

6. SYSTEM CALIBRATION

Calibration of system hardware is both simple and fast due to the use of: 1) field-replaceable calibrated sub-modules, and 2) software-based calibration due date and report status tracking/reporting.

A “smart module” philosophy has been implemented whereby all calibrated replaceable modules embed calibration information internally via an electronic memory storage device. Calibration-specific information can be read via IRWindows™ and reported to the User upon command, or upon reaching defined calibration due dates. Module-specific calibration information enables out-of-calibration modules to be quickly swapped with spares to minimize system downtime. Modules start their calibration period when installed in the system.

Calibration Test Sequences can be run to access read-only calibration data, to provide instructions for replacement, and also to store the in-service date within the module. Modules that are out of calibration will be flagged to the User and noted in the health database (Figure 7), but remain operational. “Smart module” incorporation into critical test hardware provides for significant reduction in the cost of periodic calibration and ease of maintenance.

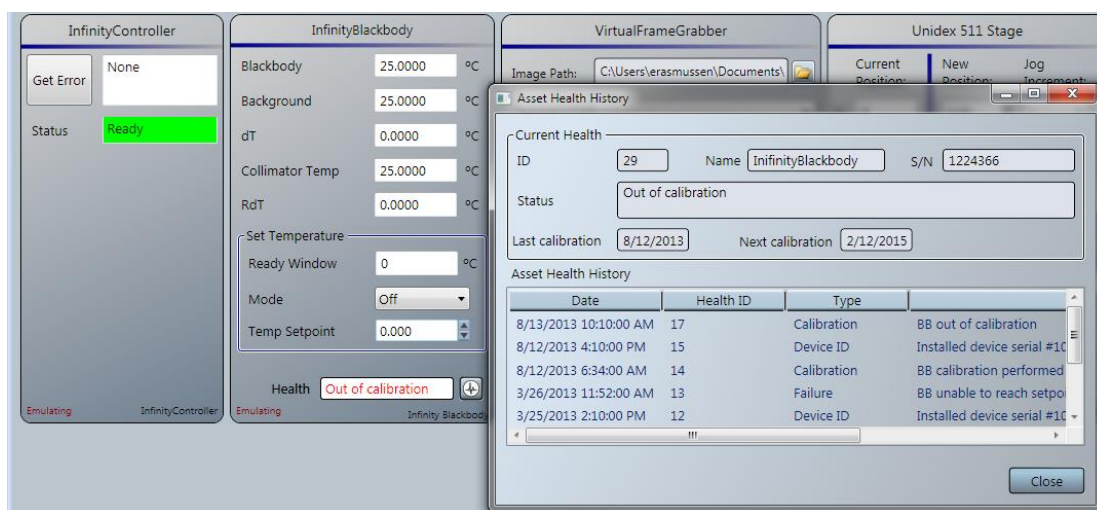


Figure 7 – Asset Calibration Record and Health History Panel

7. SUMMARY

SBIR has produced the highly-advanced and modular Future E-O Automated Test System as part of the US Army’s Next Generation Automatic Test System for fielded and future E-O systems. FEO provides the US Army with a wide range of automated EO-IR-Laser test capabilities using leading-technology SBIR products, fully integrated into a single test-ready system and controlled with proven IRWindows™ software.

As E-O systems become increasingly crucial to the warfighter’s effectiveness, the readiness state of these devices and systems must be rapidly and accurately determined and communicated to the User. FEO represents a leap forward in capability for integrated E-O test systems with advanced logistics support features.

ACKNOWLEDGMENTS

The authors wish to acknowledge US Army PD TMDE, Huntsville and US Army ARDEC ATSD, Picatinny for design performance input and EO-IR-Laser test and calibration support of this system.

REFERENCES

- [1] McKechnie, J., Irwin, A., Gauntner, T., “Rapid electro-optical (EO) TPS development in a military environment,” Proc. SPIE 8355, 83550C (2012).