

## New Requirements for Audio Induction Loops in 2007

*Are you meeting the standard?*

**A major revision of the Audio Induction Loop performance standard means better hearing assistance systems for the hearing impaired. It also changes the way that loop systems are specified, designed, commissioned and maintained.**

Providing hearing assistance is a vital way for many organisations to help their customers and staff. With over 10% of the population suffering significant hearing loss, the benefit of hearing assistance systems can be very significant for both the provider and for those who suffer from hearing loss.

However simply installing a system is not sufficient; a hearing assistance system such as an Audio Induction Loop must provide a genuine benefit to the hearing aid user. A poorly designed or installed hearing assistance system is unlikely to meet legislative requirements as the provider is not giving assistance to the hearing impaired. Standards can provide performance benchmarks that will ensure that systems provide a genuine benefit.

The international standard for audio induction loop systems – IEC60118-4 – sets out requirements and test methods for any loop system. As hearing assistance is increasingly mandated by equal access legislation around the world, IEC60118-4 has become the reference for all loop systems, often appearing in specifications and tenders or directly in hearing assistance legislation.

IEC60118-4 has been revised and republished in 2007. The revised standard is more complex but also sets a clearer performance standard for loops. There are four main requirements:

	Purpose	Test
<b>Field Strength</b>	Sets the output level for the system, ensuring sufficient signal is delivered to the hearing aid to provide enough volume but no distortion.	<ul style="list-style-type: none"> <li>Capable of 400mA/m RMS with 1kHz sine</li> <li>Variation <math>\leq \pm 3\text{dB}</math> over the required volume of use</li> </ul>
<b>Frequency Response</b>	Sets the requirement for flat frequency response to give good speech intelligibility, the most critical requirement for loop system and the most frequently failed.	<ul style="list-style-type: none"> <li>Field strength variation <math>\leq \pm 3\text{dB}</math> from 100Hz to 5kHz over the required volume of use (referenced to the level at 1kHz).</li> </ul>
<b>Background Noise</b>	Sets a requirement for a maximum acceptable level of background noise. Suppression of background noise is essential to give the intelligibility required by the hearing impaired.	<ul style="list-style-type: none"> <li>A-weighted background noise to be <math>&lt; 32\text{dB}</math> relative to the signal (400mA/m RMS)</li> <li>Ideally <math>&lt; 47\text{dB}</math> where possible.</li> </ul>
<b>Subjective Test</b>	To ensure the system provides an undistorted clear signal to hearing aid users using the actual system sources (microphones etc.).	<ul style="list-style-type: none"> <li>Ideally hearing aid users will validate the system performance.</li> <li>If not, someone from the service provider must assess the system with suitable receiving equipment.</li> </ul>

## What action should you take?

If you are specifying, designing, commissioning or maintaining an audio induction loop system, you must do everything reasonable to meet the requirements of IEC60118-4. This will ensure that you provide a system that is a benefit to the hearing impaired and that will comply with any legislative requirements for assistive listening. Here are a few pointers to help you to comply:

### Specification

While many contractors will apply the principles of IEC60118-4, there are also many who will not unless specified – in the UK it is estimated that over 50% of loop systems do not work when first installed!

If you are specifying an audio induction loop system, ensure that the specification includes:

- The installed loop system must comply to IEC60118-4
- The contractor must provide test results and a certificate of conformity to show compliance to IEC60118-4

These requirements should not add cost or complexity to the job if done correctly, but effectively guarantee a working system.

Contact Ampetronic support if you need help in specifying your system appropriately.

### Design

It is not possible to get a system to meet IEC60118-4 if is poorly designed. To help you, Ampetronic can provide:

- Technical support for any application
- Full design service
- Training courses
- Technical guides

However you design your system, make sure you have considered:

- Metal structures (significantly affects performance)
- Overspill and interference
- Provision of appropriate input audio
- Use of array systems for large areas, very low overspill or areas with significant metal structures

### Commissioning

If the installed loop system has been designed and installed correctly, commissioning to IEC60118-4 will not be a complex process. You will require:

- Reference test signals
- Field strength meter
- Frequency analyser
- Loop listener / receiver
- Certificate of test and conformity

All of these facilities are provided by Ampetronic as part of the Ampetronic FSM (Field Strength Meter) as shown.

Alternatives include a NTI Minilyser with Ampetronic CMR3 and ILR4, which provides a highly capable analytical system.



### Maintenance

The most common cause of failure in hearing assistance systems is poor maintenance / operation. To ensure that your system keeps providing a benefit, meets IEC60118-4 and meets your obligations under disability legislation, the system provider must perform regular maintenance checks:

- Minimum requirement

Regular checks with a loop listener / receiver such as the Ampetronic ILR4, providing a subjective check as well as a basic field strength measurement.

- Preferred approach

More thorough checks to ensure system operation and compliance. The most simple approach is with the Ampetronic FSM (shown left) which provides a very cost effective and simple package for any user to perform all the necessary tests and provide documentation for regular surveys.

The full text of IEC60118-4 can be obtained from the International Electrotechnical Commission ([www.iec.ch](http://www.iec.ch)) or from a regional standards organisation such as BSI ([www.bsonline.bsi-global.com](http://www.bsonline.bsi-global.com)).