

# Can You Hear Me Now?

## Wirelessly Into The Future

by Wayne Dolnick

It seems that every day we hear of a new must-have feature in everything from the ubiquitous iPod to our personal favorite microphone. But, in reality, does the latest microphone offering with a new painted finish or new lighter-weight carbon fiber body make it a must-have? That depends on your budget, your proclivity to being first on the block with the new piece of tech gear, and overall belief in marketing hype.

But some things change for the better with qualified product improvements—say hello to wireless microphones 2006, specifically today's new group of UHF-based wireless microphone systems.

Most likely if you have a system that is older, possibly picks up interference, is susceptible to RF and is limited for expansion, you probably have a high-band, VHF-based wireless system.

Why UHF instead of VHF? UHF physically uses smaller antennae, with a potentially shorter transmission range and possible multi-path dropouts. But with a "diversity" system, which is based on multiple antennae on the receiver, greater bandwidth, potentially greater dynamic range and a radio spectrum that is eight times greater than VHF,



Shure's SLX UHF system

the market for a new handheld or two, then a new UHF system may be in order. The choices are varied, with features previously not available in wireless microphones, including better reception, more channels for continual sound, a larger selection of optional capsules, and even integration within Ethernet-controlled systems.

a larger number of systems can run simultaneously.

If you are the AV specialist of your house of worship and are currently using a wired podium microphone, now is the time to look at the plethora of wireless systems. From a small congregation to a very large one, wireless systems will allow for more interactivity between clergy and the congregants—a very worthy investment, whose upgradeability is only limited by the initial system purchased.

If you're already wireless, but wish for a clearer signal, and are in

Wireless systems are quite easy to set up and install if you have a modicum of technical skill. A wireless system is based on a receiver, transmitter and microphones. Three basic types of transmitters exist—one being the microphone itself, called a handheld; and the other a small, lightweight box that is usually attached to the person's clothing via a clip, called a body pack; and the third, a plug-on.

Simple, so far. Now, choosing the microphone style, depending on the system selected, can be made specifically for vocals or instru-

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### Avlex's MIPRO MA-909 Wireless Mixer

Avlex's MIPRO MA-909 professional wireless mixer is a UHF true-diversity 16-frequency agile wireless mixer that combines up to two wireless microphones, a CD player, mic and line inputs into a rackmountable 2-space control mixer with a wireless transmitter.

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### beyerdynamic's Opus 560 Wireless System

The Opus 560 wireless system from beyerdynamic is based on the modular Opus 800 system. The 560's AutoScan/ACT function allows complicated system setups to be easily and quickly programmed onsite. The receiver automatically searches for a free channel, which then can be transmitted via infrared to the matching transmitter. The Opus 560 is a vocal set comprised of receiver (NE



500 S) and handheld transmitter (SDM 860 microphone). A rugged transport case is also included.

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### Azden's APS 25b Battery Powered Speaker

Azden's APS 25b battery powered speaker can operate without being plugged into an AC outlet, making it completely wireless. It uses an internal, rechargeable battery that allows the speaker to operate for several hours before needing to be recharged.

The APS 25b gives installers the ability to have the right system for almost any situation. The built-in wireless receiver systems can be used with either body-pack lavalier or handheld mics. By attaching one of Azden's plug-in transmitters to the house mixing console, the house feed can be sent to any number of speakers wirelessly. Wireless receiver modules can be changed any time without tools.

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ments. Within the type of microphones, one can choose patterns (cardioid, supercardioid, omni, etc.), again depending on the system selected and one's needs. These capsules allow sounds to travel only into the microphone as desired. Microphones should be selected based on one's primary use and possible secondary need. Handheld, lavalier, head-worn are all examples. System selection is based on your needs and who has an answer for you.

Internally, the capsule or element of the microphone determines the type of sound and pattern of recording. Therefore, purchasing a handheld or lavalier model is dependent on one's needs and the unit's performance. Most UHF systems allow for additional, optional microphones to be added with various capsule styles.

**Audio-Technica** offers various wireless systems. Recently, the company enhanced its 3000 Series with auto-frequency scanning, allowing up to 16 simultaneous systems per band, maxing out at 32



Sennheiser's freePORT system

across two bands. Within each band, 200 frequencies are selectable. With the true-diversity UHF receiver system, you can choose from a body-pack transmitter (ATW-3110) or a handheld unit (ATW-3141).

**Shure** offers its UHF-R system that is UHF-frequency-based, allowing use of some of the most recognized microphones (capsules) that Shure makes. From the SM58 or the Beta58, or any of the other half-dozen or so capsules Shure is noted for, the UHF-R might answer your needs. 1- or 2-channel diversity receivers are available, allowing for 2,400 possible frequencies across 60 MHz bandwidth from which to

lock onto one of the 40 preset compatible systems per band, and up to 108 systems with multiple bands. The receivers also have the ability to store six 60-channel custom frequencies groups to a flash memory. For the average-sized congregation, Shure offers the SLX UHF system, with diversity receiver, optional handhelds and/or lavs, head-worn or instrument

microphones, in a more economical package that supports up to 20 compatible systems.

**Sennheiser's** wireless microphone system, the Evolution series G2, was recently introduced with an updated



Audio-Technica's 3000 Series system

grouping of transmitters, receivers and body packs. The SR3254-U and the SR3256-U offer single- and dual-channel transmission respectively, with claimed noise suppression of up to 90 dB in a wide dynamic range. The new flagship handheld transmitter is the SKM 5200 UHF with eight interchangeable mic heads, including two from legendary Neumann. Operating in the 36-MHz bandwidth and switching at 5-kHz steps, the system offers up to 7,200 frequencies.

An affordable UHF wireless system was recently introduced by Sennheiser in its entry-level freePORT with three plug-and-play variations. Using diversity technology with switchable UHF, the freePORT has a vocal, presentation and speech option.

**AKG** Acoustics offers the new WMS 40 Pro Wireless system, a third-generation product whose design allows for systems purchased based on need. The WMS 40 Pro Flexx Diversity system allows for three user-selectable frequencies per channel, with the WMS 40 Pro Sin-

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gle having fixed frequencies, and the WMS Pro Dual, with two transmitters and two independent channels in a single half-rack. The approach taken by AKG is based on market need more than engineering prowess. If a simple system is need-

ed and one can use a fixed frequency, the WMS 40 Pro Single is the answer, or, for more options, the WMS 40 Pro Dual system allows for two people on the same receiver. Answering an RF interference problem, the choice would be the WMS 40 Pro Flexx.

If you work with a very large congregation and need more control of the room, AKG has introduced its

first HiQnet controlled wireless system. The WMS4000 can integrate within the Harman family using the HUB 4000Q. Up to eight WMS 4000 systems can be controlled and monitored simultaneously. If this is a desired feature, this is a product worth serious consideration. The WMS 4000 system has dynamic range up to 120 dB and a reported frequency response of 35 Hz-20 kHz.

### » A Quick Look At Common Microphone Patterns

Polar pattern, as the word suggests, is based on sound shape around a "pole" (think of the North Pole). And the polar-pattern is nothing more than a graphical representation of the capsule's directionality, hence the terms omni- and uni-directional.

Cardioid refers to a pickup area around the microphone whose pattern is concentrated in the front, with less on the sides, and is not as susceptible as some from feedback. This pattern resembles a flat tire, where the microphone is the axel, forming a type of unidirectional plot. On a flat plot, the pattern appears like a heart, with the most sensitivity (absorption) coming from the top of the plot, or front of the mic, with almost a complete null at the back, or at 180 degrees.

Supercardioid and hypercardioids are variants of the cardioid, whose patterns are similar, but with less feedback, and a narrower "beam." An omni-directional polar-pattern might be desirable for a choir or a band to record with, but might cause issues if a live PA system were near it, with its susceptibility for picking up sounds from all around.

#### Electro-Voice

offers the RE 2 UHF wireless system, with two variants—the RE-2 and the RE-2 Pro. Offering up to 1,112 possible frequencies via



EV's RE2 system

the 28-MHz operating bandwidth in the receiver, the systems allow for the use of one of three handhelds plus a lavalier, with the RE-2 Pro allowing for one of two premium handhelds to be used for a clearer spoken word and a better vocal response. To outfit a larger facility or one that incorporates a full choir and musical section, look at the RE-1.

As you can see, a wireless system allows for multiple users, expansion, remote control and the ability to pick microphones whose patterns support your needs. The decision should be based on which brand and which system offer options meeting your requirements, not whose product is the cheapest, or the most feature-laden.

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