**Rationale for VIIRS measurements of the NIST Flat Plate Integrator (FPI) at Raytheon before delivery to Ball:**

The design of VIIRS limits the ability to assess the radiometric health of the reflective bands as a function of time during instrument build, shipment of the sensor from the instrument vendor, Raytheon, to the spacecraft vendor, Ball Aerospace, and observatory testing. While the VIIRS emissive bands have access to an onboard blackbody source that can be operated in both locations, the reflective bands require either solar illumination of the diffuser in both locations or a common lamp-based source. The NIST Flat-Plate Integrator (FPI) offers the opportunity to illuminate the reflective bands at the instrument vendor and spacecraft vendor with a common source. Moreover, the FPI employs detector-based standards (i.e. calibrated filtered detectors and scanning spectroradiometer) to ensure FPI spectral radiance performance and stability between locations over all measurements.

At Raytheon, it is recommended that VIIRS first view the FPI over a series of output levels at or near the same time it views the SIS 100. This could be performed with the FPI in ambient through the thermal vacuum chamber window. As part of a bench acceptance test (BAT), VIIRS would then view the FPI over a series of output levels in ambient at Raytheon before shipment to Ball and again in ambient after it arrives at Ball. As successfully demonstrated in the observatory level testing of S-NPP VIIRS, the FPI would then be used in thermal vacuum at the spacecraft vendor’s facility constituting an important last verification of RSB trending performance before shipment to the launch facility.