



EMC VERIFICATION SUMMARY

Report No.: SZHH01091799-001

Toy

ITE

Others

| | | | |
|--|--|--------------------------|--------------------------|
| Model: BL-76120 Additional Models: BL-76121, BL-76122, BL-76220, BL-76221, BL-76222, BL-76330, BL-76331, BL-76332. Product Description: NOJE | Applicant: DONGGUAN LIYANG TOYS LTD. Floor 3, Building 2, Daxingwei Industry Xianxi, Wusha, Changan Town, Dongguan City, Guangdong Province Sample Receipt Date: 13 September 2016 Test Conducted Date: 13 September 2016 to 1 November 2016 | | |
| <input checked="" type="checkbox"/> 1 st TEST <input type="checkbox"/> 2 nd TEST | ALL TESTS WERE CONDUCTED IN ACCORDANCE WITH: *EN 55014-1: 2006 + A1: 2009 + A2: 2011 *EN 55014-2: 1997 + A1: 2001 + A2: 2008 | | |
| Test Site and Location: | Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch 6/F., Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, China | | |
| Test Result | OK | Not OK | Remark |
| *EN 55014-1: 2006 + A1: 2009 + A2: 2011 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| *EN 55014-2: 1997 + A1: 2001 + A2: 2008 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Remark: When determining the test conclusion, the Measurement Uncertainty of test has been considered. | | | |

Prepared and checked by:

Approved By:

Sign On File
Vanessa Deng
Assistant Engineer
Intertek

Jimmy Wen
Assistant Supervisor
Intertek
Date: 1 November 2016

- This summary is part of the full report and should be read in conjunction with it.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
- The test report only allows to be revised only within the report defined retention period unless further standard or the requirement was noticed

TRF No.: EN55014-1/-2_b

1 of 23

EMC Results Conclusion (with Justification)

RE: EMC Testing Pursuant to EMC Directive 2014/30/EU, Performed On the NOJE,
Model: BL-76120

We tested the NOJE, Model: BL-76120, to determine if it was in compliance with the relevant EN standards as marked on the EMC Verification Summary. We found that the unit met the requirement of EN55014-1, EN55014-2 standards when tested as received.

The Models: BL-76121, BL-76122, BL-76220, BL-76221, BL-76222, BL-76330, BL-76331, BL-76332 are the same as the Model: BL-76120 in hardware aspect. The difference in model number serves as marketing strategy.

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

LABORATORY MEASUREMENTS**Configuration Information**

| | |
|------------------------------------|---|
| Equipment Under Test (EUT): | NOJE |
| Model: | BL-76120 |
| Serial No.: | N/A |
| Support Equipment: | N/A |
| Cables: | USB Cable (Length: 100cm Unshielded) (Provided by client) |
| Adaptor: | TP-LINK (Model: T050100-2A3) Input: AC 100V-240V, 50/60Hz, 0.3A; Output: 5V, 1A (Provided by Intertek) |
| Rated Voltage: | DC 3.7V(1 x 3.7V rechargeable battery) which can be charged by adaptor |

Performance Criteria for Immunity

The performance criteria are referred to the test standard: EN 55014-2

Performance criteria A

During and after the test the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a minimum performance level specified by the manufacturer when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. 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 by what the user may reasonably expect from the EUT if used as intended.

Performance criteria B

After the test, the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.

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 by what the user may reasonably expect from the EUT if used as intended.

Performance criteria C

During and after testing, a temporary loss of function is allowed, provided the function is selfrecoverable, or can be restored by the operation of the controls or cycling of the power to the EUT by the user in accordance with the manufacturer's instructions.

Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120
Worst Case Operating Mode: Motor

EN 55014-1 Radiated Scan

Used Test Equipment

| Equipment No. | Equipment | Manufacturer | Model No. | Cal. Date | Due Date |
|---------------|-------------------|--------------|-------------|-----------|-----------|
| SZ185-01 | EMI Receiver | R & S | ESCI | 23-Jan-16 | 23-Jan-17 |
| SZ061-12 | Biconilog Antenna | ETS | 3142E | 9-Sep-16 | 9-Sep-17 |
| SZ188-01 | Anechoic Chamber | ETS | RFD-F/A-100 | 16-Apr-16 | 16-Apr-18 |

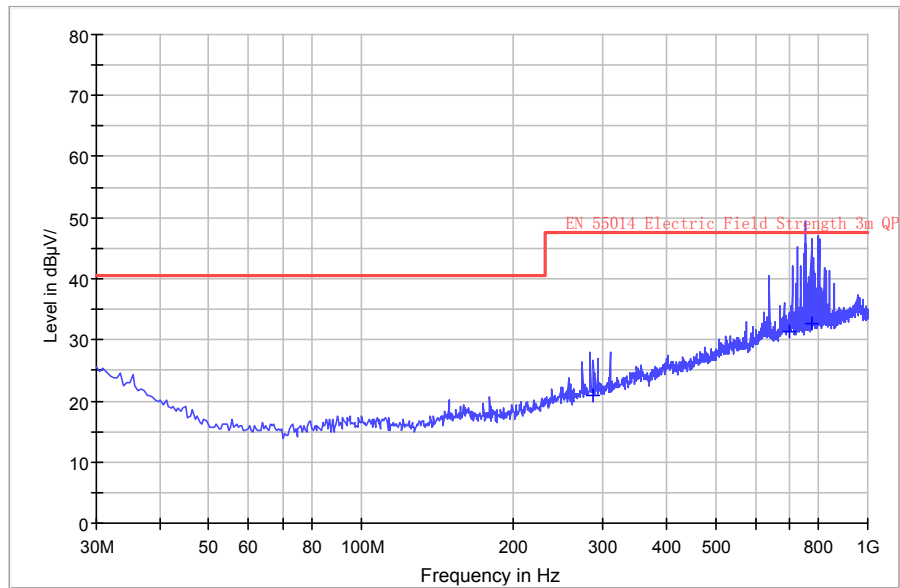
- Notes:
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (–) in the margin column signify levels below the limit.
 3. Frequency range scanned: 30MHz to 1000MHz.
 4. Only emissions significantly above equipment noise floor are reported.
 5. Uncertainty: $\pm 4.8\text{dB}$ at a level of confidence of 95%.

Applicant: DONGGUAN LIYANG TOYS LTD.

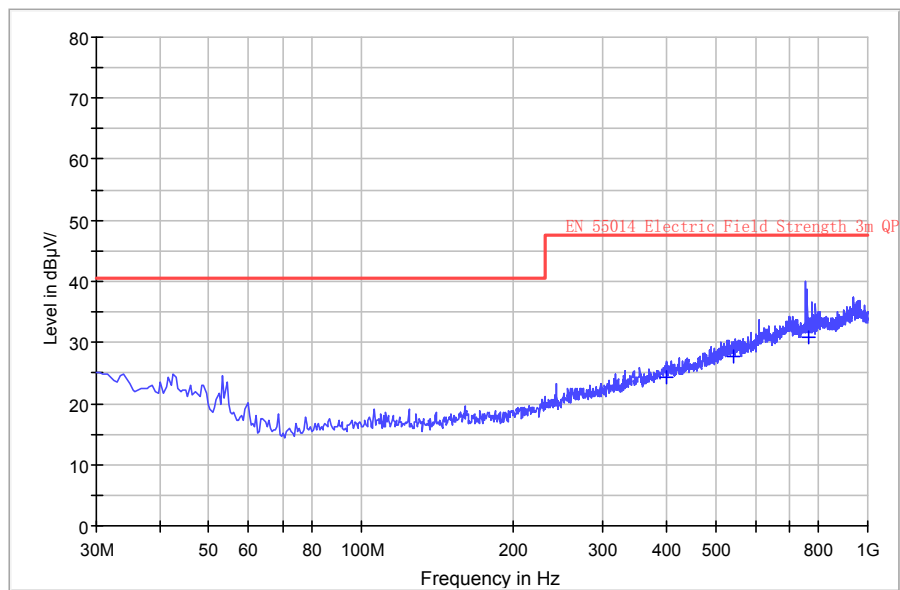
Model: BL-76120

Worst Case Operating Mode: Motor

Graphic Radiated Emissions Pursuant to EN55014-1: Emissions Requirement Horizontal



Vertical



Applicant: DONGGUAN LIYANG TOYS LTD.

Model: BL-76120

Worst Case Operating Mode: Motor

Data Table**Radiated Emissions
Pursuant to EN55014-1: Emissions Requirement**

| Polarization | Frequency (MHz) | Net at 3m (dB μ V/m) | Calculated Net at 10m (dB μ V/m) | Limit at 10m (dB μ V/m) | Margin (dB) |
|--------------|-----------------|--------------------------|--------------------------------------|-----------------------------|-------------|
| H | 286.080 | 20.9 | 10.4 | 37.0 | -26.6 |
| H | 699.785 | 31.3 | 20.8 | 37.0 | -16.2 |
| H | 773.505 | 32.6 | 22.1 | 37.0 | -14.9 |
| V | 401.025 | 24.4 | 13.9 | 37.0 | -23.1 |
| V | 542.160 | 27.8 | 17.3 | 37.0 | -19.7 |
| V | 762.835 | 30.8 | 20.3 | 37.0 | -16.7 |

 No emissions significantly above equipment noise floor.

Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120
Worst Case Operating Mode: Charge Mode

EN55014-1 RFI Voltage Test

Used Test Equipment

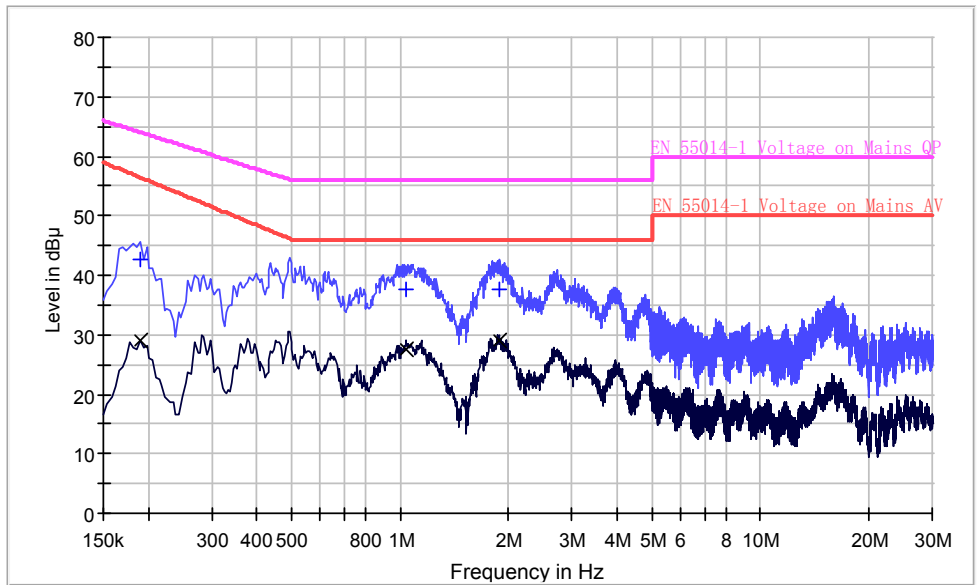
| Equipment No. | Equipment | Manufacturer | Model No. | Cal. Date | Due Date |
|---------------|-------------------|--------------|-----------|-----------|-----------|
| SZ187-01 | LISN | R & S | ENV216 | 9-Nov-15 | 9-Nov-16 |
| SZ187-02 | LISN | R & S | ENV216 | 9-Nov-15 | 9-Nov-16 |
| SZ185-02 | EMI Test Receiver | R&S | ESCI | 9-Nov-15 | 9-Nov-16 |
| SZ188-03 | Shielding Room | ETS | RFD-100 | 17-Aug-16 | 17-Aug-17 |

- Notes:
1. Peak and average detector quick scan are showed on the graph and final quasi-peak and average detector data are measured, the worst-case is recorded in the following graph and table.
 2. Frequency range scanned: 150kHz to 30MHz.
 3. Only emissions significantly above equipment noise floor are reported.
 4. Uncertainty: $\pm 3.6\text{dB}$ at a level of confidence of 95%.

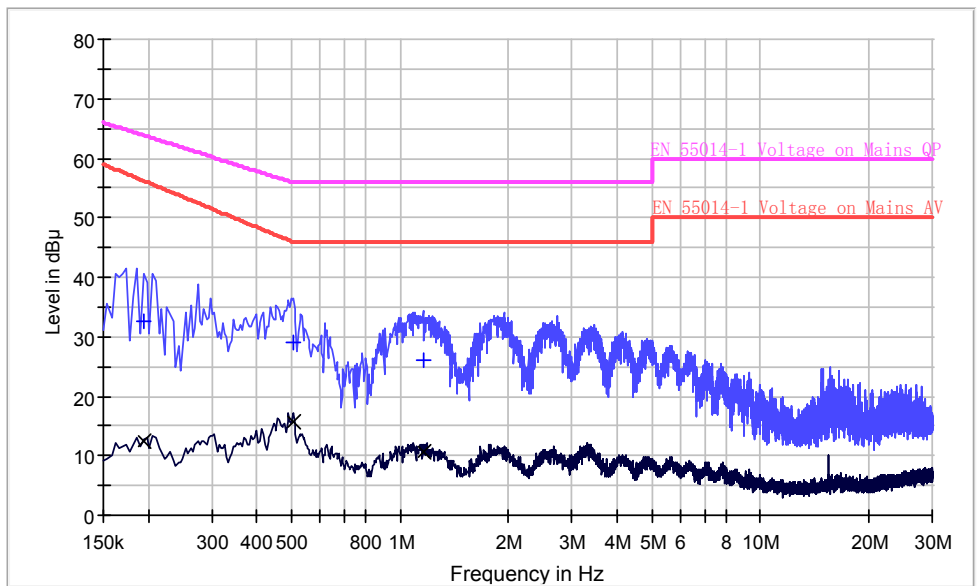
Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120
Worst Case Operating Mode: Charge Mode
Phase: Live / Neutral

Graphic RFI Voltage Test Pursuant to EN 55014-1: Emissions Requirement

Live Line



Neutral Line



Applicant: DONGGUAN LIYANG TOYS LTD.
 Model: BL-76120
 Worst Case Operating Mode: Charge Mode
 Phase: Live / Neutral

Data Table

RFI Voltage Test Pursuant to EN 55014-1: Emissions Requirement

Live Line

| Frequency (MHz) | Quasi-Peak | | Average | |
|-----------------|--------------------------------|------------------------------|--------------------------------|------------------------------|
| | Disturbance level dB(μ V) | Permitted limit dB(μ V) | Disturbance level dB(μ V) | Permitted limit dB(μ V) |
| 0.190000 | 42.7 | 64.0 | 29.1 | 56.4 |
| 1.038000 | 37.6 | 56.0 | 27.4 | 46.0 |
| 1.878000 | 37.7 | 56.0 | 29.2 | 46.0 |

No emissions significantly above equipment noise floor.

Neutral Line

| Frequency (MHz) | Quasi-Peak | | Average | |
|-----------------|--------------------------------|------------------------------|--------------------------------|------------------------------|
| | Disturbance level dB(μ V) | Permitted limit dB(μ V) | Disturbance level dB(μ V) | Permitted limit dB(μ V) |
| 0.190000 | 44.0 | 64.0 | 32.5 | 56.4 |
| 0.494000 | 37.8 | 56.1 | 31.1 | 46.1 |
| 1.870000 | 34.9 | 56.0 | 28.5 | 46.0 |

No emissions significantly above equipment noise floor.



Report No.: SZHH01091799-001

Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

EN61000-4-2 Electrostatic Discharge

Test Summary (Pursuant to EN55014-2)

| | |
|---------------------------------|---|
| Basic Standard: | IEC 61000-4-2: 1995 + A1: 1998 + A2: 2000 |
| Port: | Enclosure |
| Required Performance Criterion: | B |
| Limit: | ±8.0kV (Air Discharge) |
| | ±4.0kV (Contact Discharge) |
| | ±4.0kV (Indirect Contact Discharge) |
| Time Between Each Discharge: | 1 second |
| Temperature: | 24.1°C |
| Relative Humidity: | 51.0% |
| Test Mode: | Motor, Charge Mode |
| Test Setup: | Table-Top |
| Test of Post-Installation: | N/A |

Used Test Equipment

| Equipment No. | Equipment | Manufacturer | Model No. | Cal. Date | Due Date |
|---------------|---------------|--------------|-----------|-----------|----------|
| SZ189-03 | ESD Simulator | Teseq | NSG 435 | 6-Nov-15 | 6-Nov-16 |

Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

Test Results

EN61000-4-2 Electrostatic Discharge

| Discharge Type | No. of Discharge | Applied Voltage | Result (Pursuant to EN55014-2, Criterion B) |
|------------------------|------------------|-----------------|--|
| Contact Discharge | 20 | ±4kV | OK |
| Air Discharge | 20 | ±8kV | OK |
| Indirect HCP Discharge | 20 | ±4kV | OK |
| Indirect VCP Discharge | 20 | ±4kV | OK |

Additional Information

No observable change

Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

EN61000-4-4
Electrical Fast Transient / Burst

Test Summary (Pursuant to EN55014-2)

| | |
|---------------------------------|---------------------|
| Basic Standard: | IEC 61000-4-4: 2004 |
| Port: | AC Power Lines |
| Required Performance Criterion: | B |
| Limit: | ±1.0kV |
| Temperature: | 25.0°C |
| Relative Humidity: | 55.0% |
| Test Duration: | 1 minute |
| Test Mode: | Charge Mode |
| Test Setup: | Table-Top |
| Generator Drive: | Internal |
| Sequence of Application: | Multiple |

Used Test Equipment

| Equipment No. | Equipment | Manufacturer | Model No. | Cal. Date | Due Date |
|---------------|-------------------------|--------------|------------|-----------|-----------|
| SZ063-01 | Compact Immunity Tester | Haefely | ECOMPACT 4 | 23-Jan-16 | 23-Jan-17 |



Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

Test Results

EN61000-4-4 Electrical Fast Transient / Burst

| Port | Level | Polarity | Result (Pursuant to EN55014-2, Criterion B) |
|----------------|-------|----------|--|
| AC Power Lines | 1kV | + | OK |
| | 1kV | - | OK |
| DC Power Lines | 0.5kV | + | N/A |
| | 0.5kV | - | N/A |
| Signal Lines | 0.5kV | + | N/A |
| | 0.5kV | - | N/A |
| Control Lines | 0.5kV | + | N/A |
| | 0.5kV | - | N/A |

- Additional Information
- No observable change

Applicant: DONGGUAN LIYANG TOYS LTD.
 Model: BL-76120

EN61000-4-5 Surge Immunity

Test Summary (Pursuant to EN55014-2)

| | | | |
|---------------------------------|---|-----------------|-------------------|
| Basic Standard: | IEC 61000-4-5: 2005 | | |
| Port: | AC Power Lines | | |
| | Phase and Neutral | Phase and Earth | Neutral and Earth |
| Limit: | 5 Positive and 5 Negative Surges | | |
| | ±1kV | ±2kV | ±2kV |
| Generator Impedance: | 2ohm | 12ohm | 12ohm |
| Required Performance Criterion: | B | | |
| Repetition Rate: | 1 minute | | |
| Temperature: | 25.0°C | | |
| Relative Humidity: | 55.0% | | |
| Test Mode: | Charge Mode | | |
| Test Setup: | Table-Top | | |
| Surge Generator Trigger: | Internal | | |
| Installation Condition: | Class 3: Electrical environment where cables run in parallel. | | |
| Phase Angle: | 90°, 270° | | |

Used Test Equipment

| Equip No. | Equipment | Manufacturer | Model No. | Cal. Date | Due Date |
|-----------|-------------------------|--------------|------------|-----------|-----------|
| SZ063-01 | Compact Immunity Tester | Haefely | ECOMPACT 4 | 23-Jan-16 | 23-Jan-17 |



Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

Test Results
EN61000-4-5
Surge Immunity

| Level | Result (Pursuant to EN55014-2, Criterion B) |
|---------------------------------|--|
| Between Phase and Neutral: ±1kV | OK |
| Between Phase and Earth: ±2kV | N/A |
| Between Neutral and Earth: ±2kV | N/A |

- Additional Information
- No observable change

Applicant: DONGGUAN LIYANG TOYS LTD.
 Model: BL-76120

EN61000-4-6
Injected Current (0.15MHz to 230MHz)

Test Summary (Pursuant to EN55014-2)

| | |
|---------------------------------|---|
| Basic Standard: | IEC 61000-4-6: 2003 + A1: 2004 + A2: 2006 |
| Port: | AC Power Lines |
| Required Performance Criterion: | A |
| Limit: | 3.0V (rms) |
| Test Modulation: | 1kHz, 80% AM |
| Frequency: | 0.15MHz to 230MHz |
| Dwell Time: | 1s |
| Frequency Step: | 1% |
| Temperature: | 25.0°C |
| Relative Humidity: | 55.0% |
| Coupling Factor of CDN: | -1.0dB ~ -1.7dB |
| Test Mode: | Charge Mode |
| Test Setup: | Table-Top |
| Equipment Under Test (EUT): | Single Unit |

Used Test Equipment

| Equipment No. | Equipment | Manufacturer | Model No. | Cal. Date | Due Date |
|---------------|-----------------------------|--------------|------------------|------------|------------|
| SZ180-02 | Signal Generator | Aeroflex | 2023A | 7-Feb-2016 | 7-Feb-2017 |
| SZ181-03 | Amplifier | AR-WORLDWIDE | 75A250 | 7-Feb-2016 | 7-Feb-2017 |
| SZ181-03-01 | Attenuator | AR-WORLDWIDE | 6dB/50FH-006-100 | 7-Feb-2016 | 7-Feb-2017 |
| SZ184-01 | Coupling-Decoupling Network | LUTHI | CDN L-801 M2/M3 | 7-Feb-2016 | 7-Feb-2017 |



Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

Test Results

EN61000-4-6 Injected Current (0.15MHz to 230MHz)

| Port | Frequency (MHz) | Level | Result (Pursuant to EN55014-2, Criterion A) |
|----------------|-----------------|----------|---|
| AC Power Lines | 0.15 to 230 | 3V (rms) | OK |
| DC Power Lines | 0.15 to 230 | 1V (rms) | N/A |
| Signal Lines | 0.15 to 230 | 1V (rms) | N/A |
| Control Lines | 0.15 to 230 | 1V (rms) | N/A |

- Additional Information
- No observable change

Applicant: DONGGUAN LIYANG TOYS LTD.
 Model: BL-76120

EN61000-4-11 Voltage Dips and Interruptions

Test Summary (Pursuant to EN55014-2)

| | | | | |
|-------------------------------|--|-----------------------|------|-----------------------------------|
| Basic Standard | EN 61000-4-11: 2004 | | | |
| Port: | A.C. Power Lines | | | |
| Limit: | Test level in %UT | Duration (Periods) | | Required Performance Criterion |
| | | 50Hz | 60Hz | |
| | 0 | 0.5 | 0.5 | C |
| | 40 | 10 | 12 | C |
| | 70 | 25 | 30 | C |
| No. of dips/interruptions: | 3 | | | |
| Test Mode: | Charge Mode | | | |
| Test Setup: | Test generator causes the interference of the EUT AC mains | | | |

U_T is the rated voltage for the equipment.

Used Test Equipment

| Equip No. | Equipment | Manufacturer | Model No. | Cal. Date | Due Date |
|-----------|-------------------------|--------------|------------|-----------|-----------|
| SZ063-01 | Compact Immunity Tester | Haefely | ECOMPACT 4 | 23-Jan-16 | 23-Jan-17 |

Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

Test Results

EN61000-4-11 Voltage Dips and Interruptions

| Test condition | | | Result (Pursuant to EN55014-2, Criterion C) |
|-------------------|-----------------------|------|--|
| Test Level in %UT | Duration (Periods) | | |
| | 50Hz | 60Hz | |
| 0 | 0.5 | 0.5 | OK |
| 40 | 10 | 12 | OK |
| 70 | 25 | 30 | OK |

Additional Information

No observable change

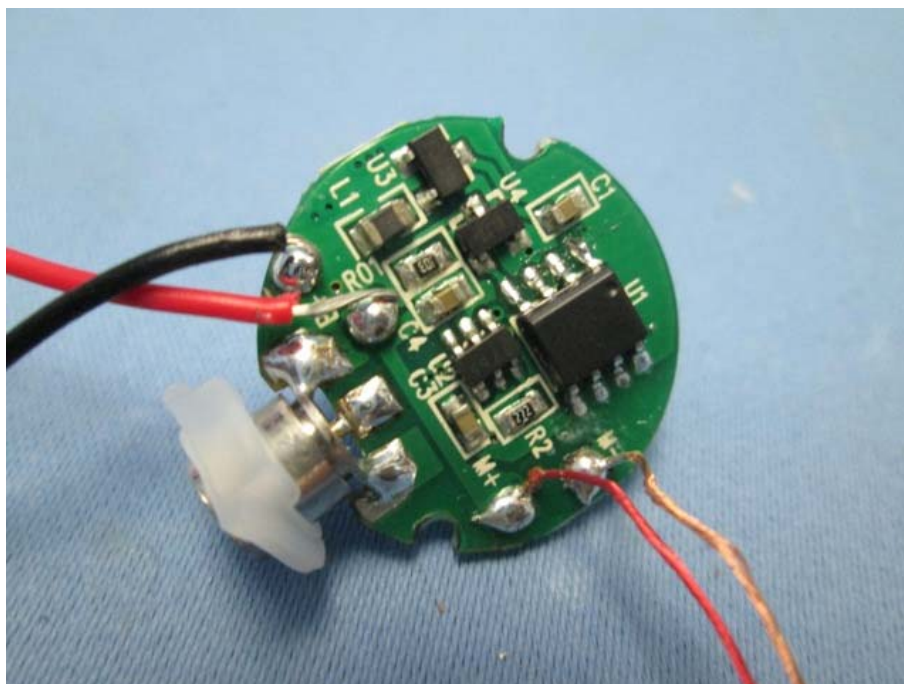
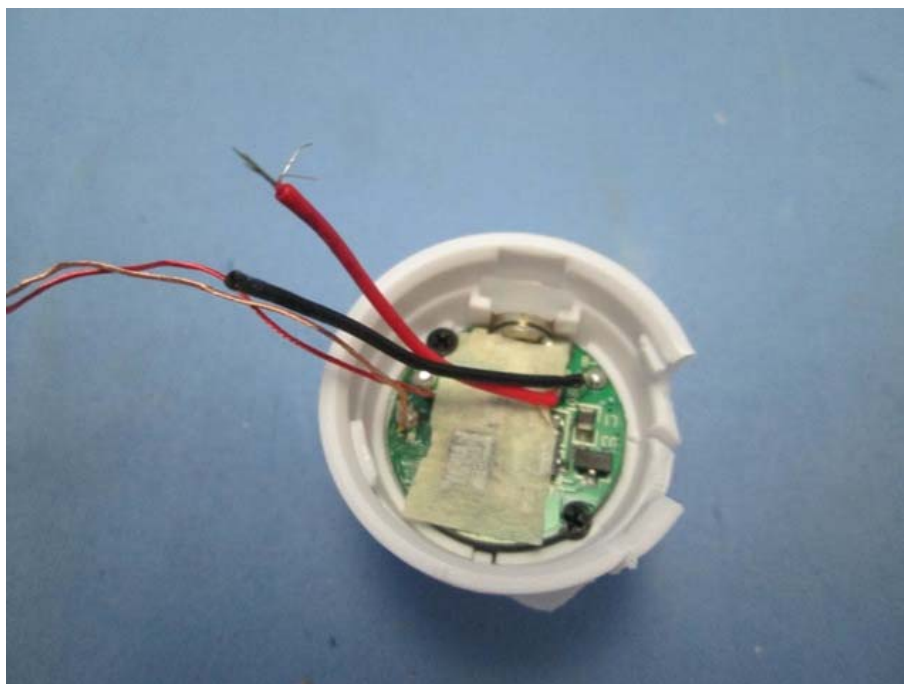
Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

External Photo



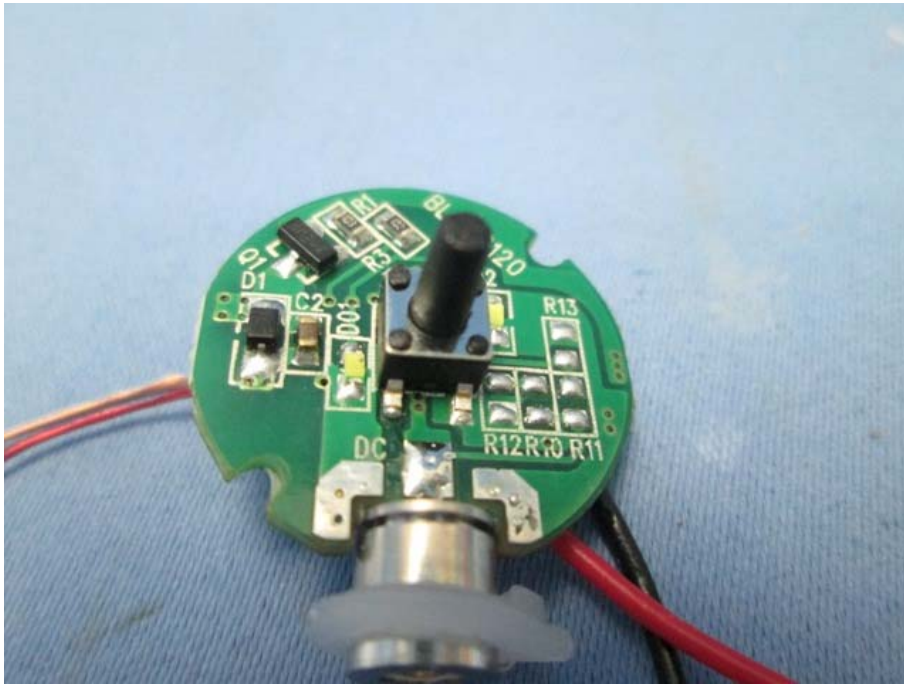
Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

Internal Photo



Applicant: DONGGUAN LIYANG TOYS LTD.
Model: BL-76120

Internal Photo



---- END ----