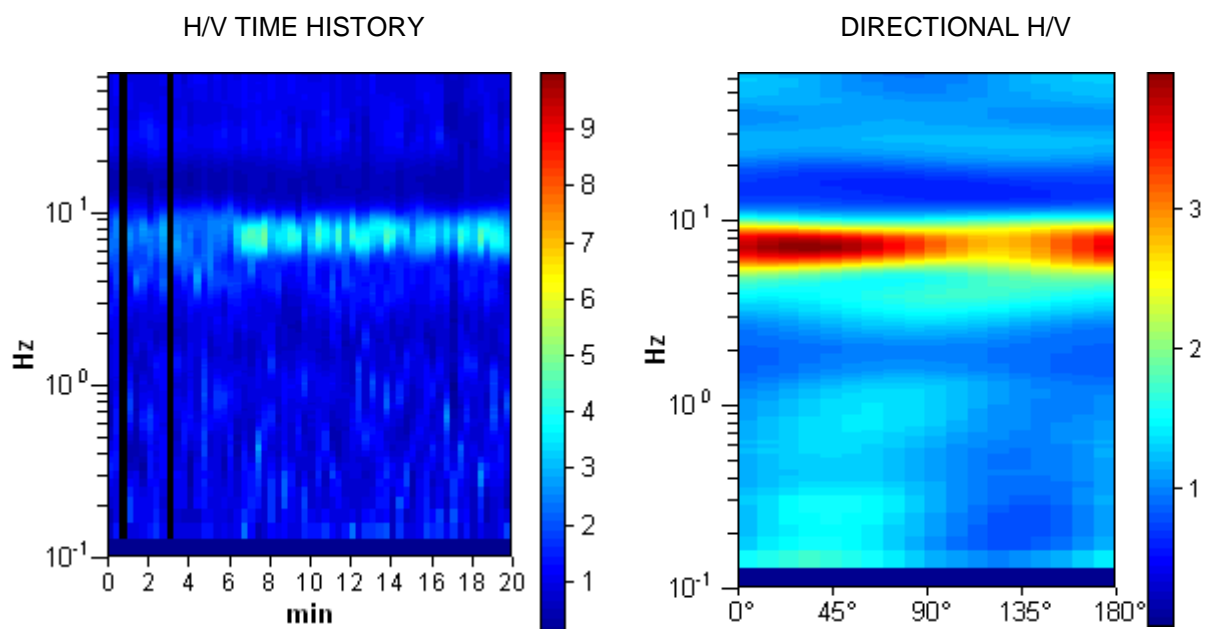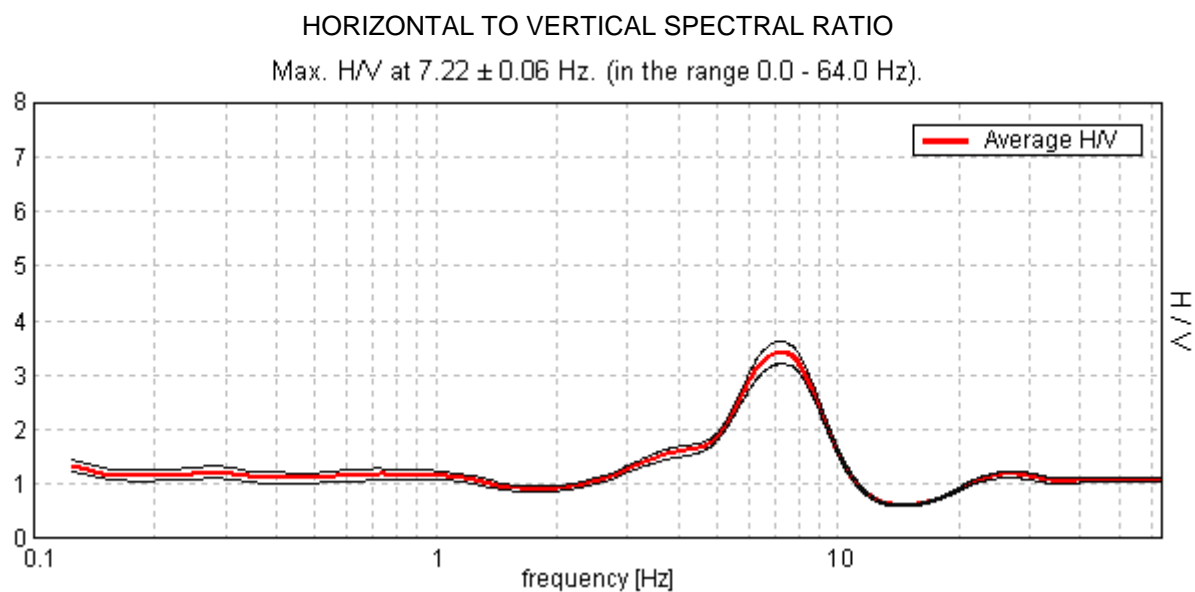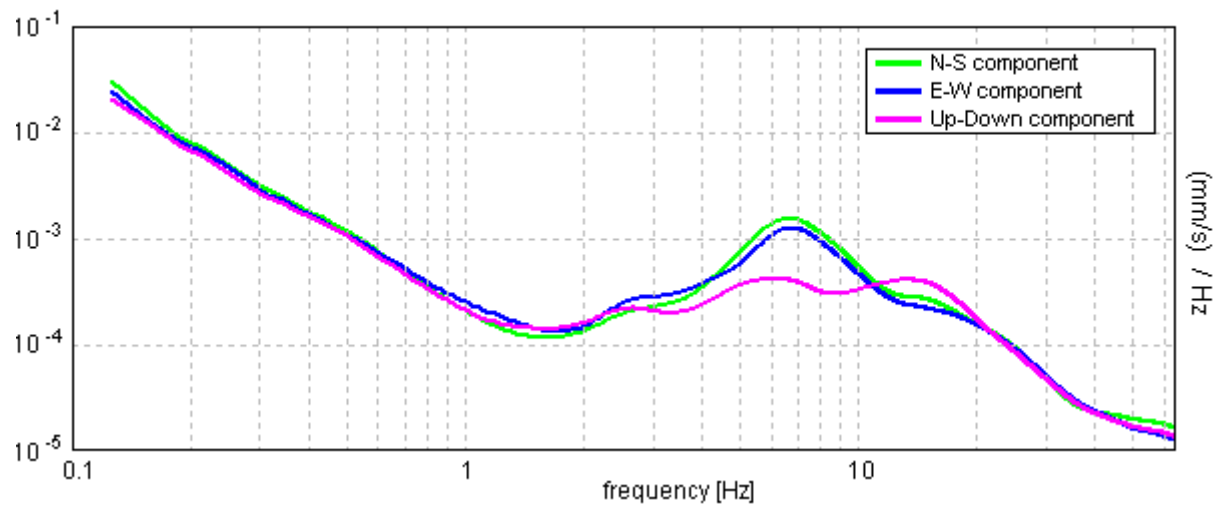# TROMINO® *Grilla*

www.tromino.it

Start recording: 02/02/11 11:45:31   End recording: 02/02/11 12:05:32
Channel labels: NORTH SOUTH;   EAST WEST ;   UP   DOWN
GPS data not available

Trace length: 0h20'00".   Analyzed 97% trace (manual window selection)
Sampling frequency: 128 Hz
Window size: 20 s
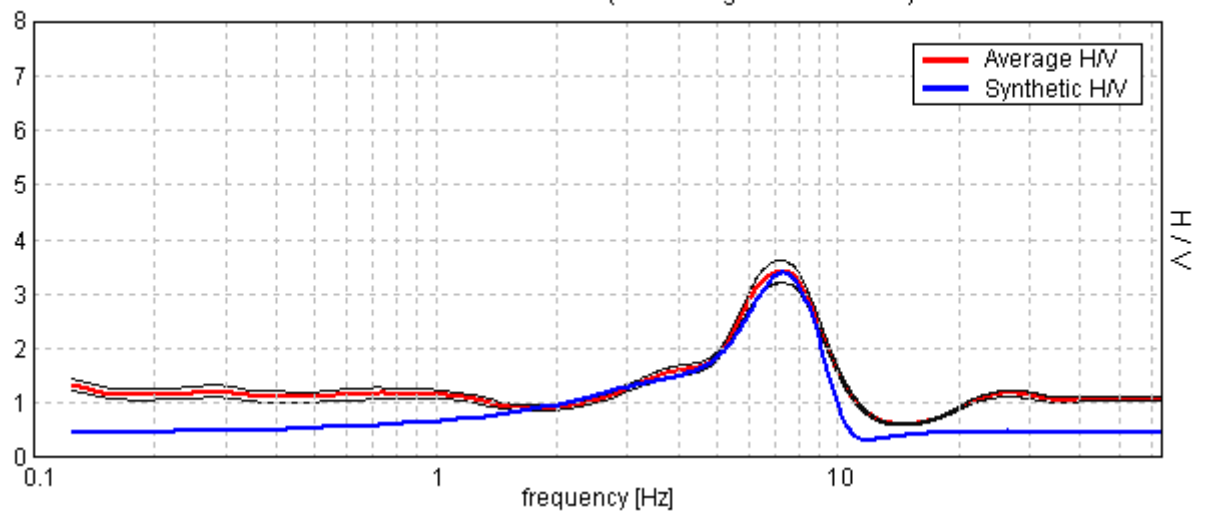Smoothing window: Triangular window
Smoothing: 29%

HORIZONTAL TO VERTICAL SPECTRAL RATIO

Max. H/V at 7.22 ± 0.06 Hz. (in the range 0.0 - 64.0 Hz).

H/V TIME HISTORY

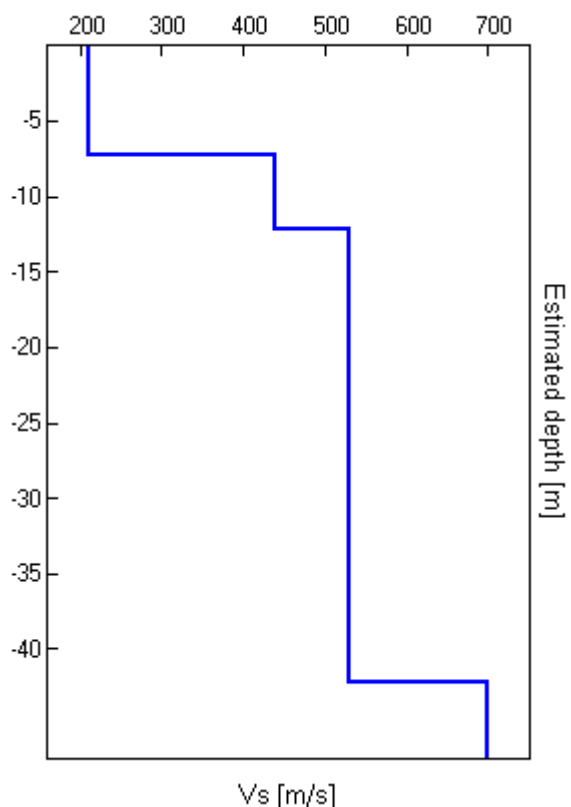DIRECTIONAL H/V

1

SINGLE COMPONENT SPECTRA

EXPERIMENTAL VS. SYNTHETIC H/V

Max. H/V at 7.22 ± 0.06 Hz. (in the range 0.0 - 64.0 Hz).

Depth at the bottom of the layer [m]	Thickness [m]	Vs [m/s]
7.20	7.20	210
12.20	5.00	440
42.20	30.00	530
inf.	inf.	700

Vs(1.0-31.0)=393m/s

[According to the Sesame, 2005 guidelines. **Please read carefully the** *Grilla* **manual before interpreting the following tables**.]

<table>
<tr><td colspan="3" align="center">**Max. H/V at 7.22 ± 0.06 Hz. (in the range 0.0 - 64.0 Hz).**</td></tr>
</table>

<table>
<tr><td colspan="3" align="center">**Criteria for a reliable HVSR curve**
[All 3 should be fulfilled]</td></tr>
<tr><td>$f_0 > 10 / L_w$</td><td>7.22 > 0.50</td><td>**OK**</td></tr>
<tr><td>$n_c(f_0) > 200$</td><td>8373.8 > 200</td><td>**OK**</td></tr>
<tr><td>$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz
$\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz</td><td>Exceeded 0 out of 348 times</td><td>**OK**</td></tr>
<tr><td colspan="3" align="center">**Criteria for a clear HVSR peak**
[At least 5 out of 6 should be fulfilled]</td></tr>
<tr><td>Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$</td><td>4.656 Hz</td><td>**OK**</td></tr>
<tr><td>Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$</td><td>9.844 Hz</td><td>**OK**</td></tr>
<tr><td>$A_0 > 2$</td><td>3.41 > 2</td><td>**OK**</td></tr>
<tr><td>$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$</td><td>|0.00421| < 0.05</td><td>**OK**</td></tr>
<tr><td>$\sigma_f < \varepsilon(f_0)$</td><td>0.03038 < 0.36094</td><td>**OK**</td></tr>
<tr><td>$\sigma_A(f_0) < \theta(f_0)$</td><td>0.1023 < 1.58</td><td>**OK**</td></tr>
</table>

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w\, n_w\, f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

………………………………. (omitted)………………………………..

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