

**LISA PIÑERO CAS,**  
Board of Directors,  
Production  
Mixer

Recent and  
current projects:  
*Steve Jobs, Suicide  
Squad*

Lisa works primarily on features and travels with about 18 Lectrosonics RF's. She also carries a variety of small mixers in addition to her

sound cart to accommodate different shooting situations, exterior, interior, cars, etc., basically providing a "zone defense" in anticipation of both planned and unexpected situations. She too uses the RF manufacturers' software to scout for usable frequencies, along with additional computer software and brings with her a number of antenna options. Her preference is to hard-wire her booms. With her not in the car on "free drive" car recordings, she uses a version of a Dugan Automix available in one of her mixers. She finds that valuable in creating a better dailies mix.



**NOW PART 2** RF spectrum users requiring a  
large number of frequencies

While I will discuss primarily television projects requiring large numbers of frequencies, they are almost always associated with stadiums, concert halls, multistage motion picture and television facilities, etc. For these projects, there is often a person or office assigned by the venue to clear and regulate frequency assignments.

There are only a limited number of RF vendors around the country with the engineering capability and equipment to make projects of this size work. Those that come to mind: (in LA) Soundtronics Wireless (also in Las Vegas), ATK Audiotek, (in NY) Firehouse Productions, Masque Sound, Sound Associates, PRG, Professional Sound Services, and CP Communications. My apologies to any I may have inadvertently left out. From my experience, all the vendors are good people and support each other on very large projects or when multiple shows all fall at the same time. For purposes of this article, I'll focus on just one vendor, Soundtronics Wireless, and its owner, David Bellamy.

If not the primary RF vendor for most live-event shows in the LA area, often the technology and attention Soundtronics Wireless has developed is in large part responsible for their success. One example: For more than eight years, I was the production mixer for *American Idol* on Stage 36 at CBS TV City. *Idol* typically used 50-plus RF's for its host, judges, contestants, some instruments, vocals, etc., along with a large wireless stage manager and communications PL system.



**Dave Bellamy**

Next door on Stage 46 was (and still is) *Dancing with the Stars (DWTS)*, with a similar complement of RF and communications channels. The two shows rehearse and are on air roughly at the same time. All in all, between the two shows, there are probably close to 150 frequencies operating simultaneously. Soundtronics Wireless provides RF's and frequency allocations for both shows. Dennis Dreier is the CBS person in charge of approving frequencies. The stages are reasonably well-shielded from each other but Dave Bellamy, finding an unreasonable amount of reflected RF from Mount Wilson, from the west wall of Stage 36, covered that wall with an RF paint designed to minimize its effect on the stage RF sys-

**PART 1 IN SUMMARY**

At present, there seems to be a reasonable and clear path to usable frequencies for production people working on features and episodic television. For their part, RF system manufacturers have stepped up with technology to help RF system users quickly find usable frequencies for safe operation. At the same time, it seems logical that these manufacturers are looking to a newer generation of high-quality systems requiring less spectrum space. From my brief experience visiting the FCC, they are aware of the present prolific use of the RF microphone spectrum by many users for wildly different applications. Best to periodically check with manufacturers of the RF's you are using and/or the FCC at [fcc.gov](http://fcc.gov) to learn of any pending reallocation of RF spectrum.

tems. To the best of my knowledge, in eight-plus years, the only problem we had between stages was when a stage manager from *DWTS* came to visit during a lunch wearing his PL transmitter.

**What's the secret? The secret is preparation, proper execution.**

Soundtronics Wireless, recently having successfully provided the RF systems for the musical *Grease*, is presently preparing for another live musical, *Hairspray*, for broadcast on NBC December 7 on the Universal backlot. By now, they have completed a full RF spectrum analysis at the site from 80 MHz to 960 MHz to determine present RF traffic and to provide a spectral noise-floor analysis. It is the spectral noise-floor analysis that determines the RF frequencies chosen for communications, ear monitors, talent, and principal talent.

As this article is being written, Dave has gone over staging and performance requirements to formulate a plan for various zones of antenna placements and coverage. But there's another secret to Soundtronics' success. Some time ago, Dave commissioned, and had built, several versions of custom, proprietary antennas. He said he considers Soundtronics Wireless primarily an antenna systems company that happens to rent RF's, although he neither sells nor rents his antenna systems.

From personal experience on many, many shows with Soundtronics Wireless, there is such a high comfort level

with their professionalism and attention to detail that it allows my concentration to shift to the mix and performance and away from anxiety about the RF systems. That being said, it is always prudent to have a spare RF plan for principals, just in case of a mechanical failure or accident.

## PART 2 IN SUMMARY

It seems clear, this area of large RF system users is not for the unprepared or inexperienced. This is also true of the mixers and support personnel asked to execute these concepts. It is the sheer volume (no pun intended) of production that stresses these resources. I asked Dave Bellamy where he thought we were headed. He said a probable extension of channels above 1 GHz as a start. He expressed the hope that stages and personnel dealing with RF systems have a better understanding of their setup, operation, and limits. It's also probable that RF system manufacturers will continue to develop new products of high quality using less operational spectrum.

Special thanks to all the CAS mixers and people I spoke with, along with my appreciation for their dedication to their craft. Also to Dave Bellamy for his personal tutorial on RF systems and their future. •

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