




Comparison of different Sensor Technologies



Model			
Name	Accelerometer: Measures acceleration (Structure borne sound)	Microphone: Measures Sound Pressure (Pressure borne sound)	Laser Vibrometer: Measures Velocity (Vibration Velocity)
Measuring Range	up to ~12kHz possible, depending on mounting type	up to ~80kHz is possible	up to ~100kHz
	Amplitudes up to 6.000m/s ²	Amplitudes up to 178dB /16.000P	Amplitudes up to 2.000 mm/s
Advantages	Point by Point measurement of Vibrations	Measurement of total radiated sound	Point by Point measurement of Vibrations
	Insensitive to External noise	Insensitive to Structure born noise	Insensitive to External noise
	External noise can be compensated with multiple sensors	Directional characteristics possible for reduction interference	
		Evaluation of sound radiation with different filters (A, B, C) possible	
		Subjective volume and sound comparisons possible	
		No additional mechanical components required	
			Direct control through SonicTC software without additional hardware requirement
			Laser beam can be deflected by mirror
			Device can be mounted remotely from DUT (Up to 3 m)
			Interference-Immune Electronics
		Quick assembly, easy commissioning and Contactless Measurements	
		No mass influence especially with Lightweight Components	

	Accelerometer	Microphone	Laser Vibrometer
Disadvantages	Complex correlation with subjective perception		Complex correlation with subjective perception
		No recording of the entire structure-borne sound	Accurate measurement but no recording of the entire component vibration
	Direct contact with the sample		
	Weight influence with low sample weight		
	Additional Mechanics for infeed necessary at the test part		
	Limited measuring range depending on mounting		
	Complex installation especially where space is limited		
		Housing sometimes necessary in case of external noise	
		Signal distortion with strong external noise influence	
			Compensation of disturbances are complex
			Multi-axial measurements require a lot of space
			Not suitable for all surfaces additional actions required
			High acquisition cost