

THE WACKY WORLD OF WIRELESS

(Let's pray "Dear Lord...(squawk...rf...fuzz) ...Would you like fries with that?")

Knowing Wireless Microphones

by Tim Johnson

It seems like the world is becoming wireless and the church is not excluded. I would guess that over 95% of all churches in America have at least 1 wireless microphone. I would further that by saying that more than half of those churches have three or more wireless microphones.

There are more wireless microphone companies out there now than ever before. So, how do you choose?

Low Quality	Good Quality	Better Quality	Professional Quality
<\$300	\$300 - \$500	\$500 - \$800	>\$800

Transmitter styles: There are two basic styles of transmitters: handheld and body pack.

Hand held microphones are great because you can hand them off from person to person.

A body pack transmitter straps to your belt making them less likely to be dropped. Another benefit to a body pack transmitter is that the microphone can be unplugged and exchanged for a different style microphone (like a headset to replace that old lapel microphone.) On "Low Quality Systems", the lapel microphone is hardwired into the transmitter. This means that you cannot replace or swap the microphone even if the microphone wire goes bad. The lapel microphone wires take the most abuse and go bad sooner than any other cable in your sound system!

Basic Receiver styles: There are generally two styles of receivers: diversity and non-diversity.

Non-diversity receivers have a single antenna to pickup one transmitter. This means that if there is interference between the transmitter and receiver the signal can become lost. You hear nothing, static or some other noises... not your microphone.



Diversity systems have two antennas that receive a signal from one transmitter. It is like the system has two independent receivers. The receiver (through various methods) attempts to choose the best signal.

Beginning with "Better Quality Systems", the antennas are able to be remote mounted. This means that you can separate the antennas farther apart so that it is less likely that both antennas will receive interference at the same time. If you use three or more wireless units or plan to in the near future, use the remote mount receivers. This feature with the use of an antenna splitter allows you to combine antennas. So, if you would normally have six antennas you would only have two.

Frequencies: There are generally two basic frequency ranges*: VHF and UHF (same as TV). *Some ultra "Low Quality Systems" still use FM...Blah!

VHF wireless systems use TV channels 7-13 (Frequencies 174-216 MHz). VHF is the old standard that has been around forever. (I think Mosses used one.) These work quite well and present similar quality/fidelity as UHF.

VHF Benefits: Cost less than UHF. Battery life is slightly longer. Accessories cost less (antenna, etc.) More equipment choices

UHF wireless systems use TV Channels 14-69 (Frequencies 474-806 MHz). UHF is the new kid on the block.

UHF Benefits: Available frequencies less crowded. Less general RF interference

All of the benefits of both systems should be considered when choosing between VHF and UHF.

One other note about UHF: All American TV stations have been mandated to convert to HDTV (High Definition Television) within the next five years. These stations will be located in the UHF range. If you have chosen to purchase a UHF system, please note:

- Most existing stations have already had their new frequency chosen. Make sure that when existing stations convert to HDTV, that they will not over take the frequency you have selected. A good sales person should be able to check your area for assigned HDTV stations.
- In the near future UHF frequency band will be more crowded.

OTHER THINGS TO KNOW

Most of the systems up to the "Better Quality Systems" are permanently set to a frequency but we are increasingly seeing systems that are Frequency Agile.

Frequency Agile: Systems with frequency agility ships on a given frequency, a switch located on the transmitter and receiver allows the church to select any one of multiple operating frequencies. Thus, if a year from now a nearby church should decide to purchase an identical wireless system, you can easily change the operational frequencies of its systems to avoid any interaction.

Digital Frequency Control: While sending a signal (like voice), the transmitter will send with the voice a carrier wave. The transmitter will only accept a signal that has the carrier wave. This keeps the receiver from searching and "locking on" to stray radio frequencies (wireless telephones, walkie-talkies, etc.) when the transmitter's power switch is turned off. In addition, Digital Frequency Control allows the transmitter to have only one on/off switch. This switch is noiseless in operation and does not send damaging "pops" or "clicks" through the system.

Other options include

- Battery fuel gauge or test
- Mute buttons (in case you have to sneeze or cough.)
- Different microphone patterns or types
- Microphone or line output

When purchasing a system, it is important that your salesperson knows your needs; intended use, existing frequencies and the area that you intend to use your system. If you are considering a wireless system, please call Integrated Audio Systems today.