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Application Note
Sound Level Guide

When laying out a Voice Evacuation or Mass Notification system, determining the size of the amplifiers and the number of speakers depend upon a number of factors.
Primarily the size of the area that needs to be covered and the existing noise level in that area.

The National Fire Alarm Code (NFPA 72) specifies that they "shall have a sound pressure level at least 15 dB above the average ambient sound level or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet above the floor in the occupiable area, using the A-weighted scale (dBA)."

To properly do a system design, the ambient noise level of the area must be measured as stated above, but to do an initial concept, the use of 'typical' readings can be used.

The following chart has the relationship between some noise sources, the area environment, and the dBA level that one might expect to find there. Other sources and descriptions are included to provide a reference to commonly identifiable items.

Level	dBA	Speech	Environment	Source
Deafening	150			Pistol
OSHA max exposure	140			Jet Aircraft on Runway
Threshold of pain >130 hearing damage	130			Propeller aircraft, Pneumatic Hammer
Discomfort threshold Max NAC Level	120	Maximum vocal effort	Engine / Generator Room	Thunder nearby, Police Siren, Rock music front row
Extremely Loud Visual NAC required	110		Heavy Machine shop	Nearby Train, Chainsaw, Power tools, Headphones
Very Loud	100		Loud Factory, Disco	Lawnmower, Car Horn,
Possible hearing damage (8 hrs) OSHA hearing protection required	90	Conversation almost impossible	Noisy Factory, Machine Shop, Construction Site	Symphony or band, Food Blender, semi-Truck, maximum legal motorcycle exhaust at 55'
Loud	80	Conversation difficult	Heavy Street noise, Average Factory.	Alarm Clock, Whistle, Shaver, Hair Dryer
	70	Must raise voice	Noisy Office, Restaurant, Street Noise	Average Radio, Vacuum Cleaner, Dot Matrix Printer
Moderate	60	Conversation easy	Light Street noise, Business Office	Air Conditioner, Laser/Inkjet Printer, Server
	50	Typical Conversation	Typical Office, Average Home	Refrigerator, Desktop Computer
Faint	40	Quiet Conversation	Private Office, Living Room, Library	
	30	Whisper	Bedroom	
Very Faint	20		Empty Theater, Forest	Watch Ticking
Threshold of hearing	10			Rustling Leaf
Silence	0			

It should be noted that the actual measurements are in dBA, however, it is common for many Sound Pressure Level measuring instruments to default to the dbC weighting, and fast response. Be sure to set them to the **A-Weighting**, **Slow-Response** settings, and measure the sound level **5 feet** above the floor, not at the convenient waist high level.