

General Bluetooth Notes:



Introduction

Wireless systems provide much simpler installation as well as the flexibility to relocate or add to a system, compared to installing wired systems. The recommendations in this guide are provided to ensure successful installation and reliable operation of Prolojik Bluetooth wireless building networks.



Communication / Signal

Radio signals (i.e. Bluetooth) are electromagnetic waves, hence the signal becomes weaker the further it travels, the range is limited. The radio coverage is further decreased by specific materials found in the direction of the propagation. While radio waves can penetrate a wall, they are dampened more than on a direct line-of-sight path (LoS).



Restrictions & Barriers

Material Range reduction vs. LoS

- | | |
|--|----------|
| • Wood, plaster, glass uncoated, without metal | 0 - 10% |
| • Brick, press board | 5 - 35% |
| • Ferro concrete | 10 - 90% |
| • Metal, aluminium lining | 70 - 90% |

Objects made of metal, such as metallic separation walls and metal inserted ceilings, wall reinforcements and the metal foil of heat insulations, reflect electromagnetic waves and thus create what is known as radio shadow and are barriers to signal path.

Important objects and factors that decreases or affects coverage:

- Metal separation walls or hollow lightweight walls filled with insulating wool on metal foil
- Inserted ceilings with panels made of metal or carbon fibre
- Steel furniture, glass with metal coating (typically not used indoor)
- Switch mounted on metal surfaces (typically 30% loss of range)
- Use of metallic switch frames (typically 30% loss of range)

Fire-safety walls, elevator shafts, staircases and air ducting can be considered as barriers.

Avoid barriers when installing BLE wireless networks by repositioning the Bluetooth transmitting and/or receiving unit away from the radio shadow, or by using a repeater unit.

Prolojik wireless Bluetooth (BLE) networks Guidance Notes

Prolojik Bluetooth Interface Node (PL17x)



Prolojik BLE interface nodes offer direct DALI connection, control and signal commands to OEM luminaires to control all aspects of lighting control. These units wirelessly connect to Prolojik Sensors, LCM's and gateway hubs.

Wireless communication distance of these devices can be up to 30M in open area without any restrictions, however the general notes in this document should be taken into consideration as mounting nodes in ceiling voids or boxes will inhibit the ability for devices to communicate.

Interface nodes should **NOT** be housed in all metal luminaires as this will restrict the wireless Bluetooth signal.

Prolojik GO™ LCM's



Although the recommended distance between GO™ LCM's is a maximum of 8 metres, it should be noted that this is dependent on the installation environment and the additional services within the ceiling void.

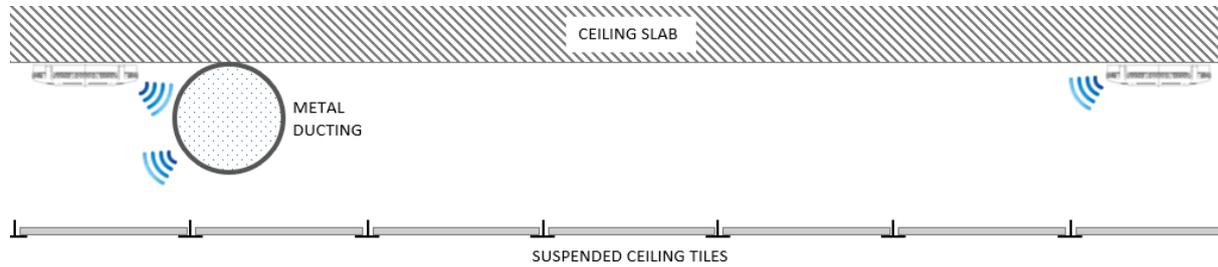
It may NOT be possible in every installation to achieve the quoted 8 metres.

There are several aspects that may impair the Bluetooth communications between GO™ LCM's and it might be a requirement to re-position LCM's during the commissioning and setup process to optimise the Bluetooth communications and improve the signal path between LCM's or add in BLE sensor repeaters to enhance the cluster communications.

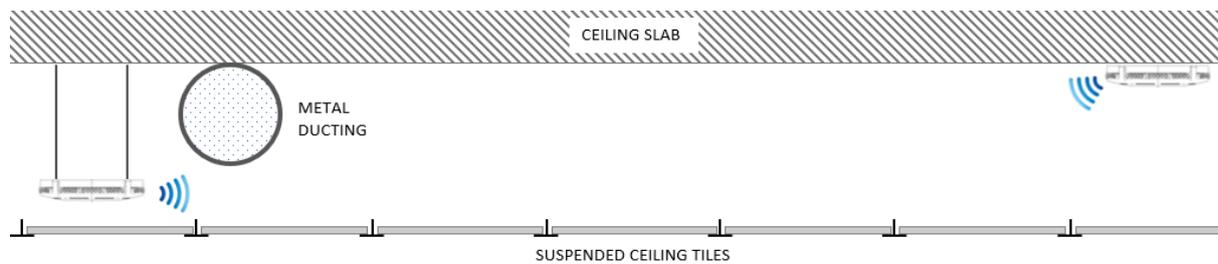
The types of things which could impact the Bluetooth communication signal are:

- Metal pan ceiling tiles
- Metal clad air ducting
- HVAC units
- Metal piping
- Dividing Fire curtains

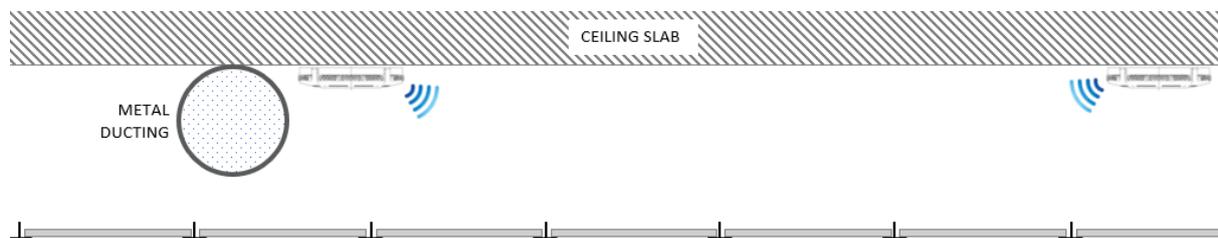
Installation environment may be restricting the Bluetooth signal between LCM's



Consider dropping the LCM's position to create a clearer Bluetooth signal path between LCM's



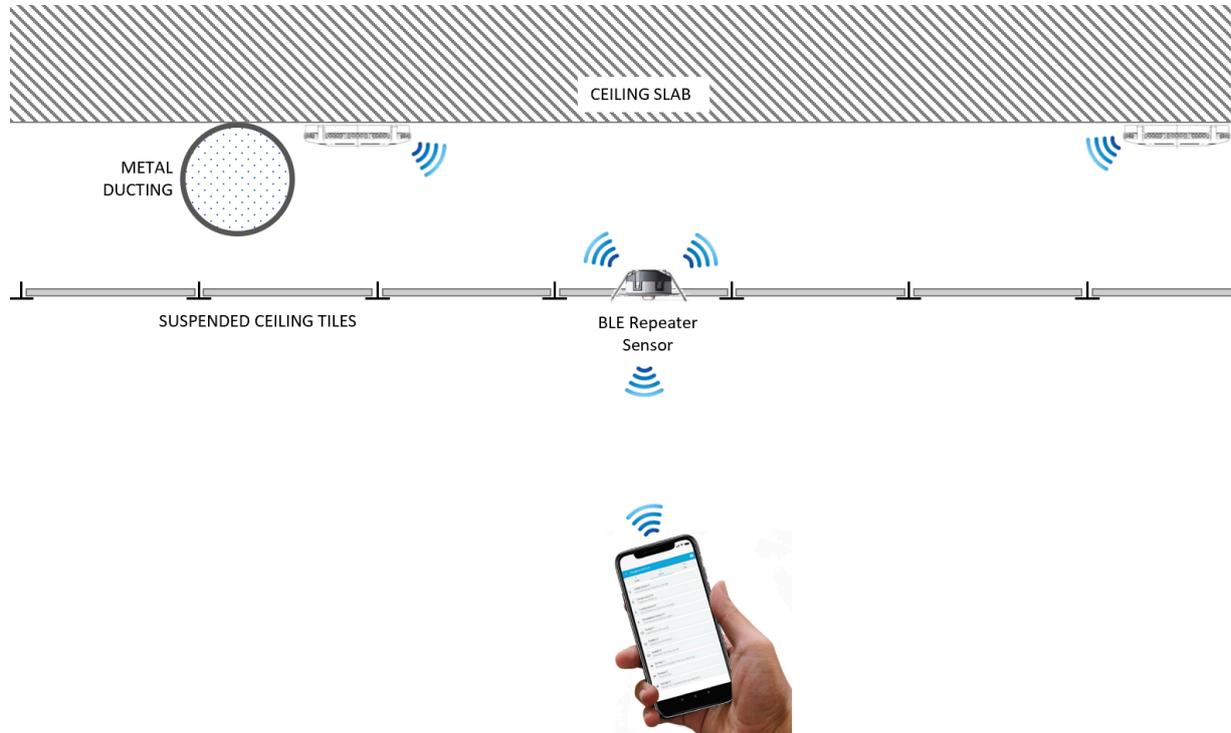
Consider moving the LCM's position to improve Bluetooth signal path (LoS) between LCM's



It may also be beneficial during set-up and commissioning to leave open the service ceiling tiles to help identify and link LCM's.

Prolojik wireless Bluetooth (BLE) networks Guidance Notes

Consider adding in a BLE repeater sensor to improve Bluetooth signal path (LoS) and distance between LCM's in a cluster set-up



For further information please contact Prolojik: info@prolojik.com

Disclaimer:

Statements regarding the suitability of products for certain types of applications are based on Prolojik's knowledge of typical requirements that are often placed on lighting / controls products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Prolojik do not recommend the use of Bluetooth wireless controls in a mission critical environment.



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