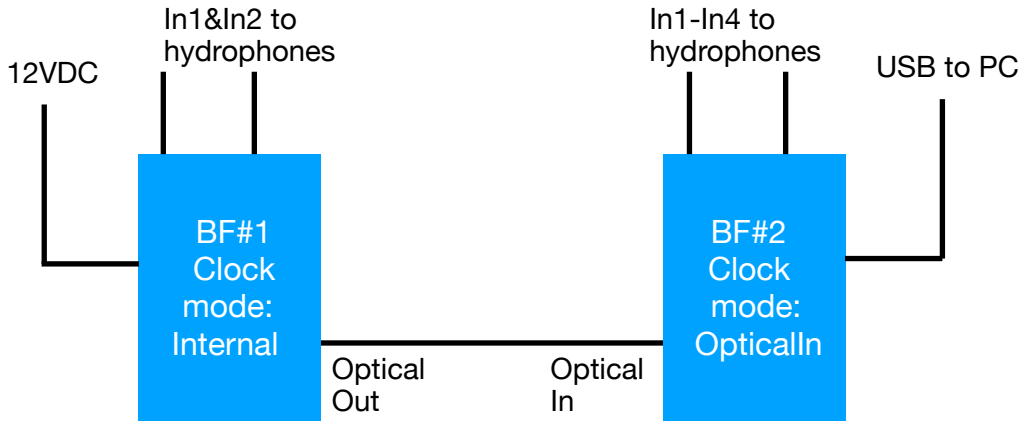
How to work with 2 babyface

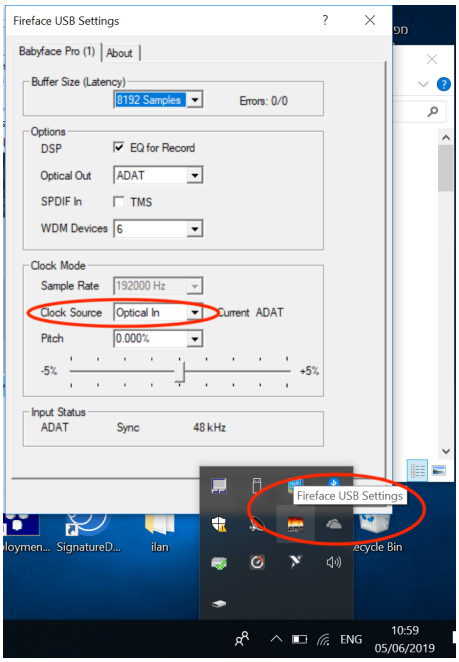
The connection of the 2 devices is showed in the following figure, Babyface No. 1 (BF#1) is working in stand alone mode (not connect to PC, use a 9V-12V battery for power supply), Babyface No.2 (BF#2) is working in USB mode (connect to black computer with USB cable).



Some setting of the devices:

1. Make sure that clock source of BF#1 is set to internal (see Page 89 “Set Clock Mode and Sample Rate” in User’s Manual, set clock mode to Master will do)
   -> how to set clock mode and sample rate of BF#1
   Push SET for two seconds. The level meters will now signal the current clock mode and sample rate.
   Use SELECT to step through all available options:
   ** Master 44.1kHz*
   ** Master 48kHz*
   ** Master 88.2kHz*
   ** Master 96kHz*
   ** Master 176.4kHz*
   ** Master 192kHz*
   ** AutoSync*
   ** AutoSync, Double Speed mode in case input = ADAT (2x SMUX)*
   ** AutoSync, Quad Speed mode in case input = ADAT (4x SMUX)*

   and clock source of BF#2 is set to Optical In (see Page 14 in User’s Manual).



-> how to set clock source of BF#2
see the following figure, you can find "Fireface USB Settings" in the bottom part of windows. Open the "Fireface USB Settings", select the "Clock Source" to "Optical In".

Once "Optical In" is selected, the sampling rate is determined by BF#1, hence you can not "Sample Rate" in "Fireface USB Settings". You can change the "Sample Rate" when you change "Clock Source" to "Internal".

2. Route the input of BF#1 to optical out (see Page 89 "Monitoring-MIX" in User's Manual). Output for monitoring should be set to "opt", signal be monitor should be set to "CH 1/2".
   -> how to route the input of BF#1
   Use OUT to select the output for the monitoring, i.e. where the signal will be routed to
   Use IN to select the input with the signal that should be monitored
   Push MIX. The input level LEDs start to flash
   Use SELECT to choose between left, right or both channels
   Turn the encoder to set the actual monitoring level.

3. Set the optical output format of BF#1 to ADAT (see Page 89 "Switch digital output format " in User's Manual), which is suggested by RME engineer.
   -> how to set the output format of BF#1
   Use OUT to select the optical output. Push SET. The level meter will signal ADAT mode with 8 LEDs, SPDIF mode with 2 LEDs turned on. Use SELECT to switch between them.

4. Set sample rate of BF#1 (see Page 89 "Set Clock Mode and Sample Rate" in User's Manual),
   -> how to set sample rate of BF#1
   Push SET for two seconds. The level meters will now signal the current clock mode and sample rate.
   Use SELECT to step through all available options:
   ** Master 44.1kHz*
   ** Master 48kHz*
   ** Master 88.2kHz*
   ** Master 96kHz*
   ** Master 176.4kHz*
   ** Master 192kHz*
   ** AutoSync*
   ** AutoSync, Double Speed mode in case input = ADAT (2x SMUX)*
   ** AutoSync, Quad Speed mode in case input = ADAT (4x SMUX)*

   sample rate of BF#2 depends on the optical input, but should be verified in "Fireface USB settings" window (see Page 23 "Clock Mode" in User's Manual). Sample rate of BF#2 is the final sample rate of the wav files. It is recommended to set the sample rate of the two babyface with the same value.

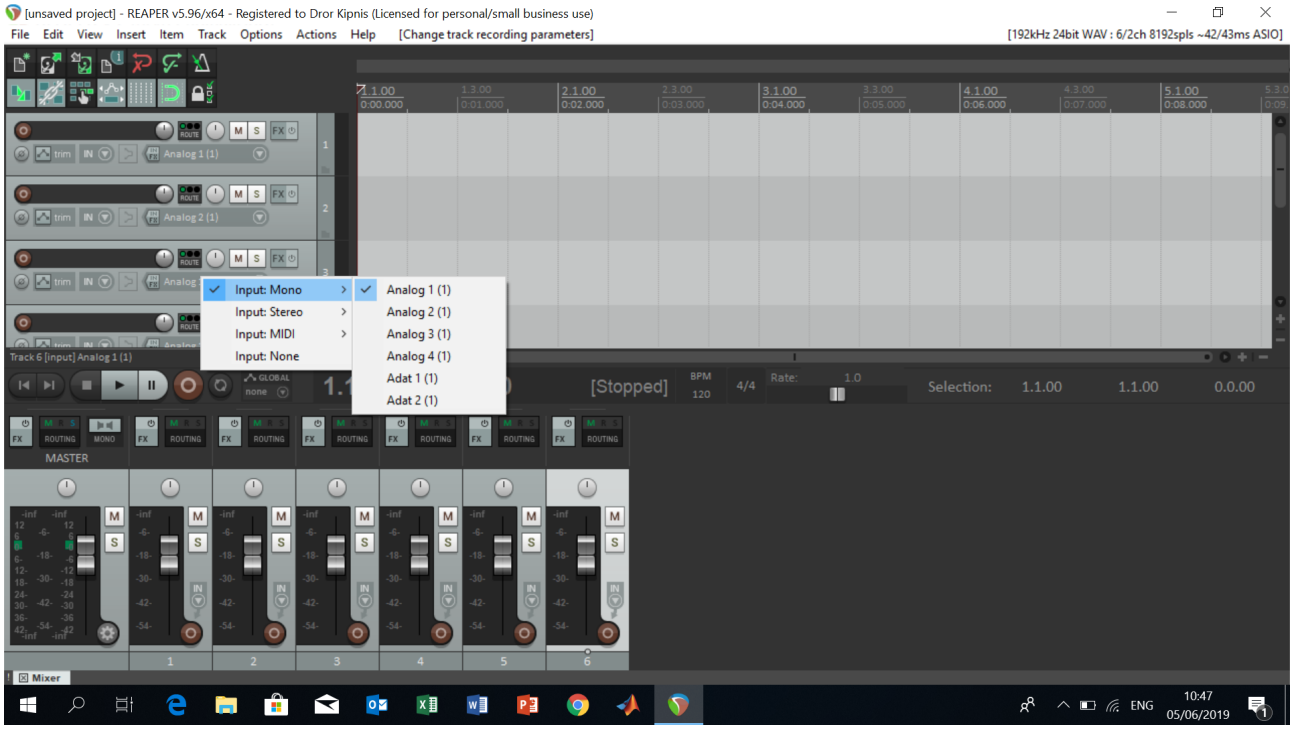
The devices remember the setting. You don't need to set the above every time.

5. Recommended connection of the hydrophones and the devices is listed as follow

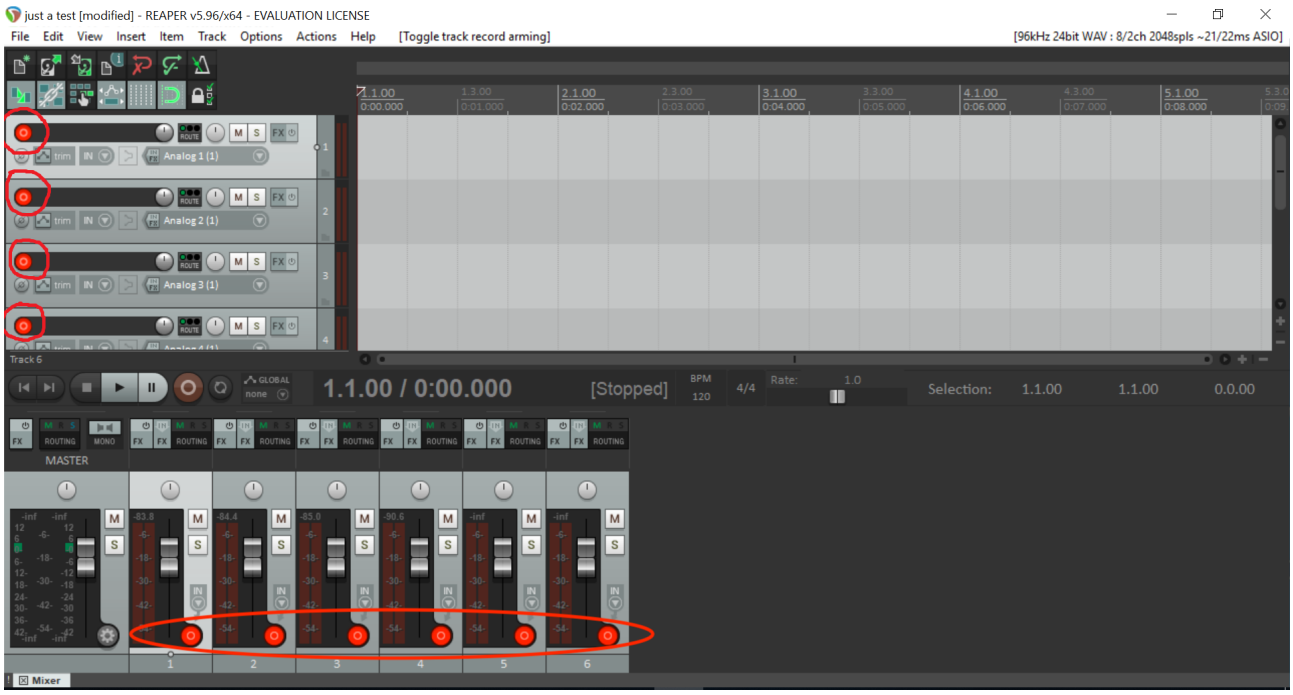
No of hydrophone	No of array box	No of babyface	CH in babyface	No of record files	Track source in software
1 (top)	1	2	In1	1	Analog 1
2	2	2	In2	2	Analog 2
3	3	2	In3	3	Analog 3
5	4	2	In4	4	Analog 4
6	5	1	In1	5	ADAT 1
7 (bottom)	6	1	In2	6	ADAT 2

6. Before recording, DO NOT forget to power the array box up by pressing the POWER BUTTON on the box .

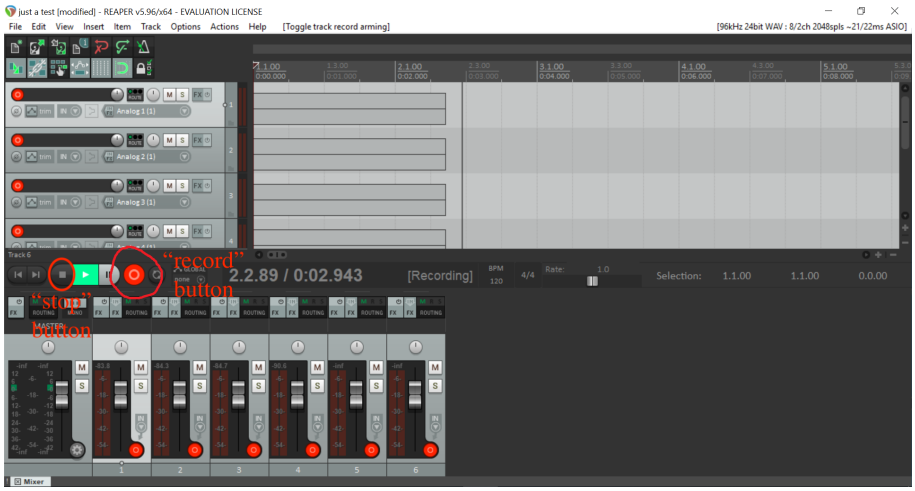
7. Open software “Reaper” in the laptop, create a new project. In the project, insert 6 tracks (click on the menu “Insert” -> “Tracks”, or use the shortcut “ctrl+T”), source of the 6 tracks set to Analog1, Analog2, Analog3, Analog4, ADAT1 and ADAT2 respectively, corresponding to In1, In2, In3, In4 of BF#2 and In1, In2 of BF#1 (see below figure to know where to select the options. Select “Input:mono” first, then pick one from Analog1, Analog2, Analog3, Analog4, ADAT1 and ADAT2).



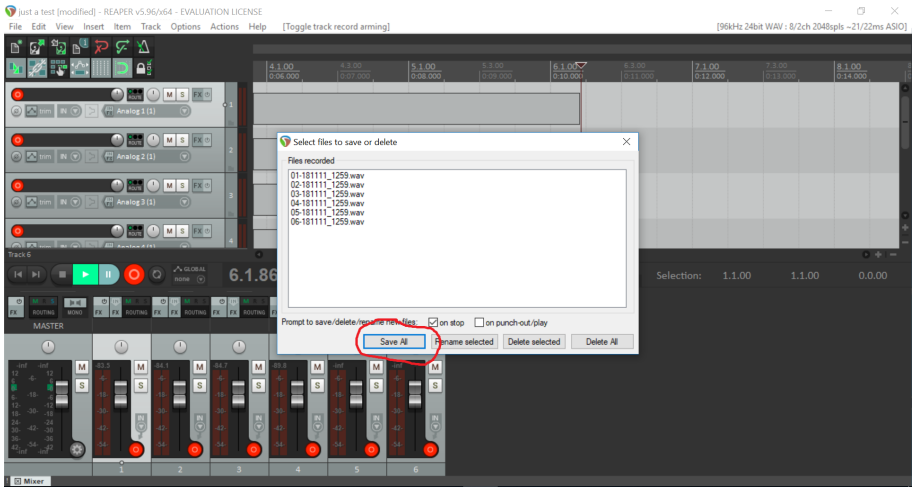
8. Save the project to anywhere you want in the local disk, the recorded wav files will be saved to the same folder with the project file.
9. Press the button “arm” on all the 6 tracks to prepare them for recording.



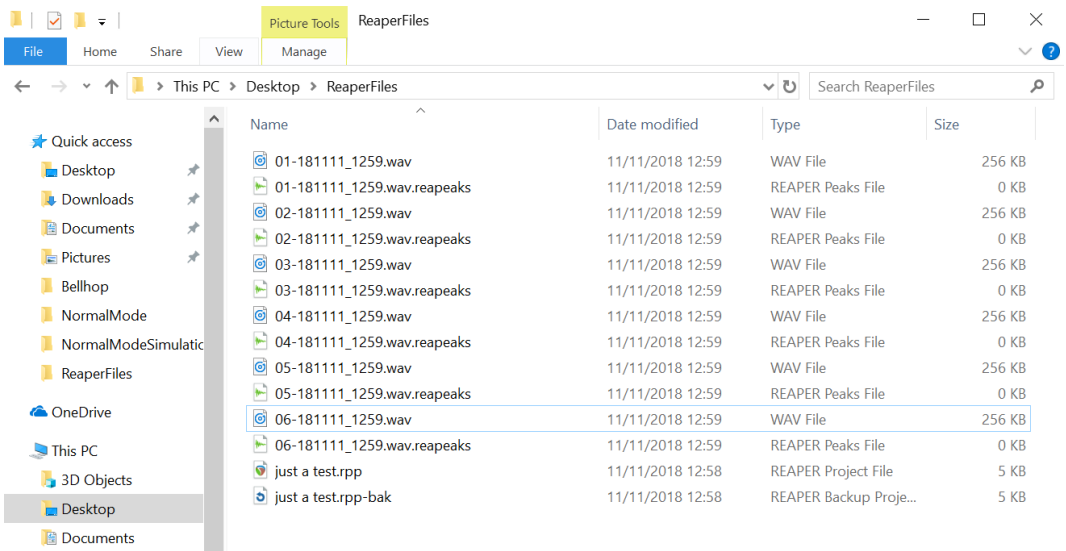
10. Press button “record” on Reaper, then it starts to record.



11. After the signal is recorded, press “stop” button in the software or SPACE button on keyboard. A window ask to save the wav files pops out, choose “Save All” to save the record files.

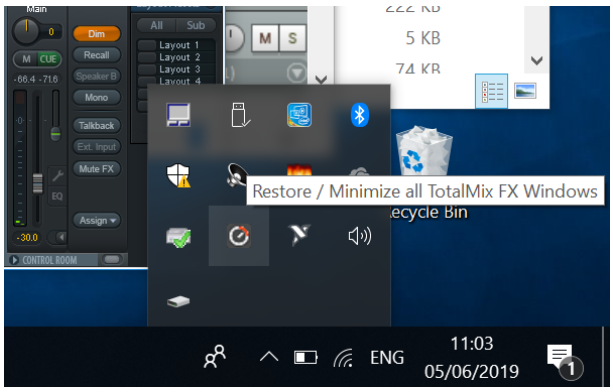


12. After saving, the wav files can be found in the same path with the folder with project file. Named with 01 to 06 corresponding with the 6 channels, also the date and time when recording starts are marked on the file name.(in the folder *.rpp file is project file)



If you are unable to find the wav file in this folder, try the direction “Documents/REAPER Media/”, the files could be in this folder.

One more thing: to make sure the gain of the six channels are the same
You can check the gain of all the channels by the tool “TotalMix FX” provided by RME, you can find it at the bottom of Windows. You can set the gain of the four channels of BF#2 (USB mode), as shown in the following figure



By default, the gain of CH1 and CH2 should be set to 5, and gain of CH3 and Ch4 should be set to 9, then these four channels are equal in amplitude. (CH1 and CH2 can be set up to 65dB, but the maximum of CH3 and CH4 is limited to 9. So CH1 and CH2 are set much lower than the maximum)

To set the gain of the other two channels in BF#1, it is recommended that you set it on the device. On the “TotalMix FX” window, you can find the sound level of the six channels. You can read it from the numbers shown in the following figure.

To calibrate it, you can use the signal generator to provide a signal with certain amplitude to the six channels. The signal can be a CW signal, set the amplitude to 0.5 Vpp, the frequency can be set to 1kHz (actually any frequency will do).
Use a BNC splitter to split the output of signal generator. Connect one of the output to CH1, the value of CH1 level in the TotalMix will become larger. Keep this connection during the calibration process.

Then connect the other output to CH2, CH3, CH4 respectively. Read the corresponding level value, make sure they are equal to CH1 (not strictly, difference within 0.5dB will be OK). If not, adjust the gain of these channels by double click on the icon, and enter a new value to make them equal.

For CH5 and CH6, it is basically the same idea to do the calibration. But instead changing number in the software, you change the gain on the device with the following steps:

- Connect CH5 to the signal generator.
- Press IN button to select from CH1&2 / CH3&4 / Opt (the LED on these three options will light up in turn). Make sure the LED of CH1&2 is on, and other two are off.
- Press SELECT button to select between CH1 and CH2. Press it until the LED bar on the left hand side start to flash. Then you can start to change the gain of CH5 by turning the knob in the middle. While you are turning the knob, the level value of CH5 in “TotalMix FX” software will change. Keep turning the knob until this value is equal to CH1.
- Connect CH6 to the signal generator.
- Press SELECT again, make sure the right hand side LED bar start to flash. Now you can start to change the gain of CH6. Turn the knob until the level value is equal to CH1.
- Finally, press SELECT again, make sure no LED bar is flashing, then the setting of BF#1 is done.