inst-bpm - Task #9610

Milestone # 9608 (New): Down Converter Test

Test command list for reading out down converter

07/13/2015 04:26 PM - John Diamond

Status:	New	**Start date:**	07/13/2015
Priority:	Normal	**Due date:**	
Assignee:	John Diamond	**% Done:**	30%
Category:	bpmd	**Estimated time:**	8.00 hours
Target version:		**Spent time:**	10.75 hours

Description

Verify that we can execute a command list that arms the DDC and reads it out and the end of a 0x20 cycle.

History

#1 - 07/14/2015 10:01 AM - John Diamond

First test:

```
[root@bbpmts bbpmts]# ./bpmcli ct_show_list 0
Description: raw[70222.634506] LXRT releases PID 992 (ID: bpmcli).
 test
Commands: 3
    0:  Immediate       ARM   measurement = raw, trigger = immediate, samples = 1000
    1:   TCLK $26   READOUT   source = raw
    2:   TCLK $26      IDLE   n/a
    3: Empty
    4: Empty
```

#2 - 07/14/2015 10:09 AM - John Diamond

Apparently we don't have an ARM command for the digitizer yet:

```
[70368.305067] adc250x12xsmod: Control task received unknown message type = 0
```

See task #9614.

#3 - 07/14/2015 05:03 PM - John Diamond

- % Done changed from 0 to 30

ARM command implemented. Testing shows that the parameters are making it to the digitizer but the raw character devices are not showing reasonable data. Opened a bug ticket to investigate - #9620.

#4 - 07/15/2015 01:14 PM - John Diamond

Spent about 2 hours debugging why an incorrect value for the adc250x12xsmod ARM command trigger parameter was being passed to the driver.

#5 - 07/22/2015 04:24 PM - John Diamond

Had Peter setup the test rig upstairs to trigger the digitizer and a 500k sine-wave burst at 15Hz. He says we should see a DC signal coming out of the down-converter.

Trying to arm the system for a TBT measurement but it's causing bpmd to crash hard, investigating...

#6 - 07/22/2015 08:33 PM - John Diamond

Turn-by-turn test command list:

```
Description: ddc test
Commands: 3
    0:  Immediate       ARM   measurement = tbt, trigger = external, samples = 3e8
    1:   TCLK $26   READOUT   source = ddc_wide
    2:   TCLK $26      IDLE   n/a
    3: Empty
```

```
    4: Empty
    5: Empty
```

#7 - 07/22/2015 08:46 PM - John Diamond

Looks like we were missing support for an external trigger in ADC250X12XS::rtArm(..).

#8 - 07/23/2015 02:34 PM - John Diamond

- File rawplot.gif added

Input signal is 39MHz (matched with the NCO frequency). Couldn't get anything out of the down converter so we went back to testing a raw mode capture. Here's the command list:

```
[root@bbpmts bbpmts]# ./bpmcli ct_show_list 0
Description: raw[ 7458.336019] LXRT releases PID 1023 (ID: bpmcli).
 test
Commands: 3
    0:  Immediate       ARM   measurement = raw, trigger = external, samples = 1024
    1:   TCLK $26   READOUT   source = raw
    2:   TCLK $26      IDLE   n/a
    3: Empty
```

And here is the result:
rawplot.gif

#9 - 07/23/2015 02:42 PM - John Diamond

Also, had to change the primary transform on Z:HRBOOA and Z:HRBOOB from 20 (unsigned data handler) to 10 (float(input)) to get the above plot.

#10 - 07/23/2015 04:56 PM - John Diamond

We will probably need Alexei's help getting the DDC to trigger next week...

Files

rawplot.gif	15.9 KB	07/23/2015	John Diamond