Sennheiser Spectera for 2025 ACM Awards

Picture: Rich Polk / Getty Images

At this year’s Academy of Country Music (ACM) Awards, innovation wasn’t only reserved for the artists onstage. Behind the scenes at the Ford Center at The Star, wireless RF technology was undergoing its own critical test: Sennheiser’s Spectera, the world’s first wideband, bidirectional wireless ecosystem. While Spectera was being put through its paces in RF testing, the Digital 6000 wireless system, paired with both the MD 9235 and MMD 935 capsules, supported the performances of Blake Shelton, Kelsea Ballerini and the Backstreet Boys as millions of viewers tuned in on May 8, 2025.

Stephen Vaughn, RF Coordinator for Soundtronics, was the engineer tasked with giving Spectera its first high-profile trial run in a live award show environment notorious for difficult spectrum and unforgiving conditions. Vaughn admits he was cautious at first. “Honestly, I was a bit hesitant. Given the environment we were in - a live show - I was already occupying a lot of the clean spectrum typically needed for RF use to ensure good performance. So, I had to place the Spectera system in a pretty noisy DTV spectrum. I wasn’t expecting much in terms of performance, especially since I couldn’t use a media converter to get an antenna out to the dish location. But surprisingly, the system performed well on stage and in the covered house areas.”

With testing limited to rehearsals and crew, Vaughn’s team still found ways to rigorously put the system through its paces. They leveraged Dante from the control computer and streamed music to simulate real-world use, then distributed multiple packs for walk testing throughout the arena. “We had no failures - except for some minor issues outside the intended coverage areas. Overall, it was impressive,” Vaughn recalls.

Spectera’s wideband approach allows IEMs and mics to share the same TV channel, automatically coordinating all packs. The system constantly senses and adapts, so engineers don’t need to wrestle with calculations or worry about local interference. “The noise floor was around -80 dBm. One cool feature is that it measures the noise floor while transmitting, so you can see what you’re working over,” Vaughn notes.

What surprised Vaughn most was how reliably Spectera worked even in what RF engineers would consider “dirty spectrum” - the kinds of channels typically avoided for mission-critical audio. “The biggest surprise was the performance in the DTV spectrum - especially at those levels,” he says. “Having the freedom to use the device without worrying about dropouts or interference is a big deal.”

The system’s scan and monitoring features proved their worth as the team distributed units to audio staff throughout the arena. “I wanted to make sure the system could handle everything in real time - scanning and operating all units

simultaneously without any flaws or data crashes. Everyone who used them came back impressed - with both the performance and the sound quality.”

Though Vaughn’s expertise is RF, he experimented with two of the system’s audio link modes: Live Ultra Low Latency and Live Low Latency. Operators can choose from 11 audio link modes to balance audio quality, latency, channel count, and range according to the needs of each production. With latency as low as 0.7 milliseconds, performers experience clear, immediate sound that’s critical in live environments.

“Regardless of the mode, we didn’t experience dropouts or garbled audio - unless we were really far from any antennas or out of line of sight,” Vaughn says. “Even then, performance degradation was minimal. And that’s an easy fix-just reposition or add an antenna. As a technician and RF provider, that’s the most important thing: the ability to improve performance by adjusting antenna placement.”

Spectera’s single rack-space base station and wideband channel made a striking difference in setup as the base station packs in redundant power and network (Dante, with optional MADI). “The single base station made things really easy. I could just place it on top of my rack and be done. With my other RF systems, I usually need a massive setup - like a 32-space double rack... But with Spectera, it’s just a single rack space. That’s it. The compact size is amazing,” shares Vaughn. With this, Spectera can be controlled via the intuitive LinkDesk desktop software interface offering unprecedented remote control and monitoring capabilities, or alternatively with Spectera WebUI browser-based management, users can adjust IEM volume, audio levels, or device health from a laptop, tablet, or even a phone.

Looking ahead, Vaughn believes Spectera’s scanning and spectrum analyzer features could make every RF coordinator’s life easier, especially for touring acts. “Those kinds of flexible options are vital. My advice would be: Take full advantage of all the features the system offers.” While Spectera was being tested behind the scenes, the trusted Digital 6000 wireless system, paired with both the MD 9235 and MMD 935 capsules, powered the performances for the Ford Center audience as well as the millions of viewers tuned in for the broadcast.

For the Backstreet Boys, long accustomed to the demands of both live harmonies and national broadcasts, reliability and vocal clarity were clear standouts. FOH Engineer James McCullagh shared, “The Sennheiser 6000 mics are fantastic. We have tried several different capsules over the years, and the MD 9235 capsule has the most natural response across all five vocals. Couple that with the fact there is no intermodulation between the mics, and it basically chooses itself. Doing the ACM’s is always a privilege and this was no different - one more opportunity to showcase their signature vocal harmonies.”

Kelsea Ballerini’s audio team echoed the confidence, highlighting consistency and vocal character as essential factors on a night this important. “The 6000 Series constantly delivers. We take this system everywhere from tours to award shows, and it always performs beautifully,” reported her FOH Engineer, Chris Diener. “The 9235 capsule is perfectly suited for Kelsea’s vocals, and we are always hearing how much the shows love the frequency response for her voice.”

Blake Shelton’s crew relied on the same dependability under pressure, but with gear optimized for his trademark sound. “For the 2025 ACM Awards, we relied on the 6000 series with the MMD 935 capsule for Blake’s vocals - it gives us the

powerful, present sound we’re after and holds up incredibly well in wedges, with great feedback resistance,” said monitor engineer Brad Baisley. “We also used a full complement of Sennheiser Evolution series dynamic mics with Neumann KM 185 condensers on the drums, which gave us consistent, reliable performance all night. Sennheiser gear continues to deliver exactly what we need on a high stakes show like this.”

For Vaughn and his team, Spectera’s first real-world trial at the ACM Awards was conclusive: “The units worked flawlessly, even in dirty spectrum. It gives you confidence. You can say, ‘Bring it - we can place it anywhere in the spectrum,’ and still have it work well. That’s a big deal for the future of live production. Spectera really feels like it’s going to be an important tool for the future.”

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