

# NDT: NVH Noise Vibration and Harshness

**Problem:** As vehicle engineers have reduced engine and transmission noise levels, brake squeals, groans, and other related issues have become an annoyance for the more demanding automotive buyer. Quieter is better. Automotive customers have established specifications for first natural frequencies for brake components they expect their suppliers to measure and meet.



Fig 1. Brake system components

**Solution:** Resonant Acoustic Method (RAM) NDT provides an extremely fast, whole body NVH measurement. By impacting parts and measuring the first several natural resonant frequencies, brake components can be 100% tested for meeting and archiving sound quality requirements per manufacturing specifications.

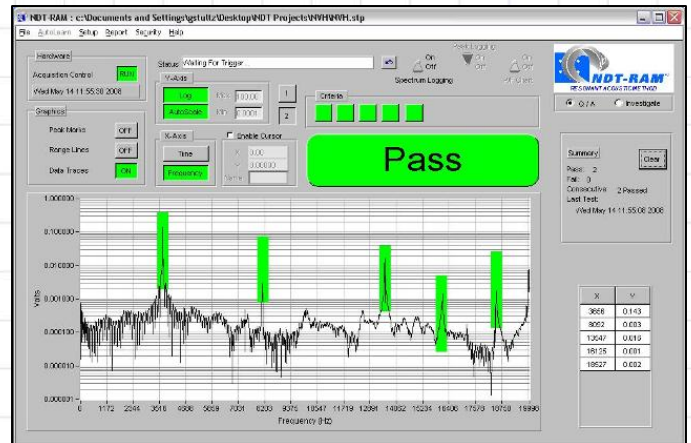
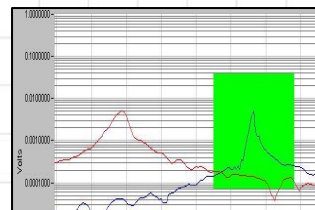


Fig 2. First 5 natural resonant frequencies

**Benefit:** Market wide, warranty repairs for brake NVH claims exceed \$100 million annually in the U.S<sup>1</sup>. Objective, economically automated resonant inspection with NDT-RAM ensures a simple, reliable, affordable means to screen for NVH resonant frequencies, meeting supplier demands and reducing warranty claims.

1. Akebono Corporation



Status	Part #	I	CRIT 1
FAILED	1	F	3485.5
PASSED	2	P	3656.2
PASSED	3	P	3656.2
PASSED	4	P	3656.2
PASSED	5	P	3656.2
PASSED	6	P	3656.1
PASSED	7	P	3656.2
PASSED	8	P	3656.2
FAILED	9	F	3319.9
FAILED	10	P	3662.1
FAILED	11	P	3662.1

Pass	Freq (Hz)	Amp (volts)
Average	3658.6	0.1677
Std Dev	2.9	0.0423

Fail	Freq (Hz)	Amp (volts)
Average	3485.5	0.1331
Std Dev	117.1	0.0451

Fig 3. Reporting capabilities in NDT-RAM software.



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