



Another EMC resource
from EMC Standards

EMC and the 17th edition

Helping you solve your EMC problems

EMC and the 17th edition

Good EMC engineering will soon be required to comply with the IEE Wiring Regulations (BS7671) and Lightning Protection (IEC 62305). Keith Armstrong reports

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Previous editions of the column have briefly described how the new electromagnetic compatibility (EMC) Directive 2004/108/EC, and the 2006 EMC Regulations that implement it in the UK, require 'fixed installations' to employ good EMC engineering practices, and document that it was done, from 20th July 2007. They also briefly discussed how these new legal requirements could affect panel builders, system integrators, and M&E contractors.

In this column we will discuss other developments in Laws and Regulations that will require good EMC engineering practices to be employed, which might affect readers of this magazine, even if only indirectly.

The 17th Edition of the IEE Wiring Regulations (BS7671) has just been published, and gone straight into Amazon's top 20 by volume of sales. Like all of the preceding Editions it contains no EMC requirements at all. *However*, at the time of writing, work is well underway at BSI on including EMC requirements that will either be published as an amendment to the 17th Edition, or in the 18th Edition.

These EMC requirements will implement IEC 60364-4-44 clause 444, and the reason for this is to harmonise the UK's 'electrical installation code' with that of other EU member states.

Buildings, plant and sites generally in the UK have to comply with BS7671 to meet Health & Safety at Work requirements. So when (not 'if') the Edition of BS7671 that includes EMC requirements comes into force, Health & Safety at Work requirements will mandate the use of good EMC engineering practices in all electrical installation work.

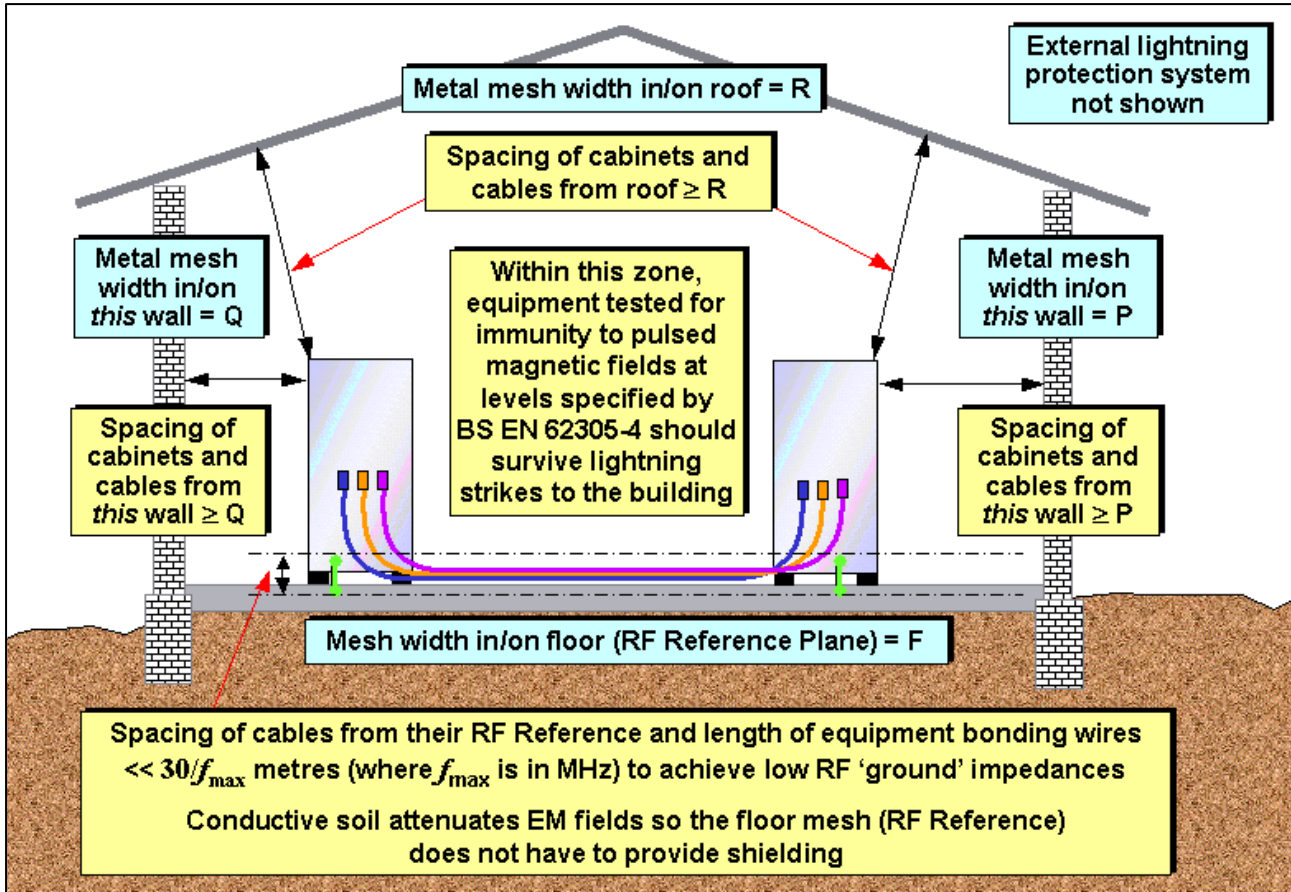
You may be aware of British Standard 6651, since all major and public buildings in the UK have to comply with it in order to get fire insurance at an affordable premium. Mostly, the only result is a few flat lightning conductors draped over the building and stapled to its walls, connected to earth rods driven into the ground around the walls – so it does not generally have much effect on the activities of this magazine's readers.

But all that is going to change on the 30th August 2008 when BS 6651 becomes obsolete and is superseded by BS EN 62305. The big change with this new standard is that it requires a site's lightning risk assessment to include the potential for lightning damage to electronic equipment/systems on the site. The result will be that from the end of August this year, almost all commercial, financial, industrial and healthcare premises will be required to apply certain EMC engineering practices to their equipment, systems and installations, to comply and be able to get insurance.

The requirements are spelled out in Part 4 of BS EN 62305, including RF Reference structures and surge protection devices to protect against overvoltage surges on power and signal/data/control cables; and shielding against lightning electromagnetic pulse (LEMP) using meshed metal structures and other conductors.

Interestingly, it also includes requirements for the immunity of the equipment/systems to pulsed magnetic fields. Since such tests are not required by any of the standards listed under the EMC Directive, it will not be sufficient to rely on the CE marking when purchasing equipment/systems, they will also need documentation that shows they would pass the appropriate levels of pulsed magnetic field tests (IEC 61000-4-9 and 61000-4-10) that have been calculated using BS EN 62305-4.

Although all of these Directives, EMC Regulations, (future) Wiring Regulations and lightning protection standards mandate the use of good EMC engineering practices, they generally do not describe how to actually do them. For example, in BS EN 62305 or the future IEE Wiring Regulations, there are requirements such as 'install an appropriate filter' – but they don't tell you how to select the filter, or how to install it so that it achieves the intended EMC suppression purpose. And as a previous column in this series has shown, if you don't assemble/install the filter correctly it won't work as intended and could even make interference worse.



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The same is true for all other EMC issues – the techniques that are required to make them work in real-life are not described in 2004/108/EC or the UK's associated 2006 EMC Regulations, BS EN 62305-4 or the future edition of BS7671. They tell us **what** techniques are required, but in the main they do not tell us **how** to do them.

The situation is made more difficult by the fact that many of the practical EMC engineering techniques that are now required, are not yet commonly used in electrical installations, and there is no tradition of EMC engineering amongst architects, building and site design consultants, electrical installers, M&E Contractors and panel builders, and only a few system integrators seem to understand what is needed.

These brief columns are not only intended to inform PSB readers of new legislation and standards, but also to fill the gap between their requirements and practical engineering techniques by providing the necessary understanding of **how** to do good EMC engineering in real life, in practical detail that can be applied immediately.

For those who wish to investigate further, the Directives and Regulations, and their official guides, plus a great deal of useful and practical information, are available as described in the document: '*Some Useful References on EMI and EMC*' posted on this site.