

## OsmoTRX - Bug #3775

### properly debug limesdr usb and limesdr mini clocking requirements and osmo-trx support

01/31/2019 04:45 PM - roh

<b>Status:</b> Stalled	<b>Start date:</b> 01/31/2019
<b>Priority:</b> Normal	<b>Due date:</b>
<b>Assignee:</b>	<b>% Done:</b> 20%
<b>Category:</b> LimeSDR	
<b>Target version:</b>	
<b>Spec Reference:</b>	
<b>Description</b>	
limesdr usb and limesdr mini need a external reference clock to be used for gsm applications properly since the internal oscillator is sadly not of the required performance class.	
limesdr usb has an extra internal pll (ADF4002 and Si5351C as well as LMK00105) and can handle different external clocks quite flexible	
limesdr mini has no pll chip, but only a clock buffer (LMK00105) and needed some help from the fpga to make clocks possible which are not 40MHz	
<b>Related issues:</b>	
Blocks OsmoTRX - Bug #3341: osmo-trx-lms RF Envelope FAIL on LimeSDR, but not...	<b>Stalled</b> <b>06/13/2018</b>
Blocks OsmoTRX - Bug #3342: osmo-trx-lms: low tx output power level	<b>Stalled</b> <b>06/13/2018</b>
Blocked by OsmoTRX - Bug #3861: fix function call ordering to support LimeSui...	<b>Resolved</b> <b>03/25/2019</b>

#### History

##### #1 - 01/31/2019 04:50 PM - roh

there is <https://github.com/myriadrf/LimeSuite/issues/244> to get more details about the required clock specifications and documentation from lime

##### #2 - 01/31/2019 05:33 PM - roh

- File *lms\_mini\_clock\_in.png* added
- File *lms\_mini\_clock\_in\_50ohm.png* added
- File *lms\_mini\_clock\_out.png* added
- File *lms\_mini\_clock\_out\_50ohm.png* added
- % Done changed from 0 to 10

looking at the schematic, i think there should be proper termination for 50Ohm, but i see a lot of ringing on the input which i do not see not there when i only connect the gpsdo to a 50ohm terminated scope input.

the screenshots for the input are done with a bnc-t inbetween the gpsdo and the mini, the output ones are directly connected to the mini.

##### #3 - 01/31/2019 05:52 PM - roh

- File *gpsdo.png* added
- File *gpsdo\_50ohm.png* added

gpsdo slope for reference - without and with 50ohm termination.

##### #4 - 01/31/2019 06:01 PM - roh

- Status changed from New to In Progress

##### #5 - 02/14/2019 04:33 PM - roh

- Blocks Bug #3341: osmo-trx-lms RF Envelope FAIL on LimeSDR, but not on LimeSDR-mini added

##### #6 - 02/14/2019 04:33 PM - roh

- Blocks Bug #3342: osmo-trx-lms: low tx output power level added

**#7 - 02/19/2019 06:18 PM - roh**

- % Done changed from 10 to 20

i repeated the experiments today with a 'clock converter' based on ltc6957-4 with 40MHz, still using limesuite 18.10.

sadly i could not get the dcs1800 band to have better results than with the 10MHz square clock from the gpsdo last time.

phase-noise is still way too high for a 'PASS' result (needs to be  $<5^\circ$  rms and  $\sim <10^\circ$  pk) (check *phase* shots of [#3341](#) and [#3342](#))

next experiment is to use a clock generator based on si5351c

**#8 - 04/17/2019 07:26 PM - roh**

- Blocked by Bug #3861: fix function call ordering to support LimeSuite 19.01 added

**#9 - 06/27/2019 05:37 PM - roh**

the spec from the clockchip used (ti LMK00105) speaks of "sharp rectangles 2V/ns or better".

**#10 - 09/30/2020 08:08 PM - laforge**

- Assignee deleted (roh)

**#11 - 09/30/2020 08:09 PM - laforge**

- Status changed from In Progress to Stalled

**Files**

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lms_mini_clock_in_50ohm.png	12.7 KB	01/31/2019	roh
lms_mini_clock_in.png	13.4 KB	01/31/2019	roh
lms_mini_clock_out.png	12.1 KB	01/31/2019	roh
lms_mini_clock_out_50ohm.png	11.9 KB	01/31/2019	roh
gpsdo_50ohm.png	11.6 KB	01/31/2019	roh
gpsdo.png	13.9 KB	01/31/2019	roh