

# RF Transmission Line & Performance Analytics

## Real-time P<sub>FWD</sub>, P<sub>REF</sub>, and VSWR Monitoring

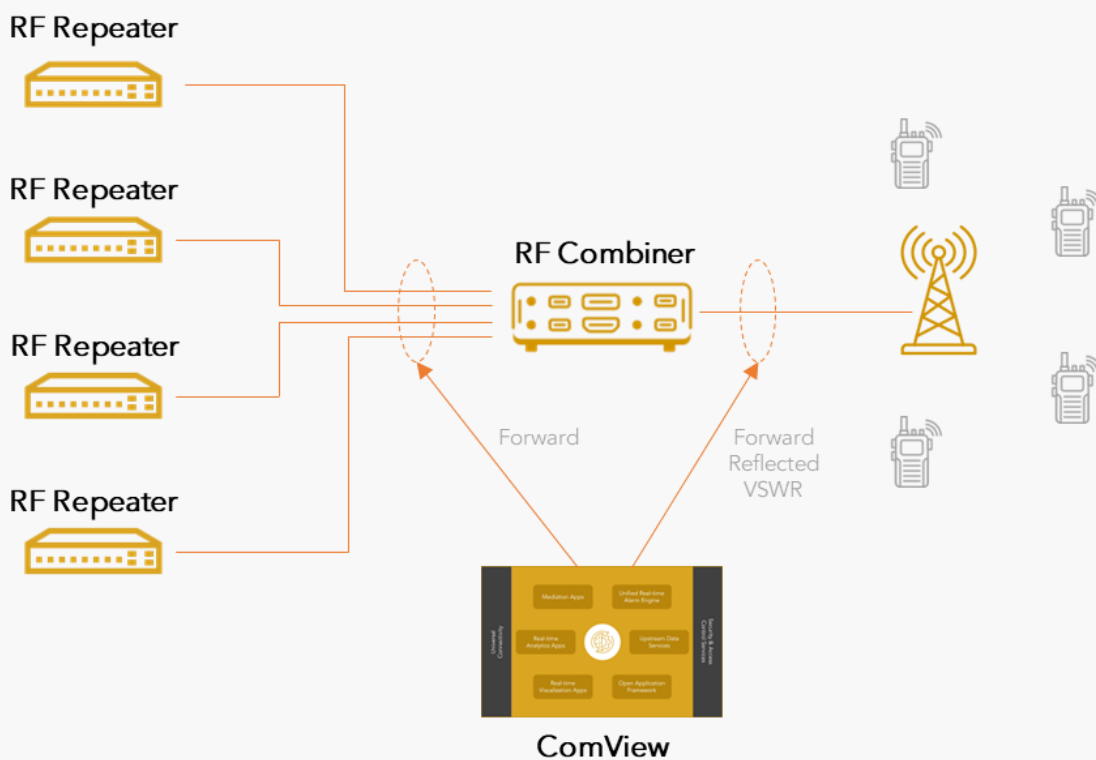
### The Challenge — Invisible Degradation in Critical RF Infrastructure

RF coverage is the foundation of mission-critical communications. At remote RF sites, multiple repeaters feed into a combiner and ultimately into the antenna system — a chain where any degradation can reduce coverage, distort audio, or cause complete loss of communication. Problems such as moisture ingress, connector corrosion, cable damage, or impedance mismatch often develop gradually and remain undetected.

Without real-time visibility into forward power (P<sub>FWD</sub>), reflected power (P<sub>REF</sub>), and VSWR, Operations teams are left reacting to user complaints or site outages rather than identifying early-stage degradation. This lack of insight increases downtime, drives up OPEX, and exposes organizations to service interruptions that impact operational performance and user safety.

### The ComView Solution — Real-Time Edge Intelligence for RF Signal Paths

ComView provides a dedicated RF monitoring and analytics layer at the edge, delivering continuous visibility into the health and performance of the entire RF transmission line. By measuring RF power directly at the site and applying digital signal processing, ComView not only triggers real-time alarms when thresholds are breached but also generates performance analytics that allow users to visualize subtle degradation trends long before they become service-impacting events.





### Repeater Forward Power Monitoring

ComView monitors the forward transmit power from each RF repeater individually, ensuring that every transmitter is operating within user-defined thresholds. This enables early detection of power drops caused by repeater faults, amplifier degradation, misconfigured or failing RF paths.



### Antenna System Integrity

ComView continuously measures and monitors PFWD, PREF, and VSWR to assess antenna system health. User-defined thresholds trigger immediate alarms when values drift outside acceptable ranges, enabling early detection of moisture ingress, damaged cables or connectors, combiner faults, and antenna degradation.



### Digital Filtering

ComView applies digital filters to raw RF measurements to remove noise and transient spikes. This ensures fewer false alarms, higher confidence in detected anomalies, more accurate trend analysis.



### Performance Analytics

All RF measurements are converted into CSV-formatted performance records, enabling onsite analytics, long-term trend analysis, upstream processing by enterprise systems or cloud applications.



### 24/7 RF Line Surveillance

ComView monitors the RF transmission line around the clock, detecting issues in real time and enabling immediate corrective action to reduce service interruptions or system downtime.



### Immediate Alarm Reporting

Alarms are delivered instantly upon detection to ComView ARC, NOC/NMS platforms, enterprise systems, or cloud services for real-time awareness.

## The Results — Maximum Coverage, Minimum Downtime

ComView transforms RF site maintenance from reactive troubleshooting to proactive operational control:

- Early detection of RF degradation before coverage is affected
- Reduced downtime through proactive maintenance
- Improved coverage reliability for mission-critical users
- Protection of expensive RF equipment from damage caused by high VSWR
- Fewer unplanned site visits, lowering OPEX
- Standardized RF monitoring across all sites
- High-integrity analytics for engineering and performance teams

For Operations management, this means predictable RF performance, stronger service reliability, and a more resilient communications footprint.

## Who It's For

- Public-safety RF sites (police, fire, EMS)
- Utilities and energy communications networks
- Transportation and railway radio systems
- Industrial and mining RF infrastructure
- Municipal and regional radio networks
- Any organization operating RF repeaters, combiners, and antenna systems