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1 Project Description

The RGBSaber is an open source RGB Luxeon LED driver. The driver allows for PWM modulation of an RGB luxeon LED, allowing the color of the lightsaber blade to be adjusted to nearly any color in the RGB color spectrum. The current version of the lightsaber firmware supports 24-bit color, allowing for 16,777,216 different color combinations. The RGBSaber project, and all other NBitWonder projects, are made available under a Creative Commons 3.0 BY-SA license.

2 Schematics and Block Diagrams

3 Project Roadmap

The RGBSaber system has considerable upgrade potential over the course of the project. A rough project roadmap looks something like this:

Control Board

1. **Version 1:** Basic RGBSaber system, capable of full RGB color control.
2. **Version 2:** Modular system, featuring hardware plugins for sound. Integration of sound with RGB color control
3. **Version 3:** Upgraded lightsaber transistor drive capabilities.

Peripheral Board

1. **Version 1:** Simple functional peripheral board.
2. **Version 2:** Improved peripheral board with touch interface

4 Project Analysis

4.1 Open Source Project Analysis

To date, no other known open source RGB lightsaber systems appear to exist. That said, there are a number of boards online that are designed to do RGB color mixing.

4.1.1 Dangerous Prototypes USB RGB Color Changer

Dangerous Prototypes produced a USB RGB color changer some time ago. This design was only ever in the prototype stage, and is not in production. Additionally, the boards are far too large to fit into a lightsaber form factor and use through-hole parts. As such, this design is not seen as a strong competitor to the RGB Lightsaber design.

4.1.2 MaceTech ShiftBrite Project

Open source company Macetech developed and manufactures an RGB color mixing system known as the ShiftBrite. The ShiftBrite RGB system is theoretically small enough to fit inside of a lightsaber hilt environment. However, the LEDs and the driving circuitry for the ShiftBrite system are not bright and powerful enough to see use in a lightsaber system.

4.2 Commercial Product Analysis

4.2.1 Sparkfun Electronics RGB Triple Play

In late 2010, Sparkfun electronics released the RGB Triple Play and an associated driver. Coupled with a triple LED lens, these products certainly hit closer to the RGBSaber system. However, at the time of this writing, these products are still too bulky to be used in a lightsaber environment, and also vastly overpriced (costing approximately 70 dollars for the LED and drivers alone, without any control electronics). As such, Sparkfun's products are not seen as a particular threat to the RGBSaber project.

4.3 Plecter Labs Crystal Focus System

Lightsaber company Plecter Labs produces a lightsaber core system known as Crystal Focus which is an extremely strong competitor to the RGBSaber project. The board is extremely high end, and features many advanced features, particularly sound and swing/clash detection. The board is not capable of RGB color control at the present time, and only supports a single channel. Nonetheless, the system could be modified to support RGB color without too much effort. The system is decidedly a high-end system at the present time (costing approximately 200 USD per board), so a slightly less featured but cheaper board could be a prominent competitor to this system.

4.4 Patent Analysis

At the present time, the RGBSaber project uses simple PWM color mixing techniques. These techniques are trivial and well documented in the public domain, and, as such, patent analysis and infringment is not anticipated or likely.

