

Configuring the Model 43 for MOTOTRBO™

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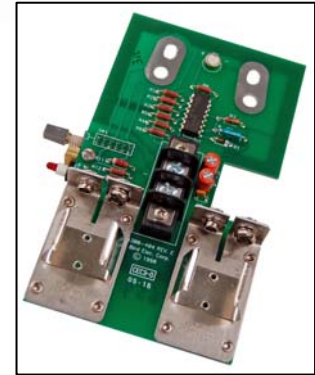
Configuring the Model 43 for MOTOTRBO™

The model 43 wattmeter has been a staple for power measurement in two-way communication systems, providing accurate measurements for analog signals for the past 50 years. Modern communication techniques have changed the way signals are modulated so that they can carry more information while using less power. These complex modulation techniques utilize various methods for increasing the data rate or decreasing the required bandwidth. MOTOTRBO™ was designed to reduce costs by combining calls onto the same bandwidth, thus doubling the possible call volume. While the model 43 can be used to measure signals like MOTOTRBO™, it's important to understand the signals coming out of the radios in order to configure the wattmeter for the proper measurements.



MOTOTRBO™ utilizes a signal format called Time-Division Multiple-Access (TDMA) in order to add a second call on the same amount of band space. TDMA signals use multiple time slots of data, taking turns using the bandwidth allocated to the channel. Since the switching occurs very fast, there is no apparent drop in quality but more calls can be made using one set of equipment (repeater, antenna, etc). In addition to adding a second call to the line, power consumption of a single call is reduced, as the second window is turned off and doesn't consume power. Due to the switching between the two calls, the envelope of the signal is not constant and thus average power measurement is not going to reflect the real output of the radio. However, peak power can be used as an accurate way to verify the output of the radio regardless of how many time slots are in use.

Using the 4300-400 Peak Power Retrofit Kit, the model 43 can be configured to make peak power measurements using the same elements that are used for average power. When in this mode, measurements of MOTOTRBO™ will be accurate and will reflect the actual output of the radio. The model 43 can still perform average power measurements for the systems that use analog modulation schemes, simply by flipping a switch on the side of the unit. Additionally, an internal battery allows the unit to maintain its portability.



With the future of radio focused on reducing the bandwidth required to communicate, TDMA signals are going to become more prevalent. MOTOTRBO is a great example of how smarter signals can be used to reduce infrastructure and overhead. With the proper upgrades, the legacy model 43 can be used to verify MOTOTRBO systems without losing any functionality.