MODIS Protoflight Model (PFM) Instrument Status

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Instrument is Fully Functional

- All mechanisms and heaters functioning properly
- All doors operated successfully every time.
- All 0n-board Calibrators functioning properly (SD/SDSM, SRCA, BB)
- Telemetry, Command and Data Handling all nominal
- Thermal performance consistent with models
- Excellent Radiative Cooler performance (6 K margin)
- All configurational changes successfully completed
  - B-side on start-up to A-side operational (2 times)
  - Science to safe mode due to spacecraft maneuvering
  - Earth sector rotations, Day/Night mode formatter changes
  - Gain changes (Bands 13H, 14H, 16)

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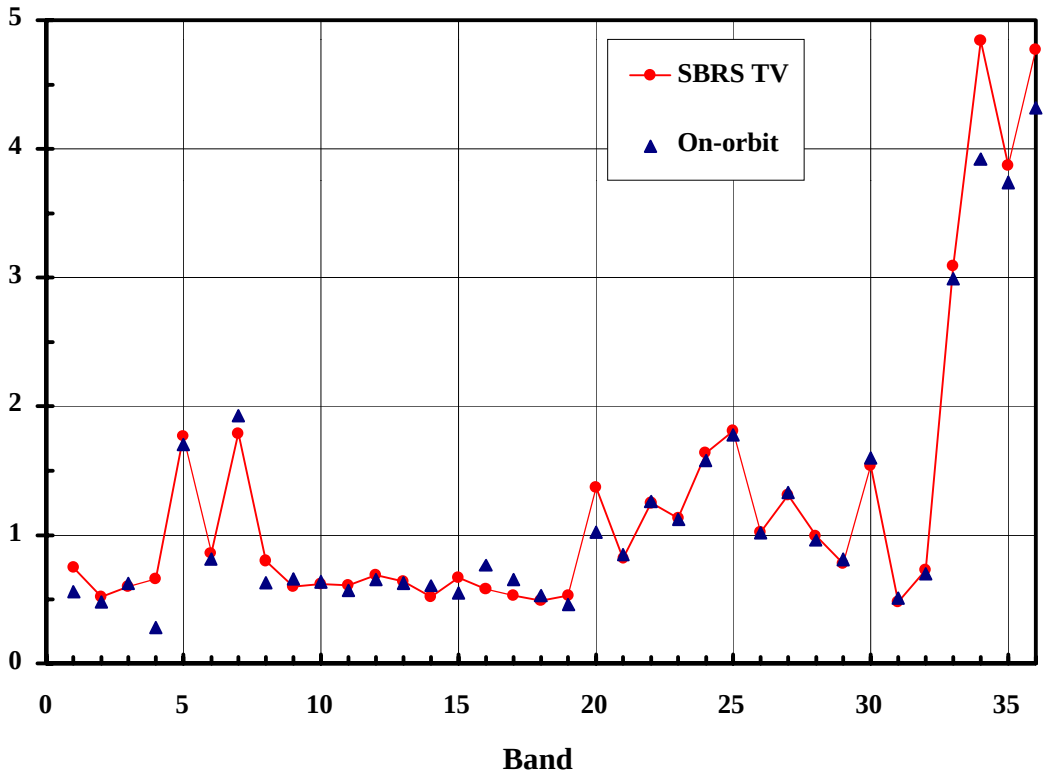
Baseline Noise Performance Consistent with Pre-Launch

- All bands/channels functional with at-launch biases
- Baseline system noise (space view sector) consistent with pre-launch spacecraft TV results



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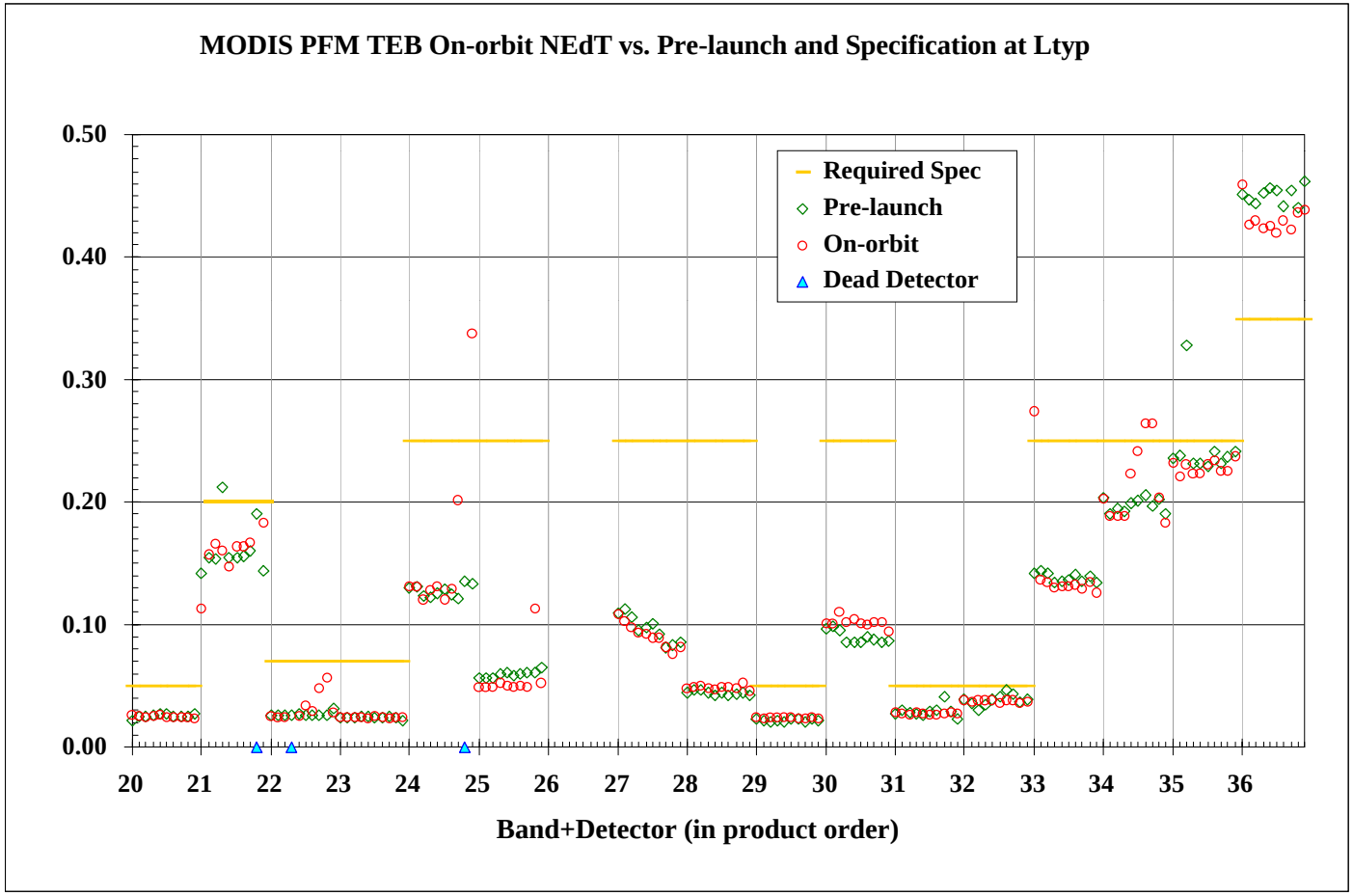
Thermal Band NEdT's Consistent with Pre-launch

- Note: Different Biases for the two data sets



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Spatial Performance Stable Pre- to Post- Launch

- On-orbit pointing errors < 100m (2-sigma)
- MCST analysis of SRCA data for band-band registration indicate that:
  - Instrument continues to meet 0.2 IFOV spec.
  - Max. change in track direction is 50 m
  - Scan direction unchanged to within 10 m
- MCST analysis of moon in space view data indicate bands co-registered to 50m

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Crosstalk

- Reviewed extensively in MCST briefings
- Electronic crosstalk on S/MWIR & PV LWIR FPA's due to FPA readout effects
- MWIR - SWIR optical leak also present (5.3 µm leak)
- SAM resistor change effective for LWIR but not S/MWIR
- Re-biasing of S/MWIR FPA appears to have reduced crosstalk at the expense of 6 detectors
- SBRS working with MCST to continue assessment of problem
- Algorithmic correction required for optical leak
- Moon in SV on 21 June 2000
- SRCA has potential to aid investigation/correction

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ADC Performance

- Observe LSB effects in PC bands
- System timing and noise effects lead to ADC non-linearities
  - Increased differential non-linearity (deviation from ideal bin width)
  - Patterning in ADC bin sizes
- Primarily a Band 31/32 concern due to low noise in those bands
- Also observed and characterized in FM1 testing
- B-side performance better on both FM1 & PFM in S/C testing

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Additional Calibration Issues

- Reflective band SNR's still under review
  - Analysis is more complicated than for emissive bands
- RVS - Reflective and Emissive Bands
- MWIR leak into SWIR bands
- Band 31 optical leak into bands 32-36
- Striping & Banding
- Polarization

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Team Formed to Address Outstanding Issues

- Working with MCST, Science Team members to understand & resolve calibration/performance concerns
- Contract in place to provide support to MCST
- Team Formed to address these issues
  - Dr. Roger Drake, Jim Young, Paul Lommen, Dr. Joe Walker
  - Other experts will be consulted as necessary
- Science Team inputs & assistance are welcomed

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FM1 Design/Characterization Resolves Known PFM Issues

- Electronic crosstalk eliminated
- MWIR to SWIR leak reduced
- Band 31 optical leak eliminated
- RVS successfully characterized

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