

**Contact:**

Mike Lohman  
Shure Incorporated  
847-600-6417  
lohman\_mike@shure.com

Melody Demel  
Formula PR  
619-234-0345  
demel@formulapr.com

**James Stoffo Selects Shure Wireless for Super Bowl**

**NILES, Ill., Feb. 17, 2015**—As onsite Entertainment RF Engineer for Super Bowl XLIX, James Stoffo was charged with wireless system design and product selection for the wireless systems used in the pregame and halftime entertainment as well as the referee’s microphone and all associated communication systems.

“As a consultant to Professional Wireless and ATK Audiotek, this was my 15th Super Bowl, and probably the most challenging ever,” says Stoffo. “There were over 1,000 active frequencies during the game, mostly media, which is all managed by the NFL. Karl Voss is their lead frequency coordinator, and he does a fantastic job. My responsibility was handling RF down on the field. I did the same thing for the Pro Bowl, the week before in the same venue. Sort of like a live dry run for the Super Bowl, which is really convenient.”

For referee Bill Vinovich’s microphone system, Stoffo selected Shure Axient® wireless. “This year was the first time I was responsible for the referee mics, and I wanted a system that was controllable over the air,” he explains. “That system is in play the whole game, and no one likes hearing dropouts on referee announcements. I’ve heard it a million times while watching football games, and it was not about to happen on my watch. That’s why I wanted Axient.”

Shure Axient uses backchannel communications to enable full remote control of the transmitter. The system also detects oncoming interference and alerts the operator to change frequencies, with alternate frequencies queued up for instant, silent changeover, delivered through Axient Access Points located at the 20 yard lines on both ends of the field. For further protection, the referee was equipped with two Axient bodypack transmitters, each of which had two lavalier microphones for redundancy.

“We did, in fact, have to change the ref’s frequencies multiple times during the game, but no one ever knew, because Axient lets us do that silently and remotely,” reports Stoffo. “We were constantly monitoring his channel, plus, we would get alerts from the Axient system. Because the ref doesn’t speak constantly, we always had time to find the cleanest frequency and make the change. No one ever had to run out onto the field to change hardware, and everything was seamless.”

Stoffo took a similar approach to the entertainment wireless systems, using Axient handhelds with KSM9 capsules for both pregame performers: John Legend singing “God Bless America” and Idina Menzel’s a cappella rendition of the national anthem. In addition, an Axient bodypack system with

WL184 lavalier mic was used on the drill sergeant of the color guard. “The audio quality of the system is outstanding, but the other important aspect was RF performance,” Stoffo says. “Nothing else does what Axient can do.”

Both of the pregame music performances, as well as the entire halftime show, used 11 channels of Shure PSM®1000 in-ear monitor systems – again, at the specific request of Stoffo. The dual antennas and linear amplifier for RF gain control in the bodypack receivers can effectively lower the noise floor, giving the performers a cleaner signal, even in the intense RF field in University of Phoenix Stadium.

“The stage was made entirely of LED light panels, which looked great in terms of visual effects, but creates a lot of stray radiation that is deadly for wireless mics. In addition, the main vocalists were using their personal wireless systems,” explains Stoffo. “To ensure everything sounded great, we required the Shure PSM 1000 for in-ears. The diversity reception is just head-and-shoulders above any alternative. But we didn’t stop there. We also sent techs out on the field with helical antennas pointed at the artists, both to receive their microphone signals and send them their in-ear mixes. We literally did everything in our power to make sure that wireless was never an issue, even when Katy Perry was flying above the stadium.”

Another technique used was to augment the usual UHF communications for the tech crew with the UV-1G, a high-band VHF system by Radio Active Designs (RAD), for whom Stoffo is co-founder and Chief Technology Officer. The preferred headset among the crew was the Shure BRH441M broadcast single-muff model. “You have to use the VHF spectrum in order to get FCC protection in the white spaces database anyway, so it was a perfect fit,” says Stoffo. “We tried several different headsets for the comm systems, and the techs onsite agreed the Shure units sounded and felt the best, so that’s what RAD will be recommending now.”

During the game, Stoffo’s team was constantly watching every frequency for stability. “We re-used frequencies where we could, which gave us some flexibility in terms of backup channels. We monitored on my Rohde & Schwarz precision spectrum analyzer, but also used the Axient Spectrum Manager via Shure Wireless Workbench,” he says. “By the end of the game, Evan Hall, my A2, was finding frequencies faster with the Shure gear than I was with my \$25,000 piece of test equipment. I found that to be pretty impressive.”

Overall, Stoffo reports that every aspect of the on-field entertainment wireless performed flawlessly. “I attribute that to two things,” he concludes. “First is preparation and planning, being ready for every possible contingency. Second is equipment and execution. Shure Axient and PSM 1000 are designed to perform under the most challenging RF conditions, and the results speak for themselves. Mission accomplished.”



*Shure Axient® Wireless Management Network*

**About Shure Incorporated**

Founded in 1925, Shure Incorporated ([www.shure.com](http://www.shure.com)) is widely acknowledged as the world's leading manufacturer of microphones and audio electronics. Over the years, the Company has designed and produced many high-quality professional and consumer audio products that have become legendary for performance, reliability, and value. Shure's diverse product line includes world-class wired microphones, wireless microphone systems, in-ear personal monitoring systems, conferencing and discussion systems, networked audio systems, award-winning earphones and headphones, and top-rated phonograph cartridges. Today, Shure products are the first choice whenever audio performance is a top priority.

Shure Incorporated is headquartered in Niles, Illinois, in the United States. The Company also has regional sales and marketing headquarters in Eppingen, Germany, and Hong Kong, China, with more than 30 additional manufacturing facilities and regional sales offices throughout the Americas, EMEA, and Asia.

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