BRIGHTLUXX

Brightness & Nits Guide

LED Display Brightness Specification for UAE & GCC Environments

How to correctly specify LED display brightness for indoor, semi-outdoor, and full outdoor installations in the Gulf region's extreme light conditions.

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UNDERSTANDING NITS (cd/m2)

A 'nit' (candela per square metre, cd/m2) measures luminance - how bright a display appears to the human eye. In the GCC region, extreme ambient light demands significantly higher brightness than temperate climates.

- 1 nit = 1 candela per square metre (cd/m2)
- A laptop screen is typically 300-500 nits
- A premium indoor LED wall is 600-1,200 nits
- A Dubai outdoor billboard needs 5,000-8,000+ nits

BRIGHTNESS BY ENVIRONMENT (GCC SPECIFIC)

Environment	Ambient Light	Min Nits	Recommended	Notes
Dark room / cinema	< 50 lux	200	400-600	Lower = better contrast
Office / conference	300-500 lux	400	600-800	Anti-glare coating helps
Retail (indoor)	500-1,000 lux	800	1,000-1,500	Bright retail lighting
Mall atrium	1,000-2,000 lux	1,200	1,500-2,500	Skylights add ambient
Lobby (glass facade)	2,000-5,000 lux	2,000	2,500-3,500	Direct sun through glass
Semi-outdoor canopy	5,000-20,000 lux	3,000	4,000-5,000	Shaded but open air
Outdoor (shaded)	10,000-30,000 lux	4,000	5,000-6,000	Under overhang
Full outdoor Dubai	60,000-120,000 lux	5,500	7,000-10,000	Direct Gulf sun

GCC CLIMATE FACTORS

Heat Impact on Brightness

LED brightness degrades at high temperatures. In the GCC where ambient can reach 50C and panel surface temperatures can exceed 70C:

- Specify 20-30% higher brightness than minimum to account for thermal derating
- Ensure the display has active thermal management (fans or convection)
- Operating temperature range must cover -10C to +55C minimum
- Request brightness at 40C ambient, not just at 25C lab conditions

Sand and Dust

- Fine desert sand can block airflow and coat surfaces, reducing apparent brightness
- Specify IP54+ minimum for any semi-outdoor location
- Include maintenance cleaning schedule in specification
- COB technology is inherently better in dusty environments

Solar Orientation

- West and south-facing outdoor displays in UAE receive the most intense sunlight
- Add 30% to brightness spec for west-facing installations
- North-facing displays can use lower brightness (significant cost saving)
- Consider auto-brightness sensors to reduce power during evening/night

POWER & HEAT CONSIDERATIONS

Higher brightness = more power = more heat. Plan HVAC and electrical accordingly:

Brightness Range	Typical Power	Heat Output	HVAC Impact
600-1,200 nits	200-400 W/sqm	~300 BTU/sqm/hr	Minimal
1,200-2,500 nits	400-600 W/sqm	~500 BTU/sqm/hr	Moderate
2,500-5,000 nits	600-900 W/sqm	~800 BTU/sqm/hr	Significant
5,000-10,000 nits	900-1,500 W/sqm	~1,200 BTU/sqm/hr	Major planning needed

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BRIGHTLUXX | Premium LED Display Solutions

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