Compliance Department
Accredited by ENAC according to EN ISO/IEC 17025:2005

Nº 827/LE1882

EMC Test Report

Customer: **NEEC AUDIO BARCELONA, S.L.**

Product type: **Self-Powered Mixer**

EUT Model: **ECLER HMA 180**

Serial number: **223860045**

Test Report ID Number: **BE2015061**

Test Report version: **1.0**

Total Number of pages: **23**

Test standards:

FCC RULES AND REGULATIONS 47 CFR PART 15, SUBPART B (10-01-12 Edition) DEVICE CLASS A.

Edited by:	***Revised and approved by:***
MAG 2015.06.29 09:37:27 +02'00'	David Ortiz 2015.06.29 09:38:22 +02'00'
M.A. Garcia	***D. Ortiz***
EMC Laboratory Engineer	***Head of EMC Laboratory***

IDNEO Technologies S.L.
COMPLIANCE DEPARTMENT
Pol. Ind. Can Mitjans S/N
08232 Viladecavalls
Barcelona
Telephone: +34937008178
Telefax: +34937008168

REVISION PAGE

Date	Issued by	Pages	Item	Description
19/06/2015	M.A. Garcia	23	1.0	Original Release

Report Index

1.0 Technical Details

1.1 Test standards and results

Overview about the different emission measurements

EMISSION					
Kind of Test	Test Carried Out	Used Standard	Results o.k.	not o.k.	Test Page No.
Radiated Emissions (30MHz-1GHz) ***Electromagnetic Field strength at 3m***					
- Enclosure	☒	FCC 47 CFR PART 15 subpart B	☒	☐	15
Conducted Emissions (150kHz–30MHz) ***Disturbance Voltage***					
- AC power supply port	☒	FCC 47 CFR PART 15 subpart B	☒	☐	16

Complete Test Results
The measurement was carried out according to the previous mentioned standards. Deviations from the standards are listed at the specified tests.

Exceeding of the limits was observed:

☐ **YES** ☒ **NO**

Comment :
The test result is only valid for the equipment tested.
In following cases the compliance with relevant standards for the system has to be ensured again:

I. Tested product will not be used with other components than those mentioned in this report.
II. Tested product will not be used in other modes than those described in the manufacturer descriptions.

Viladecavalls (Barcelona), June 19th, 2015

2.0 General Details

2.1 Test laboratory

Department/group:	**EMC Compliance Department**
Laboratory address:	**IDNEO Technologies S.L.** **Polígono Industrial, Can Mitjans s/nº, C.P. 08232 Viladecavalls (Barcelona), Spain**
Telephone:	**+34-93-706-8400**
Fax:	**+34-93-700-8168**
Contact person:	**Mr. David Ortiz**
Phone contact:	**+34-93-700-8471**
Email contact:	**david.ortiz@idneo.es**

2.2 Client details

Company name:	**NEEC AUDIO BARCELONA, S.L.**
Department/group:	**R+D**
Company address:	**C/ Motors, 166-168** **08038 Barcelona - Spain**
Contact person:	**Sr. Josep Mª. Mas**
Phone contact:	**+34 93 223 84 00**
Fax contact:	**+34 93 223 84 04**
Email contact:	**j.mas@ecler.es**

2.3 Dates of order

Incoming date of order : 04/05/2015

Incoming date of the test object : 10/06/2015

Date of test: From: 10/06/2015 Until: 10/06/2015

2.4 Test object

Product type:	Self-Powered Mixer
Tested model:	ECLER HMA 180
Serial number:	223860045
Brand:	ECLER
PCB version:	V 0.3
Input ratings:	90-264Vac / 47-63Hz
EUT status:	Production sample
Auxiliary Equipment :	Pink noise generator. Qty 1 Set for 1/8W of nominal power XLR FEMALE to RCA STEREO adapter. Qty 1 Conected from the generator to the E.U.T. inputs Cable RCA Stereo. Qty 1 Conected from the generator to the E.U.T. inputs MPAGE1 microphone console with cable. Qty 1 Conected to the D.U.T. microphone paging input Wall volume control (0-10V) with cable. Qty 1 Connected to EUT remote ports 4X25Ω dummy load with cable. Qty 1 2x25 ohm in series connected to E.U.T. output

EUT operating mode description during the tests (Mode1):

The set up using during RE and CE testing is described below :

The speaker output of the amplifier were connected to a 50 ohm dummy load.

Both INPUT 1 channels were connected to a pink noise generator.

A microphone console was connected to the MIC pager input.

A WPmVOL remote control was connected to the REMOTE input

2.5 Details about uncertainty measurement.

In case of measurement results close to the limit, there is the possibility, that due to the measurement uncertainty Ux = k *σt (σt = $\sqrt{\sigma_1^2 + \sigma_2^2 + ...+ \sigma_n^2}$ standard deviation of the total accumulated error), at a confidence level of 95% (k =2), the limits are indeed exceeded!.

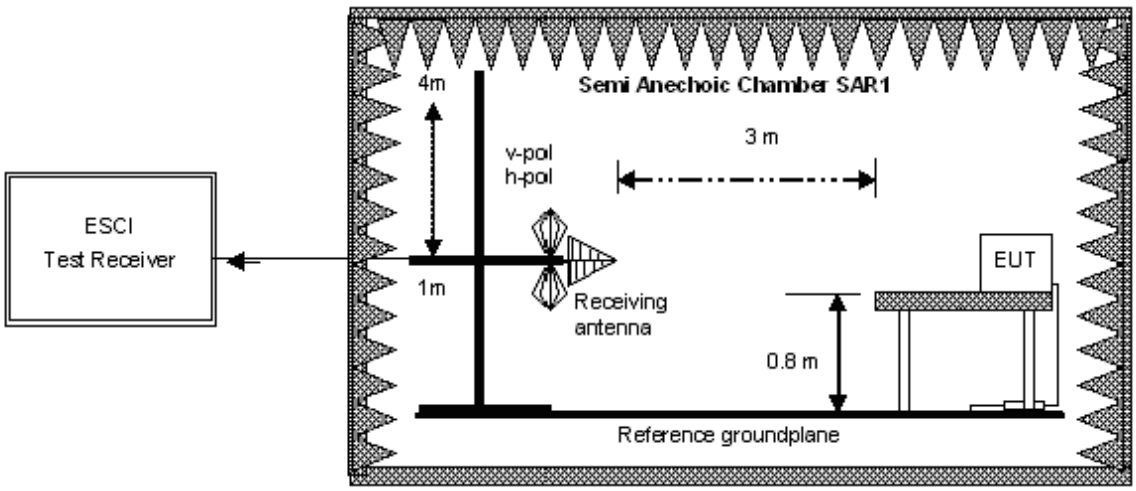
Test measurement	**Uncertainty** **(Expanded Uncertainty)**
Radiated Emissions at 3 m distance	**±3.9 dB**
Conducted Emissions at power port	**±2.6 dB**

Measurement protocols and test setups

3.1 Emissions

3.1.1 Radiated Emission in semianechoic chamber

Test setup



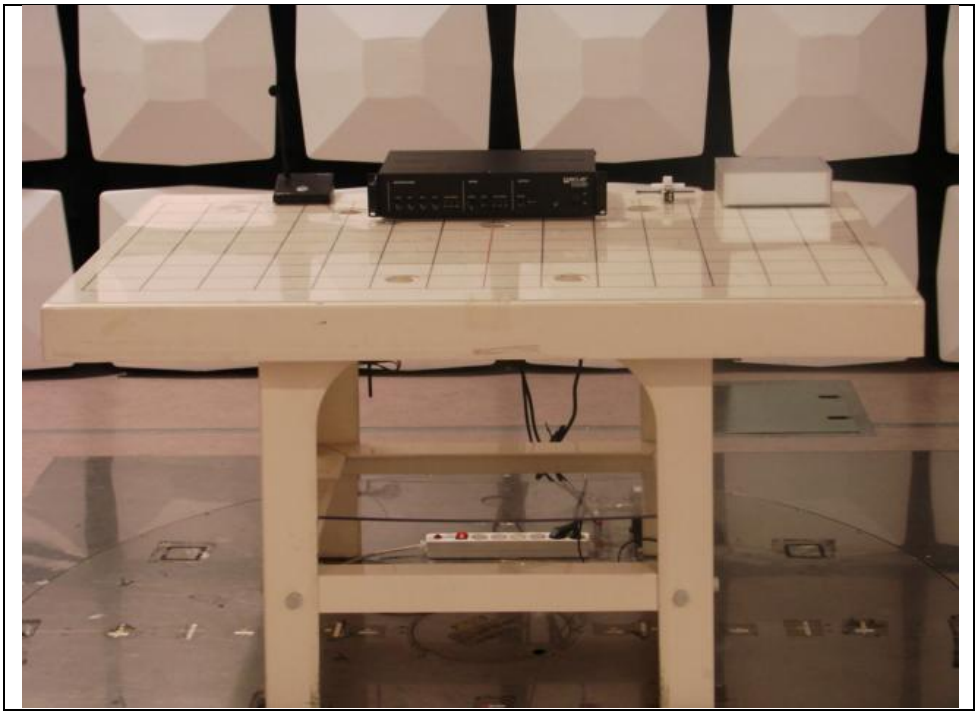
Operation Modes

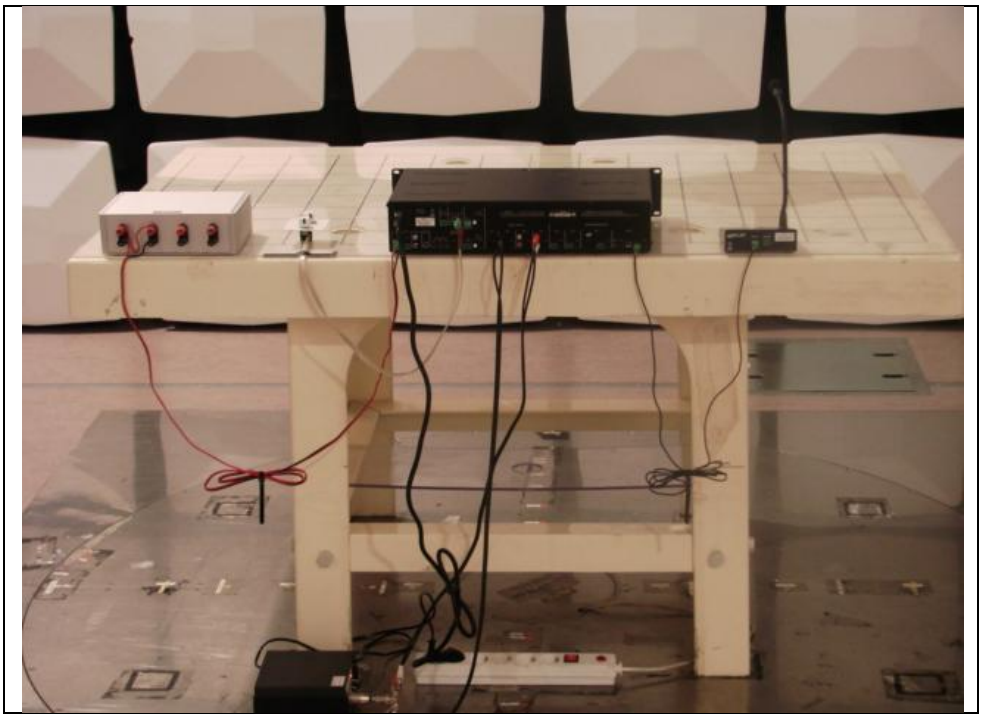
Following operation modes have been applied to the EUT:	EUT working as described in MODE 1

Accessories used for these measurements: ***described in clause 2.4.***

Test set up photo for EUT

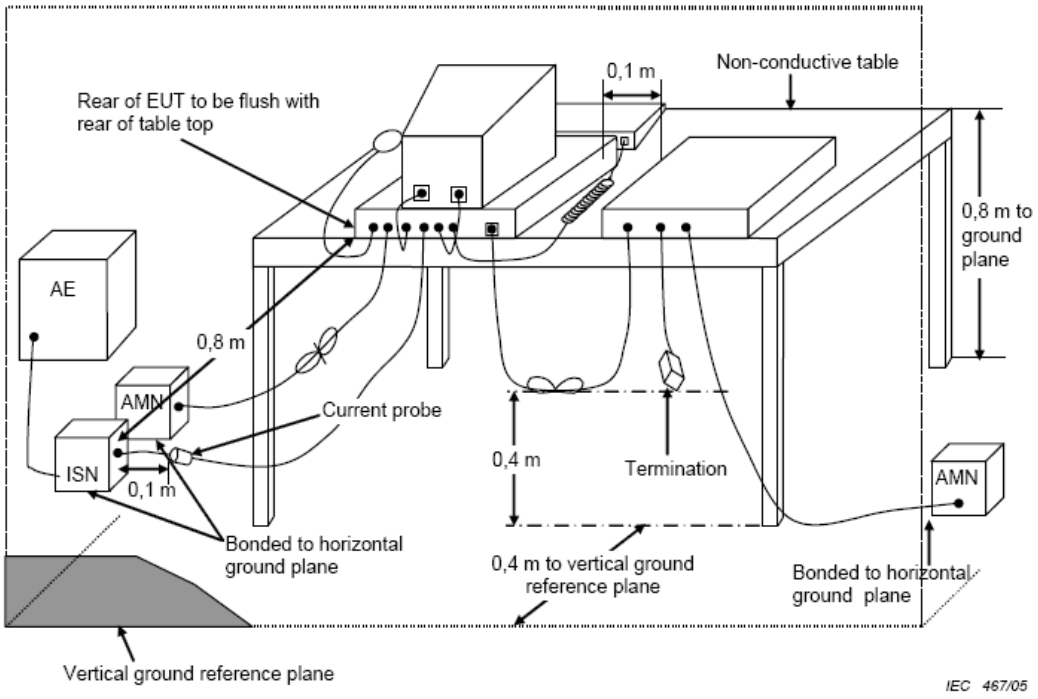
Enclosure





3.1.2 Conducted Emissions at AC power port

Test setup



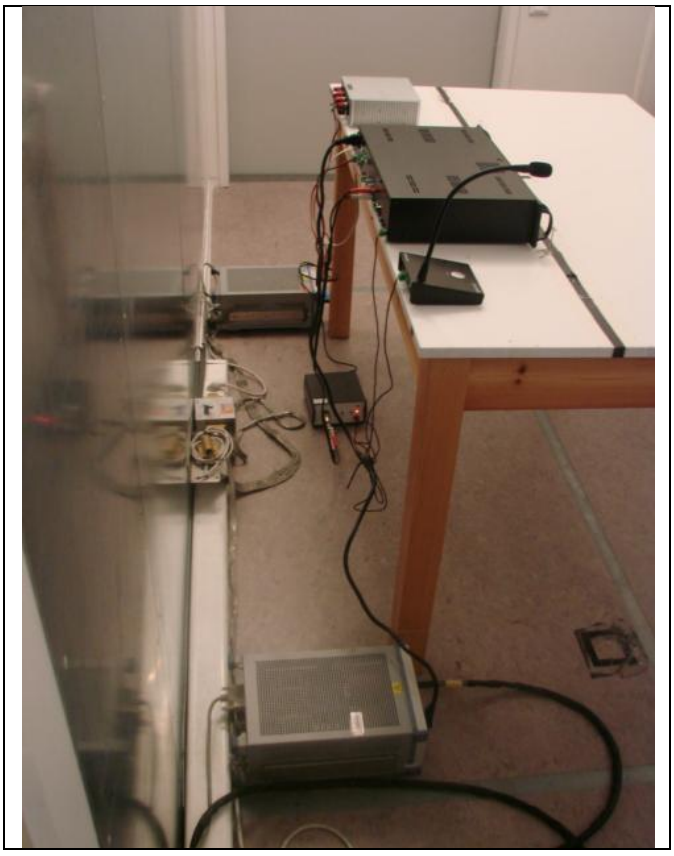
Operation Modes

Following operation modes have been applied to the EUT:	EUT working as described in MODE 1

Accessories used for these measurements: ***described in clause 2.4.***

Test set up photo for EUT

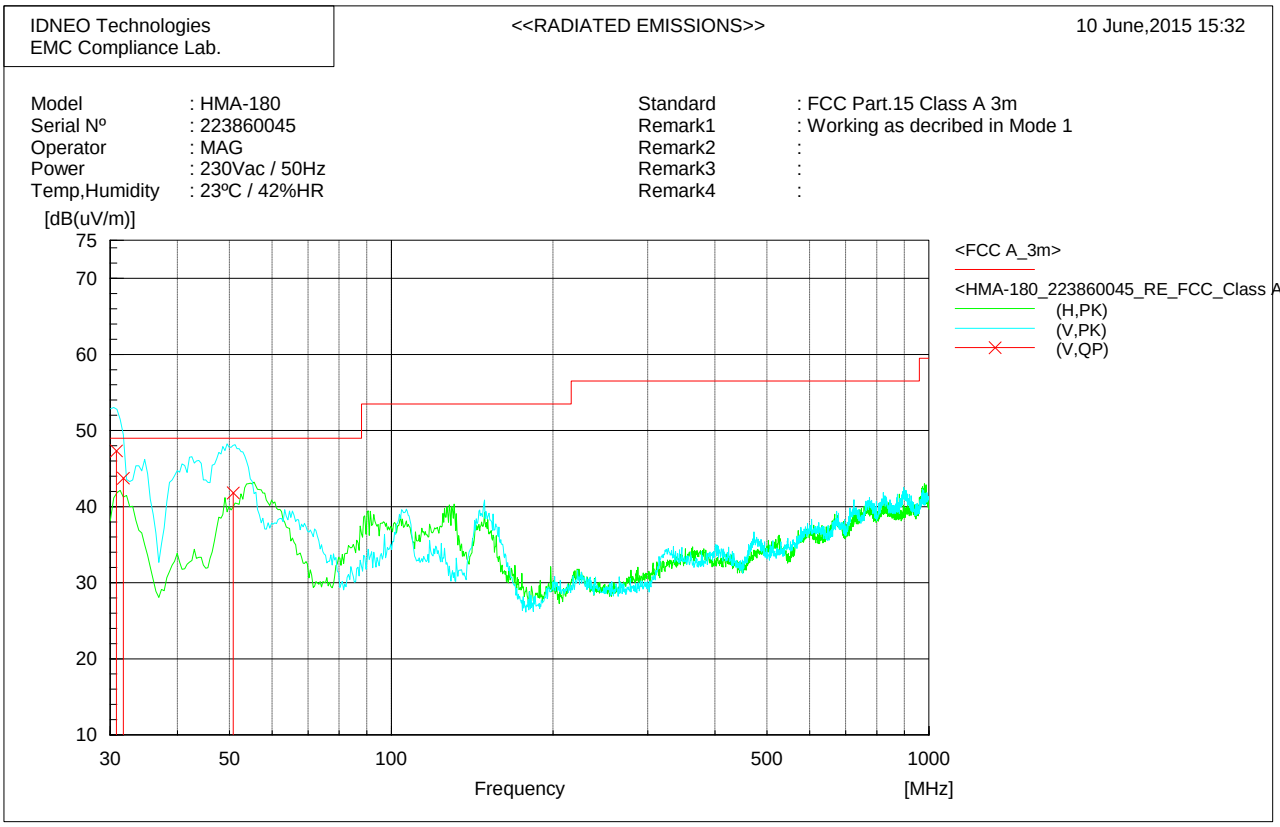
AC power supply port



4. Measurements

4.1 Emission measurements

4.1.1 Radiated Emissions from 30MHz to 1GHz



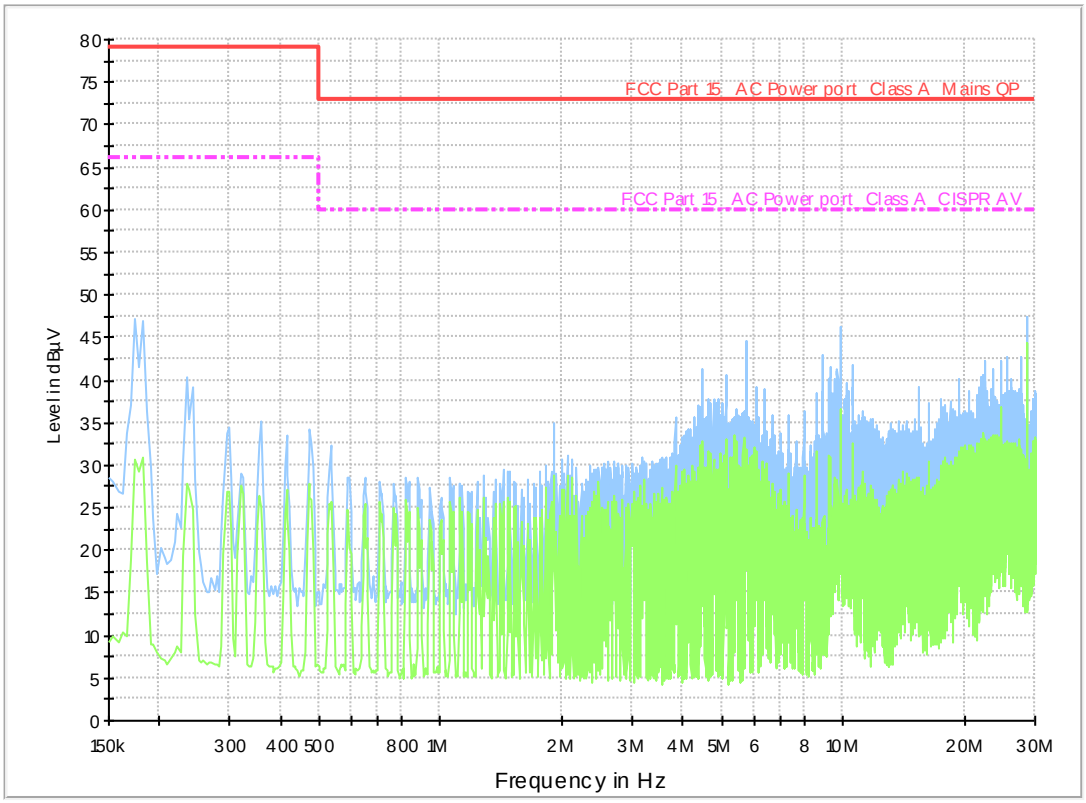
Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	30.815	V	27.9	19.4	47.3	49.0	1.7	100.0	219.8
2	31.734	V	24.4	19.3	43.7	49.0	5.3	100.0	196.7
3	50.784	V	22.2	19.6	41.8	49.0	7.2	100.0	292.5

4.1.2 Conducted Emissions EUT

4.1.2.1 Conducted emissions at AC power port

EUT Name:	ECLER HMA 180
Serial Number:	223860045
Test Description:	Conducted Emissions test
Operating Conditions:	23ºC / 51% HR
Operator Name:	MAG
Comment:	Working as describe in Mode 1 / Input rating 110Vac/60Hz
Test Report ID.:	BE2015061
Date:	10/06/2015



5.0 Measurement Remarks

Deviations from the applied test specification

- no deviations -

Remarks:

The device has max. oscillator frequency at 500kHz. Therefore radiated emission testing has been performed up to 1GHz.

1) Initial RE test shows result out of specification.

According to the client, the following actions were taken in order to get a PASS for the test:

a) Adittion: one capacitor Vishay/ROE_WKP2n2 2N2, 500VAC or one capacitor Jya-Nay Co., Ltd_JN 222 Y1 2N2, 250VAC.

b) Addition: one WE-FLAT Flat Ferrite Core _Wurth 7427218

c) Addition: one WE-FLAT Flat Ferrite Core _Wurth 7427220

For further information see Figure 1

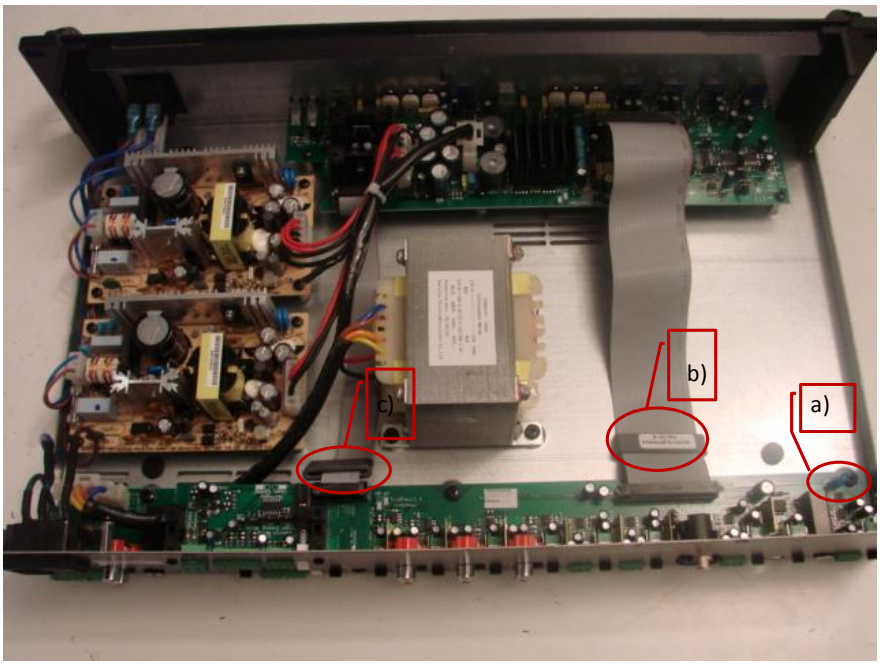


Fig.1

Used Components:

N/A

Other Participants:

Two NEEC members were present during the EMC tests.

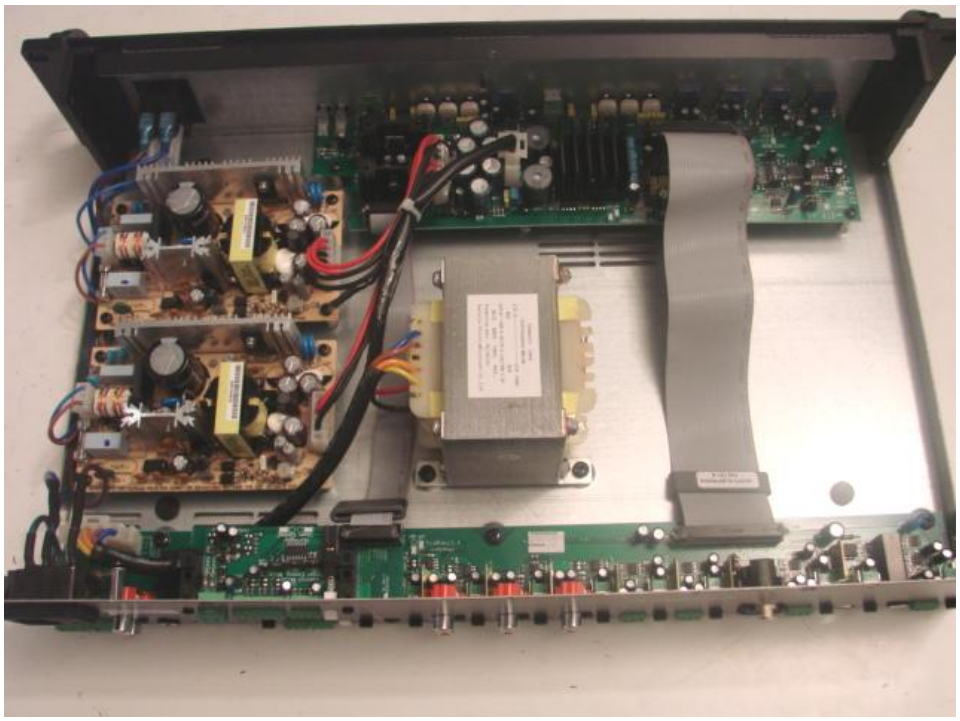
6.0 Photos of equipment under test

ECLER HMA 180

ECLER HMA 180 – General View

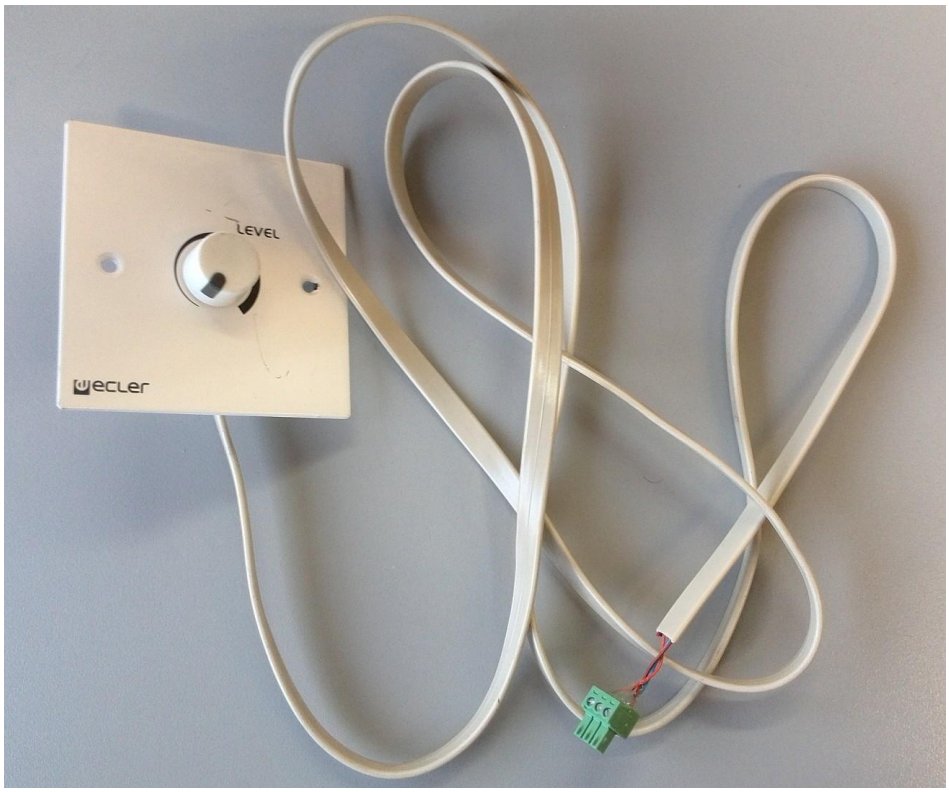
ECLER HMA 180 – Control Pannel

ECLER HMA 180 – I/O ports



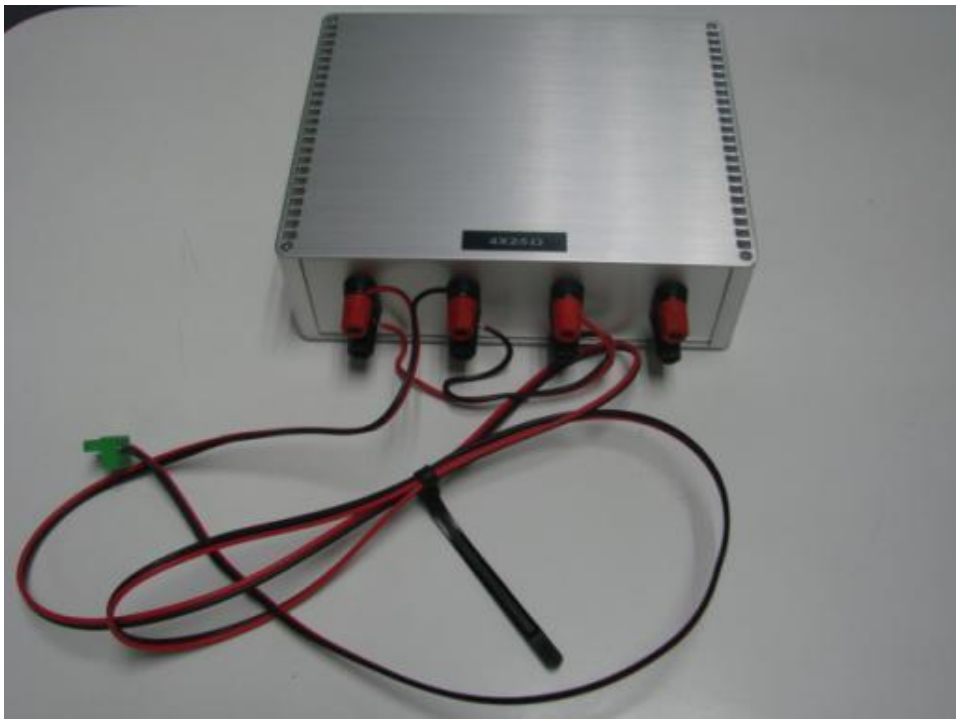
ECLER HMA 180 – Opened

AUXILIARY EQUIPMENT



Wall volume control (0-10V) with cable supplied by customer

Pink Noise Generator – General view



4X25Ω dummy load with cable supplied by customer

MPAGE1 microphone console with cable supplied by customer

AC power cord supplied by customer

7.0 List of measurement equipments

ID	MODEL	TYPE	MANUFACT	SERIAL_NR	LOCATION
421	ESCI	EMI receiver	Rohde & Schwarz	121994001829	CR1
425	ENV216	LISN	Rodhe&Schwarz	121994001801	CR1
433	VULB9163	Comb Broadband antena	Schwarzbeck	226	SAR1
435	DC-12.4Ghz	6dB Atenuator	Huber Suhner	6806.17.A	SAR1
512	645	Temperature/Humidity Meter	Testo	830003/04	CR1
540	ESCI	EMI Receiver	R&S	121994001882	CR1
550	W10.03	Cable Conducted EMI	R&S	1502.9687	CR1
562	K-219940018/002/003	Cable EMI radiated emissions SAR1-CR1	Sucoflex	#	SAR1
652	335 3609	Cable EMF low emissions	Huber Suhner	335 3609	SAR1
650	ENV216	LISN	Rodhe&Schwarz	100300	CR1
691	THERMO-HYGRO	RS 413-7617	RS	CR1	CR1
693	THERMO-HYGRO	RS 413-7617	RS	SAR1	SAR1
694	Enviroflex 393	EMI cable with ferrites	Huber Suhner	SAR1	SAR1
699	ESU26	EMI receiver	Rohde & Schwarz	100203	CR1