Know Your Standards

Where do standards come from and who produces them?

Contrary to popular belief, standards are not produced by faceless morons in Brussels or malignant demons in Geneva, but by industry people like you and me (especially me!). Of course, we are hired for our talents at electronics, not for our literary skills, so sometimes our writing falls short of the lucidity that is, nevertheless, essential in a standard, especially one that is associated with legislation or regulation, and that particularly includes standards for safety and for EMC.

What this amounts to is 'Don't shoot the pianist, he's doing his best.' When you find something in a standard that isn't comprehensible, or is comprehensible but cannot possibly be meant, **please** don't just fume and ignore it; tell someone involved with that standard, or even me. It may take a while, but it will be fixed.

Standards-making bodies

International

There are two groups of international standards bodies:

- those established by treaty, or as organs of the United Nations, or by special international agreement, such as IEC (including CISPR), ISO and ITU. ITU is split into ITU-R, which produces non-mandatory requirements for broadcasting, and ITU-T, which produces requirements that it intends to be mandatory, for telecommunications;

- those which are learned societies with international membership of individuals, such as IEEE and the Audio Engineering Society.

You might well conjecture that, on the basis of the perversity of human nature, that there is a degree of xenophobia between these two groups, but they do talk to each other.

CISPR (abbreviation of the French title) is part of IEC, but has a different Constitution, allowing government agencies, normally the spectrum management authorities, to be members, in addition to national standards bodies.

Regional

Two bodies in this category are the European CENELEC (dealing with most electrical and electronics matters) and CEN, dealing with everything else. Their declared policy is to adopt IEC or ISO standards, respectively, wherever possible. 'Common Modifications' can be agreed by all participating countries, while 'Special National Conditions' are allowed where legal or major infrastructure requirements in particular countries make them necessary.

National

Every developed state, and most emergent states, has a national standards body, which is a member, or associate, of the international bodies. The UK Government is the ITU member, BSI is the ISO and CEN member, and also the member of IEC and CENELEC.

The British Standards INSTITUTION

Not 'Institute'! BSI is one of the oldest standards bodies and sometimes it shows. But the Greek National Committee produced evidence that standards for metal parts used in masonry work were in place in Classical times (around 360 BCE)!

Most BSI committees parallel the work of international or regional committees. For example, BSI EPL/100 parallels IEC TC100 (on multimedia equipment). Membership of BSI committees is not very difficult to achieve, but you do tend to 'need to know someone', simply because it's not obvious how to apply. Not that there is often a queue of eager aspirants! However, unlike in almost all other countries, committee membership (as opposed to subscribing membership of BSI) is FREE. All you need to do is to devote your (employer's?) time and travel costs. If the committee sends you to a regional or international meeting, you may qualify for a government travel grant (AITS), which, in these days of budget air travel, may pay for a good percentage of the total cost.

Why standards matter for compliance

There are few countries in the world now that will allow products to be marketed without meeting requirements for safety and EMC (and maybe other things). While some require compliance with national standards, and others require testing in an indigenous laboratory, the demands for trade restrictions to be removed is strong enough to force the acceptance of IEC standards, or the substantial alignment of national standards with the IEC standards. There is also a growing number of mutual recognition agreements (MRA) between governments, meaning that they accept test reports from laboratories in each other's country.

Free trade and legal issues have also resulted in the abandonment, for most purposes, of *mandatory* compliance with standards and, to a large extent, *mandatory* third-party testing. The result is that the manufacturer bears the whole, non-delegatable responsibility for a product being safe and having sufficient electromagnetic compatibility, but can demonstrate that by any means that he wishes and expects to be acceptable to the market surveillance authorities.

The importance of 'design in' and the availability of standards at the 'solder face'

It seems incredible that there are still companies who either don't buy any standards or keep them locked up in the Technical Director's office. They hand over a 'finished' product from the design engineers to specialist safety and EMC experts, who proceed to re-design it, at huge cost and with a long time delay, in order to comply with what they *think* are the mandatory regulations, because even they don't have free access to the standards and subsist on information from colleagues and the

web, much of it not exactly wrong but misleading because of incompleteness.

It seems so obvious that the right way is to 'design-in' safety and EMC compliance from the beginning of the design process, with the experts involved at all necessary stages. In order for the designers and experts to talk the same language, and, especially, to prevent conflict, they must all have ready access to the relevant standards. If not, they soon begin to suspect that each expert has a personal agenda and is not just ensuring that the product complies. There isn't actually anything wrong with personal agendas, if they are in the open and recognized for what they are. For example, how close to an EMC limit is 'too close for comfort'? The EMC expert may well say that from experience, this sort of product needs a 5 dB margin, whereas this sort needs only 3 dB.

How to obtain standards

You can, of course, buy them from BSI. Be cautious about buying from 'official agents' – their mark-ups can be quite large. If you buy from IEC or ISO, you may be able to buy only a bilingual publication, (English and French), which naturally costs more than for one language. Some IEC standards are published in Spanish.

Because of the 'Common Modifications' and 'Special National Conditions' mentioned above, the CENELEC or CEN adoption of an IEC or ISO standard is NOT identical to the original. In addition, there are almost always differences in the 'Normative References' – standards mentioned in the text which give information on, for example, the methods of measurement that must be used. EMC ENs also have an Annex ZB about how the standard matches up to the Directive.

ENs in English can be purchased from the national standards bodies of other European countries, often at attractive prices. There is a comprehensive article, including a web-site linked list of standards-making bodies, at:

http://en.wikipedia.org/wiki/Standards_organization

Participants in standards work are given access, with restrictions, to the standards in their area of work. BSI Project Managers can give committee members access to related standards if they are needed for reference in connection with work on another standard.

In UK, some County Library Services give library members free read-only access to British standards, including ENs.

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