ColorSpy Instruction Manual

**\*Disclaimer\*:** This project assumes the reader is familiar and experienced with safe soldering techniques, Arduino programming and battery handling. Always use best practices when handling electronic components, solder, soldering irons, and batteries. The uploaders of these files assume no liabilities for damaged micro controllers, injuries or other damage that may stem from accessing this information.

\*MICRO-CONTROLLER REQUIREMENT\*: This project was designed using the Ardunio Mega 2560 microcontroller because of it’s program space. Other microcontrollers may or may not work, substitute at your own risk.

\*DEVICE ALTERATION NOTE\*: There are two adafruit components that were altered in the making of this project; (1): the Ardunio Mega 2560 has the power jack removed and wire leads directly soldered to the positive and negative terminals. (2) the MAX9744 power jack is also removed from the component and the positive and negative wire lead directly soldered to the terminals. You can avoid this part by using power jack connections with the 2 wires stripped and soldered to the correct nodes, the makers of this project altered the components in the interest of space saving. If the reader is not comfortable with altering the components, using the power jacks is highly recommended.

Part 1: Ardunio code set up

Navigate to your Ardunio libraries fold. On windows its C:// -> Documents -> Ardunio -> libraries. Ensure that you have the libraries:

Adafruit\_BusIO

Adafruit\_GFX\_Library

Adafruit\_SSD1306

Adafruit\_TCS34725

OneWire – 2.3.7

TMRpcm

inside your Arduio libraries folder. If you’re missing any of them you can download them from the ColorSpy github repositor. Next open up your Ardunio IDE and configure it for the Ardunio MEGA 2560. Open up the text document labeled ColorSpyMain.docx. Copy and paste the contents of the ColorSpyMain.docx into your IDE. Click on verify. Barring any incompatibilities, the code should compile directly. Debug as needed.

At the same time as you are implementing the software, download the ColorAudioFiles.zip file and extract the audio files onto your SD card. After the audio files are transferred you can insert it into the SD Card module.

Part 2: Hardware Setup

Access the parts list docx file in the repository and ensure you have all the components necessary for this project. DigiKey, Amazon and Adafruit were all distributors that the makers of this project used. Then use the colorspydiagram.jpg diagram to guide you in making the correct connections. Ensure all connections are made exactly according to the diagram, as deviation may cause misoperation and damage.

Part 3: Testing

After the software has be succeffully compiled and the hardware portion has been implemented; upload the code to the board. After uploading you can disconnect the usb to the computer and the entire circuit should work from the 9V battery. Use the OLED screen to to ensure the device operates in both modes (Normal and Advanced). Confirm speaker outputs the human sound.

Part 4: 3D housing (optional)

Download the STL files for the 3D print housing and convert to your preferred obj. format. Print out parts for the housing, you can use the folder labeled 3D product visualization to allow you to preview the device design. You’ll notice small rail systems inside the housing, these are included to allow you slide each of the breakout boards into the housing to secure them. Wire minimization may have to take place to fit everything inside the housing.