TEST REPORT N°: BUYX-ESH-P21101096B

EMC TEST REPORT

To :	ANHUI HONYI INTERNATIONAL CORP	Fax :	--
Attn :	--	Email :	--
Address :	Room B-2106, Business Office Building, Woye Garden, Ganquan Road, Shushan District, Hefei city, Anhui, China.		
Cc :	--	Fax/Email :	--
Attn :	--		
This document includes : 19 pages		Test date :	Oct. 28 to Dec. 03, 2021

FACTORY NAME :	ANHUI HONYI INTERNATIONAL CORP
ADDRESS :	Room B-2106, Business Office Building, Woye Garden, Ganquan Road, Shushan District, Hefei city, Anhui, China.
PRODUCT :	Benchy(Chiller)
TRADE MARK :	KegLand
TYPE REFERENCE :	KL18210
RATED VOLTAGE :	AC 220-240V, 50Hz
RATED INPUT CURRENT :	1.26A
PROTECTION CLASS :	I
TESTS REALISED :	On one sample of KL18210

STANDARDS USED(DATE) :	EN IEC 61000-6-3:2021 EN IEC 61000-6-1:2019
CLAUSES EXAMINED :	All Clauses Relevant.

Test Location: Building C, No. 829, Xin Zhuan Road, Shanghai, CHINA

CONCLUSION :	**The sample does satisfy the clauses examined .**
Test done by:	Approved by:
Name : Tony MAO Date : Feb. 24, 2022	Name : Daniel SUN Date : Feb. 24, 2022

1 TESTING PROGRAM

The tests have been carried out according to the requirements of the following standards :

Emission standard EN IEC 61000-6-3:2021

- Measurement of the radiated emission.
- Measurement of the conducted emission.
- Measurement of the discontinuous interference.
- Measurement of the harmonic currents.
- Measurement of the voltage fluctuations.

Immunity standard EN IEC 61000-6-1:2019

- Immunity to electrostatic discharges - publication IEC 61000-4-2.
- Immunity to fast transients/bursts - publication IEC 61000-4-4.
- Immunity to conducted disturbances induced by radio-frequency fields - publication IEC 61000-4-6.
- Immunity to power frequency magnetic field- publication IEC 61000-4-8.
- Immunity to radiated radio-frequency electromagnetic field with amplitude modulation - publication IEC 61000-4-3.
- Immunity to surges - publication IEC 61000-4-5.
- Immunity to voltage dips -publication IEC 61000-4-11.
- Immunity to voltage interruptions - publication IEC 61000-4-11.

Special Comment : None

2 HISTORY OF FAILURE

None.

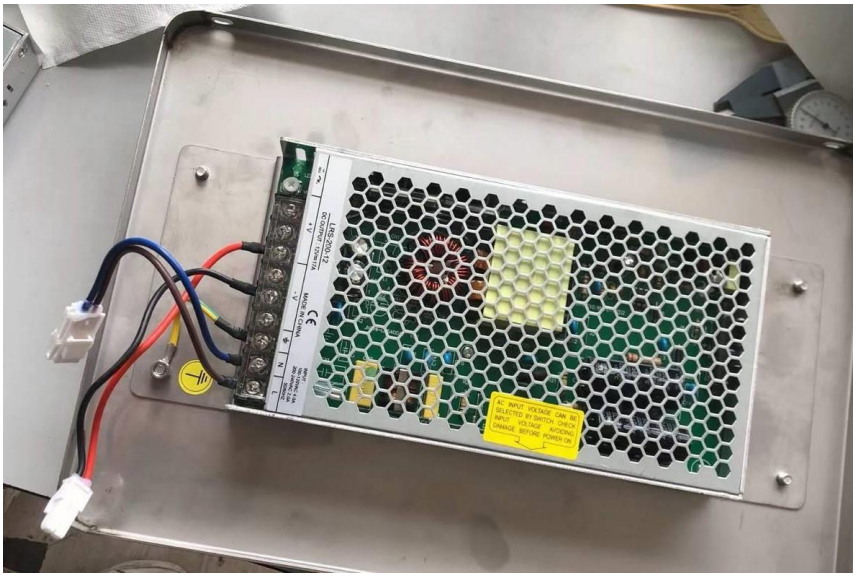
3 EQUIPMENT CHARACTERISTICS

3.1 List of critical EMC components

Object / part No.	Manufacturer/ trademark	Type / model	Technical data
Compressor (including Inverter for compressor)		QDZY60D	DC 12/24V, R600a
Control PCB		HK-963	DC (12-24V)
-Transformer		FBDB-	INPUT: 230V, 50Hz; OUTPUT: 10,0V, 1,5VA, Class 130(B)
Fan motor		AA1212UB-F51	DC-12V, 0.7A, Class 130(B)
Switching power supply		LRS-200-12	AC INPUT: 110/220V±15%; DC OUTPUT: 12V, 17A
-Transformer		250 PQ2620	110-240V, 50Hz, Class 130(B)
-Y capacitor		F Series	AC 250V, T125, 2200PF/4700PF
-X capacitor		MPX; MEX; NPX(SMX)	AC275V; 0.47μF/0,22 μF/ 0,1μF; T110 or T100

3.2 Pictures of sample

Front



Compressor

Fan motor: AA1212UB-F51

Control PCB

Control PCB

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Switching power supply

4 OPERATING CONDITIONS

The apparatus was placed in a shielded room, full or semi anechoic chamber, and was powered with an alternative current source through filters mounted on the shielded room wall. The apparatus was worked continuously.

Climatic conditions :	Temperature	: 20-30 °C
	Relative humidity	: 30-60 %
	Atmospheric pressure	: 101 kPa

5 PERFORMANCE CRITERIA

Criterion A : The apparatus operate as intended during the test. No degradation of performance or loss of function is allowed below the performance level.

Criterion B : The apparatus operate as intended after the test. No change of operating state and the stored data are allowed. During the test, degradation of performance is allowed.

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.

6 TEST RESULTS

6.1 EMISSION STANDARD EN IEC 61000-6-3:2021

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
9	**Radiated disturbance** Frequency range: 30 – 1000 MHz Table 1: Emission Enclosure Basic standard: EN 55022, Class B	Operating conditions : according to the article 9 Measuring Distance: 3 m Antenna : - horizontal position - vertical position Diagram(s) No. <1>	[X] [X]	[ ] [ ]	[ ] [ ]	[ ] [ ]
9	**Conducted disturbance** Frequency range: 0,15 – 30 MHz Table 1: Emission AC mains Basic standard: EN 55022, Class B	Operating conditions : according to the article 9 Port(s) : • AC mains port Diagram(s) No. <2>	[X]	[ ]	[ ]	[ ]
9	**Discontinuous interference** Frequency range: 0,15 – 30 MHz Table 1: Emission AC mains Basic standard: EN 55014-1	Operating conditions : according to the article 9 Port(s) : • AC mains port Table(s) No. <1>	[X]	[ ]	[ ]	[ ]
9	**Limits for harmonic currents emission** Basic standard: EN 61000-3-2	Frequency range: 0 to 2 kHz Class of the apparatus : A Table(s) No. <2>	[X]	[ ]	[ ]	[ ]
9	**Limitation of voltage fluctuations and flicker in low-voltage supply systems** Basic standard: EN 61000-3-3	Frequency range: 0 to 2 kHz Table(s) No. <3>	[X]	[ ]	[ ]	[ ]

P : pass – F : Fail – NA : not applicable – Rem : remark

6.2 IMMUNITY STANDARD EN IEC 61000-6-1:2019

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
9	**Electrostatic discharges** Table 1 Enclosure Performance criteria B	Contact discharges Level : ± 4 kV Application points : • horizontal coupling plane • vertical coupling plane • Metal part	 [X] [X] [X]	 [ ] [ ] [ ]	 [ ] [ ] [ ]	 [1] [1] [1]
	Performance criteria B	Air discharges Level : ± 8 kV Application points : • Gap	 [X]	 [ ]	 [ ]	 [1]
9	**Radio-frequency electromagnetic fields 80 to 1000 MHz** Table 1 Enclosure Performance criteria A	Test field strength : 3 V/m (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time : 2 s Logperiodic antenna : - horizontal position - vertical position	 [X] [X]	 [ ] [ ]	 [ ] [ ]	 [1] [1]
	Radio-frequency electromagnetic fields 1400 to 6000 MHz Performance criteria A	Test field strength : 3 V/m (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time : 2 s Horn antenna : - horizontal position - vertical position	 [X] [X]	 [ ] [ ]	 [ ] [ ]	 [1] [1]

P : pass – F : Fail – NA : not applicable – Rem : remark

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
9	**Power Frequency Magnetic Field** Table 1 Enclosure Performance criteria A	Field frequency : 50/60 Hz Level : 3 A/m	[ ]	[ ]	[X]	[2]
9	**Fast transients/bursts** Table 4 Alternative current power input and output ports Performance criteria B	Level : ± 1 kV Rise time/hold time : 5/50 ns Repetition rate : 5 kHz Testing time : 2 min Port(s) : • AC mains	[X]	[ ]	[ ]	[1]
9	**Injected current 0,15 to 80 MHz** Table 4 Alternative current power input and output ports Performance criterion A	Voltage level : 3 V (unmodulated signal) Modulation frequency : 1 kHz Frequency Step : 1% Dwell Time: 2 s Modulation depth : 80 % Application with Port(s) : • AC mains	[X]	[ ]	[ ]	[1]
9	**Surges** Table 4 Alternative current power input and output ports Performance criterion B	Tr/Th(µs) : 1.2/50 (8/20) Number of surges : 5 positive and 5 negative Phase angles : 0°, 90°, 180° and 270° Level : ± 1 kV Port(s) : • power input, between lines and neutral	[X]	[ ]	[ ]	[1]
	Performance criterion B	Level : ± 2 kV Port(s) : • power input, between lines and earth • power input, between neutral and earth	[X] [X]	[ ] [ ]	[ ] [ ]	[1] [1]

P : pass – F : Fail – NA : not applicable – Rem : remark

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
9	**Voltage dips and voltage interruptions** Table 4 Alternative current power input port(s) Performance criterion C	Voltage interruptions Test level : 0 % Ut-> 0 V Duration : 5 s Phase angles : 0° and 180° Port(s) : • AC mains	[X	[ ]	[ ]	[1]
	Table 4 Alternative current power input port(s) Performance criterion B	Voltage dips Test level : 0 % Ut-> 0 V Duration : 10/20 ms Phase angles : 0° and 180° Port(s) : • AC mains	[X]	[ ]	[ ]	[1]
	Table 4 Alternative current power input port(s) Performance criterion C	Voltage dips Test level : 70 % Ut-> 161 V Duration : 500 ms Phase angles : 0° Port(s) : • AC mains	[X]	[ ]	[ ]	[1]

P : pass – F : Fail – NA : not applicable – Rem : remark

Remark(s) :

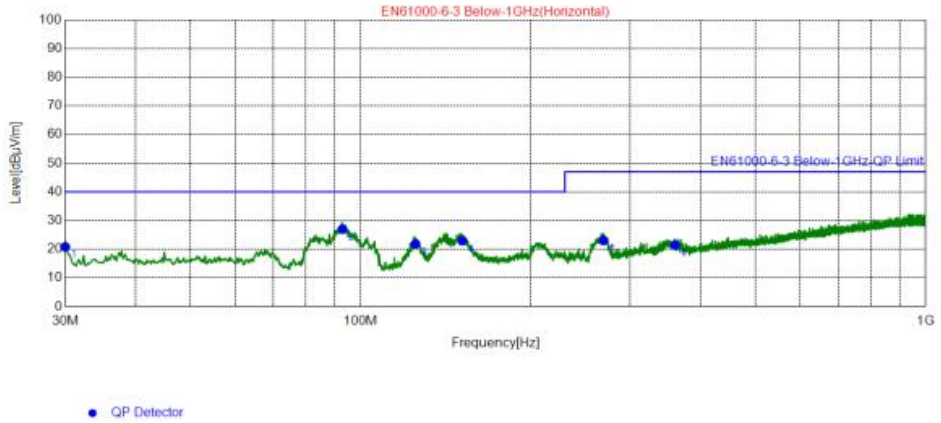
1 : The EUT continue to operate as intended during and after the test.
2 : As there is no components in the EUT susceptible to magnetic fields, so it is not needed to perform this test.

7 CONCLUSION

The apparatus Benchy(Chiller) and model KL18210 is in compliance with the requirements of the standards EN IEC 61000-6-3:2021, EN IEC 61000-6-1:2019.

Diagram No. 1

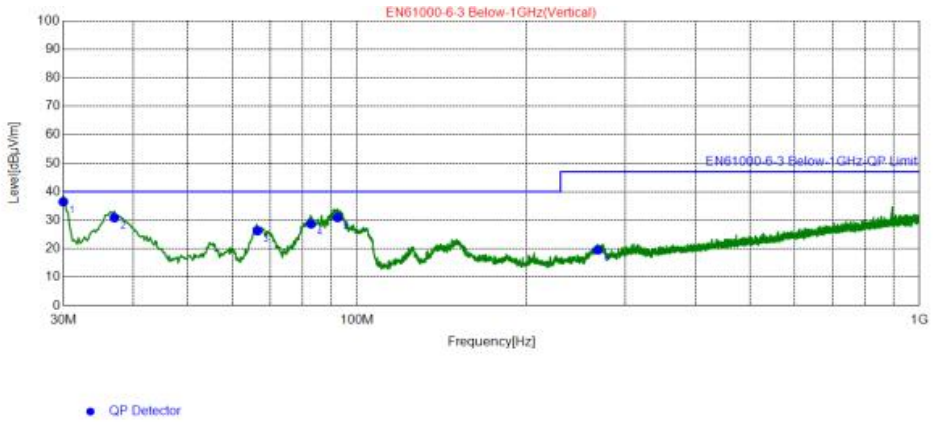
Horizontal



Final Data List

NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	30.00	32.73	-11.92	20.81	40.00	19.19	200	9	Horizontal
2	92.85	42.43	-15.41	27.02	40.00	12.98	200	71	Horizontal
3	125.0	33.9	-12.09	21.81	40.00	18.19	200	249	Horizontal
4	151.2	32.78	-9.84	22.94	40.00	17.06	200	239	Horizontal
5	269.0	32.57	-9.54	23.03	47.00	23.97	100	302	Horizontal
6	360.3	28.58	-7.16	21.42	47.00	25.58	100	206	Horizontal

Vertical

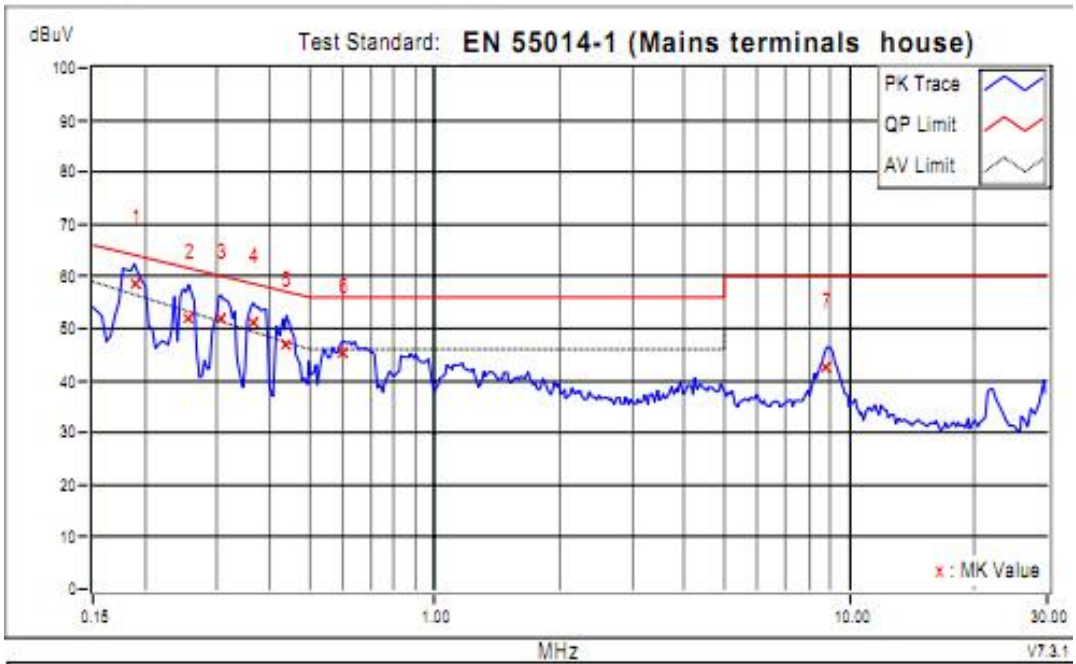


Final Data List

NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	30.00	48.42	-11.92	36.50	40.00	3.50	100	137	Vertical
2	36.98	42.21	-11.34	30.87	40.00	9.13	100	256	Vertical
3	66.47	37.93	-11.63	26.30	40.00	13.70	100	298	Vertical
4	82.76	43.35	-14.66	28.69	40.00	11.31	100	348	Vertical
5	92.27	46.39	-15.46	30.93	40.00	9.07	100	117	Vertical
6	267.8	29.14	-9.59	19.55	47.00	27.45	200	190	Vertical

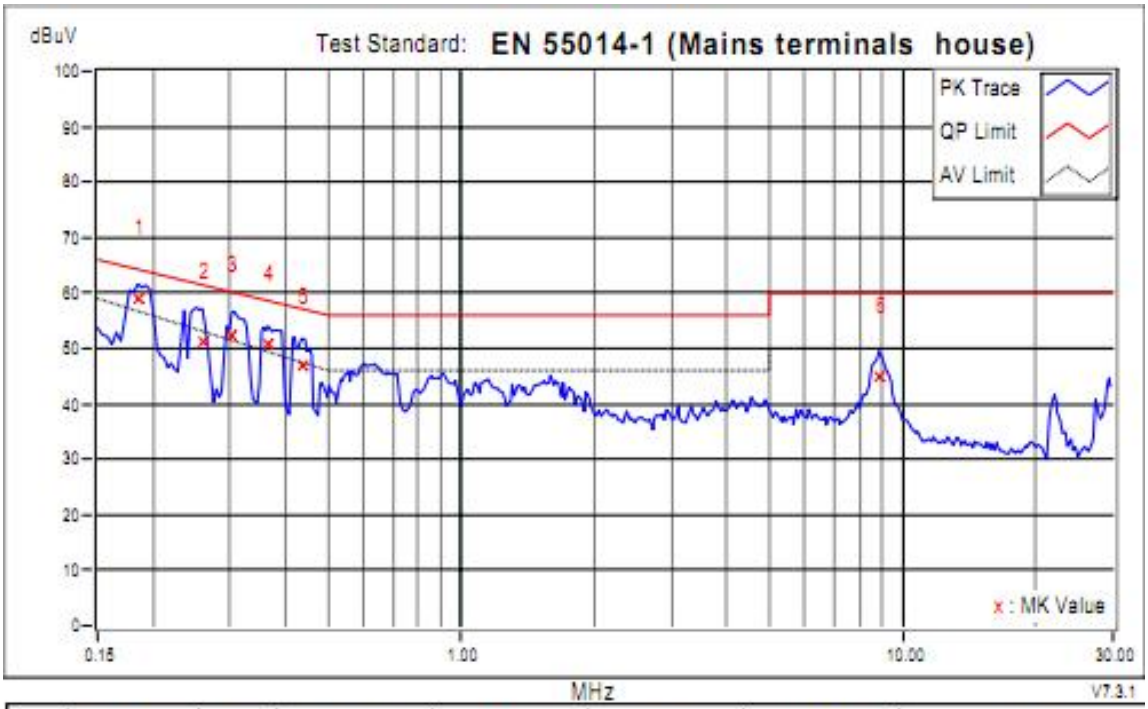
Diagram No. 2

Line



	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
No.	MHz	dB	QP	AV	QP	AV	QP	AV	QP	AV	
+1	0.16910	9.82	48.88	39.30	58.70	49.12	64.08	56.50	-5.38	-7.38	
2	0.25557	9.74	42.12	25.10	51.86	34.84	61.57	53.25	-9.71	-18.41	
3	0.30640	9.67	42.30	31.66	51.97	41.33	60.07	51.29	-8.10	-9.96	
4	0.36505	9.68	41.54	30.67	51.22	40.35	58.61	49.40	-7.40	-9.05	
5	0.43934	9.68	37.16	25.64	46.84	35.32	57.07	47.40	-10.24	-12.08	
6	0.59965	9.62	35.68	21.30	45.28	30.92	56.00	46.00	-10.72	-15.08	
7	8.82391	10.28	32.16	27.28	42.44	37.56	60.00	50.00	-17.56	-12.44	

Neutral



	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
No.	MHz	dB	QP	AV	QP	AV	QP	AV	QP	AV	
+1	0.18519	9.77	49.06	39.21	58.83	48.98	64.25	56.72	-5.42	-7.75	
2	0.25948	9.81	41.52	22.73	51.33	32.54	61.45	53.08	-10.11	-20.54	
3	0.30249	9.85	42.30	31.18	52.15	41.03	60.17	51.43	-8.02	-10.40	
4	0.36505	9.84	41.06	30.15	50.90	39.99	58.61	49.40	-7.72	-9.41	
5	0.43543	9.82	37.00	25.51	46.82	35.33	57.15	47.49	-10.33	-12.17	
6	8.84737	10.26	34.52	30.01	44.78	40.27	60.00	50.00	-15.22	-9.73	

Table No. 1

temp.drd

Discontinuous Interference Tests

Apparatus Code: Tested by: Henry
Manufacturer: LCIE
Model: KL18210
干粉机

RUN A: November 04, 2021: 02.56 PM Run Duration: 117 mins 22 secs
Duration limit: 120 mins
Continuous limit: 0.600 secs
Sw Ops limit: 40
Switching Operations: 40 Rate: 0.34

Channel no:	1	2	3	4	5	6
	150kHz	500kHz	1.4MHz	30MHz		
Sensitivity (dBuV):	66	56	56	60		
Short Clicks:	1	1	1	0		
Long Clicks:	0	0	0	0		
Total:	1	1	1	0		
Click Rate:	0.01	0.01	0.01	0.00		
> 2 in 2s:	N	N	N	N		
Continuous(s):	0.00	0.00	0.00	0.00		

Count limit reached

Table No. 2

Average and Maximum harmonic current results									
Hn	Average				Maximum				Harmonic Result
	Ieff [A]	of Limit [%]	Limit [A]	Result	Ieff [A]	of Limit [%]	Limit [A]	Result	
1	0.390				0.429				
2	0.011	1.001	1.080	PASS	0.014	0.894	1.620	PASS	PASS
3	0.373	16.220	2.300	PASS	0.409	11.864	3.450	PASS	PASS
4	0.014	3.216	0.430	PASS	0.019	2.967	0.645	PASS	PASS
5	0.346	30.375	1.140	PASS	0.379	22.142	1.710	PASS	PASS
6	0.012	4.046	0.300	PASS	0.017	3.754	0.450	PASS	PASS
7	0.308	40.054	0.770	PASS	0.337	29.158	1.155	PASS	PASS
8	0.011	4.702	0.230	PASS	0.015	4.218	0.345	PASS	PASS
9	0.263	65.756	0.400	PASS	0.287	47.914	0.600	PASS	PASS
10	0.009	5.113	0.184	PASS	0.012	4.272	0.276	PASS	PASS
11	0.213	64.490	0.330	PASS	0.232	46.930	0.495	PASS	PASS
12	0.008	4.051	0.153	PASS	0.009	3.976	0.230	PASS	PASS
13	0.162	77.004	0.210	PASS	0.178	56.386	0.315	PASS	PASS
14	0.006	4.849	0.131	PASS	0.007	3.746	0.197	PASS	PASS
15	0.114	75.696	0.150	PASS	0.126	55.923	0.225	PASS	PASS
16	0.006	4.789	0.115	PASS	0.006	3.655	0.173	PASS	PASS
17	0.071	53.628	0.132	PASS	0.080	40.358	0.199	PASS	PASS
18	0.005	4.929	0.102	PASS	0.006	3.756	0.153	PASS	PASS
19	0.039	32.518	0.118	PASS	0.045	25.419	0.178	PASS	PASS
20	0.005	5.146	0.092	n/a	0.006	4.025	0.138	PASS	PASS
21	0.023	21.377	0.107	PASS	0.028	17.133	0.161	PASS	PASS
22	0.004	5.296	0.084	n/a	0.005	4.297	0.125	PASS	PASS
23	0.027	27.500	0.098	PASS	0.032	21.693	0.147	PASS	PASS
24	0.004	5.306	0.077	n/a	0.005	4.283	0.115	n/a	PASS
25	0.033	36.930	0.090	PASS	0.038	27.883	0.135	PASS	PASS
26	0.004	5.114	0.071	n/a	0.004	3.927	0.106	n/a	PASS
27	0.034	41.270	0.083	PASS	0.038	30.480	0.125	PASS	PASS
28	0.003	4.939	0.066	n/a	0.004	3.686	0.099	n/a	PASS
29	0.031	39.790	0.078	PASS	0.034	29.463	0.116	PASS	PASS
30	0.003	4.799	0.061	n/a	0.003	3.651	0.092	n/a	PASS
31	0.024	32.883	0.073	PASS	0.027	24.912	0.109	PASS	PASS
32	0.003	4.942	0.058	n/a	0.003	3.718	0.086	n/a	PASS
33	0.016	22.762	0.068	PASS	0.019	18.194	0.102	PASS	PASS
34	0.003	5.011	0.054	n/a	0.003	3.779	0.081	n/a	PASS
35	0.009	13.351	0.064	PASS	0.011	11.180	0.096	PASS	PASS
36	0.003	5.130	0.051	n/a	0.003	4.124	0.077	n/a	PASS
37	0.007	12.059	0.061	PASS	0.009	10.338	0.091	PASS	PASS
38	0.002	5.088	0.048	n/a	0.003	4.284	0.073	n/a	PASS
39	0.011	18.347	0.058	PASS	0.013	15.047	0.087	PASS	PASS
40	0.002	4.096	0.046	n/a	0.003	4.082	0.069	n/a	PASS

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

Table No. 3

Maximum Flicker results

	EUT values	Limit	Result
Pst	NA	NA	NA
Plt	NA	NA	NA
dc [%]	0.000	3.30	PASS
dmax [%]	0.523	4.00	PASS
dt [s]	0.000	0.50	PASS