2/F., Garment Centre,
576 Castle Peak Road, Kowloon,
Hong Kong.

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EMC VERIFICATION SUMMARY
Pursuant to EMC Directive 2014/30/EU

Report No.:	19090448HKG-001
Applicant:	Silverlit Toys Manufactory Ltd. Room 1102, East Ocean Centre, 98 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong.
Equipment Under Test (EUT):	
Product Description:	ROBO DACKEL JR.
Model:	88578
Sample Receipt Date:	10 Sep 2019
Test Conducted Date:	10 Sep 2019 to 12 Sep 2019
Issue Date:	12 Sep 2019
Test Site Location:	1. For Radiated Emission Test: Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong. 2. For Other Test: 2nd Floor, Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Relevant Standard(s):	EN 55014-1:2006+A1+A2 EN 55014-2:1997+A1+A2 (EN 61000-4-2:1995+A1+A2) EN 55014-2:2015 (EN 61000-4-2:2009)
Conclusion:	Test was conducted by client submitted sample. The submitted sample as received complied with the EMC requirement.

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Prepared and Checked by:

Signed on File
Tsui Pui Shing, Felix
Assistant Engineer

Approved by:

Digitally signed by Joe Ma
DN: cn=Joe Ma, o, ou=ITS, email=joe.j.ma@intertek.com, c=HK

Ma Jun, Joe
Senior Lead Engineer

TEST REPORT

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1. GENERAL INFORMATION

1.1 Client Information

Applicant: Silverlit Toys Manufactory Ltd.

1.2 General Description of EUT

Product Description: ROBO DACKEL JR.
Model No.: 88578
Serial No.: Not Labelled

1.3 Details of EUT

Rated Voltage: IR TX: DC 1.5V (1 x 1.5V "AAA" battery),
IR RX: DC 4.5V (3 x 1.5V "AAA" batteries)
Cables: N/A

For more detail features, please refer to user's Manual.

1.4 Description of Peripherals

a) Support Equipment
N/A

b) Cable
N/A

c) Adaptor
N/A

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2. TEST SUMMARY

Test	Standard	Result
Radiated Emission	EN 55014-1	Pass
Electrostatic Discharge	EN 55014-2 (EN 61000-4-2)	Pass

Remark:

The EUT has been tested/evaluated and pass the above EN standard without modification.

The production units are required to conform to the initial sample as received when the units are placed on the market.

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3. TEST SPECIFICATIONS

3.1 Standards

The radiated emission test was performed according to the procedures in EN 55014-1. Test results are in compliance with the requirements of EN 55014-1.

All the immunity tests were performed according to the procedures in the relative standards. Test results are in compliance with the requirements of EN 55014-2.

The EUT setup configuration please refers to the photo of test configuration in item.

3.2 EUT Operation Condition

The EUT was powered by IR TX: DC 1.5V (1 x 1.5V "AAA" battery), IR RX: DC 4.5V (3 x 1.5V "AAA" batteries) and was running in accordance with the manufacturer’s operation manual.

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4. RADIATED EMISSION MEASUREMENTS

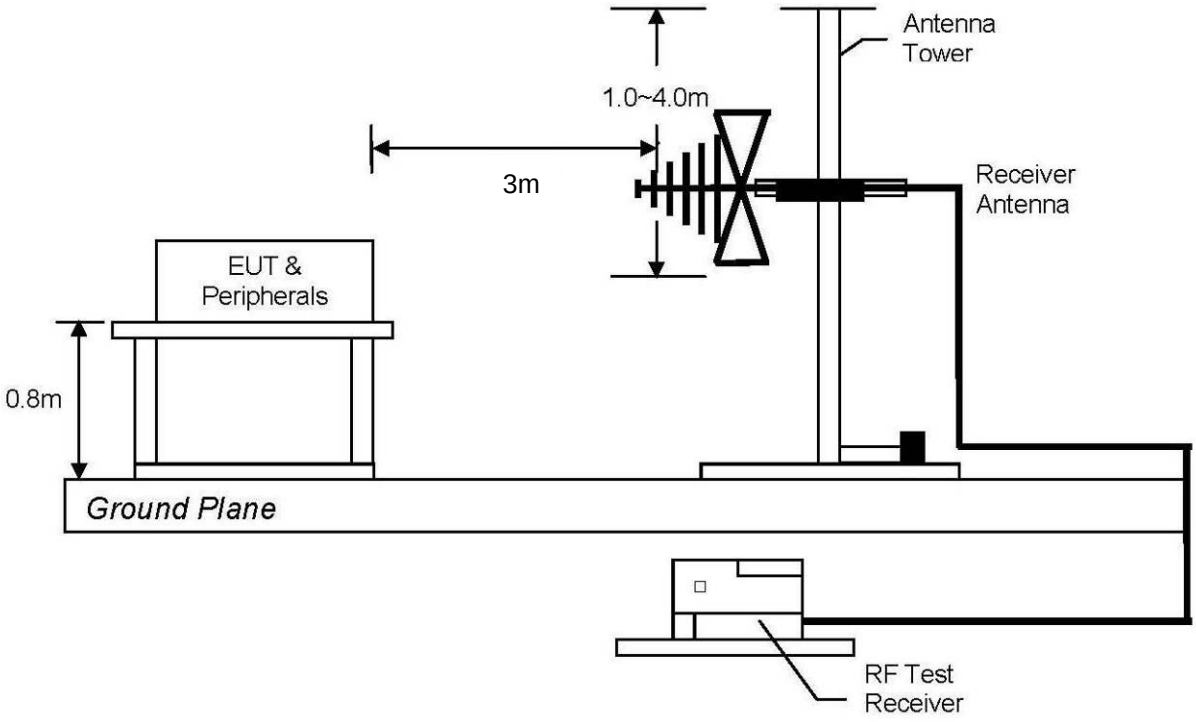
4.1 Operating Environment

Temperature:	25°C ± 10°C	Test Voltage:	IR TX: DC 1.5V (1 x 1.5V "AAA" battery), IR RX: DC 4.5V (3 x 1.5V "AAA" batteries)

4.2 Test Setup and Procedure

The figure below shows the test setup, which is utilized to make these measurements.

The frequency spectrum from 30MHz to 1000MHz was investigated.



For tabletop equipment, the equipment under test was placed on the top of rotation table 0.8 meter above ground plane. For floor-standing equipment, the EUT and all cables were insulated, if required, from the ground plane by up to 12 mm of insulating material.

The table was 360 degrees to determine the position of the highest radiation.

EUT is set 3 meters from the EMI receiving antenna, which is mounted on a variable height mast. The antenna height is varied between one meter and four meters above ground to find the maximum value of the field strength. Both horizontal polarization and vertical polarization of the antenna are set to make the measurement. The bandwidth was setting on the EMI meter 120 kHz. Then the measured data will be converted to 10 meters data.

The levels are quasi peak value readings. The frequency spectrum from 30MHz to 1000MHz was investigated.

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4.3 Test Equipment

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.
EW-3156	EMI Test Receiver	ROHDESCHWARZ	ESR26	101398
EW-3281	Spectrum Analyzer	ROHDESCHWARZ	FSV40	101229
EW-0571	Biconical Antenna 20MHz to 200MHz	EMCO	3104C	9504-4685
EW-1042	Log Periodic Antenna	EMCO	3148	0001-1109
EW-1133	Double Ridged Guide Antenna	EMCO	3115	0003-6091
EW-2505	14m Double Shield RF Cable (20MHz - 6GHz)	RADIALL	nm / br5d / sma 14m	Nil

4.4 Radiated Emission Limits

According to EN 55014-1 Clause 4.1.2.2, the field strength of radiated emission from the toy at a distance of 10 meters shall not exceed the following values:

Frequency MHz	Field Strength dBµV/m
30 to 230	30
230 to 1000	37

4.5 Uncertainty of Radiated Emission

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

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4.6 Radiated Emission Test Data

Phase: Horizontal/ Vertical
Model: 88578 (IR RX)
Worst Case: Motoring, Sound, Flashing Light and IR RX

Polarization	Frequency (MHz)	Net at 3m (dBμV/m)	Calculated Net at 10m (dBμV/m)	Limit at 10m (dBμV/m)	Margin (dB)
H	133.997	27.6	17.1	30	-12.9
H	242.496	28.6	18.1	37	-18.9
H	345.329	31.2	20.7	37	-16.3
H	448.162	29.7	19.2	37	-17.8
H	560.203	31.5	21.0	37	-16.0
H	663.966	30.1	19.6	37	-17.4

Notes:
1. Quasi-Peak Detector Data
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30 MHz to 1000 MHz.
4. Only emissions significantly above equipment noise floor are reported.
5. Uncertainty : ± 5.3 dB at a level of confidence of 95%

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Phase: Horizontal/ Vertical
Model: 88578 (IR TX)
Worst Case: Flashing Light and IR TX

Polarization	Frequency (MHz)	Net at 3m (dBμV/m)	Calculated Net at 10m (dBμV/m)	Limit at 10m (dBμV/m)	Margin (dB)
H	31.371	24.0	13.5	30	-16.5
H	39.214	25.6	15.1	30	-14.9
H	47.057	23.4	12.9	30	-17.1
H	50.194	26.0	15.5	30	-14.5
H	53.331	24.4	13.9	30	-16.1
H	66.663	26.2	15.7	30	-14.3

Notes:
1. Quasi-Peak Detector Data
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30 MHz to 1000 MHz.
4. Only emissions significantly above equipment noise floor are reported.
5. Uncertainty : ± 5.3 dB at a level of confidence of 95%

Total Quality. Assured.

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5. PERFORMANCE CRITERIA FOR IMMUNITY TEST

Performance Criterion A :

The apparatus shall continue to operate as intended during test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance Criterion B :

The apparatus shall continue to operate as intended after test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance Criterion C :

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

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6. ELECTROSTATIC DISCHARGE

6.1 Operating Environment

Temperature: 23.0 °C Relative Humidity: 54.0 %
Atmospheric Pressure : 100 kPa

6.2 Test Setup and Procedure

Basic Standard:		EN 61000-4-2
Port:		Enclosure
Required Performance Criterion:		C
Level:		±8.0 kV (Air Discharge) ±4.0 kV (Contact Discharge) ±4.0 kV (Indirect Contact Discharge)
Time Between Each Discharge:		1 second
Test Mode:		Stand-by and Operating (Motoring, Sound, Flashing Light, IR TX and IR RX)
Test Setup:		Table-Top
Test of Post-installation		N/A
Test Point:	Air Discharge :	All insulated enclosure and seams
		All the points where contact discharge cannot be applied
	Contact :	All metal parts of the EUT
	HCP :	All sides of the EUT
	VCP :	Four faces of the EUT

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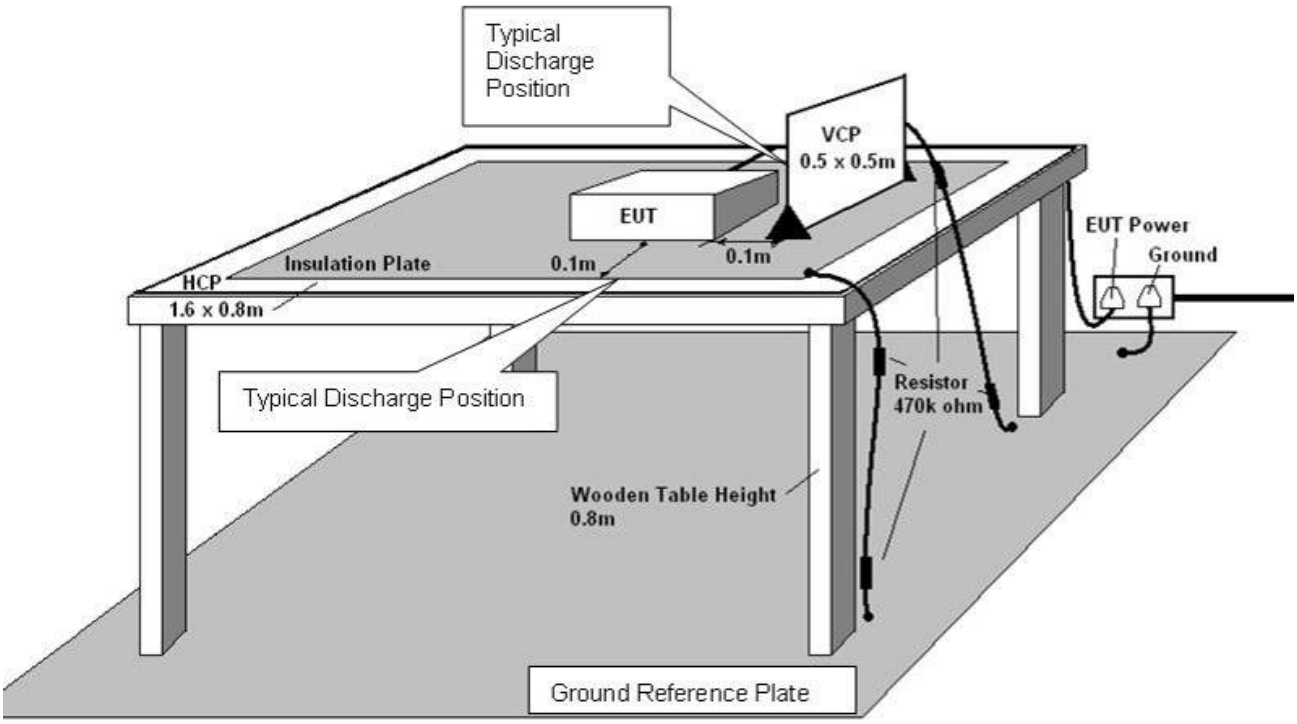
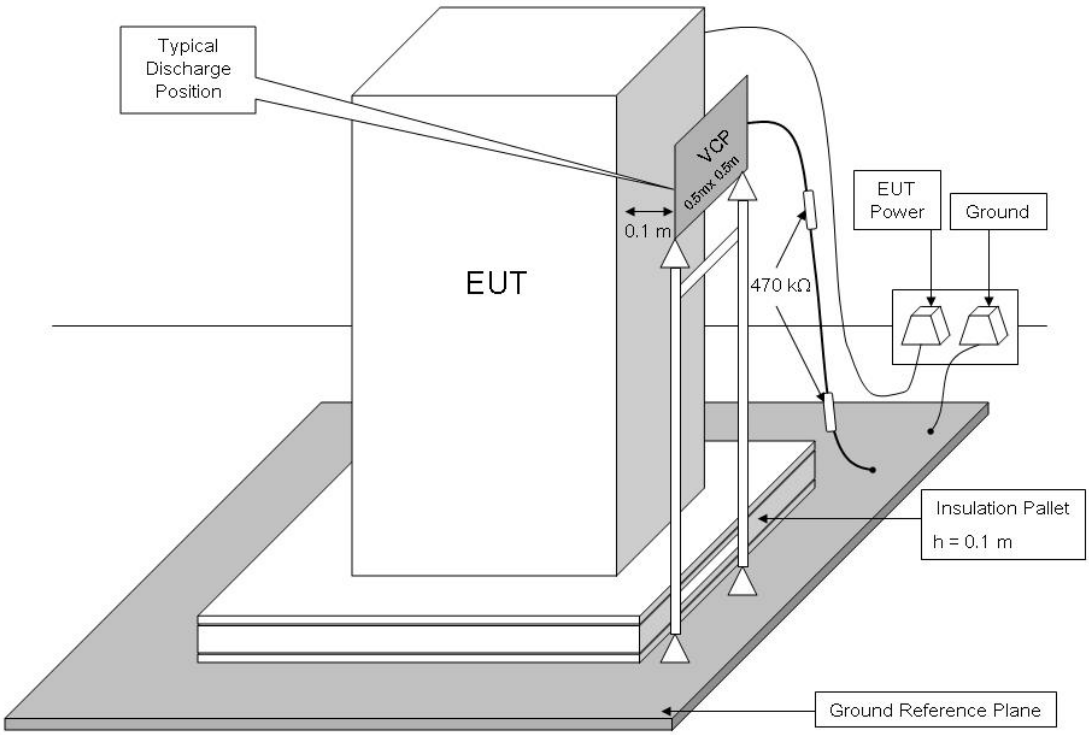
The typical table-top test setup is as follow:



The typical floor-stand test setup is as follow:



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6.3 Test Equipment

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.
EW-2282	ESD Gun	Schaffner	NSG435	5888

6.4 Required Performance Criterion

Apparatus shall fulfill the following requirement :

A performance criterion C should be applied to battery operated toys not using score or data entered by the user and with no internal clock frequency or oscillator frequency higher than 15MHz only.

All other apparatus which is covered by this standard should meet a performance criterion B.

6.5 Test Results

Discharge Type	No. of Discharge	Applied Voltage	Result (Pursuant to EN 55014-2 Criterion C)
Contact Discharge	20	+4kV	OK
		-4kV	OK
Air Discharge	20	+8kV	OK
		-8kV	OK
Indirect HCP Discharge	20	+4kV	OK
		-4kV	OK
Indirect VCP Discharge	20	+4kV	OK
		-4kV	OK

☒ There was no observable degradation in performance.

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APPENDIX A1: EXTERNAL PHOTO OF EUT

Photo – Model: 88578 (IR TX)

Photo – Model: 88578 (IR RX)

---- E N D ----

Guidelines On Issuing EC Declaration Of Conformity Pursuant To EMC Directive

To attest the compliance of apparatus with the relevant EMC Directive, an EC Declaration of Conformity shall be issued by the manufacturer or his authorised representative in the European Community, and the attached EC Declaration of Conformity template contains all mandatory requirements pursuant to EMC Directive 2014/30/EU. Please follow the steps listed below when preparing an EC Declaration of Conformity:

1. Provide the name and address of the manufacturer;
2. Provide the name and address of the authorised representative in the European Community, where applicable;
3. For Apparatus' Description, specify the brand name and any other information allowing for the description of the apparatus to which the EC Declaration of Conformity refers;
4. For Apparatus' Identification, specify the type, batch, serial number or any other information allowing for the identification of the apparatus to which the EC Declaration of Conformity refers;
5. Specify the relevant EMC Directive with which the apparatus are in compliance;
6. List all dated specifications under which conformity is declared to ensure the conformity of the apparatus with the relevant EMC Directive, you may refer the standards shown in the Test Verification of Conformity issued by Intertek;
7. Sign the EC Declaration of Conformity by the person empowered to bind the manufacturer or his authorised representative in the European Community. The Name, Position and Company of this person shall be specified for identification;
8. State the date of issuing the EC Declaration of Conformity.

NOTES:

a. The EC Declaration of Conformity shall be held by the manufacturer or his authorised representative in the European Community at the disposal of the competent authorities for a period of at least ten years after the date on which such apparatus was last manufactured. If neither the manufacturer nor his authorised representative is established within the European Community, the obligation to hold the EC Declaration of Conformity at the disposal of the competent authorities shall lie with the person who places the apparatus on the European Community market.

b. If EMC Directive 2014/30/EU is applied, the manufacturer shall draw up technical documentation according to Annex IV of this EMC Directive; and in addition to CE Marking, the apparatus shall also meet other marks and information as stated in Article 9 of the same EMC Directive.

c. The EC Declaration of Conformity guidelines and template are for your reference only, you shall ensure that the EMC Directive 2014/30/EU are applied correctly.

EC DECLARATION OF CONFORMITY

I, the undersigned,

Manufacturer's Name:

Manufacturer's Address:

Authorised Representative's Name:

Authorised Representative's Address:

certify and declare under our sole responsibility that the following apparatus:

Apparatus' Description:

Apparatus' Identification:

conforms with the essential requirements of

Directive:

based on the following specifications applied:

Dated Specifications:

and therefore complies with the essential requirements and provisions of the EMC Directive.

Signature:

Full Name:

Position:

Company:

Date: