COMPLIANCE ENGINEERING
EMC - Shielding - Environmental

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IP Rating Compliance Test Report

AS 60529: 2004 (IP4X Requirements)

Report Number: TR2276B

Dara Switchboards
DSE Panel Board Enclosure
(Dim. 590mm H x 1000mm W x 135mm D)

The results detailed in this test report relate only to the specific sample/s tested. It is the Manufacturer's responsibility to ensure that all production units are manufactured with equivalent EMC characteristics. This report is not to be reproduced except in full, without written approval from Compliance Engineering Pty Ltd.

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ACCREDITED
TESTING CERT# 2829.01

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COMPLIANCE CERTIFICATE

Client Contact: Shanaka Unantenne
Dara Switchboards
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Telephone: (03) 8544 3300
Email: shanaka@dara-switchboards.com.au

Device: DSE Panel Board Enclosure
(Dim. 590mm H x 1000mm W x 135mm D)

Reference Standard: AS 60529: 2004
Degrees of protection provided by enclosures (IP Code)

Summary Result: IP4X requirements
1.0 mm probe ingress test (Table 1 & section 12.2) **Complied**

Test Date(s): 23rd to October 2017

Tests Performed by: Jeremy Poynter
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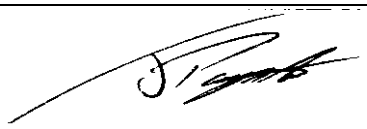
The DSE Panel Board Enclosure (Dim. 590mm H x 1000mm W x 135mm D) complied with the IP4X requirements of AS 60529: 2004: Degrees of protection provide by enclosures (IP Code)

		10th November 2017
Prepared By: *Jeremy Poynter* *Test Engineer* *Compliance Engineering Pty Ltd*	***Approved By:*** *Andrew Burden* *Technical Manager* *Compliance Engineering Pty Ltd*	***Date***

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1. INTRODUCTION

Foreign object and water ingress protection measurements were performed on a DSE Panel Board Enclosure (Dim. 590mm H x 1000mm W x 135mm D) in accordance with the IP4X requirements detailed in AS 60529: 2004.

2. RESULTS SUMMARY

IP4X requirements:

1.0 mm probe ingress test (Table 1 & section 12.2) **Complied**

3. TEST SAMPLE

The test samples are described as follows:
DSE Panel Board Enclosure
Dim. 590mm H x 1000mm W x 135mm D

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4. MODIFICATIONS

No modifications were performed on the above sample by Compliance Engineering.

5. CONFIGURATION

Unless otherwise specified in a relevant product standard, the test samples for each test shall be in a clean and new condition, with all parts in place and mounted in the manner stated by the manufacture.

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6. DEGREES OF PROTECTION

First Numeral Requirements

The first characteristic numeral indicates that the enclosure provides protection of persons against access to hazardous parts by preventing or limiting the ingress of a part of the human body or an object held by a person; and simultaneously the enclosure provides protection of equipment against the ingress of solid foreign objects.

AS 60529 - Table 1 Protection against access to hazardous parts			
First Character	**Description**	**Ingress Test**	**Section**
1	Prevent access to back of hand	No entry by 50 mm sphere probe	12.2
2	Prevent access to a finger	No entry by 12 mm test finger	12.2
3	Prevent access to a tool	No entry by 2.5 mm probe	12.2
4	**Prevent access to a wire**	**No entry by 1 mm probe**	**12.2**
5	Prevent access to a wire	No entry by 1 mm probe	12.2
6	Prevent access to a wire	No entry by 1 mm probe	12.2

AS 60529 - Table 2 Protection against solid foreign objects			
First Character	**Description**	**Ingress Test**	**Section**
1	Prevent access to 50 mm sphere	No entry by 50 mm sphere probe	13.2
2	No access to 12.5 mm sphere	No entry by 12.5 mm sphere probe	13.2
3	No access to 2.5 mm rod	No entry by 2.5 mm probe	13.2
4	**No access to 1 mm rod**	**No entry by 1 mm probe**	**13.2**
5	Dust protected	Minor dust ingress only	13.4 & 13.5
6	Dust Tight	No ingress of dust	13.4 & 13.6

Second Numeral Requirements

The second characteristic numeral indicates the degree of protection provided by enclosures with respect to harmful effects on the equipment due to the ingress of water.

AS 60529 - Table 3 Protection against water			
Second Character	**Description**	**Ingress Test**	**Section**
1	Vertical water drops	No harmful effect	14.2.1
2	Water drops, 15º EUT angle	No harmful effect at 15º to drops	14.2.2
3	Spraying water	No harmful effect to 60º spray	14.2.3
4	Splashing water	No harmful effect by splashed water	14.2.4
5	Water jet	No harmful effect to water jet	14.2.5
6	Powerful water jet	No harmful effect to powerful water jet	14.2.6
7	Temporary immersion	No harmful effect to water immersion	14.2.7
8	Continuous immersion	No harmful effect to water immersion	14.2.8

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7. ATMOSPHERIC CONDITIONS FOR WATER OR DUST TESTS

Unless otherwise specified in the relevant product standards, the tests should be carried out under the standard atmospheric conditions described in IEC 60068-1.

The recommended atmospheric conditions during the tests are as follows;

- Temperature range: 15 °C to 35 °C
- Relative humidity: 25 % to 75 %
- Air pressure: 86 kPa to 106 kPa (860 mbar to 1060 mbar)

8. PROTECTION AGAINST HAZARDOUS PARTS (IP 4X)

8.1 REQUIREMENTS & PROCEDURE – 1 mm PROBE INGRESS

The protection is satisfactory if adequate clearance is kept between the (1 mm diameter) access probe and hazardous parts.

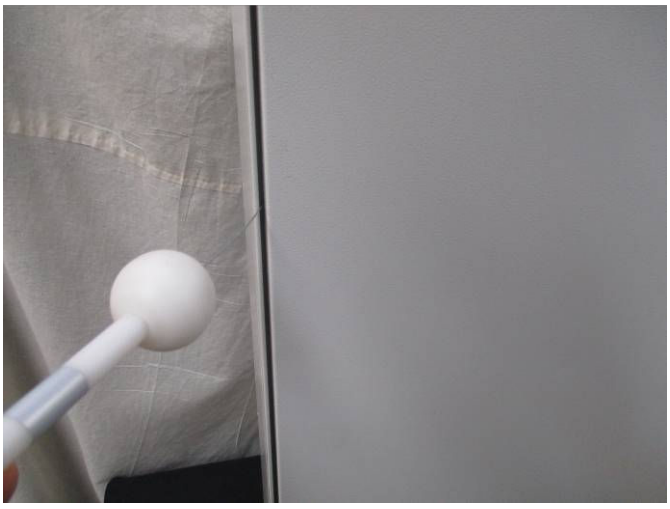
The following specifications are required;

- A rigid steel rod 1mm + 0.05mm diameter with edges free from burrs.
- Test force of 1 N ±10%

8.2 TEST EQUIPMENT

Inv	Equipment	Model No	Serial No	Cal Due
418	IEC 60529 Test Probe Set	AUTO A/B/C/D	AUTO1305280	N/A

N/A= Not Applicable



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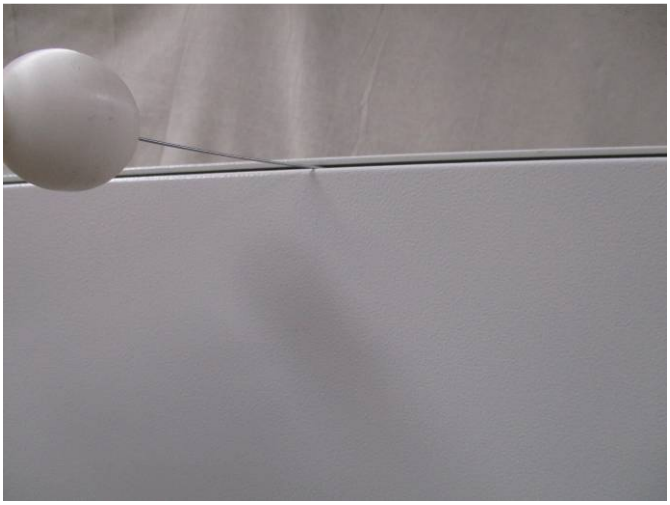

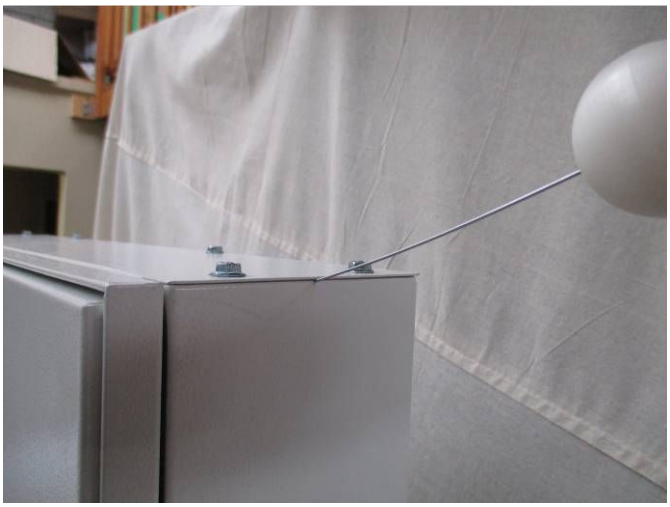

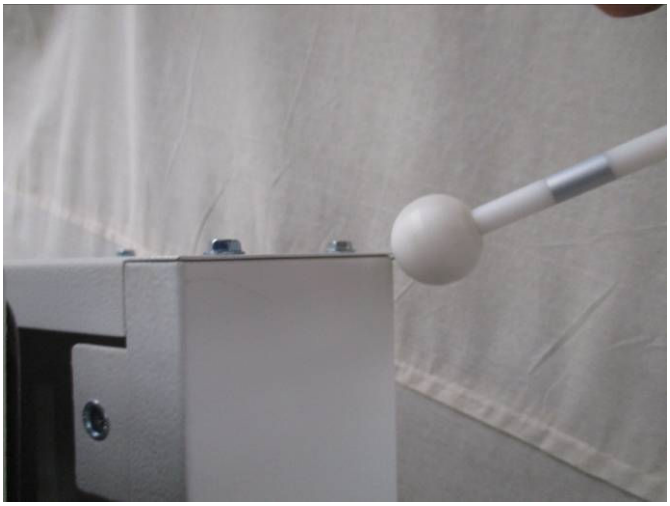

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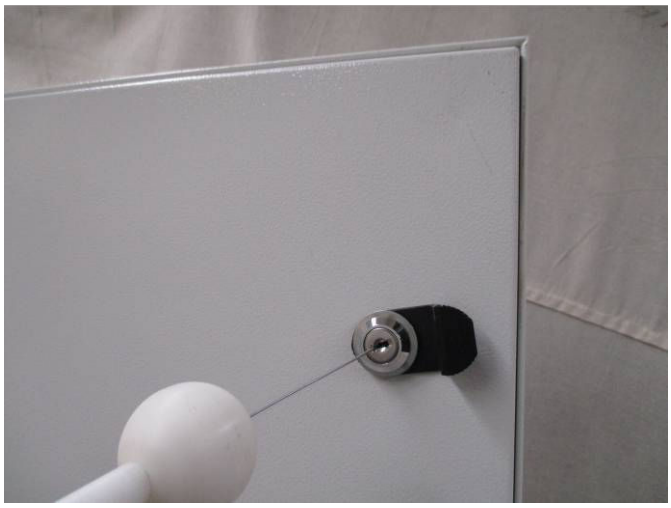
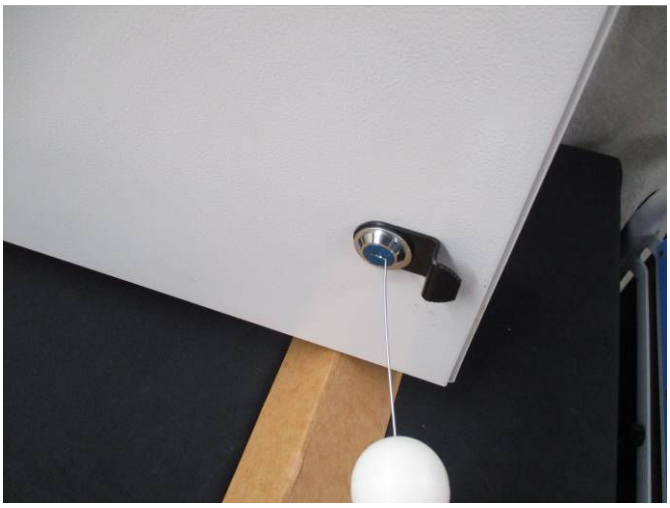

Environmental Conditions: Temperature 16°C, Humidity 62%

8.3 RESULTS

The probe was able to penetrate into the enclosure at single point only due to a corner welding defect, however unable to touch hazardous parts.

8.4 ASSESSMENT

The DSE Panel Board Enclosure (Dim. 590mm H x 1000mm W x 135mm D) enclosure complies with the protection against solid foreign objects IP4X as per item 4, table 7 of AS 60529-2004.

9. CONCLUSION

The DSE Panel Board Enclosure (Dim. 590mm H x 1000mm W x 135mm D) complies with the IP4X requirements of AS 60529: 2004, degrees of protection provided by enclosures (IP Code).