



NEW STANDARD IEC 60118-4:2006

On September 1 2006 a new improved standard for induction loop systems (IEC 60118-4) was approved by the IEC members, replacing the old standard from 1995. Please study the new requirements for the standard carefully.

Note: All quoted text is from the new standard.

In the new standard the measuring procedures are defined. Although the desired field strength level is still the same (400 mA/m). The new standard presents three novelties:

1. Reference level is now clearly defined at the peak value: 0 dB=400 mA/m
2. Coverage area shall now be specified in different heights, i.e. coverage space/volume
3. Background noise requirements has been increased to a low -47 dB(A)

1. Reference level

Desired field strength level is still 400 mA/m, but the relative reference value (0 dB) is now defined to that same level. All reference to the old 100 mA/m is no longer relevant. In the section Setting up (commissioning) the system it is stated: *“The maximum value of the short-term average of magnetic field strength obtained from a speech signal shall normally be 400 mA/m, measured with the RMS meter with 0.125 s averaging time...”*

There are three different measuring methods to use: Sine wave, pink noise and speech (synthetic ITU-speech or recorded speech). None of the signals should be tampered with, chopped to pulses/bursts or similar, and level should for all methods be 400 mA/m as stated. The UniVox method uses speech as it is equivalent to the requirements quoted above. Specifically the ITU synthetic speech is used *“for making objective measurements”*.

Whatever test method is used the final procedure is the same. *“The commissioning procedure shall include a test with the sound sources (talker, etc.) in their normal positions with respect to the system microphone(s), and with any other sources, such as a CD player. Measurements shall be made to check that the controls of the amplifier, etc., are set so that the magnetic field strength specified is achieved.”* I.e. always conduct a final test using normal speech and secure that 400 mA/m is achieved in the highest peaks using a correct RMS with 0.125 s averaging time.

2. Coverage space and volume

Coverage area is changed to *“useful magnetic volume”* in the new standard. *“Normally, measurements heights of 1.2 m for seated listeners and 1.7 m for standing listeners should be used”*. If only the 1.2 m is used, for example in a theatre, only that level needs to be measured.

The presentation form may vary – either a graph with printed values or a text. An example:

- a. Full coverage at 1.2 m listening height, 1 m from the walls.
- b. Full coverage except an area (1x1 metre) in the centre of the room.

Normally a text is more straightforward and easy to interpret than a graph full with numbers.

3. Background noise

Background signal/noise ratio demand has increased to 47 dB(A) for high quality listening areas. *“Ideally, the difference between the reference magnetic field strength level and the A-weighted magnetic background noise level, which for clarity is referred to as ‘reference signal-to-noise ratio’ in this standard, should be greater than 47 dB.”* High quality listening areas are defined as *“i.e. in theatres and similar situations”*. *“If the actual ratio is less than 32 dB, this shall be reported and consideration given to remedial measures.”*

Conclusion

The preferred signal/noise ratio should ideally be at least 47 dB, but values down to 32 dB are acceptable. There is however one exception to this conclusion: *“If the magnetic noise has no significant undesirable tonal quality or is mostly at low frequencies, then a higher level of interfering signal may be acceptable. For example, a reference signal/noise ratio as low as 22 dB may be tolerable.”*

General information

A calibrated meter with the old reference of 0 dB = 100 mA/m can easily be used by just reducing the readout value by 12 dB. Example: a reading of +12 dB with the old calibrated meter using reference of 100 mA/m is equivalent to 0 dB with the new standard 0 dB = 400 mA/m (gives the reading of 0.50 uT on a magnetic flux density instrument).



4. Field Strength Level

Set the input level according to the amplifier's manual. Adjust the output level using the standardised speech material according to the standard, CD track 1, artificial voices. An artificial reproducible speech is mandatory for setting the right level in systems where active signal processing is implemented, like attenuating feedback and active AGC. Sine wave signals are very different from speech and music and will trigger the amplifier system differently giving false readings. Adjust the field strength (highest peak) to 400 mA/m = 0 dB (± 3 dB).

Adjusted level using artificial speech: _____ dB (0 dB)

5. Final confirmation and commissioning

Connect the actual signal source, preferably speech, and adjust the input level according to the instructions of the amplifier's manual.

The highest field strength peak: _____ dB (0 dB)

Customer

Venue: _____

Room: _____

Signature: _____

Date: _____

Place: _____

Installer

Installer Co: _____

Installer Name: _____

Signature: _____

Date: _____

Place: _____

Equipment: _____ Serial No: _____ Size of room: _____

Comments: _____
