

Testing modified cp210x driver with GPSD

1. Starting GPSD

```
12:01:29> sudo killall -9 gpsd
12:01:36> sudo stty -F /dev/ttyUSB0 38400
12:01:41> sudo gpsd -nN -D 5 /dev/ttyUSB0

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gpsd:INFO: launching (Version 3.15)
gpsd:IO: opening IPv4 socket
gpsd:IO: opening IPv6 socket
gpsd:INFO: listening on port gpsd
gpsd:PROG: NTP: shmctl(0,0,0) succeeded, segment 0
gpsd:PROG: NTP: shmctl(32769,0,0) succeeded, segment 1
gpsd:PROG: NTP: shmctl(65538,0,0) succeeded, segment 2
gpsd:PROG: NTP: shmctl(98307,0,0) succeeded, segment 3
gpsd:PROG: NTP: shmctl(131076,0,0) succeeded, segment 4
gpsd:PROG: NTP: shmctl(163845,0,0) succeeded, segment 5
gpsd:PROG: NTP: shmctl(196614,0,0) succeeded, segment 6
gpsd:PROG: NTP: shmctl(229383,0,0) succeeded, segment 7
gpsd:PROG: successfully connected to the DBUS system bus
gpsd:PROG: shmget(0x47505344, 8936, 0666) for SHM export succeeded
gpsd:PROG: shmctl() for SHM export succeeded, segment 262152
gpsd:INFO: stashing device /dev/ttyUSB0 at slot 0
gpsd:INFO: opening GPS data source type 3 at '/dev/ttyUSB0'
gpsd:INFO: speed 38400, 8N1
gpsd:PROG: Probing "Garmin USB binary" driver...
gpsd:INFO: attempting USB device enumeration.
gpsd:INFO: 1d6b:0002 (bus 2, device 1)
gpsd:INFO: 1d6b:0001 (bus 7, device 1)
gpsd:INFO: 1d6b:0001 (bus 6, device 1)
gpsd:INFO: 09da:054f (bus 5, device 3)
gpsd:INFO: 0403:6001 (bus 5, device 2)
gpsd:INFO: 1d6b:0001 (bus 5, device 1)
gpsd:INFO: 0c45:63e0 (bus 1, device 3)
gpsd:INFO: 1d6b:0002 (bus 1, device 1)
gpsd:INFO: 1d6b:0001 (bus 4, device 1)
gpsd:INFO: 413c:8140 (bus 3, device 2)
gpsd:INFO: 1d6b:0001 (bus 3, device 1)
gpsd:INFO: vendor/product match with 091e:0003 not found
gpsd:PROG: Probe not found "Garmin USB binary" driver...
gpsd:PROG: Probing "GeoStar" driver...
gpsd:PROG: Sent GeoStar packet id 0xc1
gpsd:IO: => GPS: 5053474700c100010000000050924746
gpsd:PROG: Probe not found "GeoStar" driver...
gpsd:PROG: Probing "Trimble TSIP" driver...
gpsd:INFO: speed 9600, 801
gpsd:INFO: speed 38400, 8N1
gpsd:PROG: Probe not found "Trimble TSIP" driver...
gpsd:PROG: no probe matched...
gpsd:INFO: gpsd_activate(2): activated GPS (fd 6)
```

This is where GPSD creates a virtual pps device. Even if it can't find a pps source.

```
gpsd:PROG: PPS:/dev/ttyUSB0 chrony socket /var/run/chrony.ttyUSB0.sock doesn't exist
gpsd:PROG: KPPS:/dev/ttyUSB0 checking /sys/devices/virtual/pps/pps0/path, /dev/ttyUSB0
gpsd:INFO: KPPS:/dev/ttyUSB0 RFC2783 path:/dev/pps0, fd is 7
gpsd:INFO: KPPS:/dev/ttyUSB0 pps_caps 0x1133
gpsd:INFO: KPPS:/dev/ttyUSB0 have PPS_CANWAIT
gpsd:INFO: KPPS:/dev/ttyUSB0 kernel PPS will be used
gpsd:PROG: PPS:/dev/ttyUSB0 thread launched
gpsd:INFO: PPS:/dev/ttyUSB0 ntpshm_link_activate: 1
gpsd:INFO: device /dev/ttyUSB0 activated
gpsd:INFO: running with effective group ID 20
gpsd:INFO: running with effective user ID 127
```

Once PPS is detected GPSD will give this output saying assert and clear were rejected because last_fixtime is rejected and won't give any value for pps in gpsmon until it doesn't get fixed.

```
gpsd:PROG: KPPS:/dev/ttyUSB0 assert 1472814446.551454078, sequence: 1, clear 0.000000000,
sequence: 0 - using: assert
gpsd:PROG: KPPS:/dev/ttyUSB0 Assert cycle: 1441276318, duration: 0 @ 1472814446.551454078
gpsd:PROG: PPS:/dev/ttyUSB0 Assert cycle: 1441276318, duration: 0 @ 1472814446.551454078
gpsd:PROG: PPS:/dev/ttyUSB0 Assert rejected missing last_fixtime
gpsd:PROG: KPPS:/dev/ttyUSB0 assert 1472814446.552383335, sequence: 3, clear 0.000000000,
sequence: 0 - using: assert
gpsd:PROG: KPPS:/dev/ttyUSB0 Assert cycle: 970, duration: 0 @ 1472814446.562340197
gpsd:PROG: KPPS:/dev/ttyUSB0 assert 1472814792.448094699, sequence: 803, clear
1472814830.465628273, sequence: 56 - using: clear
gpsd:PROG: KPPS:/dev/ttyUSB0 Clear cycle: 999515, duration: 38017533 @ 1472814830.465628273
gpsd:PROG: PPS:/dev/ttyUSB0 Clear cycle: 999515, duration: 0 @ 1472814830.465628273
gpsd:PROG: PPS:/dev/ttyUSB0 Clear rejected missing last_fixtime
gpsd:IO: <= GPS: $GPGGA,120109.000,0000.0000,N,000000.0000,E,0,00,0.0,0.0,M,0.0,M,,0000*66
gpsd:IO: <= GPS: $GPGLL,0000.0000,N,000000.0000,E,120109.000,V,N*4A
gpsd:WARN: can't use GLL time until after ZDA or RMC has supplied a year.
gpsd:PROG: GPGLL sentence timestamped 120109.00.
gpsd:PROG: GPGLL starts a reporting cycle.
gpsd:PROG: GPGLL ends a reporting cycle.
gpsd:IO: <= GPS: $GPRMC,120109.000,V,0000.0000,N,000000.0000,E,000.0,000.0,280606,,,N*77
gpsd:WARN: bad checksum in NMEA packet; expected 54.
```

2. gpsmon output (after fix is obtained) :

Terminal

/dev/ttyUSB0
NMEA0183>

Time: 2016-09-02T08:51:50.000Z Lat: 41 59' 11.021" N Lon: 21 26' 21.719" E

Cooked TPV

GPGGA GPGSA GPGSV PJLTS GPRMC

Sentences

Ch	PRN	Az	El	S/N	Time:	085150.000	Time:	085151.000
0	21	204	61	40	Latitude:	4159.1837 N	Latitude:	4159.1837
1	29	48	60	46	Longitude:	02126.3620 E	Longitude:	02126.3620
2	4	312	53	38	Speed:	000.0	Altitude:	254.6
3	25	133	46	41	Course:	000.0	Quality:	2 Sats: 08
4	5	62	23	43	Status:	A FAA: D	HDOP:	1.1
5	12	130	10	32	MagVar:		Geoid:	44.6
6					RMC		GGA	
7								
8					Mode:	A3 Sats: 21 29 25 5 1	UTC:	RMS:
9					DOP:	H=1.1 V=1.8 P=2.1	MAJ:	MIN:
10					TOFF:	-0.879711370	ORI:	LAT:
11					PPS:	-1.814181455	LON:	ALT:
GSV					GSA + PPS			
(63) \$PJLTS,96.10,112.50,303,2,1.6966790,56.5559,6.9E-9,0,8,0x0*65								

3. Possible errors:

In case GPSD can't detect any PPS source it will give the following output:

```
gpsd:ERROR: KPPS:/dev/ttyUSB1 kernel PPS failed Connection timed out
```

If the old driver is used, KPPS Interrupted system call or ioctl(TIOCMWAIT) error will be reported.