



Analysis of a 2022, 17inch Archtop

Jens Feldhaus

Info@feldhaus-sound-works.de

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Impuls measurements of a
2022, 17 Inch Archtop

Measured in 50 cm
Distance Measured in 15 °
resolution on bridge hight

Graph shows the
frequency resonance at 0°



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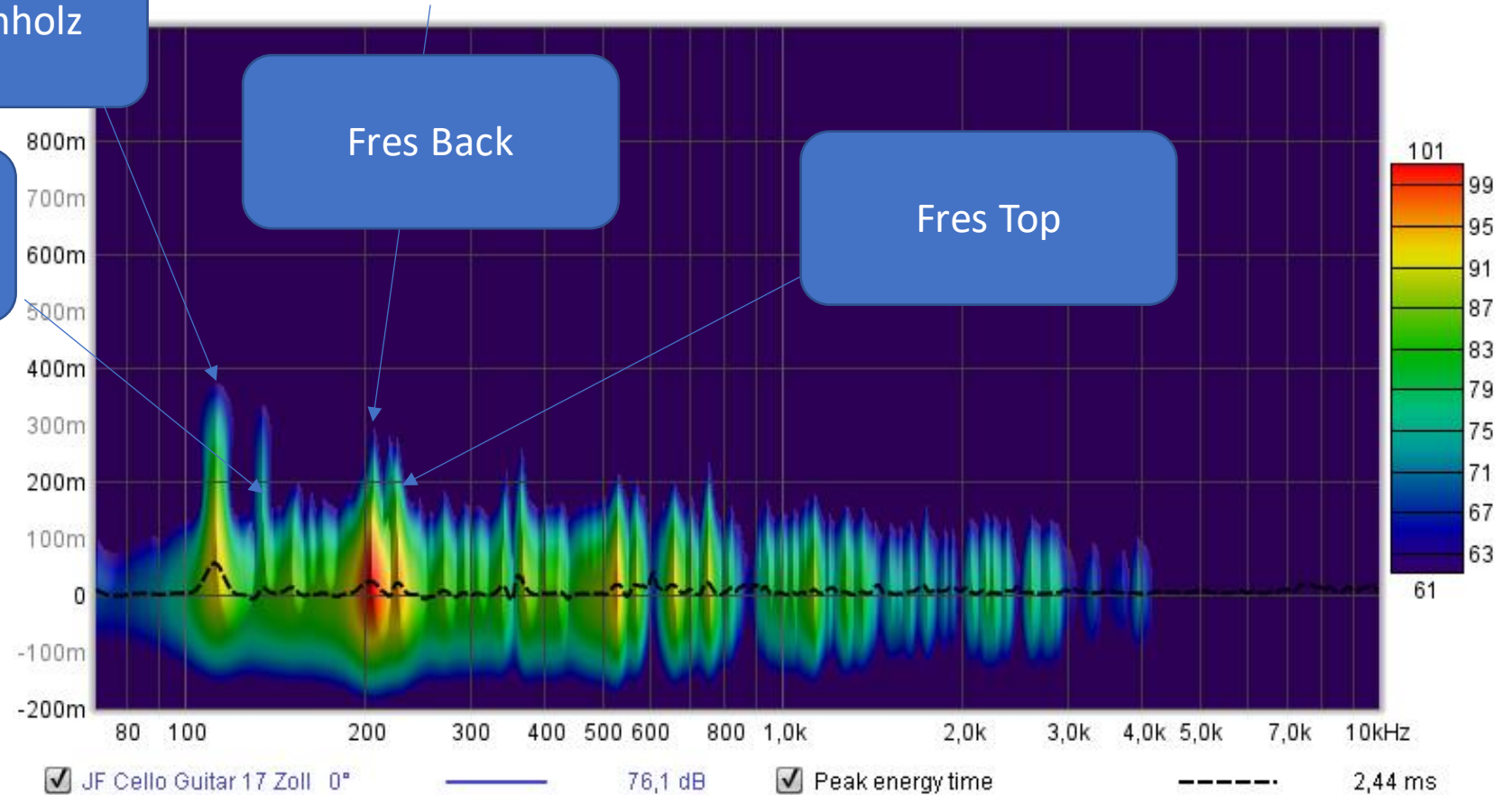
Fres Tailpiece

Fres Helmholz

Fres Back

Fres Top

The view into the decay shows the resonances we can see in the frequency plot as well, but also shows the time these resonances stay active.

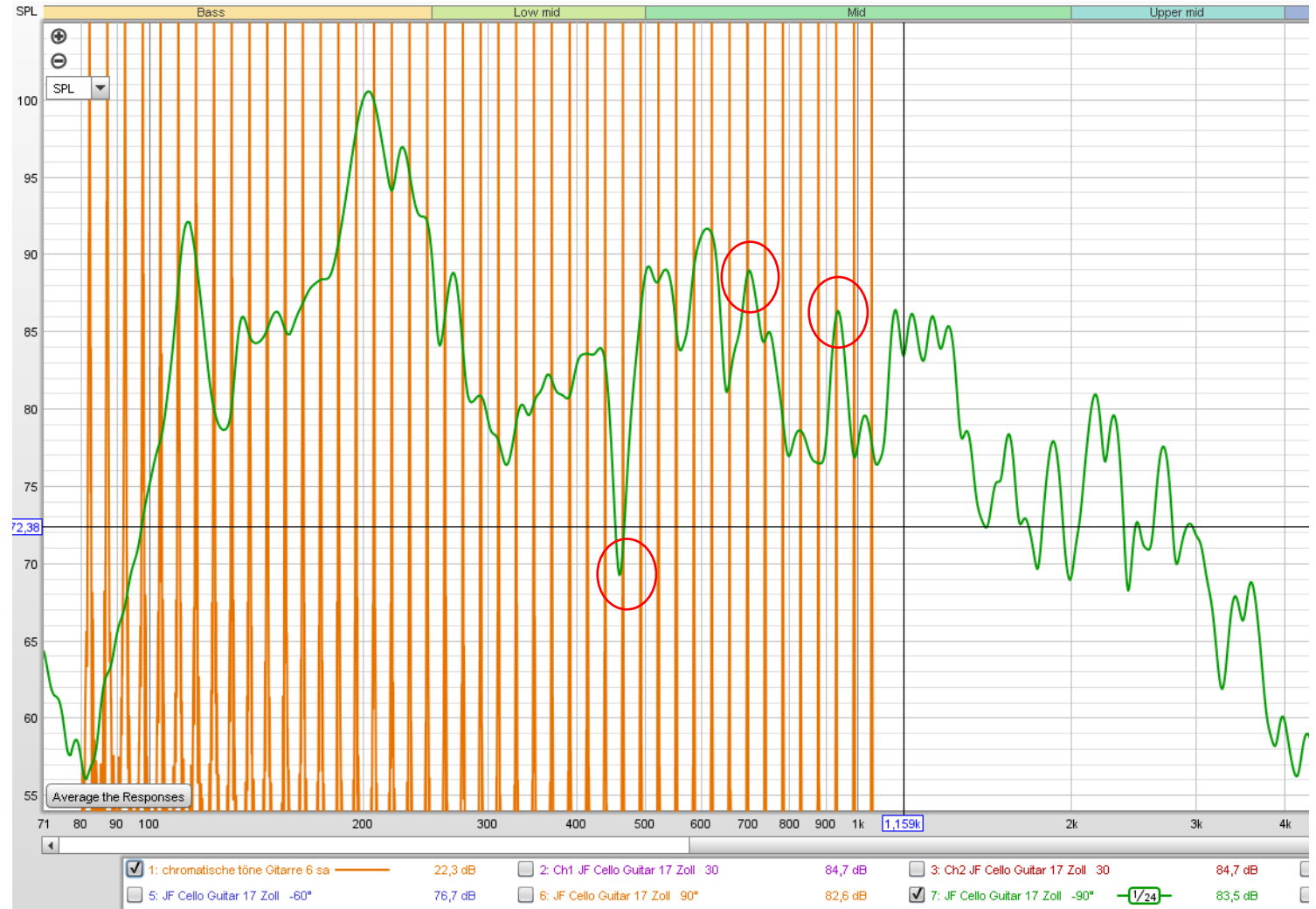


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The stripes show the chromatic scale of semitones at $a=440\text{Hz}$

Zooming in shows several overlays of resonance frequencies with semitones. This might result in Wolfetones or uneven sound character.



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Measurement Set Up:

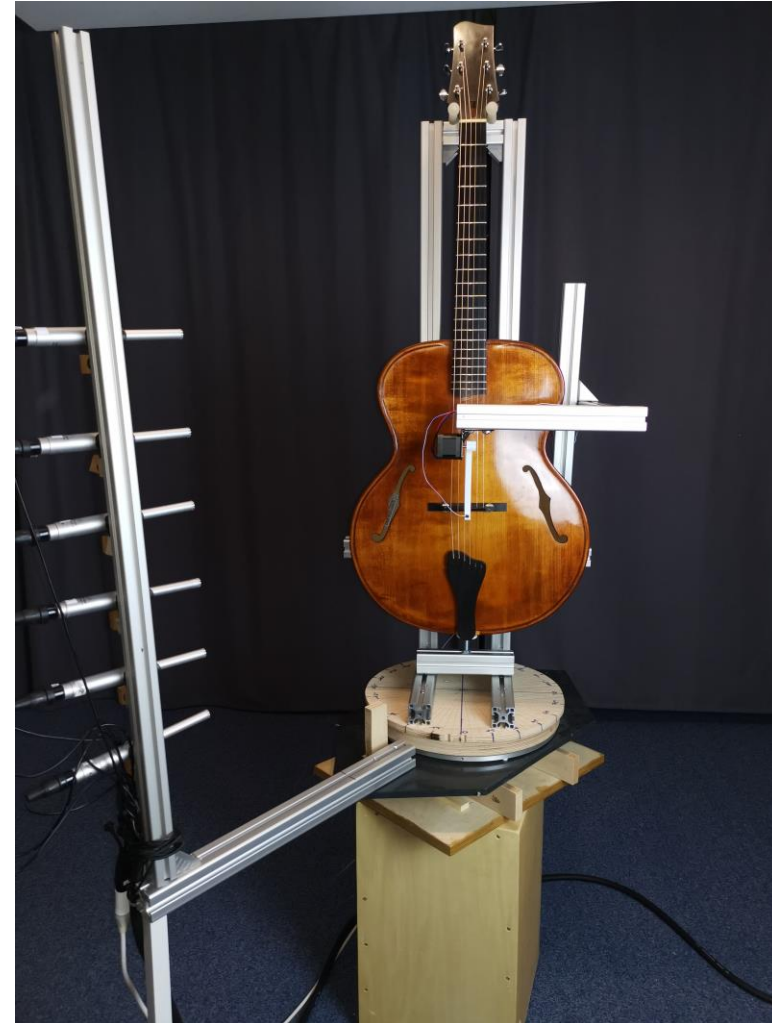
Microphones in 50 cm distance to the instrument.

Microphone spacing 15 cm

Automated impact hammer to avoid double tapping.

Microphone array is moved in 15 degree steps.

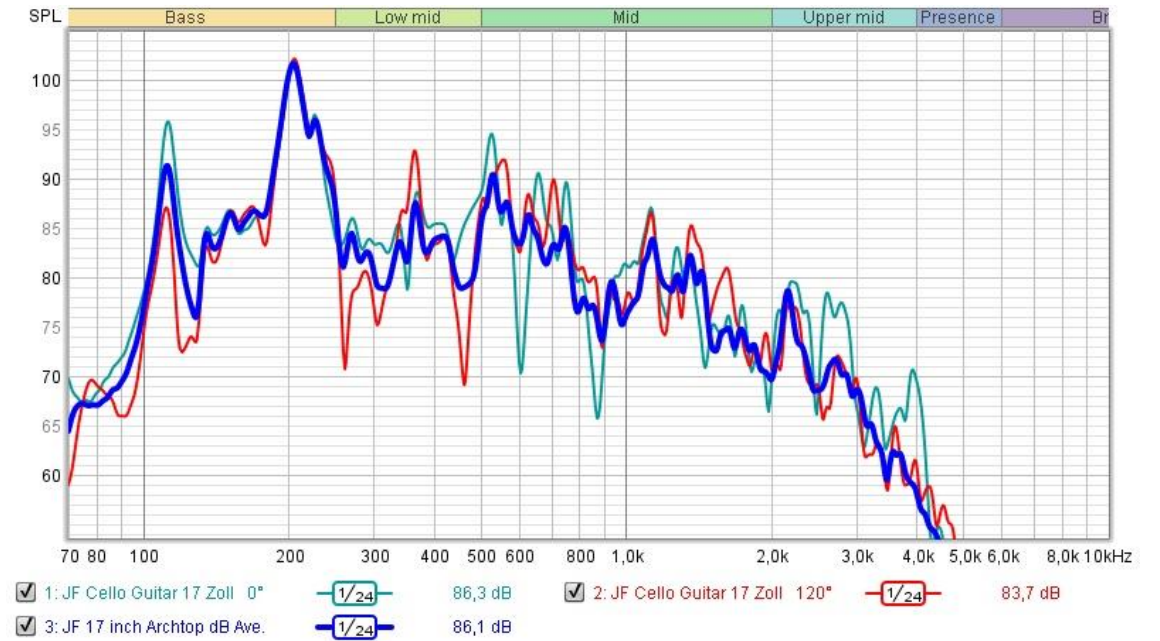
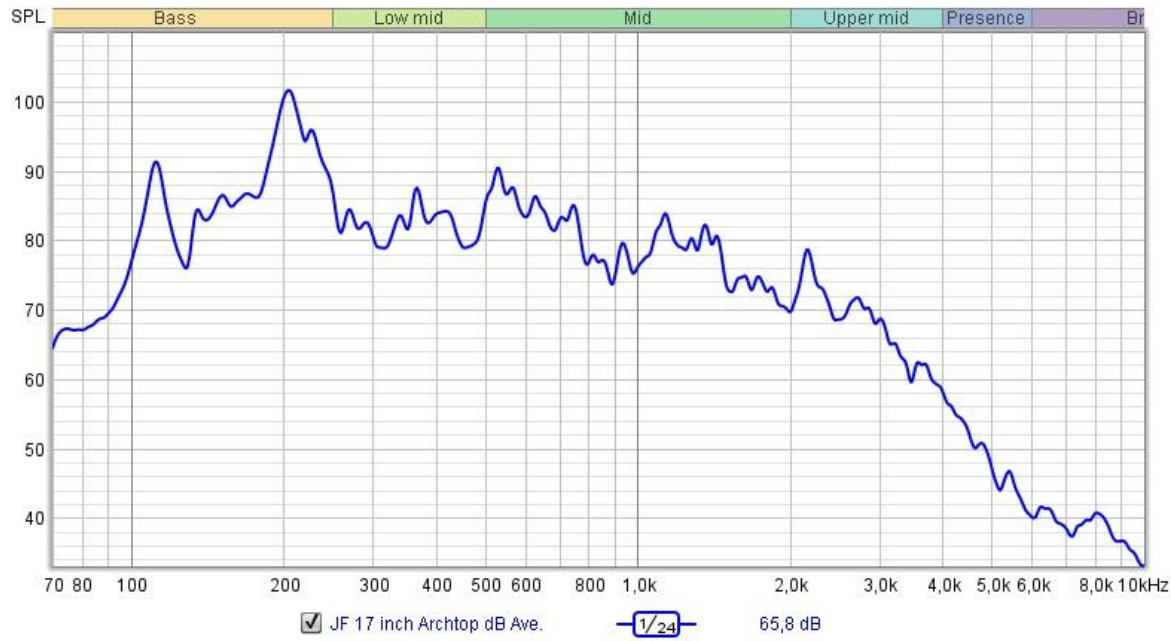
The measurement room has a noise level of 37dBA and a reverberation time of 0.3 s above 100 Hz.



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Acoustic power response calculated from angled measurements and in comparrison to 0° and 120° player position



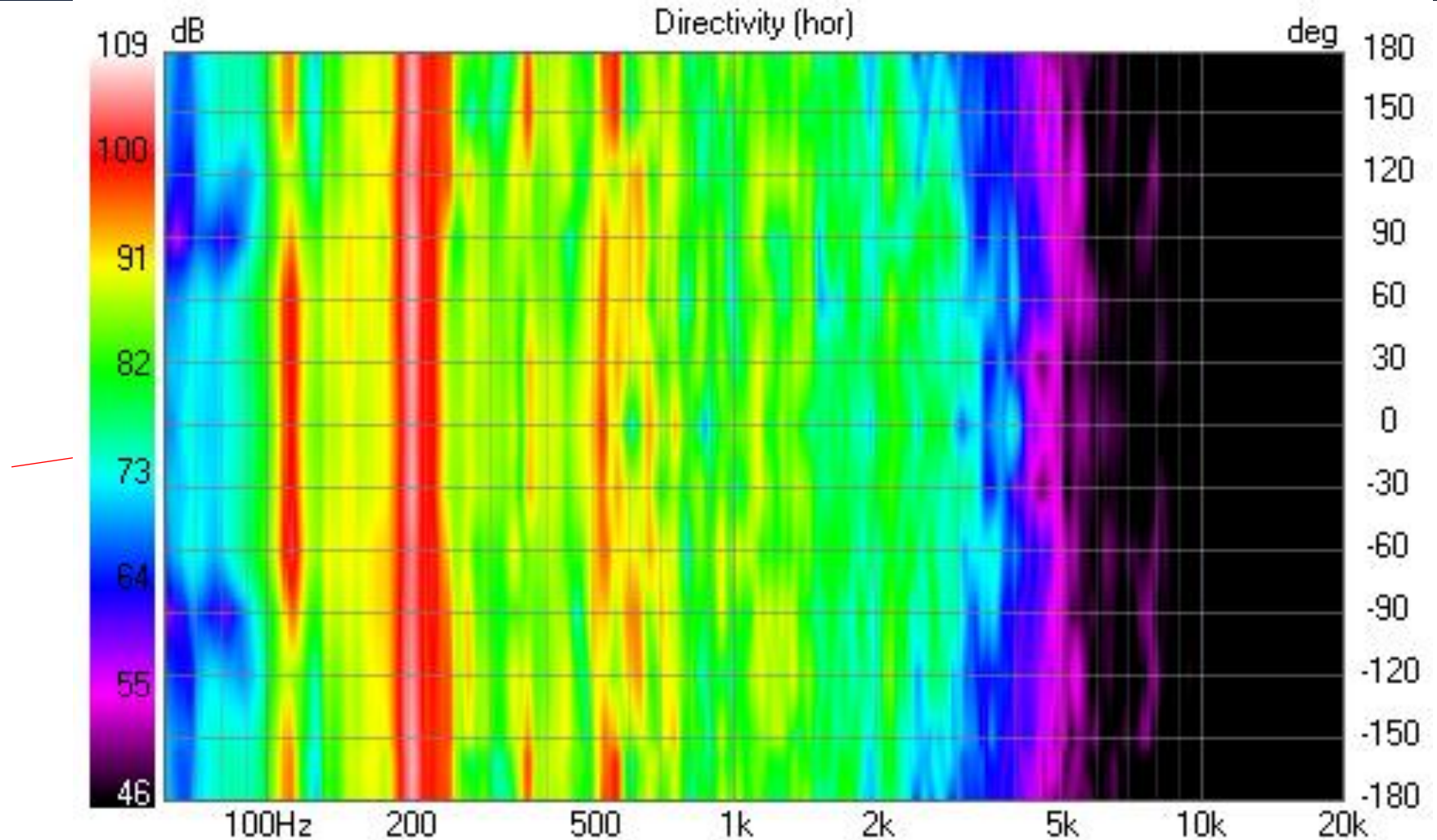
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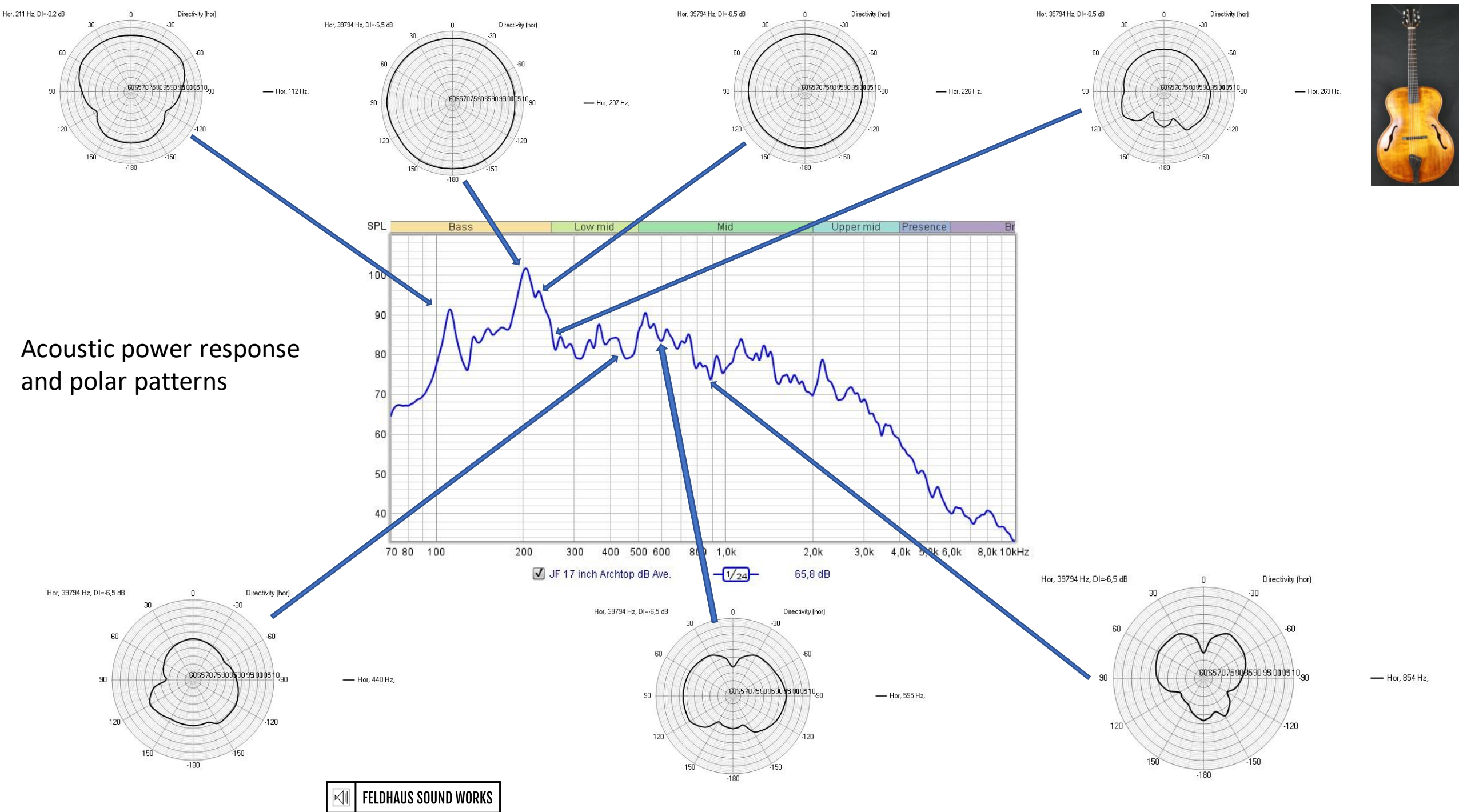


Measured in 50 cm
Distance in 15°
resolution on bridge
height around the
instrument

0° = Guitar Top

Isobaric diagram,
showing the
distribution of sound
around the instrument.



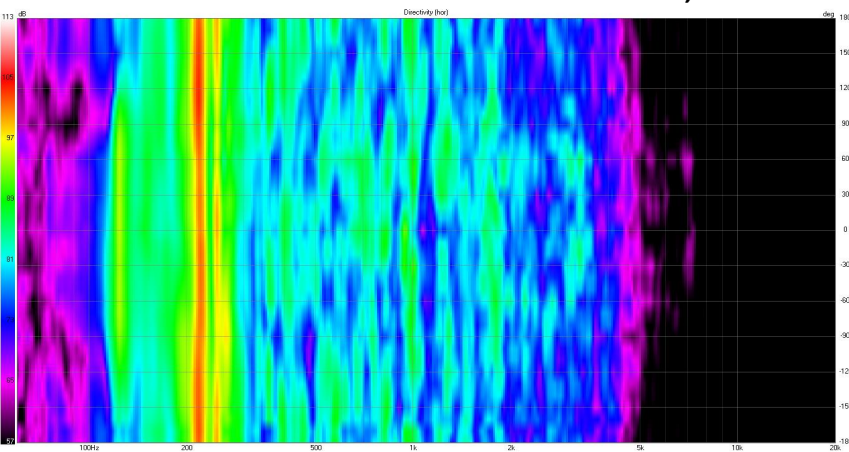


FFT analysis of impuls responses, isobaric graphs of Gibson Archtop Guitars

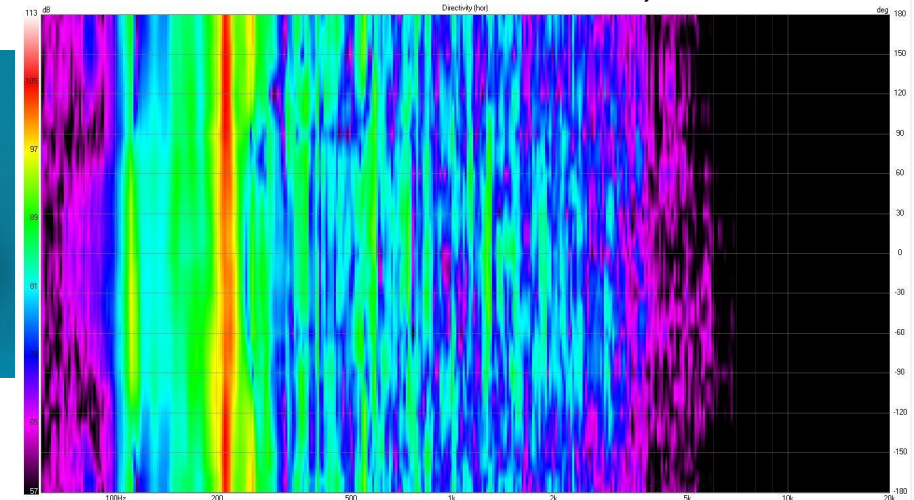
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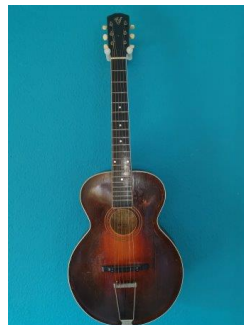
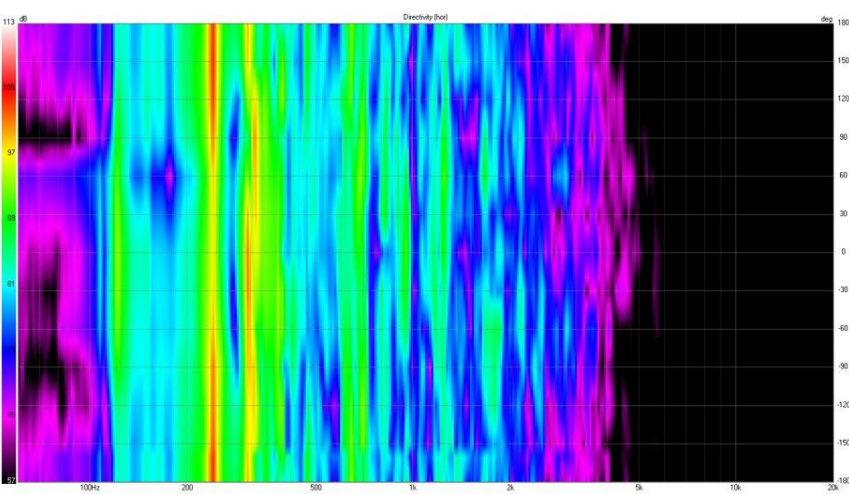
Gibson L4 F Holes 1939, 16"



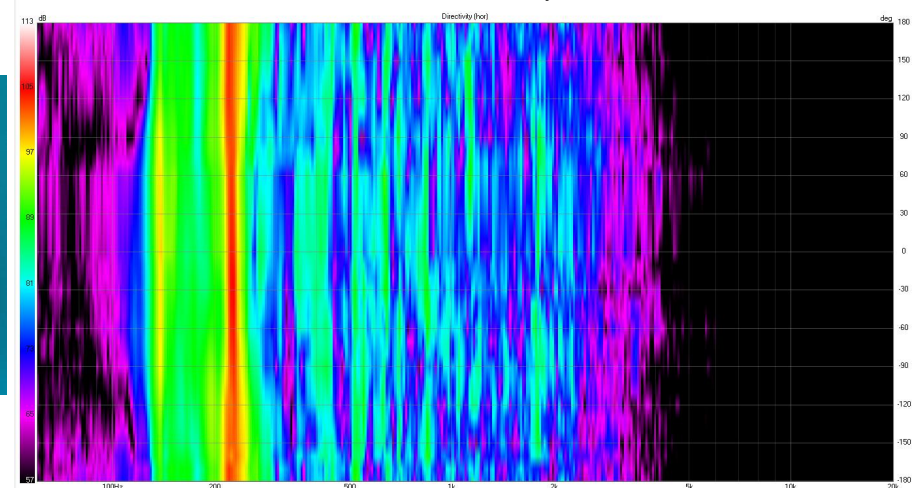
Gibson L4 round hole 1939, 16"



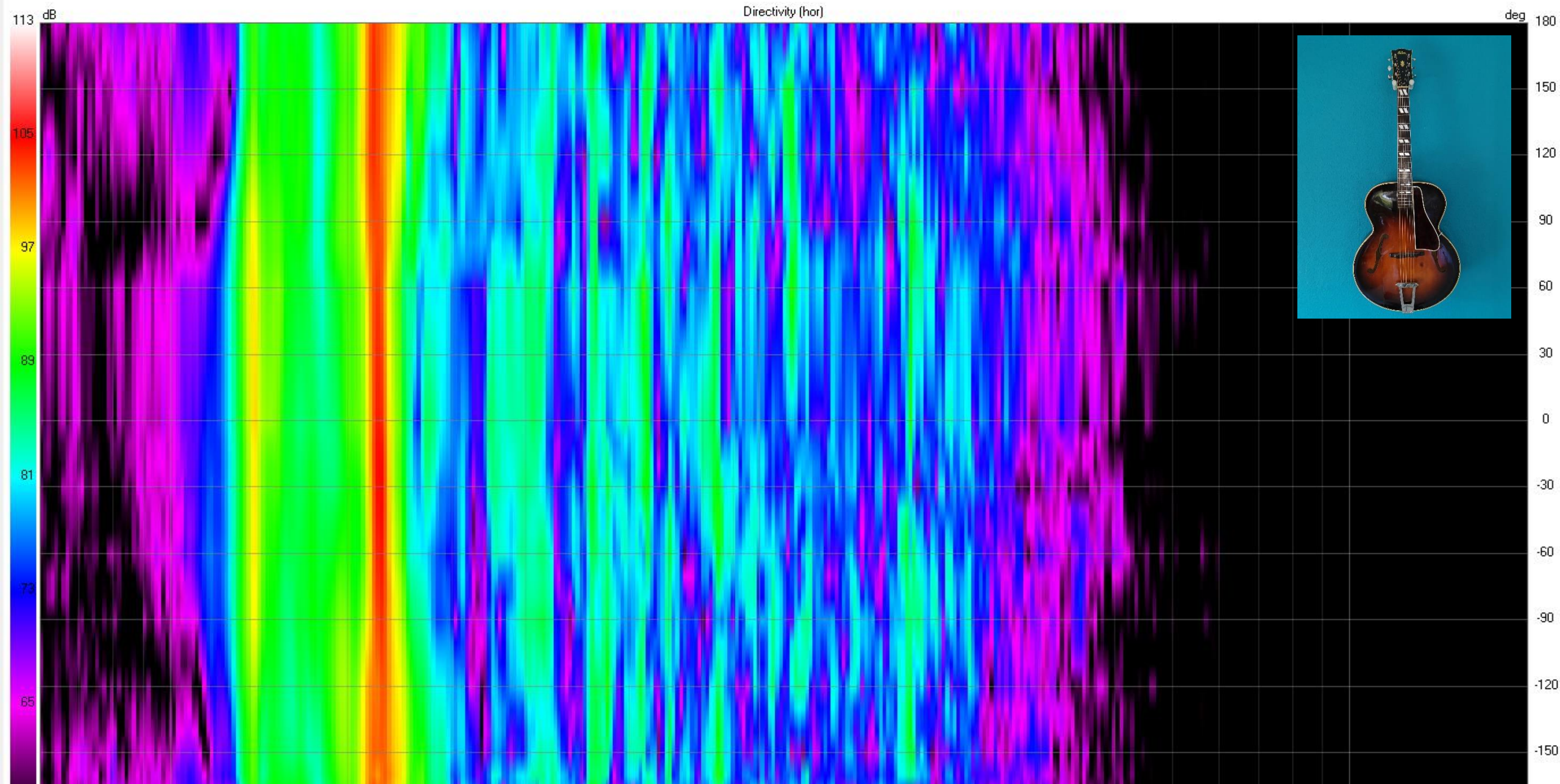
Gibson L3 round hole 1928



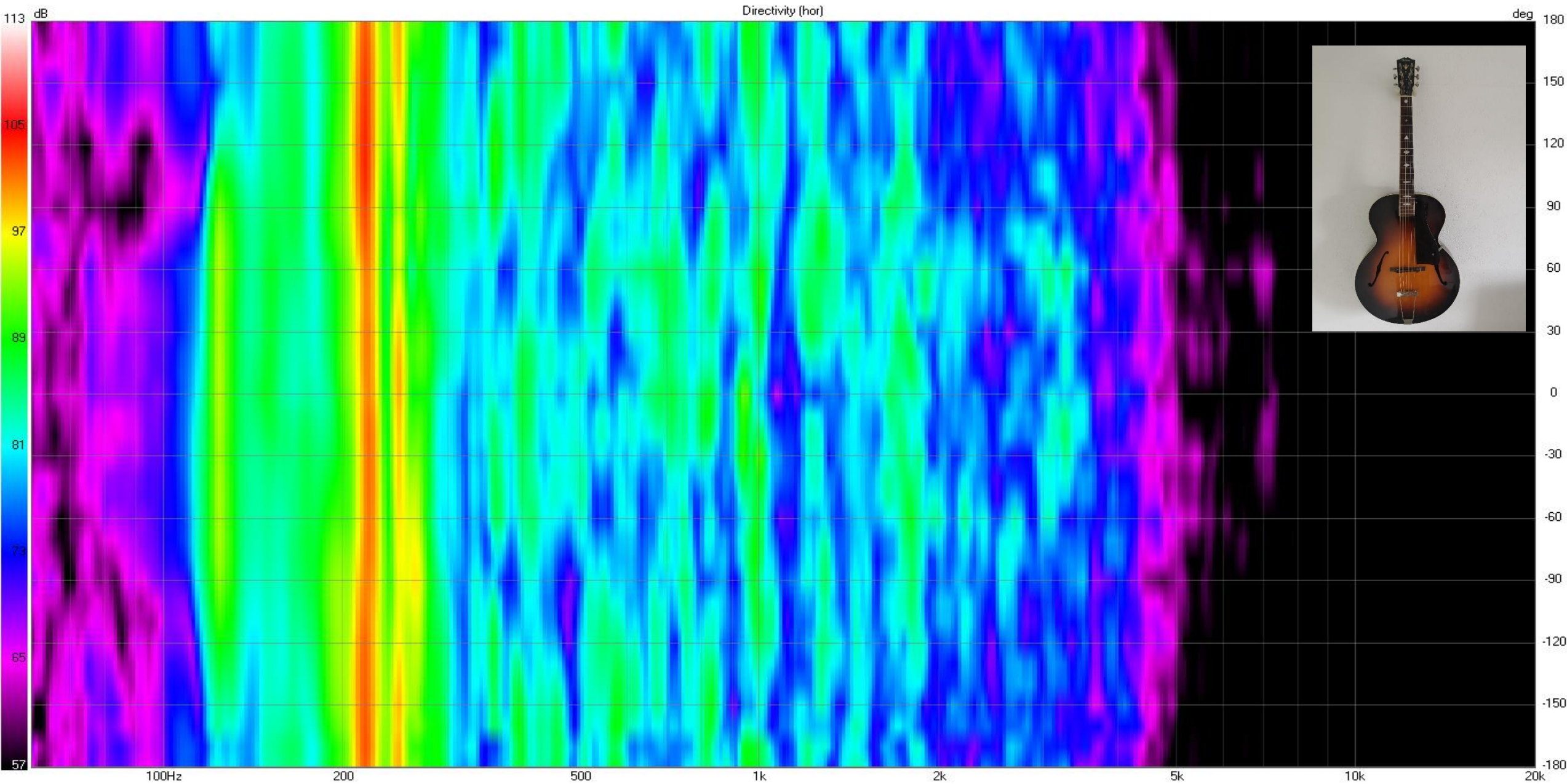
Gibson L7 1946, 17"



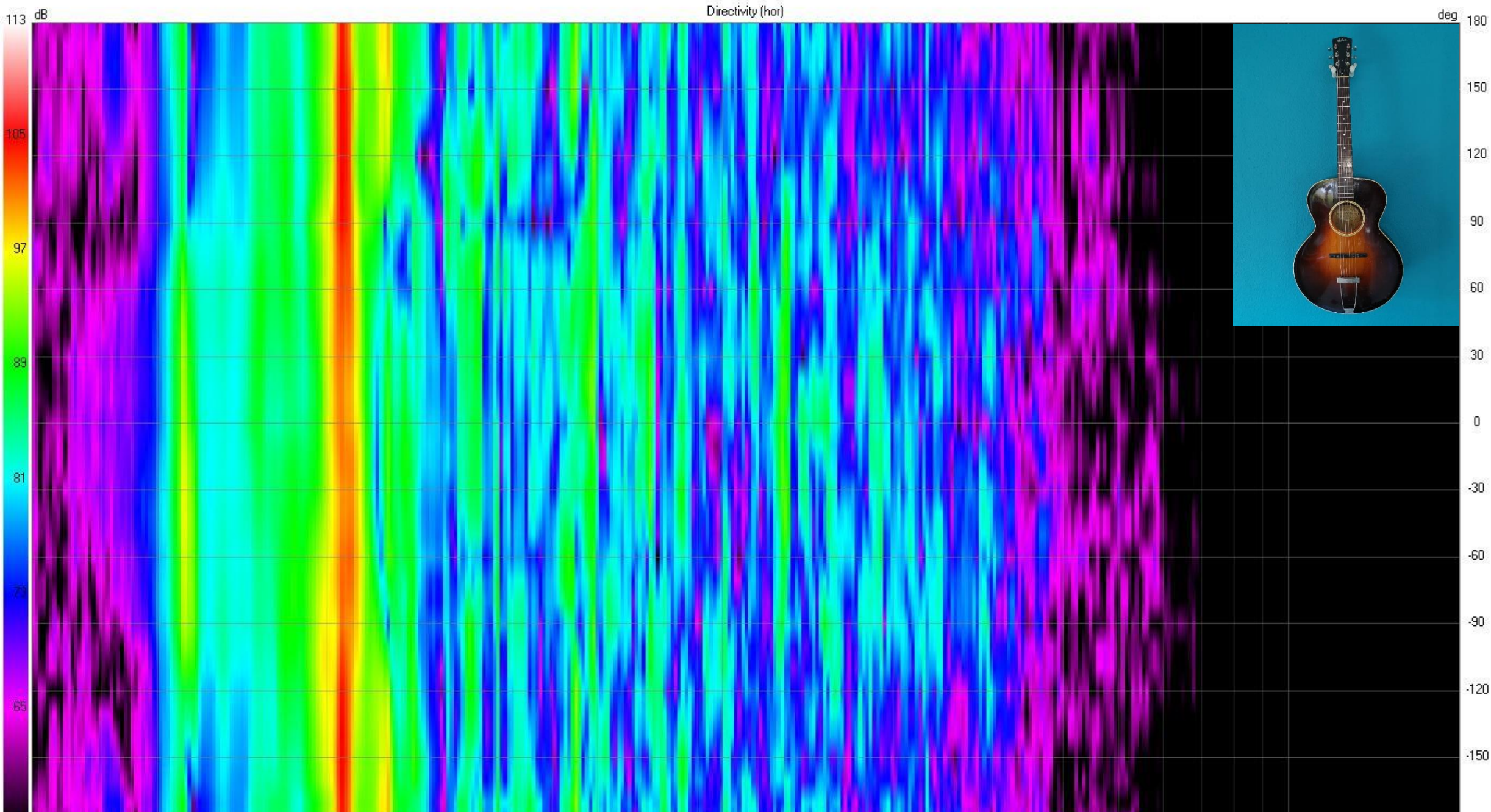
Gibson L7 1946 17"



Gibson L4 F Holes 1939 16"



Gibson L4 round hole 1939 16"



Gibson L3 round hole 1928

