



**Telecommunications & Telematics
for Transports Lab.**

TEST REPORT

Ref. No. ARSG00133/2

Date: 2007-03-07

Measurements performed in accordance with:



**FCC Rules: Code of Federal Regulations (CFR) no. 47 -
PART 15 – RADIO FREQUENCY DEVICES**

PRODUCT	: Radio control transmitter
APPLICANT	: SIST&MATICA S.r.l. – Via S.Pertini, 17 – I-12030 Manta
MANUFACTURER	: SIST&MATICA S.r.l. – Via S.Pertini, 17 – I-12030 Manta
TRADEMARK	: SIST&MATICA
TESTED MODEL	: EASY4
FCC ID	: PPMRXEASY4
SERIAL NUMBER	: 0270107
RATING	: DC 12/24 V
OTHER INFORMATION	: Samples received on : 2006-07-06
	Testing dates : 2006-07-06 ÷ 2006-07-07
	Samples tested No. : 1
	Testing site : IMQ S.p.A:Viale Lombardia, 20 – I-20021 Bollate

Tested by : R. Torri

Signature:

Robertino Tori

Date : 2007-03-07

Ing. C. Cantaluppi

Checked by: (EMC and R&TTE Lab Head)

Signature:

Robert O. Colburn

Date : 2007-03-09

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	2006-09-01	Test Results and Evaluation Report
Rev. 1	2007-03-07	Test report format and measurement updating

*NOTICE: The results of tests and checks reported in this Test Report refer exclusively to the samples tested and described in the Report itself.
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IMO S.p.A. - Via Quintiliano, 43 – I-20138 MILANO

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1 TEST SPECIFICATIONS, METHODS & PROCEDURES

The following tests and relevant standards have been applied to the Equipment Under Test (EUT):

1.1 EMISSION TESTS

Product family standard	Date	Title
FCC Rules	February 1, 2006	Code of Federal Regulations (CFR) no. 47 PART 15 – RADIO FREQUENCY DEVICES

1.2 EQUIPMENT CLASSIFICATION

According to the definition 15.3 (o) EUT is a Class B digital device. A digital device that is marketed for use in a residential environment notwithstanding use in commercial, business and industrial environments. Examples of such devices include, but are not limited to, personal computers, calculators, and similar electronic devices that are marketed for use by the general public. Note: The responsible party may also qualify a device intended to be marketed in a commercial, business or industrial environment as a Class B device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B digital device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B digital device, regardless of its intended use so it shall fulfil provisions of **47CFR Part 15 Subpart C – Intentional radiators** – Section 15.209 and 15.231.

1.3 ENVIRONMENTAL CONDITIONS

TEST CONDITIONS	MEASURED
Ambient Temperature	20 ÷ 25 °C
Relative Humidity	50 ÷ 60 %
Atmospheric Pressure	900 ÷ 1000 mbar

2 EQUIPMENT UNDER TEST DETAILS

2.1 EUT IDENTIFICATION

The EUT is composed by the following modules/parts:

- Receiver module

EUT classification

- Unintentional radiator

EUT use / installation
(fixed/vehicular use/portable use) :

- Vehicular

EUT single or system:

- Single

EUT standing (floor-standing/Table-top-wall-mounted) :

- ---

Dimension of EUT
(H x W x D):

- 80x75x55 mm

Weight of EUT:

- 55 g

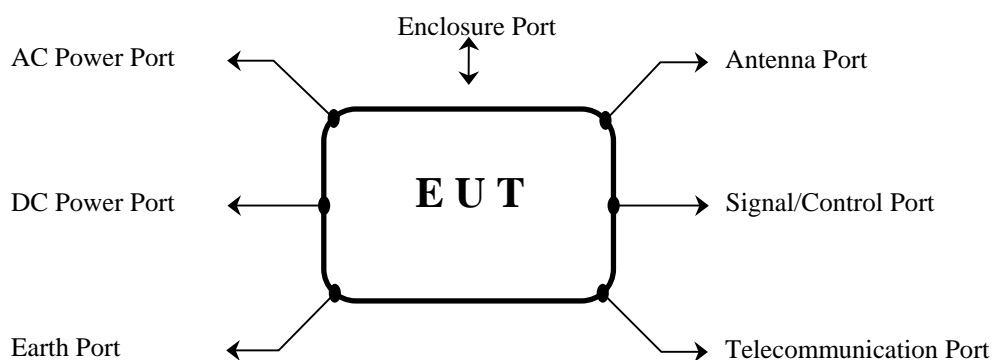
2.2 EUT TECHNICAL DATA

Power supply:	▪ DC 12/24 V (rating power supply through connection to the vehicle's battery)
Power specification	▪ ---
Working frequency	▪ 433.92 MHz
Processor	▪ ---
Main Battery	▪ None
Main SW identification	▪ ----
Main HW Board identification	▪ ---
Peripherals included (for system application)	▪ None
Interfaces :	▪ ---
Integrated interfaces :	▪ None
AC adapter:	▪ ---

2.3 TESTED SAMPLES

SAMPLE Nr.	S/N
1	---

2.4 SYSTEM INTERFACE IDENTIFICATION



#	Interface	Description	Maximum length	Ref. Document
1	Enclosure	Plastic surface	----	----

2.5 DESCRIPTION OF SUPPORT EQUIPMENT

Here following the details concerning equipment needed for correct operation or loading of the EUT, but not considered as part of equipment under test :

EQUIPMENT	MANUFACTURER	MODEL
Radio control receiver	SIST&MATICA	RXEASY4

3 GENERAL MEASUREMENT CONDITIONS

Unless special conditions specified in the present test report, EUT configuration and general measurement conditions used are based on requirements of ANSI C63.4-2003 and CISPR Pub. 22:1997.

3.1 OPERATION OF THE EQUIPMENT (EUT)

The operational condition of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission.

These operational modes are described in the following table:

Ref.	Description
#1	Receiver supplied in normal operating condition.

3.2 EUT PERFORMANCE ASSESSMENT

As declared by manufacturer the following settings have been adopted:

PRIMARY FUNCTIONS	REPRESENTATIVE PARAMETER	TEST INSTRUMENTATION	ACCEPTABLE LEVEL OF PERFORMANCE
Data transmission	Radio data transmission	---	Radio data received by radio receiver

The test instrumentation used for monitoring the parameters has the following identification:

TEST INSTRUMENTS	MANUFACTURER	MODEL	SERIAL NUMBER
---	---	---	---
---	---	---	---

4 SUMMARY OF TEST RESULTS

4.1 Emission tests

CFR47 Part 15 Subpart C Section:	Title	Port	Operating condition	Result	Test detail s
15.207	Conducted emission	AC power supply	---	Not applicable ¹	---
15.209	Radiated emission	Enclosure	#1	Complies	1
15.231	Radiated emission	Enclosure	---	Not applicable ²	---

¹ Port not present as the equipment is supplied by vehicular battery

² The equipment has not periodic transmissions

5 EMC TEST DATA

TEST No. 1	Title “Radiated disturbances”		47CFR Part 15 Ref. Section	
			15.209	
TEST REQUIREMENTS	TEST SETUP	CISPR Pub. 22 :1997		
	TEST FACILITY	Anechoic chamber		
	TEST DISTANCE	3 m		
	LIMITS FOR RADIATED DISTURBANCES	47CFR Part 15 Ref. Section: 15.209 (a)		
	FREQUENCY RANGE	0.09 – 30 MHz 30 – 1000 MHz 1000 – 4400 MHz		
	DETECTOR	PEAK		
	IF BANDWIDTH	9 kHz (0.09 – 30 MHz) 120 KHz (30 – 1000 MHz) 1 MHz (1000 – 4400 MHz)		
	NOTE: In search of max noise (EUT rotation: from 0° to 360°; receiving antenna height: from 1 m to 4 m; receiving antenna polarization: horizontal and vertical). The measurements with Quasi-Peak detector are performed only for frequencies for which the Peak values are ≥ Q.P. limit -6 dB.			

TEST DATA	PORT UNDER TEST	OPERATING CONDITION	RESULT	NOTES
	Enclosure	#1	Complies	---

Modification during the test:

- None

MEASUREMENTS RESULTS

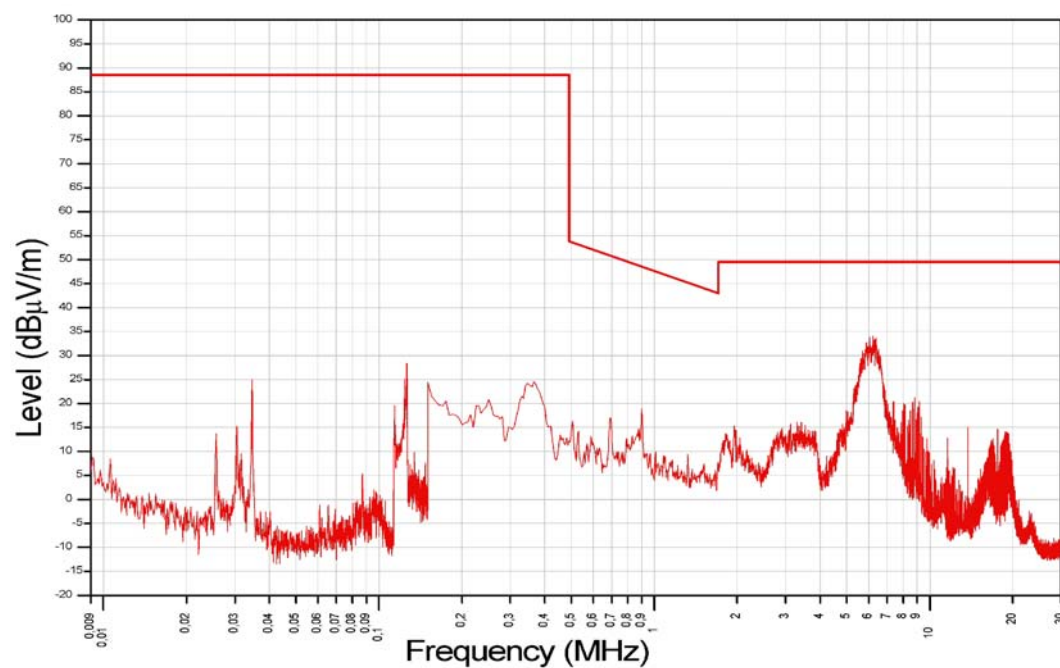
RADIATED DISTURBANCE AT ENCLOSURE PORT

There were no emissions found above 1000 MHz and up-to 4400 MHz at least 10 dB below the limit.

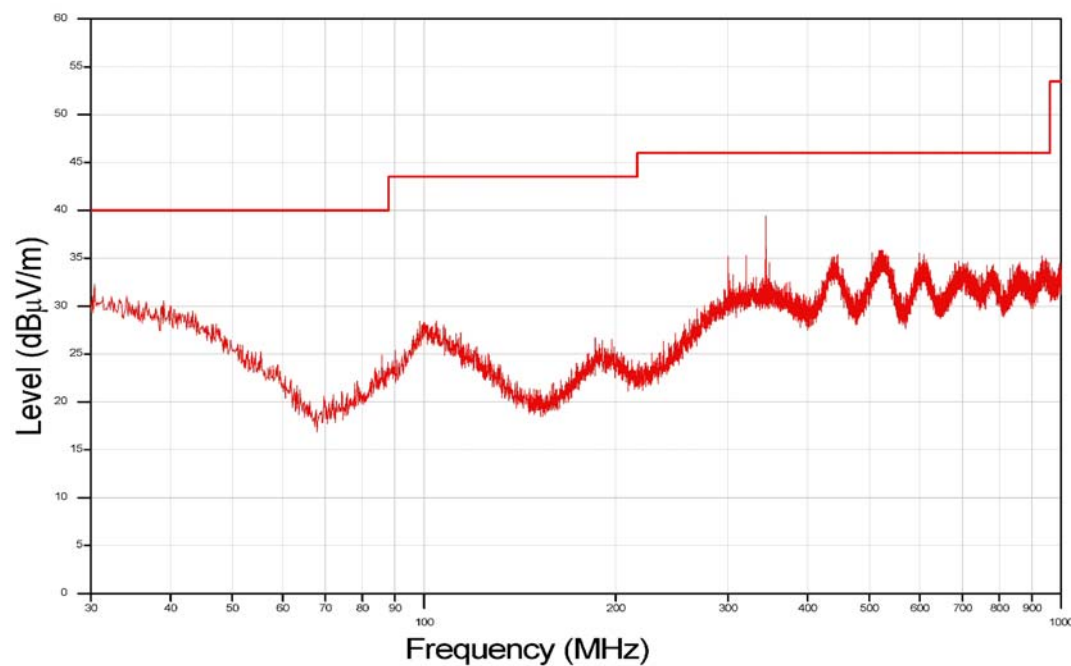
MEASUREMENTS RESULTS

RADIATED DISTURBANCE AT ENCLOSURE PORT

Radiated emission 9 kHz – 30 MHz



Radiated emission 30 MHz – 1000 MHz



6 ADDITIONAL TECHNICAL INFORMATION

6.1 Electromagnetically relevant components:

Components	N°	Manufacturer	Type – Technical data
Receiver	1	SIST&MATICA	RXEASY4

6.2 RFI suppression devices:

Components	N°	Manufacturer	Type – Technical data
None			

6.3 EMI protection devices:

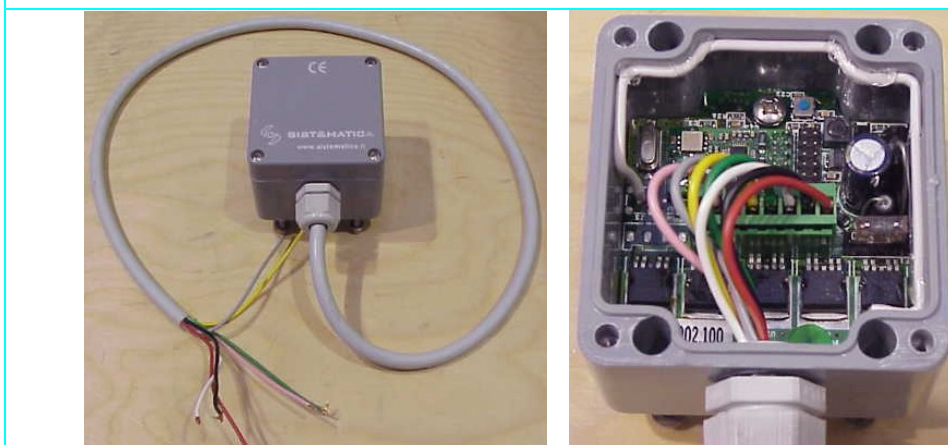
Components	N°	Manufacturer	Type – Technical data
None			

7 TECHNICAL DOCUMENTATION

DOCUMENT	REFERENCE
None	

8 PHOTOGRAPHIC DOCUMENTATION

8.1 EUT IDENTIFICATION



Front and internal view of EUT



View of marking

9 MEASUREMENT AND TEST EQUIPMENT

INSTRUMENTS	MANUFACTURER	MODEL	IMQ s/n
LISN	Comtest	/	S-02405
EMI receiver	Rohde & Schwarz	ESHS10	S-03494
EMI receiver	Rohde & Schwarz	ESVS10	S-04197
Spectrum analyzer	Rohde & Schwarz	FSP40	S-02350
Pre-amplifier	HP	HP 8439 B	S-03542
Pulse limiter	Rohde & Schwarz	ESH3-Z2	S-03510
Log-periodic antenna	ARA	LPE-2520/1	S-03511
Ridged horn antenna	Schwarzbeck	BBHA9120D	S-03464
Shielded anechoic chamber	SIDT EUROPE	/	P-02386
PC and SW for test automation	/	/	/