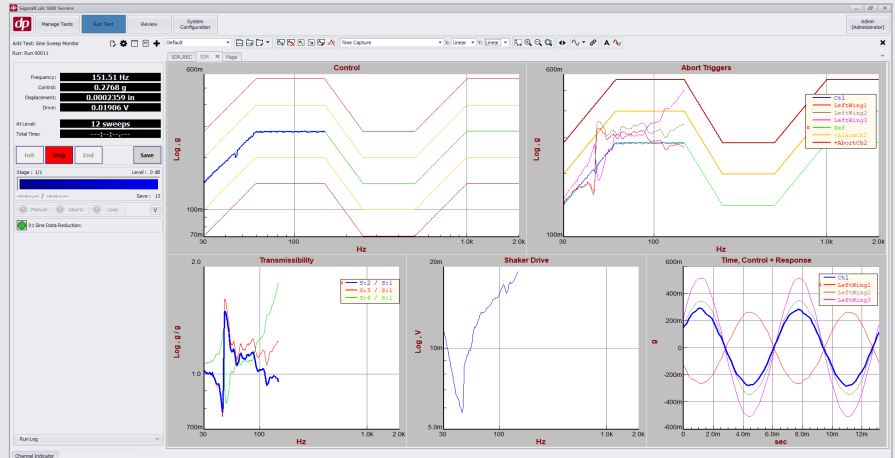


# Sine Data Reduction

DP930-19

SignalCalc Sine Data Reduction is used during a swept sine test under the direction of a vibration controller, providing additional measurement channels to supplement the controller. Sine Data Reduction also serves as a critical safety system for protection of high value test articles like satellites, initiating alarms for the users or aborting a test if the specified limits are exceeded.

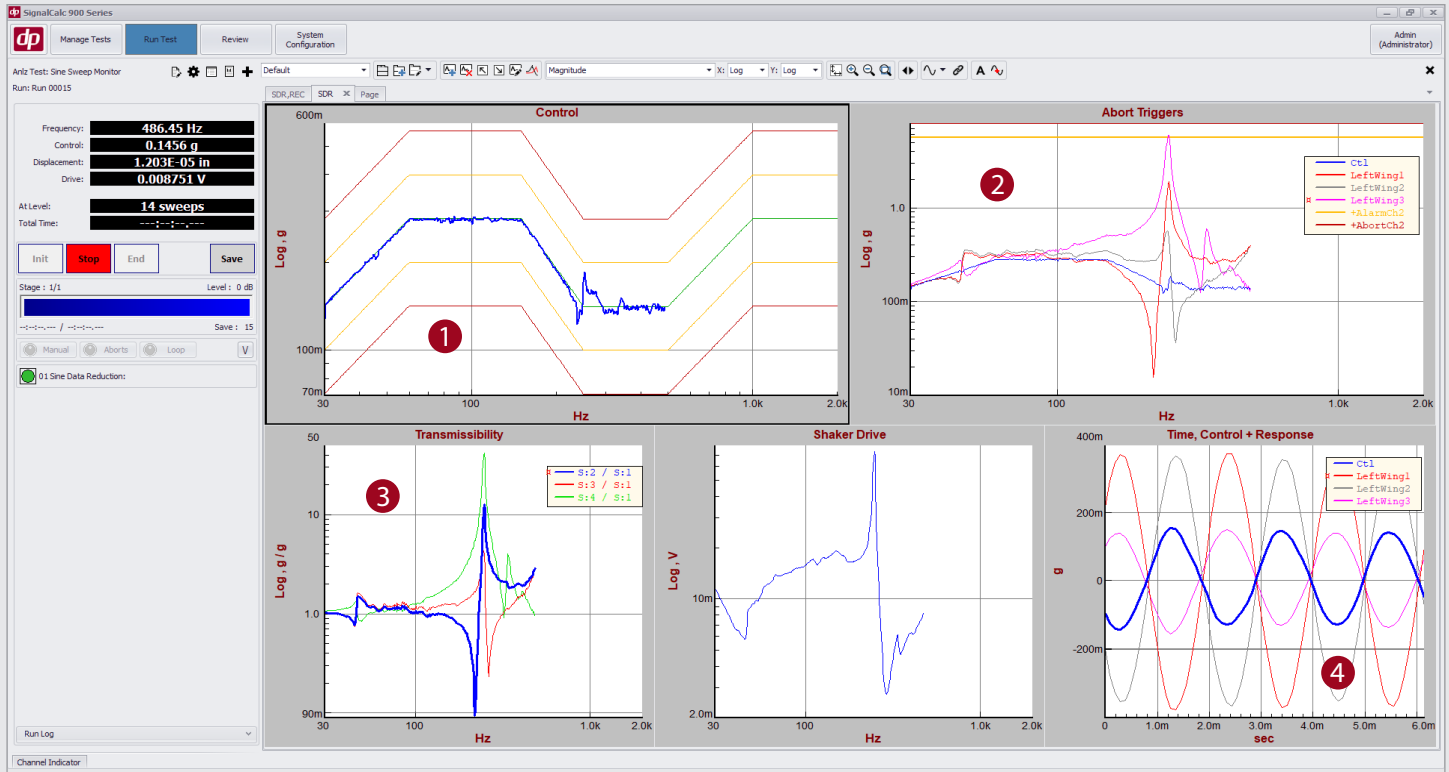
The powerful analysis functions and easily customizable graphical user interface features facilitate data analysis and comparison with analytical models, enabling test engineers to make critical decisions when testing high value test articles.



## Features and Benefits

Feature	Benefit
User-specified sine measurement processing	User specified Average, Peak, RMS, Tracking Filter, or DC amplitude measurement
Programmable Tracking Filters	User specified fixed or proportional frequency bandwidth tracking filters
Accurate frequency tracking using the vibration controller COLA signal	An input channel with both analog to digital signal processing and tachometer accurately measures the amplitude and frequency of the COLA signal to ensure accurate tracking of the swept sine frequency from the vibration controller
Channel Averaging	Multiple channels may be averaged (average, RMS average, Maximum, Minimum) to calculate the averages used by the vibration controller. Average channels can be used with Alarm and Abort profiles
User-defined alarm and abort profiles	Alarm and abort profiles provide additional safety for high value test articles by providing warnings and remotely aborting the vibration controller test
Safe Shutdown	When used with a Data Physics vibration controller, Sine Reduction is an essential part of the Safe Shutdown system. The Sine Reduction measurement provides a low latency signal to the vibration controller indicating an abort condition and shutting down the vibration test with a smooth ramp of the shaker drive signal to zero, reducing potential damage to the test article
<b>Convenient Options</b>	
Time Data Recording (DP930-23)	Raw time data may be recorded at up to 200 kSamples per second to local memory in the 900 Series hardware to enable analysis of all shock and vibration experienced by valuable test articles
Channel and Signal Math (DP930-80)	Math operations may be applied on live data to compute summed forces and moments for force and moment limiting

## Comprehensive Sine Data Reduction Features



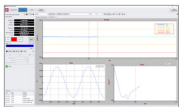
**1 Control Signals**  
Average control signals can be computed and overlaid on tolerances (reference, alarm, abort).

**2 Abort Profiles**  
Abort profiles, used to protect test articles, can be displayed in graphs during testing.

**3 Transmissibility**  
The transmissibility between any two channels can be computed, saved, and displayed during testing.

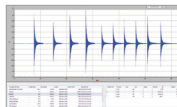
**4 Time Data**  
Both sweep data and time data can be displayed during testing.

## Related Applications



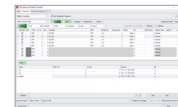
### Sine Vibration Control DP960-20

Control a shaker to run sine sweep or dwells and characterize a test structure's resonances



### Recording and Playback Analysis DP930-23

Record data up to 200 k samples/second simultaneously with real-time measurement or control



### Channel and Signal Math DP930-80

User-defined real time signal processing operations, including summing, multiplying, filtering, integrating/differentiating, and more during acquisition