

## Heart-Rate Monitor Using MAX30101 MAXREFDES1044

### Design Verification Testing

#### Introduction

The MAXREFDES1044 is a high-accuracy, low-power, small-size easy-to-implement design for a heart-rate monitoring system. Using the MAX30101, it can monitor the heart rate using red, IR, or green LEDs.

#### Test Equipment Used

The following test equipment was used for design verification:

- PC
- Whiteboard

#### Tests Conducted

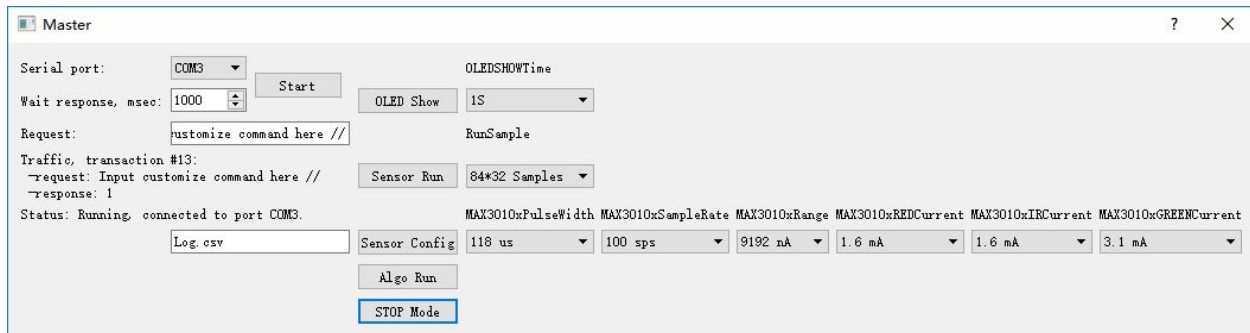
The following tests and results were completed on the MAXREFDES1044:

- Finger contact waveform
- SNR measurement

## Test Procedure

### Finger Contact Waveform

- 1) Click **Sensor Config** to configure the MAX30101.
- 2) Enter the name of .csv file you want to save data in.
- 3) Put the finger on the package of the MAX30101 hardware, then click **Sensor Run** to start the measurement.
- 4) Wait and open the file using Microsoft® Excel® to draw the waveform.



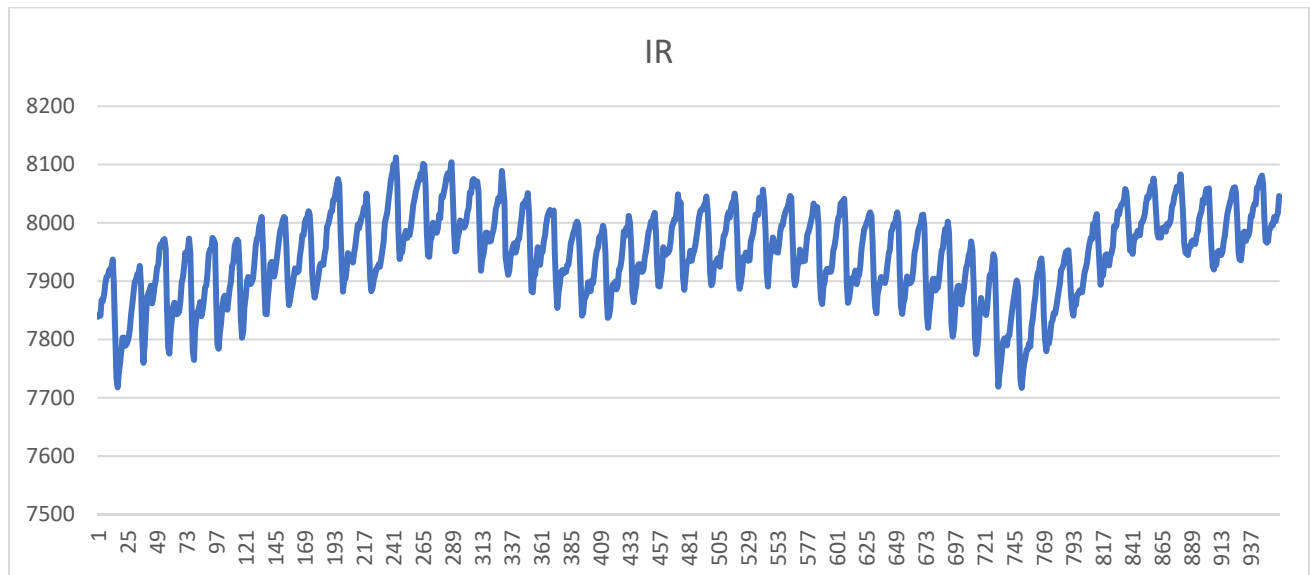
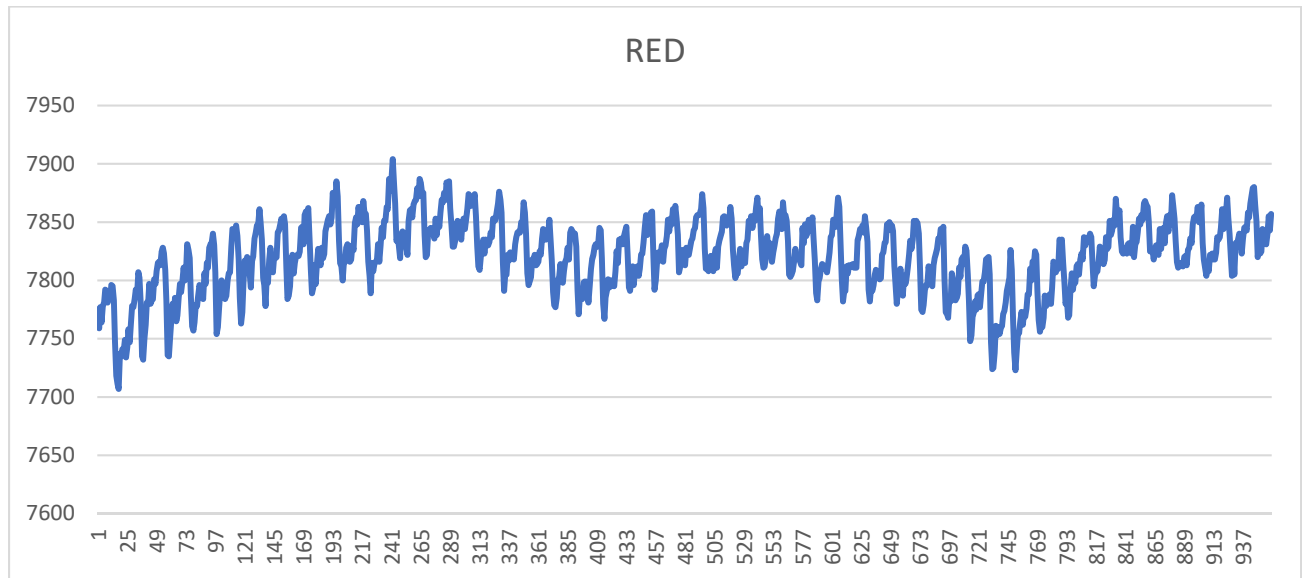
### SNR Measurement

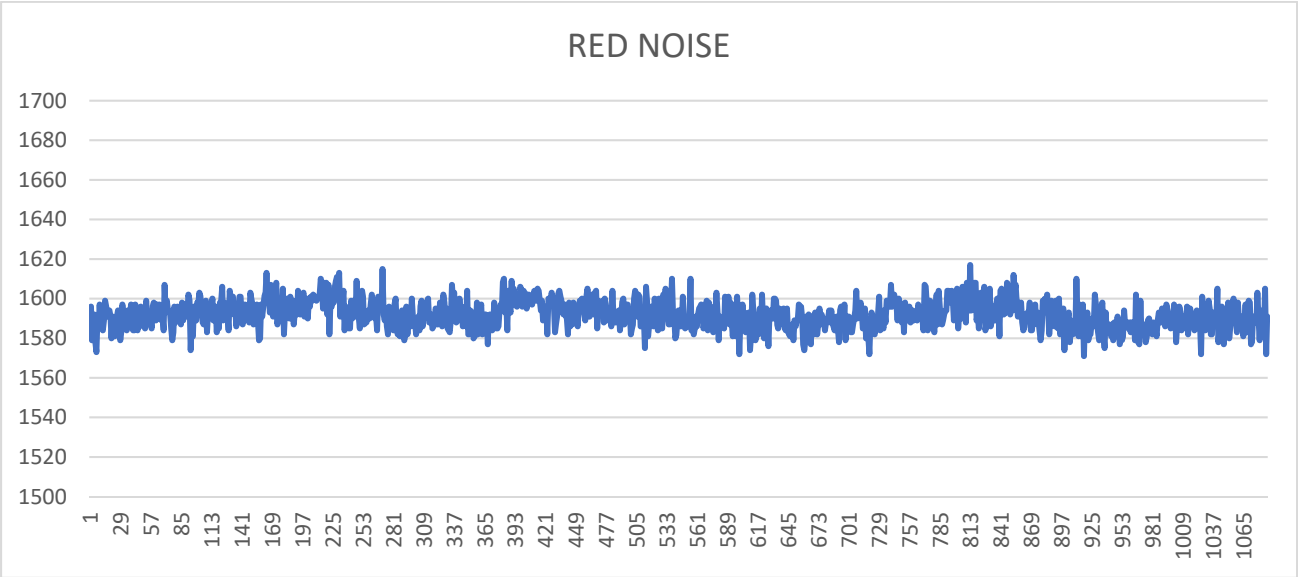
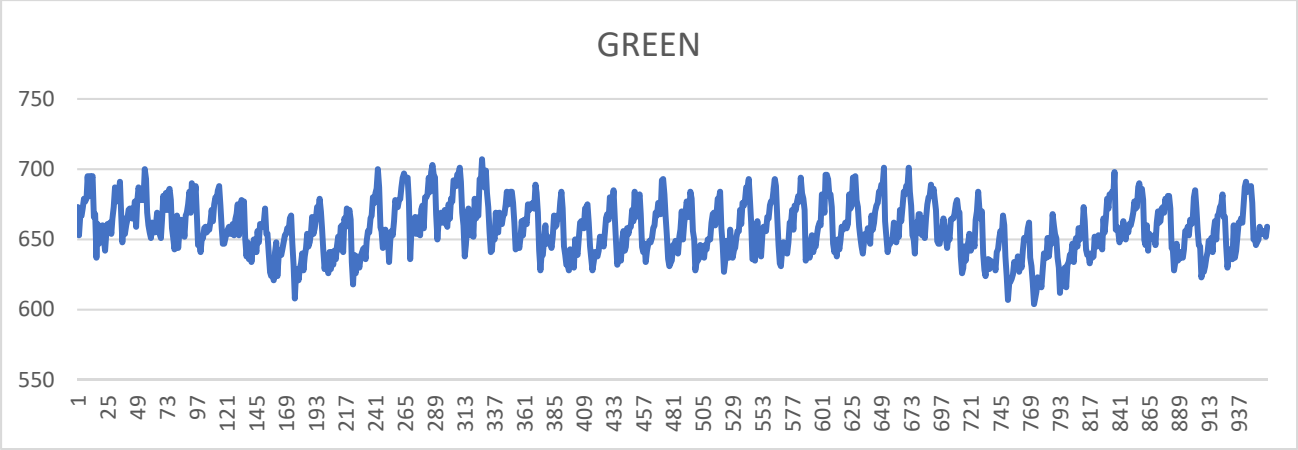
- 1) Place a whiteboard on the package of the MAX30101 hardware to measure the pure noise in the MAX30101.
- 2) Place finger on the package of MAX30101 hardware using same configuration to measure the normal waveform.
- 3) Calculate the SNR using the maximum peak-to-peak noise value and peak-to-peak value of normal waveform.
- 4) The SNR should be larger than 10dB.

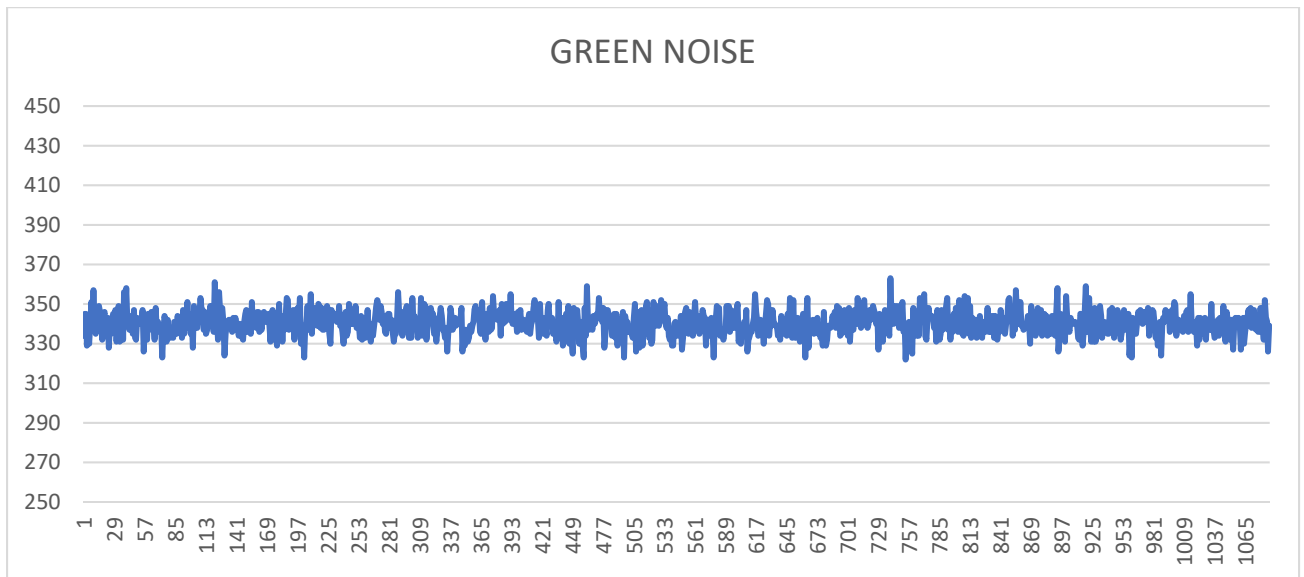
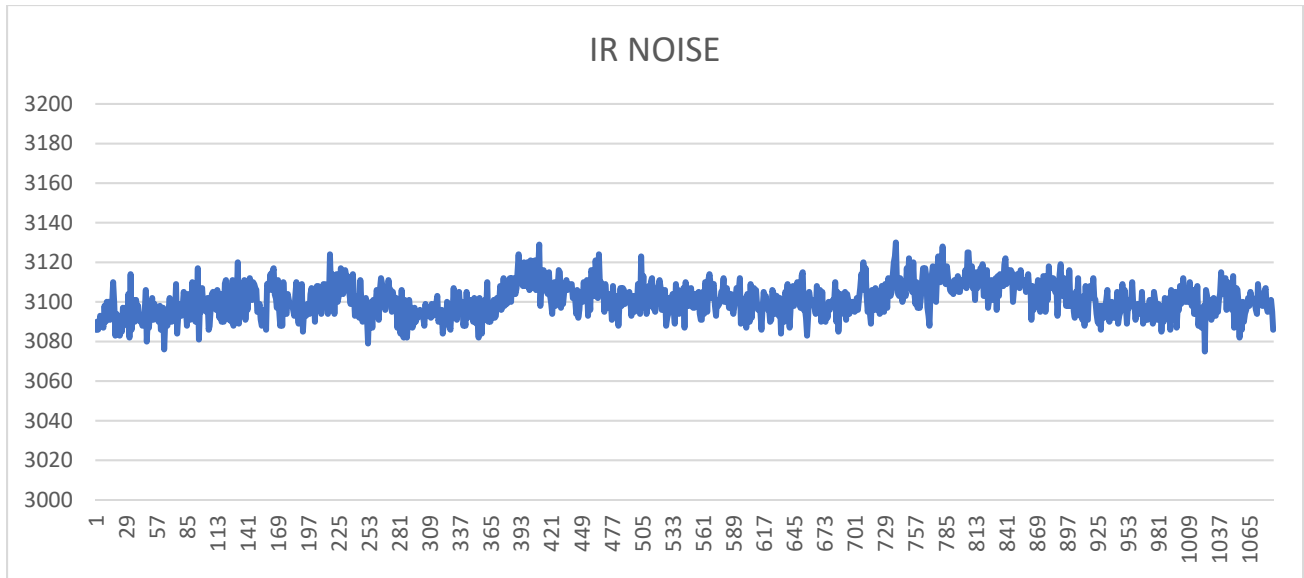
## Test Results

Test condition: Pulse Width = 68 $\mu$ s, Sample Rate = 100sps, Resolution: 18 bits

Red current: 20.8mA, IR current: 20.8mA, Green current: 20.8mA







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