

TEST REPORT

Requested by บริษัท คอมชายน เน็ตเวอร์ค จำกัด
Equipment Under Test Indoor Terminal (MDF) **Model / Type** LITECH รุ่น LTZF-CL2-10A-PBT (10 Pair Disconnection Module)
Manufacturer Advanced Network Solutions Sdn Bdh **Dealer** บริษัท คอมชายน เน็ตเวอร์ค จำกัด
Reference (Standard / Specification) No. TOT Spec.No.OES-002-001-02 (Issued: January, 2006)

SUMMARY

Item No.	Test Result of Product (s)	Lot Size	Sample Size
2	Indoor Terminal (MDF) LITECH รุ่น LTZF-CL2-10A-PBT (10 Pair Disconnection Module) The tested samples were found to meet relevant specifications. 2. Construction (Item 2.3.2) 3. Material Requirement 3.3 Terminal Block 3.3.2 The contact element 4. Electrical Requirements 4.1 Terminal Block 4.1.1 Contact Resistance Test 4.1.2 Insulation Resistance Test 4.1.3 Dielectric Strength Test 4.2 Grounding Connector 4.2.1 Contact Resistance of Grounding Connector 4.2.2 Current Carrying Capability of Grounding Connector 5. Mechanical Requirement 5.1 Terminal Block 5.1.1 Wire Pull-Out 5.1.2 Bending Test 5.1.3 Torsion Test 5.1.4 Vibration Test	-	15 ST.

Manager 
 (Mr. Sumran Sritoh)

5, 20, 51

This report applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are applicable to other similar items.

Supervisor 

(Mr. Thongchai Kongsuwan)

5, 6, 08

Purchase Order No. -	Contract No. -
Document Control Code 51050 01001	

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SUMMARY

Item No.	Test Result of Product (s)	Lot Size	Sample Size
	5.1.5 Repeated Connection and Disconnection Test 5.1.6 Re-patching Test 5.2 Grounding Conductor Pull-Out 6. Environmental Requirements 6.1 High Temperature 6.2 Temperature Cycle with High Humidity		

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Specific Descriptions	Limits	Test Values/Inspection	Remarks
<u>2. CONSTRUCTION</u>			
2.3 Terminal Block (2.3.2)	The terminal block shall consist of input feeder field side and output distribution field side, and shall be able to terminate solid copper wire range 0.40 mm to 0.65 mm in diameter with wire insulation (PE or PVC) diameter of 1.40 mm (max.)	Complied	Sample No. 1-15
<u>3. MATERIAL REQUIREMENTS</u>			
3.3 Terminal Block			Sample No. 1
3.3.2 The contact element	Shall be made form copper alloy, such as copper-tin (bronze), copper-zinc (brass) or beryllium copper	{ Cu 83.30 Wt% Mg 0.90 Wt% Al 7.40 Wt% Sn 7.10 Wt%	ทองแดง (Cu)
- The contact surface	Shall be plated with > 5 μ m thickness tin or tin-lead or with silver.		แมกนีเซียม (Mg) อลูมิเนียม (Al) ดีบุก (Sn,Tin)
			* not test (thickness)

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(Mrs. Anarat Traison)

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4. ELECTRICAL REQUIREMENT			
4.1 Terminal Block			
4.1.1 Contact Resistance Test	$< 1 \text{ m}\Omega$	0.49 - 0.78 $\text{m}\Omega$	Sample No. 2
4.1.2 Insulation Resistance Test			
- Contact to contact	} $\geq 10^9 \Omega$ at 500 Vdc	$4.2 \times 10^{13} - 1.2 \times 10^{14} \Omega$	} Sample No.3
- Contact to ground		$6.3 \times 10^{13} - 2.1 \times 10^{14} \Omega$	
4.1.3 Dielectric Strength	2,000 Vrms for a period 1 minute Leakage current $< 10 \text{ mA}$	Complied	Sample No. 3
4.2 Grounding			
4.2.1 Contact Resistance of Grounding Connector	$\leq 20 \text{ m}\Omega$	11.46 $\text{m}\Omega$	Terminated a 6 AWG solid copper wire with the grounding connector terminal on Back Mount Frame
4.2.2 Current Carrying Capability of Grounding Connector	The ground connector shall be capable of carrying a current of 1,000 A for 20 seconds. The grounding connector shall display no evidence of cracking, breaking or melting.	Complied	Terminated a 6 AWG solid copper wire with the grounding connector terminal on Back Mount Frame

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5. MECHANICAL REQUIREMENT			
5.1.1 Wire Pull-Out The samples shall be terminated with 0.5 mm PE or PVC insulated solid copper wire.	The breaking strength or pull-out of the connections shall be above 60 % of the mean unsplice insulated wire breaking strength.	91.04 %	Sample No. 4
5.1.2 Bending Test The samples shall be terminated with 0.5 mm PE or PVC insulated solid copper wire. The length of the wire shall be 300 mm. The weight of 150 grams shall be fixed to the free end of the wire and shall be subjected to a pendulum motion whose plane is perpendicular to the axis of the contact. The angle of the motion shall be 45° from the vertical and the test shall comprise 10 cycles.	The contact shall not be damaged.	Complied	Sample No. 5

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5.1.3 Torsion Test The samples shall be terminated with 0.5 mm PE or PVC insulated solid copper wire, and 2 N load shall be applied to the wires to the contact, 10 applications has done right and to the left side with the angle of 90° through the contact axis.	The wire shall not be broken or scraped.	Complied	Sample No. 6
5.1.4 Vibration Test The samples shall be firmly held on a vibration table and each terminal shall be terminated with 0.5 mm. PE or PVC insulated solid copper wire, The condition forc testing shall be as follows: Range of frequency: 10 Hz to 50 Hz. Displacement amplitude below the cross-over frequency: 0.76 mm. Direction: 3 mutually perpendicular planes.			Sample No. 7

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Number of cycles per direction: 20 minutes. Total time: 2 hours. - Contact Resistance Test - Insulation Resistance Test 5.1.5 Repeated Connection and Disconnection Test The samples shall be subject to 200 repetitive of connections and disconnections, using 0.5 mm PE or PVC insulated solid copper wire at room temperature. One cycle consist of removed and insertion. - Contact Resistance Test	Change < 2 mΩ > 10 ⁹ Ω at 500 Vdc	Change 0.31 - 0.70 mΩ 3.5 x 10 ¹³ - 1.1 x 10 ¹⁴ Ω	Sample No. 8
5.1.6 Re-patching Test The center port shall be subjected to 500 repetitive patching cycles using the test plug or patch cord plug insert the contacts at room temp. - Contact Resistance Test	Change < 2 mΩ	Change 0.70 - 1.32 mΩ	Sample No. 8
- Contact Resistance Test	Change < 2 mΩ	Change 0.67 - 1.26 mΩ	

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<p>5.2 <u>Grounding Conductor Pull Out</u></p> <p>When the grounding connector is mounted on the indoor terminal and a 6 AWG copper wire is terminated, the assembly shall be capable of withstanding a pull of 35 lbs(15.9 kg) for 1 minute when the screws are tightened to a torque of 25 in-lbs (28.8 cm-kG).</p>	No sudden application of force	Complied	
<p>6. ENVIRONMENTAL REQUIREMENTS</p> <p>6.1 High Temperature</p> <p>The samples shall be subjected to a temperature of 140°F(60°C) for a period of 10 days.</p> <ul style="list-style-type: none"> - Contact Resistance - Insulation Resistance after test 	<p>Change < 2 mΩ</p> <p>≥ 10⁸ Ω at 500 Vdc</p>	<p>Change 0.24 - 0.45 mΩ</p> <p>7.2 x 10¹³ - 1.4 x 10¹⁴ Ω</p>	Sample No. 9

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6.2 <u>Temperature Cycling with High Humidity</u> The shall be subjected to the temperature from 4.4°C to 32°C , humidity 90 to 95 %RH with -48 Vdc for 30 days. - Contact Resistance - Insulation Resistance during test - Insulation Resistance after test	Change < 2 mΩ ≥ 100 MΩ at 500 Vdc ≥ 10 ⁸ Ω at 500 Vdc	Change 0.51 - 1.08 mΩ 1.7 x 10 ⁵ - 1.8 x 10 ⁶ MΩ 5.8 x 10 ¹² - 2.0 x 10 ¹³ Ω	Sample No. 10

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