



BUREAU  
VERITAS

CONSUMER PRODUCTS SERVICES DIVISION



## LEXIBOOK LIMITED

**Technical Report:** (5219)171-0222

Date Received: June 20, 2019

July 11, 2019

Page 1 of 12

JOHN CHONG  
LEXIBOOK LIMITED  
UNIT 8-9, 4TH FLOOR KENNING INDUSTRIAL  
BUILDING  
19 WANG HOI ROAD  
KOWLOON BAY  
KOWLOON  
HONG KONG

Sample Description: SMART ROBOT  
1.) POWERGIRL  
2.) POWERMAN

Vendor: N/A  
Manufacturer: N/A

Sample Size: 8  
Style No(s): (ROB20) ROB20GEN,  
(ROB20) ROB20EN

Buyer: N/A  
Labeled Age Grade: 3+  
Appropriate Age Grade: OVER 8 YEARS OF AGE  
Client Specified Age Grade: NOT SPECIFIED

SKN/SKU No.: N/A  
PO No.: N/A  
Ref #: N/A  
Country of Origin: CHINA

Tested Age Grade: OVER 3 YEARS OF AGE  
UPC Code: 3380743081021, 3380743060231  
Test Starting Date: JUNE 20, 2019

Assortment No.: N/A

Test Finished Date: JULY 11, 2019

Terminal voltage: 4.5V (ROBOT)  
3.0V (REMOTE)

### EXECUTIVE SUMMARY:

The sample COMPLIES with the tested requirements of the applicable EC harmonized standards EN 55014-1 and EN 55014-2 pertaining to Directive 2014/30/EU Electromagnetic Compatibility.

BUREAU VERITAS HONG KONG LIMITED

Law Man Kit  
Assistant Manager  
EMC Department

LMK/eva

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LEXIBOOK LIMITED  
 Technical Report: **(5219)171-0222**  
 July 11, 2019  
 Page 2 of 12

## **STANDARDS**

<b>EMISSION STANDARD APPLIED</b>		
<b>Standard</b>		<b>Overall Result</b>
EN 55014-1: 2017  Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission		<b>Meet</b>
<b>Emission Tests Required</b>		
<b>Test</b>	<b>Test method</b>	<b>Result</b>
Measurement of Radiated Disturbances (30 MHz – 1000 MHz)	CISPR 16-2-3: 2006	<b>Meet</b>

<b>IMMUNITY STANDARD APPLIED</b>		
<b>Standard</b>		<b>Overall Result</b>
EN 55014-2: 2015  Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity		<b>Meet</b>
<b>Immunity Tests Required</b>		
<b>Test</b>	<b>Test method</b>	<b>Result</b>
Electrostatic Discharge (ESD)	IEC 61000-4-2: 2008	<b>Meet</b>



LEXIBOOK LIMITED  
Technical Report: **(5219)171-0222**  
July 11, 2019  
Page 3 of 12

**Test Laboratory**

**Hong Kong Productivity Council – Electromagnetic Compatibility Centre**

**Address:**

LG1/F., HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong

**BUREAU VERITAS HONG KONG LIMITED, EMC CENTRE**

**Address:**

No. 2106-2107, 21/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

**A) Emission Measurements:**

Classification of electrical and electronic toys and the consequently applicable emission tests in accordance to the standard EN 55014-1:

Per sub-clause 7.3.6.1 of EN55014-1, the captioned EUT falls within the scope of the following category:

**Category B:**

Definition: Battery toys with built-in batteries, without possibility for external electric connection

Tests required: - radiated disturbances



LEXIBOOK LIMITED  
Technical Report: **(5219)171-0222**  
July 11, 2019  
Page 4 of 12

#### Test Results:

##### Measurement of Radiated Electromagnetic Disturbances (30 MHz – 1 GHz):

**Standard:** EN 55014-1  
**Limit:** Table 9  
**Port under test:** Enclosure  
**Operational mode under test:** On mode (with sound, light, motor, infrared remote control)  
Record mode (with sound, light, mic)

The operational mode under test is determined according to the typical use of the EUT with respect to the expected highest level of emission. During the test, various parts of the EUT system are exercised in a manner permitting detection of all system disturbances.

##### **Test Location: Hong Kong Productivity Council – Electromagnetic Compatibility Centre**

LG1/F., HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong

##### **Test equipment:**

Description	Brand Name	Model No.
EMI TEST RECEIVER	R&S	ESU40
SEMI-ANECHOIC CHAMBER	FRANKONIA	--
BICONICAL ANTENNA	R&S	HK116
LOG-PERIODIC ANTENNA	R&S	HL223
ACTIVE LOOP ANTENNA	EMCO	6502

##### Remarks: -

The measurement instrumentation uncertainty would be taking into consideration on each of the test result

**Test method:**

The test is performed in accordance with CISPR 22 as a basic standard at a measurement range of 3 meters.

The test site has, by verification measurements, satisfied the normalized site attenuation (NSA) requirements specified in the standard CISPR 22. For each test frequency during final test, the antenna-to-EUT azimuth is varied through 360°. The antenna is also scanned between 1m to 4m in height above the ground plane to maximize the level of radiated disturbances. The final test results are measured with quasi-peak detector of the EMI test receiver.

If the measurement results are 20 dB lower than the corresponding limit levels, no records of these measurement results are required.

**Results:**

The maximum radiated electromagnetic disturbances measured are recorded as shown below:

Measuring range: 3 meters

Frequency	Antenna Polarization	Detector	Measurement Result @ 3m	Limit @ 3m	Margin	Comment
<i>MHz</i>	<i>Vertical / Horizontal</i>	Quasi-Peak	<i>dBμV/m</i>	<i>dBμV/m</i>	<i>dB</i>	<i>Meets / Does not Meet</i>
261.56	<i>Vertical</i>	Quasi-Peak	30.7	47.0	-16.3	<i>Meets</i>
465.32	<i>Vertical</i>	Quasi-Peak	35.2	47.0	-11.8	<i>Meets</i>
520.04	<i>Vertical</i>	Quasi-Peak	33.9	47.0	-13.1	<i>Meets</i>
207.36	<i>Horizontal</i>	Quasi-Peak	28.7	40.0	-11.3	<i>Meets</i>
337.36	<i>Horizontal</i>	Quasi-Peak	33.1	47.0	-13.9	<i>Meets</i>
960.84	<i>Horizontal</i>	Quasi-Peak	38.1	47.0	-8.9	<i>Meets</i>

Remarks: Calculated measurement uncertainty: 5.1dB (30MHz to 200MHz)  
 6.2dB (200MHz to 1GHz)



LEXIBOOK LIMITED  
Technical Report: **(5219)171-0222**  
July 11, 2019  
Page 6 of 12

#### Immunity Tests:

Classification of electrical and electronic toys and the consequently applicable immunity tests in accordance to the standard EN 55014-2:

Per clause 4 of EN55014-2, the captioned EUT falls within the scope of the following category; listed together with the applicable tests and performance criteria in accordance to sub-clause 7.2 of EN 55014-2:

<b>Category III:</b>	Battery powered apparatus (with built-in batteries or external batteries) which in normal use is not connected to the mains, containing electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15 MHz
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Test Applicable for Category III Equipment:	Performance Criteria
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- |   |   |
|---|---|
| (1) Electrostatic Discharge (ESD)<br><i>If the equipment are appliances or toys using score or data entered by the user</i> | B |
|---|---|



#### Definitions of Performance criteria

- **Criterion A:** The apparatus shall continue to operate as intended during the 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 what the user may reasonably expect from the apparatus if used as intended.
- **Criterion B:** The apparatus shall continue to operate as intended after the 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 however allowed. 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 what the user may reasonably expect from the apparatus if used as intended.
- **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.

#### Classification of Observations

Observation	Description
A	Satisfying Performance Criterion A
B	Satisfying Performance Criterion B
C	Satisfying Performance Criterion C
D	Loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data



LEXIBOOK LIMITED  
Technical Report: **(5219)171-0222**  
July 11, 2019  
Page 8 of 12

### Electrostatic Discharge (ESD):

<b>Standard:</b>	EN 55014-2	<b>Test method:</b>	IEC61000-4-2
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**Test Levels:**  $\pm 4\text{kV}$  for Contact Discharge,  $\pm 8\text{kV}$  for Air Discharge

**Test Location:**

No. 2106-2107, 21/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

**Test equipment:**

Description	Brand Name	Model
Electrostatic Discharge Simulator	Kikusui	KES 4021A
Ground Reference Plane (GRP) - Dimension = 2.70m x 1.93m (Length x Width)	None	None
Wooden Table, - Height = 0.8m	None	None
Horizontal Coupling Plane (HCP) - Dimension = 1.6m x 0.8m (Length x Width) - Connected to the GRP via two resistors of 470kΩ in series	None	None
Insulation Support Laminate - Thickness = 0.5 mm	None	None
Vertical Coupling Plane (VCP) - Dimension 0.5m x 0.5m (L x W) - Connected to the GRP via two resistors of 470kΩ in series	None	None
Thermometer & Hydrometer	Sato Keryoki	NSII – Q
Barometer	Sigma-II	7237-00
Conductive Discharge Brush for ungrounded EUT (Connected to the GRP via two resistors of 470kΩ in series)	None	None

**Results:**

Operation mode under test:	On mode (with sound, light, motor, infrared remote control)
	Record mode (with sound, light, mic)
	Standby mode

Environmental Condition:

Temperature (°C):	28	Relative Humidity (%) :	48	Atmospheric Pressure (kPa):	100.0
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Application of direct discharges

i) Contact Discharge

The ESD generator is held with its tip of the contact discharge electrode perpendicular to the surface of the point of the sample enclosure to be tested. The tip of electrode shall firmly touch the surface of the point to be tested prior to charging up the electrode and application of discharge to the point under test.

At least 10 positive discharges and 10 negative discharges are applied to each accessible and dischargeable metal parts of the enclosure with an interval of at least 1 second between successive discharges.

Points of discharge	Polarity	Applied voltage (kV)	Performance criterion	Observation	Result
Screws	-	4	B	A	Meet
	+	4	B	A	Meet

Remark: A, normal performance

ii) Air Discharge

The ESD generator is held with its tip of the air discharge electrode charged up prior to the application of discharge. The tip of charged electrode shall be brought to the surface of the point to be tested as fast as possible without causing any mechanical damage to the sample.

At least 10 positive discharges and 10 negative discharges are applied to each dischargeable but un-accessible metal parts or non-metal parts of the enclosure with an interval of at least 1 second between successive discharges.

Points of discharge	Polarity	Applied voltage (kV)	Performance criterion	Observation	Result
Enclosure	-	8	B	A	Meet
	+	8	B	A	Meet

Remark: A, normal performance

Application of indirect discharges

i) Discharge on Horizontal Coupling Plane (HCP)

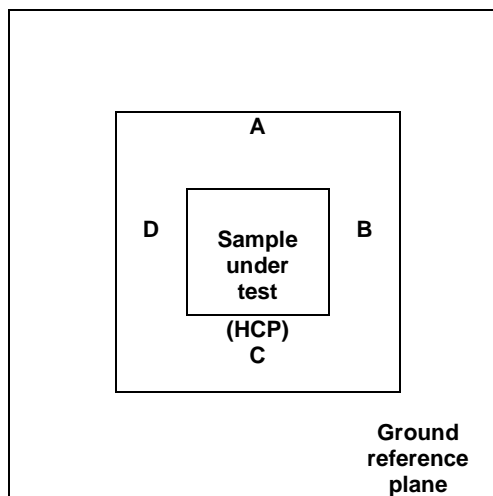
The electrostatic discharge generator is held horizontally in plane of the horizontal coupling plane (HCP), with the contact discharge electrode firmly touching the edge of the HCP. The tip of the electrode shall be at a distance of 0.1 m from the side of the sample being tested.

At least 10 positive discharges and 10 negative discharges are applied with an interval of not less than 1 second between each discharge.

Points of discharge	Polarity	Applied voltage (kV)	Performance criterion	Observation	Result
Position A, B, C, D	-	4	B	A	Meet
	+	4	B	A	Meet

Remark: A, normal performance

Figure 1:



ii) Discharge on Vertical Coupling Plane (VCP)

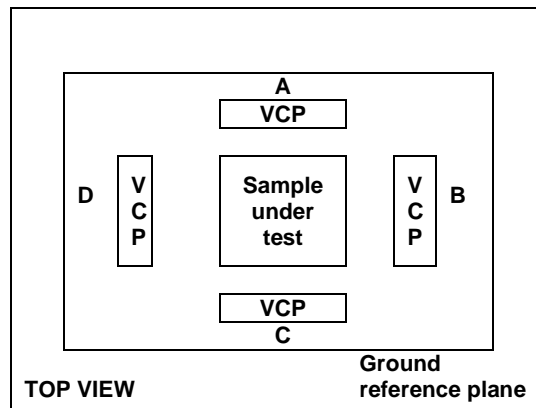
The electrostatic discharge generator is positioned horizontally to the center of the edge of the Vertical Coupling Plane (VCP) which is located vertically 0.1 m from the sample with contact discharge electrode touching the vertical coupling plane.

At least 10 positive discharges and 10 negative discharges are applied with an interval of not less than 1 second between each discharge.

Points of discharge	Polarity	Applied voltage (kV)	Performance criterion	Observation	Result
Position A, B, C, D	-	4	B	A	Meet
	+	4	B	A	Meet

Remark: A, normal performance

Figure 2:





Sample Number  
(5219)171-0222



Sample Number  
(5219)171-0222

END OF REPORT