

## Demonstration 4. The Decibel Scale (1:57)

In the first part of this demonstration, we hear broadband noise reduced in steps of 6, 3, and 1 dB in order to obtain a feeling for the decibel scale.

In the latter part, a voice is heard at distances of 25, 50, 100, and 200 cm from an omni-directional microphone in an anechoic room. Under these conditions, the sound pressure level decreases about 6 dB each time the distance is doubled. (In a normal room this will not be the case, since considerable sound energy reaches the microphone via reflections from walls, ceiling, floor, and objects within the room.)

### Commentary

"Broadband noise is reduced in 10 steps of 6 decibels. Demonstrations are repeated once."

"Broadband noise is reduced in 15 steps of 3 decibels."

"Broadband noise is reduced in 20 steps of 1 decibel"

"Free-field speech of constant power at various distances from the microphone."

### References

- ISO R532 (1966), "Method for calculating loudness levels," (International Standards Organization, Geneva, Switzerland).
- S.S. Stevens (1955), "The measurement of loudness," *J. Acoust. Soc. Am.* 27, 815-29.