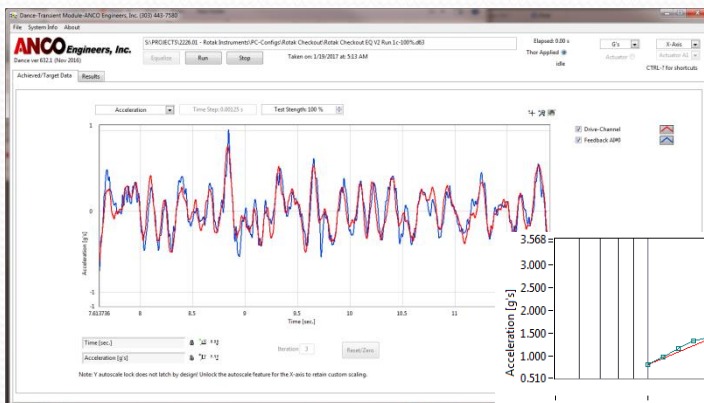


DANCE: Equalizing Closed Loop Digital Controller for Shake Tables

DANCE is a PC-based, closed loop controller for 1-6 DOF shake tables. DANCE performs a closed loop iterative process to determine the shake table/test item transfer function and equalize the table response. That is, DANCE determines what modified drive signals are required so that the resulting table motion closely matches that specified by the user. The features and capabilities of DANCE are:

- Addresses the unique requirements of seismic shake table testing.
- SINE, SINE SWEEP, SINE BEAT, Impulsive and Transient Test Waveforms.
- Trace durations of up to 5 minutes.
- Operating frequency from 0-100 Hz.
- With scaled models, operating range is 0-300 Hz.
- Internally generated spectrum compatible time histories.
- Imported custom time histories.
- Full matrix inversion for table equalization up to 6x6.
- Procedures provided to meet 10CFR50 Appendix B (Nuclear QA).
- 16 bit National instruments ADC and DAC.
- Analog, five pole, anti aliasing filters.
- 1 to 6 actuator/degree-of-freedom control.
- 16-128 channels of data acquisition.
- Performs time history checks required by IEEE-344
- Semi-automatic report writing .
- Very flexible export functionality for further data study.

DANCE is a PC based ANCO written Virtual Instrument (VI) using LabVIEW which produces drive signals and acquires data using National Instruments hardware.



Typical drive and feedback trace

Typical spectral fit with manual adjustment options

