

Petitioner's reference:

File Number: **22015681**

**Federal Signal Vama
C/ Dr. Ferran, 7
08339 – VILASSAR DE DALT
BARCELONA - SPAIN**

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Date: **June 05th, 2002**

Represented by: **Mr. Xavier Compte**

LGAI
Campus de la UAB
Apt. Correos, 18
08193 Bellaterra
Barcelona
Tel +34- 93 567 2000
Fax +34- 93 567 2001
E-mail: lgai@lgai.es
www.lgai.es

ELECTROMAGNETIC COMPATIBILITY

STANDARD: Directive 95/54/EC

DEVICE TESTED:

Denomination: LED light.
Manufacturer: Federal Signal Vama
Quantity: 1
Model: Microled 12V blue
Part number: Sample1
Code: 1/1

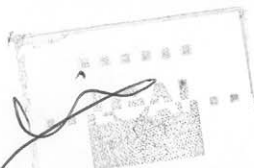
TEST DATE:

Test product reception: 31/05/2002
Test initial date: 03/06/2002
Test final date: 05/06/2002
Test site: LGAI Technological Center.

TEST RESULTS:

The device under test has been found to be in compliance with the requirements of Directive 95/54/EC.

The results are shown in detail in the following pages.

Authorised Signatory/ies**Date of issue:** Bellaterra, 05/06/2002

Antoni Garriga i Roca
Manager of EMC Centre



Antoni Martin Ruiz
Technical responsible

The test result is only valid for the equipment tested. A summary of the test report may be reproduced only when it is clearly that it is a summary, and the summary has been approved by

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1 TEST REQUIREMENTS

1.1 Measuring equipment used

Radiated Emission Test
Semianechoic chamber EUROSHIELD model TC2 TEST CHAMBER.
Receiver EMI HP model 8542E.
Attenuator 3dB NARDA model 773-3 s/n: 111.
Bilogoperiodic antenna MESS-ELEKTRONIK model VULB 9165 s/n: 2010.
Antenna tower HD model MA 240T s/n: 240/458.
Powerline Filter (Single Fase) 100A – Mod: 23336C S/N:
Power Supply Technos Electronico, S.A. Mod: LN-1200/30 S/N: 0-0119704
LISN 70A MESS-ELEKTRONIK model NNBM 8126-A s/n: 8126-A/123 and 8126-A/122.
Computer system HP model KAYAK XM600 SERIES. S/N: FR10717868

Radiated Immunity
Semianechoic chamber EUROSHIELD model TC1 TEST CAMBER
Amplifier AR model 500A100M2 s/n: 21608
Amplifier AR model 500W1000M11 s/n: 21625
Power meter BOONTON model 4300 s/n: 93305EF
Power sensor BOONTON model 51013(4E) s/n: 29953 and 29954
Directional coupling AR model DC2600 s/n: 21755
Directional coupling AR model DC6180 s/n: 22077
Signal generator HP model HP8648D s/n: 3642U00189
Field intensity meter AR model FP3000A s/n: 21937
Logoperiodic antenna EMC AUTOMATION model LPD-1000-4-3 s/n: LPD98022
Powerline Filter (Single Fase) 100A – Mod: 23336C S/N:
Power Supply Technos Electronico, S.A. Mod: LN-1200/30 S/N: 0-0119704
LISN 70A MESS-ELEKTRONIK model NNBM 8126-A s/n: 8126-A/123 and 8126-A/122.
Biconical antenna EMCO model:3109XLP s/n:9712-3139

1.2 DUT Operation Mode

Condition during the test:

Voltage supply: 13.5VDC
DUT working in continuous mode.

1.3 Measuring uncertainties

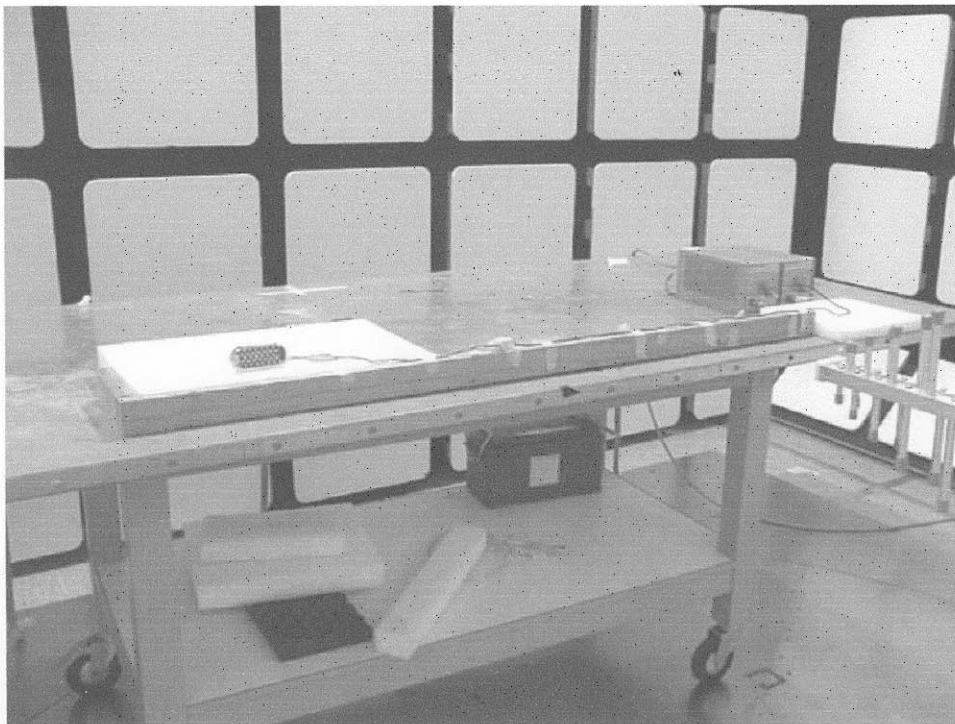
Test	Uncertainty
Radiated Emission	$\pm 4\text{dB}$
Radiated Immunity	$\pm 1\text{V/m}$

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by a coverage factor $k=2$, which for normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EAL publication EA-4/02.

2 RESULTS

2.1 Radiated Emission

Test Site	SAC2	Environmental conditions Temperature: 22.6°C Humidity: 59.1 % Atm. Pressure: 987.40mbar
Polarisation	Horizontal and vertical	



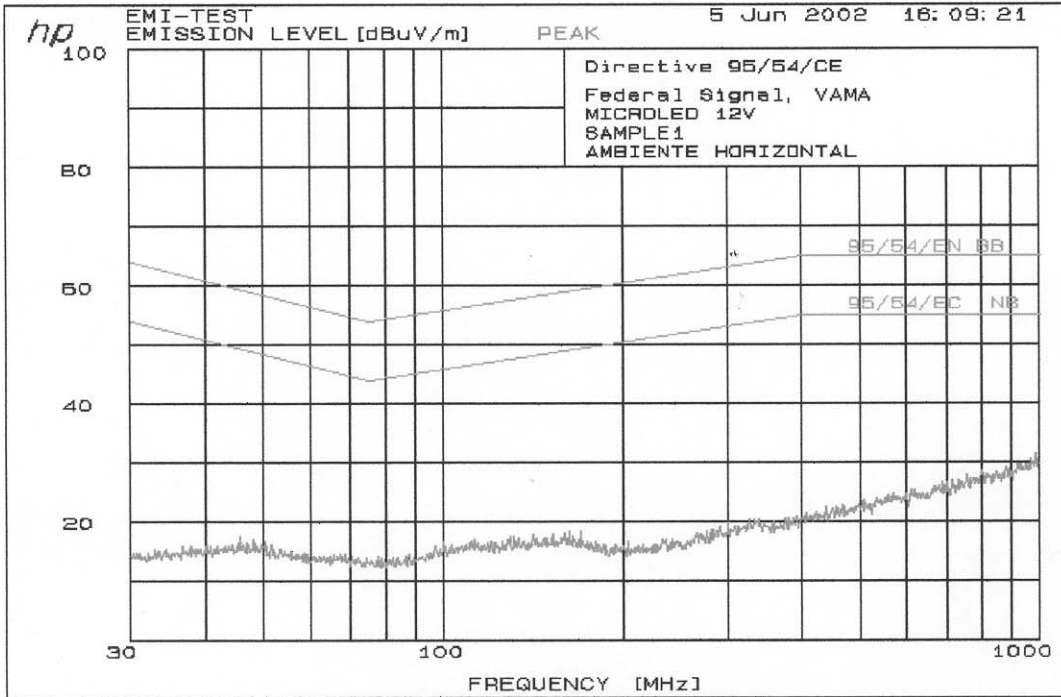
Broadband (BB):

Bandwidth	Limit (dB μ V/m)			Results
	30-75MHz	75-400MHz	400-1000MHz	
120kHz	$L=64-25.13\log(f/30)$	$L=54+15.13\log(f/75)$	L=65	PASS

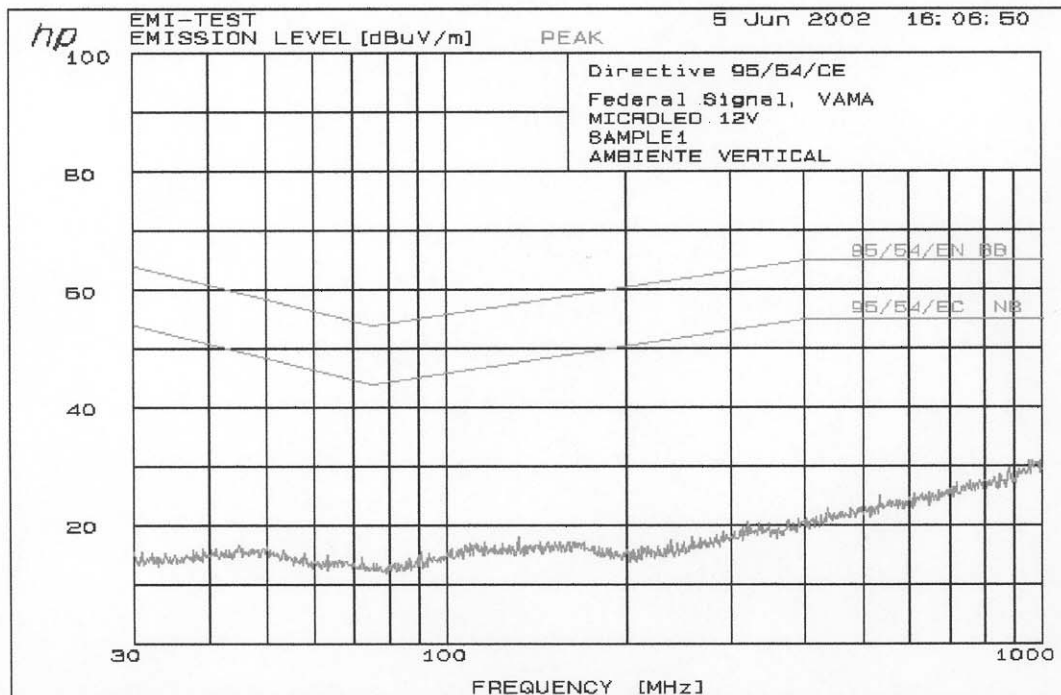
Narrowband (NB):

Bandwidth	Limit (dB μ V/m)			Results
	30-75MHz	75-400MHz	400-1000MHz	
120kHz	$L=54-25.13\log(f/30)$	$L=44+15.13\log(f/75)$	L=55	PASS

RESULTS



ENVIRONMENT NOISE MEASUREMENT, HORIZONTAL POLARISATION



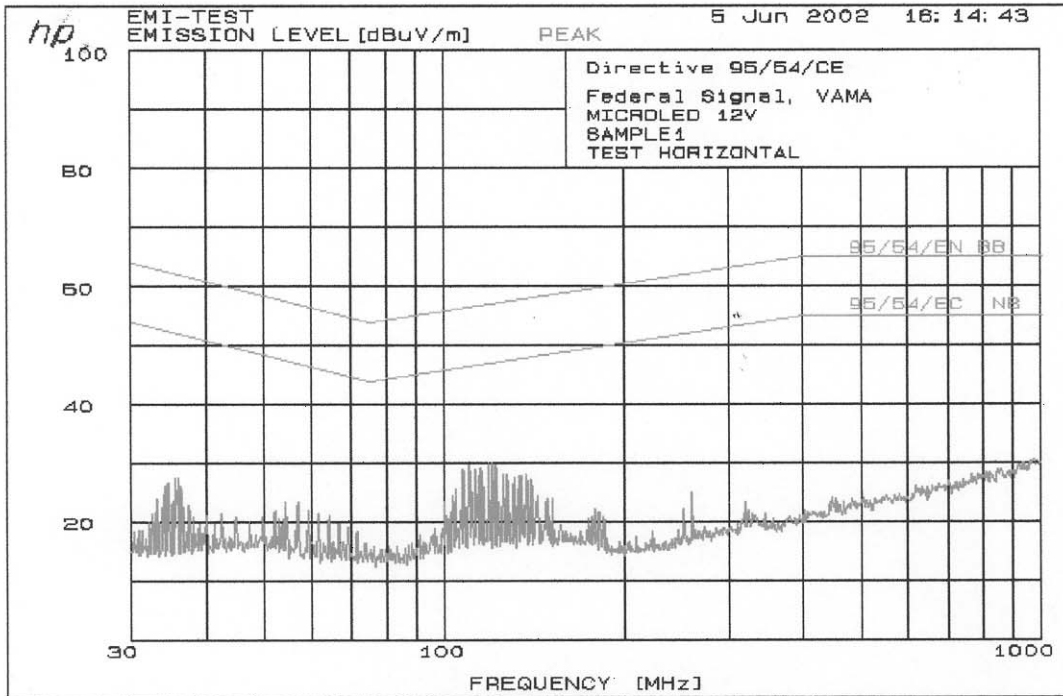
ENVIRONMENT NOISE MEASUREMENT, VERTICAL POLARISATION



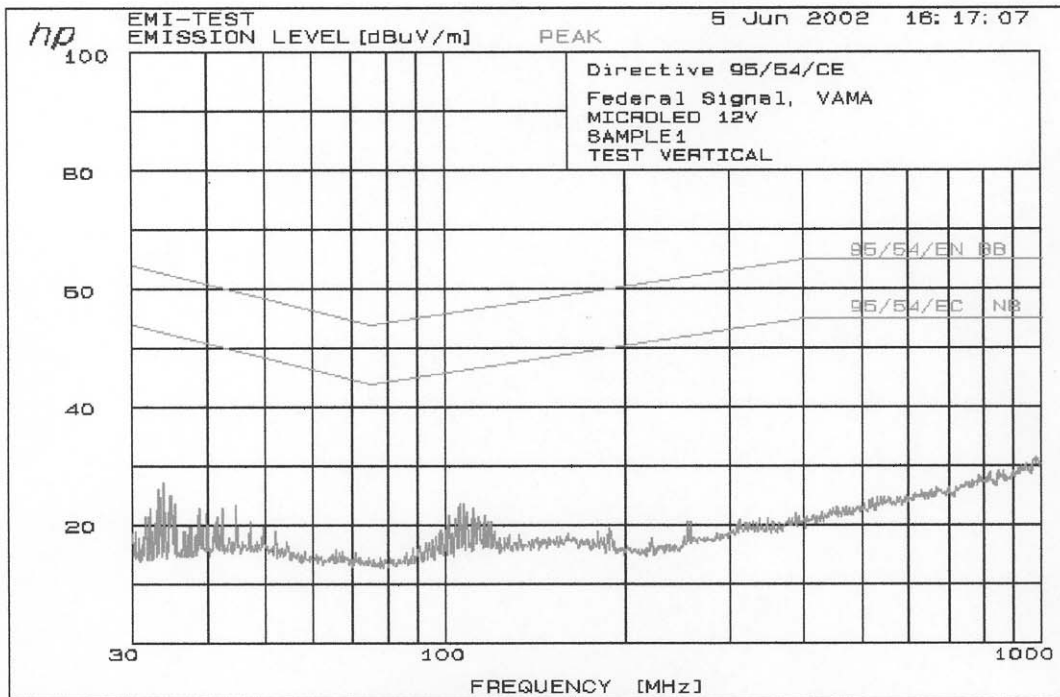
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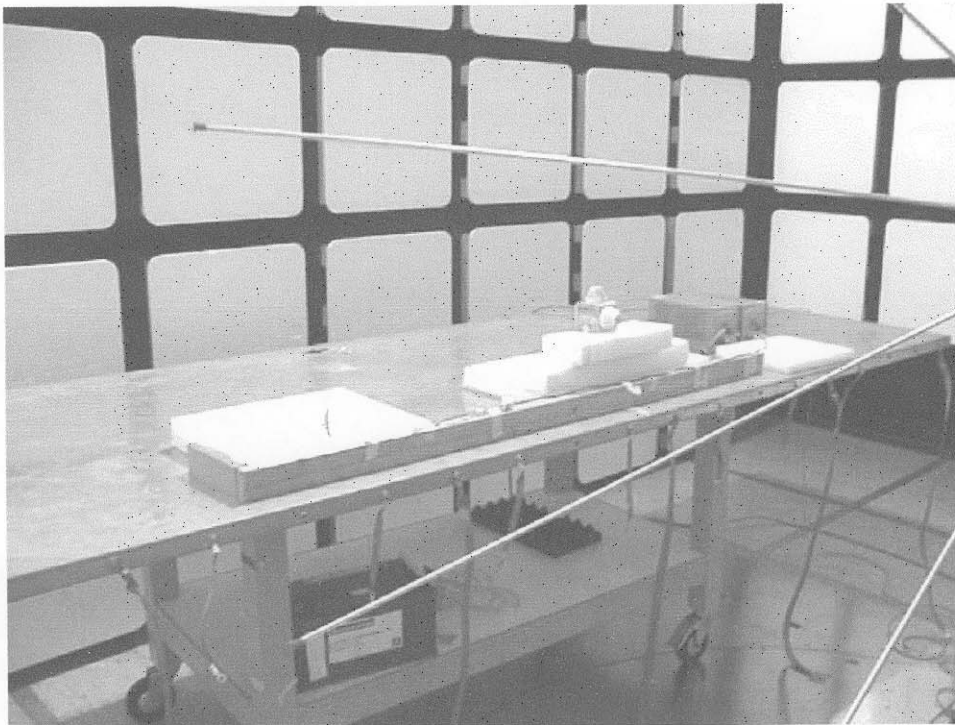
HORIZONTAL POLARISATION



VERTICAL POLARISATION

2.2 Radiated Immunity

Test Site	SAC1	Environmental conditions Temperature: 21.0°C Humidity: 64.9 % Atm. Pressure: 997.81mbar
Modulation	AM 80%, 1kHz	
Polarisation	Horizontal and vertical	



Level Test	Freq. (MHz)	Modulation	Results
30V/m	20-1000	CW	PASS
	20-1000	AM	PASS

Conformance criteria: The main performance of the device under test must remain during the test.