USB / External Serial ATA Connector, 2 in 1 Type

1. INTRODUCTION

1.1. PURPOSE

Testing was performed on the TE USB / External Serial ATA Connector, 2 in 1 Type to determine its conformance to the requirements of Product Specification 108-99116, Revision B2.

1.2. SCOPE

This report covers the electrical, mechanical, and environmental performance of the TE USB / External Serial ATA Connector, 2 in 1 Type Conclusion.

The TE USB / External Serial ATA Connector, 2 in 1 Type meets the electrical, mechanical, and environmental performance requirements of Product Specification 108-99116, Revision B2.

1.3. PRODUCT DESCRIPTION

The USB / External Serial ATA Connector, 2 in 1 Type is designed for printed circuit board applications of PC industry.

1.4. TEST SAMPLES

Test specimens were randomly selected from normal current production lots, and the following Product were used for test：

Test Group	Quantity	Description	Part Number
A, B, C, D, E	5 EA.	USB / External Serial ATA Connector, 2 in 1 Type	2129156-X 1759592-X 2041470-X 2129160-X 1759599-X

1.5. QUALIFICATION TEST SEQUENCE

Test Examination	Test Group				
	A	B	C	D	E
	Test Sequence				
Examination of Product	1,9	1.10	1,8	1,8	1,3
Termination resistance	2,8	4,8	2,4,6		
Dielectric withstanding Voltage				2,7	
Insulation resistance				3,6	
Temperature-rise			7		
Vibration (Random)		6			
Physical shock		7			
Mating Force	3,6	2			
Unmating Force	4,7	9			
Durability(Repeated mate/unmate)	5	5(a)			
Reseating		3	5		
Solderbility					2
Humidity				5	
Thermal shock				4	
Temperature life (Heat Aging)			3		

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

（b）Discontinuities shall not take place in this test group, during tests.

Figure 1

2. TEST RESUL

GP	TEST	Requirement	TEST DATA				Judgment
			Max.	Min.	Mean	Std. Dev.	
A	Examination of Product	No abnormalities	PASSED				ACCEPTED
	Termination Resistance	ESATA: 30 MΩ Max.	25.90	23.80	24.70	0.46	ACCEPTED
		USB: 30 MΩ Max.	13.10	12.20	12.70	0.21	
	Mating Force	ESATA: 40 N Max.	12.60	11.10	12.10	0.60	ACCEPTED
		USB: 35 N Max.	9.48	7.67	8.22	0.73	
	Unmating Force	ESATA: 10 N Min.	12.98	11.57	12.50	0.54	ACCEPTED
		USB: 10 N Min.	12.21	12.51	14.03	1.03	
	Durability	ESATA: 2500 cycles USB: 1500 cycles	PASSED				ACCEPTED
	Mating Force	ESATA: 40 N Max.	9.72	9.32	9.51	0.15	ACCEPTED
		USB: 35 N Max.	9.04	8.37	8.75	0.27	
	Unmating Force	ESATA: 10 N Min.	12.25	11.88	12.04	0.13	ACCEPTED
		USB: 10 N Min.	13.10	11.43	12.19	0.61	
	Termination Resistance	ESATA: 45 MΩ Max.	25.70	23.8	24.63	0.44	ACCEPTED
		USB: 45 MΩ Max.	13.20	12.20	12.70	0.29	
	Dielectric withstanding Voltage	500 VAC, 1Minute	PASSED				ACCEPTED
	Examination of Product	No abnormalities	PASSED				ACCEPTED
B	Examination of Product	No abnormalities	PASSED				ACCEPTED
	Mating Force	ESATA: 40 N Max.	10.09	9.19	9.53	0.37	ACCEPTED
		USB: 35 N Max.	9.68	8.02	8.77	0.60	
	Reseating	No physical damage	PASSED				ACCEPTED
	Termination Resistance	ESATA: 30 MΩ Max.	25.50	23.60	24.61	0.39	ACCEPTED
		USB: 30 MΩ Max.	13.10	12.30	12.64	0.16	
	Durability	ESATA: 2500 cycles USB: 1500 cycles	PASSED				ACCEPTED
	Vibration	No electrical discontinuity greater than 1 µsec shall occur.	PASSED				ACCEPTED
	Physical shock	No electrical discontinuity greater than 1 µsec shall occur.	PASSED				ACCEPTED
	Termination Resistance	ESATA: 45 MΩ Max.	26.50	23.80	24.63	0.48	ACCEPTED
		USB: 45 MΩ Max.	14.20	12.20	12.77	0.36	
	Unmating Force	ESATA: 10 N Min.	15.52	12.39	13.48	1.23	ACCEPTED
		USB: 10 N Min.	12.88	11.87	12.32	0.41	
	Examination of Product	No abnormalities	PASSED				ACCEPTED

GP	TEST	Requirement	TEST DATA				Judgment
			Max.	Min.	Mean	Std. Dev.	
C	Examination of Product	No abnormalities	PASSED				ACCEPTED
	Termination Resistance	ESATA: 30 MΩ Max.	25.70	23.60	24.64	0.51	ACCEPTED
		USB: 30 MΩ Max.	12.80	11.80	12.27	0.28	
	Temperature Life	85℃, 500Hrs	PASSED				ACCEPTED
	Termination Resistance	ESATA: 30 MΩ Max.	25.50	23.70	24.56	0.39	ACCEPTED
		USB: 30 MΩ Max.	12.90	12.00	12.32	0.25	
	Reseating	No physical damage	PASSED				ACCEPTED
	Termination Resistance	ESATA: 45 MΩ Max.	25.70	23.50	24.54	0.47	ACCEPTED
		USB: 45 MΩ Max.	12.70	11.90	12.23	0.21	
	Temperature rise	30℃ Max.	27.6	27.3	27.50	0.08	ACCEPTED
	Examination of Product	No abnormalities	PASSED				ACCEPTED
D	Examination of Product	No abnormalities	PASSED				ACCEPTED
	Dielectric withstanding Voltage	500 VAC, 1Minute	PASSED				ACCEPTED
	Insulation Resistance	1000 MΩ Min.	PASSED				ACCEPTED
	Thermal Shock	-55℃/+85℃, 10 cycles	PASSED				ACCEPTED
	Humidity	25~65℃, 80~98%RH, 10 cycles	PASSED				ACCEPTED
	Insulation Resistance	1000 MΩ Min.	PASSED				ACCEPTED
	Dielectric withstanding Voltage	500 VAC, 1Minute	PASSED				ACCEPTED
	Examination of Product	No abnormalities	PASSED				ACCEPTED
E	Examination of Product	No abnormalities	PASSED				ACCEPTED
	Solderability	Coverage: Contact 95% Min, Shell 75% Min	PASSED				ACCEPTED
	Examination of Product	No abnormalities	PASSED				ACCEPTED