

LIGHTNING TECHNOLOGIES, INC.

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21 December 2009

Subject: Lightning Indirect Effects Testing of the IND560 PDX System

Our Reference: Lightning Technologies, Inc.
Project No. LTI-4039

Mettler-Toledo, Inc.
1150 Dearborn Drive
Worthington, OH 43085

Attention: Mr. Russ Vires

Gentlemen:

Lightning stroke current Component D strikes were applied to the shield of an interconnecting cable between the load cell and the scale display unit in accordance with SAE ARP5412 (Ref. 1). The component D waveform is representative of natural lightning strikes. The tests were applied to the IND560 PDX. The test results contained in this report relate only to the test items/ part numbers tested or to items manufactured using the same design drawings and processes as the test items.

The tests were conducted by D. DeBlois and K. Crouch at the Lightning Technologies, Inc. facility in Pittsfield, MA. Testing was conducted during the period of 7 through 8 July 2009 and witnessed by J. Lin of Mettler-Toledo, Inc.

Ref. 1 SAE International, SAE ARP5412 Revision A, *Aircraft Lightning Environment and Related Test Waveforms*, February 2005

The IND560 PDX Terminal survived 26kA and failed at 32kA with the initial PC board installed. The PC board was replaced and the test repeated. The second board survived 38kA and failed at 40kA. The POWERCELL PDX load cell continued to operate following the 40kA surge current.

The test setup consisted of injecting lightning surge currents into the shield of the interconnecting cable between the POWERCELL PDX load cell on one end and the IND560 on the other. Figure 1 shows a 30 kA surge current at the POWERCELL PDX load cell.

The surge current Component D waveform as defined in SAE ARP5412 had a time to crest of 13 μ s and tail time (return to 50% of crest) of 32 μ s. Figure 2 is a typical current pulse oscillogram. The applied currents started at 7 kA and increased in \sim 5 kA steps until a failure occurred.



Figure 1 – Test Area Setup

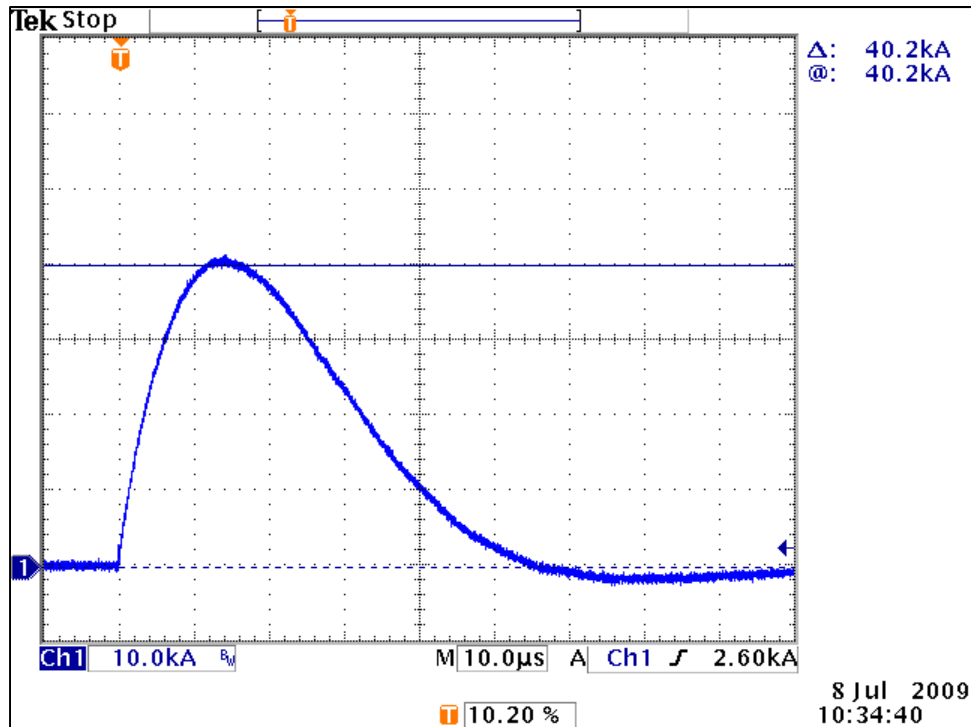


Figure 2 – Typical Test Current Oscillogram
(Test No. 35 – 40 kA)

We have appreciated the opportunity to being of service. Please contact the undersigned if you have any questions.

Yours truly,

Keith Crouch
Senior Research Engineer
Lightning Technologies, Inc

Approved by:

M. M. Dargi
Vice President
Lightning Technologies, Inc.