



New international standard for induction loops

With Managing Director Conny Andersson as convener of the work group TC-29/MT-20, Bo EDIN AB (UniVox) has been deeply involved in the working process to create a new enhanced induction loop standard IEC 60118-4. The new standard is now realized and was unanimously approved September 1 2006 by the IEC members from all parts of the world. The new standard has yet to be adopted in every member country (adopted in Sweden by SIS March 1 2007). This means that the UniVox method using ITU artificial speech is now included in the new international standard for induction loops!

The basis for the work with the new standard has been to establish measuring methods to be adopted in the standard to minimize incorrect interpretation. Until now one problem has been that many induction loop systems incorrectly have been adjusted to a approximate peak value of 100mA/m and not to the correct standard value of 400mA/m. This has led to many induction loop systems that are 12dB too weak (1/16 of the actual power requirement!) and equipped with underdimensioned low cost induction loop amplifiers. Incorrectly dimensioned or adjusted loop systems has also, undeservedly, created a bad reputation for induction loop systems in general. With fulfilled new standard bad induction loop systems are avoided. By use of the new compatible SLS induction loop system the standard is even surpassed with a wider frequency response, a larger coverage area and levelled magnetic field.

The fundamental demands on magnetic field strength and frequency response remains mainly unchanged in the new standard. This includes the demand that a loop system should be able to reproduce 400mA/m in program peaks measured with a RMS measuring device with 125ms integration time and achieve the frequency response 100-5000Hz ± 3 dB. An important new item however, is that the magnetic field strength now has its reference level at the peak level (like other typical level controls): 400mA/m=0dB.

Please note!

The current measuring instruments often have 100mA/m as their reference level. For this reason there is an obvious risk of confusion. We therefore always recommend to communicate with the absolute value measured in mA/m instead of relative dB values.

Technical data

- **Frequency response: 100-5000Hz ± 3 dB relative 1000Hz (unchanged)**
- **Field strength: in peaks 400mA/m (unchanged)**
- **Listening area has been replaced with listening volume, i.e. listening height has to be integrated in the specification. This means that the magnetic field should be homogenous (± 3 dB) within an area and a min./max. height, for example 1.2m (seated) and 1.7m (standing)**
- **Specified reference level: 400mA/m=0dB. This might be confusing since many has used 100mA/m as reference level before. We recommend to use absolute values, i.e. mA/m to avoid misunderstandings. A certified loop system must reach 400mA/m in program peaks**
- **Background noise is measured with Field Strength Meter FSM in A-filter position. The following is valid for the signal/noise (S/N) ratio relative 400mA/m=0dB:**
 - **47dB S/N ratio (-35dB on the existing FSM scale) is desirable with loop amplifier connected**
 - **If S/N ratio is lower than 32dB (-20dB on existing FSM scale) it should be reported and measures to overcome the problem suggested**
 - **By short time listening (for example across-the-counter systems) a S/N ratio down to 22dB can be accepted (-10dB on existing FSM scale)**





If Field Strength Meter FSM with reference 100mA/m=0dB (the old type) is used, the following conversion table can be used to obtain the right reading for 400mA/m=0dB:

Absolute field strength mA/m	The new standard 0dB=400mA/m	The old standard 0dB=100mA/m	
800	6	18	
565	3	15	
400	0	12	Peak value, RMS, 125ms
283	-3	9	
200	-6	6	
142	-9	3	
100	-12	0	Speech average value (old standard)
71,1	-15	-3	
50,4	-18	-6	
35,7	-21	-9	
25,2	-24	-12	
17,9	-27	-15	
12,6	-30	-18	
9,0	-33	-21	Max. background noise level without report
6,3	-36	-24	
4,5	-39	-27	
3,2	-42	-30	
2,2	-45	-33	
1,6	-48	-36	Desired max. background noise level
1,1	-51	-39	
<1	-54	-42	
<1	-57	-45	
<1	-60	-48	

