Test Report issued under the responsibility of:

TEST REPORT
CISPR 14-1, CISPR 14-2, IEC 61000-3-2, IEC 61000-3-3
Household appliances, electrical tools & similar apparatus

Report Reference No. .....:	4357264.50
Date of issue: .....:	2020-10-14
Total number pages:.....:	51 Pages
Applicant´s name .....:	Ningbo Allsing electrical appliance co., ltd.
Address.....:	Cixi Xinpu Town Hedong No. 97th, Ningbo, China.
Test specification:	
Standard.....:	CISPR 14-1:2016, CISPR 14-2:2015, IEC 61000-3-2:2018, IEC 61000-3-3:2013, AMD1:2017
Test procedure .....:	CB Scheme
Non-standard test method .....:	N/A
Test Report Form No. .....:	IECCISPR14_1&2_IEC61000_3_2&3H
Test Report Form(s) Originator .....:	VDE Testing and Certification Institute
Master TRF .....:	2018-07-27

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 CB testing laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

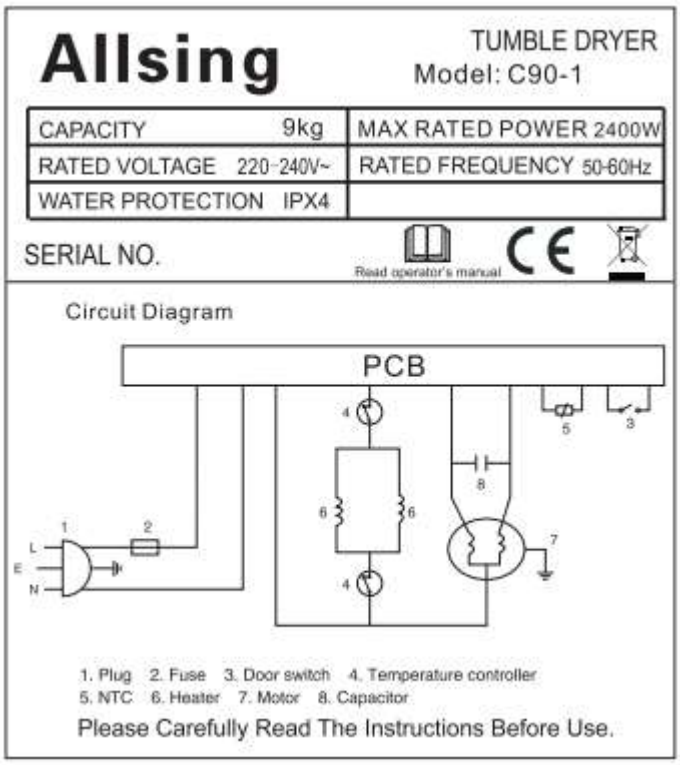
Test item description.....:	Tumble Dryer
Trademark.....:	Allsing
Manufacturer .....:	The same as applicant
Model / Type reference.....:	T60-1, T70-1, T80-1, T90-1, C60-1, C70-1, C80-1, C90-1 AST60-*, AST70-*, AST80-*, AST90-*, ASC60-*, ASC70-*, ASC80-*, ASC90-* "*" denotes 1, 2, 3, 4
Rating(s).....:	220-240 Vac, 50-60 Hz, Class I

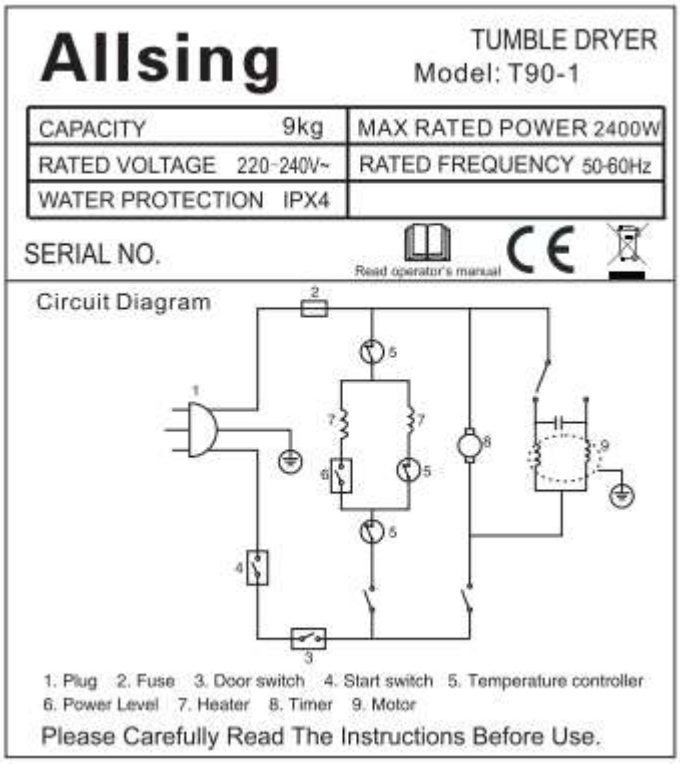
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	DEKRA Testing and Certification (Shanghai) Ltd., Guangzhou branch	
Testing location/ address .....:		No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China	
Tested by (name, signature).....:		Jazz Liang	Jazz Liang
Approved by (name, function, signature)...:		Tim Yan	Tim Yan
☐	**Testing procedure: CTF Stage 1:**	N/A	
Testing location/ address .....:			
Tested by (name, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 2:**	N/A	
Testing location/ address .....:			
Tested by (name, signature).....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 3:**	N/A	
☐	**Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address .....:			
Tested by (name, 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): N/A	
Summary of testing:	
Tests performed (name of test and test clause): models C90-1, T90-1 are chosen for full test.	**Testing location:** DEKRA Testing and Certification (Shanghai) Ltd., Guangzhou branch No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
Summary of compliance with National Differences (List of countries addressed): N/A ☒ **The product fulfils the requirements of** CISPR 14-1:2016, CISPR 14-2:2015, IEC 61000-3-2:2018, IEC 61000-3-3:2013, AMD1:2017	

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.





Remark 1:

As declared by the applicant, the manufacturer and importer's name, registered trade name or registered trade mark and the postal address will be marked on the products before being place on the market. Marking on the packaging or in a document accompanying the electrical equipment is only acceptable if it is not possible to place such markings on the product.

Remark 2:

Rating label of model T60-1, T70-1, T80-1, AST60-*, AST70-*, AST80-* and AST90-* are the same as T90-1 except for the ratings and model name.

Rating label of model C60-1, C70-1, C80-1, ASC60-*, ASC70-*, ASC80-* and ASC90-* are the same as C90-1 except for the ratings and model name.

Test item particulars ..... :	
Classification of installation and use .....:	N/A
Supply Connection .....:	N/A
.....:	
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 .....:	2019-08-07
Date(s) of performance of tests.....:	2019-08-07 to 2019-12-12

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.

CISPR 14-1:2016,
CISPR 14-2:2015,
IEC 61000-3-2:2018,
IEC 61000-3-3:2013,
AMD1:2017

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 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) ..... :	Ningbo Allsing electrical appliance co., ltd. Cixi Xinpu Town Hedong No. 97th, Ningbo, China.

General product information and other remarks:

The apparatus as supplied for the test is Tumble Dryer intended for residential use. The product of models C-series contains electronic control circuitry and have earth connection; The product of models T-series contains no electronic control circuitry but have earth connection.

Base on client's declaration, all models are identical except the list below:

Model	Rated power (W)	Capacity (kg)	Volume (L)	Remark
T60-1	2050	6	790	Mechanical
T70-1	2050	7	790	
T80-1	2050	8	790	
T90-1	2400	9	1024	
C60-1	2050	6	790	Electronical
C70-1	2050	7	790	
C80-1	2050	8	790	
C90-1	2400	9	1024	
AST60-*	2000	6	790	Mechanical
AST70-*	2100	7	790	
AST80-*	2200	8	790	
AST90-*	2350	9	1024	
ASC60-*	2000	6	790	Electronical
ASC70-*	2100	7	790	
ASC80-*	2200	8	790	
ASC90-*	2350	9	1024	

Table 1

Remark:

Models AST60-* are the same as model T60-1 except model name, appearance of the door and heater.

Models ASC60-* are the same as model C60-1 except model name, appearance of the door and heater.

Model name contain "AST" and "ASC" have only one heater, others have two heaters.

Other models have the same rule.

"*" denote different appearance of the door.

Hence, model C90-1, T90-1 was chosen for full tests, and the corresponding data is representative of the other models as well.

Table of Contents:

1 General description of test item(s)

Description ..... :	Tumble Dryer				
Model Number ..... :	C90-1, T90-1				
Serial Number..... :	-				
Brand name ..... :	Allsing				
Ports ..... :	**Port name and description**		**Cable**		
			Specified length [m]	**Attached during test**	**Shielded**
	AC mains		1.5	☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐
				☐	☐
Supplemental information to the ports..... :	---				
Rated power supply..... :		Voltage and Frequency	1 ph/PE	2 ph/N/PE	3 ph/N/PE
	☒	AC: 220-240V, 50-60Hz	☒/☒	☐/☐/☐	☐/☐/☐
	☐	DC:			
Rated Power..... :	-				
Protection Class ..... :	-				
Clock frequencies..... :	-				
Other parameters ..... :	-				
Software version..... :	-				
Hardware version ..... :	-				
Dimensions in cm (W x H x D) ... :	-				
Mounting position ..... :	☐	Table top equipment			
	☐	Wall/Ceiling mounted equipment			
	☒	Floor standing equipment			
	☐	Hand-held equipment			
	☐	Other:			
Modules/parts..... :	**Module/parts of test item**			**Type**	**Manufacturer**

Operating modes ..... :	**No.**	**Operating mode of test item**	**Applied for testing**	
			Emission	**Immunity**
	1	Motor running and heating	☒	☒
	2		☐	☐
	3		☐	☐
	4		☐	☐
	5		☐	☐
	6		☐	☐
	7		☐	☐
	8		☐	☐

Supplemental information to the operating modes ..... :	---

Accessories (not part of the test item) ..... :	**Accessory**	**Type**	**Manufacturer**

Documents as provided by the applicant ..... :	**Description**	**File name**	**Issue date**

Modifications to the test item during testing ..... :	

1.1 Description of the test item

model C90-1, T90-1 was chosen for full tests, and the corresponding data is representative of the other models as well.

1.2 Photo of the test item

Model C90-1

Model T90-1

2 Verdict summary section

CISPR-14-1			
Clause	**Requirement – Test case**	**Basic standard**	**Verdict**
Table 2 Table 4	Continuous disturbances (Induction cooking) (9 kHz to 30 MHz)	CISPR 16-1-1:2015 CISPR 16-1-2:2014 CISPR 16-2-1:2014	-
Table 5 Table 6	Continuous disturbances (150 kHz to 30 MHz)	CISPR 16-1-1:2015 CISPR 16-1-2:2014 CISPR 16-2-1:2014 CISPR 32:2015	P
Table 3	Magnetic field (Induction cooking) (9 kHz – 30 MHz)	CISPR 16-1-4:2010+AMD1:2012 CISPR 16-2-3:2010 +AMD1:2010+AMD2:2014	-
Table 7 Table 8	Radiated emission Disturbance power (30 MHz – 300 MHz)	CISPR 16-1-1:2015 CISPR 16-1-3:2004+AMD1:2016 CISPR 16-2-2:2010	P
Table 9	Radiated emission (30 MHz to 1000 MHz)	CISPR 16-1-1:2015 CISPR 16-1-4:2010+AMD1:2012 CISPR 16-2-3:2010 +AMD1:2010+AMD2:2014 IEC 61000-4-20:2010 IEC 61000-4-22:2010	-
4.4	Discontinuous disturbance (clicks)	CISPR 16-1-1:2015 CISPR 14-1:2016	P
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	P
6.2	Harmonic current emissions	IEC 61000-4-7:2002+AMD1:2008	P
IEC 61000-3-3			
Clause	**Requirement – Test case**	**Basic standard**	**Verdict**
4	Voltage changes, voltage fluctuations and flicker	IEC 61000-4-15:2010	P
CISPR-14-2			
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	-
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	-
5.6	Surges	IEC 61000-4-5:2014	P
5.7	Voltage dips and interruptions	IEC 61000-4-11:2004	P
Supplementary information: The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result, unless the specification, standard or customer have special requirements			

3 Test conditions

3.1 General

<table>
<tr><td>Environmental reference conditions ..... :</td><td>The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.
The climatic conditions during the tests were within the following limits:
<table>
<tr><th>Temperature</th><th>Humidity</th><th>Atmospheric pressure</th></tr>
<tr><td>15 °C – 35 °C</td><td>30 % - 60 %</td><td>800 hPa – 1060 hPa</td></tr>
<tr><td colspan="3">If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.</td></tr>
</table></td></tr>
<tr><td>Measurement uncertainties ..... :</td><td>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 an 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.</td></tr>
</table>

3.2 Specific conditions required by CISPR 14-1

AC or DC mains voltage used during the test if not otherwise specified ..... :	AC Mains

3.3

4 Emission

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

Tested by..... :	John Ou	
Test date1..... :	2019-12-12	
Test date2..... :	-	
Test Location (stand)..... :	Refer Summary of testing	
Applied limit class or environment..... :	☐	Table 2 (Induction cooking 100 V rated); Mains terminals
	☐	Table 2 (Induction cooking; Other appliances); Mains terminals
	☒	Table 5 (Columns 2 and 3); Mains ports
	☐	Table 5 (Columns 4 and 5); Associated ports; disturbance voltage
	☐	Table 5 (Columns 6 and 7); Associated ports; disturbance current
	☐	Table 6 (Columns 2 and 3); Mains port of tools P ≤ 700 W
	☐	Table 6 (Columns 4 and 5); Mains port of tools 700 W < P ≤ 1000 W
	☐	Table 6 (Columns 6 and 7); Mains port of tools P > 1000 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
	☐	Artificial mains network used as voltage probe
	☐	Voltage probe
	☐	CDN according to IEC 61000-4-6
	☐	Current probe and capacitive voltage probe (CVP)
	☐	ISN according CISPR 32
	☐	In situ CDN (150 Ohm and current probe)

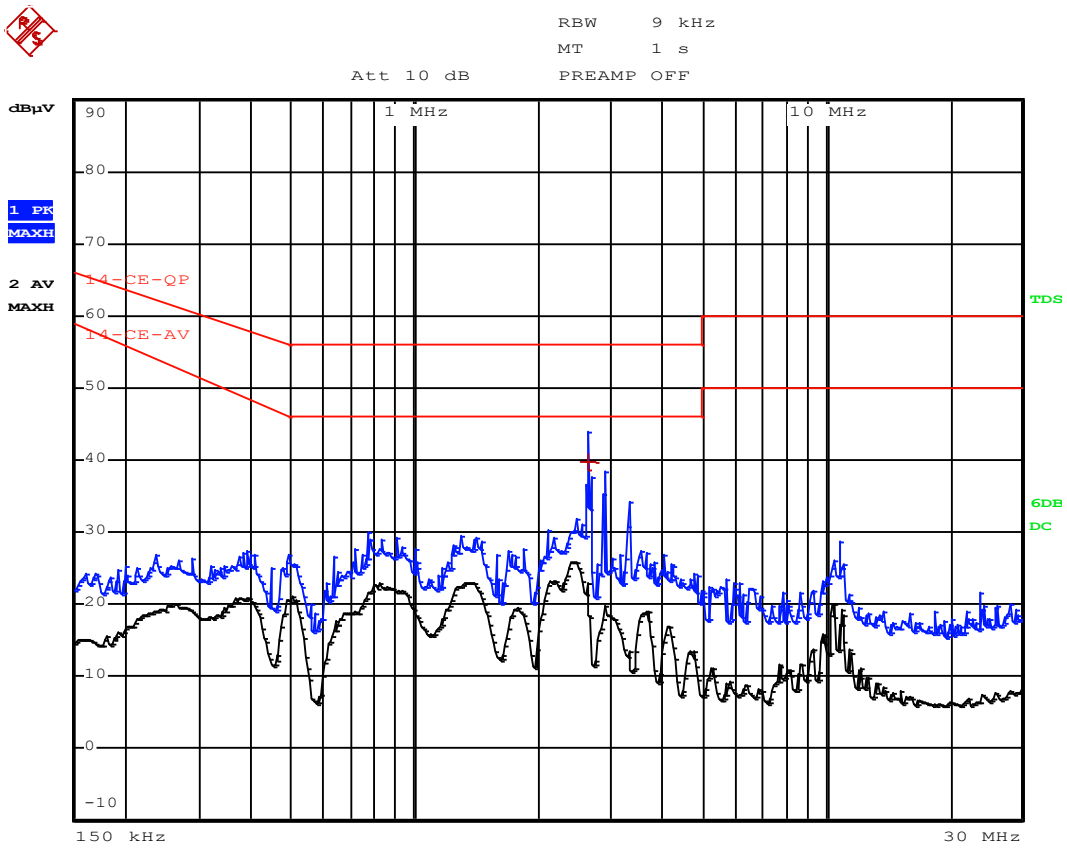
	☐	Other:
Supplementary information.....:	---	

Test set-up photo

Results

Model	C90-1
Port	AC mains
Test method	LISN
Mode	Motor running and heating mode
Test voltage	230 Vac, 50 Hz
Ambient temperature	20.6 °C
Relative Humidity air	41.5 %

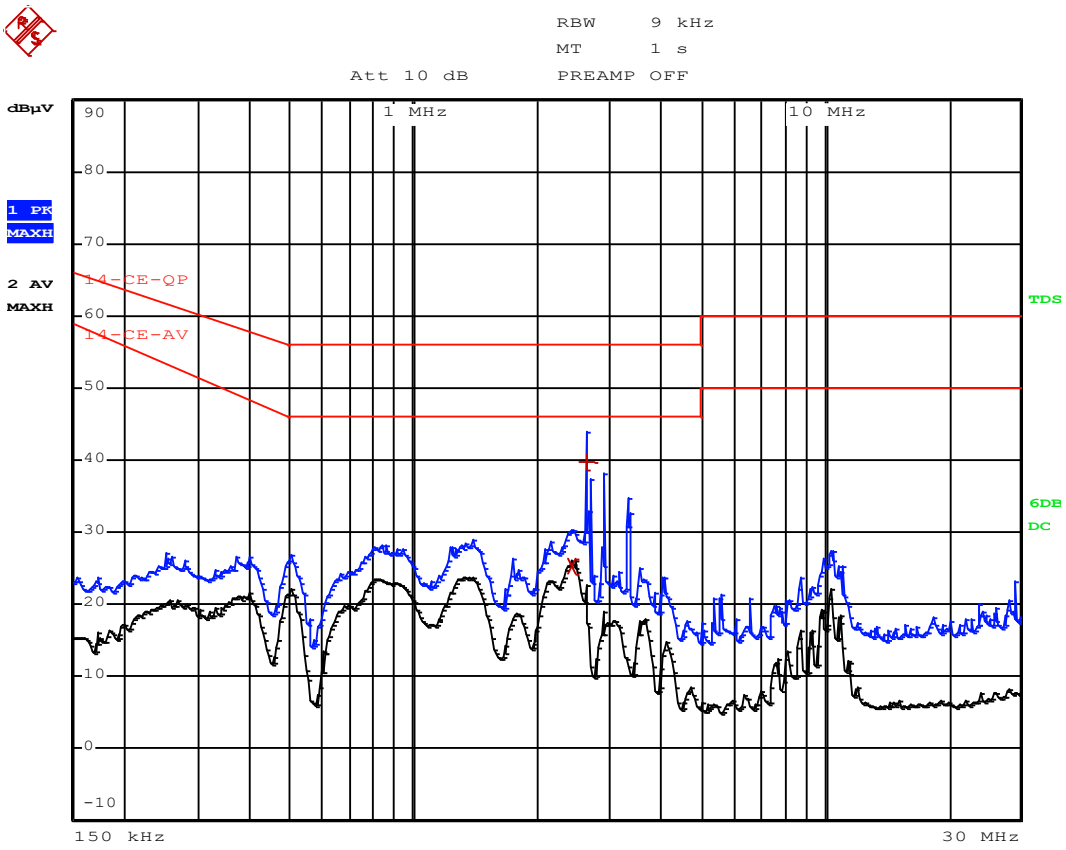
Live



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14-CE-QP		
Trace2:	14-CE-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	2.642 MHz	39.78	-16.21

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

Neutral

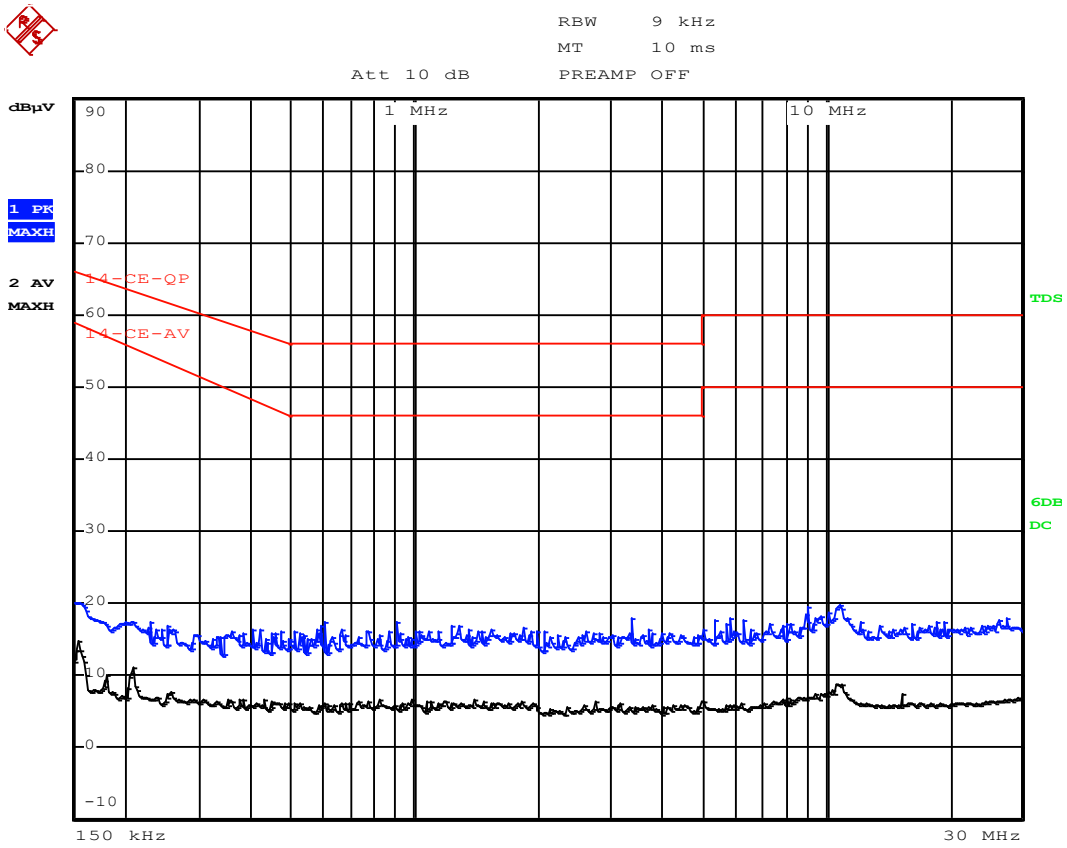


EDIT PEAK LIST (Final Measurement Results)			
Trace1:	14-CE-QP		
Trace2:	14-CE-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	2.642 MHz	39.64	-16.35
2 Average	2.422 MHz	25.39	-20.60

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

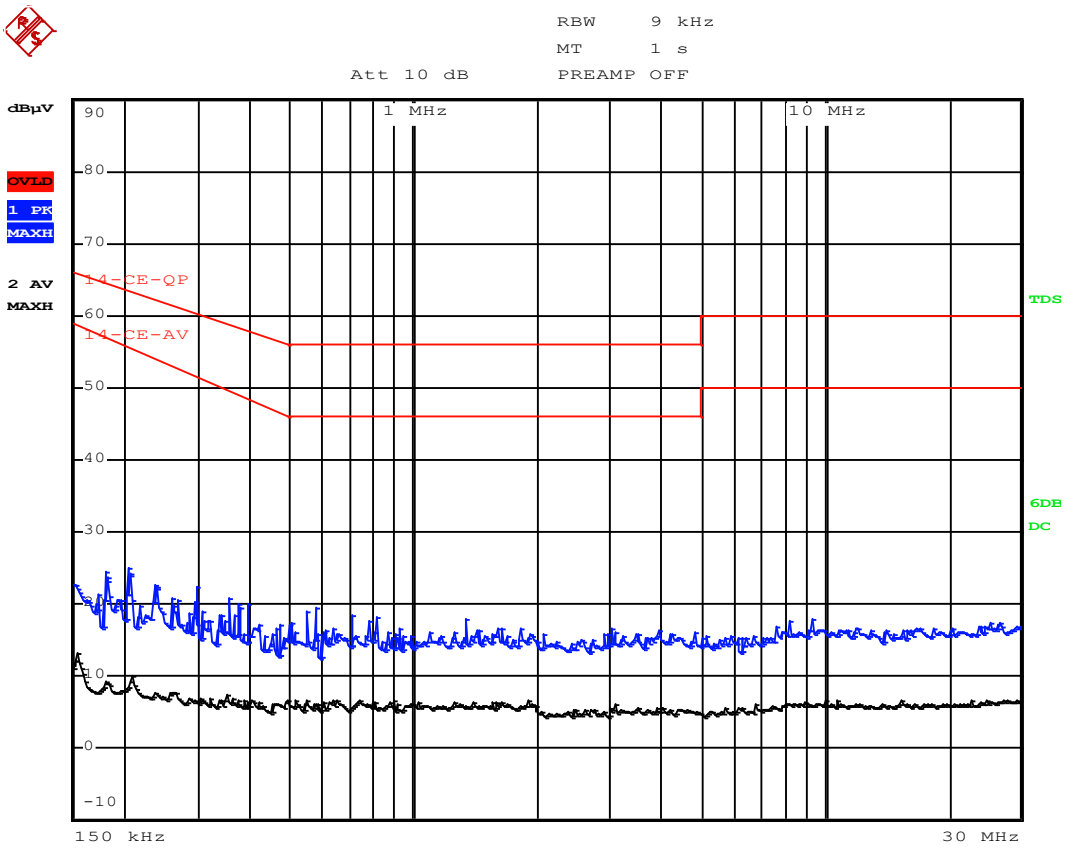
Model	T90-1
Port	AC mains
Test method	LISN
Mode	Motor running and heating mode
Test voltage	230 Vac, 50 Hz
Ambient temperature	20.6 °C
Relative Humidity air	41.5 %

Live



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

Neutral



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

Conclusion:

PASS

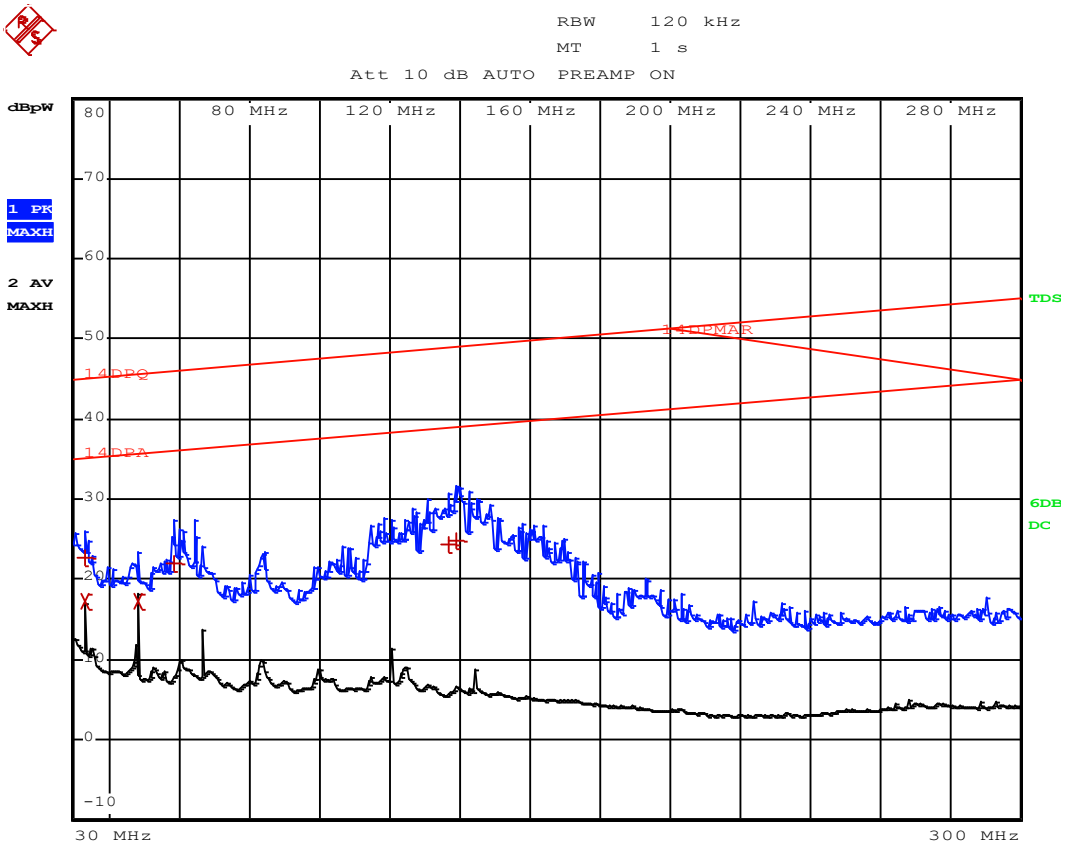
4.2 Disturbance power - 30 MHz to 300 MHz

Tested by..... :	John Ou	
Test date1..... :	2019-12-12	
Test date2..... :	-	
Test Location (stand)..... :	Refer Summary of testing	
Applied limit class or environment..... :	☒	Table 7 (Columns 2 and 3); General
	☐	Table 7 (Columns 4 and 5); Tools P ≤ 700 W
	☐	Table 7 (Columns 6 and 7); Tools 700 W < P ≤ 1000 W
	☐	Table 7 (Columns 8 and 9); Tools P > 1000 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 ..... :	☒	Table 8 reduction of Table 7 limits applied and passed
	☒	Maximum clock frequency < 30 MHz
Supplementary information ..... :	---	

Test set-up photo

Results

Model	C90-1
Port	AC Mains
Mode	Motor running and heating mode
Test voltage	230 Vac, 50 Hz
Ambient temperature	21.5 °C
Relative Humidity air	41.6 %



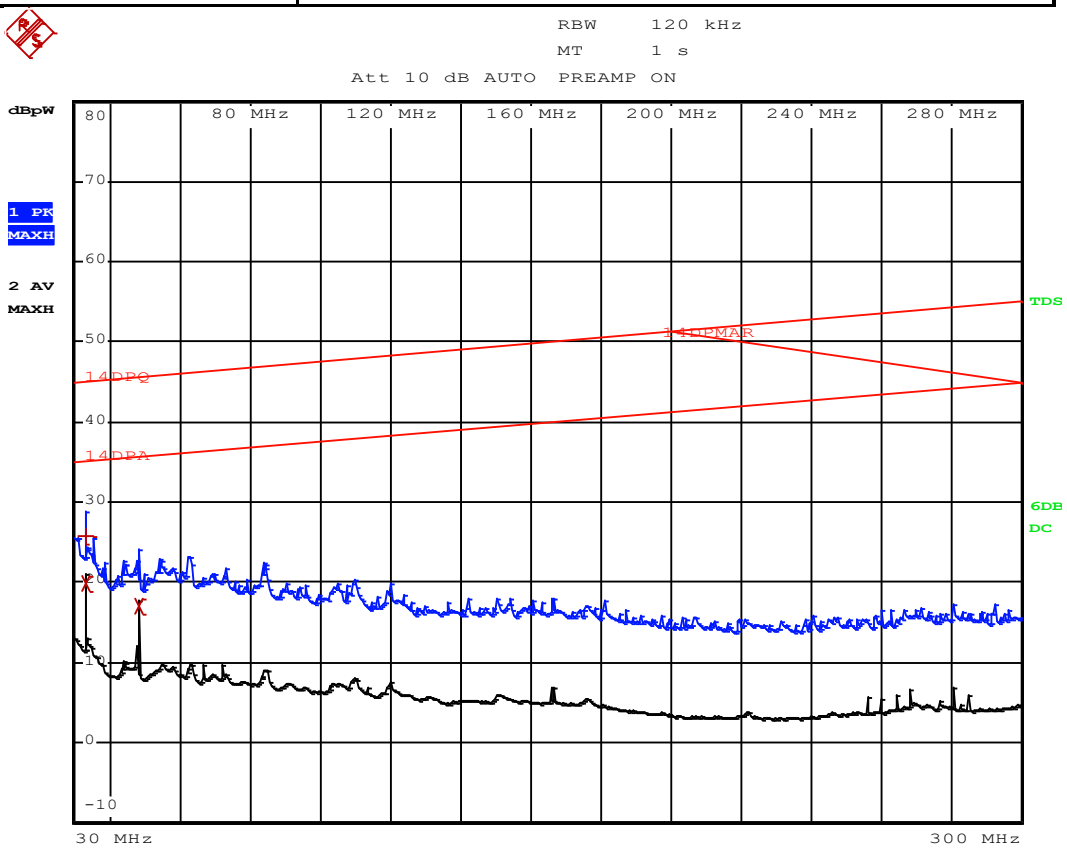
EDIT PEAK LIST (Final Measurement Results)

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

TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
2 Average	33.32 MHz	17.32	-17.79
2 Average	48.4 MHz	17.32	-18.35
1 Quasi Peak	33.28 MHz	22.78	-22.33
1 Quasi Peak	58.48 MHz	22.04	-24.01
1 Quasi Peak	138.88 MHz	24.81	-24.22
1 Quasi Peak	136.8 MHz	24.31	-24.64

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

Model	T90-1
Port	AC Mains
Mode	Motor running and heating mode
Test voltage	230 Vac, 50 Hz
Ambient temperature	21.5 °C
Relative Humidity air	41.6 %



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

Conclusion:

PASS

4.3 Radiated disturbances - 30 MHz to 1000 MHz

Tested by..... :	-	
Test date..... :	-	
Test Location (stand)..... :	-	
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
Applied limits ..... :	☐	Table 9 Radiated disturbance limits
	☐	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..... :	☐	OATS or SAC with measurement distance [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
Supplementary information ..... :	---	

Test set-up photo

N/A

4.4 Discontinuous disturbances (clicks)

Tested by ..... :	John Ou	
Test date ..... :	2019-12-12	
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..... :	---	
CDN applied..... :	☒	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: ---
Applied interpretation for upper quartile method (ISH 1 to CISPRT 14-1)..... :	☐	Interpretation 1: The click rate at 1,4 MHz and 30 MHz is determined at ¼ of the clicks counted at each frequency (1,4 MHz and 30 MHz)
	☒	Interpretation 2: The click rate at 1,4 MHz and 30 MHz determined at ¼ of the clicks counted at 500 kHz.
Exceptions from the click definition applied..... :	☒	Test item only causes single switching events (5.4.3.2)
	☐	Combination of disturbances in a time frame less than 600 ms (5.4.3.3)
	☐	Instantaneous switching (5.4.3.4)
	☐	Separation less than 200 ms (5.4.3.5)
	☐	Thermostatically controlled three-phase switches (5.4.3.6)
	☐	Superposition of clicks with continuous disturbance (5.4.3.7)
	☐	Other: ---
Supplementary information..... :	---	

Test set-up photo

Results

Port	AC Mains
Mode	Motor running and heating mode
Test voltage	230 Vac, 50 Hz
Ambient temperature	21.5 °C
Relative Humidity air	41.6 %

Results of model C90-1

Description	Frequency [MHz]			
	0,15	0,50	1,40	30,0
Observation time T in minutes	120	120	120	120
Number of short clicks	22	77	81	0
Number of long clicks	0	0	0	0
Total of clicks (n)	22	77	81	0
Click rate N: n/T	0,18	0,64	0,68	0
Raise limit with 20*log(30/N) [dB]	N/A	N/A	N/A	N/A

	The amplitudes of the observed disturbances were all below the limit for continuous disturbance, these are not considered to be clicks.
√	The calculated click rate N is not more than 5 times per minute and all the clicks are classified as short (t ≤ 10 ms). Thus, the EUT is deemed to comply with the limits without any further measurement at an increased limit.

Results of model T90-1

Description	Frequency [MHz]			
	0,15	0,50	1,40	30,0
Observation time T in minutes	69	69	69	69
Number of short clicks	39	118	119	20
Number of long clicks	1	6	11	1
Total of clicks (n)	40	124	130	21
Click rate N: n/T	0,58	1,8	1,88	0,3
Raise limit with 20*log(30/N) [dB]	34	24	24	40

Measurement at raised limit with “upper quartile method”:

Frequency [MHz]	Limit [dB(μV)]	Increase with [dB]	New limit [dB(μV)]	Clicks (old)	Clicks (new)	new/old [%]
0,15	66	44	100	40	0	0
0,50	56	44	90	124	0	0
1,40	56	44	90	130	0	0
30	60	44	100	21	0	0
Limit						25%

Conclusion:

PASS

5 Harmonic current emissions

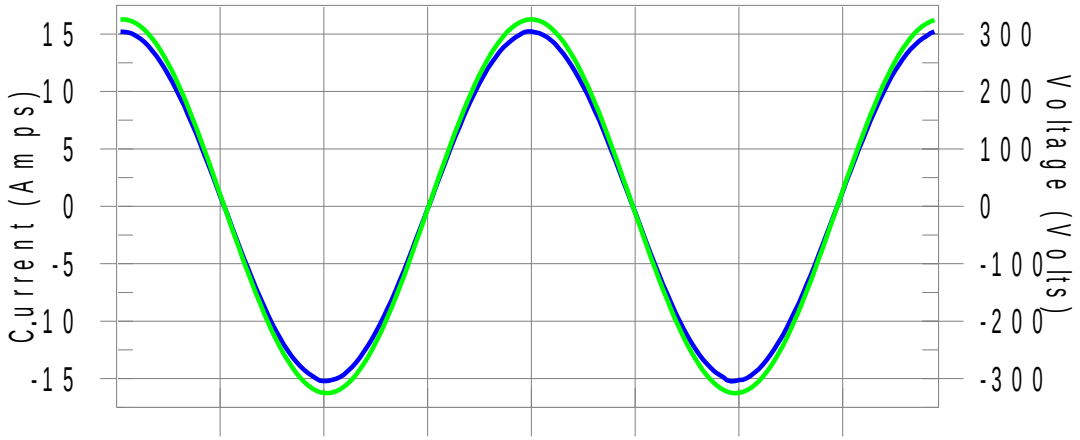
Tested by ..... :	John Ou		
Test date ..... :	2019-12-12		
Test location (stand) ..... :	Refer Summary of testing		
Version of measurement instrument standard used IEC 61000-4-7 (Clause 7) ..... :	☒	Measuring instrumentation according IEC 61000-4-7:2002 + AMD1:2008, (Grouping ON)	
	☐	Measuring instrumentation according IEC 61000-4-7:1991, (Grouping OFF)	
Test set up description..... :	-		
Operating modes of EUT ..... :	Motor running and heating mode		
Limit classification in accordance with the standard..... :	☒	Class A	
	☐	Class B	
	☐	Class C with power > 25 W, 7.4.2	
	☐	Class C with power ≥ 5 W and ≤ 25 W 7.4.3 First dash: Limits of Table 3 column 2	
	☐	Class C with power ≥ 5 W and ≤ 25 W 7.4.3 Second dash: Waveform control	
	☐	Class D	
Observation period..... :	Description		Period selected T_{obs}
	☒	Quasi stationary	2.5 min
	☐	Short cyclic	T_{obs} ≥ 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..... :	-		
Supplementary information..... :	-		

Port	AC Mains supply
Mode	Motor running and heating mode
Voltage	230 Vac, 50Hz
Ambient temperature	20.3 °C
Relative Humidity air	41.8 %

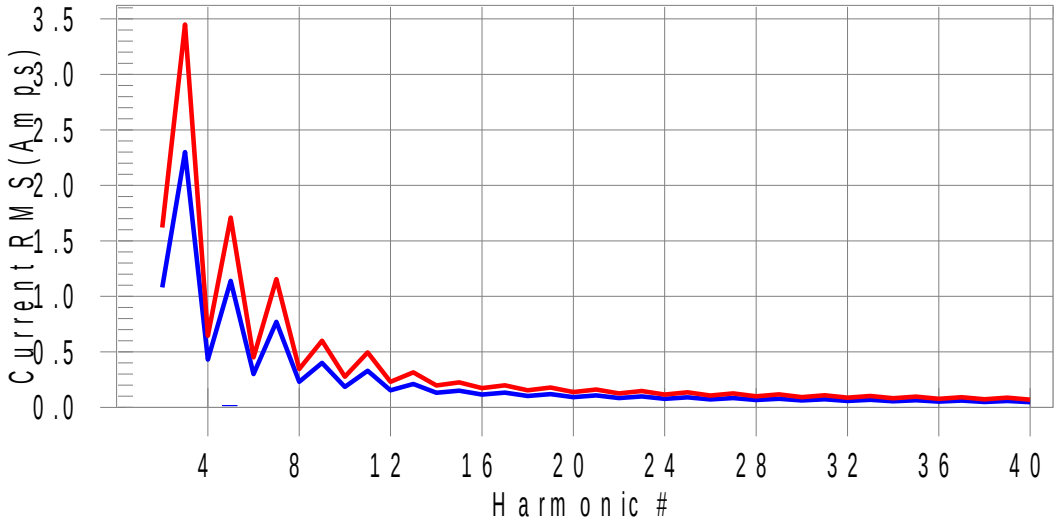
Results of model C90-1

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



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



Test result: Pass Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit

Test Result: Pass Source qualification: Normal
THC(A): 0.031 I-THD(%): 0.3 POHC(A): 0.009 POHC Limit(A): 0.251

Highest parameter values during test:

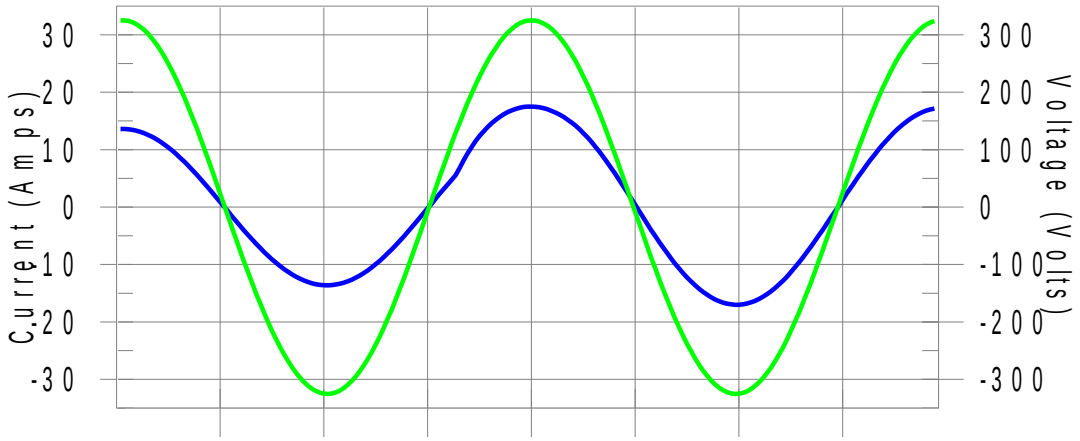
V_RMS (Volts):	**230.23**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**15.250**	**I_RMS (Amps):**	**10.716**
I_Fund (Amps):	**10.692**	**Crest Factor:**	**1.428**
Power (Watts):	**2461.4**	**Power Factor:**	**1.000**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.005	1.080	N/A	0.007	1.620	N/A	Pass
3	0.009	2.300	N/A	0.014	3.450	N/A	Pass
4	0.004	0.430	N/A	0.006	0.645	N/A	Pass
5	0.016	1.140	N/A	0.017	1.710	N/A	Pass
6	0.002	0.300	N/A	0.003	0.450	N/A	Pass
7	0.015	0.770	N/A	0.017	1.155	N/A	Pass
8	0.001	0.230	N/A	0.001	0.345	N/A	Pass
9	0.005	0.400	N/A	0.005	0.600	N/A	Pass
10	0.001	0.184	N/A	0.001	0.276	N/A	Pass
11	0.009	0.330	N/A	0.010	0.495	N/A	Pass
12	0.001	0.153	N/A	0.001	0.230	N/A	Pass
13	0.004	0.210	N/A	0.005	0.315	N/A	Pass
14	0.001	0.131	N/A	0.001	0.197	N/A	Pass
15	0.007	0.150	N/A	0.008	0.225	N/A	Pass
16	0.001	0.115	N/A	0.001	0.173	N/A	Pass
17	0.005	0.132	N/A	0.006	0.198	N/A	Pass
18	0.001	0.102	N/A	0.001	0.153	N/A	Pass
19	0.006	0.118	N/A	0.006	0.178	N/A	Pass
20	0.001	0.092	N/A	0.001	0.138	N/A	Pass
21	0.004	0.107	N/A	0.004	0.161	N/A	Pass
22	0.001	0.084	N/A	0.001	0.125	N/A	Pass
23	0.005	0.098	N/A	0.005	0.147	N/A	Pass
24	0.001	0.077	N/A	0.001	0.115	N/A	Pass
25	0.003	0.090	N/A	0.004	0.135	N/A	Pass
26	0.002	0.071	N/A	0.002	0.107	N/A	Pass
27	0.003	0.083	N/A	0.004	0.125	N/A	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.004	0.078	N/A	0.004	0.116	N/A	Pass
30	0.005	0.061	N/A	0.005	0.092	N/A	Pass
31	0.002	0.073	N/A	0.003	0.109	N/A	Pass
32	0.001	0.058	N/A	0.001	0.086	N/A	Pass
33	0.002	0.068	N/A	0.003	0.102	N/A	Pass
34	0.001	0.054	N/A	0.001	0.081	N/A	Pass
35	0.001	0.064	N/A	0.002	0.096	N/A	Pass
36	0.000	0.051	N/A	0.001	0.077	N/A	Pass
37	0.002	0.061	N/A	0.003	0.091	N/A	Pass
38	0.000	0.048	N/A	0.001	0.073	N/A	Pass
39	0.001	0.058	N/A	0.002	0.087	N/A	Pass
40	0.001	0.046	N/A	0.001	0.069	N/A	Pass

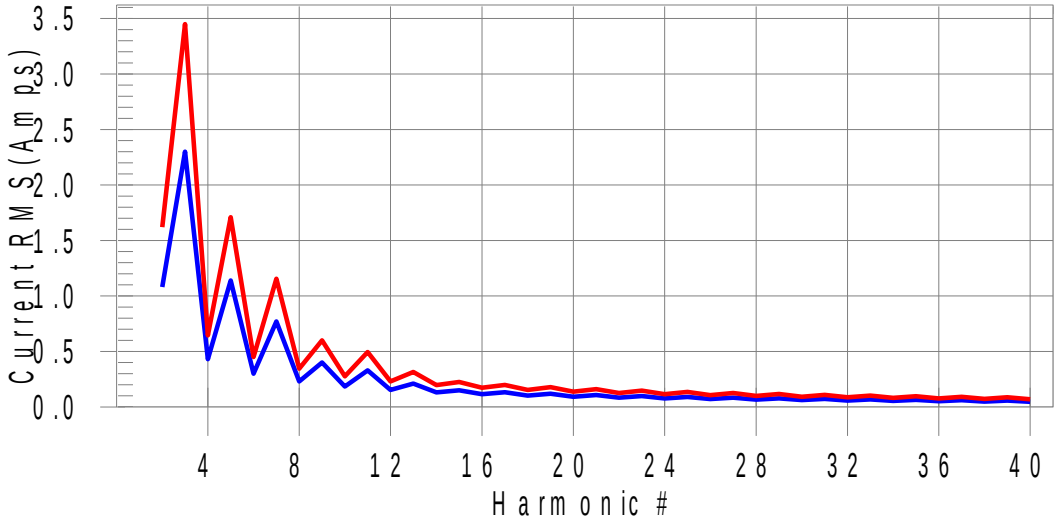
Results of model T90-1

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



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



Test result: Pass Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit

Test Result: Pass Source qualification: Normal
THC(A): 0.026 I-THD(%): 0.2 POHC(A): 0.006 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts):	**230.42**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**17.512**	**I_RMS (Amps):**	**11.964**
I_Fund (Amps):	**10.545**	**Crest Factor:**	**6.194**
Power (Watts):	**2427.8**	**Power Factor:**	**1.000**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.006	1.080	N/A	0.054	1.620	N/A	Pass
3	0.010	2.300	N/A	0.065	3.450	N/A	Pass
4	0.004	0.430	N/A	0.033	0.645	N/A	Pass
5	0.015	1.140	N/A	0.039	1.710	N/A	Pass
6	0.002	0.300	N/A	0.021	0.450	N/A	Pass
7	0.013	0.770	N/A	0.032	1.155	N/A	Pass
8	0.001	0.230	N/A	0.016	0.345	N/A	Pass
9	0.006	0.400	N/A	0.019	0.600	N/A	Pass
10	0.001	0.184	N/A	0.013	0.276	N/A	Pass
11	0.003	0.330	N/A	0.012	0.495	N/A	Pass
12	0.001	0.153	N/A	0.011	0.230	N/A	Pass
13	0.003	0.210	N/A	0.010	0.315	N/A	Pass
14	0.001	0.131	N/A	0.009	0.197	N/A	Pass
15	0.002	0.150	N/A	0.009	0.225	N/A	Pass
16	0.001	0.115	N/A	0.008	0.173	N/A	Pass
17	0.002	0.132	N/A	0.008	0.198	N/A	Pass
18	0.001	0.102	N/A	0.007	0.153	N/A	Pass
19	0.002	0.118	N/A	0.007	0.178	N/A	Pass
20	0.001	0.092	N/A	0.006	0.138	N/A	Pass
21	0.002	0.107	N/A	0.006	0.161	N/A	Pass
22	0.001	0.084	N/A	0.006	0.125	N/A	Pass
23	0.002	0.098	N/A	0.006	0.147	N/A	Pass
24	0.001	0.077	N/A	0.006	0.115	N/A	Pass
25	0.002	0.090	N/A	0.006	0.135	N/A	Pass
26	0.001	0.071	N/A	0.005	0.107	N/A	Pass
27	0.002	0.083	N/A	0.005	0.125	N/A	Pass
28	0.001	0.066	N/A	0.005	0.099	N/A	Pass
29	0.003	0.078	N/A	0.007	0.116	N/A	Pass
30	0.001	0.061	N/A	0.005	0.092	N/A	Pass
31	0.001	0.073	N/A	0.004	0.109	N/A	Pass
32	0.001	0.058	N/A	0.004	0.086	N/A	Pass
33	0.001	0.068	N/A	0.004	0.102	N/A	Pass
34	0.001	0.054	N/A	0.004	0.081	N/A	Pass
35	0.001	0.064	N/A	0.004	0.096	N/A	Pass
36	0.000	0.051	N/A	0.004	0.077	N/A	Pass
37	0.001	0.061	N/A	0.004	0.091	N/A	Pass
38	0.000	0.048	N/A	0.004	0.073	N/A	Pass
39	0.001	0.058	N/A	0.003	0.087	N/A	Pass
40	0.001	0.046	N/A	0.003	0.069	N/A	Pass

Conclusion:

PASS

6 Voltage changes, voltage fluctuations and flicker

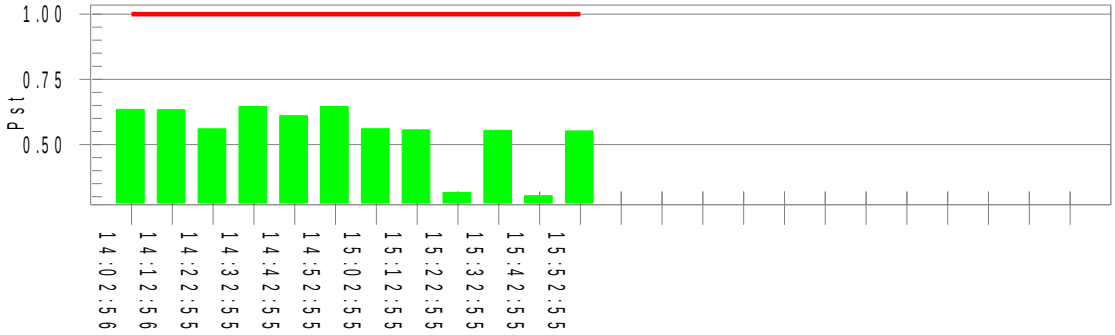
Tested by..... :	John Ou	
Test date..... :	2019-12-12	
Test Location (stand)..... :	Refer Summary of testing	
Test set-up description ..... :	-	
Test method..... :	☒	4.2.2 Flicker meter according IEC 61000-4-15
	☐	4.2.3 Simulation
	☐	4.2.4 Analytical method
	☐	4.2.5 Use of P_{st} = 1 curve
	☐	4.3 Long-Term flicker value P_{lt}
Observation time selected..... :	☐	10 Minutes
	☒	120 Minutes
	☐	24 times switching according to Annex B
	☐	Other: --
Limit for d_{max} applied..... :	☐	4 %
	☒	6 %
	☐	7 %
AC Mains voltage during test ..... :	230 Vac, 50 Hz	
Supplementary information ..... :	-	

Port	AC Mains supply
Mode	Motor running and heating mode
Voltage	230 Vac, 50Hz
Ambient temperature	20.3 °C
Relative Humidity air	41.8 %

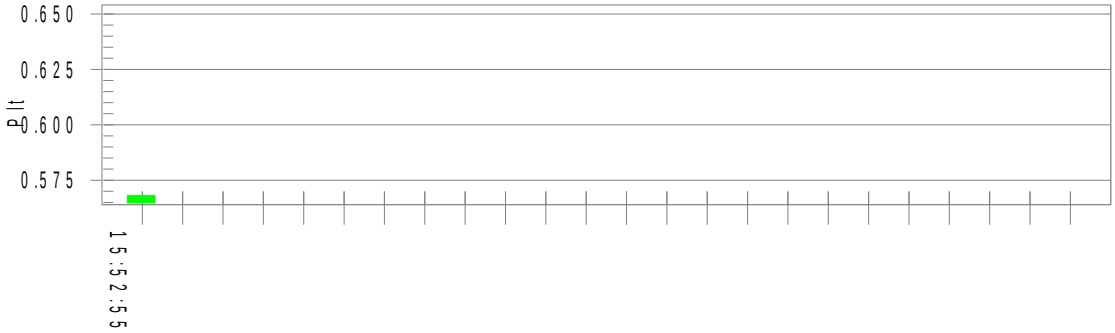
Results of model C90-1

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line



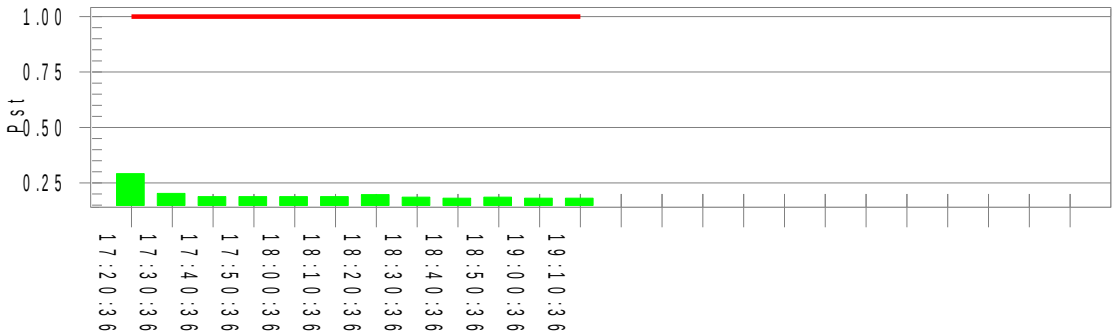
Parameter values recorded during the test:

Vrms at the end of test (Volt):	**233.66**			
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**2.05**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**2.92**	**Test limit (%):**	**6.00**	**Pass**
Highest Pst (10 min. period):	**0.646**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.568**	**Test limit:**	**0.650**	**Pass**

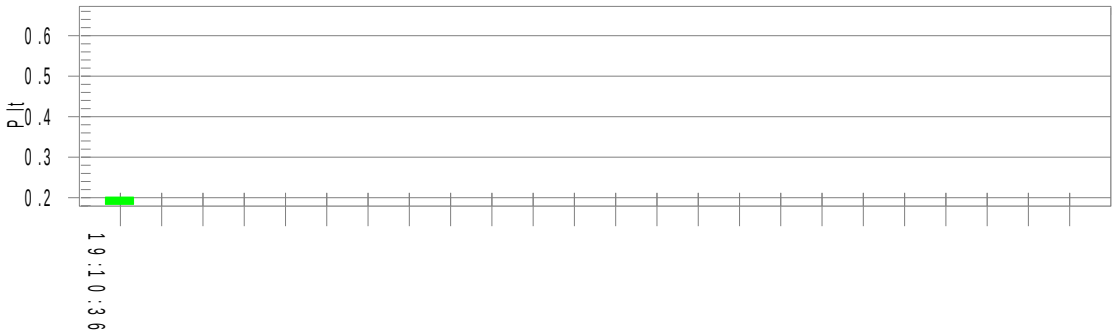
Results of model T90-1

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**228.03**			
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**1.80**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**1.81**	**Test limit (%):**	**6.00**	**Pass**
Highest Pst (10 min. period):	**0.292**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.202**	**Test limit:**	**0.650**	**Pass**

Conclusion:

PASS

7 Immunity

7.1 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:	--

Manufacturer defined performance criteria ..... :	***Criterion***	***Description***
	A	-
	B	-
	C	-
	D	-
	Other:	-
Monitoring during the tests..... :	-	

7.2 Specific information CISPR 14-2

Category of test item acc. CISPR 14-2 (7.2)..... :	☒	CAT I (Category I)
	☒	CAT II (Category II)
	☐	CAT III (Category III)
	☐	CAT IV (Category IV)

Remark:

Models T-series belongs to category I

Models C-series belongs to category II

7.3 Electrostatic discharge

Tested by..... :	John Ou	
Test date..... :	2019-12-12	
Test Location(Stand) ..... :	Refer Summary of testing	
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 for each test point..... :	10	
Discharge interval..... :	1 s	
Performance criterion ..... :	B	
Supplementary information ..... :	Ambient temperature	20.6 °C
	Relative Humidity air	41.5 %
	Atmospheric pressure	101kPa

Test set-up photo

Test results for electrostatic discharges							
No.	Location of discharge	Polarity	Discharge	Number of discharges	Test level [kV]	Operating mode	Observations
1	HCP	P	C	-	-	Heating and mixing	-
2	HCP	N	C	-	-		-
3	VCP	P	C	10	4		A
4	VCP	N	C	10	4		A
5	Points on conductive surface as indicated in the picture above	P	C	10	4		A
6	Points on conductive surface as indicated in the picture above	N	C	10	4		A
7	Points on non-conductive surface as indicated in the picture above	P	A	10	8		A
8	Points on non-conductive surface as indicated in the picture above	N	A	10	8		A
HCP = Horizontal coupling plate VCP = Vertical coupling plate			N = Negative P = Positive			A = Air discharge C = Contact discharge	
Supplementary information: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or loss of data was observed.							

Conclusion:

PASS

7.4 Fast transients

Tested by..... :	John Ou	
Test date..... :	2019-12-12	
Test location (stand)..... :	Refer Summary of testing	
Test set-up..... :	☐	Equipment on the table (0,1 ± 0,01) m above ground plane
	☒	Equipment standing on floor at (0,1 ± 0,01) m above ground plane
	☐	Artificial hand applied. Location see photo.
Supplementary test set-up description ..... :	----	
Repetition frequency ..... :	5 kHz	
Test time..... :	-	
Performance criterion ..... :	B	
Supplementary information ..... :	Ambient temperature	20.6 °C
	Relative Humidity air	41.5 %

Test set-up photo

Test results fast transients						
Port	**Coupling**	**Level [kV]**	**Polarity**	**Operating mode**	**Mains voltage/ frequency**	**Observation**
L-N-PE	CDN	1	P	Heating and mixing	230Vac/ 50Hz	A
Supplementary information: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or loss of data was observed.						

Conclusion:

PASS

7.5 Injected currents, 0,15 MHz to 80 MHz (0,15 MHz to 230 MHz)

Tested by ..... :	John Ou		
Test date ..... :	2019-12-12		
Test location (Stand) ..... :	Refer Summary of testing		
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		
Supplementary information ..... :	Ambient temperature		20.6 °C
	Relative Humidity air		41.5 %

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 – 230 MHz	3	AC mains	CDN-M3	-	Heating and mixing	3	A
Supplementary information: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or loss of data was observed.							

Conclusion:

PASS

7.6 Surges

Tested by..... :	John Ou	
Test date..... :	2019-12-12	
Test location(Stand) ..... :	Refer Summary of testing	
Test set-up description ..... :	-	
Repetition rate ..... :	1/min	
Number of pulses for each coupling ..... :	5	
Performance criterion ..... :	B	
Supplementary information ..... :	Ambient temperature	20.6 °C
	Relative Humidity air	41.5 %

Test set-up photo

Test results for surges

Port	Coupling	CDN	Level [kV]	Po-larity	Phase angles [°]	Operating mode	Mains voltage/ frequency	Observation
L-N	CDN	Mains	1	P	90	Heating and mixing	230Vac/ 50Hz	A
L-N	CDN	Mains	1	N	270			A
L-PE	CDN	Mains	2	P	90			A
L-PE	CDN	Mains	2	N	270			A
N-PE	CDN	Mains	2	P	90			A
N-PE	CDN	Mains	2	N	270			A

Lower test levels..... :	☐	The lower test levels are tested also.
	☒	The lower test levels are not tested.

P = Positive
N = Negative

CDN:
Mains = Mains Coupling Network
S/C = Signal/Control lines
F13 = Figure No. 13 of IEC 61000-4-5 etc.
D = Direct Coupling (shielded lines)

Supplementary information:
During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or loss of data was observed.

Conclusion:

PASS

7.7 Voltage dips and interruptions

Tested by..... :	John Ou	
Test date..... :	2019-12-12	
Test Location (Stand) ..... :	Refer Summary of testing	
Test set-up description ..... :	-	
Repetition rate ..... :	-	
Number of dips or interruptions .. :	-	
Performance criterion ..... :	B (Voltage dips) C (Short interruptions U_T = 0 %)	
Supplementary information ..... :	Ambient temperature	20.6 °C
	Relative Humidity air	41.5 %

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
U_{NOM} – 100%	50	0	0°, 180°	0,5	Heating and mixing	A
U_{NOM} – 60%	50	40	0°	10		C
U_{NOM} – 30%	50	70	0°	25		C
U_{NOM} – 100%	60	0	0°, 180°	0,5	Heating and mixing	A
U_{NOM} – 60%	60	40	0°	12		C
U_{NOM} – 30%	60	70	0°	30		C
Supplementary information: During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance or loss of data was observed.						

Conclusion:

PASS

8 List of test equipment

Location: DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch

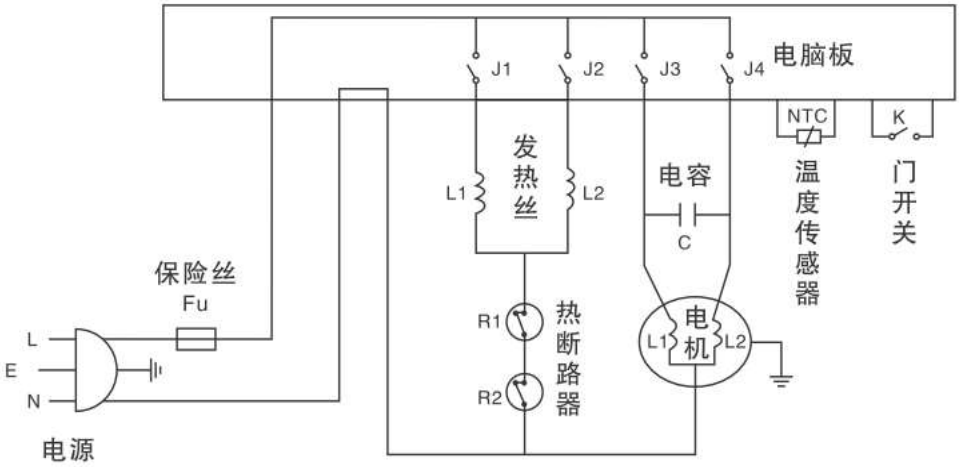
Item	Instrumentation	Manufacturer	Model No.	Serial No.	Dekra No.	Cal. Interval
1	EMI Receiver	R&S	ESCI	101206	G/L858	2020/11/02
2	LISN	R&S	ENV216	101336	G/L859	2020/11/02
3	Shielding Room	Changzhou Feite	/	/	G/L861	2021/07/05
4	Clamp	MDS21	TESEQ	4085	G/L863	2020/11/05
5	POWER SOURCE	California Instruments	500LiX-CTS-400	1132A00193	G/L862	2020/11/02
6	Analyzer	California Instruments	PACS-A	1132A00193	G/L862	2020/11/02
7	ESD Generator	TESEQ	NSG435	6513	G/L867	2020/11/05
8	Signal Generator	TESEQ	NSG3040	1821	G/L868	2021/09/07
9	STEPTRANSFORMER	TESEQ	INA6501	/	G/L868	2021/09/07
10	Signal Generator	TESEQ	NSG4070	31446	G/L870	2021/01/01
11	CDN	TESEQ	M016	31564	G/L870	2021/01/01
12	EM-Koppelzange	TESEQ	KEMZ801	31493	G/L870	2021/01/01
13	6dB	TESEQ	ATN6075	30789	G/L870	2021/01/01
14	Multi-Channel Discontinuous Interference Analyzer	DIA1512D	TESEQ	28300	G/L871	2020/11/02
15	LISN	R&S	ENV216	101336	G/L860	2020/11/02

9 Measurement instrumentation uncertainties

Measurement	Uncertainty
Mains disturbance voltage (150 kHz – 30 MHz)	2,82 dB
Disturbance power (30 MHz– 300 MHz)	3,76 dB

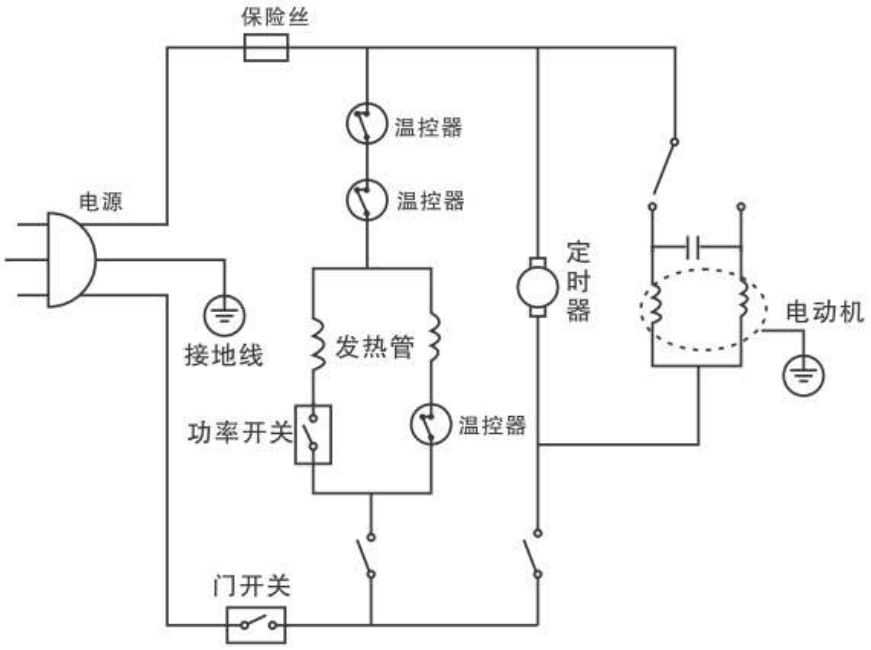
10 Annex

Model C90-1



Block diagram of model C90-1

Model T90-1



Block diagram of model T90-1

-END-