

## Secure Digital Card Connector

### 1. INTRODUCTION

#### 1.1. Purpose

Testing was performed on the Tyco Electronics Secure Digital Card Connector to determine its conformance to the requirements of Product Specification 108-2377 Revision A.

#### 1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the Secure Digital Card Connector. Testing was completed at the Chant Sincere Research and Development Department on 09Mar05. The test file number for this testing is 412D05. This documentation is on file at and available from the Chant Sincere Research and Development Department.

#### 1.3. Conclusion

The Secure Digital Card Connector listed in paragraph 1.5., conformed to the electrical, mechanical, and environmental performance requirements of Product Specification 108-2377 Revision A.

#### 1.4. Test Specimens

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

Test Group	Quantity	Part Number	Description
1,2,3,4,5,6,7	4 each	2041021-1	Secure digital memory card, standard

Figure 1

#### 1.5. Environmental Conditions

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

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

1.6. Qualification Test Sequence

Test or Examination	Test Group (a)						
	1	2	3	4	5	6	7
	Test Sequence (b)						
Initial examination of product	1	1	1	1	1	1	1
Low Level Contact Resistance (LLCR)	2,4		2,4	2,4			
Insulation resistance					2		
Withstanding voltage					3		
Solderability, dip test						2	
Durability	3						
Mating force		2					
Unmating force		3					
Contact retention force							2
Thermal shock				3			
Humidity/temperature cycling			3				
Final examination of product	5	4	5	5	4	3	

**NOTE**

- (a) See paragraph 1.4.
- (b) Numbers indicate sequence in which tests are performed.

Figure 2

**2. SUMMARY OF TESTING**

2.1. Initial Examination of Product - All Test Groups

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. LLCR - Test Groups 1, 3 and 4

All LLCR measurements, taken at 100 milliamperes maximum and 20 millivolts maximum open circuit voltage were less than 40 milliohms initially and 100 milliohms after testing.

2.3. Insulation Resistance - Test Group 5

All insulation resistance measurements were greater than 1000 megohms.

2.4. Withstanding Voltage - Test Group 5

No dielectric breakdown or flashover occurred.

2.5. Solderability, Dip Test - Test Group 6

All contact leads had a minimum of 95% solder coverage.

2.6. Durability - Test Group 1

No physical damage occurred as a result of mating and unmating the specimens 10,000 times.

2.7. Mating Force - Test Group 2

All mating force measurements were less than 40 N.

2.8. Unmating Force - Test Group 2

All unmating force measurements were greater than 1 N.

2.9. Contact Retention Force - Test Group 7

All contact retention force measurements were greater than 3 N per contact.

2.10. Thermal Shock - Test Group 4

No evidence of physical damage was visible as a result of thermal shock testing.

2.11. Humidity/temperature Cycling - Test Group 3

No evidence of physical damage was visible as a result of humidity/temperature cycling.

2.12. Final Examination of Product

Specimens were visually examined and no evidence of physical damage detrimental to product performance was observed.

### 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.

3.2. LLCR

LLCR measurements were made using a 4 terminal measuring technique. The test current was maintained at 100 milliamperes maximum with a 20 millivolt maximum open circuit voltage.

3.3. Insulation Resistance

Insulation resistance was measured between adjacent contacts. A test voltage of 500 volts DC was applied for 2 minutes before the resistance was measured.

3.4. Withstanding Voltage

A test potential of 500 volts AC was applied between adjacent contacts. This potential was applied for 1 minute and then returned to zero.

### 3.5. Solderability, Dip Test

Specimens were immersed in ROL0 non-activated flux for 5 to 10 seconds, allowed to drain for 5 to 20 seconds, then held over molten solder without contact for 2 seconds. Specimens were then immersed in the molten solder at a rate of approximately 25.4 mm per second, held for 4 to 5 seconds, then withdrawn. After cleaning in isopropyl alcohol, the specimens were visually examined under 10X magnification. The solder used for testing was maintained at a temperature of  $245 \pm 5^{\circ}\text{C}$ .

### 3.6. Durability

Specimens were mated and unmated 10,000 times at a maximum rate of 500 cycles per hour.

### 3.7. Mating Force

The force required to mate individual specimens was measured using a tensile/compression device with a free floating fixture and a rate of travel of 12.7 mm per minute.

### 3.8. Unmating Force

The force required to unmate individual specimens was measured using a tensile/compression device with a free floating fixture and a rate of travel of 12.7 mm per minute.

### 3.9. Contact Retention Force

The force required to remove a contact from the housing was measured using a tensile/compression device with a free floating fixture and a rate of travel of 12.7 mm per minute.

### 3.10. Thermal Shock

Specimens were subjected to 5 cycles of thermal shock with each cycle consisting of 30 minute dwells at  $-55$  and  $100^{\circ}\text{C}$  and 1 minute transition between temperatures.

### 3.11. Humidity/temperature Cycling

Specimens were exposed to 10 humidity/temperature cycles. Each cycle lasted 24 hours and consisted of cycling the temperature between  $25$  and  $65^{\circ}\text{C}$  twice while maintaining high humidity.

### 3.12. Final Examination of Product

Specimens were visually examined for evidence of physical damage detrimental to product performance.