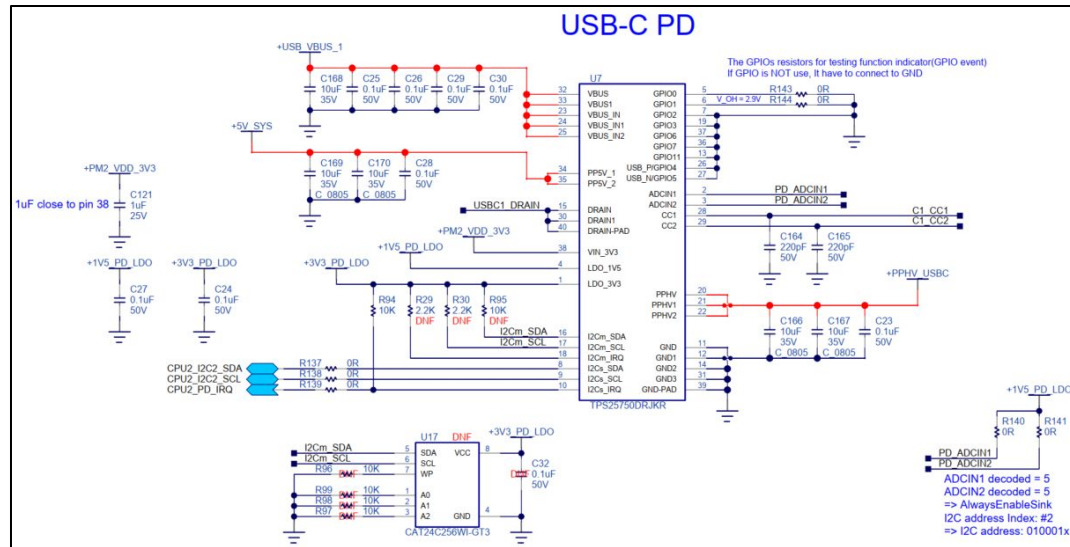


# GW CV V3

# TPS25750 USB-C PD Test

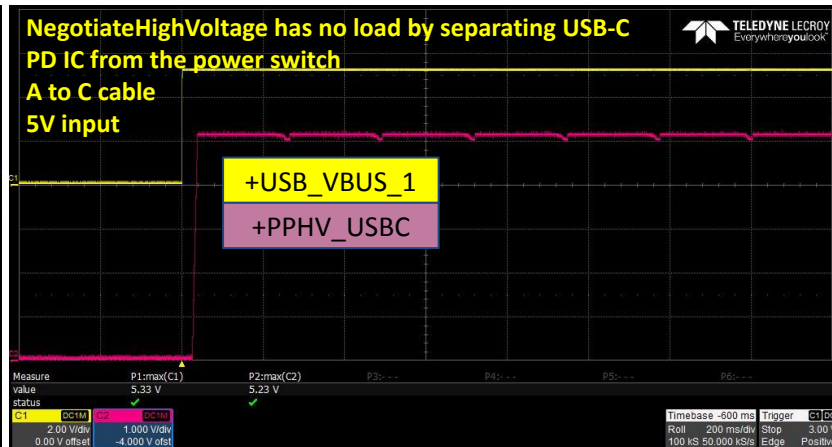
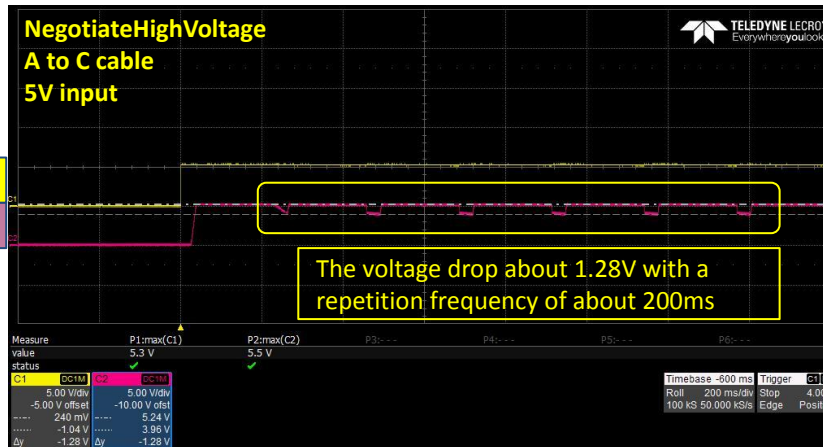
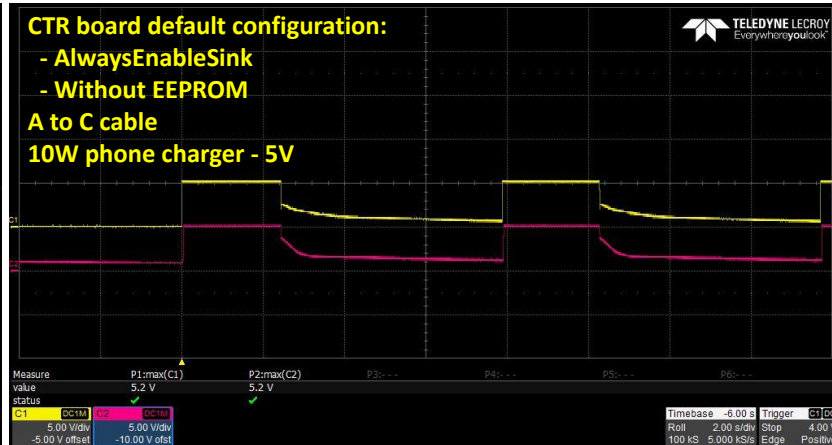
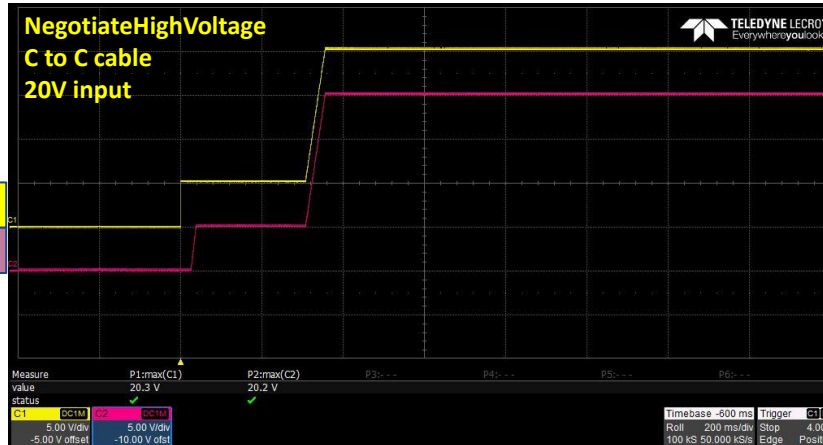
26 Jan 2024

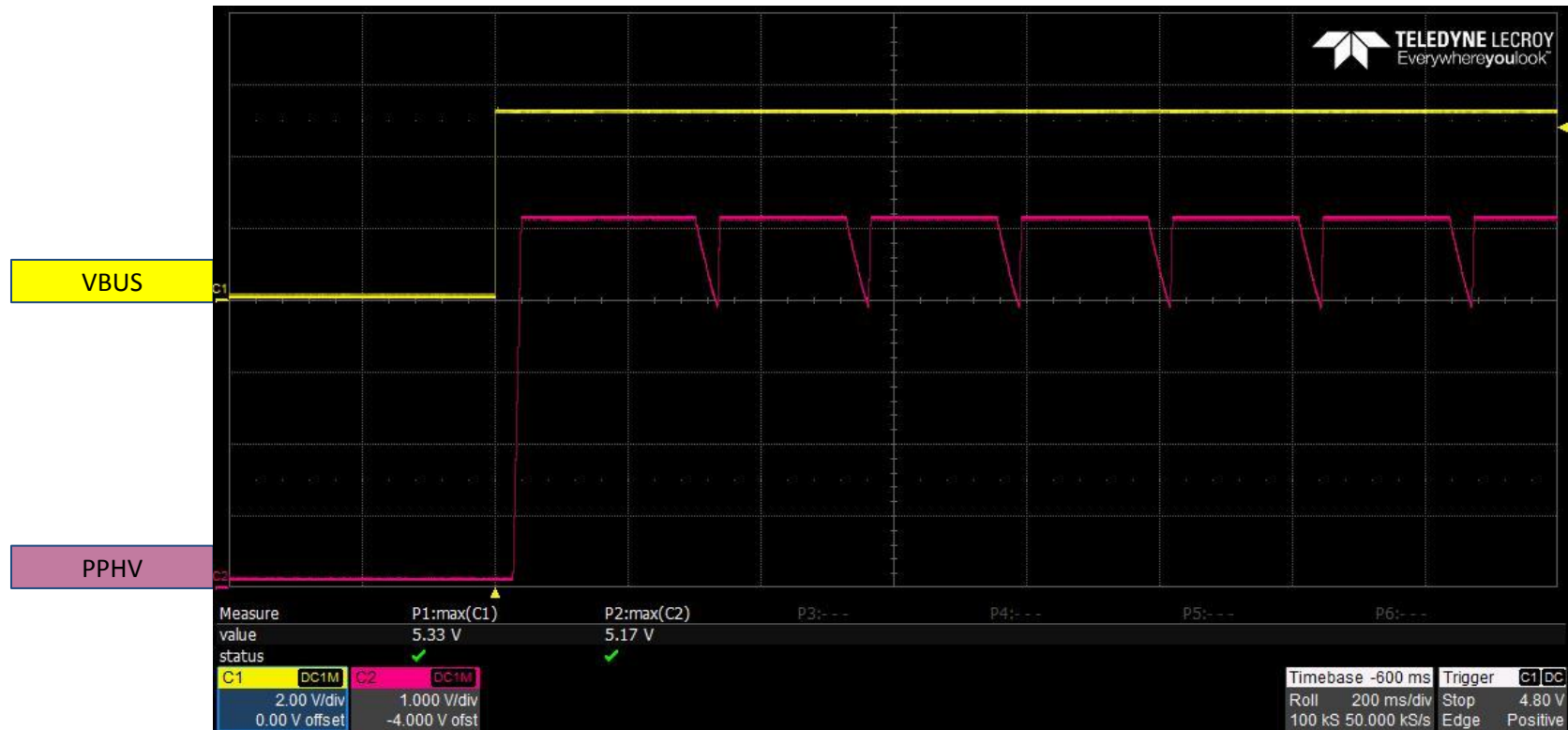


| DIV = R <sub>DOWN</sub> / (R <sub>UP</sub> + R <sub>DOWN</sub> ) <sup>(1)</sup> |        |        | Without using R <sub>UP</sub><br>or R <sub>DOWN</sub> | ADCINx decoded value |
|---------------------------------------------------------------------------------|--------|--------|-------------------------------------------------------|----------------------|
| MIN                                                                             | Target | MAX    |                                                       |                      |
| 0                                                                               | 0.0114 | 0.0228 | tie to GND                                            | 0                    |
| 0.0229                                                                          | 0.0475 | 0.0722 | N/A                                                   | 1                    |
| 0.0723                                                                          | 0.1074 | 0.1425 | N/A                                                   | 2                    |
| 0.1425                                                                          | 0.1899 | 0.2372 | N/A                                                   | 3                    |
| 0.2373                                                                          | 0.3022 | 0.3671 | N/A                                                   | 4                    |
| 0.3672                                                                          | 0.5368 | 0.7064 | tie to LDO_1V5                                        | 5                    |
| 0.7065                                                                          | 0.8062 | 0.9060 | N/A                                                   | 6                    |
| 0.9061                                                                          | 0.9530 | 1.0    | tie to LDO_3V3                                        | 7                    |

(1) External resistor tolerance of 1% is recommended. Resistor values must be chosen to yield a DIV value centered nominally between listed MIN and MAX values. For convenience, the Target column shows this value.

| ADCIN1 decoded value <sup>(2)</sup> | ADCIN2 decoded value <sup>(2)</sup> | I <sup>2</sup> C address Index <sup>(1)</sup> | Dead Battery Configuration                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------|-------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7                                   | 3                                   | #1                                            | NegotiateHighVoltage: The device always enables the sink path during the initial implicit contract regardless of the amount of current the attached source is offering. The PD controller will enter the 'APP' mode, enable USB PD PHY and negotiate a contract for the highest power contract that is offered up to 20 W. This cannot be used when a patch is loaded from EEPROM. This option is not recommended for systems that can boot from 5 V. |
| 3                                   | 3                                   | #2                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4                                   | 0                                   | #3                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3                                   | 7                                   | #4                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |





## EVK configuration:

- NegotiateHighVoltage
- Without EEPROM

A to C cable plug in laptop USB-A port

| Device                                 | CTR board (flasher loaded already)                     |                                                             |                                                                      | TPS25750 EVK                                           |                                                         |                                                                      |
|----------------------------------------|--------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------|
| Device Configuration                   | AlwaysEnableSink<br>Without EEPROM<br>Configuration    | AlwaysEnableSink<br>With EEPROM (from<br>EVK) Configuration | NegotiateHighVoltage<br>Without EEPROM<br>Configuration              | AlwaysEnableSink<br>Without EEPROM<br>Configuration    | AlwaysEnableSink<br>With EEPROM<br>Configuration        | NegotiateHighVoltage<br>Without EEPROM<br>Configuration              |
| ADCIN1<br>ADCIN2                       | Tie to LDO_1V5                                         | Tie to LDO_1V5                                              | Divide resistors: (Ru<br>connect to LDO_1V5)<br>Ru = 42.2k, Rd = 10k | Tie to LDO_1V5                                         | Tie to LDO_1V5                                          | Divide resistors: (Ru<br>connect to LDO_1V5)<br>Ru = 42.2k, Rd = 10k |
| 60W phone charger<br>C to C cable      | PPHV = 5V<br>CC pins = 1.7V<br>CTR board working well  | PPHV = 20V<br>CC pins = 1.71V<br>CTR board working well     | PPHV = 20V<br>CC pins = 1.71V<br>CTR board working well              | PPHV = 5V<br>CC pins = 1.65V<br>CTR board working well | PPHV = 20V<br>CC pins = 1.66V<br>CTR board working well | PPHV = 20V<br>CC pins = 1.66V<br>The EVK working well                |
| 20W Iphone charger<br>C to C cable     | PPHV = 5V<br>CC pins = 1.6V<br>CTR board working well  | PPHV = 9V<br>CC pins = 1.63V<br>CTR board working well      | PPHV = 9V<br>CC pins = 1.63V<br>CTR board working well               | PPHV = 5V<br>CC pins = 1.55V<br>CTR board working well | PPHV = 9V<br>CC pins = 1.58V<br>CTR board working well  | PPHV = 9V<br>CC pins = 1.58V<br>The EVK working well                 |
| Laptop USB-C port<br>C to C cable      | PPHV = 5V<br>CC pins = 1.69V<br>CTR board working well | PPHV = 5V<br>CC pins = 1.68V<br>CTR board working well      | PPHV = 5V<br>CC pins = 1.68V<br>CTR board working well               | PPHV = 5V<br>CC pins = 1.63V<br>CTR board working well | PPHV = 5V<br>CC pins = 1.63V<br>CTR board working well  | PPHV = 5V<br>CC pins = 1.62V<br>The EVK working well                 |
| Laptop USB-A port<br>A to C cable      | PPHV = 5V<br>CC pins = 0.42V<br>CTR board working well | PPHV = 5V<br>CC pins = 0.42V<br>CTR board working well      | PPHV = 5V<br>CC pins = 0.42V<br>Voltage dropped                      | PPHV = 5V<br>CC pins = 0.41V<br>CTR board working well | PPHV = 5V<br>CC pins = 0.41V<br>CTR board working well  | PPHV = 5V<br>CC pins = 0.43V<br>Voltage dropped                      |
| 10W Samsung<br>charger<br>A to C cable | Can not Power on                                       | Can not Power on                                            | PPHV = 5V<br>CC pins = 0.42V<br>Voltage dropped                      | PPHV = 5V<br>CC pins = 0.4V<br>CTR board working well  | PPHV = 5V<br>CC pins = 0.4V<br>CTR board working well   | PPHV = 5V<br>CC pins = 0.44V<br>Voltage dropped                      |

1. Can this IC operate at AlwaysEnableSink mode and the output can go up to 5-9-20V without configuration from EEPROM or CPU/MCU ? Does it require configuration when power on?
2. I changed ADCIN pins ( $R_u=42.2k$ ,  $R_d=10k$ ) to change to NegotiateHighVoltage mode, without EEPROM:
  - a. With C to C cable, the IC can operate with 5-9-20V with C.
  - b. With the A to C cable(USB-A 3.0) plugged in from the laptop USB 3.0 port, there is a voltage drop of about 5V to 3.7V with a repetition frequency of about 200ms. I have checked this case in TPS25750 EVK, the PPHV has drop voltage the same as our board. Is that the behavior of the IC in this mode ?
3. About configuration for TPS25750, can the host configure the IC via I2Cs bus ? Please help to confirm the configuration of the IC, the host(CPU/MCU) -> TPS25750 -> EEPROM or the host(CPU/MCU) -> EEPROM -> TPS25750



**Thank You**  
for your kind audience



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