

IoRL

Remote Radio Light Head

by SFY and Brunel



Hardware Requirements

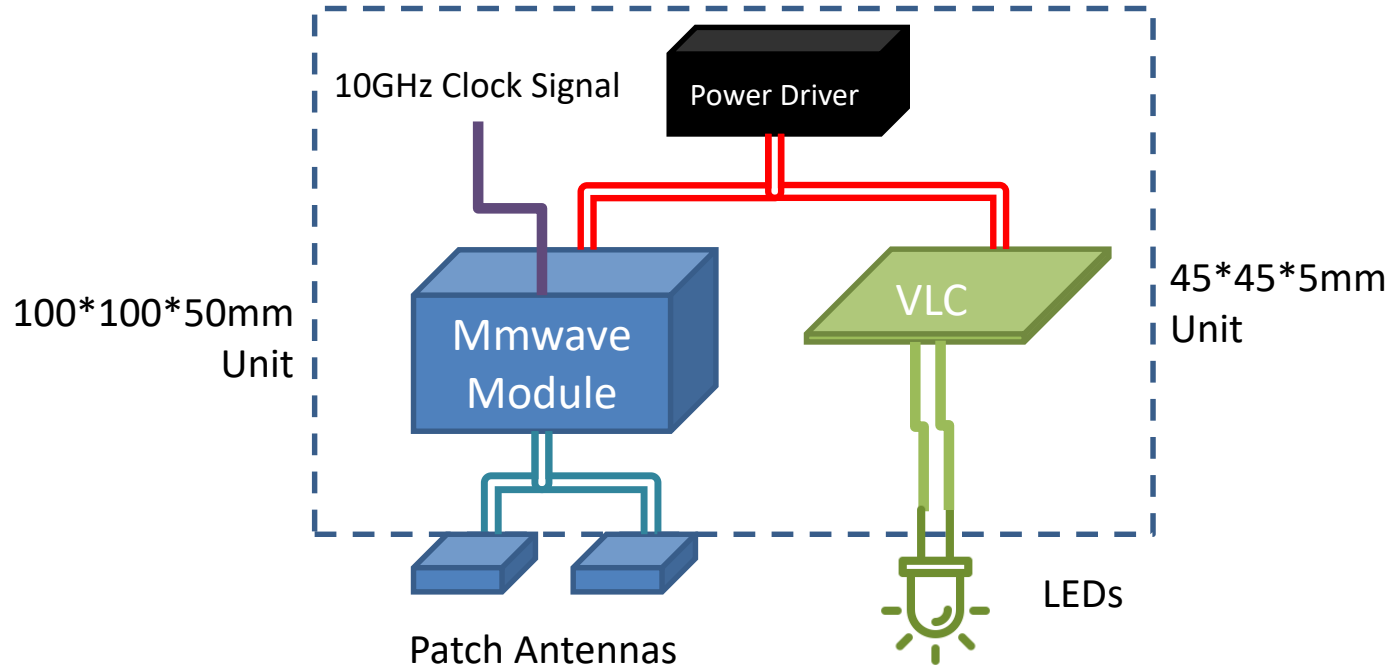
Scenarios and specifications

Design roadmap

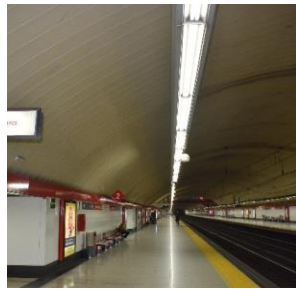
The final design of ceiling light and manufacturing

Testing in demonstration in Europe

Initial Hardware Requirements



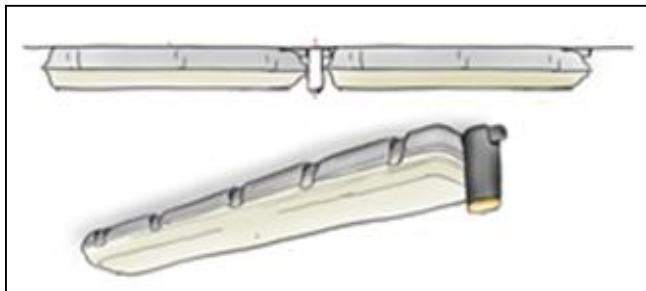
Scenario Designs



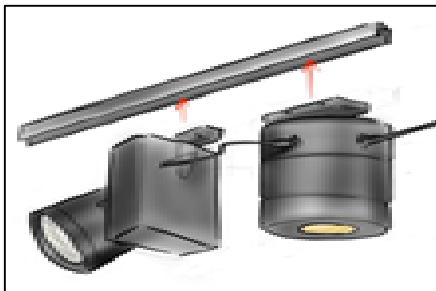
Supermarket & Train station

Museum

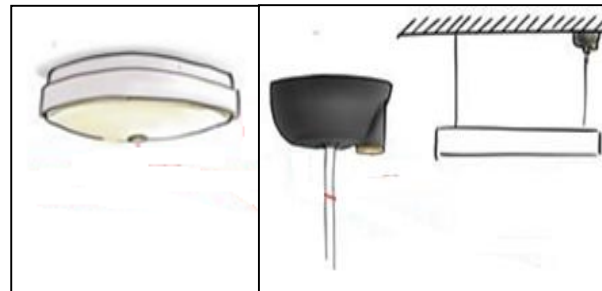
Home (BRE)



Strip light Accessory



Spotlight

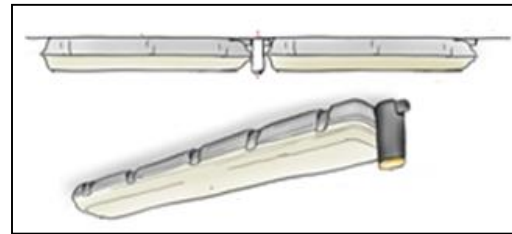
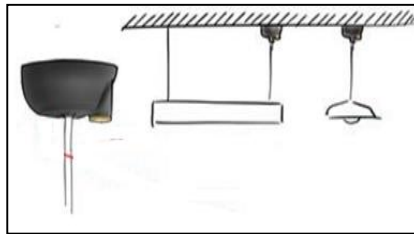
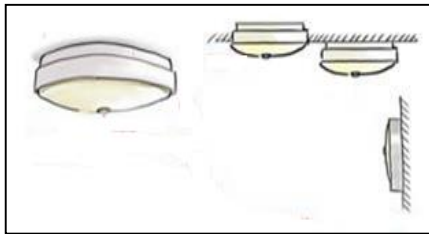


Ceiling light & Pendant

Design road map

Light fixtures

- Initially considered existing light systems to embed the VLC and mmWave technology
- Opting to create the RRLH different lights from scratch, making sure it covers both usability of the light fixture and the best performance of the RRLH.

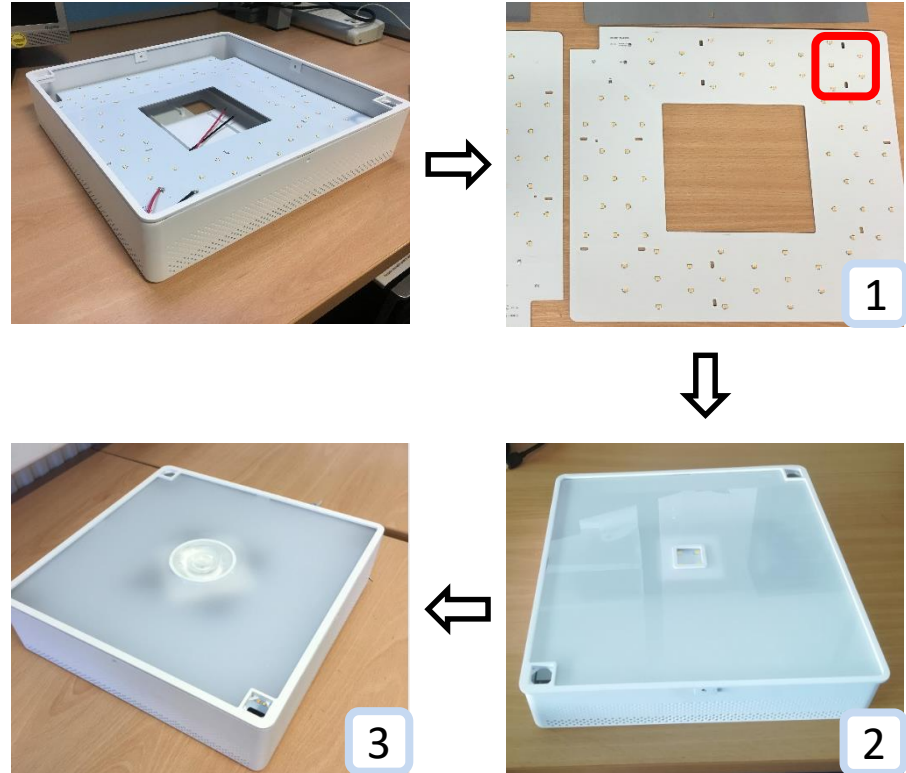


Ceiling light

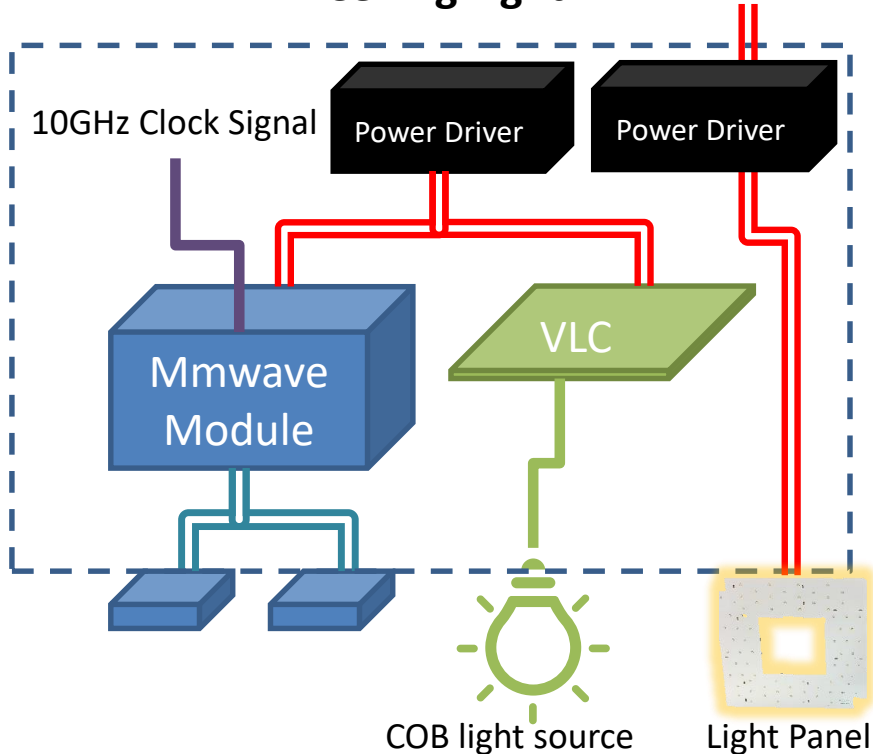
- ❑ Issue of the large LED light source
 - Driver not powerful enough
 - Positioning array too large

Solutions

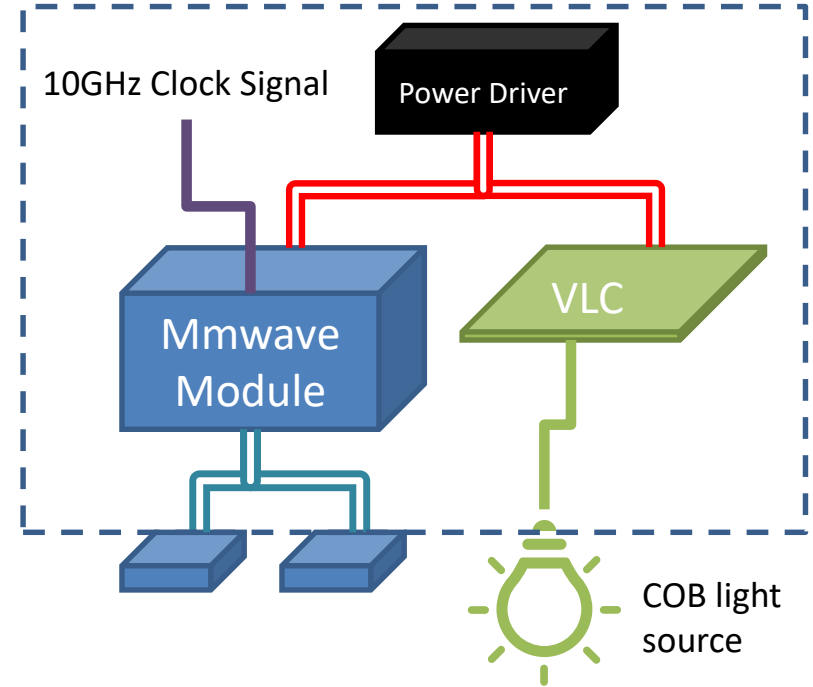
1. Separate illumination and VLC source on the same board
 - Small 4 LED patch on the board
 - VLC Signal blocked by diffuser
2. External LED patch in the center
 - LEDs not powerful enough
3. More powerful COB light source



Ceiling Light



COB light source integrated for all RRLHS



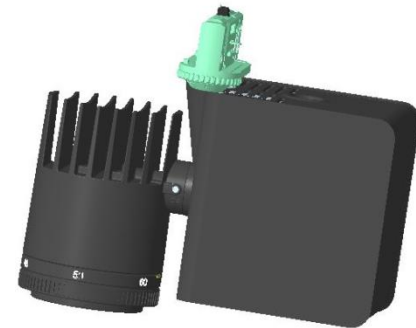
To be used in the museum scenario

Challenge

- wire everything through the existing rail system
- house the hardware in a decent looking RRLH spotlight

Approach

- Use an existing spotlight from SFY collection
- Keep electronics and joinery parts while redesigned the housing around them
- Introduction of COB for the communication of the VLC to all RRLHS
- For strength - change the material of the housing from plastic into Aluminum



Pendant light

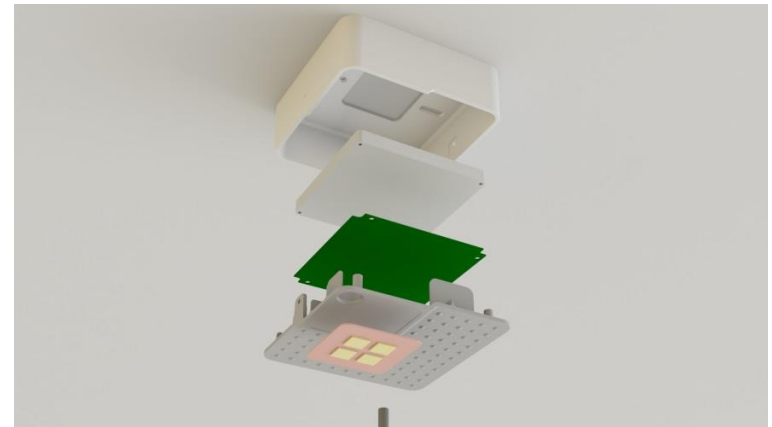
For the house scenario

Challenge

House hardware near the ceiling and direct the VLC through different type of pendent lights, light strip lights, and light shades

Approach

Housing only the IoRL Hardware and no internal light source



Accessory light

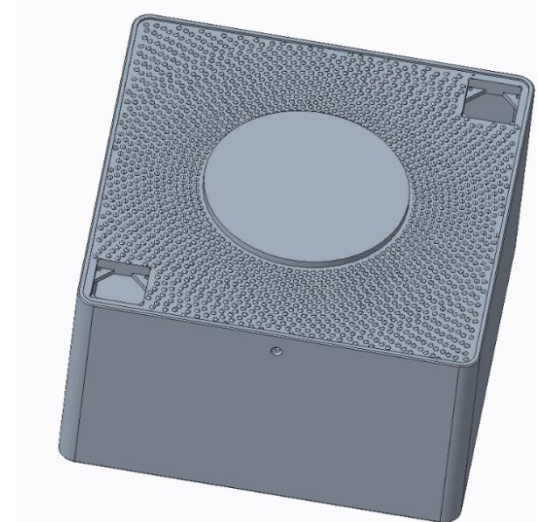
A backup plan, consideration for when Lights cannot be changed in a scenario.

The accessories are as minimalistic as possible to house all the electronics needed for a functional RRLH.

Two designs in the beginning,

- **Without LEDs** - connected to existing regular led powered lights (similar to Pendant design)
- **With LEDs** – A complete all in one RRLHS

recent transition of the entire RRLH collection to the COB solution scrapped the Without-LED accessory.



Housing

ABS plastic is one of the five synthetic resin

- performs well in impact resistance, heat resistance, low temperature resistance and chemical resistance.
- easy processing, products with good size stability, surface gloss, easy coating and dyeing.
- It also can undertake surface spraying, electroplating, metal welding, hot pressing and adhesion, and other secondary processing, which is widely used in many industries.



VLC light which composed of COB (chip on board) and a big lens.

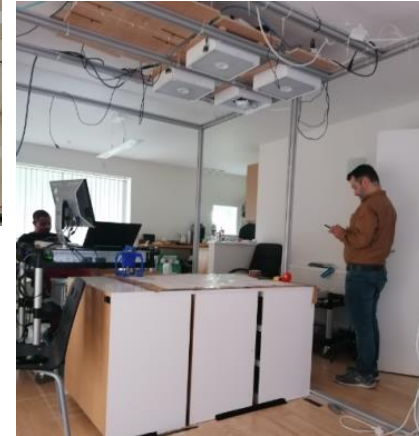
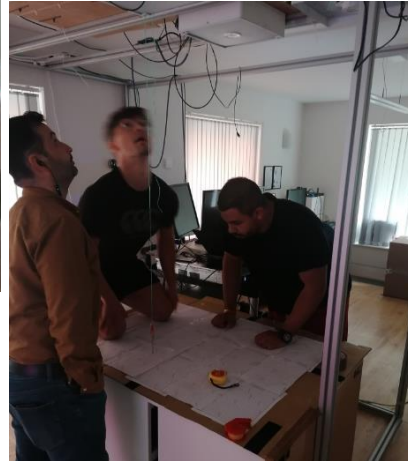
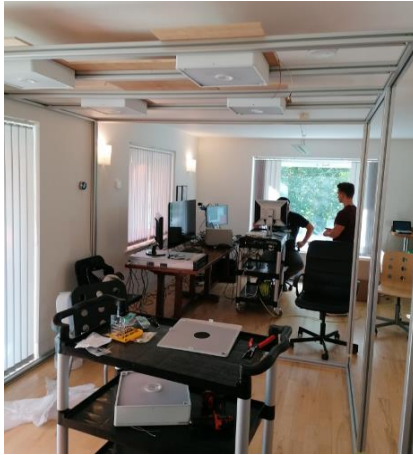
A bracket used to fix the COB and lens by screws.

The driver used to light up the big panel, with flexible light intensity and color temperature adjusting.

OSRAM LED chips have many advantages:

- With long life
- High lumens
- Good illumination uniformity

Testing in Europe



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- ❑ This presentation reflects the author's view, only, and the Commission is not responsible for any use that may be made of the information provided.