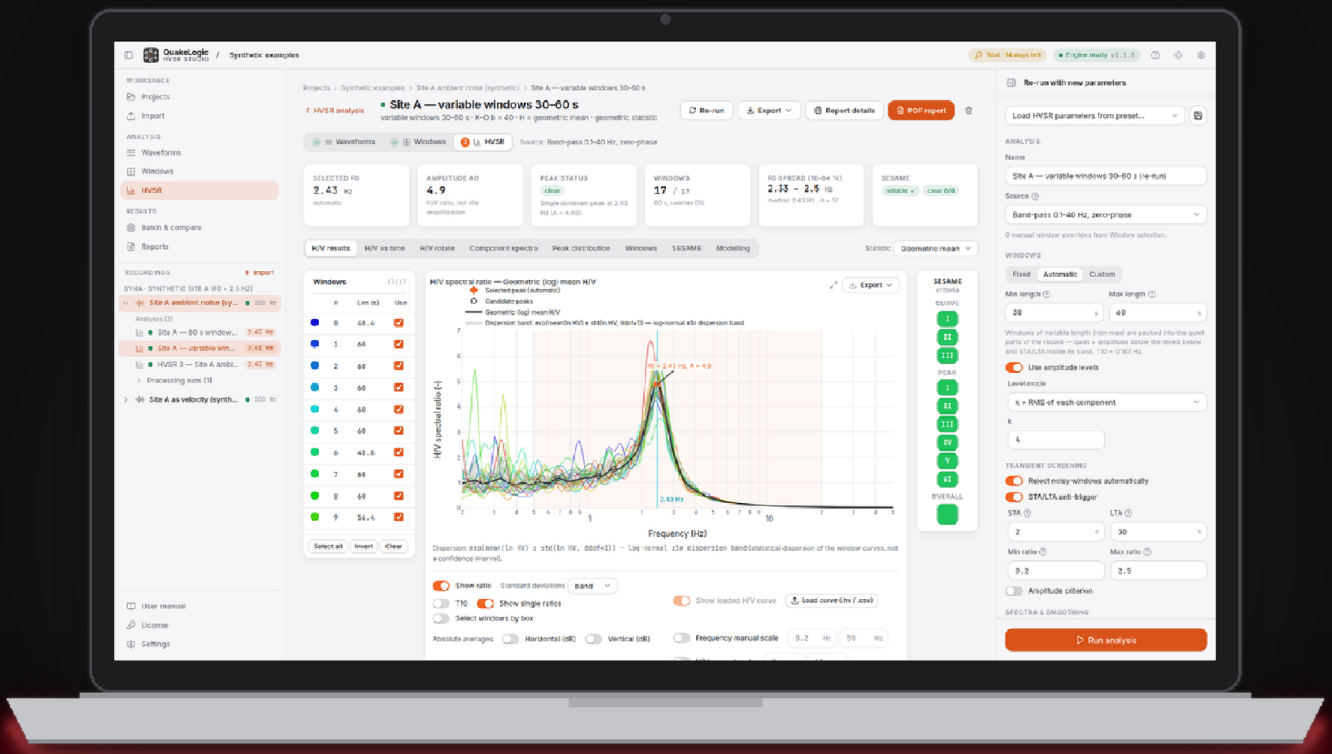
QUAKELOGIC

DATASHEET

QUAKEX · AMBIENT-VIBRATION ANALYSIS SOFTWARE

HVSR Studio

Windows desktop software for the horizontal-to-vertical spectral ratio technique: from a three-component ambient-vibration record to a documented resonance frequency, SESAME criteria and a branded PDF report, entirely offline.



IMPORT

8 field formats

MiniSEED, SAC, GSE2, SEG-2, ASCII

HVSR

Konno–Ohmachi

geometric, RMS or directional H

CRITERIA

SESAME 2004

3 reliability + 6 clarity criteria

MODEL

Herak (2008)

Vs30, VsEq and model f0

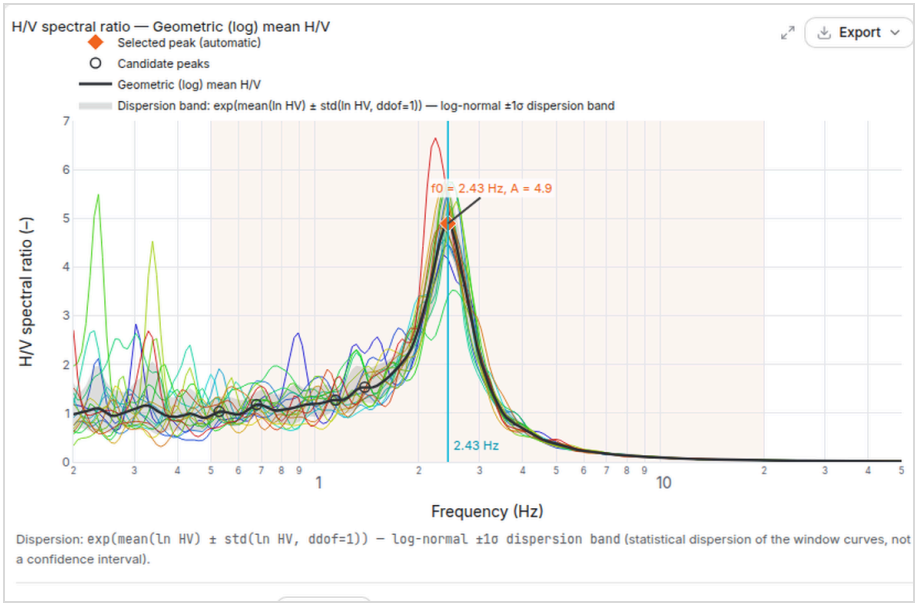
CUSTOMER SATISFACTION 100% GUARANTEED

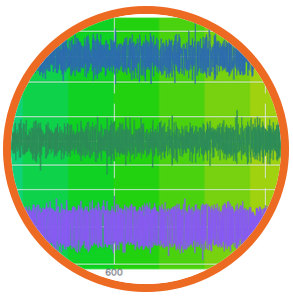
Software developed in the USA by QuakeLogic Inc.

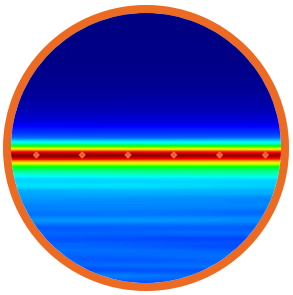
Roseville, California · sales@quakelogic.net · products.quakelogic.net

HVSR Studio

HORIZONTAL-TO-VERTICAL SPECTRAL RATIO ANALYSIS · WINDOWS DESKTOP







FROM AMBIENT-VIBRATION RECORD TO DOCUMENTED RESONANCE

HVSR Studio is a standalone Windows application for the horizontal-to-vertical spectral ratio (HVSR) technique on three-component ambient-vibration recordings, developed in the USA by QuakeLogic Inc. It takes a raw record through import and validation, transparent preprocessing, window selection, the HVSR computation with Konno–Ohmachi smoothing, peak detection with variability estimates, the SESAME (2004) criteria and forward modelling to a branded PDF report. It runs entirely offline and records every parameter.

- Reads field data directly: TXT/CSV, MiniSEED, SAC, GSE2, SEG-2 and SESAME ASCII, with explicit N, E and Z mapping and strict validation before analysis.
- Defensible results: dispersion bands are labelled for what they are, near-zero vertical bins are masked, and every SESAME criterion is reported with its value and threshold.
- Directional and temporal views (azimuthal rotate map, H/V versus time) and a layered ground model for comparison, clearly marked as non-unique.
- Fully offline with no account or telemetry: projects stay on your own computer, and the licence file is verified locally without a connection.

STANDARD FEATURES »

- TXT, CSV, MiniSEED, SAC import
- GSE2, SEG-2, SAF import
- Explicit N / E / Z mapping
- Gap, clipping and NaN checks
- Butterworth, notch, taper
- Anti-aliased resampling
- Instrument-response removal
- Fixed, automatic, custom windows
- STA/LTA transient screening
- Seismogram player
- Konno–Ohmachi smoothing
- Geometric, RMS, directional H
- Bootstrap peak interval
- SESAME 2004 criteria
- Azimuthal rotate map
- H/V versus time
- Herak (2008) forward model
- Branded PDF report
- CSV, JSON and .hv export
- Batch runs and comparison

KEY FEATURES

- **Strict import.** Delimiter, decimal mark, header rows and time columns are detected and shown; gaps, misalignment, clipping and dead channels are flagged, never patched.
- **Transparent preprocessing.** Mean removal, detrend, Butterworth and notch filters, taper, crop, resampling, rotation and response removal, previewed with their frequency response and stored as a named run.
- **Window control.** Fixed, automatic variable-length or hand-drawn windows, STA/LTA and amplitude screening, manual accept and reject, and a player to hear and bookmark transients.
- **HVSR engine.** Per-window amplitude spectra, Konno–Ohmachi smoothing on a log axis, geometric-mean, RMS or directional combination, and geometric, arithmetic or median statistics.
- **Peaks and SESAME.** Candidate peaks inside a search range, window-level f0 spread, a seeded bootstrap interval, and the three reliability and six clarity criteria of SESAME (2004), reported one by one.
- **Directional and temporal views.** The azimuthal rotate map and the H/V-versus-time map expose directional sources, 2-D or 3-D structure and non-stationary noise.
- **Forward modelling.** A layered Vs, Vp, density and Q model gives a synthetic H/V curve (Herak 2008), Vs30, VsEq and misfit for comparison; non-uniqueness is stated on the page.
- **Reporting.** A branded PDF with survey details and photos, source checksums, processing steps, window statistics, figures, the SESAME table, quality flags and limitations.

PRODUCT FEATURES

Data import
TXT · CSV · DAT · three-component files · MiniSEED · SAC · GSE2 · SEG-2 · SESAME ASCII (.saf) · StationXML / poles-zeros · Geopsy .hv

Processing
Mean, linear and polynomial detrend · Butterworth (causal or zero-phase) · notch · taper · crop · resampling · rotation · response removal

Windows
Fixed, automatic variable-length or custom · STA/LTA anti-trigger · amplitude criterion · manual overrides · seismogram player

HVSR
Konno–Ohmachi smoothing (b = 40 default) on a log axis · geometric mean, RMS or directional H · geometric, arithmetic or median statistics

Peaks
Search range and prominence · window-level f0 spread · bootstrap interval with recorded seed · SESAME 2004 reliability and clarity criteria

Views & modelling
Mean curve and band · single-window ratios · component spectra · azimuthal rotate map · H/V versus time · layered model · Herak (2008) · Vs30 · VsEq

Output
Branded PDF report · CSV / JSON · Geopsy .hv · PNG / SVG / PDF figures · window sets · project backup zip

For more information about the features, specifications and licensing of HVSR STUDIO, please contact QuakeLogic.

SOFTWARE CONFIGURATION

COMPONENT	CONFIGURATION
Application	Native Windows desktop application, 64-bit
Architecture	Bundled runtimes; loopback only, no ports open
Installer	Per-user installer; portable zip also available
Projects	Local project folders with sources and results
Backup	Project backup and restore as a single zip
Display	Resizable application window; light and dark themes
Internet connection	Not required; runs fully offline
Licence	14-day trial, then a perpetual per-computer licence file
Activation	Licence file bound to the Machine ID; verified offline
Updates	New versions on the QuakeLogic download page
Batch	Batch runs and side-by-side comparison of analyses
Support	support@quakelogic.net · reply within 3 business days

SYSTEM REQUIREMENTS & SUPPORTED FIELD DATA

SPECIFICATION	VALUE
Operating system	Windows 10 (1809 or later) or Windows 11, 64-bit
Memory	8 GB RAM recommended
Disk space	About 1 GB plus recordings and exports
ASCII	.txt · .csv · .dat; any delimiter, decimal mark, header rows
Timing	Time column (seconds or date-time) or a typed sampling rate
Component files	One multicolumn file, or one file per component (N, E, Z)
Seismic formats	MiniSEED · SAC · GSE2 · SEG-2; multi-trace with trace picker
Instrument response	StationXML or poles and zeros; VEL, ACC or DISP output
File size	Up to 4 GB per file

INCLUDED WITH EVERY LICENCE

DELIVERY & INSTALLATION

Digital delivery of the Windows installer with SHA-256 checksums and a START HERE guide. Per-user installation; a portable zip is also provided.

TRAINING

Narrated training video with captions, and a field guide covering sensor placement, coupling, recording length and site checklists.

LICENCE & SUPPORT

Written licence agreement (EULA) issued by QuakeLogic Inc. Email support at support@quakelogic.net, answered within three business days.

DOCUMENTATION

Built-in user guide, brochure and user guide PDF, third-party notices and synthetic example recordings with known f0.

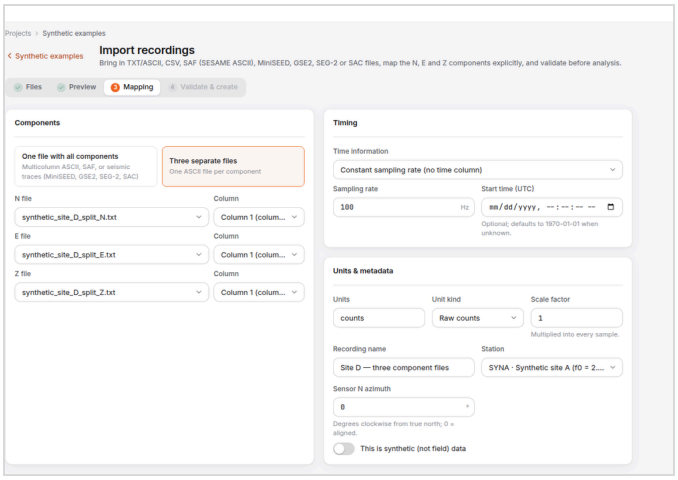
TECHNICAL SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Application	Native Windows desktop window
Architecture	64-bit, bundled runtimes
Network use	Loopback only; no ports open, no cloud
Telemetry	None
Import formats	TXT, CSV, DAT, MiniSEED, SAC, GSE2, SEG-2, SAF
File size	Up to 4 GB per file
Validation	Overlap, alignment, gaps, duplicates, NaN, clipping, constant channels
Detrend	Mean, linear, polynomial order 1–10
Filters	Butterworth high-, low-, band-pass, band-stop; causal or zero-phase
Notch	Frequency, Q and harmonics below Nyquist
Taper	Cosine (Tukey), percent per side
Resampling	Anti-aliased decimation or polyphase
Rotation	Horizontals to true north from sensor azimuth
Response removal	StationXML or poles-zeros, water level, pre-filter
Window modes	Fixed, automatic variable-length, custom
Screening	STA/LTA anti-trigger; amplitude criterion

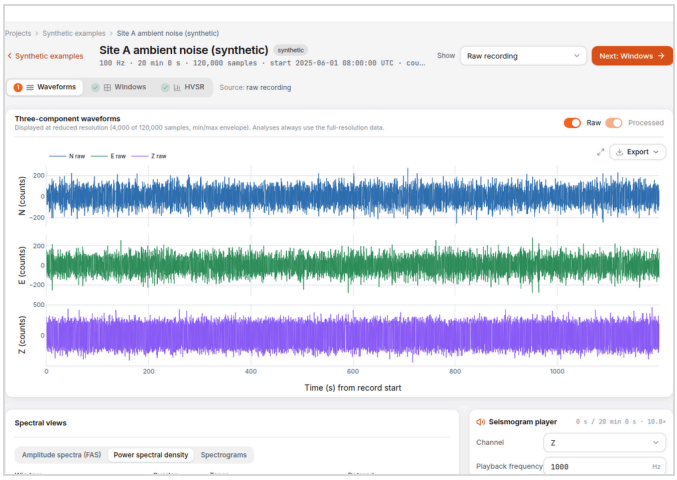
SPECIFICATION	DESCRIPTION
Spectra	Per-window detrend, taper and Fourier amplitude spectrum
Smoothing	Konno–Ohmachi, b = 40 default, log-spaced axis
Horizontal combination	Geometric mean, RMS or directional, after smoothing
Statistics	Geometric (log) mean, arithmetic mean or median
Dispersion bands	Log-normal ±1σ, ±1σ or 16–84 %, labelled
Vertical masking	Relative and absolute floor; bins marked invalid
Peak search	Range and minimum prominence; manual selection
Bootstrap	Window resampling with recorded seed
SESAME 2004	Three reliability and six clarity criteria
Azimuthal H/V	Single rotated horizontal, 0–180°, chosen step
H/V versus time	Window ratios against clock time
Forward model	Herak (2008) body-wave transfer-function ratio
Model outputs	Synthetic H/V, Vs30, VsEq, model f0, misfit
Report	Branded PDF with survey details and photos
Exports	CSV, JSON, Geopsy .hv, PNG, SVG, PDF
Validation record	120 engine tests and an analytic validation suite

Images are representative. Specifications describe the standard HVSR Studio configuration, version 1.1.0.

APPLICATION WORKSPACES



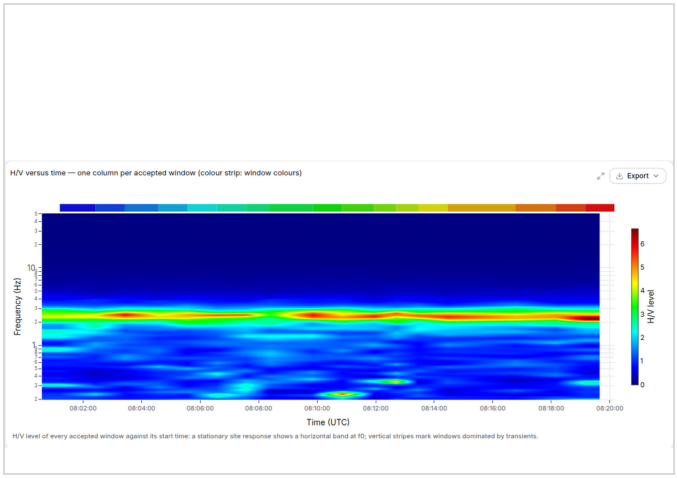
IMPORT & VALIDATION



WAVEFORMS & PROCESSING



WINDOW SELECTION



H/V VERSUS TIME



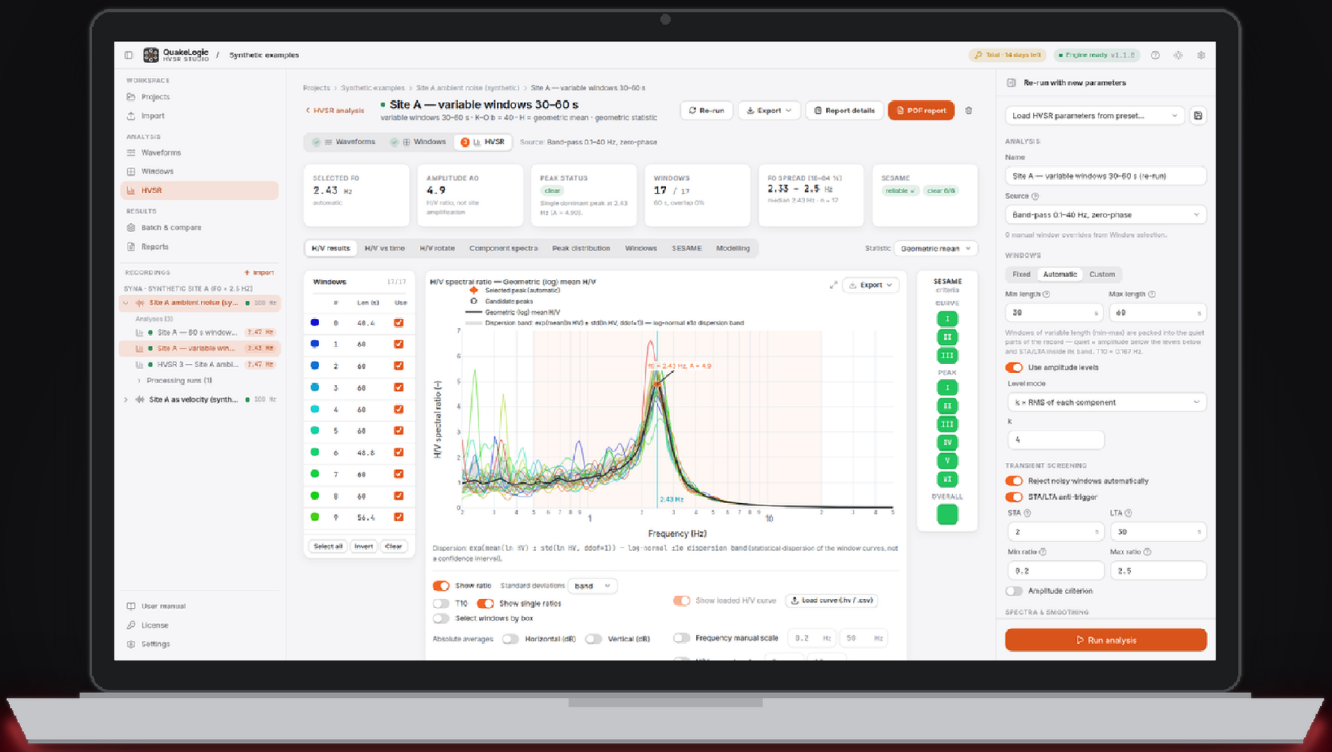
H/V RESULTS & SESAME



FORWARD MODELLING

Screens are representative and show the example dataset supplied with HVSR Studio.

QUAKELOGIC



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VIEW PRODUCT

Scan for the HVSR Studio product page.

QuakeLogic Inc. is a California-based engineering and technology company. HVSR Studio is developed, published and supported in the USA by QuakeLogic Inc., committed to quality and customer satisfaction through reliable solutions and dependable support.

CUSTOMER SATISFACTION 100% GUARANTEED