



TEST REPORT nr. R09164101

Federal Communication Commission (FCC)

Test item

Description: MONITOR LCD 15"
Trademark: GLOBAL DISPLAY SOLUTIONS
Model/Type: G1500072 – G1500127

Test Specification

Standard: FCC Rules & Regulations, Title 47 - Part 15.107 and Part 15.109 (2009)

Client's name: GLOBAL DIPLAY SOLUTIONS S.p.a.

Address: Via Tezze, 20/A - 36073 Cornedo Vicentino (VI) - ITALY

Manufacturer's name: Same as client

Address: --

Report

Tested by: C. Panozzo - Technician

Approved by: R. Beghetto - Laboratory Manager

Date of issue: 28.01.10

Contents: 22 pages

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The test results presented in this report relate only to the item tested.



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1. Summary

Emission Test:

FCC Rules & Regulations, Title 47

Test specifications	Environmental Phenomena	Port	Tests sequence	Result
Part 15.107	Continuous disturbance voltage	Mains terminal	1	Complies
Part 15.109	Radiated disturbance	Enclosure	2	Complies

The Test Report was given to the Client representatives for necessary documentation of ratification of the tested equipment and it is valid for the FCC certification.



2. Description of Equipment under test (EUT)

Power supply: 110 Vac 60Hz single-phase + earth
Power cable: Unshielded
Serial Number: --

2.1 Test Site

Company: CMC Centro Misure Compatibilità S.r.l.
Address: Via dell'Elettronica, 12/C
36016 Thiene (VI) - ITALY

3. Testing and sampling

Date of receipt of test item: 16.12.09
Testing start date: 16.12.09
Testing end date: 21.12.09
Samples tested nr.: 1

Test was executed on model G1500072.

The differences between two models are reported in the operational description

Sampling procedure: Equipment used for testing was picked up by the manufacturer, at the end of the production process with random criterion

Internal identification: adhesive label with the product number P091105



4. Operative conditions

EUT exercising	: Steady condition Patern H 1024x768 60GHz
Auxiliary equipment	: - N.1 24Vdc power supply TDK-LAMBDA LS150-24 - N.1 PC NCR PIVAT Core 01 Intel P4 2.80 GHz, Graphic controller 82845G - N.1 USB ultra flat keyboard Logitech M/N Y- BP62A - N.1 USB optical mouse Logitech M/N Y-BJ69 - N.1 USB Key Kingston Datatraveler 1GB - N.1 Printer Samsung ML-1750 - N.1 24Vdc Power 3Mt Cable - N.1 VGA 5 Mt cable - N.1 USB A-MiniB M-M 5 Mt cable - N.1 USB A-B - N.4 USB A-A M-F
Performance check for immunity test	: --
Test configuration	: Display under test powered at 24Vdc and connected to the PC with VGA cable; USB A- MiniB cable; USB A-A M-F cables of Mouse keyboard and USB key, the printer connetted to the PC with USB A-B cable and USB A-A M-F.

Video output VGA 1024x768 60Hz - Page of H's



5. Photograph(s) of EUT

5.1 Photograph(s) of EUT





5.2 Photograph(s) of setup





6. Equipment list

<i>Id. number</i>	<i>Manufacturer</i>	<i>Model</i>	<i>Description</i>	<i>Serial number</i>	<i>Last calibration</i>	<i>Due date calibration</i>
CMC S001	Rohde & Schwarz	ESHS30	EMC interference receiver	862024/003	January '09	January '10
CMC S009	Rohde & Schwarz	ESH2-Z5	Artificial network	839497/007	January '09	January '10
CMC S010	Rohde & Schwarz	ESH3-Z2	Impulses limiting device	---	January '09	January '10
CMC S136	Schwarzbeck	VULB 9136	Broadband Antenna	9136-205	May '07	May '10
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '09	January '10
CMC A013	CMC	TR01	Rotary motorized table	---	---	---
CMC A014	CMC	PM01	Antenna positioning Mast	---	---	---



7. Measurement uncertainty

Test	Expanded Uncertainty	note
Conducted Emission		
(50Ω/50μH AMN) - (9 kHz – 150 kHz)	±3.8 dB	1
(50Ω/50μH AMN) - (150 kHz – 30 MHz)	±3.4 dB	1
(Voltage probe) - (150 kHz – 30 MHz)	±3.0 dB	1
(50Ω/5μH AMN) - (150 kHz – 108 MHz)	±3.2 dB	1
Discontinuous Conducted Emission		
Conducted Emission (50Ω/50μH AMN) - (9 kHz – 150 kHz)	±3.8 dB	1
Conducted Emission (50Ω/50μH AMN) - (150 kHz – 30 MHz)	±3.4 dB	1
Disturbance Power (30 MHz – 300 MHz)		
	±3.2 dB	1
Radiated Emission		
(0,150 MHz – 30 MHz)	±4.5 dB	1
(30 MHz – 1000 MHz)	±4.8 dB	1
(1 GHz – 6 GHz)	±4.4 dB	1
Electromagnetic field EMF		
	±18.8 dB	1
Harmonic current emissions test		
	±2.4 %	1
Voltage fluctuation and flicker test		
	±6.0 %	1
Insertion loss test		
	±2.6 %	1
Radiated electromagnetic disturbance test (loop antenna)		
	±2.5 %	1
Radiated electromagnetic field immunity test		
	0.9 V/m at 3V/m	1
Pulse modulated radiated electromagnetic field immunity test		
	0.9 V/m at 3V/m	1
Injected currents immunity test		
	0.6 V at 3V	1
Bulk current		
	9 mA at 60 mA	1
Power frequency magnetic field immunity test		
	0.3 A/m at 3 A/m	1
Electrostatic discharge immunity test		
		2
Electrical fast transients / burst immunity test		
		2
Surge immunity test		
		2
Short interruption immunity test		
		2
Voltage transient emission test		
	±5 %	1
Transient immunity test		
		2

Notes

Note 1:

The expanded uncertainty reported according to EN55016-4-2(2004-10) is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of p = 95%

Note 2:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor k = 2.



8. Reference documents

Reference no.	Description
FCC Rules and Regulation Title 47 part 15 (2009)	--
Internal Procedure PM001 rev. 2.0 (Quality Manual)	Measure procedure
Internal procedure INC_M rev. 7.0 (Quality Manual)	Measurement uncertainty calculation



9. Deviation from test specification

In agreement with the client, emission tests were performed with peak detector .

At the frequencies where the measures exceed the limit or within 6dB from it, the test was repeated with quasi-peak detector and/or average detector.

10. Test case verdicts

Test case does not apply to the test object.....: N / N.A.

Test item does meet the requirement.....: P / Pass / Complies

Test item does not meet the requirement.....: F / Fail / Does not comply

Test not performed: NE / Not Executed

11. Results

In this clause tests results are reported.

Measurement uncertainty is in accordance with document CMC INC_M rev. 7.0.



11.1 Continuous disturbance voltage test (150 kHz – 30 MHz)

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part. 15.107
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Shielded chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S001, CMC S009, CMC S010

Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Mains terminal
Frequency range: 150 kHz – 30 MHz

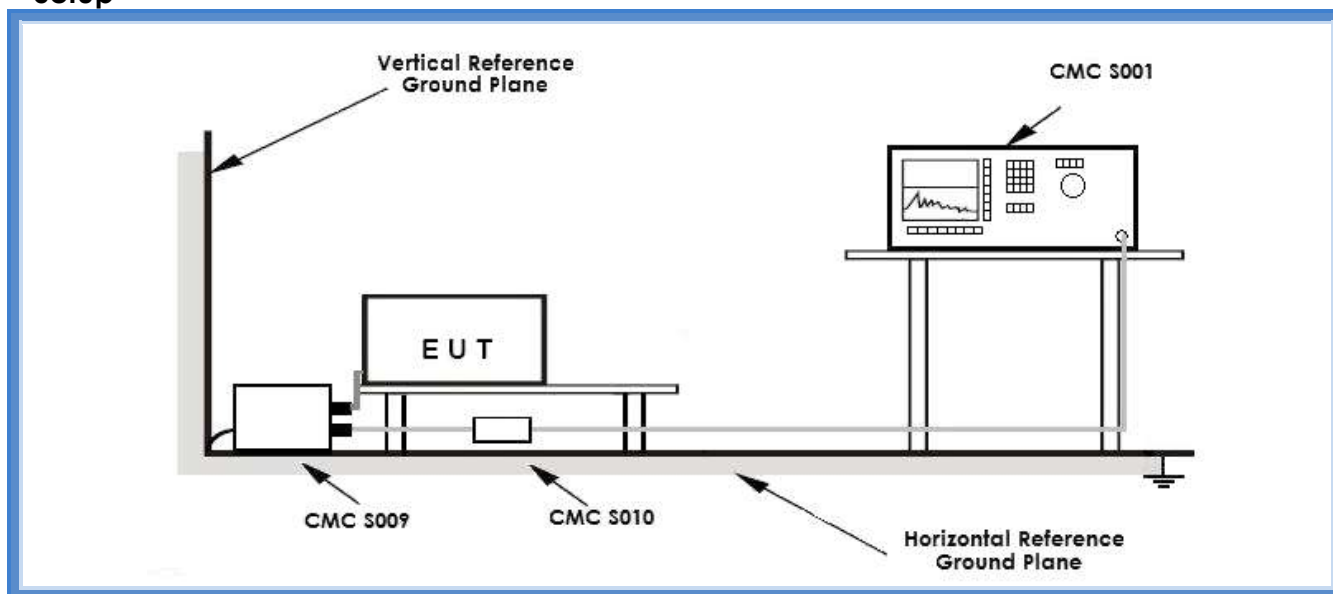
Acceptance limits

Limits for class A equipment		
Frequency range (MHz)	dB(μV) Quasi-peak	dB(μV) Average
0,15 to 0,50	79	66
0,5 to 5	73	60
5 to 30	73	60

Limits for class B equipment		
Frequency range (MHz)	dB(μV) Quasi-peak	dB(μV) Average
0,15 to 0,50	66 to 56	56 to 46
0,5 to 5	56	46
5 to 30	60	50



Setup



Result

Line	Graphs	Remarks	Result
N	G09164109	Class B	Complies
L1	G09164110	Class B	Complies
Remarks:	--		

Graphs Legend

PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a X
AV: Average; AV [1s] (average at 1 second) values are marked with a +

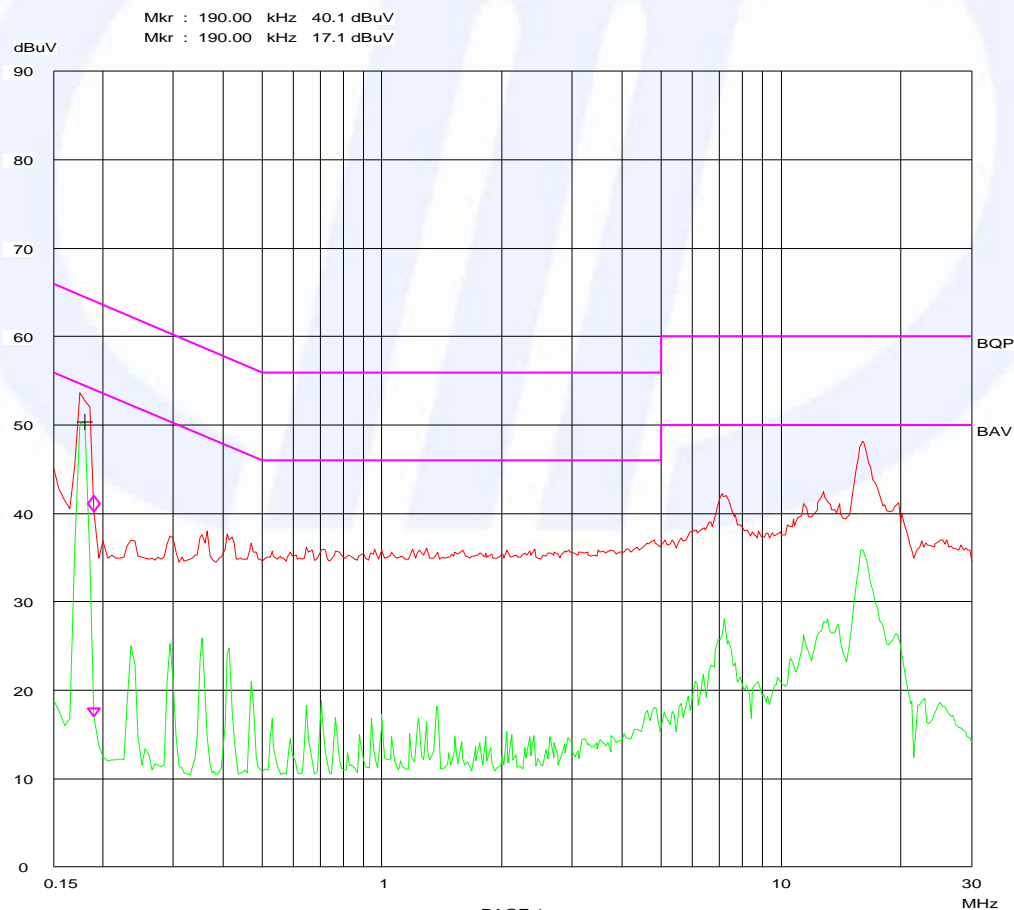


Graphs

CMC Centro misure compatibilita srl

Emission 0.15-30MHz

Op Cond: In Function pattern H
Operator: Gandini 09164109
Test Spec: Line N

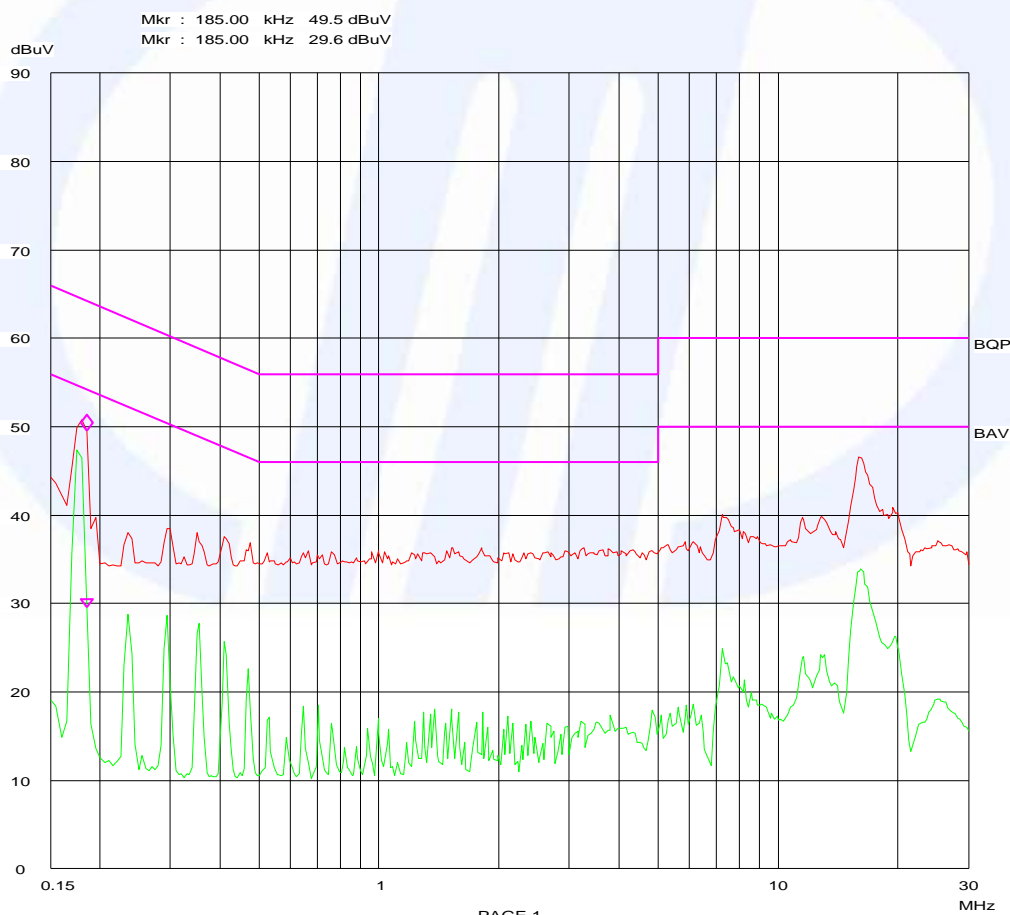




CMC Centro misure compatibilita srl

Emission 0.15-30MHz

Op Cond: In Function pattern H
Operator: Gandini 09164110
Test Spec: Line L



Result: The requirements are met



11.2 Radiated disturbance test (30 – 2000 MHz)

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part. 15.109
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Semi-anechoic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S136, CMC S164, CMC A013, CMC A014

Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
Frequency range: 30 MHz – 2000 MHz
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 3m



Acceptance limits

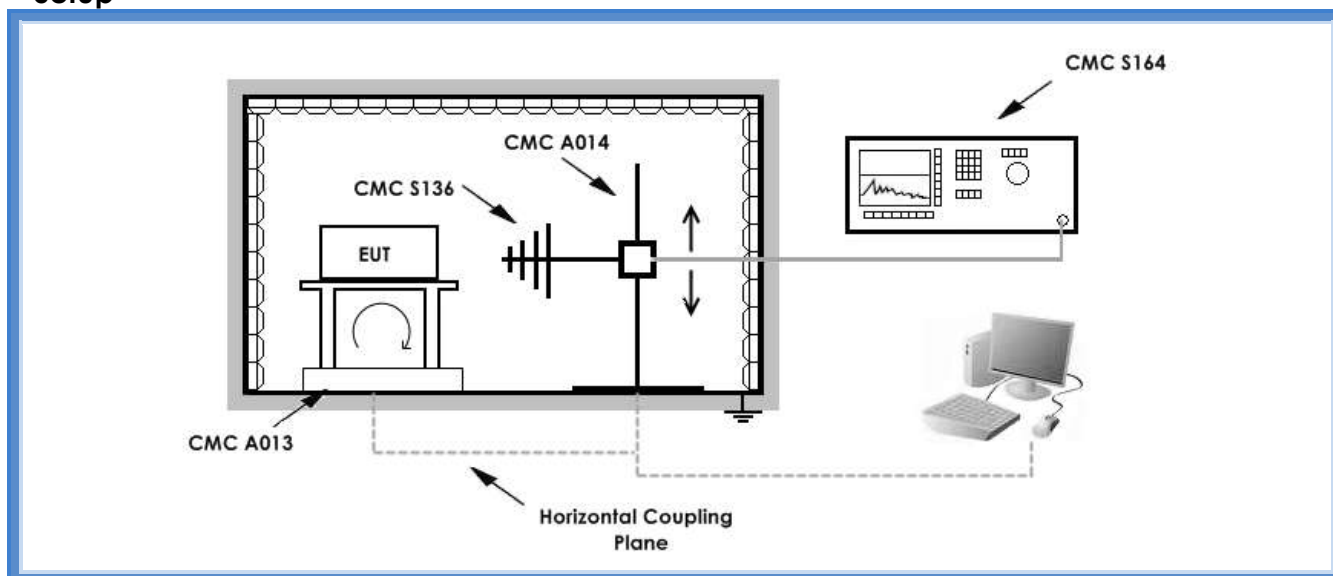
Limits for class A equipment	
Frequency range (MHz)	Limits [dB(μV/m)]
30 to 88	49,08
88 to 216	53,52
216 to 960	56,44
960 to 1000	59,54

Limits for class B equipment	
Frequency range (MHz)	Limits [dB(μV/m)]
30 to 88	40
88 to 216	43,52
216 to 960	46,02
960 to 1000	53,98

Limits for class B equipment		
Frequency range (GHz)	Limits [dB(μV/m)] (~)	
	Average Limit	Peak Limit
1 to 2	50	70



Setup



Result

Polarization	Frequency Range (MHz)	Graphs	Remarks	Result
V	30 – 1000	G09164101	Class B	Complies
H	30 – 1000	G09164102	Class B	Complies
V	1000 – 2000	G09164103	Class B	Complies
H	1000 – 2000	G09164104	Class B	Complies
Remarks:	--			

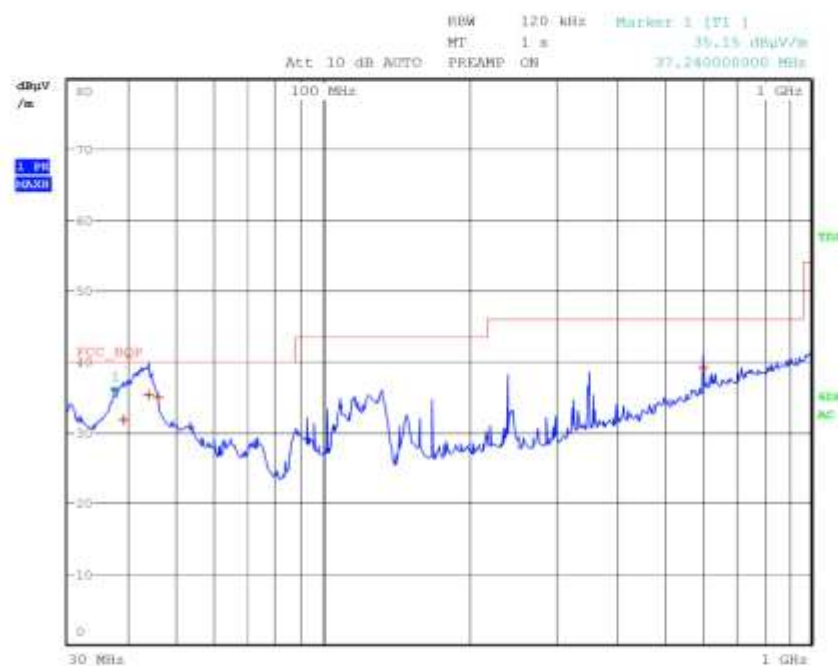
Graphs Legend

PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
AV: Average; AV [1s] (average at 1 second) values are marked with a x



Graphs

Meas Type Emission 30-1000MHz
Equipment under Test
Manufacturer
OP Condition in function pattern H 1024x768 60hz
Operator Panozzo 09164101
Test Spec
Vert



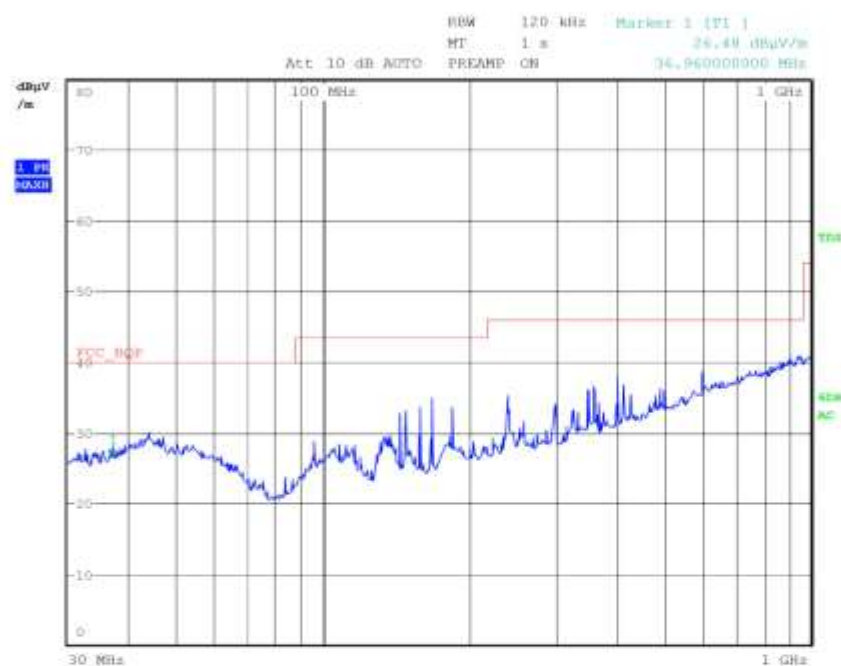
Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 4

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	38.920000000 MHz	31.61	Quasi Peak	-8.39
1	43.880000000 MHz	35.21	Quasi Peak	-4.79
1	45.920000000 MHz	34.79	Quasi Peak	-5.21
1	601.480000000 MHz	39.05	Quasi Peak	-6.97



Meas Type Emission 30-1000MHz
Equipment under Test
Manufacturer
OP Condition in function pattern H 1024x768 60hz
Operator Panozzo 09164102
Test Spec
Horiz.

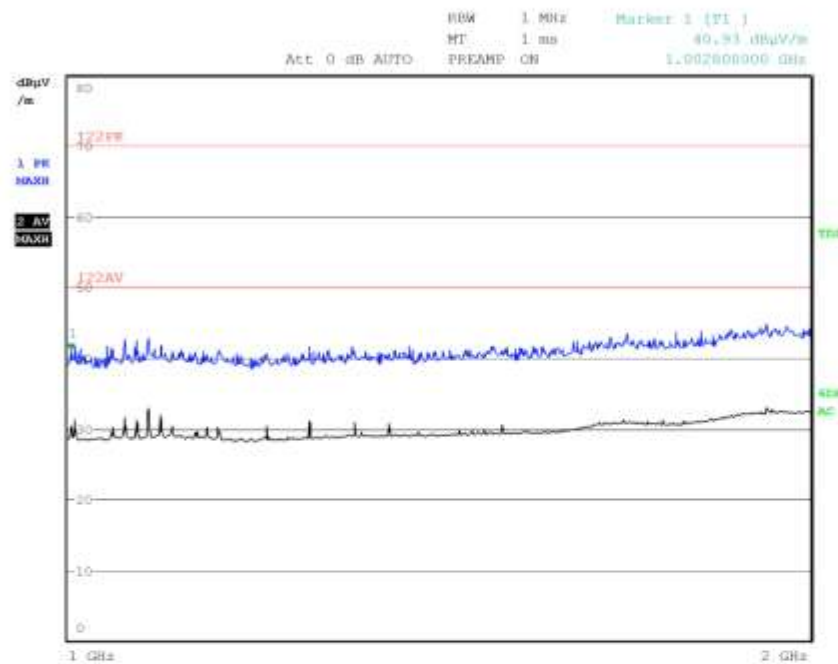


Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 0



Meas Type Emission 1000-2000MHz
Equipment under Test
Manufacturer
OP Condition in function pattern H 1024x768 60hz
Operator Panozzo 09164103
Test Spec
Vert.

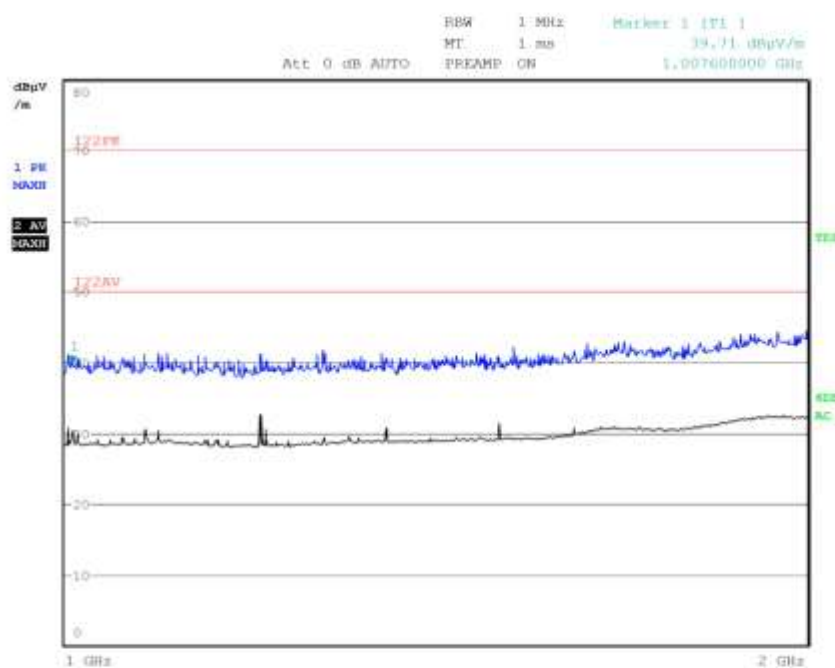


Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 0



Meas Type Emission 1000-6000MHz
Equipment under Test
Manufacturer
OP Condition in function pattern H 1024x768 60hz
Operator Panozzo 09164104
Test Spec
Horiz.



Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 0

Result: The requirements are met