



Jabra®

WHITEPAPER

NOISE BLACKOUT™

A BRAND BY

GN Netcom

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NOISE BLACKOUT™

To ensure a crystal clear and noise free quality of the uplink audio on wireless headsets, Jabra has developed the innovative Noise Blackout™ Technology.

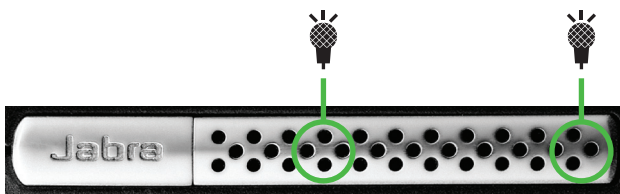
Historically the most efficient way to optimize the transmission speech quality and to reduce the pickup of background noise is to place a noise cancellation microphone right in front of the mouth. With this technique a significant amount of the static background noise is reduced – in particular low frequency background noise.

Introducing digital transmission systems and Digital Signal Processing (DSP), the means for applying noise reduction on the digitized audio signals are available.

Digital signal processors are included on more and more basic transmission systems. And it is an integrated part of wireless transmission systems both on DECT technology and Bluetooth technology.

Jabra introduced its first generation of digital signal processing algorithms for noise reduction back in 1999. Several improvements have been added over the years. With the introduction of Noise Blackout™, the noise reduction performance has been taken to the next level.

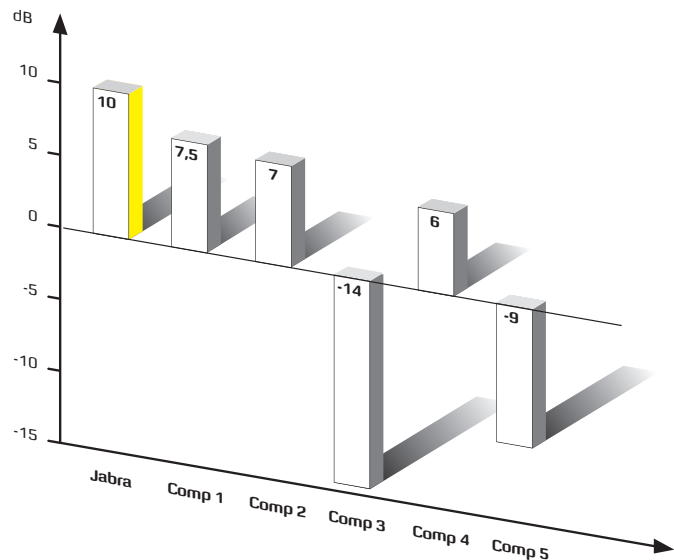
Noise Blackout™ is taking advantage of the information picked up by 2 microphones integrated into the product design. By adding information from a second microphone it is possible to distinguish sounds from different directions. It is possible to improve the clarity of the transmitted speech quality from the headset user. It is possible to a much bigger extent to reduce the pickup of background noise. And it is also possible to eliminate the pickup of a potential disturbing noise source like e.g. a colleague talking just next to you.



The use of Noise Blackout™ in particular delivers distinct advantages over conventional acoustical solutions when it comes to mobility oriented wireless solutions. These tend to have shorter – and in many cases much shorter – boom arms. And by the fact that users of wireless headsets are moving around in various environments, they are also constantly exposed to wind and turbulence.

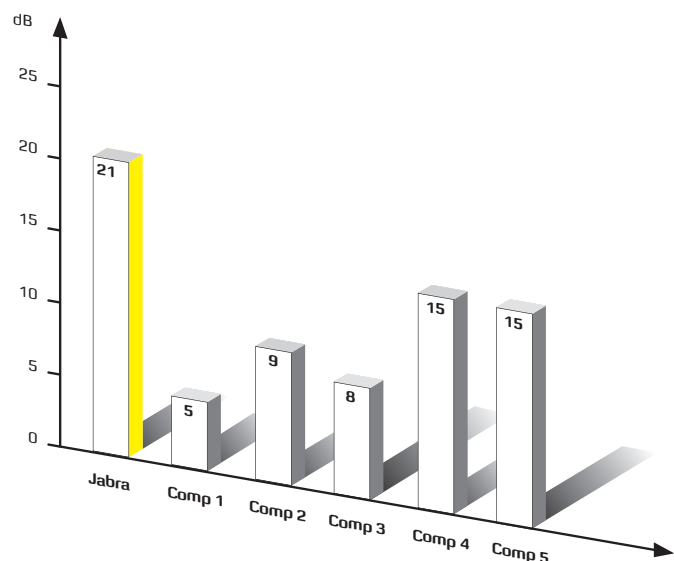
In both scenarios the Noise Blackout™ technology will offer improved performance over traditional solutions.

In figure below the wind noise reduction in Jabra's first Noise Blackout™ product is compared to competitive products in the market:



The wind noise is reduced significantly. Some competitive products even amplify the wind noise.

The next figure shows the Noise Blackout™ products capability to suppress a directional noise source. Again it is Jabra's first product with Noise Blackout™ compared to some competitive products in the market.



THE SOURCE IS SIGNIFICANTLY REDUCED - ALMOST ELIMINATED.

The use of digital signal processing for noise reduction impacts the sound of the transmitted speech. Jabra wants to deliver solutions which create customer satisfaction and delivers the best sound quality. To verify this, a pilot test of user preference has been conducted.

Persons have been through an in-depth analysis testing preference for and attitude to

- Level of noise cancellation
- Type of voice quality

The general conclusion is that people prefer best possible reduction of background noise, and highest possible audio quality.

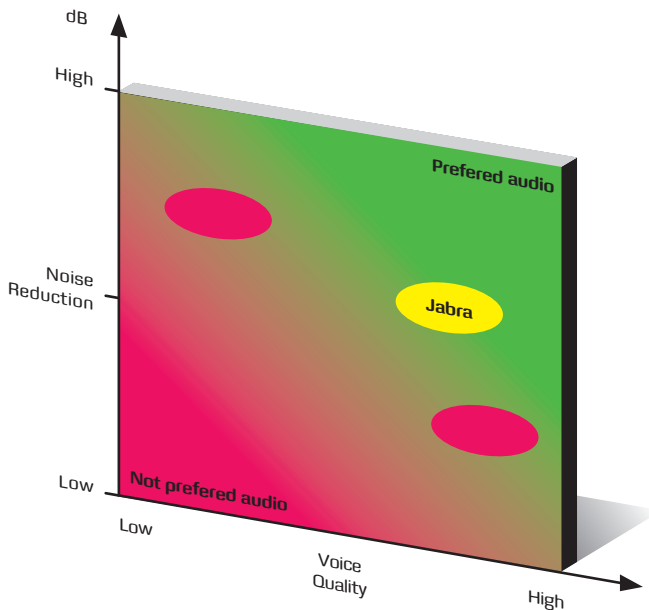
But people prefer to listen to an acceptable speech quality with some noise in the background rather than low/no noise and poor speech quality

79% of the test panel preferred the Jabra solution compared to competitive solutions.

Jabra's Noise Blackout™ technology is under constant development and improvements. The target is clearly to remove as much noise as possible. But at the same time keep the transmitted voice quality uncompromised. Many parameters in the software code are tuneable, and will in each product case be optimized according to the industrial design of the product, - the expected use cases and the expected amount of background noise.

IN SUMMARY:

- Noise Blackout™ offers state of the art noise reduction for headsets.
- It is based on dual microphone designs offering up to 30 dB of noise reduction without any speech quality degradation.
- Headsets with Noise Blackout™ technology have very good performance in moderate wind conditions.



GN Netcom is a world leader in innovative headset solutions. GN Netcom develops, manufactures and markets its products under the Jabra brand name.