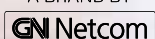


Jabra®



AN INTRODUCTION TO  
JABRA SAFETONE™  
PROTECTION SYSTEM

A BRAND BY



JABRA® IS A REGISTERED TRADEMARK OF GN NETCOM A/S

WWW.JABRA.COM

# NOISE PROTECTION

This white paper provides insight into headset acoustics, the relevant regulations and standards, and the personal protection offered by Jabra headset and amplifier solutions with built in Safetone™ protection system.

## JABRA OFFERS ACTIVE HEARING PROTECTION

Jabra supplies solutions (headsets and amplifiers) that protect the hearing and well-being of the headset user. Our technologies unequivocally reduce the risk of the rare, but latent, occupational hazards that can be caused by exposure to too high levels of noise. Jabra is an active partner in the international standardization of acoustic safety in telecommunication equipment. Our participation helps to ensure that pertinent requirements serve and protect the users of headsets and correspond to recommendations agreed upon by health authorities and hearing experts. Hence, all GN Netcom professional headsets are compliant with - and often even surpass - the strictest regulations and standards in the world.

## WHY CAN SOUND LEVELS BE A PROBLEM TO HEADSET USERS?

For headset users in contact centers and offices who are on the phone for many hours every day, two potential hazards exist. One is the risk of sudden, very loud sounds due to e.g. a fault in the telephone network, which can lead to a so-called acoustic shock and potentially affect your hearing and well-being, if your headset does not have built-in protection. The other is quite different, as it is not related to sudden loud noises, but instead is concerned with the average noise levels throughout the day. A too high level of noise from machines - and even from high volume speech through headsets - can over time lead to inconveniences such as hearing fatigue and stress, jeopardizing employee productivity and commitment. Well designed headset equipment is paramount to avoid these hazards. Figure 1 shows typical sound levels from familiar sources.

FIGURE 1

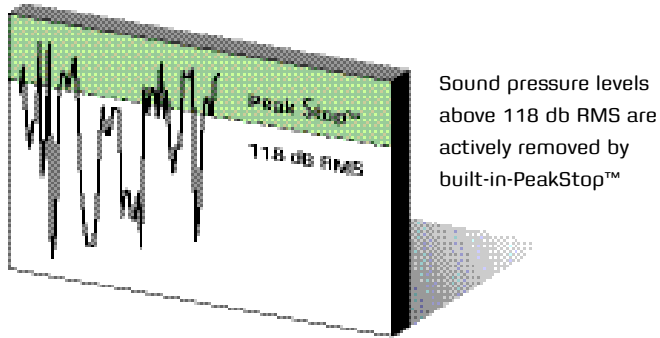
EXAMPLES	SOUND PRESSURE LEVEL DBSPL
JET AIRCRAFT, 50 M AWAY	140
THRESHOLD OF PAIN	130
THRESHOLD OF DISCOMFORT	120
CHAINSAW, 1 M DISTANCE	110
DISCO, 1 M FROM SPEAKER	100
DIESEL TRUCK, 10 M AWAY	90
KERBSIDE OF BUSY ROAD, 5 M	80
VACUUM CLEANER, DISTANCE 1 M	70
CONVENTIONAL SPEECH, 1 M	60
AVERAGE HOME	50
QUIET LIBRARY	40
QUIET BEDROOM AT NIGHT	30
BANCKGROUND IN TV STUDIO	20
RUSTLING LEAF	10
THRESHOLD OF HEARING	0

## PEAKSTOP™ - PEAKS ARE ACTIVELY REMOVED

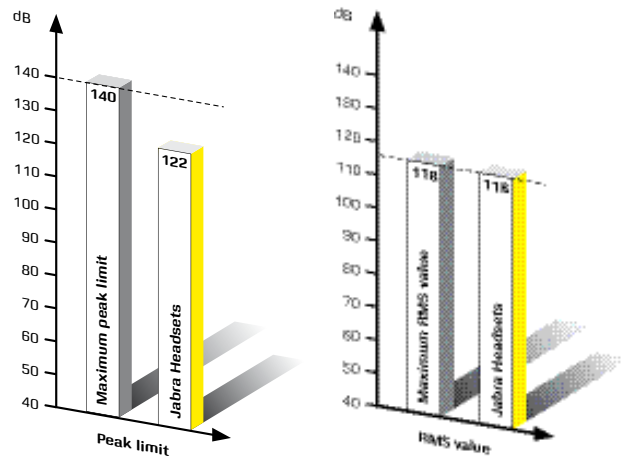
All Jabra Contact Center and Office (CC&O) headsets are fitted with PeakStop™, an electronic peak control gateway (transistor) that does not allow excessively loud sounds to pass to the ear. It reacts instantly and removes potentially harmful sound spikes before they reach the headset speaker. PeakStop™ actively protects the user by keeping the absolute sound level and the energy of the peak in the safe zone at all times. As a result, the headset user will never be exposed to the full effect of the peak and consequently the risk of harming the sensitive mechanisms of the ear is minimized. The figure 2 illustrates how PeakStop™ continuously monitors the sound flow from the telephone to the headset speaker and actively reduces critical sound peaks to a safe level.

## STANDARDS AND VALUE

**FIGURE 2**  
**PEAKSTOP PROTECTION**



**FIGURE 3**  
**HEADSET PROTECTION - PEAK AND RMS LEVELS**



### MEETING GLOBAL STANDARDS

Legal requirements from national authorities and recommendations from telecommunications specialists and health authorities are met by all Jabra CC&O headsets. Our experienced acoustic experts are selected to be active participants in the acoustic safety specification work in international standardization organization such as International Telecommunication Standardization Sector (ITU-T) and European Telecommunications Standards Institute (ETSI). When focusing on protection against extremely high sound levels, the two most important measurements are 'Maximum absolute peak value' and 'RMS' value. Jabra products exceeds the global requirements for sound level exposure:

### INSTANTANEOUS MAXIMUM LEVEL IN ABSOLUTE PEAK VALUE

The absolute peak value is the maximum value of a sound that can be exposed to the ear from the receiver. Internationally, 140 dB(C) is accepted as the agreed limit for absolute peak value that the ear should be exposed to. Conforming to a maximum of 122 dB absolute peak value, all professional Jabra headsets are significantly below this limit.

### RMS VALUE

Root Mean Square – the effective energy in the sound waves. Leading EU and US authorities agree that 118 dB (RMS value) should be the maximum level for total sound exposure from a continuous sound. All Jabra headsets meet this requirement limit thanks to the PeakStop™ from built-in active peak control gateway.

# NOISE EXPOSURE

## STANDARDS & REGULATIONS

In theory, noise exposure for telephone users is defined as the sum of background noise + signals received via the phone. In practice, the background noise in contact centers does not contribute significantly to total exposure, and exposure for headset users equals the output from the headset. However, it must be recognized that background noise can make a contact center agent turn up the volume in order to counteract the background noise. Therefore, attention should be paid to the general sound level in the office or contact center environment.

Time weighted average exposure over an 8-hour workday  
Exposure to much lower noise than defined for peak value limits can also affect your hearing, if the exposure time is long enough. It is important to differentiate between the instantaneous peak levels and the long-term effect of the time weighted average exposure. This latter is measured over an 8-hour workday. The term average is important. A worker can be exposed to an average of 90 dB for 1 hour every day with peak levels at 100 dB without any problems, if he/she, for the remaining part of the day sits in an office with an average noise level of e.g. 75 dB.

EU Noise at work directive (Directive 2003/10/EC) enforces an upper max exposure limit of 87 dB(A) (time weighted average over a full working day). And leading US authorities recommend the time-weighted average exposure limit for a working day not to exceed 85 dB(A), (time weighted average over a full working day).

According to the EU regulation, the upper exposure action value is also defined at 85 dB(A). If the upper exposure action value of 85 dB(A) is exceeded, instant action must be taken. In a contact center, this could be done by providing a contact center agent with a headset amplifier designed to help assuring a maximum average exposure below 85 dB(A) from the headset.

## INTELLITONE™

Jabra products with built in Safetone™ technology offers Intellitone™ settings of the noise exposure control. The level of hearing protection offered by intellitone™ ranges from Peakstop™ only, to levels assuring max exposure from the headset to be safe and below levels defined in Noise at Work regulations for 1 hour on the phone per day - up to a full working day of 8 hours.

## OR PRODUCT COMPLIANCE WITH THE EVEN MORE RESTRICTIVE AUSTRALIAN PROTECTION GUIDELINE:

ACIF Guideline G616:2004