

Calibration Protocol Overview

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Purpose

This document outlines routine calibration and maintenance schedules to ensure measurement accuracy and equipment reliability across all SRN monitoring sites.

Spectrum Analyzer Calibration (Quarterly)

Equipment: Keysight N9030B PXA Series

Frequency: Every 90 days

Procedure:

1. Power on analyzer and allow 30-minute warm-up period
2. Connect calibrated signal generator (HP 8657A or equivalent)
3. Run internal self-calibration routine (approx. 15 minutes)
4. Verify amplitude accuracy at reference frequencies: 1 kHz, 100 kHz, 1 MHz, 5 MHz
5. Document results in calibration log with pass/fail criteria (± 0.5 dB tolerance)

Receiver Array Alignment (Semi-Annually)

Frequency: April and October

Procedure:

1. Verify mounting stability of all dish elements
2. Check coaxial connections for corrosion or water ingress
3. Measure signal-to-noise ratio at each receiver output
4. Replace any preamplifiers showing degraded performance (< 20 dB gain)

Environmental Sensor Validation (Monthly)

- Cross-check temperature/humidity readings against calibrated reference meter
- Replace sensor batteries annually or when voltage $< 2.8V$

Data Logger System Check (Monthly)

- Verify system clock accuracy (sync to NTP server)
- Confirm adequate disk space (minimum 500 GB free)
- Test automated backup routine

Calibration Records: All calibration activities must be logged in site logbook and reported to central coordination within 7 days.