

# **P10003 Dynamic Keyboard Phase II**

## **Mechanical Test Results**

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## 2.1 Data Collection Plan

### 2.1.1.a Mechanical Data Collection Structure

Phase 1 (ESN2, ESN17): Using the designed finger motion testing machine, three keys were tested to 25,000 cycles at 4 pounds of force per keystroke. One key was not fabricated and used as a control for this testing. One key was fabricated with the cast silicone foam compressive and the Santropene rubber cut flush to the key plunger. The last key was fabricated with the cast silicone foam compressive and the Santropene rubber extruding past the key plunger to provide a preload on the contact sheets. After the testing there was no noticeable change in the compressive material properties. Three keys were fabricated in the manners described above and not long term tested to compare to the tested keys.

Phase 2 (ESN17, ESN13): Using a high speed video camera, we took videos of the long term tested keys and the non tested keys. A picture of one frame can be seen in figure 1. The analysis of the high speed videos showed that the average rebound rate for all keys was approximately 0.06 seconds (30 frames at 500 fps). This proves that the fabricated keys have the same rebound response as a normal keyboard and that the compressives showed no signs of wear after the long terms testing.

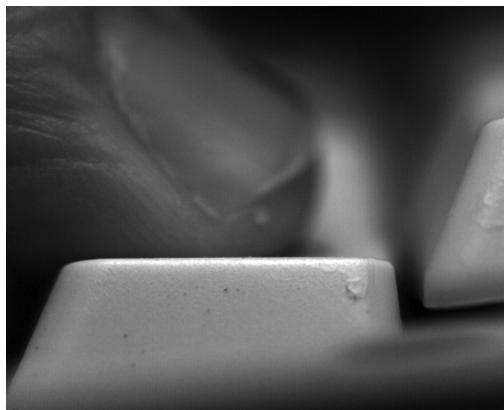


Figure 1: High Speed Compressive Testing

Phase 3 (n/a): The keyboard was displayed at the Imagine RIT festival on Saturday, May 1<sup>st</sup> 2010. Patrons of the festival were asked to type on the keyboard with the fabricated keys and give a subjective opinion on the overall tactile feel of the keys. Almost all participants preferred the layout with the selected compressive material to have the best overall feedback.