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Bus BW Test

From gpsOne Technology

Bus BW Test can be run with USB cable connected or disconnected to check for the number of violations happening for transfers over the BUS.

Contents

USB Connected BUS BW Test

Procedure to setup and run the test is as follows:

Setup

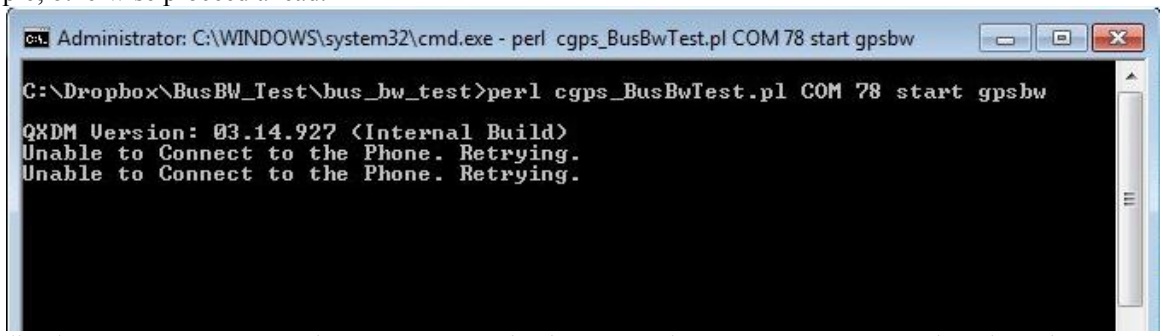
1. Enable only ME/CC High messages to reduce output – output QXDM message will look like this:

```
21:09:05.281  cc_busbwtest.c  01393  Srch Execution Times: Min 854 chipx1, Max 854 chipx1 @ gps_rtc 11
21:09:05.281  cc_busbwtest.c  01400  Srch Nominal Completion/Execution Time Over-run: 0 / 0 (Count)
21:09:05.281  cc_busbwtest.c  01402  Srch Stall Count:   Min 0  Max 0  Accum 0 (Clock cycles)
21:09:05.281  cc_busbwtest.c  01407  Srch Violation Count:   0 / 1000 (Violations / Attempts)
21:09:06.245  cc_busbwtest.c  01442  Gacc Completion Time: Min 5737 chipx1, Max 12575 chipx1, Accum 42
21:09:06.245  cc_busbwtest.c  01447  Gacc Violation Count: 0 / 50 (Violations / Attempts)
21:09:06.281  cc_busbwtest.c  01389  Srch Completion Times: Min 854 chipx1, Max 854 chipx1 @ gps_rtc 2
21:09:06.281  cc_busbwtest.c  01393  Srch Execution Times: Min 854 chipx1, Max 854 chipx1 @ gps_rtc 22
21:09:06.281  cc_busbwtest.c  01400  Srch Nominal Completion/Execution Time Over-run: 0 / 0 (Count)
21:09:06.281  cc_busbwtest.c  01402  Srch Stall Count:   Min 0  Max 0  Accum 0 (Clock cycles)
21:09:06.282  cc_busbwtest.c  01407  Srch Violation Count:   0 / 1000 (Violations / Attempts)
21:09:07.248  cc_busbwtest.c  01442  Gacc Completion Time: Min 5773 chipx1, Max 24431 chipx1, Accum 43
21:09:07.248  cc_busbwtest.c  01445  Gacc Violation Count: 1 / 50 (Violations / Attempts)**********
21:09:07.280  cc_busbwtest.c  01389  Srch Completion Times: Min 854 chipx1, Max 854 chipx1 @ gps_rtc 3
21:09:07.280  cc_busbwtest.c  01393  Srch Execution Times: Min 854 chipx1, Max 854 chipx1 @ gps_rtc 32
21:09:07.280  cc_busbwtest.c  01400  Srch Nominal Completion/Execution Time Over-run: 0 / 0 (Count)
21:09:07.280  cc_busbwtest.c  01402  Srch Stall Count:   Min 0  Max 0  Accum 0 (Clock cycles)
```

- Execution Time:- Time taken from the time transfer begins to the point when it finishes.
- Completion Time: Time taken from the point when the transfer was supposed to start to the point when it finishes.
- Violation Count: Count of transfers exceeding 1ms in the last 1000 Srch readings. For Gacc UBL, # exceeding 0.5ms of 2000 Gacc readings. For Gacc regular, # exceeding 20ms of 50 Gacc readings.
- Stall Count (line2): When srch is unable to write to its output FIFO because of presence of old data (which was not transferred quickly enough over the bus), it stalls and this delay is measured in number of clock cycles.

Instructions

1. Run Adreno Apps or stress the system any other way like Youtube running on foreground and Music on background while running the script.
2. Ensure task_cnt = 106 in cgps_BusBwTest.pl if a local copy is being used.
3. In Command Window 1:
   1. pushd \\sclcdg33\Dropbox\gnss_tools\standalone_rfv\cgps_mode_switch (or local copy directory)
   2. perl CGPS_ModeSwitch.pl <COM_PORT> ON

4. In Command Window 2:
    1. pushd \\sclcdg33\Dropbox\gnss_tools\internal\standalone_rfv\bus_bw_test (or local copy directory)
    2. perl cgps_BusBwTest.pl <COMPORT> start gpsbw
5. If you see the following error message in the command window after giving the command for Mode Switch ON or start gpsbw, do step 6, otherwise proceed ahead.
    - 

6. Immediately open QXDM --> Options --> Communications --> Select correct Target Port that phone is connected to.
7. Run Bus BW Test for about 30-45 minutes.
8. After the test is completed, Save the QXDM logs as a TXT file.
9. From bus_bw_test folder, run perl ProcBusBwResults.pl < F3_TXT_FILE (perl ProcBusBwResults.pl -h for detailed help)
    1. This script parses the F3 text file and prints a summary.
    2. All results are output to “cgps_busbw_summary.txt” created in the same directory.
    3. cgps_busbw_dump.xls contains a dump of Bus BW F3 msgs to help in debugging (sort, plot etc.).
    4. Output Ex: \\mash-lab\Dropbox\BusBW_Test\bus_bw_test\cgps_busbw_dump.xls and \\mash-lab\Dropbox\BusBW_Test\bus_bw_test\cgps_busbw_summary.txt

```
Check for non-zero violation count in output.
```

Pointers

1. You do not need to run GPS in parallel with the test, the CGPS_Mode_Swtich will turn on GPS.
2. You can check if the test has started properly by looking for the following messages in the QXDM F3s:

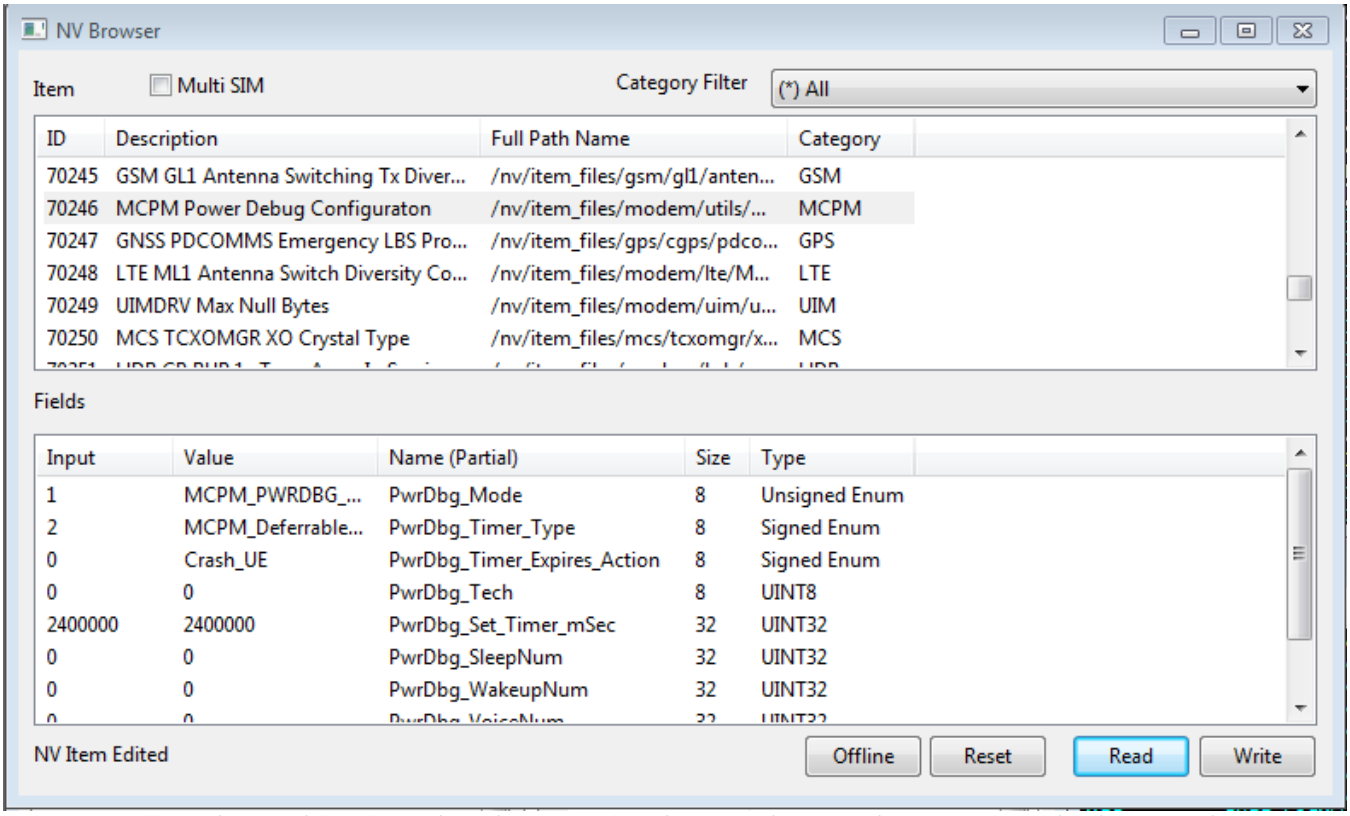
```
MSG        MGP ME/CC High                  01:00:24.941        cc_busbwtest.c  02304  BBT: Handover from mission mode to test mode successful
MSG        MGP ME/CC High                  01:00:26.001        cc_busbwtest.c  01523  Srch Completion Times: Min 216 chipx1, Max 329 chipx1 @ gp
```

USB Disconnected BUS BW Test

Since QXDM Logs can not be collected without USB connected, debug code needs to be added to the modem build which can be analyzed when the device crashes or a crash is injected.

Setup

1. The file that needs to be changed is cc_busbwtest.c (<modem_build>\modem_proc\gps\gnss\mgp\me\cc\src\cc_busbwtest.c)
2. Change List 7497882 can be used to add the necessary debug code.
3. To ensure the device crashes after a fixed amount of time, you can configure the MCPM NV 70246. If you want to run the test for 40 minutes (40*60*100=2400000 msec) you can make the changes to the NV 70246 as shown below:



4. Only parameters 1 (PwrDbg_Mode), 2 (PwrDbg_Timer_Type) and 5 (PwrDbg_Set_Timer_msec) need to be set as above.

Instructions

1. Follow the same instructions as mentioned above till step number 6. Disconnect the USB cable after the test has started.
2. Run Bus BW Test for about 30-45 minutes.
3. If the MCPM NV has not been configured, you can force a crash by sending the following command in QXDM command window: send_data 75 37 03 00 00
4. Collect the crash dumps.
    1. 8974 and TRITON targets: http://qwiki.qualcomm.com/qct-target/8974_Stability/How_to_save_RAM_dumps_via_QPST
    2. 9x25/Fusion: http://qwiki.qualcomm.com/qct-target/How_to_save_ramdumps
    3. 8994: http://qwiki.qualcomm.com/qct-target/8994_lab_machine

Analzying Crash Dumps

1. Load the crash dumps using CrashScope.
    1. go/crashscope for help with Crashcope.
    2. Launch the .csr report and move to the summary page.
    3. Use the radio button on the right side to select Modem and click Load dumps to load on T32 simulator.
2. To view the structure, run the command: v.v ccz_SrchBusBwRes (for CP) and v.v ccz_GaccBusBwRes (for GACC)
3. Look for w_Violations in both, these should be non zero.
