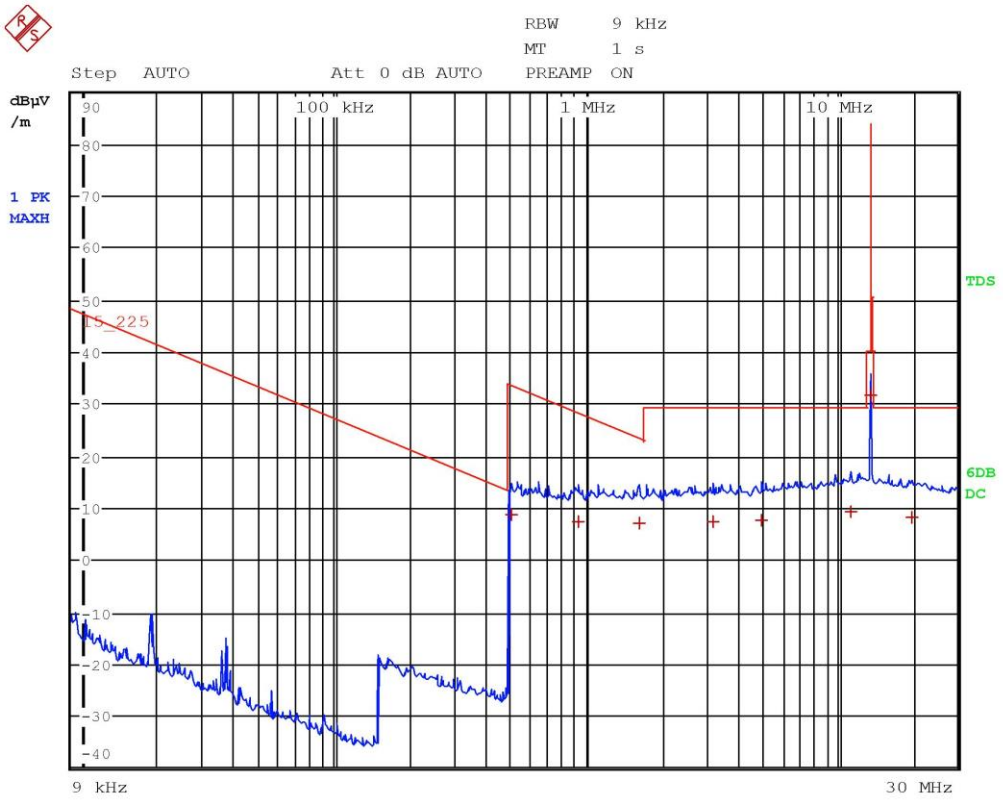
Graphs



Gandini 19239302

CMC Centro Misure Compatibilità S.r.l.

EDIT PEAK LIST (Final Measurement Results)

Trace1:	15_225
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	502 kHz	8.82	-24.76
1 Quasi Peak	926 kHz	7.40	-20.87
1 Quasi Peak	1.618 MHz	7.23	-16.19
1 Quasi Peak	3.222 MHz	7.29	-22.24
1 Quasi Peak	4.982 MHz	7.58	-21.95
1 Quasi Peak	11.294 MHz	9.17	-20.36
1 Quasi Peak	13.562 MHz	31.62	-52.37
1 Quasi Peak	19.738 MHz	8.33	-21.20

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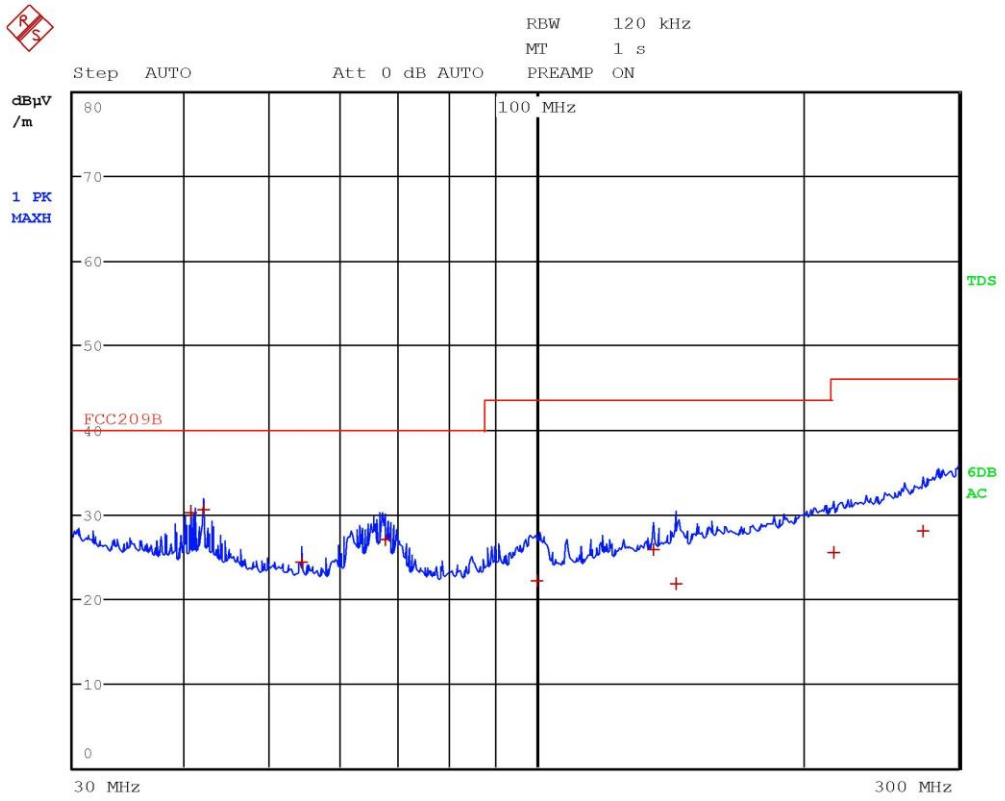

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CMC Centro Misure Compatibilità S.r.l.

EDIT PEAK LIST (Final Measurement Results)

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

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	40.6809102564 MHz	30.21	-9.78
1 Quasi Peak	42.08 MHz	30.53	-9.46
1 Quasi Peak	54.24 MHz	24.34	-15.65
1 Quasi Peak	67.52 MHz	26.91	-13.08
1 Quasi Peak	100.32 MHz	22.06	-21.45
1 Quasi Peak	135.6 MHz	25.86	-17.65
1 Quasi Peak	144.04 MHz	21.82	-21.69
1 Quasi Peak	216.72 MHz	25.45	-20.56
1 Quasi Peak	273.36 MHz	28.04	-17.97

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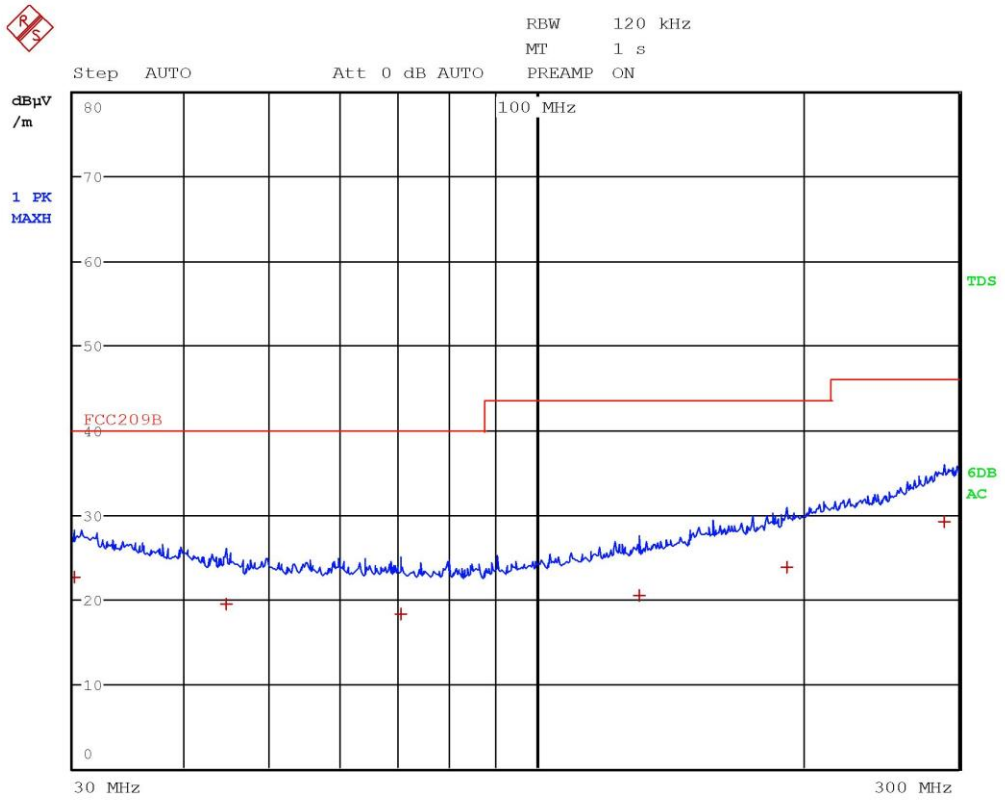

Gandini 19239308

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	30.12 MHz	22.55	-17.44
1 Quasi Peak	44.68 MHz	19.39	-20.60
1 Quasi Peak	70.4 MHz	18.15	-21.84
1 Quasi Peak	130.96 MHz	20.34	-23.18
1 Quasi Peak	191.8 MHz	23.77	-19.74
1 Quasi Peak	289.52 MHz	29.10	-16.92

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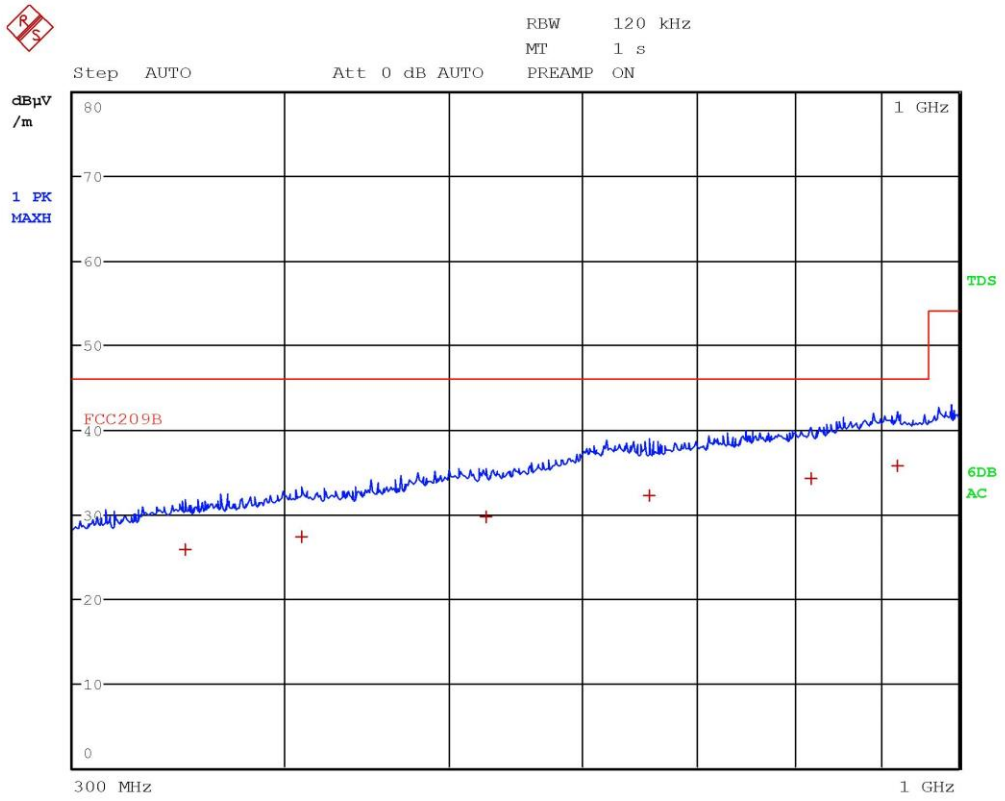


Gandini 19239309

CMC Centro Misure Compatibilità S.r.l.

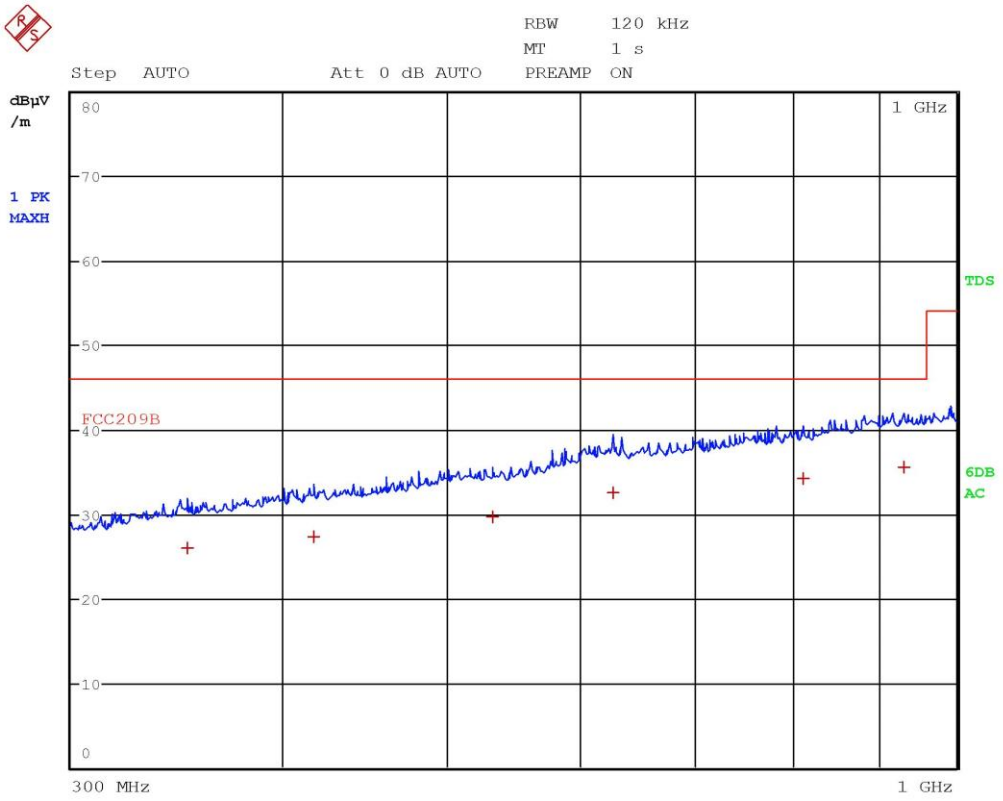
EDIT PEAK LIST (Final Measurement Results)

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

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	349.68 MHz	25.77	-20.24
1 Quasi Peak	409.16 MHz	27.32	-18.70
1 Quasi Peak	526.08 MHz	29.68	-16.33
1 Quasi Peak	656.08 MHz	32.21	-13.80
1 Quasi Peak	817.84 MHz	34.14	-11.87
1 Quasi Peak	920.88 MHz	35.76	-10.26

Gandini 19239309

CMC Centro Misure Compatibilità S.r.l.



Gandini 19239310

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	351.12 MHz	25.89	-20.13
1 Quasi Peak	417.12 MHz	27.23	-18.78
1 Quasi Peak	531.84 MHz	29.73	-16.29
1 Quasi Peak	626.44 MHz	32.51	-13.50
1 Quasi Peak	812.52 MHz	34.18	-11.83
1 Quasi Peak	930.36 MHz	35.59	-10.42

Gandini 19239310

CMC Centro Misure Compatibilità S.r.l.

9.4 Field strength with the assigned band

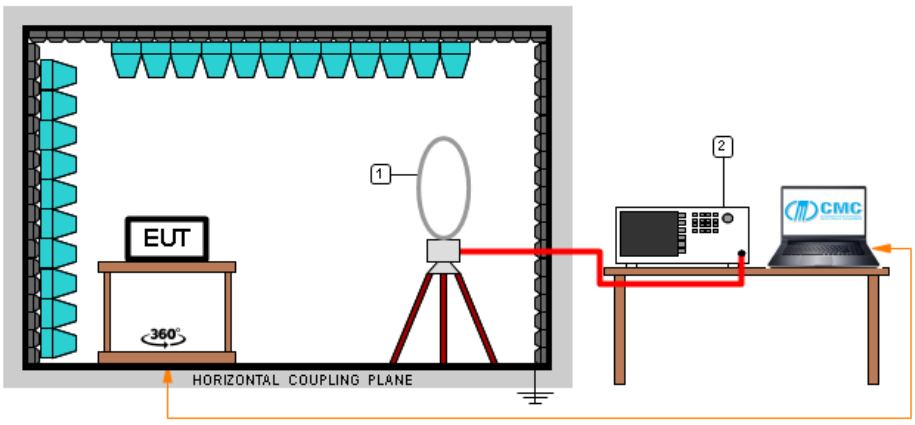
Tested by ..... :	G. Gandini
Test date ..... :	28.01.2020
Test location (stand) ..... :	Semi-anechoic chamber (CMC A070)
Reference standards ..... :	FCC Rules and Regulation; Titles 47 Part. 15.209 and 15.225 ANSI C63.10
Supplementary test set-up description ..... :	EUT – antenna distance: 10 m
Supplementary information..... :	--

Acceptance limits

a) The field strength of any emissions within the band 13,553 – 13,567 MHz shall not exceed 15,848 microvolts/meter at 30 meters
b) Within the bands 13,410 – 13,553 MHz and 13,567 – 13,710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters
c) Within the bands 13,110 – 13,410 MHz and 13,710 – 14,010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters
d) The field strength of any emissions appearing outside of the 13,110 – 14,010 MHz band shall not exceed the general radiated emission limits in §15.209

Test setup

Frequency ≤ 30 MHz



Test setup PE004_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S164	Rohde & Schwarz	ESU26	Receiver 20 Hz - 26.5 GHz
1	CMC S127	Schaffner	HLA6120	Loop Antenna 9kHz - 30MHz

CMC Centro Misure Compatibilità S.r.l.

Result

Frequency band (MHz)	*Graphs*	*Measured level (dBµV/m)*	*Limit (dBµV/m)*
13,553 – 13,567	G19239303	32,56	84,00
	G19239304		

Remarks: EUT was tested in 3 orthogonal planes, graphs are related to the highest detected levels. Measurements have been performed with an EUT – antenna distance of 10 m. Measured values have been corrected with conversion factor 40log(test distance/10) based on the measuring distance provided by the standard.

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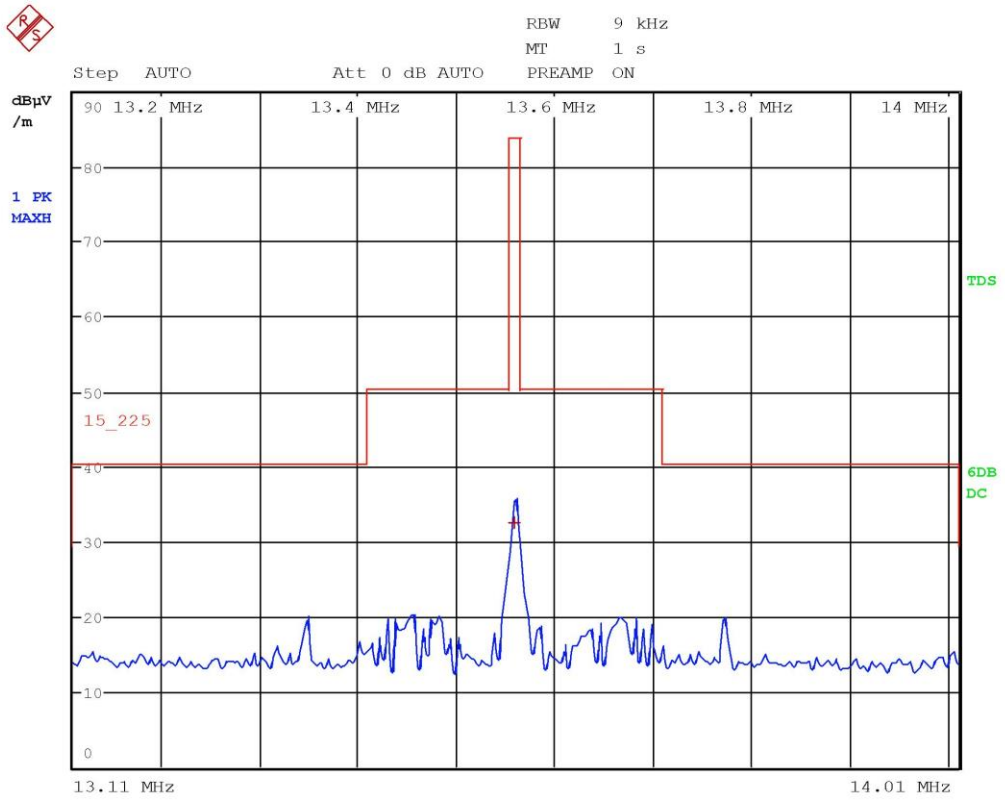
Graphs



Gandini 19239303

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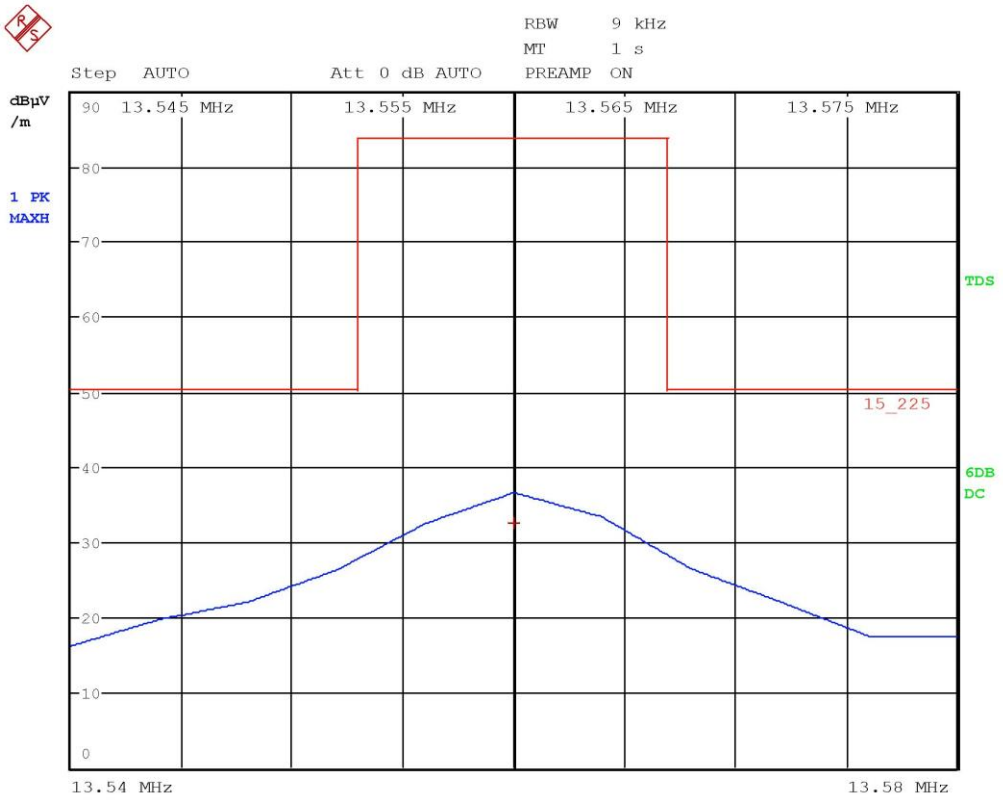
EDIT PEAK LIST (Final Measurement Results)

Trace1:	15_225
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	13.5603012821 MHz	32.56	-51.43

Gandini 19239303

CMC Centro Misure Compatibilità S.r.l.



Gandini 19239304

CMC Centro Misure Compatibilità S.r.l.

EDIT PEAK LIST (Final Measurement Results)

Trace1:	15_225
Trace2:	---
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
1 Quasi Peak	13.56 MHz	32.56	-51.43

Gandini 19239304

CMC Centro Misure Compatibilità S.r.l.

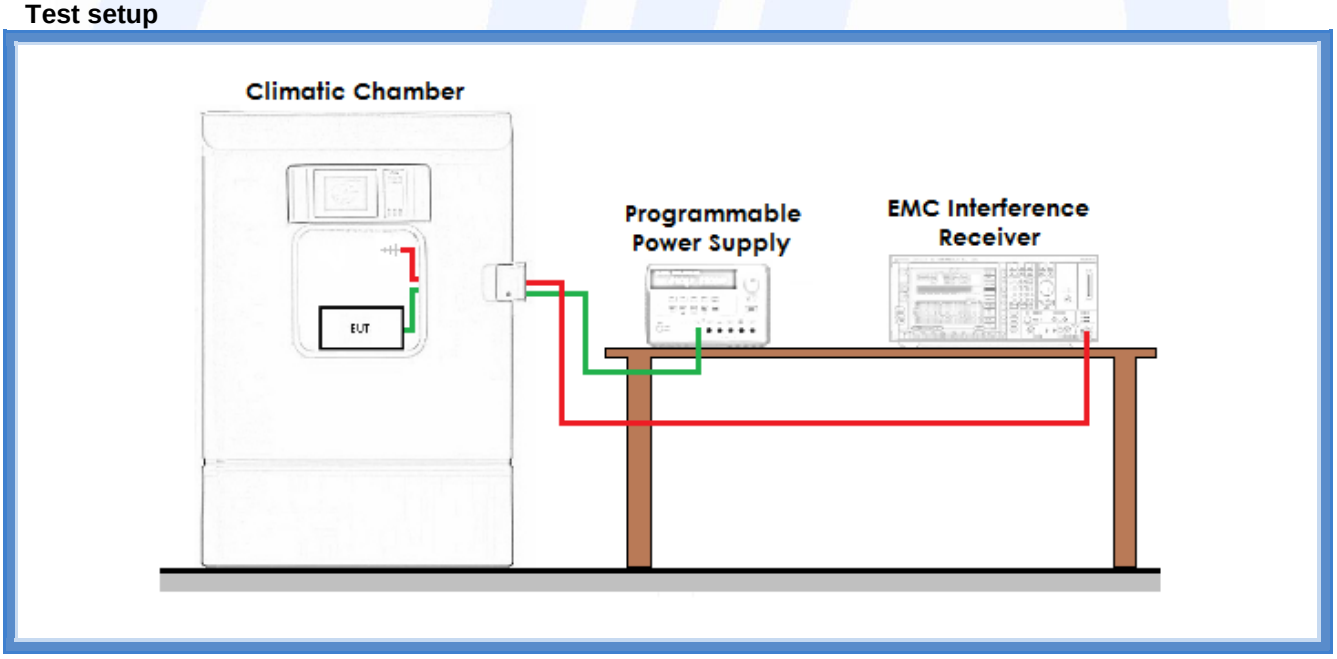
9.5 Frequency tolerance

Tested by ..... :	G. Gandini
Test date ..... :	19.02.2020
Test location (stand) ..... :	Climatic chamber (CMC B069)
Reference standards ..... :	FCC Rules and Regulation; Titles 47 Part. 15.225 e) ANSI C63.10
Supplementary test set-up description ..... :	--
Supplementary information..... :	--

Acceptance limits

The frequency tolerance of the carrier signal shall be maintained within ±0,01% of the operating frequency over a temperature variation of -20 °C to +50 °C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 °C. For battery operated equipment, the equipment tests shall be performed using a new battery

Test setup



Id. Number	*Manufacturer*	*Model*	*Description*
CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz
CMC B069	Angelantoni	CH 600C	Climatic chamber

CMC Centro Misure Compatibilità S.r.l.

Result

Test conditions		*Measured frequency*	*Frequency limits*
Temperature (°C)	*Voltage level (V)*	*(MHz)*	*(MHz)*
-20	Nominal supply voltage	13,56020	13,55864 – 13,56136
-10	Nominal supply voltage	13,56024	13,55864 – 13,56136
0	Nominal supply voltage	13,56028	13,55864 – 13,56136
10	Nominal supply voltage	13,56024	13,55864 – 13,56136
20	Nominal supply voltage	13,56010	13,55864 – 13,56136
30	Nominal supply voltage	13,56018	13,55864 – 13,56136
40	Nominal supply voltage	13,56014	13,55864 – 13,56136
50	Nominal supply voltage	13,56014	13,55864 – 13,56136

Test conditions			*Measured frequency*	*Frequency limits*
Temperature (°C)	*Voltage level (%)*	*Voltage level (V)*	*(MHz)*	*(MHz)*
20	85	4,25	13,56028	13,55864 – 13,56136
20	90	4,50	13,56020	13,55864 – 13,56136
20	95	4,75	13,56024	13,55864 – 13,56136
20	100	5,00	13,56010	13,55864 – 13,56136
20	105	5,25	13,56010	13,55864 – 13,56136
20	110	5,50	13,56020	13,55864 – 13,56136
20	115	5,75	13,56020	13,55864 – 13,56136

CMC Centro Misure Compatibilità S.r.l.

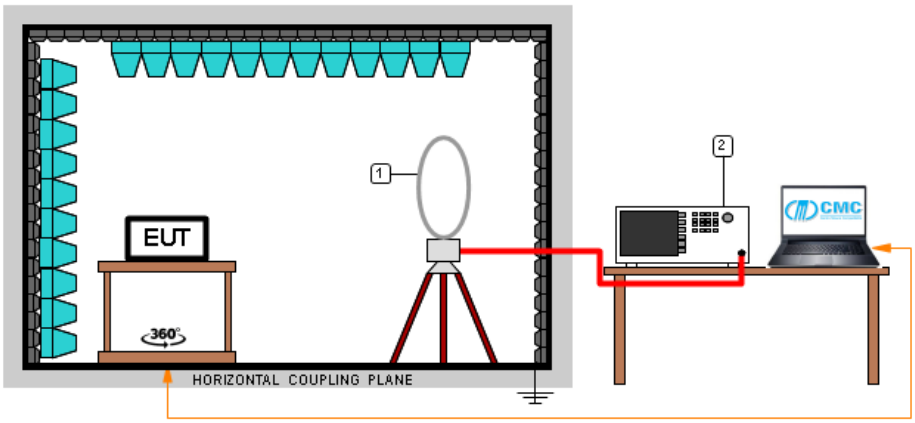
9.6 20 dB bandwidth

Tested by ..... :	G. Gandini
Test date ..... :	28.01.2020
Test location (stand) ..... :	Semi-anechoic chamber (CMC A070)
Reference standards ..... :	FCC Rules and Regulation; Titles 47 Part. 15.215 ANSI C63.10 cl. 7.8.7
Supplementary test set-up description ..... :	--
Supplementary information..... :	--

Acceptance limits
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

Test setup

Frequency ≤ 30 MHz

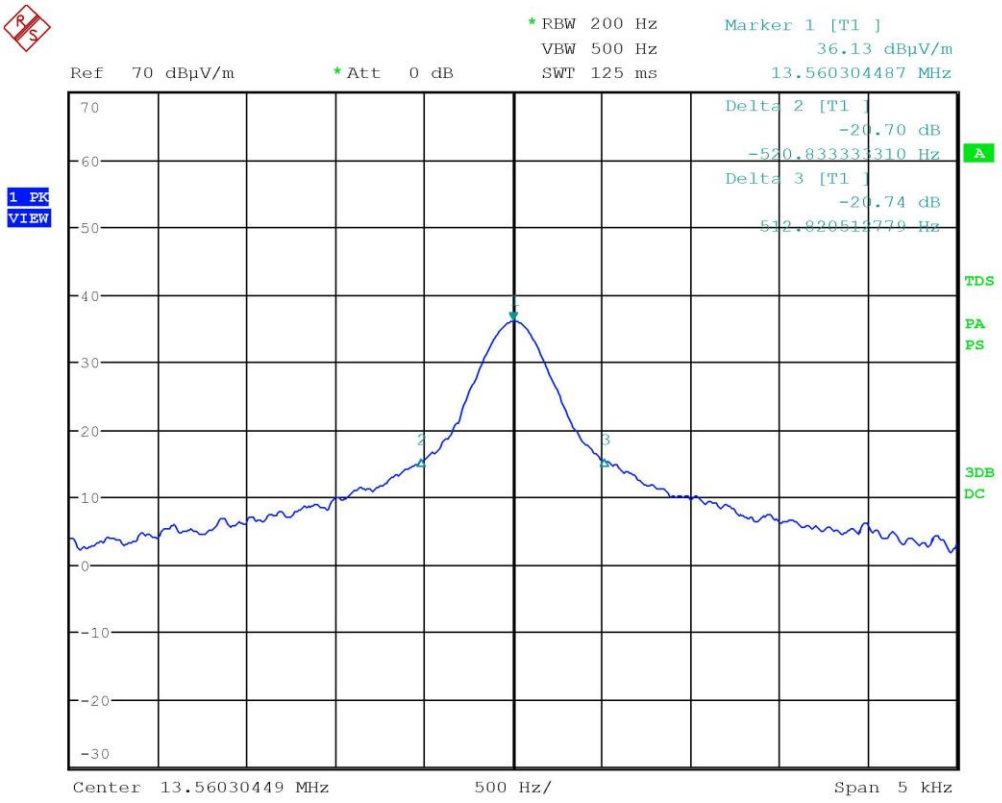


Test setup PE004_01				
Nr.	*Id. Number*	*Manufacturer*	*Model*	*Description*
2	CMC S164	Rohde & Schwarz	ESU26	Receiver 20 Hz - 26.5 GHz
1	CMC S127	Schaffner	HLA6120	Loop Antenna 9kHz - 30MHz

Result

f (MHz)	*20 dB bandwidth (MHz)*		*Graph*	*Results*
	F_L	F_H		
13,56	13,559784	13,560817	G19239306	Complies

Graphs



Gandini 19239306

CMC Centro Misure Compatibilità S.r.l.

Attachment 1

Id. number	*Manufacturer*	*Model*	*Description*	*Serial number*	*Last calibration*	*Due date calibration*
CMC S010	Rohde & Schwarz	ESH3-Z2	Impulses Limiting Device	- - -	January '20	January '21
CMC S108	EMCO	3115	Horn Antenna	9811-5622	June '19	June '22
CMC S127	Schaffner	HLA6120	Loop Antenna	1191	November '18	November '23
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '20	January '21
CMC S200	Schwarzbeck	NSLK 8128	V-LISN	8128-273	January '20	January '21
CMC S206	Rohde & Schwarz	ESCI 7	EMC Receiver 9KHz-7GHz	100781	January '20	January '21
CMC S260	CMC	Wfr_N	Shielded Cable	Wfr_ant10-1	November '19	November '20
CMC S261	CMC	Wfr_N	Shielded Cable	Wfr_ant20-1	November '19	November '20
CMC S262	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix32-1	November '19	November '20
CMC S263	CMC	Wfr_N_fix	Shielded Cable	Wfr_fix31-1	November '19	November '20
CMC S264	CMC	Wfr_N	Shielded Cable	Wfr_ext03-1	November '19	November '20
CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Biconical Antenna (30-300MHz)	831	June '19	June '22
CMC S287	Schwarzbeck	VUSLP 9111B	Log-periodic Antenna (200 MHz-3Ghz)	9111B-203	June '19	June '22
CMC S288	CMC	W_sma_white	Joint Shielded Cable	W_001	November '19	November '20
CMC S295	Rohde & Schwarz	FSW43	Spectrum Analyzer 43GHz	104059	November '19	November '22

CMC Centro Misure Compatibilità S.r.l.

Attachment 1

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

CMC Centro Misure Compatibilità S.r.l.

Attachment 1

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+05	4,7 dB	1
Misura della potenza EiRP 18-40GHz d=3m	PR001_06	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
Ring Wave immunity test	PE110_01		2
Low frequency immunity test	PE111_01		2
Dumped Oscillotary immunity test	PE113_01		2
Rev_20_01 date 16/01/2020			

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%

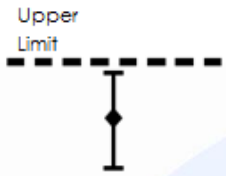
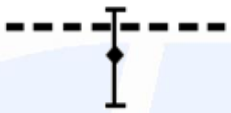
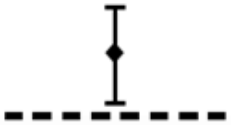
Note 2:

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

CMC Centro Misure Compatibilità S.r.l.

Attachment 1

Judgement of compliance

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

Quality manual references – Internal procedure

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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