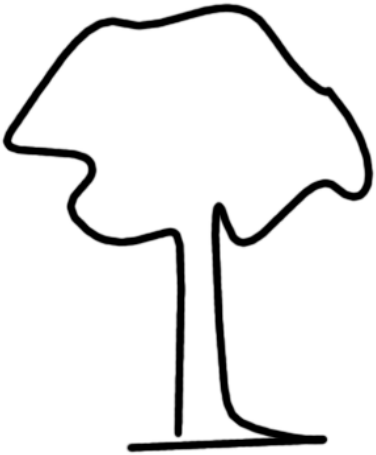
RESONANCE LOG GRADER

for log grading
Android software
User's guide



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Resonance Log Garder (RLG)

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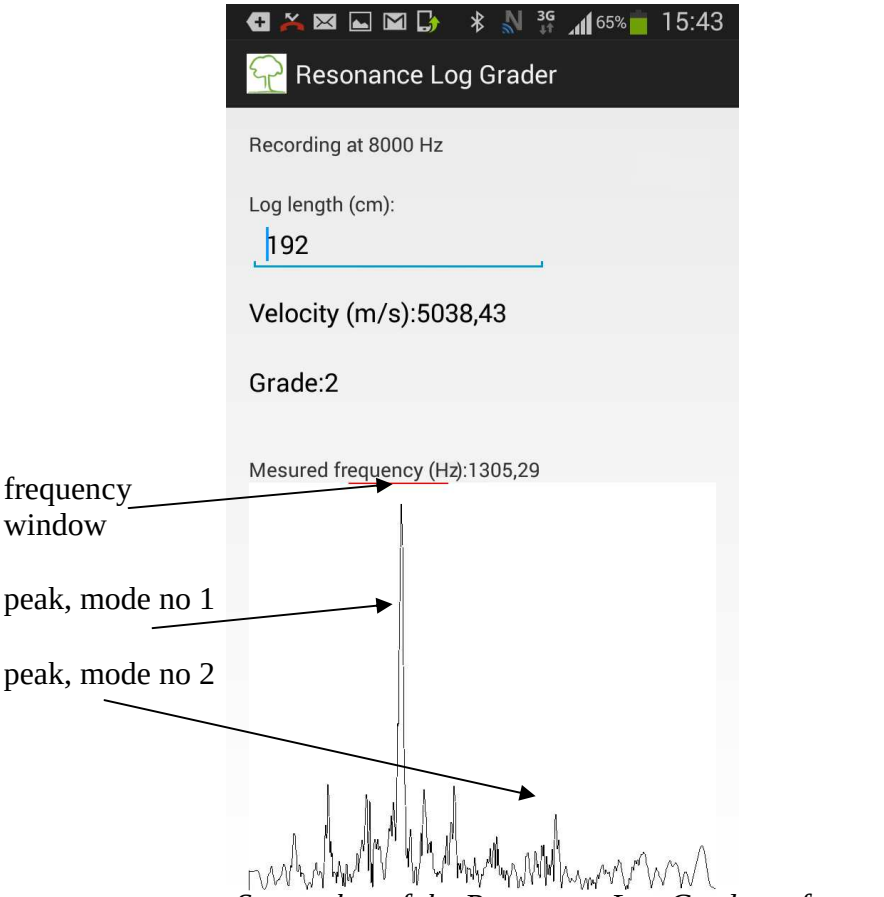
Log quality is influenced by the future lumber MOE. Because dynamic MOE is given by density miltiplied by velocity square, the stress wave velocity in the log is an important quality indicator.

RLG is a simple tool; a hammer and a Android phone or tablet with a specialised software. The user sets the length, then hits the end of the log. The accurate velocity appears on the screen and gives a grade number. The product is available in two forms: software only or a PocketPC with the installed software.

Technical background

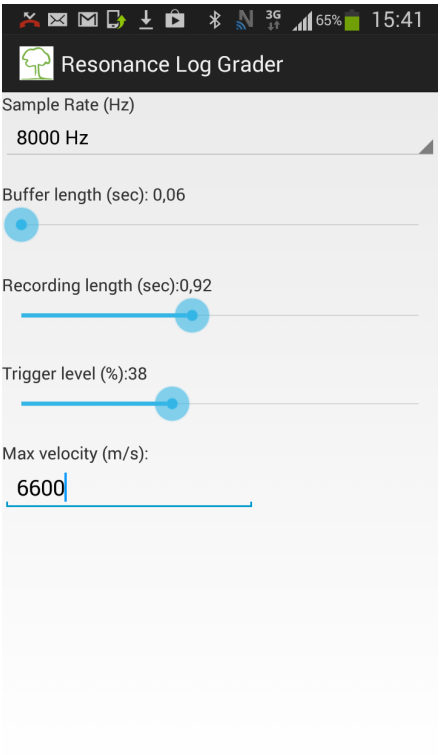
Velicity is measured by longitudinal vibration generated by operators hammer impact. The sound card of the pockert PC captures the sound. RLG software based on Fast Fourier Transformation (FFT) gives the frequency (f) of the firs vibration mode. Velocity is calculated by V=2Lf where L is the length of the log. The length data is set by the operator.

Resonance Log Grader in use



Screenshot of the Resonance Log Grader software

The grade number (arbitrary grade) is calculated from the measured velocity. The longitudinal vibration of the log, mode # 1 and 2 appears on the screen. Sometimes mode 2 peak is higher, than mode no. 1. The frequency is measured in the marked frequency window. A dominant peak has to be in the window region. We assume, that the velocity is in between "Max velocity" and "Max velocity/2" m/s. setting window. Please press your MENU button (left bottom corner of your android tool) to get the setting window, shown on the next image. If your log velocity is different, please set a new "Max velocity" value. You can select other parameters like: Sample Rate between 8000 and 44100 Hz, and Trigger level. Buffer length: select low value, if your android tool is slow, please increase this value. Recording length have to be higher than Buffer length. Optimal value is around 0,5 - 1 sec



The Settins window

Set the trigger level above the surrounding noise level. The setting is correct if the measurement start after hammer impact only. Please hold the android tool's microphone close to the end of the log.
A hint: the frequency for long log is low, generating low frequency a rubber hammer is better than steel one.

Installation

- Plesae copy the enclosed APK file to your android tool and run it.

Technical parameters:

Log length range: 1-12 m
Accuracy of the frequency measurement: +/- 2 Hz (depending on the actual android tool)