

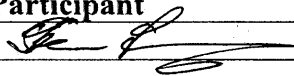
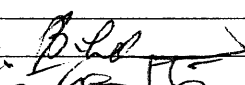

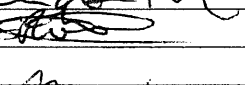
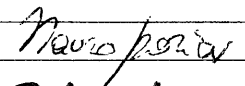
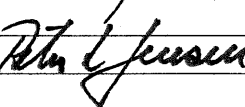
SUBJECT : JEM-X FM-1 TB/TV Test Readiness Review (TRR)

PLACE : ESTEC

DATE : 31 August 2001

AGENDA : Annex 1

SIGNATURES :

Participant	Organisation
S. Laursen 	DSRI
S. Brandt	DSRI
B. Lehmann 	LAVAF/ESTEC
C. Gomez 	ESTEC
S. Roure 	LAVAF/ESTEC
M. Gorla 	Alenia
P. Jensen 	ESTEC

Copy: PJ, GS, AT ESTEC
SL DSRI
MG ALS
BL ESTEC / LAVAF

AGREEMENTS	ACTIONS
<p>1. Configuration status: DFEE, Detector, SW, EGSE</p> <p>Same configuration as for the vibration and EMC test, see INT-MN-39790 for details.</p> <p>2. Documentation Status.</p> <ul style="list-style-type: none"> • Procedure Ref. Procedure for test is: Thermal Vacuum Test Procedure for the JEM-X FM1 Instrument, July 2001, INT-TP-JEM-0008. The following changes have been agreed: <ul style="list-style-type: none"> ➤ Internal thermistors will be calibrated after evacuation at 20 deg C, hot soak and cold soak. Before temperature read-out the TC 07 and TC 08 must be stable within 1 deg C / 4 hours (Annex 1) ➤ Two TB phases shall be performed hot/cold operational ➤ In rush current will be measured in hot/cold start • Max/min alarm limits TC14 and TC15 on the cold plate shall not exceed qualification temperature by more than 5 deg. C TC16 and TC17 on the shroud shall not exceed qualification temperature by more than 10 deg. C • DML for the JEM-X instrument, IN-LI-JEM-007, Issue 0, Rev.1 was approved by the facility. <p>3. Pre Test</p> <ul style="list-style-type: none"> • Functional. <ul style="list-style-type: none"> ➤ Electronic calibration, background test and noise test have been successfully performed (Annex 2). • Thermocouple pre test by hot air <p>4. Instrument NCR status.</p> <ul style="list-style-type: none"> • Summary of NCR status is listed in Annex 02 of the INT-MN-39790. In addition two NCRs were raised during the EMC test, 1039 and 1040. • None of the open NCR's have impact on the planned TB/TV test. • The noise discovered in the QM TB/TV test was due to the internal detector failure (dirty MS plate due to loose capacitor and failed amplifier in one of the anode section) 	

AGREEMENTS	ACTIONS
<p>5. Facility Status.</p> <ul style="list-style-type: none"> • Data acquisition <ul style="list-style-type: none"> ➤ 18 thermocouples are monitored ➤ High vacuum gauge is monitored ➤ Paper recording of temperatures ➤ ACII file of all recordings with 30 sec interval • Cooling: <ul style="list-style-type: none"> ➤ Cold plate was verified before the QM testing between +65 and -55 C. Repeat of this test is not deemed necessary. ➤ Shroud was verified during bake out at +80 deg. C. • Vacuum system: Vane pump and turbo molecular pump. Gate valve present. This was verified during bake-out. • Bake out results. A pressure of 1.5 E-5 mbar was maintained. • Sensor calibration <ul style="list-style-type: none"> ➤ Thermocouples: Cu/constantan type T ➤ System calibration status OK ➤ Accuracy +/- (0.05 % of range, +/- 0.5 C) ➤ Range set to - 100 to + 100 deg. C • Grounding: Verified. No grounding of instrument inside chamber. • NCR's: No outstanding NCR against the facility. <p>6. Test Plan and Schedule</p> <ul style="list-style-type: none"> • Test coverage by DSRI (24 hours per day coverage during complete test) • Test coverage by LAVAF facility personnel <p>On site support during nominal working hours. On call support outside working hours:</p> <ul style="list-style-type: none"> - B. Lehmann phone No. 0252 421262 - S. Roure, phone No. 0252 221550 <p>Regular inspection of facility status will be performed by ESTEC security staff during outside working hours.</p> <ul style="list-style-type: none"> • Expected test schedule <ul style="list-style-type: none"> ➤ Chamber closure today ➤ Expected duration: 7 days <p>7. Open Work before start of test. There is no open work before the start of the test.</p>	

AGREEMENTS	ACTIONS
<p data-bbox="248 191 362 222">8. AOB.</p> <ul data-bbox="298 233 418 264" style="list-style-type: none"><li data-bbox="298 233 418 264">• None <p data-bbox="248 306 444 338">9. Conclusion.</p> <p data-bbox="248 380 842 411">The TB/TV test of JEM-X FM-1 can proceed.</p>	

Bernd Lehmann

29.08.01 11:43

To: Arrien Tiemon/estec/ESA@ESA

cc: Cesar Gomez Hernandez/estec/ESA@ESA, Peter Jensen/estec/ESA@ESA, Stephane Roure/estec/ESA@ESA, sl@dsri.dk

Subject: Re: JEM-X TV Procedure for FM1 Test

After the review of the test procedure I have some questions, which hopefully can be easily answered.

page 4: test levels

I see the same temperature levels as imposed on the QM, i.e. qualification. Shall the FM test be performed within the qualification or acceptance range?

QUAL TEMP RANGE, 4 CYCLES, AS
STATED IN THE TEST PROCEDURE

page 4: point 8.2

The LAVAF operation during the last test was without any problem. I do not see a reason to perform a pre-test.

Whereas, we promised/agreed to perform a bake out of the facility (24 hours at 80C). Is it still required?

BAKE-OUT PERFORMED 30.08.01 JWT PRIOR TO FM1 TB/TV

page 7: point 8.5.3

As far as it is known to me, there was not any significant difference between prediction and test temperatures during the QM test.

Could you please confirm the need of the TB phases! TB PHASES WILL BE PERFORMED
AS STATED IN TEST PROCEDURE

General, I assume, that the agreements of the QM TRR are still valid and applicable for the FM's. Especially, the allowed deviation for the shroud and cold plate temperatures of 10K and 5 K, respectively.

YES.

Schedule

29-Aug: start of bake out

31-Aug: installation and chamber closure

02-Sep: start of hot non-op cycle

The facility is available until 11-Sep 16:00.

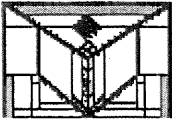
Regards,

Bernd Lehmann (TOS-MCV)

Mechanical Systems Laboratory

ESTEC, P.O. Box 299, 2200 AG Noordwijk ZH, The Netherlands

Phone: +31 71 565 3515 Fax: +31 71 565 6142



Cesar Gomez Hernandez

09.08.01 16:55

To: Arrien Tiemon/estec/ESA@ESA

cc: Peter Jensen/estec/ESA@ESA, Bernd Lehmann/estec/ESA@ESA, Stephane

Roure/estec/ESA@ESA, Giuseppe Sarri/estec/ESA@ESA

Subject: Points to Be Discussed with JEM-X Team

Hello Arrien.

I would appreciate it if you could start the discussion on the following TB/TV-related points with the JEM-X team:

Issues Raised during QM JEM-X TB/TV test (January 2001)

1) what is the conclusion of the investigation about the detector noise measured during the QM TB test (see NCR IN-NC-JEM-1027) ?

FM TV Test Procedure IN-TP-JEM-0008 Iss 1 Rev 1

2) 8.3. Test Preparation - do we need to perform mass spectrometry during the FM TB/TV to demonstrate that there is no Xenon leak during the test ? *NO MASS SPECTROMETRY NEEDED*

3) during QM TB/TV testing, it was found that the TV chamber temperature controller somehow disturbed the detector measurements; do we have to make some modification in the test set-up or is it acceptable to use the same temperature controller again ? *CAUSE OF NOISE WAS INTERNAL TO JEM-X AND NOT RELATED TO TVC FACILITY*

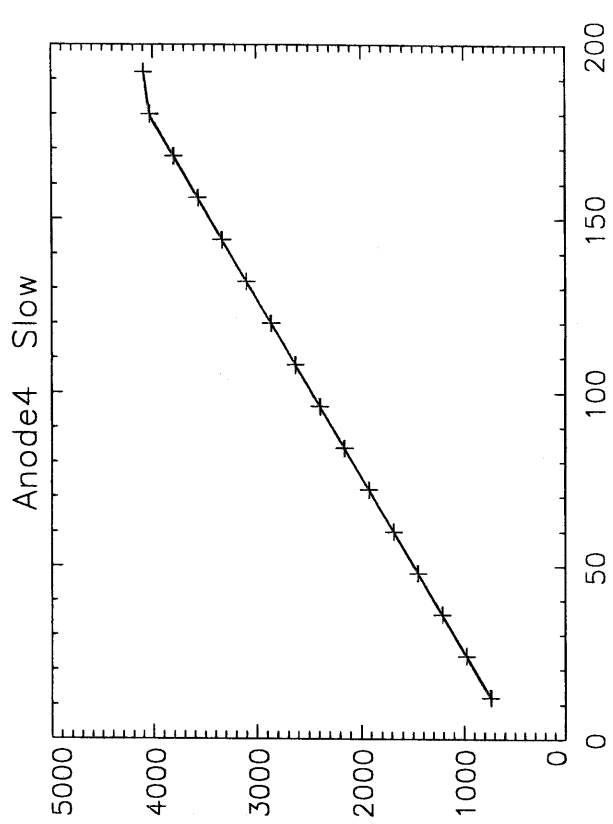
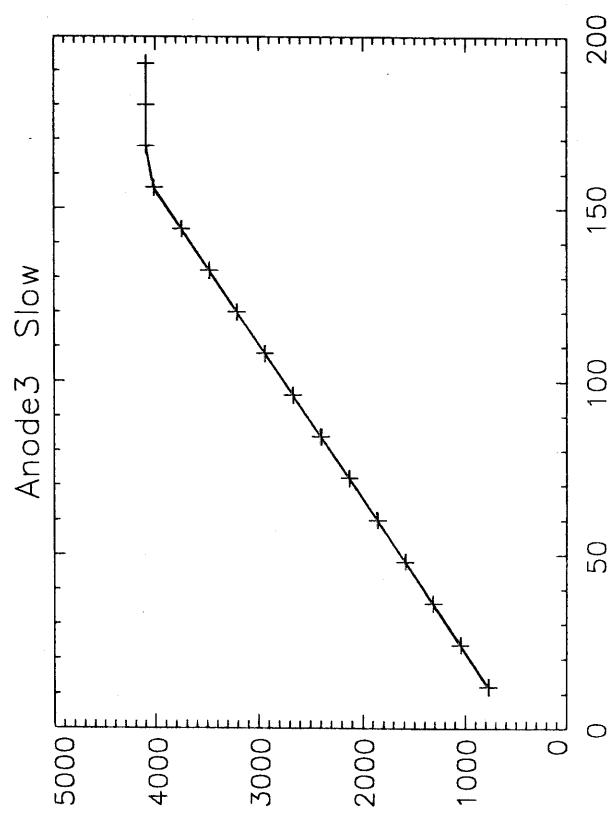
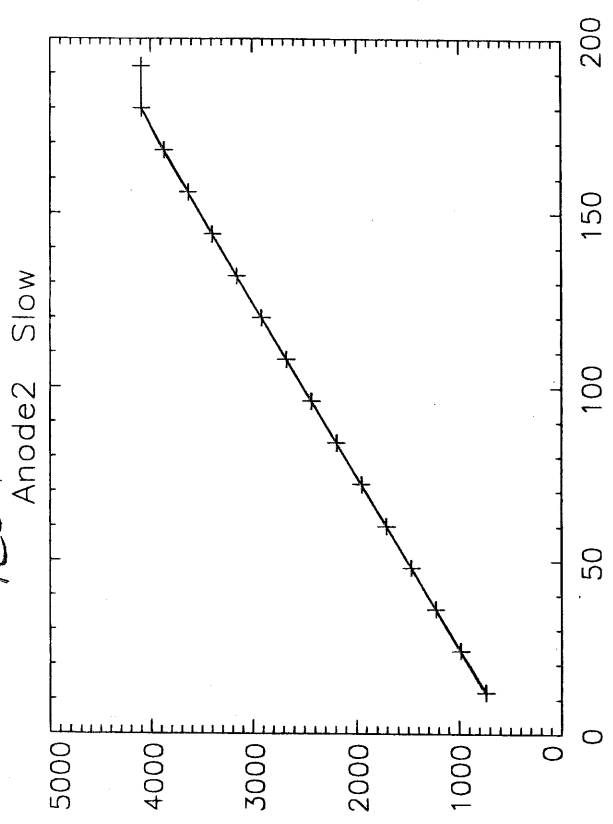
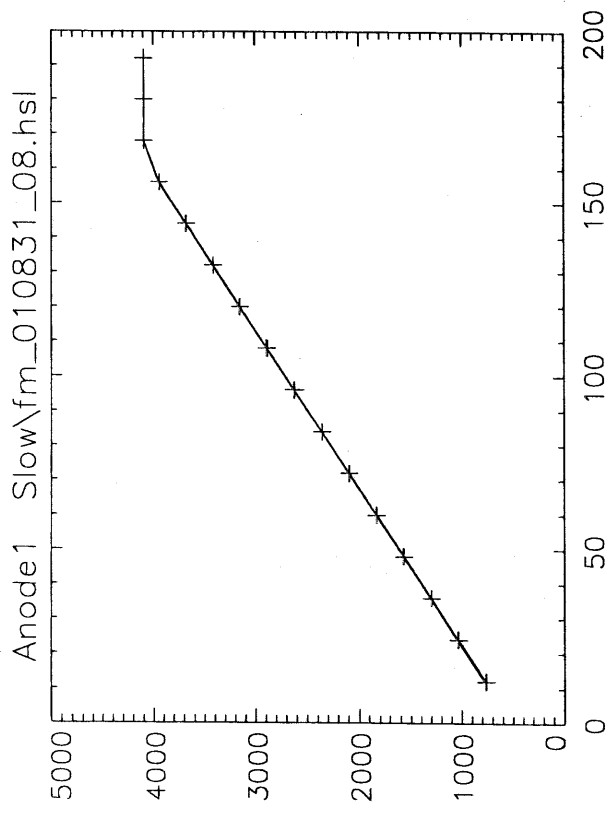
4) thermistor calibration - during QM TB/TV testing the detector module thermistors gave temperature measurements which did not make sense; I sent a fax to the JEM-X team (PG/11.4/CGH/6170 22.03.01) requesting some information to study the problem; is there a reply available to this fax ? I need the information in order to complete the thermal model correlation of the QM, and the best would be to have this correlation completed before the start of the FM TB/TV.

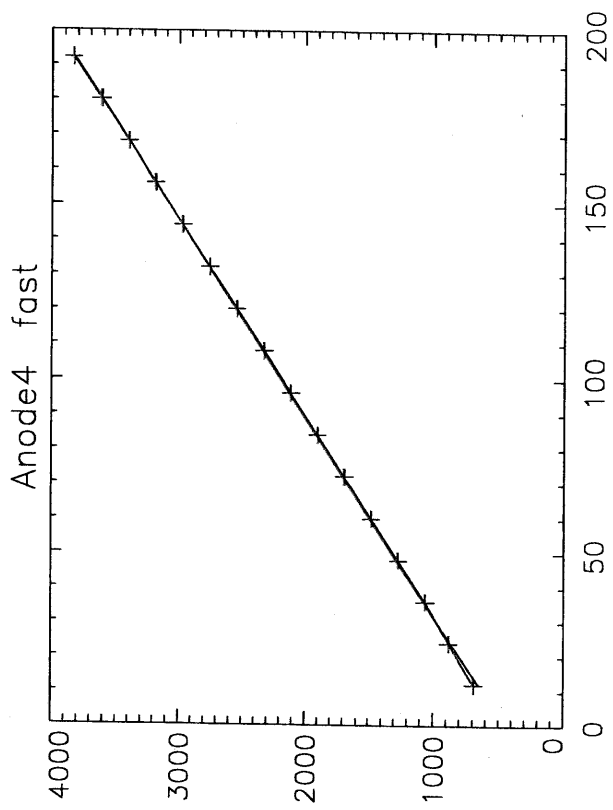
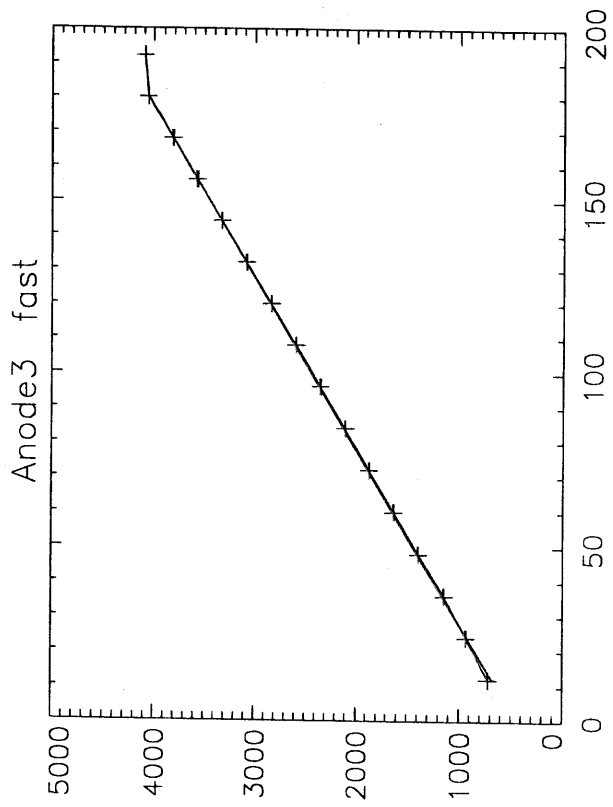
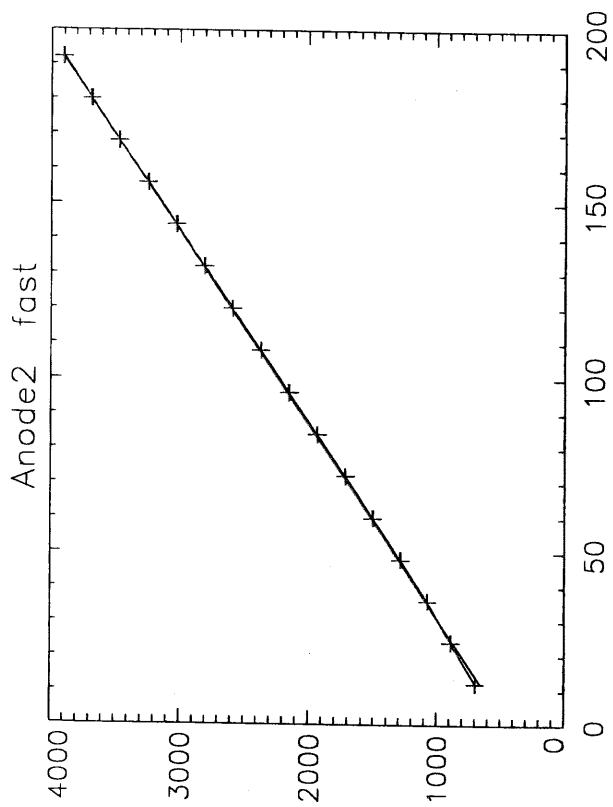
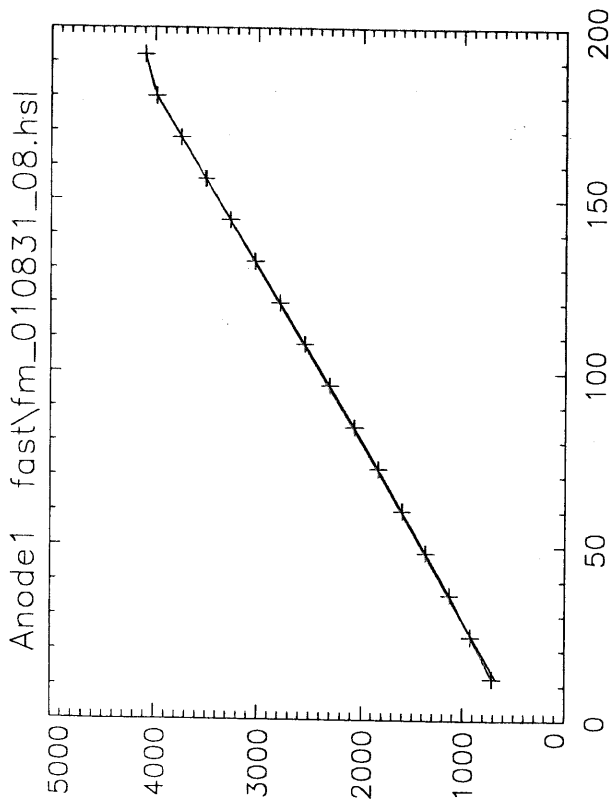
Thank you and have a nice meeting.

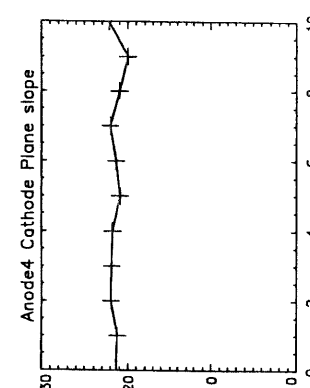
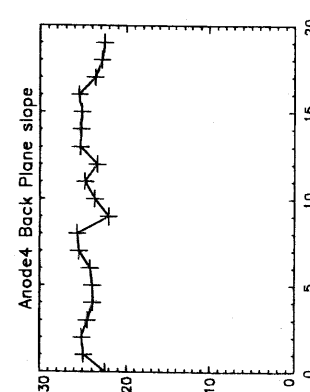
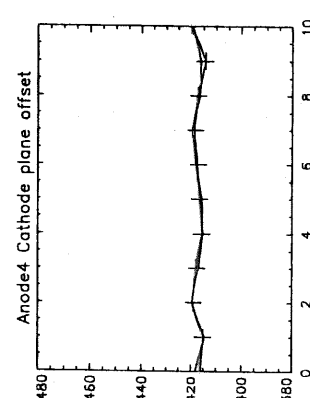
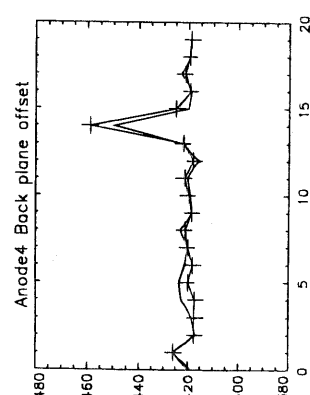
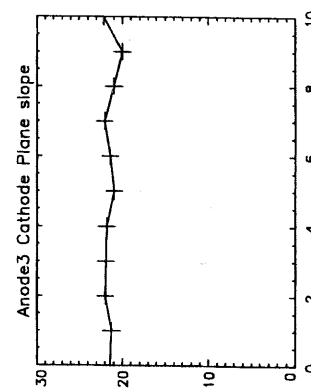
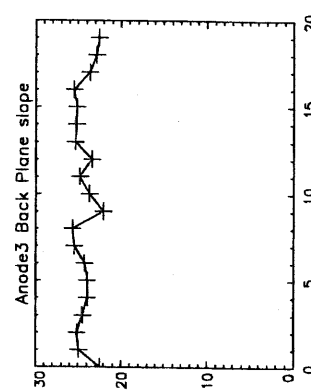
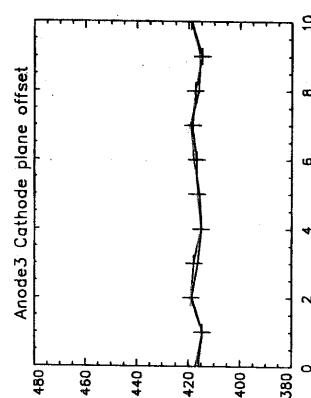
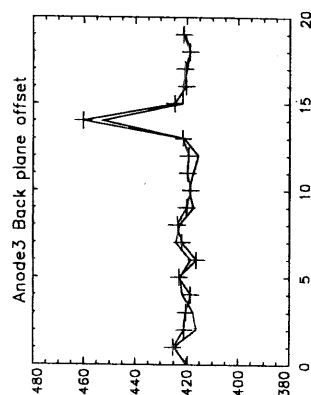
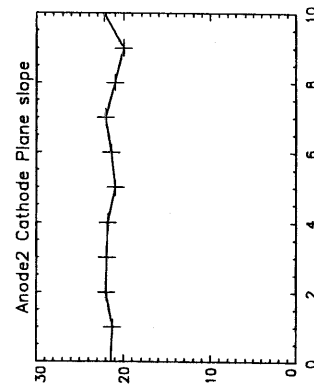
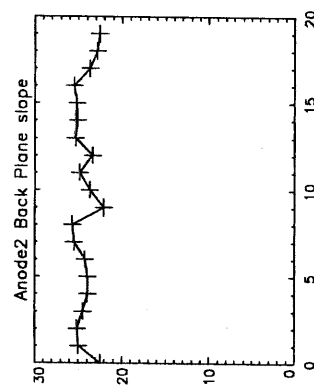
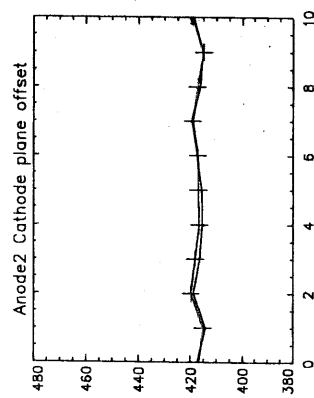
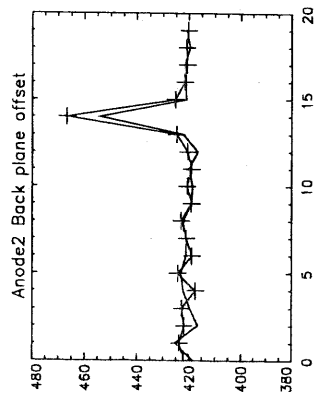
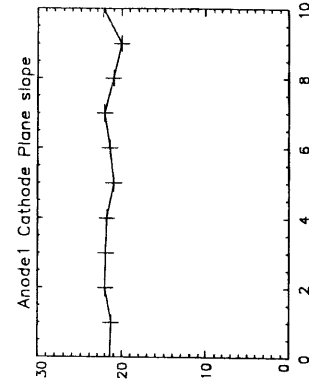
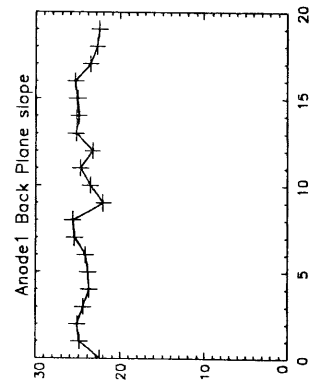
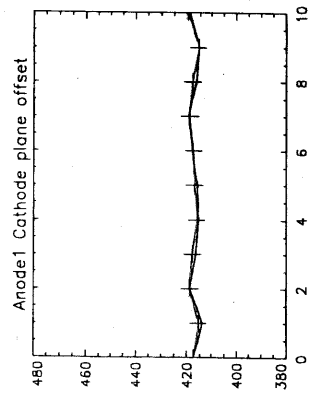
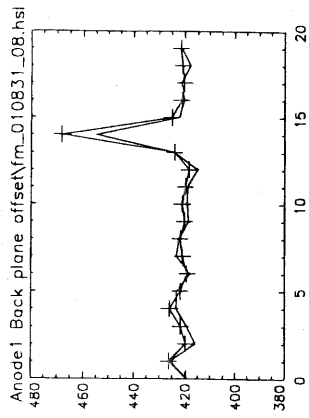
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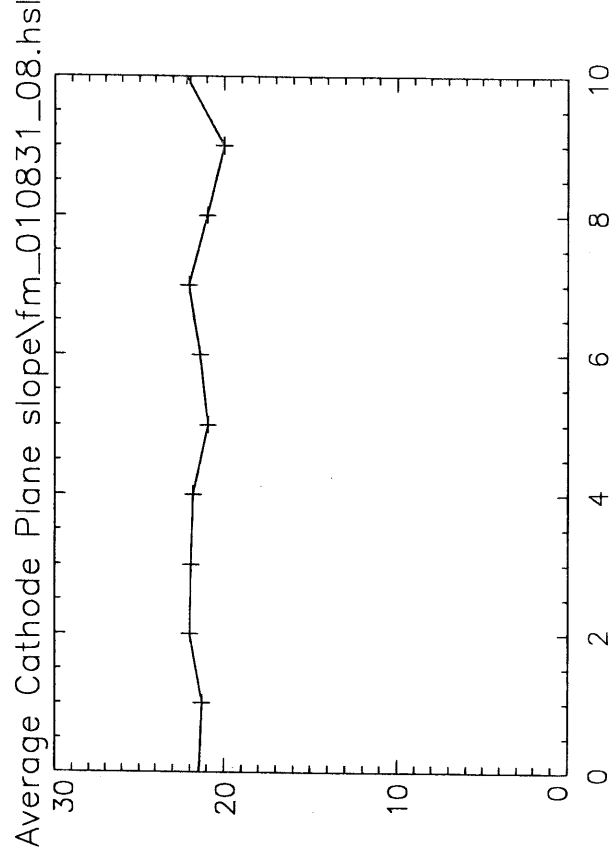
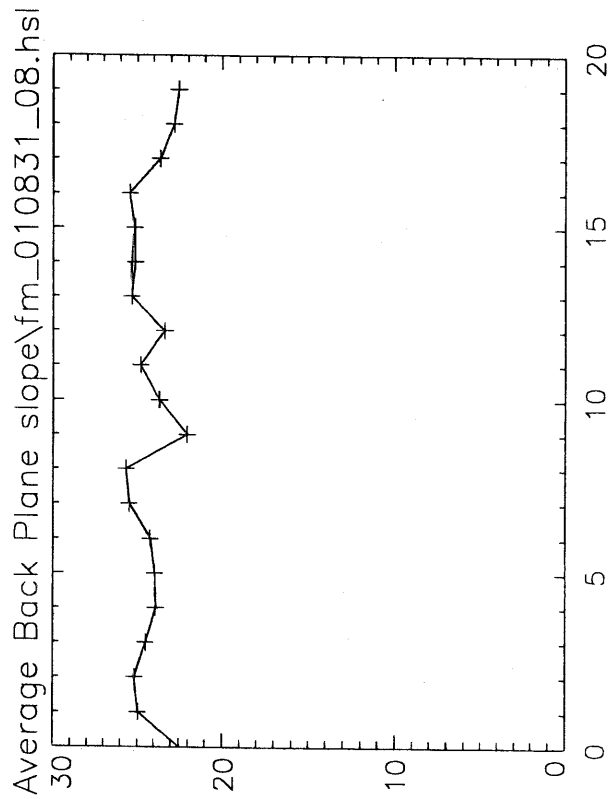
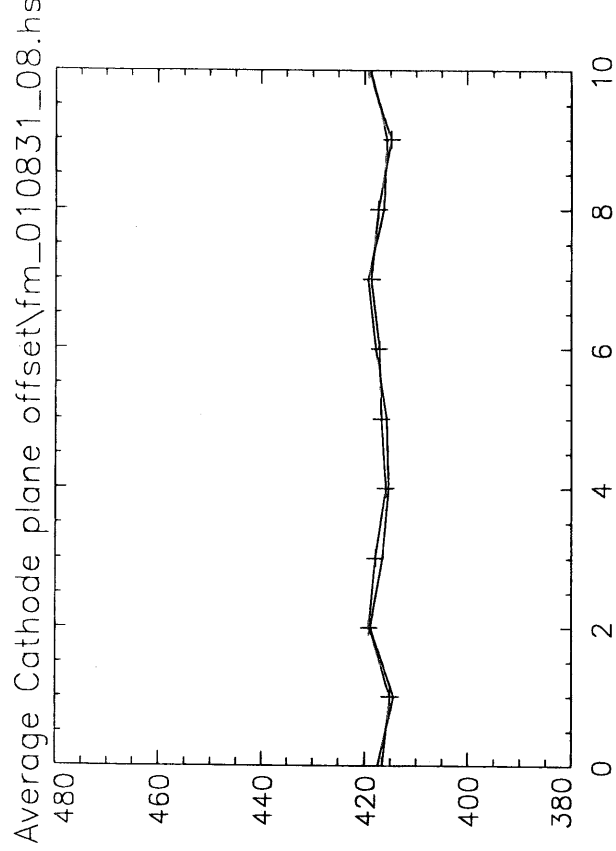
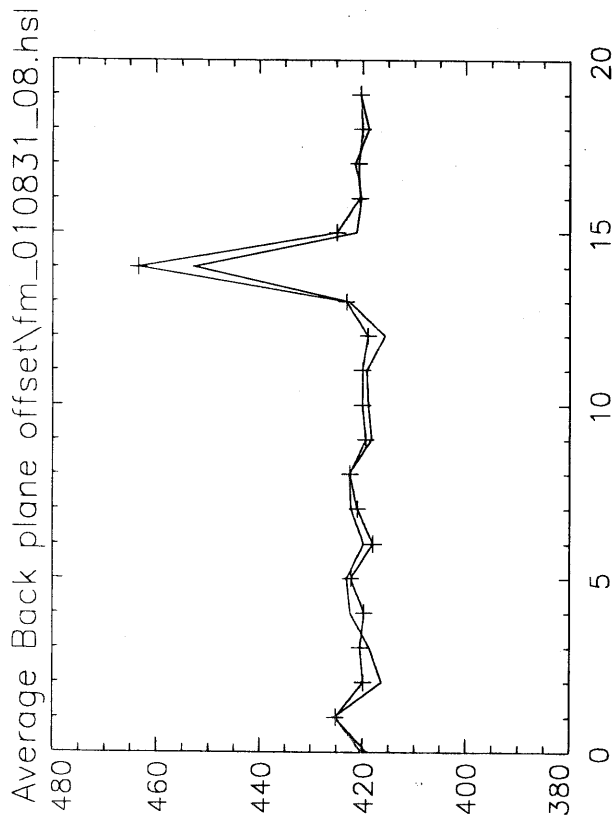
Cesar (ESTEC tel. extension 5644)

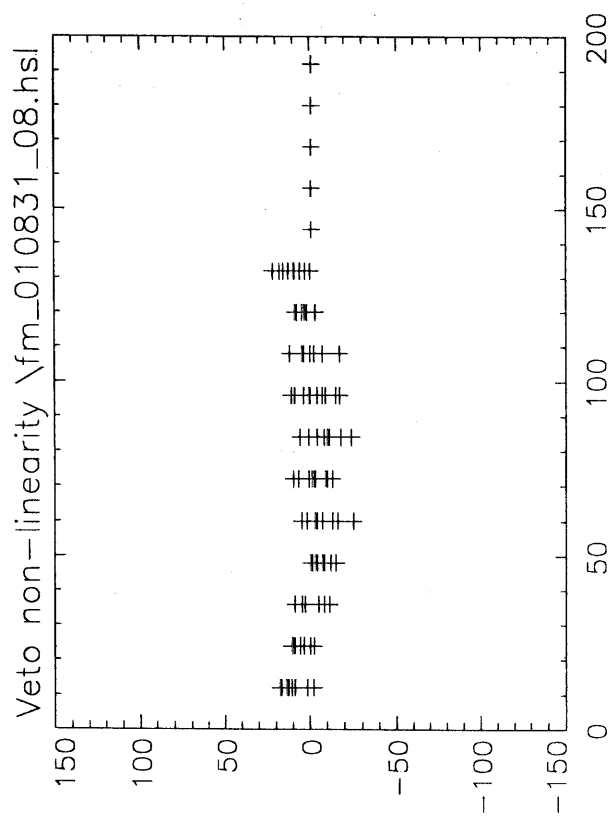
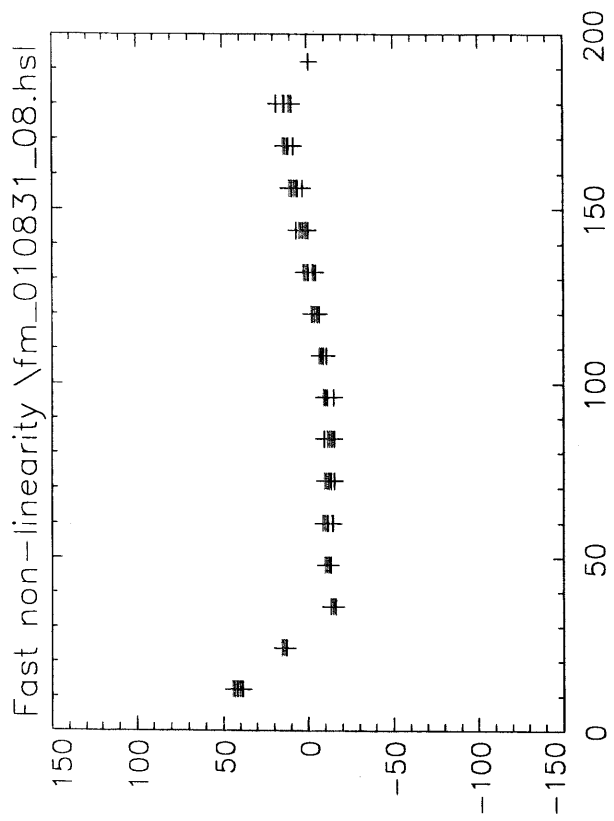
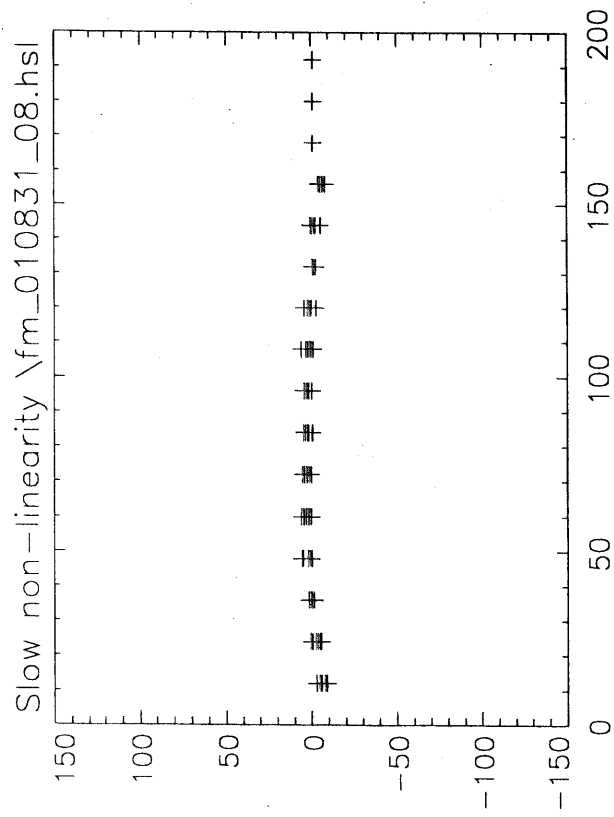
ANNEX 2 - RESULTS OF FUNCTIONAL TEST 31.08.01 ~ 13: 5

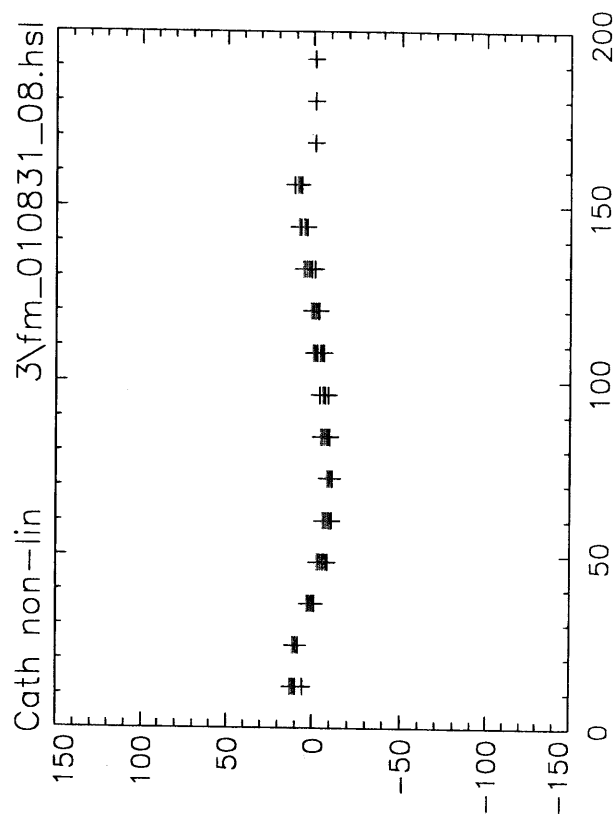
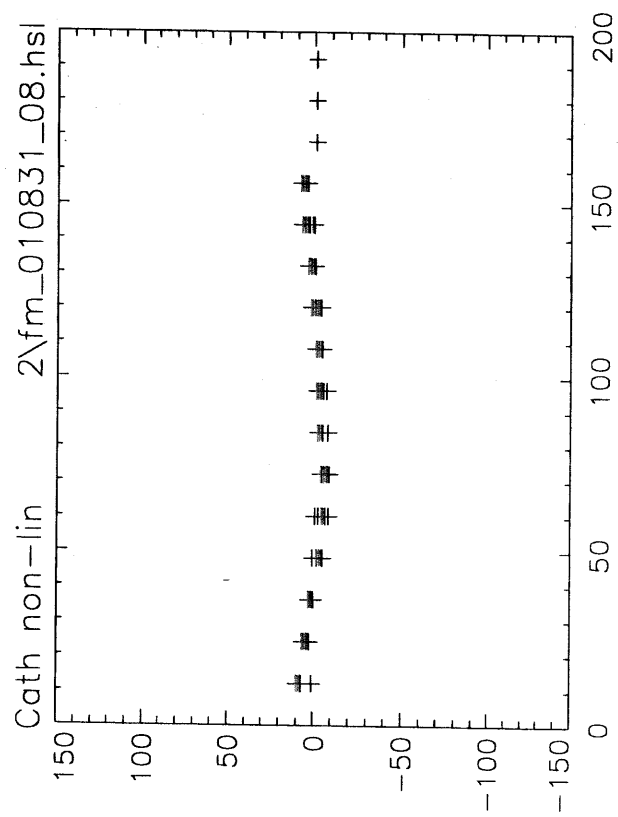
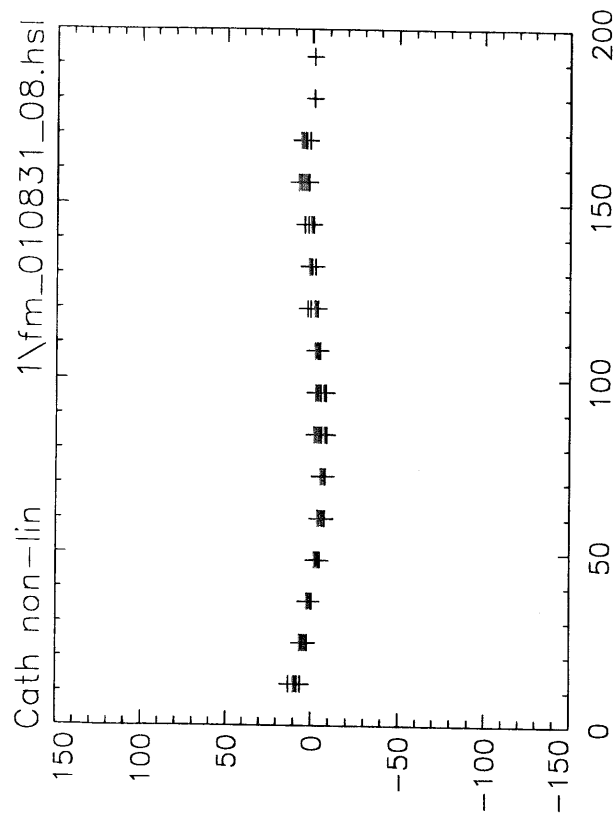
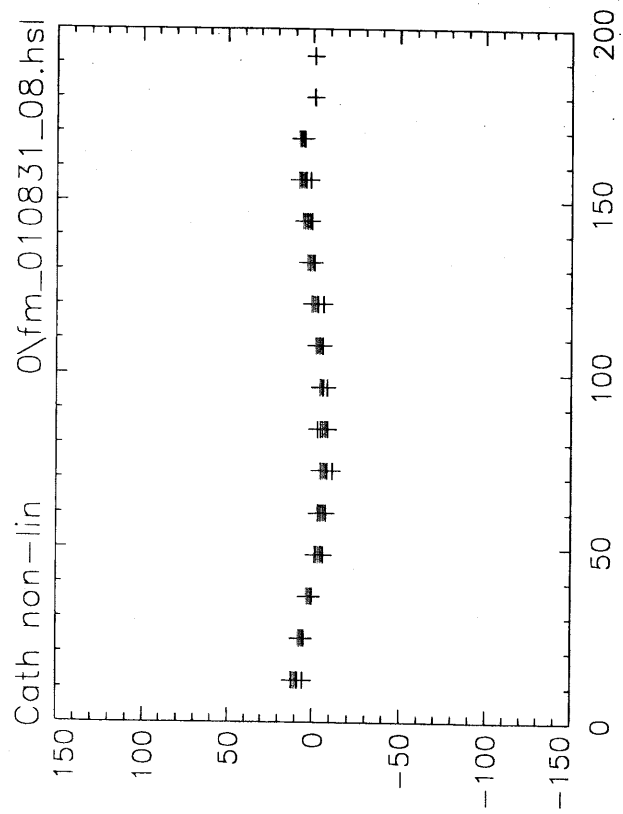


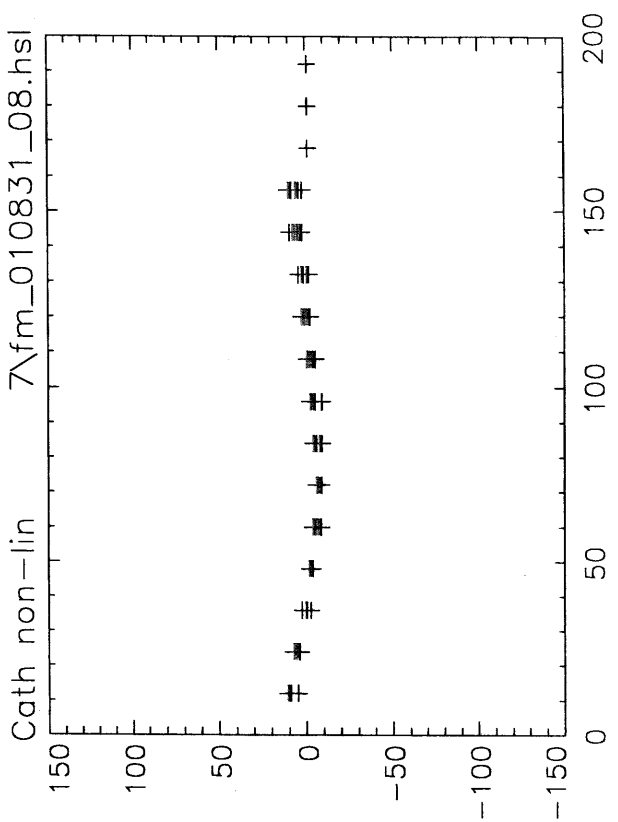
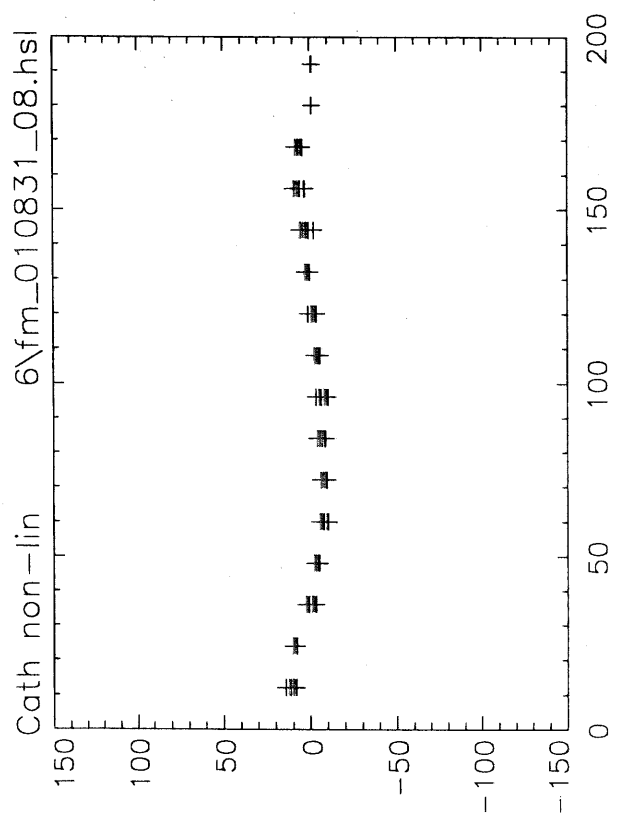
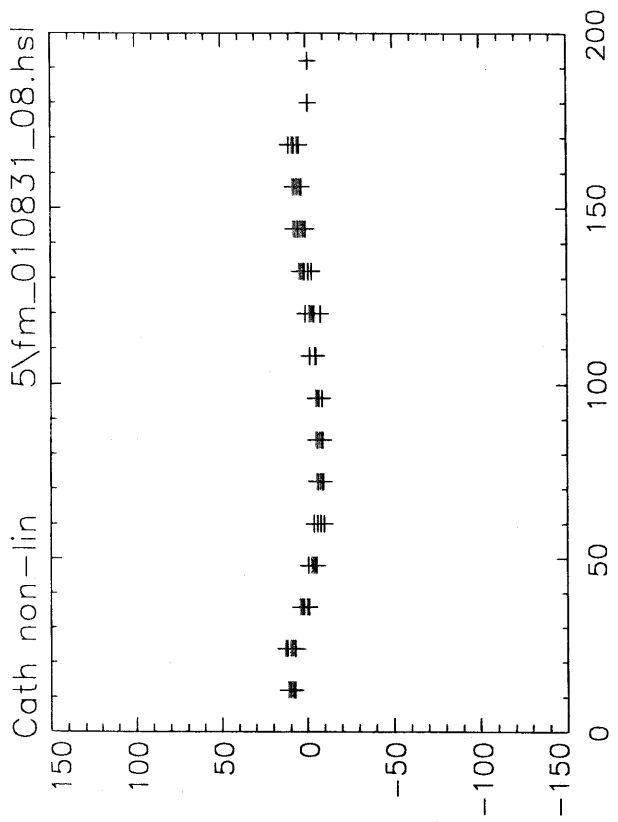
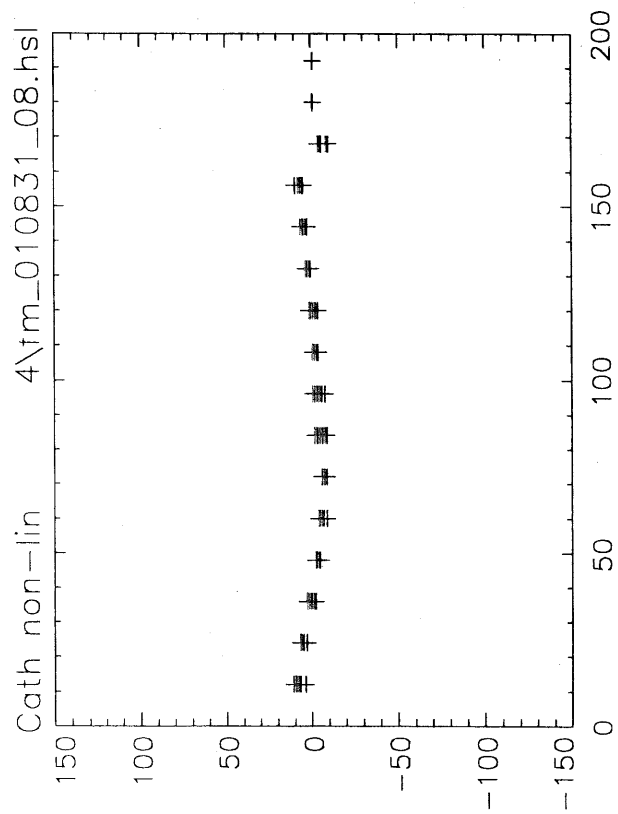


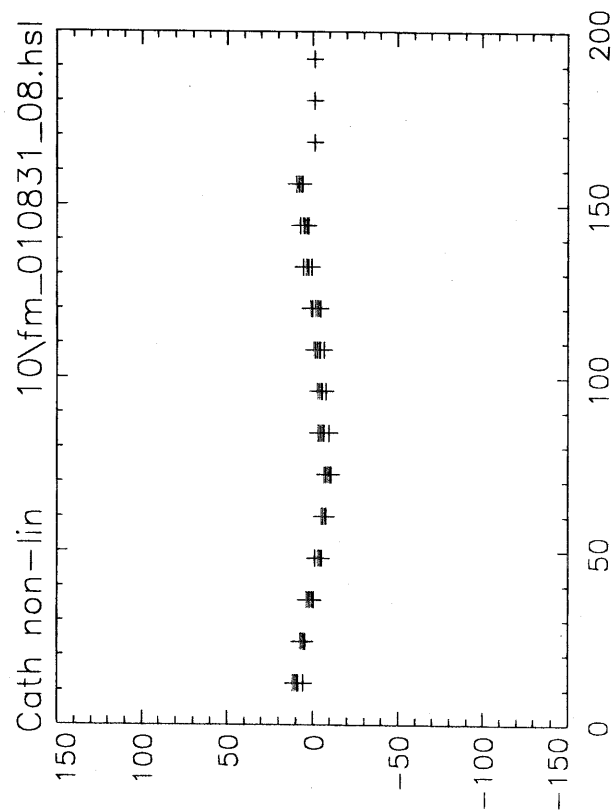
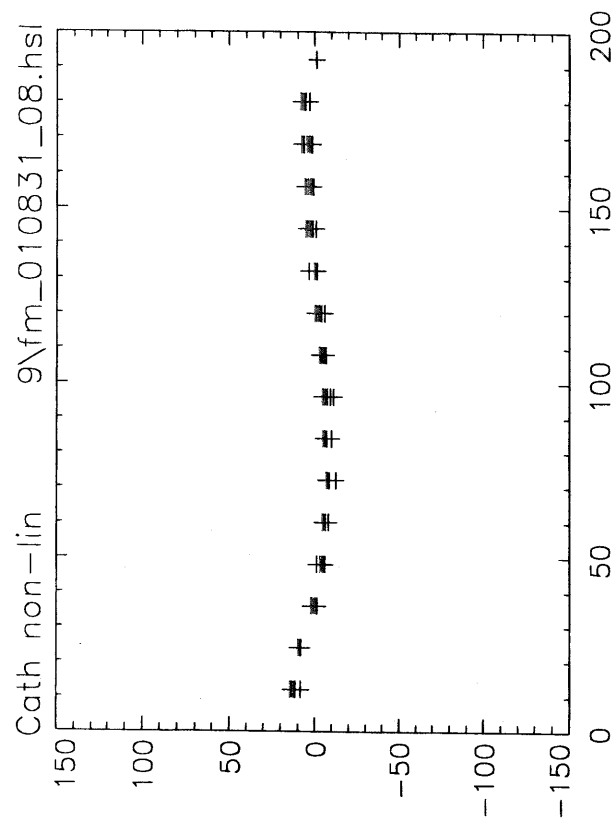
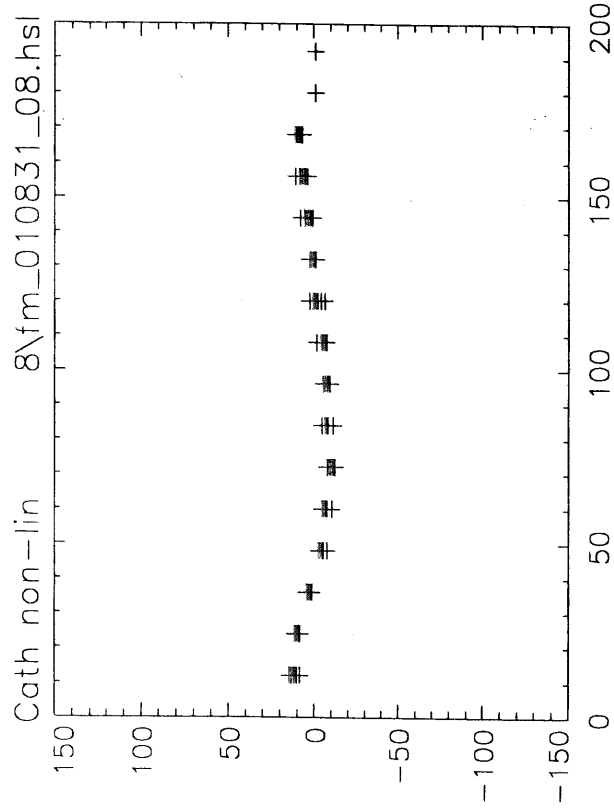


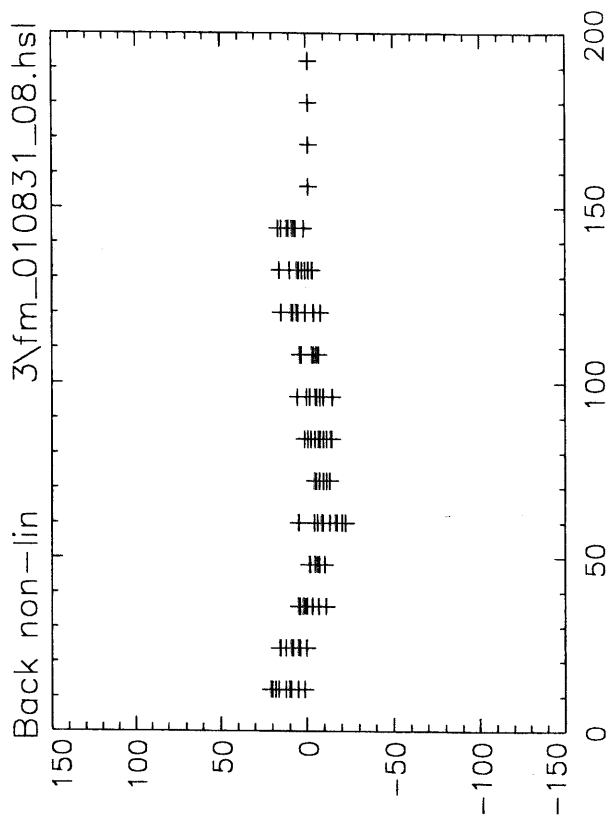
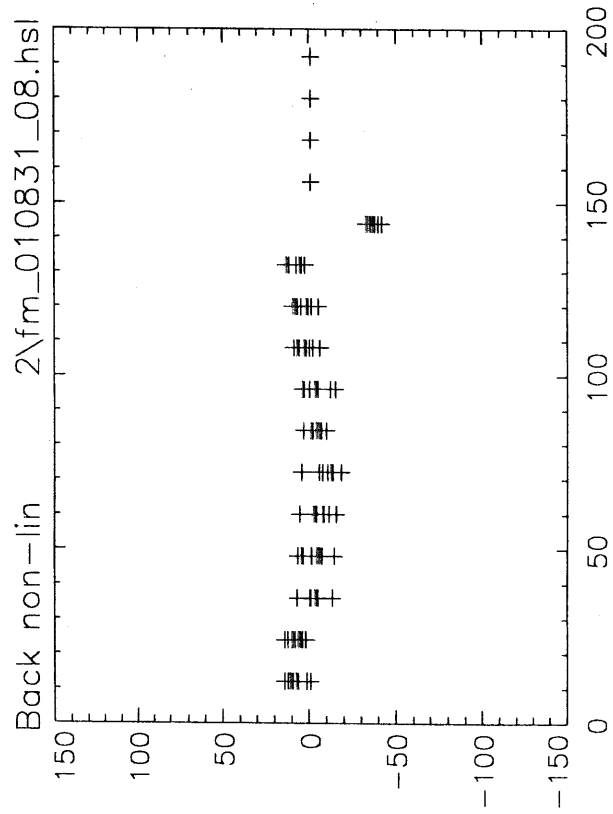
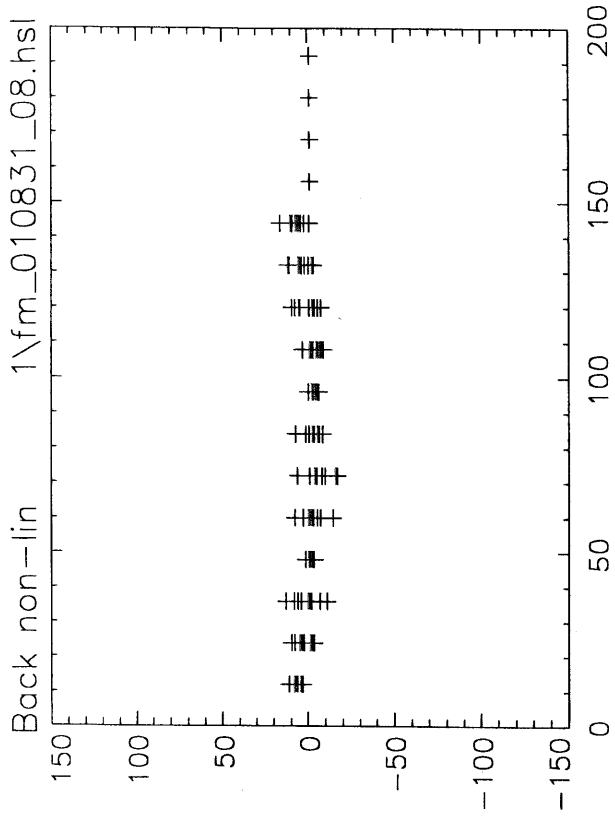
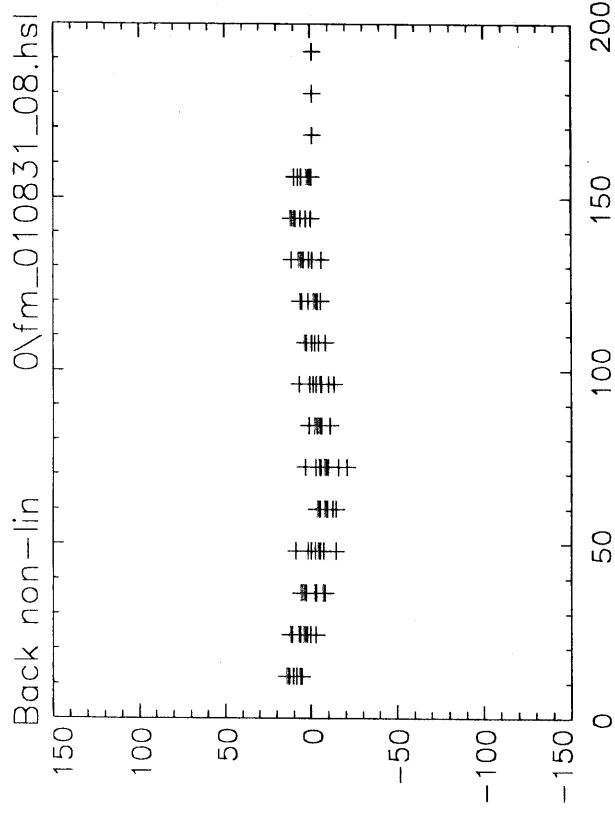


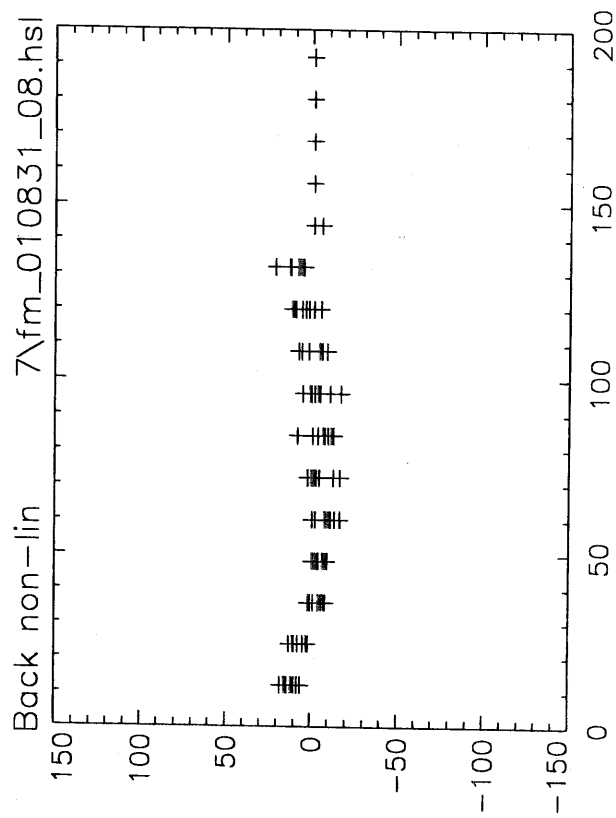
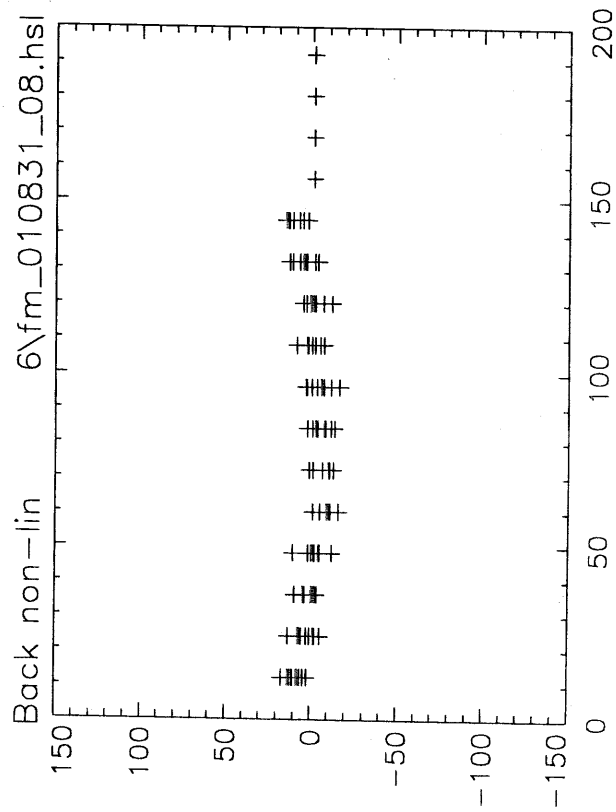
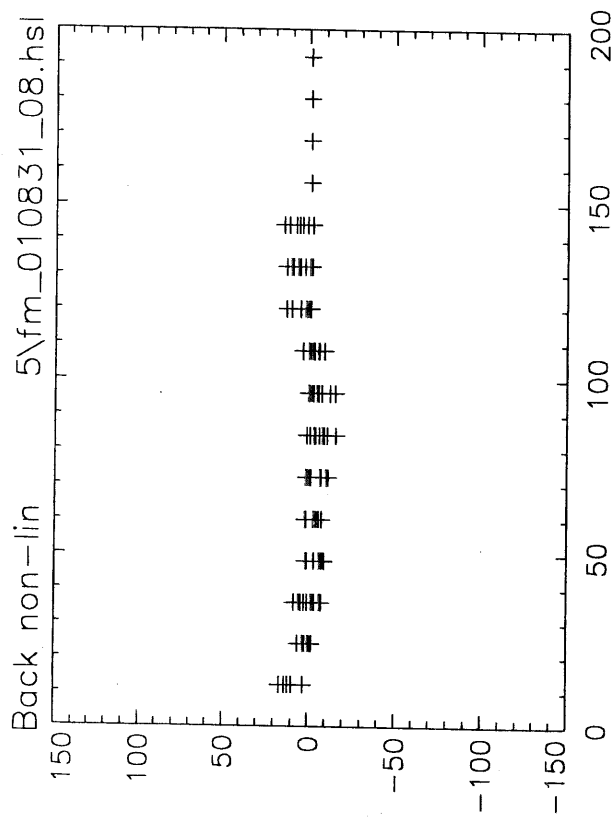
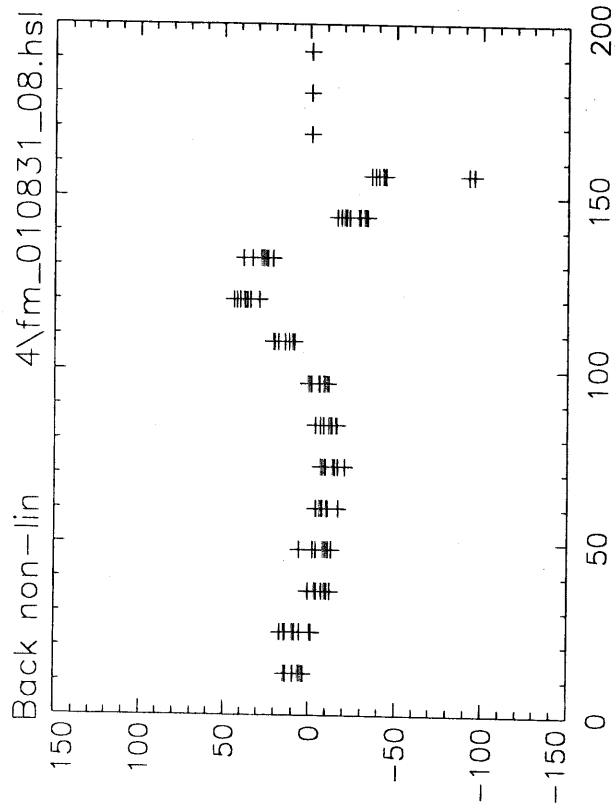


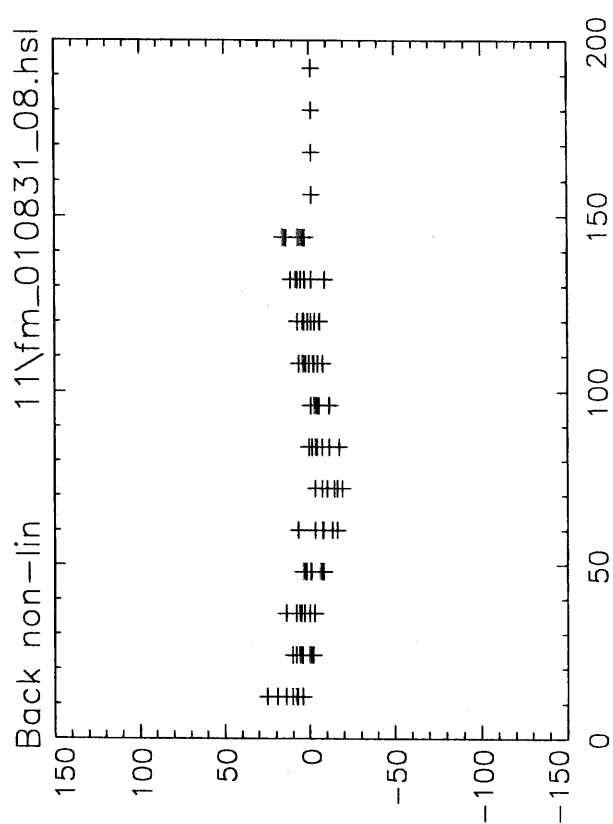
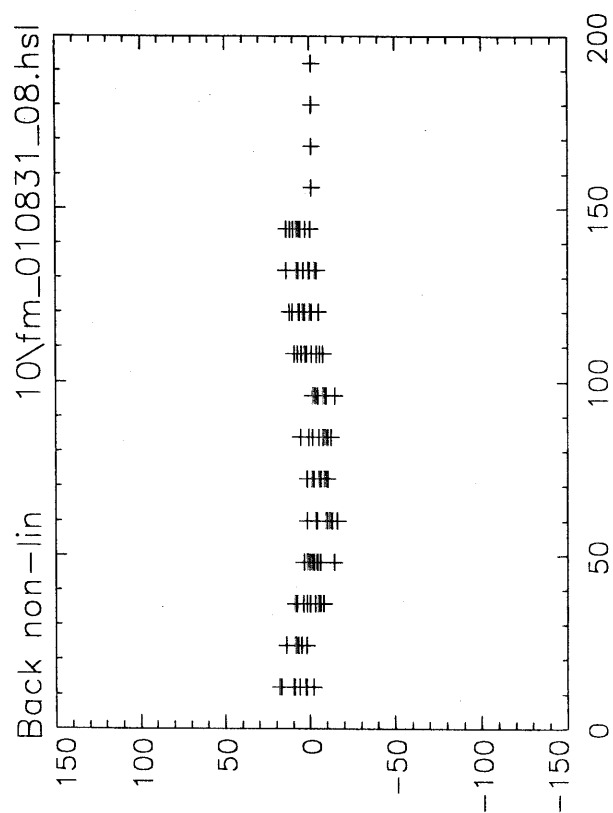
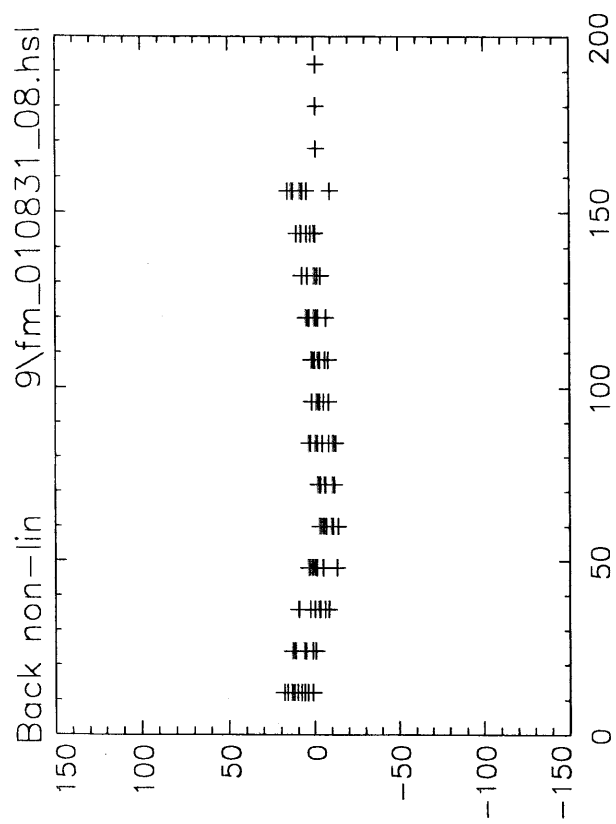
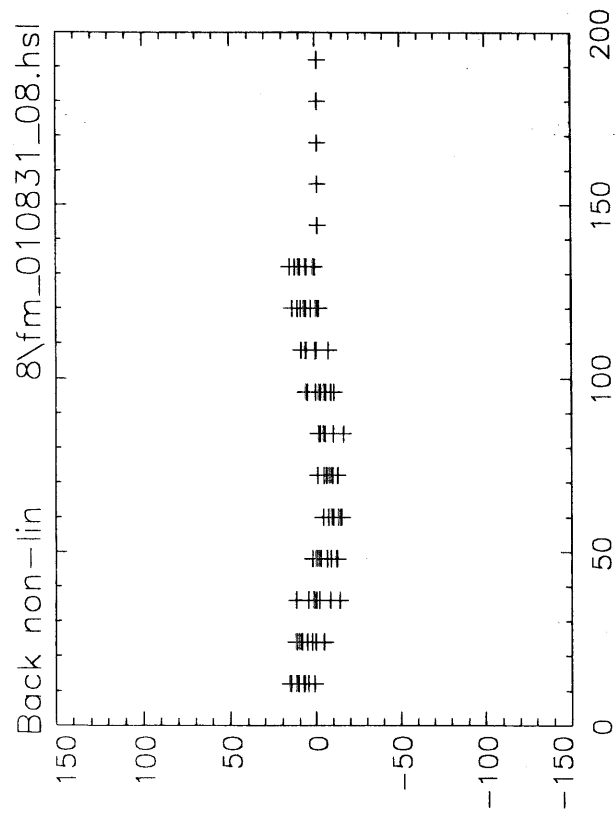


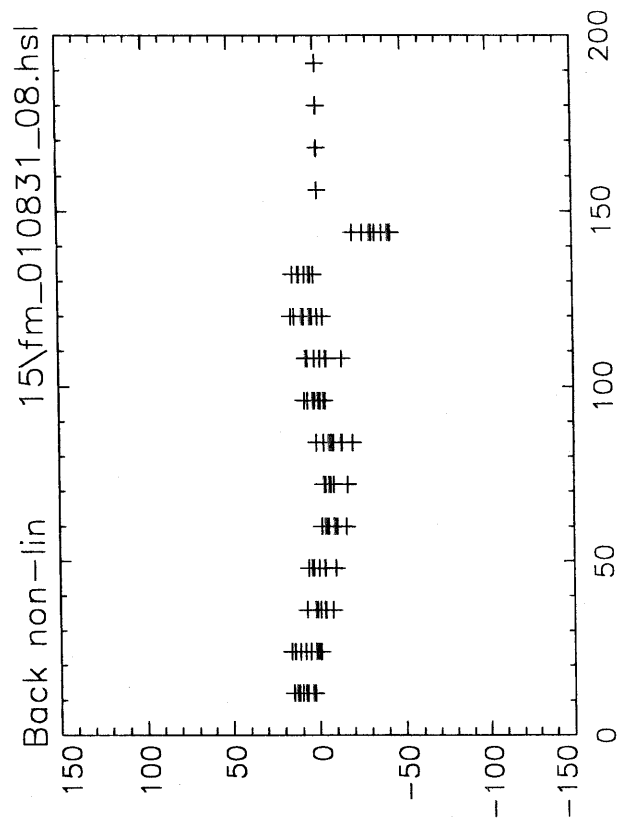
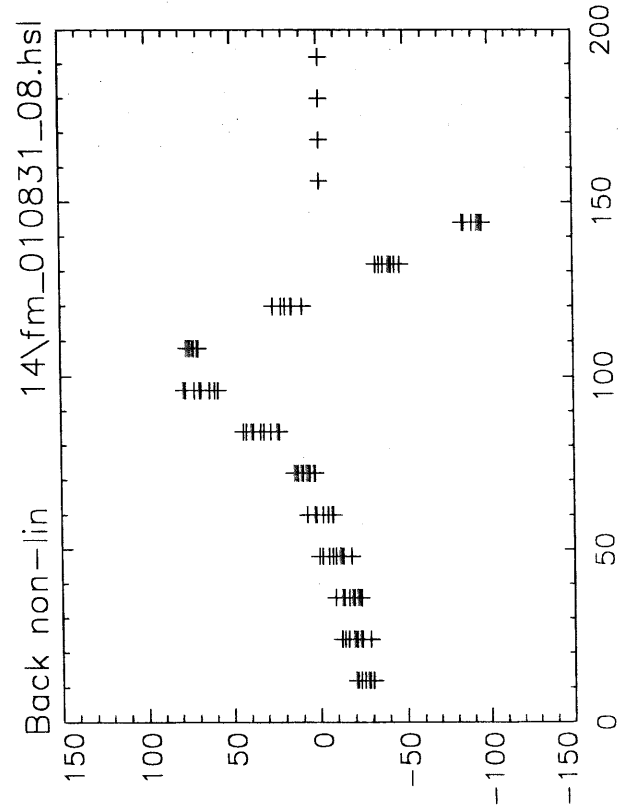
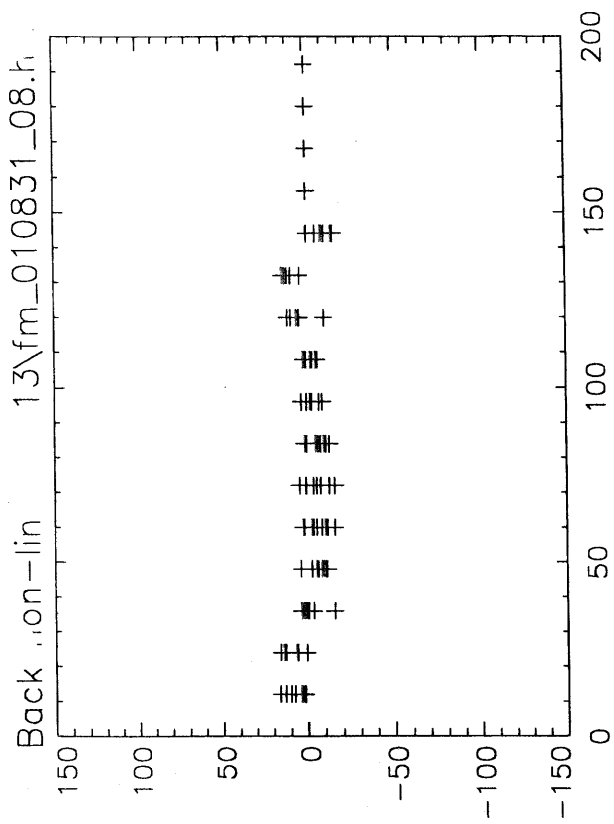
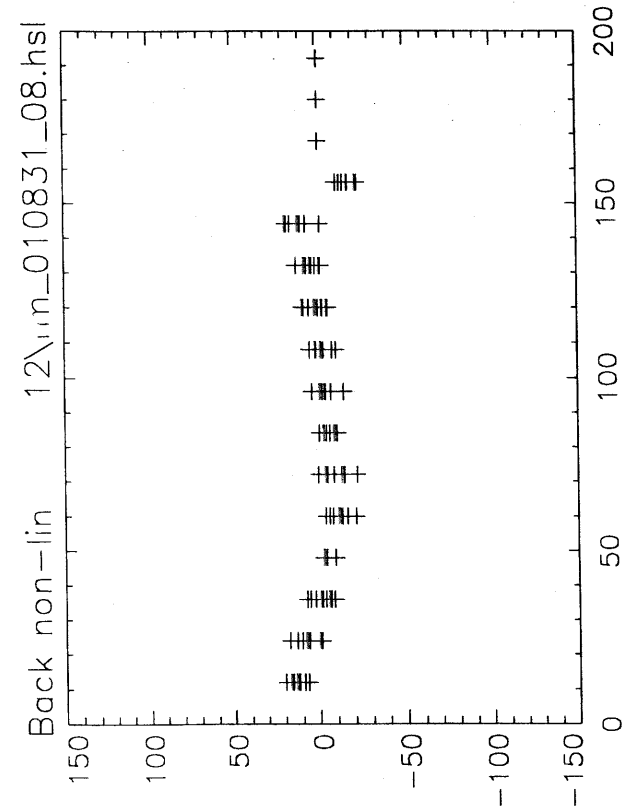


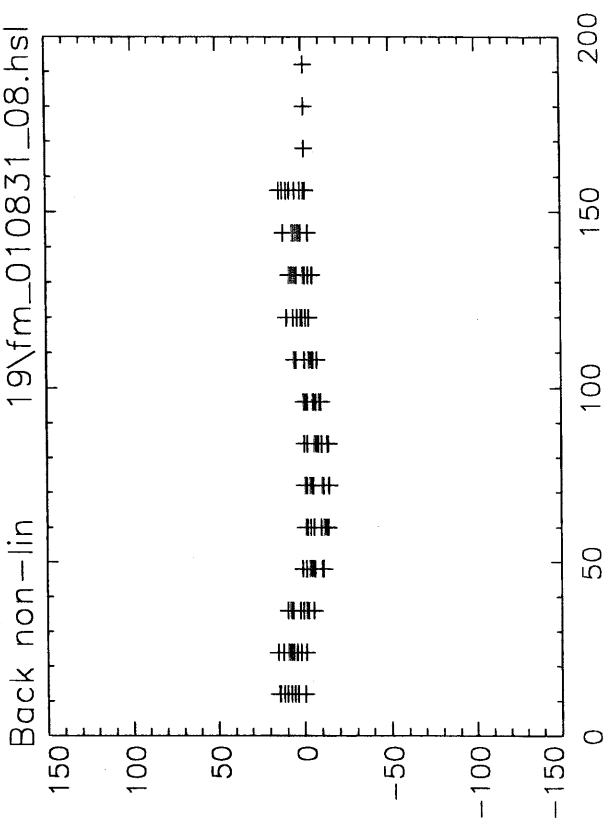
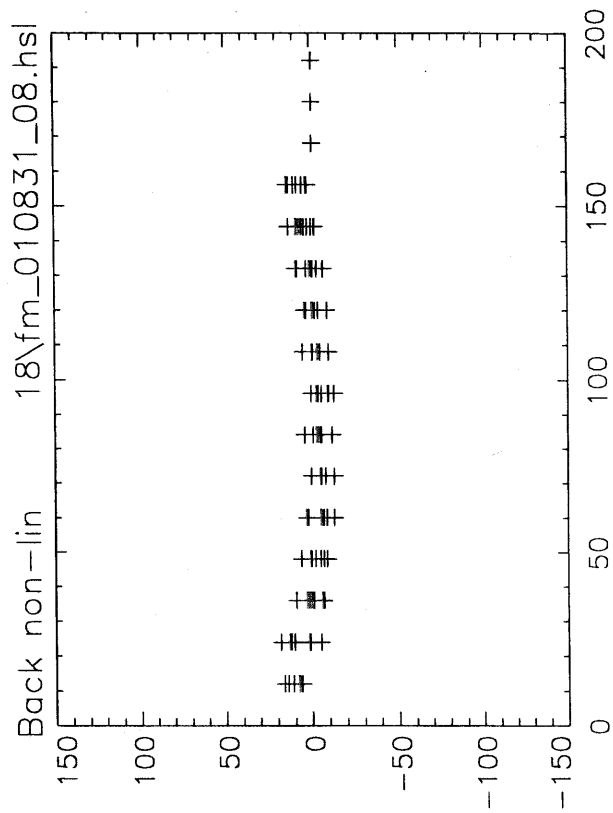
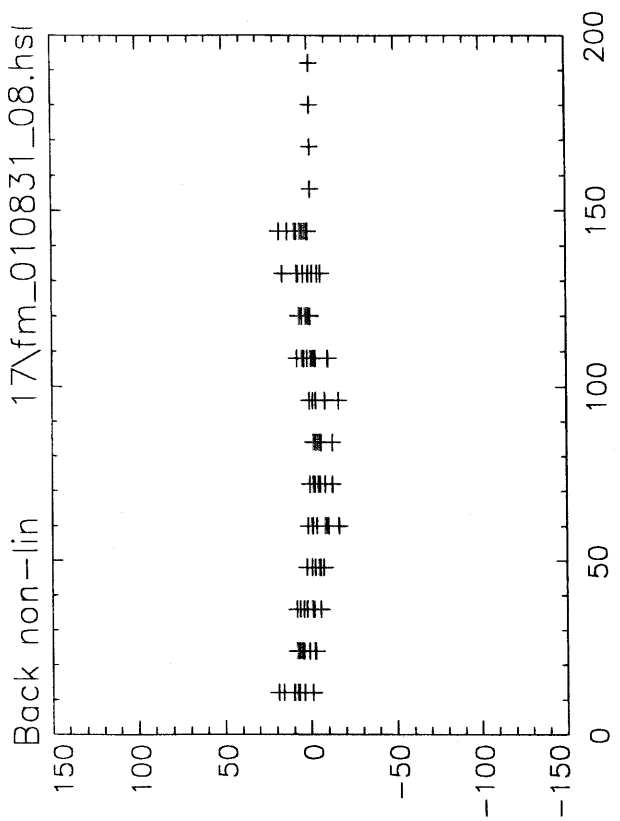
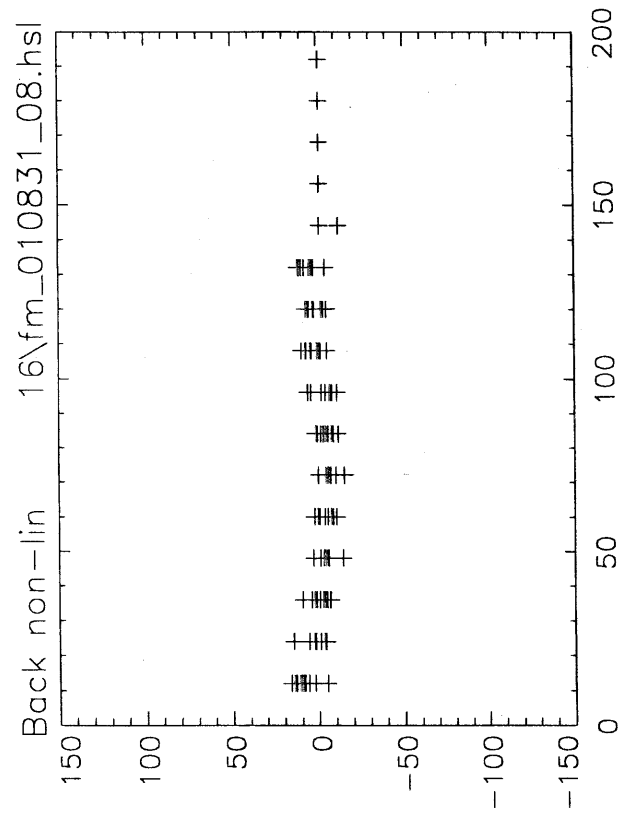












SUBJECT : JEM-X FM-1 TB/TV Post Test Review (PTR)

PLACE : ESTEC

DATE : 7 September 2001

AGENDA : See annex 0

Participant	Organisation	Function
Giuseppe Sarri	ESTEC	
Peter Jensen		<i>Peter L. Jensen</i>
Arrien Tiemon		
Cesar Gomez		
Bernd Lehmann		
Soeren Brandt	DSRI	
Steen Laursen		
Poul Anker Jensen		<i>Poul Anker Jensen 4/2/01</i>

AGREEMENTS	ACTIONS
<p>1. Test Configuration, deviations.</p> <p>No deviations.</p> <p>2. Tests Performed, deviations.</p> <ul style="list-style-type: none"> • Thermistor calibration was performed at ambient, cold and hot. • Inrush current measurements were made at ambient, cold and hot • Thermal balance hot was done at second hot plateau with HV on. • As-run Procedure, see Annex 1. <p>3. Test results.</p> <p>TV</p> <p>Baseplate temperatures Non Op -47.2, +58 (requirement -45, +55) Baseplate tempertures Op -28.2, +42.1 (requirement -30, +40) Shroud Non Op -72, +58 (requirement -70, +55) Shroud Op -72, +27 (requirement -70, +25)</p> <p>All required temperatures have been met.</p> <p>TB</p> <p>Thermal model was correlated by changing conducted coupling between spider and mainframe from 0.15 to 0.55 W/K. Correlation results were very good. EIDB shall be updated accordingly. See Appendix 2.</p> <p>Functional Verification</p> <p>Increased noise during electronic calibration was observed during cold phases. In the last cold phase, the controller for thermal vacuum was turned off, after which the noise disappeared. The conclusion is that the noise originates from the mechanical and electrical environment. Further investigation showed that the noise also exists at hot phases. No NCR has been raised</p> <p>Gain change in the detector of approximately a factor of two from ambient to cold was observed. At hot the gain dropped about 10%. Comparing gain before and after test show a slight drop. Phenomenon not understood, further investigation to be performed. NCR will be raised. Part of the investigation should be looking at the results from the QM test.</p> <p>Backplane amplifier 4 and fourteen show non-linearity during</p>	

AGREEMENTS	ACTIONS
<p>calibration. Further investigation to be performed. NCR will be raised.</p> <p>All other tests have shown nominal performance. See Annex 3.</p> <p>Inrush current measurements at ambient, cold and hot were performed. See Annex 4.</p> <p>4. NCRs, Open work.</p> <p>Two NCRs will be raised, see above. No open work.</p> <p>5. AOB</p> <p>No Thermal Balance phase is required for FM2 and FS.</p> <p>6. Conclusion The planned test has been successfully executed. Open NCRs must be dispositioned before successful qualification can be stated.</p>	

