

Meyer Sound's Low-Frequency Directional Control Helps Bring New Orleans to Duke Ellington Jazz Festival

Jazz On the National Mall was the highlight of this summer's [Duke Ellington Jazz Festival](#), the largest annual music event in Washington, DC, with more than 100 performances staged at concert venues and clubs around the city. In front of the Washington Monument, a Meyer Sound system provided by Coatesville, Pa.-based [DBS Audio](#) enabled thousands of artists and visitors to fully indulge in the splendid dynamics and mesmerizing beat of a concert program dedicated to New Orleans jazz, with performances by Terence Blanchard, Trombone Shorty, and Donald Harrison Jr.

This was the first year DBS Audio was chosen to provide sound reinforcement for the Duke Ellington Jazz Festival, and the crew was given very specific goals for the Sylvan Theater stage on the Mall. In addition to providing even coverage for the audience on the lawn, DBS Audio was tasked with addressing the excessive low-frequency buildup on the stage and in the areas surrounding it—including the artist section and the VIP pit—a problem attributed to a retaining wall on the stage and plagued the event for several years.

"This sub bass issue manifested itself as a rolling lobe of unfavorable bass," says Bill Winn, FOH engineer and supervising producer who has been involved for all five years of the festival. "The reason I wanted to change sound companies was to get a Meyer rig in there and experiment with ways to use the sub bass management tools to smooth out this bass response and make it more musical."

Using a combination of low-frequency directional control techniques, the linearity of Meyer Sound subwoofers, and design modeling in the MAPP Online Pro acoustical prediction program, DBS Audio and Meyer Sound Design Services created an unconventional configuration that effectively solved the challenges at the Sylvan venue without losing bass power at FOH. "The prediction of the proposed design looked great on a laptop, but the proof would be in the actual application," adds Winn. "When we heard it, I was amazed—I think we all were—as the problem was absolutely gone."

The final subwoofer configuration comprised left and right cardioid arrays of three 650-P subwoofers per side to prevent low-frequency energy from spilling onto the stage. For the VIP area, the low-frequency energy of these subwoofers was steered slightly upwards and away from the guests at the front, with a fourth 650-P firing at 45 degrees inwards towards the center of the VIP section to eliminate bass buildup. Using the delay and polarity control capabilities in the Galileo loudspeaker management system, a 5.2 dB low-frequency reduction was achieved in the VIP area, while a 15.3 dB reduction on the stage facilitated a less contaminated performance environment for the artists.

Sixteen MILO line array loudspeakers covered the vast audience area, with four UPJ-1P VariO loudspeakers serving frontfill duties, two CQ-2 loudspeakers as outfill, in addition to four UM-1P, ten USM-1P, and two UPA-1P loudspeakers used for stage monitoring. A SIM 3 audio analyzer handled final tuning.

"For the first time in four years I had zero complaints from the artists about the excessive bass in their area," Winn continues. "Coverage for the audience was very good but cleaning up the sub bass issue near the stage without losing any power out at FOH was a true work of art."

David Brotman of DBS Audio reports that bass steering is a useful technique to acquire for future live shows. "DBS has been using electronically steered subwoofer arrays for years with some cardioid deployments, but steering the sub beam over a three-foot wall no more than five feet from the subs was something we had not done before," says Brotman. "The complete support of Meyer Sound Design Services furthered my understanding of cardioid sub steering. I am always amazed by Meyer's determination to make every event, large and small, as perfect as it can be. That has always been our philosophy at DBS Audio and that is why we have solely used Meyer Sound systems since 1992."