



TEST REPORT nr. R11159802

Federal Communication Commission (FCC)

Test item

Description.....: REMOTE CONTROL

Trademark.....: SIT LA PRECISA

Model/Type.....: 0582040

Test Specification

Standard: FCC Rules & Regulations, Title 47 (2011)
Part 15 paragraph(s) : 203, 204, 207, 209 and 231

Client's name.....: SIT LA PRECISA S.p.A.

Address: Viale dell'industria, 31/33 - 35129 Padova (PD) - ITALY

Manufacturer's name.: Same as client

Address: --

Report

Tested by.....: A. Bertezolo - Technician

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

Date of issue.....: 06.06.12

Contents: 21 pages

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The test results presented in this report relate only to the item tested.



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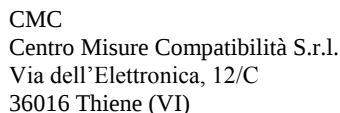
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1. Summary			
Emission: FCC Rules & Regulations, Title 47 (2011)			
Test specifications	Environmental Phenomena	Tests sequence	Result
Part 15.203 and 15.204	Antenna Requirement	1	Complies
Part 15.207	Conducted Emission	--	N.A. (+)
Part 15.209 and 15.231	Radiated Emission	2	Complies
Part 15.209 and 15.231	Bandwidth of emission	3	Complies

(+) Apparatus with 4,5Vdc of power supply from internal battery

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.



Power supply.....	: 4,5Vdc from internal battery (3 x 1,5Vdc)
Type of equipment	: ☒ Transmitter Unit ☐ Receiver Unit ☐ Fixed station ☒ Portable station ☐ Mobile station
Receiver class	: --
Working Frequency	: 433,85 MHz
Number of channels	: --
Channel separation.....	: --
Modulation	: --
Extreme conditions	: --
Maximum transmitter output power.....	: --

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

Date of receipt of test item	12.10.11
Testing start date.....	02.12.11
Testing end date.....	04.06.12
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 P111004

—



5. Photograph(s) of EUT





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 S108	Emco	3115	Horn antenna	9811-5622	April '10	April '13
CMC S136	Schwarzbeck	VULB 9163	Broadband Antenna	9136-205	May '10	May '13
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '12	January '13
CMC S129	Rohde & Schwarz	ESPI7	Receiver	836.914/004	January '12	January '13



7. Measurement uncertainty

Test	Expanded Uncertainty	note
Conducted Emission		
(50Ω/50μH AMN) - (9 kHz – 150 kHz)	±3.8 dB	1
(50Ω/50μH AMN) - (150 kHz – 30 MHz)	±3.4 dB	1
(Voltage probe) - (150 kHz – 30 MHz)	±3.0 dB	1
(50Ω/5μH AMN) - (150 kHz – 108 MHz)	±3.2 dB	1
Discontinuous Conducted Emission		
Conducted Emission (50Ω/50μH AMN) - (9 kHz – 150 kHz)	±3.8 dB	1
Conducted Emission (50Ω/50μH AMN) - (150 kHz – 30 MHz)	±3.4 dB	1
Disturbance Power (30 MHz – 300 MHz)		
	±3.2 dB	1
Radiated Emission		
(0,150 MHz – 30 MHz)	±4.5 dB	1
(30 MHz – 1000 MHz)	±4.8 dB	1
(1 GHz – 6 GHz)	±4.4 dB	1
Electromagnetic field EMF		
	±18.8 dB	1
Harmonic current emissions test		
	±2.4 %	1
Voltage fluctuation and flicker test		
	±6.0 %	1
Insertion loss test		
	±2.6 %	1
Radiated electromagnetic disturbance test (loop antenna)		
	±2.5 %	1
Radiated electromagnetic field immunity test		
	0.9 V/m at 3V/m	1
Pulse modulated radiated electromagnetic field immunity test		
	0.9 V/m at 3V/m	1
Injected currents immunity test		
	0.6 V at 3V	1
Bulk current		
	9 mA at 60 mA	1
Power frequency magnetic field immunity test		
	0.3 A/m at 3 A/m	1
Electrostatic discharge immunity test		
		2
Electrical fast transients / burst immunity test		
		2
Surge immunity test		
		2
Short interruption immunity test		
		2
Voltage transient emission test		
	±5 %	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 demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor k = 2.



8. eference documents

Reference no.	Description
FCC Rules and Regulation Title 47 part 15 (2011)	--
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.

All measurements are done in accordance with the Filling and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems DA-705

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



11.1 Antenna Requirements

Test configuration and test method

Test site

Auxiliary equipment

Laboratory

See clause 4 of this test report

Environmental conditions

Temperature 20 °C Atmospheric pressure 98 kPa Relative humidity 52 %

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 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 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.

Test specification

Port: Antenna.

EUT exercising

See clause 4 of this test report

Result

<i>Antenna Type</i>	<i>External R.F. power amplifier</i>	<i>Remarks</i>	<i>Results</i>
Integral antenna	Not Present	--	Complies

Remarks

//////////

Reference documents

See clause 8 of this test report

Result

The requirements are met



11.2 Radiated Emission 30-1000 MHz

Test configuration and test method

Test site

Laboratory

Auxiliary equipment

See clause 4 of this test report

Environmental conditions

Temperature 21 °C

Atmospheric pressure 98 kPa

Relative humidity 48 %

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.209 and 15.231e
- Internal Procedure PM001
- See clause 4 of this test report

Test specification

Port: Enclosure.

EUT exercising

See clause 4 of this test report

Result

Antenna	Frequency Range (MHz)	Graph(s)	Remarks	Result
Loop Antenna	9kHz – 30MHz	G11159818	--	Complies

Polarization	Frequency Range (MHz)	Graph(s)	Remarks	Result
Horizontal	30 – 1000	G11159814	--	Complies
Vertical	30 – 1000	G11159815	--	Complies

Frequency (MHz)	Final Measurement QP level (dBμV/m)	Remark	Results
433,852	65,40	Limit: 72,9 dBμV/m	Complies
867,700	41,29	--	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 S136, CMC S164

Measurement uncertainty: See clause 7 of this test report

Result The requirements are met



11.3 Spurious Emission

Test configuration and test method

Test site

Laboratory

Auxiliary equipment

See clause 4 of this test report

Environmental conditions

Temperature 21 °C

Atmospheric pressure 98 kPa

Relative humidity 48 %

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.209 and Part 15.231e
- Internal Procedure PM001
- See clause 4 of this test report

Test specification

Port: Antenna;

EUT exercising

See clause 4 of this test report

Result

Nr. <i>Harmonics</i>	Final Measurement AV level (dBμV/m)	AV Limits (dBμV/m)	Remarks
III Harmonic	More than 10dB below limit	54,0	--
IV Harmonic	More than 10dB below limit	54,0	--
V Harmonic	More than 10dB below limit	54,0	--
VI Harmonic	More than 10dB below limit	54,0	--
VII Harmonic	More than 10dB below limit	54,0	--
VIII Harmonic	More than 10dB below limit	54,0	--
IX Harmonic	More than 10dB below limit	54,0	--
X Harmonic	More than 10dB below limit	54,0	--
Graphs G11159811			
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 S136, CMC S164

Result The requirements are met



11.4 20dB Bandwidth of emission

Test configuration and test method

Test site

Laboratory

Auxiliary equipment

See clause 4 of this test report

Environmental conditions

Temperature 20 °C Atmospheric pressure 99 kPa Relative humidity 50 %

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.209 and 15.231c
- Internal Procedure PM001
- See clause 4 of this test report

Test specification

Port: Enclosure.

EUT exercising

See clause 4 of this test report

Acceptance limits

LIMITS
0.25% of the center frequency

Result

Port	Bandwidth	Graphs	Results
Enclosure	567,307 kHz	G11159816	Complies

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

Reference documents See clause 8 of this test report

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

CMC S136, CMC S164

Result The requirements are met



11.5 Periodic Operation Characteristics

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.231
- Internal Procedure PM001
- See clause 4 of this test report

Test specification

15.231 (e) In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

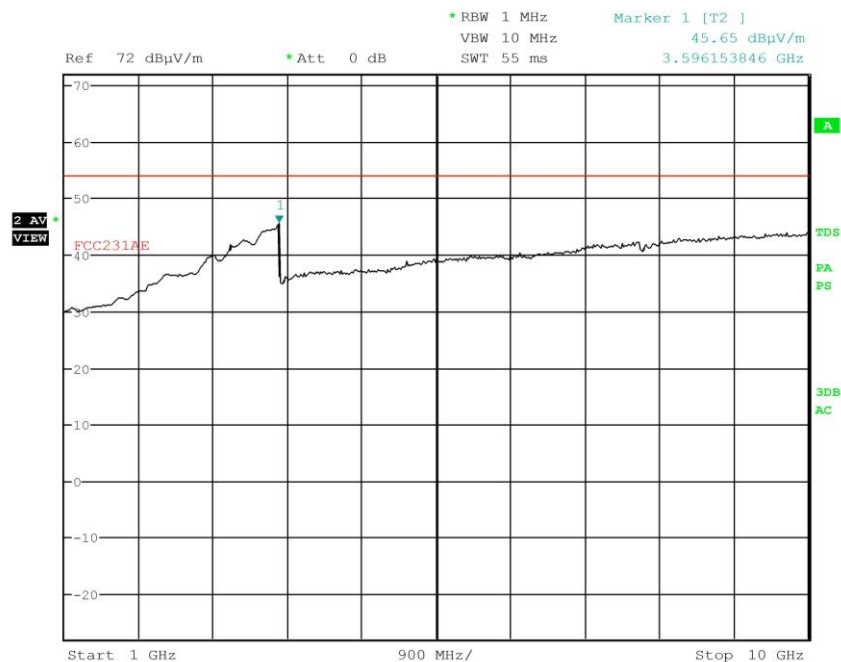
Result: Complies. As declared in SIT LA PRECISA's Operational Description OD11114_01 (Operational Description), the transmission during is 403,8 ms every 1 minutes (graphs nr. G11159850 and G11159860)



12. Graphs and Tables

G11159811

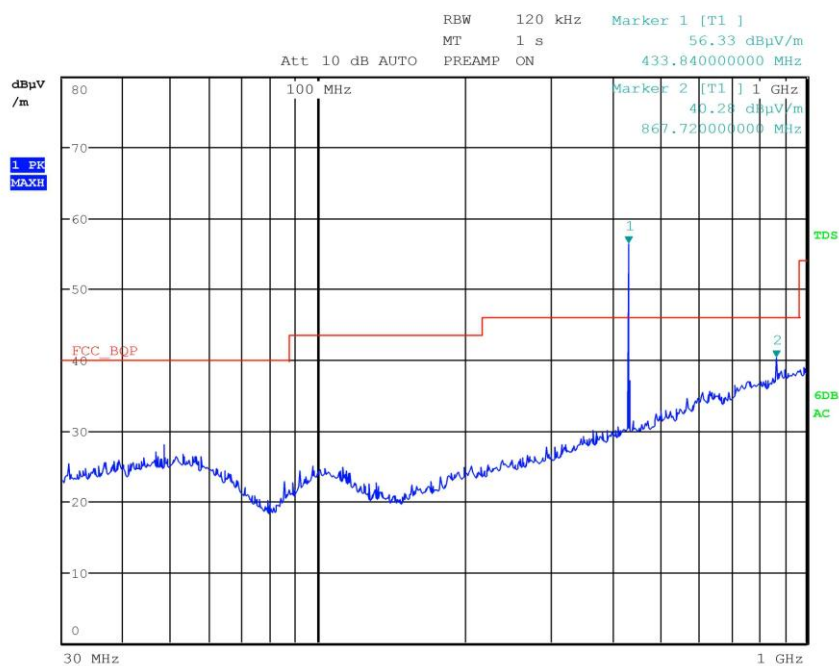
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition TX
Operator Bertezolo 11159811
Test Spec
Vert





G11159814

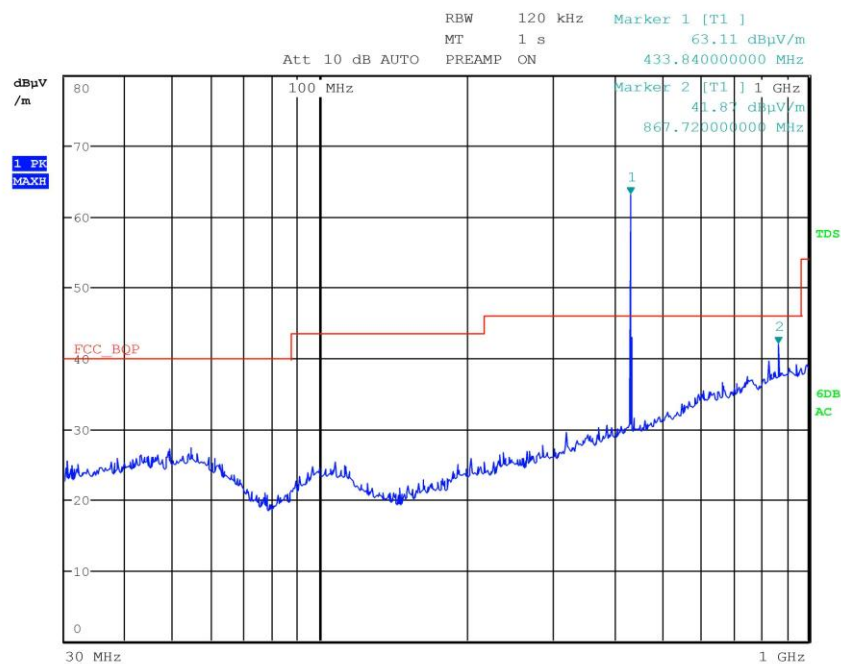
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition TX
Operator Bertezolo 11159814
Test Spec
Vert





G11159815

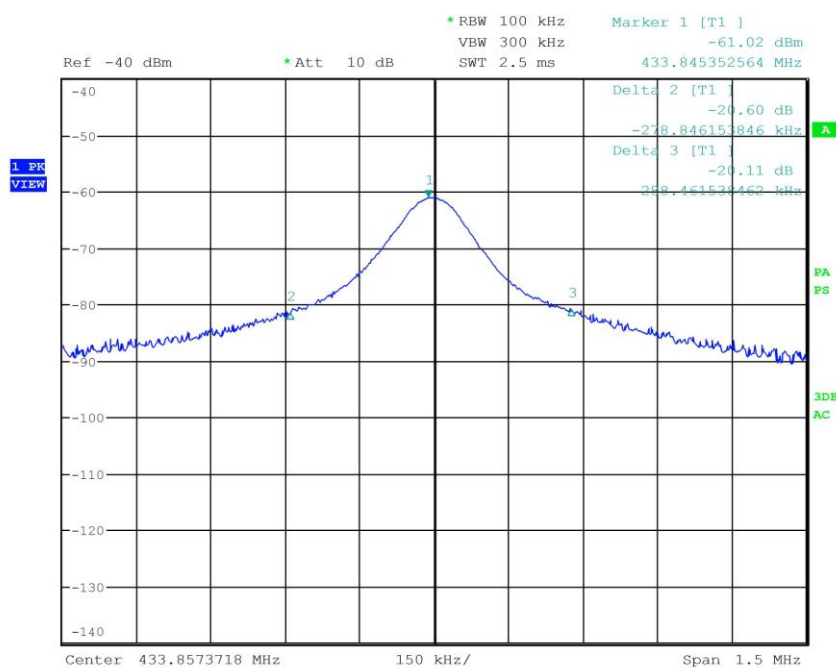
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition TX
Operator Bertezolo 11159815
Test Spec
Horiz





G11159816

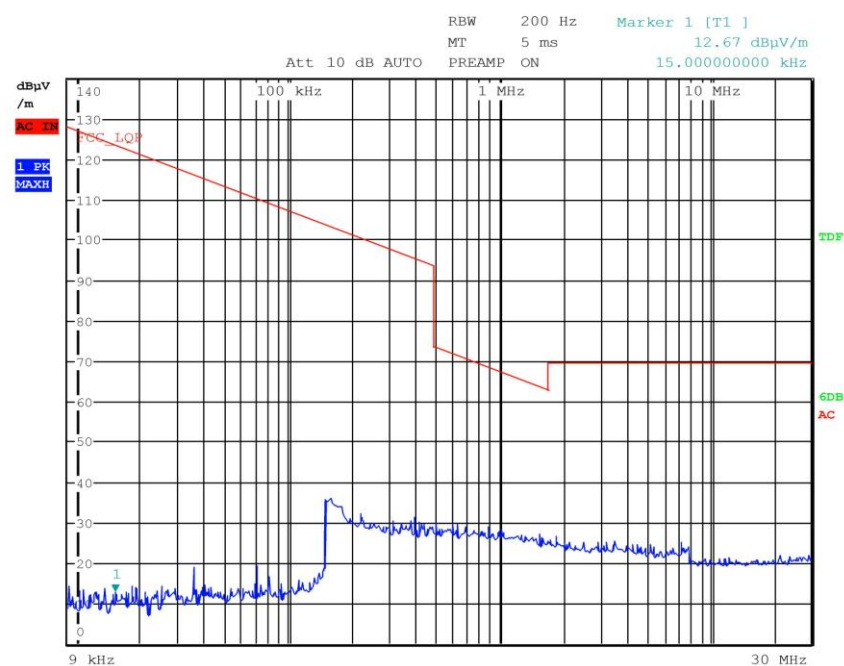
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition TX
Operator Bertezolo 11159816
Test Spec





G11159818

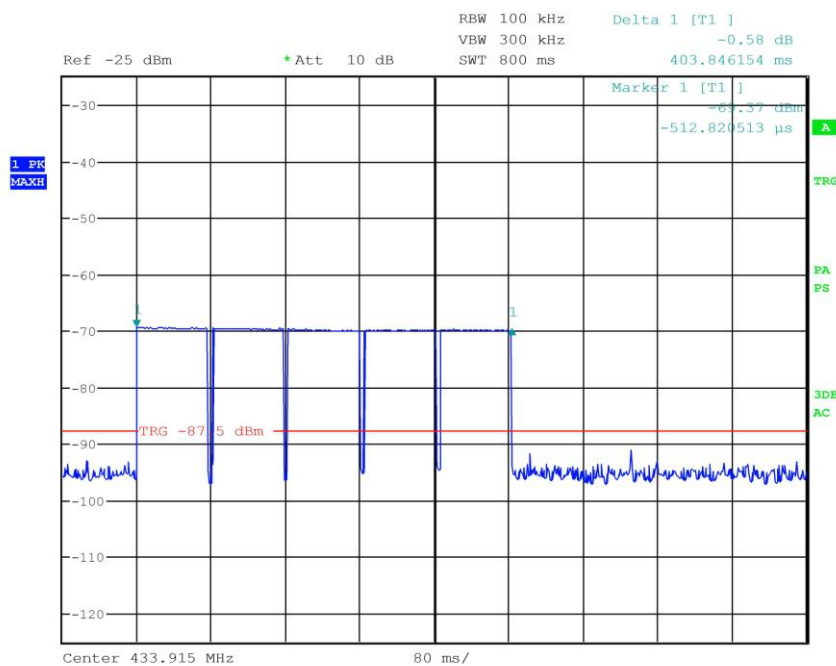
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition TX
Operator Bertezolo 11159818
Test Spec
Loop





G11159850

Meas Type
Equipment under Test
Manufacturer
OP Condition one automatic periodic trasmission
Operator Bertezolo 11159850
Test Spec





G11159860



RBW 100 kHz Delta 1 [T1]
VBW 300 kHz 3.65 dB
SWT 90 s 59.940000 s

Ref -20 dBm

* Att 0 dB

1 PK *
VIEW

