



LCIE

TEST REPORT

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Version :
02

Subject

Measurement of electromagnetic shielding
effectiveness
EN 61000-5-7

Issued to

Schroff SAS
4 rue du Marais
67660 BETSCHDORF
France

Apparatus under test

↪ Product

Varistar EMC series

↪ Trade mark

SCHROFF

↪ Manufacturer

nVent

↪ Model under test

Standard Varistar EMC Cabinet with gasket 23130-617

↪ Serial number

EN 45545 Railway qualified

CABINET 2 door 4

Test date

November 12, 2018 to November 16, 2018

Test location

PULVERSHEIM

Composition of document

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SUMMARY

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1. EQUIPMENT UNDER TEST: CONFIGURATION (DECLARED BY PROVIDER)

1.1. INFORMATION

Dimensions: height 2.0m width 0.6m depth 0.6m

Customer:

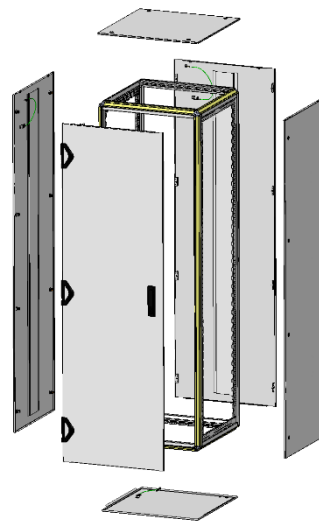
Name	Company
Daniel THOMAS	Schroff SAS
Christophe MARCINKOWSKI	Schroff SAS

1.2. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):

Standard Varistar EMC Cabinet with gasket 23130-617
EN 45545 Railway qualified

- => 20130-018 Frame 2000H600W600D
- => 23130-079 Levelling feet
- => 23130-617 EMC gasket EN45545
- => 22130-030 Side panels
- => 22130-894 Steel door with new handle
- => 21130-084 Rear panel
- => 21130-272 Flat top cover
- => 23130-281 Base plate



Equipment Under Test

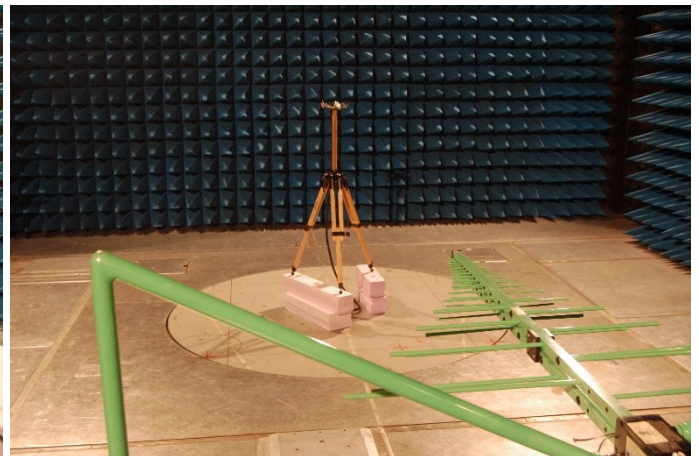
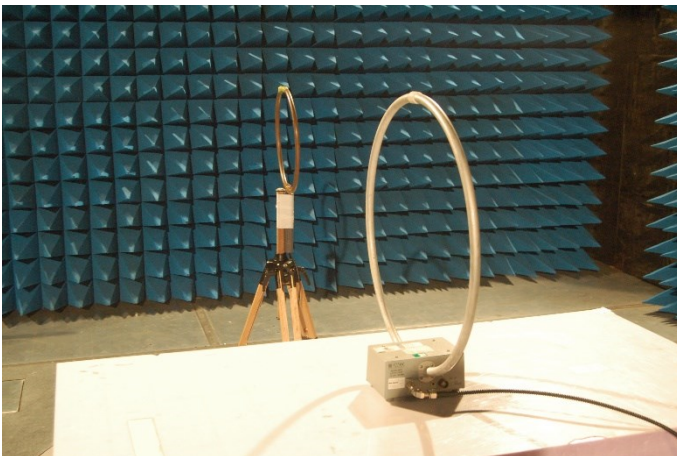
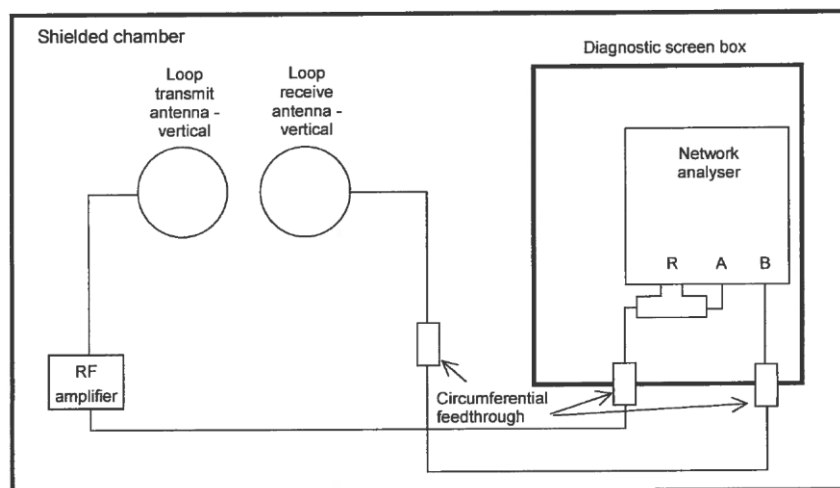
2. MEASUREMENT

2.1. TEST SETUP

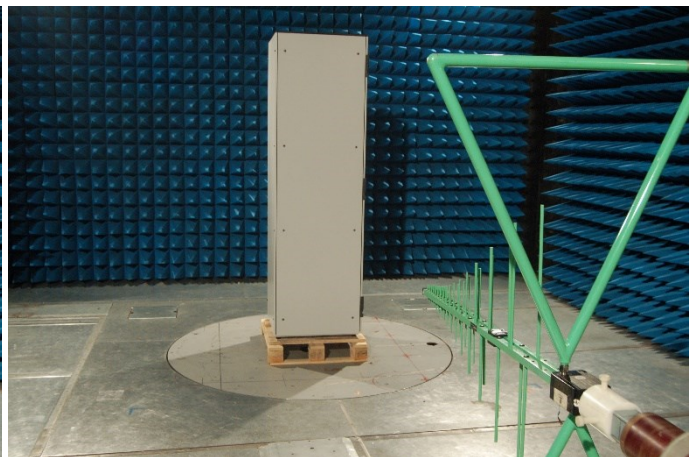
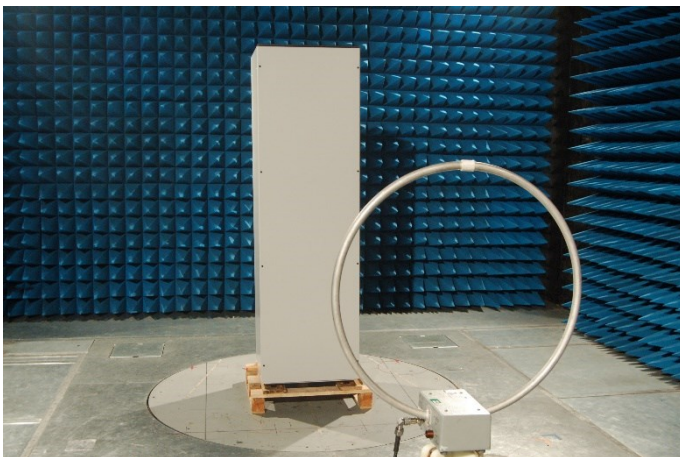
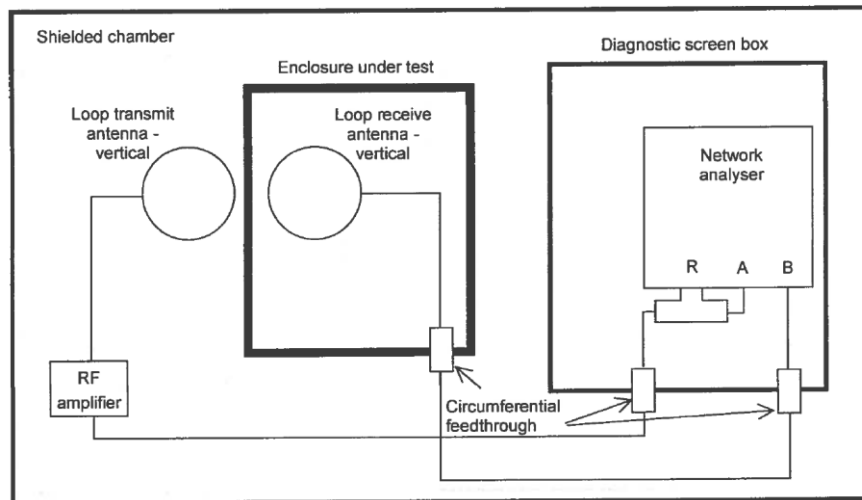
- ☐ The measurements are carried out in a 3 meters semi-anechoic chamber.
- The EUT and auxiliaries are set:
 - ☐ 80 cm above the ground on the non-conducting table (Table-top equipment)
 - ☒ 10 cm above the ground on isolating support (Floor standing equipment)

2.2. TEST METHOD

2.2.1. REFERENCE POINT



2.2.2. ATTENUATION VALUES





The equipment under test is placed on the center of the turn-table, on a wooden platform.

The analysis bands are :

- Band 1 : 10 kHz to 100 kHz
- Band 2 : 100 kHz to 1 MHz
- Band 3 : 1 MHz to 30 MHz
- Band 4 : 30 MHz to 150 MHz
- Band 5 : 150 MHz to 1 GHz
- Band 6 : 1 GHz to 18 GHz

The frequency step is : 1 to 2 %

The angular position of the cabinet is : 1 doors side & 3 sides

Emission antenna high : 1.1 m

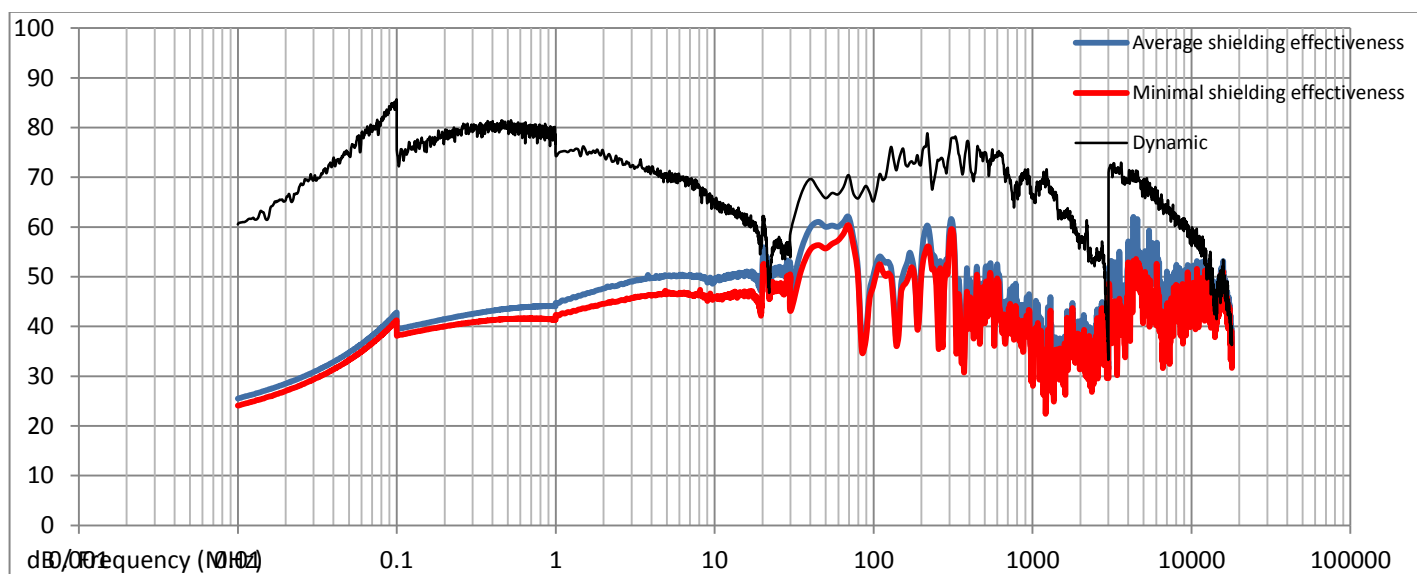
Receiving antenna high : 1.1 m

2.3. TEST EQUIPMENT LIST

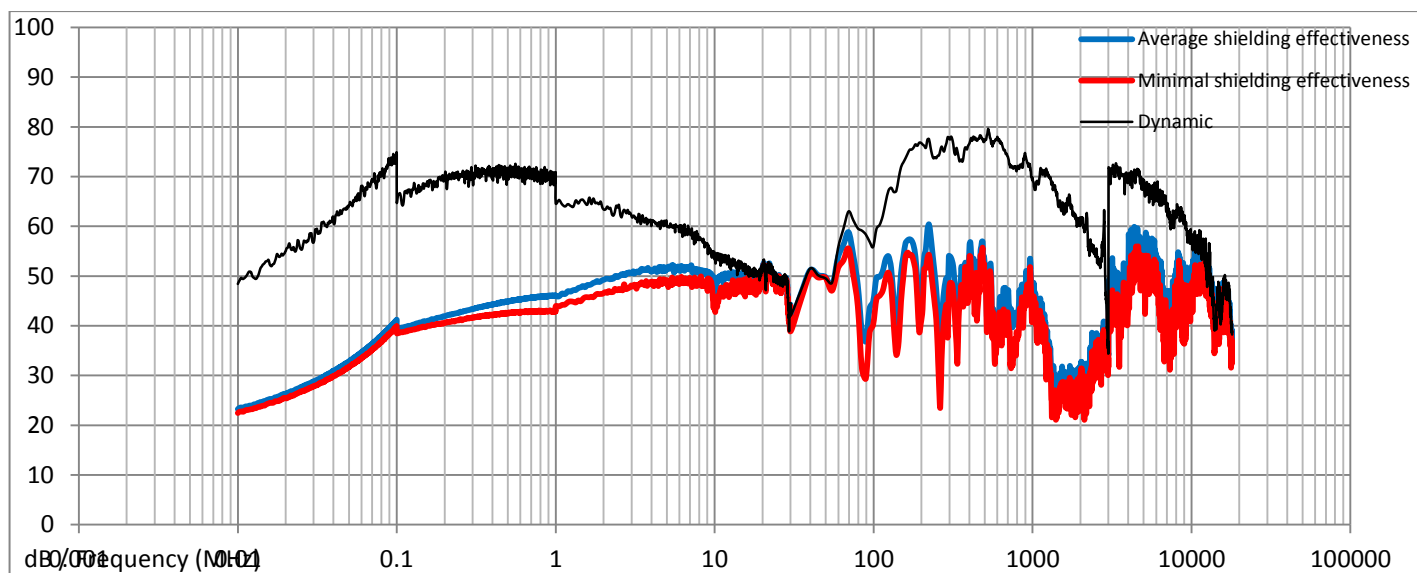
Apparatus	Trade Mark	Type	Registration number	Used in
Semi-Anechoic room	SIEPEL	--	D3044022	All
Spectrum Analyzer	ROHDE & SCHWARZ	ESCI	A2642022	All
Cable	Metz	N 8 m	A5329699	All
Cable	3.5MD TDINOX	SMA 7m	A5329458	All
Loop antenna	LCIE	9t diam 30 cm	C2040220	Band 1 2 3
Loop antenna	EMCO	6502	C2040159	Band 1 2 3
Generator	ROHDE & SCHWARZ	SME03	A5400039	Band 1 2 3
Antenna	Seibersdorf Laboratories	PCD8250	C2040204	Band 4 5
BILOG antenna	SCHAFFNER	CBL6111A	C2040154	Band 4 5
RF Preamplifier	Mitec	0.01-3 GHz	A7085015	Band 4 5
Cable	RADIAL	N 1 m	A5329680	Band 4 5
RF Sweeper	HP	83630B	A5400035	Band 4 5 6
Horn antenna	EMCO	3115	C2042045	Band 6
Horn antenna	EMCO	3115	C2042046	Band 6
HF Preamplifier	MITEQ	1-18GHz	A7086011	Band 6
Cable	FLEX	SMA 2m	A5329567	Band 6
Spectrum Analyzer	HP	8563E	A4060044	Band 6

2.4. TEST RESULTS

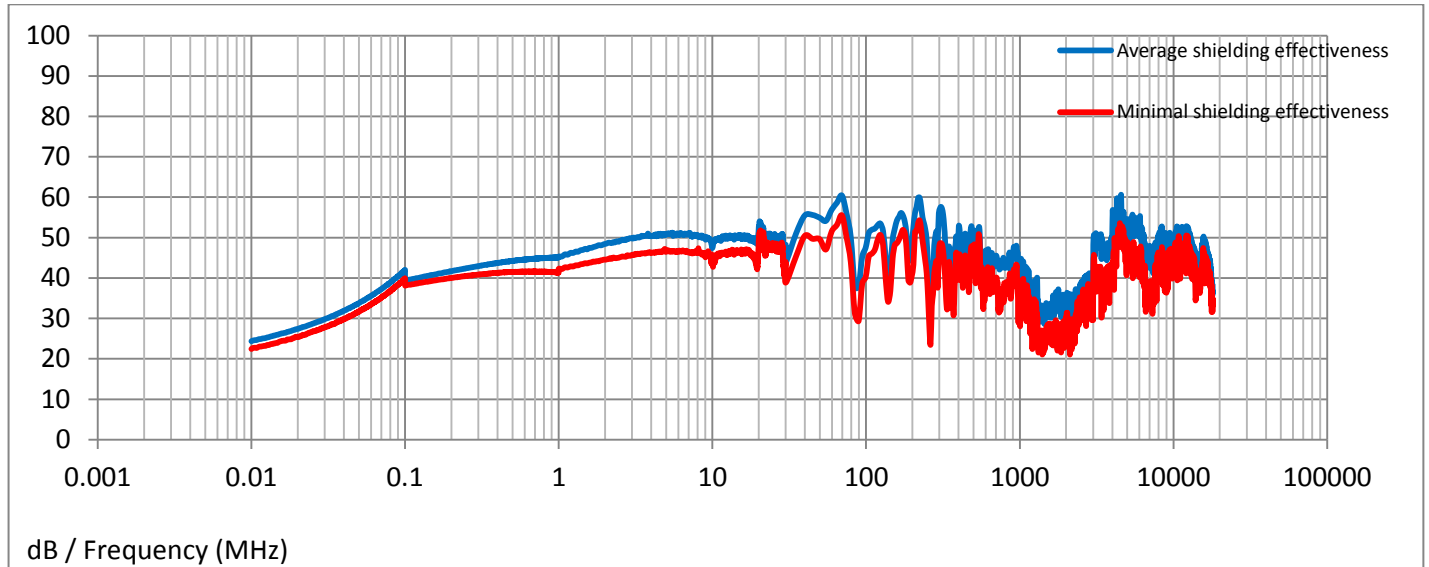
Vertical polarity



Horizontal polarity



All Polarities:



The shielding effectiveness is measured in Magnetic field for the frequencies 10 KHz to 30 MHz, and in Electric field for the frequencies 30 MHz to 18 GHz.

2.5. CONCLUSION

The average cabinet attenuation is :

34 dB	10 KHz to 100 KHz
44 dB	100 KHz to 1 MHz
50 dB	1 MHz to 30 MHz
47 dB	30 MHz to 1 GHz
40 dB	1 GHz to 10 GHz
47 dB	10 GHz to 18 GHz

The minimum cabinet attenuation is :

22 dB	10 KHz to 100 KHz
38 dB	100 KHz to 1 MHz
41 dB	1 MHz to 30 MHz
23 dB	30 MHz to 1 GHz
21 dB	1 GHz to 10 GHz
31 dB	10 GHz to 18 GHz

The EM shielding code is : EM23422X