EMC Test Report

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Applicant: DONNERBERG - Svetozar Grbic
Address: Max Planck Strasse 10 85716 Unterschleissheim GERMANY

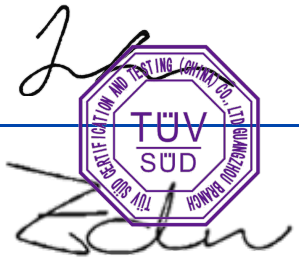
Product: Massage appliances

(NECK AND SHOULDER MASSAGER)

Model: NM-089, B NM-089, J NM-089

COMMERCIAL-IN-CONFIDENCE

Report Number: 64.710.22.05124.01

RESPONSIBLE FOR	NAME	SIGNATURE	DATE
Prepared by	Jackson Chen		2023-01-16
Approved by	Edward Sun		2023-01-16

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service control rules.

EXECUTIVE SUMMARY This product was tested and found to be in compliance with	EN IEC 55014-1:2021 EN IEC 55014-2:2021 EN IEC 61000-3-2:2019+A1:2021 EN 61000-3-3:2013+A1:2019+A2:2021

Contents

1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	2023-01-16

1.2 Introduction

The information contained in this report is intended to show verification of the EMC Qualification Approval Testing of the requirements of the standards for the tests listed in Section 1.3.

Applicant	:	DONNERBERG - Svetozar Grbic
Address	:	Max Planck Strasse 10 85716 Unterschleissheim GERMANY
Manufacturer	:	DONNERBERG - Svetozar Grbic
Address	:	Max Planck Strasse 10 85716 Unterschleissheim GERMANY
Model Number(s)	:	NM-089, B NM-089, J NM-089
Product Type	:	Massage appliances (NECK AND SHOULDER MASSAGER)
Trademark	:	/
Date of Receipt of EUT	:	2022-12-16
Start of Test	:	2022-12-19
Finish of Test	:	2023-01-10
Name of Engineer(s)	:	Jackson Chen

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with EN IEC 55014-1, EN IEC 61000-3-2, EN 61000-3-3 and EN IEC 55014-2 is shown below.

Specification	Clause	Test Description	Result	Remark
EN IEC 55014-1:2021	4.3.2	Magnetic field induced current	N/A	Note 1
EN IEC 55014-1:2021	4.3.3	Conducted disturbance at mains terminals	Pass	/
EN IEC 55014-1:2021	4.3.4	Disturbance power	Pass	/
EN IEC 55014-1:2021	4.3.4	Radiated disturbance	N/A	Note 2
EN IEC 55014-1:2021	4.4.2	Discontinuous disturbance	N/A	Note 3
EN IEC 61000-3-2:2019+A1:2021	6	Harmonic current emission	N/A	Note 4
EN 61000-3-3:2013+A1:2019+A2:2021	6	Flicker	Pass	/
EN IEC 55014-2:2021 (refer IEC 61000-4-2:2008)	5.1	Electrostatic discharge immunity test	Pass	/
EN IEC 55014-2:2021 (refer IEC 61000-4-4:2012)	5.2	Electrical fast transient /burst immunity test	Pass	/
EN IEC 55014-2:2021 (refer IEC 61000-4-6:2013)	5.3	Immunity to conducted disturbances, induced by radio-frequency fields	Pass	/
EN IEC 55014-2:2021 (refer IEC 61000-4-3:2006+AMD1:2007+AMD2:2010)	5.5	Radiated, radio-frequency, electromagnetic field immunity test	N/A	Note 5
EN IEC 55014-2:2021 (refer IEC 61000-4-5:2014/AMD1:2017)	5.6	Surge immunity test	Pass	/
EN IEC 55014-2:2021 (refer IEC 61000-4-11:2020)	5.7	Voltage dips, short interruptions and voltage variations immunity tests	Pass	/

Remark:
Note 1: This is applicable only to equipment and apparatus with active IPT functions.

Note 2: Since the disturbance power emission from the EUT is lower than the limits of Table 7 reduced by the values of Table 8 and their maximum clock frequency is less than 30 MHz, it is deemed to comply in the frequency range from 300 MHz to 1 000 MHz and fulfil EMC requirement of standard without test.

Note 3: The product is excluded from switching operation in thermostatically controlled appliance, automatic programme controlled machines and electrically controlled or operated appliances generate discontinuous disturbance, Therefore, it is not applicable.

Note 4: The rated power of this product is less than 75W, so the harmonic test was not applied.

Note 5: For category II apparatus, the radio frequency electromagnetic fields test is not applicable.

1.4 Test Conditions

1.4.1 Environmental Conditions

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:		
Temperature	**Humidity**	**Atmospheric pressure**
15 °C – 35 °C	30 % - 60 %	860 hPa – 1060 hPa
If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.		

1.4.2 Performance Criteria

Performance 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 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 reasonable expect from the apparatus if used as intended.

Performance 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 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 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 reasonable expect from the apparatus if used as intended.

Performance 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 instruction for use.

1.5 Product Information and general remarks

1.5.1 Technical Description

Ratings	:	100-240V, 50/60Hz, 0.8A (for adaptor); DC 12V, 2.0A, 24W (for main unit)
Protection class	:	Class II

1.5.2 Test Configuration

Configuration	Description
TC1	230V, 50Hz
TC2	120V, 60Hz

1.5.3 Modes of Operation

Mode	Description
TM1	Massaging (high speed) + Heating
TM2	Massaging (middle speed) + Heating

1.5.4 General remark:

Model J NM-089 is same as model B NM-089, except for the shape of massage head.
By evaluation, model B NM-089 and NM-089 are selected to perform full tests.

1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 Test Location

Test Site:
JianYan Testing Group Co.,Ltd.

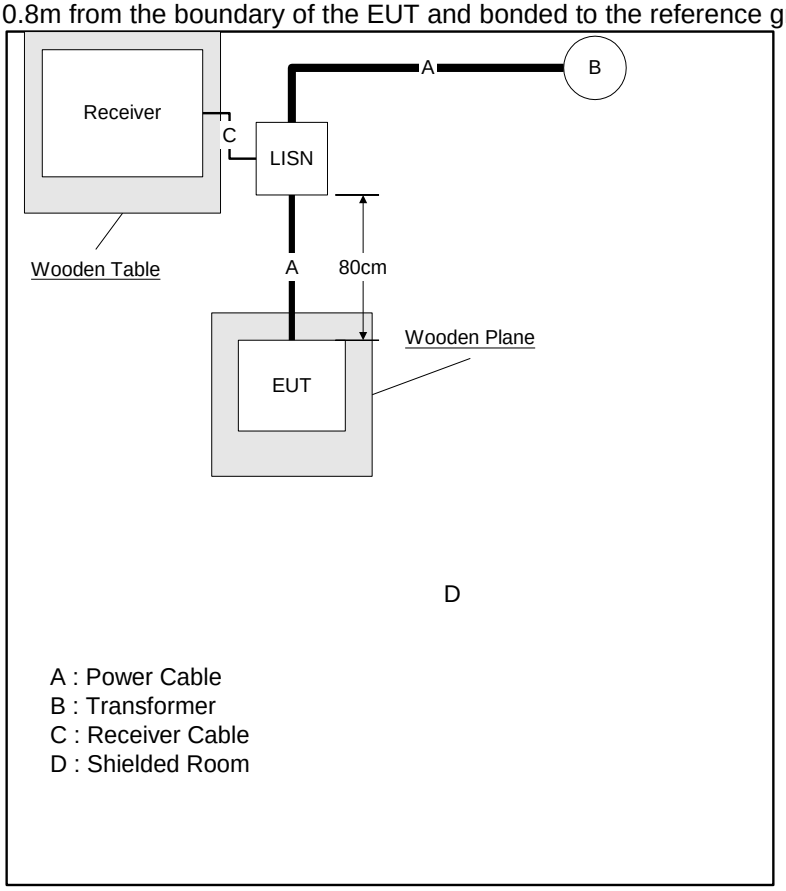
Address:
No.760, Fengling Road, Tong'an District, Xiamen, Fujian, China

2 Test Details

2.1 Conducted Disturbance at Mains Terminals

2.1.1 Test Method

The EUT was placed on a 0.8 m non-conductive table for table-top equipment and on a 0.12 m insulated support for floor standing equipment above a ground reference plane all within a test laboratory.
All power was connected to the EUT through an Artificial Mains Network (AMN). Conducted disturbance voltage measurements on mains lines were made at the output of the AMN. The AMN was placed 0.8m from the boundary of the EUT and bonded to the reference ground plane.

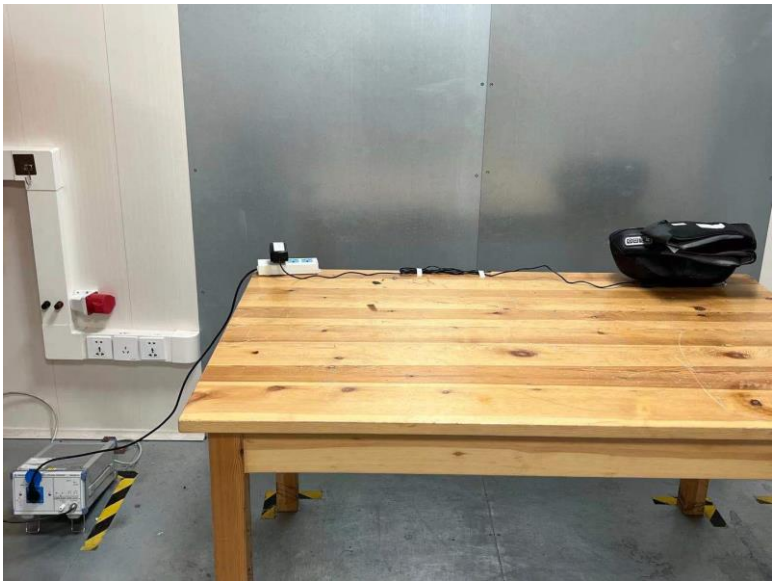


2.1.2 Specification Limits

Household appliances and equipment causing similar disturbances and regulating controls incorporating semiconductor devices				
Frequency range	At main terminals dB(μV)		At load terminals and additional terminals dB(μV)	
MHz	Quasi-peak	Average	Quasi-peak	Average
0.15 to 0.5	66 to 56	59 to 46	80	70
0.5 to 5	56	46	74	64
5 to 30	60	50	74	64

Remark for test data:
*Level=Reading Level + Correction Factor
**Correction Factor=Cable Loss + LISN Factor
(The Reading Level is recorded by software which is not shown in the sheet)

2.1.3 Test Setup

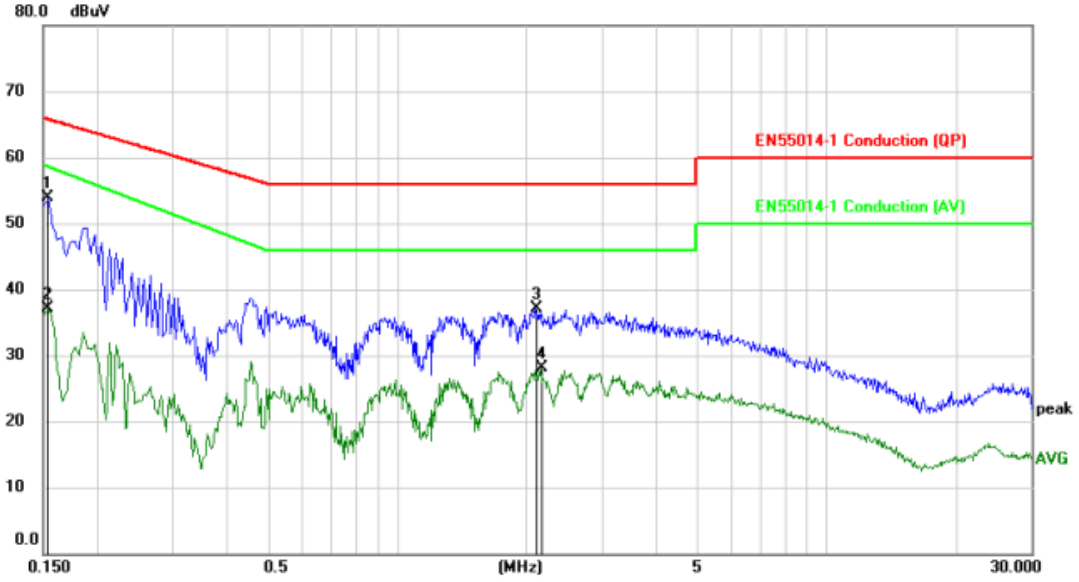


2.1.4 Test Location

This test was carried out in shielded room.

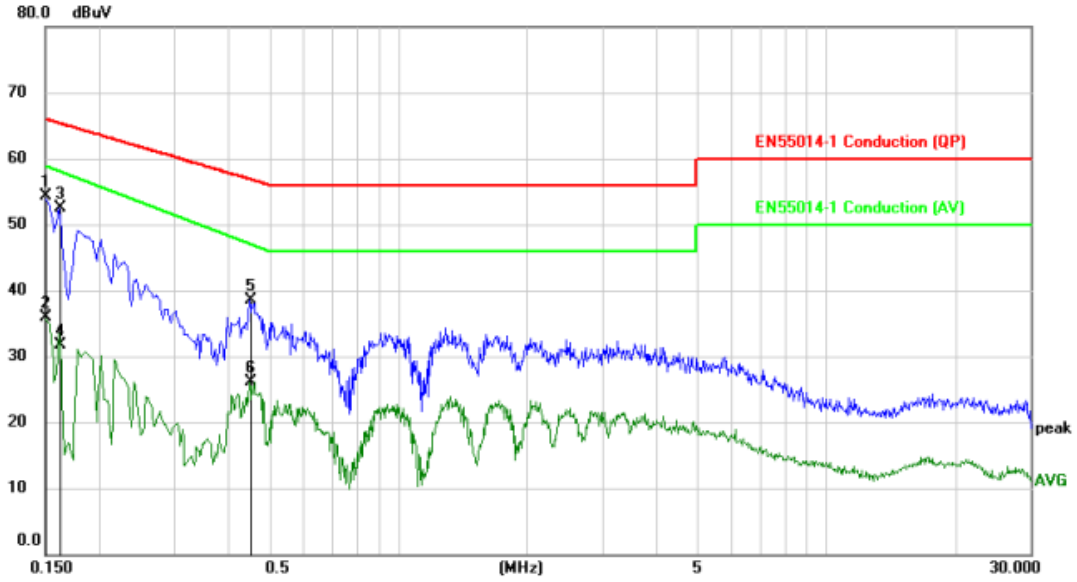
2.1.5 Test Results

Model	:	B NM-089
Test Mode	:	TM1, the worst
Test Voltage	:	230V, 50Hz
Remark	:	L
Test Date	:	2023-01-05



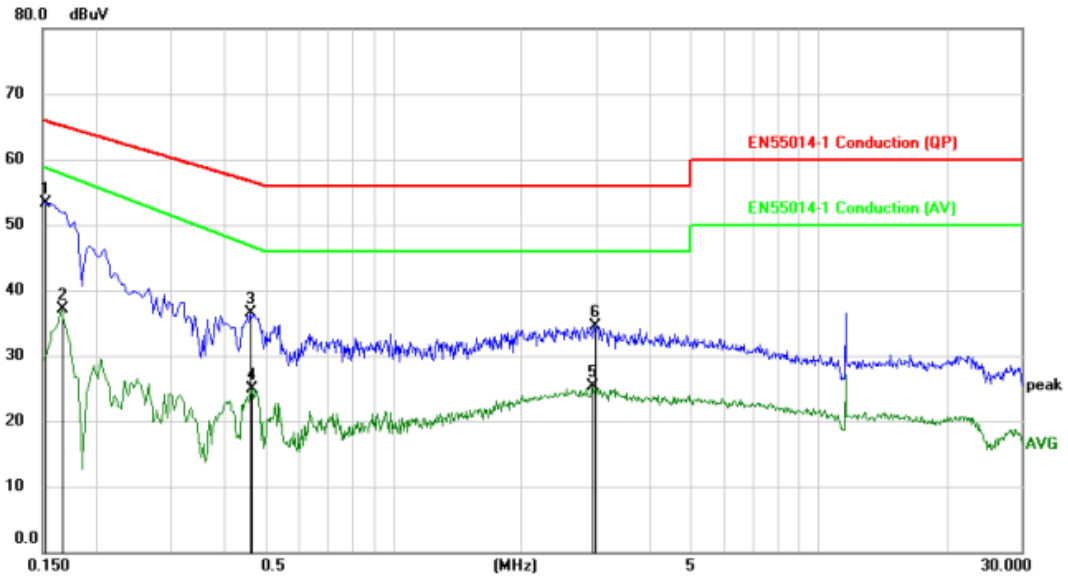
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBuV	dB	dBuV	dBuV	dB	Detector
0.1539	44.15	9.70	53.85	65.79	-11.94	peak
0.1539	27.48	9.70	37.18	58.72	-21.54	AVG
2.1099	27.28	9.74	37.02	56.00	-18.98	peak
2.1619	18.31	9.74	28.05	46.00	-17.95	AVG

Model	:	B NM-089
Test Mode	:	TM1, the worst
Test Voltage	:	230V, 50Hz
Remark	:	N
Test Date	:	2023-01-05



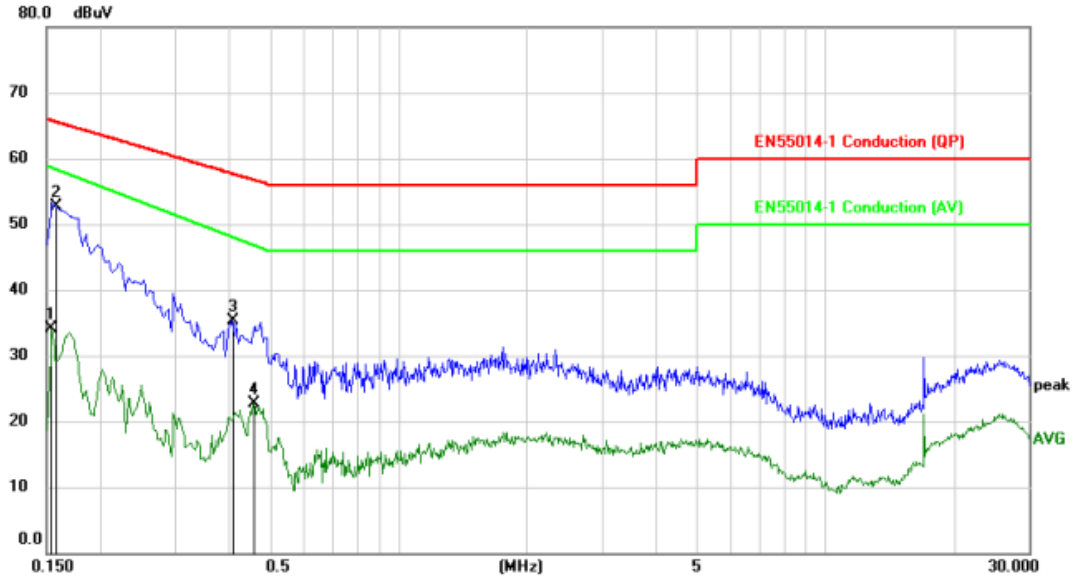
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBuV	dB	dBuV	dBuV	dB	Detector
0.1500	44.49	9.73	54.22	66.00	-11.78	peak
0.1500	26.24	9.73	35.97	59.00	-23.03	AVG
0.1620	42.81	9.74	52.55	65.36	-12.81	peak
0.1624	21.89	9.74	31.63	58.14	-26.51	AVG
0.4500	28.79	9.72	38.51	56.88	-18.37	peak
0.4500	16.34	9.72	26.06	47.14	-21.08	AVG

Model	:	B NM-089
Test Mode	:	TM1, the worst
Test Voltage	:	120V, 60Hz
Remark	:	L
Test Date	:	2023-01-05



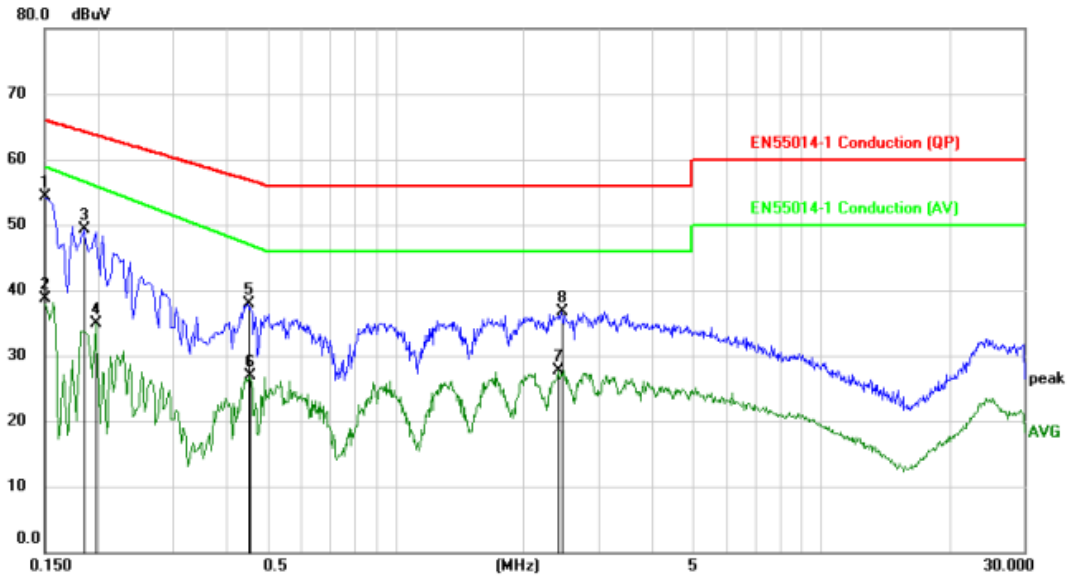
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBuV	dB	dBuV	dBuV	dB	Detector
0.1524	43.68	9.70	53.38	65.87	-12.49	peak
0.1660	27.33	9.70	37.03	57.91	-20.88	AVG
0.4620	26.76	9.68	36.44	56.66	-20.22	peak
0.4660	15.17	9.68	24.85	46.76	-21.91	AVG
2.9420	15.58	9.82	25.40	46.00	-20.60	AVG
2.9660	24.61	9.82	34.43	56.00	-21.57	peak

Model	:	B NM-089
Test Mode	:	TM1 , the worst
Test Voltage	:	120V, 60Hz
Remark	:	N
Test Date	:	2023-01-05



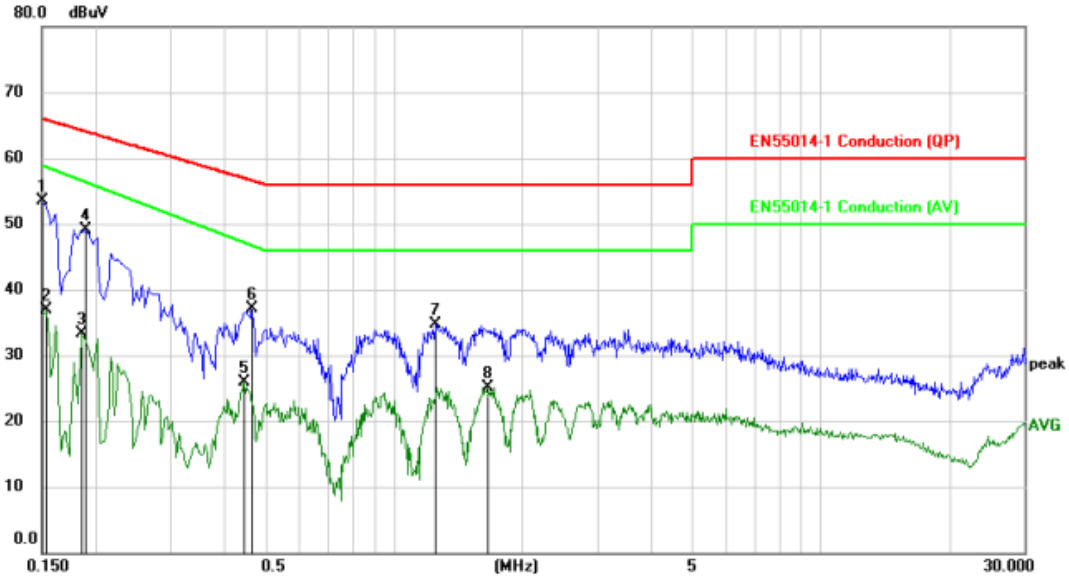
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBuV	dB	dBuV	dBuV	dB	Detector
0.1539	24.39	9.74	34.13	58.72	-24.59	AVG
0.1580	42.94	9.74	52.68	65.57	-12.89	peak
0.4100	25.57	9.70	35.27	57.65	-22.38	peak
0.4580	13.07	9.73	22.80	46.95	-24.15	AVG

Model	:	NM-089
Test Mode	:	TM1 + Vibrating, the worst
Test Voltage	:	230V, 50Hz
Remark	:	L
Test Date	:	2022-12-28



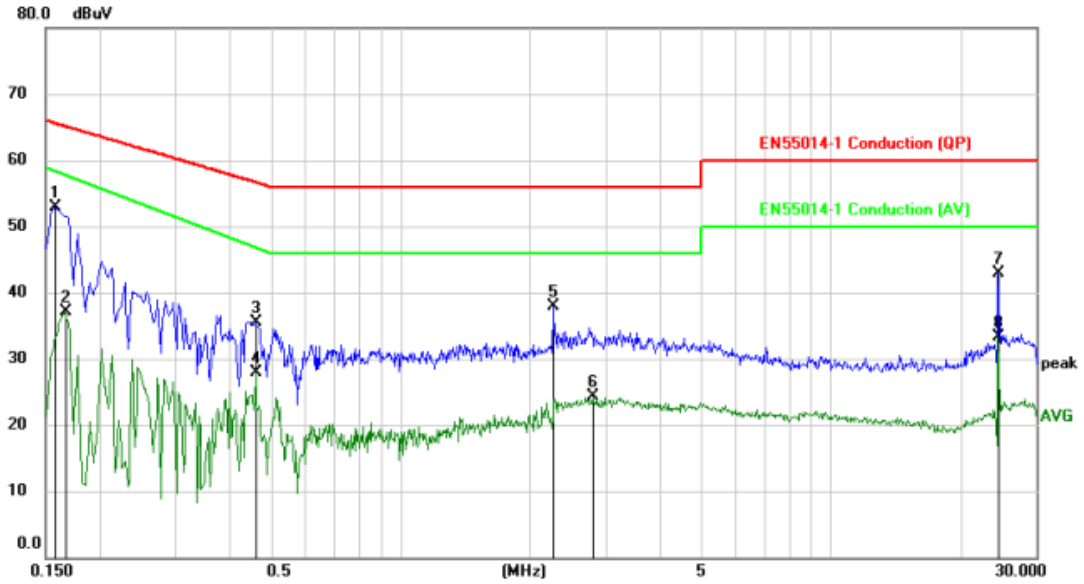
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBuV	dB	dBuV	dBuV	dB	Detector
0.1500	44.65	9.69	54.34	66.00	-11.66	peak
0.1500	28.92	9.69	38.61	59.00	-20.39	AVG
0.1860	39.51	9.71	49.22	64.21	-14.99	peak
0.1980	25.15	9.72	34.87	56.00	-21.13	AVG
0.4500	28.32	9.67	37.99	56.88	-18.89	peak
0.4540	17.31	9.69	27.00	47.04	-20.04	AVG
2.4180	17.43	10.24	27.67	46.00	-18.33	AVG
2.4539	26.44	10.25	36.69	56.00	-19.31	peak

Model	:	NM-089
Test Mode	:	TM1 + Vibrating, the worst
Test Voltage	:	230V, 50Hz
Remark	:	N
Test Date	:	2022-12-28



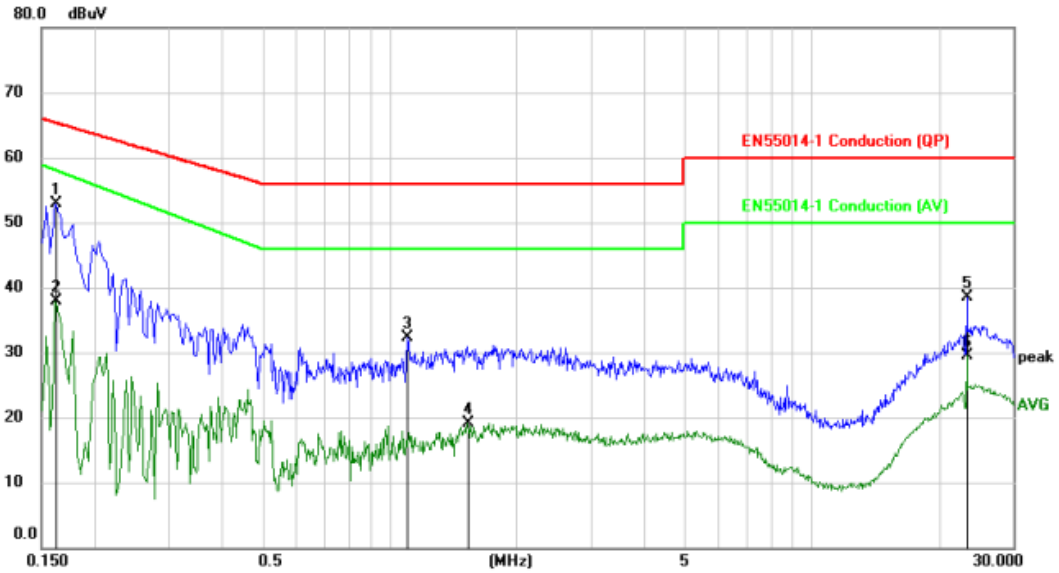
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBuV	dB	dBuV	dBuV	dB	Detector
0.1500	43.71	9.73	53.44	66.00	-12.56	peak
0.1539	27.12	9.74	36.86	58.72	-21.86	AVG
0.1860	23.55	9.74	33.29	56.68	-23.39	AVG
0.1900	39.28	9.74	49.02	64.04	-15.02	peak
0.4460	16.14	9.81	25.95	47.23	-21.28	AVG
0.4660	27.31	9.84	37.15	56.58	-19.43	peak
1.2540	24.42	10.22	34.64	56.00	-21.36	peak
1.6580	14.79	10.36	25.15	46.00	-20.85	AVG

Model	:	NM-089
Test Mode	:	TM1 + Vibrating, the worst
Test Voltage	:	120V, 60Hz
Remark	:	L
Test Date	:	2022-12-28



Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBuV	dB	dBuV	dBuV	dB	Detector
0.1580	43.26	9.70	52.96	65.57	-12.61	peak
0.1660	27.39	9.70	37.09	57.91	-20.82	AVG
0.4620	25.86	9.70	35.56	56.66	-21.10	peak
0.4620	18.17	9.70	27.87	46.85	-18.98	AVG
2.2700	27.62	10.19	37.81	56.00	-18.19	peak
2.8020	13.93	10.30	24.23	46.00	-21.77	AVG
24.5220	30.09	12.84	42.93	60.00	-17.07	peak
24.5220	20.37	12.84	33.21	50.00	-16.79	AVG

Model	:	NM-089
Test Mode	:	TM1 + Vibrating, the worst
Test Voltage	:	120V, 60Hz
Remark	:	N
Test Date	:	2022-12-28

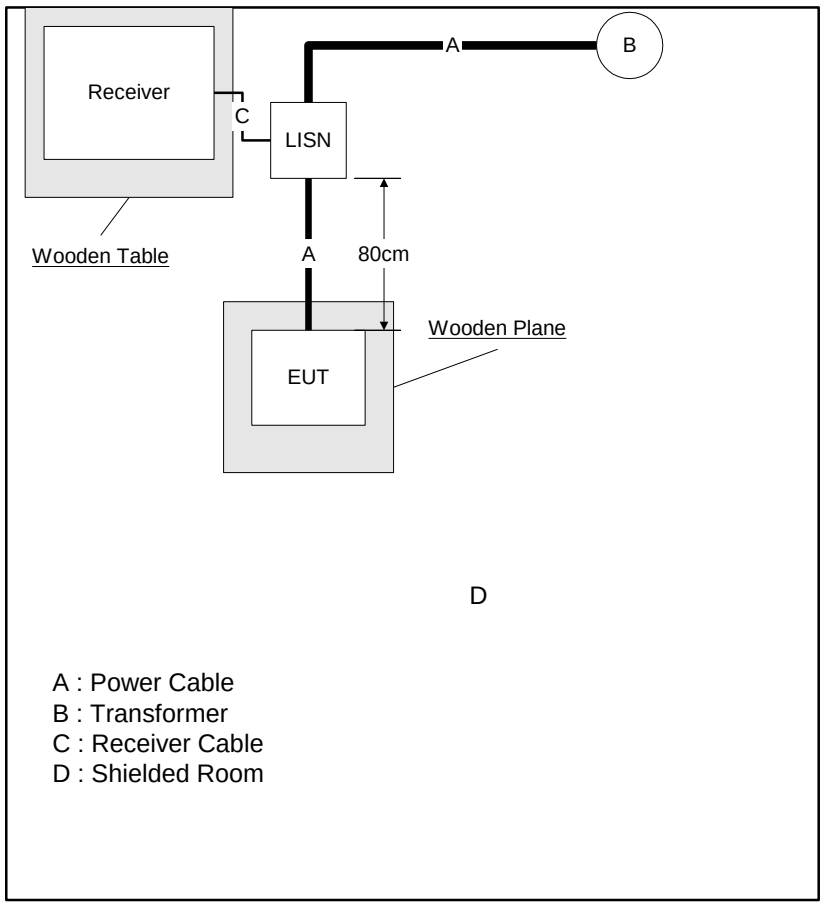


Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBuV	dB	dBuV	dBuV	dB	Detector
0.1620	43.24	9.74	52.98	65.36	-12.38	peak
0.1620	28.09	9.74	37.83	58.17	-20.34	AVG
1.1019	22.06	10.19	32.25	56.00	-23.75	peak
1.5339	8.85	10.31	19.16	46.00	-26.84	AVG
23.3580	24.73	13.72	38.45	60.00	-21.55	peak
23.3580	15.70	13.72	29.42	50.00	-20.58	AVG

2.2 Discontinuous disturbances

2.2.1 Test Method

All power was connected to the EUT through an Artificial Mains Network (AMN). Conducted disturbance voltage measurements on mains lines were made at the output of the AMN. An initial measurement was made in an observation period of 120 minutes, or the time to register 40 clicks. The clicks obtained was compared against the corresponding click limit Lq for the required 4 individual frequencies. The test was repeated in similar period as the initial measurement. The number of clicks during the second measurement should not exceed a quarter of that measured during the initial measurement.



2.2.2 Specification Limits

Frequency Range (MHz)	Discontinuous disturbances limits (dBµV)	
	N < 0.2	0.2 ≤ N < 30
0.15	110dBµV	66dBµV + 20 log (30/N)
0.5	100dBµV	56dBµV + 20 log (30/N)
1.4	100dBµV	56dBµV + 20 log (30/N)
30	104dBµV	60dBµV + 20 log (30/N)
Note: N refers to click rate		

2.2.3 Test Setup

N/A

2.2.4 Test Location

This test was carried out in shielded room.

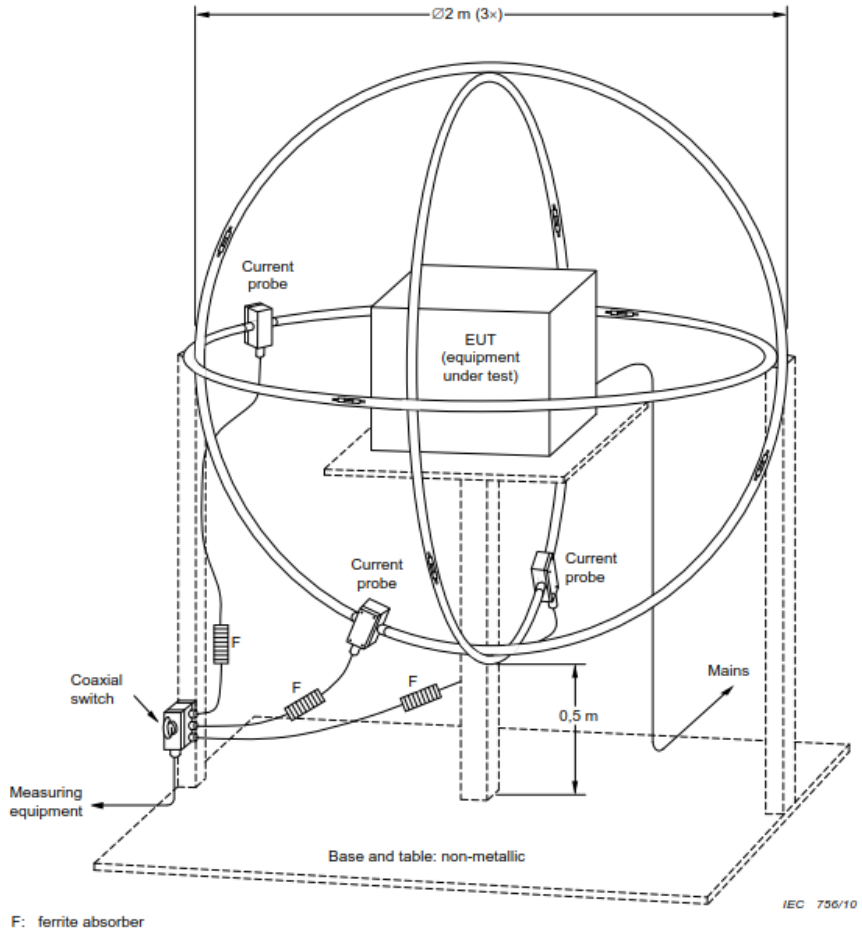
2.2.5 Test Results

N/A

2.3 Magnetic field induced current

2.3.1 Test Method

The magnetic component shall be measured by means of a loop antenna. The equipment shall be placed in the center of the antenna.
The induced current in the loop antenna is measured by means of a current probe and the CISPR measuring receiver. By means of a coaxial switch, the three field directions can be measured in sequence.



2.3.2 Specification Limits

Magnetic field induced current limits		
Frequency range	Limits dB(μA)	
	Horizontal component Quasi-peak	Vertical component Quasi-peak
9kHz to 70kHz	88	106
70kHz to 150kHz	88 to 58	106 to 76
150kHz to 30MHz	58 to 22	76 to 40

Remark：
Level=Reading Level + Correction Factor
Correction Factor=Loop Antenna Factor + Cable Loss
(The Reading Level is recorded by software which is not shown in the sheet)

2.3.3 Test Setup

N/A

2.3.4 Test Location

This test was carried out in conducted emission shielded room.

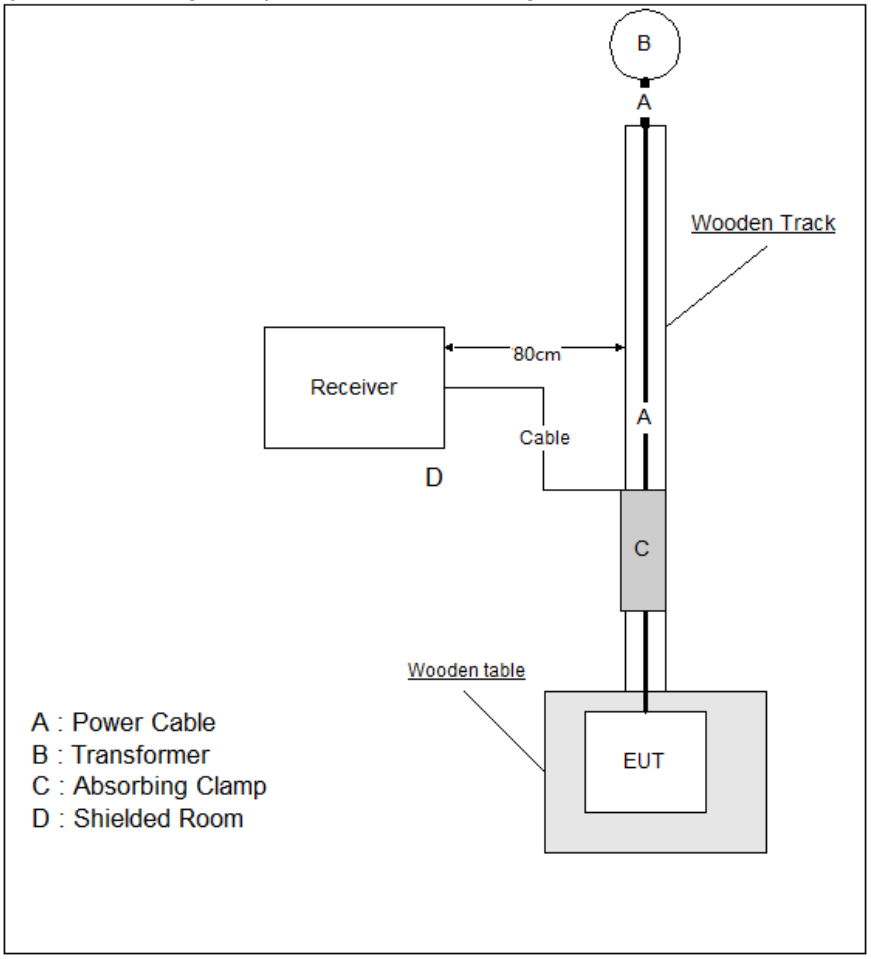
2.3.5 Test Results

N/A

2.4 Disturbance power

2.4.1 Test Method

The associated equipment under test was placed on a 0.8 m non-conductive table for table-top equipment and on a 0.12 m insulated support for floor standing equipment and at least 0.8m from other metallic objects and from any person. The lead to be measured shall be stretched in a straight horizontal line for a length sufficient to accommodate the absorbing clamp. At each test frequency, the absorbing clamp shall be moved along the lead until the maximum value is found.



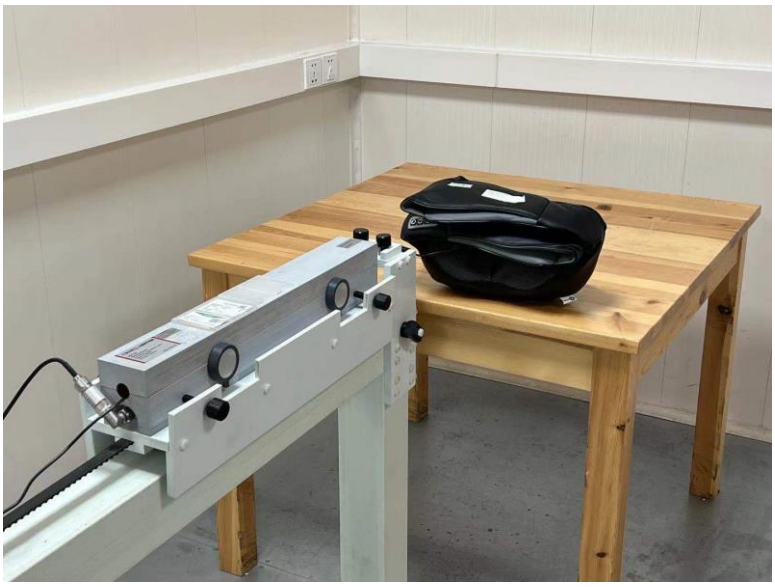
2.4.2 Specification Limits

Disturbance power limits for frequency range 30MHz to 300MHz		
Frequency range	Household and similar appliances dB(pW)	
MHz	Quasi-peak	Average
30 to 300	45 to 55	35 to 45

Margin when performing disturbance power measurement in the frequency range 30MHz to 300MHz		
Frequency range	Household and similar appliances dB(pW)	
MHz	Quasi-peak	Average
	Increasing linearly with the frequency from	
200 to 300	0 to 10 dB	-

Remark for test data:
*Level=Reading Level + Correction Factor
**Correction Factor=Cable Loss + Clamp Factor
(The Reading Level is recorded by software which is not shown in the sheet)

2.4.3 Test Setup

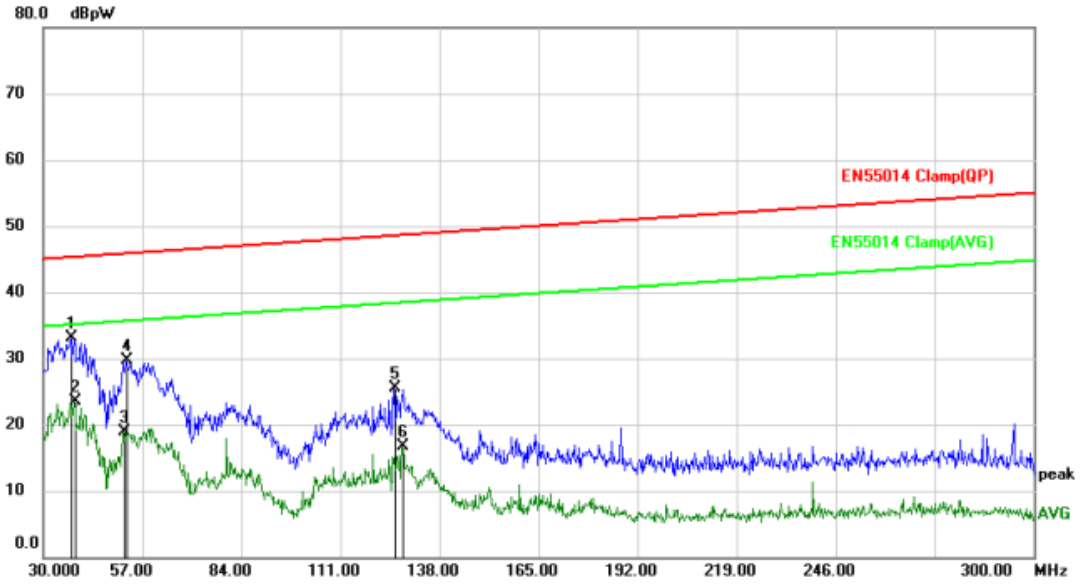


2.4.4 Test Location

This test was carried out in shielded room.

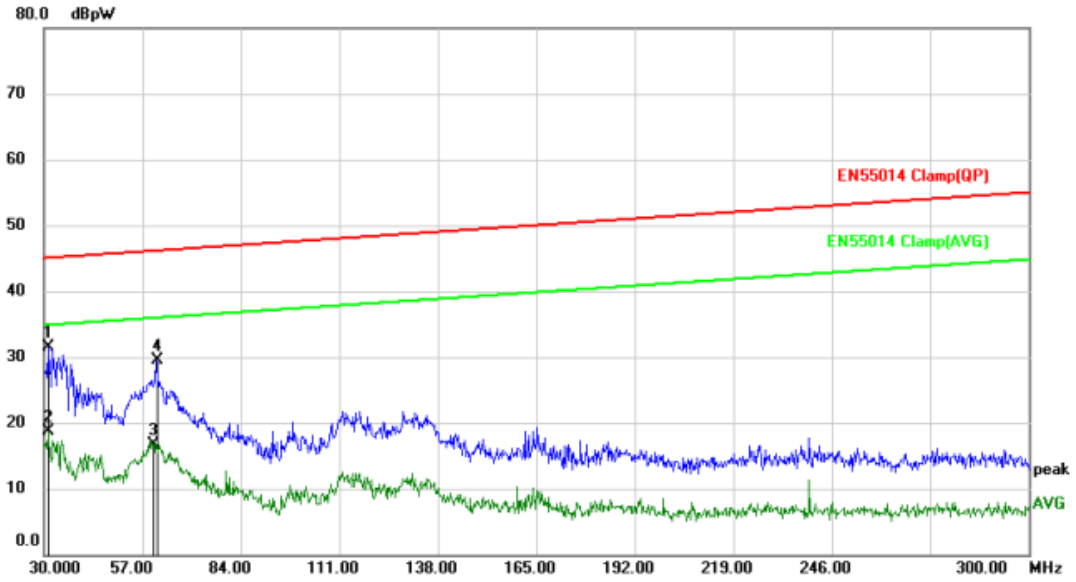
2.4.5 Test Results

Model	:	B NM-089
Test Mode	:	TM1, the worst
Test Voltage	:	230V, 50Hz
Remark	:	AC Mains
Test Date	:	2023-01-05



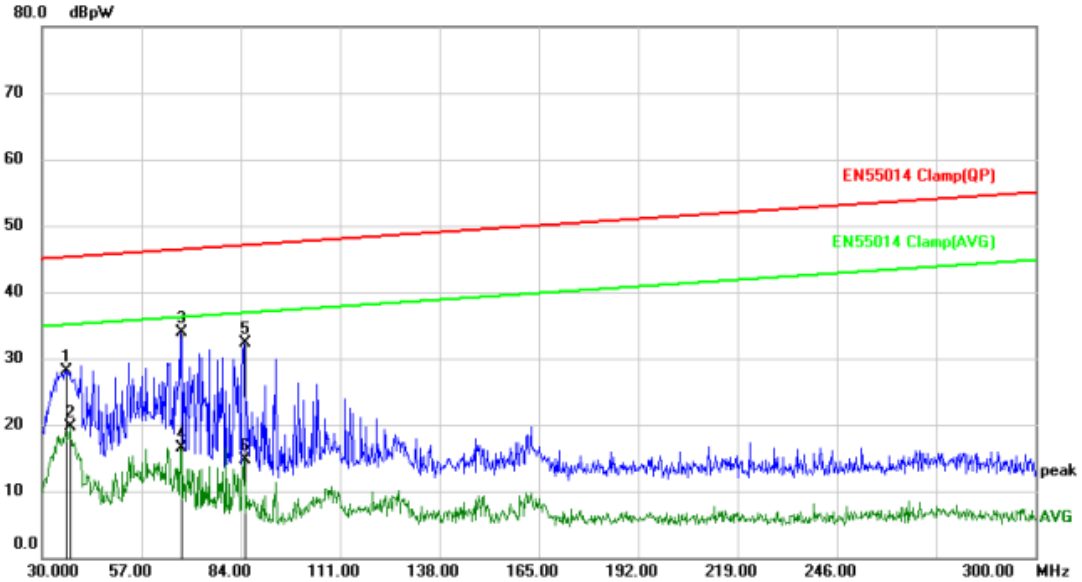
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
37.6000	7.98	25.17	33.15	45.28	-12.13	peak
38.6000	-1.43	24.89	23.46	35.32	-11.86	AVG
52.0000	-5.37	24.34	18.97	35.81	-16.84	AVG
52.5600	5.45	24.27	29.72	45.84	-16.12	peak
125.6400	2.32	23.09	25.41	48.54	-23.13	peak
128.0000	-6.30	22.96	16.66	38.63	-21.97	AVG

Model	:	B NM-089
Test Mode	:	TM1, the worst
Test Voltage	:	230V, 50Hz
Remark	:	Clamp to adaptor
Test Date	:	2023-01-05



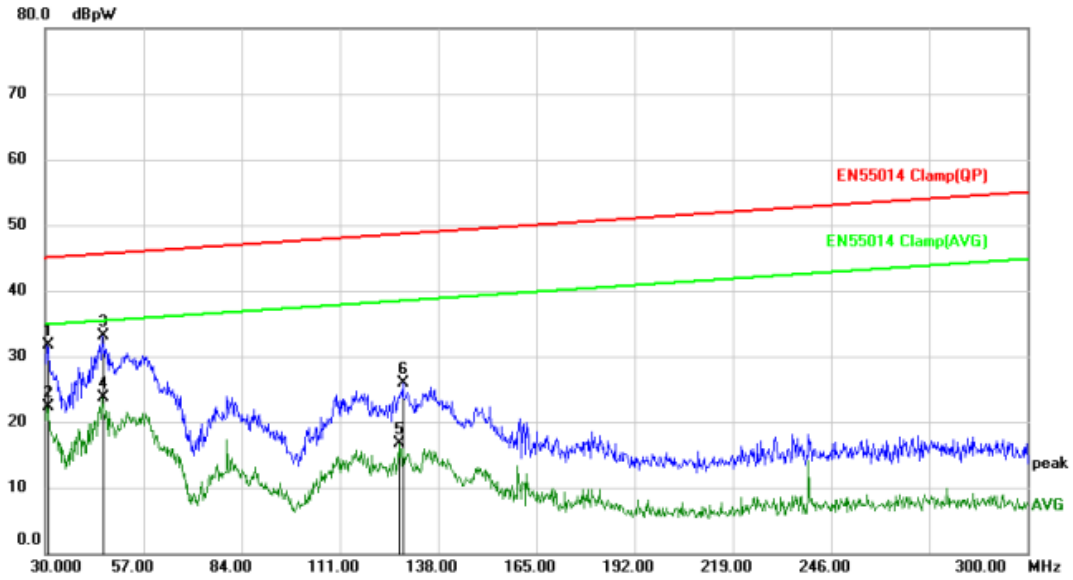
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
31.3200	5.85	25.68	31.53	45.05	-13.52	peak
31.3200	-6.97	25.68	18.71	35.05	-16.34	AVG
59.9600	-7.17	23.90	16.73	36.11	-19.38	AVG
60.8800	5.59	23.96	29.55	46.14	-16.59	peak

Model	:	B NM-089
Test Mode	:	TM1, the worst
Test Voltage	:	230V, 50Hz
Remark	:	Clamp to main unit
Test Date	:	2023-01-05



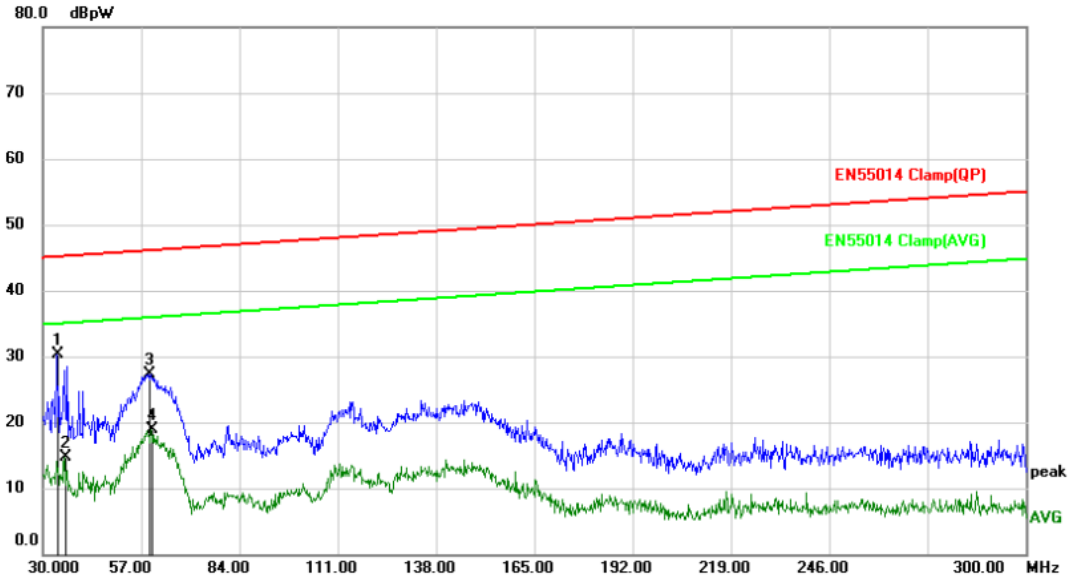
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
36.4000	2.68	25.51	28.19	45.24	-17.05	peak
37.6800	-5.53	25.15	19.62	35.28	-15.66	AVG
67.7200	9.64	24.23	33.87	46.40	-12.53	peak
67.7200	-7.80	24.23	16.43	36.40	-19.97	AVG
84.9600	8.12	24.10	32.22	47.04	-14.82	peak
84.9600	-9.30	24.10	14.80	37.04	-22.24	AVG

Model	:	B NM-089
Test Mode	:	TM1, the worst
Test Voltage	:	120V, 60Hz
Remark	:	AC Mains
Test Date	:	2023-01-05



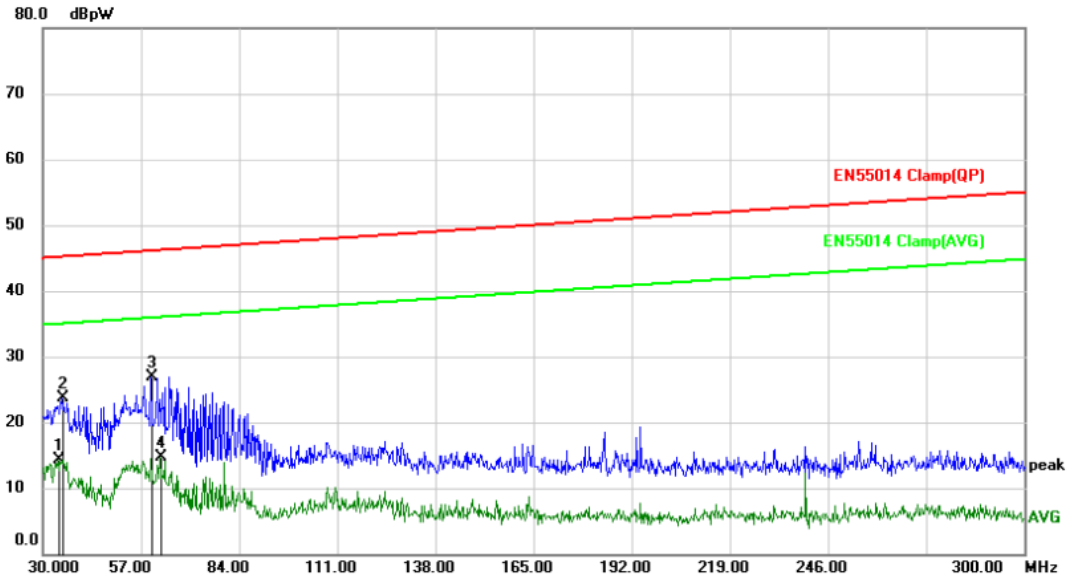
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
30.7200	6.14	25.64	31.78	45.03	-13.25	peak
30.7200	-3.41	25.64	22.23	35.03	-12.80	AVG
45.8000	8.32	24.69	33.01	45.59	-12.58	peak
45.8000	-0.98	24.69	23.71	35.59	-11.88	AVG
127.2800	-6.28	23.00	16.72	38.60	-21.88	AVG
128.5200	3.05	22.93	25.98	48.65	-22.67	peak

Model	:	B NM-089
Test Mode	:	TM1, the worst
Test Voltage	:	120V, 60Hz
Remark	:	Clamp to adaptor
Test Date	:	2023-01-05



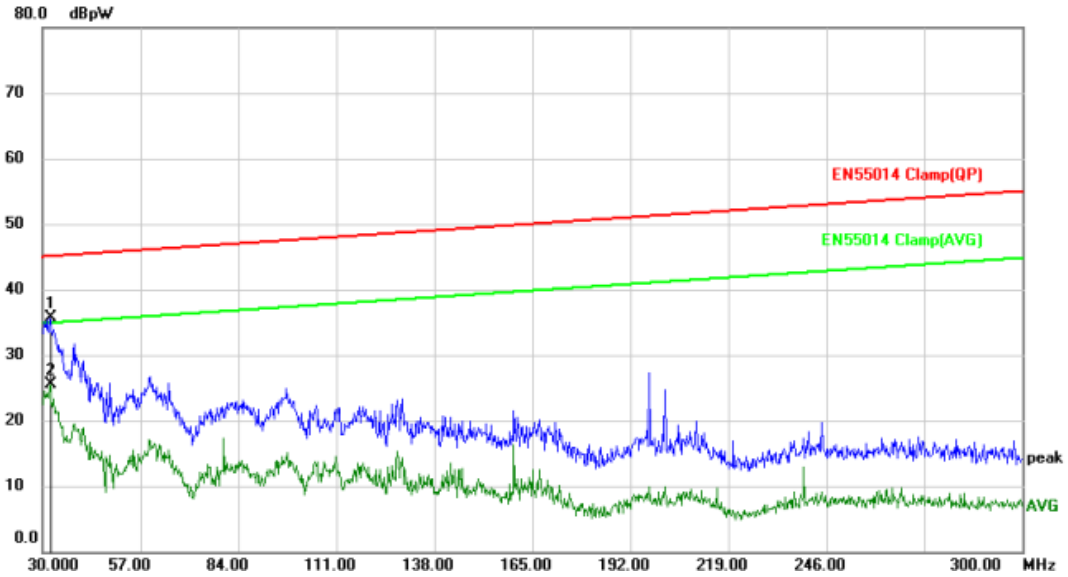
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
33.8000	4.49	25.83	30.32	45.14	-14.82	peak
36.1200	-10.87	25.58	14.71	35.23	-20.52	AVG
58.9200	3.32	23.91	27.23	46.07	-18.84	peak
59.9600	-5.04	23.90	18.86	36.11	-17.25	AVG

Model	:	B NM-089
Test Mode	:	TM1, the worst
Test Voltage	:	120V, 60Hz
Remark	:	Clamp to main unit
Test Date	:	2023-01-05



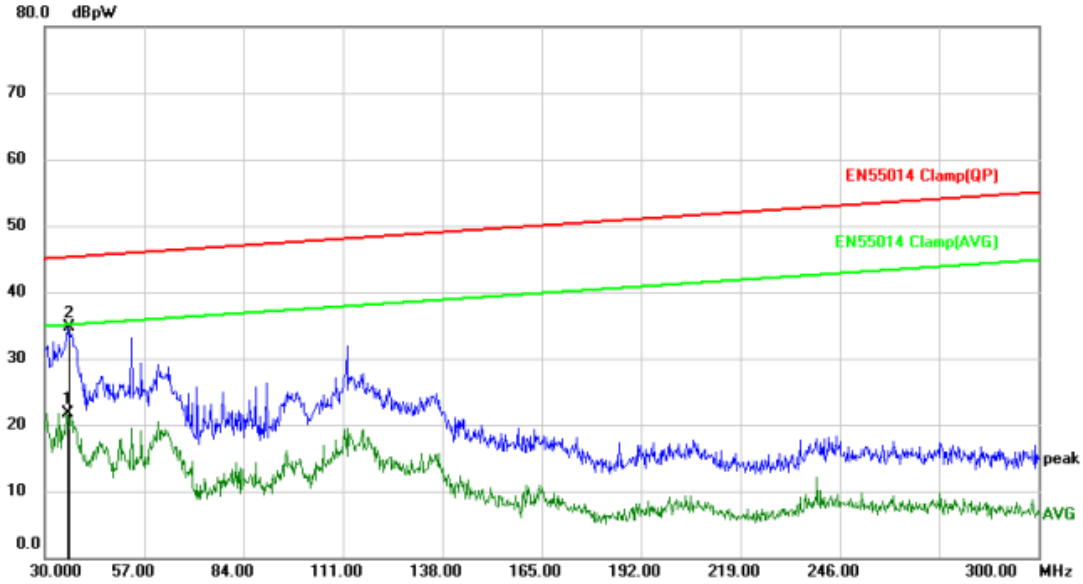
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
34.1600	-11.49	25.85	14.36	35.15	-20.79	AVG
35.3600	-2.10	25.80	23.70	45.20	-21.50	peak
59.9200	3.08	23.90	26.98	46.11	-19.13	peak
62.1600	-9.30	24.05	14.75	36.19	-21.44	AVG

Model	:	NM-089
Test Mode	:	TM1 + Vibrating, the worst
Test Voltage	:	230V, 50Hz
Remark	:	AC Mains
Test Date	:	2023-01-04



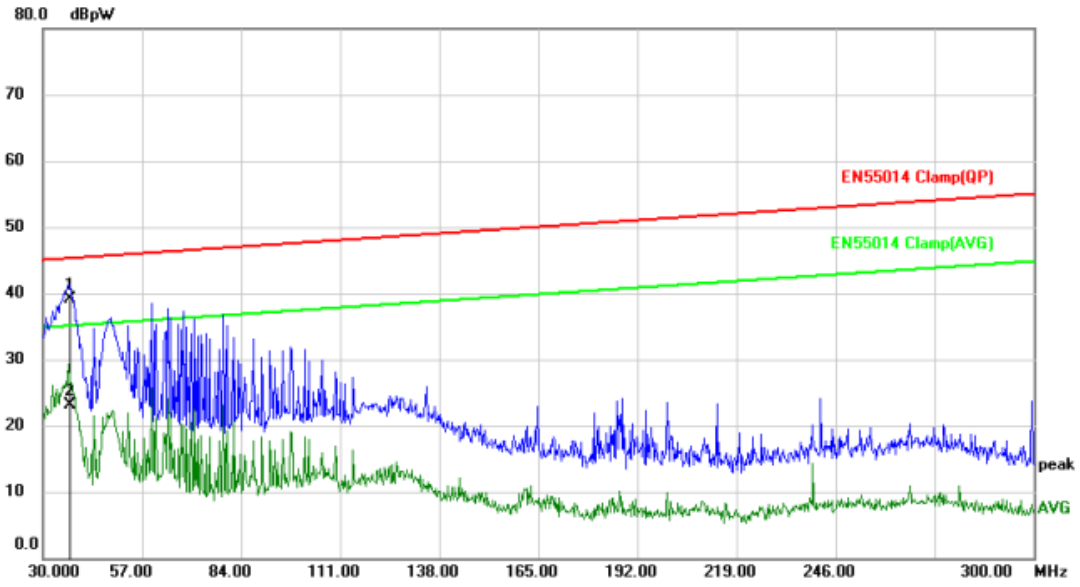
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
32.1600	8.79	26.82	35.61	45.08	-9.47	peak
32.3200	-1.29	26.80	25.51	35.09	-9.58	AVG

Model	:	NM-089
Test Mode	:	TM1 + Vibrating, the worst
Test Voltage	:	230V, 50Hz
Remark	:	Clamp to adaptor
Test Date	:	2023-01-04



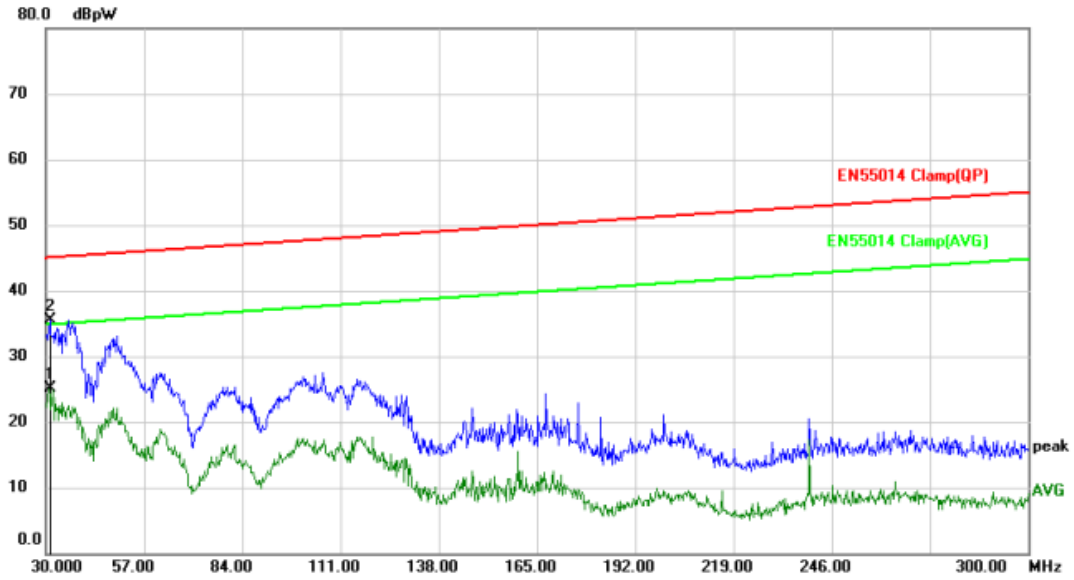
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
36.0400	-4.71	26.33	21.62	35.22	-13.60	AVG
36.2400	8.38	26.31	34.69	45.23	-10.54	peak

Model	:	NM-089
Test Mode	:	TM1 + Vibrating, the worst
Test Voltage	:	230V, 50Hz
Remark	:	Clamp to main unit
Test Date	:	2023-01-04



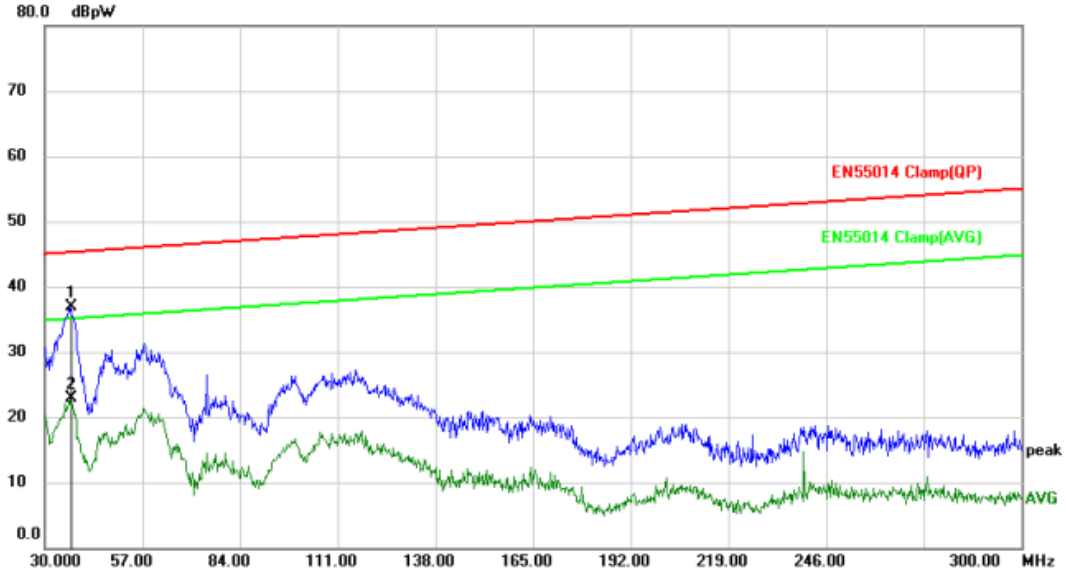
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
37.1600	12.89	26.21	39.10	45.27	-6.17	QP
37.1600	-3.01	26.21	23.20	35.27	-12.07	AVG

Model	:	NM-089
Test Mode	:	TM2 + Vibrating, the worst
Test Voltage	:	120V, 60Hz
Remark	:	AC Mains
Test Date	:	2023-01-04



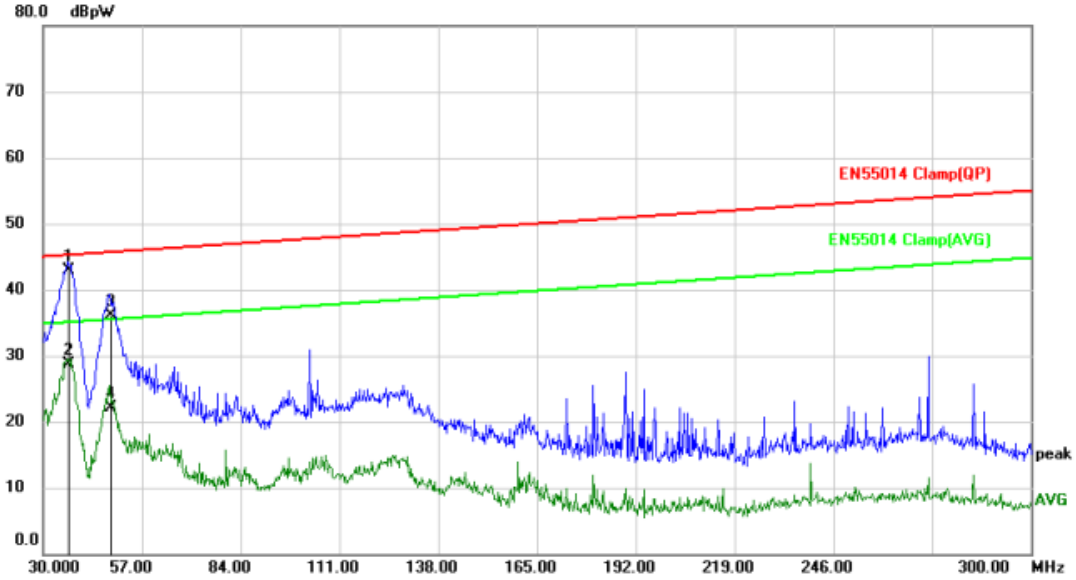
Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
31.0000	-1.93	26.97	25.04	35.04	-10.00	AVG
31.1600	8.58	26.95	35.53	45.04	-9.51	peak

Model	:	NM-089
Test Mode	:	TM2 + Vibrating, the worst
Test Voltage	:	120V, 60Hz
Remark	:	Clamp to adaptor
Test Date	:	2023-01-04



Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
37.2000	10.65	26.20	36.85	45.27	-8.42	peak
37.2000	-3.23	26.20	22.97	35.27	-12.30	AVG

Model	:	NM-089
Test Mode	:	TM2 + Vibrating, the worst
Test Voltage	:	120V, 60Hz
Remark	:	Clamp to main unit
Test Date	:	2023-01-04

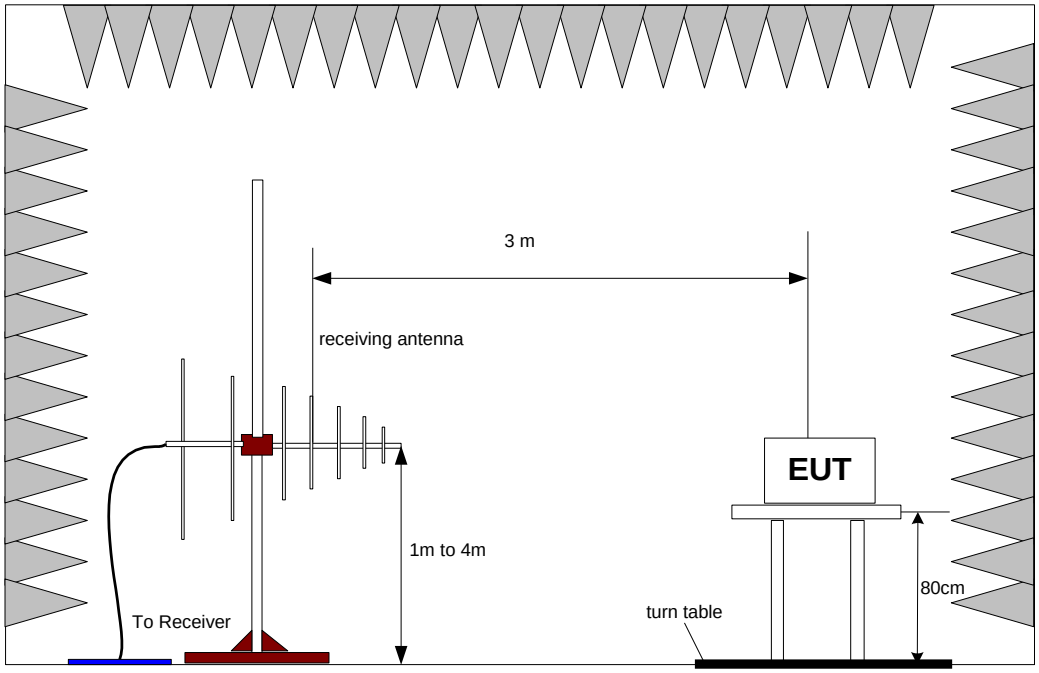


Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
MHz	dBpW	dB	dBpW	dBpW	dB	Detector
36.8400	16.65	26.25	42.90	45.25	-2.35	QP
36.8400	2.55	26.25	28.80	35.25	-6.45	AVG
48.1200	10.87	25.33	36.20	45.67	-9.47	QP
48.1200	-3.13	25.33	22.20	35.67	-13.47	AVG

2.5 Radiated Disturbance (30MHz to 1000MHz)

2.5.1 Test Method

The EUT was set up in a semi-anechoic chamber on a remotely controlled turntable and placed on a non-conductive. Guidance on how to arrange the EUT during the measurements can be found in 5.3.4.3.
Table-top EUT shall be placed at (0,8 ± 0,05) m above the reference plane of the test site selected for measurement.
Floor standing EUT shall be placed at (0,12 ± 0,04) m above the reference plane of the test site selected for measurement.
Where the EUT comprises multiple parts, these shall be arranged to minimise, as far as it is reasonably practical, the test volume. A minimum distance of 0,1 m shall be maintained between these parts.
A prescan of the EUT emissions profile was made while varying the antenna-to-EUT azimuth and antenna-to-EUT polarization using a peak detector; measurements were taken at a 3m distance. Using the prescan list of the highest emissions detected, their bearing and associated antenna polarization, the EUT was then formally measured using a Quasi-Peak detector. The readings were maximized by adjusting the antenna height, polarization and turntable azimuth, in accordance with the specification.



2.5.2 Specification Limits

Radiated disturbance limits in the frequency range 30MHz to 1000MHz at a measuring distance of 3 m	
Frequency range MHz	Quasi-peak limits dB(μV/m)
30 to 230	40
230 to 1000	47

Radiated disturbance limits in the frequency range 30MHz to 1000MHz at a measuring distance of 10 m	
Frequency range MHz	Quasi-peak limits dB(μV/m)
30 to 230	30
230 to 1000	37

Remark：
Level=Reading Level + Correction Factor
Correction Factor=Antenna Factor + Cable Loss
(The Reading Level is recorded by software which is not shown in the sheet)

2.5.3 Test Setup

N/A

2.5.4 Test Location

This test was carried out in 3m SAC Test Location.

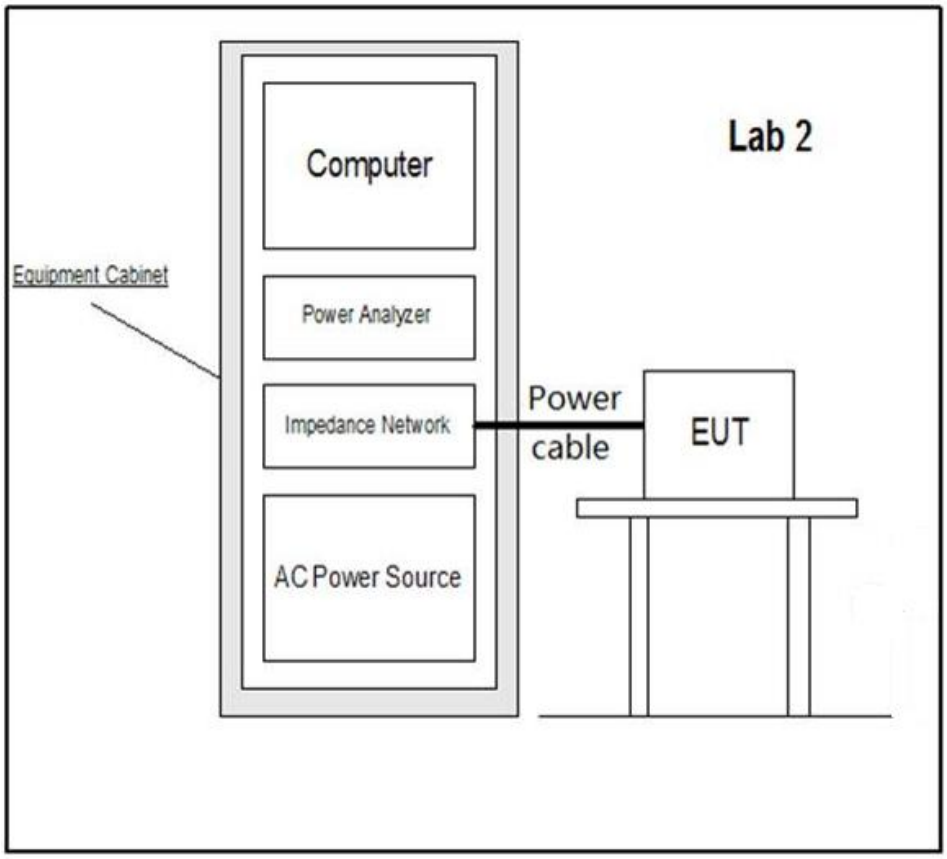
2.5.5 Test Results

N/A

2.6 Harmonic current emission

2.6.1 Test Method

Harmonic current test should be conducted with the user's operation control or automatic programs set to the mode expected to produce the maximum total harmonic current under normal operating conditions.
Specific test conditions for the measurement of harmonic currents associated with some types of equipment are given in test equipment list.



2.6.2 Specification Limits

Limits for class A Equipment	
Harmonic order n	Maximum permissible harmonic current A
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
15≤ n≤ 39	0.15(15/n)
Even harmonics	
2	1.08

Limits for class A Equipment	
4	0.43
6	0.30
8≤ n ≤40	0.23(8/n)

2.6.3 Test Setup

N/A

2.6.4 Test Location

This test was carried out in Harmonic Flicker Test area.

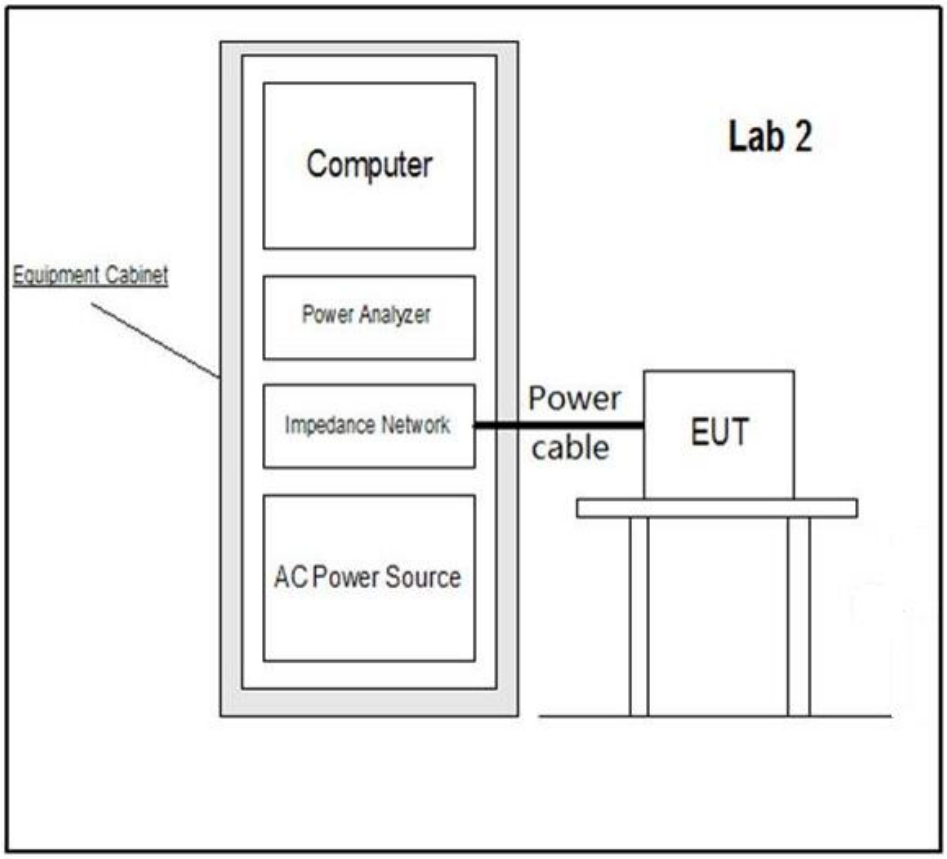
2.6.5 Test Results

N/A

2.7 Flicker

2.7.1 Test Method

Flicker test should be conducted with the user's operation controls or automatic programs set to the mode expected to produce the most unfavourable sequence of voltage change, using only those combinations of controls and programmes which are mentioned by the manufacturer in the instruction manual, or are otherwise likely to be used.



2.7.2 Specification Limits

The value of *P*st shall not be greater than 1.0
The value of *P*lt shall not be greater than 0.65
*T*max, the accumulated time value of *d*(t) with a deviation exceeding 3.3% during a single voltage change at the EUT terminals, shall not exceed 500ms
The maximum relative steady-state voltage change, *d*c, shall not exceed 3.3%
The maximum relative voltage change *d*max, shall not exceed

a) 4% without additional conditions

b) 6% for equipment which is:

- Switched manually, or
- Switched automatically more frequently than twice per day, and also has either a delayed start, or manual restart, after a power supply interruption

c) 7% for equipment which is:

- Attended whilst in use, or

- Switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart or manual restart, after a power supply interruption

2.7.3 Test Setup

2.7.4 Test Location

This test was carried out in Harmonic Flicker Test area.

2.7.5 Test Results

Results for Configuration and Mode: AC powered/TM1 (B NM-089), TM1+Vibarting (NM-089)

Performance assessment of the EUT made during this test: Pass

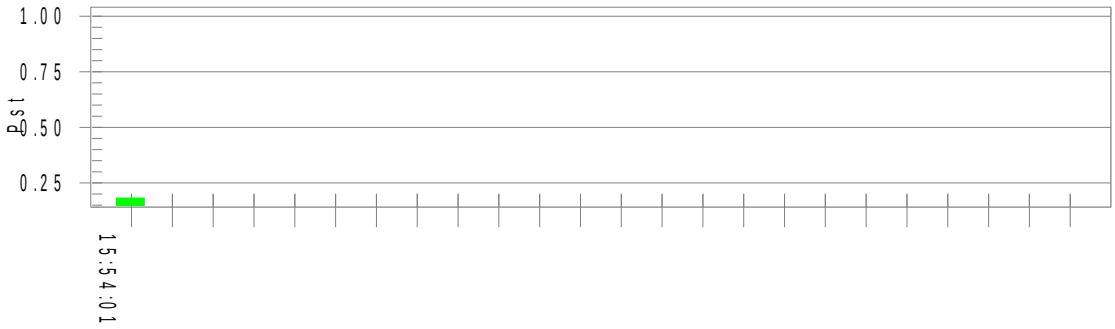
Detailed results are shown below.

Test date: 2022-12-27

Model: B NM-089

Test category: dt,dmax,dc and Pst (European limits) **Test Margin: 100**
Test duration (min): 10
Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Parameter values recorded during the test:

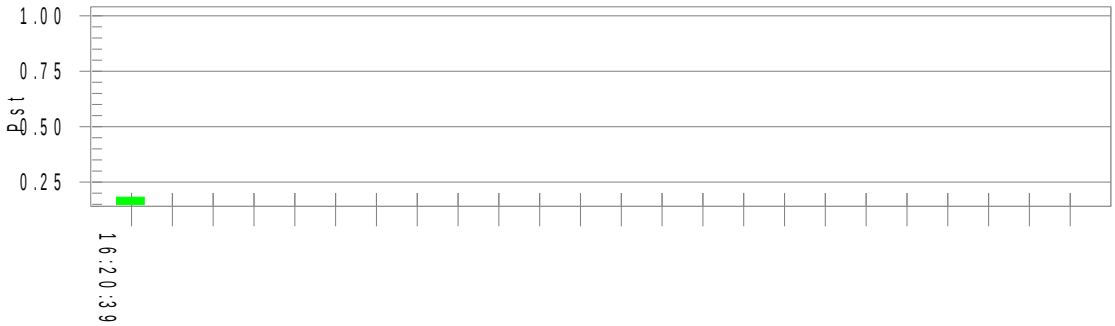
Vrms at the end of test (Volt):	**230.54**			
Highest dt (%):		**Test limit (%):**		
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.182**	**Test limit:**	**1.000**	**Pass**

Model: NM-089

Test category: dt,dmax,dc and Pst (European limits) **Test Margin: 100**
Test duration (min): 10

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

Pst_i and limit line **European Limits**



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.29**			
Highest dt (%):		**Test limit (%):**		
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.182**	**Test limit:**	**1.000**	**Pass**

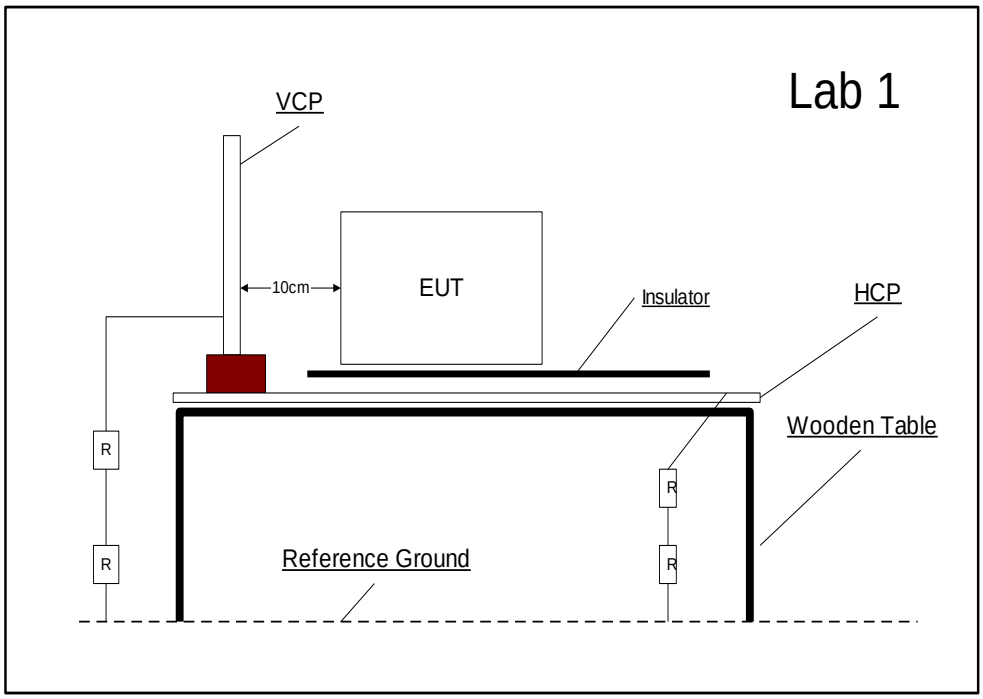
2.8 Electrostatic discharge immunity test

2.8.1 Test Method

The equipment under test including associated cabling was configured on but insulated from, using a 0.5mm isolator, a horizontal coupling plane fitted to the top of a 0.8m non-conductive table for table-top equipment; and on a 0.1m insulated support for floor standing equipment; above a ground reference plane all within a test laboratory.

Using the air discharge method for non-metallic parts, contact discharge method for metallic parts with both vertical and horizontal couple plane discharge methods for the sides of the equipment under test, the required electrostatic discharge voltage levels in both voltage polarities were applied at the detailed pulse repartition rate.

During this testing any anomalies in the equipment under tests performance was recorded.



2.8.2 Specification Limits

Required Test Levels				Performance Criteria
Discharge type	Discharge Level (kV)		Number of discharges per location (each polarity)	
	Positive	Negative		
Air – Direct	8	8	10	B
Contact – Direct	4	4	10	B
Contact – Indirect	4	4	10	B

2.8.3 Test Setup and Teat point

Test Setup

X: Contact Discharge, O: Air Dischage

Test point

2.8.4 Test Location

This test was carried out in ESD room.

2.8.5 Test Results

Results for Configuration and Mode: TC1, TC2/TM2 (B NM-089), TM2+Vibarting (NM-089)

Performance assessment of the EUT made during this test: Pass

Detailed results are shown below.

Test date: 2023-01-10

Test Point	Discharge	Results: Met Performance Criteria									
		2kV		4kV		6kV		8kV		15kV	
		+	-	+	-	+	-	+	-	+	-
HCP	Contact	N/A	N/A	A	A	N/A	N/A	N/A	N/A	N/A	N/A
VCP	Contact	N/A	N/A	A	A	N/A	N/A	N/A	N/A	N/A	N/A
Each conductive location touchable by hand	Contact	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Each nonconductive location touchable by hand	Air	N/A	N/A	N/A	N/A	N/A	N/A	A	A	N/A	N/A
N/A	Not Appliance										

Remark: No observable change.

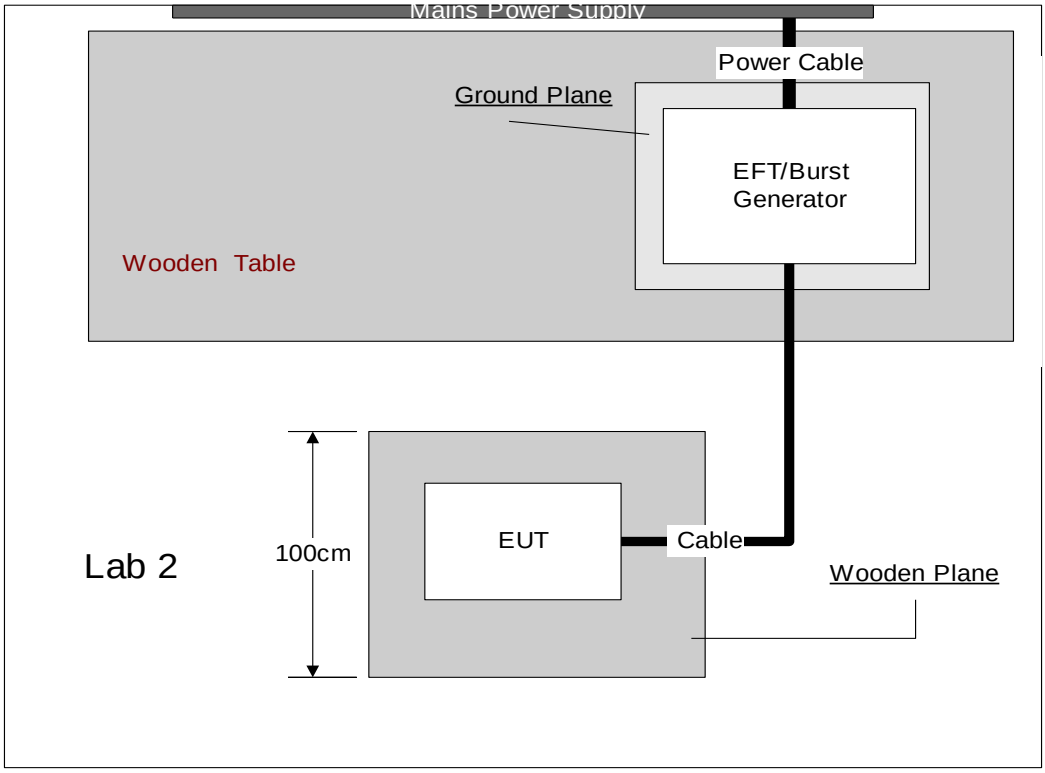
2.9 Electrical fast transient /burst immunity test

2.9.1 Test Method

The equipment under test including associated cabling was configured on but insulated from, using a 0.1 m isolator, a horizontal coupling plane fitted to the top of a 0.8 m non-conductive table for table-top equipment; and on a 0.1 m insulated support for floor standing equipment; above a ground reference plane all within a test laboratory.

Using a CDN for power ports, capacitive coupling clamp for signal and control ports and a 33nF coupling capacitor for earth ports, the required fast transient burst voltage levels in both voltage polarities were applied at the detailed pulse repartition rate and duration of test.

During this testing any anomalies in the equipment under tests performance was recorded.



2.9.2 Specification Limits

Required Test Levels Input and output a.c. power ports					
Line Under Test	Level (kV)	Repetition Rate (kHz)	Test Duration	Coupling Method	Performance Criteria
Input and output a.c. power ports	± 1.0	5 kHz	2 min per polarity	Direct	B
For extra low voltage a.c. ports and output a.c. ports, this testing is only applicable to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification.					

Required Test Levels ports for signal and control lines					
Line Under Test	Level (kV)	Repetition Rate (kHz)	Test Duration	Coupling Method	Performance Criteria
Signal and control lines	± 0.5	5 kHz	2 min per polarity	Direct	B
Applicable only to ports interfacing with cables whose total length can exceed 3m according to the manufacturer’s function specification.					

2.9.3 Test Setup

2.9.4 Test Location

This test was carried out in EMS Test Location.

2.9.5 Test Results

Results for Configuration and Mode: TC1, TC2/TM2 (B NM-089), TM2+Vibarting (NM-089)

Performance assessment of the EUT made during this test: Pass

Detailed results are shown below.

Test date: 2023-01-10

Tabulated Results for Fast Transient Burst Immunity					
Line under test	Test Level (V/m)	Repetition Rate	Test Duration	Coupling Method	Result
Power line	± 1.0 kV	5 kHz	2 min	CDN	A

Remark: No observable change.

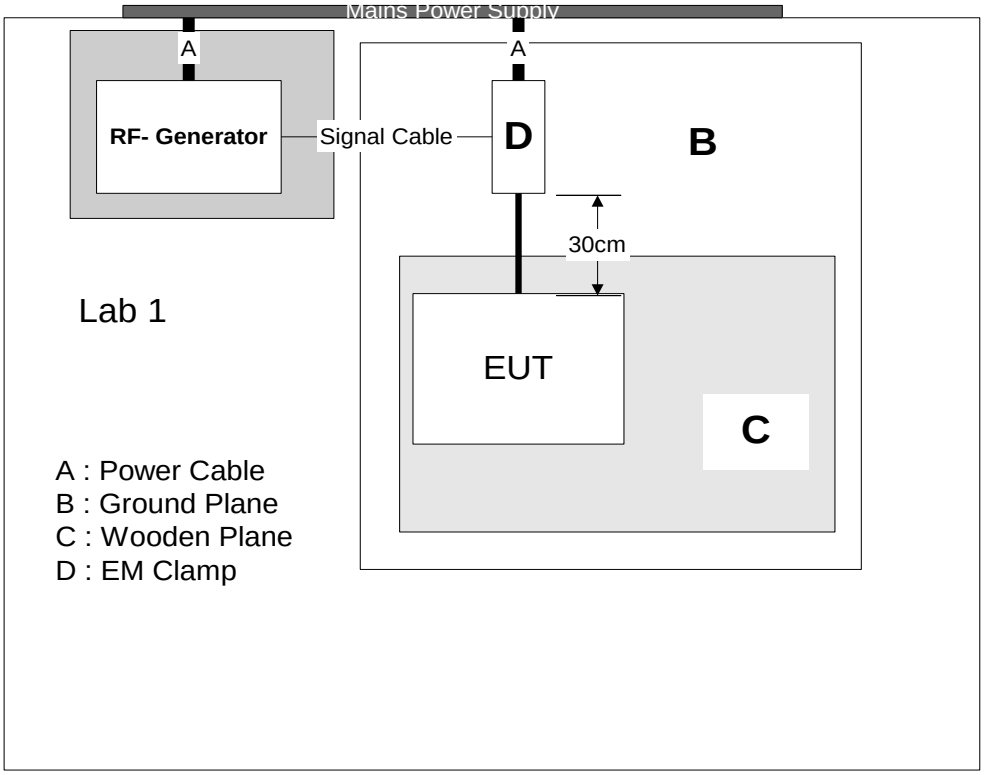
2.10 Immunity to conducted disturbances, induced by radio-frequency fields

2.10.1 Test Method

The equipment under test was configured, on but insulated from, using a 0.1 m isolator, a horizontal coupling plane fitted to the top of a 0.1 m non-conductive table for table-top equipment, above a ground reference plane all within a test laboratory.

All associated cabling was configured, on but insulated from, using a 50 mm isolator, the same horizontal coupling plane as the equipment under test.

Using CDNs, EM Clamps or current clamps as appropriate, the power ports and applicable signal and control ports were subjected to the required, pre calibrated RF injected signal strength, modulated as described, swept over the frequency range of test.
During this testing any anomalies in the equipment under tests performance was recorded.

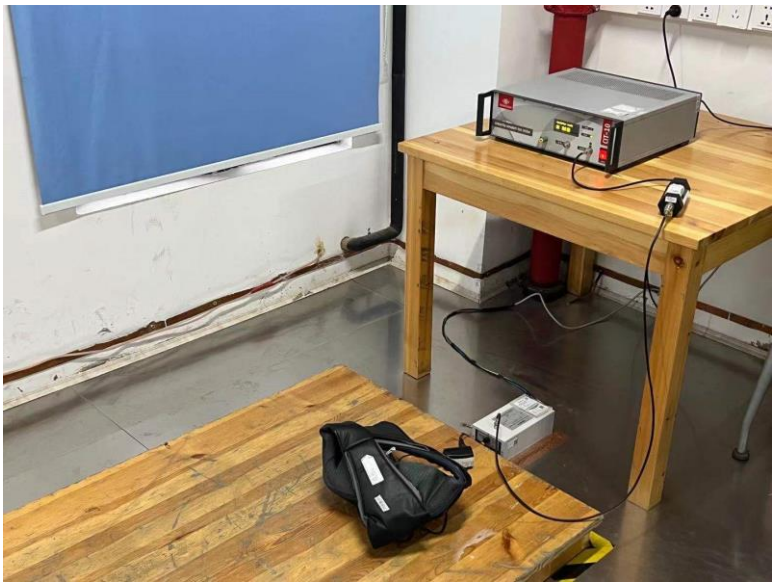


2.10.2 Specification Limits

Required Test Levels Input and output a.c. power ports						
Line Under Test	Frequency Range (MHz)	Level (V/m)	Modulation	Step Size (%)	Dwell (s)	Performance Criteria
Input and output a.c. power ports	0.15 to 230	3	AM (80 %,1 kHz, sine wave)	1	1	A
For extra low voltage a.c ports and output a.c. ports, this testing is only applicable to ports interfacing with cables whose total length may exceed 3 m according to the manufacturer's functional specification.						

Required Test Levels Ports for signal lines and control lines						
Line Under Test	Frequency Range (MHz)	Level (V/m)	Modulation	Step Size (%)	Dwell (s)	Performance Criteria
Signal and control port	0.15 to 230	1	AM (80 %,1 kHz, sine wave)	1	1	A
Applicable only to ports interfacing with cables whose total length may exceed 3m according to the manufacturer’s function specification.						

2.10.3 Test Setup



2.10.4 Test Location

This test was carried out in EMS Test Location.

2.10.5 Test Results

Results for Configuration and Mode: TC1, TC2/TM2 (B NM-089), TM2+Vibarting (NM-089)

Performance assessment of the EUT made during this test: Pass

Detailed results are shown below.

Test date: 2023-01-09

Tabulated Results for Injected current						
Line and sensitive frequency under test	Test Level	Step	Dwell Time	Coupling Method	Modulation	Result
Power line	3V	1%	1s	CDN	1kHz, 80%	A

Remark: No observable change.

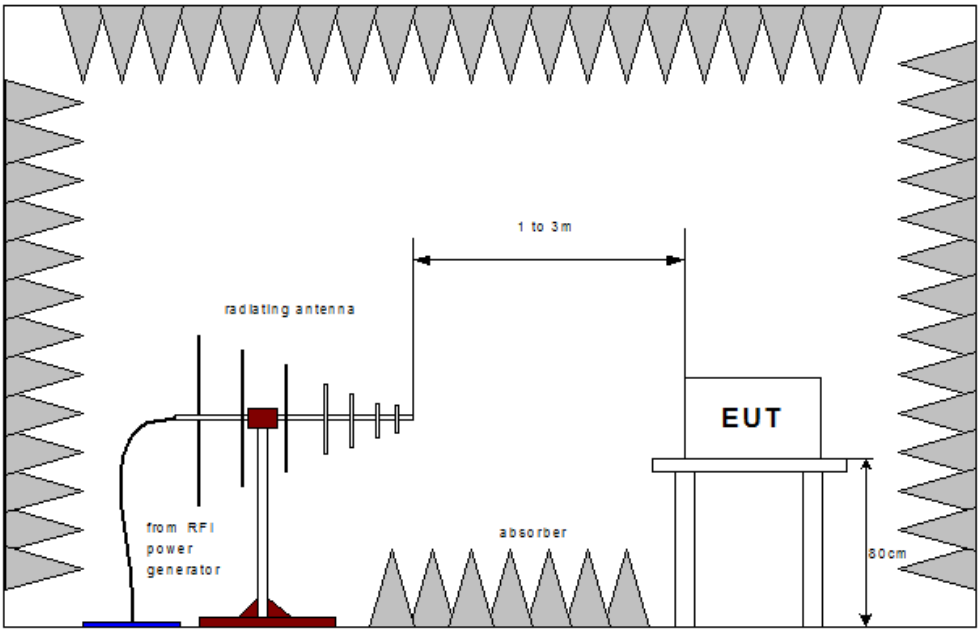
2.11 Radiated, radio-frequency, electromagnetic field immunity test

2.11.1 Test Method

The equipment under test including associated cabling was configured, on a 0.8 m non-conductive table for table-top equipment and on a 0.12 m insulated support for floor standing equipment; with a pre-calibrated semi anechoic chamber.

All four side of the equipment under test were subjected to the required RF field strength, modulated as described, swept over the frequency range of test with the antenna positioned in both horizontal and vertical polarizations.

During this testing any anomalies in the equipment under tests performance was recorded.



2.11.2 Specification Limits

Required Test Levels					Performance Criteria
Frequency Range (MHz)	Level (V/m)	Modulation	Step Size (%)	Dwell (s)	
80 to 1000	3	AM (80 %,1 kHz, sine wave)	1	1	A
Note 1. EUT powered at one of the Nominal input voltages and frequencies					

2.11.3 Test Setup

N/A

2.11.4 Test Location

This test was carried out in RS Test Location.

2.11.5 Test Results

N/A

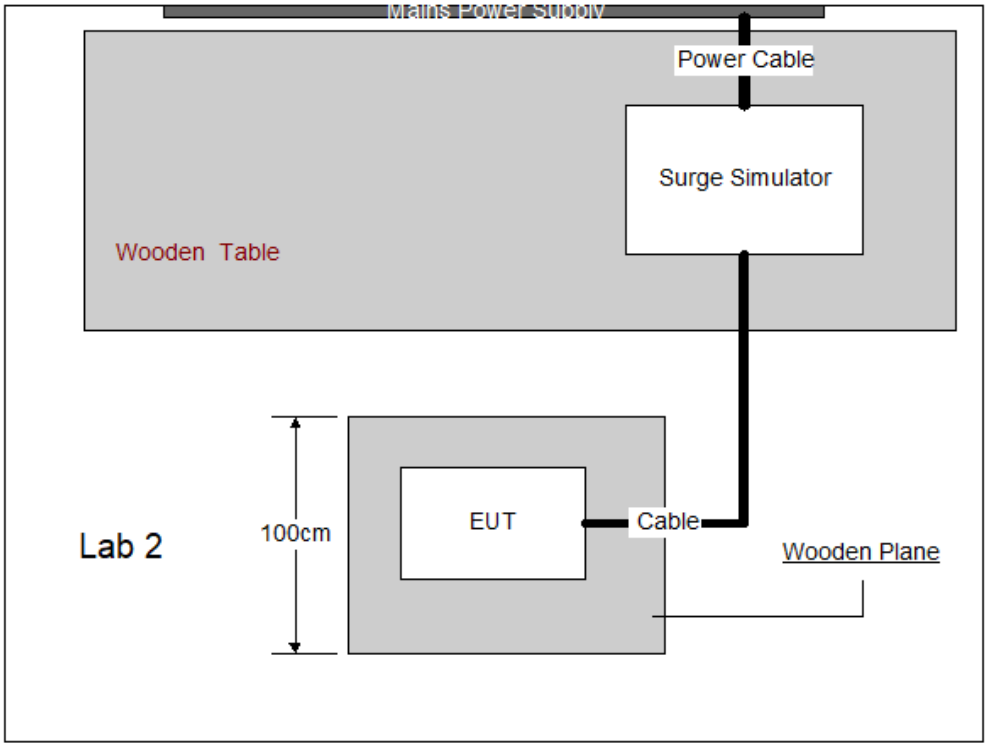
2.12 Surge immunity test

2.12.1 Test Method

The equipment under test including associated cabling was configured, on a 0.8 m non-conductive table for table-top equipment and on a 0.1 m insulated support for floor standing equipment above a ground reference plane all within a test laboratory.

Using CDNs for power ports and appropriate coupling methods for applicable signal and control ports, the required number of surges was applied for each surge voltage level using both positive and negative surge voltage polarities. Surges were applied at the power line frequency phase angles and repartition rates detailed.

During this testing any anomalies in the equipment under tests performance was recorded.



2.12.2 Specification Limits

Characteristics	Test Levels	Performance Criteria
Wave-shape data Test levels line to line with 2Ω impedance line to earth with 12Ω impedance	1.2/50 µs ± 1.0 kV ±2.0 kV	B
Note in addition to the specified test level, all lower levels as detailed in IEC 61000-4-5 should also be satisfied.		

2.12.3 Test Setup

2.12.4 Test Location

This test was carried out in EMS Test Location.

2.12.5 Test Results

Results for Configuration and Mode: TC1, TC2/TM2 (B NM-089), TM2+Vibarting (NM-089)

Performance assessment of the EUT made during this test: Pass

Detailed results are shown below.

Test date: 2023-01-10

Tabulated Results for Surge Immunity (Power Ports)							
Line Name	Coupling	Level	Polarity	Phase Angle	No of Pulses	Repetition Rate	Result
Power line	Live to Neutral	1.0kV	NEGATIVE	270 deg	5	60 sec	A
Power line	Live to Neutral	1.0kV	POSITIVE	90 deg	5	60 sec	A

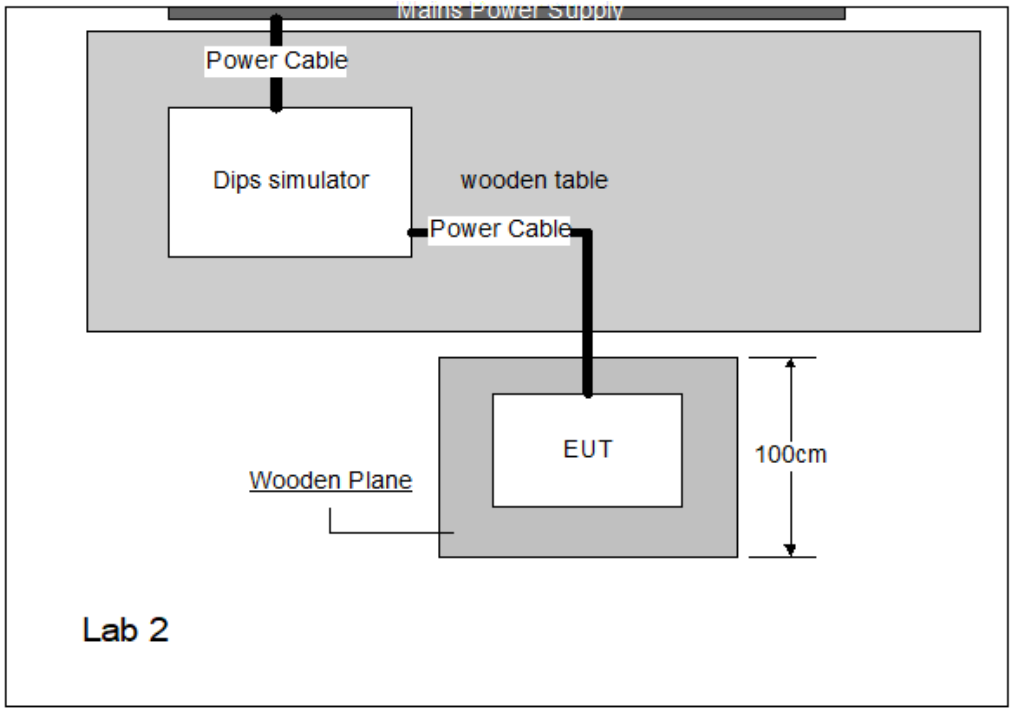
Remark: No observable change.

2.13 Voltage dips, short interruptions and voltage variations immunity tests

2.13.1 Test Method

The equipment under test including associated cabling was configured, on a 0.8 m non-conductive table for table-top equipment and on a 0.1 m insulated support for floor standing equipment above a ground reference plane all within a test laboratory.

Using a programmable power supply the equipment under test was subjected to the detailed supply voltage dips and interruptions. The required supply phase synchronization and test repetition rate, detailed, was controlled by the programmable power supply.
During this testing any anomalies in the equipment under tests performance was recorded.



2.13.2 Specification Limits

Voltage Dips				
Voltage Dips in % UT	Test level in % UT	Duration		Performance Criteria
		50Hz	60Hz	
100	0	½ cycle	½ cycle	C
60	40	10 cycles	12 cycles	C
30	70	25 cycles	30 cycles	C
UT is the rated voltage of the Equipment Under Test				

2.13.3 Test Setup

2.13.4 Test Location

This test was carried out in EMS Test Location.

2.13.5 Test Results

Results for Configuration and Mode: TC1, TC2/TM2 (B NM-089), TM2+Vibarting (NM-089)

Performance assessment of the EUT made during this test: Pass

Detailed results are shown below.

Test date: 2023-01-10

Tabulated Results for Voltage Dip and Short Interruption					
Line under test	Vnom	Operating Frequency	Test Level	Duration	Result
Power line	230 V~	50 Hz	0% of Vnom	½ cycle	A
Power line	230 V~	50 Hz	40% of Vnom	10 cycles	A
Power line	230 V~	50 Hz	70% of Vnom	25 cycles	A

Tabulated Results for Voltage Dip and Short Interruption					
Line under test	Vnom	Operating Frequency	Test Level	Duration	Result
Power line	120 V~	60 Hz	0% of Vnom	½ cycle	A
Power line	120 V~	60 Hz	40% of Vnom	12 cycles	A
Power line	120 V~	60 Hz	70% of Vnom	30 cycles	A

Remark: No observable change.

3 Test Equipment Information

3.1 General Test Equipment Used

Conducted Emission:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
EMI Test Receiver	R&S	ESR 3	SBE0005-1	2022-07-14	2023-07-13
LISN	R&S	ENV 216	SBE0005-3	2022-07-14	2023-07-13
LISN	AFJ/Italy	LS16C\10	SBE0028-1	2022-03-02	2023-03-01
Voltage probe	Schwarzbeck	TK9420+VT9420	SBE0005-4	2022-07-13	2023-07-12
EMI Test Software	Farad	EZ-EMC	Version: V.EMCE-3A1		

Discontinuous conducted disturbance voltage:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
Click Analyzer	AFJ/Italy	DDA55	SBE0028	2022-03-02	2023-03-01
LISN	AFJ/Italy	LS16C\10	SBE0028-1	2022-03-02	2023-03-01
EMI Test Software	AFJ	CMS	Version: 4.03		

Disturbance Power:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
EMI Test Receiver	R&S	ESR 3	SBE0005-1	2022-07-14	2023-07-13
Decouple Clamp	TESEQ	CMAD 20B	SBE0006-2	N/A	N/A
Absorbing Clamp (With 6dB Attenuation)	TESEQ	MDS 21B	SBE0006-1	2022-10-17	2023-10-16
EMI Test Software	Farad	EZ-EMC	Version: V.EMCE-3A1		

Radiated Electromagnetic Disturbances:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
EMI Test Receiver	R&S	ESR 3	SBE0005-1	2022-07-14	2023-07-13
Triple-loop Antenna	Daze	ZN30401	SBE0015	2022-07-27	2023-07-28
EMI Test Software	Farad	EZ-EMC	Version: V.EMCE-3A1		

Harmonic & Flicker:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
3kVA AC Power Source	CI	300liX-CTS-208-413	SBE0008-1	2022-07-13	2023-07-12
Harmonic/Flicker Test System	CI	100-CTS-115	SBE0008-2	2022-07-13	2023-07-12
Test Software	CI	CTS 4	Version: 4.29.0		

Radiated Emission:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
EMI Test Receiver	R&S	ESR 3	SBE0007-1	2022-07-14	2023-07-13
BiConiLog Antenna	SCHWARZBECK	VULB 9163	SBE0007-3	2022-12-02	2023-12-01
Pre-amplifier	SCHWARZBECK	BBV9743	SBE0007-2	2022-07-14	2023-07-13
EMI Test Software	Farad	EZ-EMC	Version: V.EMCE-3A1		

ESD:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
ESD Generator	EMTEST	NX 30.1	SBE0009-1	2022-04-20	2023-04-19
Test Software	EMTEST	31392	Version：V06.00		

Continuous RF Electromagnetic Radiated Field Disturbances:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
Signal Generator	R&S	SMB100A	SBE0012-1	2022-07-14	2023-07-13
RF Amplifier	Milmega	80RF1000-175	SBE0012-5	N/A	N/A
Power Meter	R&S	NRP2	SBE0012-2	2022-07-14	2023-07-13
Power Sensor	R&S	NRP6	SBE0012-3	2022-07-14	2023-07-13
Power Sensor	R&S	NRP6	SBE0012-4	2022-07-14	2023-07-13
Log-periodic Antenna	Schwarzbeck	STLP 9128	SBE0032-5	N/A	N/A
Field Probes	ETS	HI-6105-20	SBE0012-7	2022-12-23	2023-12-22
Test Software	R&S	EMC32	Version: 10.50.40		

EFT, Surge, PFMF & DIPS:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
EMS test system	EMC Partner	IMU4000F-S-D-V	SBE0010-1	2022-07-27	2023-07-28
Capacitive coupling clamp	EMC Partner	CN-EFT1000	SBE0010-2	2022-07-13	2023-07-12
Inductive Coil	EMC Partner	MF1000-1	SBE0010-3	2022-07-13	2023-07-12
Test Software	EMC Partner	EPOS	Version: 3.9.28		

Injected Currents:					
Test Equipment	**Manufacturer**	**Model No.**	**Equipment No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
Conducted Immunity Test System	Frankonia	CIT-10-75	SBE0011-1	2022-07-13	2023-07-12
CDN	Frankonia	CDN M2+M3	SBE0011-2	2022-07-13	2023-07-12
Electromagnetic Injection Clamp	Frankonia	EMCL	SBE0011-3	2022-07-14	2023-07-13
6dB Attenuation	Frankonia	DAM 75W	SBE0011-4	2022-07-13	2023-07-12
Test Software	Frankonia	Hubert	Version: 1.4.1		

4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

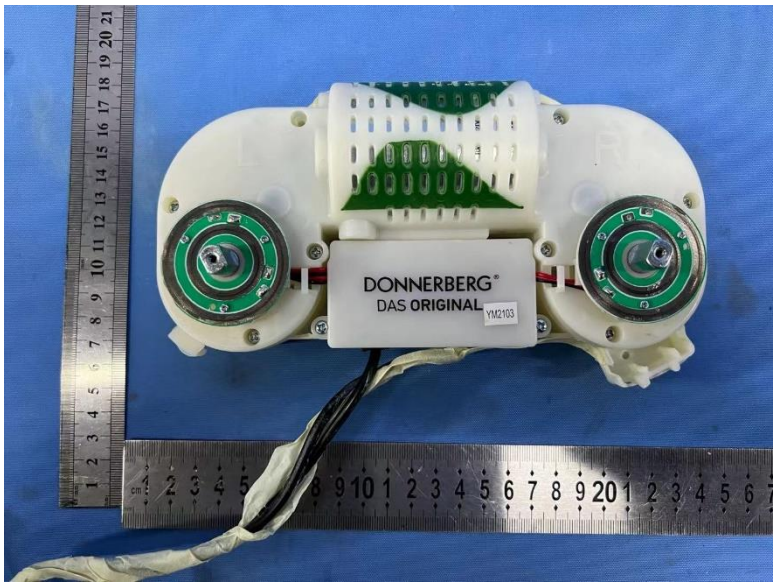
System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Conducted Emission 150kHz-30MHz	2.8dB
Uncertainty for Power Clamp test	3.7dB

5 Photographs

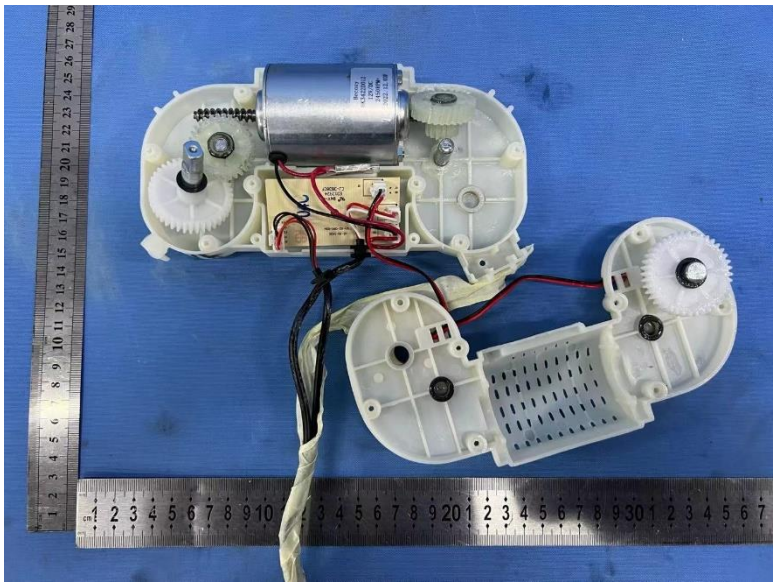
Details of: General view for B NM-089

Details of: Inner view of B NM-089

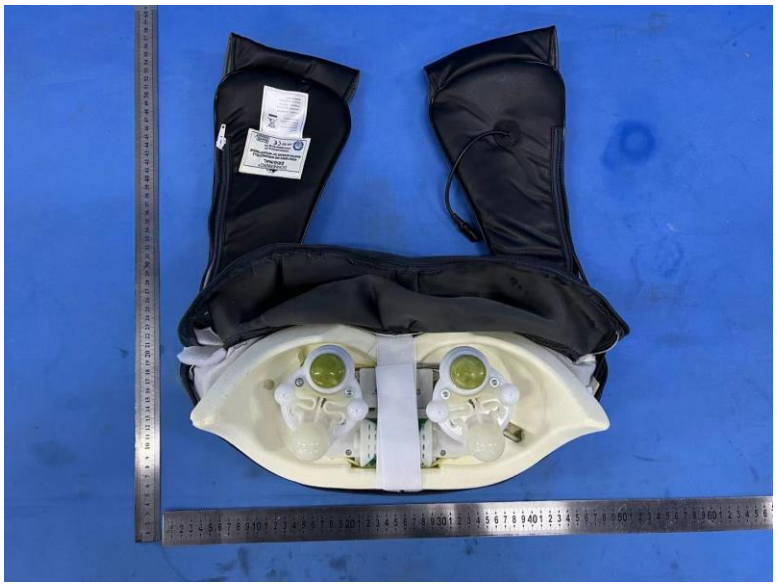
Details of: Inner view of B NM-089



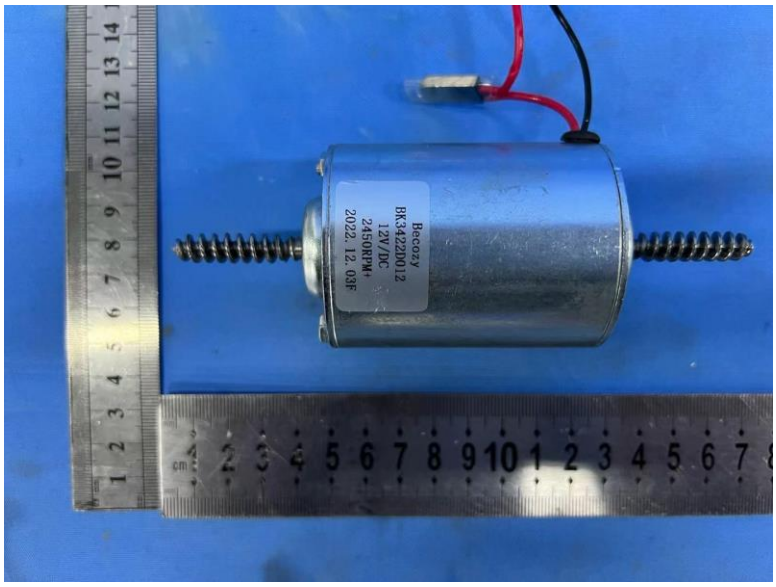
Details of: Inner view of B NM-089



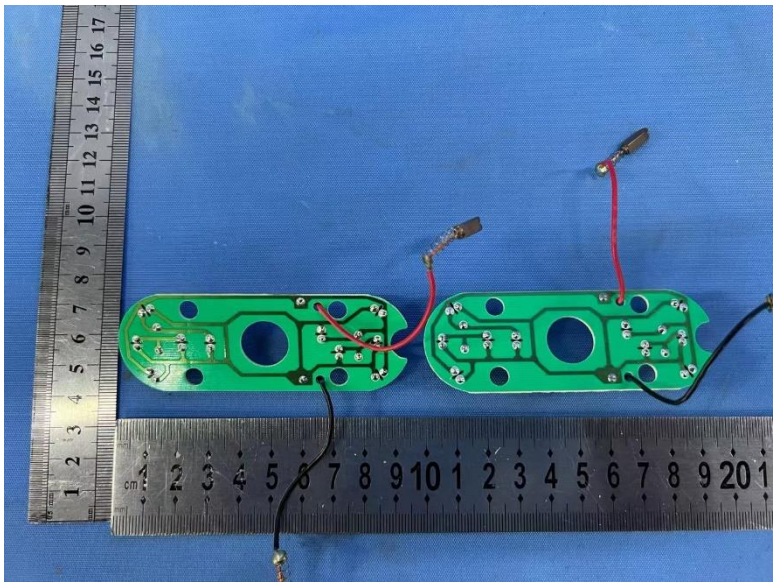
Details of: Inner view of J NM-089



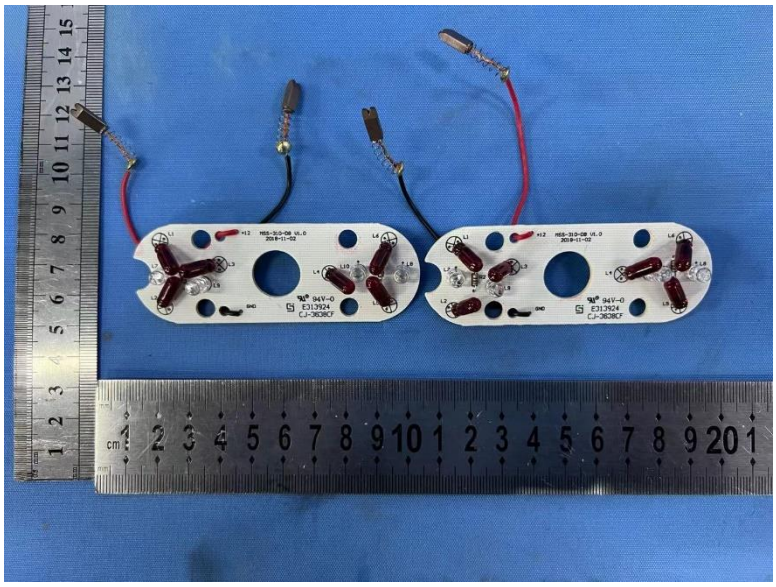
Details of: Motor of B NM-089



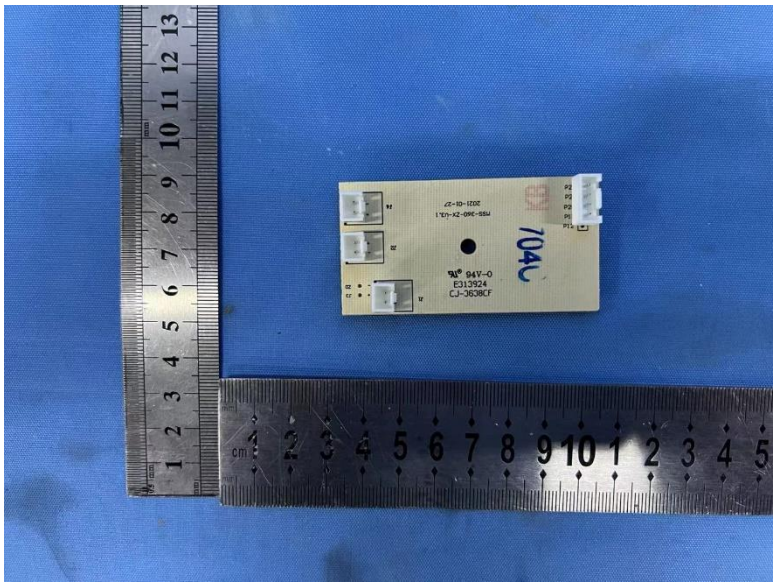
Details of: Light board of B NM-089



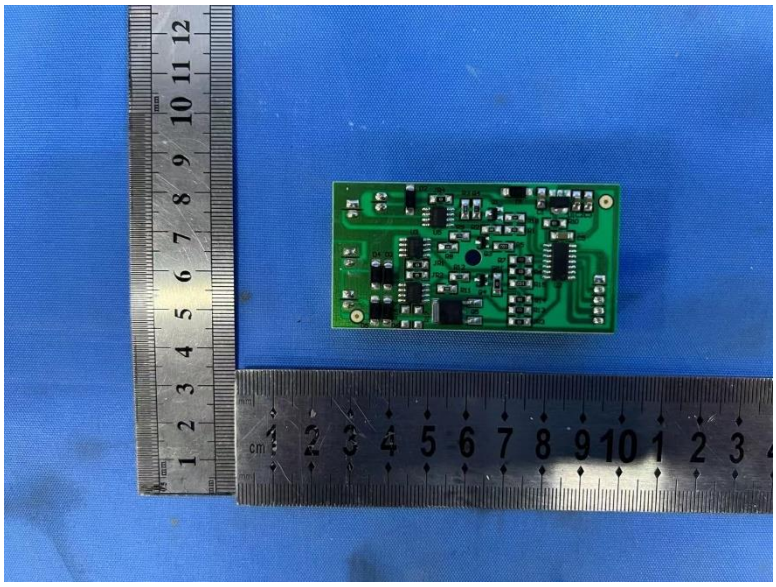
Details of: Light board of B NM-089



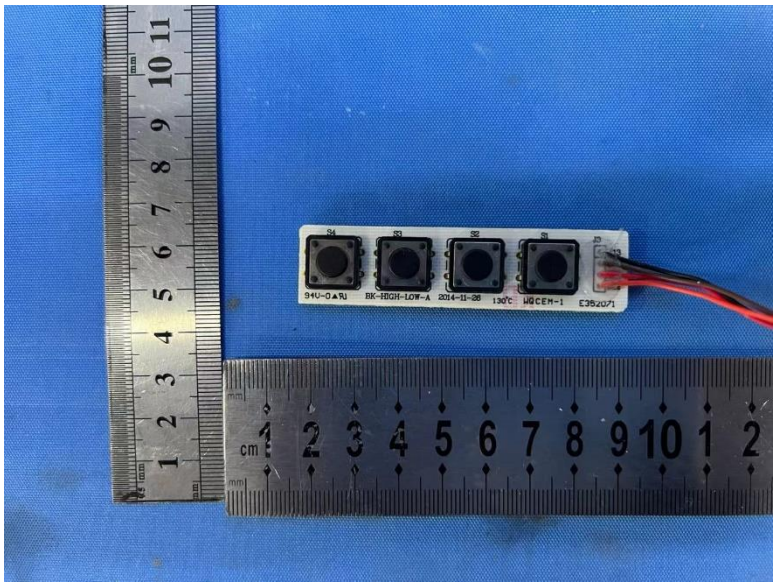
Details of: Main board of B NM-089



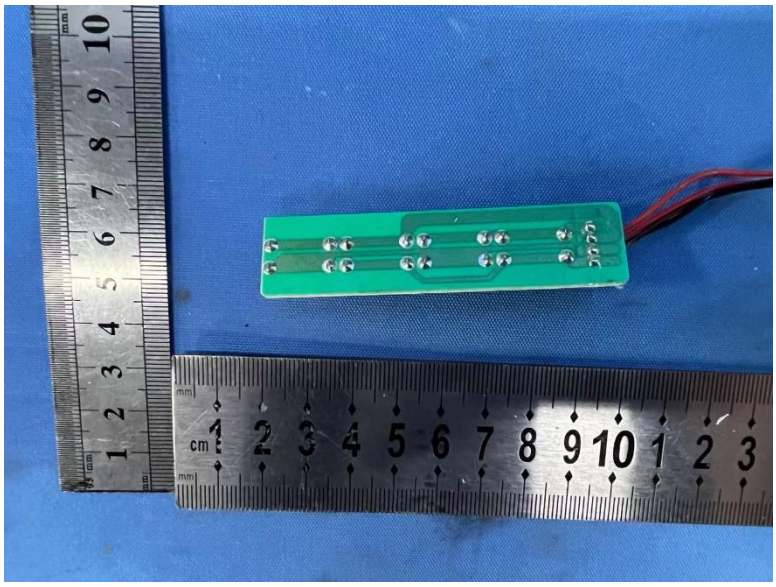
Details of: Main board of B NM-089



Details of: Key board of B NM-089

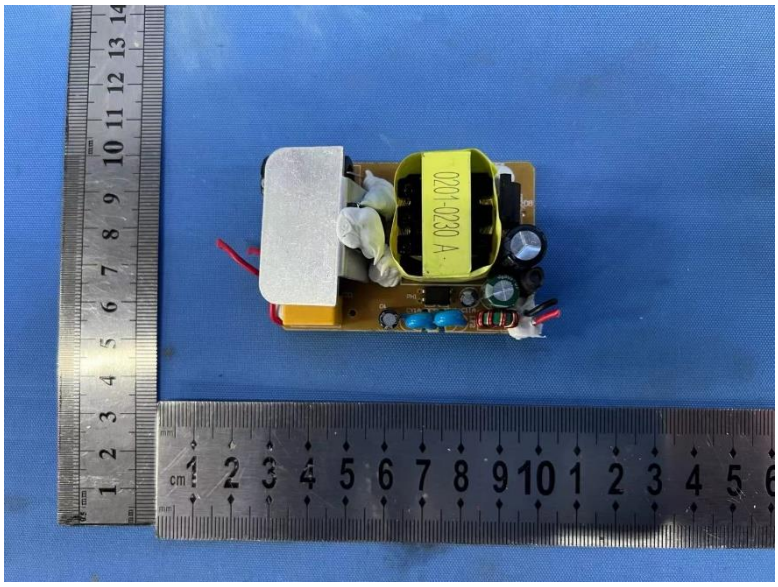


Details of: Key board of B NM-089

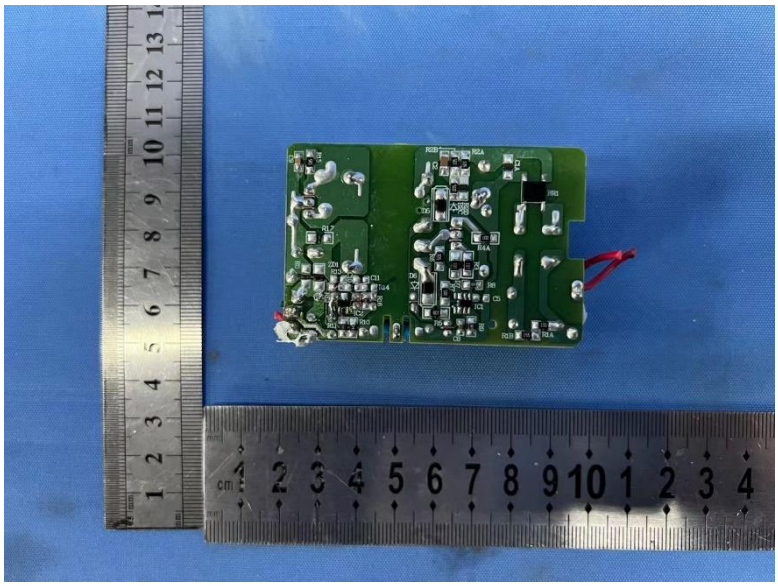


Details of: Adaptor of B NM-089

Details of: Circuit board for Adaptor of B NM-089

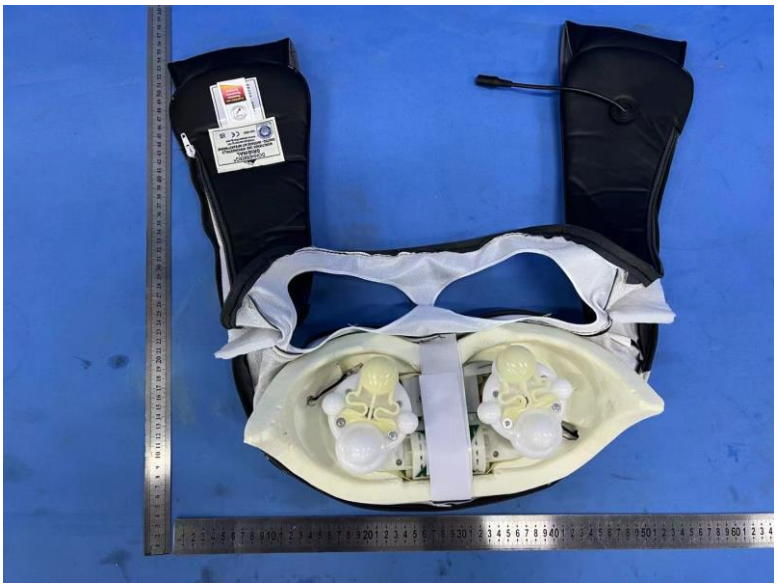


Details of: Circuit board for Adaptor of B NM-089

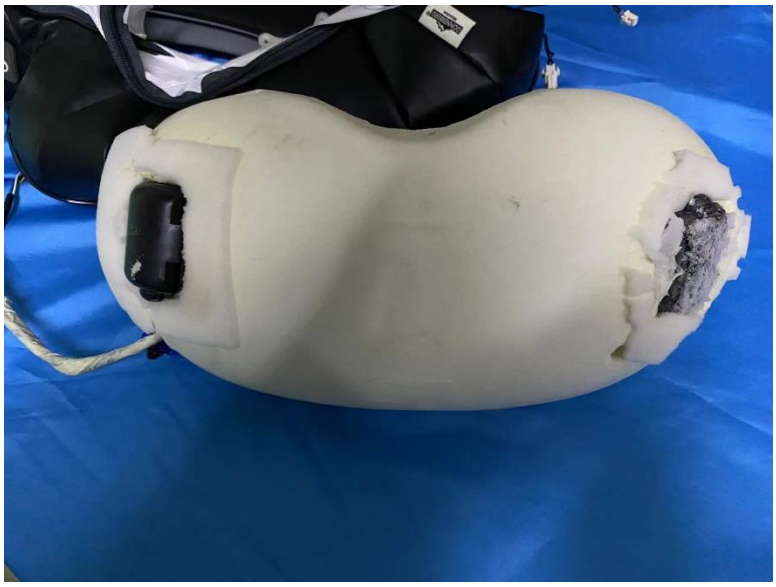


Details of: General view for NM-089

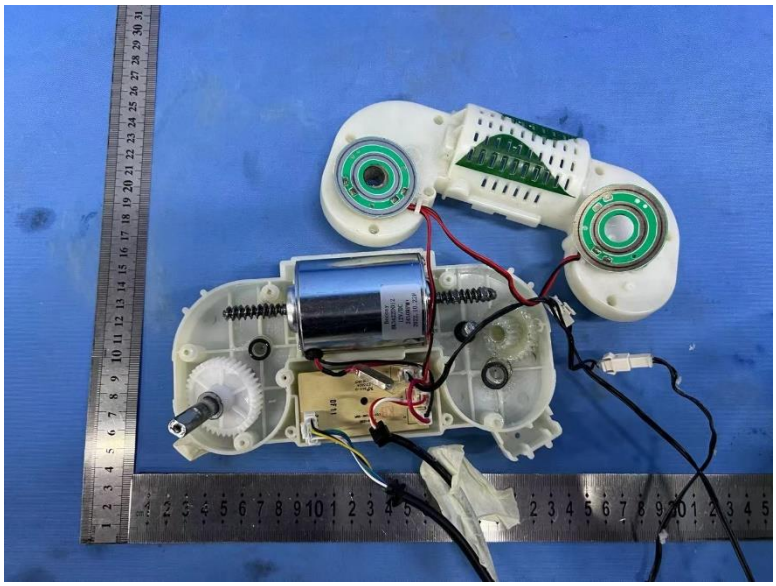
Details of: Inner view of NM-089



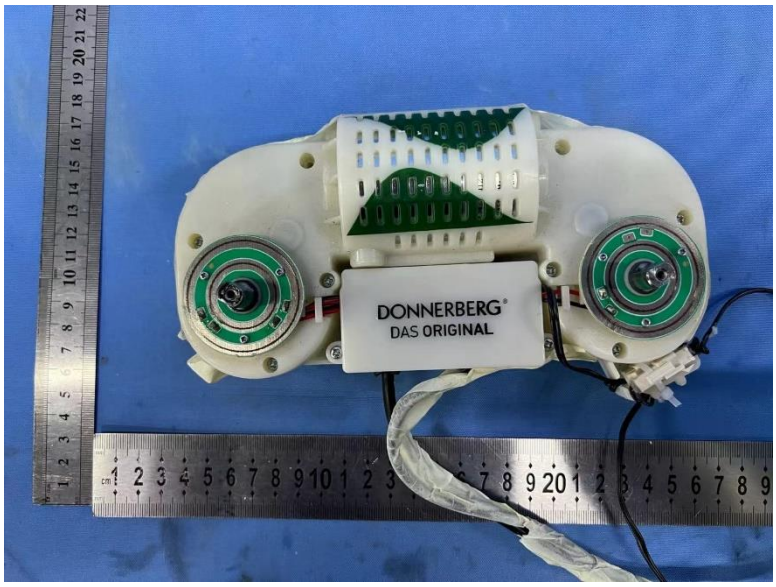
Details of: Inner view of NM-089



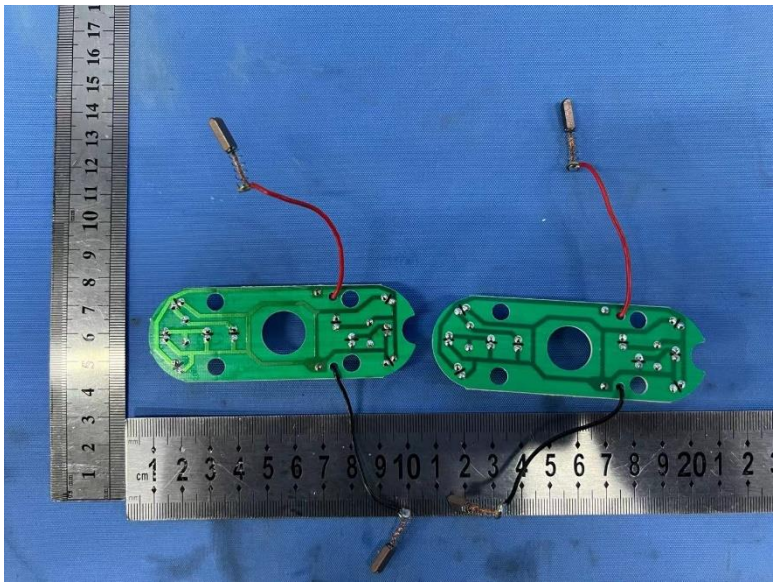
Details of: Inner view of NM-089



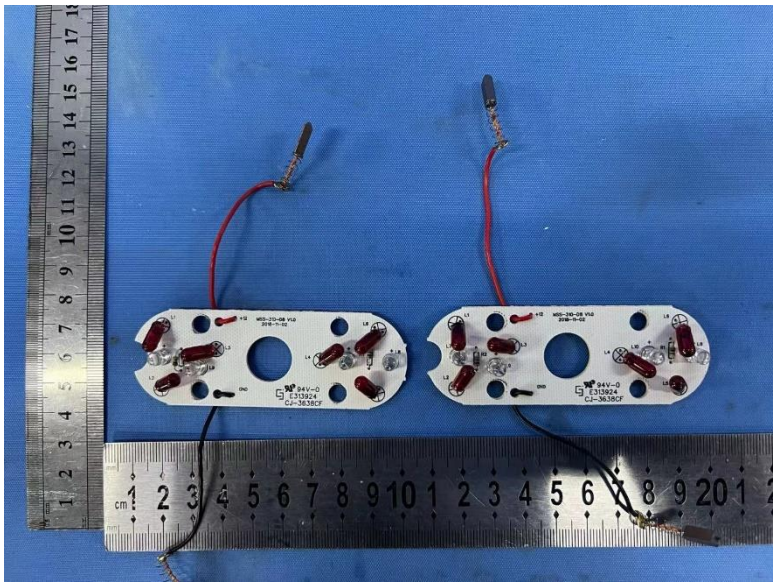
Details of: Inner view of NM-089



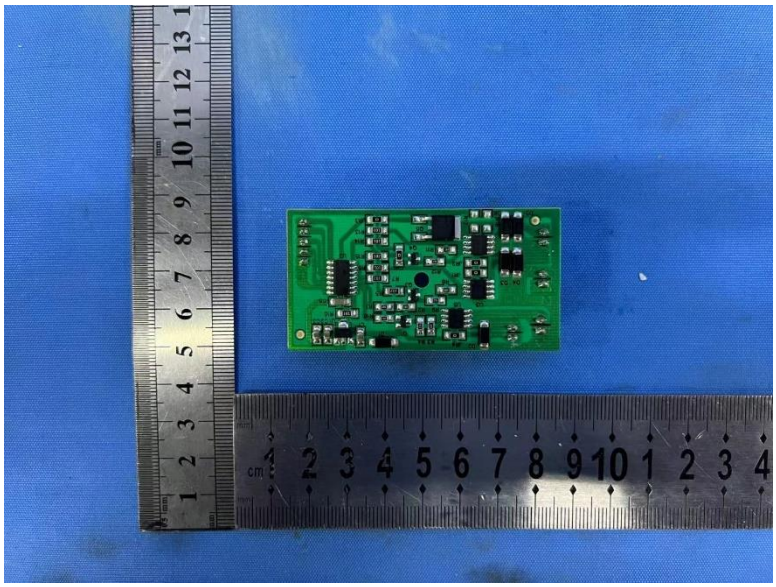
Details of: Light board of NM-089



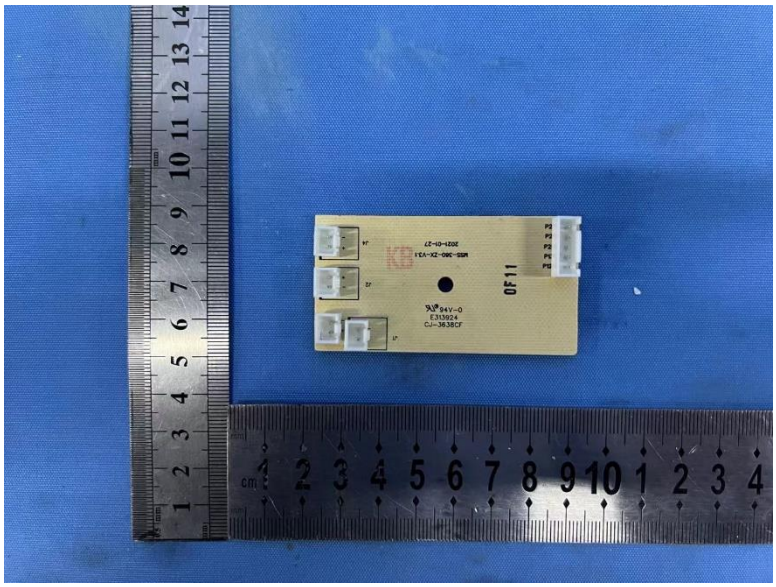
Details of: Light board of NM-089



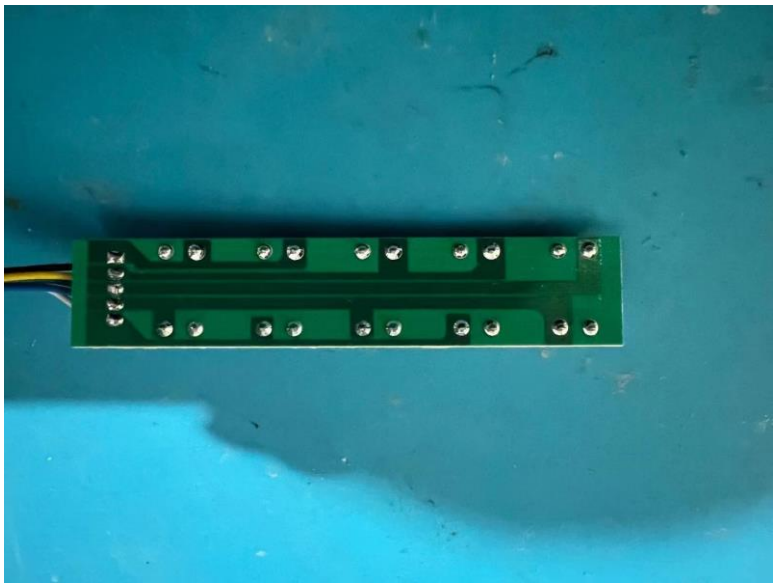
Details of: Main board of NM-089



Details of: Main board of NM-089

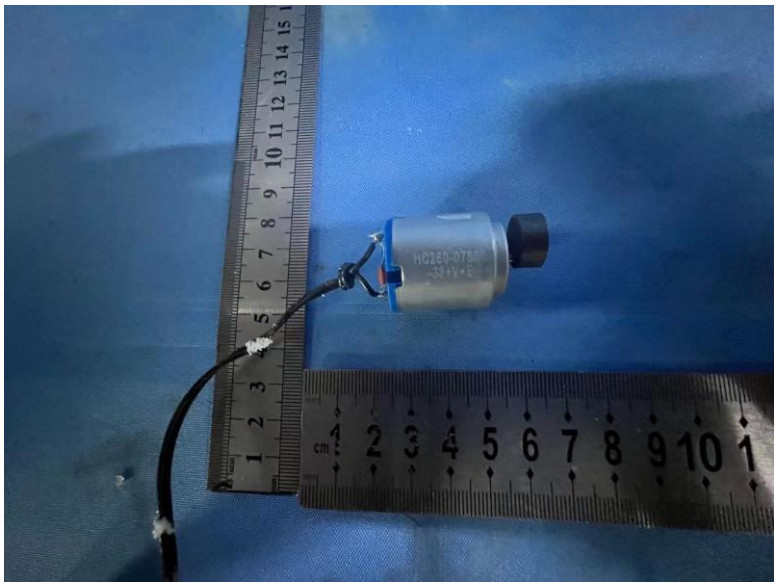


Details of: Key board of NM-089

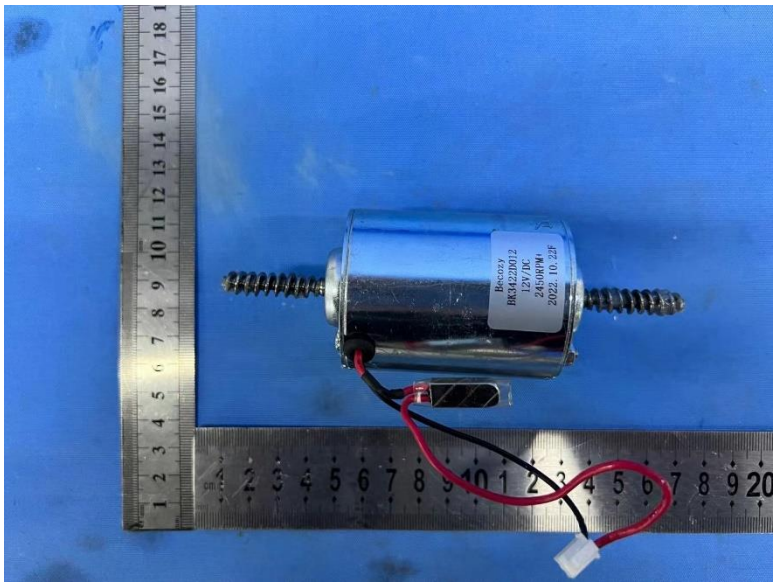


Details of: Key board of NM-089

Details of: Motor of NM-089

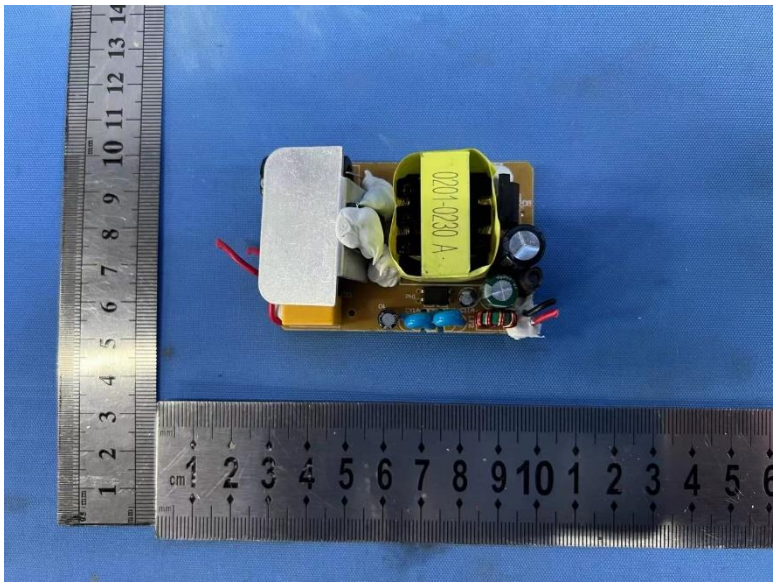


Details of: Motor of NM-089

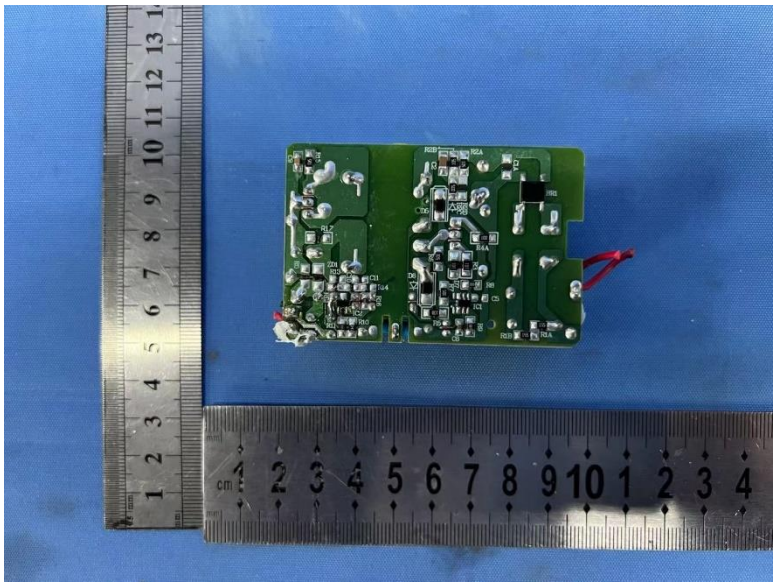


Details of: Adaptor of NM-089

Details of: Circuit board for Adaptor of NM-089



Details of: Circuit board for Adaptor of NM-089



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