

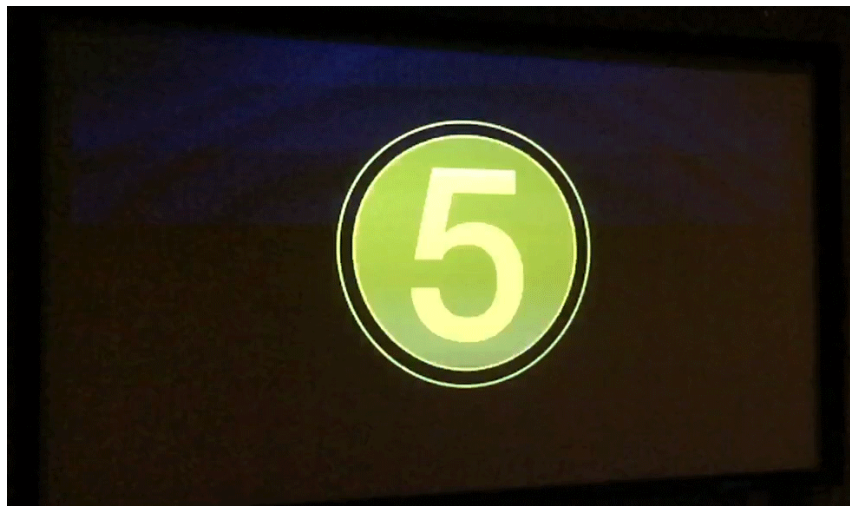
# How to measure Audio Visual Sync offset

Set your phone camera to slo-mo.

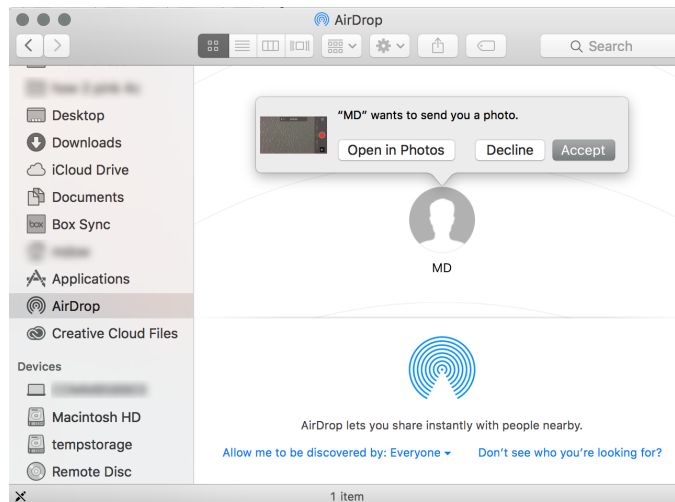


Shoot the countdown with 2 pop on your phone.

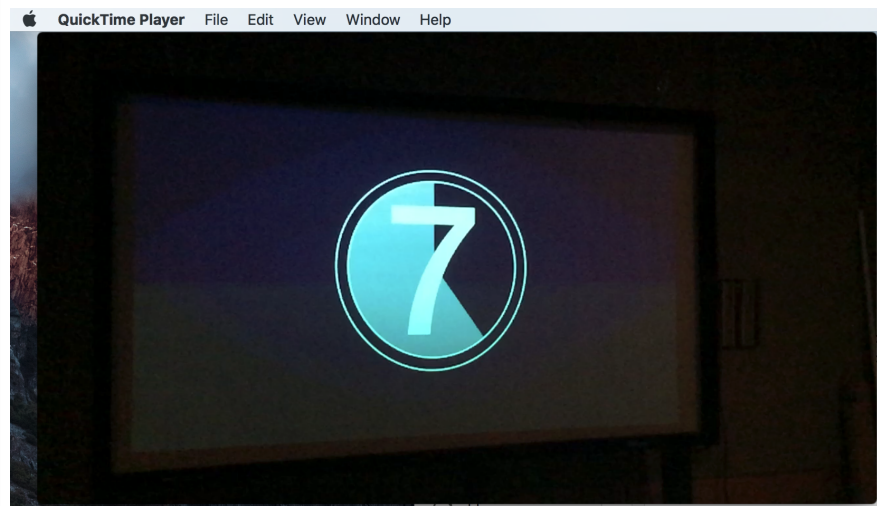
Make sure you can hear the two pop, you'll need to analyze its waveform in a video editor.



Transfer the file you just shot to a computer with video editing software on it.



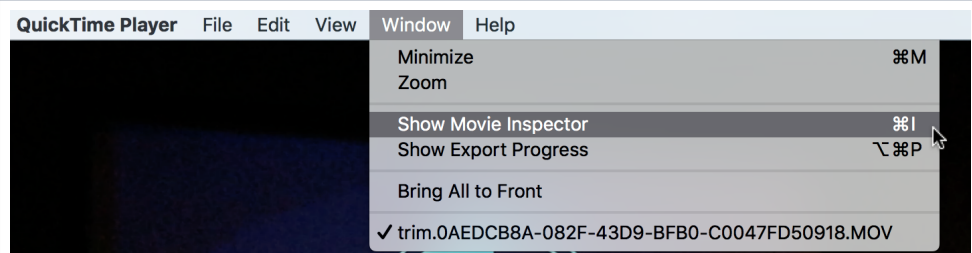
Open the file you just transferred to your computer.



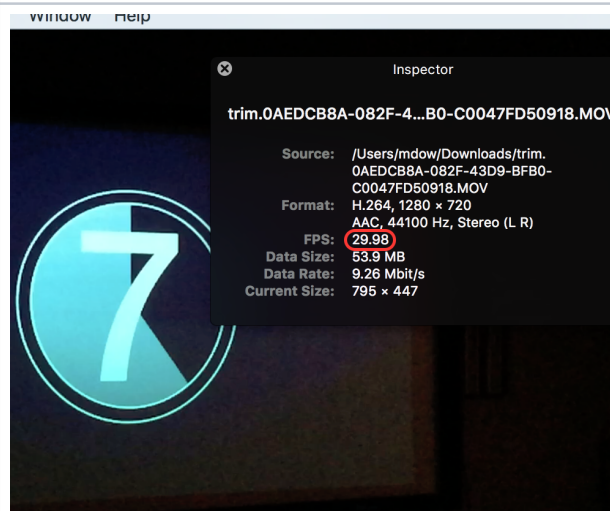
Within QuickTime, go to Window > Show Movie Inspector

or

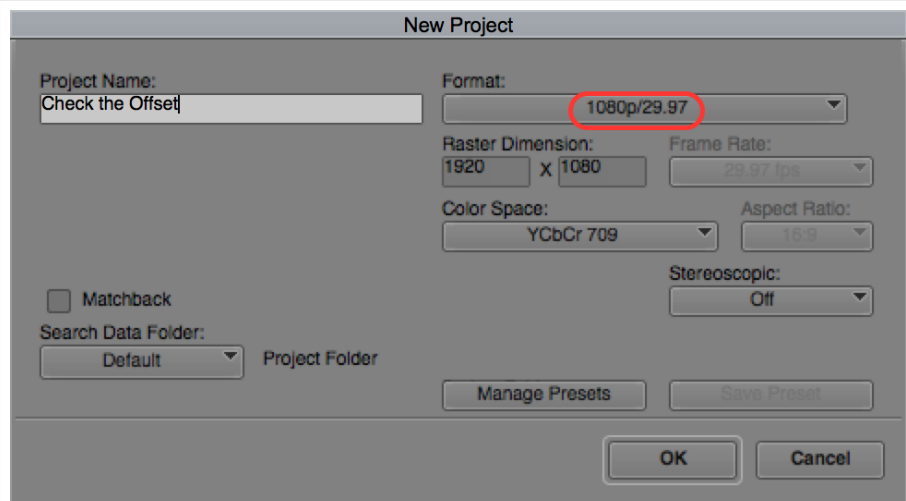
hit Command + I



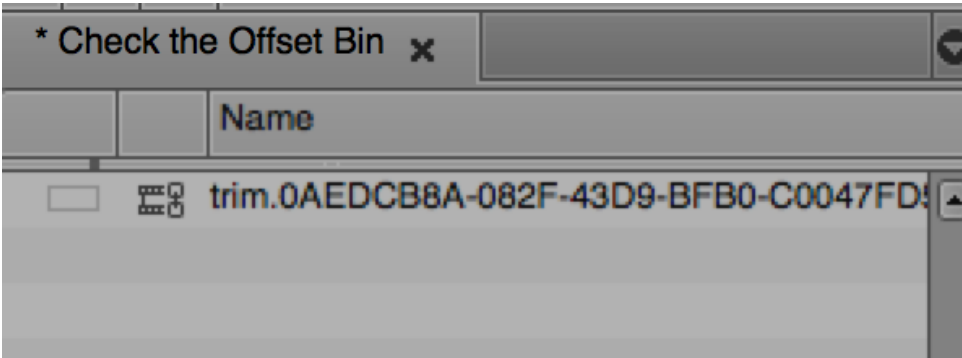
Check the frame rate, because this is the rate that you will need to set your project to. Quicktime likes to round frame rates... this frame rate says 29.98, but it's actually 29.976 fps.



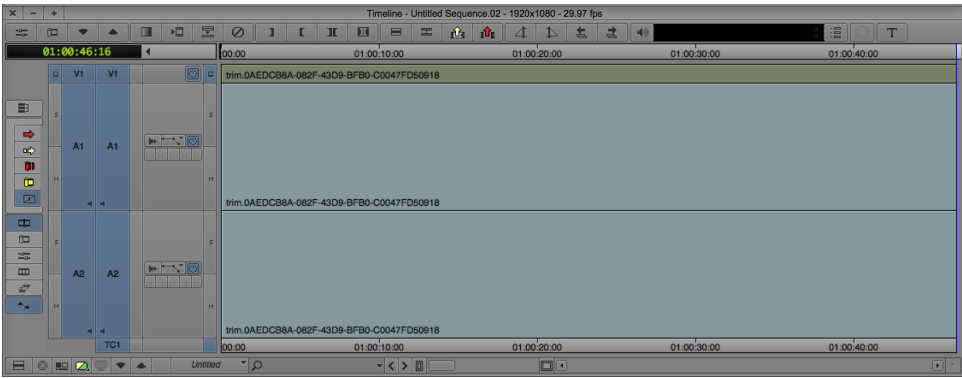
Create a project in an editing application with the same frame rate. We'll use Avid.



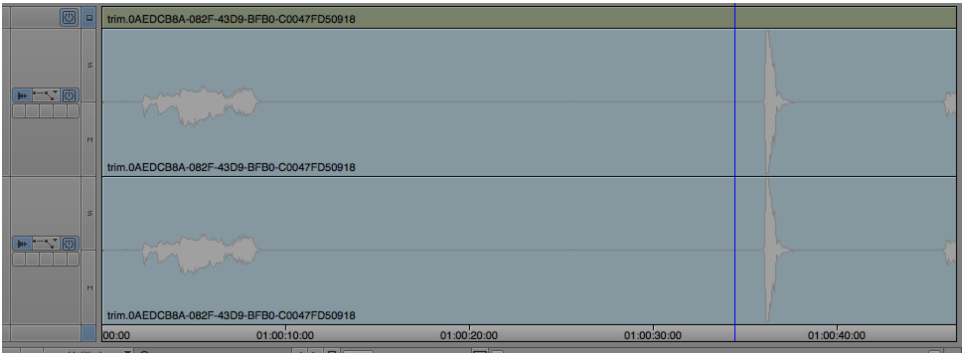
Link to the file you shot on your phone.



Edit that newly linked file into the timeline.

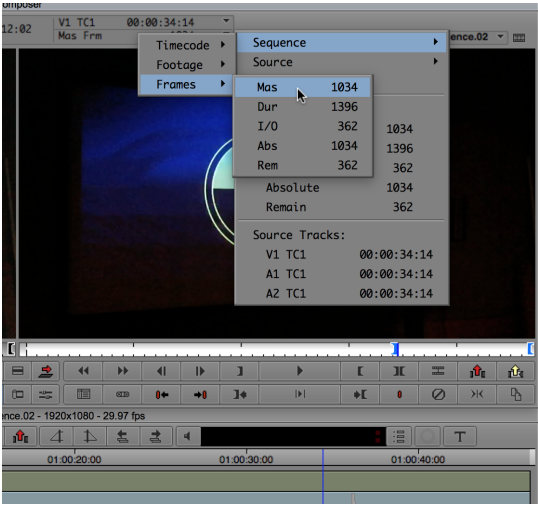


Show waveforms.



Choose Frames from the composer timecode readout drop down.

Sequence > Frames > Mas



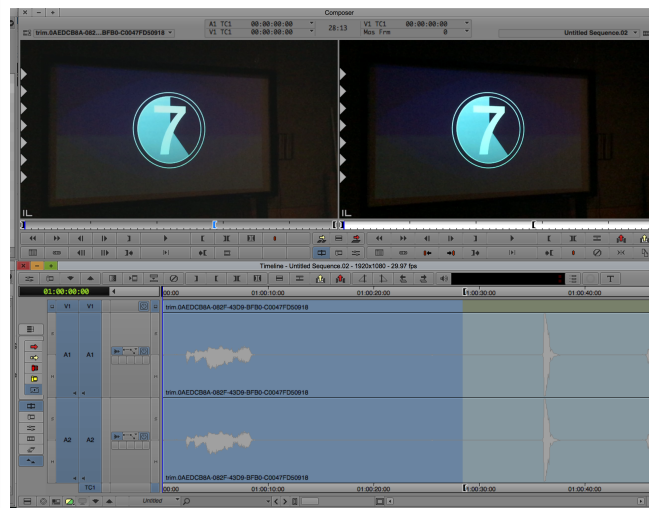
Your phone has (hopefully) shot more FPS than the projector has displayed giving you (hopefully) better than 1/4 frame resolution.

This means that you might see half numbers.

Find the first frame of the number 3 and mark an out point on the frame before.



Mark an in point at the beginning of the timeline.

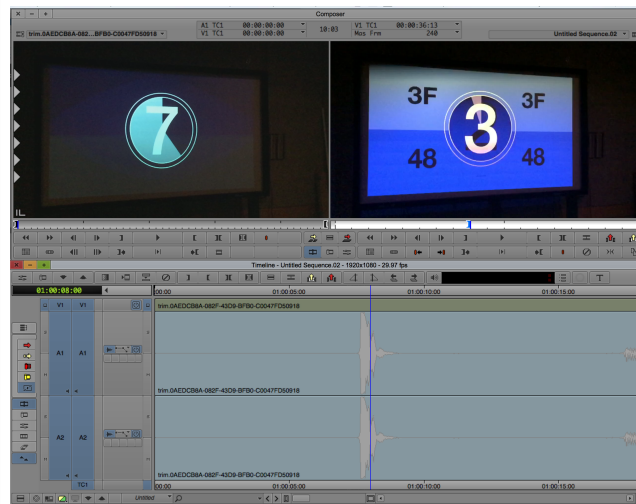


Extract using these marks, so that the timeline starts at the first frame of 3.





Go to the first VIDEO frame of the 2 pop.

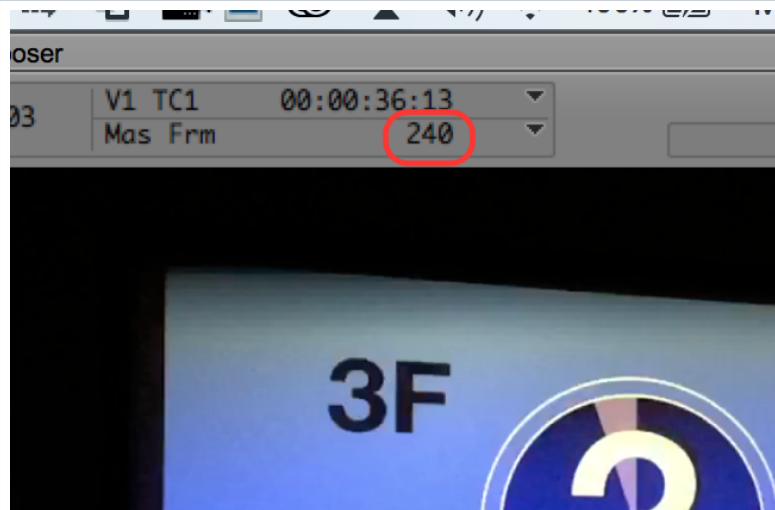


Notice that the first frame of the 2 pop is 240 frames away from the first frame of 3.

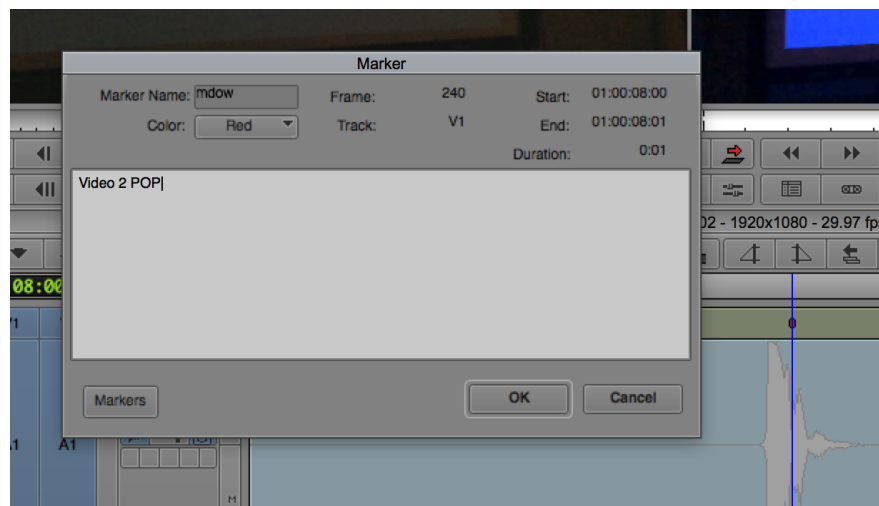
This means our phone shot at 240 frames per second.

Remember this number.

If your phone does not shoot at a high frame rate, don't continue following this wiki until you can find a phone that does.

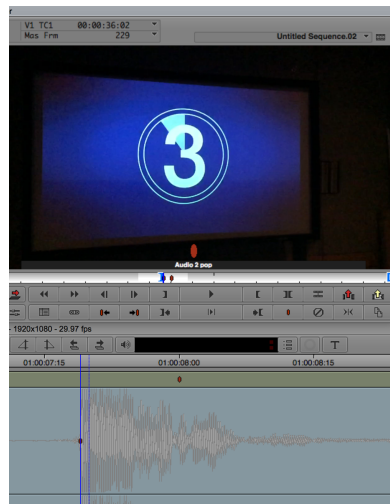


Add a marker on the video track where the video 2 pop starts

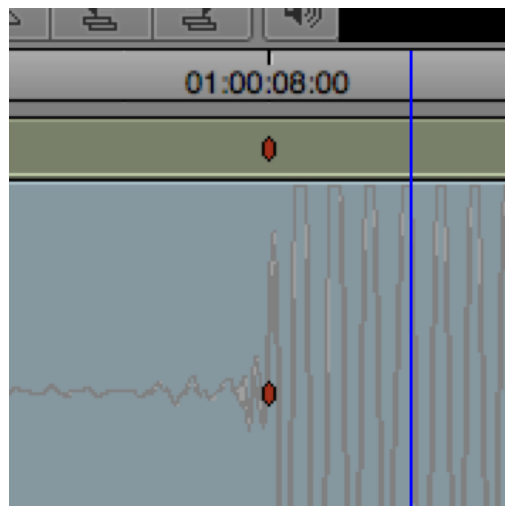


Now add a marker on the audio track where the audio 2 pop starts.

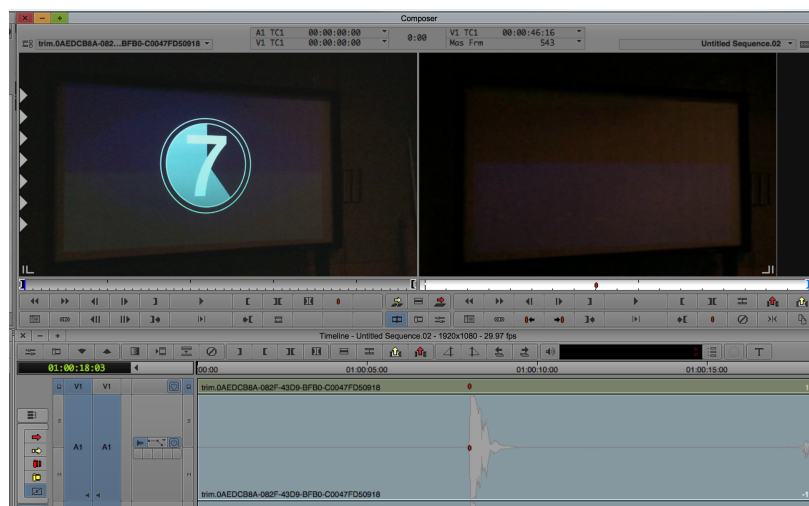
You may have to zoom in.

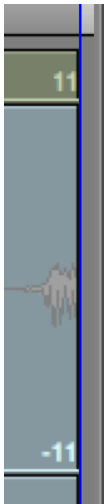
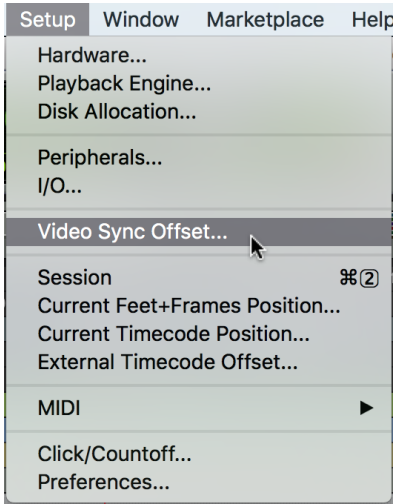


Now use the trim keys to line these two markers up.



Zoom out all the way on the timeline.



<p>Check the sync number on the clip in the timeline.</p> <p>Here, we're off by 11.</p> <p>DO NOT USE THIS NUMBER!!!</p> <p>The real number is 11 divided by 240. That is the fraction of a second that you need to use. So, for us it's 0.0458333333. Or we need the sound to happen 0.0458333333 of a second sooner to line up with the video.</p> <p>WHAT DOES THAT MEAN?!?!?!?</p>	
<p>First we need to know what a quarter frame is. <math>0.25 \text{ divided by } 23.976 = 0.01042709376033</math>, which is the value of one quarter of a frame if your fps is 23.976.</p>	
<p>How many times will this quarter frame value of 0.01042709376033 go into our sync value of 0.0458333333? It turns out that value is 4.3955999984772 or a little over 4 quarter frames.</p>	
<p>Go into ProTools</p> <p>Choose Video Sync Offset... form the Setup menu</p>	

Put in your 4 quarter frames here.

**Set Video Sync Offset**

Video Sync Offset:  quarter frames  
 milliseconds

When using a video peripheral which is locked to video reference, offsets will be rounded to the nearest full frame.

Watch your video and audio match. In fact, re-measure and go through this wiki again to see how close you got.

If, it's off, you probably needed to go -4 in the quarter frames box.

Here's an excel Quarter Frame Calculator:



Quarter Frame Calculator.xlsx