Long, JA (Judy)

From:	Aramburu, AA (Asier)
Sent:	16 February 2006 20:19
To:	Sawyer, EC (Eric); 'AUGUERES Jean-Louis DAPNIA'; 'Renato Orfei'; ''Sergio Molinari (E-mail)' '; 'CARA Christophe SMTP'; 'TRIOU Henri DAPNIA'; 'Pinsard Frederic'
Cc:	'Matt Griffin'; Swinyard, BM (Bruce); Griffin, DK (Doug); Sidher, SD (Sunil); Smith, DL (Dave); King, KJ (Ken); Long, JA (Judy); Polehampton, ET (Edward)
Subject:	RE: Investigations on the SPIRE Warm units.

Hello all,

Here is a brief summary of all the "known" problems:

 1). **Problem**

   - Missing commands or failure of commands during the execution of a command list.

   Symptoms

   - Of the 15 cycles(high PCAL bias/low PCAL bias) executed during a standard PCAL flash sequence, the complete series of cycles (high + low) are not always set properly,
    i.e., PCAL bias stays at either high or low value.

    - These problems were also present during PFM2 campaign when we were using the AVM2 DPU with OBS (v2.0.C) and the QM2 DCU+SCU electronics (see HR-SP-RAL-NCR-137)

    - The anomalous flashes are only seen very occasionally.

   Tests

   - Repeatedly performed 0.25Hz PCAL flash sequences at ~ 18Hz detector sampling frequency, bias frequency 130Hz, with and without HK generation. Each sequence lasts 15
    cycles.

    The attached plots show an anomalous PCAL flash generated using a Command List with 1ms interval between commands (same Command List as used for PFM2) on Wednesday 15th Feb.
    with HK generation on: 1st plot shows a timeline of PCAL current during three standard PCAL flashes, the middle one showing the anomaly. 2nd plot is a zoom at the high levels of the
    anomalous PCAL flash. As can be seen the PCAL current remains at the high level when it should be switching between low and high levels.

    During the period of this anomalous flash 7 packets were received with APID = 508 type = 21 subtype = 4 SID = 0xcc02. The APID, type and subtype
    of these packets are consistent with an SCU science packet, except that the SID value of 0xcc02 is undefined in the SPIRE Data ICD. The SCU
    nominal science data correspond to APID = 508 type = 21 subtype = 4 SID = 0x0a20.

    Interestingly the times of the strange packets appear to coincide exactly with the start of constant high value of the PCAL current.

 2). **Problem**

    - Event reports (NO DCU RESPONSE ERROR) are generated while the DRCU is ON and commanding is in progress.

    - Occasionally we also get event reports (NO SCU RESPONSE ERROR).

   Symptoms

    Error reports are generated by the DPU indicating no response from the DCU to different GET HK commands. These get cleared within a second.

    SCU response error reports are also generated but not as frequently.

There seems to be some correlation between the commanding (in particular PCAL flash command list execution) and the occurrence of these event reports.

These errors were also present during PFM2 campaign but the correlation has not been checked there.

Note that the error report and the corresponding clearance of error report have identical contents.

Tests

Swapped the DCU and SCU harnesses on the DPU-DRCU interface to rule out a harness problem. No results available yet.

3). **Problem**

- MCU cannot be booted up. The same boot sequence was used for PFM2. It fails now with the commands sent to the MCU being rejected.

Symptoms

Commands sent to the MCU are rejected with LS_INHIBITED_COMMAND (error code 0x81C).

Tests

a. Stopped the HK request before issuing the SetDRelOnOff command to switch on the MCU (0xA0870004)

Then Started the HK and continued with the boot sequence as normal. --> All boot commands rejected as before

b. Stopped HK request before issuing the SetDRelOnOff command to switch on the MCU (0xA0870004) and throughout the boot sequence --> All boot commands still rejected as before.

4). **Problem**

Instrument mode configurations are not correctly implemented in the current OBS version (v2.1.E)

Symptoms

As soon as the OBS is started using the FORCE_BOOT_PRIMARY command the mode parameter is set to DRCU_ON when it should be DPU_ON.

This problem is probably related to the MCU problem as the OBS does not recognize a configuration where the SCU and DCU are switched ON but the MCU is not.

So when the MCU is switched ON the OBS considers this as a subsystem failure and causes the rejection of MCU commands.

Tests

None so far

Regards,
Asier and Sunil

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Dear all,

As you probably know we are having some difficulties testing the warm units, DRCU QM2 and DPU CFM, in preparation for the test cold test campaign.
We need to get these problem resolved before we start the test campaign, in fact before we plug in the Flight unit FPU.

I would like to request that IFSI and CEA come to RAL next Tuesday for a day or two of testing and fault finding. It is very important that these problems are resolved not just because they are delaying the start of testing, but also we need to give the go ahead to blow the flight FPGAs in the DRCU.

Asier and Sunil are preparing a list of problems that need to be tackled and will send that out tomorrow, in preparation for next week. In the mean time we will continue investigating.

Please let me know if this is acceptable to you and also who will be coming to RAL.

Thanks

Eric

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