

Tried and tested – the UK's top LED downlights

Lux magazine doesn't just recommend products – we take 'em apart and put 'em back together. And then, just to make sure, we have them independently tested in the UK's most rigorous lighting labs.

Selecting LED downlights is real headache. There's the claims and counterclaims – not to mention spec sheets that make the plot from *Lost* look like a model of clarity and consistency.

So to help specifiers sort the wheat from the chaff, we've taken the most popular brands of LED downlights and given them a Lux MOT. We examined the quality of the light, the standard of engineering – and then we tested them for output and efficacy at the industry's most respected laboratories – 42 Partners in Wolverhampton.

They checked all our downlights on state-of-the-art equipment using best-practice procedures.

Minefield

When they've come through all that, the Lux expert panel of engineers and LED experts is happy to stick the 'Lux recommendation' label on them.

So if we say the downlights are Part L2 compliant, that's because we've tested them to make sure they deliver at least 55 lumens per circuit watt – an extremely high bar for LED technology to reach.

Specifying LED lamps and luminaires is a notorious minefield so it's worth remembering a few ground rules.

HOW WE TESTED THE KIT

Our tests were carried out by UK's leading lighting test laboratories at 42 Partners in Wolverhampton. They were tested strictly in accordance with EN13032 in an integrating sphere (rather than the more forgiving gonio where the LEDs can run cooler) at a stable 25 degrees C, and after 100 hours of lamp pre-conditioning. Efficacy is lower than manufacturer ratings due to losses in the luminaire. We measured the efficacy of luminaire lumens per watt which includes the driver.




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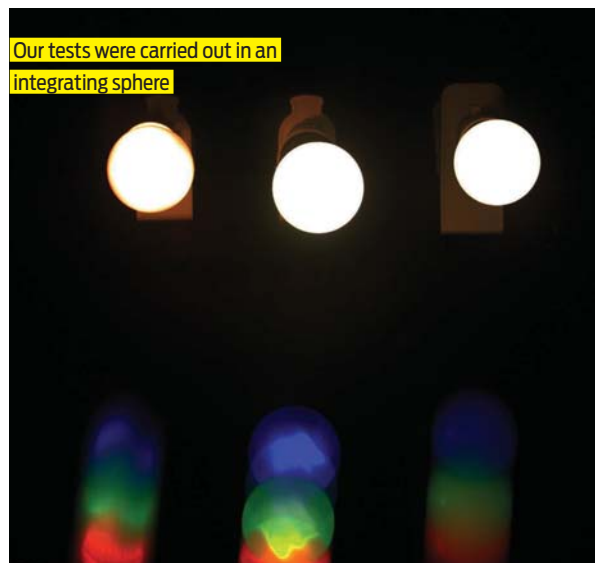
POWER FACTOR AND LEDS

The lowest power factor we measured in our tests was 0.77. But many LED products, especially LED lamps, are much lower than this and can be as little as 0.5. A case can be made that low power factors increase the energy used, with commensurate carbon emissions. With traditional lighting systems, specifiers have become used to high power factors of over 0.9, and they expect it with solid state lighting. But it costs the manufacturers more to make LED lamps with a high PF of 0.9 – and it creates more flicker. The debate about power factor is currently raging amongst manufacturers, and if they can't convince the world that low PFs acceptable, they'll have to bite the bullet and rework the products.

Stick to trusted brands – they have more to lose if the products don't deliver. Also, if you go on the Internet to find a particular luminaire spec – such as the colour rendering, efficacy, photometry or colour temperature – and it's not easy to find, that's because the manufacturer doesn't want you to find it.

But don't believe the sceptics: LED luminaires – at their best – are more than a match for traditional fittings. Just make your selection with care. 

Our tests were carried out in an integrating sphere





Best halogen
downlight
replacement

L RECOMMENDS

PHOTONSTAR LASER LITE

ENGINE: Cree XPG

RATED POWER (LUMINAIRE ONLY): 9.1W

RATED OUTPUT: 577-770 lumens

COLOUR TEMPERATURE: 3000K

COLOUR RENDERING: Ra >80

BEAM ANGLE: 12 degrees

PRICE: TRADE £76

OUR VERDICT:



The 55-luminaire-lumen-per-watt metric of Part L2 is not an easy bar to reach, especially in a warmer colour temperature, but the Laser Lite – with the new Cree XPG engine at its heart – hits it comfortably. The narrow beam angle of 12 degrees helps get more of the light out of the luminaire, giving a better LOR (see Tech Briefing, page 96) but this is a difference of only a few percentage points. A lot of product for the price.