

Prima Ricerca & SviluppoSrl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

EQUIPMENT UNDER TEST :

RADIO MOTOR CONTROL (receiver)

APPARECCHIO IN PROVA :

TYPE :

RC200

MODELLO :

REFERENCE STANDARDS :

47 CFR Part 15 – Unintentional Radiators

NORME DI RIFERIMENTO :

CUSTOMER:

RICHIEDENTE:

- Dept. / Firm : **CARDIN ELETTRONICA S.p.A.**
Ente / Società:
- Mr. : **CINTI**
Sig.:
- Address: **VIA RAFFAELLO, 36 – 31020 S. VENDEMIANO (TV) - ITALY**
Indirizzo:
- Tel. : **+39 0438.404011** • Telefax **+39 0438.401831** • E-mail: **d.cinti@cardin.it**
Telefono : Fax :

Site of test execution:

Via Campagna, 92 - 22020 Gaggino Faloppio (CO) - Italy

Località esecuzione prove:

Date of test samples receipt: 14/03/2008

Data ricevimento campioni:

Date of start test: 14/03/2008

Data inizio prove:

Date of end test: 17/03/2008

Data fine prove:

Witness to the test:

Presenti alle prove:

Tested by:

Testato da:

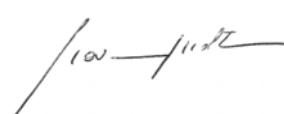
Approved by:

Approvato da:

Nobody / Nessuno



Massimo Maltempi



Giovanni Molteni

The test results recorded in this Test Report are exclusively referred to the tested samples.

I risultati del presente rapporto di prova si riferiscono esclusivamente al campione sottoposto a prova.

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0. CONTENTS

| | | |
|-----|---|--|
| 0. | CONTENTS | |
| 1. | TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT) | |
| 1.1 | Identification | |
| 1.2 | Technical data | |
| 1.3 | Modifications incorporated in E.U.T. | |
| 1.4 | Derived models..... | |
| 1.5 | Auxiliary equipment | |
| 2. | TEST CONDITIONS | |
| 2.1 | Operating test modes and test conditions | |
| 2.2 | Test overview | |
| 3. | REFERENCE STANDARD FOR PERFORMED TESTS | |
| 4. | Summary of test results | |
| 4.1 | Emission tests | |
| 5. | TEST RESULTS | |
| 6. | EUT TECHNICAL DOCUMENTATION..... | |
| 6.1 | Wiring diagrams..... | |
| 6.2 | Technical manual | |
| 7. | LIST OF INSTRUMENTS USED | |
| 8. | PHOTOS | |

1. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 Identification

Brand name: SIMU U.S Inc.
Manufacturer : CARDIN S.p.A.
Model name or No. : RX: RC200
Part number / Serial No.: Not present
Country of manufacturer: Italy
FCC ID : LH8RP-S435

1.2 Technical data

FCC class: Unintentional radiators, Class B
Supply voltage: 120 Vac 60 Hz
Maximum internal frequency generated by EUT Reference oscillator 433,36 MHz
Typical usage : Programmable radio control for open/closed door

1.3 Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test :

- None

1.4 *Derived models*

- None

Ports identification

This section contains descriptions of all signal ports and AC/DC power input/output ports, the length and the type of the cable provided by manufacturer needed for the tests.

Moreover it is specified if the ports are ever or optionally connected.

| Port | | Description | Connection |
|-------------|-----------------------------|--------------------|-------------------|
| 1 | Enclosure | Plastic case | Screws |
| 2 | AC power input/output ports | 120 Vac 60Hz | Screws |
| 3 | DC power input/output ports | Not present | ***** |
| 4 | Signals ports | None | ***** |

Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.

1.5 *Auxiliary equipment*

- None

2. TEST CONDITIONS

2.1 *Operating test modes and test conditions*

The equipment has been tested according to the operative conditions described in the user/installation manual provided by the manufacturer and by following reference standards :

Reference Standard:

- FCC Part 15, Subpart B

In the following table there are the operating conditions adopted during tests identified by an indicator (#..) at which has been referred the item “Operating condition of the equipment under test” of all technical sheets of the tests (see Section 4)

| <i>Operating condition</i> | <i>Description</i> |
|-----------------------------------|----------------------------|
| #1 | <i>Continuous receiver</i> |

2.2 *Test overview*

The appliance is classified as “*unintentional radiator*” in conformity to FCC Part 15 Sub. B §15.109, §15.107 , and it is subject to “*Certification*” procedure.

The application is mainly used as document encrypting and data storing.

3. REFERENCE STANDARD FOR PERFORMED TESTS

| <i>Reference standard :</i> | <i>Title :</i> |
|-----------------------------|--|
| FCC Part 15 part A | Code of Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communication Commission (FCC) |
| FCC Part 15 part B | Code of Regulations Part 15 (Radio Frequency Devices), Subpart B (Unintentional Radiators) of the Federal Communication Commission (FCC) |
| 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 9 kHz – 40 GHz |

4. SUMMARY OF TEST RESULTS

4.1 Emission tests

| Port | Phenomena | Basic standard | Operating condition ¹ | Result |
|------------------------|--|----------------------|--|------------------|
| 1 Enclosure | Radiated emission | FCC Part 15 § 15 109 | #1 | Within the limit |
| 2 AC mains Input ports | RF Disturbance voltage: <ul style="list-style-type: none">• continuous | FCC Part 15 § 15 107 | #1 | Within the limit |
| 3 Antenna terminals | Antenna power conduction limits for receivers | FCC Part 15 §15 111 | Not applicable: Applicable only to equipments which have an external antenna connector | |

¹ Ref. Tab. of Section 2



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5. TEST RESULTS

| | |
|---|---|
| EMISSION OF MAINS TERMINAL DISTURBANCE VOLTAGE (CONTINUOUS DISTURBANCE) | 8 |
| RADIATED EMISSION 30 - 4000 MHz..... | 8 |

**TEST
1.**

**EMISSION OF MAINS TERMINAL DISTURBANCE VOLTAGE
(CONTINUOUS DISTURBANCE)**

REFERENCE DOCUMENT FCC47CFR Part 15

- **TEST SETUP:** According to reference standard
- **TEST LOCATION:** Semi-anechoic chamber Siemens mod. B83117-D6019-T232
- **TEST EQUIPMENT USED FOR TEST:** EMI receiver Rohde & Schwarz Mod. ESMI
Artificial Network Rohde & Schwarz Mod. ESH2-Z5
AC power Generator Spitzemberger

- **TESTED PORT:** AC mains
- **FREQUENCY RANGE:** 0.15 - 30 MHz
- **EMISSION LIMITS:** Section 15.107 of Standard
- **MEASUREMENT UNCERTAINTY:** Total uncertainty (k=2) \pm 2.5 dB

| TEST CONDITIONS: | | MEASURED |
|-------------------------|-------------------------------------|-------------------|
| Ambient temperature : | 15 - 35 °C | 24 \pm 3 °C |
| Ambient humidity : | 25 - 75 %rH | 38 \pm 5 %rH |
| Pressure : | 85 - 106 kPa (860 mbar - 1060 mbar) | 975 \pm 50 mbar |
| Voltage : | | 120 Vac \pm 3 % |

OPERATING CONDITION (Rif. Section. 2) : #1

RESULT: WITHIN THE LIMIT

SCAN TABLE : Voltage Mains

Unit : dB μ V

| | | |
|----------|-------------------|---------------|
| | <u>Detector :</u> | <u>Mode :</u> |
| Curve 1: | MaxPeak | ClearWrite |
| Curve 2: | Average | ClearWrite |

Subrange 1:

| | | | |
|-------------------|-----------|----------------|-------|
| Start Frequency : | 150.0 kHz | IF Bandwidth : | 9 kHz |
| Stop Frequency : | 30.0 MHz | Step size : | 6 kHz |
| Measure Time : | 10.0 ms | | |

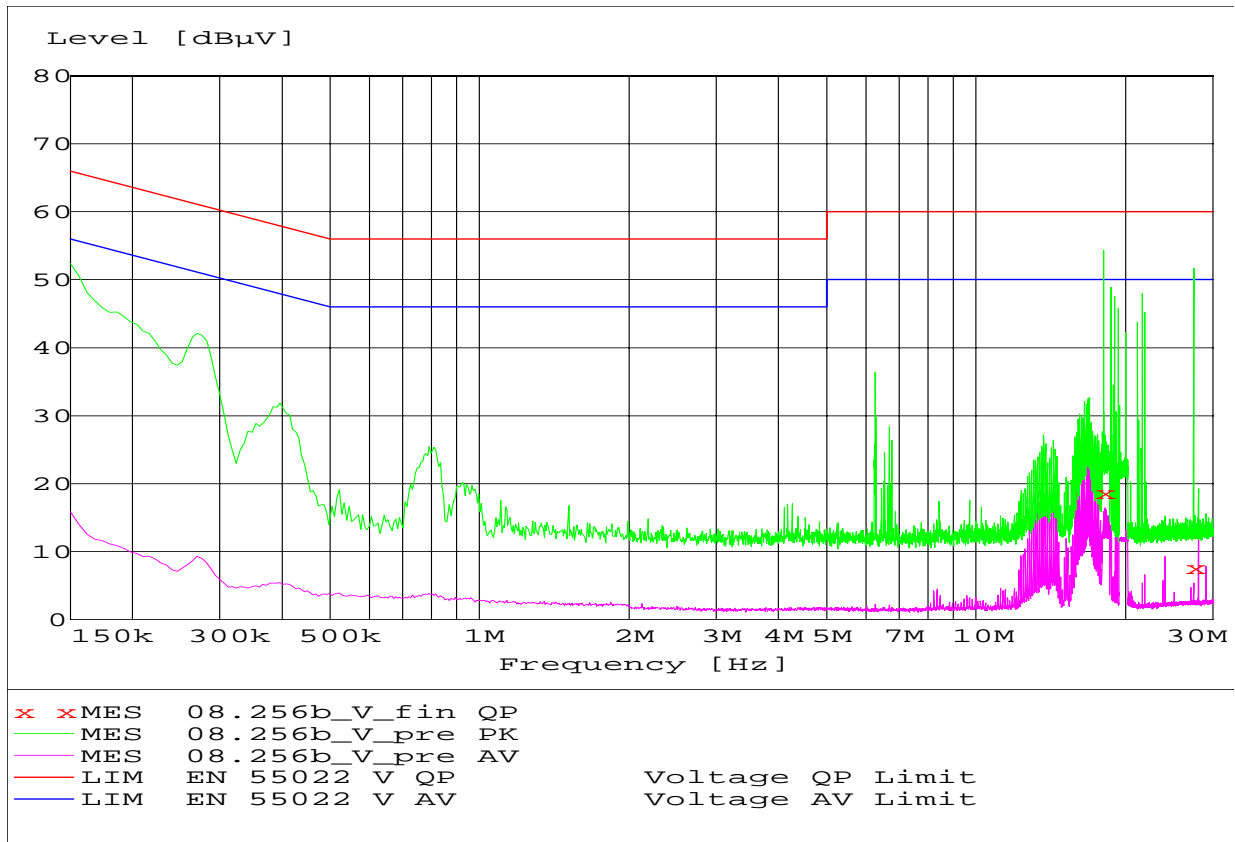
| | | | |
|-----------------------------|--------|----------------------------|---------------|
| Receiver : | ESMI | Transducer : | ESH3-Z5_PRC |
| Signal Path : | Path 3 | System Transducer : | Rfin1-CP2/X11 |
| Meas. Mode : | Lin | Add. Transd. 1 : | W71.03 |
| Tracking Generator : | Off | Add. Transd. 2 : | None |
| Input : | 1AC | Add. Transd. 3 : | None |

| | | | |
|-----------------------|---------|-----------------------|----------|
| Preamplifier : | 10 dB | Demodulation : | FM Broad |
| RF Att. : | Coupled | Volume : | 0 % |
| Ref. Level : | -10 dBm | Squelch : | -- |
| Min. RF Att. : | 0 dB | Option : | None |
| IF Att. : | 0 dB | | |
| Autorange : | On | | |

| | | | |
|------------------|----|-----------------------|-------------|
| Curve 1 : | On | Repetition : | Single |
| Curve 2 : | On | Stop Mark : | On |
| | | Stop Message : | On |
| | | Stop Message : | Connect EUT |



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measurement on N Neutral

**TEST
2.**

RADIATED EMISSION 30 - 4000 MHZ

**REFERENCE
DOCUMENT**

FCC PART 15 subpart B

- **TEST LOCATION:** Semi-anechoic chamber Siemens mod. B83117-D6019-T232
- **TEST EQUIPMENT USED FOR TEST:** EMI receiver Rohde & Schwarz Mod. ESMI
Chase Antenna Mod. CBL 6111 A
Log-periodica Broadband Antenna mod. HL025
- **TESTED PORT:** Enclosure
- **EMISSION LIMITS:** Acc. to Section 15.109 of reference document
- **UNCERTAINTY OF MEASURE:** Combined uncertainty = ± 1.75 dB
Total uncertainty = $(k=2) \pm 3.5$ dB

| TEST CONDITIONS: | MEASURED |
|--|-------------------|
| Ambient temperature : 15 - 35 °C | 23,5 \pm 3 °C |
| Ambient humidity : 25 - 75 %rH | 39 \pm 5 %rH |
| Pressure : 85 - 106 kPa (860 mbar - 1060 mbar) | 950 \pm 50 mbar |
| Voltage : | 120 Vac |

OPERATING CONDITION (Rif. Section. 2) : #1

RESULT: WITHIN THE LIMIT

SCAN TABLE : “Radiated Emission”

Unit: dB μ V/m

Detector : Mode:

Curve1: MaxPeak ClearWrite

Curve2: -- ClearWrite

Subrange1:

| | | | |
|------------------|------------|---------------|---------|
| Start Frequency: | 30.0 MHz | Step Size: | 80 kHz |
| Stop Frequency: | 4000.0 MHz | IF Bandwidth: | 120 kHz |
| Measure Time: | 0.01 sec. | | |

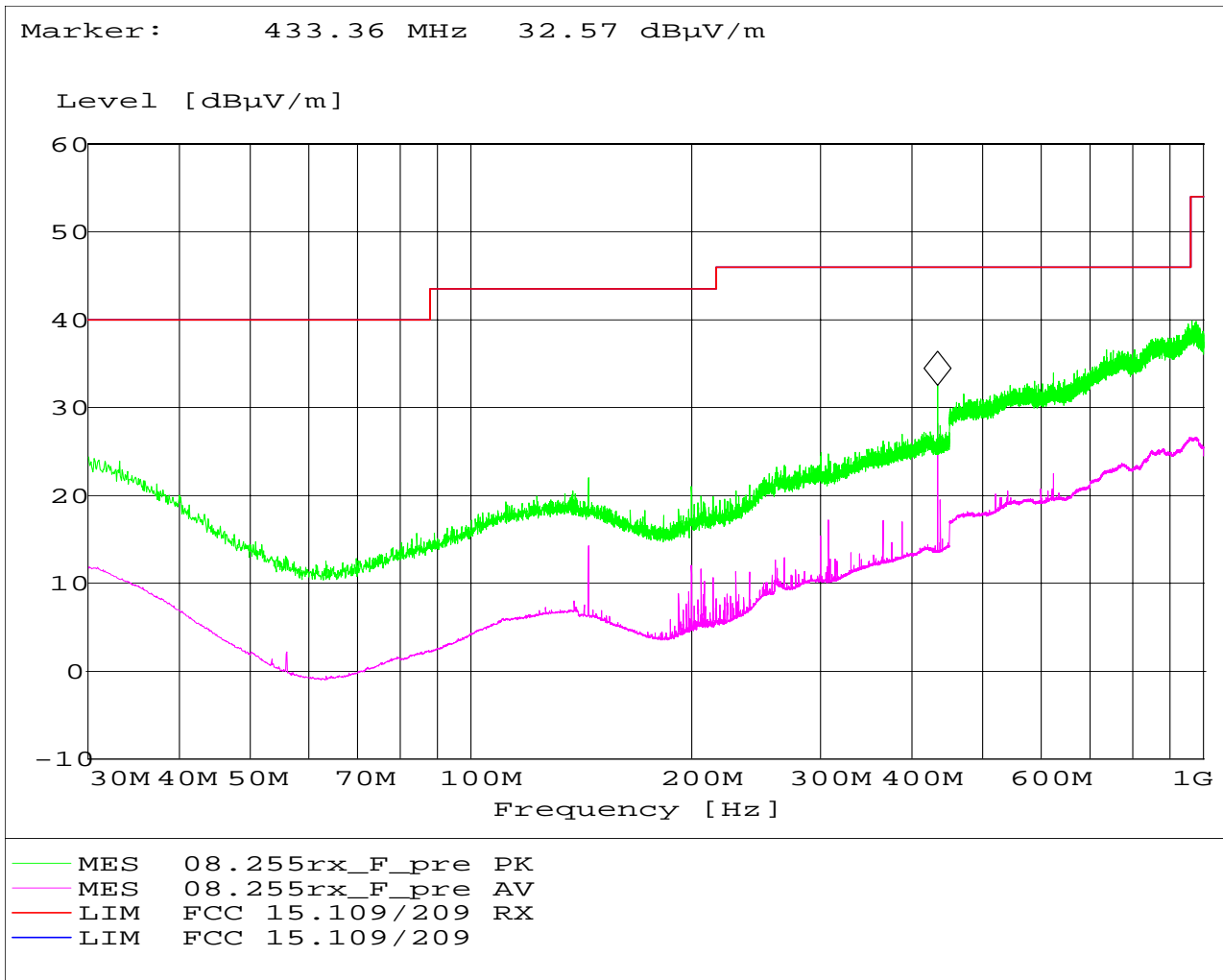
| | | | |
|----------------|--------|--------------------|----------------|
| Receiver: | ESXI | Probe Transducer: | CHASE_6111_PRC |
| Signal Path: | Path 4 | System Transducer: | RFin2-CP1/X11 |
| Scan Mode: | Lin | Add. Transducer: | W71.01 |
| Tracking Gen.: | Off | | |
| Input: | 2 DC | | |

| | | | |
|---------------|---------|---------------|----------|
| Preamplifier: | 10 dB | Demodulation: | FM Broad |
| RF att.: | Coupled | Volume: | 0.0% |
| Ref. Level: | -50 dBm | Squelch: | -- |
| Min. RF att.: | 0 dBm | Option: | None |
| Autorange: | On | | |

| | | | |
|----------|-----|---------------|-----------------|
| Curve 1: | On | Repetition: | Single |
| Curve 2: | Off | Stop Mark: | On |
| | | Stop Message: | On |
| | | Text: | Connect antenna |



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No significant disturbance in the range 1-4 GHz

6. EUT TECHNICAL DOCUMENTATION

6.1 Wiring diagrams

| | Document reference (n., edition, date, ...) |
|-----------------------|---|
| WIRING DIAGRAM | ----- |
| PART LIST | ----- |

6.2 Technical manual

| | Document reference (n., edition, date, ...) |
|--------------------|---|
| USER MANUAL | ----- |

7. LIST OF INSTRUMENTS USED

| EQUIPMENT | MANUFACTURER | MODEL | SERIAL N. | CAL. DUE |
|--|-----------------|-------------------|---------------------------|-----------|
| EMI RECEIVER | ROHDE & SCHWARZ | ESMI | 835862/016+ 838325/007 | Oct.2008 |
| RF SEMI-ANECHOIC CHAMBER (CSSA) | SIEMENS | B83117-D6019-T232 | 003-005-134/94C | aug.2008 |
| BILOG ANTENNA | CHASE | CBL6111A | 1798 | jul.2009 |
| LOG PERIODIC ANTENNA BROAD BAND 1-18 GHz | ROHDE & SCHWARZ | HL025 | 350380/007 | Dec.2009 |
| SPECTRUM ANALYZER | ROHDE & SCHWARZ | FSP40 | 100038 | Dec.2008 |
| SOFTWARE | ROHDE & SCHWARZ | ESK V1.60 | -- | -- |
| ARTIFICIAL MAINS NETWORK | ROHDE & SCHWARZ | ESH2-Z5 | 830364/015 | sept.2008 |
| DIGITAL OSCILLOSCOPE | TEKTRONIX | TDS 680B | B010130 | may.2008 |
| THERMOIGROMETER | SALMOIRAGHI | 1750-2/Q | 324505 | jen.2009 |
| AC POWER GENERATOR | SPITZEMBERGER | PAS5000 | A154201/00595 | apr.2010 |



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8. PHOTOS

PHOTO N. 1 – EQUIPMENT UNDER TEST

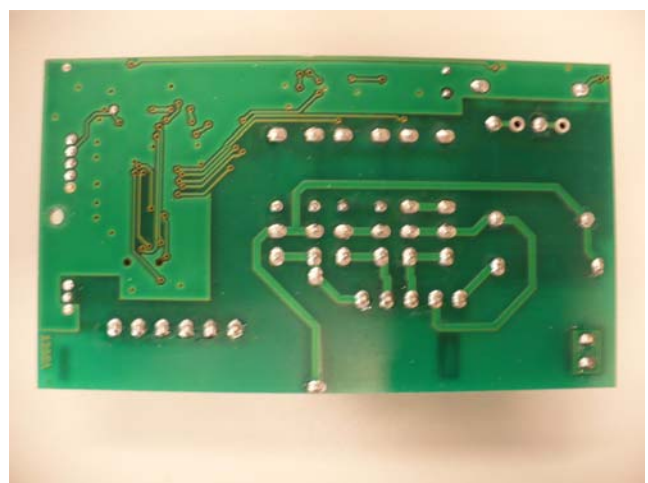
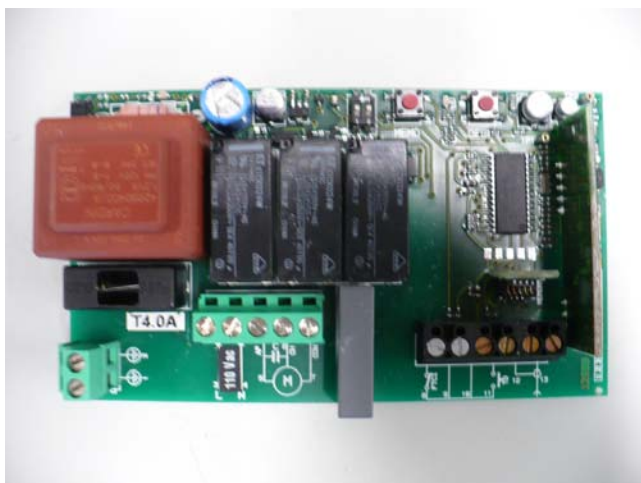


PHOTO N. 2 – SET-UP FOR EMISSION RADIATED TEST





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PHOTO N. 3 – ANTENNA

