

**TEST REPORT**
Nr. R20103501**Federal Communication Commission (FCC)**

Report Reference No.	R20103501
Date of issue:	22.07.2020
Total number pages:	43
Applicant's name	Autec S.r.l.
Address	Via Pomaroli, 65 – 36030 Caldogno (VI) – Italy
Test specification:	
Standards	FCC Rules & Regulations, Title 47:2019 Part 15 paragraph(s): 209
Non-standard test method	N/A
Test Report Form No.	15-247_HoppingCMC
Test Report Form(s) Originator ..	CMC Centro Misure Compatibilità S.r.l.
Master TRF	2020-04
General disclaimer:	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of CMC Centro Misure Compatibilità S.r.l.	
Test item description	Transceiver unit
Trademark	Autec
Manufacturer	Autec S.r.l.
Model / Type reference	Model J9P Type VJ955
FCC ID	OQA-J9PVJ955
Rating(s)	7,4 Vdc from battery
Report	
Tested by (name + signature)	G. Gandini
Approved by (name + signature)	R. Beghetto



1 Summary

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2	Reference standard
FCC Rules and Regulation Title 47 part 15:2019	--
3	List of attachments
Attachment 1: Instruments list, measurement uncertainty, judgement of compliance and quality manual references	
4	Deviation(s) from test specification
None	
5	Testing location
CMC Centro Misure Compatibilità S.r.l. Via della Fisica, 20 – 36016 Thiene (VI) – Italy Test site facility's FCC registration number: 182474	

Revision index	Date	Change history
1.0	22.07.2020	--



Testing and sampling:	
Date of receipt of test item.....	10.03.2020
Testing start date	11.06.2020
Testing end date	14.06.2020
Sampling procedure.....	Equipment used for testing was picked up by the manufacturer, at the end of the production process with random criterion. The results relate to the sample as it has been received.
Internal identification.....	Adhesive label with the product number P200320
General remarks:	
This 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 object tested. “(see appended table)”: refers to a table appended to the report. Throughout this report a comma is used as the decimal separator.	
Possible test case verdicts:	
Test case does not apply to the test object:	N/A (Not Applicable)
Test object does meet the requirement:	P (Pass)
Test object does not meet the requirement:	F (Fail)
Test object does not performed:	N/E (Not Executed)
Definition of symbols used in this test report:	
☒ Indicates that the listed condition, standard or equipment is applicable for this report. ☐ Indicates that the listed condition, standard or equipment is not applicable for this report.	



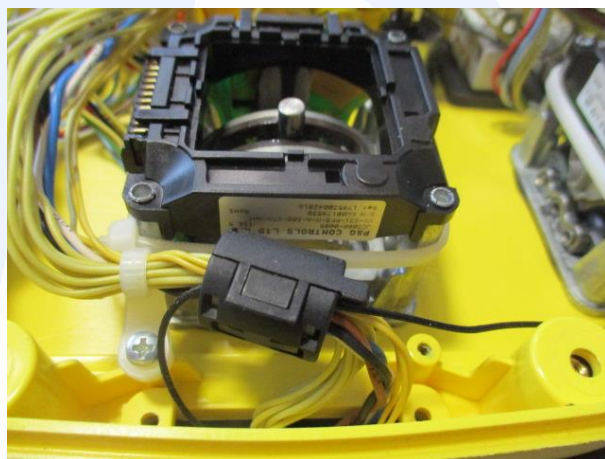
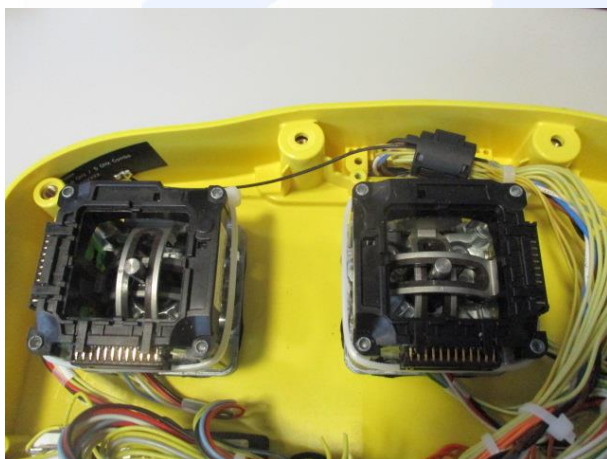
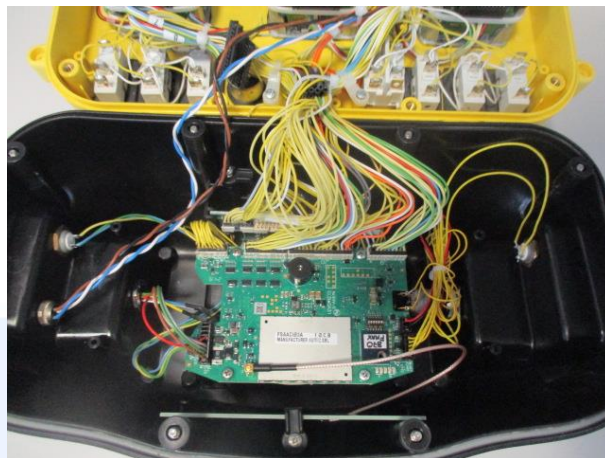
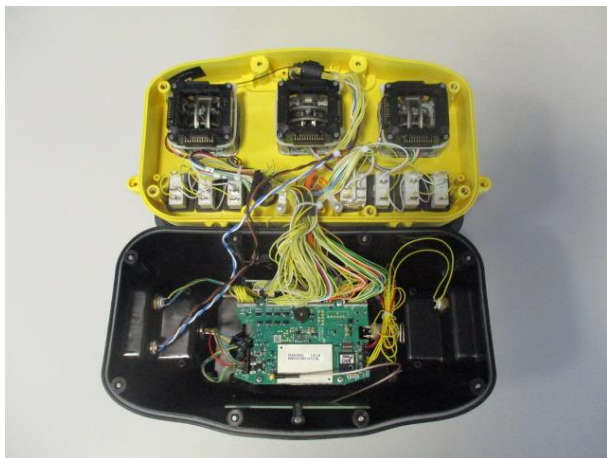
6 General description of test item(s)

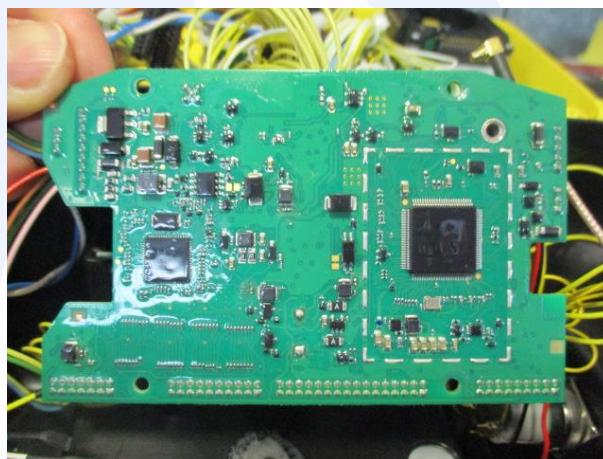
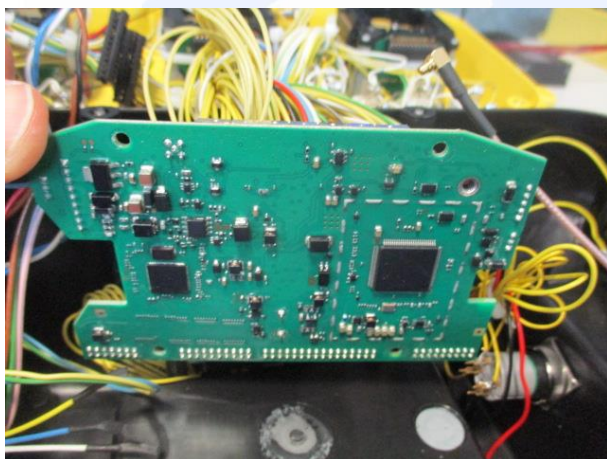
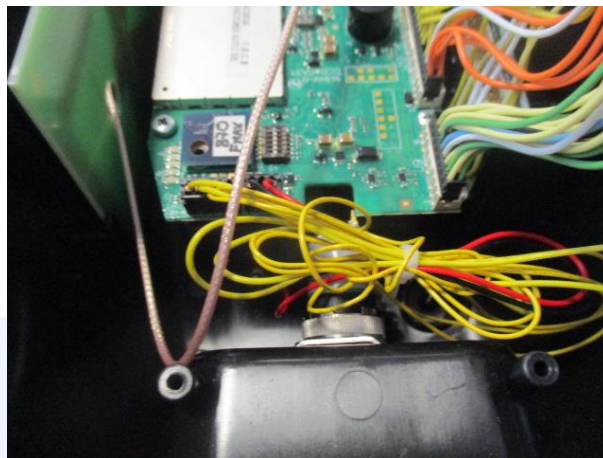
Description	Transceiver unit						
Model Number	Model J9P Type VJ955						
FCC ID	OQA-J9PVJ955						
Serial Number	--						
Brand name	Autec						
Frequency band	902 – 928 MHz 2400–2483,5 MHz						
Rated power supply		Voltage and Frequency	Reference poles				
			N	L1	L2	L3	PE
	☐	AC:	☐	☐	☐	☐	☐
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: 7,4 V from battery					☐
Test configuration	☐	Table top equipment					
	☐	Floor standing equipment					
	☒	Hand-held equipment					
Type of equipment	☒	Transmitter unit					
	☒	Receiver unit					
Type of station	☐	Fixed station					
	☒	Portable station					
	☐	Mobile station					
Operating modes	No.	Operating mode of test item					
	1	EIT with both radio modules in continuous transmission at maximum power					

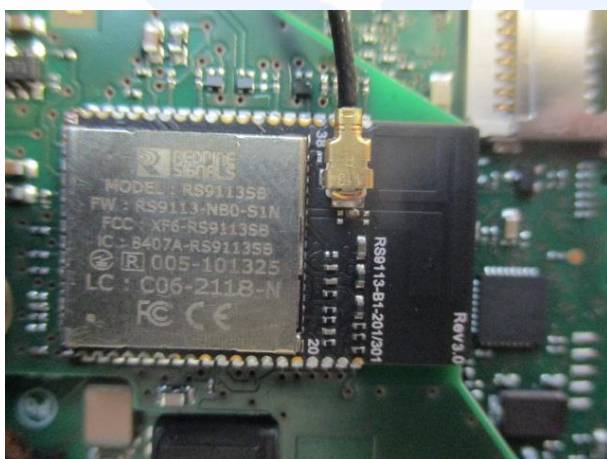
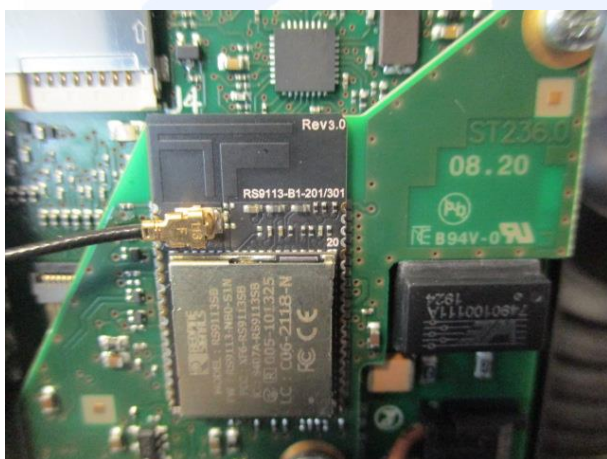


6.1 Photos of the test item













7 Verdict summary section

FCC Rules & Regulations, Title 47:2019 Part 15 paragraph(s): 209			
Clause	Requirement – Test case	Basic standard	Verdict
Part 15.209	Co-location: radiated emissions and spurious emission	ANSI C63.10	P





Normative references	
Reference no.	Description
FCC Rules and Regulation Title 47 part 15:2019	--
ANSI C63.10:2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices





8 Test conditions

8.1 General

Environmental reference conditions.....:	The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:		
	Temperature	Humidity	Atmospheric pressure
	15 °C – 35 °C	30 % - 60 %	800 hPa – 1060 hPa
	If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.		
Measurement uncertainties	Attachment 1		



9 Test results

9.1 Co-Location: emissions in restricted frequency bands and in unrestricted frequency bands

Tested by	G. Gandini	
Test date	11.06.2020	
Test location (stand)	Semi-anechoic chamber (CMC A070)	
Reference standards	FCC Rules and Regulation; Titles 47 Part. 15.209 ANSI C63.10 cl. 6.3, 6.4, 6.5 and 6.6	
Test set-up description	☒	Table top equipment set-up (80 cm above the reference ground plane)
	☐	Floor standing equipment set-up (insulating material up to 12 mm thick)
	☐	False floor installation equipment set-up (insulating material up to 34 cm above the reference ground plane)
Supplementary test set-up description	--	
Test method applied	☒	SAC with measurement distance [m]: 10 m at frequencies ≤ 1 GHz 3 m at frequencies > 1 GHz
Supplementary information.....	--	

Acceptance limits

Acceptance limits for emissions in restricted frequency bands ($f < 1000$ MHz)		
Frequency range (MHz)	Test distance (m)	Limits [dB(μ V/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
960 to 1000	3	54

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 and 110–490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector. The results have been extrapolated to the specified distance using an extrapolation factor

Acceptance limits for emissions in restricted frequency bands ($f \geq 1000$ MHz)			
Frequency (MHz)	Test distance (m)	AV limits [dB(μ V/m)]	Peak limits [dB(μ V/m)]
> 1000	3	54	74



The restricted frequency bands are listed in the following table

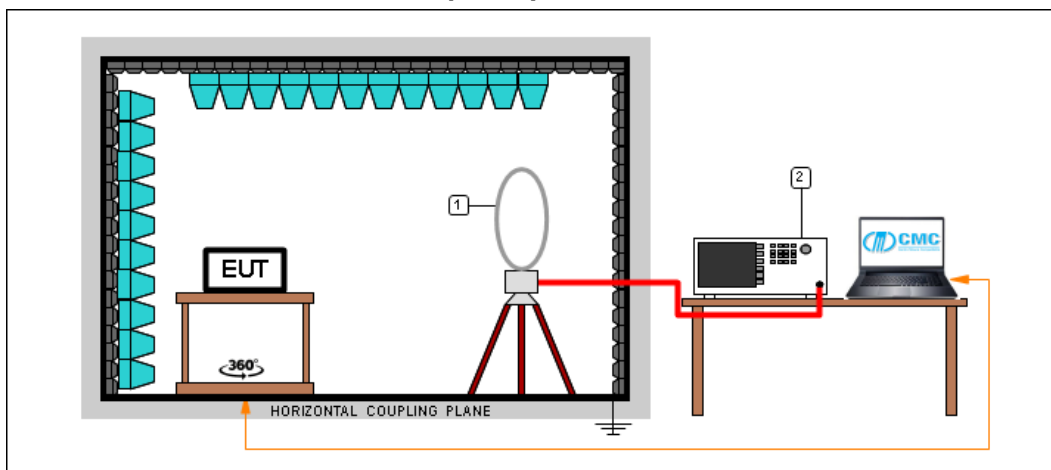
MHz	MHz	MHz	GHz
0,090 – 0,110	16,42 – 16,423	399,9 – 410	4,5 – 5,15
0,495 – 0,505	16,69475 – 16,69525	608 – 614	5,35 – 5,46
2,1735 – 2,1905	16,80425 – 16,80475	960 – 1240	7,25 – 7,75
4,125 – 4,128	25,5 – 25,67	1300 – 1427	8,025 – 8,5
4,17725 – 4,17775	37,5 – 38,25	1435 – 1626,5	9,0 – 9,2
4,20725 – 4,20775	73 – 74,6	1645,5 – 1646,5	9,3 – 9,5
6,215 – 6,218	74,8 – 75,2	1660 – 1710	10,6 – 12,7
6,26775 – 6,26825	108 – 121,94	1718,8 – 1722,2	13,25 – 13,4
6,31175 – 6,31225	123 – 138	2200 – 2300	14,47 – 14,5
8,291 – 8,294	149,9 – 150,05	2310 – 2390	15,35 – 16,2
8,362 – 8,366	156,52475 – 156,52525	2483,5 – 2500	17,7 – 21,4
8,37625 – 8,38675	156,7 – 156,9	2690 – 2900	22,01 – 23,12
8,41425 – 8,41475	162,0125 – 167,17	3260 – 3267	23,6 – 24,0
12,29 – 12,293	167,72 – 173,2	3332 – 3339	31,2 – 31,8
12,51975 – 12,52025	240 – 285	3345,8 – 3358	36,43 – 36,5
12,57675 – 12,57725	322 – 335,4	3600 – 4400	Above 38,6
13,36 – 13,41			

Acceptance limits for emissions in non-restricted frequency bands

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test setup

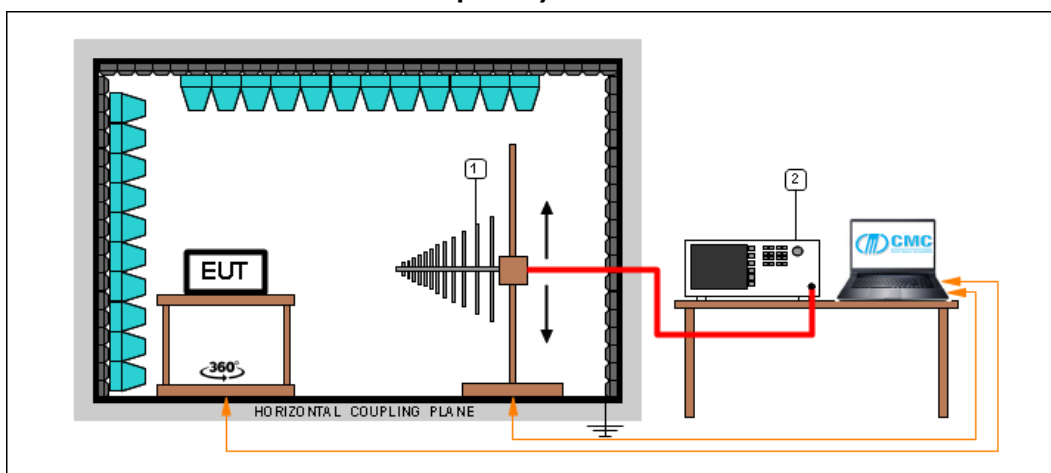
Frequency ≤ 30 MHz



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

Frequency ≤ 1 GHz



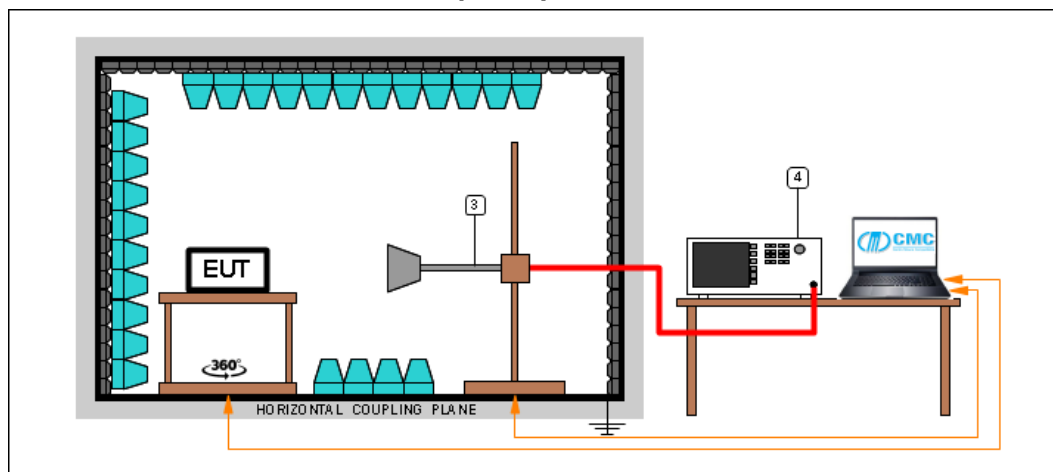
Test setup PE004_02

Nr.	Id. Number	Manufacturer	Model	Description
2	CMC S164	Rohde & Schwarz	ESU26	Receiver 20 Hz - 26.5 GHz
1	CMC S271	Schwarzbeck	BBA 9106 + VHBB 9124	Broadband Antenna

Test setup PE004_03

Nr.	Id. Number	Manufacturer	Model	Description
2	CMC S164	Rohde & Schwarz	ESU26	Receiver 20 Hz - 26.5 GHz
1	CMC S287	Schwarzbeck	VUSLP 9111B	Broadband Antenna

Frequency > 1 GHz



Test setup PE004_04

Nr.	Id. Number	Manufacturer	Model	Description
4	CMC S164	Rohde & Schwarz	ESU26	Receiver 20 Hz - 26.5 GHz
3	CMC S108	Emco	3115	Waveguide antenna

Result

Polarization	Frequency Range (MHz)	Graphs	Remarks	Result
H	300 – 1000	G20103501	--	P
V	300 – 1000	G20103502	--	P
V	30 – 300	G20103503	--	P
H	30 – 300	G20103504	--	P
Loop	0,009 – 30	G20103505	--	P
V	1000 – 3000	G20103506	--	P
H	1000 – 3000	G20103507	--	P
H	3000 – 18000	G20103508	--	P
V	3000 – 18000	G20103509	--	P
V	18000 – 26000	G20103510	--	P
H	18000 – 26000	G20103511	--	P

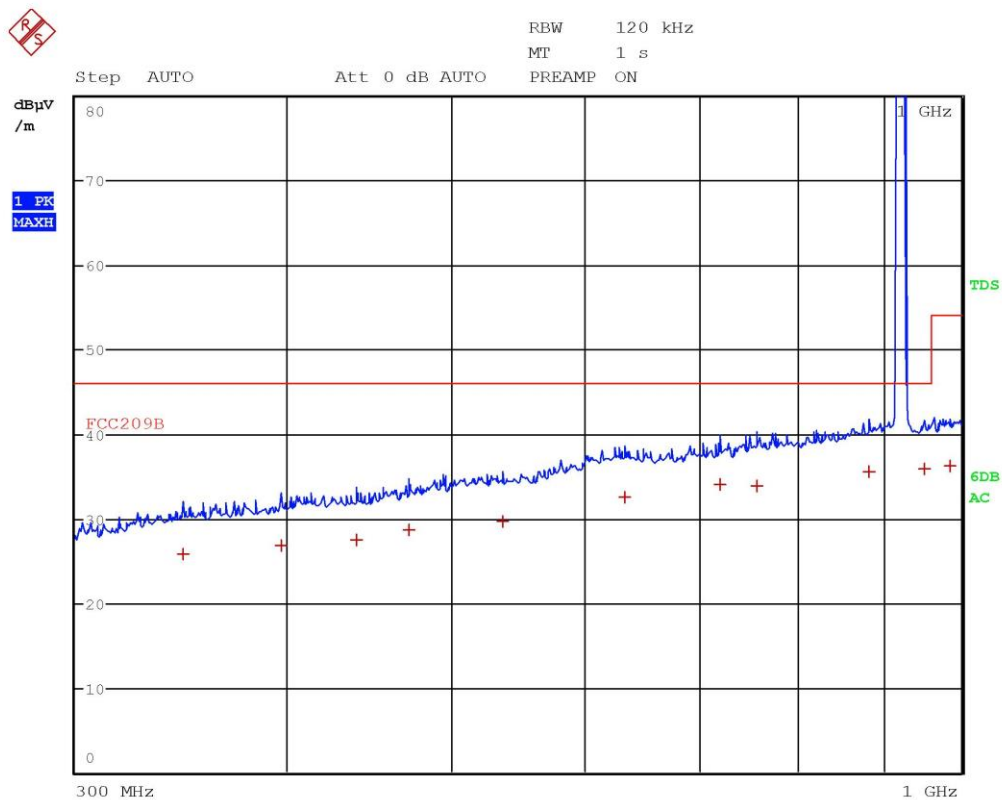
Remarks: EUT was tested in 3 orthogonal planes, graphs are related to the highest detected levels. Measurements at frequencies lower than 30 MHz have been performed with an EUT – antenna distance of 10 m. Measured values have been corrected with conversion factor $40\log(\text{test distance}/10)$ based on the measuring distance provided by the standard. Measurements at frequencies higher than 30 MHz and lower than 1000 MHz have been performed with an EUT – antenna distance of 10 m. Measured values have been corrected with conversion factor $20\log(\text{test distance}/10)$ based on the measuring distance provided by the standard. 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



Graphs

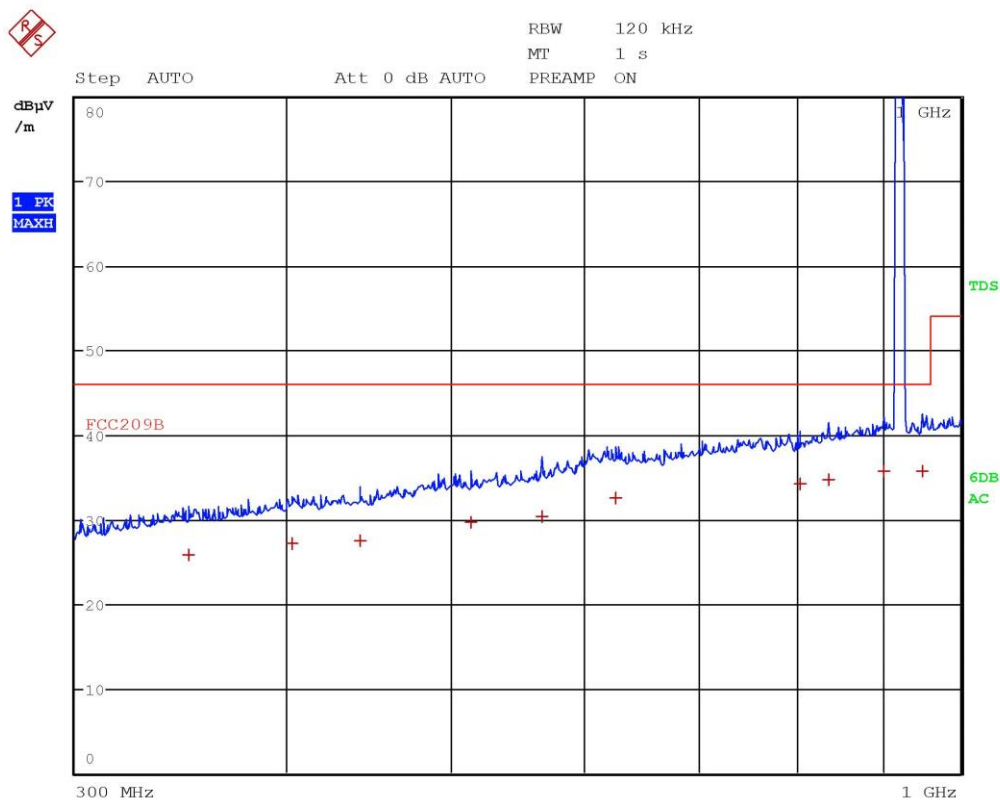


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EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC209B		
Trace2:	---		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV/m	DELTA LIMIT dB
1 Quasi Peak	347.2 MHz	25.78	-20.23
1 Quasi Peak	396.56 MHz	26.85	-19.17
1 Quasi Peak	439.92 MHz	27.48	-18.53
1 Quasi Peak	472.36 MHz	28.62	-17.39
1 Quasi Peak	536.56 MHz	29.65	-16.36
1 Quasi Peak	632.44 MHz	32.48	-13.53
1 Quasi Peak	720.04 MHz	33.97	-12.05
1 Quasi Peak	756.8 MHz	33.90	-12.11
1 Quasi Peak	882.16 MHz	35.61	-10.40
1 Quasi Peak	951 MHz	35.82	-10.19
1 Quasi Peak	985.12 MHz	36.27	-17.70

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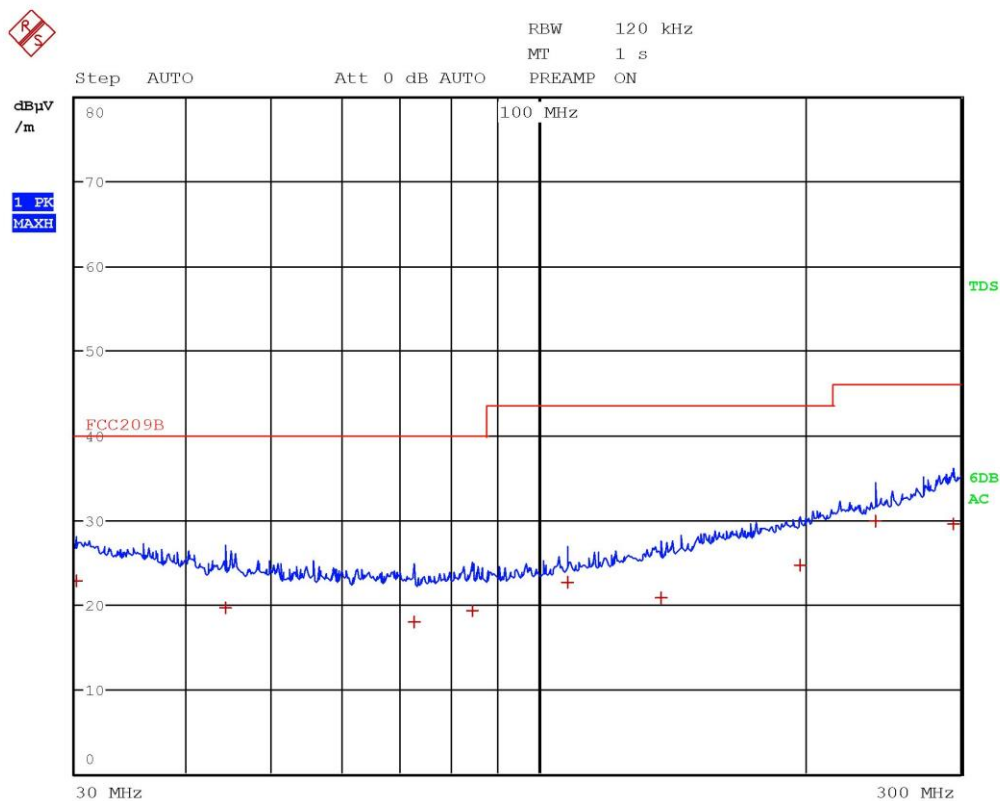


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EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC209B		
Trace2:	---		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV/m	DELTA LIMIT dB
1 Quasi Peak	350.08 MHz	25.85	-20.16
1 Quasi Peak	403.12 MHz	27.14	-18.87
1 Quasi Peak	441.88 MHz	27.50	-18.51
1 Quasi Peak	514.16 MHz	29.59	-16.42
1 Quasi Peak	565.48 MHz	30.29	-15.72
1 Quasi Peak	625.76 MHz	32.52	-13.50
1 Quasi Peak	803.96 MHz	34.13	-11.88
1 Quasi Peak	835.04 MHz	34.66	-11.35
1 Quasi Peak	901.2 MHz	35.79	-10.22
1 Quasi Peak	949.16 MHz	35.71	-10.30

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