Independent Testing Laboratory
CMC Centro Misure Compatibilità S.r.l.
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Accredited by Ministry of Communications – Notified Body EMC Directive 2004/108/EC n° NB 2044

TEST REPORT nr. R13051401

Federal Communication Commission (FCC)

Industry Canada (IC)

Test item

Description.....: Transceiver Unit

Trademark.....: AUTEC

Model/Type.....: Model RGA Type GA00M

Test Specification

Standard .....: FCC Rules & Regulations, Title 47 (2012) - Part 15 paragraph(s) : 207, 209, 215 and 249
RSS-210 (2010) – Annex 2 (A2.9)

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

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

Manufacturer's name.: Same ad client

Address .....: --

Report

Tested by.....: G. Gandini - *Technician*

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

Date of issue.....: 01.08.13

Contents .....: 81 pages

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1. Summary

Standard: FCC Rules & Regulations, Title 47
RSS-210 (2010) – Annex 2 (A2.9)

Test specifications	Environmental Phenomena	Tests sequence	Result
FCC – Title 47 Part 15.203 and 15.204 IC – RSS-210	Antenna Requirement	1	Complies
Part 15.215 IC – RSS-210 Annex 2 (A2.9)	20 Bandwidth	2	Complies
IC – RSS-210 Annex 2 (A2.9)	Occupied Bandwidth (99% BW)	3	Complies
Part 15.249 IC – RSS-210 Annex 2 (A2.9)	Peak Output Power	4	Complies
Part 15.215 IC – RSS-210 Annex 2 (A2.9)	Band Edge	5	Complies
Part 15.209 IC – RSS-210 Annex 2 (A2.9)	Radiated Spurious	6	Complies
Part 15.207	Conducted Emission	7	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 and IC certification.

2. Description of Equipment under test (EUT)

Power supply	:	110Vac 60Hz
Type of equipment	:	☒ Transmitter Unit ☒ Receiver Unit ☒ Fixed station ☐ Portable station ☐ Mobile station
Alignment range	:	902 – 928 MHz
Switching frequency	:	902 – 928 MHz
Modulation	:	Up to 19300 Baud RC-FSK
Information on antenna	:	- Embedded - External antenna: λ/4 stylus antenna Type: A0ANTE00E0040
FCC ID	:	OQA-RGAGA00M
IC number	:	9061A-RGAGA00M

2.1 Test Site

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

3. Testing and sampling

Date of receipt of test item	:	25.03.13
Testing start date	:	25.03.13
Testing end date	:	09.04.13
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 P130294

4. Operative conditions

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5. Photograph(s) of EUT

6. Equipment list

Id. number	*Manufacturer*	*Model*	*Description*	*Serial number*	*Last calibration*	*Due date calibration*
CMC S108	Emco	3115	Horn antenna	9811-5622	April '13	April '16
CMC S124	Spin	AMTP42-20	Horn Antenna 18-26GHz	103	May '13	May '16
CMC S127	Schaffner	HLA6120	Loop Antenna	1191	January '13	January '16
CMC S129	Rohde & Schwarz	ESPI7	Receiver	836.914/004	January '13	January '14
CMC S136	Schwarzbeck	VULB 9163	Broadband Antenna	9136-205	May '13	May '16
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '13	January '14
CMC S207	Rohde & Schwarz	ESCI 7	EMI receiver	100781	January '13	January '14

7. Measurement uncertainty

Test	*Expanded Uncertainty*	*note*
Conducted Emission		
(50Ω/50μH AMN) - (9 kHz – 150 kHz)	±3.9 dB	1
(50Ω/50μH AMN) - (150 kHz – 30 MHz)	±3.4 dB	1
(Voltage probe) - (150 kHz – 30 MHz)	±3.4 dB	1
(50Ω/5μH AMN) - (150 kHz – 108 MHz)	±2.8 dB	1
DiscontinuousConducted Emission		
Conducted Emission (50Ω/50μH AMN) - (150 kHz – 30 MHz)	±3.4 dB	1
Disturbance Power (30 MHz – 300 MHz)	±3.8 dB	1
Radiated Emission		
(0,150 MHz – 30 MHz)	±4.3 dB	1
(30 MHz – 1000 MHz)	±4.6 dB	1
(1 GHz – 6 GHz)	±4.7 dB	1
Electromagnetic field EMF	±15.0 %	1
Harmonic current emissions test	±2.7 %	1
Voltage fluctuation and flicker test	±2.9 %	1
Insertion loss test	±2.9 dB	1
Radiated electromagnetic disturbance test (loop antenna)	±2.8 dB	1
Radiated electromagnetic field immunity test	0.8 V/m at 3V/m	1
Pulse modulated radiated electromagnetic field immunity test	0.8 V/m at 3V/m	1
Injected currents immunity test	0.4 V at 3V	1
Bulk current	9.7 mA at 60 mA	1
Power frequency magnetic field immunity test	0.1 A/m at 10 A/m	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

Notes

Note 1:
The expanded uncertainty reported according to EN55016-4-2(2004-10) 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 demostrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor k = 2.

8. Reference documents

Reference no.	*Description*
FCC Rules and Regulation Title 47 part 15 (2012)	--
RSS-210 Issue 8 – December 2010	Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment
ANSI C63.4	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz – 40GHz
Internal Procedure PM001 rev. 2.0 (Quality Manual)	Measure Procedure
Internal procedure INC_M rev. 8.1 (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 6dB 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 / N.A.

Test item does meet the requirement..... : P / Pass / Complies

Test item does not meet the requirement..... : F / Fail / Does not comply

Test not performed ..... : NE / Not Executed

11. Results

In this clause tests results are reported.

Measurement uncertainty is in accordance with document CMC INC_M rev. 8.1.

11.1 Antenna Requirements

Test configuration and test method

Test site	Laboratory
Auxiliary equipment	See clause 4 of this test report

Environmental conditions

Temperature	21	ºC	Atmospheric pressure	99	kPa	Relative humidity	48	%

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.203 and 15.204
- RSS-210
- Internal Procedure PM001
- See clause 4 of this test report

Test Requirements

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 unique coupling to the intentional radiator shall be considered sufficient comply with the provisions of this section.
The manufacturer may design the unit so that a broken antenna can replaced by the user, but the use of 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.

Test specification

Port: Antenna.

EUT exercising

See clause 4 of this test report

Result

Antenna Type	*Gain*	*Remarks*	*Results*
Embedded	0 dBi	--	Complies
External	0 dBi	--	Complies

Remarks ///////////////

Reference documents

See clause 8 of this test report

Result

The requirements are met

11.2 20dB Bandwidth

Test configuration and test method

Test site: Laboratory
Auxiliary equipment: See clause 4 of this test report

Environmental conditions

Temperature 21 ºC Atmospheric pressure 99 kPa Relative humidity 45 %

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.215
- RSS-210 Annex 2 (A2.9)
- Internal Procedure PM001
- See clause 4 of this test report

Test specification

Port: Antenna;

EUT exercising

See clause 4 of this test report

Result

Frequency (MHz)	Graph(s)	*Bandwidth (kHz)*	Remark
915,250	G130514A10	19,23	Antenna: Embedded
921,500	G130514A11	19,34	
927,750	G130514A12	19,23	
915,250	G130514A13	19,23	Antenna: External
921,500	G130514A14	19,23	
927,750	G130514A15	19,23	
Measurement uncertainty: ±1 kHz			

Remarks ////////////////

Reference documents

See clause 8 of this test report

Test equipment used (Id number – see clause 6 of this test report)

CMC S129

Result

The requirements are met

11.3 Occupied Bandwidth (99% BW)

Test configuration and test method

Test site: Laboratory
Auxiliary equipment: See clause 4 of this test report

Environmental conditions

Temperature 21 ºC Atmospheric pressure 99 kPa Relative humidity 45 %

Test set-up and execution

- RSS-210 Annex 2 (A2.9)
- Internal Procedure PM001
- See clause 4 of this test report

Test specification

Port: Antenna;

EUT exercising

See clause 4 of this test report

Result

Frequency (MHz)	Graph(s)	*Bandwidth (kHz)*	Remark
915,250	G130514A16	15,94	Antenna: Embedded
921,500	G130514A17	16,02	
927,750	G130514A18	15,95	
915,250	G130514A19	15,86	Antenna: External
921,500	G130514A20	15,94	
927,750	G130514A21	16,03	
Measurement uncertainty: ±1 kHz			

Remarks

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Reference documents

See clause 8 of this test report

Test equipment used (Id number – see clause 6 of this test report)

CMC S129

Result

The requirements are met

11.4 Peak Output Power

Test configuration and test method

Test site: Laboratory
Auxiliary equipment: See clause 4 of this test report

Environmental conditions

Temperature 24 ºC Atmospheric pressure 99 kPa Relative humidity 50 %

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.209 and 15.249
- RSS-210 Annex 2 (A2.9)
- Internal Procedure PM001
- See clause 4 of this test report

Test specification

Port: Antenna;
Antenna distance: 3m

EUT exercising

See clause 4 of this test report

Acceptance limits

Frequency range	RF power output
902-928 MHz	50mV/m (94dBµV/m)

Result

Frequency (MHz)	*Polarization*	*Graphs*	*Measured QP level (dBµV/m)*	*Peak Output Power (mW)*	*Remark*
915,250	Horizontal	G13051461	81,64	0,03	Antenna: Embedded
915,250	Vertical	G13051469	80,80	0,03	
921,000	Horizontal	G13051465	80,49	0,03	
921,000	Vertical	G13051460	88,76	0,27	
927,750	Horizontal	G13051468	86,41	0,12	
927,750	Vertical	G13051464	87,50	0,12	
Measurement uncertainty: ±3dBm					

Frequency (MHz)	*Polarization*	*Graphs*	*Measured QP level (dBµV/m)*	*Peak Output Power (mW)*	*Remark*
915,250	Horizontal	G13051450	87,37	0,12	Antenna: External
915,250	Vertical	G13051458	87,22	0,12	
921,000	Horizontal	G13051455	92,15	0,48	
921,000	Vertical	G13051451	93,10	0,75	
927,750	Horizontal	G13051449	92,81	0,48	
927,750	Vertical	G13051454	92,70	0,48	
Measurement uncertainty: ±3dBm					

Remarks

$P = (E \times d)^2 / (30 \times G)$
Where:
E = the measured maximum fundamental field streght in V/m
G = the numeric gain of the transmitting antenna: 1 (0dBi)
d = the distance in meters from which the field strength was measured (3m)
P = the power in watts

Reference documents

See clause 8 of this test report

Test equipment used (Id number – see clause 6 of this test report)

CMC S164

Result

The requirements are met

11.5 Band Edge

Test configuration and test method

Test site: Laboratory
Auxiliary equipment: See clause 4 of this test report

Environmental conditions

Temperature 23 ºC Atmospheric pressure 98 kPa Relative humidity 51 %

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 specification

Port: Antenna;

EUT exercising

See clause 4 of this test report

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. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Result

Frequency (MHz)	Graph(s)	Remark
915,250	G13051462	Antenna: Embedded
	G13051463	
927,750	G13051466	
	G13051467	
915,250	G13051452	Antenna: External
	G13051453	
927,750	G13051456	
	G13051457	
Measurement uncertainty: ±1dB		

Remarks ////////////

Reference documents See clause 8 of this test report

Test equipment used (Id number – see clause 6 of this test report) CMC S129

Result The requirements are met

11.6 Radiated Spurious (Transmitter)

Test configuration and test method

Test site: Semi-anechoic chamber
Auxiliary equipment: None

Environmental conditions

Temperature 23 ºC Atmospheric pressure 98 kPa Relative humidity 51 %

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.209
- RSS-210 Annex 2 (A2.9)
- Internal Procedure PM001
- See clause 4 of this test report

Test specification

Port: Antenna;
For measurements below 1GHz the resolution bandwidth is set to 100kHz.
For measurements above 1GHz the resolution bandwidth is set to 1MHz.

EUT exercising

See clause 4 of this test report

Acceptance limits

In any 100kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in cl. 15.205(a), must also comply with the radiated emission limits specified in cl. 15.209(a) (see cl.15.205(c)).

Result

Channel	*Polarization*	Frequency Range (MHz)	Graph(s) (peak measurements)	Result	Remarks
915,250	Horizontal	30 – 1000	G131051470	Complies	Antenna: Embedded
915,250	Vertical	30 – 1000	G131051471	Complies	
921,500	Horizontal	30 – 1000	G131051473	Complies	
921,500	Vertical	30 – 1000	G131051472	Complies	
927,750	Horizontal	30 – 1000	G131051474	Complies	
927,750	Vertical	30 – 1000	G131051475	Complies	

Antenna	Frequency Range (MHz)	Graph(s)	Result	Remarks
Loop Antenna	9kHz – 30MHz	G131051483	Complies	Antenna: Embedded

Nr. Harmonics	*AV level (dBµV/m)*						*AV Limits (dBµV/m)*	*Remark*
	915,250MHz		*921,500 MHz*		*927,750 MHz*			
	Frequency	*(dBµV/m)*	*Frequency*	*(dBµV/m)*	*Frequency*	*(dBµV/m)*		
II Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	Antenna: Embedded
III Harmonic	2745,8173	44,8	2764,5812	45,3	2783,3800	43,9	54,00	
IV Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
V Harmonic	4575,5112	44,2	4606,7112	45,2	4638,9112	46,8	54,00	
VI Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
VII Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
VIII Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
IX Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
X Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
Measurement Uncertainty: ±4dB								

Nr. Harmonics	*PK level (dBµV/m)*						*PK Limits (dBµV/m)*	*Remark*
	915,250MHz		*921,500 MHz*		*927,750 MHz*			
	Frequency	*(dBµV/m)*	*Frequency*	*(dBµV/m)*	*Frequency*	*(dBµV/m)*		
II Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	Antenna: Embedded
III Harmonic	2745,8173	50,0	2764,5812	49,7	2783,3800	50,6	74,00	
IV Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
V Harmonic	4575,5112	50,2	4606,7112	50,8	4638,9112	51,0	74,00	
VI Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
VII Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
VIII Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
IX Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
X Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
Measurement Uncertainty: ±4dB								

Channel	*Polarization*	Frequency Range (MHz)	Graph(s) (peak measurements)	Result	Remarks
915,250	Horizontal	30 – 1000	G131051477	Complies	Antenna: External
915,250	Vertical	30 – 1000	G131051476	Complies	
921,500	Horizontal	30 – 1000	G131051478	Complies	
921,500	Vertical	30 – 1000	G131051479	Complies	
927,750	Horizontal	30 – 1000	G131051481	Complies	
927,750	Vertical	30 – 1000	G131051480	Complies	

Antenna	Frequency Range (MHz)	Graph(s)	Result	Remarks
Loop Antenna	9kHz – 30MHz	G131051482	Complies	Antenna: External

Nr. Harmonics	*AV level (dBµV/m)*						*AV Limits (dBµV/m)*	*Remark*
	915,250MHz		*921,500 MHz*		*927,750 MHz*			
	Frequency	*(dBµV/m)*	*Frequency*	*(dBµV/m)*	*Frequency*	*(dBµV/m)*		
II Harmonic	1855,4727	44,0	1842,9702	44,5	1830,4279	45,3	54,00	Antenna: External
III Harmonic	2783,3471	47,5	2764,5809	48,0	2745,8294	48,3	54,00	
IV Harmonic	3711,1461	43,6	3686,1390	44,6	3661,1362	44,3	54,00	
V Harmonic	4638,8250	49,1	4606,7550	48,9	4575,5098	48,8	54,00	
VI Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
VII Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
VIII Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
IX Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
X Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
Measurement Uncertainty: ±4dB								

Nr. Harmonics	*PK level (dBµV/m)*						*PK Limits (dBµV/m)*	*Remark*
	915,250MHz		*921,500 MHz*		*927,750 MHz*			
	Frequency	*(dBµV/m)*	*Frequency*	*(dBµV/m)*	*Frequency*	*(dBµV/m)*		
II Harmonic	1855,4727	48,1	1842,9702	47,3	1830,4279	48,3	74,00	Antenna: External
III Harmonic	2783,3471	52,8	2764,5809	52,9	2745,8294	52,3	74,00	
IV Harmonic	3711,1461	50,3	3686,1390	48,8	3661,1362	51,2	74,00	
V Harmonic	4638,8250	53,9	4606,7550	54,0	4575,5098	54,6	74,00	
VI Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	54,00	
VII Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
VIII Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
IX Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
X Harmonic	--	More than 15dB below limit	--	More than 15dB below limit	--	More than 15dB below limit	74,00	
Measurement Uncertainty: ±4dB								

Remarks
EUT was tested in 3 orthogonal planes. In results table are reported the worst case.

Reference documents
See clause 8 of this test report

Test equipment used (Id number – see clause 6 of this test report)
CMC S108, CMC S124, CMC S136, CMC S164
Measurement uncertainty: See clause 7 of this test report

Result
The requirements are met

11.7 Radiated Spurious (Receiver)

Test configuration and test method

Test site: Semi-anechoic chamber
Auxiliary equipment: See clause 4 of this test report

Environmental conditions

Temperature 22 ºC Atmospheric pressure 99 kPa Relative humidity 50 %

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.209
- RSS-210 Annex 2 (A2.9)
- Internal Procedure PM001
- See clause 4 of this test report

Test specification

Port: Antenna;

EUT exercising

See clause 4 of this test report

Acceptance limits

In any 100kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in cl. 15.205(a), must also comply with the radiated emission limits specified in cl. 15.209(a) (see cl.15.205(c)).

Result

Channel	*Polarization*	Frequency Range (MHz)	Graph(s) (peak measurements)	Result	Remarks
915,250	Horizontal	1000 – 10000	G13051497	Complies	Antenna: Embedded
915,250	Vertical	1000 – 10000	G13051496	Complies	
921,500	Horizontal	1000 – 10000	G13051498	Complies	
921,500	Vertical	1000 – 10000	G13051499	Complies	
927,750	Horizontal	1000 – 10000	G130514A1	Complies	
927,750	Vertical	1000 – 10000	G130514A0	Complies	
915,250	Horizontal	1000 – 10000	G130514A2	Complies	Antenna: Embedded
915,250	Vertical	1000 – 10000	G130514A3	Complies	
921,500	Horizontal	1000 – 10000	G130514A4	Complies	
921,500	Vertical	1000 – 10000	G130514A5	Complies	
927,750	Horizontal	1000 – 10000	G130514A6	Complies	
927,750	Vertical	1000 – 10000	G130514A7	Complies	

Remarks

EUT was tested in 3 orthogonal planes. In results table are reported the worst case.

Reference documents

See clause 8 of this test report

Test equipment used (Id number – see clause 6 of this test report)

CMC S108, CMC S124, CMC S127, CMC S136, CMC S164
Measurement uncertainty: See clause 7 of this test report

Result The requirements are met

11.8 Emission of mains terminal disturbance voltage (continuous disturbance)

Test configuration and test method

Test site: Laboratory
Auxiliary equipment: See clause 4 of this test report

Environmental conditions

Temperature 20 ºC Atmospheric pressure 99 kPa Relative humidity 45 %

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 specification

Port: AC mains

EUT exercising

See clause 4 of this test report

Acceptance limits

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

Result

Line	*Graphs*	*Result*	*Remarks*
N	G13051420	Complies	Antenna: External Worst case condition
L1	G13051421	Complies	

Graphs Legend
PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a X
AV: Average; AV [1s] (average at 1 second) values are marked with a +

Remarks ///////////////

Reference documents

See clause 8 of this test report

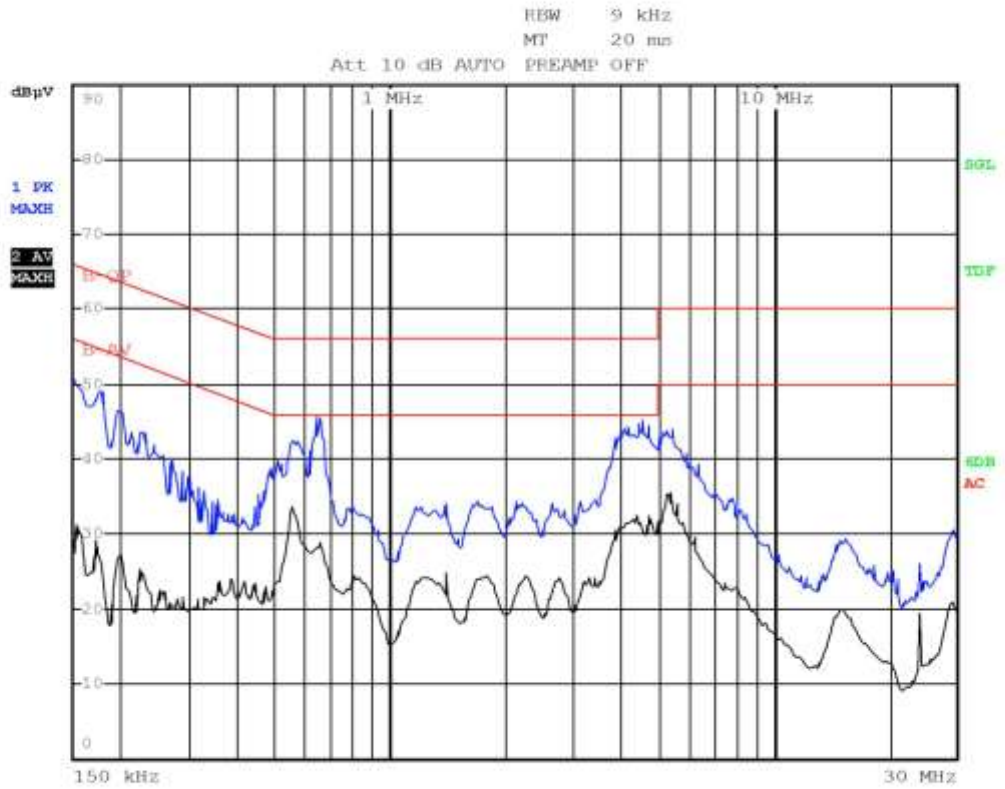
Test equipment used (Id number – see clause 6 of this test report)

CMC S206
Measurement uncertainty: See clause 7 of this test report

Result The requirements are met

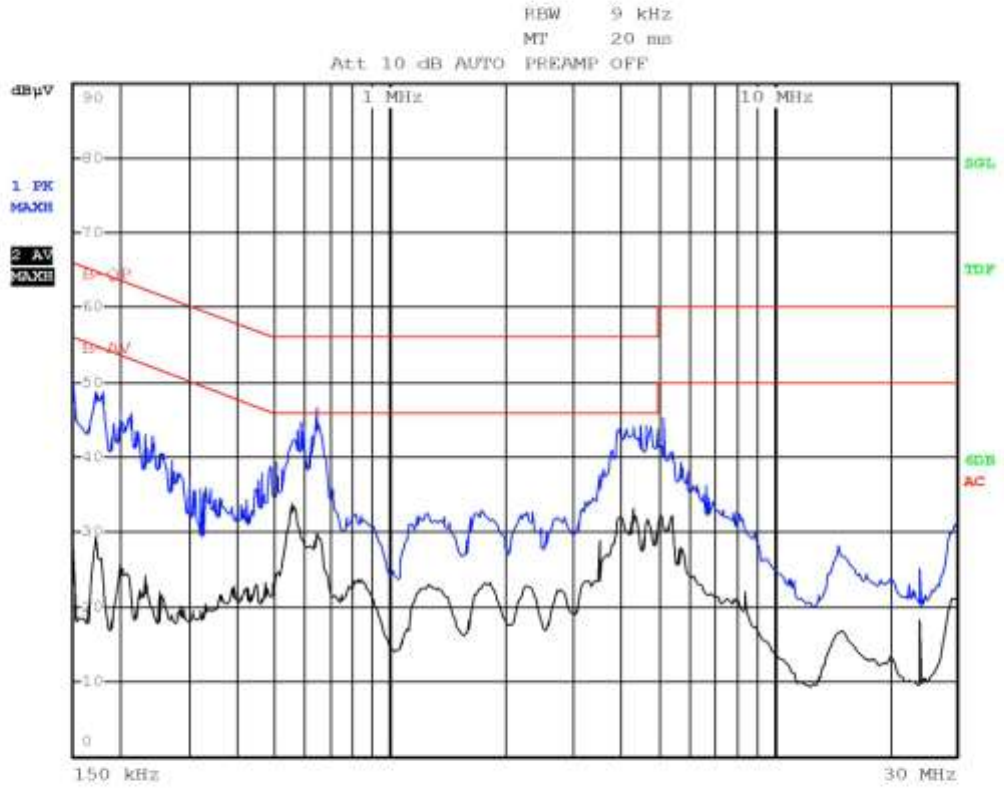
12. Graphs and Tables

G13051420



Bertezzolo 13051420 Line N

G13051421

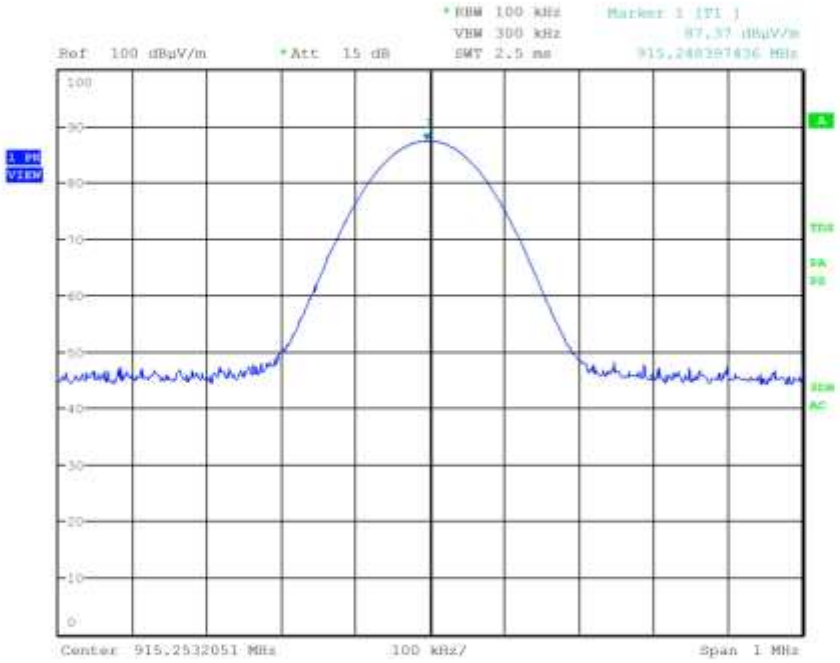


Bertezzolo 13051421 Line L

G13051450

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051450
Test Spec	

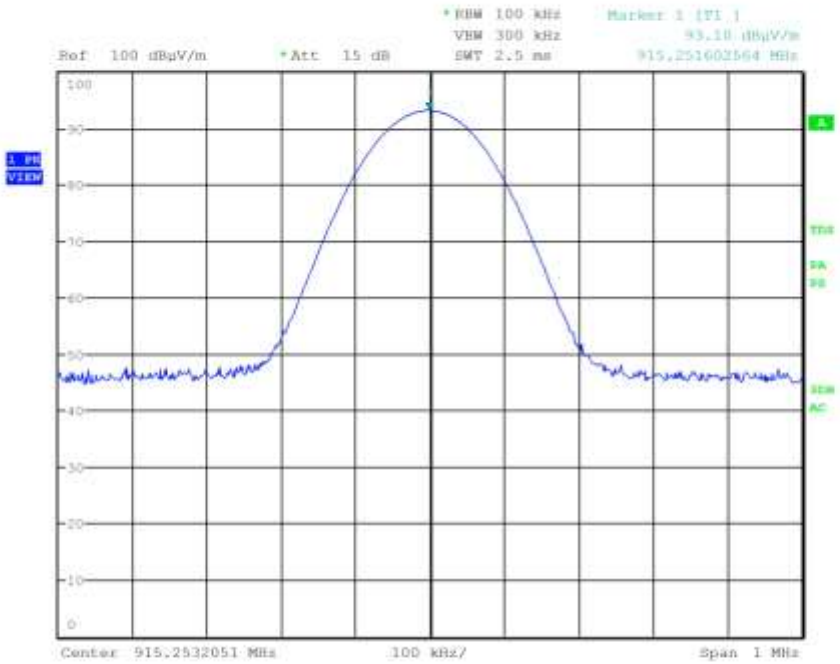
Horiz



G13051451

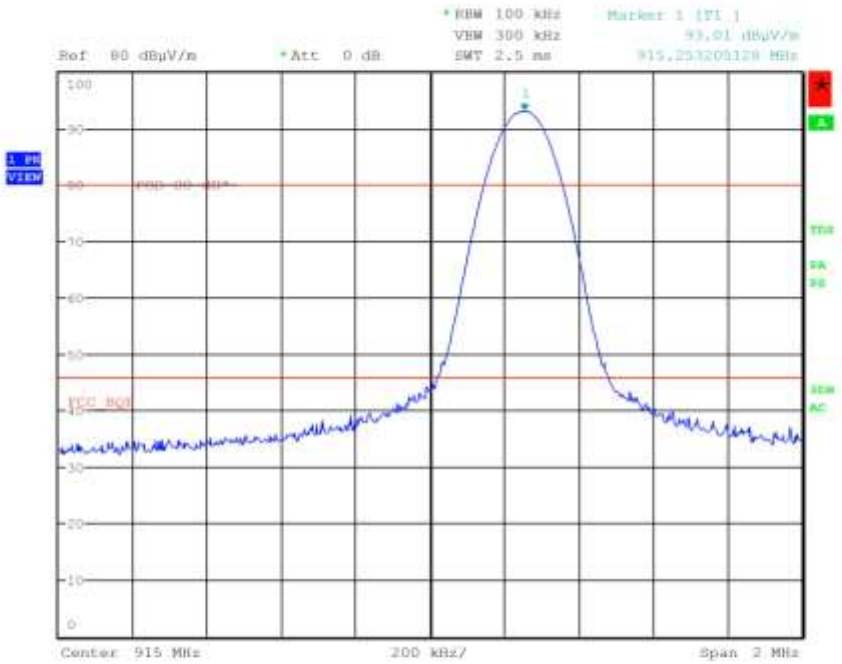
Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051451
Test Spec	

Vert



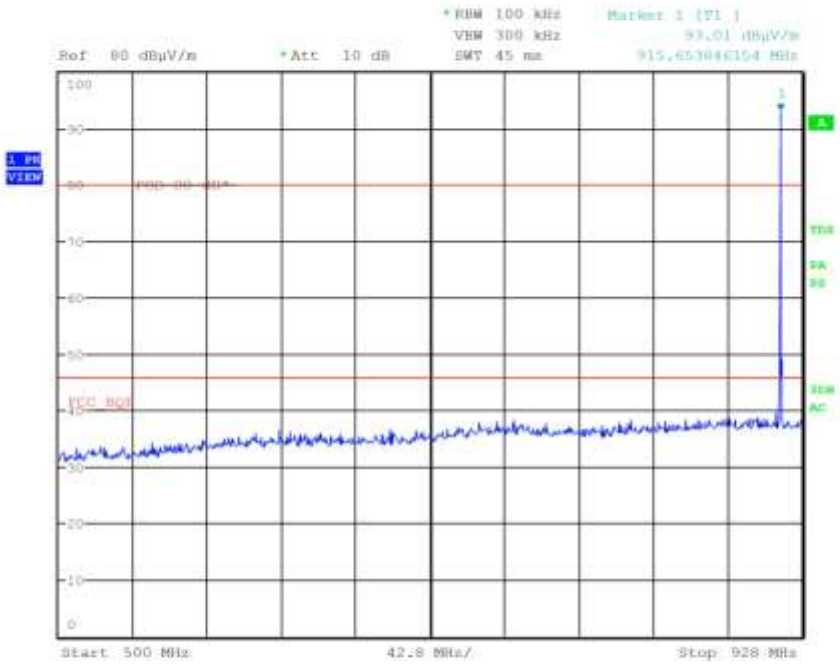
G13051452

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051452
Test Spec	



G13051453

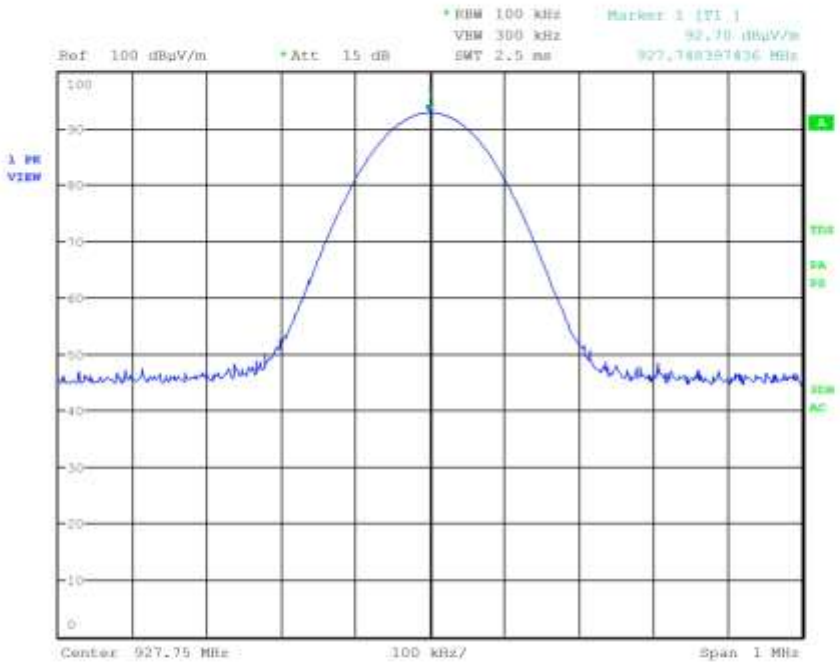
Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051453
Test Spec	



G13051454

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051454
Test Spec	

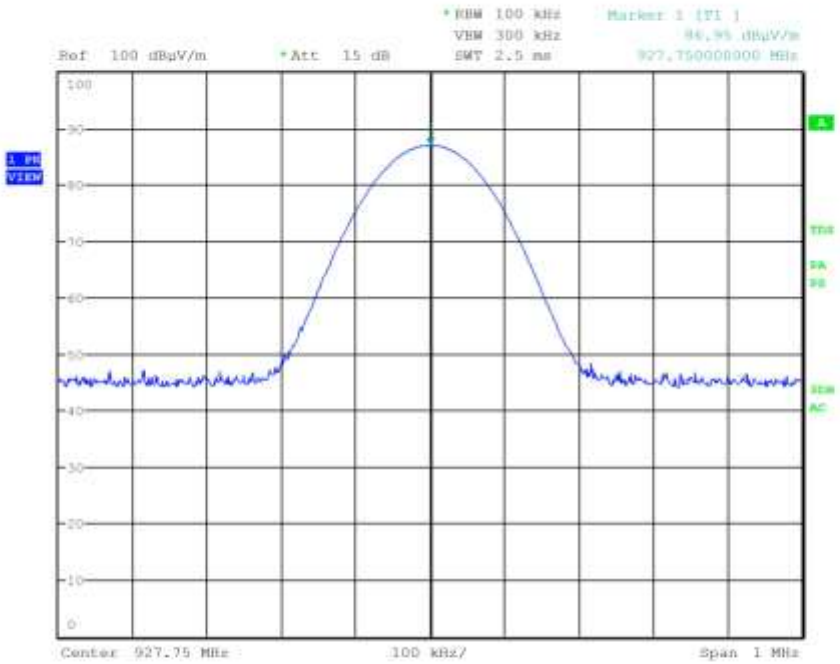
Vert



G13051455

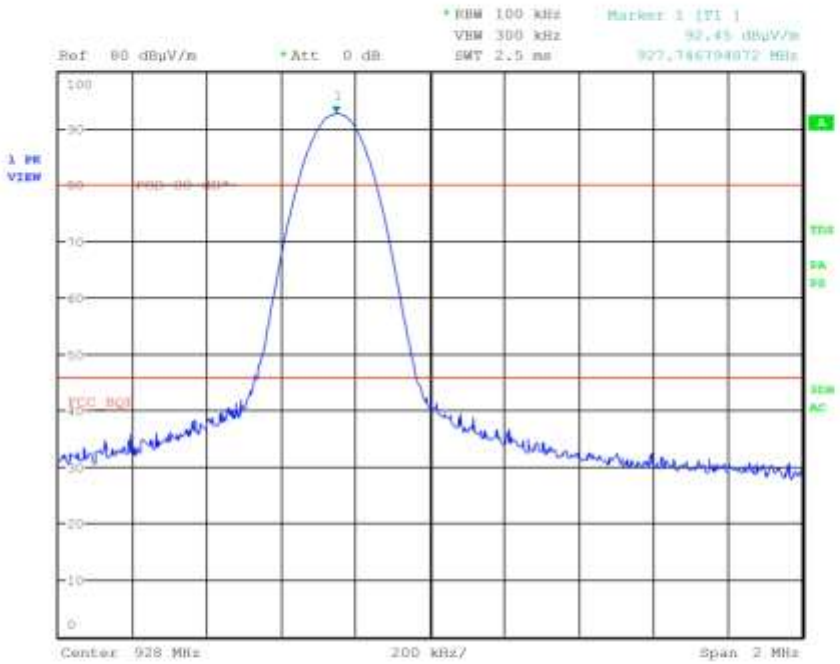
Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051455
Test Spec	

Horiz



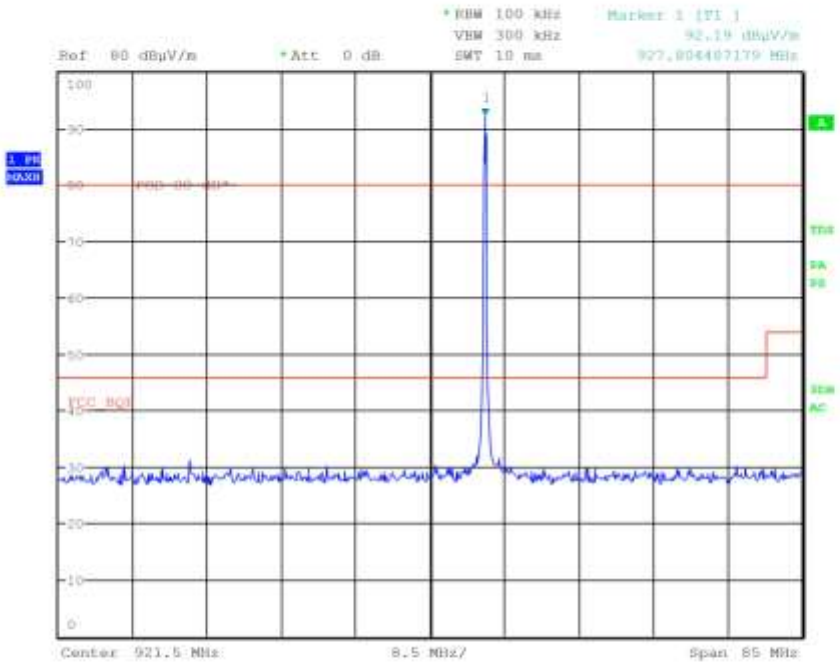
G13051456

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051456
Test Spec	



G13051457

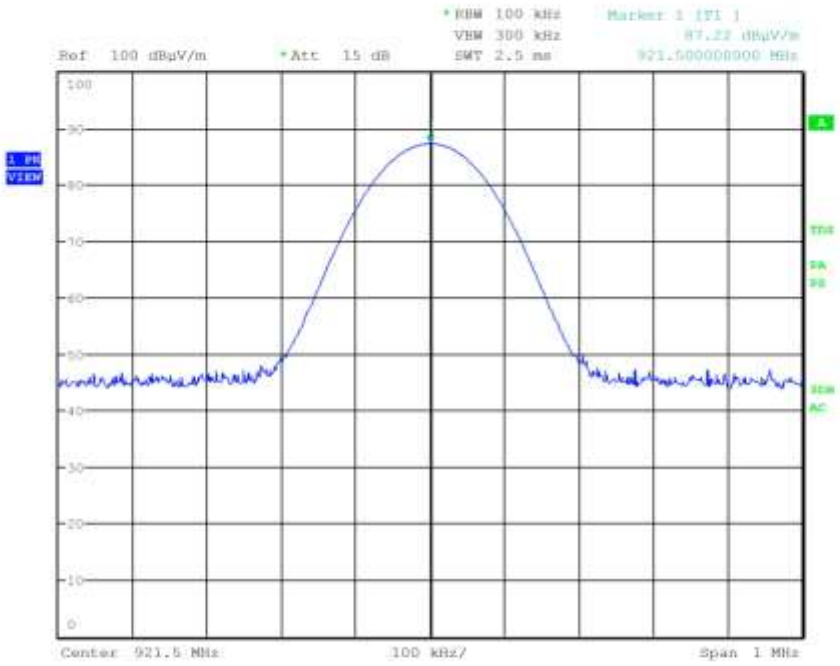
Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051457
Test Spec	



G13051458

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F med
Operator	Bertezzolo 13051458
Test Spec	

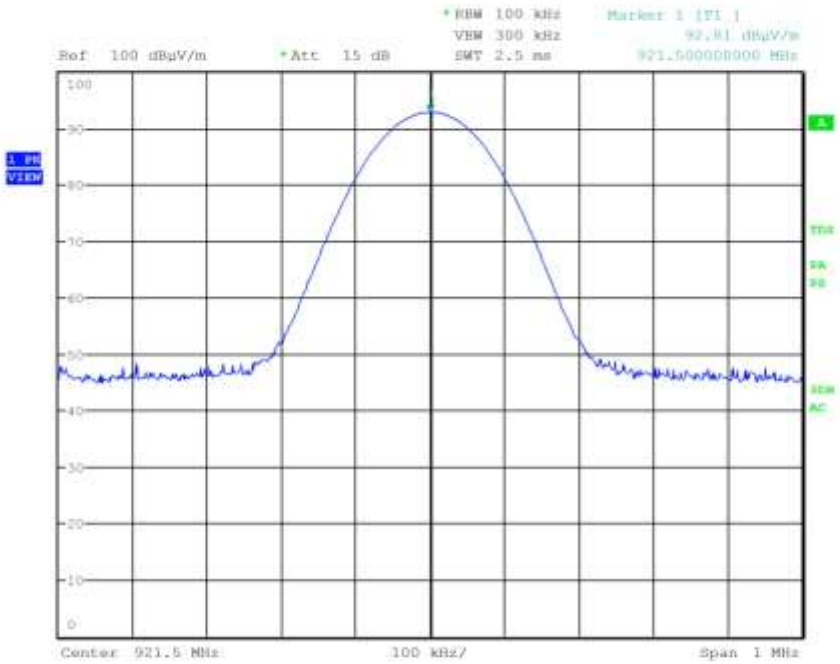
Horiz



G13051459

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F med
Operator	Bertezzolo 13051459
Test Spec	

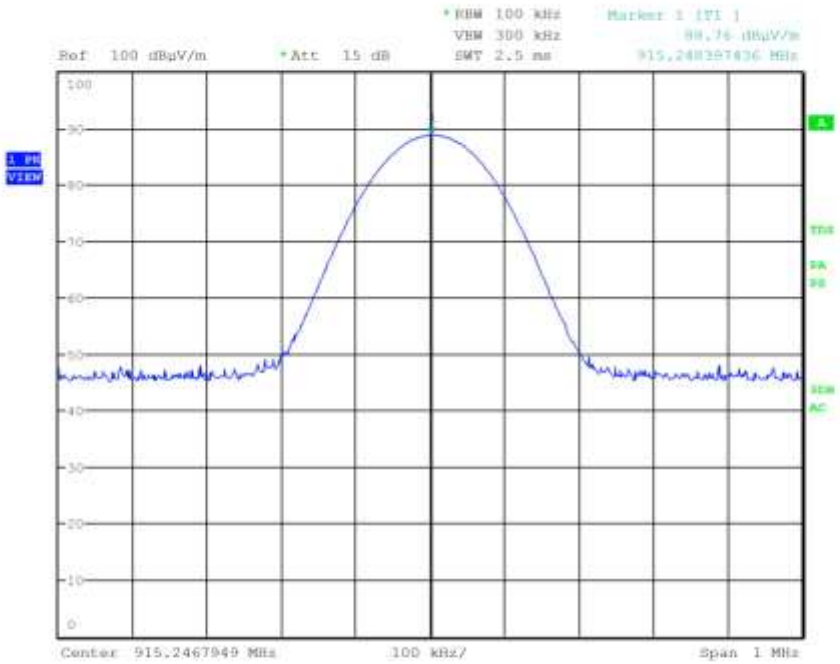
Vert



G13051460

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051460
Test Spec	

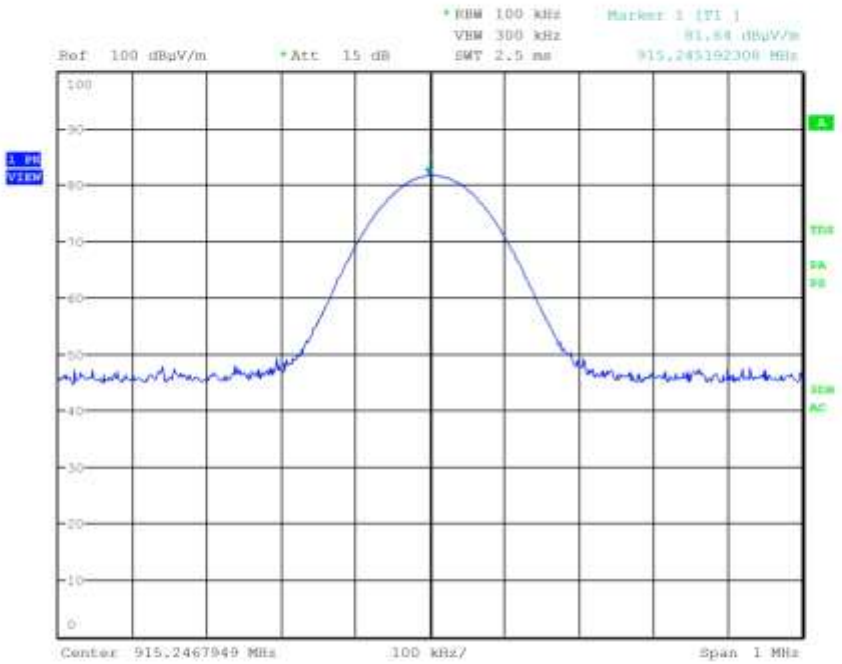
Vert



G13051461

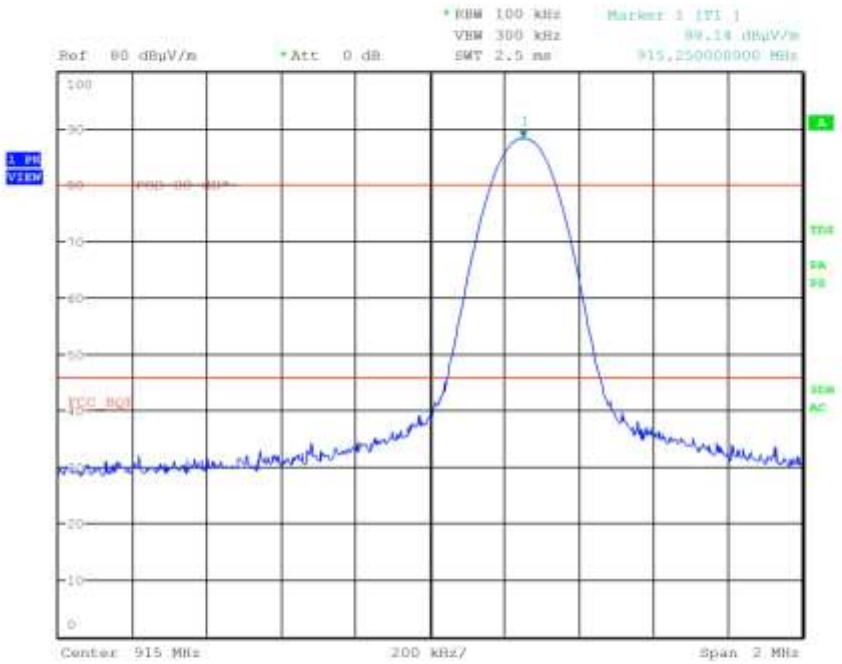
Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051461
Test Spec	

Horiz



G13051462

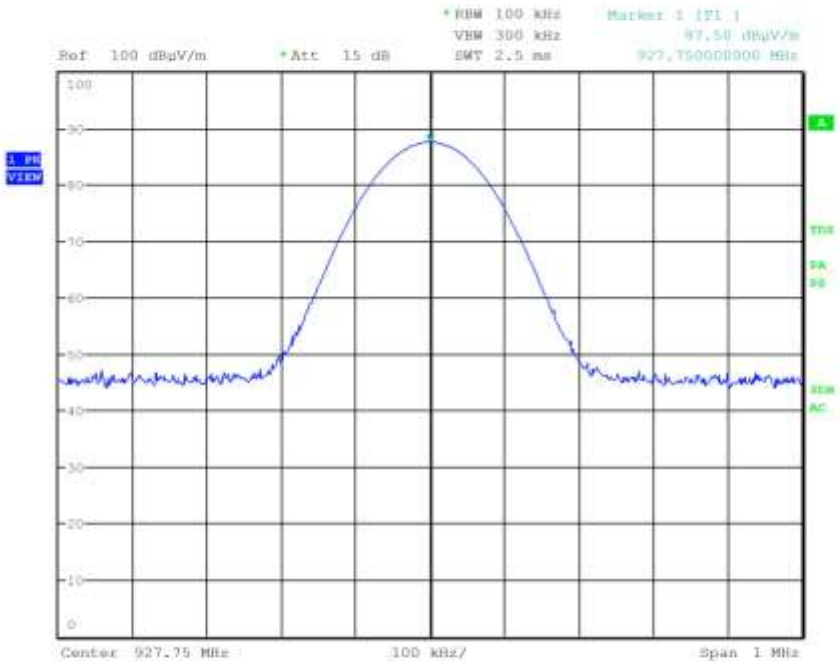
Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051462
Test Spec	



G13051463

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051464
Test Spec	

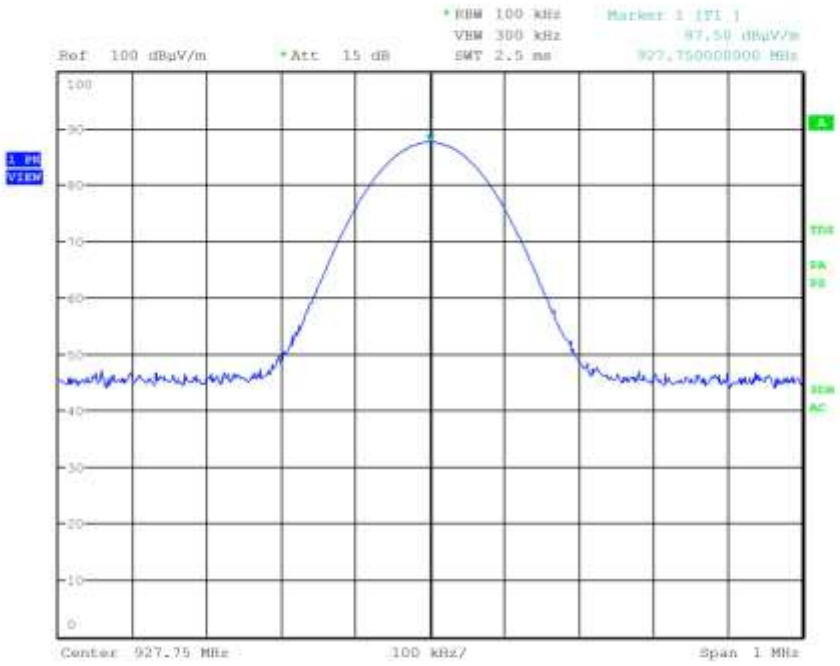
Vert



G13051464

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051464
Test Spec	

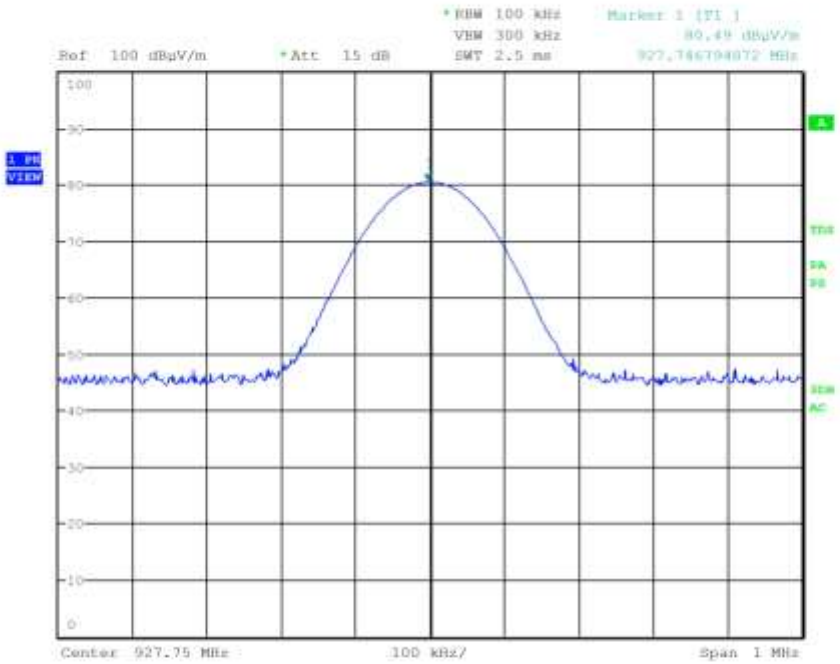
Vert



G13051465

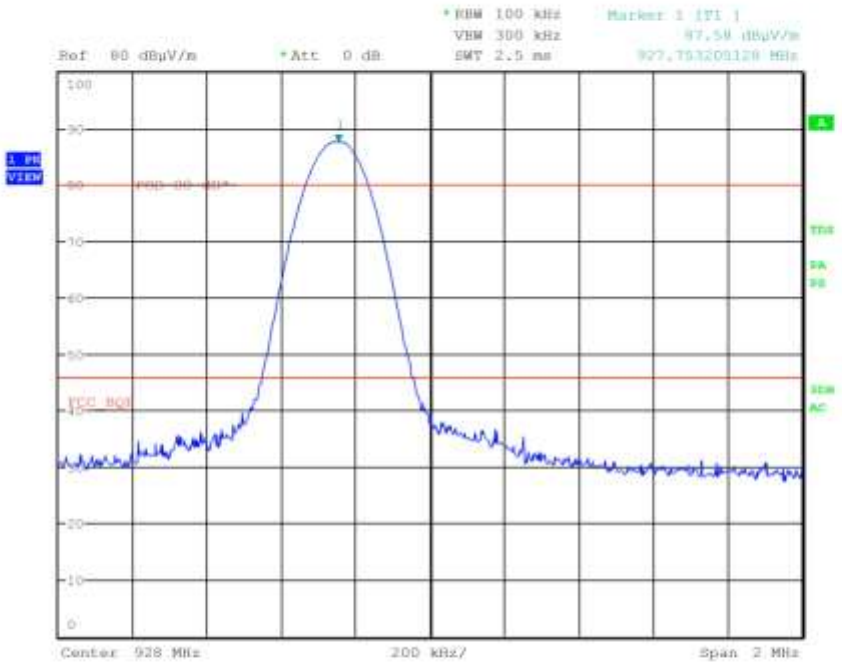
Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051465
Test Spec	

Horiz



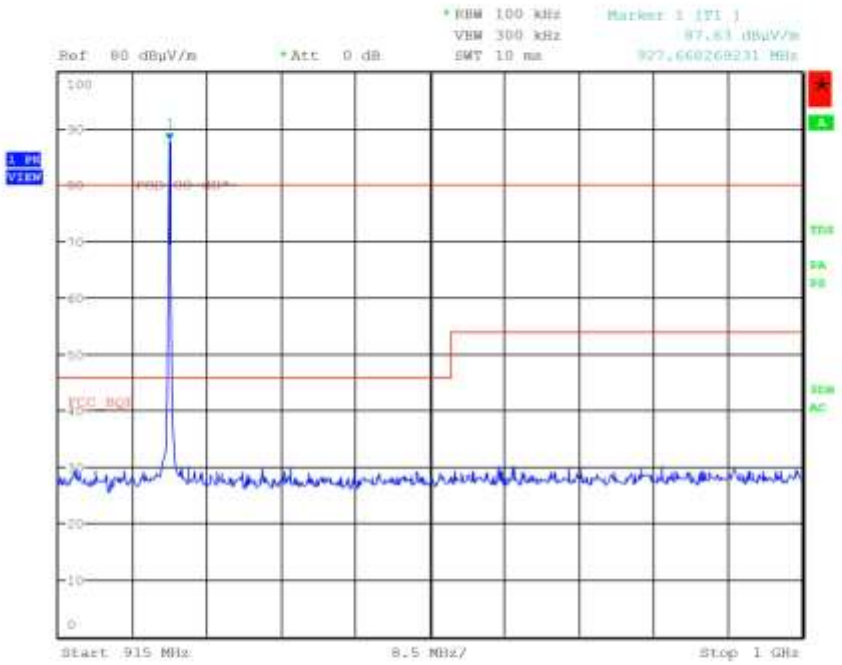
G13051466

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051466
Test Spec	



G13051467

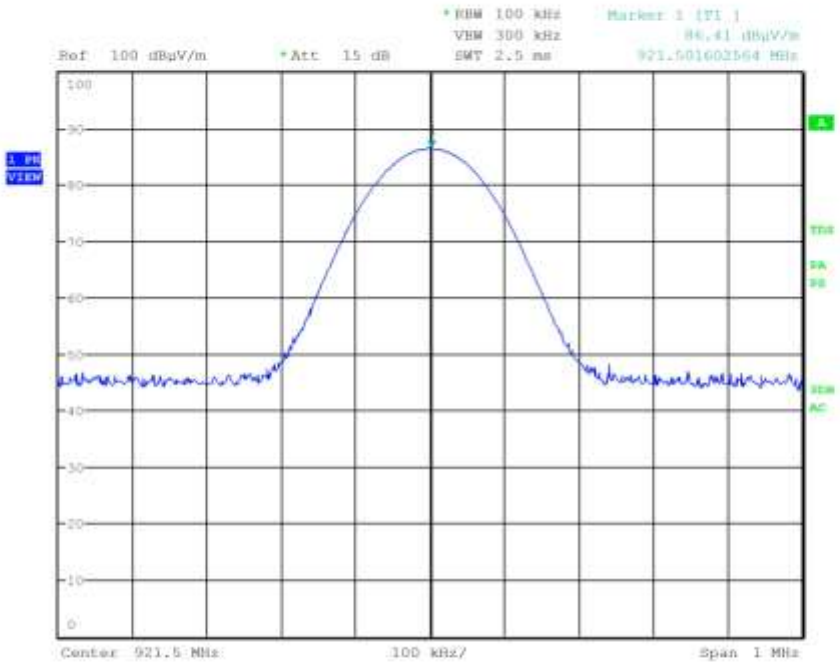
Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051467
Test Spec	



G13051468

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F med
Operator	Bertezzolo 13051468
Test Spec	

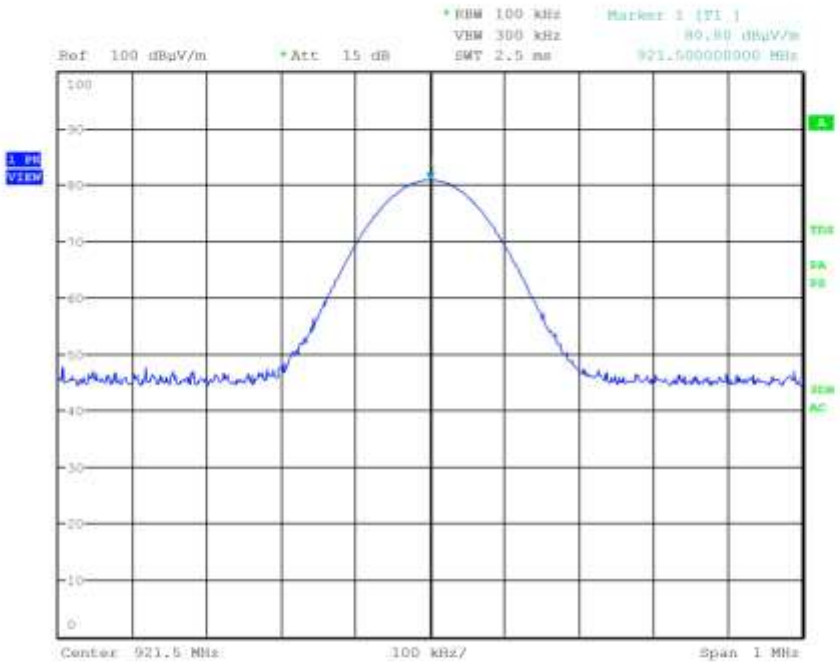
Vert



G13051469

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F med
Operator	Bertezzolo 13051469
Test Spec	

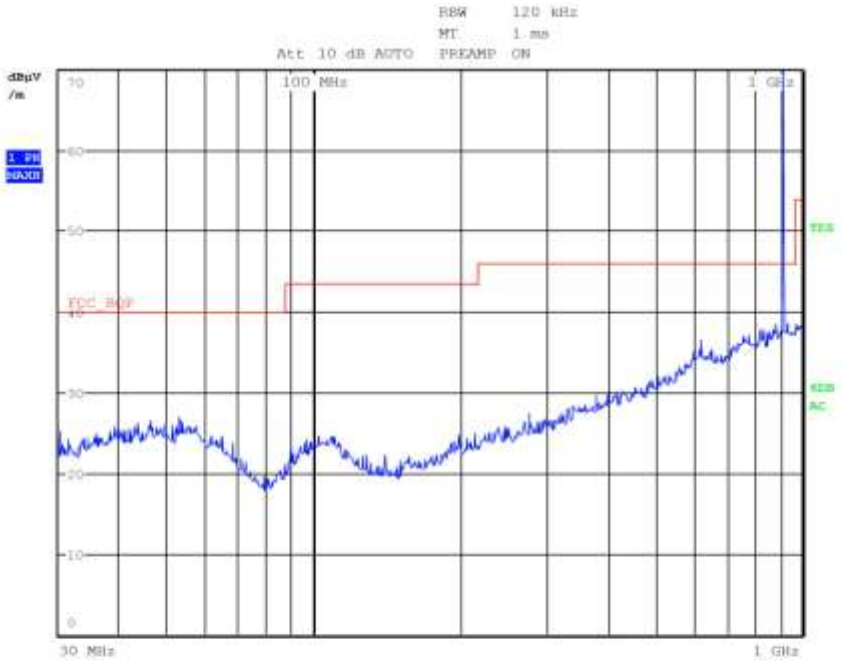
Horiz



G13051470

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051470
Test Spec	

Horiz



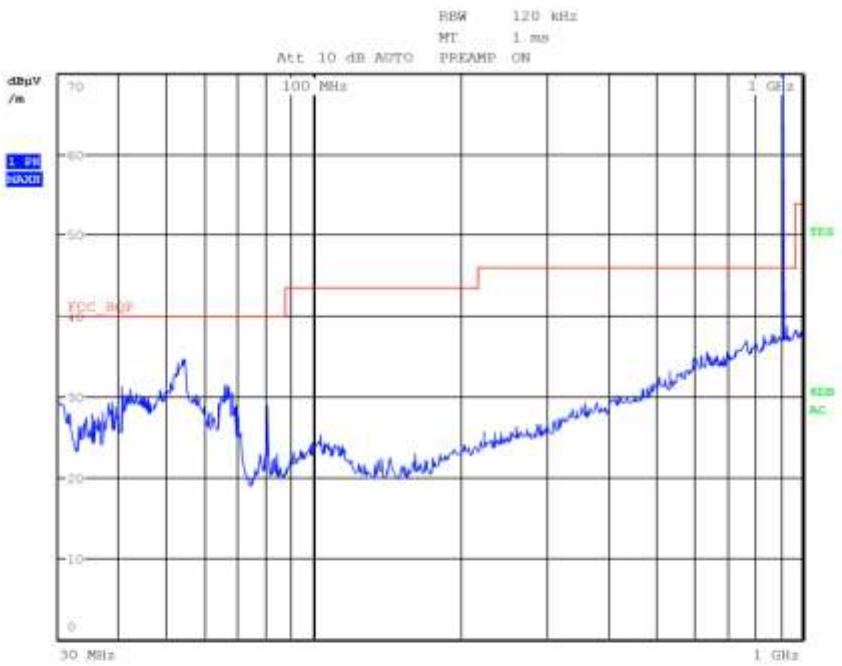
Final Measurement

Meas Time:	1 s
Margin:	6 dB
Subranges:	2

G13051471

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051471
Test Spec	

Vert



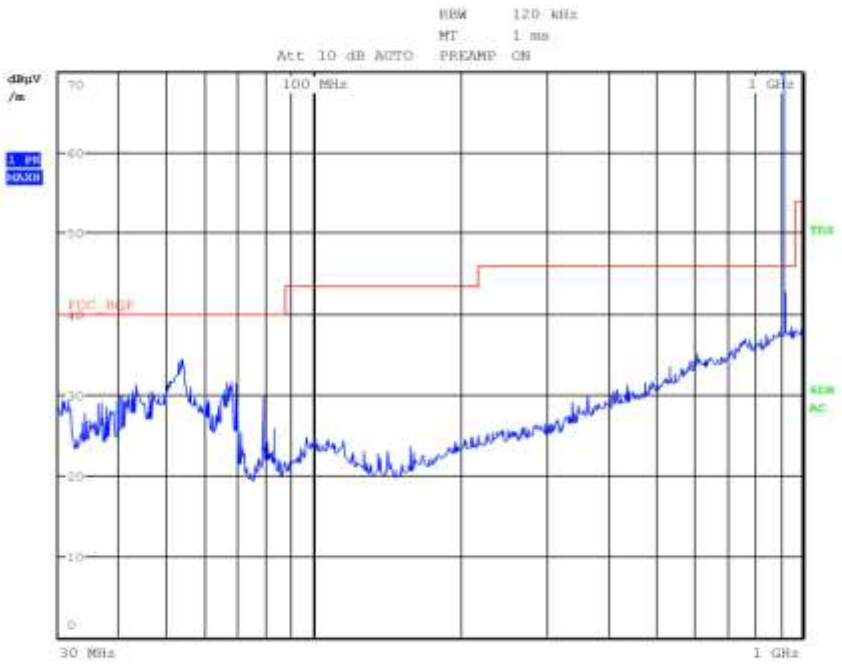
Final Measurement

Meas Time:	1 s
Margin:	6 dB
Subranges:	2

G13051472

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F med
Operator	Bertezzolo 13051472
Test Spec	

Vert

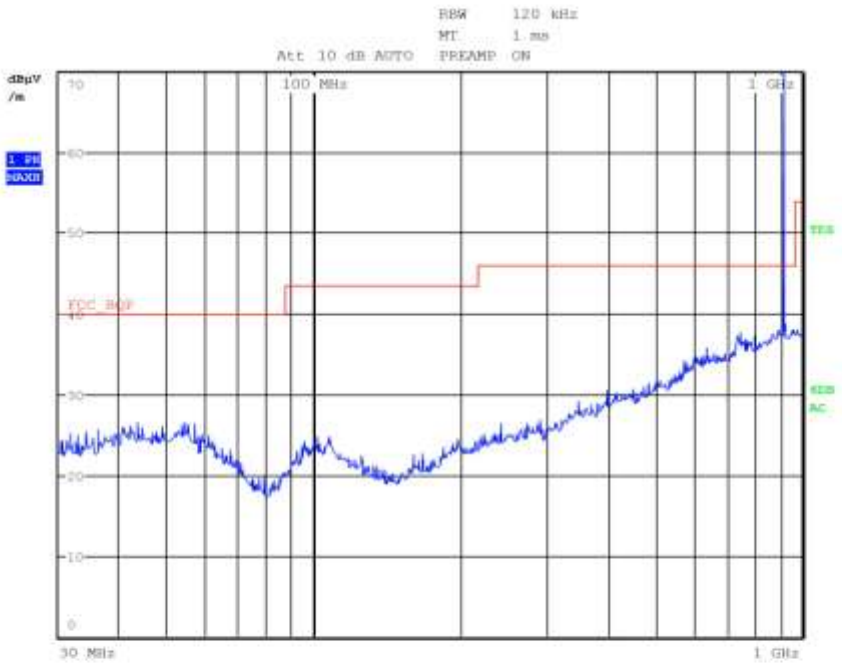


Final Measurement

Meas Time:	1 s
Margin:	6 dB
Subranges:	2

G13051473

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition F med
Operator Bertezzolo 13051473
Test Spec
Horiz



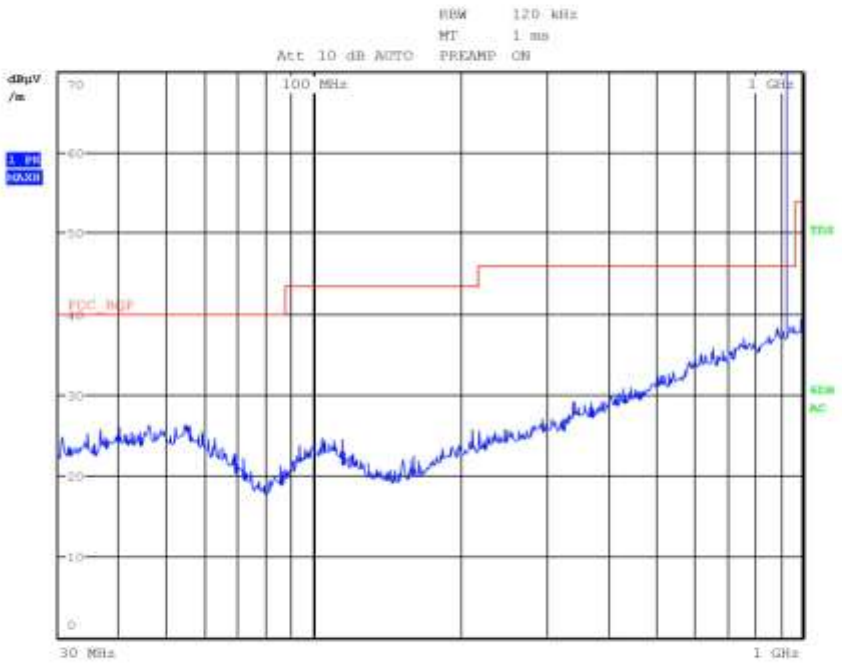
Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 2

G13051474

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051474
Test Spec	

Horiz



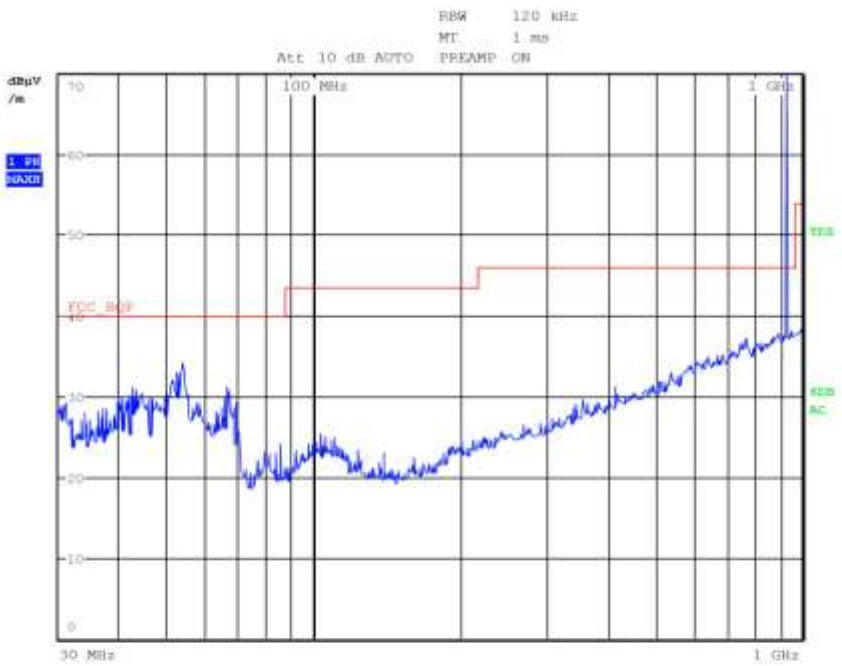
Final Measurement

Meas Time:	1 s
Margin:	6 dB
Subranges:	2

G13051475

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051475
Test Spec	

Vert



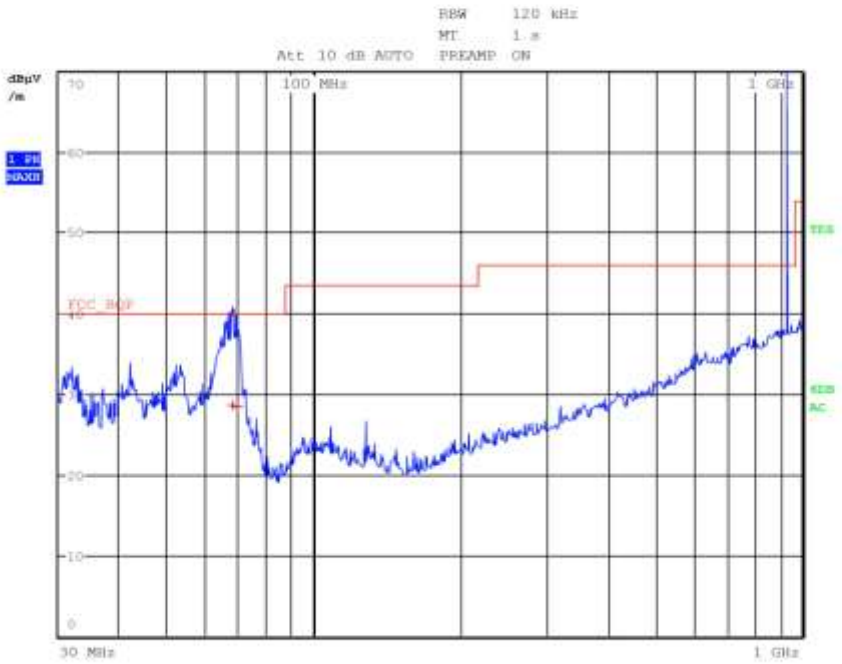
Final Measurement

Meas Time:	1 s
Margin:	6 dB
Subranges:	2

G13051476

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051476
Test Spec	

Vert



Final Measurement

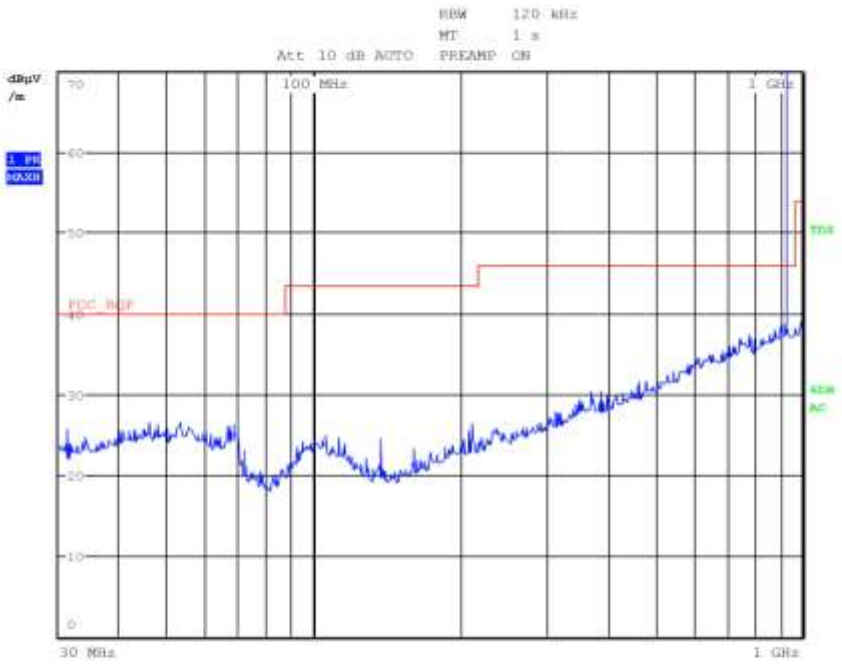
Meas Time: 1 s
Margin: 6 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	67.920000000 MHz	28.66	Quasi Peak	-11.34
1	69.680000000 MHz	28.42	Quasi Peak	-11.58

G13051477

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F max
Operator	Bertezzolo 13051477
Test Spec	

Horiz



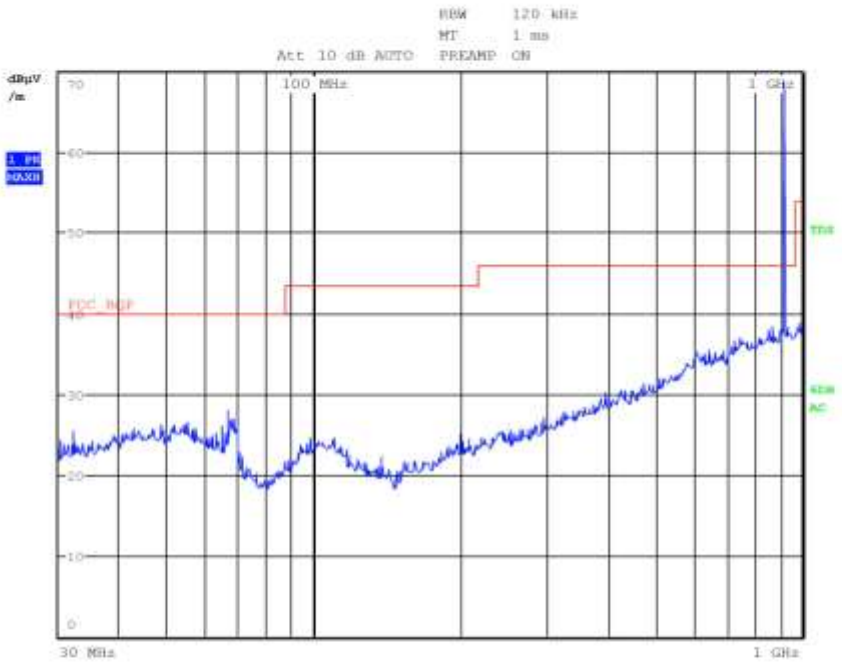
Final Measurement

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

G13051478

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F med
Operator	Bertezzolo 13051478
Test Spec	

Horiz



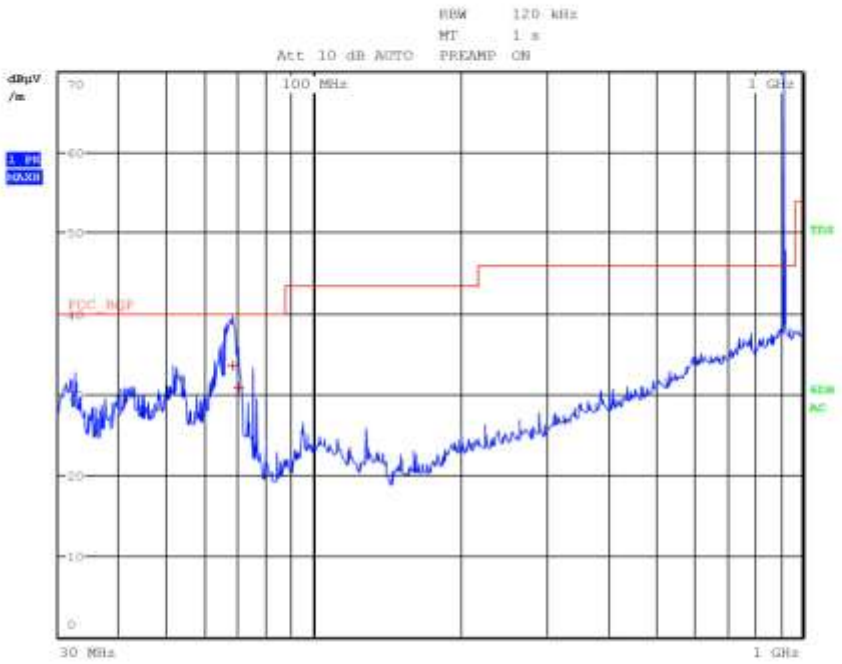
Final Measurement

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

G13051479

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F med
Operator	Bertezzolo 13051479
Test Spec	

Vert



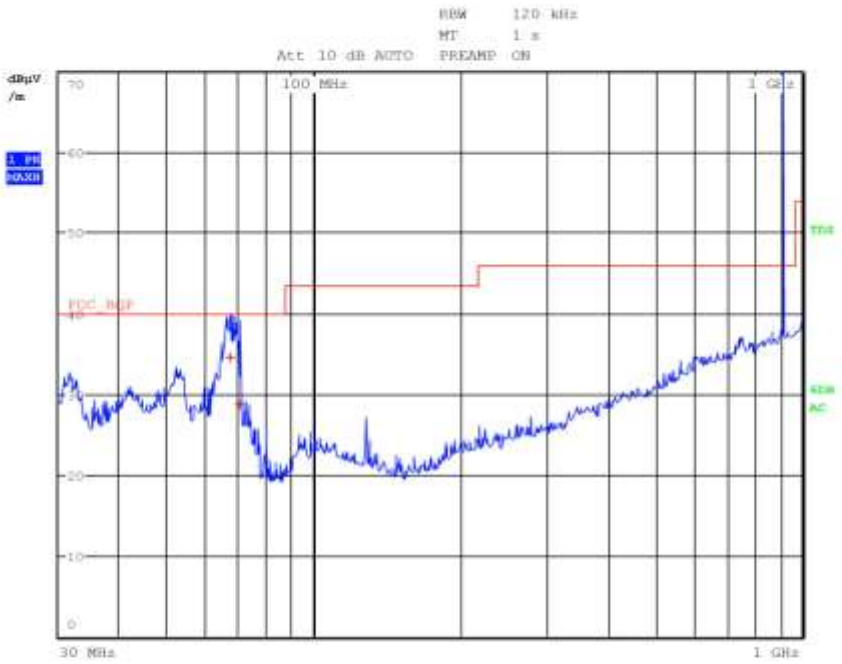
Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	68.200000000 MHz	33.54	Quasi Peak	-6.46
1	70.080000000 MHz	30.83	Quasi Peak	-9.17

G13051480

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition F min
Operator Bertezzolo 13051480
Test Spec
Vert



Final Measurement

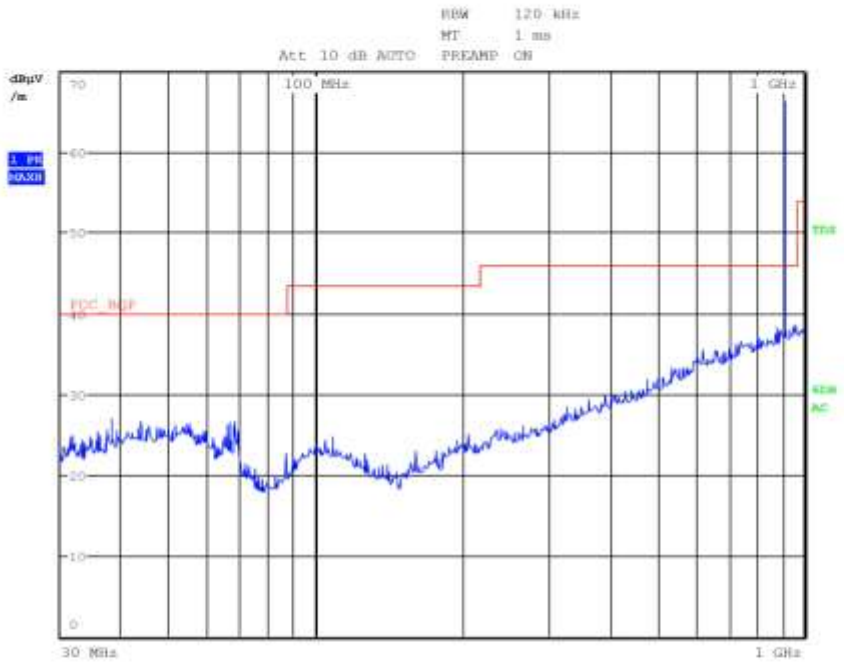
Meas Time: 1 s
Margin: 6 dB
Subranges: 2

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	67.440000000 MHz	34.60	Quasi Peak	-5.40
1	70.400000000 MHz	28.79	Quasi Peak	-11.21

G13051481

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	F min
Operator	Bertezzolo 13051481
Test Spec	

Horiz



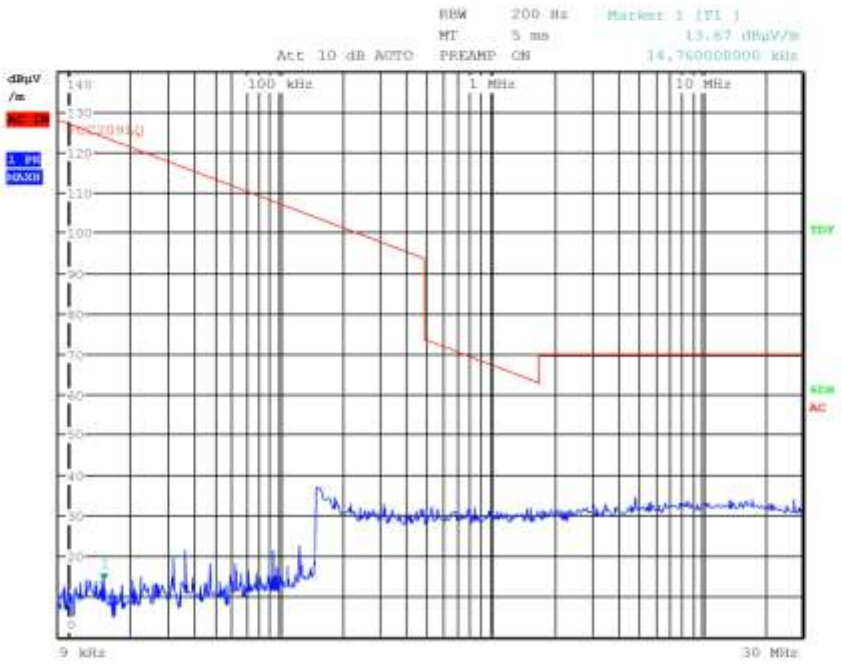
Final Measurement

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

G13051482

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	
Operator	Bertezzolo 13051482
Test Spec	

Loop



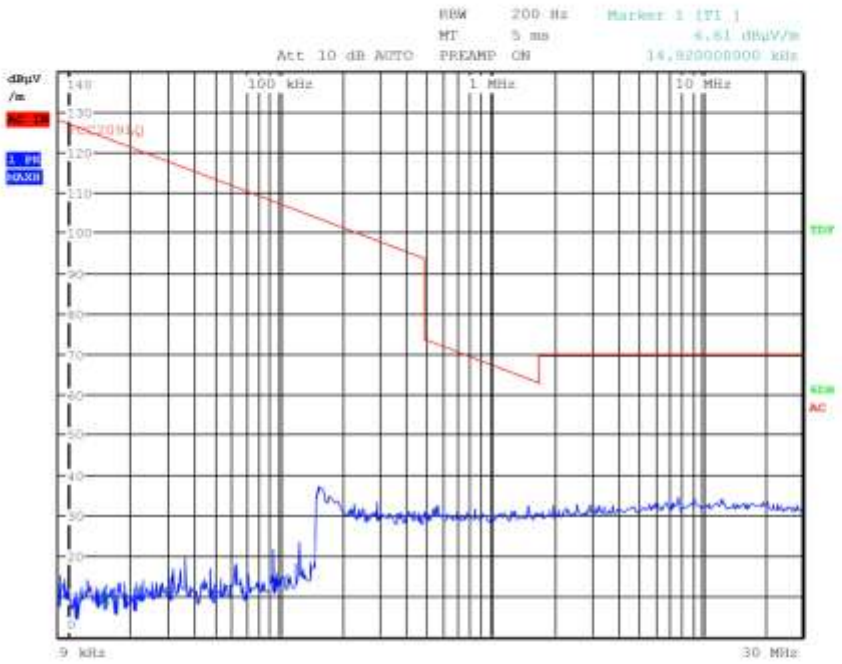
Final Measurement

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

G13051483

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	
Operator	Bertezzolo 13051483
Test Spec	

Loop



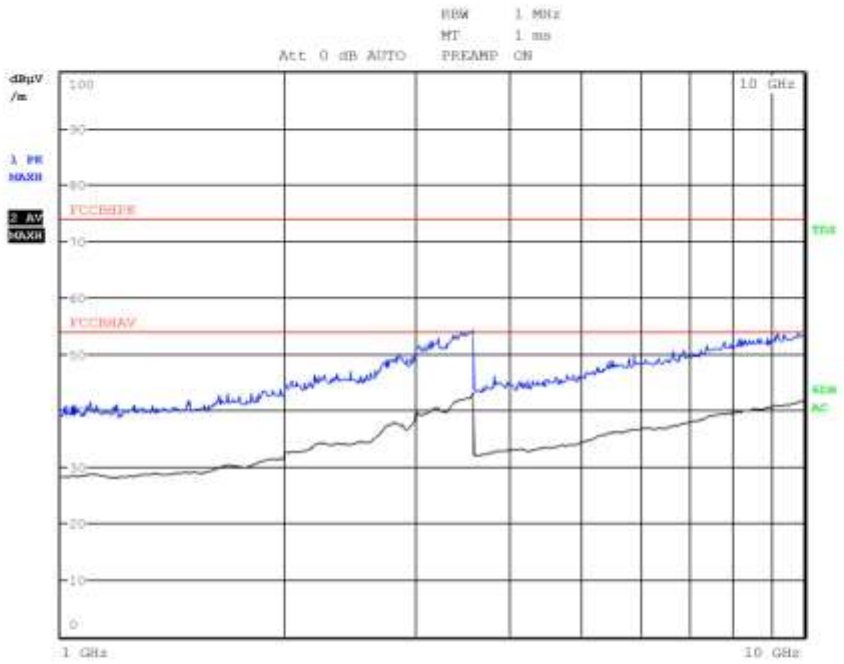
Final Measurement

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

G13051496

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	f min RX
Operator	Bertezzolo 13051496
Test Spec	

Vert

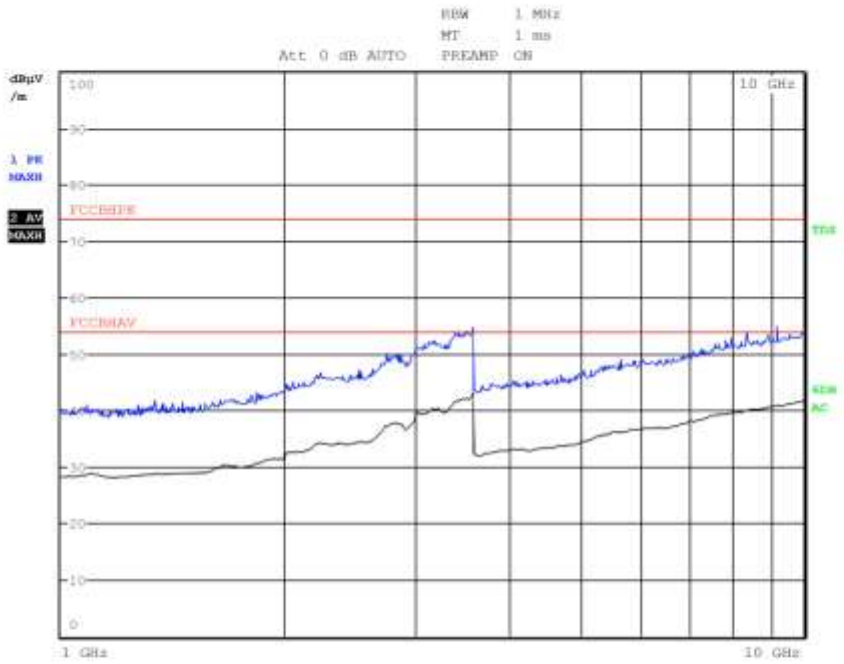


Final Measurement

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

G13051497

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition f min RX
Operator Bertezzolo 13051497
Test Spec
Horiz



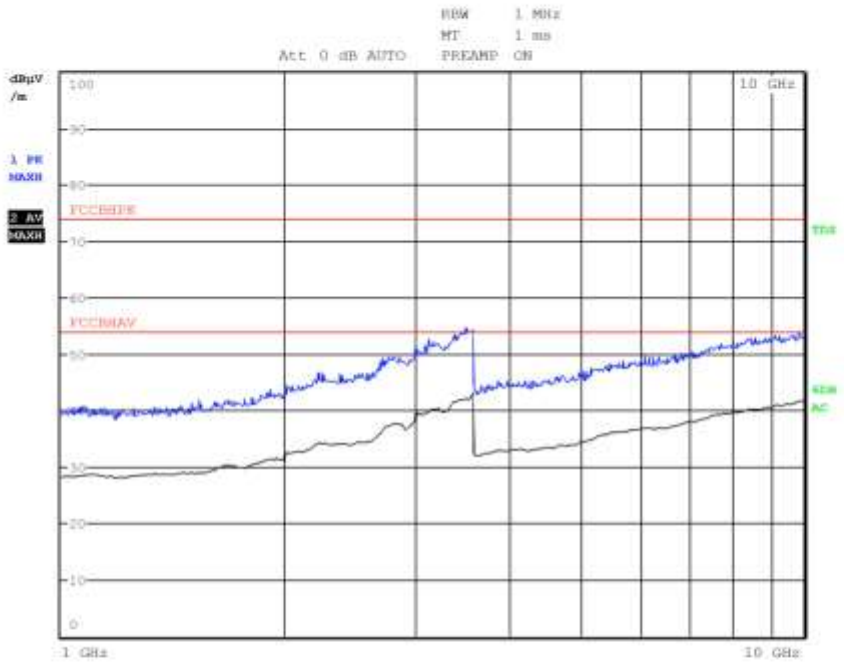
Final Measurement

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

G13051498

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	f med RX
Operator	Bertezzolo 13051498
Test Spec	

Horiz



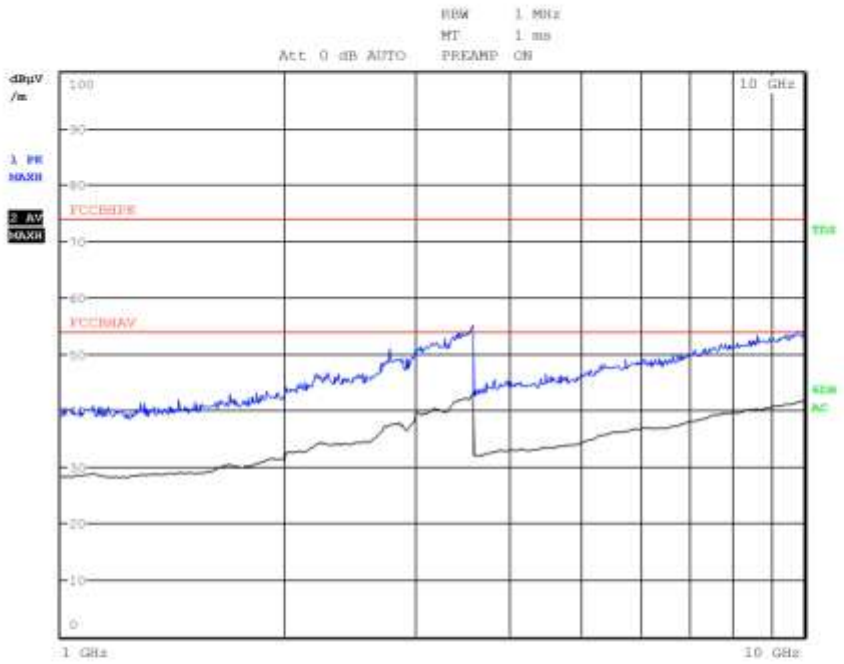
Final Measurement

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

G13051499

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	f med RX
Operator	Bertezzolo 13051499
Test Spec	

Vert



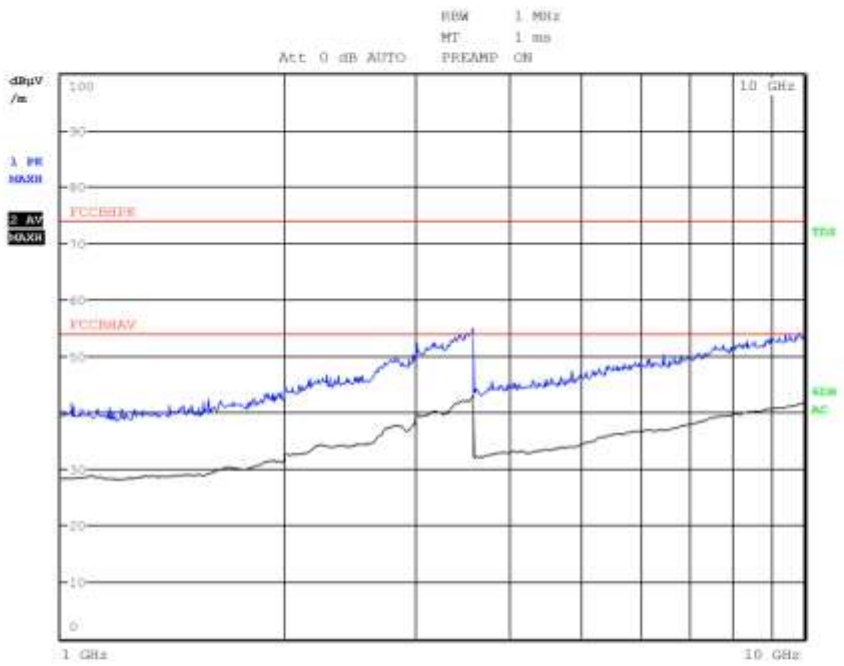
Final Measurement

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

G130514A0

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	f max RX
Operator	Bertezzolo 130514A0
Test Spec	

Vert



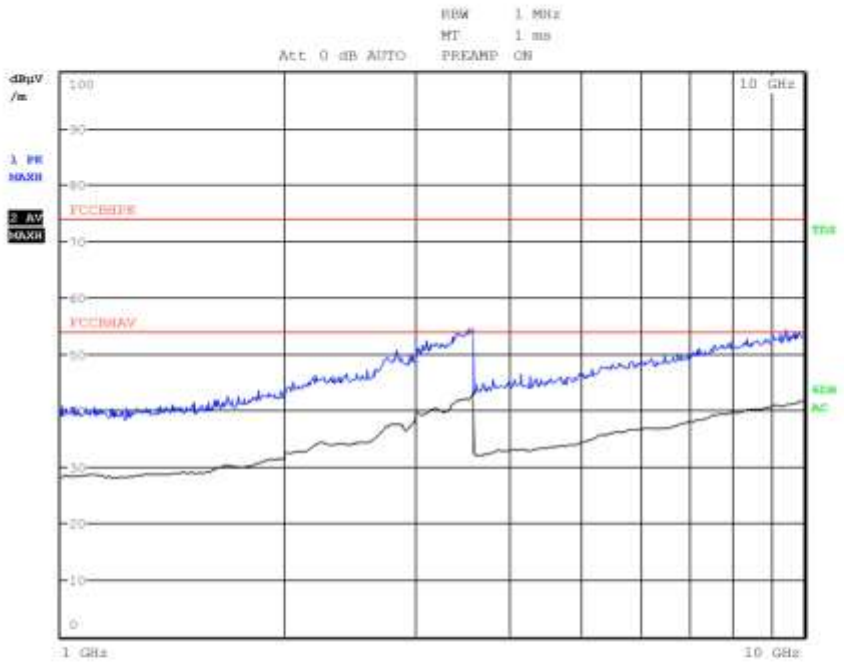
Final Measurement

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

G130514A1

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	f max RX
Operator	Bertezzolo 130514A1
Test Spec	

Horiz



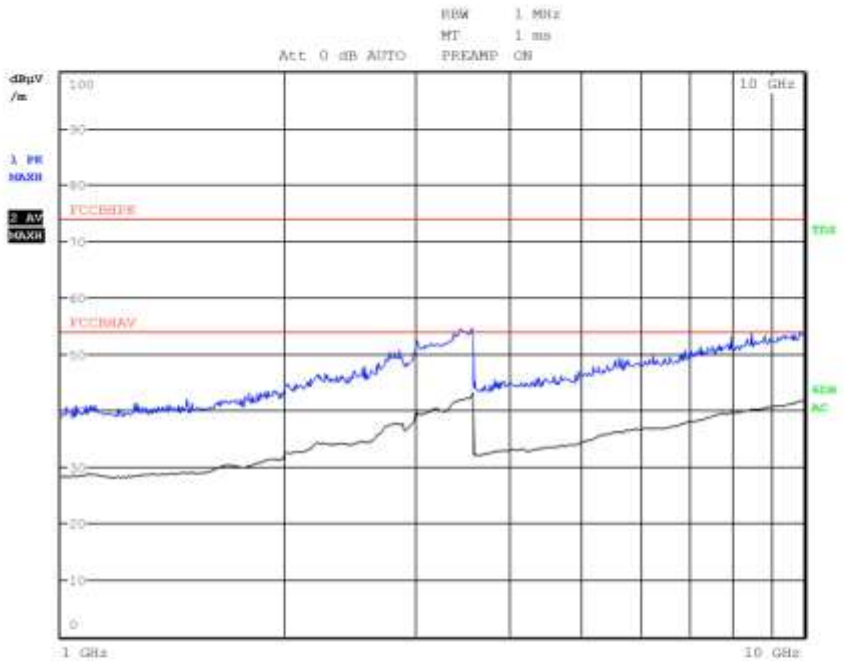
Final Measurement

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

G130514A2

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Fmin RX
Operator	Bertezzolo 130514A2
Test Spec	

Horiz

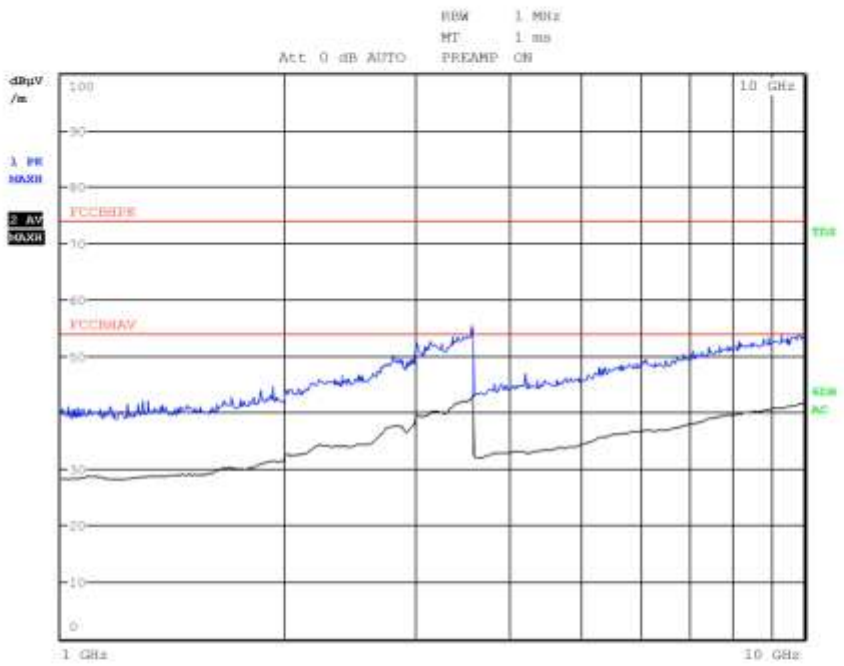


Final Measurement

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

G130514A3

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Fmin RX
Operator Bertezzolo 130514A3
Test Spec
Vert

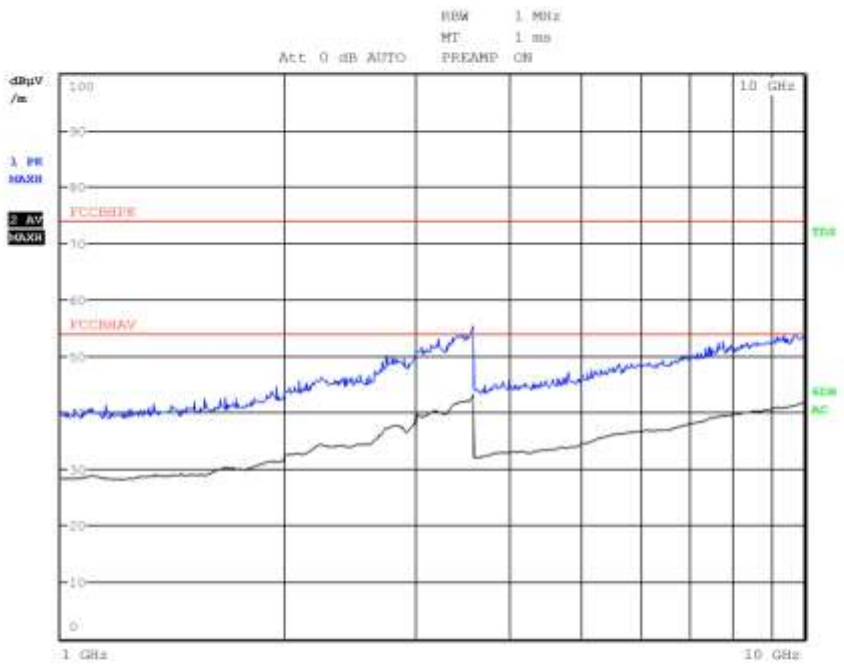


Final Measurement

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

G130514A4

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Fmed RX
Operator Bertezzolo 130514A4
Test Spec
Vert

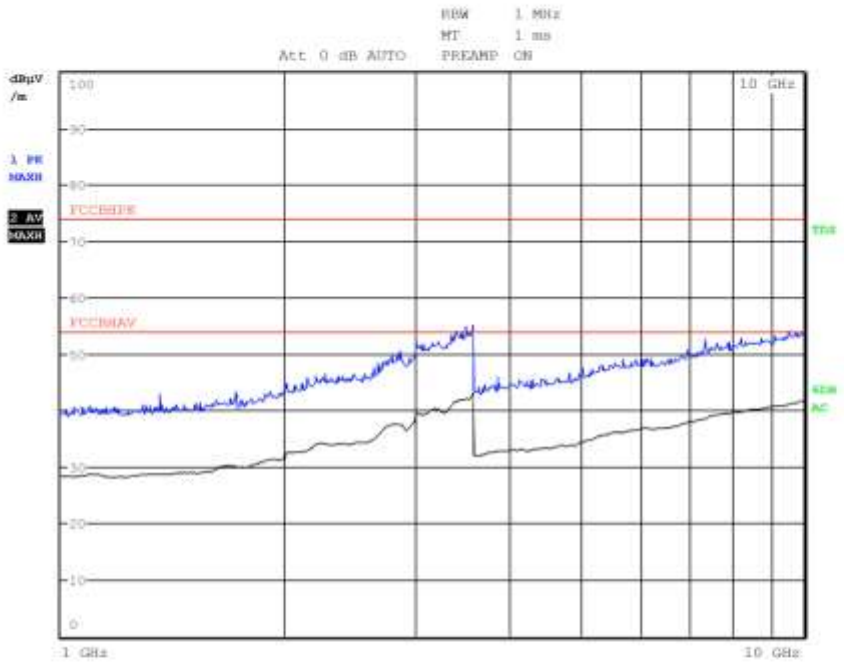


Final Measurement

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

G130514A5

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition Fmed RX
Operator Bertezzolo 130514A5
Test Spec
Horiz



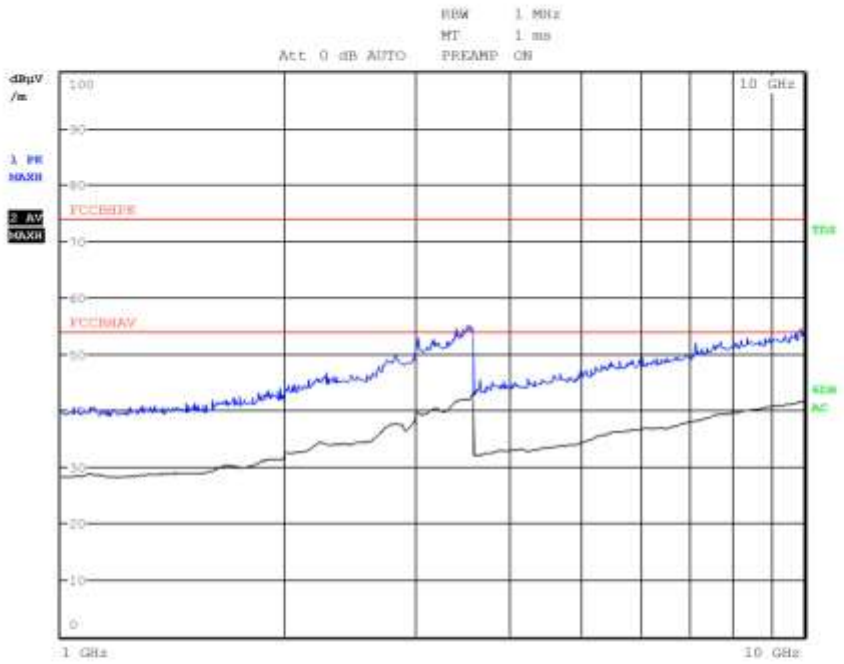
Final Measurement

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

G130514A6

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Fmax RX
Operator	Bertezzolo 130514A6
Test Spec	

Horiz



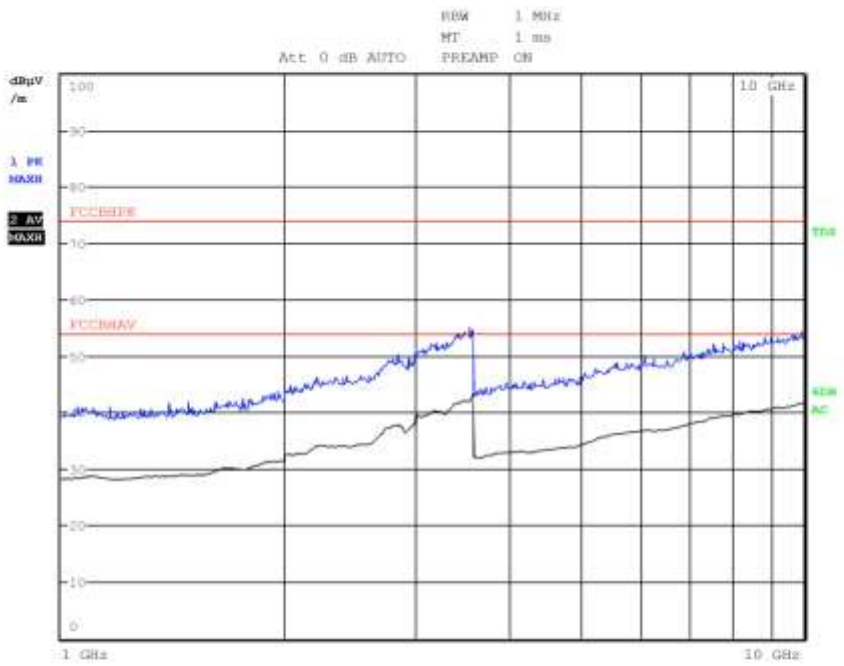
Final Measurement

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

G130514A7

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Fmax RX
Operator	Bertezzolo 130514A7
Test Spec	

Vert

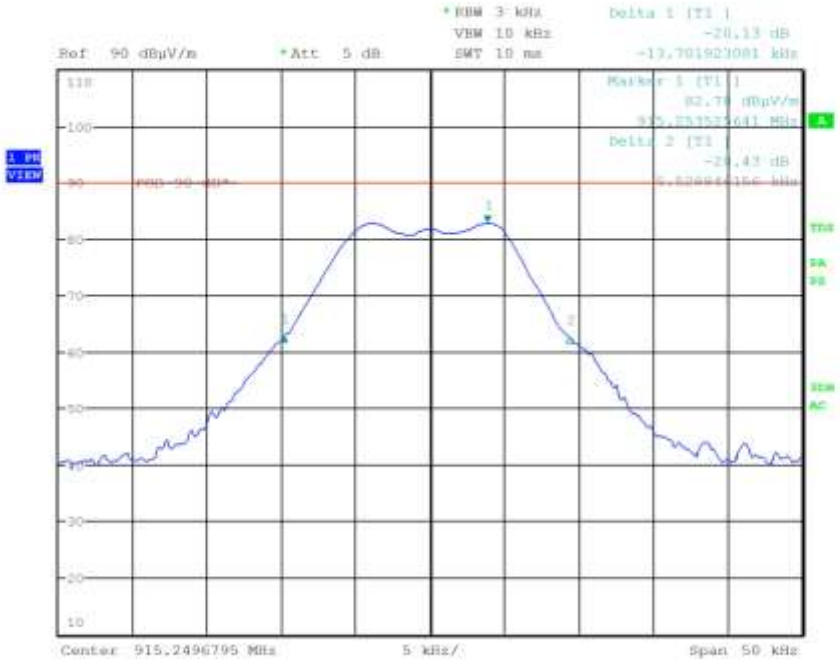


Final Measurement

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

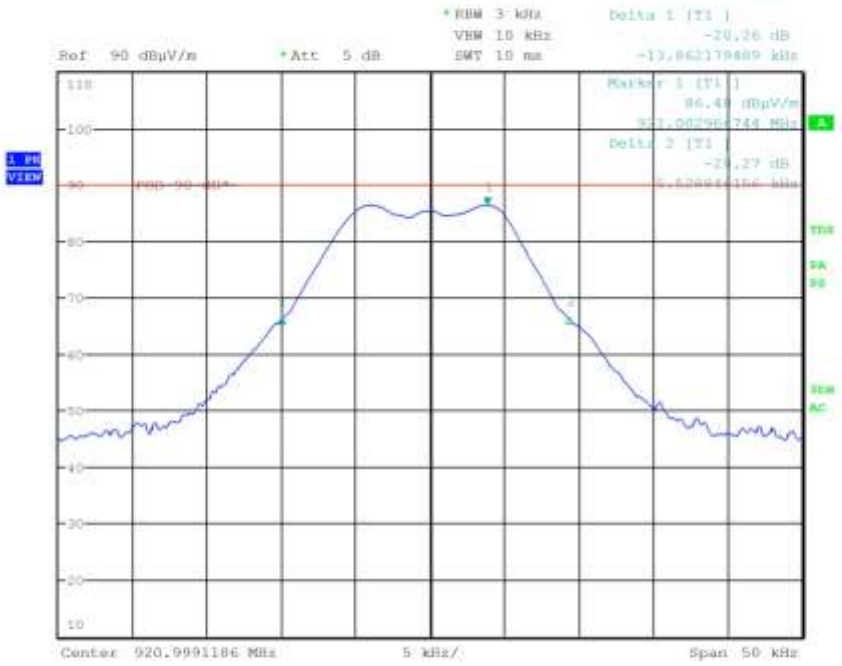
G130514A10

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmin-ANT. INT.
Operator	Gandini
Test Spec	



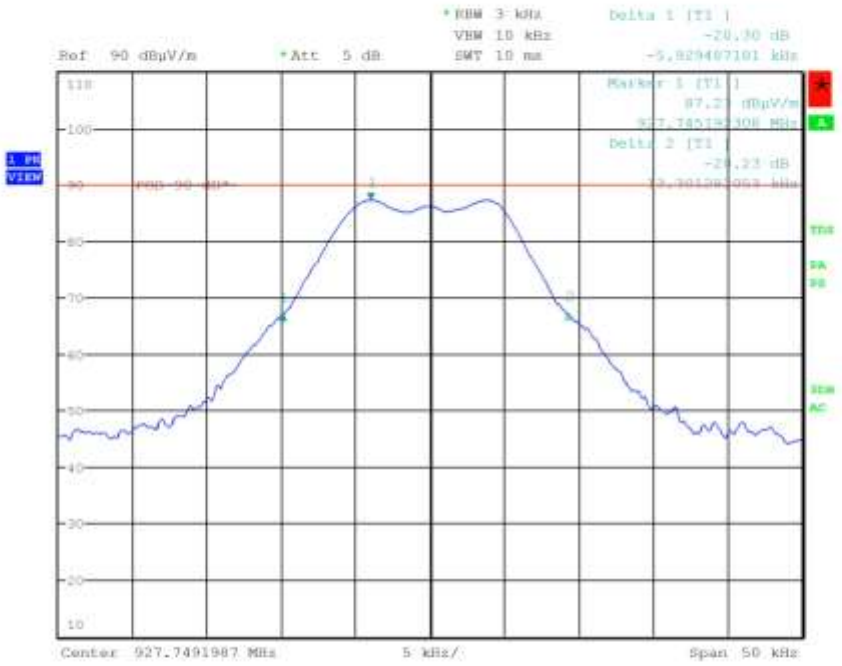
G130514A11

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmed-ANT, INT,
Operator	Gandini
Test Spec	



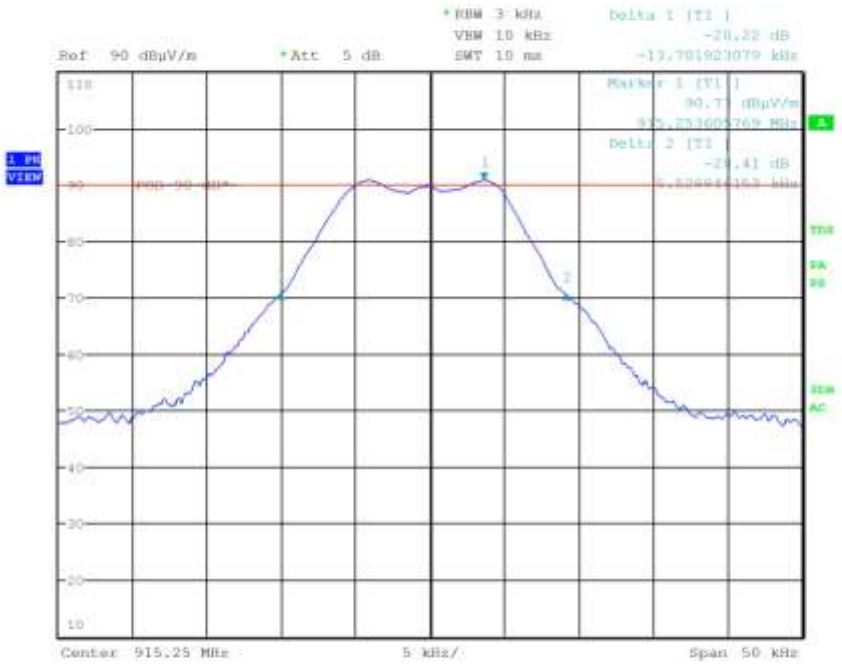
G130514A12

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmax-ANT. INT.
Operator	Gandini
Test Spec	



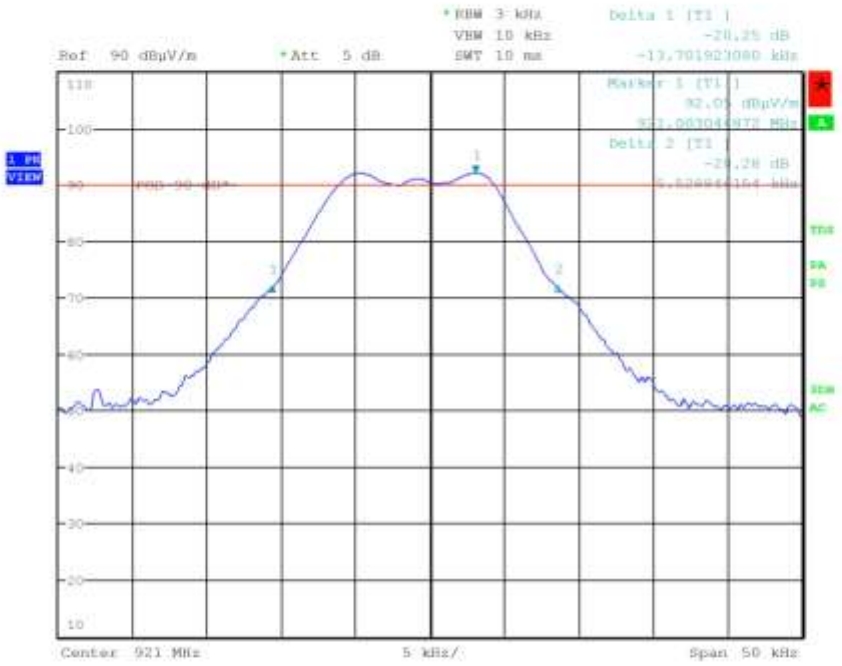
G130514A13

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmin-ANT. EXT.
Operator	Gandini
Test Spec	



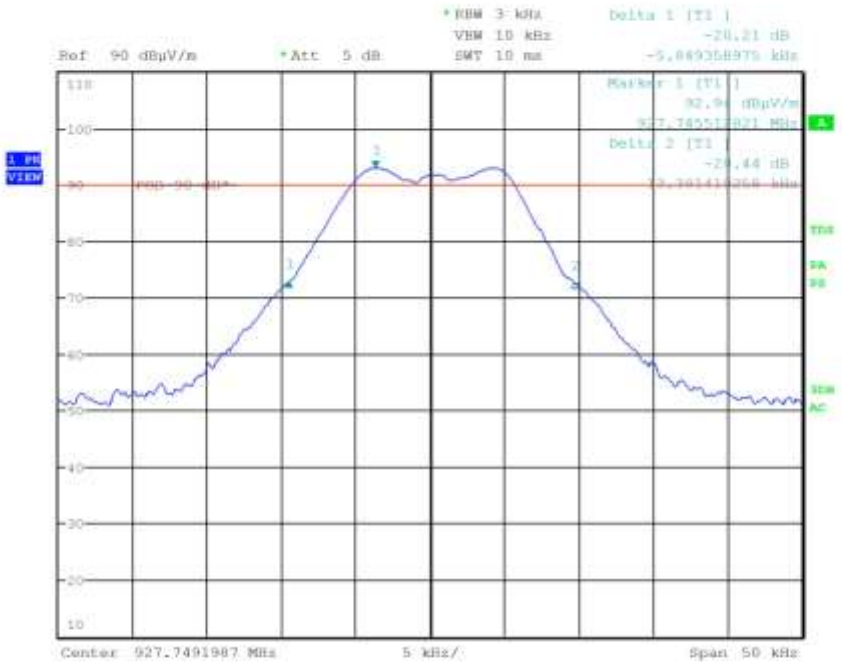
G130514A14

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmed-ANT. EXT.
Operator	Gandini
Test Spec	



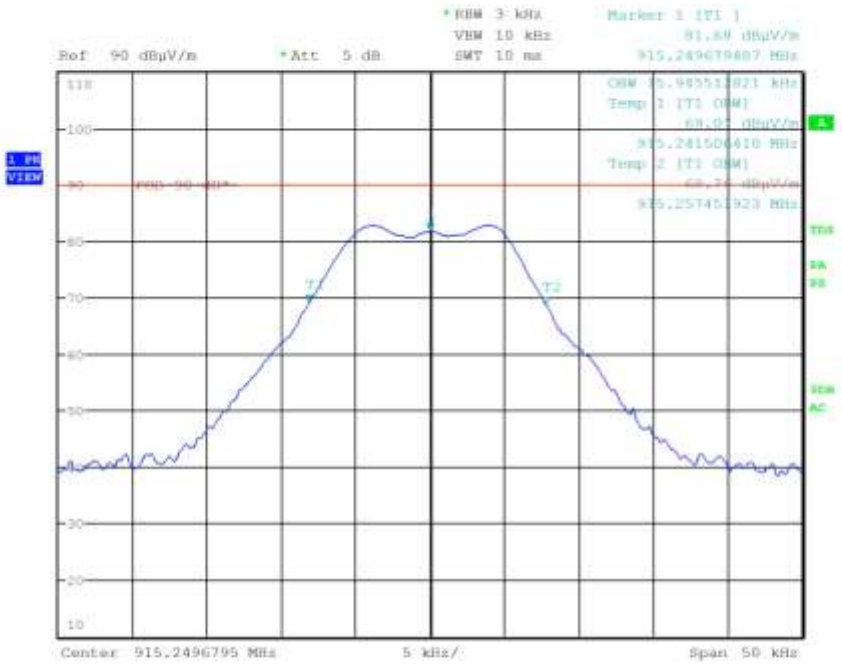
G130514A15

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmax-ANT. EXT.
Operator	Gandini
Test Spec	



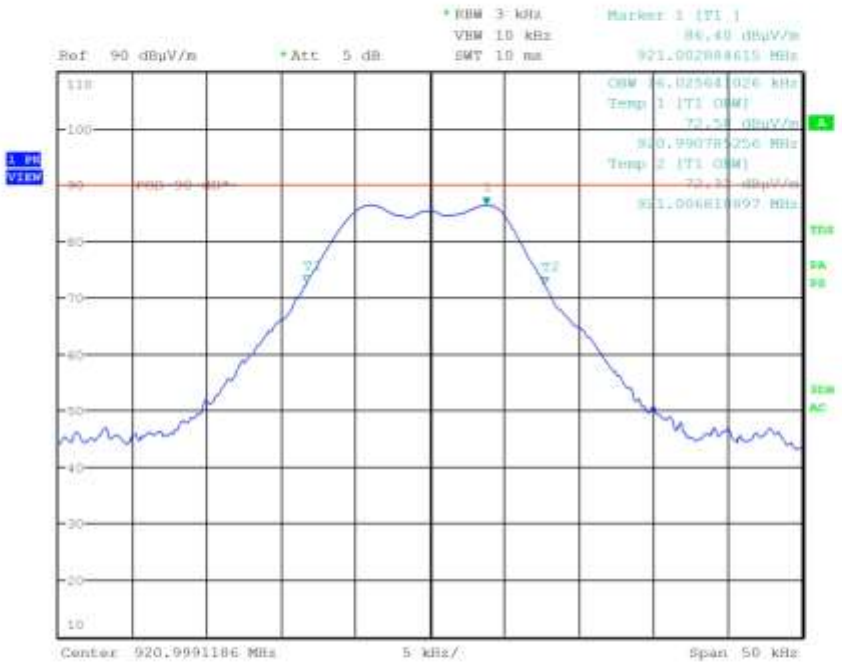
G130514A16

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmin-ANT. INT.
Operator	Gandini
Test Spec	



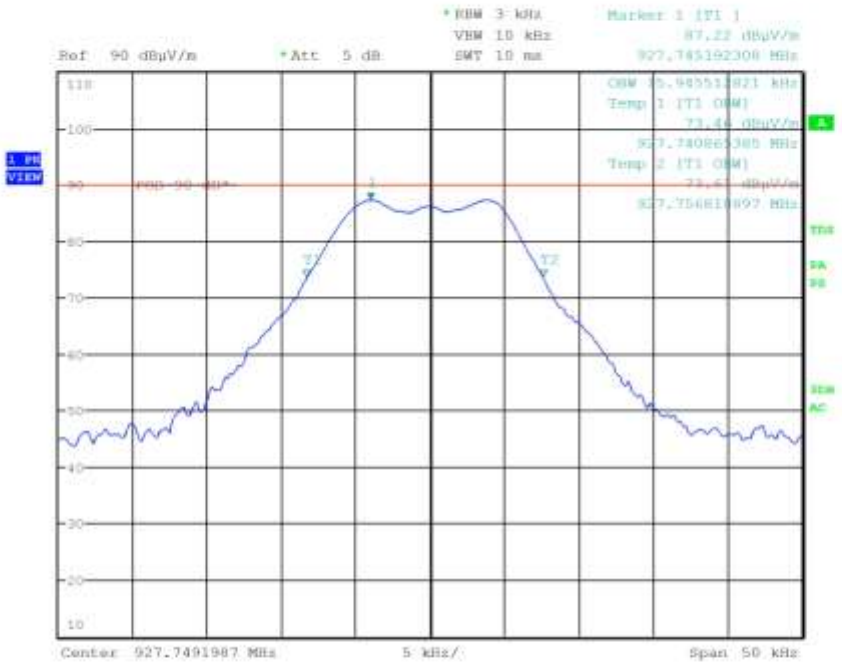
G130514A17

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmed-ANT. INT.
Operator	Gandini
Test Spec	



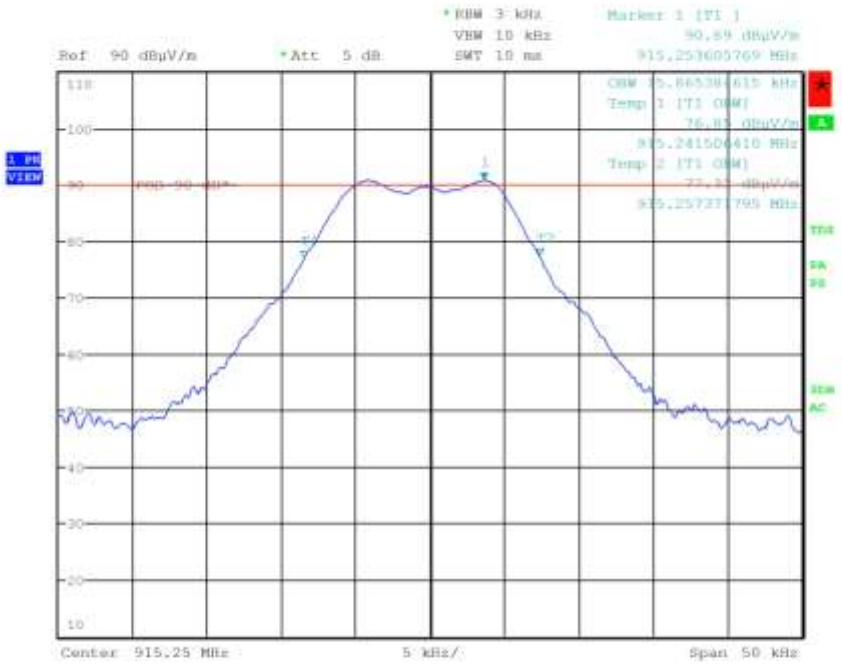
G130514A18

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmax-ANT. INT.
Operator	Gandini
Test Spec	



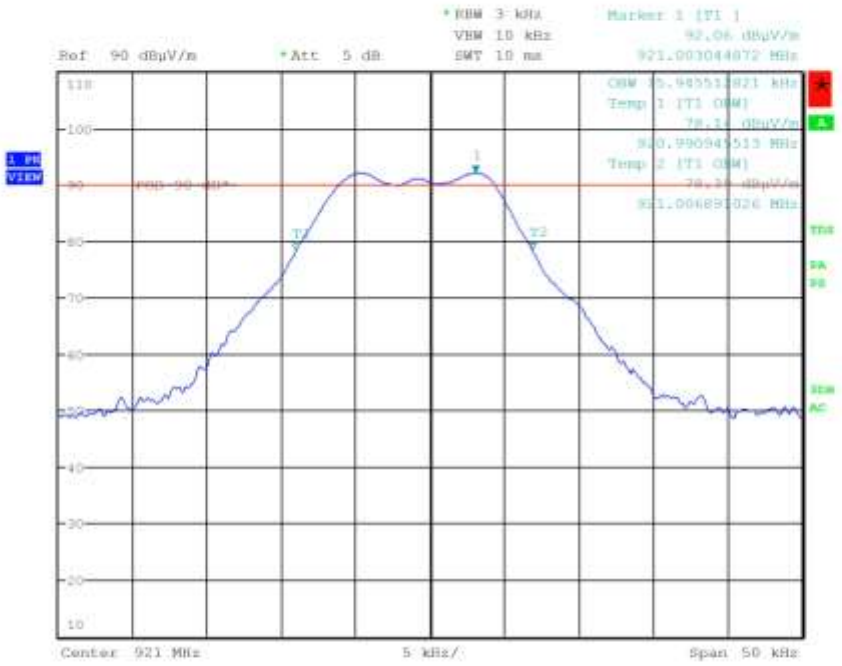
G130514A19

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmin-ANT. EXT.
Operator	Gandini
Test Spec	



G130514A20

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmed-ANT. EXT.
Operator	Gandini
Test Spec	



G130514A21

Meas Type	Emission
Equipment under Test	
Manufacturer	
OP Condition	Tx-Fmax-ANT. EXT.
Operator	Gandini
Test Spec