Free Space Optical Communication (FSOC) Nation Development of a Device to Establish a Wireless Ethernet Connection.

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PROBLEM STATEMENT

Not everybody in the world has access to the internet which creates a digital divide, leaving people in poverty behind the curve.

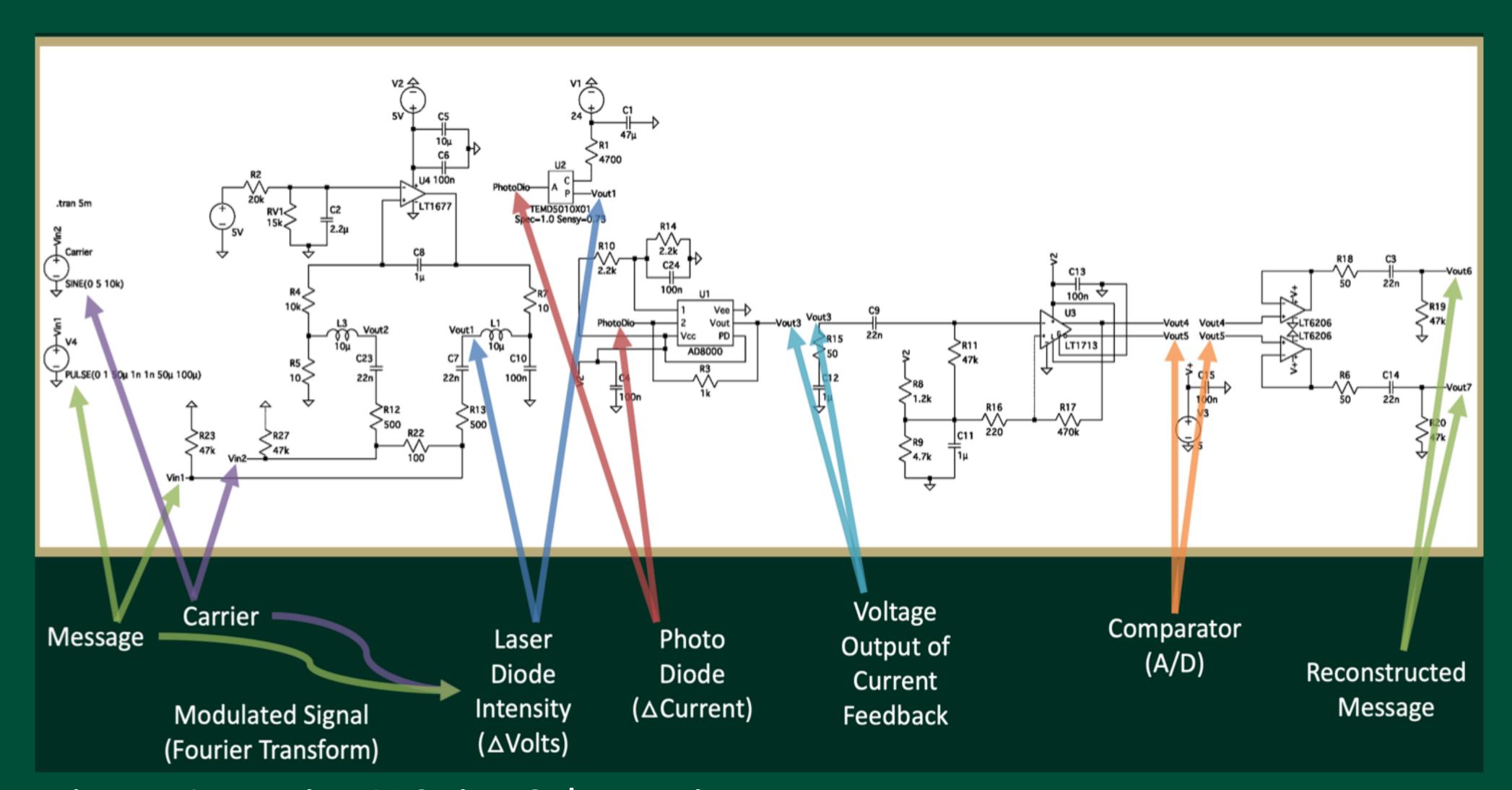


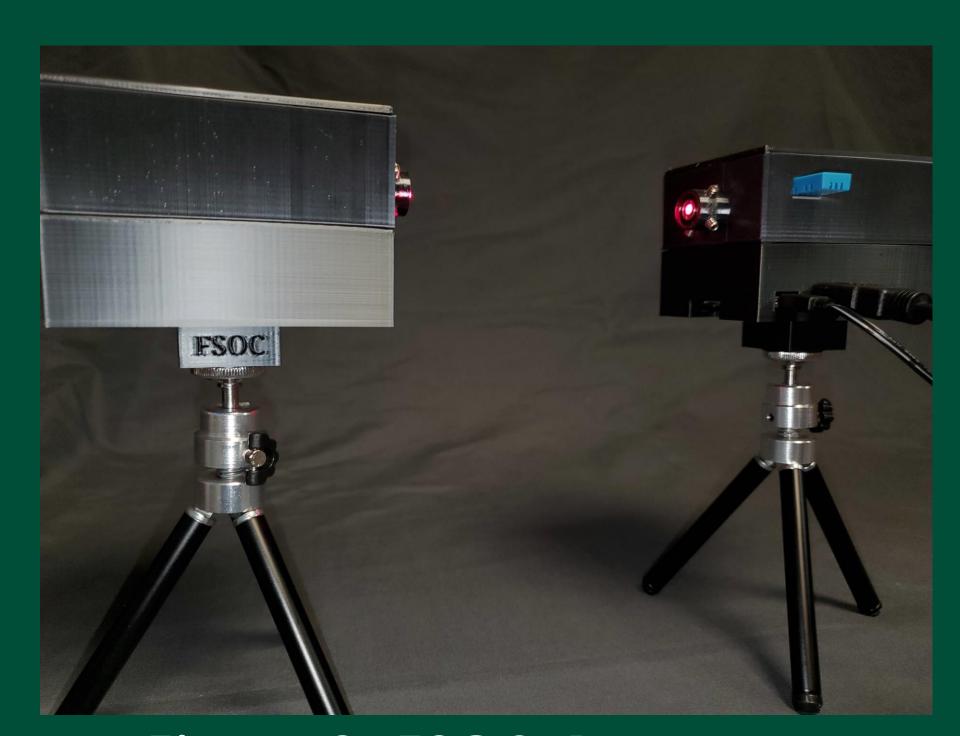
Figure 1: Device LTSpice Schematic

BACKGROUND

Internet accessibility has become integral to our daily lives. More so in today's environment since a global pandemic has forced us into self-quarantine. Unfortunately, however, a discrepancy is growing within our societies: those with ready access to the internet and those in underserved locations who don't. Inadvertently, this is leaving those without internet behind and with less opportunities accessible to them.

SUMMARY OF WORK

Our device can establish a wireless ethernet connection to transmit and receive 10Mbps of data within a 2-meter distance. Not only is it cost effective, but it is also be capable of fast deployment. In other words, it is portable in case of emergencies. Figure 2 shows our deployable prototype with 90x63x252 mm dimensions mounted on tripods. Last of all, It includes a localized online web database to keep track of connections established as shown in Figure 3.



FSOC NATION

Table 1: Transfer Rate

Connection Established

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Figure 2: FSOC Prototype

Figure 3: Online Web Database

IMPACT ON COMMUNITY

- 1. The online database is one of the main features to quickly spot errors in the connections established with our FSOC device.
- 2. Slashed deployment costs compared to traditional cabled networks.
- 3. Makes it possible to establish networks in geographical locations where laying cable just isn't possible.
- 4. Has the benefits of ultra-wideband communications. Specifically, high bandwidths and security.