Pendulum Success Story 8

A story about using correct tools that makes the job so much easier

A wireless systems integrator recently purchased an Analyze-R™, after selling their other spectrum analyzers, because the Analyze-R™ was able to resolve their customer's wireless link problem…their other spectrum analyzers could not. Standard Spectrum Analyzers (bench & portable) are complicated to operate without considerable knowledge and training, and these instruments don't typically record data measurements over time.

The application involved a customer's wireless link that used radios operating with two 36 MHz-wide channels in the 5.8 GHz unlicensed U-NII band near a large US metropolitan city. The link was experiencing fading issues which lead to corrupted data packets over time. The cause of the problem was not clear, as the link had been in place for four years and originally operated without problems. Could the problem be an increase in use of the 5.8 GHz band due to the growing popularity of unlicensed wireless connections in the area? Was a nearby transmitter burning the link off the air with too much power? The RSL (received-signal-level) had dropped 10 dB over the original install date but the link had not otherwise changed (no new buildings, trees, etc.). Previous attempts to analyze the cause, using other instruments, were unsuccessful.

With the link operating and using the Analyze-R™ on site at the receive end, the systems integrator made a baseline measurement of the 5.8 GHz band during daytime operation and recorded the results. Then, the Analyze-R™ was set to record this band (on peak hold) for a 24-hour period and left overnight…to accomplish this with other portable analyzers would require a person to spend 24 hours with the instrument and note the results as they happened. Nothing unusual was noted in the 24-hour sweep record that would explain the fading problem. Further analysis of both the original baseline sweep and the 24-hour sweep showed a marked difference in RSL between the two 36 MHz-wide channels in both records. Further testing with the Analyze-R™ determined that the problem was not with the external environment but with the radios themselves...the radio's transmit power had *faded internally* over time, due to aging. These particular radios were not capable of external adjustment, so, the band sweep records from the Analyze-R™ were sent, with the radios, to a repair facility. The recorded band sweep data was used by the technicians to determine which components to change out in order to bring the radios back to symmetry between channels. When reinstalled, the radios regained their original RSL of four years ago and the link experienced no further fade problems or corrupted data packets.

The ability of the Analyze-R™ to capture and record band sweeps and download this data to a computer for transfer to another facility was key in resolving the customer's problem and provided a quick, simple, and cost effective solution for the wireless systems integrator.

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