## Maker Project: Voyager and littleBits™ Music Visualizer

## Introduction

It's not always enough to just *hear* music. Many of us enjoy *visualizing* it **while** *listening*. 4<sup>th</sup> of July fireworks are commonly synced to Sousa's *The Stars and Stripes Forever*. Concert goers see spotlights flashing to their favorite pop songs. Modern home owners play their sound systems synchronized with *Phillips Hue* lighting and *nanoleaf*<sup>®</sup> light panels with a *Rhythm* module. For many years, classic visualizers have displayed bouncing graphs that break down music into its component frequencies.

In this maker project, Voyager and littleBits are blended to make a real-time music visualizer. Music from an iOS or Android device is changed to a modulated light signal with littleBits. This light signal is in turn captured by Voyager's light sensor with light intensity displayed in a real-time graph synced with the music. See Figure 1 for a snapshot from the action video that accompanies this lesson. The video contains a 21-second sound clip from the 1960's album *Electronic Hair Pieces*. The sound clip, arranged by Mort Garson, is rendered on an analog Moog synthesizer. Of course, you can visualize *any* music in this way from your mp3 device.



Figure 1

## The Author's Approach to this Maker Project

littleBits<sup>™</sup> are reusable color-coded electronic building blocks that can snap together to form a plethora of unique circuits. Blue is for power bits, pink is for input bits, orange is for wire bits, and green is for output bits. Figure 2 shows the project setup used by the author. Using a 3.5 mm input jack, the littleBits *microphone* bit takes the input from any mp3 player, in this case an iPod, and modulates the sound for the littleBits *speaker* bit. The *speaker* bit output is connected to a littleBits *long led* bit. The modulated light signal from the led is then captured by Voyager's light sensor. The iPad at the far right of Figure 2 is running the PocketLab app and displays a real-time graph in sync with the music.



Figure 2

Figure 3 shows a 10-second clip of the light intensity data collected by Voyager while the iPod was playing "Hair" from the album *Electronic Hair Pieces*. The graph was post-processed in Excel.



Figure 3