2022-03-17 BQ796xx Setup and Test

Thursday, 17 March 2022 12:13 PM

Setting up BQ79600 and BQ79656 EVMs to pick up where Shakeeb left off on BMM development and troubleshooting.

Doing toolchain set up and install on Duo's Alienware laptop.

Checking software and docs from TI secure resources.
https://www.ti.com/lit/ug/sluuc36/sluuc36.pdf
Public "BQ79616-Q1 and BQ75614-Q1 GUI User's Guide" is newer version than secure draft version.
Dec 2020 public vs Dec 2019 secure

BQAutoEval-1.0.4.setup-win_7.4.2.exe	Application	9,977 KB	No	11,665 KB	15%	25/09/2020 4:14 AM
install_image_BQAutoEval.zip	Compressed (zipped) Folder	24,829 KB	No	24,829 KB	0%	17/05/2021 6:04 PM

GUI secure

BQAutoEval-1.0.4.setup-win_7.4.2.exe	Application	9,977 KB	No	11,665 KB	15%	25/09/2020 4:14 AM
install_image_BQAutoEval.zip	Compressed (zipped) Folder	24,829 KB	No	24,829 KB	0%	17/05/2021 6:04 PM

GUI public https://www.ti.com/lit/zip/slvc810

Large slow install. Needs to also download and install GUI Composer Runtime.

Note, do not need to touch USB2ANY firmware as Shakeeb has already done updating.

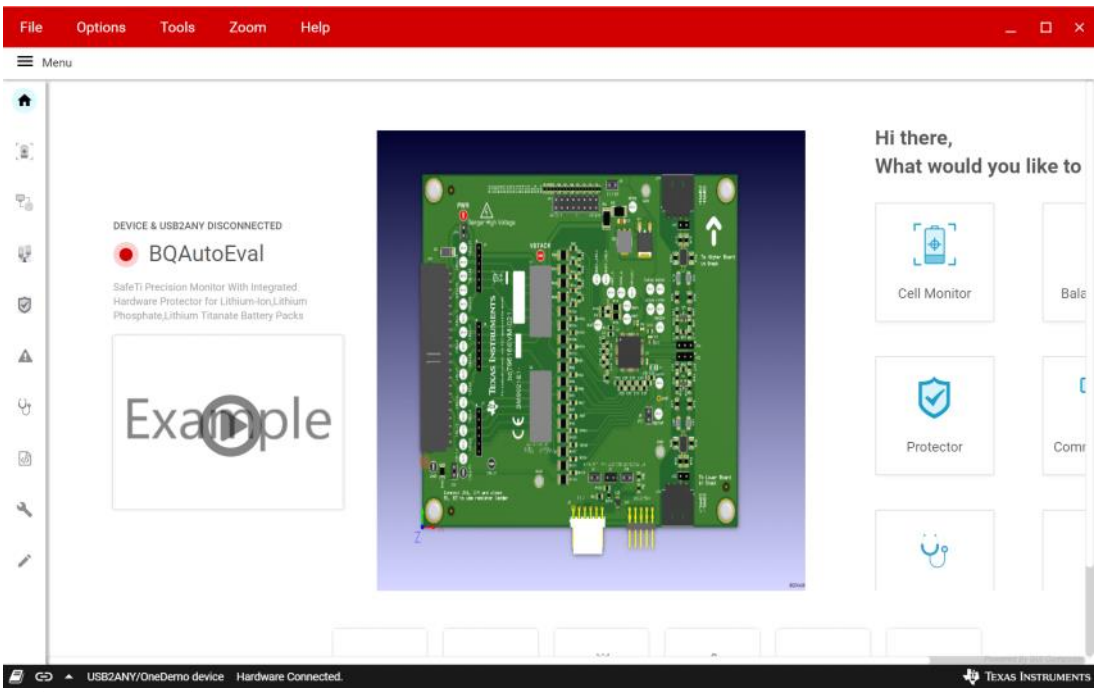
BQ79600EVM Quick Start Guide www.ti.com

Table 13. Connections Between BQ79600EVM High Side and BQ79616EVM Low Side

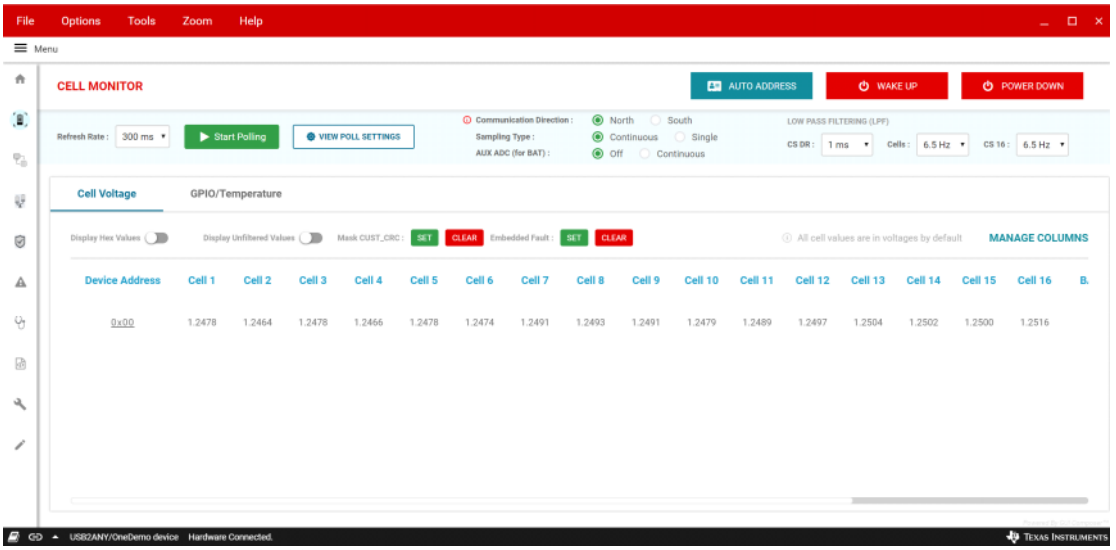
Connection Name	BQ79600EVM High Side	BQ79616EVM Low Side
COMH_N to COML_N	J15 pin 4	J10 pin 1
COMH_P to COML_P	J15 pin 3	J10 pin 2

BQ79656 EVM connected as recommended in GUI user guide 20V across GND and Vstack test points.

GUI displays not connected.



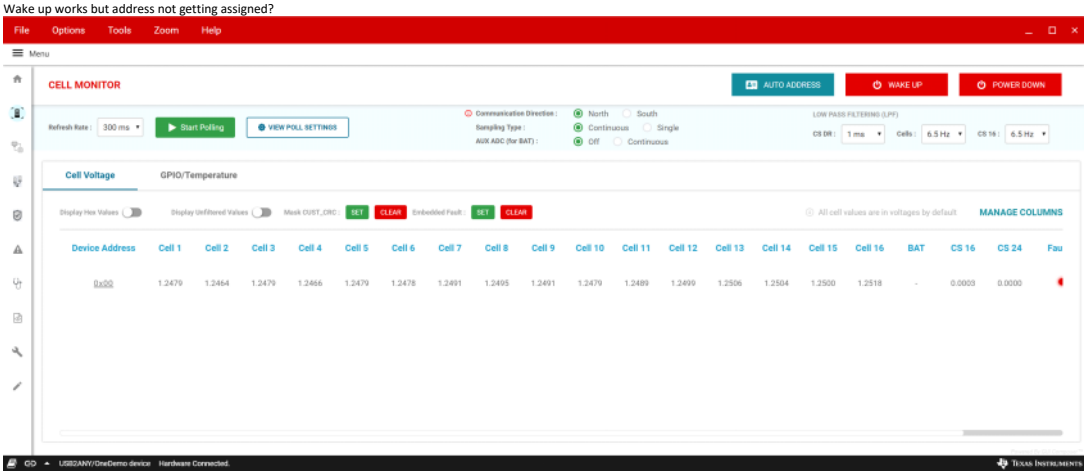
Does show USB2ANY is connected



To get connection need to go to Cell Monitor, then click:

1. Wake up
2. Auto Address
3. Start Polling

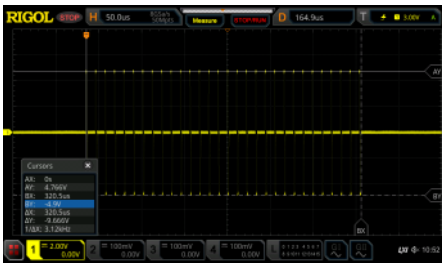
Connected BMM to BQ79656 EVM.
Wake up works but address not getting assigned?



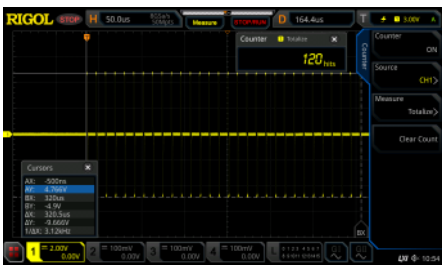
Also noted, does not respond to power down, LED on EVM goes out but stays on for BMM

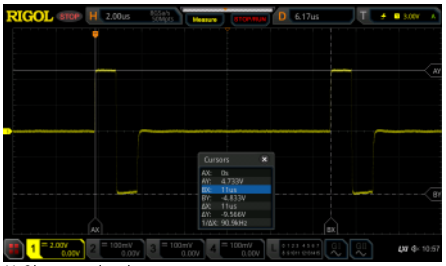
USB2ANY connection seems to fail when connected via USB-C Hub? Disconnected, waited and reconnected. Seems to work again.

Capturing waveform on BQ79656 COMH, Probed differentially with HVP-70.

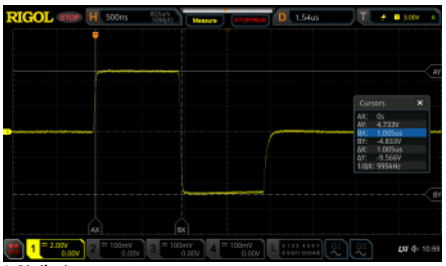


320uS wakeup pulsing period length





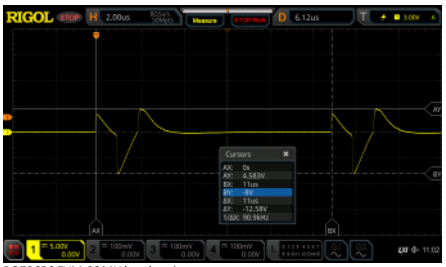
11uS between pulse edges



1uS half pulse

320/11=29.0909 +1 so 30 pulses for wakeup

Plugged BQ79656 EVM COMH to BMM COML.



BQ79656 EVM COMH header pins
Severely distorted waveforms

Probing BQ79656 EVM J19 COMMH (pre filter/isolation)

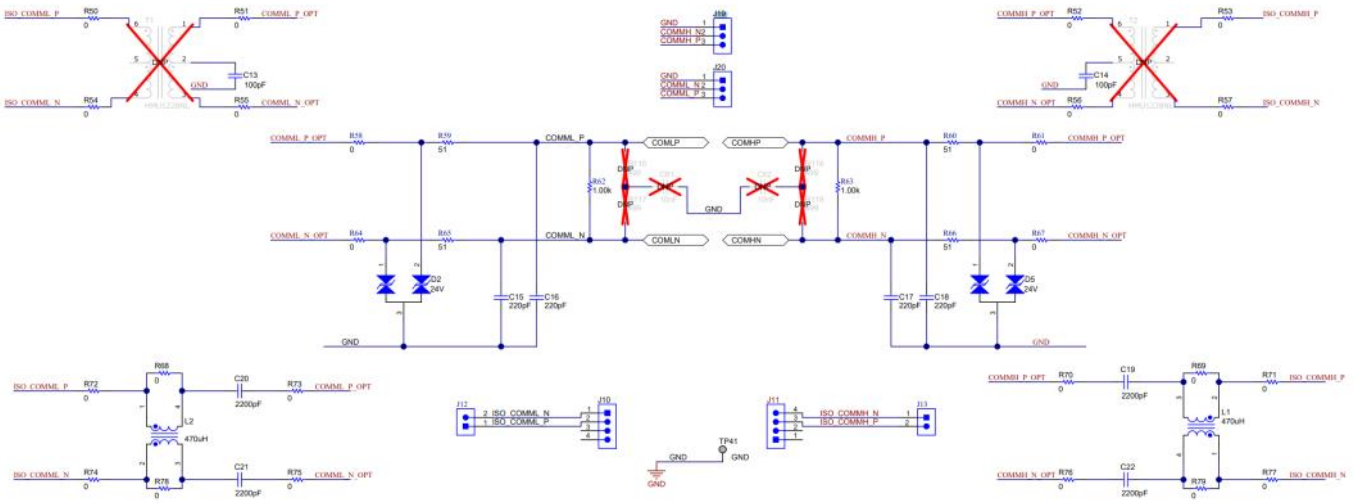
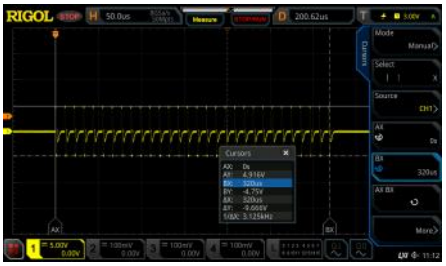


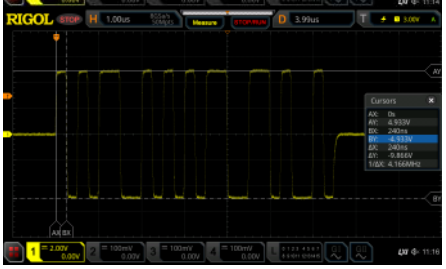
Figure 9-5. BQ79656EVM Schematic Part 4



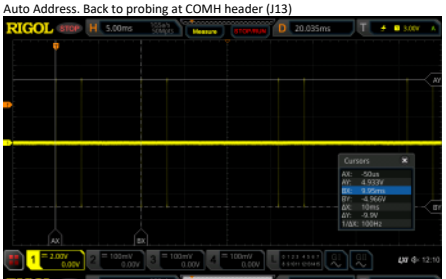
Connected to BMM

BMM disconnected.

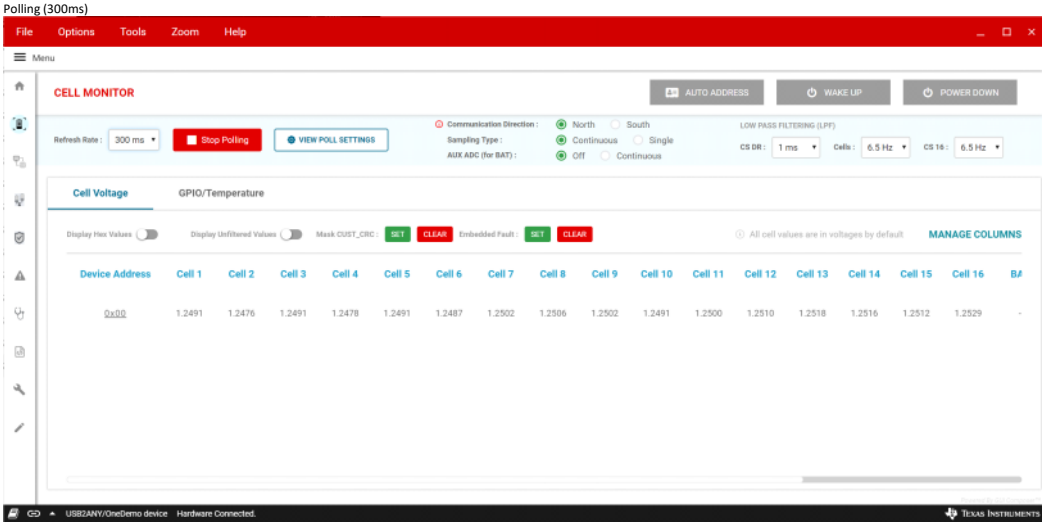
Power down signal



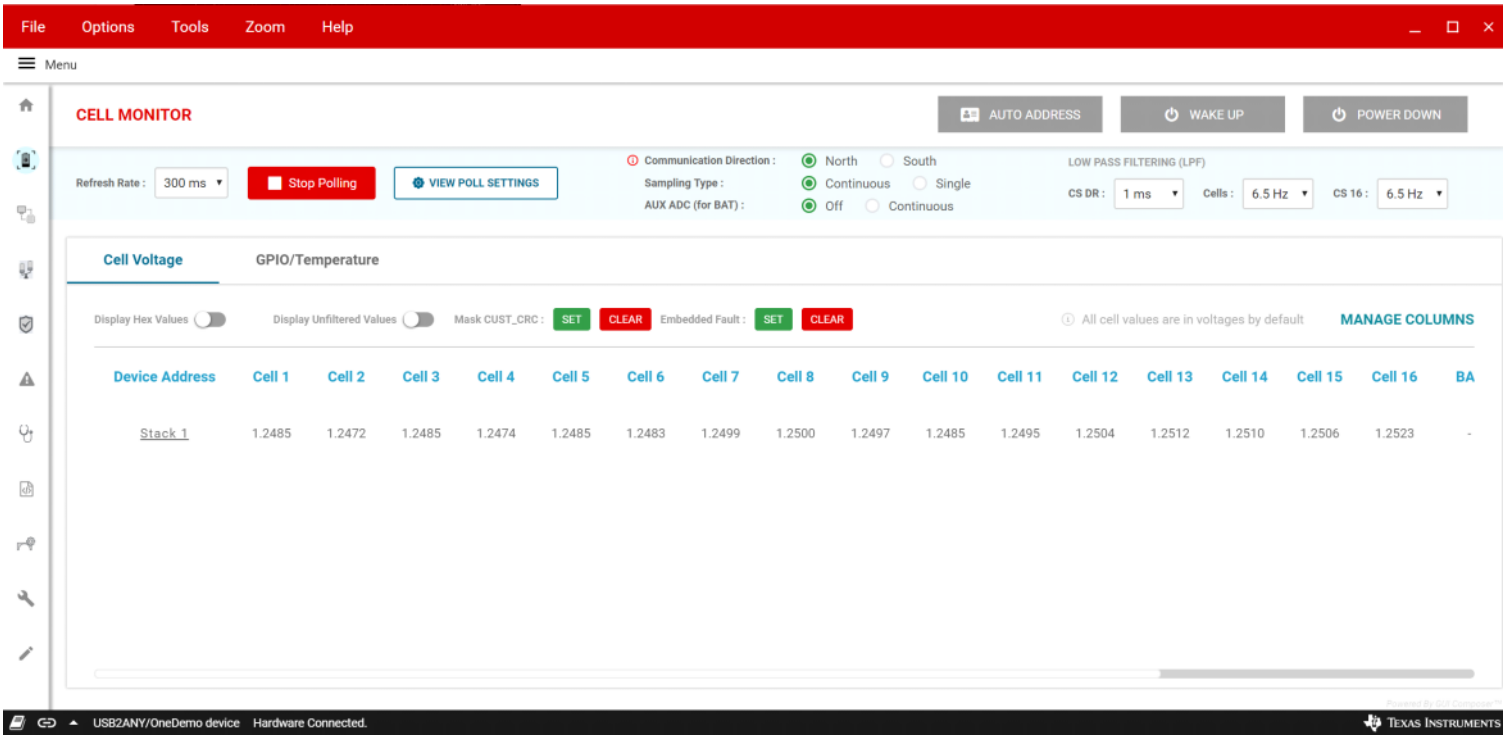
Auto Address. Back to probing at COMH header (J13)



Polling (300ms)

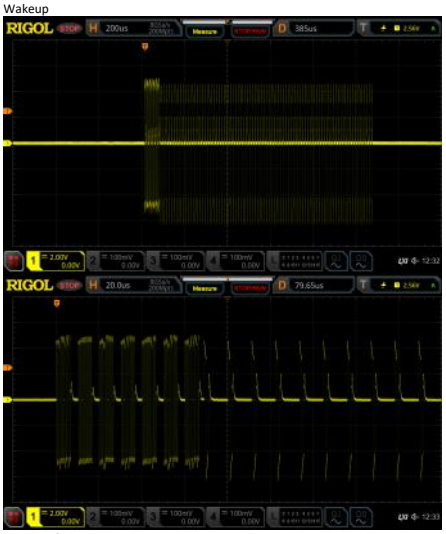


Changing to BQ79600 EVM.
Connected BQ79600 EVM COMH (J15) to BQ79656 EVM COML (J10)
Seems to work



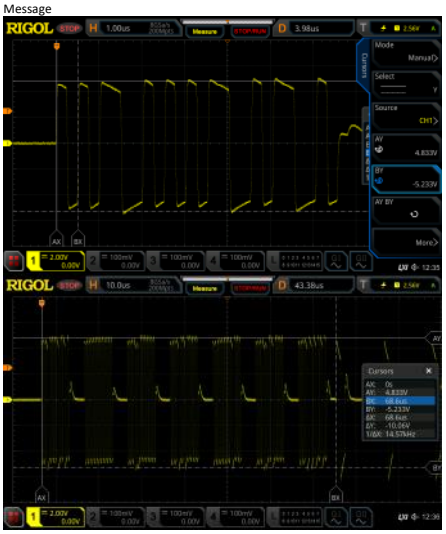
No connection, BQ79656 disconnected. Probing J17 COMH.

Wakeup

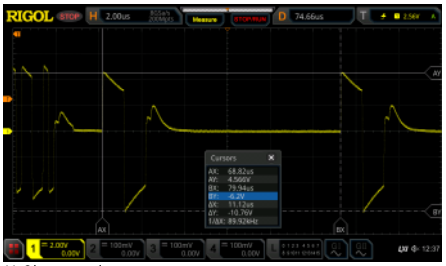


Message follow by tone?

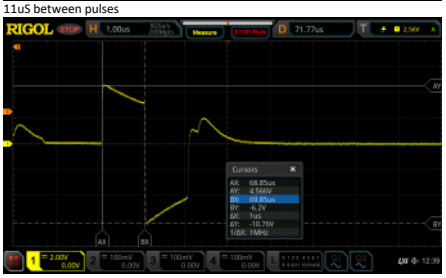
Message



Tone



11uS between pulses

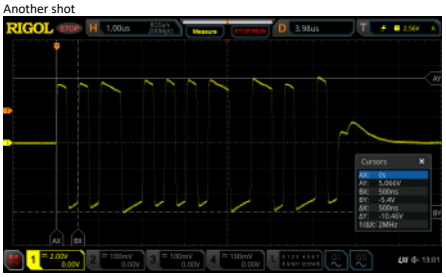


Reset and trying wakeup again

990uS
990/11=90
BQ79600 does a different wakeup?

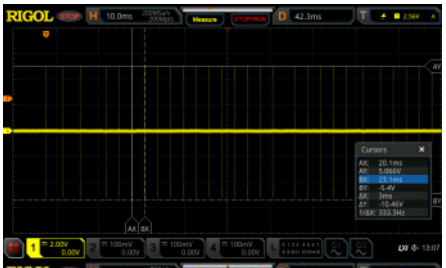
Power Down

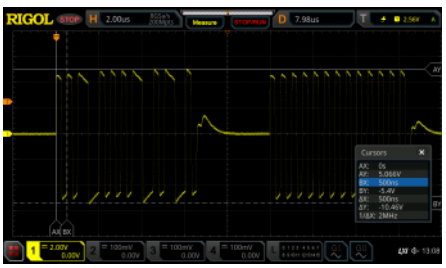
Another shot



Need to send a wakeup before power off. Can't send repeated power although button is not greyed out in GUI.

Auto Address

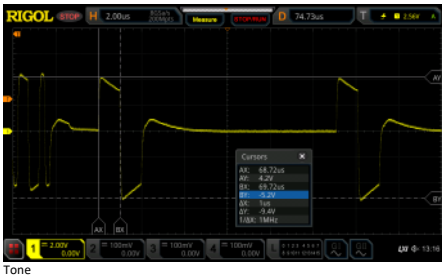




Now with BQ79656 EVM plugged in. Still probing BQ79600 J17 (COMH header)

Wake up

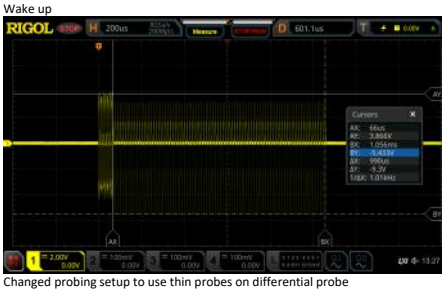
Message



Tone

Auto Address

BQ79600EVM + BQ79656EVM , Probing BQ79656EVM J20 (COML after filter/isolation)
Wake up

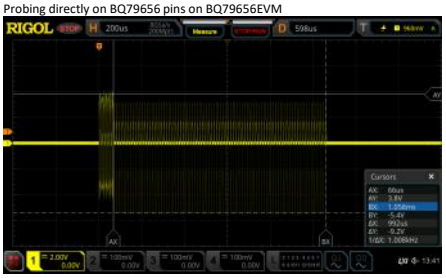


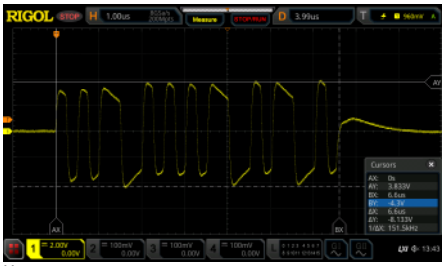
Changed probing setup to use thin probes on differential probe

Message

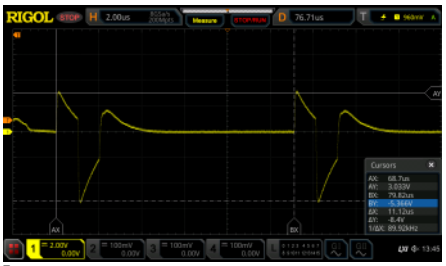
Tone

Probing directly on BQ79656 pins on BQ79656EVM



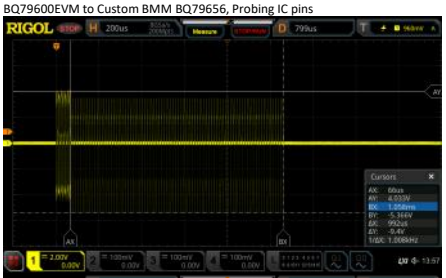


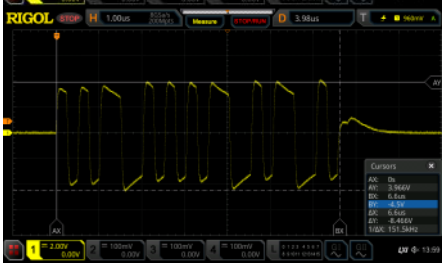
Message



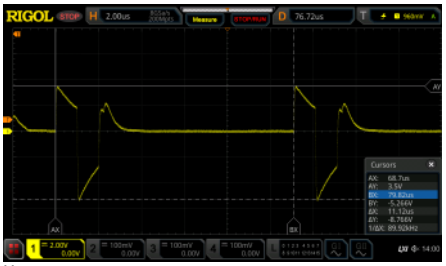
Tone

BQ79600EVM to Custom BMM BQ79656, Probing IC pins



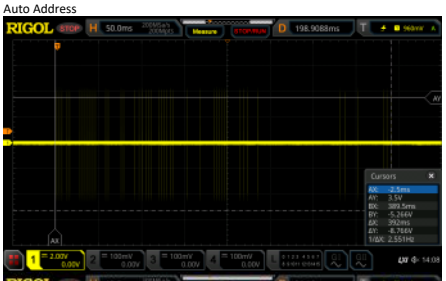


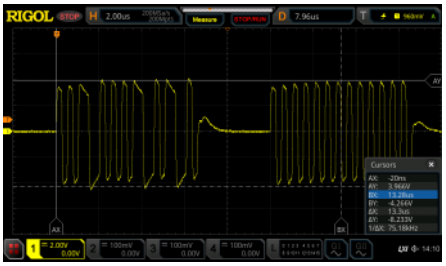
Tone



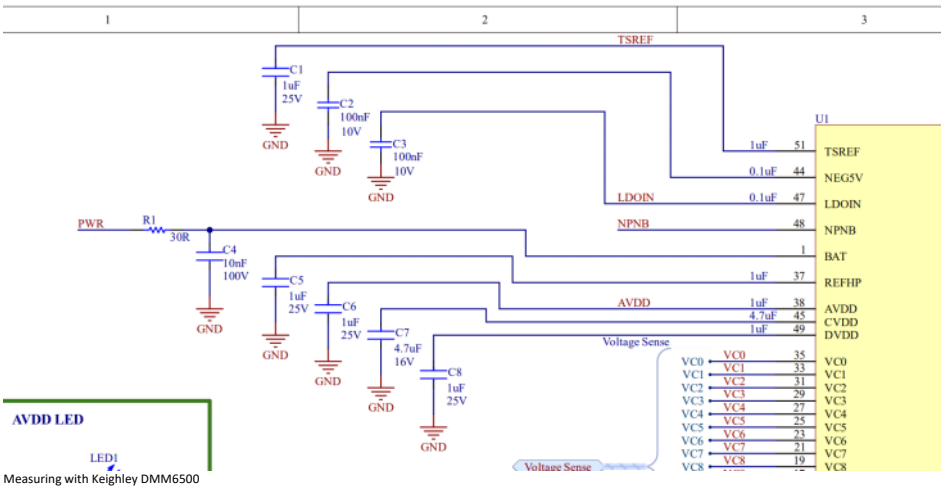
Message

Probing at Custom BMM C46 and C47 pads
Auto Address



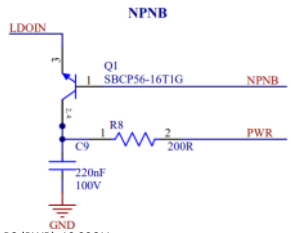


Check voltages?



Measuring with Keighley DMM6500

C1 (TSREF) 2.55 mV
C2 (NEG5V) -4.753 V
C3 (LDOIN) 6.011 V
C4 (BAT) 19.990 V
C5 (REFHP) 4.994 V
C6 (AVDD) 5.042 V
C7 (CVDD) 5.042 V
C8 (DVDD) 1.8095 V



R8 (PWR) 19.996 V
Q1 Collector 17.070 V
Q1 Base (NPNB) 6.650 V

Checking Rail Stability.
Added in test points to PCB. Wire on isolation transformer T2
CH1 Trigger, CH2 monitor and probe power rail.
Auto address message sent
Probing passive probe on 1x. (Rigol PVP2350)

C7 (CVDD)
Try checking common mode signals?