

# PREMIUM-GRADE LMR TEST EQUIPMENT AT AN AFFORDABLE COST

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## Case Study: Red Dog Radios matches the capabilities of a large land mobile radio dealer with Copper Mountain Technologies' 2-Port 1.3 GHz Analyzer.

Red Dog Radios is one of many small two-way radio shops scattered throughout the country. Having the right test equipment is critical for keeping up with large scale land mobile radio (LMR) dealers. Finding premium-grade test equipment at an affordable cost can be an overwhelming challenge. Copper Mountain Technologies' TR1300/1 which features a frequency range of 300 kHz to 1.3 GHz and a 130dB dynamic range, helps Red Dog Radios match the capabilities of a large LMR shop without exceeding their limited budget.



Located in Louisville, Colorado, Red Dog Radios is an Authorized JVC Kenwood, Harris and Icom America Land Mobile dealer as well as an Authorized Warranty and Depot Repair Center for these companies. They focus mainly on local government, tech departments, and industrial customers, selling and servicing two-way radio equipment for their first-responder operations. They furnish and install antennas, antenna mounts, batteries, chargers, repeaters, installation equipment, power supplies, accessories, and spare parts.

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**Tom Ohlsson, Red Dog Radios**



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Tom Ohlsson is at the helm of Red Dog Radios' mostly one-man operation, occasionally working with contractors for larger projects. He is often required to perform periodic maintenance (PM) for repeaters in mountaintop electronics. These installation sites can be anywhere from 9,000-13,000 feet high. The weather conditions severely limit the opportunity to perform these PM checks. Because of this, Tom needs to be efficient, while operating within a constrained budget. When administering PM on land mobile sites, it's not just an issue of checking the health of a repeater. Tuning duplexers is a crucial aspect of PM.

Traditional portable service monitors are not well-suited for tuning duplexers, are difficult to use to measure return loss, and they leave a lot to be desired in convenience, cost, and performance. "Few service monitors include the VNA function, and the LCD screen forces you to interpret a really small display, with inadequate dynamic range," said Tom Ohlsson, after demoing a competitor's field-testing equipment. "In order to get the right piece of equipment with a suitable dynamic range, you are looking at a major investment for a small operation."

After a friend referred him to Copper Mountain Technologies, Tom requested a demo of the TR1300/1 and was instantly impressed with the 2-port USB VNA. "In 30 minutes, I had set up a UHF template and tuned three filter devices, I was blown away by the accuracy and repeatability of the measurements." said Tom. Several attributes of the TR1300/1 have been beneficial to Red Dog Radios. The dynamic range allows Tom to tune duplexers more quickly and accurately than his previous instruments. The functionality of the software allows him to easily set up standards. And the USB connection offers freedom while making measurements. Being able to look at the software on a separate laptop screen, rather than a smaller built-in screen, means he can glance at the display while standing several feet away on a step ladder without any misinterpretation.

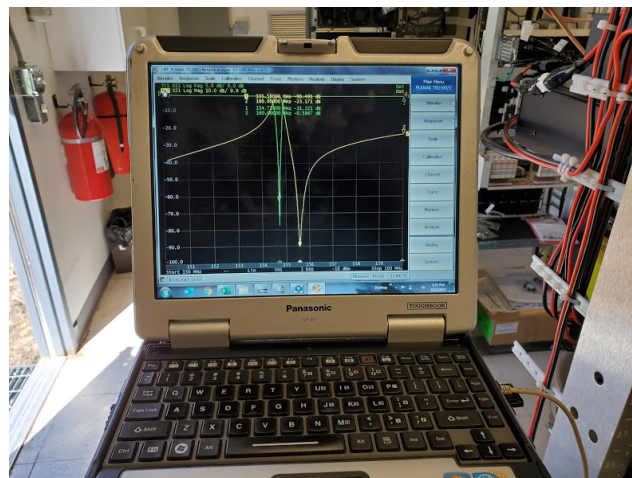
*"This is dollar for dollar the best possible site PM instrument. No respectable radio shop should go without it."*

**Tom Ohlsson, Red Dog Radios**

When Tom is on the road for a site installation or periodic maintenance, he's got his TR1300/1 and its carrying case with him. With it, he has a tremendous degree of confidence that he can quickly and accurately tune equipment in the field. Tom can receive a generic rack that has not been tuned, obtain a frequency assignment after the rack arrives, then bring the rack into the field and quickly tune it on-site with extreme accuracy. It's not just a piece of field-testing equipment though. The instrument has become an integral tool in his shop as well. He uses it to tune duplexers or isolators before shipping them out and to commission racked equipment. He is now able to tune racks in place, and onto a specific frequency with ease.



(The TR1300/1 is shown, connected to the receive leg of a DB4060 duplexer. Both return loss and rejection loss were adjusted on this duplexer.)



(A final tuning of a duplexer obtained by Tom in the field with his TR1300/1)

Even with a low price point compared to competitive products, the TR1300/1 is an important investment for small land mobile radio dealers like Red Dog Radios. "It's a significant purchase for me," said Tom. "But the value is such that it will be the next piece of test equipment I buy, I'll buy a second one dedicated to my bench." Tuning a duplexer, which was once a 30-minute task, can now be accomplished in just five minutes. Tom has been able to tune as many as 12 racks in a single afternoon. This purchase has saved

him valuable time and eliminated the need for other, larger investments in test equipment. "This is dollar for dollar the best possible site PM instrument. No respectable radio shop should go without it."

