



TEST REPORT nr. R13031001

Federal Communication Commission (FCC)

Test item

Description.....: PNF1P-TG CONTROLLER USB PEN 125KHZ MULTITAG
Trademark.....: iDTRONIC
Model/Type: STICK-LF-ASS

Test Specification

Standard: FCC Rules & Regulations, Title 47 - Part 15.207 and Part 15.209:2011

Client's name: APROMIX S.r.l.

Address: Contrà San Giorgio, 148 – 36061 Bassano del Grappa (VI) – ITALY

Manufacturer's name : Same as client

Address: --

Report

Tested by: G. Gandini – Technician

Giovanni Gandini

Approved by: R. Beghetto – Laboratory Manager

R. Beghetto

Date of issue: 12.03.13

Contents.....: 20 pages

This test report shall not be reproduced except in full without the written approval of CMC.
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 - Part 15.207 and Part 15.209:2011

Test specifications	Environmental Phenomena	Port	Tests sequence	Result
Part 15.207	Continuous disturbance voltage	Mains terminal	2	Complies
Part 15.209	Radiated disturbance	Enclosure	1	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 : From USB port
Power cable : Unshielded
Serial Number : --
Components list : Annex 1

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 : 20.02.13
Testing start date : 01.03.13
Testing end date : 05.03.13
Samples tested nr. : 1
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
P130166

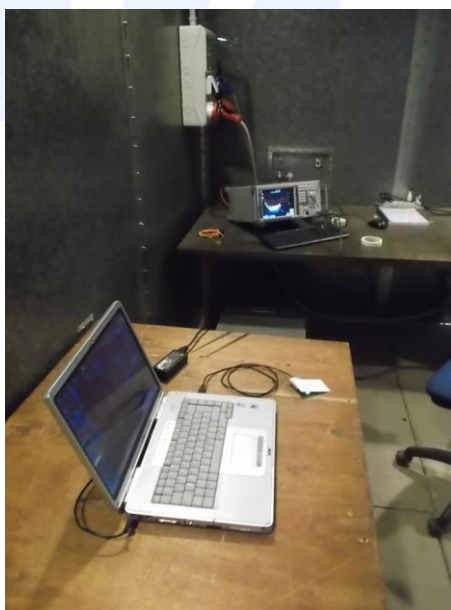
4. Operative conditions

EUT exercising : Steady condition, PC connected
Auxiliary equipment : None



5. Photograph(s) of EUT

5.1 Photograph(s) of setup





6. Equipment list

Id. number	Manufacturer	Model	Description	Serial number
CMC S001	Rohde & Schwarz	ESHS30	EMC interference receiver	862024/003
CMC S002	Rohde & Schwarz	ESVS30	EMC interference receiver	826638/011
CMC S003	SCHAFFNER	NSG 2025-4	Burst source with CDN	1010
CMC S004	SCHAFFNER	NSG 435-01	ESD simulator	1166
CMC S005	XITRON	2503	Harmonic & Flicker analyser	2503592013
CMC S006	Chauvin Arnoux	CA43	Field meter	218541RLV
CMC S007	Rohde & Schwarz	SMY01	RF signal generators	841403/038
CMC S009	Rohde & Schwarz	ESH2-Z5	Artificial network	839497/007
CMC S010	Rohde & Schwarz	ESH3-Z2	Impulses limiting device	---
CMC S012	Rohde & Schwarz	MDS21	Absorbing clamp	838506/015
CMC S013	Rohde & Schwarz	EZ-17	Current probe	840411/009
CMC S014	Rohde & Schwarz	ESH2-Z3	Passive probe	---
CMC S015	RKB	LOG801000	Log-periodic Antenna	---
CMC S016	Rohde & Schwarz	HK116	Biconical antenna	839472/001
CMC S017	Rohde & Schwarz	HL223	Log-periodic Antenna	825584/009
CMC S018	SCHAFFNER	CDN 126	Coupling clamp	128
CMC S019	FCC	FCC 801-M5-25	CDN Power Line	06
CMC S021	CMC	TRBS 01	Balance-to-unbalance transformer	---
CMC S022	Teseo	LAS 1	Loop antenna	3971
CMC S024	CMC	CTL-01	Voltage change for LISN	---
CMC S025	Salmoiraghi	1750-1	Hygro - Thermograph	323.601
CMC S026	Chroma	C6530	Power supply source	653000095
CMC S027	Amplifier Research	75A250	RF Amplifier	19349
CMC S028	FCC	FCC-203I	Injection clamp	209
CMC S029	Keytek	Cemaster	Surge, dips, burst source	9609258
CMC S030	Rohde & Schwarz	ESPC	EMC interference receiver	844006/013
CMC S031	Tektronix	TDS 210	Digital oscilloscope	B010552
CMC S032	SCHAFFNER	NSG 2050	Surge source with CDN	200111-253AR
CMC S033	Tektronix	P6015	High voltage probe	R0238/1
CMC S034	Schwarzbeck	UHA 9105	Dipole	UHA 91052234
CMC S037	Rohde & Schwarz	NRVS	Power meter	845127/023
CMC S039	CMC	BI 01	Induction coil	---
CMC S040	Walker Scientific	ELF 50-D	Magnetic field meter	K71484-290
CMC S042	Fluke	Fluke 73	Multimeter	67771510
CMC S(51-75)	CMC	LFXXX	Dummy lamp	---
CMC S076	Altitude	25438	Barometer	---
CMC S077	Fluke	Fluke-87	Multimeter	69050353
CMC S078	Amplifier Research	100W1000M1	RF Amplifier	21849
CMC S079	AH System, Inc	SAS-200/542	Biconical antenna	504
CMC S080	AH System; Inc	SAS-200/510	Log periodic antenna	807
CMC S081	AH System; Inc	SAS 200/550-1	Active Monopole Antenna	660
CMC S082	AH System; Inc	SAS-200/560	Loop Antenna	635
CMC S083	AH System; Inc	BCP-200/510	LF Current Probe	564
CMC S084	AH System; Inc	BCP-200/511	HF/VHF Current Probe	579
CMC S085	AH System; Inc	SAS-200/530	Broadband dipole	504
CMC S086	CMC	RHCP01	Resistance 470Kohm	---
CMC S087	CMC	RHCP01	Resistance 470Kohm	---
CMC S088	CMC	LFAS20	Dummy lamp	---
CMC S089	CMC	CSTARTER	Capacitor 5000pF	---
CMC S090	CMC	CSTARTER	Capacitor 5000pF	---
CMC S091	CMC	DIPLP	Dipole for Loop Antenna control	---
CMC S094	Schwarzbeck	NNBM 8126-A	Artificial network	8126A161
CMC S095	FCC	FCC 801-M3-16	CDN power line	9821



Id. number	Manufacturer	Model	Description	Serial number
CMC S096	B & K	2260	Phonometer	1847463
CMC S105	Decca	PA-50	Log-periodic antenna	34/17977 - b
CMC S106	Gigatronix	900	RF signal generator	323001
CMC S107	Hewlett Packard	HP8563E	Spectrum analyser	3846A09658
CMC S108	Emco	3115	Horn antenna	9811-5622
CMC S109	Farnell	LFM4	LF signal generator	531
CMC S110	CMC	OPS800	Open strip line 800mm	---
CMC S111	LEM HEME	PR 1001	Current probes	---
CMC S112	Amplifier Research	DC3010	Directional coupler	15238
CMC S114	Schwarzbeck	VHA 9103	Dipole	VHA 91031801
CMC S116	CMC	BCIP01	Bulk current injection probe	--
CMC S117	MARCONI	2019A	RF signal generator	118453/014
CMC S118	Hewlett Packard	E3632A	Programmable power supply	KR75301881
CMC S119	Hewlett Packard	HP8903B	Audio Analyzer	3011A09055
CMC S120	FCC	FC130-A	Bulk Current Injection Probe	118
CMC S121	Wavetek	LCR55	Bridge LCR	20104738
CMC S122	Fluke	336	Amperometric clamp meter	81754972
CMC S123	Rohde & Schwarz	SML03	RF signal generator	100625
CMC S124	Spin	AMTP42-20	Horn Antenna 18-26GHz	103
CMC S125	SCHAFFNER	PNW 2003	Dips source	200234-014SC
CMC S126	LDS + Dactron	V730-335+LASER	Vibration testing system	132+133+4512698
CMC S127	SCHAFFNER	HLA6120	Loop Antenna	1191
CMC S128	SCHAFFNER	CBA9428	RF Amplifier	1006
CMC S129	Rohde & Schwarz	ESPI7	Receiver	836.914/004
CMC S130	SCHAFFNER	NSG 5000	Automotive Impulse Generator	02032579-1
CMC S131	SCHAFFNER	CDN 500	Capacitive clamp	400-151/0128
CMC S132	CMC	OPS150	Open strip line 150mm	---
CMC S133	RKB	LOG8002500	Log-periodic Antenna	---
CMC S135	LEM HEME	PR 30	Current Probe	P04217832830
CMC S136	Schwarzbeck	VULB 9136	Broadband Antenna	9136-205
CMC S138	Agilent	33220A	Function / Arbitrary Waveform Gen.	MY44003979
CMC S139	Wilcoxon	736	Accelerometer 101 mV/g	12245
CMC S140	Wilcoxon	732A	Accelerometer 9.8 mV/g	1424
CMC S141	Dytran	3023A1	Accelerometer Triaxial	383
CMC S142	Narda	ELT-400+B-sensor	Exposure level tester	D-0034+D-0032
CMC S143	EM TEST	DPA 500	Harmonic & Flicker analyser	0903 - 04
CMC S144	Rohde & Schwarz	URV5	Power meter	881375/004
CMC S145	Hewlett Packard	778D	Directional coupler	17237
CMC S146	Amplifier Research	10W1000B	RF Amplifier	18451
CMC S150	RKB	LOG3080	Log-periodic Antenna	---
CMC S155	Chroma	61705	Power supply source	000000088
CMC S156	Yokogawa	DL9040	Digital oscilloscope	91F643771
CMC S158	CMC	ITF	Impedance	---
CMC S159	Rohde & Schwarz	SM300	RF signal generator	1006114
CMC S161	EM TEST	EFT 500 M4 S1	Burst source with CDN	V0739102946
CMC S162	FCC	FCC 801-M2-16	CDN power line	07047
CMC S163	NOISEKEN	ESS-2002+TC-815R	ESD simulator	ESS0787336
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052
CMC S170	Amplifier Research	FL7006	Field meter	0327425
CMC S171	Schwarzbeck	BBHA 9120 LF(A)	Broadband Antenna	284
CMC S172	Schwarzbeck	VHBD9134+BBAL9136	Broadband Antenna	9134-037
CMC S173	Luthi	CDN L-801 AF4	CDN I/O line	2481
CMC S174	Luthi	CDN L-801 AF8	CDN I/O line	2482
CMC S175	Luthi	CDN L-801 T2	CDN I/O line	2473
CMC S176	Luthi	CDN L-801 T4	CDN I/O line	2475
CMC S177	Luthi	CDN L-801 T8	CDN I/O line	2476



Id. number	Manufacturer	Model	Description	Serial number
CMC S178	Schwarzbeck	STLP 9128 C	Broadband Antenna (150 - 4000 MHz)	086
CMC S179	Frankonia	FLL-250A	RF Amplifier	1023
CMC S180	Milmega	RF350	RF Amplifier	1031422
CMC S181	Milmega	AS0822-200	RF Amplifier	1031424
CMC S182	Milmega	AS0206-50	RF Amplifier	1031425
CMC S183	Minicircuits	PWR-SEN-6G+	Power sensor	0809070042
CMC S184	ARRAY	3400A	Arbitrary Waveform Generation	TW00009164
CMC S185	EM TEST	OCS 500 M6 S4	Oscillatory compact simulator	V0915104789
CMC S187	Rohde & Schwarz	SMB100A	RF signal generator	102572
CMC S190	Spin	AMDR-10180	Horn antenna	01-309-09
CMC S193	Solar	6552-1A	BF Amplifier	---
CMC S194	CMC	CDN 16 PL	CDN Power line	---
CMC S195	Schwarzbeck	VULB 9118 E sp.	Log-periodic Antenna (50 - 2000 MHz)	827
CMC S196	EM TEST	BS 200N	Electronic switch	V100510506
CMC S197	EM TEST	UCS 200N	Pulse generator 1/2/3a/3b/6/7	V0825103901
CMC S198	FCC	F - 55	RF Current Probe	100999
CMC S199	EM TEST	CNI 503	CDN for Burst and Surge	V1026106843
CMC S200	Schwarzbeck	NSLK 8128	V-LISN	8128-273
CMC S201	Fairview microwave	AR-06N	6 dB attenuator	---
CMC S202	Rohde & Schwarz	CMU200	Universal radio communication tester	104099
CMC S203	CMC	VH	Van der Hoofden test-head	---
CMC S204	Amplifier Research	150L	RF Amplifier	10939
CMC S205	Schwarzbeck	NNBM 8124	LISN 5uH	065
CMC S206	Rohde & Schwarz	ESCI 7	EMC Receiver	100781
CMC S207	AlphaLab	ASMGM	Milligauss meter	584
CMC S209	Elektrotest	TPS40K 30K60S	AC Source	002.11
CMC S210	EM TEST	PFS 200N30	Power Fail simulator	V1130110311
CMC S211	Luthi	CDN L-801 M1	CDN M line	2811
CMC S212	Luthi	CDN L-801 M2	CDN M line	2812
CMC S213	Luthi	CDN L-801 M3	CDN M line	2813
CMC S214	EM TEST	VDS200N10	Voltage drop simulator	V1150111222
CMC S215	FCC	F-130A-1	BCI probe	112166
CMC S216	Luthi	MDS21	Absorbing clamp	4101
CMC S217	Schwarzbeck	TK9420	Voltage probe	458
CMC S218	RS	50WCW	Carico 50 Ohm 50W	---
CMC S219	EM TEST	CNV 504 N1.2	Box surge	V1210112161
CMC S220	Minicircuits	PWR-SEN-6GHS	USB POWER SENSOR	110082250012
CMC S221	Minicircuits	BW-N20W5+	Attenuator 20dB 5W (DC-18GHz)	0612
CMC S222	A-INFOMW	ACB06-100SN	Attenuator 6dB 100W (DC-3GHz)	J3081111111003
CMC S223	Minicircuits	BW-N20W20+	Attenuator 20dB 20W (DC-18GHz)	1217
CMC S224	Fairview microwave	SMC4037-20	Directional Coupler	J5DF568-081
CMC S225	Fairview microwave	SA3550N	Step Attenuator DC-3GHz	201237026
CMC S226	Werlatone	C6021-10	Dual Directional Coupler	99019
CMC A001	Sispe	F5123	Shield chamber	---
CMC A002	SIDT	951130	Anechoic chamber	---
CMC A007	CMC	10707	Semi-anechoic chamber	---
CMC A008	CMC	BPA	Track for absorbing clamp	---
CMC A013	CMC	TR01	Rotary motorized table	---
CMC A014	CMC	PM01	Antenna positioning Mast	---
CMC B026	Angelantoni	UY 245 IU	Climatic chamber	1059.78
CMC B087	Yokogawa	WT3000	Precision Power analyzer	91JB15155



7. Measurement uncertainty

Test	Expanded Uncertainty	note
Conducted Emission		
(50Ω/50μH AMN) - (9 kHz – 150 kHz)	±3.4 dB	1
(50Ω/50μH AMN) - (150 kHz – 30 MHz)	±2.8 dB	1
(Voltage probe) - (150 kHz – 30 MHz)	±2.8 dB	1
(50Ω/5μH AMN) - (150 kHz – 108 MHz)	±2.4 dB	1
Discontinuous Conducted Emission		
Conducted Emission (50Ω/50μH AMN) - (150 kHz – 30 MHz)	±2.9 dB	1
Disturbance Power (30 MHz – 300 MHz)		
	±2.9 dB	1
Radiated Emission		
(0,150 MHz – 30 MHz)	±4.0 dB	1
(30 MHz – 1000 MHz)	±4.2 dB	1
(1 GHz – 6 GHz)	±3.4 dB	1
Electromagnetic field EMF		
	±15.0 %	1
Harmonic current emissions test		
	±2.5 %	1
Voltage fluctuation and flicker test		
	±4.1 %	1
Insertion loss test		
	±2.2 dB	1
Radiated electromagnetic disturbance test (loop antenna)		
	±1.7 dB	1
Radiated electromagnetic field immunity test		
	0.7 V/m at 3V/m	1
Pulse modulated radiated electromagnetic field immunity test		
	0.7 V/m at 3V/m	1
Injected currents immunity test		
	0.5 V at 3V	1
Bulk current		
	9.2 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		
	±2.2 %	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 15:2011	--
Internal Procedure PM001 rev. 2.0 (Quality Manual)	Measure procedure
Internal procedure INC_M rev. 8.1 (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 6 dB 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.A.

Test item does meet the requirement..... : Complies

Test item does not meet the requirement..... : Does not comply

Test not performed : N.E.

11. Results

In this clause tests results are reported.

Measurement uncertainty is in accordance with document CMC INC_M rev. 8.1.



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

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part. 15.207
- 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 S010, CMC S200, CMC S206
Measurement uncertainty: See clause 7 of this test report

Test specification

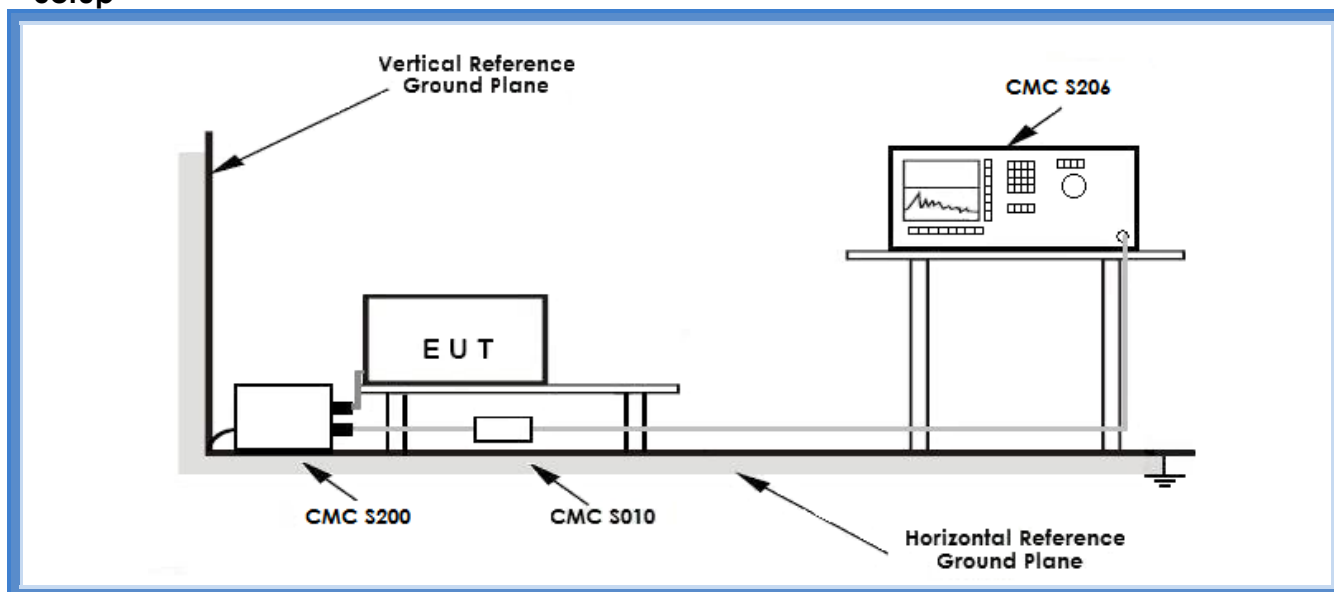
Port: Mains terminal
Frequency range: 150 kHz – 30 MHz

Acceptance limits

Frequency range (MHz)	dB(μ V) Quasi-peak	dB(μ V) 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

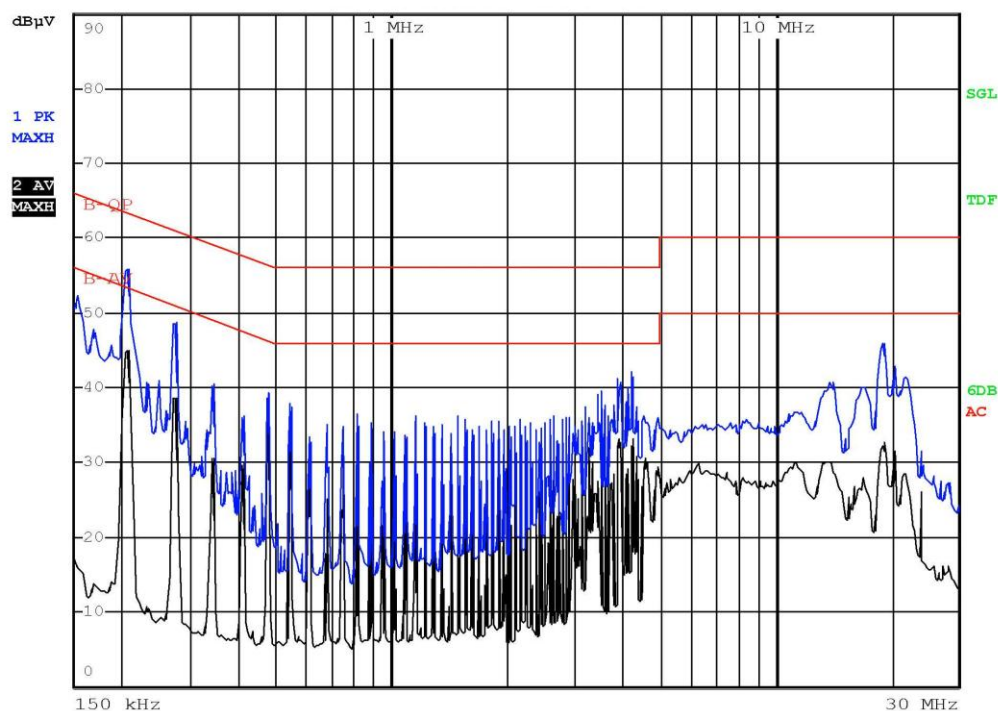
Line	Graphs	Remarks	Result
N	G13031004	--	Complies
L1	G13031005	--	Complies
Remarks: --			

Graphs Legend

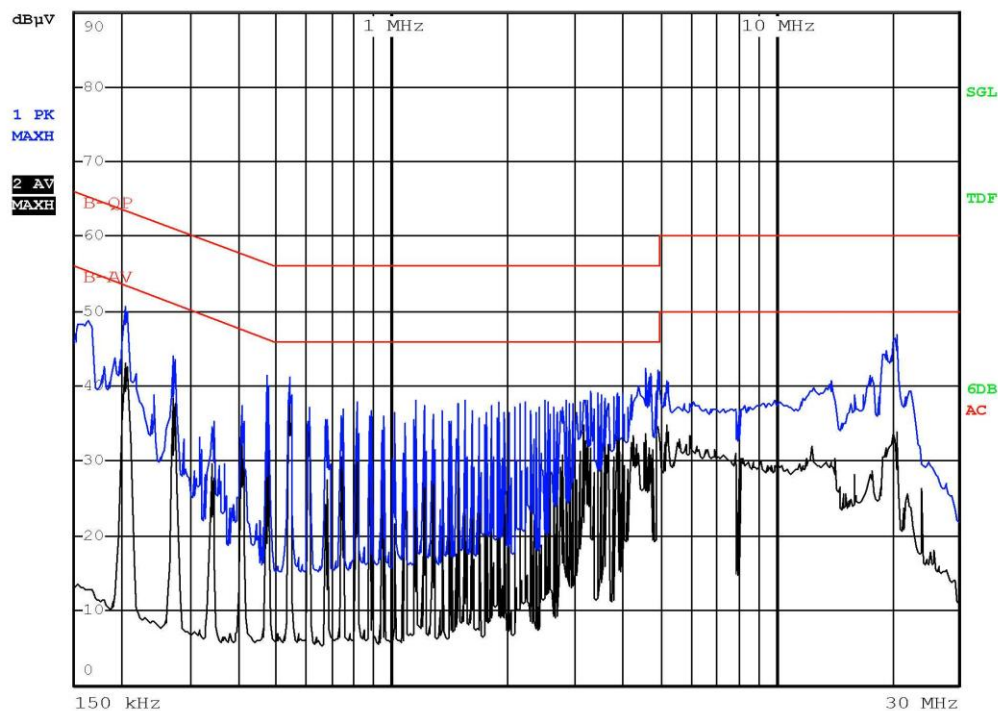
PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
AV: Average; AV [1s] (average at 1 second) values are marked with a X



Graphs



Panozzo 13031004 Line N in funzione



Panozzo 13031005 Line L in funzione

Result: The requirements are met



11.2 Radiated disturbance test (0,009 – 1000 MHz)

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part. 15.209
- 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 S108, CMC S136, CMC S164, CMC A013,
CMC A014
Measurement uncertainty: See clause 7 of this
test report

Test specification

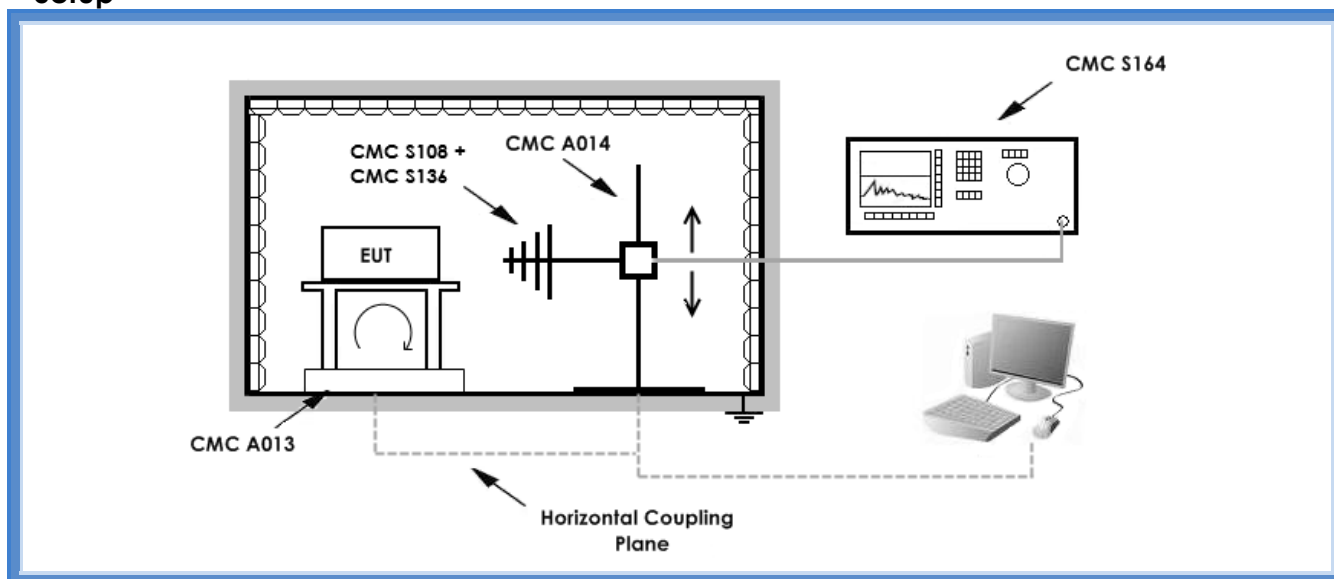
Port: Enclosure
Frequency range: 0,009 MHz – 1000 MHz
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 3 m

Acceptance limits

Frequency range (MHz)	Limits [dB(μV/m)]
0,009 to 0,490	$20\log[2400/F(\text{kHz})]$
0,490 to 1,705	$20\log[24000/F(\text{kHz})]$
1,705 to 30	29,54
30 to 88	40
88 to 216	43,52
216 to 960	46,02
960 to 1000	53,98



Setup



Result

Polarization	Frequency Range (MHz)	Graphs	Remarks	Result
V	30 – 1000	G13031001	--	Complies
H	30 – 1000	G13031002	--	Complies
Loop	0,009 – 30	G13031003	--	Complies
Remarks: --				

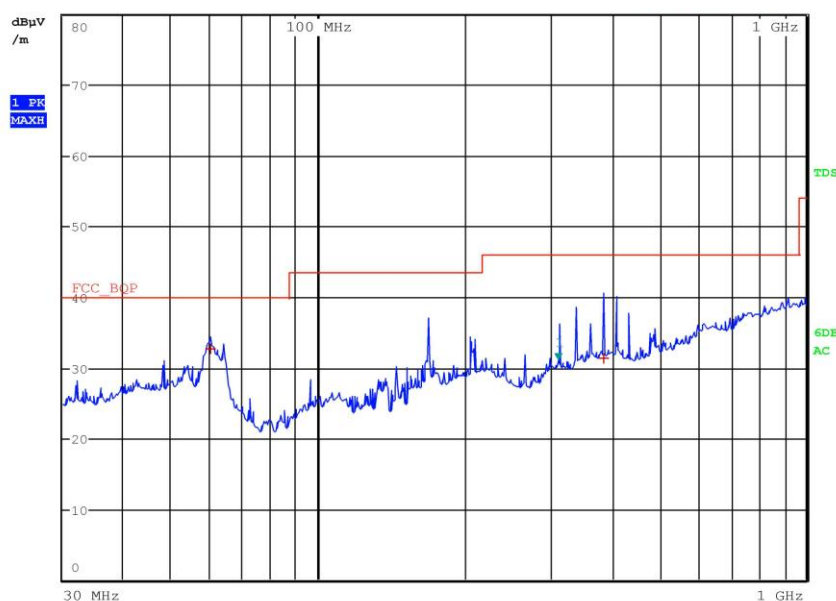
Graphs Legend

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 Emissioni 30-1000MHz
Equipment under Test
Manufacturer
OP Condition In funzione con pc
Operator Panozzo 13031001
Test Spec
Vert.



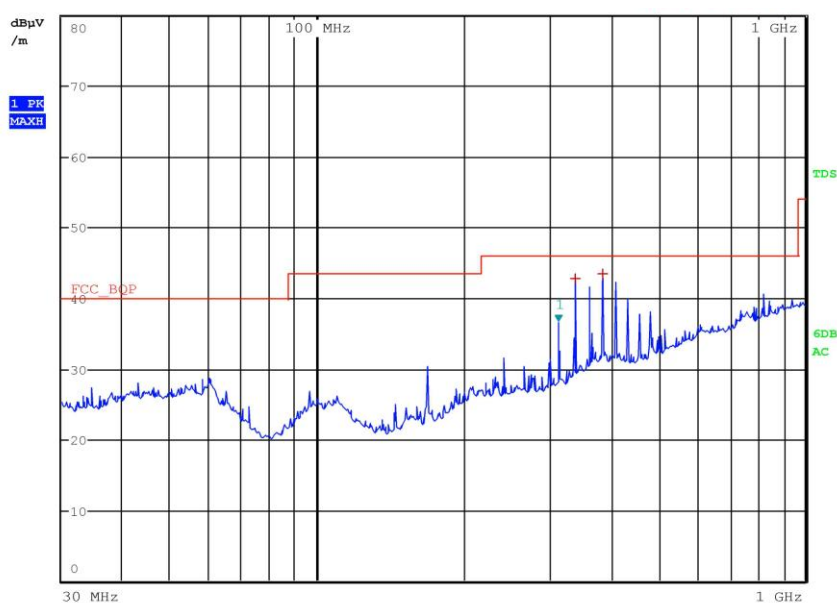
Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 2

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	60.280000000 MHz	32.69	Quasi Peak	-7.31
1	385.520000000 MHz	31.35	Quasi Peak	-14.67



Meas Type Emissioni 30-1000MHz
Equipment under Test
Manufacturer
OP Condition In funzione con pc
Operator Panozzo 13031002
Test Spec
Horiz.



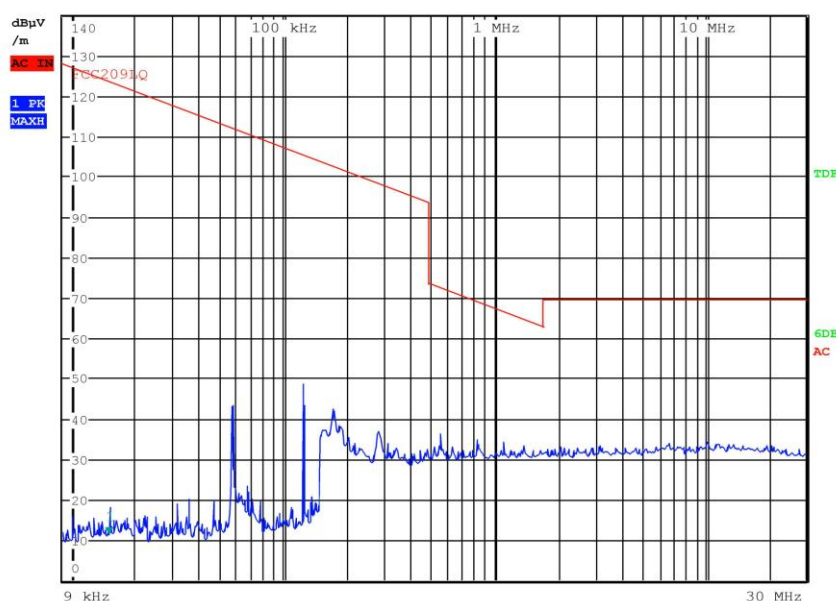
Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 2

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	337.360000000 MHz	42.73	Quasi Peak	-3.29
1	385.520000000 MHz	43.46	Quasi Peak	-2.56



Meas Type Emissioni 0.009-30MHz
Equipment under Test
Manufacturer
OP Condition In funzione con pc
Operator Panozzo 13031003
Test Spec
Loop.



Final Measurement

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

Result: The requirements are met

ANNEX 1 of document nr. R13031001

STICK-LF-ASS

Index	Designator	Comment	Footprint	Description	Quantity
1	ANT	NON MONTATO	ANTENNA(D-20-27	NON MONTATO	0
2	ANT1	1uH EPCOS B82144A2105J	AXIAL0.6		1
3	C1	100nF X7R	0603		1
4	C2	100pF np0 NON MONTATO	0805	NON MONTATO	0
5	C4	33nF	0805		1
6	C5	1uF X7R	0805		1
7	C11	10nF X7R	0805		1
8	C12	1uF X7R	0805		1
9	C17	100nF X7R	0805		1
10	C18	100nF X7R	0805		1
11	C19	100nF X7R	0805		1
12	C22	1uF X7R	0805		1
13	C23	100uF 10V Tant SizeB	SMB		1
14	C24	1nF np0	0805		1
15	C25	1nF np0	0805		1
16	C26	1nF np0	0603		1
17	CN1	USB PLUG MOLEX 48037-1000	USB-PLUG-SMT-PT	NON MONTATO	0
18	CN-PROG	CON6	SIP6	NON MONTATO	0
19	D1	BAV70	SOT-23		1
20	D590	RCLAMP0502B	SOT-523	2-channel ESD/CDE protecti	1
21	DL1	CLV1A-FKB-CHMKPEHBB7A363	LED-RGB-CLV1A-FK		1
22	DZ1	5Vz6 0.5W Diodes BZT52C5V6	SOD-123	NON MONTATO	0
23	F2		FIDUCIAL		1
24	F3		FIDUCIAL		1
25	F4		FIDUCIAL		1
26	F5		FIDUCIAL		1
27	GND		TP		1
28	JP1	0R NON MONTATO	JP-0603	NON MONTATO	0
29	JP12	0R	0805		1
30	JP23	0R NON MONTATO	0805	NON MONTATO	0
31	L2	1A Ferrite Bead Murata BLM18PG4715	0805		1
32	Q1	IRLML6302(P-Mosfet) NON MONTATO	SOT-23	NON MONTATO	0
33	Q2	BC817	SOT-23		1
34	Q3	BC817	SOT-23		1
35	R1	470R	0603		1
36	R3	0R	0805		1
37	R4	4K7	0805		1
38	R5	2K2 NON MONTATO	0805	NON MONTATO	0
39	R6	1K5	0805		1
40	R7	27R	0805		1
41	R8	27R	0805		1
42	R9	1K NON MONTATO	0805	NON MONTATO	0
43	R10	10K NON MONTATO	0805	NON MONTATO	0
44	R12	4K7	0805		1
45	R13	4K7	0805		1
46	R14	4K7	0805		1
47	R17	10K	0805		1

48	R20	10R	0805	NON MONTATO	0
49	R21	1M	0603		1
50	R26	1R	0805		1
51	R41	220R	0805		1
52	R42	62R	0805		1
53	R43	220R	0805		1
54	R105	1M	0603		1
55	RV	100K	0805		1
56	U1	93C46 NON MONTATO	SO-8	NON MONTATO	0
57	U2	FT232BM(LQFP-32)	TQFP32		1
58	U3	ATMEGA8-16AU TQFP32	TQFP32		1
59	U4	HTRC110	SO-14		1
60	V1	VC080505C150RP	0805	NON MONTATO	0
61	X2	CSTCE8M00G55Z-R0 CeraLock 8MHz	XTAL3X2		1
62	Y3	CSTCR6M00G53-R0 CeraLock 6MHz	XTAL4,5X2		1