SPEECH AUDIBILITY AUDIOGRAM FOR CLASSROOM LISTENING

Student _____ Grade _____ School _____ Date _____

Loudness in dB HL	250	500	1000	2000	4000	8000 Hz
0	**Soft speech (35 dB HL)** Typical hearing children: 93-98% word recognition in quiet 86-94% at 35 dB HL in 0 S/N noise.1			**Teacher voice (50 dB HL)** Typical hearing children: 92-100% word recognition at 50 dB HL in quiet, 90-97% in +5 S/N, and 89-96% in 0 S/N noise.[1]		
10	95% audibility of speech energy perceived with hearing levels between 0 – 10 dB HL **64% at +10 S/N, 34% at 0 S/N**[2]			0-20 dB HL should perceive 98% of speech sounds at a comfortable level in a quiet classroom and acceptable reverberation levels (35 dBA or less background noise in an unoccupied classroom & reverberation no greater than 0.9 sec[3]) **84% at +10 S/N, 48% at 0 S/N**		
15	75% audibility of speech energy perceived with hearing levels between 10 – 15 dB HL **44% at +10 S/N, 24% at 0 S/N**					
20	60% audibility of speech energy perceived with hearing levels between 15 – 20 dB HL **29% at +10 S/N, 9% at 0 S/N**					
25	40% audibility of speech energy perceived with hearing levels between 20 – 25 dB HL **9% at +10 S/N, 0% at 0 S/N**			95% audibility of speech energy perceived with hearing levels between 20 – 25 dB HL **81% at +10 S/N, 55% at 0 S/N**		
30	25% audibility of speech energy perceived with hearing levels between 25 – 30 dB HL **0% in any setting that is not quiet**			81% audibility of speech energy perceived with hearing levels between 25-30 dB HL **67% at +10 S/N, 41% at 0 S/N**		
35	15% audibility of speech energy perceived with hearing levels between 30 – 35 dB HL **0% in any setting that is not quiet**			60% audibility of speech energy perceived with hearing levels between 30-35 dB HL **46% at +10 S/N, 20% at 0 S/N**		
40	10% audibility of speech energy perceived with hearing levels between 35 – 40 dB HL **0% in any setting that is not quiet**			45% audibility of speech energy perceived with hearing levels between 35 – 40 dB HL **31% at +10 S/N, 5% at 0 S/N**		
45	☐ Hearing with amplification ☐ Hearing without amplification			30% audibility of speech energy perceived with hearing levels between 40 - 45dB HL **16% at +10 S/N, 0% at 0 S/N**		

S/N means the loudness of the speaker's voice (i.e. teacher) over the background noise. 0 S/N = noise and voice are the same loudness. FM negates the affects of background noise and distance and provides optimal access to verbal instruction in large and small groups. Results of Functional Listening Evaluation are presented in percent correct.

Results of Functional Listening Evaluation[4]: Type of speech materials used: _____

SPEECH PERCEPTION	Close / Quiet	Close / Noise	Distant/Quiet	Distant/Noise
Auditory + Visual				
Auditory Only				

Loudness: _____ dB
Close = _____ Feet
Distant = _____ Feet
Quiet = _____ S/N*
Noise = _____ S/N*
***at child's ear level**

Audibility represents the listening challenge, or fragmented speech perception, experienced by listeners with hearing loss. Audibility should not be interpreted as speech perception.

AUDIBILITY	Quiet No noise	+10 dB S/N Good classroom listening condition	0 dB S/N Very noisy classroom listening condition
Estimated Audibility Soft Speech			
Estimated Audibility Teacher's Speech			

Recommended Hearing Technology/ Accommodations:

1. Bodkin, K, Madell, J., & Rosenfeld, R. (1999). *Word recognition in quiet and noise for normally developing children*, AAA Convention, Miami, Poster Session.
2. Nelson, P. Anderson, E., Nie, Y., Katare, B. (2010). Effect of reduced audibility on masking release for normal- and hard-of-hearing listeners, *JASA 127*, 1903
3. Yang, W., & Bradley, J. S. (2009). Effects of room acoustics on the intelligibility of speech in classrooms for young children. *J. Acous. Soc. Am., 125*(2), 922-933.
4. Revised 2004 by Johnson. Based on Functional Listening Evaluation by C.D. Johnson & P. Von Almen, 1993.

Karen L. Anderson, PhD, 2011 www.kandersonaudconsulting.com