

# ATSC Recommended Practice Monitoring

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# Purpose

- Characterize standard monitoring environments and speaker placement for mixing. (BS-775-2)
- Set correct reference levels (acoustic and electric) for mixing environments.
- Stress the importance of accurate frequency spectrum response with in a monitoring system.
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# Characteristics of Rooms and Spaces

**Table 7.1** Categories of Audio Conditions used in Television Production

Category	Characteristics
I	Principal audio monitoring control rooms with specialized acoustics and sound systems. Channel range up to 5.1 (3 front/2 surround/0.1 low frequency enhancement). Well isolated from other operations. Widest frequency and dynamic ranges equal to best home cinemas properly aligned. This type of room may be used for quality control at the network level, for example checking program material for conformance to delivery requirements when a question arises at ingest stations. Sound monitor quality dominates over production requirements in this category of room. Broadcast organizations might be expected to have only a small number of such rooms.
II	Audio-mostly production spaces with equipment needs and placement supplanting absolute audio monitoring conditions, although audio monitoring is still expected to be good. Channel number equal to highest number used for material originating in the room. Good isolation from other operations. This type of room may be used for program origination, with its output occasionally subject to check in a Category I room. Low-frequency range and headroom may be somewhat restricted compared to a Category I room.
III	Audio editing spaces, premix, and prelay rooms, and other spaces the output of which is typically expected to be integrated into programs in a Category II room or better. If used for final mixing, apply the level and equalization recommended practice herein.
IV	Trucks and booths for program mixing. These spaces have special considerations due to their small room volume, high background noise level, high level of early reflections, and communication needs in a production environment.
V	Headphone monitoring systems recommendations. Used for ingest stations in crowded environments, quality control in machine rooms, and the like.

# Standardized Reference Levels

Universal monitoring system requirements are reflected in the RP and can be summarized in the following statements:

- Room size has a direct impact on loudness. Thus the physical Sound Pressure Level reference for monitoring must be scaled for room volume. Setting proper sound pressure reference levels for the listening environment will provide greater uniformity of product from room to room.
- Monitoring frequency response is important, especially at the frequency extremes, where current production has the most variation.
- Monitoring positioning and appropriate delays are key in order to properly localize sound as well as create proper phantom images (stereo).

# Reference Sound Pressure Levels

Table 7.2 Reference Sound Pressure Level

Categories	Room Volume in Cubic Feet	SPL in dB re 20 $\mu\text{N}/\text{m}^2$
I, II	> 20,000	85*
	10,000 < 19,999	82
	5,000 < 9,999	80
	1,500 < 4,999	78
	< 1,499	76
III	Depends on room usage. For editing purposes, may be controlled by the editor for use with the material at hand. For final program mixing, follow the recommendations for categories I, II above.	
IV	< 1,500	76
V		Use 2 cc. Coupler and set 440 Hz level to 74 dB.
* Per SMPTE RP 200 [6]		

# Balanced Frequency Spectrum For Monitoring Systems

For higher quality spaces (category I-III) room equalization is highly desirable for optimum frequency response for program content. It has been shown that mixers produce mixes that are the inverse of errors in the monitor frequency response.

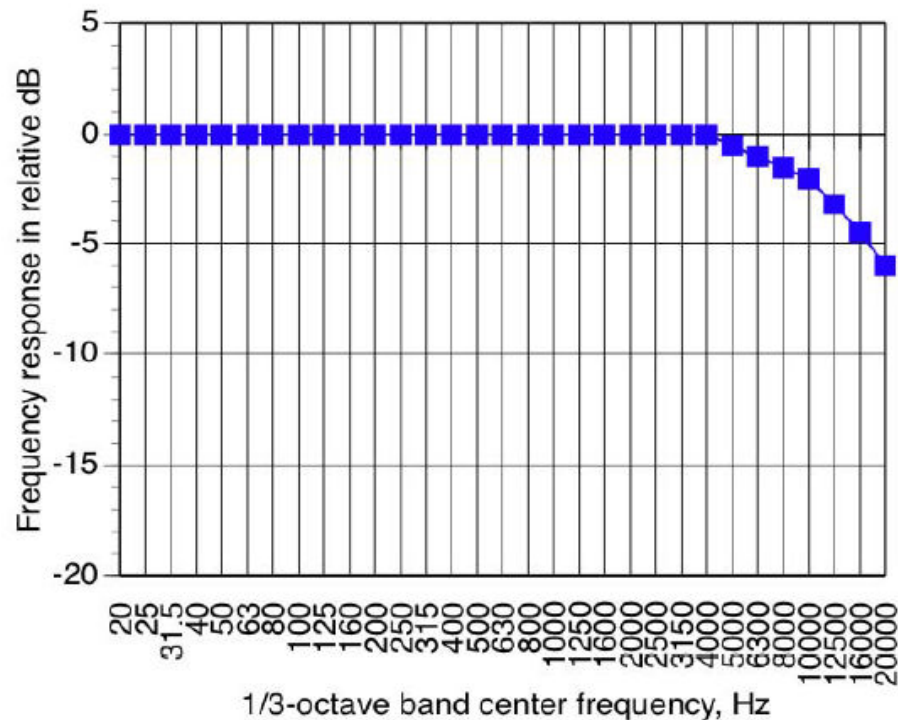


Figure 7.1 Operational room electro-acoustic response curve.