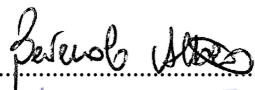





TEST REPORT nr. R18175301	
Federal Communication Commission (FCC)	
Test item	
Description	COMPACT UHF NEAR FIELD RFID DESKTOP READER
Trademark	CAEN RFID
Model/Type	WR1251IUNFBA
FCC ID	UVECAENRFID029
Test Specification	
Standard	FCC Rules & Regulations, Title 47:2017 Part 15 paragraph(s): 107 and 109
Client's name	CAEN RFID S.r.l.
Address	Via Vetraia, 11 – 55049 Viareggio (LU) – ITALY
Manufacturer's name :	Same as client
Address	--
Report	
Tested by	A. Bertezolo 
Approved by	R. Beghetto – <i>Laboratory Manager</i> 
Date of issue	09.08.18
Contents	31 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.

CMC Centro Misure Compatibilità S.r.l.



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1. Summary

Emission Test:

FCC Rules & Regulations, Title 47:2017
 Part 15 paragraph(s): 107 and 109

Test specifications	Environmental Phenomena	Port	Tests sequence	Result
Part 15.107 Class B	Continuous disturbance voltage	Mains terminal	2	Complies
Part 15.109 Class B	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 : 5 Vdc from USB
 Tests performed on 120 V ~ 60 Hz side of auxiliary PC

Power cable : Unshielded

Serial Number : --

2.1 Test Site

Company : CMC Centro Misure Compatibilità S.r.l.

Address : Via della Fisica, 20
 36016 Thiene (VI) – ITALY

Test site facility's FCC registration number : 182474

3. Testing and sampling

Date of receipt of test item : 25.07.18

Testing start date : 07.08.18

Testing end date : 09.08.18

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 P180973

4. Operative conditions

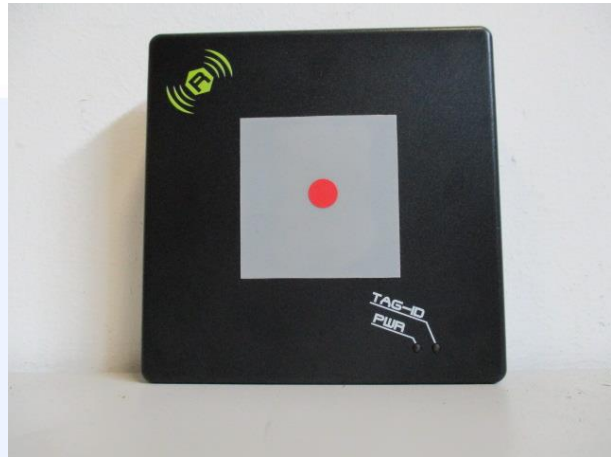
EUT exercising : EUT supplied from PC, link test running

Auxiliary equipment : PC Acer mod. Aspire One ZE6



5. Photograph(s) of EUT

5.1 Photograph(s) of EUT



CMC Centro Misure Compatibilità S.r.l.



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 S010	Rohde & Schwarz	ESH3-Z2	Impulses Limiting Device	---	January '18	January '19
CMC S108	EMCO	3115	Horn Antenna	9811-5622	June '16	June '19
CMC S127	Schaffner	HLA6120	Loop Antenna	1191	March '17	March '20
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '18	January '19
CMC S227	Rohde & Schwarz	ESR7	EMI Test Receiver 7GHz	101121	January '18	January '19
CMC S260	CMC	Wfr_N	Shielded Cable	Wfr_ant10-1	November '17	November '18
CMC S261	CMC	Wfr_N	Shielded Cable	Wfr_ant20-1	November '17	November '18
CMC S262	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix32-1	November '17	November '18
CMC S263	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix31-1	November '17	November '18
CMC S264	CMC	Wfr_N	Shielded Cable	Wfr_ext03-1	November '17	November '18
CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Biconical Antenna (30-300MHz)	831	June '16	June '19
CMC S287	Schwarzbeck	VUSLP 9111B	Log-periodic Antenna (200 MHz-3Ghz)	9111B-203	June '16	June '19
CMC S288	CMC	W_sma_white	Joint Shielded Cable	W_001	November '17	November '18



7. Measurement uncertainty

Test	Test Setup	Expanded uncertainty	Note
Conducted emission CISPR 16 LISN 50uH 0,009-0,0150MHz	PE001_01	3,4 dB	1
Conducted emission CISPR 16 LISN 50uH 0,150-30,0MHz	PE001_01	2,8 dB	1
Conducted emission CISPR 16 Voltage Probe 0,15-30MHz	PE001_02	2,6 dB	1
Conducted emission CISPR 16 Current Probe 0,15-30MHz	PE001_03	2,2 dB	1
Conducted emission CISPR 16 ISN 0,15-30MHz	PE001_04	4,5 dB	1
Clic CISPR 16 LISN 50uH 0,150-30,0MHz	PE001_05	3,1 dB	1
Disturbance Power 30-300 MHz	PE002_01	3,4 dB	1
Radiated Emission LAS 0,15-30MHz	PE003_01	1,5 dB	1
Radiated Emission CISPR 16 Loop Ant. 0,15-30MHz	PE004_01	3,8 dB	1
Radiated Emission CISPR 16 Bicon. Ant. 30-300MHz	PE004_02	3,3 dB	1
Radiated Emission CISPR 16 LogP. Ant. 300-1000MHz	PE004_03	3,1 dB	1
Radiated Emission CISPR 16 Horn Ant. 1-18GHz	PE004_04	3,6 dB	1
Human Exposure to electromagnetic fields	PE005_01	15,0 %	1
Harmonic current emissions test	PE006_01	10 mA + 1,6 %	1
Voltage fluctuation and flicker test	PE007_01	4,2 %	1
Radiated Immunity 80MHz-6GHz	PE102_XX	2,1 dB 0,82 V/m a 3V/m	1
Conducted Immunity 0,15-230MHz	PE105_XX	1,2 dB 0,44 V a 3V	1
AC Magnetic field	PE106_01	1,55 % 0,15 A/m a 10A/m	1
Pulse Magnetic field	PE107_01	6,24 % 18,7 A/m a 300A/m	1
Dumped Magnetic field	PE108_01	6,24 % 1,87 A/m a 30A/m	1
Common mode conducted immunity	PE112_01	2,20 % 0,22 V a 10V	1



Test	Test Setup	Expanded uncertainty	Note
Power/Spurious 9kHz-30MHz	PR001_01	3,8 dB	1
Power/Spurious ERP 30-1000MHz d=10m	PR001_02+03	4,3 dB	1
Misura della potenza EIRP 1-18GHz d=3m	PR001_04	4,3 dB	1
Misura della potenza EIRP 18-40GHz d=3m	PR001_05	5,5 dB	1
Frequency error	PR002_01+02	< 1x10 ⁻⁷	1
Timing zero span (1001pts.)	PR002_01+02	0,2 % SWT	1
Modulation bandwidth	PR002_01+02	< 1x10 ⁻⁷	1
Conducted RF power and spurious emission	PR002_01+02	1,2 dB	1
Adjacent channel power	PR002_01+02	1,2 dB	1
Blocking	PR002_01+02	1,2 dB	1

Test	Test Setup	Expanded uncertainty	Note
Electrostatic discharge immunity test	PE101_0X		2
Electrical fast transients / burst immunity test	PE103_0X		2
Surge immunity test	PE104_0X		2
Short interruption immunity test	PE109_01		2
Rev_18_01 date 30/01/2018			

Note 1:

The expanded uncertainty reported according to EN55016-4-2:2011 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 15:2017	--
ANSI C63.4:2014	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz
Internal Procedure PM001 rev. 3.0 (Quality Manual)	Measure procedure
Internal procedure INC_M rev. 9.0 (Quality Manual)	Measurement uncertainty calculation



9. Deviation from test specification

None

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.

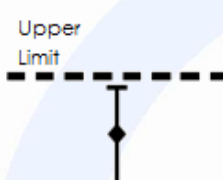
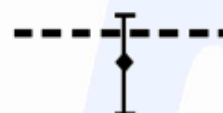




11. Results

In this clause tests results are reported.

Measurement uncertainty is in accordance with document CMC INC_M rev. 9.0.

Judgement of compliance:

Case 1	Case 2	Case 3	Case 4
			
<p>The sample complies with the requirement.</p> <p>The measurement results is within the specification limit when the measurement uncertainty is taken into account.</p>	<p>The sample complies with the requirement.</p> <p>It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty although the measurement result is below the limit.</p>	<p>The sample does not comply with the requirement.</p> <p>It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty also the measurement result is upper the limit.</p>	<p>The sample does not comply with the requirement.</p> <p>The measurement results is outside the specification limit when the measurement uncertainty is taken into account.</p>

In agreement with ILAC-G8: 03/2009 Guidelines on the Reporting of Compliance with Specification.



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 S010, CMC S200, CMC S227
Measurement uncertainty: See clause 7 of this test report

Test specification

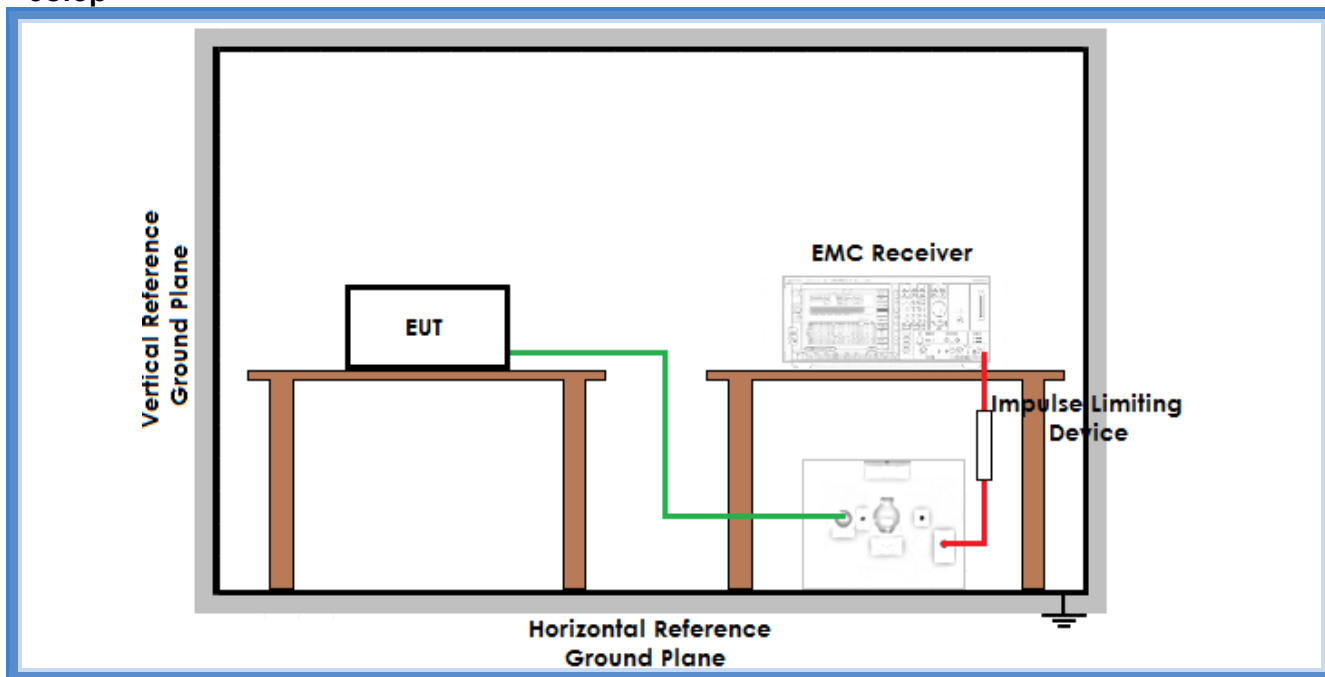
Port: Mains terminal
Frequency range: 150 kHz – 30 MHz

Acceptance limits

Limits for class A equipment		
Frequency range (MHz)	dB(μ V) Quasi-peak	dB(μ V) 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(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

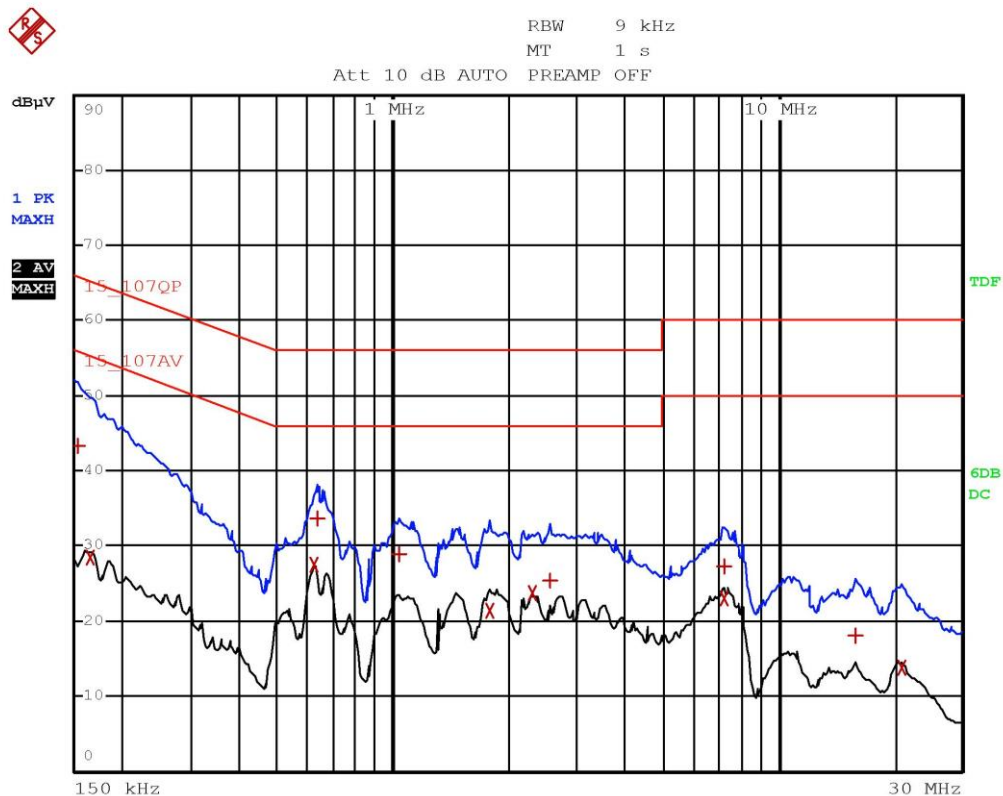
Line	Graphs	Remarks	Result
L1	G18175307	--	Complies
N	G18175308	--	Complies
Remarks: --			

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

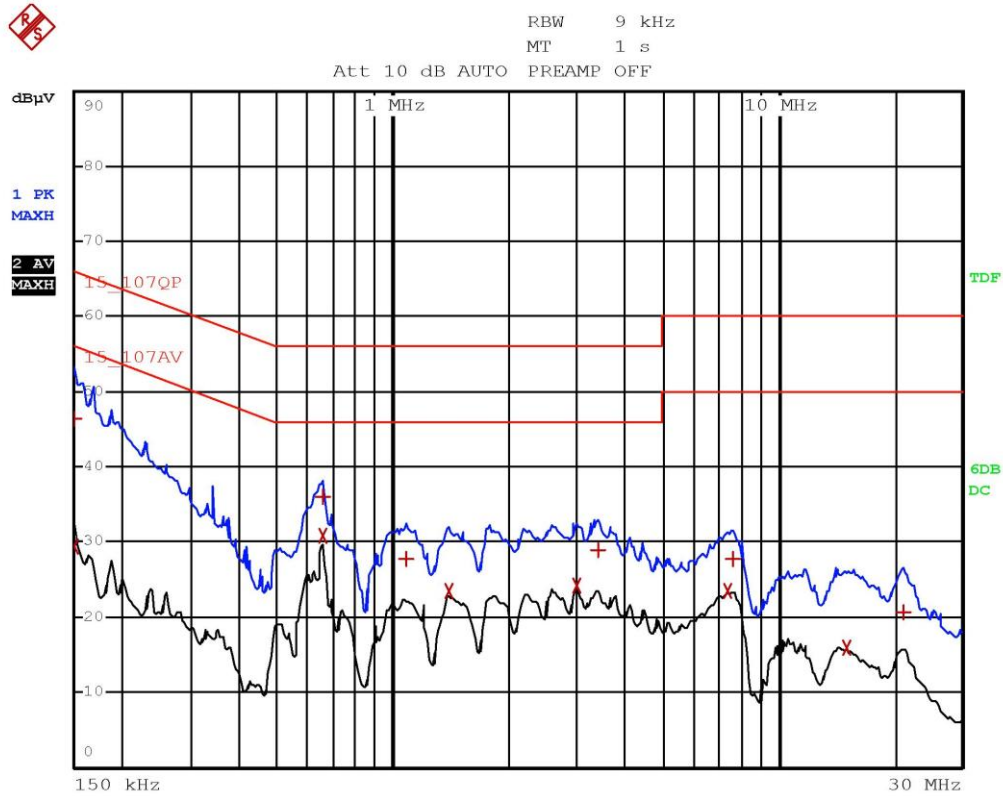


Segalla 18175307-Line L



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	15_107QP		
Trace2:	15_107AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Quasi Peak	154 kHz	43.29	-22.48
2 Average	166 kHz	28.54	-26.61
2 Average	622 kHz	27.51	-18.48
1 Quasi Peak	638 kHz	33.63	-22.36
1 Quasi Peak	1.042 MHz	28.97	-27.02
2 Average	1.79 MHz	21.28	-24.71
2 Average	2.298 MHz	23.62	-22.37
1 Quasi Peak	2.562 MHz	25.37	-30.62
1 Quasi Peak	7.21 MHz	27.25	-32.74
2 Average	7.218 MHz	22.97	-27.02
1 Quasi Peak	15.906 MHz	18.04	-41.95
2 Average	20.898 MHz	13.73	-36.26

Segalla 18175307-Line L



Segalla 18175308-Line N

CMC Centro Misure Compatibilità S.r.l.



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	15_107QP		
Trace2:	15_107AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Quasi Peak	150 kHz	46.32	-19.68
2 Average	150 kHz	29.40	-26.59
1 Quasi Peak	654 kHz	36.03	-19.96
2 Average	654 kHz	30.74	-15.26
1 Quasi Peak	1.082 MHz	27.75	-28.24
2 Average	1.394 MHz	23.41	-22.58
2 Average	2.994 MHz	24.24	-21.75
1 Quasi Peak	3.398 MHz	28.86	-27.14
2 Average	7.398 MHz	23.41	-26.58
1 Quasi Peak	7.65 MHz	27.85	-32.14
2 Average	15.026 MHz	15.94	-34.05
1 Quasi Peak	21.158 MHz	20.60	-39.39

Segalla 18175308-Line N

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.



11.2 Radiated disturbance test

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 S108, CMC S127, CMC S164, CMC S271,
CMC S287
Measurement uncertainty: See clause 7 of this
test report

Test specification

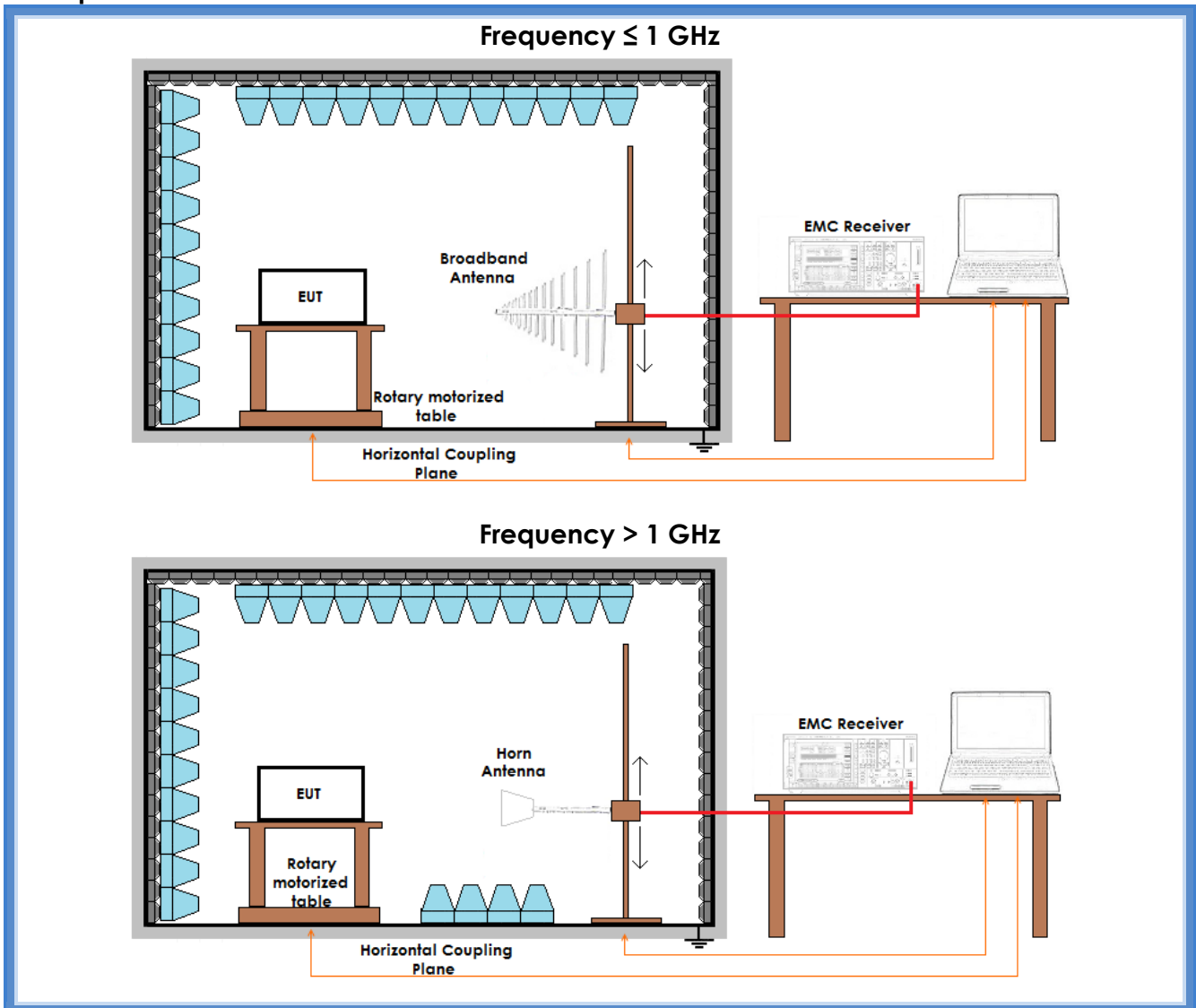
Port: Enclosure
Frequency range: 30 MHz – 6000 MHz
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance:
10 m for frequencies \leq 1000 MHz
3 m for frequencies $>$ 1000 MHz

Acceptance limits

Class A radiated limits	
Frequency range (MHz)	Limits [dB(μ V/m)]
30 to 88	39,08
88 to 216	43,52
216 to 960	46,44
Above 960	49,54

Class B radiated limits	
Frequency range (MHz)	Limits [dB(μ V/m)]
30 to 88	40
88 to 216	43,52
216 to 960	46,02
Above 960	53,98

Setup



Result

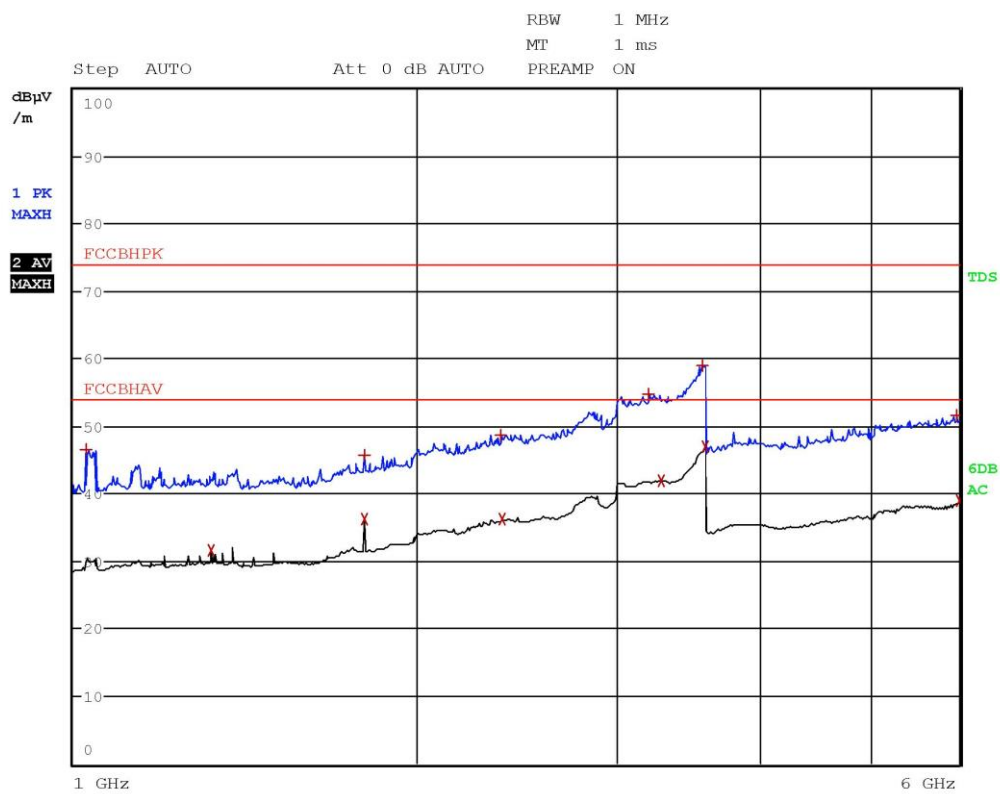
Polarization	Frequency Range (MHz)	Graphs	Remarks	Result
V	1000 – 6000	G18175301	--	Complies
H	1000 – 6000	G18175302	--	Complies
V	300 – 1000	G18175303	--	Complies
H	300 – 1000	G18175304	--	Complies
H	30 – 300	G18175305	--	Complies
V	30 – 300	G18175306	--	Complies
Remarks: --				

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

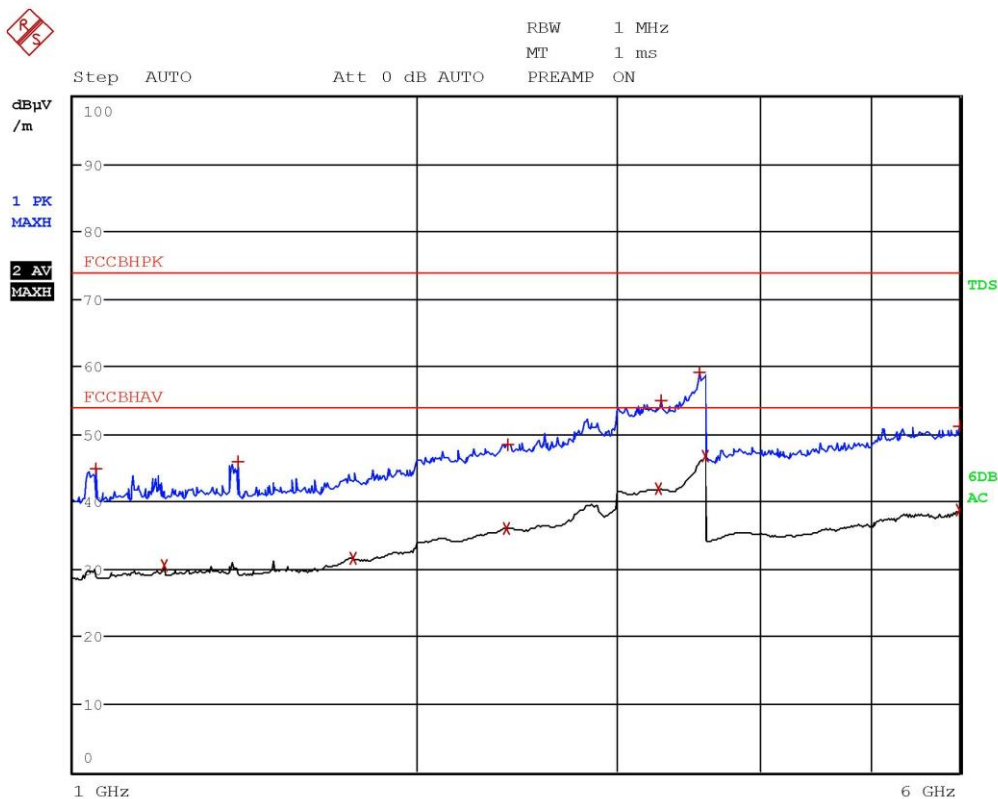


Segalla 18175301-Vert (1000-6000MHz)



EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL d μ V/m	DELTA LIMIT dB
1 Max Peak	1.0272 GHz	46.43	-27.55
2 Average	1.32 GHz	31.71	-22.26
1 Max Peak	1.8 GHz	45.77	-28.20
2 Average	1.8 GHz	36.33	-17.64
1 Max Peak	2.3744 GHz	48.71	-25.26
2 Average	2.3796 GHz	36.30	-17.67
1 Max Peak	3.2016 GHz	54.63	-19.34
2 Average	3.286 GHz	41.89	-12.08
1 Max Peak	3.5652 GHz	58.88	-15.09
2 Average	3.5988 GHz	46.86	-7.11
1 Max Peak	5.9712 GHz	51.55	-22.42
2 Average	5.9984 GHz	38.88	-15.09

Segalla 18175301-Vert (1000-6000MHz)



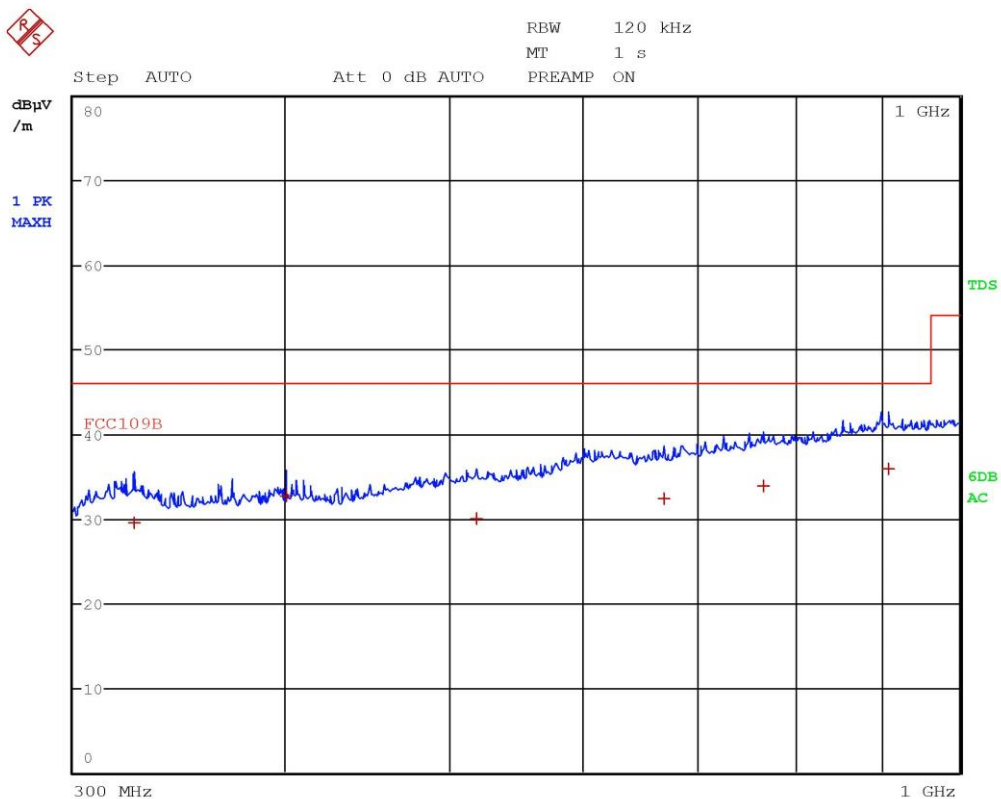
Segalla 18175302-Horiz(1000-6000MHz)

CMC Centro Misure Compatibilità S.r.l.



EDIT PEAK LIST (Prescan Results)			
Trace1:	FCCBHPK		
Trace2:	FCCBHAV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dμV/m	DELTA LIMIT dB
1 Max Peak	1.0452 GHz	44.78	-29.19
2 Average	1.2 GHz	30.66	-23.31
1 Max Peak	1.3948 GHz	45.92	-28.06
2 Average	1.762 GHz	31.63	-22.34
2 Average	2.4024 GHz	36.09	-17.88
1 Max Peak	2.408 GHz	48.42	-25.55
2 Average	3.2616 GHz	41.87	-12.10
1 Max Peak	3.2852 GHz	54.91	-19.06
1 Max Peak	3.5504 GHz	59.06	-14.91
2 Average	3.5996 GHz	46.84	-7.13
1 Max Peak	5.9972 GHz	51.15	-22.82
2 Average	5.9972 GHz	38.81	-15.16

Segalla 18175302-Horiz(1000-6000MHz)



Segalla 18175303-Vert (300-1000MHz)

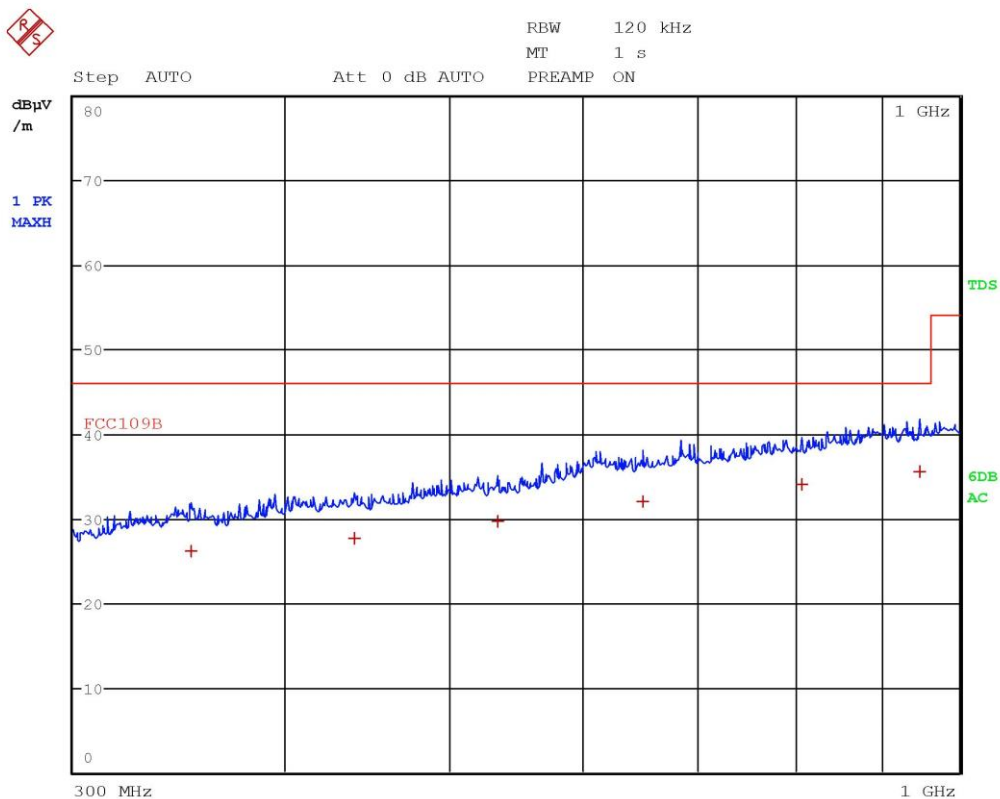
CMC Centro Misure Compatibilità S.r.l.



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC109B		
Trace2:	---		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV/m	DELTA LIMIT dB
1 Quasi Peak	326 MHz	29.49	-16.52
1 Quasi Peak	400.88 MHz	32.62	-13.39
1 Quasi Peak	518.64 MHz	29.99	-16.02
1 Quasi Peak	669.36 MHz	32.42	-13.60
1 Quasi Peak	766.4 MHz	33.86	-12.15
1 Quasi Peak	908.16 MHz	35.91	-10.10

Segalla 18175303-Vert (300-1000MHz)

CMC Centro Misure Compatibilità S.r.l.



Segalla 18175304-Horiz(300-1000MHz)

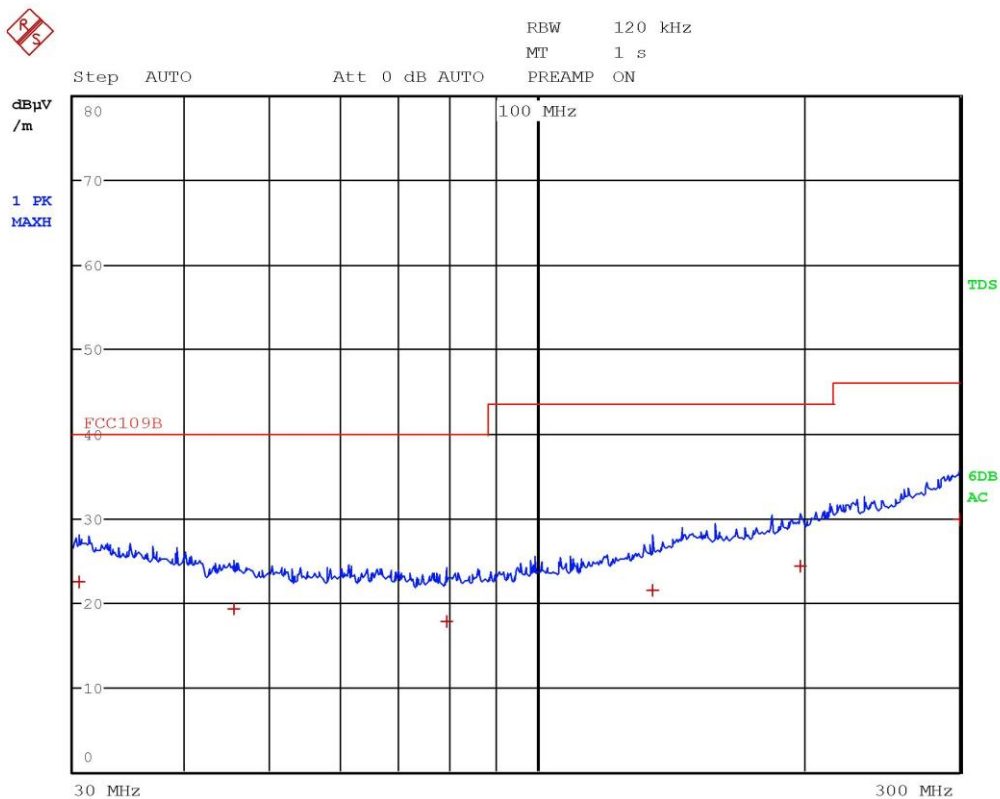
CMC Centro Misure Compatibilità S.r.l.



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC109B		
Trace2:	---		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV/m	DELTA LIMIT dB
1 Quasi Peak	352.08 MHz	26.18	-19.83
1 Quasi Peak	439.76 MHz	27.67	-18.34
1 Quasi Peak	534 MHz	29.60	-16.41
1 Quasi Peak	649.76 MHz	32.07	-13.94
1 Quasi Peak	807.88 MHz	34.04	-11.97
1 Quasi Peak	946.64 MHz	35.56	-10.45

Segalla 18175304-Horiz(300-1000MHz)

CMC Centro Misure Compatibilità S.r.l.



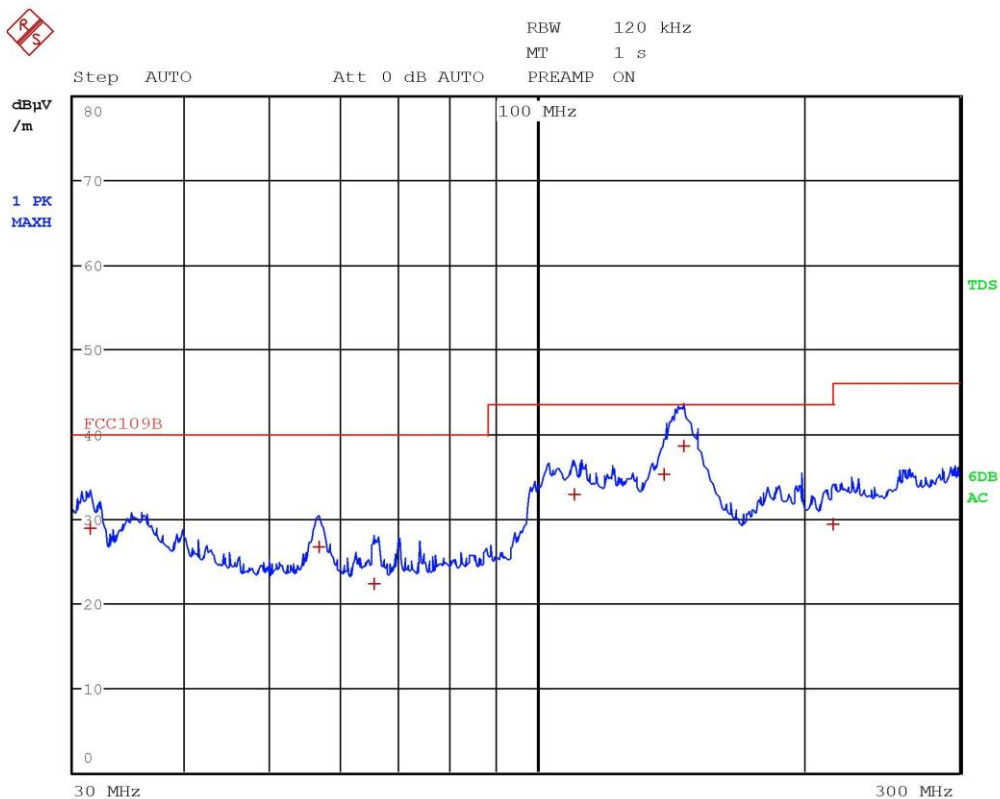
Segalla 18175305-Horiz(30-300MHz)

CMC Centro Misure Compatibilità S.r.l.



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC109B		
Trace2:	---		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV/m	DELTA LIMIT dB
1 Quasi Peak	30.36 MHz	22.46	-17.53
1 Quasi Peak	45.56 MHz	19.27	-20.72
1 Quasi Peak	79.28 MHz	17.71	-22.28
1 Quasi Peak	135.08 MHz	21.36	-22.15
1 Quasi Peak	198.6 MHz	24.36	-19.15
1 Quasi Peak	299.6 MHz	29.78	-16.23

Segalla 18175305-Horiz(30-300MHz)



Segalla 18175306-Vert (30-300MHz)



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC109B		
Trace2:	---		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV/m	DELTA LIMIT dB
1 Quasi Peak	31.28 MHz	28.88	-11.11
1 Quasi Peak	56.76 MHz	26.59	-13.40
1 Quasi Peak	65.44 MHz	22.21	-17.78
1 Quasi Peak	110.44 MHz	32.82	-10.69
1 Quasi Peak	139 MHz	35.13	-8.38
1 Quasi Peak	146.84 MHz	38.57	-4.94
1 Quasi Peak	215.64 MHz	29.29	-14.23

Segalla 18175306-Vert (30-300MHz)

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.