

GOES-8 TIRs 182

PROBLEM DESCRIPTION:

- Imager/Sounder East-West Space Counts are Different
- Systematic Radiometric Error is Introduced versus Scan Mirror Pointing

FINDINGS:

- Only Channels 4 & 5 affected in the Imager (8 - 14.7 um spectral region will be affected)
- Imager/Sounder East-West Error Has Opposite Trend vs Scan Mirror Direction
- ITT Analysis (D.Wickholm) Correctly Predicts Error Magnitude vs Channel and Scan Direction
- Analysis Supports Swales/MIT-LL p-Polarization Mechanism as Root Cause of Error (Scan Mirror Coating)

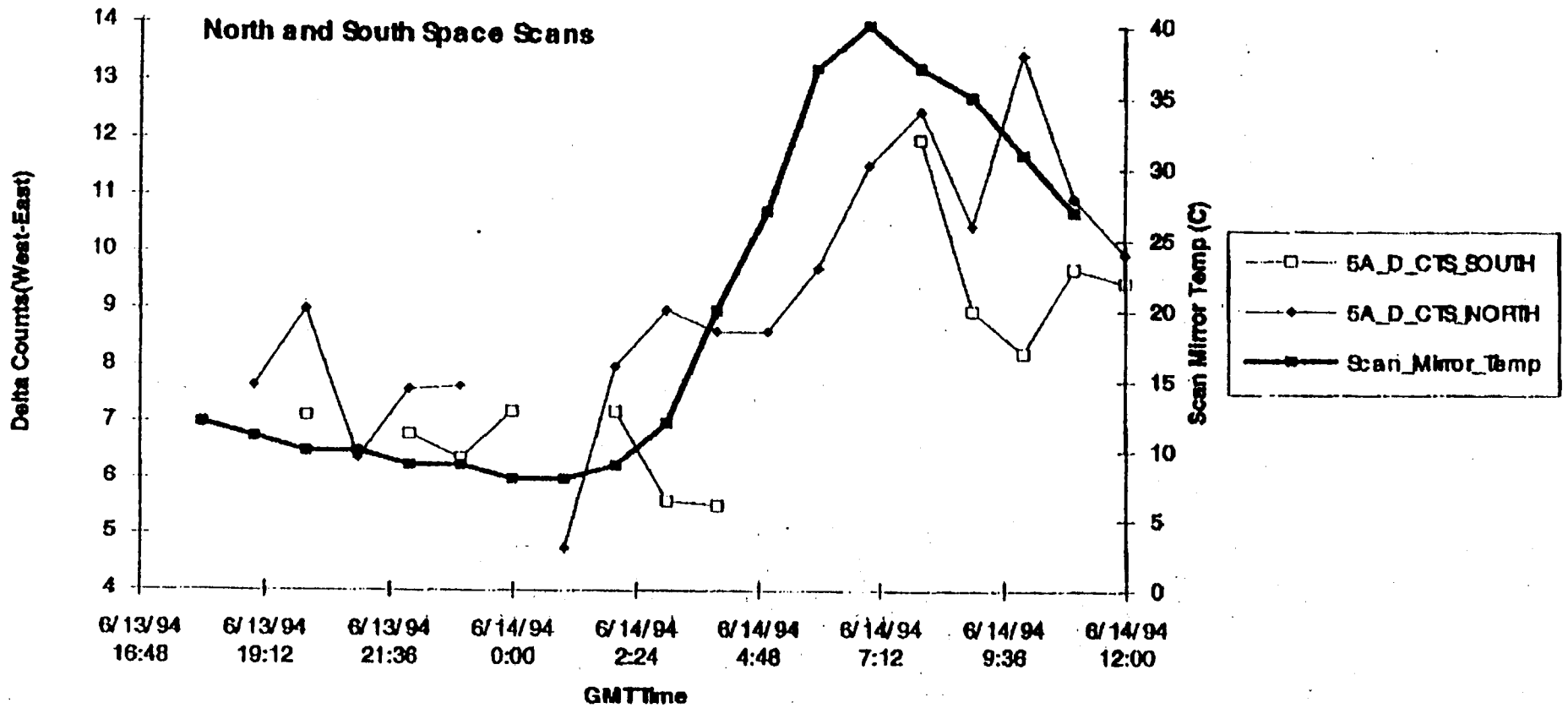


Aerospace / Communications Division



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Imager Ch_5A Space Delta Space Counts (West-East)

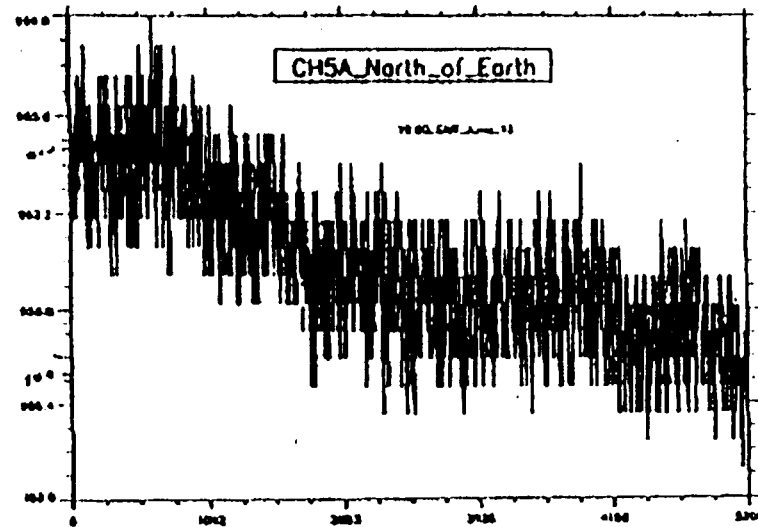
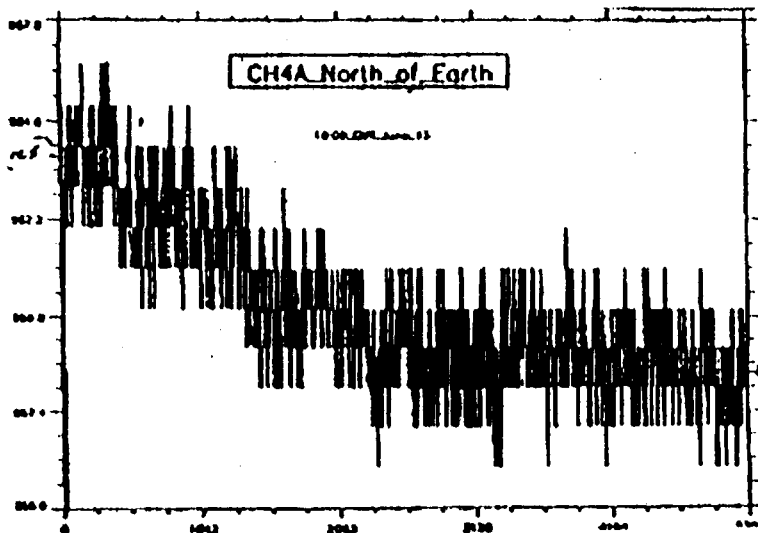
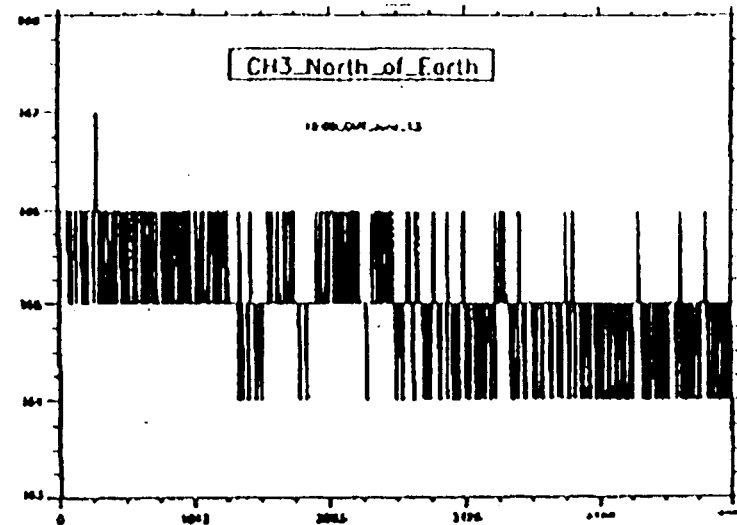
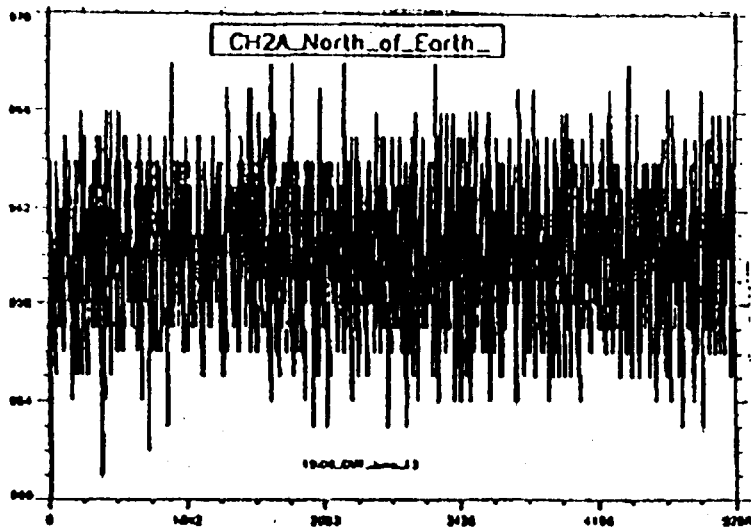


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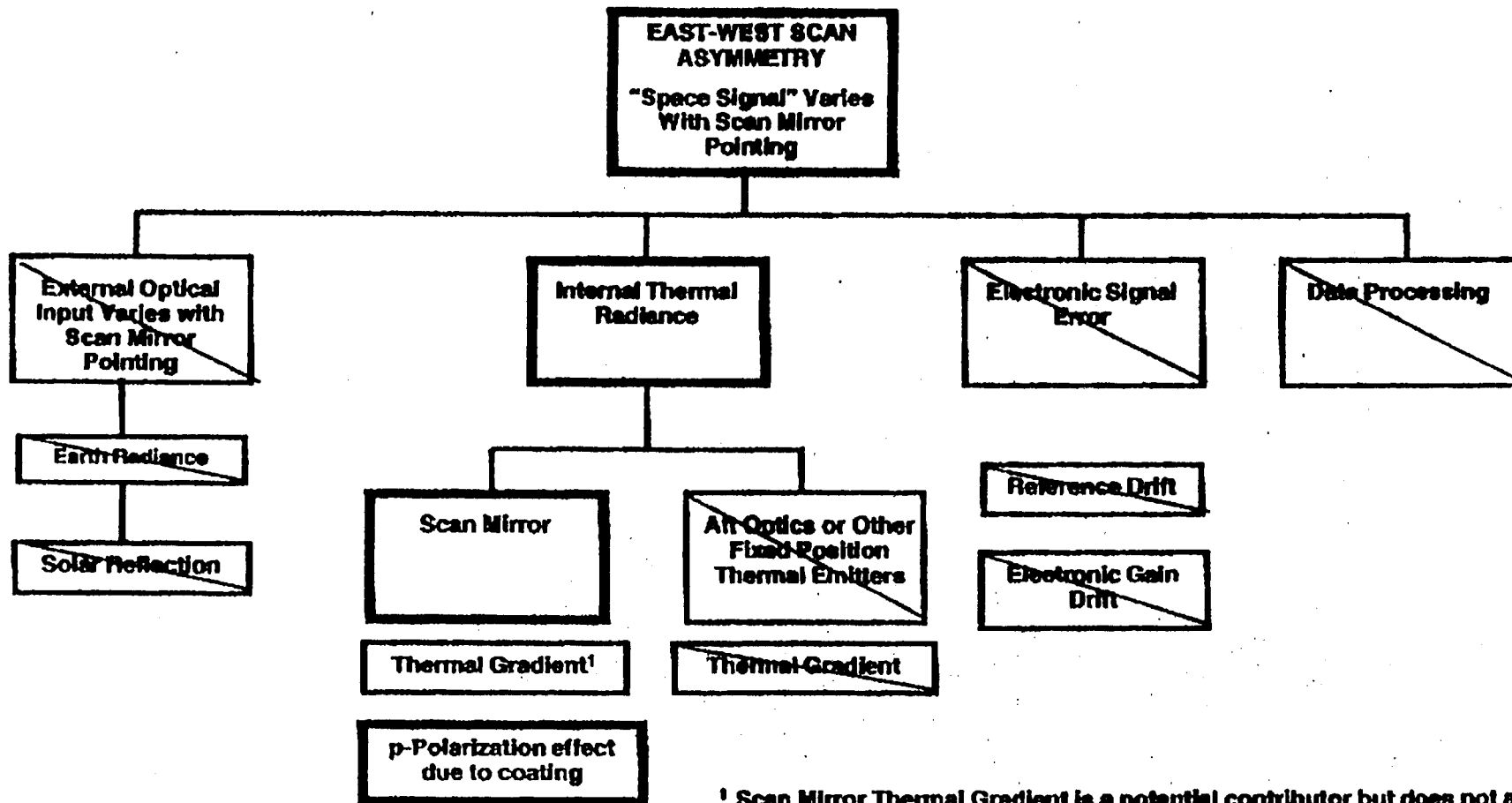
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TO GOES-SSL

FROM ITT NASA FT WAYNE



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¹ Scan Mirror Thermal Gradient is a potential contributor but does not appear to be dominant. Calculations and thermal modelling still in progress



FIGURE 1: Calculated temperature of a 300 K scene, uncorrected for emissivity variations, as a function of scan mirror emissivity. Space looks for calibration and data taking at 40 degrees ($E = .042$)

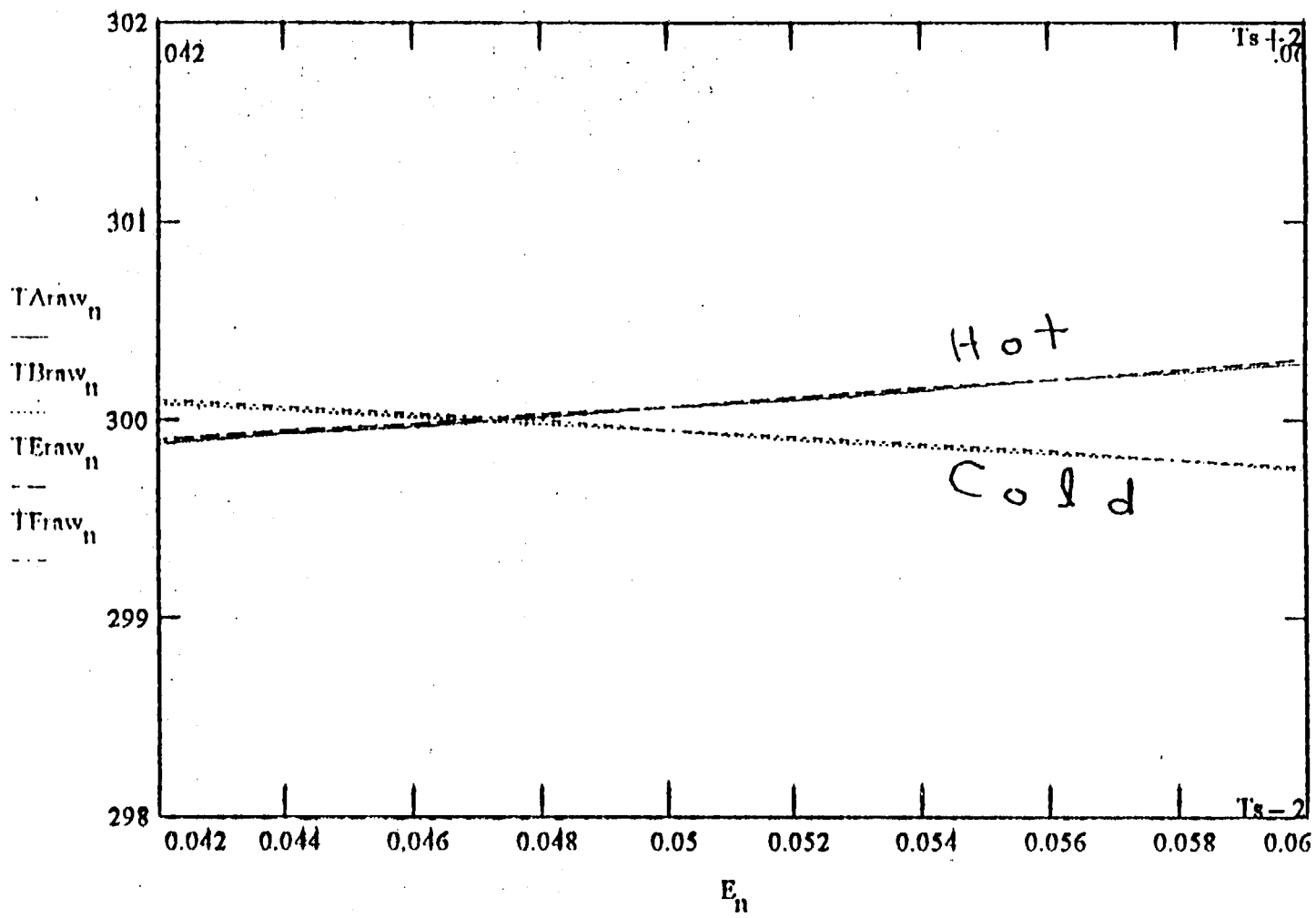
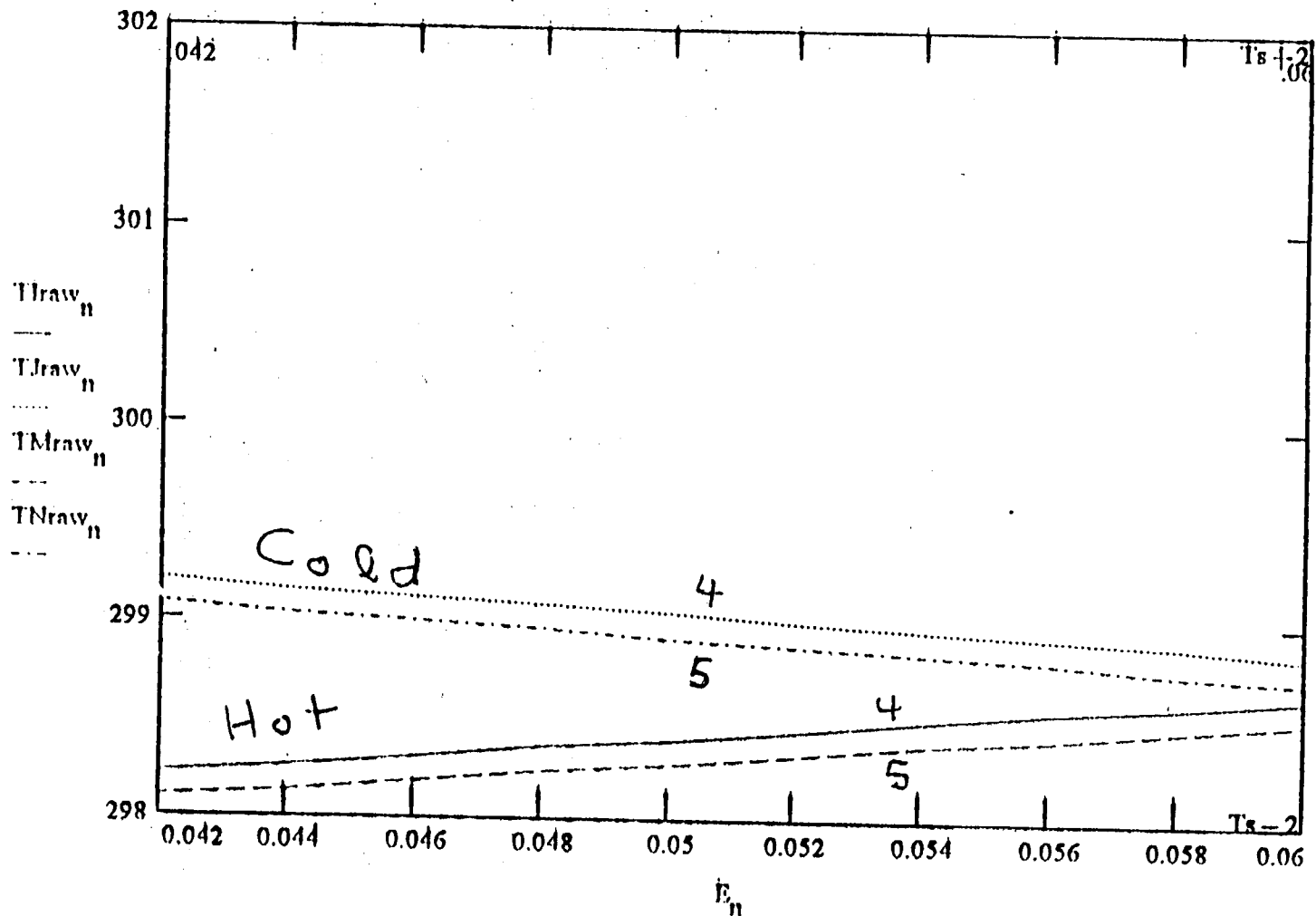


FIGURE 3: Calculated temperature of a 300 K scene, uncorrected for emissivity variations, as a function of scan mirror emissivity. Space looks for calibration at 40 degrees and space looks for data taking at 50 degrees.



GOES S/N#5 SAMPLE - SiO_x ON AL, S-POL

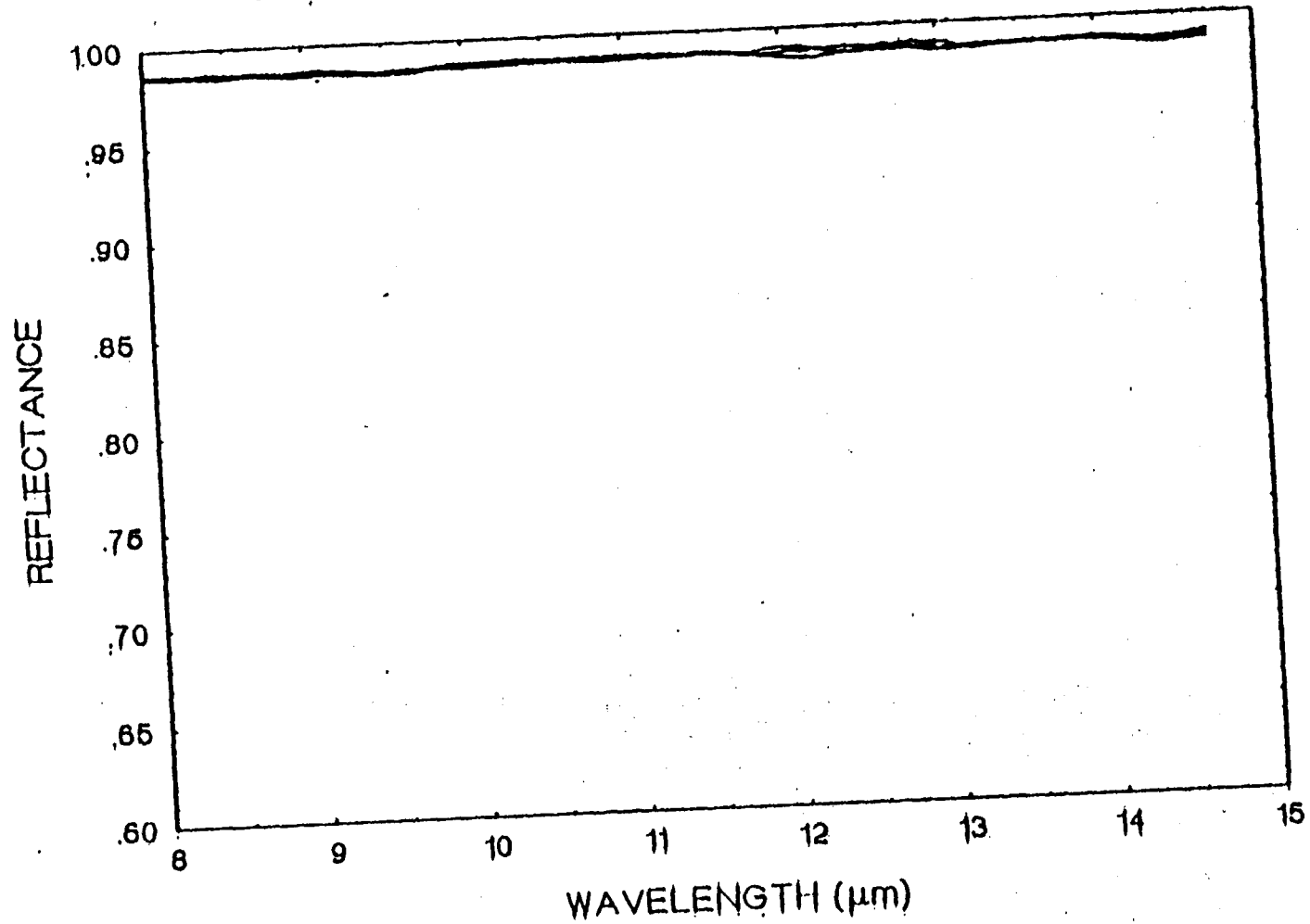


Figure 3: S-polarization reflectance of GOES S/N 5 witness sample.



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GOES S/N#5 SAMPLE - SiO_x ON AL, P-POL

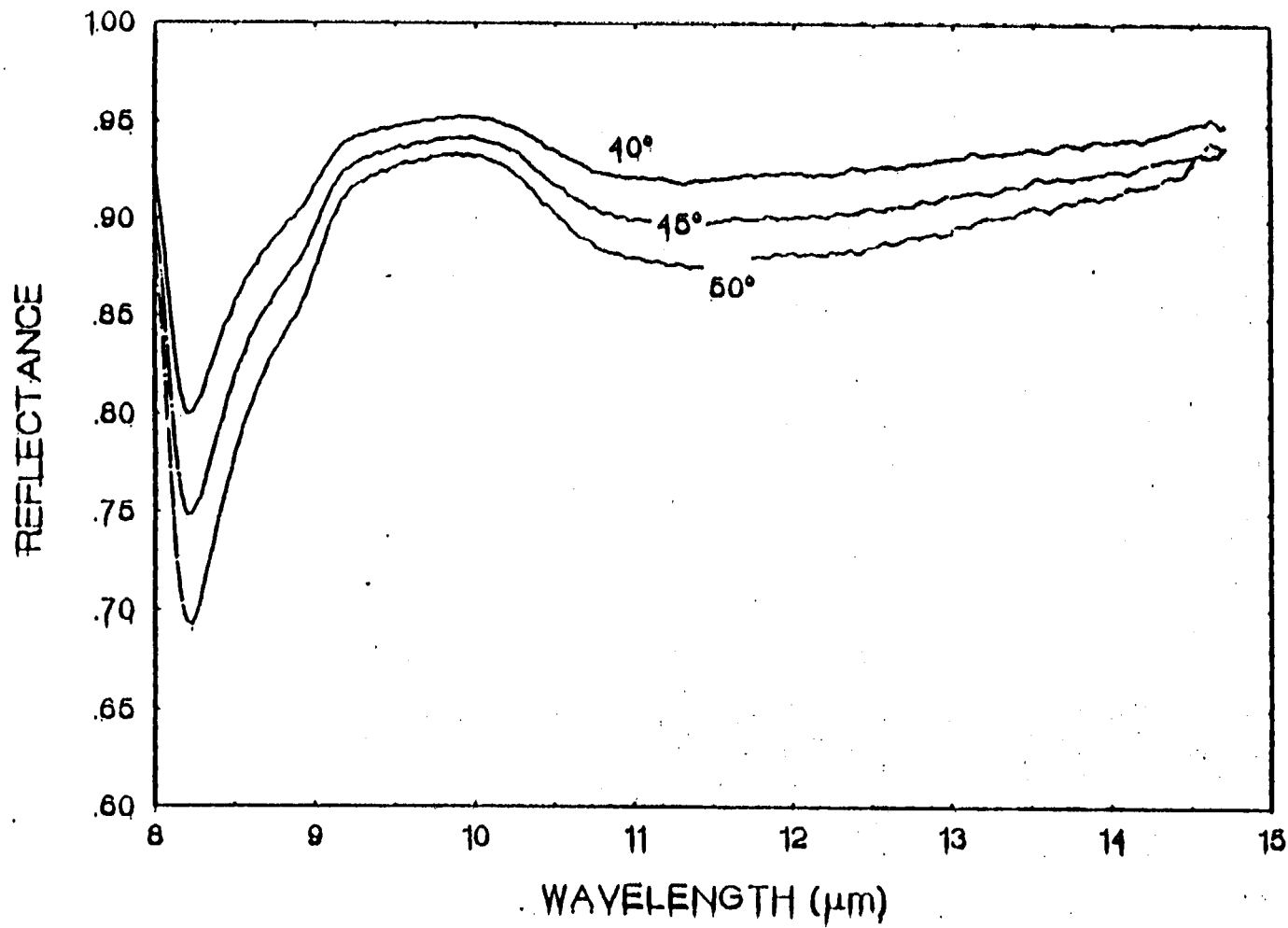


Figure 2: P-polarization reflectance of GOES S/N 5 witness sample.



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