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TEST REPORT **48472.1A**

SUBJECT

Infinity Cable Company, 450/750V, (4 x 2.5 mm² +Earth 2.5 mm²), Cu, PVC Insulated,
PVC Sheathed Cable

CLIENT

Infinity Cable Company Pty. Ltd.

Address: Encompass Business Park, Unit D1, 101-115 Rookwood Road, Yagoona, N.S.W. 2199

Date of Signed Quotation: 30 November 2009

Attention: Mr. J. Nikolovski

NATURE OF TEST

Examination and tests for compliance with the relevant clauses of Australian/New Zealand
Standard:

AS/NZS 5000.2:2006

SUMMARY OF RESULTS

Complied, except compliance with Clause No. 9.3 (Marking of packaging) of AS/NZS 5002.2, could
not be determined, see Results.

DATE OF COMPLETION OF TESTS

22nd March 2010

DATE OF ISSUE

23rd March 2010

APPROVED SIGNATORY
Robert L. Tulloch



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DESCRIPTION

Four core, 2.5 mm² (7 x 0.67mm, plus 2.5mm² (7 x 0.67mm²) earth, circular annealed copper) PVC insulated, V-90 (red, white, blue, black and green/yellow), PVC sheathed, 5V-90 (orange) electric cable.

MARKING DETAILS

“metre marking” Infinity/Wanma 2009 V-90/4V-90 ELECTRIC CABLE 450750V AS/NZS 5000 2.5mm²x4C+E

SELECTION OF SAMPLE

The test samples was selected and delivered to the laboratory by the Client.

LABORATORY IDENTIFICATION OF SAMPLE

Adhesive label bearing test report number 48472.1A affixed to the sample.

DATE SAMPLE RECEIVED

16th February 2010

RESULTS

REQUIREMENTS OF AS/NZS 5000.2

<u>SECTION 1</u>	<u>SCOPE</u>	Noted
<u>SECTION 2</u>	<u>REFERENCE DOCUMENTS</u>	Noted
<u>SECTION 3</u>	<u>DEFINITIONS</u>	Noted
<u>SECTION 4</u>	<u>VOLTAGE DESIGNATION</u>	Complied
	<u>Rated voltage (U_0/U):</u> 450/750V	
<u>SECTION 5</u>	<u>CONDUCTORS</u>	Complied
	<u>Conductor Type:</u> Class 2, plain, annealed copper	



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SECTION 6 INSULATION Complied

- 6.1 Material: V-90
- 6.2 Application: non-adherent to conductors
- 6.3 Thickness: See Clause 10, Table 3, Test No. 5, below.
- 6.4 Core identification
 Colours: red, white, blue, black and green/yellow

SECTION 7 CONSTRUCTION OF CABLES Complied

- 7.1 General: Cable to have over sheath
- 7.3 Circular cables
- 7.3.1 Lay-up of cores: helical 'SZ'
- 7.3.2 Filler, barrier tapes and binders

SECTION 8 OVERSHEATH Complied

- 8.1 Material: 5V-90
- 8.2 Application: non-adherent to underlying cores
- 8.3 Thickness: See Clause 10, Table 3, Test No. 6, below.

SECTION 9 MARKING Complied

- 9.1 Information to be marked
 Manufacturer or suppliers name or mark : Infinity/Wanma
 Year of manufacture : 2009
 Designation of insulation : V-90
 Words "ELECTRIC CABLE"
 and Voltage Rating : Pass
 Distance between marking blocks : 450/750V
 : 500mm

- 9.2 Legibility of marking on outer surface
 Legible at a illuminance of 400-600 lux. : Complied

- 9.3 Marking of packaging
 Cable coil marking was not provided Not Tested



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SECTION 10 TESTS (Table 3, AS/NZS 5000.2)

Test No.

1 Copper Conductors
 (Section 2, AS/NZS 1125)

2.6 Stranded Conductors (Class 2) Complied

Tests for Plain or Metal-coated Copper Conductors
 (Table 2.1, AS 1125)

Elongation of Annealed, Circular Conductors Complied

The minimum average elongation of the conductor strands taken from red, white, blue, black and green/yellow cores of the cable was between 29.1%, 28.6%, 28.4%, 29.1% and 28.6% respectively.

Minimum allowable: 18.0 %

Note: The estimated uncertainty of the measured values at the 95% confidence level is ± 0.4%.

2 Conductor Resistance Complied

Cable c.s.a.	Conductor resistance (Ω/km)					Max. allow.
	Red	White	Blue	Black	Green/ Yellow	
2.5 mm ²	6.831	6.839	6.840	6.836	6.835	7.41

Note: The estimated uncertainty of the measured values at the 95% confidence level is ± 0.05 Ω/km.

3 Tests and criteria for PVC insulation
 (AS/NZS 3808, Table 5))

A Mechanical Tests Without Ageing

A.1 Tensile Strength Complied

The Tensile strength for the red, white, blue, black and green/yellow insulations was 16.49Mpa, 16.04Mpa, 16.51Mpa, 15.80Mpa and 16.17Mpa respectively

Minimum allowable: 12.5MPa

Note: The estimated uncertainty of the measured values at the 95% confidence level is ± 0.5MPa.



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Test No. (Cont.)

3 Tests and criteria for PVC insulation
(AS/NZS 3808, Table 5))

D Pressure test at high temperature Complied
(AS/NZS 1660.2.3, Cl. 2.3)

The indentation of the red, white, blue, black and green/yellow insulations were 25.68%, 18.01%, 23.78%, 24.18% and 23.44% respectively.

Maximum allowable: 50%

Note: The estimated uncertainty of the measured values at the 95% confidence level is $\pm 2\%$.

E Heat shock test Complied
(AS/NZS 1660.2.3, Cl. 2.4)

No core showed any evidence of cracking.

F Hot Set Test Not Applicable

G Electrical Characteristics

G.1 Insulation Resistance Constant Complied
(k_i) at 20°C

The insulation resistance constants at 20°C of the red, white, blue, black and green/yellow insulations were 787.1 GΩ.m, 367.4 GΩ.m, 562.8 GΩ.m, 625.3 GΩ.m and 694.4 GΩm respectively.

Minimum allowable: 40 GΩ.m

Note: The estimated uncertainty of the measured values at the 95% confidence level is ± 0.02 GΩ.m.

G.2 Insulation Resistance Constant Complied
(k_i) at 90°C

The insulation resistance constants at 90 °C of the red, white, blue, black and green/yellow insulations were 0.206 GΩ.m, 0.109 GΩ.m, 0.209 GΩm, 0.254 GΩm and 0.304 GΩm respectively.

Minimum allowable: 0.002 GΩ.m

Note: The estimated uncertainty of the measured values at the 95% confidence level is ± 0.02 GΩ.m.



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Test No. (Cont.)

4 Tests and Criteria on PVC Oversheaths
(Table 6, AS/NZS 3808)

A Mechanical Tests Without Ageing

A.1 Tensile Strength Complied

The Tensile strength for the orange sheath was 18.61Mpa

Minimum allowable: 12.5Mpa

Note: The estimated uncertainty of the measured values at the 95% confidence level is ± 0.5 MPa.

A.2 Elongation at Rupture Complied

The percentage elongation for the orange sheath was 295%

Minimum Allowable: 150%

Note: The estimated uncertainty of the measured values at the 95% confidence level is $\pm 2\%$.

B Mechanical Tests After Ageing in Air Oven

B.1 Tensile Strength Complied

The Tensile strength for the orange sheath was 18.72

Minimum allowable: 13.96

Note: The estimated uncertainty of the measured values at the 95% confidence level is ± 0.5 MPa.

B.2 Elongation at Rupture Complied

The percentage elongation for the orange sheath was 275%

Minimum Allowable: 191.8%

Note: The estimated uncertainty of the measured values at the 95% confidence level is $\pm 2\%$.

C Loss of Mass Complied

The Calculated loss of mass for the orange sheath was 1.76mg/cm²

Maximum Allowable 2.5mg/cm² Complied

Note: The estimated uncertainty of the measured values at the 95% confidence level is ± 0.02 mg/cm².

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Test No. (Cont.)

4 Tests and Criteria on PVC Oversheaths
 (Table 6, AS/NZS 3808)

D Pressure Test at High Temperature Complied

The indentation of the sheath was 19.64.6%.

Maximum allowable: 50%

Note: The estimated uncertainty of the measured values at the 95% confidence level is $\pm 2\%$.

E Heat Shock Test Complied

The oversheath showed no evidence of cracking.

E Hot set test Not Applicable
 (AS 1660.2.2, Clause 2.1)

G Exudation of Plasticizer Complied

There was no greasiness or droplets of liquid

5 Measurement of Insulation Thickness and Complied
6 Measurement of Oversheath Thickness Complied
 (AS/NZS 1660.2.1, Cl. 2.1)

Component	Thickness (mm)			
	Average		Minimum	
	Measured	Allowable	Measured	Allowable
Red	0.856	0.7	0.72	0.53
White	0.888		0.64	
Blue	0.925		0.85	
Black	0.925		0.76	
Green/Yellow	0.853		0.75	
Oversheath	2.24	1.3	2.10	1.21

Note: The estimated uncertainty of the measured values at the 95% confidence level is ± 0.01 mm.

7 High Voltage a.c. Test for 4 h Complied

8 Spark test on cores during production Not Tested
 (AS/NZS 1660.3, Cls. 3.5.5 and 3.1)

Note: This test was not conducted as the spark test is carried out during manufacture.

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Test No. (Cont.)

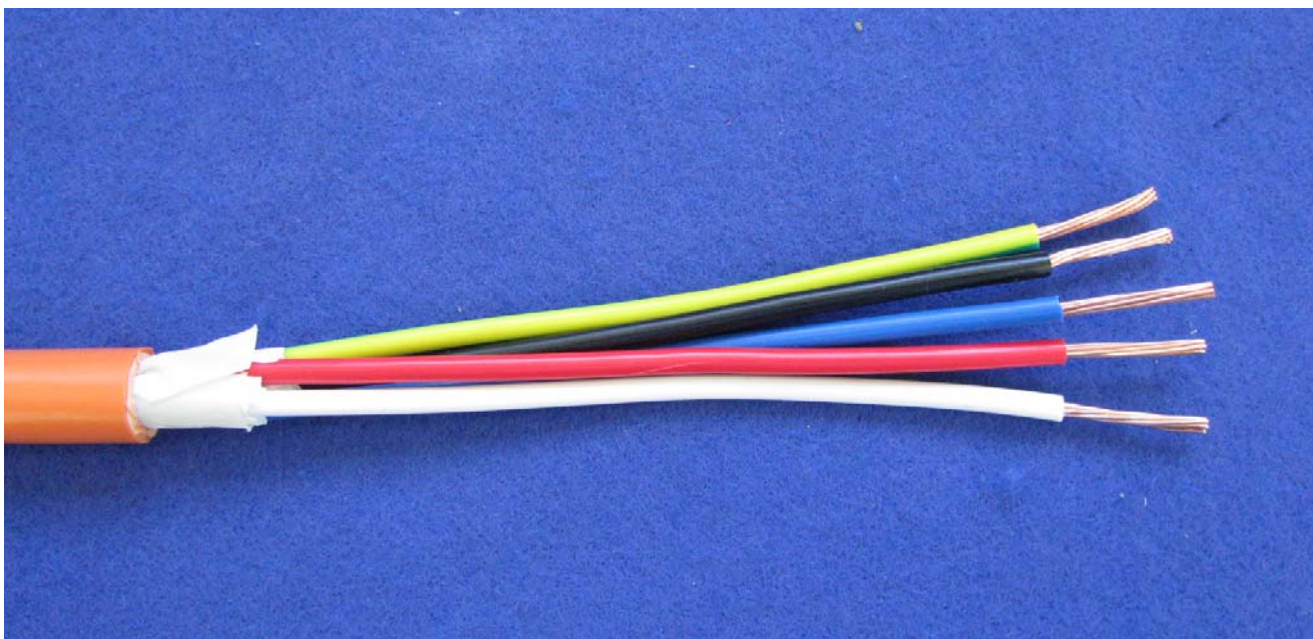
9 High Voltage Test for Five Minutes Not Required

10 Vertical Flame Propagation Complied

Note: Individual items of this test report should not be quoted in isolation as proof of product acceptability nor applied to directly assess performance under conditions other than as envisaged by the reference specification, e.g. individual fire tests to prove an overall acceptable fire hazard level.

Compatibility Test after Ageing Not Applicable

PHOTOGRAPHS



General View