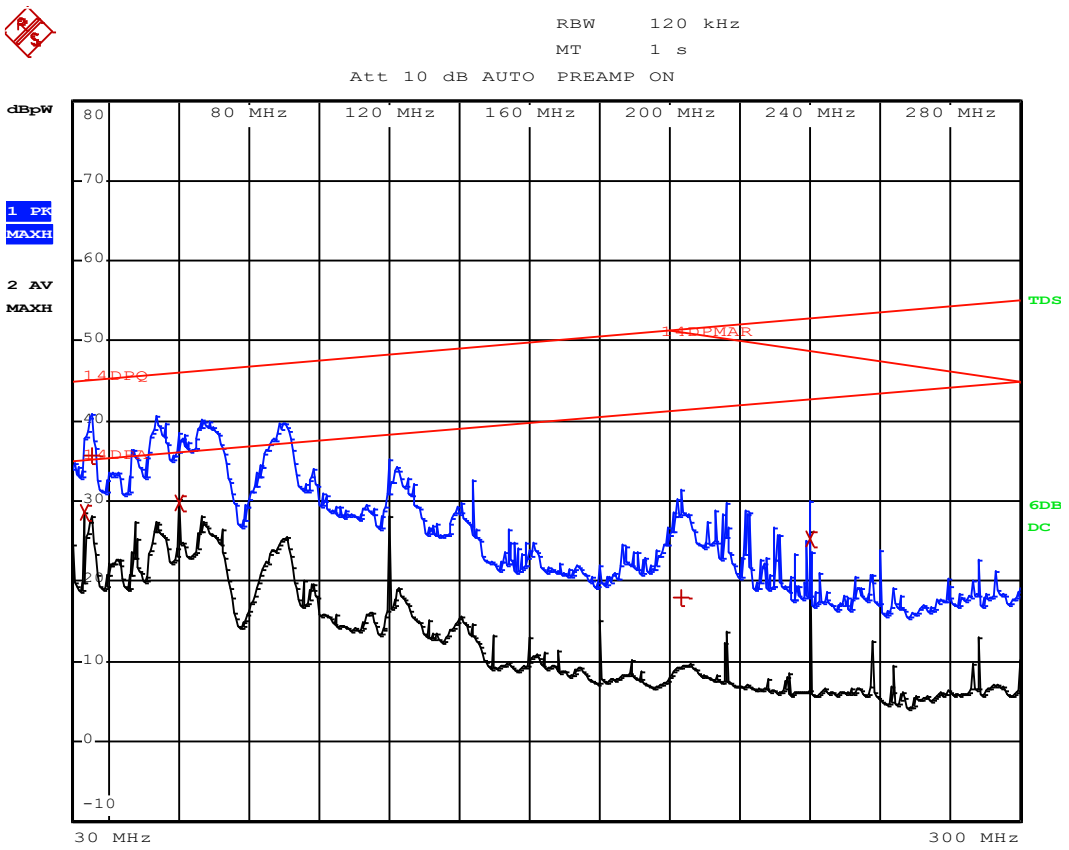
1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	AC mains
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Results



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	60 MHz	29.82	-6.28
2 Average	33.36 MHz	28.59	-6.52
1 Quasi Peak	35.44 MHz	35.79	-9.40
2 Average	240.04 MHz	25.33	-17.44
1 Quasi Peak	203.04 MHz	18.09	-33.31

Remarks:

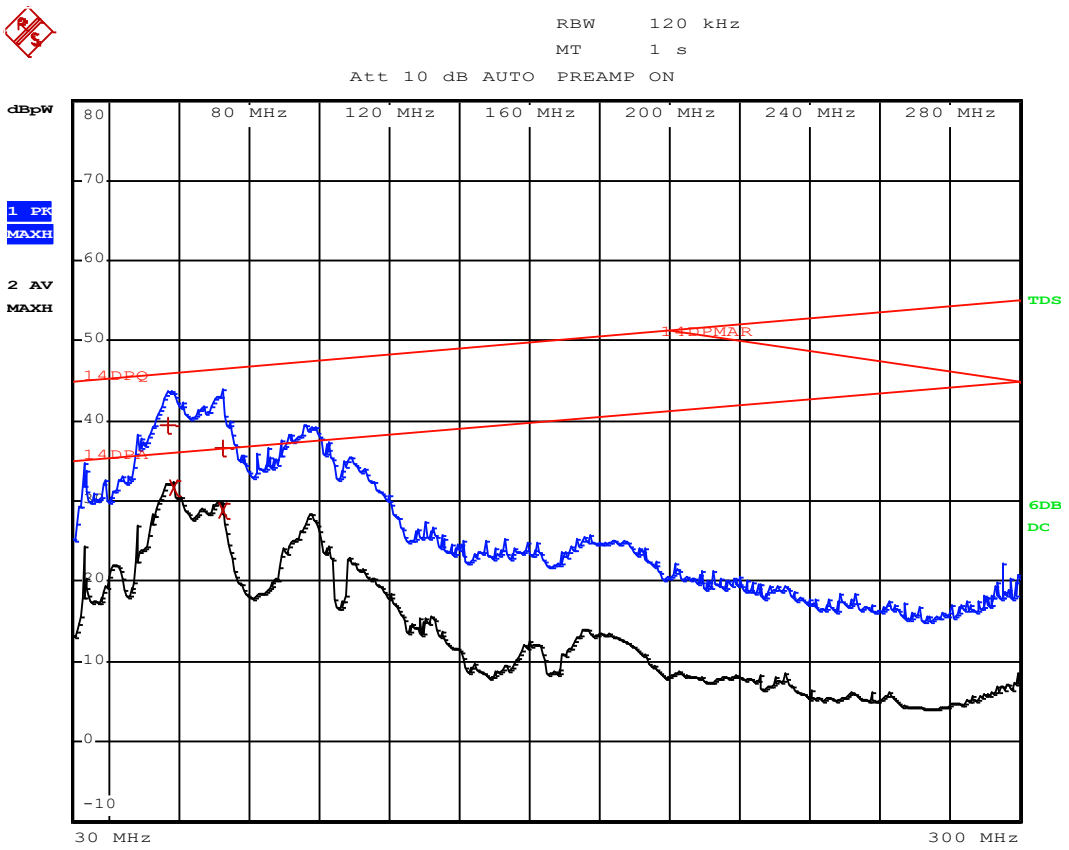
1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-09CHSD/ TP11I3A	Port under test	Signal ports
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Results for measurement toward to indoor unit:



EDIT PEAK LIST (Final Measurement Results)

Trace1:	14DPQ
Trace2:	14DPA
Trace3:	---

TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	58.48 MHz	31.77	-4.27
1 Quasi Peak	56.8 MHz	39.48	-6.50
2 Average	72.56 MHz	28.86	-7.70
1 Quasi Peak	72.52 MHz	36.59	-9.97

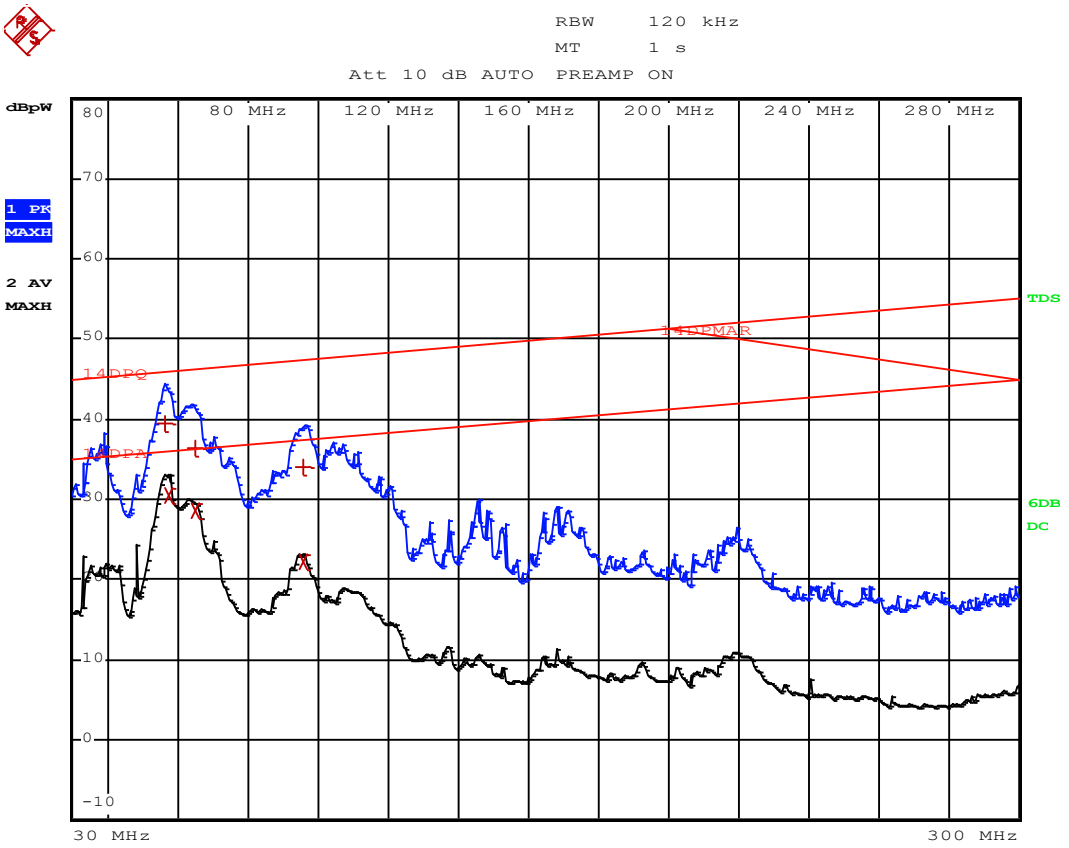
Remarks:

1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-09CHSD/ TP11I3A	Port under test	Signal ports

Results for measurement toward to outdoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	57.64 MHz	30.42	-5.59
1 Quasi Peak	56.4 MHz	39.55	-6.42
2 Average	64.8 MHz	28.71	-7.57
1 Quasi Peak	64.8 MHz	36.32	-9.96
1 Quasi Peak	96.08 MHz	34.01	-13.43
2 Average	95.92 MHz	22.26	-15.17

Remarks:

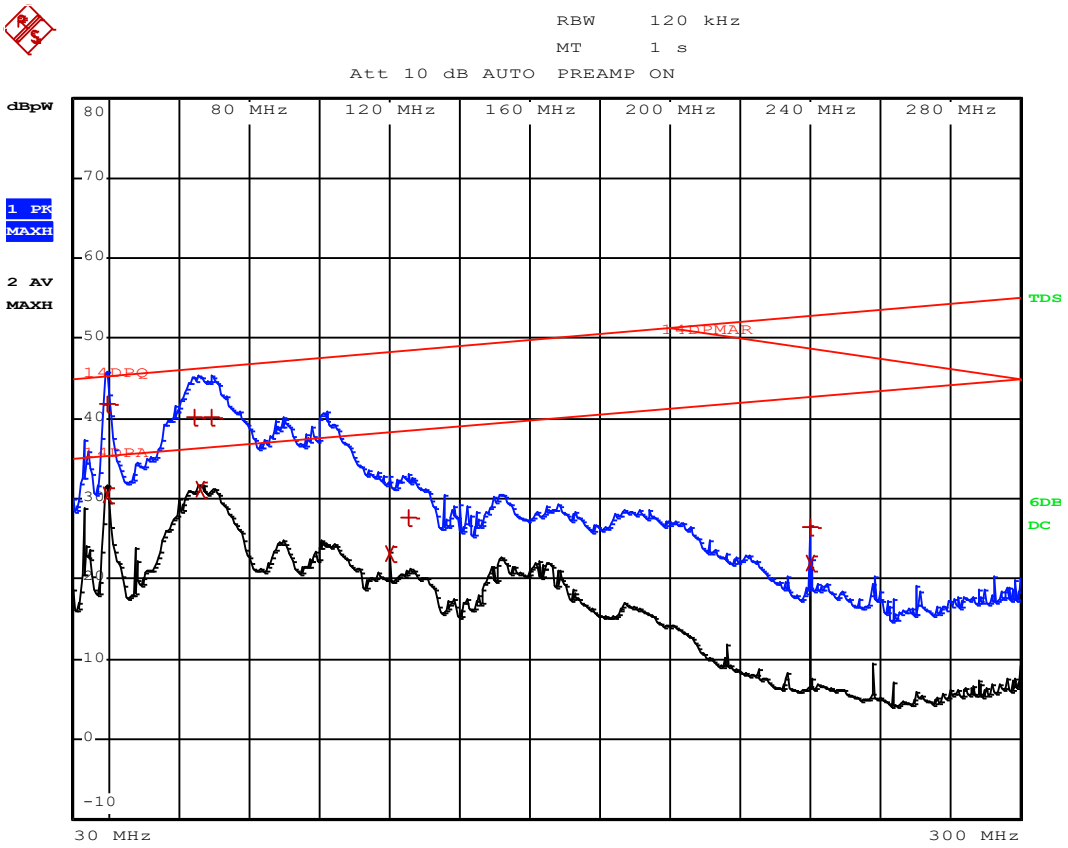
1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	Signal ports
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Results for measurement toward to indoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
1 Quasi Peak	39.68 MHz	41.95	-3.40
2 Average	39.76 MHz	30.53	-4.82
2 Average	66.16 MHz	31.14	-5.19
1 Quasi Peak	64.44 MHz	40.24	-6.02
1 Quasi Peak	69.48 MHz	40.20	-6.26
2 Average	120 MHz	23.10	-15.23
2 Average	240.04 MHz	21.90	-20.87
1 Quasi Peak	125.4 MHz	27.58	-20.95
1 Quasi Peak	240 MHz	26.38	-26.39

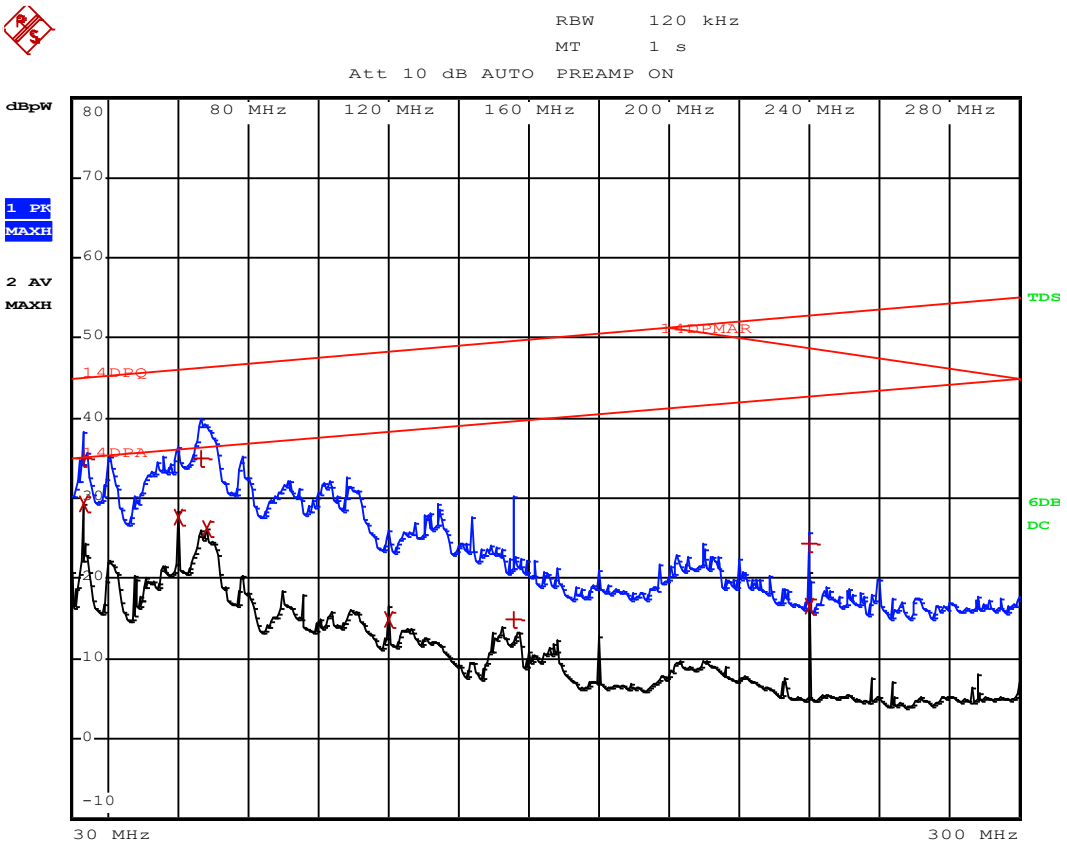
Remarks:

1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	Signal ports

Results for measurement toward to outdoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	33.32 MHz	29.21	-5.90
2 Average	60 MHz	27.78	-8.32
1 Quasi Peak	33.28 MHz	34.95	-10.16
2 Average	68.24 MHz	26.19	-10.21
1 Quasi Peak	66.72 MHz	35.01	-11.35
2 Average	120 MHz	15.03	-23.30
2 Average	240.08 MHz	16.57	-26.20
1 Quasi Peak	240.04 MHz	24.34	-28.43
1 Quasi Peak	156 MHz	14.82	-34.84

Remarks:

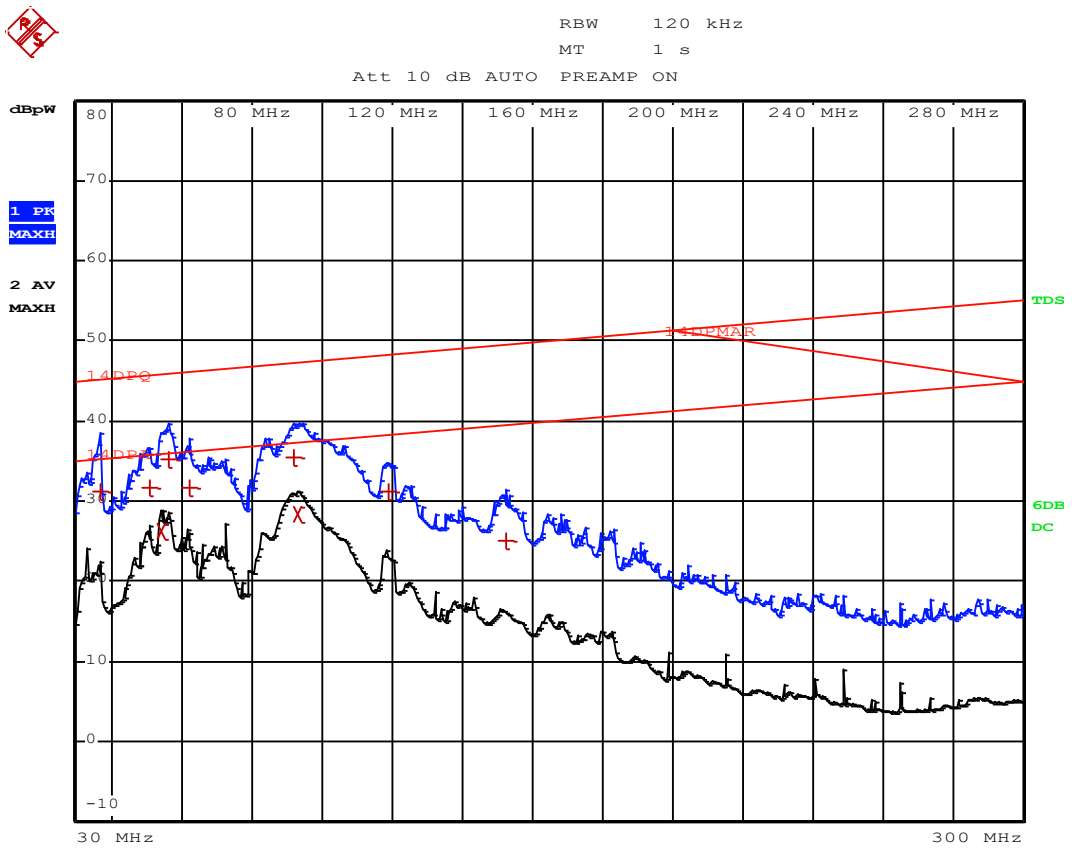
1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	Signal ports
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Results for measurement toward to indoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	93.4 MHz	28.44	-8.90
2 Average	54.48 MHz	26.21	-9.69
1 Quasi Peak	56.44 MHz	35.13	-10.84
1 Quasi Peak	92.2 MHz	35.37	-11.92
1 Quasi Peak	37.04 MHz	31.25	-14.00
1 Quasi Peak	50.76 MHz	31.65	-14.11
1 Quasi Peak	62.12 MHz	31.66	-14.52
1 Quasi Peak	119.32 MHz	31.32	-16.98
1 Quasi Peak	152.32 MHz	24.98	-24.54

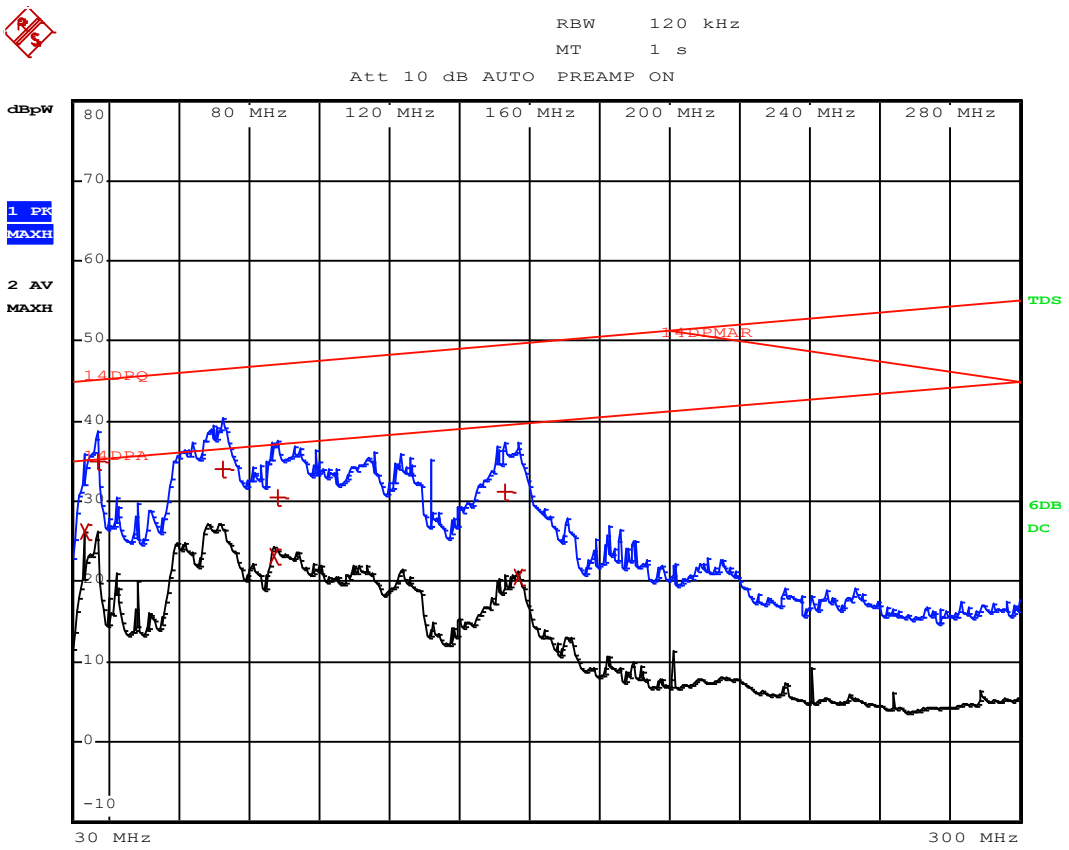
Remarks:

1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	Signal ports

Results for measurement toward to outdoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	33.32 MHz	26.33	-8.78
1 Quasi Peak	37.2 MHz	34.90	-10.35
1 Quasi Peak	72.6 MHz	33.95	-12.61
2 Average	87.36 MHz	23.14	-13.97
1 Quasi Peak	88.2 MHz	30.52	-16.63
1 Quasi Peak	153.2 MHz	31.30	-18.25
2 Average	156.8 MHz	20.70	-18.99

Remarks:

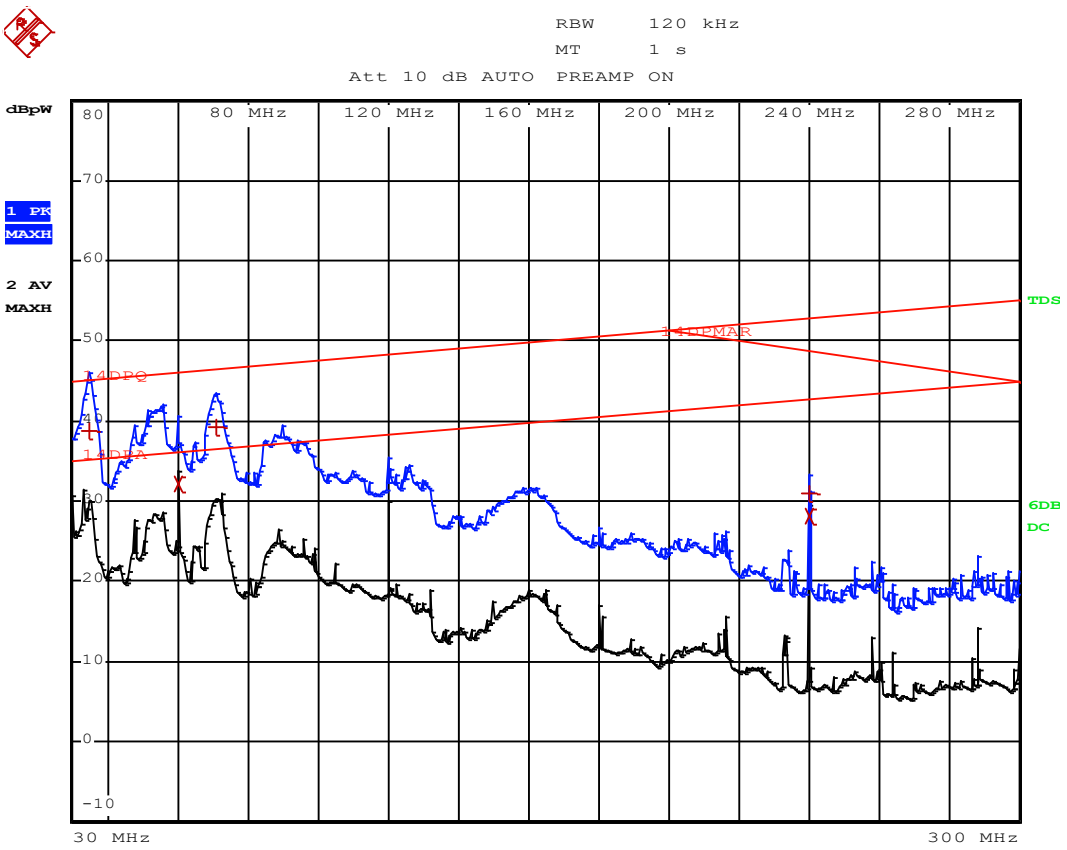
1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	Signal ports
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Results for measurement toward to indoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	60 MHz	32.24	-3.86
1 Quasi Peak	35.04 MHz	38.69	-6.49
1 Quasi Peak	71.2 MHz	39.24	-7.28
2 Average	240 MHz	28.18	-14.59
1 Quasi Peak	240 MHz	30.90	-21.87

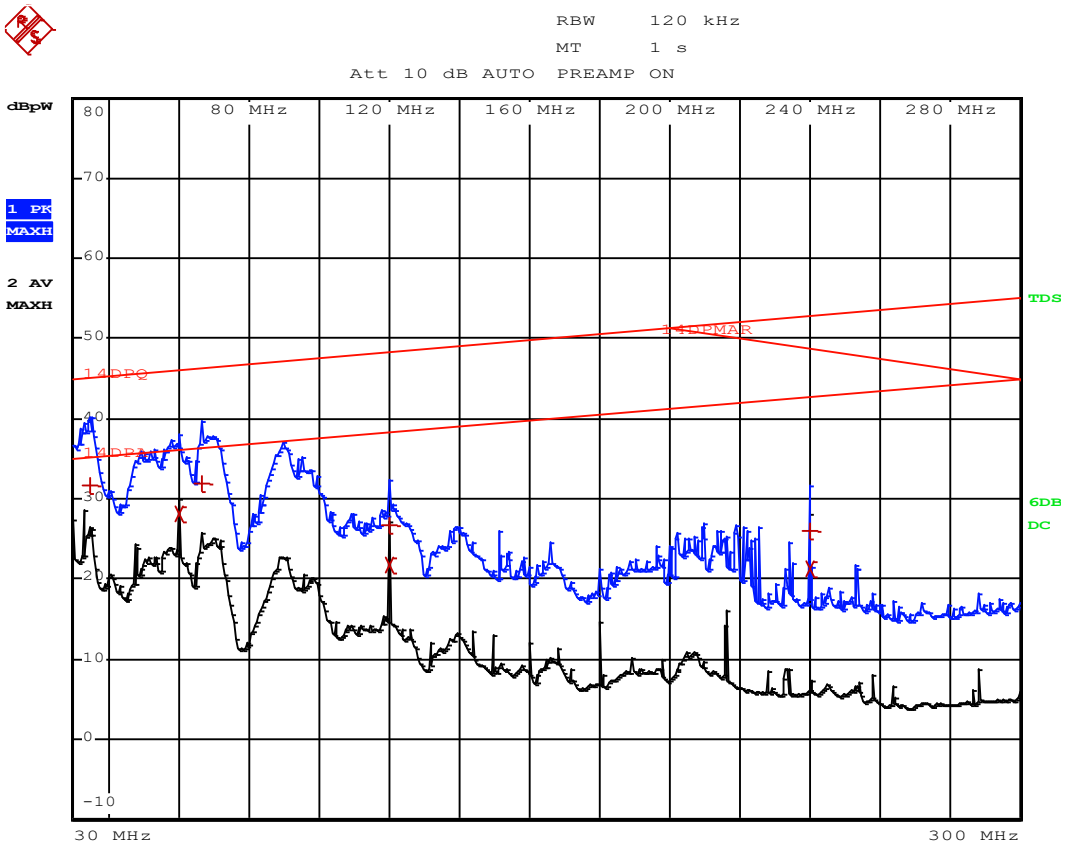
Remarks:

1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	Signal ports

Results for measurement toward to outdoor unit:



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14DPQ		
Trace2:	14DPA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	60 MHz	28.10	-8.00
1 Quasi Peak	34.8 MHz	31.79	-13.38
1 Quasi Peak	66.8 MHz	31.95	-14.40
2 Average	120 MHz	21.83	-16.50
2 Average	240.04 MHz	21.25	-21.52
1 Quasi Peak	120 MHz	26.81	-21.52
1 Quasi Peak	240.04 MHz	25.95	-26.82

Remarks:

1) Level (Final measurement) = received value + Insertion Loss + cable Loss
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Remark	

4.5	Radiated electromagnetic disturbances (30 – 1000 MHz)	VERDICT: PASS

Standard	EN 55014-1
Basic standard	EN 55016-2-3
Test method	Antenna method according to EN 55016-2-3 standard.

Limits

Frequency [MHz]	Limit: QP [dB(µV/m)[1)]] @3 m.	@5 m.	@10 m.	IF BW	Detector
30 - 230	40	36	30	120 KHz	QP
230 - 1000	47	43	37	120 KHz	QP
[1)] At the transition frequency, the lower limit applies.					

~~Performed measurements~~

~~Port under test~~	~~Enclosure~~	
~~Voltage – Mains [V]~~		
~~Frequency – Mains [Hz]~~		
~~Test method applied~~	☐	~~OATS or SAC with measurement distance [m]: 3 m.~~
	☐	~~OATS or SAC with measurement distance [m]: 5 m.~~
	☐	~~OATS or SAC with measurement distance [m]: 10 m.~~
~~Test setup~~	☐	~~Equipment on a table of 80 cm height~~
	☐	~~Equipment on the floor (insulated from ground plane)~~
	☐	~~Other:~~
	~~Refer to the Annex 3 for test setup photo(s).~~	
~~Operating mode(s) used~~		
Remark	The EUT met the both conditions 1) and 2) of clause 4.3.4.2 procedure (a) of the standard, therefore the EUT is deemed to comply in the frequency range from 300 MHz to 1000 MHz without further measurements.	

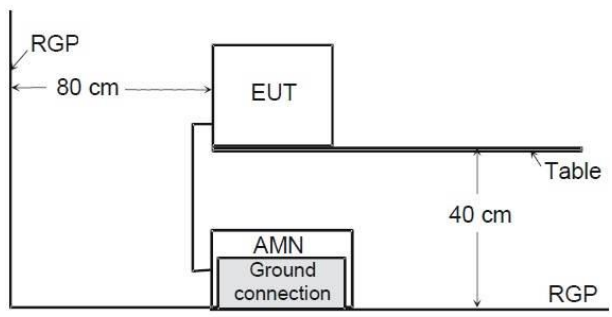
4.6	Discontinuous disturbance (clicks) on AC power leads	VERDICT: PASS

Standard	EN 55014-1		
Frequency [MHz]	Limit: QP [dB(μV)]	IF BW	Detector
0,15	66	9 KHz	Quasi-Peak (QP)
0,50	56	9 KHz	Quasi-Peak (QP)
1,40	56	9 KHz	Quasi-Peak (QP)
30,0	60	9 KHz	Quasi-Peak (QP)

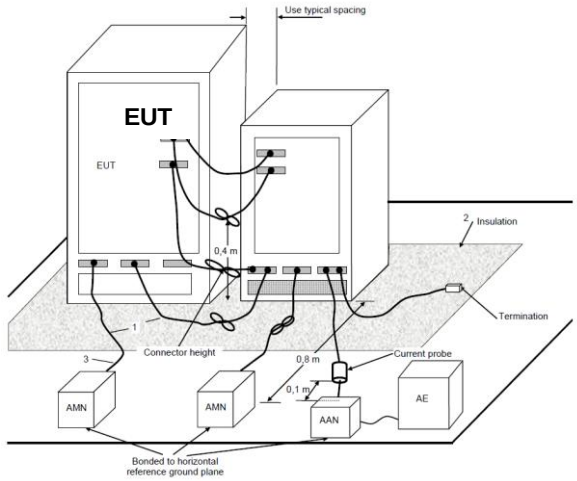
Performed measurements

Voltage – Mains [V]	230 Vac			
Frequency – Mains [Hz]	50 Hz			
Test method applied	☒	Artificial mains network		
	☐	Voltage probe		
Test setup	☐	Table top	☒	Floor standing
	☐	Other:		
	Refer to the Annex 3 for test setup photo(s).			
Operating mode(s) used	Mode 1, 2			
Remark	---			

Test Configuration



Test setup for "Table-top" DUT.



Test setup for "Floor-standing" DUT.

Result for mode 1, 2 of model TAC-09CHSD/ TP11I3A, TAC-12CHSD/ TP11I3A, TAC-18CHSD/ TP11I3A, TAC-24CHSD/ TP11I3A

Reason for not performing the test		☒	The amplitudes of the observed disturbances were all below the limit for continuous disturbance, these are not considered to be clicks.					
Measurement results		☒	Neutral	☒	Line 1	☐	Line 2	☐ Line 3
Frequency (MHz)	First Measurement: Determination of the limit L_q – Quasi-peak							
	Limit L (dBµV)	Number of short clicks	Number of long clicks	Number of clicks – N_1	Time of meas. (min.)	Click rate N	Increased limit (dB)	Increased Limit L_q
0,15	66	0	0	0	120	0	N/A	N/A
0,5	56	0	0	0	120	0	N/A	N/A
1,4	56	0	0	0	120	0	N/A	N/A
30	60	0	0	0	120	0	N/A	N/A
☐	The calculated click rate N is not more than 5 times per minute and all the clicks are classified as short (t ≤ 10 ms). Thus, the EUT is deemed to comply with the limits without any further measurement at an increased limit.							
Frequency (MHz)	Second measurement with Limit = L_q (Upper quartile method):							
	Limit Lq (dBµV)	Number of clicks – N_2	Number of authorized clicks N2 ≤N1/4					Verdict
0,15								
0,5								
1,4								
30								
Supplementary information: ---								

4.7	Harmonic current emissions	VERDICT: PASS

Standard	EN IEC 61000-3-2	
Exlusions (For these categories of equipment, limits are not specified in the EN 61000-3-2 standard)	☐	Arc welding equipment intended for professional use.
	☐	System(s) with nominal voltage(s) less than 220 V_{AC} (line-to-neutral).
	☐	Equipment with rated power of ≤ 75 W (other than lighting equipment).
	☐	Professional equipment with total rated power > 1 kW.
	☐	Symmetrically controlled heating elements with a rated power ≥ 200 W.
	☐	Independent dimmers for incandescent lamps with rated power ≤ 1 kW.

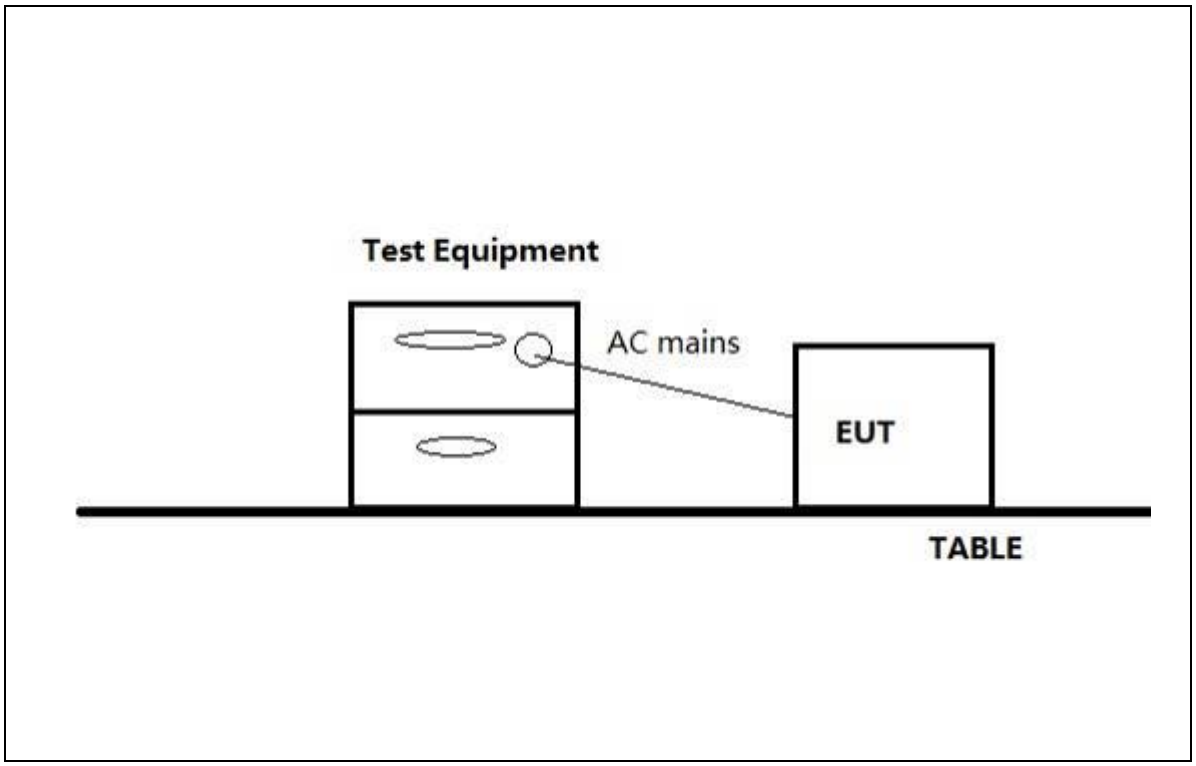
Classification			
☒	Class A	All apparatus not classified as Class B, C or D	
☐	Class B	Portable tools	
☐	Class C	☐	Lighting equipment with active input power > 25 W
		☐	Lighting equipment with active input power ≤ 25 W (First requirement, Table 3 column 2)
		☐	Lighting equipment with active input power ≤ 25 W (Second requirement)
☐	Class D	Personal computers, television receivers	

Performed measurements

Port under test	AC mains power input					
Voltage – Mains [V]	230 Vac					
Frequency – Mains [Hz]	50 Hz					
Observation peroid	☐	6.5 min.	☒	2.5 min.	☐	Other:
Version of measurement instrument standard used EN / IEC61000-4-7 (Cl. 7)	☒	EN 61000-4-7:2002 + AM1:2009 (IEC 61000-4-7:2002+AM1:2008)				
	☐	EN 61000-4-7:1991				
Control principle used in the EUT	☒	Comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-2).				
	☐	Not comply with the requirements of the Clause 6.1 (EN / IEC 61000-3-2).				
Operating mode(s) used	Mode 1, 2					
Remark	Ambient temperature is 30 °C ± 2 °C for cooling mode, 15 °C ± 2 °C for Heating mode					

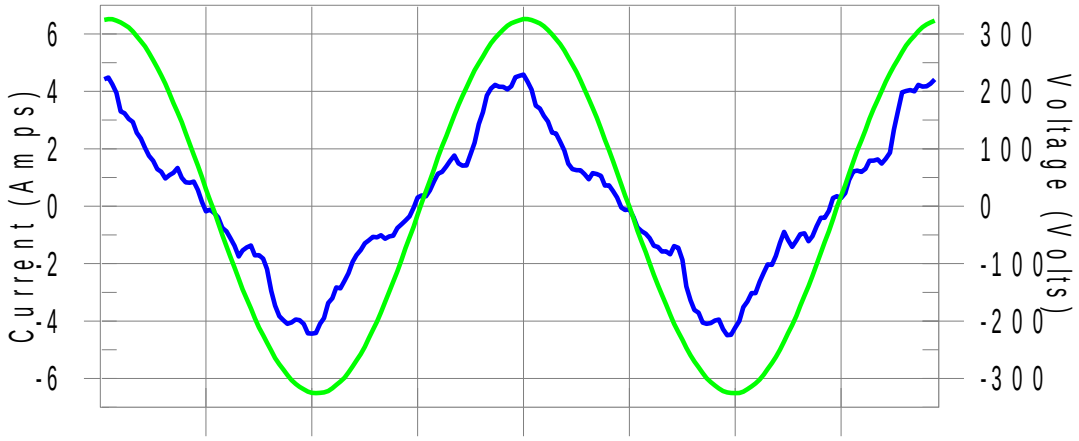
See next page.

Test Configuration

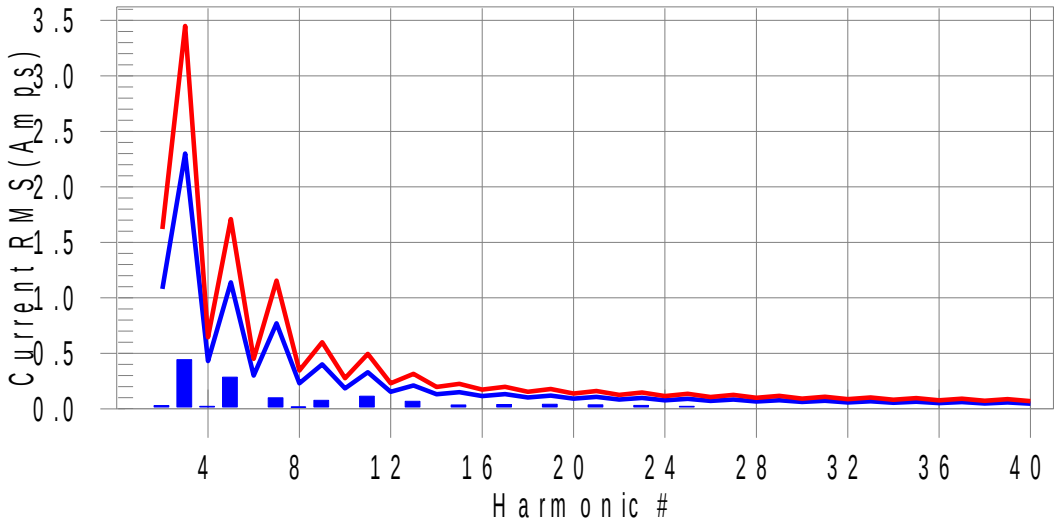


Measurement data of TAC-09CHSD/ TP11I3A	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass Worst harmonics H15-31.5% of 150% limit, H19-34.7% of 100% limit

Measurement data of TAC-09CHSD/ TP11I3A	Port under test	AC mains power input

THC(A): 0.566 I-THD(%): 23.0 POHC(A): 0.054 POHC Limit(A): 0.251

Highest parameter values during test:

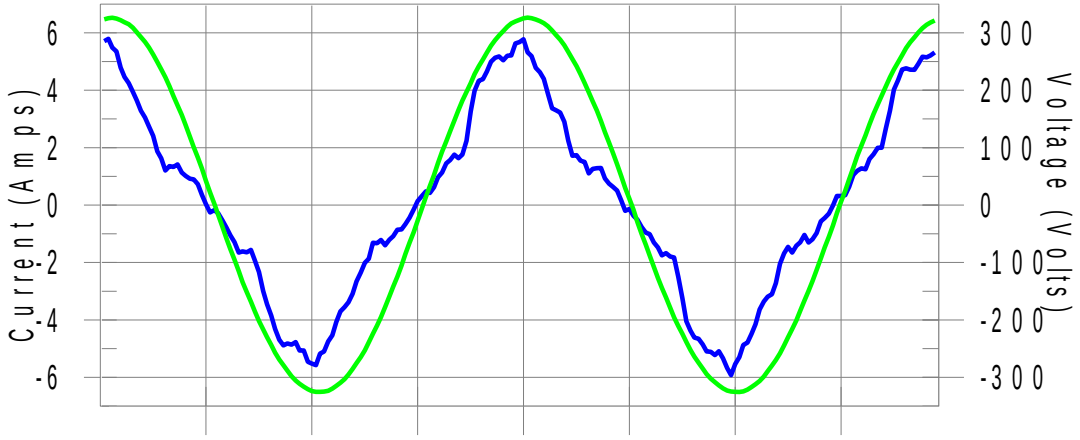
V_RMS (Volts):	230.55	Frequency(Hz):	50.00
I_Peak (Amps):	4.728	I_RMS (Amps):	2.533
I_Fund (Amps):	2.458	Crest Factor:	2.428
Power (Watts):	560.8	Power Factor:	0.963

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.030	1.080	2.8	0.090	1.620	5.6	Pass
3	0.442	2.300	19.2	0.498	3.450	14.4	Pass
4	0.023	0.430	5.3	0.126	0.645	19.6	Pass
5	0.285	1.140	25.0	0.417	1.710	24.4	Pass
6	0.015	0.300	N/A	0.080	0.450	N/A	Pass
7	0.099	0.770	12.9	0.164	1.155	14.2	Pass
8	0.016	0.230	6.8	0.067	0.345	19.4	Pass
9	0.076	0.400	19.1	0.097	0.600	16.2	Pass
10	0.012	0.184	N/A	0.062	0.276	N/A	Pass
11	0.114	0.330	34.4	0.136	0.495	27.5	Pass
12	0.011	0.153	N/A	0.047	0.230	N/A	Pass
13	0.068	0.210	32.3	0.079	0.315	25.1	Pass
14	0.008	0.131	N/A	0.031	0.197	N/A	Pass
15	0.035	0.150	23.3	0.071	0.225	31.5	Pass
16	0.007	0.115	N/A	0.022	0.173	N/A	Pass
17	0.039	0.132	29.8	0.046	0.198	23.4	Pass
18	0.005	0.102	N/A	0.017	0.153	N/A	Pass
19	0.041	0.118	34.7	0.051	0.178	28.6	Pass
20	0.004	0.092	N/A	0.013	0.138	N/A	Pass
21	0.036	0.107	33.5	0.040	0.161	24.7	Pass
22	0.003	0.084	N/A	0.009	0.125	N/A	Pass
23	0.031	0.098	31.8	0.034	0.147	23.5	Pass
24	0.003	0.077	N/A	0.006	0.115	N/A	Pass
25	0.022	0.090	24.8	0.026	0.135	19.5	Pass
26	0.002	0.071	N/A	0.006	0.107	N/A	Pass
27	0.007	0.083	N/A	0.009	0.125	N/A	Pass
28	0.002	0.066	N/A	0.005	0.099	N/A	Pass
29	0.005	0.078	N/A	0.014	0.116	N/A	Pass
30	0.002	0.061	N/A	0.004	0.092	N/A	Pass
31	0.004	0.073	N/A	0.006	0.109	N/A	Pass
32	0.002	0.058	N/A	0.003	0.086	N/A	Pass
33	0.009	0.068	N/A	0.011	0.102	N/A	Pass
34	0.002	0.054	N/A	0.003	0.081	N/A	Pass
35	0.003	0.064	N/A	0.005	0.096	N/A	Pass
36	0.002	0.051	N/A	0.003	0.077	N/A	Pass
37	0.003	0.061	N/A	0.004	0.091	N/A	Pass
38	0.003	0.048	N/A	0.003	0.073	N/A	Pass
39	0.002	0.058	N/A	0.004	0.087	N/A	Pass
40	0.001	0.046	N/A	0.002	0.069	N/A	Pass

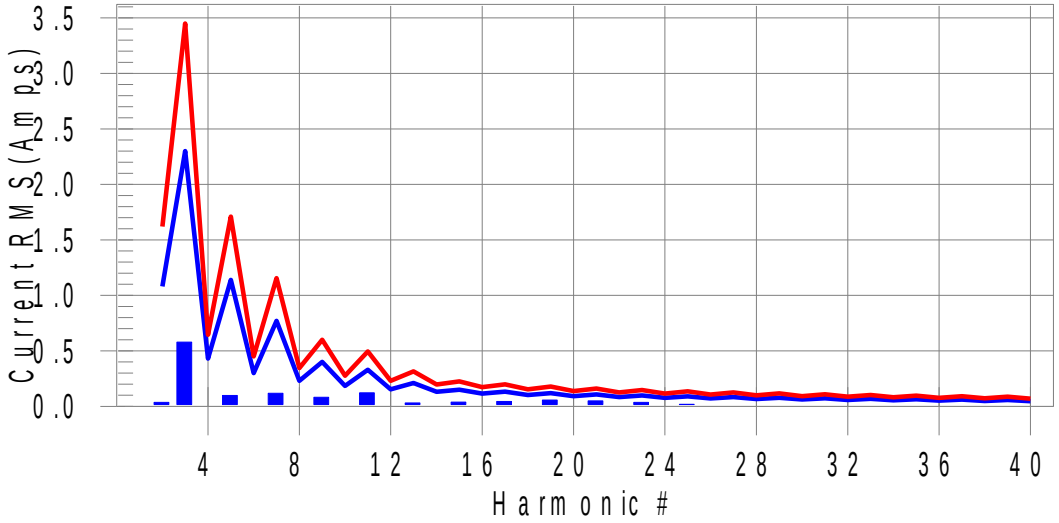
Remark	

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass Worst harmonics H19-37.0% of 150% limit, H19-47.7% of 100% limit

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	AC mains power input

THC(A): 0.627 I-THD(%): 19.2 POHC(A): 0.066 POHC Limit(A): 0.251

Highest parameter values during test:

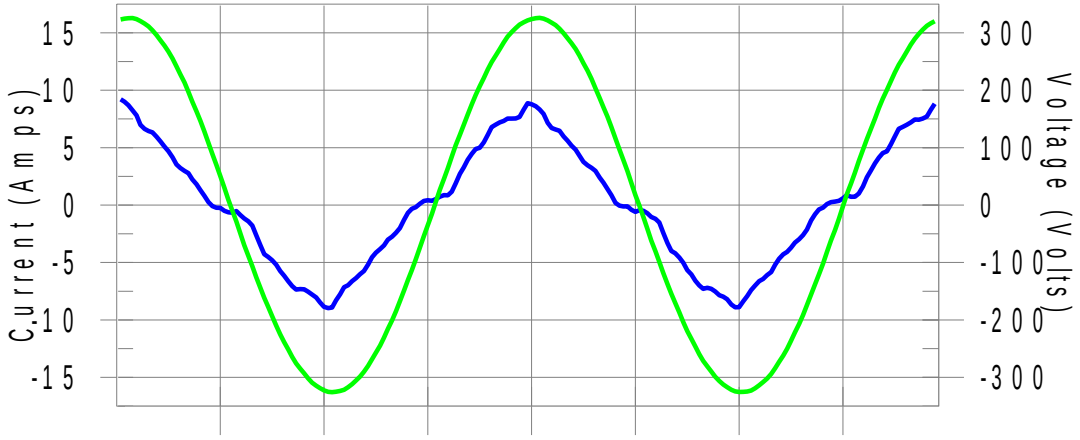
V_RMS (Volts):	230.54	Frequency(Hz):	50.00
I_Peak (Amps):	6.116	I_RMS (Amps):	3.347
I_Fund (Amps):	3.265	Crest Factor:	1.869
Power (Watts):	744.3	Power Factor:	0.972

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.036	1.080	3.3	0.054	1.620	3.3	Pass
3	0.579	2.300	25.2	0.673	3.450	19.5	Pass
4	0.014	0.430	N/A	0.021	0.645	N/A	Pass
5	0.098	1.140	8.6	0.152	1.710	8.9	Pass
6	0.013	0.300	N/A	0.019	0.450	N/A	Pass
7	0.118	0.770	15.3	0.131	1.155	11.4	Pass
8	0.010	0.230	N/A	0.015	0.345	N/A	Pass
9	0.082	0.400	20.4	0.105	0.600	17.5	Pass
10	0.011	0.184	N/A	0.017	0.276	N/A	Pass
11	0.122	0.330	36.9	0.135	0.495	27.4	Pass
12	0.008	0.153	N/A	0.012	0.230	N/A	Pass
13	0.031	0.210	14.6	0.043	0.315	13.8	Pass
14	0.008	0.131	N/A	0.012	0.197	N/A	Pass
15	0.038	0.150	25.4	0.056	0.225	24.9	Pass
16	0.006	0.115	N/A	0.009	0.173	N/A	Pass
17	0.044	0.132	33.2	0.059	0.198	29.7	Pass
18	0.006	0.102	N/A	0.010	0.153	N/A	Pass
19	0.057	0.118	47.7	0.066	0.178	37.0	Pass
20	0.004	0.092	N/A	0.007	0.138	N/A	Pass
21	0.050	0.107	46.3	0.054	0.161	33.7	Pass
22	0.004	0.084	N/A	0.006	0.125	N/A	Pass
23	0.036	0.098	36.5	0.042	0.147	28.4	Pass
24	0.003	0.077	N/A	0.004	0.115	N/A	Pass
25	0.018	0.090	N/A	0.024	0.135	N/A	Pass
26	0.002	0.071	N/A	0.004	0.107	N/A	Pass
27	0.007	0.083	N/A	0.009	0.125	N/A	Pass
28	0.002	0.066	N/A	0.003	0.099	N/A	Pass
29	0.010	0.078	N/A	0.012	0.116	N/A	Pass
30	0.002	0.061	N/A	0.003	0.092	N/A	Pass
31	0.006	0.073	N/A	0.008	0.109	N/A	Pass
32	0.002	0.058	N/A	0.003	0.086	N/A	Pass
33	0.005	0.068	N/A	0.006	0.102	N/A	Pass
34	0.002	0.054	N/A	0.002	0.081	N/A	Pass
35	0.004	0.064	N/A	0.007	0.096	N/A	Pass
36	0.001	0.051	N/A	0.002	0.077	N/A	Pass
37	0.005	0.061	N/A	0.009	0.091	N/A	Pass
38	0.003	0.048	N/A	0.003	0.073	N/A	Pass
39	0.003	0.058	N/A	0.006	0.087	N/A	Pass
40	0.001	0.046	N/A	0.002	0.069	N/A	Pass

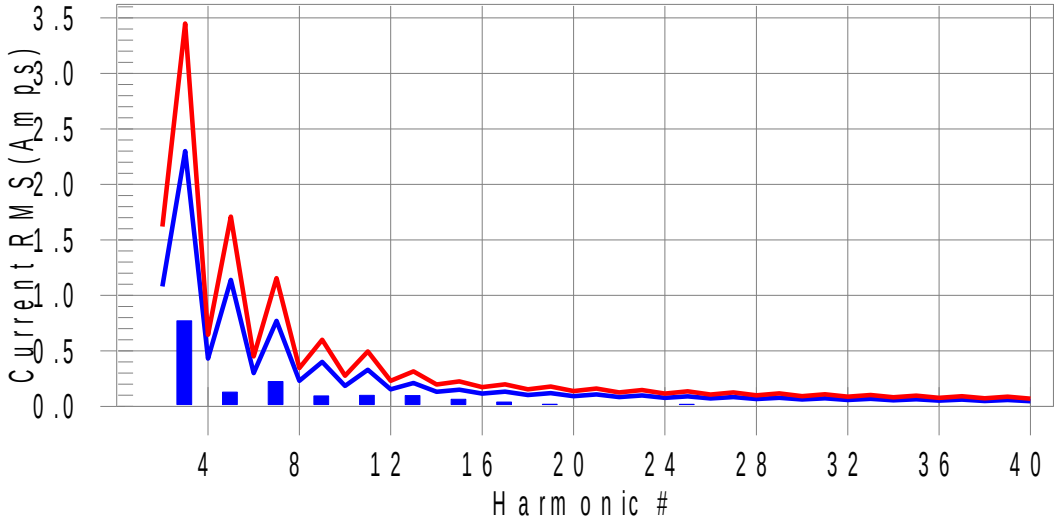
Remark	

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass Worst harmonics H13-32.2% of 150% limit, H13-46.1% of 100% limit

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	AC mains power input

THC(A): 0.834 I-THD(%): 16.0 POHC(A): 0.031 POHC Limit(A): 0.251

Highest parameter values during test:

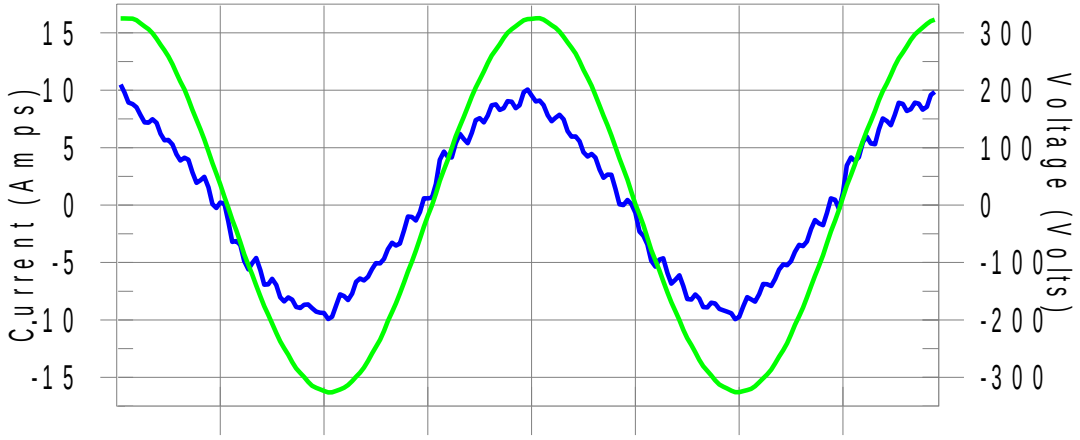
V_RMS (Volts):	230.50	Frequency(Hz):	50.00
I_Peak (Amps):	9.209	I_RMS (Amps):	5.277
I_Fund (Amps):	5.199	Crest Factor:	1.808
Power (Watts):	1182.5	Power Factor:	0.975

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.012	1.080	N/A	0.013	1.620	N/A	Pass
3	0.771	2.300	33.5	0.783	3.450	22.7	Pass
4	0.004	0.430	N/A	0.005	0.645	N/A	Pass
5	0.129	1.140	11.3	0.151	1.710	8.9	Pass
6	0.004	0.300	N/A	0.005	0.450	N/A	Pass
7	0.224	0.770	29.1	0.241	1.155	20.9	Pass
8	0.005	0.230	N/A	0.009	0.345	N/A	Pass
9	0.094	0.400	23.6	0.130	0.600	21.7	Pass
10	0.007	0.184	N/A	0.013	0.276	N/A	Pass
11	0.099	0.330	30.1	0.107	0.495	21.6	Pass
12	0.004	0.153	N/A	0.009	0.230	N/A	Pass
13	0.097	0.210	46.1	0.102	0.315	32.2	Pass
14	0.006	0.131	N/A	0.012	0.197	N/A	Pass
15	0.064	0.150	42.8	0.072	0.225	32.1	Pass
16	0.004	0.115	N/A	0.008	0.173	N/A	Pass
17	0.039	0.132	29.3	0.043	0.198	21.5	Pass
18	0.003	0.102	N/A	0.006	0.153	N/A	Pass
19	0.019	0.118	N/A	0.030	0.178	N/A	Pass
20	0.002	0.092	N/A	0.004	0.138	N/A	Pass
21	0.013	0.107	N/A	0.017	0.161	N/A	Pass
22	0.002	0.084	N/A	0.003	0.125	N/A	Pass
23	0.007	0.098	N/A	0.009	0.147	N/A	Pass
24	0.001	0.077	N/A	0.002	0.115	N/A	Pass
25	0.018	0.090	N/A	0.020	0.135	N/A	Pass
26	0.001	0.071	N/A	0.002	0.107	N/A	Pass
27	0.011	0.083	N/A	0.016	0.125	N/A	Pass
28	0.001	0.066	N/A	0.002	0.099	N/A	Pass
29	0.011	0.078	N/A	0.012	0.116	N/A	Pass
30	0.001	0.061	N/A	0.002	0.092	N/A	Pass
31	0.009	0.073	N/A	0.010	0.109	N/A	Pass
32	0.001	0.058	N/A	0.002	0.086	N/A	Pass
33	0.003	0.068	N/A	0.007	0.102	N/A	Pass
34	0.001	0.054	N/A	0.002	0.081	N/A	Pass
35	0.003	0.064	N/A	0.005	0.096	N/A	Pass
36	0.001	0.051	N/A	0.002	0.077	N/A	Pass
37	0.006	0.061	N/A	0.008	0.091	N/A	Pass
38	0.002	0.048	N/A	0.002	0.073	N/A	Pass
39	0.006	0.058	N/A	0.007	0.087	N/A	Pass
40	0.001	0.046	N/A	0.001	0.069	N/A	Pass

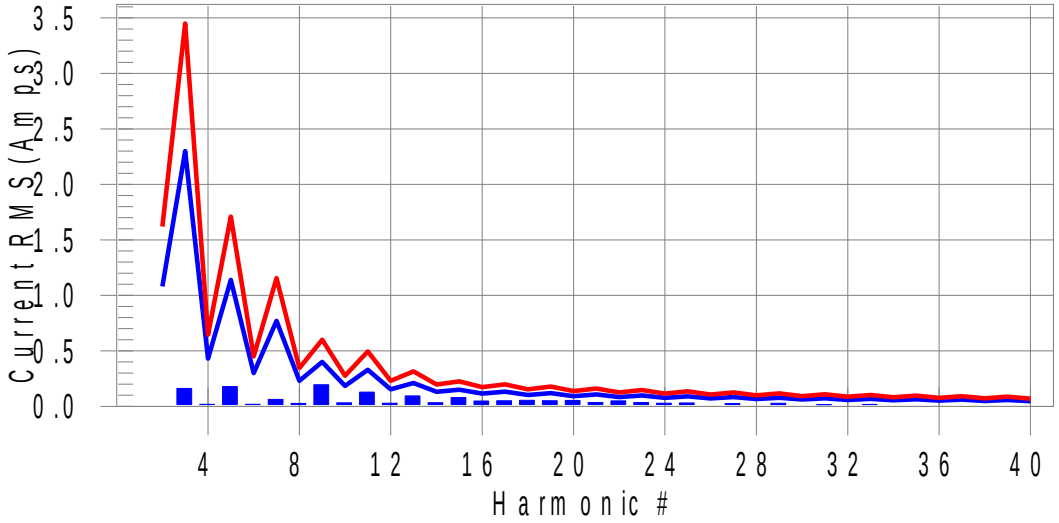
Remark	

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	AC mains power input
Operating mode / voltage / frequency used during the test		Mode 1 / 230 Vac / 50 Hz – worst case

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass Worst harmonics H20-41.7% of 150% limit, H22-58.5% of 100% limit

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	AC mains power input

THC(A): 0.398 I-THD(%): 6.2 POHC(A): 0.075 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts):	230.49	Frequency(Hz):	50.00
I_Peak (Amps):	10.562	I_RMS (Amps):	6.472
I_Fund (Amps):	6.428	Crest Factor:	1.820
Power (Watts):	1453.4	Power Factor:	0.979

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.015	1.080	N/A	0.017	1.620	N/A	Pass
3	0.161	2.300	7.0	0.190	3.450	5.5	Pass
4	0.018	0.430	N/A	0.021	0.645	N/A	Pass
5	0.178	1.140	15.6	0.194	1.710	11.4	Pass
6	0.018	0.300	N/A	0.025	0.450	N/A	Pass
7	0.062	0.770	8.1	0.079	1.155	6.8	Pass
8	0.026	0.230	N/A	0.029	0.345	N/A	Pass
9	0.195	0.400	48.8	0.225	0.600	37.5	Pass
10	0.031	0.184	N/A	0.039	0.276	N/A	Pass
11	0.128	0.330	38.9	0.160	0.495	32.3	Pass
12	0.029	0.153	N/A	0.034	0.230	N/A	Pass
13	0.093	0.210	44.3	0.106	0.315	33.8	Pass
14	0.033	0.131	N/A	0.037	0.197	N/A	Pass
15	0.079	0.150	53.0	0.091	0.225	40.6	Pass
16	0.049	0.115	42.4	0.053	0.173	30.9	Pass
17	0.050	0.132	37.9	0.058	0.198	29.3	Pass
18	0.054	0.102	53.1	0.060	0.153	39.4	Pass
19	0.050	0.118	42.5	0.063	0.178	35.4	Pass
20	0.053	0.092	57.9	0.058	0.138	41.7	Pass
21	0.034	0.107	N/A	0.040	0.161	N/A	Pass
22	0.049	0.084	58.5	0.051	0.125	41.0	Pass
23	0.035	0.098	N/A	0.039	0.147	N/A	Pass
24	0.029	0.077	N/A	0.031	0.115	N/A	Pass
25	0.031	0.090	N/A	0.036	0.135	N/A	Pass
26	0.014	0.071	N/A	0.016	0.107	N/A	Pass
27	0.025	0.083	N/A	0.029	0.125	N/A	Pass
28	0.008	0.066	N/A	0.010	0.099	N/A	Pass
29	0.027	0.078	N/A	0.033	0.116	N/A	Pass
30	0.007	0.061	N/A	0.008	0.092	N/A	Pass
31	0.016	0.073	N/A	0.020	0.109	N/A	Pass
32	0.006	0.058	N/A	0.007	0.086	N/A	Pass
33	0.017	0.068	N/A	0.021	0.102	N/A	Pass
34	0.006	0.054	N/A	0.007	0.081	N/A	Pass
35	0.013	0.064	N/A	0.014	0.096	N/A	Pass
36	0.006	0.051	N/A	0.007	0.077	N/A	Pass
37	0.012	0.061	N/A	0.016	0.091	N/A	Pass
38	0.006	0.048	N/A	0.007	0.073	N/A	Pass
39	0.012	0.058	N/A	0.015	0.087	N/A	Pass
40	0.002	0.046	N/A	0.003	0.069	N/A	Pass

Remark	

4.8	Voltage changes, voltage fluctuations and flicker	VERDICT: PASS

Standard	EN 61000-3-3

Limits

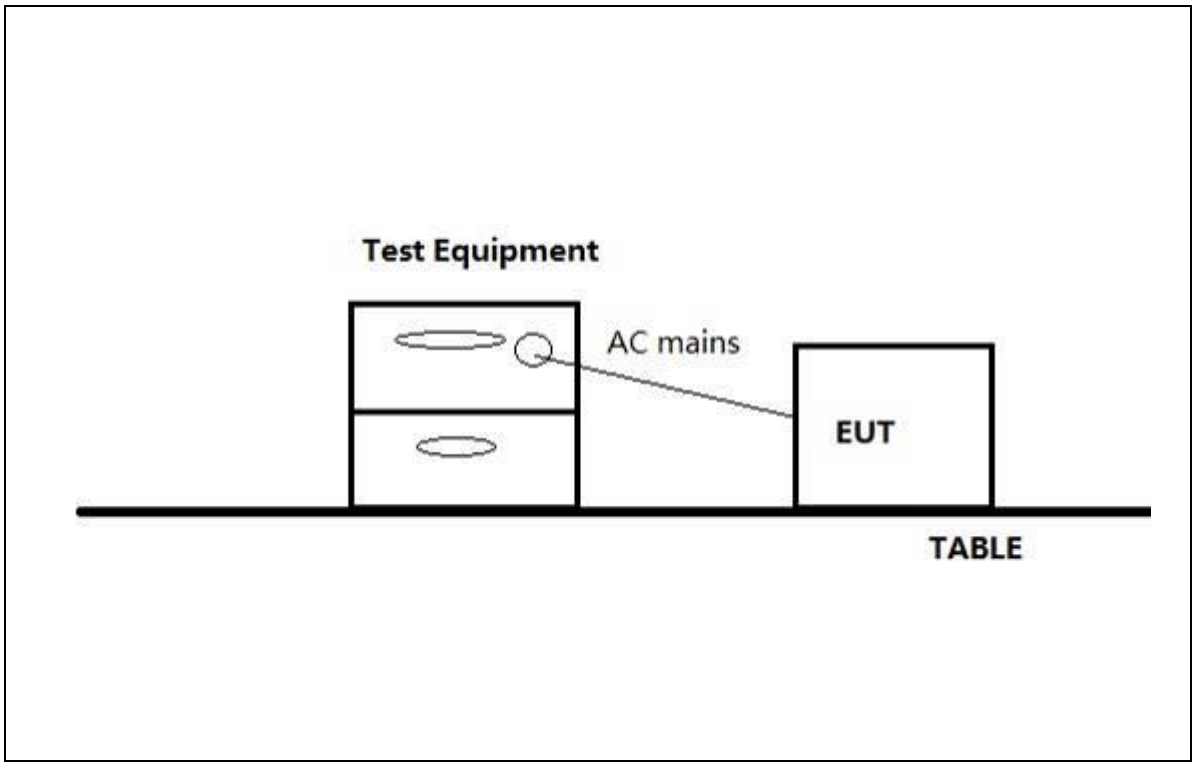
P_{ST} (Short term flicker)	☒	≤ 1	☐	Not Applicable
P_{LT} (Long term flicker)	☒	≤ 0,65	☐	Not Applicable
d_C (Relative Voltage change)	☒	≤ 3,3%	☐	Not Applicable
d_{MAX} (Max. voltage change)	☐	≤ 4%	☒	6%
	☐	7%	☐	Not Applicable
Tmax	☒	≤ 500 ms		
Supplemental information:				

Performed measurements

Reason for not performing the measurement(s)	☐	Tests are not necessary because the EUT is unlikely to produce significant voltage fluctuations or flicker (clause 6.1).				
Port under test	AC Mains power input					
Voltage – Mains [V]	230 Vac					
Frequency – Mains [Hz]	50 Hz					
Test method	☒	Flickermeter according EN / IEC 61000-4-15:2011				
	☐	Simulation (Clause 4.2.3 of EN / IEC 61000-3-3)				
	☐	Analytical method (Clause 4.2.4 of EN / IEC 61000-3-3)				
	☐	Use of P_{st} = 1 curve (Clause 4.2.5 of EN / IEC 61000-3-3)				
Observation peroid	☐	10 min.	☒	120 min.	☐	Other:
	☐	24 times switching according to Annex B				
Operating mode(s) used	Mode 1, 2					
Remark	Ambient temperature is 30 °C ± 5 °C for cooling mode, 15 °C ± 5 °C for Heating mode					

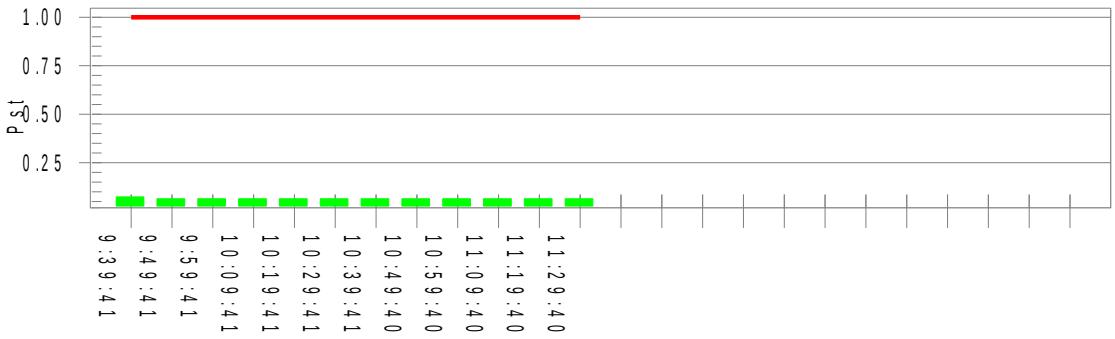
See next page.

Test Configuration



Measurement data of TAC-09CHSD/ TP11I3A	Port under test	AC Mains power input
Operating mode used during the test	Mode 1 – worst case	

Pst$_i$ and limit line **European Limits**



Plt and limit line

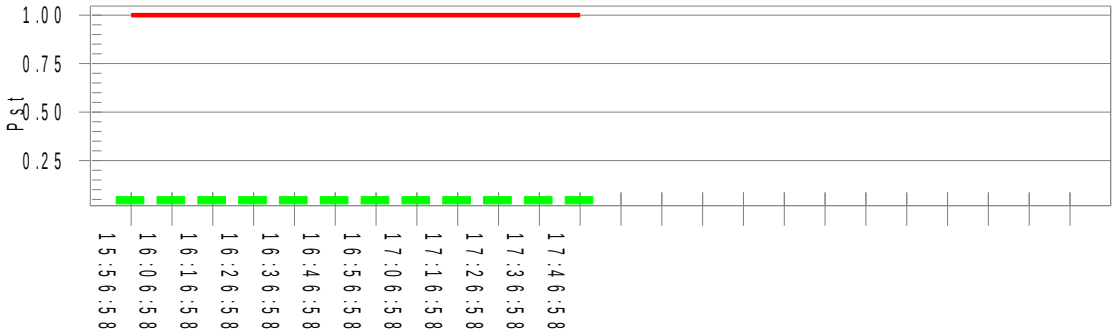
Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.49**			
Highest dt (%):		**Test limit (%):**		
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**6.00**	**Pass**
Highest Pst (10 min. period):	**0.073**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.065**	**Test limit:**	**0.650**	**Pass**

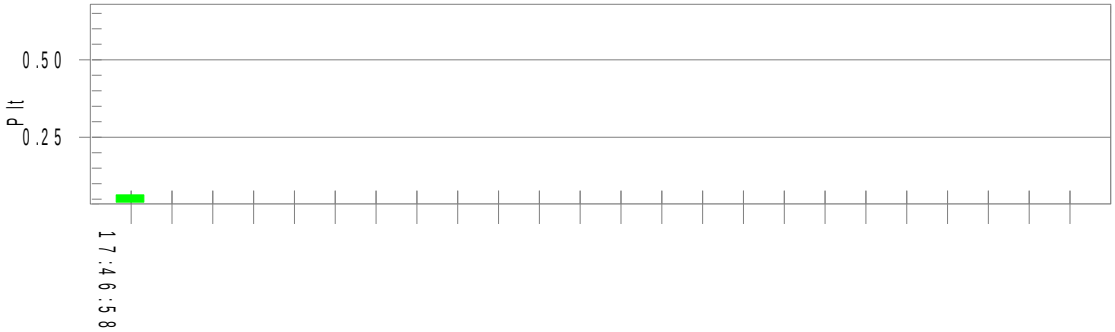
Remark	

Measurement data of TAC-12CHSD/ TP11I3A	Port under test	AC Mains power input
Operating mode used during the test	Mode 1 – worst case	

Pst and limit line **European Limits**



Plt and limit line



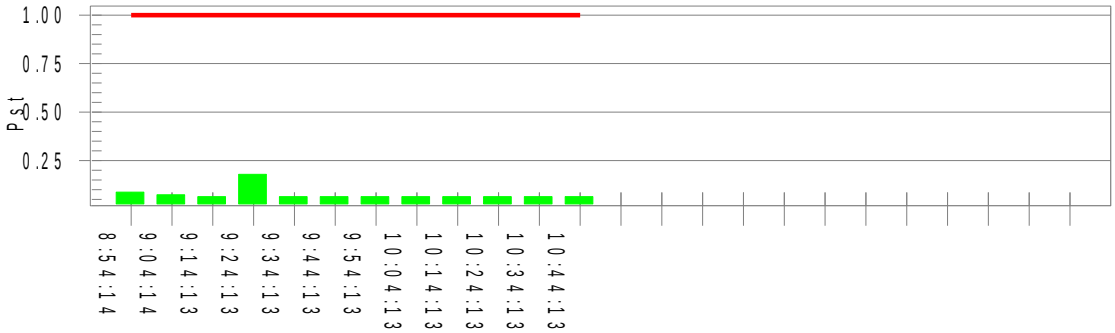
Parameter values recorded during the test:

Vrms at the end of test (Volt):	**233.12**			
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**6.00**	**Pass**
Highest Pst (10 min. period):	**0.064**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.064**	**Test limit:**	**0.650**	**Pass**

Remark	

Measurement data of TAC-18CHSD/ TP11I3A	Port under test	AC Mains power input
Operating mode used during the test	Mode 1 – worst case	

Pst and limit line **European Limits**



Plt and limit line

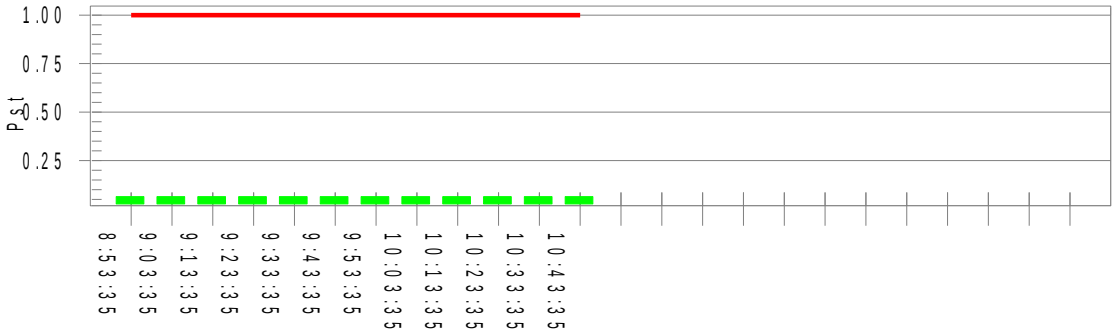
Parameter values recorded during the test:

Vrms at the end of test (Volt):	**234.14**			
Highest dt (%):		**Test limit (%):**		
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**-1.13**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-1.17**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.179**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.091**	**Test limit:**	**0.650**	**Pass**

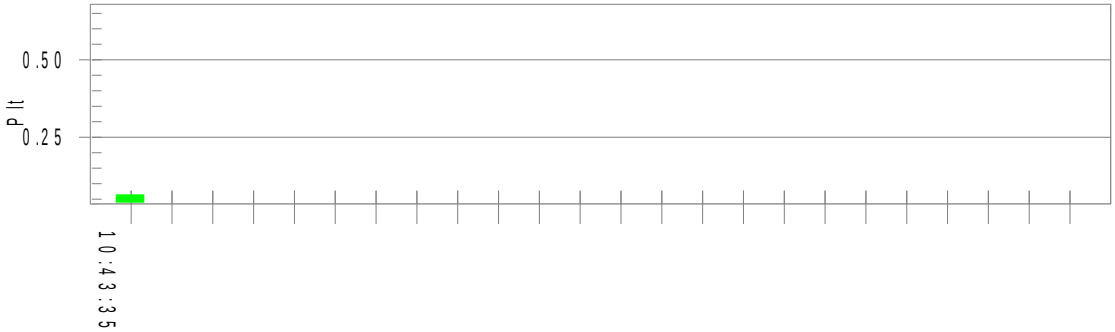
Remark	

Measurement data of TAC-24CHSD/ TP11I3A	Port under test	AC Mains power input
Operating mode used during the test	Mode 1 – worst case	

Pst and limit line **European Limits**



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**232.25**			
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.064**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.064**	**Test limit:**	**0.650**	**Pass**

Remark	

5 IMMUNITY TEST RESULTS

5.1 Performance (Compliance) criteria

[According to EN 55014-2 (CISPR 14-2)]

Performance criteria A : The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and from what the user may reasonably expect from the apparatus if used as intended.

Performance criteria B : The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer when the apparatus is used as intended. During the test, degradation of performance is allowed however 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 then either of these may be derived from the product description and documentation and from what the user may reasonable expect from the apparatus if used as intended.

Performance criteria C : Temporary loss of function is allowed provided the function is self- recoverable or can be restored by the operation of the controls or by any operation specified in the instruction for use.

5.1.1 Performance criteria related to immunity tests

Immunity test	Performance criteria
Electrostatic discharge	B
Radio-frequency electromagnetic fields	A
Fast transients	B
Surge transient	B
Injected currents (radio-frequency common mode)	A
Voltage dips and short interruptions	C

5.1.2 Manufacturer defined performance criteria

Not provided.

5.2 Monitored – Checked Functions / Parameters

During the immunity tests the following functions of the EUT has/have been monitored/checked.

☒	Motor speed	☐	Display data
☐	Switching	☐	Data storage
☐	Standby mode	☐	Sensor functions
☒	Temperature	☐	Audible signals
☐	Power consumption	☒	Others : LED's
☒	AC mains input current	☐	Others :
☐	Timing	☐	Others :
☐	Illumination	☐	Others :
Supplementary information :			

Immunity test	Monitored - Checked function(s)/parameter(s) during / after the test	Method
Electrostatic discharge	Mode 1&2	Visual
Fast transients	Mode 1&2	Visual
Surge transient	Mode 1&2	Visual
Injected currents (radio-frequency common mode)	Mode 1&2	Visual
Voltage dips and short interruptions	Mode 1&2	Visual
Supplementary information :		

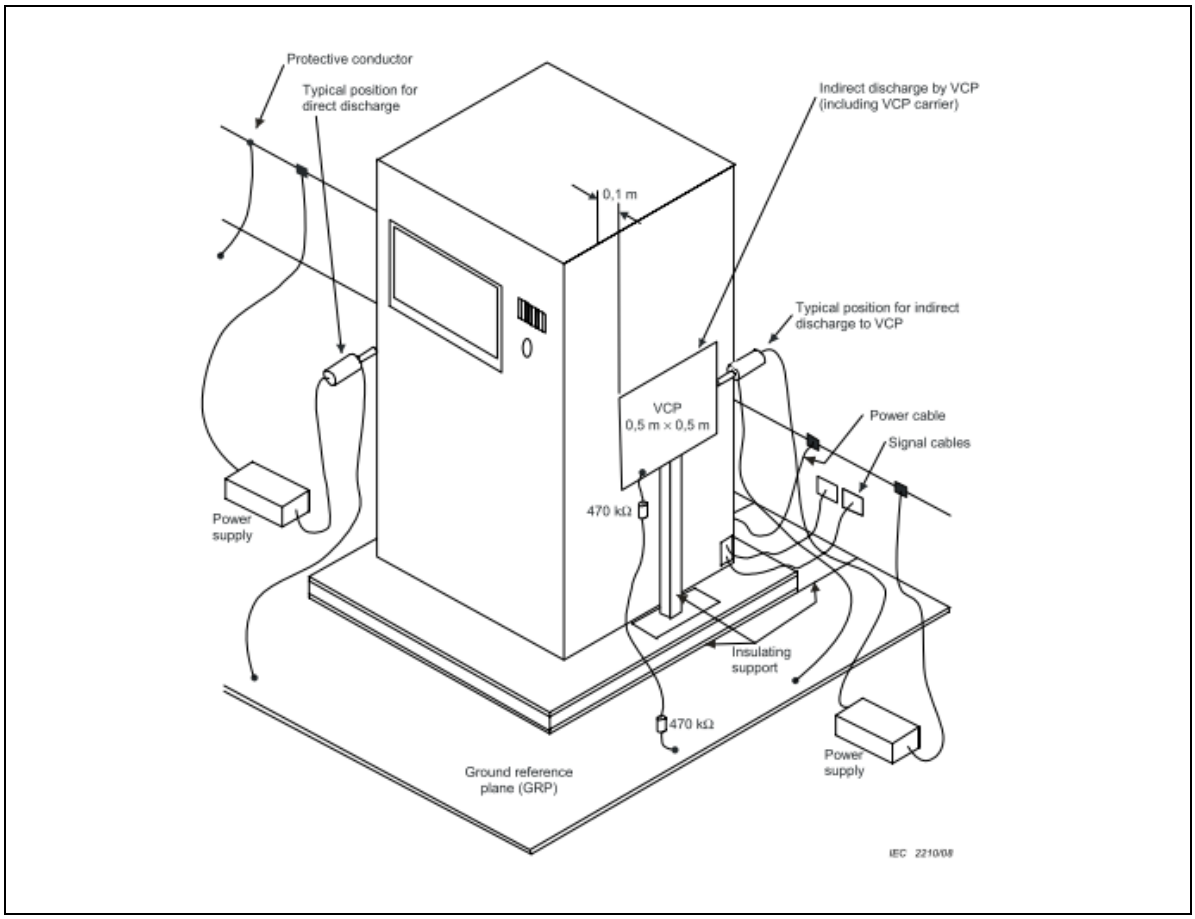
5.3	Electrostatic discharge immunity	VERDICT:	PASS

Electrostatic discharges (ESD) are the result of persons or objects that accumulate static electricity due to for instance walking on synthetic carpets. The ESD can influence the operation of equipment or damage its electronics, either by a direct discharge or indirectly by coupling or radiation. Both effects are simulated during the tests.

Requirements

Standard	EN 55014-2							
Basic standard	EN 61000-4-2							
Port under test	Enclosure							
Air discharges [1)]	☐	±2 kV	☐	±4 kV	☒	±8 kV	☐	kV
Contact discharges [1)]	☐	±2 kV	☒	±4 kV	☐	±8 kV	☐	kV
Number of discharges	≥ 10 per polarity with ≥ 1 sec interval.							
[1)] Tests with lower voltages are not required.								

Test Configuration



Performed tests of TAC-09CHSD/ TP11I3A, TAC-12CHSD/ TP11I3A, TAC-18CHSD/ TP11I3A, TAC-24CHSD/ TP11I3A

Set-up	☐	Table-top	☒	Floor standing	
Ambient temperature [°C]	23,5			Relative Humidity air [%]	51
Atmospheric pressure	101 kPa				
Voltage – Mains [V]	230 Vac				
Frequency – Mains [Hz]	50 Hz				
Operating mode(s) used	Mode 1&2				

Test Point (Location of discharge, see also photo)		Test Voltage [kV] & Polarity	Coupling type	# of applied discharges / polarity	Discharge interval [s]
☒	Points on conductive surface as indicated in the picture below.	±4	Contact	10	1
☒	Points on non-conductive surface as indicated in the picture below.	±8	Air	10	1
☐	HCP	±4	Contact	10	1
☒	VCP	±4	Contact	10	1
Observation(s)	During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.				
Supplementary information:					

Photo of selected test points

All models have the same construction

Remark: this is the representative selected points for ESD test, the other side which can be touched points are also selected for ESD test.

Supplementary information: Red and bue arrows representative discharge points.

5.4	Radio-frequency electromagnetic fields immunity	VERDICT: N/A

During the test it is verified if the equipment under test (EUT) has sufficient immunity against radiated electromagnetic fields. Industrial electromagnetic sources, walkie-talkies, radio transmitters, television transmitters and telecommunication equipment including cellular telephones and other emitting devices can generate these fields.

Requirements

Standard	EN 55014-2			
Basic standard	EN 61000-4-3			
Port under test	Enclosure			
Frequency range	Test level	Modulation	Dwell time	Step size
80 – 1000 MHz	3 V/m	80% AM (1kHz)	≥ 0,5 s	≤ 1%
Supplementary information:				

Performed tests

~~Test method~~	☒	~~EN 61000-4-3~~		☐	~~EN 61000-4-20~~	
~~Test set-up~~	☐	~~Equipment on the table (0,8 m height)~~				
~~(see annex 3 for photo)~~	☐	~~Equipment standing on floor (0,05 – 0,15 m height)~~				
~~Voltage – Mains [V]~~	~~(Please write the voltage/voltages used for testing)~~					
~~Frequency – Mains [Hz]~~	~~(Please write the frequency/frequencies used for testing)~~					
~~Operating mode(s) used~~	~~(Please write operating mode(s) used for testing)~~					
~~Frequency range (applied)~~	~~Antenna Polarization~~	~~Test level (applied)~~		~~Modulation (applied)~~	~~Dwell time (applied)~~	~~Remark~~
~~80 – 1000 MHz~~	~~H~~	~~3 V/m~~		~~80% AM (1kHz)~~	~~2 s~~	
~~(step size 1%)~~	~~V~~	~~3 V/m~~		~~80% AM (1kHz)~~	~~2 s~~	
~~Exposed side of the EUT~~	☐	~~Front (0°)~~	☐	~~Right (90°)~~	☐	~~Top~~
	☐	~~Rear (180°)~~	☐	~~Left (270°)~~	☐	~~Bottom~~
~~Observation(s)~~	~~During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.~~					
~~Supplementary information:~~						

5.5	Electrical Fast Transients immunity	VERDICT: PASS

The EFT immunity test simulates disturbances by bursts of very short transients caused for example by switching off loads such as an AC motor or bouncing relay contacts. The transients are likely to disturb electronics but less likely to cause damage.

Requirements

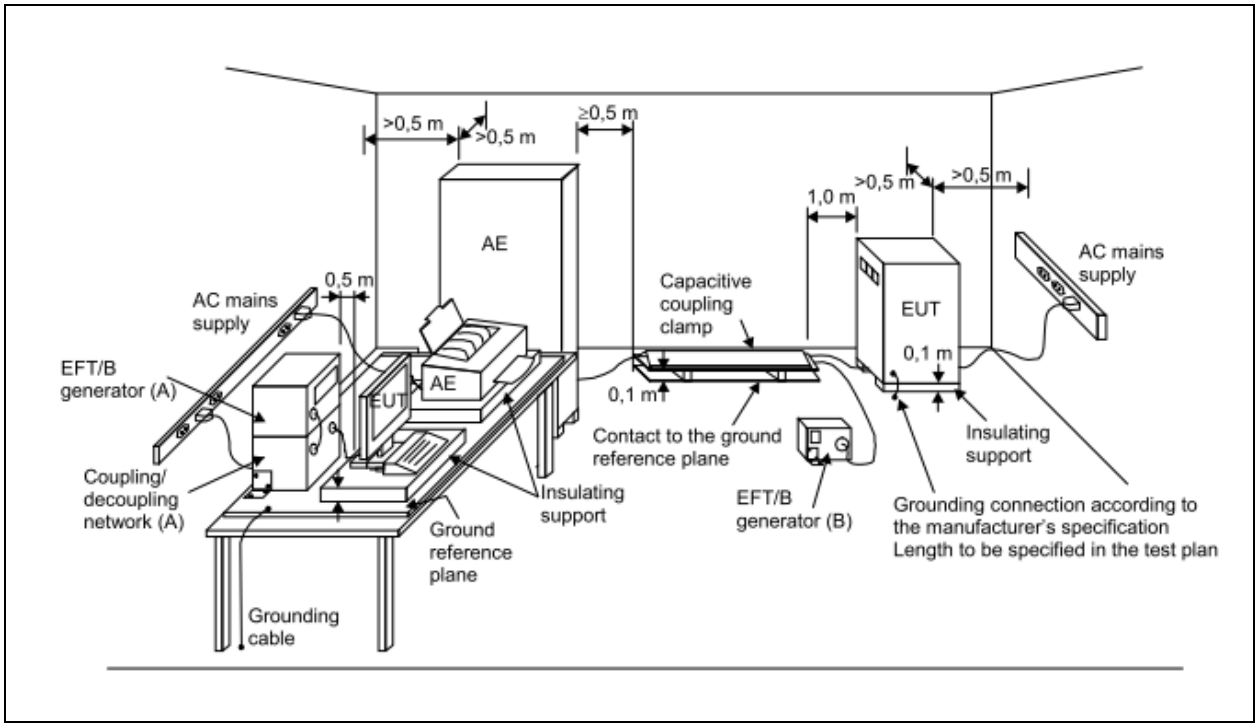
Standard	EN 55014-2			
Basic standard	EN 61000-4-4			
Pulse characteristics	5/50 ns			
Port		Test level	Repetition frequency	Duration
☒	AC input-output power [1]	± 1000 V	5 KHz	2 min. / polarity
☐	DC input-output power [2]	± 500 V	5 KHz	2 min. / polarity
☒	Signal and Control lines [3]	± 500 V	5 KHz	2 min. / polarity

[1] For extra low voltage a.c ports, this testing is only applicable to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification.

[2] Not applicable to battery operated appliances that cannot be connected to the mains while in use.

[3] Applicable only to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification.

Test Configuration



Performed tests of TAC-09CHSD/ TP11I3A, TAC-12CHSD/ TP11I3A, TAC-18CHSD/ TP11I3A, TAC-24CHSD/ TP11I3A

Voltage – Mains [V]	230 Vac			
Frequency – Mains [Hz]	50 Hz			
Operating mode(s) used	Mode 1&2			
Test Set-up (see annex 3 for photo)	☒	Equipment standing on floor at (0,1 ± 0,01) m above ground plane		
	☐	Equipment on the table (0,1 ± 0,01) m above ground plane		
	☐	Artificial hand applied. Location refer to annex 3.		
Coupling	☒	Common mode	☐	Other:

Port(s) under test	Test Voltage &Polarity	Repetition Frequency	Test duration / polarity	Injection method			
AC mains power input	± 1000 V	5 KHz	2 min. / polarity	☒	CDN	☐	Clamp
Signal ports	± 500 V	5 KHz	2 min. / polarity	☐	CDN	☒	Clamp
				☐	CDN	☐	Clamp
Observation(s)	During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.						

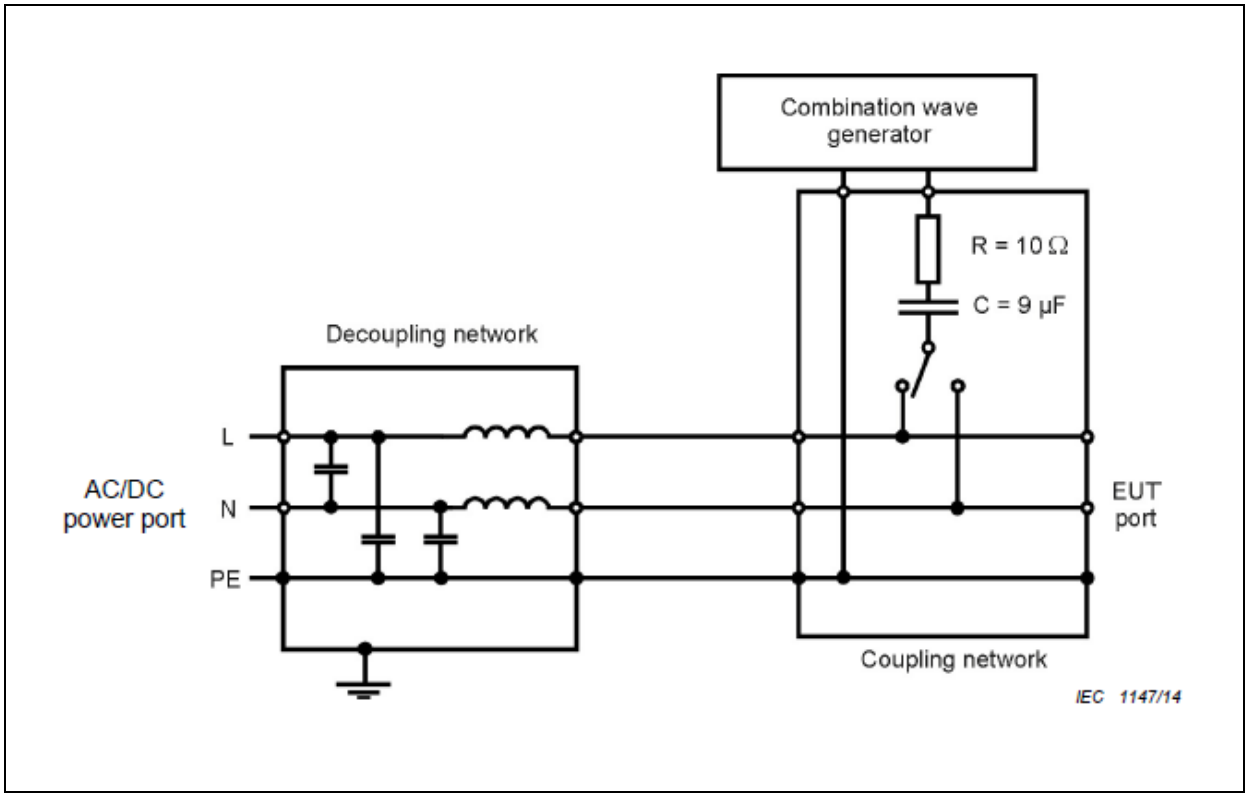
5.6	Surge transient immunity	VERDICT: PASS

The surge transient immunity test simulates the surges that are caused by over-voltages due to indirect (induced) lightning transients. The pulse is a slow transient with high-energy contents and due to its long duration may cause damage to an unprotected EUT.

Requirements

Standard	EN 55014-2		
Basic standard	EN 61000-4-5		
Pulse characteristics	1,2/50µs Voltage; 8/20µs Current		
Repetition rate	≥ 60 secs. (for each test level and phase angle)		
Number of pulses	5 pulses (at each polarity and phase angle)		
Port	Test level & Polarity & Coupling		Phase angle
	Line to Line	Line to Earth	[°]
AC input power [1)]	+ 1 kV	+ 2 kV	90
AC input power [1)]	- 1 kV	- 2 kV	270
[1)] Tests with lower voltages are not required.			

Test Configuration



Performed tests of TAC-09CHSD/ TP11I3A, TAC-12CHSD/ TP11I3A, TAC-18CHSD/ TP11I3A, TAC-24CHSD/ TP11I3A

Voltage – Mains [V]	230 Vac
Frequency – Mains [Hz]	50 Hz
Operating mode(s) used	Mode 1&2
Repetition rate	60 secs. (for each test level and phase angle)
Number of pulses	5 pulses (at each polarity and phase angle)

Port(s) under test		Coupling	Test level & Polarity	Phase angle [º]	Remark
☒	AC mains input power	Line to Neutral	+1 kV	90	
☒	AC mains input power	Line to Neutral	-1 kV	270	
☒	AC mains input power	Line to Earth	+2 kV	90	
☒	AC mains input power	Line to Earth	-2 kV	270	
☒	AC mains input power	Neutral to Earth	+2 kV	90	
☒	AC mains input power	Neutral to Earth	-2 kV	270	
Observation(s)		During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.			
Supplementary information:					

5.7	Injected currents (RF common mode) immunity	VERDICT: PASS

During this test the immunity of the equipment for induced or conducted electromagnetic fields is checked. Fields generated by radio and other transmitters cause RF voltages in long cables like the mains network. This test reproduces these induced disturbing voltages by injecting them to the EUT via the cabling.

Requirements

Standard		EN 55014-2		
Basic standard		EN 61000-4-6		
Frequency range		Modulation	Step size	Dwell time
☐	0,15 – 80 MHz	80% AM (1kHz)	≤ 1%	≥ 0,5 s
☒	0,15 – 230 MHz	80% AM (1kHz)	≤ 1%	≥ 0,5 s
Port			Test level, *Uo*	
☒	AC input-output power [1]		3 V	
☐	DC input-output power [2] [3]		1 V	
☒	Signal and Control lines [4]		1 V	

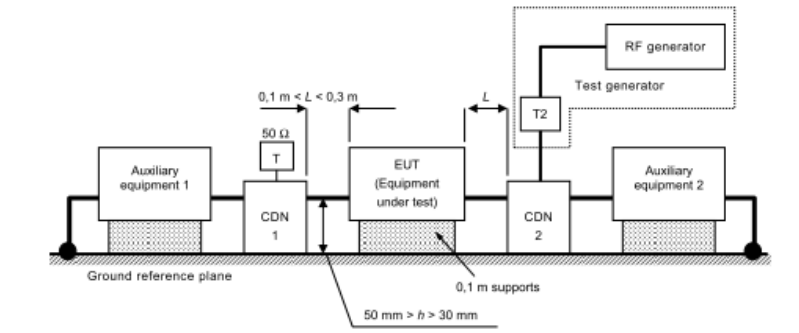
[1] For extra low voltage a.c ports, this testing is only applicable to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification.

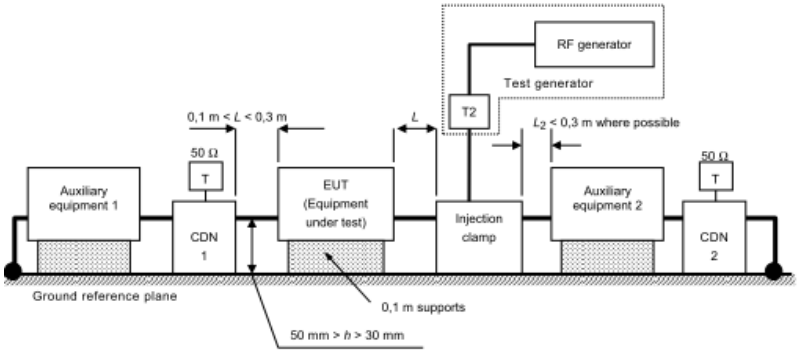
[2] Not applicable to battery operated appliances that cannot be connected to the mains while in use.

[3] Applicable to battery operated appliances that can be connected to the mains while in use, or to appliances for which the length of d.c. cables may exceed 3 m according to the manufacturer's functional specification.

[4] Applicable only to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification.

Test Configuration





Performed tests of TAC-09CHSD/ TP11I3A, TAC-12CHSD/ TP11I3A, TAC-18CHSD/ TP11I3A, TAC-24CHSD/ TP11I3A

Frequency range (applied)				Modulation (applied)	Step size (applied)
☐	0,15 – 80 MHz	☒	0,15 – 230 MHz	80% AM (1kHz)	1%
Voltage – Mains [V]		230 Vac		Frequency – Mains [Hz]	50 Hz
Operating mode(s) used		Mode 1&2			
Test set-up (see annex 3 for photo)		☒	Equipment standing on floor at (0,1 ± 0,01) m above ground plane.		
		☐	Equipment on the table (0,1 ± 0,01) m above ground plane.		
		☐	Artificial hand applied. Location refer to annex 3.		

Port(s) under test	Test Level (applied)	Injection method	Dwell time (applied)	Remark
AC mains power input	3V	CDN-M3	3s	
Signal ports	1V	EM Clamp	3s	
Observation(s)	During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.			
Supplementary information:				

5.8	Power supply interruptions and dips immunity	VERDICT: PASS

The purpose of the test is to verify the immunity of the equipment against voltage dips and voltage interruptions. It helps to ensure that the equipment functions properly (as expected and safely) with power supply fluctuations. Voltage dips and interruptions are caused by faults in the LV, MV, HV networks (short-circuit or ground faults).

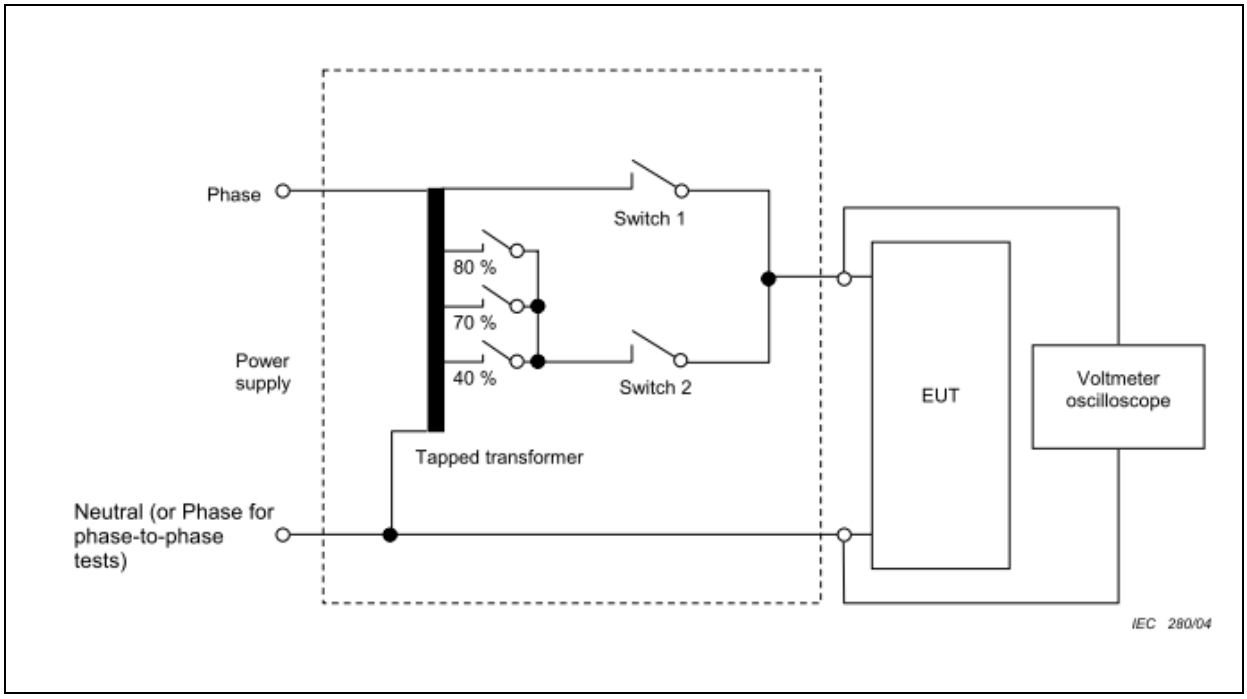
Requirements

Standard	EN 55014-2			
Basic standard	EN 61000-4-11			
# of dips & interruptions	3 dips / interruptions for each test level and phase angle			
Interval between events	≥ 10 seconds			
Port	Test level [1)]	Period (Cycles)		Performance Criterion
		50 Hz	60 Hz	
AC input power port	U_{NOM} – 100%	0,5	0,5	C; Refer to the chapter 5.1 for details.
AC input power port	U_{NOM} – 60%	10	12	C; Refer to the chapter 5.1 for details.
AC input power port	U_{NOM} – 30%	25	30	C; Refer to the chapter 5.1 for details.

[1)] Changes to the voltage level shall occur at a zero crossing point in the a.c. voltage waveform.

NOTE: Where the equipment has a rated voltage range the following shall apply:
- If the voltage range does not exceed 20% of the lower voltage specified for the rated voltage range. A single voltage within that range may be selected for testing.
- In all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range.

Test Configuration



Performed tests of TAC-09CHSD/ TP11I3A, TAC-12CHSD/ TP11I3A, TAC-18CHSD/ TP11I3A, TAC-24CHSD/ TP11I3A

U_{NOM} [V_{AC}]	Terminal	Voltage dip [% U_{NOM}]	Duration [cycles]		Repetion rate [s]	Number of dips per test	Phase angle [º]
			50 Hz	60 Hz			
230	L-N	0	0,5	/	10	3	0, 180
230	L-N	40	10	/	10	3	0, 180
230	L-N	70	25	/	10	3	0, 180

Operating mode(s) used	Mode 1&2
Observation(s)	During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or data was observed.

Supplementary information:

6 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photographs show the tested device.

Indoor unit view of TAC-09CHSD/ TP11I3A

Outdoor unit view of TAC-09CHSD/ TP11I3A

Indoor unit view of TAC-12CHSD/ TP11I3A

Outdoor unit view of TAC-12CHSD/ TP11I3A

Indoor unit view of TAC-18CHSD/ TP11I3A

Outdoor unit view of TAC-18CHSD/ TP11I3A

Indoor unit view of TAC-24CHSD/ TP11I3A

Outdoor unit view of TAC-24CHSD/ TP11I3A

7 ANNEX 1 - MEASUREMENT UNCERTAINTIES

The table(s) below show(s) measurment uncertainties of the EMC test set-ups. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Measurement		Uncertainty
Mains disturbance voltage	(150 kHz-30MHz)	**2,82 dB**
Disturbance Power	(30 MHz-300 MHz)	**3,76dB**

8 ANNEX 2 – USED EQUIPMENT

DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch					
Instrumentation	Manufacturer	Model No.	Serial No.	DEKRA No.	Cal. Due date
Shielding Room	Changzhou Feite	/	/	G/L861	2024/05/31
EMI Receiver	R&S	ESCI	101206	G/L857	2023/07/07
LISN	R&S	ENV216	101336	G/L859	2023/07/07
Multi-Channel Discontinuous Interference Analyzer	TESEQ	DIA1512D	28300	G/L871	2023/07/07
LISN	R&S	ENV216	101336	G/L860	2023/07/07
Clamp	TESEQ	MDS21	4085	G/L863	2022/08/11
POWER SOURCE	California Instruments	500LiX-CTS-400	1132A00193	G/L862	2023/07/07
Analyzer	California Instruments	PACS-A	1132A00193	G/L862	2023/07/07
ESD Generator	TESEQ	NSG435	6513	G/L867	2022/08/10
Signal Generator	TESEQ	NSG3040	1821	G/L868	2023/05/08
STEPTRANSFORMER	TESEQ	INA6501	/	G/L868	2023/05/08
Clamp	TESEQ	CDN 8014	/	G/L868	2023/05/08
33nF capacitor	-	-	-	G/L2248	2023/07/19
Signal Generator	TESEQ	NSG4070	31446	G/L870	2022/12/26
CDN	TESEQ	M016	31564	G/L870	2022/12/26
EM-Clamp	TESEQ	KEMZ801	31493	G/L870	2022/12/26
6dB	TESEQ	ATN6075	30789	G/L870	2022/12/26

9 ANNEX 3 - TEST PHOTOS

Conducted disturbance voltage at mains terminals

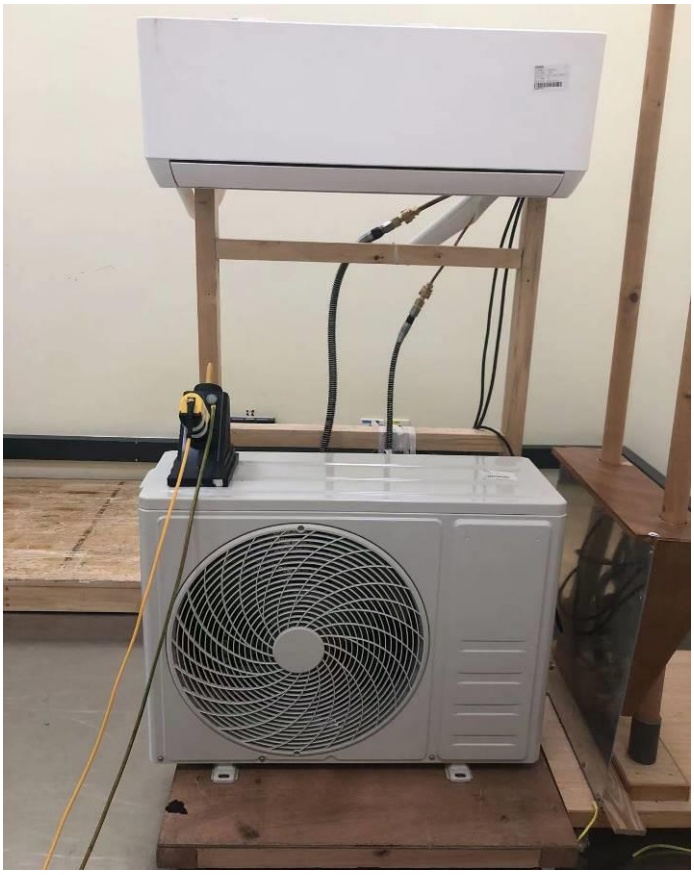
Conducted disturbance voltage at additional terminals

Discontinuous disturbance (clicks) on AC power leads

Disturbance power

Harmonic current emissions & Flicker

Electrostatic discharge immumity



Electrical fast transient (EFT) / Burst transients immumity, Surge transients & Power supply voltage interruptions & dips immunity

Conducted RF disturbances immunity

---END---