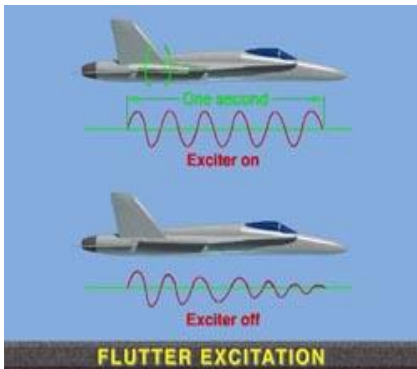




# MB Win475, Multi-DUT

## Simultaneously Calibrate 4 Accelerometers

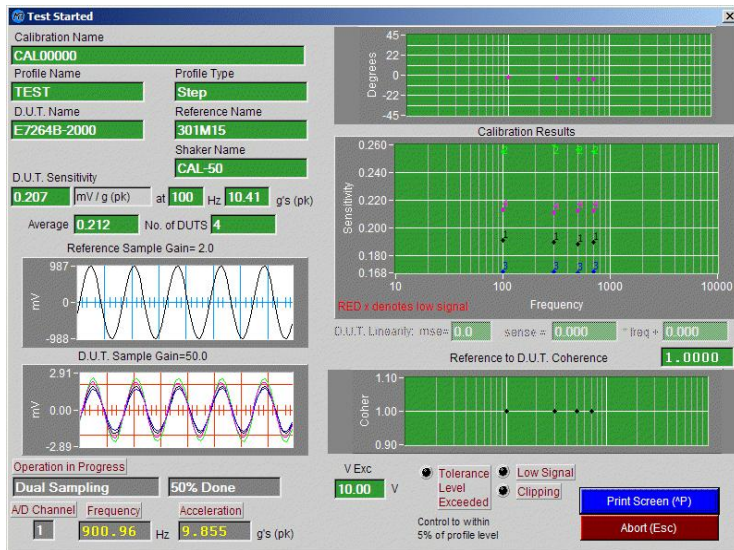


To increase the productivity of calibrating accelerometers, MB Dynamics offers the MB Win475 Multi-DUT Option. One optional version automatically performs frequency-response calibrations on up to four IEPE (ICP), charge or capacitive sensors. Another version performs frequency-response, as well as static, calibrations on up to four piezoresistive (PR) sensors.



## Features to calibrate multiple IEPE, charge or capacitive accelerometers

- ❖ Step sine frequency response calibration
- ❖ Simultaneously measures magnitude and phase of each DUT using FFT technology
- ❖ Calibrates up to 4 accelerometers at once
- ❖ Transducer mass  $\leq 20$  grams, each
- ❖ Freq. response: 1 Hz to 4,000 Hz with CAL 50
- ❖ Calibrate up to 40 g's pk with CAL 50
- ❖ Calibrate up to 15mm p-p with CAL 50 exciter (25mm between stops)
- ❖ Model 407-MULT Signal Conditioner provides independent software auto-ranging gains/Ch.
- ❖ Measures nominal sensitivity at 100 or 159 Hz
- ❖ Archives with record flagged as to single or Multiple-DUT calibration
- ❖ Visually identifies out-of-tolerance transducers
- ❖ Run-time display of all accelerometer results
- ❖ Freq. response: 0.5 to 2,000 Hz with CAL RED
- ❖ Calibrate up to 60 g's pk with CAL RED
- ❖ Calibrate up to 28mm p-p with CAL RED (38mm between stops)
- ❖ Model 407-MULT also provides DC excitation voltage for capacitive devices



**Win475 Run-time display of 4 DUTs at 900 Hz & 10 g's. Note different accelerometer sensitivities. Phase and coherence are identical so only one point is visible.**

**Model 407-MULT 4-Channel Signal Conditioner sitting on top of Model 405 Signal Conditioner, all channels with software auto-ranging gains.**

# Features to calibrate & characterize performance of multiple piezoresistive (PR) accelerometers

<p>❖ <b>Static or DC measurements</b></p> <ul style="list-style-type: none"> <li>○ Perform bridge shunt calibration</li> <li>○ Measure ZMO, 0-g offset voltage, zero offset error</li> <li>○ Measure input and output resistance of transducer</li> </ul>	<p>❖ <b>Dynamic or frequency-dependent measurements</b></p> <p style="text-align: center;">Same Features on previous page, IEPE &amp; charge devices</p>
---	--

Specification for Static or DC Measurements	Value
Bridge excitation voltage, VDC	2 – 15, continuously variable, software-selectable
Zero Measurand Output (ZMO), zero-g offset voltage, or zero offset error	Measured, stored and reported automatically
DC voltage measurement	0.005% from using PCI DMM; no operator adjustment of DMM
Shunt calibration:	
a) Number of shunt resistors	a) Up to 9 user-supplied internal to Model 407 Signal Conditioner, socketed connections; 1 user-supplied external, easy access; software automatically sequences through selected resistors; both data and settings stored in database for future retrieval
b) Shunt placement	b) Any arm, user-selected via mouse click
c) Shunt resistor values and tolerances	c) Unlimited range; user-supplied
d) Input and output resistances, error	d) Measured automatically, < 0.1%
e) Checks for opens and shorts	e) Automatic; values are obvious in input/output resistances
f) 4-wire vs. 2-wire measurement	f) 4-wire results in improved accuracy; directly measuring voltage and current then computing resistance eliminates errors due to fixturing and interface resistance

The Table below shows the additional uncertainty due to any one or more of the four DUTs not being back-to-back with the REF, what MB calls the "Multi-DUT Non-Coincident" uncertainty. System Transfer Uncertainty and Reference Accelerometer Uncertainty are per the Win475 Data Sheet. Frequencies in the Table are the NIST-traceable frequencies for the REF in a **Win475-Basic** system, the only frequencies at which MB recommends calibrations. Expanded System Uncertainty = square root of the sum of the squares of the other 3 uncertainties at the 95% level.

NIST Trace-able Frequencies	System Transfer Uncertainty	Reference Accel Uncertainty	Non-Coincident Uncertainty	Expanded System Uncertainty
5 Hz	± 0.25%	± 2.0%	± 1.7%	± 2.6%
100 Hz	± 0.25%	± 1.0%	± 1.7%	± 2.0%
159 Hz	± 0.25%	± 1.0%	± 1.7%	± 2.0%
300 Hz	± 0.25%	± 1.0%	± 1.7%	± 2.0%
700 Hz	± 0.25%	± 1.0%	± 1.7%	± 2.0%
1,000 Hz	± 0.25%	± 1.0%	± 1.7%	± 2.0%
2,000 Hz	± 0.25%	± 2.5%	± 1.7%	± 3.0%
3,000 Hz	± 0.25%	± 2.5%	± 2.6%	± 3.7%
4,000 Hz	± 0.25%	± 2.5%	± 2.6%	± 3.7%



### Sample Report for each PR DUT

### CAL 50 exciter with 3 PR DUTs mounted

