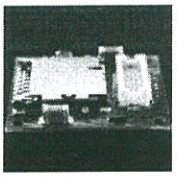
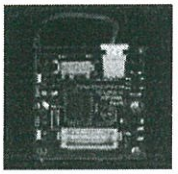
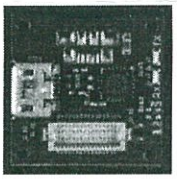
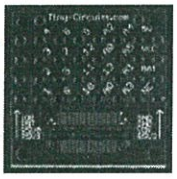
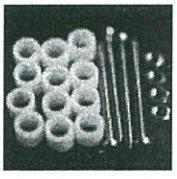
MY WISHLIST

Modules
[x] Arduino
[x] SD module
[x] SD card
[x] RTC module
[x] Coin cell
[ ] 5V up/down
[ ] Batt holder
[ ] Batteries
~~[ ] Protoboard~~
[ ] Enclosure

8x AA batt.
5V reg = $112.08
holder = $31.56
batt = $90.00
AU$ 233.64 @ 12 pc.
= AU$ 20 @ 1 pc
∴ $112.74 @ 1 pc
+ $10 enclosure
+ fudge factor
= $130.00 @ 1 pc.

1 3.7V 140mAh
batt = $71.10 @ 18 pc (yes, 18.)
AU$ 92.61 @ 12 pc.
AU$ 7.72 @ 1 pc
∴ $100.19 @ 1 pc.
+ $10.00 enclosure
+ Fudge factor
∴ $120.00 @ 1 pc.

	Product Details and Comment	Add to Cart
	TINYSHIELD REAL-TIME CLOCK Add low power real time keeping to your TinyDuino (Model ASD2831) Please, enter your comments...	$19.95 12 (US$239.40 @ 12) ADD TO CART
	**TINYSHIELD MICROSD** Add huge amounts of storage with theTinyShield microSD Adapter.(Model ASD2201) Please, enter your comments...	$14.95 12 (US$179.40 @ 12) ADD TO CART
	**TINYDUINO PROCESSOR BOARD** The Heart of the TinyDuino Platform (Model ASM2001) Please, enter your comments...	Price From: $19.95 12 (US$215.52 @ 12) ADD TO CART
	**TINYSHIELD USB** Connect your TinyDuino to yourcomputer for programming. (Model ASD2101) Please, enter your comments...	$17.95 1 (US$17.95 @ 1) ADD TO CART
	**TINYSHIELD PROTO BOARD** All of TinyShield Signals with 0.1" Spacing(Model ASD2009) Please, enter your comments...	Price From: $2.95 12 (US$35.40 @ 12) ADD TO CART
	**TINYDUINO MOUNTING KIT** Mounting Kit for the TinyDuino (Model ASH1002) Please, enter your comments...	$3.95 12 (US$47.40 @ 12) ADD TO CART
	MICROSD CARD (8 GB) AND SD ADAPTER microSD Card (8 GB) and SD Adapter Please, enter your comments...	$9.95 12 (US$119.40 @ 12) ADD TO CART

==========
US$ 854.47 @ 12 pc
US$ 71.21 @ 1 pc
AU$ 92.74 @ 1 pc

Tips
Hum%
TempC
80
70
60
50
40
30
20
10
0
2015-04-12T10:53:02
2015-04-12T11:11:07
2015-04-12T11:31:07
2015-04-12T11:47:03
2015-04-12T12:03:02
2015-04-12T12:19:06
2015-04-12T12:35:01
2015-04-12T12:51:05
2015-04-12T13:07:04
2015-04-12T13:23:07
2015-04-12T13:39:02
2015-04-12T13:55:04
2015-04-12T14:12:02
2015-04-12T14:28:04
2015-04-12T14:44:06
2015-04-12T15:00:08
2015-04-12T15:17:03
2015-04-12T15:33:05
2015-04-12T15:49:07
2015-04-12T16:07:01
2015-04-12T16:23:02
2015-04-12T16:39:04
2015-04-12T16:55:05
2015-04-12T17:13:04
2015-04-12T17:29:05
2015-04-12T17:45:07
2015-04-12T18:04:12
2015-04-12T18:20:05
2015-04-12T18:36:06
2015-04-12T18:52:07
2015-04-12T19:11:02
2015-04-12T19:27:03
2015-04-12T19:43:04
2015-04-12T19:59:05
2015-04-12T20:19:06
2015-04-12T20:35:07
2015-04-12T20:51:07
2015-04-12T21:11:04
2015-04-12T21:27:05
2015-04-12T21:43:00
2015-04-12T21:59:01
2015-04-12T22:20:04
2015-04-12T22:36:05
2015-04-12T22:52:05
2015-04-12T23:13:04
2015-04-12T23:29:04
2015-04-12T23:45:04
2015-04-13T00:07:17
2015-04-13T00:23:00
2015-04-13T00:39:00
2015-04-13T00:55:01
2015-04-13T01:17:02
2015-04-13T01:33:02
2015-04-13T01:49:02
2015-04-13T02:12:00
2015-04-13T02:28:01
2015-04-13T02:44:01
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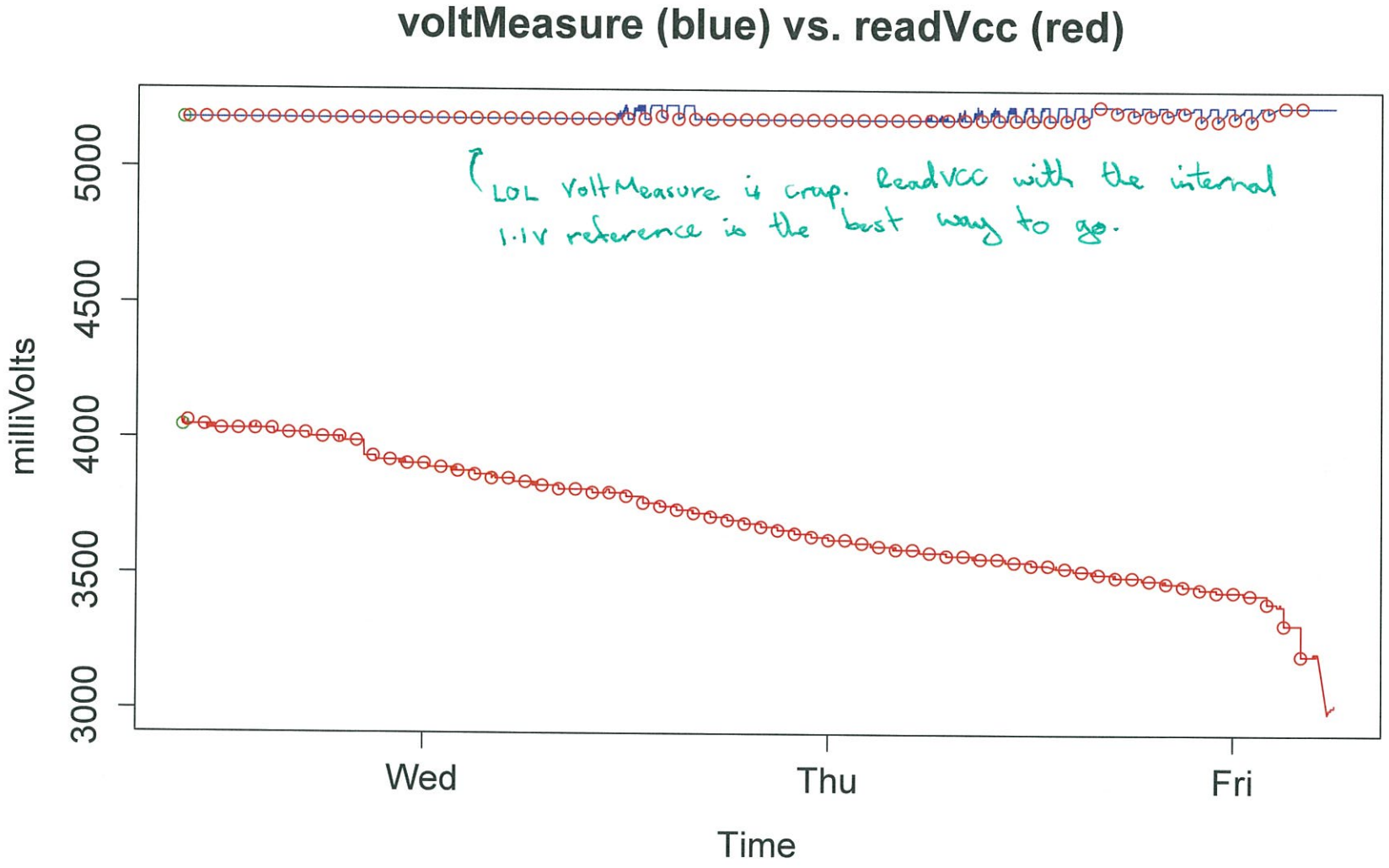
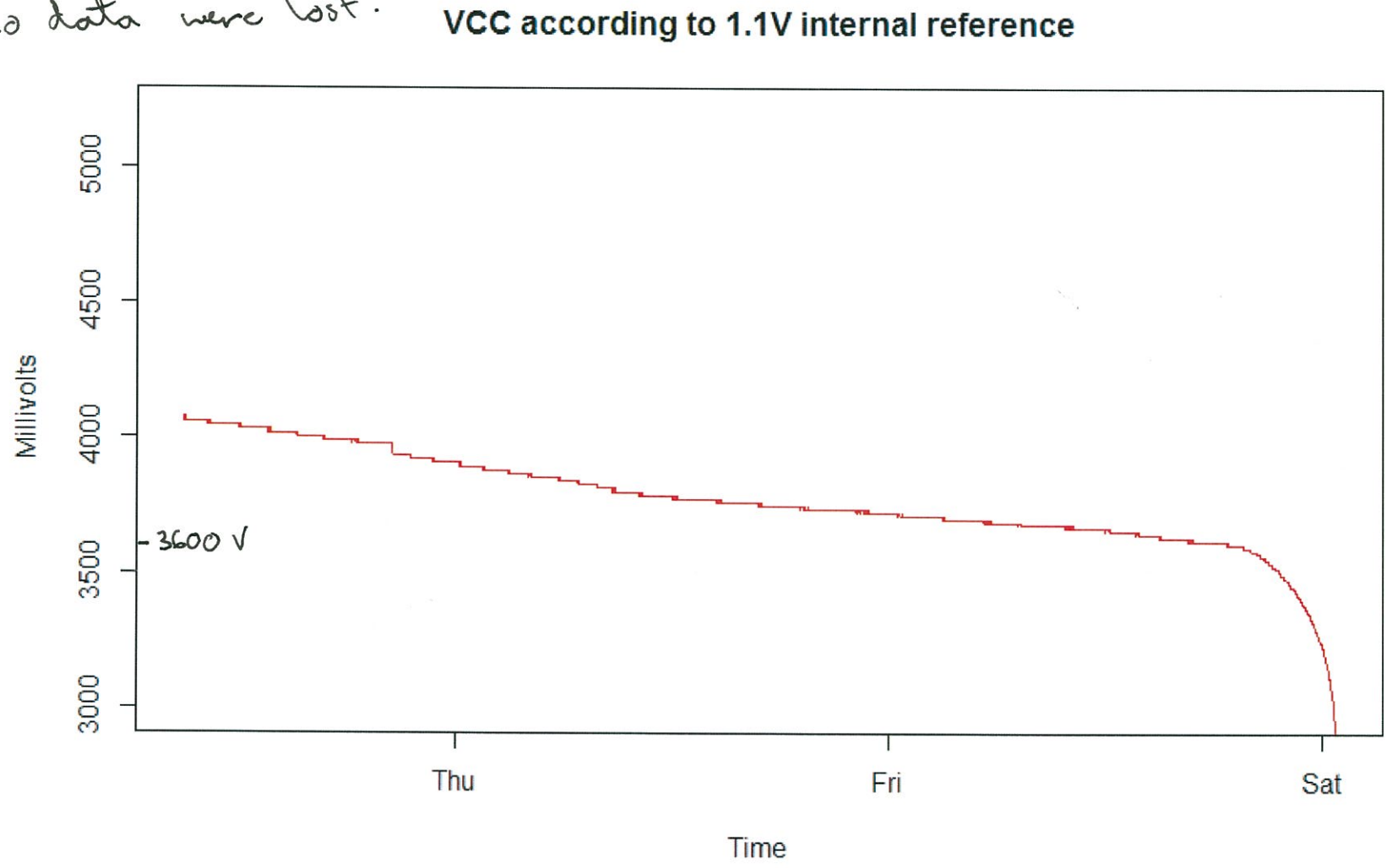
2015-04-13T03:39:03
2015-04-13T03:55:03


voltMeasure (blue) vs. readVcc (red)
LOL voltMeasure is crap. readVcc with the internal 1.1V reference is the best way to go.
milliVolts
5000
4500
4000
3500
3000
Wed
Thu
Fri
Time

40 mAh battery test. With a safety shutdown set at 2800 mV, RTC and SD access became unsafe (the log recorded about 10 logs with the same time stamp and Vcc below 2800 mV) but no data were lost.



Logger battery life.

Experiment ran for 78 hours continuously.
Energizer Max is supposed to be 2500 mAh, but Energizer's own test showed 50 hours service life in a remote (50 mA drain?).

$2000\,mAh = 2000\,mA \times 1h \rightarrow \frac{mAh}{h} = mA$

Apparently, I was draining 32 mA.
With TinyDuino alone connected and measuring amperage at the battery before it's stepped up, drawing 21 mA.

So it's my step-up that's costing me battery life. I need to ship it, perhaps by just using 3x batteries together. Even with the reduced voltage range, I should be able to get more life with less power draw.

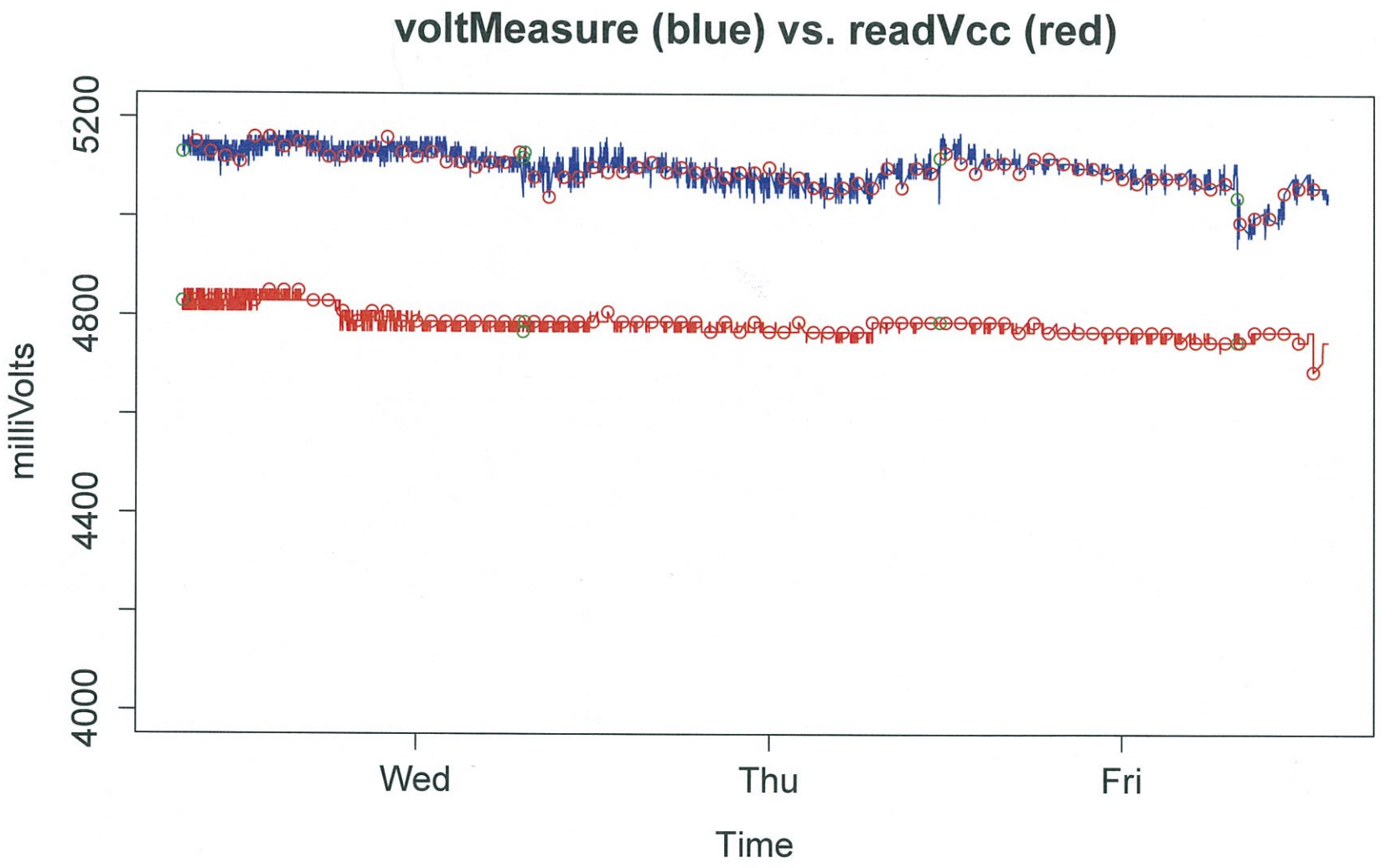
Alternatively, I could do a hybrid system where I use a forward-biased Zener to only allow voltage through.

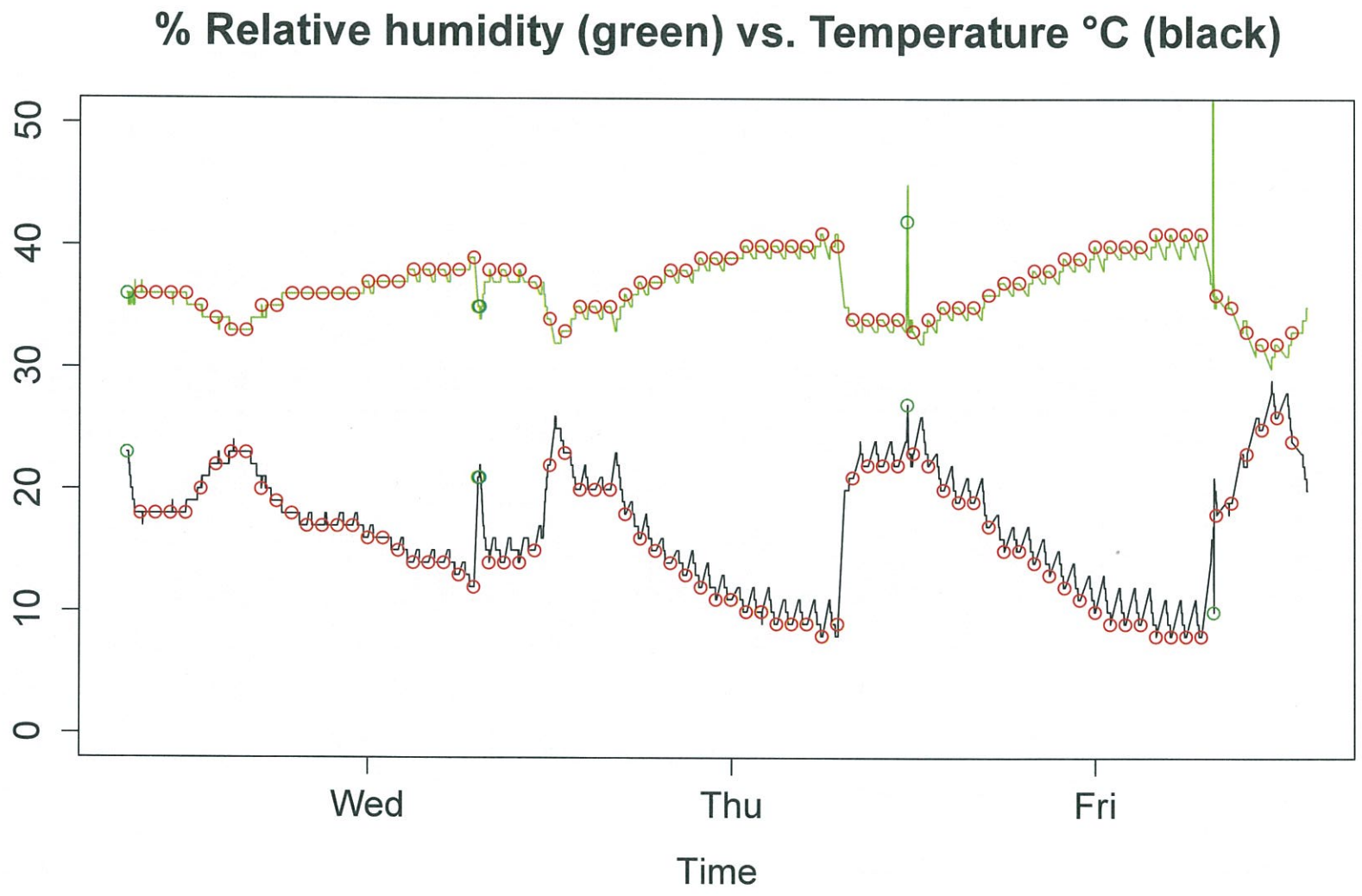
TinyDuino power draw:

Processor board, pin 13 LOW, empty program; IN4007 protection diode	5.74 mA.
" " " without protection diode.	8.68 mA.
Processor, RTC, no protection diode.	9.10 mA.

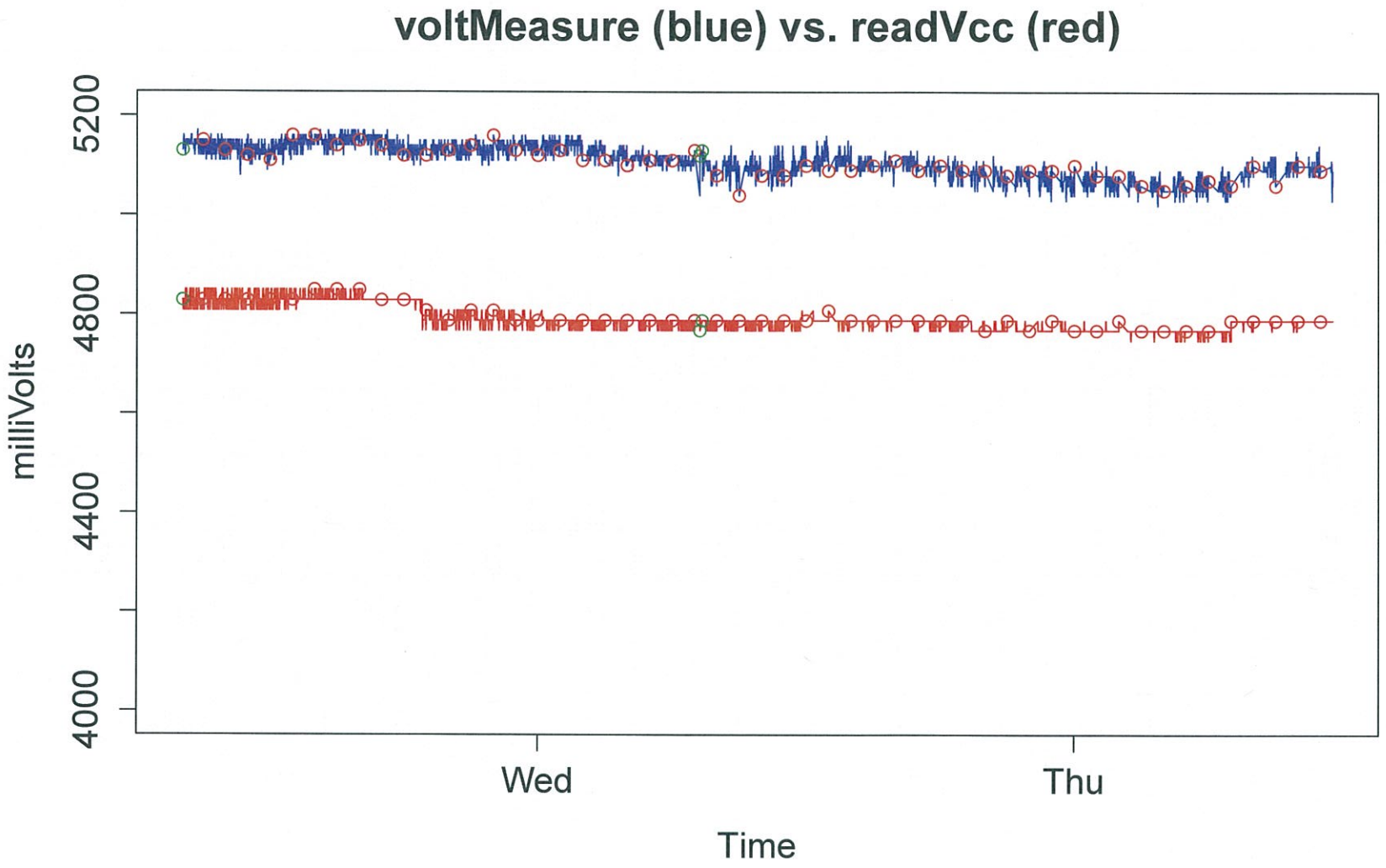
Delay 8sec, flash LED 13 for 0.5 sec.	8.90 mA
Sleep. powerdown for 8 sec, flash LED 13 for 0.5 sec.	0.04 mA
" above " with unbranded microSD card (2GB).	0.77 mA
" above " with Kingston 8GB card.	0.70 mA
" " Sandisk 32 GB Extreme Plus.	0.96 mA
" " unbranded 1 GB microSD card.	0.92 mA
Prototype with unbranded 2GB microSD card	17.00 mA

Software test:

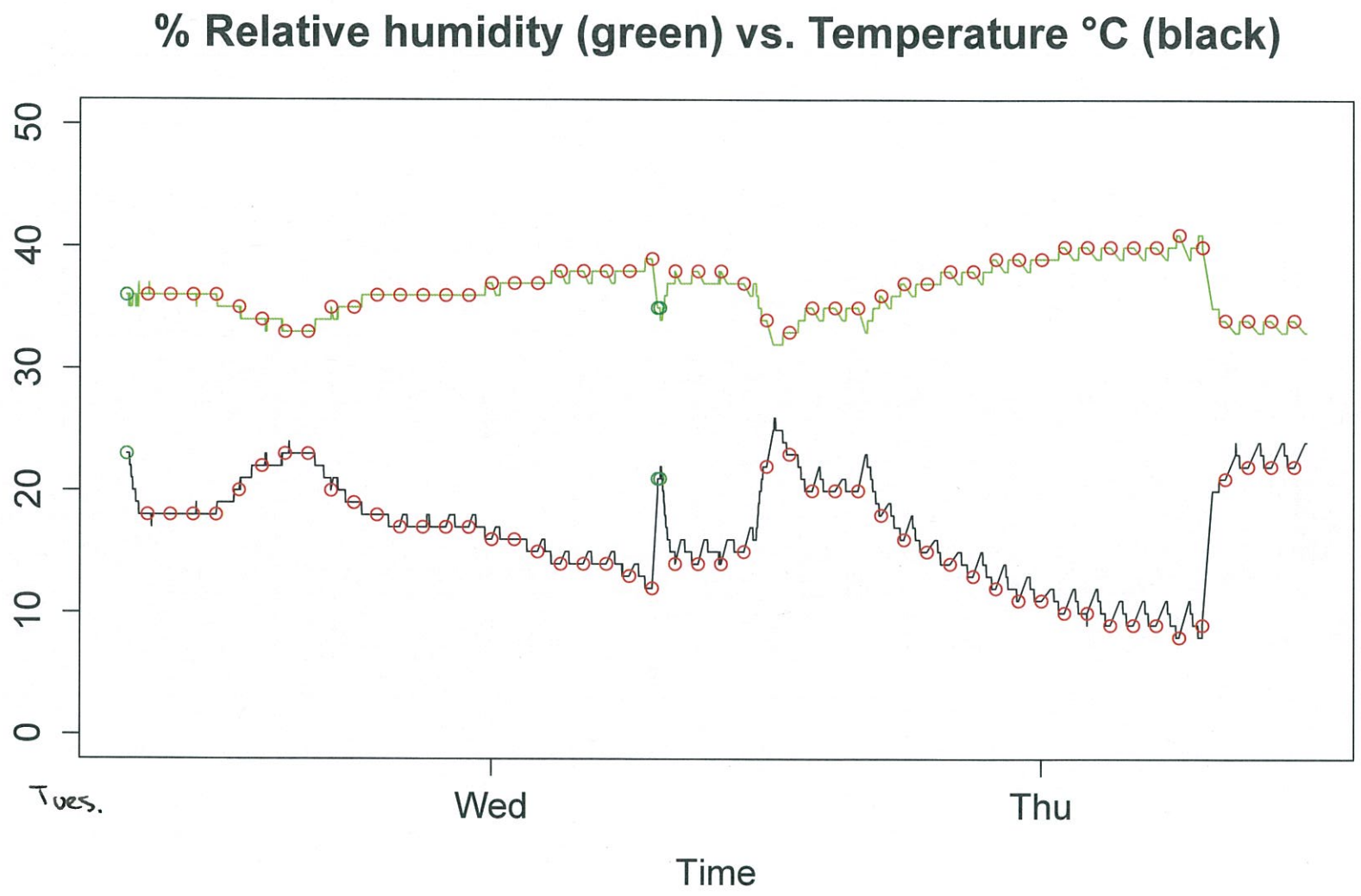

voltMeasure (blue) vs. readVcc (red)
milliVolts
5200
4800
4400
4000
Wed
Thu
Fri
Time

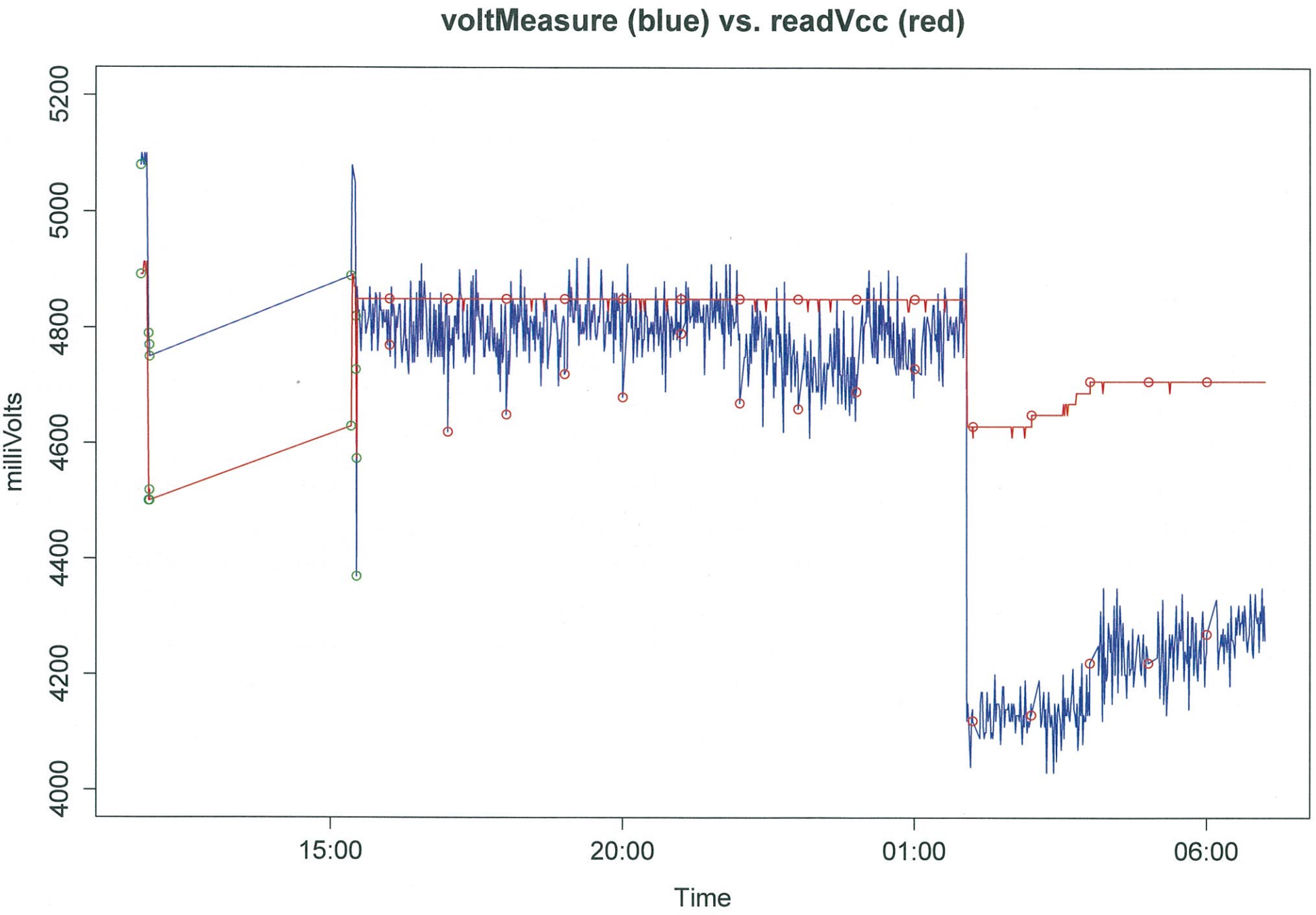

% Relative humidity (green) vs. Temperature °C (black)
0
10
20
30
40
50
Wed
Thu
Fri
Time

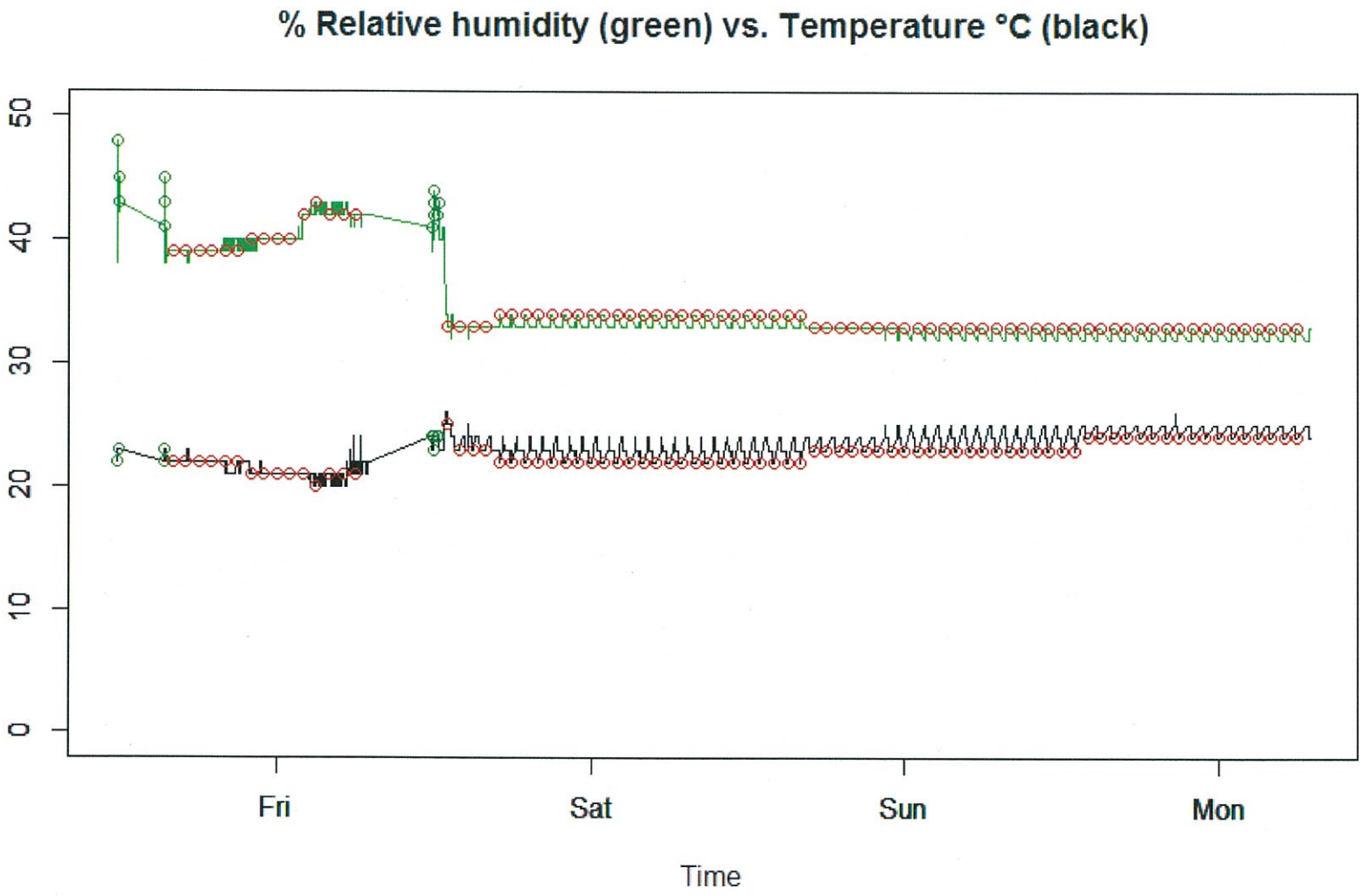
5 May – 7 May 2015

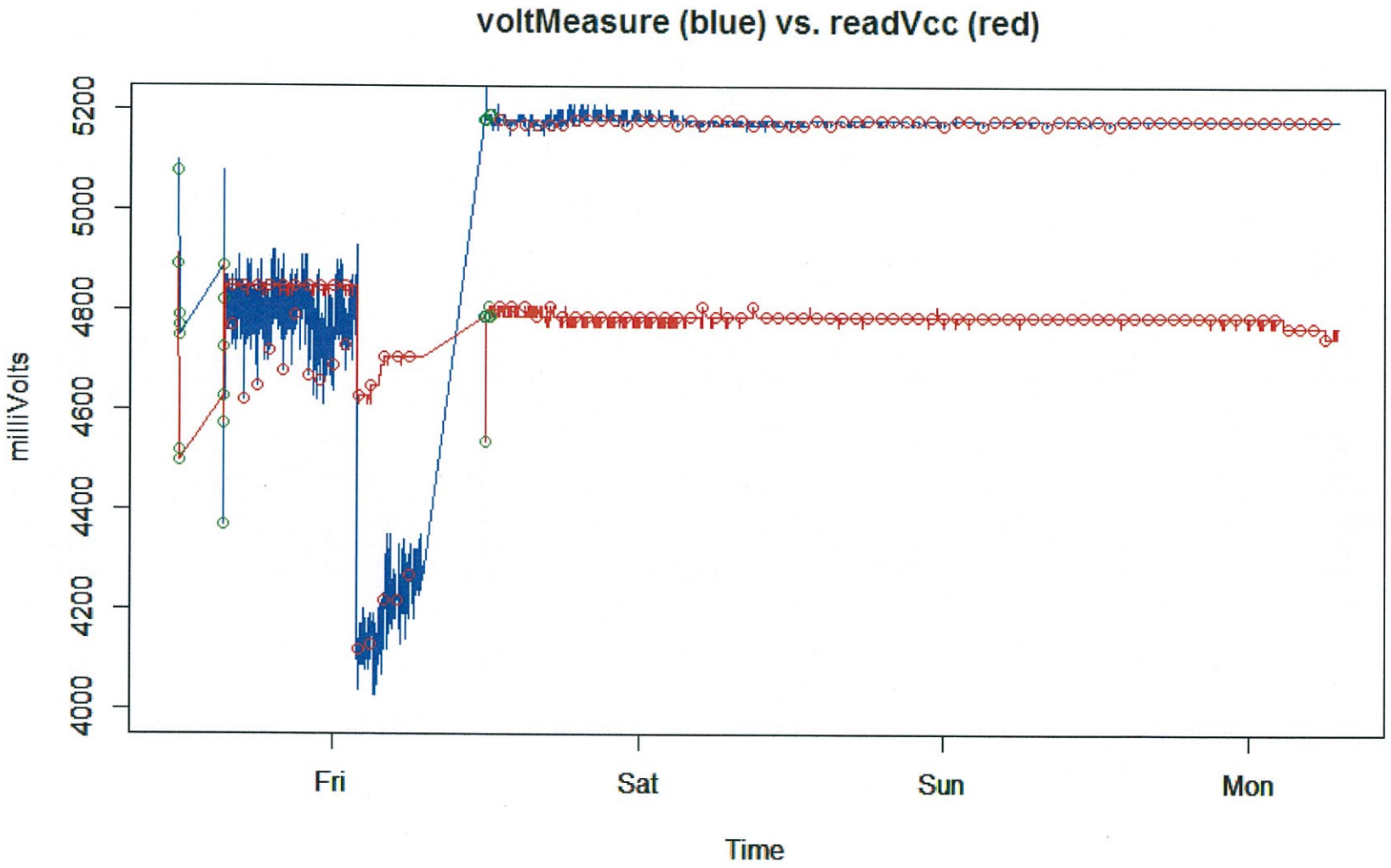


5 May — 7 May 2015




voltMeasure (blue) vs. readVcc (red)
milliVolts
5200
5000
4800
4600
4400
4200
4000
15:00
20:00
01:00
06:00
Time


% Relative humidity (green) vs. Temperature °C (black)
0
10
20
30
40
50
Fri
Sat
Sun
Mon
Time


voltMeasure (blue) vs. readVcc (red)
milliVolts
4000
4200
4400
4600
4800
5000
5200
Fri
Sat
Sun
Mon
Time