

CERTIFICATE of Conformity



Certificate No.: MK 69265462 0001

Test Report No.: HU21PKA7 001

Certificate Holder: Ventilation Systems PrJSC
1, Mikhaila Kotzubinskogo St.,
Kiev UA-01030, Ukraine

Product: Centrifugal ceiling fan

Identification: Model: CBF 200; CBF 250; CBF 300;
CBF LP 200; CPF LP 250

Ratings:
220-240 V, 50 Hz,
20/29 W (CBF 200, CBF LP 200)
23/39 W (CBF 250, CBF LP 250, CBF 300)
220 V 60 Hz,
21/34 W (CBF 200, CBF LP 200)
25/50 W (CBF 250, CBF LP 250, CBF 300)

Class I, IP 2X, Tamb=1-40°C, T - Tropical climate

Trademark: VENTS

Tested according to: EN IEC 55014-1:2021
EN IEC 55014-2:2021
EN IEC 61000-3-2:2019
EN 61000-3-3:2013+A1

This certificate refers to the above mentioned product. This is to certify that the test sample is in conformity with the requirements stated above. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity.

Certification Body

Date of Issue:
Budapest, 2021-06-21

Ferencne Schmidt

TÜV Rheinland InterCert Kft. – Product Certification Body — H-1143 Budapest, Gizella út 51-57. — www.tuv.com

Validity of certificate can be checked on www.CERTIPEDIA.com

Vizsgálati jegyzőkönyv sz.: <i>Test Report No.:</i>		HU21PKA7 001		Rendelés sz.: <i>Order No.:</i>		93381013		Oldal 1 / 63 <i>Page 1 / 63</i>	
Megbízó: <i>Client:</i>		Ventilation Systems PrJSC 1, Mikhaila Kotzubinskogo St., Kyiv, UA-01030, Ukraine							
Gyártó: <i>Manufacturer:</i>		Ventilation Systems PrJSC 1, Mikhaila Kotzubinskogo St., Kyiv, UA-01030, Ukraine.							
Vizsgálat tárgya: <i>Test item:</i>		Centrifugal ceiling fan							
Azonosítás: <i>Identification:</i>		CBF 200; CBF 250; CBF 300; CBF LP 200; CBF LP 250				Széria sz.: <i>Serial No.:</i>		pre-production sample without serial number	
Raktározási szám.: <i>Receipt No.:</i>		A003032488-001				Átvételi dátum: <i>Date of receipt:</i>		2021-04-12	
Vizsgálati tárgy állapota: <i>Condition of test item:</i>		Hiánytalan, sérülésmentes <i>Complete, undamaged</i>				Vizsgálat ideje: <i>Duration of test:</i>		2021-04-27 – 2021-04-29	
Vizsgálati előírás: <i>Test specification:</i>		EN IEC 55014-1:2021 EN IEC 55014-2:2021 EN IEC 61000-3-2:2019 EN 61000-3-3:2013+A1:2019							
Vizsgálat helyszíne: <i>Testing location:</i>		TÜV Rheinland InterCert Kft. Termékek üzletág Termékvizsgáló laboratórium H-1135 Budapest, Béke u. 41-43., Hungary							
Vizsgáló laboratórium: <i>Testing Laboratory:</i>		TÜV Rheinland InterCert Kft. Termékek üzletág Termékvizsgáló laboratórium H-1143 Budapest, Gizella út 51-57., Hungary							
Vizsgálati eredmény: <i>Test Result:</i>		A vizsgálati minta megfelel a fent megnevezett vizsgálati előírásoknak. <i>The test item passed the test specification(s) above.</i>							
Vizsgálta/ tested by:					Ellenőrizte/ reviewed by:				
See date in digital signature expert					See date in digital signature reviewer				
Dátum <i>Date</i>	Név, feladatkör <i>Name, function</i>	Aláírás <i>Signature</i>	Dátum <i>Date</i>	Név, feladatkör <i>Name, function</i>	Aláírás <i>Signature</i>				
Egyéb szempontok/ Other Aspects:									
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Rated data: 220-240 V; 50 Hz; 20 / 29 W (CBF 200; CBF LP 200); 23 / 39 W (CBF 250; CBF LP 250; CBF 300) 220 V; 60 Hz; 21 / 34 W (CBF 200; CBF LP 200) 25 / 50 W (CBF 250; CBF LP 250; CBF 300) Class I.; IP 2X; T _{amb} =1-40°C; T – tropical climate									
Trade mark: VENTS									
Rövidítések:					Abbreviations:				
P(ass) = megfelelő F(ail) = nem megfelelő N/A = nem vonatkozik N/T = nem vizsgált					P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested				
Ezen vizsgálati jegyzőkönyv a vizsgált mintapéldányra vonatkozik. A vizsgáló szervezet engedélye nélkül részleges másolata nem engedélyezett. Ez a jegyzőkönyv nem jogosít fel valamely biztonsági jel használatára. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>									

Test Report issued under the responsibility of:



TEST REPORT EN 55014-1, EN 55014-2, EN IEC 61000-3-2, EN 61000-3-3 Household appliances, electrical tools & similar apparatus	
Report Reference No.....	HU21PKA7 001
Date of issue:	See date in digital signature
Total number pages:	63
Name of Testing Laboratory preparing the Report.....	TÜV Rheinland InterCert kft., MEEI Division
Applicant's name.....	Ventilation Systems PrJSC
Address	1, Mikhaïla Kotzubinskogo St., Kiev, UA-01030, Ukraine
Test specification: Standard : EN IEC 55014-1:2021; EN IEC 55014-2:2021; EN IEC 61000-3-2:2019; EN 61000-3-3:2013+A1:2019 Test procedure..... : Type test Non-standard test method..... : N/A	
TRF template used	IECEE OD-2020-F7:2020; ed. 1.1
Test Report Form No.....	IECCISPR14_1&2_IEC61000_3_2&3I
Test Report Form(s) Originator:	VDE Prüf- und Zertifizierungsinstitut GmbH
Master TRF	2020-11-16
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General disclaimer: The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	

Test item description	Centrifugal ceiling fan	
Trademark	VENTS	
Manufacturer	Ventilation Systems PrJSC 1, Mikhaila Kotzubinskogo St., Kiev, UA-01030, Ukraine	
Model / Type reference	CBF 200; CBF 250; CBF 300; CBF LP 200; CBF LP 250	
Rating(s)	220-240 V; 50 Hz; 20 / 29 W (CBF 200; CBF LP 200) 23 / 39 W (CBF 250; CBF LP 250; CBF 300) 220 V; 60 Hz; 21 / 34 W (CBF 200; CBF LP 200) 25 / 50 W (CBF 250; CBF LP 250; CBF 300) Class I.; IP 2X; T _{amb} =1-40°C; T – tropical climate	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	Testing Laboratory:	TÜV Rheinland InterCert kft., MEEI Division
	Testing location/ address	H-1143 Budapest, Gizella út 51-57., Hungary
	Tested by (name, function, signature)	Balázs Sztehlík (testing engineer) (see on cover page test report)
	Approved by (name, function, signature) :	Tamás Novotny (technical certifier) (see on cover page test report)
☐ Testing procedure: CTF Stage 1:		
	Testing location/ address	
	Tested by (name, function, signature)	
	Approved by (name, function, signature) :	
☐ Testing procedure: CTF Stage 2:		
	Testing location/ address	
	Tested by (name, function, signature)	
	Witnessed by (name, function, signature):	
	Approved by (name, function, signature) :	
☐ Testing procedure: CTF Stage 3:		
Testing procedure: CTF Stage 4:		
	Testing location/ address	
	Tested by (name, function, signature)	
	Witnessed by (name, function, signature):	
	Approved by (name, function, signature) :	
	Supervised by (name, function, signature)	

List of Attachments (including a total number of pages in each attachment):

None

Summary of testing:

See "Verdict summary section" below.

Tests performed (name of test and test clause):

EN IEC 55014-1
Disturbance voltage – 9 kHz (150 kHz) to 30 MHz (4.1)
Radiated disturbances – 30 MHz to 6000 MHz (4.3)
EN IEC 55014-2
Electrostatic Discharges (5.1)
Fast transients (5.2)
Injected currents 0,15 MHz to 230 MHz (5.3)
Surge (5.6)
Voltage dips and interruptions (5.7)

Testing location:

TÜV Rheinland InterCert Kft., MEEI Division
H-1135 Budapest, Béke utca 41-43., Hungary

Summary of compliance with National Differences (List of countries addressed):

No national differences were considered.

☒ **The product fulfils the requirements of EN IEC 55014-1:2021; EN IEC 55014-2:2021; EN IEC 61000-3-2:2019; EN 61000-3-3:2013+A1:2019**

Statement concerning the uncertainty of the measurement systems used for the tests

☒ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title: MS-0041609 / 2020-02-19 / Measurement Uncertainty

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

☐ **Statement not required by the standard used for type testing**

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.

 	
Ventilation systems, PrJSC	
CBF 200	
220-240 V ~ 50 Hz 20 / 29 W 130 / 210 m³/h	  
220 V ~ 60 Hz 21 / 34 W 130 / 225 m³/h	IP 2X Tamb = 1 - 40°C T-tropical climate
Vents Hungary Bodorvent Kft. 3, Uj ut., Tata, Hungary, H-2890	

 	
Ventilation systems, PrJSC	
CBF LP 200	
220-240 V ~ 50 Hz 20 / 29 W 130 / 210 m³/h	  
220 V ~ 60 Hz 21 / 34 W 130 / 225 m³/h	IP 2X Tamb = 1 - 40°C T-tropical climate
Vents Hungary Bodorvent Kft. 3, Uj ut., Tata, Hungary, H-2890	

 	
Ventilation systems, PrJSC	
CBF 250	
220-240 V ~ 50 Hz 23 / 39 W 170 / 260 m³/h	  
220 V ~ 60 Hz 25 / 50 W 160 / 270 m³/h	IP 2X Tamb = 1 - 40°C T-tropical climate
Vents Hungary Bodorvent Kft. 3, Uj ut., Tata, Hungary, H-2890	

 	
Ventilation systems, PrJSC	
CBF LP 250	
220-240 V ~ 50 Hz 23 / 39 W 170 / 260 m³/h	  
220 V ~ 60 Hz 25 / 50 W 160 / 270 m³/h	IP 2X Tamb = 1 - 40°C T-tropical climate
Vents Hungary Bodorvent Kft. 3, Uj ut., Tata, Hungary, H-2890	

 	
Ventilation systems, PrJSC	
CBF 300	
220-240 V ~ 50 Hz 23 / 39 W 220 / 300 m³/h	  
220 V ~ 60 Hz 25 / 50 W 200 / 320 m³/h	IP 2X Tamb = 1 - 40°C T-tropical climate
Vents Hungary Bodorvent Kft. 3, Uj ut., Tata, Hungary, H-2890	

Test item particulars : Centrifugal ceiling fan	
Possible test case verdicts:	
- test case does not apply to test object..... : N/A	
- test object does meet requirement..... : Pass (P)	
- test object does not meet requirement..... : Fail (F)	
Testing..... :	
Date of receipt of test item : 2021-04-13	
Date(s) of performance of tests..... : See dates in each test	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☒ comma / ☐ point is used as the decimal separator. The report is issued electronically. It is valid in the digitally signed PDF file. You can find details on the Singature Panel, check the signature named „TUEV-RHEINLAND-DOCUMENTS“. Any printed version of this PDF file is considered as a copy, where the authenticity cannot be verified.	
Manufacturer's Declaration per sub-clause 4.2.5 of IECIEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory(ies)..... :	Ventilation Systems PrJSC 36, 40-Richchya Zhovtnya Str. Boyarka 08150, Kiev Region, Ukraine. (according to the declaration of manufacturer)

General product information and other remarks:

The EUT is a centrifugal ceiling extract fan. The centrifugal ceiling extract fan CBF is designed for extract ventilation of small to medium-sized premises. The unit is rated for continuous operation.

The CBF 300 model was tested. The results apply to all models below. According to the client, the all function main circuitry incorporated and the motor design and applied materials are the same only difference mechanical construction and size, these are not EMC relevant. The results of the test report apply to all model without any further tests.

Type designation	Rated power input	
	220-240V 50Hz	220V 60Hz
CBF 200; CBF LP 200	20 / 29 W	21 / 34 W
CBF 250; CBF LP 250	23 / 39 W	25 / 50 W
CBF 300	23 / 39 W	25 / 50 W

The tests was carried out on type CBF 300.

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1 General description of test item(s)

1.1 Ports

No.	Port name	Port type	Cable		
			Specified length in m	Attached during test	Shielded
1	Enclosure	Enclosure	-	☐	☐
2	AC power port	AC Mains	>3	☒	☐
Supplementary information: --					

1.2 Power supply

Rated power supply..... :		Voltage and Frequency	1 ph/PE	2 ph/N/PE	3 ph/N/PE
	☒	AC: 220 - 240 V; 50 Hz	☒	☐	☐
	☒	AC: 220 V; 60 Hz	☒	☐	☐
	☐	DC:			
Rated Power..... :	220 – 240 V; 50 Hz: 23 / 39 W 220 V; 60 Hz: 25 / 50 W (See detailed in General and other remarks on page 6.)				

1.3 Additional parameters

Protection Class..... :	Class I.				
Clock frequencies..... :	The EUT clock frequency: 38 kHz				
Other parameters..... :	<u>220 – 240 V; 50 Hz:</u> Max air capacity: 220 / 300 m ³ / h <u>220 V; 60 Hz:</u> Max air capacity: 200 / 320 m ³ / h (See detailed in Copy of marking plate on page 6.) Tamb:1-40 °C				
Software version..... :	N/A				
Hardware version..... :	N/A				
Dimensions in cm (W x H x D) ... :	N/A				
Mounting position..... :	☐	Table-top equipment			
	☒	Wall/Ceiling mounted equipment			
	☐	Floor standing equipment			
	☐	Hand-held equipment			
	☐	Other: --			

1.4 Modules / parts

No.	Module/parts of test item	Type	Manufacturer
--	The EUT consist of single module part	---	---
Supplementary information: ---			

1.5 Operating modes

No.	Abbreviation	Detailed description of the operating mode	Applied for testing	
			Emission	Immunity
1	Continuous operation low mode	The fan runs continuously, the switch is set to low position	☒	☒
2	Continuous operation high mode	The fan runs continuously, the switch is set to high position	☒	☒
Supplementary information: --				

1.6 Accessories (not part of the test item)

No.	Accessory description
1	None

1.7 Documents as provided by the applicant

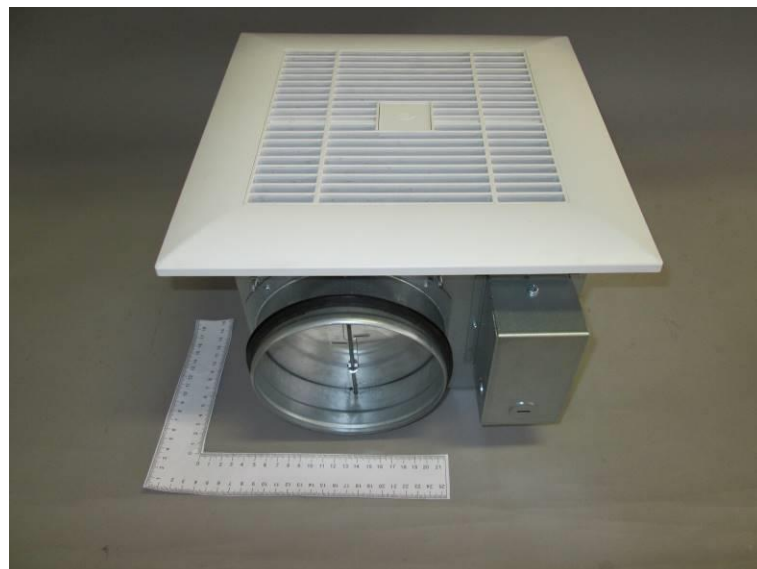
No.	Description	File name	Issue date
1	Constructional Data Form (CDF) for Electrical Appliances	CDF TUV (VENTS CBF 200,250,300, CBF LP 200,250) dtd 2021.03.30.doc	2021.03.30
2	Application for Certification	Application for Certification (VENTS CBF 200, 250, 300) dtd 2021.03.30.pdf	2021.03.30

1.8 Modifications to the test item during testing

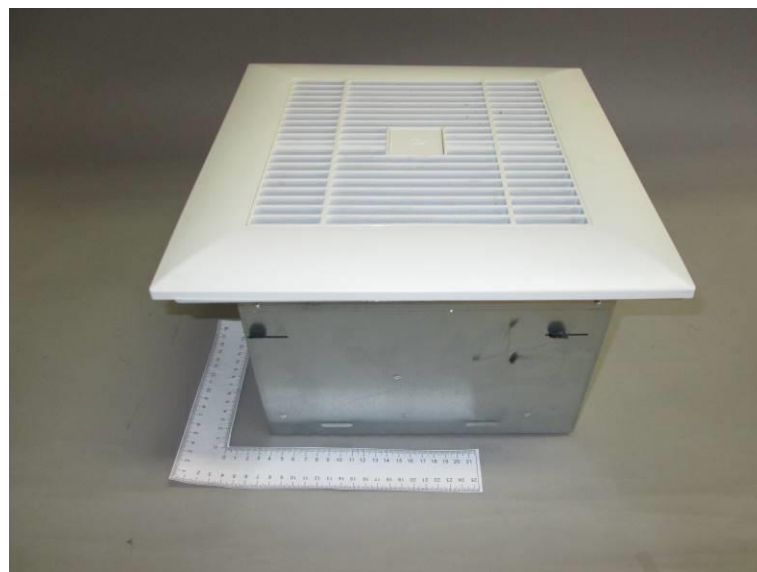
☒	No modifications done during testing	
☐	Modifications done during testing (see details below)	
No.	Description of modification	Date of modification
1	---	---
Supplementary information: --		

1.9 Photo(s) of the test item

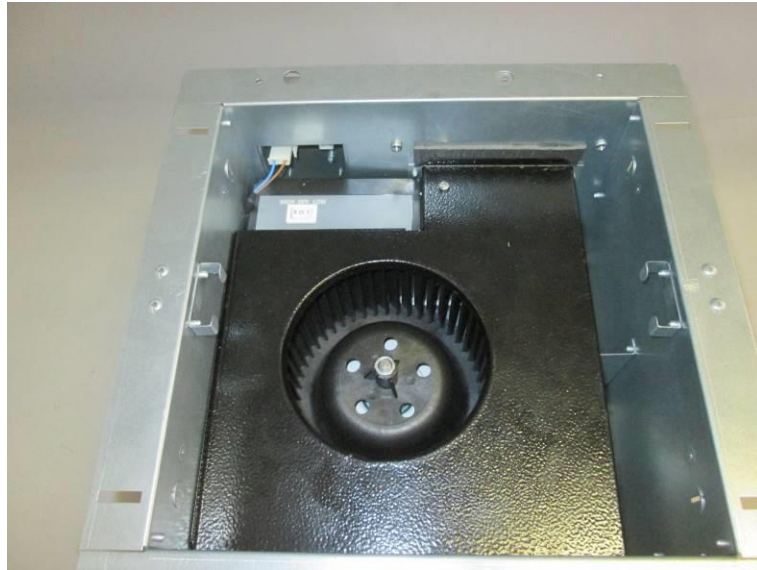
Test item photo(s)



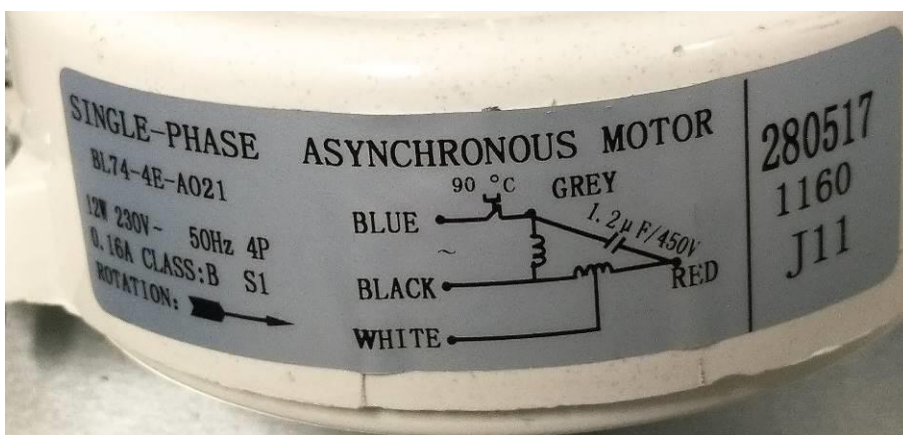
Test item photo(s)



Test item photo(s)



Test item photo(s)



2 Verdict summary section

EN IEC 55014-1			
Clause	Requirement – Test case	Basic standard	Verdict
Table 2	Continuous disturbances conducted (Induction cooking and IPT) (9 kHz to 30 MHz)	CISPR 16-1-1:2019 CISPR 16-1-2:2014 + AMD1:2017 CISPR 16-2-1:2014 + AMD1:2017	N/A*
Table 5 Table 6	Continuous disturbances conducted (150 kHz to 30 MHz)	CISPR 16-1-1:2019 CISPR 16-1-2:2014 + AMD1:2017 CISPR 16-2-1:2014 + AMD1:2017 CISPR 32:2015	P
Table 3 Table 4	Magnetic field (Induction cooking and IPT) (9 kHz – 30 MHz)	CISPR 16-1-4:2019 CISPR 16-2-3:2010 + AMD1:2010 + AMD2:2014	N/A*
Table 7 Table 8	Disturbance power (30 MHz – 300 MHz)	CISPR 16-1-1:2019 CISPR 16-1-3:2004 + AMD1:2016 + AMD2:2020 CISPR 16-2-2:2010	N/A**
Table 9	Radiated emission (30 MHz to 1000 MHz)	CISPR 16-1-1:2019 CISPR 16-1-4:2019 CISPR 16-2-3:2016 + AMD1:2019 IEC 61000-4-20:2010 IEC 61000-4-22:2010	P
Table 11	Radiated emission (1 GHz to 6 GHz)	CISPR 16-1-1:2019 CISPR 16-1-4:2019 CISPR 16-2-3:2016 + AMD1:2019	N/A***
4.4	Discontinuous disturbance (clicks)	CISPR 16-1-1:2019 CISPR 14-1:202009	N/A****
Supplementary information (e.g. detailed information to verdicts): *: The test was not performed, as the device is not an induction cooking appliance. **: Disturbance power measurement in the frequency range 30 MHz to 300 MHz was not performed, as Radiated emission measurement (30MHz to 1000MHz) was used instead. ***: The test was not performed, as the device is not incorporate clock frequency above 108 MHz. ****: Discontinuous disturbances were not tested, as the device doesn't incorporate any automatic switching.			

EN IEC 61000-3-2			
Clause	Requirement – Test case	Basic standard	Verdict
6.1	Control principle shall be allowed for the application according to the clause 6.1	IEC 61000-3-2:2018 + AMD1:2020	N/A*****
6.2	Harmonic current emissions	IEC 61000-4-7:2002+AMD1:2008	N/A*****
Supplementary information (e.g. detailed information to verdicts): *****: Clause 7 of the standard IEC 61000-3-2 reads: „For the following categories of equipment, limits are not specified in this standard: equipment with a rated power of 75 W or less, other than lighting equipment.” Rated power of the EUT is less than 75 W.			

EN 61000-3-3 (or EN 61000-3-11)			
Clause	Requirement – Test case	Basic standard	Verdict
4	Voltage changes, voltage fluctuations and flicker	IEC 61000-4-15:2010	N/A*****
Supplementary information (e.g. detailed information to verdicts): *****: The tests to IEC 61000-3-3 standard (voltage fluctuations and flicker) were not carried out, with regard to Subclause 6.1 of the standard: test shall not be made on equipment which is unlikely to produce significant voltage fluctuations or flicker.			

EN IEC 55014-2			
Clause	Requirement – Test case	Basic standard	Verdict
5.1	Electrostatic discharge	IEC 61000-4-2:2008	P
5.2	Fast transients	IEC 61000-4-4:2012	P
5.3	Injected currents, 0,15 MHz to 230 MHz	IEC 61000-4-6:2013	P
5.4	Injected currents, 0,15 MHz to 80 MHz	IEC 61000-4-6:2013	N/A*****
5.5	Radio frequency electromagnetic fields, 80 MHz to 1000 MHz	IEC 61000-4-3:2006 + AMD1:2007 + AMD2:2010 IEC 61000-4-22:2010 IEC 61000-4-20:2010	N/A*****
5.6	Surges	IEC 61000-4-5:2014 + AMD1/2017	P
5.7	Voltage dips and interruptions	IEC 61000-4-11:2020	P
Supplementary information (e.g. detailed information to verdicts): *****: The EUT does not incorporate clock frequency above 15 MHz and the device is Category II, so this test is not applicable.			

3 Test conditions

3.1 General

Measurement uncertainties	For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in CISPR 16-4-2, IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards. In all cases if the test laboratory uncertainty is larger than the value for U_{CISPR} given in CISPR 16-4-2 the uncertainty is included in the test report annex. In case the standards in the IEC 61000-4 series or the product standard requires the indication of the uncertainty in the report these uncertainty values are included in the annex.
Conformity decision rule	None

3.2 Specific conditions required by CISPR 14-1

AC or DC mains voltage used during the test if not otherwise specified	220 V; 50 Hz 220 V; 60 Hz 230 V 50 Hz 240 V 50 Hz
--	--

4 Emission

4.1 Disturbance voltage – 9 kHz (150 kHz) to 30 MHz

Tested by..... :	Balázs Sztehlík	
Test date..... :	2021-04-28	
Test Location (stand)..... :	Shielded room (Disturbance voltage)	
Applied limit class or environment..... :	☐	Table 2 (Induction cooking and IPT: 100 V rated); Mains terminals
	☐	Table 2 (Induction cooking and IPT; Other appliances); Mains terminals
	☐	
	☒	Table 5 (Columns 2 and 3); Mains port
	☐	Table 5 (Columns 4 and 5); Auxiliary ports
	☐	Table 5 (Columns 6 and 7); Auxiliary ports
	☐	
	☐	Table 6 (Columns 2 and 3); Mains port of tools $P \leq 700 \text{ W}$
	☐	Table 6 (Columns 4 and 5); Mains port of tools $700 \text{ W} < P \leq 1000 \text{ W}$
	☐	Table 6 (Columns 6 and 7); Mains port of tools $P > 1000 \text{ W}$
	☐	Wired Network port according CISPR 32 class B
☐	Other: --	
Test set-up description	☐	Set-up Type A (40 cm distance to vertical ground plane, 80 cm o ground plane)
	☒	Set-up Type B (40 cm distance to horizontal ground plane)
	☐	Floor standing equipment set-up (10 cm over ground plane)
	☐	Other:
	☐	Artificial hand applied
Supplementary Test set-up description	---	

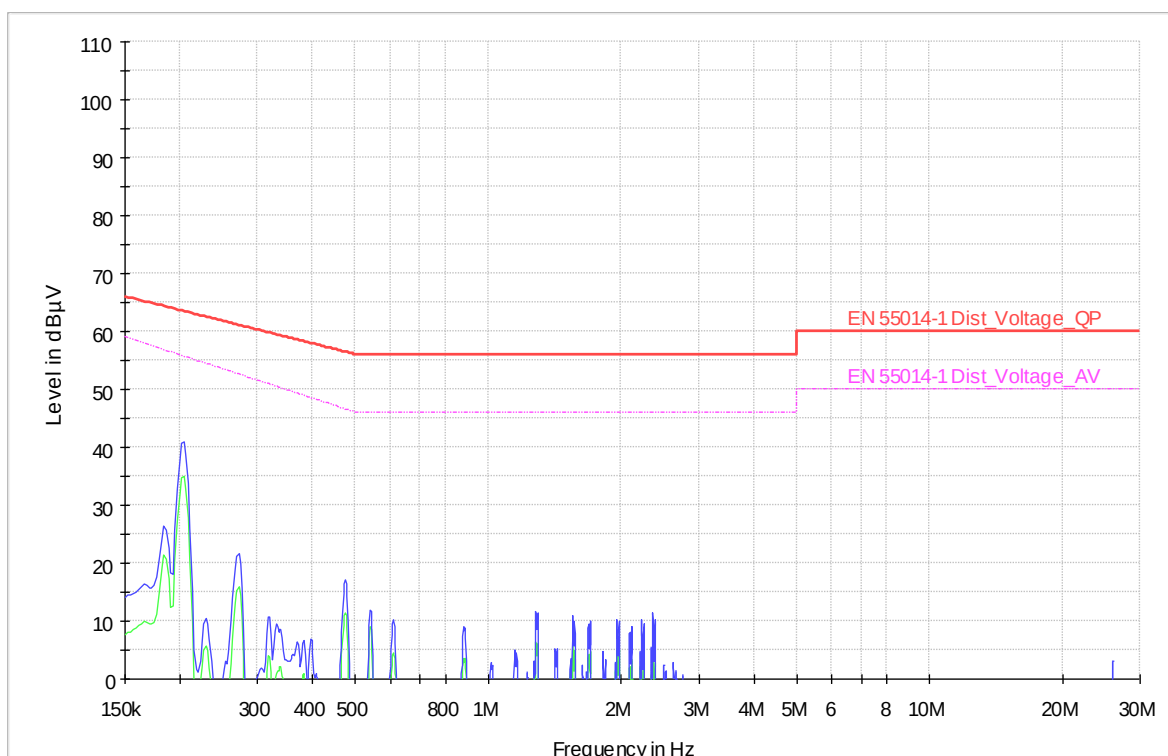
Test method applied	☒	Artificial mains network
	☐	Voltage probe
	☐	Current probe
	☐	ISN according CISPR 32
	☐	In situ CDN (150 Ohm and current probe)
	☐	Current probe and capacitive voltage probe (CVP) according CISPR 32
	☐	CDN according to IEC 61000-4-6
	☐	Artificial mains network used as voltage probe
	☐	Other: --
Supplementary information	Applied mains voltage: 220V; 50 Hz; 240 V; 50 Hz and 220 V; 60 Hz	

Test set-up photo



EUT Operation mode:							1
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 1; 220 V; 60 Hz; Pole N;

Red line: QP limit line

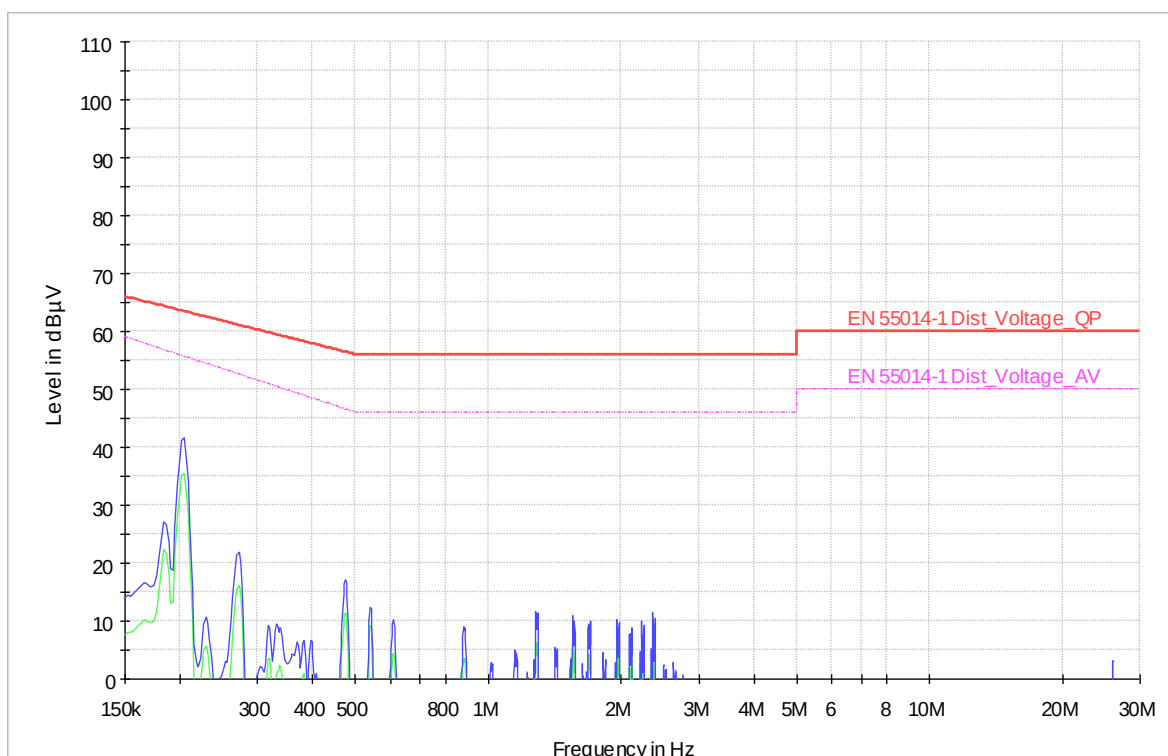
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							1
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 1; 220 V; 60 Hz; Pole L;

Red line: QP limit line

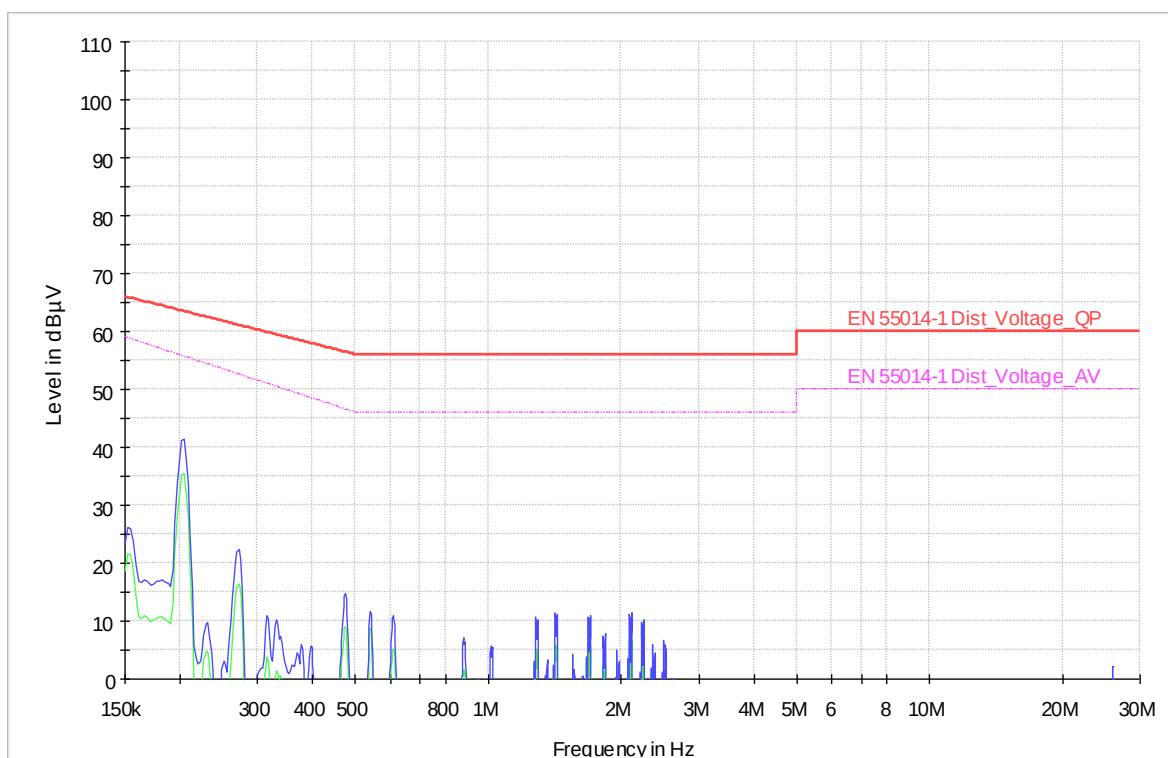
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							1
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 1; 220 V; 50 Hz; Pole N;

Red line: QP limit line

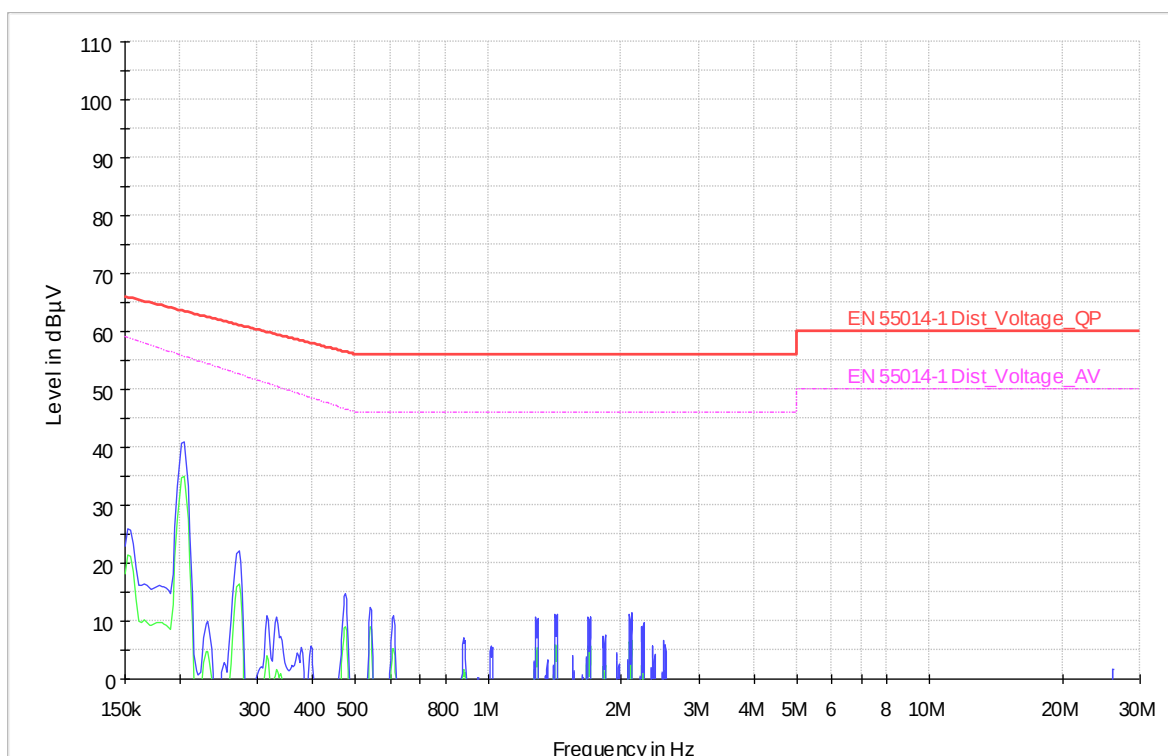
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							1
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 1; 220 V; 50 Hz; Pole L;

Red line: QP limit line

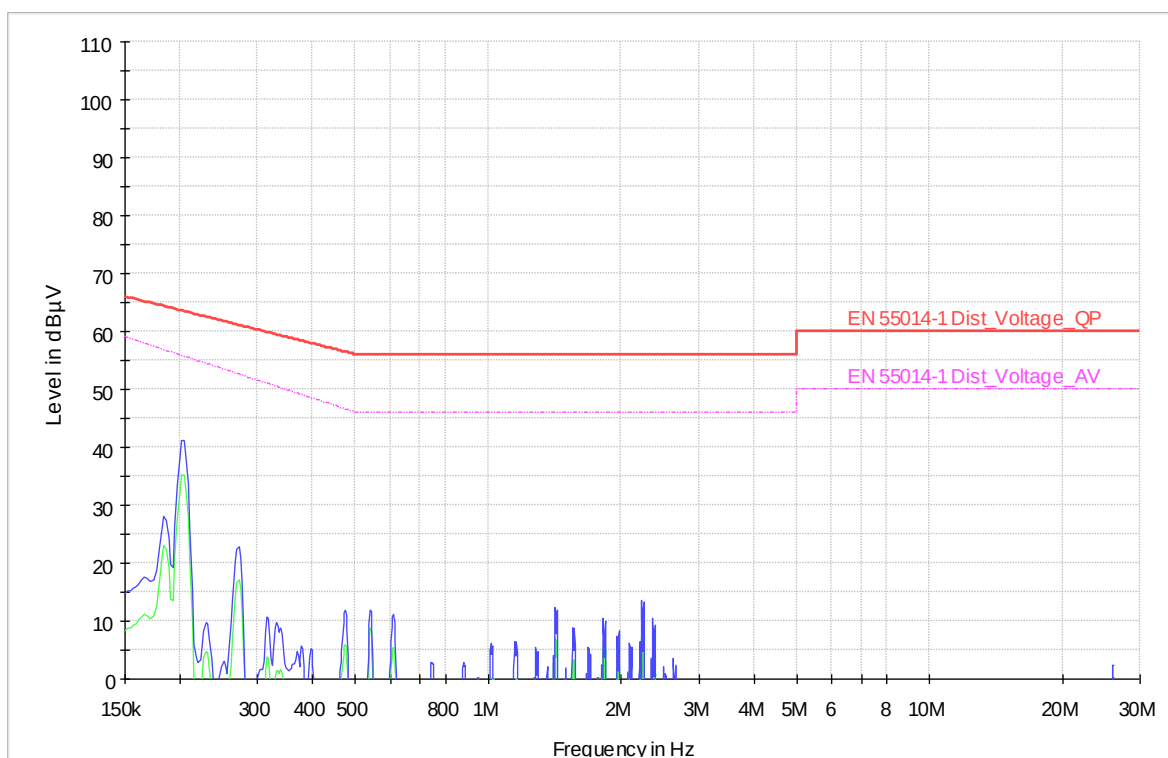
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							1
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 1; 240 V; 50 Hz; Pole N;

Red line: QP limit line

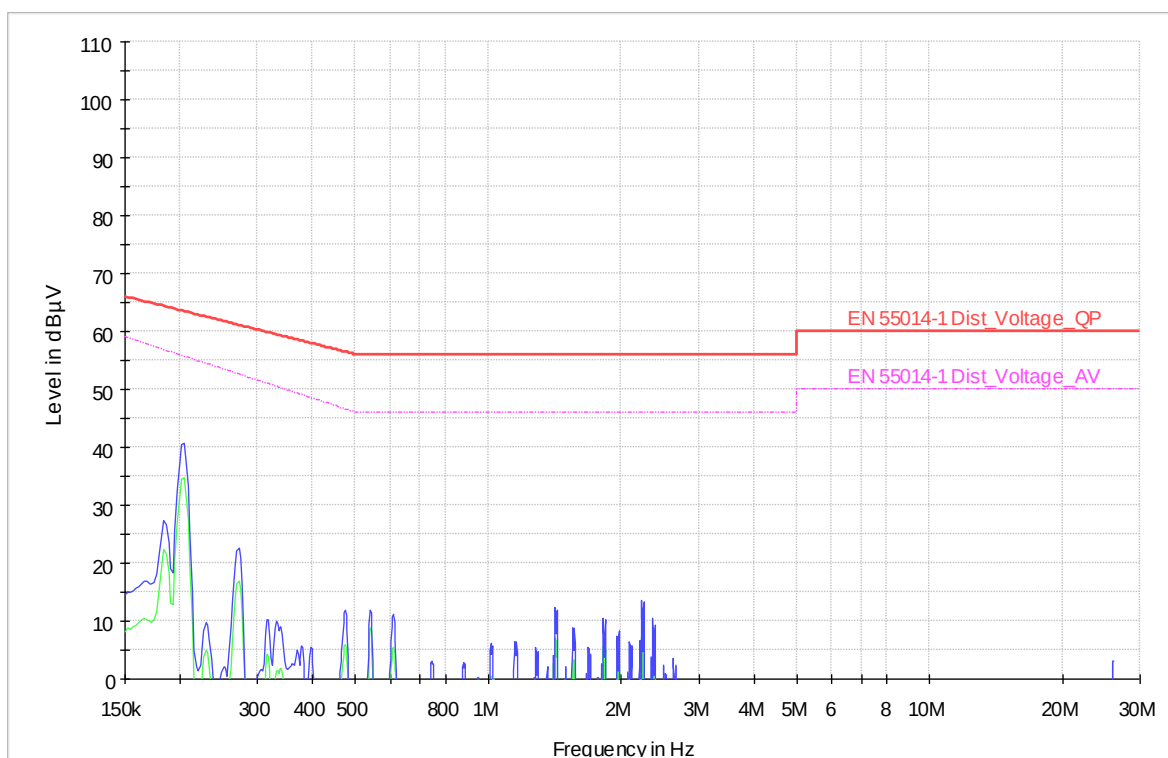
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							1
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 1; 240 V; 50 Hz; Pole L;

Red line: QP limit line

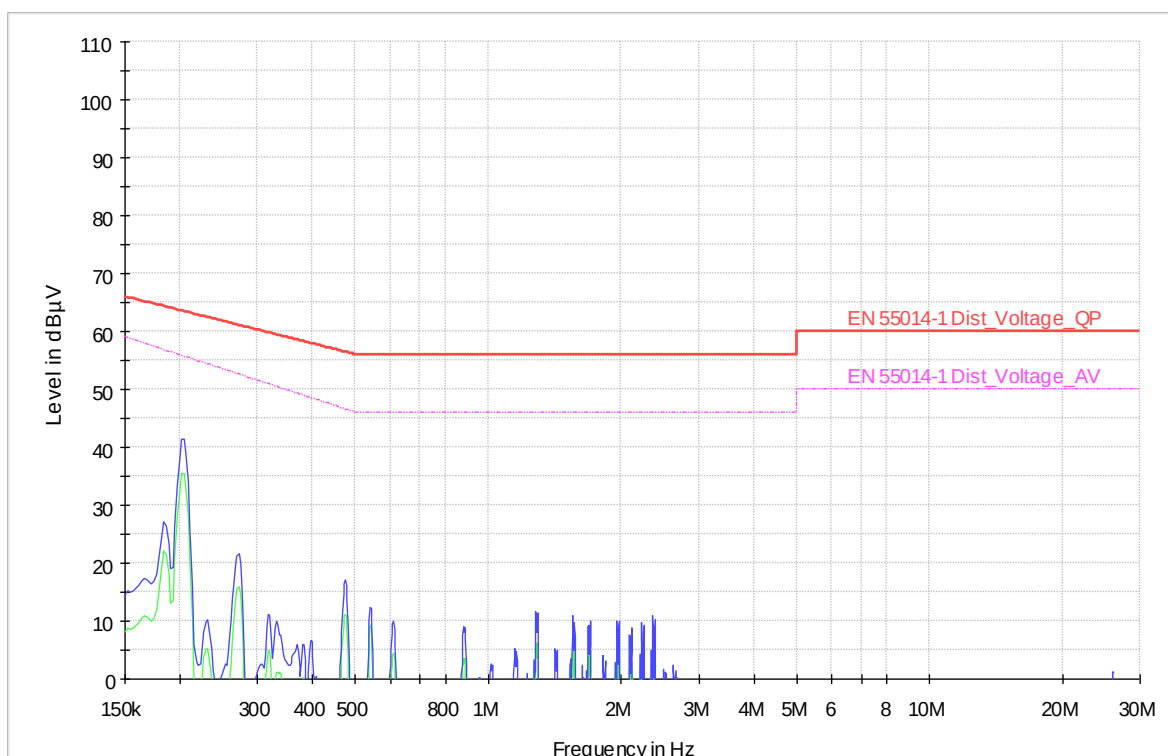
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							2
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 2; 220 V; 60 Hz; Pole N;

Red line: QP limit line

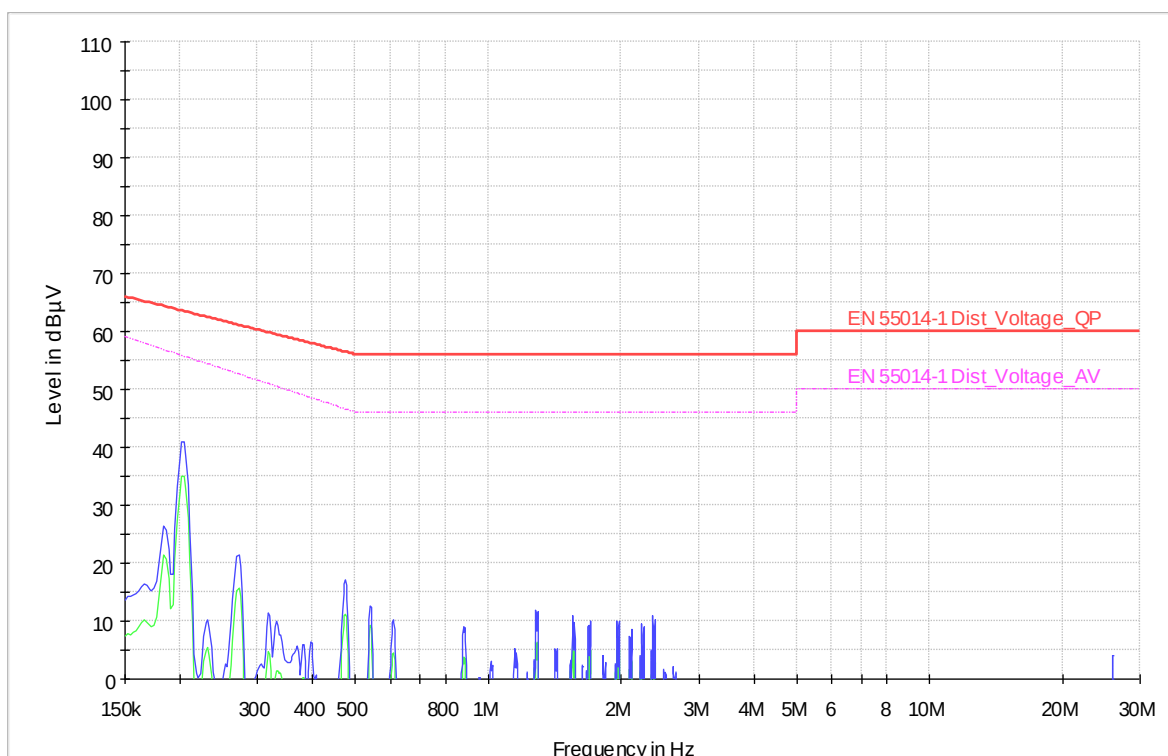
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							2
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 2; 220 V; 60 Hz; Pole L;

Red line: QP limit line

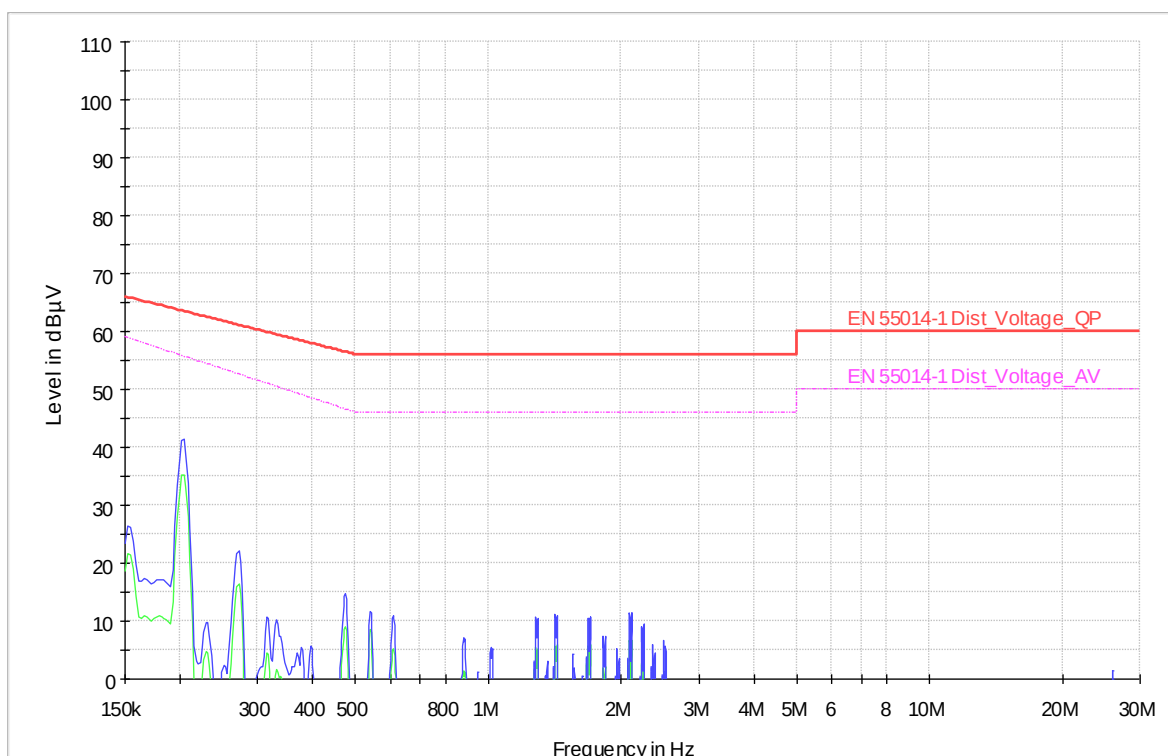
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							2
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 2; 220 V; 50 Hz; Pole N;

Red line: QP limit line

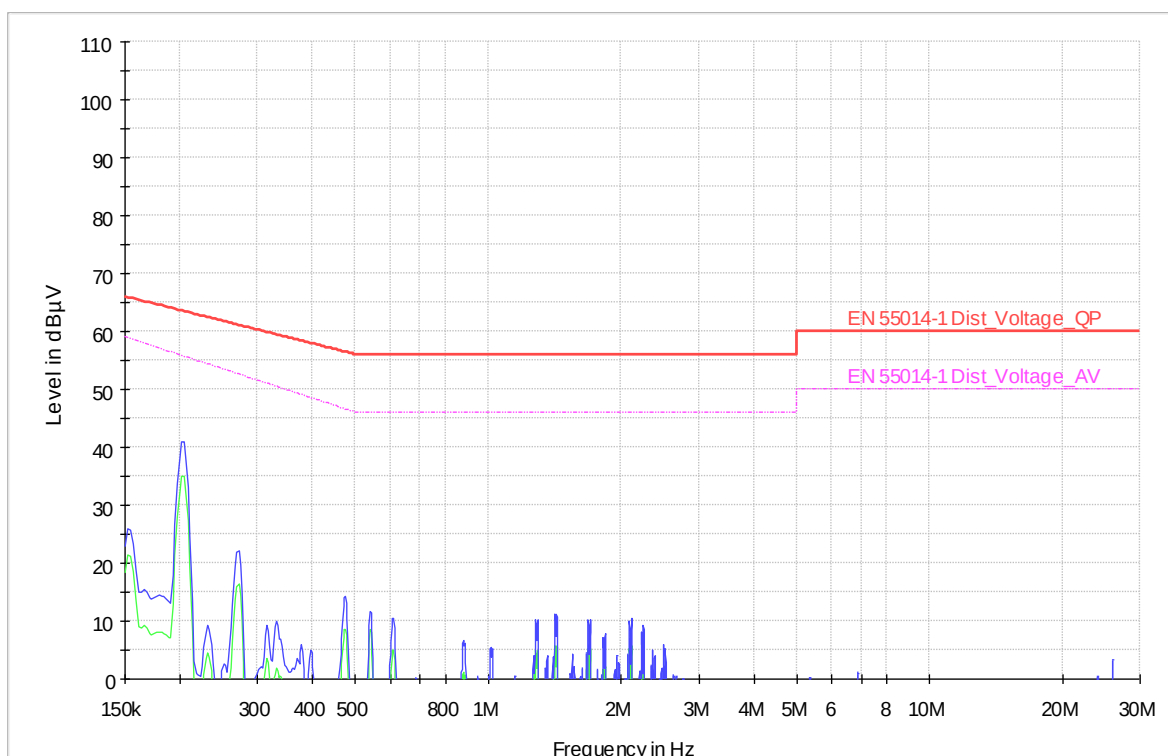
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							2
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 2; 220 V; 50 Hz; Pole L;

Red line: QP limit line

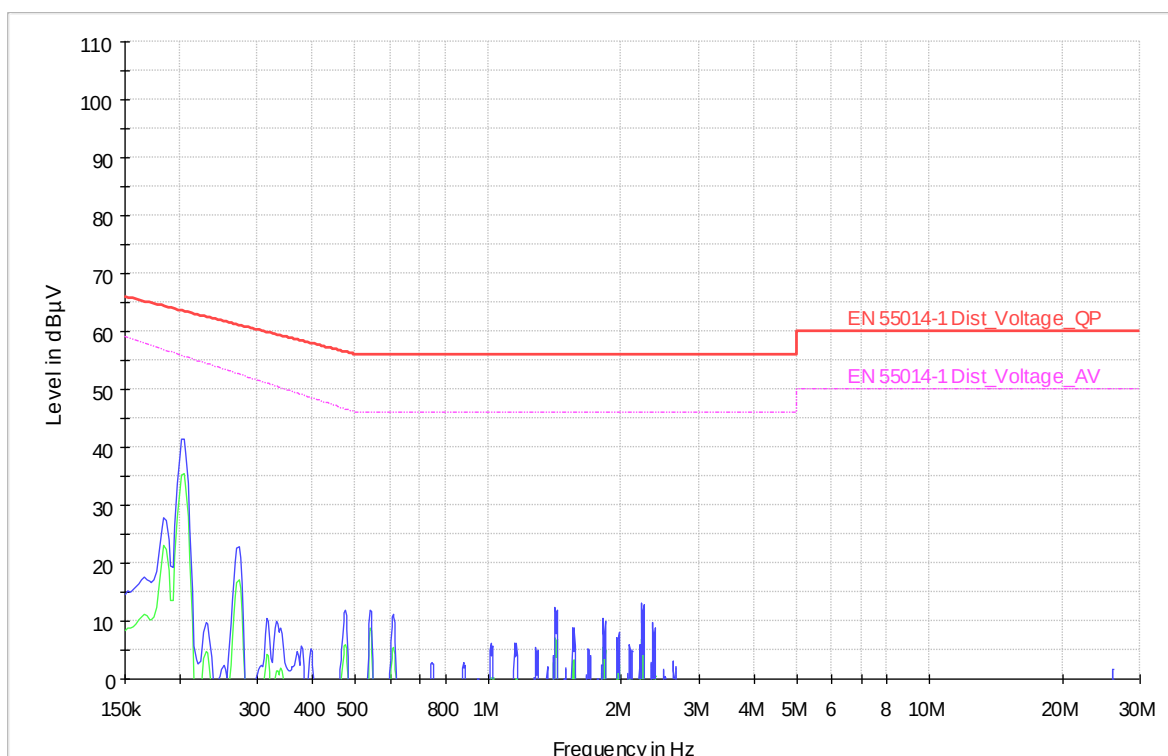
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							2
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 2; 240 V; 50 Hz; Pole N;

Red line: QP limit line

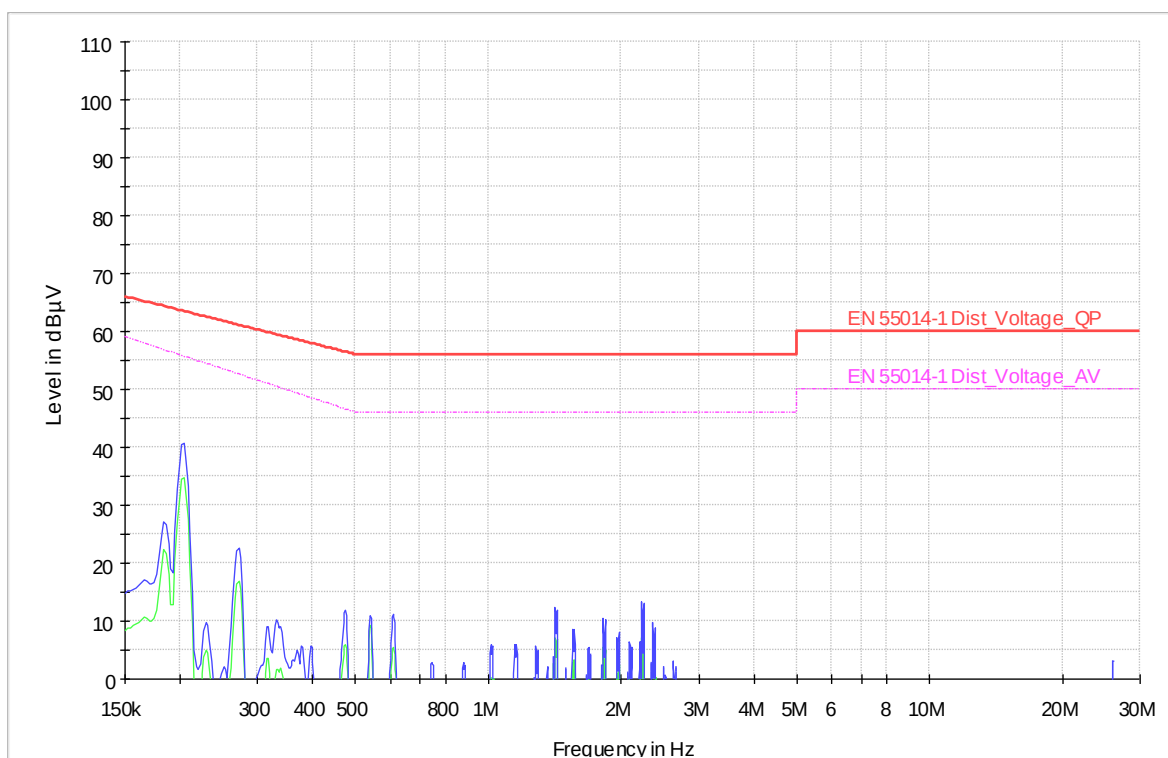
Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

EUT Operation mode:							2
Tabulated Results for Mains Terminal Disturbance Voltage							
Test Frequency (MHz)	Meter Reading (dB(μV))	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Transducer Factor(dB)	Level (dB(μV))	Limit (dB(μV))	Margin (dB)
---	---	QP	---	10	---	---	>15
---	---	AV	---	10	---	---	>15
See graphical presentation							

Disturbance voltage diagram:



Operation mode 2; 240 V; 50 Hz; Pole L;

Red line: QP limit line

Pink line: AV limit line

Blue line: Final measurement results with QP detector

Green line: Final measurement results with AV detector

4.2 Disturbance power – 30 MHz to 300 MHz

Tested by..... :		
Test date..... :		
Test Location (stand)..... :		
Applied limit class or environment..... :	☐	Table 7 (Columns 2 and 3); General
	☐	Table 7 (Columns 4 and 5); Tools $P \leq 700 \text{ W}$
	☐	Table 7 (Columns 6 and 7); Tools $700 \text{ W} < P \leq 1000 \text{ W}$
	☐	Table 7 (Columns 8 and 9); Tools $P > 1000 \text{ W}$
Test set-up description	☐	Equipment on table of 80 cm height
	☐	Equipment on support of 10 cm height
	☐	Other: --
Supplementary test set-up description	--	
Conditions for exemption from radiated measurements above 300 MHz (Both required)	☐	Table 8 reduction of Table 7 limits applied and passed
	☐	Maximum clock frequency < 30 MHz
Supplementary information	Disturbance power measurement in the frequency range 30 MHz to 300 MHz was not performed, as Radiated emission measurement (30MHz to 1000MHz) was used instead.	

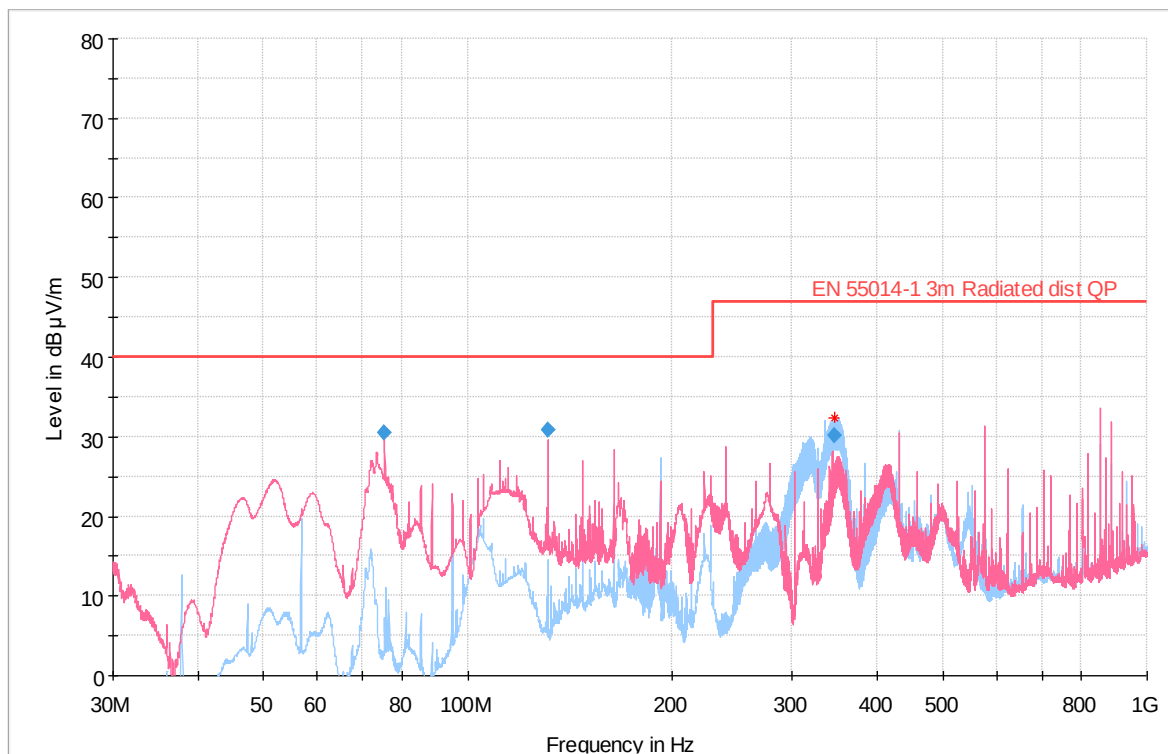
4.3 Radiated disturbances – 30 MHz to 6000 MHz

Tested by	Balázs Sztehlík	
Test date	2021-02-23	
Test Location (stand)	Semi-anechoic chamber (radiated disturbance)	
Radiated test application	☐	Radiated test NOT applied because conditions of 4.3.4.2 are met Only disturbance power measurement applied
	☐	Radiated test applied from 300 MHz to 1000 MHz Disturbance power measurement from 30 MHz to 300 MHz
	☒	Radiated test applied from 30 MHz to 1000 MHz No disturbance power measurement applied
Upper frequency limit for testing. :	Clock frequency F_x (As informed by applicant)	
	☒	< 108 MHz
	☐	108 MHz < F_x ≤ 500 MHz
	☐	500 MHz < F_x ≤ 1 GHz
	☐	F_x > 1 GHz
	☐	Information not provided for testing
		Upper frequency limit for measurement
		1 GHz
		2 GHz
		5 GHz
		5 x F_x up to max. 6 GHz
		6 GHz
Applied limits	☒	Table 9 Radiated disturbance limits 30 (300) MHz to 1000 MHz
	☐	Table 10 Radiated disturbance limits 1 GHz to 6 GHz
	☐	Other: --
Test set-up description	☒	Equipment on a table of 80 cm height
	☐	Equipment on the floor (insulated from ground plane)
	☐	Other: --
Supplementary test set-up description	---	
Test method applied (< 1000 MHz)	☒	OATS or SAC with measurement distance [m]: 3 m
	☐	FAR CISPR 16-2-3 with measurement distance [m]: 3
	☐	FAR IEC 61000-4-22 with measurement distance [m]: 3
	☐	TEM Waveguide according IEC 61000-4-20
Test method applied (1 GHz to 6 GHz)	☐	FSOATS with measurement distance [m]: 3
	☐	FAR CISPR 16-2-3 with measurement distance [m]: 3
	☐	Other: --
Supplementary information	Applied mains voltage: 230 V; 50 Hz and 220 V; 60 Hz	

Test set-up photo



EUT Operation mode:	1
Graphical representation of radiated disturbance measurement:	

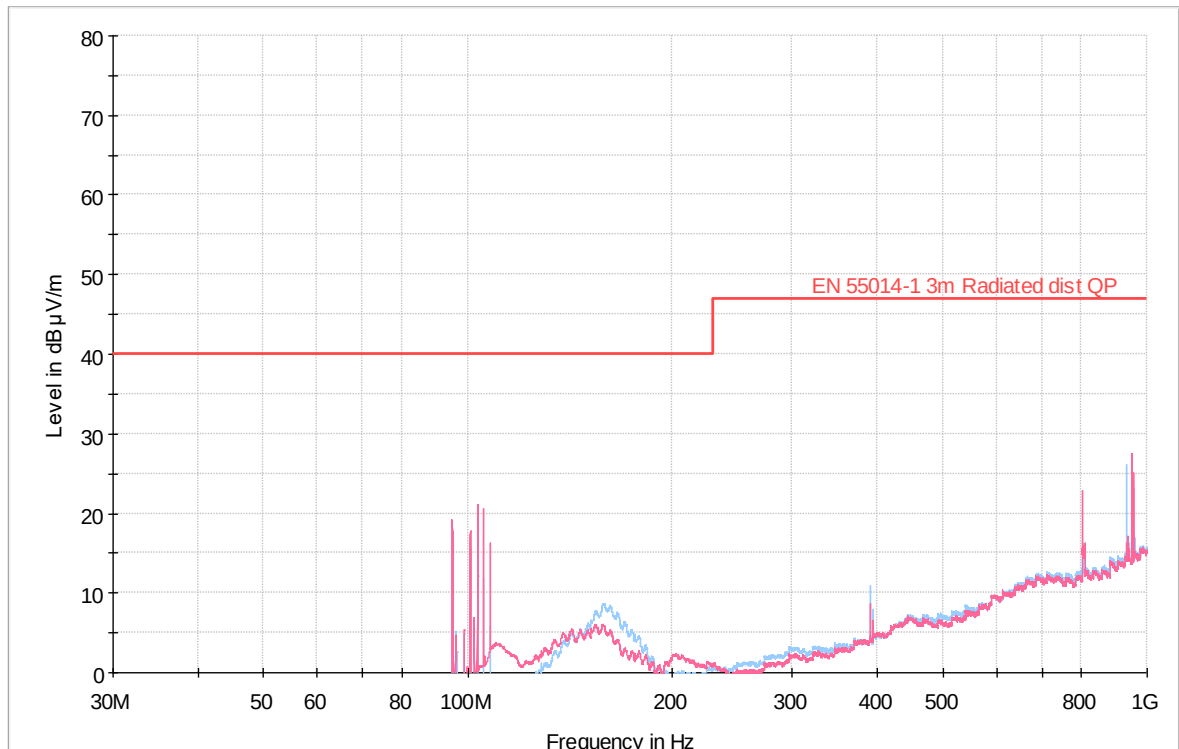


Operation mode 1; 220 V; 60 Hz

Red line: Preliminary measurement with QP detector, performed at vertical antenna polarisation
Blue line: Preliminary measurement with QP detector, performed at horizontal antenna polarisation
Red cross: Markers on both diagrams with QP detector, marking frequencies selected for final measurement.
Blue rhombus: Final measurement results.

Tabulated results for radiated disturbances:							
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr, (dB)
75,36	30,53	40,00	9,47	105,0	V	42,0	5,3
131,07	30,80	40,00	9,20	100,0	V	276,0	16,8
346,38	30,12	47,00	16,88	148,0	H	101,0	16,6
See graphical presentation							

EUT Operation mode:	1
Graphical representation of radiated disturbance measurement:	



Operation mode 1; 230 V; 50 Hz

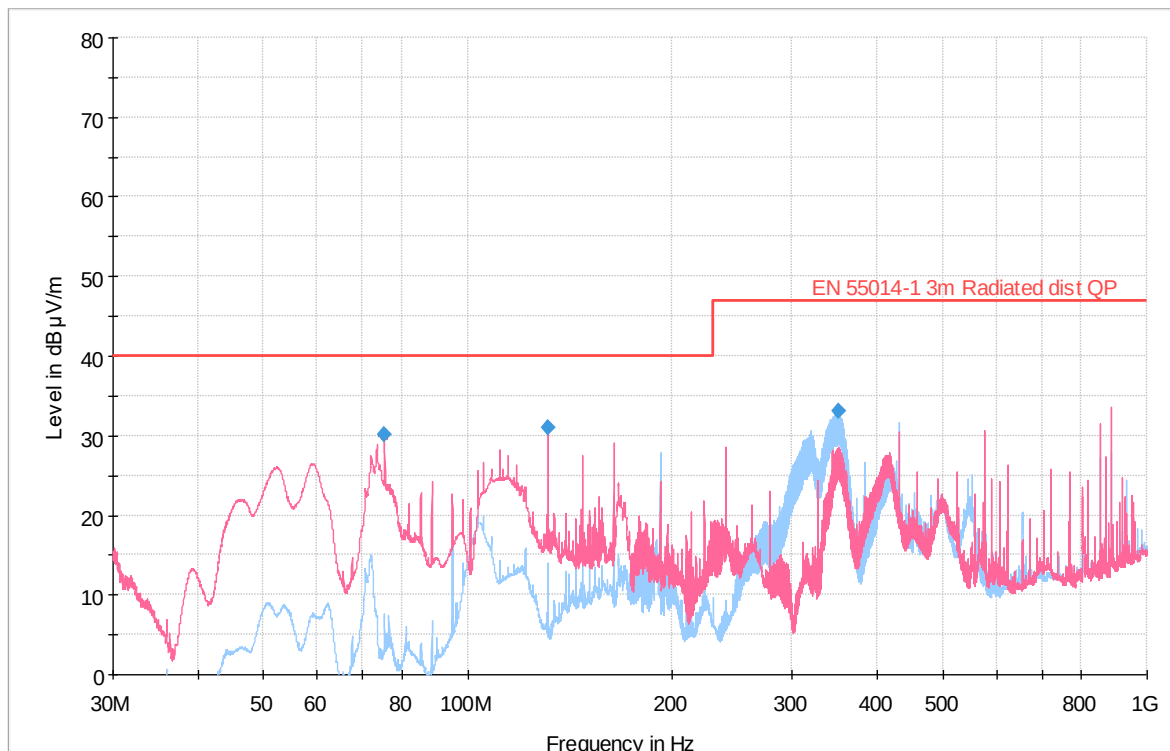
Red line: Preliminary measurement with QP detector, performed at vertical antenna polarisation
Blue line: Preliminary measurement with QP detector, performed at horizontal antenna polarisation
Red cross: Markers on both diagrams with QP detector, marking frequencies selected for final measurement.
Blue rhombus: Final measurement results.

Tabulated results for radiated disturbances:							
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr, (dB)
---	---	---	>15	---	---	---	---
See graphical presentation							

EUT Operation mode:

2

Graphical representation of radiated disturbance measurement:



Operation mode 2; 220 V; 60 Hz

Red line: Preliminary measurement with QP detector, performed at vertical antenna polarisation

Blue line: Preliminary measurement with QP detector, performed at horizontal antenna polarisation

Red cross: Markers on both diagrams with QP detector, marking frequencies selected for final measurement.

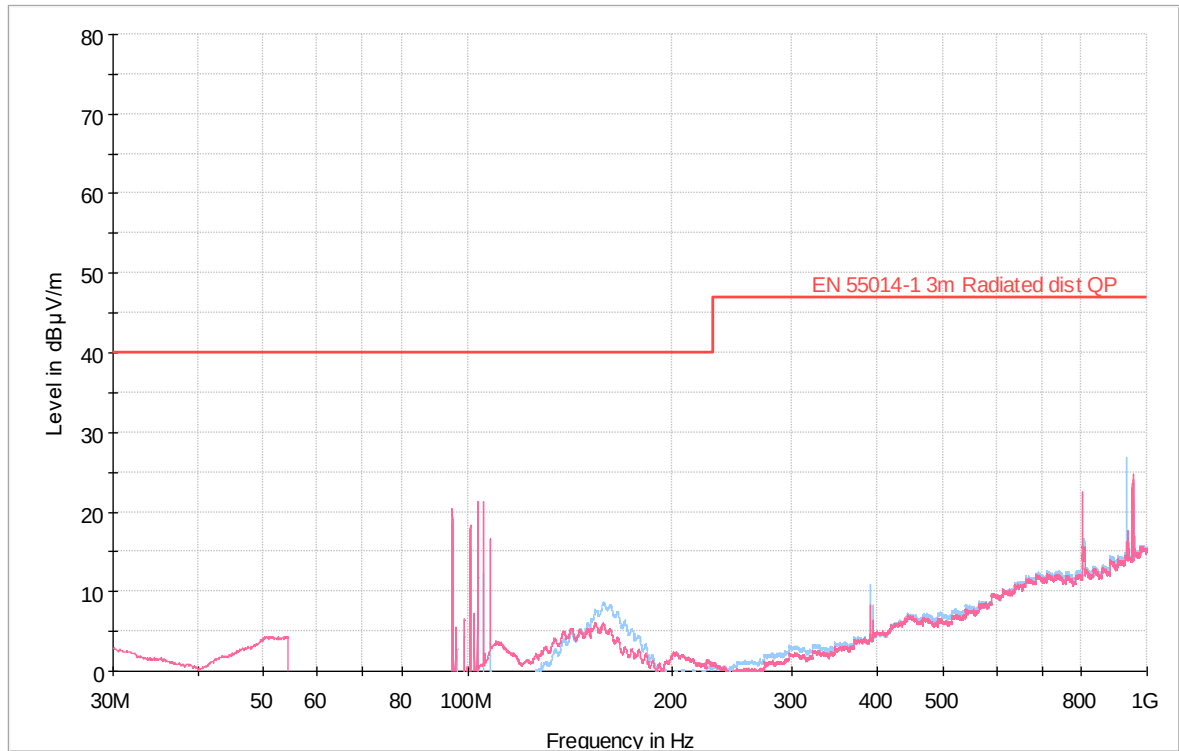
Blue rhombus: Final measurement results.

Tabulated results for radiated disturbances:							
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr, (dB)
75,36	30,09	40,00	9,91	105,0	V	60,0	5,3
131,07	31,05	40,00	8,95	100,0	V	289,0	16,8
350,85	33,14	47,00	13,86	106,0	H	40,0	16,6
See graphical presentation							

EUT Operation mode:

2

Graphical representation of radiated disturbance measurement:



Operation mode 2; 230 V; 50 Hz

Red line: Preliminary measurement with QP detector, performed at vertical antenna polarisation

Blue line: Preliminary measurement with QP detector, performed at horizontal antenna polarisation

Red cross: Markers on both diagrams with QP detector, marking frequencies selected for final measurement.

Blue rhombus: Final measurement results.

Tabulated results for radiated disturbances:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr, (dB)
---	---	---	>15	---	---	---	---
See graphical presentation							

4.4 Magnetic field – 9 kHz to 30 MHz

Tested by		
Test date		
Test Location (stand)		
Application	☒	Not applied because no induction cooking appliance
Applied limit class	☐	Table 3; Magnetic field; IPT equipment
	☐	Table 4; Magnetic field induced current; IPT equipment
	☐	Other: --
Test set-up description	☐	Equipment on a table of 80 cm height
	☐	Equipment on the floor (insulated from ground plane)
	☐	Equipment placed in the centre of the large loop antenna system (LLAS) according CISPR 16-1-4:2019, 4.7
	☐	Other: --
Supplementary test set-up description	---	
Test method applied	☐	3 m distance, small loop antenna (e.g. 60 cm) according CISPR 16-1-4:2019, 4.3.2
	☐	2 m large loop antenna system (LLAS) according CISPR 16-1-4:2019, 4.7
Supplementary information	Not an induction cooking appliance.	

4.5 Discontinuous disturbances (clicks)

Tested by		
Test date		
Test location (stand)		
Test set-up description	☐	Set-up Type A (40 cm distance to vertical ground plane, 80 cm over ground plane)
	☐	Set-up Type B (40 cm distance to horizontal ground plane)
	☐	Floor standing equipment set-up (10 cm over ground plane)
	☐	Other: ---
	☐	Artificial hand applied
Supplementary test set-up description	---	
Coupling network	☐	Artificial mains network
	☐	Artificial mains network used as voltage probe
	☐	Voltage probe
	☐	Other: ---
Applied method for discontinuous disturbances	☐	Click rate determined on base of switching operations
	☐	Click rate determined on base of clicks measurements
	☐	Other: ---
Click-analyser	☐	4-channel click analyser
	☐	1-channel click analyser
	☐	Other: ---
Exceptions from the click definition applied	☐	5.4.3.2 Individual switching operations
	☐	5.4.3.3 Combination of disturbances in a time frame less than 600 ms
	☐	5.4.3.4 Instantaneous switching
	☐	5.4.3.5 Separation less than 200 ms
	☐	Test item only causes single switching events (5.4.3.2)
	☐	5.4.3.6 Thermostatically controlled three-phase switches
	☐	5.4.3.7 Superposition of clicks with continuous disturbance (QP continuous level is at least 2 dB lower than the QP Limit)
	☐	Other: ---
Supplementary information	Discontinuous disturbances were not tested, as the device doesn't incorporate any automatic switching	

5 Harmonic current emissions

Tested by			
Test date			
Test location (stand)			
Version of measurement instrument standard used IEC 61000-4-7 (Clause 7)	☐	Measuring instrumentation according IEC 61000-4-7:2002 + AMD1:2008, (Grouping ON)	
	☐	Measuring instrumentation according IEC 61000-4-7:1991, (Grouping OFF)	
Test set up description			
Operating modes			
	☐	Class A	
	☐	Class B	
	☐	Class C with rated power > 25 W (Table 2)	
	☐	Class C with rated power ≥ 5 and ≤ 25 W (First requirement, Table 3 column 2)	
	☐	Table 3, column 2 (Power related limits)	
	☐	3 rd harmonic ≤ 86 %, 5 th harmonic ≤ 61 % and waveform conditions	
	☐	THD ≤ 70 %, Harmonics: 3 rd ≤ 35 %, 5 th ≤ 25 %, 7 th ≤ 30 %, 9 th and 11 th ≤ 20 %, 2 nd ≤ 5 %	
	☐	Other: --	
	☐	Class D	
Observation period	Description	Period selected T_{obs}	
	☐	Quasi stationary	2.5 min
	☐	Short cyclic	$T_{obs} \geq 10$ cycles =
	☐	Random	$T_{obs} =$
	☐	Long cyclic	Full program cycle or 2.5 min. with highest THC $T_{obs} =$
Control principle used in the sample	☐	The EUT does not utilize half-wave rectification or any other method to control the active input power. Such equipment is in conformity with the standard if the measured values comply with the applicable limit.	
	☐	The EUT uses half-wave rectification directly on the mains supply, or it uses symmetrical or asymmetrical methods to control the active input power. Such equipment is permitted under conditions only. An evaluation on the control method is required. However, the equipment shall still comply with the harmonic requirements of the standard.	
Supplementary information	The rated power of the device is below 75W so there is no applicable limit according to IEC 61000-3-2. The device therefore complies with the standard without testing.		

6 Voltage changes, voltage fluctuations and flicker

Tested by		
Test date		
Test Location (stand)		
Test set-up description		
Test method	☐	4.2.2 Flicker meter according IEC 61000-4-15
	☐	4.2.3 Simulation
	☐	4.2.4 Analytical method
	☐	4.2.5 Use of $P_{st} = 1$ curve
Observation time selected	☐	10 Minutes
	☐	120 Minutes
	☐	24 times switching according to Annex B
	☐	Other: --
Limit for d_{max} applied	☐	4 %, clause 5 a)
	☐	6 %, clause 5 b)
	☐	7 %, clause 5 c)
AC Mains voltage during test		
Supplementary information	The device is not likely to cause any flicker, so according to IEC 61000-3-3 testing is not necessary. The device therefore complies with the standard without testing.	

IEC 61000-3-11:

IEC 61000-3-11 applied?	☒	NO (IEC 61000-3-11 has NOT been applied)
	☐	YES (IEC 61000-3-11 has been applied. Please fill in the following data)
Statement regarding IEC 61000-3-11	☐	The equipment under test (EUT) deems to be compliant with the applied standard, on condition the manufacturer meets his obligations regarding EN 61000-3-11:2000, Section 4a. The result is regarded as PASS if all information requested by EN 61000-3-11 is published in the user manual.
Maximum permissible system impedance	.. Ω	

7 Immunity

7.1 General information

7.2 General information

Performance criteria as defined by the standard	
Criterion	Description from standard
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.
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 to persist after the test. 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.
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 instructions for use.
Other:	--

Performance criteria details		
Criterion	Description	Monitoring
A	- No change of fan speed. The fan is working properly. - No change in settings.	visual and audial observation and current measurement
B	- The fan may restart, and should return to its original operating state. - The device can restart during the test, but should return to the original mode after that automatically.	visual and audial observation and current measurement
C	- The fan may stop, and should be restartable manually. - The device can restart during the test, but should return to the original mode with operator intervention.	visual and audial observation and current measurement
Supplementary information: --		

7.3 Specific information CISPR 14-2

Category of test item acc. CISPR 14-2 (7.2)	☐	CAT I (Category I) Equipment containing no electronic control circuitry.
	☒	CAT II (Category II) Mains operated equipment containing electronic control circuitry with no clock frequency higher than 15 MHz.
	☐	CAT III (Category III) Battery operated equipment not included in Category I.
	☐	CAT IV (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.
	☐	CAT V (Category V) Mains operated equipment containing electronic control circuitry with a highest clock frequency greater than 200 MHz.
Supplementary information: --		

7.4 Electrostatic discharge

Tested by	Balázs Sztehlík		
Test date.....	2021-04-28		
Test Location(Stand)	Conducted immunity test table (ESD)		
Environmental conditions	Parameter	During test	Limits
	Temperature:	23	15 °C to 35 °C
	Rel. Humidity:	25	30 % to 60 %
	Air pressure:	1012	860 mBar to 1060 mbar
Test set-up.....	☐	Table-top equipment	
	☐	Floor standing equipment	
	☒	Wall or ceiling mounted equipment (Treated as table top)	
Supplementary test set-up description	---		
Size of horizontal coupling plate. :	1,6 x 0,8 m		
Size of vertical coupling plate..... :	0,5 x 0,5 m		
Number of discharges	Min. 10 per discharge location		
Discharge interval.....	1 s		
Performance criterion	B		
Supplementary information	Applied mains voltage: 230 V, 50 Hz and 220 V; 60 Hz		

Test results for electrostatic discharges						
No.	Location of discharge	Type	Polarity	Test level in kV	Operating mode	Observations
1	HCP	CON	P	4	1; 2	No change was observed
2	HCP	CON	P	4	1; 2	No change was observed
3	VCP	CON	P	4	1; 2	No change was observed
4	VCP	CON	P	4	1; 2	No change was observed
5	Points on conductive surface as indicated in the picture above	CON	P	4	1; 2	Not tested*
6	Points on conductive surface as indicated in the picture above	CON	N	4	1; 2	Not tested*
7	Points on non-conductive surface as indicated in the picture above	AIR	P	8	1; 2	No change was observed
8	Points on non-conductive surface as indicated in the picture above	AIR	N	8	1; 2	No change was observed
HCP = Horizontal coupling plate N = Negative AIR = Air discharge VCP = Vertical coupling plate P = Positive CON = Contact discharge						
Observations (Detail)..... :		No change was observed				
Supplementary information		*Tested appliance has not conductive surface points.				

Test set-up photo



Photo(s) of selected test points

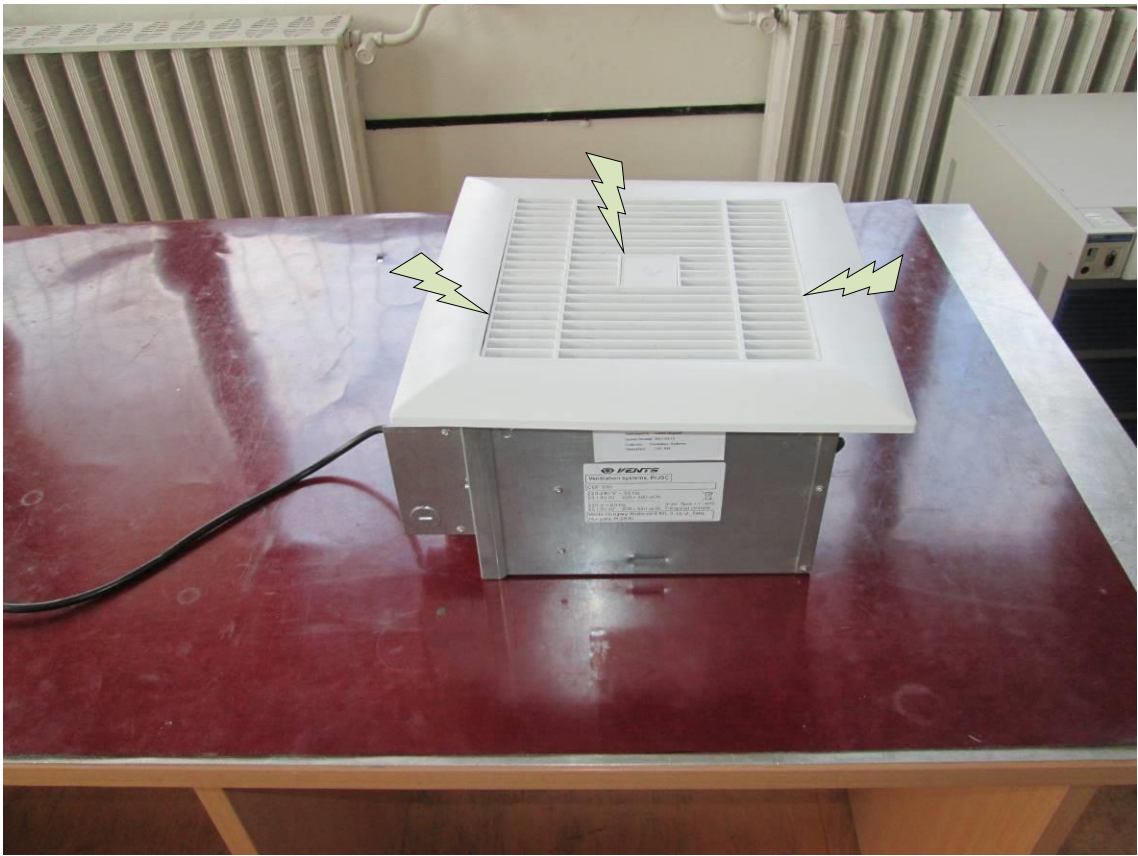


Indirect contact discharge Horizontal coupling plate



Indirect contact discharge Vertical coupling plate

Photo(s) of selected test points

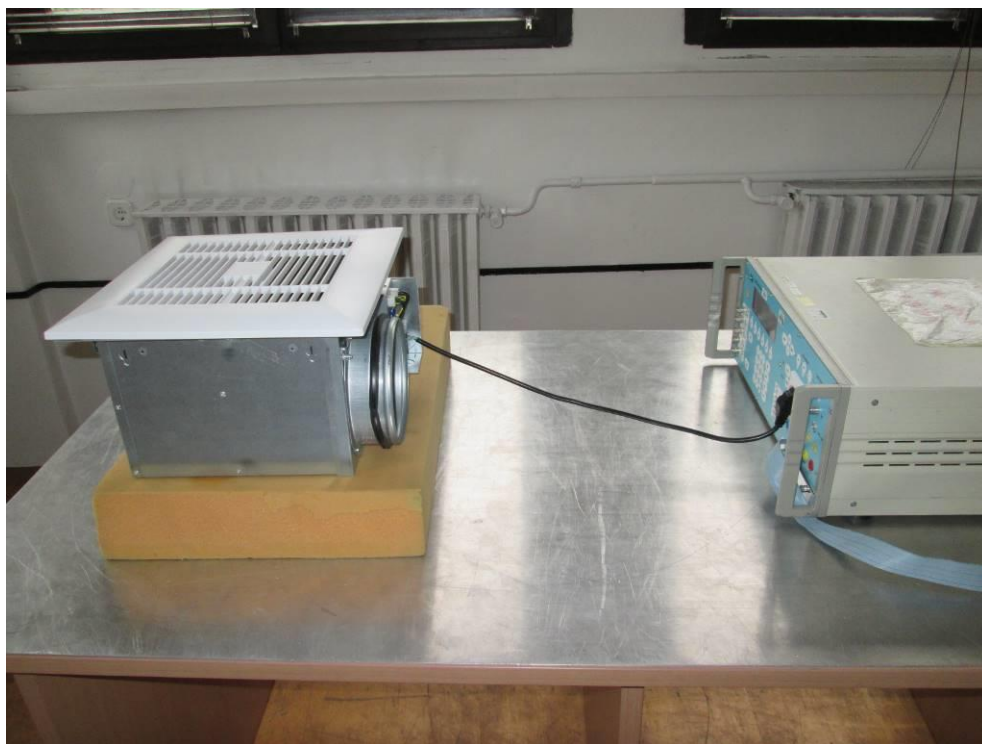


Symbols identifying discharge applied		Contact discharge
		Air discharge
		Air discharge, discharge did not occur

7.5 Fast transients

Tested by	Balázs Sztehlík
Test date	2021-04-29
Test location (stand)	Conducted immunity test place (Fast transients)
Test set-up	☒ Equipment on the table ($0,1 \pm 0,01$) m above ground plane ☐ Equipment standing on floor at ($0,1 \pm 0,01$) m above ground plane ☐ Artificial hand applied. Location see photo.
Supplementary test set-up description	----
Repetition frequency	5 kHz
Test time	120 s (positive) + 120 s (negative)
Performance criterion	B
Supplementary information	Applied mains voltage: 230 V, 50 Hz and 220 V; 60 Hz

Test set-up photo

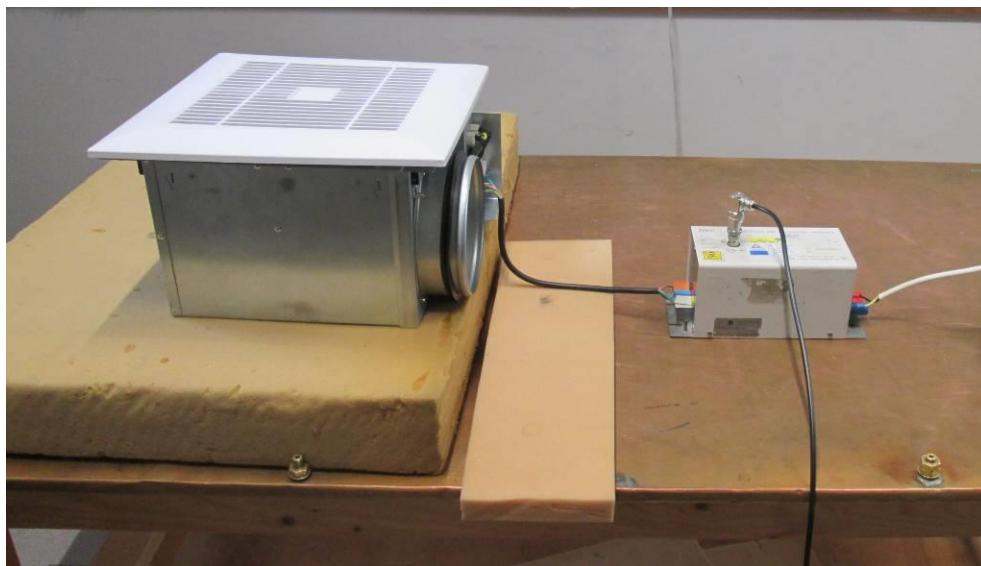


Test results fast transients						
Port	Coupling	Level [kV]	Polarity	Operating mode	Mains voltage/ frequency	Observation
AC mains	CDN (built-in)	1	Positive	1; 2	230 V; 50 Hz	No change was observed
AC mains	CDN (built-in)	1	Negative	1; 2	230 V; 50 Hz	No change was observed
AC mains	CDN (built-in)	1	Positive	1; 2	220 V; 60 Hz	No change was observed
AC mains	CDN (built-in)	1	Negative	1; 2	220 V; 60 Hz	No change was observed
Observations (Detail)..... :			No change was observed			
Supplementary information: ---						

7.6 Injected currents, 0,15 MHz to 230 MHz

Tested by	Balázs Sztehlík
Test date.....	2021-04-29
Test location (Stand)	Conducted immunity test place (Injected currents)
Test set-up.....	☒ Equipment located (0,1 ± 0,05) m above ground plane ☐ Elevated ground plane according to Annex F ☐ Artificial hand applied. Location see photo. ☐ Other:
Supplementary test set-up description	--
Modulation	☒ 80 % AM with 1 kHz ☐ Other: ---
Step size	1 %
Performance criterion	A
Mains voltage / frequency during test	Applied mains voltage: 230 V, 50 Hz and 220V; 60 Hz
Supplementary information	--

Test set-up photo



Test results for conducted disturbances, induced by radio-frequency fields							
Frequency range /discrete frequencies	Test Level [V]	Port under test	CDN type	Port with terminated CDN	Operating mode	Dwell time [s]	Observations
0,15 MHz to 230 MHz	3	AC Mains	M3	N/A	1; 2	1	No change was observed
Observations (Detail)..... :		No change was observed					
Supplementary information: ---							

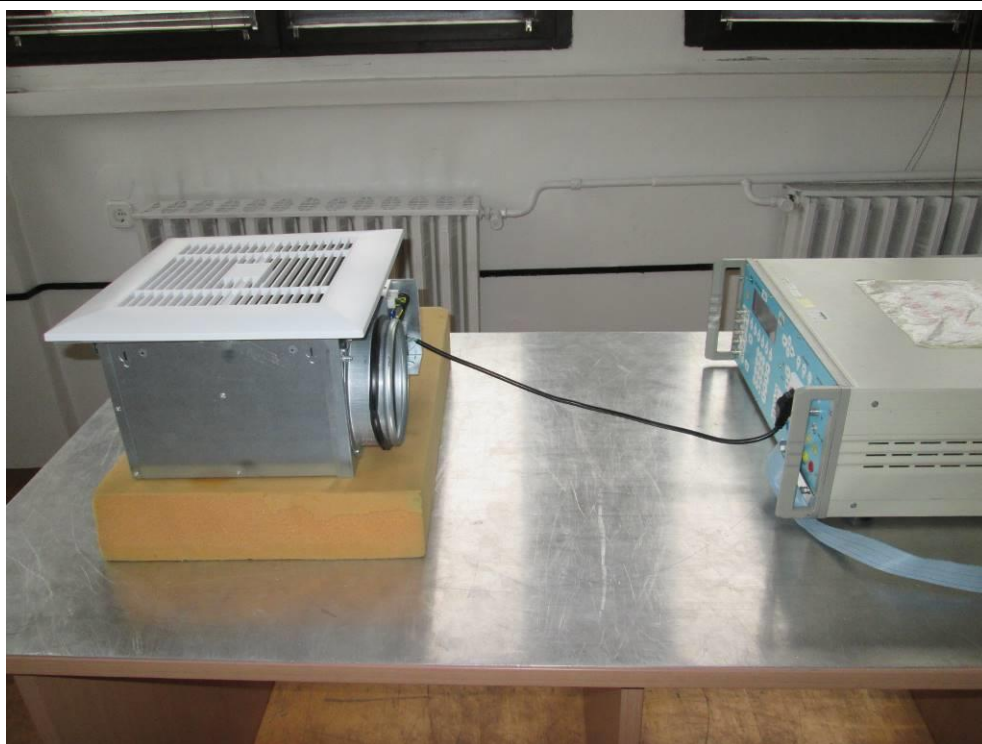
7.7 Radio-frequency electromagnetic fields

Tested by		
Test date.....		
Test location (Stand)		
Test set-up.....	☐	Equipment on the table (0,8 m height)
	☐	Equipment standing on floor (0,05 – 0,15 m height)
Supplementary test set up description	---	
Exposed side of EUT	☐	0° (Front)
	☐	90 °
	☐	180 ° (Rear)
	☐	270 °
	☐	Top side
	☐	Bottom side
Reason for not exposing a side..	---	
Distance Antenna to EUT	3 m	
Test method.....	☐	IEC 61000-4-3 (FAR)
	☐	IEC 61000-4-22 (FAR, uniform set-up)
	☐	IEC 61000-4-20 (TEM)
Distance Antenna to EUT	3 m	
Step size [%].....	1 %	
Performance criterion	A	
Supplementary information	The EUT does not incorporate clock frequency above 15 MHz and the device is Category II, so this test is not applicable.	

7.8 Surges

Tested by	Balázs Sztehlík
Test date.....	2021-04-29
Test location (Stand)	Conducted immunity test place (Surge)
Test set-up description	---
Repetition rate	1/min
Number of pulses for each coupling	5
Performance criterion	B
Supplementary information	Applied mains voltage: 230 V, 50 Hz and 220 V 60 Hz

Test set-up photo



Test results for surges								
Port	Coupling	CDN	Level [kV]	Po- larity	Phase angles [°]	Operating mode	Mains voltage/ frequency	Observation
AC Mains	L – N	F5	1	P	90	1; 2	230 V; 50 Hz	No change was observed
AC Mains	L – N	F5	1	N	270	1; 2	230 V; 50 Hz	No change was observed
AC Mains	L – PE	F6	2	P	90	1; 2	230 V; 50 Hz	No change was observed
AC Mains	L – PE	F6	2	N	270	1; 2	230 V; 50 Hz	No change was observed
AC Mains	N – PE	F6	2	P	90	1; 2	230 V; 50 Hz	No change was observed
AC Mains	N – PE	F6	2	N	270	1; 2	230 V; 50 Hz	No change was observed
AC Mains	L – N	F5	1	P	90	1; 2	220 V; 60 Hz	No change was observed
AC Mains	L – N	F5	1	N	270	1; 2	220 V; 60 Hz	No change was observed
AC Mains	L – PE	F6	2	P	90	1; 2	220 V; 60 Hz	No change was observed
AC Mains	L – PE	F6	2	N	270	1; 2	220 V; 60 Hz	No change was observed
AC Mains	N – PE	F6	2	P	90	1; 2	220 V; 60 Hz	No change was observed
AC Mains	N – PE	F6	2	N	270	1; 2	220 V; 60 Hz	No change was observed
Lower test levels..... :			☐	The lower test levels are tested also.				
			☒	The lower test levels are not tested.				
Observations (Detail)..... :			No change was observed					
Legend: Polarity: P = Positive, N = Negative CDN (figure no.) from IEC 61000-4-5 etc. F5 = Figure 5 – AC / DC lines line-to-line coupling F6 = Figure 6 – AC / DC lines: line-to-ground coupling F7 = Figure 7 – AC lines (3 phases): line L2-to-line L3 coupling F8 = Figure 8 – AC lines (3 phases): line L3-to-ground coupling F9 = Figure 9 – network for unshielded unsymmetrical interconnection lines: line-to-line and line-to-ground coupling F10 = Figure 10 – network for unshielded symmetrical interconnection lines: lines-to-ground coupling F11 = Figure 11 – network for unshielded symmetrical interconnection lines: lines-to-ground coupling via capacitors F12 = Figure 12 – surges applied to shielded lines								
Supplementary information: *Tested appliance has not PE terminal so line to ground surges was not applied according to IEC 61000-4-5 clause 7.3.								

7.9 Voltage dips and interruptions

Tested by	Balázs Sztehlík
Test date.....	2021-04-29
Test Location (Stand)	Harmonic/flicker/voltage dip testing area
Test set-up description	---
Repetition rate	10 s
Number of dips or interruptions ..	3
Performance criterion	C (Voltage dips)
Supplementary information	---

Test set-up photo



Test results voltage dips						
U_T in V	Frequency in Hz	Test Level % of U_T	Phase angle	Duration in cycles	Operating mode	Observations
220	50 Hz	0	0°, 180°	0,5 (50 Hz)	1; 2	No change was observed
240	50 Hz	0	0°, 180°	0,5 (50 Hz)	1; 2	No change was observed
220	60 Hz	0	0°, 180°	0,5 (60 Hz)	1; 2	No change was observed
220	50 Hz	40	0°	10 (50 Hz)	1; 2	See Observation (Details)*
240	50 Hz	40	0°	10 (50 Hz)	1; 2	See Observation (Details)*
220	60 Hz	40	0°	12 (60 Hz)	1; 2	See Observation (Details)*
220	50 Hz	70	0°	25 (50 Hz)	1; 2	See Observation (Details)*
240	50 Hz	70	0°	25 (50 Hz)	1; 2	See Observation (Details)*
220	60 Hz	70	0°	30 (60 Hz)	1; 2	See Observation (Details)*
Observations (Details)..... :			*The EUT's speed has reduced, After the test the device was working continuously without any operator intervention. The device passed the tests with performance criterion "B".			
Supplementary information: --						

8 List of test equipment

Equipment used					
Equipment	Type	Inventory number	Manufacturer	Last calibration date	Calibration due date
Test Stand:	Disturbance voltage (150 kHz to 30 MHz)				
Measuring receiver	ESR3	9022565	R & S	2021-02	2022-02
Artificial mains network	PMM L2-16B	2787657	Narda	2020-07	2021-07
Pulse limiter	ESH3-Z2	2787337	R & S	2020-06	2021-06
Power supply	PCR 4000LE	9023253	Kikusui	2021-01	2022-01
Test Stand:	Disturbance power (30 MHz to 300 MHz)				
---	---	---	---	---	---
Test Stand:	Radiated emission (30 MHz to 6000 MHz)				
Semi anechoic chamber	3, 10m	2786942	T-Network	2019-07	2022-07
Measuring receiver	ESR3	9022565	R & S	2021-02	2022-02
Biconilog antenna	VULB 9161	2787549	SCHWARZBECK	2020-09	2021-09
Test Stand:	Magnetic field (9 kHz to 30 MHz)				
---	---	---	---	---	---
Test Stand:	Discontinuous disturbance (clicks)				
---	---	---	---	---	---
Test Stand:	Harmonic current emissions				
---	---	---	---	---	---
Test Stand:	Voltage changes, voltage fluctuations and flicker				
---	---	---	---	---	---
Test Stand:	Electrostatic discharge				
ESD generator	esd NX30	9022257	EM Test	2020-12	2021-12
Test Stand:	Fast transients				
EMC Test system	EXT-TRA 3000S	2786943	EMC Test System	2021-02	2022-02
Test Stand:	Injected currents, 0,15 MHz to 230 MHz				
COMPACT IMMUNITY TEST SYSTEM	NSG 4070C-110	9022712	AMETEK	2021-02	2022-02
CDN	M3	2786636	MEB	2020-10	2021-10
Test Stand:	Radio-frequency electromagnetic fields				
---	---	---	---	---	---
<i>Note: Calibration dates are shown at the date of the measurements. All instruments have valid calibration at the report's publication date also.</i>					

Calibration interval may be extended based on sufficient calibration data and experience of use (see IEC 61010-1:2019 clause 8.2.5)

List of test equipment

Equipment used					
Equipment	Type	Inventory number	Manufacturer	Last calibration date	Calibration due date
Test Stand:	Surge				
EMC Test system	EXT-TRA 3000S	2786395	EMC Test System	2021-02	2022-02
Test Stand:	Voltage dips and interruptions				
Multimeter	3257-50	2786821	Hioki	2020-10	2021-10
Power supply	PCR 4000LE	9023253	Kikusui	2021-01	2022-01
<i>Note: Calibration dates are shown at the date of the measurements. All instruments have valid calibration at the report's publication date also.</i>					

Calibration interval may be extended based on sufficient calibration data and experience of use (see IEC 6011:2019 clause 8.2.5)

9 Measurement instrumentation uncertainties

Type of disturbance test method	Used test equipment (only main instruments, no details)	Calculated uncertainty	U_{CISPR}
Disturbance voltage Mains terminals 9 kHz ... 150 kHz 150 kHz ... 30 MHz	Test receiver, AMN	150 kHz – 30 MHz: $\pm 2,9$ dB	3,44 dB
Radiated disturbance measurement 30 MHz – 200 MHz: 200 MHz – 1000 MHz:	Test receiver, antenna	30 MHz – 100 MHz: $\pm 4,84$ dB 100 MHz – 1000 MHz: $\pm 5,79$ dB	6,3 dB
Harmonic currents IEC 61000-3-2 IEC 61000-3-12	Digital flickermeter- real time harmonic analyser, Power supply	5,27%	not applicable
Flicker IEC 61000-3-3 IEC 61000-3-11	Digital flickermeter- real time harmonic analyser, Power supply	13,96%	not applicable
Uncertainties of immunity measurements: There is no procedure how to deal with the results of immunity uncertainty calculations during the testing. Therefore the uncertainties of the immunity test set-ups have not been published here. All instrumentation used for immunity tests is calibrated and within the specifications required by the basic standards (IEC 61000-4-X).			

10 Annex

10.1 Critical components table

Critical Components			
Material: e.g. external enclosure, PCB, closed-end connector, sleeves, cord anchorage etc			
Components with winding: e.g. motor, transformer, magnetic coil etc.			
Other components: e.g. switch, thermostat, heater, plug, internal wire, capacitor, relay, varistor etc.			
Object/part No.	Manufacturer/ trademark	Type/ model	Technical data
Turbine for fans: CBF 200, CBF LP 200	SHENGZHOU CITY DONG FANG MOTOR CO., LTD	BL74-4E-A011	230V~ 50Hz 10W
Turbine for fans: CBF 250, CBF LP 250, CBF 300	SHENGZHOU CITY DONG FANG MOTOR CO., LTD	BL74-4E-A021	230V~ 50Hz 12W
Thermal (motor) protector	Foshan Changhong Tongli Electric Appliance Co.,Ltd	KW-C1	250V, 30-150°±5°C
Alt. Thermal (motor) protector	Jiangsu Changsheng Electric Appliance Co. Ltd.	18AM-C	AC250V/5A
Alt. Thermal (motor) protector	Zhejiang Dongyang Hengdian	KSD-IB	250V 50- 150°±5°C
Capacitor	Hui Li CO Ltd/Xindian Co Ltd Trademark: Dianz/Hui Li	CBB60	1µF±5% 450VAC 50/60 Hz
Capacitor	Hui Li CO Ltd/Xindian Co Ltd Trademark: Dianz/Hui Li	CBB60	1.2µF±5% 450VAC 50/60 Hz
Alt. Capacitor	Chenshen Capacitor Co. Ltd	CBB60	1µF, 1.2µF 450VAC
Alt. Capacitor	ANHUI MASCOTOP ELECTRONIC CO.,LTD	CBB60	1µF 1,2µF 450VAC
Connector plug 6-Pin	ZHEJIANG HONGXING ELECTRICAL CO LTD	HX45002-6R HX45002- 6P	10A
Terminal	ZHEJIANG HONGXING ELECTRICAL CO LTD	HX45003-21RT HX45002-21PT	0.25~0.75 mm² 10A
Switch	Everel Group S.p.A.	A11562219000	250V 10A
Terminal	Heavy Power Co., Ltd	PA8	2,5mm², 450V
Power connector 3-Pin	TE Connectivity Industrial GmbH	172166-1	600 V
Power connector 3-Pin	TE Connectivity Industrial GmbH	172158-1	600 V
Power connector 4-Pin	TE Connectivity Industrial GmbH	172159-1 4	600V

Critical Components			
Material: e.g. external enclosure, PCB, closed-end connector, sleeves, cord anchorage etc			
Components with winding: e.g. motor, transformer, magnetic coil etc.			
Other components: e.g. switch, thermostat, heater, plug, internal wire, capacitor, relay, varistor etc.			
Object/part No.	Manufacturer/ trademark	Type/ model	Technical data
Terminal strip	10.1.1 NICHIFU TERMINAL INDUSTRIES CO., LTD.	JIS C 2807 CE1	22-16 AWG 300V 7A
Alt. Terminal strip	RS PRO	BM991 1.5mm ²	450 V 85°C 1.5 mm ²
Plastic	Lotte Advanced Materials Co. Ltd.	ABS Starex SD-0150	UL94-HB
Alt. Plastic	Lotte Advanced Materials Co. Ltd.	ABS Starex VE-0856	UL94-5VA
Alt. Plastic	LG Chem Co.Ltd	PP Lupol GP3200	UL94-HB
Alt. Plastic	LG Chem Co.Ltd	PP Lupol GP3156F	UL94-V0

10.2 Type designation code

Type designation:

Type designation	Rated power input	
	220-240V 50Hz	220V 60Hz
CBF 200; CBF LP 200	20 / 29 W	21 / 34 W
CBF 250; CBF LP 250	23 / 39 W	25 / 50 W
CBF 300	23 / 39 W	25 / 50 W

End of test report

End of test report