



TEST REPORT nr. R15107601

Federal Communication Commission (FCC)

Test item

Description.....: TRANSCEIVER UNIT
Trademark.....: AUTECH
Model/Type.....: Model RGM Type KA00M
FCC ID.....: OQA-RGMKA00M

Test Specification

Standard.....: FCC Rules & Regulations, Title 47:2014
Part 15 paragraph(s): 203, 204, 207, 209 and 249

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

Address.....: Via Pomaroli, 65 – 36030 Caldogno (VI) – ITALY

Manufacturer's name : Same as client

Address.....: --

Report

Tested by.....: G. Gandini – Technician

G. Gandini

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

R. Beghetto

Date of issue.....: 02.12.15

Contents.....: 63 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 47:2014
Part 15 paragraph(s): 203, 204, 207, 209 and 249

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 15.209 and 15.249	Peak Output Power	4	Complies
Part 15.249 (d)	Band edge	5	Complies
Part 15.209	Spurious emission	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



2. Description of Equipment under test (EUT)

Power supply : 12-24 Vdc
12-24 V ~ 50 Hz single-phase + earth
Serial Number : --
Type of equipment : ☒ Transmitter Unit
☒ Receiver Unit
Type of station : ☒ Fixed station
☐ Portable station
☐ Mobile station
Nominal frequency : F_L: 915,05 MHz F_M: 921,00 MHz F_H: 927,75 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 : 271947

3. Testing and sampling

Date of receipt of test item : 03.06.15
Testing start date : 03.06.15
Testing end date : 19.11.15
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 P150645

4. Operative conditions

EUT exercising : EUT in continuous transmission at maximum power



5. Photograph(s) of EUT

5.1 Photograph(s) of EUT

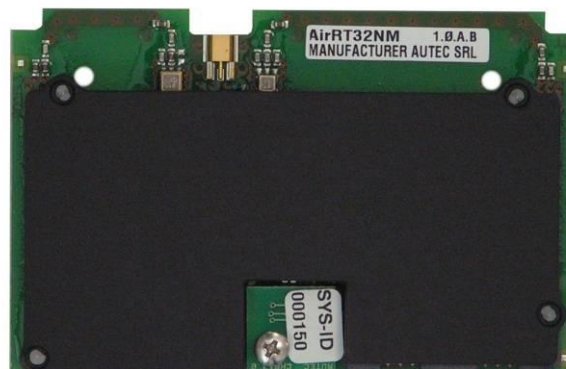
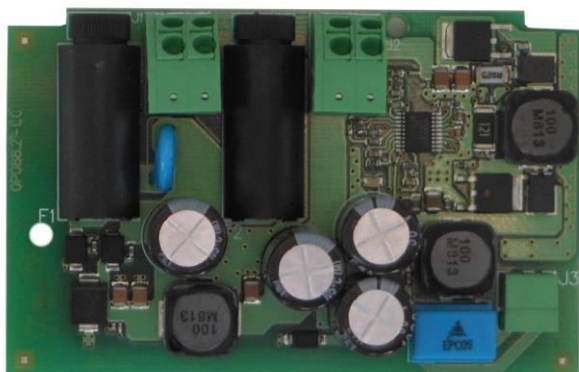




CMC
Centro Misure Compatibilità S.r.l.
Via dell'Elettronica, 12/C
36016 Thiene (VI)



LAB N° 0168





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 '15	January '16
CMC S108	EMCO	3115	Horn Antenna	9811-5622	May '13	May '16
CMC S127	Schaffner	HLA6120	Loop Antenna	1191	January '13	January '16
CMC S136	Schwarzbeck	VULB 9163	Broadband Antenna	9136-205	May '13	May '16
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '15	January '16
CMC S200	Schwarzbeck	NSLK 8128	V-LISN	8128-273	January '15	January '16
CMC S227	Rohde & Schwarz	ESR7	EMI Test Receiver 7GHz	101121	January '15	January '16



7. Measurement uncertainty

Test	Expanded Uncertainty	note
Conducted Emission		
(50Ω/50μH AMN) - (9 kHz – 150 kHz)	±3.6 dB	1
(50Ω/50μH AMN) - (150 kHz – 30 MHz)	±3.0 dB	1
(Voltage probe) - (150 kHz – 30 MHz)	±2.8 dB	1
(50Ω/5μH AMN) - (150 kHz – 108 MHz)	±2.6 dB	1
Discontinuous Conducted Emission		
Conducted Emission (50Ω/50μH AMN) - (150 kHz – 30 MHz)	±3.0 dB	1
Disturbance Power (30 MHz – 300 MHz)		
	±3.7 dB	1
Radiated Emission		
(0,150 MHz – 30 MHz)	±4.0 dB	1
(30 MHz – 1000 MHz)	±4.3 dB	1
(1 GHz – 6 GHz)	±4.5 dB	1
Electromagnetic field EMF		
	±10.5 %	1
Harmonic current emissions test		
	±1.8 %	1
Voltage fluctuation and flicker test		
	±2.6 %	1
Insertion loss test		
	±2.0 dB	1
Radiated electromagnetic disturbance test (loop antenna)		
	±2.1 dB	1
Radiated electromagnetic field immunity test		
	0.81 V/m at 3V/m	1
Pulse modulated radiated electromagnetic field immunity test		
	0.81 V/m at 3V/m	1
Injected currents immunity test		
	0.45 V at 3V	1
Bulk current		
	3.7 mA at 60 mA	1
Power frequency magnetic field immunity test		
	0.1 A/m at 10 A/m	1
Effective radiated power (F < 1GHz)		
	±4.3 dB	1
Effective radiated power (F > 1GHz)		
	±3.7 dB	1
Frequency error		
	< 1x10 ⁻⁷	1
Modulation bandwidth		
	< 1x10 ⁻⁷	1
Conducted RF power and spurious emission		
	±0.7 dB	1
Adjacent channel power		
	±1.2 dB	1
Blocking		
	±1.2 dB	1
Electrostatic discharge immunity test		
		2
Electrical fast transients / burst immunity test		
		2
Surge immunity test		
		2
Pulse magnetic field immunity test		
		2
Damped oscillatory magnetic field immunity test		
		2
Short interruption immunity test		
		2
Voltage transient emission test		
	±2.2 %	1
Transient immunity test		
		2

Rev_15_01 date 04/05/2015

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.



CMC
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Via dell'Elettronica, 12/C
36016 Thiene (VI)



LAB N° 0168



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8. Reference documents

Reference no.	Description
FCC Rules and Regulation Title 47 part 15:2014	--
ANSI C63.4:2009	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. 2.0 (Quality Manual)	Measure Procedure
Internal procedure INC_M rev. 8.2 (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.

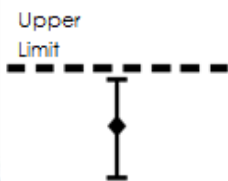
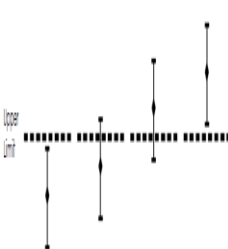
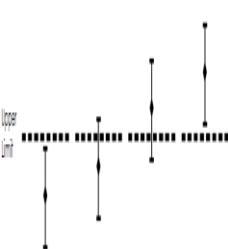


11. Results

In this clause tests results are reported.

Measurement uncertainty is in accordance with document CMC INC_M rev. 8.2.

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.



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	100	45



Result

Antenna Type	External R.F. power amplifier	Gain	Remarks	Results
Integral antenna	Not Present	--	--	Complies
External	Not Present	0 dBi	--	Complies

Result: The requirements are met



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 S227
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Main port
Frequency range: 150 kHz – 30 MHz

Environmental conditions

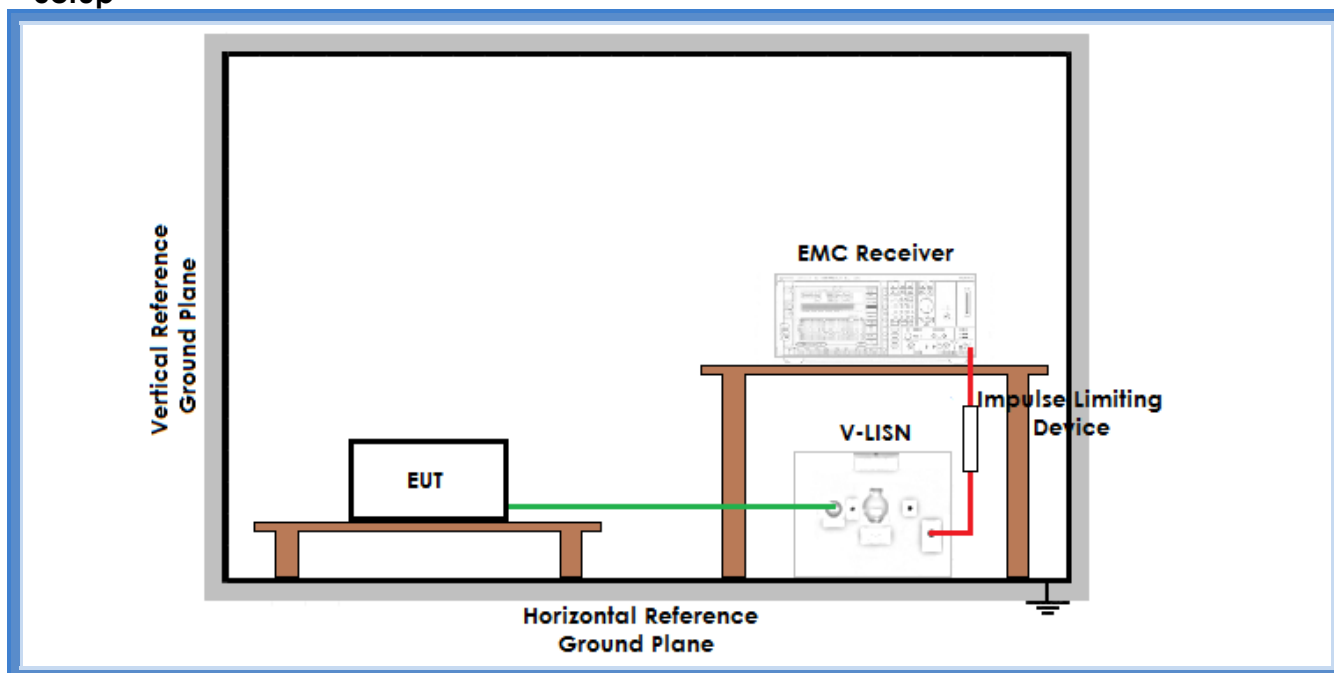
Temperature (°C)	Atmospheric pressure (kPa)	Relative humidity (%)
22	100	45

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



Setup



Result

Line	Graphs	Remarks	Result
- terminal	G15107644	--	Complies
+ terminal	G15107645	--	Complies
Remarks: External antenna			

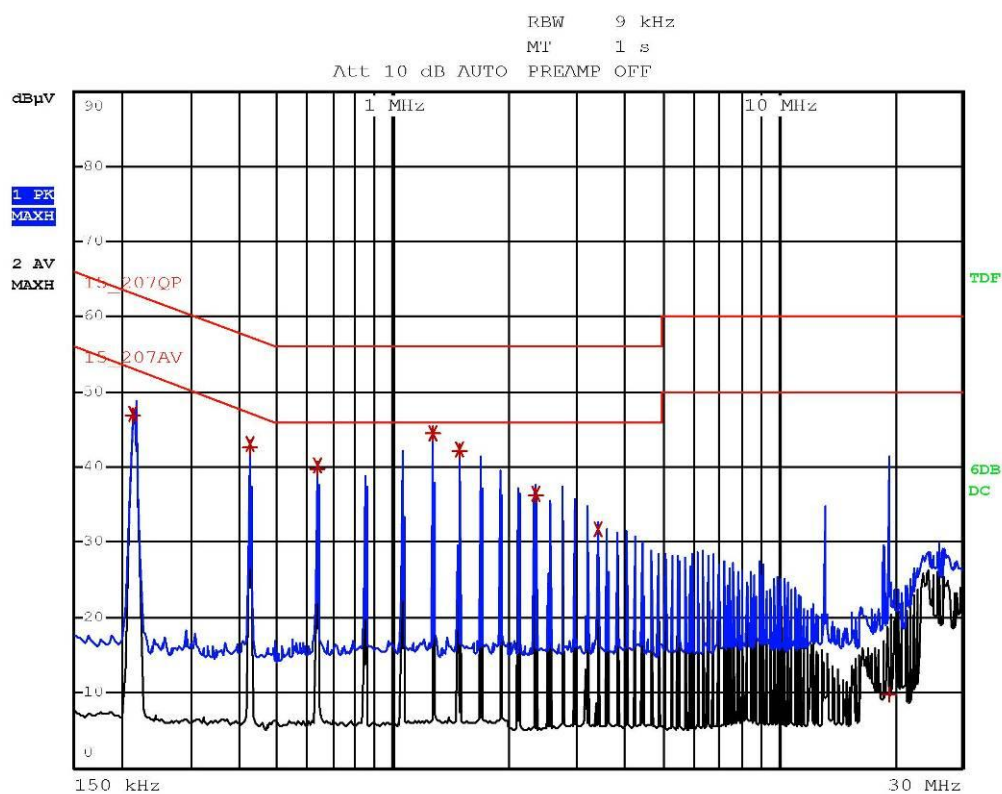
Graphs Legend

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



Graphs

G15107644



Gandini 15107644-Line (-)-Tx-Rx

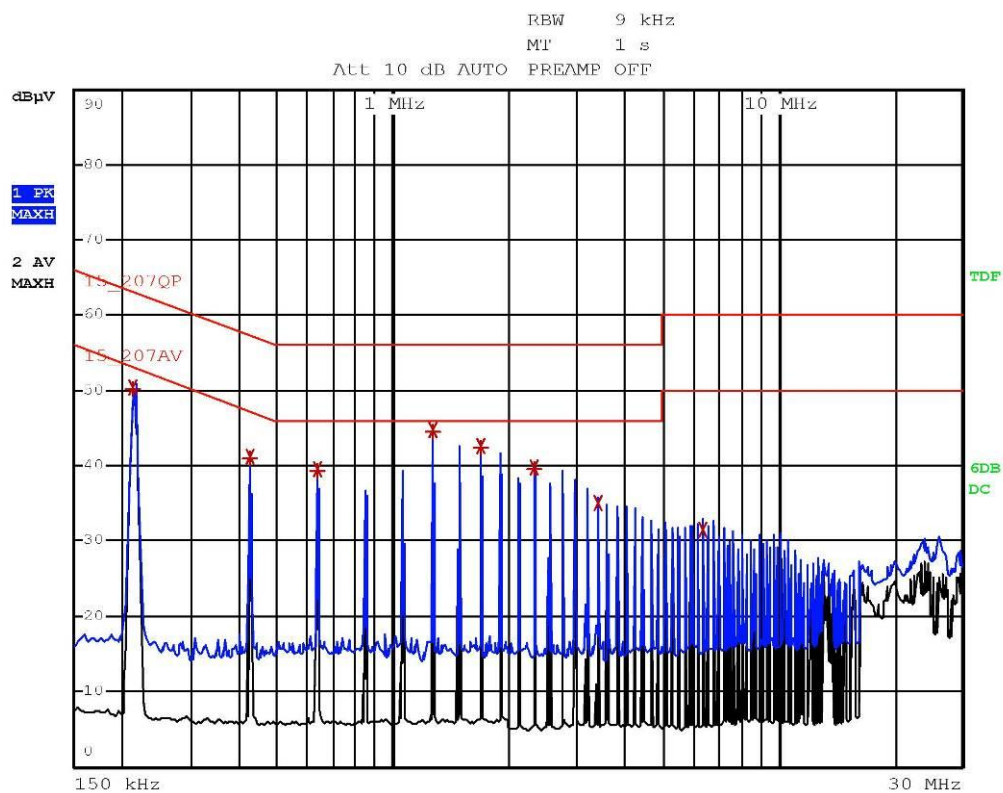


EDIT PEAK LIST (Final Measurement Results)			
Trace1:	15_207QP		
Trace2:	15_207AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Quasi Peak	214 kHz	46.96	-16.08
2 Average	214 kHz	47.23	-5.81
1 Quasi Peak	426 kHz	42.70	-14.62
2 Average	426 kHz	42.99	-4.33
1 Quasi Peak	638 kHz	39.88	-16.11
2 Average	638 kHz	40.17	-5.82
1 Quasi Peak	1.278 MHz	44.42	-11.57
2 Average	1.278 MHz	44.62	-1.37
1 Quasi Peak	1.49 MHz	42.05	-13.94
2 Average	1.49 MHz	42.31	-3.68
1 Quasi Peak	2.342 MHz	36.18	-19.81
2 Average	2.342 MHz	36.40	-9.59
2 Average	3.402 MHz	31.68	-14.31
1 Quasi Peak	19.462 MHz	9.77	-50.22

Gandini 15107644-Line (-)-Tx-Rx



G15107645



Gandini 15107645-Line (+)-Tx-Rx



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	15_207QP		
Trace2:	15_207AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Quasi Peak	214 kHz	50.19	-12.85
2 Average	214 kHz	50.47	-2.57
1 Quasi Peak	426 kHz	40.99	-16.33
2 Average	426 kHz	41.27	-6.05
1 Quasi Peak	638 kHz	39.27	-16.72
2 Average	638 kHz	39.55	-6.45
1 Quasi Peak	1.278 MHz	44.58	-11.41
2 Average	1.278 MHz	44.79	-1.20
1 Quasi Peak	1.702 MHz	42.29	-13.70
2 Average	1.702 MHz	42.56	-3.43
1 Quasi Peak	2.338 MHz	39.53	-16.46
2 Average	2.338 MHz	39.69	-6.30
2 Average	3.402 MHz	35.17	-10.82
2 Average	6.382 MHz	31.53	-18.46

Gandini 15107645-Line (+)-Tx-Rx

Result: The requirements are met



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 S127, CMC S136, CMC S164
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

Environmental conditions

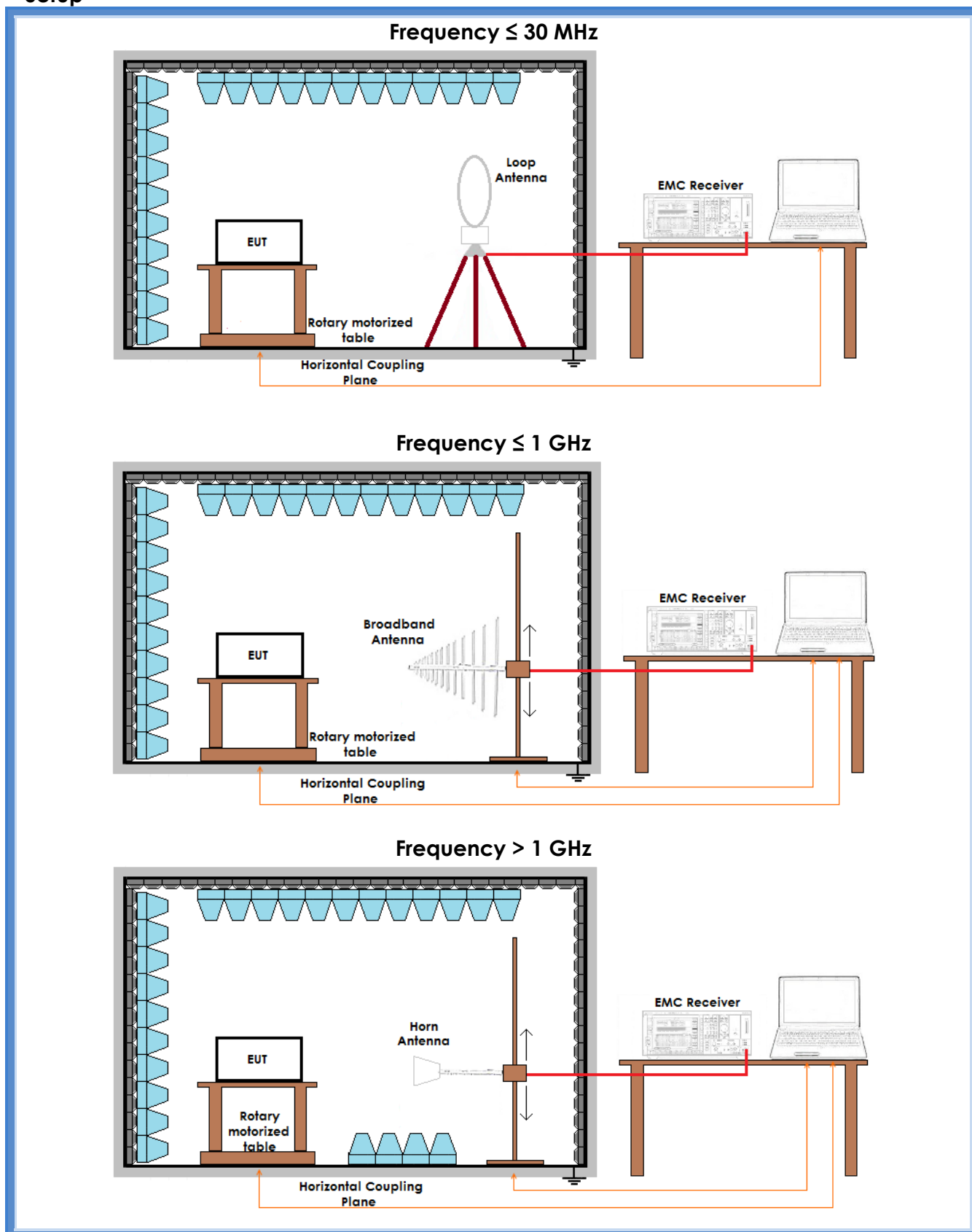
Temperature (°C)	Atmospheric pressure (kPa)	Relative humidity (%)
22	100	45

Acceptance limits

Frequency range (MHz)	Limits [dB(μV/m)]
0,009 to 0,490	128,51 to 93,80
0,490 to 1,705	73,80 to 62,97
1,705 to 30	69,54
30 to 88	40
88 to 216	43,52
216 to 960	46,02
Above 960	53,98

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.

Setup





Result

Polarization	Frequency Range (MHz)	Graphs	Remarks	Result
Loop	0,009 – 30	G15107611	Worst case	Complies
V	30 – 1000	G15107605	915,05 MHz channel	Complies
H	30 – 1000	G15107606	915,05 MHz channel	Complies
V	30 – 1000	G15107608	921,00 MHz channel	Complies
H	30 – 1000	G15107607	921,00 MHz channel	Complies
V	30 – 1000	G15107609	927,75 MHz channel	Complies
H	30 – 1000	G15107610	927,75 MHz channel	Complies
V	1000 – 10000	G15107601	Worst case	Complies
H	1000 – 10000	G15107602	Worst case	Complies
Remarks: External antenna				

Graphs Legend

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

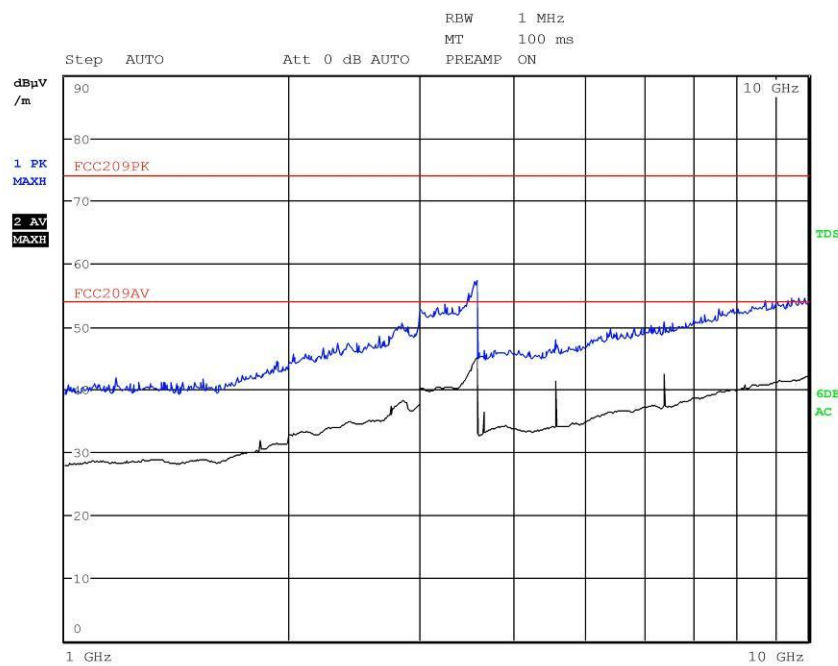
AV: Average; AV [1s] (average at 1 second) values are marked with a x



Graphs

G15107601

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx-Rx - Ant.Ext 5m
Operator Gandini 15107601
Test Spec
Vert



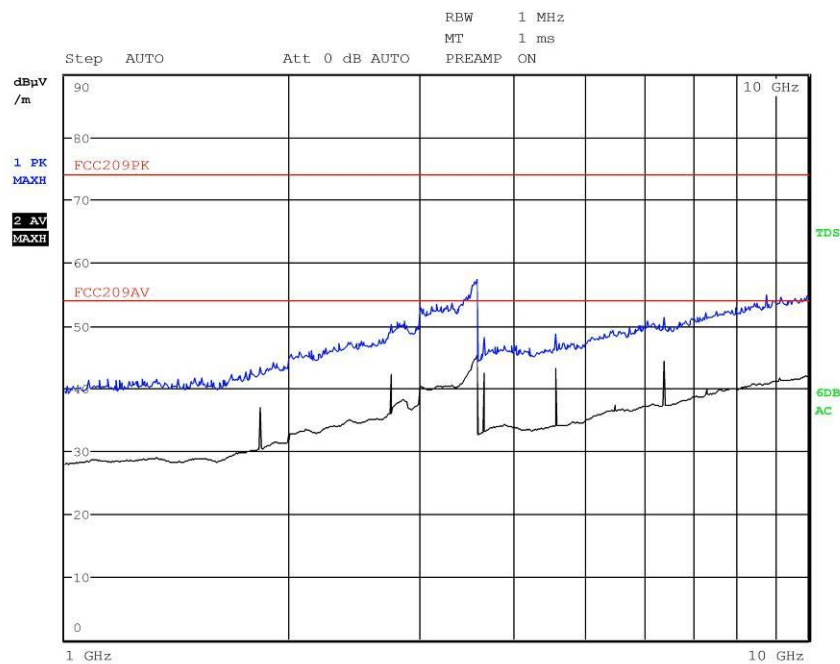
Final Measurement

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



G15107602

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx-Rx - Ant.Ext 5m
Operator Gandini 15107602
Test Spec
Horiz



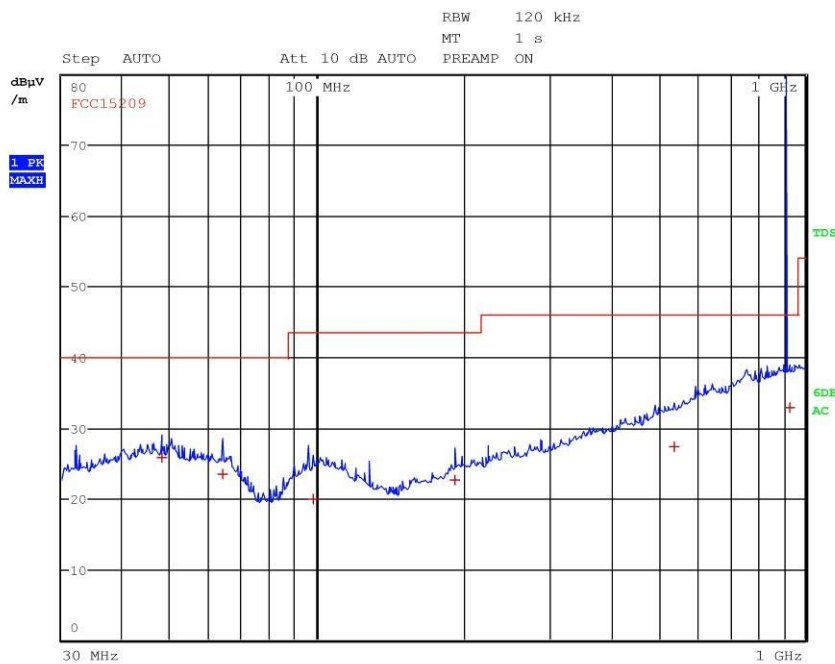
Final Measurement

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



G15107605

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmin - Ant.Ext 5m
Operator Gandini 15107605
Test Spec
Vert



Final Measurement

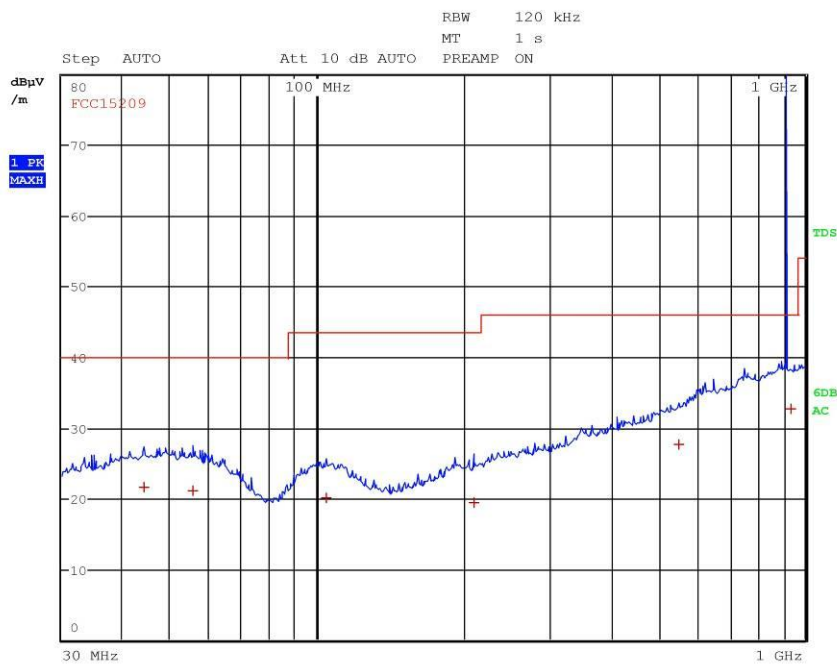
Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dB μ V/m)	Detector	Delta Limit/dB
1	48.000000000 MHz	25.74	Quasi Peak	-14.26
1	64.000000000 MHz	23.51	Quasi Peak	-16.49
1	97.960000000 MHz	19.89	Quasi Peak	-23.63
1	192.000000000 MHz	22.53	Quasi Peak	-20.99
1	538.280000000 MHz	27.31	Quasi Peak	-18.71
1	927.760000000 MHz	32.84	Quasi Peak	-13.18



G15107606

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmin - Ant.Ext 5m
Operator Gandini 15107606
Test Spec
Horiz



Final Measurement

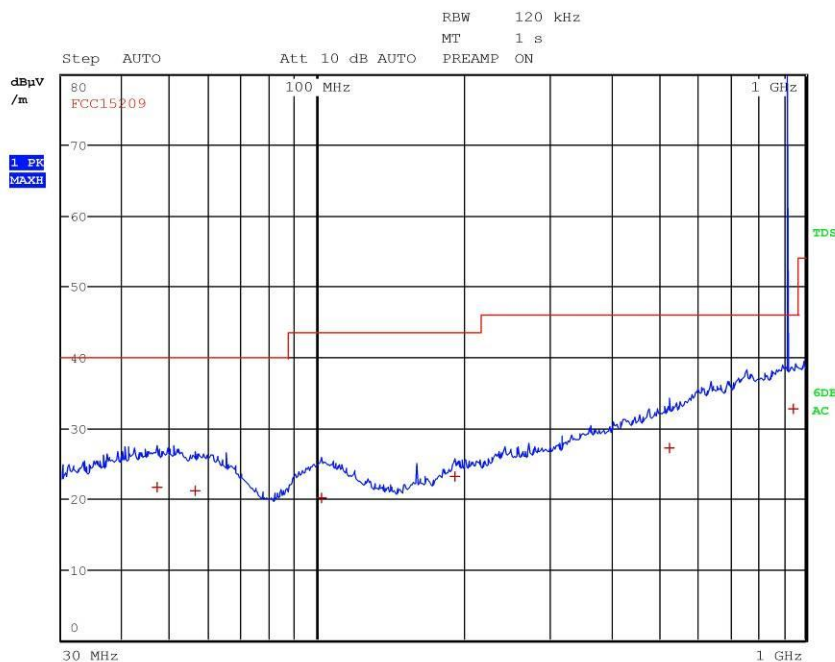
Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dB μ V/m)	Detector	Delta Limit/dB
1	44.160000000 MHz	21.56	Quasi Peak	-18.44
1	55.600000000 MHz	21.10	Quasi Peak	-18.90
1	104.400000000 MHz	20.04	Quasi Peak	-23.48
1	209.800000000 MHz	19.41	Quasi Peak	-24.11
1	551.440000000 MHz	27.57	Quasi Peak	-18.45
1	936.160000000 MHz	32.72	Quasi Peak	-13.30



G15107607

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmid - Ant.Ext 5m
Operator Gandini 15107607
Test Spec
Horiz



Final Measurement

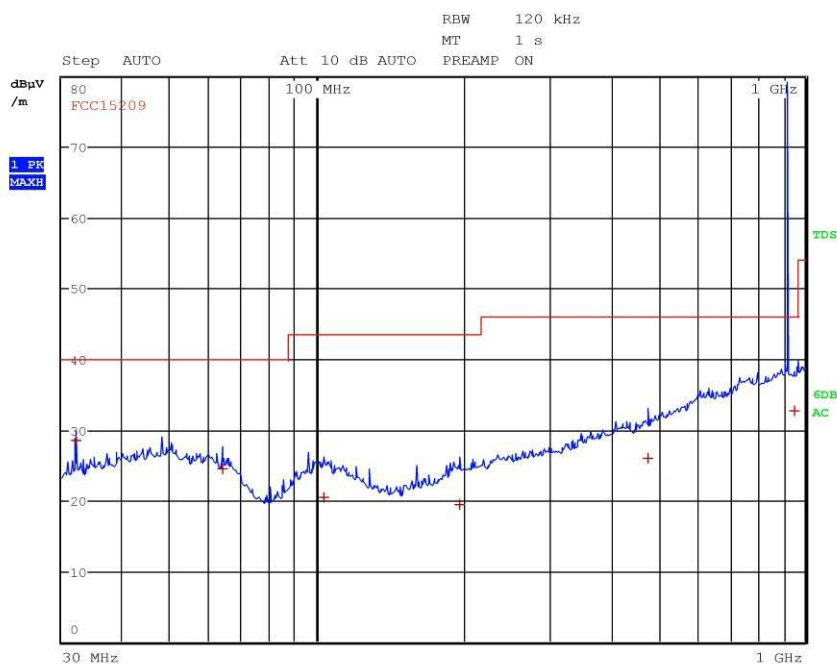
Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dB μ V/m)	Detector	Delta Limit/dB
1	46.880000000 MHz	21.67	Quasi Peak	-18.33
1	56.160000000 MHz	21.10	Quasi Peak	-18.90
1	102.320000000 MHz	20.10	Quasi Peak	-23.42
1	192.000000000 MHz	23.17	Quasi Peak	-20.35
1	526.920000000 MHz	27.07	Quasi Peak	-18.95
1	944.400000000 MHz	32.74	Quasi Peak	-13.28



G15107608

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmid - Ant.Ext 5m
Operator Gandini 15107608
Test Spec
Vert



Final Measurement

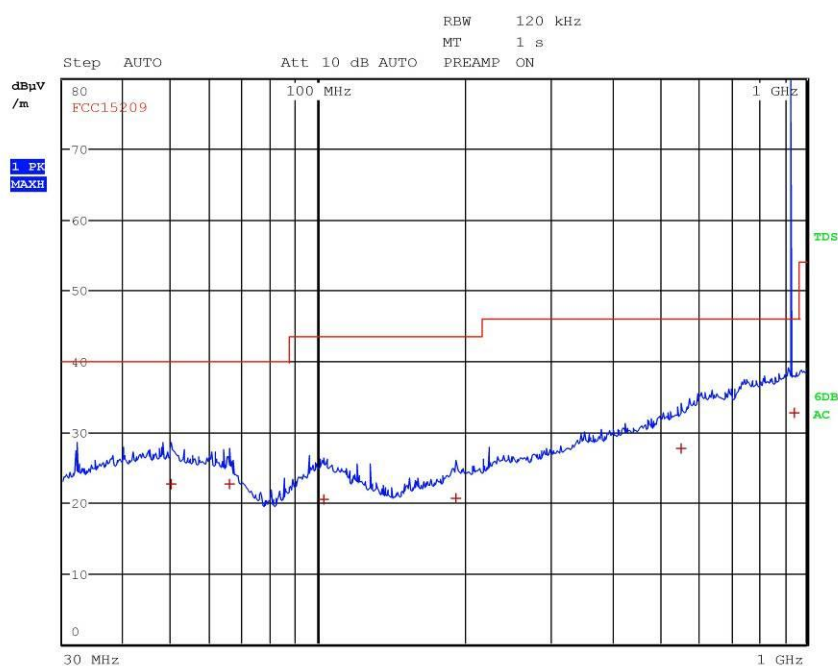
Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dB μ V/m)	Detector	Delta Limit/dB
1	32.00000000 MHz	28.50	Quasi Peak	-11.50
1	64.00000000 MHz	24.43	Quasi Peak	-15.57
1	103.20000000 MHz	20.38	Quasi Peak	-23.14
1	195.64000000 MHz	19.44	Quasi Peak	-24.08
1	476.40000000 MHz	25.94	Quasi Peak	-20.08
1	948.16000000 MHz	32.74	Quasi Peak	-13.28



G15107609

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmax - Ant.Ext 5m
Operator Gandini 15107609
Test Spec
Vert



Final Measurement

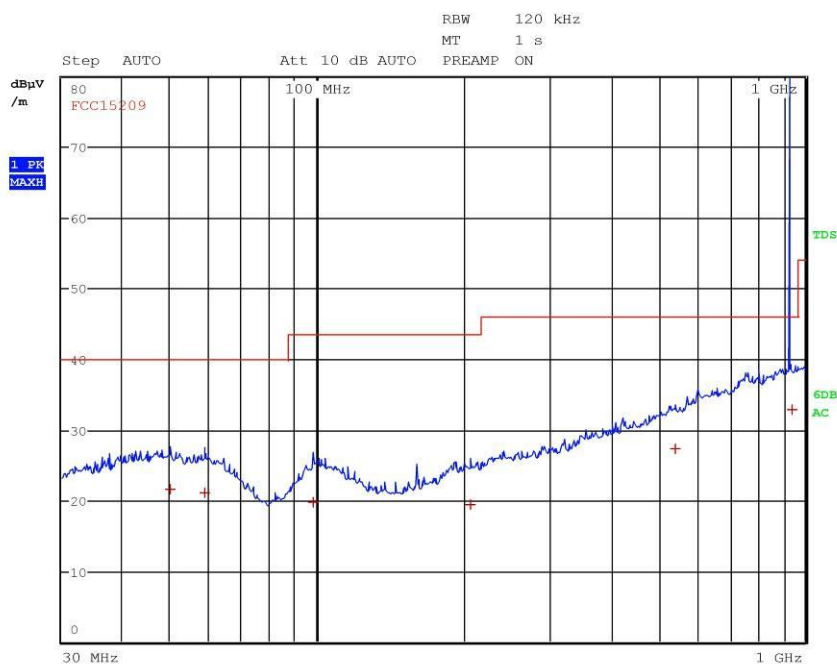
Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dB μ V/m)	Detector	Delta Limit/dB
1	49.880000000 MHz	22.54	Quasi Peak	-17.46
1	65.720000000 MHz	22.62	Quasi Peak	-17.38
1	102.800000000 MHz	20.46	Quasi Peak	-23.06
1	192.000000000 MHz	20.58	Quasi Peak	-22.94
1	555.360000000 MHz	27.65	Quasi Peak	-18.37
1	943.120000000 MHz	32.74	Quasi Peak	-13.28



G15107610

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmax - Ant.Ext 5m
Operator Gandini 15107610
Test Spec
Horiz



Final Measurement

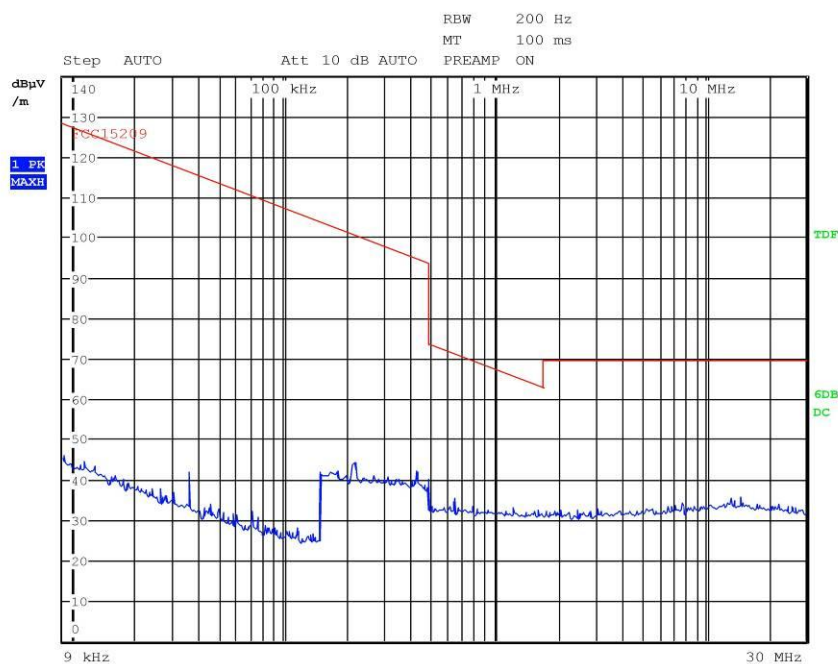
Meas Time: 1 s
Margin: 20 dB
Subranges: 6

Trace	Frequency	Level (dB μ V/m)	Detector	Delta Limit/dB
1	50.040000000 MHz	21.51	Quasi Peak	-18.49
1	58.960000000 MHz	21.08	Quasi Peak	-18.92
1	98.160000000 MHz	19.73	Quasi Peak	-23.79
1	205.920000000 MHz	19.48	Quasi Peak	-24.04
1	542.120000000 MHz	27.34	Quasi Peak	-18.68
1	940.680000000 MHz	32.81	Quasi Peak	-13.21



G15107611

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx-Rx - Ant.Ext 5m
Operator Gandini 15107611
Test Spec
Loop



Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 0

Result: The requirements are met



11.4 Peak Output Power

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.209 and Part 15.249
- 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
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 3 m

Environmental conditions

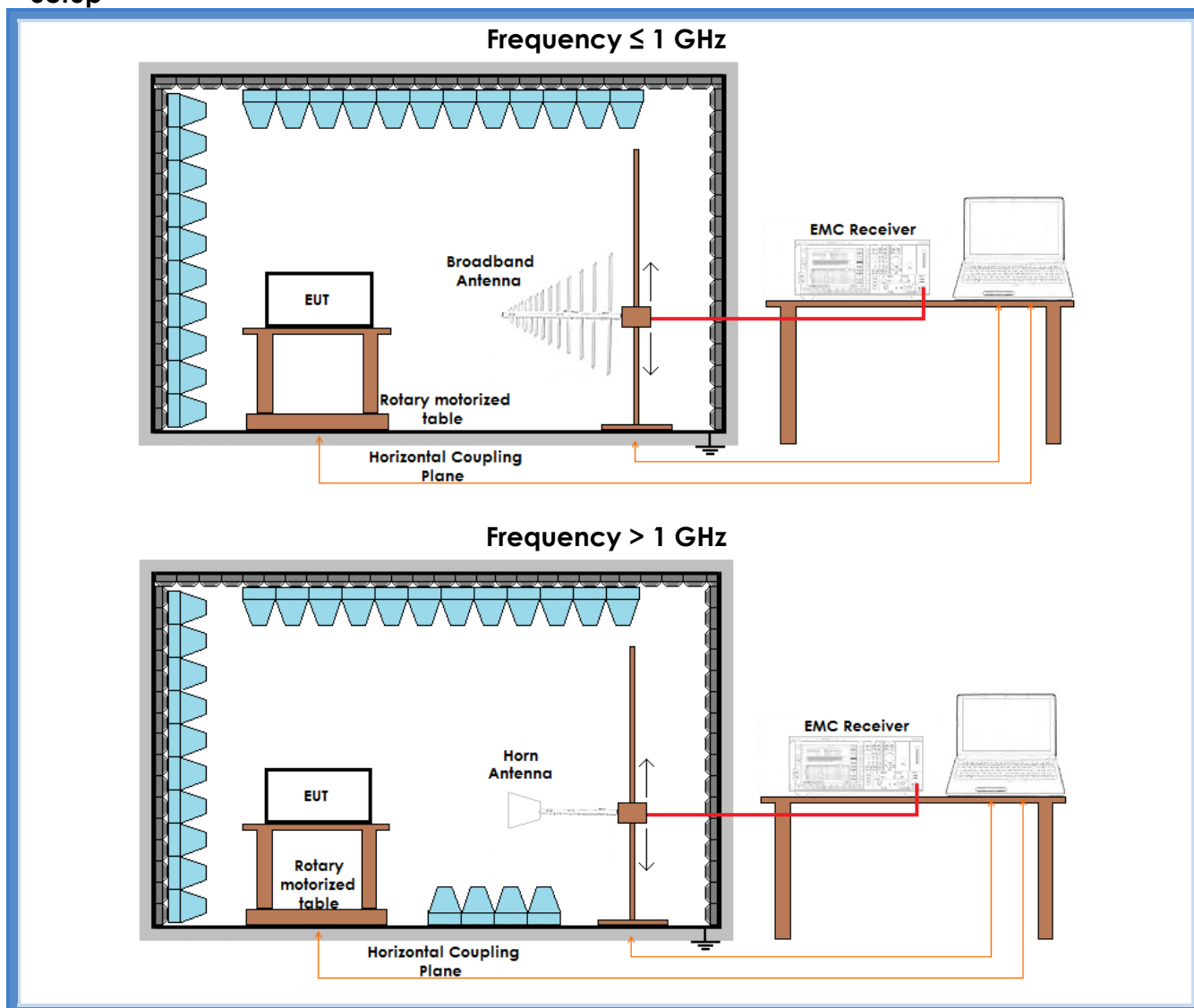
Temperature (°C)	Atmospheric pressure (kPa)	Relative humidity (%)
23	100	45

Acceptance limits

Frequency range (MHz)	RF Power Output dB(μV/m)
902 – 928	94

Frequency range (MHz)	RF Power Output dB(μV/m)
2400 – 2483,5	94

Setup



Result

Frequency (MHz)	Polarization	Graphs	Measured QP level (dB μ V/m)	Peak Output Power (mW)	Remarks
915,048717	Horizontal	G15107616	85,81	0,114	--
915,055128	Vertical	G15107617	93,17	0,622	--
920,998718	Horizontal	G15107615	85,84	0,115	--
921,003846	Vertical	G15107612	93,95	0,745	--
927,746154	Horizontal	G15107627	84,03	0,076	--
927,753846	Vertical	G15107622	92,21	0,499	--
Remarks: external antenna					



Frequency (MHz)	Polarization	Graphs	Measured QP level (dB μ V/m)	Peak Output Power (mW)	Remarks
915,047435	Horizontal	G15107643	91,16	0,392	--
915,046153	Vertical	G15107638	92,36	0,517	--
920,996153	Horizontal	G15107634	89,89	0,292	--
920,996154	Vertical	G15107635	93,37	0,652	--
927,746153	Horizontal	G15107633	90,06	0,304	--
927,747435	Vertical	G15107628	93,02	0,601	--
Remarks: internal antenna					

Remarks

$$P = (E \times d)^2 / (30 \times G)$$

Where:

E = the measured maximum fundamental field strength in V/m

G = the numeric gain of the transmitting antenna: 1 (0 dBi)

d = the distance in meters from which the field strength was measured (3 m)

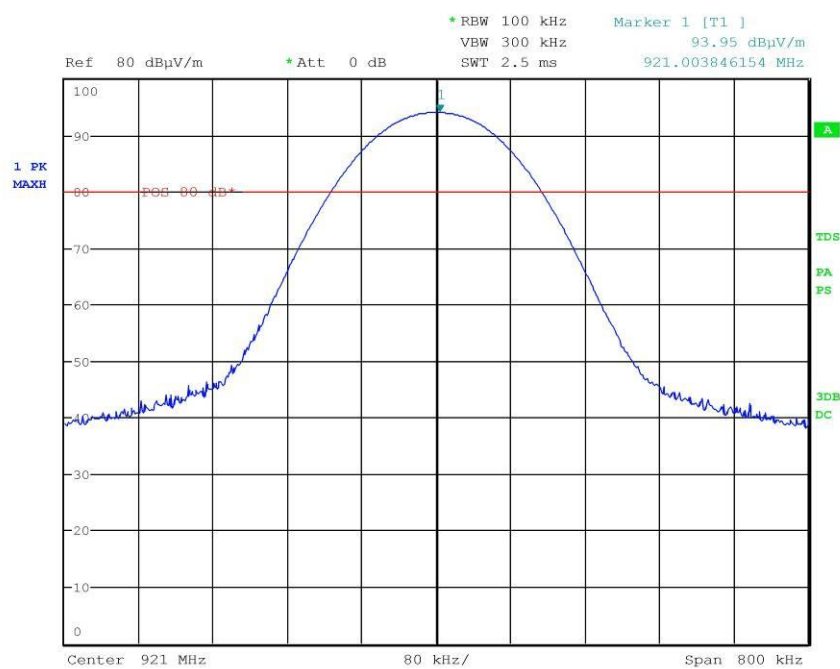
P = the power in watts



Graphs

G15107612

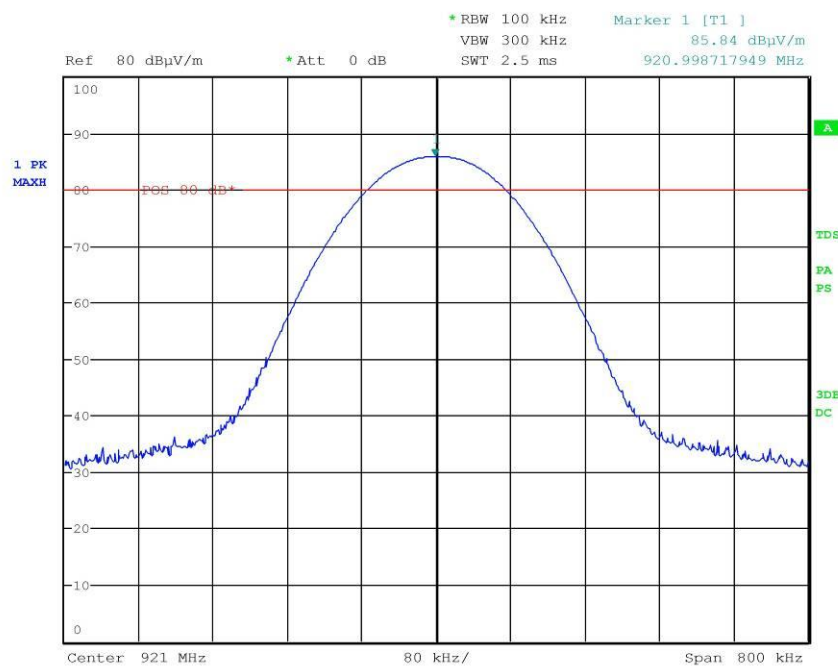
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmax - Ant.Ext 5m
Operator Gandini 15107612
Test Spec
Vert





G15107615

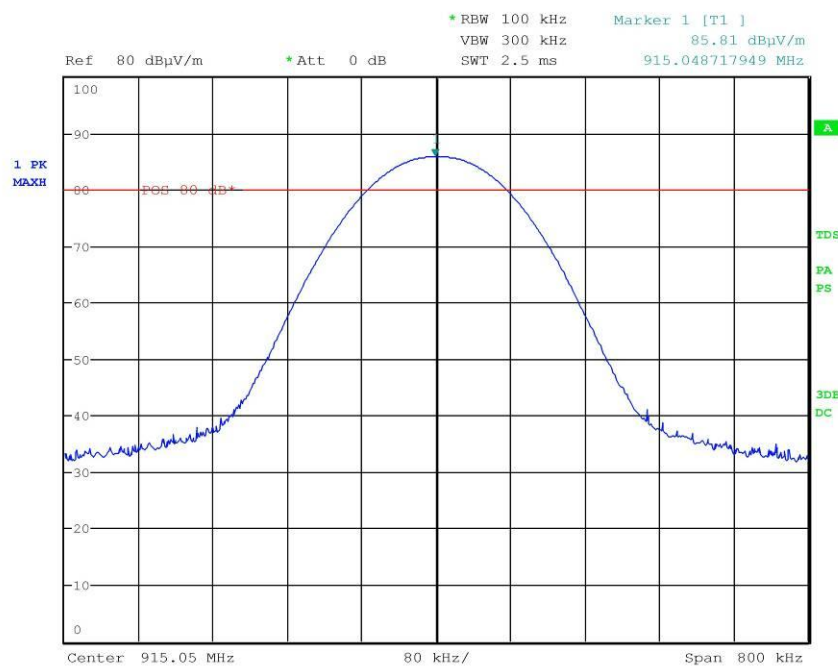
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmax - Ant.Ext 5m
Operator Gandini 15107615
Test Spec
Horiz





G15107616

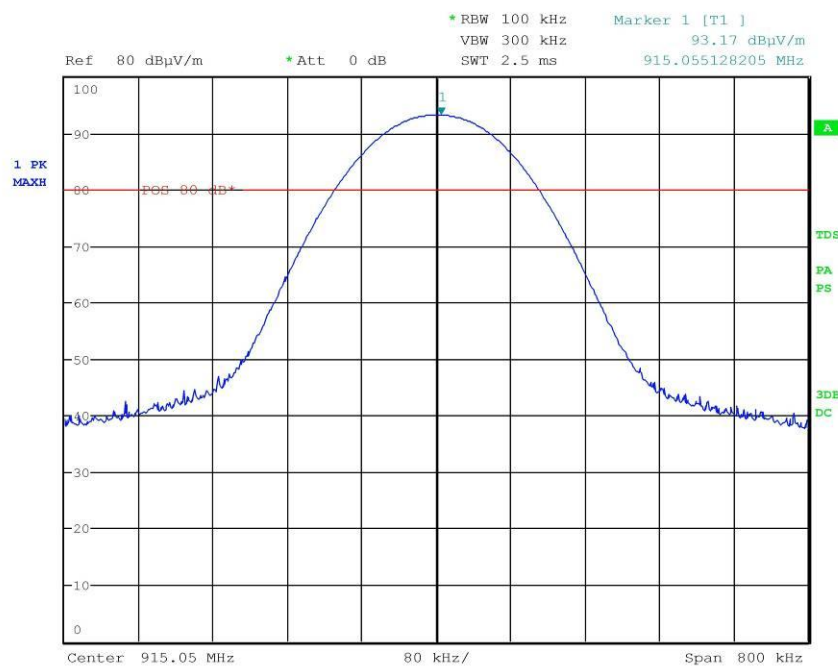
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmin - Ant.Ext 5m
Operator Gandini 15107616
Test Spec
Horiz





G15107617

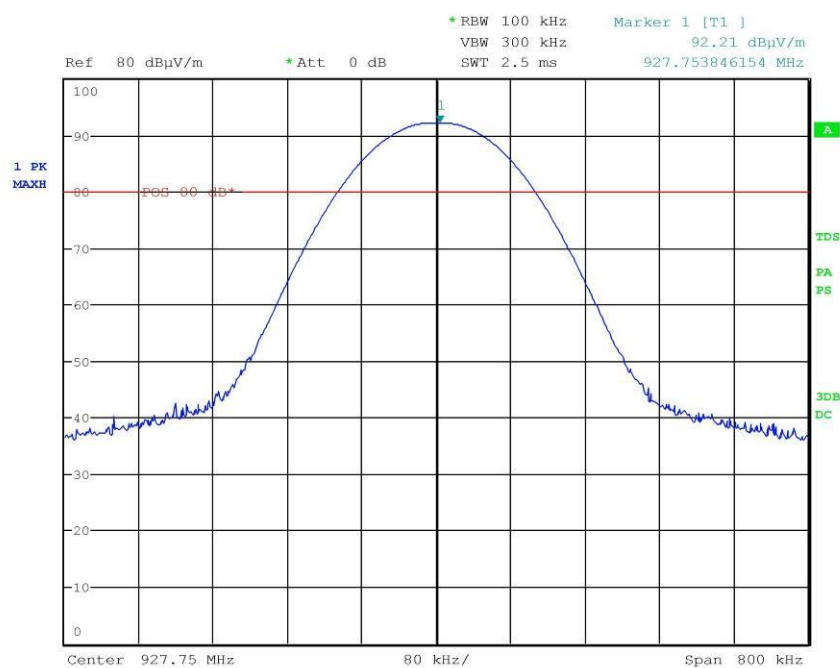
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmin - Ant.Ext 5m
Operator Gandini 15107617
Test Spec
Vert





G15107622

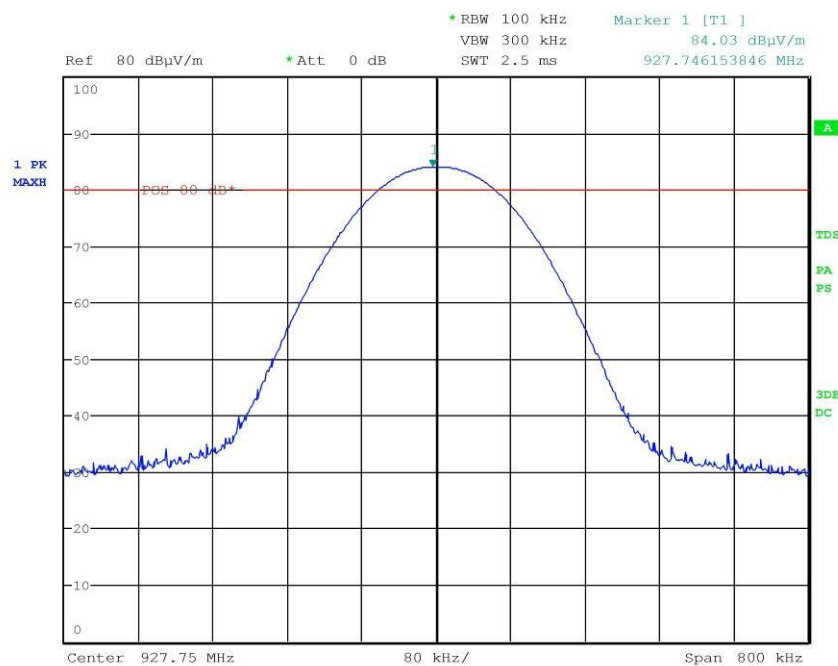
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmax - Ant.Ext 5m
Operator Gandini 15107622
Test Spec
Vert





G15107627

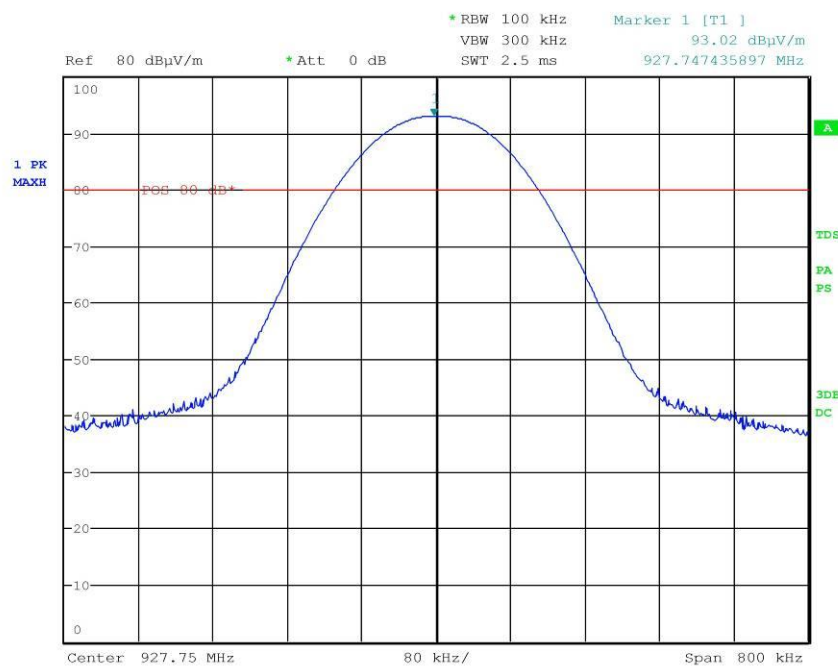
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmax - Ant.Ext 5m
Operator Gandini 15107627
Test Spec
Horiz





G15107628

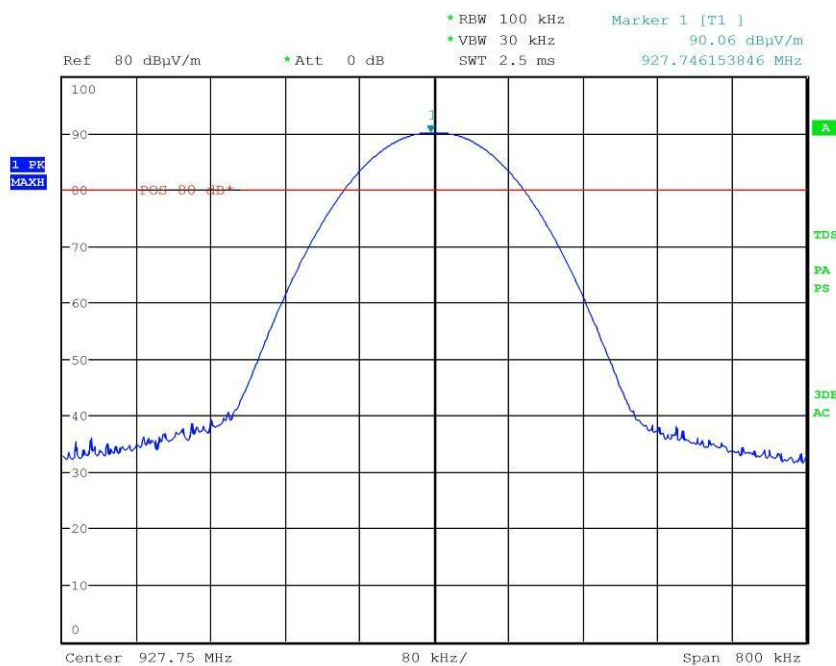
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmax - Ant.Int.
Operator Gandini 15107628
Test Spec
Vert





G15107633

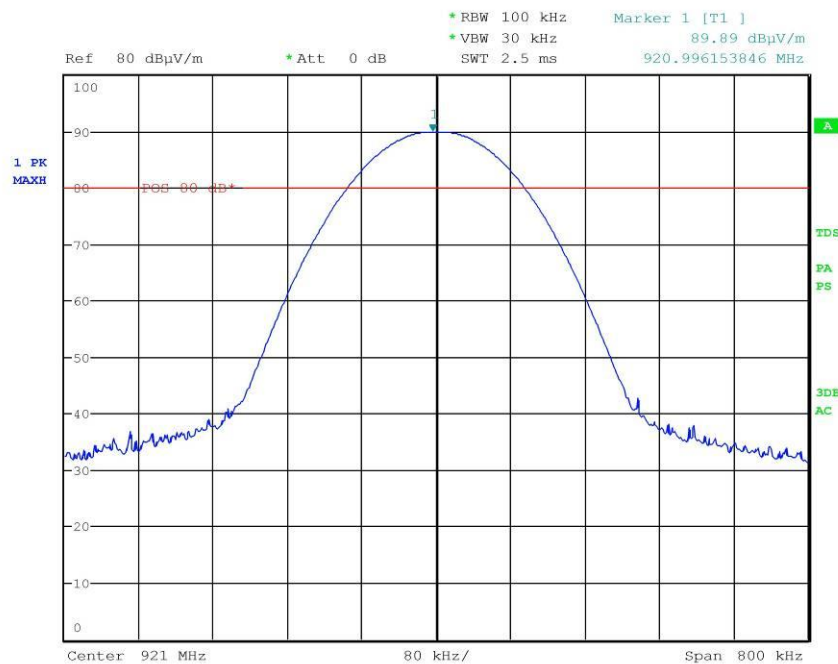
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmax - Ant.Int.
Operator Gandini 15107633
Test Spec
Horiz





G15107634

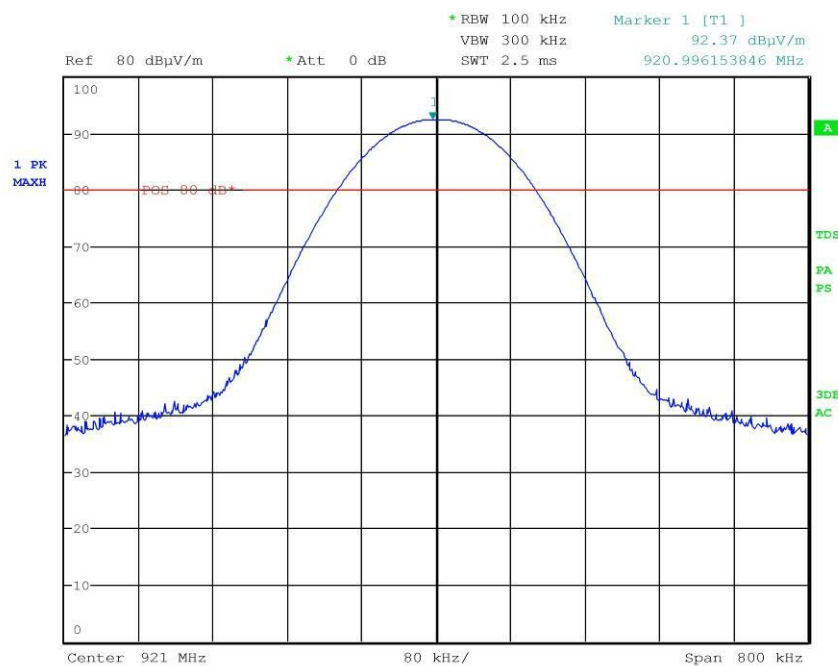
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmid - Ant.Int.
Operator Gandini 15107634
Test Spec
Horiz





G15107635

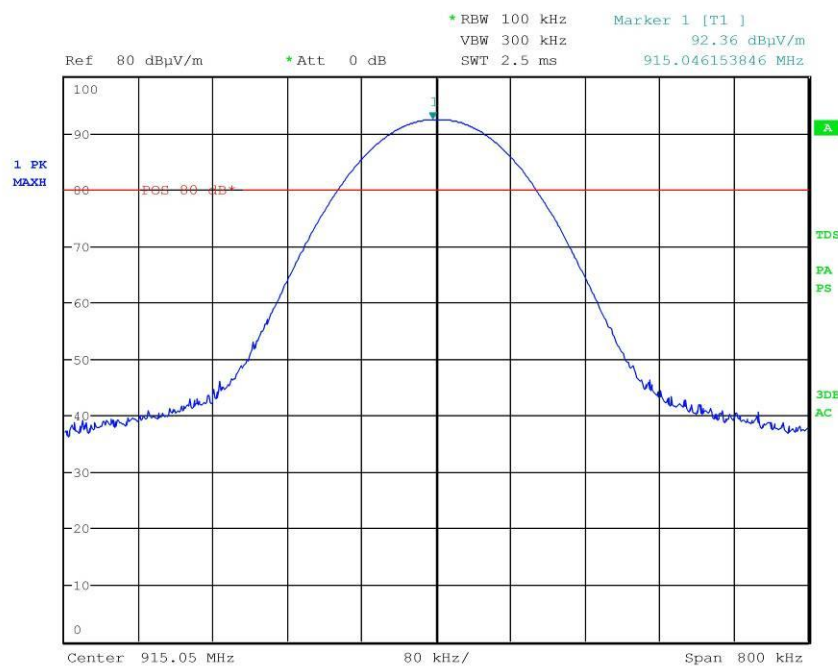
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmid - Ant.Int.
Operator Gandini 15107635
Test Spec
Vert





G15107638

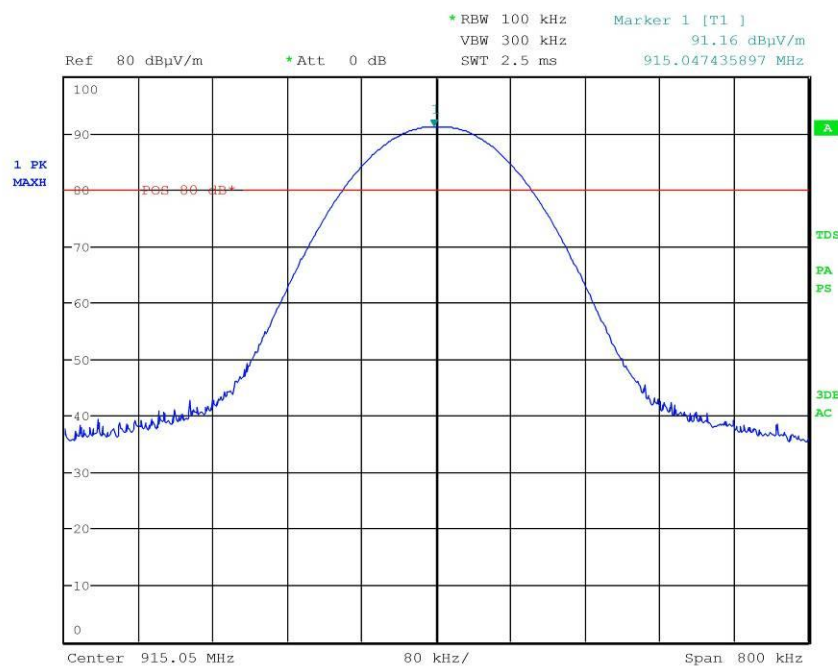
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmin - Ant.Int.
Operator Gandini 15107638
Test Spec
Vert





G15107643

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmin - Ant.Int.
Operator Gandini 15107643
Test Spec
Horiz



Result: The requirements are met



11.5 Band edge

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.249 (d)
- 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 S108, CMC S136, CMC S164
Measurement uncertainty: See clause 7 of this test report

Test specification

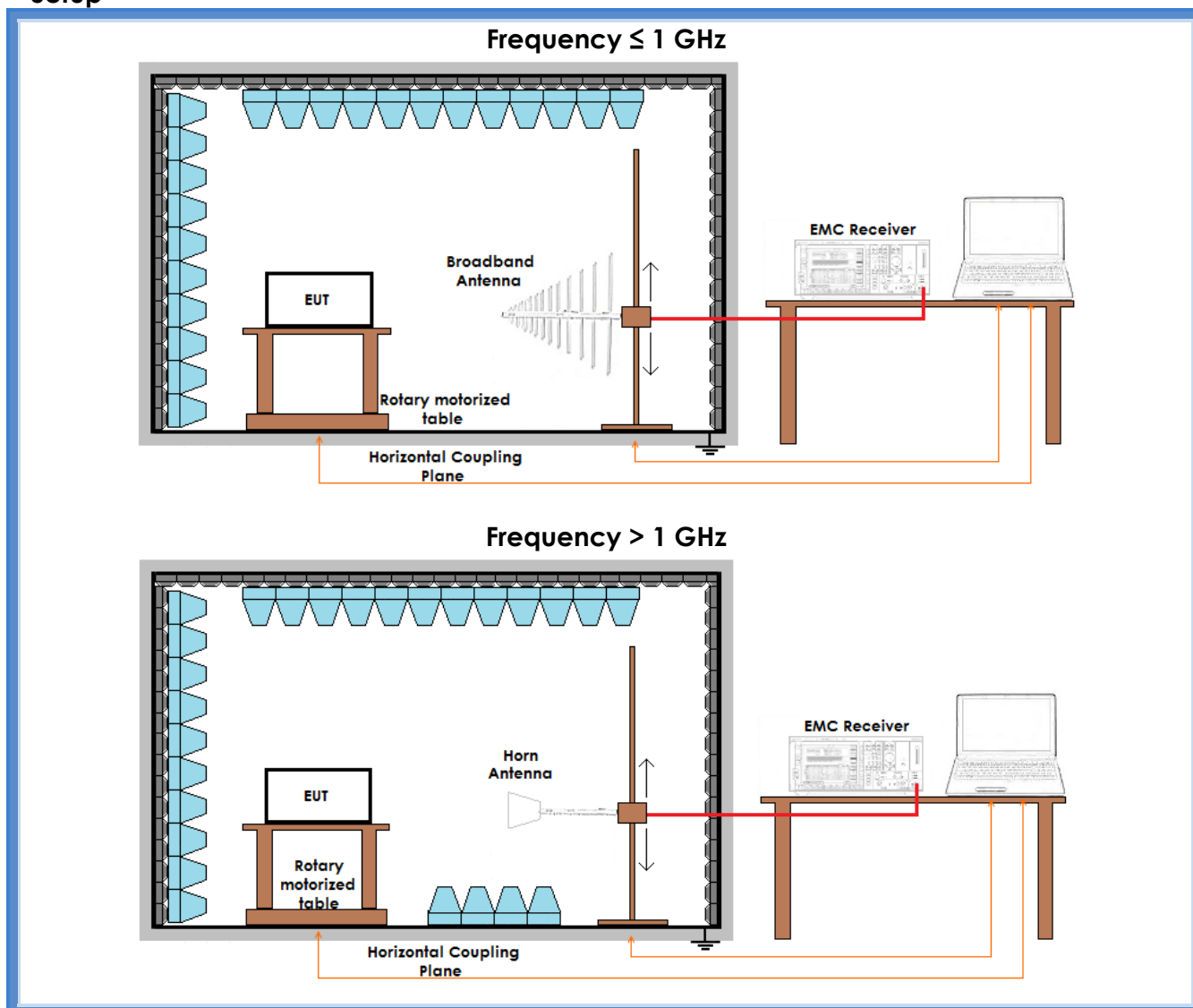
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation

Environmental conditions

Temperature (°C)	Atmospheric pressure (kPa)	Relative humidity (%)
22	100	42

Acceptance limits: operation within the band 902 – 928 MHz

Setup



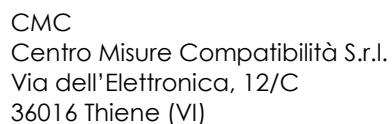
Result

Frequency (MHz)	Graph(s)	Results	
915,050	G15107620	FL: 914,803846 MHz	Complies
	G15107621		
927,750	G15107625	FH: 927,971794 MHz	Complies
	G15107626		
Remarks: external antenna			



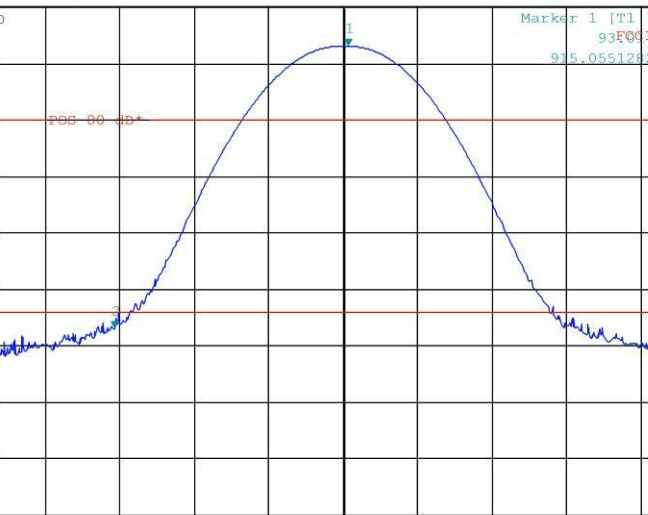
Frequency (MHz)	Graph(s)	Results	
915,050	G15107639	FL: 914,819230 MHz	Complies
	G15107640		
927,750	G15107641	FH: 927,976923 MHz	Complies
	G15107632		
Remarks: internal antenna			





LAB N° 0168

G15107620



1 PK
MAXH

Ref 80 dBμV/m *Att 0 dB

*RBW 100 kHz VBW 300 kHz SWT 2.5 ms

Marker 1 [T1]
935.055128205 MHz
915.055128205 MHz

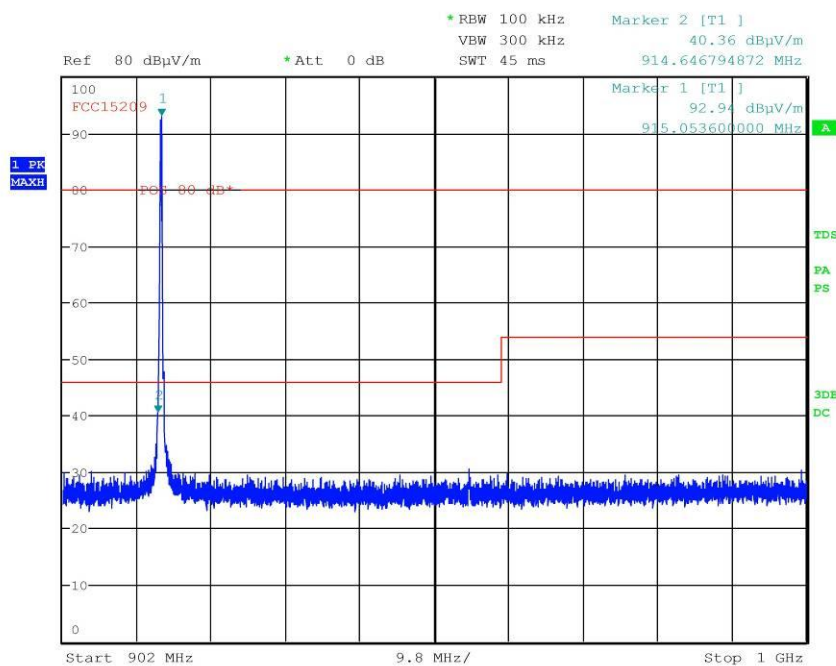
Marker 2 [T1]
914.803846154 MHz

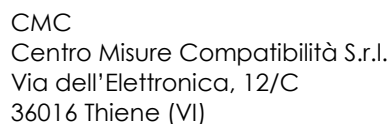
Center 915.05 MHz 80 kHz/ Span 800 kHz



G15107621

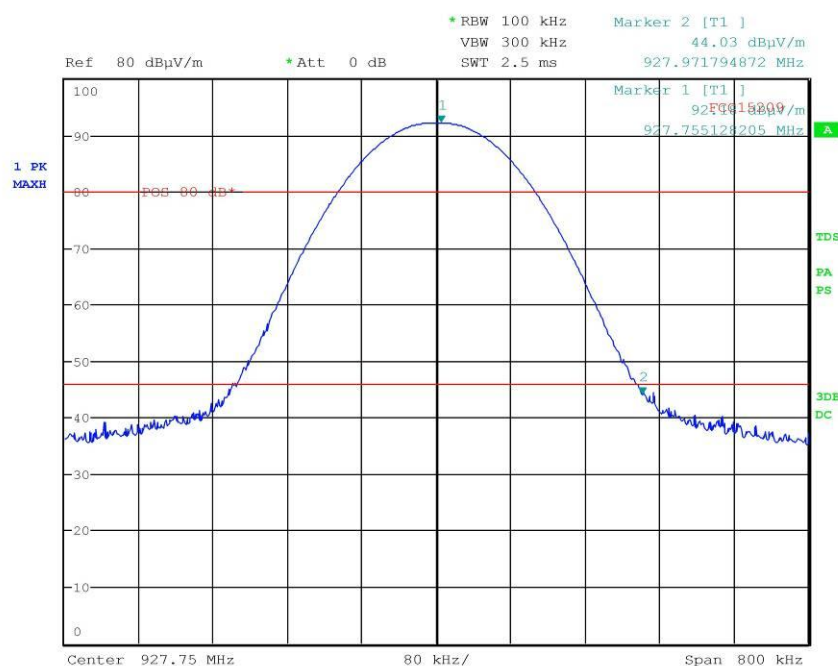
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmin - Ant.Ext 5m
Operator Gandini 15107621
Test Spec
Vert





LAB N° 0168

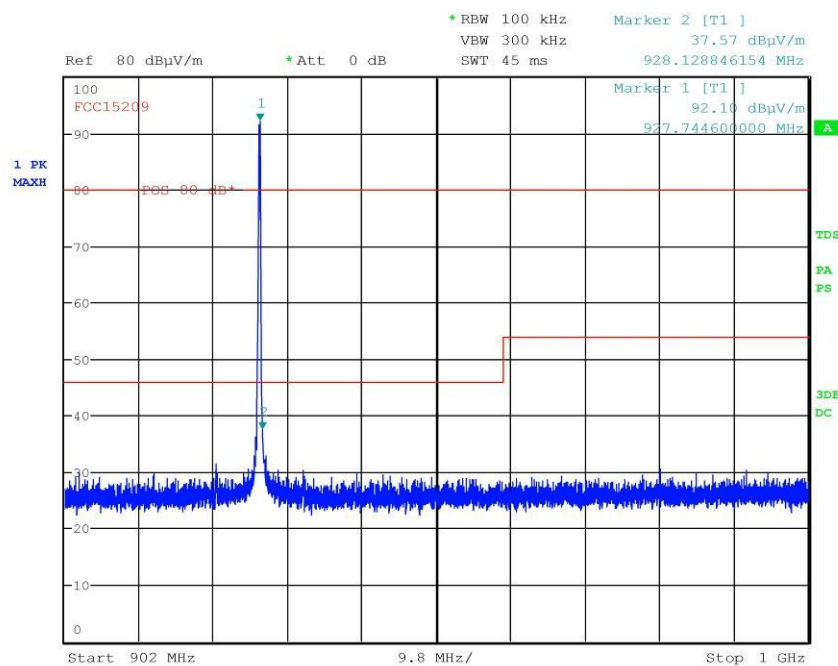
Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx -Fmax - Ant.Ext 5m
Operator	Gandini 15107625
Test Spec	
Vert	





G15107626

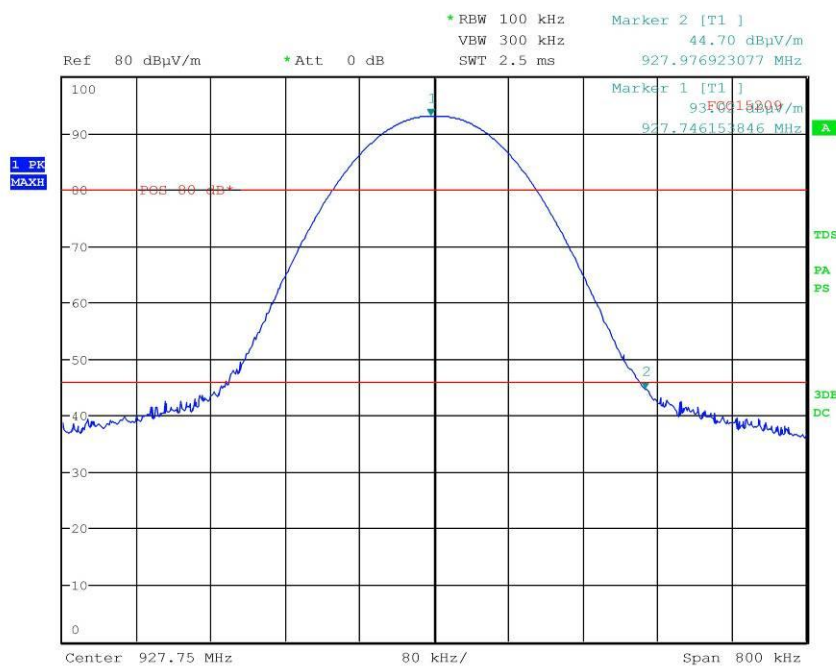
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmax - Ant.Ext 5m
Operator Gandini 15107626
Test Spec
Vert





G15107631

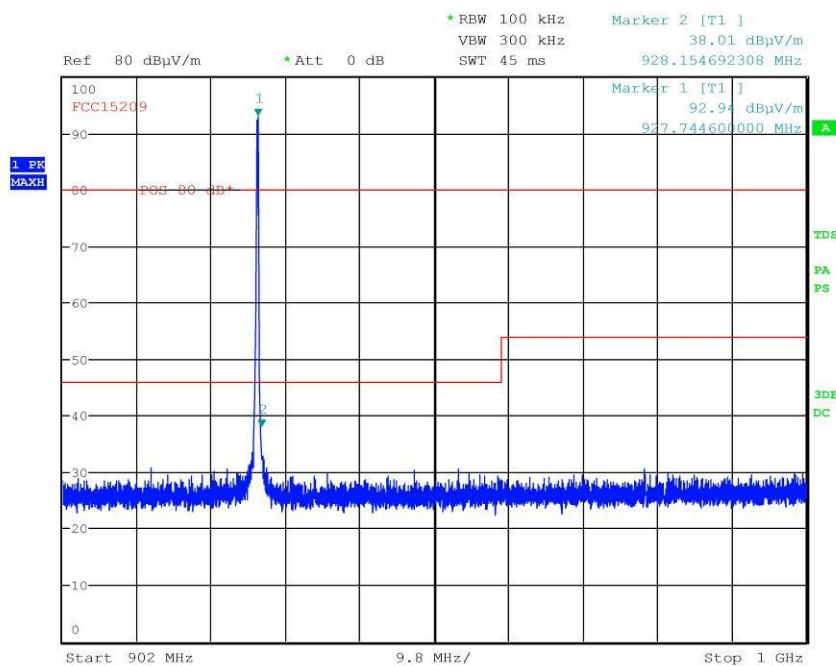
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmax - Ant.Int.
Operator Gandini 15107631
Test Spec
Vert





G15107632

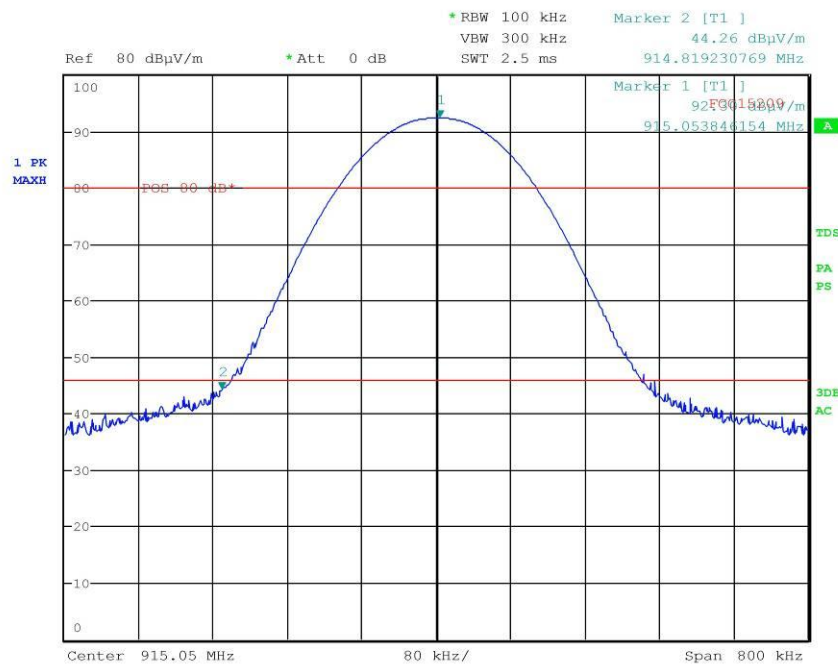
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx -Fmax - Ant.Int.
Operator Gandini 15107632
Test Spec
Vert





G15107639

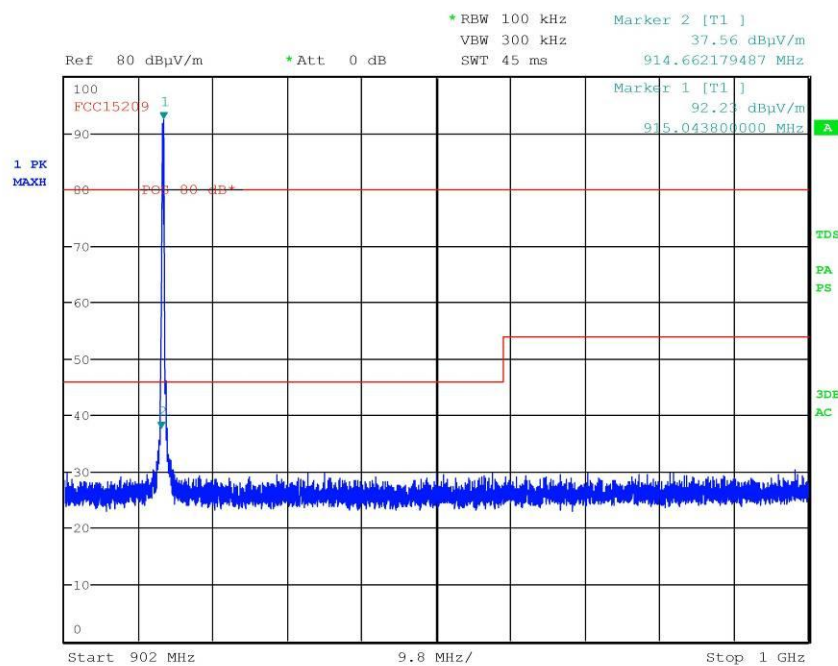
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmin - Ant.Int.
Operator Gandini 15107639
Test Spec
Vert





G15107640

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx - Fmin - Ant.Int.
Operator Gandini 15107640
Test Spec
Vert



Result: The requirements are met



11.6 Spurious Emission

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
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 3 m
Detector AV + Peak

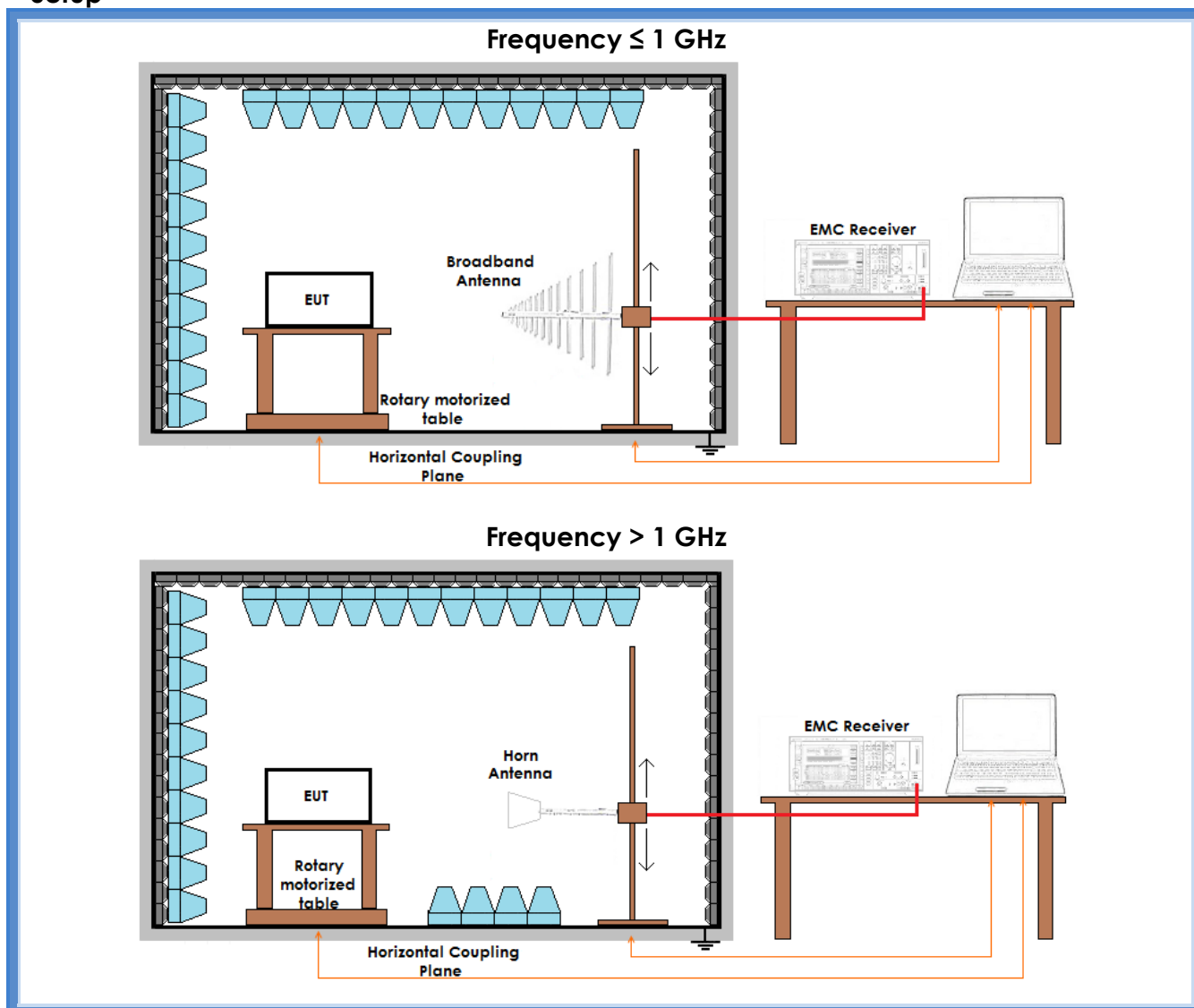
Environmental conditions

Temperature (°C)	Atmospheric pressure (kPa)	Relative humidity (%)
23	101	45

Acceptance limits

Frequency (MHz)	AV limits [dB(μV/m)]	Peak limits [dB(μV/m)]
> 1000	54	74

Setup



Graphs:

G15107603 and G15107604



Result – AV detector

Harmonic	Limits (dB μ V/m)	Level (dB μ V/m)			Results
		915,050 MHz	921,000 MHz	927,750 MHz	
II	54	38,9	39,9	39,1	Complies
III	54	41,6	41,5	41,8	Complies
IV	54	44,1	43,3	44,1	Complies
V	54	45,2	45,1	43,9	Complies
VI	54	40,0	41,4	39,5	Complies
VII	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
VIII	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
IX	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
X	54	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies

Remarks: EUT was tested in 3 orthogonal planes. The results in this table show the highest values

Result – Peak detector

Harmonic	Limits (dB μ V/m)	Level (dB μ V/m)			Results
		915,050 MHz	921,000 MHz	927,750 MHz	
II	74	41,6	41,7	42,3	Complies
III	74	44,5	44,6	44,2	Complies
IV	74	48,2	47,7	48,0	Complies
V	74	48,9	48,9	48,0	Complies
VI	74	47,4	47,9	47,2	Complies
VII	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
VIII	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
IX	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies
X	74	More than 20 dB below limit	More than 20 dB below limit	More than 20 dB below limit	Complies

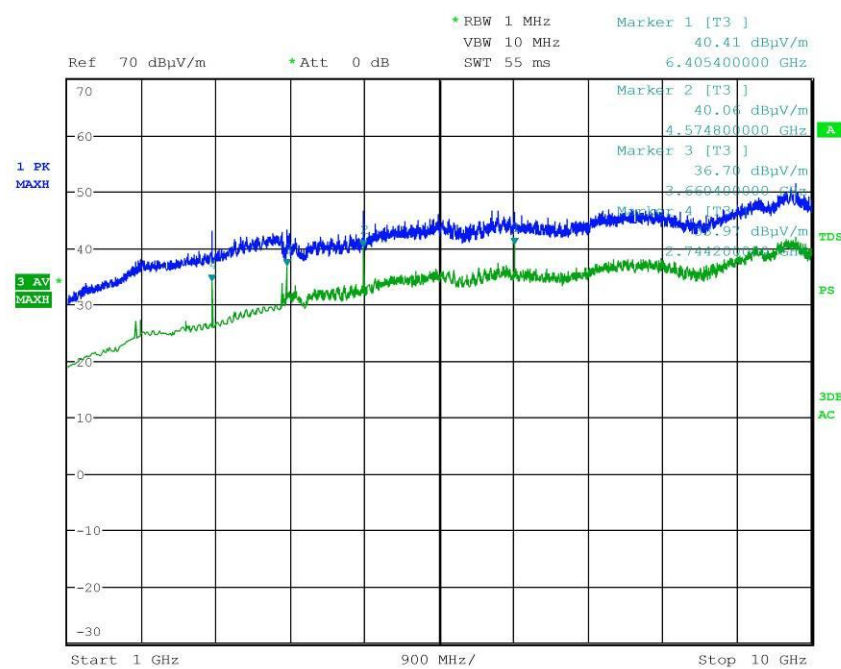
Remarks: EUT was tested in 3 orthogonal planes. The results in this table show the highest values



Graphs

G15107603

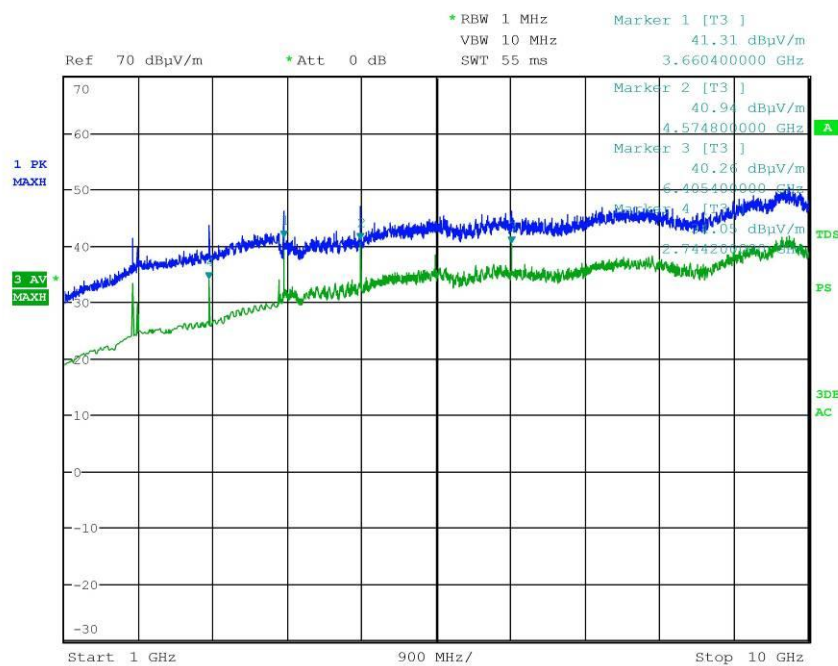
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx-Rx - Ant. Ext. 5m
Operator Gandini 15107603
Test Spec
Vert - EUT Vert





G15107604

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Tx-Rx - Ant. Ext. 5m
Operator Gandini 15107604
Test Spec
Horiz - EUT Vert



Result: The requirements are met