TEST REPORT #10-0001

Dry Heat Environmental Test

(test approximates IEC 60068-2-2 Part 2.2)

Revision: 01
Date: 10/27/10

1. Introduction

Quabbin Wire & Cable Co., Inc. manufactures a complete line of Industrial Ethernet cables for use in harsh environments. The most common application for Industrial Ethernet on the factory floor is plant automation and robotics. However, the product is well suited for a variety of uses that would destroy a typical commercial cable in a limited amount of time. In order to provide meaningful data about this specialty product line, testing was conducted to validate the resistance of 5730 cable to a dry heat exposure that may occur during transport, storage and implementation. The electrical performance was used for pass/fail criteria. Mechanical performance was not evaluated, since this is a short term test and the most likely failure mode would be in the electrical performance.

2. Testing Equipment

- Convection Horizontal Airflow Oven (NIST 210153).
- Network Analyzer 8753E.
- Hipot Tester.
- Multi-meter.

3. Procedure

Initial set-up

1. Cut two cable samples to a length of 30'.
2. Test Crosstalk and Return Loss using the Network Analyzer. These will be the initial readings.

   Note: The limit line should be set to account for the cable portion of a 30ft cable assembly.
3. Place the two samples in the oven as shown below. The oven should be at the ambient temperature (~20°C). Spread the coils out so that the cable coil weight is not concentrated on one cable wrap (see picture below).

4. Turn on Convection Horizontal Airflow Oven using the Chamber Power switch (red arrow in picture below).
5. Set the Overtemperature Protection Control to 150°C (green arrow in picture below).
6. Set the initial temperature set point to RT (~20°C) using the PRO-SET Temperature Control (yellow arrow in picture below).

   Note: The temperature setting will be ramped up over a one hour period. The setting will begin at RT (~20°C) and end at 85°C.

7. Note the time. This will be time 00:00 in the chart below.
8. Change the temperature set point at the appropriate time, according to the following chart:

Time (hrs:min)	Temperature Set Point	Time (hrs:min)	Temperature Set Point
00:00	20°C	01:10	85C
00:10	30°C	01:20	85C
00:20	40°C	17:20	65C
00:30	50°C	17:40	45C
00:40	60°C	17:60	20C
00:50	70°C	18:60	20C
01:00	80°C		

After Test Period

9. Remove both samples from the oven and repeat Crosstalk and Return Loss Tests using the Network Analyzer.
10. Perform a dielectric withstand test of 1500V for 2 seconds (conductor to conductor and conductor to shield) using the Hipot Tester.
11. Check for continuity on all conductors using an Multi-meter.

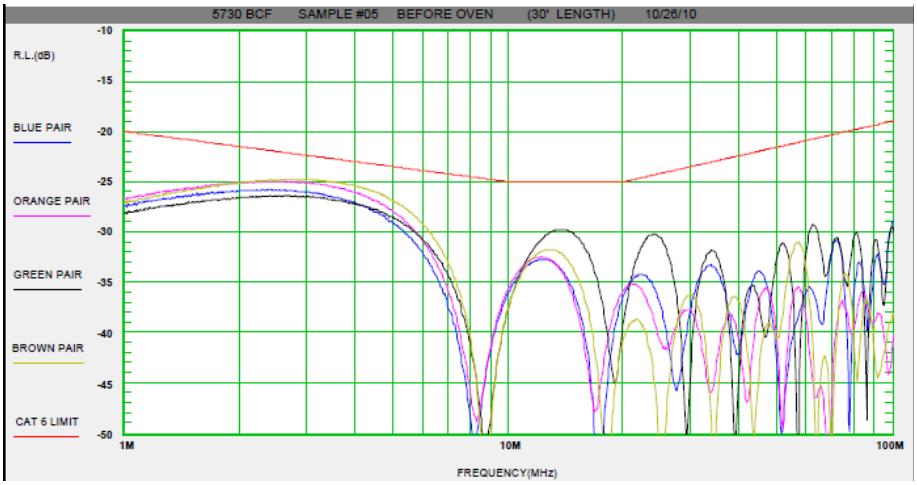
4. Results

Technicians: George Munroe, Marlene Goodwin, Roxanne Koczur

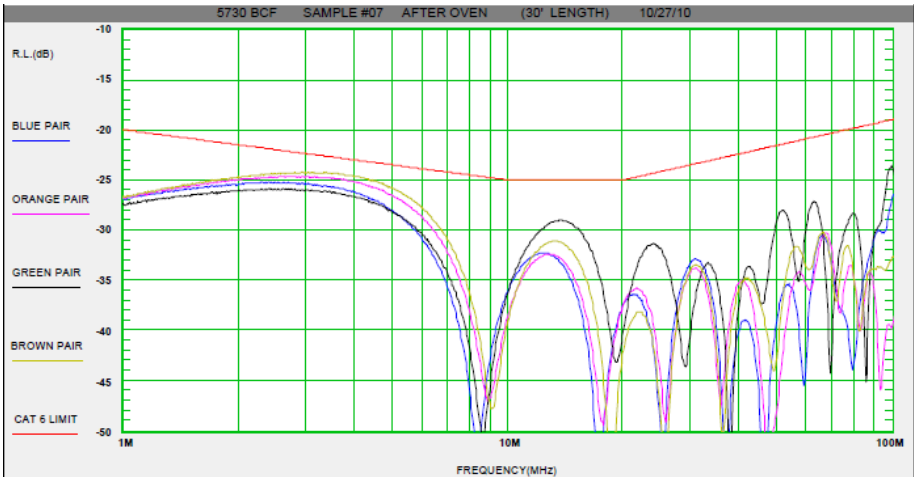
Cable Sample: 5730 BCF

Sample #1

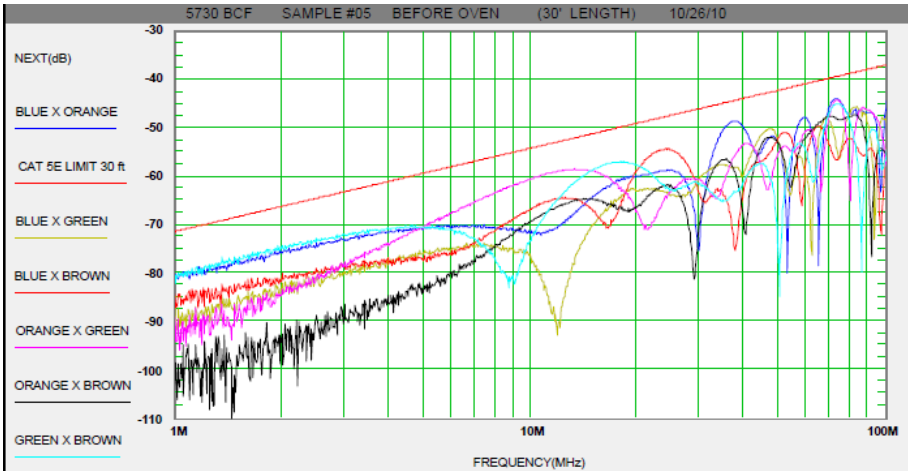
Return Loss Before Test



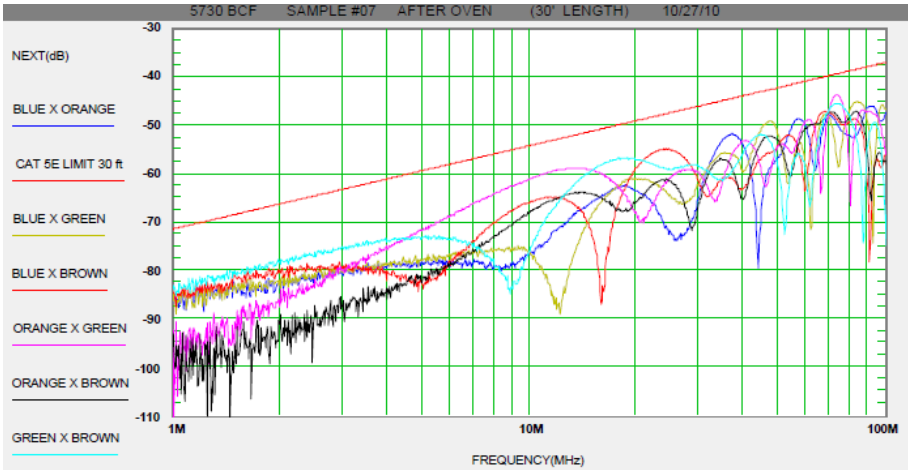
Return Loss After Test



Crosstalk Before Test



Crosstalk After Test

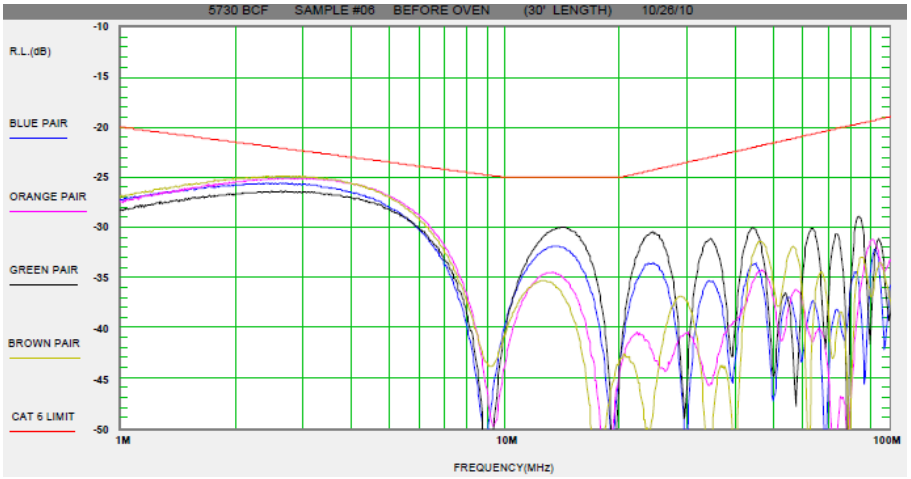


Dielectric Withstand – PASS

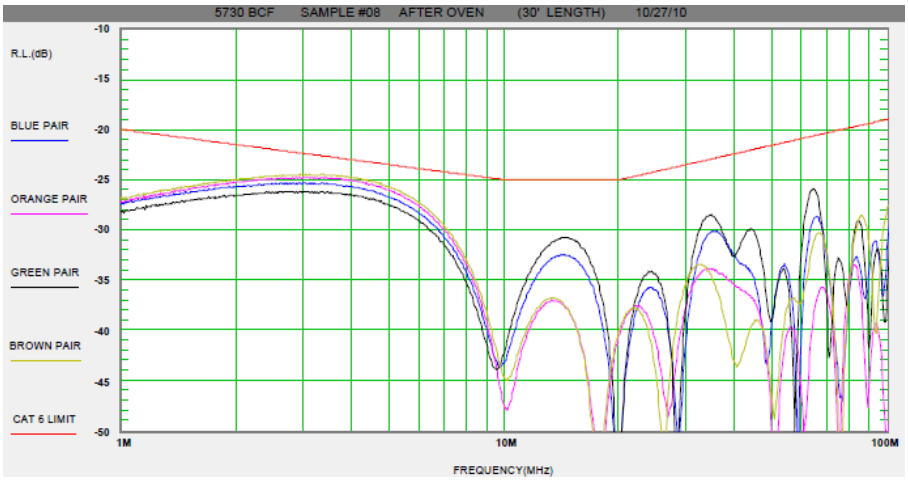
Continuity - PASS

Sample #2

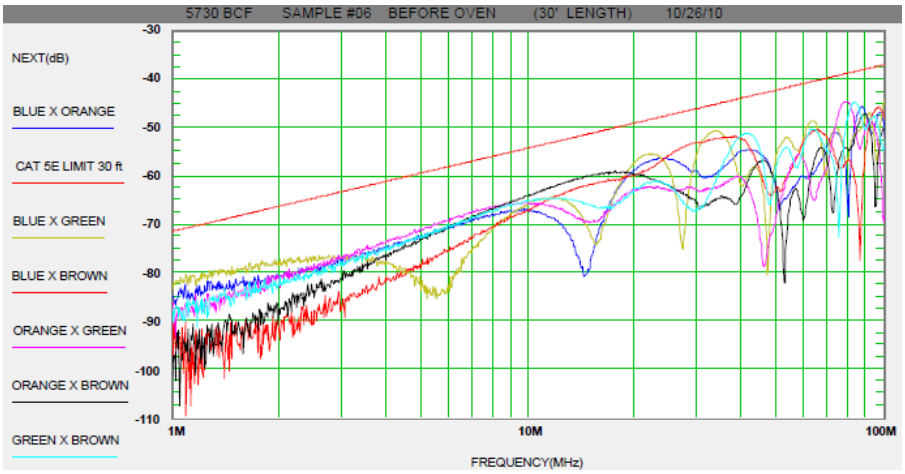
Return Loss Before Test



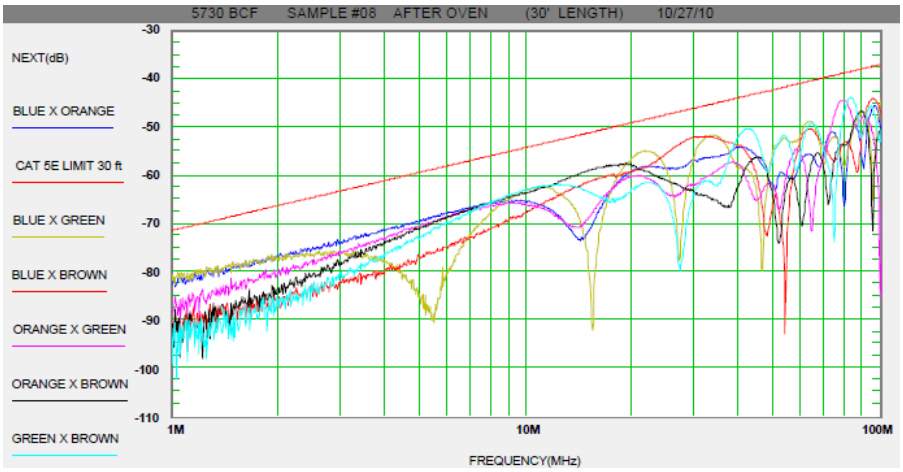
Return Loss After Test



Crosstalk Before Test



Crosstalk After Test



Dielectric Withstand – PASS

Continuity – PASS

5. Conclusion

The initial and final measurements for these cables showed a negligible change. The electrical tests indicate that there were no dimensional changes to the cable.

The cable will meet the performance requirements as called out in the specification after exposure to the above environmental conditions.