



HARWIN

Test Report Summary

HT02503

Detailed Environmental Testing of
Datamate (M80 Series) Connectors

1. Introduction

1.1. Description and Purpose

The Harwin Datamate (M80 Series) connector is manufactured to the requirements of BS9525-F0033 and has been designed to withstand 500 successive engagements and separations without impairing its mechanical or electrical performance. The following tests were carried out to establish whether the connector's performance would be impaired when subjected to bump, shock and vibration above the levels specified in BS9525-F0033.

1.2. Conclusion

The following data has been collated from Harwin test report ET3858. During the product testing no mechanical failures occurred, connectors remained latched together securely and no electrical discontinuity was observed.

The results contained within this report are representative of all M80 series connectors utilising latches. Unlatched and friction latch connectors may perform differently when subjected to the intensive test methods used within this report.

2. Test Method, Requirements and Results

2.1. Specification Parameters

Test	BS9520	Parameters
Vibration - 10g	1.2.6.3.1	In general accordance with BS2011: Part 2.1 Fc: 1977 10Hz to 2kHz 1.5mm peak/10g, duration 1.5 hours total (0.5hr/axis), continuous monitoring of electrical continuity during frequency sweep
Vibration - 20g, 30 minutes	1.2.6.3.1	In general accordance with BS2011: Part 2.1 Fc: 1977 10Hz to 2kHz 1.5mm peak/20g, duration 1.5 hours total (0.5hr/axis), continuous monitoring of electrical continuity during frequency sweep
Vibration - 20g, 2 hours	1.2.6.3.1	In general accordance with BS2011: Part 2.1 Fc: 1977 10Hz to 2kHz 1.5mm peak/20g, duration 6 hours total (2hr/axis), continuous monitoring of electrical continuity during frequency sweep
Shock	1.2.6.4	In general accordance with BS2011: Part 2.1 Ea: 1977 981 m/s ² (100g) 1msTrapezoidal pulse, both directions of three axis, 6 shocks total, continuous monitoring of electrical continuity during application of shocks
Bump	1.2.6.2	In general accordance with BS2011: Part 2.1 Eb: 1977 390 m/s ² (40g) 10ms, 4000 ±40 Bumps, both directions of three axis, continuous monitoring of electrical continuity during the last 200 bumps
Visual Examination	1.2.2 (d)	Mechanical damage, movement or displacement of parts such as would impair operation

2.2. List of Test Samples

The following pair of connectors were mated throughout the testing:

- M80-8531042 - Datamate L-Tek male with locking latch, 10 contacts
- M80-8501042 - Datamate L-Tek female, 10 contacts

2.3. Test Method and Results

All tests were carried out with connectors in the mated condition.

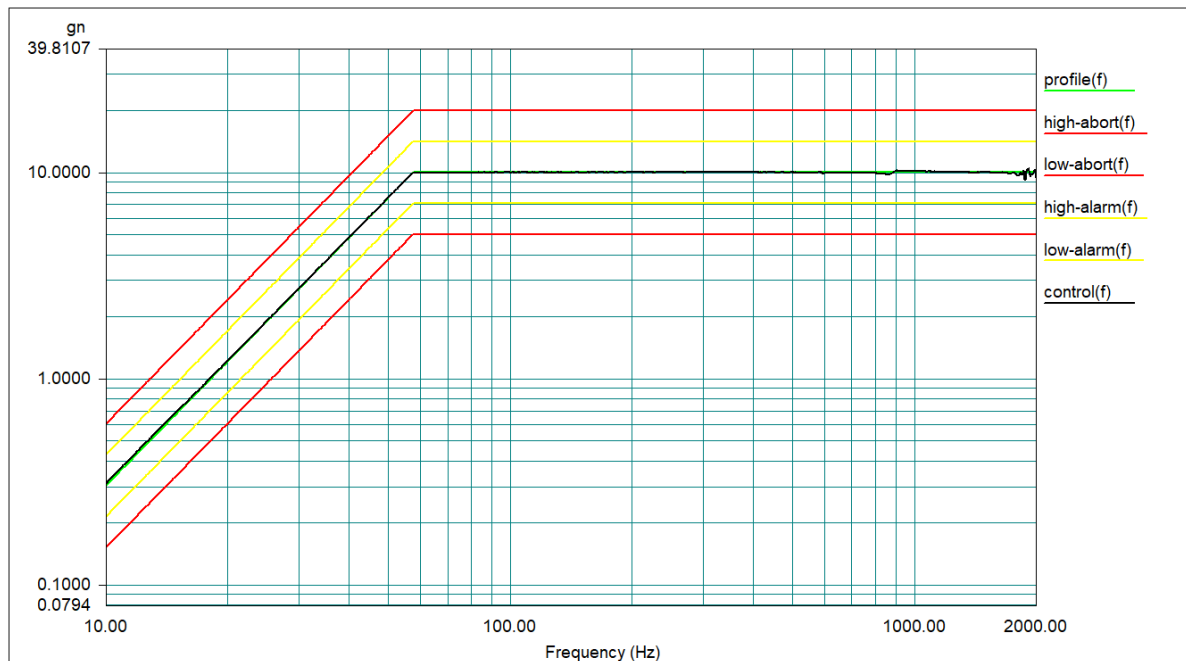
Summary	Result
Bump	OK ✓
Vibration	OK ✓
Shock	OK ✓
Visual Examination	OK ✓

2.3.1. Vibration – 10g

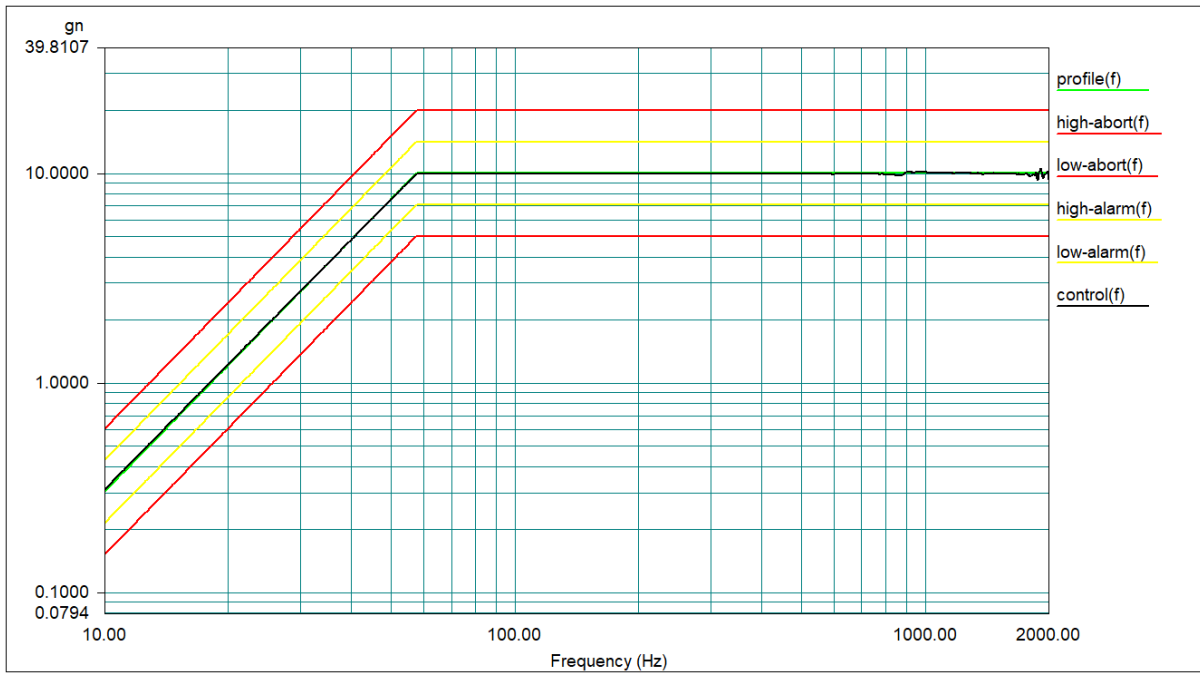
Methodology: The sample was subjected to a Swept Sine Test carried out generally in accordance with BS 9525 and BS EN 60068-2-6 test Fc, under the following conditions:

- 10-57.55Hz @ 1.5mm peak-peak, 57.55-2,000Hz @ 10g
- Sweep rate 1 octave/minute for 30 minutes in each axis
- Intermittencies on each connector to be recorded

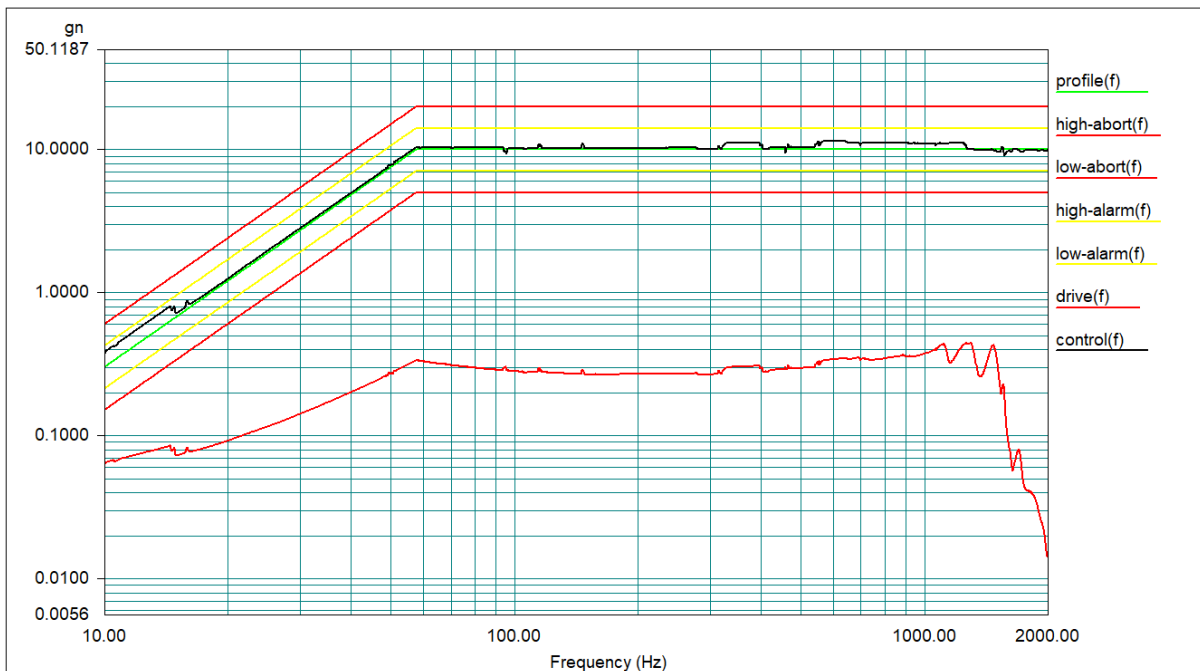
Results: In each plot, the black line is the Control Accelerometer response. The red line in the Z axis plot is the Shaker Drive response.



X axis - 10g Sine Vibration Plot



Y axis - 10g Sine Vibration Plot



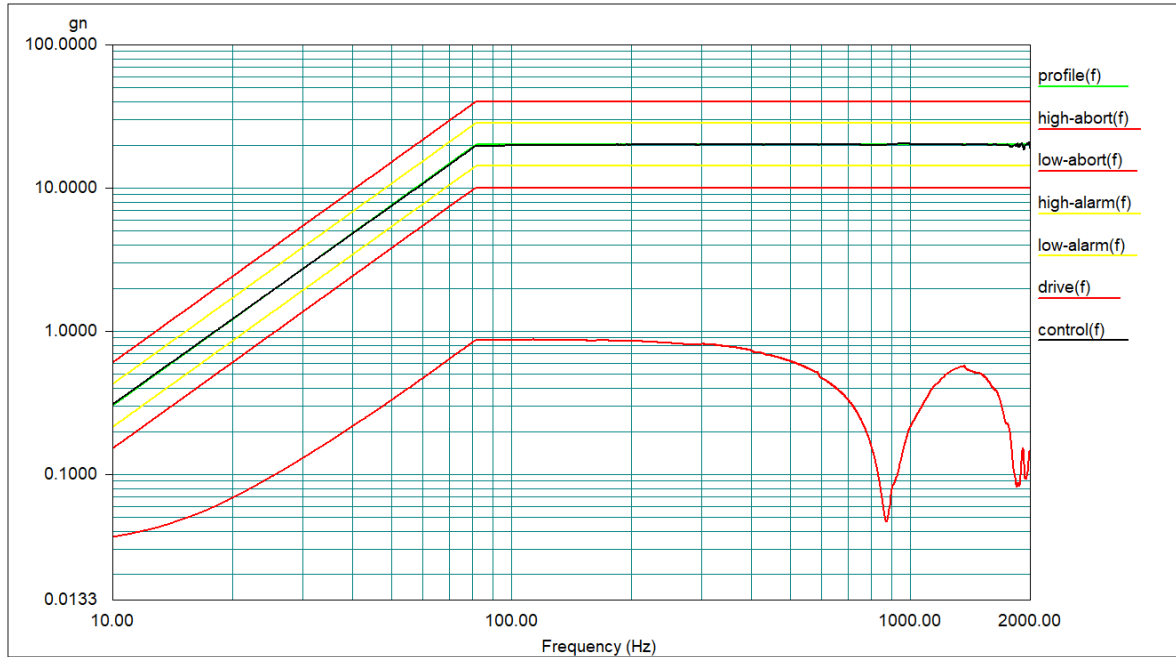
Z axis - 10g Sine Vibration Plot

2.3.2. Vibration – 20g, 30 minutes

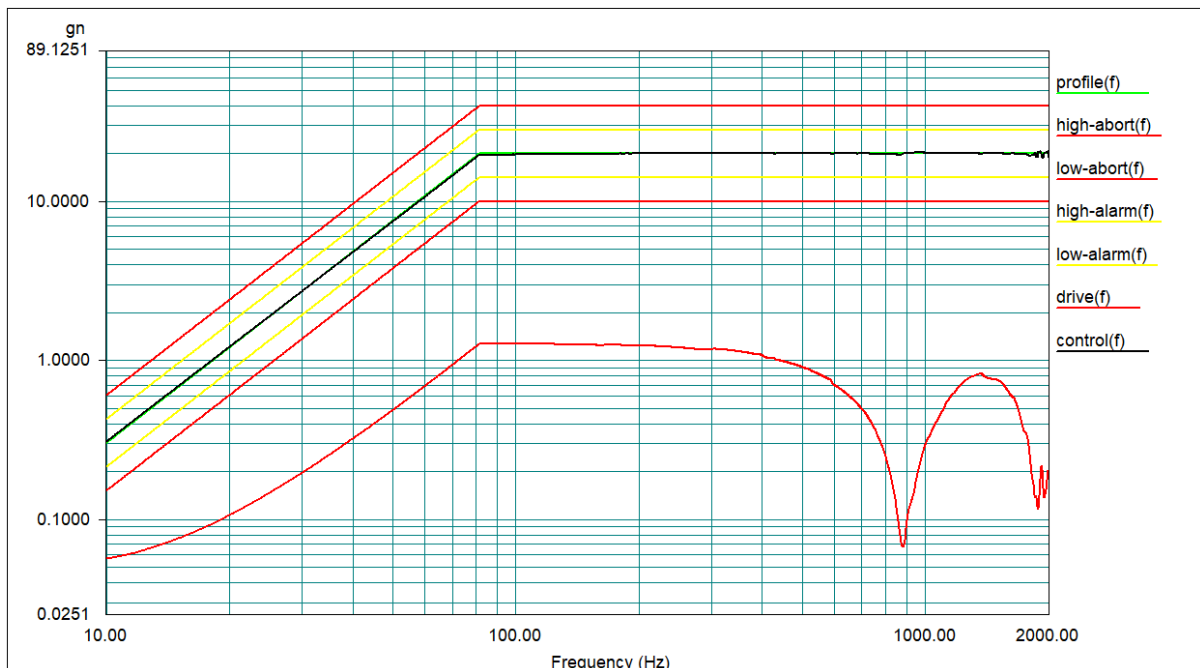
Methodology: The sample was subjected to a Swept Sine Test carried out generally in accordance with BS 9525 and BS EN 60068-2-6 test Fc, under the following conditions:

- 10-81.73Hz @ 1.5mm peak-peak, 57.55-2,000Hz @ 20g
- Sweep rate 1 octave/minute for 30 minutes
- Intermittencies on each connector to be recorded

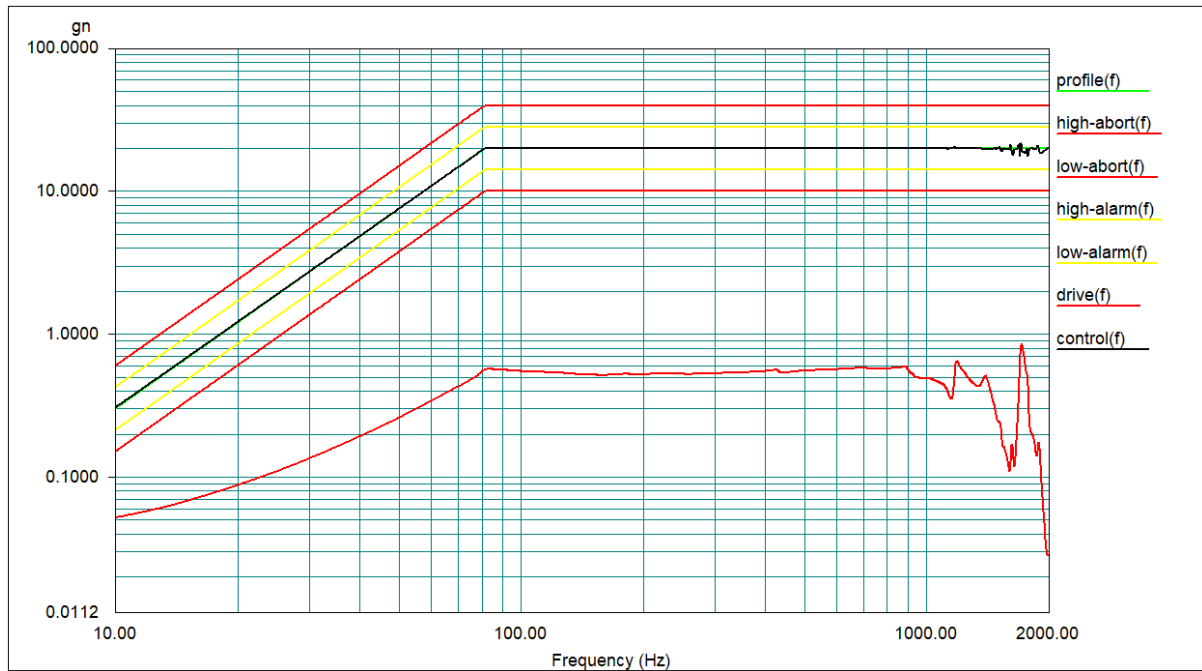
Results: In each plot, the black line is the Control Accelerometer response, and the red line is the Shaker Drive response.



X axis - 20g Sine Vibration Plot for 30 minutes



Y axis - 20g Sine Vibration Plot for 30 minutes



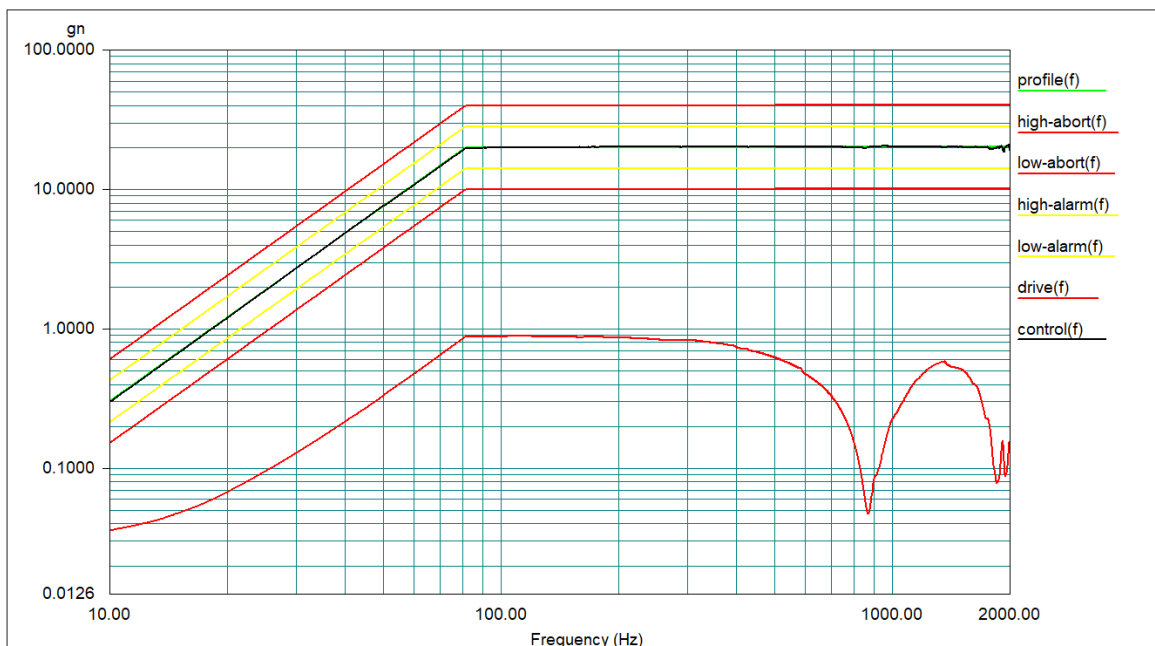
Z axis - 20g Sine Vibration Plot for 30 minutes

2.3.3. Vibration – 20g, 2 hours

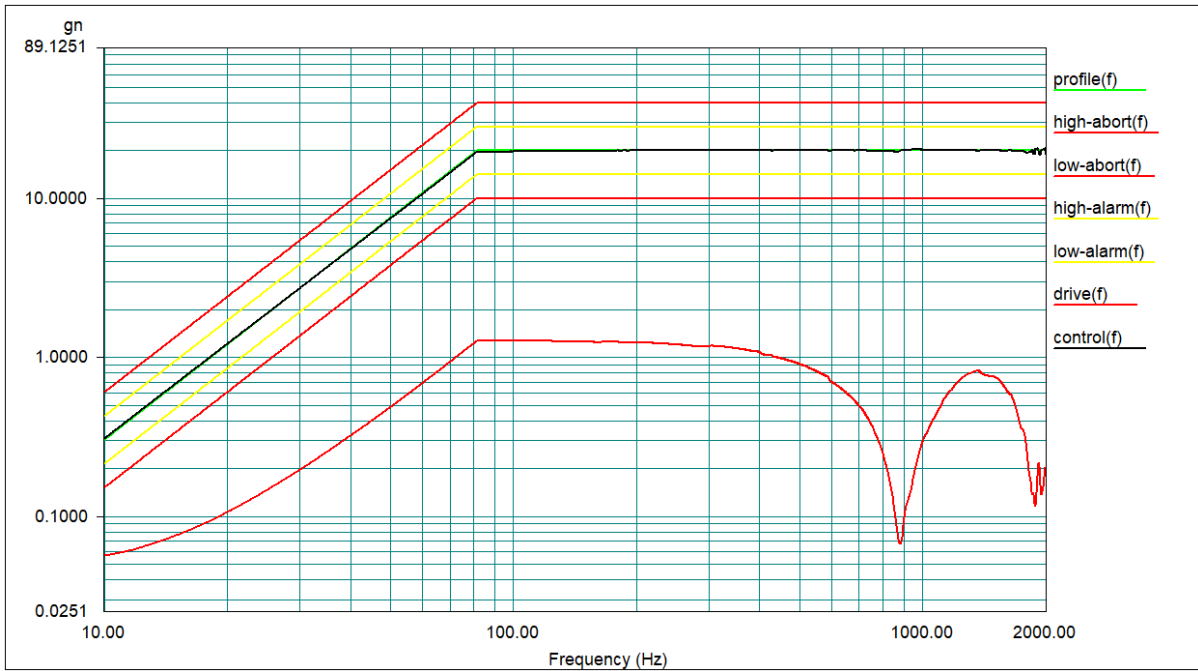
Methodology: The sample was subjected to a Swept Sine Test carried out generally in accordance with BS 9525 and BS EN 60068-2-6 test Fc, under the following conditions:

- 10–81.73Hz @ 1.5mm peak-peak, 57.55–2,000Hz @ 20g
- Sweep rate 1 octave/minute for 2 hours
- Intermittencies on each connector to be recorded

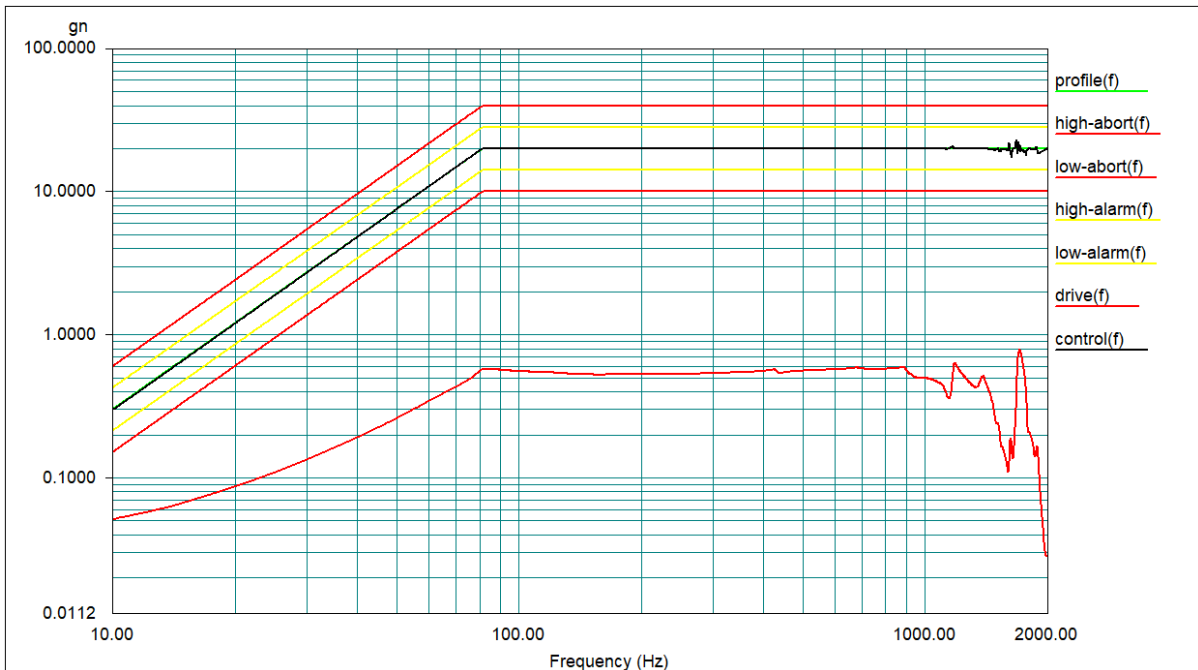
Results: In each plot, the black line is the Control Accelerometer response, and the red line is the Shaker Drive response.



X axis - 20g Sine Vibration Plot for 120 minutes



Y axis - 20g Sine Vibration Plot for 120 minutes



Z axis - 20g Sine Vibration Plot for 120 minutes

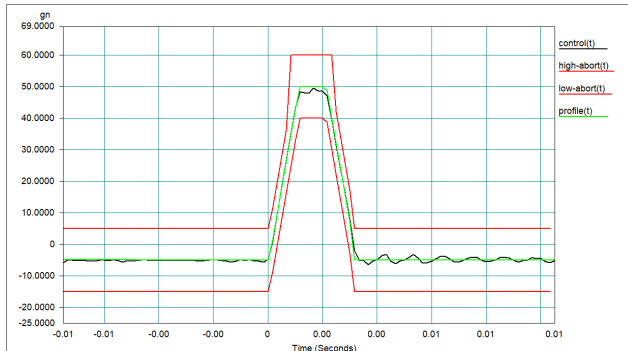


2.3.4. Shock

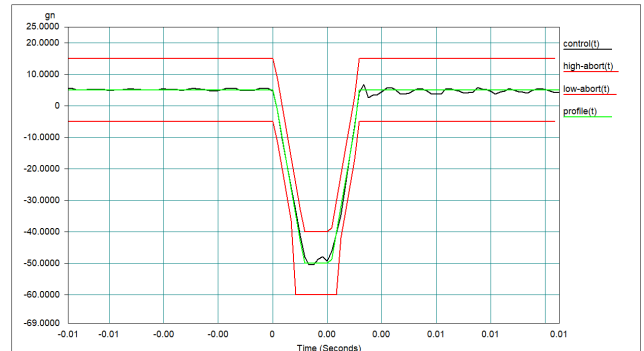
Methodology: The sample was subjected to a Shock Test carried out generally in accordance with BS 9525 and BS EN 60068-2-6 test Ea, under the following conditions:

- Severity = 100g for Z axis, 50g for X/Y axes (due to shaker table limitations)
- Duration = 1ms
- Shape = trapezoidal
- Number of shocks = 1 per direction; 2 per axis; 6 in total

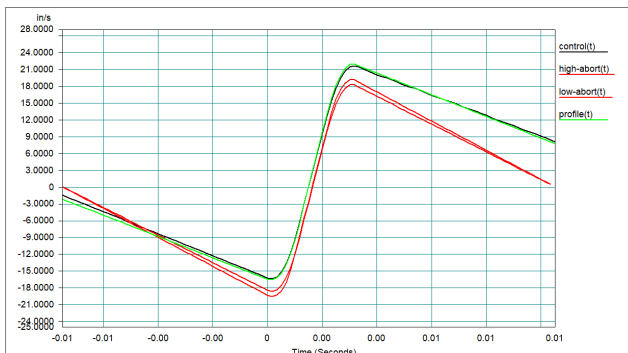
Results: In each plot, the black line is the Control.



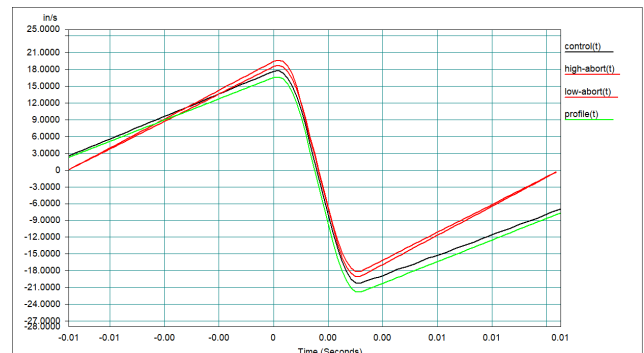
X axis - Positive shock pulse



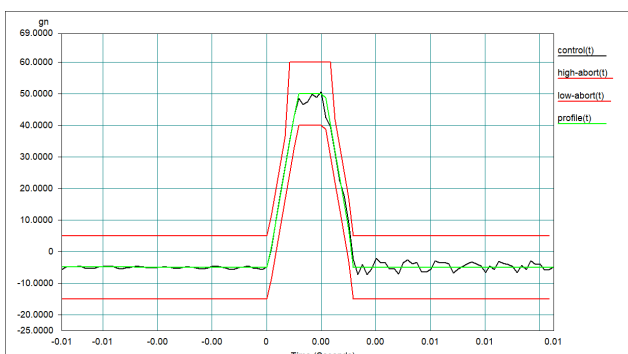
X axis - Negative shock pulse



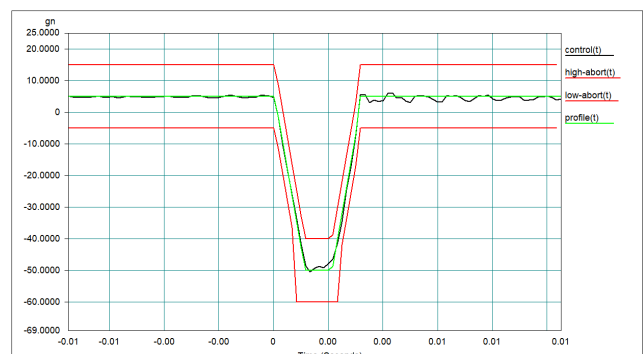
X axis - Positive velocity pulse



X axis - Negative velocity pulse

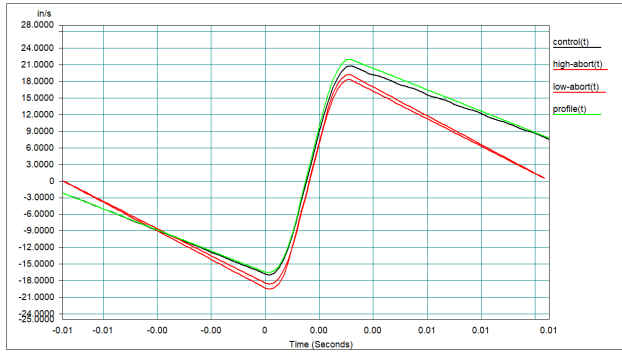


Y axis - Positive shock pulse

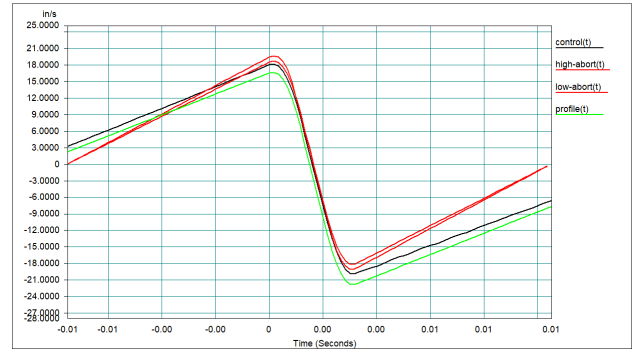


Y axis - Negative shock pulse

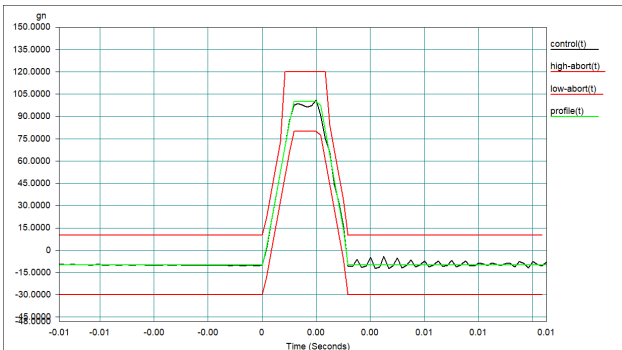




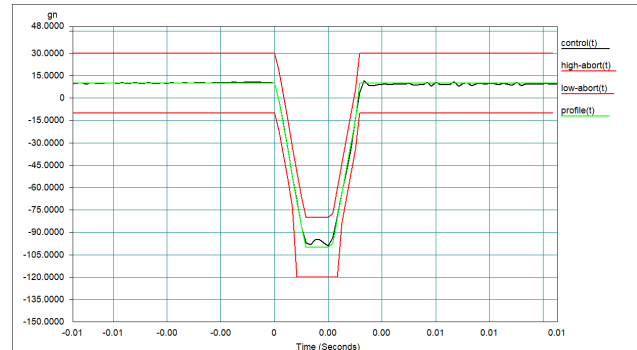
Y axis - Positive velocity pulse



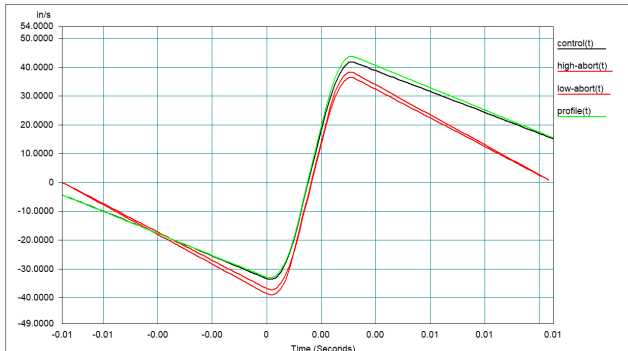
Y axis - Negative velocity pulse



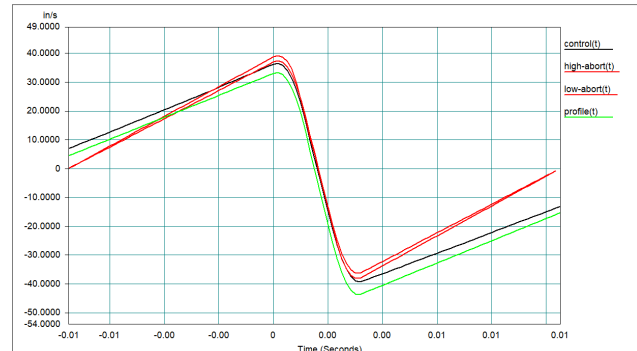
Z axis - Positive shock pulse



Z axis - Negative shock pulse



Z axis - Positive velocity pulse



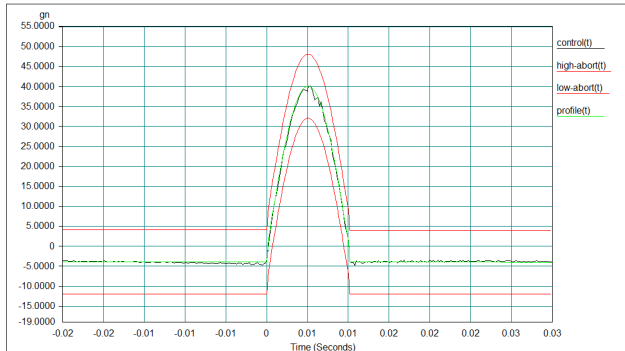
Z axis - Negative velocity pulse

2.3.5. Bump

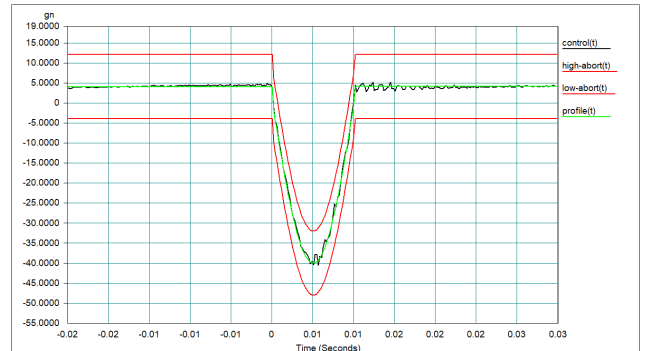
Methodology: The sample was subjected to a Bump Test carried out generally in accordance with BS 9525 and BS EN 60068-2-6 test Ea, under the following conditions:

- Severity = 40g
- Duration = 10ms
- Shape = half-sine
- Number of bumps = 666 per direction; 1,333 per axis; 4,000 in total

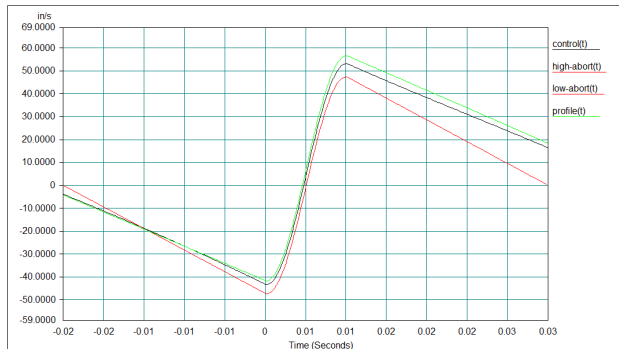
Results: In each plot, the black line is the Control.



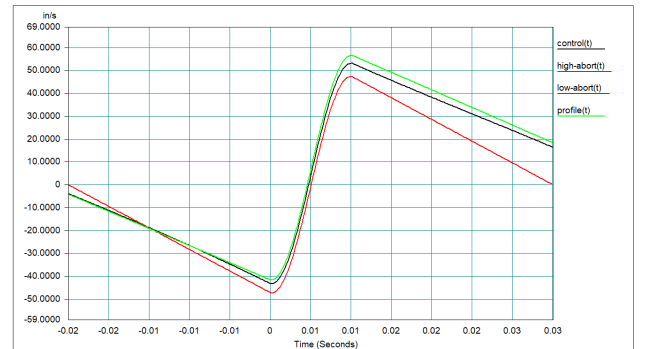
X axis - Positive shock pulse



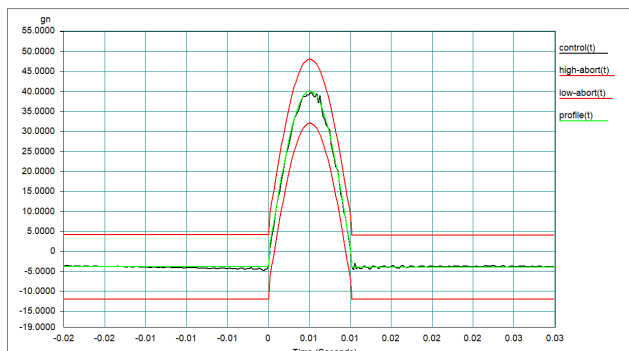
X axis - Negative shock pulse



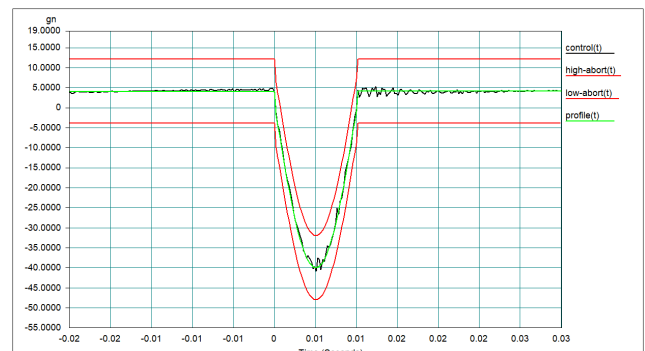
X axis - Positive velocity pulse



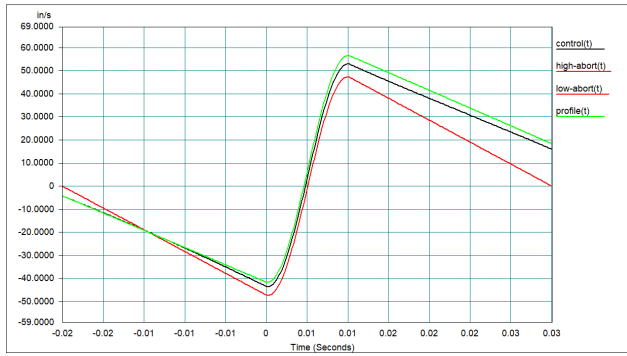
X axis - Negative velocity pulse



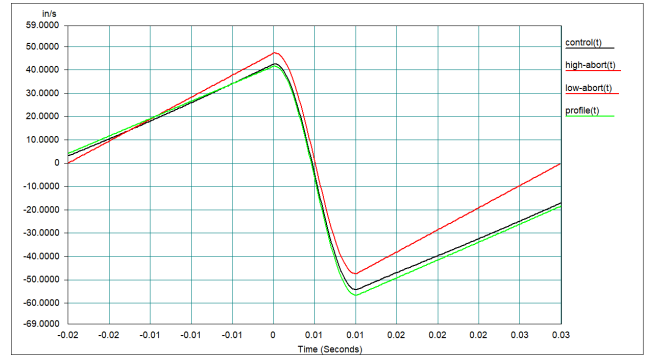
Y axis - Positive shock pulse



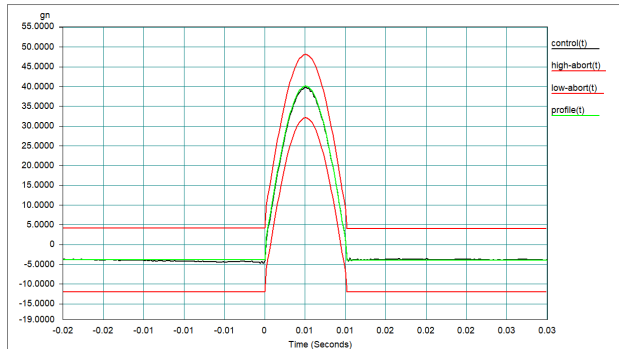
Y axis - Negative shock pulse



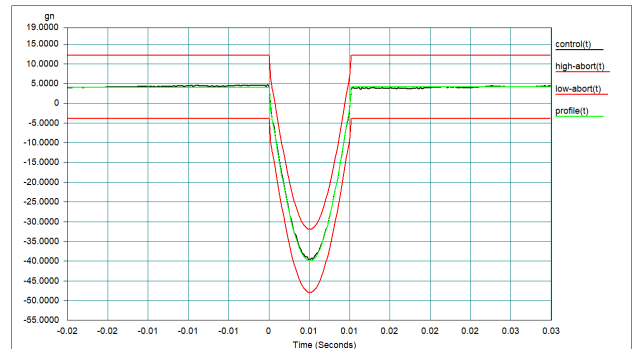
Y axis - Positive velocity pulse



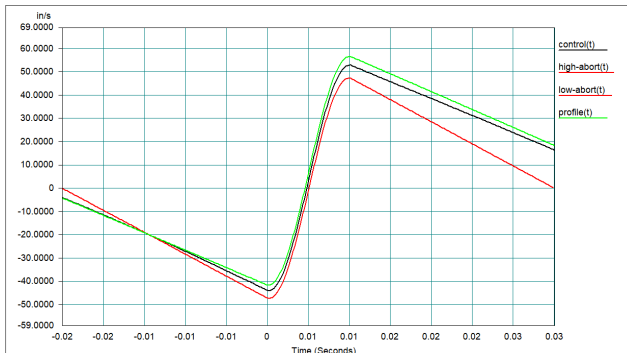
Y axis - Negative velocity pulse



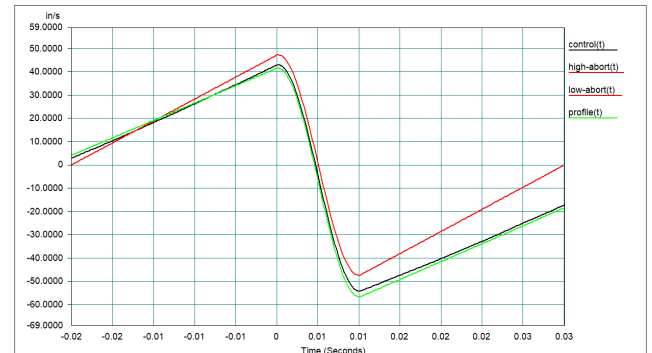
Z axis - Positive shock pulse



Z axis - Negative shock pulse



Z axis - Positive velocity pulse



Z axis - Negative velocity pulse