OV Downstream Analyzer

Diagnose and Troubleshoot Signal Impairments in Subscribers' Homes

OpenVault's robust downstream spectrum analysis system is equipped with a spectral impairment detection (SID) engine and enhanced by machine learning that auto-detects RF impairments. This enables cable operators to elevate network performance and subscriber quality of experience (QoE). Leveraging advanced impairment detection algorithms and automatic capabilities, the OV Downstream Analyzer swiftly identifies and presents a comprehensive view of network impairments. It supports full band capture modems (FBC) and ensures 24/7 spectrum analysis. This provides cable operators with proactive and reactive measures to prevent service disruptions.

Visibility into a highly impaired modem with poor RxMER performance

Full Band Capture

This function analyzes the entire frequency spectrum of the network in a single pass and in real time to accurately diagnose signal quality issues. Information captured is then analyzed using our specialized software to identify potential issues such as signal noise, distortion, or interference.

BENEFITS
- **Faster diagnosis:** Allows network operators to quickly identify and diagnose signal quality issues and take appropriate corrective action.
- **Minimize downtime** and reduce the need for time-consuming and costly manual testing.
- **More accurate results:** Full band capture can provide more comprehensive results and Identify issues that might not be visible using traditional signal testing methods.
- **Improved network performance**

Full band capture is extremely beneficial in cable networks that use high frequency ranges, as these networks can be more susceptible to signal quality issues.

Full Band Capture Correlation

By correlating data from multiple sources, including modems and other network devices, our solution can help operators distinguish between impairments that are caused by issues in the OSP (outside plant) versus those that are caused by in-home issues.

For example, if a group of modems in a particular area are all experiencing the same impairment, OV Spectrum Analyzer: Downstream can identify that the issue is likely caused by an OSP problem, such as a damaged cable or faulty amplifier. On the other hand, if only one or a few modems are experiencing the issue, it may be caused by an in-home issue, such as a faulty splitter or loose connector.
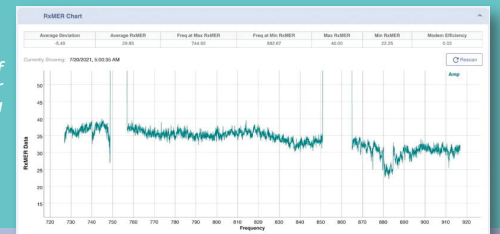
BENEFITS
- Avoid unnecessary truck rolls to address in-home issues that are caused by problems in the OSP.
- Save time and money
- Improve the quality of experience for subscribers

RxMER

RxMER (Received Modulation Error Ratio) per subcarrier analysis is a useful tool for monitoring and analyzing the performance of DOCSIS 3.1 OFDM channels in a cable network. By analyzing the RxMER data we can measure the quality of the signal received by the modem to determine how close the subscriber's modem is to the threshold of each modulation scheme, such as 4096-QAM.

BENEFITS
- Identify potential problems before they impact subscribers
- Enables a technician to identify the root cause of the problem and take proactive measures to prevent service disruptions

RxMER Correlation

- Identify OSP impairments impacting OFDM channels
- Know what subscriber's have in-home vs OSP issues
- Improve OFDM service for many subscribers at once
- Increase OFDM modulation to increase data throughput

Example plot of OFDM RxMER per subcarrier data

QAM Capacity Analyzer

This optimizes spectrum use during network upgrades, especially mid-to-high split transitions and DOCSIS 3.1/4.0 transitions. By analyzing downstream signal quality and determining optimal modulation orders, it identifies available bandwidth, helping maximize capacity for high-speed data services.

- Pre-qualify OSP prior to DOCSIS 3.1/4.0 deployment to ensure all network areas supports OFDM channels
- Relax sweep requirements and identify sections of plant that require upgrades / re-balancing prior to DOCSIS 3.1 / 4.0 roll-out and/or expansions
- Target specific sections of the plant that need re-built based on actionable metrics

10+ YEARS OF INDUSTRY LEADERSHIP

No other company knows more about broadband subscriber usage behavior and how to use network data to drive revenue, reduce costs, better manage networks and improve customer satisfaction and retention than OpenVault
Contact us at sales@openvault.com

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