

# TCO Certified Edge Headsets 1.0



**29 February 2012**

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# Introduction

TCO Certified Edge is a first of its kind certification program to offer an award to those electronics brands that offer truly cutting edge solutions to the market in the areas of environment and usability. TCO Certified Edge is the way TCO Development, together with industry, recognizes and promotes the very best products on the market; products that are at the cutting edge of new technologies; that offer distinct benefits for the user and reduced impact on the environment. TCO Certified Edge is a natural step in further pushing the boundaries of ICT design in an environmental and user-centred direction.

Quoting parts of these criteria (e.g. in procurements) is allowed, provided the source is properly disclosed and the extent of the quotation is consistent with sound copyright practice.

Stockholm 29 February 2012

TCO Development

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## A Criteria

To comply with TCO Certified Edge Headsets it is enough to fulfil *one* cutting edge criteria. To apply for a TCO Certified Edge certificate it is also necessary that the product is certified according to the regular TCO Certified program.

## A.1. Enhanced Acoustic Limiting

### Background

The Acoustic impulse test in requirement A.2.1.1 in TCO Certified Headsets 2.0 limits the maximum sound pressure level (SPL) that headsets may produce. This level is relatively high and is extremely loud when compared to normal speech. Thus headsets that comply with the Acoustic Impulse test limits can still cause user discomfort due to loud sound levels and may also startle the headset user due to sudden increases in the sound level from normal to relatively loud.

Removing or reducing those sounds that are significantly louder than normal speech, even those that are below the Acoustic Impulse test limits, can enhance the comfort of the headset user. This feature should reduce the likelihood and intensity of acoustic startle.

### Applicability

- Headsets that incorporate any kind of acoustic limiting feature.
- Devices used in conjunction with headsets that have an integral acoustic limiting feature.

### Reference

- Australian Communications Industry Forum (ACIF) G616:2006 Acoustic Safety for Telephone Equipment.
- R&TTE Compliance Association TGN 14 Rev 2 Guidance on Acoustic Safety

**Mandate:**

The Enhanced acoustic limiting feature should have the following aspects:

- The requirements of A.2.1.1 Acoustic impulse test shall be met in full with the enhanced acoustic limiting feature active or inactivated.
- It shall not operate at normal speech levels, only in response to loud (unwanted) signals.
- It shall limit the sound pressure to maximum 102 dB(A) SPL at DRP.
- It shall operate at all volume levels of the product.
- It shall operate over the defined frequency range of the headset for different stimuli.
- It shall operate within 100ms of the application of the unwanted signal.
- On removal of the unwanted signal, normal speech shall resume within 150ms.
- By default the enhanced acoustic limiting shall be active.

**The following information shall be submitted:**

Pictures of the headset mounted on the HATS from front, back and each side.

Specification if the headset is a monaural or binaural headset.

A copy of a test report and a verification report from a test laboratory accepted by TCO Development.

We hereby guarantee that the above mandatory requirements are fulfilled.

.....  
Signature

.....  
Name and title in block capitals

.....  
Date

.....  
Company

## **B TEST METHOD**

### **B.1 Enhanced Acoustic Limiting**

#### **B.1 Test laboratory requirements**

The A-weighted sound level pressure in the chamber used for measurement shall not exceed 45dB.

#### **B.2 Preparations of the EUT for testing**

All necessary preparations described in TCO Certified Headsets 2.0 clause B.1 and B.2.1 shall be done.

#### **B.3 Equipment**

The EUT shall be set up in accordance with TCO Certified Headsets 2.0 clause B.2.1.0.1.

A head and torso simulator HATS shall be fitted with a soft pinna v.3.3 simulator. When testing headsets the headset shall be mounted on the HATS in a position according to EN 50332-1:2000 paragraph 6.2.

#### **B.4 Test Methods**

##### **B.4.1 Acoustic Impulse Test with active enhanced acoustic limiting.**

The enhanced acoustic limiting should be active by default.

If it is possible to disable the enhanced acoustic limiting feature ensure the acoustic impulse test requirements are met both with the enhanced acoustic limiting feature active and disabled, see TCO Certified Headsets 2.0 requirement A.2.1.1 for test methods.

##### **B.4.2 Test method**

The HATS ear simulator should be monitored with a suitable frequency response analyser (an oscilloscope for time domain, if necessary). Note that both the frequency and time domain will need to be monitored. The audio output also needs to be monitored with a suitable speaker connected in parallel.

Wanted speech signals should be -15dBV, -10dBV and -5dBV 1 minute mean average levels from a suitable source and suitable source impedance. That is via the telephone line interface or digital source dependent upon the EUT.

Prior to test it is necessary to ensure that the wanted speech signal is intelligible for all defined input levels and all volume settings of the EUT.

The following test shall be made:

1. Check that the requirements of A.2.1.1 Acoustic impulse test is met in full with the enhanced acoustic limiting feature active or inactivated. Use the speech simulating signals according to ITU-T Recommendation P.59 Artificial conversational speech as wanted speech signals .

2. Interfering signals (unwanted) signals to be used are sinusoidal frequencies 500Hz, 1000Hz, 2500Hz, and white noise signal (100Hz to 10kHz). Levels of the interfering signal shall be greater than the wanted signal being used. The level of the interfering signal should be increased until the enhanced acoustic limiting threshold is determined.
3. If the EUT has a volume control set to maximum volume. Drive the headset at -5dBV with the wanted speech signal. Whilst monitoring the output of the headset receiver earpiece also stimulate the headset with 500Hz sinusoidal unwanted signal of 3dB greater than the threshold level.
4. Check that the enhanced acoustic limiting feature operates over defined frequency range of the headset for different stimuli. If the headset is binaural repeat this test for the other earpiece.  
Repeat the test for all test combinations detailed above, including the unwanted white noise signal.
5. With the unwanted white noise, measure the time period between the presence of this interfering signal and the activation of the enhanced acoustic limiting feature. Similarly, measure the time period between the cessation of the interfering signal and resumption of normal speech.
6. Repeat at mid volume and minimum volume levels of the headset.

#### **B.4.3 Test Evaluation**

The enhanced acoustic limiting feature should be active by default.

With the enhanced acoustic limiting feature enabled and disabled the TCO Certified Headsets 2.0 requirements of A.2.1.1 should be met

The wanted speech signal should be intelligible for all input levels and all volume settings of the EUT.

The unwanted interfering signal should be attenuated such that the DRP (Ear Reference Point) A-weighted sound pressure shall be  $\leq 102$  dB, effectively providing an improvement of 16dB attenuation in comparison to acoustic impulse protection.

The time period between the presence of the unwanted interfering signal and the introduction of the enhanced acoustic limiting feature should be  $\leq 100$  ms and the time period between the cessation of the interfering signal and resumption of normal speech should be  $\leq 150$  ms.

#### **B.4.4 Overall uncertainty**

The test shall be performed in such a way that the total extended uncertainty in the test results shall be less than  $\pm 3$ dB. The result shall be presented as printed on the instrument without the addition or reduction of the measurement uncertainty.

Below are general test clarifications to the criterion described