

**Title:** Anomaly and Interference Detection for Space Radios and Iris

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**Abstract:** There have been instances of JPL radios experiencing interference from spacecraft sources, including the CRISM instrument on MRO generating tones that interfere with the Electra relay radio. With the application of NASA Standard 1006, the spacecraft is now asked to be more pro-active in identifying such instances and to relay this knowledge to ground operators. In this presentation, we will explore the ways in which we are enabling the Iris radio to perform such detection. First, we explain our approach to open-loop recording to Iris for enabling signal quality analysis. Second, we explore our current results for a relatively simple algorithm to detect anomalies on the uplink channel of the radio in terms of probability of false alarm and probability of detection. Initial results indicate that detection of tone interference (the prevalent interference form from benign sources such as switching power supplies) can be detected at relatively low interference powers. Chirp signals (i.e., moving tones) can also be detected with slightly reduced performance. The anomaly detection approach only utilizes "nominal" data for training and does not require forehand knowledge of the nature of the anomaly.