

## SUPPLEMENTAL MATERIAL FOR

# GEOPHYSICAL AND GEOLOGICAL SIGNATURES OF AN UNKNOWN FAULT IN THE HISTORIC CENTER OF MESSINA (SICILY, SOUTH ITALY)

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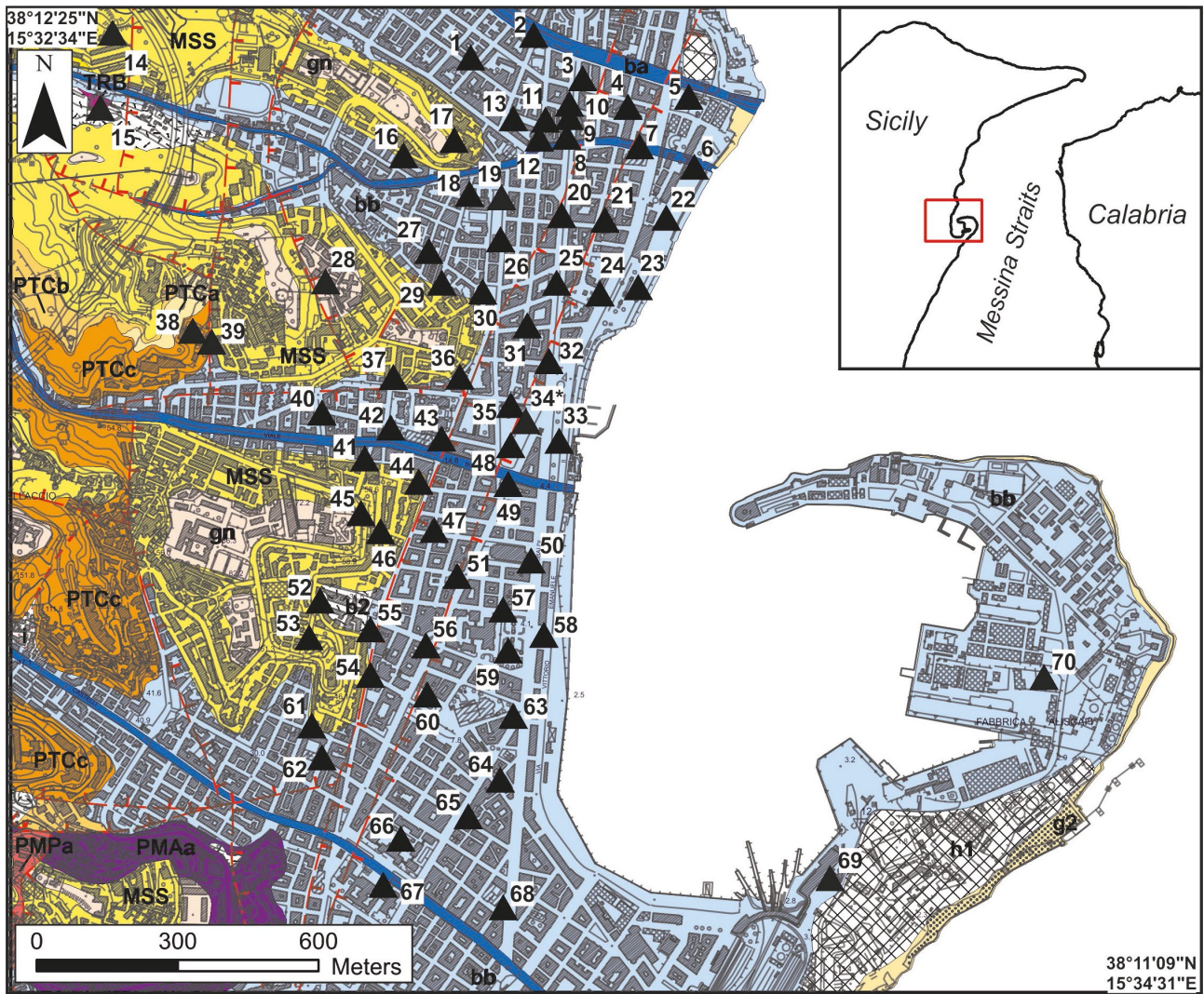
## Introduction

The auxiliary material basically includes seventy plots representing the database of HVSR curves built in the present study (see Figures S1-S2).

1) **Figure S1.** The figure shows the revised geological map with topographic map 1:10.000 of the historic center of Messina (red rectangle in the top-right inset). Triangles indicate the locations of the HVSR measurement stations of the database collected in the present study. The number with asterisk (34\*) indicates the site of HVSR measurements obtained from the Municipality of Messina, in this case only the  $f_0$  fundamental frequency value is available.

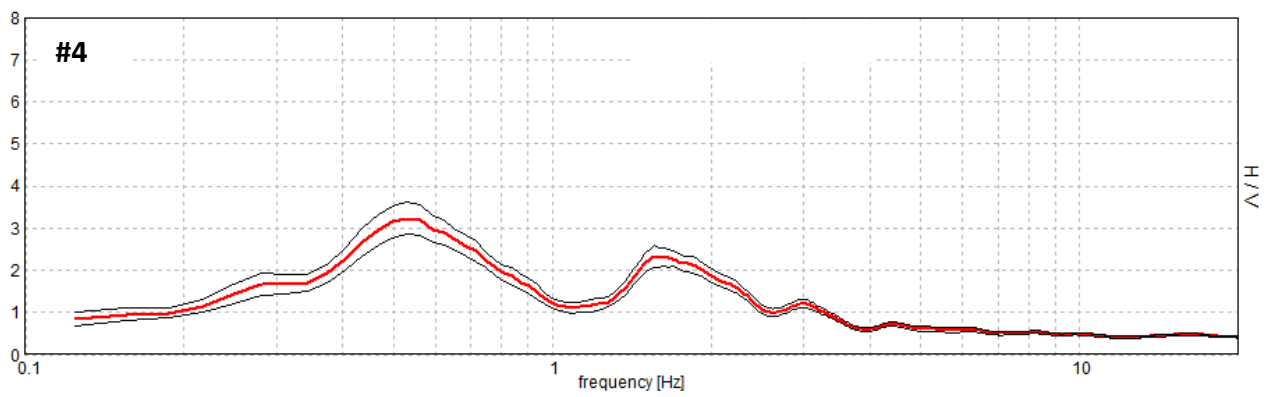
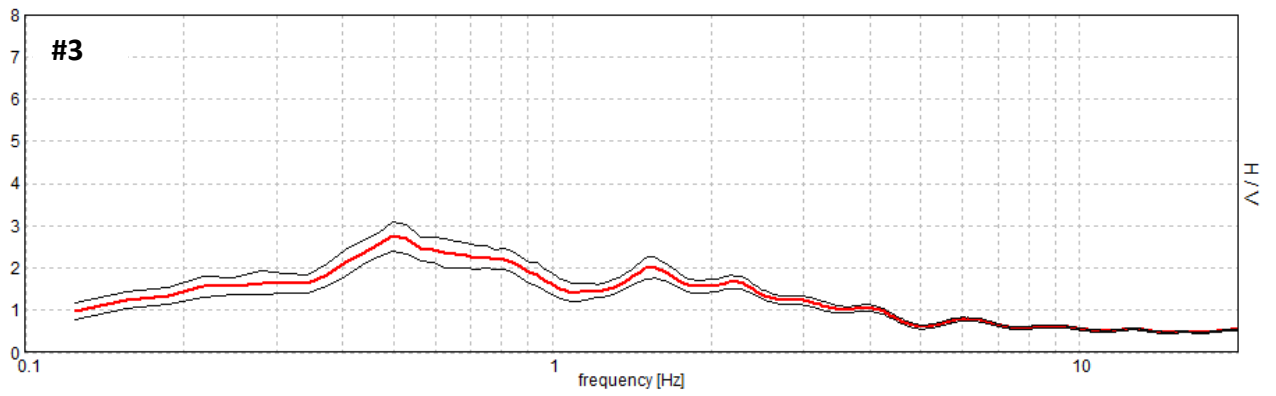
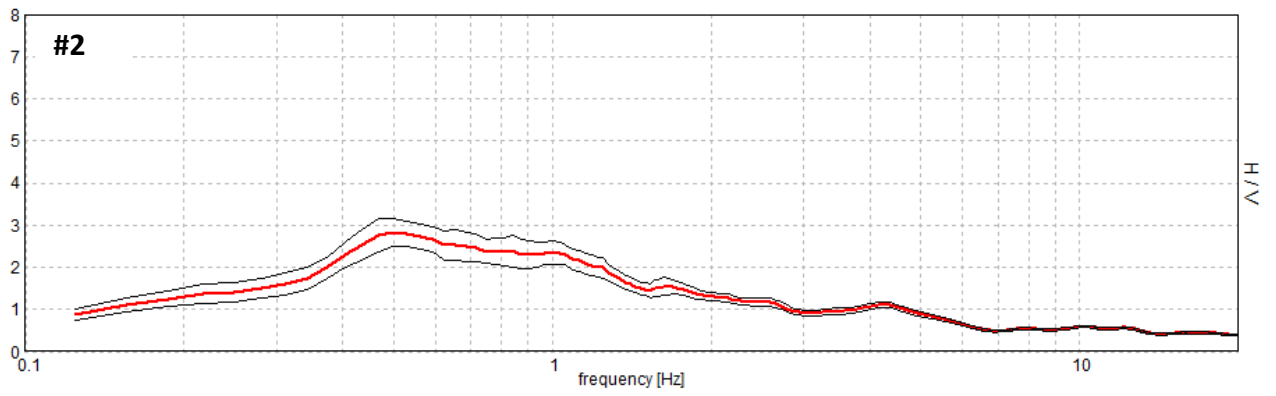
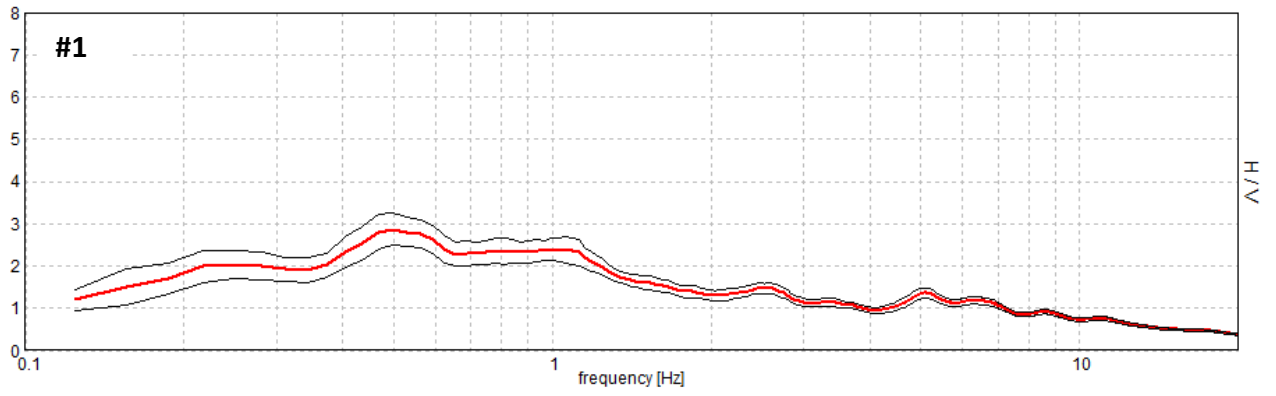
Geological legend: h1: anthropic fill (Holocene); g2: coastal deposits (Holocene); b2: colluvial detrital deposits; i: alluvial fans deposits; ba and bb: alluvial deposits (Holocene); bn: fluvial terraces deposits (Holocene); gn: marine terraces deposits (Upper Pleistocene); MSS: gravel and sands of Messina Fm. (Middle Pleistocene); ORDa: calcarenites of San Corrado Fm. (Middle Pleistocene); TRB: White marls and marly limestones of Trubi Fm. (Lower Pliocene); PTCa: dark gray clays of San Pier Niceto Fm. (Tortonian); PTCb: sandstones low cemented light gray of San Pier Niceto Fm. (Tortonian); PTCc: conglomerate slow cemented of San Pier Niceto Fm. (Tortonian); PMPa: aplites and pegmatites of Aspromonte unit (Paleozoic metamorphic basement); PMAa: paragneiss and mica-schist of Aspromonte unit (Paleozoic metamorphic basement). Continued and dashed red lines: certain and uncertain normal faults, respectively.

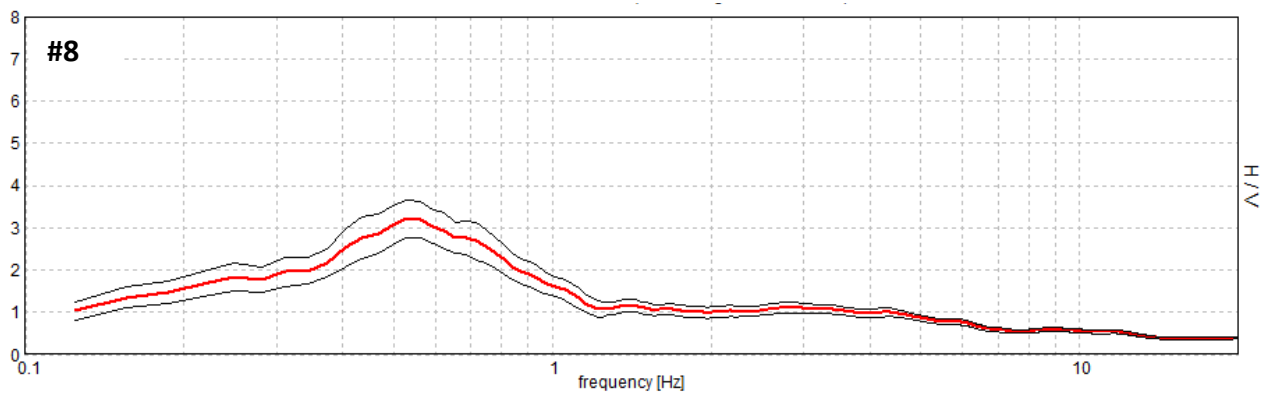
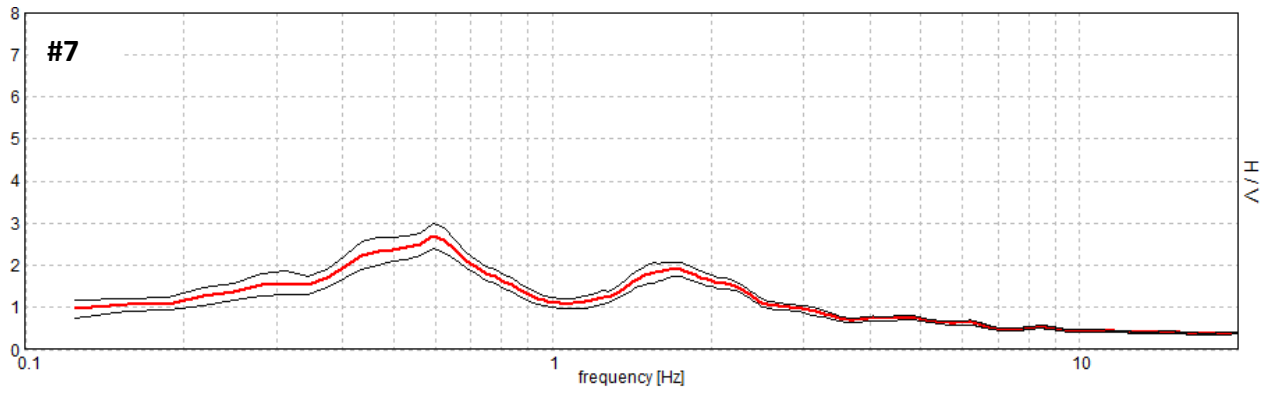
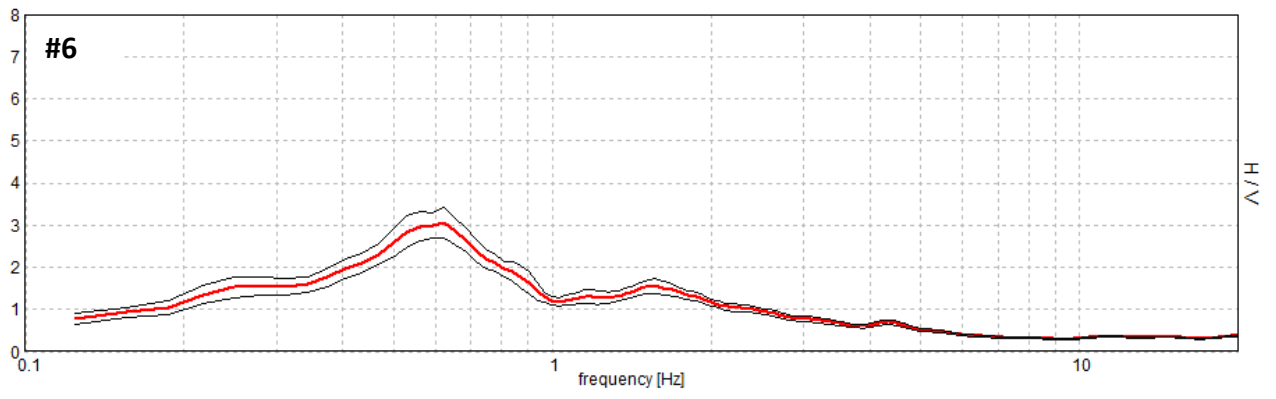
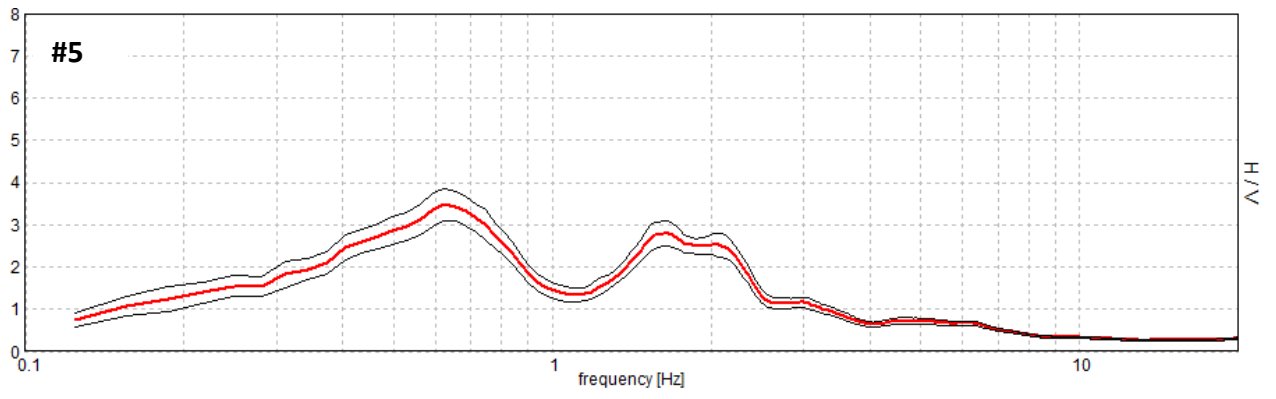
2) **Figure S2.** HVSR curves for the Messina historic centre study area. Numbering reported on the top-left of the individual plot indicates the location of the concerned measurement station according to the map of Figure S1. Red curve = mean spectral ratio, black curves = standard deviation.

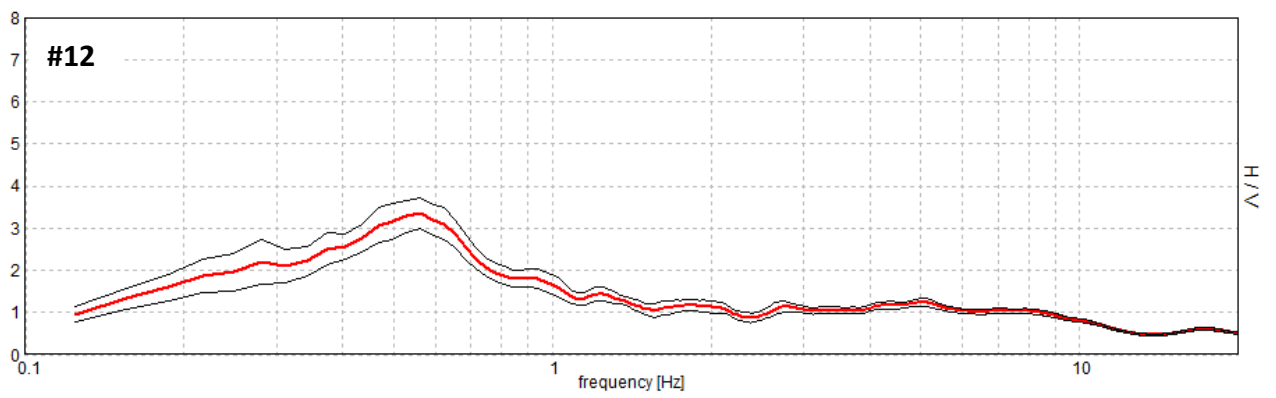
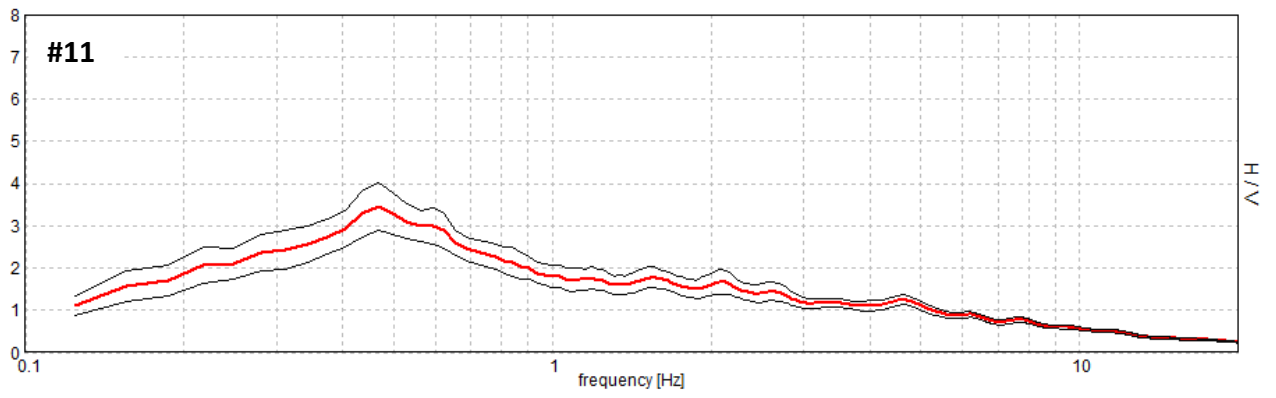
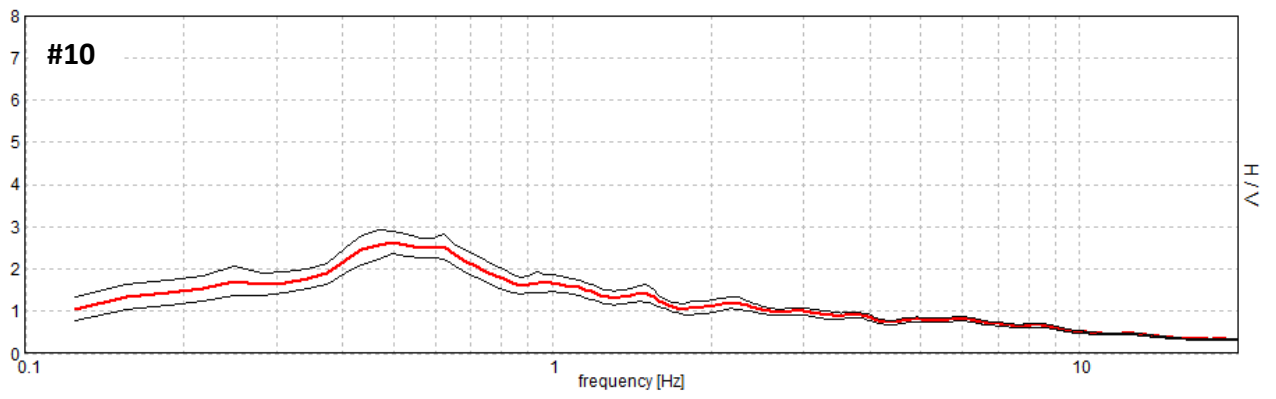
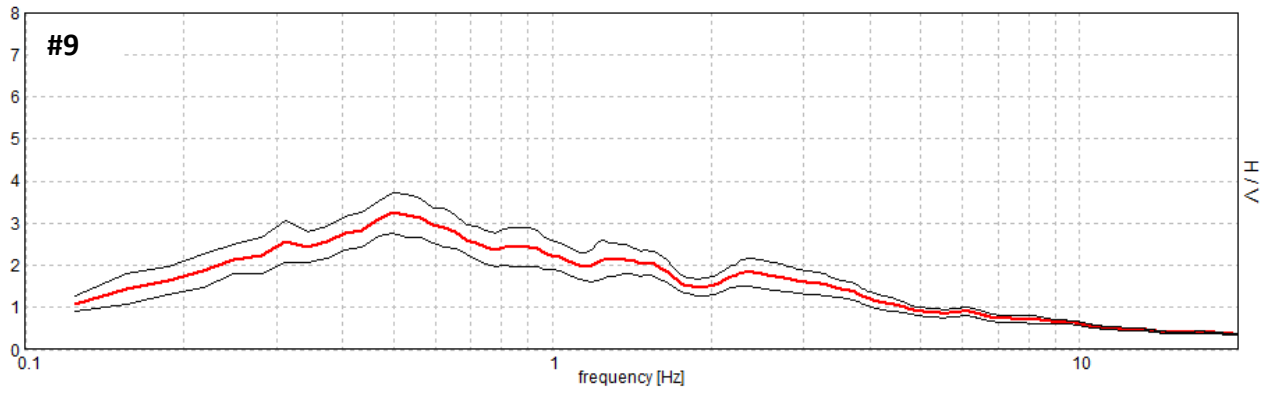


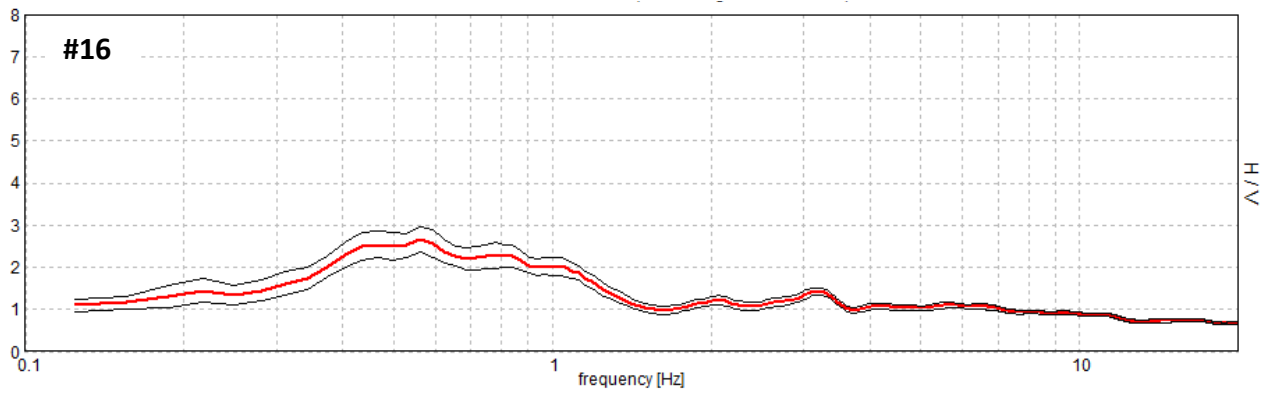
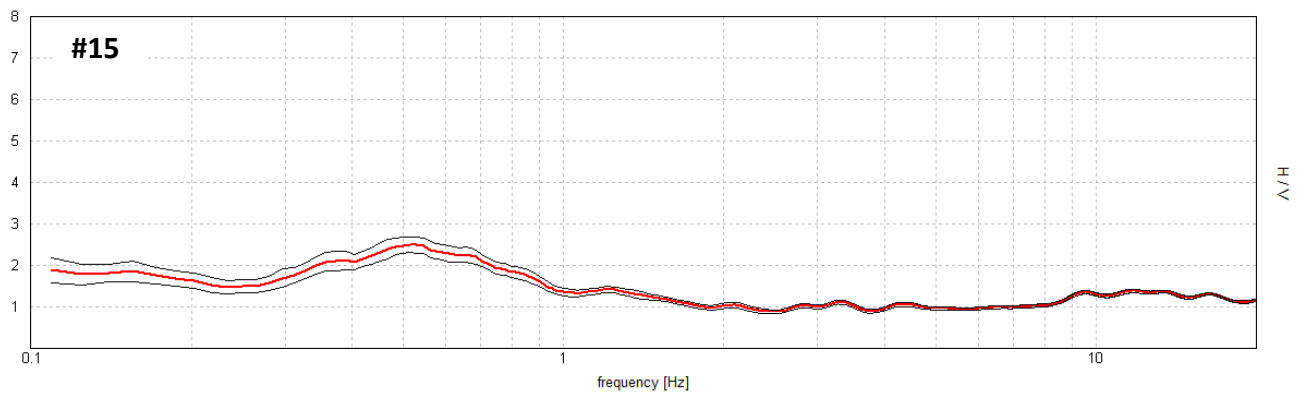
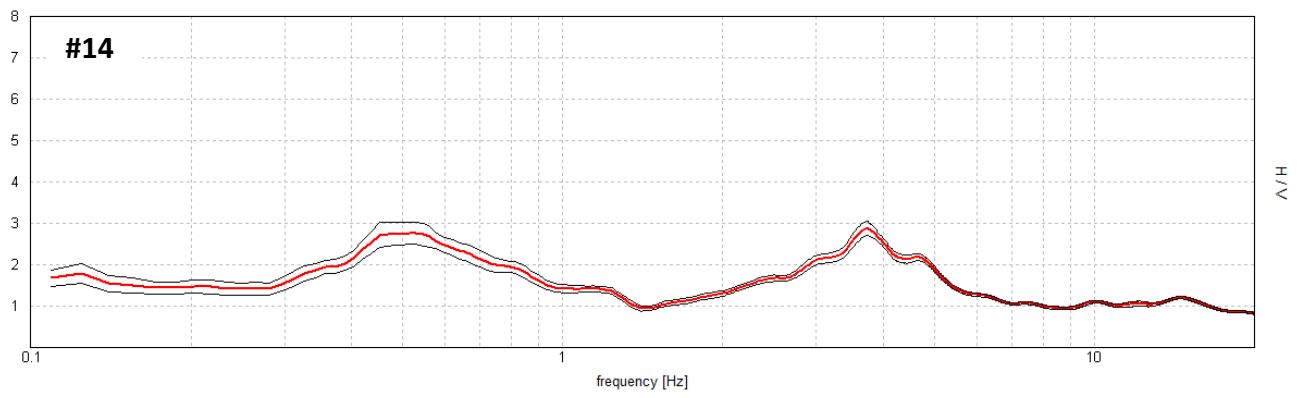
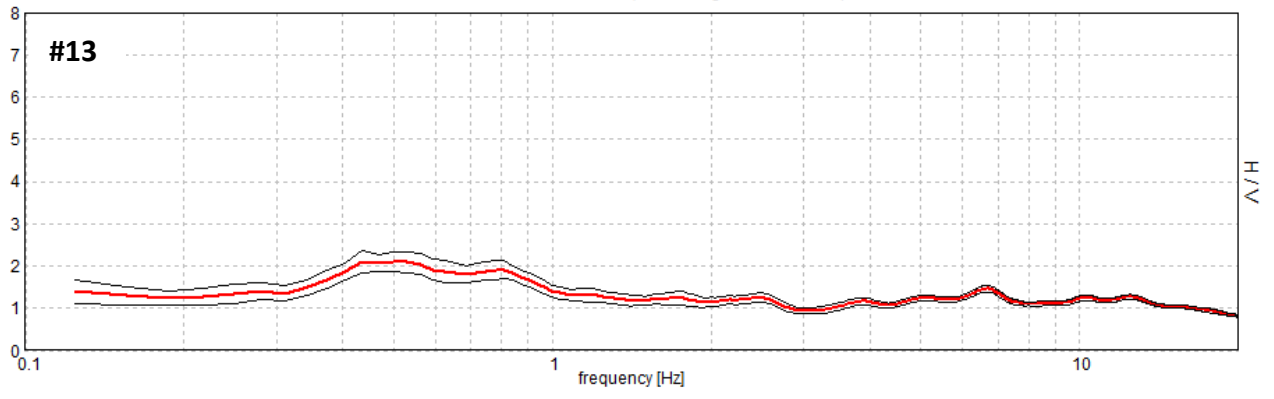
**Figure S1.** The figure shows the revised geological map with topographic map 1:10.000 of the historic center of Messina (red rectangle in the top-right inset). Triangles indicate the locations of the HVSR measurement stations of the database collected in the present study. The number with asterisk (34\*) indicates the site of HVSR measurements obtained from the Municipality of Messina, in this case only the  $f_0$  fundamental frequency value is available.

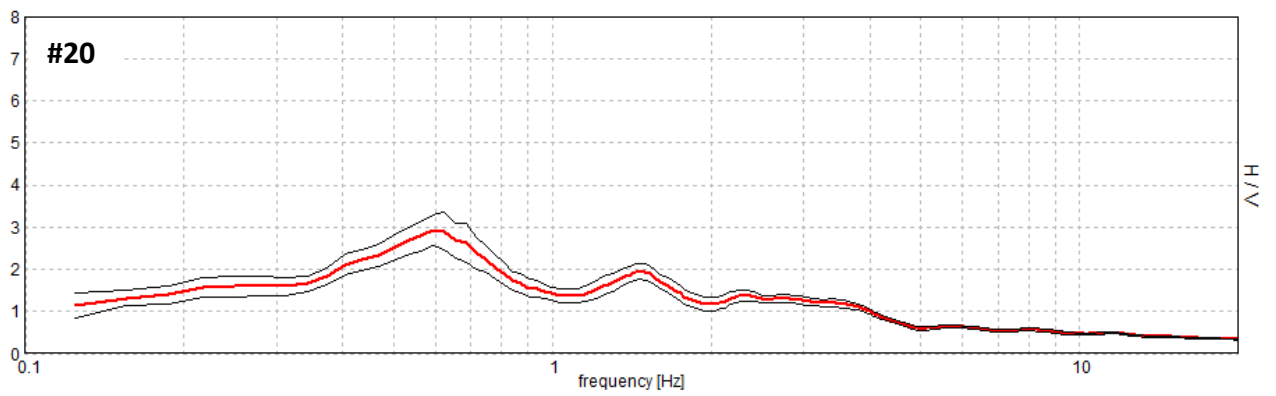
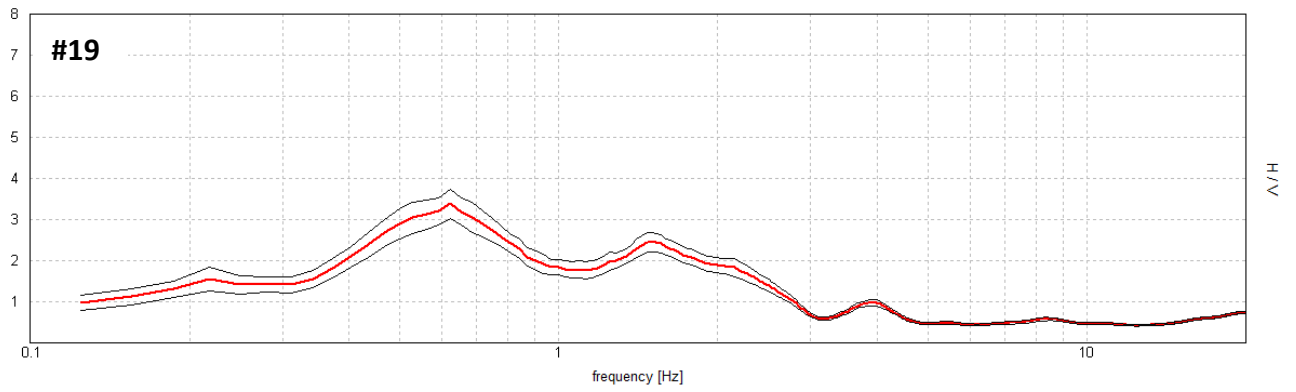
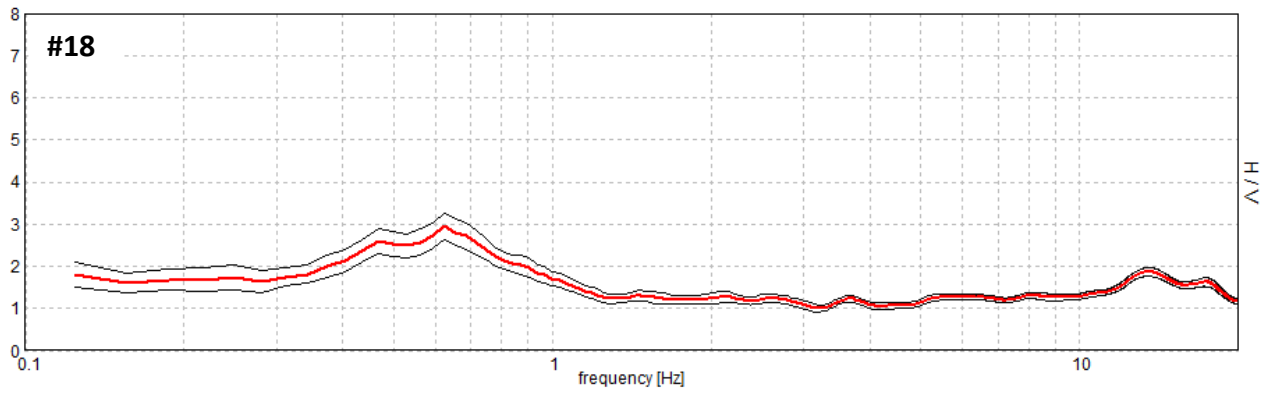
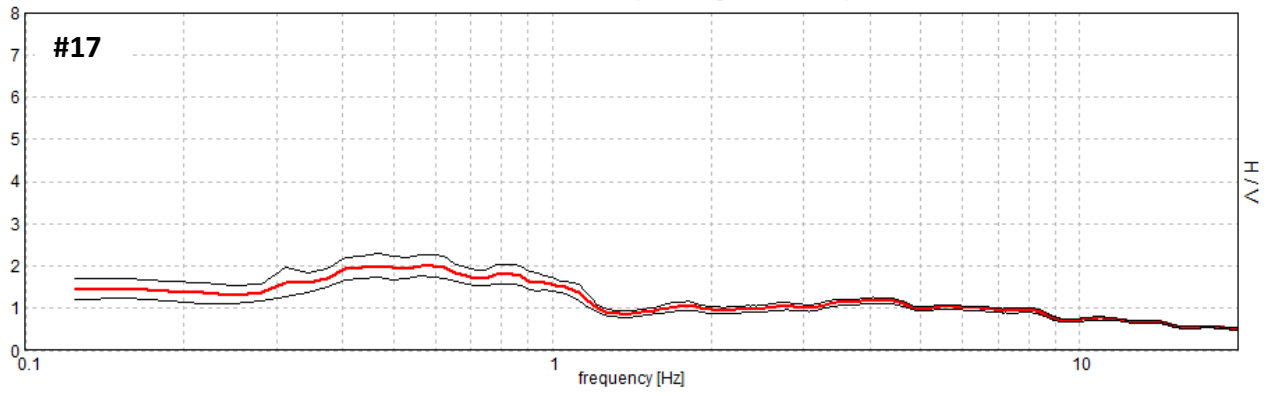
Geological legend: h1: anthropic fill (Holocene); g2: coastal deposits (Holocene); b2: colluvial detrital deposits; i: alluvial fans deposits; ba and bb: alluvial deposits (Holocene); bn: fluvial terraces deposits (Holocene); gn: marine terraces deposits (Upper Pleistocene); MSS: gravel and sands of Messina Fm. (Middle Pleistocene); ORDa: calcarenites of San Corrado Fm. (Middle Pleistocene); TRB: White marls and marly limestones of Trubi Fm. (Lower Pliocene); PTCa: dark gray clays of San Pier Niceto Fm. (Tortonian); PTCb: sandstones low cemented light gray of San Pier Niceto Fm. (Tortonian); PTCc: conglomerate slow cemented of San Pier Niceto Fm. (Tortonian); PMPa: aplites and pegmatites of Aspromonte unit (Paleozoic metamorphic basement); PMAa: paragneiss and mica-schist of Aspromonte unit (Paleozoic metamorphic basement). Continued and dashed red lines: certain and uncertain normal faults, respectively.

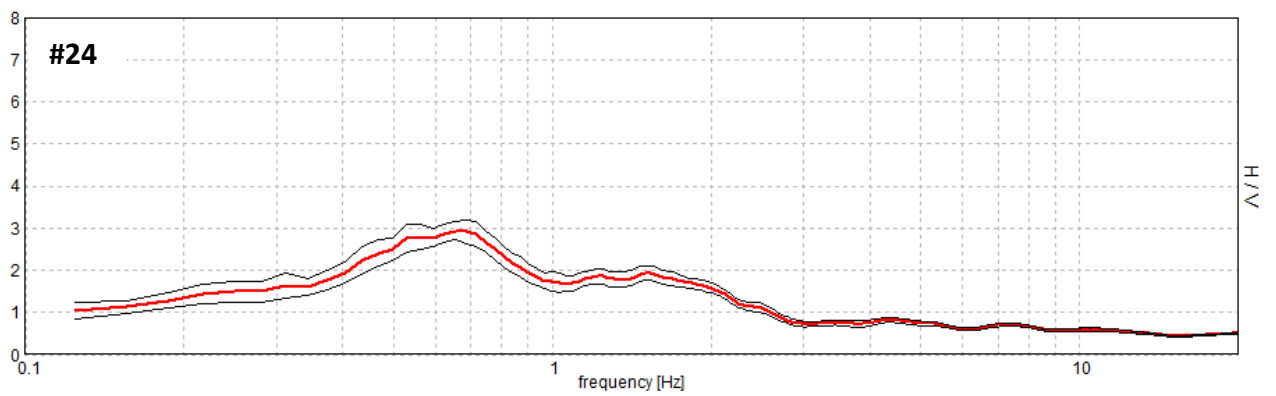
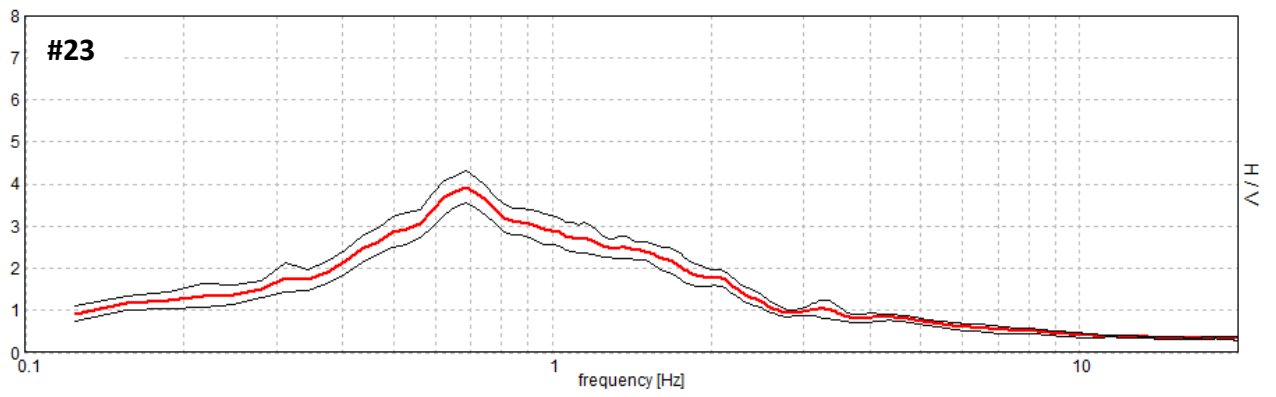
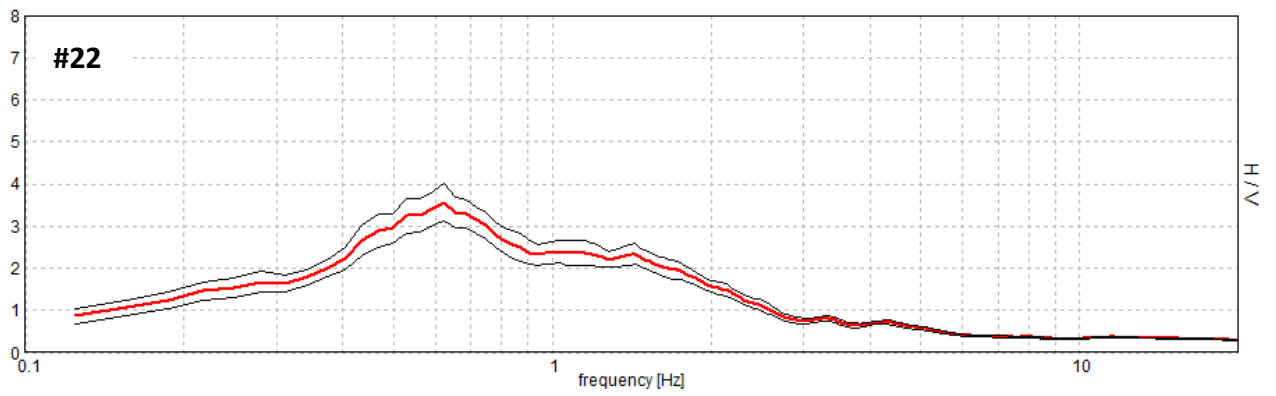
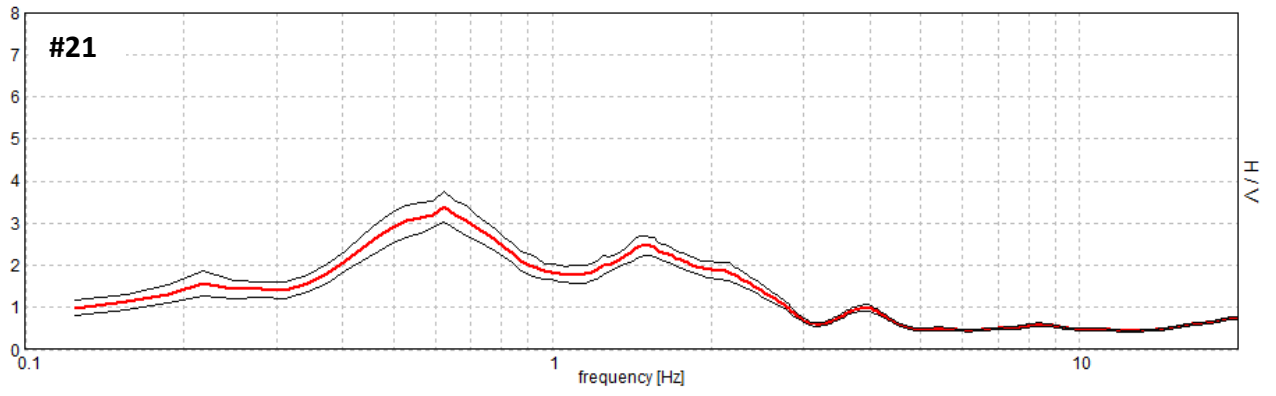




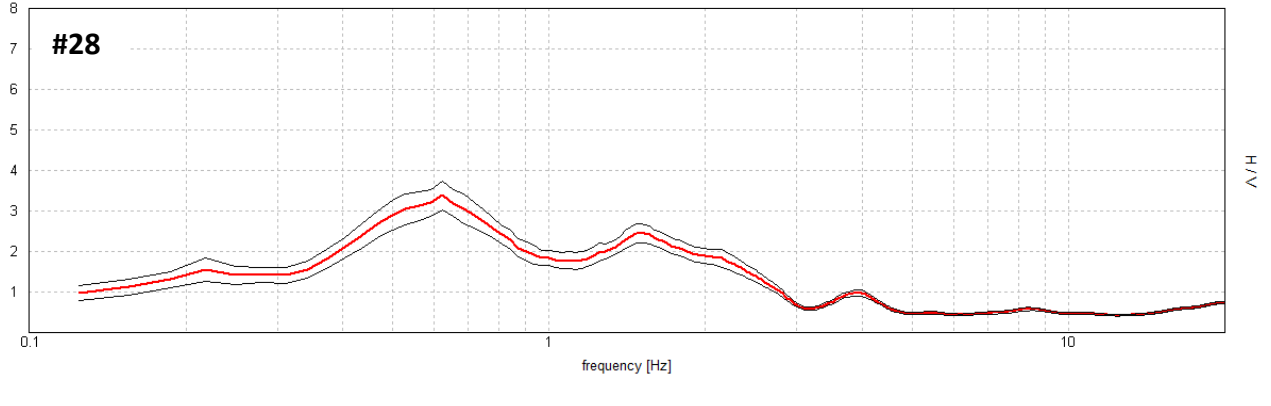
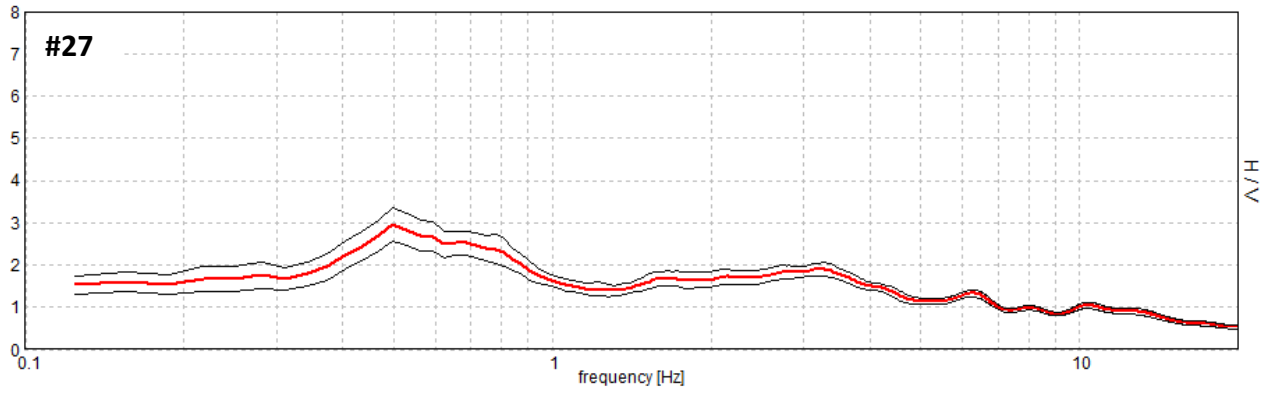
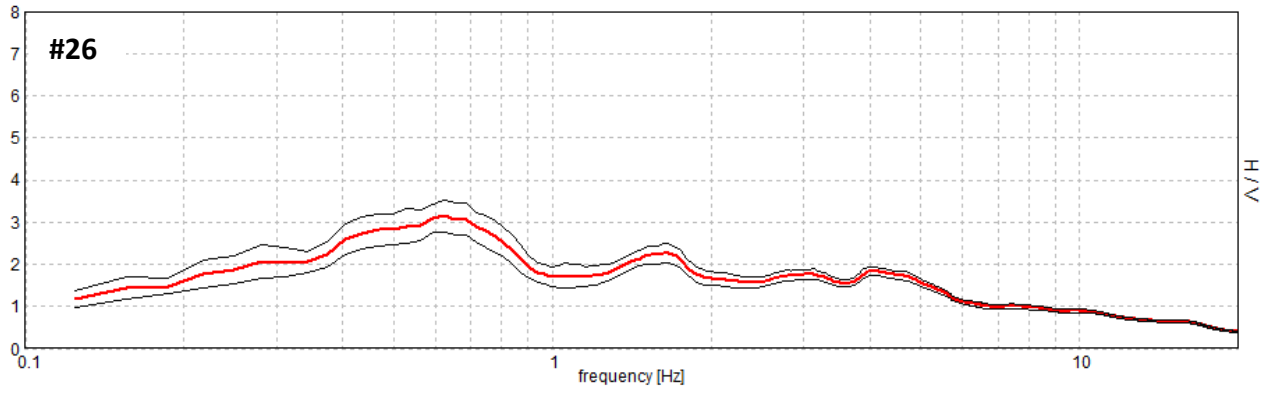
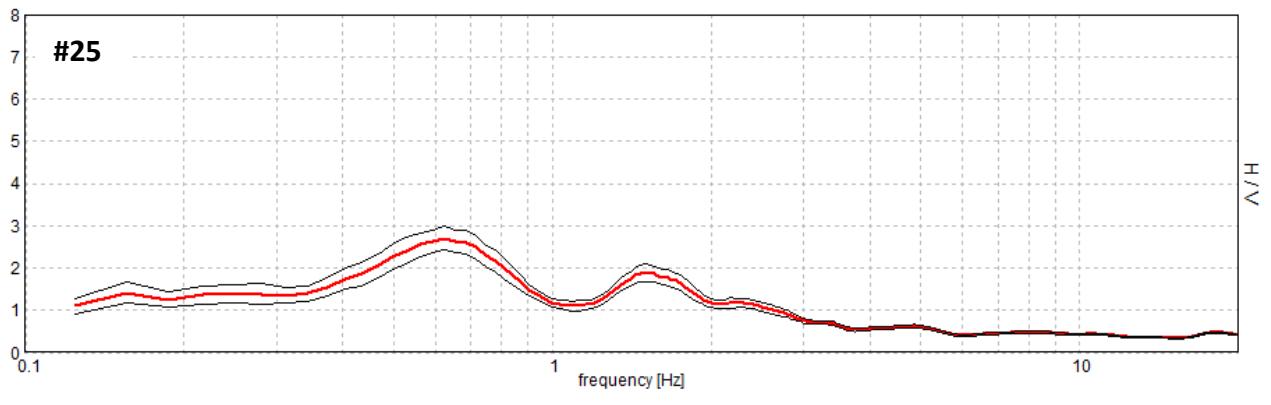


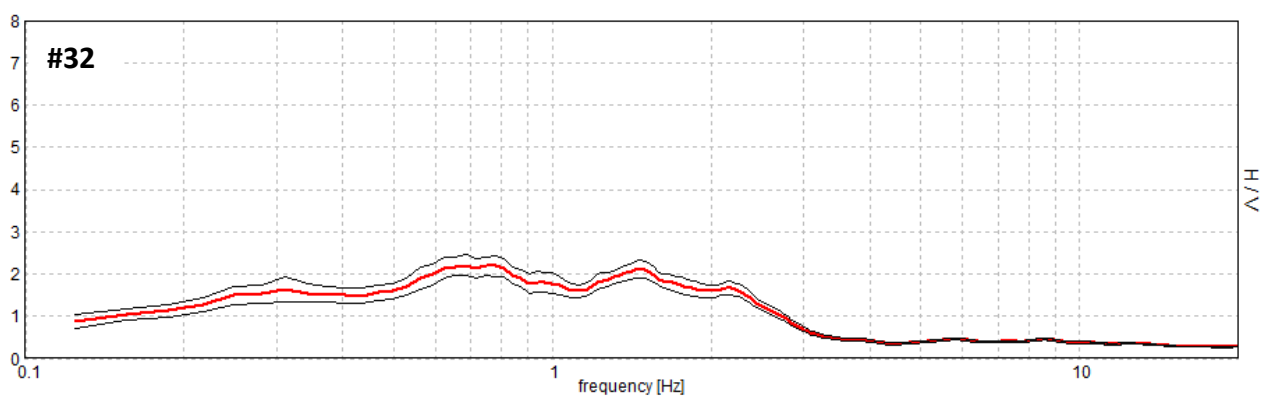
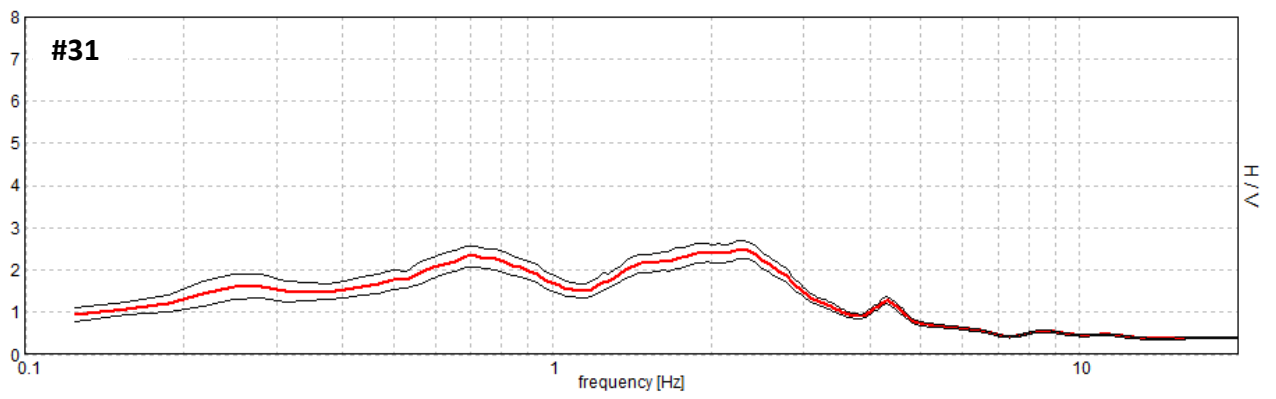
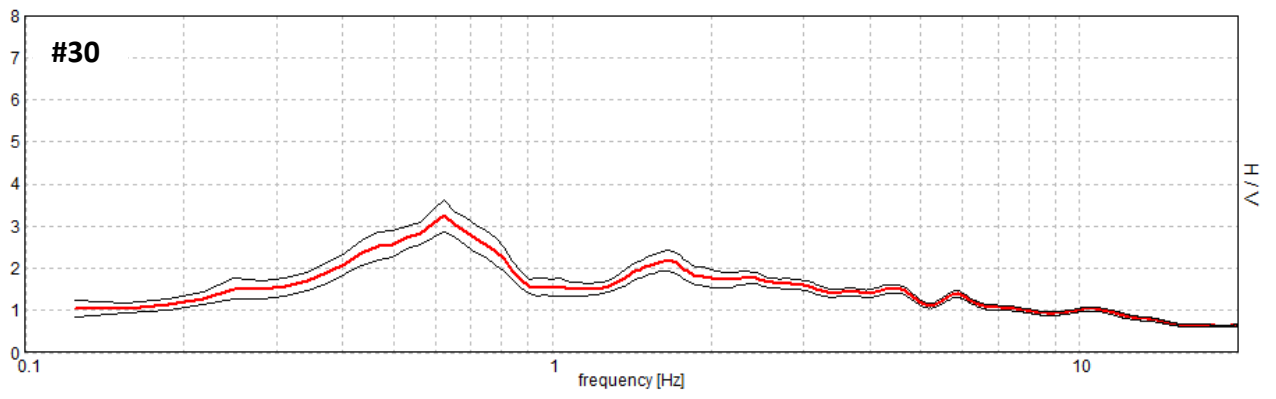
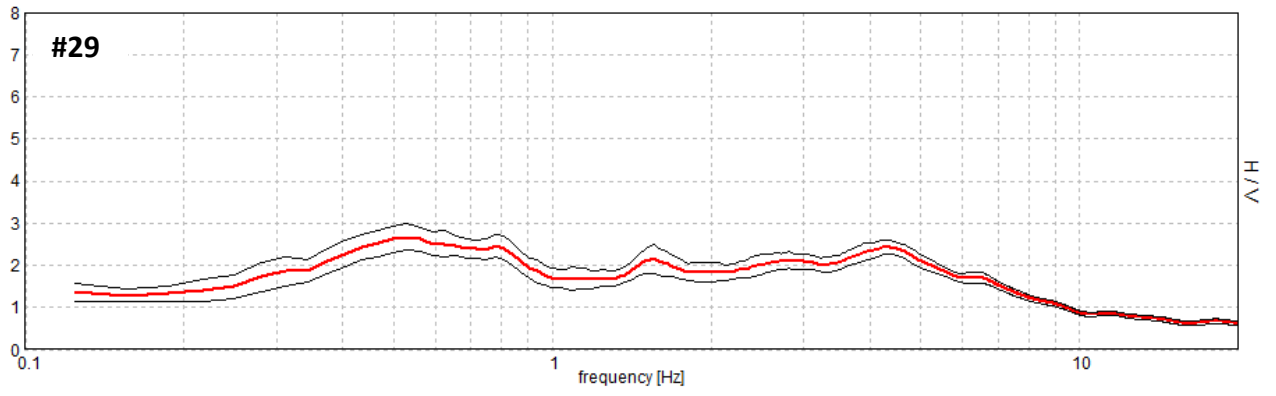


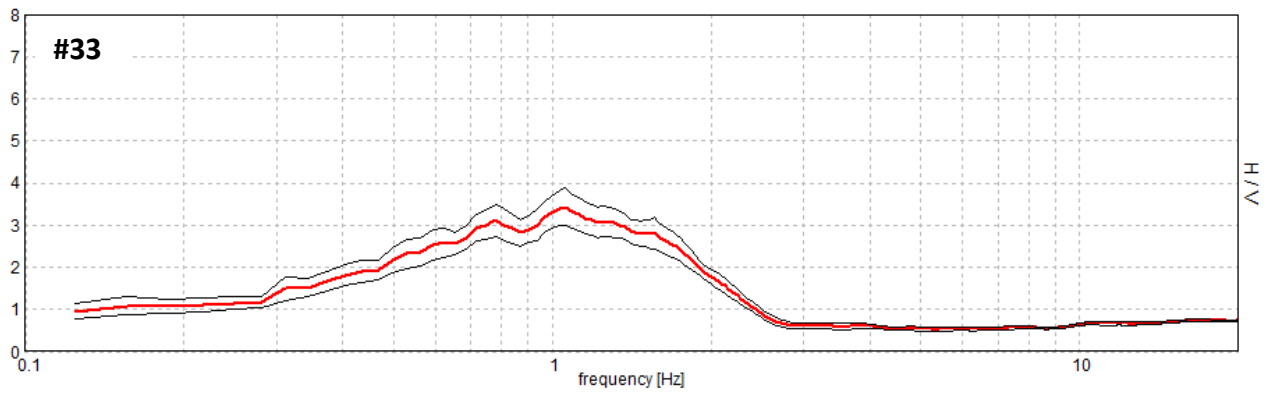






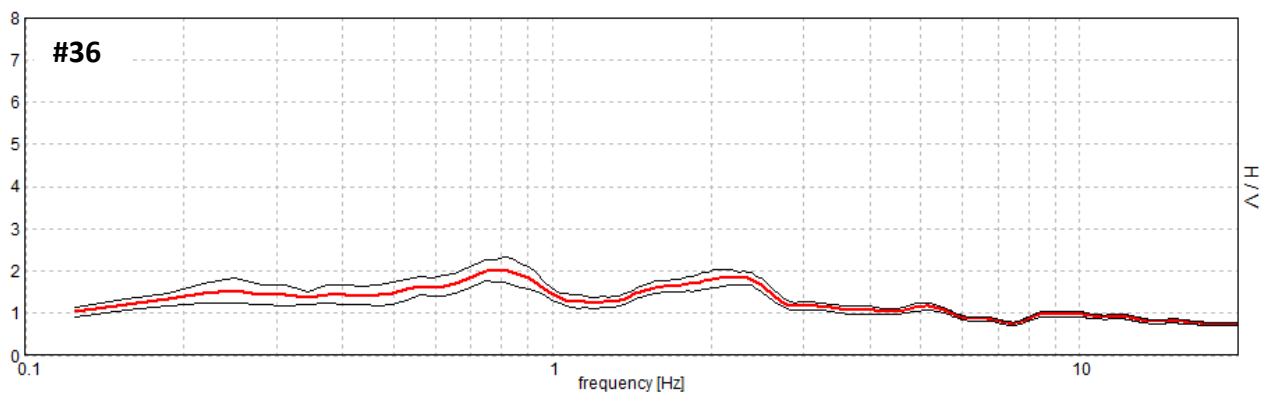
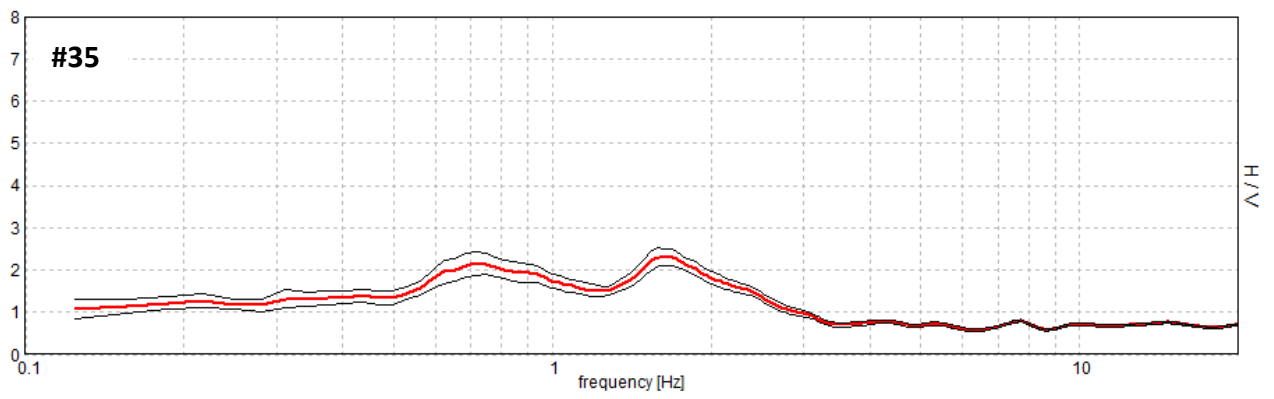


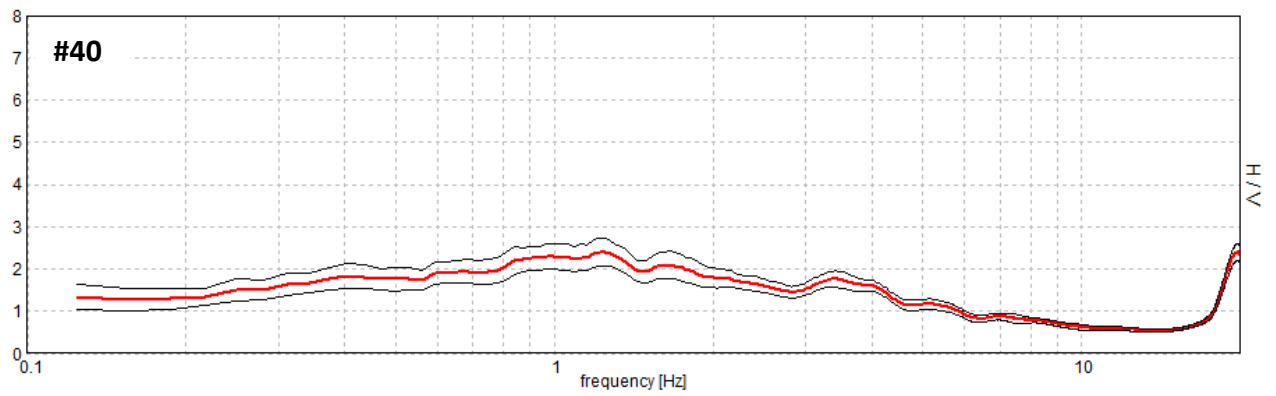
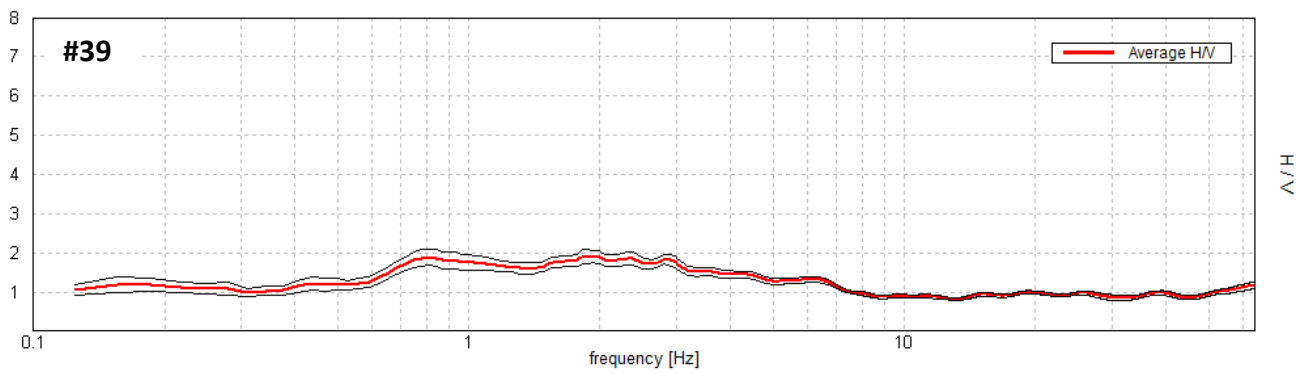
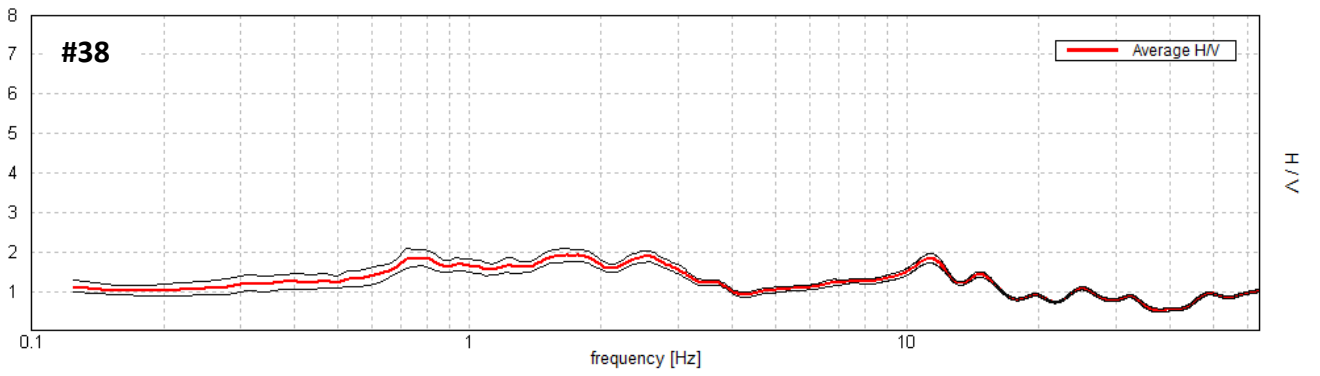
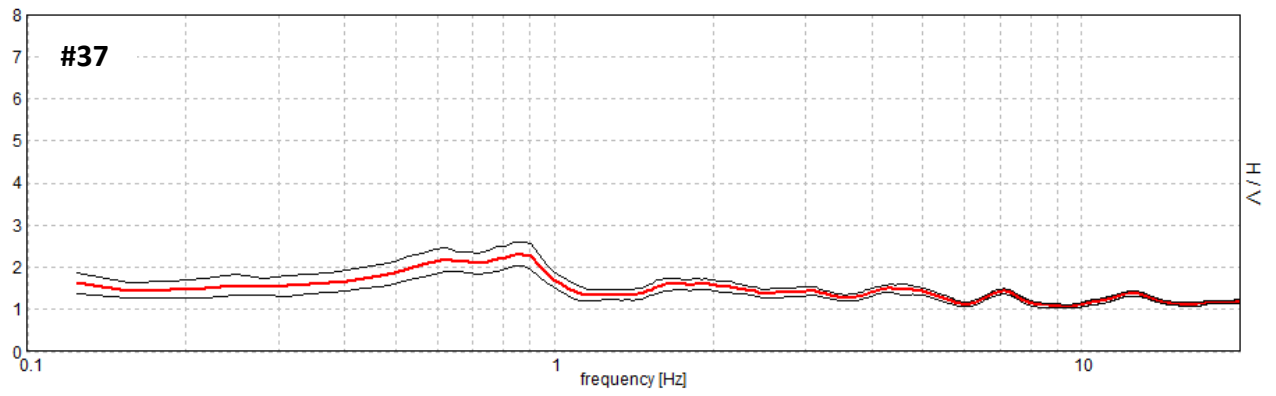


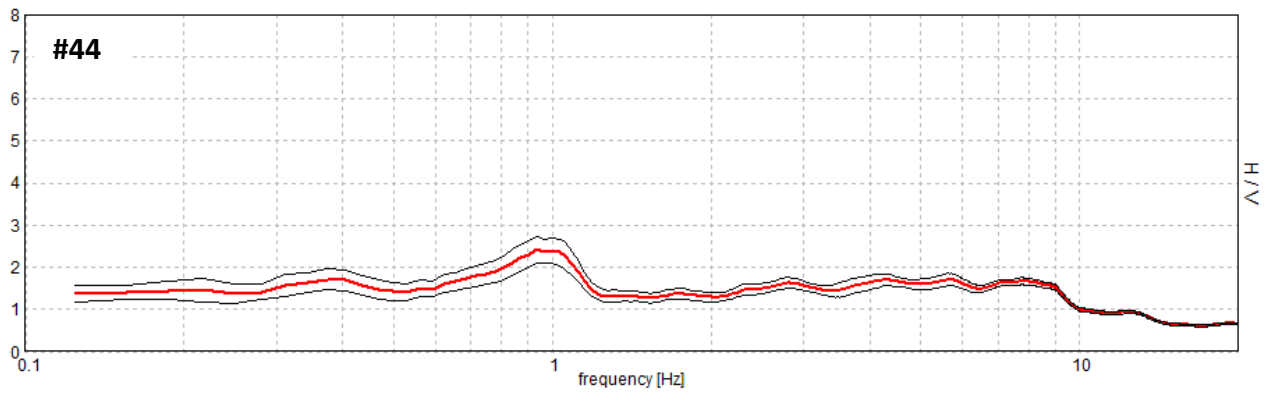
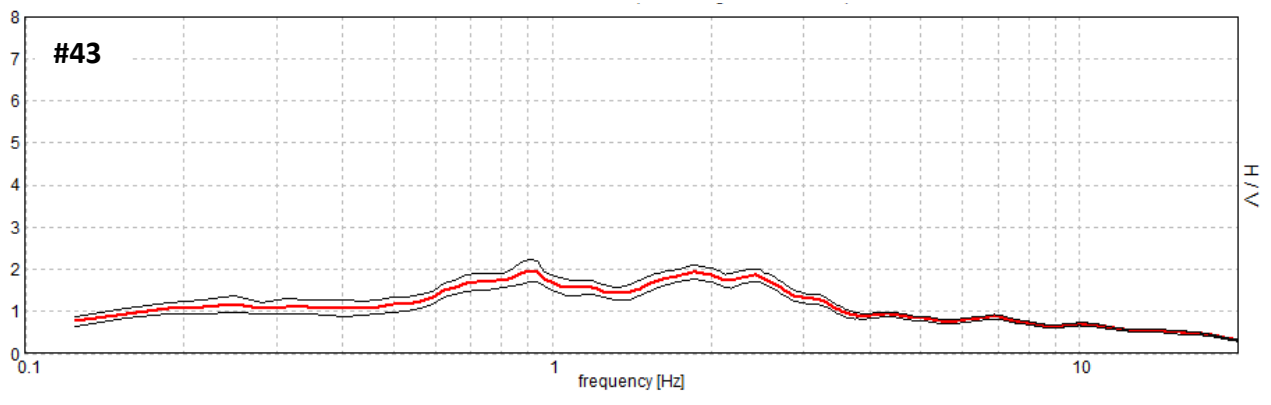
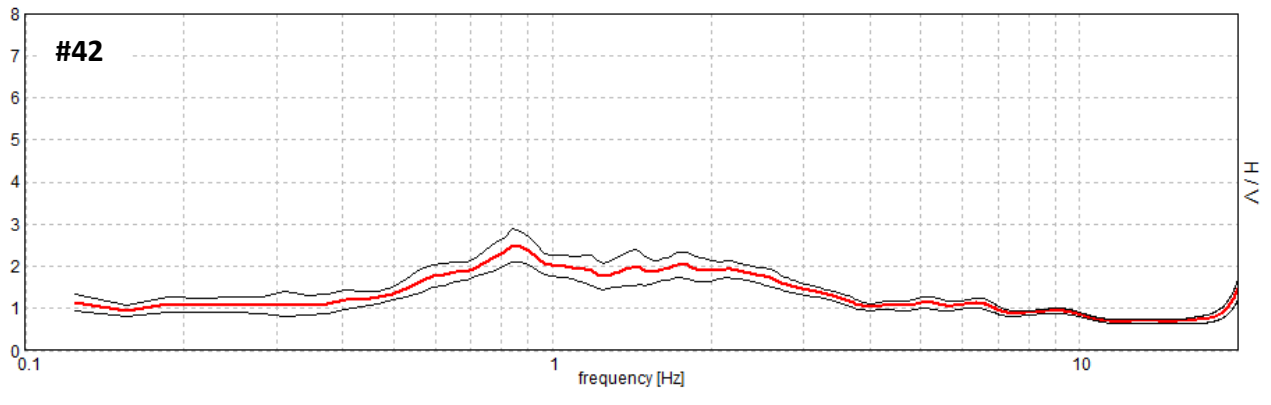
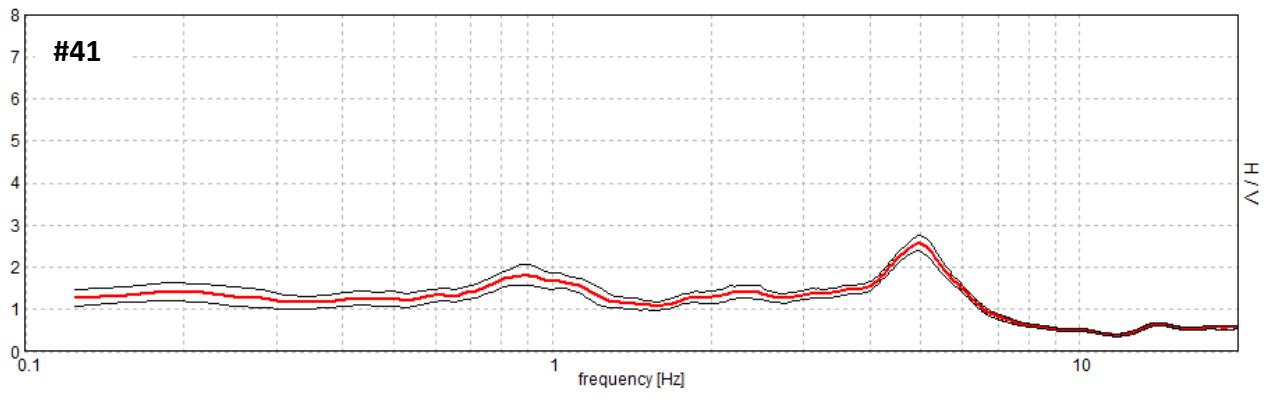


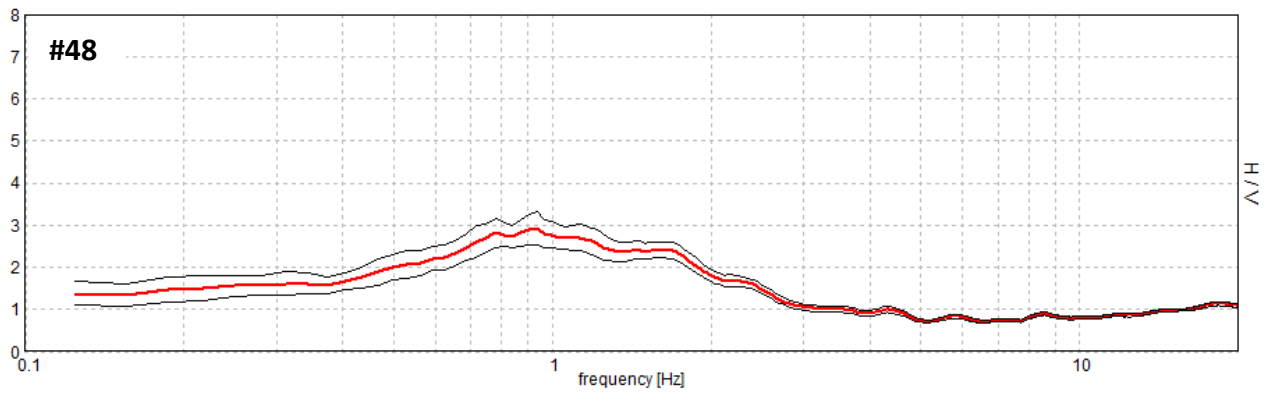
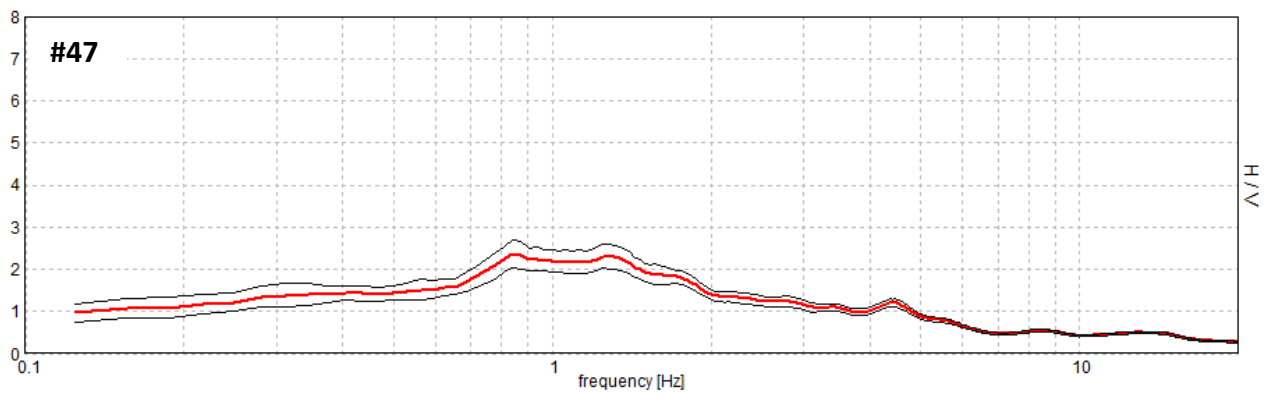
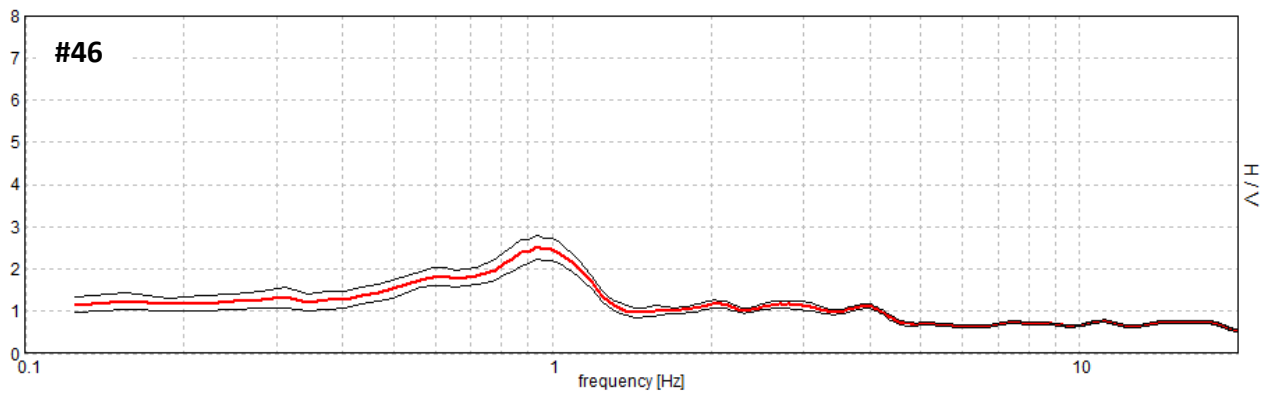
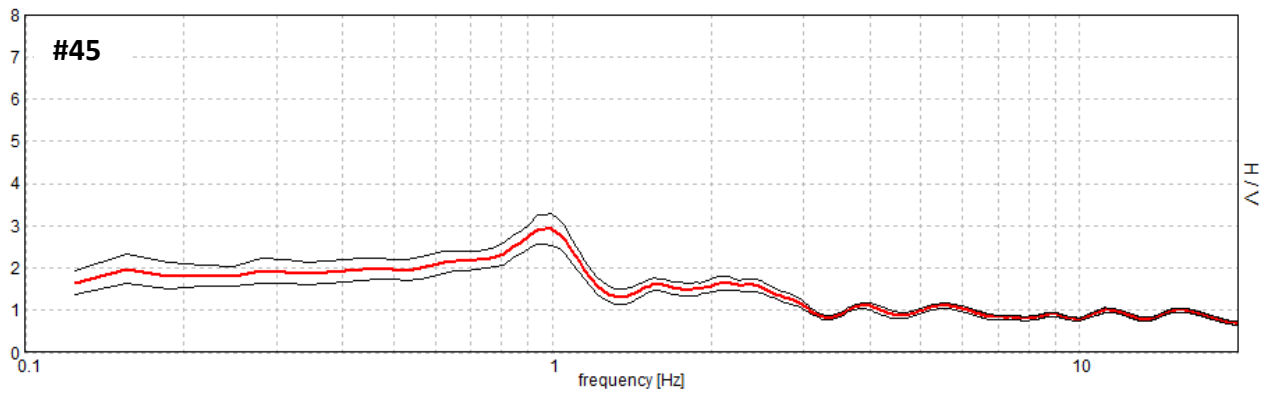
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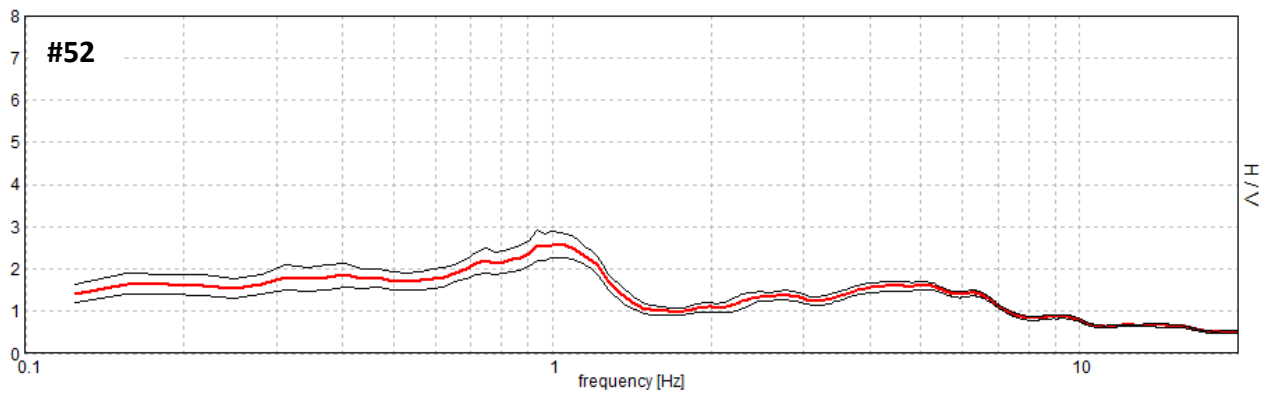
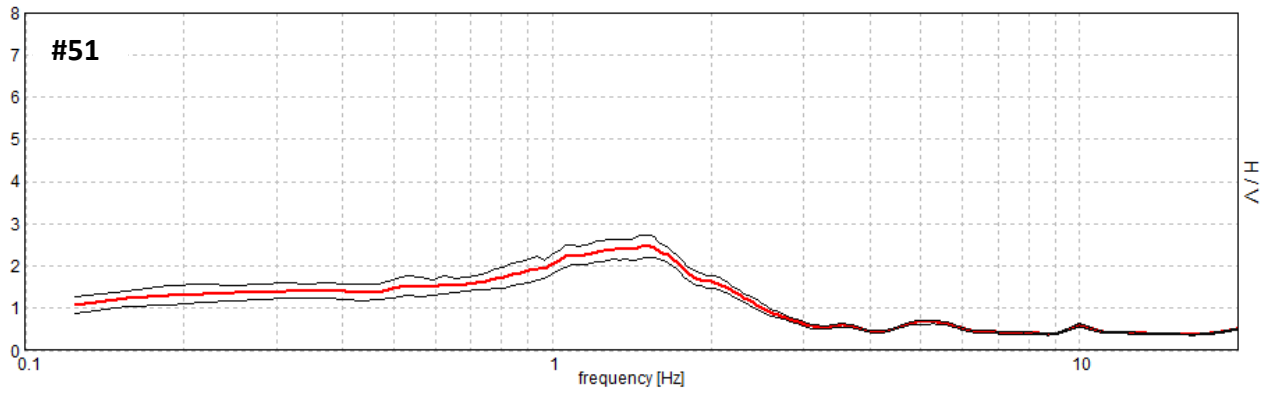
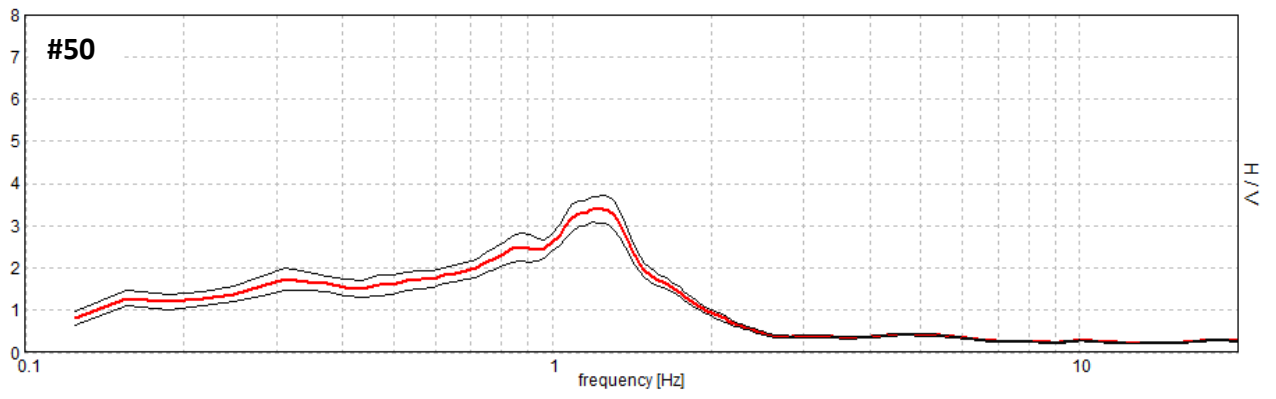
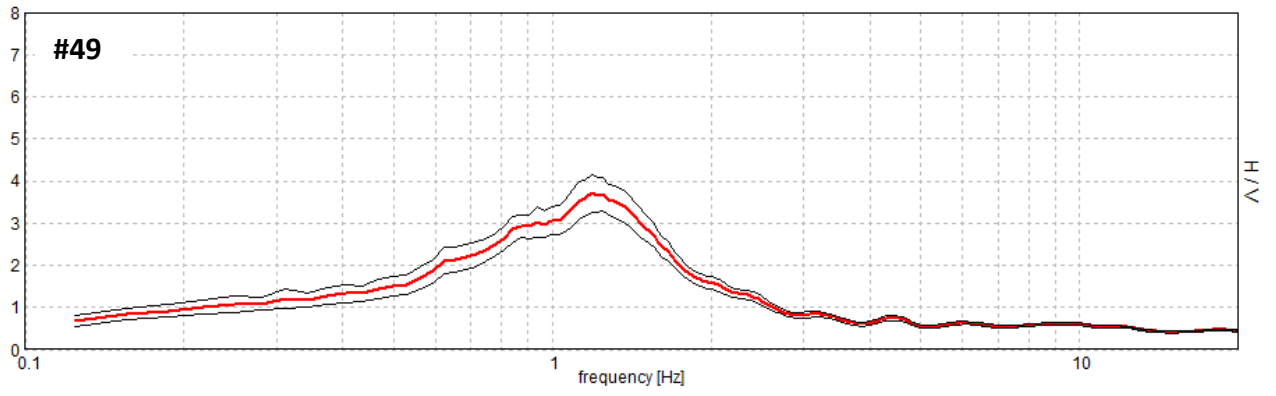
#34. See note in the caption of Figure S1.

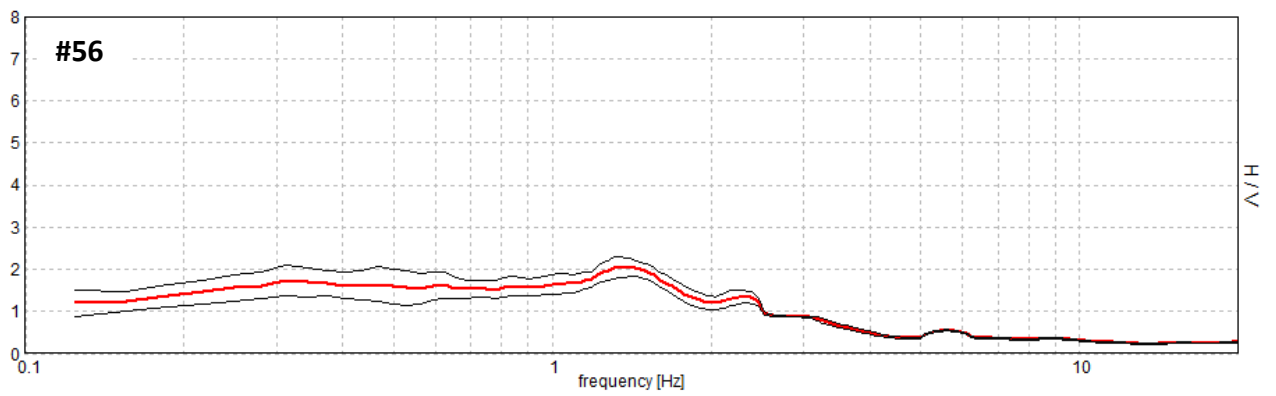
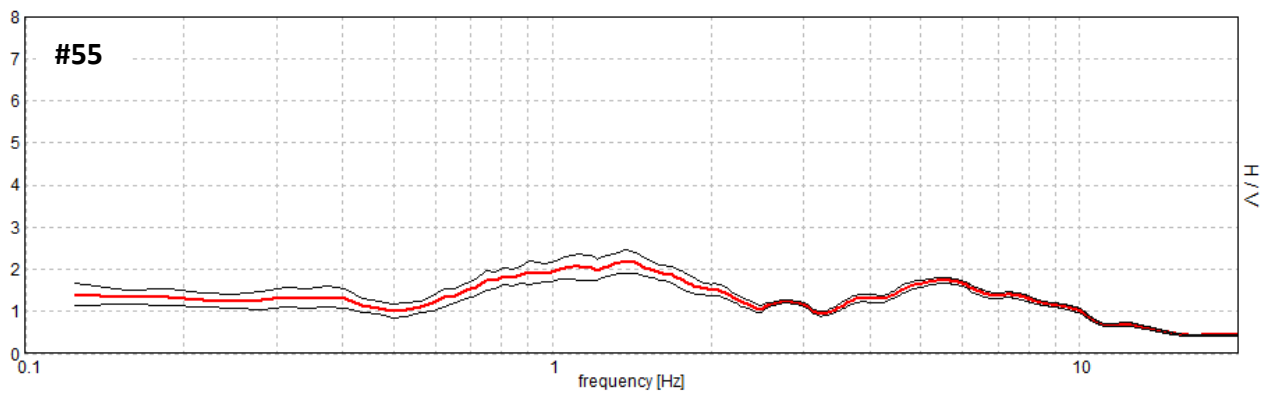
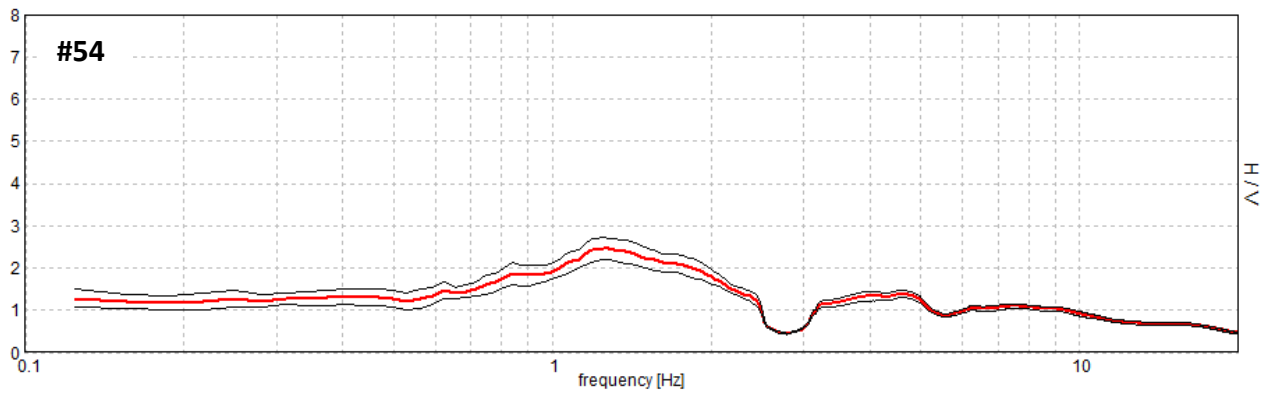
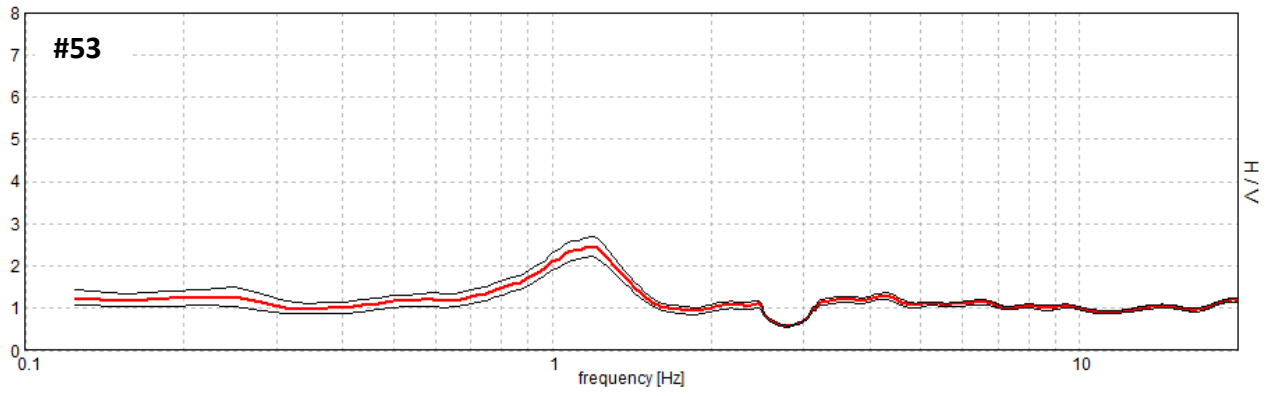




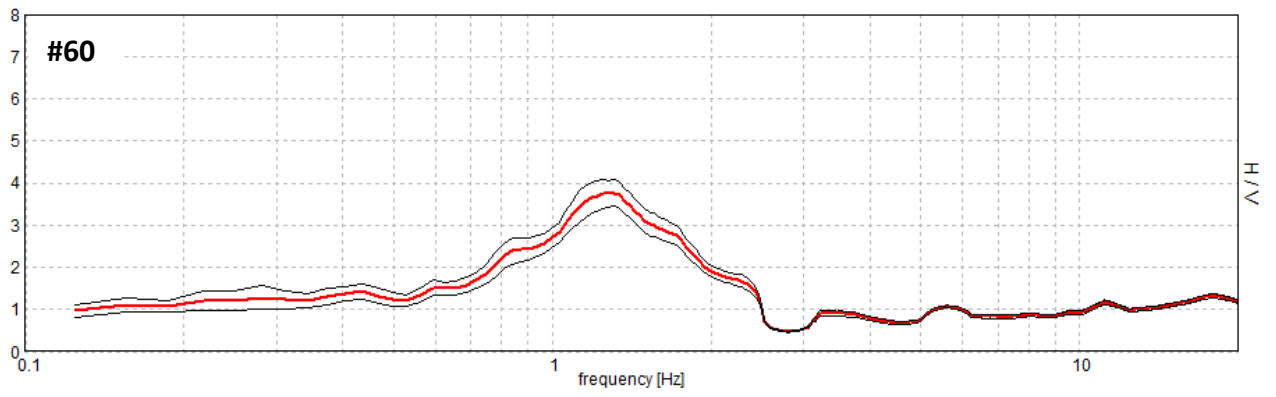
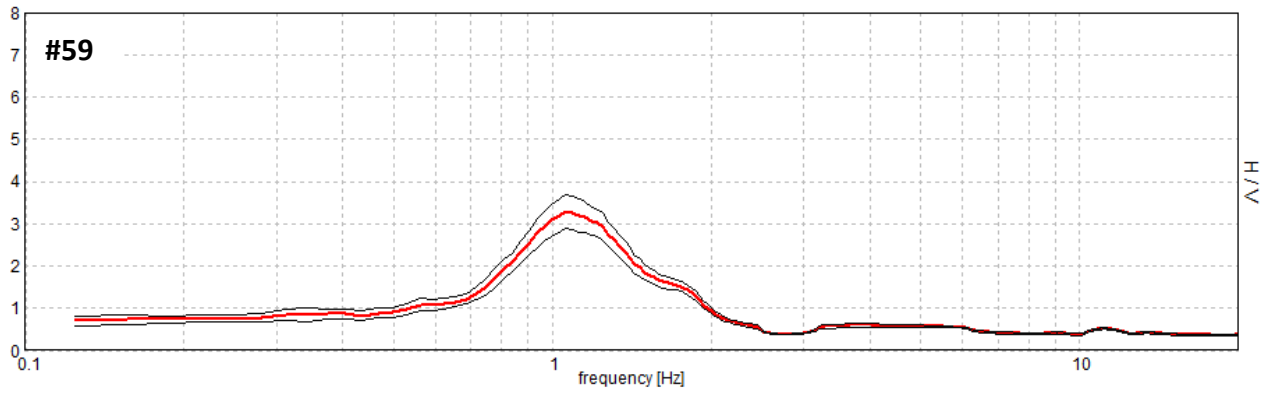
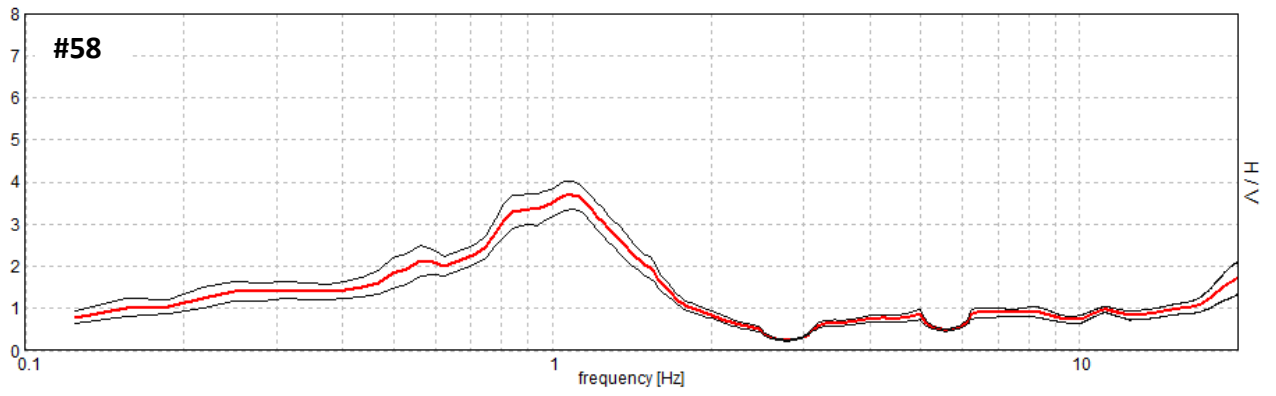
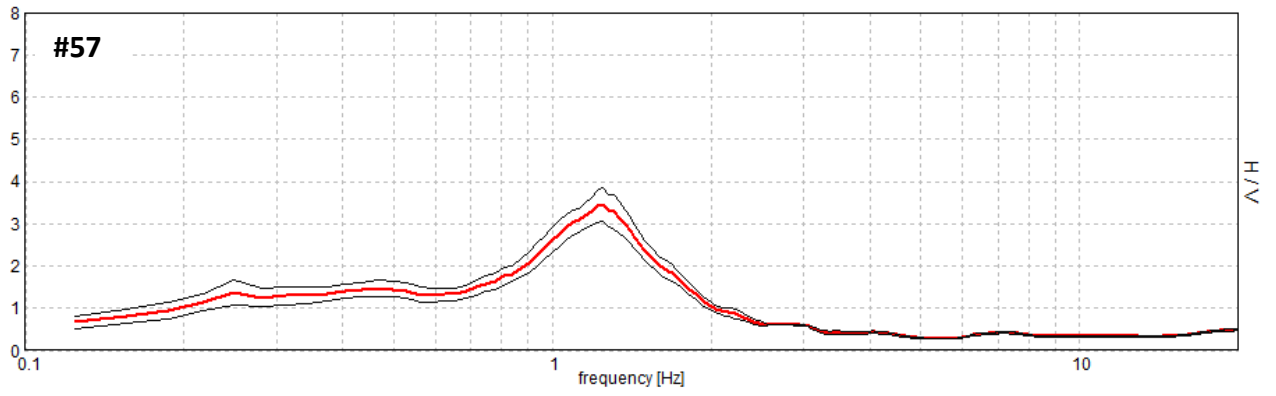


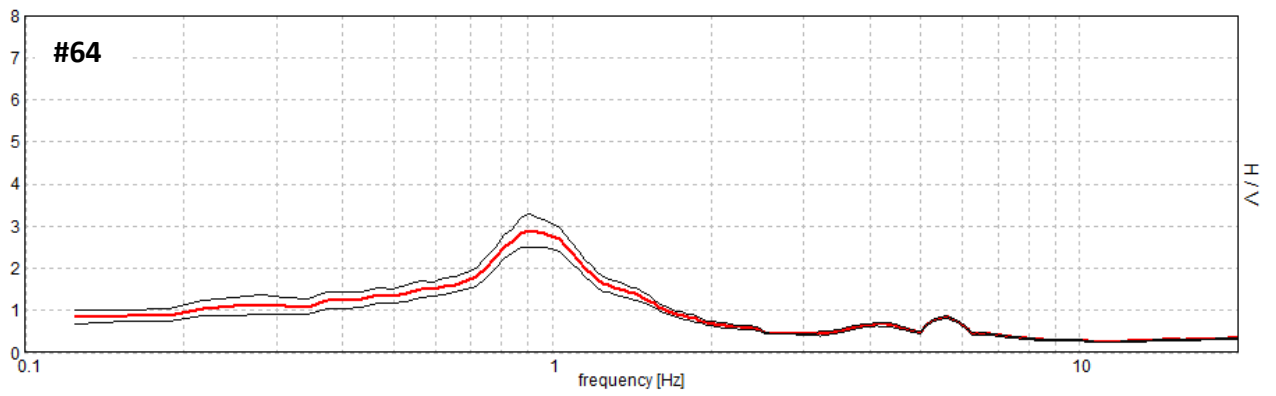
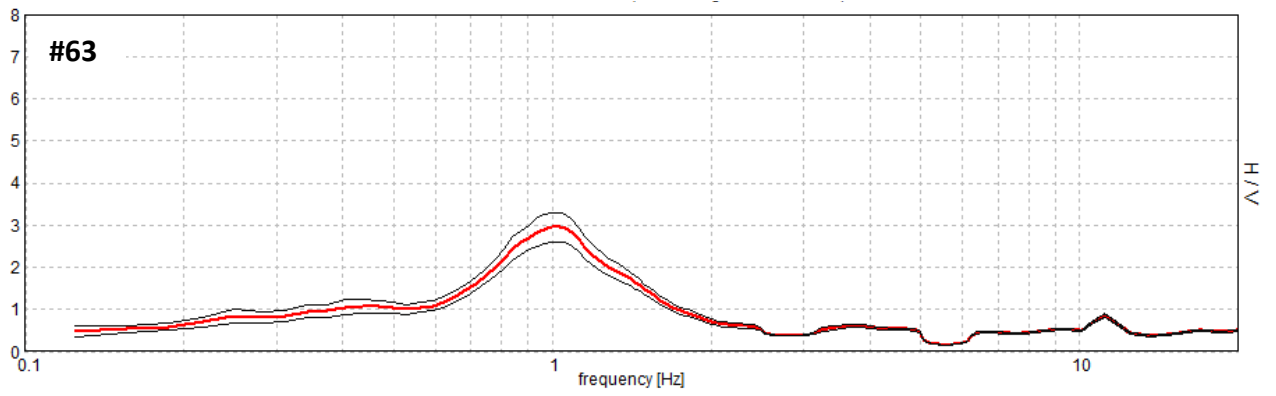
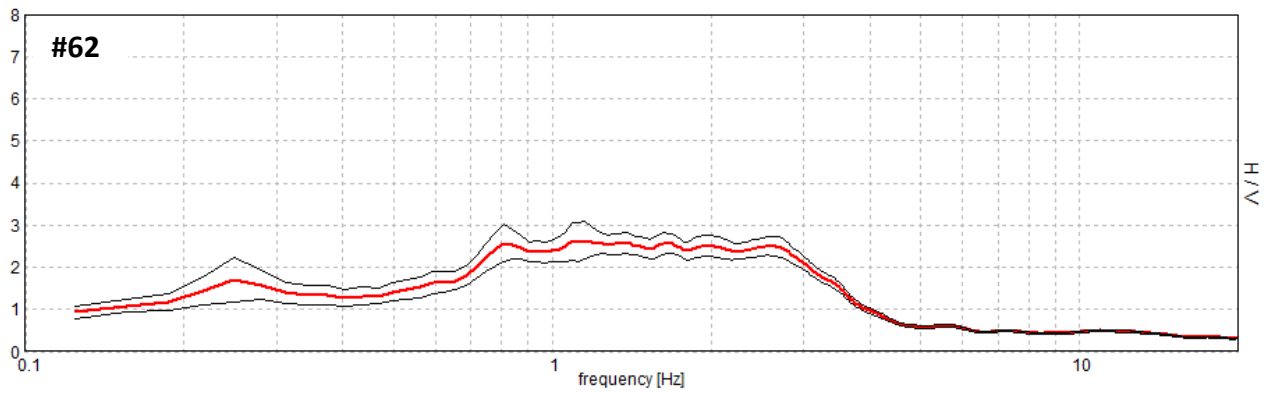
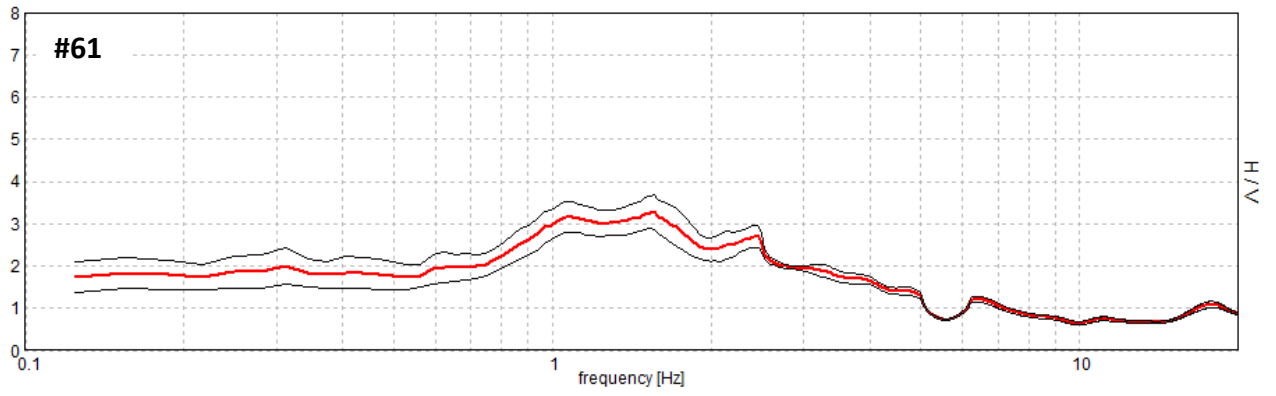


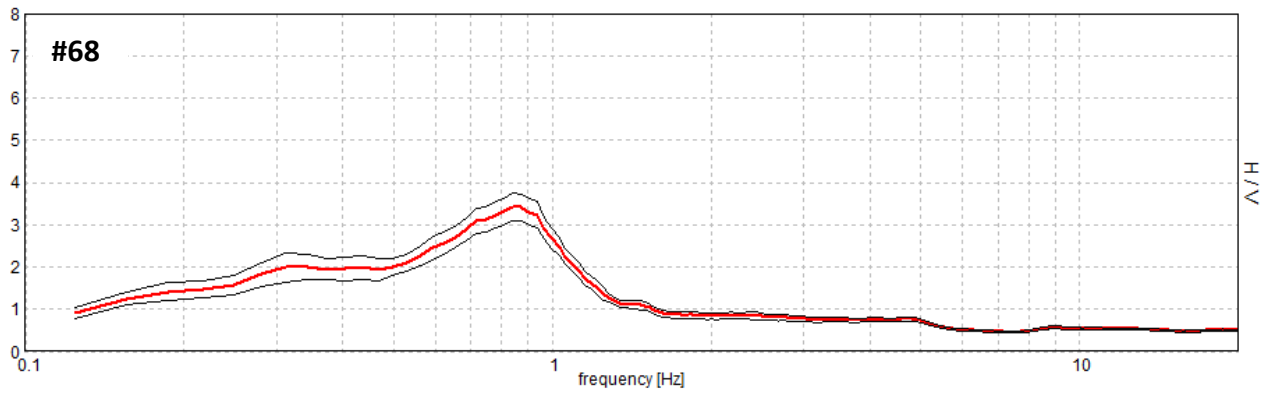
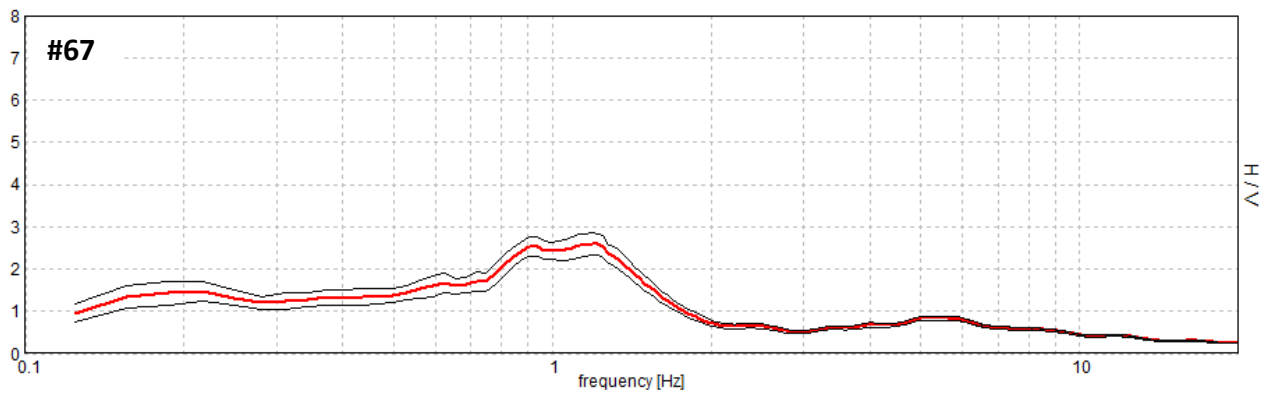
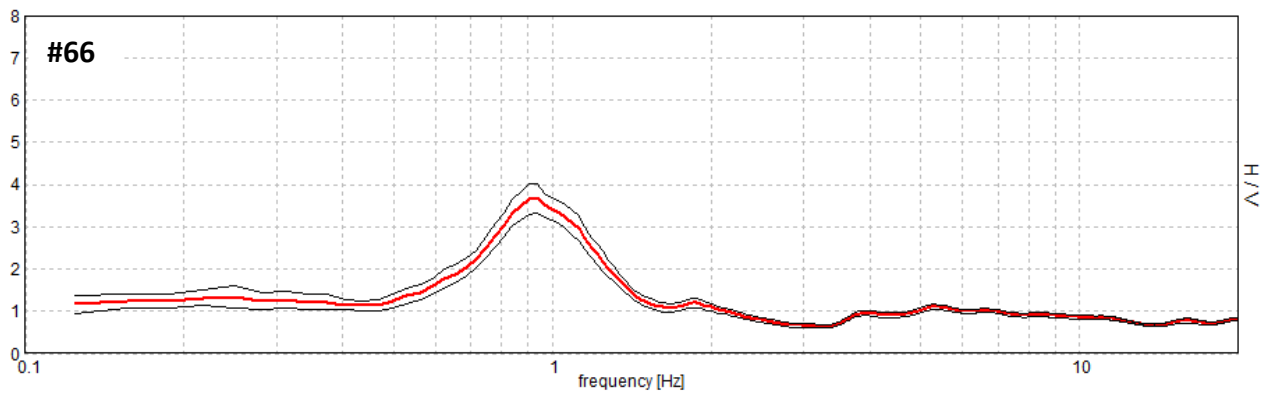
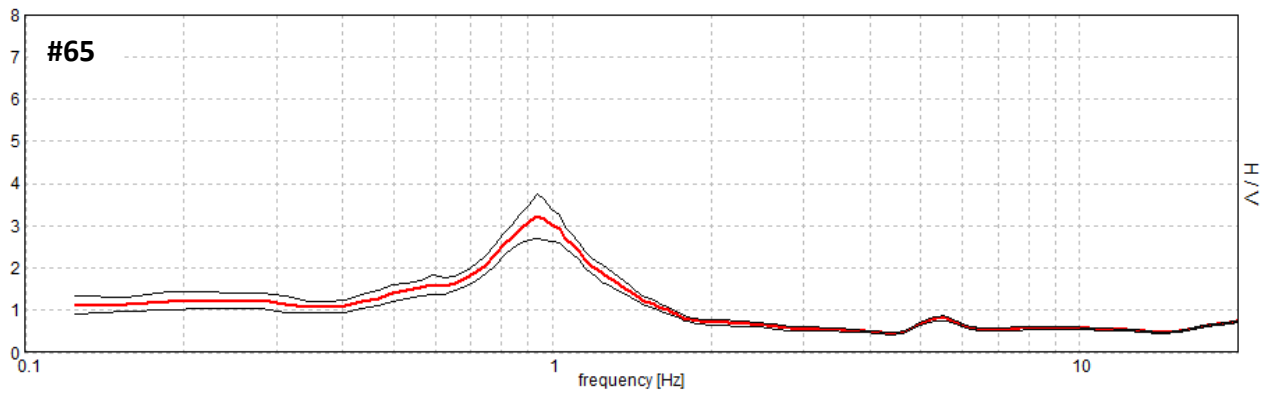


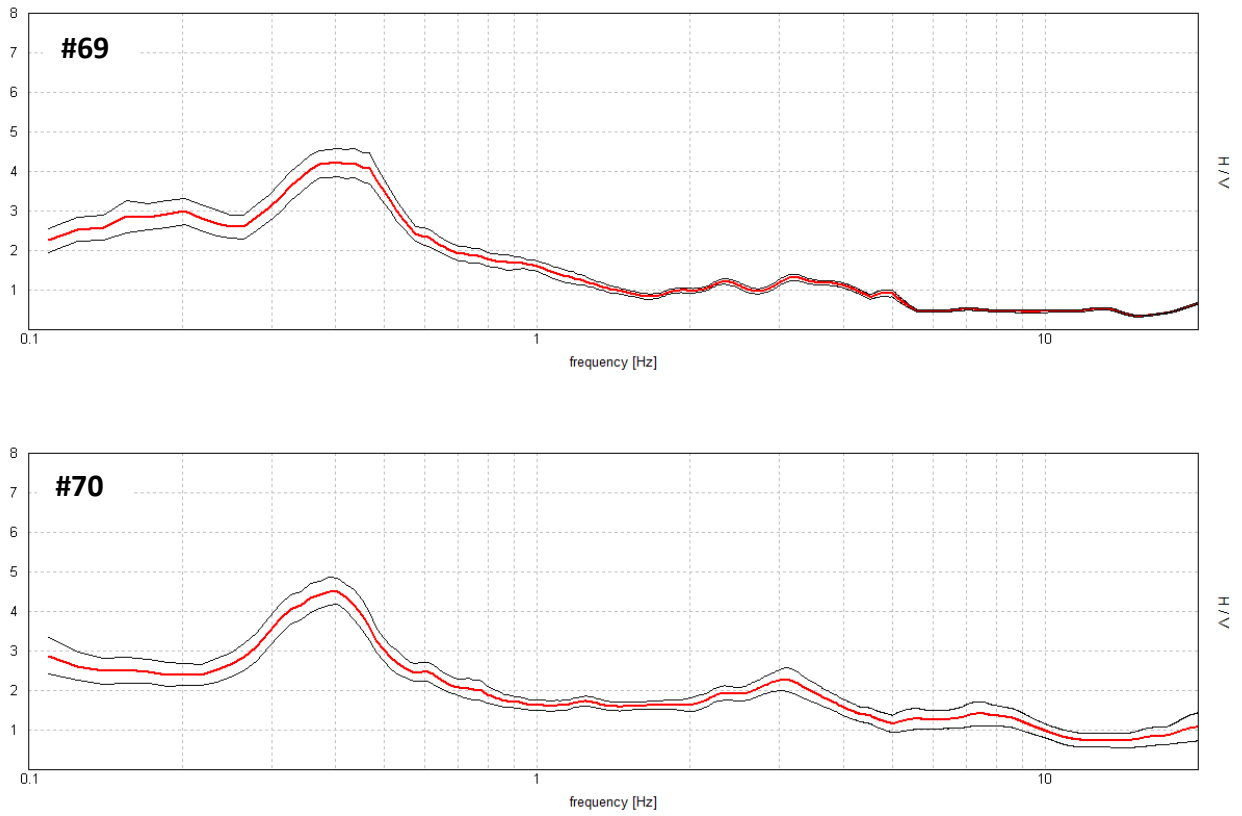












**Figure S2.** HVSR curves for the Messina historic centre study area. Numbering reported on the top-left of the individual plot indicates the location of the concerned measurement station according to the map of Figure S1. Red curve = mean spectral ratio, black curves = standard deviation.