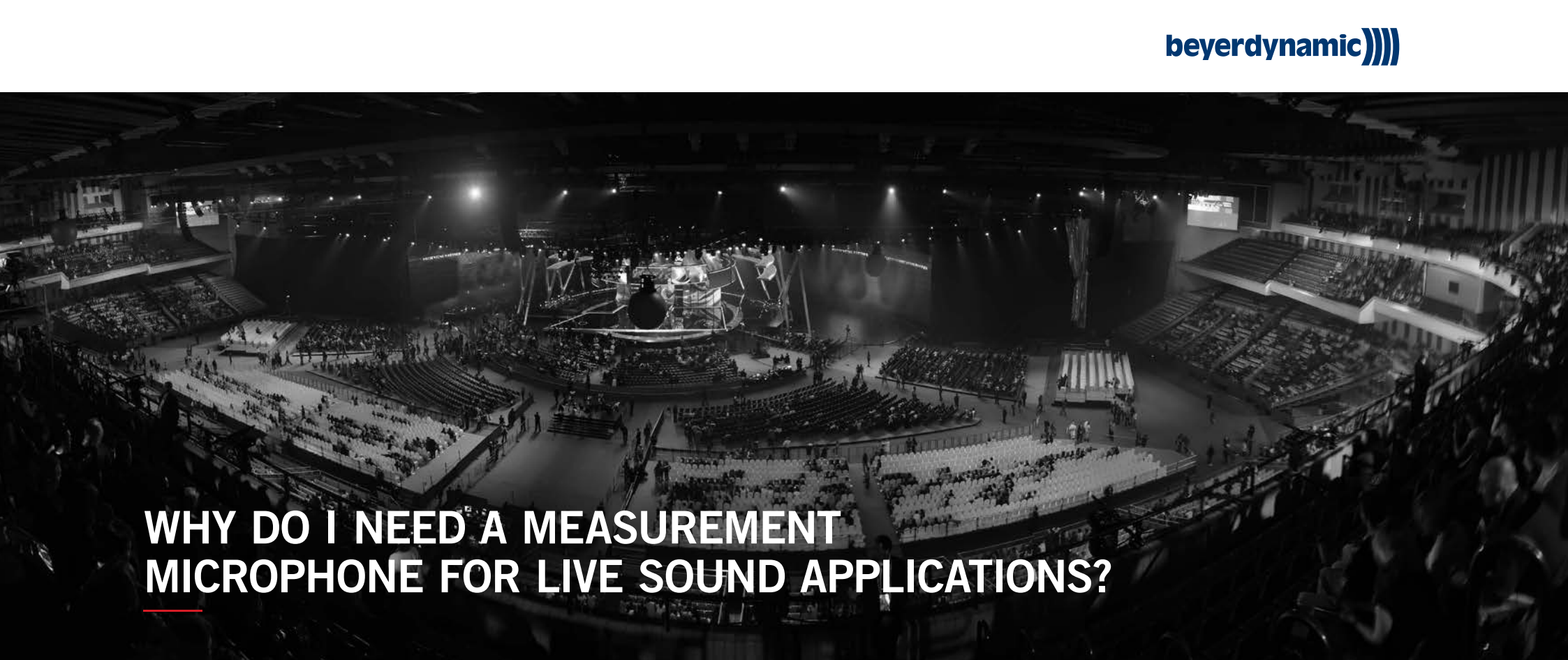


MEASUREMENT MICROPHONES



A high-angle, black and white photograph of a large concert hall. The stage is illuminated with bright spotlights, and the audience is seated in tiered rows, filling the lower half of the frame. The overall atmosphere is dark and professional.

WHY DO I NEED A MEASUREMENT MICROPHONE FOR LIVE SOUND APPLICATIONS?

The reason of tuning a sound system is to provide the same sound for every seat. This is the reason why many productions have a separate system technician who takes care about the sound system (PA). He works together with the sound engineer to get the best possible sound.

A system technician uses a drive rack with controllers to control the whole PA system by a computer and is placed besides the FOH desk. He has to take care about following parts of his job:

- Plan complete PA system for a tour
- Fix the rigging points for the PA system in each venue
- Speaker setup
- Driver functionality
- Speaker aim and splay
- Speaker level and crossover
- Phase/delay of different speakers (subwoofers)
- Filter/EQ

To measure the frequency and phase response in different places, the system technician uses a software like Smaart or systune.



With the **MM 1** and the **TG MM1w**, beyerdynamic offers the possibility to carry out both wired and wireless measurements simply.



MM1

**Wired measurement microphone
for live sound applications**



The MM 1 is an omnidirectional measurement microphone.



The narrow tubular construction ensures that the microphone has negligible influence on the sound field so that an increase in sound pressure is avoided with high frequencies.

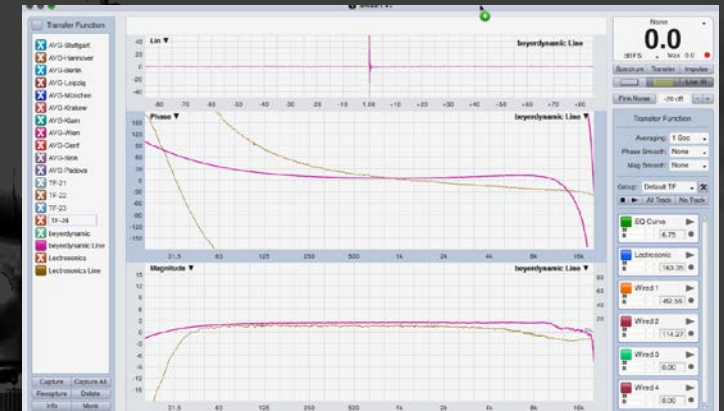


A natural reproduction is achieved due to the linear frequency response.



Each microphone is supplied with an individual 0° frequency response curve. When sending a request to AudioSystems@beyerdynamic.de, the measured data can be sent via e-mail.

TG MM1w



Frequency response comparison between beyerdynamic TG MM1w and Lectrosonics R400

Interchangeable measurement microphone capsule for the handheld transmitter of the digital wireless system TG 1000 also enables wireless measurement!



For this application, it is important to use a digital wireless system, because an analog wireless system has a compander integrated and the frequency response is nonlinear. The digital wireless system TG 1000 has no integrated compander and a very linear frequency response.



With the TG MM1w, the TG 1000 digital wireless system presents an all-in-one solution. The wireless system can now be used not only to mike speaking and singing voices and musical instruments, but also to calibrate PA systems.



TG 1000 covers 319 MHz of the UHF band. That's four times more than most of our competitors.



By easy changing the capsules of the handheld transmitter, a wireless measurement microphone will have to be made from a voice microphone without changes on the hardware.



With a wireless measurement microphone, the system technician is very flexible because he can walk around with his tablet/smartphone and a measurement microphone in the hand, without needing to lay metres of cable. Especially when it is in a large arena, he can operate completely flexibly and faster than with a wired measurement microphone.



Ulf Oeckel, freelance FOH mixing & audio system engineer
(on tour with Adele, Rammstein, Red Hot Chili Peppers,
P!nk, Sade, Cher, Mark Knopfler):

"When calibrating using a tablet in the venue, the handheld transmitter with its interchangeable measurement capsule is very convenient, light and practical, but also sturdy. I use the system primarily for time alignment, monitoring the system response in different areas of the arena during the show. Generally, when I'm on tours I go through up to six measurement microphones, because in the HF range most of them suffer performance and therefore become inaccurate. After nine months, the TG MM1w is still delivering constant and reliable measurements."