

JEM-X FM1 NCR List

Updated 19/9/01

NCR No.	NCR Title	Affected Item	Affected Item No.	Originator	Status
IN-NC-JEM-1031	Spider Electronics Malfunction	FU1		PAJ	Closed
IN-NC-JEM-1032	Detector Malfunction, HV Discharge	FU1		PAJ	Closed
IN-NC-JEM-1033	DFEE Anomaly, Excessive Power at Turn-On	FU1		PAJ	Closed
IN-NC-JEM-1034	DFEE Clock Lines Wrongly Connected	FU1		PAJ	Closed
IN-NC-JEM-1035	Incorrect readings from pressure transducers in detector	FU1		PAJ	Closed
IN-NC-JEM-1036	Detector image distorted due to wrong capacitors	FU1		PAJ	Closed
IN-NC-JEM-1037	Broken wire inside detector at 25 pin connector	FU1		PAJ	Closed
IN-NC-JEM-1038	Switching between primary and secondary format	FU1		M. Gorla	Closed
IN-NC-JEM-1039	EMC Test, RE out of spec.	FU1		PAJ	Closed
IN-NC-JEM-1040	EMC Test, Common mode rejection problem	FU1		PAJ	Open
IN-NC-JEM-1041	TV Test, Gain change in detector	FU1		PAJ	Open
IN-NC-JEM-1042	TV Test, Bacplane amplifier 4 and 14 non-linearity	FU1		PAJ	Open
IN-NC-JEM-1043	HV Discharge at initial turn-on	FU1		PAJ	Open
JEMX-MTX-NC-005	Broken M3 Spindle in Thread	FU1 Bracket		Metorex	Closed
JEMX-MTX-NC-006	Spider Damaged During Machining	FU1 Spider		Metorex	Closed

		Integral Jem-X		1 NCR No: IN-NC-JEM-1031	
				Revision: -	
				Page 1 of 2 Attachments: MRBMinutes <i>Photos</i>	
NON CONFORMANCE REPORT					
2 Supplier DSRI		3 Order No		4 Subsystem Detector	
5 Model FM1		6 Affected Item Detector Electronics		7 Affected Item No 131000	
8 Affected Item CI No 01		9 Aff. It. Serial No 02		10 Higher Unit JEM-X Detector	
11 Higher Unit No		12 Higher Unit CI No		13 H. U. Serial No	
14 N. C. detected during ... Test DAE/Spider Assembly Electrical Test		15 Relat. Int. NCR, Other Rel. NCR		16 Critical Item Yes	
21 Description of Nonconformance: JEM-X FM1 DAE/Spider assembly electrical test set-up malfunction. Test of the FM1 Spider DAE Electronics could not be made due to erroneous behaviour in calibration mode. Crosstalk, missing triggering, and missing calibration signals were experienced.					
22 Suspected cause of NC: Process				23 Initiator: 21-02-01, Poul Anker Jensen (Date, Name, Sign.)	
31 Test Failure: Yes		32 Problem: Yes		33 Class: Major	
				34 Category: (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '-'=No Cat. Assigned) B	
35 Proposed Internal MRB Disposition / Preliminary Disposition:				36 Customer Notific. / Invitation Ref. No: Date:	
After troubleshooting, the cause of problem was determined to be noise coupled into the preamplifiers. Problem was reduced by shielding and grounding of the test setup. Verification of findings shall be done by repeated test with shielding included.				37 Verification	
38 Local MRB Dept., Name		DSRI, PAJ		DSRI, KO, NL, CBJ	
Date, Signature				DSRI, SMP, KHA	
				DSRI, SL, MA, AHC	
				DSRI, RK, JP	
39 Final MRB Disposition (as proposed or as follows) : Shielding of logical signals in detector shall be implemented. Shield termination to be determined. Metal shield between cable bundle and amplifier inputs shall be designed and implemented. <i>Shield implemented, see attached photos.</i> <i>Assembly tested ok.</i>					
40 Finally Determined Cause of NC: Other - Specify		41 Corrective Action(s) (to be verified):			
42 Request for Waiver: No		43 Analysis / FAC Requested: No		44 Alert Requested: No	
				45 Other Related Document(s):	
50 MRB Approval: Organ, Name				51 Closed by QA (Date, Stamp/Sign.)	
Date, Signature		21/3/01 <i>Kund</i>		21/3/01 <i>Paul</i>	

NON CONFORMANCE REPORT
(Continuation Sheet)

1. 22/2-01: MRB met to decide shield modification.
(AHC-PAJ-MA-KHA-RO) It was decided to shield the cal-com-
mand lines using 3M shield tape and a thin P shaped
shield over the connector fan-out section of the
cable at the 25 pin connector. Following sequence
of actions was decided:

- Restore test set up to version without any
shielding. Make measurement of fault condi-
tion, in particular verify state of the calibra-
tion circuit. All anodes connected, ^{to MS} only
A2, A3 or A4 connected to discern anode out
Take data-set and evaluate.
- Mount DAE/SPIDER/MS on feet to lift it in position
with respect to 50 pin & 25 pin connector like
it will be when mounted in Main Frame.
Make same measurements as above.
- Shield cable & connector fan-out.
Make same measurements as above.
 - Discriminator setting normal (12)
 - Calibration at fixed, mid level when
measuring, step/staircase when
data taking
 - Cal off, H/V on, lower discriminator
to trigger on the noise at reasonable
rate to determine offset.

Verification

Not
made

Test results:

- DAE/SPI/MS on feet;

- all A₁ or forbidden til MS

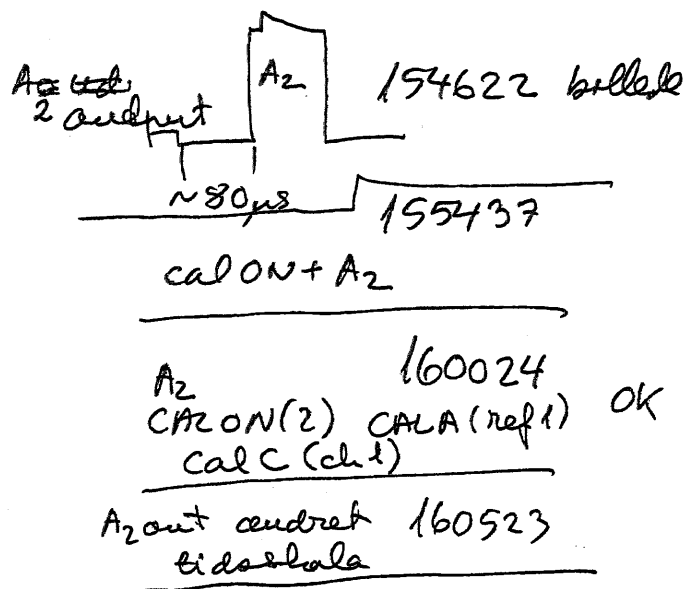
1 return 9000

- Discriminator 12

- Km Anode 2

- Kal level 70H ~45% 1600 pulses

C121 orish 4.7mF



connected
- anode 1 forbidden. Cal. ~~for~~ signals disappears. all 4 sets
Trouble shooting shows strong cross talk to anode 1
amplifier, starting the trigger circuit at the leading
edge of Cal-ON signal. Cal-ON is then cut short to ~20µs (?)
too short to pass the low pass filter R143-C121? look at pic.

conclusion: Shielding of CAL-ON will help this problem.

Apparently Cal-ON is already inside the housing
shield so only shielding of the connector fan-
out should be necessary.

- Next step: Make this shield and then test.

23/2-01.

- It is necessary to make a rather large shield to obtain
good reduction of cross talk. Then it was found that
cross talk also originate from the input to the cal-
circuit. It was tried to shield this, it helped ~50%
of remaining ~~no~~ cal-ON. ~~How~~ Further: the Anode 1 input
line is positioned in flight position close to the octagon

This setup is documented by tests & oscilloscope pictures and photos.

TEST: FM1_010223_1 (log file). HSL (Performed by SB)

HKFRE - - - DHK

RTU - - - RTU

POWER ON \rightarrow 985 mA (ON)

CONFIGURE DISC 12

ANOD 1 enab Anod 2, 3, 4 disab.

CALIBRATION, TRIGGER RATE NORMAL

- Anod 2 enab anod 1, 3, 4 disab

- - 3 - - - 12, 4 - -

- - 4 - - - 1, 2, 3 - -

- ~~Σ Anod 1, 2, 3, 4 enab all.~~

- NO BETEST HV ON lowest level HV not connected to MS

FM1_010223_2.HSL

all anodes enab 1040 mA

(55 mA \times 20V)

DISC. 12 0.1 trigger / 8 sec

- 10 70 - / 8 sec

- 9 500 - / 8 sec as expected

Diagnostic mode 32000 events.

\rightarrow SAFE / HV OFF

Q-R instrument off

Data reduction & review.

23/2. MRB Report Annexed (2). Conclusion:

- Electronics DDE-FM1 can go to next step: integration with Main Frame, but:

- To in order to clearly understand the calibration offset of the backplane amplifiers, one more shielding attempt was decided.

26/2. Shield (temporary) between Cal board edge (5cm) and MS-RC boards was implemented. Test run \equiv the above was run. Result: all OK.

NEXT: Design shield of snub triggers on Cal board and shield (box) around 25 pin connector

should arrive 27/2. (arrived)

27-28/2 Design of shields ongoing.

9. 0.

To 28/2/3 Implementation of cal board shields.

Fr 2/3 SMP cell. Design of 25 pin connector, CMC-ON signal lines.

Ma 5/3 - Test with both shields mounted on PCB. Shields configuration is flight-like, i.e. possible to implement in a flight worthy design.

- Test run is made.
- Still small cross talk to A1 input lines, but low enough to be i.d.c. 12.
- TEST RUN IS OK, ^(ANNEX 4) go ahead to manufacture shield #2, clean assembly and shields.

Next: Close this NER by MRB formal meeting and recommendation.



JEM-X MRB FM1 DAE/Spider assembly test set up malfunction

Report from meeting #1 held at DSRI, 21 February 2001

MRB members: SL, SMP, PAJ, KO,

Ad hoc members: JP, AHC, CBJ, NL, KHA, MA.

1. SL presented the finding that there is severe cross talk from the command cable bundle to the amplifier inputs, in particular the anode 1 HV supply wire.
2. A test run is made with a loosely inserted, grounded shield. The result was good except that the B0 & B19 channels showed a lower offset than the other channels. It was believed to be remaining cross talk between the calibration command signals and the amplifier inputs. More measurements will be made when the FM changes has been made (final configuration), the hope being that the problem has disappeared. It was also argued that it is only a problem in calibration mode and that we can live with it if need be. Further a test will be made to find the offset in normal operational mode, see next point.
3. CBJ asks a test to show the offset in near normal operational mode: Low discriminator setting so that the instrument triggers on the noise (HV ON diagnostic mode). This will be done today.
4. A test will be made with all 4 anodes active, this is the normal operational mode.
5. A design group will make the shielding design proposal today so that it can be coordinated with Mtx by tomorrow morning. (SMP, AHC, JP, KHA, MA).
6. When the shielding is implemented on the FM1 a final test will be made: A0, A1, A2, A3, & $\Sigma A0,3$. Thereupon it is decided whether the B0 & B19 problem still exists.

Outside the MRB CBJ asked to have discussed the requirements to the cleanliness of the test facilities used for the assembled instrument, that is in DSRI, Mtx and Ferrara. The formal request is class 100.000 but it seems to be difficult to meet it. Further discussions are necessary soon to come up with plans to overcome this, that is plans for bagging etc.

Kurt Omø

JEM-X Project Manager

Kurt Omø

Fra: Kurt Omø <kurt@dsri.dk>
Til: Ib Lundgaard Rasmussen <iblr@dsri.dk>; Søren Møller Pedersen <smp@dsri.dk>; Søren Brandt <sb@dsri.dk>; Poul Anker Jensen <paj@dsri.dk>; Michael Avngaard <avngaard@dsri.dk>; Knud Harboe Andersen <knud@dsri.dk>; Carl Budtz-Jorgensen <carl@dsri.dk>; Arne Heilmann Clausen <arne@dsri.dk>
Cc: Steen Laursen <sl@dsri.dk>; Niels Lund <nl@dsri.dk>; Josef Polny <josef@dsri.dk>; Joern O. Hansen <joh@dsri.dk>
Sendt: 23. februar 2001 16:41
Emne: Test af JEM-X FM1

Resultatet af den test vo gennemførte efter den forsøgsmæssige installation af skærme viser at vi har en elektronik, vi kan frigive til samling på MF. Der er dog stadig en væsentlig offset i to af backplane forstærkerne i calibration mode. Noise-testen viser korrekte offset for alle kanaler (ca 400), dvs at det er overkobling af A og/eller B signalerne eller måske Cal-ON signalet.

Vi (NL+KO) har kigget lidt på hvad årsagen til bagplanforstærker kalibreringsoffset kan være, det ser ud som om det er smittriggerne med tilhørende ledninger m.m. på cal.boardet, der kobler over til to af backplane forstærkerne.

Vi vil gerne gennemføre endnu et skærningsforsøg, at lægge en skærm imellem det yderste del af calboardet og MS'ens skærm, kan vi gøre det som det første mandag morgen så kan vi komme videre.

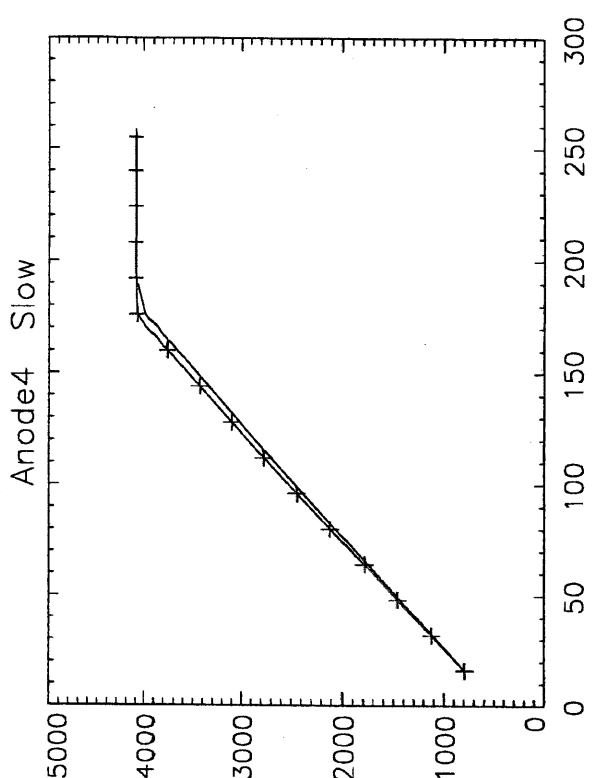
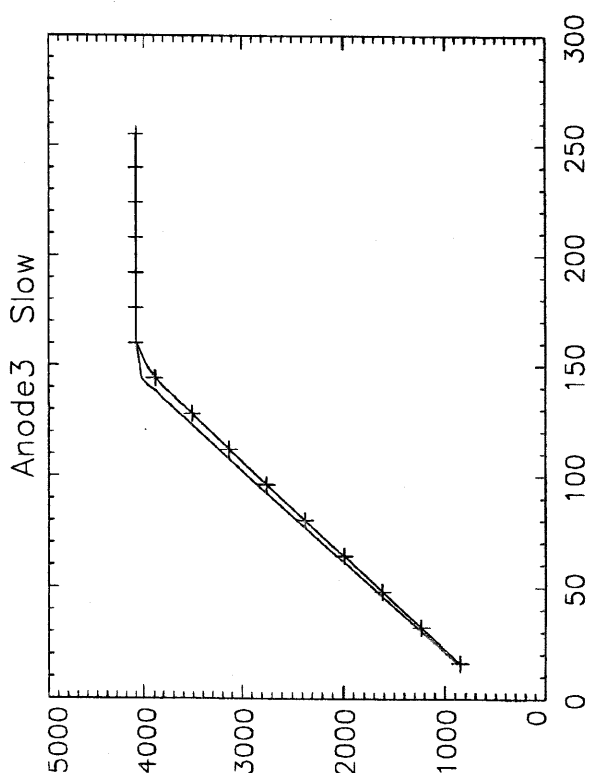
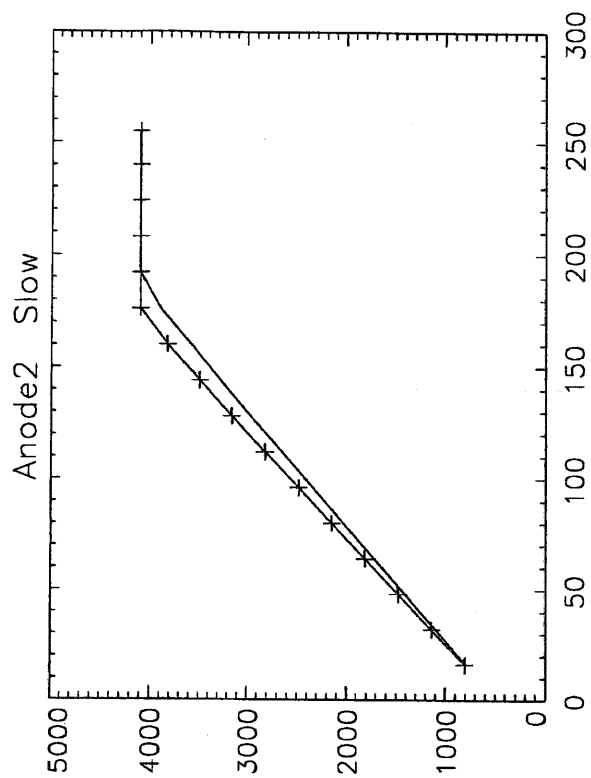
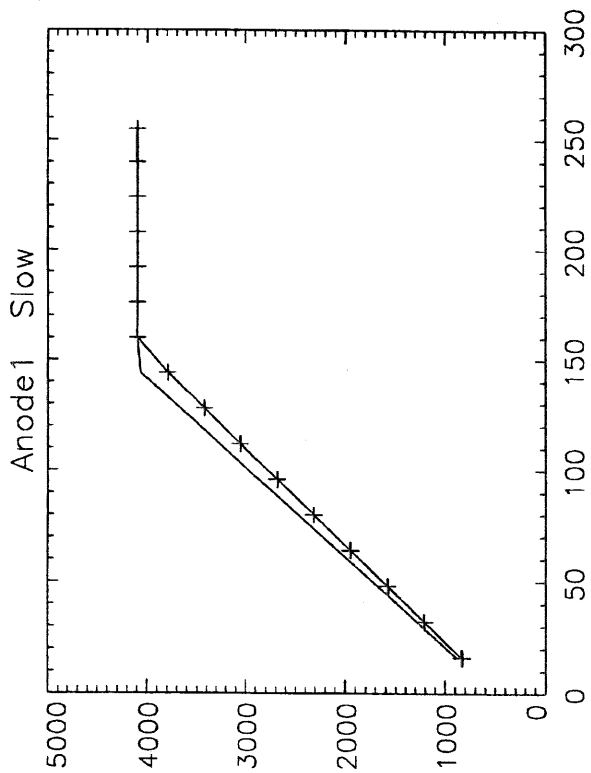
Vi er indstillet på i givet fald at leve med det kalibreringsoffset, vi har nu.

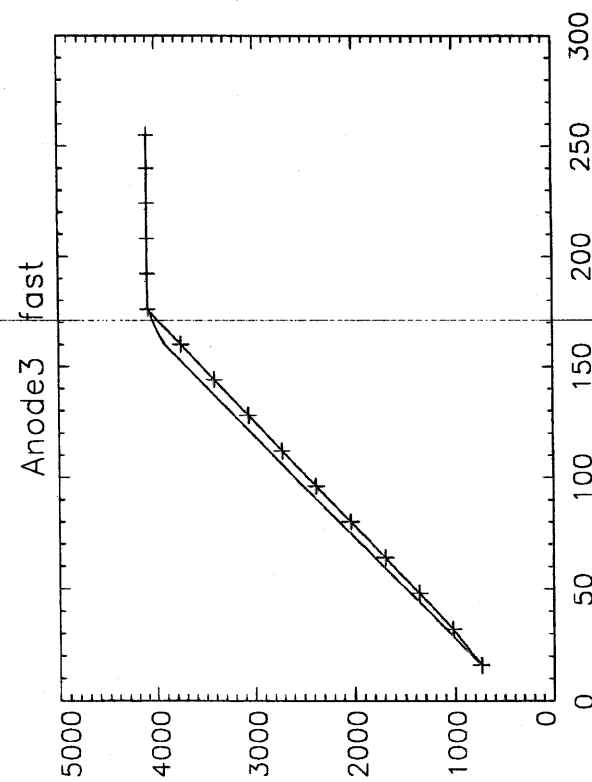
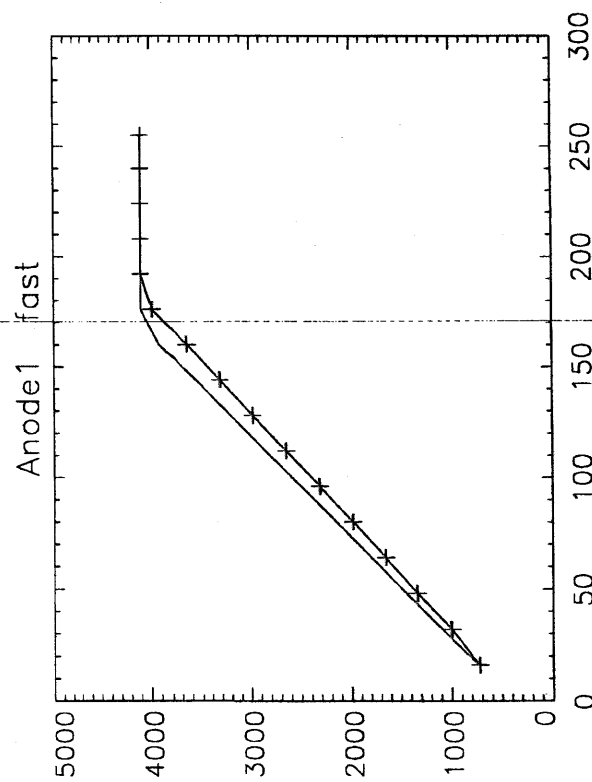
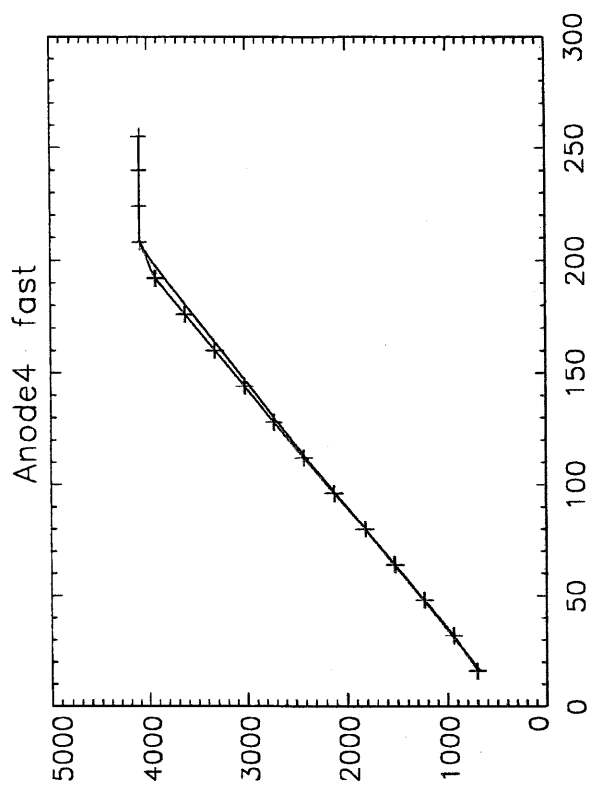
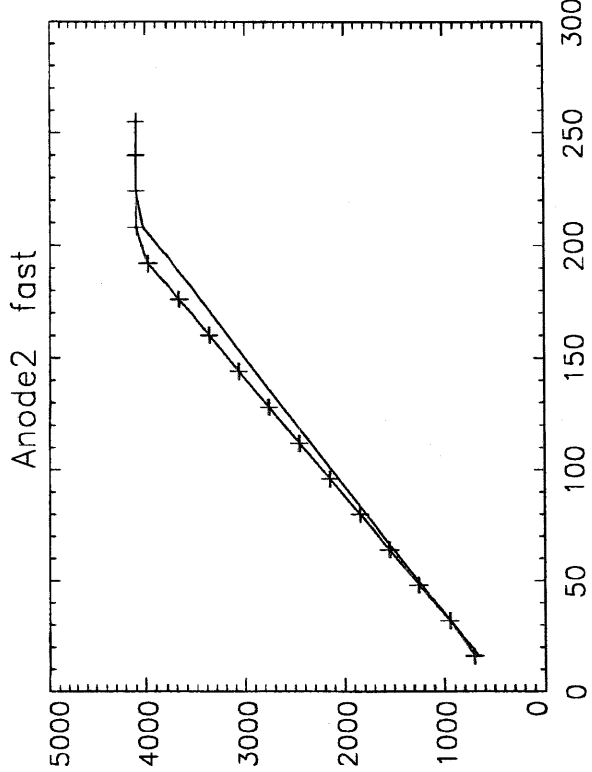
Før afgang bliver vi (SMP, AM, AHC, PAJ, KO) oveni alt det andet også nødt til at gå gennem alle kabelforbindelserne een for een og afgøre, hvorledes vi gør dem fast: Med eller uden fjeder, med eller uden lim, med eller uden teflonmanchet osv.

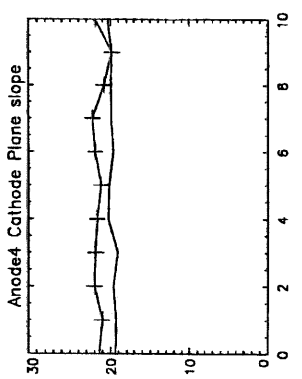
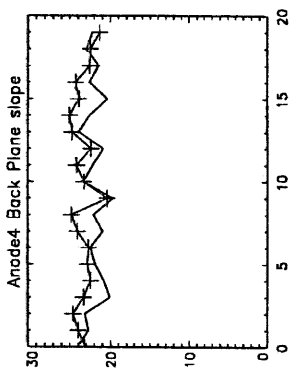
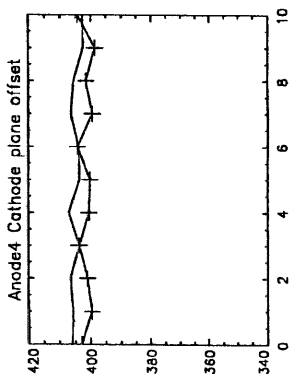
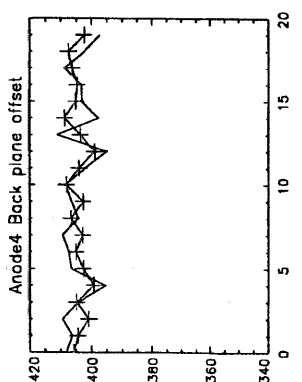
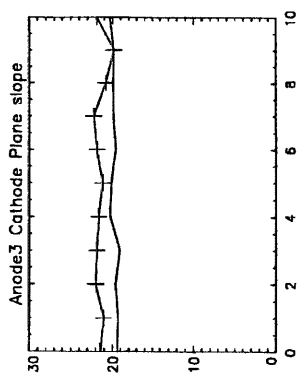
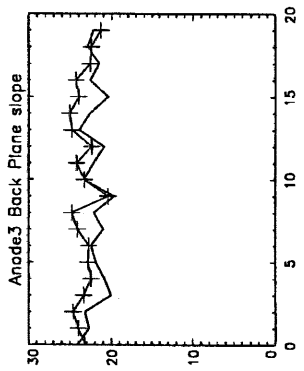
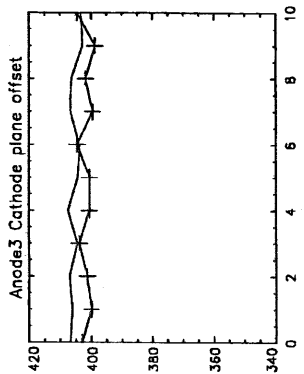
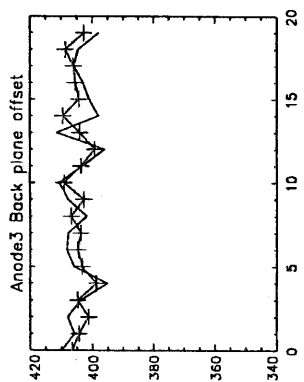
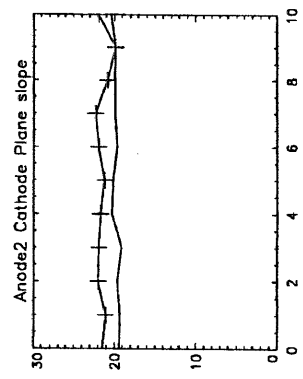
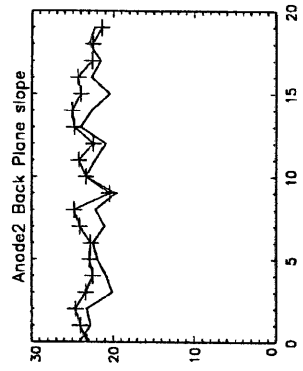
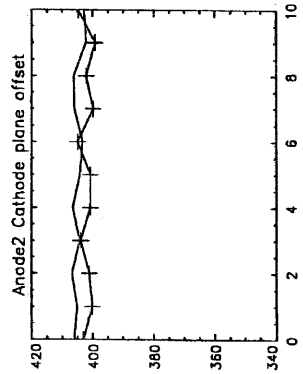
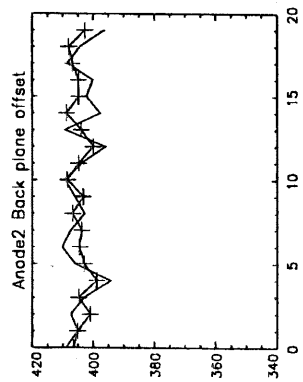
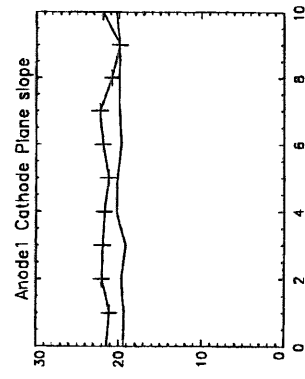
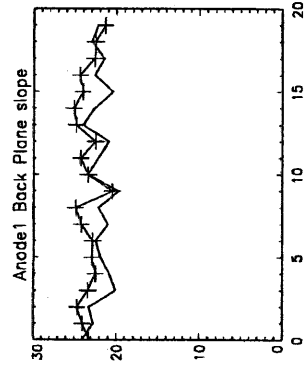
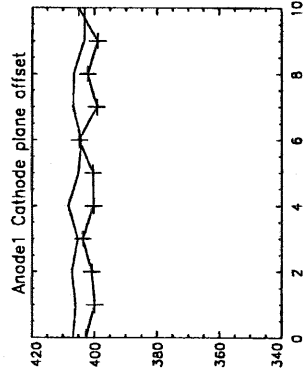
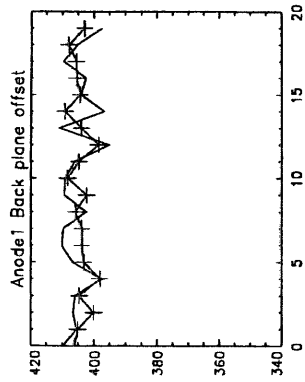
Ligeledes skal vi afgøre om vi kan bruge limdoseringsmaskinen og dermed bringe den til Mtx.

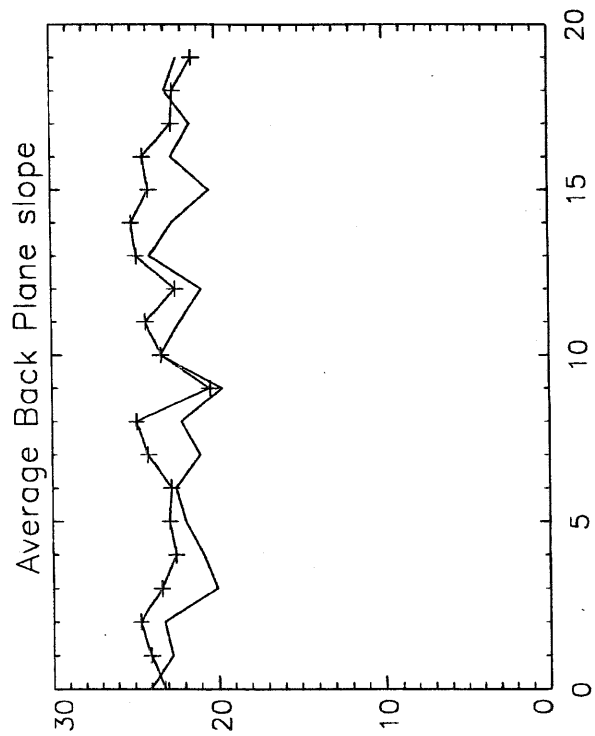
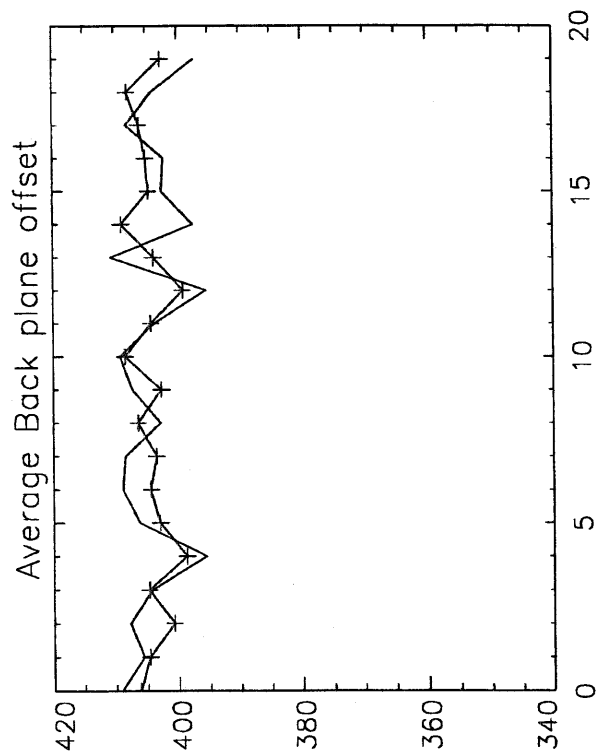
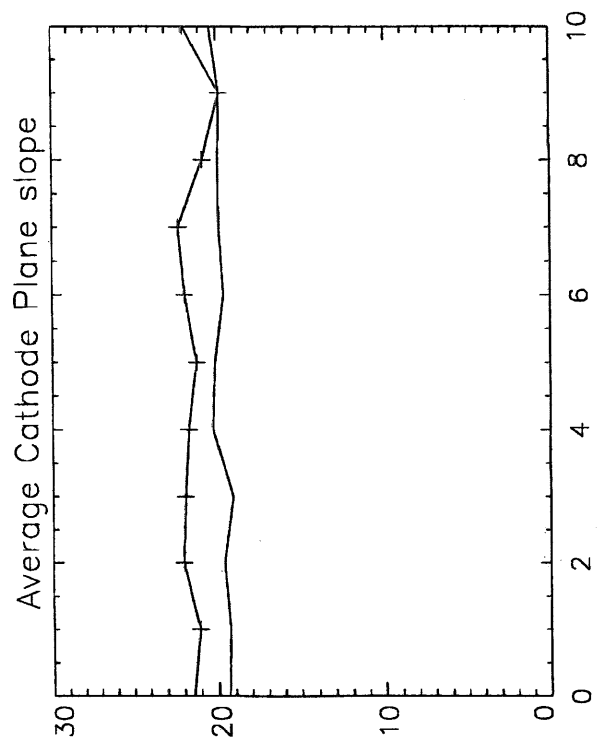
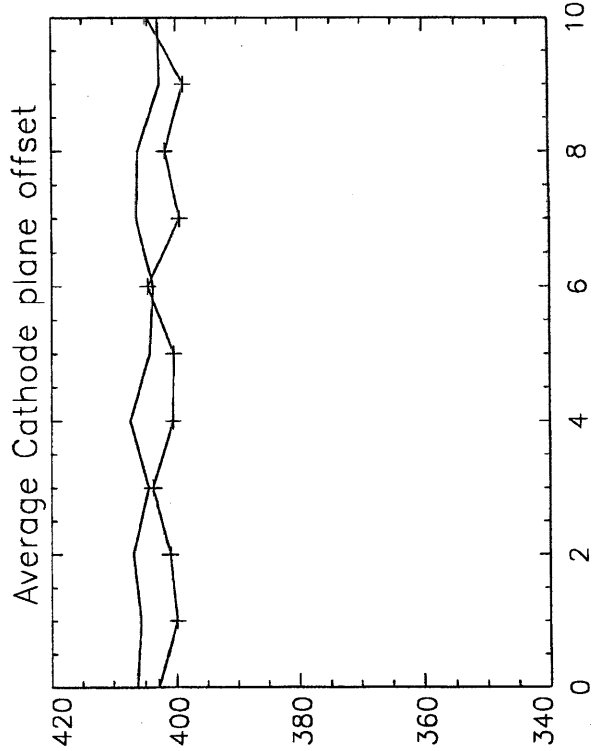
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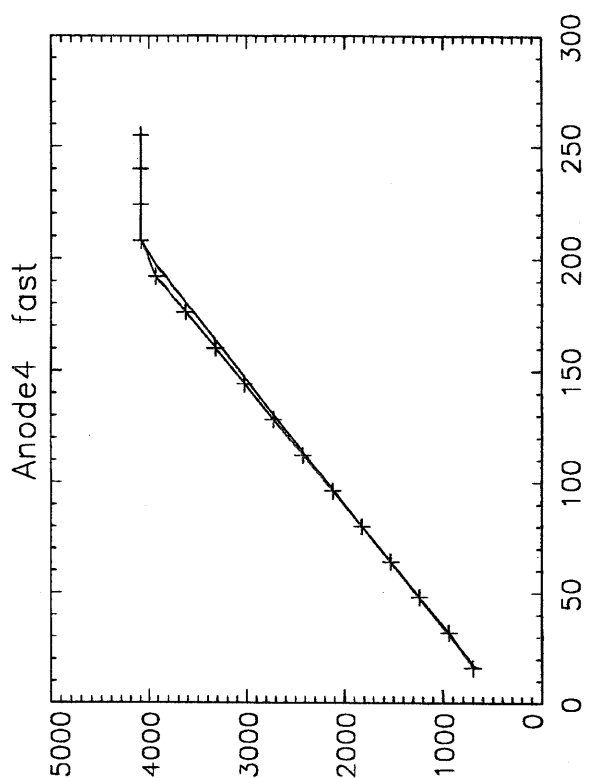
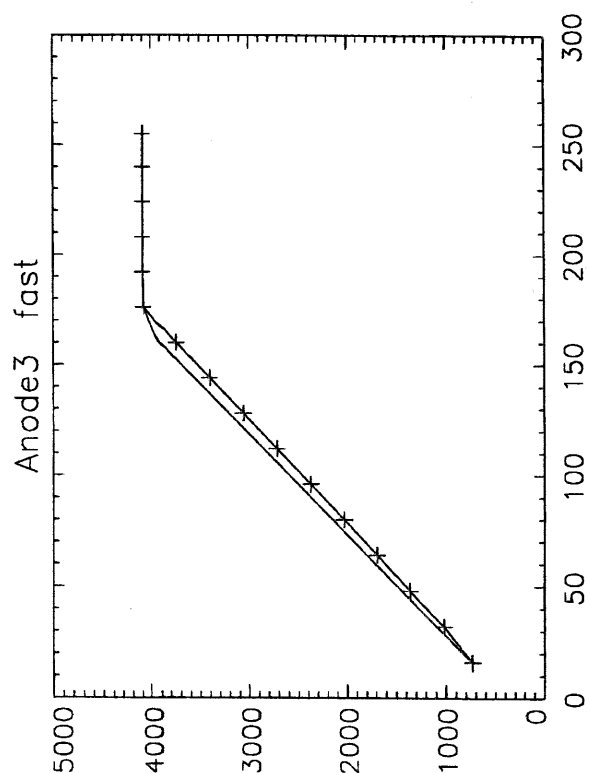
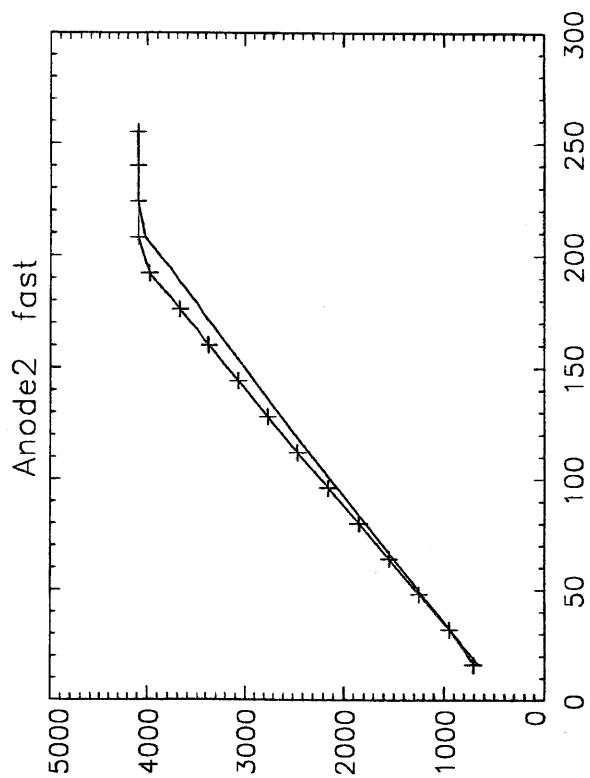
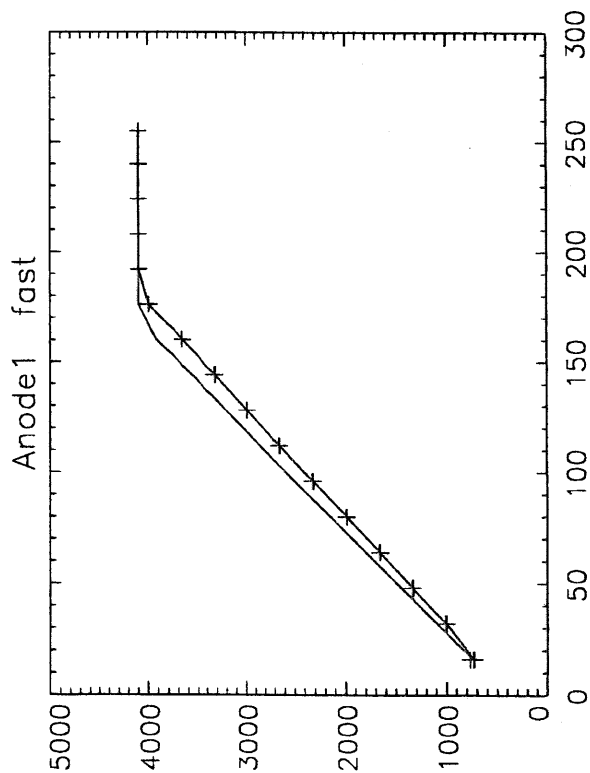
mvh
Kurt

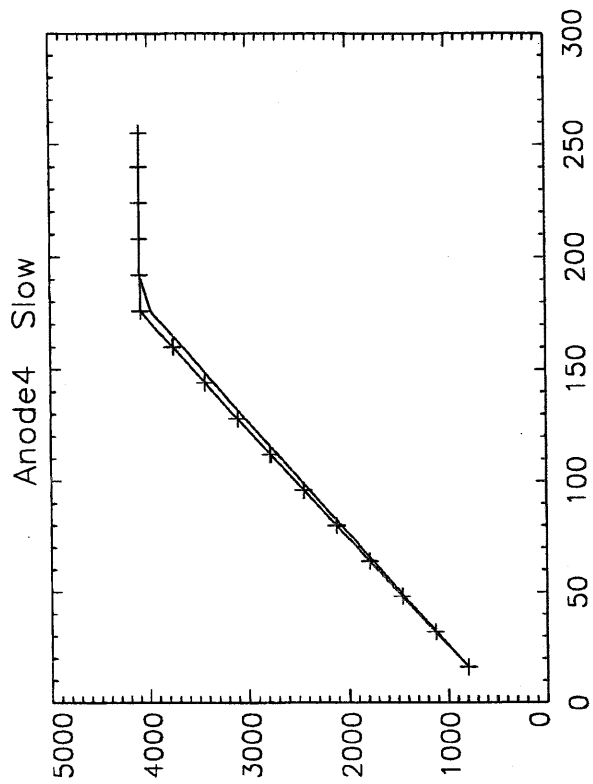
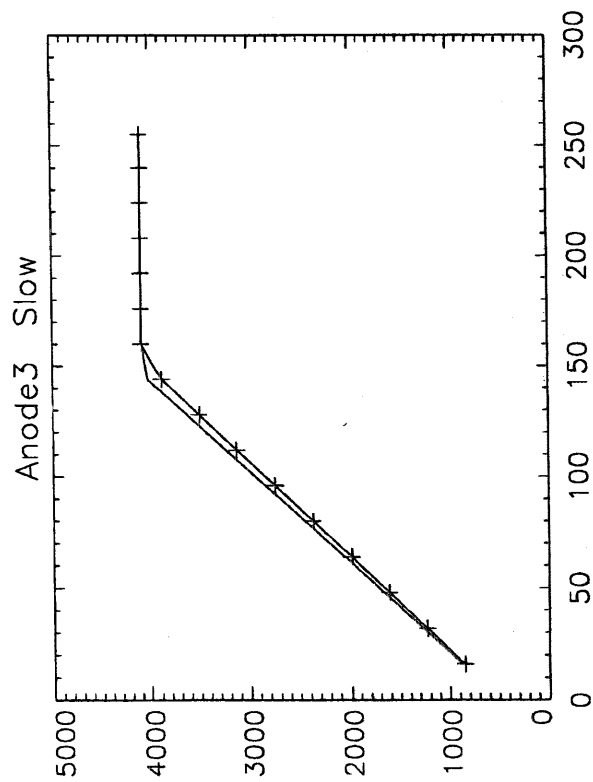
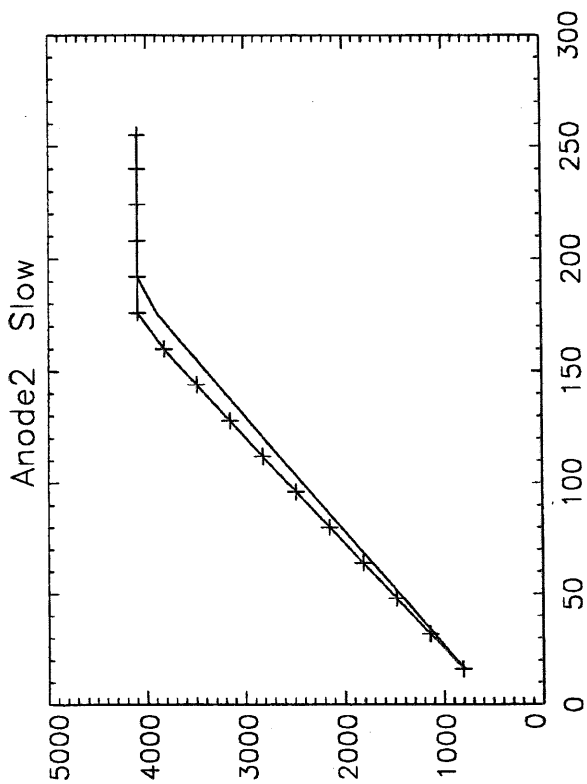
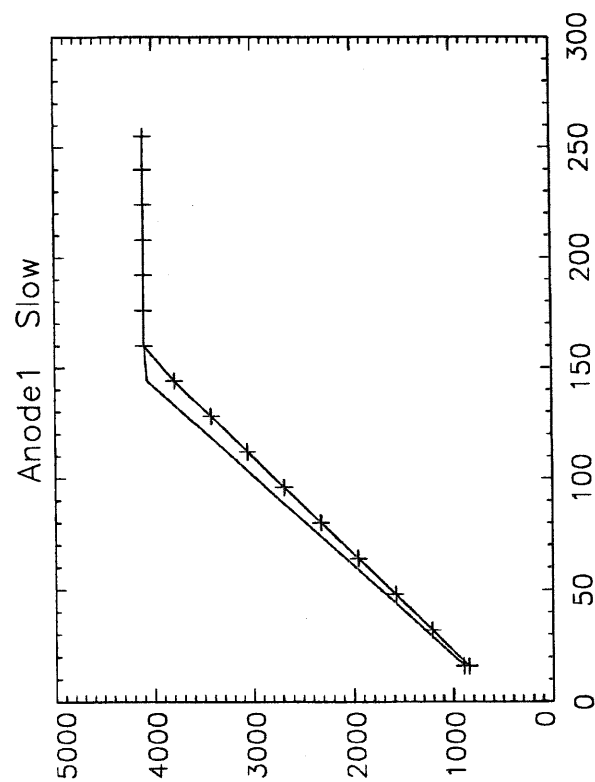


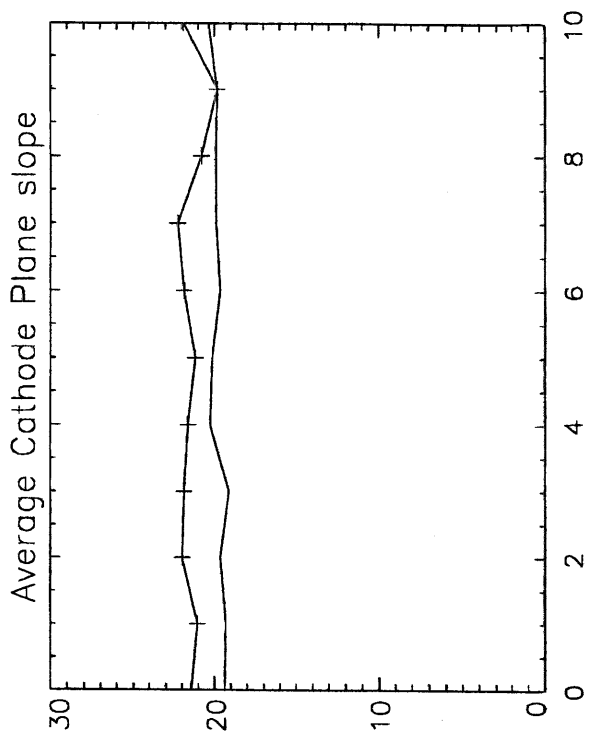
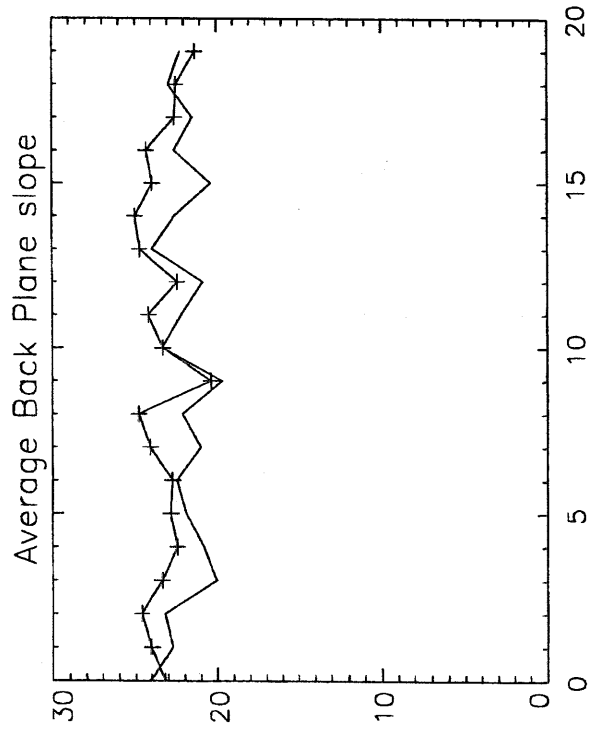
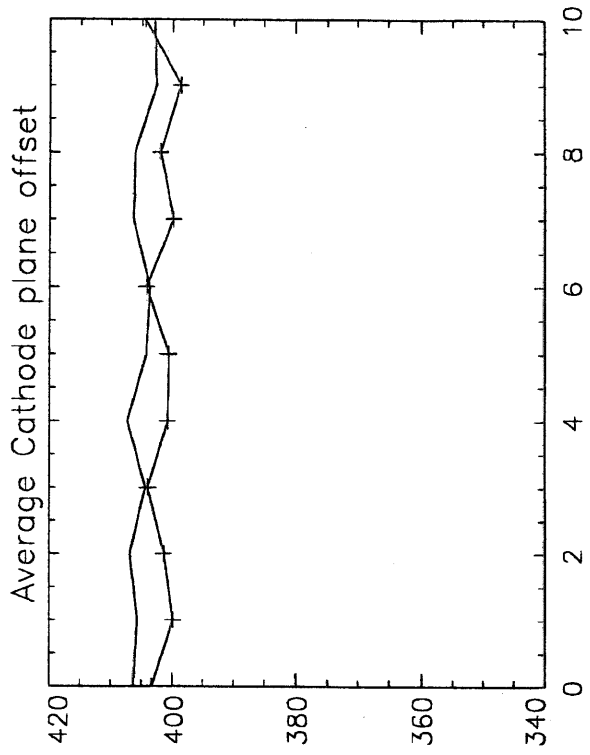
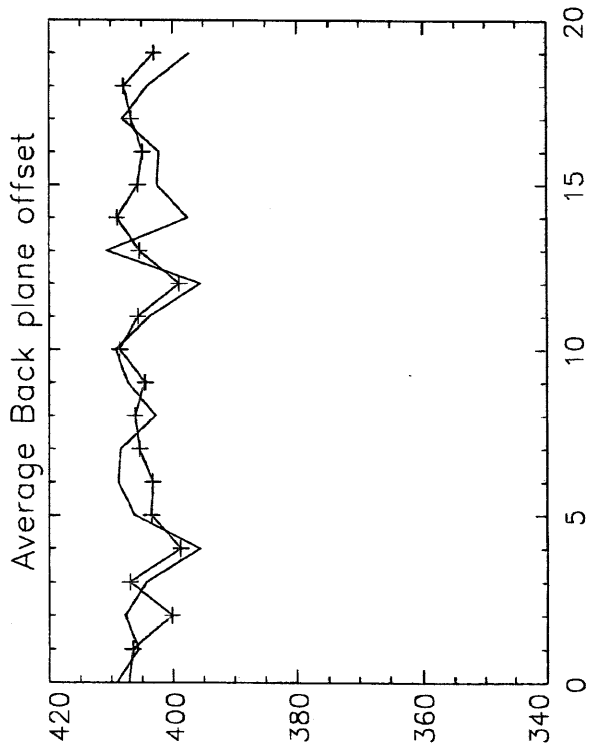


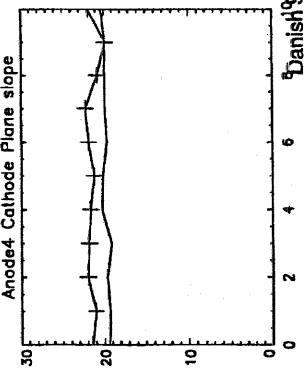
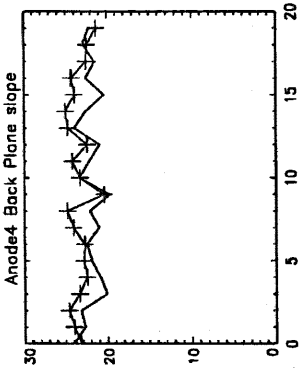
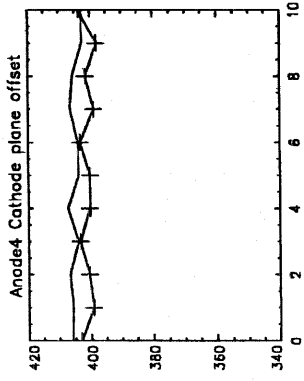
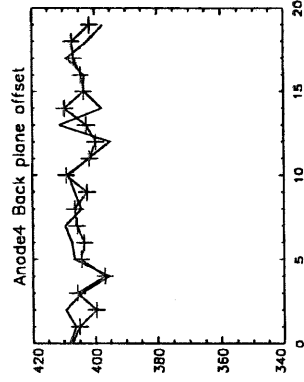
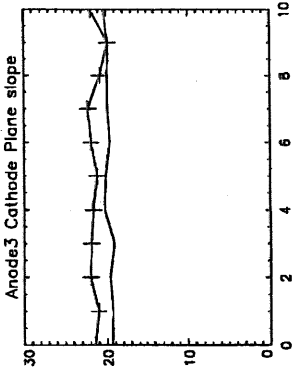
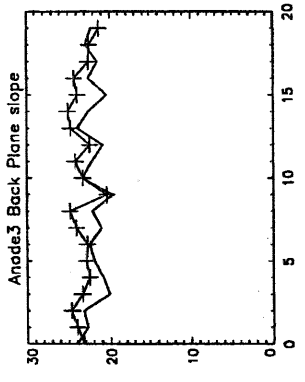
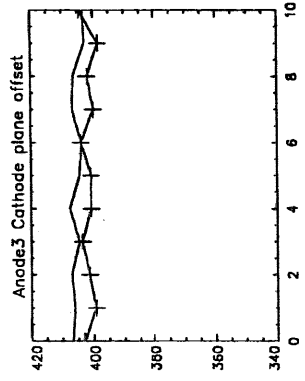
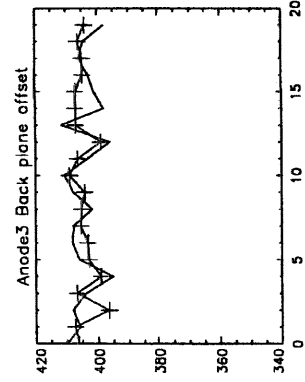
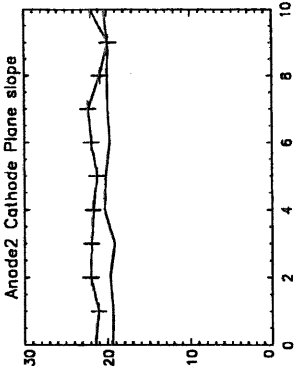
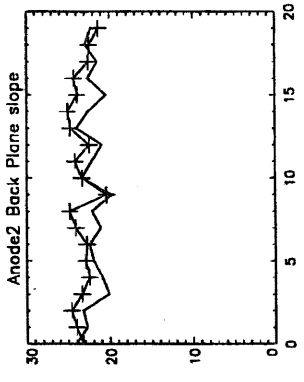
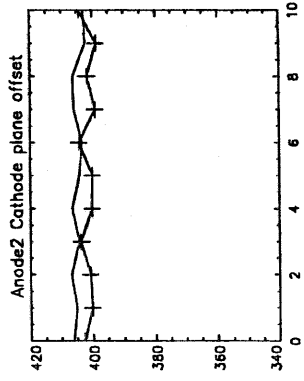
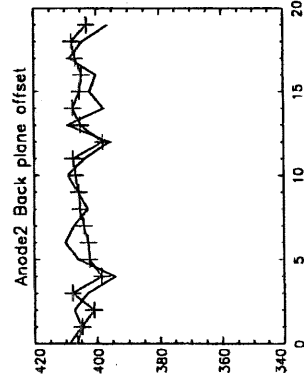
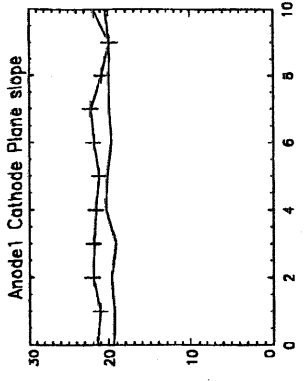
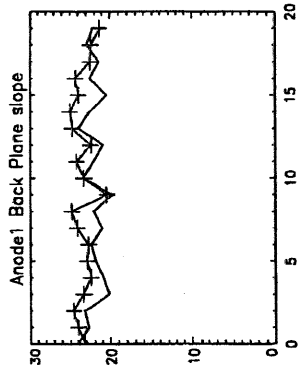
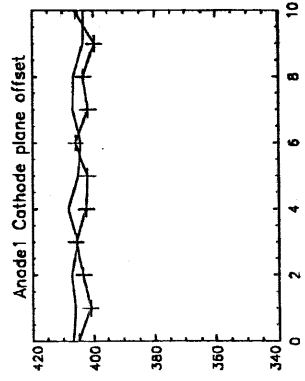
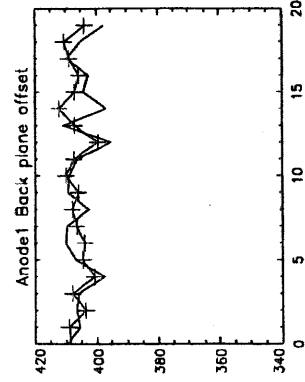


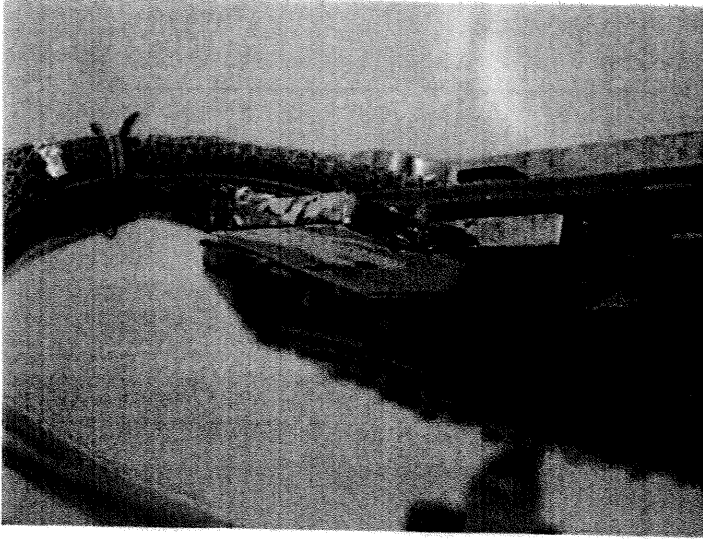




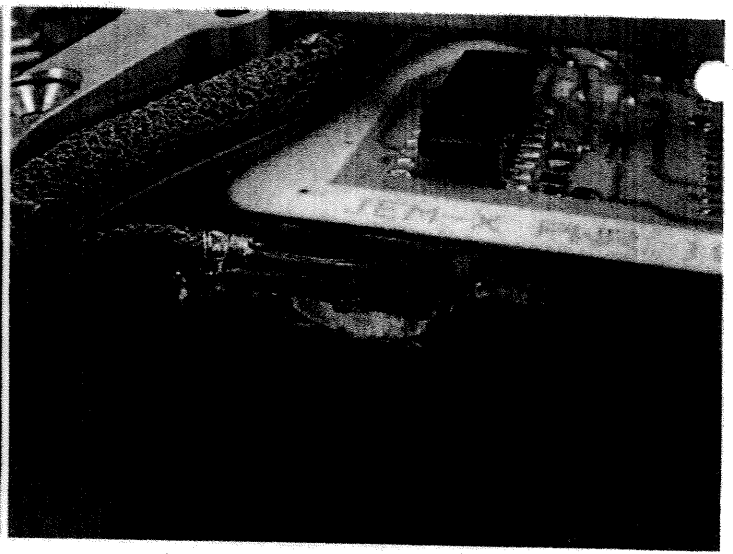




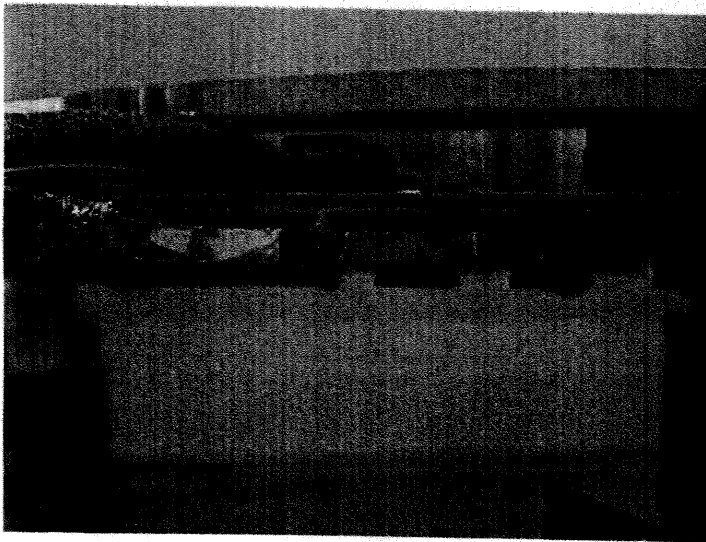




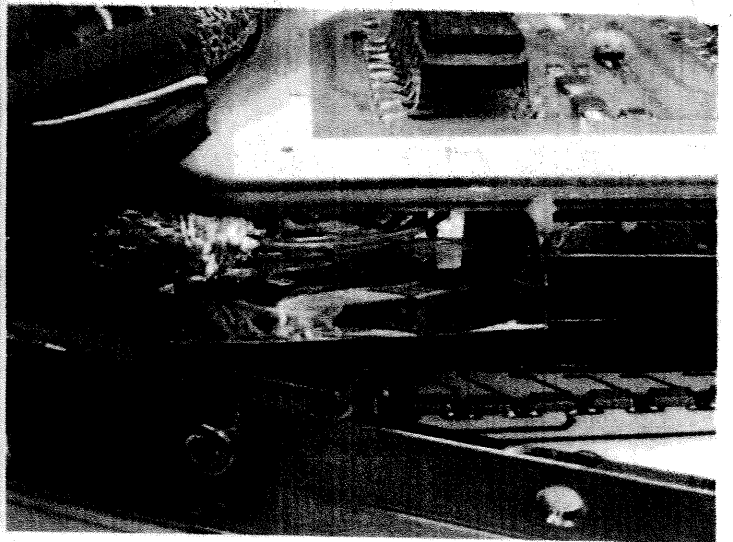
CAL Shield 01



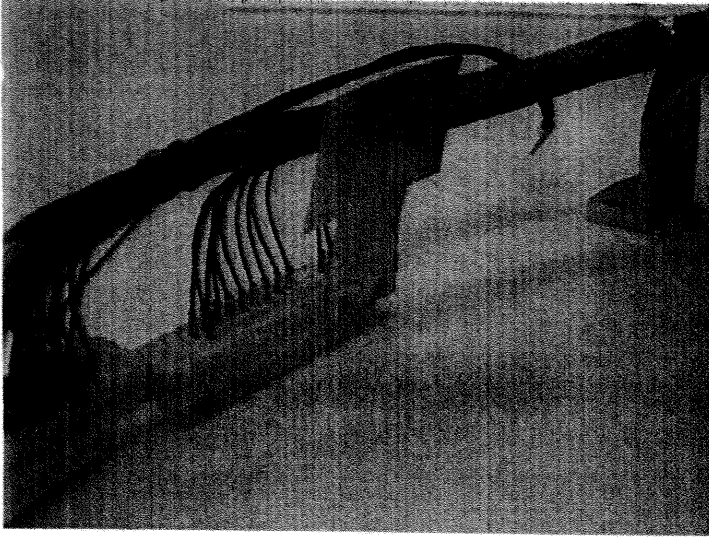
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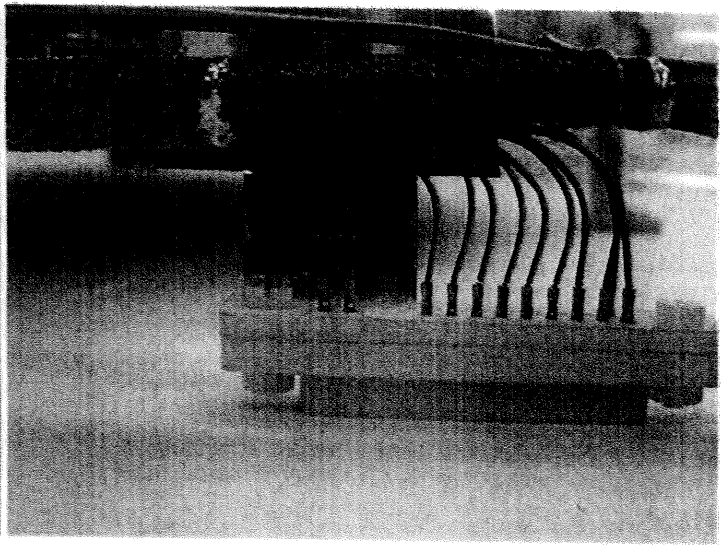
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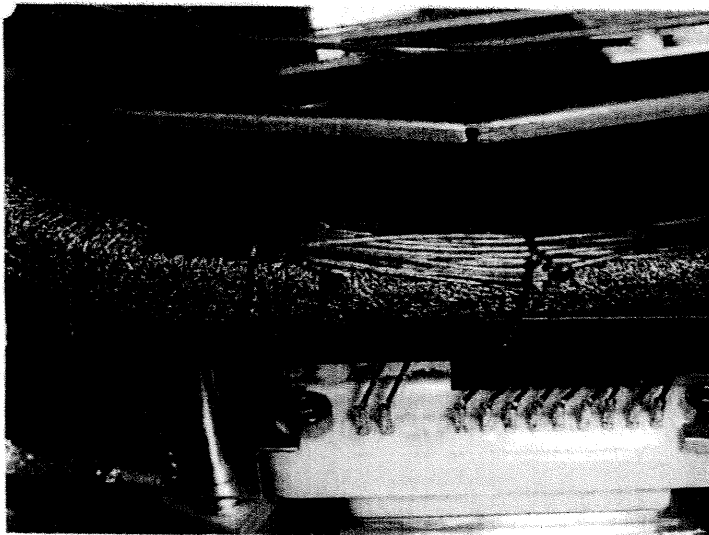
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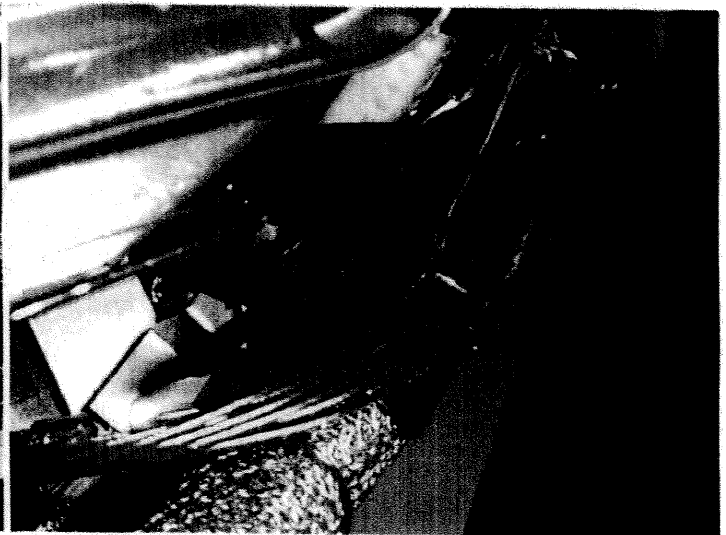
Cable Shield 05



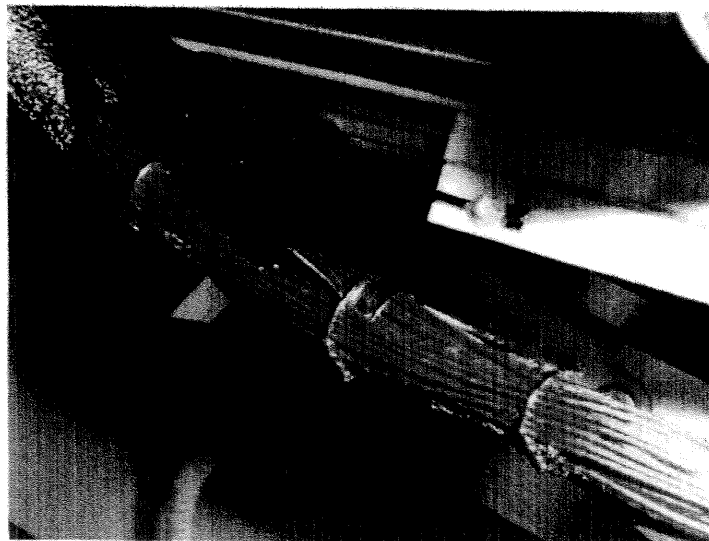
Cable Shield 06



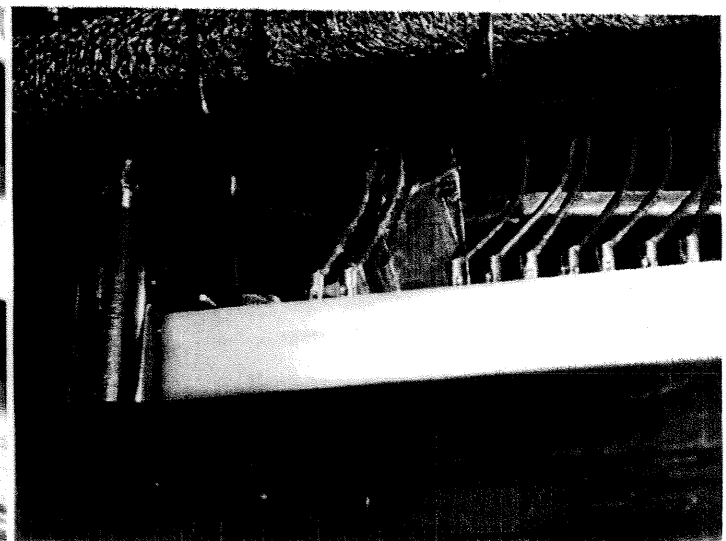
Cable Shield 07




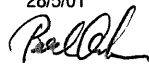
Cable Shield 08



Cable Shield 09



Cable Shield 10

		Integral Jem-X		<div style="display: flex; justify-content: space-between;"> 1 NCR No: IN-NC-JEM-1032 </div>			
				<div style="display: flex; justify-content: space-between;"> Revision: - </div>			
				<div style="display: flex; justify-content: space-between;"> Page 1 of 3 Attachments: Plots, Minutes from status </div>			
NON CONFORMANCE REPORT							
2 Supplier DSRI		3 Order No		4 Subsystem Detector			
6 Affected Item Detector		7 Affected Item No 131000		8 Affected Item CI No 01			
10 Higher Unit JEM-X		11 Higher Unit No 130000		12 Higher Unit CI No 01			
14 N. C. detected during ... Test Detector Performance Verification				15 Relat. Int. NCR, Other Rel. NCR			
				16 Critical Item Yes			
21 Description of Nonconformance : JEM-X FM1 Detector malfunction. Test of the FM1 failed, apparently due to HV discharge. Significant areas of MS plate appears inoperative on both sides. Electronics is operating when calibration is turned on. Initial analysis of data records show that veto and backplane 14 signals are missing after a period of increased noise. See Attachment 1.							
22 Suspected cause of NC : Other - Specify HV Discharge				23 Initiator : 23-03-01, Poul Anker Jensen (Date, Name, Sign.)			
31 Test Failure : Yes		32 Problem : Yes		33 Class : Major			
				34 Category : (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '-'=No Cat. Assigned) <div style="text-align: right;">A</div>			
35 Proposed Internal MRB Disposition / Preliminary Disposition :				36 Customer Notific. / Invitation Ref. No: Date:			
Inspection of detector: Bondwires ok; no visible sign of discharge to mainframe or spider; HV test of HV boards ok, burn marks between veto electrode and backplane electrode on microstrip plate; 30 ohms resistors on veto board and backplane 14 amplifier board evaporated; arcing under HV capacitor on backplane 14 amplifier board at 2.3 kV test voltage; several anode sections burned open on MS plate. Cont. page 2 with initial MRB dispositions.				37 Verification			
38 Local MRB Dept., Name DSRI, PAJ DSRI, SMP DSRI, KO DSRI, SL DSRI, MA Date, Signature							
39 Final MRB Disposition (as proposed or as follows) :							
40 Finally Determined Cause of NC : Other - Specify				41 Corrective Action(s) (to be verified) :			
42 Request for Waiver : No		43 Analysis / FAC Requested : No		44 Alert Requested : No			
				45 Other Related Document(s) :			
50 MRB Approval : Organ, Name				51 Closed by QA (Date, Stamp/Sign.) 28/5/01			
Date, Signature							



NON CONFORMANCE REPORT
(Continuation Sheet)

28/03/01 MRB

Verification

1. New MS plate to be built by Metorex, RC boards are readily available
2. Check isolation resistance on all HV capacitors
3. Inspect all 30 ohm resistors on DAE boards
4. Remove HV capacitor and 30 ohm resistor on BP 14 amplifier board
5. Inspect board and capacitor for damage and contamination
6. Install new capacitor and 30 ohm resistor on BP 14 amplifier board
7. Replace 30 ohm resistor on Veto board
8. Test function of protection diodes on veto and BP 14 board. Compare results with test results from board level test
9. Connect dummy microstrip and perform noise test on spider assembly. Compare results with results from test done after integration before shipment of assembly to Metorex. This test is done to see if any damage or degradation to FET inputs have occurred.

Next MRB when results are available.

re 1: Fabrication of new MS plate assembly has started, expected to be available week 12.

re 2: Capacitance and isolation resistance on all HV capacitors checked with low voltage, see Attachment 2.

re 3: All 30/100 ohm resistors on DAE boards inspected. Resistors on PAB5 and PAV are burnt, resistors on PAB4 and PAB7 show increased value to around 40 ohm from nominal 31 ohm. Several other resistors show about 10% increased value. See Attachment 2.

re 4: HV capacitor on BP 14 amplifier removed by preheating the board to 95C and then using the desolder tweezer. Serious burn marks from the HV discharge visible on substrate and capacitor. See Photo Attachment 3.

X-ray inspection of the capacitors has been attempted, feasibility is being evaluated.

Removal of capacitors on sample board using IR-laser has been attempted, results do not look promising. Calculations show that damage to protection diodes is unlikely. See Attachment 4.

15/05/01

- Alcatel-Kirk hot air tool tested for HV capacitor removal, boards cracked in the process.
- Attachment 5: SMP evaluation of capacitor removal methods, in-house method recommended by KO, SMP, AHC, MA, and SL.
- Attachment 6: Procedure for capacitor installation, OP-DSRI-0007.
- Attachment 7: Photos of capacitor installation.

MRB recommendation:

- FET transistors shall not be replaced. Noise test show ok performance and protection diode integrity has been verified.
- All 30.1 ohm resistors on FM1 shall be replaced. See attachment 2.
- In case of damage to solder joint at 220 nF capacitors, the capacitors shall be replaced.
- Perform rework in accordance with NL's Technical Note IN-TN-JEM-2001-3/NL, Detector Repair Activities. See attachment 8.
- Implement above changes to FM2 and FS.
- MPSs to be updated to reflect planned work.



**Integral
Jem-X**

NCR No: IN-NC-JEM-1032

Revision:

Page 3 of 3

NON CONFORMANCE REPORT
(Continuation Sheet)

Verification

16/5/01

- ESA reports microcracks in capacitor samples installed per OPP-DSRI-0007, consequently, new method for capacitor installation must be developed. See Attachment 9.


17/5/01


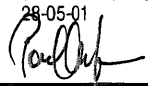
- Investigation of microcracks is inconclusive. The microcracks may originate from the microsectioning at ESA. New samples using Cu bar installation and s-lead installation of capacitors shall be made for new microsectioning. Procedure for capacitor installation will be selected based on results of microsectioning.

28/5/01

- Microsectioning of 3 new samples show no sign of microcracks. See attachment 10. Consequently, capacitor installation will be as specified in OP-DSRI-1007, Attachment 6.
- The NCR can be closed.

8/6/01 Attachment 11: Thermal cycling of capacitor
Samples after installation.

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				<div style="display: flex; justify-content: space-between; align-items: center;"> Revision: - </div>	
				<div style="display: flex; justify-content: space-between; align-items: center;"> Page 1 of 1 Attachments: </div>	
NON CONFORMANCE REPORT					
<div style="display: flex; justify-content: space-between; align-items: center;"> 2 Supplier DSRI </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 3 Order No </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 4 Subsystem Detector </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> 5 Model FM1 </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 6 Affected Item DFEE </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 7 Affected Item No 132000 </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> 8 Affected Item CI No 01 </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 9 Aff. It. Serial No 01 </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 10 Higher Unit JEM-X </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> 11 Higher Unit No </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 12 Higher Unit CI No </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 13 H. U. Serial No </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> 14 N. C. detected during ... Test DFEE Preliminary Integration and Test </div>			<div style="display: flex; justify-content: space-between; align-items: center;"> 15 Relat. Int. NCR, Other Rel. NCR </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 16 Critical Item Yes </div>
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 60%;"> 21 Description of Nonconformance : JEM-X FM1 DFEE power consumption at turn-on was 1.3 amps instead of the expected 1 amp. Problem identified to be associated with inrush current. </div> <div style="width: 35%;"></div> </div>					
<div style="display: flex; justify-content: space-between; align-items: center;"> 22 Suspected cause of NC : Material Defect </div>			<div style="display: flex; justify-content: space-between; align-items: center;"> 23 Initiator : 18-04-01, Poul Anker Jensen (Date, Name, Sign.) </div>		
<div style="display: flex; justify-content: space-between; align-items: center;"> 31 Test Failure : Yes </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 32 Problem : Yes </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 33 Class : Major </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> 34 Category : (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '-'=No Cat. Assigned) </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 35 Proposed Internal MRB Disposition / Preliminary Disposition : </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 60%;"> 36 Customer Notific. / Invitation Ref. No: Date: </div> <div style="width: 35%;"> 37 Verification </div> </div>	
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 75%;"> <p>Inrush current test show excessive current consumption relative to SIS current limit setting causing conflict between SIS shut-down and LVPS built in undervoltage protection.</p> <p>Test with S/C like LCL unit show no turn-on problem.</p> <p>Thermal test -27 C to + 36 C show no turn-on problem.</p> </div> <div style="width: 25%;"></div> </div>					
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 60%;"> 38 Local MRB Dept., Name </div> <div style="width: 15%;"> DSRI, PAJ </div> <div style="width: 15%;"> DSRI, KO </div> <div style="width: 15%;"> DSRI, SB </div> <div style="width: 15%;"> DSRI, SL </div> </div>					
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 60%;"> 39 Final MRB Disposition (as proposed or as follows) : As the problem is associated with the SIS, this NCR can be closed. </div> <div style="width: 35%;"></div> </div>					
<div style="display: flex; justify-content: space-between; align-items: center;"> 40 Finally Determined Cause of NC : Other – Specify </div>			<div style="display: flex; justify-content: space-between; align-items: center;"> 41 Corrective Action(s) (to be verified) : </div>		
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<div style="display: flex; justify-content: space-between; align-items: center;"> 45 Other Related Document(s) : </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> 50 MRB Approval : Organ, Name </div>			
<div style="display: flex; justify-content: space-between; align-items: center;"> 51 Closed by QA (Date, Stamp/Sign.) </div>		<div style="display: flex; justify-content: space-between; align-items: center;"> Date, Signature </div>			
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		Integral Jem-X		1 NCR No: IN-NC-JEM-1034	
				Revision: -	
				Page 1 of 1 Attachments:	
NON CONFORMANCE REPORT					
2 Supplier DSRI		3 Order No		4 Subsystem Detector	
6 Affected Item DFEE		7 Affected Item No 132000		8 Affected Item CI No 01	
10 Higher Unit JEM-X		11 Higher Unit No		12 Higher Unit CI No	
14 N. C. detected during ... Test DFEE Preliminary Integration and Test		15 Relat. Int. NCR, Other Rel. NCR		16 Critical Item Yes	
21 Description of Nonconformance : JEM-X FM1 DFEE Clock Signals BCP1 1/8 Hz and BCP2 1 Hz interchanged in connection from J06 to Motherboard.					
22 Suspected cause of NC : Work Instruction				23 Initiator : 19-04-01, Poul Anker Jensen (Date, Name, Sign.)	
31 Test Failure : Yes		32 Problem : Yes		33 Class : Minor	
				34 Category : (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '-'=No Cat. Assigned) B	
35 Proposed Internal MRB Disposition / Preliminary Disposition :				36 Customer Notific. / Invitation	
Rework to correct connections.				Ref. No: Date:	
				37 Verification	
38 Local MRB					
Dept., Name					
Date, Signature					
39 Final MRB Disposition (as proposed or as follows) :					
Wire installation corrected.					
NCR can be closed.					
40 Finally Determined Cause of NC : Workmanship				41 Corrective Action(s) (to be verified) :	
42 Request for Waiver : No		43 Analysis / FAC Requested : No		44 Alert Requested : No	
				45 Other Related Document(s) :	
50 MRB Approval : Organ, Name				51 Closed by QA (Date, Stamp/Sign.) 28-05-01	
Date, Signature					



Integral
Jem-X


1 NCR No: IN-NC-JEM-1035


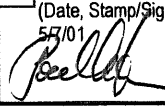
Revision: -

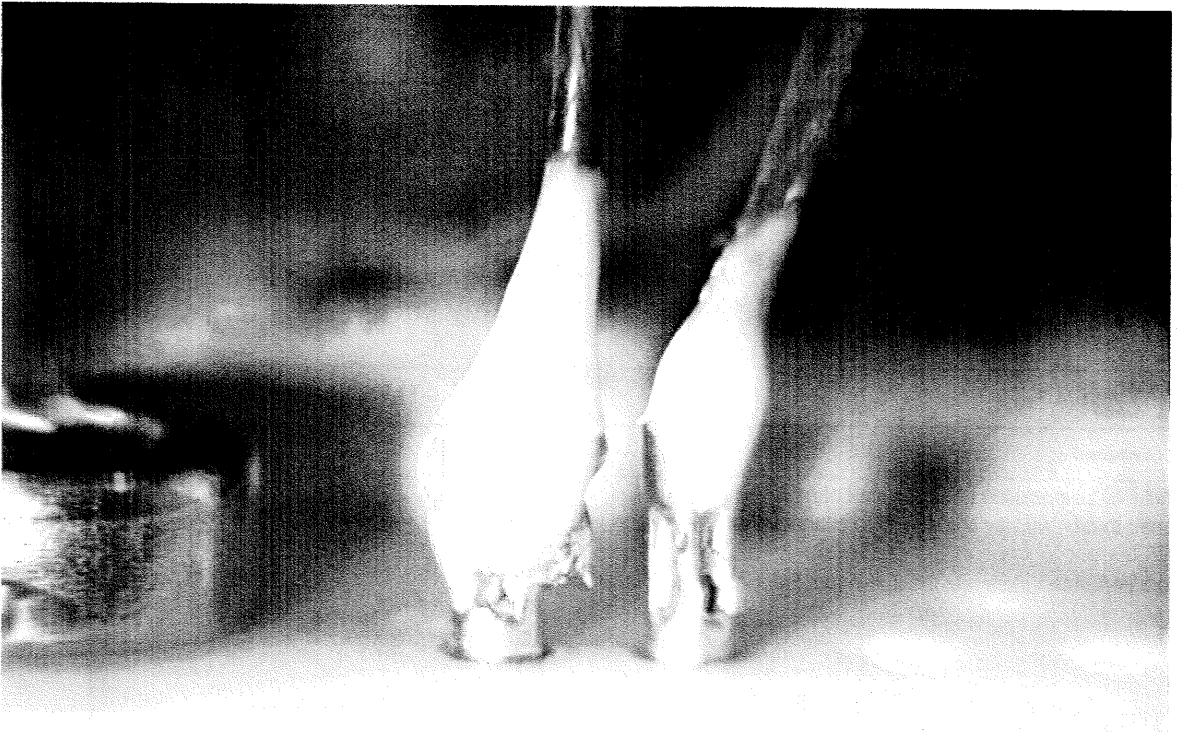
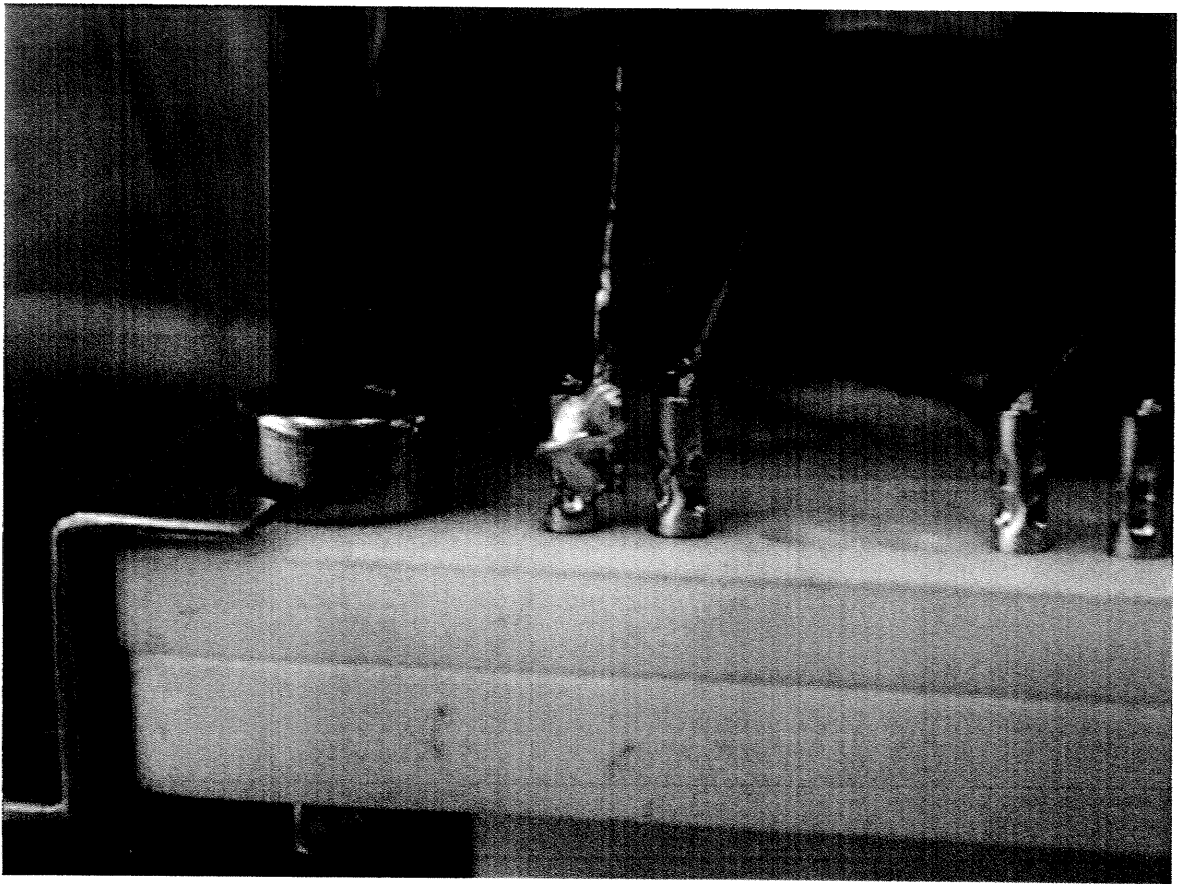
Page 1 of 1 Attachments:


NON CONFORMANCE REPORT

2	Supplier DSRI	3	Order No	4	Subsystem Detector	5	Model FM1	
6	Affected Item Pressure Transducers	7	Affected Item No 132000	8	Affected Item CI No 01	9	Aff. It. Serial No 01	
10	Higher Unit JEM-X	11	Higher Unit No	12	Higher Unit CI No	13	H. U. Serial No	
14	N. C. detected during . . . Test JEM-X FU1 Preliminary Performance Verification			15	Relat. Int. NCR, Other Rel. NCR		16	Critical Item Yes
21	Description of Nonconformance : Incorrect pressure readings from pressure transducers in detector.							
22	Suspected cause of NC : Work Instruction			23	Initiator : 02-07-01, Poul Anker Jensen (Date, Name, Sign.)			
31	Test Failure : Yes	32	Problem : Yes	33	Class : Minor	34	Category : (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '-'=No Cat. Assigned) A	
35	Proposed Internal MRB Disposition / Preliminary Disposition : Check to see if protective tape over tansducers has been removed.			36	Customer Notific. / Invitation Ref. No: Date:		37	Verification
38	Local MRB Dept., Name	DSRI, PAJ	DSRI, KO	DSRI, SMP	I,	,		
	Date, Signature							
39	Final MRB Disposition (as proposed or as follows) : Protective tape removed. Work instruction to be improved. NCR can be closed.							
40	Finally Determined Cause of NC : Work Instruction			41	Corrective Action(s) (to be verified) :			
42	Request for Waiver : No		43	Analysis / FAC Requested : No		44	Alert Requested : No	
45	Other Related Document(s) :							
50	MRB Approval : Organ, Name						51	Closed by QA (Date, Stamp/Sign.) 10-07-01
	Date, Signature							

		Integral Jem-X		<div style="border-bottom: 1px solid black; padding-bottom: 2px;"> <div style="display: flex; justify-content: space-between;"> 1 NCR No: IN-NC-JEM-1036 </div> <div style="border-bottom: 1px solid black; padding-bottom: 2px;"> Revision: - </div> <div> Page 1 of 2 Attachments: <i>7/2/01</i> </div> </div>	
NON CONFORMANCE REPORT					
2 Supplier DSRI		3 Order No		4 Subsystem Detector	
5 Model FM1		6 Affected Item Pressure Transducers		7 Affected Item No 132000	
8 Affected Item CI No 01		9 Aff. It. Serial No 01		10 Higher Unit JEM-X	
11 Higher Unit No		12 Higher Unit CI No		13 H. U. Serial No	
14 N. C. detected during ... Test JEM-X FU1 Preliminary Performance Verification		15 Relat. Int. NCR, Other Rel. NCR		16 Critical Item Yes	
21 Description of Nonconformance : Detector image distorted. Test of capacitors on RC boards show incorrect capacitor values.					
22 Suspected cause of NC : Work Instruction				23 Initiator : 02-07-01, Poul Anker Jensen (Date, Name, Sign.)	
31 Test Failure : Yes		32 Problem : Yes		33 Class : Major	
				34 Category : (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '-'=No Cat. Assigned) A	
35 Proposed Internal MRB Disposition / Preliminary Disposition : <i>Use as is.</i>				36 Customer Notific. / Invitation Ref. No: Date:	
				37 Verification	
38 Local MRB Dept., Name		DSRI, PAJ		DSRI, KO	
Date, Signature		<i>5/7/01 PAF</i>		<i>5/7/01 KO</i>	
				<i>5/7/01 SMP</i>	
39 Final MRB Disposition (as proposed or as follows) : <i>Use as is. Minor degradation of detector accepted due to critical F41 schedule. Repair is considered a very high risk operation for damage to the microstrip plate.</i>					
40 Finally Determined Cause of NC : Work Instruction			41 Corrective Action(s) (to be verified) : <i>Changed procedure for RC boards to include Capacitor Inspection</i>		
42 Request for Waiver : No		43 Analysis / FAC Requested : No		44 Alert Requested : No	
				45 Other Related Document(s) :	
50 MRB Approval : Organ, Name				51 Closed by QA (Date, Stamp/Sign.) 28-05-01	
Date, Signature				<i>[Signature]</i>	

		Integral Jem-X		<div style="border-bottom: 1px solid black; padding-bottom: 2px;"> 1 NCR No: IN-NC-JEM-1037 </div> <div style="border-bottom: 1px solid black; padding-bottom: 2px;"> Revision: - </div> <div style="padding-bottom: 2px;"> Page 1 of 2 Attachments: Photos </div>			
		NON CONFORMANCE REPORT					
		2 Supplier DSRI		3 Order No		4 Subsystem Detector	
6 Affected Item Detector Harness		7 Affected Item No 132000		8 Affected Item CI No 01		9 Aff. It. Serial No 01	
10 Higher Unit JEM-X		11 Higher Unit No		12 Higher Unit CI No		13 H. U. Serial No	
14 N. C. detected during . . . Production Inspection				15 Relat. Int. NCR, Other Rel. NCR		16 Critical Item Yes	
21 Description of Nonconformance: Wire broken at connector inside detector.							
22 Suspected cause of NC : Other – Specify Handling				23 Initiator : 03-07-00, Poul Anker Jensen (Date, Name, Sign.)			
31 Test Failure : No		32 Problem : Yes		33 Class : Minor		34 Category : (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '-'=No Cat. Assigned) A	
35 Proposed Internal MRB Disposition / Preliminary Disposition : Repair broken wire by soldering it to connector pin and secure with Torseal.				36 Customer Notific. / Invitation Ref. No: Date:		37 Verification	
38 Local MRB Dept., Name		DSRI, PAJ		DSRI, KO		DSRI, SMP	
Date, Signature							
39 Final MRB Disposition (as proposed or as follows) : Repair broken wire by soldering it to connector pin and secure with Torseal. Work performed, documented and inspected. See photo attachments.							
40 Finally Determined Cause of NC : Other – Specify Handling				41 Corrective Action(s) (to be verified) :			
42 Request for Waiver : No		43 Analysis / FAC Requested : No		44 Alert Requested : No		45 Other Related Document(s) :	
50 MRB Approval : Organ, Name						51 Closed by QA (Date, Stamp/Sign.) 5/1/01 	
Date, Signature							



		Integral Jem-X		<div style="display: flex; justify-content: space-between;"> 1 NCR No: IN-NC-JEM-1038 </div>			
				<div style="display: flex; justify-content: space-between;"> Revision: - </div>			
				<div style="display: flex; justify-content: space-between;"> Page 1 of 2 Attachments: </div>			
NON CONFORMANCE REPORT							
2 Supplier DSRI		3 Order No		4 Subsystem Detector			
6 Affected Item Software		7 Affected Item No 132000		8 Affected Item CI No 01			
10 Higher Unit JEM-X		11 Higher Unit No		12 Higher Unit CI No			
14 N. C. detected during ... Test JEM-X FU1 Functional Test		15 Relat. Int. NCR, Other Rel. NCR		16 Critical Item Yes			
21 Description of Nonconformance : During the FM1 test campaign (ref. IN-TP-JEM-0011) it has been discovered that the switching back from secondary format to the primary one did not work at all at any grey filter percentage value reached. Moreover, 3 CSSW OEM have been displayed during grey filter percentage value increasing: <div style="display: flex; justify-content: space-between;"> <div>OEM ID=4 F1=0 F2=0004 F3= 0004 (Major Anomaly)</div> <div>OEM ID=5 F1=0 F2=1C04 F3=12FE (Exception)</div> </div> <div style="text-align: right; margin-top: 10px;">Continued on page 2</div>							
22 Suspected cause of NC : Work Instruction				23 Initiator : 02-07-01, Poul Anker Jensen (Date, Name, Sign.)			
31 Test Failure : Yes		32 Problem : Yes		33 Class : Minor			
				34 Category : (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '-'=No Cat. Assigned) <div style="text-align: right;">A</div>			
35 Proposed Internal MRB Disposition / Preliminary Disposition :				36 Customer Notific. / Invitation Ref. No: Date:			
38 Local MRB Dept., Name Date, Signature				37 Verification			
39 Final MRB Disposition (as proposed or as follows) : See page 2.							
40 Finally Determined Cause of NC : Work Instruction				41 Corrective Action(s) (to be verified) :			
42 Request for Waiver : No		43 Analysis / FAC Requested : No		44 Alert Requested : No			
				45 Other Related Document(s) :			
50 MRB Approval : Organ, Name				51 Closed by QA (Date, Stamp/Sign.) 2/18/01			
Date, Signature							



**Integral
Jem-X**

NCR No: IN-NC-JEM-1038

Revision: -

Page 2 of 2

NON CONFORMANCE REPORT
(Continuation Sheet)

OEM

ID=6

F1=0

F2=1C04

F3=5302

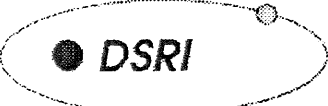
(Exception)

They have been displayed several times.

To be noted: The TC sent to go into DATA TAKING mode contains a parameter which says when the switching from secondary to primary format has to happen. This parameter has been set to 1F (100%).

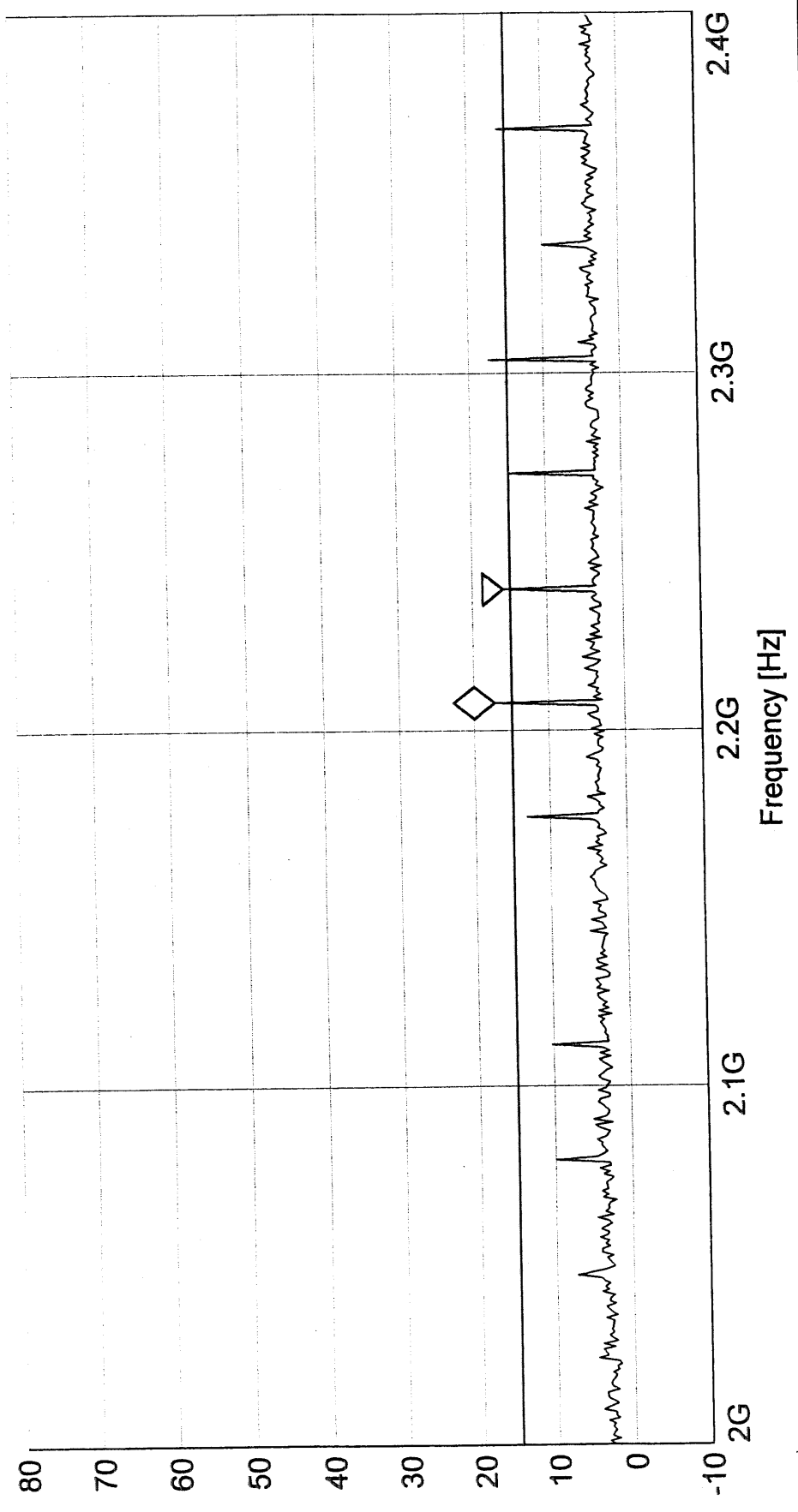
2/10/01 User Manual and Instrument Database is updated. The NCR can be closed.

Verification

		Integral Jem-X		1 NCR No: IN-NC-JEM-1039	
				Revision: -	
				Page 1 of 1 Attachments: 2 plats	
NON CONFORMANCE REPORT					
2 Supplier DSRI		3 Order No		4 Subsystem JEM-X	
5 Model FM1		6 Affected Item JEM-X		7 Affected Item No 132000	
8 Affected Item CI No 01		9 Aff. It. Serial No 01		10 Higher Unit INTEGRAL	
11 Higher Unit No		12 Higher Unit CI No		13 H. U. Serial No	
14 N. C. detected during Test EMC Test		15 Relat. Int. NCR, Other Rel. NCR		16 Critical Item Yes	
21 Description of Nonconformance: EMC Test, Radiated emissions, show out of spec. conditions, +2.3 dB at 2.2076 GHz and +2 dB at 2.07936 GHz. Both frequencies have been determined to be outside the receiver band at 2.039GHz.					
22 Suspected cause of NC: Design/Drawing				23 Initiator: 27-08-01, Poul Anker Jensen (Date, Name, Sign.)	
31 Test Failure: Yes		32 Problem: No		33 Class: Minor	
34 Category: (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '-'=No Cat. Assigned)		A			
35 Proposed Internal MRB Disposition / Preliminary Disposition: Use as is.				36 Customer Notific. / Invitation Ref. No: Date:	
37 Verification					
38 Local MRB Dept., Name		DSRI, PAJ			
Date, Signature		27-08-01			
39 Final MRB Disposition (as proposed or as follows) : ESA accept use as is disposition 4.9.01 [Signature] A [Signature] Peter Jensen					
40 Finally Determined Cause of NC: Design/Drawing				41 Corrective Action(s) (to be verified):	
42 Request for Waiver: No Yes		43 Analysis / FAC Requested: No		44 Alert Requested: No	
45 Other Related Document(s)					
50 MRB Approval				51 Closed by: [Signature]	

Marker: 2.20761523 GHz 17.31 dBμV/m
Delta Mk: 32.064129 MHz -1.33 dB

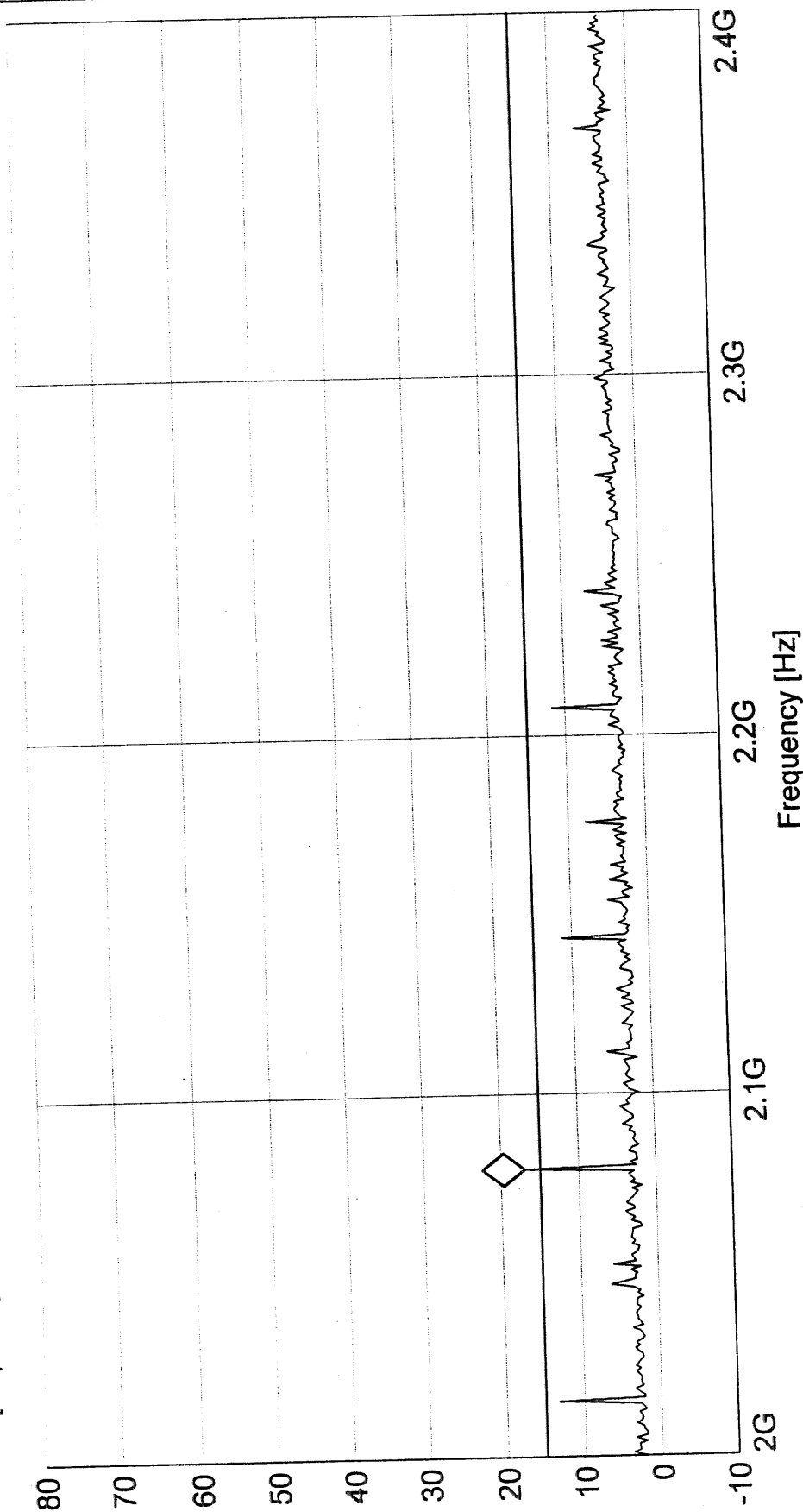
Level [dBμV/m]



— MES JEMX RE 2G prevP cal
— LIM INTEGRAL RE NB 2 GHz

Marker: 2.079358717 GHz 16.99 dBuV/m

Level [dBuV/m]




— MES JEMX RE 2G preHP cal
— LIM INTEGRAL RE NB 2 GHz


NON CONFORMANCE REPORT

2	Supplier DSRI	3	Order No	4	Subsystem JEM-X	5	Model FM1	
6	Affected Item JEM-X	7	Affected Item No 132000	8	Affected Item CI No 01	9	Aff. It. Serial No 01	
10	Higher Unit INTEGRAL	11	Higher Unit No	12	Higher Unit CI No	13	H. U. Serial No	
14	N. C. detected during ... Test EMC Test		15	Relat. Int. NCR, Other Rel. NCR		16	Critical Item No	
21	Description of Nonconformance: - CS/CM rejection: susceptibility at 6.7 to 7.7MHz: at 5Vpp a CPU reset occurred (safe mode), injection levels were reduced to 2.5Vpp, 1.25Vpp and 0.625Vpp, with the latter being established as susceptibility threshold (gradual reduction of HV level disturbance). DSRI believes that the problem originates from the test setup disconnecting all the ground and shields for this injection. It should be considered to perform a CM current injection in flight configuration (and grounding) during S/C level CS tests.							
22	Suspected cause of NC: Design/Drawing			23	Initiator: 27-08-01, Poul Aker Jensen (Date, Name, Sign.)			
31	Test Failure: Yes	32	Problem: No	33	Class: Minor	34	Category: (A=System, B=SS/Assy, C=Eq't N/A=Not appl., '-'=No Cat. Assigned) A	
35	Proposed Internal MRB Disposition / Preliminary Disposition: Use as is. <i>for FM1</i> DSRI to perform investigation on QM DFEE.			36	Customer Notific. / Invitation Ref. No: Date:		37	Verification
8	Local MRB Dept., Name	DSRI, PAJ						
	Date, Signature							
39	Final MRB Disposition (as proposed or as follows): <i>S/C FM CS test foresee +6dB injection. CM (Pd) current on signal lines between XDPF and JEM-X, in flight configuration (harness, grounding). NCR disposition use as is accepted for FM1.</i> <i>Poul Aker Jensen</i> <i>4.9.01</i>							
40	Finally Determined Cause of NC: Design/Drawing		41	Corrective Action(s) (to be verified):				
42	Request for Waiver: No		43	Analysis / FAC Requested: No		44	Alert Requested: No	
45	Other Related Document(s):							
50	MRB Approval: Organ, Name							
	Date, Signature							
51	Closed by QA (Date, Stamp/Sign)							

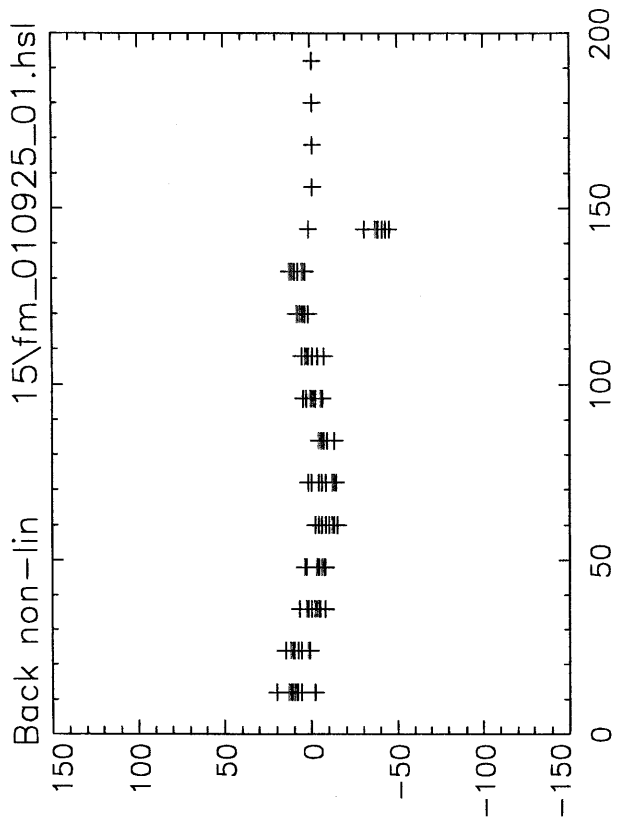
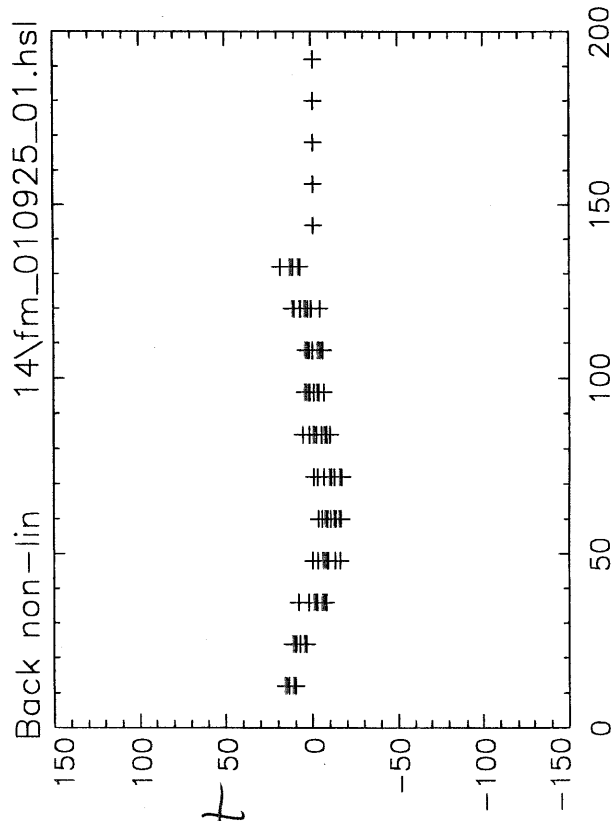
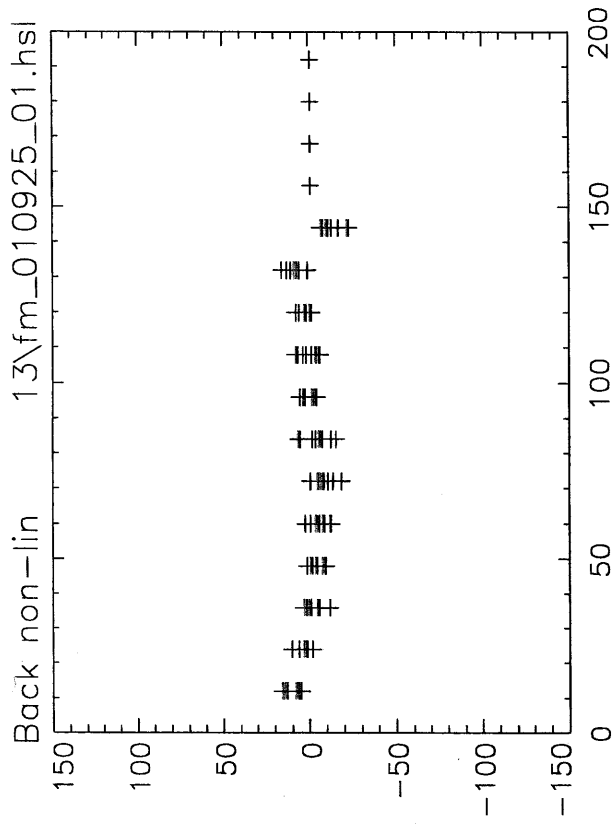
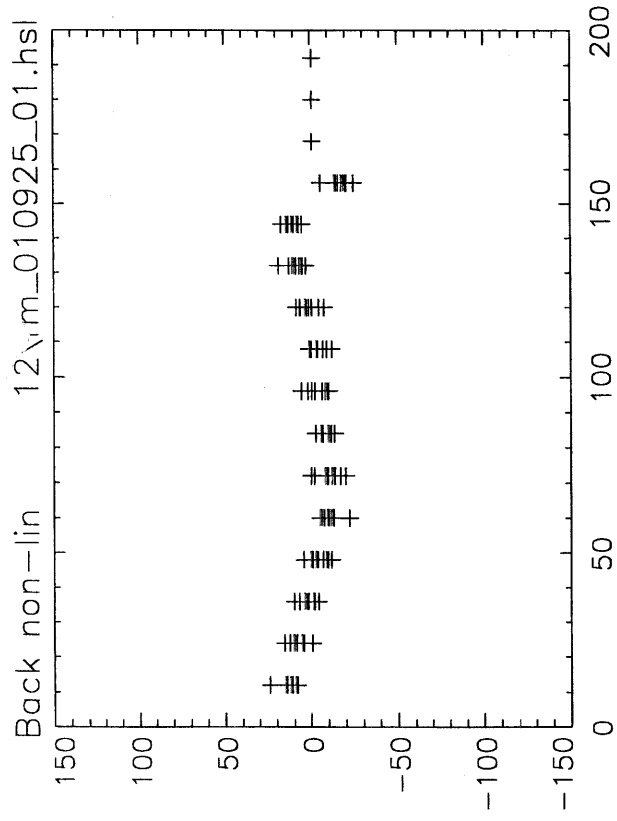
Ø P3, L, P, R, DB
AT & Klaus

27-08-01

		Integral Jem-X		<div style="border-bottom: 1px solid black; padding-bottom: 2px;">1 NCR No: IN-NC-JEM-1041</div> <div style="border-bottom: 1px solid black; padding-bottom: 2px;">Revision:</div> <div style="border-bottom: 1px solid black; padding-bottom: 2px;">Page 1 of 1 Attachments:</div>			
		NON CONFORMANCE REPORT					
		2 Supplier DSRI		3 Order No		4 Subsystem JEM-X	
6 Affected Item JEM-X		7 Affected Item No 132000		8 Affected Item CI No 01		9 Aff. It. Serial No 01	
10 Higher Unit INTEGRAL		11 Higher Unit No		12 Higher Unit CI No		13 H. U. Serial No	
14 N. C. detected during ... Test Thermal Vacuum Test				15 Relat. Int. NCR, Other Rel. NCR		16 Critical Item No	
21 Description of Nonconformance : 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 the TV test shows a slight drop. Phenomenon not understood, further investigation to be performed. Part of the investigation should be looking at the results from the QM test.							
22 Suspected cause of NC : Environment				23 Initiator : 27-08-01, Poul Aker Jensen (Date, Name, Sign.)			
31 Test Failure : Yes		32 Problem : Yes		33 Class : Minor		34 Category : (A=System, B=SS/Assy, C=Equ't N/A=Not appl., ''=No Cat. Assigned) A	
35 Proposed Internal MRB Disposition / Preliminary Disposition :				36 Customer Notific. / Invitation Ref. No: Date:		37 Verification	
<div style="display: flex; justify-content: space-between; border-bottom: 1px dashed black; padding-bottom: 5px;"> <div style="width: 15%;">38 Local MRB Dept., Name</div> <div style="width: 15%;">DSRI, PAJ</div> </div> <div style="display: flex; justify-content: space-between; border-bottom: 1px dashed black; padding-bottom: 5px;"> <div style="width: 15%;">Date, Signature</div> <div style="width: 15%;">25/8/01 PAJ</div> </div>							
39 Final MRB Disposition (as proposed or as follows) : <div style="font-family: cursive; font-size: 1.2em; margin-top: 10px;"> No further investigation on FM1, possible. Further investigation to be performed on FM2. </div>							
40 Finally Determined Cause of NC : Design/Drawing				41 Corrective Action(s) (to be verified) :			
42 Request for Waiver : No		43 Analysis / FAC Requested : No		44 Alert Requested : No		45 Other Related Document(s) :	
50 MRB Approval : Organ, Name		50 MRB Approval : Date, Signature		50 MRB Approval : Date, Signature		51 Closed by QA (Date, Stamp/Sign.)	

		Integral Jem-X		<div style="border: 1px solid black; padding: 2px;">1 NCR No: IN-NC-JEM-1042</div>	
				<div style="border: 1px solid black; padding: 2px;">Revision:</div>	
				<div style="border: 1px solid black; padding: 2px;">Page 1 of 1 Attachments: 1: Test data</div>	
NON CONFORMANCE REPORT					
2 Supplier DSRI		3 Order No		4 Subsystem JEM-X	
6 Affected Item JEM-X		7 Affected Item No 132000		8 Affected Item CI No 01	
10 Higher Unit INTEGRAL		11 Higher Unit No		12 Higher Unit CI No	
14 N. C. detected during ... Test Thermal Vacuum Test		15 Relat. Int. NCR, Other Rel. NCR		16 Critical Item No	
21 Description of Nonconformance: Backplane amplifier 4 and 14 show non-linearity during calibration. Further investigation during calibration campaign to be performed. <i>Test shows the effect to be correlated with CPU frequency. Not present at 8 MHz, but clearly visible at 16 MHz. (See Attachment I)</i>					
22 Suspected cause of NC :				23 Initiator: 27-08-01, Poul Aker Jensen (Date, Name, Sign.)	
31 Test Failure : Yes	32 Problem : Yes	33 Class : Minor	34 Category : (A=System, B=SS/Assy, C=Equ't N/A=Not appl., '=No Cat. Assigned) A		
35 Proposed Internal MRB Disposition / Preliminary Disposition :			36 Customer Notific. / Invitation Ref. No: Date:		37 Verification
<i>Investigation during calibration with X-ray beam at 60 keV is inconclusive. If present, the effect will only influence the position of X-rays with energy > 60 keV.</i>					
38 Local MRB Dept., Name DSRI, PAJ					
Date, Signature					
39 Final MRB Disposition (as proposed or as follows) : <i>No further investigation foreseen on FM1</i>					
40 Finally Determined Cause of NC : Design/Drawing		41 Corrective Action(s) (to be verified) :			
42 Request for Waiver : No		43 Analysis / FAC Requested : No		44 Alert Requested : No	
				45 Other Related Document(s) :	
50 MRB Approval : Organ, Name					51 Closed by QA (Date, Stamp/Sign.)
Date, Signature					

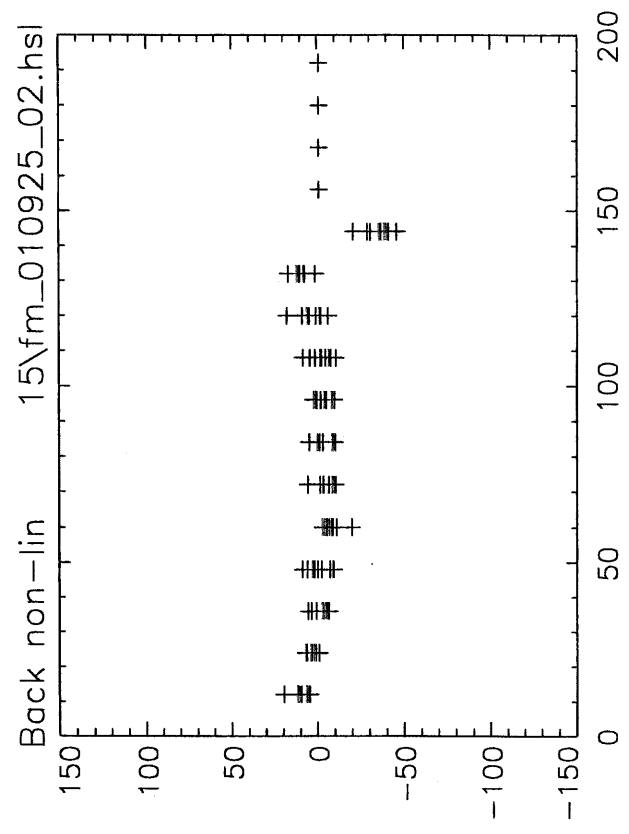
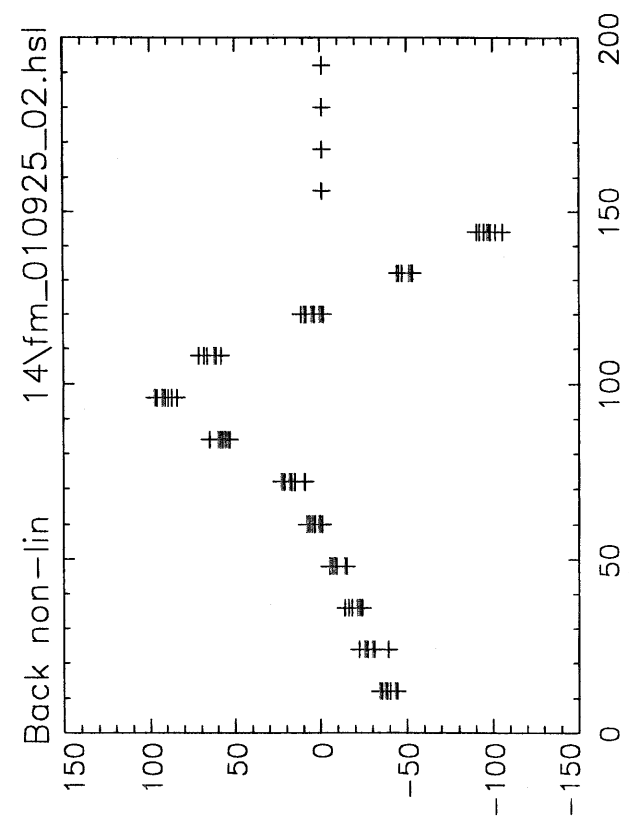
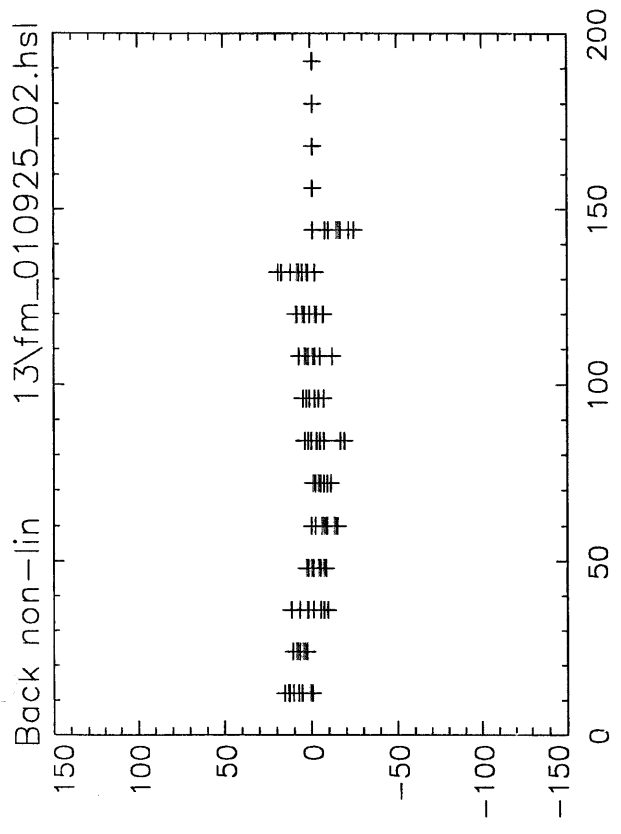
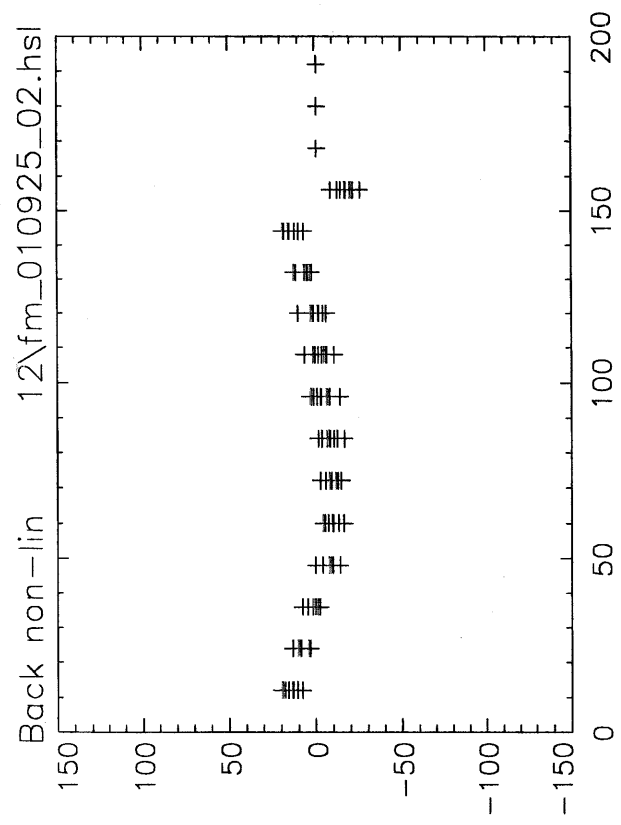
8 MHz



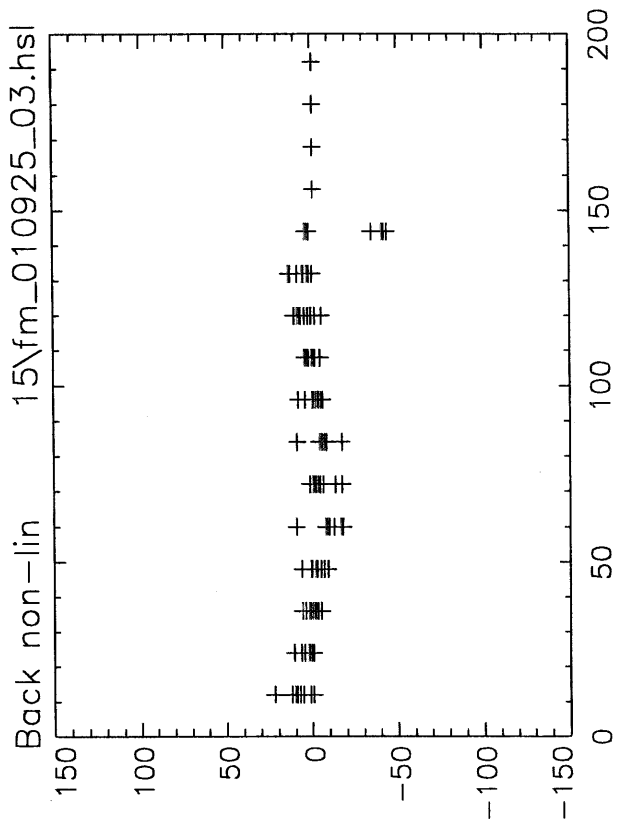
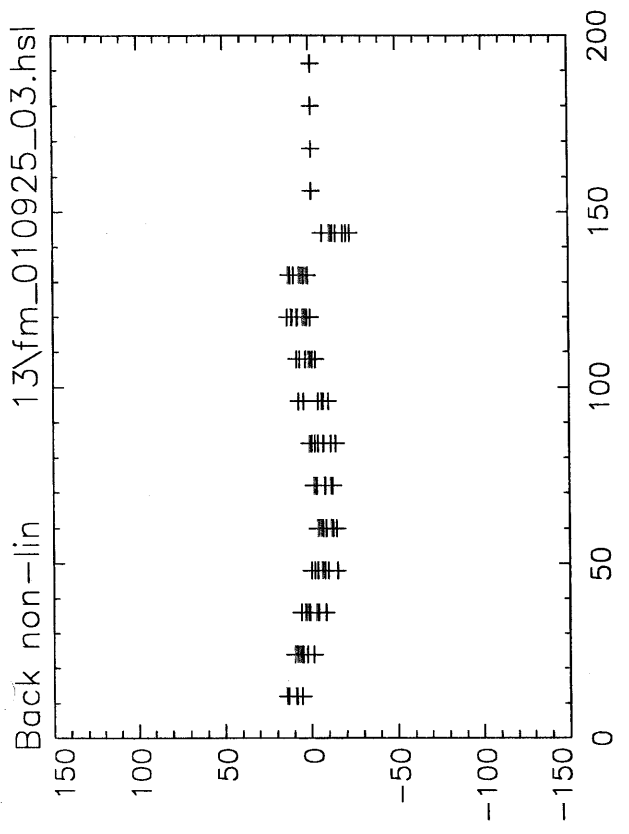
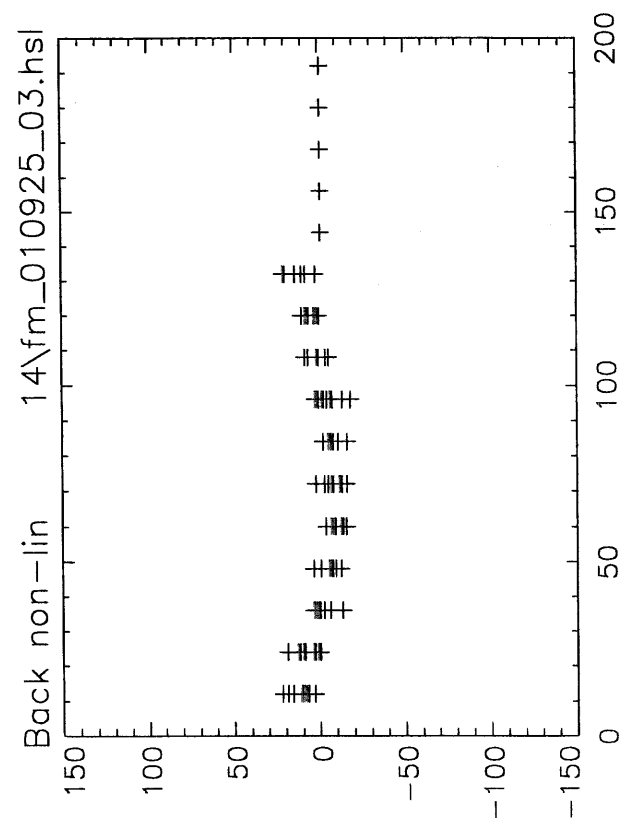
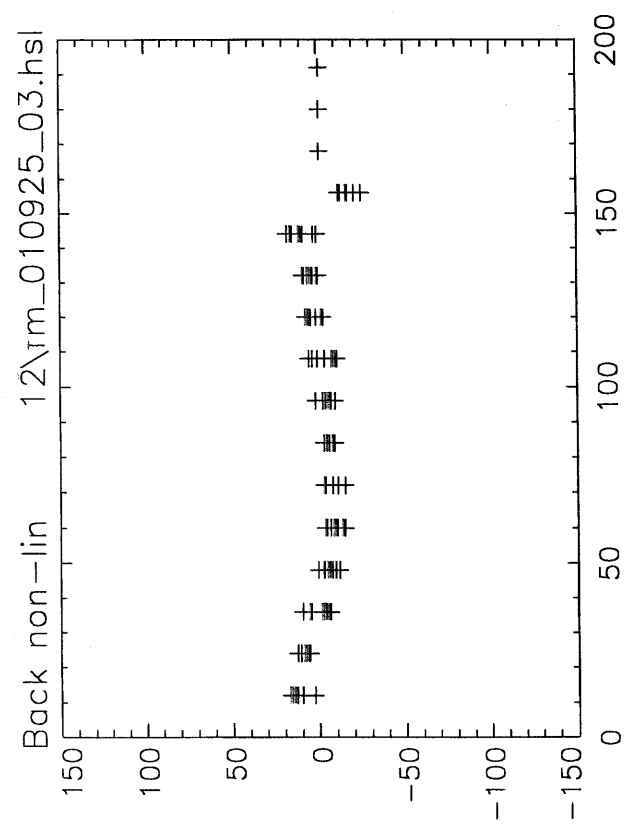
deviation
from linear fit

calibration signal

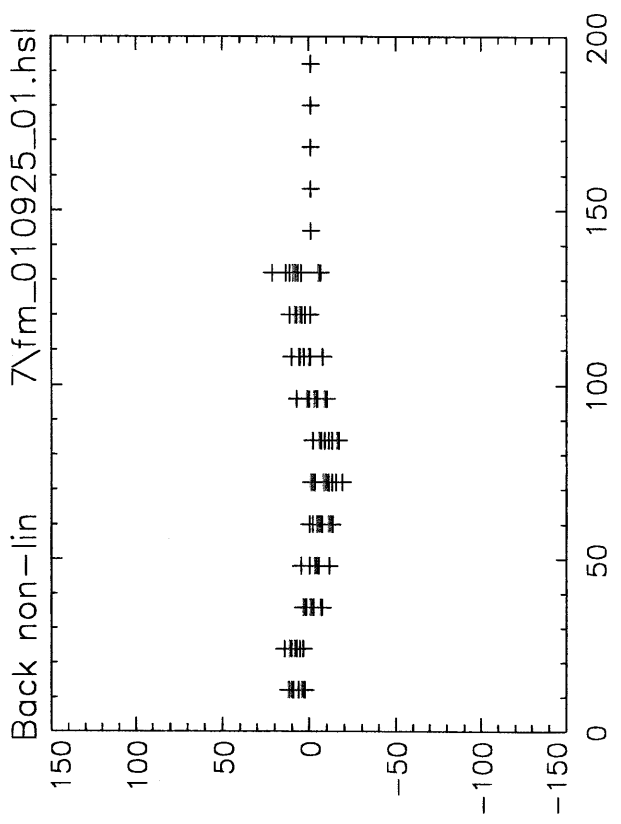
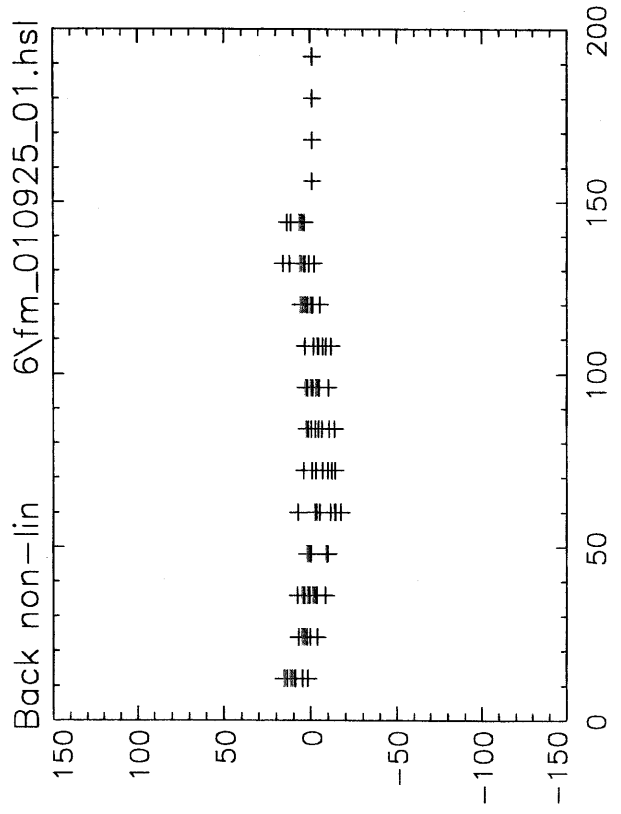
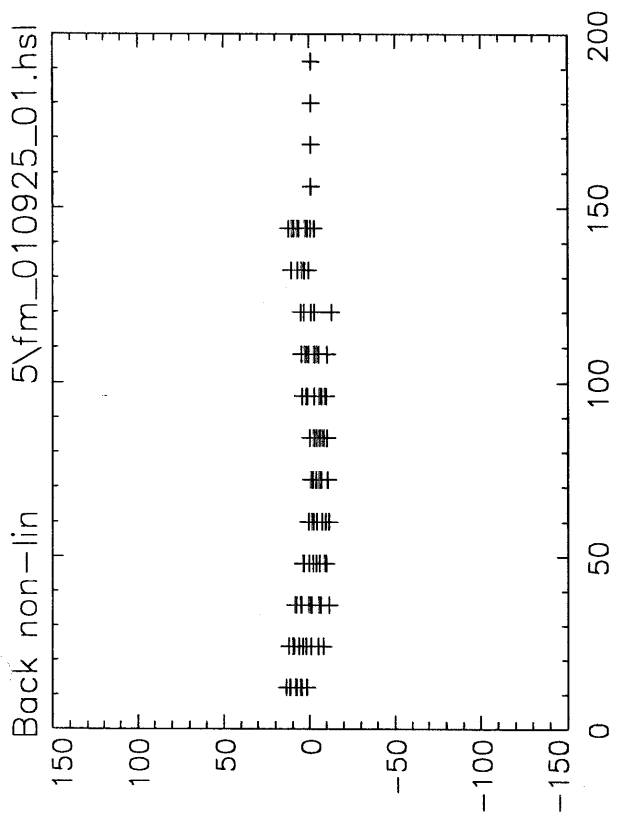
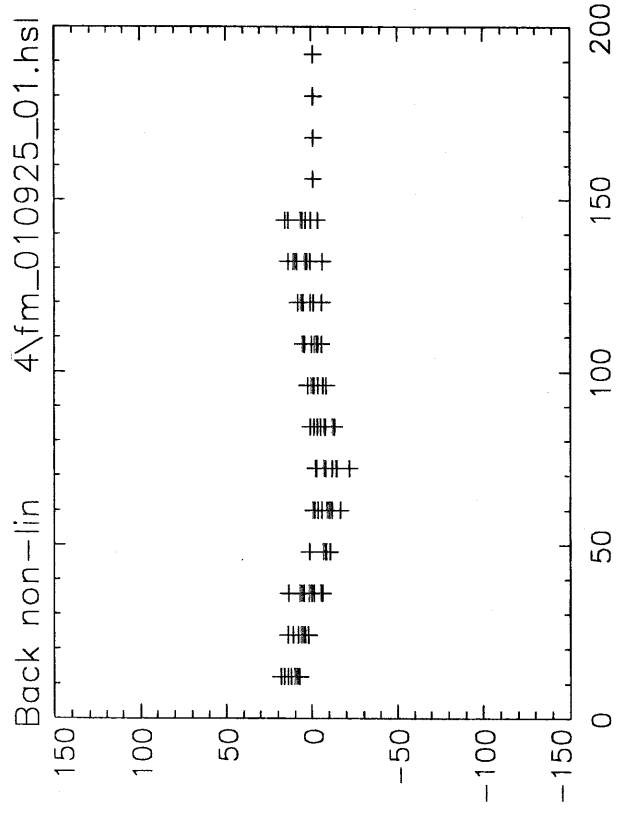
16 MHz



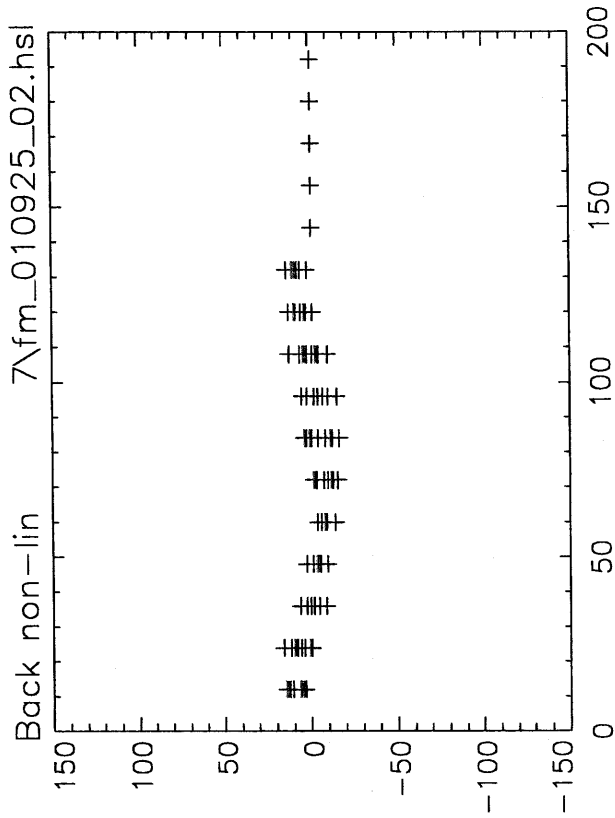
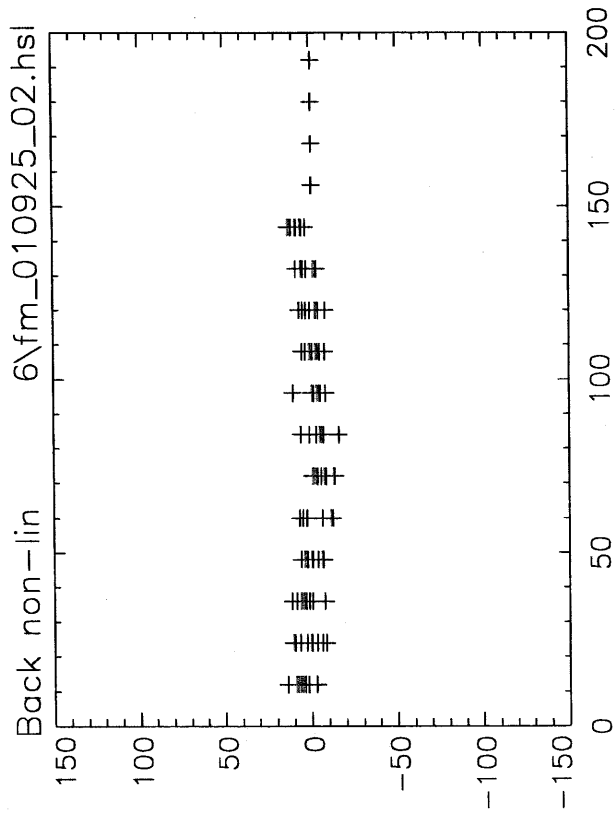
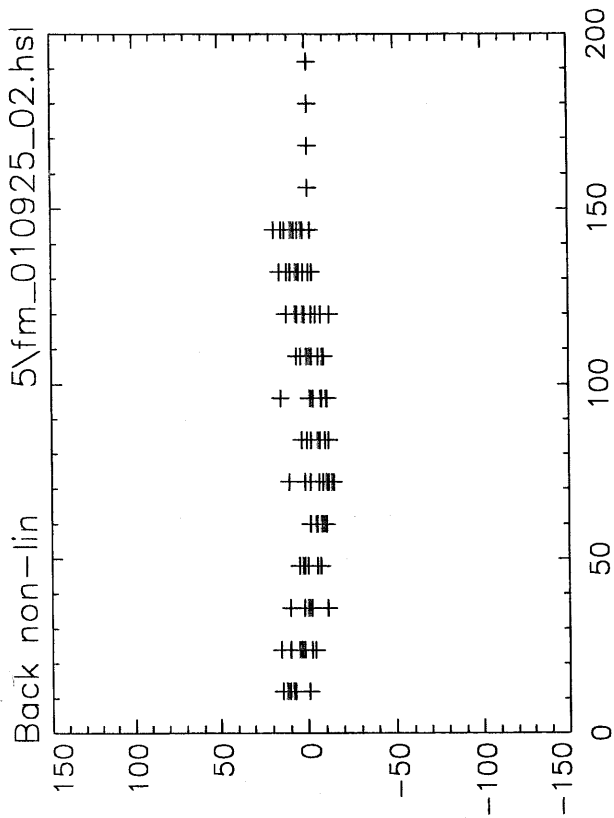
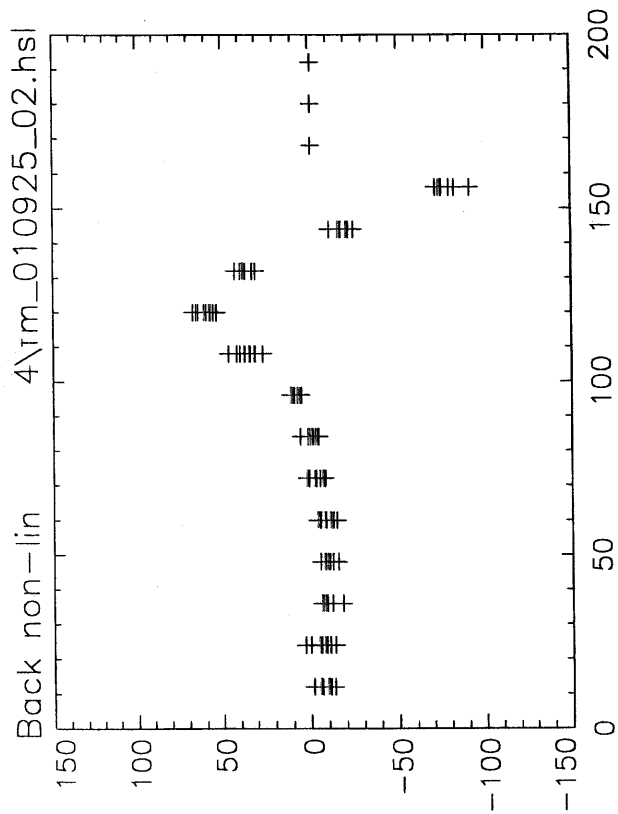
8 MHz



16 MHz



8 MHz



16 MHz

