CONSUMER PRODUCTS SERVICES DIVISION

LEXIBOOK LIMITED

Technical Report: **(5221)203-0518** September 03, 2021
Date Received: July 22, 2021 Page 1 of 20

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

Sample Description:	STORY TELLER CLOCK 1.) TRAINER LEON 2.) COACH LEON		
Vendor:	N/A	Sample Size:	7
Manufacturer:	N/A	Style No(s):	(RLT101) RLT101DE, (RLT101) RLT101FR
Buyer:	N/A	SKN/SKU No.:	N/A
Labeled Age Grade:	4+	PO No.:	N/A
Appropriate Age Grade:	OVER 8 YEARS OF AGE	Ref #:	N/A
Client Specified Age Grade:	NOT SPECIFIED	Country of Origin:	CHINA
Tested Age Grade:	OVER 4 YEARS OF AGE	Assortment No.:	(RLT100/ RLT101)
UPC Code:	3380743093680, 3380743092478		
EUT's adaptor:	230Vac, 50Hz		

EXECUTIVE SUMMARY:

The sample COMPLIES with the tested requirements of the applicable EC harmonized standards EN 55014-1, EN 55014-2, EN 61000-3-2 and EN 61000-3-3 pertaining to Directive 2014/30/EU Electromagnetic Compatibility.

BUREAU VERITAS HONG KONG LIMITED

Law Yiu Tung
Assistant Manager
Electrical Department

LYT/kn

Bureau Veritas Hong Kong Limited
Kowloon Bay Office
1/F Pacific Trade Centre, 2 Kai Hing Road,
Kowloon Bay, Kowloon, Hong Kong
Tel: (852) 2331 0888 Fax: (852) 2331 0889
www.bureauveritas.com/cps

STANDARDS

Emission Standard	Overall Result
EN 55014-1: 2017 Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission	Meet
EN 61000-3-2: 2014 Electromagnetic compatibility (EMC) — Part 3-2:Limits — Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)	Meet
EN 61000-3-3: 2013 Electromagnetic compatibility (EMC) — Part 3-3: Limits — Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipments with rated current ≤ 16A per phase and not subject to conditional connection.	Meet
Immunity Standard	**Overall Result**
EN 55014-2: 2015 Electromagnetic compatibility — Requirements for household appliances, electric tools and similar apparatus — Part 2: Immunity — Product family standard	Meet

A) Emission Tests:

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

Per sub-clause A.7.1 of EN55014-1, the captioned EUT falls within the scope of the following category:

Category E:

Definition:	Transformer toys and dual supply toys incorporating electronic circuits and all other toys which are not covered by the other categories and are within the scope of the standard EN55014-1
Tests required:	- continuous conducted emissions on mains terminals - radiated disturbances - discontinuous disturbances

RESULTS

Emission Testing

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

Standard: EN 55014-1

Limit: Table 9 of Clause 4, EN 55014-1

Port under test: Enclosure

Operational mode under test: On mode (with sound, light, alarm, display)

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 equipment:

Description	Brand Name	Model No.
EMI TEST RECEIVER	R&S	ESU26
SEMI-ANECHOIC CHAMBER	FRANKONIA	--
BICONICAL ANTENNA	R&S	HK116
LOG-PERIODIC ANTENNA	R&S	HL223
ACTIVE LOOP ANTENNA	EMCO	6502

Remarks: -
Measurement uncertainty is calculated in accordance with CISPR 16-4-2.
The statement of compliance is based on a 95% coverage probability for the expanded uncertainty of the measurement result using a coverage factor k = 2.
Compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Test method:

Hong Kong Productivity Council – Electromagnetic Compatibility Centre is located at the following address: LG1/F., HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong
The test is performed in accordance with CISPR 16-2-3 as a basic standard at a measurement range of 3 meters. Measurement shall be carried out on the EMC chamber located on the roof of the EMC Hong Kong Productivity Council – Electromagnetic Compatibility Centre.

The test site has, by verification measurements, satisfied the normalized site attenuation (NSA) requirements specified in the standard CISPR 16-1-4. 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

Detector: Quasi-Peak

Frequency	**Antenna Polarization**	**Measurement Result @ 3m**	**Limit @ 3m**	**Correction (Note 1)**	**Margin (Note 2)**	**Comment**
MHz	*Vertical / Horizontal*	*dBµV/m*	*dBµV/m*	*dB*	*dB*	*Meets / Does not Meet*
234.85	*Horizontal*	20.5	47.0	11.9	-26.5	*Meets*
288.41	*Horizontal*	31.2	47.0	14.2	-15.8	*Meets*
384.47	*Horizontal*	36.7	47.0	16.4	-10.3	*Meets*
228.50	*Vertical*	35.7	47.0	11.9	-11.3	*Meets*
288.46	*Vertical*	31.0	47.0	14.2	-16.0	*Meets*
384.41	*Vertical*	24.1	47.0	16.4	-22.9	*Meets*

Remarks: Calculated measurement uncertainty: 5.2dB (30MHz to 200MHz)
6.1dB (200MHz to 1GHz)

Conducted Emissions on AC mains port (150 kHz – 30 MHz)

Standard: EN 55014-1

Limit applicable: Table 5

Port under test: AC mains input of the AC-DC adaptor

Operational mode under test: On mode (with sound, light, alarm, display)

Test Location:
No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test equipment:

Description	Brand Name	Model No.
EMI Test Receiver	Rohde & Schwarz	ESCS 30
EMI Test Receiver	Rodhe & Schwarz	ESCI
Artificial Mains Network (AMN)	Rohde & Schwarz	ENV 216
Thermometer + Hydrometer	HTC	HTC-1
Barometer	Cole-parmer	99770-00
Shield Room	Yan Thai HK, Ltd.	None
Digital Multi-meter	Fluke	Fluke 26 III

Remarks: -
Measurement uncertainty is calculated in accordance with CISPR 16-4-2.
The statement of compliance is based on a 95% coverage probability for the expanded uncertainty of the measurement result using a coverage factor k = 2.
Compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Test method:

Select the AC mains supply voltage of the rated voltage to maximize the level of disturbance voltage measured at about 160 kHz.

Perform an initial measurement on each line with peak detectors to identify the frequencies where the maximum disturbances may occur. Then measure and record the maximum disturbances with quasi-peak and average detectors. The reading on the measuring receiver is observed for about 15 s for each measurement; the highest readings shall be recorded with the exception of any isolated spike which shall be ignored.

The final measurements with quasi-peak detector shall be carried out at all frequencies at which there is a maximum.

In case of measuring disturbances caused by the electronic devices with average detector, at least all isolated spectral lines shall be measured and registered.

AC Mains Voltage applied = 230 Vac

The maximum conducted electromagnetic emissions measured are recorded as shown below:

Frequency	**Line**	**Detector**	**Result**	**Limit**	**Margin**	**Comment**
MHz	*Live / Neutral*	*Quasi-Peak / Average*	*dBµV*	*dBµV*	*dB*	*Meets / Does not Meet*
0.537000	*Neutral*	*Quasi-Peak*	32.7	56.0	-23.3	*Meets*
0.550500	*Neutral*	*Quasi-Peak*	31.8	56.0	-24.2	*Meets*
0.555000	*Neutral*	*Quasi-Peak*	32.6	56.0	-23.4	*Meets*
0.397500	*Neutral*	*Average*	24.1	48.5	-24.4	*Meets*
0.555000	*Neutral*	*Average*	27.3	46.0	-18.7	*Meets*
0.591000	*Live*	*Average*	21.9	46.0	-24.1	*Meets*

Remarks: Calculated measurement uncertainty: 2.7dB

Harmonic Emissions on AC Supply:

Standard: EN61000-3-2

Limit applicable: Class A

Port under test: AC mains input of the AC-DC adaptor

Operational mode under test: On mode (with sound, light, alarm, display)

Test Location:
No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test equipment:

Description	Manufacturer	Model No.
PROFLINE 2103-240 SINGLE PHASE 3KV SYSTEM	SCHAFFNER	PROFLINE: 2103-240-413 NSG: 1007-3-240-413 CCN: 1000-1

Test Method

The test was performed in accordance with EN 61000-3-2, with on mode of operation investigated.

Results:

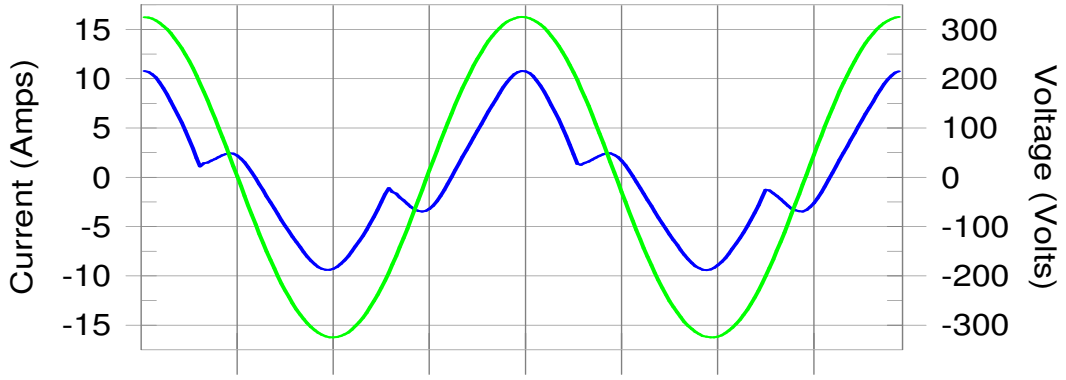
All the measured harmonic levels were within specification. Detailed results are listed in the following page.

Harmonic Emissions on AC Supply: (cont'd)

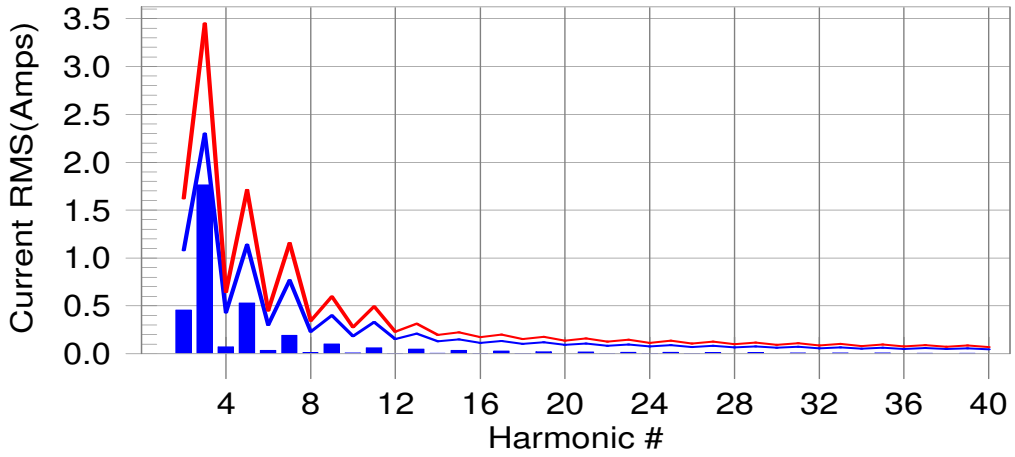
Measurement of Harmonic Current Emission

Results and limit line for Harmonics Emissions:
For limits for Harmonics Emission Test, please refer to limit lines (saw-tooth lines) in the following diagram.

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Fluctuation & Flicker:

Standard: EN61000-3-3

Port under test: AC mains input of the AC-DC adaptor

Operational mode under test: On mode (with sound, light, alarm, display)

Test Location:
No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test equipment

Description	Manufacturer	Model No.
PROFLINE 2103-240 SINGLE PHASE 3KV SYSTEM	SCHAFFNER	PROFLINE: 2103-240-413 NSG: 1007-3-240-413 CCN: 1000-1

Test Method

The test was performed in accordance with EN 61000-3-3, with on mode of operation investigated.

Results:

The Flicker Test

Maximum Occurring Levels:

Pst:	0.064	Limit = 1.0	(The Highest Short Term Flicker Value)
Pit:	0.028	Limit = 0.65	(The Highest Long Term Flicker Value)
dt(%):	0.00	Limit = 4%	(The Highest Instantaneous Voltage Change (10ms))
dc(%):	0.00	Limit = 3%	(The Highest Relative Steady State Voltage Change (1 sec))
dmax:	0.00	Limit = 4%	The Highest Maximum Relative Voltage Change)
Tdt:	0	Limit = 200ms	(The Max Time (in milli-sec) that dt exceeds 3%)
Ut:	230.22		(EUT Test RMS Voltage)

B) 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:

Category II: Transformer toys, dual supply toys, mains powered motor operated appliances, tools, heating appliances and similar electric apparatus (for example – UV radiators, IR radiators and microwave ovens) containing electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15 MHz

Test Applicable for Category II Equipment:

		Performance Criteria
(1)	Electrostatic Discharge (ESD)	B
(2)	Fast Transients (EFT)	B
(3)	Conducted Immunity or Injected Currents (150 kHz – 230 MHz)	A
(4)	Surges	B
(5)	Voltage dips and interruptions	C

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

RESULTS

Immunity Testing

Electrostatic Discharge (ESD):

Product Standard: EN55014-2 **Test method:** IEC 61000-4-2

Test Levels: ±4kV for Contact Discharge, ±8kV 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
ESD Generator	Schaffner	NSG435
Electrostatic Discharge Simulator	Kikusui	KES 4021A
Ground Reference Plane (GRP) of dimension 2.70m x 1.93m (L x W)	None	None
Wooden Table, 0.8m high	None	None
Horizontal Coupling Plane (HCP) of dimension 1.6m x 0.8m (L x W) (Connected to the GRP via two resistors of 470kΩ in series)	None	None
Insulation Support Laminate of 0.5 mm in thickness	None	None
Vertical Coupling Plane (VCP) of 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, alarm, display)

Environmental Condition:

Temperature (°C):	26	Relative Humidity (%):	54	Atmospheric Pressure (kPa):	100.2

Application of direct discharges

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 dischargable metal parts of the enclosure with an interval of at least 1 second between successive discharges.

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

Remark: A, normal performance

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 dischargable 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 Criteria**	**Observation**	**Result**
Enclosure	-	8	B	A	Meet
	+	8	B	A	Meet

Remark: A, normal performance

Application of indirect discharges

Discharge on Horizontal Coupling Plane (HCP)

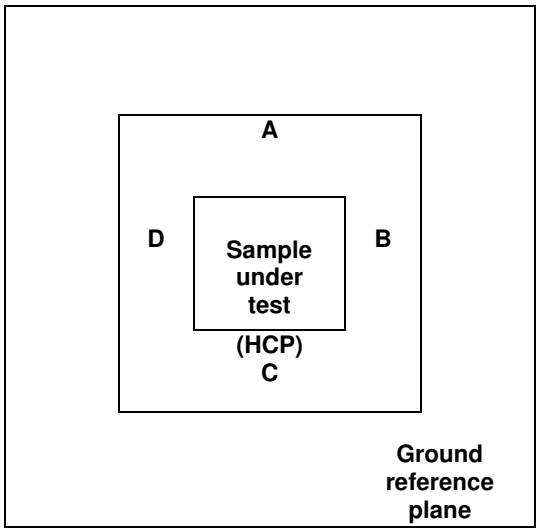
The electrostatic discharge generator is positioned vertically at a distance of 0.1 m from the sample with the contact discharge electrode touching the horizontal coupling plane (HCP).

10 positive discharges and 10 negative discharges are applied with an interval of 1 second between each discharge.

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

Remark: A, normal performance

Figure 1:



Discharge on Vertical Coupling Plane (VCP)

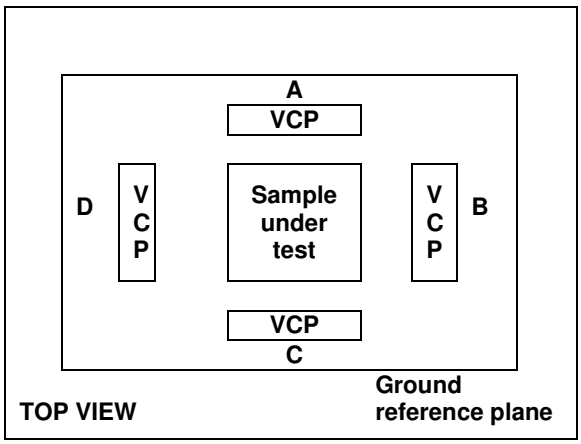
The electrostatic discharge generator is positioned horizontally to the center of the edge of the Vertical Coupling Plane (VCP) which is located vertically 0.1 m from the sample with contact discharge electrode touching the vertical coupling plane.

10 positive discharges and 10 negative discharges are applied with an interval of 1 second between each discharge.

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

Remark: A, normal performance

Figure 2:



Electrical Fast Transient / Burst (EFT):

Product Standard:	EN55014-2	**Test method:**	IEC 61000-4-4
Test Level:	±1.0kV	**Repetition Frequency:**	100kHz
Burst Duration:	0.75ms at 100kHz	**Burst Period:**	300 ms
Duration of test:	2 minutes	**Synchronization:**	Asynchronous
Port Under Test:	AC mains input of the AC-DC adaptor		
Performance Criteria:	B		

Test Location:
No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test equipment:

Description	Brand Name	Model
Multifunction Generator	Schaffner	Modula 6150
EUT Support Benches	None	None
Digital Multi-meter	Fluke	Fluke 26 III
Notebook Computer	Dell	1501
Thermometer + Hydrometer	Sato Keryoki	NSII - Q
Barometer	Cole-Parmer	99770-00

Results:

Operation mode under test: On mode (with sound, light, alarm, display)

Environmental Condition:

Temperature (°C): 25 Relative Humidity (%): 50

	Coupling Mode	Severity Level	Performance Criteria	Observation	Result
1.	Live-Neutral	*+ 1 kV*	B	A	Meet
	Live-Neutral	*- 1 kV*	B	A	Meet

Remark: A, normal performance

Surges:

Product Standard: EN55014-2 **Test method:** IEC 61000-4-5

Test Level: ±1kV between lines, ±2kV between lines and Protective Earth (PE)

Repetition Rate: at least 1 minute between successive applications of surge pulses

Port Under Test: AC mains input of the AC-DC adaptor

Performance Criteria: B

Test Location:
No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test equipment:

Description	Brand Name	Model
Multifunction Generator	Schaffner	Modula 6150
EUT Support Bench	None	None
Digital Multi-meter	Fluke	Fluke 26 III
Thermometer + Hydrometer	Sato Keryoki	NSII-Q
Barometer	Cole-Parmer	99770-00
Notebook Computer	Dell	1501

Results:

Operation mode under test: On mode (with sound, light, alarm, display)

Environmental Condition:

Temperature (°C): 25 Relative Humidity (%): 50

Coupling Mode	Severity Level	Phase Angle of Synchronization	Performance Criteria	Observation	Result
Live – Neutral	*+/- 1 kV*	*90º*	B	A	Meet
Live – Neutral	*+/- 1 kV*	*270º*	B	A	Meet

Remark: A, normal performance

Conducted Immunity or Injected Currents (150 kHz – 230 MHz):

Product Standard:	EN55014-2	**Test method:**	IEC 61000-4-6
Frequency Range:	0.15 - 230MHz	**Severity Level:**	3V/m (r. m. s.) (unmodulated)
Modulation:	1 kHz sinusoidal, 80% AM	**Frequency Step:**	1% of fundamental
Dwell Time:	≥ 1 second		
Port Under Test:	AC mains input of the AC-DC adaptor		
Performance Criteria:	A		

Test Location:
No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test equipment:

Description	Brand Name	Model
Signal Generator, 9 kHz – 1.2 GHz	IFR	IFR 2023A
RF Power Amplifier, 25W, Class A Linear, 0.01 – 230 MHz, Gain > 40 dB,	Haefely EMC Technology	PAMP 250
Coupling/Decoupling Network (CDN) for 2-Line and 3-Line Single Phase Power Ports (i.e. CDN M2/M3)	Lüthi Electronik – Feinmechanik AG	CDN L-801 M2/M3
150 Ω to 50 Ω adaptor for CDN calibration purpose	Lüthi Electronik – Feinmechanik AG	L-CR 100A
RF Attenuator, 6 dB, 50 W, N-male to N-female	Huber+Suhner AG	5906.17.0005
Test Automation and Reporting Software	Haefely EMC Technology	WinPAMPver. 1.11
EUT Supports (10cm high)	None	None
Digital Multi-meter	Fluke	Fluke 26 III
PC with CPIB Interface card	HP	D220MT
Thermometer + Hydrometer	HTC	HTC-1
Barometer	Cole-Parmer	99770-00

Results:

Operation mode under test: On mode (with sound, light, alarm, display)

Environmental Condition:

Temperature (°C): 25 Relative Humidity (%): 50

Frequency (MHz)	Performance Criteria	Observation	Results
0.15-230	A	A	Meet

Remark: A, normal performance

Voltage Dips and Interruptions:

Product Standard: EN55014-2 **Test method:** IEC 61000-4-11

Port under test: AC mains input of the AC-DC adaptor

Test Levels and Parameters:

Test Level in % of U_T	Duration of Test (in period of rated frequency)	Phase Angle of Synchronization
0	0.5 period	0° followed by 180°
40	10 periods	0° followed by 180°
70	25 periods	0° followed by 180°

Test Location:
No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test equipment:

Description	BRAND NAME	Model
Profline 2103-240 Single Phase 3kv System	Schaffner	Profline : 2103-240-413 NSG : 1007-3-240-413 CCN : 1000-1
EUT Support Benches	None	None
Digital Multi-meter	Fluke	Fluke 26 III
Thermometer + Hydrometer	HTC	HTC-1
Barometer	Cole-Parmer	99770-00
Notebook Computer	Dell	1501

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

Results:

Operation mode under test: On mode (with sound, light, alarm, display)

Environmental Condition:

Temperature (°C): 25 Relative Humidity (%): 50

Test Level in % of U_T	Duration of Test (in period of rated frequency)	Performance Criteria	Observation	Result
0	0.5 period	C	A	Meet
40	10 periods	C	A	Meet
70	25 periods	C	A	Meet

Remark: A, normal performance

Sample Number
(5221)203-0518

Sample Number
(5221)203-0518