

**Category 6 System (Channel), 4 UTP, 24 AWG Undercarpet Cable**

**1. INTRODUCTION**

1.1. Purpose

Testing was performed on the Tyco Electronics Category 6 System (Channel), 4 Unshielded Twisted Pair (UTP), 24 AWG Undercarpet Cable to determine its conformance to the requirements of Product Specification 108-2374 Revision A.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the Category 6 System, 4 UTP, 24 AWG Undercarpet Cable. Testing was performed at the Intertek/ETL Semko laboratory between 04Apr07 and 09Apr07. The test file number for this testing is 3118695-311. This documentation is on file at and available from the Intertek/ETL Semko laboratory, 3933 US Route 11, Cortland, New York 13045.

1.3. Conclusion

The Category 6 System, 4 UTP, 24 AWG Undercarpet Cable listed in paragraph 1.5., conformed to the electrical performance requirements of Product Specification 108-2374 Revision A.

1.4. Product Description

The Category 6 System, 4 UTP, 24 AWG Undercarpet Cable is designed for interconnection of voice and data devices by way of cabling that is easily concealed using carpet squares. The system is installed over smooth, level and continuous floor surfaces and is easily interfaced to building wiring eliminating the need for ductwork, poke-thru and telepoles.

1.5. Test Specimens

Test specimens were representative of normal production lots. Specimens identified with the following part numbers were used for test:

Part Number	Description
216563-6	Housing, modular jack, 4 position., top entry with panel stops for PCB
219560	Cable, category 6, 4 UTP, 23 AWG, CMR
137505-2	Wall outlet
147934-1	Micro miniature PB switch, J-lead
1499539	Cable, 4 UTP, 24 AWG, Cat 6 system, CMUC

Figure 1

1.6. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

- ! Temperature: 15 to 35°C
- ! Relative Humidity: 25 to 75%

1.7. Qualification Test Sequence

Test or Examination	Test Group (a)
	1
Test Sequence (b)	
Examination of product	1
Propagation delay	2
Delay skew	3
Insertion Loss (IL)	4
Near End Crosstalk (NEXT)	5
Return Loss (RL)	6
Power Sum Near End Crosstalk (PS NEXT)	7
Equal Level Far End Crosstalk (ELFEXT)	8
Power Sum Equal Level Far End Crosstalk (PS ELFEXT)	9

**NOTE**

- (a) See paragraph 1.5.
- (b) Numbers indicate sequence in which tests are performed.

Figure 2

**2. SUMMARY OF TESTING**

2.1. Examination of Product

All specimens submitted for testing were representative of normal production lots. A Certificate of Conformance (C of C) was issued by Product Assurance. Specimens were visually examined and no evidence of physical damage detrimental to product performance was observed.

2.2. Propagation Delay

All propagation delay measurements were less than 5.7 ns/m at 10 MHz; 570 ns/100m at 1 MHz; 545 ns/100m at 10 MHz; 538 ns/100m at 100 MHz; and 536 ns/100m at 250 MHz.

2.3. Delay Skew

All delay skew measurements were less than 45 ns/100m.

## 2.4. IL

All IL measurements were within limits specified in Figure 3.

Frequency (MHZ)	IL (dB) See Note (a)	NEXT (dB) See Note (b)	RL (dB) See Note (c)	PS NEXT (dB) See Note (d)	ELFEXT (dB) See Note (e)	PS ELFEXT (dB) See Note (f)
1	-2.1	-65.0	-19.0	-62.0	-63.3	-60.3
4	-4.0	-63.0	-19.0	-60.5	-51.2	-48.2
8	-5.7	-58.2	-19.0	-55.6	-45.2	-42.2
10	-6.3	-56.6	-19.0	-54.0	-43.3	-40.3
16	-8.0	-53.2	-18.0	-50.6	-39.2	-36.2
20	-9.0	-51.6	-17.5	-49.0	-37.2	-34.2
25	-10.1	-50.0	-17.0	-47.3	-35.3	-32.3
31.25	-11.4	-48.4	-16.5	-45.7	-33.4	-30.4
62.5	-16.5	-43.4	-14.0	-40.6	-27.3	-24.3
100	-21.3	-39.9	-12.0	-37.1	-23.3	-20.3
200	-31.5	-34.8	-9.0	-31.9	-17.2	-14.2
250	-35.9	-33.1	-8.0	-30.2	-15.3	-12.3

**NOTE**

- (a) IL limits are computed from EIA/TIA-568-B.2-1, Equation 8.
- (b) NEXT limits are computed from EIA/TIA-568-B.2-1, Equation 20.
- (c) RL limits are computed from Table 29.
- (d) PS NEXT limits are computed from EIA/TIA-568-B.2-1, Equation 24.
- (e) ELFEXT (worst pair) limits are computed from Equation 28.
- (f) PS ELFEXT (pair-to-pair) limits are computed from EIA/TIA-568-B.2-1, Equation 32.

Figure 3  
Category 6 System (100 ohm) Performance Requirements

## 2.5. NEXT

All NEXT measurements were within limits specified in Figure 3.

## 2.6. RL

All RL measurements were within limits specified in Figure 3.

## 2.7. PS NEXT

All PS NEXT measurements were within limits specified in Figure 3.

## 2.8. ELFEXT

All ELFEXT measurements were within limits specified in Figure 3.

## 2.9. PS ELFEXT

All PS ELFEXT measurements were within limits specified in Figure 3.

### 3. TEST METHODS

#### 3.1. Initial Examination of Product

A C of C was issued stating that all specimens in this test package were produced, inspected, and accepted as conforming to product drawing requirements, and were manufactured using the same core manufacturing processes and technologies as production parts. Specimens were visually examined and no evidence of physical damage detrimental to product performance was observed.

#### 3.2. Propagation Delay

Propagation delay was tested per TIA/EIA-568-B.2-1, paragraph 7.5.2.

#### 3.3. Delay Skew

Delay skew was tested per TIA/EIA-568-B.2-1, paragraph 7.5.4.

#### 3.4. IL

IL was tested per TIA/EIA-568-B.2-1, paragraph 7.1.3.

#### 3.5. NEXT

NEXT was tested per TIA/EIA-568-B.2-1, paragraph 7.2.1.4.

#### 3.6. RL

RL was tested per TIA/EIA-568-B.2-1, paragraph 7.4.5.

#### 3.7. PS NEXT

PS NEXT was tested per TIA/EIA-568-B.2-1, paragraph 7.2.2.2.

#### 3.8. ELFEXT

ELFEXT was tested per TIA/EIA-568-B.2-1, paragraph 7.3.1.3.

#### 3.9. PS ELFEXT

PS ELFEXT was tested per TIA/EIA-568-B.2-1, paragraph 7.3.2.