

What's That Buzz?



Photo: Tea Jagodic

AUDIO TROUBLE-SHOOTING MICROPHONES

by Michelle Makariak

The band has never sounded better, the worship leader has an exciting lesson planned, and the children's ministry will be presenting a short dramatic piece they've been practicing for a month, and you want the sound to be perfect. Your audio team (made up entirely of volunteers) has prepped the main sanctuary, and all mics are in place for what promises to be a truly wonderful service...and then you run a sound check, and things fall apart. Perhaps only some of the microphones work; perhaps you're experiencing feedback, or muddy and distorted sound, or even no sound at all. What are you going to do? First things first: don't panic! Trouble-shooting microphone problems doesn't have to be difficult: step back, take a deep breath, and assess the problem or problems. Look at the different systems you have in place – are the audio issues affecting your wired or wireless microphones, or is the problem with the lavalier or head-worn mic? Different mics have different issues, so it helps to know just where the problem seems to be originating.

removing the grille and speaking into the mic. If the high frequencies return, clean the grille, get a new one or swap it out with one that works. You can reduce this problem by putting a little foam windscreen over the grille to help protect it.

This is especially important for headset and lavalier mics, which tend to 'gunk-up' faster than other types of microphones because of the size of the mic head, and the proximity to the mouth and body. Andrew Kornstein, House of Worship Market Development Manager, Sennheiser, says it's important to use accessory caps. This will help protect the mic head from sweat and saliva, and has the added benefit of improving the tone. "The caps are designed not only to protect," says Kornstein, "but also to shape the sound to a more desirable tone. Take some time to find the right cap for your preacher's voice."

The loss of low frequencies in a microphone is often caused by a cartridge or electronics failure, but can also be caused by a wiring problem either in the mic cable or the microphone itself. With a dynamic mic where phantom power is present, this is not uncommon. A properly wired dynamic mic should function the same with or without phantom power, and shouldn't be affected by the presence of phantom power. However, cabling faults can occur that effect the phantom power



Shure KSM9HS Vocal Mic

On rare occasions, the voice coil or one of the connecting leads from the mic cartridge itself will fail. You can sometimes see the broken wires if you unthread the cartridge from the body.

-Tim Vear, Senior Applications Engineer, Shure Inc

and cause the low end frequencies to be drowned out. If there's a wiring fault in the cable, this will cause the phantom power current to flow into the dynamic mic and will generally result in a dramatic loss of low frequency output in the microphone. It's easy to trouble shoot – if you plug the dynamic mic into another channel and it sounds fine, it's an issue with the mic cable or wiring. Alternatively, if you switch off the phantom power and

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the dynamic mic sounds fine afterwards, that also indicates a problem with the wiring in the cable. Just be aware that when you switch phantom power on in a mixer you should turn the sound down to avoid a pop through the system.

What about Feedback?

Sometimes people will attribute feedback to a mic malfunction and, while some mic failures can cause this, feedback problems are often not related to mic performance issues. Feedback is more often caused by how the mic is being used in the sound system. Sometimes, different polar patterns and different frequency microphones can feedback because of the acoustic set-up; the mixer and amplifiers contribute gain. Make sure your set-up is functional for the types of mics you are using.

This awareness must carry over to your wireless microphones as well. According to Kevin Lake, Technical Director, Avlex Corp., wireless mics are no more prone to feedback than wired; however, since the freedom of movement wireless provides makes it is easier to accidentally walk in front of

speakers, feedback problems are more common. “Be aware of where you stand and where you move when using wireless microphones,” Lake suggests. “You can avoid a lot of issues simply by knowing where potential points of interference are and staying away from them.”

Wireless Microphones

“The number one issue with wireless microphones not working,” says Steve Savanyu, Director, Educational Services, Audio Technica US, “is dead batteries. Make sure your wireless batteries are fresh and/or charged. If it’s a critical service, be safe and put new batteries in the transmitter!”

And it may sound obvious, but Savanyu also advises you make sure your wireless is turned on properly. “Often times, wireless mics have a three position switch – off, mute and on – it’s easy to turn the microphone off or put it on mute when you think you’re switching it on.”

Wireless microphones are more prone to interference than wired, which is the nature of radio communication. However, most interference is avoidable if you follow some simple steps.



Avlex MIPRO ACT-818/828 Wireless System

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-Kevin Lake, Technical Director, Avlex Corp.

- 1) Make sure different systems aren't on the same frequency, or on frequencies that are too close together.
- 2) Check your squelch setting on the receiver. The higher the setting, the less interference you will have. However, keep in mind that high squelch also reduces the operating range, so set the control to the setting that mutes the

“Although microphones can be used in a variety of different ways, certain types of mics excel in specific applications. For example, when miking a large area such as a choir, you want to choose a microphone that has greater sensitivity to capture large areas from a distance, which means a condenser microphone is your best choice.”

interference without going overboard.

- 3) Turn off all unnecessary electronics (computers, CD players, etc.), because they can also cause interference with wireless mics. For the computers you have running, make sure they are three feet away from the receivers and transmitters. Lake points out that smart phone interference is often a problem. “All phones that use the GSM standard run on frequencies in either the 800 to 900 MHz or 1,800 to 1,900 MHz range, transmitting data in RF energy bursts that are short



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- ▶ Accessories: analog XLR-remote, Radio remote, Hanging set, Duct adaptor, Flightcase

but powerful. These bursts occur 217 times per second at power levels as high as 2 watts, and there 217 Hz 'lightning bolts' can easily induce a ragged sounding noise into most audio equipment. Best way to avoid this? TURN OFF YOUR PHONE."

- 4) Keep radio and system transmitters, and other wireless systems, 10 to 15 feet away from receiving antennas, and make sure antennas don't touch each other.
- 5) If you are wearing a body pack, make sure the mic is plugged in and the antenna isn't wrapped around the belt
- 6) Be aware that phantom power could be the culprit here as well – make sure it's turned on.

The Cable Conundrum

Sometimes, it's not the microphones causing the problem – it's the cable that's being used. According to Jose Gonzalez, Product Manager, Hosa Technology, Houses of Worship tend to take good care of their microphones, but not their mic cables. "Cables end up simply tossed inside a big plastic crate, which obviously leads to messy tangles and kinks, both only made



*Hosa Technology Mic Cable
All cables should be coiled and placed on wall hooks with individual cable ties to ensure the coils don't get tangled.
-Jose Gonzalez, Product Manager, Hosa Technology*

worse as each cable is pulled from the crate before use. Volunteers are always pressed for time and cables are yanked from the box as quickly as possible, adding kinks, knots, and sometimes even breaking the conductors inside or the solder joints."

His suggestion? Take the time to

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organize and wrap your cables properly: “All cables should be coiled and placed on wall hooks with individual cable ties to ensure the coils don’t get tangled on the wall. You can identify the type and length of each cable using labels or simple color tape, and if there are some cables that are used in all services, place those at separate area of the wall to keep the basic setup quick and easy.”

It’s important to remember your cables are just as much an investment as your microphones, so treat them well.

Mic it Right

Problems are also caused when the right type of mic isn’t being used. Although microphones can be used in a variety of different ways, certain types of mics excel in specific applications.



*Sennheiser’s MKE1
Accessory caps will help protect the mic head from sweat and saliva, and has the added benefit of improving the tone.
-Andrew Kornstein, HoW Market Development Manager, Sennheiser*

For example, when micing a large area such as a choir, you want to choose a microphone that has greater sensitivity to capture large areas from a distance, which means a condenser microphone is your best choice. If you use a dynamic mic, the signal will be too weak and you’ll need to turn it up, which invites feedback. “It is important to learn the difference between condenser microphones and dynamic microphones and the types of applications that they are best suited for,” states Gene Houck, National Sales Manager, Audix Inc. “If you are not sure if a microphone is a condenser or a dynamic microphone, a simple test is to mute the channel, plug in the mystery mic, turn off any

phantom power that the mixing board provides and then unmute. If the microphone will not work without the phantom power turned on, it is a condenser mic.”

Trouble-shooting your microphone problems doesn’t have to cause panic. Work down the list of potential problems, starting with the easiest – and most often overlooked – causes of mic malfunction: phantom power, whether it’s plugged in or not, and batteries. From there, apply a logical approach to narrowing down the problem. Swap gear out, check for loose wires, clean out the grille...

It’s in your power to make your worship sound perfect every week, for every service and every event. ♦

Michelle Makariak is the editor of Technologies for Worship magazine. While she’s related to a few Mike’s, the only audio problem she has with them is that they talk a lot.

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