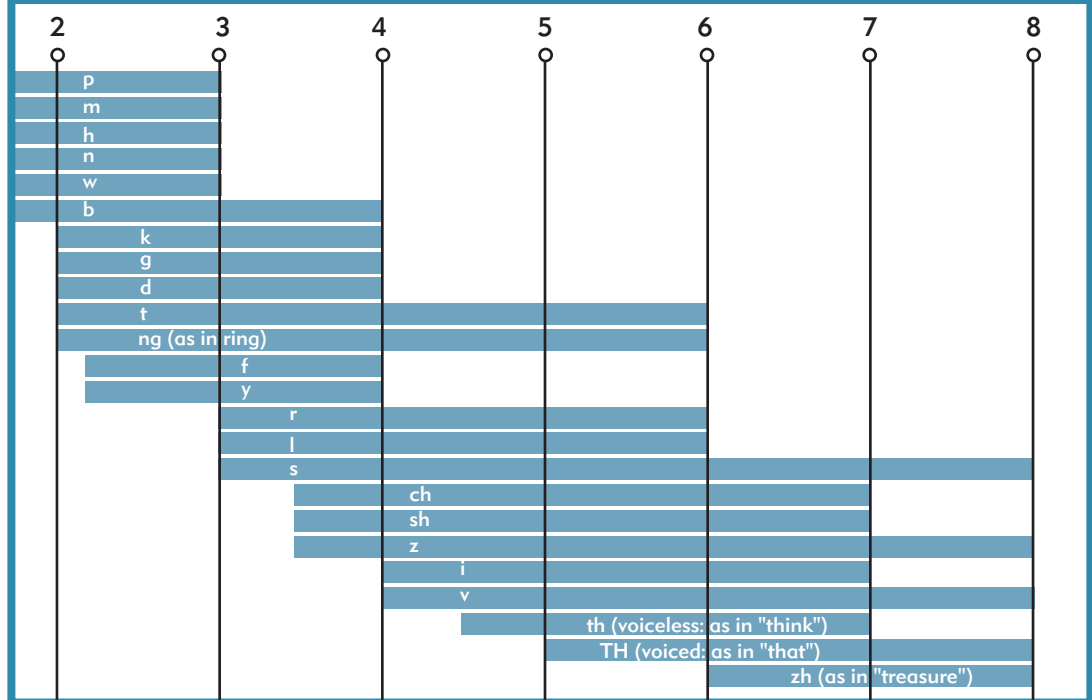




English Consonants

Consonant	1st Formant	2nd Formant	3rd Formant	4th Formant
/p/			1500-2000	
/t/			2500-3000	
/k/			2000-2500	
/d/	300-400		2500-3000	
/b/	300-400		2000-2500	
/g/	200-300		1500-2500	
/m/	250-350	1000-1500	2500-3500	
/n/	250-350	1000-1500	2000-3000	
/ng/ (wing)	250-350			4500-6000
/f/				4000-5000
/s/				5000-6000
/sh/			1500-2000	4500-5500
/th/ (thin)				6000
/h/			1500-2000	
/v/	300-400			
/z/	200-300			
/TH/ (that)	250-350			
/ch/	200-300		1500-2000	4000-5000
/dg/ (jot)			2000-3000	
/l/	250-400		2000-3000	
/r/ (err)	600-800	1000-1500	1800-2400	

English Consonants-Age of Acquisition Adapted from Sanders, 1972 and Templin, 1957



Frequency Allocation Table

Band	250	5500*																		
1	250	5500*																		
2	250	1387	5500*																	
3	250	877	2196	5500*																
4	250	697	1387	2762	5500*															
5	250	607	1053	1827	3170	5500*														
6	250	554	877	1387	2196	3475	5500*													
7	250	519	769	1140	1689	2504	3711	5500*												
8	250	494	697	983	1387	1958	2762	3898	5500*											
9	250	475	646	877	1191	1617	2196	2982	4050	5500*										
10	250	461	607	800	1053	1387	1827	2407	3170	4176	5500*									
11	250	450	578	742	953	1224	1573	2020	2595	3333	4282	5500*								
12	250	440	554	697	877	1103	1387	1745	2196	2762	3475	4372	5500*							
13	250	433	535	661	817	1010	1248	1543	1907	2357	2913	3600	4450	5500*						
14	250	426	519	632	769	936	1140	1387	1689	2056	2504	3048	3711	4518	5500*					
15	250	421	505	607	730	877	1053	1266	1521	1827	2196	2638	3170	3809	4577	5500*				
16	250	416	494	587	697	828	983	1168	1387	1648	1958	2326	2762	3281	3898	4630	5500*			

Vowels

Vowel	Example	1st Formant	2nd Formant
/i/	bee	270	2290
/I/	bit	390	1990
/ɛ/	bet	530	1840
/æ/	bat	660	1720
/a/	box	730	1090
/ə/	bail	570	840
/U/	book	440	1020
/u/	boot	300	870
/ʌ/	but	640	1190
/ɜ/	bird	490	1350

* Range of this band is 5500 - 8000Hz



Tools for Schools
 Helping children with cochlear implants
 succeed in the classroom

Six Sound Speech Test

A Practical Check to Determine a Cochlear Implant's Effectiveness

The sounds "ah", "ee", "oo", "sh", "s", and "mm" are used because they indicate a child's ability to detect all aspects of speech as these five sounds encompass the frequency range of all phonemes.

The clinician can determine what sounds the child is able to detect or identify/discriminate.

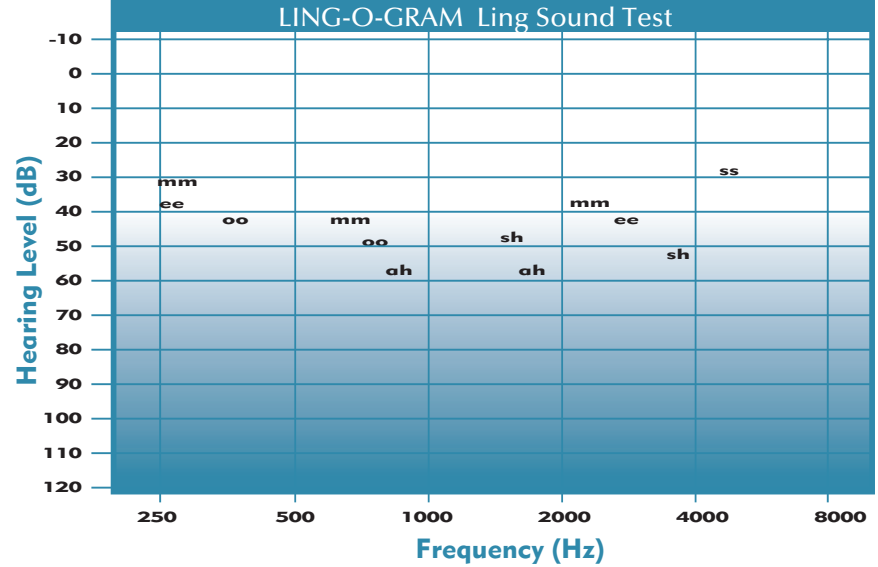
Task	Description
Detection:	The child indicates that the sound was heard by conditioned response (e.g., clapping his or her hands)
Identification/ discrimination:	The child repeats or points to the sound heard.

If the child has:

- hearing to 1000 Hz, she or he should hear the three vowel sounds "ah", "ee", "oo", spoken in a quiet voice at a distance of at least five yards.
- hearing to 2000 Hz, she or he should also hear the sound "sh"
- hearing to 4000 Hz, she or he should detect "s", from a distance of at least 1 to 2 yards

Ling Test Instructions

- 1 Position the student about 1-2 yards from you.
- 2 If this is the student's first time competing the task demonstrate what is expected.
- 3 Signal the student to listen.



- 4 Say each of the Ling sounds at a normal loudness level.
Confirming Detection: After you say each Ling sound the child should raise their hand or clap their hands to indicate the sound has been heard.
Confirming Identification/Discrimination: After you say each Ling sound the student should either point to a picture of the sound or repeat the sound heard.
- 5 The test should be completed in the auditory only condition so that the student does not receive any visual cues (lip reading, facial expression). You can complete the test in the auditory only condition by covering your mouth with your hand (be sure your hand is not too close to your mouth so that sound is distorted), using a listening hoop, or by having the student turn their back to you.
- 6 When presenting the sounds be sure to vary the length of the pause between each sound so that the student does not anticipate the sound.
- 7 Occasionally say nothing while doing the test. This way the child learns that it is OK to say that they do not hear anything.
- 8 Repeat the test twice and record the results.
- 9 The Ling test should be completed at the start of every day and whenever you suspect that your student is not hearing as they normally do.
- 10 To test your student's hearing from further away, complete the task with increased distance between you and your student.