

NITEK

NEMA TS-2 Testing
Per
Version 02.06
and Nitek instructions

May 21, 2013

Prepared for:

NITEK

5410 Newport Drive #24
Rolling Meadows, IL 60008

Report Number 13-3090

By:

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THE SPECIALTY LAB, INC.

PART DESCRIPTION: Network Transmission Device	CUSTOMER MODEL NUMBER: ER1500C / ET1500C ER1500U / ET1500U
SUPPLIER NAME: NITEK	CUSTOMER: Nitek
SUPPLIER PART NUMBER: NA	REQUESTER: Nitek
APPLICABLE DOCUMENTS: NEMA TS-2, Model EL1500U Installation and Operation Manual, Model EL1500CW Installation Guide SPL Quote No. 5273	TEL: 800-528-4343
	E-MAIL: info@nitek.net
	DATE LAB TESTS STARTED: 04/18/2013
	DATE LAB TESTS COMPLETED: 05/14/2013
CUSTOMER P. O. NO.: 9376 DISTRIBUTION: File NITEK 5410 Newport Drive, #24 Rolling Meadows, IL 60008	FILE CODE: 13-3090

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TESTED BY: <i>Craig Starr</i>	REPORT BY: <i>Lucy Gray</i>	REVIEWED BY: <i>Mark Schneider</i>
Craig Starr	Lucy Gray	Mark Schneider

I. PRODUCT DESCRIPTION

“Etherstretch” EL1500C (coax) and EL1500U (ethernet extender), transmitter and receivers. STD-4810PA DC power supplies for PoE.

II. TEST OBJECTIVE

To submit the product to the following NEMA TS-2 tests:

- 1.) Temperature and Humidity per ppg 2.2.7
(the temperature and humidity profile only)
- 2.) Mechanical Vibration per ppg 2.1.9, 2.2.3, 2.2.8.2 thru 2.2.8.5
(5 to 30Hz up to 0.5g's applied in each of three mutually perpendicular planes for one (1) hour each)
- 3.) Mechanical Shock per ppg 2.1.10, 2.2.4, 2.2.9.2 thru 2.2.9.4
(10 g's in each of three (3) mutually perpendicular planes)
- 4.) Operating Voltage per ppg 2.1.2, (89Vac to 135Vac)
Operating Frequency per ppg 2.1.3 (60Hz \pm 3Hz)
- 5.) Transient Tests per ppg 2.1.6, 2.1.7 and 2.1.8

III. FAILURE CRITERIA

Failure to continue to cycle (function, operate, etc) due to the application of one of the above tests.

IV. PROCEDURE-RESULTS-EQUIPMENT USED

The test procedure for “functionality” provided by the customer is to “watch a youtube video”.

Two (2) pairs of product were tested in series. A diagram of the test setup is in Appendix B.

A. Temperature and Humidity:**1. Low temperature, Low and High Line Voltage tests, SS=4:****a. PROCEDURE:**

Adjust the temperature and Line voltage and verify “functionality” as specified in ppgs 2.2.7.3 and 2.2.7.4 of the NEMA TS2 spec.

b. RESULTS:

The equipment was functional per the customers test procedure. Testing occurred on 4/18/2013. See Appendix C for the chamber chart.

c. EQUIPMENT USED:

Thermotron, Temp Chamber, Model F12-CHV-5-5, S/N 4949, Cal Due 6/19/13 (900-027)
Honeywell, Chart Recorder, Model DR450T, S/N 89904740672005, Cal Due 10/10/13 (900-030A)
California Instruments, AC Power Source, Model 1301XPCL, S/N 36383 (650-024)
Fluke, DVM, Model 73 III, S/N 82010306, Cal Due 11/15/13 (260-070)

IV. PROCEDURE-RESULTS-EQUIPMENT USED Continued**2. High temperature, High and Low Line Voltage tests, SS=4:****a. PROCEDURE:**

Adjust the temperature and Line voltage and verify “functionality” as specified in ppgs 2.2.7.5 thru 2.2.7.7 of the NEMA TS2 spec.

b. RESULTS:

The equipment was functional per the customers test procedure. Testing occurred on 4/25/2013. See Appendix C for chamber chart.

c. EQUIPMENT USED:

BlueM, Temp/Humidity Chamber, Model FRP-381B, S/N FRP-173 (900-035)
Honeywell, Chart Recorder, Model DR4502, S/N 8920719216117, Cal Due 11/3/13 (900-035A)
California Instruments, AC Power Source, Model 1301XPCL, S/N 36383 (650-024)
Fluke, DVM, Model 73 III, S/N 82010306, Cal Due 11/15/13 (260-070)

B. Mechanical Vibration, SS=4:**1. PROCEDURE:**

Subject four (4) devices to Mechanical Vibration testing per ppg 2.1.9, 2.2.3, 2.2.8.2-2.2.8.5 of the NEMA TS2 spec. Sinusoidal sweep cycle over a frequency range of 5 to 30Hz in each of three mutually perpendicular planes. Record resonant frequencies, and dwell for one hour on each plane at each of the three planes maximum resonant frequency.

2. RESULTS:

The equipment was functional per the customers test procedure. Testing occurred on 04/29/2013. See Appendix D for setup photos and graphs.

3. EQUIPMENT USED:

Kinetic Systems, Vibration Slip Table (900-147)
Ling, Vibration Shaker, Model 385, S/N 44 (900-167)
Unholtz-Dickie, Condition, Signal, Model CVA-8, S/N 201, Cal Due 3/8/14 (900-057)
Unholtz-Dickie, Controller, Sine, Model UD-345, S/N 351, Cal Due 3/8/14 (900-134)
Unholtz-Dickie, Controller, Random, Model UD-320, S/N 703CF, Cal Due 3/8/14 (900-050)
PCB, Accelerometer, Model Q353B04, S/N 11893, Cal Due 11/21/13 (900-004)
PCB, Accelerometer, Model 303A03, S/N 22318, Cal Due 11/29/13 (900-100)

IV. PROCEDURE-RESULTS-EQUIPMENT USED **Continued****C. Mechanical Shock, SS=4:**1. PROCEDURE:

Subject four (4) devices to Mechanical Shock testing per NEMA TS2, ppg 2.1.10, 2.2.4, 2.2.9.2-2.2.9.4 , 10 g's-pk in each direction for each of three (3) mutually perpendicular planes (six total shock pulses).

2. RESULTS:

The equipment was functional per the customers test procedure. Testing occurred on 04/29/2013. See Appendix E for setup photos and graphs.

3. EQUIPMENT USED:

Kinetic Systems, Vibration Slip Table (900-147)

Ling, Vibration Shaker, Model 385, S/N 44 (900-167)

Unholtz-Dickie, Condition, Signal, Model CVA-8, S/N 201, Cal Due 3/8/14 (900-057)

Unholtz-Dickie, Controller, Sine, Model UD-345, S/N 351, Cal Due 3/8/14 (900-134)

Unholtz-Dickie, Controller, Random, Model UD-320, S/N 703CF, Cal Due 3/8/14 (900-050)

PCB, Accelerometer, Model Q353B04, S/N 11893, Cal Due 11/21/13 (900-004)

PCB, Accelerometer, Model 303A03, S/N 22318, Cal Due 11/29/13 (900-100)

D. Operating Voltage, SS=4:1. PROCEDURE:

Adjust the Line voltage and verify "functionality" per ppg 2.1.2 of the NEMA TS2 spec. 89Vac to 135Vac.

2. RESULTS:

The equipment was functional per the customers test procedure. Testing occurred on 5/9/2013. See Appendix F for Scope plots.

3. EQUIPMENT USED:

California Instruments, AC Power Source, Model 1301XPCL, S/N 36383 (650-024)

Fluke, DVM, Model 73 III, S/N 82010306, Cal Due 11/15/13 (260-070)

HP, Probe, Model 54001A (600-070)

IV. PROCEDURE-RESULTS-EQUIPMENT USED Continued**E. Operating Frequency, SS=4:**

1. **PROCEDURE:**
Adjust the Line frequency and verify “functionality” per ppg 2.1.3 of the NEMA TS2 spec.
60 Hz \pm 3 Hz
2. **RESULTS:**
The equipment was functional per the customers test procedure. Testing occurred on 5/9/2013.
See Appendix F for Scope plots.
3. **EQUIPMENT USED:**
California Instruments, AC Power Source, Model 1301XPCL, S/N 36383 (650-024)
Fluke, DVM, Model 73 III, S/N 82010306, Cal Due 11/15/13 (260-070)
HP, Probe, Model 54001A (600-070)

F. Transient Tests, SS=4:

1. **PROCEDURE:**
Subject the equipment to the transients specified in ppg 2.1.6, 2.1.7 and 2.1.8 of the NEMA TS2 specification.

2.1.6.1 High Repetition Noise Transients on the Line
2.1.6.2 Low Repetition Noise Transients on the Line
2.1.7 Transients, Input-Output Terminals
2.1.8 Nondestruct Transient Immunity
2. **RESULTS:**
The equipment was functional per the customers test procedure. Testing occurred on 5/13/2013.
See Appendix G for scope plots of the pulses.
3. **EQUIPMENT USED:**
Tektronix, Oscilloscope, Model TDS3052, S/N B010458, Cal Due 11/15/13 (600-098)
Wavetek, Function Generator, Model 273, S/N 7030767 (650-006)
KeyTek, Coupler, Model 281 modified (410-124)
B&K Precision, Power Supply, Model 1601, S/N 24-21321 (500-022)
HP, Power Supply, Model 6209B, S/N 1147A02403 (500-003)
HP, Power Supply, Model 6209B, S/N 1147A02404 (561-061)
HP, Power Supply, Model 6515A, S/N 1941A04999 (561-008)