# Serial ATA
# International Organization

**Version 1.0**
**30-November 2006**

# Serial ATA Interoperability Program Revision 1.1
# ETC MOI for Cable Dimensional Inspection (MCI-01) Tests

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# MODIFICATION RECORD

| Revision | Date | Comments |
|---|---|---|
| 0.10 | 01/12/06 | INITIAL DRAFT RELEASE |
| 0.90 | 02/23/06 | Modified to new format, a number of edits, and some additional tests (cable pull-out) added. |
| 0.92 | 08/15/06 | Minor editorial |
| 0.93 | 09/05/06 | Added MCI-01 Visual and Dimensional inspections and MCI-04 Removal Force (Latching)<br>Modified insertion and remove force and Cable pull out test setup |
| 0.94 | 09/28/06 | Removed MCI-02 to MCI-05<br>Revised MCI-01 Test set up & procedure |
| 0.95 | 10/18/06 | Update title information<br>Modified MCI-01.8 test procedure and Pass/Fail Criteria |
| 0.96 | 10/31/06 | Change MCI-01h Pass/Fail Criteria from 1.45mm to 1.50mm<br>Modify MCI-01h drawing |
| 1.0RC | 11/30/06 | Approved Release Candidate draft for Rev1.1 program |

## ACKNOWLEDGMENTS

The Serial ATA Logo Group would like to acknowledge the efforts of the following individuals in the development of this document:

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# INTRODUCTION

The tests contained in this document are organized in order to simplify the identification of information related to a test, and to facilitate in the actual testing process. Tests are separated into groups, primarily in order to reduce setup time in the lab environment, however the different groups typically also tend to focus on specific aspects of device functionality.

The test definitions themselves are intended to provide a high-level description of the motivation, resources, procedures, and methodologies specific to each test. Formally, each test description contains the following sections:

**Purpose**

The purpose is a brief statement outlining what the test attempts to achieve. The test is written at the functional level.

**References**

This section specifies all reference material *external* to the test suite, including the specific subclauses references for the test in question, and any other references that might be helpful in understanding the test methodology and/or test results. External sources are always referenced by a bracketed number (e.g., [1]) when mentioned in the test description. Any other references in the test description that are not indicated in this manner refer to elements within the test suite document itself (e.g., "Appendix 6.A", or "Table 6.1.1-1")

**Resource Requirements**

The requirements section specifies the test hardware and/or software needed to perform the test. This is generally expressed in terms of minimum requirements, however in some cases specific equipment manufacturer/model information may be provided.

**Last Modification**

This specifies the date of the last modification to this test.

**Discussion**

The discussion covers the assumptions made in the design or implementation of the test, as well as known limitations. Other items specific to the test are covered here as well.

**Test Setup**

The setup section describes the initial configuration of the test environment. Small changes in the configuration should not be included here, and are generally covered in the test procedure section (next).

**Procedure**

The procedure section of the test description contains the systematic instructions for carrying out the test. It provides a cookbook approach to testing, and may be interspersed with observable results.

**Observable Results**

This section lists the specific observables that can be examined by the tester in order to verify that the DUT is operating properly. When multiple values for an observable are possible, this section provides a short discussion on how to interpret them. The determination of a pass or fail outcome for a particular test is generally based on the successful (or unsuccessful) detection of a specific observable.

**Possible Problems**

This section contains a description of known issues with the test procedure, which may affect test results in certain situations. It may also refer the reader to test suite appendices and/or other external sources that may provide more detail regarding these issues.

# REFERENCES

The following documents are referenced in this text:

[1] Serial ATA Revision 2.5, section 6.1.10.2, Table 5
[2] Serial ATA Interoperability Program Unified Test Document, Revision 1.0, Section 2.6.2, Section 2.6.3 and Section 2.6.4
[3] Serial ATA Interoperability Program Policy Document, Revision 1.0
[4] Optical measurement system user manual
[5] EIA-364-18 Visual and Dimensional Inspection

## Test Title：MCI-01 : Visual and Dimensional inspections

**Purpose:** To verify that the dimension of the cable receptacle connector is within the conformance limits.

**References: See main reference section**

**Resource Requirements:**

1. Serial ATA Device Under Test
2. Optical measurement system
   Resolution = 0.01 mm or better
   Accuracy of +- 0.001” (+- 0.025 mm) or better
3. Fixture jig (TBD, get part number from ECT)

**Last Modification:** September 7, 2006

**Discussion:**

See section 6.1.10.2, Table 5 and section 6.1.4, Figures 30 and 31 of the Serial ATA Revision 2.5 specification.

**Test Setup:**

1. Mount the Serial ATA Device Under Test into test holder as shown in Figure 1.
2. Assemble the optical measurement system.
3. Turn on the stage and CCD camera power.
4. Turn on PC and open the “Capvideo.exe” software.
5. Configure “capvideo” software as followings.
   Step 1：Setting
   (1) Image source：AVerTV USB 2.0 Plus Video Capture
   (2) Resolution of image：640*480
   (3) Pixel and compress：RGB 24
   Step 2：Initial stage
   Step 3：Capture
6. For more detail setup and calibration process refer to reference [4].

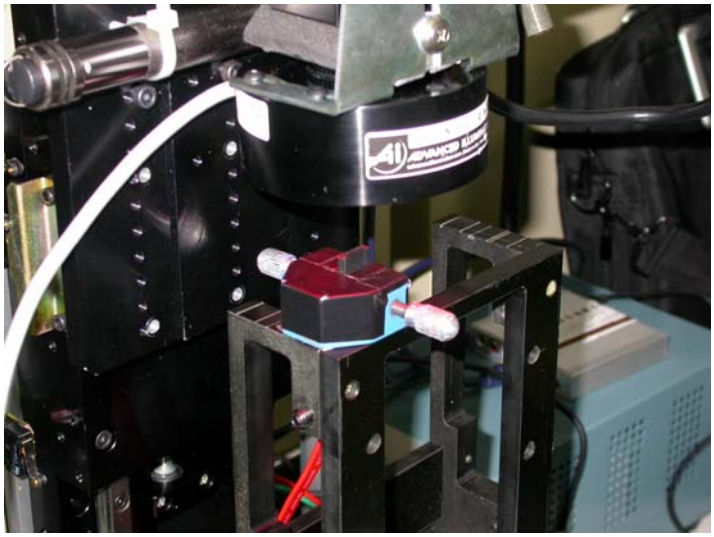
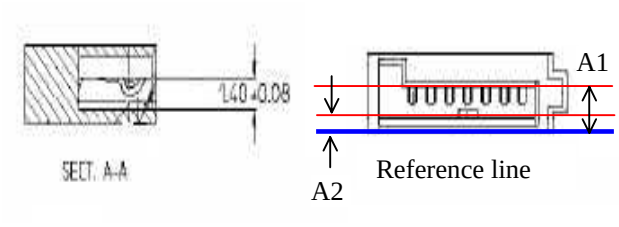


Fig.1 DUT holder setup

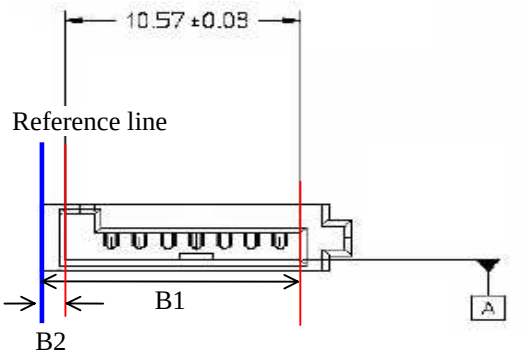
**Test Procedure:**

MCI-01a The height of the slot (for the device plug tongue) (Figure 30, section A-A of the Serial ATA Revision 2.5 specification)



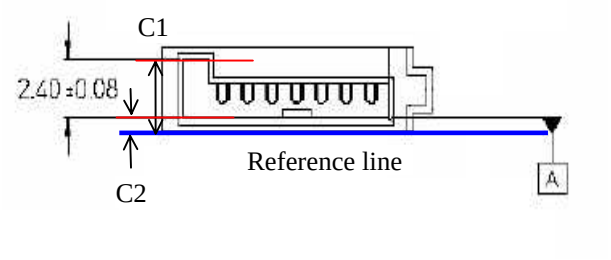

Calculate the value of A as *A=A1-A2.*
Pass/Fail Criteria1：1.40 +- 0.08 mm
Measurement Tolerance：+- 0.01 mm

MCI-01b The width of the slot (for the device plug tongue) shall be (Figure 30 of the Serial ATA Revision 2.5 specification)



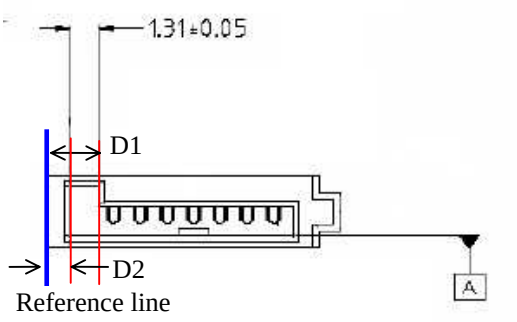

Calculate the value of B as *B=B1-B2.*
Pass/Fail Criteria1：10.57 +- 0.08 mm
Measurement Tolerance：+- 0.01 mm

MCI-01c The height of the slot for the device plug key (Figure 30 of the Serial ATA Revision 2.5 specification)



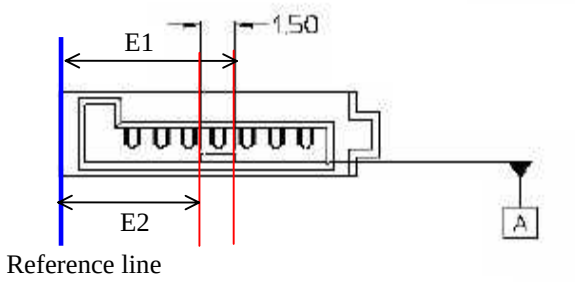

Calculate the value of C as *C=C1-C2.*
Pass/Fail Criteria1：2.40 +- 0.08 mm
Measurement Tolerance：+- 0.01 mm

MCI-01d The width of the slot for the device plug key (Figure 30 of the Serial ATA Revision 2.5 specification)



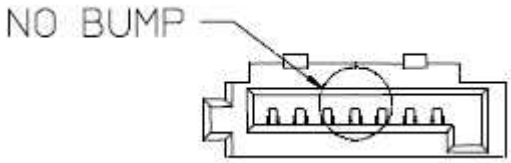

Calculate the value of D as *D=D1-D2.*
Pass/Fail Criteria1：1.31 +- 0.05 mm
Measurement Tolerance：+- 0.01 mm

MCI-01e For a non-latching cable the width of the cable retention feature (bump) shall be (Figure 30 of the Serial ATA Revision 2.5 specification)



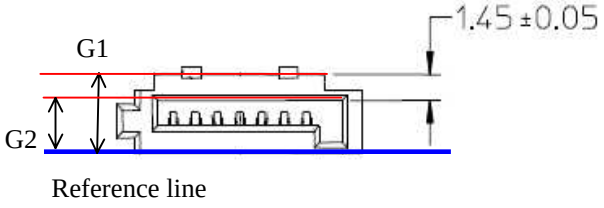

Calculate the value of E as *E=E1-E2.*
Pass/Fail Criteria1：1.50 +- 0.20 mm
Measurement Tolerance：+- 0.01 mm

MCI-01f For a latching cable there shall be no cable retention feature (bump), (Figure 31 of the Serial ATA Revision 2.5 specification)



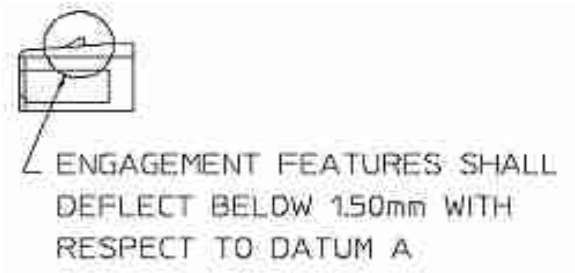

Pass/Fail Criteria1：no cable retention feature (bump)

MCI-01g For a latching cable the distance from the slot to the top surface of the receptacle (Figure 31 of the Serial ATA Revision 2.5 specification)




Calculate the value of F as *G=G1-G2.*
Pass/Fail Criteria1：1.45 +- 0.05 mm
Measurement Tolerance：+- 0.01 mm

MCI-01h For a latching cable the latch engagement feature shall be able to deflect below 1.50 mm (Figure 31 form Rev_2.6 SATA specification).




Measure the distance from the top of latch and the top of slot to the bottom of the receptacle for H1 and G2. (Refer to Fig.2) When measured the top of latch must be turning the focus in order to focus on the top of latch. Then, press and hold the latch by jaw to make the latch function works. Measure the distance from top of latch to the bottom of the receptacle again for H3 (H3 test conduction refer to Fig. 3). Calculate the value of H as *H=(H1-G2)-H3.*

**Note:**

(1) The value of G2 is caught from MCI-01g

(2) The value of H3 probability equals the value of G (item MCI-01g) if the latch sank in the connector.

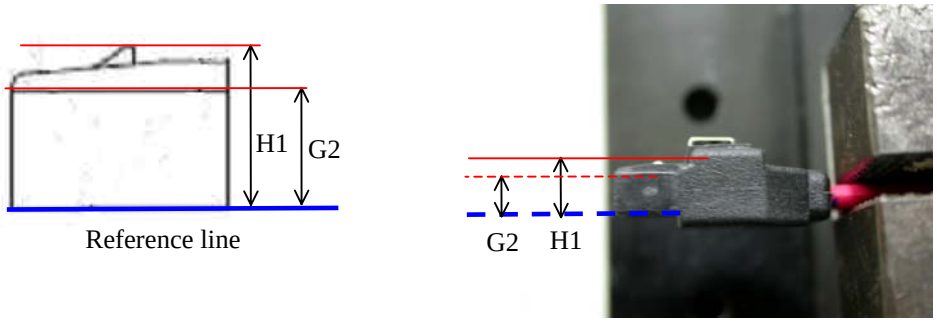



Fig.2

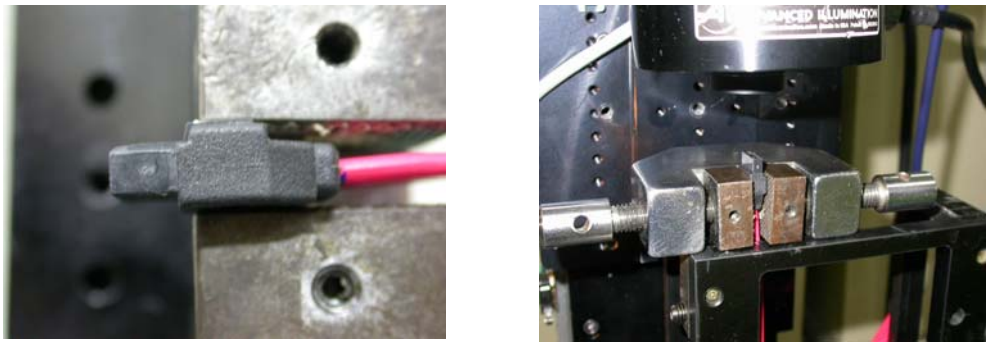


Fig.3

Pass/Fail Criteria1：The latch engagement features must deflect below 1.50 mm.

Measurement Tolerance：+- 0.01 mm

**Observable Results:**

1. Measure and record the value of the request dimension.
2. Repeat each measurement 5 times to reduce any random errors and provide an accurate result

**Possible Problems:** None