VIAVI Solutions

Application Note

VIAVI

Holistic Approach to Ingress Management

Quickly Find Where Noise is Entering & Exiting Your Plant

Upstream Ingress is enemy #1 for cable operators creating the most customer calls and consuming the most OPEX. By combining forces, XPERTrak and Seeker X provide the best insight possible to fix ingress and other issues faster.

Cable operators generally spend about 75% of their OPEX budget addressing upstream ingress – which is really finding and fixing network shielding weaknesses. These can occur in the home, drop, or outside plant but in all cases these shielding faults allow external noise to enter cable networks disrupting services and/or allow cable signals to exit, interfering with mobile or other over-the-air networks.

Signal Ingress

Undesirable RF Noise getting
Into the Network

Impact: US CWEs, Customer Calls

Characteristics

- Noise enters through shielding fault
- Funnel effect — hard to localize
- Noise sources may be intermittent
- Disrupts cable services

Signal Egress

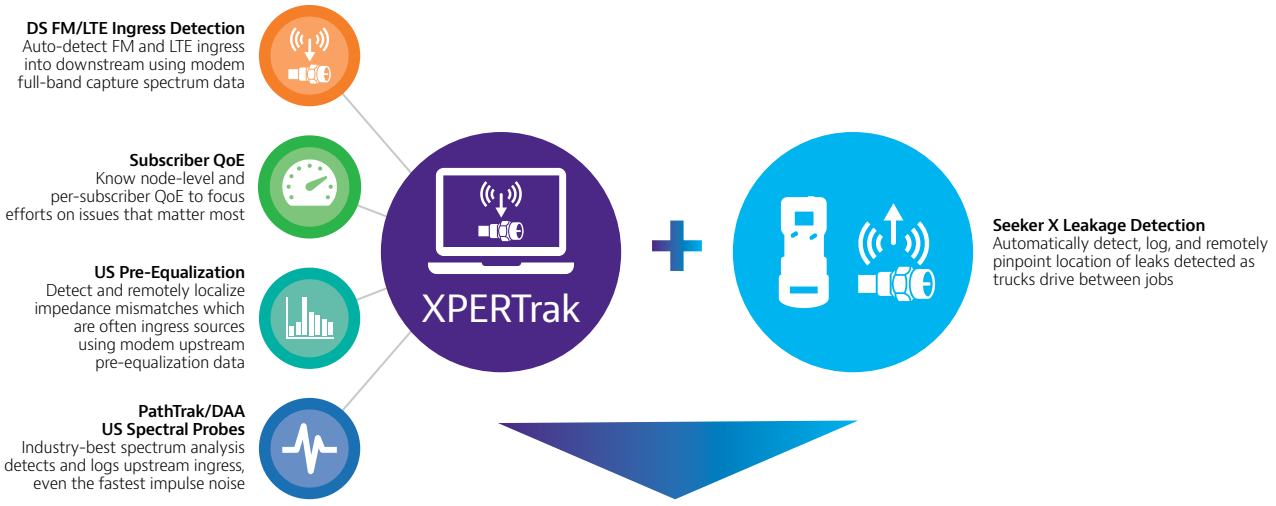
Cable RF signal getting
Out of the Network

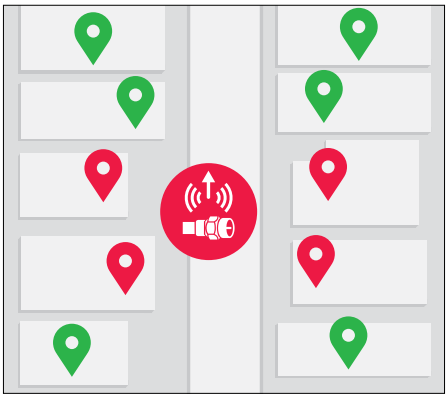
Impact: Mobile Interference, Signal Loss

Characteristics

- Signal exits through shielding fault
- Detected in downstream, no funnel effect
- HFC signal always present
- Disrupts mobile services

VIAVI offers industry-leading tools to detect noise entering and exiting cable networks. Through modernized data integration, data can be pushed directly into XPERTrak platform thus giving the operators unprecedented data correlation and to quickly detect, find, and fix service-killing shielding impairments.





Combining ingress monitoring, subscriber QoE, and FM/LTE ingress datapoints from XPERTrak with the pinpointed leaks from LAW X on a single map paints a very clear picture of:

- Which nodes are experiencing subscriber impacting levels of upstream ingress
- Whether the ingress is persistent or intermittent and best times to troubleshoot
- Location within these nodes pinpointing known shielding weaknesses (FM/LTE ingress, leaks)

Armed with this information, operators have been proven to resolve ingress issues faster and in many cases proactively address shielding weaknesses before subscribers are impacted.

Operators with disciplined leakage programs see highest ROI

10% 10% drop in customer calls

75% 75% codeword error reduction

50% 50% drop in low SNR nodes

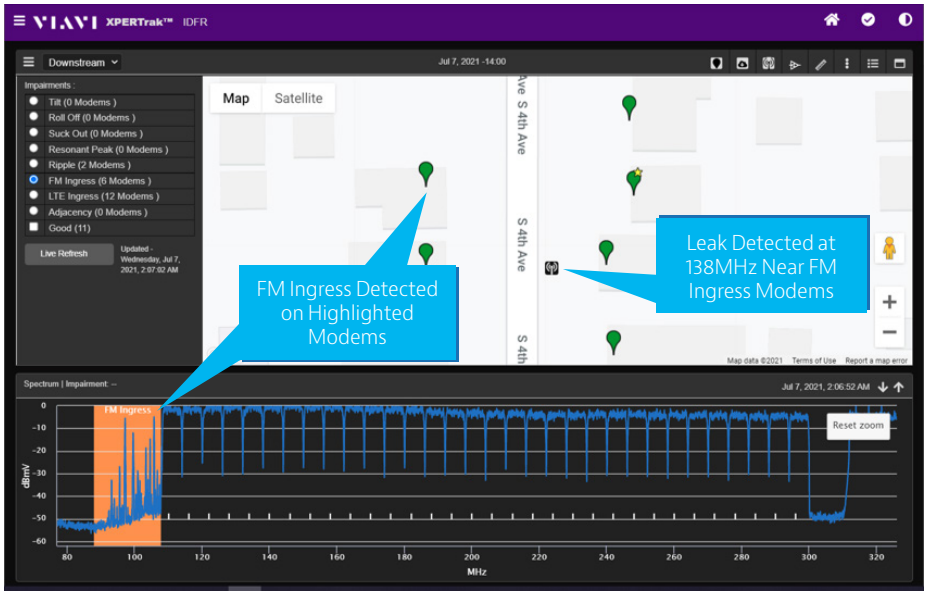
Use Cases

Accelerate upstream ingress localization

Problem: Node has chronic ingress issues – intermittent in nature. Traditional find and fix methods are cumbersome and inefficient.

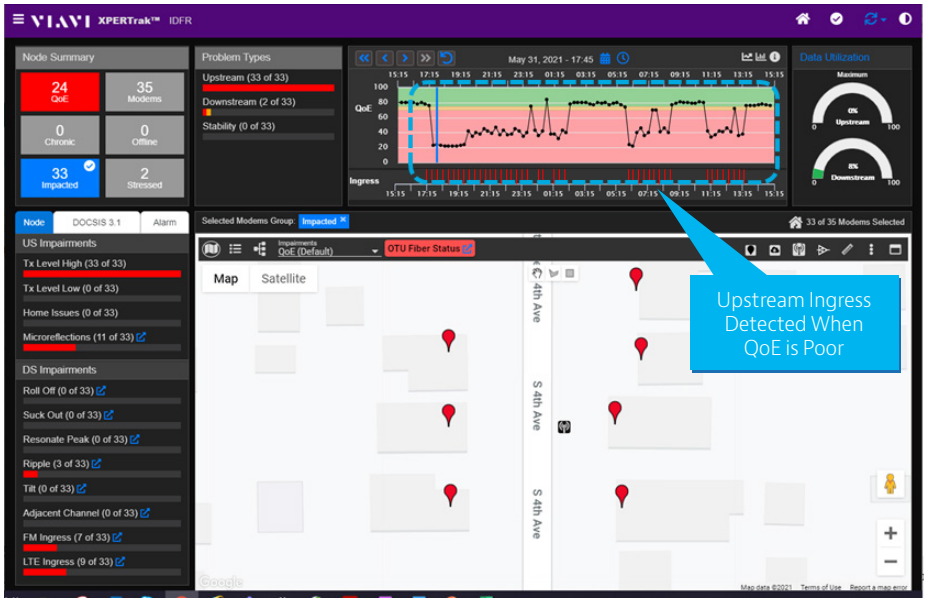
Solution: Use leakage to identify and localize probable ingress points

- Drive out node if recent drive-out data not available
- Look for leaks near identified FM Ingress locations, sign of low freq shielding weakness
- If no leaks near FM Ingress points focus on highest level leaks at lowest monitored frequency
- Continue until all leaks >20uV/m are fixed, drive out again to verify all were fixed



Solution: Use leakage tools to accelerate traditional ingress find and fix

- Use handheld antenna to check for leaks at each stop in amp cascade
- Find/fix significant leaks quickly vs checking all connections at each network element

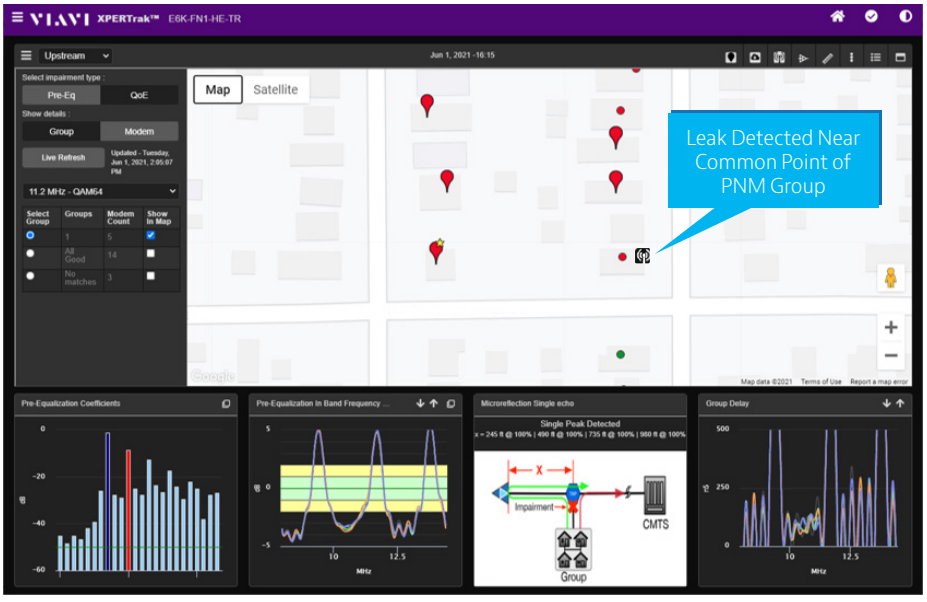


Find and Fix Upstream PNM (Pre-Eq)-Identified Problems Faster

Problem: Final PNM field find and fix can still be time consuming even with distance to fault from last common element provided from PNM system

Solution: Use leakage to identify possible fault locations before dispatch, use leakage meter in the field to quickly find actual fault.

- Look for leaks on map near PNM-identified issue before rolling truck
- Jump straight to any leak close to PNM-identified point
- If no leaks on map close to PNM-identified location, drive to location, check for leaks when exiting truck with leakage meter (leak may have started after last driveout)
- Pinpoint any detected leaks and fix (near-field probe ideal for locating leaks within inches/cm in a crowded pedestal), these will often be the issue causing PNM-detected impedance mismatch



What About Ingress From Homes?

Upstream ingress issues are often tracked back to problems in subscriber homes or drops. The best method to prevent these issues is to ensure homes/drops are tight after each installation or service call, and pressure testing is the best way to accomplish this. By injecting a signal tag at +40 or +60 dBmV and checking for leaks using existing field meters with a specialized antenna, even very small shielding weaknesses can quickly be detected and located. The VIAVI Home Leakage Test Kit contains everything that you will need to pressure test any existing Home/Drop using your existing VIAVI installation meters, and can be directly integrated into your OneCheck test routines to track compliance and test results.

The individual tools that operators use to improve subscriber QoE by detecting, finding, and fixing service-impacting issues are steadily improving over time, but the real step-change in effectiveness comes when synergies between them can be realized. The integration of VIAVI plant leakage data into XPERTrak is the breakthrough that unlocks the true value of these tools to not only find and fix ingress issues faster, but also proactively harden networks against future ingress issues.

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