

AFE4490 with DCM03 – Measurement Results

Aug 27, 2013



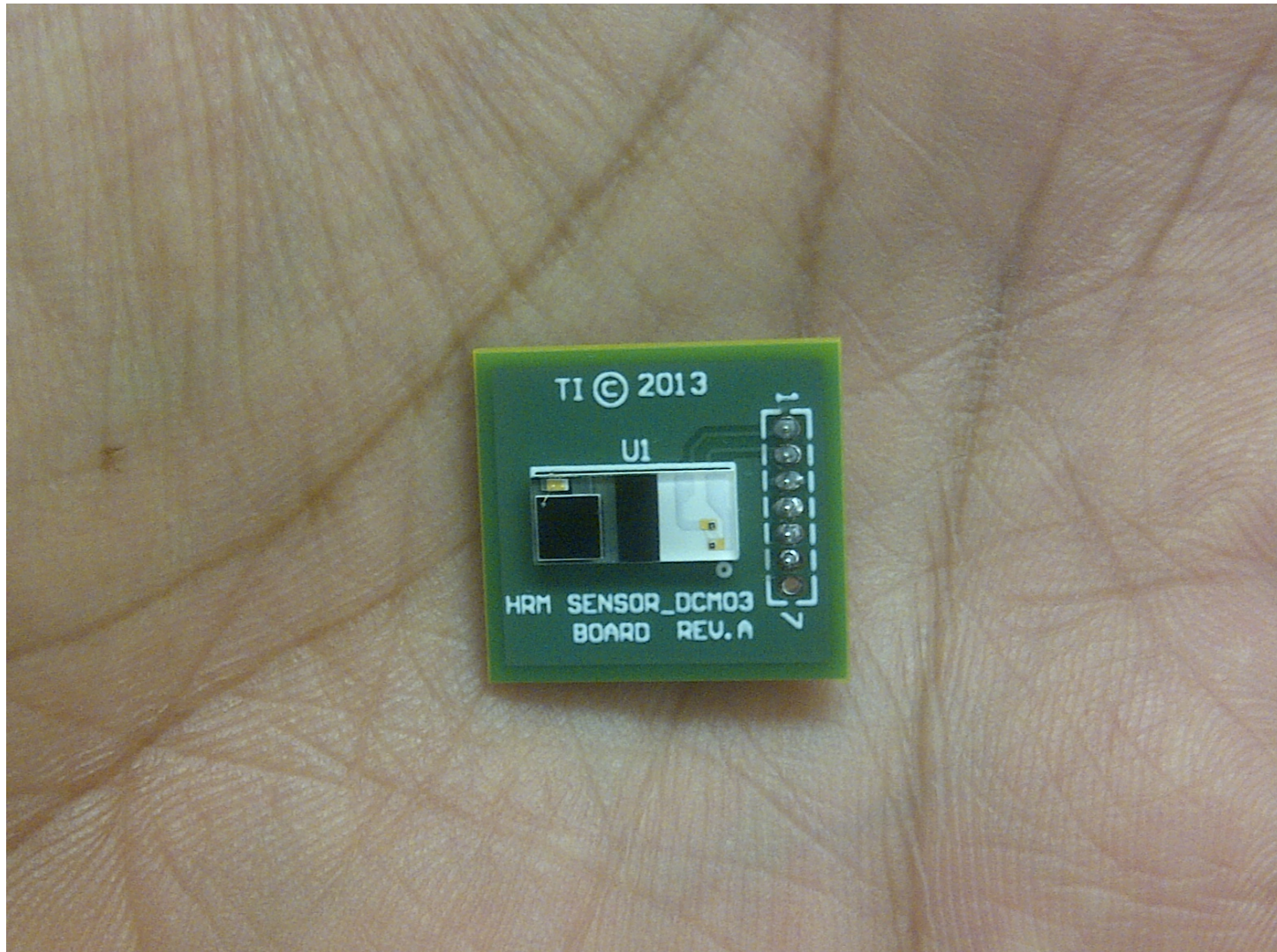
Summary

- The slide set presents the PPG data using DCM03 (Dual LEDs + Photodiode module) with AFE4490.
- The tests were carried out on the thumb and the wrist of 1 subject.
- The PPG results were captured using a DCM03 sensor board with watch board.
- Results:

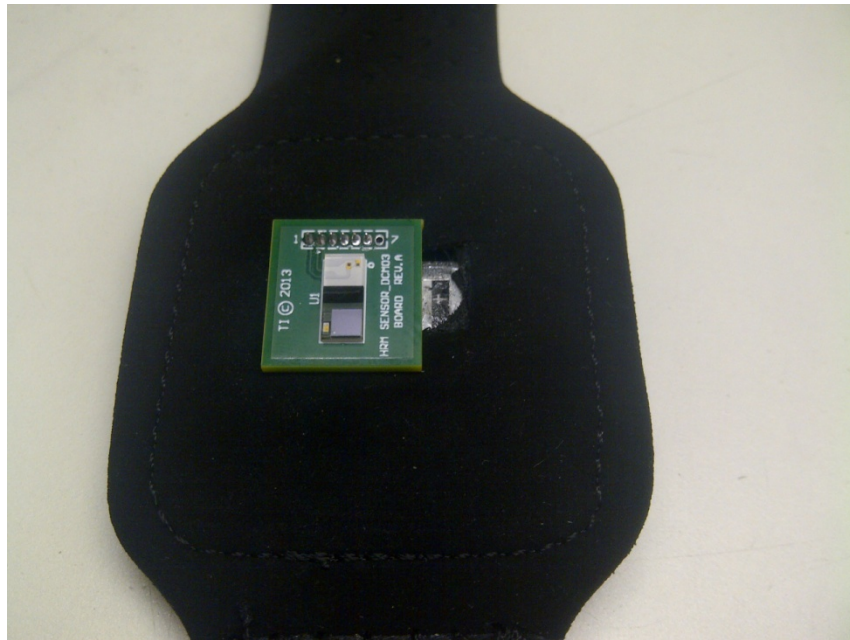
	Set current (mA)	Actual current (mA)	Left Thumb					Left Wrist				
			TIA gain	DC shift	2nd stage gain	IR DC (V)	IR pk-pk (mV)	TIA gain	DC shift	2nd stage gain	IR DC (V)	IR pk-pk (mV)
DCM03	0.25	0.294	500k	0uA	4	0.601	20	1M	0uA	4	0.598	2
	1	0.88	100k	0uA	4	0.525	10	250k	0uA	4	0.658	3
	2.5	2.35						100k	0uA	4	0.89	6
	5	5						50k	0uA	4	1.14	5
	10	10						25k	0uA	4	1.14	5

Measurement Setup Hardware

DCM03 Sensor board



Sensor board & Watch board setup

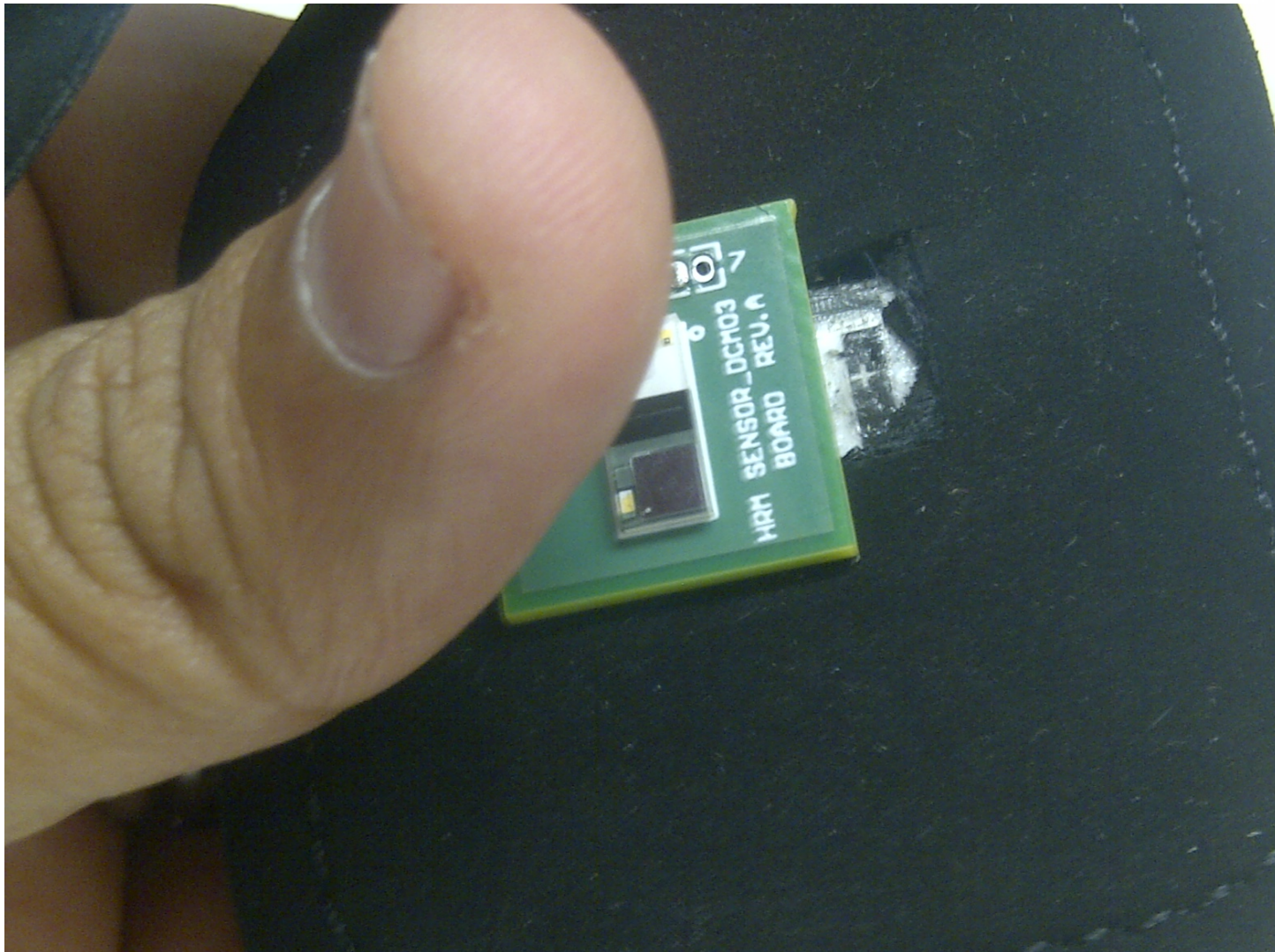


Rear side of watch setup

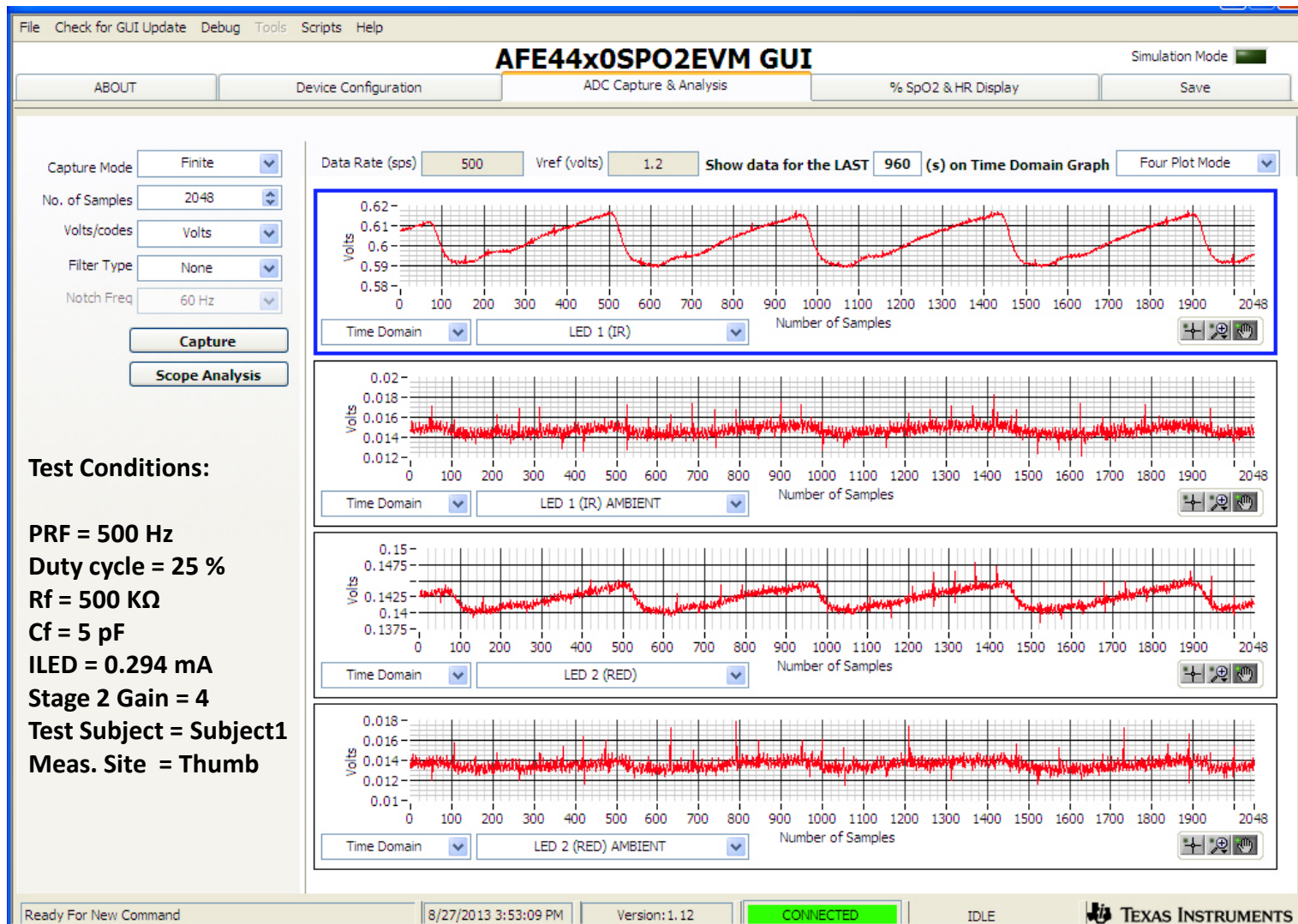


Front side of watch setup

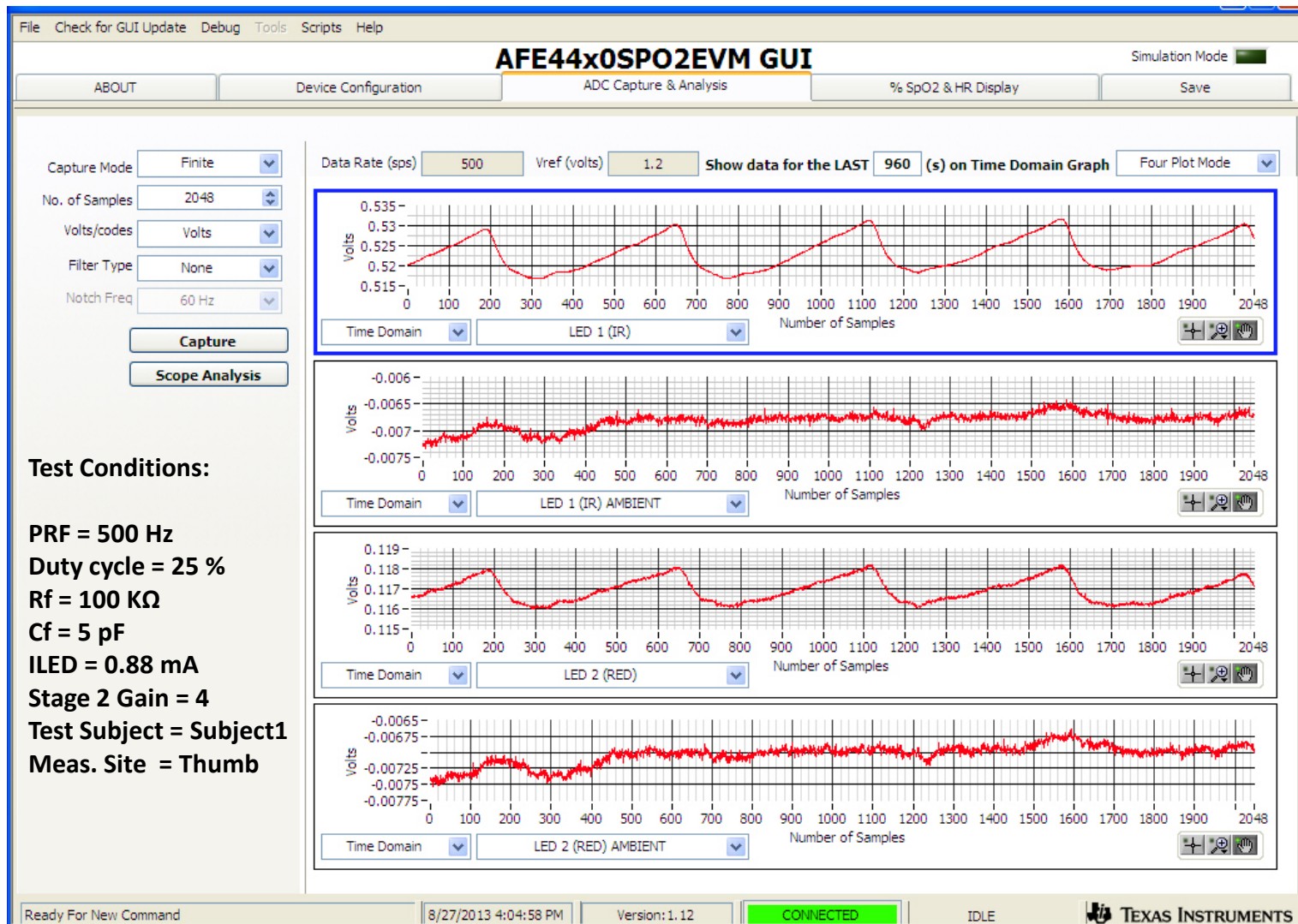
Hardware setup on Thumb



PPG Data – Thumb (0.294mA)



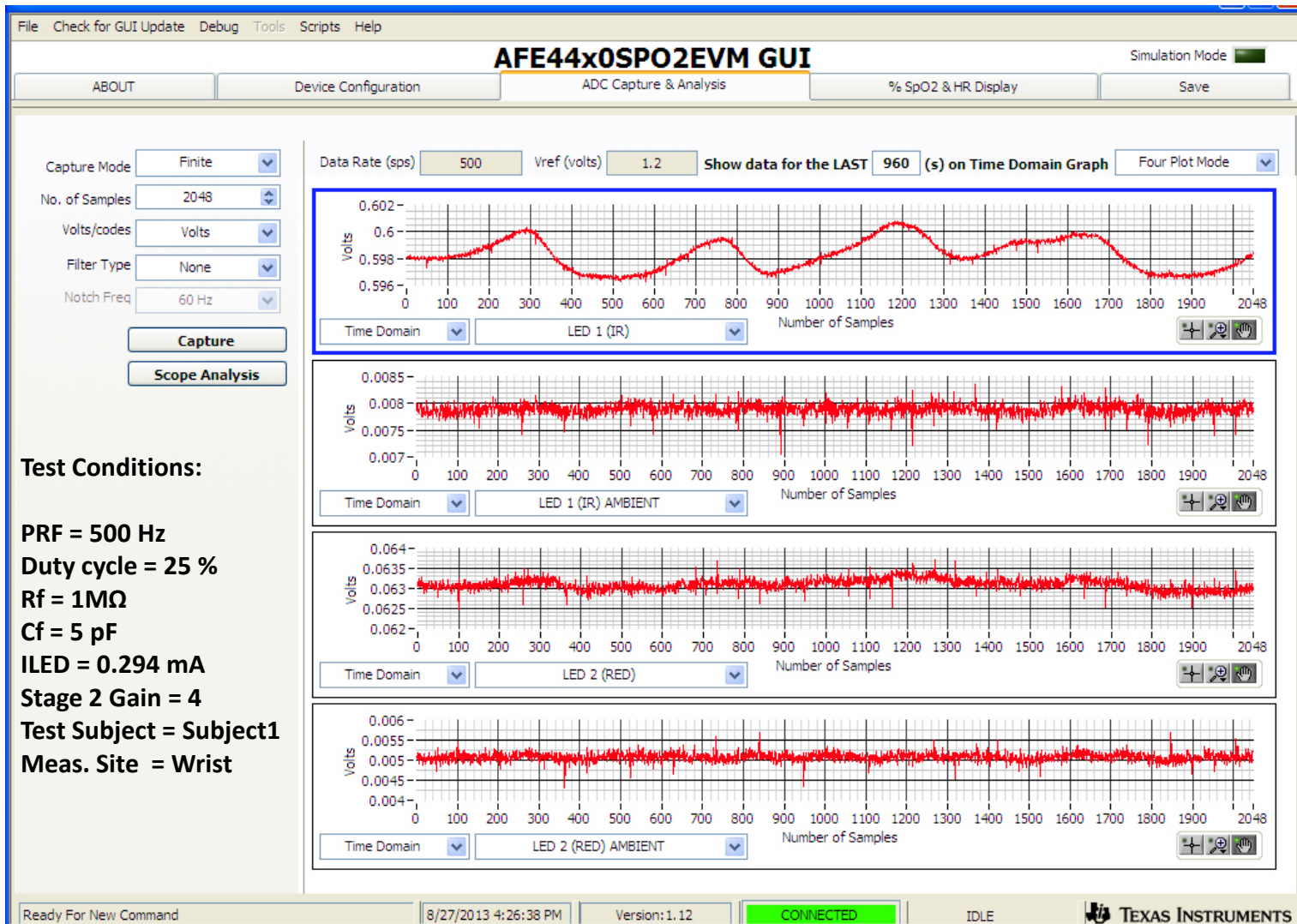
PPG Data – Thumb (0.88mA)



Hardware setup on wrist



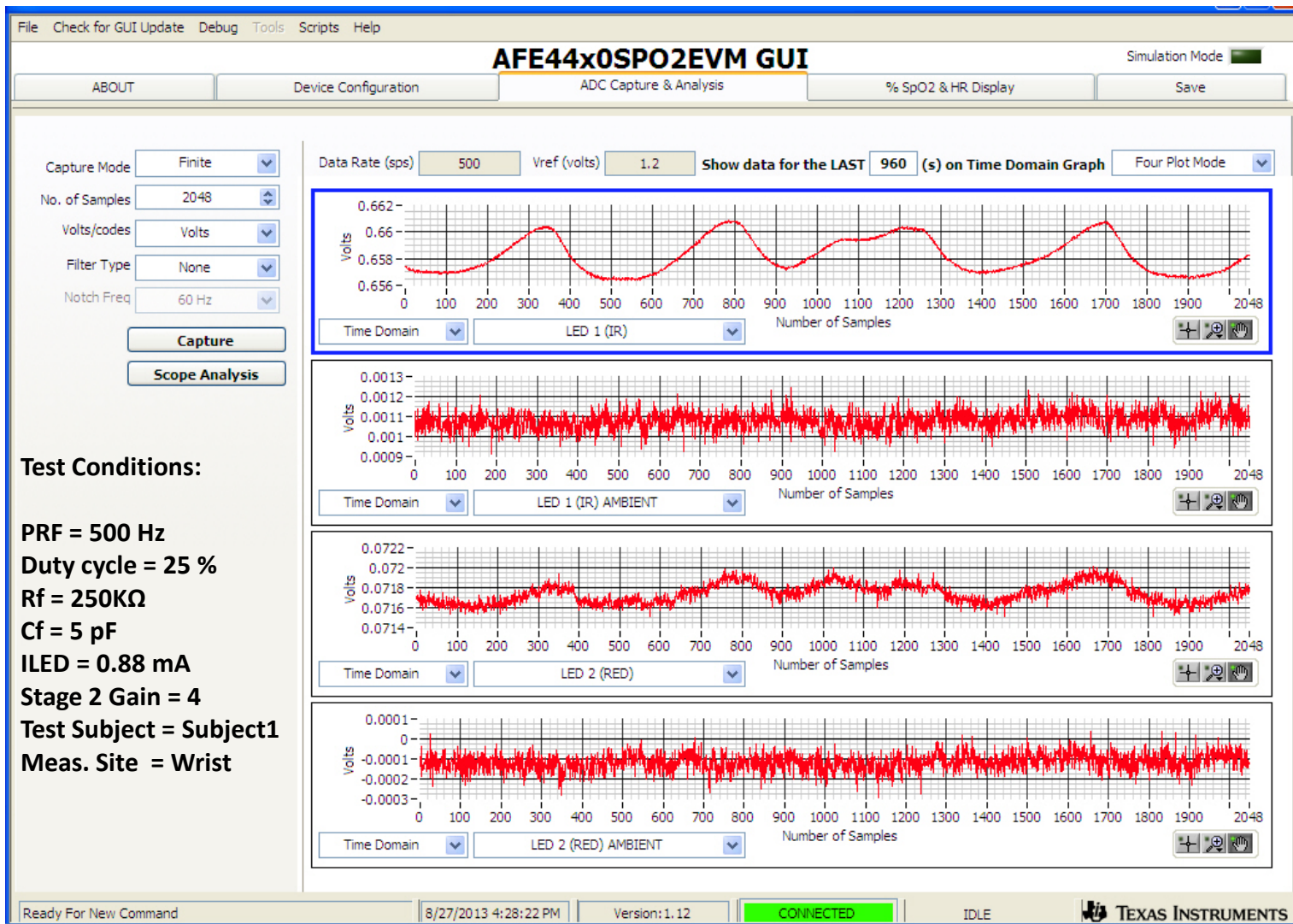
PPG Data – Wrist (0.294mA)



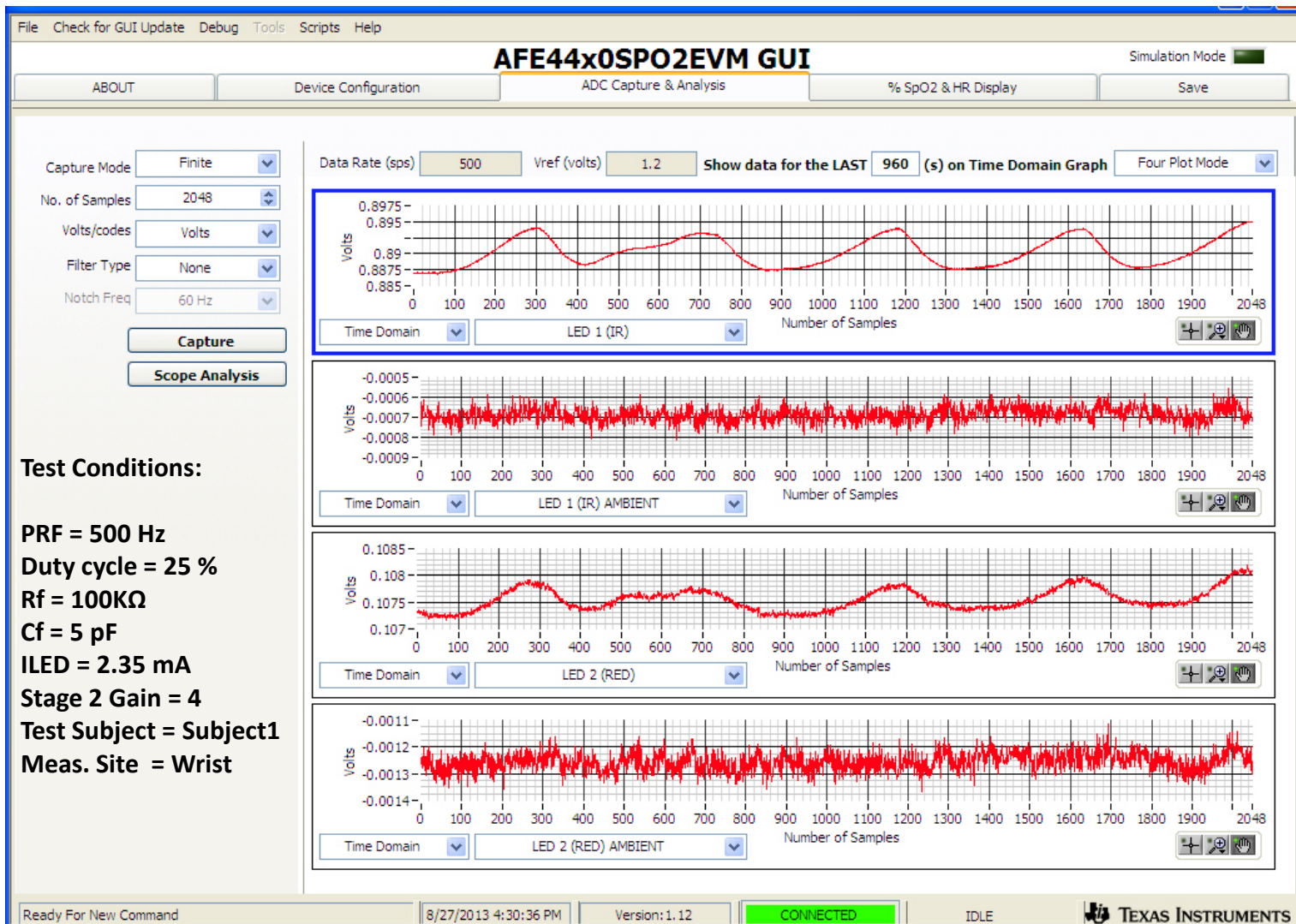
Test Conditions:

PRF = 500 Hz
Duty cycle = 25 %
 $R_f = 1\text{M}\Omega$
 $C_f = 5\text{ pF}$
ILED = 0.294 mA
Stage 2 Gain = 4
Test Subject = Subject1
Meas. Site = Wrist

PPG Data – Wrist (0.88mA)



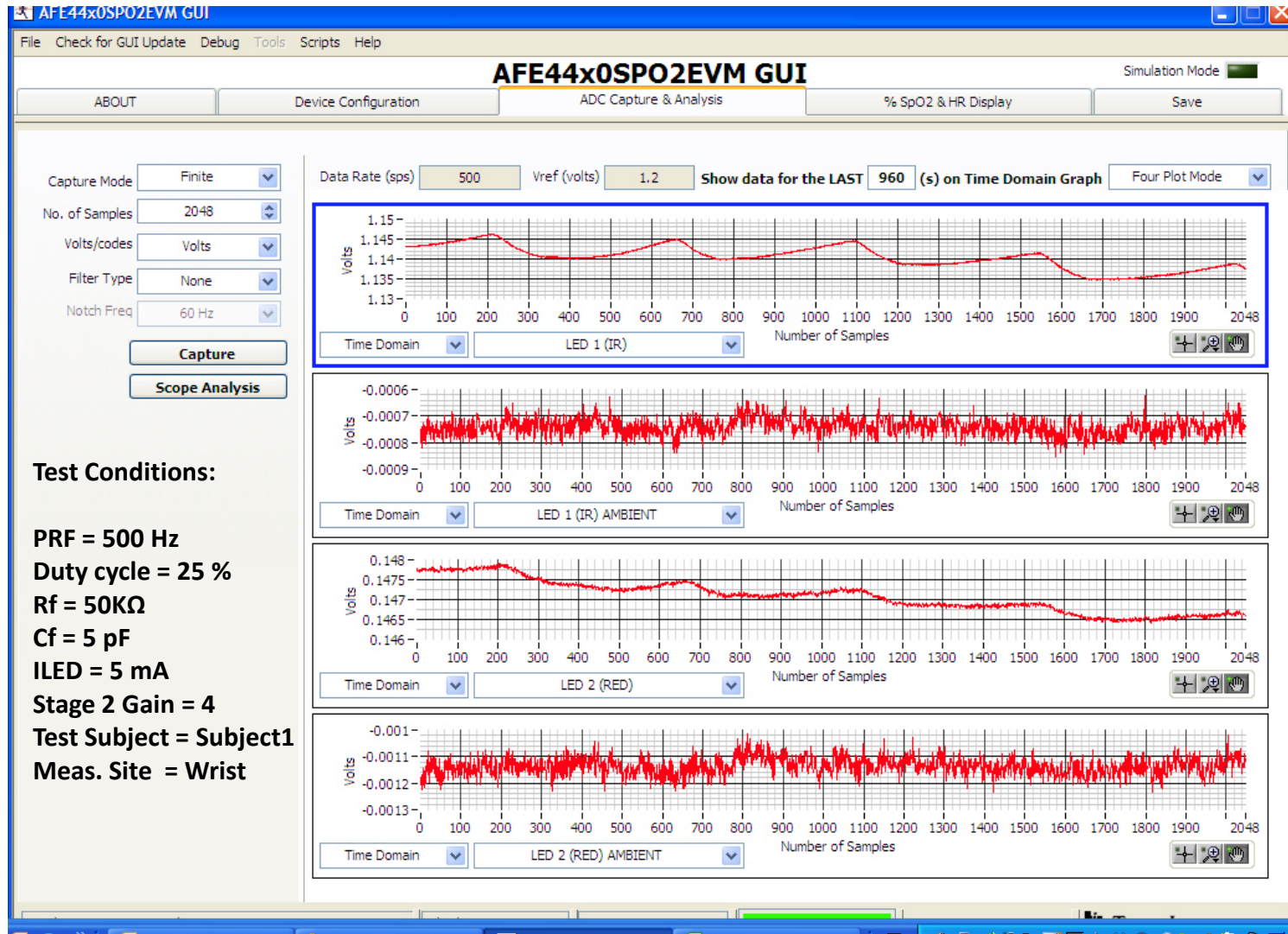
PPG Data – Wrist (2.35mA)



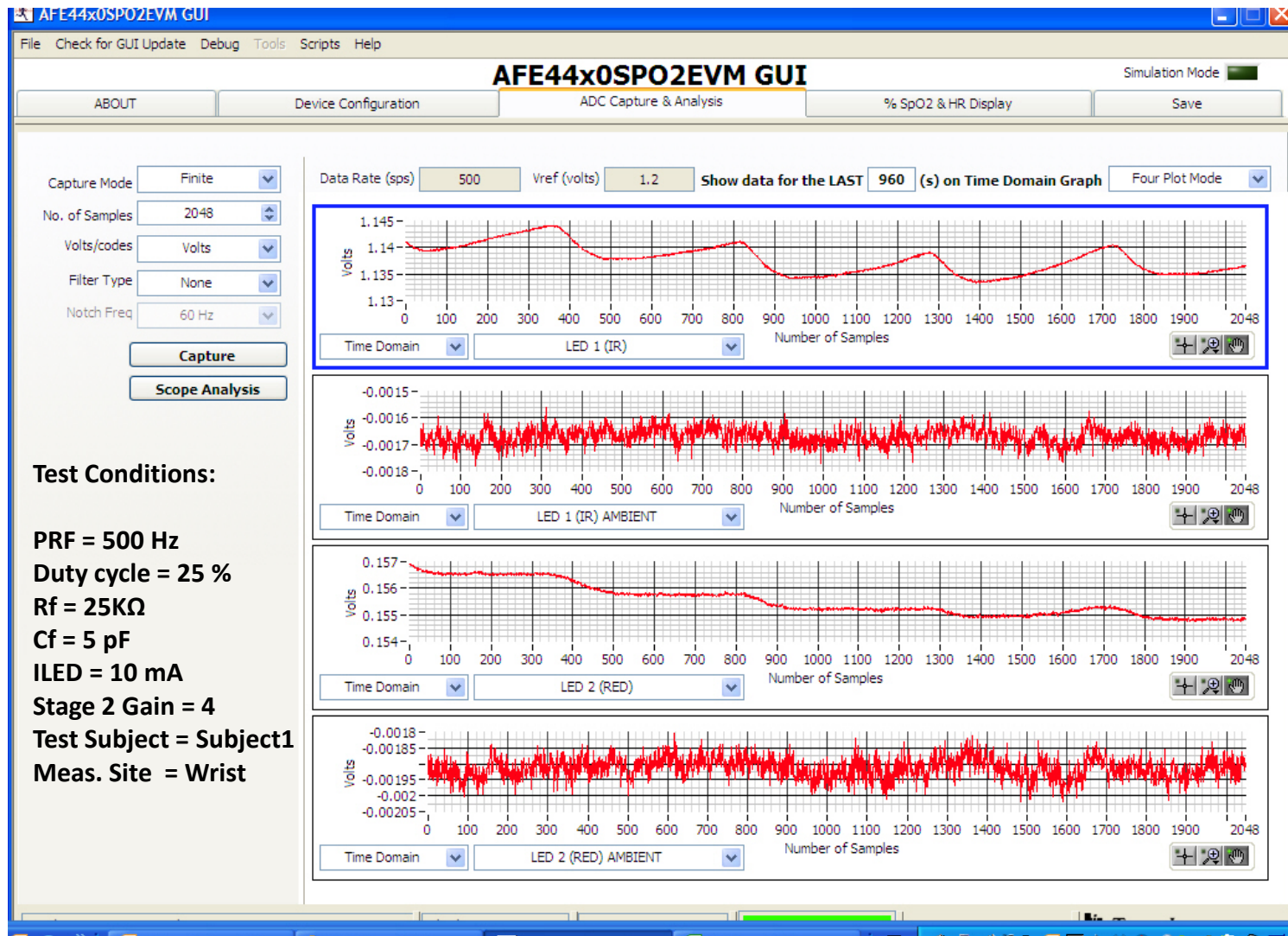
Test Conditions:

PRF = 500 Hz
Duty cycle = 25 %
Rf = 100KΩ
Cf = 5 pF
ILED = 2.35 mA
Stage 2 Gain = 4
Test Subject = Subject1
Meas. Site = Wrist

PPG Data – Wrist (5mA)



PPG Data – Wrist (10mA)



Summary data

	Set current (mA)	Actual current (mA)	Left Thumb					Left Wrist				
			TIA gain	DC shift	2nd stage	IR DC (V)	IR pk-pk (mV)	TIA gain	DC shift	2nd stage	IR DC (V)	IR pk-pk (mV)
DCM03	0.25	0.294	500k	0	4	0.601	20	1M	0	4	0.598	2
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	5	5						50k	0	4	1.14	5
	10	10						25k	0	4	1.14	5