

<b>TEST REPORT</b> <b>AS/NZS 60950.1</b> <b>Safety of information technology equipment</b> <b>Part 1-General requirements</b>	
Report reference No .....	RSHA180625001-SF-02
Compiled by (+ signature) .....	Test Engineer: William Wu <i>William Wu</i>
Approved by (+ signature) .....	Safety Engineer: Tiller Chen <i>Tiller Chen</i>
Date of issue .....	2018-11-29
Testing laboratory .....	Bay Area Compliance Laboratories Corp. (KunShan)
Address .....	No.248 Chenghu Road, Kunshan, Jiangsu province, China
Testing location .....	As above
Applicant's name .....	Pycom Ltd
Address.....	High Point 9 Sydenham Road, Guildford, Surrey, United Kingdom
Manufacturer's name.....	Pycom Ltd
Address.....	High Point 9 Sydenham Road, Guildford, Surrey, United Kingdom
Factory's name .....	N/A
Address.....	N/A
Standard .....	AS/NZS 60950.1:2015
Test sample(s) received .....	2018-11-20
Test in period .....	2018-11-21 to 2018-11-27
<b>CONCLUSION: The sample satisfies to the standard examined</b>	
Note: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the specific product described herein. It must not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Kunshan).	
Test item description .....	LoPy4 Module
Trademark .....	Pycom
Model/type reference .....	LoPy4 1.0
Multiple Model .....	N/A
Manufacturer .....	Pycom Ltd
Rating .....	5.0V==0.5A

Copy of marking plate(The marking plate artwork appended to this report may be only a draft)



The CE marking and WEEE symbol (if any) should be at least 5,0mm and 7,0mm respectively in height.

<b>Test item particulars</b> .....	
Equipment mobility .....	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains .....	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input checked="" type="checkbox"/> not directly connected to the mains
Operating condition .....	<input type="checkbox"/> continuous <input checked="" type="checkbox"/> rated operating / resting time:
Access location .....	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC) .....	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other:
Mains supply tolerance (%) .....	N/A
Tested for IT power systems .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V) .....	N/A
Class of equipment .....	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input checked="" type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A) .....	N/A
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class .....	N/A
Altitude during operation (m) .....	Up to 2000
Altitude of test laboratory (m) .....	Below 2000
Mass of equipment (kg) .....	Approx. 0.007
Possible test case verdicts .....	
- test case does not apply to the test object.....: N(N.A.)	
- test object does meet the requirement.....: P(ass)	
- test object does not meet the requirement.....: F(ail)	
<b>General remarks:</b> "(see remark #)" refers to a remark appended to the report. (see appended table)" refers to a table appended to the report. The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the testing laboratory. Throughout this report a <input type="checkbox"/> comma/ <input checked="" type="checkbox"/> point is used as the decimal separator.	

**General product information:**

- 1.1 The product tested with model name LoPy4 1.0 is LoPy4 Module, supplied by 5.0Vdc.
- 1.2 All circuit considered to SELV circuit.

FINAL

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>1</b>	<b>General</b>		<b>P</b>
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<b>1.5</b>	<b>Components</b>		<b>P</b>
1.5.1	General		P
	Comply with IEC60950-1 or relevant component standard	Components that were found to affect safety aspects comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. (see appended table 1.5.1)	P
1.5.2	Evaluation and testing of components	<p>Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this Standard.</p> <p>Components not certified are used in accordance with their ratings and they comply with IEC60950-1 and the relevant component Standard.</p> <p>Components, for which no relevant IEC Standard exist, have been tested under the condition occurring in the equipment, using applicable parts of IEC60950-1.</p>	P
1.5.3	Thermal controls	No such component	N
1.5.4	Transformers	No such components	N
1.5.5	Interconnecting cables		N
1.5.6	Capacitors bridging insulation	No such component	N
1.5.7	Resistors bridging insulation	No such component	N
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N
1.5.8	Components in equipment for IT power systems	Not intend for IT power distribution systems.	N
1.5.9	Surge suppressors	No such component	N
1.5.9.1	General		N
1.5.9.2	Protection of VDRs		N
1.5.9.3	Bridging of functional insulation by a VDR		N
1.5.9.4	Bridging of basic insulation by a VDR		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N
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<b>1.6</b>	<b>Power interface</b>		<b>N</b>
1.6.1	AC power distribution systems	Class III equipment.	N
1.6.2	Input current		N
1.6.3	Voltage limit of hand-held equipment		N
1.6.4	Neutral conductor	Class III equipment.	N

<b>1.7</b>	<b>Marking and instructions</b>		<b>P</b>
1.7.1	Power rating and identification markings		P
1.7.1.1	Power rating marking	No connection to mains supply	N
	Multiple mains supply connections.....:		N
	Rated voltage(s) or voltage range(s) (V) .....	5.0	P
	Symbol for nature of supply, for d.c. only .....	==	P
	Rated frequency or rated frequency range (Hz).....:		N
	Rated current (mA or A) .....	0.5A	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark .....	Manufacturer's name: Pycom Ltd	P
	Model identification or type reference .....	See marking	P
	Symbol for Class II equipment only .....	Class III equipment	N
	Other markings and symbols .....	Others marking can be added, which not misunderstand.	P
1.7.1.3	Use of graphical symbols		N
1.7.2	Safety instructions and marking	In user manual	N
1.7.2.1	General		N
1.7.2.2	Disconnect devices	No such device	N
	-for permanently connected equipment, a readily accessible disconnect device shall be incorporated in the building installation wiring	Not permanently connected equipment	N
	-for pluggable equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible	Not pluggable equipment	N
1.7.2.3	Overcurrent protective device	No such device	N
1.7.2.4	IT power distribution systems		N
1.7.2.5	Operator access with a tool		N
1.7.2.6	Ozone	No ozone produced	N
1.7.3	Short duty cycles	Continuous operation.	N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.4	Supply voltage adjustment .....	No such device	N
	Methods and means of adjustment; reference to installation instructions .....		N
1.7.5	Power outlets on the equipment .....	No such component	N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....	No such component	N
1.7.7	Wiring terminals	No wiring terminals	N
1.7.7.1	Protective earthing and bonding terminals .....	No such terminals	N
1.7.7.2	Terminals for a.c. mains supply conductors	No connection to mains supply	N
1.7.7.3	Terminals for d.c. mains supply conductors	No connection to mains supply	N
1.7.8	Controls and indicators		N
1.7.8.1	Identification, location and marking .....		N
1.7.8.2	Colours .....		N
1.7.8.3	Symbols according to IEC 60417 .....		N
1.7.8.4	Markings using figures .....		N
1.7.9	Isolation of multiple power sources .....		N
1.7.10	Thermostats and other regulating devices .....	No such devices	N
1.7.11	Durability	Rubbed with a cloth soaked with water for 15s then again for 15s with cloth soaked with petroleum spirit, after this test, the marking on the label did not fade there are no curling nor lifting of the label edge.	P
1.7.12	Removable parts	No removable parts	N
1.7.13	Replaceable batteries .....	No such batteries	N
	Language(s) .....		—
1.7.14	Equipment for restricted access locations.....		N

<b>2</b>	<b>Protection from hazards</b>		<b>P</b>
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	All circuit considered to SELV circuit	P
2.1.1.1	Access to energized parts		P
	Test by inspection .....		P
	Test with test finger (Figure 2A) .....		P
	Test with test pin (Figure 2B) .....		P
	Test with test probe (Figure 2C) .....	No TNV circuits	N
2.1.1.2	Battery compartments	No such component	N
2.1.1.3	Access to ELV wiring	No ELV wiring	N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
	Working voltage (V <sub>peak</sub> or V <sub>rms</sub> ); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage circuit wiring	N
2.1.1.5	Energy hazards .....	No energy hazards	N
2.1.1.6	Manual controls	No such device	N
2.1.1.7	Discharge of capacitors in equipment	No such component	N
	Measured voltage (V); time-constant (s) .....		—
2.1.1.8	Energy hazards – d.c. mains supply	No connection to d.c. mains supply	N
	a) Capacitor connected to the d.c. mains supply ..		N
	b) Internal battery connected to the d.c. mains supply .....		N
2.1.1.9	Audio amplifiers .....	No such component	N
2.1.2	Protection in service access areas		N
2.1.3	Protection in restricted access locations		N

<b>2.2</b>	<b>SELV circuits</b>		<b>P</b>
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V) .....	42.4V peak or 60V d.c. are not exceeded in SELV circuits.	P
2.2.3	Voltages under fault conditions (V) .....	Not exceed 42.4V peak or 60V d.c. for longer than 0.2s, and under limit of 71V peak or 120V d.c. within 0.2s.	P
2.2.4	Connection of SELV circuits to other circuits .....	No connection to other circuits	N

<b>2.3</b>	<b>TNV circuits</b>		<b>N</b>
2.3.1	Limits	No TNV circuit.	N
	Type of TNV circuits .....		—
2.3.2	Separation from other circuits and from accessible parts		N
2.3.2.1	General requirements		N
2.3.2.2	Protection by basic insulation		N
2.3.2.3	Protection by earthing		N
2.3.2.4	Protection by other constructions .....		N
2.3.3	Separation from hazardous voltages		N
	Insulation employed.....		—
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed.....		—
2.3.5	Test for operating voltages generated externally		N



AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>2.4</b>	<b>Limited current circuits</b>		<b>N</b>
2.4.1	General requirements	No limited current circuits	N
2.4.2	Limit values		N
	Frequency (Hz).....:		—
	Measured current (mA).....:		—
	Measured voltage (V) .....		—
	Measured circuit capacitance (nF or $\mu$ F).....:		—
2.4.3	Connection of limited current circuits to other circuits		N

<b>2.5</b>	<b>Limited power sources</b>		<b>N</b>
	a) Inherently limited output		N
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition		N
	d) Overcurrent protective device limited output		N
	Max. output voltage (V), max. output current (A), max. apparent power (VA) .....		—
	Current rating of overcurrent protective device (A)		—
	Use of integrated circuit (IC) current limiters		N

<b>2.6</b>	<b>Provisions for earthing and bonding</b>		<b>N</b>
2.6.1	Protective earthing	Class III equipment.	N
2.6.2	Functional earthing		N
2.6.3	Protective earthing and protective bonding conductors		N
2.6.3.1	General		N
2.6.3.2	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area ( $\text{mm}^2$ ), AWG .....		—
2.6.3.3	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area ( $\text{mm}^2$ ), AWG .....		—
	Protective current rating (A), cross-sectional area ( $\text{mm}^2$ ), AWG .....		—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance ( $\Omega$ ), voltage drop (V), test current (A), duration (min) .....		N
2.6.3.5	Colour of insulation .....		N
2.6.4	Terminals		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.4.1	General		N
2.6.4.2	Protective earthing and bonding terminals		N
	Rated current (A), type, nominal thread diameter (mm) .....		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N
2.6.5	Integrity of protective earthing		N
2.6.5.1	Interconnection of equipment		N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N
2.6.5.3	Disconnection of protective earth		N
2.6.5.4	Parts that can be removed by an operator		N
2.6.5.5	Parts removed during servicing		N
2.6.5.6	Corrosion resistance		N
2.6.5.7	Screws for protective bonding		N
2.6.5.8	Reliance on telecommunication network or cable distribution system		N

<b>2.7</b>	<b>Overcurrent and earth fault protection in primary circuits</b>		<b>N</b>
2.7.1	Basic requirements	Class III equipment	N
	Instructions when protection relies on building installation		N
2.7.2	Faults not simulated in 5.3.7		N
2.7.3	Short-circuit backup protection		N
2.7.4	Number and location of protective devices .....		N
2.7.5	Protection by several devices		N
2.7.6	Warning to service personnel.....		N

<b>2.8</b>	<b>Safety interlocks</b>		<b>N</b>
2.8.1	General principles	No safety interlocks	N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
	Protection against extreme hazard		N
2.8.5	Moving parts		N
2.8.6	Overriding		N
2.8.7	Switches, relays and their related circuits		N
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) .....		N
2.8.7.2	Overload test		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test		N
2.8.8	Mechanical actuators		N

<b>2.9</b>	<b>Electrical insulation</b>		<b>P</b>
2.9.1	Properties of insulating materials	Natural rubber, hygroscopic and materials containing asbestos not used as insulation.	P
2.9.2	Humidity conditioning		N
	Relative humidity (%), temperature (°C) .....		—
2.9.3	Grade of insulation	Functional insulation only	P
2.9.4	Separation from hazardous voltages		N
	Method(s) used .....		—

<b>2.10</b>	<b>Clearances, creepage distances and distances through insulation</b>		<b>N</b>
2.10.1	General	Class III equipment, functional insulation considered to 5.3.4 c)	N
2.10.1.1	Frequency .....		N
2.10.1.2	Pollution degrees .....		N
2.10.1.3	Reduced values for functional insulation		N
2.10.1.4	Intervening unconnected conductive parts		N
2.10.1.5	Insulation with varying dimensions		N
2.10.1.6	Special separation requirements		N
2.10.1.7	Insulation in circuits generating starting pulses		N
2.10.2	Determination of working voltage		N
2.10.2.1	General		N
2.10.2.2	RMS working voltage		N
2.10.2.3	Peak working voltage		N
2.10.3	Clearances		N
2.10.3.1	General		N
2.10.3.2	Mains transient voltages		N
	a) AC mains supply .....		N
	b) Earthed d.c. mains supplies .....		N
	c) Unearthed d.c. mains supplies .....		N
	d) Battery operation .....		N
2.10.3.3	Clearances in primary circuits		N
2.10.3.4	Clearances in secondary circuits		N
2.10.3.5	Clearances in circuits having starting pulses		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.6	Transients from a.c. mains supply .....		N
2.10.3.7	Transients from d.c. mains supply .....		N
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....		N
2.10.3.9	Measurement of transient voltage levels		N
	a) Transients from a mains supply		N
	For an a.c. mains supply .....		N
	For a d.c. mains supply .....		N
	b) Transients from a telecommunication network :		N
2.10.4	Creepage distances		N
2.10.4.1	General		N
2.10.4.2	Material group and comparative tracking index		N
	CTI tests .....		—
2.10.4.3	Minimum creepage distances		N
2.10.5	Solid insulation		N
2.10.5.1	General		N
2.10.5.2	Distances through insulation		N
2.10.5.3	Insulating compound as solid insulation		N
2.10.5.4	Semiconductor devices		N
2.10.5.5	Cemented joints		N
2.10.5.6	Thin sheet material – General		N
2.10.5.7	Separable thin sheet material		N
	Number of layers (pcs) .....		—
2.10.5.8	Non-separable thin sheet material		N
2.10.5.9	Thin sheet material – standard test procedure		N
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure		N
	Electric strength test		—
2.10.5.11	Insulation in wound components		N
2.10.5.12	Wire in wound components		N
	Working voltage .....		N
	a) Basic insulation not under stress .....		N
	b) Basic, supplementary, reinforced insulation .....		N
	c) Compliance with Annex U .....		N
	Two wires in contact inside wound component; angle between 45° and 90° .....		N
2.10.5.13	Wire with solvent-based enamel in wound components		N
	Electric strength test		—

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
	Routine test		N
2.10.5.14	Additional insulation in wound components		N
	Working voltage .....		N
	- Basic insulation not under stress .....		N
	- Supplementary, reinforced insulation .....		N
2.10.6	Construction of printed boards		N
2.10.6.1	Uncoated printed boards		N
2.10.6.2	Coated printed boards		N
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N
2.10.6.4	Insulation between conductors on different layers of a printed board		N
	Distance through insulation		N
	Number of insulation layers (pcs).....		N
2.10.7	Component external terminations		N
2.10.8	Tests on coated printed boards and coated components		N
2.10.8.1	Sample preparation and preliminary inspection		N
2.10.8.2	Thermal conditioning		N
2.10.8.3	Electric strength test		N
2.10.8.4	Abrasion resistance test		N
2.10.9	Thermal cycling		N
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N
2.10.11	Tests for semiconductor devices and cemented joints		N
2.10.12	Enclosed and sealed parts		N

<b>3</b>	<b>Wiring, connections and supply</b>		<b>P</b>
3.1	General		P
3.1.1	Current rating and overcurrent protection		P
3.1.2	Protection against mechanical damage		P
3.1.3	Securing of internal wiring		P
3.1.4	Insulation of conductors		N
3.1.5	Beads and ceramic insulators		N
3.1.6	Screws for electrical contact pressure	No such screws	N
3.1.7	Insulating materials in electrical connections		N
3.1.8	Self-tapping and spaced thread screws	No such screws	N
3.1.9	Termination of conductors		N
	10 N pull test		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

3.1.10	Sleeving on wiring	No sleeving	N
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<b>3.2</b>	<b>Connection to a mains supply</b>		<b>N</b>
3.2.1	Means of connection	No connection to mains supply	N
3.2.1.1	Connection to an a.c. mains supply		N
3.2.1.2	Connection to a d.c. mains supply		N
3.2.2	Multiple supply connections		N
3.2.3	Permanently connected equipment		N
	Number of conductors, diameter of cable and conduits (mm) .....		—
3.2.4	Appliance inlets		N
3.2.5	Power supply cords		N
3.2.5.1	AC power supply cords		N
	Type .....		—
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		—
3.2.5.2	DC power supply cords		N
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N) .....		—
	Longitudinal displacement (mm) .....		—
3.2.7	Protection against mechanical damage		N
3.2.8	Cord guards		N
	Diameter or minor dimension D (mm); test mass (g) .....		—
	Radius of curvature of cord (mm).....		—
3.2.9	Supply wiring space		N

<b>3.3</b>	<b>Wiring terminals for connection of external conductors</b>		<b>N</b>
3.3.1	Wiring terminals	No such wiring terminals	N
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals		N
3.3.4	Conductor sizes to be connected		N
	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ).....		—
3.3.5	Wiring terminal sizes		N
	Rated current (A), type, nominal thread diameter (mm) .....		—
3.3.6	Wiring terminal design		N
3.3.7	Grouping of wiring terminals		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

3.3.8	Stranded wire		N
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<b>3.4</b>	<b>Disconnection from the mains supply</b>		<b>N</b>
3.4.1	General requirement	Class III equipment	N
3.4.2	Disconnect devices		N
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords		N
3.4.6	Number of poles - single-phase and d.c. equipment		N
3.4.7	Number of poles - three-phase equipment		N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		N
3.4.10	Interconnected equipment		N
3.4.11	Multiple power sources		N

<b>3.5</b>	<b>Interconnection of equipment</b>		<b>N</b>
3.5.1	General requirements		N
3.5.2	Types of interconnection circuits .....		N
3.5.3	ELV circuits as interconnection circuits	No such circuit	N
3.5.4	Data ports for additional equipment	No data port for additional equipment	N

<b>4</b>	<b>Physical requirements</b>		<b>P</b>
4.1	Stability		N
	Angle of 10°	Equipment with mass not exceeding 7kg and not a floor standing	N
	Test force (N) .....		N

<b>4.2</b>	<b>Mechanical strength</b>		<b>P</b>
4.2.1	General		P
	Rack-mounted equipment.	.	--
4.2.2	Steady force test, 10 N	No hazards	P
4.2.3	Steady force test, 30 N		N
4.2.4	Steady force test, 250 N		N
4.2.5	Impact test		N
	Fall test		N
	Swing test		N
4.2.6	Drop test; height (mm) .....		N
4.2.7	Stress relief test		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
4.2.8	Cathode ray tubes	No such tubes	N
	Picture tube separately certified .....		N
4.2.9	High pressure lamps	No such lamps	N
4.2.10	Wall or ceiling mounted equipment; force (N) .....		N
4.2.11	Rotating solid media		N
	Test to cover on the door.....		N

<b>4.3</b>	<b>Design and construction</b>		<b>P</b>
4.3.1	Edges and corners	All edges corners are smooth and rounded	P
4.3.2	Handles and manual controls; force (N).....	No such device	N
4.3.3	Adjustable controls	No such device	N
4.3.4	Securing of parts		P
4.3.5	Connection by plugs and sockets		N
4.3.6	Direct plug-in equipment	No such equipment	N
	Torque .....		—
	Compliance with the relevant mains plug standard .....		N
4.3.7	Heating elements in earthed equipment	No such component	N
4.3.8	Batteries	No such batteries	N
	- Overcharging of a rechargeable battery		N
	- Unintentional charging of a non-rechargeable battery		N
	- Reverse charging of a rechargeable battery		N
	- Excessive discharging rate for any battery		N
4.3.9	Oil and grease	No oil and grease	N
4.3.10	Dust, powders, liquids and gases		N
4.3.11	Containers for liquids or gases		N
4.3.12	Flammable liquids .....		N
	Quantity of liquid (l) .....		N
	Flash point (°C) .....		N
4.3.13	Radiation		P
4.3.13.1	General		P
4.3.13.2	Ionizing radiation		N
	Measured radiation (pA/kg) .....		—
	Measured high-voltage (kV) .....		—
	Measured focus voltage (kV) .....		—
	CRT markings .....		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N



AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
	Part, property, retention after test, flammability classification .....		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....		N
4.3.13.5	Lasers (including laser diodes) and LEDs	LED is only used as indicating lights.	P
4.3.13.5.1	Lasers (including laser diodes)		N
	Laser class .....		—
4.3.13.5.2	Light emitting diodes (LEDs)	LED is only used as indicating lights.	P
4.3.13.6	Other types .....		N

<b>4.4</b>	<b>Protection against hazardous moving parts</b>		<b>N</b>
4.4.1	General	No hazardous moving parts	N
4.4.2	Protection in operator access areas .....		N
	Household and home/office document/media shredders		N
4.4.3	Protection in restricted access locations .....		N
4.4.4	Protection in service access areas		N
4.4.5	Protection against moving fan blades		N
4.4.5.1	General		N
	Not considered to cause pain or injury. a) .....		N
	Is considered to cause pain, not injury. b) .....		N
	Considered to cause injury. c) .....		N
4.4.5.2	Protection for users		N
	Use of symbol or warning .....		N
4.4.5.3	Protection for service persons		N
	Use of symbol or warning .....		N

<b>4.5</b>	<b>Thermal requirements</b>		<b>P</b>
4.5.1	General		P
4.5.2	Temperature tests		P
	Normal load condition per Annex L .....		—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat .....		N

<b>4.6</b>	<b>Openings in enclosures</b>		<b>N</b>
4.6.1	Top and side openings	Considered to end product	N
	Dimensions (mm) .....		—
4.6.2	Bottoms of fire enclosures		N
	Construction of the bottom, dimensions (mm) ...		—

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
4.6.3	Doors or covers in fire enclosures		N
4.6.4	Openings in transportable equipment		N
4.6.4.1	Constructional design measures		N
	Dimensions (mm) .....		—
4.6.4.2	Evaluation measures for larger openings		N
4.6.4.3	Use of metallized parts		N
4.6.5	Adhesives for constructional purposes		N
	Conditioning temperature (°C), time (weeks) .....		—

<b>4.7</b>	<b>Resistance to fire</b>		<b>P</b>
4.7.1	Reducing the risk of ignition and spread of flame		P
	Method 1, selection and application of components wiring and materials	Materials with the required flammability classes are used. see appended table 1.5.1.	P
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure	Considered to end product	N
4.7.2.1	Parts requiring a fire enclosure		N
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures		N
4.7.3.3	Materials for components and other parts outside fire enclosures		N
4.7.3.4	Materials for components and other parts inside fire enclosures	All component mounting on PCB rated V-1 or better.	P
4.7.3.5	Materials for air filter assemblies		N
4.7.3.6	Materials used in high-voltage components		N

<b>5</b>	<b>Electrical requirements and simulated abnormal conditions</b>		<b>P</b>
5.1	Touch current and protective conductor current		N
5.1.1	General	Class III equipment	N
5.1.2	Configuration of equipment under test (EUT)		N
5.1.2.1	Single connection to an a.c. mains supply		N
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N
5.1.3	Test circuit		N
5.1.4	Application of measuring instrument		N
5.1.5	Test procedure		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.6	Test measurements		N
	Supply voltage (V) .....		—
	Measured touch current (mA) .....		—
	Max. allowed touch current (mA) .....		—
	Measured protective conductor current (mA) .....		—
	Max. allowed protective conductor current (mA).....		—
5.1.7	Equipment with touch current exceeding 3,5 mA		N
5.1.7.1	General .....		N
5.1.7.2	Simultaneous multiple connections to the supply		N
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks		N
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N
	Supply voltage (V) .....		—
	Measured touch current (mA) .....		—
	Max. allowed touch current (mA) .....		—
5.1.8.2	Summation of touch currents from telecommunication networks		N
	a) EUT with earthed telecommunication ports .....		N
	b) EUT whose telecommunication ports have no reference to protective earth		N

<b>5.2</b>	<b>Electric strength</b>		<b>N</b>
5.2.1	General	Function insulation considered to 5.3.4 c)	N
5.2.2	Test procedure		N
<b>5.3</b>	<b>Abnormal operating and fault conditions</b>		<b>P</b>
5.3.1	Protection against overload and abnormal operation	(See appended table 5.3)	P
5.3.2	Motors	No such component	N
5.3.3	Transformers	No such component	N
5.3.4	Functional insulation.....	Functional insulation complies with the requirements 5.3.4(c)	P
5.3.5	Electromechanical components	No such component	N
5.3.6	Audio amplifiers in ITE .....	No such component	N
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment	No such component	N
5.3.9	Compliance criteria for abnormal operating and fault conditions	(See appended table 5.3)	P

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.9.1	During the tests		P
5.3.9.2	After the tests		P
<b>6</b>	<b>Connection to telecommunication networks</b>		<b>N</b>
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N
6.1.1	Protection from hazardous voltages		N
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements	No TNV circuits	N
	Supply voltage (V) .....		—
	Current in the test circuit (mA) .....		—
6.1.2.2	Exclusions .....		N
<b>6.2</b>	<b>Protection of equipment users from overvoltages on telecommunication networks</b>		<b>N</b>
6.2.1	Separation requirements	No TNV circuits	N
6.2.2	Electric strength test procedure		N
6.2.2.1	Impulse test		N
6.2.2.2	Steady-state test		N
6.2.2.3	Compliance criteria		N
<b>6.3</b>	<b>Protection of the telecommunication wiring system from overheating</b>		<b>N</b>
	Max. output current (A) .....	No TNV circuits	—
	Current limiting method .....		—
<b>7</b>	<b>Connection to cable distribution systems</b>		<b>N</b>
7.1	General	No connection to cable distribution systems	N
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N
7.3	Protection of equipment users from overvoltages on the cable distribution system		N
7.4	Insulation between primary circuits and cable distribution systems		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse test		N
<b>A</b>	<b>Annex A ,Tests for resistance to heat and fire</b>		<b>N</b>

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N
A.1.1	Samples.....:		—
	Wall thickness (mm) .....		—
A.1.2	Conditioning of samples; temperature (°C) .....		N
A.1.3	Mounting of samples .....		N
A.1.4	Test flame (see IEC 60695-11-3)		N
	Flame A, B, C or D .....		—
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N
A.2.1	Samples, material.....:		—
	Wall thickness (mm) .....		—
A.2.2	Conditioning of samples; temperature (°C) .....		N
A.2.3	Mounting of samples .....		N
A.2.4	Test flame (see IEC 60695-11-4)		N
	Flame A, B or C .....		—
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—
A.3	Hot flaming oil test (see 4.6.2)		N
A.3.1	Mounting of samples		N
A.3.2	Test procedure		N
A.3.3	Compliance criterion		N
<b>B</b>	<b>Annex B ,Motor tests under abnormal conditions (see 4.7.2.2 and 5.3.2)</b>		N
B.1	General requirements		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days) .....		—
	Electric strength test: test voltage (V) .....		—
B.6	Running overload test for d.c. motors in secondary circuits		N
B.6.1	General		N
B.6.2	Test procedure		N
B.6.3	Alternative test procedure		N
B.6.4	Electric strength test; test voltage (V) .....		N
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N
B.7.1	General		N
B.7.2	Test procedure		N
B.7.3	Alternative test procedure		N
B.7.4	Electric strength test; test voltage (V) .....		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V) .....		—
<b>C</b>	<b>Annex C ,Transformers (see 1.5.4 and 5.3.3)</b>		<b>N</b>
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
	Method of protection.....		—
C.1	Overload test		N
C.2	Insulation		N
	Protection from displacement of windings.....		N
<b>D</b>	<b>Annex D ,Measuring instruments for touch-current testes(see 5.1.4)</b>		<b>N</b>
D.1	Measuring instrument		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
D.2	Alternative measuring instrument		N
<b>E</b>	<b>Annex E, Temperature rise of a winding (see 1.4.13)</b>		<b>N</b>
<b>F</b>	<b>Annex F ,Measurement of clearances and creepage distances (see 2.10 and Annex G)</b>		<b>N</b>
<b>G</b>	<b>Annex G ,Alternative method for determining minimum clearances</b>		<b>N</b>
G.1	Clearances		N
G.1.1	General		N
G.1.2	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V)		N
G.2.1	AC mains supply .....		N
G.2.2	Earthed d.c. mains supplies .....		N
G.2.3	Unearthed d.c. mains supplies .....		N
G.2.4	Battery operation .....		N
G.3	Determination of telecommunication network transient voltage (V) .....		N
G.4	Determination of required withstand voltage (V)		N
G.4.1	Mains transients and internal repetitive peaks .....		N
G.4.2	Transients from telecommunication networks .....		N
G.4.3	Combination of transients		N
G.4.4	Transients from cable distribution systems		N
G.5	Measurement of transient voltages (V)		N
	a) Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b) Transients from a telecommunication network		N
G.6	Determination of minimum clearances .....		N
<b>H</b>	<b>Annex H ,Ionizing radiation (see 4.3.13)</b>		<b>N</b>
<b>J</b>	<b>Annex J ,Table of electrochemical potentials (see 2.6.5.6)</b>		<b>N</b>
	Metal(s) used .....		--
<b>K</b>	<b>Annex K ,Thermal controls (see 1.5.3 and 5.3.8)</b>		<b>N</b>
K.1	Making and breaking capacity		N
K.2	Thermostat reliability; operating voltage (V) .....		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
K.3	Thermostat endurance test; operating voltage (V) .....		N
K.4	Temperature limiter endurance; operating voltage (V) .....		N
K.5	Thermal cut-out reliability		N
K.6	Stability of operation		N

<b>L</b>	<b>Annex L ,Normal load conditions for same types of electrical business equipment (see 1.2.2.1 and 4.5.2)</b>		<b>N</b>
L.1	Typewriters		N
L.2	Adding machines and cash registers		N
L.3	Erasers		N
L.4	Pencil sharpeners		N
L.5	Duplicators and copy machines		N
L.6	Motor-operated files		N
L.7	Other business equipment		P

<b>M</b>	<b>Annex M ,Criteria for telephone ringing signals (see 2.3.1)</b>		<b>N</b>
M.1	Introduction		N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringing signal		N
M.3.1.1	Frequency (Hz) .....		--
M.3.1.2	Voltage (V) .....		--
M.3.1.3	Cadence; time (s), voltage (V) .....		--
M.3.1.4	Single fault current (mA) .....		--
M.3.2	Tripping device and monitoring voltage .....		N
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
M.3.2.2	Tripping device		N
M.3.2.3	Monitoring voltage (V) .....		N

<b>N</b>	<b>Annex N ,Impulse test generators (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)</b>		<b>N</b>
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generator		N

<b>P</b>	<b>Annex P .Normative references</b>		—
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AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>Q</b>	<b>Annex Q , Voltage dependent resistors (VDRs) (see 1.5.9.1)</b>		<b>N</b>
	a) Preferred climatic categories .....		N
	b) Maximum continuous voltage .....		N
	c) Pulse current .....		N
<b>R</b>	<b>Annex R ,Examples of requirements for quality control programmes</b>		<b>N</b>
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N
R.2	Reduced clearances (see 2.10.3)		N
<b>S</b>	<b>Annex S ,Procedure for impulse testing (see 6.2.2.3)</b>		<b>N</b>
S.1	Test equipment		N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N
<b>T</b>	<b>Annex T ,Guidance on protection against ingress of water (see 1.1.2)</b>		<b>N</b>
			—
<b>U</b>	<b>Annex U ,Insulated winding wires for use without interleaved insulation (see 2.10.5.4)</b>		<b>N</b>
			—
<b>V</b>	<b>Annex V ,AC power distribution systems (see 1.6.1)</b>		<b>N</b>
V.1	Introduction		N
V.2	TN power distribution systems		N
<b>W</b>	<b>Annex W ,Summation of touch currents</b>		<b>N</b>
W.1	Touch current from electronic circuits		N
W.1.1	Floating circuits		N
W.1.2	Earthed circuits		N
W.2	Interconnection of several equipments		N
W.2.1	Isolation		N
W.2.2	Common return, isolated from earth		N
W.2.3	Common return, connected to protective earth		N
<b>X</b>	<b>Annex X ,Maximum heating effect in transformer tests (see clause C.1)</b>		<b>N</b>
X.1	Determination of maximum input current		N
X.2	Overload test procedure		N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>Y</b>	<b>Annex Y ,Ultraviolet light conditioning test (see 4.3.13.3)</b>		<b>N</b>
Y.1	Test apparatus .....		N
Y.2	Mounting of test samples .....		N
Y.3	Carbon-arc light-exposure apparatus .....		N
Y.4	Xenon-arc light exposure apparatus .....		N
<b>Z</b>	<b>Annex Z ,Overvoltage categories (see 2.10.3.2 and Clause G.2)</b>		<b>N</b>
<b>AA</b>	<b>Annex AA ,Mandrel test (see 2.10.5.8)</b>		<b>N</b>
<b>BB</b>	<b>Annex BB ,Changes in the second edition</b>		—
<b>CC</b>	<b>Annex CC , Evaluation of integrated circuit (IC) current limiters</b>		<b>N</b>
CC.1	General		N
CC.2	Test program 1 .....		—
CC.3	Test program 2 .....		—
<b>DD</b>	<b>Annex DD , Requirements for the mounting means of rack-mounted equipment</b>		<b>N</b>
DD.1	General		N
DD.2	Mechanical strength test, variable N .....		—
DD.3	Mechanical strength test, 250N, including end stops .....		—
DD.4	Compliance.....		N
<b>EE</b>	<b>Annex EE , Household and home/office document/media shredders</b>		<b>N</b>
EE.1	General		N
EE.2	Markings and instructions		N
	Use of markings or symbols .....		N
	Information of user instructions, maintenance and/or servicing instructions .....		N
EE.3	Inadvertent reactivation test .....		N
EE.4	Disconnection of power to hazardous moving parts .....		N
	Use of markings or symbols .....		N
EE.5	Protection against hazardous moving parts		N
	Test with test finger (Figure 2A) .....		—
	Test with wedge probe (Figure EE1 and EE2) .....		—

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

## APPENDIX ZZ

### VARIATIONS TO IEC 60950-1, Ed. 2.2 (2013) FOR AUSTRALIA AND NEW ZEALAND (Normative)

<b>ZZ.1 SCOPE</b> This Appendix sets out variations and additional requirements to cover issues which have not been addressed by the International Standard. These variations indicate national variations for purposes of the IECEE CB System and will be published in the IECEE CB Bulletin.			
<b>ZZ.2 Variations</b> The variations are as follows:			
1.2	After definition 'PERSON, SERVICE', insert the following new definition: <b>POTENTIAL IGNITION SOURCE</b> ..... 1.2.12.201	Inserted	P
1.2.12.201	Insert a new Clause 1.2.12.201 after Clause 1.2.12.15 as follows: <b>1.2.12.201 POTENTIAL IGNITION SOURCE:</b> Possible fault which can start a fire if the open-circuit voltage measured across an interruption or faulty contact exceeds a value of 50 V (peak) a.c. or d.c. and the product of the peak value of this voltage and the measured r.m.s. current under normal operating conditions exceeds 15 VA. Such a faulty contact or interruption in an electrical connection includes those which may occur in <b>CONDUCTIVE PATTERNS</b> on <b>PRINTED BOARDS</b> . NOTE 1: An electronic protection circuit may be used to prevent such a fault from becoming a POTENTIAL IGNITION SOURCE. NOTE 2: This definition is from AS/NZS 60065:2012, Clause 2.8.11	Added	P
1.5.1	1. First paragraph, insert the following text after the words 'IEC component standard': or the relevant Australian/New Zealand Standard. 2. In the NOTE, insert the following text after the word 'standard': or an Australian/New Zealand Standard. 3. Second paragraph, delete the words 'without further evaluation'.	Added	P
1.5.2	1. First paragraph, insert the following text after the word 'standard': or an Australian/New Zealand Standard. 2. First paragraph, second dash item, second line, insert the following text after the word 'standard': or an Australian/New Zealand Standard. 3. First paragraph, second dash item, last line, insert the following text after the word 'standard': or an Australian/New Zealand Standard.	Added	P

AS/NZS 60950.1																			
Clause	Requirement + Test	Result - Remark	Verdict																
1.7.1.3	<p>Delete existing text and replace with the following: Graphical symbols placed on the equipment as a requirement of this standard, shall be in accordance with IEC 60417 or ISO 3864-2 or ISO 7000, if available. In the absence of suitable symbols, the manufacturer may design specific graphical symbols. Symbols as required by this standard placed on the equipment shall be explained in the user manual.</p>		N																
2.9.2	<p>Second paragraph, delete the word 'designated'. Table 3B as follows: 1. Delete the first four rows and replace with the following:</p> <table border="1"> <tr> <td>Over 0.2</td><td>up to and including 3</td><td>0.5<sup>a</sup></td><td>18 [0,8]</td></tr> <tr> <td>Over 3</td><td>up to and including 7.5</td><td>0.75</td><td>16 [1,3]</td></tr> <tr> <td>Over 7.5</td><td>up to and including 10</td><td>(0.75)<sup>b</sup> 1.00</td><td>16 [1,3]</td></tr> <tr> <td>Over 10</td><td>up to and including 16</td><td>(1.0)<sup>c</sup> 1.5</td><td>14 [2]</td></tr> </table> <p>2. Delete NOTE 1 and renumber existing NOTE 2 as 'NOTE'. 3. Delete Footnote<sup>a</sup> and replace with the following: <sup>a</sup> This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm<sup>2</sup> three-core supply flexible cords are not permitted; see AS/NZS 3191).</p>	Over 0.2	up to and including 3	0.5 <sup>a</sup>	18 [0,8]	Over 3	up to and including 7.5	0.75	16 [1,3]	Over 7.5	up to and including 10	(0.75) <sup>b</sup> 1.00	16 [1,3]	Over 10	up to and including 16	(1.0) <sup>c</sup> 1.5	14 [2]	Replaced	N
Over 0.2	up to and including 3	0.5 <sup>a</sup>	18 [0,8]																
Over 3	up to and including 7.5	0.75	16 [1,3]																
Over 7.5	up to and including 10	(0.75) <sup>b</sup> 1.00	16 [1,3]																
Over 10	up to and including 16	(1.0) <sup>c</sup> 1.5	14 [2]																
4.1.201	<p>Insert new Clause 4.1.201 after Clause 4.1 as follows: <b>4.1.201 Display devices used for television Purposes</b> Display devices which may be used for television purposes, with a mass of 7 kg or more, shall comply with the requirements for stability and mechanical hazards, including the additional stability requirements for television receivers, specified in AS/NZS 60065.</p>	No such device	N																
4.3.6	<p>Delete the third paragraph and replace with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112, shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.</p>		N																

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.8	Eighth paragraph, insert the following new note after the first dash item: NOTE 6.201 In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of SELV may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.		N
4.3.8.201	After Clause 4.3.8, add the following new clause as follows: <b>4.3.8.201 Products containing coin/button cell batteries and batteries designated R1</b> The requirements of AS/NZS 60065:2012 Amendment 1:2015, Clause 14.10.201 apply for this Clause.		N
4.3.13.5.1	1 Delete the first paragraph and replace with the following: Except as permitted below, equipment shall be classified and labelled according to IEC 60825-1 or AS/NZS 60825.1, IEC 60825-2 or AS/NZS 60825.2 and IEC 60825-12, as applicable. 2 Third paragraph, first sentence, after 'IEC 60825-1', insert the following text: or AS/NZS 60825.1 3 Fourth paragraph, after 'IEC 60825-1', insert the following text: or AS/NZS 60825.1		N
4.7	Add the following new paragraph to the end of the clause: For alternative tests refer to Clause 4.7.201.	Added.	P
4.7.201	Add new Clause 4.7.201 after Clause 4.7.3.6 as follows: <b>4.7.201 Resistance to fire – Alternative tests</b>	Added. Alternative tests not applied for.	N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.1	<p><b>4.7.201.1 General</b></p> <p>Parts of non-metallic material shall be resistant to ignition and spread of fire.</p> <p>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from inside the apparatus, or the following:</p> <p>a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1mm in width regardless of length.</p> <p>b) The following parts which would contribute negligible fuel to a fire:</p> <ul style="list-style-type: none"> <li>- small mechanical parts, the mass of which does not exceed 4g, such as mounting parts, gears, cams, belts and bearings;</li> <li>- small electrical components, such as capacitors with a volume not exceeding 1,750 mm<sup>3</sup>, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10.</li> </ul> <p>NOTE: In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.</p> <p>Compliance shall be checked by the tests of 4.7.201.2, 4.7.201.3, 4.7.201.4 and 4.7.201.5.</p> <p>For the base material of printed boards, compliance shall be checked by the test of 4.7.201.5.</p> <p>The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use.</p> <p>These tests are not carried out on internal wiring.</p>		N
4.7.201.2	<p><b>4.7.201.2 Testing of non-metallic materials</b></p> <p>Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C.</p> <p>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall not be carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part.</p>		N

AS/NZS 60950.1													
Clause	Requirement + Test	Result - Remark	Verdict										
4.7.201.3	<p><b>4.7.201.3 Testing of insulating materials</b></p> <p>Parts of insulating material supporting <b>POTENTIAL IGNITION SOURCES</b> shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C</p> <p>The test shall also be carried out on other parts of insulating material which are within a distance of 3 mm of the connection.</p> <p>NOTE: Contacts in components such as switch contacts are considered to be connections.</p> <p>For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test shall not be tested.</p> <p>The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications:</p> <table><tr><th>Clause of AS/NZS 60695.11.5</th><th>Change</th></tr><tr><td colspan="2"><b>9 Test procedure</b></td></tr><tr><td><b>9.2 Application of needle-flame</b></td><td><i>Delete the first and second paragraphs and replace with the following:</i>  The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner.  The duration of application of the test flame shall be 30 s ± 1 s.</td></tr><tr><td><b>9.3 Number of test specimens</b></td><td><i>Delete existing text and replace with the following:</i>  The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.</td></tr><tr><td><b>11 Evaluation of test results</b></td><td><i>Delete existing text and replace with the following:</i>  The duration of burning (<i>t<sub>b</sub></i>) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.</td></tr></table> <p>The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10, provided that the sample tested was not thicker than the relevant part.</p>	Clause of AS/NZS 60695.11.5	Change	<b>9 Test procedure</b>		<b>9.2 Application of needle-flame</b>	<i>Delete the first and second paragraphs and replace with the following:</i>  The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner.  The duration of application of the test flame shall be 30 s ± 1 s.	<b>9.3 Number of test specimens</b>	<i>Delete existing text and replace with the following:</i>  The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.	<b>11 Evaluation of test results</b>	<i>Delete existing text and replace with the following:</i>  The duration of burning ( <i>t<sub>b</sub></i> ) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.		N
Clause of AS/NZS 60695.11.5	Change												
<b>9 Test procedure</b>													
<b>9.2 Application of needle-flame</b>	<i>Delete the first and second paragraphs and replace with the following:</i>  The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner.  The duration of application of the test flame shall be 30 s ± 1 s.												
<b>9.3 Number of test specimens</b>	<i>Delete existing text and replace with the following:</i>  The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.												
<b>11 Evaluation of test results</b>	<i>Delete existing text and replace with the following:</i>  The duration of burning ( <i>t<sub>b</sub></i> ) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.												

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.4	<p><b>4.7.201.4 Testing in the event of non-extinguishing material</b></p> <p>If the parts, other than enclosures, do not withstand the glow-wire tests of 4.7.201.3, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in 4.7.201.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during tests of 4.7.201.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested.</p> <p>NOTE 1: If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing.</p> <p>NOTE 2: If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing.</p> <p>NOTE 3: Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.</p>		N



AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.5	<p><b>4.7.201.5 Testing of printed boards</b></p> <p>The base material of printed boards shall be subjected to the needle-flame test of Clause 4.7.201.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a <b>POTENTIAL IGNITION SOURCE</b>.</p> <p>The test is not carried out if the –</p> <ul style="list-style-type: none"> <li>- Printed board does not carry any <b>POTENTIAL IGNITION SOURCE</b>;</li> <li>- Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category FV-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or</li> <li>- Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category FV-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely.</li> </ul> <p>Compliance shall be determined using the smallest thickness of the material.</p> <p>NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximise the apparent power from more than 2 min when the circuit supplied is disconnected.</p>		N
6.2.2	<p>For Australia only, delete the first paragraph and Note, and replace with the following:</p> <p>In Australia only, compliance with 6.2.2 shall be checked by the tests of both 6.2.2.1 and 6.2.2.2.</p>	No TNV.	N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
6.2.2.1	<p><i>For Australia only, delete the first paragraph including the Notes, and replace with the following:</i></p> <p>In Australia only, the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator reference 1 of Table N.1. The interval between successive impulses is 60 s and the initial voltage, <math>U_c</math>, is:</p> <ul style="list-style-type: none"> <li>- for 6.2.1 a): 7.0 kV for hand-held telephones and for headsets and 2.5 kV for other equipment; and</li> <li>- for 6.2.1 b) and 6.2.1 c): 1.5 kV.</li> </ul> <p>NOTE 201: The 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines.</p> <p>NOTE 202: The value of 2.5 kV for 6.2.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.</p>	No TNV.	N
6.2.2.2	<p><i>For Australia only, delete the second paragraph including the Note, and replace with the following:</i></p> <p>In Australia only, the a.c. test voltage is:</p> <ul style="list-style-type: none"> <li>- for 6.2.1 a): 3 kV; and</li> <li>- for 6.2.1 b) and 6.2.1 c): 1.5 kV.</li> </ul> <p>NOTE 201: Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used.</p> <p>NOTE 202: The 3 kV and 1.5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system.</p>	No TNV.	N
7.3	<p>Add the following before the first paragraph:</p> <p>Equipment providing functions that fall only within the scope of AS/NZS 60065 and that incorporate a PSTN interface, are not required to comply with this Clause where the only ports provided on the equipment, in addition to a coaxial cable connection and a PSTN interface, are audio or video ports and analogue or data ports not intended to be used for telecommunications purposes.</p>	Not connected to cable distribution system.	N
Annex P	<p>Add the following Normative References:</p> <p>AS/NZS 3191, Electric flexible cords</p> <p>AS/NZS 3112, Approval and test specification—Plugs and socket-outlets</p>	Added	P

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
Index	<p>1. Insert the following between 'asbestos, not to be used as insulation' and 'attitude see orientation':</p> <p>AS/NZS 3112..... 4.3.6  AS/NZS 3191..... 3.2.5.1 (Table 3B)  AS/NZS 60064..... 4.1.201  AS/NZS 60695.2.11..... 4.7.201.2, 4.7.201.3  AS/NZS 60695.11.10..... 4.7.201.1, 4.7.201.5  AS/NZS 60695.11.5..... 4.7.201.3  'AS/NZS 60825.1 .....4.3.13.5.1'  'AS/NZS 60825.2 .....4.3.13.5.1'</p> <p>2. Insert the following between 'positive temperature coefficient (PTC) device' and 'powder':</p> <p>potential ignition source.....1.2.201, 4.7.201.3, 4.7.201.5</p>		—

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>1.5.1</b>	<b>TABLE: List of critical components</b>					<b>P</b>
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity <sup>1)</sup>	
PCB	Q & D CIRCUITS CO LTD	M2	V-0,130°C	UL94 UL796	UL E251497	
-Alt	Various	Various	V-0 or better, Min. 130 °C	UL94 UL796	UL	
<sup>1)</sup> An asterisk indicates a mark which assures the agreed level of surveillance						
Supplementary information:						

1.5.1	TABLE: Opto Electronic Devices	N
Manufacturer ..... :		
Type..... :		
Separately tested..... :		
Bridging insulation ..... :		
External creepage distance ..... :		
Internal creepage distance ..... :		
Distance through insulation ..... :		
Tested under the following conditions ..... :		
Input..... :		
Output..... :		
Supplementary information:		

<b>1.6.2</b>	<b>TABLE: Electrical data (in normal conditions)</b>							<b>N</b>
Input			output			Fuse #	Ifuse (A)	Condition/status
U (V)	I (mA)	I <sub>rated</sub> (mA)	U (V)	I (mA)	I <sub>rated</sub> (mA)	I (A)	I <sub>rated</sub> (A)	
---	---	---	---	---	---	---	---	---
Supplementary information:								

<b>2.1.1.5 c)1)</b>	<b>TABLE: max. V, A, VA test</b>					<b>N</b>
Voltage (rated) (V)	Current (rated) (mA)	Voltage (max.) (V)	Current (max.) (mA)	VA (max.) (VA)		
-	-	-	-	-		
Supplementary information:						

<b>2.1.1.5 c)2)</b>	<b>TABLE: stored energy</b>					<b>N</b>
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AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
Capacitance C (μF)	Voltage U (V)	Energy E (J)	
-	-	-	
Supplementary information:			

2.2	TABLE: evaluation of voltage limiting components in SELV circuits			N
Component (measured between)		max. voltage (V) (normal operation)		Voltage Limiting Components
		V peak	V d.c.	
-		-	-	-
-		-	-	-
Fault test performed on voltage limiting components		Voltage measured (V) in SELV circuits (V peak or V d.c.)		
-		-		
Supplementary information:				

<b>2.4.2</b>	<b>TABLE: limited current circuit measurement</b>				<b>N</b>
Location	Voltage (V)	Current (mA)	Freq. (KHz)	Limit (mA)	
-	-	-	-	-	
-	-	-	-	-	
Supplementary information:					

2.5	TABLE: limited power sources				N
Circuit output tested::					
Measured Uoc (V) with all load circuits disconnected ..... :					
Components	Isc (A)		VA		
	Meas.	Limit	Meas.	Limit	
Normal operation	-	-	-	-	
Supplementary information:					

<b>2.10.2</b>	<b>Table: working voltage measurement</b>			<b>N</b>
Location	Peak voltage (V)	RMS voltage (V)	Comments	
-	-	-	-	
Supplementary information:				

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>2.10.3 and 2.10.4</b>	<b>TABLE: Clearance and creepage distance measurements</b>						N
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
Supplementary information:							

<b>2.10.5</b>	<b>TABLE: Distance through insulation measurements</b>						N
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)		
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
Supplementary information:							

<b>4.3.8</b>	<b>TABLE: Batteries</b>								N
The tests of 4.3.8 are applicable only when appropriate battery data is not available									N
Is it possible to install the battery in a reverse polarity position?									---
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current (mA)	Manuf. Specs (mA)		Meas. Current (mA)	Manuf. Specs (mA)	Meas. current (mA)	Manuf. Specs (mA)	Meas. current (mA)	Manuf. Specs (mA)
Max. current during normal condition	--	--	--	--	--	--	--	--	--
Max. current during fault condition	--	--	--	--	--	--	--	--	--
Test results:									
- Chemical leaks								No	N
- Explosion of the battery								No	N
- Emission of flame or expulsion of molten metal								No	N
- Electric strength tests of equipment after completion of tests								Not applied	N

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

4.3.8	TABLE: Batteries								N
The tests of 4.3.8 are applicable only when appropriate battery data is not available								N	
Is it possible to install the battery in a reverse polarity position?								---	
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current(mA)	Manuf. Specs(mA).		Meas. Current(mA)	Manuf. Specs(mA).	Meas. current(mA)	Manuf. Specs(mA).	Meas. current(mA)	Manuf. Specs(mA).
Supplementary information:									

4.5	TABLE: Thermal requirements			P			
	Supply voltage (V) .....	5.0V		—			
	Ambient Tmin (°C) .....	24.3	---	—			
	Ambient Tmax (°C) .....	24.6	Shift to Tma	—			
Maximum measured temperature T of part/at:		T (°C)		Allowed Tmax(°C)			
Ambient		24.7	85.0	--			
Aluminum of WIFI module		33.6	93.9	Ref.			
PCB near WIFI module		32.7	93.0	130			
Supplementary information:Tma is 85°C.							
Temperature T of winding:	t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation class
--	--	--	--	--	--	--	--
Supplementary information:							

4.5.5	TABLE: Ball pressure test of thermoplastic parts			N
	Allowed impression diameter (mm) .....:	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
-		-	-	
Supplementary information:				

4.7	TABLE: Resistance to fire					N
Part		Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
-		-	-	-	-	-
Supplementary information:						

AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict

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5.1	TABLE: touch current measurement			N
Measured between:		Measured (mA)	Limit (mA)	Comments/conditions
-		-	-	-
Supplementary information:				

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			N
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
-		-	-	-
-		-	-	-
Supplementary information:				

<b>5.3</b>	<b>TABLE: Fault condition tests</b>					<b>P</b>
	Ambient temperature (°C) .....: 23.5°C					—
	Power source for EUT: ---					—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
C81	S-C	5.0Vdc	10mins	--	--	The EUT immediately shut down, recoverable, NHT, NCD, NFG.
C53	S-C	5.0Vdc	10mins	--	--	The EUT immediately shut down, recoverable, NHT, NCD, NFG.
R2	S-C	5.0Vdc	10mins	--	--	The EUT immediately shut down, recoverable, NHT, NCD, NFG.
NHT: No High Temperature; NCD: No Component Damage; NFG no flammability gas; S-C:Short circuit						

<b>C.2</b>	<b>TABLE: transformers</b>						<b>N</b>
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm(2.10.4)	Required distance thr. insul. (2.10.5)
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
-	-			-	-	-	-

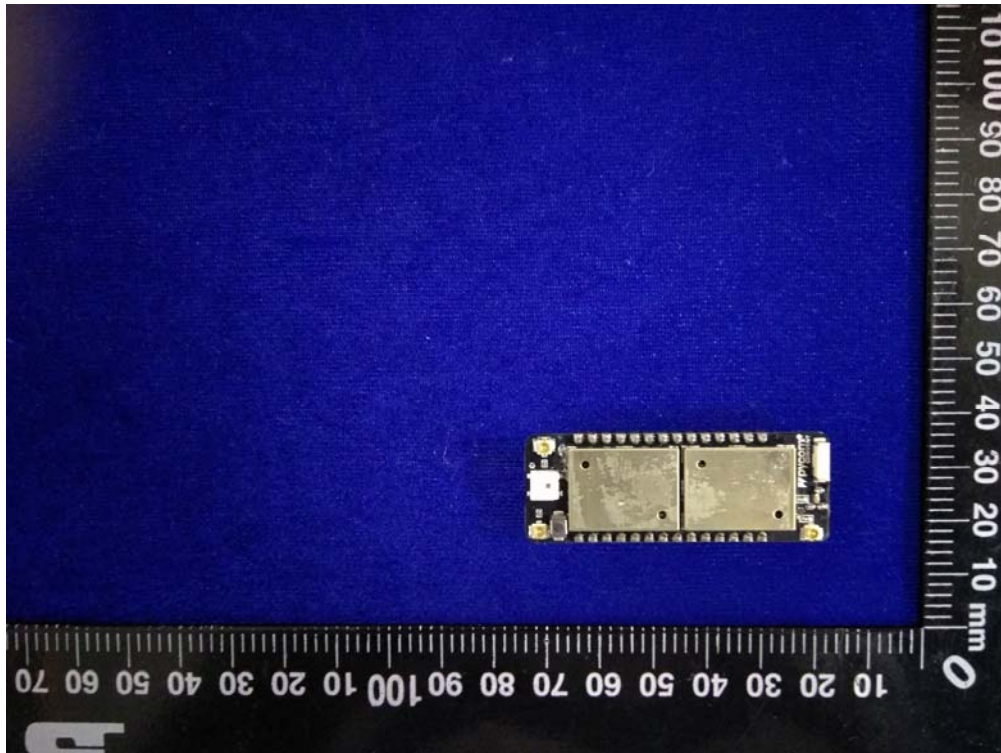


AS/NZS 60950.1			
Clause	Requirement + Test	Result - Remark	Verdict
Supplementary information:			

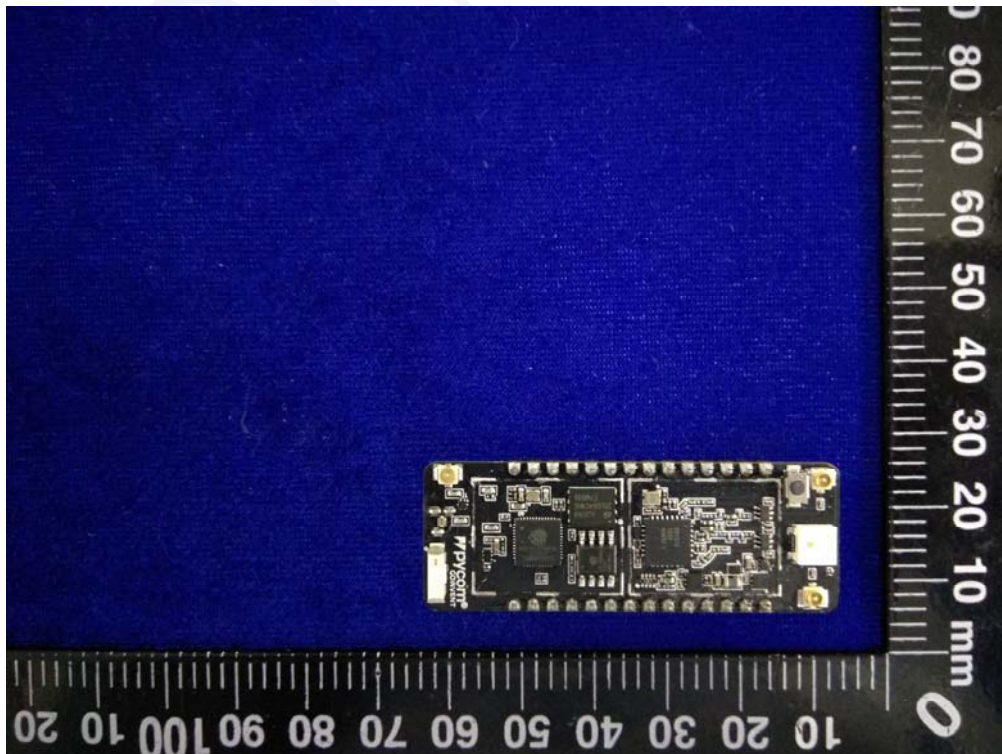
FINAL

## Appendix A EUT PHOTOS

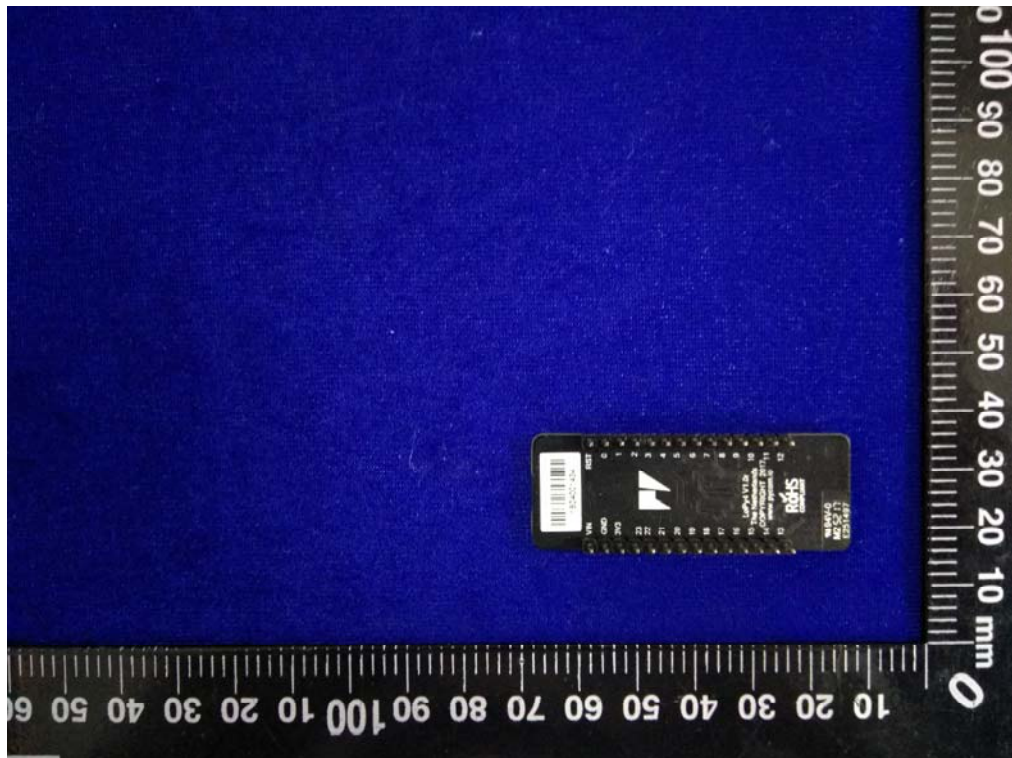
### A.1 EUT- Top view of PCB



### A.2 EUT- Uncover view of PCB

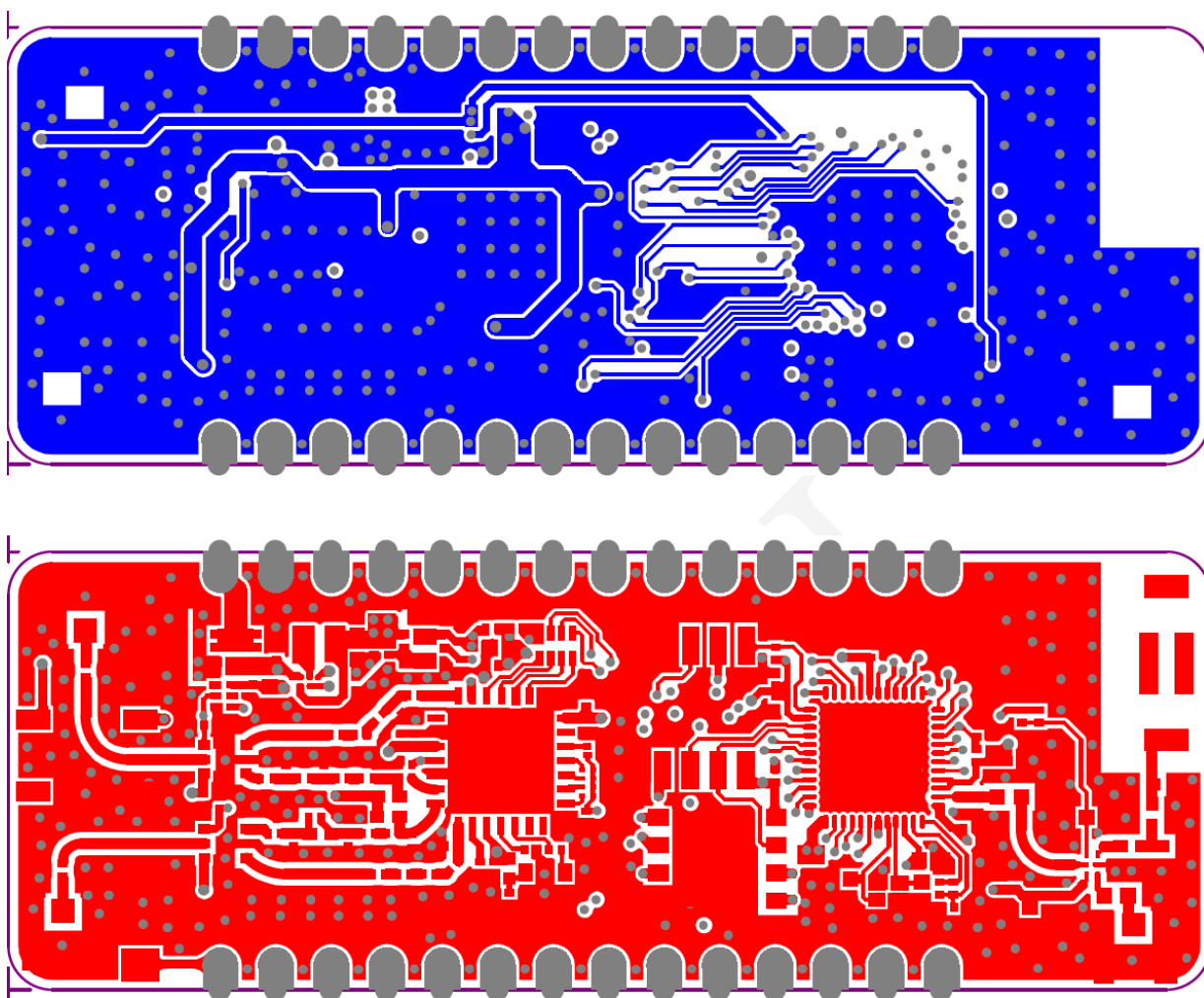


**A.3 EUT- Bottom view of PCB**





**Appendix C – PCB layout**



**Appendix D – Test equipments list**

<b>BACL#</b>	<b>Equipment Description</b>	<b>Serial No</b>	<b>Model No</b>	<b>Last Cal</b>	<b>Cal Due</b>
T-07-SF006	Hybrid Recorder	4TJH0903	DR230	2018-04-08	2019-04-08
T-07-SF009	Electron Balance	34201470062	TCK200KG	2018-05-14	2019-05-14
T-07-SF020	DIGITAL MULTIMETER	27690095WS	114	2018-04-08	2019-04-08
T-07-SF023	Hygrothermograph	N/A	HTC-1	2018-04-12	2019-04-12
T-07-SF044	DC power	20250305	PS-305DM	2018-04-08	2019-04-08
T-07-EE062	Stopwatch	N/A	FC396	2018-11-14	2019-11-14

----- End of Report -----