Plantronics audio safety

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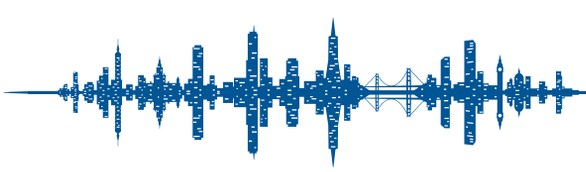


plantronics®

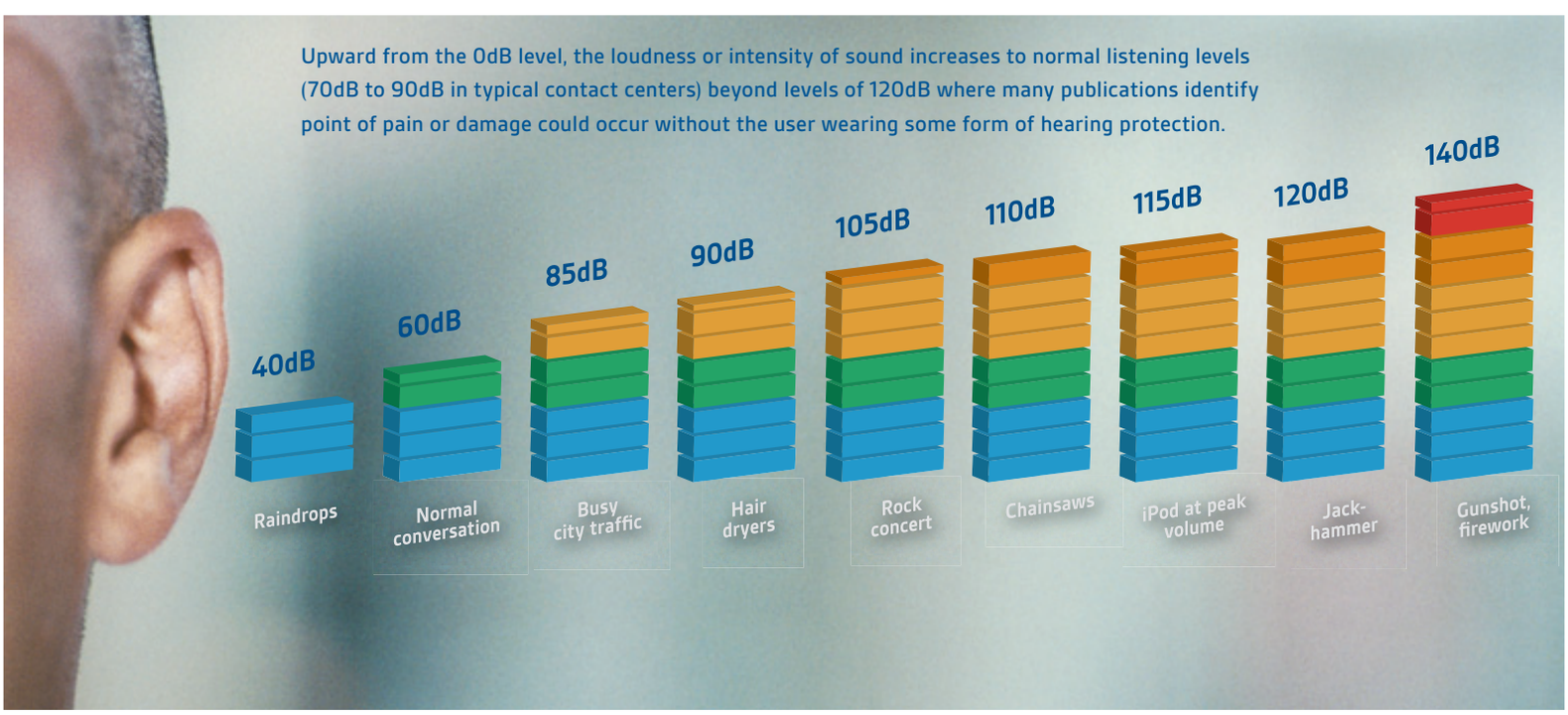
Plantronics history in audio comfort

With a history of over 50 years in the design and manufacturer of telecommunication headsets, Plantronics has been continually at the leading edge in providing headset solutions for customers with respect to audio comfort and safety. Our products offer solutions that can limit short maximum sound exposure or long term (daily) sound exposure. Our solutions not only allow for compliance against acoustic safety regulations but also to surpass standards with additional measures that bring greater acoustic comfort to the user.

The audio spectrum

What we hear is determined by the level and the frequency of the sound being generated. The human ear is limited to frequencies between 20Hz and 20,000Hz (20kHz). In many voice telecom circuits the actual frequency range is limited to less than 8kHz as good audio intelligibility can be delivered by frequencies within this range over the telecom networks we use.

The level we hear covers a similar large range and is defined in a logarithmic scale (decibels) relative to a starting level defined as the threshold of human hearing (0dB).



Plantronics history in audio comfort (continued)

What is the maximum sound level of the Plantronics telecommunication headset?

The maximum acoustic level that the Plantronics headset could reach is determined by the characteristics of the source signal and the headset, plus any audio processor in use. All Plantronics telecommunication headsets feature SoundGuard® technology which limits the maximum sound level to 118dB. This maximum level may be further reduced by the use of a Plantronics audio processor which is discussed later in this document.

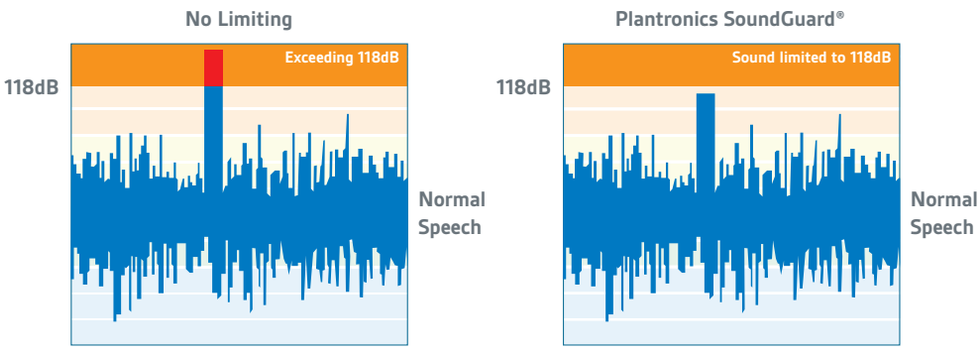
The standards behind the limits

The limit level of 118dB is used by Plantronics to demonstrate its compliance in part to the relevant European Safety Directives[1] and the European safety standard (EN 60950-1). These do not quote a level, but instead require the use of appropriate test standards. In some national and international telecom standards[2] past and present, a sound pressure level of 118dB is cited as the maximum permitted level for a telephony headset and so this limit is used as the appropriate reference.

[1] *The European Low Voltage Directive (LVD 2006/95/EC and its earlier version 73/23/EEC)*
[2] *e.g. BS 6317, FTZ 1TR2, ETS 300 245-2, TIA810B*

Enhanced audio comfort and protection technologies

Plantronics SoundGuard® technology removes those levels that would exceed 118dB being exposed to the user. Beyond this other Plantronics technologies can enhance the audio comfort and protection offered.

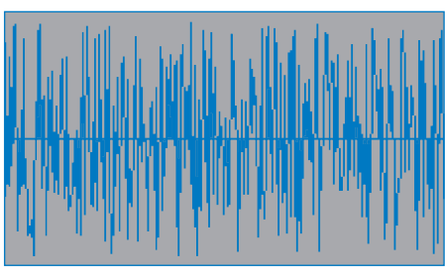


EncorePro™ Headset

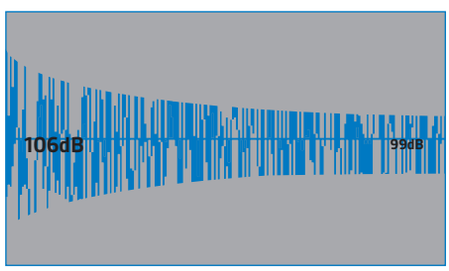
SoundGuard Plus

SoundGuard Plus™ features multistage limiting technology. This limits loud sounds within a fast acting time to less than 106dB. For those longer duration loud sounds, this level is further reduced by compression technology to levels below 99dB. With this active technology the natural voice remains unchanged ensuring excellent clarity of communication.

No Limiting



SoundGuard Plus™



Vista™ M22 Audio Processor

SoundGuard Digital™ is a further enhancement to the SoundGuard Plus technology; it provides multi-stage digital Anti-Startle protection and also daily limiting to manage the users' long term daily exposure or Time Weighted Average (TWA).

Anti-Startle

Similar to SoundGuard Plus™ it identifies and eliminates sudden loud sounds. Network interference, a fax machine tone, or even a whistle blown by a malicious caller are all instantly reduced to a level similar to background noise. A particular strength of SoundGuard Digital is its ability to provide such protection whilst not affecting normal speech – delivering face-to-face clarity of communication within a Contact Centre or Office environment.

Digital algorithms provide multi-stage limiting that:

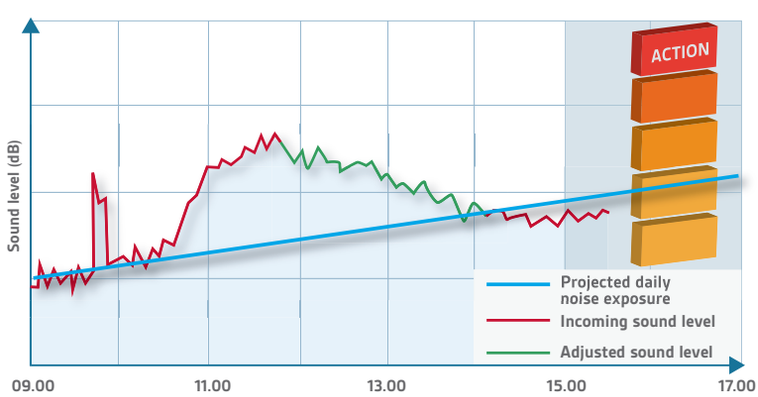
(a) Provides fast acting attenuation to limit the average Plantronics headset response to less than 102dBA.

(b) Provide further limiting for unwanted long duration sounds reducing them every second to a total attenuation of 40dB after 3 seconds.

(c) Provides attenuation to those sudden sounds that rise from quiet periods to loud too quickly.

Long term exposure or Time Weighted Average (TWA)

A European Directive[3] details the maximum daily exposure of sound that a user can be exposed to. The levels given are for the exposure over an 8 hour working day. A level of 85dBA is set by the directive as the upper daily value. Daily personal exposure is separate from the short term or long duration limiting discussed in this document and reflects the average sound that the user hears including when no call is present e.g. includes sound level when there are breaks in active speech.



The working day

VistaPlus™ DM15E Audio Processor

[3] *Directive 2003/10/EC of the European Parliament and of the Council of 6 February 2003 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise)*

G616 limiting

G616 limiting provides limiting to sound levels in excess of 102dBA in accordance to the G616:2006 guidelines issued by the Australian Communications Industry Forum (ACIF). The Plantronics anti-startle protection discussed earlier sets a similar level based on a generic headset response for the Plantronics corded audio processor solutions.

TCO has adopted the same G616 limit when it tests for headsets that comply with its enhanced acoustic limiting labelling scheme under its banner of **TCO Certified Edge headsets**. A range of Plantronics solutions have been independently tested and achieved TCO certification.

The Plantronics headset solutions

The wide range of Plantronics solutions covers both wired and wireless products giving the user the choice of acoustic limiting technology.

	ACOUSTIC COMFORT				
	SoundGuard	SoundGuard Plus	SoundGuard Digital		G616 Limiting
Plantronics solution			Anti-startle	TWA	TCO Certified Edge
Contact centre headsets (D, H and HW series)	✓				
Blackwire™ UC headsets	✓				
AL10 Wired audio processor	✓[1]			✓	
M12/M22/P10/E10 Wired audio processor	✓[1]	✓			
DM15 Wired audio processor	✓[1]		✓	✓	✓[2]
CS510/520 Wireless system	✓		✓	✓	✓
CS540 Wireless system	✓				
W440/W710/W720 Wireless system	✓		✓[3]	✓[3]	✓[3]
W740/W745 Wireless system[3]	✓		✓[3]	✓[3]	✓[3]

[1] These are Plantronics wired audio processors and require the use of a Plantronics contact centre grade headset.
[2] When used with the D-top EncorePro headset.
[3] When used with Headband only.

Levels quoted relate to measurements made on a fast acting industry recognized sound meter (rms measurement).

Industry standards quote acoustic levels relative to different measurement points to the human ear; these are often referred to as Open Field, Ear Reference Position (ERP) and Drum Reference Position (DRP). For ease of cross reference within this document, Plantronics has adopted the reference mostly associated with industry practice for that technology or standard measurement. Correlation between these measurement points varies with frequency and full definition can be found in the relative standards technical documentation.