Connector, LightCrimp*, Multimode, XTC*, Ceramic, 2.5mm Bayonet, Fiber Optic

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the LightCrimp* multimode XTC* ceramic 2.5mm bayonet fiber optic connector.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in EIA-455 shall be used. All inspections shall be performed using the applicable inspection plan(s) and product drawing(s).

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between requirements of this specification and referenced documents, this specification shall take precedence.

2.1. AMP Documents

A.	102-1099:	Quality Specification
B.	408-9860:	Instruction Sheet
C.	501-339:	Qualification Test Report

2.2. Commercial Standard

EIA/TIA-455-A: Standard Test Procedures for Fiber Optic Fibers, Cables, Transducers, Sensors, Connecting and Terminating Devices and Other Fiber Optic Components

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing(s).

3.2. Optical Power Source

The optical power source wavelength shall be 1300 ± 30nm.

* Trademark
| Indicates change

3.3. Ratings

Performance	Value	Units
Insertion Loss, Typical 62.5/125	0.4	dB
Operating Temperature	-40 to 65	°C
Cable Retention	33 [7.5]	Newtons [Pounds force]
Durability	500	Cycles
Flex Cycling	100	Cycles

Figure 1

3.4. Performance and Test Description

Product is designed to meet the mechanical, environmental and optical transmittance performance requirements specified in Figure 2. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing.	EIA RS-455-13. Visual, dimensional and functional per applicable quality inspection plan.
Insertion loss.	Maximum allowable insertion loss is 0.4 dB average and 0.7 dB for any single sample. See Note.	TIA/EIA-455-34A, Method A2. Launch cable shall be wrapped 5 times around mandrel so that fiber loop shall be 20mm [0.787 inch] for 62.5/125 fiber. Wrap shall be close wound turns on a smooth surface and be secured in such a manner to guarantee integrity for duration of test. See Figure 4 for cable length.
Temperature cycling.	Maximum change in optical transmittance during testing is 0.5 dB average and 1.0 dB for any single sample. Maximum change in optical transmittance after testing is 0.3 dB average and 0.6 dB for any single sample. See Note.	EIA/TIA-455-3A, Test Condition C2. Subject mated samples to 5 cycles at -40 to 65°C. Measure optical transmittance before and after test with samples in place in test chamber and 5 to 10 minutes before end of each dwell during each cycle. See Para 5.2.

Figure 2 (cont)

Test Description	Requirement	Procedure
Humidity, steady state.	Maximum change in optical transmittance during testing is 0.5 dB average and 1.0 dB for any single sample. Maximum change in optical transmittance after testing is 0.3 dB average and 0.6 dB for any single sample. See Note.	TIA/EIA-455-5B, Method A, Test Condition A. Subject mated samples to steady state humidity at 90 to 95% RH at 60°C for 96 hours. Measure initial optical transmittance at least 1 hour after preconditioning with samples in place in test chamber. Measure optical transmittance once every 24 hours. Measure optical transmittance 1 to 2 hours after humidity exposure with samples in place in test chamber. See Para 5.2.
Cable retention.	Maximum change in optical transmittance after testing is 0.3 dB average and 0.8 dB for any single sample. See Note.	EIA/TIA-455-6B, Method 1. Using 7.6cm [3 inch] mandrel, apply 33 N [7.5 pound force] tensile load for 5 seconds to the cable a minimum distance of 20cm [8 inches] behind the end of the strain relief of 1 connector of the mated test sample. Measure optical transmittance before and after test.
Durability.	Maximum change in optical transmittance during/after testing is 0.3 dB average and 0.6 dB for any single sample. See Note.	EIA-455-21A. Mate and unmate samples 500 times. Measure optical transmittance every 50 cycles, cleaning optical interface before each measurement.
Cable flexing.	Maximum change in optical transmittance during/after testing is 0.3 dB average and 0.6 dB for any single sample. See Note.	EIA-455-1A, Figure 2 apparatus. Apply 0.1 kg [0.2 pound] tensile load to cable a minimum distance of 20cm [8 inches] behind the end of the strain relief of 1 connector of the mated test sample. Flex 1 side ± 90° per cycle for 100 cycles at maximum rate of 15 cycles per minute. Measure optical transmittance before test and after every 50 cycles with load removed.

Figure 2 (cont)

Test Description	Requirement	Procedure
Twist.	Maximum change in optical transmittance after testing is 0.3 dB average and 0.5 dB for any single sample. See Note.	EIA-455-36A. Apply 2.5 kg [5.51 pound] tensile load to cable. Twist and return ± 90° from center for 10 cycles at maximum rate of 30 cycles per minute.
Change in optical transmittance.	Maximum of 0.5 dB average and 0.7 dB for any single sample after completion of sequence.	EIA RS-455-20. Measure optical transmittance after all tests have been performed. Calculate change from last measurement taken for insertion loss test. See Para 5.2.

NOTE *Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence in Figure 3.*

Figure 2 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)	
	1	2
	Test Sequence (b)	
Examination of product	1	1
Insertion loss	2	2
Temperature cycling	3	
Humidity, steady state	4	
Cable retention		3
Durability		4
Cable flexing		5
Twist		6
Change in optical transmission	5	7

NOTE

(a) See Para 4.1.A.
(b) Numbers indicate sequence in which tests are performed.

Figure 3

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Samples shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production per Figure 4. Cable used for qualification shall be of type and length specified in Figure 4 and terminated with connectors on each end as required for equipment interfacing.

Test Group	1	2
Fiber size (microns/microns)	62.5/125	62.5/125
Cable type (See Note)	LDS	LDS
Cable PN	503016-1	503016-1
Connector kit PN	504001-1	504001-1
Coupling adapter	502750-1	502750-1
Test cable length	10m [32.81 ft]	10m [32.81 ft]
Test samples required	5	5
Control cable required	1	0

NOTE *Light Duty Single, 3.0mm diameter.*

Figure 4

B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 3.

4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that product meets requirements of Figure 2. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

Applicable AMP quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.

5. SPECIAL INSTRUCTIONS

5.1. Cleaning

If at any time, a connector sample is uncoupled during qualification testing, optical interface shall be cleaned according to applicable Instruction Sheet prior to any subsequent optical measurements. Additional cleaning techniques deemed necessary by Product Engineering shall be described in the Test Report. If, after cleaning the connector as prescribed, loss performance exceeds the specified limit, or, if the operator suspects the presence of debris at the optical interface, perform the cleaning procedure a second time. If the resultant optical reading still exceeds the specification, clean the interface a third time and accept that reading.

5.2. Control cables.

Control cables shall be subjected to climatic environmental tests. Transmittance shall be recorded each time a sample transmittance is made. Changes in control cable power of less than 0.05 dB may be neglected in test sample power and loss calculations. If control cable power changes by more than 0.05 dB over the duration of the test or sequence of tests, change in control cable power shall be included in power and loss calculations per EIA RS-455-20.