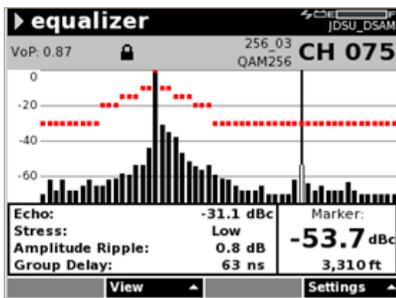


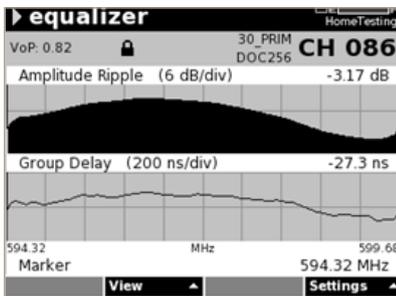
# DSAM Equalizer Test Solves Tiling Issues



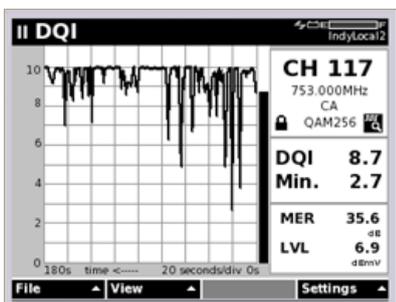
Equalizer warning appears in the signal measurement screen indicating an equalizer-related issue



Equalizer display with marked reflection at 3,310 feet



In-channel response and group delay display



DQI also indicated a problem

## Background

A technical operations engineering supervisor at a top tier MSO in Northern Michigan had previous experience performing equalizer tests using expensive and cumbersome spectrum analyzers to troubleshoot return path issues. In those tests, a QAM source was injected and analyzed in the headend using a spectrum analyzer. His testing experience prompted him to use the DSAM meter for similar troubleshooting tests in the forward path with enhanced results and more efficient troubleshooting capabilities for his team, as illustrated in the following examples.

## Solving Tiling Issue #1

A customer complained of repeated tiling issues. Previously and on multiple service calls, several technicians were unable to find anything wrong. On this particular service call, DSAM tests conducted at the tap looked good at first, but then the technician noticed some random pre-forward error correction (FEC) bit errors, but no post-FEC errors. A digital quality index (DQI) test showed intermittent drops down to an index of about 5. Switching to the DSAM Equalizer test indicated a reflection about 3,300 feet out. The reflection wasn't large, but the engineer's experience with equalizer testing helped to quickly recognize it. After further investigation, they found and replaced a 3 foot section of mismatched cables and connectors and the customer complaints ended.

## Solving Tiling Issue #2

Investigating another tiling complaint revealed no obvious problems. All signal levels, MER, BER, and sweep, among others, were within proper range. However, they did notice a small suck-out on the channel scan. Using the DSAM Equalizer test option, the technician discovered a tap full of water about 800 feet from his location. After repairing this, no tiling was observed and no further complaints were received from this customer.

## Conclusion

The DSAM Equalizer test provides definitive tests for troubleshooting that narrows the scope to a more specific location using the "distance to fault" feature. This rapid troubleshooting capability will improve technician efficiency, productivity, and customer satisfaction and, in return, reduces churn.

*The DSAM is already such a great meter we seem to overlook the Equalizer test because there are so many other options to use. That's really a good thing." Engineering Supervisor, Top tier MSO in North Michigan*

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