

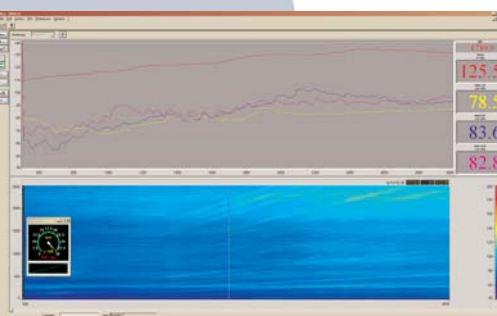
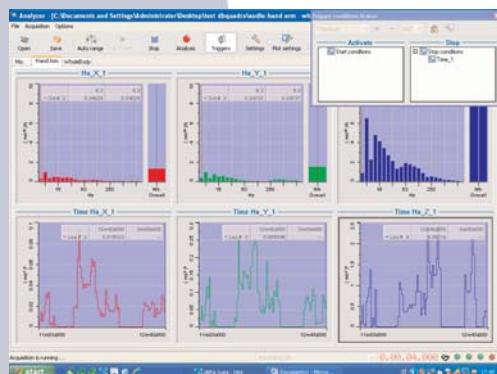
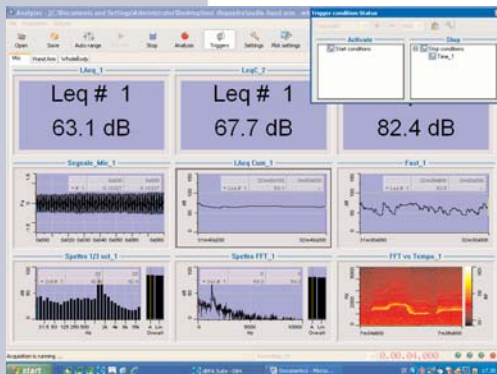
An engineered proposal from [01dB-Metravib](#) based on dB4 standard S&V Hardware and dBFA Software platforms

dBQuadro

A ruggedised Notebook integrating 01dB-Metravib standard dB4 hardware running dBFA software suite

- ➔ **Extremely robust** Aluminum case anti-shock, vibration, powder and humidity resistant. Touch screen display with high-visibility. Batteries operated.
- ➔ **Sound and Vibration Meter and Real Time Analyzer:** Leq, Lp, SEL, Lmax, Lmin, LN, Lpeak; 1/1, 1/3, 1/6, 1/12, 1/24, 1/48 octave bands in the range of 0.01Hz - 20 kHz. FFT analyzer up to 32000 lines; 24 bit A/D and Class 1 precision.
- ➔ **Digital Recorder** with synchronous sampling on all channels, Hard Disk storage, Post processign Analysis software.
- ➔ **Applications:** Sound Intensity and Sound Power, Material Testing, Sound Quality, Vehicle Cabin Noise, Pass-by and TPA Analysis, Vibration Check, Order Analysis, Machine Diagnostics Toolbox, Modal Analysis.
- ➔ **Customization:** Build your own "Troubleshooter" by interfacing dBFA software using TCP-IP commands, as easy as 1-2-3, or let us help you!

*Touch screen
Water and Dust resistance
Shockproof*



For NVH Applications in:

Automotive, Railway, Aeronautics, Space, Mechanics, Materials, Household appliances, Electro-acoustics, Information technology, Telecommunications, etc.

Industrial Sound & Vibration Applications:

Signal Recording, FFT Analysis, Order Tracking (dBFA software); Impact Testing, Shaker Excitation, Modal Analysis interface to most common Modal Analysis Packages, File export to Simulation environment (ME-Scope software); Automotive applications for Cabin Noise, Pass-by Noise, Mechanical Parameters Measurements, Transfer Functions, TPA - Transfer Path Analysis (SCS & Metravib Software); Sound Quality, Binaural Recording using Cortex Head or BMH Headset, Psychoacoustic Analysis (dBsonic software).

Material Testing

Impedance tube (Kundt tube) for Sound Absorption, Acoustic Impedance, Sound Transmission Loss with 2 or 4 microphones (SCS software); Elastic Module and Damping loss factor flexural (Oberst, SAE), Compression Modules, Mechanical Impedance (SCS software).

Noise & Vibration Control and Consulting

Noise measurement in any indoor and outdoor conditions and on vehicles (dBTrait software as post processing on recorded signals); Vibration measurements on hand-tools and on seats, on buildings and bridges (dBFA post processing software); Sound Insulation in Buildings, Sound barriers performance check (dBati post processing software); Sound Intensity (dBFA software option) and Sound Power (dBPower software).

Special Functions

Signal Editing and Analysis, Filters HP, LP, BP, BS, Notch; Time-frequency analysis; Matlab communication; TCP-IP Programming

dBQuadro Technical Specifications

Data Acquisition and Signal Processing

4 channels simultaneous, 24-bit Delta-Sigma 52 kHz A/D channels for high resolution measurements. Support for four IEPE inputs, including 4mA AC or DC coupling current source (option for 200V microphones). Sound Intensity with standard connection of "0" volt Probe and optional "200V" Probe adaptor.
 Simultaneous real-time multi-analysis as: Averaged and multi-spectra with FFT and 1/1 down to 1/48 octave, cross-spectra, etc.
 Advanced software package for: Frequency Response Functions, Order analysis, Transient & Impact Testing analysis
 Customizable, with an enhanced path management for modal analysis
 Portable operation. No external power supply needed.
 Tachometer input support in the A/D data stream for synchronizing measurements. Sampling rate of over 52kHz to meet your application need.
 Programmable triggers: software, TTL, analog threshold.
 Set of application oriented post-processing functions with analysis scripts, "server" mode with external control using TCP IP commands
 Transducers Database management: Sensors, calibrators, calibration history, ...
 Data Import/Export: ASCII, UFF58, Wave, nCODE, Matlab™, MeScope, mp3, SDF, ASAM/ODS, SONY, TEAC (Digital format)
 Automatic reporting capabilities with customizable template both in real-time and post-processing modules
 MS Windows Office and MatLab compatibility

PC Power

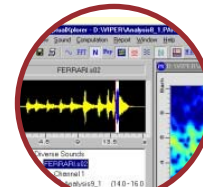
CPU Intel Core 2 Duo processor U7500 a 1,06 GHz
 Memory RAM 1 GB SDRAM (DDR2) ep. to 4 GB
 Hard disk 80 GB SATA HDD antishock
 Display HighLight 10,4" XGA 1024x768, touch-screen
 Audio SigmaTel STAC9200 AC-97 V2.1 Compliant Audio Codec
 Expansion Slot 1xPC Card Type II, 1xExpress Card/54, 1 x Secure Digital Card (SD)
 Keyboard & Input 82-key, TouchPad
 Video out 1 x DSUB 15
 Seriale port RS232 1 x DSUB 9
 USB 2.0 1 x 4 pin
 IEEE1394a FireWire 1 x 4 pin
 LAN 1 x RJ45 10/100/1000 Ethernet
 Wireless LAN (opz.) IEEE802.11a/b/g Intel PRO/Wireless 3945
 Bluetooth (opz.) Bluetooth 2.0 + EDR
 Modem 1 x RJ11 modem 56K V92
 Slot SD card 1 x Secure Digital Card
 Slot PCMCIA card 1 x PC Card Type II
 Slot Express Card 1 x Express Card/54
 Power supply AC main 100-240 VAC, 50/60 Hz, 10,65 V, 5.700 mAh, up to 5 hours
 Batteries
 Weight (with batteries) 3,2 Kg
 Dimensions (LxPxX) 27,2 x 21,6 x 7,0 cm
 Operating System Windows XP Professional Multilanguage



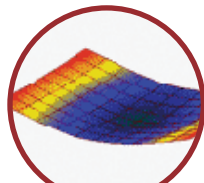
Where you can use it

Software dBFA Suite (Recorder - Analyzer - Post-Processing):

Simultaneous signal recording and real-time multiprocessing and monitoring, post-processing analysis
 All Measurements as Leq, Lp, F, S, I, P; weighting A, B, C, L, Wb, VDV, etc.
 Multispectrum and Average 1/n octave, 1/n octave vs. time, FFT, FFT vs. Time, Auto and Cross functions, FRF, Coherence, Gxx, Gxy, ...
 Enhanced Data Display, Color spectrogram and waterfall,
 Signal edition, Files Import, Reporting Module in real Time and post-processing mode
 User-defined sequential acquisition procedure and TCP-IP commands for customization;
 Tacho acquisition, Order (Analysis and Tracking in Real Time and post-processing)
 Time-Frequency Transforms, De-noising, Convolution (Post Processing on signals)
 MATLAB communicator in Post-processing
Additional Software and Hardware for:
 Binaural recording (Cortex Head, BMH Headset) for Sound Quality, Sound Perception, Psychoacoustic analysis
 Sound Intensity mapping and Sound Power ISO9614, ISO 374x, ISO 7779
 Sound images using Holographic mapping for precise sources localization and ranking.



Noise and Vibration Analysis



Modal Analysis

Sound and Vibration on Transportation Vehicles:

Automakers typical applications for cabin noise, engines airborne emission, engine mount filtering, air inlet noise, exhaust noise efficiency and elastic suspension, air-climatic noise, electrical motors, mechanical transmissions, etc.
 Analysis of Transfer Path for Noise and Vibration Control
 Passenger trains acoustic and vibration confort, Aerodynamic noise, Wheels-Rayls contact
 Cruise ship acoustic confort in passenger cabins, Vibration control of engine mounts, HVAC devices,
 Auto, Trucks, Buses, Motorbike Pass-by Noise test according to ISO 362 and option for simultaneous on-board sources identification, tyre noise, indoor testing
 Earth Moving and Agricultural machines acoustic emission and cabin noise, mechanical transmission analysis
 Aerospace and Military vehicles Noise and Vibration emission, Soundproof and Damping Materials applications



Pass-by Noise test



Cabin Noise and Sound Quality (Binaural Recording)

Characteristic of Materials for Noise and Vibration Control

Trims and Acoustic Packages manufacturers, Systems Integrator, Research Center and Engineering Services
 Providers would need to measure Material poro-acoustic and elastic characteristics as:
 Absorption coefficient using Standing wave tube ISO 1053-ASTM E-1050 standards and Transmission Loss, Surface Impedance, Transfer Complex Impedance, Propagation constant
 Flow Resistance ISO 9053 in air and Tortuosity method using electrical impedance in water
 Absorption coefficient in Reverberant room for alpha ST
 Damping Loss Factor and Elastic Modulus using Oberst Device, SAE method, BS standard
 Bulk Modulus Measurement device for dynamic elastic modulus on porous materials



Material Testing (Kundt Tube)



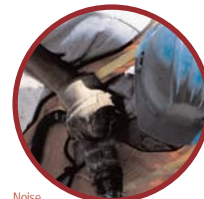
Sound Insulation and Sound Absorption (Road Barriers)

.....Industrial Machines, Mechanical devices, Household Appliances, Noise and man, etc.

Sound power inside Acoustic rooms or Outdoor (Software dBPower)
 Vibration to Noise correlation to search for Noise Control solution and improving Quality
 Vibration diagnostic of Mechanical Transmission, spectrum analysis, cepstrum, order analysis
 Noise and Vibration emission from Air-conditioner, source identification, transmission path, elastic suspension
 Household appliances sound level and sound perception (software dBsonic)
 Hand-tooling noise and vibration exposure in workplaces. ISO2631, ISO5349, ISO8041, weighting Wk, Wd, WBc (Wm), Wf, Wh, Wc, We, Wj, Wb, Lin, crest-factor, VDV, MTVV.
 Building vibration monitoring to prevent damages from construction activities
 Noisiness in the leaving places, noise monitoring, data analysis, Psychoacoustic analysis
 Quality control and Target setting on components: Electrical motors, compressor, pumps, gearbox, etc.



Machinery Diagnostic



Noise and Vibration at work places

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