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Charity No. 1159816

Energy Advice Drop In  
The Wellbeing Centre  
Church Stretton  
Thursday's 10.00 – 12.00



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## LED bulbs and radio interference

Interference from low energy light bulbs, which now comes under the broad heading of Electromagnetic Compatibility or EMC, has been a problem since the first compact fluorescent bulbs (CFLs) went on sale in the early 1990s. CFL technology has improved but interference from light bulbs is now back on the agenda, with a vengeance, following the appearance of low cost, energy-saving LED light bulbs, and this just happens to coincide with the growth in popularity of DAB radio. *It is caused by the electronic 'driver' circuits, which convert mains electricity to the low voltages used to power LEDs, and it all depends on how well these circuits have been designed.*

For the most part it is not a problem with branded LED bulbs made in the EU, which should have the CE mark and be labelled as EMC compliant. The majority of complaints concern cheap LED bulbs, mostly made in China, which do not meet standards for radio frequency interference (RFI), and it doesn't help that some cheap DAB radios do not conform to EMC standards for immunity or susceptibility to interference.

Unfortunately there is no easy fix. In fact it will probably only get worse as LED bulbs proliferate and it is unlikely that non-compliant bulbs will be banned any time soon. On the plus side the interference tends to be very localised and there are a few things that you can do to reduce or eliminate the effects. Switching to EMC compliant bulbs should work, but only buy one, and see if that makes a difference. Re-orientate or move the DAB radio as far as possible from the lamps; make sure that the antenna is not close to any mains cables or wall sockets, and try plugging the radio into another mains socket. *Incidentally, if a lighting system has been installed by a qualified electrician it will be down to them to sort out any problems with interference.*

## Can LED lights cause interference to my DAB reception?

Low-voltage, LED lamps can sometimes cause interference to DAB and FM reception. The problem is worst with 12V types. The more lamps switched on at a time, the worse the problem becomes. This is most likely to happen when LED lamps are directly substituted for 12V halogen lamps, retaining the original transformers. As the power used is lower, the original transformer is forced to work outside of its operating parameters and this has been known to cause widespread electrical impulse interference.

## The Answer

Substituting one make of LED for another may solve the problem, but if not, try a transformer specifically-designed for LED lamps. Mains-powered LED lamps may be less troublesome. It is a complex problem and there is no single solution.

*Something which is CE marked may be returned to the supplier if it gives problems. Lamps without a CE mark should not be on sale.*

LEDs themselves do not produce the radio frequency interference. An LED is simply a diode that emits light when a DC current is run through it. There is no complex circuitry within an LED to create the radio waves.

It is the power source generating the voltage to run into the diode that can produce the radio frequency interference. It all depends upon the design of the circuit around the LED chip. Some inexperienced design engineers are taking a simple, cheap approach to providing power to the LED, and their products create the RF interference.

Information taken from various on-line sources

### **Caution - Please Read this:**

*Our Advice Note has been carefully prepared and is, as far as we know, accurate at the date of publication. However, things change very fast in the world of technology and in government schemes. Sometimes parts of Advice Notes become outdated and may not offer best advice very soon after publication. We do our best to keep them up to date with the limited resources we have. Furthermore, our advice may not be appropriate for your particular circumstances. We advise that you get advice from a relevant expert before making changes. We may be able to offer further advice or make suggestions on who to contact if you get in touch with us. We are not technical experts but have many years of offering common sense advice and we recommend you should not rely on our Advice Note alone for making decisions. The national advice centre Energy Savings Trust is a good source of information.*

See <https://energysavingtrust.org.uk/>