



The Kennel Club BAER (Brainstem Auditory Evoked Response) Programme

Best Practice Testing Protocol

1. For results to be considered for inclusion in the BAER (Brainstem Auditory Evoked Response) Programme, it is recommended that the test be conducted at a KC-recognised testing centre by an operator using equipment that aligns with the guidelines outlined in this protocol.
2. The electro diagnostic equipment used should have been validated for the test as illustrated by the referenced, peer-reviewed, scientific publications*, and should be capable of generating a waveform of a minimum of 90dB nHL.
3. The operator must be fully trained in the use of the equipment, either by the manufacturer of the electro diagnostic equipment or a person experienced in carrying out the test.
4. Equipment should be maintained by the manufacturer, safety tested and calibrated at least annually
5. Each ear should be tested in turn. The test should be carried out at a decibel level which is comfortable for the candidate animal, but loud enough to generate an optimal waveform, usually 70 or 80dB nHL. If the trace is absent at this level, the stimulus intensity should be increased by 15 to 20dB and the test repeated to confirm that the waveform is completely absent in that ear.
6. If the waveform is present but abnormal, the test should be repeated to confirm that the waveform is consistent. The decibel level should be adjusted in increments to ascertain threshold (the lowest stimulus intensity where Wave V is still discernible), and the threshold should be recorded on the certificate. Contralateral masking of the opposite ear, set at 20dB lower than the stimulus intensity, should be used in the event that a possible contralateral contribution from a normal ear may lead to an erroneous conclusion.
7. Any equivocal results should be repeated at least 3 times in succession to confirm they are accurate, and if necessary the results should be averaged to establish if they are a true reading. If they are still anomalous (when compared to the usual traces expected), the trace should be classified as "impaired" (see below).
8. Results should be recorded only in one of the following ways
"Right ear – Pass, Left ear – Pass" or "Bilaterally normal"
"Right ear – Pass, Left ear – Fail" or "Unilaterally deaf in the Left ear"
"Right ear – Fail, Left ear - Pass" or "Unilaterally deaf in the Right ear"
"Right ear – Fail, Left ear – Fail" or "Bilaterally deaf"
9. In the event either or both ears is/are impaired, the certificate should reflect which ear is affected, and the threshold for the affected ear(s), and if only one ear is affected, the unaffected ear should be categorised as "Pass", e.g. "Right ear – Pass, Left ear impaired, threshold 55dB" or similar. If both ears are impaired, the results should reflect this, and the threshold for each ear should be recorded, likewise, if one ear is deaf and the other is impaired.
10. In the event any ear is deemed to be "impaired", the offer should be made to re-test the affected ear/ears approximately 3 weeks after the initial test, to evaluate any change in the hearing status during this time period.

11. The certificate should be on the headed paper of the establishment where the test was performed, or the appropriate Kennel Club form, and must include the dog's details including its registration number and microchip number, the owner's details, and the results of the test and must include the signature of the veterinary surgeon who interpreted and authorised the results.
12. The certificate for each individual should be accompanied by a copy of the corresponding trace, which should be identifiable as matching with the certificate, for example, by a reference number or the dog's name as it appears on the certificate (or both).
13. If the tester is not a MRCVS, the results should be reviewed by a second individual. At least one of the reviewers must be a MRCVS, who will be responsible for examining the traces and authorizing the results by signing the certificates.
14. For the results to be recorded on The Kennel Club database, and published on the Health Test Results Finder, the dog must be registered with The Kennel Club and microchipped at the time of the test. The operator must check the microchip with a microchip reader at the time of the test, and record the microchip number on the certificate.
15. Results provided to The Kennel Club will be added to the dogs record and will appear on The Kennel Club website

*** References:**

Strain, G. (2011). 'Brainstem Auditory Evoked Response (BAER)' in *Deafness in Dogs and Cats*, Wallingford (UK): CAB International; 2011. p. 83–107.

De Risio, L., Lewis, T., Freeman, J., de Stefani, A., Matiasek, L. and Blott, B. (2011). Prevalence, heritability and genetic correlations of congenital sensorineural deafness and pigmentation phenotypes in the Border Collie. *The Veterinary Journal* 188:286–290

Strain, G. (2012). Canine Deafness. *Veterinary Clinics of North America: Small Animal Practice* 42:1209–1224. Doi: 10.1016/j.cvsm.2012.08.010

Scheifele, P. and Greer Clark, J. (2012). Electrodiagnostic Evaluation of Auditory Function in the Dog. *Veterinary Clinics of North America: Small Animal Practice* 42:1241–1257 doi: 10.1016/j.cvsm.2012.08.012

Strain, G. (2015). The genetics of deafness in domestic animals. *Frontiers in Veterinary Science* 2:29. doi: 10.3389/fvets.2015.00029

De Risio, L., Freeman, J. and Lewis, T. (2016). Prevalence, heritability and genetic correlations of congenital sensorineural deafness and coat pigmentation phenotype in the English bull terrier. *BMC Veterinary Research* 12:146-155. DOI 10.1186/s12917-016-0777-6

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