General Guidance

Plug portion testing - AS/NZS3112 Appendix J test report format

STANDING COMMITTEE OF OFFICIALS (SCO)
Secretariat: c/o Electrical Safety Office Queensland
GPO Box 69, Brisbane QLD 4001
eess.secretariat@oir.qld.gov.au

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General

AS/NZS3112 Approval and test specification -Plugs and socket-outlets (2025) captures unique requirements for Australia and New Zealand plugs and socket outlets. It includes requirements for plug portions of direct plug-in equipment in Appendix J to ensure correct testing is performed and reported and can be analysed a standard report format has been developed.

Question

What is the expected reporting requirements for plug portions testing of direct plug in equipment?

Answer

To ensure relevant types of equipment with integral plug portions or separate plug portions fully meet the minimum safety requirements of the standards, responsible suppliers, certifiers and test laboratories are to use the test report template attached and titled “AS/NZS3112_2025_App_J_TRF”.

This template applies to the 2025 edition of AS/NZS 3112 of the standard and remains effective until the standard is updated*. If the standard is updated the test format should still be used, with test facility notating the changes due to the updated requirements of the standard, until an updated test repot format is issued.

***subject to change, such as for correction.**

EESS Electrical Equipment Safety System

AS/NZS 3112:2025 Appendix J			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT

AS_NZS_3112:2025 Appendix J

AUSTRALIAN / NEW ZEALAND NATIONAL DIFFERENCES

(Approval and test specification—Plugs and socket-outlets)

Differences according to ..... :	AS_NZS_3112:2025_Appendix J
TRF template used:.....:	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No. ..... :	AS_NZS_3112:2025_Appendix J
Attachment Originator..... :	JAS-ANZ
Master Attachment..... :	2022-03

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	Note: AS/NZS 3112 is NOT covered by IECEE Accreditation for Testing / Reporting Please State Laboratory Accreditation for this Standard		
	Accreditation		
	Accreditation Stamp		

J1 SCOPE	General: This Appendix specifies additional dimensional and constructional requirements for detachable plug portions, or equipment incorporating integral supply pins or equipment incorporating detachable plug portions. This Appendix shall be read in conjunction with Section 2 of this Standard. For the purposes of this Appendix, where the term ‘plug’ is used in Section 2 it shall be taken to mean the plug portion of equipment or the detachable plug portion. The equipment shall comply with the relevant product Standard. The tests and requirements specified in this Appendix are in addition to any test and requirements of the relevant product Standard for the equipment. (AS/NZS 3112:2025)	

J2	DEFINITION	
J2.1	Detachable plug portion A plug portion that is detachable from the equipment and with connections including the following standardized outputs and other contacts	

	(a) Type A (see Figure J1): A detachable plug portion with a connection intended for plugging directly into equipment. The connection being via the equipment group 1 appliance inlet within the scope of AS/NZS 60320.1. (b) Type B (see Figure J2): A detachable plug portion with a non-standardized connection intended for plugging directly into equipment (c) Type C (see Figure J3): A detachable plug portion with a connection intended for use with an adaptor connected to a flexible cord so as to replicate a supply plug and flexible cord configuration. The connection being via a group 1 appliance outlet within scope of AS/NZS 60320.2.2, which is integral with the plug portion (AS/NZS 3112:2025)	
J2.2	Integral plug portion A plug portion that is integral to the equipment enclosure and is not detachable (AS/NZS 3112:2025)	
J2.3	Plug portion A plug portion is that portion of equipment with pins for insertion into a socket-outlet, including the plug pins, terminals of the plug pins, external dimensions of the 'maximum projection' and any connections of a detachable plug portion. (AS/NZS 3112:2025)	

J3	**REQUIREMENTS FOR THE PLUG PORTION**	

J3.1	General The following provisions apply to the dimensional and constructional requirements of plug portions of equipment and any detachable connection between the plug portion and the equipment:		
(a)	For detachable plug portions intended for connection to the equipment in multiple orientations, the relevant tests are performed in the most onerous orientation.		
(b)	For Type A detachable plug portion, the relevant requirements of AS/NZS 3105:2014 are applicable, in addition to conformance with relevant clauses of this Appendix	See Test Report xxx to AS/NZS 3105:2014 Test Report xxx to AS/NZS 60320.1 for the Group 1 appliance inlet portion.	
(c)	For Type B detachable plug portions, the conformance is shown by the relevant clauses of this Appendix.		
(d)	For Type C detachable plug portions, conformance is shown by assessment to Section 2 of this Standard (plugs) and relevant clauses of this Appendix (AS/NZS 3112:2025)	See also Test Report xxx to AS/NZS 60320.2.2 for the Group 1 appliance outlet portion.	

J3.2	**Plug pins of plug portions** The requirements of Clause 2.2 are applicable for plug pins.	

2.2	PLUG PINS		
2.2.1	Current carrying parts of plug pins of metal having sufficient mechanical strength, electrical conductivity		

	and resistance to corrosion adequate for the intended use		
	Plug pin material?		

2.2.3	Plug pins adequately proportioned throughout and portion adjacent to the connection designed to not introduce a stress concentration which may lead to a fracture of the pin, and suitably shaped to prevent abrasion or cutting of conductor strands due to flexure in normal use		
	Exposed ends of plug pins have a lead-in, bevel or radius to facilitate entry into socket-outlets and to operate shutters		
	Flat-pins with the following profile are deemed to comply:		
(a)	Flat-pins with a radius on the end with side bevels may have a width and thickness profile as specified in Figure 2.1(h)		
(b)	Flat-pins square on the end with corner and side bevels may have a width and thickness profile as specified in Figure 2.1(i)		
(c)	Flat-pins square on the end with corner bevels and a radius on the sides may have a width and thickness profile as specified in Figure 2.1(j)		
	Contact portion of the pins smooth and free from openings or indentations		
	Flat pin plugs having a longitudinal seam or opening in the contact portion of one face; width not exceeding 0.3 mm and		
	Thickness not exceeding 1.58 mm		
	Exposed portion of earthing pins and pins other than insulated pins free from any non-metallic coverings or coatings (AS/NZS 3112:2025)		
2.2.4	Live parts of insulated pin plugs not exposed when plug is partially or fully engaged with associated socket		
	Compliance by measurement to Figure 2.4	(see appended table)	
	Lacquer, enamel or sprayed insulating coating not considered to be insulation material		
	All live pins on low voltage plugs except for those shown in Figure 2.1 (a2), (b) and (g) of the insulated pin type		
	Colour green or green / yellow not used for insulation of insulated pins (AS/NZS 3112:2025)		

J3.3	**Ratings and dimensions for low-voltage plug portions** Requirements of clauses 2.8.1 and 2.8.4 apply for rating and dimensions	

2.8	Ratings and Dimensions of Low Voltage Plugs	

2.8.1	Plugs with ratings up to and including 20A; shall conform to the appropriate dimensions shown in Figure 2.1	(see appended results)	
	Rating of plug	___A	
	Nominal dimensions covering disposition of pins checked by gauge of Appendix A		
	Distance between live pin and edge of moulding to not less than 9 mm		
	Measured distance	___mm	
	No point on plug face protrudes more than 0.5 mm		
	Measured protrusion	___mm	
	Dimensional requirements of Figure 2.1(e2) did not applied to plugs with greater than three pins (AS/NZS 3112:2025)		
2.8.4	Low voltage plugs comply with dimensions of Figure 2.1	(see appended table 2.8.1)	
	Disposition of pins checked by gauge complying with Appendix A, B or F as appropriate		
	Low voltage plug having rating up to 15A and of the Figure 2.1 (a1), (c), (d), (f) or (g) type; comply with dimensional requirements of Figure 2.1 (e1 and e2)		
	20A plug of Figure 2.1 (a2) type complies with dimensional requirements of Figure 2.1 (e2)		
	Plugs with insulated pins need not comply with dimension R20.0 ± 1 mm requirement of Figure 2.1 (e3) provided there is at least 9mm from the edge of the live pins to the edge of the plug face Figure 2.1(e3). (AS/NZS 3112:2025)		

J3.4	**Internal connections for plug portions** Requirements of clause 2.9 apply for internal connections, unless requirements contained in the relevant product standard (AS/NZS 3112:2025)	

2.9	INTERNAL CONNECTIONS		
	Plug provided with earthing connections designed and constructed so that when plug is correctly wired and assembled:		
(a)	Loose terminal screw or conductive material cannot bridge any live or earthed parts		
(b)	Earthing parts effectively isolated from contact with live conductor which may become detached		
(c)	Live parts effectively isolated from contact with any earthing conductor which may become detached		
	Any connections for auxiliary devices comply with above requirements (AS/NZS 3112:2025)		

J3.5	**Arrangement of earthing connections for plug portions** Requirements of clause 2.10 apply for arrangement of earthing connections	

2.10	Arrangement of earthing connections		
	Earthing pin radial to the circle embracing the pins (AS/NZS 3112:2025)		

J3.6	**Configuration of plug portions** Requirements of clause 2.12.6 apply for configuration of the plug portion (AS/NZS 3112:2025)	

2.12	Marking		
2.12.6	Configuration of plugs		
	Pins disposed so that configuration, as viewed from the pins, is earth, neutral and active in a clockwise direction		
	Where there is no earthing pin; live pins conform to this configuration (AS/NZS 3112:2025)		

J4	**Tests**	

J4.1	General Plug portions of equipment shall be subjected to the following tests and unless stated otherwise, shall comply with the requirements specified in Section 2 for each test. The number of test samples shall be in accordance with Table J1 For equipment with a detachable plug portion, the assessment(s) of Table J1 tests 2, 3, 5, 10 and 11 shall be conducted on the— (a) assembled equipment with the detachable plug portion connected; and (b) the detachable plug portion after it has been separated from the equipment (AS/NZS 3112:2025)	

J4.2	**High voltage test** The requirements of Clause 2.13.3 are applicable unless requirements are contained in the relevant product standard (AS/NZS 3112:2025)	

2.13.3	Test No.1 - High voltage test		
	Plug withstands without failure electric strength test as specified (AS/NZS 3112:2025)	(see appended table)	

J4.3	**Mechanical strength**	
J4.3.1	**Tumbling barrel test** The tumbling barrel test is applied to determine the mechanical strength of the plug portions and equipment having integral or detachable plug portions.	

	For equipment with a detachable plug portion, the detachable plug portion may become detached during the test. If this occurs the detachable plug portion shall be reassembled with the equipment when the pins are straightened as per (a) and (b) below. Three samples (Samples BCD in Table J1) that have not been subjected to any previous test are tested as specified in Clause 2.13.7.1, however the test is modified as follows:		
	They are tested in a tumbling barrel as described in AS 60068.2.32 or test Free fall repeated – Procedure 2 in IEC 60068-2.31. The samples shall be dropped from a height of 500 mm onto a steel plate, 3 mm thick. The barrel shall be turned at a rate of 5 r/min, to yield 10 falls per minute. Only one sample shall be tested at a time. A sample is dropped— (a) 500 times if the mass of the specimen does not exceed 250 g. The pins being straightened after each 100 drops and at the completion of the test to pass through the appropriate gauge of Figure A1, Figure B1 or Figure F1; and (b) 250 times if the mass of the specimen exceeds 250 g. The pins being straightened after each 25 drops and at the completion of the test to pass through the appropriate gauge of Figures A1, Figure B1 or Figure F1. (AS/NZS 3112:2025)		
	Mass of sample	_____Grams	
	Number of drops	500 / 250	
	Compliance shall be checked by Paragraph J4.3.3	(See appended table)	

J4.3.2	Test No.3 **Impact test.** Plug portions and equipment having integral plug portions or detachable plug portions shall withstand lateral impact forces. All samples that were subjected to the tests in Paragraph J4.3.1 (Samples BCD in Table J1) shall be tested as follows:		
	(a) The sample shall be positioned at the centre of a steel plate with a thickness of at least 6 mm. Apertures in the steel plate for the plug pins to pass through shall conform to the corresponding socket Standard. The sample shall be held against the steel plate by clamping all the pins.		
	(b) Samples shall be subjected to blows, with an impact energy of 1.0 ± 0.05 J by any means having the same performance as the spring-operated impact-test apparatus of AS/NZS 3100.		
	(c) Three blows shall be applied to every point that is most likely to directly or indirectly stress the enclosure joints of the sample		
	Compliance shall be checked by Paragraph J4.3.3		

J4.3.3	**Specific compliance criteria**	

	This Paragraph provides the common compliance assessment criteria for tests specified in Paragraphs J4.3.1 and J4.3.2.		
	Following each test, the samples shall comply with Clause 2.13.7.1		
(a)	**assembled equipment with the detachable plug portion connected;**		
	After the test, samples show no damage	(See appended table)	
(b)	**the detachable plug portion after it has been separated from the equipment**.		
	After the test, samples show no damage	(See appended table)	

4.3.4	**Pin bending test** The pins of the plug portion of three samples (Samples EFG in Table J1) not subjected to any previous tests shall be tested for compliance with the pin bending test of Clause 2.13.7.2 (AS/NZS 3112:2025)	

2.13.7.2	Test No.4 – Pin bending test		
	All flat–pin plugs rated up to and including 15 A shall be subjected to the pin bending test		
	Three samples are subjected by clamping the plug in a rigid holding block and applying the bending force as specified		
	After the test the pins shall not be broken off. (AS/NZS 3112:2025)		

J4.8.3	Test No.5 **Plug portion detachment requirements**		
	For all Type B or C devices and for Type A devices where the outlet of the detachable plug portion is parallel to the plug supply pins, disengagement of the detachable plug portion from the equipment shall require at least two simultaneous independent actions or the use of a tool.		
	The plug portion and the equipment/adaptor shall be connected and disconnected 50 times (100 strokes).		
	Compliance is verified by the plugging test, a force which, over a period of 10 s, shall be increased steadily to 60 ±0.6 N and held at this value for a further 10 s, shall be applied evenly at the connecting equipment in a direction parallel to the pins. This procedure shall be conducted three times on the same plug portion, at intervals of 5 min, without disturbing the plug portions between tests		
	During the test the plug portion shall not separate		
	The test of AS/NZS 3112 'temperature rise test' for plugs shall be conducted immediately after the above test without disturbing the sample. Test No 6 Temperature Rise test J4.4 (AS/NZS 3112:2025)		

J4.4	**Temperature rise test** The relevant requirements of Clause 2.13.8 are applicable for the temperature rise test, except that the test current shall be that specified in the relevant product standard		
	The temperature rise of the pins shall not exceed 45 K irrespective of the temperature rise of parts specified in end-product standards.		
	For detachable plug portions the temperature rise of terminals and contacts shall not exceed 45 K. (AS/NZS 3112:2025)		

2.13.8	Test No.6 – **Temperature rise test**		
	Plug tested in draught free environment as specified using clamping units as specified in Figure 2.10		
	Test Current Relevant Product Standard	_____ Amps _____ (Standard?)	
	Temperature of terminals and contacts of detachable plug portion not exceeding 45 K (AS/NZS 3112:2025)	(see appended table)	

J4.5	**Securement of pins of the plug portion** The requirements of Clause 2.13.9 are applicable for the securement of pins. (AS/NZS 3112:2025)		

2.13.9	Test No.7. **Securement of pins**		
2.13.9.1	Movement of pins		
	Plug pins clamped 5 ± 0.5 mm from pin face; test equipment and sample pre-conditioning for 1 h at 40 ± 1°C		
	Force of 18 ± 1 N applied to pin 14 ± 0.5 mm from plug face; applied gradually over 10 s and maintained for 10 s; applied in four directions		
	Maximum deflection during test not exceeding 2.0 mm	(see appended results)	
	Any distortion 5 minutes after test does not prevent insertion of plug into standard gauge(s) (AS/NZS 3112:2017 + A1:2021)		
2.13.9.2	**Fixing of pins**		
	Plug heated to 50 ± 2°C for 1h		
	Force of 60 ± 0.6 N applied to each pin over 10 s and maintained for 10 minutes; applied in two directions along length of pin		
	Maximum displacement during test not exceeding 2.4 mm		
	Maximum measured displacement		
	Pin returns to within 0.8 mm of nominal length within 5 minutes of removal of test force		

	(AS/NZS 3112:2025)		

J4.6	**Tests on the insulation material of insulated pin-plug portions** The requirements of Clause 2.13.13 are applicable for insulating material of insulated plug pins. (AS/NZS 3112:2025)	

2.13.13	Test No.8 **Tests for insulation material of insulated pin plugs**		
2.13.13.1	Material of pin-insulation resistant to stresses at temperature likely to occur		
2.13.13.2	Pressure test at high temperature		
	Specimen tested as per Figure 2.5 with force of 2.5 N applied as specified; maintained for 2 h at 160 ± 5°C; removed and cooled by immersion in water within 10 s		
	Thickness of insulation at point of impression not reduced by more than 50%		
	Initial thickness	mm	
	Thickness after test	mm	
	No visible cracks on insulation material		
	Dimension of insulating material not below minimum size in Figure 2.4 (AS/NZS 3112:2025)		

2.13.13.3	**Static damp heat test**		
	Specimen subjected to two damp heat cycles in accordance with IEC 60068-2-30; Db (12 + 12h), 95% RH, 25 ± 3°C; 40°C		
	After this treatment and recovery to room temperature; specimen subjected to:		
(a)	Insulation resistance test in accordance with clause 2.13.2 (e)	(see appended table)	
(b)	High voltage test in accordance with clause 2.13.3	(see appended table)	
(c)	Abrasion test in accordance with clause 2.13.13.6		
2.13.13.4	**Low temperature test**		
	Plug maintained at –15 ± 2°C for minimum of 24 h and returned to room temperature; after which specimen subjected to:		
(a)	Insulation resistance test in accordance with clause 2.13.2 (e)	(see appended table)	
(b)	High voltage test in accordance with clause 2.13.3	(see appended table)	
(c)	Abrasion test in accordance with clause 2.13.13.6		
2.13.13.5	**Impact test at low temperature**		
	Specimen maintained at –15 ± 2°C for 24 h		
	Specimen placed in position and subjected to impact test as per Figure 2.6; mass of 100 ±1 g falling through 100 mm		

	Four impacts applied; specimen rotated through 90° between impacts		
	After return to room temperature; no visible cracks of insulating material		
2.13.13.6	**Abrasion test**		
	Plug held in clamp and tested as per Figure 2.7; pin loaded at 4 N; 20 000 movements		
	After test; pins show no damage affecting safety or impairing further use of the plug		
	Insulating sleeve not punctured or rucked up (AS/NZS 3112:2025)		

J4.7	Test no.9 **Equipment with a plug portion intended to be supported by the contacts of a socket-outlet**		
	Equipment with pins intended to be introduced into fixed socket-outlets not imposing undue strain on socket-outlet		
	Applied torque not exceeding 0.25 Nm		
	Measured torque (AS/NZS 3112:2025)	____Nm	

J4.8	**Additional requirements for detachable plug portions**		
J4.8.1	Test no.10 **Access to live parts**		
	Small test finger of Figure 13 of IEC 61032 was not possible to contact live parts with the force of 20N		
	incorrectly assemble the plug portion was not possible (AS/NZS 3112:2025)		

J4.8.2	Test No.11: **Construction of detachable contacts where the input current of the equipment exceeds 0.2 A**		
	Contacts of the equipment shall be such that they make and maintain, under normal service conditions, satisfactory electrical and mechanical contact with the corresponding contact of the detachable plug portion.		
	For connections intended to accommodate pins, contact shall be made on two surfaces diametrically opposite, except if a single spring-assisted contact is used. (AS/NZS 3112:2025)		
	Contacts shall not rely exclusively on the resilience of the contact material and shall have an opposite face of material other than thermoplastic or resilient insulating material. (AS/NZS 3112:2017/ A1:2021)		
	The alignment and contact-making properties of contacts shall be independent of terminal screws		
	The effectiveness of the contacts shall be independent of pressure from any thermoplastic or resilient moulding.		

	A visual inspection is conducted to determine the existence of interference between the metal contacts and the thermoplastic or resilient moulding to provide supplementary contact pressure to the metal contacts.		
	Conformance of the effectiveness of the contacts is checked by inspection and by the inspection and tests in J4.8.3 (AS/NZS 3112:2025)		

J4.8.4	**Resistance of insulating material to heat and fire**		
J4.8.4.1	Test no.12 **Resistance to heat** For Type B detachable plug portions parts of non-metallic material, parts of insulating material supporting live parts including connections, and parts of thermoplastic material providing supplementary insulation or reinforced insulation, shall be sufficiently resistant to heat if their deterioration could cause the appliance to fail to comply with this Standard.		
	Ball pressure test conducted in accordance with IEC 60695-10-2		
(a)	75°C ± 2°C, for external parts;		
(b)	125°C ± 2°C, for parts supporting live parts.		

J4.8.4.2	Test no.13 **Resistance to fire**		
	Plug portions comply with resistance to fire requirements of AS/NZS 3100 Annex A as follows:		
	The glow wire test temperature 'T' for 'retaining parts' of fixed socket outlets shall be 750 C (AS/NZS 3112:2025)		

TABLES OF RESULTS

2.2.4	TABLE: Dimensions of insulation on insulated pin plugs	

Dimension (Figure 2.1 designation)	Measured (mm)	Allowed (mm)
Phase pin		8.7 ± 0.5
Neutral pin		8.7 ± 0.5

2.8.1	TABLE: Dimensions of plugs- 10A (a1)	

Dimension (Figure 2.1 designation)	Measured (mm)	Allowed (mm)
Phase and neutral pin width (A)		6.35 ± 0.15
Earth pin width (B)		6.35 ± 0.15
Pin thickness (C)		1.63 + 0.15, -0.05
Pin disposition (D)		checked by test gauge
Pin disposition (E)		checked by test gauge
Phase and neutral pin length (F)		17.06 ± 0.4
Earth pin length (G)		19.94 ± 0.8
Pin boss radius - maximum		21.0 max

Pin boss height		8.6 min

2.8.1	TABLE: Dimensions of plugs- 15A (a1)	
Dimension (Figure 2.1 designation)	Measured (mm)	Allowed (mm)
Phase and neutral pin width (A)		6.35 ± 0.15
Earth pin width (B)		9.08 ± 0.15
Pin thickness (C)		1.63 + 0.15, -0.05
Pin disposition (D)		checked by test gauge
Pin disposition (E)		checked by test gauge
Phase and neutral pin length (F)		17.06 ± 0.4
Earth pin length (G)		19.94 ± 0.8
Pin boss radius - maximum		21.0 max
Pin boss height		8.6 min

2.8.1	TABLE: Dimensions of plugs-20A (a2)	
Dimension (Figure 2.1 designation)	Measured (mm)	Allowed (mm)
Phase and neutral pin width (A)		9.08 ± 0.15
Earth pin width (B)		9.08 ± 0.15
Pin thickness (C)		1.63 + 0.15, -0.05
Pin disposition (D)		checked by test gauge
Pin disposition (E)		checked by test gauge
Phase and neutral pin length (F)		17.06 ± 0.4
Earth pin length (G)		19.94 ± 0.8
Pin boss radius - maximum		21.0 max
Pin boss height		8.6 min

2.8.1	TABLE: Projection from plug face centroid	
Direction of projection	Measured (mm)	Allowed (mm)
Left		≤ 21.9 or ≥ 27.0
Right		≤ 21.9 or ≥ 27.0
Up		≤ 21.9 or ≥ 27.0
Down		≤ 21.9 or ≥ 27.0

2.13.3	TABLE: Test No. 1 – High voltage test	
Test voltage applied between:	Test voltage (V)	Breakdown
All poles of the plug; taken in pairs	1000	Yes / No
Live poles of the plug and any external metal	3500	Yes / No
Live poles of the plug and the earthing terminal	1000	Yes / No

Live poles of the plug and a flexible electrode	3500	Yes / No
Live poles and metal foil applied around insulation on pins	1250	Yes / No

2.13.7.1	**Test No.2 – Tumbling barrel test**		
	Following the test, the samples shall comply with Clause 2.13.7.1(a..e)		
	(a) Live parts shall not have become exposed to the standard test finger		
	(b) For earth pins, the resistance of the plug/socket-outlet circuit shall be such that conformance with Clause 3.14.7 is maintained. AS/NZS 3100 Cl 8.5 The resistance shall not exceed 0.1 Ω	___ Ω.	
	(c) Any other function affecting safety shall not be impaired		
	(d) No live part shall have become detached or loosened, to the extent that a hazardous situation is created (see Clause 2.9)		
	(e) The pins shall be inspected with normal, or corrected to normal, vision. Insulation may be removed if necessary. Pins shall not be broken or show cracking		

	Test No.**3** **Impact test for assembled equipment with the detachable plug portion connected and for equipment with an integral plug portion.**		
	Following the test, the samples shall comply with Clause 2.13.7.1 (a..e) as follows:		
	(a) Live parts shall not have become exposed to the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		
	(b) For earth pins, the resistance of the plug/socket-outlet circuit shall be such that conformance with Clause 3.14.7 is maintained so that the resistance between the earthing terminal of any socket-outlet provided with an earthing contact and the earthing terminal of the plug used for testing shall be of a low resistance. Compliance is by the test of earthing connection in AS/NZS 3100 Clause 8.5. The resistance shall not exceed 0.1 Ω	___ Ω.	
	(c) Any other function affecting safety shall not be impaired		
	(d) No live part shall have become detached or loosened, to the extent that a hazardous situation is created		
	(e) The pins shall be inspected with normal, or corrected to normal, vision. Insulation may be removed if necessary. Pins shall not be broken or show cracking.		

	Following the test, the samples shall conform to the 'Guarding of live parts' requirements of AS/NZS 3100:2015 cl 5.1 as follows:		
	Except for equipment intended for use only in a position not accessible to unauthorized persons, all equipment shall be so designed and constructed that, when the equipment is standing, supported, or fixed, in a normal manner, no person can inadvertently come into contact with any live part		
	If a hole giving access to preset controls is marked as such on the enclosure or reference made to it in the instructions and the setting of this control requires a screwdriver or other tool, the adjustment of the control shall not allow contact with any live parts. A metal test pin having a diameter of 2 mm and a length of 100 mm shall not become live when it is inserted through the hole in every position with a force of 10 N.		
	In addition, the opening or removal of any cover or component, with or without tools, where such opening or removal is necessary as a normal operation of the equipment as distinct from maintenance, repairs, or adjustment, shall not expose live parts to inadvertent personal contact.		
	Any metal cover or casing enclosing live parts shall be of a strength sufficient to ensure that it cannot be deformed readily so as to come into contact with live parts.		
	Compliance is checked by inspection, test and checking that live parts shall not have become exposed to the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		
	Class II equipment and class II constructions shall be constructed and enclosed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only.		
	It shall only be possible to touch parts which are separated from live parts by double insulation or reinforced insulation.		
	Compliance is checked by application of the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		
	Following the test, the samples shall conform to the 'Separation of live parts from non-current-carrying conductive parts' requirements of AS/NZS 3100.Cl 5.2.2 as follows:		
	The support and insulation of every live part shall be such as will ensure that no live part can make contact with any non-current-carrying conductive part exposed to personal contact.		

	In respect of terminals of components such as switches, adequate clearances shall be maintained or insulation shall be provided to prevent contact of the terminals, or loose strands of flexible cords intended to be terminated therein, with exposed conductive parts. Where necessary, provision shall be made to ensure that conductors protruding through terminals, when normally connected, will not contact exposed conductive parts.		
	Compliance is checked by inspection.		

	Test No.3 **Impact test for the detachable plug portion after it has been separated from the equipment**		
	Following the test, the samples shall comply with Clause 2.13.7.1 (a..e)		
	(a) Live parts shall not have become exposed to the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		
	(b) For earth pins, the resistance of the plug/socket-outlet circuit shall be such that conformance with Clause 3.14.7 is maintained so that the resistance between the earthing terminal of any socket-outlet provided with an earthing contact and the earthing terminal of the plug used for testing shall be of a low resistance. Compliance is by the test of earthing connection in AS/NZS 3100 Clause 8.5. The resistance shall not exceed 0.1 Ω	___ Ω.	
	(c) Any other function affecting safety shall not be impaired		
	(d) No live part shall have become detached or loosened, to the extent that a hazardous situation is created		
	(e) The pins shall be inspected with normal, or corrected to normal, vision. Insulation may be removed if necessary. Pins shall not be broken or show cracking.		
	Following the test, the samples shall conform to the 'Guarding of live parts' requirements of AS/NZS 3100:2015 cl 5.1 as follows:		
	Except for equipment intended for use only in a position not accessible to unauthorized persons, all equipment shall be so designed and constructed that, when the equipment is standing, supported, or fixed, in a normal manner, no person can inadvertently come into contact with any live part		

	If a hole giving access to preset controls is marked as such on the enclosure or reference made to it in the instructions and the setting of this control requires a screwdriver or other tool, the adjustment of the control shall not allow contact with any live parts. A metal test pin having a diameter of 2 mm and a length of 100 mm shall not become live when it is inserted through the hole in every position with a force of 10 N.		
	In addition, the opening or removal of any cover or component, with or without tools, where such opening or removal is necessary as a normal operation of the equipment as distinct from maintenance, repairs, or adjustment, shall not expose live parts to inadvertent personal contact.		
	Any metal cover or casing enclosing live parts shall be of a strength sufficient to ensure that it cannot be deformed readily so as to come into contact with live parts.		
	Compliance is checked by inspection, test and checking that live parts shall not have become exposed to the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		
	Class II equipment and class II constructions shall be constructed and enclosed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only.		
	It shall only be possible to touch parts which are separated from live parts by double insulation or reinforced insulation.		
	Compliance is checked by application of the standard test finger (Figure 8.10 in AS/NZS 3100 or Test Probe B in IEC 61032)		
	Following the test, the samples shall conform to the 'Separation of live parts from non-current-carrying conductive parts' requirements of AS/NZS 3100.Cl 5.2.2 as follows:		
	The support and insulation of every live part shall be such as will ensure that no live part can make contact with any non-current-carrying conductive part exposed to personal contact.		
	In respect of terminals of components such as switches, adequate clearances shall be maintained or insulation shall be provided to prevent contact of the terminals, or loose strands of flexible cords intended to be terminated therein, with exposed conductive parts. Where necessary, provision shall be made to ensure that conductors protruding through terminals, when normally connected, will not contact exposed conductive parts.		
	Compliance is checked by inspection.		

2.13.8	TABLE: Test No. 6 - Temperature rise test		
	Ambient temperature	°C	
	Test current	A	

Measured part	dT measured (K)	dT allowed (K)
Active (phase) terminal		45
Neutral terminal		45
Earthing terminal		45

2.13.9.1	TABLE: Movement of pins	
	Earth and neutral pins clamped – phase pin loaded	

Force direction	Measured deflection (mm)	Allowed deflection (mm)
Force towards neutral plane parallel to pin plane		2.0
Force from neutral plane parallel to pin plane		2.0
Force outwards at 90° to pin plane		2.0
Force inwards at 90° to pin plane		2.0

2.13.9.1	TABLE: Movement of pins	
	Phase and neutral pins clamped – earth pin loaded	

Force direction	Measured deflection (mm)	Allowed deflection (mm)
Force inwards parallel to pin plane		2.0
Force outwards parallel to pin plane		2.0
Force towards neutral		2.0
Force towards phase		2.0

2.13.9.1	TABLE: Movement of pins	
	Phase and earth pins clamped – neutral pin loaded	

Force direction	Measured deflection (mm)	Allowed deflection (mm)
Force towards phase plane parallel to pin plane		2.0
Force from phase plane parallel to pin plane		2.0
Force outwards at 90° to pin plane		2.0
Force inwards at 90° to pin plane		2.0

2.13.13.3	TABLE: Test No.13(b) – Insulation resistance test after static damp heat test	

Applied between:	Insulation resistance (MΩ)	Minimum required (MΩ)
Live poles and metal foil applied around insulation on pins		5

2.13.13.3	TABLE: Test No.1 – High voltage test after static damp heat test	

Test voltage applied between:	Test voltage (V)	Breakdown
Live poles and metal foil applied around insulation on pins	1250	Yes / No

2.13.13.4	TABLE: Test No.1 – Insulation resistance test after low temperature test	

Applied between:	Insulation resistance (MΩ)	Minimum required (MΩ)
Live poles and metal foil applied around insulation on pins		5

2.13.13.4	TABLE: Test No.1 – High voltage test after low temperature test	

Test voltage applied between:	Test voltage (V)	Breakdown
Live poles and metal foil applied around insulation on pins	1250	Yes / No

J4.8.4.1	TABLE: Test no.12 Resistance to heat	

Component tested	Temperature (°C)	Diameter of impression (mm)

Conformance is checked by subjecting the relevant part to the ball pressure test of IEC 60695-10-2.

J4.8.4.2	TABLE: Test no.13 Resistance to Fire	
	Plug portions shall comply with the requirements for resistance to fire in accordance with AS/NZS 3100:2017 Annex A. The glow-wire test temperature 'T' shall be 750°C.	

Glow-wire testing was conducted in accordance with IEC 60695-2-11.
Test specimens arranged so that the surface in contact with the tip of the glow-wire was vertical and glow wire tip applied to surface of the specimen likely to be subjected to thermal stresses in normal use.
A layer of white pine board and wrapping tissue was placed beneath the sample at 200mm ± 5mm distance.

SPECIMEN NUMBER	1	2	3	4	5	6	7	8
SPECIMEN DESCRIPTION								
Material								
Colour								
Test specimen								
Glow wire tip temperature (°C)	750	750	750	750	750	750	750	750
Duration of glow wire application (t_a) (s)	30	30	30	30	30	30	30	30
OBSERVATIONS								
Duration from beginning of glow-wire tip application to ignition of specimen or layer (t_i) (s)								
Duration from beginning of glow-wire tip application to when flames extinguish (t_e) (s)								
Maximum height of flames after initial 1s (to nearest 5 mm) (mm)								
Flame impingement on other parts								
Degree of tip penetration								
Degree of specimen distortion								
Scorching of pinewood board								
EVALUATION CRITERIA								
Visible flame or sustained glowing								
Visible Flame Duration in Seconds during test.								

Duration of flaming or glowing after tip removal (max. allowable 30 s) (s)								
Surrounding parts burned away completely (not permitted)								
Ignition of wrapping tissue layer (not permitted)								
RESULTS If parts tested withstand the glow-wire test, but during the test produce a flame that persists for longer than 2 s, then the consequential needle flame test of AS/NZS 3100:2017 Annex A 6.1.5 applies.								

LEGEND:

CE	Complete Equipment	SA	Sub Assembly	SE	Self Extinguished
EBD	Emitted Burning Droplets	SBD	Specimen Burned and Distorted	SMD	Specimen Melted and Distorted
ME	Manually Extinguished	SC	Separate Component	SS	Specimen Scorched
NA	Not Applicable	SCC	Specimen Completely Consumed	WPNI	Wall Penetrated but no Ignition
NI	No Ignition	X	Flame Appeared for an Instant		

TABLE: Needle- flame test (NFT)					
Object/ Part No./ Material	**Manufacturer/ trademark**	**Duration of application of test flame (ta); (s)**	**Ignition of specified layer Yes/No**	**Duration of burning (tb) (s)**	**Verdict**
Supplementary information: - NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1 - NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0					

PHOTOGRAPHS