

US Module Production Status

- *Electrical Results and Issues*
- *Shipments*

Alessandra Ciocio
LBNL, Berkeley, USA



Module Classification

	ANY Barrel	B5B6
• GOOD	255	117
• PASS	36	24
• Pass2	15	9
• SPARE	9	31
• FAIL		
• Rework		

Reason for B5B6

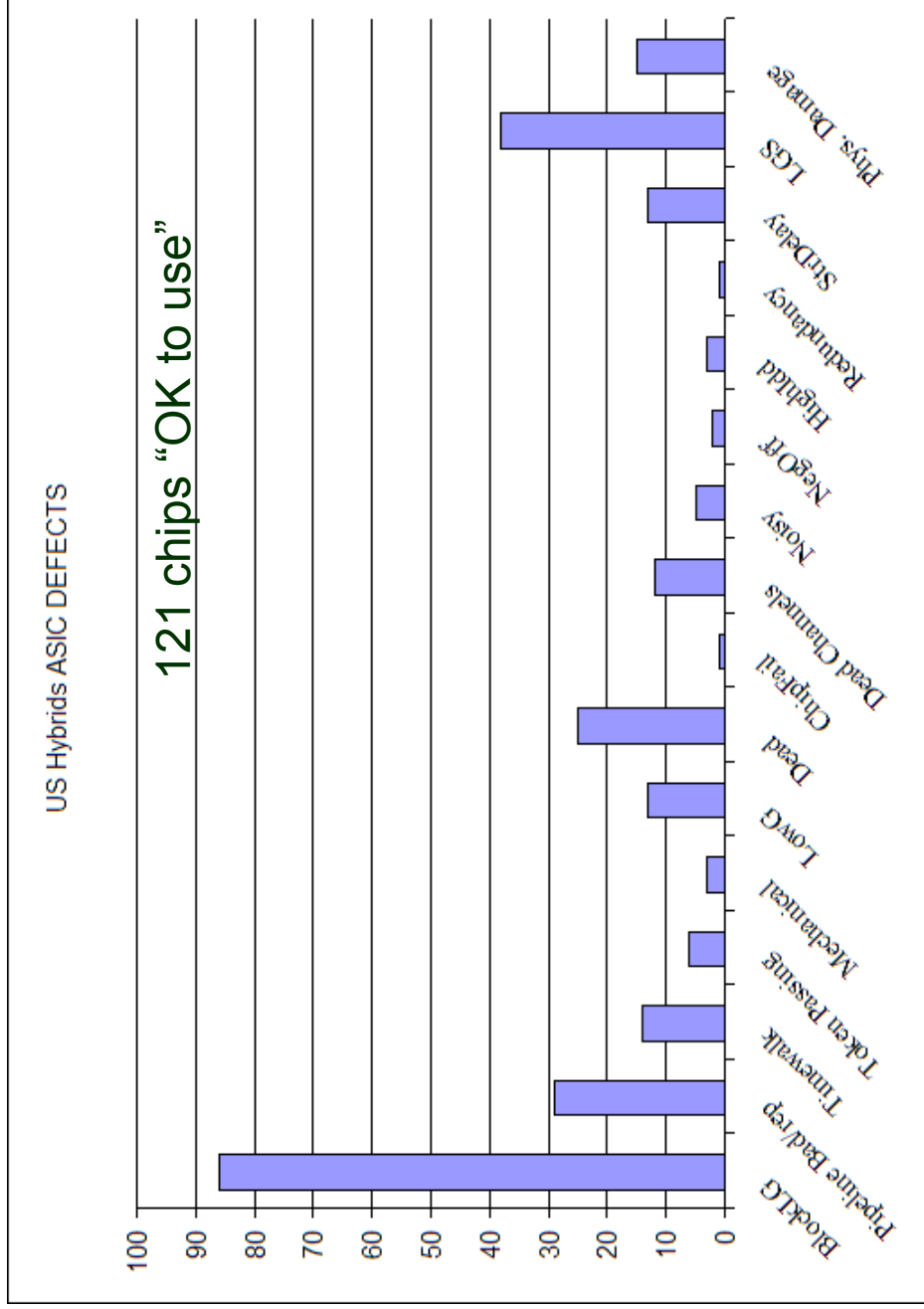
- IV (~100), Tdiff>=2 (~10), Preseries Sensors(6)

Wiggles (GOOD+PASS)

Wiggles neg thr only	Wiggles both neg/pos thr
12.47 %	20.09 %
52	86

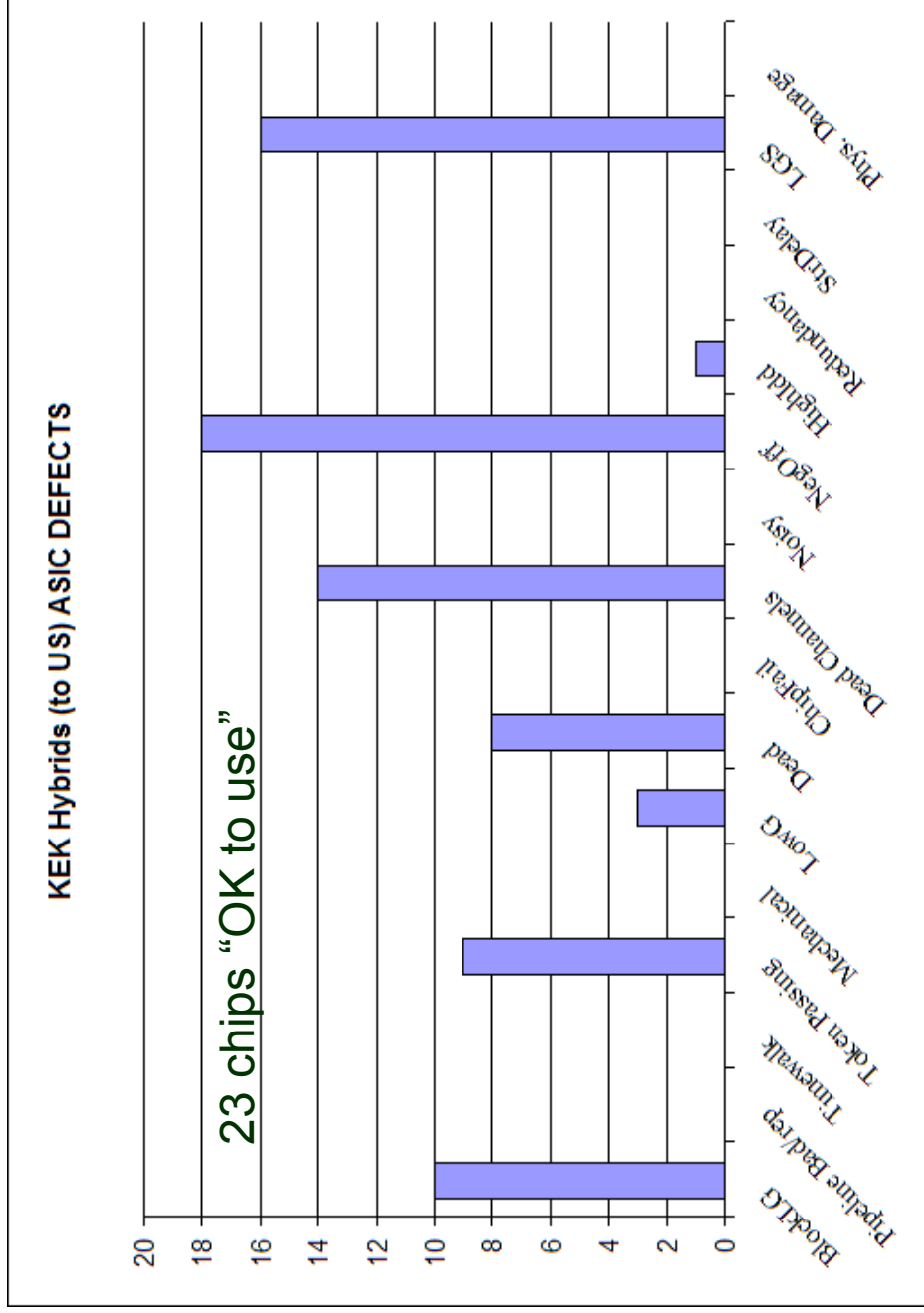


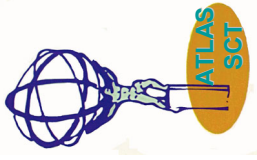
Defective ASICs – US Hybrids





Defective ASICs - KEK hybrids





IV Measurement

- IV measurement
 - 370 Good ANY
 - 78 MD>350V B5B6
 - 36 Bad current behav B5B6
 - 9 noisy MDM Spare (*probably going to B5B6*)
 - 3 I(500V)>4uA W/O MD<350V Spare
 - 4 Abn decay >1hr Spare
 - 10 Abnormal LC FAIL

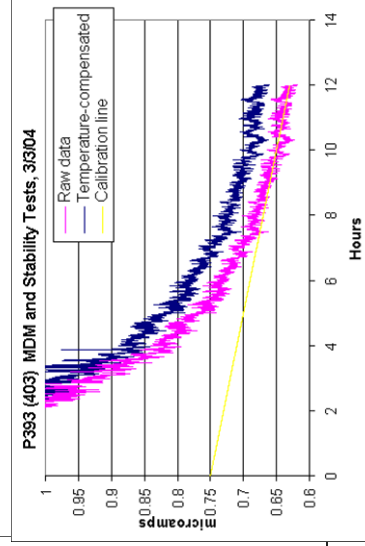
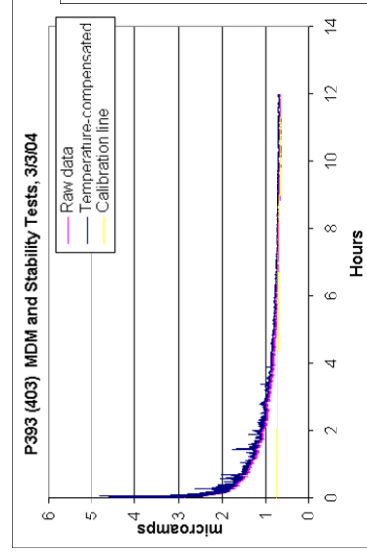
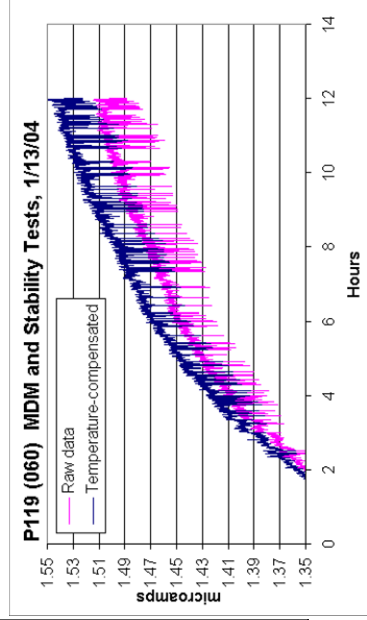
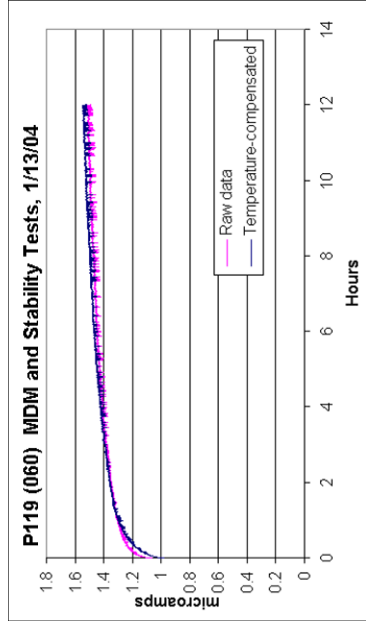


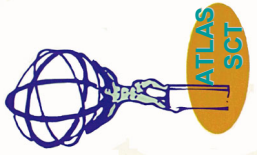
IV Measurement - Noisy MDM

- Presently 9 modules classified as SPARE
 - Input noise correlation study and NOcc correlation study in progress
 - Preliminary observation shows no correlation between noise seen in MDM measurements and anything observed during electrical tests



Noisy MDM plots





Response Issues

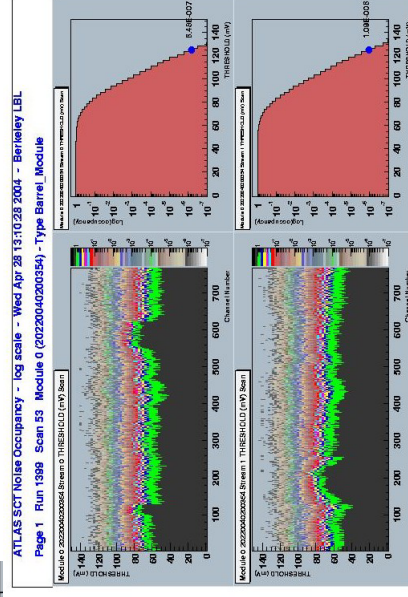
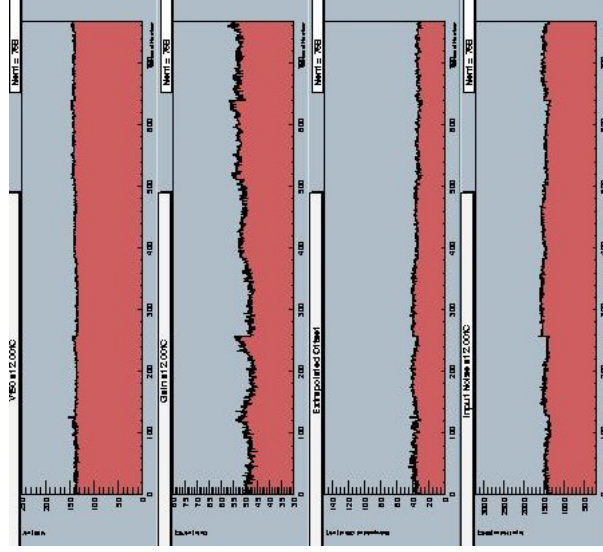
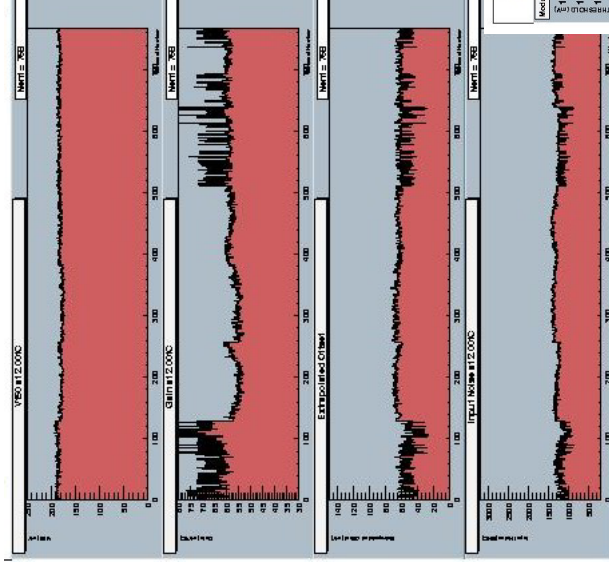
- FullBypass/Token passing Problem
 - TOKEN or RTOKEN minimum Vdd 3.60 – 3.80 V
 - Response OK
 - Proposal to use Module
 - for B5B6 if min Vdd range 3.60-3.70 V
 - as Spare/B5B6 if min Vdd = 3.80 V
 - Inefficient Channels
 - FAIL due more than 1 bad strips (INEFF/ResponseCurve)
 - Response Curve OK (example module 497)
 - Spiky Gain
 - Curable with lower ISH
 - Masking High offset channels
 - Noisy channels
 - NOcc
 - Bumpy -> SPARE
 - Negative Offset
 - 2 modules missed -> SPARE B6
 - No response timeout
 - FAIL (2 modules)
-



Response issues – Spiky gain

- Spiky Gain
 - After trim spikes in the gain (and SD, TW)

Cured with ISH=20 or 25

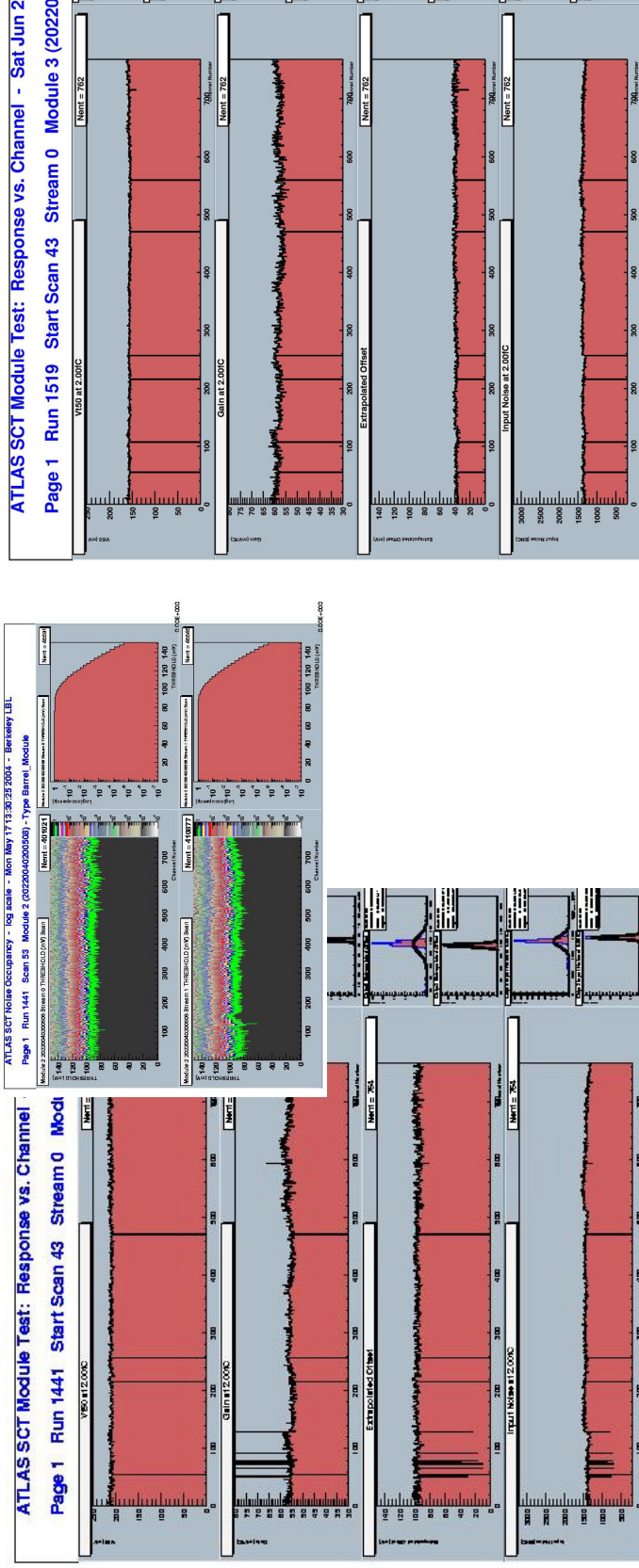


ATLAS SCT Noise Occupancy - log scale - Wed Apr 28 13:10:28 2004 - Berkeley LBL
Page 1 Run 1389 Scan 53 Module 0 (2022004000354) - Type Barrel Module



Response issues – Spiky gain - 2

- This is probably due to behavior at high charge injection when the module is trimmed a high trim target.
- high trim is due to high offset channels
- masked out every channel (5) with offset > 80, it trimmed lower and the spikes go away

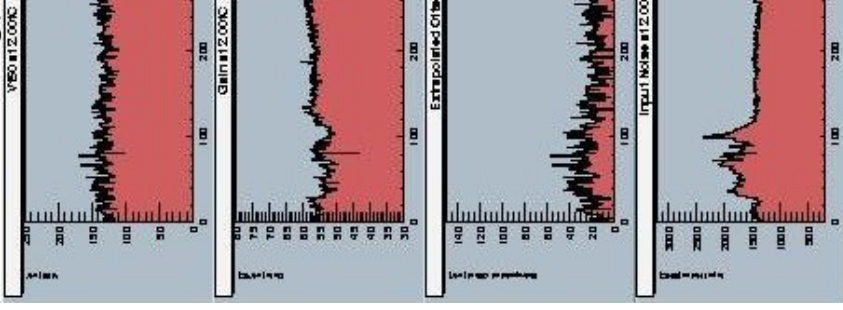




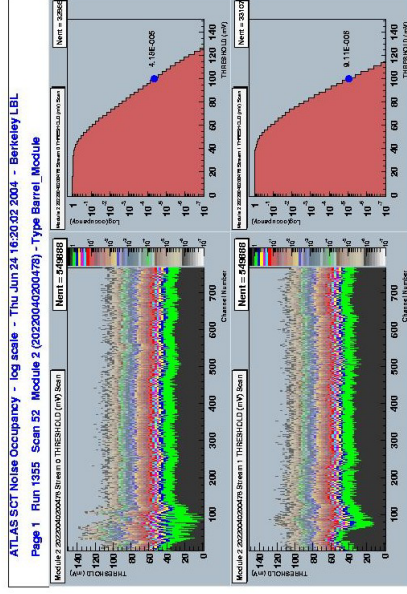
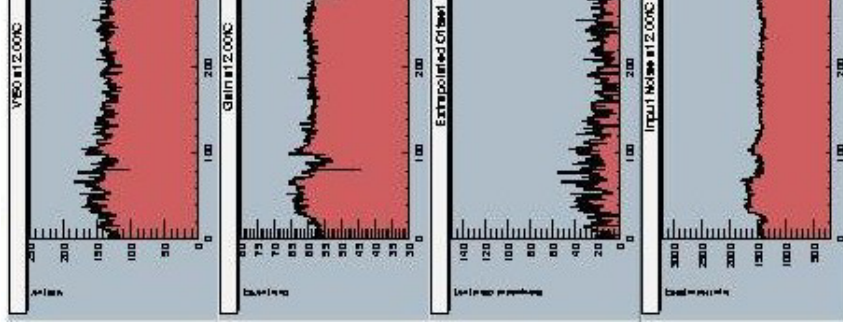
Response Issues – Noisy Channels (bumps)

- Noise Bump
 - IV very good
 - SDF=0.40 doesn't cure bump
 - Edge Detect ON makes response better

Edge Detect OFF
(default in testing)



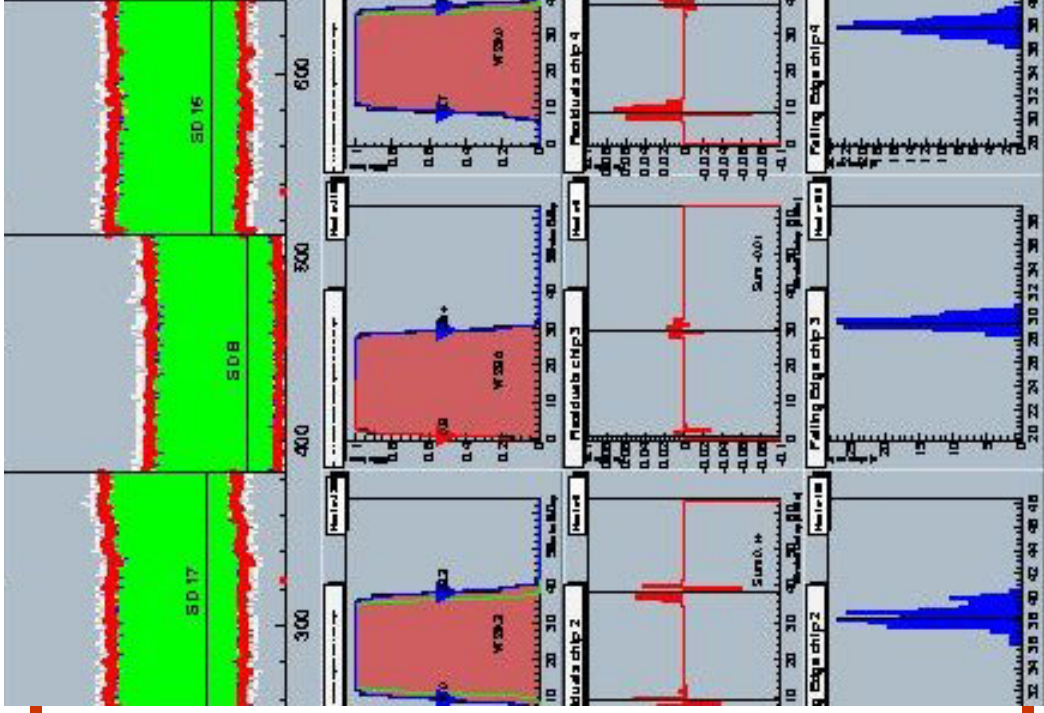
Edge Detect ON

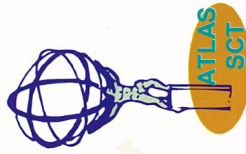




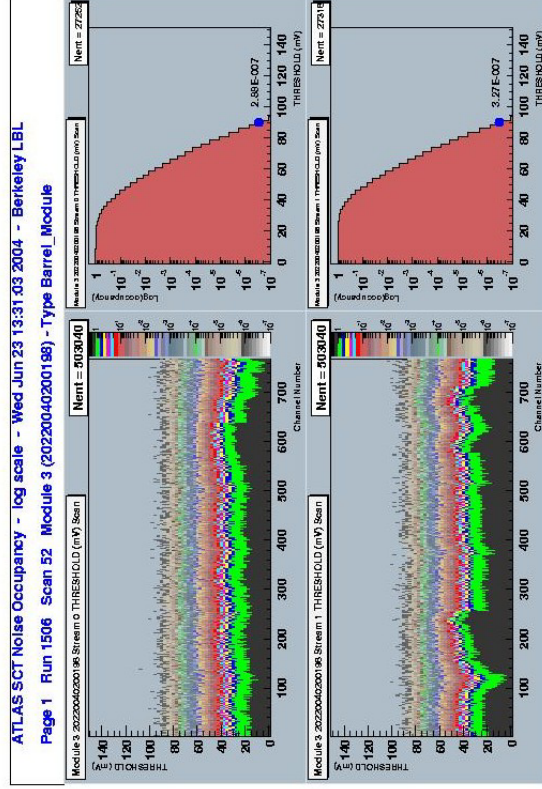
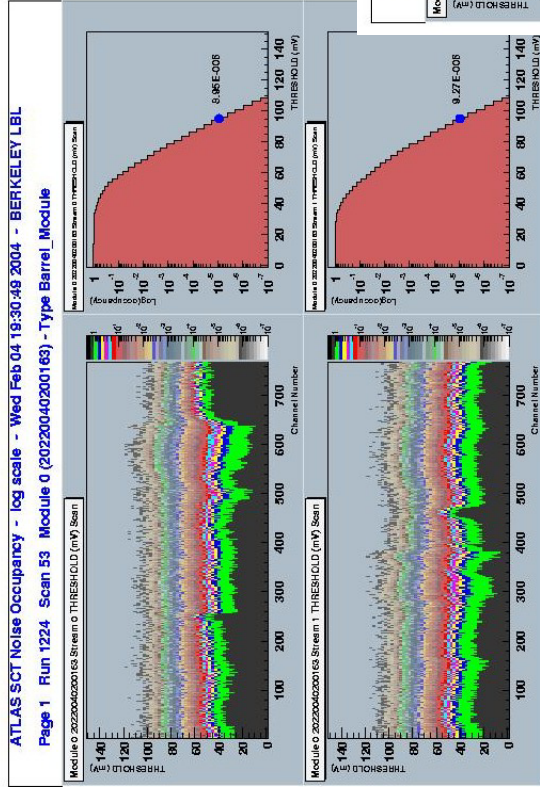
Response Issues - SD

- Strobe delay
 - SD = 8 for S11
 - Response, NOcc, TW are OK





NOCC



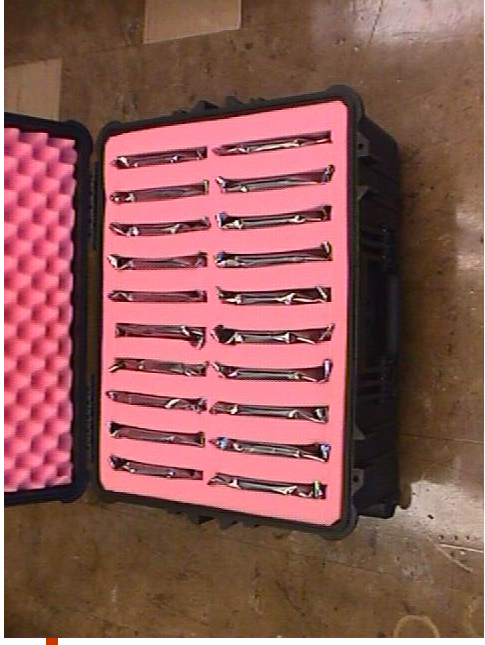


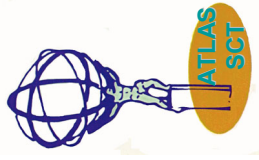
Shipments

- Shipments started on April 1 (20 modules)
 - » 20 modules: 19 Good and 1 Pass for ANY Barrel
 - Followed by:
 - April 27 40 modules 37 Good/ANY, 2 Pass2/ANY, 1 Good/B5B6
 - May 12 40 modules 37 Good/ANY, 2 Pass/ANY, 1 Spare/ANY
 - May 26 40 modules 38 Good/ANY, 2 Pass/ANY
 - June 8 40 modules 34 Good/ANY, 6 Pass/ANY
 - June 17 40 modules 20 Good/ANY, 4 Pass/ANY, 14 Good/B5B6, 2 Pass/B5B6
 - June 23 40 modules 21 Good/ANY, 1 Pass/ANY, 15 Good/B5B6, 3 Pass/B5B6
- 187 Good/ANY 15 Pass/ANY 30 Good/B5B6 5 Pass/B5B6
- » 260 modules shipped
- Reception tests OK
 - No physical damage
 - Shocklogger reading OK (typical: Peaks at $x=11g$, $y=1g$, $z=12g$)
-



Packaging





No problem!

Damage that occurred during shipment of empty boxes back to LBL





Shipments - Plan

- Regular shipments of 40 modules/week
- Last shipment week of August 23
 - Capacity at reception?
 - Might finish earlier