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LAB N° 0168

Independent Testing Laboratory
Accredited by ACCREDIA according to UNI CEI EN ISO/IEC 17025 cert. nr. 0168

TEST REPORT nr. R15129001
Electromagnetic Compatibility (EMC)

Test item

Description.....: OIL FILLED RADIATOR
Trademark.....: DE' LONGHI
Model/Type .....: TRRSxxyyzj / Category HRRJ

Test Specification

Standard .....: EN 55014-1:2006 + A1:2009 + A2:2011
EN 61000-3-2:2014
EN 61000-3-3:2013
EN 55014-2:1997 + A1:2001 + A2:2008

Client's name.....: DE' LONGHI APPLIANCES S.r.l.
Address.....: Via L. Seitz, 47 – 31100 Treviso (TV) – ITALY

Manufacturer's name : Same as client
Address.....: --

Report

Tested by.....: D. Velo – *Technician*
Approved by.....: R. Beghetto – *Laboratory Manager*
Date of issue.....: 04.08.15
Contents.....: 29 pages

Index

1. Summary

Emission Test:

EN 55014-1:2006 + A1:2009 + A2:2011
EN 61000-3-2:2014
EN 61000-3-3:2013

Test specifications	*Environmental Phenomena*	*Port*	*Tests sequence*	*Result*
EN 55014 -1	Continuous disturbance voltage	Mains terminals	1	Complies
		Load terminals	--	N.A. (+)
EN 55014 -1	Discontinuous disturbance voltage	AC mains	2	Complies
EN 55014 -1	Disturbance Power	Mains terminals	5	Complies
		Auxiliary Lead	--	N.A. (+)
EN 55014 -1	Radiated disturbance	Enclosure	--	N.A. (++)
EN 61000-3-2 Class A	Harmonic current emissions	AC mains	3	Complies
EN 61000-3-3	Voltage fluctuations and flicker	AC mains	4	Complies

(+) Port Not Present

(++) In agreement with figure 10 of EN 55014-1/A1 (2009)

NOTE: tests performed on model TRRS0920. See Annex 1 for the differences between all models

Immunity Test:				
EN 55014-2:1997 + A1:2001 + A2:2008 - Category I				
Test specifications	*Environmental Phenomena*	*Port*	*Tests sequence*	*Result*
EN 61000-4-2	Electrostatic discharge	Enclosure	--	N.A. (+)
EN 61000-4-3	Radiated electromagnetic field	Enclosure	--	N.A. (+)
EN 61000-4-4	Electrical Fast Transients	AC mains	--	N.A. (+)
		DC mains	--	N.A. (+)
		Signal/Control Line	--	N.A. (+)
EN 61000-4-5	Surge	AC mains	--	N.A. (+)
EN 61000-4-6	Injected currents	AC mains	--	N.A. (+)
		DC mains	--	N.A. (+)
		Signal/Control Line	--	N.A. (+)
EN 61000-4-11	Dips / Short interruptions	AC mains	--	N.A. (+)

(+) Apparatus with no electronic control circuitry

This document aims to report the compatibility test results according to the 2004/108 EC and 2014/30 UE Directives. The Test Report was given to the Client representatives for necessary documentation of ratification of the tested equipment and it is valid for the CE marking.

2. Description of Equipment under test (EUT)

Power supply	:	230 V ~ 50 Hz single-phase + earth
Power cable	:	Unshielded
Serial Number	:	--
Components list	:	Annex 1

3. Testing and sampling

Date of receipt of test item	:	24.06.15
Testing start date	:	27.07.15
Testing end date	:	27.07.15
Samples tested nr.	:	1
Sampling procedure.	:	Equipment used for testing was picked up by the manufacturer, at the end of the production process with random criterion
Internal identification	:	adhesive label with the product number P150740

4. Operative conditions

EUT exercising	:	Steady condition, heating mode
Auxiliary equipment	:	None
Performance check for immunity test	:	--
Test configuration	:	a) According to EN 55014-1 subcl. 5.2.2 EUT has been placed at 0,8 m from V- network b) EUT classified as floor-standing equipment

4.1 Evaluation criteria for immunity tests

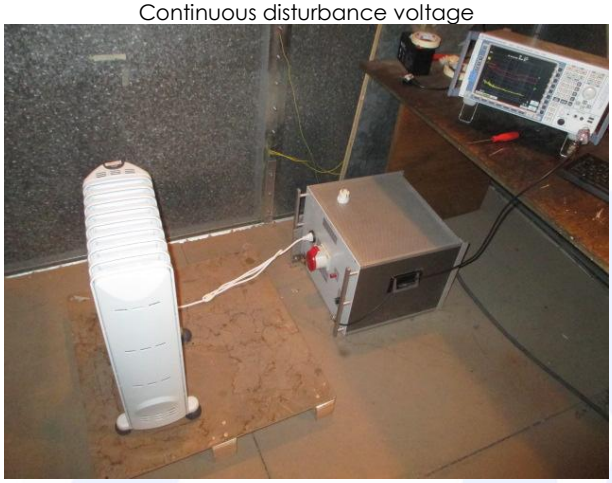
Criterion A	The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance 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.
Criterion 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 what the user may reasonably expect from the apparatus if used as intended.
Criterion 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.

5. Photograph(s) of EUT

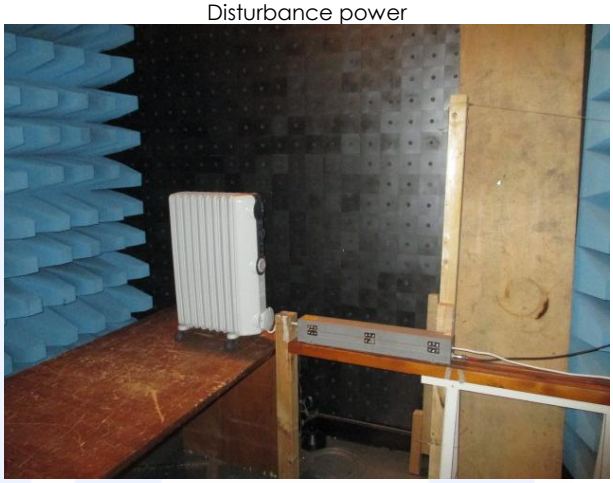
5.1 Photograph(s) of EUT

5.2 Photograph(s) of setup

Continuous disturbance voltage



Disturbance power



6. Equipment list

Id. number	Manufacturer	Model	Description	Serial number
CMC S001	Rohde & Schwarz	ESHS30	EMC Interference Receiver	862024/003
CMC S002	Rohde & Schwarz	ESVS30	EMC Interference Receiver	826638/011
CMC S003	SCHAFFNER	NSG 2025-4	Burst Source with CDN	1010
CMC S004	SCHAFFNER	NSG 435-01	ESD Simulator	1166
CMC S005	XITRON	2503	Harmonic & Flicker Analyser	2503592013
CMC S006	Chauvin Arnoux	CA43	Field Meter	218541RLV
CMC S007	Rohde & Schwarz	SMY01	RF Signal Generators	841403/038
CMC S009	Rohde & Schwarz	ESH2-Z5	Artificial Network	839497/007
CMC S010	Rohde & Schwarz	ESH3-Z2	Impulses Limiting Device	- - -
CMC S013	Rohde & Schwarz	EZ-17	Current Probe	840411/009
CMC S014	Rohde & Schwarz	ESH2-Z3	Passive Probe	- - -
CMC S015	RKB	LOG801000	Broadband Antenna	- - -
CMC S016	Rohde & Schwarz	HK116	Broadband Antenna	839472/001
CMC S017	Rohde & Schwarz	HL223	Broadband Antenna	825584/009
CMC S018	SCHAFFNER	CDN 126	Coupling Clamp	128
CMC S019	FCC	FCC 801-M5-25	CDN Power Line	06
CMC S021	CMC	TRBS 01	Balance-to-unbalance transformer	- - -
CMC S022	Teseo	LAS 1	Loop Antenna	3971
CMC S024	CMC	CTL-01	Voltage change for LISN	- - -
CMC S025	Salmoiraghi	1750-1	Hygro – Thermograph	323.601
CMC S026	Chroma	C6530	Power Supply Source	653000095
CMC S027	Amplifier Research	75A250	RF Amplifier	19349
CMC S028	FCC	FCC-203I	Injection Clamp	209
CMC S029	Keytek	Cemaster	Surge/Dip/Burst Generator	9609258
CMC S030	Rohde & Schwarz	ESPC	EMC Interference Receiver	844006/013
CMC S031	Tektronix	TDS 210	Digital Oscilloscope	B010552
CMC S032	SCHAFFNER	NSG 2050	Surge Source with CDN	200111-253AR
CMC S034	Schwarzbeck	UHA 9105	Dipole	UHA 91052234
CMC S037	Rohde & Schwarz	NRVS	Power Meter	845127/023
CMC S039	CMC	BI 01	Induction Coil	- - -
CMC S040	Walker Scientific	ELF 50-D	Magnetic Field Meter	K71484-290
CMC S042	Fluke	Fluke 73	Multimeter	67771510
CMC (S051-075)	CMC	LFXXX	Dummy Lamp	- - -
CMC S076	Altitude	25438	Barometer	- - -
CMC S078	Amplifier Research	100W1000M1	RF Amplifier	21849
CMC S079	AH System, Inc	SAS-200/542	Broadband Antenna	504
CMC S080	AH System; Inc	SAS-200/510	Broadband Antenna	807
CMC S081	AH System; Inc	SAS 200/550-1	Active Monopole Antenna	660
CMC S082	AH System; Inc	SAS-200/560	Loop Antenna	635
CMC S083	AH System; Inc	BCP-200/510	Current Probe	564
CMC S084	AH System; Inc	BCP-200/511	Current Probe	579
CMC S085	AH System; Inc	SAS-200/530	Broadband Dipole	504
CMC S086	CMC	RHCP01	Resistance 470Kohm	- - -
CMC S087	CMC	RHCP01	Resistance 470Kohm	- - -
CMC S088	CMC	LFAS20	Dummy Lamp	- - -
CMC S089	CMC	CSTARTER	Capacitor 5000pF	- - -
CMC S090	CMC	CSTARTER	Capacitor 5000pF	- - -
CMC S091	CMC	DIPLP	Dipole for Loop Antenna control	- - -
CMC S094	Schwarzbeck	NNBM 8126-A	LISN 5µH	8126A161
CMC S095	FCC	FCC 801-M3-16	CDN power line	9821
CMC S096	B & K	2260	Phonometer	1847463
CMC S105	Decca	PA-50	Broadband antenna	34/17977 - b
CMC S106	Gigatronix	900	RF Signal Generator	323001

Id. number	Manufacturer	Model	Description	Serial number
CMC S107	Hewlett Packard	HP8563E	Spectrum Analyser	3846A09658
CMC S108	Emco	3115	Horn Antenna	9811-5622
CMC S109	Farnell	LFM4	LF Signal Generator	531
CMC S110	CMC	OPS800	Open Strip Line 800mm	- - -
CMC S111	LEM HEME	PR 1001	Current Probes	- - -
CMC S112	Amplifier Research	DC3010	Directional Coupler	15238
CMC S114	Schwarzbeck	VHA 9103	Dipole	VHA 91031801
CMC S116	CMC	BCIP01	Current Injection Probe	--
CMC S117	MARCONI	2019A	RF Signal Generator	118453/014
CMC S118	Hewlett Packard	E3632A	Programmable Power Supply	KR75301881
CMC S119	Hewlett Packard	HP8903B	Audio Analyzer	3011A09055
CMC S120	FCC	FC130-A	Current Injection Probe	118
CMC S121	Wavetek	LCR55	Bridge LCR	20104738
CMC S122	Fluke	336	Amperometric Clamp Meter	81754972
CMC S123	Rohde & Schwarz	SML03	RF Signal Generator	100625
CMC S124	Spin	AMTP42-20	Horn Antenna	103
CMC S125	SCHAFFNER	PNW 2003	Dips source	200234-014SC
CMC S126	LDS + Dactron	V730-335+LASER	Vibration testing system	132+133+4512698
CMC S127	SCHAFFNER	HLA6120	Loop Antenna	1191
CMC S128	SCHAFFNER	CBA9428	RF Amplifier	1006
CMC S129	Rohde & Schwarz	ESPI7	Receiver	836.914/004
CMC S130	SCHAFFNER	NSG 5000	Automotive Impulse Generator	02032579-1
CMC S131	SCHAFFNER	CDN 500	Capacitive Clamp	400-151/0128
CMC S132	CMC	OPS150	Open Strip Line 150mm	- - -
CMC S133	RKB	LOG8002500	Broadband Antenna	- - -
CMC S135	LEM HEME	PR 30	Current Probe	P04217832830
CMC S136	Schwarzbeck	VULB 9136	Broadband Antenna	9136-205
CMC S138	Agilent	33220A	Function/Arbitrary Waveform Gener.	MY44003979
CMC S139	Wilcoxon	736	Accelerometer	12245
CMC S140	Wilcoxon	732A	Accelerometer	1424
CMC S141	Dytran	3023A1	Accelerometer Triaxial	383
CMC S142	Narda	ELT-400+B-sensor	Exposure level tester	D-0034+D-0032
CMC S144	Rohde & Schwarz	URV5	Power Meter	881375/004
CMC S145	Hewlett Packard	778D	Directional Coupler	17237
CMC S146	Amplifier Research	10W1000B	RF Amplifier	18451
CMC S148	CMC	W1	Shielded Cable	- - -
CMC S149	CMC	W2	Shielded Cable	- - -
CMC S150	RKB	LOG3080	Broadband Antenna	- - -
CMC S155	Chroma	61705	Power supply source	000000088
CMC S156	Yokogawa	DL9040	Digital Oscilloscope	91F643771
CMC S159	Rohde & Schwarz	SM300	RF signal generator	1006114
CMC S161	EM TEST	EFT 500 M4 S1	Burst source with CDN	V0739102946
CMC S162	FCC	FCC 801-M2-16	CDN power line	07047
CMC S163	NOISEKEN	ESS-2002+TC-815R	ESD simulator	ESS0787336
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052
CMC S170	Amplifier Research	FL7006	Field meter	0327425
CMC S171	Schwarzbeck	BBHA 9120 LF(A)	Broadband Antenna	284
CMC S172	Schwarzbeck	VHBD9134+BBAL9136	Broadband Antenna	9134-037
CMC S173	Luthi	CDN L-801 AF4	CDN I/O line	2481
CMC S174	Luthi	CDN L-801 AF8	CDN I/O line	2482
CMC S175	Luthi	CDN L-801 T2	CDN I/O line	2473
CMC S176	Luthi	CDN L-801 T4	CDN I/O line	2475
CMC S177	Luthi	CDN L-801 T8	CDN I/O line	2476
CMC S178	Schwarzbeck	STLP 9128 C	Broadband Antenna	086
CMC S179	Frankonia	FLL-250A	RF Amplifier	1023

Id. number	Manufacturer	Model	Description	Serial number
CMC S180	Milmega	RF350	RF Amplifier	1031422
CMC S181	Milmega	AS0822-200	RF Amplifier	1031424
CMC S182	Milmega	AS0206-50	RF Amplifier	1031425
CMC S183	Minicircuits	PWR-SEN-6G+	Power Sensor	0809070042
CMC S184	ARRAY	3400A	Arbitrary Waveform Generation	TW00009164
CMC S185	EM TEST	OCS 500 M6 S4	Oscillatory compact simulator	V0915104789
CMC S187	Rohde & Schwarz	SMB100A	RF signal generator	102572
CMC S190	Spin	AMDR-10180	Horn Antenna	01-309-09
CMC S191	EM TEST	UCS 500 N5	Burst/Surge/PFQ compact simulator	V0947105547
CMC S193	Solar	6552-1A	BF Amplifier	- - -
CMC S194	CMC	CDN 16 PL	CDN Power line	- - -
CMC S195	Schwarzbeck	VULB 9118 E sp.	Broadband Antenna	827
CMC S196	EM TEST	BS 200N	Electronic switch	V100510506
CMC S197	EM TEST	UCS 200N	Pulse generator	V0825103901
CMC S198	FCC	F - 55	RF Current Probe	100999
CMC S199	EM TEST	CNI 503	CDN for Burst and Surge	V1026106843
CMC S200	Schwarzbeck	NSLK 8128	V-LISN	8128-273
CMC S201	S.M. ELECTRONICS	SA3N150-06F	Attenuator	- - -
CMC S202	Rohde & Schwarz	CMU200	Universal radio communication tester	104099
CMC S203	CMC	VH	Van der Hoofden test-head	- - -
CMC S204	Amplifier Research	150L	RF Amplifier	10939
CMC S205	Schwarzbeck	NNBM 8124	LISN 5µH	065
CMC S206	Rohde & Schwarz	ESCI 7	EMC Receiver	100781
CMC S207	AlphaLab	ASMGM	Milligauss meter	584
CMC S209	Elettrotest	TPS40K 30K60S	AC Source	002.11
CMC S210	EM TEST	PFS 200N30	Power Fail simulator	V1130110311
CMC S211	Luthi	CDN L-801 M1	CDN M line	2811
CMC S212	Luthi	CDN L-801 M2	CDN M line	2812
CMC S213	Luthi	CDN L-801 M3	CDN M line	2813
CMC S214	EM TEST	VDS200N10	Voltage drop simulator	V1150111222
CMC S215	FCC	F-130A-1	BCI Probe	112166
CMC S216	Luthi	MDS21	Absorbing Clamp	4101
CMC S217	Schwarzbeck	TK9420	Voltage Probe	458
CMC S218	RS	50WCW	50 ohm Load	- - -
CMC S219	EM TEST	CNV 504 N1.2	Box Surge	V1210112161
CMC S220	Minicircuits	PWR-SEN-6GHS	USB POWER SENSOR	110082250012
CMC S221	Minicircuits	BW-N20W5+	Attenuator	0612
CMC S222	A-INFOMW	ACB06-100SN	Attenuator	J30811111111003
CMC S223	Minicircuits	BW-N20W20+	Attenuator	1217
CMC S224	Fairview microwave	SMC4037-20	Directional Coupler	JSDF568-081
CMC S225	Fairview microwave	SA3550N	Step Attenuator	201237026
CMC S226	Werlatone	C6021-10	Dual Directional Coupler	99019
CMC S227	Rohde & Schwarz	ESR7	EMI Test Receiver 7GHz	101121
CMC S228	Agilent	U3401A	Digital Multimeter	MY52270047
CMC S229	Schwarzbeck	CAT5 8158	ISN 8-Wire	CAT5-8158-0074
CMC S230	Werlatone	C1795-10	Dual Directional Coupler	100140
CMC S232	CMC	W3	Shielded Cable	- - -
CMC S233	CMC	W4	Shielded Cable	- - -
CMC S234	Schwarzbeck	VTSD 9561-F	Pulse Limiter/Attenuator	9561-F023
CMC S235	Schwarzbeck	VUSLP 9111B	Broadband Antenna	9111B-118
CMC S236	Schwarzbeck	BBA 9106 + VHBB 9124	Broadband Antenna	9124-672
CMC S237	EM TEST	DPA 503N	Harmonic & Flicker analyser	P1338124620
CMC S238	Minicircuits	PWR-SEN-6GHS	USB POWER SENSOR	11302250023
CMC S239	Schwarzbeck	UAH 9105	Dipole	9105-2599
CMC S240	CMC	ITF2	Three-phase Impedances cabinet	- - -
CMC S241	Schwarzbeck	BBV 9718	Broadband Preamplifier	9718-126
CMC S242	CMC	W-IM1	Shielded Cable	- - -
CMC S243	Minicircuits	ZX60-33LN-S+	Low Noise Amplifier	S F558500921

Id. number	Manufacturer	Model	Description	Serial number
CMC S244	EM TEST	AutoWave	Automotive Waveforms Gen.	P1303110740
CMC S245	CMC	AEP1	Automotive ESD Plane	- - -
CMC S246	Minicircuits	ZFBT-6GW	Bias Tee	RF405100521
CMC S247	Minicircuits	ZFBT-6GW+	Bias Tee	RF476100846
CMC S249	Schwarzbeck	NNBM 8124	LISN 5µH	685
CMC S250	Pico Technology	PicoLog1216	USB Data Logger	CO117/017
CMC S251	Schwarzbeck	BBV 9745	Broadband Preamplifier	9745-0019
CMC S252	Agilent	34972A	Data Acquisition	MY49018010
CMC S253	Minicircuits	PWR-SEN-6GHS	USB POWER SENSOR	11405260039
CMC S254	Prana	DR220	RF Amplifier	1610
CMC S255	S.M.ELECTRONICS	SA3N100-03F	Attenuator	- - -
CMC A001	Sispe	F5123	Shield chamber	- - -
CMC A002	SIDT	951130	Anechoic chamber	- - -
CMC A007	CMC	10707	Semi-anechoic chamber	- - -
CMC A008	CMC	BPA	Track for absorbing clamp	- - -
CMC A013	CMC	TR01	Rotary motorized table	- - -
CMC A014	CMC	PM01	Antenna positioning Mast	- - -
CMC B026	Angelantoni	UY 245 IU	Climatic chamber	1059.78
CMC B087	Yokogawa	WT3000	Precision Power analyzer	91JB15155

7. Measurement uncertainty

Test	Expanded Uncertainty	note
Conducted Emission		
(50Ω/50µH AMN) - (9 kHz – 150 kHz)	±3.6 dB	1
(50Ω/50µH AMN) - (150 kHz – 30 MHz)	±3.0 dB	1
(Voltage probe) - (150 kHz – 30 MHz)	±2.8 dB	1
(50Ω/5µH AMN) - (150 kHz – 108 MHz)	±2.6 dB	1
Discontinuous Conducted Emission		
Conducted Emission (50Ω/50µH AMN) - (150 kHz – 30 MHz)	±3.0 dB	1
Disturbance Power (30 MHz – 300 MHz)	±3.7 dB	1
Radiated Emission		
(0,150 MHz – 30 MHz)	±4.0 dB	1
(30 MHz – 1000 MHz)	±4.3 dB	1
(1 GHz – 6 GHz)	±4.5 dB	1
Electromagnetic field EMF	±10.5 %	1
Harmonic current emissions test	±1.8 %	1
Voltage fluctuation and flicker test	±2.6 %	1
Insertion loss test	±2.0 dB	1
Radiated electromagnetic disturbance test (loop antenna)	±2.1 dB	1
Radiated electromagnetic field immunity test	0.81 V/m at 3V/m	1
Pulse modulated radiated electromagnetic field immunity test	0.81 V/m at 3V/m	1
Injected currents immunity test	0.45 V at 3V	1
Bulk current	3.7 mA at 60 mA	1
Power frequency magnetic field immunity test	0.1 A/m at 10 A/m	1
Effective radiated power (F < 1GHz)	±4.3 dB	1
Effective radiated power (F > 1GHz)	±3.7 dB	1
Frequency error	< 1x10-7	1
Modulation bandwidth	< 1x10-7	1
Conducted RF power and spurious emission	±0.7 dB	1
Adjacent channel power	±1.2 dB	1
Blocking	±1.2 dB	1
Electrostatic discharge immunity test		2
Electrical fast transients / burst immunity test		2
Surge immunity test		2
Pulse magnetic field immunity test		2
Damped oscillatory magnetic field immunity test		2
Short interruption immunity test		2
Voltage transient emission test	±2.2 %	1
Transient immunity test		2

Notes

Note 1:
The expanded uncertainty reported according to EN55016-4-2:2011 is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of p = 95%

Note 2:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor k = 2.

8. Reference documents

Reference no.	*Description*
EN 55014-1:2006 + / A1:2009 + /A2:2011	Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus. Part 1: Emission
EN 55014-2:1997 + / A1:2001 + /A2:2008	Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus. Part 2: Immunity – Product family standard
EN 61000-3-2:2014	Electromagnetic compatibility (EMC) - Part 3: Limits – Section 2: Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) - Part 3-3: Limits - 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 61000-4-2:2009	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 2: Electrostatic discharge immunity test
EN 61000-4-3:2006 + /A1:2008 + /A2:2010 + /IS1:2009	Electromagnetic compatibility (EMC) - Part 4 : Testing and measurement techniques – Section 3: Radiated, radio-frequency, electromagnetic field immunity test
EN 61000-4-4:2012	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
EN 61000-4-5:2014	Electromagnetic compatibility (EMC) - Part 4 : Testing and measurement techniques – Section 5: Surge immunity test
EN 61000-4-6:2014	Electromagnetic compatibility (EMC) -- Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
EN 61000-4-11:2004	Electromagnetic compatibility (EMC) - Part 4 : Testing and measurement techniques - Section 11: Voltage dips, short interruptions and voltage variations immunity tests
Internal Procedure PM001 rev. 2.0 (Quality Manual)	Measure procedure
Internal procedure INC_M rev. 8.2 (Quality Manual)	Measurement uncertainty calculation

9. Deviation from test specification

In agreement with the client, emission tests were performed with peak detector.

At the frequencies where the measures exceed the limit or within 6 dB from it, the test was repeated with quasi-peak detector and/or average detector.

10. Test case verdicts

Test case does not apply to the test object ..... : N.A.
Test item does meet the requirement ..... : Complies
Test item does not meet the requirement..... : Does not comply
Test not performed ..... : N.E.

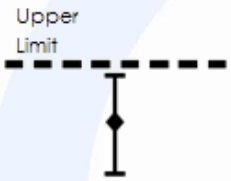
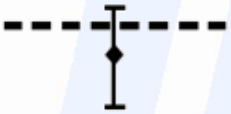
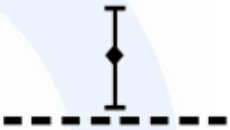
11. Results

In this clause tests results are reported.

The evaluation of EUT performance during immunity test has been performed by members of CMC staff.

Measurement uncertainty is in accordance with document CMC INC_M rev. 8.2.

Judgement of compliance:

Case 1	Case 2	Case 3	Case 4
			
The sample complies with the requirement.	The sample complies with the requirement.	The sample does not comply with the requirement.	The sample does not comply with the requirement.
The measurement results is within the specification limit when the measurement uncertainty is taken into account.	It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty although the measurement result is below the limit.	It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty also the measurement result is upper the limit.	The measurement results is outside the specification limit when the measurement uncertainty is taken into account.

In agreement with ILAC-G8: 03/2009 Guidelines on the Reporting of Compliance with Specification.

11.1 Continuous disturbance voltage test (150 kHz – 30 MHz)

Test set-up and execution

- EN 55014-1 cl. 5, 7
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Shielded chamber (CMC A001)

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S010, CMC S200, CMC S206
Measurement uncertainty: See clause 7 of this test report

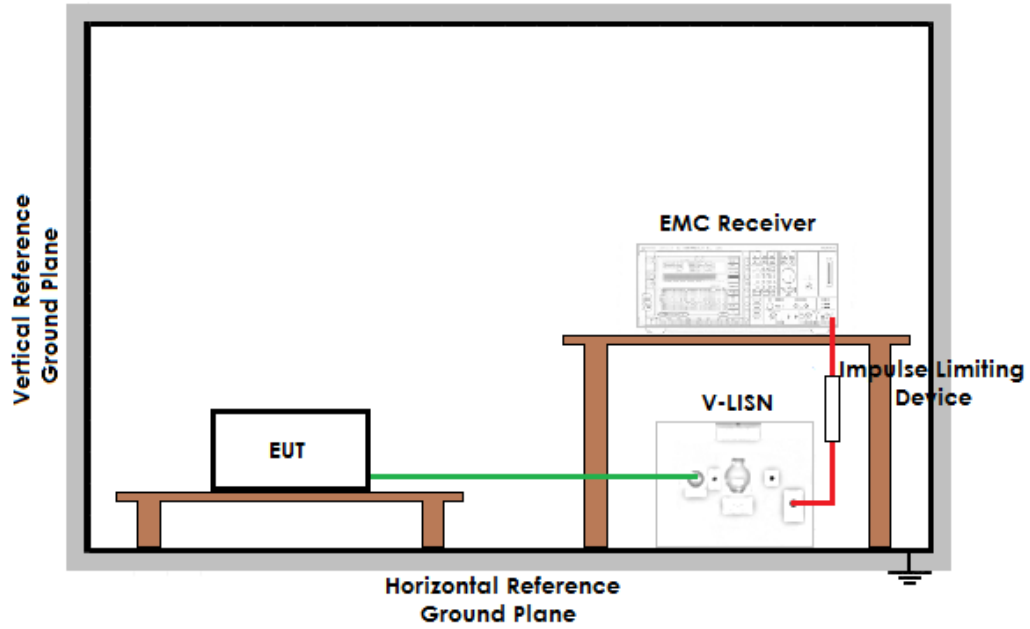
Test specification

Frequency range: 150 kHz – 30 MHz
Port: ☑ Mains terminal
❑ Load terminals and additional terminals

Acceptance limits

Limits for household and similar appliances				
Frequency range (MHz)	*At mains terminal*		*At load terminals and at additional terminals*	
	dB(µV) Quasi-peak	*dB(µV) Average*	*dB(µV) Quasi-peak*	*dB(µV) Average*
0,15 to 0,50	66 to 56	59 to 46	80	70
0,50 to 5	56	46	74	64
5 to 30	60	50	74	64

Setup

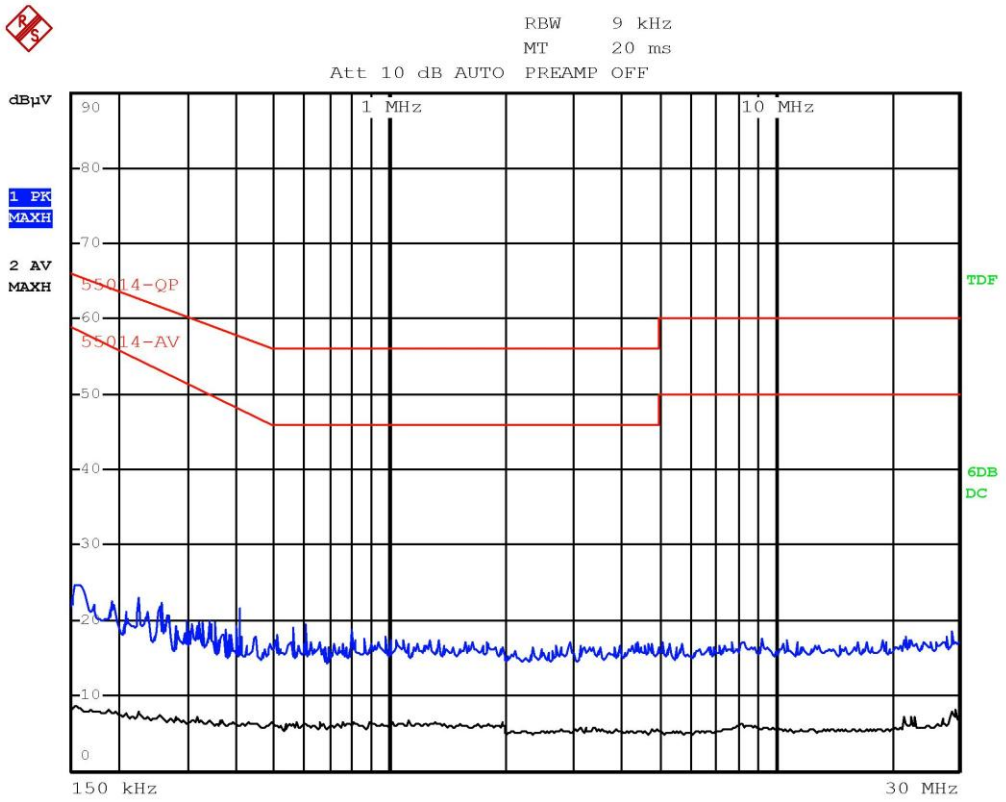


Result

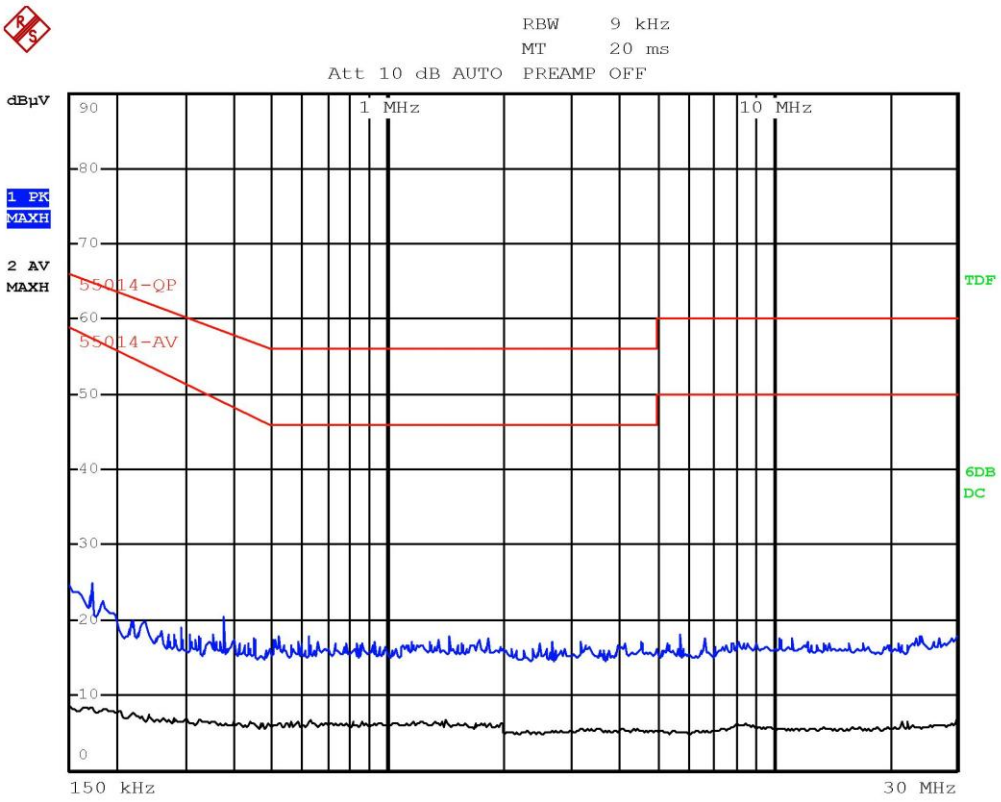
Line	*Graphs*	*Remarks*	*Result*
N	G15129001	--	Complies
L1	G15129002	--	Complies
Remarks: --			

Graphs Legend
PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
AV: Average; AV [1s] (average at 1 second) values are marked with a X

Graphs



Velo 15129001-Line N-In riscaldamento



Velo 15129002-Line L-In riscaldamento

Result: The requirements are met

11.2 Discontinuous disturbance voltage test (150/500 kHz, 1,4/30 MHz)

Test set-up and execution

- EN 55014-1 cl. 4 , 7
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Shielded chamber (CMC A001)

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S009, CMC S010, CMC S031, CMC S206
Measurement uncertainty: See clause 7 of this test report

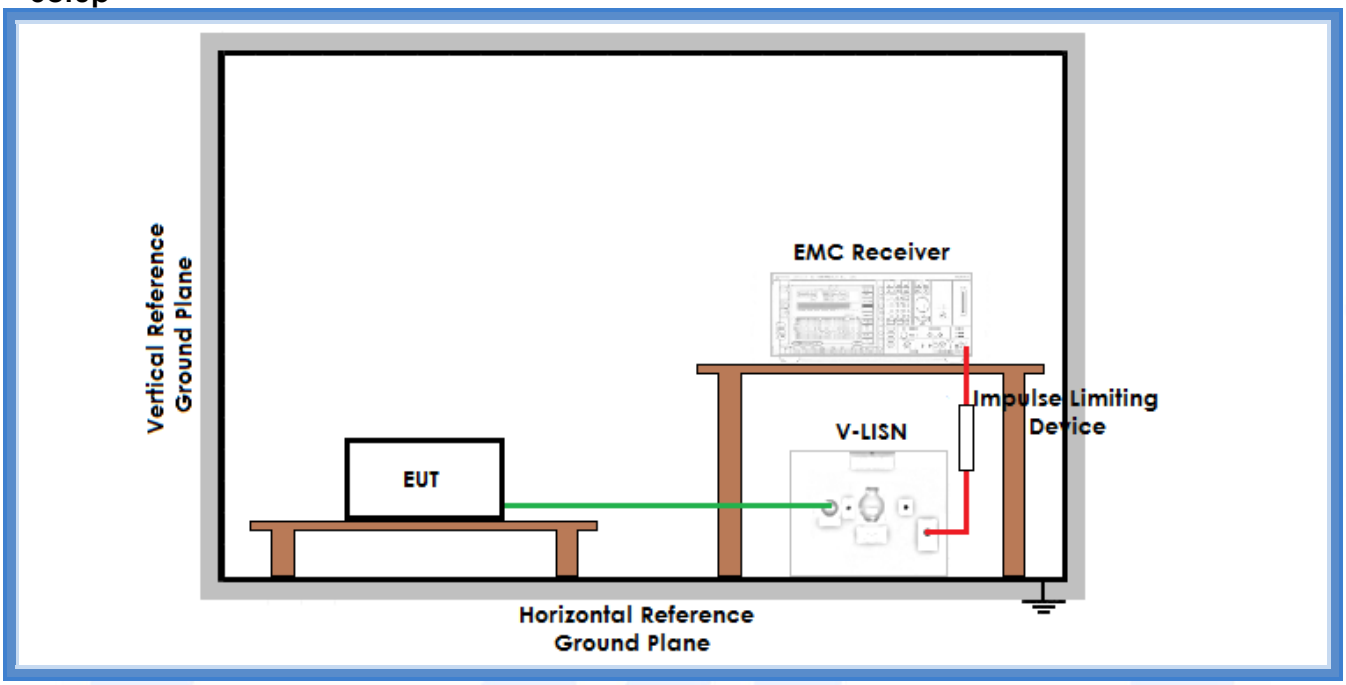
Test specification

Port: AC mains
Frequency : 150 / 500 kHz, 1,4 / 30 MHz
T: observation time
L: continuous disturbance voltage limit
L_q : click limit; N: click rate
Duration: (1) < 10 ms; (2) 10 ms < duration < 200 ms; (3) duration > 200 ms

Acceptance limits

$$L_q = L + \begin{cases} 44\ \text{dB} & \text{per } N < 0{,}2 \\ 20 \log (30/N) & \text{per } 0{,}2 \le N \le 30 \end{cases}$$

Setup



Result

N<5

According to subcl. 4.2.3.4 of EN 55014-1 appliances which have click rate < 5 and instantaneous switching (duration of each click < 10 ms) shall be deemed to comply with the limits, independent of the amplitude of the clicks.

Result: The requirements are met

11.3 Disturbance power test (30 – 300 MHz)

Test set-up and execution

- EN 55014-1 cl. 6 , 7
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Semi-anechoic chamber (CMC A007)

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S164, CMC S216, CMC A008
Measurement uncertainty: See clause 7 of this test report

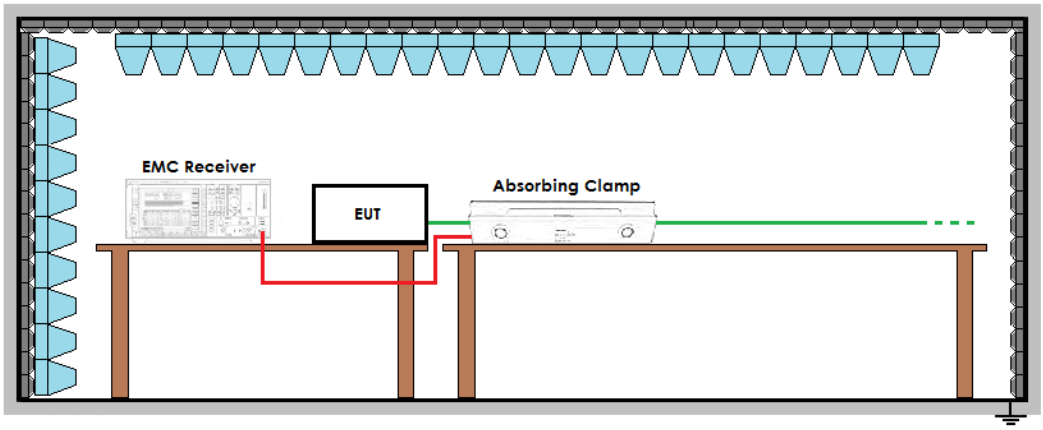
Test specification

Frequency range: 30 MHz – 300 MHz
Port: ☑ Mains terminal
❑ Auxiliary lead

Acceptance limits

Limits for household and similar appliances		
Frequency range (MHz)	*dB(pW) Quasi-peak*	*dB(pW) Average*
30 to 300	45 to 55	35 to 45

Setup



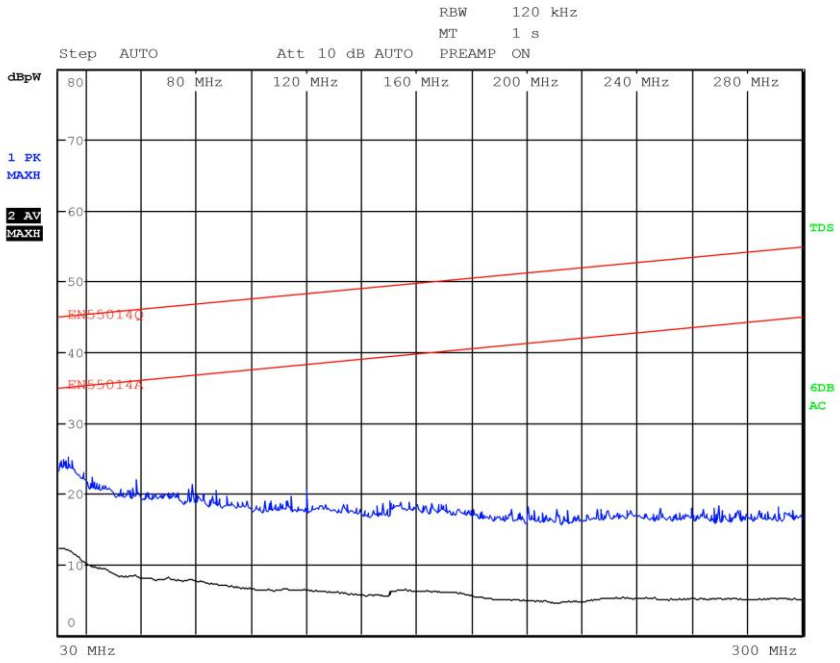
Result

Cord	*Graphs*	*Remarks*	*Result*
Mains lead	G15129005	--	Complies
Remarks: --			

Graphs Legend
PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
AV: Average; AV [1s] (average at 1 second) values are marked with a X

Graphs

Meas Type Emission 30-300MHz
Equipment under Test
Manufacturer
OP Condition In riscaldamento
Operator Velo 15129005
Test Spec
Alim. AC



Final Measurement

Meas Time: 1 s
Margin: 6 dB
Peaks: 0

Result: The requirements are met

11.4 Harmonic current emissions test

Test set-up and execution

- EN 61000-3-2 cl. 6-7 - annexes A / C
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Test table "Harmonic current"

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

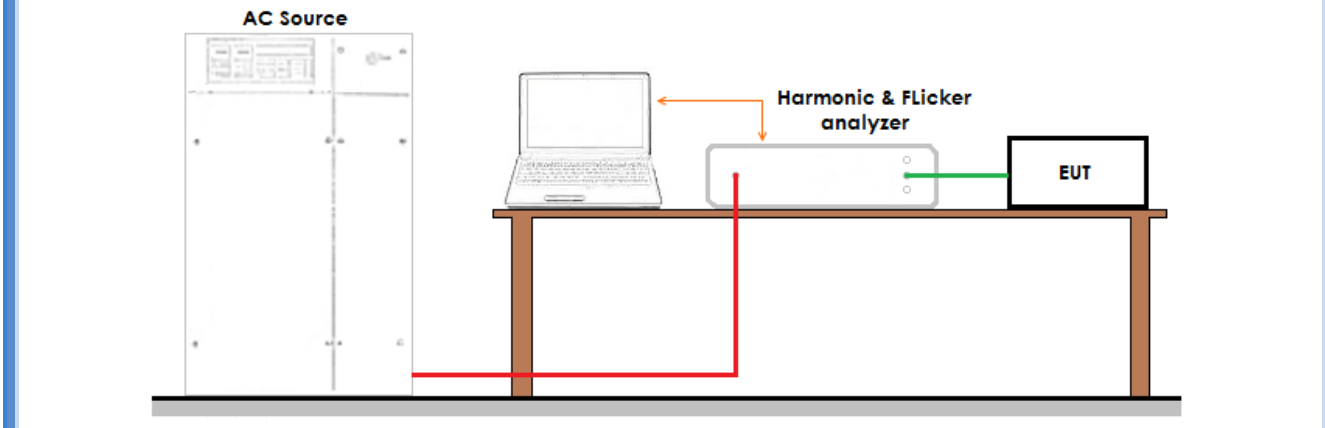
CMC S209, CMC S237
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: AC mains ;
Frequency range: 0 – 2 kHz
Class: A

Acceptance limits	See table result

Setup



Result

Test Observation Time: 150s

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	8.515			
2	2.037E-3			PASS
3	4.963E-3			PASS
4	1.361E-3			PASS
5	3.056E-3			PASS
6	907.217E-6			PASS
7	1.192E-3			PASS
8	686.333E-6			PASS
9	1.140E-3			PASS
10	806.380E-6			PASS
11	2.774E-3			PASS
12	620.715E-6			PASS
13	3.536E-3			PASS
14	738.107E-6			PASS
15	3.473E-3			PASS
16	835.289E-6			PASS
17	1.964E-3			PASS
18	530.803E-6			PASS
19	486.529E-6			PASS
20	502.063E-6			PASS
21	873.995E-6			PASS
22	445.291E-6			PASS
23	2.013E-3			PASS
24	597.093E-6			PASS
25	2.326E-3			PASS
26	622.224E-6			PASS
27	2.361E-3			PASS
28	481.361E-6			PASS
29	2.359E-3			PASS
30	514.429E-6			PASS
31	1.389E-3			PASS
32	442.958E-6			PASS
33	629.022E-6			PASS
34	468.900E-6			PASS
35	981.548E-6			PASS
36	440.777E-6			PASS
37	1.373E-3			PASS
38	526.748E-6			PASS
39	1.363E-3			PASS
40	549.227E-6			PASS

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	8.525			
2	58.221E-3	3.594	1.62	PASS
3	54.576E-3	1.582	3.45	PASS
4	34.362E-3			PASS
5	27.339E-3			PASS
6	20.843E-3			PASS
7	17.792E-3			PASS
8	15.268E-3			PASS
9	13.955E-3			PASS
10	12.342E-3			PASS
11	12.852E-3			PASS
12	10.292E-3			PASS
13	11.835E-3			PASS
14	8.880E-3			PASS
15	10.491E-3			PASS
16	7.961E-3			PASS
17	8.338E-3			PASS
18	6.825E-3			PASS
19	6.472E-3			PASS
20	6.198E-3			PASS
21	6.304E-3			PASS
22	5.674E-3			PASS
23	6.700E-3			PASS
24	5.446E-3			PASS
25	6.668E-3			PASS
26	5.215E-3			PASS
27	6.359E-3			PASS
28	4.705E-3			PASS
29	5.961E-3			PASS
30	4.508E-3			PASS
31	5.012E-3			PASS
32	4.274E-3			PASS
33	4.313E-3			PASS
34	4.092E-3			PASS
35	4.464E-3			PASS
36	3.959E-3			PASS
37	4.666E-3			PASS
38	3.891E-3			PASS
39	4.514E-3			PASS
40	3.816E-3			PASS

Result: The requirements are met

11.5 Voltage fluctuations and flicker test (50 Hz)

Test set-up and execution

- EN 61000-3-3 cl. 6 - annex A
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Test table "Voltage fluctuations and flicker"

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S158, CMC S209, CMC S237
Measurement uncertainty: See clause 7 of this test report

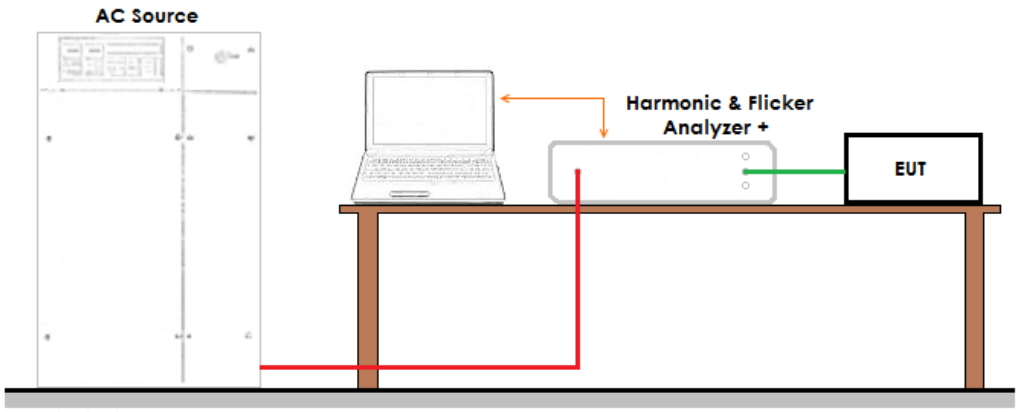
Test specification

Port: AC mains ;
Frequency range: 50 Hz

Acceptance limits

Pst	Plt	dc	dmax	d(t)
<1	N.A.	< 3,3% Unom	< 4% Unom	Not > 3,3% for more than 500ms

Setup



Result

	EUT values	Limit	Result
Pst	0.219	1.00	PASS
dc [%]	1.625	3.30	PASS
dmax [%]	1.704	4.00	PASS
dt [s]	0.000	0.50	PASS

Result: The requirements are met

ANNEX 1 of document nr. R15129001

Thermostat	Shenzhen Forever Great Technology Co., Ltd.	WK-03	230V, 15A, T260	EN/IEC 60730	VDE 40006682
Thermostat altern.	TSB	141 141	16A, AC 250 V, T200	EN/IEC 60730	VDE 40013828
Thermostat altern. max. 2000W	Abundance Thermo Control Fty. Ltd	228	10A, AC 250 V, T250	EN/IEC 60730-2-9	VDE 40016740
Alt. Thermal cut out (non self resetting)	TEXAS INSTRUMENTS	1NT08	16 A, AC 250 V, T 210, Tf:180°C	EN/IEC 60730	ENEC KEMA 2014531.13
Tip-over switch (optional)	JINHE ELECTRIC	FD4	AC 250V, 15A, T125°C	IEC/EN61058-1	
Alt. Tip-over switch (optional)	Inter Control Hope	197131	AC 250V, 15A, T150°C	IEC/EN61058-1	
Terminals	De`Longhi	HORK	Ceramic	EN/IEC 60335-1	Included in the test
Two pole switch	Defond	DRH 2415	16 A, AC 250 , T 125	IEC/EN61058-1	ENEC 15 DEMKO 121522.09
Alt. Two pole switch	Merchant CORP. LTD	SR-55	16A, AC 250V, T 125°C	IEC/EN61058-1	ENEC KEMA 2088252.01
Single pole switch (only for types TRRSxxyyM)	Defond	DRH 04	16 A, AC 250 , T 125	IEC/EN61058-1	ENEC 15 DEMKO 121522.09
Alt. Single pole switch (only for types TRRSxxyyM)	Merchant CORP. LTD	SR-55	16A, AC 250V, T 125°C	IEC/EN61058-1	ENEC KEMA 2088252.01

(A) Supply cord	Lian Dung Electric Wire Material Co., Ltd	H05VV-F	3x 1mm² or 3x 1,5mm²	60245 IEC 57	VDE 127334
Plug provided to be fitted with (A) supply cord	Lian Dung Electric Wire Material Co., Ltd	LT208	10A ; 250V	AS/NZS 3112	NSW N18651
Plug provided to be fitted with (A) supply cord	Lian Dung Electric Wire Material Co., Ltd	LT-605	10A; 250V	Israel strd no.32 part 1.01	No. 40504
Plug provided to be fitted with (A) supply cord	Lian Dung Electric Wire Material Co., Ltd	LT-312	16A; 250V	DIN 49441-R2 DIN VDE 0620-1:2010-02	VDE 40014931

Plug with fuse provided to be fitted with (A) supply cord	Lian Dung Electric Wire Material Co., Ltd	LT-318	13A; 250V	BS1363	BSI KM 68559
Plug provided to be fitted with (A) supply cord	Lian Dung Electric Wire Material Co., Ltd	LT-202	11A; 125V	CNS10917; CNS10917-2	BSMI CI511066009054 1
(B) Supply cord (alt.)	Yip Chun Products Factory	H05VV-F	3x 1mm² or 3x 1,5mm²	60245 IEC 57	VDE 107556
Plug provided to be fitted with (B) supply cord	Yip Chun	YCS-002	10A; 250V	AS/NZS 3II2 :2000	NSW N18060
Plug provided to be fitted with (B) supply cord	Yip Chun	YCC-002	10A; 250V	GB2099.1-2008; GB1002-2008;	CCC 200201020100
Plug provided to be fitted with (B) supply cord	Yip Chun	YCV-011S	16A; 250V	DIN49411-R2	VDE 40029520 NL-16825/A2
Plug provided to be fitted with (B) supply cord	Yip Chun	YCB-001	13A; 250V	BS1363	ASTA 818
Plug provided to be fitted with (B) supply cord	Yip Chun	YCI-003	10A; 250V	CEI 23-50 - II Ed. 2007	IMQ CA02.00621
(C) Supply cord (alt.)	Chau's electrical Co. Ltd	H05VV-F	3x 1mm² or 3x 1,5mm²	60245 IEC 57	VDE 40022055
Plug provided to be fitted with (C) supply cord	Chau's electrical Co. Ltd	CS-004SA	10A; 250V	IEC 60884-1	SABS 6626/6815
(D) Supply cord (alt.)	Kai Hua electric Appliance Co. Ltd	H05VV-F	3x 1mm² or 3x 1,5mm²	60246 IEC 57	SAA 18304
Plug provided to be fitted with (D) supply cord	Kai Hua electric Appliance Co. Ltd	KH-9909	10A; 250V	AS/NZS 3112	NSW18517/5
Plug provided to be fitted with (D) supply cord	Kai Hua electric Appliance Co. Ltd	KH-9955	10A; 250V	GB2099.1-2008; GB1002-2008;	CCC 20090102013846 31
Plug provided to be fitted with (D) supply cord	Kai Hua electric Appliance Co. Ltd	KH-9957	10A; 250V	GB2099.1-2008; GB1002-2008;	CCC 20090102013846 30
Plug provided to be fitted with (D) supply cord	Kai Hua electric Appliance Co. Ltd	KH-9901	16A; 250V	DIN VDE 0620-1:2010-02	VDE 40010396

Plug provided to be fitted with (D) supply cord	Kai Hua electric Appliance Co. Ltd	KH-9907	16A; 250V	SANS 164-1/ SABS 164-1	SABS 8688/13707
Cord anchorage	De`Longhi	HORK	ABS	EN/IEC 60335-1	Included in the test
Heating element (for types TRRSxx25z)	Kaneta, Headway, Hujier, CAMEWOULD, IRCA	51 serie	220 V or 225 V or 230 V or 235 V or 240 V, 2500W	EN/IEC 60335-1	Included in the test
Heating element (for types TRRSxx24z)	Kaneta, Headway, Hujier, CAMEWOULD, IRCA	51 serie	220 V or 225 V or 230 V or 235 V or 240 V, 2400W	EN/IEC 60335-1	Included in the test
Heating element (for types TRRSxx20z)	Kaneta, Headway, Hujier, CAMEWOULD, IRCA	51 serie	220 V or 225 V or 230 V or 235 V or 240 V, 2000W	EN/IEC 60335-1	Included in the test
Heating element (for types TRRSxx15z)	Kaneta, Headway, Hujier, CAMEWOULD, IRCA	51 serie	220 V or 225 V or 230 V or 235 V or 240 V, 1500W	EN/IEC 60335-1	Included in the test
Heating element (for types TRRSxx12z)	Kaneta, Headway, Hujier, CAMEWOULD, IRCA	51 serie	220 V or 225 V or 230 V or 235 V or 240 V, 1200W	EN/IEC 60335-1	Included in the test
Heating element (for types TRRSxx10z)	Kaneta, Headway, Hujier, CAMEWOULD, IRCA	51 serie	220 V or 225 V or 230 V or 235 V or 240 V, 1000W	EN/IEC 60335-1	Included in the test
24h – Timer (only for types T)	Grasslin	FM1/STU	16A, AC 250V, T85	EN/IEC 60730	VDE 54743
Alt. 24hTimer (only for typesT)	Ningbo Timer-Matic	TJ01-x Serie	16A, AC 250V, T85	EN/IEC 60730	VDE 40021203
Alt Pilot lamp	De'Longhi	PL-51	240V T120°C	IEC/EN 60335-1	Tested on the appliance
Push switch (only for types TRRSxxyyC)	Elettrotecnica Rold SrL	CM series	16A, AC 250V, T150	IEC/EN61058-1	IMQ EE498
Pilot lamp (only for types TRRSxxyyC)	De´Longhi	PL-51	240V AC T120	VDE 0710 IEC/EN 60335-1	Tested on the appliance

Thermostat (only for types TRRSxxyyC)	Shenzhen Forever Great Technology Co., Ltd.	WK-03	230V, 12A, T260	EN/IEC 60730	VDE 40006682
Control panel with handle pl. material	BASF SE	Ultramid B3S colours: ALL	V-2 1.5mm GWFI 960°C (0.8mm) GWIT 925 (0.8mm)	UL94 IEC60695-2-12	UL E41871
Alt. Control panel with handle pl. material	DOSN (CHINA) technology holding co.	N6100FN colours: ALL	V-2 (1.5 mm)	UL94	UL E253654
Alt. Control panel with handle pl. material	KINGFA sci&tech co.	RG001 colours: ALL	V-0 (0.8 mm)	UL94	UL E253654

Cord reel pl. material	BASF SE	Ultramid B3S colours: ALL	V-2 1.5mm GWFI 960°C (0.8mm) GWIT 925°C (0.8mm)	UL94 IEC60695-2-12 IEC60695-2-13	UL E41871
Alt. Cord reel pl. material	DOSN (CHINA) technology holding co.	PA6 N6100FN colours: ALL	V-2 (1.5 mm)	UL94	UL E253654
Alt. Cord reel pl. material	KINGFA sci&tech co.	PA6 RG001 colours: ALL	V-0 (0.8 mm)	UL94	UL E253654
Push switch case pl. Material (only for types TRRSxxyyC)	BASF SE	PA6/66 Ultramid C3U colours: ALL	V-0 0.4mm GWFI 960°C (0.4mm) GWIT 960°C (0.4mm)	UL94 IEC60695-2-12 IEC60695-2-13	UL E41871
Alt. Push switch case pl. Material (only for types TRRSxxyyC)	Solvay engineering plastics gbu	PA6/66 Technyl B50H colours: ALL	V-0 0.38mm	UL94	UL E44716
Alt. Push switch case pl. Material (only for types TRRSxxyyC)	KINGFA sci&tech co.	PA6 RG001 colours: ALL	V-0 (0.8 mm)	UL94	UL E253654
Wiring material	Zhongshan Hualan Electronic co.	H05S-K 1x1.5mm^2 colours: ALL	T180°C	EN50525-2-41	VDE 40028971
Wiring material	Zhongshan Hualan Electronic co.	H05S-K 1x1.0mm^2 colours: ALL	T180°C	EN50525-2-41	VDE 40028971
Wiring material	Zhongshan Hualan Electronic co.	H05S-K 1x0.75mm2 colours: ALL	T180°C	EN50525-2-41	VDE 40028971
Wiring material	Zhongshan Hualan Electronic co.	H05S-K 1x0.5mm2 colours: ALL	T180°C	EN50525-2-41	VDE 40028971
Wiring material	Zhongshan Hualan Electronic co.	H05SJ-K 1x1.5mm2 colours: ALL	T180°C	EN50525-2-41	VDE 40028971
Wiring material	Zhongshan Hualan Electronic co.	H05SJ-K 1x1.0mm2 colours: ALL	T180°C	EN50525-2-41	VDE 40028971
Wiring material	Zhongshan Hualan Electronic co.	H05SJ-K 1x0.75mm2 colours: ALL	T180°C	EN50525-2-41	VDE 40028971
Wiring material	Zhongshan Hualan Electronic co.	H05SJ-K 1x0.5mm2 colours: ALL	T180°C	EN50525-2-41	VDE 40028971

TYPE REFERENCE

Category: **HRRJ**

Type code composition

Type	No. of fins	Rated power	Features (optional)	Body color (optional)
TRRS	**xx**	**yy**	**z**	**.j**

Description

Type	No. of fins	Rated power	Control features	Body color
TRRS	**05, 06, 07, 08, 09, 10, 11, 12**	**10 :** 1000W for AC220V or AC230V or AC240V **12 :** 1200W for AC220V or AC230V or AC240V **15 :** 1500W for AC220V or AC230V or AC240V 1300-1500W for AC 220-240V **20 :** 2000W for AC220V or AC230V or AC240V 1700-2000W for AC 220-240V **24** : 2400W for AC220V or AC230V or AC240V 2000-2400W for AC 220-240V **25 :** 2500W for AC220V or AC230V or AC240V 2100-2500W for AC 220-240V	**If not present:** double switch+ ambient thermostat **T:** timer + double switch + ambient thermostat **C:** double switch + ambient thermostat + comfort temp **M:** single switch+ ambient thermostat	**if not present:** white **B:** black **G:** grey

Allowed combinations

Type	No. of fins	Rated power	Features	Body color
TRRS	**05**	**10**	ALL	ALL
TRRS	**06**	**10 ; 12**	ALL	ALL
TRRS	**07**	**10; 12; 15**	ALL	ALL
TRRS	**08**	**10; 12; 15**	ALL	ALL
TRRS	**09**	**12; 15; 20**	ALL	ALL
TRRS	**10**	**15; 20;**	ALL	ALL
TRRS	**11**	**15; 20; 24**	ALL	ALL
TRRS	**12**	**20; 24; 25**	ALL	ALL

Colours allowed for plastic enclosure parts: WHITE, LIGHT GREY, DARK GREY, BLACK, ORANGE, BROWN, BLUE