Lighting Design Lab

LED Recessed Can Test Simulations

Not intended as a design guide.

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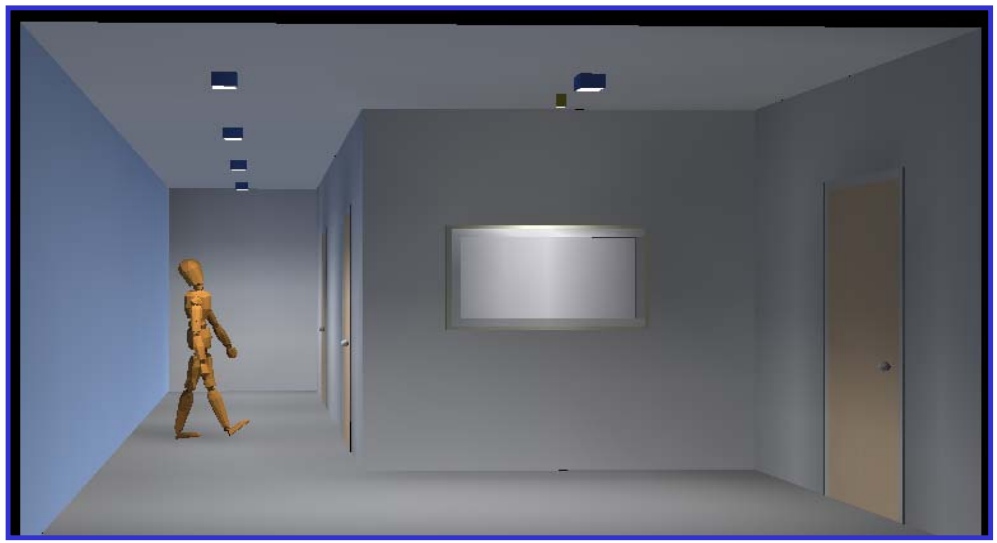
Lighting Design Lab

www.lightingdesignlab.com



LED recessed can tests.

- **Many LED products claim to be able to replace existing or competing lighting products. Though there is usually energy savings, there is also a concern about maintaining the existing light levels and uniformity.**
- **In an effort to determine how these products might perform, a series of computer simulations with AGi32 software were done. A small entry way and corridor were modeled using 5 recessed fixtures. LED recessed fixtures were compared to some common incandescent and compact fluorescent fixtures that they might be replacing (substituted, one for one). All photometric data files were taken from the manufacturers own web sites in April 2009.**
- **One 20 watt low voltage accent light at the entry was used in all of the models as well.**
- **All lamping was in the 2700 to 3500 color temperature range. All lumens are initial lumens as the LED products do not provide mean lumen data.**
- **Data on power consumption and light levels is compiled in the following table and subsequent individual models. The critical columns to compare are average foot candles and wattage.**

Summary table. See detail on following pages.

Corridor in the simulation is 6' wide and 35' long, with a 10' wide entry and 9' ceiling. Reflectances are (80/50/20). All simulations use 5 fixtures in the same locations, except where indicated w/ (). #'s in () indicate an addition or subtraction of one fixture. The T5 simulation uses only 3 fixtures.

Product/ Lamping	Watts per fixture	Total watts*	Average FC** on floor	Max FC	Min FC	Max to Min ratio
Halo-BR30	65	350	7	9.6	3.1	3.1
Halo-PAR38	75	400	12.1	26.5	2.4	11.0
Halo CFL-18	19	120	8.4	11.4	3.9	2.9
Juno CFL-18	19.3	121.5	9.9	13.6	4.2	3.2
Lightolier CFL-26	28.6	168	11.7	16.5	5.8	2.8
Cree LR6 LED	11.5	82.5 (94)	5.8 (6.97)	7.5	3.0	2.5
Gallium CXRE LED	20.8	129 (108)	13 (10.8)	18.2	5.2	3.5 (4.1)
Lightolier LED	19.2	121 (102)	10.9 (9.1)	15.3	4.9	3.1 (4.1)
Juno LED	13.4	92	6.6	9	3.4	2.7
Halo LED	14.7	98.5	6.7	9.2	3.2	2.9
Lithonia T5	29	112	12.5	18	5.9	3.0

***Total wattage includes a 25 watt LV halogen accent light in all simulations.**

****Foot candles are initial lumens in all cases as LED files do not include mean lumens. Appropriate light loss factors should be applied.**

All simulations done w/ AGi32 software and manufacturer supplied photometric files as of 4/2009

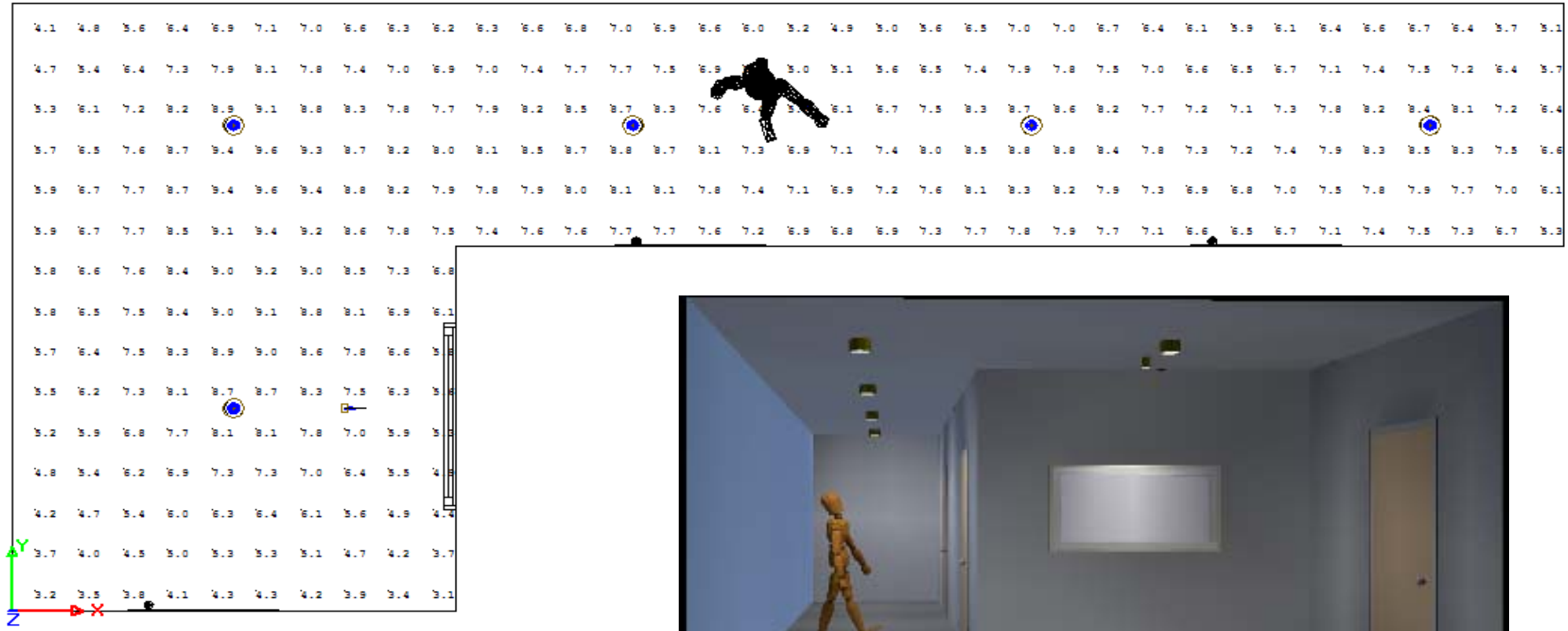
Halo- BR30 - 65 watt

Average= 7.0

Max= 9.6

Min= 3.1

Max/Min= 3.1



Area =300.00 Sq.Ft.
Total Watts = 350
Lighting Power Density =1.167 Watts/Sq.Ft.

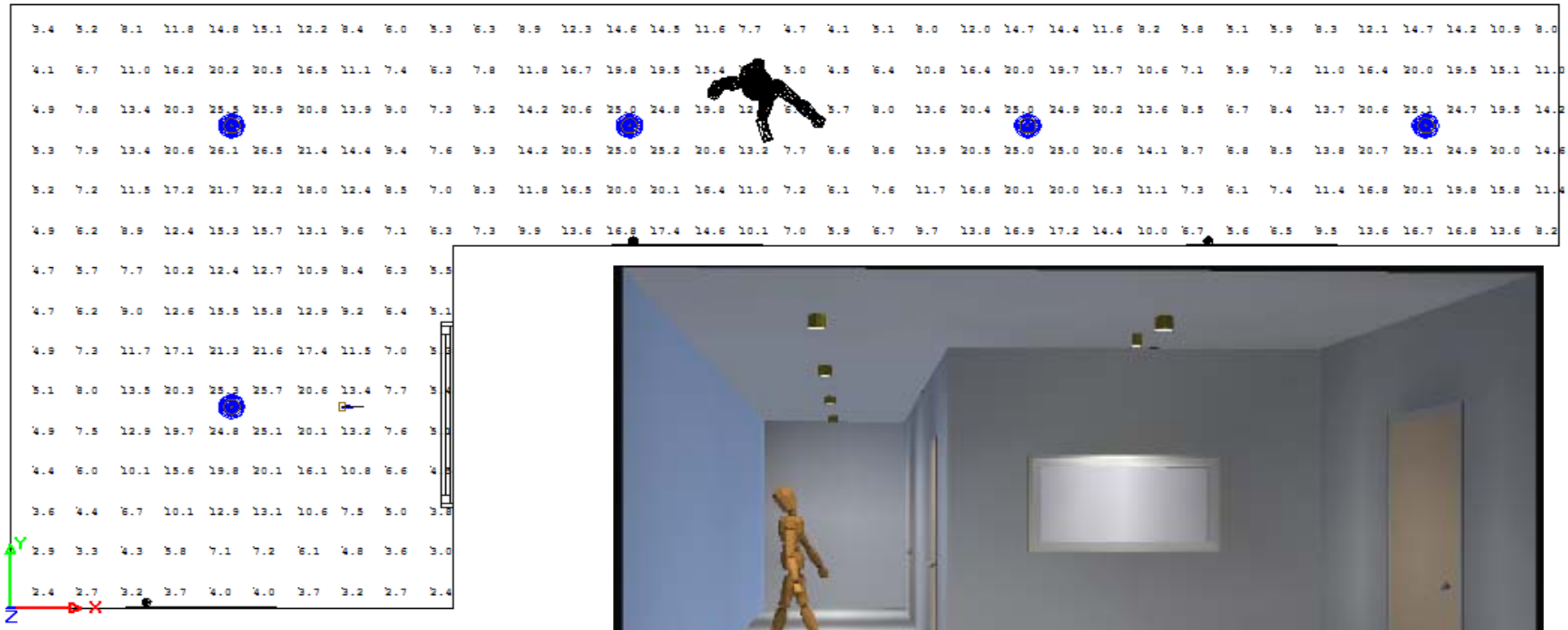
Halo PAR38 FL – 75 watt

Average= 12.1

Max= 26.5

Min= 2.4

Max/Min 11



Area =300.00 Sq.Ft.
Total Watts = 400
Lighting Power Density =1.333 Watts/Sq.Ft.

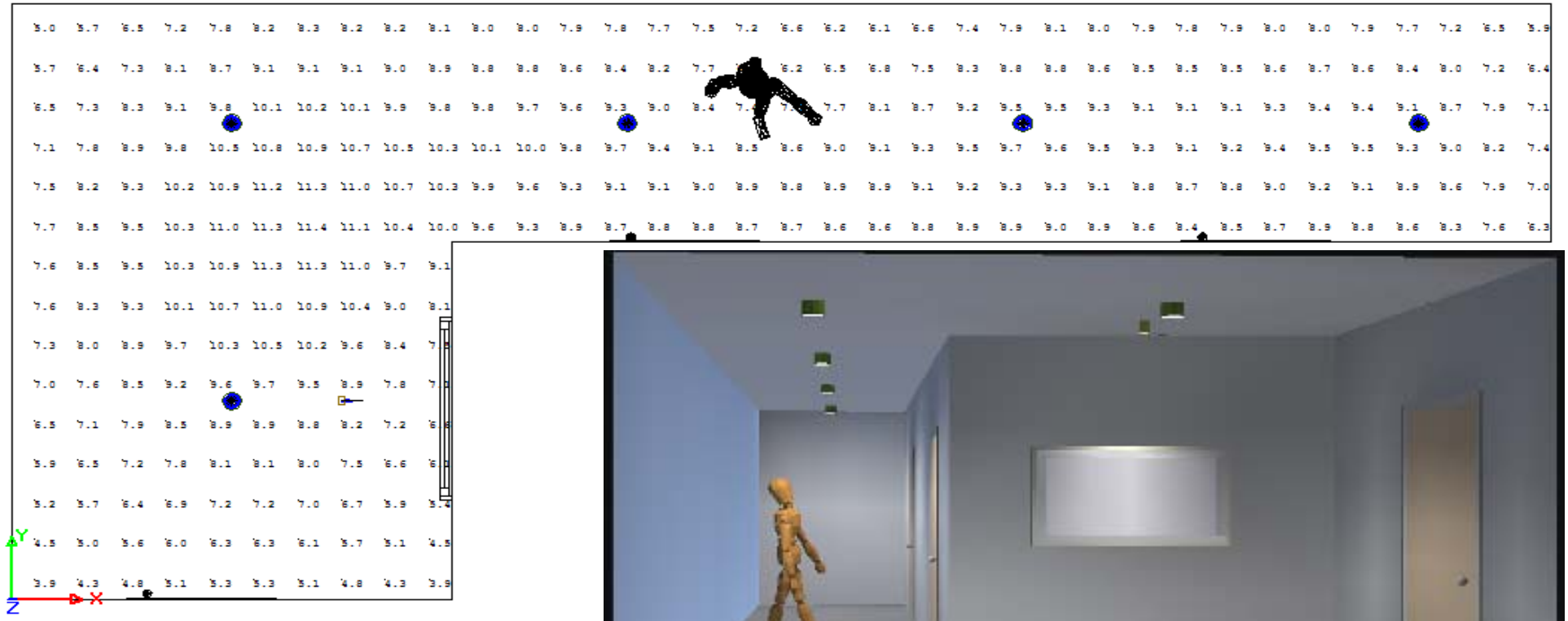
Halo – CFL-6” 18 watt

Average= 8.4

Max= 11.4

Min= 3.9

Max/Min= 2.9



Area =300.00 Sq.Ft.
Total Watts = 120
Lighting Power Density =0.400 Watts/Sq.Ft.

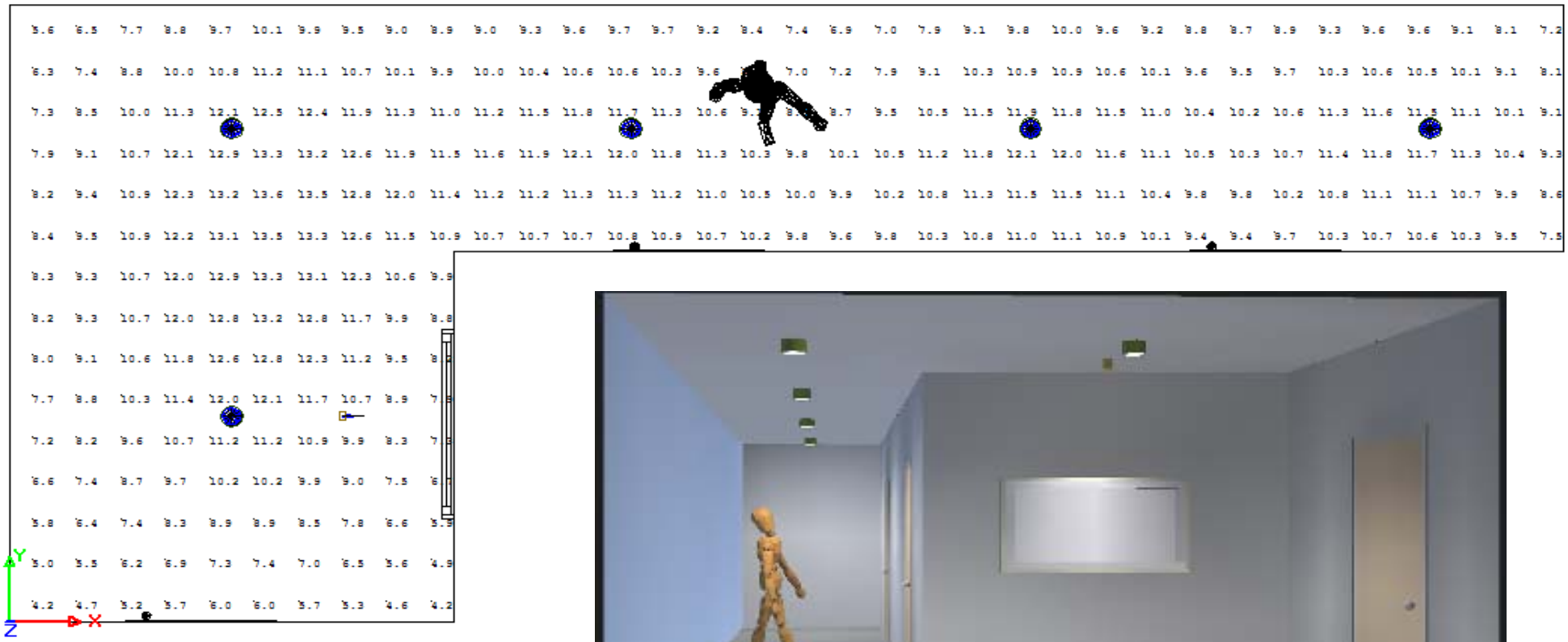
Juno – CFL- 6” 18 watt

Average= 9.9

Max= 13.6

Min= 4.2

Max/Min= 3.2



Area =300.00 Sq.Ft.
Total Watts = 121.5
Lighting Power Density =0.405 Watts/Sq.Ft.

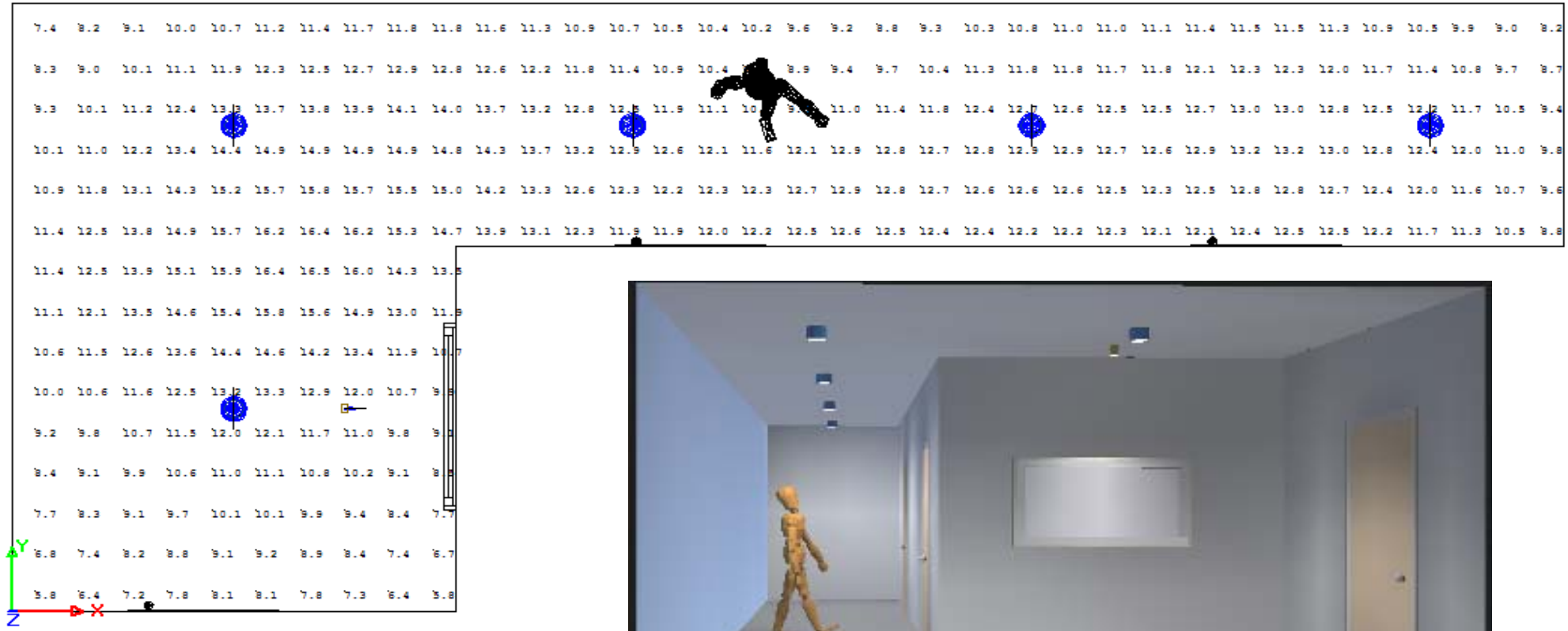
Lightolier-CFL-6” 26 watt

Average= 11.7

Max= 16.5

Min= 5.8

Max/Min= 2.8



Area =300.00 Sq.Ft.
Total Watts = 168
Lighting Power Density =0.560 Watts/Sq.Ft.

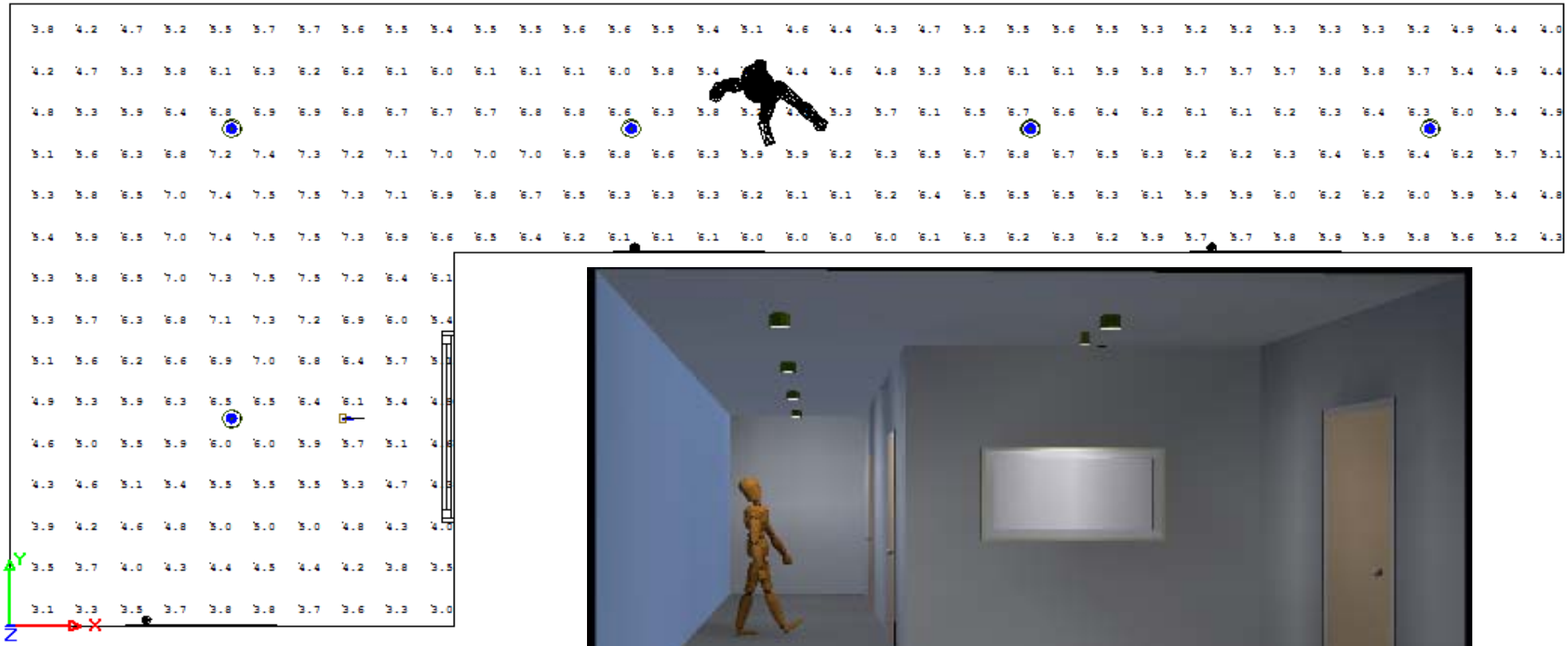
Cree LR6-LED 12 watt

Average= 5.8

Max= 7.5

Min= 3.0

Max/Min= 2.5



Area =300.00 Sq.Ft.
Total Watts = 82.5
Lighting Power Density =0.275 Watts/Sq.Ft.

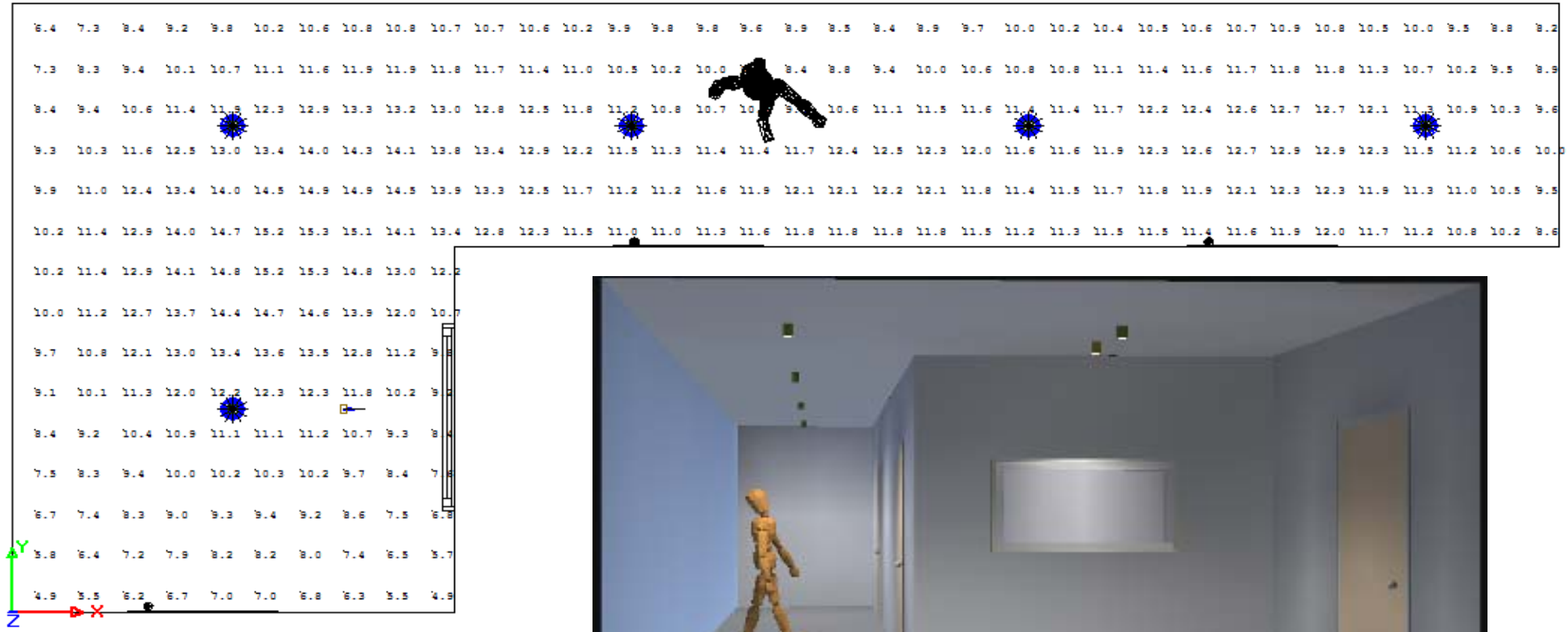
Lightolier- LED 4” 20 watt

Average= 10.9

Max= 15.3

Min= 4.9

Max/Min= 3.1



Area =300.00 Sq.Ft.
Total Watts = 121
Lighting Power Density =0.403 Watts/Sq.Ft.

Juno-LED-6” 14 watt

Average= 6.6

Max= 9

Min= 3.4

Max/Min= 2.7

Area =300.00 Sq.Ft.
Total Watts = 92.00001
Lighting Power Density =0.307 Watts/Sq.Ft.

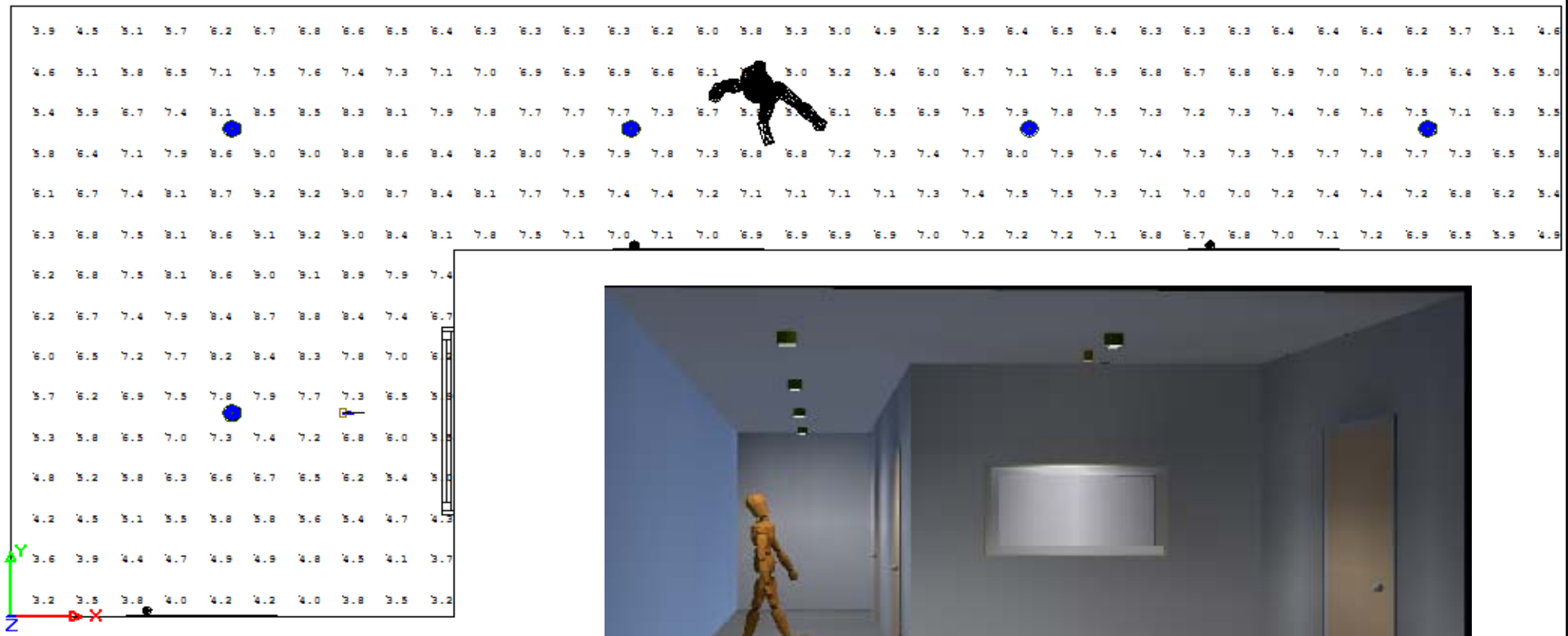
Halo- LED 6” 14 watt

Average= 6.7

Max= 9.2

Min= 3.2

Max/Min= 2.9



Area =300.00 Sq.Ft.
Total Watts = 98.49999
Lighting Power Density =0.328 Watts/Sq.Ft.

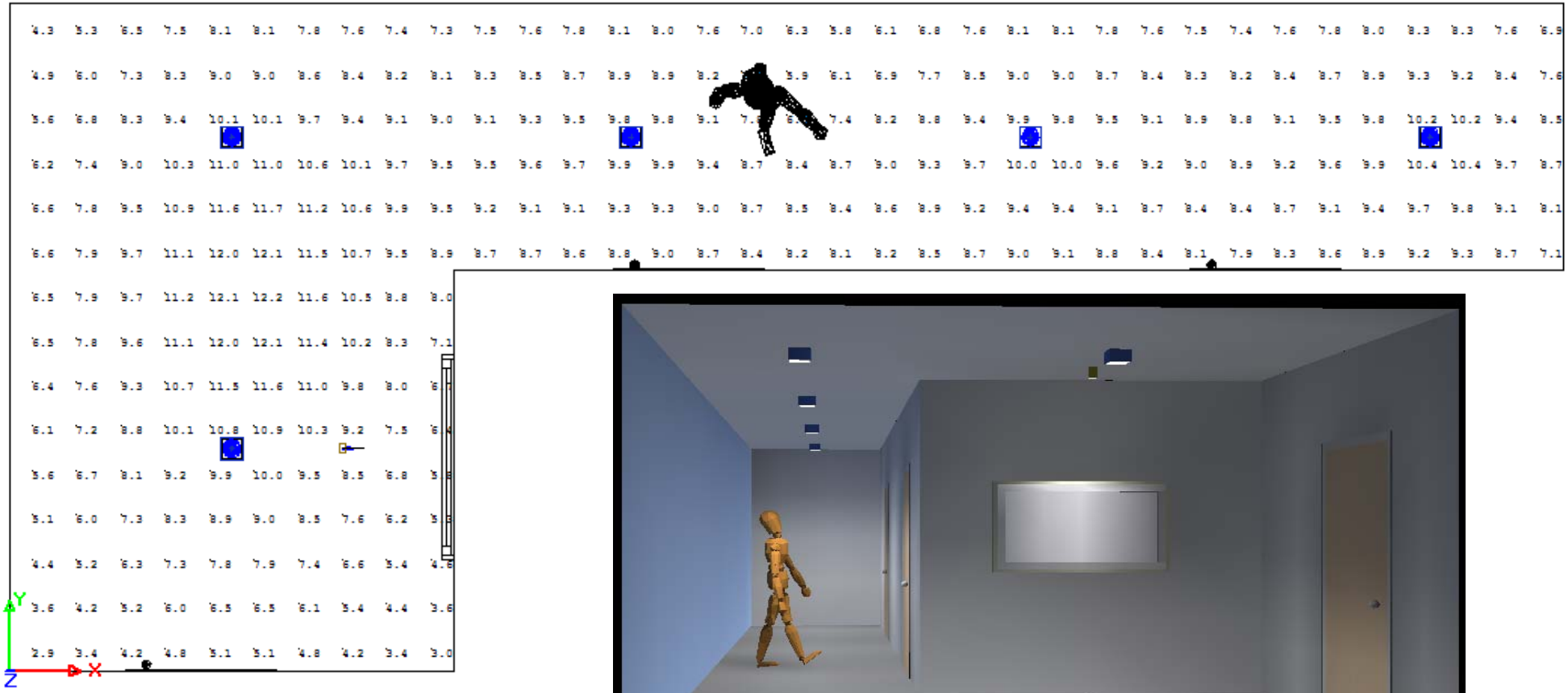
Gallium – LED 6” 26 watt
High CRI

Average= 8.4

Max= 12.2

Min= 2.9

Max/Min= 4.2



Area =300.00 Sq.Ft.
Total Watts = 152.5
Lighting Power Density =0.508 Watts/Sq.Ft.

Gallium – LED 6” 21 watt

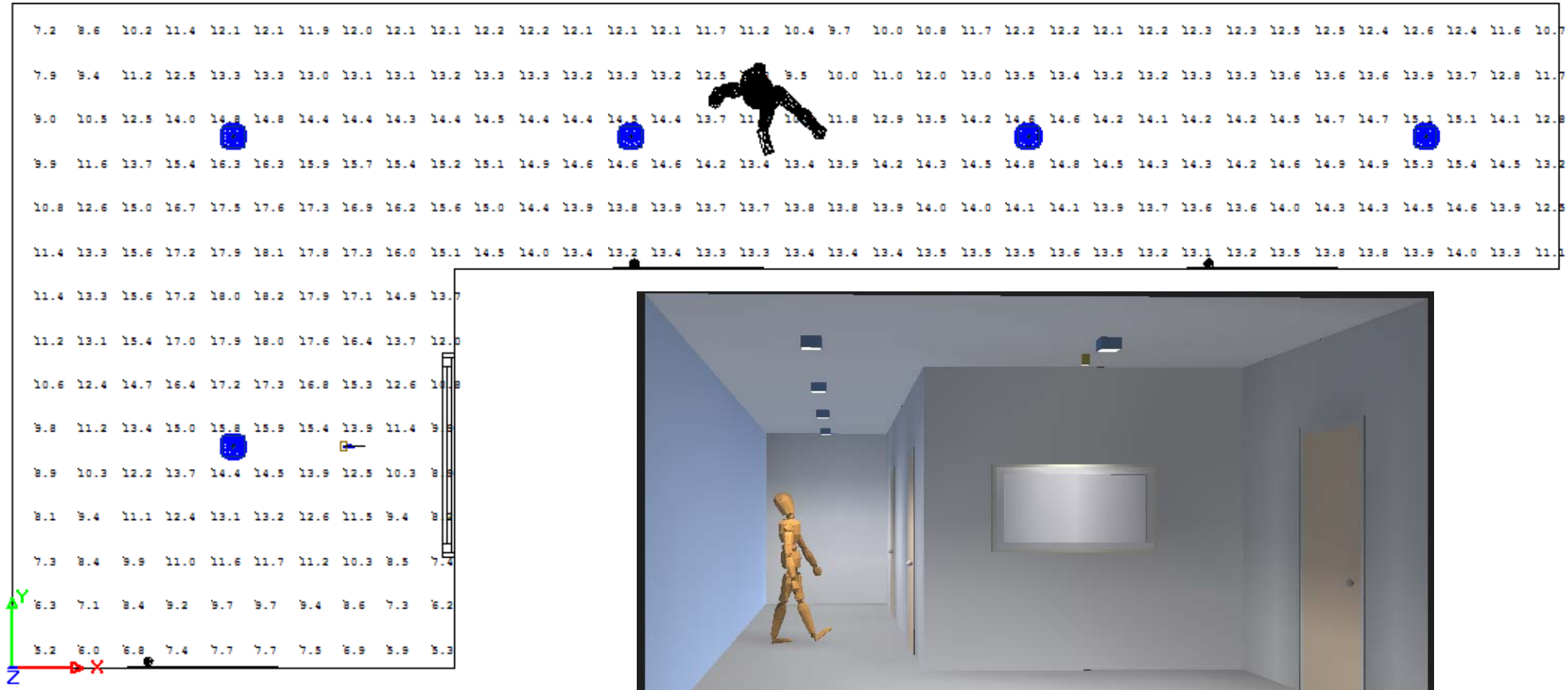
High lumen/ watt

Average= 13

Max= 18.2

Min= 5.2

Max/Min= 3.5



Area =300.00 Sq.Ft.
Total Watts = 129
Lighting Power Density =0.430 Watts/Sq.Ft.

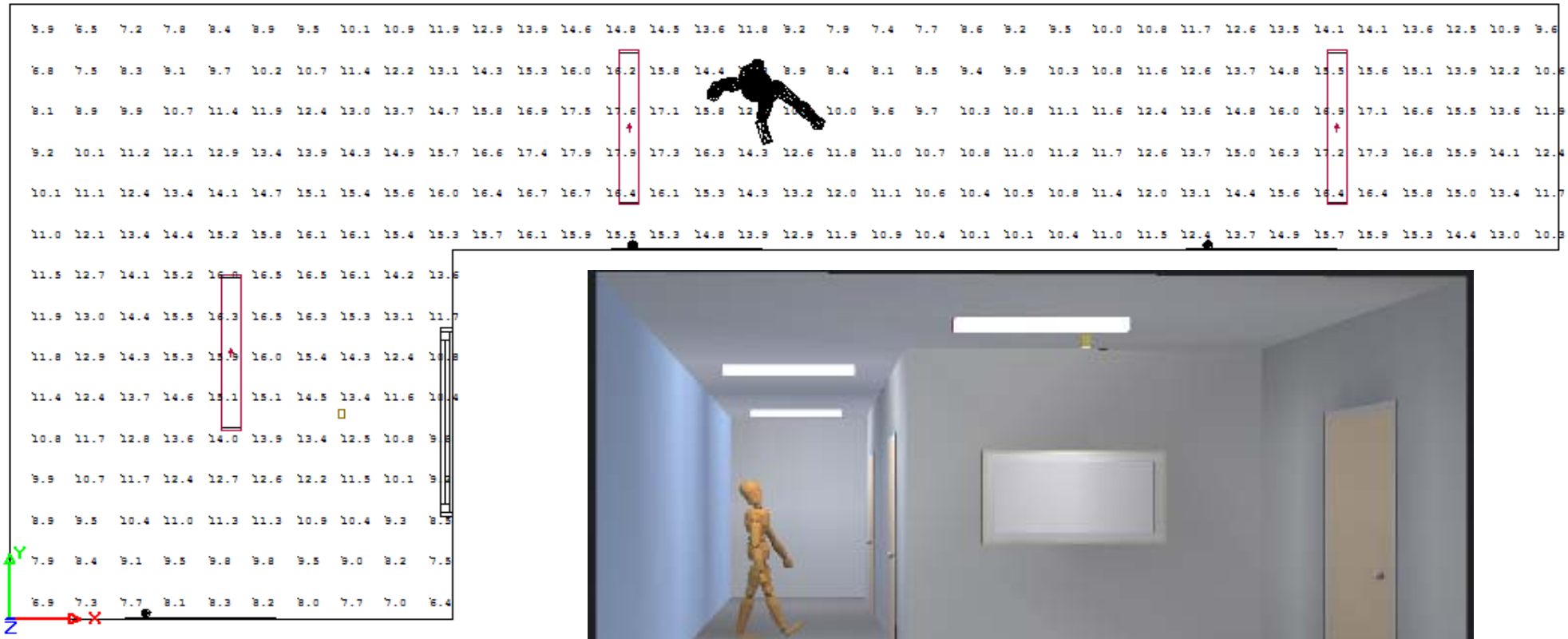
Lithonia RT5 48” – 29 watt

Average= 12.5

Max= 18

Min= 5.9

Max/Min= 3.0



Area =300.00 Sq.Ft.
Total Watts = 112
Lighting Power Density =0.373 Watts/Sq.Ft.

Lighting Design Lab

New Location!

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