



TEST REPORT

Report No. : AL004702-001 Date : 2009-02-16

Application No. : LL200702(0)

Client : iRobot Corporation
8 Crosby Drive,
Bedford, MA 01730

Sample Description : One(1) submitted sample(s) stated to be Looj Robot
of Model No. 12501
Radio Frequency : 49.860MHz Receiver
Rating : 1 x 7.2V rechargeable battery
No. of submitted sample : Two (2) piece(s) ***

Date Received : 2009-01-07.

Test Period : 2009-01-08 to 2009-01-14.

Test Requested : FCC Part 15 Class II Permissive Change.

Test Method : 47 CFR Part 15 (10-1-07 Edition)
ANSI C63.4 – 2003


Test Result : See attached sheet(s) from page 2 to 11.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15
Subpart B.

Remark : The position of antenna and PWM controller were changed.
The model 12501 is based on the previous certified model 18473.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Mr Wong Lap-Pong, Andrew
Assistant Manager
Electrical Division

FCC ID: UFE89098RX

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1 General Information

1.1 General Description

The equipment under test (EUT) is a receiver for Looj Robot. It operates at 49.860MHz and the oscillation of radio control is generated by a LRC circuit. The EUT is powered by 1 x 7.2V rechargeable battery. When it received a forward, backward, spinning signal, it will move to the corresponding direction or take the corresponding action.

The brief circuit description is listed as follows:

Main PCB:

- U1 and associated circuit act as a decoder.
- U4 and associated circuit act as a voltage regulator.
- U3 and associated circuit act as a motor daughter card interface.
- Q3 ~ Q6 and associated circuit act as a motor driver for wheel motor.
- Q1, Q9, Q11, Q12 and associated circuit act as a motor driver for auger motor.

Daughter PCB

- Q1 ~ Q3, Q14, U1 and associated circuit act as a PWM generator.
- Q7, Q8, Q13 and associated circuit act as a turn on delay.



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1.2 Location of the test site

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.



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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date
EMI Test Receiver	R&S	ESCI	100152	2009-12-02
Broadband Antenna	Schaffner	CBL6112B	2692	2009-01-21
Signal Generator	IFR	2023A	202304/972	2009-08-17



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2 Description of the radiated emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

A signal generator was used to radiate an unmodulated continuous wave (CW) signal to the EUT (superregenerative receiver) at its operating frequency in order to “cohere” the characteristic broadband emissions from the receiver.

2.2 Test Result

The emissions meeting the requirement of section 15.109 are based on measurements employing the CISPR quasi-peak detector below 1000MHz and average detector for frequencies above 1000MHz.

The frequencies from 30MHz to 1000MHz were investigated, and emissions more 20dB below limit were not reported. Thus, those highest emissions were presented in next page.

It was found that the EUT meet the FCC requirement.



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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB μ V/m)	Antenna and Cable factor (dB)	Field Strength (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
49.461	H	11.4	10.5	21.9	40.0	-18.1
50.245	H	13.3	8.8	22.1	40.0	-17.9
51.028	H	13.4	8.8	22.2	40.0	-17.8
51.429	H	12.8	8.8	21.6	40.0	-18.4
51.815	H	13.2	8.8	22.0	40.0	-18.0
99.371	H	13.2	9.4	22.6	43.5	-20.9
100.084	H	13.1	11.3	24.4	43.5	-19.1
100.556	H	13.3	11.3	24.6	43.5	-18.9
149.164	H	12.4	12.6	25.0	43.5	-18.5
150.139	H	12.3	12.6	24.9	43.5	-18.6



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3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

No measurement is required as the EUT is a battery-operated product.

3.3 Graph and Table of Conducted Emission Measurement Data

Not Applicable



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4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conduction Emission

For electronic filing, the photos are saved with filename TSup1.jpg to TSup2.jpg.

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename ExPho1.jpg to ExPho2.jpg and InPho1.jpg to InPho4.jpg.



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5 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

5.1 Bandwidth

Not Applicable

5.2 Duty cycle

Not Applicable

5.3 Transmission time

Not Applicable



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6 Appendices

A1.	Photos of the set-up of Radiated Emissions	1	page
A2.	Photos of External Configurations	1	page
A3.	Photos of Internal Configurations	2	pages
A4.	ID Label/Location	1	page
A5.	Block Diagram	1	page
A6.	Schematics Diagram	7	pages
A7.	User Manual	12	pages
A8.	Operation Description	2	pages

***** End of Report *****