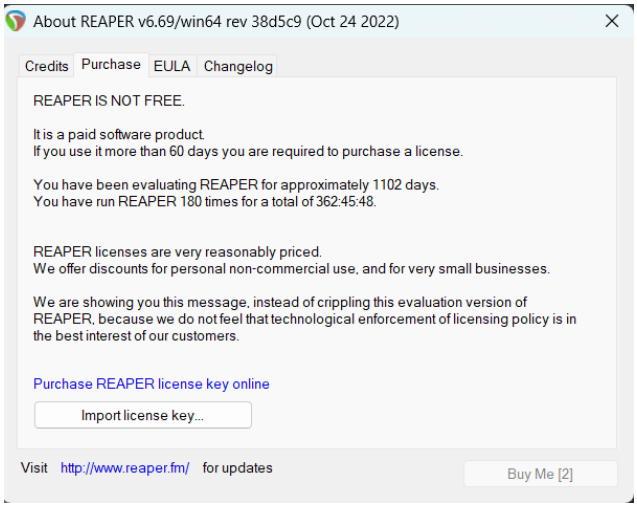
Using REAPER for Data Recording

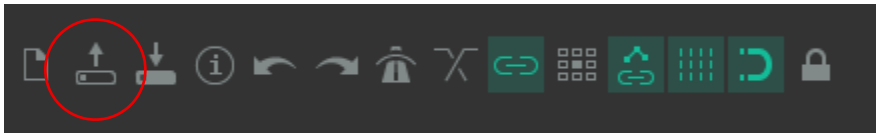
1. Open REAPER

2. Upon opening REAPER, make sure to have the “REAPER Isn’t Free” window active for 5 seconds while the timer in the bottom right “Buy Me” ticks down and changes to “Still Evaluating”. Then click “still evaluating” to close that window (if you skip this step, REAPER will not respond to any inputs)



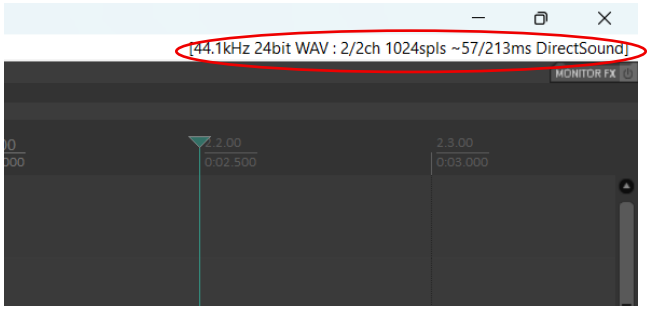
Wait for “Buy Me” to change to “Still Evaluating”

3. Make sure the “Template.RPP” REAPER project is the file opened (If you do not have that file, it is available on the GitHub). You can open a file going to “file->Open Project” or by clicking on the “Open Project” icon on the toolbar and navigating to the template



The REAPER toolbar with the “Open Project” button circled

4. You now must make sure that the TASCAM us-16x08 audio interface is the input device for REAPER. On a Windows or Linux computer, you can check the active audio devices by clicking on the bracketed words in the upper right of the window (directly under the "X" for closing the window). For a Mac, you will need to navigate to "REAPER → Settings" to open the device settings.



Click the text within the circled area to open the Device Manager

Make sure that the input device and output device are the "16x08 audio interface". Also, ensure that the sample format is set to 32 bit and that the sample rate is set to 48kHz. Press "OK"

5. Make sure all four audio tracks are armed for recording. This is achieved by pressing the red circle on the track .

Example of a track that is not armed for recording

Example of a track that is armed for recording

   - If tracks do not seem to be recording, you can check that the tracks are set to record from the correct inputs. You can do this by right-clicking the individual track's recording button, going to the "Input: Mono" selection menu, and viewing which input is selected. Below is a table showing the hydrophone/input pairings.

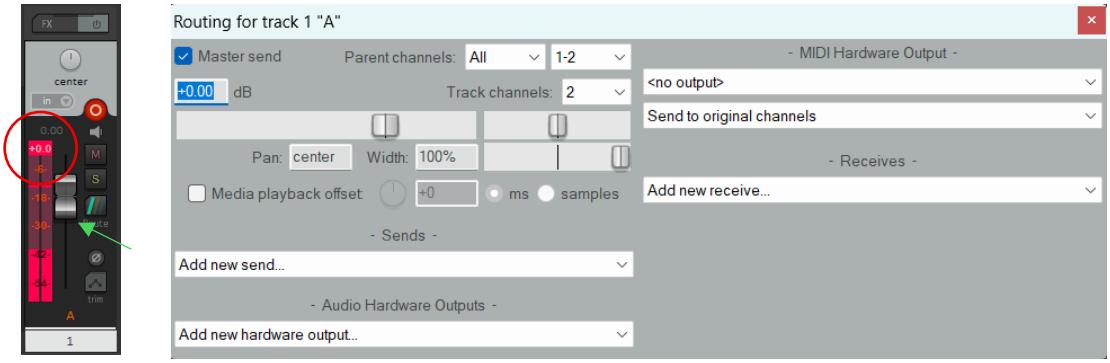
Hydrophone A	Hydrophone B	Hydrophone C	Hydrophone D
Input 7	Input 8	Input 6	Input 5

6. Before recording, make sure that the time slider is set to the beginning of the editor (if you have taken data previously, this will probably have moved from zero). This is easily done by pressing the “skip back” button or by pressing “w”.

The Skip Back button is circled in red and the Record button is circled in blue

7. When you are ready to record, press the “Record” button. On Windows and Linux, you can also press ctrl+r to record.
   You should see waveforms appear on all four tracks simultaneously (updated at a rate of 3Hz) as recording continues.
8. When you wish to stop recording, press the spacebar or click the record button again. A window asking if you wish to save the files will pop up, press “save all”.
9. If a solid orange or red bar appears at the top of ANY channel’s dB bar during recording, then that signal has been clipped and SHOULD NOT BE USED!

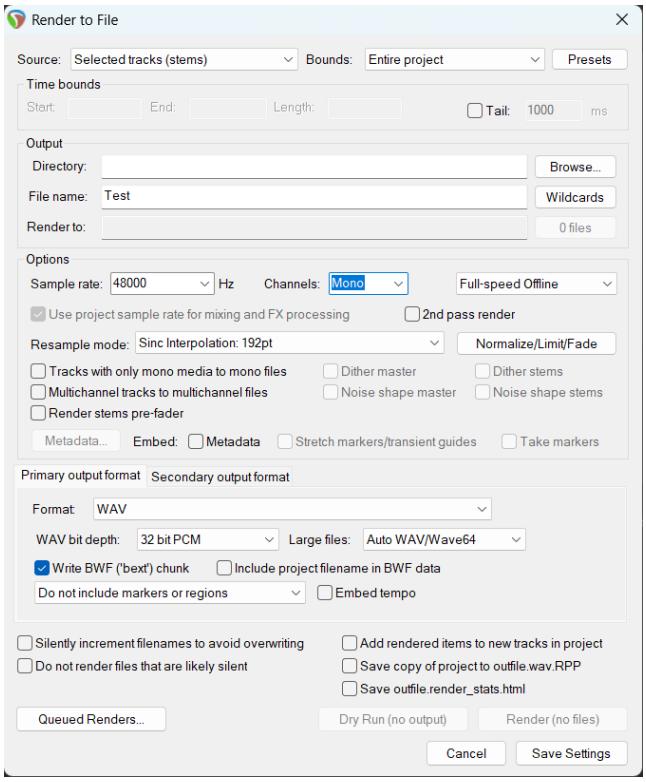
   If you have clipped a signal, you must reduce the volume of the channel low enough that there is no longer clipping occurring (normally only 1-2dB). The volume is controlled with the slider on the track; for more precise dB setting, right-click the slider and input the dB change in the dB box (make sure to have a negative sign for dB reduction)



The red circle shows the clipping indicator and the green arrow shows the volume slider. Right-clicking the volume slider brings up the window shown where the area to edit the volume dB change value is highlighted in blue

Click on the red box at the top of channel’s dB bar to clear the clipping warning and see if clipping occurs again from continued channel input.

10. If you are satisfied with your recording, we must now output the tracks as completed WAV files at a sample rate of 48kHz to a location of your choosing. To do this, make sure all tracks are selected, then press ctrl+alt+r to open the rendering menu or click File → Render. While these settings shouldn't need to be edited every time data is collected (except the file name should be edited every time), they should be double checked the first time and periodically.
    - Source" should be set to "Selected tracks (Stems)"
    - "Bounds" should be "Entire Project"
    - "Tail" should be disabled
    - "Directory" should be set to a convenient file location
    - File name should be edited to something indicative of the experiment performed
    - "Sample Rate" should be 48kHz
    - "Channels" should be set to "mono"
    - Format should be "WAV"
    - Bit depth should be 32 bit



If all the settings appear correctly, then press "Render 4 Files" and wait for the rendering screens to finish before closing the windows. If any settings besides file name needed adjusting, be sure to press "Save Settings"

Note: The produced files will have file names formatted as the master file name with "_001", "_002", "_003", and "_004" on the end. Ex. "TestRun1_001", "TestRun1_002", "TestRun1_003", TestRun1_004