

Frequency Lowering Validation



INSTRUCTIONS FOR LIVE VOICE VALIDATION

1. With frequency lowering off, present words from a plural word list (available on page 2) while masking lipreading cues.
 2. Ask the patient to repeat the word.
 3. Mark the response as correct or incorrect.
 4. Calculate the patient's score in percent correct.
 5. With frequency lowering on, use an alternate list and repeat test to obtain the patient's score.
 6. Compare patient's scores:
 - » The goal is for the patient to achieve an improvement in performance feature ON versus OFF (ideally greater than or equal to 20%)
 - » If improvement is not achieved, increase Gain in 1 dB steps and re-evaluate performance
 - » If approximately two or three increases in Gain do not yield better performance, return the Gain to 3 dB and increase the Bandwidth setting by one step and re-evaluate performance.
 - » Continue to adjust Gain and/or Bandwidth as needed to achieve a performance improvement
 - » Ensure that final settings are comfortable for the patient
- NOTE:** At the time of the first fitting with frequency lowering, the professional should focus on adjustments required to maximize benefit and ensure comfort. The patient's report of sound quality should be considered at the time of follow-up once a period of acclimatization has been provided to ensure that initial settings are not adjusted to levels that would be unhelpful.
7. Use the Fitting Adjustment Guide below to make adjustments for sound quality, if needed at a follow-up visit. Repeat behavioral validation procedure to ensure settings provide patient benefit.

FOLLOW-UP ADJUSTMENT GUIDE

	PATIENT REPORT	ADJUSTMENT	CONSIDERATIONS
OWN VOICE	Own voice sounds like static or echo	Decrease Gain Decrease Bandwidth	Adjust Gain first. If reports persist, adjust Bandwidth.
INTELLIGIBILITY	/s/ sounds too lispy	Decrease Gain	Keep in mind that a slight 'lisp' on /s/ sounds is normal.
	/s/ sounds too unnatural	Decrease Bandwidth	
	Difficulty detecting /s/ sounds or identifying plural sounds	Increase Gain Increase Bandwidth	Adjust Gain first. If report persists, adjust Bandwidth.
	Other voices echo	Decrease Bandwidth Decrease Gain	Adjust Bandwidth first. If report persists, adjust Gain.
SOUND QUALITY	Echo or lisp artifacts	Decrease Bandwidth	Alternatively decrease Bandwidth and Gain until report is resolved.
	Processing too noticeable	Decrease Gain	

PLURAL WORD LISTS FOR FREQUENCY LOWERING VALIDATION

LIST 1	SCORE	LIST 2	SCORE	LIST 3	SCORE
Key		Play		Coats	
Days		Ears		Floor	
Plays		Keys		Signs	
Toy		Clouds		Eye	
Cities		Brick		Book	
Bricks		City		Frogs	
Pig		Way		Boats	
Cloud		Toys		Card	
Ways		Pigs		Caves	
Ear		Day		Pen	
TOTAL		TOTAL		TOTAL	

LIST 4	SCORE	LIST 5	SCORE	LIST 6	SCORE
Coat		Hat		Cart	
Floors		Lists		Shines	
Sign		Pear		Cries	
Eyes		Carts		Hats	
Books		Shine		List	
Frogs		Rats		Guard	
Boat		Reeds		Parts	
Cards		Guards		Rat	
Cave		Part		Reed	
Pens		Cry		Pears	
TOTAL		TOTAL		TOTAL	

TIPS:

- » Consider using more than 10 words per condition for greater reliability
- » Have a family member or friend present the words to the patient to assess benefit using a more meaningful voice
- » Introduce a greater distance between speaker and patient to make the task more challenging
- » Consider repeating the behavioral validation procedure at the time of follow-up to look for further improvement following acclimatization and/or to validate any change made in settings designed to make the feature more advantageous to the patient