USB ENGINEERING CHANGE NOTICE

Title: Maximum Un-mating force value definition to micro connector USB 2.0

Applies to: MicroUSB Specification to the USB 2.0 Specification, Revision 1.01

Summary of ECN

Specify a maximum un-mating force value of 25N for micro series connectors. Also, as a guide to Micro-series plug designers, reference dimensions are added for the angle and typical height of the latch feature on the plug.

Reasons for ECN

As is common among connector specifications, currently there is no upper limit on the un-mating force of the Micro-series connectors. However, the variation in design of the passive latching feature has led to combinations with excessive extraction forces, resulting in customer dissatisfaction and the potential for device failures (broken cables or peeled off receptacles).

It is fairly critical to proper operation that the plug's latch feature be designed as described by the new reference dimensions. However, it was decided to leave these dimensions as reference only in order to avoid causing manufacturers with certified and working product to have to change their tooling even if it isn't designed exactly as described by the new reference dimensions.

Impact on Existing Peripherals and Systems:

Most of the current receptacle + plug combinations fulfill this new requirement already.

Hardware Implications:

None.

Software Implications:

None.

Compliance Testing Implications:

The un-mating force is already measured in compliance testing according to EIA 364-13 (testing standard and equipment exists).

Test should be made in test group 1, after test 1-1 and 1-2 (Max mating force and contact resistance tests) before durability cycle test; followed by other tests as is done now.

Specification Changes

Change 1.
In Section 6.3 Extraction Force (of MicroUSB Specification to the USB 2.0 Specification, Revision 1.01)

From :

- 8N (MIN) after 10000 insertion/extraction cycles (at a maximum rate of 12.5mm (0.492") per minute).

- No burs or sharp edges are allowed on top of locking latches (hook surfaces which will rub against receptacle shield).

- It is recommend to use a non-silicon based lubricant on the latching mechanism to reduce wear. If used the lubricant may not affect any other characteristic of the system.

To :

- 8N (MIN) and 25N (MAX) before and after 10000 insertion/extraction cycles (at a maximum rate of 12.5mm (0.492") per minute).

- No burs or sharp edges are allowed on top of locking latches (hook surfaces which will rub against receptacle shield).

- It is recommended to use a non-silicon based lubricant on the latching mechanism to reduce wear. If used the lubricant may not affect any other characteristic of the system.

Change 2. (Reference)

In Figure 4-8 Micro-A/B Plug Interface (of MicroUSB Specification to the USB 2.0 Specification, Revision 1.01)

Add REF latch height 0.6mm MAX and REF latch angle 60° (same as receptacle side Ref angle)