

Technical Specification

No. E-MF-Helmholz-Hand.doc
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1 MF Field Accessories

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1.1 Introduction

EN 55103-2 is a product standard that lists explicit test requirements for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part of that requirement is for tests using homogenous and in-homogenous magnetic fields.

TRA3000 C is the base generator required to perform these tests as the frequency range is between 50Hz and 10kHz. The TRA3000 C (common mode) system is used to generate these frequencies with sufficient power to achieve maximum test level requirements.

The frequencies are not static and require the GENECS software package with option CM-SWEEP to program the frequency and amplitude ramps.

The EUT is either placed in the magnetic field generated using a Helmholtz coil (MF-Helmholz) or for larger units, a hand-held antenna can be used to inject the magnetic field (MF-COIL HAND).

2 General

2.1 Brief description of the system

The core of the system is TRA3000 C a generator with frequency range DC up to 150kHz designed for IEC/EN61000-4-16 Common Mode testing..

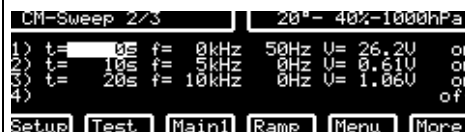
In addition to TRA3000 C, the GENECS software and option CM-SWEEP are needed to program the TRA3000 with both frequency and voltage transitions. EN55103-2 includes a list of frequency / amplitude combinations for test levels E1 to E5.

Lastly, the magnetic field is generated from coil antennas connected to the TRA3000 C.

A Helmholtz coil antenna comprises 2 loops set a a specific distance apart from one another. Magnetic fields generated by the individual coils create an homogenous field in the space between the coils.

2.2 EUT connection (equipment under test)

- EUTs with dimensions smaller than 0.7m x 0.7m x 0.7m can be placed in the MF-HELMHOLZ coil. The coil is connected to the TRA3000 C and the MF-HELMHOLZ BOX to adjust amplitudes according to Table 1.
- Large dimension EUTs that cannot fit inside the MF-HELMHOLZ coil, are tested using the MF-COIL-HAND..
- GENECS software with option CM-SWEEP provides the frequency and amplitude sweep. All parameters are pre-programmed in the GENECS library.



2.3 Standards, applications

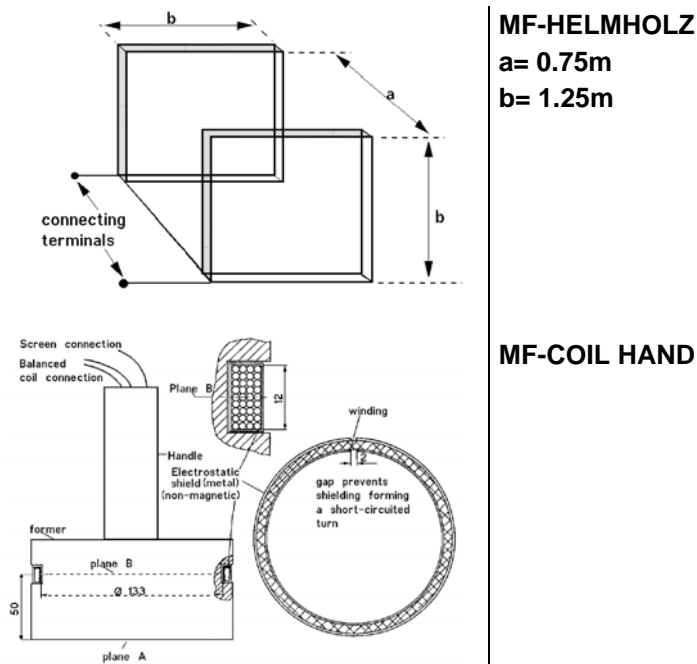
Basic standards with generator specification

IEC 61000-4-16, EN 61000-4-16, Electromagnetic compatibility (EMC) - Part 4 Testing and measuring techniques - Section 16: Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz.

EN 55103-2 Electromagnetic Compatibility

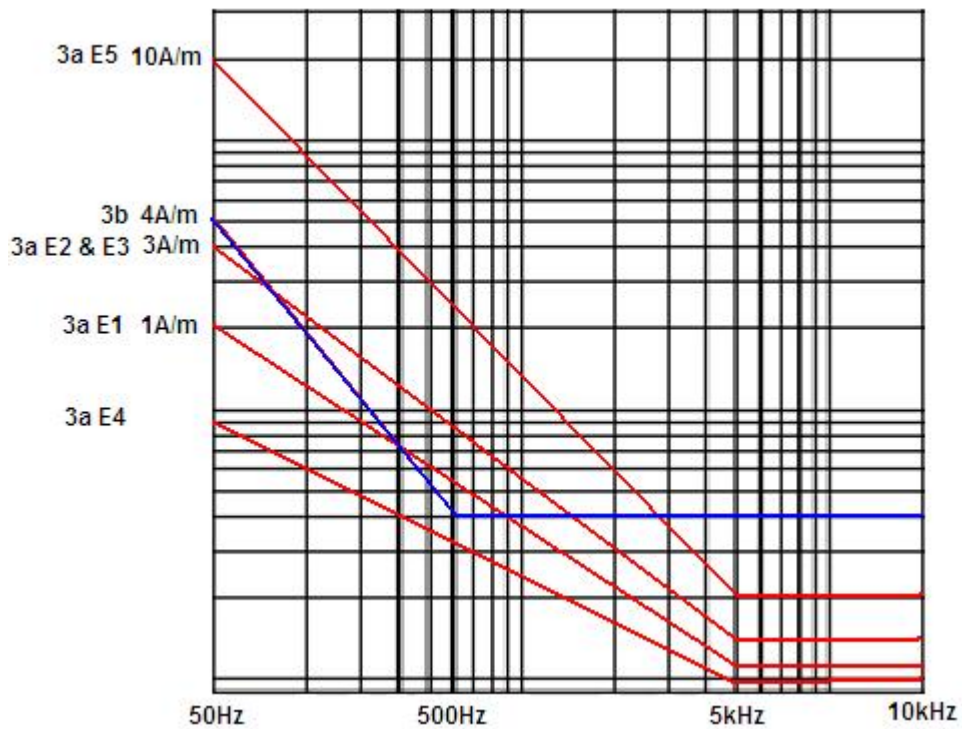
Product Family Standard for Resistibility test for audio, video, audio-visual and entertainment lighting control apparatus for professional use.

3 Coil Antenna definitions



3.1 Output definition

The frequency and amplitude variations as defined in EN55103-2 are as below:



3.2 Mechanical dimensions, climatic conditions

Type	Dimensions [mm]	Weight [kg]	Versions
	width x depth x height		
MF-HELMHOLZ	1250 x 1250 x 750	12	
MF-COIL HAND	133 x 350	2	



MF-HELMHOLZ



The MF-HELMHOLZ BOX connects the TRA3000C generator to the MF-HELMHOLZ coil antenna. Jumpers are used to adjust the impedance.

MF-HELMHOLZ BOX



MF-COIL HAND

4 Technical data

4.1 EN55103-2 Table 1

Port	Phenomenon	Frequency Range	Test Levels E1 to E3		Test Levels E4	Test Levels E5
Enclosure	1. RF electromagnetic field	50MHz to 1000MHz	3 V/m		1 V/m	10 V/m
		1.4GHz to 2.0GHz	3 V/m		No test	3 V/m
		2.0GHz to 2.7GHz	1 V/m		No test	1 V/m
	2. Electrostatic discharge	Not applicable	4 kV Contact 8 kV Air		2 kV Contact 4 kV Air	4 kV Contact 8 kV Air
	3a. Magnetic field homogenous MF-HELMHOLZ	50Hz to 10kHz	E1	E2 & E3		0.8A/m to 0.008A/m 50Hz to 5kHz 0.008A/m 5kHz to 10kHz
1A/m to 0.01A/m 50Hz to 5kHz 0.01A/m 5kHz to 10kHz	3A/m to 0.03A/m 50Hz to 5kHz 0.03A/m 5kHz to 10kHz					
3b. Magnetic field in-homogenous MF-COIL HAND	50Hz to 10kHz	4 A/m to 0.4 A/m 50Hz to 500Hz 0.4 A/m 500Hz to 10kHz				

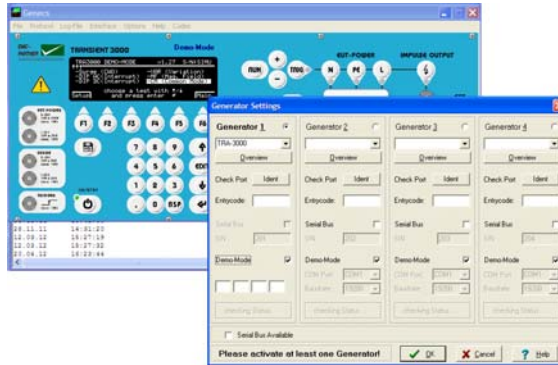
5 Accessories and Options

5.1 Necessary Accessories

Type
GENECS
Software

Pictures

accessories to
TRA3000 C



CM-SWEEP



GENECS