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| NAKSYS |
| FrameReader Specifications |
| Design Document |
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| Describes the design and modules of the FrameReader Embedded system. Also provides the technical details of analysis results. |

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# Introduction

FrameReader is a measurement and data logging device used for generate photometric reports in conformance with the ICAO & FAA standards

This document is focused on the hardware(embedded PCB) part

## Existing Design

The FrameReader Version 2.1 (Aug 2016) consist of a hardware and software.

Software: Used for collecting the reports from SD card and generating the reports and also used for analysis.

Hardaware: It consist of two major parts as described below

### 1.1.1.Sensor Board / Slave

Here after in this document “Sensor Board” will be used to describe this part.

It consist of a array/matrix of photodiodes with a circuit to give output in lumens.

### 1.1.2.Master

It has a LCD display and the control interface(buttons) to …

## Why new design is required?

Two operators are required to make a measurement.

To transfer the measurement data, SD card has to be manually removed and connected to the system with FrameReader software for further analysis.

# New Design

The existing master PCB and Sensor Board will be integrated into a single system to be conveniently used by a single operator.

A Bluetooth module will help in the data transfer without any manual intervention

## Code

Workflow diagram(Flow chart)

# Modules

## Bluetooth

How the transfer will be done

Data archive logic.

## RTC

To record the measurement time.

## SD card for data storage

Is already existing. Memory is expanded in new design.

## Compass

It aides making a proper measurement.

Provides roll, pitch, yaw & magnetic direction.

How the feedback will be given to user to take the measurement.

## Photodiodes & related components

It is the heart of the frame reader.

Photodiode definition

## Display

A display will be integrated to the FrameReader.

Where

What details will it provide?

PS: This module will be upgraded in the future version.

# Technical Details

## PIC 18F4550 Microcontroller

Manufacturer & Model

Photo

Attach DataSheet as object.

## Atmega 2560 (Arduino)

Mega, no of analog and digital pin

|  |  |  |
| --- | --- | --- |
| Microcontrollers | Arduino Mega 2560 | PIC18F4550 |
| Flash memory | 8Kb | 2.048Kb |
| SRAM | 8 Kb | 2.048 Kb |
| EEPROM | 4 Kb | 0.256 Kb |
| Clock Speed | 16 MHz | 8 MHz |

## Analog to Digital Converter

## Bluetooth

## Encasing