

# EMC TEST REPORT

No. 1609197STO-003, Ed. 1

## Electromagnetic disturbances

### EQUIPMENT UNDER TEST

Equipment: Modeling Percussion Synthesizer  
Type/Model: Nord Drum 3P  
Manufacturer: Clavia DMI AB  
Tested by request of: Clavia DMI AB

### SUMMARY

Referring to the emission limits, performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

CISPR 13: 2009

For details, see clause 2 – 4.

Date of issue: May 17, 2016

Tested by:



Andreas Isaksson

Approved by:



Hans Kohlén

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**Revision History**

Edition	Date	Description	Changes
1	2016-05-17	First release	

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## 1. CLIENT INFORMATION

The EUT has been tested by request of

Company	Clavia DMI AB Box 4214 102 65 Stockholm Sweden
Name of contact	Mikael Norlin Phone +46 8 442 73 60

## 2. EQUIPMENT UNDER TEST (EUT)

### 2.1 Identification of the EUT

Equipment	Modeling Percussion Synthesizer
Type/Model	Nord Drum 3P
Brand name	nord
Serial Number	-
Manufacturer	Clavia DMI AB
Rating	DC: 12V, 500 mA, 6 W AC:100 - 240 V, 50/60 Hz, 0,2 A
Class	II
Highest clock frequency	68 MHz

### Photo of EUT and rating plate



## 2.2 Purpose of the test

The purpose of the tests was to verify that the EUT fulfills the requirements according to CISPR 13: 2009.

## 2.3 Additional information about the EUT

The EUT was tested in a tabletop configuration.  
The EUT consists of the following units:

Unit	Type
Modeling Percussion Synthesizer	Nord Drum 3P
Switching Mode Power Supply	Nord, GPE053-120050-Z

The EUT was tested with the following cables

Port	Type	Length [m]	Specifications
Outputs and Inputs	Instrument cable	6	1/4" jack to 1/4" jack
Midi IN and OUT	Midi cable	6	DIN plugs

### 3. TEST SPECIFICATIONS

#### 3.1 Standards

CISPR 13: 2009; Sound and television broadcast receivers and associated equipment – Radio disturbance characteristics - Limits and methods of measurement.

#### 3.2 Additions, deviations and exclusions from standards and accreditation

No additions, deviations or exclusions have been made from standards and accreditation.

#### 3.3 Mode of operation during the test

The EUT was tested with 100 V, 60 Hz for the Japanese market.

The EUT was tested in active mode.

#### 3.4 Compliance

The EUT shall comply with the emission limits as listed below.

##### Disturbance voltage at, mains terminals

Frequency range [MHz]	Limits [dB $\mu$ V]	
	Quasi-Peak	Average
0,15 – 0,50	66 – 56	56 – 46
0,50 – 5,00	56	46
5,00 – 30,0	60	50

##### Disturbance power

Frequency range [MHz]	Limits [dBpW]	
	Quasi-Peak	Average
30 – 300	45 – 55	35 – 45

#### 4. TEST SUMMARY

The test has been carried out at the Intertek Semko AB premises in Kista, Sweden.  
The results in this report apply only to sample tested:

Standard	Description	Result
	<b>Emission</b>	
<b>CISPR 13: 2009</b>	<b>Disturbance Voltage at the mains terminals in the frequency range 0,15 – 30 MHz</b>  The EUT complies with the requirements. The margin to the limit was at least 10,1 dB at 0,443 MHz. See clause 5.4.	<b>PASS</b>
<b>CISPR 13: 2009</b>	<b>Disturbance Voltage at the antenna terminals in the frequency range 30 – 1000 MHz</b>  This test is not applicable.	<b>Not Applicable</b>
<b>CISPR 13: 2009</b>	<b>Disturbance power in the frequency range 30 – 300 MHz</b>  The EUT complies with the requirements. The margin to the limit was at least 15 dB at all frequencies. See clause 6.4.	<b>PASS</b>
<b>CISPR 13: 2009</b>	<b>Radiated disturbance in the frequency range 30 – 1000 MHz</b>  This test is not applicable.	<b>Not Applicable</b>

## 5. DISTURBANCE VOLTAGE AT THE MAINS TERMINALS in the frequency-range 0,15 to 30 MHz

### 5.1 Operating environment

Date of test:	Temperature:	Relative Humidity:
2016-05-03	21 [°C]	32 [%]

### 5.2 Test set-up and test procedure

The test method is in accordance with CISPR 13: 2009.

The EUT was connected to the power via Artificial Mains Networks AMN.

The EUT was placed on an insulating support 0,4 m from the reference ground plane (RGP) and 0,8 m from the AMN/ISN. Overview sweeps were performed for each lead.

During the tests the EUT was operated according to the mode of operation mentioned in clause 3.3.



Photo of the test set-up for conducted emission

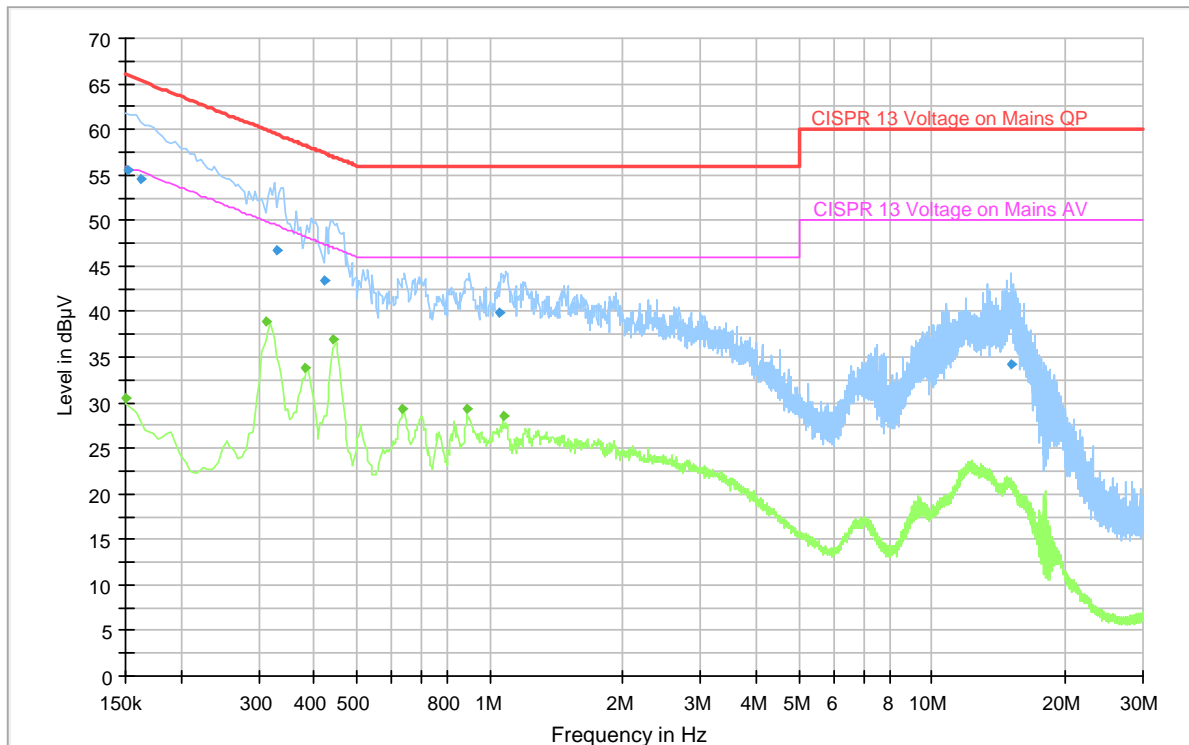
### 5.3 Measurement uncertainty

Continuous conducted disturbances with AMN, frequency range 150 kHz to 30 MHz  $\pm 3,3$  dB

Measurement uncertainty is calculated in accordance with EN 55016-4-2: 2011.  
The measurement uncertainty is given with a confidence of 95 %.



**5.4 Test results, Mains terminal**



**Diagram, Peak and Average overview sweep**

**Measurement results, Quasi-peak**

Frequency [MHz]	Level [dBµV]	Limit [dBµV]	Line L/N	Margin [dB]
0,151	55,5	66,0	N	10,5
0,162	54,7	65,4	L	10,7
0,329	46,7	59,5	N	12,8
0,424	43,4	57,4	N	14,0
1,052	40,0	56,0	N	16,0
15,051	34,2	60,0	N	25,8

**Measurement results, Average**

Frequency [MHz]	Level [dBµV]	Limit [dBµV]	Line L/N	Margin [dB]
0,150	30,6	56,0	N	25,4
0,313	39,0	49,9	N	10,9
0,383	33,9	48,2	N	14,3
0,443	36,9	47,0	N	10,1
0,634	29,3	46,0	N	16,7
0,892	29,4	46,0	N	16,6
1,075	28,5	46,0	N	17,5

## 6. CONTINUOUS DISTURBANCE POWER in the frequency-range 30 to 300 MHz

### 6.1 Operating environment

Date of test:	Temperature:	Relative Humidity:
2016-05-03	22 [°C]	30 [%]

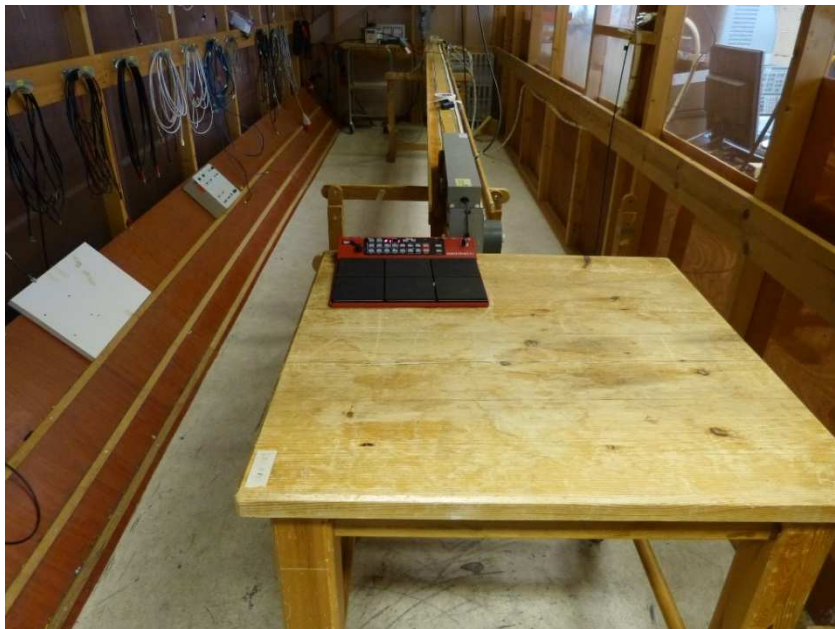
### 6.2 Test set-up and test procedure

The test method is in accordance with CISPR 13:2009.

The EUT was placed on a non-metallic support 0,8 m above the shielded floor and at least 0,8 m from other metallic objects. The cable was extended to more than 6 m. The absorbing clamp was placed around the cable and adjusted along the cable to find maximum disturbance.

During the tests the EUT was operated according to the mode of operation mentioned in clause 3.3.

#### Photo of the test set-up for continuous disturbance power



### 6.3 Measurement uncertainty

Measurement uncertainty for continuous disturbance power  $\pm 3,9$  dB

Measurement uncertainty is calculated in accordance with EN 55016-4-2: 2011.  
The measurement uncertainty is given with a confidence of 95 %.

## 6.4 Test results

### Measurement results, Quasi-peak

Tested port	Frequency [MHz]	Level [dBpW]	Limit [dBpW]	Margin [dB]
AC Power port	30 – 300	< 20	45 – 55	> 25
DC Power port	30 – 300	< 20	45 – 55	> 25
Headphones	30 – 300	< 20	45 – 55	> 25
Midi IN	30 – 300	< 20	45 – 55	> 25
Midi OUT	30 – 300	< 20	45 – 55	> 25
Left Out	30 – 300	< 20	45 – 55	> 25
Right Out	30 – 300	< 20	45 – 55	> 25
KICK	30 – 300	< 20	45 – 55	> 25

### Measurement results, Average

Tested port	Frequency [MHz]	Level [dBpW]	Limit [dBpW]	Margin [dB]
AC Power port	30 – 300	< 20	35 – 45	> 15
DC Power port	30 – 300	< 20	35 – 45	> 15
Headphones	30 – 300	< 20	35 – 45	> 15
Midi IN	30 – 300	< 20	35 – 45	> 15
Midi OUT	30 – 300	< 20	35 – 45	> 15
Left Out	30 – 300	< 20	35 – 45	> 15
Right Out	30 – 300	< 20	35 – 45	> 15
KICK	30 – 300	< 20	35 – 45	> 15

All measured disturbances have a margin of more than 15 dB to the limits.