Radio, TV or Wi-Fi Reception Issues When Using LED Lamps

Experiencing a disruption to your signal or interference with radio, TV or Wi-Fi equipment, especially in areas with low signal strength, can be the result of many factors. Switching to another brand of LED lamp will not necessarily solve any issues that may occur

LED lamps meeting EMC standards

Electromagnetic compatibility is a system issue and is affected by many variables in the installation. Despite all of our LED lamps having undergone testing for compliance with EMC standards, a real life installation will differ from the standard test conditions which can lead to signal or reception interference. Such problems are likely to arise from the power supply or the wiring and not necessarily from the lamps themselves. The possibility of reception issues will also increase dramatically in situations where the signal strength is poor or the quality or receiving equipment is low.

Retrofitting on AC transformers

If interferences take place, it is most likely to occur when directly replacing 12V halogen lamps with LED lamps. It is not possible to design a 12V LED lamp that completely eliminates the likelihood of interference when retrofitted on an AC transformer. With output frequencies varying hugely from 10's to 1000's of Hz, the AC transformer is the most likely source of the interference. It will have been designed with a large resistive load in mind and not a light inductive load, therefore its characteristics can change as the load type changes.

Possible Solutions

Many of these factors are outside of the lamp designer's control, with the LED lamp not necessarily being the most dominant disturbing source in the system. The power supply is the biggest source of possible interference, especially if it has not originally been designed for use with LED lamps. Rather than changing the LED lamp, issues should be resolved on a system level by changing the system variables.

The following advice may lead to an improvement:

• Change to dedicated DC LED drivers or mains voltage lamps as these are less likely to lead to reception problems.
• The use of LED lamps with legacy AC transformers is only a transitory phase in the adoption of LED lighting, enabling many customers to benefit from LED lighting with minimal investment.
• Minimise cable lengths to reduce emissions.
• Use shielded cables.
• Add EMI filters or chokes at the input and output of the transformer. These ferrite rings are commonly available to clip over the cable.
• If possible, position aerials as far from sources of interference as possible. Connect to receiving equipment with coaxial cables.