

1. Introduction

1.1. Purpose

This is qualification test. The purpose of this test is to evaluate the performance of Micro SD Header connector H1.45. Testing was performed on below products to determine it compliance with the requirements of product specification 108-115017 Rev. A.

1.2. Scope

This test report is for Micro SD Header connector H1.45.

Testing was performed at Tyco Electronics Shanghai Electrical Components Test Laboratory between May 09, 2011 and Jun 29, 2011.

1.3. Conclusion

The Micro SD Header connector H1.45, listed in paragraph 1.5, met the electrical, mechanical, and environmental performance requirements of TE product specification 108-115017 REV A.

1.4. Product Description

This Connector is a Micro SD Header connector with the height of 1.45mm which is applicable to application of Micro SD card.

1.5 Test Samples

Samples were taken randomly from current production.

The samples of Fig.1 were used.

Product Part No.	Name	Description
1932739-1	Micro SD Header connector H1.45	Micro SD Header connector with the height of 1.45mm
1932739-2	Micro SD Header connector H1.45	Micro SD Header connector with the height of 1.45mm

Fig. 1

2. Test Contents

No.	Test Items	Requirements	Judge-ment
2.1	Examination of Product	Meets requirements of product drawing No physical damage	Acceptable
2.2	Termination Resistance (Low Level)	Signal : 100m Ω Max. (Initial) $\Delta R=40m \Omega$ Max Switch : 300m Ω Max	Acceptable

No.	Test Items	Requirements	Judge-ment
2.3	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 1mA Max.	Acceptable
2.4	Insulation Resistance	1000M Ω Min. (Initial) 100M Ω Min. (Final)	Acceptable
2.5	Temperature Rising	30°C Max under loaded rating Current.	Acceptable
2.6	Connector Mating Force	35N (3.57kgf) Max. (Initial)	Acceptable
2.7	Durability (Office Environment) (Repeated Mate / Unmating)	Signal : $\Delta R=40m \Omega$ Max Switch : 300m Ω Max	Acceptable
2.8	Durability (Harsh Environment) (Repeated Mate / Unmating)	Signal : $\Delta R=40m \Omega$ Max Switch : 300m Ω Max	Acceptable
2.9	Random Vibration	No electrical discontinuity greater than 100nsec. Shall occur.	Acceptable
2.10	Sine Vibration	No electrical discontinuity greater than 100nsec. Shall occur.	Acceptable
2.11	Physical Shock	No electrical discontinuity greater than 100nsec. Shall occur.	Acceptable
2.12	Solder ability	Wet Solder Coverage : 95% Min.	Acceptable

2.13	Thermal Shock	Signal : $\Delta R=40m \Omega$ Max Switch : $300m \Omega$ Max	Acceptable
No.	Test Items	Requirements	Judge -ment
2.14	Thermal Cycling	Signal : $\Delta R=40m \Omega$ Max Switch : $300m \Omega$ Max	Acceptable
2.15	Low temp. lifetest	Signal : $\Delta R=40m \Omega$ Max Switch : $300m \Omega$ Max	Acceptable
2.16	Humidity Stress Test	Signal : $\Delta R=40m \Omega$ Max Switch : $300m \Omega$ Max	Acceptable
2.17	Salt Mist	Signal : $\Delta R=40m \Omega$ Max Switch : $300m \Omega$ Max	Acceptable
2.18	Ammonia gas	Signal : $\Delta R=40m \Omega$ Max Switch : $300m \Omega$ Max	Acceptable
2.19	Industrial Gas (H2S)	Signal : $\Delta R=40m \Omega$ Max Switch : $300m \Omega$ Max	Acceptable
2.20	Resistance to Reflow Soldering Heat	Tested housing shall show no evidence of deformation or fusion of housing and no physical damage.	Acceptable

Fig.2

3. Product Qualification Test Sequence

Test Examination	Test Group													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Test Sequence (a)													
Examination of Product	1,3	1,7	1,5	1,5	1,6	1,3	1,5	1,5	1,5	1,9	1,5	1,5	1,5	1,3
Termination Resistance (Low Level)		2,5	2,4	2,4	2,5		2,4	2,4	2,4	2,6	2,4	2,4	2,4	
Dielectric withstanding Voltage										3,7				
Insulation Resistance										4,8				
Temperature Rising	2													
Connector Mating Force		3,6												
Durability (Office Environment)		4												
Durability (Harsh Environment)			3											
Random Vibration				3										
Sine Vibration					3									
Physical Shock					4									
Solder ability						2								
Thermal Shock							3							
Thermal Cycling								3						
Low temp. lifetest									3					
Humidity Stress Test										5				
Salt Mist											3			
Ammonia gas												3		
Industrial H2S Gas													3	
Resistance to Reflow Soldering Heat														2

(a) Numbers indicate sequence in which the tests are performed.

Fig.3

4. Test Results

Group	Test Item	N	Condition	Test Result			Requirement	Judgment
				Max	Min	Ave		
1	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	Temperature Rising	5	Final	9.37°C	7.00°C	8.12°C	30°CMax	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
2	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	20.25 mΩ	15.60 mΩ	17.84 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	36.59 mΩ	34.65 mΩ	36.13 mΩ	300 mΩ Max	Pass
	Connector Mating Force	5	Initial	1.83 N	1.02 N	1.41 N	35 N Max	Pass
	Durability(Office Environment)	5	Final	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	8.80 mΩ	-1.80 mΩ	2.17 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	56.05 mΩ	39.45 mΩ	48.63 mΩ	300 mΩ Max	Pass
	Connector Mating Force	5	Final	1.86 N	1.38 N	1.59 N	35 N Max	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
3	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	24.97 mΩ	16.25 mΩ	18.53 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	35.87 mΩ	30.25 mΩ	33.39 mΩ	300 mΩ Max	Pass
	Durability(Harsh Environment)	5	Final	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	38.62 mΩ	-6.18 mΩ	14.72 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	64.49 mΩ	37.23 mΩ	49.88 mΩ	300 mΩ Max	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
4	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	27.02 mΩ	15.97 mΩ	18.67 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	35.69 mΩ	34.09 mΩ	34.46 mΩ	300 mΩ Max	Pass
	Random Vibration	5	Final	No electrical discontinuity greater than 100nsec. Shall occur.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	8.01 mΩ	-7.42 mΩ	1.38 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	41.69 mΩ	36.54 mΩ	39.34 mΩ	300 mΩ Max	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass

Fig.4 (Cont.)

Group	Test Item	N	Condition	Test Result			Requirement	Judgement
				Max	Min	Ave		
5	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	24.72 mΩ	16.57 mΩ	19.76 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	36.94 mΩ	34.95 mΩ	36.03 mΩ	300 mΩ Max	Pass
	Sine Vibration	5	Final	No electrical discontinuity greater than 100nsec. Shall occur.			NO abnormalities	Pass
	Physical Shock	5	Final	No electrical discontinuity greater than 100nsec. Shall occur.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	29.47 mΩ	-5.76mΩ	13.93 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	40.08 mΩ	36.87 mΩ	39.27 mΩ	300 mΩ Max	Pass
6	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
	Solderability	5	Final	More than 95% wet solder coverage.			95% Min.	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
7	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	25.36 mΩ	16.29 mΩ	19.10 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	39.65 mΩ	34.19 mΩ	36.21 mΩ	300 mΩ Max	Pass
	Thermal Shock	5	Final	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	34.28 mΩ	-4.69 mΩ	5.99 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	39.28 mΩ	36.61 mΩ	38.00 mΩ	300 mΩ Max	Pass
8	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	22.42 mΩ	15.91 mΩ	19.37 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	36.59 mΩ	34.26 mΩ	35.42 mΩ	300 mΩ Max	Pass
	Thermal Cycling	5	Final	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	28.78 mΩ	-2.49 mΩ	18.68 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	70.00 mΩ	35.85 mΩ	43.70 mΩ	300 mΩ Max	Pass
9	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	25.58 mΩ	16.09 mΩ	15.30 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	36.19 mΩ	34.57 mΩ	28.48 mΩ	300 mΩ Max	Pass
	Low Temperature Life Test	5	Final	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	8.91 mΩ	-5.74 mΩ	1.20 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	41.41 mΩ	37.13 mΩ	31.03 mΩ	300 mΩ Max	Pass
Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass	

Group	Test Item	N	Condition	Test Result			Requirement	Judgment
				Max	Min	Ave		
10	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	23.50 mΩ	15.33 mΩ	17.94 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	36.48 mΩ	34.59 mΩ	35.48 mΩ	300 mΩ Max	Pass
	Dielectric Withstanding Voltage	5	Initial	No creeping discharge or flashover shall occur.			NO abnormalities	Pass
	Insulation Resistance	5	Initial	4.12×10 ¹¹ Ω	1.11×10 ¹⁰ Ω	1.36×10 ¹¹ Ω	1×10 ⁹ Ω Min	Pass
	Humidity Stress Test	5	Final	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	7.43 mΩ	-4.20 mΩ	0.65 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	37.21 mΩ	36.08 mΩ	36.56 mΩ	300 mΩ Max	Pass
	Dielectric Withstanding Voltage	5	Final	No creeping discharge or flashover shall occur.			NO abnormalities	Pass
	Insulation Resistance	5	Final	3.48×10 ¹⁰ Ω	1.01×10 ⁹ Ω	1.12×10 ¹⁰ Ω	1×10 ⁸ Ω Min	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
11	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	26.52 mΩ	15.67 mΩ	19.55 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	36.94 mΩ	35.64 mΩ	36.54 mΩ	300 mΩ Max	Pass
	Salt Mist	5	Final	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	24.21 mΩ	-3.31 mΩ	12.34 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	47.16 mΩ	36.68 mΩ	41.50 mΩ	300 mΩ Max	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
12	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	36.62 mΩ	15.52 mΩ	19.49 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	36.78 mΩ	35.26 mΩ	36.09 mΩ	300 mΩ Max	Pass
	Ammonia Gas	5	Final	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	9.58 mΩ	-15.92 mΩ	0.49 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	41.36 mΩ	36.06 mΩ	39.06 mΩ	300 mΩ Max	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass
13	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Initial (Signal)	23.77 mΩ	17.26 mΩ	20.33 mΩ	100 mΩ Max	Pass
	LLCR	5	Initial (Switch)	36.69 mΩ	35.04 mΩ	35.87 mΩ	300 mΩ Max	Pass
	Industrial Gas (H ₂ S)	5	Final	No physical damage occurred.			NO abnormalities	Pass
	LLCR	40	Final (Signal)	26.89 mΩ	3.61 mΩ	15.34 mΩ	ΔR40 mΩ Max	Pass
	LLCR	5	Final (Switch)	38.57 mΩ	35.88 mΩ	37.31 mΩ	300 mΩ Max	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass

Group	Test Item	N	Condition	Test Result			Requirement	Judgment
				Max	Min	Ave		
14	Examination of Product	5	Initial	No physical damage occurred.			NO abnormalities	Pass
	Resistance to Reflow Soldering Heat	5	Final	No physical damage occurred.			NO abnormalities	Pass
	Examination of Product	5	Final	No physical damage occurred.			NO abnormalities	Pass

(End)