

THE BOTTOM LINE[®]

PERFORMANCE TESTING BY TOM MULHERN & ASSOCIATES, CAMPBELL, CA (408) 374-1353

AT A GLANCE: Whether you need a diversity or non-diversity wireless microphone system, TOA has every option covered. Employing unique tone-key circuitry to prevent external interference, plus companding and noise-squelching, these systems deliver strong, clean, true signals in any setting—from a conference room to an arena.

By Tom Mulhern

Anyone who's ever been onstage, tangled in a microphone cable, or who's wrapped their cable around another knows the beauty of wireless mic systems. It's no wonder that more and more, public speakers, singers, guitarists, TV reporters, and just about everyone else who has to get sound from point A to point B relies on wireless transmission. Not everyone who wants to "cut the cord" has the same needs, though, and that's why TOA's line of transmitters and receivers is so extensive: They offer high quality and dependability—in terms of both sound and construction—for practically every application and budget.

Central to TOA's Password line of wireless products is a pair of half-rack-space receiver frames designed to accommodate one or two receiver modules. The WT-770 is intended for use with either one or two WTU-770 non-diversity tuner modules, while the WT-780 Receiver Frame is ready to dock one or two WTU-870 true diversity tuner modules. Therefore, two frames, either diversity or non-diversity, accepting up to four tuner modules, can be accommodated within one rack space.

The rear of each frame has a pair of 600-ohm XLR outputs, one for each module, and a 1/4" unbalanced phone jack with a combined output. The mix output is accompanied by a switch for selecting line or mic levels, providing interfaceability with just about every conceivable type of downline gear. The WT-770 is outfitted with a single BNC connector for an antenna, while the WT-870 has two. TOA offers three different antenna options (the YW-600 whip antenna, the YW-610 mic-stand mounting antenna, and the YW-620 dipole antenna). Depending on the distance between your microphone and receiver, or where you want your antenna located to suit aesthetics of a stage or room, you can get just the antenna configuration you want. Finally, there's a DC input for powering the receiver off of 12 to 18 volts DC. This is ideal for location work or trips abroad, where you can simply change power adapters.

WTU-770 Wireless Tuner Module. At first I anticipated a time-consuming job installing a tuner module—you know, dozens of small screws, perhaps some soldering. I was pleasantly surprised to find that it was a simple

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procedure that only takes about a minute: The front tuner panel pops off easily—a fingernail, screwdriver, or even a butter knife will do the trick—and the module slips right into the receiver frame. Pop the front tuner panel back in place, and you're ready to go live. I tested the unit with the

four microphones detailed later.

Operation is simple: Turn on your microphone, and a yellow RF-present LED glows on the front of the receiver. A 5-segment LED ladder tells you how intense the audio signal is, and the volume knob adjusts the output being sent to downline equipment.

TOA's use of a tone key, a 32.768kHz signal that accompanies the audio signal and tells the receiver to accept the sound, is a stroke of brilliance. When you turn a mic on or off, there's no loud pop, and when the mic is off, the receiver is completely silent.

It doesn't pick up stray signals in scavenger-hunt fashion, instead waiting until you turn a mic back on. The tone key, combined with the companding and squelch circuitry, gives the WTU-770 squeaky-clean performance. I walked all over the place—inside, outside, and down the street, and was able to maintain a solid signal without dropouts. Of course, if you're going to be operating in a difficult environment with lots of metal beams or reflective surfaces, or in an exceptionally large venue, etc., you may want to try the WTU-870 diversity equipment.

WTU-870 True Diversity Tuner Module. Combining all the features of the WTU-770 plus dual antenna inputs with circuitry that automatically compares signal intensities and selects the more powerful, the WTU-870 works with similar simplicity. (Two RF-present LEDs indicate when the antenna selector's control circuit switches from one antenna to the other.) In addition, TOA designed its receiver frame so that you only need two antennas, regardless of whether you use one or two WTU-870 modules. The WTU-870 performed flawlessly, no matter where I moved within a few hundred feet of the receiver. I was very impressed.

WT-780 Scout Wireless Tuner. If you're looking for a small, extremely portable receiver, the WT-780 Scout fits the description perfectly. It measures only 5³/₈" x 4" x 1" and weighs a mere 9 ounces, but it's chock full of sophisticated circuitry that makes it an excellent choice as a single-tuner, non-diversity wireless setup. It couldn't be simpler to operate, either: Plug



TOA's wireless line: WT-870 and WT-770 Password and WT-780 Scout receivers with WM-370 Lavalier and WM-280, WM-290, and WM-270 hand-held microphones.

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the WT-780's AC adapter's power cord into the DC input, plug the adapter into a wall socket, run a shielded cord with standard 1/4" plugs from the receiver's output to an amplifier, P.A., etc., pull up the receiver's integral antenna, and adjust the volume. That's it. You can have the WT-780 up and running in about a minute. Despite its small size, it delivers first-rate sound. It also picks up a transmitter's signal very well; its performance is almost on a par with the WTU-770's. In addition, it uses the same type of RF signal-present keying as the WT-770 and WT-870 receivers, assuring pop- and interference-free reception. This is a very handy receiver for someone who only needs one channel, doesn't have a rackful of equipment, and wants the ultimate in convenience.

Four Microphone Options. TOA's wireless-transmitter microphones offer an excellent range of sound characteristics, plus they are designed with tone-keying circuitry to eliminate interference from extraneous sources. Also built into their circuitry is a compander that extends their dynamic range. The circuits are surprisingly easy on batteries, delivering 12+ hours of clear, clean signal on a single AA alkaline battery. A green LED on each mic's base indicates when the mic is on and that the battery is good. When the battery is near the end of its rope, an LED glows.

Two of the handhelds are dynamics, the WM-280 with a TOA head and the WM-290 with a Shure SM58 head. Both are cardioids that can handle a sound-pressure level of 144dB, making them ideal for both vocal and instrument applications. The SM58's response is accentuated slightly at around 5kHz, adding a bit of presence, although the sound of the two dynamics is otherwise very similar. The WM-270 Electret Condenser is a different story. It has less bass proximity effect and an overall brighter sound. I liked WM-270 for miking piano and acoustic guitar because it maintains their sparkling timbres very faithfully. It's also a terrific choice for voice if you don't want exaggerated lows.

Each microphone has an on/off switch (the WM-270's is on its side, while the others have theirs on their end), plus the WM-280 and WM-290 have adjustable sensitivity circuitry. This lets you set the sensitivity between 128dB and 144dB—very useful if you have a vocalist who really likes to shout and someone at the mixing board who doesn't enjoy overload distortion.

Outstanding for lectures, location work, etc., the WM-370 Lavalier Microphone has an electret condenser element connected to a lightweight

bodypack transmitter. Like the other handheld mics, it uses a tone-key circuit to lock out interference, plus its compander circuit expands its dynamic range without adding noise. It has a brighter sound than, say, the WM-280 or WM-290 handhelds, and because you clip it on your lapel, there's less bass accentuation. This is an excellent mic for hands-free work such as lecturing or demonstrating products. If you use this in conjunction

with a WA-641 Meeting Amplifier running on batteries, you could go wireless anywhere from a conference room in Boise to the middle of the Sahara Desert.

WA-641 Meeting Amplifier. For quick setups, portable installations, etc., the WA-641 is tough to beat. It's a beefy little P.A. that delivers up to 15 watts through its 8" speaker, and it is designed to accommodate one or two wireless receiver modules. It can be powered by AC (it has a permanently attached cord), eight "D" cells, or an external battery. Other features: You can adjust the two wireless receivers' volumes separately via knobs on the unit's top, and there are a wired microphone input with volume knob, an auxiliary input with volume knob, an external speaker jack, a line output, and a master tone control for the amplifier.

A variation on the WA-641 is the virtually identical WA-641C, which boasts a high-quality auto-reverse cassette recorder. The recorder is a

boon for anyone doing repeat presentations, since it records at full fidelity. Record your speech, and let it play back later, or make reference tapes for self-critiquing or distribution. There's a separate volume control for the cassette's playback, and automatic level control for recording. Another neat trick: You can play back a tape of music to accompany you while you're speaking.

The bottom line. Overall, I was impressed with the range of options in TOA's wireless line. The sound quality of the systems is excellent, with the added bonus of tone-keying and effective noise squelching to keep spurious radio signals from becoming a part of a performance or presentation. Because you can use one WT-770 or WT-870 receiver frame for two modules, system expansion is easy, plus by eliminating redundant power supplies, antennas, and mounting hardware, it keeps the cost down. It's also nice to be able to use any of the microphones with either the diversity or non-diversity receivers (including the WT-780), as well as the meeting amplifiers. TOA's wireless microphone systems are exceptional tools for venues of every size—from a conference room to an arena. 



The WA-641C combines a wireless receiver, cassette deck, and amplifier in one portable unit.

TOA'S WIRELESS MICROPHONE SYSTEMS COMPONENTS

Transmitter and receiver components:

WM-280 Dynamic Microphone
(TOA Original Head)
WM-290 Dynamic Microphone
(Shure SM58 Head)
WM-270 Electret Condenser Microphone
(TOA Original Head)
WM-370 Lavalier Microphone
WT-870 Dual-Channel Diversity Receiver Frame
WT-770 Dual-Channel Receiver Frame
WT-780 Single-Channel Receiver
WTU-870 True Diversity tuner Module
WTU-770 Non-Diversity Tuner Module

Optional accessories:

YW-600 whip antenna
YW-610 Mic Stand Mounting Antenna
YW-620 Dipole Antenna
MB-14 Rack Mounting Brackets
J-700 Joint Metal Plates for mounting all half-rack
wireless equipment in side-by-side configuration
WP-860 and WP-760 tuner panels
BK-014B Half Width Blank Panel

WA-641 Meeting Amplifier (requires WTU-770)
WA-641C Meeting Amplifier with cassette
recorder (requires WTU-770)

Operating frequency range:

168 MHz to 216 MHz
32.768kHz (Tone Key Lock)

Manufacturer's address:

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