GIADA FS MODEL

REPORT ON
IN FLIGHT PASSIVE PAYLOAD CHECKOUT N. 5 (PC5)
performed on
20/21-05-2007

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REV	DOCUMENT CHANGE ORDER	DATE	CHANGES DESCRIPTION	PREPARED
0	-	08-04-2008	First issue	GIADA Team

1. SCOPE AND APPLICABILITY

The Passive Payload Checkout n. 5 (PC5) test is one of the routine checkouts performed during Rosetta cruise. Payload Checkouts 0-3 were passive as well, while Payload Checkout 4 was active.

The PC5 was executed on 20-21 May 2007 by switching on Main and Redundant I/Fs in sequence and executing similar procedures for the two cases.

This document reports the results obtained on GIADA experiment during PC5.

This report is applicable to GIADA FS model on board the Rosetta S/C. The data were retrieved from DDS by means of the PI Workstation located at INAF - Osservatorio Astronomico di Capodimonte in Naples.

GIADA IWS software configuration is GES v. 4.2.2 plus RSOC Converter v. 1.1.2. GIADA in flight software configuration is 2.3 plus three additional patches (one more patch is used to update the context file).

2. REFERENCES

2.1 APPLICABLE DOCUMENT

AD1	RO-EST-RS-3001/EID A	ROSETTA Experiment Interface Document – Part A
AD2	RO-EST-RS-3009/EIDB	ROSETTA GIADA Experiment Interface Document – Part B
AD3	RO-ESC-PL-5000 – last issue	Flight Control Procedure
AD4	GIA-GAL-MA-007 Issue 4	GIADA Flight Spare Experiment User Manual last version

2.2 REFERENCE DOCUMENT

	None.	

3. DEFINITIONS AND ABBREVIATIONS

3.1 ABBREVIATIONS

CAL	Calibration
CF	Context File
CREP	Cover REPort
CT	Context Table
DDS	Data Disposition System
EGSE	Electrical Ground Support Equipment
EQM	Electrical Qualification Model
ESA	European Space Agency
FCP	Flight Control Procedure
FS	Flight Spare
GDS	Grain Detection System
GES	GIADA EGSE SW
GIADA	Grain Impact Analyser and Dust Accumulator
HK	House Keeping
I/F	InterFace
INAF-OAC	INAF - Osservatorio Astronomico di Capodimonte – Napoli (I)
IRQ	Interrupt ReQuest
IS	Impact Sensor
IWS	Instrument Work-Station
MBS	Micro Balance System
ME	Main Electronics
MTL	Mission TimeLine
MON	Monitor
OBCP	On-Board Control Procedure
PC	Payload Checkout
PI	Principal Investigator
PS	GIADA Power Supply
PZT	(IS) Piezoelectric Sensor
RED	Redundant
REV	Revision
RMOC	Rosetta Mission Operation Centre
RSOC	Rosetta Science Operation Centre
S/C	(Rosetta) Spacecraft
S/S	(GIADA) Sub-system (e.g. IS or GDS or MBS)
SCI	Scientific
SSC	Source Sequence Count
SSMM	Solid State Mass Memory on-board of Rosetta Spacecraft
SW	Software
TC	TeleCommand
TM	Telemetry
UM	User Manual
UTC	Coordinated Universal Time
VC0	Virtual Channel 0 (Real Time TM packets)
VC1	Virtual Channel 1 (TM packets coming from Mass Memory)

4. DESCRIPTION OF ACTIVITIES

The Active Payload Checkout n. 5 (PC5) was performed on 20-21 May 2007 according to the timelines reported in Section 10. Commands were previously loaded in the Rosetta S/C and sent to GIADA via MTL.

Starting with PC2 some new FCPs have been used, together with other FCPs already validated in the previous GIADA Commissioning phases. No new command was added/modified since then, so the two timelines used for Main and Red I/F (see below) are similar to the timelines used during PC2 and PC4.

The plan of activities foresees the following steps for the Main Interface (for the values of parameters see timelines in Section 10.1):

Sequence	**Timeline – Main Interface**

AGDS001A	VGD0001B = "nom. Branch" [ENG] \ # GIADA on Main IF
	VGD0001A = "YES" [ENG]) # Context exists

AGDS002A	Patch CT v. flight 1
AGDS003A	Patch SW v.2.3
AGDS035A	Go to Cover Mode
AGDF090A	Open cover
AGDS065A	Go to Safe mode
AGDS110A	Go to Normal mode (science enabled)
AGDS038A	Set GDS L/R receiver thresholds to 1.6/1.18 V
AGDS037A	Set IS Off
AGDS036A	Set IS PZTA/B/C/D/E threshold to 0.05/0.05/0.15/0.05/0.20 V Range = L – Gain = H/H/H/H/H
AGDS037A	Set IS On
AGDS120A	Calibrate GDS – IS – MBS at 5 min intervals
AGDF100A	Self-interference test
AGDF055A	MBS # 1-2-3-4-5 heating
AGDF060A	GIADA Switch-off (with Cover close operation in the Power-off OBCP)

followed by similar steps for the Red I/F (for the values of parameters see timelines in Section 10.2):

Sequence	**Timeline – Redundant Interface**

AGDS001A	VGD0001B = "red. branch" [ENG] \ # GIADA on Red IF
	VGD0001A = "YES" [ENG]) # Context exists

AGDS002A	Patch CT v. flight 1
AGDS003A	Patch SW v.2.3
AGDS035A	Go to Cover Mode
AGDF090A	Open cover
AGDS065A	Go to Safe mode
AGDS110A	Go to Normal mode (science enabled)
AGDS038A	Set GDS L/R receiver thresholds to 1.6/1.18 V
AGDS037A	Set IS Off

Sequence	**Timeline – Redundant Interface**
AGDS036A	Set IS PZTA/B/C/D/E threshold to 0.05/0.05/0.15/0.05/0.20 V Range = L – Gain = H/H/H/H/H
AGDS037A	Set IS On
AGDS120A	Calibrate GDS – IS – MBS at 5 min intervals
AGDF100A	Self-interference test
AGDF055A	MBS # 1-2-3-4-5 heating
AGDF060A	GIADA Switch-off (with Cover close operation in the Power-off OBCP)

Settings of Thresholds and Parameters are also reported in the tables.

The data were off-line elaborated on the PI IWS at INAF-OAC in Naples.

5. SUMMARY OF DATA ANALYSIS

The full sets of plots about Housekeeping and Science data are reported in Sections 7 and 8 for the Main and the Redundant I/F's respectively.

Here following the main findings are summarized.

5.1 GENERAL CONSIDERATIONS

The test started on "Sun May 20 2007 18:01:12.176298", when the first TM packet was received from GIADA switched on the Main interface. The last TM packet on the Main interface was received on "Mon May 21 2007 05:38:01.976356. The test on the Redundant interface started on "Mon May 21 2007 06:01:12.183622" (1st packet received) and ended on "Mon May 21 2007 17:38:02.46180" (last packet received).

All expected steps were correctly executed.

The first expected packet **(Connection Report, service 17,2) was not received** in the time window of the test, probably because the DDS has marked it with a wrong UTC time, being an unsynchronised time tag (bad time quality) TM report. As understood after iteration with RMOC people, this is a nominal situation for unsynchronised TM packets that are not received in real time; in this condition the DDS system cannot distinguish for how long the packet was stored in SSMM.

Except for the mentioned "lost event", no packet were lost, neither HK nor SCI TM; this means that **SSMM memory allocated to GIADA (1 Mbytes) is not saturated.** About HK TM see Figure 7.1-8 and Figure 7.1-9 for Main I/F, Figure 8.1-8 and Figure 8.1-9 for Red I/F. About SCI TM the previous considerations were deduced from TCTM report file resident in the log directory of GES.

At the 2nd IS power-on on both Main I/F (Mon May 21 2007 04:14:59) and Red I/F (Mon May 21 2007 16:14:59) the event ***"Hardware error in IS event detection circuitry. No IRQ received."*** was received (see TCTM report file resident in the log directory of GES). This is a false message produced by the ME of GIADA when the IS electronics is powered-on. This is a known problem (see relevant Remark in GIADA UM [**AD 4**]).

The behaviour of the cover during the different open-close operations was monitored by the **"Cover Reports" (CREP)**. About CREPs see Figure 7.2-1 and Figure 7.2-2 for Main–open and Main–close respectively, Figure 8.2-1 and Figure 8.2-2 for Red–open and Red–close respectively. The reports testify a **nominal behaviour** of the open-close operations.

5.2 GIADA STATUS

The **current consumption** and **power supply temperatures** (Main: Figure 7.1-7; Red: Figure 8.1-7) are in line with the nominal evolution of operative modes (Main: Figure 7.1-6; Red: Figure 8.1-6).

Power values must be compared with soft and hard limits reported in GIADA FS UM [**AD4**] and summarized in Table 5.2-1.

As reported in GIADA FS UM [AD4], the Soft and Hard Alarm Limits for Power consumption in Table 5.2-1 for parameters NGDD0086, NGDD0087 and/or NGDD0088 refer to the different GIADA operating modes. In order to avoid flood of Out Of Limits (OOL) alarms, it has been decided (July 2006) to refer the Hard Alarm Limits to the extreme instrument status for each mode (e.g., in normal mode, with all subsystems off – lower – or at maximum power consumption - upper). Other configurations not related to real GIADA failure may still give OOL, related to operation in non nominal temperature conditions, although such conditions have never been experienced so far.

In general, all **functional parameters** measured during the PC5 test behave as expected.

In previous in flight tests different values of **current on the 5 V line** between Main (1050 mA) and Red (< 1000 mA) I/Fs were measured. A deeper analysis of the causes of this effect has evidenced a ***wrong digitalization of the CAL factors*** in the conversion tables of the PI EGSE SW. This problem has been fixed starting from the analysis of the PC2 data, so that the inconsistency between Main (Figure 7.1-6) and Redundant (Figure 8.1-6) I/Fs has been removed and the measured values of current on the 5 V line are now only slightly different: max Main value ≈ 1100 mA, max Red value ≈ 1075 mA.

QUANTITY	NAME	LNAME	SOFT ALARM LIMITS		HARD ALARM LIMITS	
			Lower	Higher	Lower	Higher
+5V Power Consumption ([1])	NGDD0086	Current +5V	110 mA	150 mA	80 mA	180 mA
+15V Power Consumption ([1])	NGDD0087	Current +15V	30 mA	60 mA	20 mA	70 mA
-15V Power Consumption ([1])	NGDD0088	Current -15V	50 mA	90 mA	40 mA	100 mA
+5V Power Consumption ([2])	NGDD0086	Current +5V	110 mA	150 mA	80 mA	180 mA
+15V Power Consumption ([2])	NGDD0087	Current +15V	30 mA	600 mA	20 mA	700 mA
-15V Power Consumption ([2])	NGDD0088	Current -15V	50 mA	600 mA	40 mA	700 mA
+5V Power Consumption ([3])	NGDD0086	Current +5V	110 mA	1600 mA	80 mA	1800 mA
+15V Power Consumption ([3])	NGDD0087	Current +15V	30 mA	550 mA	20 mA	600 mA
-15V Power Consumption ([3])	NGDD0088	Current -15V	50 mA	350 mA	40 mA	400 mA
+5V Power Consumption ([4])	NGDD0086	Current +5V	110 mA	170 mA	80 mA	1500 mA
+15V Power Consumption ([4])	NGDD0087	Current +15V	30 mA	200 mA	20 mA	220 mA
-15V Power Consumption ([4])	NGDD0088	Current -15V	50 mA	135 mA	40 mA	155 mA

Table 5.2-1. Hard and Soft limits for GIADA FS power consumption

([1]) Safe mode ([2]) Cover mode ([3]) Normal mode ([4]) Flux mode

All **Temperatures** behave as expected (Main: Figure 7.1-2, Figure 7.1-3, Figure 7.1-4; Redundant: Figure 8.1-2, Figure 8.1-3, Figure 8.1-4). The trend of the IS Temperature is more noisy with the Main than with the Red I/F (Main: Figure 7.4-4; Red: Figure 8.4-4).

In previous in flight tests the behaviour of the **GDS Laser 1 Monitor vs. Temperature** presented an *offset* between Main and Red measurements. This effect was simply due to a ***wrong digitalization of the CAL factors*** in the conversion tables of the PI EGSE SW and has been fixed since for the analysis of the PC4 data (see Figure 7.3-5 for Main, Figure 8.3-5 for Redundant and Figure 9.1-1 for a comparison between Main and Redundant I/F).

The detection **Thresholds** applied on GDS are shown in Figure 7.3-2 (Main) and Figure 8.3-2 (Red), while those applied to PZT3 and PZT5 of IS are respectively shown in Figure 7.4-2 and Figure 7.4-3 (Main), Figure 8.4-2 and Figure 8.4-3 (Redundant). Moreover, Range and Gain for IS are set as shown in Table 5.2-2 (Note: GAIN of PZTB and PZTC is fixed "High", no matter the S/W setting).

RANGE	GAIN				
	PZTA	PZTB	PZTC	PZTD	PZTE
Low	High	High	High	High	High

Table 5.2-2. IS Range and Gain configuration

About **scientific data** we notice the following points:

During the PC5 test a **saturation of GDS** output did occur due to the Sun position (about 53 deg. with respect to the S/C +Z axis). Therefore the **GDS CAL data** show for the **GDS Left side** an output saturation level around **0.20 V** and for the **GDS Right side** a saturation level around **0.11 V** (Main: Figure 7.3-10; Red: Figure 8.3-10). These are the nominal values occurring when the GDS is saturated.

Since there was saturation, **NO GDS scientific event** was detected (see Figure 7.3-9 for the Main I/F and Figure 8.3-9 for the Redundant I/F).

The "**Dust Monitor**" presents the following results: 45 single detections and 12 double detections on the Main I/F (Figure 7.4-12); 18 single detections and 3 double detections on the Red I/F (Figure 8.4-12). We recall that during the PC2 test hundreds of single detections occurred; these were related to the detections by the PZT-E (or 5) at 0.15 V level. Since the PC4 test the detection threshold on the PZT-E (or 5) has been increased from 0.15 V to 0.20 V, so that the single detections are considerably reduced.

It must be also recalled that the Dust Monitor counts IS events even when the Scientific TM is not enabled. One IS event is marked when one (the first) PZT signal crosses the threshold (with the filtering). So it is possible to have Dust Monitor > 0 even if **no IS** event has been **detected** simultaneously by ALL the PZTs.

An analysis of the occurrence of the **IS scientific events** for the Main and Red I/Fs is reported in Section 5.2.1 for the Main I/F (Figure 7.4-6) and in Section 5.2.2 for the Red I/F (Figure 8.4-6).

The last IS CAL (8 steps rather than 4) are performed at 9.6 V amplitude instead of 10 V as the others. This is linked to the different setting of the calibrations. Thus, the IS outputs of the stimuli are lower than in the former cases (see Main I/F: from Figure 7.4-19 to Figure 7.4-23; Red I/F: from Figure 8.4-19 to Figure 8.4-23).

The frequency level of all MBS, but of MBS 1, has not changed with respect to the PC4 test. MBS 1 has increased its frequencies by an amount of 20 Hz (Figure 9.3-1 and Figure 9.3-7). The frequency – temperature behaviour is not changed since previous in-flight tests: see Figure 9.3-2 and Figure 9.3-8 for MBS 2, Figure 9.3-3 and Figure 9.3-9 for MBS 3, Figure 9.3-4 and Figure 9.3-10 for MBS 4 and Figure 9.3-5 and Figure 9.3-12 for MBS 5.

5.2.1 Analysis of IS SCI events on the Main I/F

Here following is an analysis of the IS SCI events detected on the Main I/F.

IS Events detected by Channel A (Figure 7.4-7)
- 7 events detected at IS_Event_Time = 138308915.3, 138328120.9, 138340169.3, 138341969.3, 138342034.4, 138342629.3s
- all events detected by Ch-A but 1 are also detected by Ch-B
- 4 events detected by Ch-A are also detected by Ch-C
- 5 events detected by Ch-A are also detected by Ch-D
- no event detected by Ch-A is also detected by Ch-E

IS Events detected by Channel B (Figure 7.4-8)
- 6 events detected at IS_Event_Time = 138308915.3, 138340169.3, 138341969.3, 138342034.4, 138342629.3 s
- all events detected by Ch-B are also detected by Ch-A
- 4 events detected by Ch-B are also detected by Ch-C
- all events detected by Ch-B but 1 are also detected by Ch-D
- no event detected by Ch-B is also detected by Ch-E

IS Events detected by Channel C (Figure 7.4-9)
- 5 events detected at IS_Event_Time = 138308317.9, 138308915.3, 138341969.3, 138342034.4, 138342629.3 s
- all events detected by Ch-C but 1 are also detected by Ch-A
- all events detected by Ch-C but 1 are also detected by Ch-B
- all events detected by Ch-C but 1 are also detected by Ch-D
- no event detected by Ch-C is also detected by Ch-E

IS Events detected by Channel D (Figure 7.4-10)
- 7 events detected at IS_Event_Time = 138308915.3, 138309804.1, 138309804.3, 138340169.3, 138341969.3, 138342034.4, 138342629.3 s
- 5 events detected by Ch-D are also detected by Ch-A
- 5 events detected by Ch-D are also detected by Ch-B
- 4 events detected by Ch-D are also detected by Ch-C
- no event detected by Ch-D is also detected by Ch-E

IS Events detected by Channel E (Figure 7.4-11)
- just one event detected by Ch-E at IS_Event_Time = 138308000.6 s
- the only event detected by Ch-E is not detected by Ch-A-B-C-D

Conclusions:
- 4 events are simultaneously detected by Ch-A-B-C-D, but not by Ch-E, at IS_Event_Time = 138308915.3, 138341969.3, 138342034.4, 138342629.3 s
- 1 event is simultaneously detected by Ch-A-B-D, but not by Ch-C-E, at IS_Event_Time = 138340169.3 s
- 1 event is simultaneously detected by Ch-A-B, but not by Ch-C-D-E, at IS_Event_Time = 138341969.3 s
- 1 event is only detected by Ch-A at IS_Event_Time = 138328120.9 s

- 1 event is only detected by Ch-C at IS_Event_Time = 138308317.9 s
- 2 events are only detected by Ch-D at IS_Event_Time = 138309804.1, 138309804.3 s
- 1 event is only detected by Ch-E at IS_Event_Time = 138308000.6 s

The 11 events detected by Channels A-B-C-D-E are summarized in Table 5.2-3. Five of them (highlighted in yellow) occur in coincidence with other GIADA transitions (switching on/off of the GDS lasers). The others do not seem correlated to any other GIADA event and cannot be easily identified.

IS	Time	Event
E	138308000.6	
C	138308317.9	
A, B, C, D	138308915.3	
D	138309804.1	
D	138309804.3	
A	138328120.9	
A, B, D	138340169.3	Laser OFF
A, B, C, D	138341969.3	Laser Power ON
A, B	138341969.3	Laser Power ON
A, B, C, D	138342034.4	Laser ON
A, B, C, D	138342629.3	Laser OFF

Table 5.2-3. IS SCI Events from PZTs A-B-C-D-E

The 428 events detected by Ch-E during the PC2 test, probably due to some noise effect on that channel, did not occur since the Payload Checkout n. 4 test. This behaviour was expected because the threshold of Ch-E was increased from 15 (0.15 V) to 20 (0.20 V) digital units from PC2 to PC4.

5.2.2 Analysis of IS SCI events on the Redundant I/F

Here following is an analysis of the IS SCI events detected on the Redundant I/F.

IS Events detected by Channel A (Figure 8.4-7)
- 3 events detected at IS_Event_Time = 138383369.3, 138385235.3, 138385829.3s
- no event detected by Ch-A is also detected by Ch-B-C-D-E

IS Events detected by Channel B (Figure 8.4-8)
- no event detected

IS Events detected by Channel C (Figure 8.4-9)
- 1 event detected at IS_Event_Time = 138350297.3 s
- the only event detected by Ch-C is is not detected by Ch-A-B-D-E

IS Events detected by Channel D (Figure 8.4-10)
- no event detected

IS Events detected by Channel E (Figure 8.4-11)
- no event detected

Conclusions:
- 3 events are only detected by Ch-A at IS_Event_Time = 138383369.3, 138385235.3, 138385829.3 s
- 1 event is only detected by Ch-C at IS_Event_Time = 123049548.81 s
- No event detected by Ch-B-D-E

The 4 events detected by Channels A-C are summarized in Table 5.2-4. Three of them (highlighted in yellow) occur in coincidence with other GIADA transitions (switching on/off of the GDS lasers). The other one (only detected by Ch-C) does not seem correlated to any other GIADA event and cannot be easily identified.

IS	Time	Event
C	138350297.3	
A	138383369.3	Laser OFF
A	138385235.3	Laser ON
A	138385829.3	Laser OFF

Table 5.2-4. IS SCI Events from PZTs A-C

6. CONCLUSIONS

According to the above data elaboration and results, the following conclusions can be drawn about the Active Payload Checkout 5:

- **No loss of science TM** was observed and no flood of ghost events was produced by GIADA.
- The not synchronised TM report (i.e., Connection report 17,2 which is the first packet produced by GIADA after the switch-on) had a wrong UTC time and this can result in absence of this packet in the time window of the test. **This issue has been understood**: if the packet is received on VC0, the delay of the time stamping is about some seconds, because the RMOC is able to calculate quite accurately when the packet was generated on-board. When the packet is received on VC1, the Mission Control Centre is not able to calculate the generation time since the packet could have been generated many days before.
- All operations were correctly executed, all functional parameters measured during the PC5 test behaved as expected.
- At the 2rd IS power-on both on Main and Red I/Fs, the event "*Hardware error in IS event detection circuitry. No IRQ received*" was received. This is a known problem that may happen @ IS power-on.
- The CREPs (Cover REPorts) generated by the EGSE S/W testify a **nominal behaviour** of the open-close operations during the PC5 test**.**
- The internal (Impact Sensor, Laser and Power Supply) and external (Frangibolt and MBS's) temperatures were in the nominal range, as well as the current consumption during all the phases of the test.
- The GDS was **saturated** due to the Sun position, so that NO GDS scientific events were detected. The recorded levels of saturation on GDS Left and Right side are the nominal values occurring when the GDS is saturated.
- The "Dust Monitor" measured some detections, due to the IS events detected by one or more PZTs when a PZT signal crosses its threshold.
- The IS produced some "ghost events"; most of them occurred in coincidence with other GIADA transitions. The results of the IS calibration are the same as measured during the other tests.
- MBS frequency and frequency-temperature trends are as in previous tests. MBS 1 has increased his frequency by about 20 Hz with respect to PC4 test.

7. PC5 DATA ANALYSIS – MAIN INTERFACE

7.1 GIADA STATUS

Figure 7.1-1. HK Status of GIADA and S/S vs. time - Main

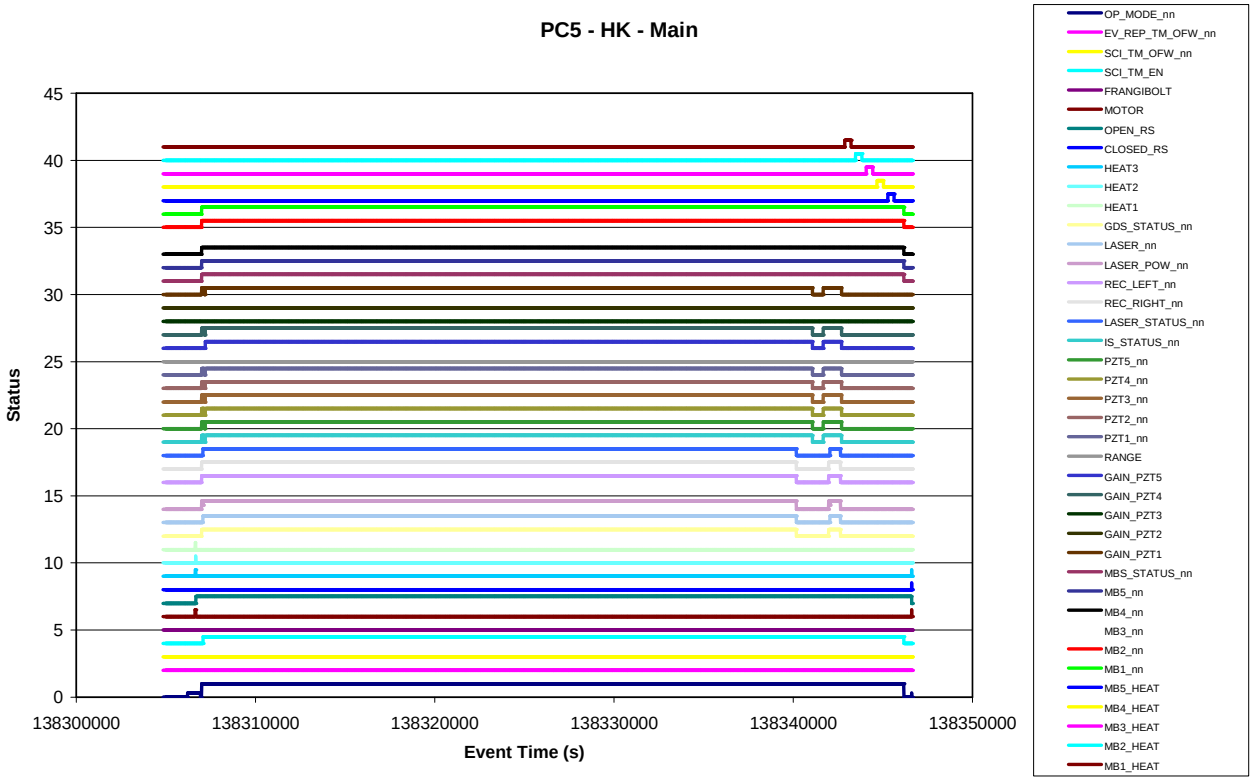


Figure 7.1-2. Evolution of all temperatures vs. time - HK, HK-SCI, SCI - Main

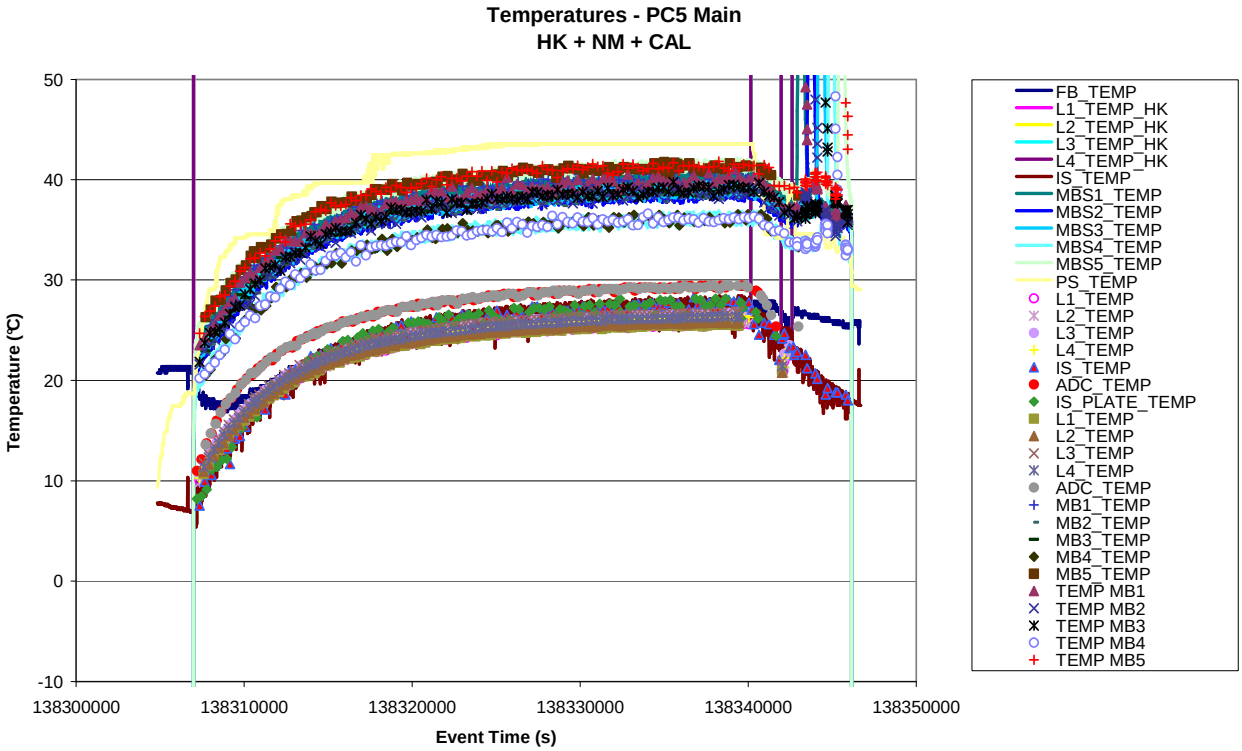


Figure 7.1-3. Evolution of temperatures of system elements vs. time - HK, HK-SCI, SCI - Main

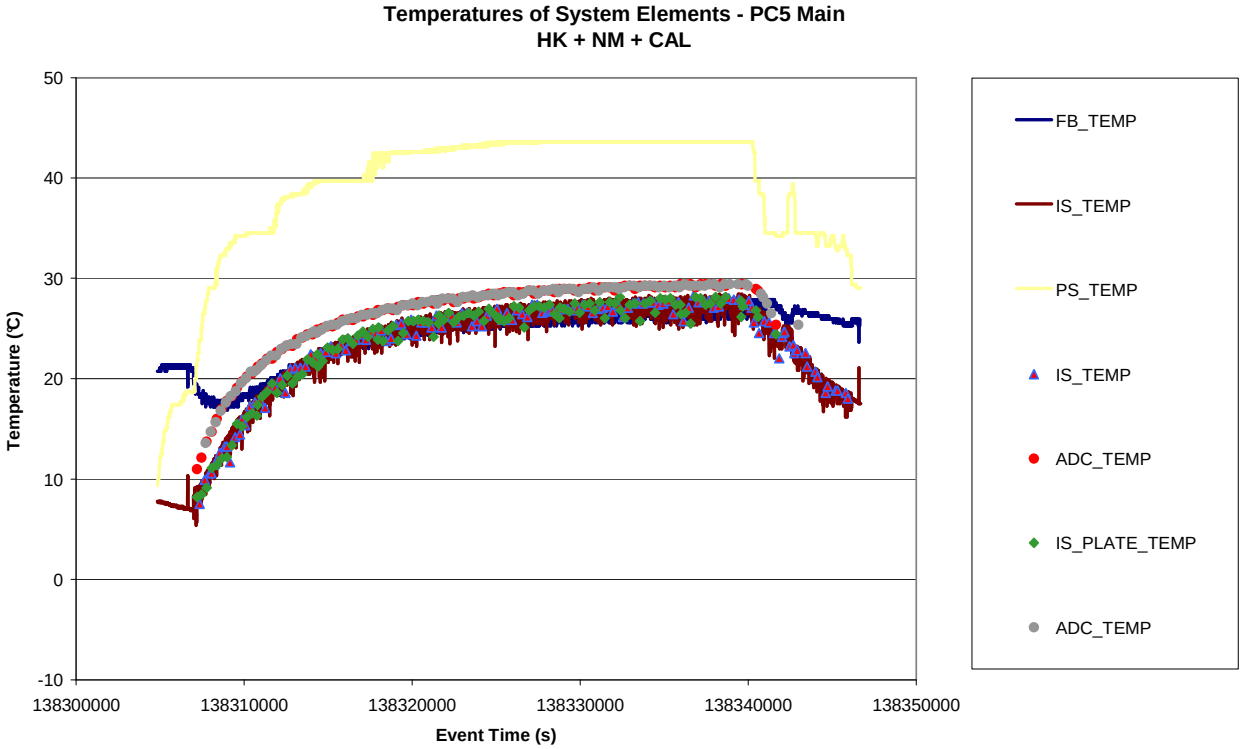


Figure 7.1-4. Evolution of temperatures of sub-systems vs. time - HK, HK-SCI, SCI - Main

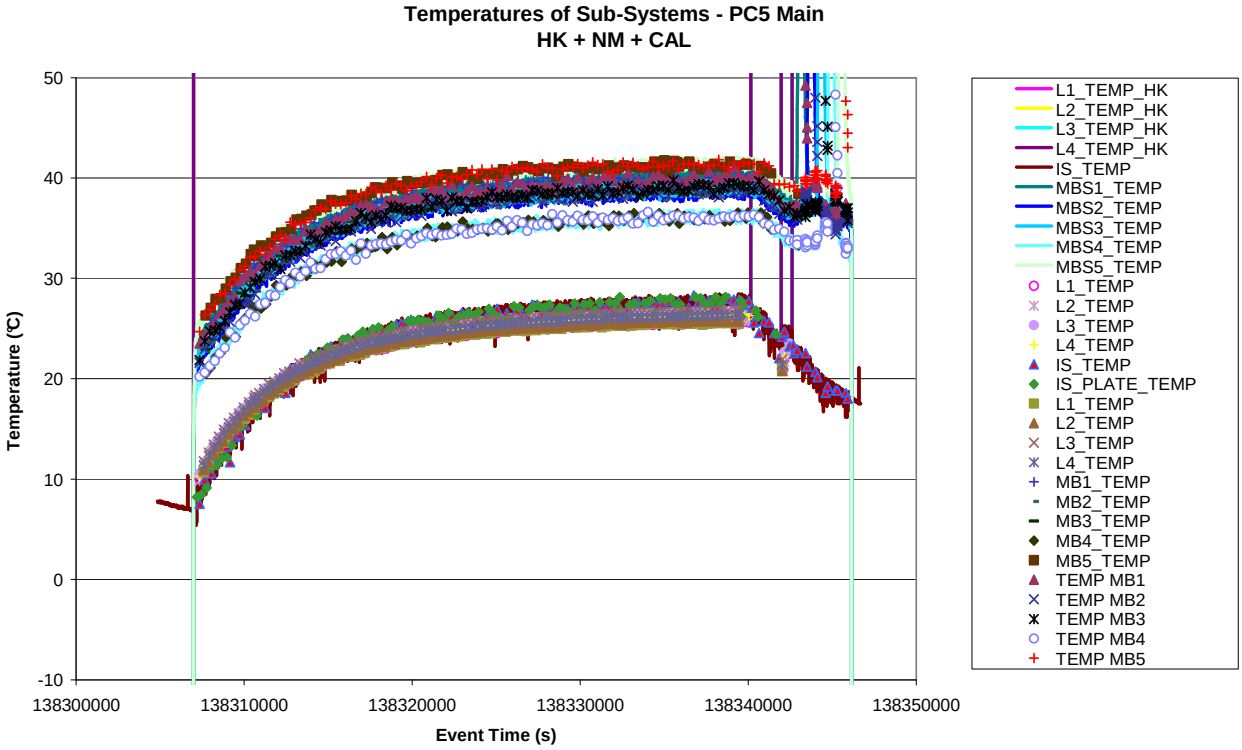


Figure 7.1-5. Operation Status vs. time - Main

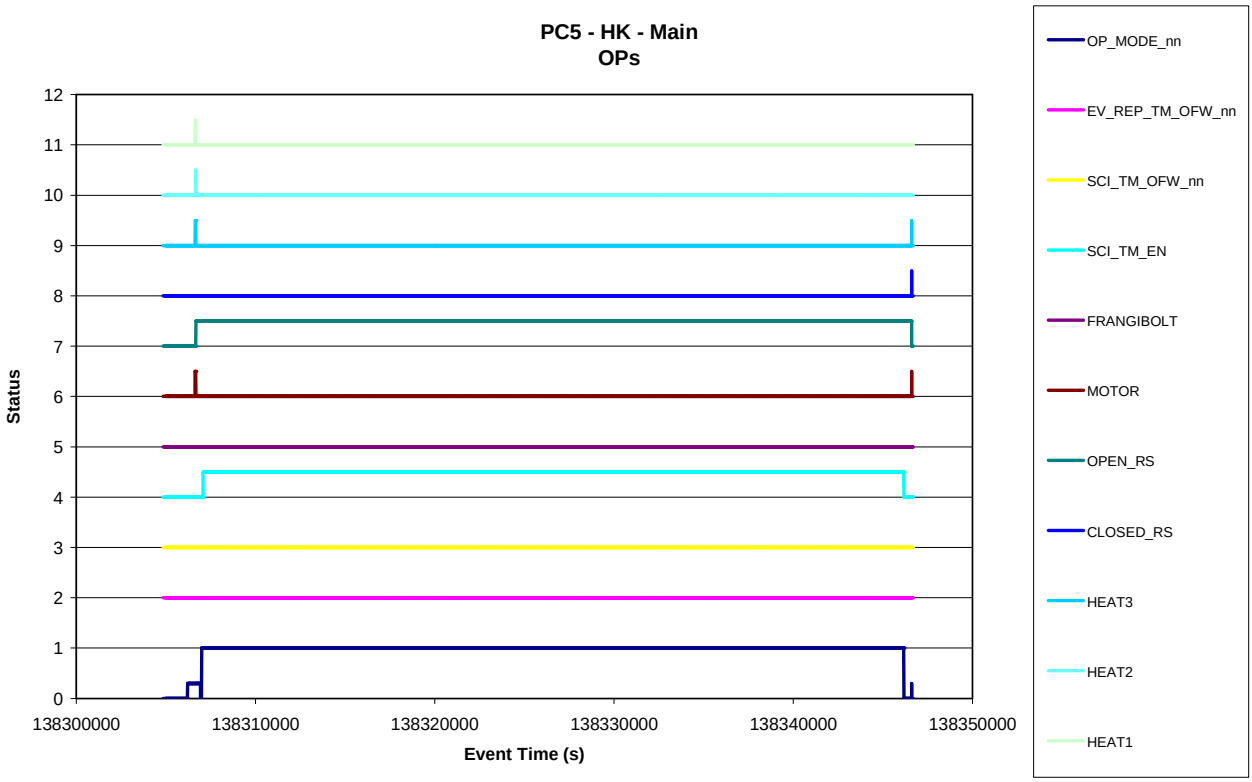


Figure 7.1-6. Power behaviour - Main

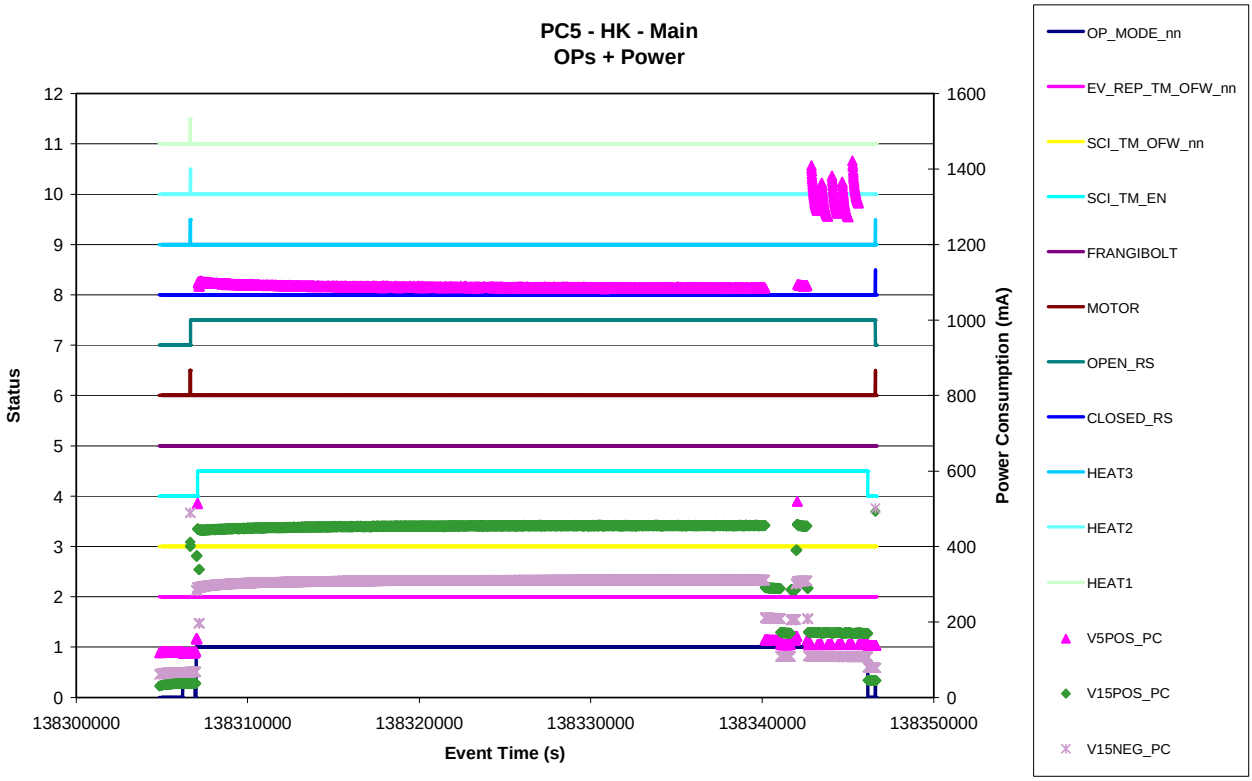


Figure 7.1-7. Power and PS temperature behaviour - Main

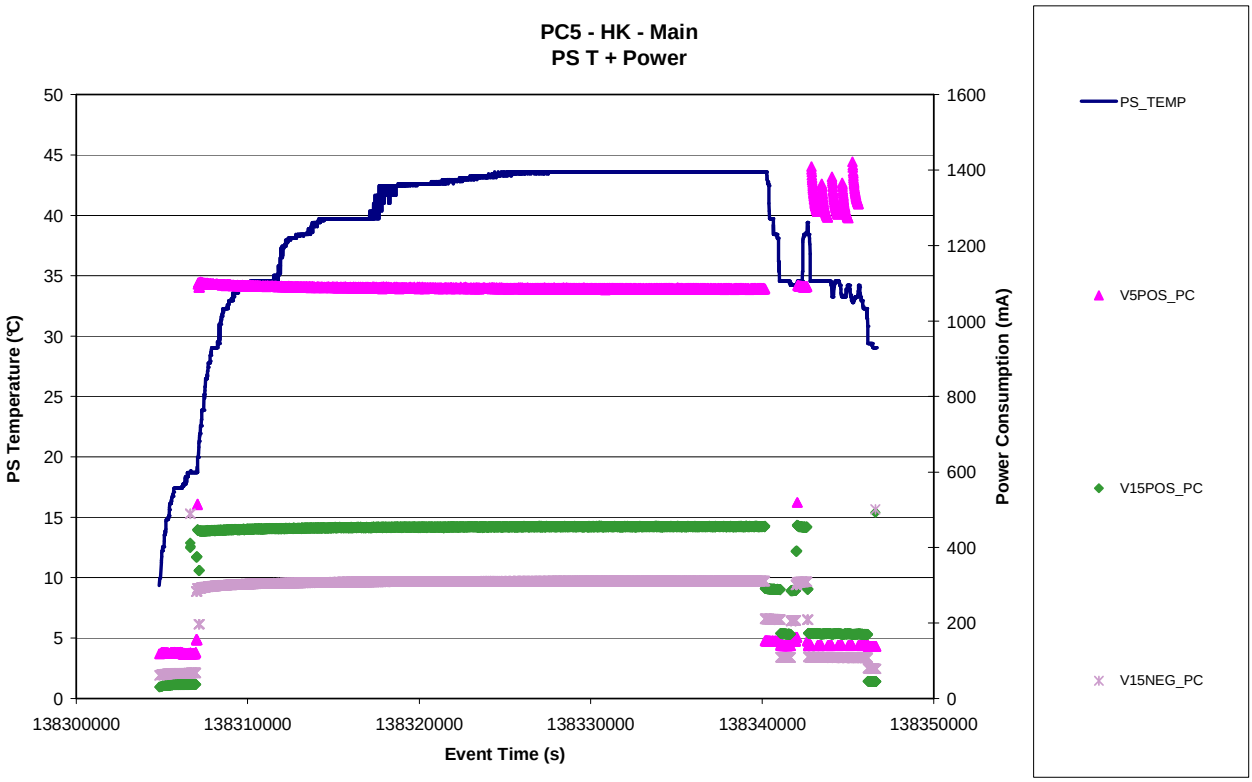


Figure 7.1-8. Source Sequence Count (SSC) of HK Telemetry vs. Time - Main

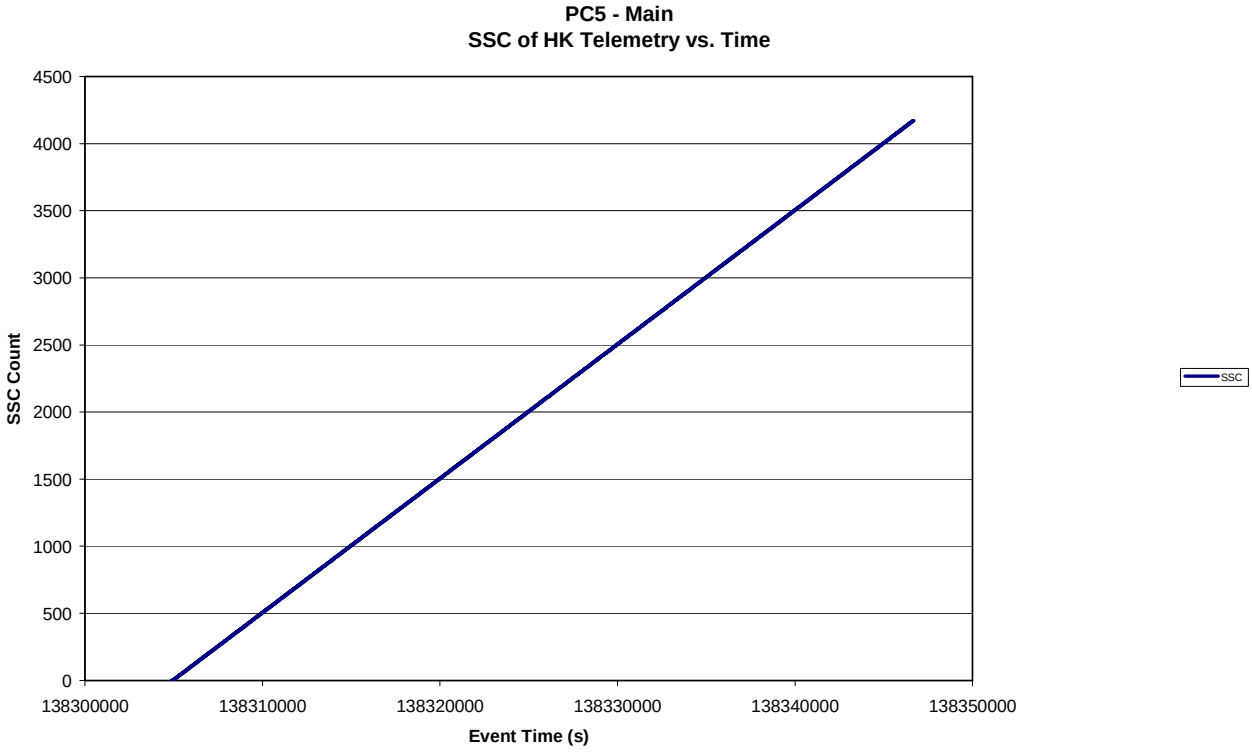


Figure 7.1-9. Source Sequence Count (SSC) of HK Telemetry vs. Number - Main

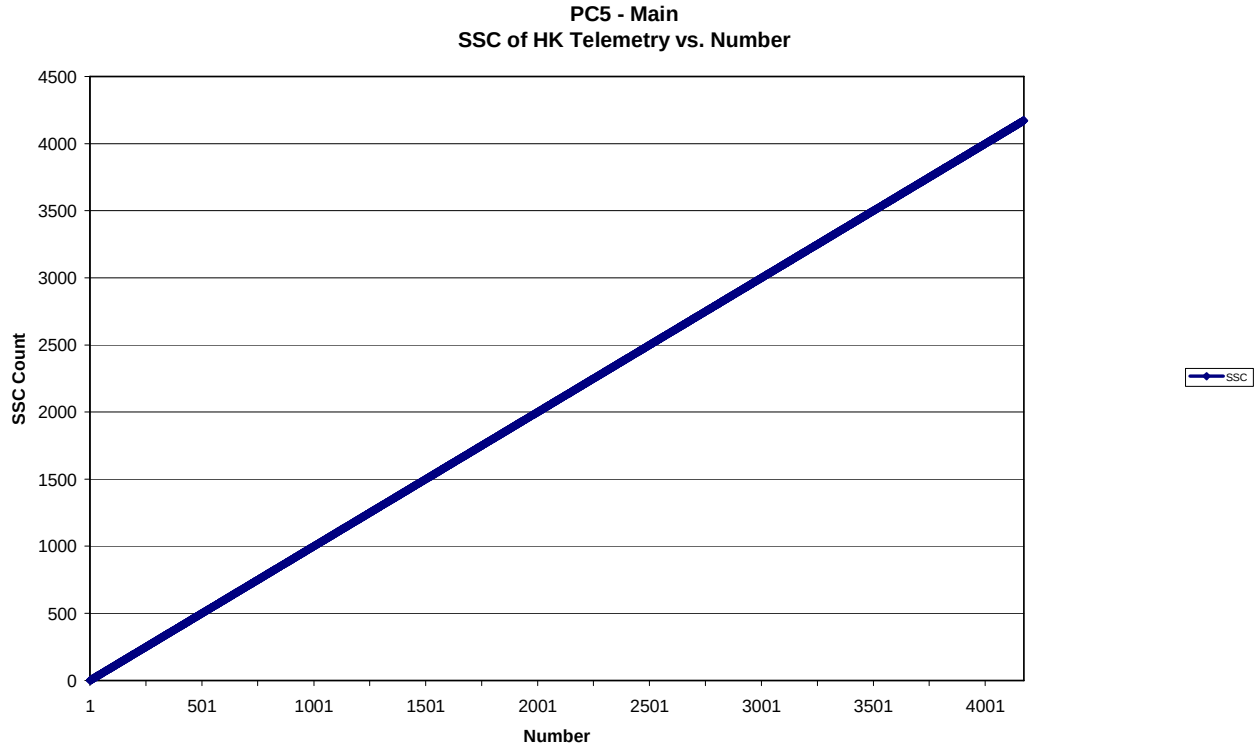


Figure 7.1-10. Source Sequence Count (SSC) of SCI Telemetry vs. Time - Main

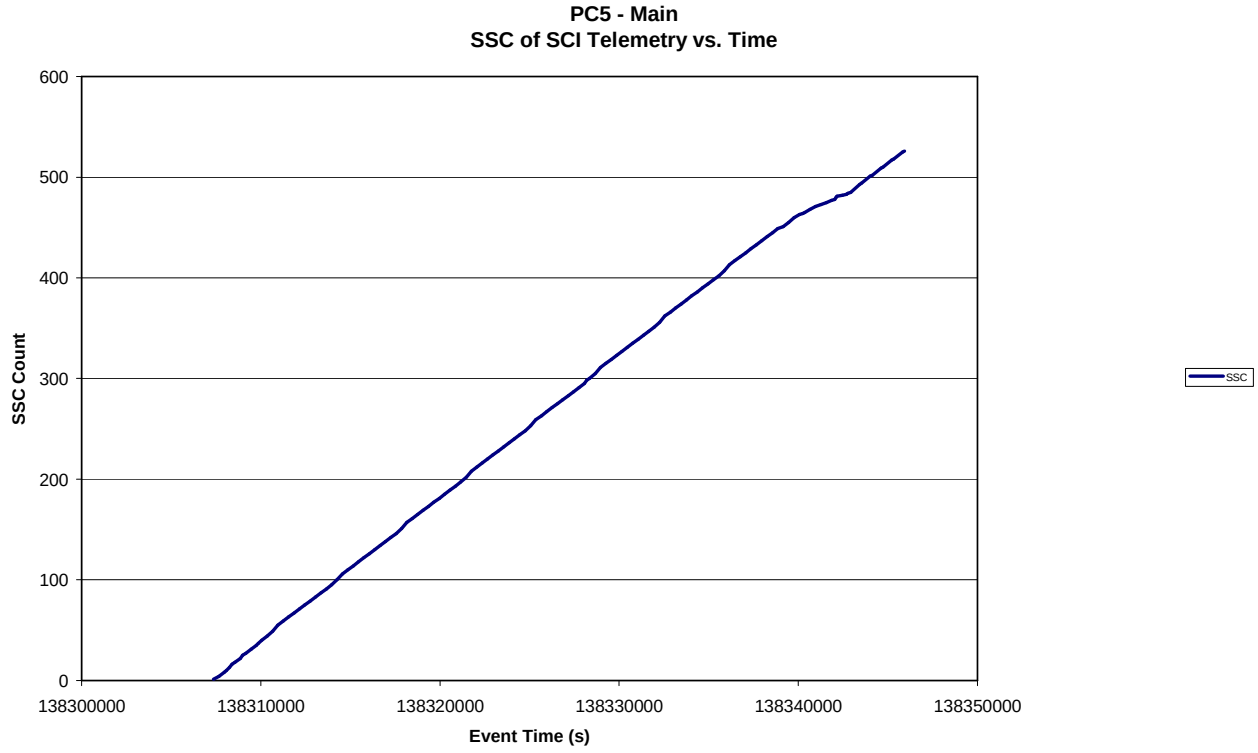
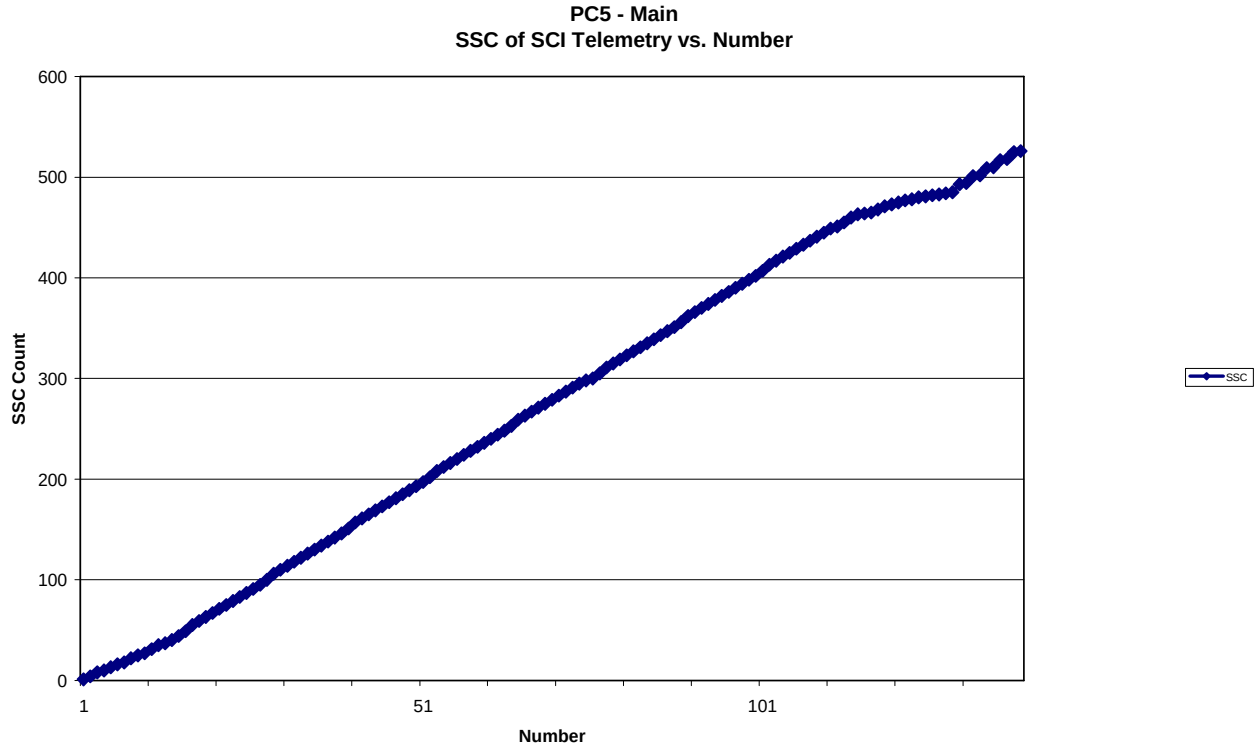


Figure 7.1-11. Source Sequence Count (SSC) of SCI Telemetry vs. Number - Main



7.2 COVER REPORTS

7.2.1 Open Cover

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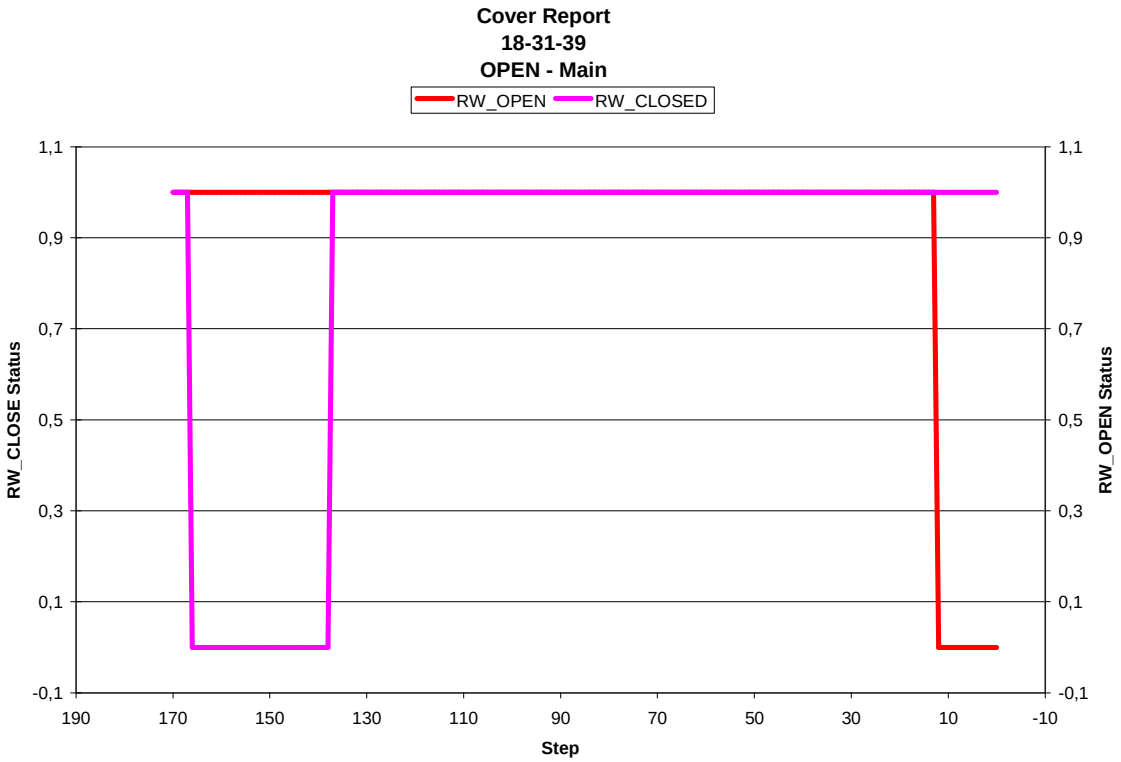
USER=AA0000
HEADER_END
//
// Generated by 'GIADA_EGSE_SW '
//
MOVEMENT DIRECTION: To open
BEGIN TIME OF OPERATION: 138306656.000000
END TIME OF OPERATION: 138306672.000000

Figure 7.2-1 Cover Report – Open - Main



7.2.2 Close Cover

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USER=AA0000
HEADER_END
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// Generated by 'GIADA_EGSE_SW '
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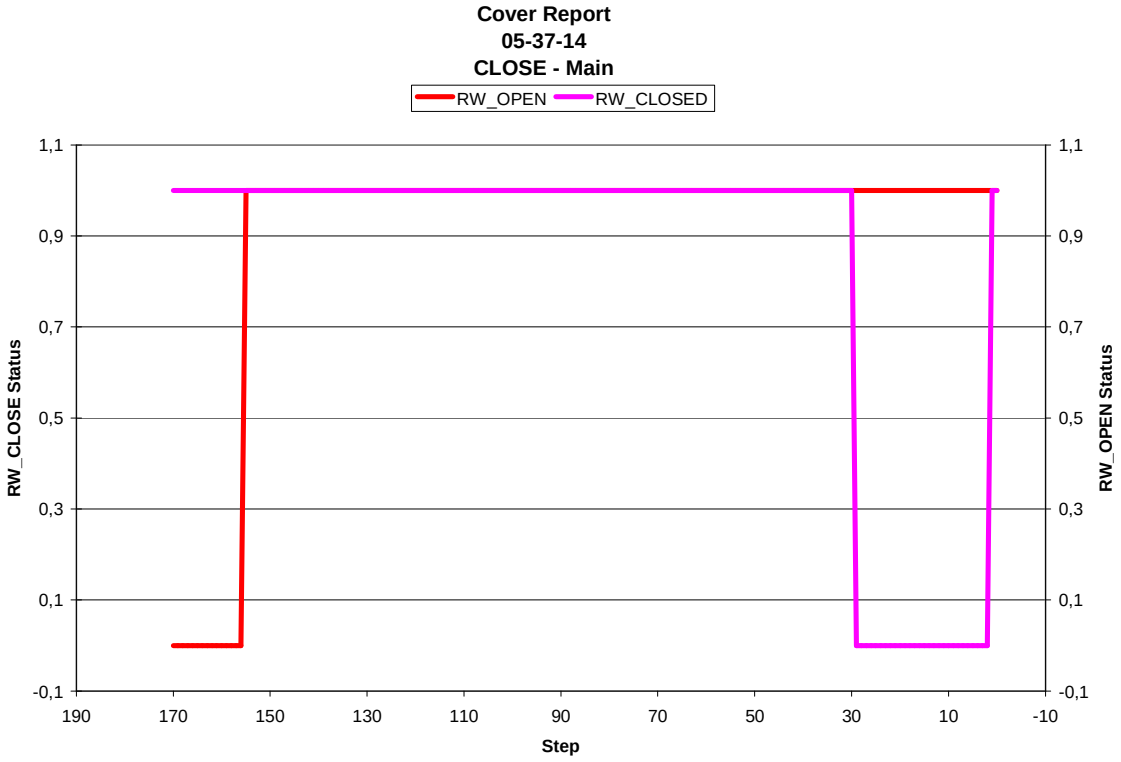
END TIME OF OPERATION: 138346608.000000

Figure 7.2-2 Cover Report – Close - Main



7.3 GRAIN DETECTION SYSTEM (GDS)

7.3.1 GDS – Status

Figure 7.3-1. GDS Operation Status vs. time - Main

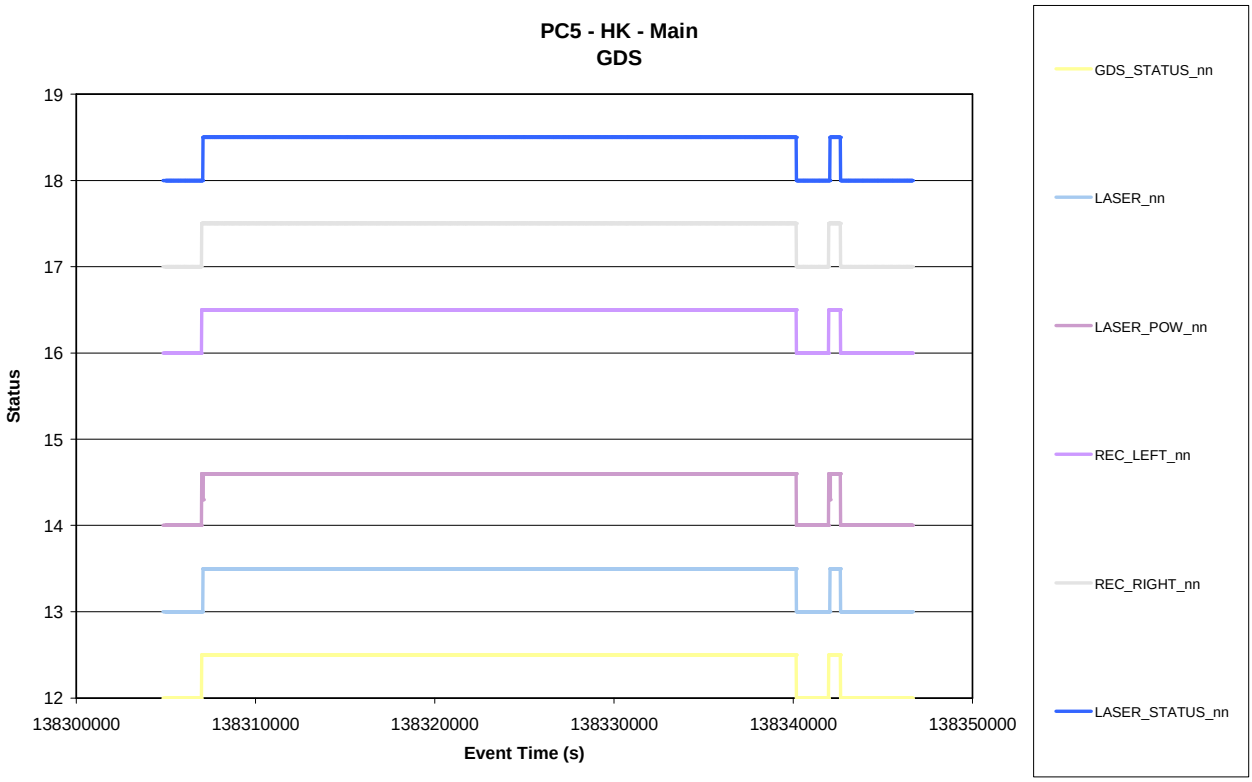


Figure 7.3-2. GDS Thresholds change vs. time - Main

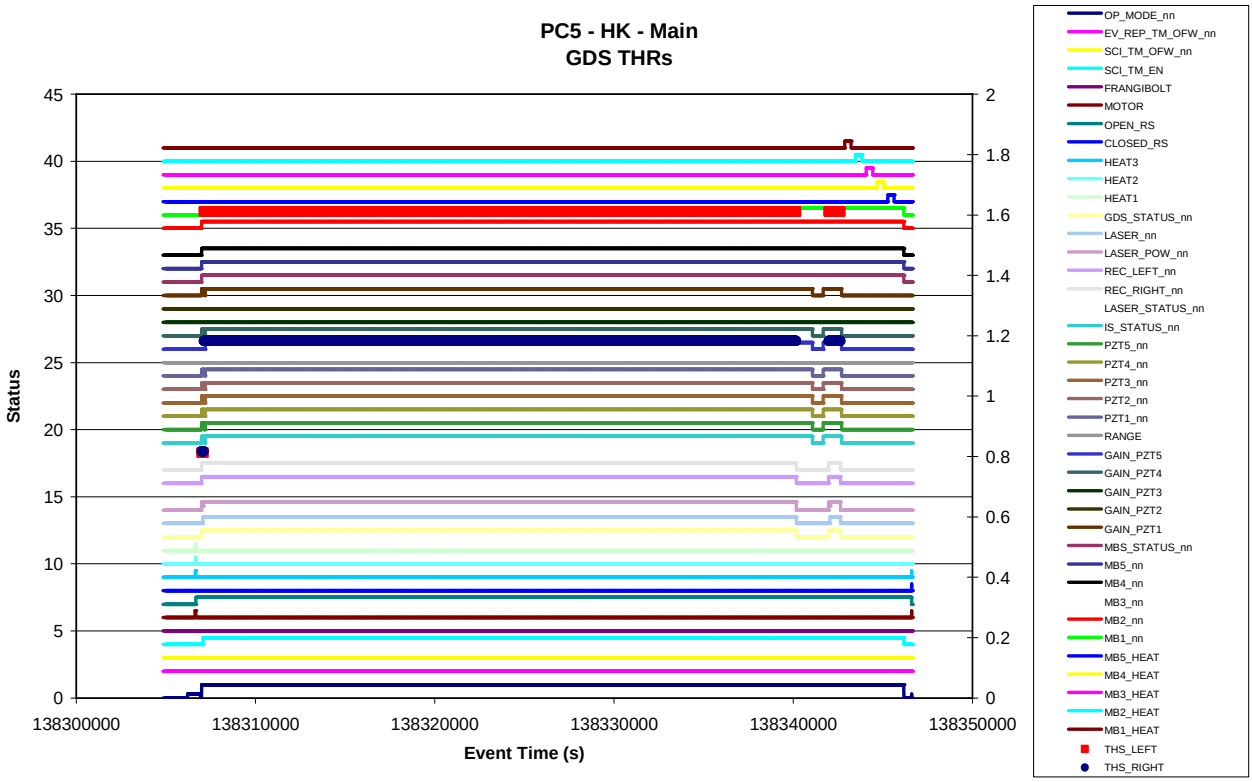


Figure 7.3-3. GDS Laser Temperatures vs. time (HK, HK-SCI, SCI) - Main

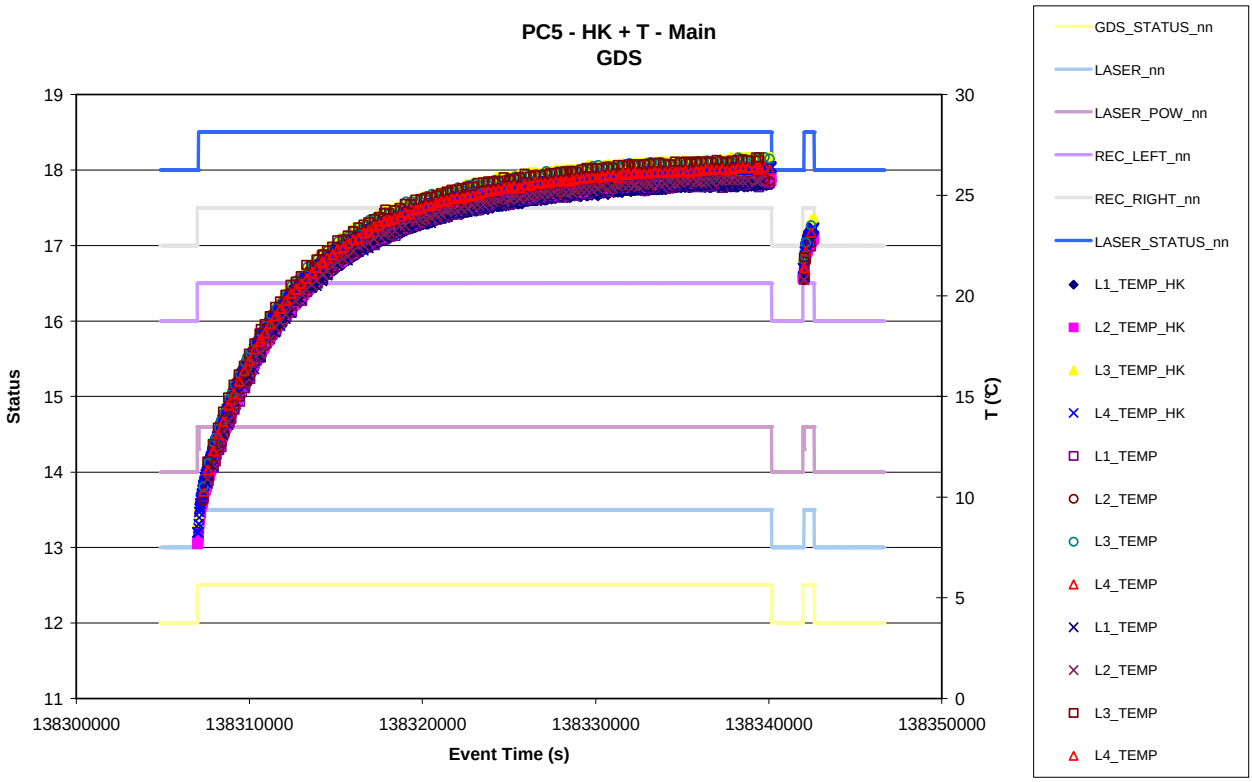


Figure 7.3-4. GDS Laser Monitor vs. time (HK, HK-SCI, SCI) - Main

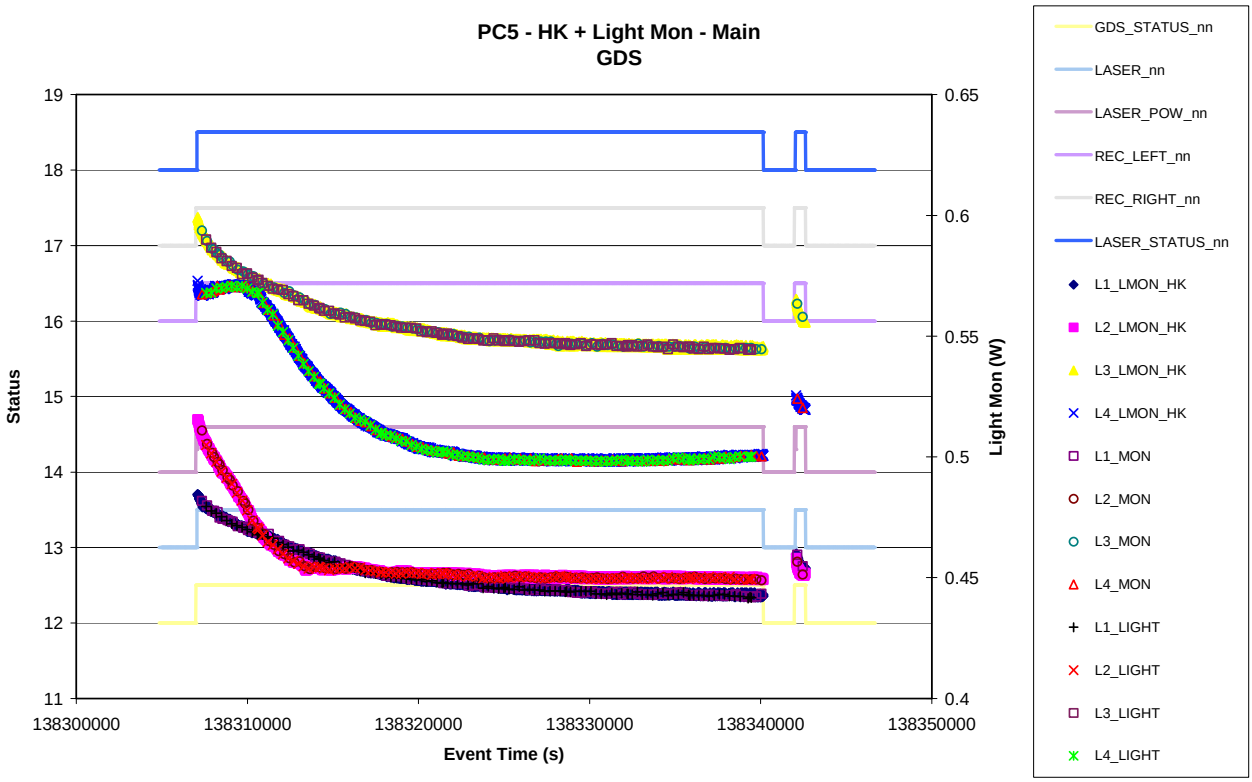


Figure 7.3-5. Laser 1 Light Monitor versus Temperature (HK, HK-SCI, SCI) - Main

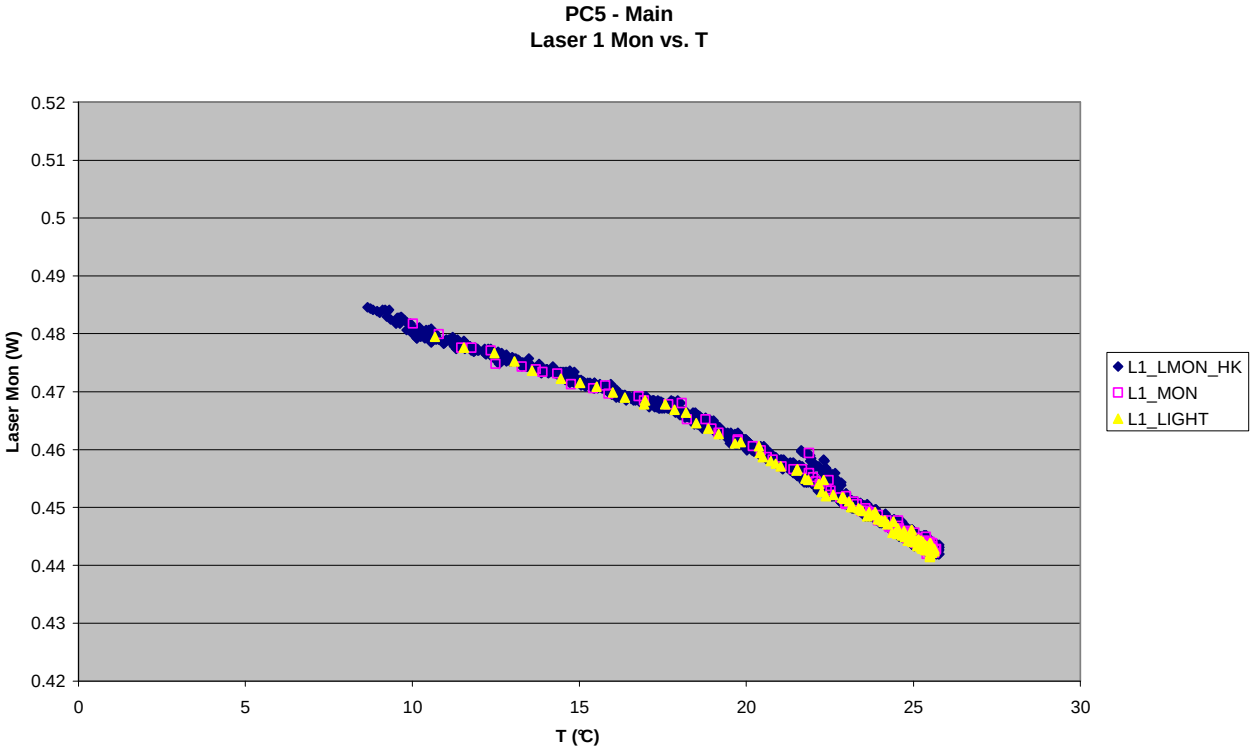


Figure 7.3-6. Laser 2 Light Monitor versus Temperature (HK, HK-SCI, SCI) - Main

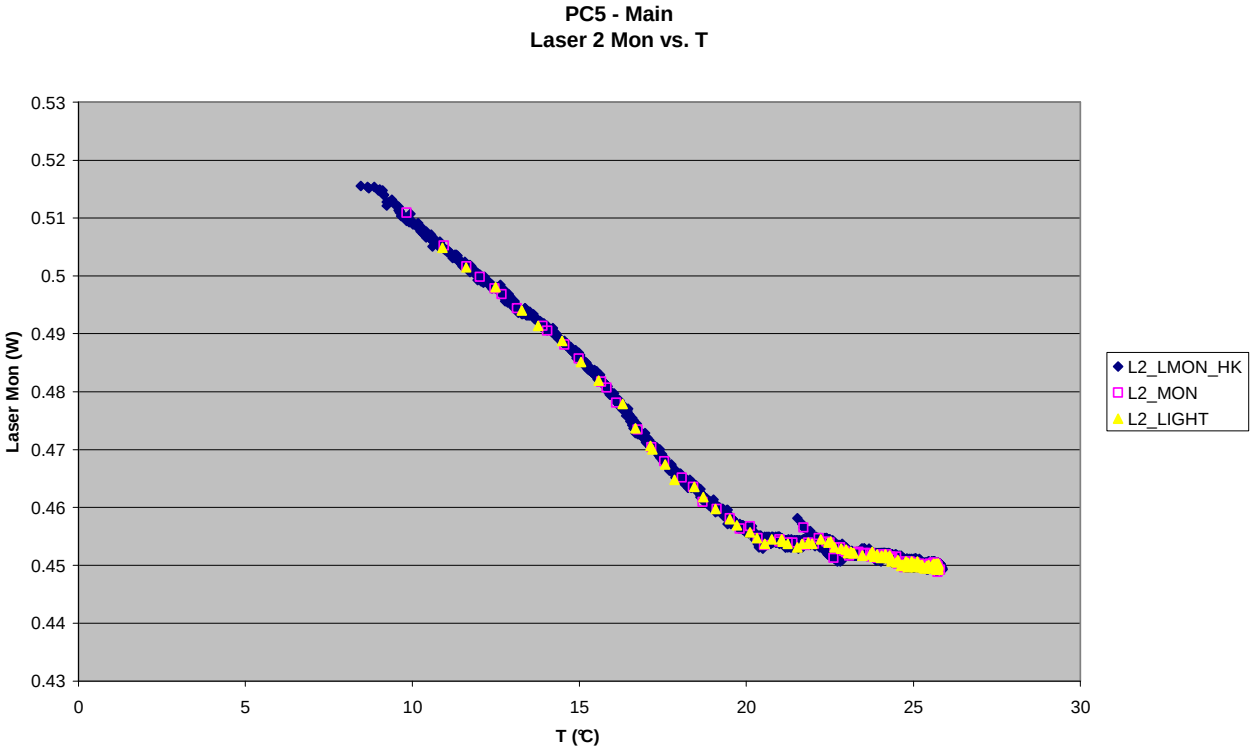


Figure 7.3-7. Laser 3 Light Monitor versus Temperature (HK, HK-SCI, SCI) - Main

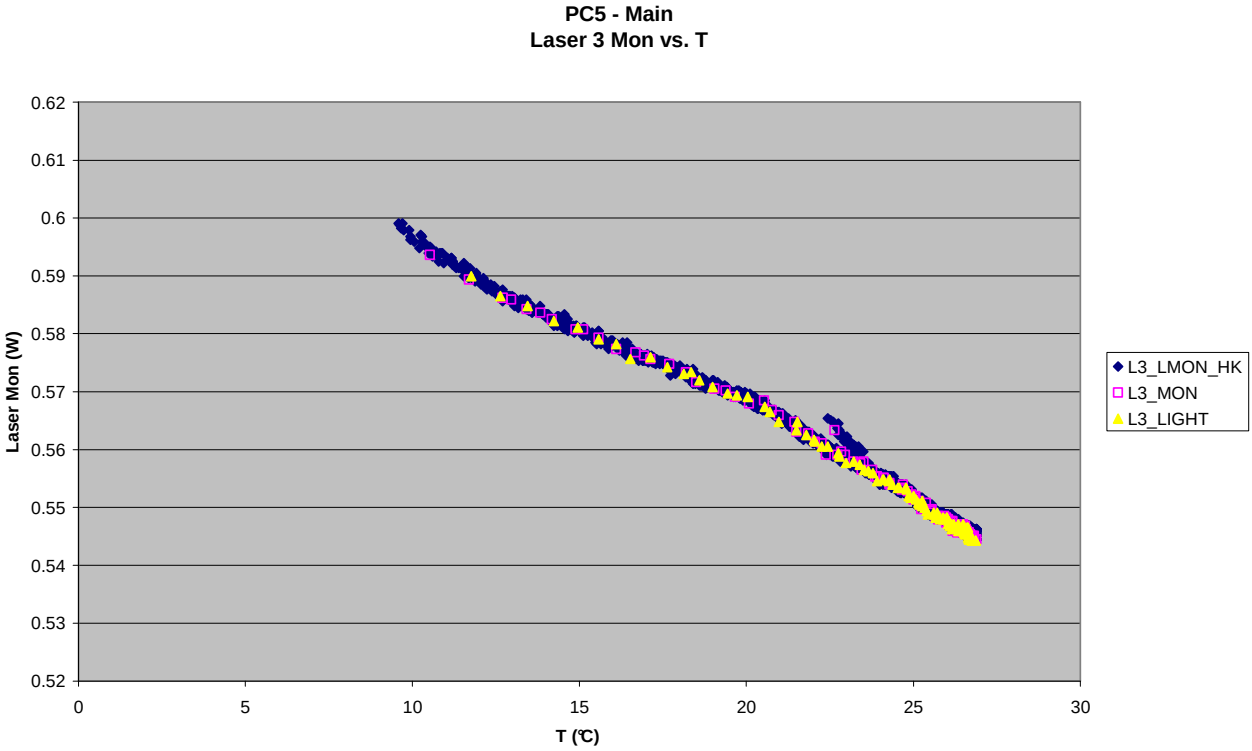
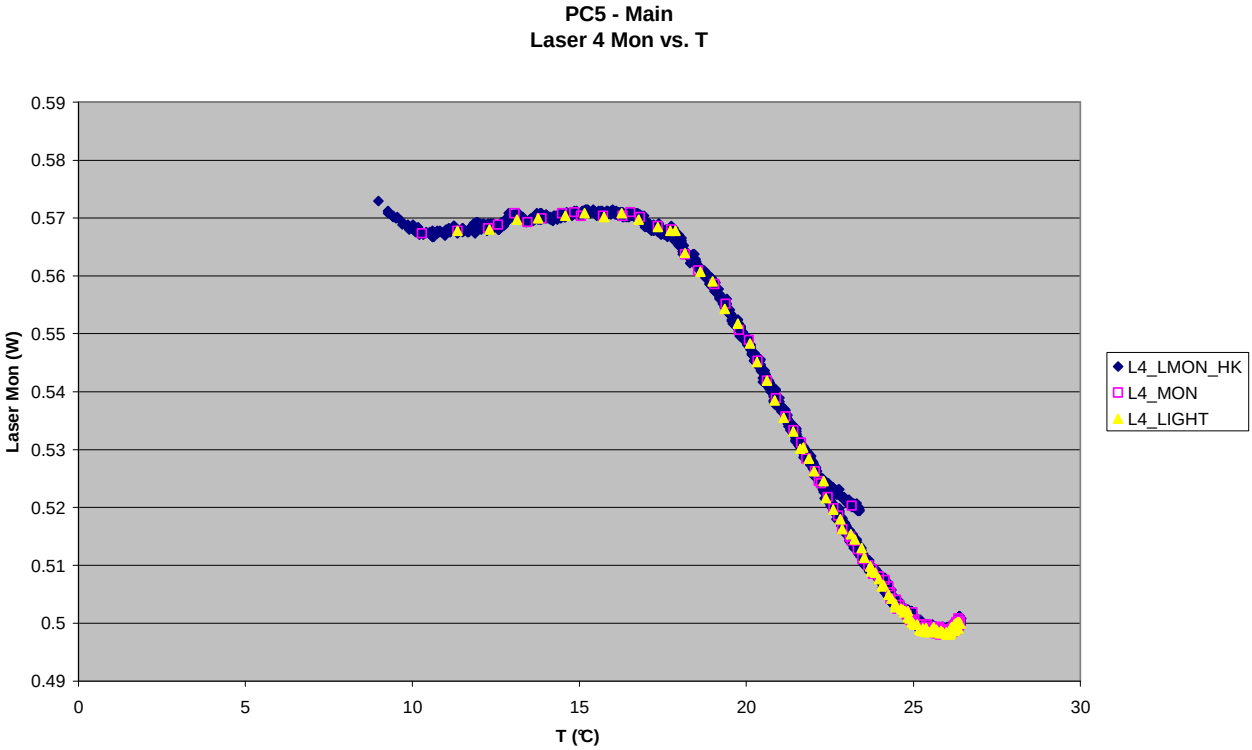


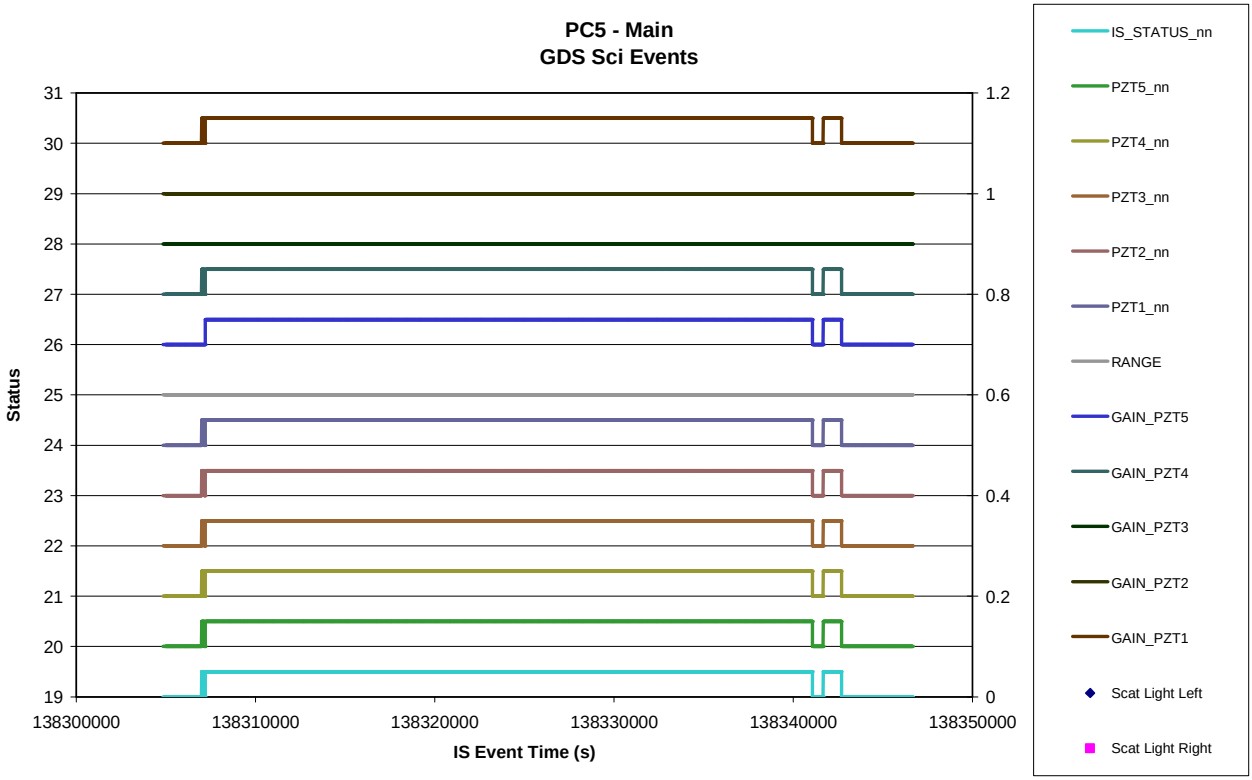
Figure 7.3-8. Laser 4 Light Monitor versus Temperature (HK, HK-SCI, SCI) - Main



7.3.2 GDS – Behaviour

7.3.2.1 Science Events

Figure 7.3-9. GDS Left and Right SCI events vs. time - Main

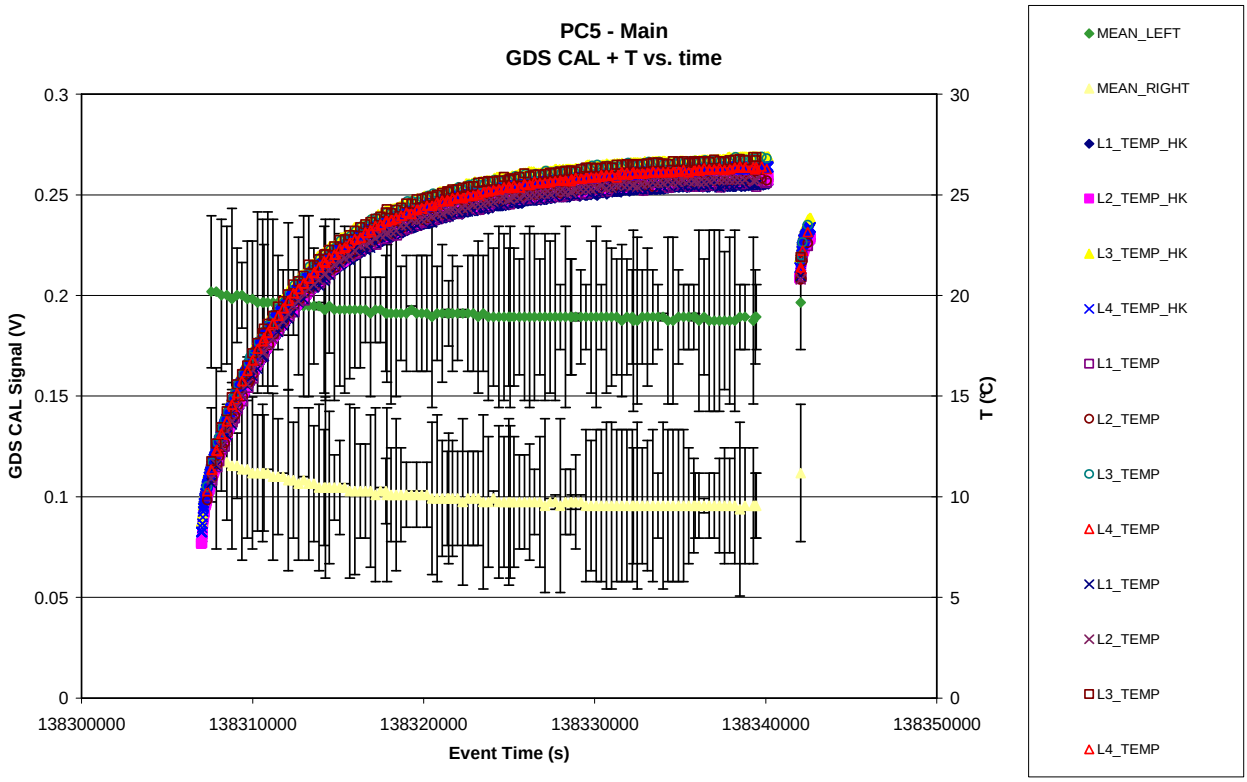


7.3.2.2 Event Rates

Not applicable

7.3.2.3 CAL

Figure 7.3-10. Evolution of GDS CAL Left and Right signals (and T) vs. time (Main)



7.4 IMPACT SENSOR (IS)

7.4.1 IS – Status

Figure 7.4-1. IS Operation Status vs. time - Main

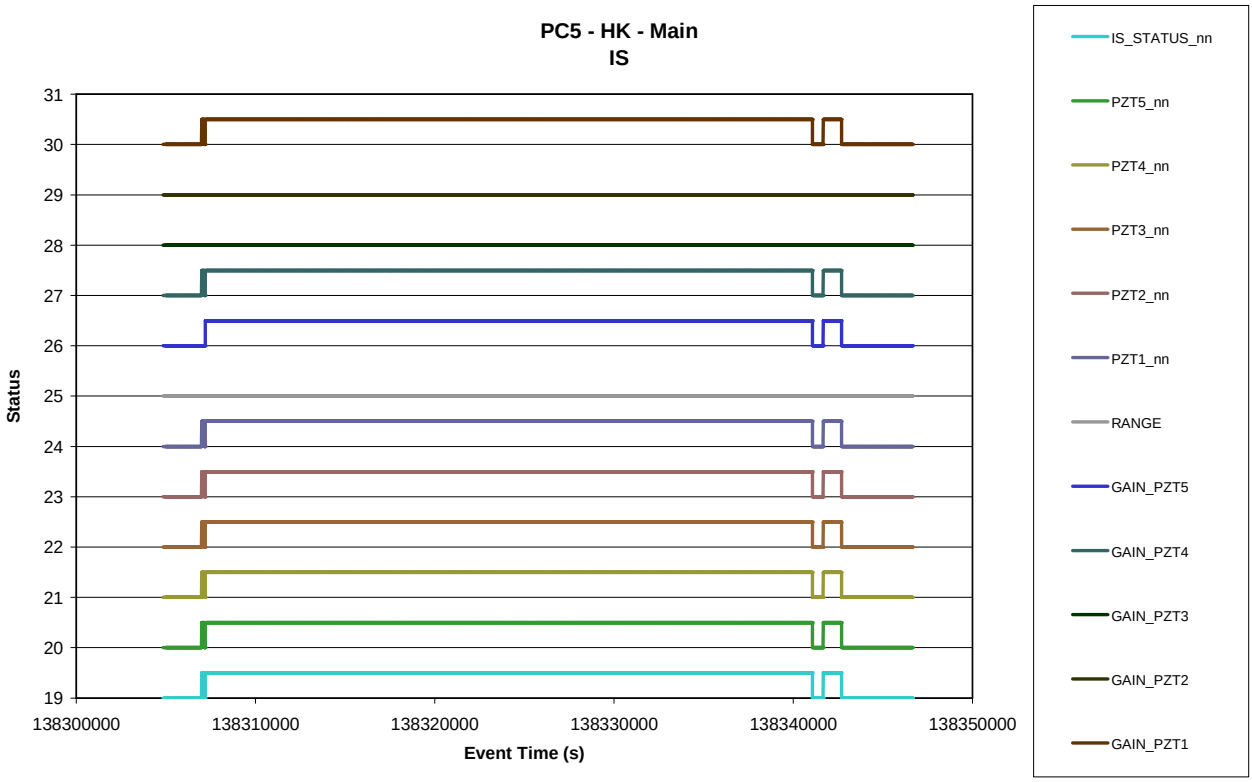


Figure 7.4-2. IS PZT 3 Thresholds change vs. time - Main

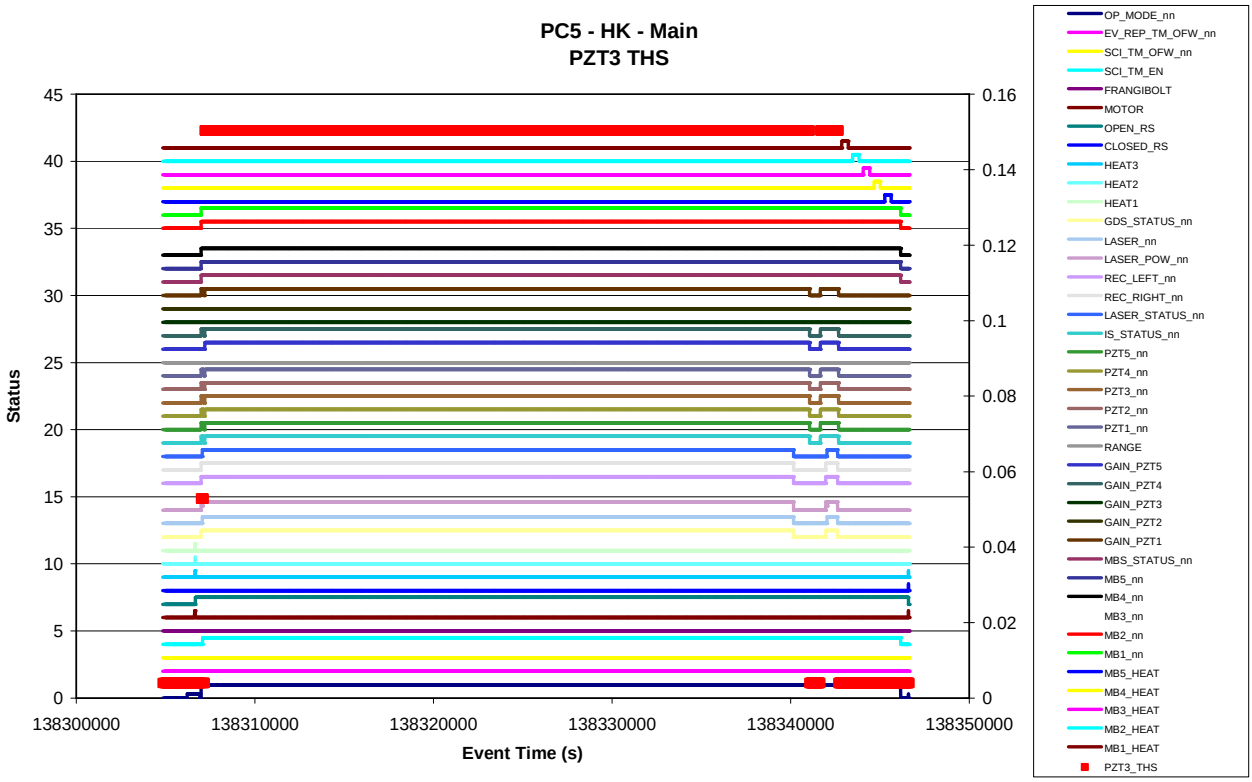


Figure 7.4-3. IS PZT 5 Thresholds change vs. time - Main

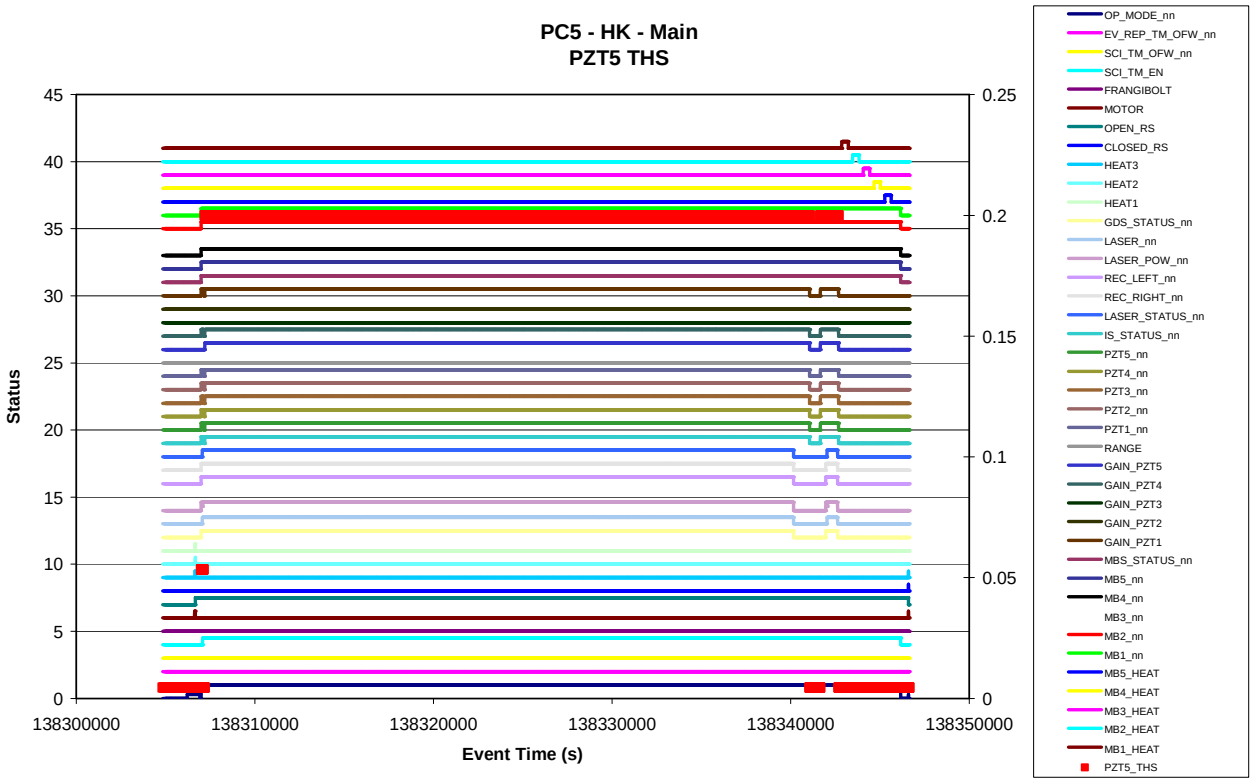
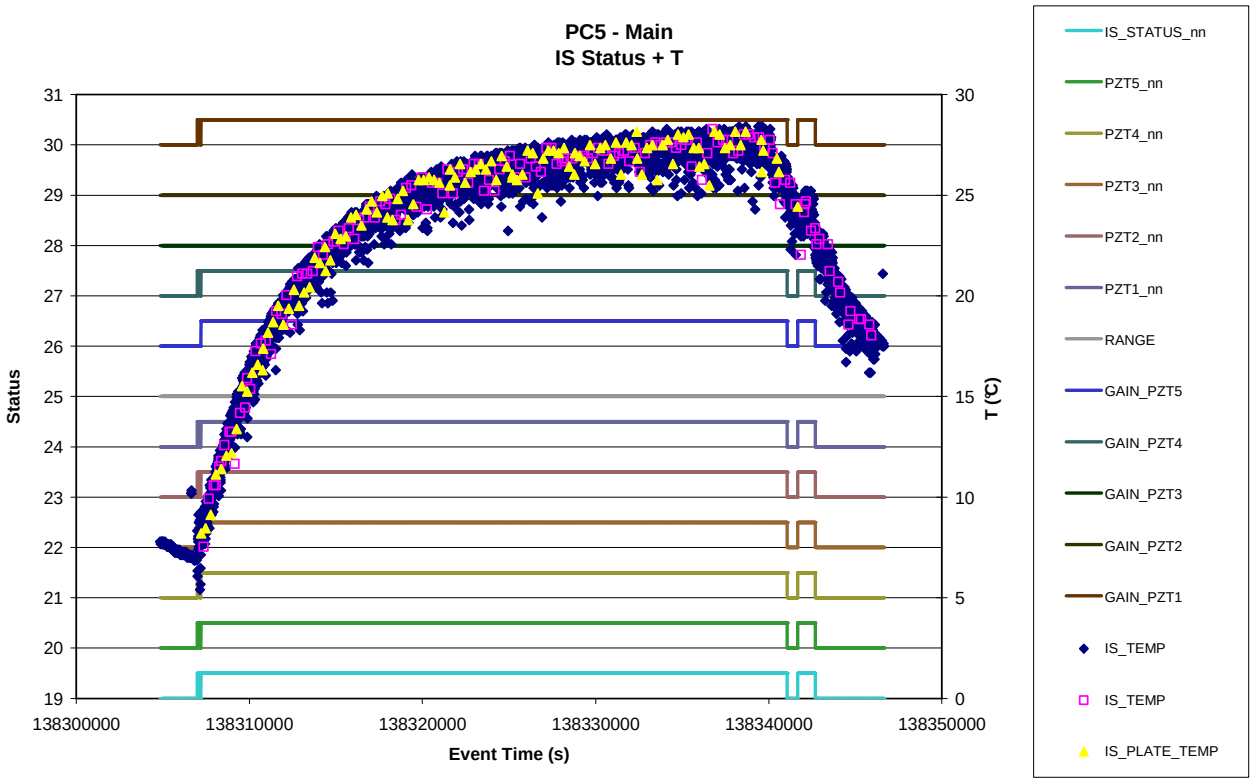


Figure 7.4-4. IS Temperature vs. time (HK, HK-SCI, SCI) - Main



7.4.2 IS – Behaviour

7.4.2.1 Science Events

Figure 7.4-5. All PZT Events (det and non-det) vs. time - Main

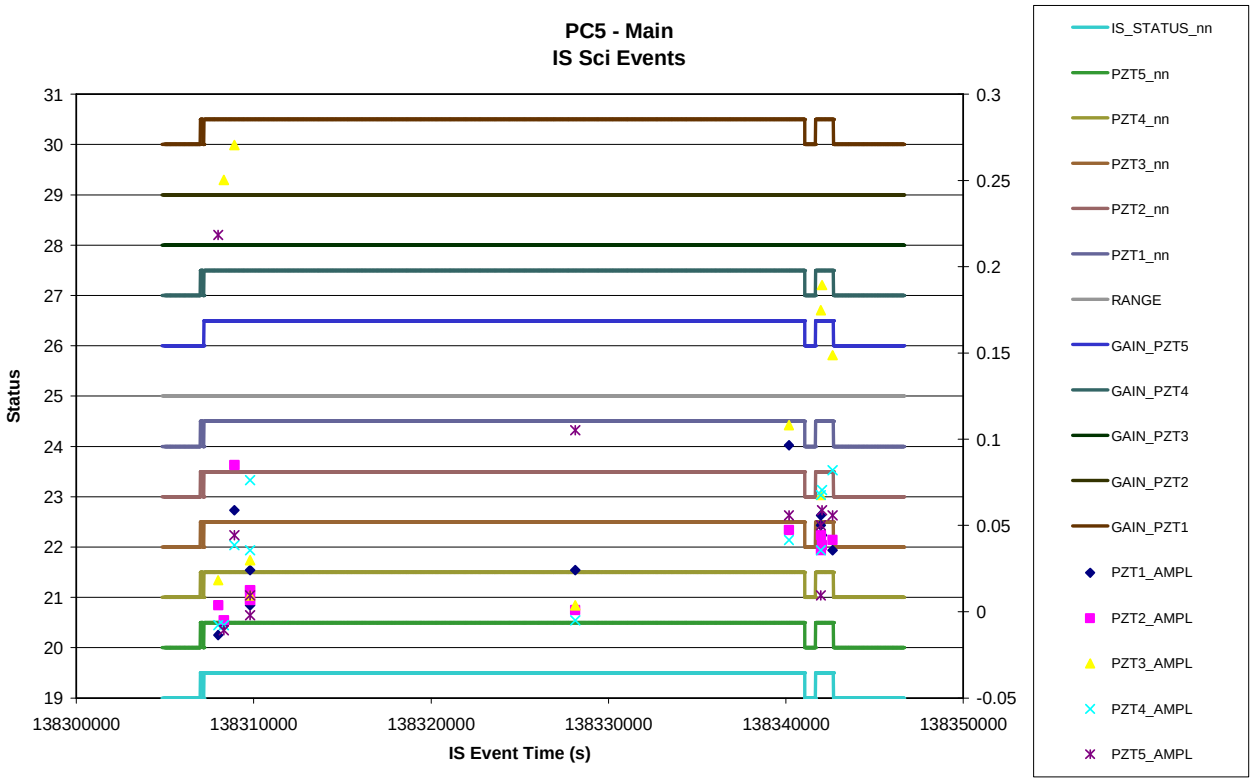


Figure 7.4-6. PZT 1-2-3-4-5 Detected Events vs. time - Main

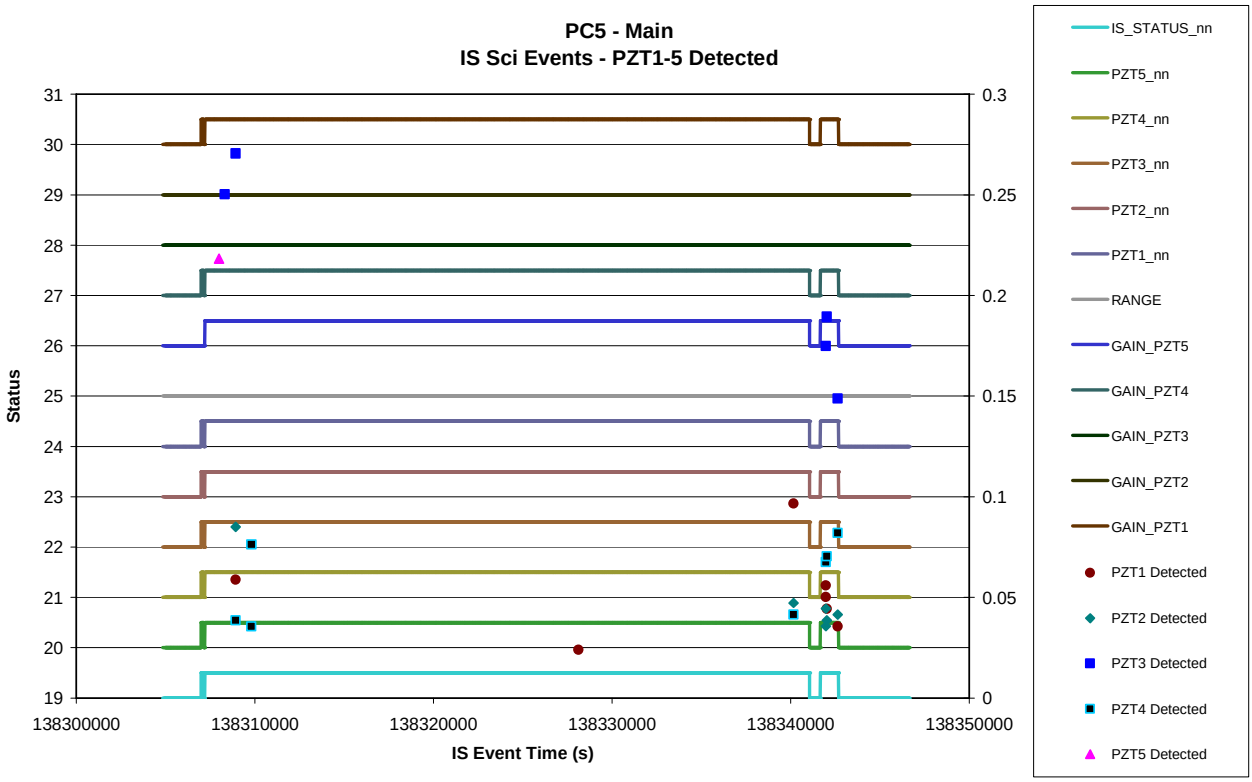


Figure 7.4-7. PZT 1 Detected Events vs. time - Main

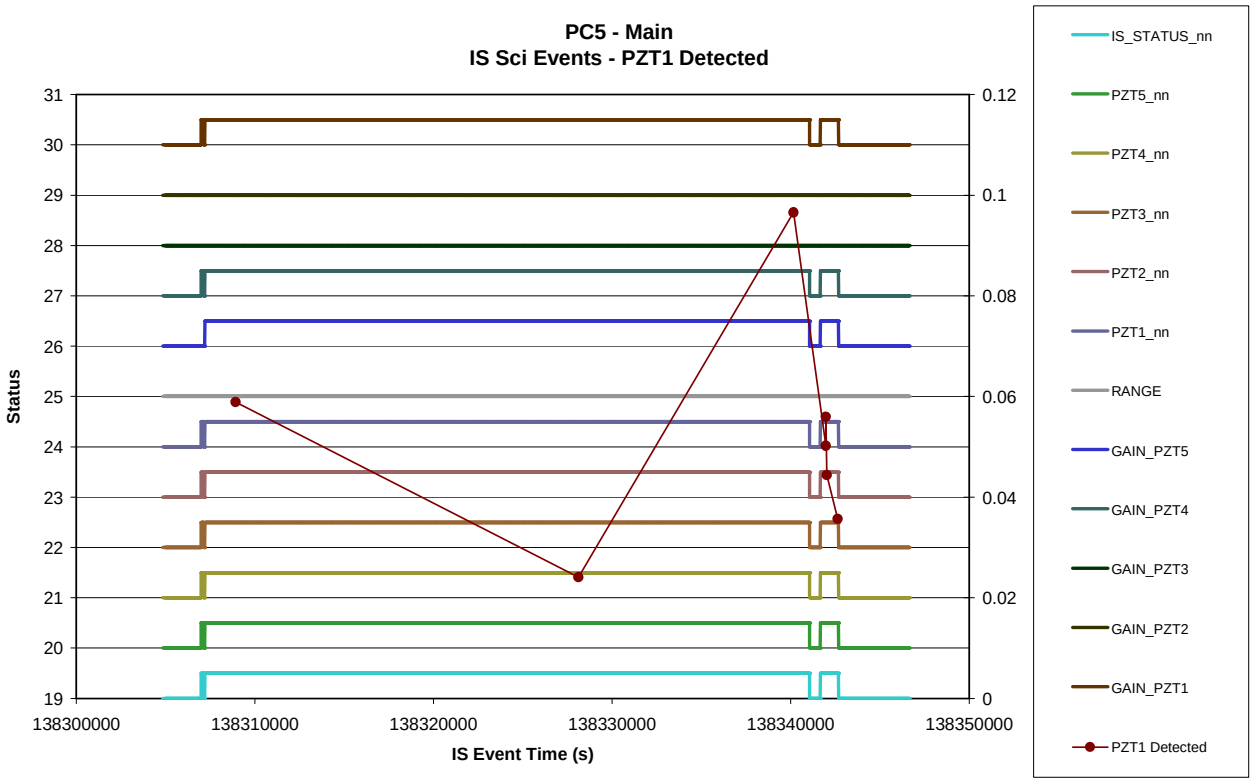


Figure 7.4-8. PZT 2 Detected Events vs. time - Main

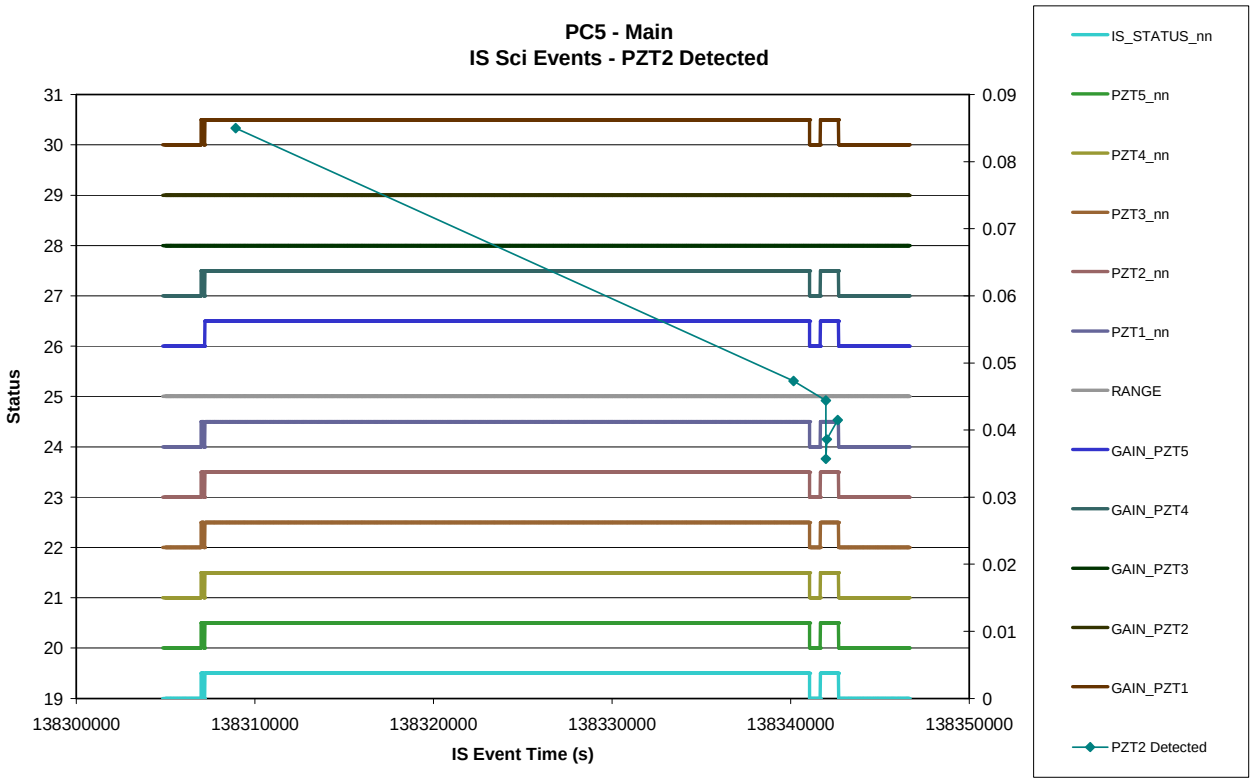


Figure 7.4-9. PZT 3 Detected Events vs. time - Main

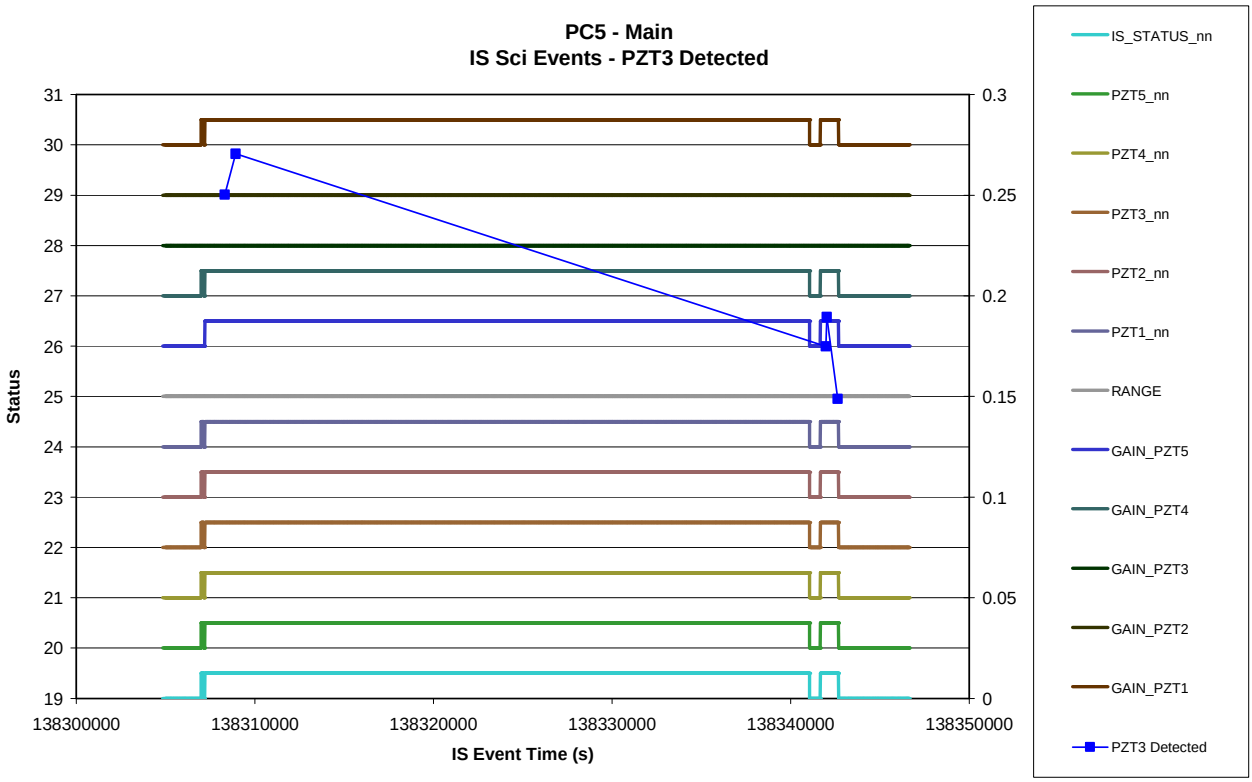


Figure 7.4-10. PZT 4 Detected Events vs. time - Main

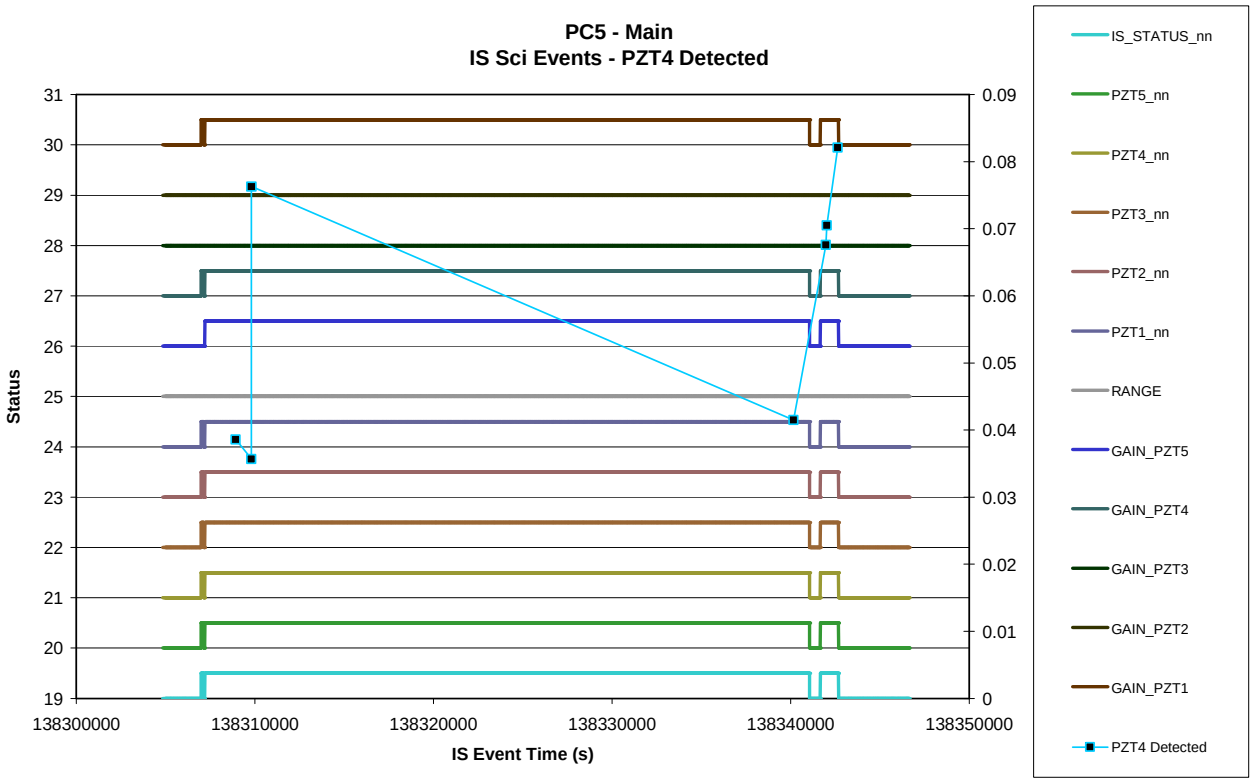


Figure 7.4-11. PZT 5 Detected Events vs. time - Main

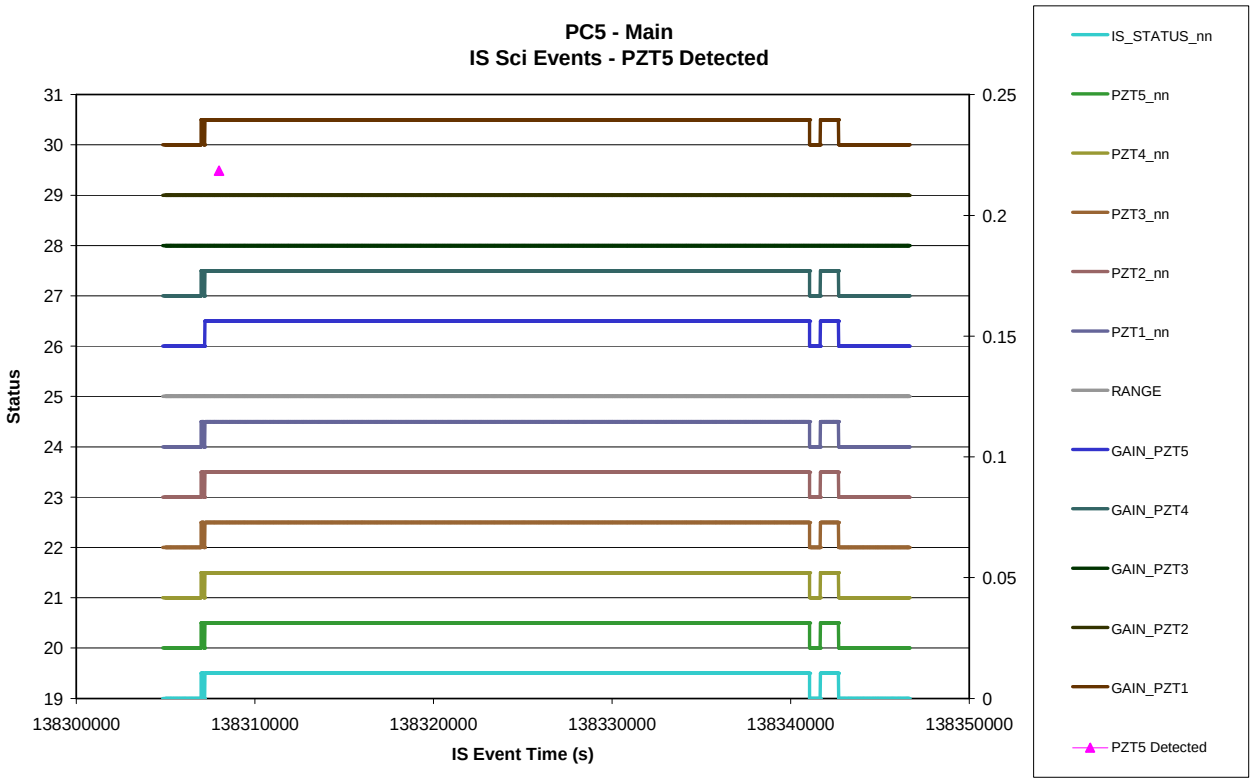
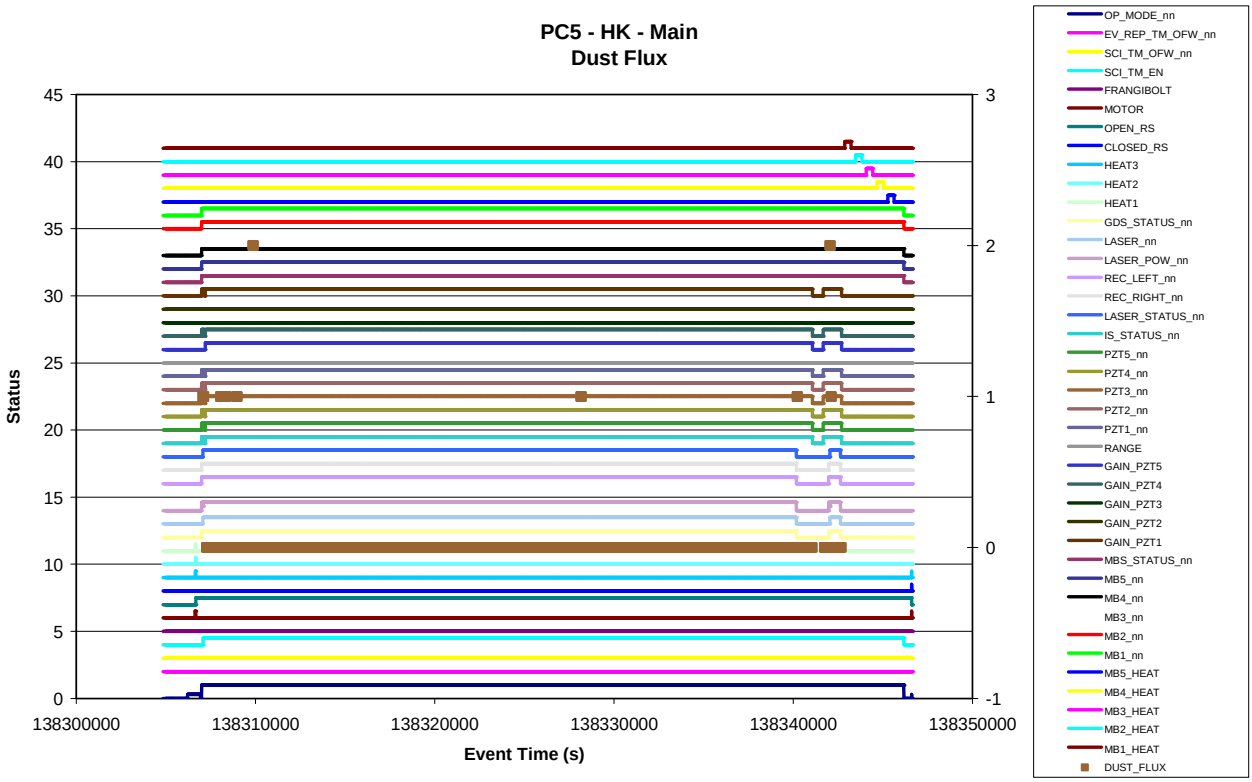


Figure 7.4-12. Dust Flux vs. time - Main



7.4.2.2 Event Rates

Not applicable

7.4.2.3 CAL

Figure 7.4-13. PZT 1 Mean and St Dev. CAL vs. time - Main

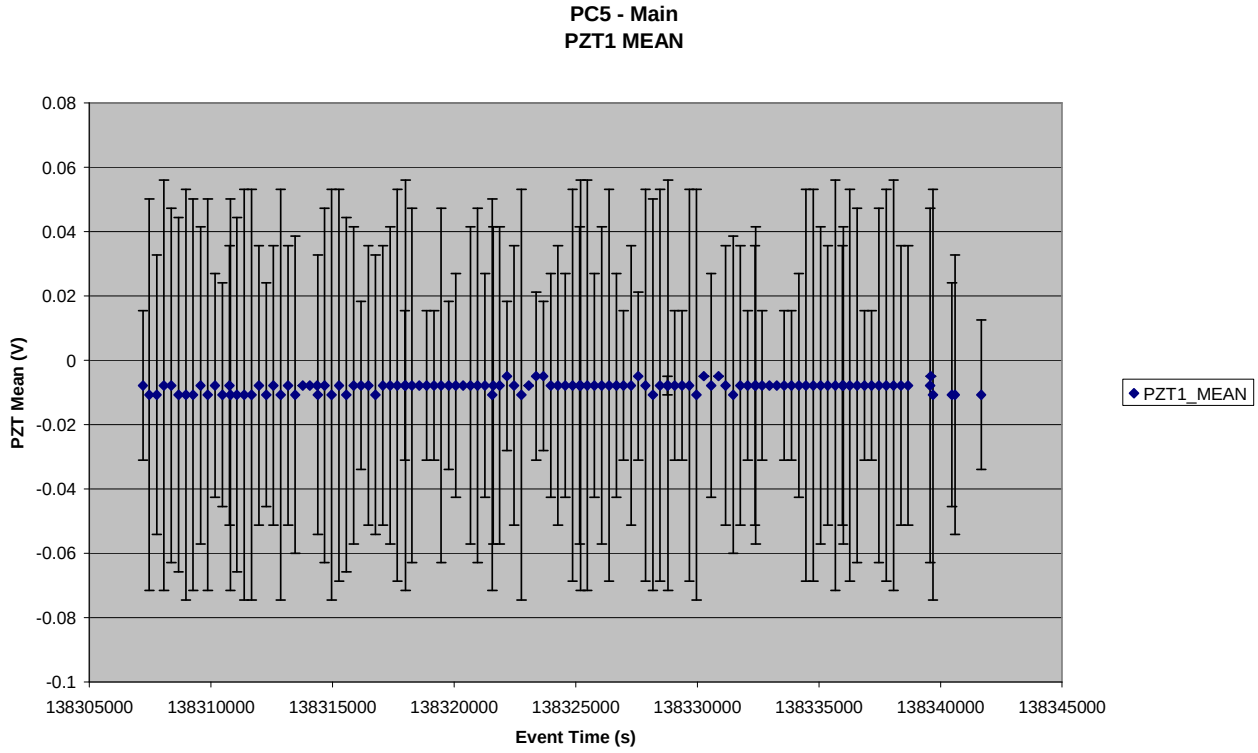


Figure 7.4-14. PZT 2 Mean and St Dev. CAL vs. time - Main

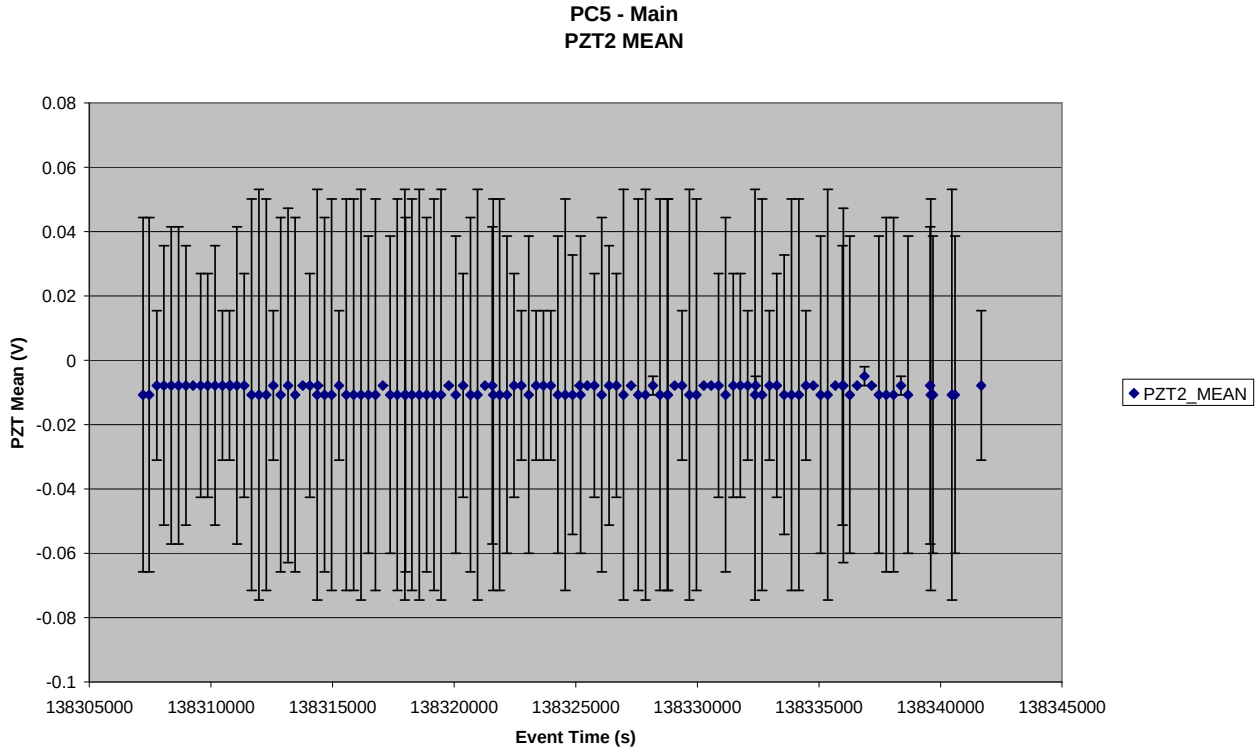


Figure 7.4-15. PZT 3 Mean and St Dev. CAL vs. time - Main

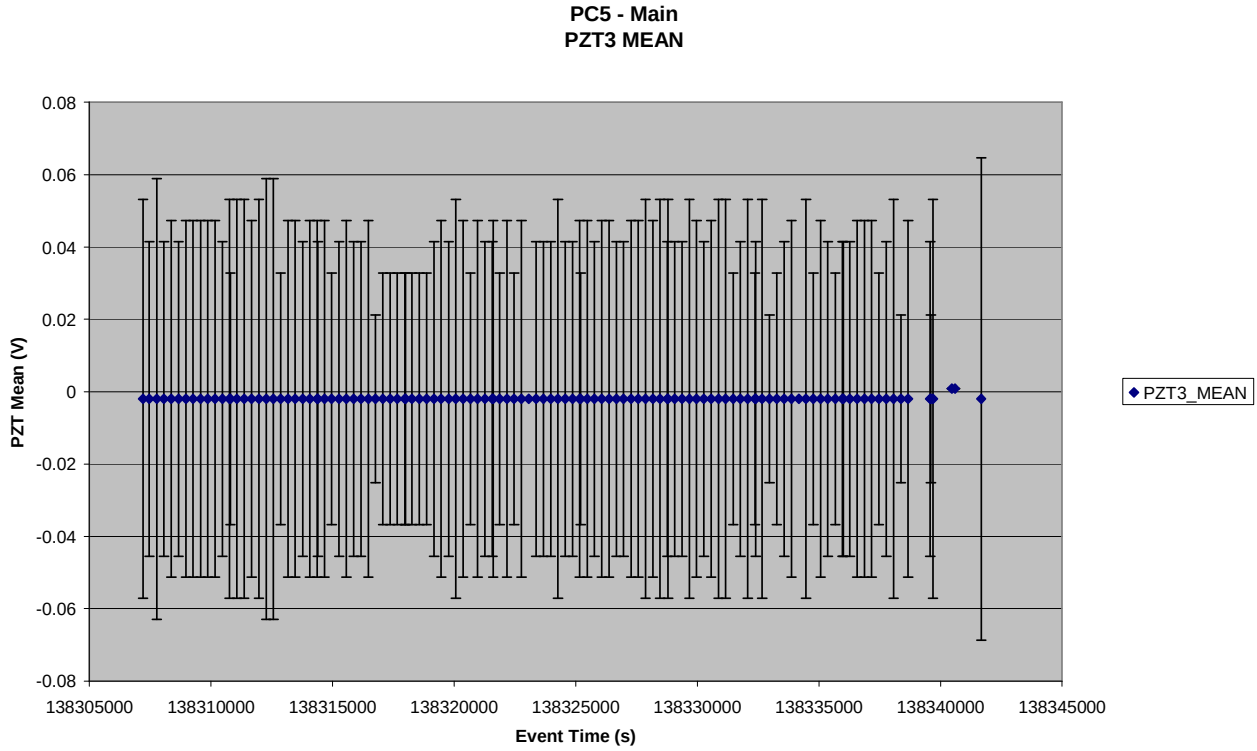


Figure 7.4-16. PZT 4 Mean and St Dev. CAL vs. time - Main

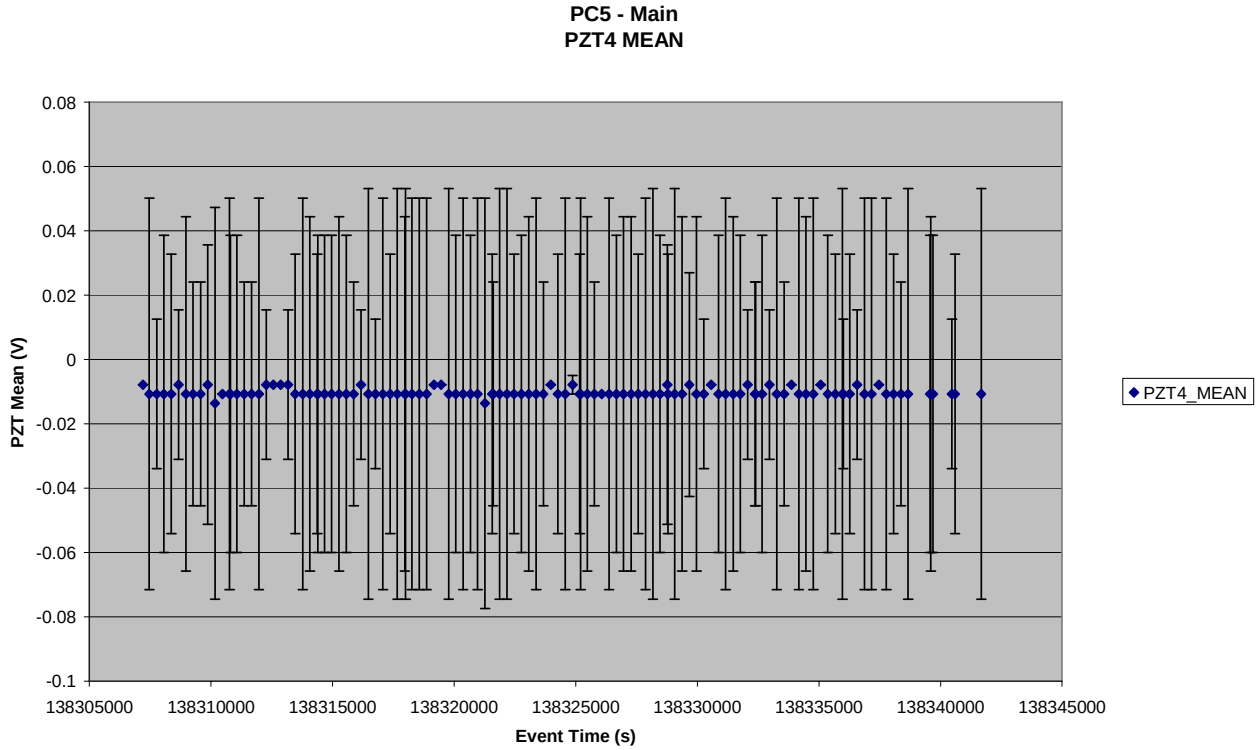


Figure 7.4-17. PZT 5 Mean and St Dev. CAL vs. time - Main

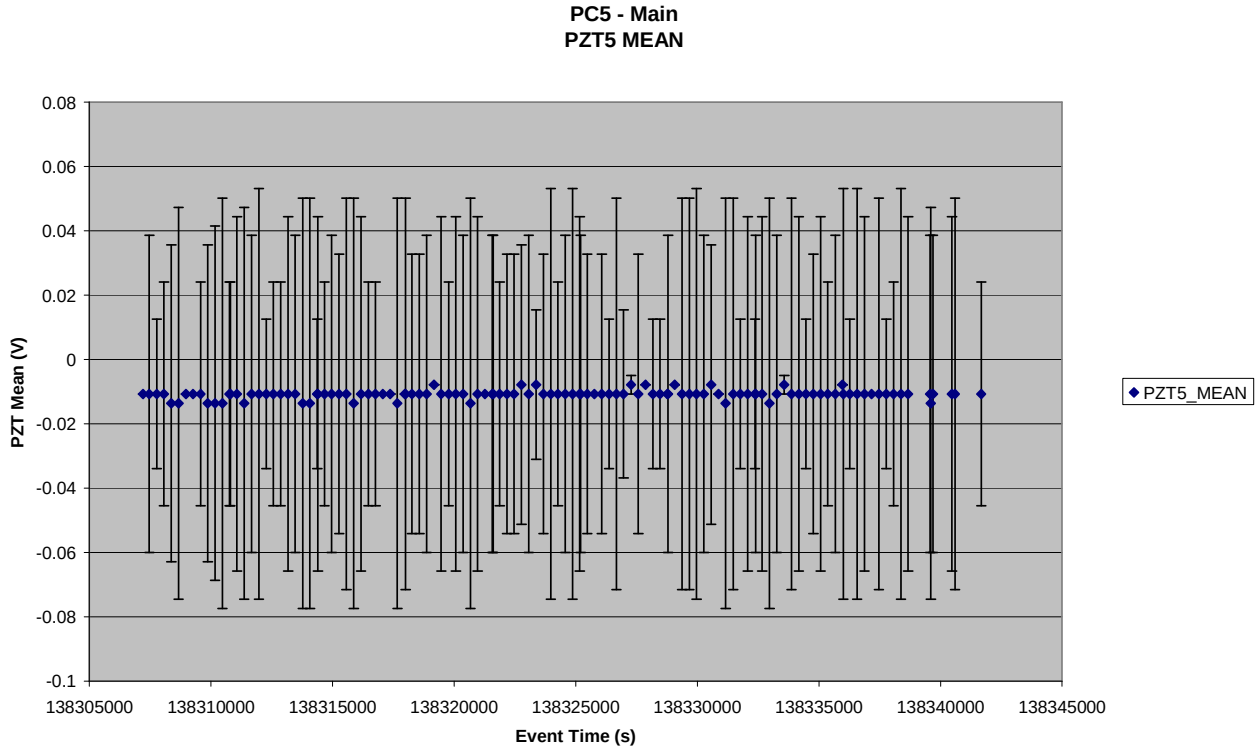


Figure 7.4-18. Reference Voltages for IS calibration vs. time - Main

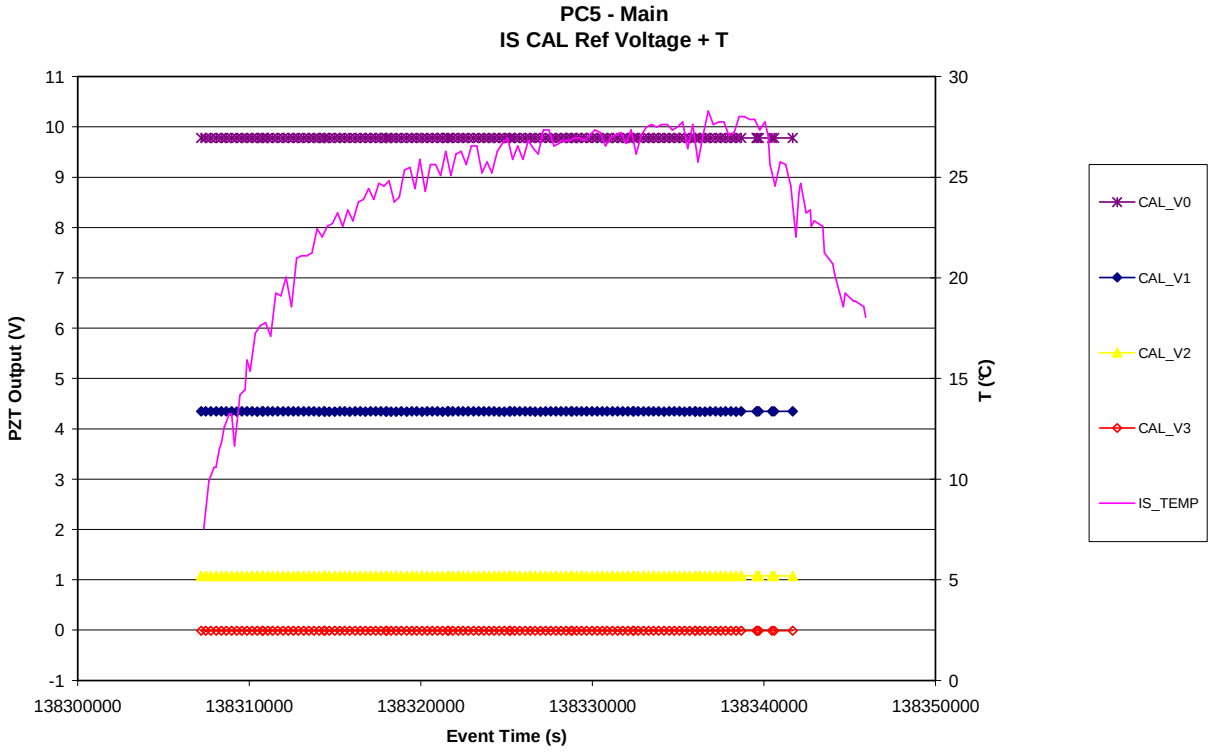


Figure 7.4-19. PZT 1 CAL Signal vs. time - Main

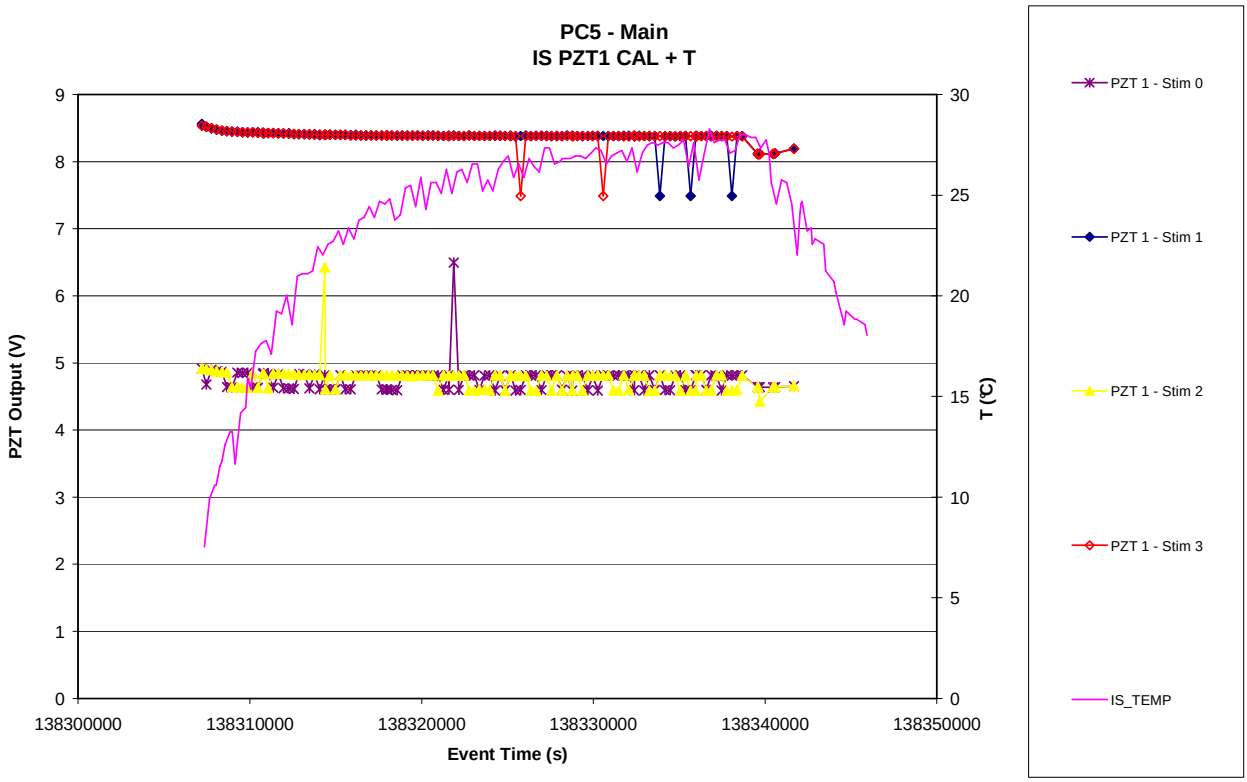


Figure 7.4-20. PZT 2 CAL Signal vs. time - Main

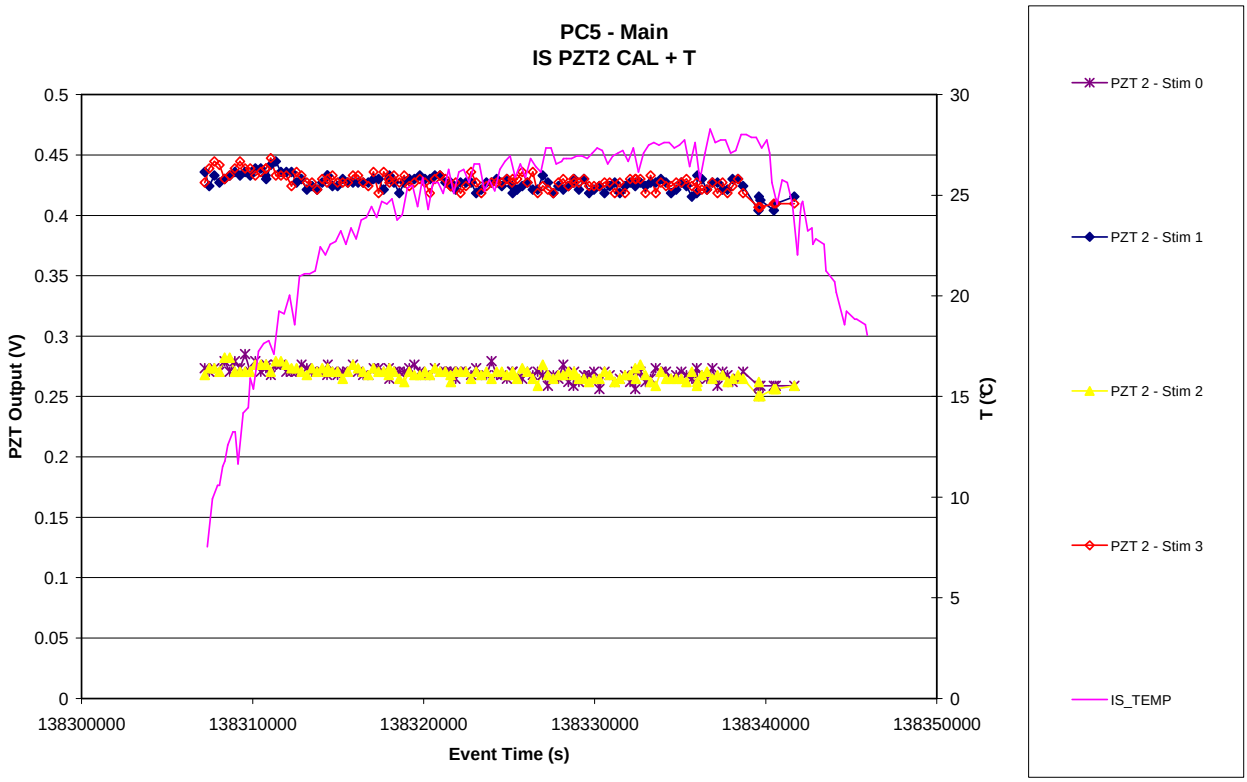


Figure 7.4-21. PZT 3 CAL Signal vs. time - Main

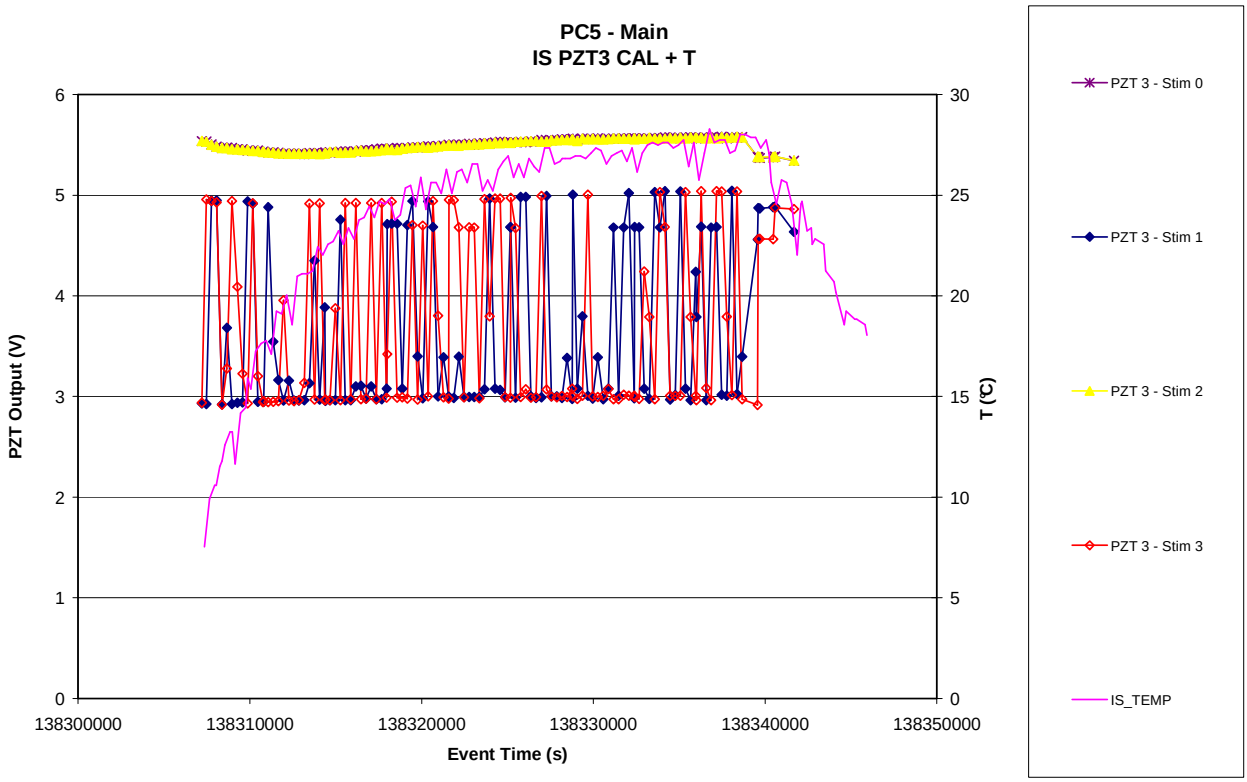


Figure 7.4-22. PZT 4 CAL Signal vs. time - Main

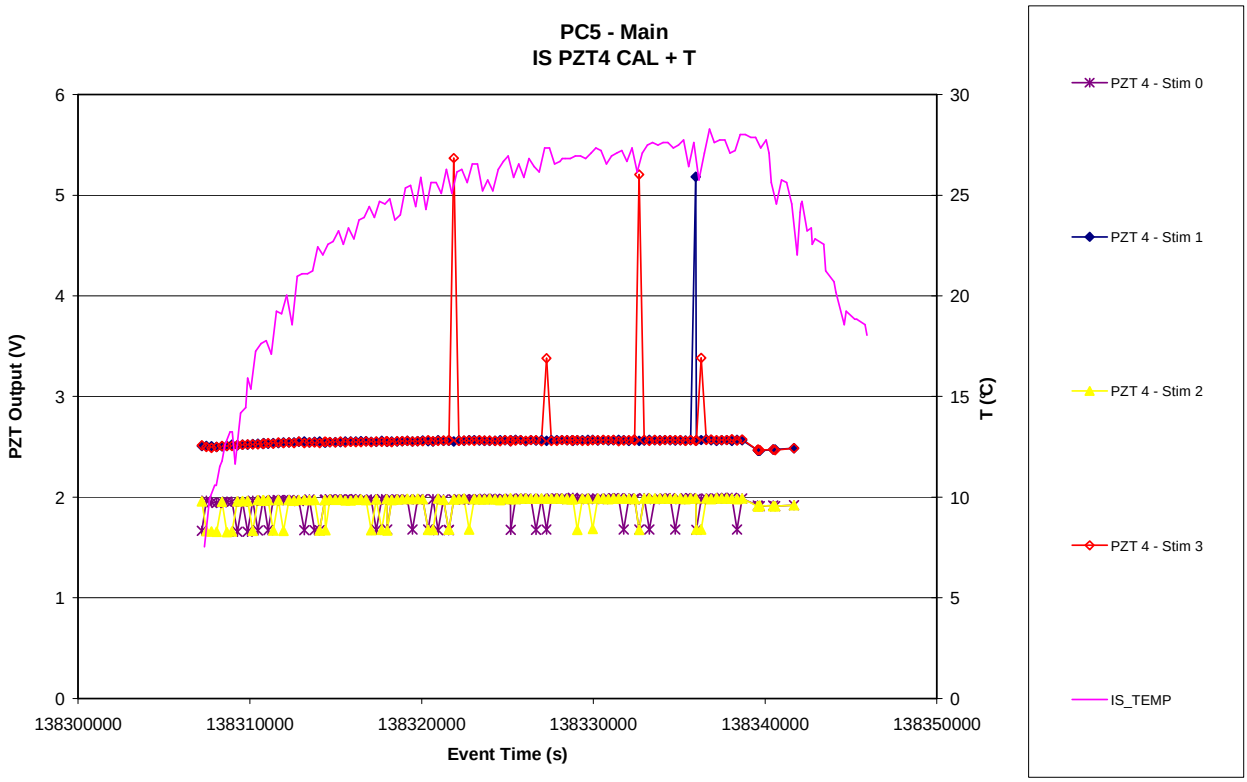


Figure 7.4-23. PZT 5 CAL Signal vs. time - Main

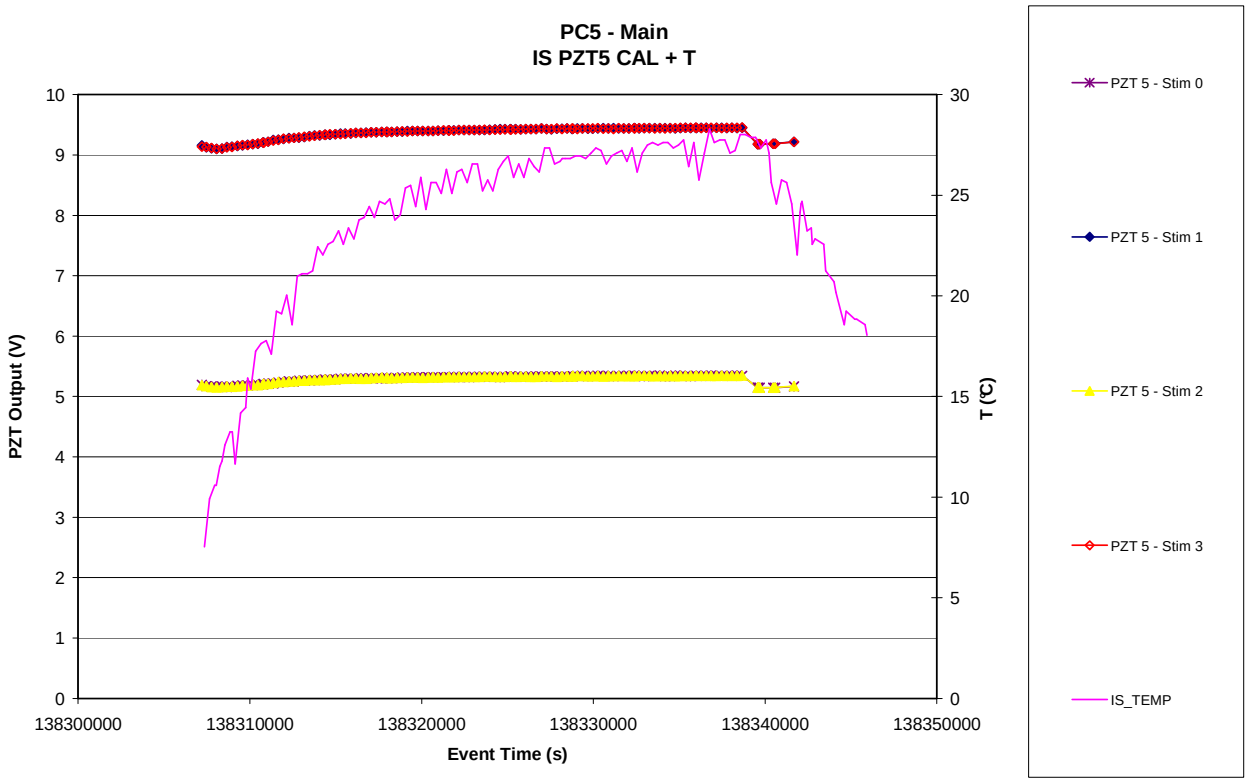


Figure 7.4-24. PZT 1 CAL Time delay vs. time - Main

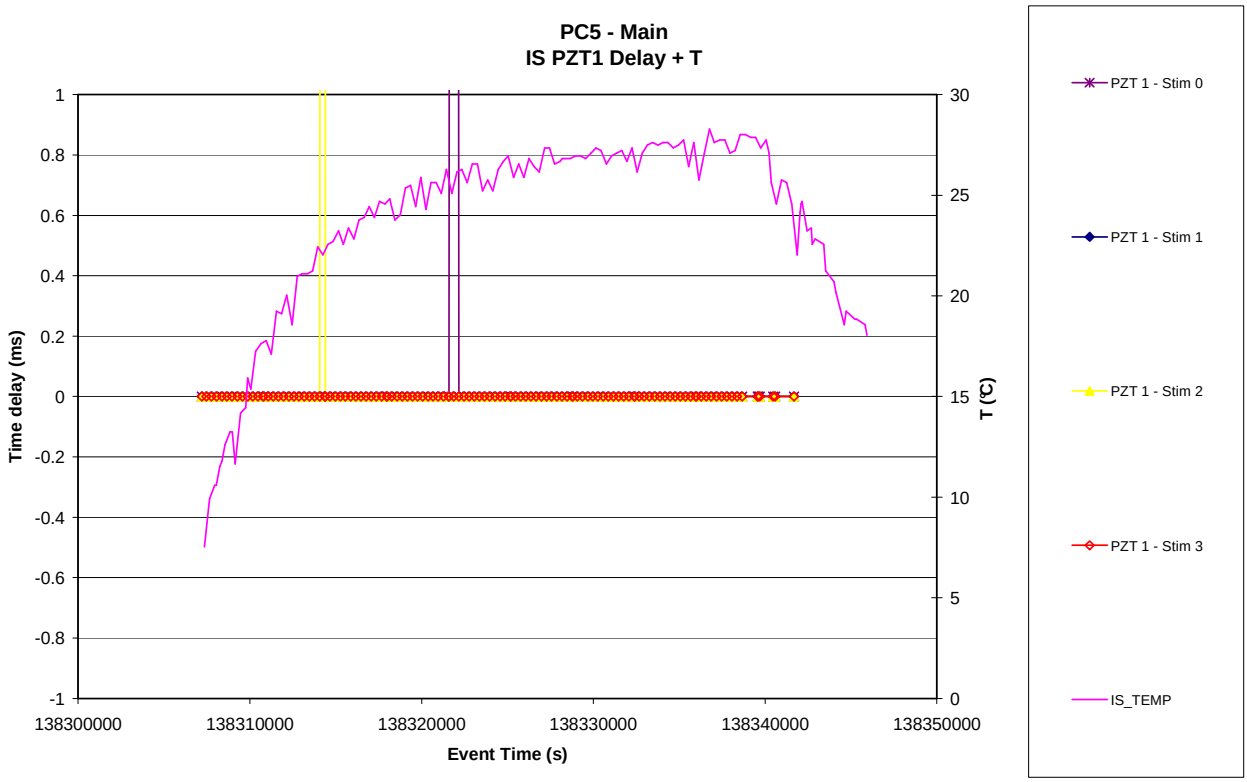


Figure 7.4-25. PZT 2 CAL Time delay vs. time - Main

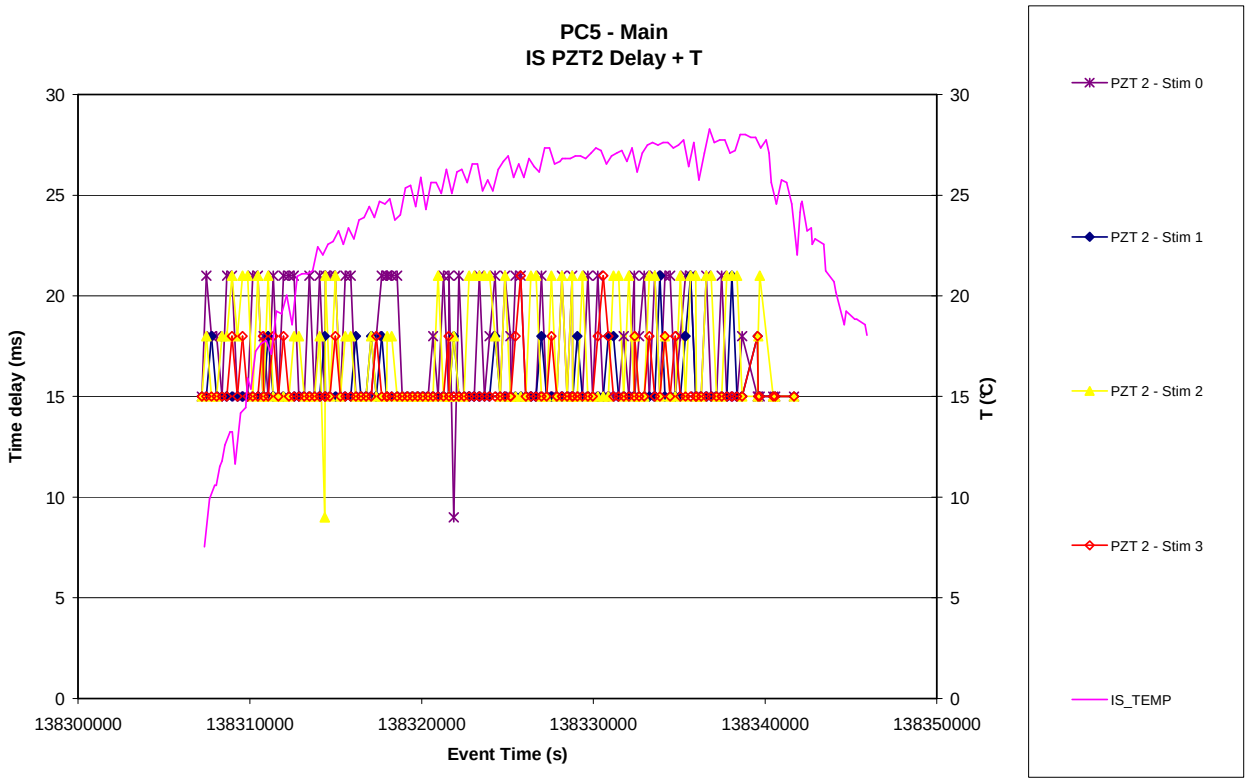


Figure 7.4-26. PZT 3 CAL Time delay vs. time - Main

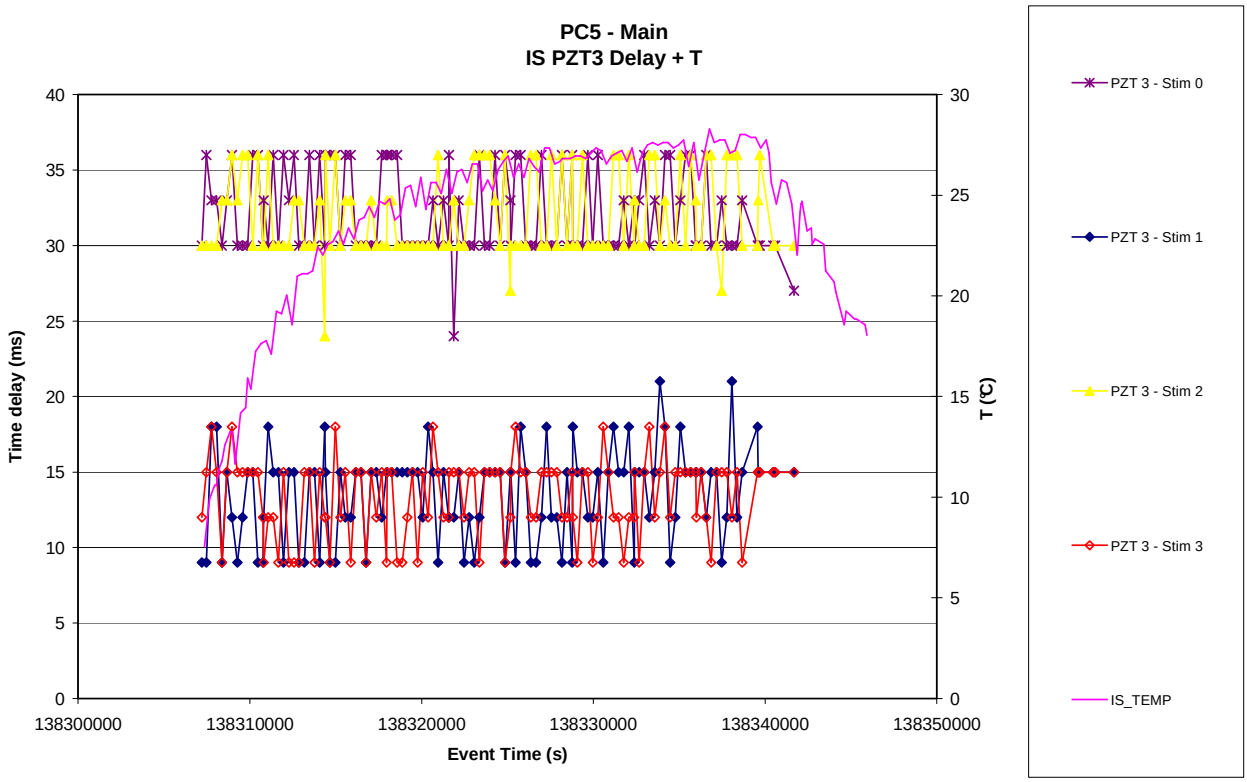


Figure 7.4-27. PZT 4 CAL Time delay vs. time - Main

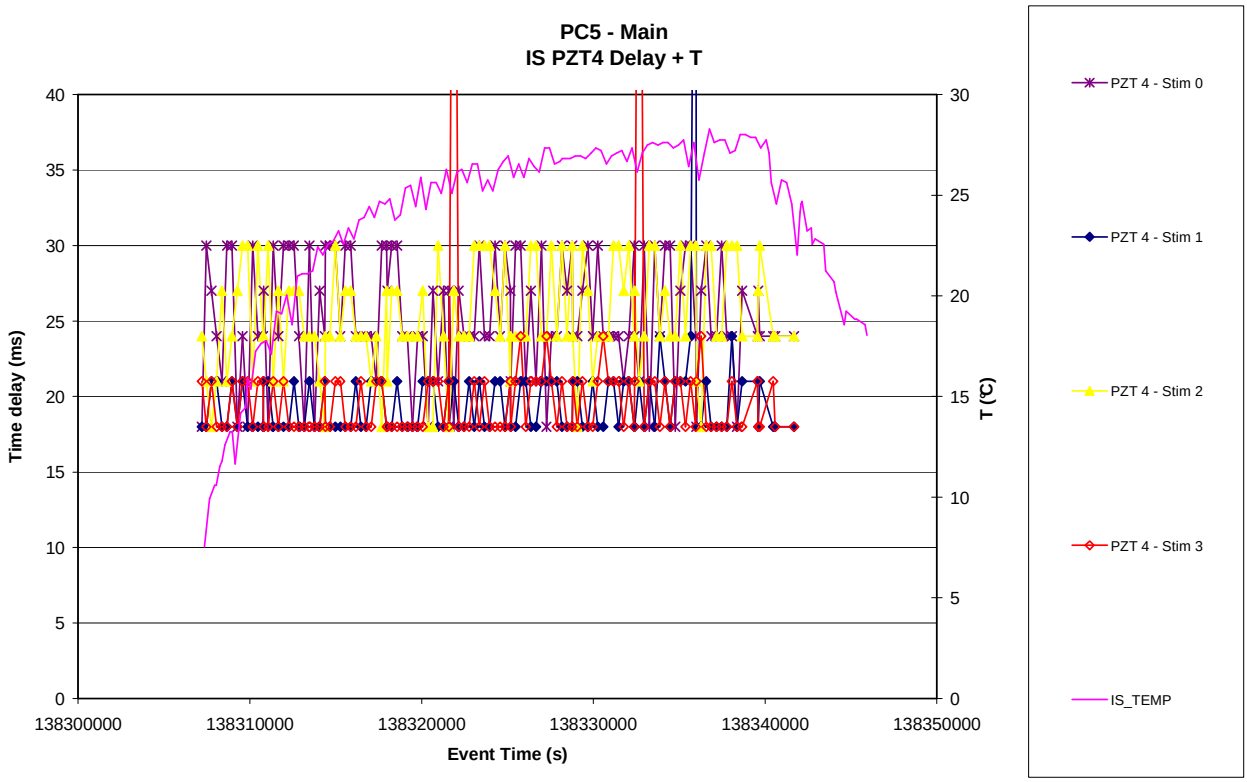


Figure 7.4-28. PZT 5 CAL Time delay vs. time - Main

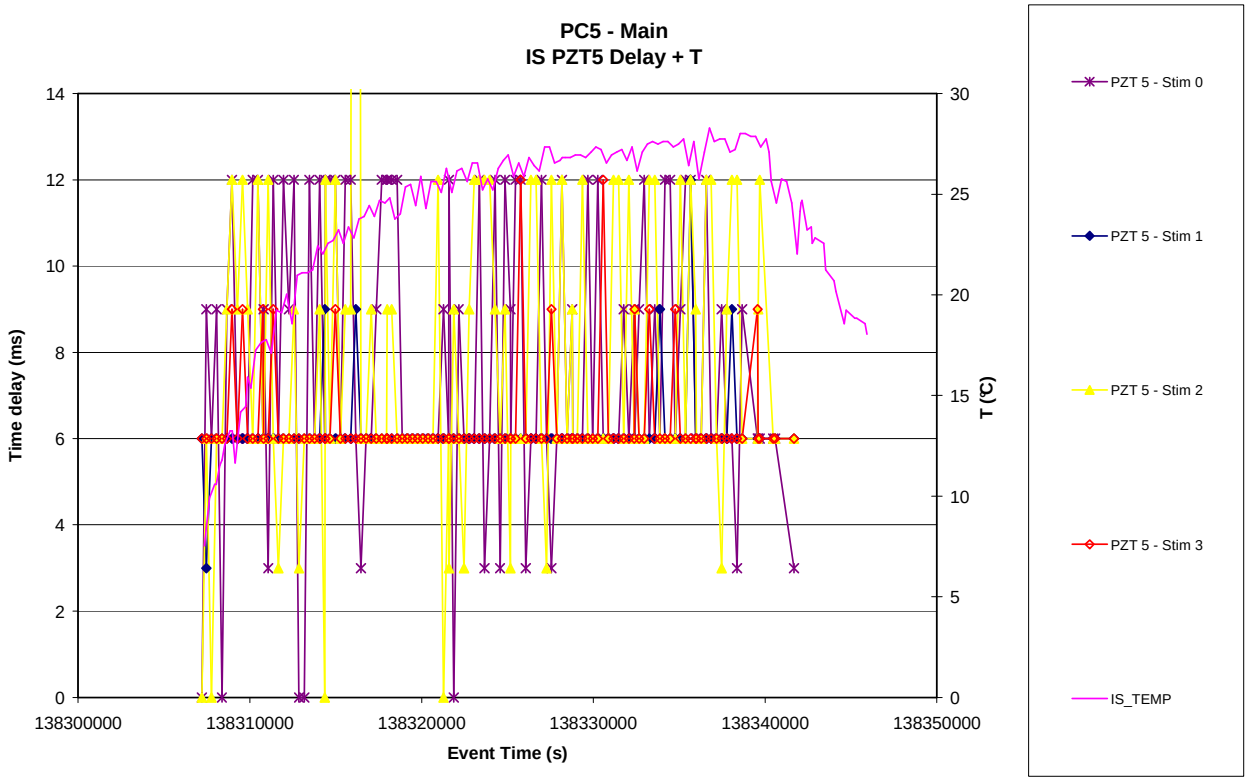


Figure 7.4-29. PZT 1 CAL Signal vs. stimulus – Main

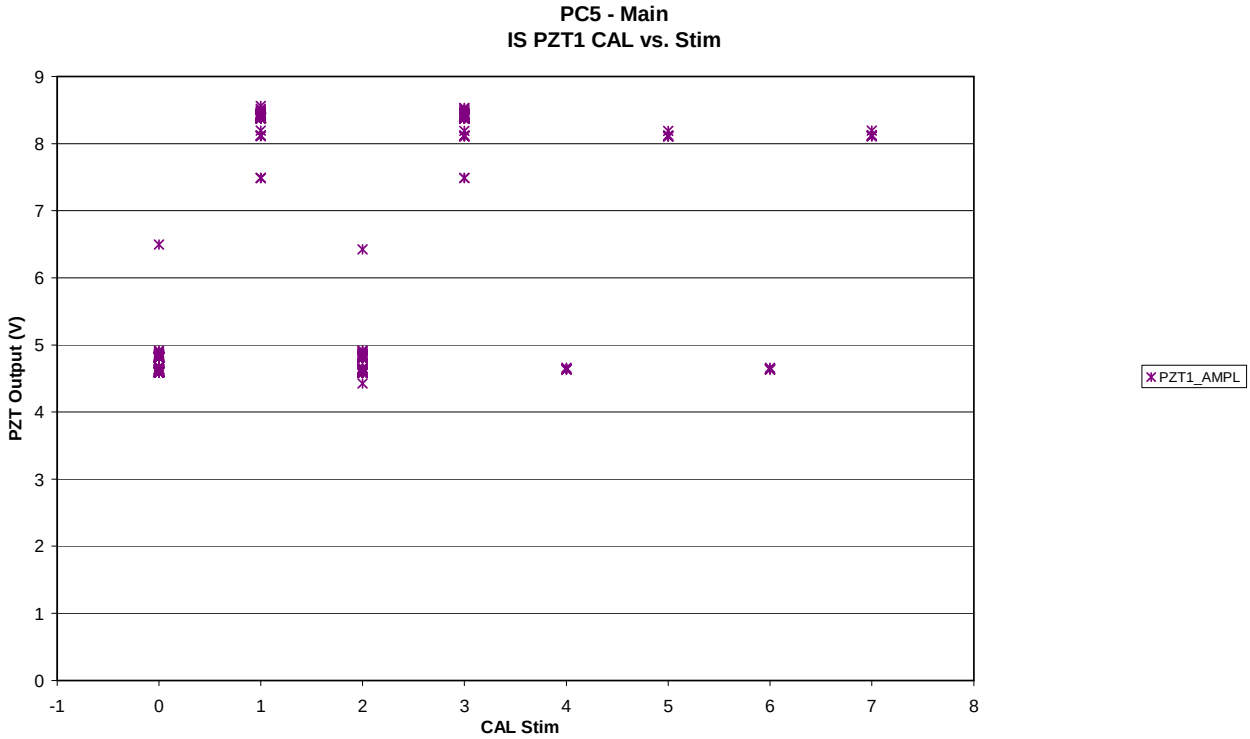


Figure 7.4-30. PZT 2 CAL Signal vs. stimulus – Main

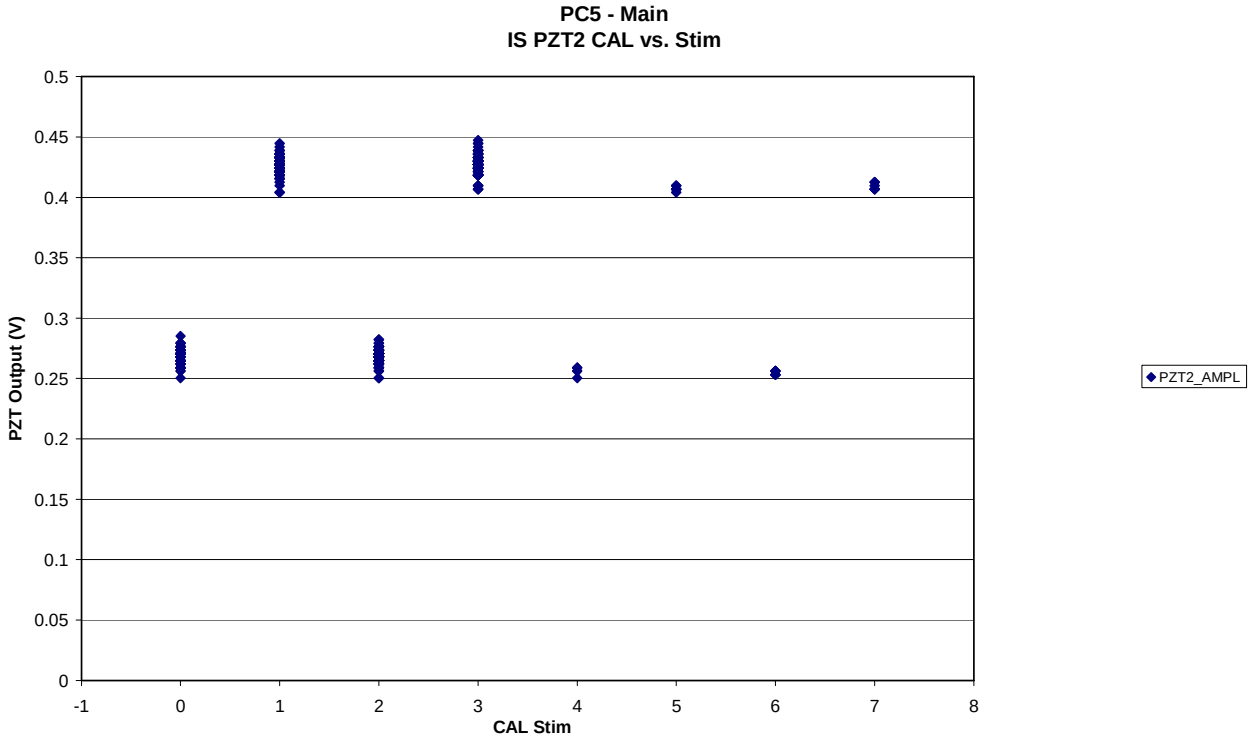


Figure 7.4-31. PZT 3 CAL Signal vs. stimulus – Main

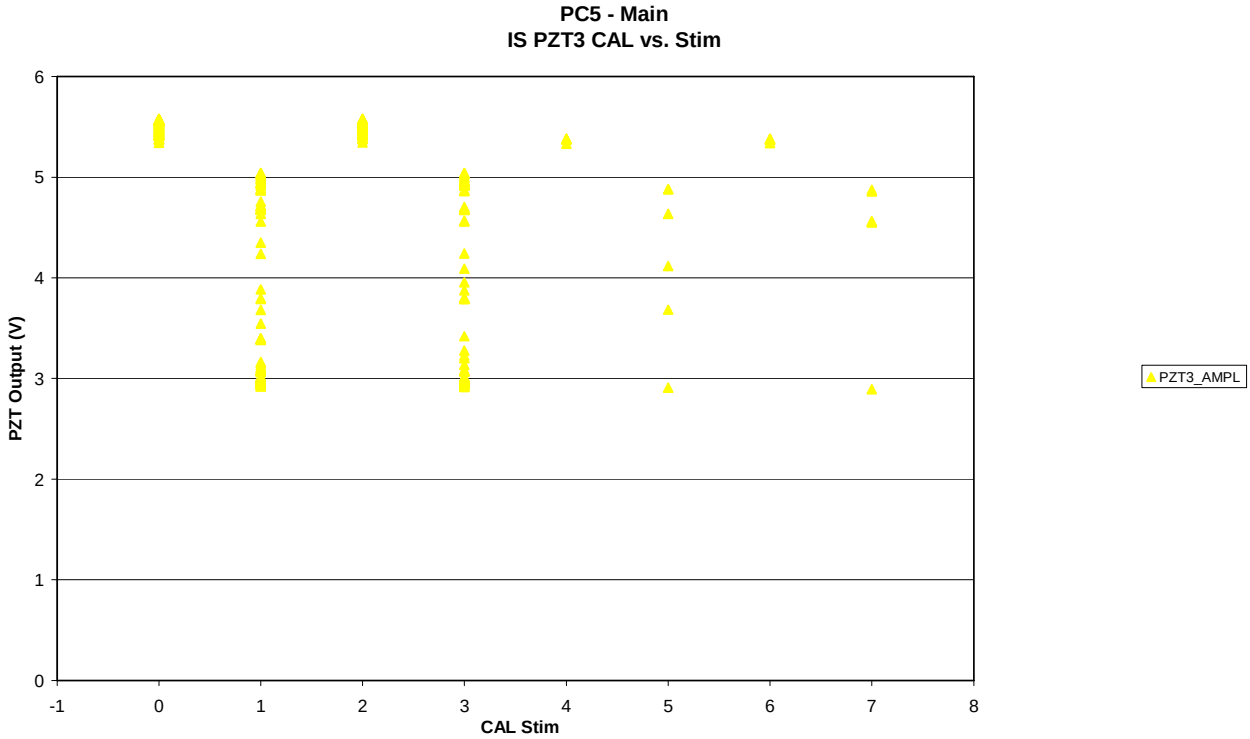


Figure 7.4-32. PZT 4 CAL Signal vs. stimulus – Main

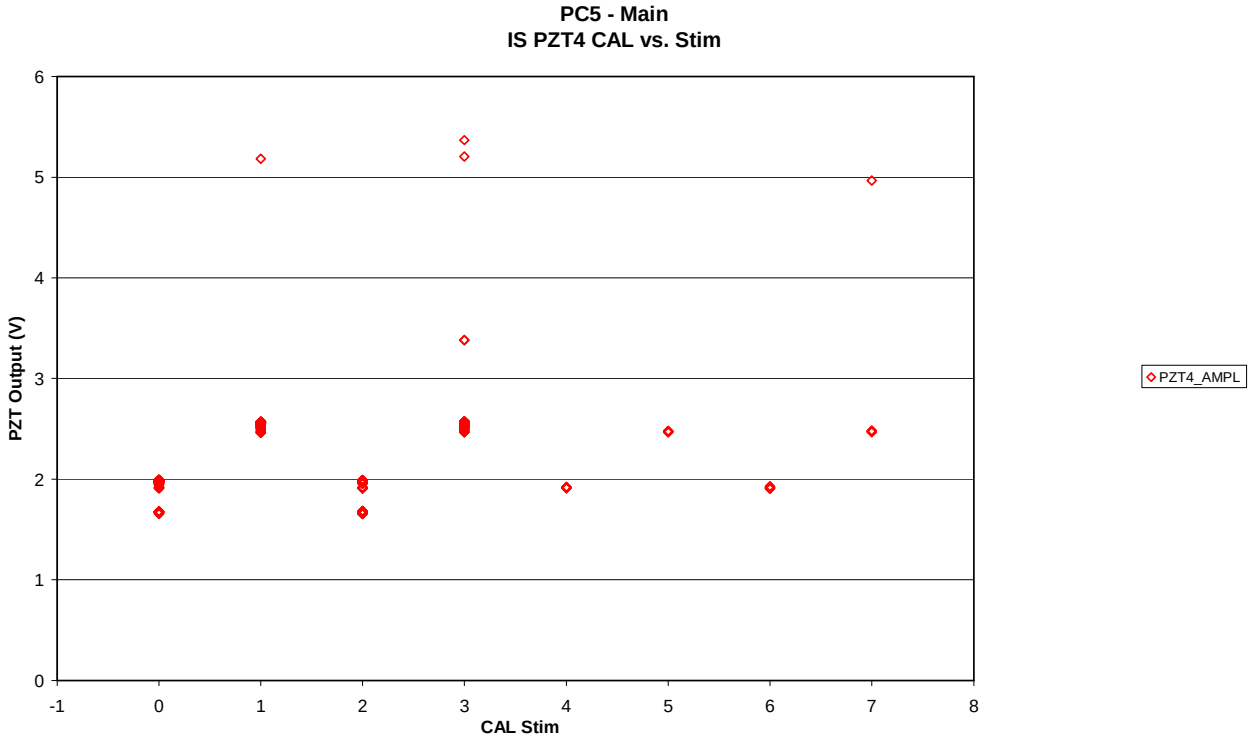


Figure 7.4-33. PZT 5 CAL Signal vs. stimulus – Main

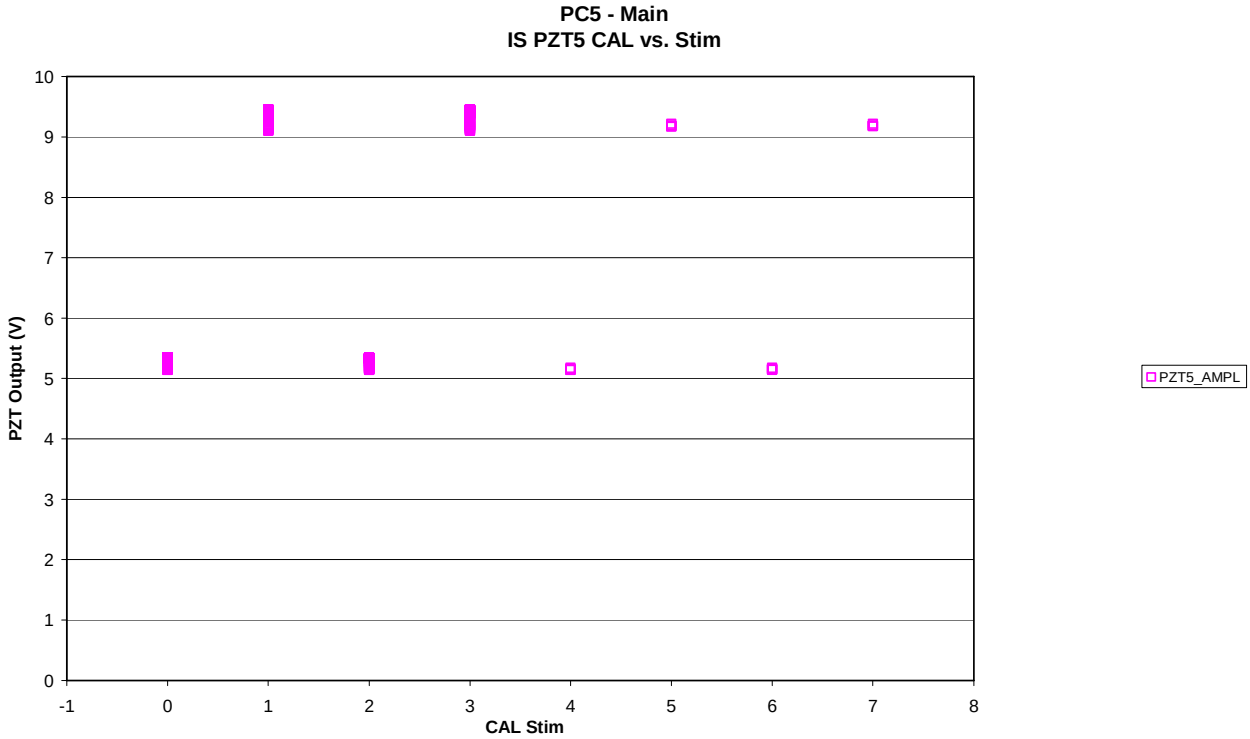


Figure 7.4-34. PZT 1 CAL Time delay vs. stimulus – Main

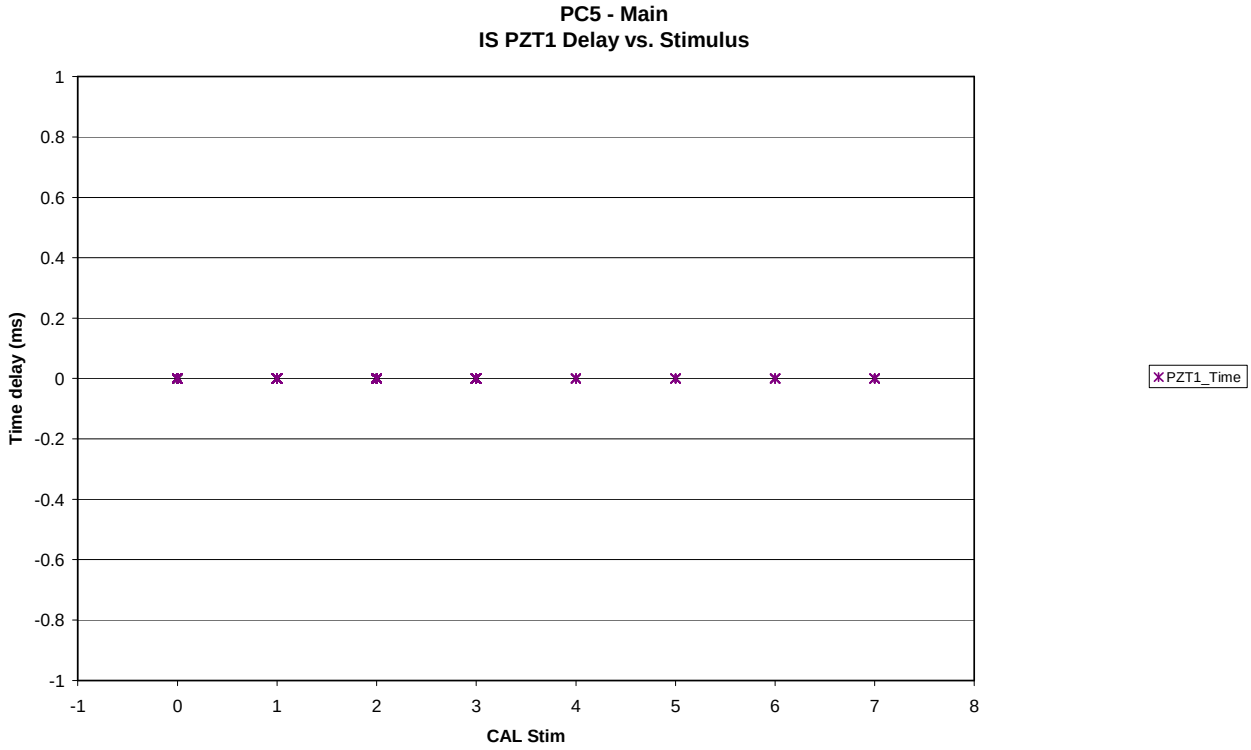


Figure 7.4-35. PZT 2 CAL Time delay vs. stimulus - Main

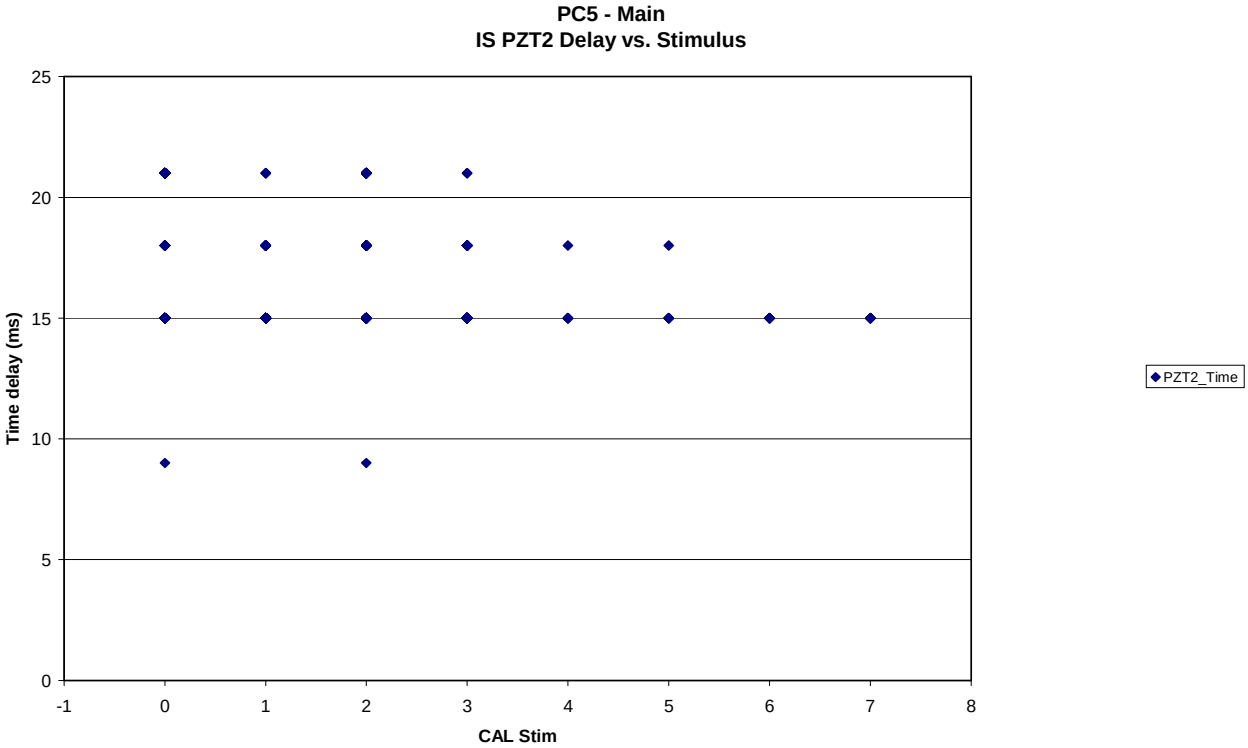


Figure 7.4-36. PZT 3 CAL Time delay vs. stimulus - Main

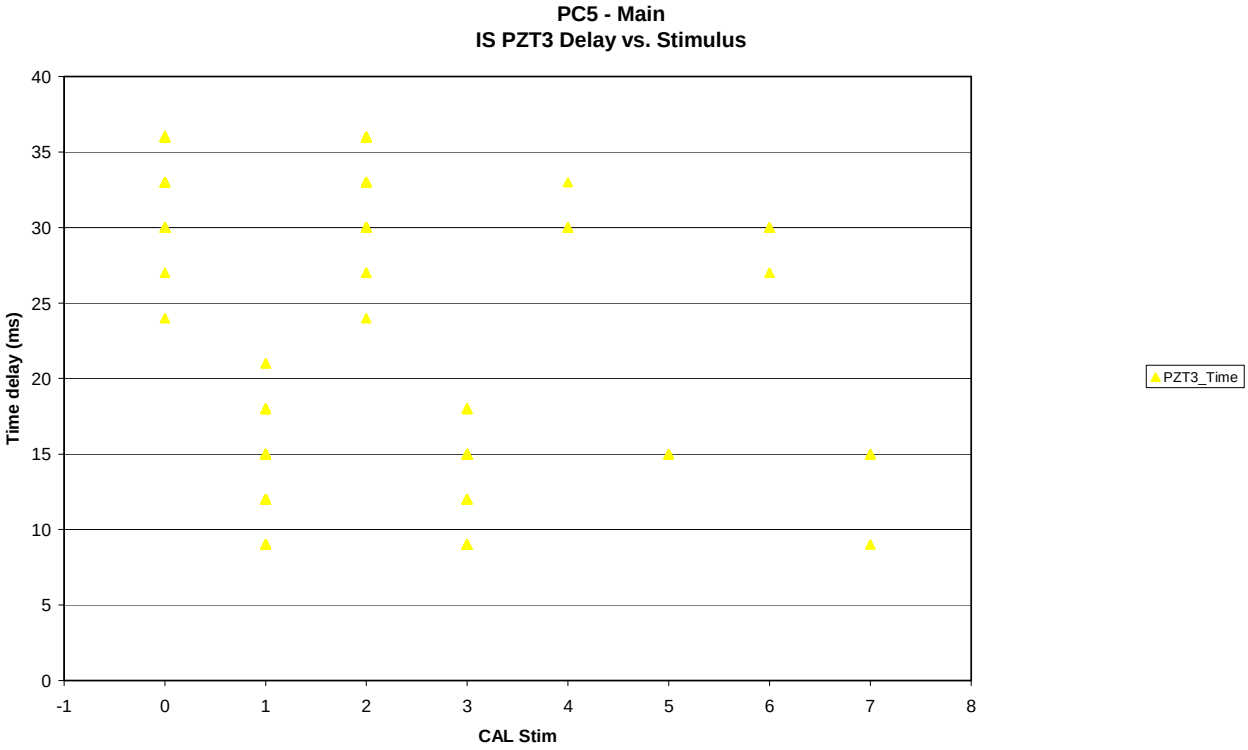


Figure 7.4-37. PZT 4 CAL Time delay vs. stimulus - Main

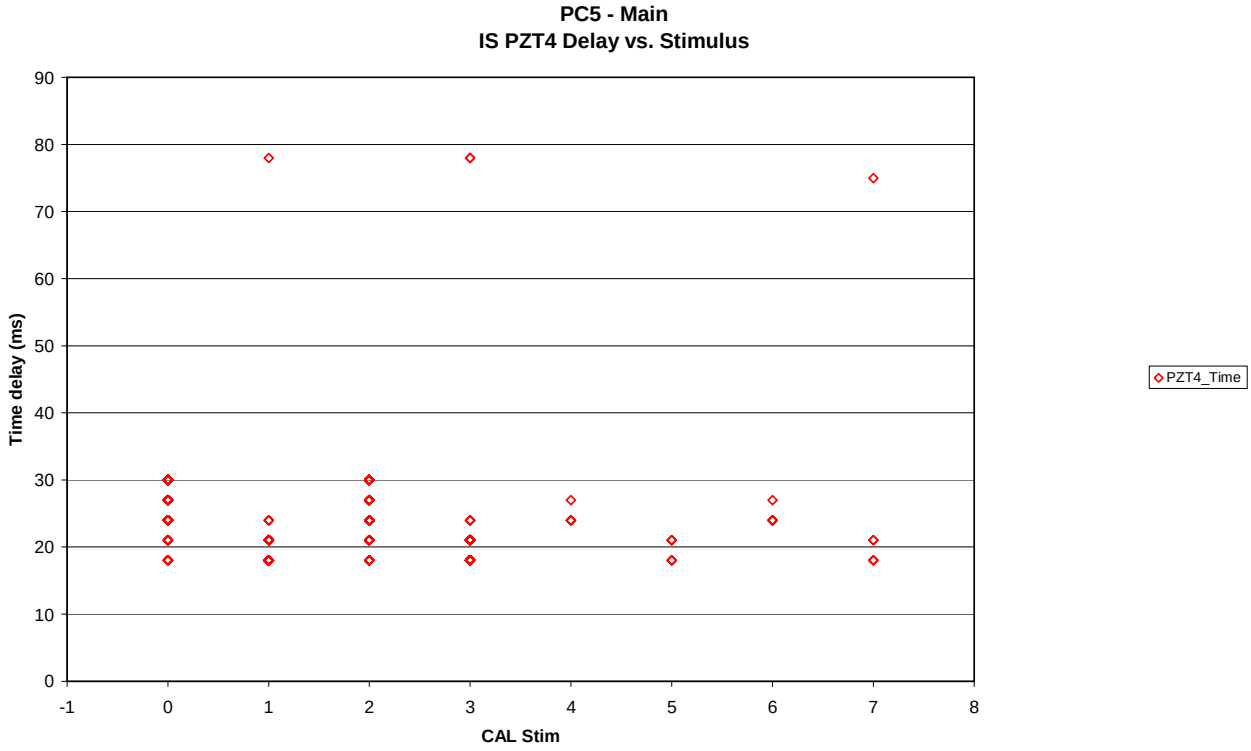
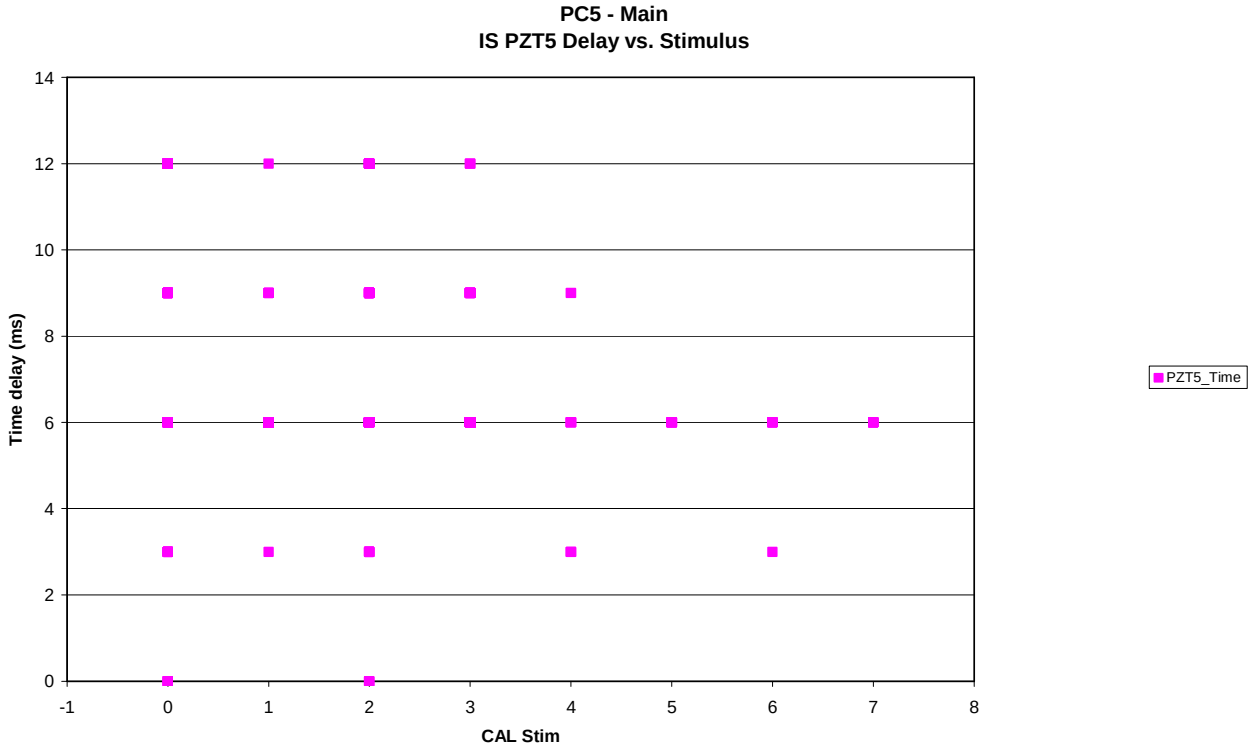


Figure 7.4-38. PZT 5 CAL Time delay vs. stimulus - Main



7.5 MICRO BALANCE SYSTEM (MBS)

7.5.1 MBS – Status

Figure 7.5-1. MBS Operation Status vs. time - Main

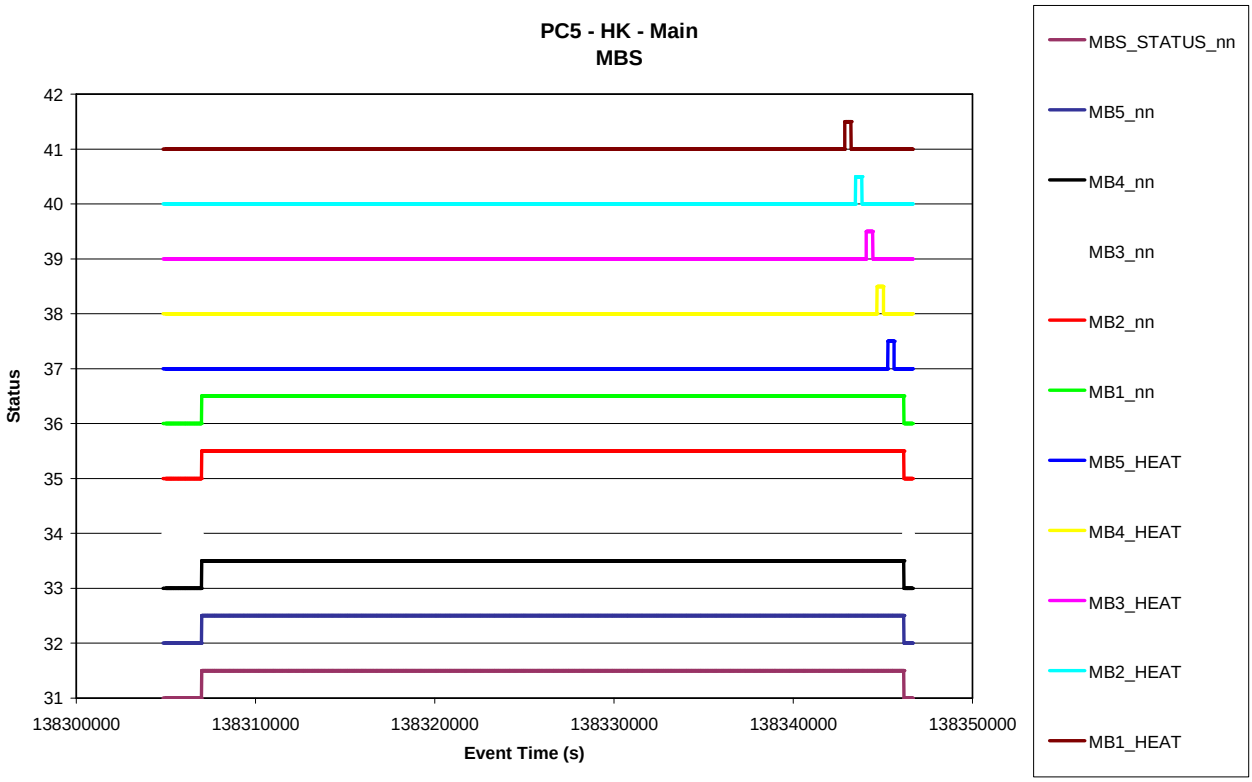


Figure 7.5-2. MBS 1 Temperature vs. time (HK, HK-SCI, SCI) – Main

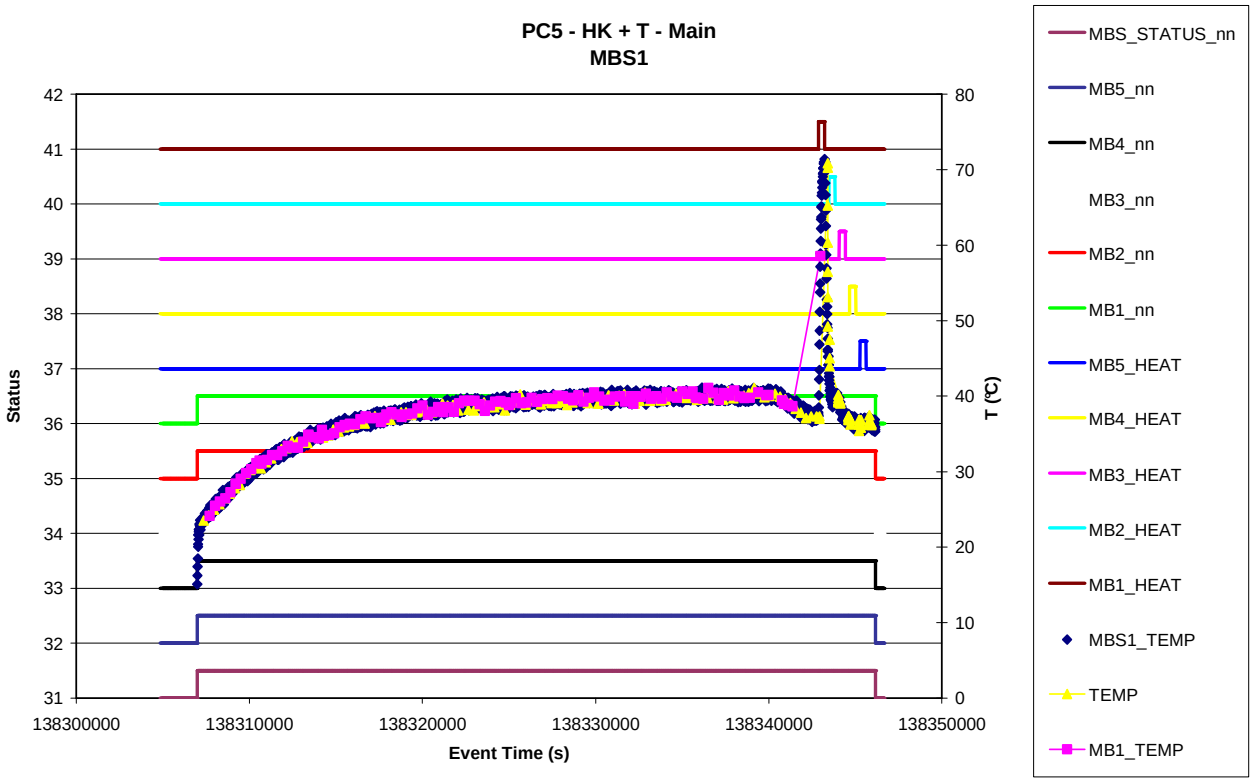


Figure 7.5-3. MBS 2 Temperature vs. time (HK, HK-SCI, SCI) - Main

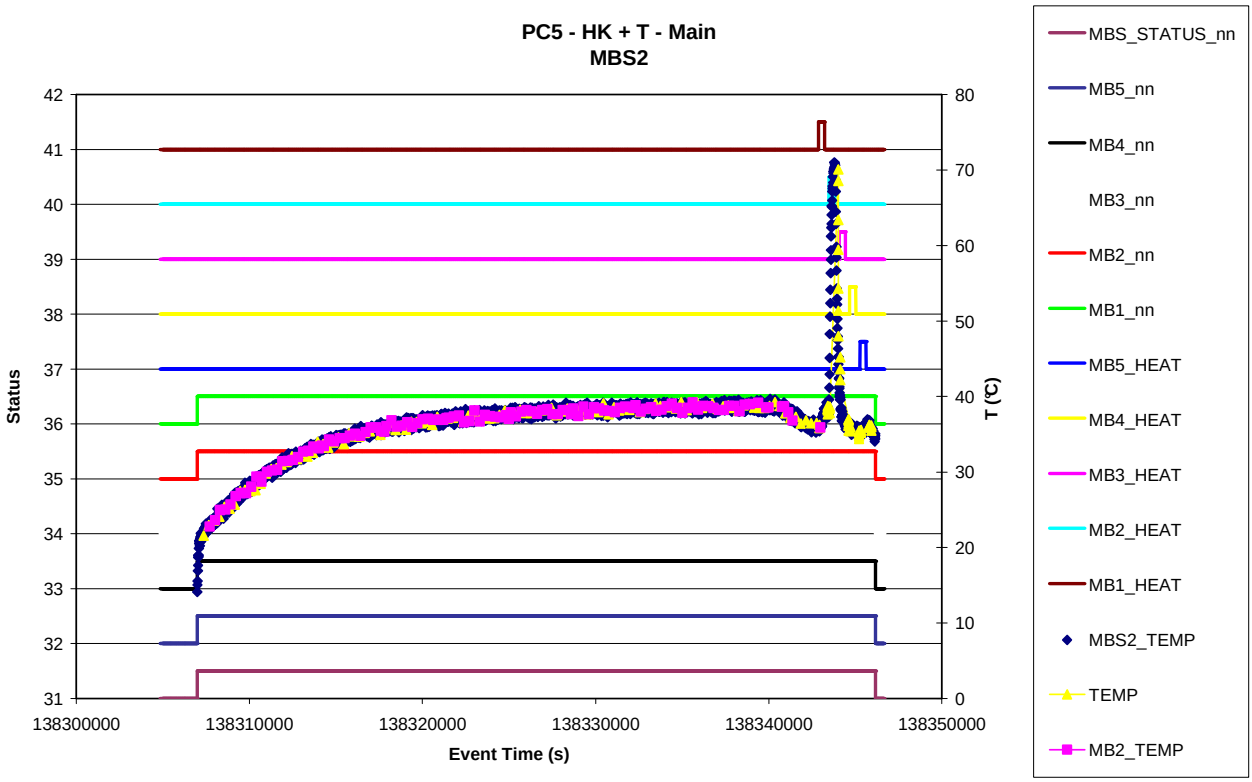


Figure 7.5-4. MBS 3 Temperature vs. time (HK, HK-SCI, SCI) - Main

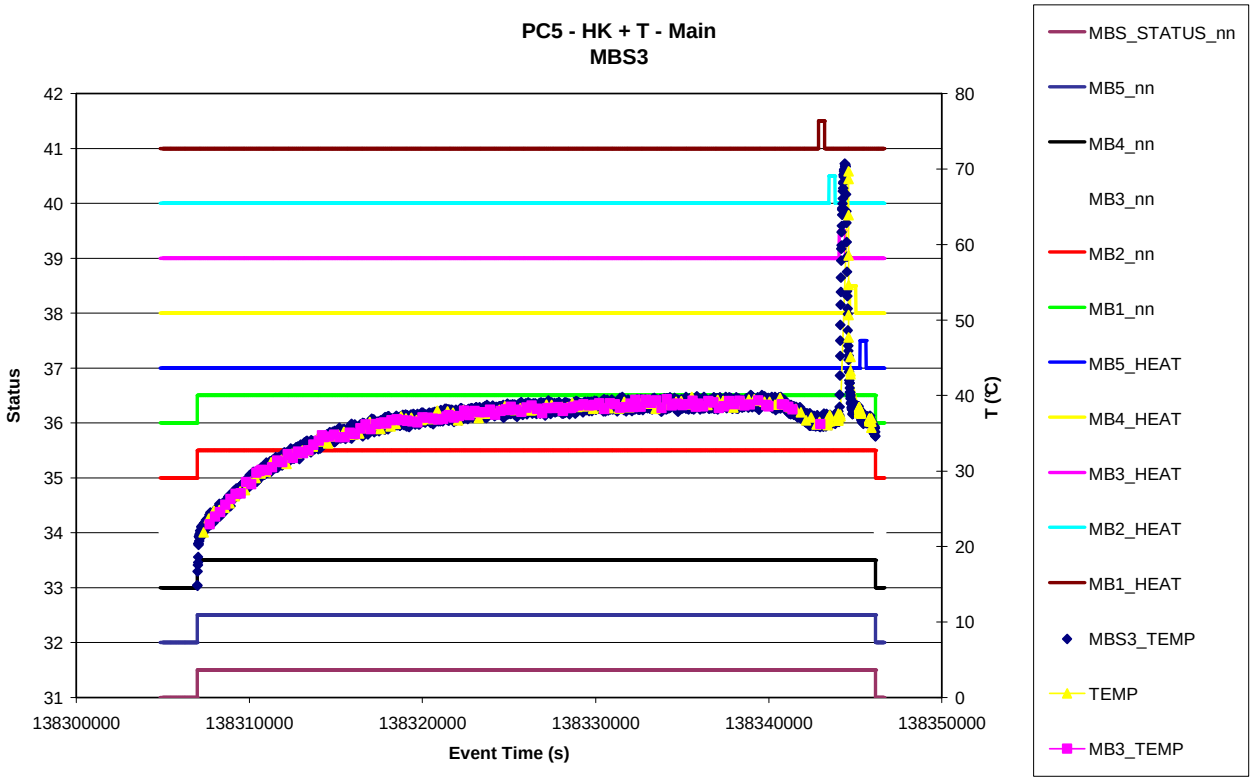


Figure 7.5-5. MBS 4 Temperature vs. time (HK, HK-SCI, SCI) - Main

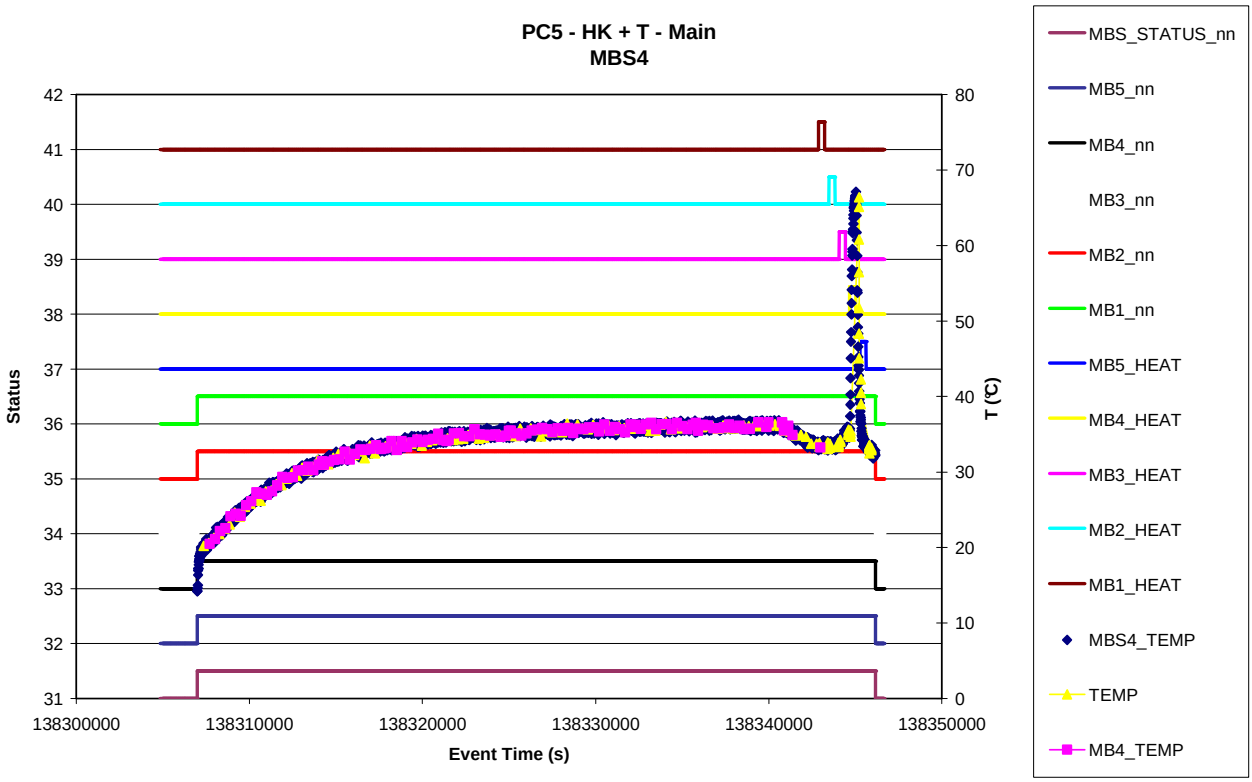
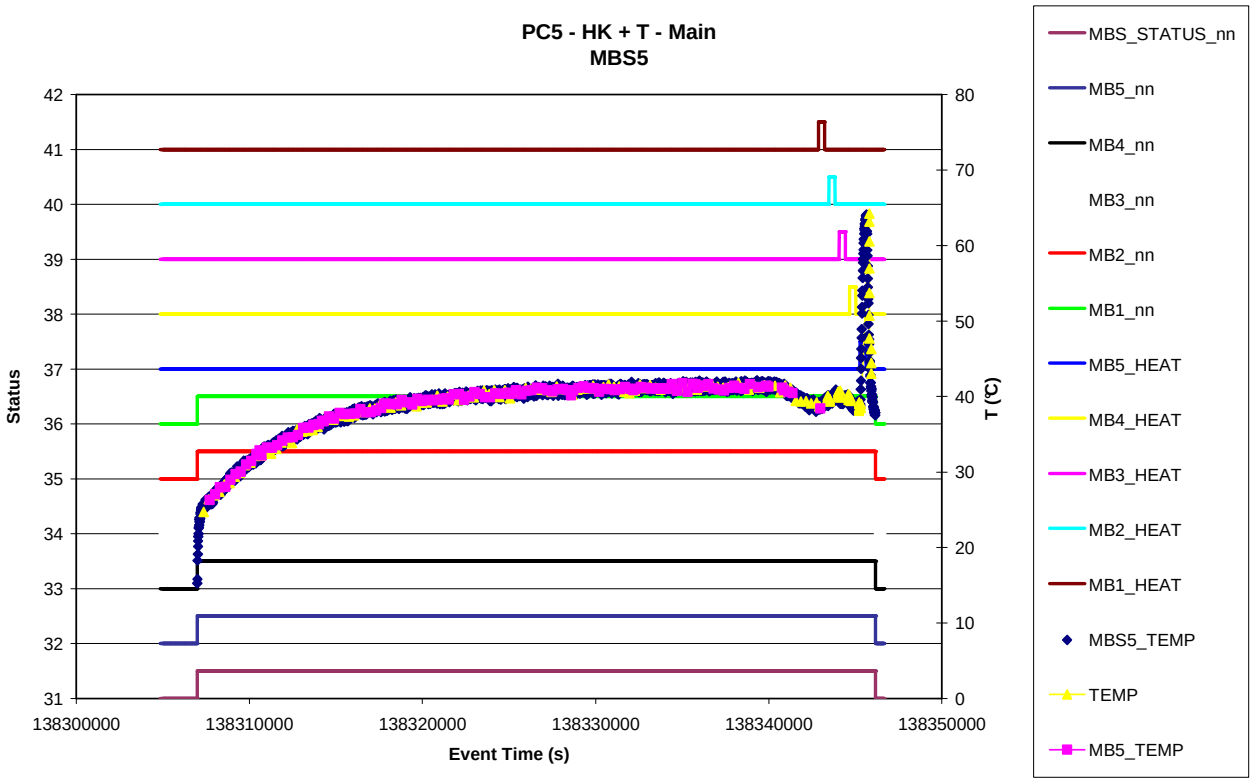


Figure 7.5-6. MBS 5 Temperature vs. time (HK, HK-SCI, SCI) - Main



7.5.2 MBS – Behaviour

7.5.2.1 Science Events (Normal + Heating)

Figure 7.5-7. MBS 1 Frequency and Temperature vs. time - Main

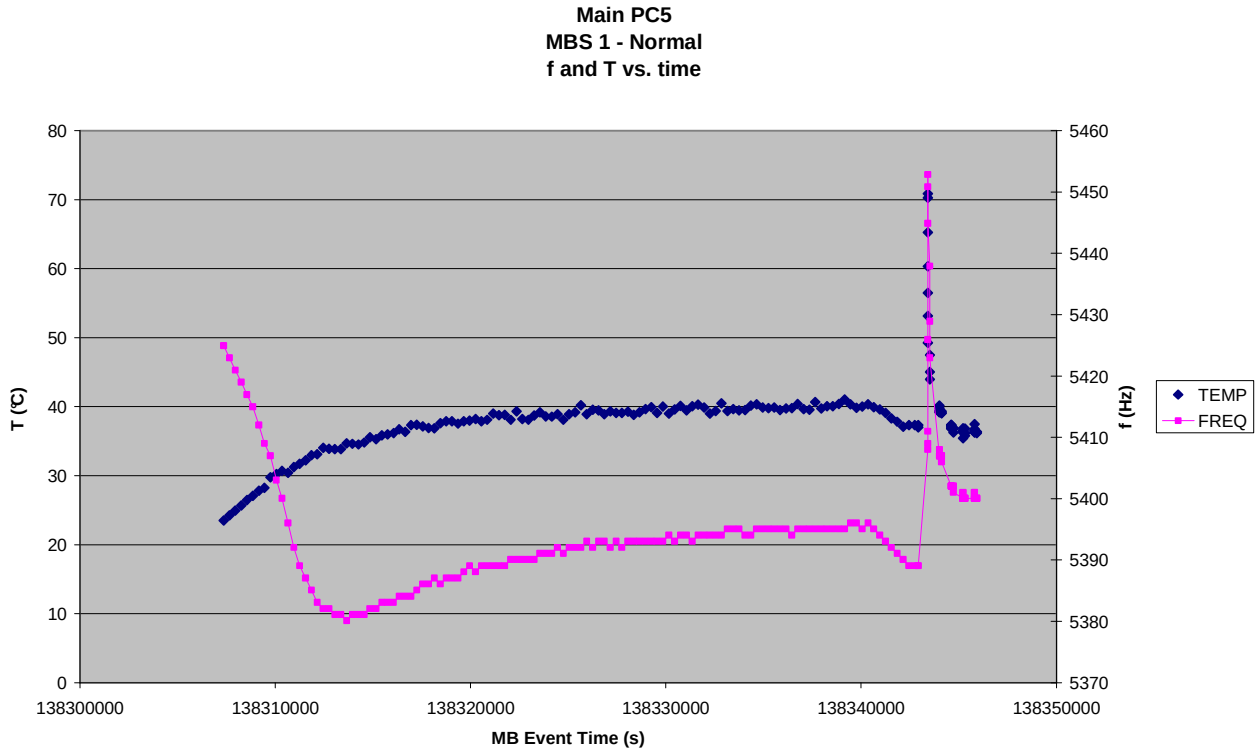


Figure 7.5-8. MBS 2 Frequency and Temperature vs. time - Main

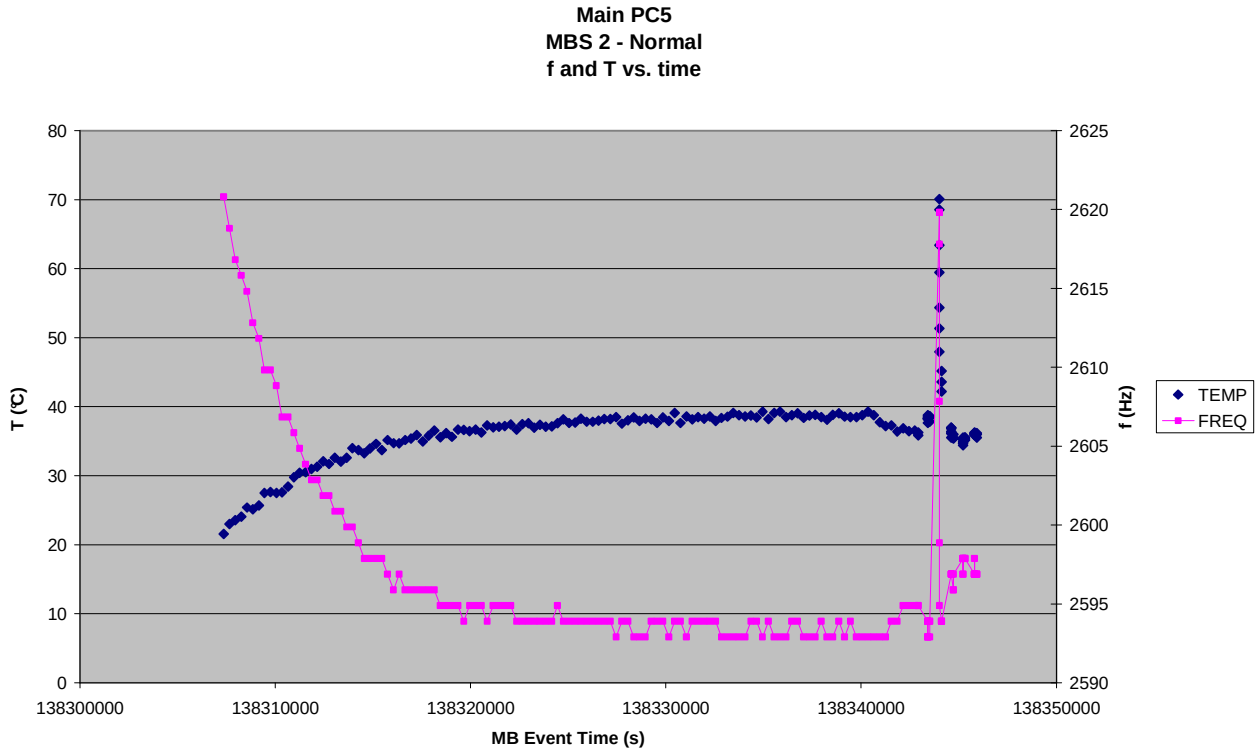


Figure 7.5-9. MBS 3 Frequency and Temperature vs. time - Main

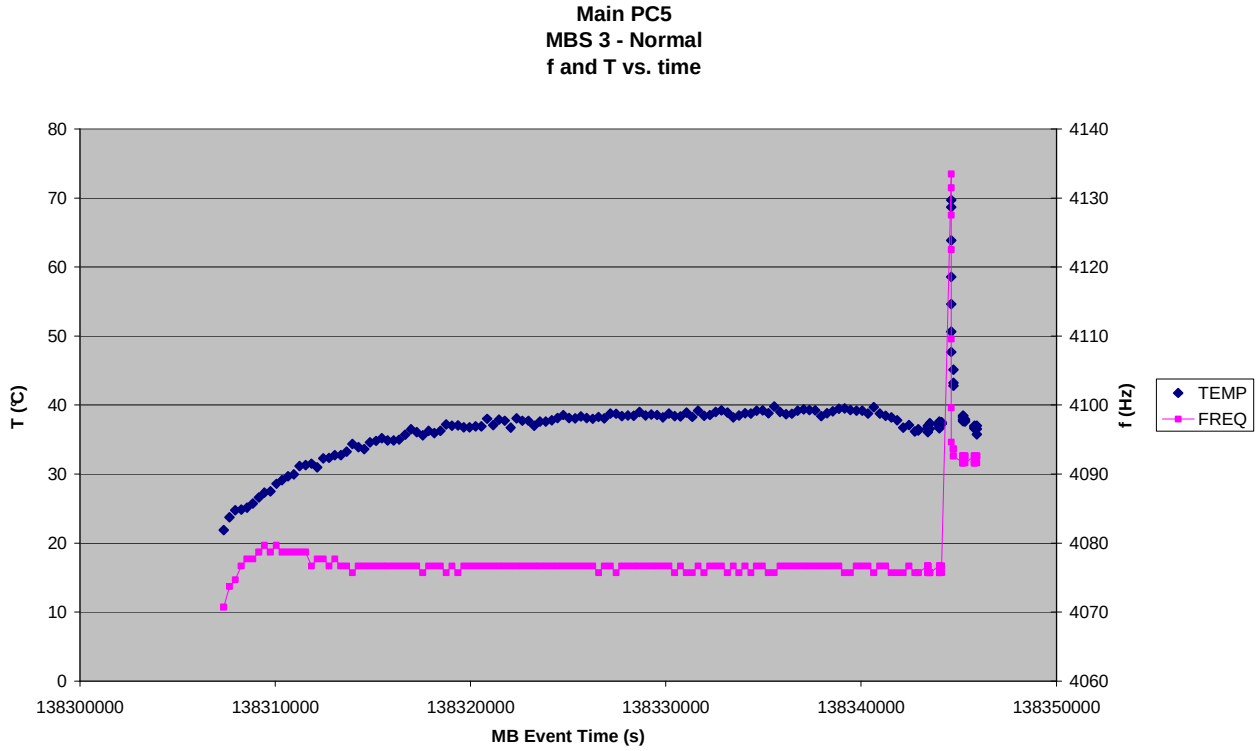


Figure 7.5-10. MBS 4 Frequency and Temperature vs. time - Main

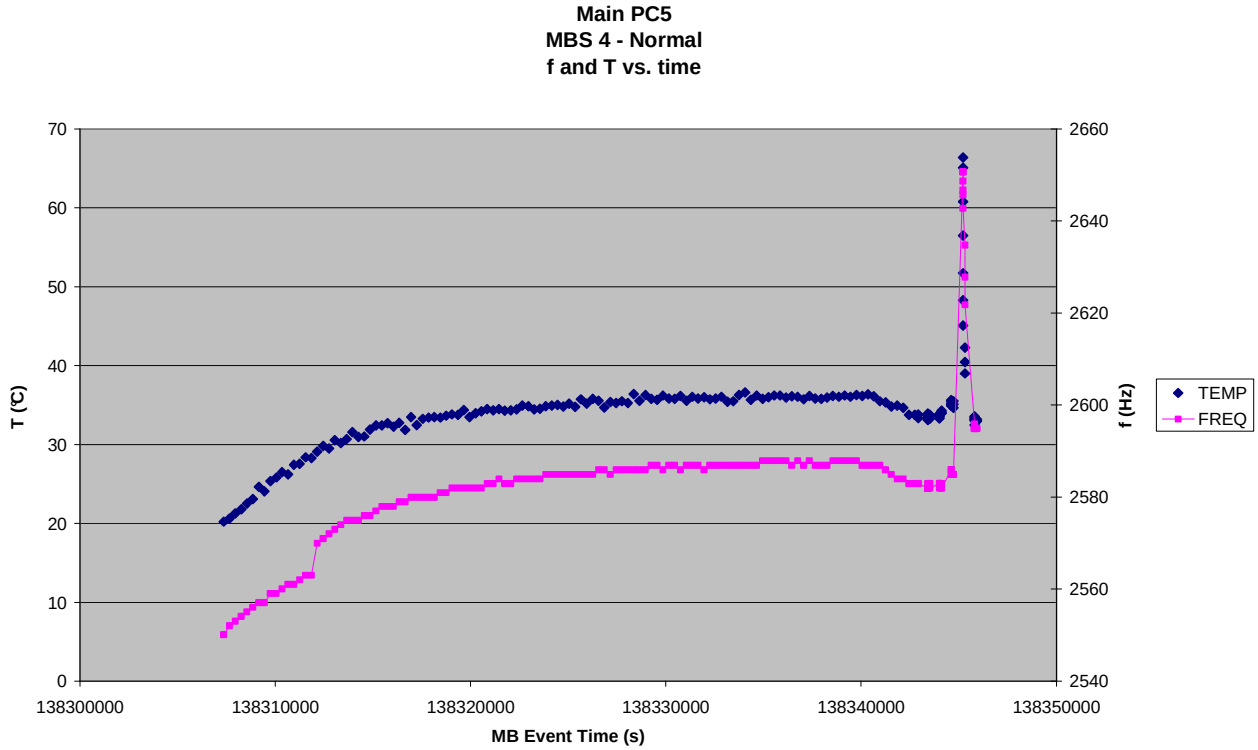


Figure 7.5-11. MBS 5 Frequency and Temperature vs. time - Main

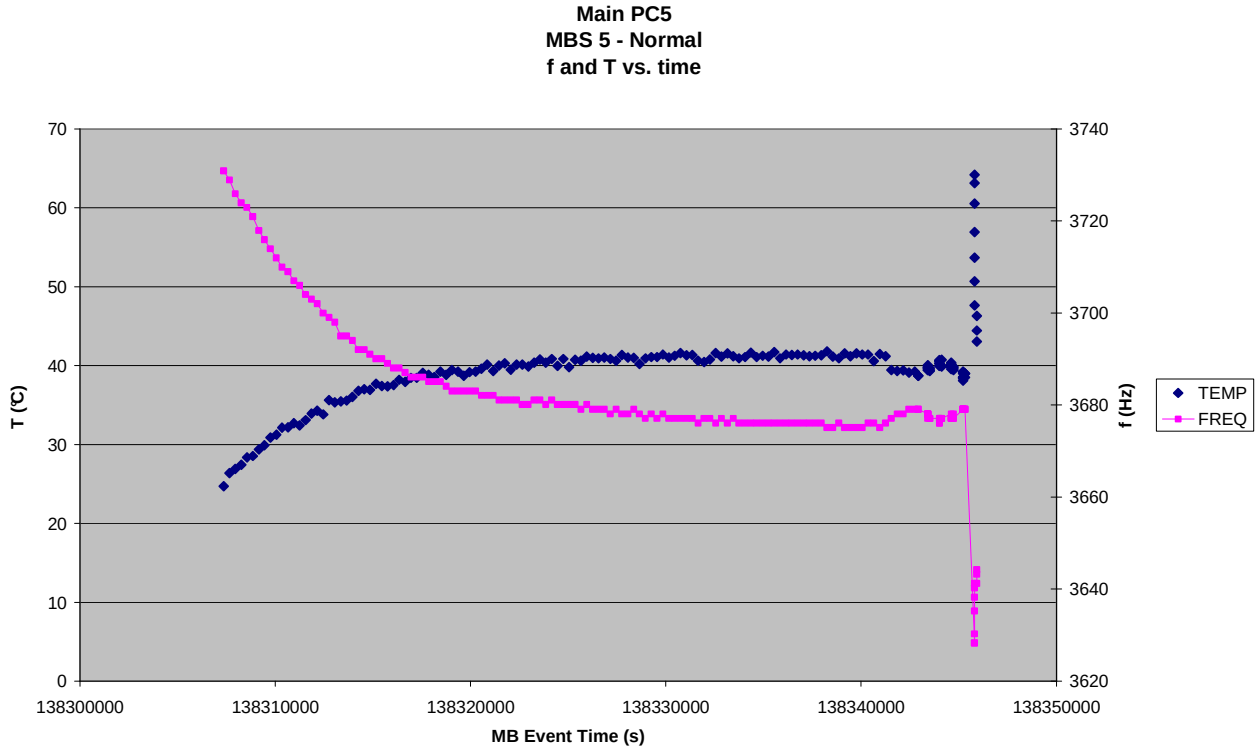


Figure 7.5-12. MBS 1 Frequency vs. Temperature - Main

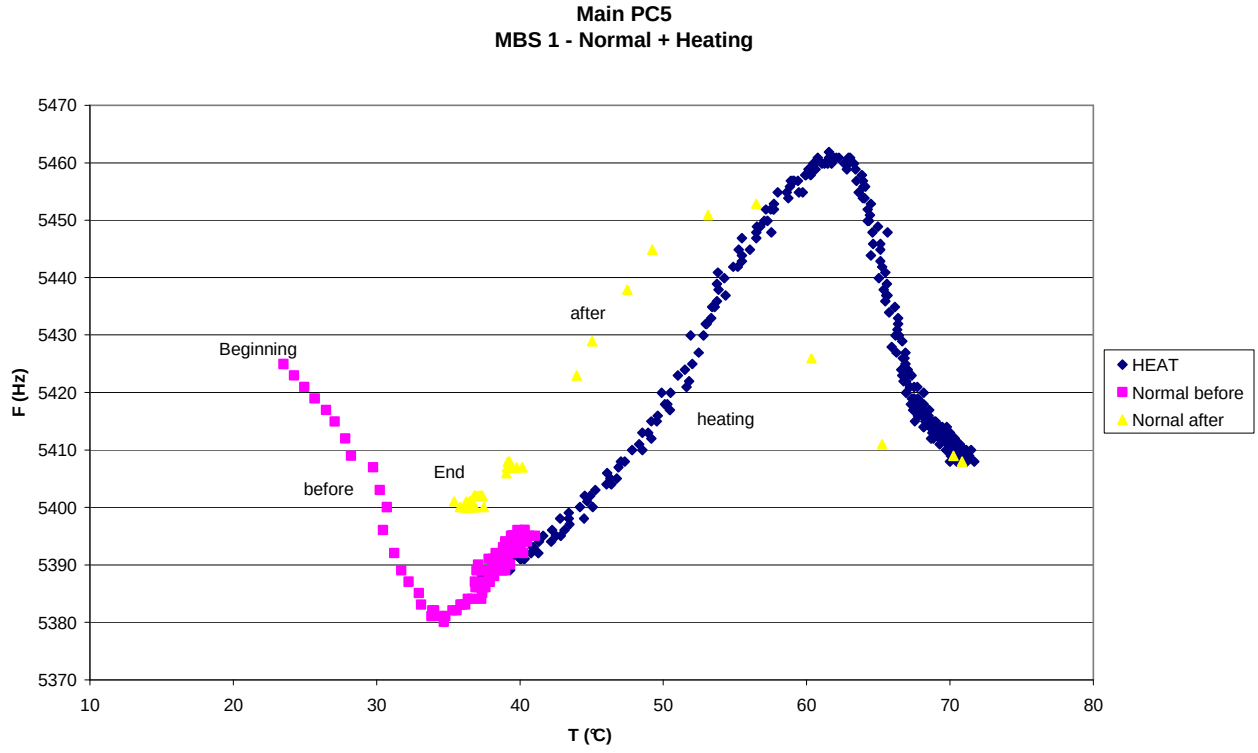


Figure 7.5-13. MBS 2 Frequency vs. Temperature - Main

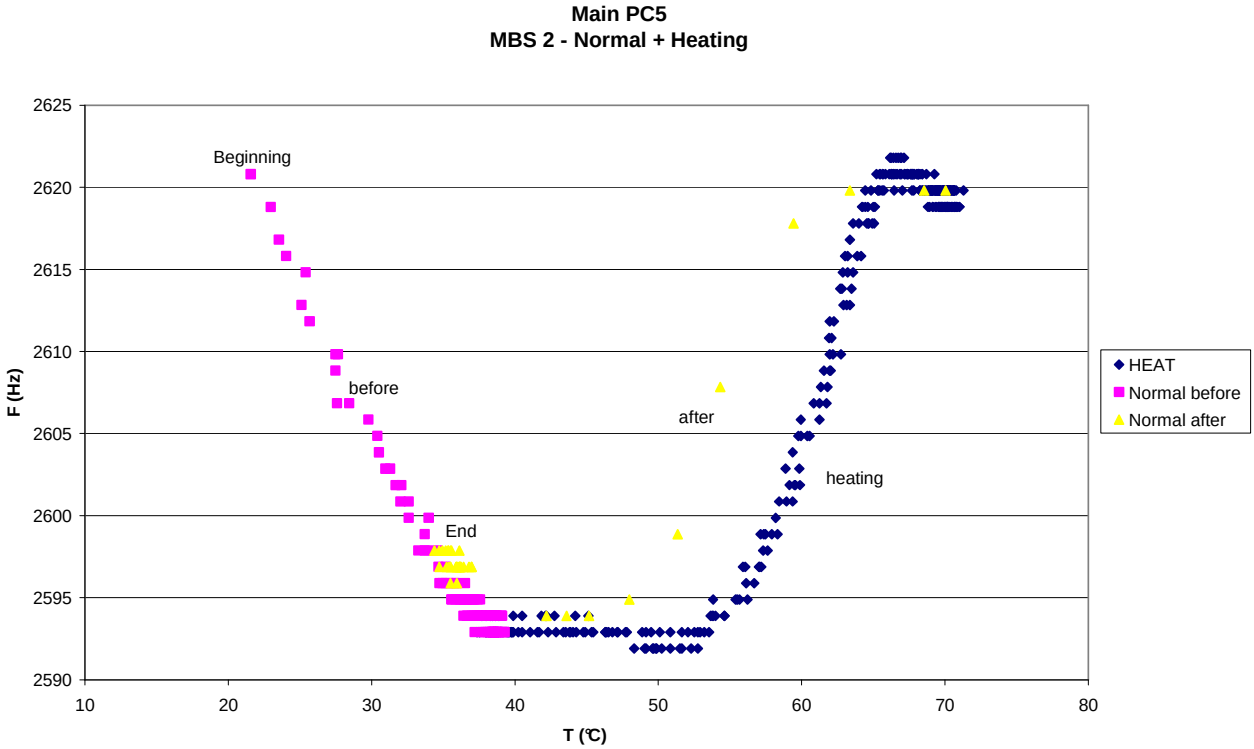


Figure 7.5-14. MBS 3 Frequency vs. Temperature - Main

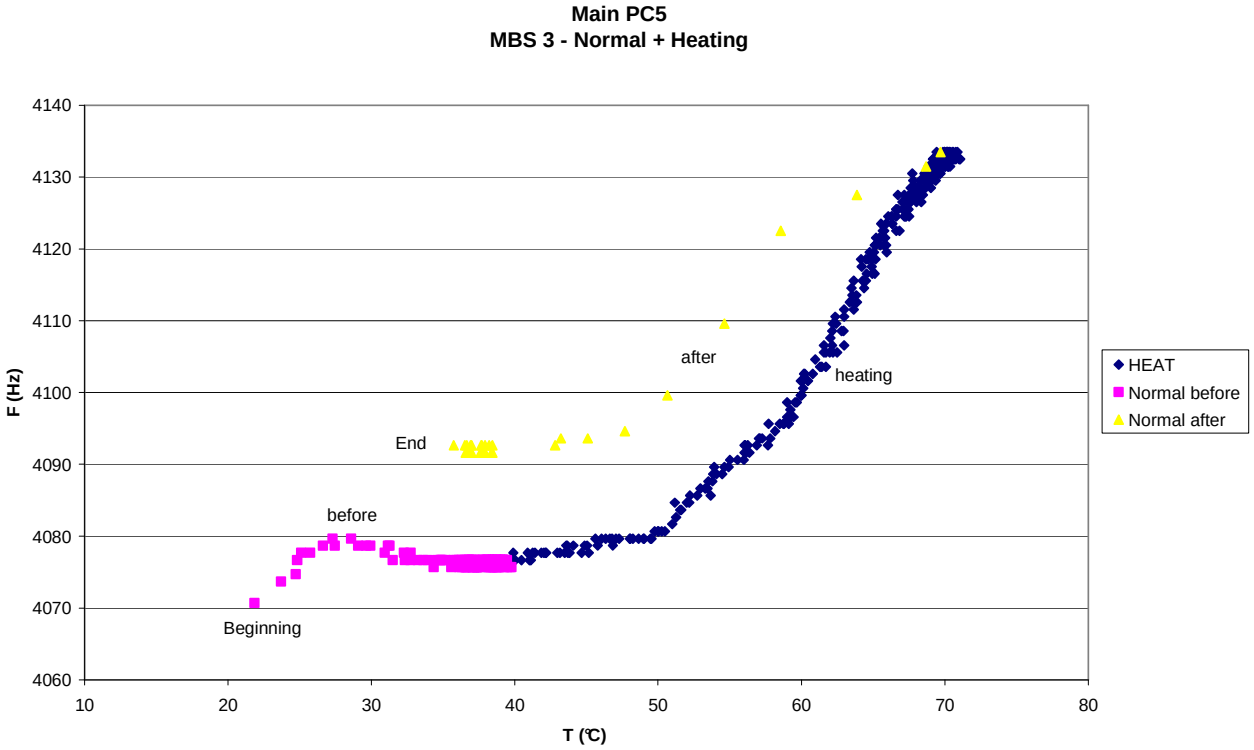


Figure 7.5-15. MBS 4 Frequency vs. Temperature - Main

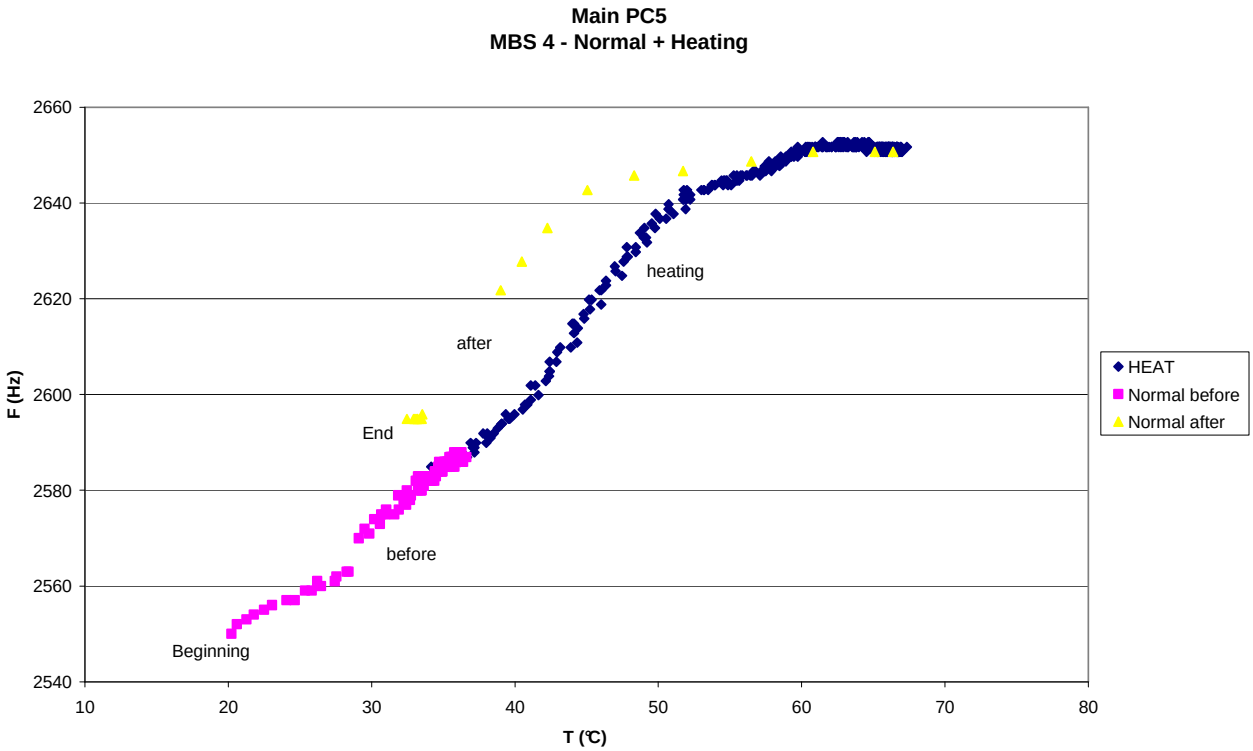
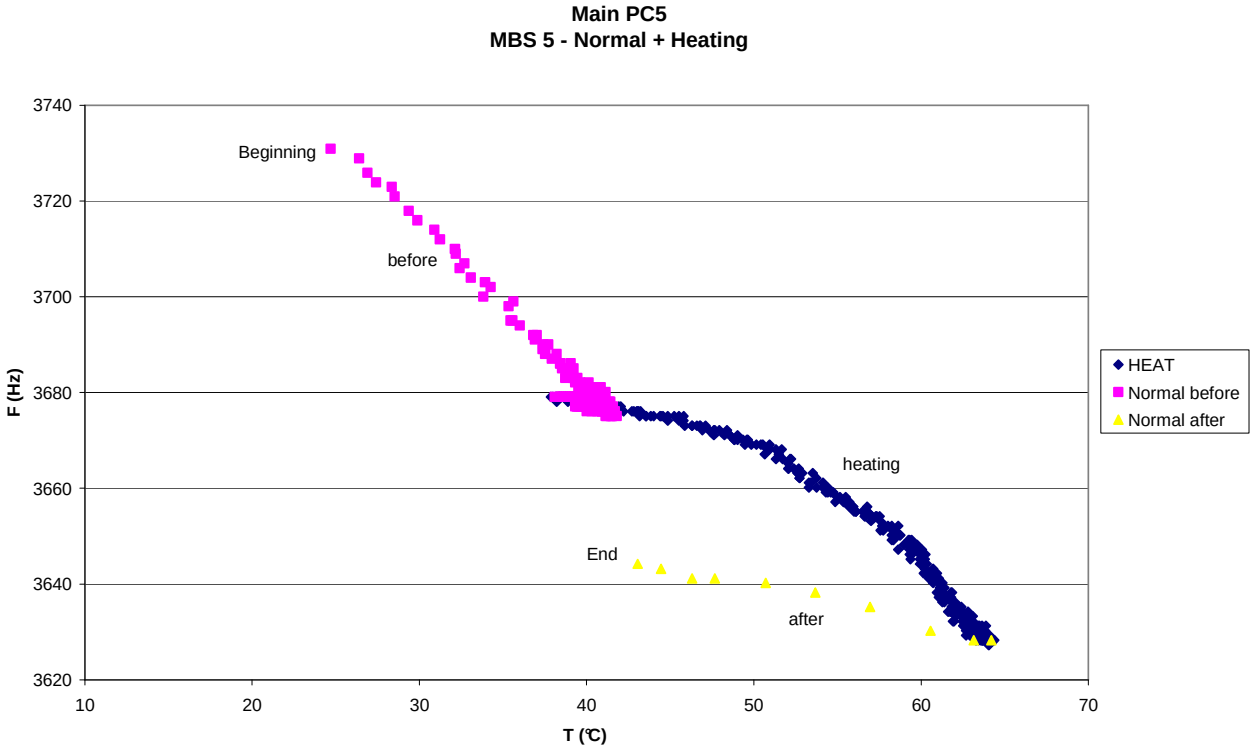


Figure 7.5-16. MBS 5 Frequency vs. Temperature - Main



8. PC5 DATA ANALYSIS – REDUNDANT INTERFACE

8.1 GIADA STATUS

Figure 8.1-1. HK Status of GIADA and S/S vs. time - Red

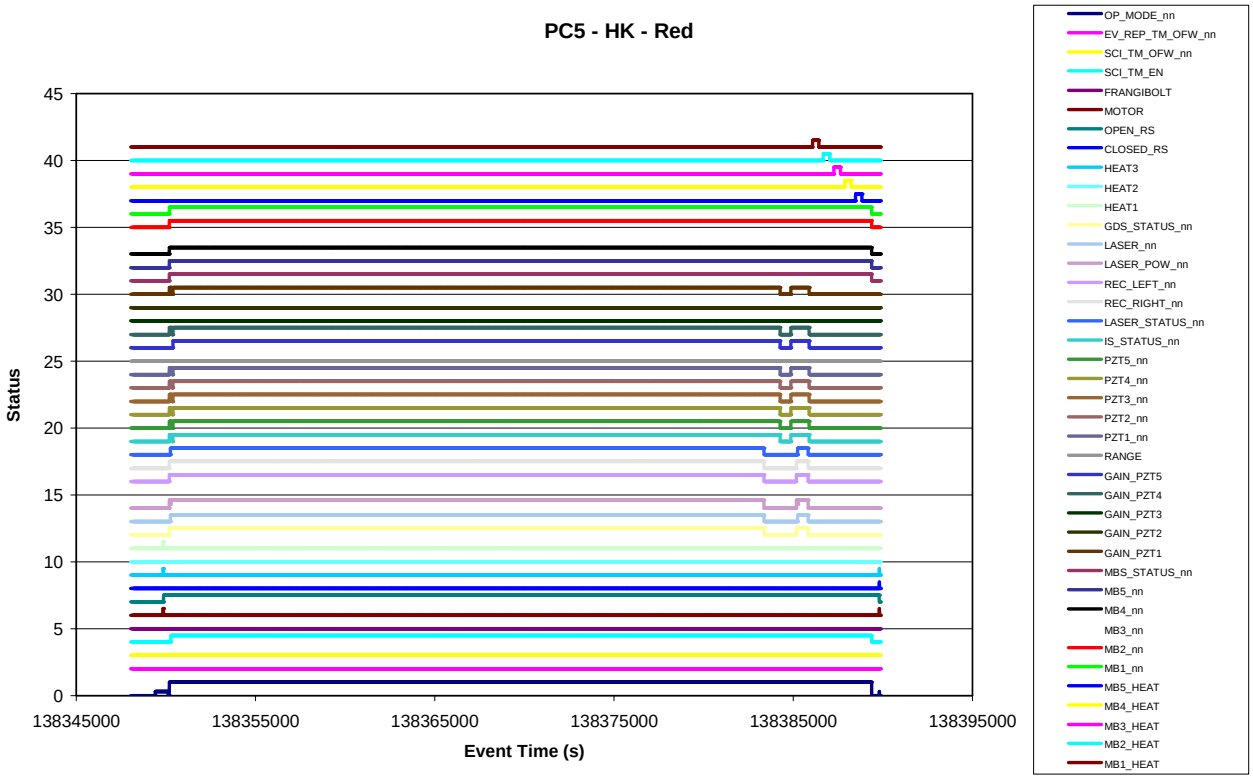


Figure 8.1-2. Evolution of all temperatures vs. time - HK, HK-SCI, SCI - Red

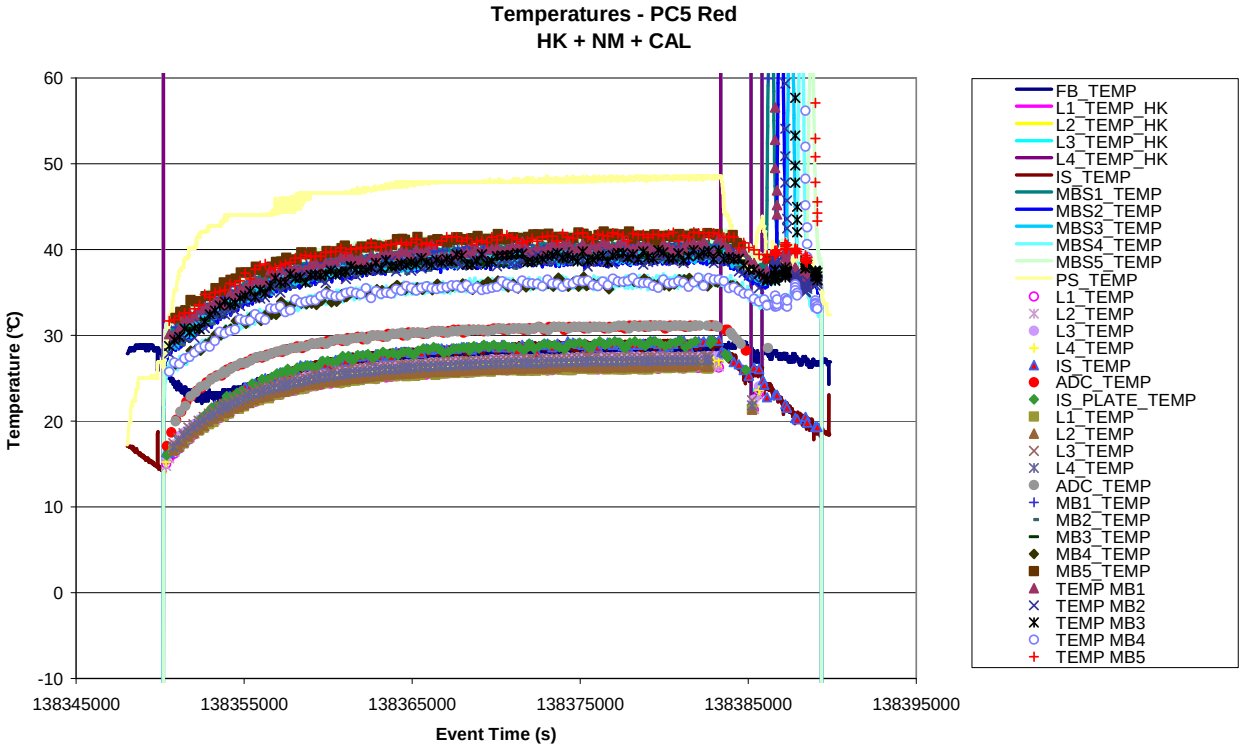


Figure 8.1-3. Evolution of temperatures of system elements vs. time - HK, HK-SCI, SCI - Red

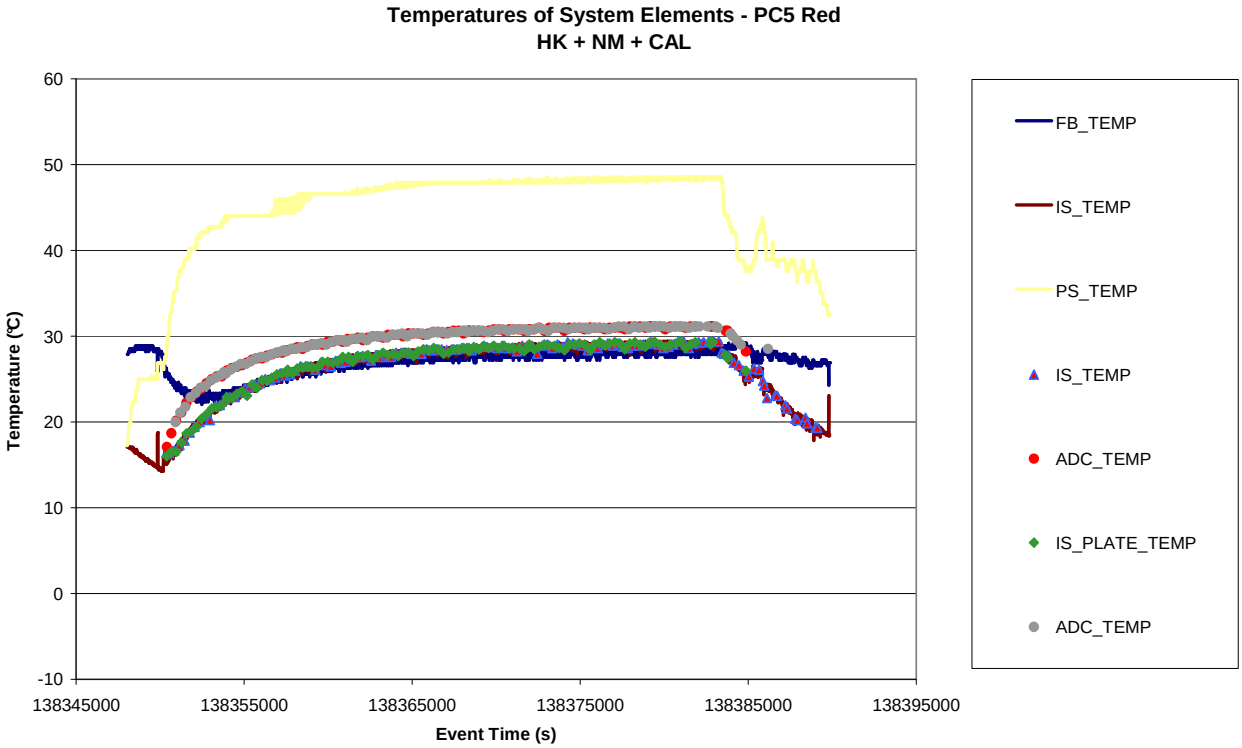


Figure 8.1-4. Evolution of temperatures of sub-systems vs. time - HK, HK-SCI, SCI - Red

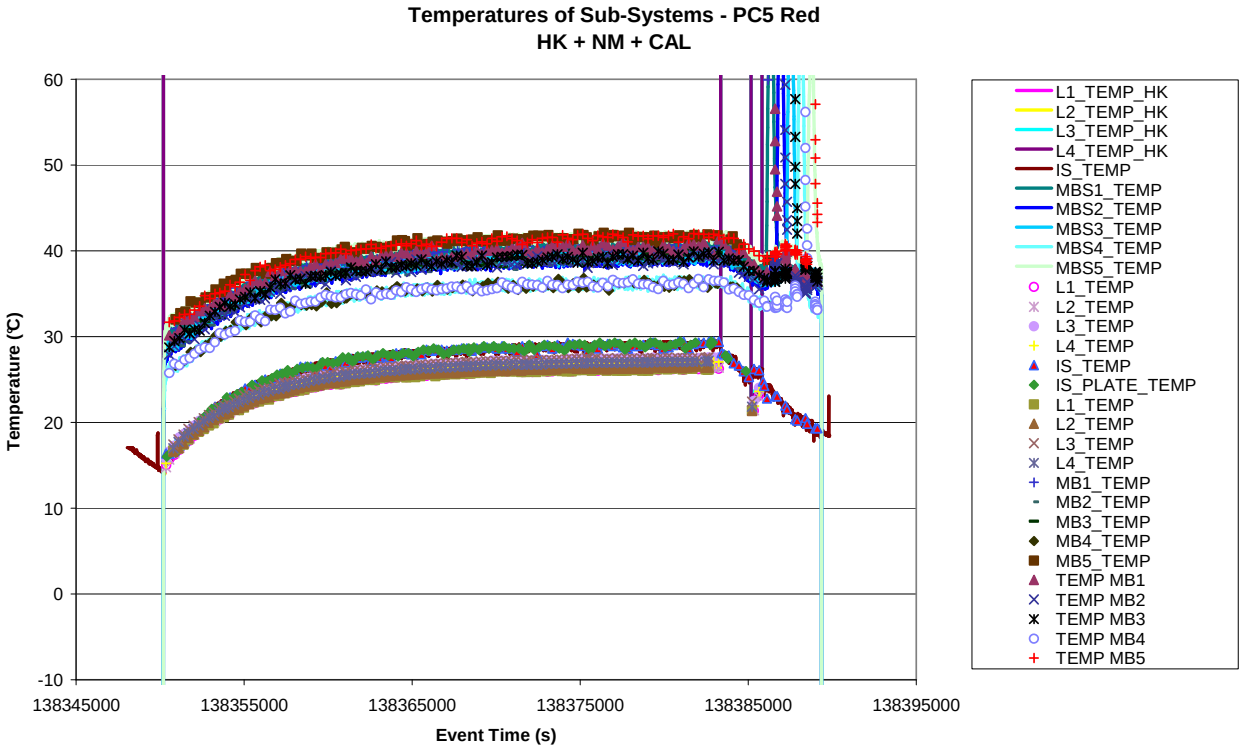


Figure 8.1-5. Operation Status vs. time - Red

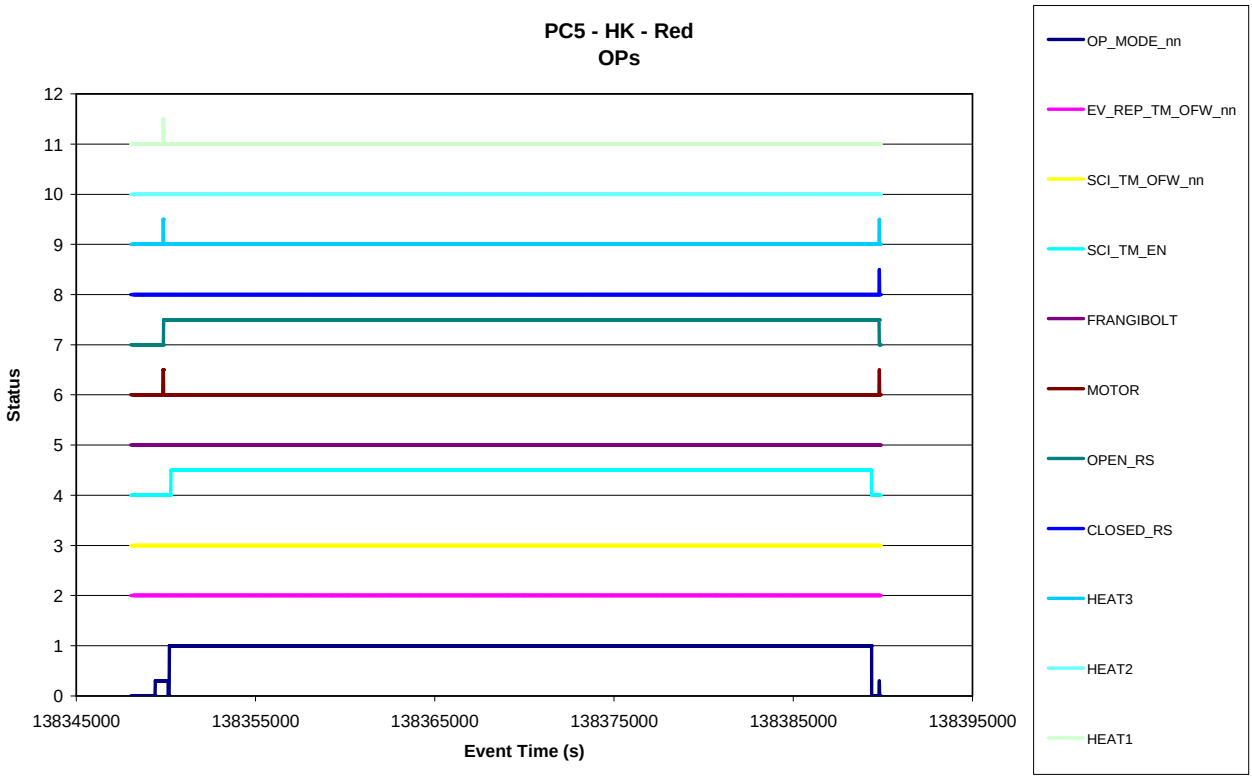


Figure 8.1-6. Power behaviour - Red

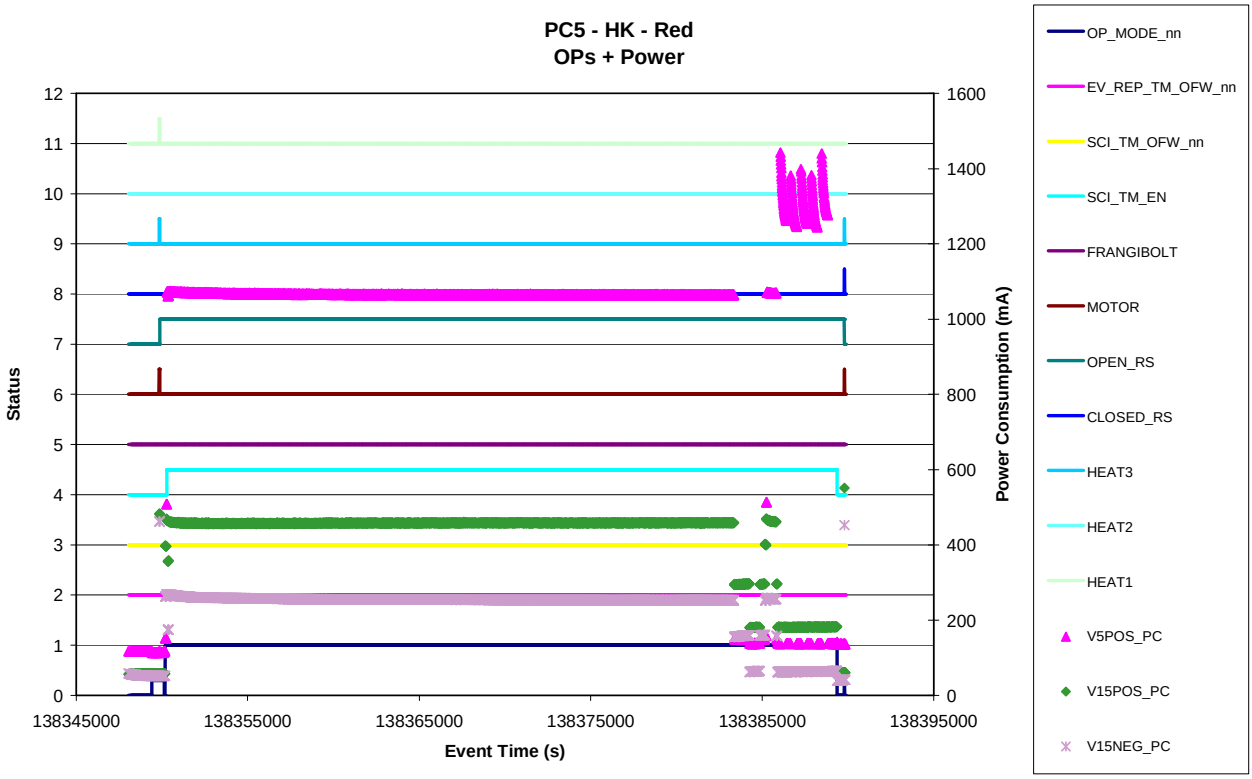


Figure 8.1-7. Power and PS temperature behaviour - Red

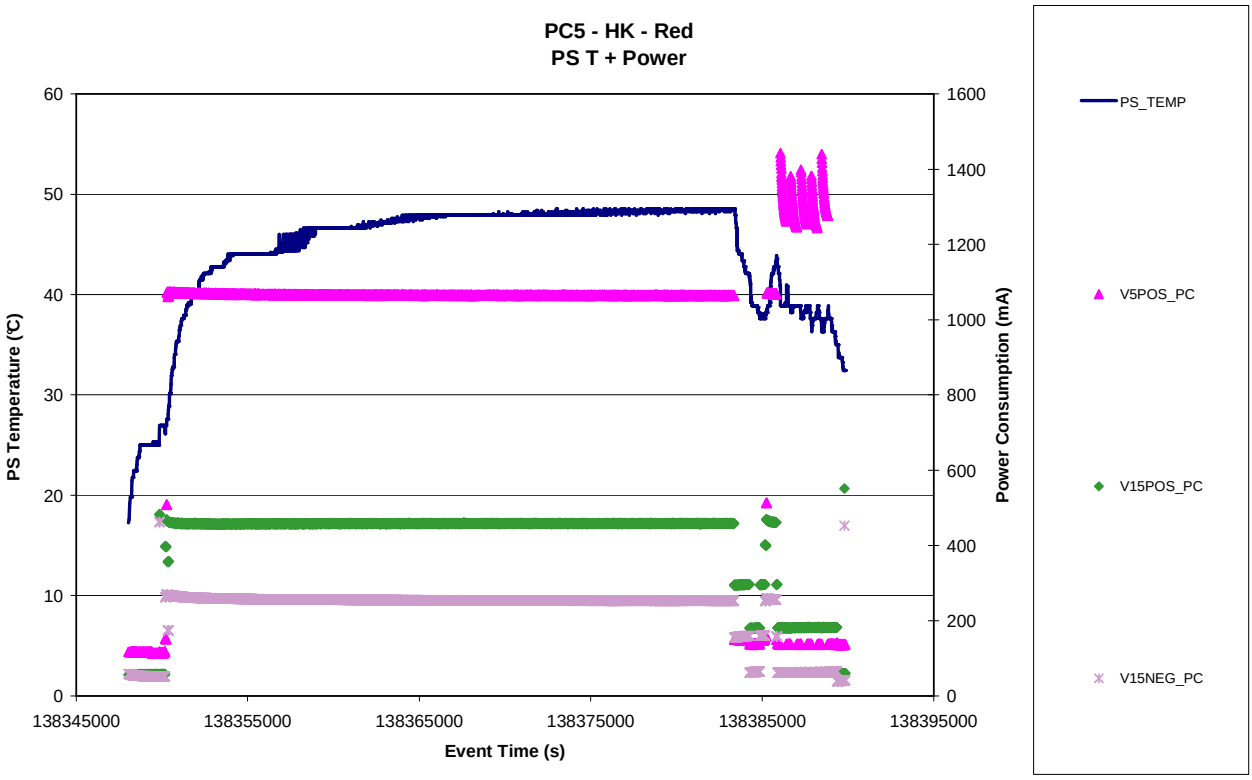


Figure 8.1-8. Source Sequence Count (SSC) of HK Telemetry vs. Time - Red

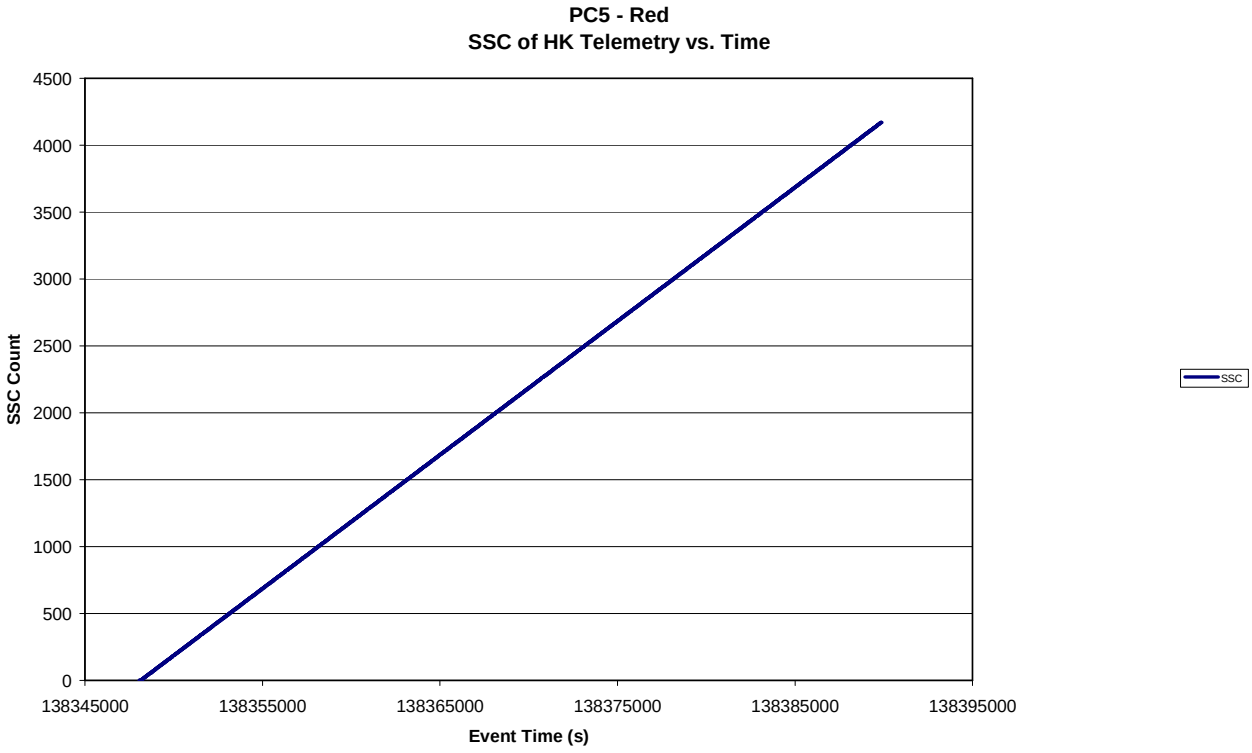


Figure 8.1-9. Source Sequence Count (SSC) of HK Telemetry vs. Number - Red

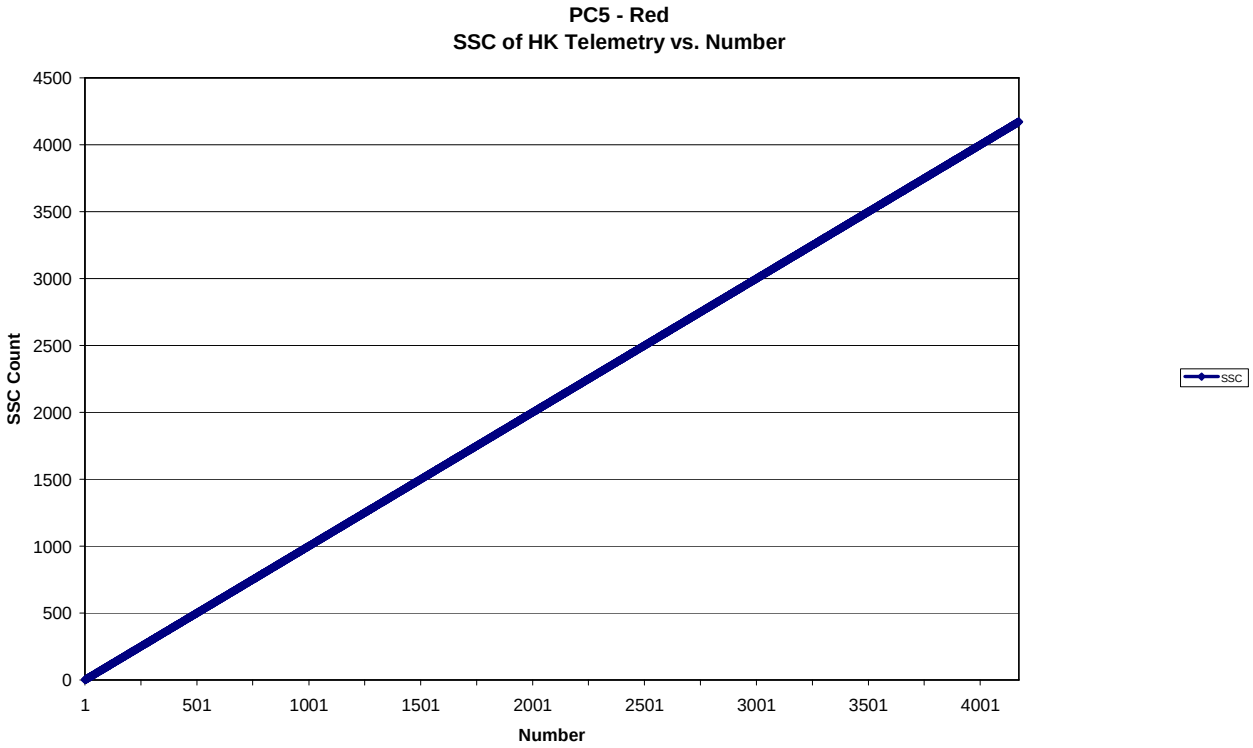


Figure 8.1-10. Source Sequence Count (SSC) of SCI Telemetry vs. Time - Red

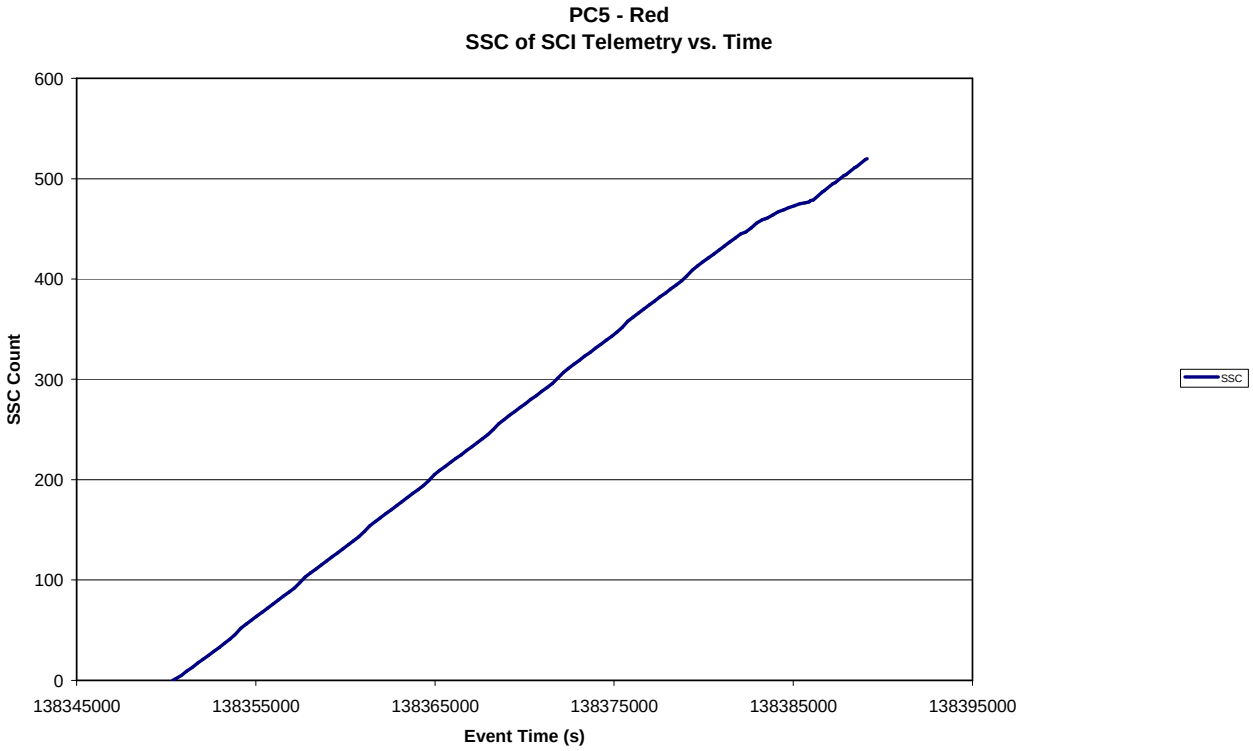
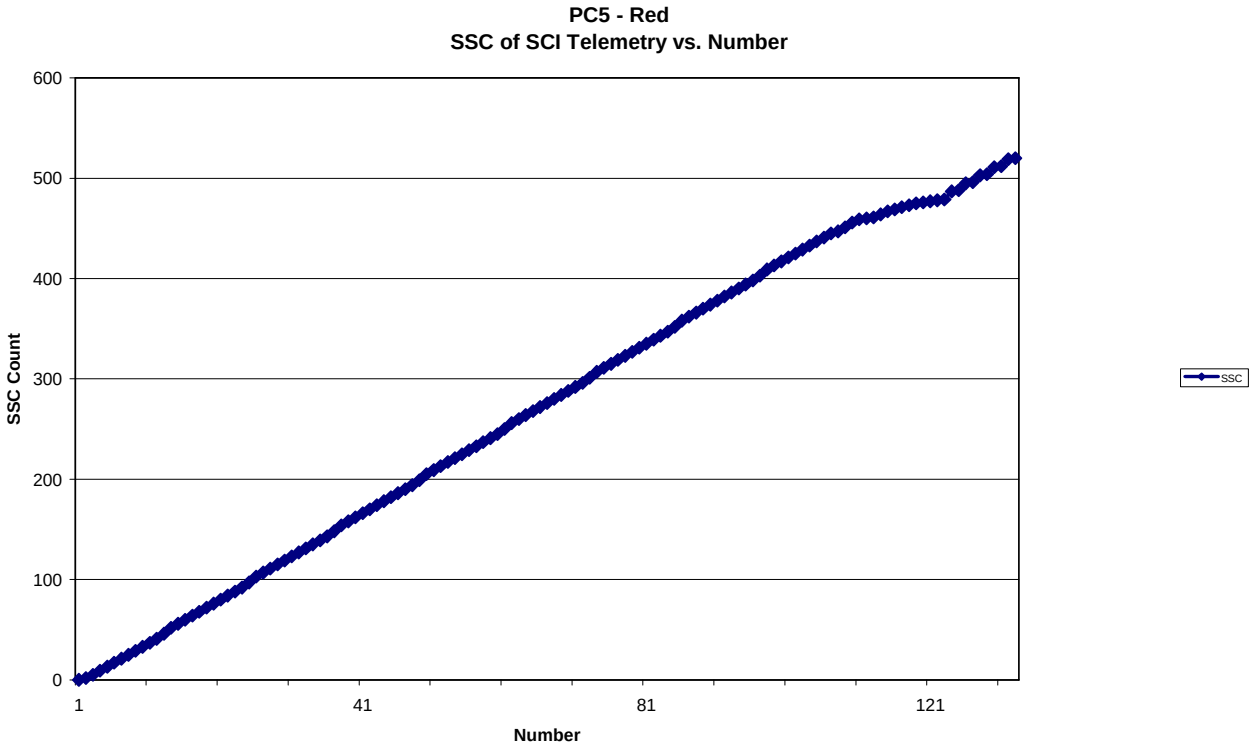


Figure 8.1-11. Source Sequence Count (SSC) of SCI Telemetry vs. Number - Red

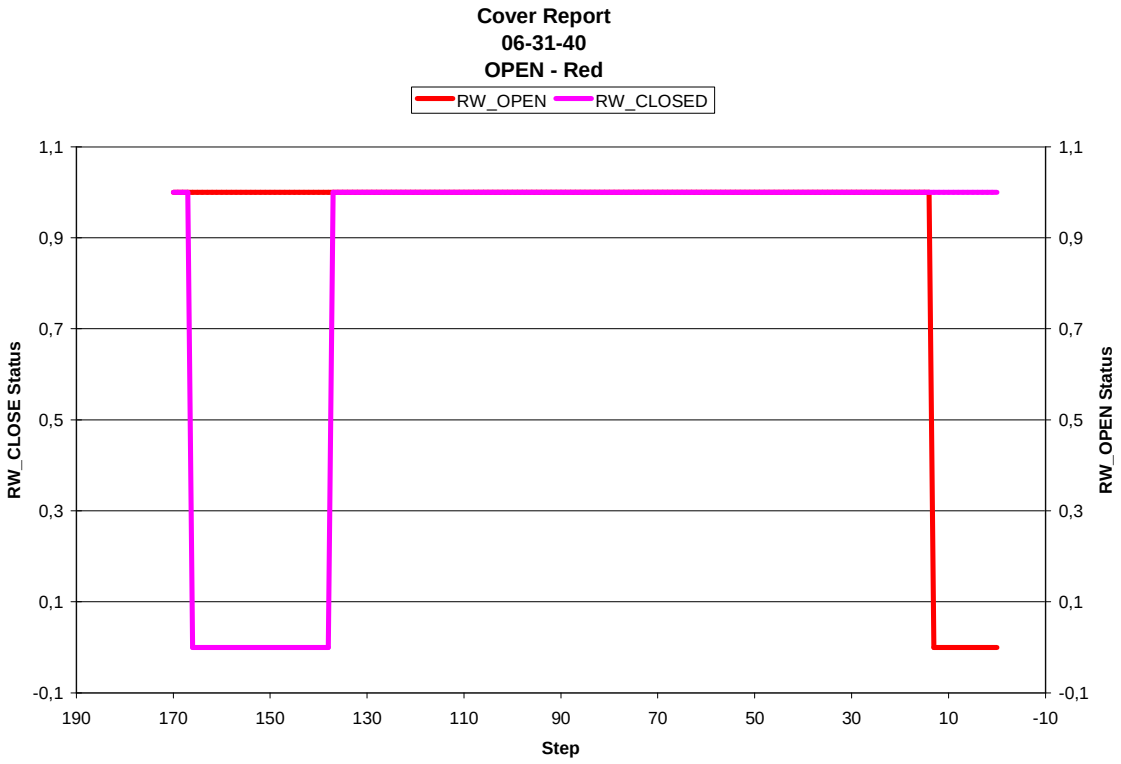


8.2 COVER REPORTS

8.2.1 Open Cover

HEADER_START
CREATION_TIME=2007-05-21T06:31:40Z
USER=AA0000
HEADER_END
//
// Generated by 'GIADA_EGSE_SW '
//
MOVEMENT DIRECTION: To open
BEGIN TIME OF OPERATION: 138349856.000000
END TIME OF OPERATION: 138349872.000000

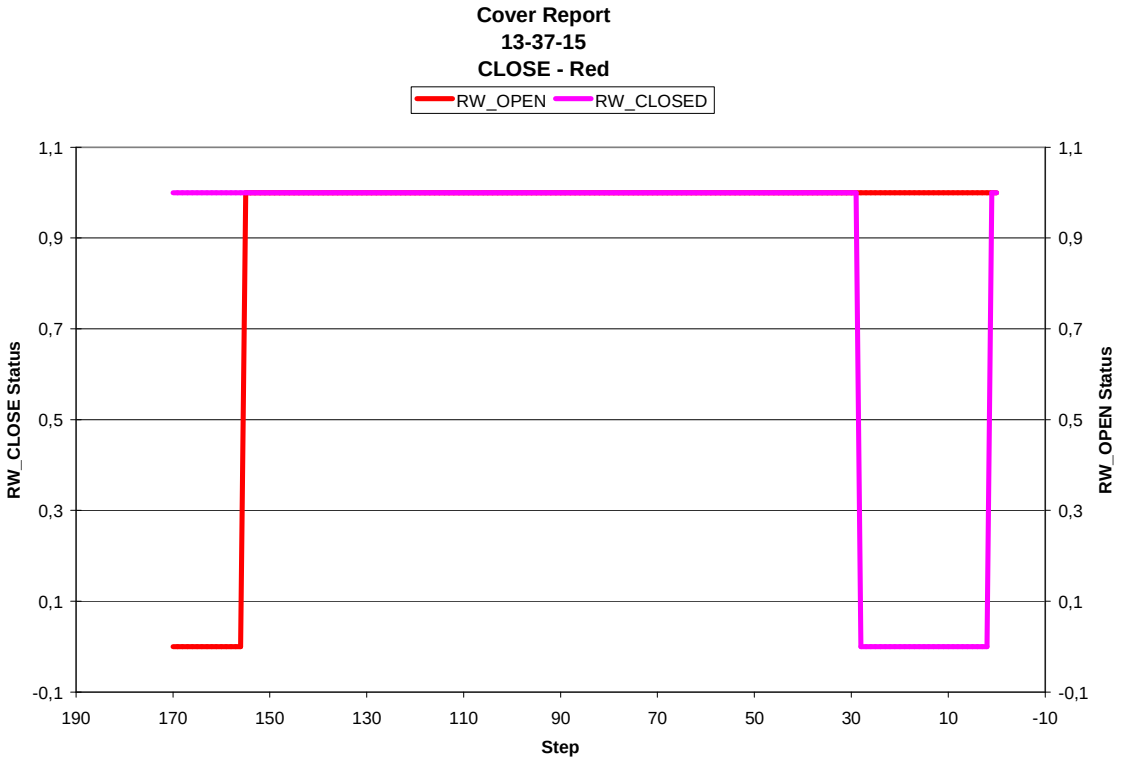
Figure 8.2-1 Cover Report – Open – Red



8.2.2 Close Cover

HEADER_START
CREATION_TIME=2007-05-21T17:37:15Z
USER=AA0000
HEADER_END
//
// Generated by 'GIADA_EGSE_SW '
//
MOVEMENT DIRECTION: To close
BEGIN TIME OF OPERATION: 138389792.000000
END TIME OF OPERATION: 138389808.000000

Figure 8.2-2 Cover Report – Close – Red



8.3 GRAIN DETECTION SYSTEM (GDS)

8.3.1 GDS – Status

Figure 8.3-1. GDS Operation Status vs. time - Red

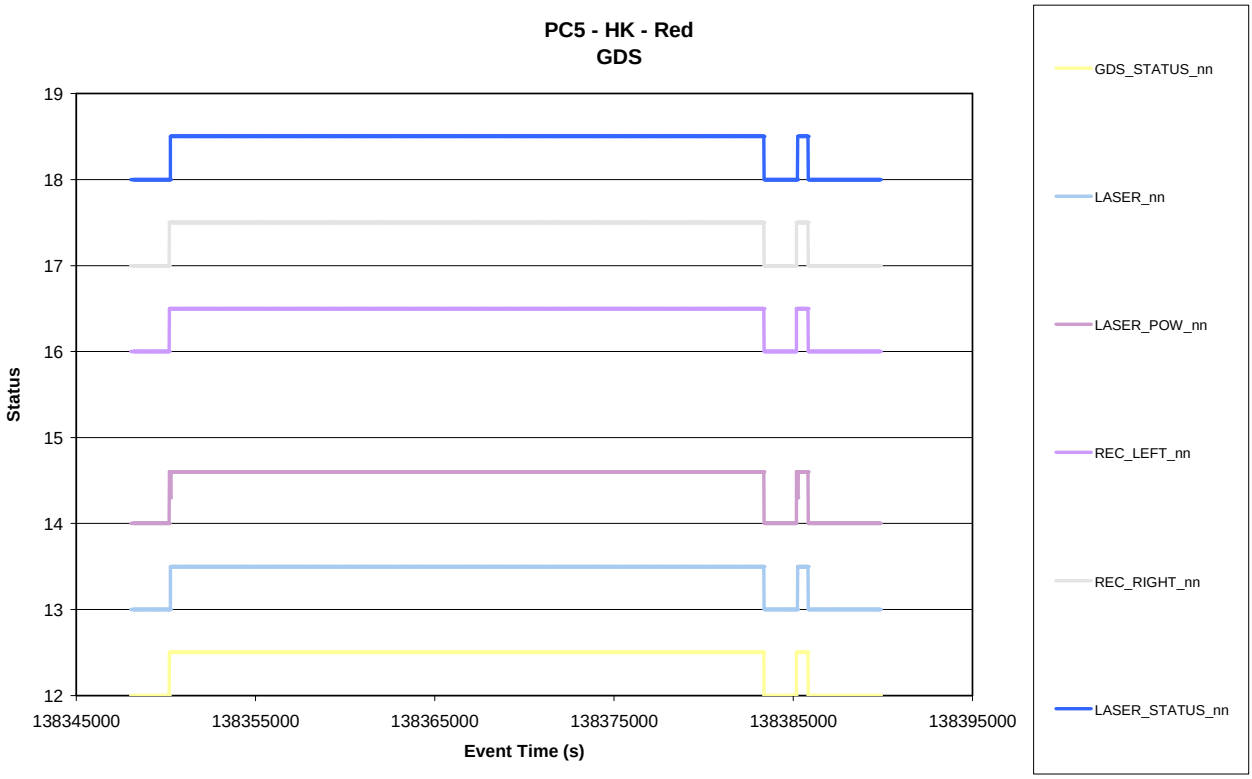


Figure 8.3-2. GDS Thresholds change vs. time - Red

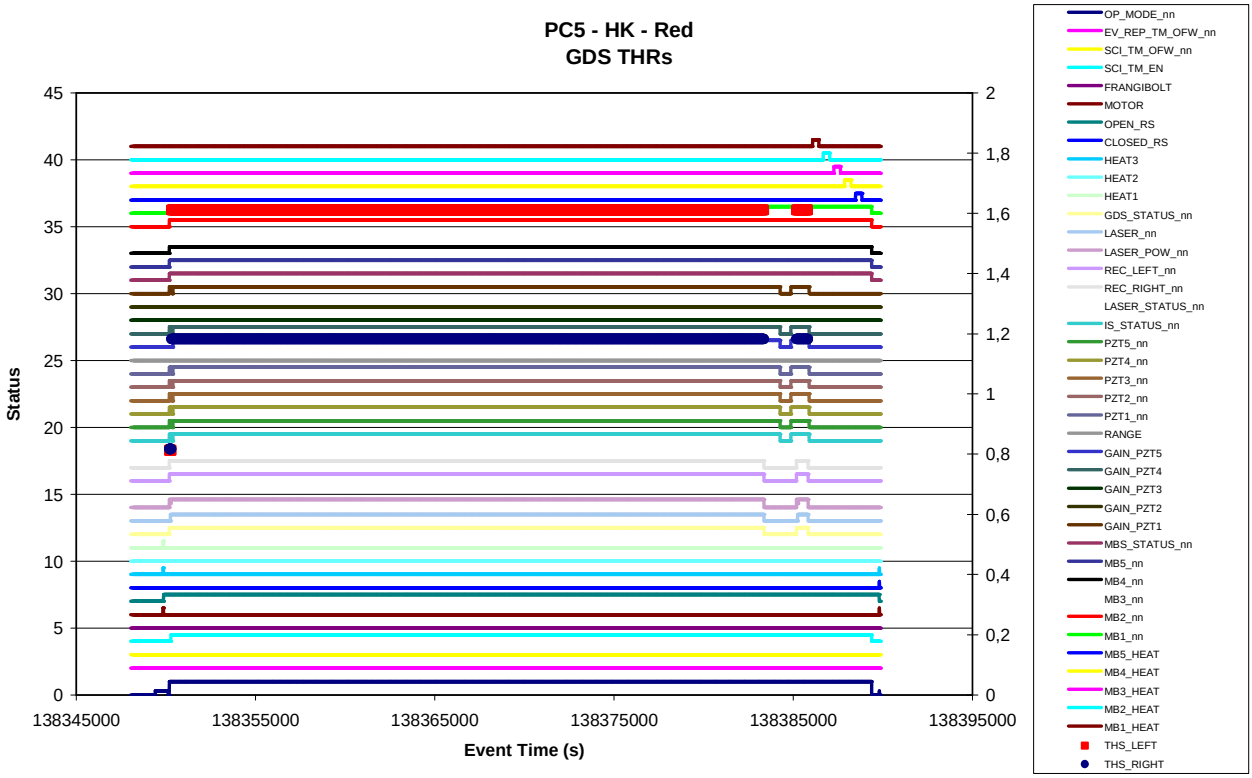


Figure 8.3-3. GDS Laser Temperatures vs. time (HK, HK-SCI, SCI) - Red

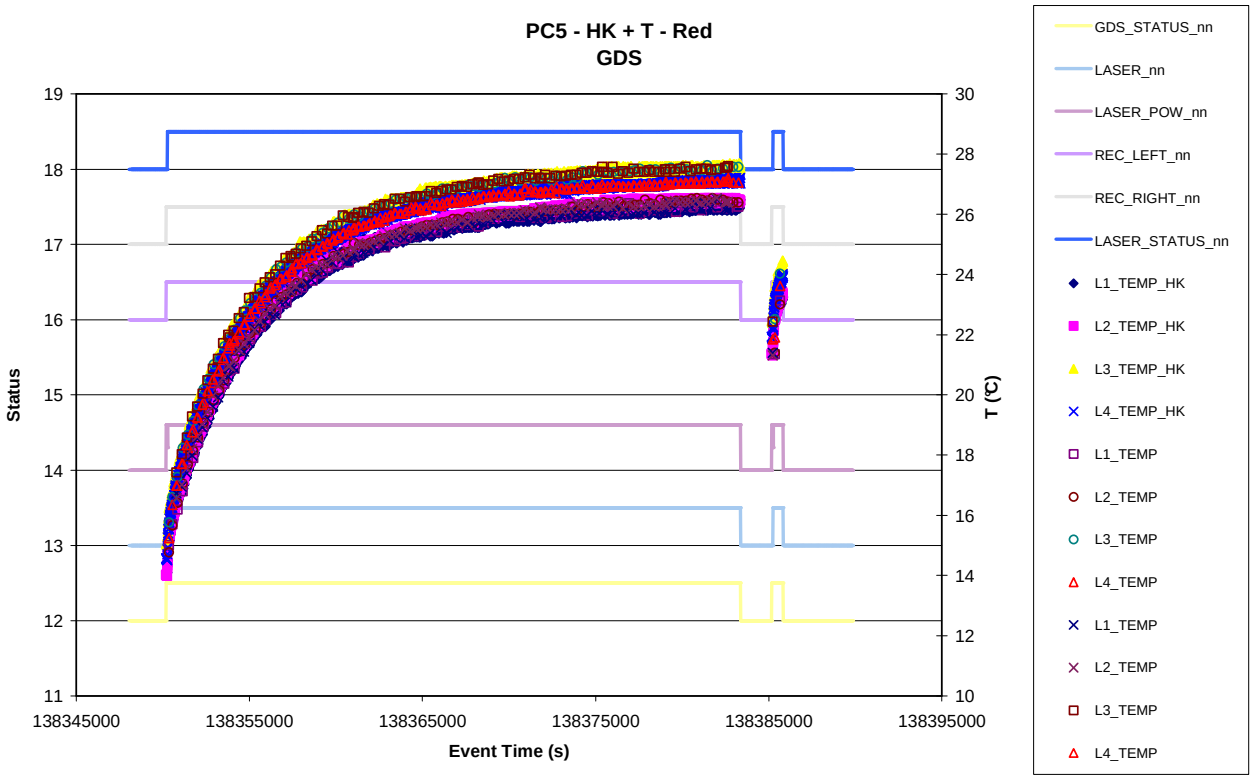


Figure 8.3-4. GDS Laser Monitor vs. time (HK, HK-SCI, SCI) - Red

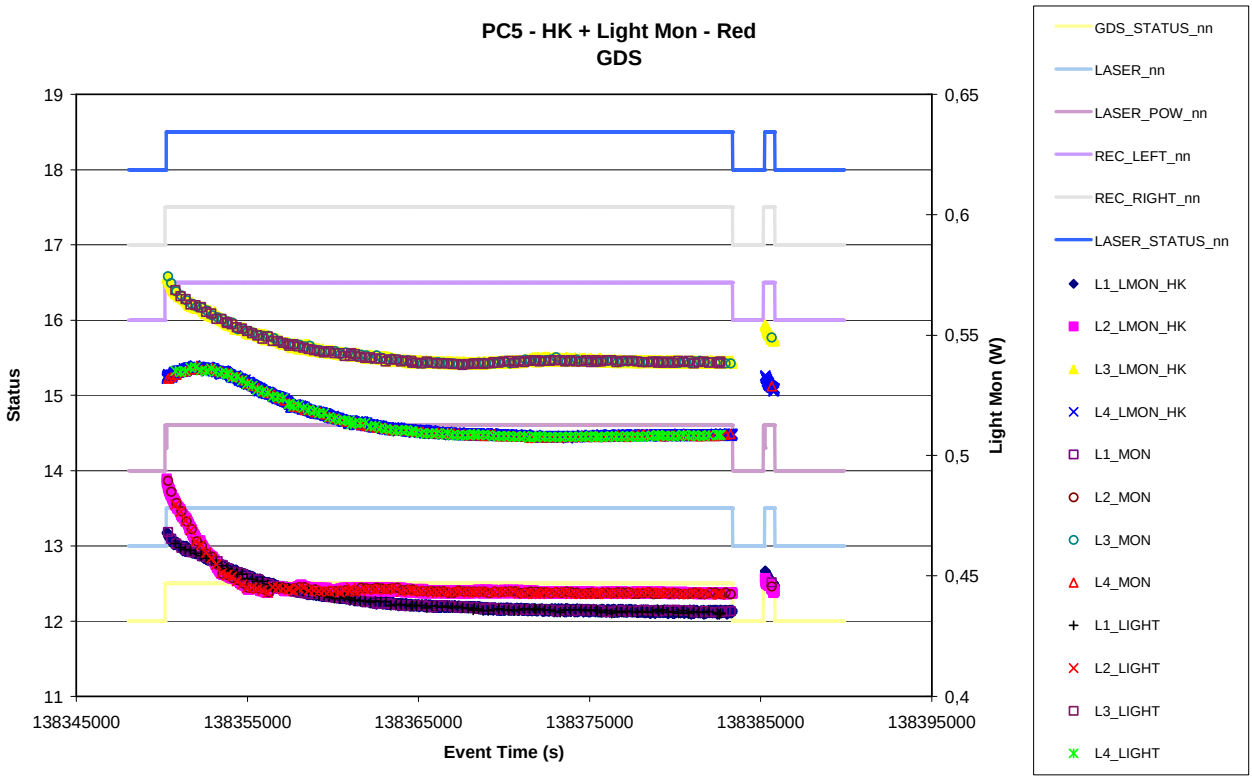


Figure 8.3-5. Laser 1 Light Monitor versus Temperature (HK, HK-SCI, SCI) - Red

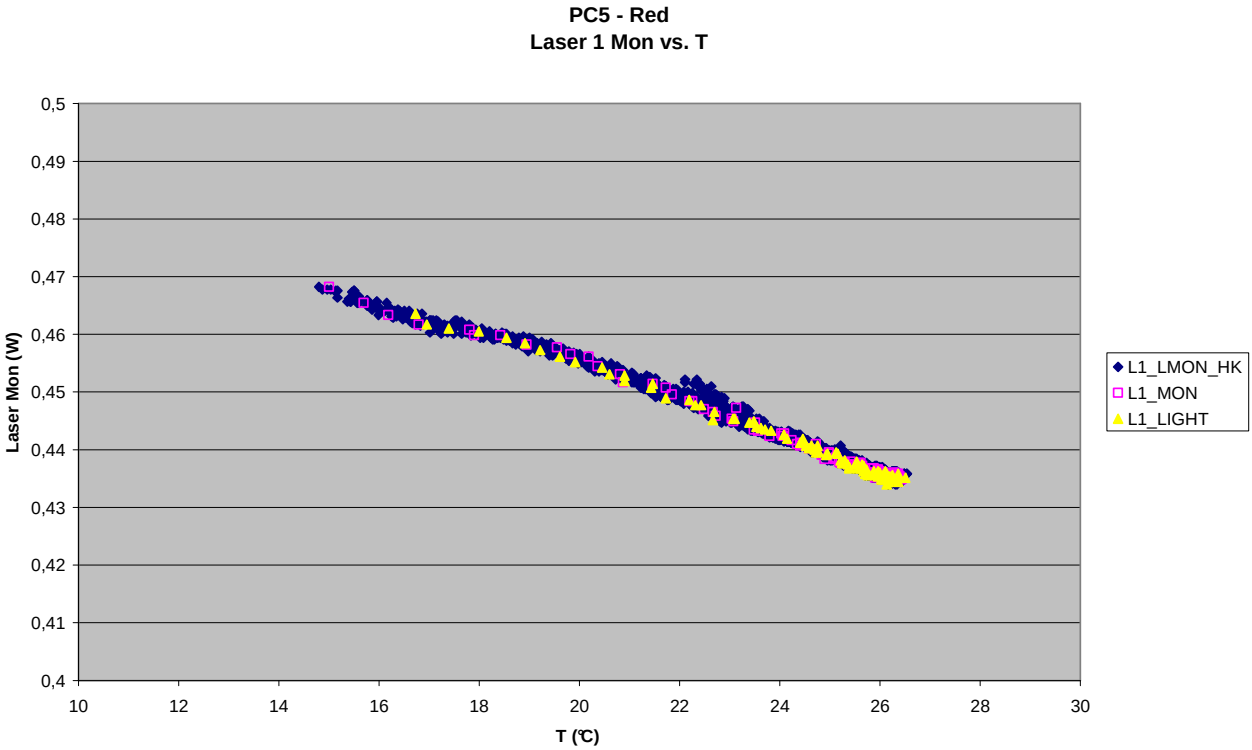


Figure 8.3-6. Laser 2 Light Monitor versus Temperature (HK, HK-SCI, SCI) - Red

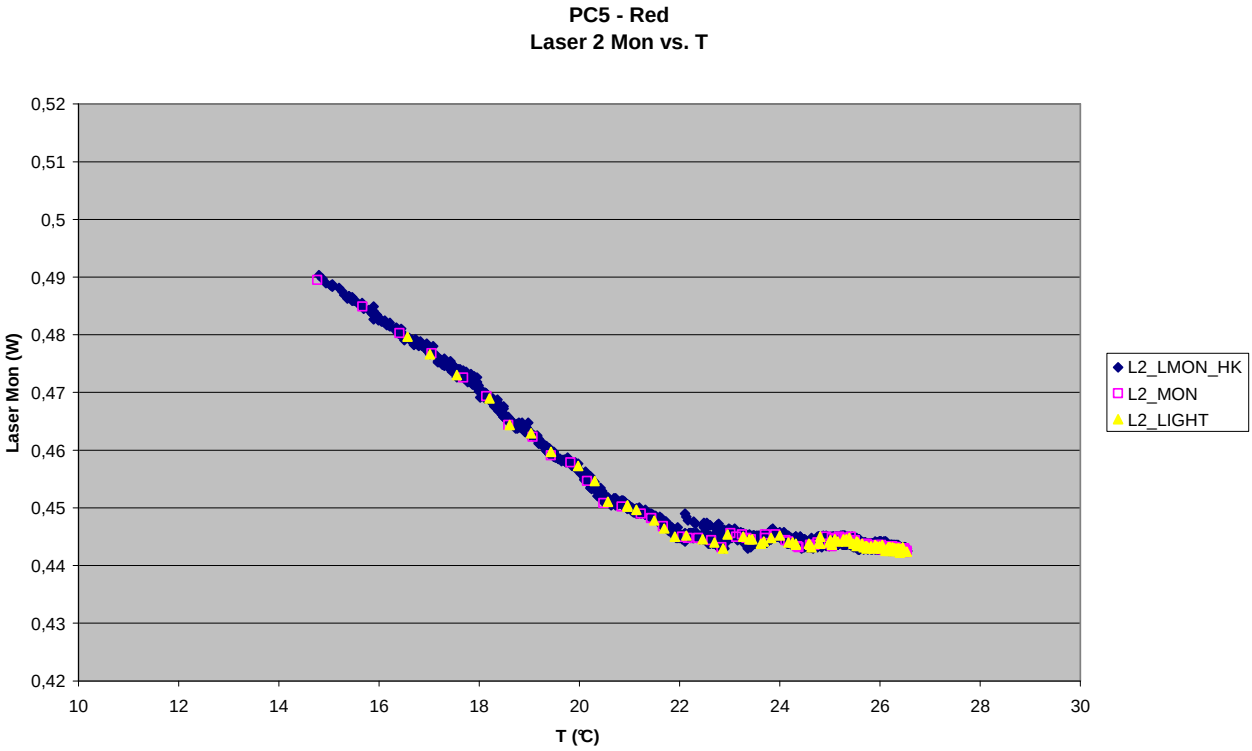


Figure 8.3-7. Laser 3 Light Monitor versus Temperature (HK, HK-SCI, SCI) - Red

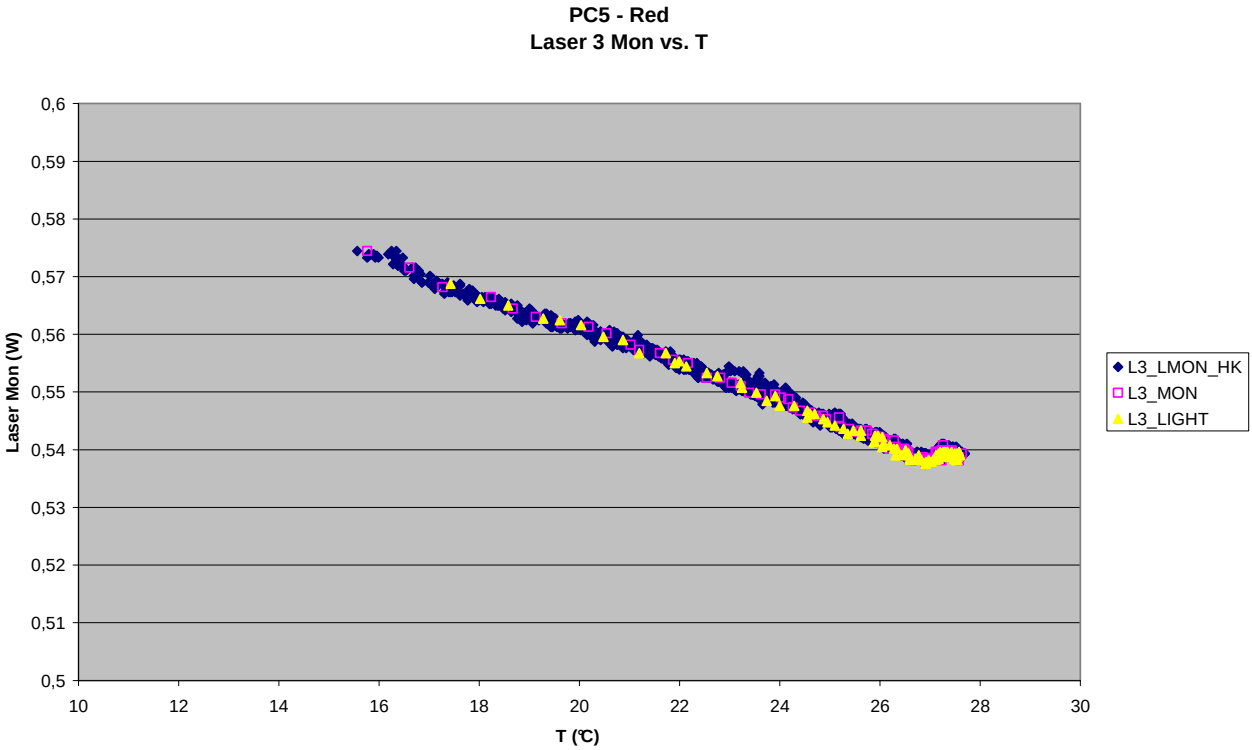
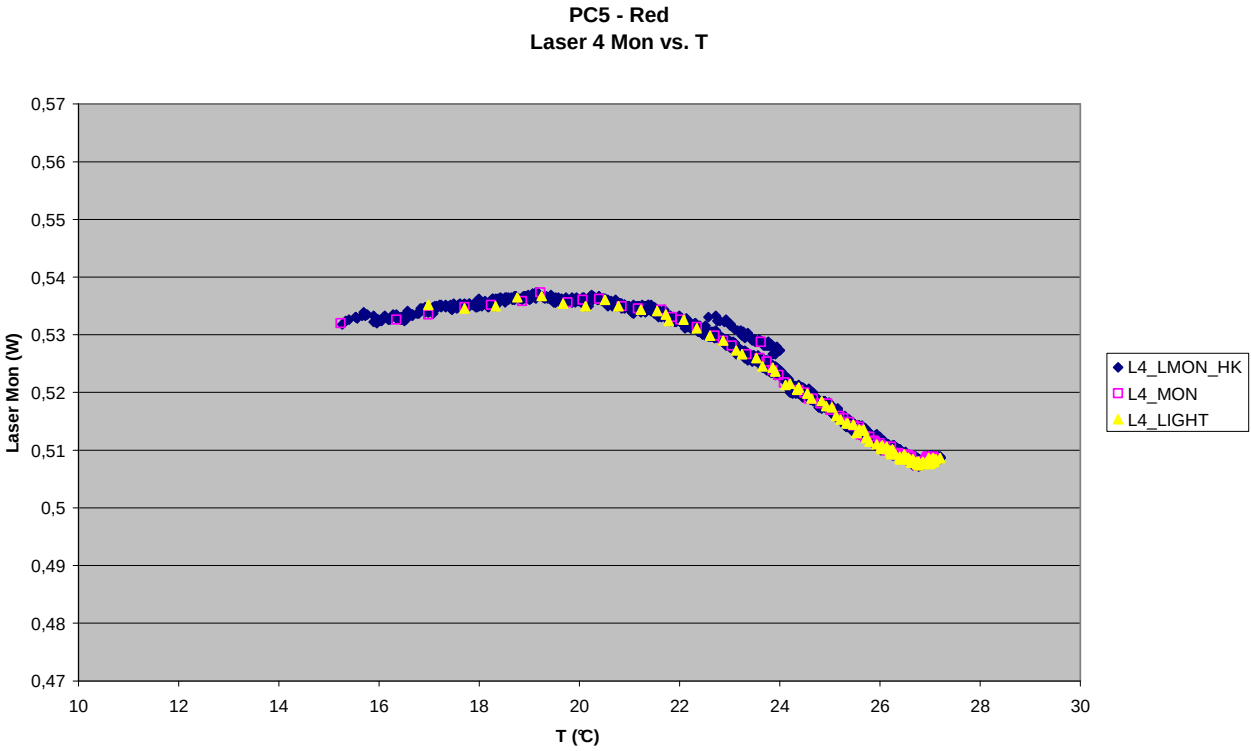


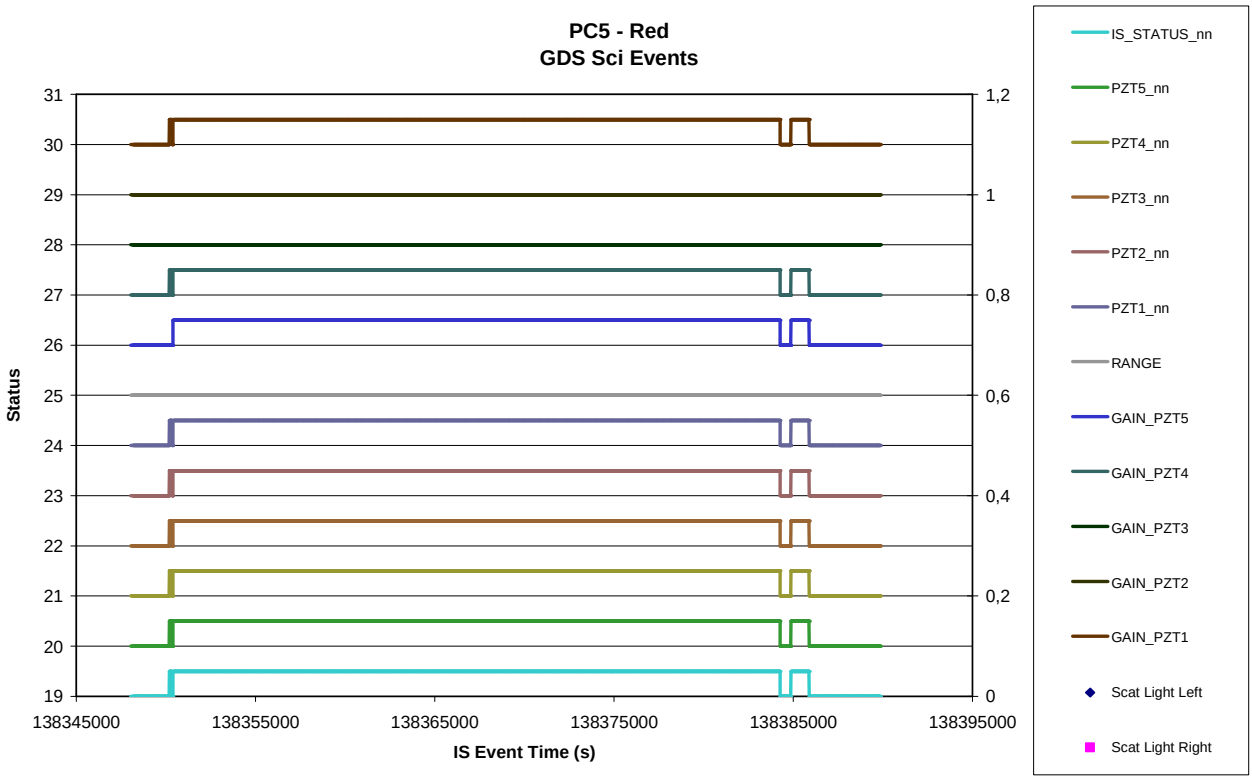
Figure 8.3-8. Laser 4 Light Monitor versus Temperature (HK, HK-SCI, SCI) - Red



8.3.2 GDS – Behaviour

8.3.2.1 Science Events

Figure 8.3-9. GDS Left and Right SCI events vs. time – Red

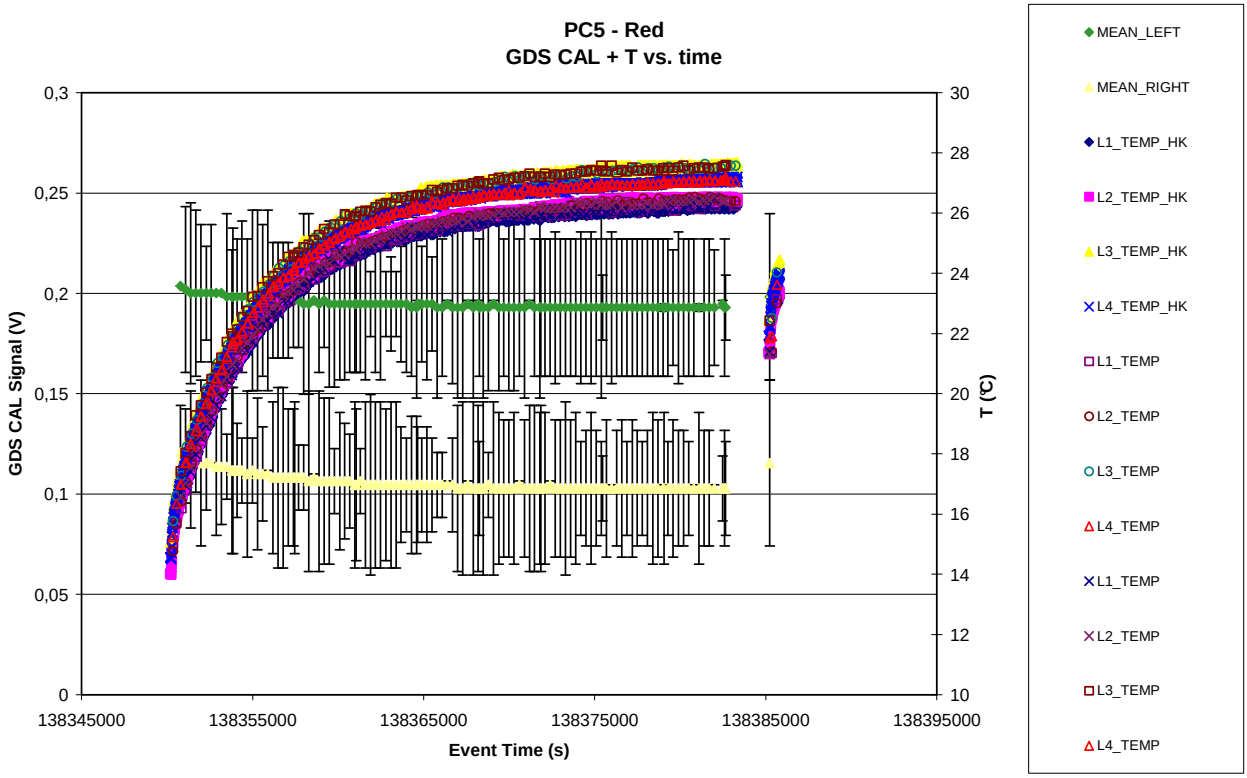


8.3.2.2 Event Rates

Not applicable

8.3.2.3 CAL

Figure 8.3-10. Evolution of GDS CAL Left and Right signals (and T) vs. time (Red)



8.4 IMPACT SENSOR (IS)

8.4.1 IS – Status

Figure 8.4-1. IS Operation Status vs. time - Red

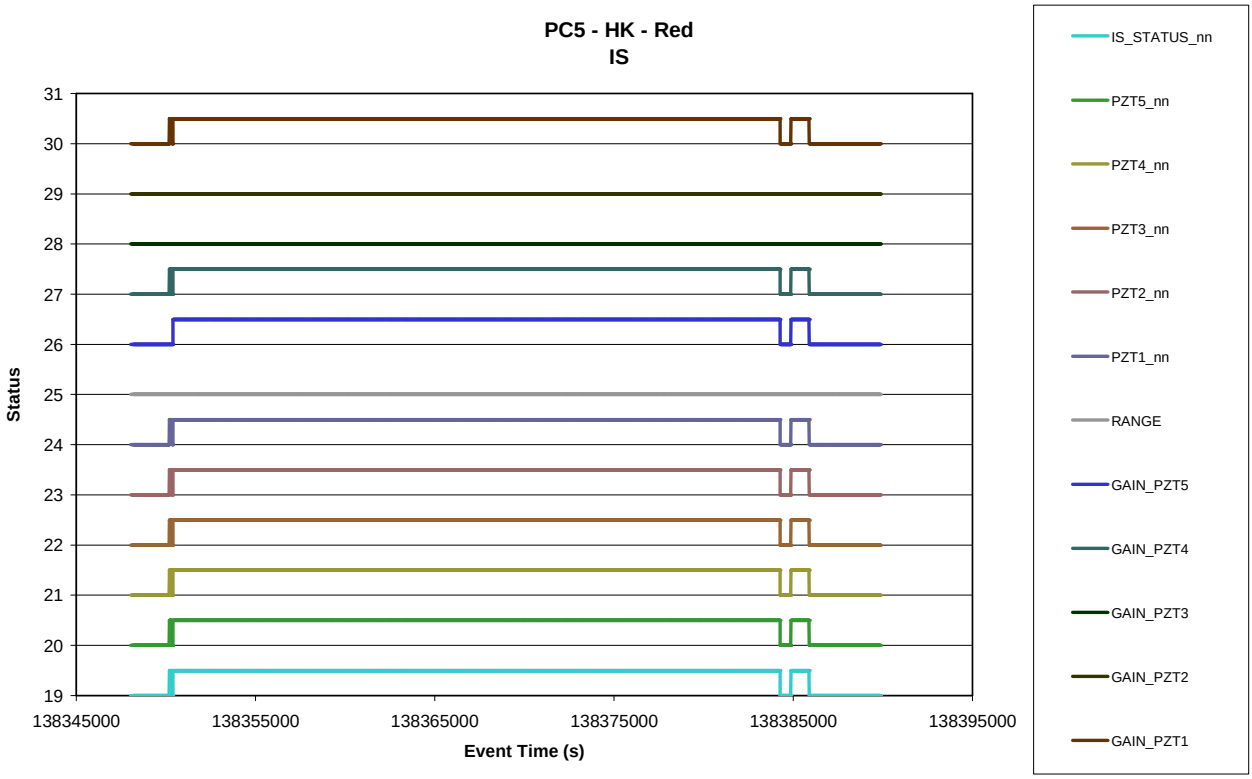


Figure 8.4-2. IS PZT 3 Thresholds change vs. time - Red

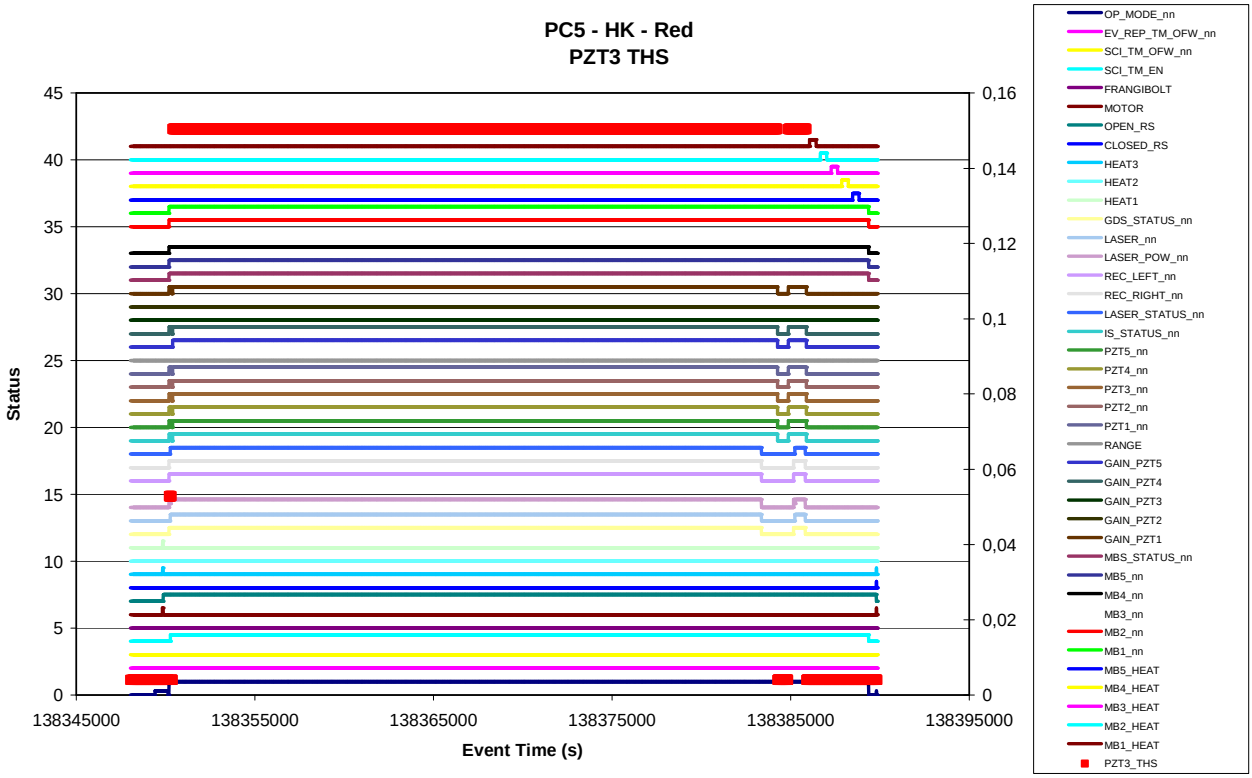


Figure 8.4-3. IS PZT 5 Thresholds change vs. time - Red

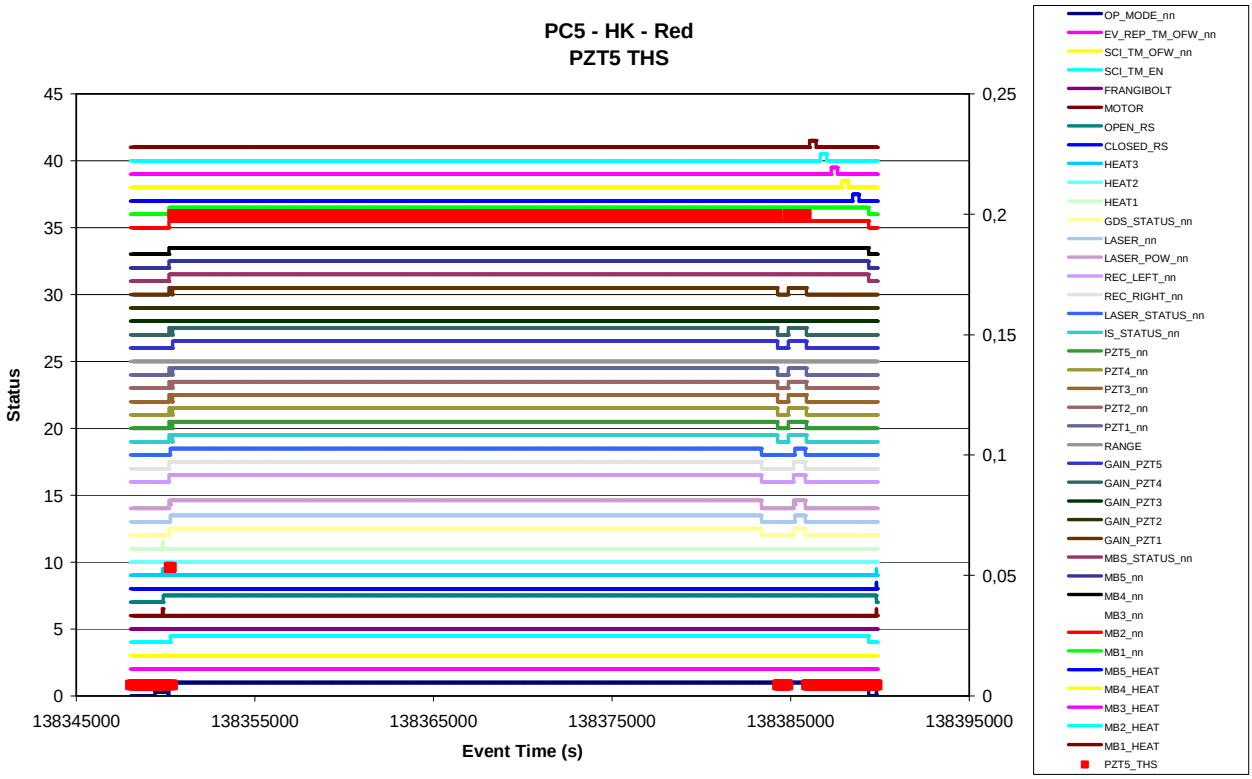
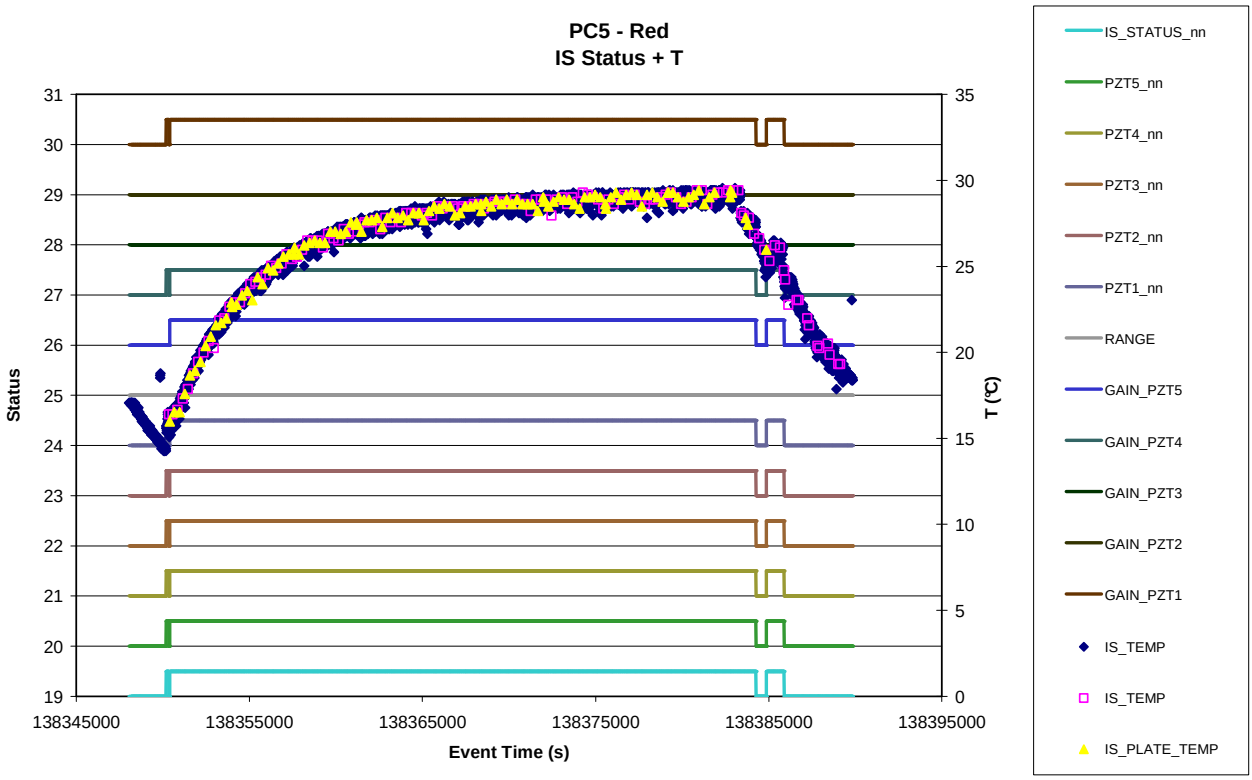


Figure 8.4-4. IS Temperature vs. time (HK, HK-SCI, SCI) - Red



8.4.2 IS – Behaviour

8.4.2.1 Science Events

Figure 8.4-5. All PZT (det. and non-det.) events vs. time - Red

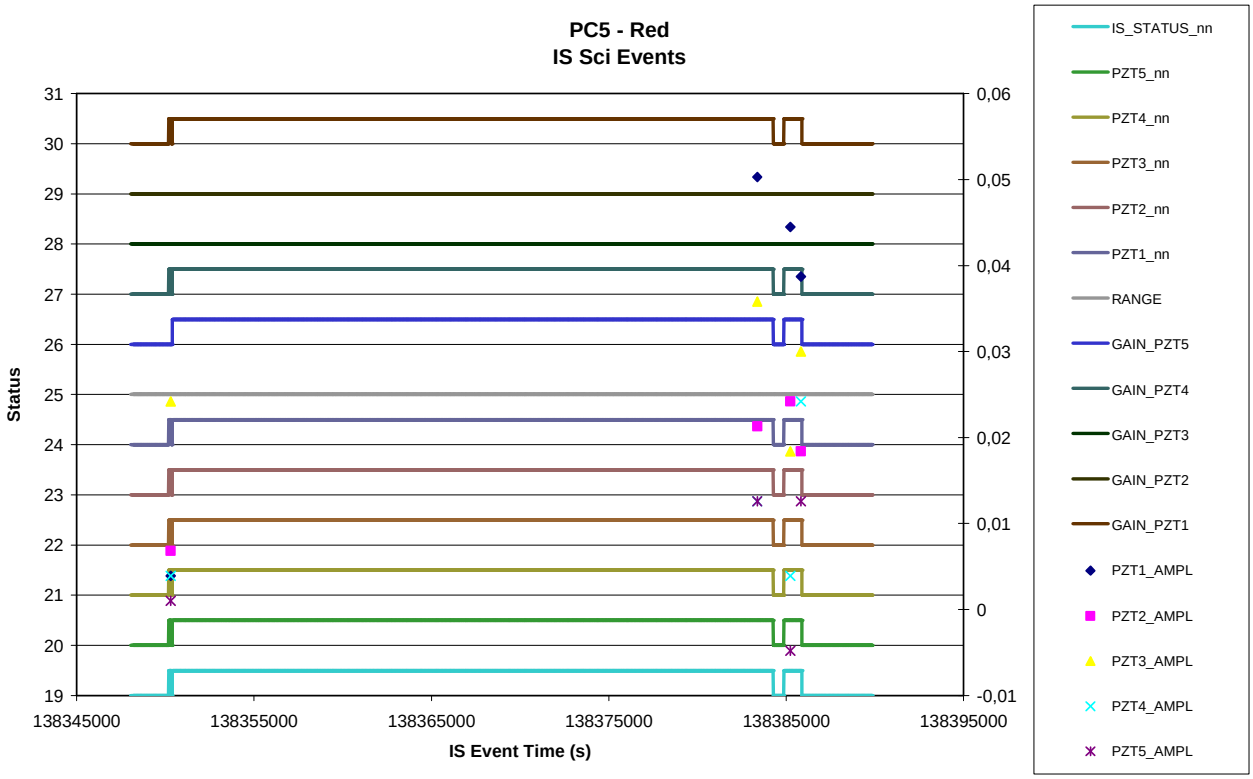


Figure 8.4-6. PZT 1-2-3-4-5 Detected Events vs. time - Red

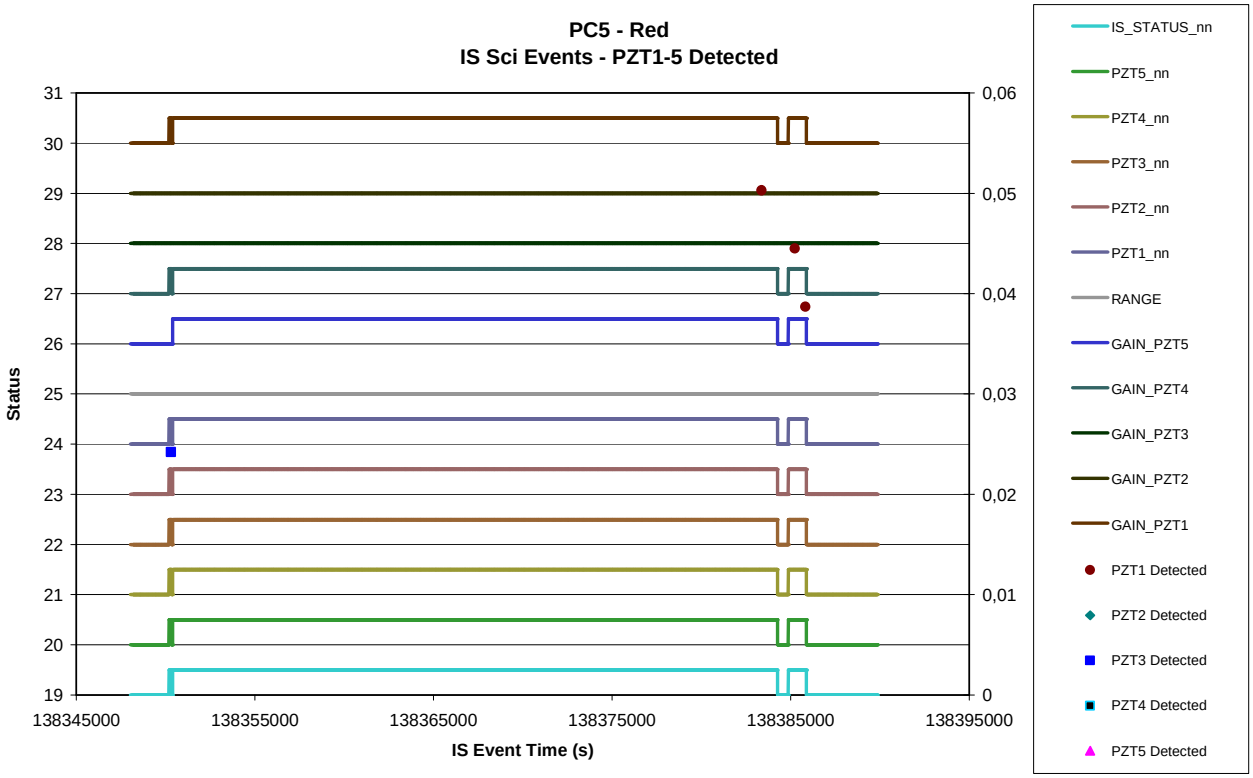


Figure 8.4-7. PZT 1 Detected Events vs. time - Red

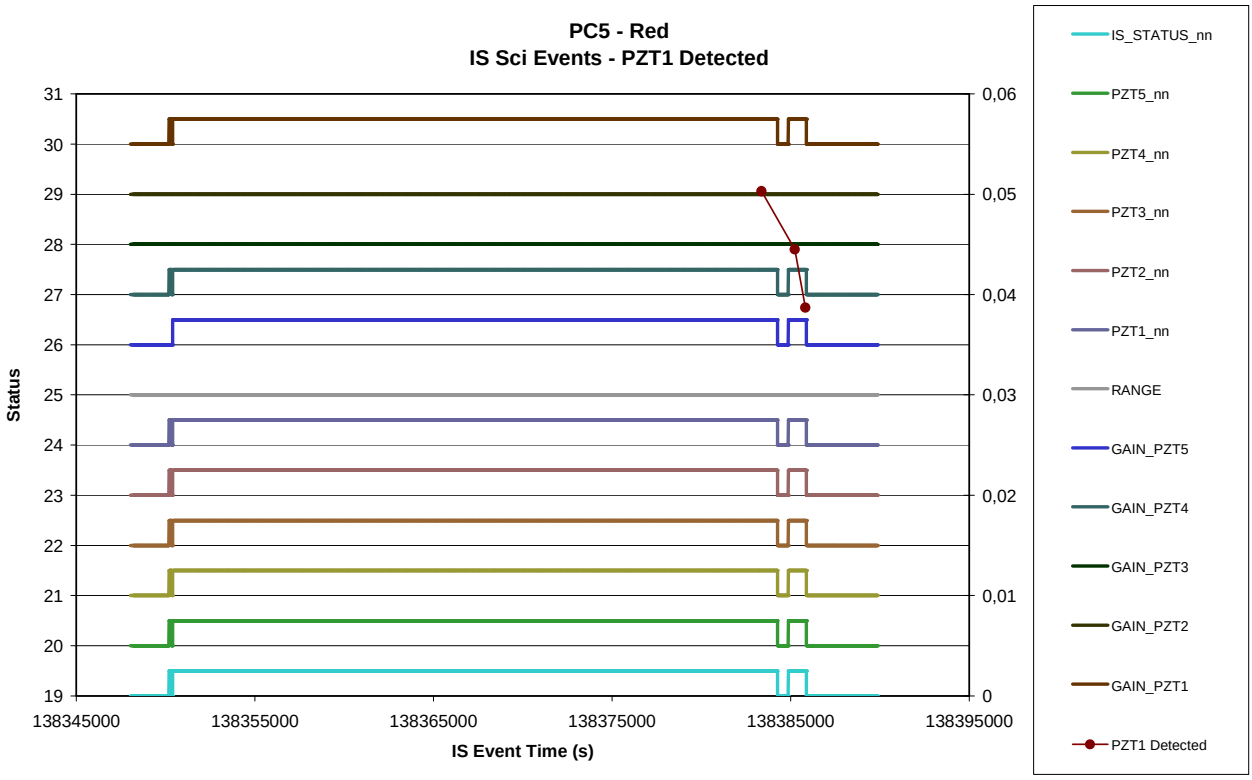


Figure 8.4-8. PZT 2 Detected Events vs. time - Red

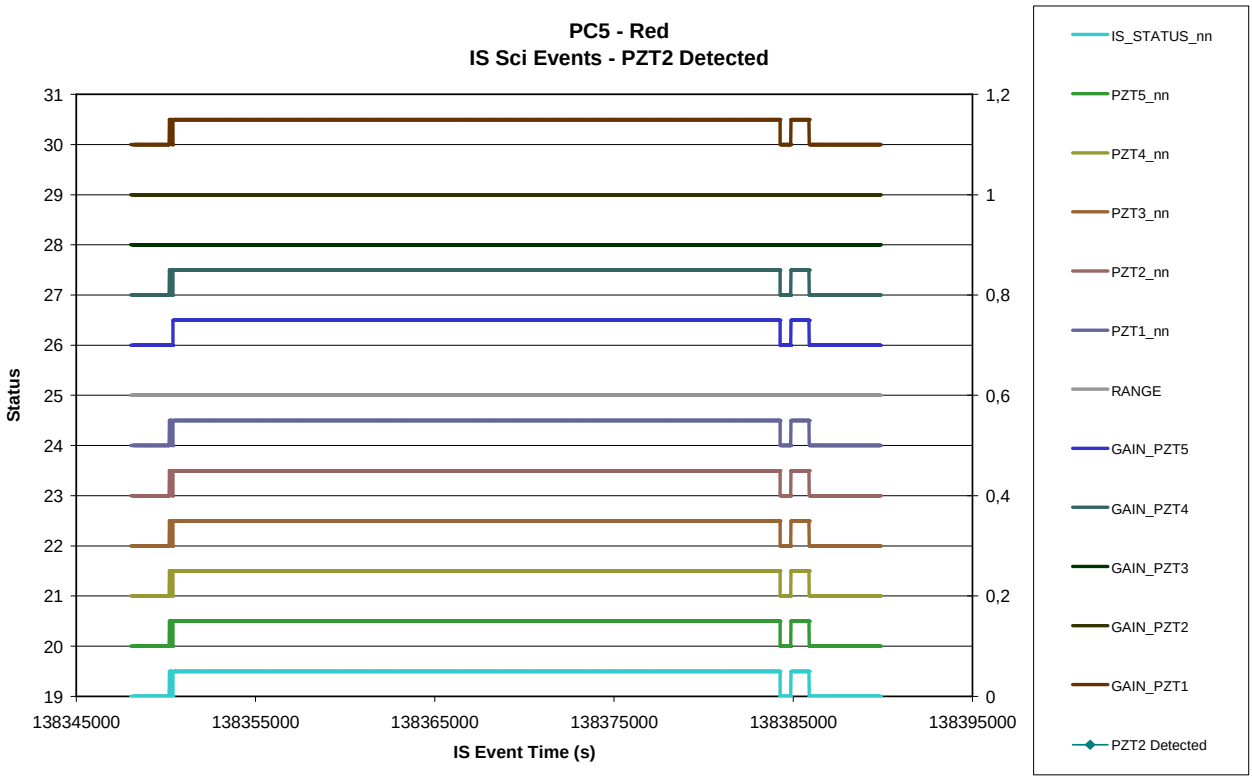


Figure 8.4-9. PZT 3 Detected Events vs. time - Red

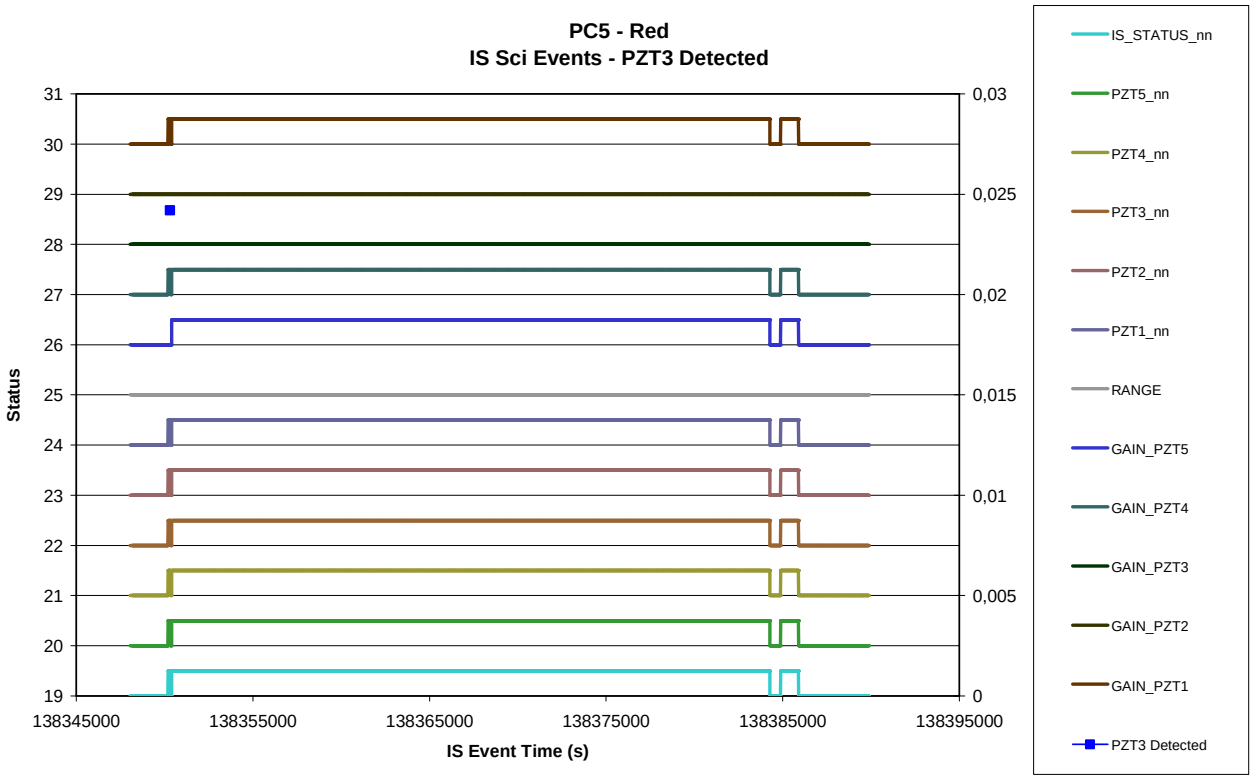


Figure 8.4-10. PZT 4 Detected Events vs. time - Red

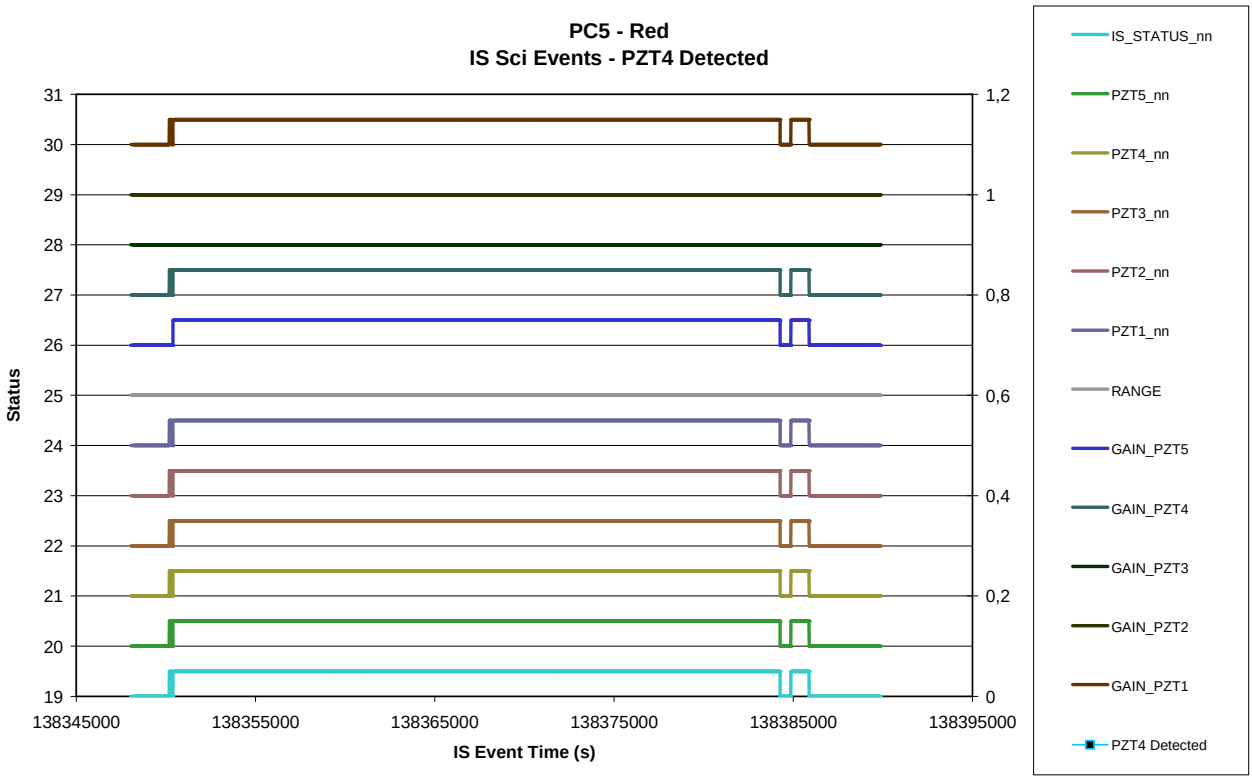


Figure 8.4-11. PZT 5 Detected Events vs. time - Red

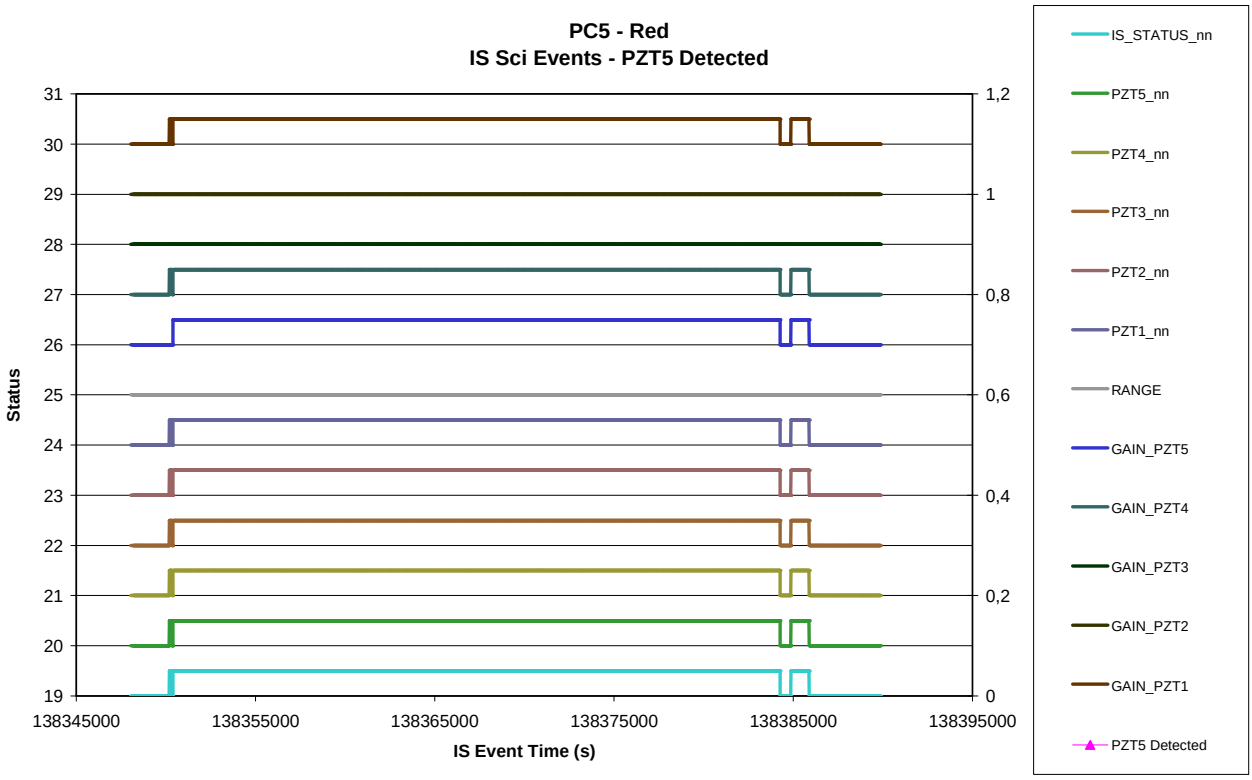
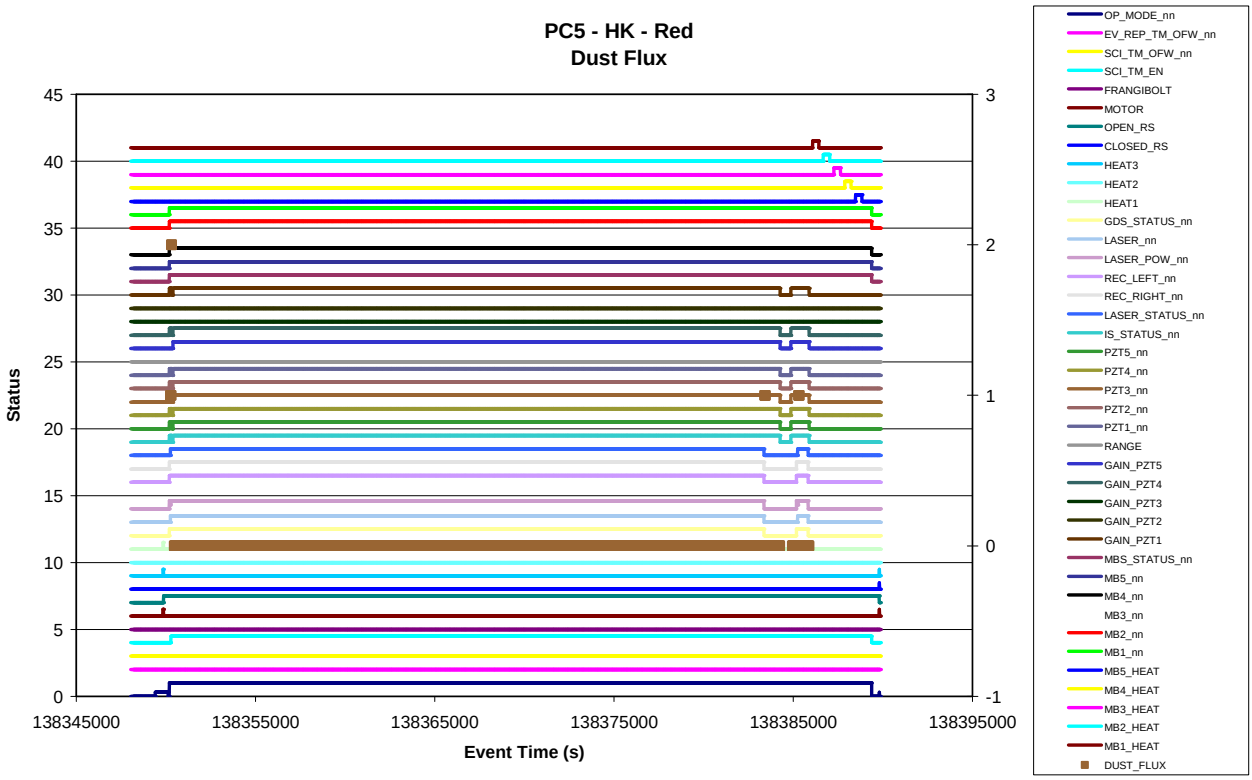


Figure 8.4-12. Dust Flux vs. time - Red



8.4.2.2 Event Rates

Not applicable

8.4.2.3 CAL

Figure 8.4-13. PZT 1 Mean and St Dev. CAL vs. time - Red

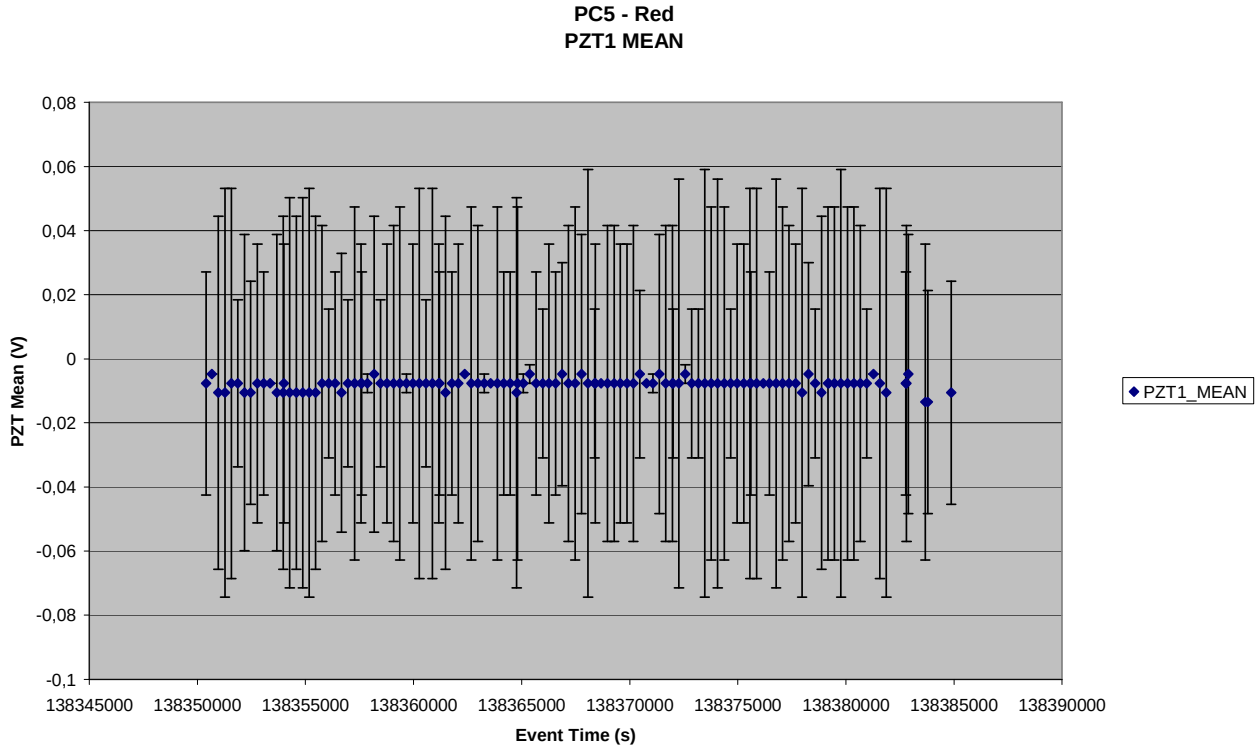


Figure 8.4-14. PZT 2 Mean and St Dev. CAL vs. time - Red

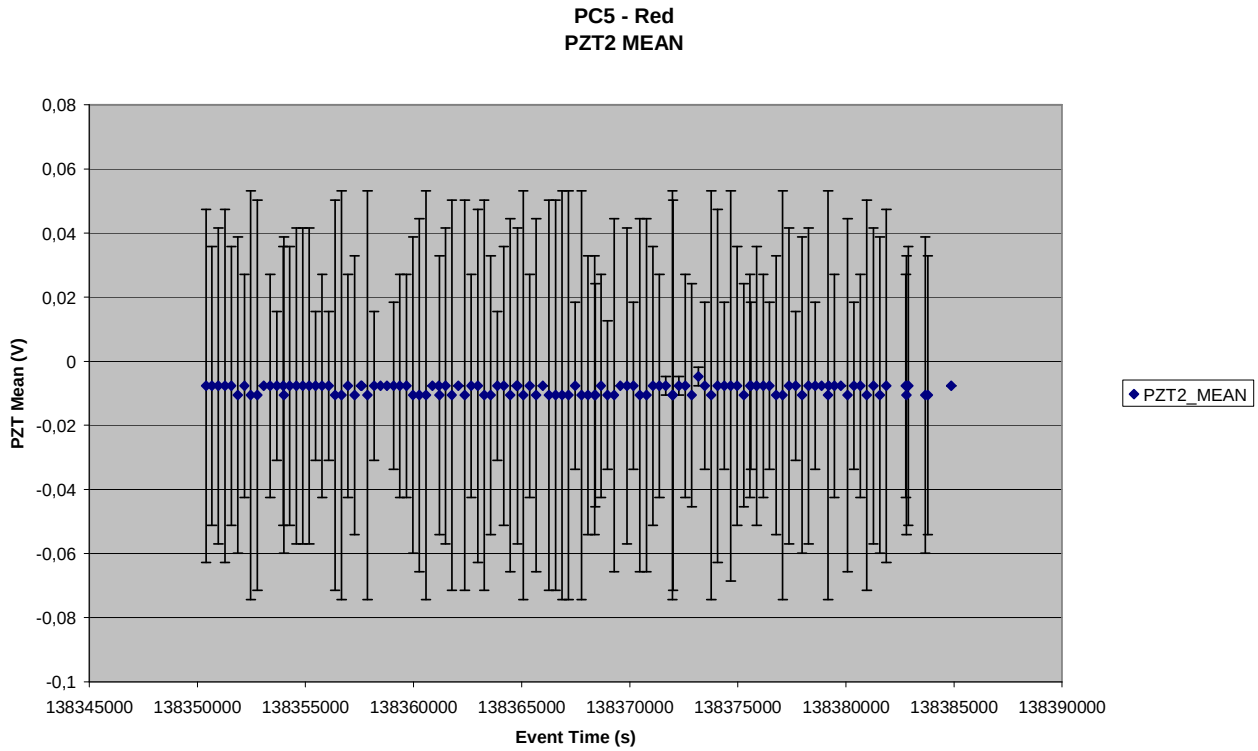


Figure 8.4-15. PZT 3 Mean and St Dev. CAL vs. time - Red

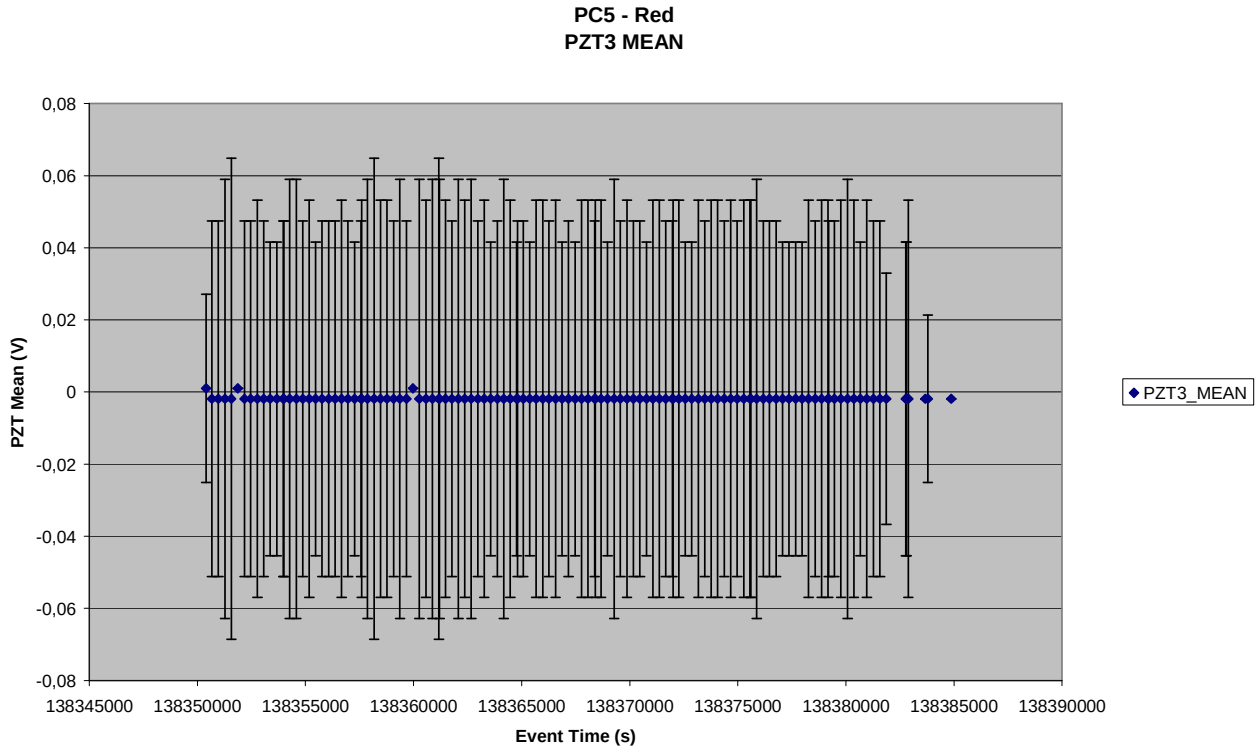


Figure 8.4-16. PZT 4 Mean and St Dev. CAL vs. time - Red

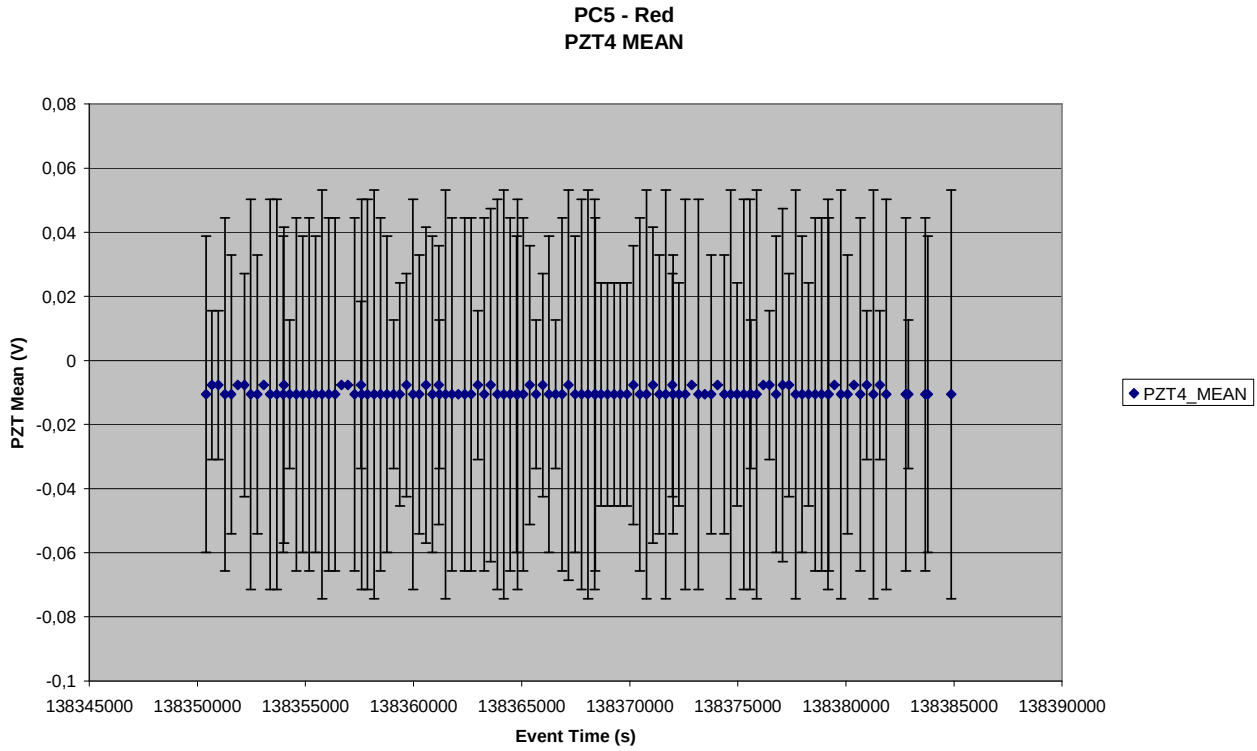


Figure 8.4-17. PZT 5 Mean and St Dev. CAL vs. time - Red

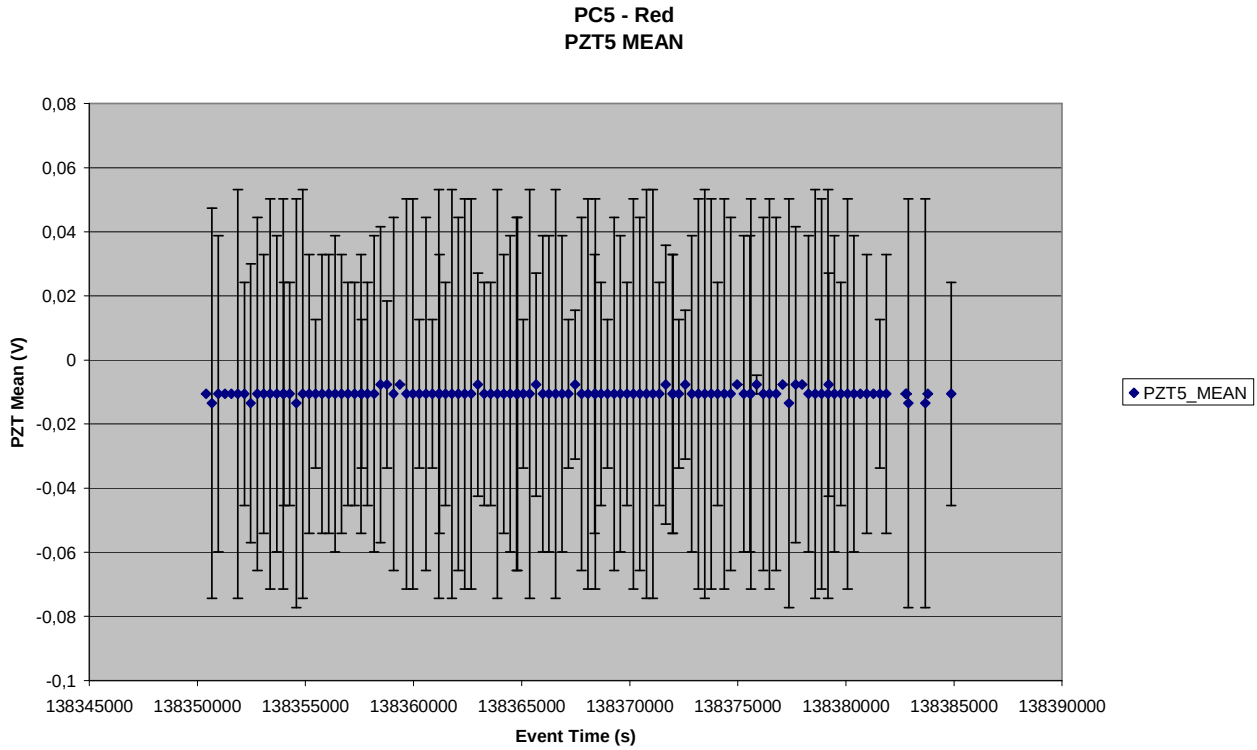


Figure 8.4-18. Reference Voltages for IS calibration vs. time - Red

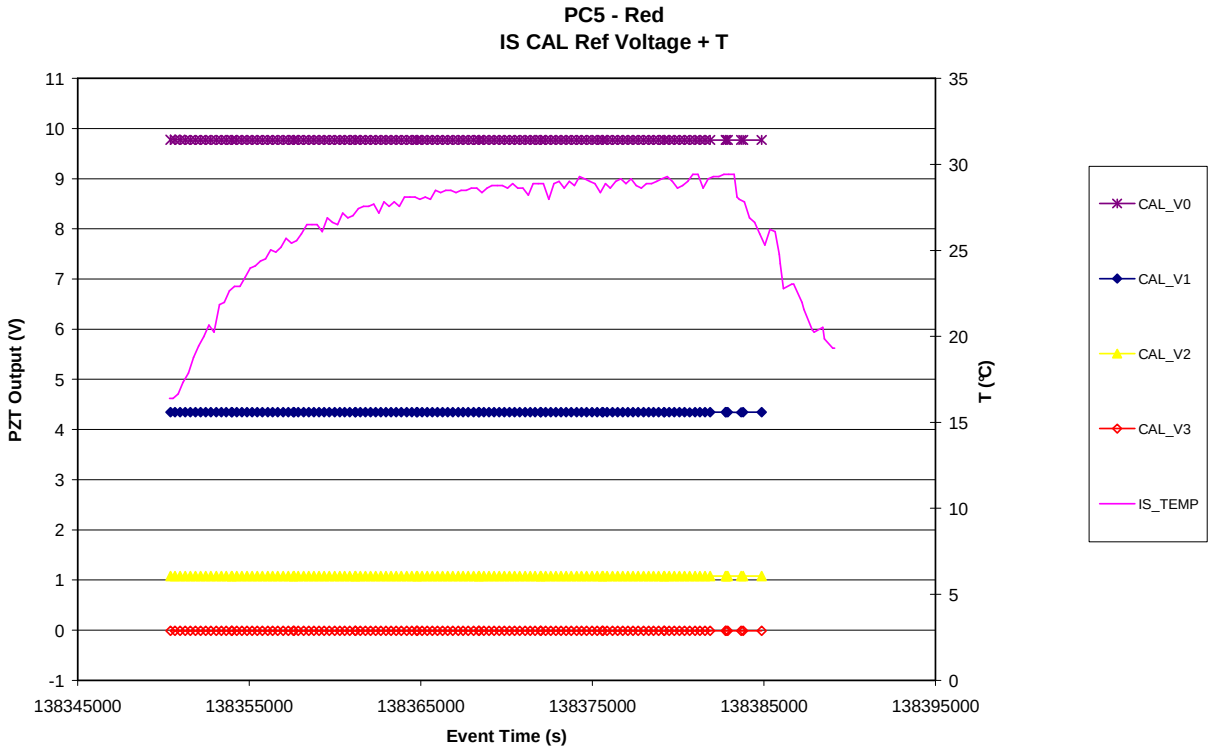


Figure 8.4-19. PZT 1 CAL Signal vs. time - Red

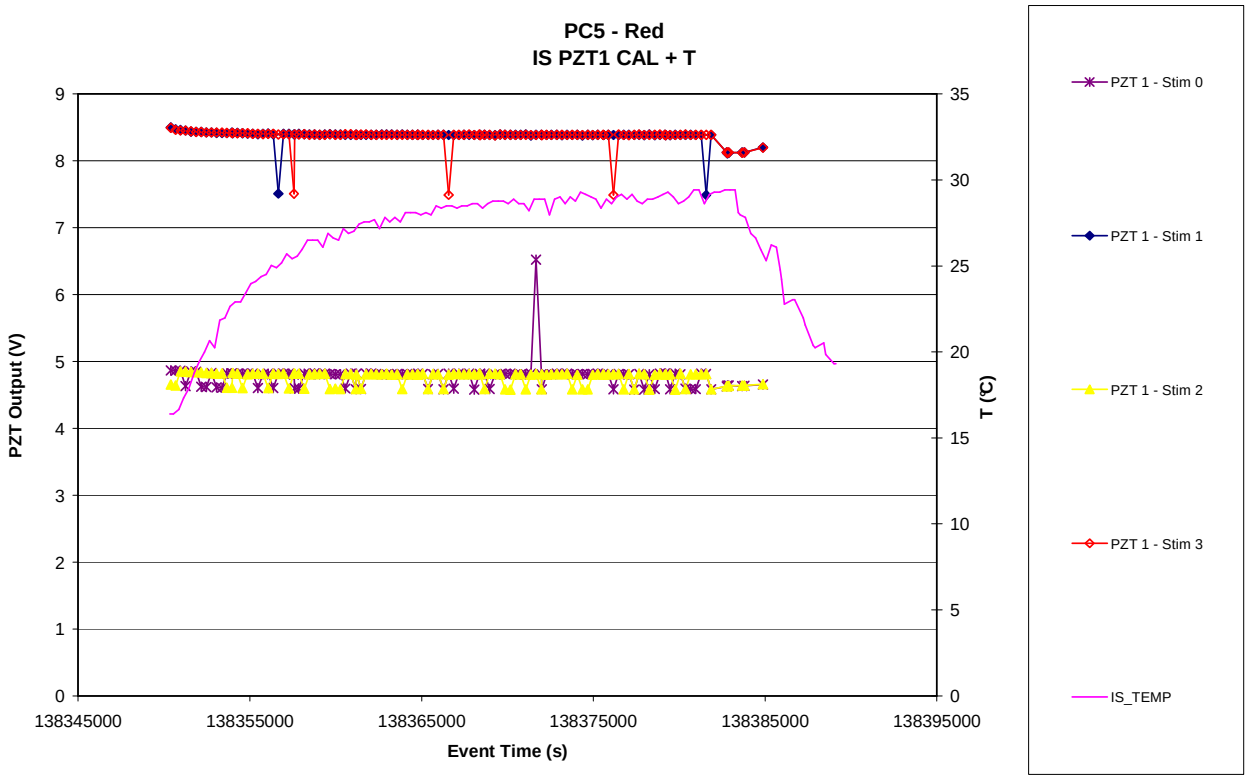


Figure 8.4-20. PZT 2 CAL Signal vs. time - Red

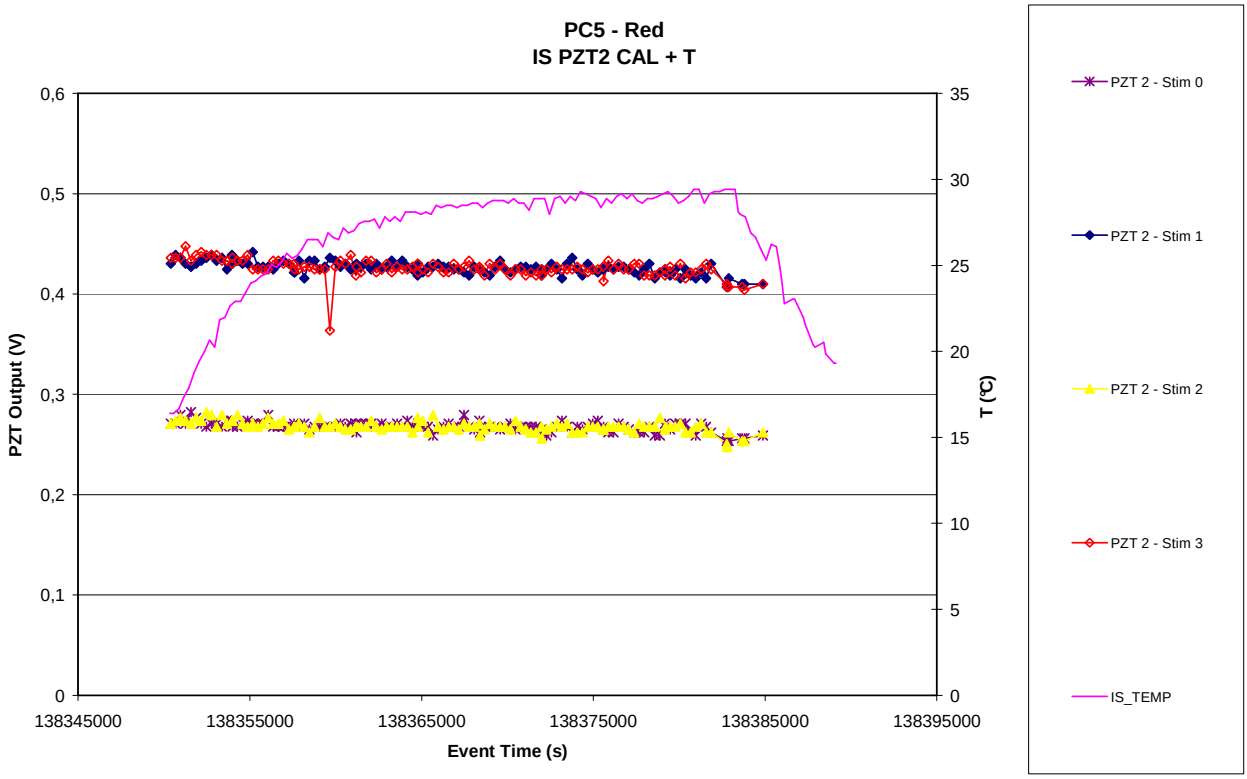


Figure 8.4-21. PZT 3 CAL Signal vs. time - Red

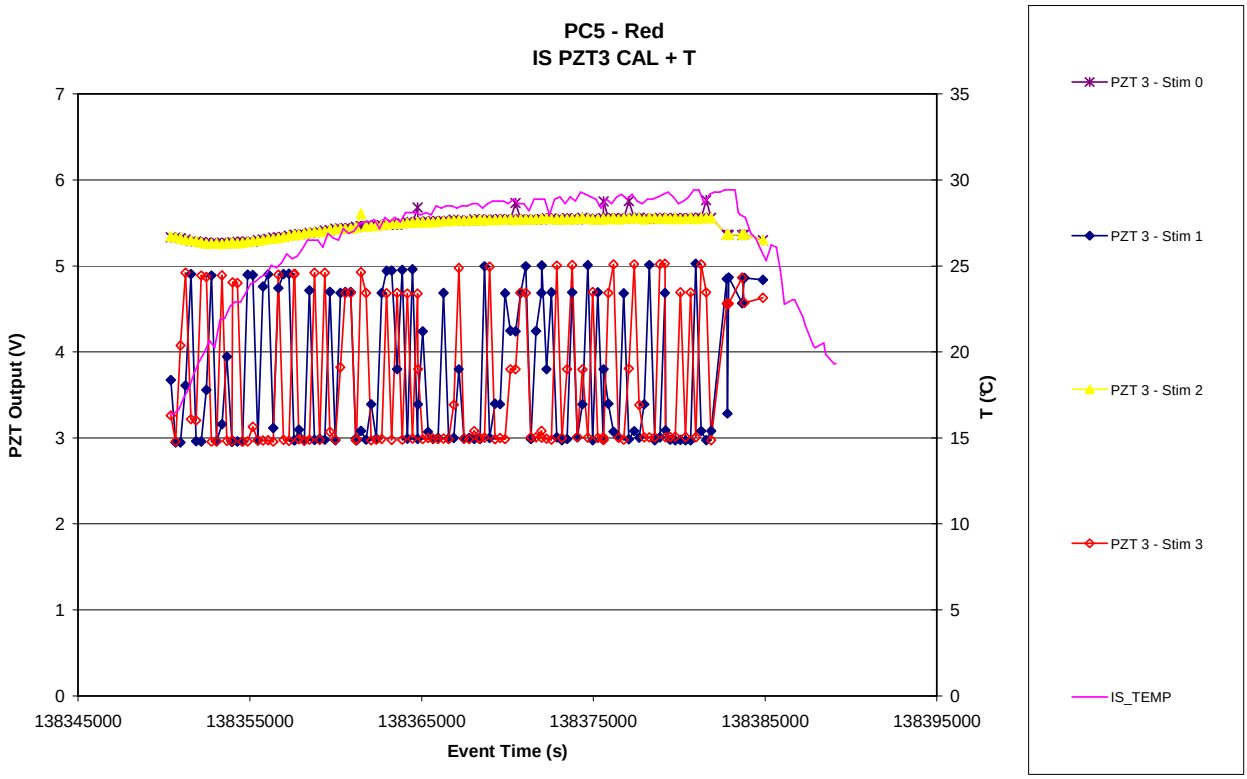


Figure 8.4-22. PZT 4 CAL Signal vs. time - Red

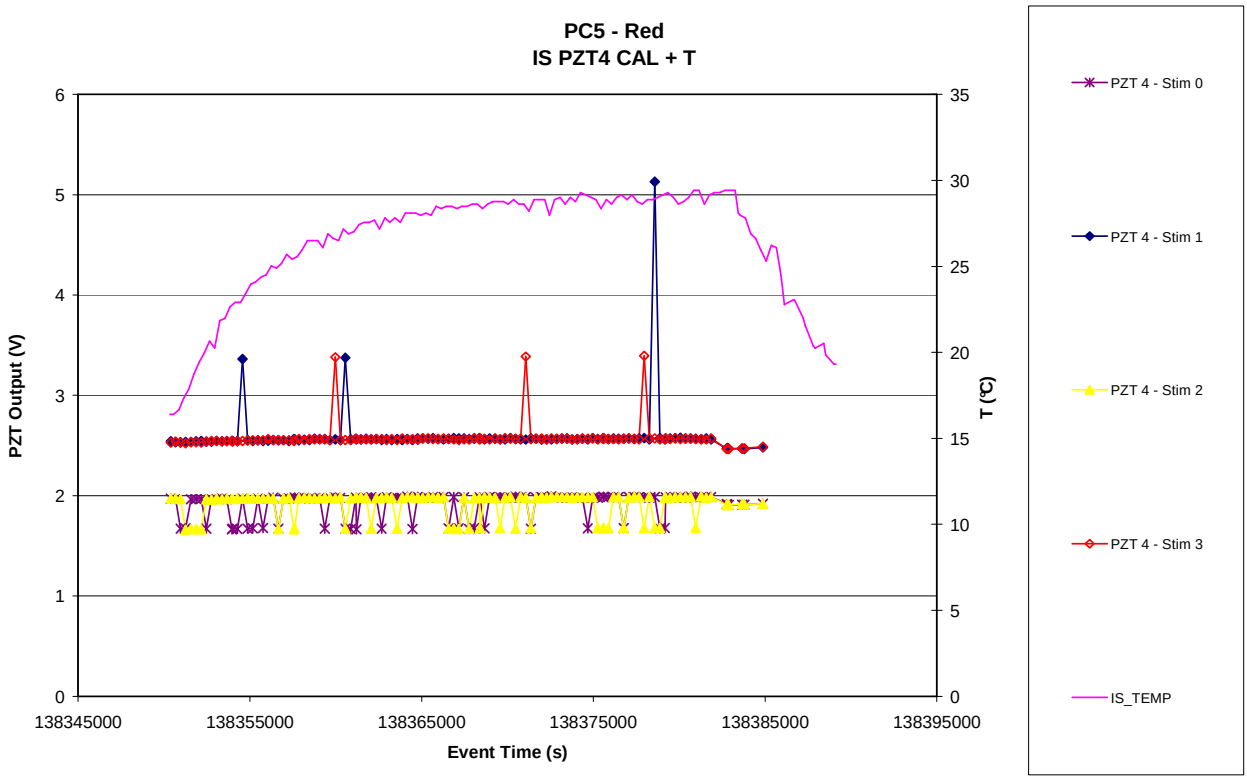


Figure 8.4-23. PZT 5 CAL Signal vs. time - Red

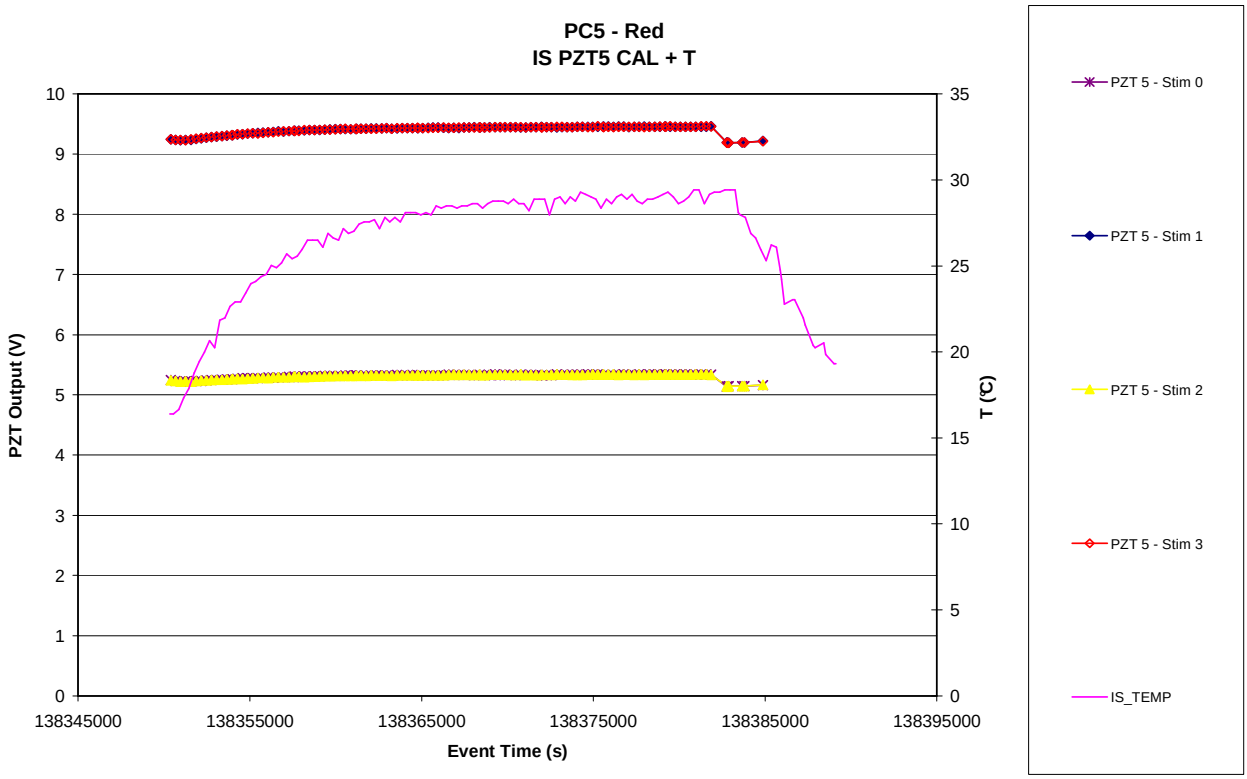


Figure 8.4-24. PZT 1 CAL Time delay vs. time - Red

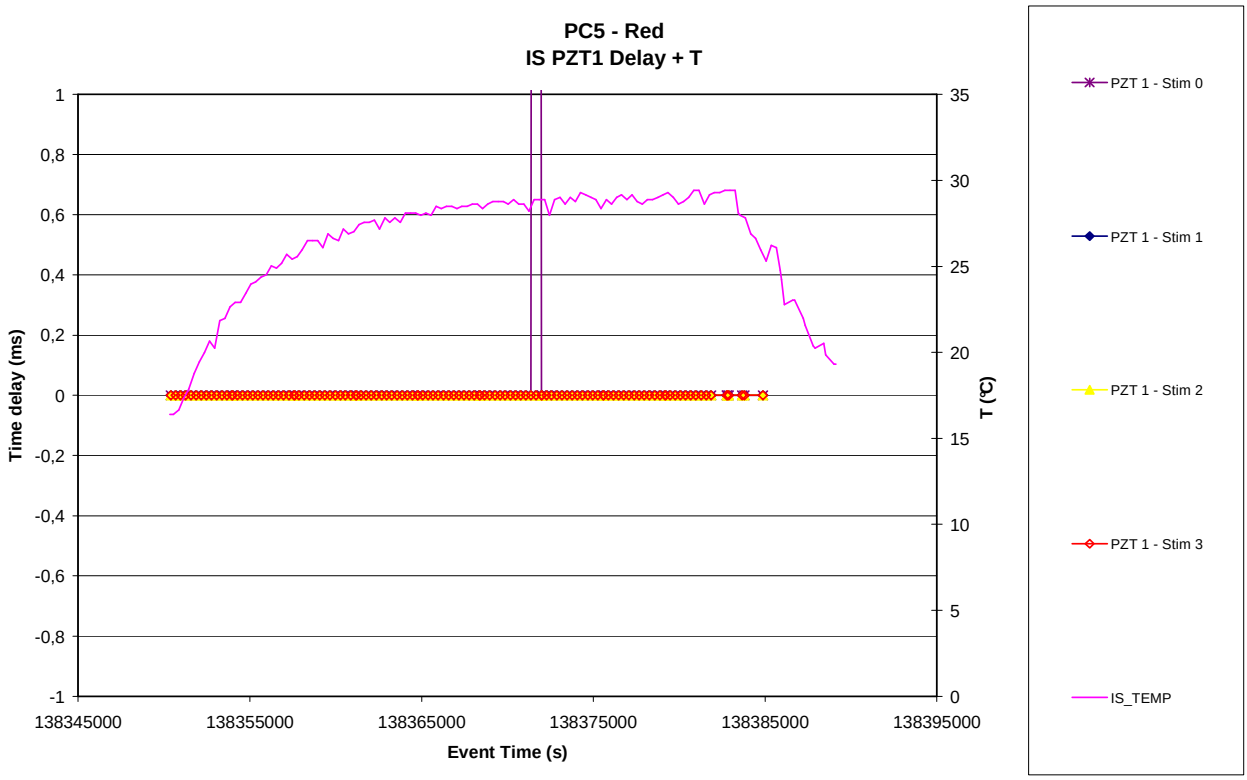


Figure 8.4-25. PZT 2 CAL Time delay vs. time - Red

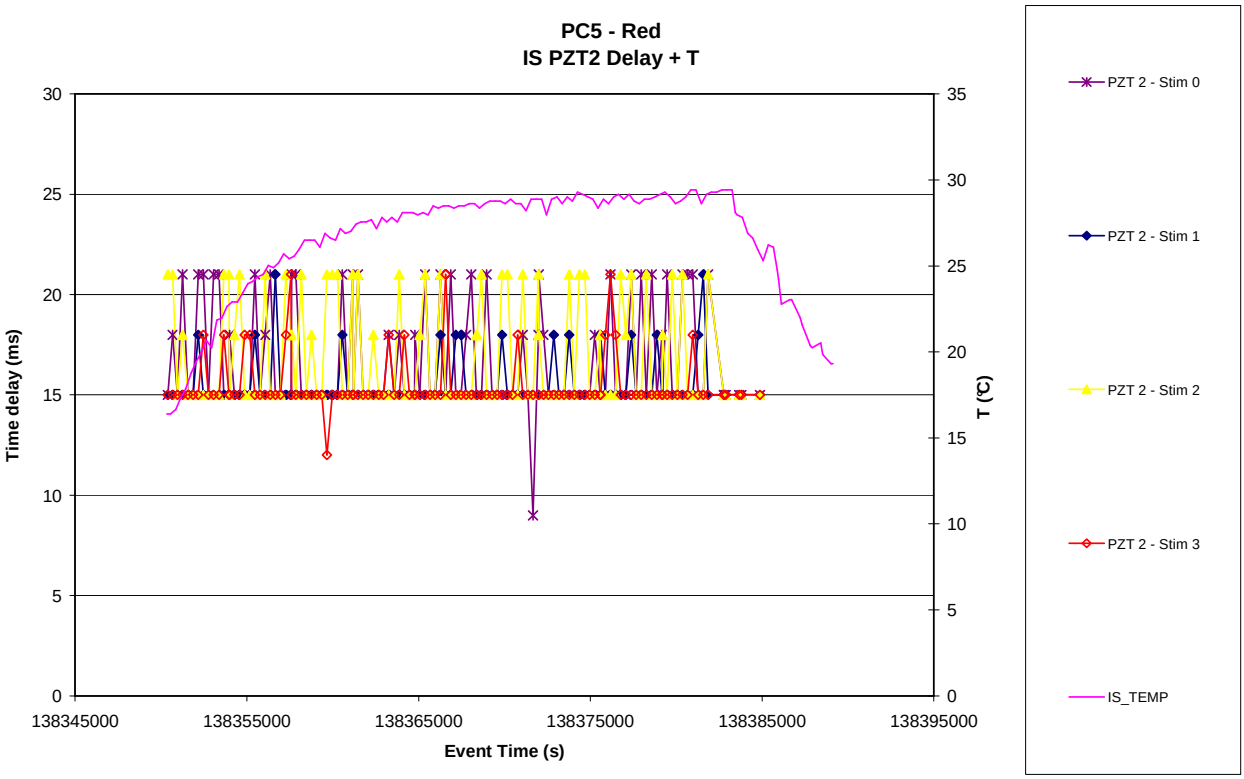


Figure 8.4-26. PZT 3 CAL Time delay vs. time - Red

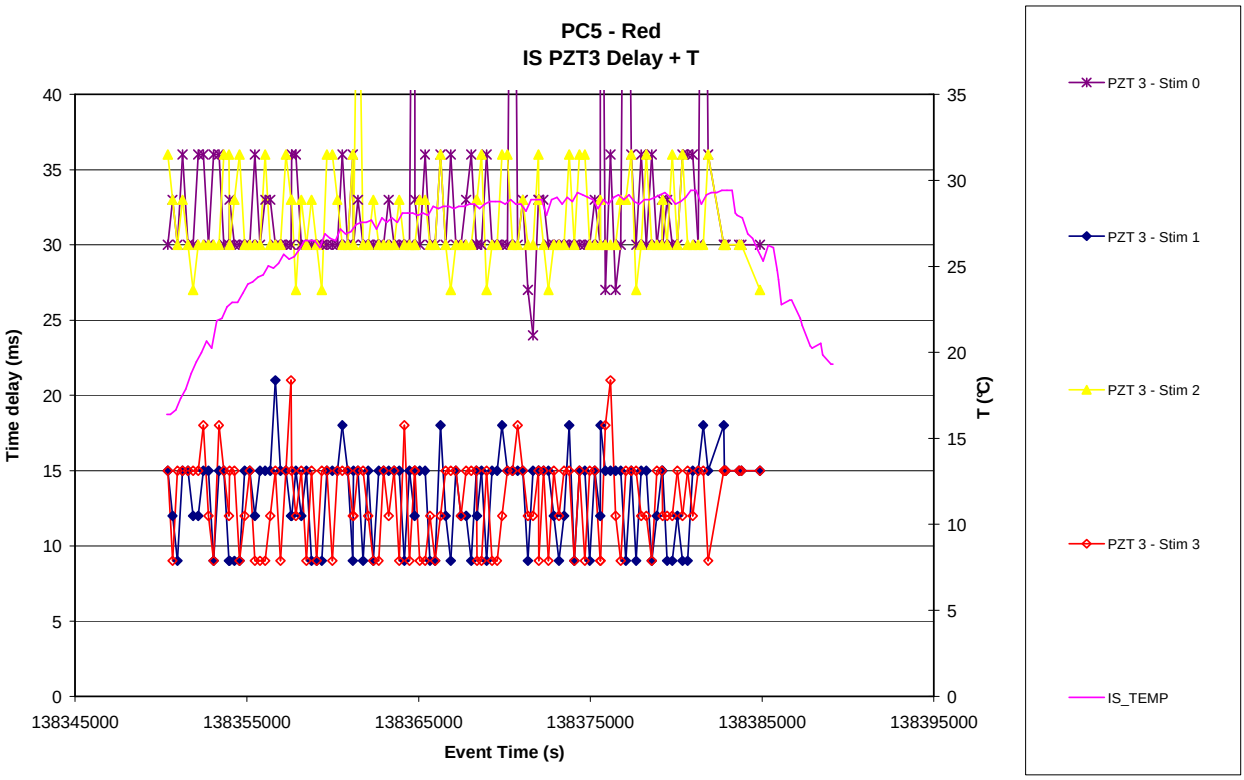


Figure 8.4-27. PZT 4 CAL Time delay vs. time - Red

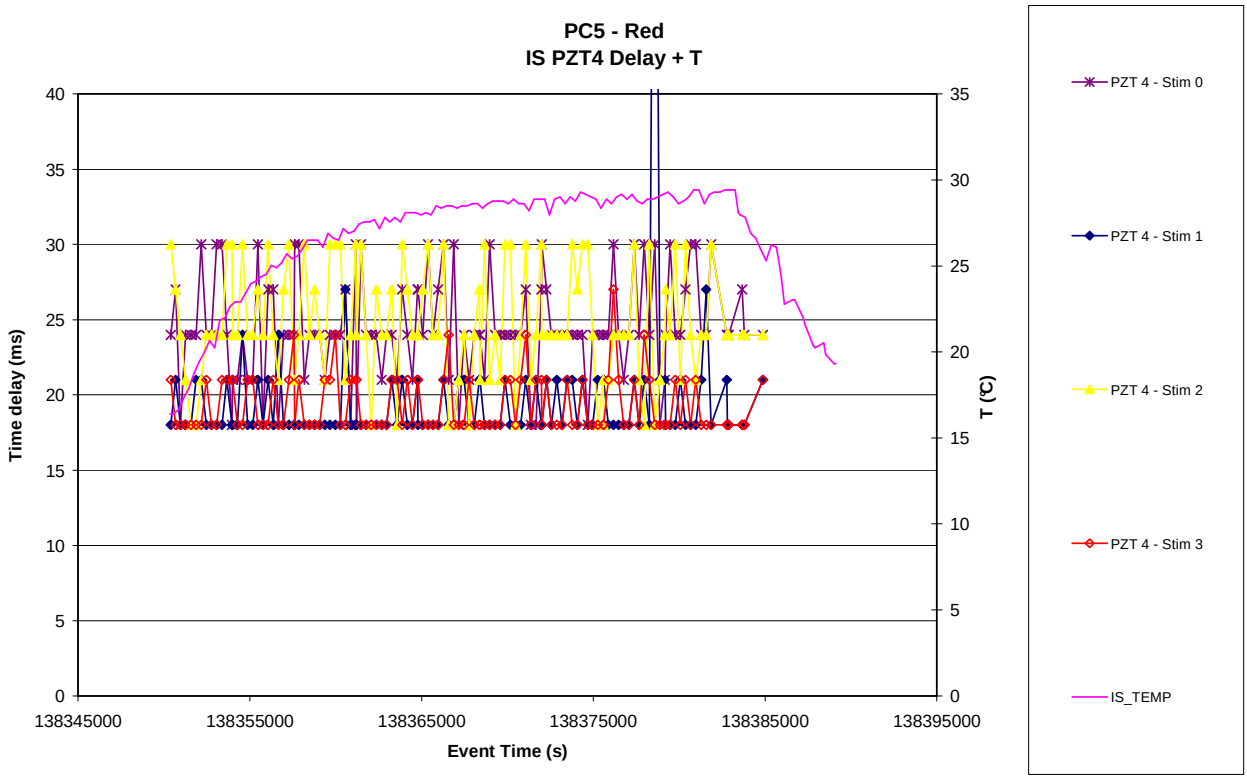


Figure 8.4-28. PZT 5 CAL Time delay vs. time - Red

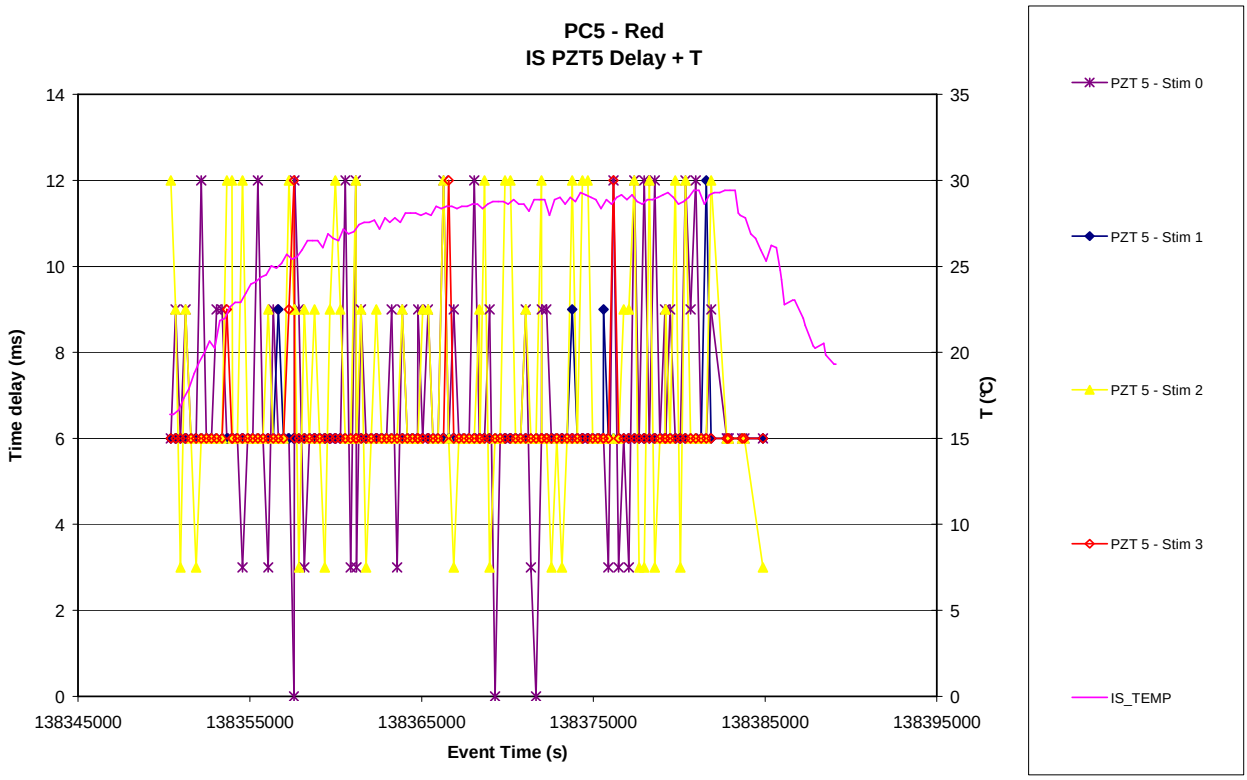


Figure 8.4-29. PZT 1 CAL Signal vs. stimulus – Red

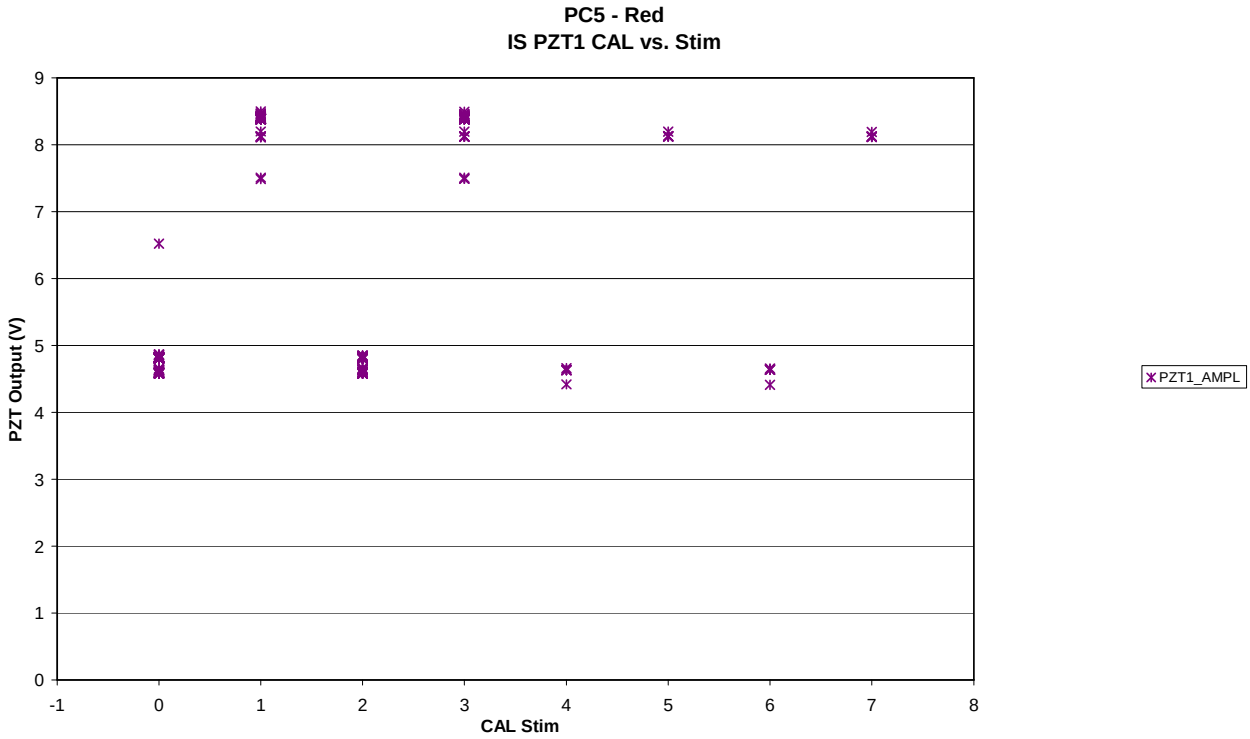


Figure 8.4-30. PZT 2 CAL Signal vs. stimulus – Red

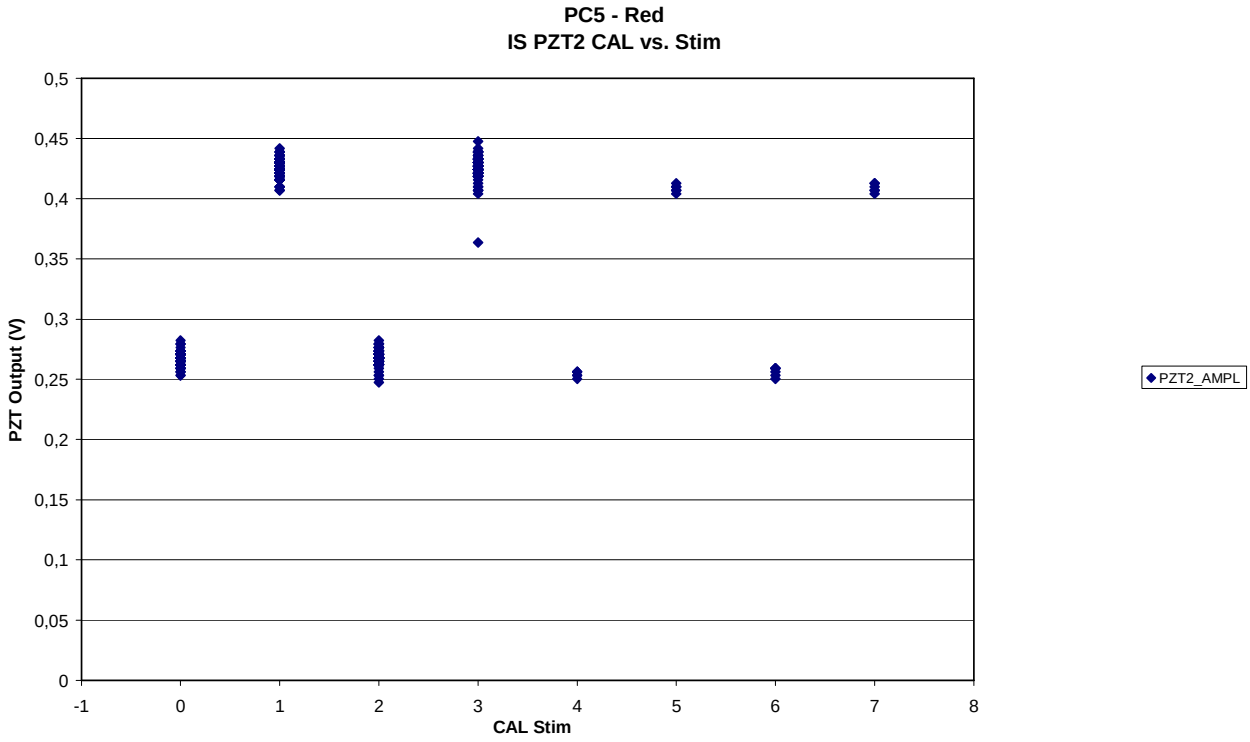


Figure 8.4-31. PZT 3 CAL Signal vs. stimulus – Red

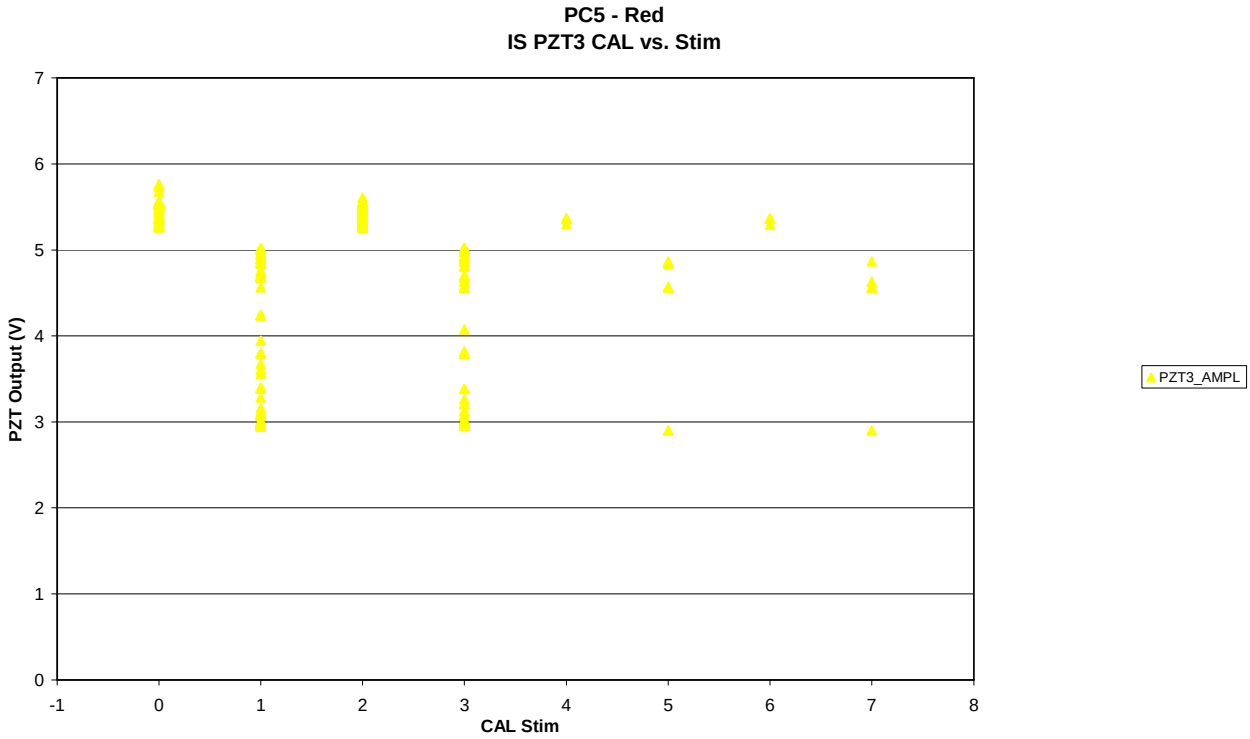


Figure 8.4-32. PZT 4 CAL Signal vs. stimulus – Red

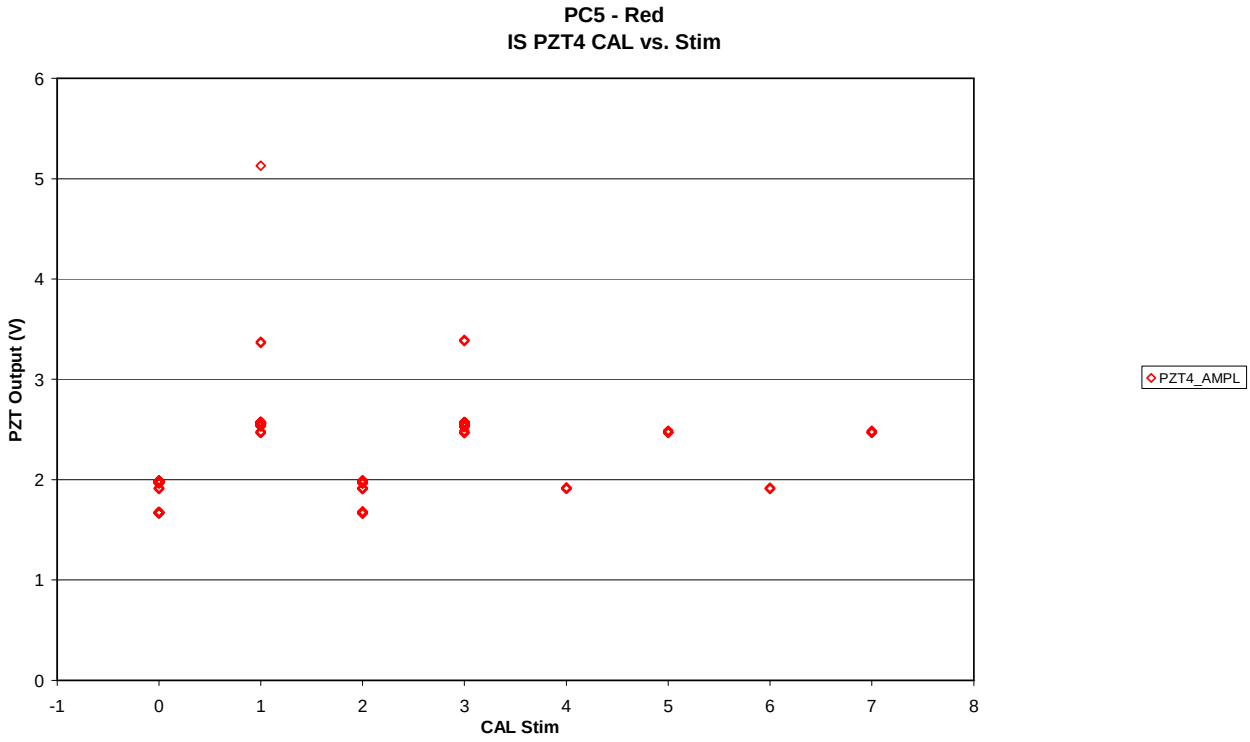


Figure 8.4-33. PZT 5 CAL Signal vs. stimulus – Red

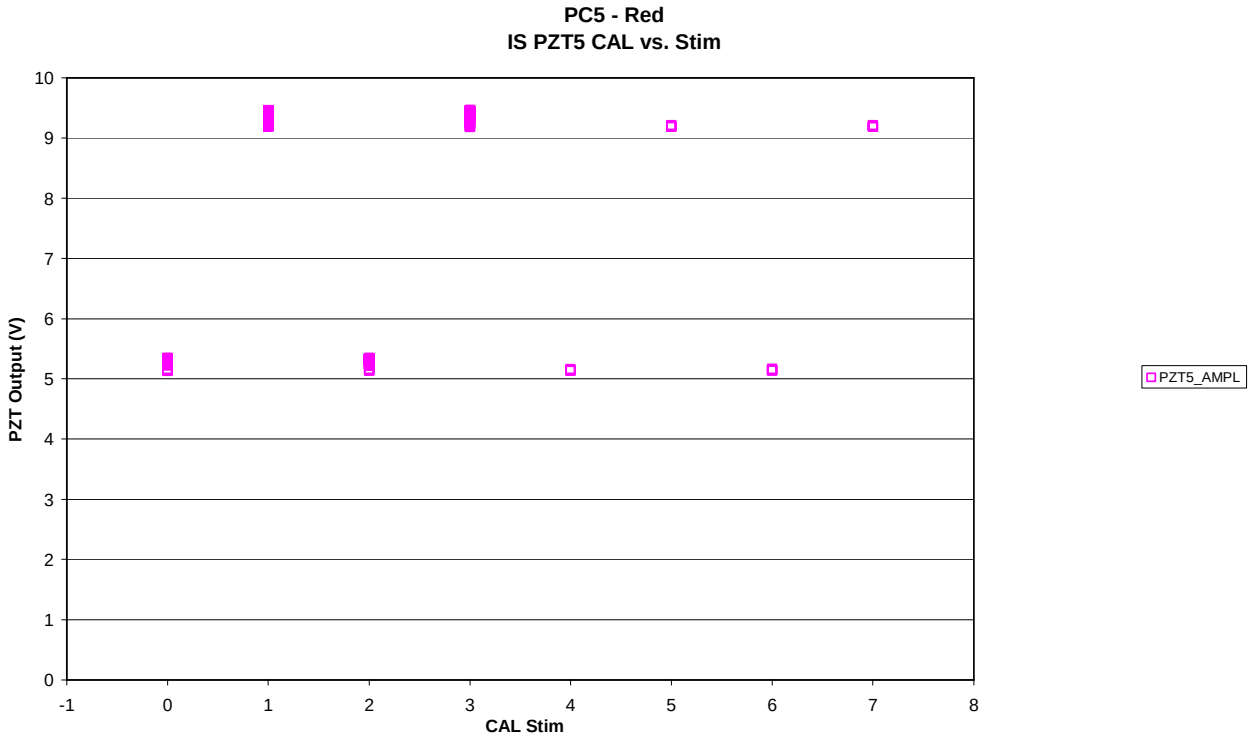


Figure 8.4-34. PZT 1 CAL Time delay vs. stimulus – Red

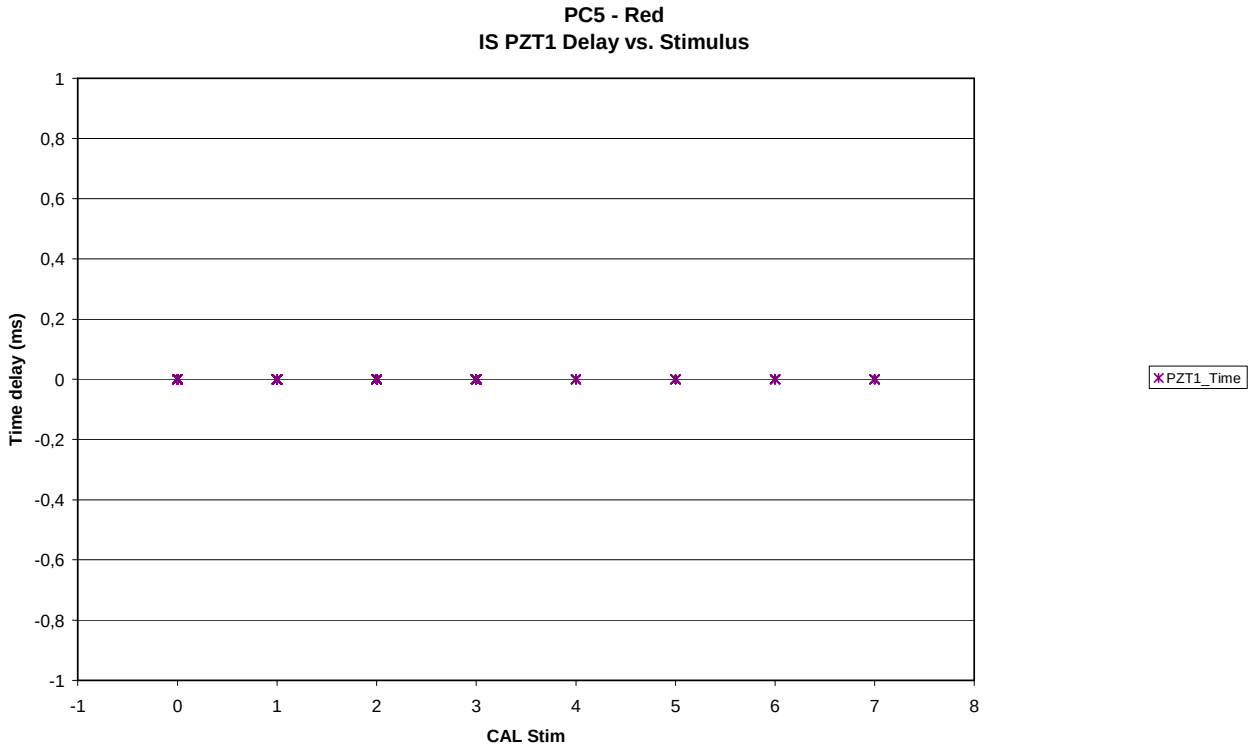


Figure 8.4-35. PZT 2 CAL Time delay vs. stimulus - Red

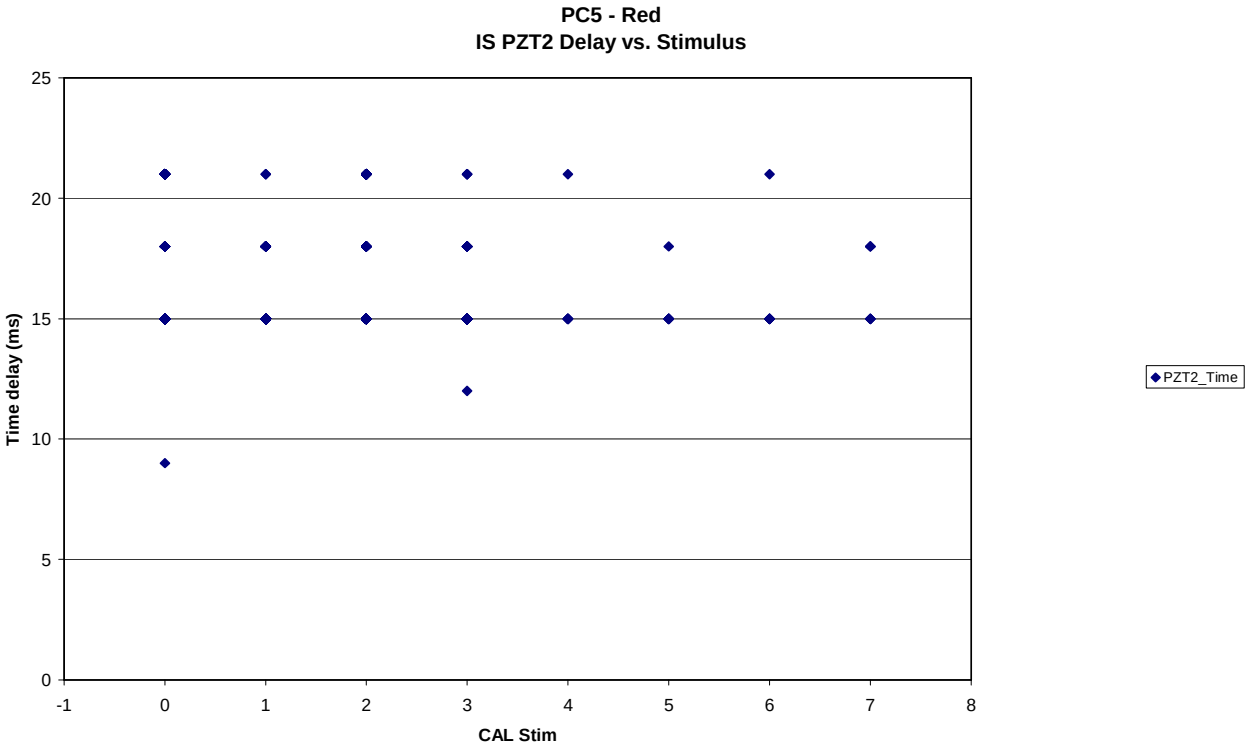


Figure 8.4-36. PZT 3 CAL Time delay vs. stimulus - Red

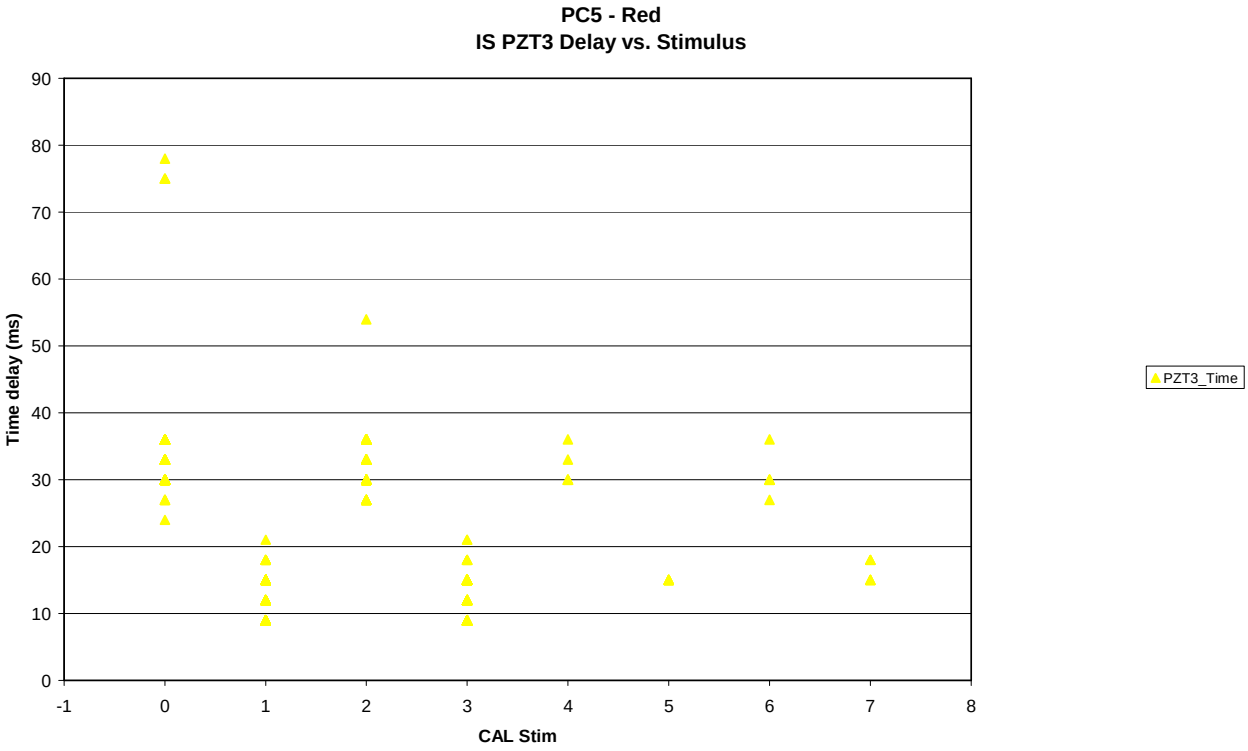


Figure 8.4-37. PZT 4 CAL Time delay vs. stimulus - Red

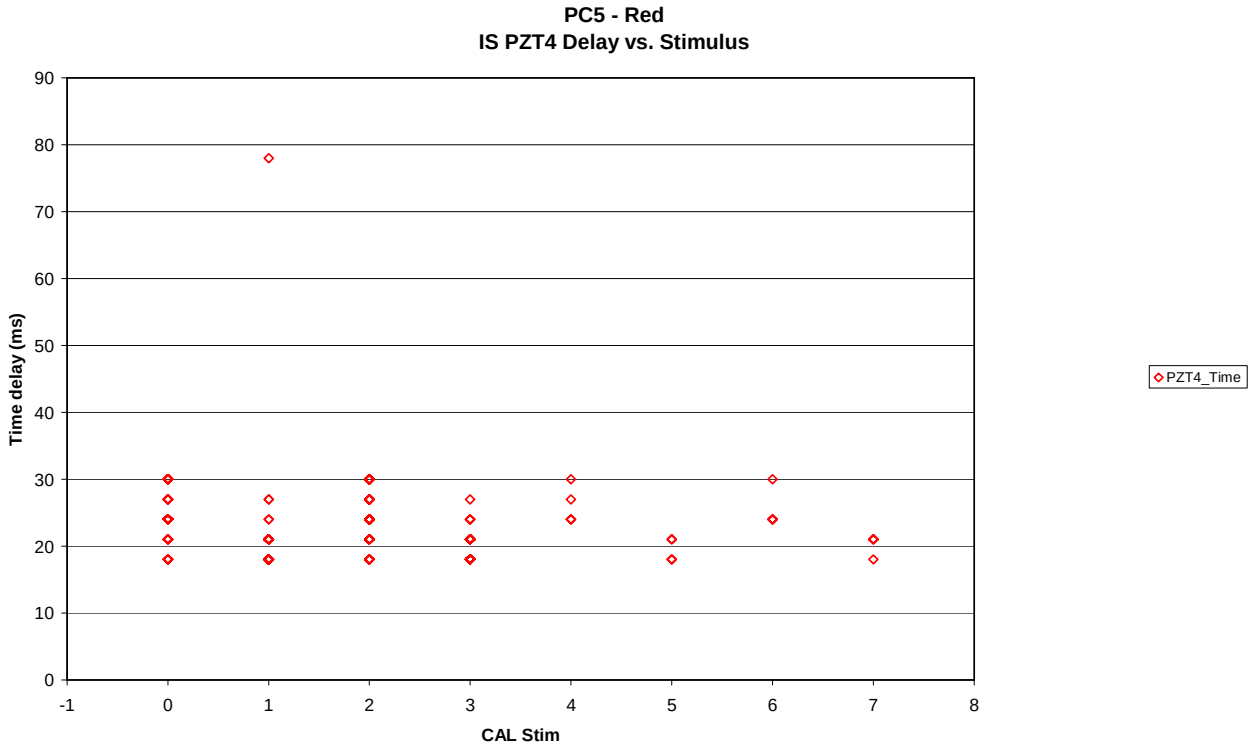
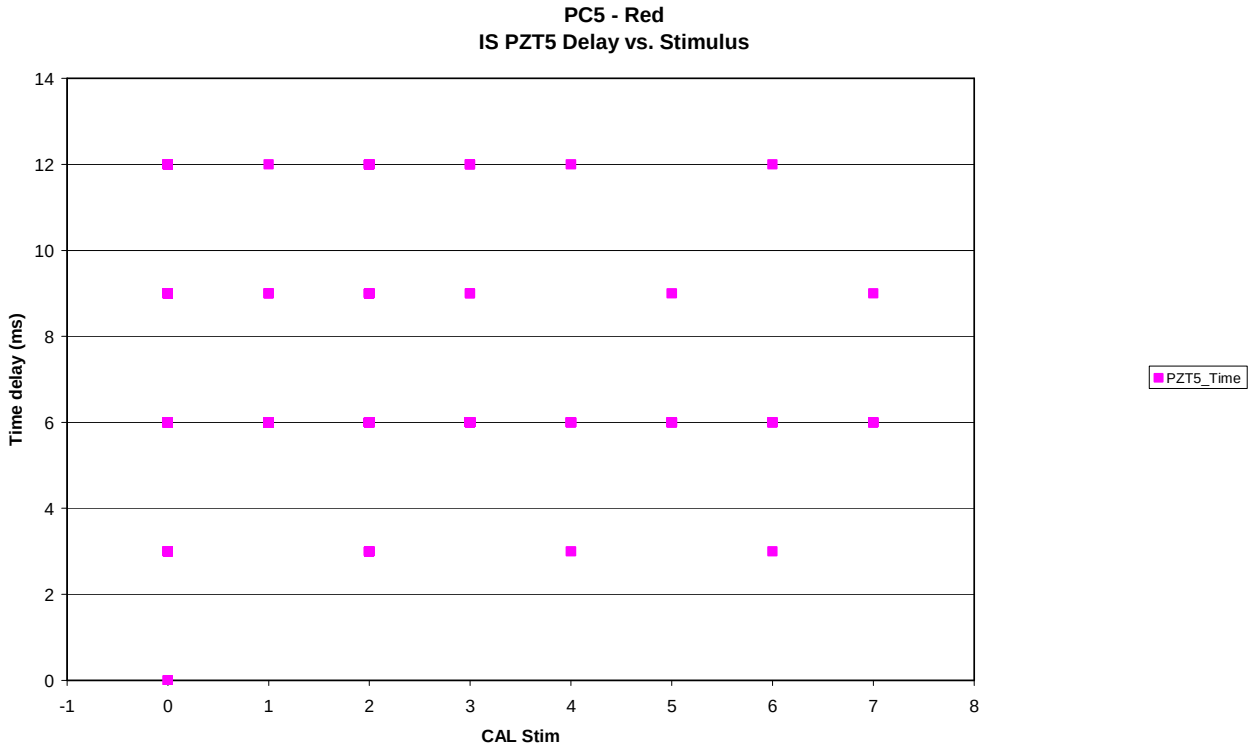


Figure 8.4-38. PZT 5 CAL Time delay vs. stimulus - Red



8.5 MICRO BALANCE SYSTEM (MBS)

8.5.1 MBS – Status

Figure 8.5-1. MBS Operation Status vs. time - Red

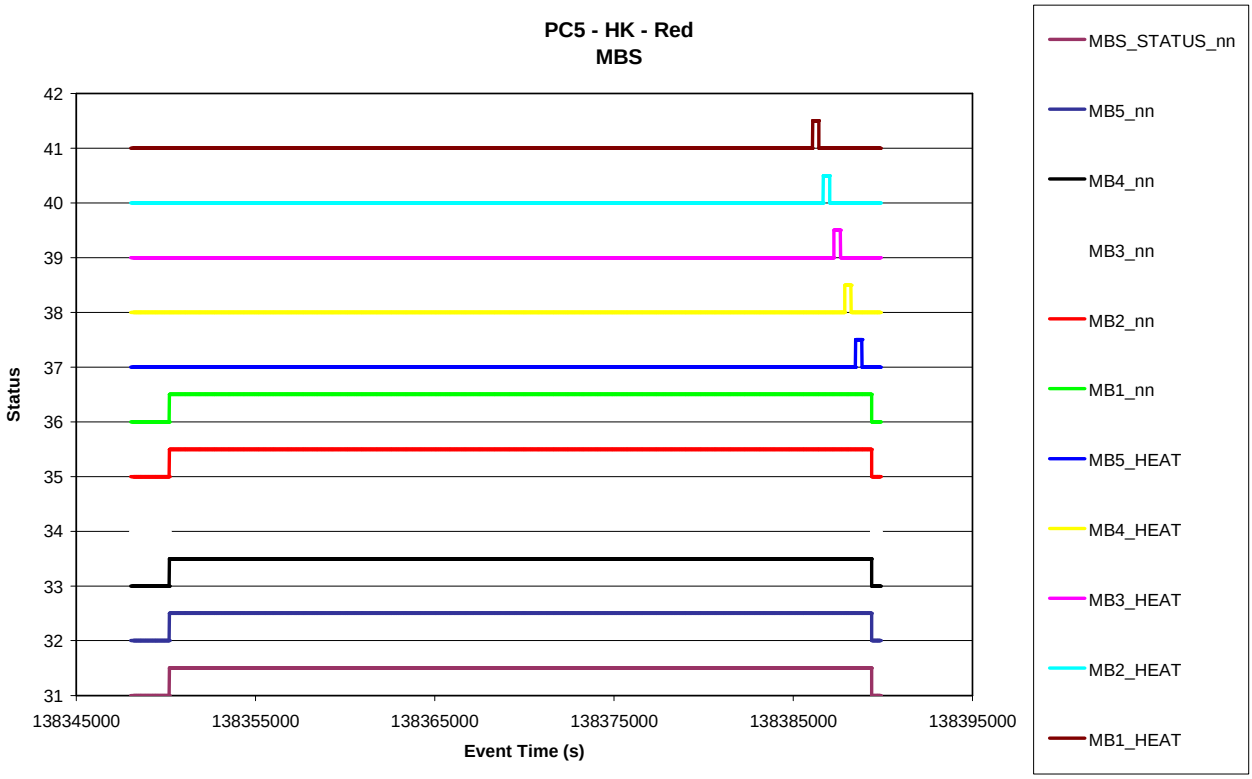


Figure 8.5-2. MBS 1 Temperature vs. time (HK, HK-SCI, SCI) – Red

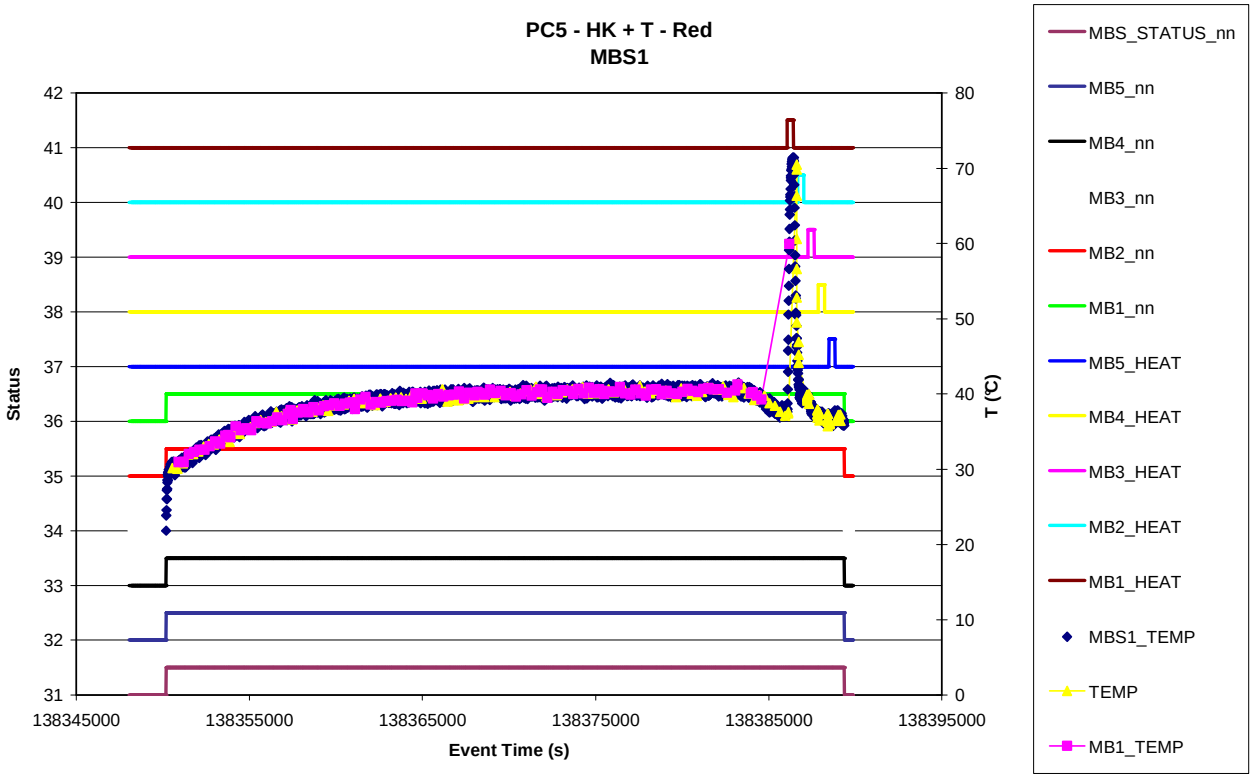


Figure 8.5-3. MBS 2 Temperature vs. time (HK, HK-SCI, SCI) - Red

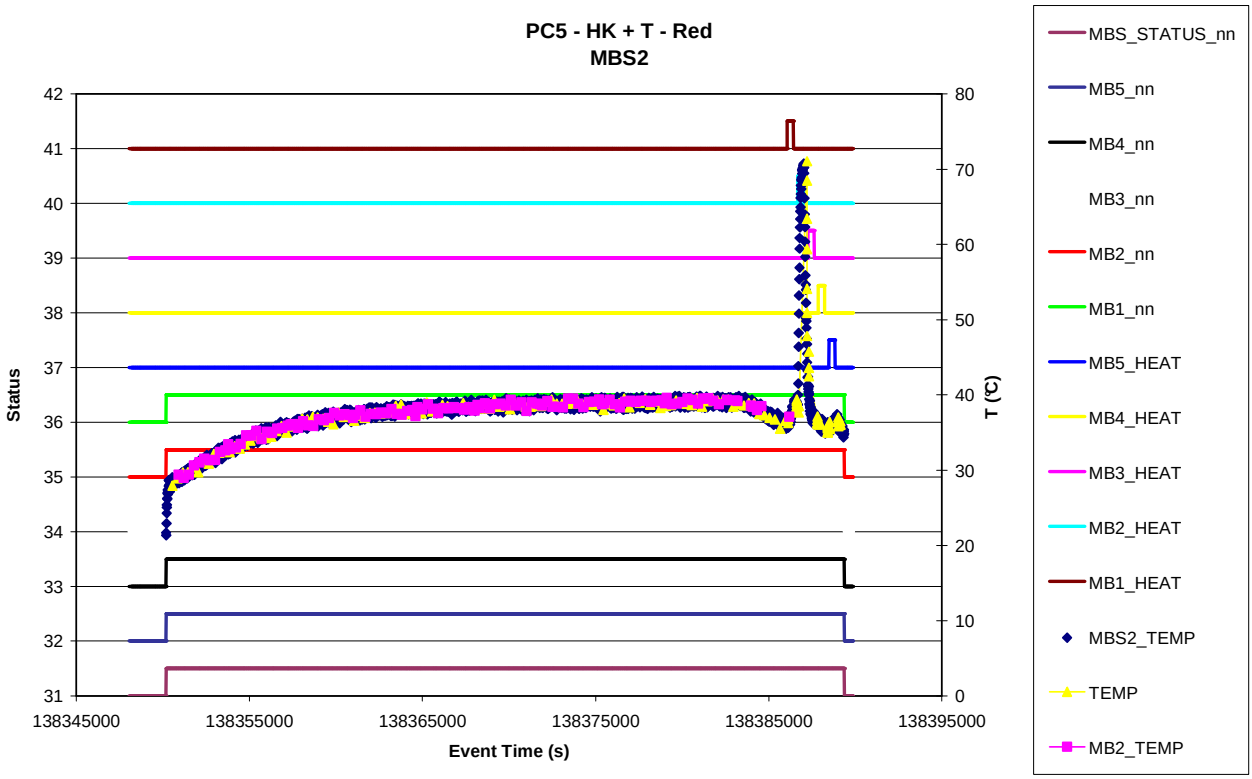


Figure 8.5-4. MBS 3 Temperature vs. time (HK, HK-SCI, SCI) - Red

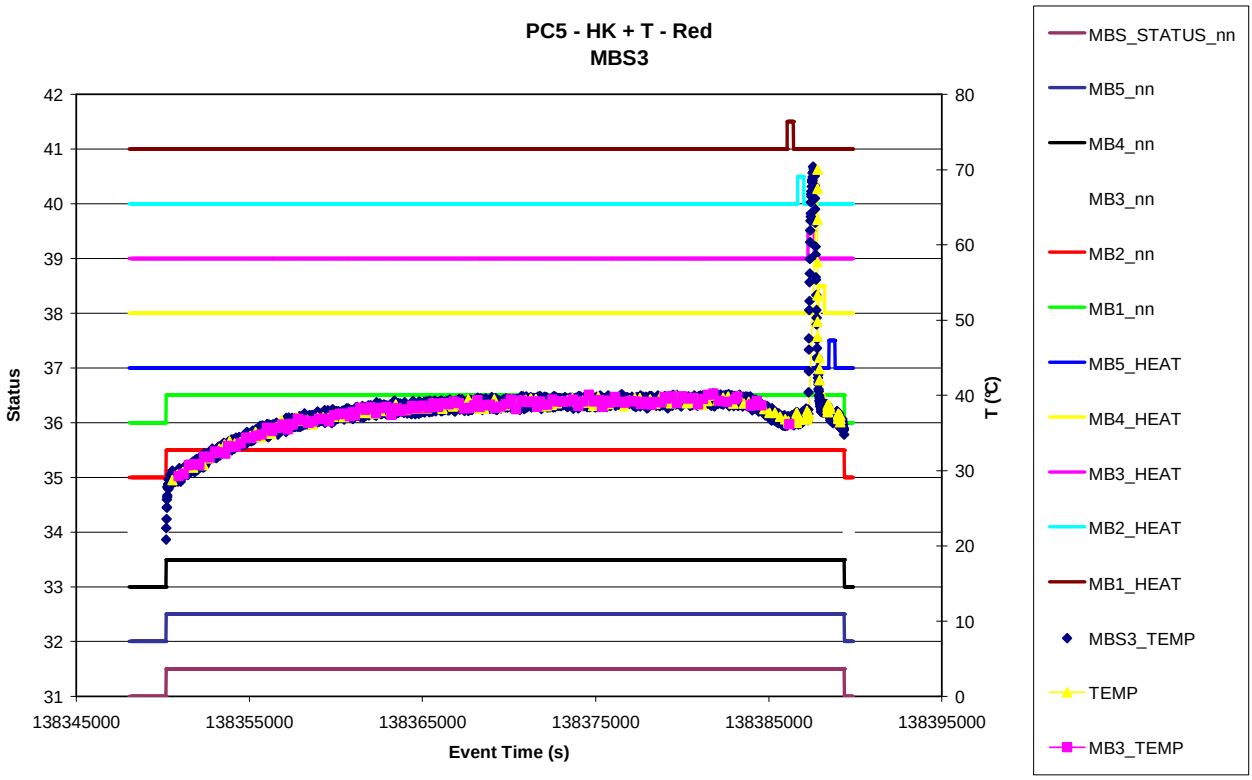


Figure 8.5-5. MBS 4 Temperature vs. time (HK, HK-SCI, SCI) - Red

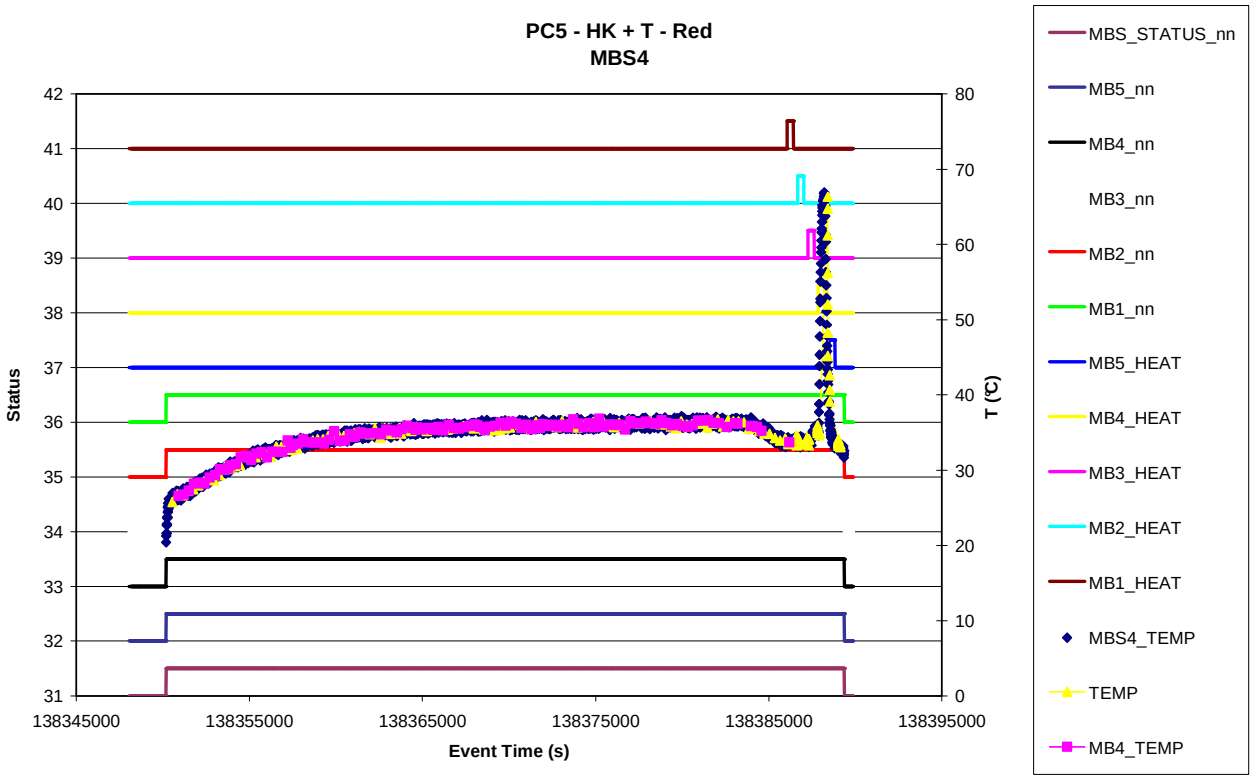
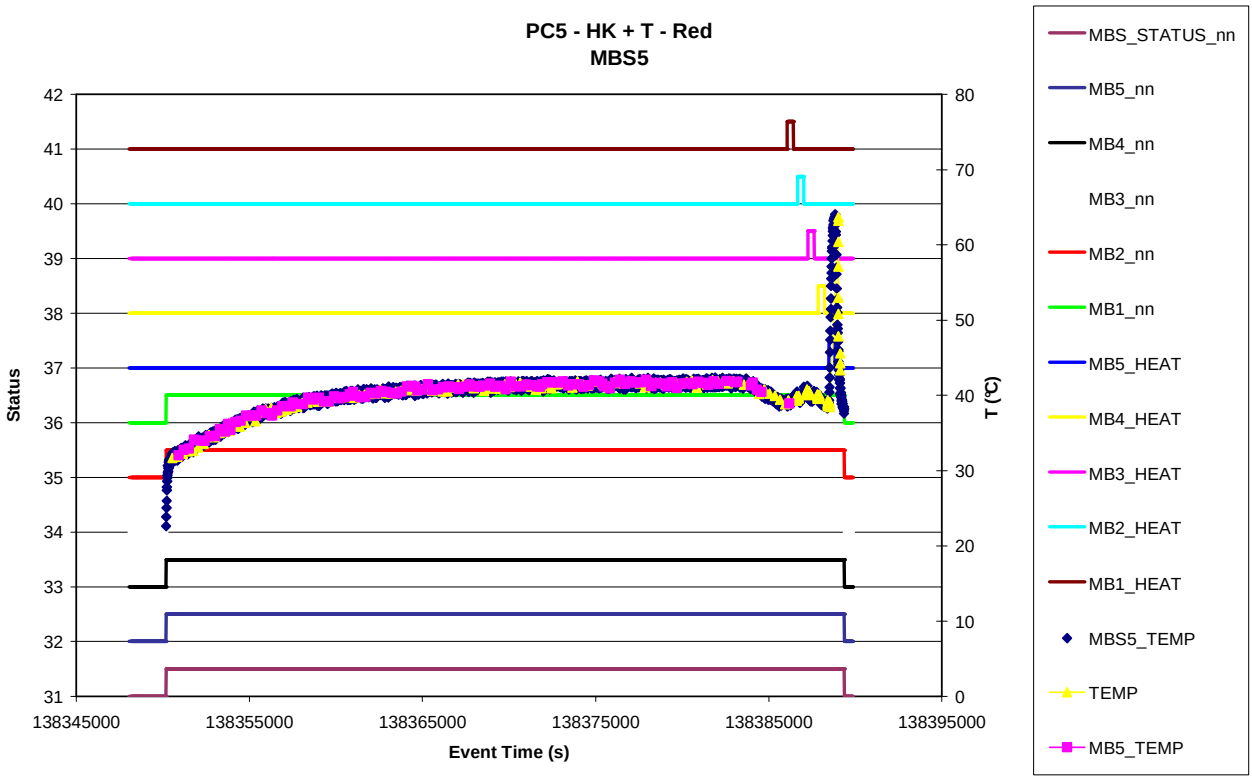


Figure 8.5-6. MBS 5 Temperature vs. time (HK, HK-SCI, SCI) - Red



8.5.2 MBS – Behaviour

8.5.2.1 Science Events (Normal + Heating)

Figure 8.5-7. MBS 1 Frequency and Temperature vs. time - Red

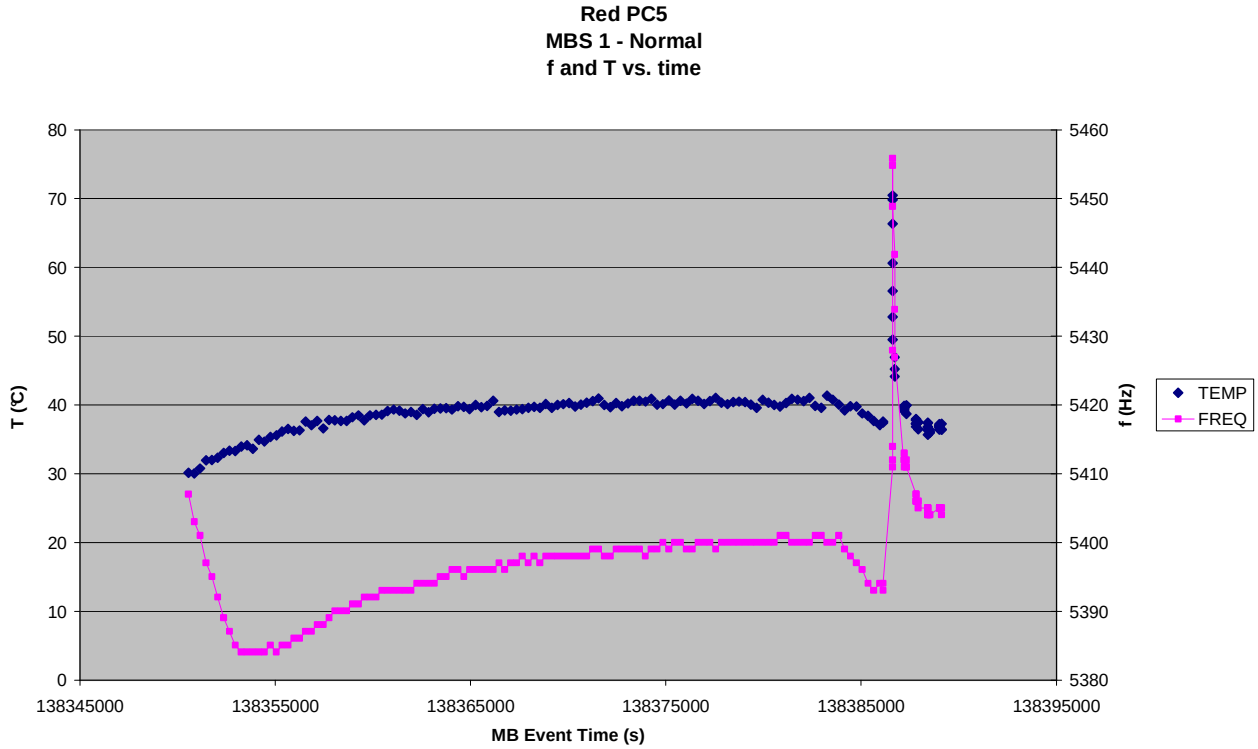


Figure 8.5-8. MBS 2 Frequency and Temperature vs. time - Red

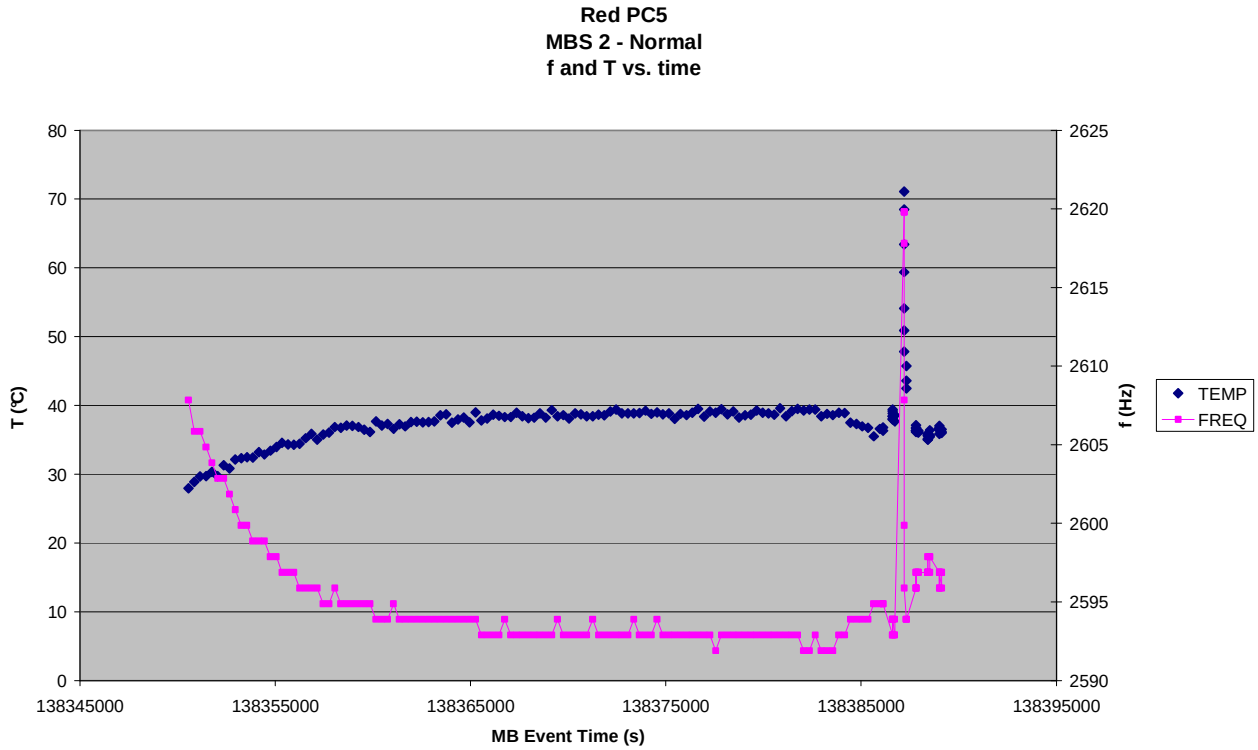


Figure 8.5-9. MBS 3 Frequency and Temperature vs. time - Red

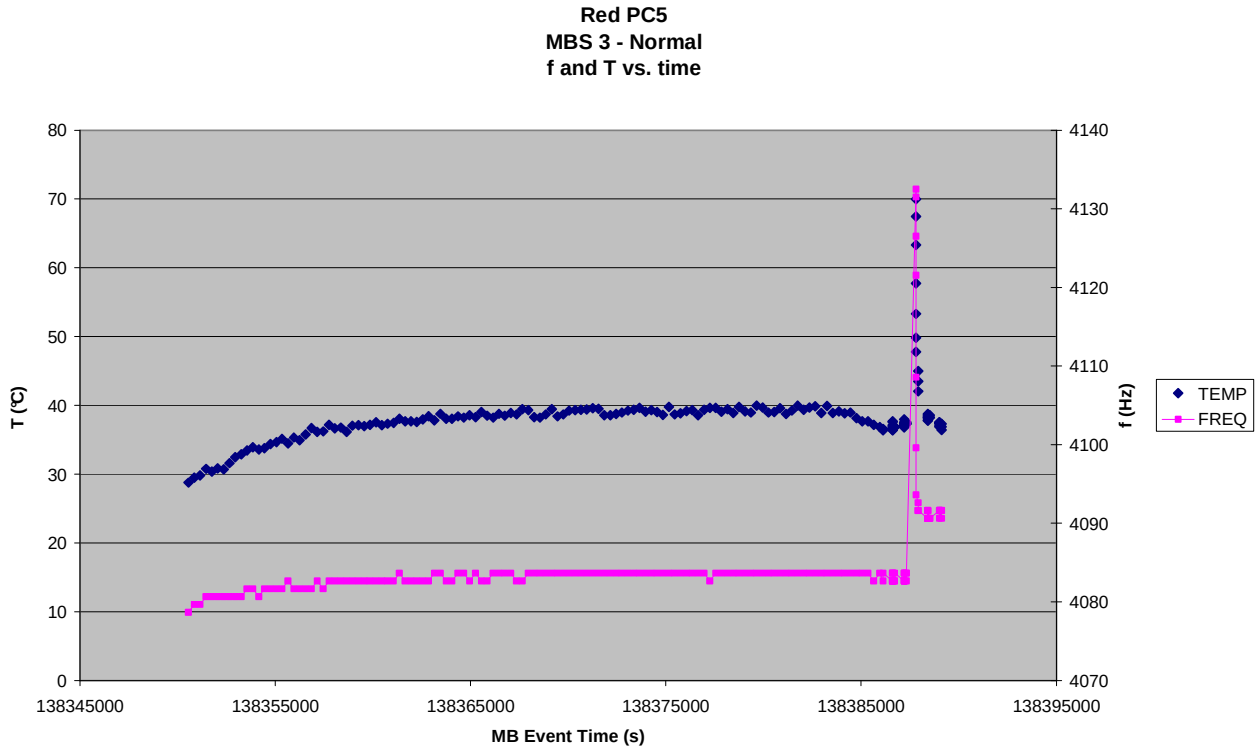


Figure 8.5-10. MBS 4 Frequency and Temperature vs. time - Red

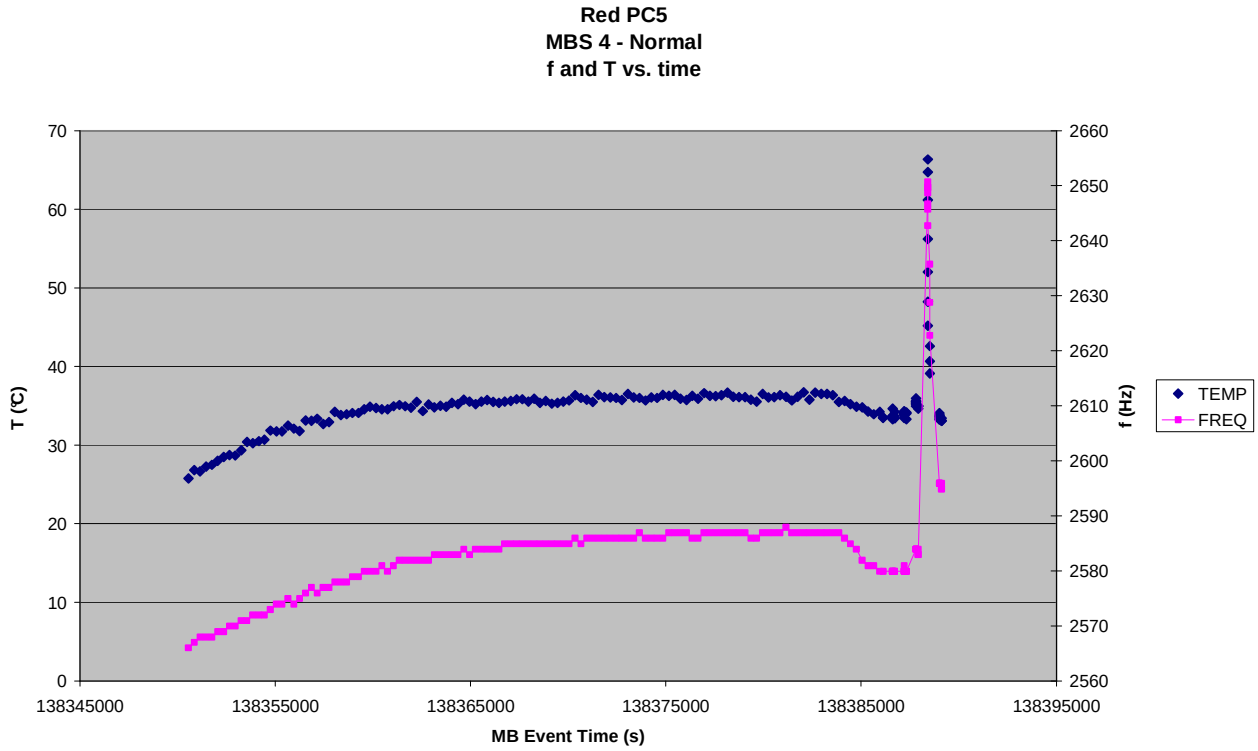


Figure 8.5-11. MBS 5 Frequency and Temperature vs. time - Red

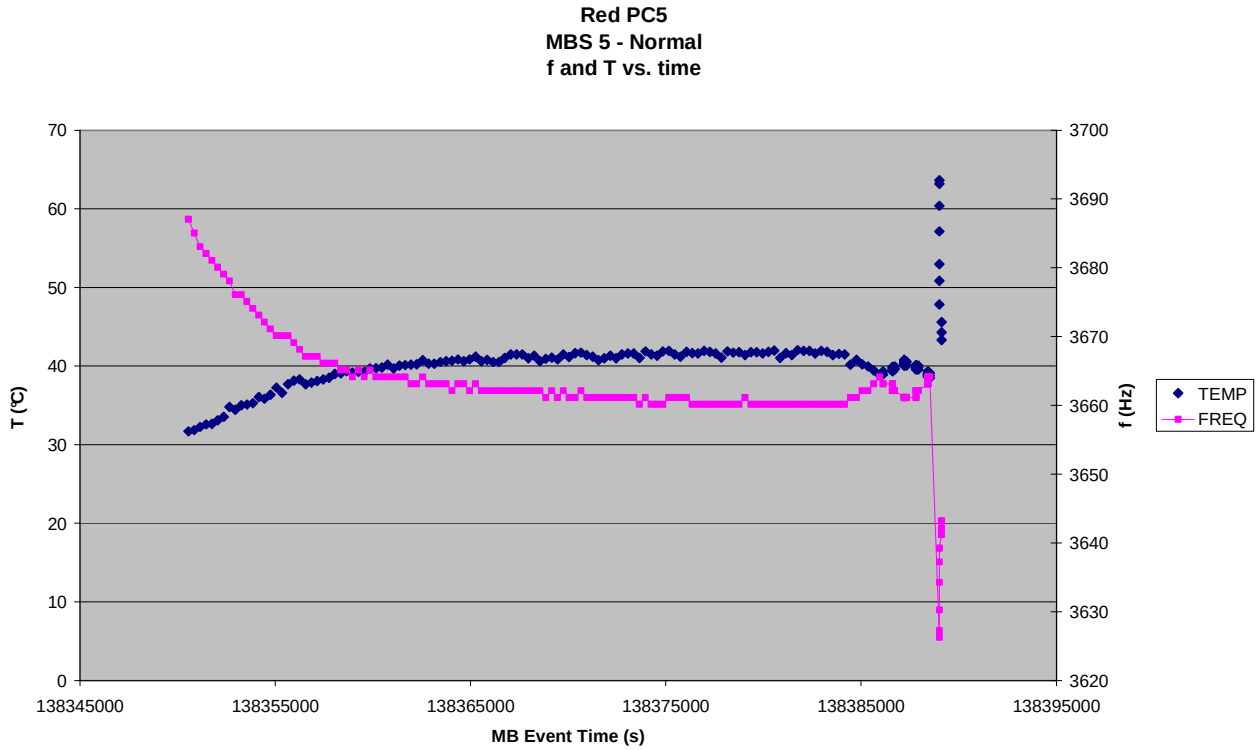


Figure 8.5-12. MBS 1 Frequency vs. Temperature - Red

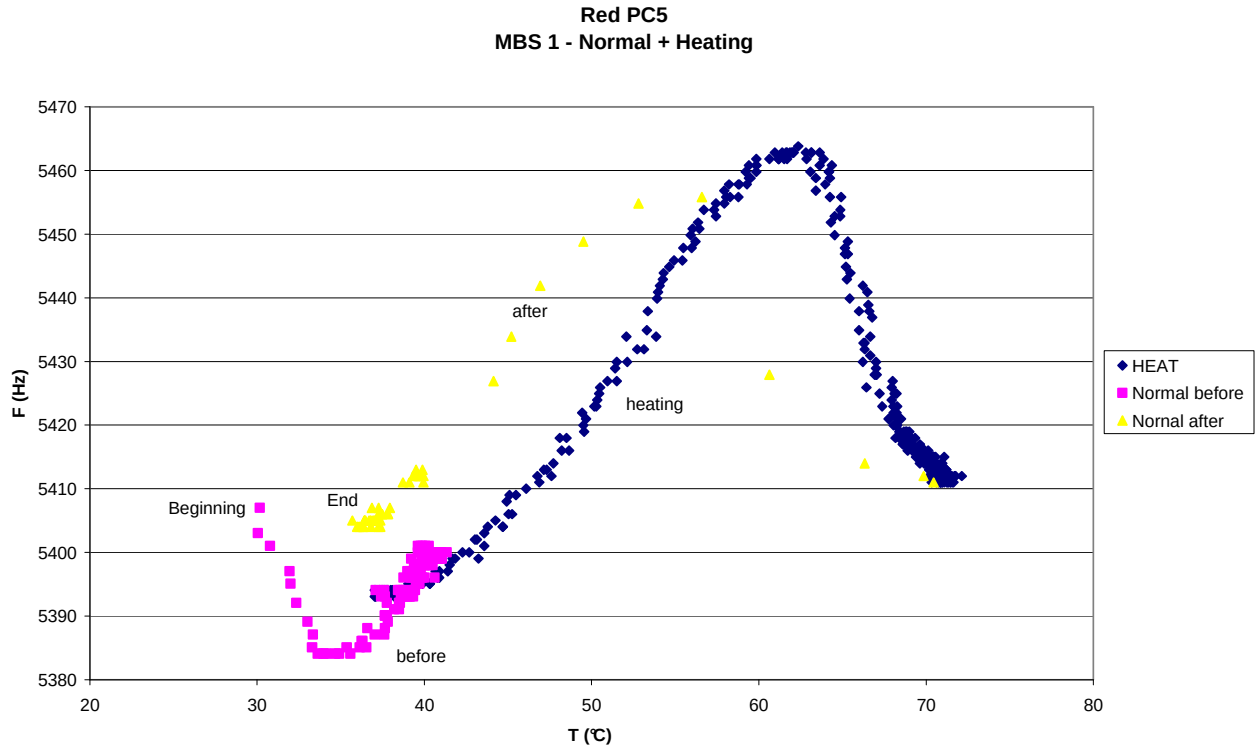


Figure 8.5-13. MBS 2 Frequency vs. Temperature - Red

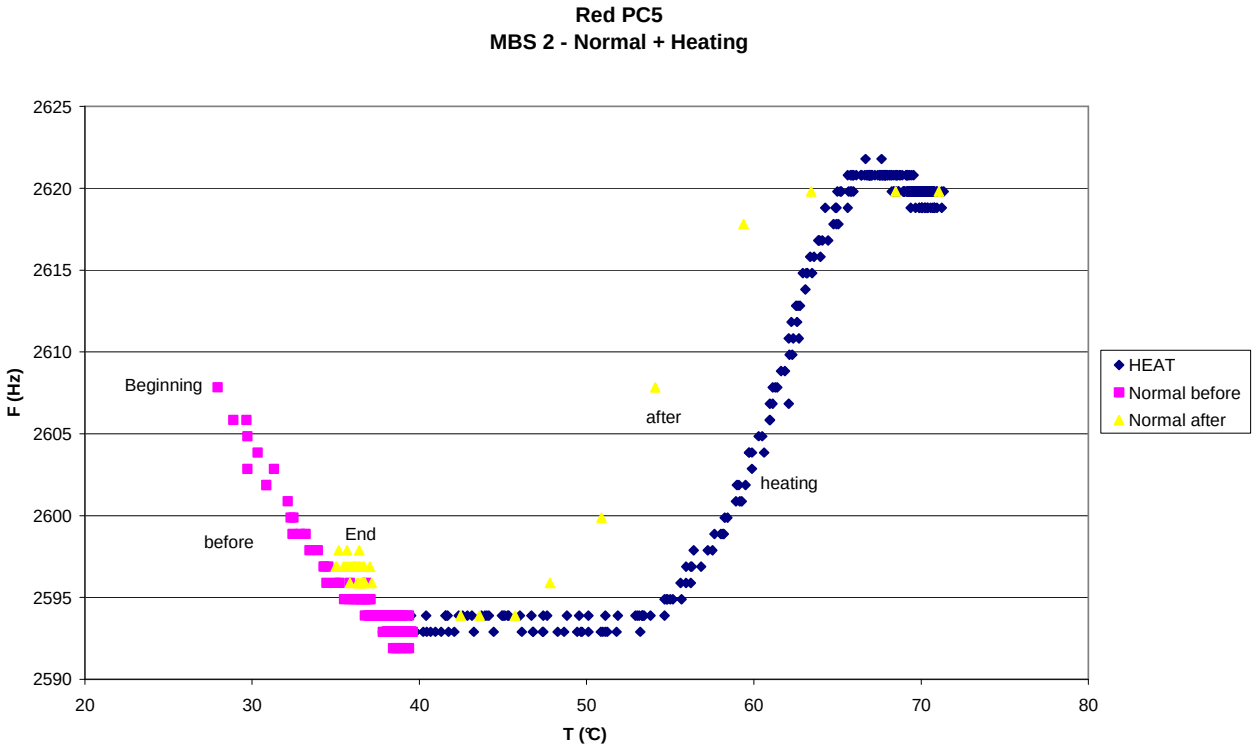


Figure 8.5-14. MBS 3 Frequency vs. Temperature - Red

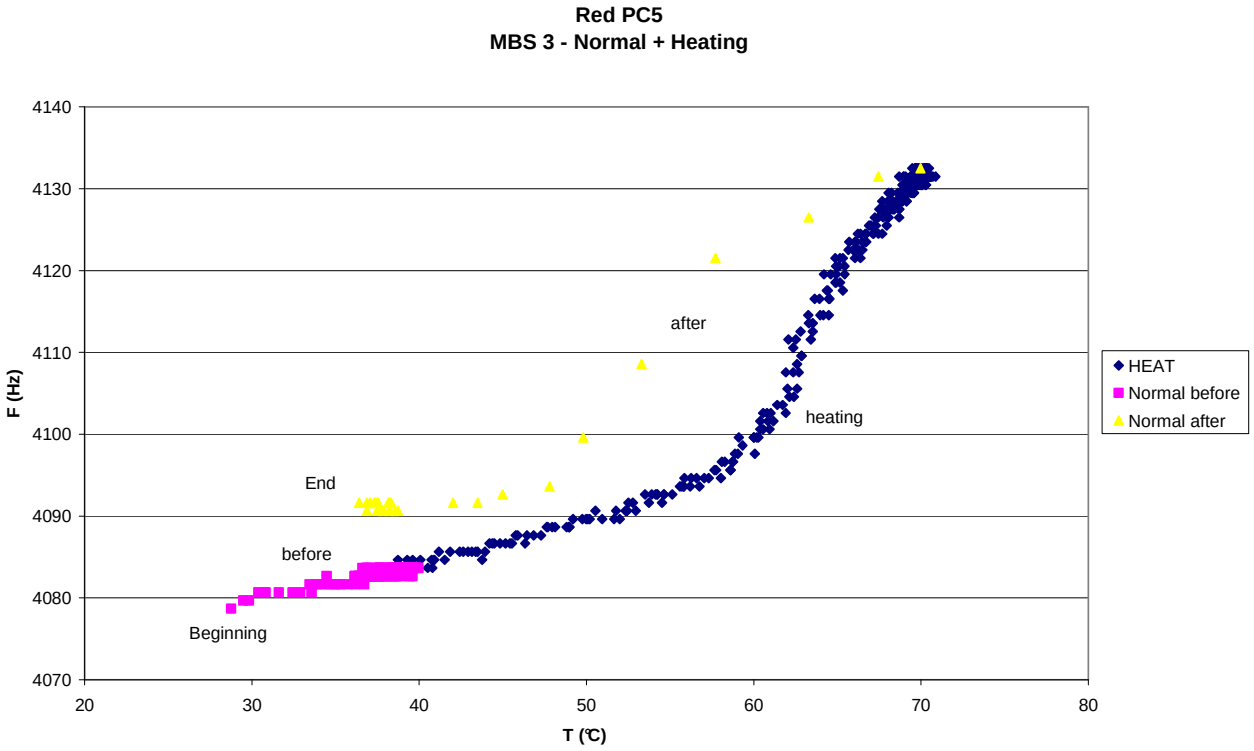


Figure 8.5-15. MBS 4 Frequency vs. Temperature - Red

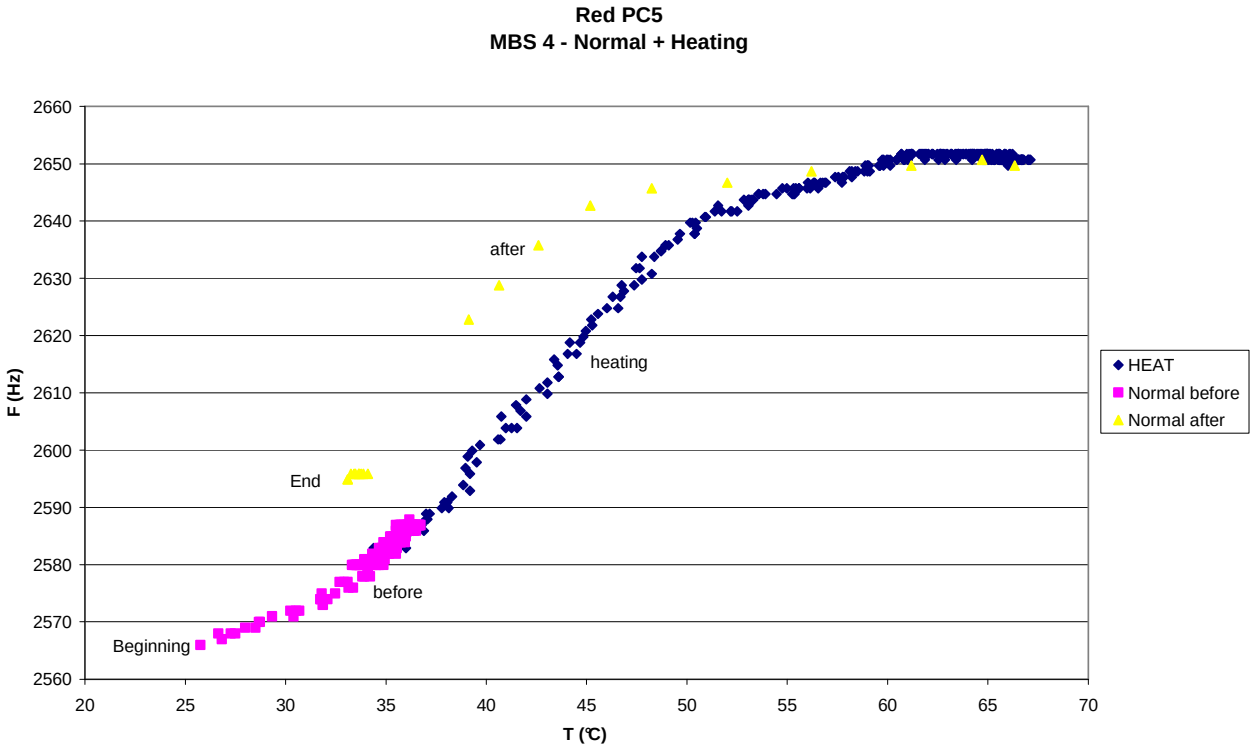
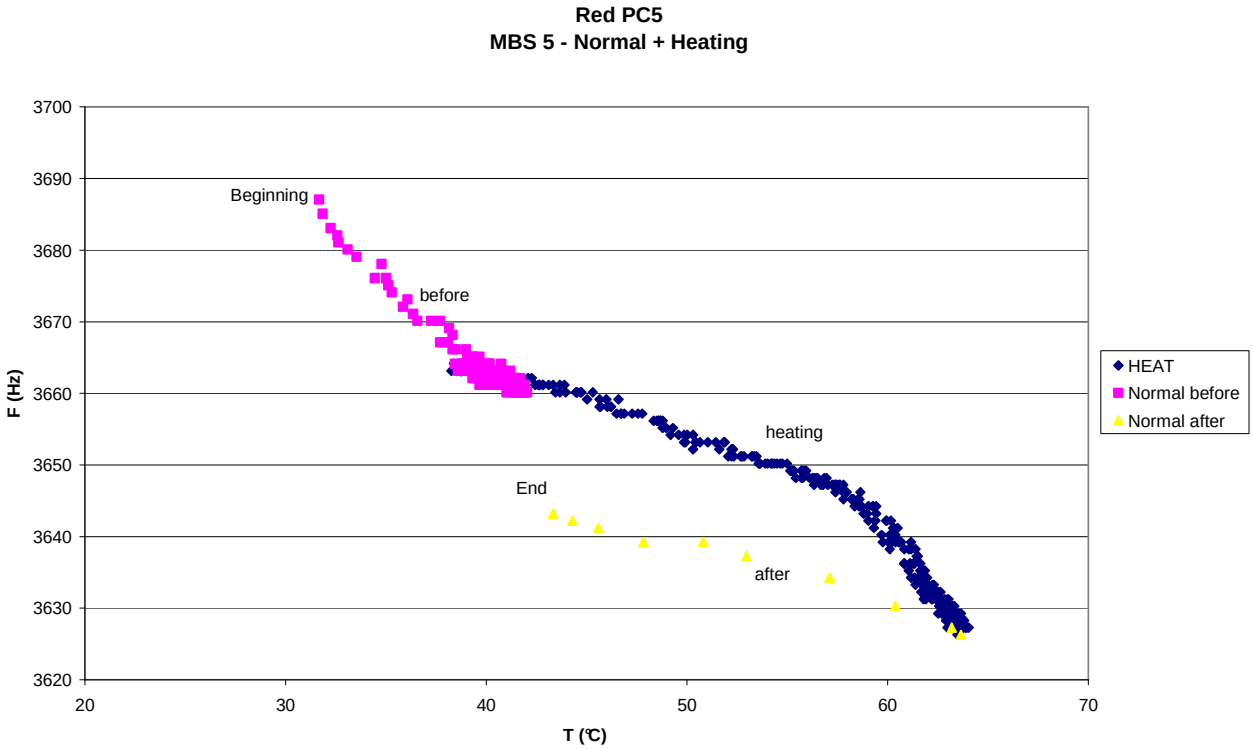


Figure 8.5-16. MBS 5 Frequency vs. Temperature - Red



9. COMPARISIONS WITH PREVIOUS TESTS

9.1 GRAIN DETECTION SYSTEM (GDS)

9.1.1 Laser Light Mon vs. Temperature

Figure 9.1-1. GDS Laser 1 Light Mon vs. Temperature (PC5 in red)

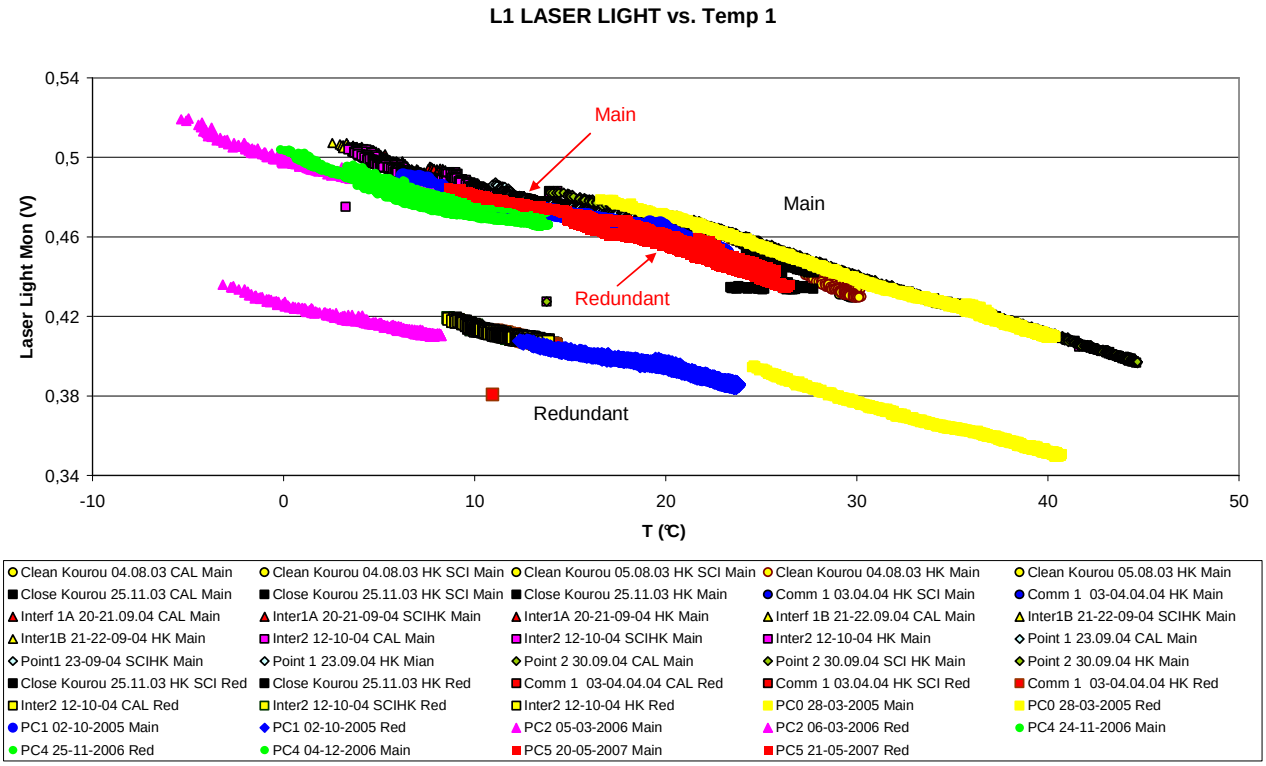


Figure 9.1-2. GDS Laser 2 Light Mon vs. Temperature (PC5 in red)

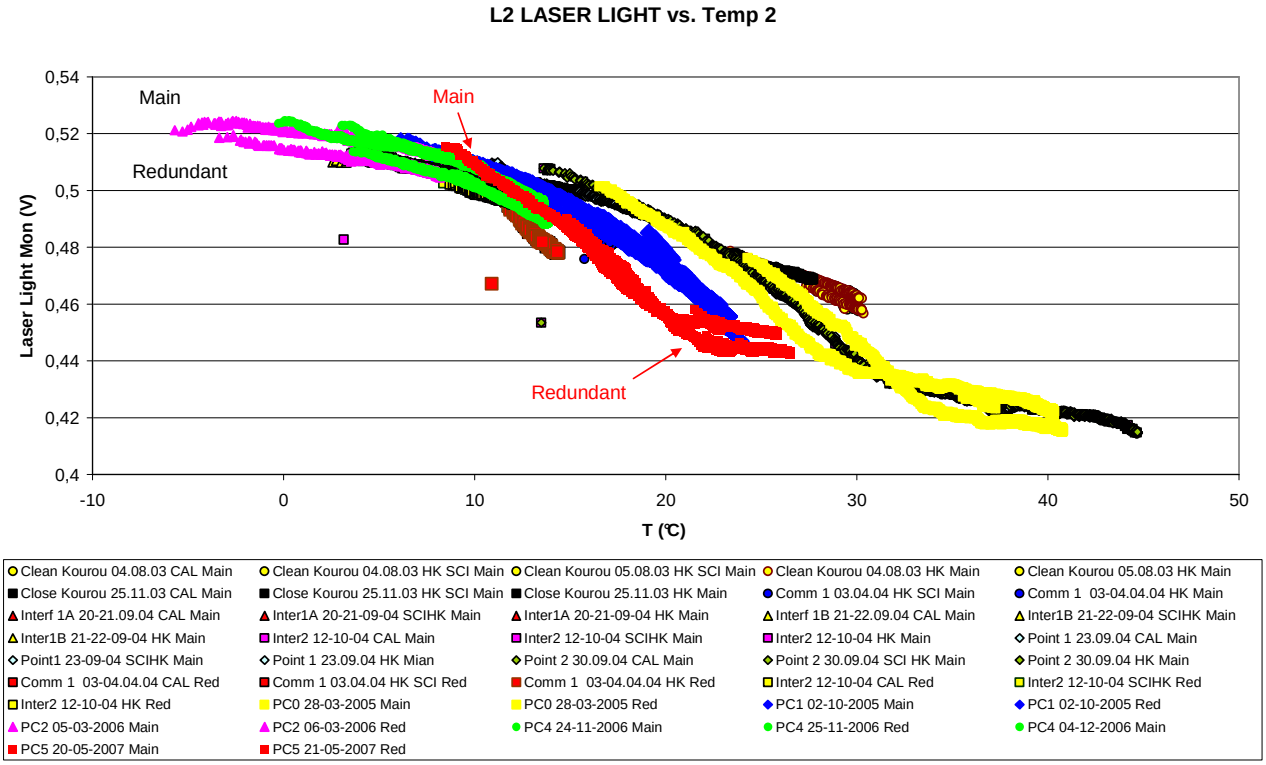


Figure 9.1-3. GDS Laser 3 Light Mon vs. Temperature (PC5 in red)

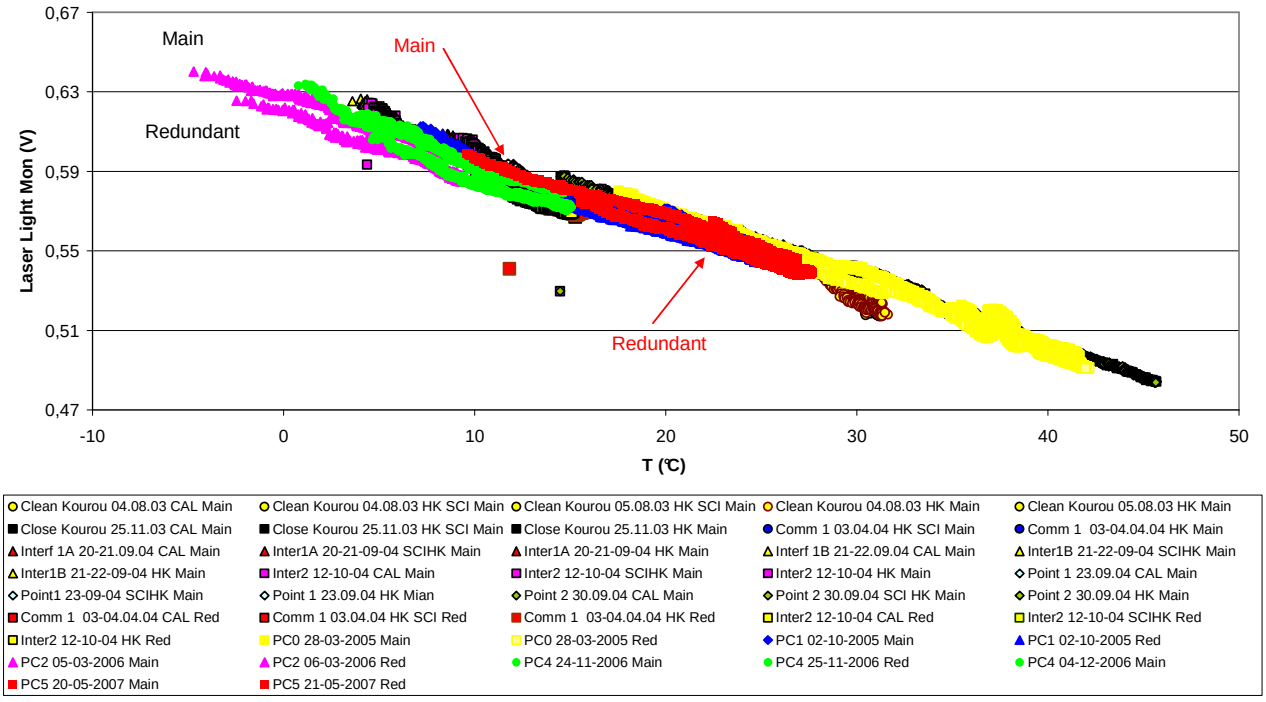
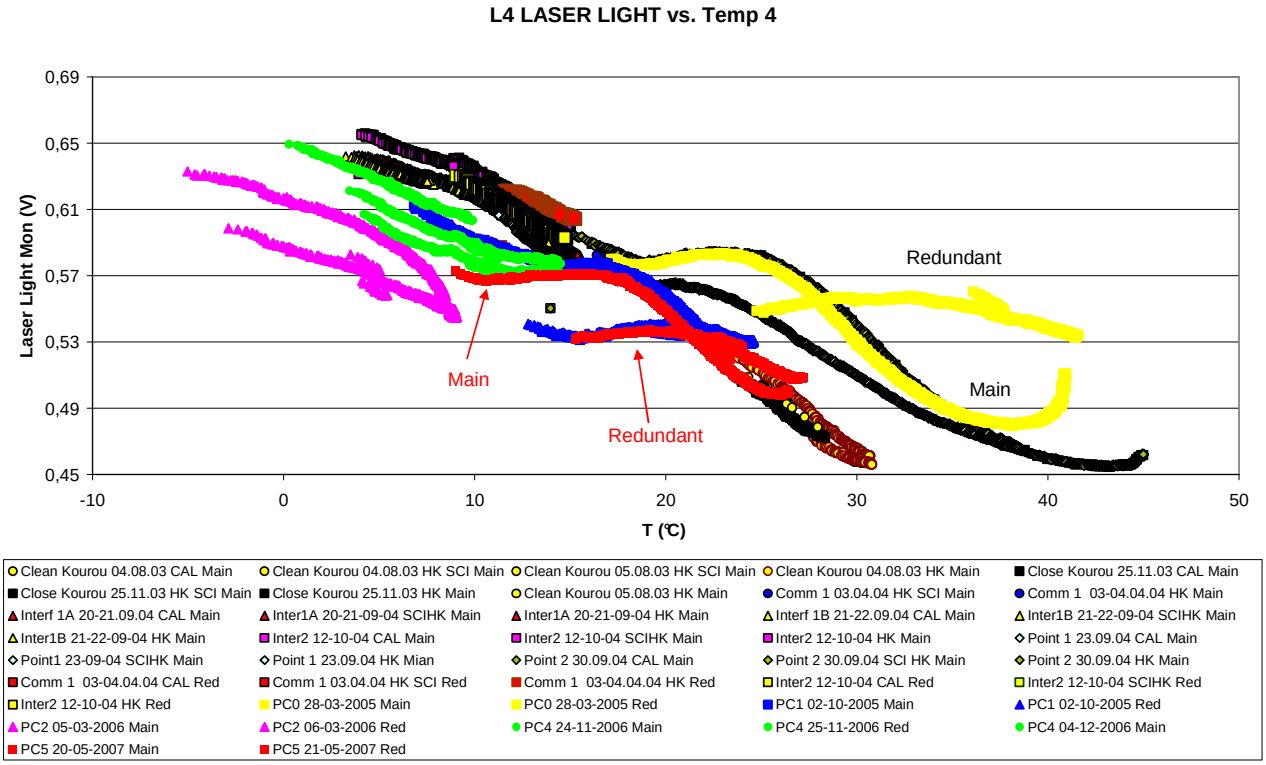


Figure 9.1-4. GDS Laser 4 Light Mon vs. Temperature (PC5 in red)



9.2 IMPACT SENSOR (IS)

9.2.1 CAL Amplitude vs. Temperature

Figure 9.2-1. IS PZT-1 CAL Amplitude vs. T – High Voltage

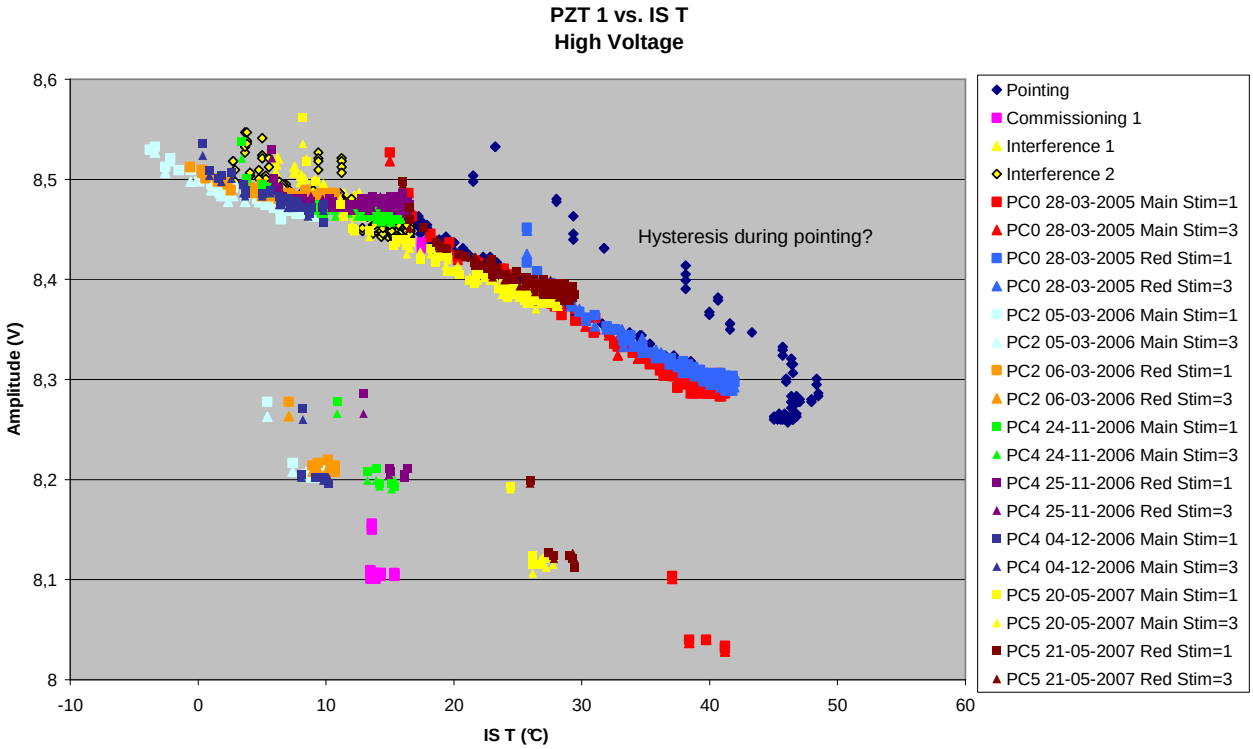
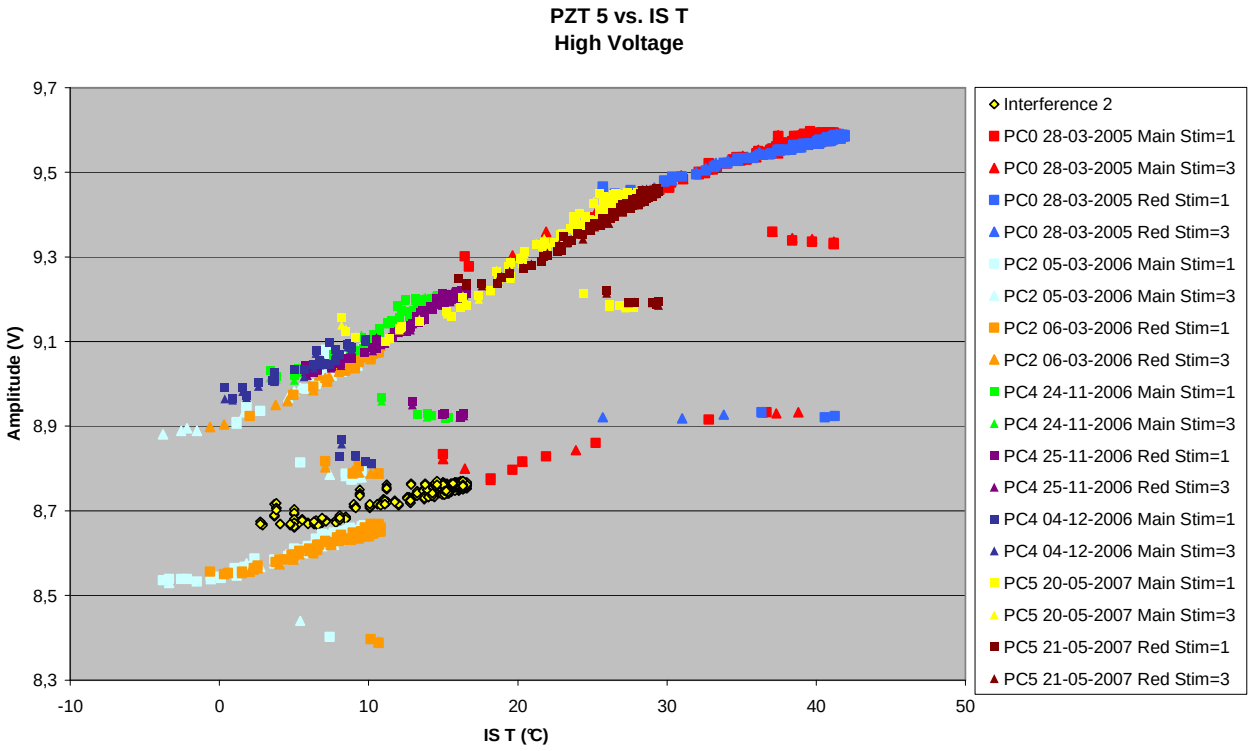


Figure 9.2-2. IS PZT-5 CAL Amplitude vs. T – High Voltage



9.3 MICRO BALANCE SYSTEM (MBS)

9.3.1 Frequency vs. Temperature

Figure 9.3-1. MBS 1 Frequency vs. Temperature

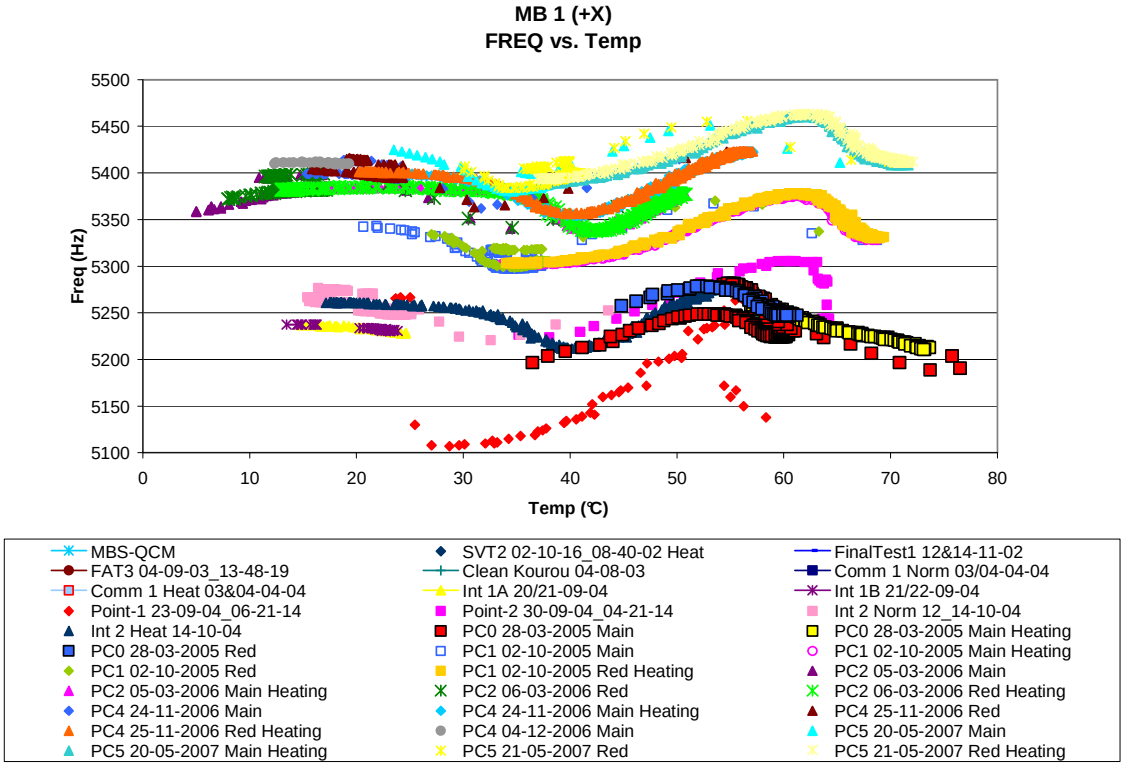


Figure 9.3-2. MBS 2 Frequency vs. Temperature

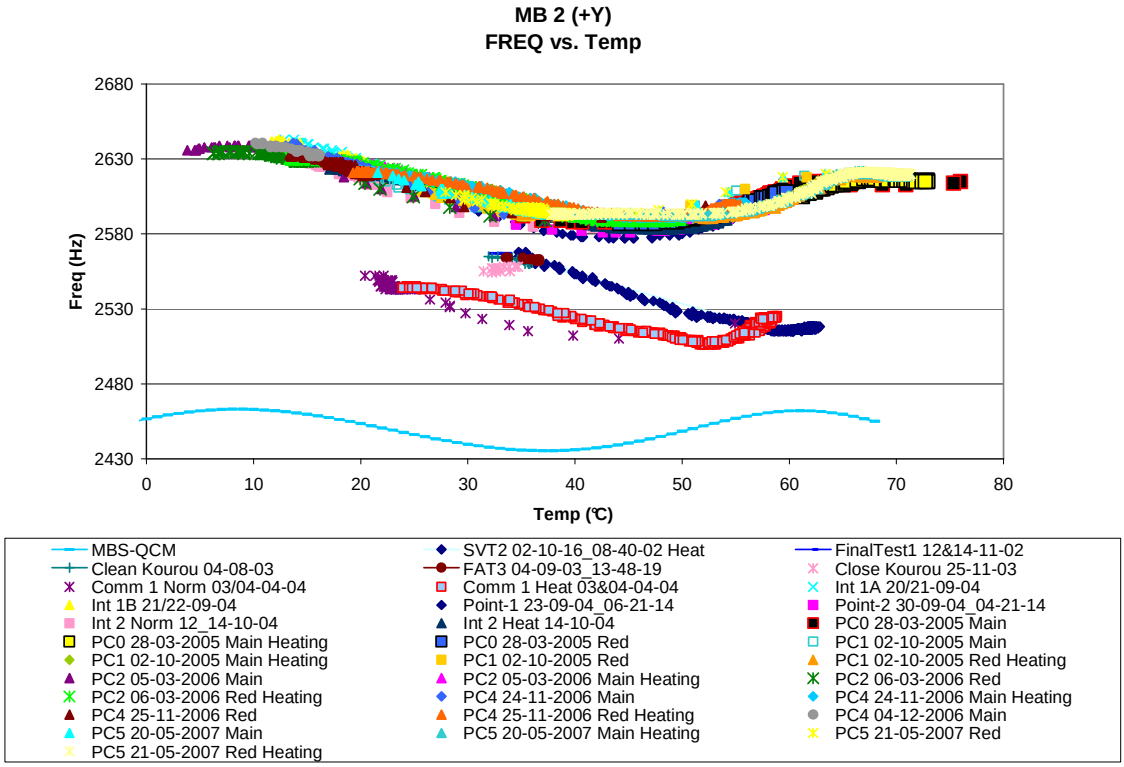


Figure 9.3-3. MBS 3 Frequency vs. Temperature

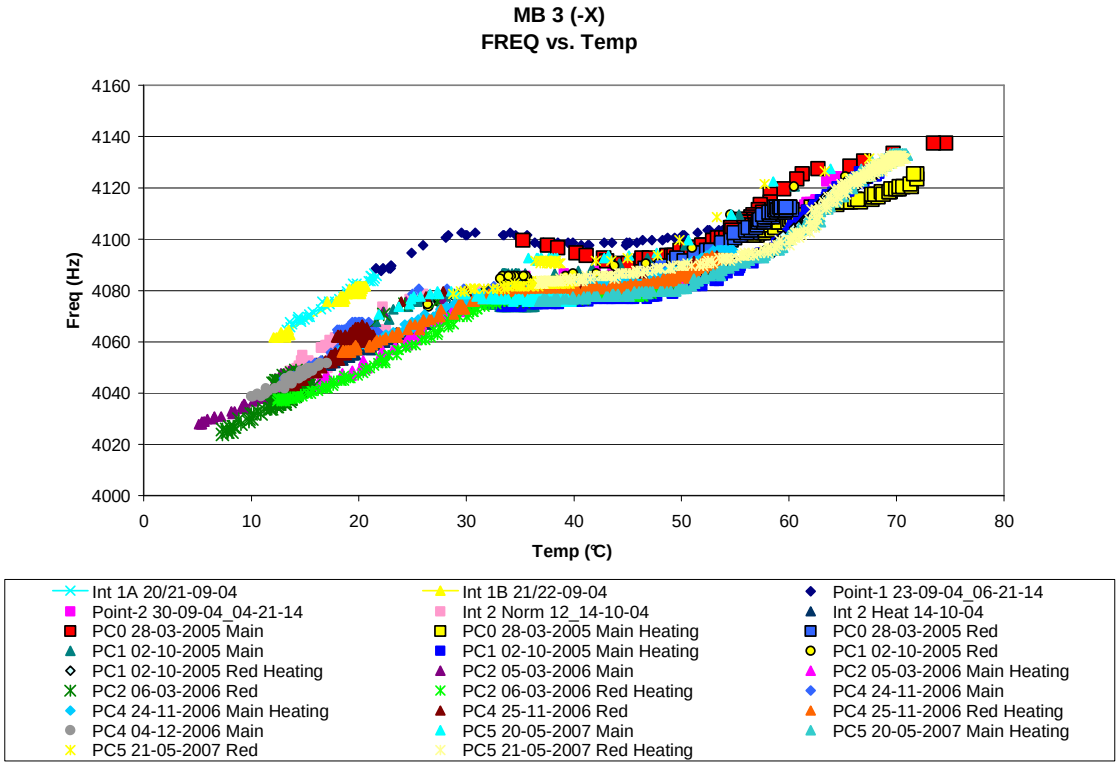


Figure 9.3-4. MBS 4 Frequency vs. Temperature

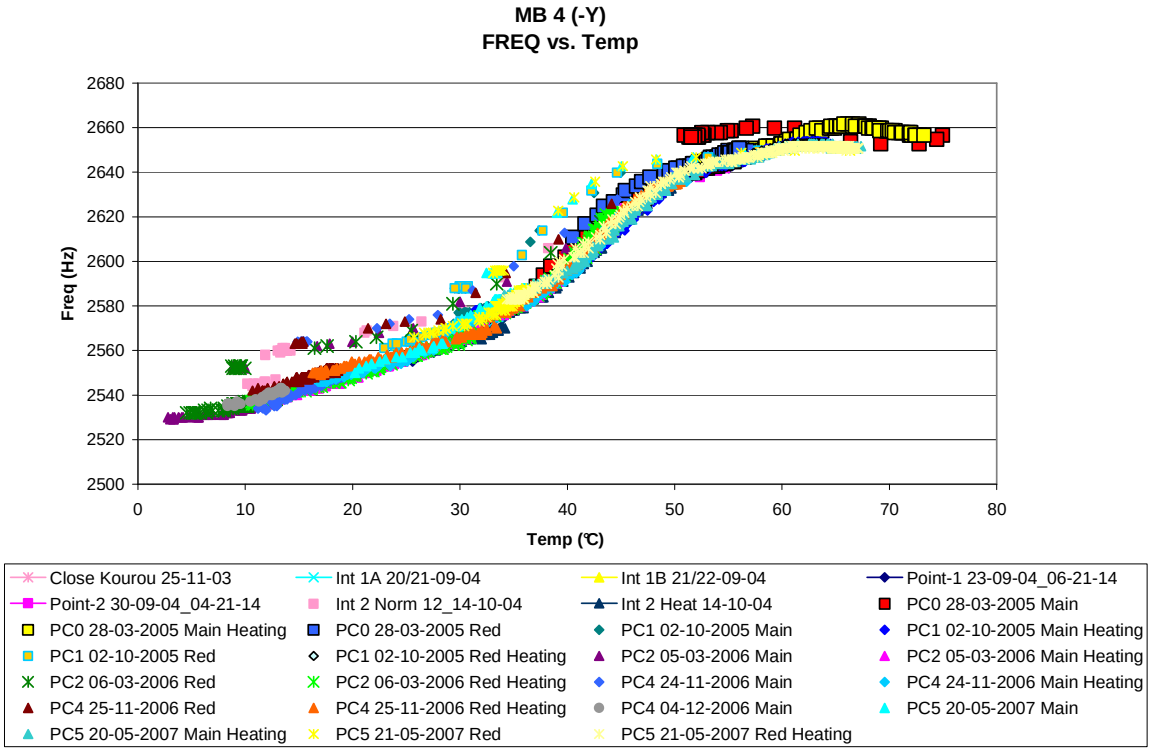
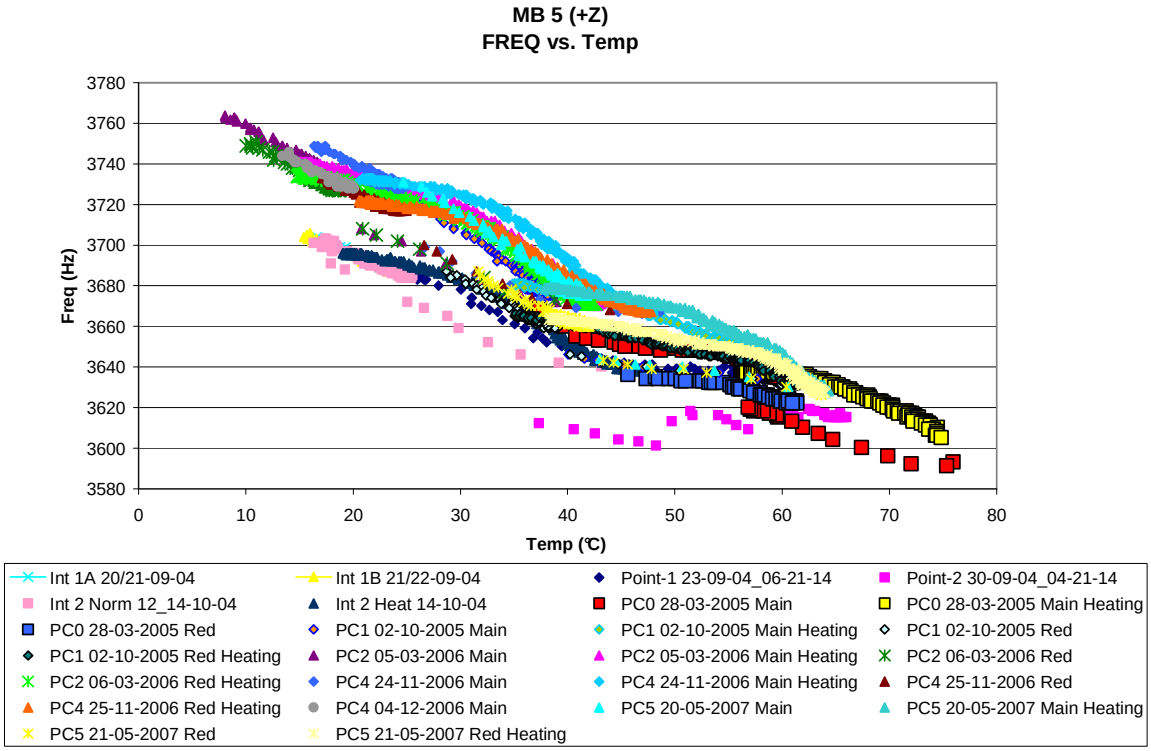


Figure 9.3-5. MBS 5 Frequency vs. Temperature



9.3.2 Frequency vs. Time

Figure 9.3-6. MBS 1 Frequency vs. Time at fixed Temperatures

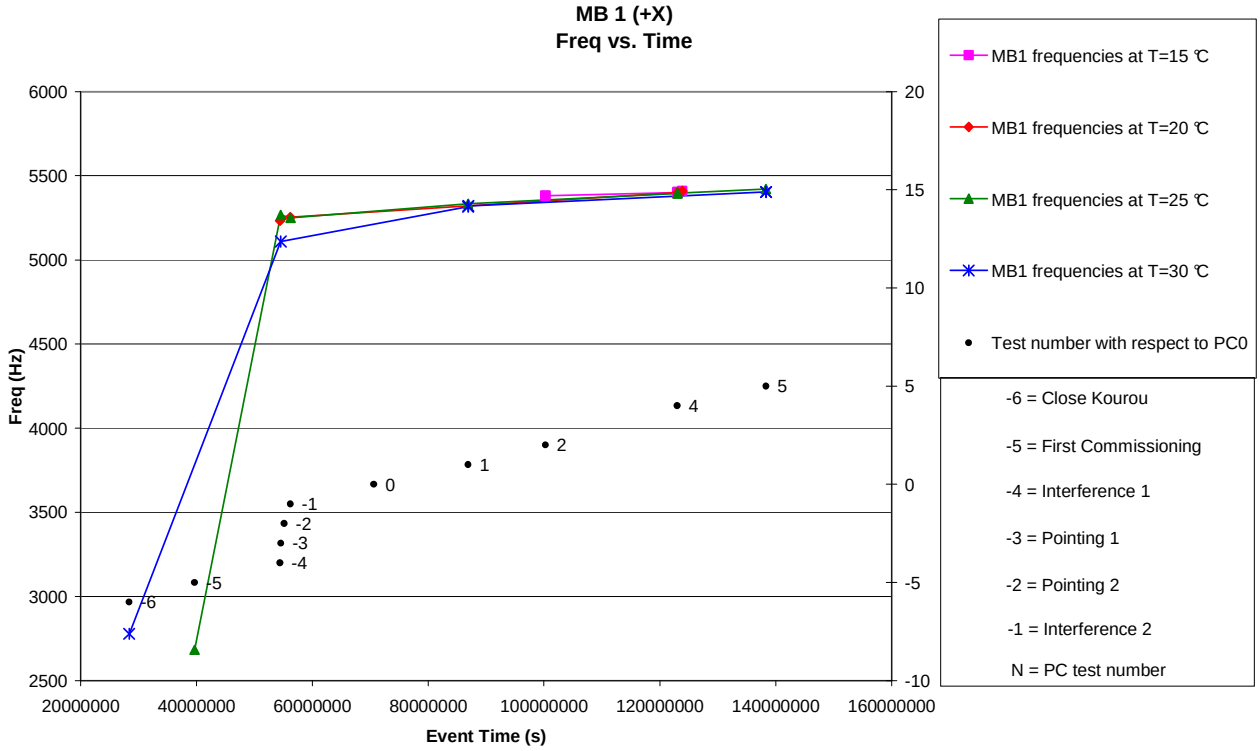


Figure 9.3-7. MBS 1 differently scaled Frequency vs. Time at fixed Temperatures

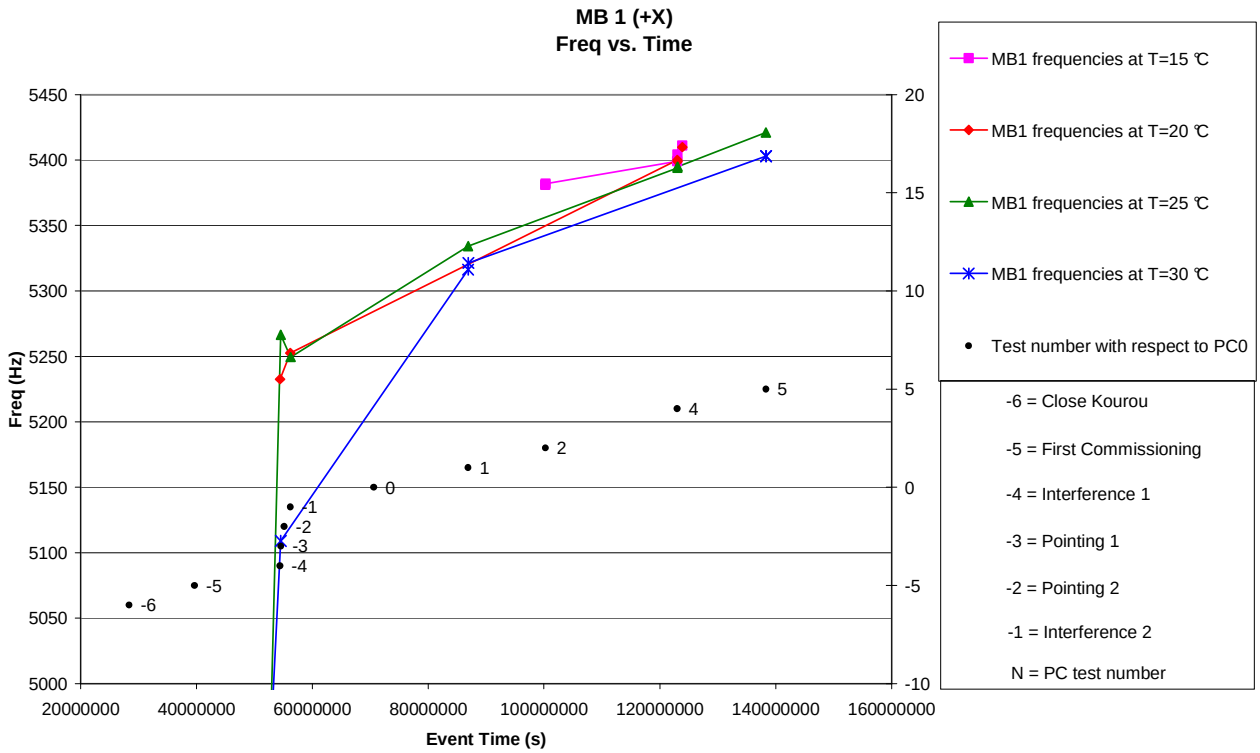


Figure 9.3-8. MBS 2 Frequency vs. Time at fixed Temperatures

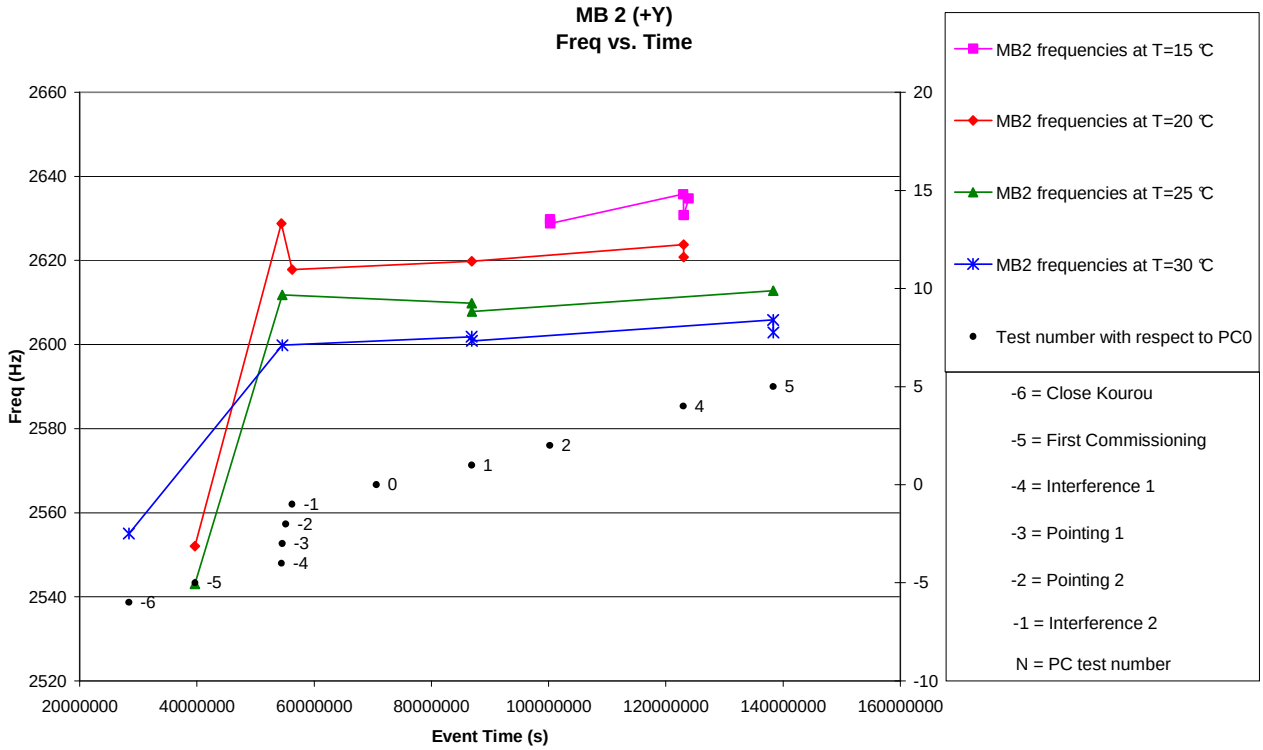


Figure 9.3-9. MBS 3 Frequency vs. Time at fixed Temperatures

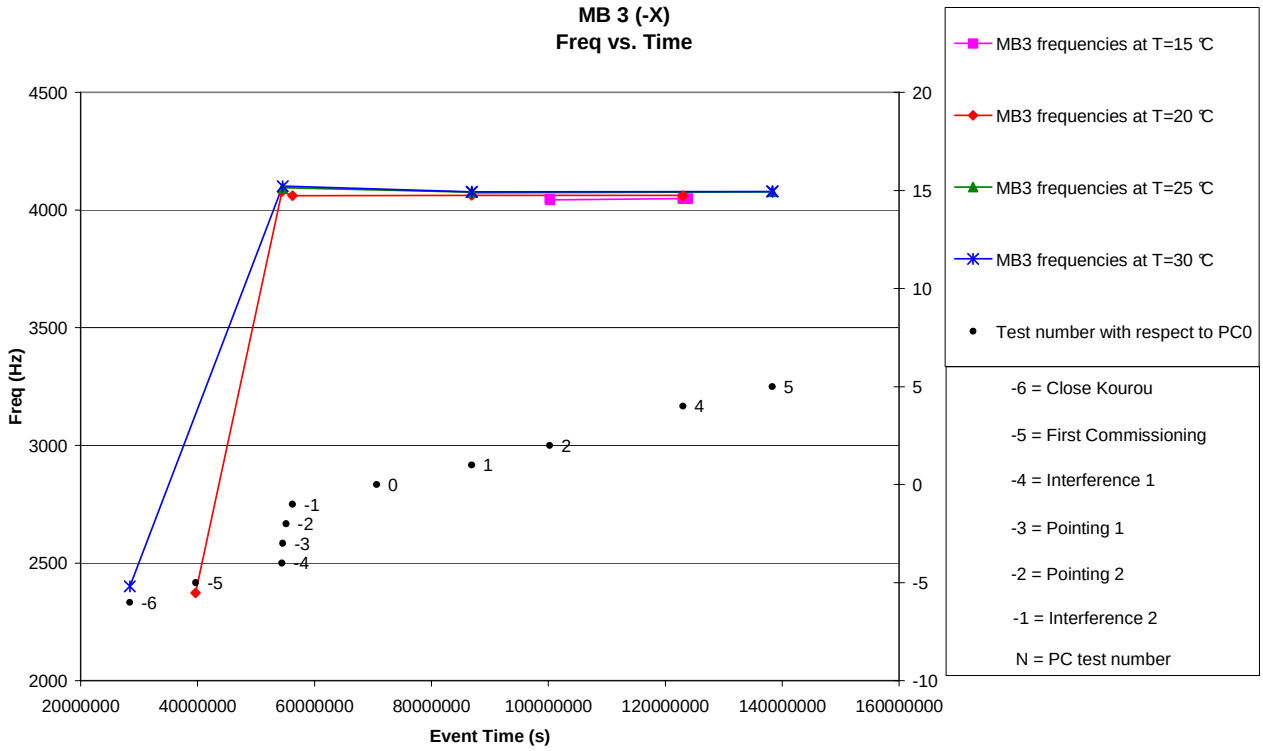


Figure 9.3-10. MBS 4 Frequency vs. Time at fixed Temperatures

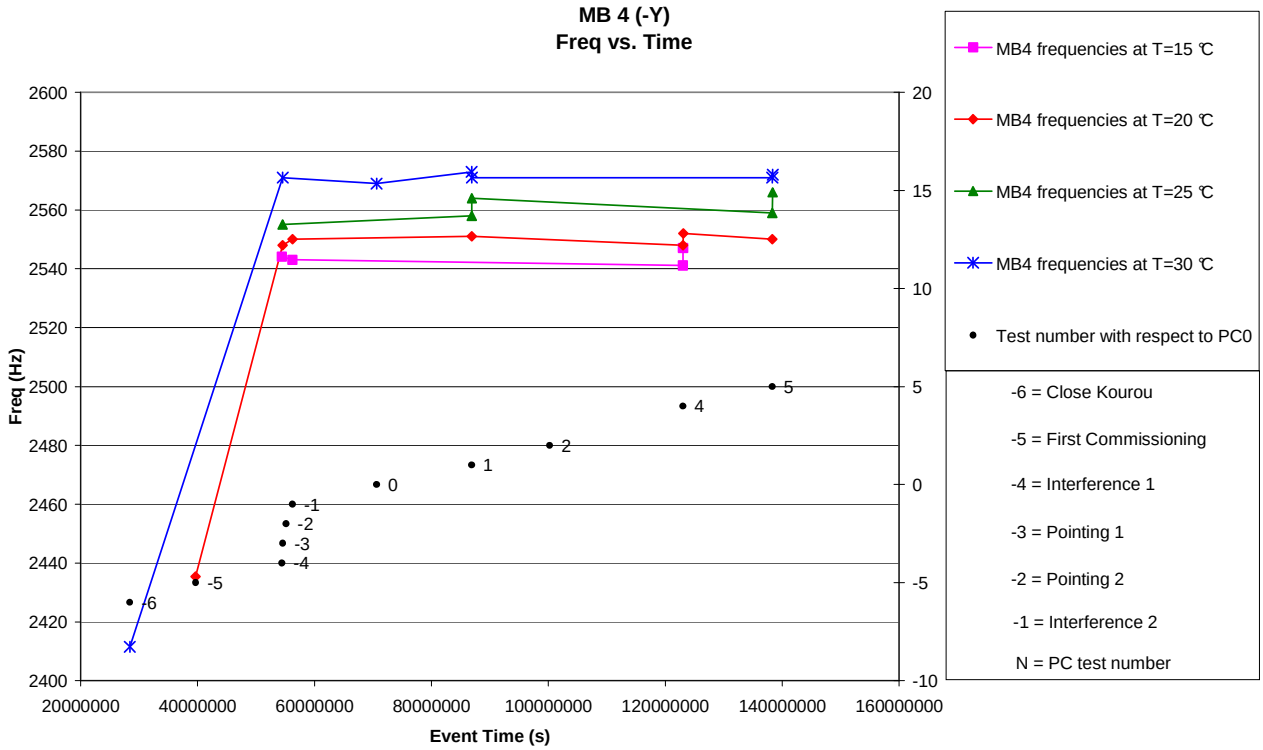


Figure 9.3-11. MBS 5 Frequency vs. Time at fixed Temperatures

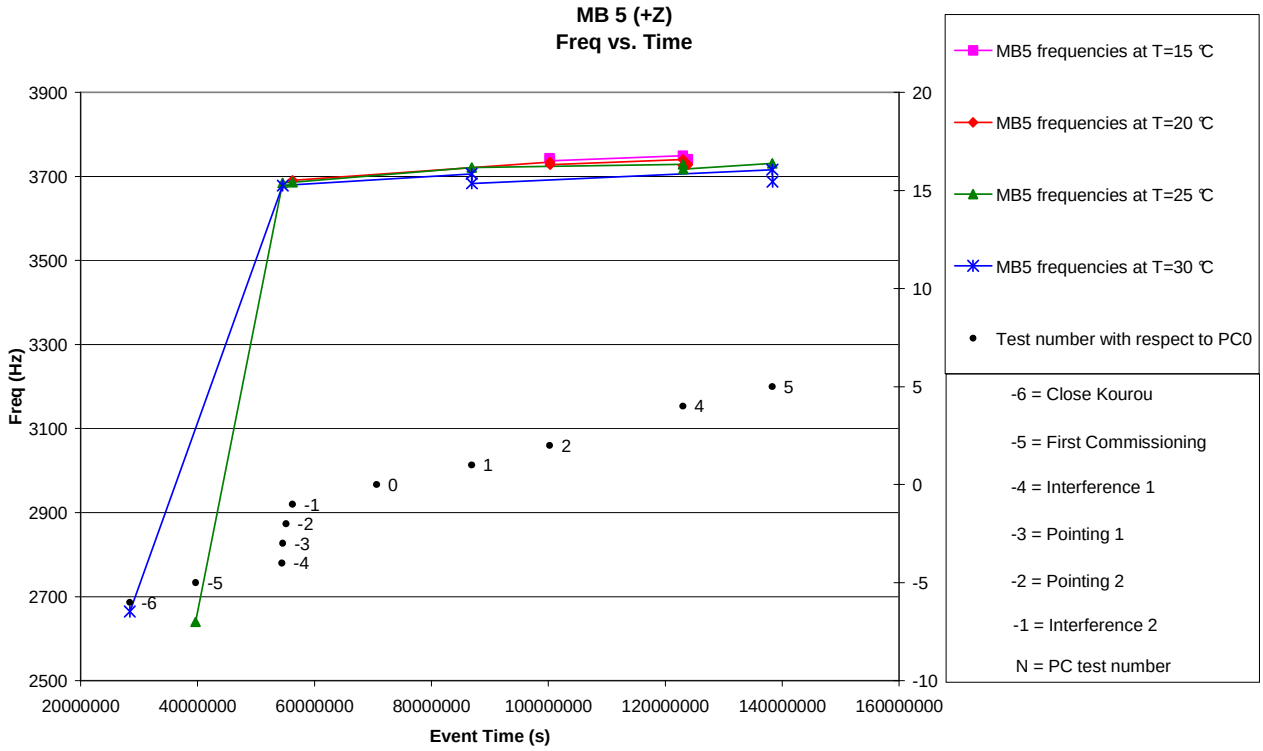
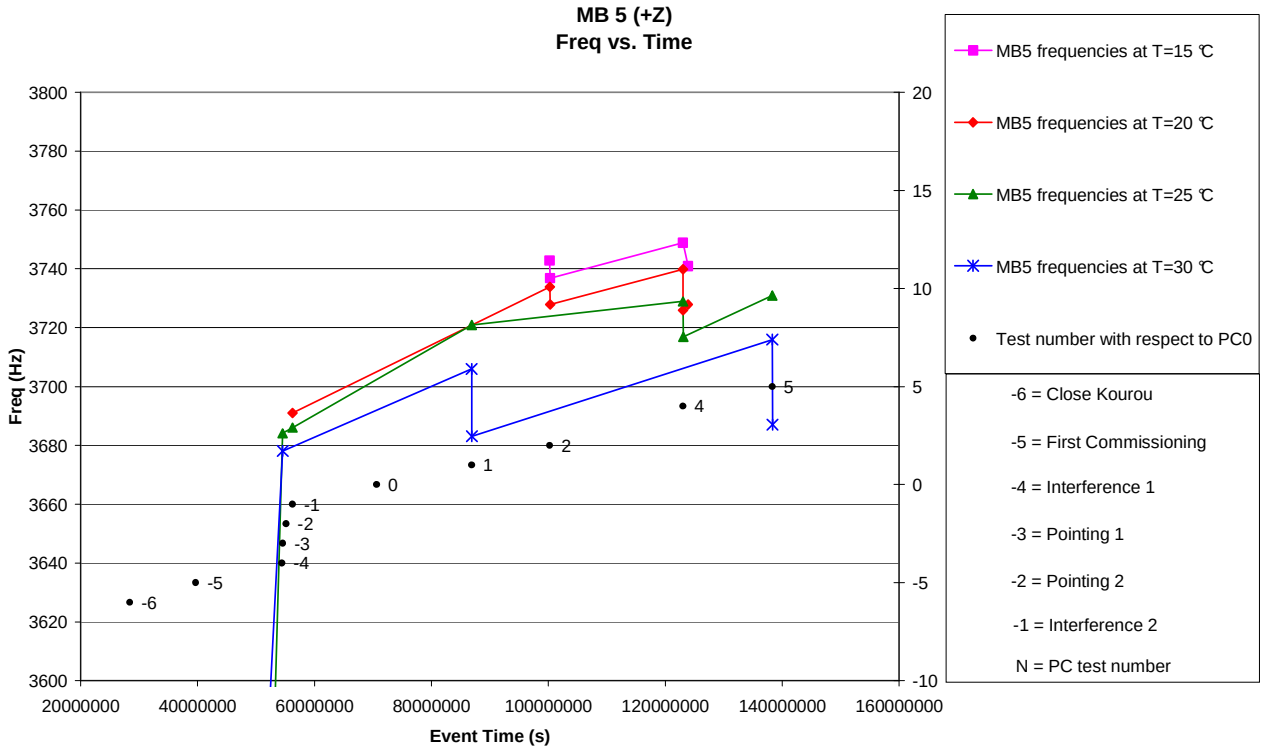


Figure 9.3-12. MBS 5 differently scaled Frequency vs. Time at fixed Temperatures



10. TIMELINES FOR GIADA PC5

10.1 TIMELINE FOR MAIN INTERFACE

```
# $Log: OIOR_PIHRSO_D_0000_GD_PCA___.ROS,v $
#
# Revision 1.8  2006/10/07 11:22:23  GIADA
# timing changed after results of PC2; sequences updated after PC1 have internal timing
# slightly different wrt previous sequences and requires this correction in the timeline
# for future PCn. Also IS and GDS thresholds have been modified.
#
# Revision 1.7  2006/09/05 11:22:23  vdhiri
# Updated to have relative timing. Note No Generic Switch ON/OFF used. Use in PC4/Passive PCn.
#
# Revision 1.6  2006/07/13 09:03:58  vdhiri
# Updated for PC3. And use of top level itl that was necessary for use of PORG.
#
# Revision 1.5  2006/01/24 18:51:20  kwirth
# Final GD OIOR for PC2.
# Original filename: OIOR_PIHRSO_D_0000_GD_PCA3__00013.ROS.
#
# Version  1.3  2005/12/12 giada MAIN for PCn
# Passive Checkout OIOR for GD after sequences update
# RSOC Assumption MSP I1
#
#============================================================================#
# Filename:       OIOR_PIHRSO_D_0000_GD_PCA1_300013.ROS
# Type:     Input Timeline file
#
# Description:    Passive Check-Out GD adapted to sequences updating
#
#
# Author:   PP
#
#           GIADA
#
# Date:           19 December 2005
#
```

```
#
# Proposed by GIADA team
# 19 December 2005
#
# (c) ESA/Estec
#
#-------------------------------------------------------------------------------#
#===============================================================================#

# EPS required, but RSOC will use CVS version
Version: 00001

Ref_date: 24-Nov-2006
Start_time: 000_00:00:00
End_time: 000_12:00:00

#===============================================================================#
# Description: "1. | Switch on and test - main I/F"
#===============================================================================#

+000_00:00:00     GIADA   OFF AGDS001A ( \
                                  VGD0001B = "nom. branch" [ENG] \ # GIADA on Main IF
                                  VGD0001A = "YES" [ENG]) # Context exists

+000_00:03:00     GIADA SAFE  AGDS002A # Patch CT v.flight 1

+000_00:08:00     GIADA SAFE  AGDS003A # Patch SW v.2.3

+000_00:24:00     GIADA SAFE  AGDS035A # Go to Cover Mode

+000_00:26:00     GIADA COVER AGDF090A # Open cover

+000_00:36:00     GIADA COVER AGDS065A # Go to Safe mode

+000_00:37:00     GIADA SAFE  AGDS110A # Go to Normal mode

Description: "GIADA operative in normal mode"

+000_00:39:00     GIADA NORMAL      AGDS038A( \
                                        VGDS038A = 35 \
```

```
                                        VGDS038B = 26 )   # Set GDS L and R thresholds

+000_00:39:30     GIADA NORMAL      AGDS037A(\
                                        VGDS037A = Off [ENG])   # Set IS On/Off

+000_00:40:00     GIADA NORMAL      AGDS036A ( \
                                      VGDS0031 = 0x05 \
                                      VGDS0032 = 0x05 \
                                      VGDS0033 = 0x0f \
                                      VGDS0034 = 0x05 \
                                      VGDS0035 = 0x14 \
                                      VGDS0018 = Enabled [ENG] \
                                      VGDS0019 = Enabled [ENG] \
                                      VGDS0020 = Enabled [ENG] \
                                      VGDS0021 = Enabled [ENG] \
                                      VGDS0022 = Enabled [ENG] \
                                      VGDS0023 = Low [ENG] \
                                      VGDS0025 = High [ENG] \
                                      VGDS0026 = High [ENG] \
                                      VGDS0027 = High [ENG] \
                                      VGDS0028 = High [ENG] \
                                      VGDS0029 = High [ENG])  # Set IS status and thresholds

+000_00:40:30     GIADA NORMAL      AGDS037A(\
                                        VGDS037A = On [ENG])    # Set IS On/Off

+000_00:45:00     GIADA NORMAL      AGDS120A ( \
                                      VGDS0010 = 0xF8 \
                                      VGDS0011 = 0x04 \ # Calibrate IS, GDS, MBS
                                      REPEAT = 105 \
                                      SEPARATION = 00:05:00 )

Description: "change GIADA setting and check effects"

+000_09:30:00     GIADA NORMAL      AGDF100A # Self-interference test

+000_10:30:00     GIADA NORMAL      AGDF055A # MBS heating

#=============================================================================================#
# Description: "2. | Shut down"
```

```
#=============================================================================#

+000_11:30:00     GIADA NORMAL      AGDF060A # go to safe mode & off

#=====================================END=====================================#
```

10.2 TIMELINE FOR REDUNDANT INTERFACE

```
# $Log: OIOR_PIHRSO_D_0000_GD_PCB___.ROS,v $
#
# Revision 1.8  2006/10/07 11:22:23  GIADA
# timing changed after results of PC2; sequences updated after PC1 have internal timing
# slightly different wrt previous sequences and requires this correction in the timeline
# for future PCn. Also IS and GDS thresholds have been modified.
#
# Revision 1.7  2006/09/05 11:22:23  vdhiri
# Updated to have relative timing. Note No Generic Switch ON/OFF used. Use in PC4/Passive PCn.
#
# Revision 1.6  2006/07/13 09:03:58  vdhiri
# Updated for PC3. And use of top level itl that was necessary for use of PORG.
#
# Revision 1.5  2006/01/24 18:51:46  kwirth
# Final GD OIOR for PC2.
# Original filename: OIOR_PIHRSO_D_0000_GD_PCB3__00014.ROS.
#
# Version  1.3  2005/12/12 giada REDUNDANT for PCn
# Passive Checkout OIOR for GD after sequences update
# RSOC Assumption MSP I1
#
#=============================================================================#
# Filename:       OIOR_PIHRSO_D_0000_GD_PCB1_300014.ROS
# Type:     Input Timeline file
#
# Description:    Passive Check-Out GD adapted to sequences updating
#
#
# Author:   PP
#
#           GIADA
#
# Date:           19 December 2005
#
#
# Proposed by GIADA team
# 19 December 2005
#
```

```
# (c) ESA/Estec
#
#-------------------------------------------------------------------------------#
#===============================================================================#

# EPS required, but RSOC will use CVS version
Version: 00001

Ref_date: 24-Nov-2006
Start_time: 000_00:00:00
End_time: 001_00:00:00

#===============================================================================#
# Description: "1. | Switch on and test - redundant I/F"
#===============================================================================#

+000_12:00:00     GIADA   OFF AGDS001A ( \
                                        VGD0001B = "red. branch" [ENG] \ # GIADA on Red IF
                                        VGD0001A = "YES" [ENG]) # Context exists

+000_12:03:00     GIADA SAFE  AGDS002A # Patch CT v.flight 1

+000_12:08:00     GIADA SAFE  AGDS003A # Patch SW v.2.3

+000_12:24:00     GIADA SAFE  AGDS035A # Go to Cover Mode

+000_12:26:00     GIADA COVER AGDF090A # Open cover

+000_12:36:00     GIADA COVER AGDS065A # Go to Safe mode

+000_12:37:00     GIADA SAFE  AGDS110A # Go to Normal mode

Description: "GIADA operative in normal mode"

+000_12:39:00     GIADA NORMAL      AGDS038A( \
                                              VGDS038A = 35 \
                                              VGDS038B = 26 )   # Set GDS L and R thresholds

+000_12:39:30     GIADA NORMAL      AGDS037A(\
                                              VGDS037A = Off [ENG])   # Set IS On/Off
```

```
+000_12:40:00     GIADA NORMAL      AGDS036A ( \
                                          VGDS0031 = 0x05 \
                                          VGDS0032 = 0x05 \
                                          VGDS0033 = 0x0f \
                                          VGDS0034 = 0x05 \
                                          VGDS0035 = 0x14 \
                                          VGDS0018 = Enabled [ENG] \
                                          VGDS0019 = Enabled [ENG] \
                                          VGDS0020 = Enabled [ENG] \
                                          VGDS0021 = Enabled [ENG] \
                                          VGDS0022 = Enabled [ENG] \
                                          VGDS0023 = Low [ENG] \
                                          VGDS0025 = High [ENG] \
                                          VGDS0026 = High [ENG] \
                                          VGDS0027 = High [ENG] \
                                          VGDS0028 = High [ENG] \
                                          VGDS0029 = High [ENG])  # Set IS status and thresholds

+000_12:40:30     GIADA NORMAL      AGDS037A(\
                                                VGDS037A = On [ENG])    # Set IS On/Off

+000_12:45:00     GIADA NORMAL      AGDS120A ( \
                                          VGDS0010 = 0xF8 \
                                          VGDS0011 = 0x04 \ # Calibrate IS, GDS, MBS
                                          REPEAT = 105 \
                                          SEPARATION = 00:05:00 )

Description: "change GIADA setting and check effects"

+000_21:30:00     GIADA NORMAL      AGDF100A # Self-interference test

+000_22:30:00     GIADA NORMAL      AGDF055A # MBS heating

#============================================================================#
# Description: "2. | Shut down"
#============================================================================#

+000_23:30:00     GIADA NORMAL      AGDF060A # go to safe mode & off
```

```
#=======================================END=============================================#
```