



## TEST REPORT nr. R07103501\_rev30

### Electromagnetic Compatibility (EMC)

This test report cancel and replace document nr. R07103501\_rev20 date 07.05.08

#### Test item

Description.....: REMOTE CONTROL (TRANSMITTER UNIT)

Trademark.....: BFT

Model/Type.....: MITTO FCC 2 12V - MITTO FCC 4 12V

#### Test Specification

Standard .....: FCC Rules & Regulations, Title 47 (2005)  
Part 15 paragraph(s) : 203, 204, 207, 209 and 231

Client's name.....: BFT S.p.A.

Address .....: Via Lago di Vico, 44 - 36015 Schio (VI) - ITALY

Manufacturer's name.: Same as client

Address .....: --

#### Report

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

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

Date of issue.....: 12.05.08

Contents .....: 17 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.



## Index

<b>1. SUMMARY .....</b>	<b>3</b>
<b>2. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT) .....</b>	<b>4</b>
2.1 TEST SITE.....	4
<b>3. TESTING AND SAMPLING .....</b>	<b>4</b>
<b>4. OPERATIVE CONDITIONS.....</b>	<b>4</b>
<b>5. PHOTOGRAPH(S) OF EUT .....</b>	<b>5</b>
<b>6. EQUIPMENT LIST .....</b>	<b>7</b>
<b>7. MEASUREMENT UNCERTAINTY .....</b>	<b>8</b>
<b>8. REFERENCE DOCUMENTS .....</b>	<b>8</b>
<b>9. DEVIATION FROM TEST SPECIFICATION .....</b>	<b>9</b>
<b>10. TEST CASE VERDICTS.....</b>	<b>9</b>
<b>11. RESULTS.....</b>	<b>9</b>
11.1 ANTENNA REQUIREMENTS .....	10
11.2 RADIATED EMISSION 30-1000 MHz .....	11
11.3 SPURIOUS EMISSION 1-10 GHz .....	12
11.4 BANDWIDTH OF EMISSION.....	13
11.5 PERIODIC OPERATION CHARACTERISTICS .....	14
<b>12. GRAPHS AND TABLES.....</b>	<b>15</b>



## 1. Summary

Emission: FCC Rules & Regulations, Title 47

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 12Vdc 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.*

## 2. Description of Equipment under test (EUT)

Power supply.....	:	12Vdc from internal battery
Type of equipment .....	:	<input checked="" type="checkbox"/> Transmitter Unit <input type="checkbox"/> Receiver Unit <input type="checkbox"/> Fixed station <input checked="" type="checkbox"/> Portable station <input type="checkbox"/> Mobile station
Receiver class .....	:	--
Working Frequency .....	:	433,92 MHz
Number of channels .....	:	--
Channel separation.....	:	--
Modulation .....	:	--
Extreme conditions .....	:	--
Maximum transmitter output power.....	:	--
Information on antenna.....	:	<input checked="" type="checkbox"/> Integrated <input type="checkbox"/> Extern <input type="checkbox"/> Other:
Duty cycle.....	:	--
Mode of operation.....	:	<input checked="" type="checkbox"/> Simplex mode <input type="checkbox"/> Duplex mode <input type="checkbox"/> Other :

### 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

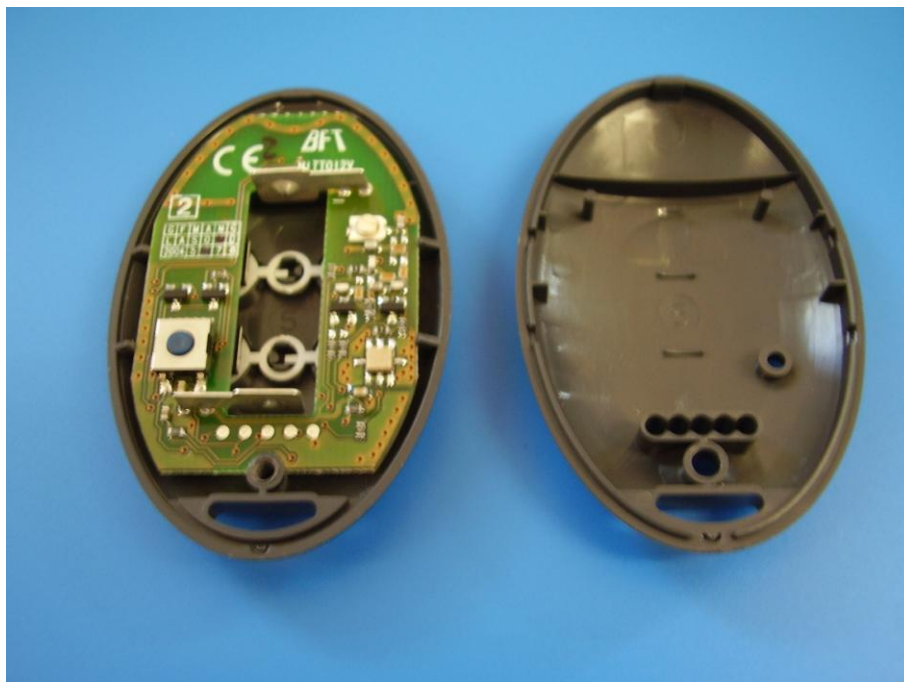
Date of receipt of test item .....	: 18.07.07
Testing start date .....	: 25.09.07
Testing end date .....	: 03.10.07
Samples tested nr. ....	: 1 - Test executed on MITTO FCC 4 12V sample.
	The difference between two samples is the number of the push buttons: MITTO FCC 2 12V have two push buttons while MITTO FCC 4 12V have four push buttons.
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 P070681

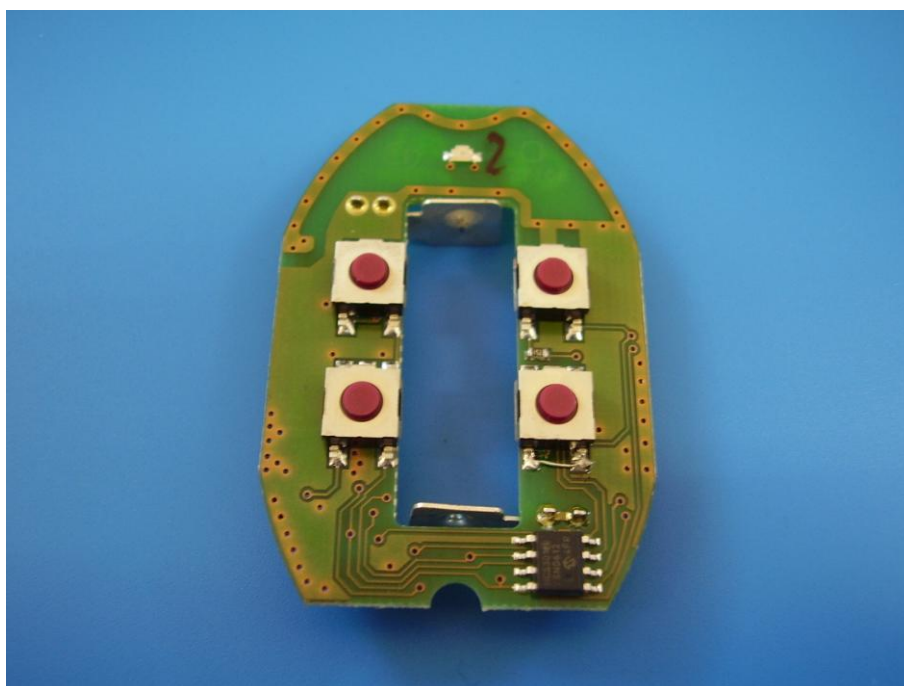
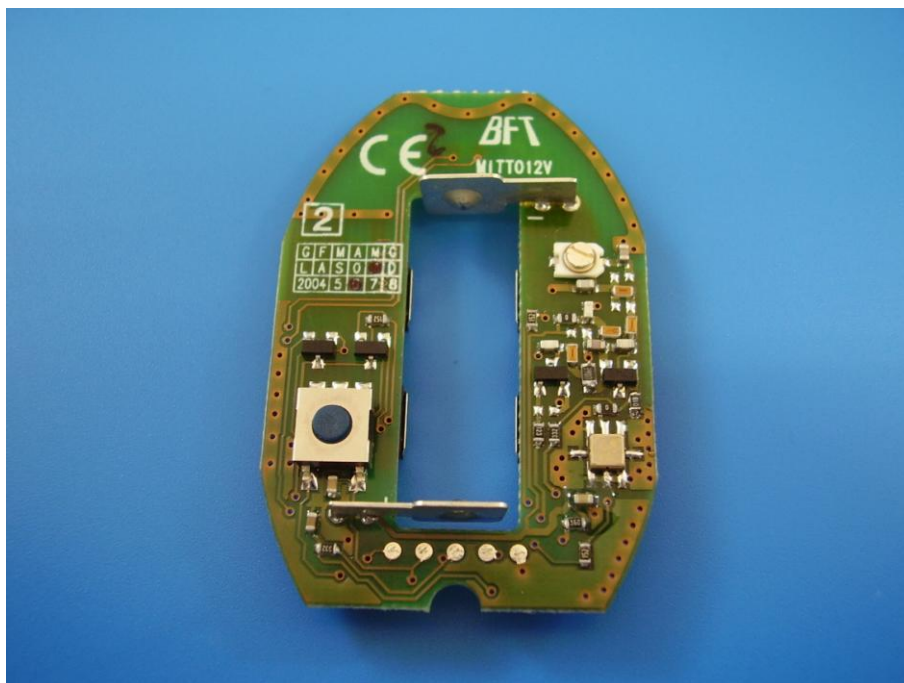
#### 4. Operative conditions

— —



## 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 S002	Rohde & Schwarz	ESVS30	EMC interference receiver	826638/011	January '07	January' 08
CMC S108	Emco	3115	Horn antenna	9811-5622	April '07	April '10
CMC S129	Rohde & Schwarz	ESPI7	Receiver	836.914/004	June '07	June '09
CMC S136	Schwarzbeck	VULB 9136	Broadband Antenna	9136-205	May '07	May '09



## 7. Measurement uncertainty

Test	Value
Conducted disturbance test – continuous and discontinuous - (9 kHz – 30 MHz)	2.1 dB
Insertion loss test	1.9 dB
Radiated electromagnetic disturbance test (loop antenna)	1.9 dB
Radiated disturbance test	4.7 dB
Disturbance power test	2.0 dB
Harmonic current emissions test	0.8 %
Voltage fluctuation and flicker test	6.2 %
Electrostatic discharge immunity test	< 10 % I <sub>pk</sub>
	< 30 % I(30 ns)
	< 30 % I(60ns)
Electrical fast transients / burst immunity test	< 10 % V <sub>pk</sub>
	< 30 % Tr
	< 30 % Td
Radiated electromagnetic field immunity test	0.7 V/m at 3V/m
Pulse modulated radio-frequency electromagnetic field immunity test	0.7 V/m at 3V/m
Surge immunity test	< 10 % V <sub>pk</sub>
	< 20 % Tr
	< 20 % Td
Injected currents immunity test (150 kHz – 230 MHz)	0.5 V at 3V
Power frequency magnetic field immunity test	0.6 A/m at 3 A/m
Short interruption immunity test	< 5 %

## 8. eference documents

Reference no.	Description
FCC Rules and Regulation Title 47 part 15	--
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. 6.0 (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. 6.0.



## 11.1 Antenna Requirements

### Test configuration and test method

Test site

Laboratory

Auxiliary equipment

See clause 4 of this test report

### Environmental conditions

Temperature 22 °C Atmospheric pressure 99 kPa Relative humidity 49 %

### 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 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 be 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

<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 20 °C

Atmospheric pressure 98 kPa

Relative humidity 50 %

### Test set-up and execution

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

### Test specification

Port: Enclosure.

### EUT exercising

See clause 4 of this test report

### Result

<i>Frequency (MHz)</i>	<i>Graph(s)</i>	<i>Measured QP level (dBμV/m)</i>	<i>Limit (dBμV/m)</i>	<i>Results</i>
433,9	G07103502	79,2	80,8	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 S002, CMC S136

Measurement uncertainty: See clause 7 of this test report

### Result

The requirements are met



### 11.3 Spurious Emission 1-10 GHz

#### Test configuration and test method

Test site

Laboratory

Auxiliary equipment

See clause 4 of this test report

#### Environmental conditions

Temperature 21 °C Atmospheric pressure 100 kPa Relative humidity 48 %

#### Test set-up and execution

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

#### Test specification

Port: Antenna;

#### EUT exercising

See clause 4 of this test report

#### Result

<i>Nr.</i> <i>Harmonics</i>	<i>AV level (dBμV/m)</i>	<i>PK level (dBμV/m)</i>	<i>AV Limits</i> <i>(dBμV/m)</i>	<i>Graphs</i>
II Harmonic	More than 20dB below limit	More than 20dB below limit	54,00	G07103503
III Harmonic	More than 20dB below limit	More than 20dB below limit	54,00	--
IV Harmonic	More than 20dB below limit	More than 20dB below limit	54,00	--
V Harmonic	More than 20dB below limit	More than 20dB below limit	54,00	--
VI Harmonic	More than 20dB below limit	More than 20dB below limit	54,00	--
VII Harmonic	More than 20dB below limit	More than 20dB below limit	54,00	--
VIII Harmonic	More than 20dB below limit	More than 20dB below limit	54,00	--
IX Harmonic	More than 20dB below limit	More than 20dB below limit	54,00	--
X Harmonic	More than 20dB below limit	More than 20dB below limit	54,00	--
Measuremt 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 S129, CMC S136

**Result** The requirements are met



## 11.4 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 15.231
- 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

<i>LIMITS</i>
0.25% of the center frequency

### Result

<i>Port</i>	<i>Bandwidth</i>	<i>Graphs</i>	<i>Results</i>
Enclosure	320kHz	G07103504	Complies

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

**Reference documents** See clause 8 of this test report

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

CMC S129, CMC S136

**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(a) The provisions of this Section are restricted to periodic operation within the band 40.66 - 40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this Section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. The prohibition against data transmission does not preclude the use of recognition codes. Those codes are used to identify the sensor that is activated or to identify the particular component as being part of the system.

**Result:** The requirements are met

### Test specification

15.231(a1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

**Result:** Transmitter ceases immediately after being released. The requirements are met

### Test specification

15.231(a2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

**Result:** The EUT does not have automatic transmission.

### Test specification

15.231(a3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

**Result:** The EUT does not employ periodic transmission.

### Test specification

15.231(a4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

**Result:** N.A.

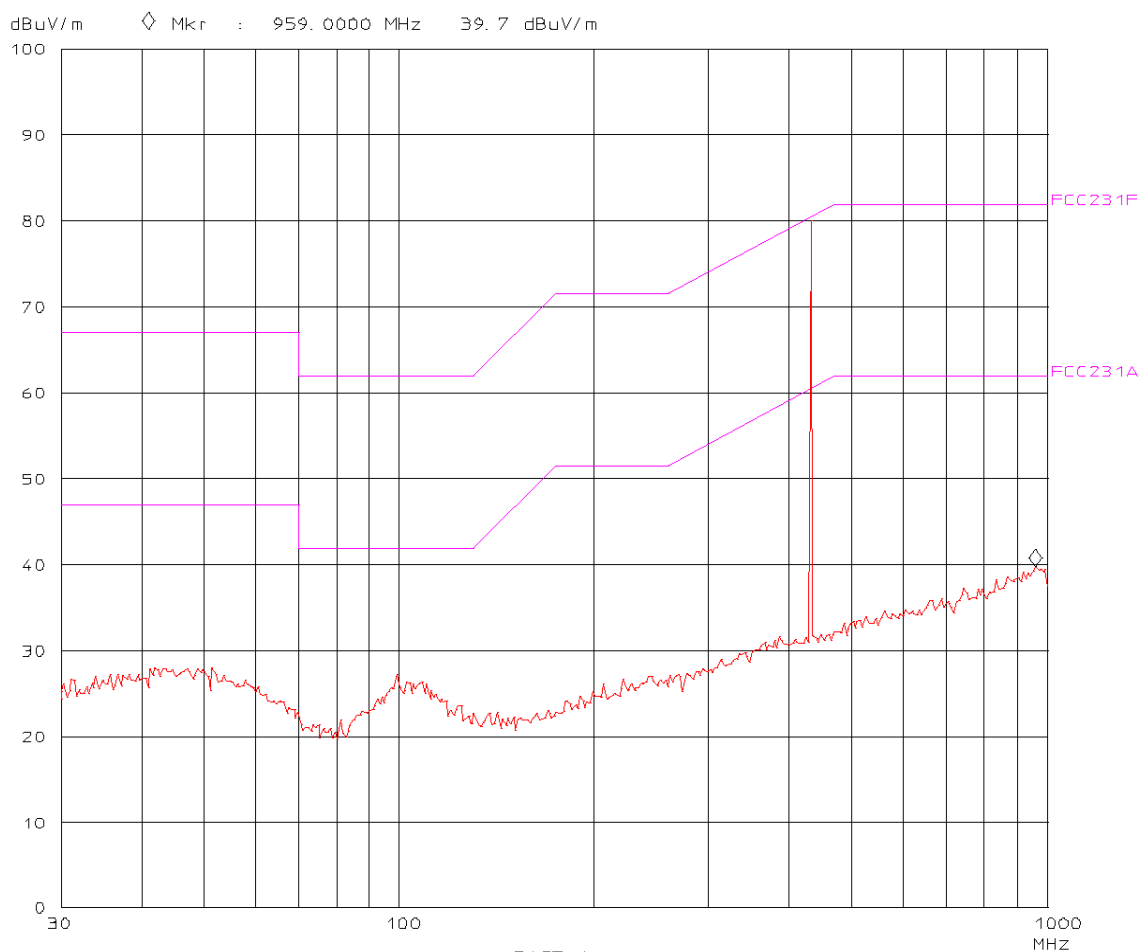


## 12. Graphs and Tables

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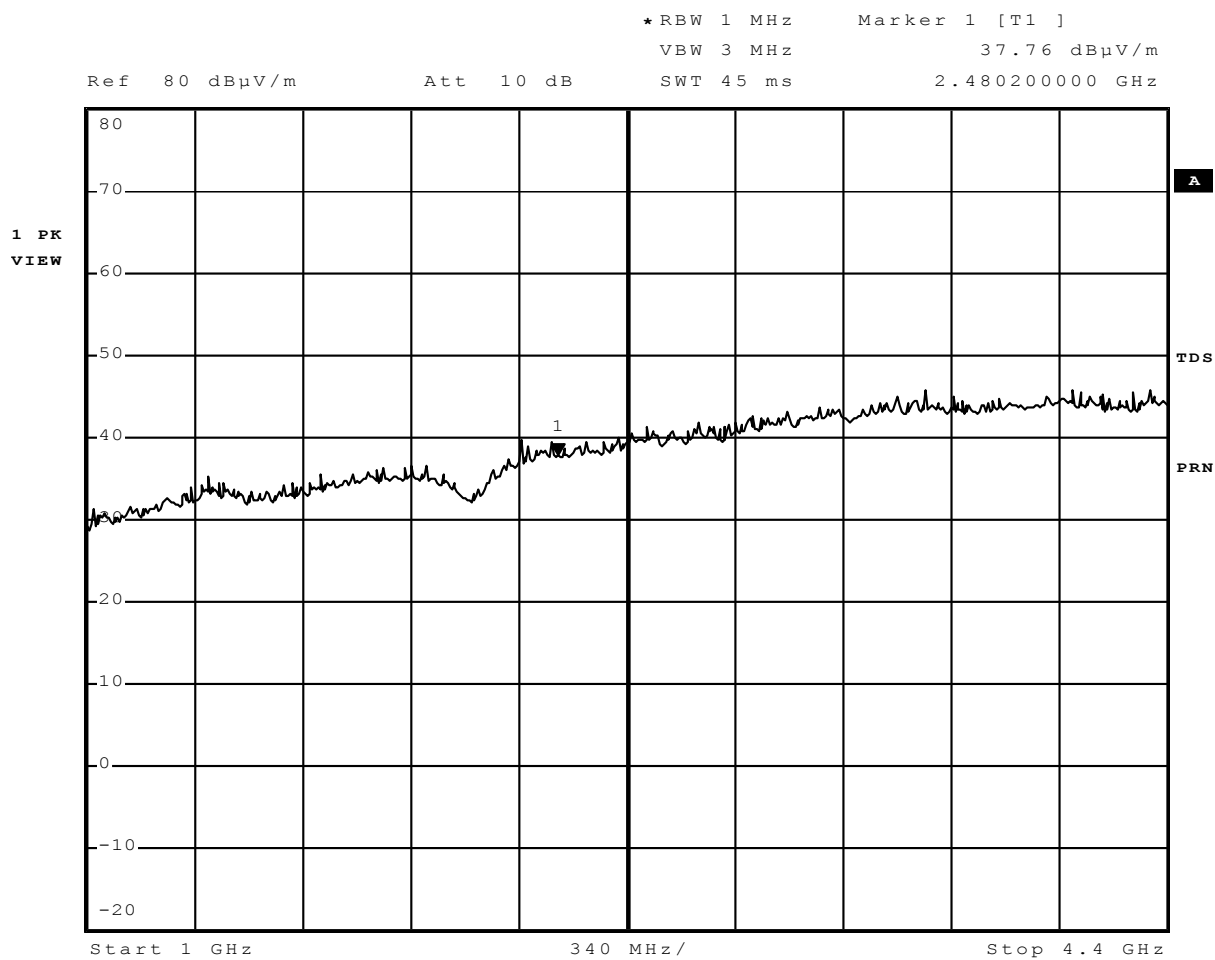
CMC Centro Misure Compatibilità S.r.l.  
Emissioni 30 - 1000MHz

Op. Cond.: In TXntato  
Operator: Gandini 07103502





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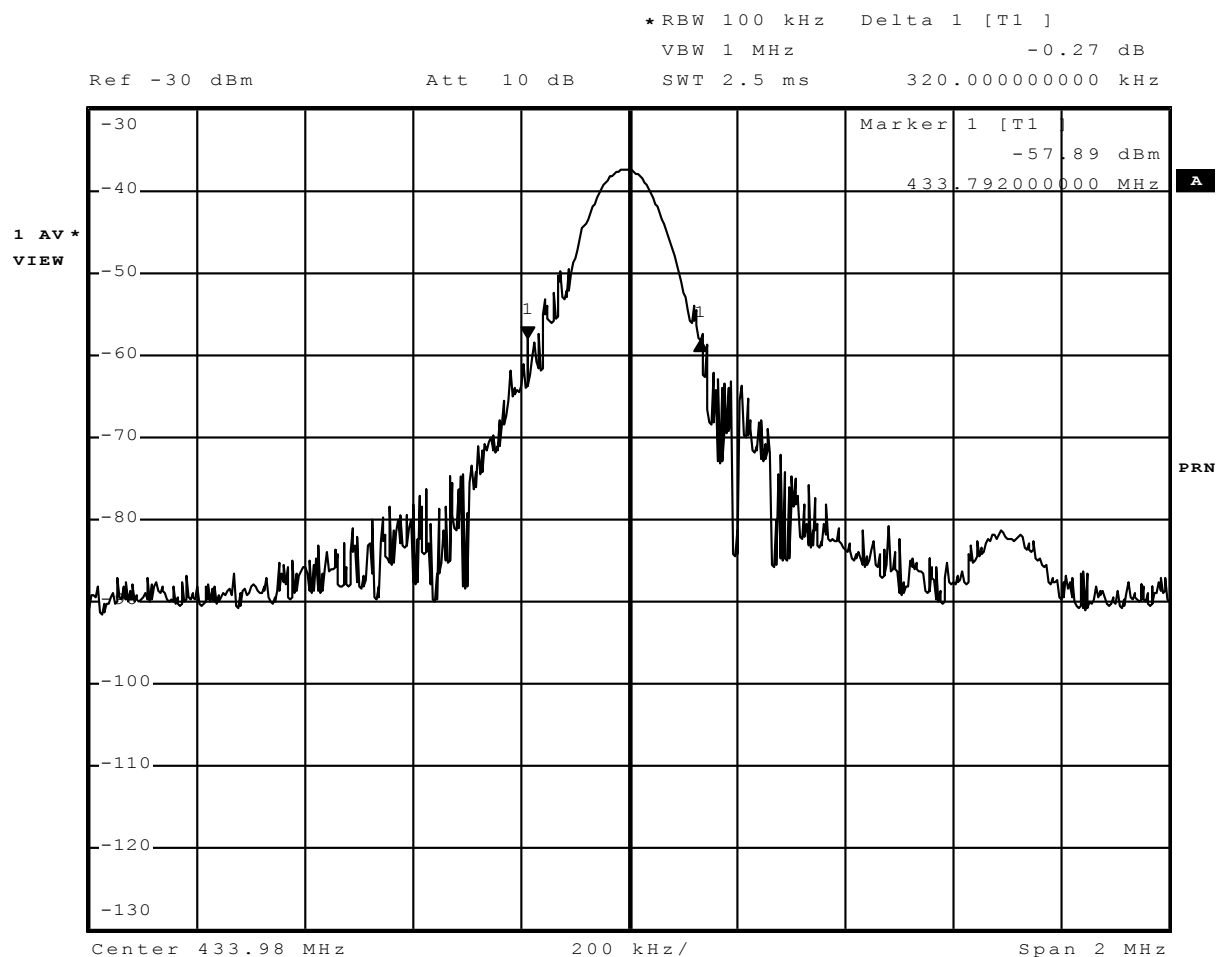


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