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LAB N° 0168

Independent Testing Laboratory
Accredited by ACCREDIA according to UNI CEI EN ISO/IEC 17025 cert. nr. 0168

TEST REPORT nr. R19032901

Federal Communication Commission (FCC)

Test item

Description .....: INSTRUMENT FOR VOLUME REDUCTION IN BIOLOGICAL SAMPLES

Trademark .....: VR™NxT

Model/Type .....: VR™NxT

FCC ID .....: 2APP5-VRNXT01

Test Specification

Standard.....: FCC Rules & Regulations, Title 47:2017
Part 15 paragraph(s): 203, 204, 205, 207, 209 and 225

Client's name .....: MENARINI SILICON BIOSYSTEMS S.p.A.

Address .....: Via G. di Vittorio, 21/b3 – 40013 Castel Maggiore (BO) – ITALY

Manufacturer's name : Same as client

Address .....: --

Report

Tested by .....: C. Panozzo .....

Approved by .....: R. Beghetto – *Laboratory Manager* .....

Date of issue .....: 05.04.19

Contents.....: 62 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

Standard:

FCC Rules & Regulations, Title 47:2017
Part 15 paragraph(s): 203, 204, 205, 207, 209 and 225

Test specifications	*Environmental Phenomena*	*Tests sequence*	*Result*
Part 15.203	Antenna requirements	1	Complies
Part 15.207	Conducted emissions	2	Complies
Part 15.209	Radiated emissions	3	Complies
Part 15.225	Field strength with the assigned band	4	Complies
Part 15.225 (e)	Frequency tolerance	5	Complies
Part 15.215	20 dB bandwidth	6	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

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2. Description of Equipment under test (EUT)

Power supply ..... :	120 V ~ 60 Hz single-phase
Serial Number ..... :	--
Type of equipment ..... :	☑ Transmitter Unit
	❑ Receiver Unit
Type of station ..... :	☑ Fixed station
	❑ Portable station
	❑ Mobile station
Nominal frequency ..... :	13,56 MHz

2.1 Test Site

Company ..... :	CMC Centro Misure Compatibilità S.r.l.
Address ..... :	Via dell'Elettronica, 12/C
	36016 Thiene (VI) – ITALY
Test site facility's FCC registration number ..... :	182474

3. Testing and sampling

Date of receipt of test item ..... :	13.02.19
Testing start date ..... :	13.02.19
Testing end date ..... :	29.03.19
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 P190165

4. Operative conditions

EUT exercising ..... :	EUT in continuous transmission at maximum power

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5. Photograph(s) of EUT

5.1 Photograph(s) of EUT

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6. Equipment list

Id. number	Manufacturer	Model	Description	Serial number	Last calibration	Due date calibration
CMC S010	Rohde & Schwarz	ESH3-Z2	Impulses Limiting Device	- - -	January '19	January '20
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 '19	January '20
CMC S227	Rohde & Schwarz	ESR7	EMI Test Receiver 7GHz	101121	January '19	January '20
CMC S260	CMC	Wfr_N	Shielded Cable	Wfr_ant10-1	November '18	November '19
CMC S261	CMC	Wfr_N	Shielded Cable	Wfr_ant20-1	November '18	November '19
CMC S262	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix32-1	November '18	November '19
CMC S263	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix31-1	November '18	November '19
CMC S264	CMC	Wfr_N	Shielded Cable	Wfr_ext03-1	November '18	November '19
CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Biconical Antenna (30-300MHz)	831	June '16	June '19
CMC S288	CMC	W_sma_white	Joint Shielded Cable	W_001	November '18	November '19
CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz	104059	November '16	November '19
CMC B026	Angelantoni	UY 245 IU	Climatic chamber	1059.78	September '16	September '19

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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	3,0 dB	1
Conducted emission CISPR 16 Voltage Probe 0,15-30MHz	PE001_02	2,9 dB	1
Conducted emission CISPR 16 Current Probe 0,15-30MHz	PE001_03	2,6 dB	1
Conducted emission CISPR 16 ISN 0,15-30MHz	PE001_04	4,7 dB	1
Clic CISPR 16 LISN 50uH 0,150-30,0MHz	PE001_05	3,1 dB	1
Disturbance Power 30-300 MHz	PE002_01	3,6 dB	1
Radiated Emission LAS 0,15-30MHz	PE003_01	2,0 dB	1
Radiated Emission CISPR 16 Loop Ant. 0,15-30MHz	PE004_01	4,0 dB	1
Radiated Emission CISPR 16 Bicon. Ant. 30-300MHz	PE004_02	3,9 dB	1
Radiated Emission CISPR 16 LogP. Ant. 300-1000MHz	PE004_03	3,8 dB	1
Radiated Emission CISPR 16 Horn Ant. 1-18GHz	PE004_04	4,2 dB	1
Human Exposure to electromagnetic fields	PE005_01	23,6 %	1
Harmonic current emissions test	PE006_01	10 mA + 2,6 %	1
Voltage fluctuation and flicker test	PE007_01	4,8 %	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	6,25 % 18,7 A/m a 300A/m	1
Dumped Magnetic field	PE108_01	6,25 % 1,87 A/m a 30A/m	1
Common mode conducted immunity	PE112_01	2,21 % 0,22 V a 10V	1

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Test	Test Setup	Expanded uncertainty	Note
Power/Spurious 9kHz-30MHz	PR001_01	4,0 dB	1
Power/Spurious ERP 30-1000MHz d=10m	PR001_02+03	4,7 dB	1
Misura della potenza EiRP 1-18GHz d=3m	PR001_04	4,7 dB	1
Misura della potenza EiRP 18-40GHz d=3m	PR001_05	5,4 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	1,1 dB	1
Adjacent channel power	PR002_01+02	1,1 dB	1
Blocking	PR002_01+02	1,1 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_19_01 date 14/01/2019			

Note 1:
The expanded uncertainty reported according to the document EA-4-02 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

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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
ANSI C63.10:2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
Internal Procedure PM001 rev. 3.0 (Quality Manual)	Measure Procedure
Internal procedure INC_M rev. 9.1 (Quality Manual)	Measurement uncertainty calculation

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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.

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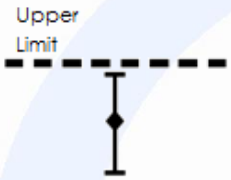
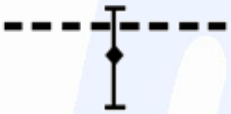
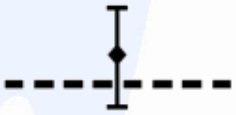
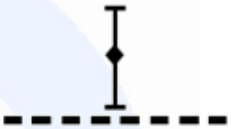
11. Results

In this clause tests results are reported.

Measurement uncertainty is in accordance with document CMC INC_M rev. 9.1.

Judgement of compliance:

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

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

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11.1 Antenna requirements

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.203 and 15.204
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Laboratory

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

--
Measurement uncertainty: See clause 7 of this test report

Test specification

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded

Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
22	101	45

Result

Antenna Type	*External R.F. power amplifier*	*Remarks*	*Results*
Integral antenna	Not Present	--	Complies

Result: The requirements are met

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11.2 Conducted emissions

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: Main port
Frequency range: 150 kHz – 30 MHz

Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
22	101	45

Acceptance limits

Frequency range (MHz)	*dB(µV) Quasi-peak*	*dB(µV) Average*
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

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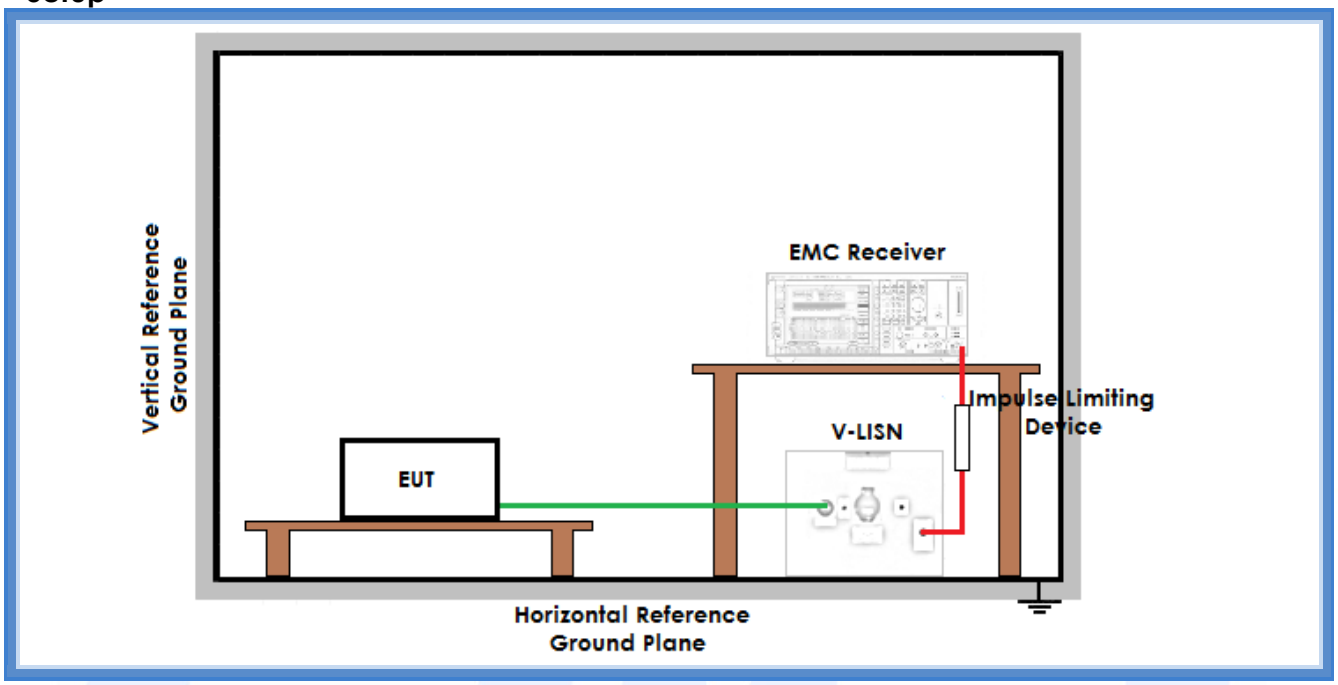
Setup



Result

Line	Graphs	Remarks	Result
L1	G19032901	--	Complies
N	G19032902	--	Complies
Remarks: Peaks above the limits are due to the main transmitting frequency			

Line	Graphs	Remarks	Result
L1	G19032903	--	Complies
N	G19032904	--	Complies
Remarks: Tests repeated closing the RF output with 50 Ω resistance instead of antenna			

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

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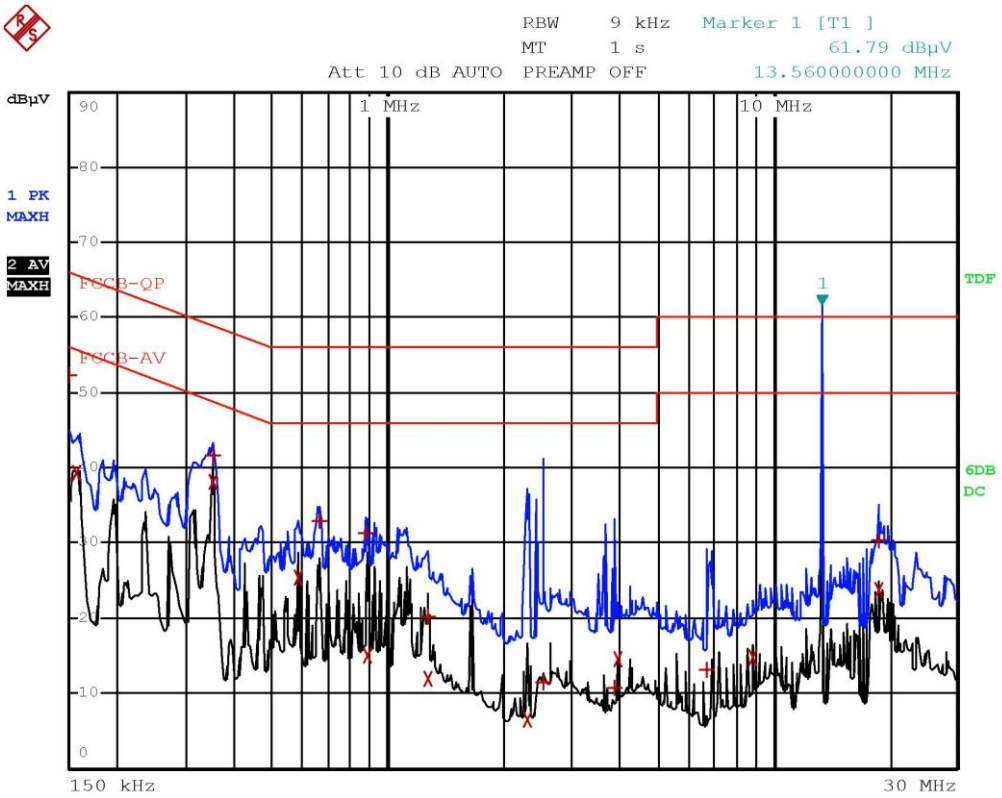
Graphs



Panozzo 19032901 Line L Operating cycle

CMC Centro Misure Compatibilità S.r.l.

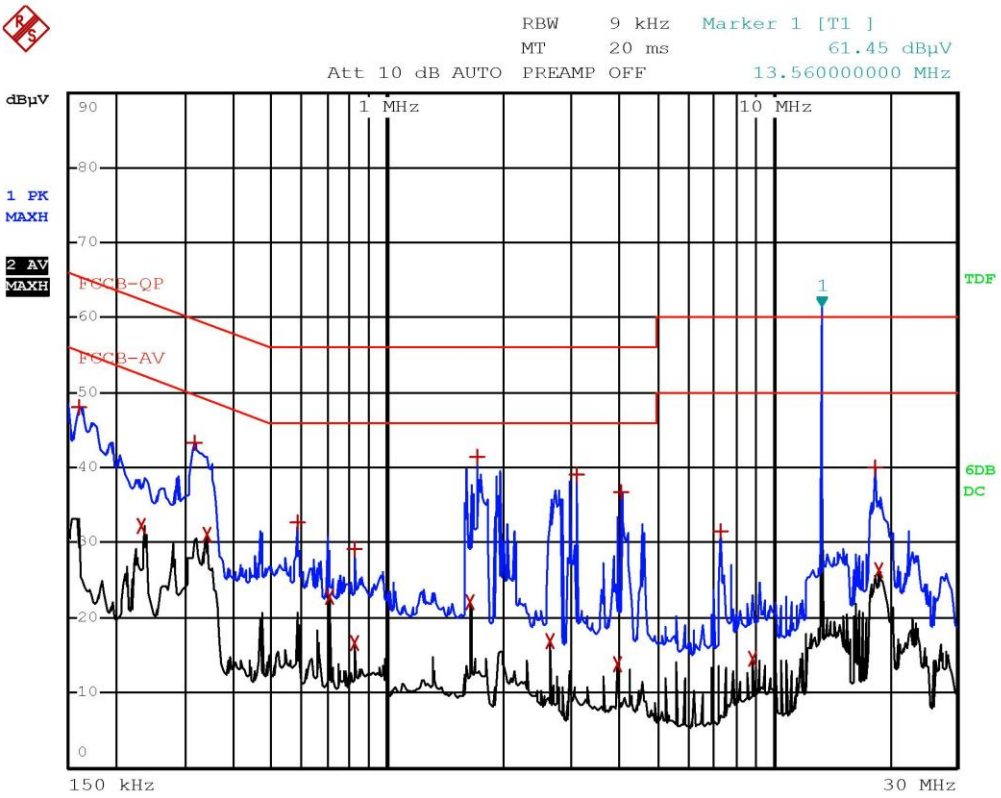
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCCB-QP
Trace2:	FCCB-AV
Trace3:	---

	TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Quasi Peak	150 kHz	52.35	-13.64
2	Average	158 kHz	39.43	-16.13
1	Quasi Peak	350 kHz	41.76	-17.19
2	Average	350 kHz	38.19	-10.76
2	Average	582 kHz	25.32	-20.67
1	Quasi Peak	662 kHz	32.91	-23.08
1	Quasi Peak	878 kHz	31.21	-24.78
2	Average	886 kHz	15.00	-30.99
1	Quasi Peak	1.274 MHz	20.24	-35.75
2	Average	1.274 MHz	12.00	-33.99
2	Average	2.298 MHz	6.46	-39.53
1	Quasi Peak	2.534 MHz	11.52	-44.48
1	Quasi Peak	3.89 MHz	10.63	-45.36
2	Average	3.954 MHz	14.59	-31.40
1	Quasi Peak	6.746 MHz	13.10	-46.89
2	Average	8.898 MHz	14.78	-35.21
1	Quasi Peak	18.784 MHz	30.39	-29.60
2	Average	18.788 MHz	23.72	-26.27

Panozzo 19032901 Line L Operating cycle

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032902 Line N Operating cycle

CMC Centro Misure Compatibilità S.r.l.

EDIT PEAK LIST (Prescan Results)

Trace1:	FCCB-QP
Trace2:	FCCB-AV
Trace3:	---

	TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Max Peak	162 kHz	48.14	-17.21
2	Average	234 kHz	32.23	-20.07
1	Max Peak	314 kHz	43.42	-16.43
2	Average	338 kHz	31.02	-18.23
1	Max Peak	586 kHz	32.63	-23.36
2	Average	706 kHz	22.68	-23.31
1	Max Peak	818 kHz	29.07	-26.92
2	Average	822 kHz	16.72	-29.27
2	Average	1.646 MHz	22.05	-23.94
1	Max Peak	1.718 MHz	41.40	-14.59
2	Average	2.65 MHz	16.87	-29.12
1	Max Peak	3.09 MHz	39.21	-16.79
2	Average	3.954 MHz	13.82	-32.17
1	Max Peak	4.066 MHz	36.73	-19.26
1	Max Peak	7.294 MHz	31.49	-28.50
2	Average	8.898 MHz	14.55	-35.44
1	Max Peak	18.444 MHz	39.96	-20.03
2	Average	18.784 MHz	26.38	-23.61

Panozzo 19032902 Line N Operating cycle

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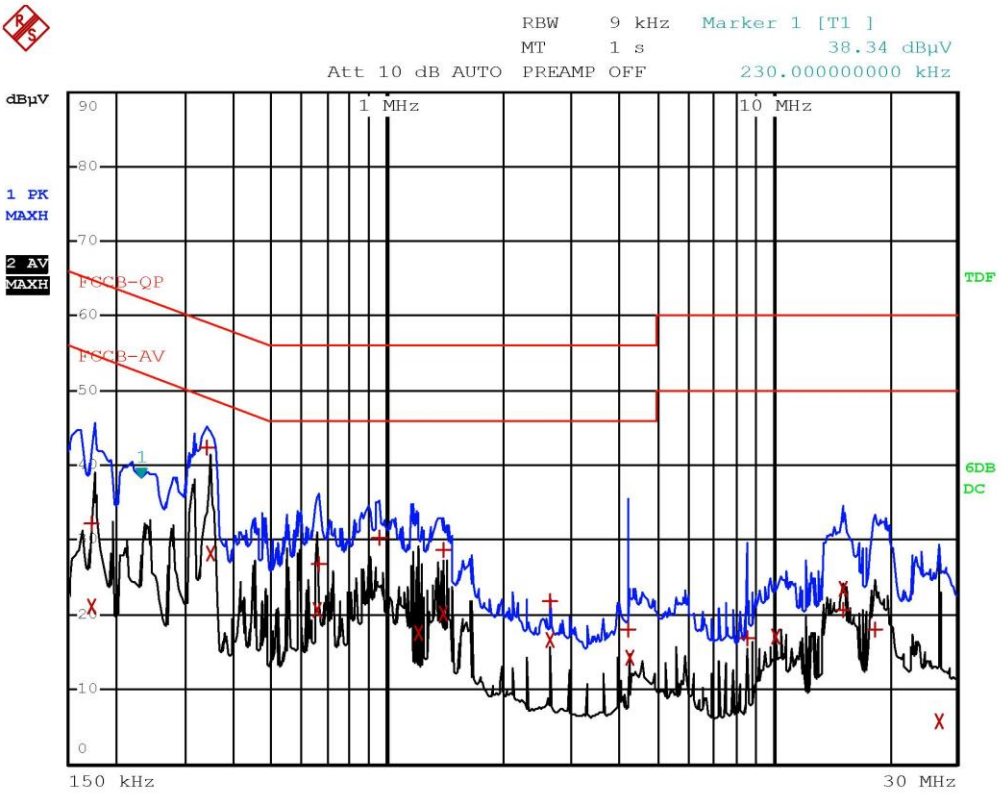

Panozzo 19032903 Line L Operating cycle RFID 50 Ω

CMC Centro Misure Compatibilità S.r.l.

EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCCB-QP
Trace2:	FCCB-AV
Trace3:	---

	TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Quasi Peak	174 kHz	32.22	-32.54
2	Average	174 kHz	21.16	-33.60
1	Quasi Peak	338 kHz	42.32	-16.92
2	Average	346 kHz	28.24	-20.81
2	Average	658 kHz	20.59	-25.40
1	Quasi Peak	662 kHz	26.74	-29.25
1	Quasi Peak	958 kHz	30.40	-25.59
2	Average	1.202 MHz	17.59	-28.40
2	Average	1.394 MHz	20.23	-25.76
1	Quasi Peak	1.398 MHz	28.73	-27.27
1	Quasi Peak	2.638 MHz	21.85	-34.14
2	Average	2.638 MHz	16.69	-29.30
1	Quasi Peak	4.222 MHz	18.10	-37.89
2	Average	4.286 MHz	14.29	-31.70
1	Quasi Peak	8.574 MHz	16.95	-43.04
2	Average	10.214 MHz	17.01	-32.98
2	Average	15.158 MHz	23.38	-26.61
1	Quasi Peak	15.286 MHz	20.58	-39.41
1	Quasi Peak	18.514 MHz	18.13	-41.86
2	Average	27.122 MHz	5.84	-44.15

Panozzo 19032903 Line L Operating cycle RFID 50 Ω

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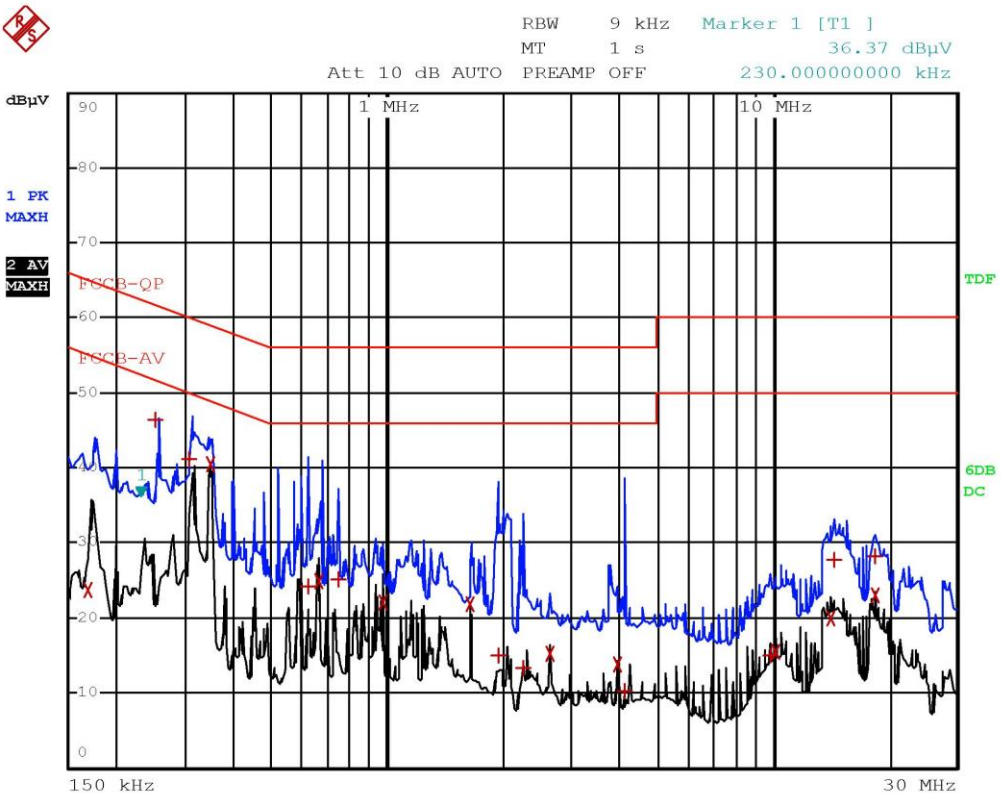

Panozzo 19032904 Line N Operating cycle RFID 50 Ω

CMC Centro Misure Compatibilità S.r.l.

EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCCB-QP
Trace2:	FCCB-AV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	170 kHz	23.75	-31.20
1 Quasi Peak	254 kHz	46.37	-15.25
1 Quasi Peak	310 kHz	41.32	-18.64
2 Average	346 kHz	40.60	-8.45
1 Quasi Peak	626 kHz	24.11	-31.88
2 Average	662 kHz	24.98	-21.01
1 Quasi Peak	750 kHz	25.27	-30.72
2 Average	970 kHz	21.99	-24.00
2 Average	1.646 MHz	21.93	-24.06
1 Quasi Peak	1.938 MHz	15.02	-40.97
1 Quasi Peak	2.258 MHz	13.28	-42.71
2 Average	2.634 MHz	15.16	-30.83
2 Average	3.954 MHz	13.80	-32.20
1 Quasi Peak	4.114 MHz	10.37	-45.62
1 Quasi Peak	9.89 MHz	14.89	-45.10
2 Average	10.214 MHz	15.51	-34.48
2 Average	14.166 MHz	19.90	-30.09
1 Quasi Peak	14.494 MHz	27.66	-32.33
1 Quasi Peak	18.45 MHz	28.20	-31.79
2 Average	18.45 MHz	22.99	-27.00

Panozzo 19032904 Line N Operating cycle RFID 50 Ω

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.

11.3 Radiated emissions

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

Test specification

Port: Enclosure
Frequency range: 0,009 MHz – 300 MHz
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 10 m
EUT height about the floor: 80 cm

Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
22	100	45

Acceptance limits

Frequency range (MHz)	*Test distance (m)*	*Limits [dB(µV/m)]*	
0,009 to 0,490	300	48,5 to 13,8	
0,490 to 1,705	30	33,8 to 22,9	
1,705 to 30	30	29,5	
30 to 88	3	40	
88 to 216	3	43,5	
216 to 960	3	46,0	
Above 960	3	53,9	
	Test distance (m)	*Linear average detector [dB(µV/m)]*	*Peak detector [dB(µV/m)]*
Above 1000	3	53,9	73,9

Remarks: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

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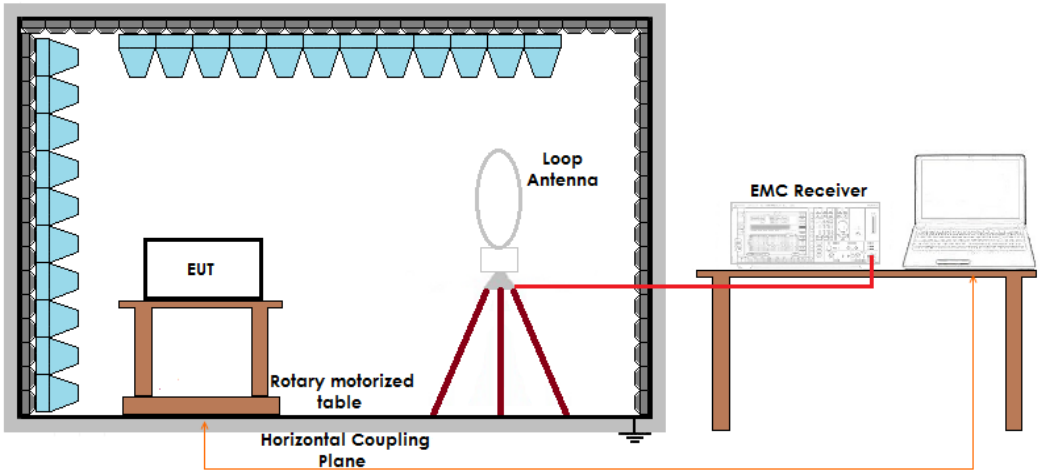
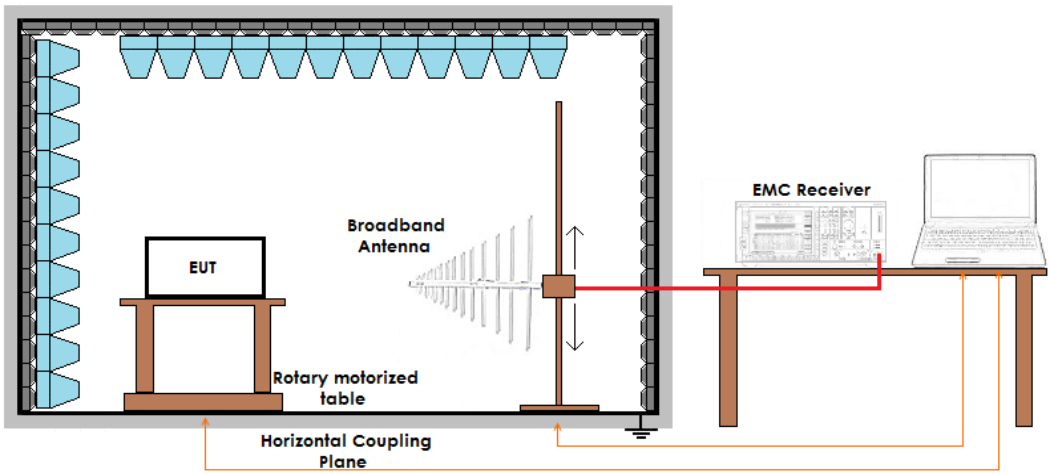
Setup

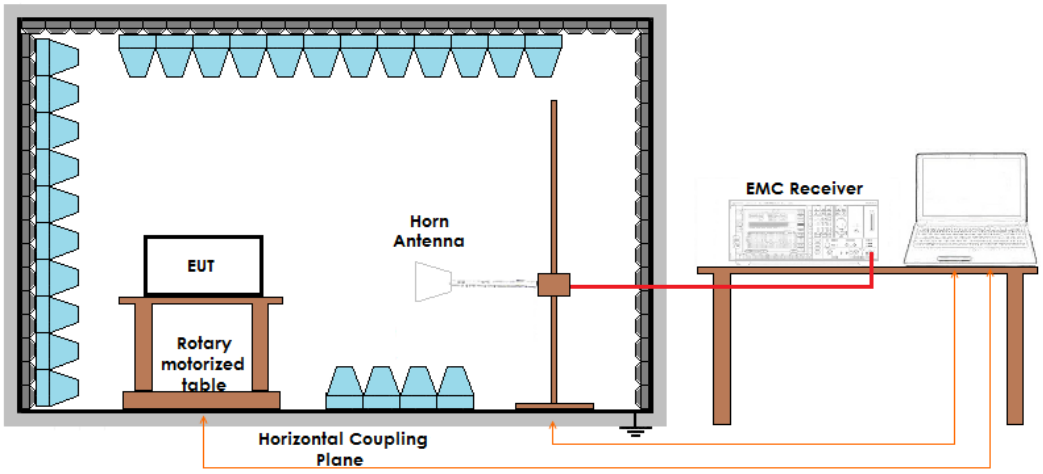
Frequency ≤ 30 MHz



Frequency ≤ 1 GHz



Frequency > 1 GHz



CMC Centro Misure Compatibilità S.r.l.

Result

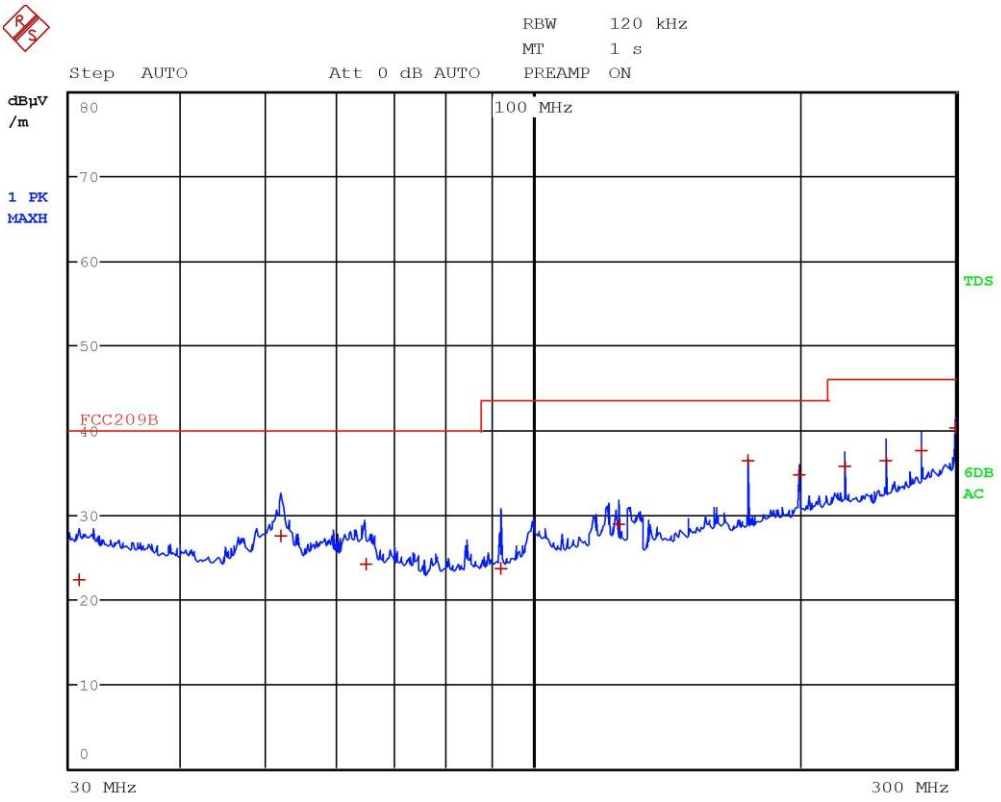
Polarization	*Frequency Range (MHz)*	*Graphs*	*Remarks*	*Result*
V	30 – 300	G19032905	RFID ON	Complies
H	30 – 300	G19032906	RFID ON	Complies
H	30 – 300	G19032907	4000 rpm	Complies
V	30 – 300	G19032908	4000 rpm	Complies
V	300 – 1000	G19032909	4000 rpm	Complies
H	300 – 1000	G19032910	4000 rpm	Complies
H	300 – 1000	G19032911	RFID ON	Complies
V	300 – 1000	G19032912	RFID ON	Complies
V	1000 – 5000	G19032913	RFID ON	Complies
H	1000 – 5000	G19032914	RFID ON	Complies
H	1000 – 5000	G19032915	4000 rpm	Complies
V	1000 – 5000	G19032916	4000 rpm	Complies
Loop	0,009 – 30	G19032917	RFID ON	Complies

Remarks: Measurements at frequencies lower than 1000 MHz have been performed with an EUT – antenna distance of 10 m. Measured values have been corrected with different conversion factors, based on the measuring distance provided by the standard.
Test on frequency range 0,009 – 30 MHz has been performed in 3 orthogonal planes.
The results in this table show the highest value.
Peaks above the limits are caused by the nominal transmitting frequencies

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

CMC Centro Misure Compatibilità S.r.l.

Graphs



Panozzo 19032905 Vert RFID on

CMC Centro Misure Compatibilità S.r.l.

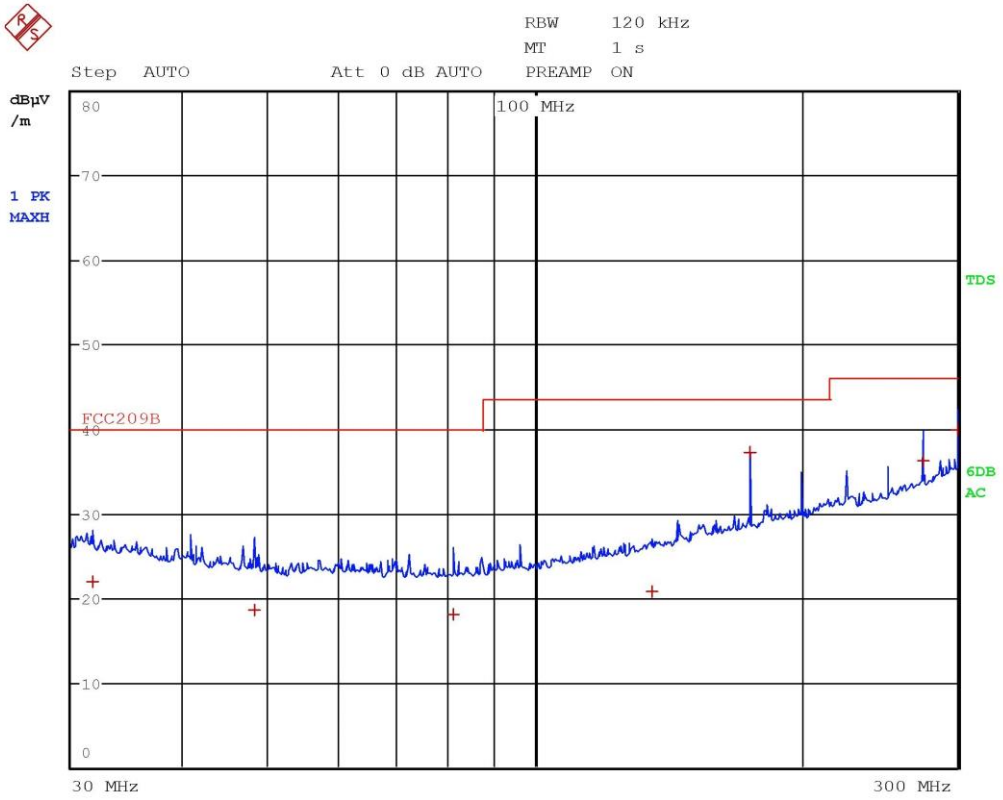
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	30.8 MHz	22.26	-17.73
1 Quasi Peak	51.88 MHz	27.47	-12.52
1 Quasi Peak	64.88 MHz	24.04	-15.95
1 Quasi Peak	92.04 MHz	23.58	-19.93
1 Quasi Peak	125 MHz	28.89	-14.63
1 Quasi Peak	175 MHz	36.40	-7.11
1 Quasi Peak	200 MHz	34.76	-8.75
1 Quasi Peak	225 MHz	35.63	-10.38
1 Quasi Peak	250 MHz	36.35	-9.66
1 Quasi Peak	275 MHz	37.50	-8.51
1 Quasi Peak	300 MHz	40.31	-5.70

Panozzo 19032905 Vert RFID on

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032906 Horiz RFID on

CMC Centro Misure Compatibilità S.r.l.

PEAK FREQUENCY
4

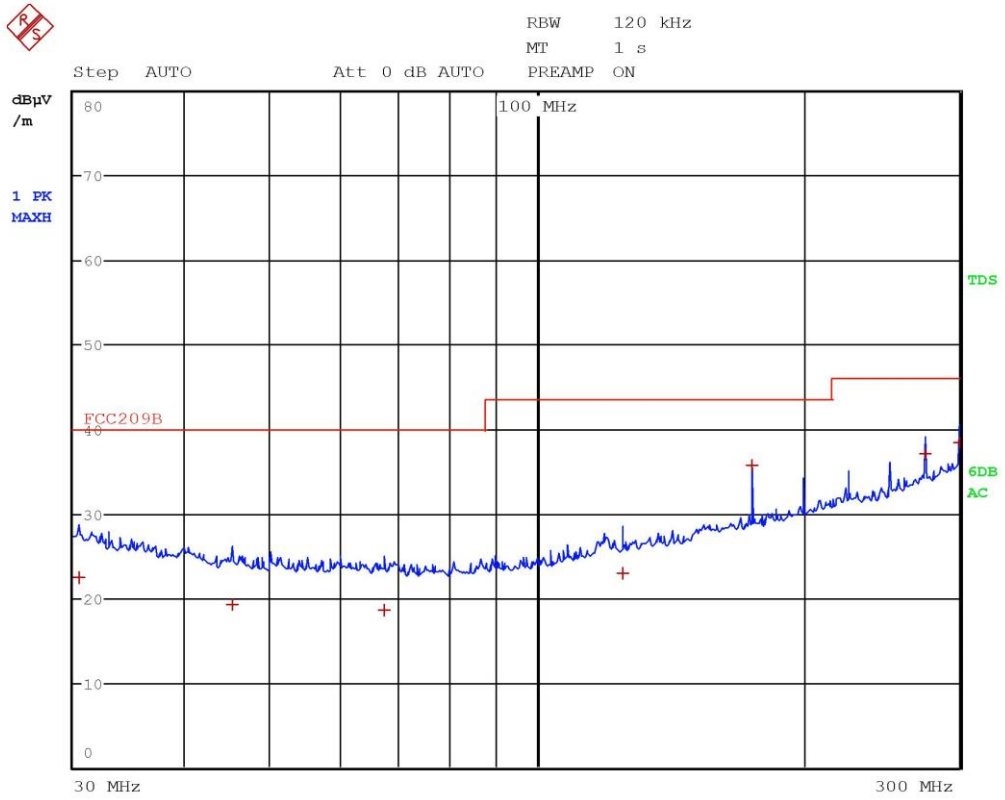
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	31.72 MHz	21.90	-18.09
1 Quasi Peak	48.32 MHz	18.54	-21.45
1 Quasi Peak	80.96 MHz	18.12	-21.87
1 Quasi Peak	135.68 MHz	20.76	-22.76
1 Quasi Peak	175 MHz	37.19	-6.32
1 Quasi Peak	275 MHz	36.24	-9.77
1 Quasi Peak	300 MHz	39.97	-6.04

Panozzo 19032906 Vert RFID on

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032907 Horiz 4000rpm

CMC Centro Misure Compatibilità S.r.l.

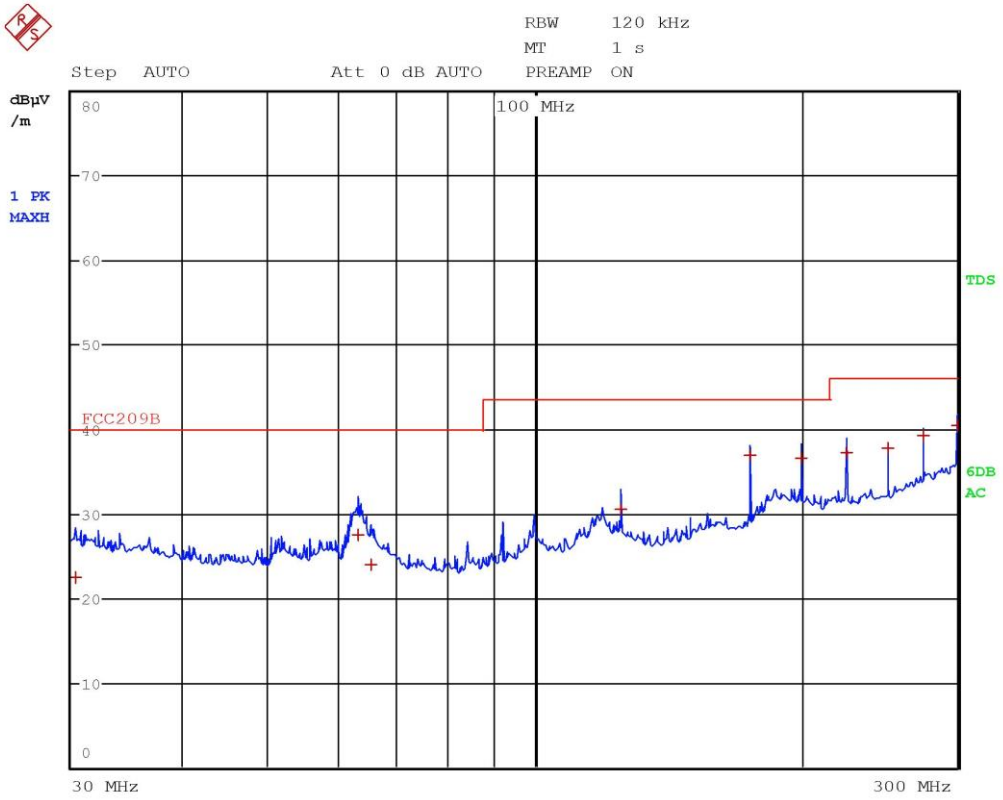
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	30.4 MHz	22.35	-17.64
1 Quasi Peak	45.28 MHz	19.25	-20.74
1 Quasi Peak	67.2 MHz	18.57	-21.42
1 Quasi Peak	125.04 MHz	22.94	-20.57
1 Quasi Peak	175 MHz	35.69	-7.82
1 Quasi Peak	275 MHz	37.13	-8.88
1 Quasi Peak	300 MHz	38.32	-7.69

Panozzo 19032907 Horiz 4000rpm

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032908 Vert 4000rpm

CMC Centro Misure Compatibilità S.r.l.

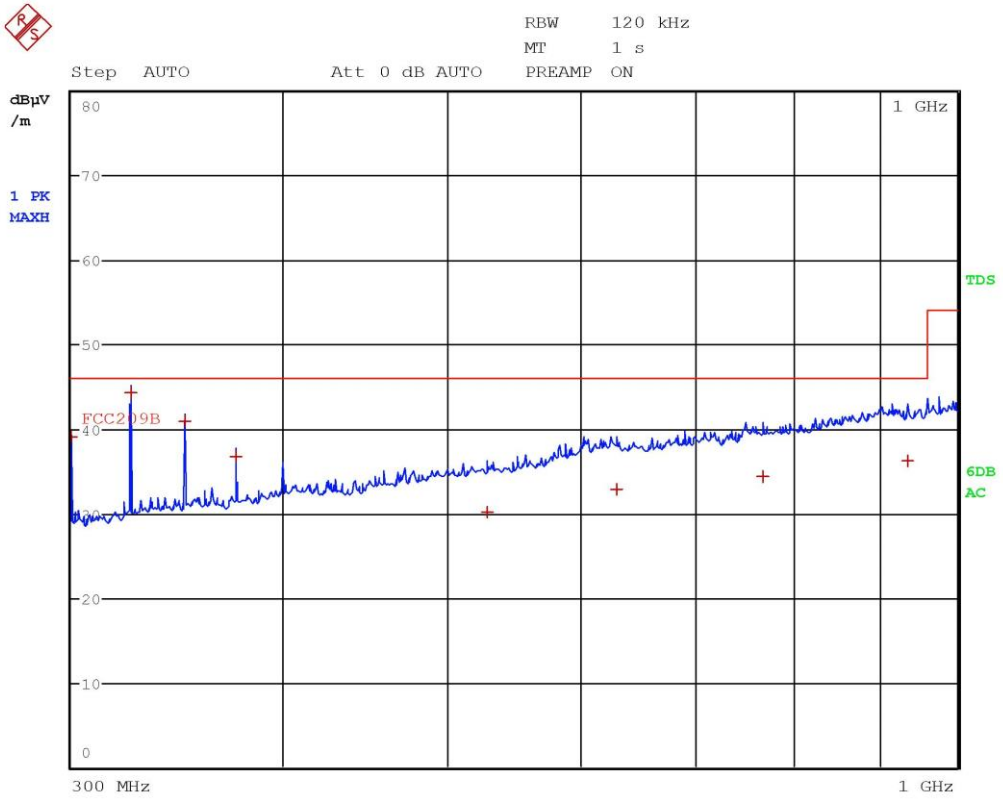
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	30.28 MHz	22.38	-17.61
1 Quasi Peak	63.24 MHz	27.54	-12.45
1 Quasi Peak	65.24 MHz	23.90	-16.09
1 Quasi Peak	125 MHz	30.56	-12.95
1 Quasi Peak	175 MHz	36.91	-6.60
1 Quasi Peak	200 MHz	36.54	-6.97
1 Quasi Peak	225 MHz	37.18	-8.83
1 Quasi Peak	250 MHz	37.74	-8.27
1 Quasi Peak	275 MHz	39.20	-6.81
1 Quasi Peak	300 MHz	40.47	-5.54

Panozzo 19032908 Vert 4000rpm

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032909 Vert 4000rpm

CMC Centro Misure Compatibilità S.r.l.

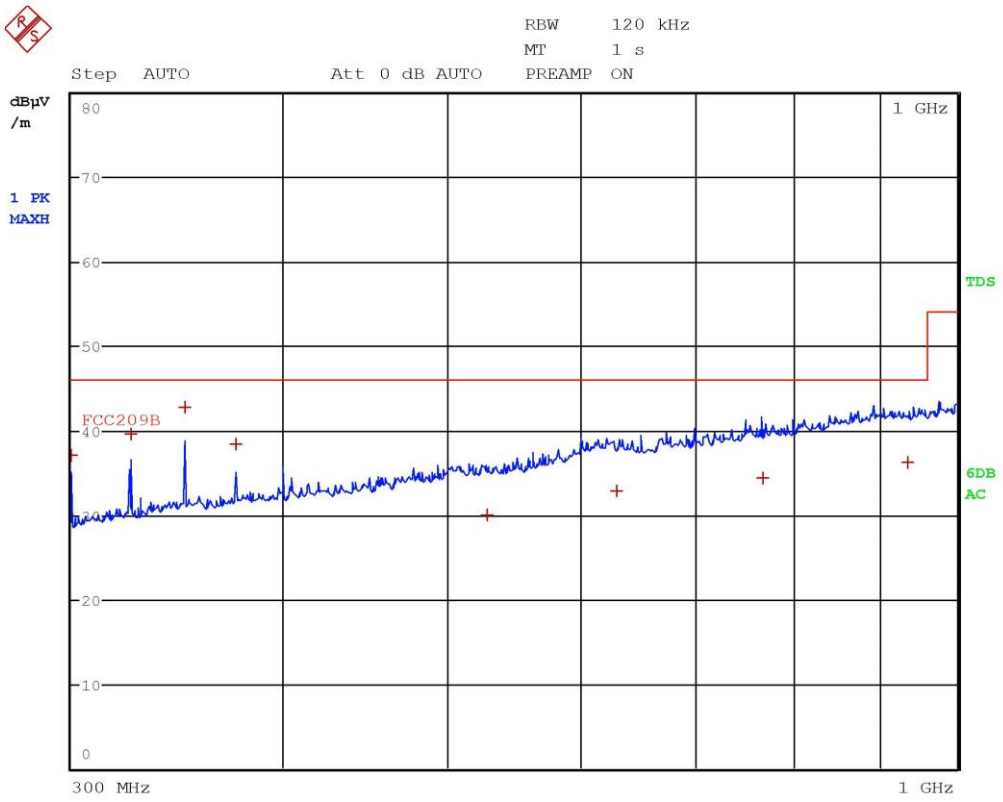
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	300 MHz	39.04	-6.97
1 Quasi Peak	325 MHz	44.20	-1.81
1 Quasi Peak	350 MHz	41.00	-5.01
1 Quasi Peak	375 MHz	36.79	-9.22
1 Quasi Peak	527.88 MHz	30.13	-15.88
1 Quasi Peak	629.36 MHz	32.92	-13.09
1 Quasi Peak	768.04 MHz	34.36	-11.65
1 Quasi Peak	935.12 MHz	36.21	-9.80

Panozzo 19032909 Vert 4000rpm

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032910 Horiz 4000rpm

CMC Centro Misure Compatibilità S.r.l.

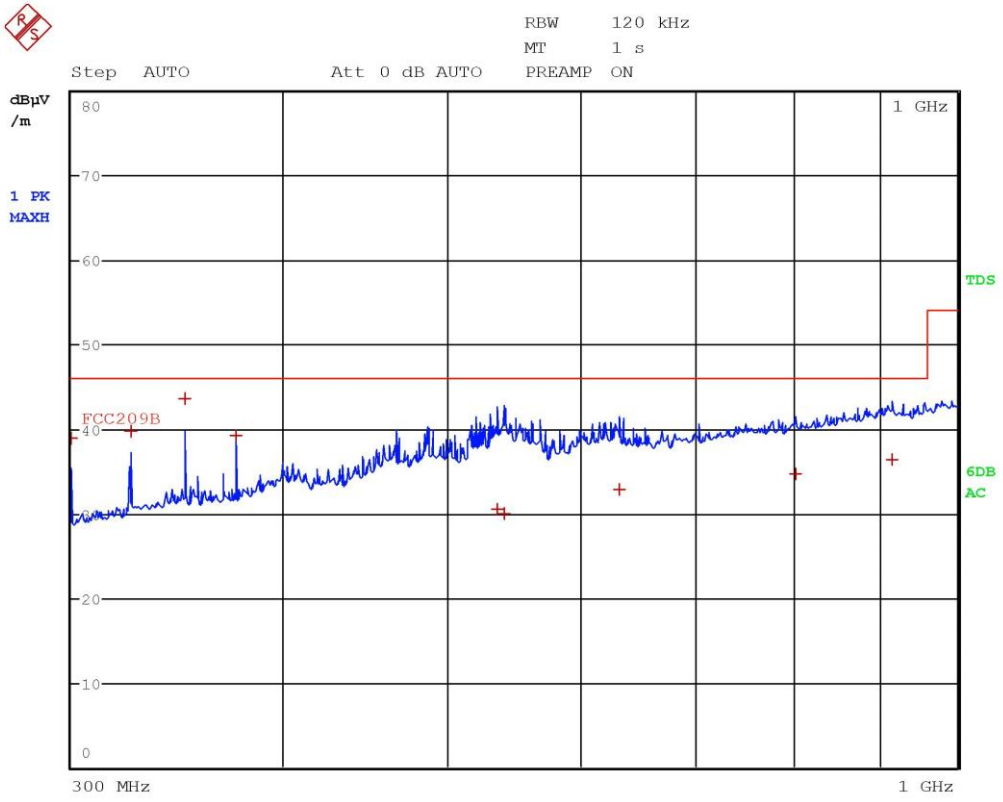
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	300 MHz	37.13	-8.88
1 Quasi Peak	325 MHz	39.52	-6.49
1 Quasi Peak	350 MHz	42.70	-3.31
1 Quasi Peak	375 MHz	38.47	-7.54
1 Quasi Peak	527.88 MHz	30.06	-15.95
1 Quasi Peak	629.36 MHz	32.88	-13.13
1 Quasi Peak	768.04 MHz	34.44	-11.57
1 Quasi Peak	935.12 MHz	36.22	-9.79

Panozzo 19032910 Horiz 4000rpm

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032911 Horiz RFID ON

CMC Centro Misure Compatibilità S.r.l.

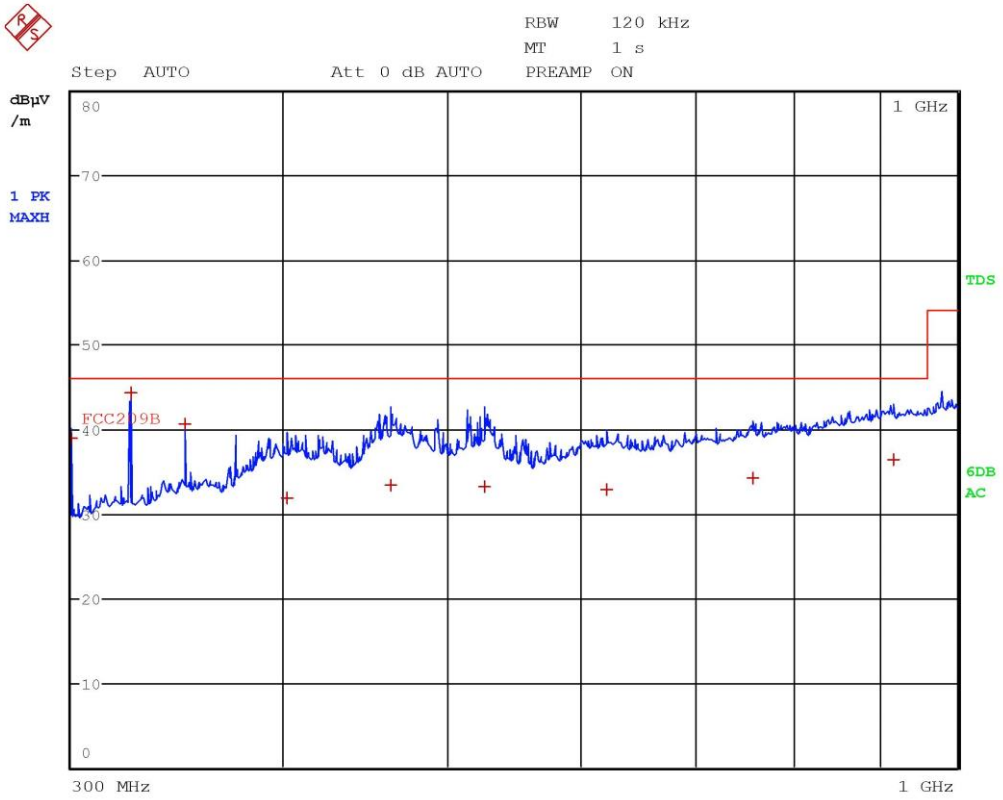
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	300 MHz	38.90	-7.11
1 Quasi Peak	325 MHz	39.80	-6.21
1 Quasi Peak	350 MHz	43.59	-2.42
1 Quasi Peak	375 MHz	39.20	-6.81
1 Quasi Peak	535.52 MHz	30.43	-15.58
1 Quasi Peak	540.12 MHz	29.97	-16.04
1 Quasi Peak	631.24 MHz	32.90	-13.11
1 Quasi Peak	802.36 MHz	34.64	-11.37
1 Quasi Peak	914.56 MHz	36.44	-9.57

Panozzo 19032911 Horiz RFID ON

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032912 Vert RFID ON

CMC Centro Misure Compatibilità S.r.l.

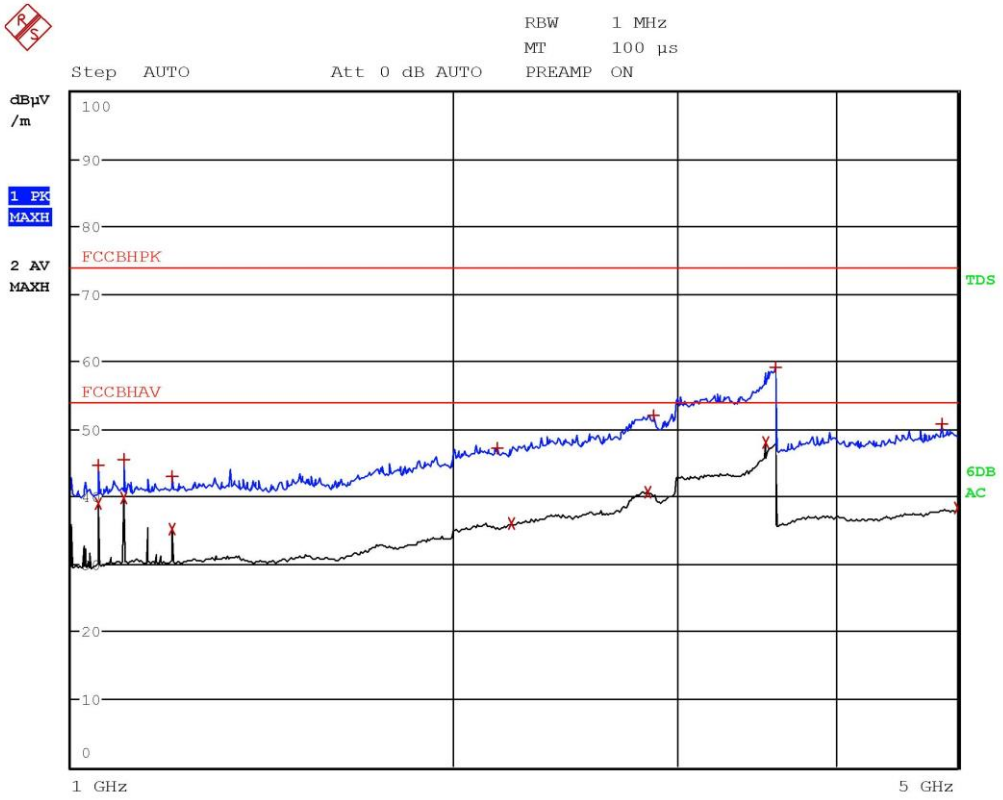
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209B
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	300 MHz	38.91	-7.10
1 Quasi Peak	325 MHz	44.29	-1.72
1 Quasi Peak	350 MHz	40.59	-5.42
1 Quasi Peak	402.48 MHz	31.76	-14.25
1 Quasi Peak	463.4 MHz	33.44	-12.57
1 Quasi Peak	525.64 MHz	33.11	-12.90
1 Quasi Peak	620.96 MHz	32.92	-13.09
1 Quasi Peak	757.24 MHz	34.27	-11.75
1 Quasi Peak	916.12 MHz	36.43	-9.58

Panozzo 19032912 Vert RFID ON

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032913 Vert RFID ON

CMC Centro Misure Compatibilità S.r.l.

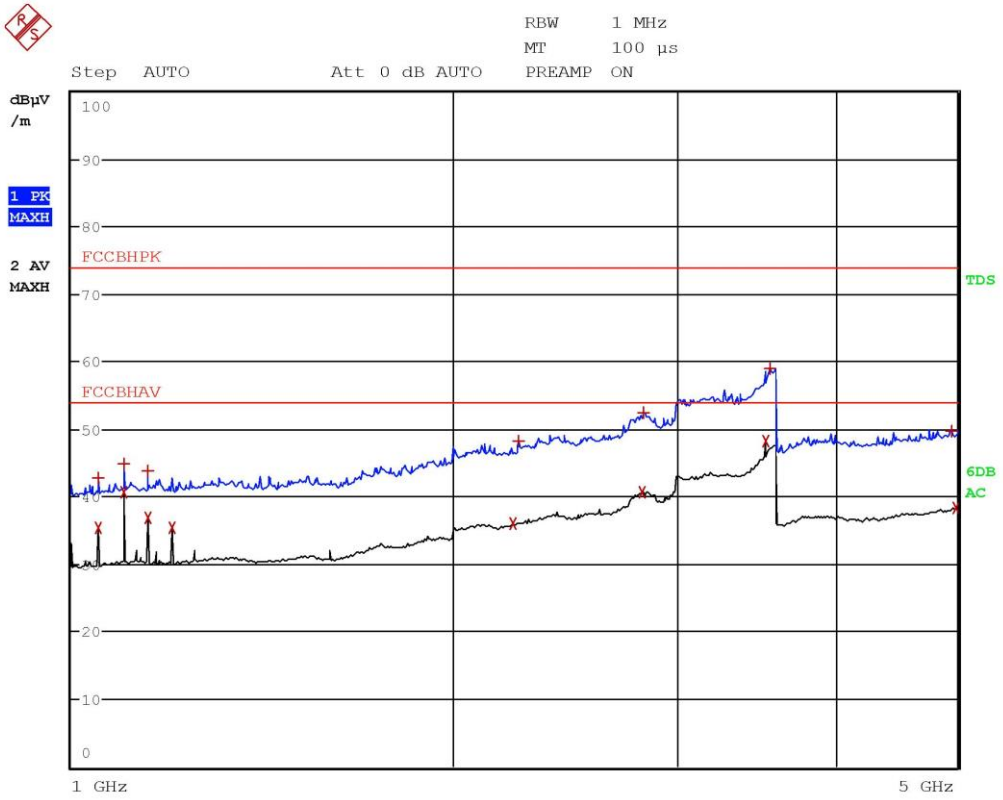
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

	TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1	Max Peak	1.05 GHz	44.72	-29.25
2	Average	1.05 GHz	39.00	-14.97
2	Average	1.1 GHz	39.73	-14.24
1	Max Peak	1.1 GHz	45.39	-28.58
1	Max Peak	1.1996 GHz	42.92	-31.06
2	Average	1.2 GHz	35.13	-18.84
1	Max Peak	2.1684 GHz	47.22	-26.76
2	Average	2.226 GHz	36.07	-17.91
2	Average	2.846 GHz	40.62	-13.35
1	Max Peak	2.8804 GHz	51.89	-22.08
2	Average	3.5316 GHz	48.04	-5.93
1	Max Peak	3.596 GHz	59.04	-14.93
1	Max Peak	4.856 GHz	50.67	-23.31
2	Average	4.9952 GHz	38.26	-15.71

Panozzo 19032913 Vert RFID ON

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032914 Horiz RFID ON

CMC Centro Misure Compatibilità S.r.l.

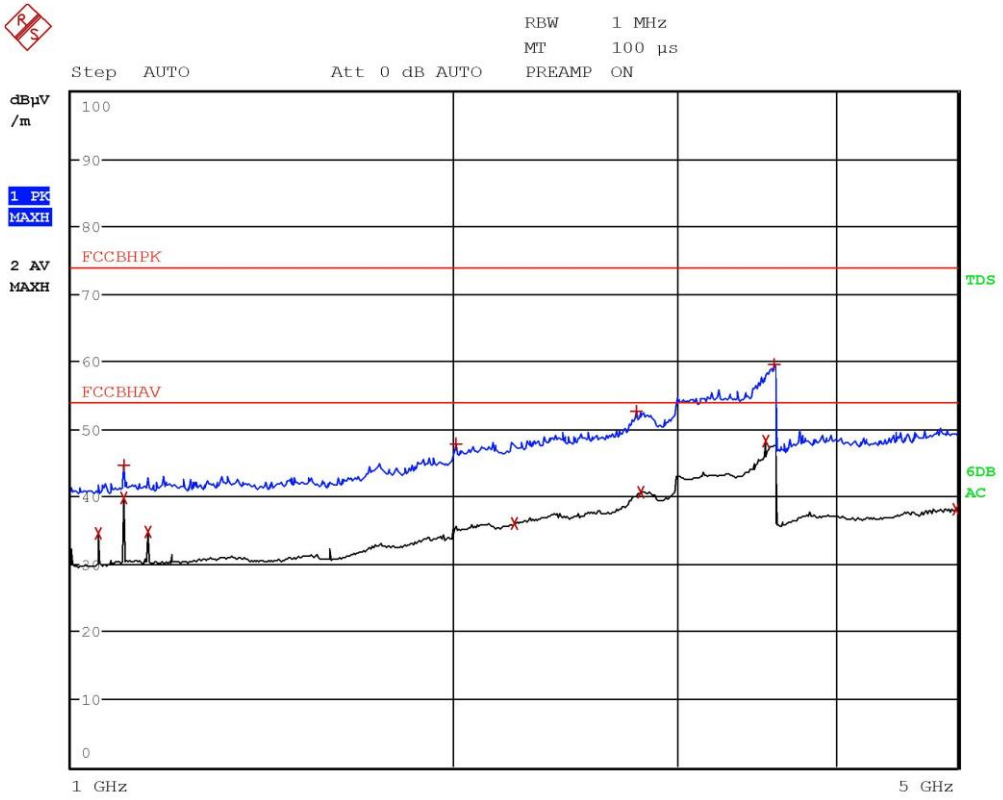
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Max Peak	1.05 GHz	42.75	-31.22
2 Average	1.05 GHz	35.47	-18.50
2 Average	1.1 GHz	40.69	-13.29
1 Max Peak	1.1 GHz	44.89	-29.09
1 Max Peak	1.15 GHz	43.87	-30.10
2 Average	1.15 GHz	36.82	-17.15
2 Average	1.2 GHz	35.37	-18.60
2 Average	2.2292 GHz	36.08	-17.89
1 Max Peak	2.2528 GHz	48.28	-25.69
2 Average	2.8224 GHz	40.60	-13.37
1 Max Peak	2.8304 GHz	52.44	-21.53
2 Average	3.5316 GHz	48.19	-5.78
1 Max Peak	3.5596 GHz	58.98	-15.00
1 Max Peak	4.9504 GHz	49.60	-24.37
2 Average	4.9856 GHz	38.35	-15.63

Panozzo 19032914 Horiz RFID ON

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032915 Horiz 4000rpm

CMC Centro Misure Compatibilità S.r.l.

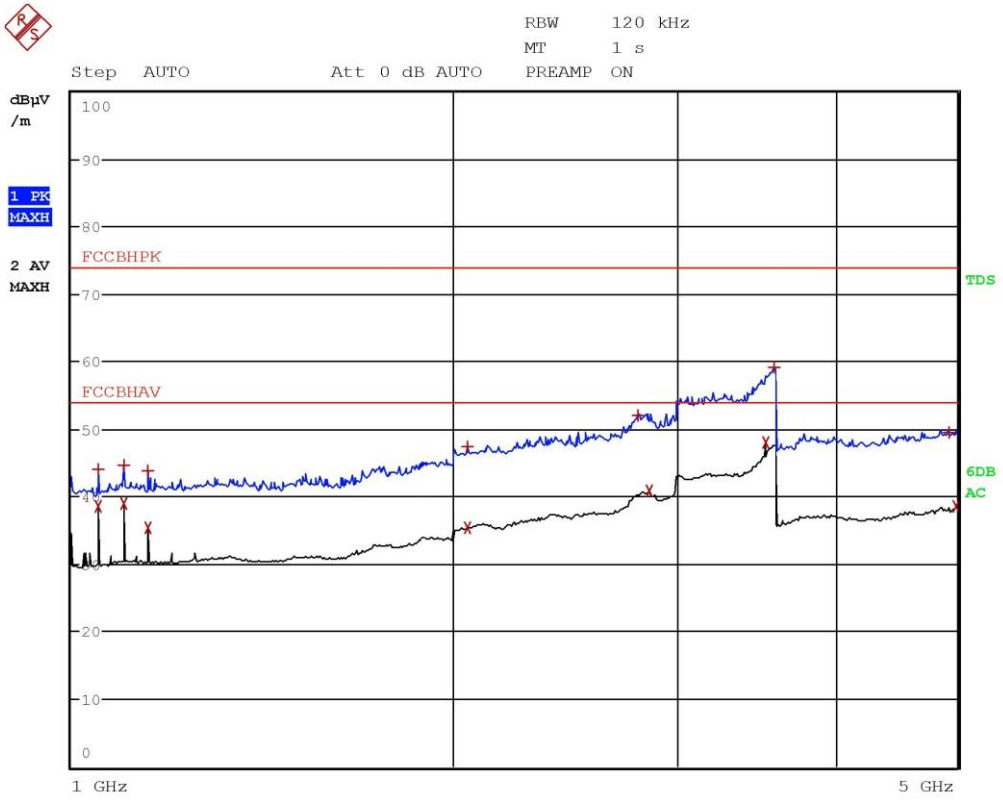
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2	Average	1.05 GHz	34.54	-19.43
2	Average	1.1 GHz	39.76	-14.21
1	Max Peak	1.1 GHz	44.74	-29.23
2	Average	1.15 GHz	34.72	-19.25
1	Max Peak	2.0112 GHz	47.71	-26.26
2	Average	2.2344 GHz	36.02	-17.95
1	Max Peak	2.7876 GHz	52.62	-21.36
2	Average	2.8152 GHz	40.72	-13.25
2	Average	3.5316 GHz	48.23	-5.74
1	Max Peak	3.5864 GHz	59.52	-14.45
2	Average	4.9828 GHz	38.23	-15.74

Panozzo 19032915 Horiz 4000rpm

CMC Centro Misure Compatibilità S.r.l.



Panozzo 19032916 Vert 4000rpm

CMC Centro Misure Compatibilità S.r.l.

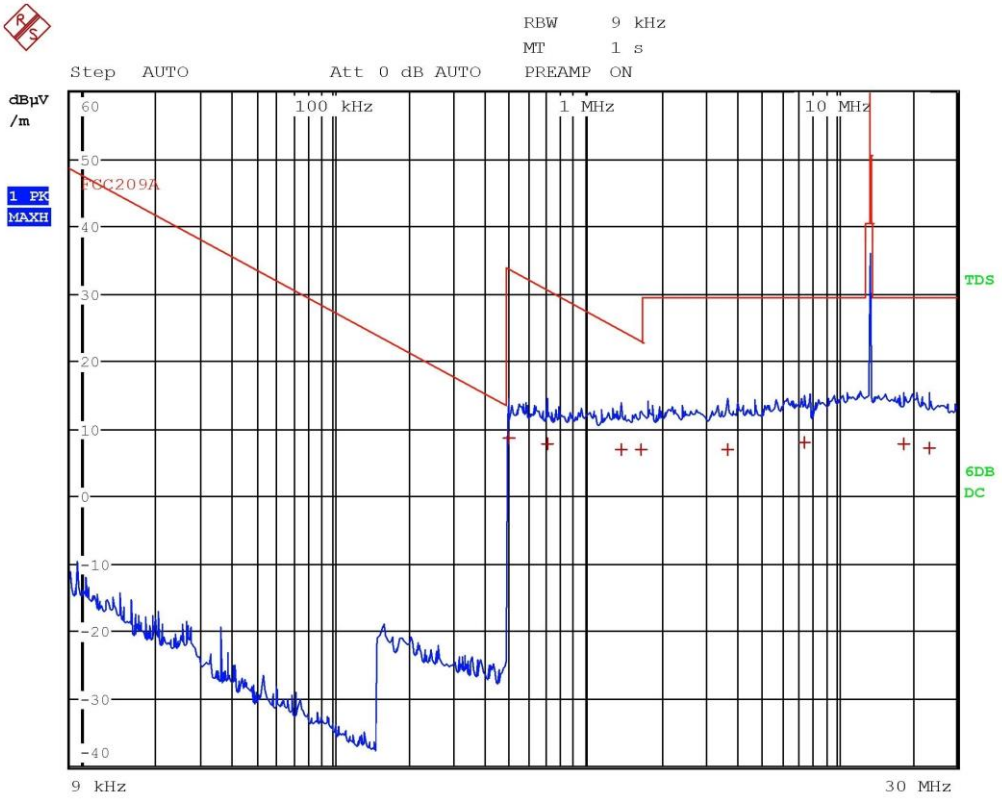
EDIT PEAK LIST (Prescan Results)

Trace1:	FCCBHPK
Trace2:	FCCBHAV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
2	Average	1.05 GHz	38.58	-15.39
1	Max Peak	1.05 GHz	43.96	-30.02
2	Average	1.1 GHz	38.98	-14.99
1	Max Peak	1.1 GHz	44.56	-29.41
2	Average	1.15 GHz	35.37	-18.60
1	Max Peak	1.15 GHz	43.84	-30.13
1	Max Peak	2.0536 GHz	47.30	-26.68
2	Average	2.0556 GHz	35.31	-18.66
1	Max Peak	2.8008 GHz	52.02	-21.95
2	Average	2.8576 GHz	40.84	-13.13
2	Average	3.5316 GHz	47.99	-5.98
1	Max Peak	3.5872 GHz	59.08	-14.89
1	Max Peak	4.9228 GHz	49.39	-24.58
2	Average	4.9852 GHz	38.53	-15.44

Panozzo 19032916 Vert 4000rpm

CMC Centro Misure Compatibilità S.r.l.



Gandini 19032917-Loop-RFID ON

CMC Centro Misure Compatibilità S.r.l.

EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC209A
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	498 kHz	8.53	-25.12
1 Quasi Peak	706 kHz	7.69	-22.93
1 Quasi Peak	1.386 MHz	7.01	-17.75
1 Quasi Peak	1.666 MHz	6.86	-16.30
1 Quasi Peak	3.678 MHz	7.03	-22.50
1 Quasi Peak	7.482 MHz	7.95	-21.58
1 Quasi Peak	18.538 MHz	7.85	-21.68
1 Quasi Peak	23.366 MHz	7.22	-22.32

Gandini 19032917-Loop-RFID ON

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.

11.4 Field strength within the assigned band

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.209 and Part 15.225
- 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 S127, CMC S164
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
EUT – Antenna distance: 10 m

Environmental conditions

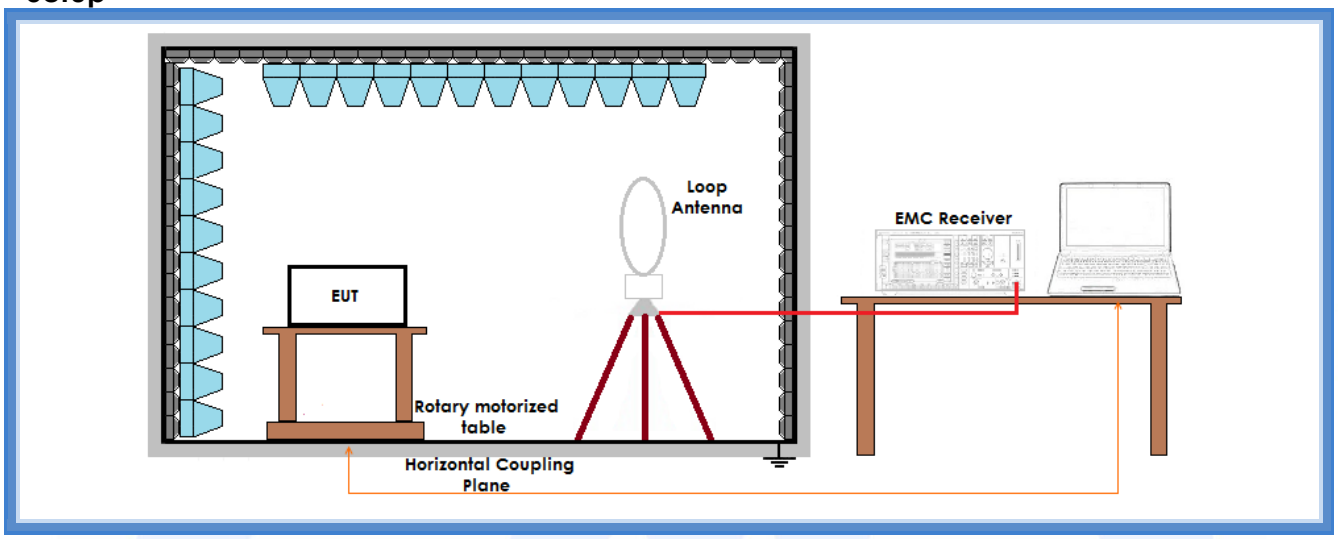
Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
22	100	45

Acceptance limits

Limits			
cl.	*Frequency range (MHz)*	*dB(µV/m) Quasi-peak*	*Test distance (m)*
15.225 (a)	13,553 to 13,567	84,00	30
15.225 (b)	13,410 to 13,553 and 13,567 to 13,710	50,47	30
15.225 (c)	13,110 to 13,410 and 13,710 to 14,010	40,51	30
15.225 (d)	outside of the 13,110 – 14,010 MHz band	FCC 15.209	

CMC Centro Misure Compatibilità S.r.l.

Setup



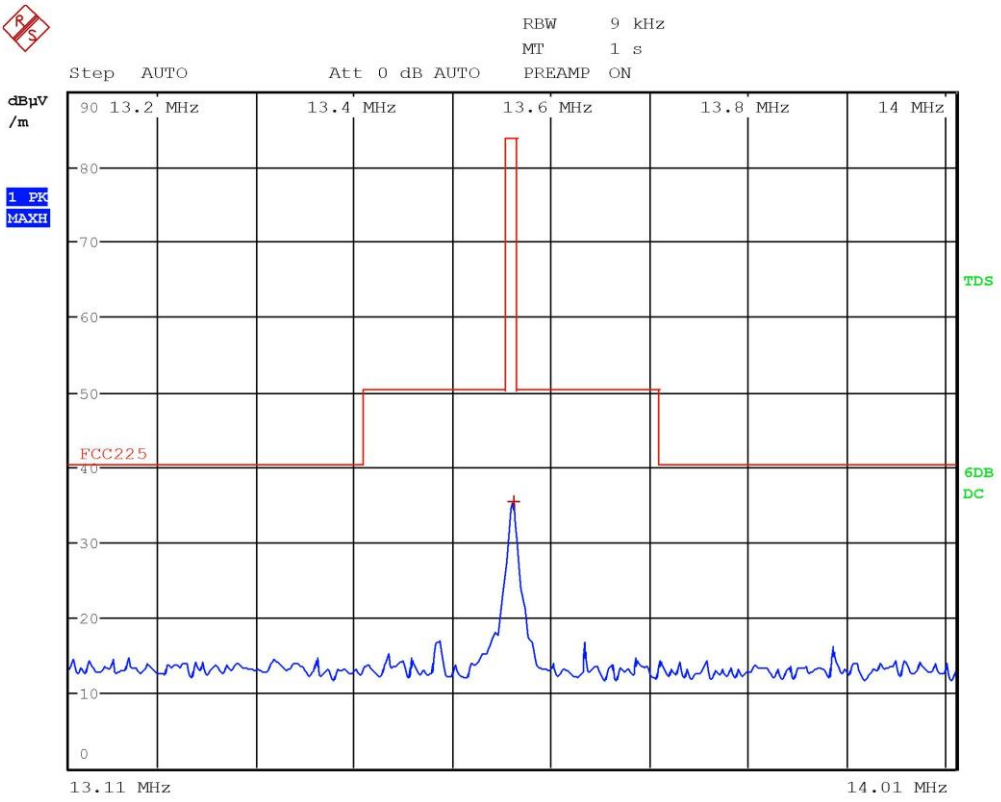
Result

Graphs	*Limits (dBµV/m)*	*Level (dBµV/m)*	*Results*
G19032918	84,00	35,56	Complies
G19032919			

Remarks: Measurements have been performed with an EUT – antenna distance of 10 m. Measured values have been corrected with different conversion factors, based on the measuring distance provided by the standard. EUT was tested in 3 orthogonal planes. The results in this table show the highest value.

CMC Centro Misure Compatibilità S.r.l.

Graphs



Gandini 19032918

CMC Centro Misure Compatibilità S.r.l.

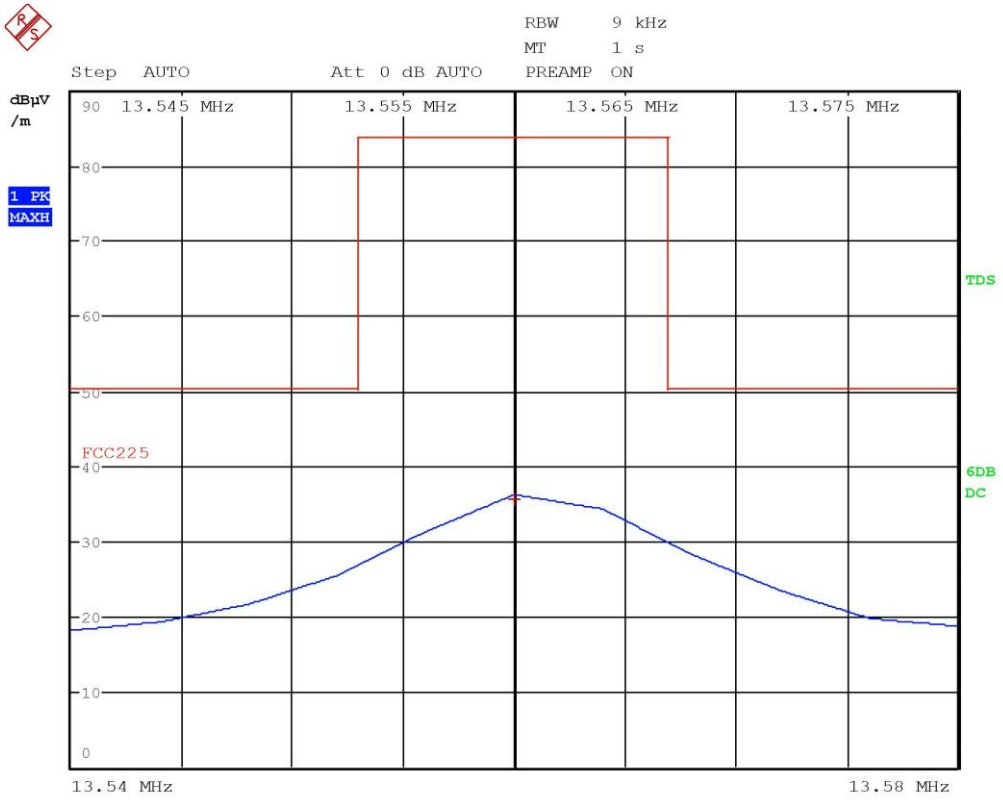
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC225
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	13.562 MHz	35.43	-48.56

Gandini 19032918

CMC Centro Misure Compatibilità S.r.l.



Gandini 19032919

CMC Centro Misure Compatibilità S.r.l.

EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC225
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	13.56 MHz	35.56	-48.43

Gandini 19032919

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.

11.5 Frequency tolerance

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.225 (e)
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Climatic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC B026, CMC S295
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
EUT – Antenna distance: 3 m

Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
23	100	55

Acceptance limits:

The frequency tolerance of the carrier signal shall be maintained within ±0,01% of the operating frequency (±1,36 kHz)

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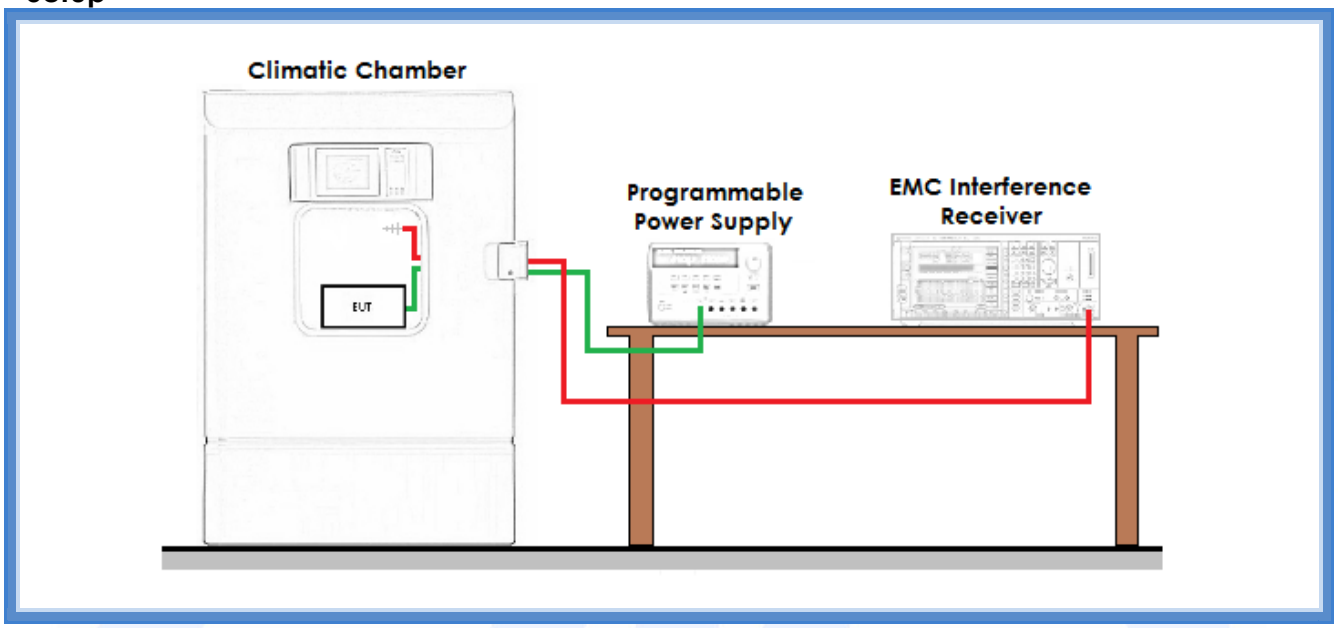
Setup



Result

Test conditions		Measured frequency	Frequency limits
Temperature (°C)	*Voltage level (V)*	*(MHz)*	*(MHz)*
-20	Normal supply voltage	*	13,55864 – 13,56136
-10	Normal supply voltage	*	13,55864 – 13,56136
0	Normal supply voltage	*	13,55864 – 13,56136
10	Normal supply voltage	13,5608	13,55864 – 13,56136
20	Normal supply voltage	13,5604	13,55864 – 13,56136
30	Normal supply voltage	13,5612	13,55864 – 13,56136
40	Normal supply voltage	13,5612	13,55864 – 13,56136
50	Normal supply voltage	13,5612	13,55864 – 13,56136

*: due to the manufacturer's settings, EUT goes into temperature error mode and turn OFF the radio

Test conditions			Measured frequency	Frequency limits
Temperature (°C)	*Voltage level (%)*	*Voltage level (V)*	*(MHz)*	*(MHz)*
20	85	102	13,5612	13,55864 – 13,56136
20	90	108	13,5608	13,55864 – 13,56136
20	95	114	13,5608	13,55864 – 13,56136
20	100	120	13,5608	13,55864 – 13,56136
20	105	126	13,5608	13,55864 – 13,56136
20	110	132	13,5608	13,55864 – 13,56136
20	115	138	13,5612	13,55864 – 13,56136

Result: The requirements are met

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11.6 20 dB bandwidth

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.215
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Laboratory

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

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

Test specification

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated

Environmental conditions

Temperature (°C)	*Atmospheric pressure (kPa)*	*Relative humidity (%)*
22	100	45

Acceptance limits: operation within the band 13,110 – 14,010 MHz

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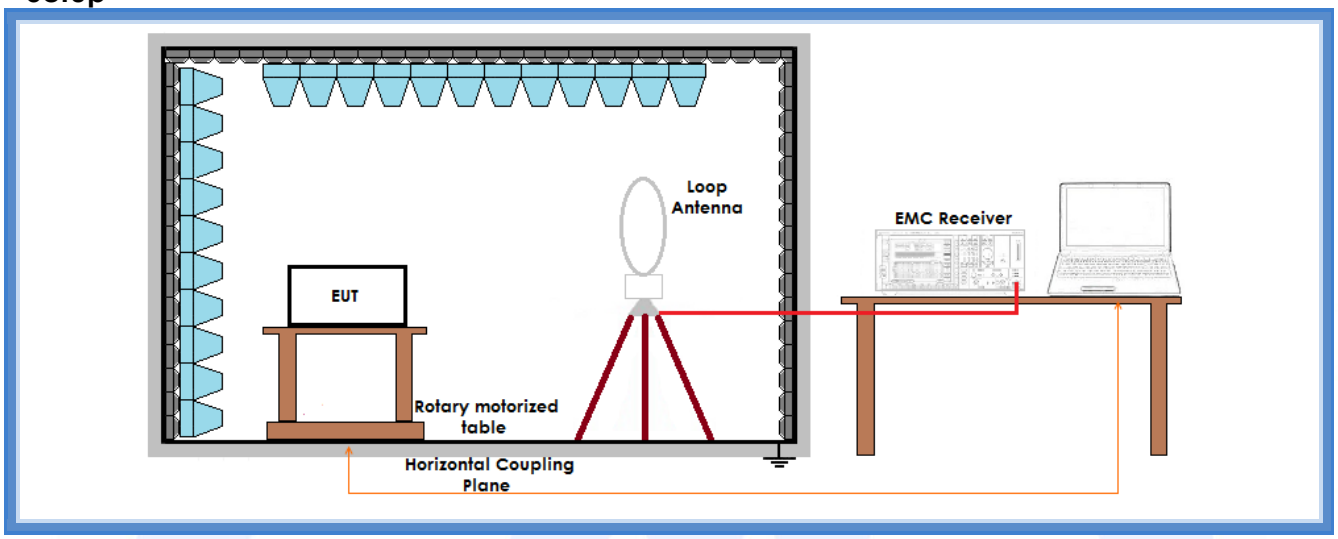
Setup



Result

f (MHz)	*20 dB bandwidth (MHz)*		*Graph*	*Results*
	FL	FH		
13,5609823	13,560424	13,561546	G19032921	Complies

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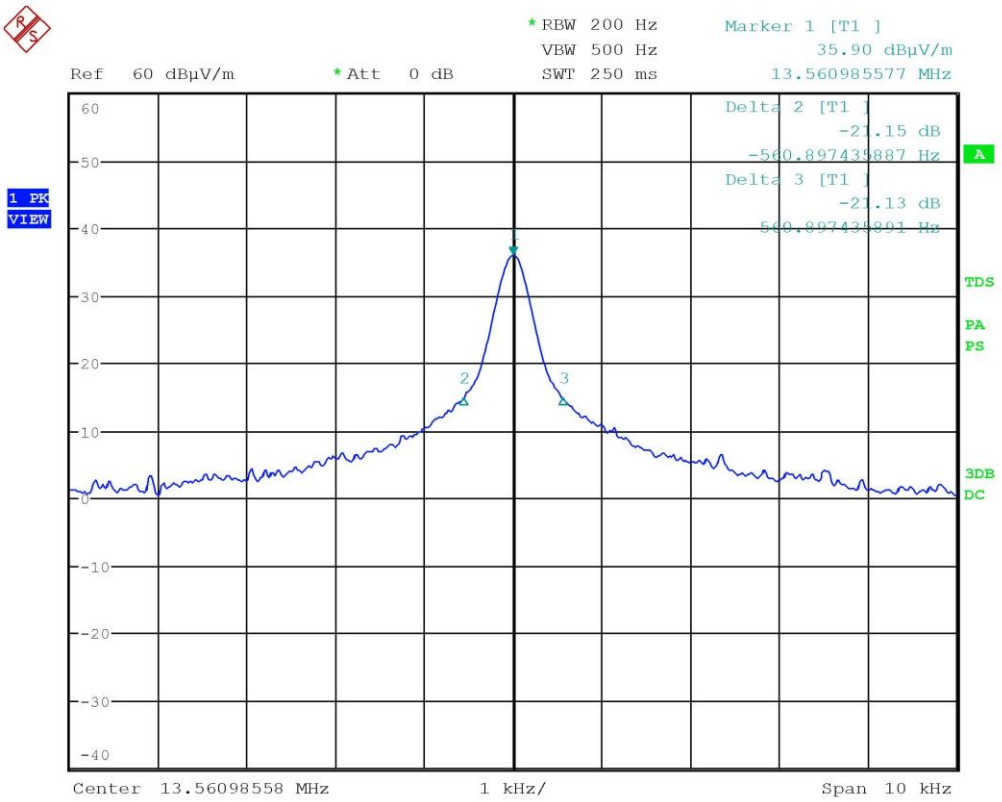
Graphs



Gandini 19032921

Result: The requirements are met

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