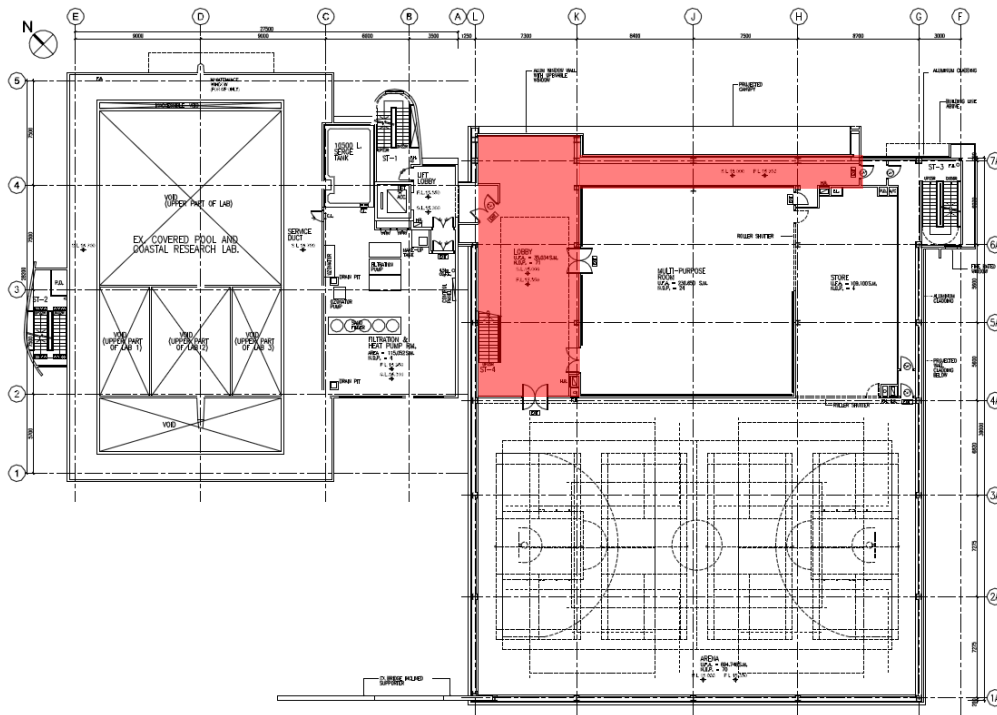


HK16010004_HKUST University Seafront Sport Centre_Rev1

DISCLAIMER

Calculations have been performed according to IES and IEC standard and good practice. Some differences between measured values and calculated values may occur due to tolerances in calculation parameters, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectance's, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured and calculated values.


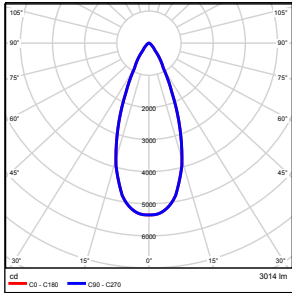
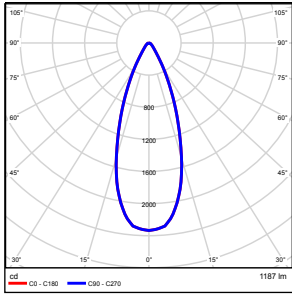
LOBBY and corridor



Height of room: 9.000 m, Reflection factors: Ceiling 70.0%, Walls 30.0%, Floor 20.0%, Light loss factor: 0.80

Workplane

| Surface | Result | Mean (target) | Min | Max | Min/average | Min/max |
|-------------|--|---------------|------|-----|-------------|---------|
| Workplane 1 | Perpendicular illuminance [lx] Height of working plane: 0.800 m, Wall zone: 0.000 m | 194 (500) | 0.03 | 352 | 0.00 | 0.00 |

| No. | Quantity | | | |
|-----|----------|--|--|---|
| 1 | 15 | Ligman Lighting Co.,Ltd. DI-80061-M-W40 Absolute photometry Luminaire Luminous Flux: 3014 lm Power: 40.0 W Light yield: 75.3 lm/W Color rendering index: 84 |  |  |
| 2 | 16 | Ligman Lighting Co.,Ltd. MY-80031-W-40-ND Marys 3 Recessed Downlight LED Absolute photometry Luminaire Luminous Flux: 1187 lm Power: 15.0 W Light yield: 79.1 lm/W Color rendering index: 84 |  |  |

Total lamp luminous flux: 64202 lm, Total luminaire luminous flux: 64202 lm, Total Load: 840.0 W, Light yield: 76.4 lm/W

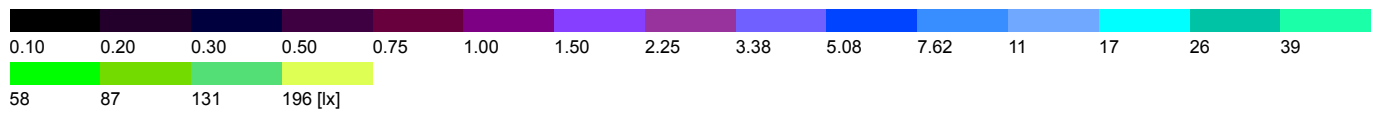
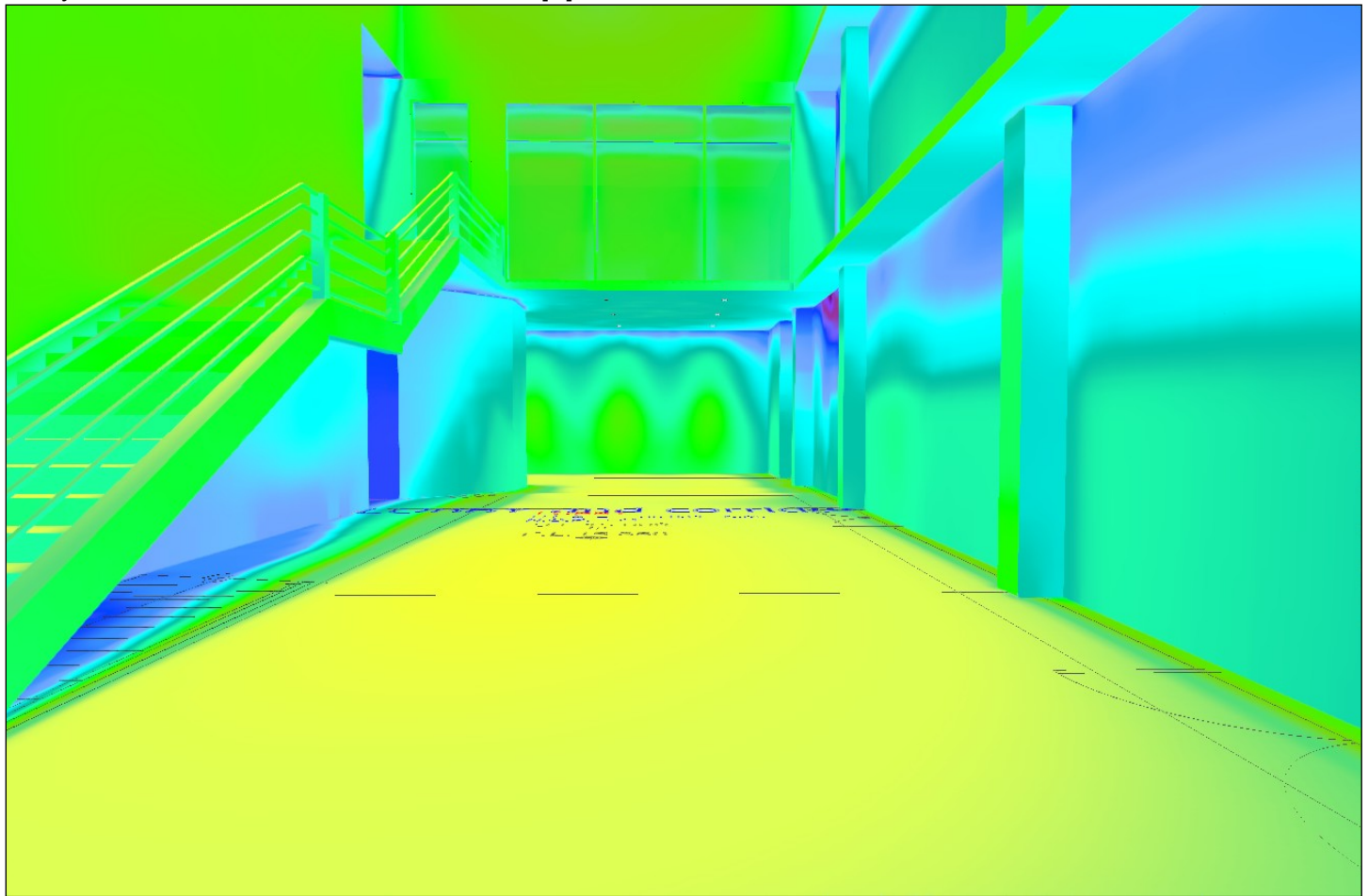
Lighting power density: $4.92 \text{ W/m}^2 = 2.54 \text{ W/m}^2/100 \text{ lx}$ (Ground area 170.81 m^2)

LOBBY and corridor

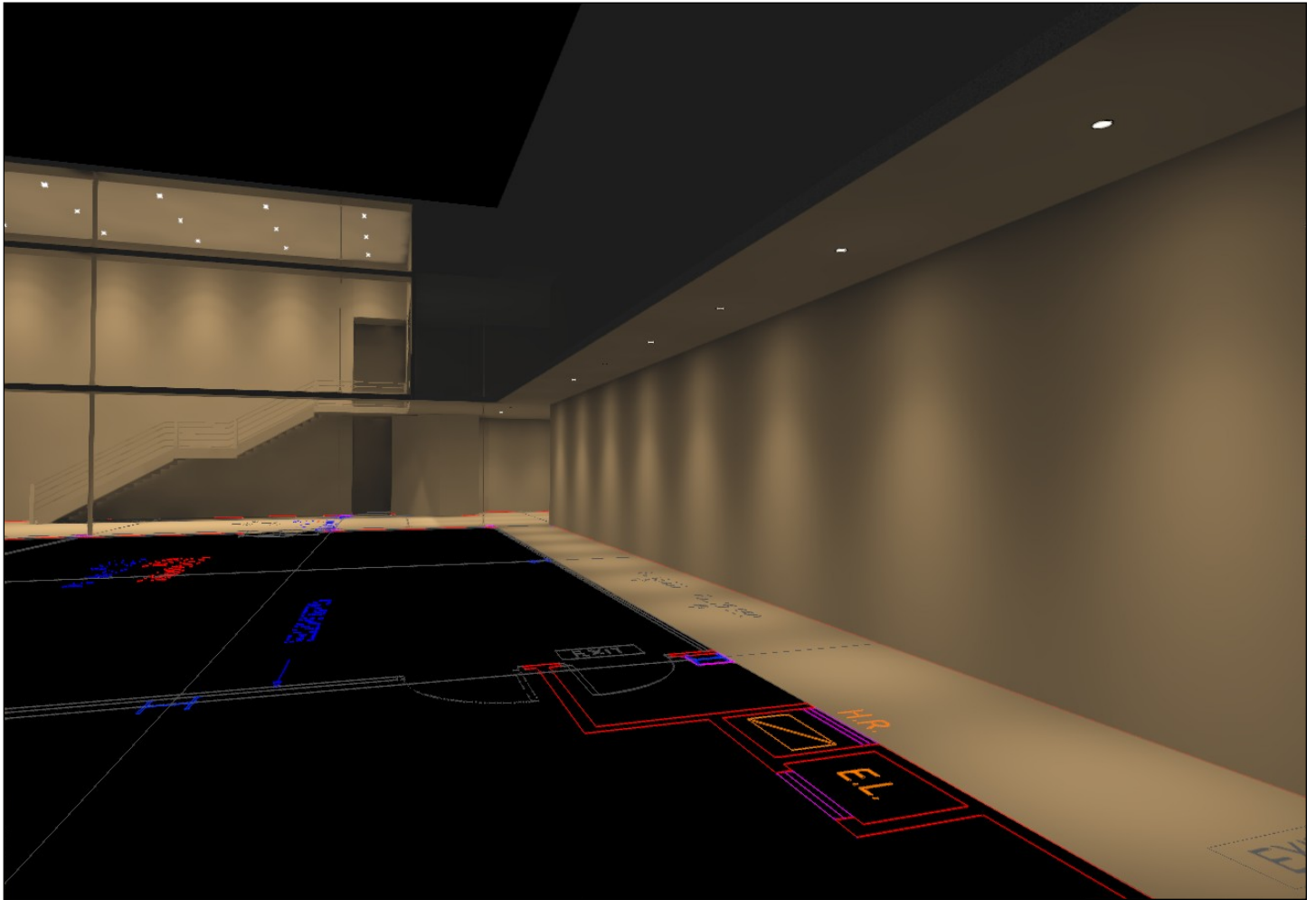
Lobby view 1



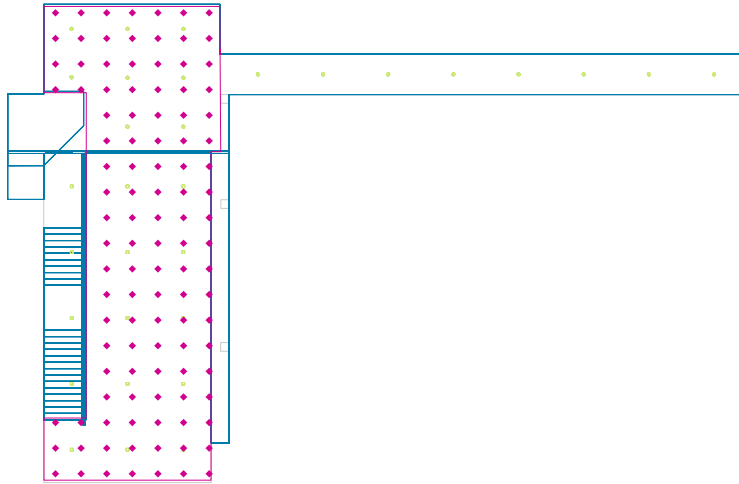
Lobby view 1_False color, Illuminance values in [lx]



Lobby view 2



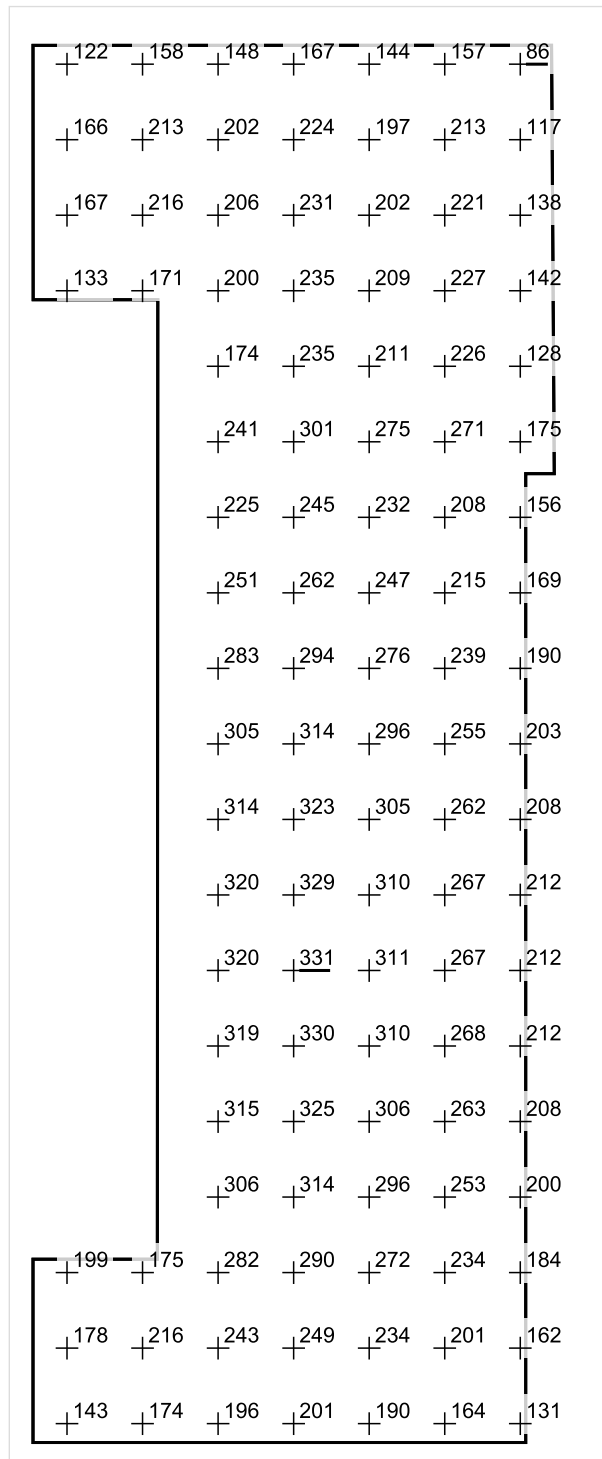
Calculation Lobby area



| Result | Mean (target) | Min | Max | Min/average | Min/max |
|--------------------------------|---------------|------|-----|-------------|---------|
| Perpendicular illuminance [lx] | 229 | 86.0 | 331 | 0.38 | 0.26 |

Profile: Offices, Writing, typewriting, reading, data processing

Calculation Lobby area

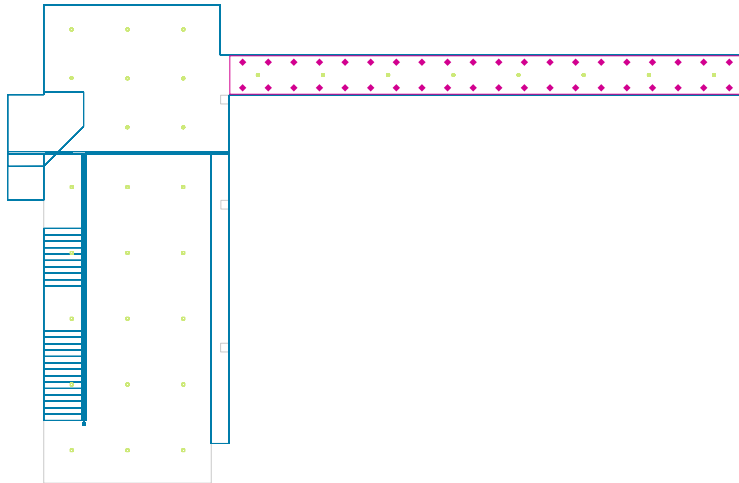


Scale: 1 : 100

Perpendicular illuminance (Grid)

Mean (actual): 229 lx, Min: 86.0 lx, Max: 331 lx, Min/average: 0.38, Min/max: 0.26

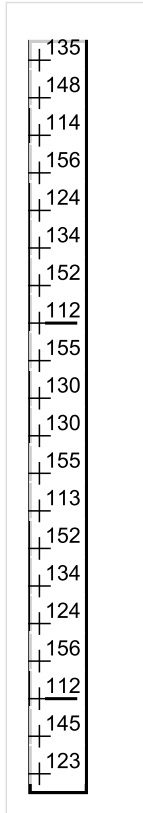
Calculation Corridor area



| Result | Mean (target) | Min | Max | Min/average | Min/max |
|--------------------------------|---------------|-----|-----|-------------|---------|
| Perpendicular illuminance [lx] | 135 | 112 | 157 | 0.83 | 0.71 |

Profile: Offices, Writing, typewriting, reading, data processing

Calculation Corridor area

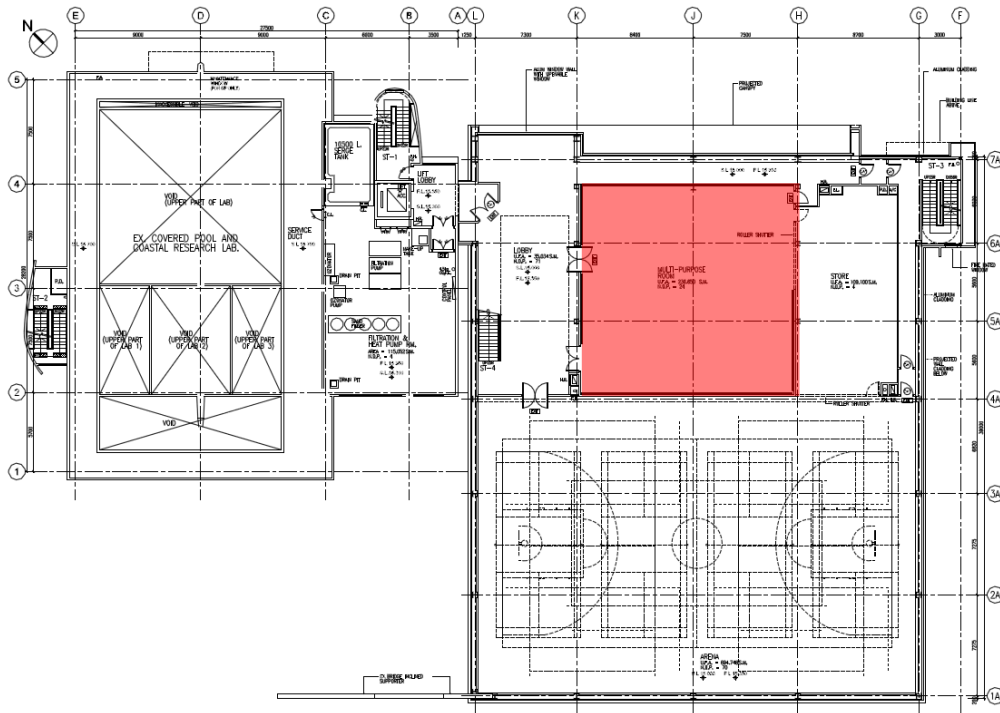


Scale: 1 : 200

Perpendicular illuminance (Grid)

Mean (actual): 135 lx, Min: 112 lx, Max: 157 lx, Min/average: 0.83, Min/max: 0.71

Multi - Purpose Room

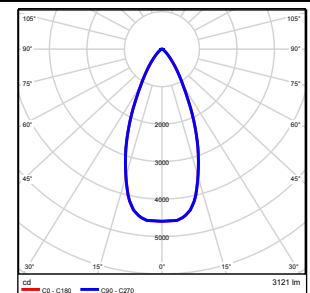


Height of room: 5.000 m, Reflection factors: Ceiling 70.0%, Walls 30.0%, Floor 30.0%, Light loss factor: 0.80

Workplane

| Surface | Result | Mean (target) | Min | Max | Min/average | Min/max |
|---------------|--|---------------|-----|-----|-------------|---------|
| 1 Workplane 4 | Perpendicular illuminance [lx] Height of working plane: 0.800 m, Wall zone: 0.000 m | 512 (500) | 183 | 598 | 0.36 | 0.31 |

| No. | Quantity | |
|-----|----------|---|
| 1 | 49 | Ligman Lighting Co.,Ltd. MY-80061-W-40-ND Marys 5 Recessed Downlight LED Absolute photometry Luminaire Luminous Flux: 3121 lm Power: 39.0 W Light yield: 80.0 lm/W Color rendering index: 84 |



Total lamp luminous flux: 152929 lm, Total luminaire luminous flux: 152929 lm, Total Load: 1911.0 W, Light yield: 80.0 lm/W

Lighting power density: $8.25 \text{ W/m}^2 = 1.61 \text{ W/m}^2/100 \text{ lx}$ (Ground area 231.77 m^2)

Multi - Purpose Room

| Quantity | Luminaire (Luminous emittance) | | |
|----------|--|--|---|
| 49 | Ligman Lighting Co.,Ltd. MY-80061-W-40-ND Marys 5 Recessed Downlight LED Luminous emittance 1 Fitting: 1xMY-80061-W-40 Absolute photometry Luminaire Luminous Flux: 3121 lm Power: 39.0 W Light yield: 80.0 lm/W Color rendering index: 84 |  |  |

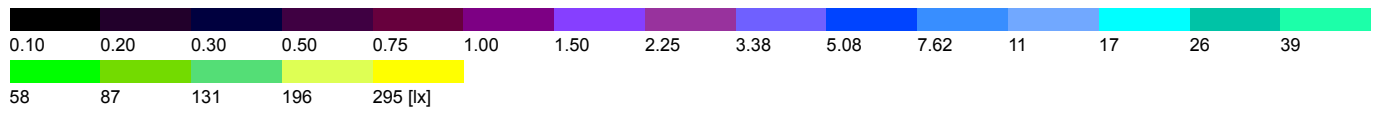
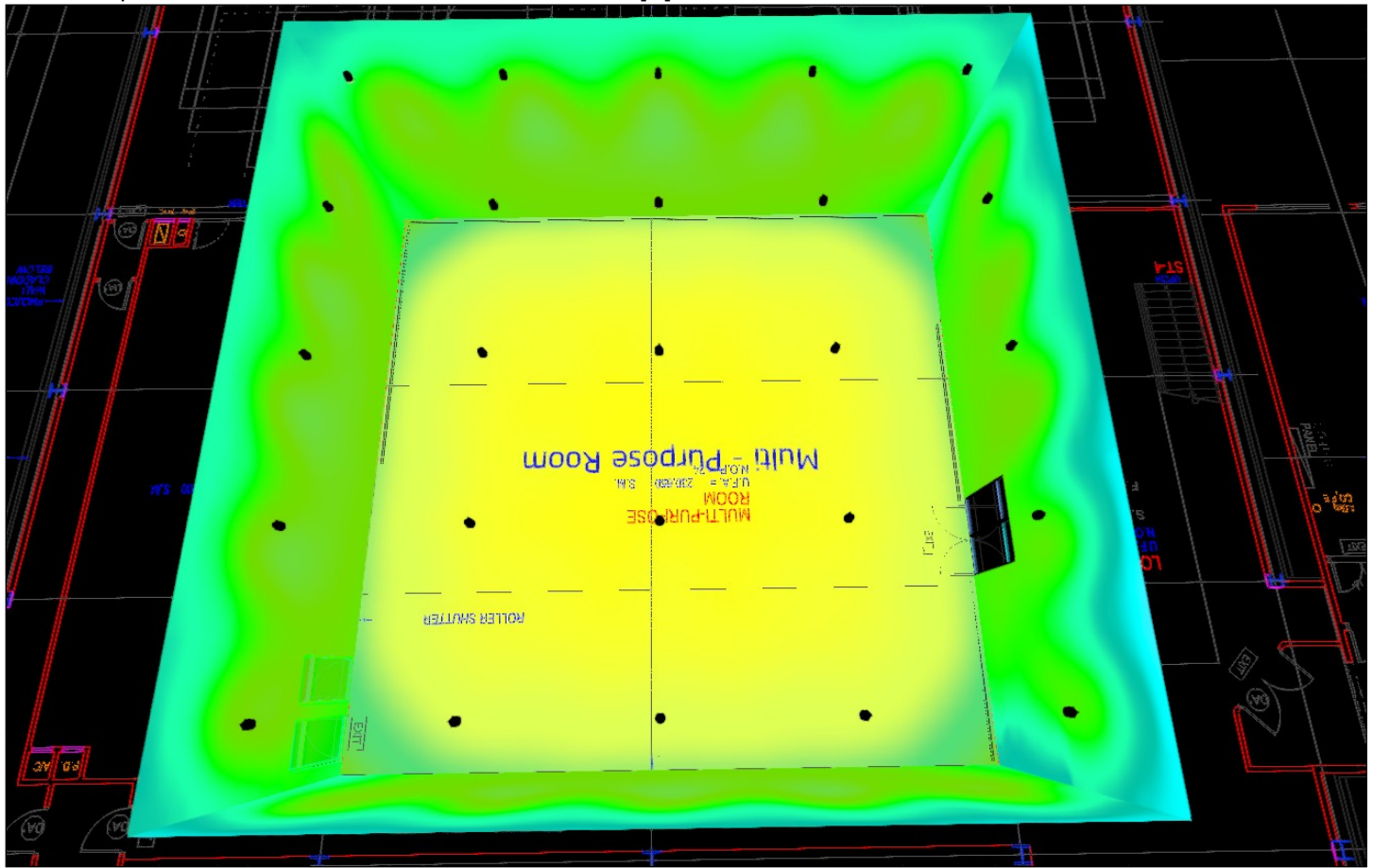
Total lamp luminous flux: 152929 lm, Total luminaire luminous flux: 152929 lm, Total Load: 1911.0 W, Light yield: 80.0 lm/W

Multi - Purpose Room

Multi - Purpose Room_View 1

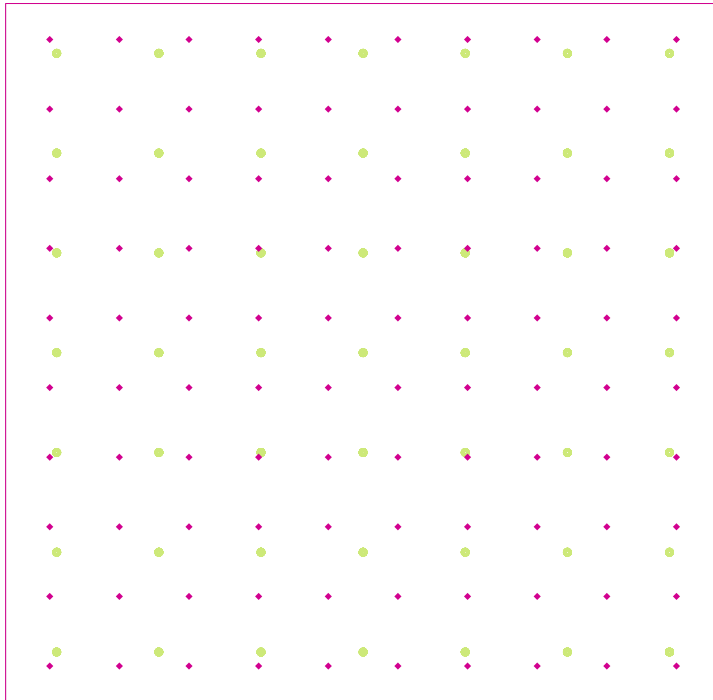


Multi - Purpose Room_False color, Illuminance values in [lx]



Calculation Multi Purpose Room

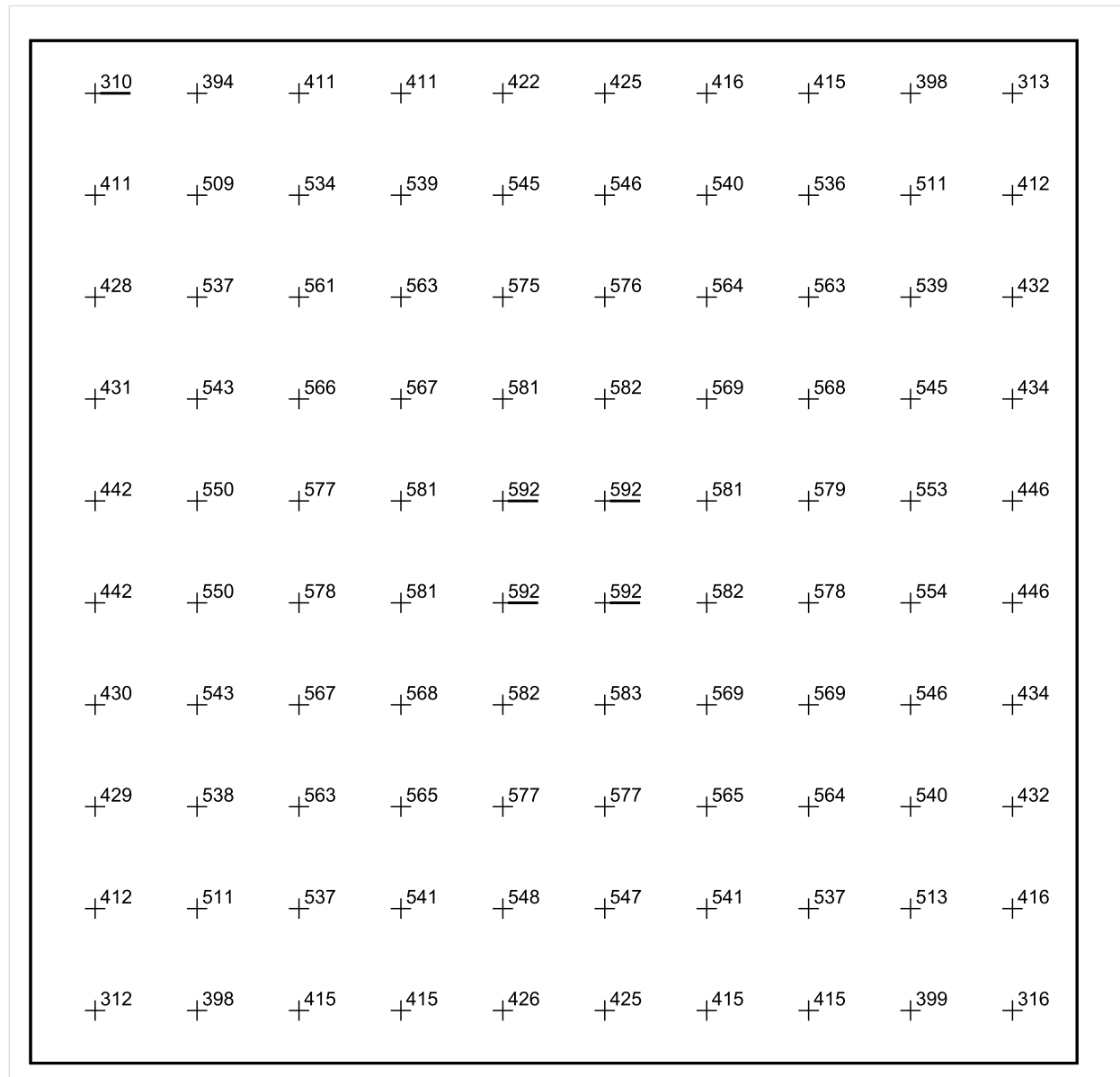
OPTION 1



| Result | Mean (target) | Min | Max | Min/average | Min/max |
|--------------------------------|---------------|-----|-----|-------------|---------|
| Perpendicular illuminance [lx] | 505 | 310 | 592 | 0.61 | 0.52 |

Profile: Offices, Writing, typewriting, reading, data processing

Calculation Multi Purpose Room

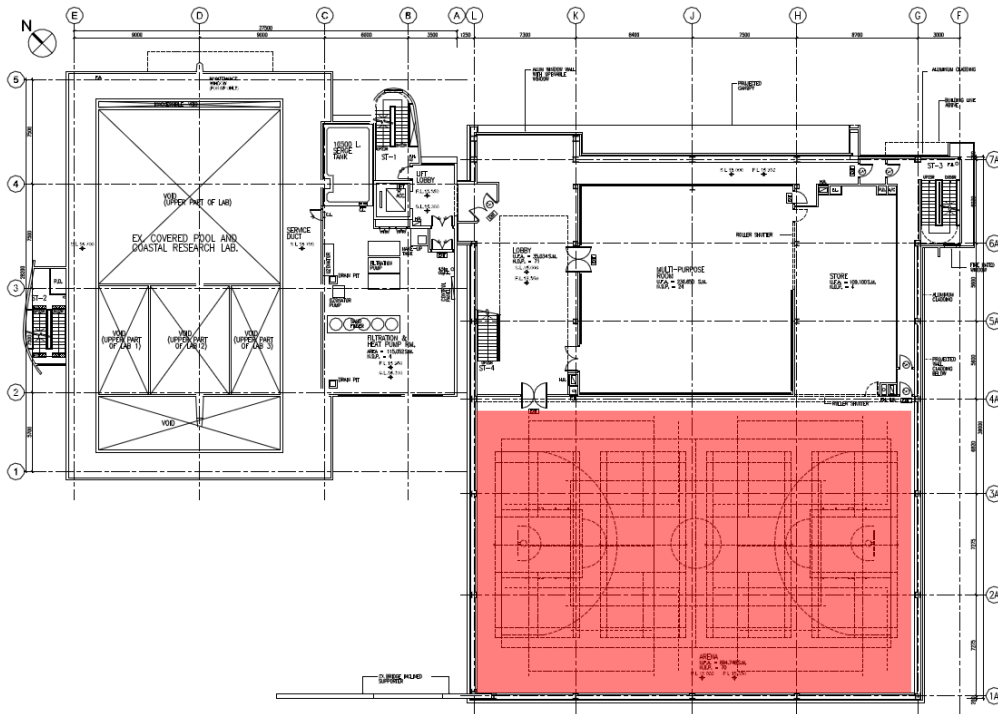


Scale: 1 : 100

Perpendicular illuminance (Grid)

Mean (actual): 505 lx, Min: 310 lx, Max: 592 lx, Min/average: 0.61, Min/max: 0.52

Arena area

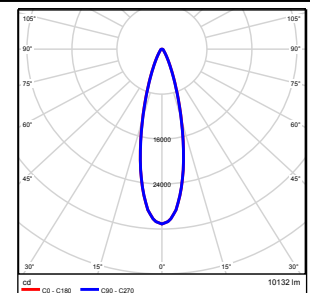


Height of room: 11.650 m, Reflection factors: Ceiling 70.0%, Walls 50.0%, Floor 20.8%, Light loss factor: 0.80

Workplane

| Surface | Result | Mean (target) | Min | Max | Min/average | Min/max |
|---------------|--|---------------|-----|-----|-------------|---------|
| 1 Workplane 5 | Perpendicular illuminance [lx] Height of working plane: 0.800 m, Wall zone: 0.000 m | 556 (500) | 221 | 650 | 0.40 | 0.34 |


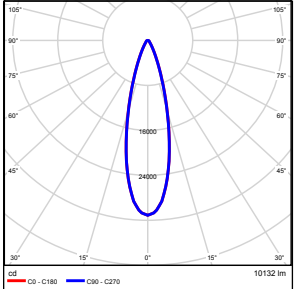
| No. | Quantity | |
|-----|----------|---|
| 1 | 48 | Ligman Lighting Co.,Ltd. PW29-GP108-M-W40 Powervision 2 surface high bay and lowbay luminaire 48 LED type V Absolute photometry Luminaire Luminous Flux: 10134 lm Power: 105.0 W Light yield: 96.5 lm/W Color rendering index: 86 |



Total lamp luminous flux: 486336 lm, Total luminaire luminous flux: 486432 lm, Total Load: 5040.0 W, Light yield: 96.5 lm/W

Lighting power density: $7.64 \text{ W/m}^2 = 1.37 \text{ W/m}^2/100 \text{ lx}$ (Ground area 659.98 m^2)

Arena area

| Quantity | Luminaire (Luminous emittance) | | |
|----------|---|--|---|
| 48 | Ligman Lighting Co.,Ltd. PW29-GP108-M-W40 Powervision 2 surface high bay and lowbay luminaire 48 LED type V Luminous emittance 1 Fitting: 1x2x24 LED 4000K, 1x2x24 LED 4000K Absolute photometry Luminaire Luminous Flux: 10134 lm Power: 105.0 W Light yield: 96.5 lm/W Color rendering index: 86 |  |  |

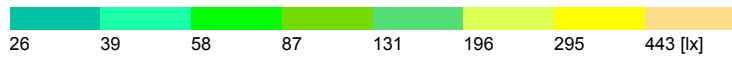
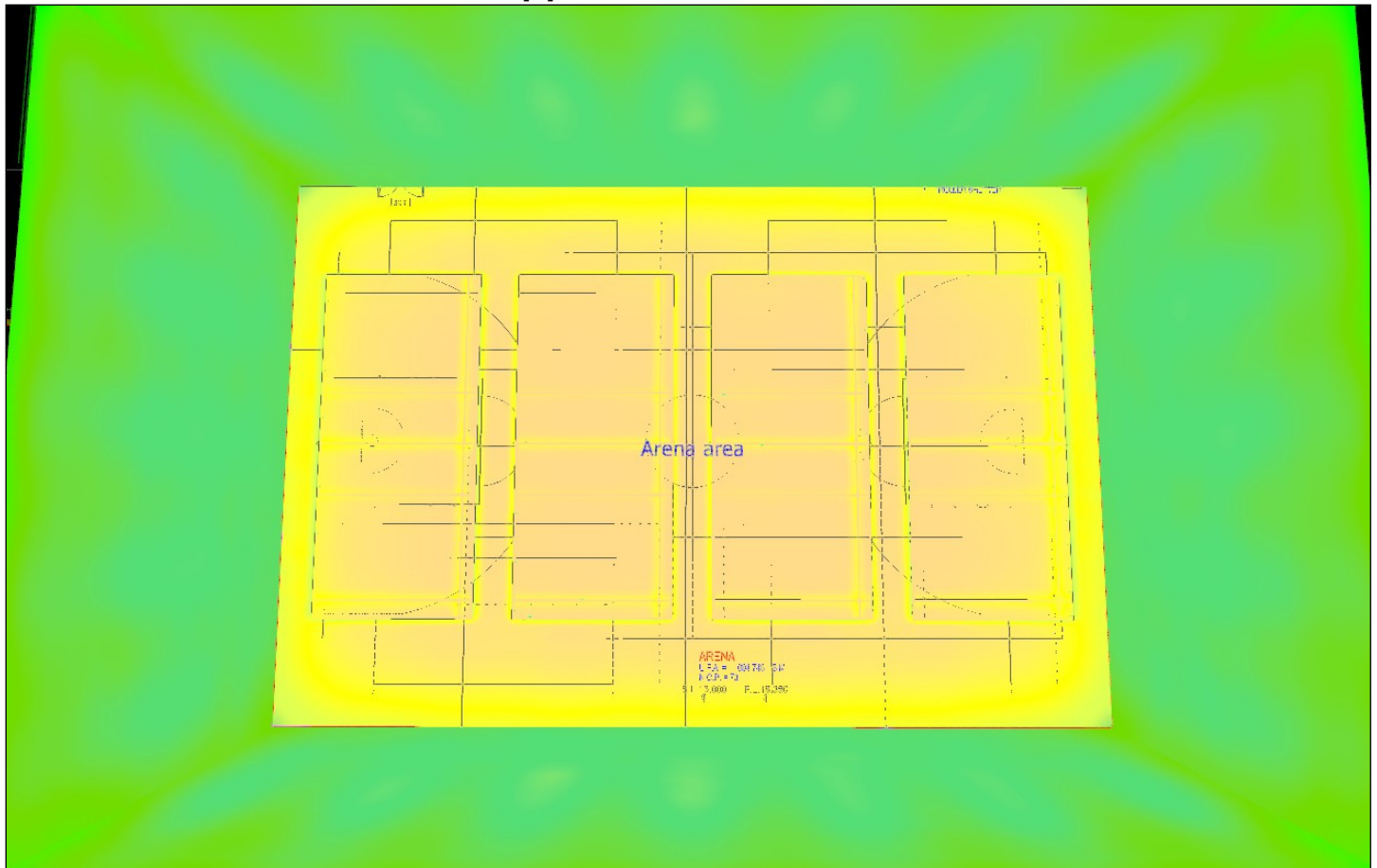
Total lamp luminous flux: 486336 lm, Total luminaire luminous flux: 486432 lm, Total Load: 5040.0 W, Light yield: 96.5 lm/W

Arena area

Arena area_View 1



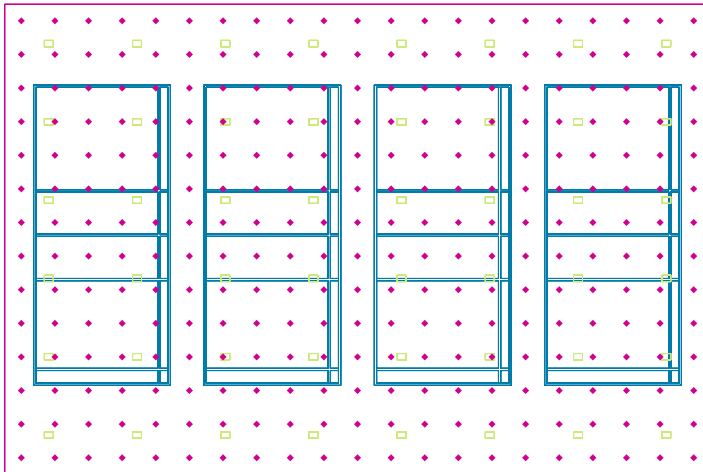
Arena area_False color, Illuminance values in [lx]



Arena view 2



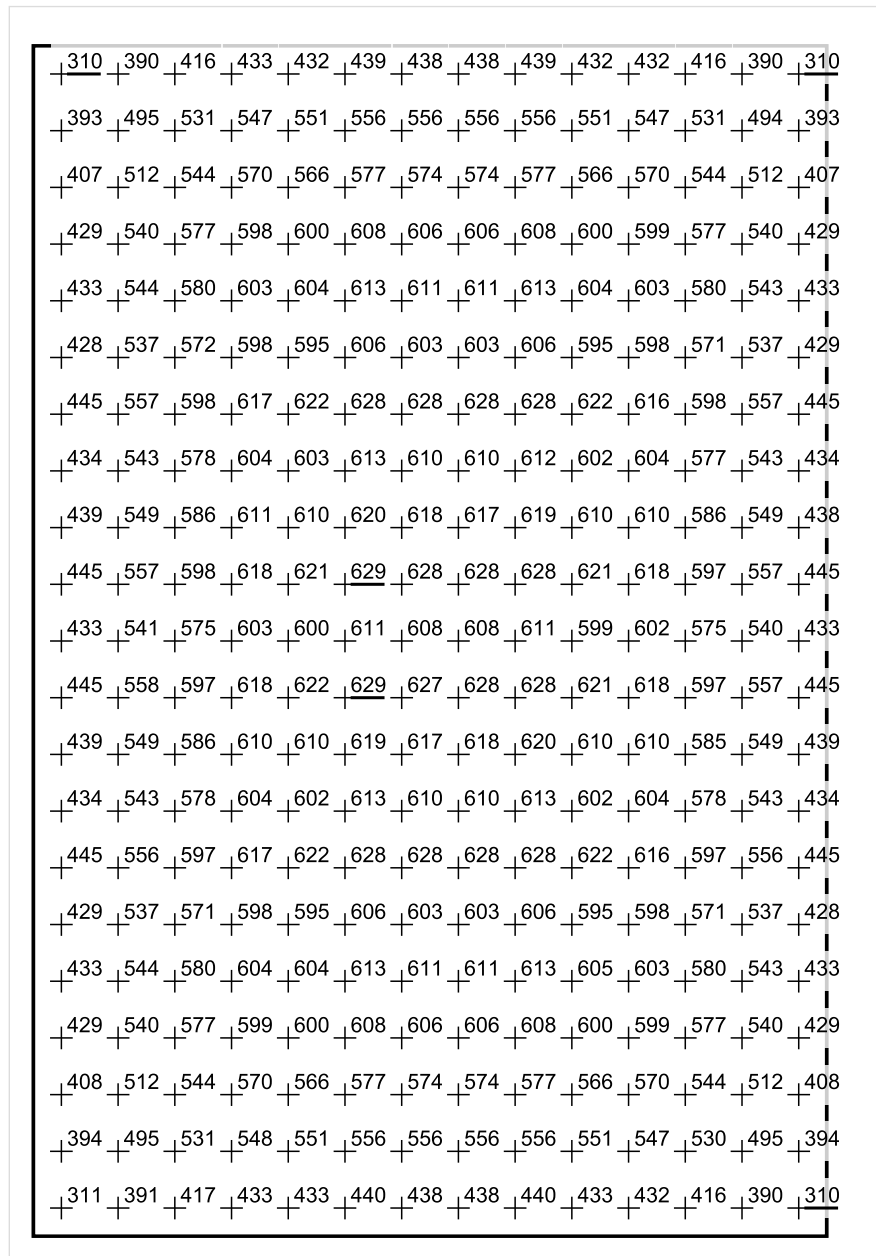
Calculation Arena area



| Result | Mean (target) | Min | Max | Min/average | Min/max |
|--------------------------------|---------------|-----|-----|-------------|---------|
| Perpendicular illuminance [lx] | 548 | 310 | 629 | 0.57 | 0.49 |

Profile: Offices, Writing, typewriting, reading, data processing

Calculation Arena area



Scale: 1 : 200

Perpendicular illuminance (Grid)

Mean (actual): 548 lx, Min: 310 lx, Max: 629 lx, Min/average: 0.57, Min/max: 0.49