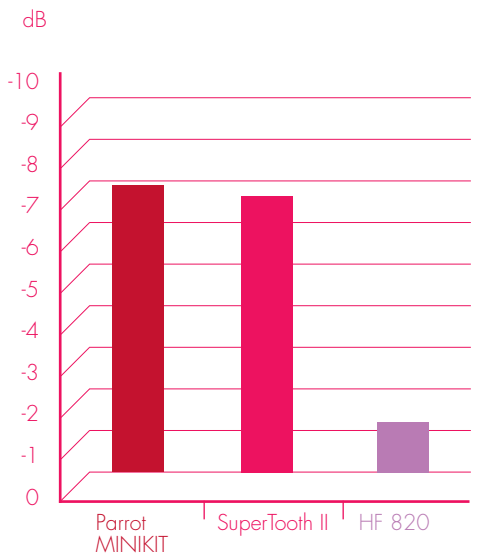
## TEST 04

Parameter: RLR max. vol.
Explanation: loudness level at maximum playback volume
Scale: 0 to -13dB – Unit of measurement is decibel
Marks: 0=bad -13dB=excellent




**loudness level at maximum playback volume**
The parameter tested by the laboratory was called RLR max. vol.
It was measured on a negative logarithmic scale graduated from 0 to -13, in decibel (dB) units. The highest value, 0 dB, was the poorest, meaning that the loudspeaker transmission was much weaker than it should have normally been (excessive loudness level). On the other hand, a value of –13 dB was the equivalent of a very weak loudness level, and thus close to an optimum sound level.

**results**
The Parrot MINIKIT tested at (-7.3 dB) and again is ahead of the competition. This means that the Parrot MINIKIT has superior echo cancellation despite of having a compact form factor (microphone close to speaker).

*Parrot MINIKIT software version: 1.01 RC3*
*Purchasing date of the ECE SUPERTOOTH II: April 27th, 2006. software version: 3.9*
*Purchasing date of the Motorola HF 820: January 3rd, 2006*



# ACOUSTIC COMPARISON TEST OF THE MAJOR COMPACT AND PORTABLE HANDS-FREE KITS

The summary of the tests results presented in this document is published under the exclusive responsibility of Parrot. The whole content of the study and results are available on the Parrot Internet web site or by simple written request to Parrot S.A.

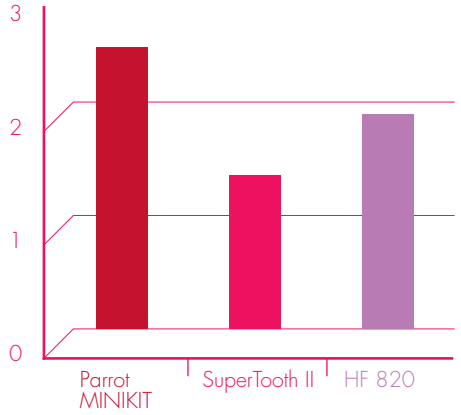
This document presents a summary of the tests of three autonomous hand-free kits (speakerphones) carried out during the month of August 2006 by an independent acoustic laboratory of world fame. The standard used during these tests is the VDA v1.5 standard.

The VDA (Verband der Automobilindustrie) is an international standard resulting from the standard ISO 9001, recognized and accepted by all the car manufacturers as well as by all the equipment suppliers: Ford, General Motors, Daimler-Chrysler, Volkswagen, Peugeot, Citroen, Mazda, Toyota… It is relatively close to another standard - QS9000 - also accepted and recognized of all.

This very rigorous standard was defined to allow a quality follow-up in the car industry. One of the applications of this standard makes it possible to measure and characterize the acoustic behaviour of all the audio appliances embarked in a motor vehicle.

## TEST 01

Parameter: TMOS SND
Explanation: quality of voice in transmission
Scale: 0 to 5 (no unit of measurement)
Marks: 0=bad 5=excellent

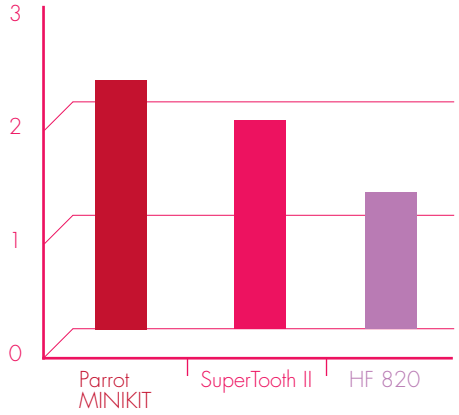



**quality of voice in transmission**
The parameter tested by the laboratory was called TMOS SND. It is measured on a unitless linear scale graduated from 1 to 5.
1 was the poorest value, describing mediocre quality, with the highest value (5) describing excellent quality.

**results**
The Parrot MINIKIT came in first with a score of 2.5, which is a very good result given the strictness of the standards. With the Parrot MINIKIT, the listener is guaranteed to hear the driver of the vehicle very clearly.

## TEST 02

Parameter: TMOS RCV
Explanation: quality of voice in reception
Scale: 0 to 5 (no unit of measurement)
Marks: 0=bad 5=excellent



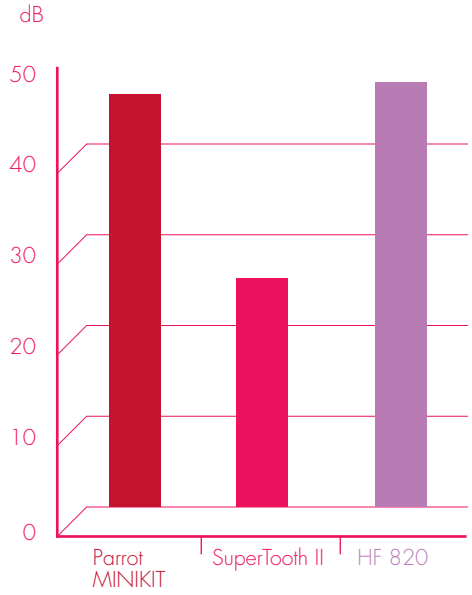

**quality of voice in reception**
The parameter tested by the laboratory was called TMOS RCV. It is measured on a unitless linear scale graduated from 1 to 5.

1 was the poorest value, describing mediocre quality, with the highest value (5) describing excellent quality.

**results**
The Parrot MINIKIT again tested in first place with a score of 2.4. This score reflects the Parrot MINIKIT's superiority in terms of quality, clarity and intelligibility of the listener's voice, transmitted by the Parrot MINIKIT and its speaker. These are basic and determining criteria for the use of a hands free kit whilst in the car.

## TEST 03

Parameter: TCL max. vol.
Explanation: echo reduction at maximum playback volume
Scale: 0dB to 50dB – Unit of measurement is decibel
Marks: 0=bad 50dB=excellent




**echo reduction at maximum volume**
The parameter tested by the laboratory was called TCL max. vol.
It was measured on a logarithmic scale graduated from 0 to 50, in decibel (dB) units. The higher the dB value, the better echo reduction with the volume approaching maximum.

**results**
Both the Parrot MINIKIT (46 dB) and the MOTOROLA HF820 (48 dB) clearly beat the competition. This is a gauge of high audio quality for users inside a vehicle as well as at home or in the office.