



Tlagnose Watch

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Introduction

- Most common measurements in maternity hospitals
 - Body temperature
 - Hypothermia & infections
 - Bilirubin level
 - Liver problems
 - Oxygen saturation
 - Vital organ disorders



Introduction

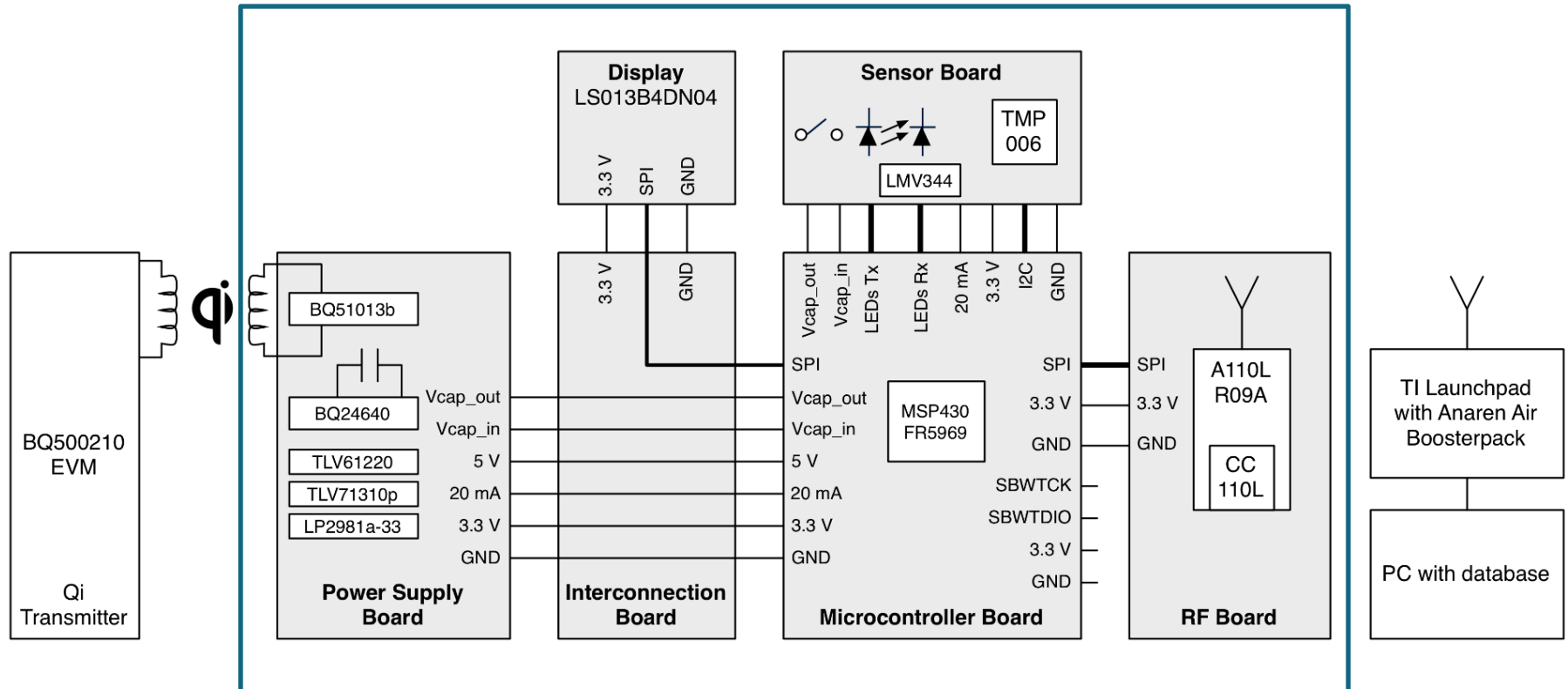
- Current measuring equipment:
 - 1 bulky device for each measurement
 - Unhygienic
 - Contaminated battery lids, connectors
 - Difficult to clean or sterilize
 - Regular battery replacement / charging
 - Misplacement



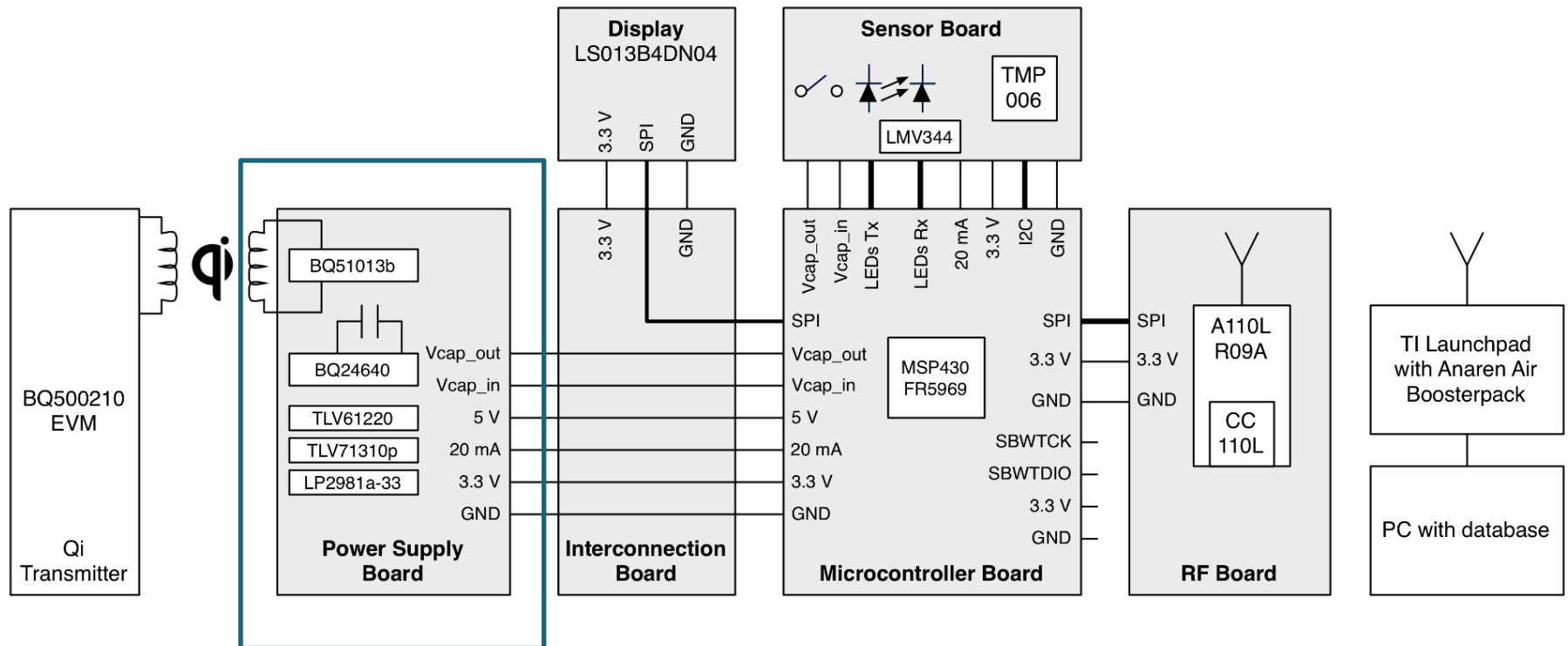
Solution: Tlagnose Watch

- Wristband device for medical staff
- User-friendly & hygienic
 - No controls, no connectors
 - Fast charging (Supercap)
 - Wireless charging (Qi)
 - Wireless data transfer
 - Measures temperature, bilirubin, oxygen saturation

Block Diagram

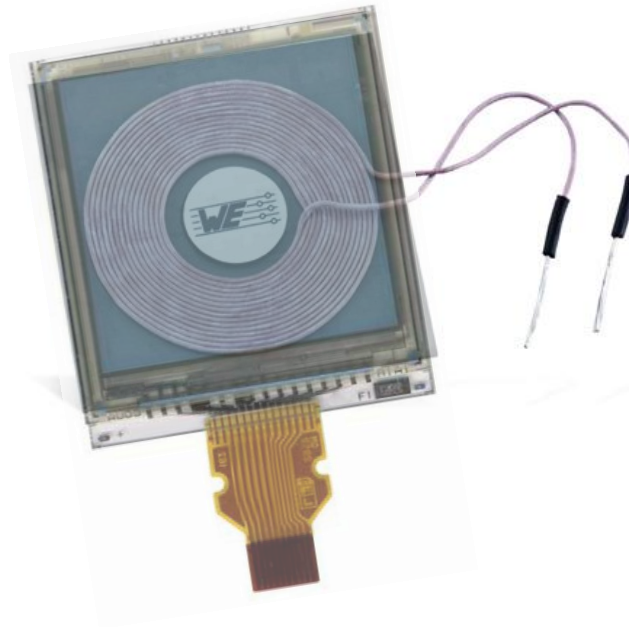


Block Diagram



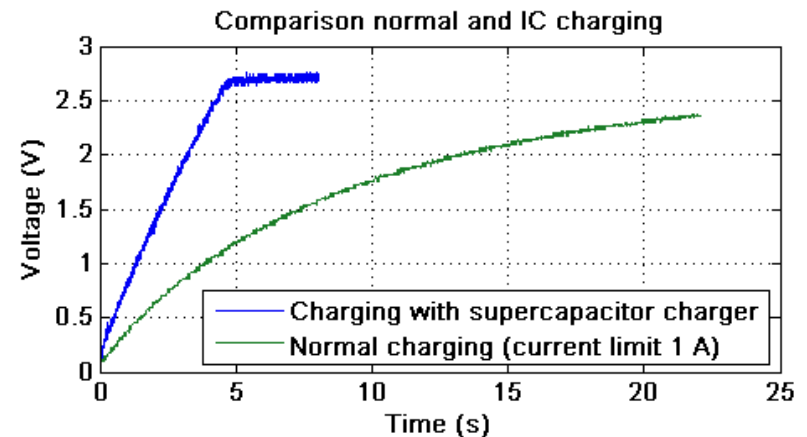
Power Supply Board

- Wireless power receiver
 - Qi compatible
 - Unprecedented through-display powering



Power Supply Board

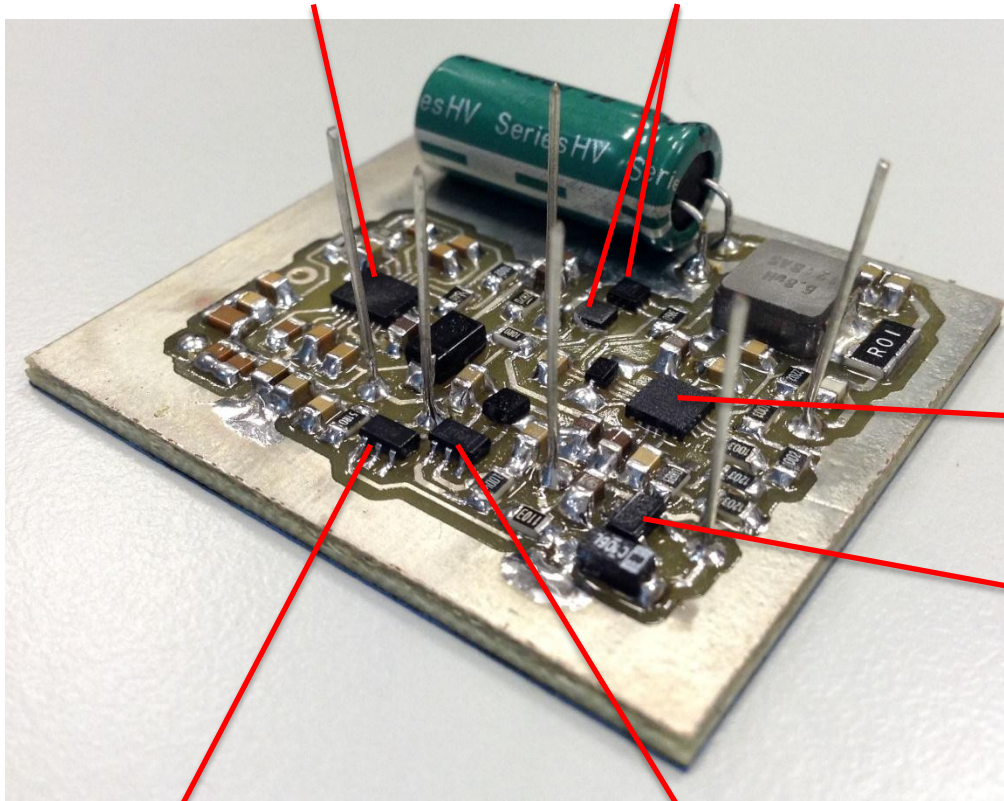
- Supercap charger
 - 3 F supercap
 - Charging in < 5 seconds
 - 38 patient measurements
 - 81 hours standby



Power Supply Board

BQ51013b
Qi receiver

CSD13202Q2
MOSFETs



BQ24640
Supercap charger

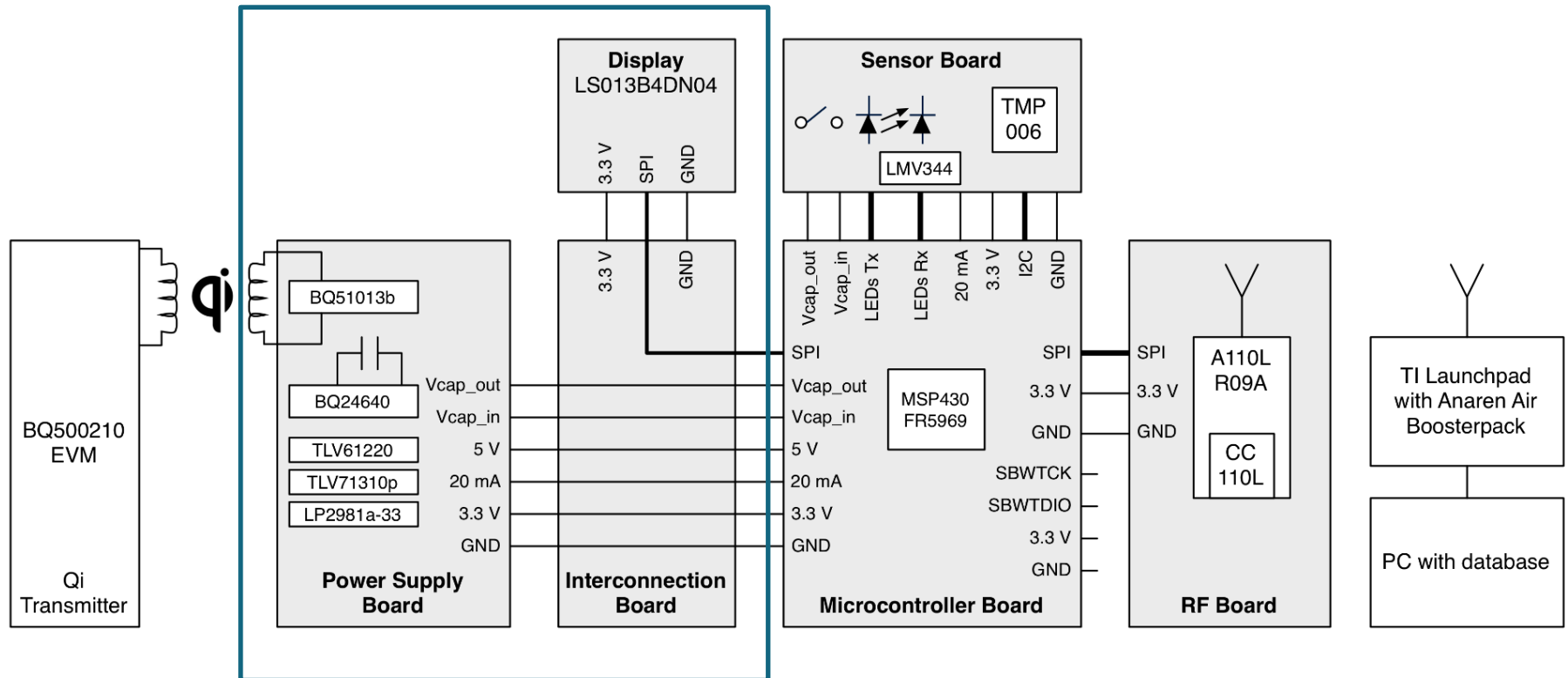
LP2981a-33
3.3 V linear supply

TLV71310p
20 mA LED source

TLV61220
5 V step-up supply



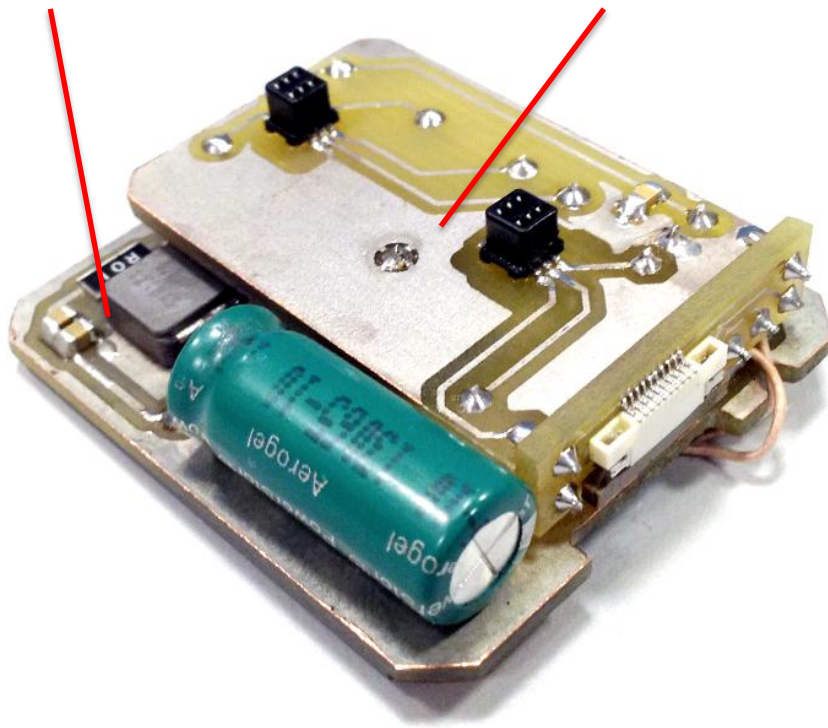
Block Diagram



Power & Display Unit

Power Supply
Board

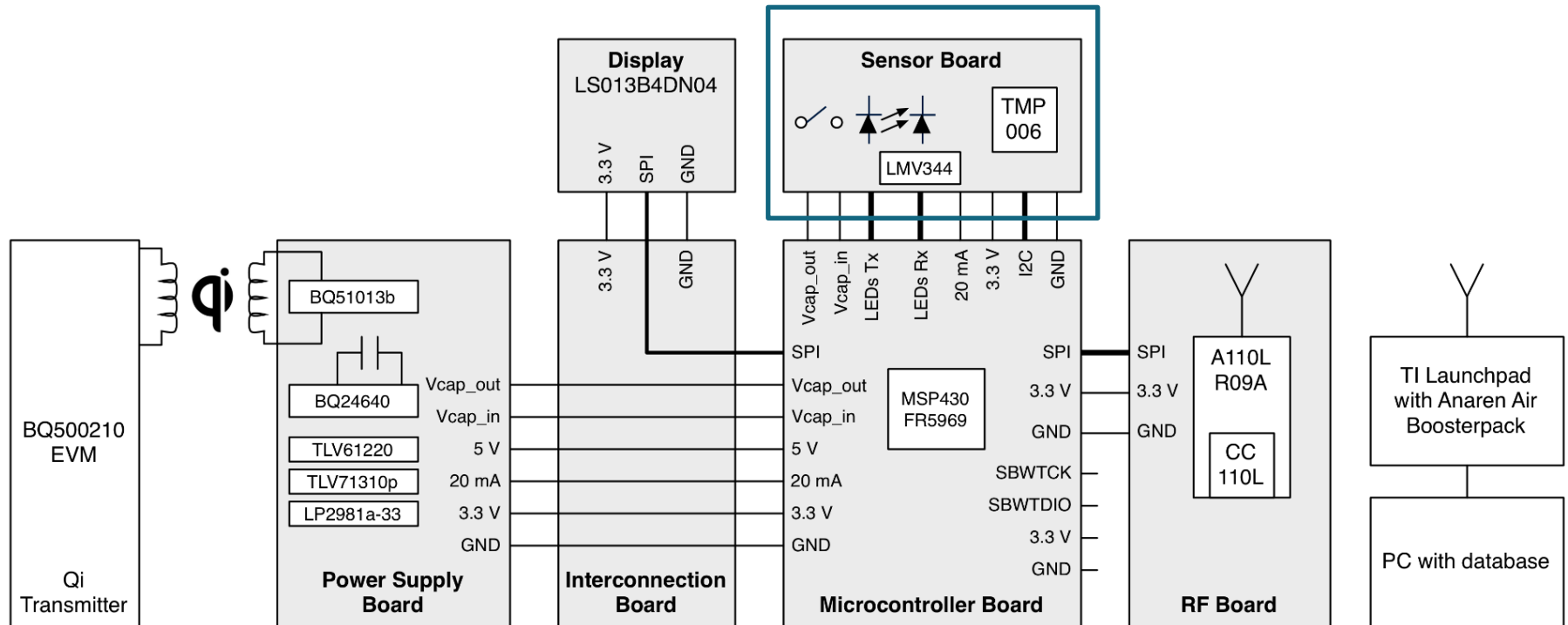
Interconnection
Board



Display



Block Diagram

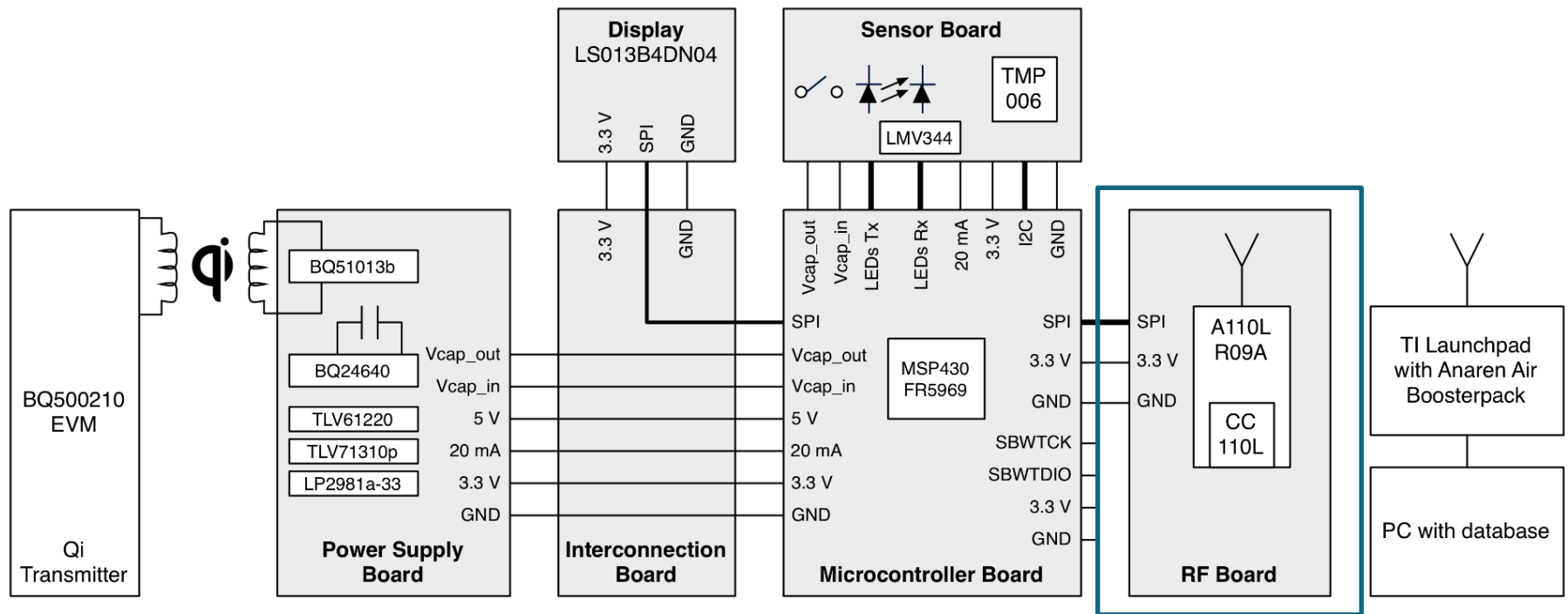


Sensor Board

- Button activates the watch when pressed against patient's skin
- Temperature: TMP006 on satellite board
- Bilirubin & Oxygen saturation:
 - Optical measurements
 - High illuminance LEDs: IR, Red, Blue, Green
 - Signal amplification: quad opamp: LMV344



Block Diagram

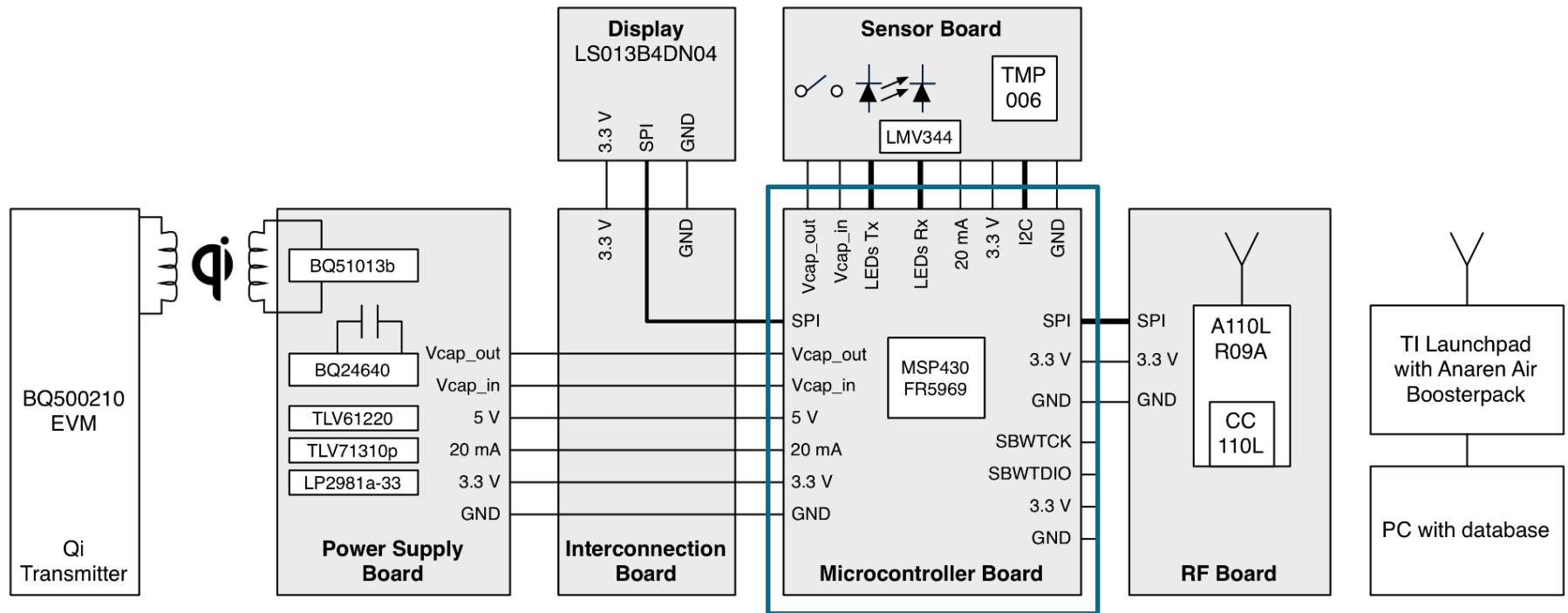


RF Board

- Anaren A110LR09A module with CC110L
- Transmits measurement data
- Patient identification with RSSi

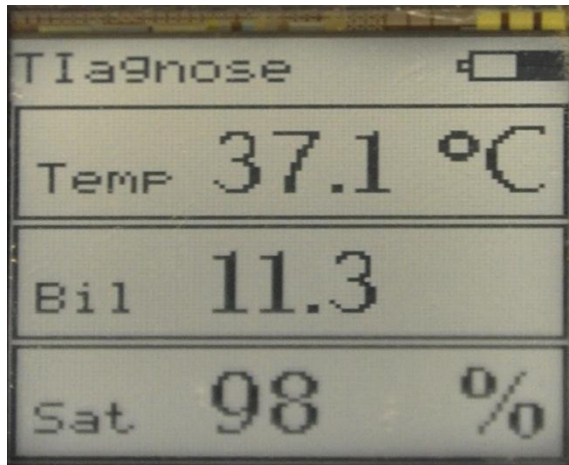
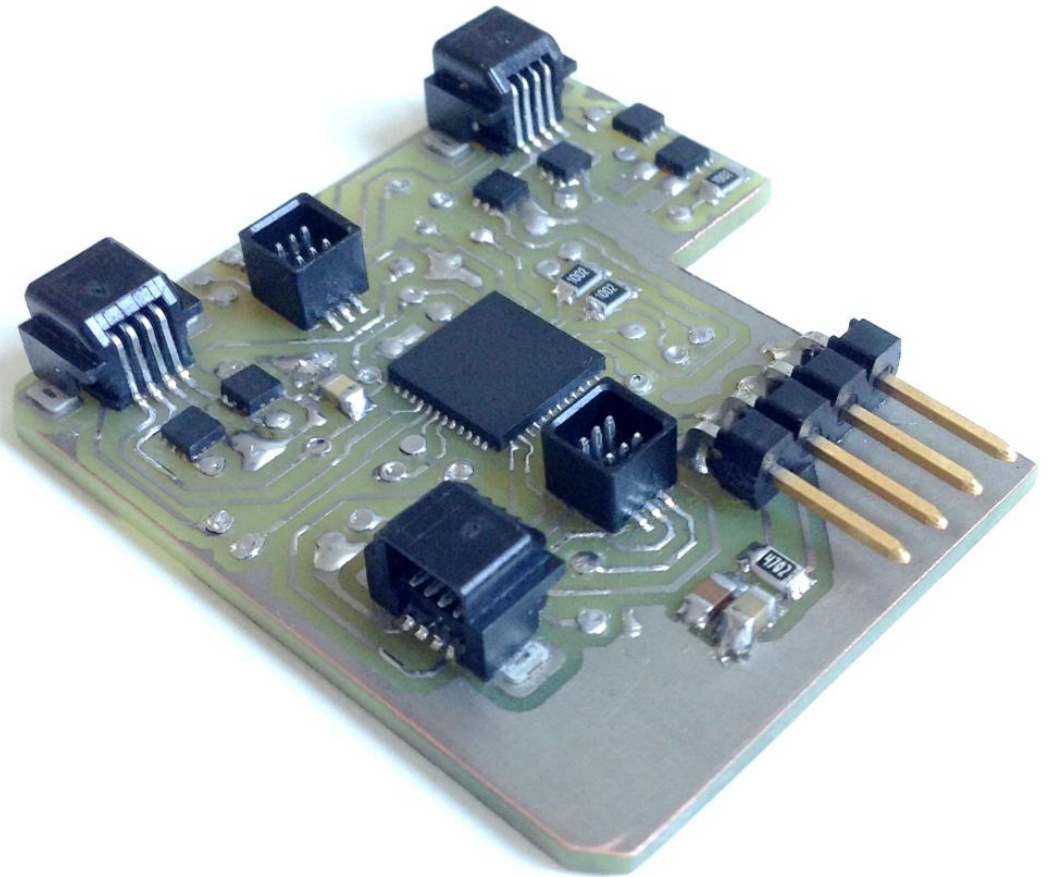


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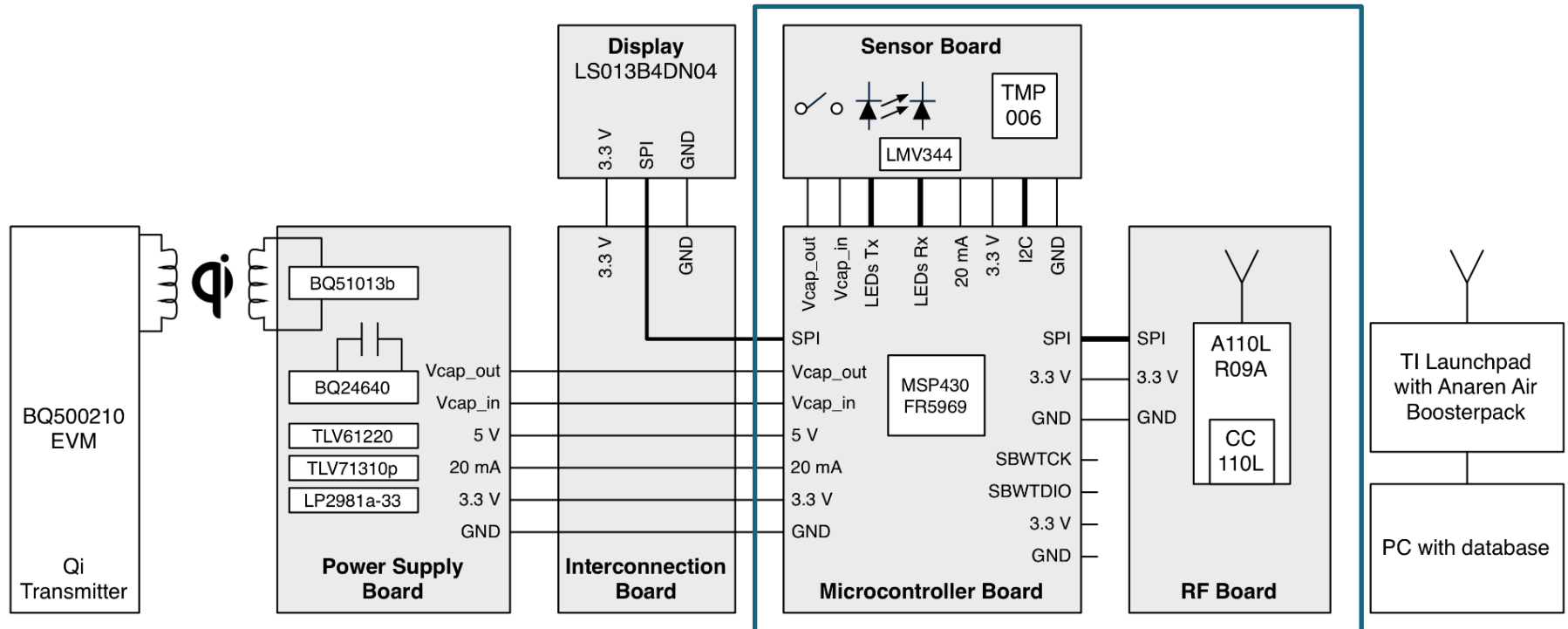


Microcontroller Board

- MSP430FR5969
- Controls
 - Sensors
 - Display
 - RF module
 - Power supplies



Block Diagram

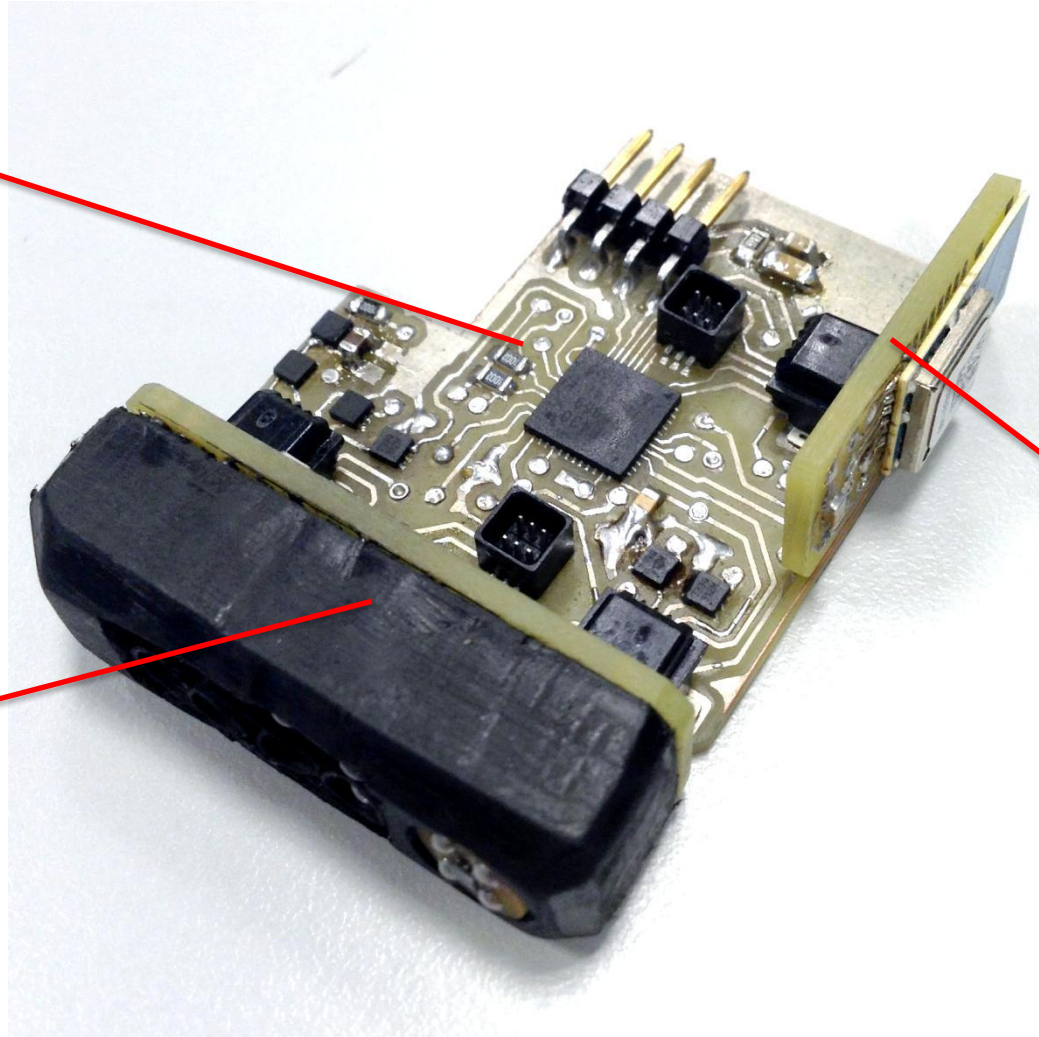


Sensor + RF + Microcontroller Unit

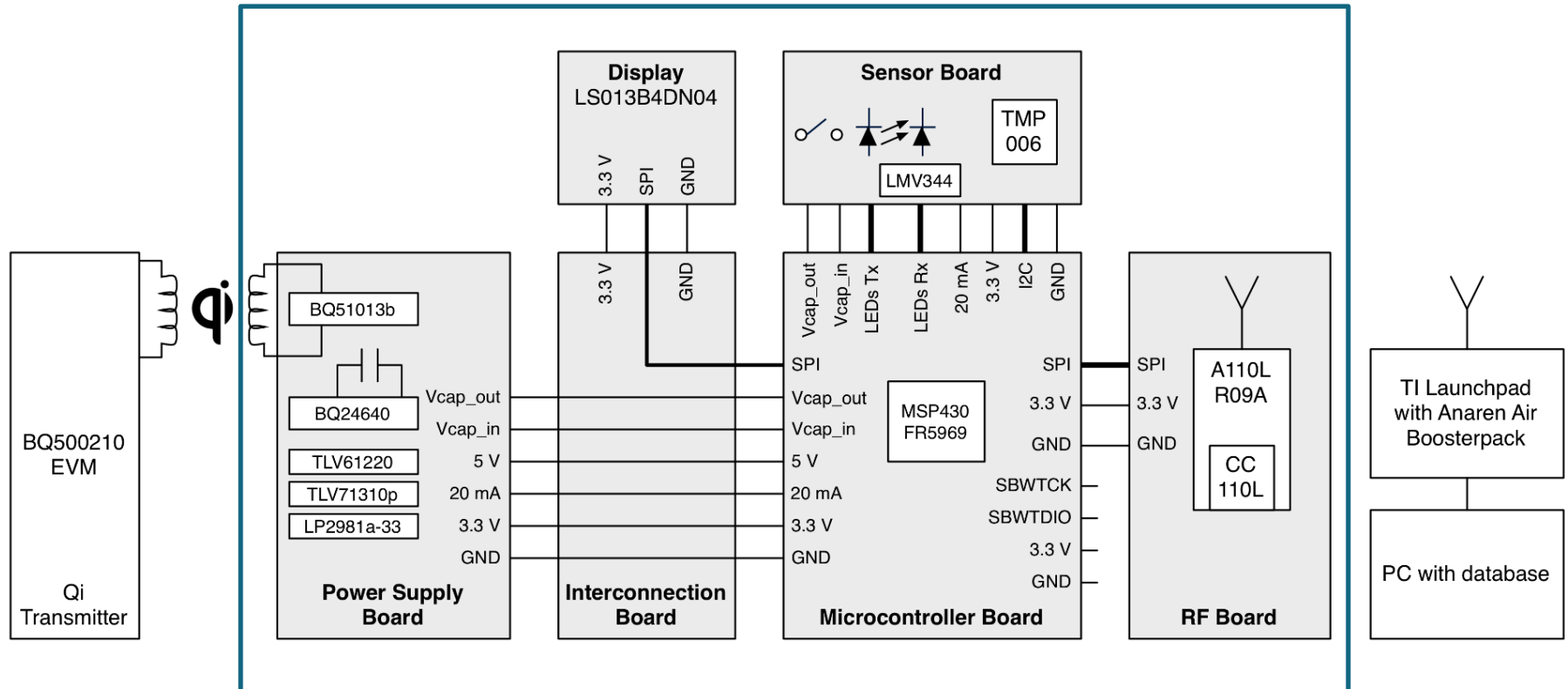
Microcontroller
Board

Sensor
Board

RF Board



Block Diagram

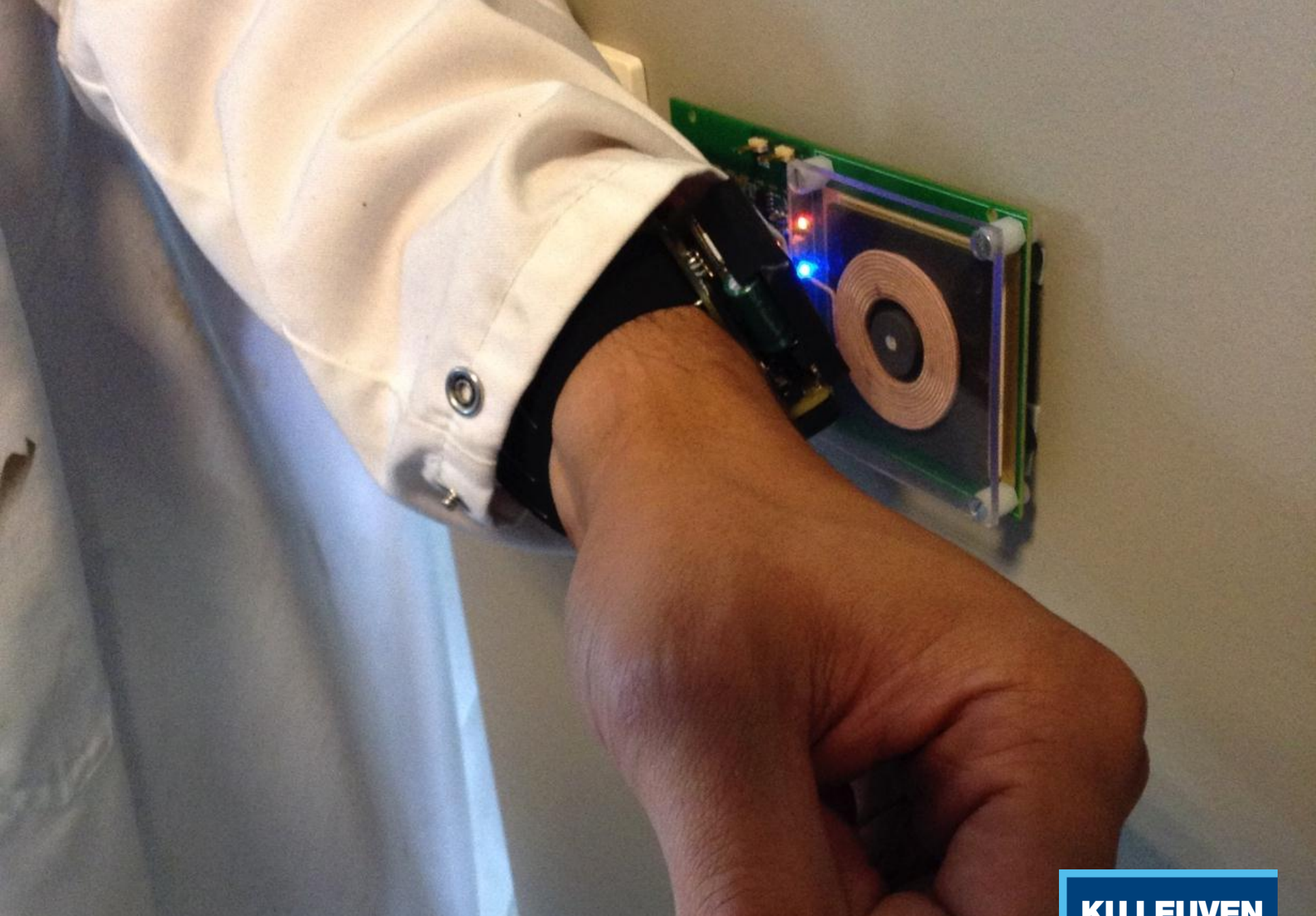


Tlagnose Watch

- Measures newborn's
 - Body temperature
 - Oxygen saturation
 - Bilirubin levels
- Wireless charging in < 5 seconds
- 38 patient measurements on 1 charge
- > 3 days standby time
- Only Texas Instruments ICs: 17 pcs in 3.5 x 4 cm

Tlagnose Watch







Diagnose
Temp 37.5 °C
Bil 10.8
Sat 99

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