

lighting | projects | consulting

**Lighting Projects Consulting s.r.o.**

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název zakázky: **REKONSTRUKCE A MODERNIZACE SPORTOVNÍHO AREÁLU,  
MĚSTSKÝ STADION V KARVINÉ – RÁJI**

stupeň projektu: Dokumentace provedení stavby datum: 05.12.2014

investor: Statutární město Karviná č.zakázky: 62/2014

hlavní projektant: Tomáš Behina měřítko: ---

vypracoval: ing. Karel Pinkas stupeň: DPS

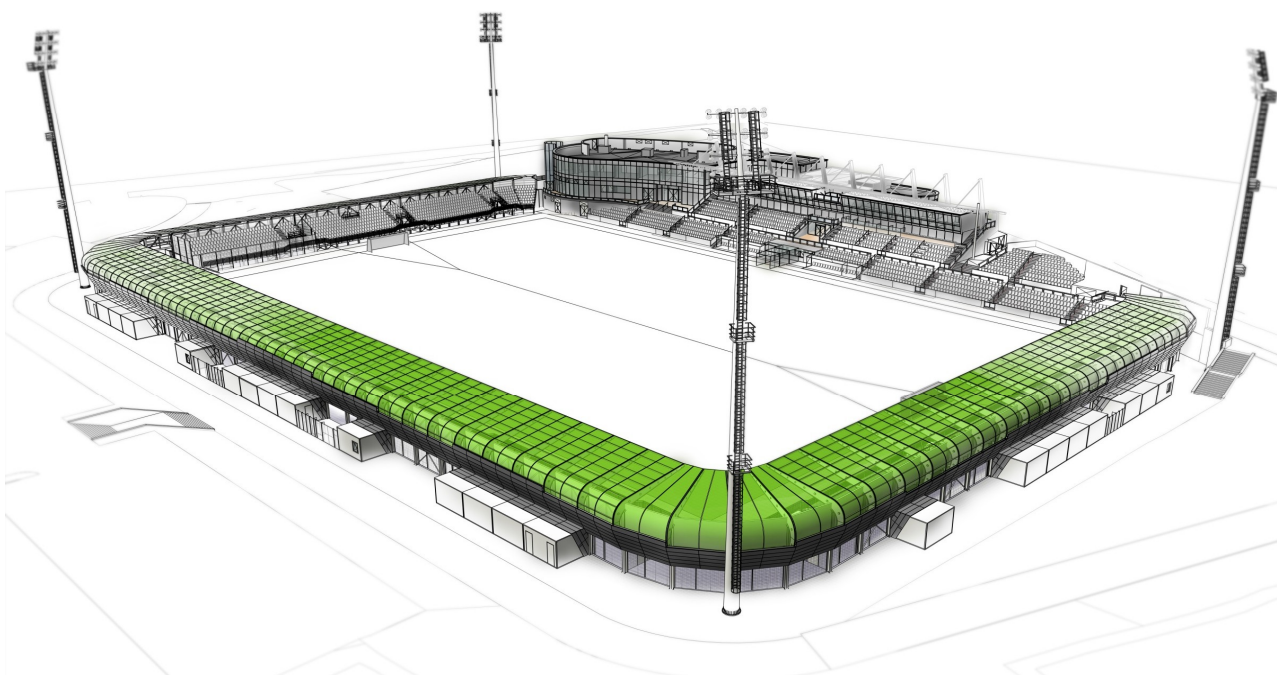
část: **OSVĚTLENÍ HRACÍ PLOCHY**

obsah: **TECHNICKÁ ZPRÁVA OSVĚTLENÍ  
VÝPOČET OSVĚTLENÍ (pouze 1. a 2.paré)**

příloha označení:  
**D1.4-1.2**

## Osvětlení hrací plochy

### MĚSTSKÝ FOTBALOVÝ STADION V KARVINÉ



1.12.2014

## Osvětlení hrací plochy

1. Úvod : Tento návrh řeší osvětlení hrací plochy fotbalového městského stadionu v KARVINĚ. Osvětlení je provedeno ze čtyř osvětlovacích věží a střechy hlavní tribuny. Jako podklad pro zpracování je použito ČSN 12193 - Světlo a osvětlení - Osvětlení sportovišť, "Guidelines and Recommendations for Floodlighting for all UEFA Competitions" a technická doporučení vydaná ČMFS.

2. Použité podklady :
1. projektové stavební řešení ve formátu DWG
  2. ČSN EN 12193, 1838 a UEFA Guidelines
  3. Technická doporučení ČMFS
  4. Požadavky investora
  5. Projekt elektroinstalace a stavební PD

3. Souhrn důležitých požadavků norem, FIFA, UEFA, ČMFS a investora a navržené hodnoty LPC se svítidly FORUM HP

Požadavkem investora je osvětlit hrací plochu a prostor pro diváky dle UEFA ve třídě V., mezinárodní zápasy vysílané televizí a splnění všech bezpečnostních kritérií.

	osvětlenost plošná (Eh) Eave	osvětlenost kamerová (Ev) Eave	barva světla Ra	Rovnoměrn ost (Ev) Emin/Emax	Rovnoměrn ost (Ev) Emin/Eave	Rovnoměrn ost (Eh) Emin/Emax	Rovnoměrnost (Eh) Emin/Eavemax
požadavky EN	500 lx		≥80			≥ 0,6	≥ 0,7
požadavky UEFA	≥ 1500 lx	≥ 1400 lx	≥ 80	≥ 0,5	≥ 0,7	≥ 0,6	≥ 0,7 (FIFA ≥ 0,8)
požadavek ČMFS	≥ 1400 lx	≥ 1400 lx	≥ 80	≥ 0,5	≥ 0,7	≥ 0,6	≥ 0,7
návrh LPC	2278 lx	1554 lx	≥ 0,85	0,51	0,79	0,68	0,87

	poměr mezi Eh a Ev osvětleností	rozdíl osvětlení-nosti mezi jednotlivými body sítě	umístění svítidel dle UEFA	rovnoměrn ost na svislých rovinách v jednom bodu sítě	činitel oslnění GR	zajištění náhradního osvětlení pro dokončení TV přenosu
požadavky EN	od 0,5 ~2	≤ 25%		≥ 0,3	≤ 50	
požadavky UEFA	od 0,5 ~2	≤ 20%	tabulky	≥ 0,3	≤ 50	800 lx
požadavek ČMFS	od 0,5 ~2		tabulky	≥ 0,3	≤ 50	800 lx
návrh LPC	0,62~1,41	≤ 19 %	je splněno	≥ 0,33	46,23	800 lx

Tabulka specifikací FIFA pro televizní přenosy



Lighting specifications for TELEvised events									
Class	Calculation toward :	VERTICAL ILLUMINANCE *			HORIZONTAL ILLUMINANCE			PROPERTIES OF LAMPS	
		Ev cam Ave.	Uniformity		Eh. Ave.	Uniformity		Colour temperature	Colour rendering
		Lux	U1	U2	Lux	U1	U2	Tk	Ra
International Class V	Slow motion cameras	1800	0.5	0.7	1500 to 3000	0.6	0.8	Tk > 5500 K	≥ 80 pref. 90
	Fixed camera	1400	0.5	0.7					
	Mobile cameras (at pitch level)	1000	0.3	0.5					

### Lighting Requirements

Competition	Stage	Ev(lux) towards fixed camera(s)*	Ev(lux) towards Mobile, ENG and CCD cameras
European Championship	- final tournament - qualifying matches	1400 1400	1000 1000
UEFA Champions League	- final - as from group matches - qualifying rounds	1400 1400 1000	1000 1000 700
UEFA Cup	- as from 1st round - qualifying rounds	1200 800	800 500
UEFA Intertoto Cup		800	500
European Under-21 Championship	- final tournament - qualifying matches	1400 800	1000 500
European Under-19 Championship		800	500
European Under-17 Championship		800	500
European Women's Championship	- final tournament - qualifying matches	1000 800	700 500
European Women's Under-19 Championship		800	500
UEFA Super Cup		1400	1000
Indoor competitions		1000	700

#### 4. Technický popis návrhu :

Návrh byl konsultován a rezentován představenstvu FAČR

a) Osvětlení hrací plochy je vypočteno na reflektory FORUM s přesnou optikou a deflektorem, který zamezuje nekontrolovanému rozptylu světla. Reflektory jsou o výkonu 2.000W s různými úhly vyzařování. Jako světelný zdroj je použita výbojka HQI-TS 2000/ HO-SB High Flux, 2000W, Ra85 se světelným tokem 220.000 lumenů, 5500K. Hladiny osvětlenosti a požadovaných hodnot jsou uvedeny v bodě 3. (doloženo ve výpočtech)

Spínání osvětlení bude řešeno ve třech náběhových spínacích stupních.

Svítidla budou umístěna na sloupy tak, aby svým umístěním nezasahovala do zakázaných prostorů.

Na hlavní tribuně do povolených prostorů jsou umístěny také konstrukce se svítidly, které zajišťují požadované hodnoty osvětlenosti pohledu ze směru od tribuny, osvětlenost pro mobilní kamery a zároveň zajišťují dosažení požadované rovnoměrnosti na svislých rovinách v jednom bodě.

b) Činitel oslnění GR je menší než 50 (doloženo ve výpočtech), směrování reflektorů je nutné dodržet, neboť dva stožáry leží mimo doporučenou zónu.



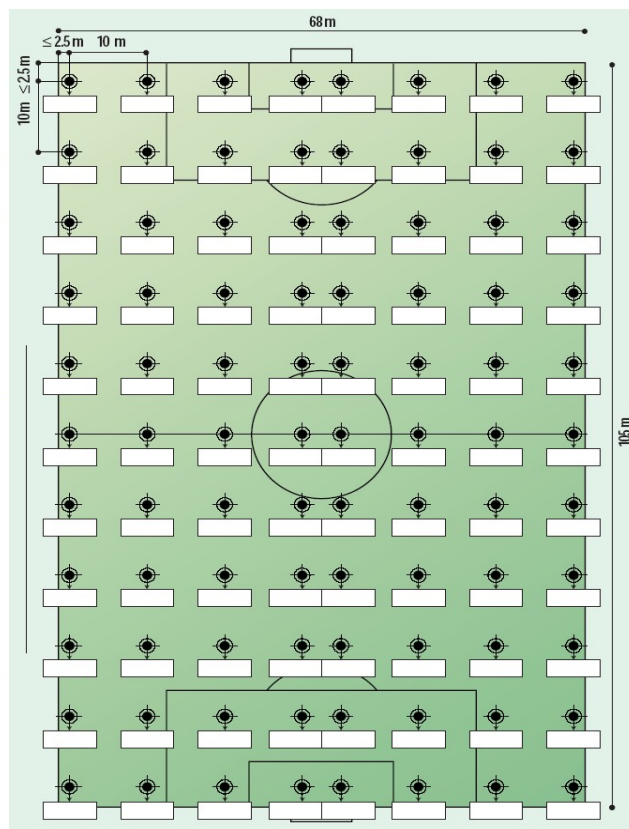
- c) Výška a umístění osvětlovacích těles je v souladu s UEFA
- d) Výzbroj jednotlivých osvětlovacích těles je standartu TRIDONIC a je umístěna v rozvodnách
- e) Ovládání osvětlení bude pomocí spínací skříňky - umístění dle projektu elektro.
- f) Hlavní pevná kamera je umístěna na hlavní tribuně (podklad investora).
- g) Osvětlení pro dokončení TV přenosu bude řešeno a zajištěno z dieselagregátu na hladinu 800 luxů.
- h) Nabídky případných dodavatelů musí obsahovat nastavení celé osvětlovací soustavy, měření osvětlenosti Ev ave a Eh ave a vystavení závěrečného měřicího protokolu.

## Podoba měřicího protokolu dle UEFA

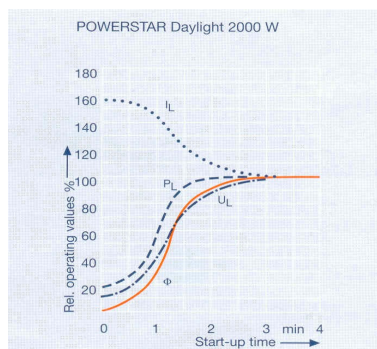
### Introduction

A measurement record sheet should be completed for each class of play and for both horizontal and vertical illuminance, as required. The number of measurements to be made will depend upon the size and type of facility: Televised or non Televised.

Project Name: .....	
Measuring Equipment:	
Type .....	Calibration Date .....
Switching Mode: .....	
Measurement Type: (Tick in box)	
Horizontal illuminance <input type="checkbox"/>	
Vertical illuminance toward camera <input type="checkbox"/>	Camera # <input type="text"/>
Vertical illuminance <input type="checkbox"/>	Indicate direction <input type="checkbox"/>
Illuminance	
E <sub>ref.</sub> <input type="text"/>	U <sub>1</sub> <input type="text"/> Emin./Emax.
E <sub>max.</sub> <input type="text"/>	U <sub>2</sub> <input type="text"/> Emin./Emax.
E <sub>ave.</sub> <input type="text"/>	U <sub>2</sub> <input type="text"/> Gradient % OK
Signed on behalf of contractor .....	Signed on behalf of Consultant .....



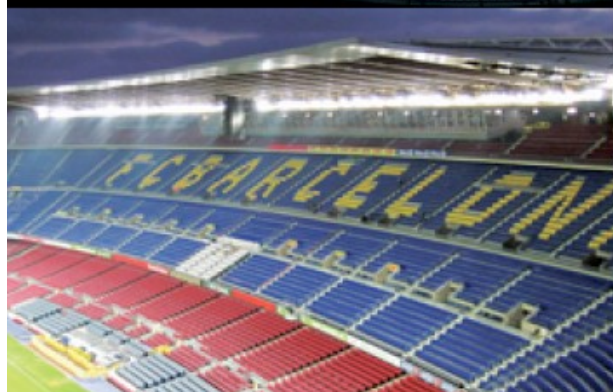
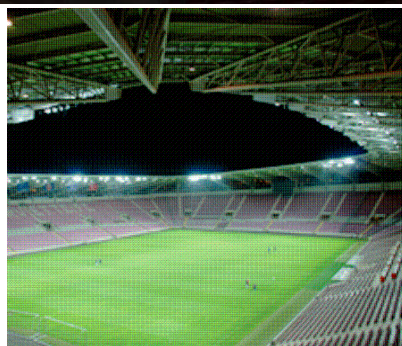
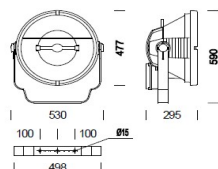
## Zobrazení náběhového proudu svítidel hrací plochy



Zpracoval : Petr Brzek

použité svítidlo

FORUM HP 2000 HQI TS s různými úhly





**Peak  
performance,  
maximum  
control**

Sports floodlights

**Forum  
Olympic  
Area**

**disano** ●

**Olympic**

**Forum**

**Area**

References





Forum



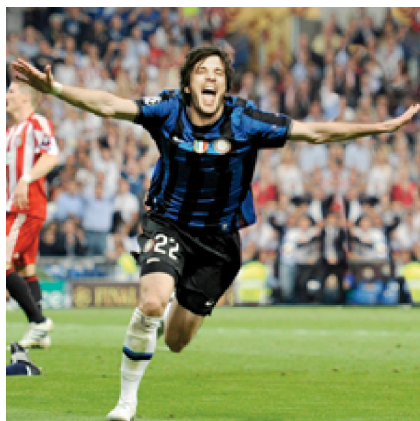
Forum

## A modern stadium is the concentration of emotions and technology

Sports facilities are becoming increasingly multi-purpose; these facilities are designed to host different kind of events and are built according to new environmental criteria. The show is as important as the sport, which can be watched by a huge audience thanks to television coverage.

## Light with no glare

Light installations must meet the several requirements imposed on international competitions, and high-resolution TV broadcasting, which needs to ensure high vertical luminance, light uniformity, excellent colour rendering, and visual comfort for both spectators and athletes using light with no glare.



Sydney Skoda Showground · Sydney, Australia



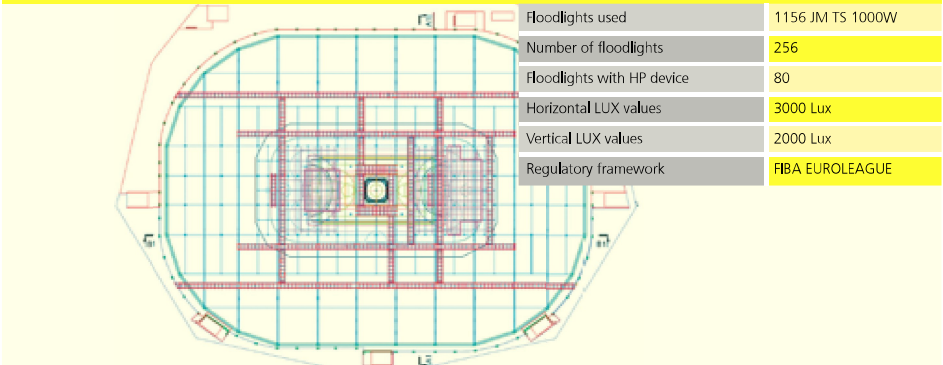
# Forum

## The right position of light beams

Three versions with six different light beams, completely and accurately controlled to keep excellent light uniformity.  
Anti-glare round symmetric optics in 99.98 aluminium, anodically oxidised and polished, with light flux recovery device.



### Kaunas Arena • Kaunas, Lithuania



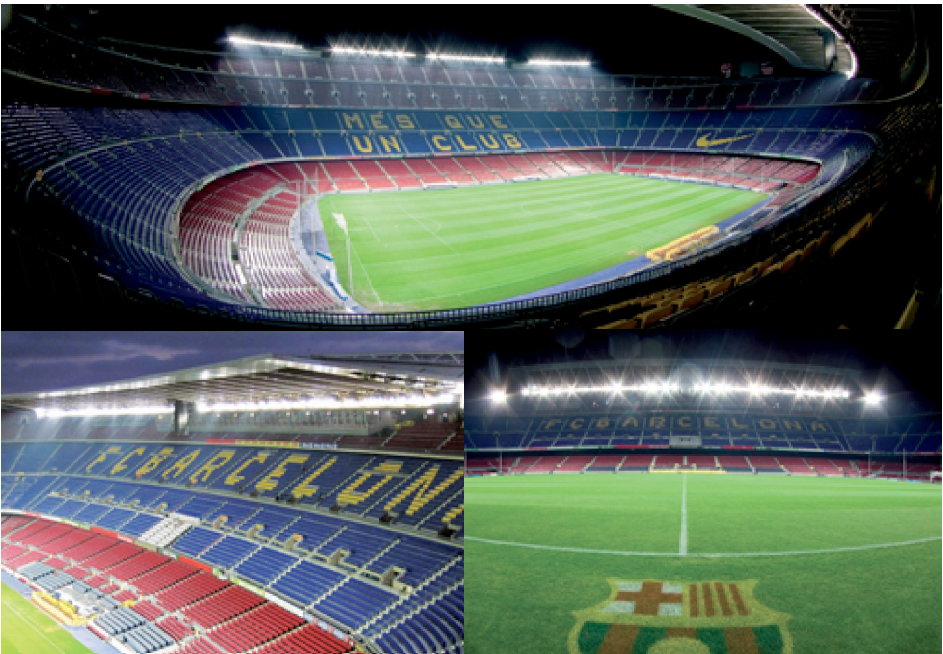
# Forum

## High light emission for TV broadcasting

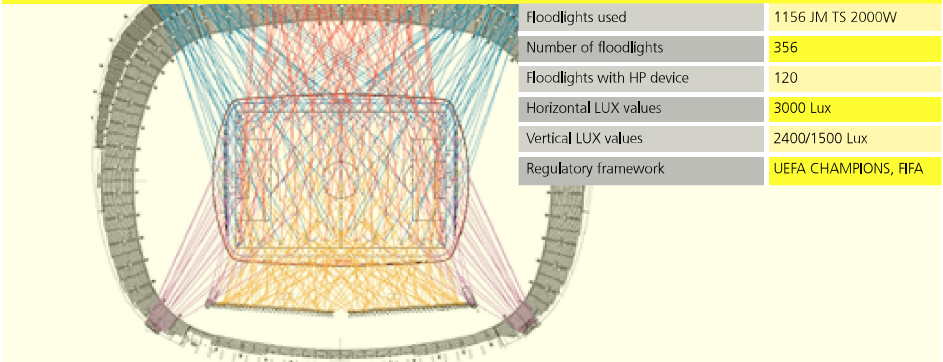
Higher efficiency and higher light output thanks to the optical design. Very high vertical lighting levels, perfect for high-resolution TV broadcasting.  
It uses short-arc metal halide lamps with different colour temperatures.



Geneva Stadium • Geneva, Switzerland



### Football Stadium of Nou Camp • Barcelona, Spain





# Forum

Examples of application with floodlight:

## Forum 1156 JM-TS 2000W FM FL XL

	Em Lx	Tower arrangement	Tower height	n° of tower	n° of floodlights	Lx Avg	Min/ Avg
Pitch 105 x 65 m							
1	300	Vertex	30	4	20 FM 8 FL	332	0,76
2	300	Vertex	25	4	20 FM 8 FL	326	0,75
3	300	Longitudinal	20	4	8 FM 12 XL	310	0,70
4	150	Vertex	25	4	8 FM 12 FL	250	0,70
5	150	Longitudinal	20	4	8 FM 8 FL	205	0,70
Pitch 100 x 50 m							
6	300	Vertex	25	4	4 FM 20 FL	342	0,70
7	300	Longitudinal	20	4	16 FL 4 XL	250	0,70
8	150	Vertex	25	4	16 FL	230	0,70
9	150	Longitudinal	20	4	16 XL	211	0,70
Pitch 90 x 45 m							
10	100	Vertex	25	4	8 FL	160	0,60
11	100	Longitudinal	20	4	8 XL	150	0,60

## Dealing with stress on the pitch

Even when installed over 30 meters, the fixture must guarantee the maximum reliability and service life. Housing in die-cast aluminium, equipped with cooling fins, designed to withstand the greatest impacts.

Graphite polyester power coating applied, resistant to corrosive and saline environments.

Tempered glass, 5mm thick, resistant to thermal shocks and impacts. Goniometre and pointer.

The light bulb can be changed without removing the pointer.



Sydney Skoda Showground · Sydney, Australia

## Immediate re-ignition guaranteed

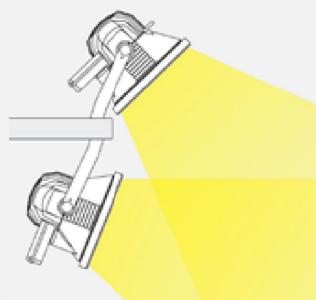
Hot restrike with microprocessor-controlled instant starter. Automatic detection of connected lamp with relative start-up load regulation.

Symmetric starter with automatic disconnection in case of failure. ENEC certified, IP66.

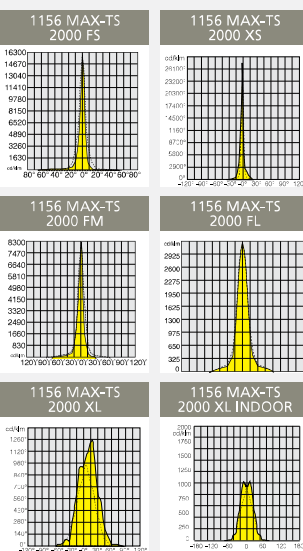


Golf Club · Bouznika Bay, Morocco

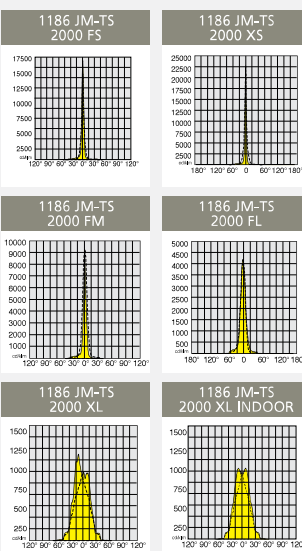
This state-of-the-art floodlight, which is currently being used in major international facilities, now welcomes a new version featuring special sources with very high luminous flux. Great colour rendering, perfect for TV shooting. Lamp versions with different colour temperatures can be selected depending on usage. Available with protective glass grid upon request.



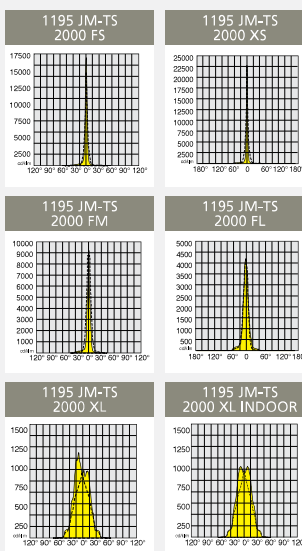
## Forum

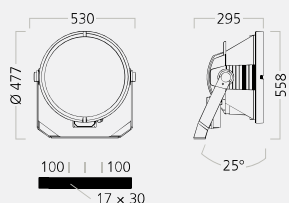


## Forum high performance



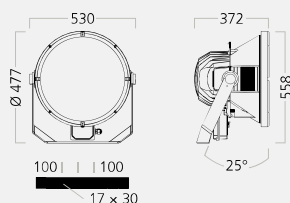
## Forum hot restrike





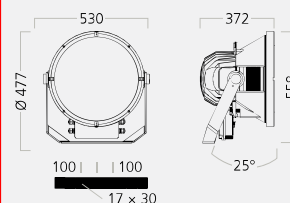
## Forum

<b>1156 XS</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	MAX-TS 2000 SA	200000	5900	90
<b>1156 FS</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	MAX-TS 2000 SA	200000	5900	90
<b>1156 FM</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	MAX-TS 2000 SA	200000	5900	90
<b>1156 FL</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	MAX-TS 2000 SA	200000	5900	90
<b>1156 XL</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	MAX-TS 2000 SA	200000	5900	90
<b>1156 XL indoor</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	MAX-TS 2000 SA	200000	5900	90



## Forum high performance

<b>1186 XS</b>	Watt	Lumen	K	Ra
	JM-TS 2000 HO-SB	220000	5500	85
	JM-TM 1000	110000	5600	80
<b>1186 FS</b>	Watt	Lumen	K	Ra
	JM-TS 2000 HO-SB	220000	5500	85
	JM-TM 1000	110000	5600	80
<b>1186 FM</b>	Watt	Lumen	K	Ra
	JM-TS 2000 HO-SB	220000	5500	85
	JM-TM 1000	110000	5600	80
<b>1186 FL</b>	Watt	Lumen	K	Ra
	JM-TS 2000 HO-SB	220000	5500	85
	JM-TM 1000	110000	5600	80
<b>1186 XL</b>	Watt	Lumen	K	Ra
	JM-TS 2000 HO-SB	220000	5500	85
	JM-TM 1000	110000	5600	80
<b>1186 XL indoor</b>	Watt	Lumen	K	Ra
	JM-TS 2000 HO-SB	220000	5500	85
	JM-TM 1000	110000	5600	80



## Forum hot restrike

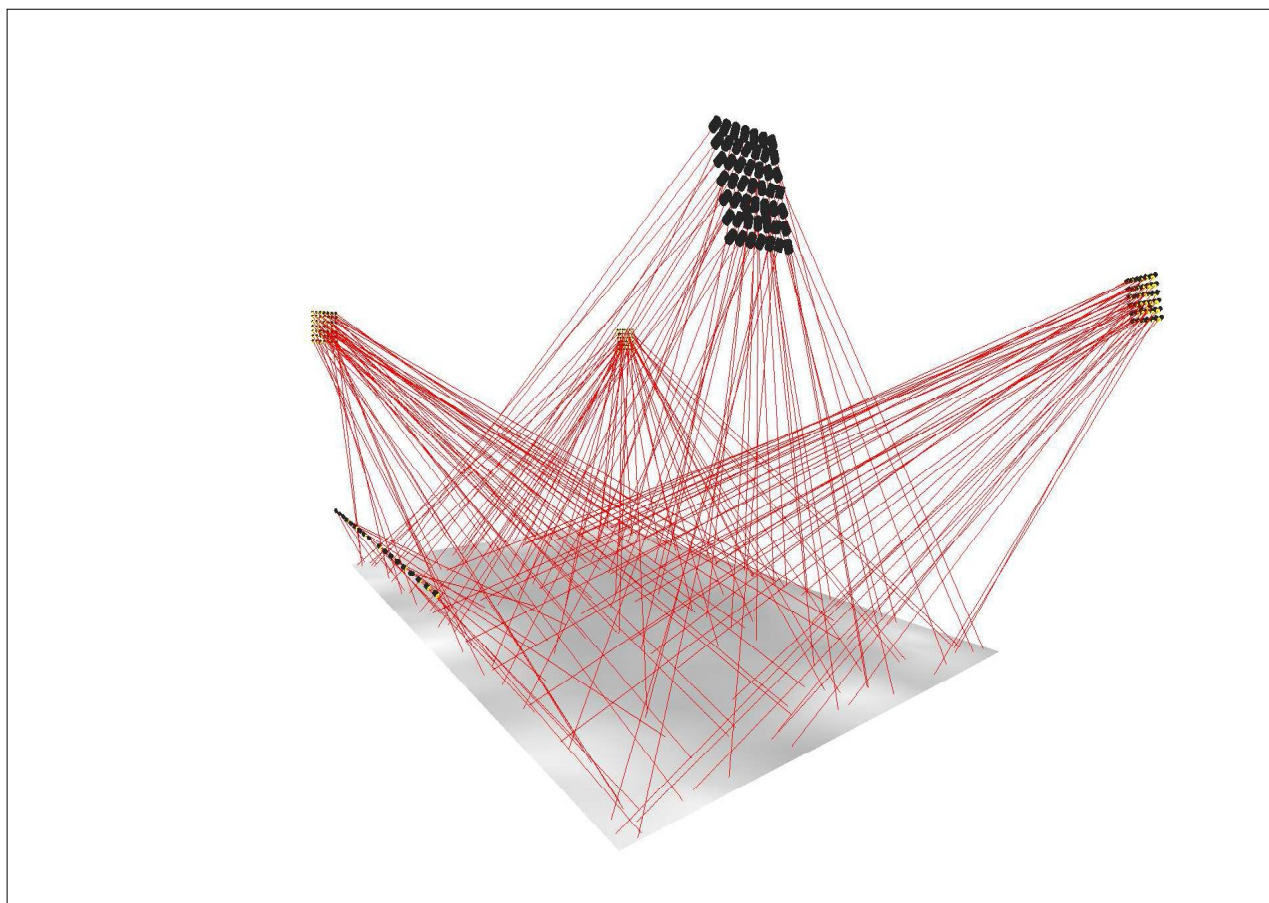
<b>1195 XS</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	JM-TS 2000 HO-SB	220000	5500	85
<b>1195 FS</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	JM-TS 2000 HO-SB	220000	5500	85
<b>1195 FM</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	JM-TS 2000 HO-SB	220000	5500	85
<b>1195 FL</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	JM-TS 2000 HO-SB	220000	5500	85
<b>1186 XL</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	JM-TS 2000 HO-SB	220000	5500	85
<b>1195 XL indoor</b>	Watt	Lumen	K	Ra
	MAX-TS 1000 SA	90000	5900	90
	JM-TS 2000 HO-SB	220000	5500	85

All fixtures need to be completed with its relevant wiring box acc. 1176



Project : *FOOTBALL STADIUM KARVINA*  
Code : *XFM8259V*  
Customer : *EXX*  
Customer code :  
Date : *21/11/2014*

environment: FOOTBALL



Project : **FOOTBALL STADIUM KARVINA**  
 Code : **XFM8259V**  
 Customer : **EXX**  
 Customer code :  
 Date : **21/11/2014**

### Reassumed General Page

environment : **FOOTBALL**

#### GRID

1	GRID 5mtX5mt	21X15PTS 105mX68m	Maintenance factor 82
		H horizontal: 0m H verticals: 1m	H semi cylindrical: 1m

#### OBSERVERS

1	MAIN camera	X=0 Y=55 Z=10
2	TV2	X=-25 Y=55 Z=10
3	TV3	X=-55 Y=0 Z=1,5
4	TV4	X=0 Y=38 Z=1,5

#### FASE

1	UEFA Ev=1400lux
2	Training

#### FITTINGS

A	1186 JM-TS 2000 FM HO	96
B	1186 JM-TS 2000 FL HO	18
C	1186 JM-TS 2000 FS HO	78
D	1186 JM-TS 2000 XL HO	16

#### LIST OF LUMINIRE (ORGANIZED PER IGNITION)

	A	B	C	D
UEFA Ev=1400lux	96	18	78	16
Training	20	12	0	0

#### LIST OF LUMINIRE (ORGANIZED PER GROUP)

	A	B	C	D
TOWER H=40mt	48	8	32	0
TOWER H=40mt	48	8	46	0
GROUP SEATS h=14mt	0	2	0	16
free fittings	0	0	0	0

Project : **FOOTBALL STADIUM KARVINA**  
 Code : **XFM8259V**  
 Customer : **EXX**  
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### Reassumed General Page

environment : **FOOTBALL**

#### TABLE

PHASE	CALCULATION TYPE	GRID	OBSERVER	AVG	MIN/AVG	MIN/MAX
UEFA Ev=1400lux	horizontal	GRID 5mtX5mt		2278	0,87	0,68
UEFA Ev=1400lux	Vert. Observer	GRID 5mtX5mt	MAIN camera	1554	0,79	0,51
UEFA Ev=1400lux	Vert. Observer	GRID 5mtX5mt	TV2	1518	0,67	0,42
UEFA Ev=1400lux	Vert. Observer	GRID 5mtX5mt	TV3	1520	0,60	0,46
UEFA Ev=1400lux	Vert. Observer	GRID 5mtX5mt	TV4	1460	0,73	0,47
Training	horizontal	GRID 5mtX5mt		383	0,70	0,52

#### RESULTS (UEFA EV=1400LUX)

			AVG	MIN/AVG	MIN/MAX
<b>HORIZONTAL</b>	GRID 5mtX5mt		2278	0,87	0,68
<b>VERT. OBSERVER</b>	MAIN camera	GRID 5mtX5mt	1554	0,79	0,51
	TV2	GRID 5mtX5mt	1518	0,67	0,42
	TV3	GRID 5mtX5mt	1520	0,60	0,46
	TV4	GRID 5mtX5mt	1460	0,73	0,47
<b>GLARE</b>	GRID 5mtX5mt	GR MAX 46,23			

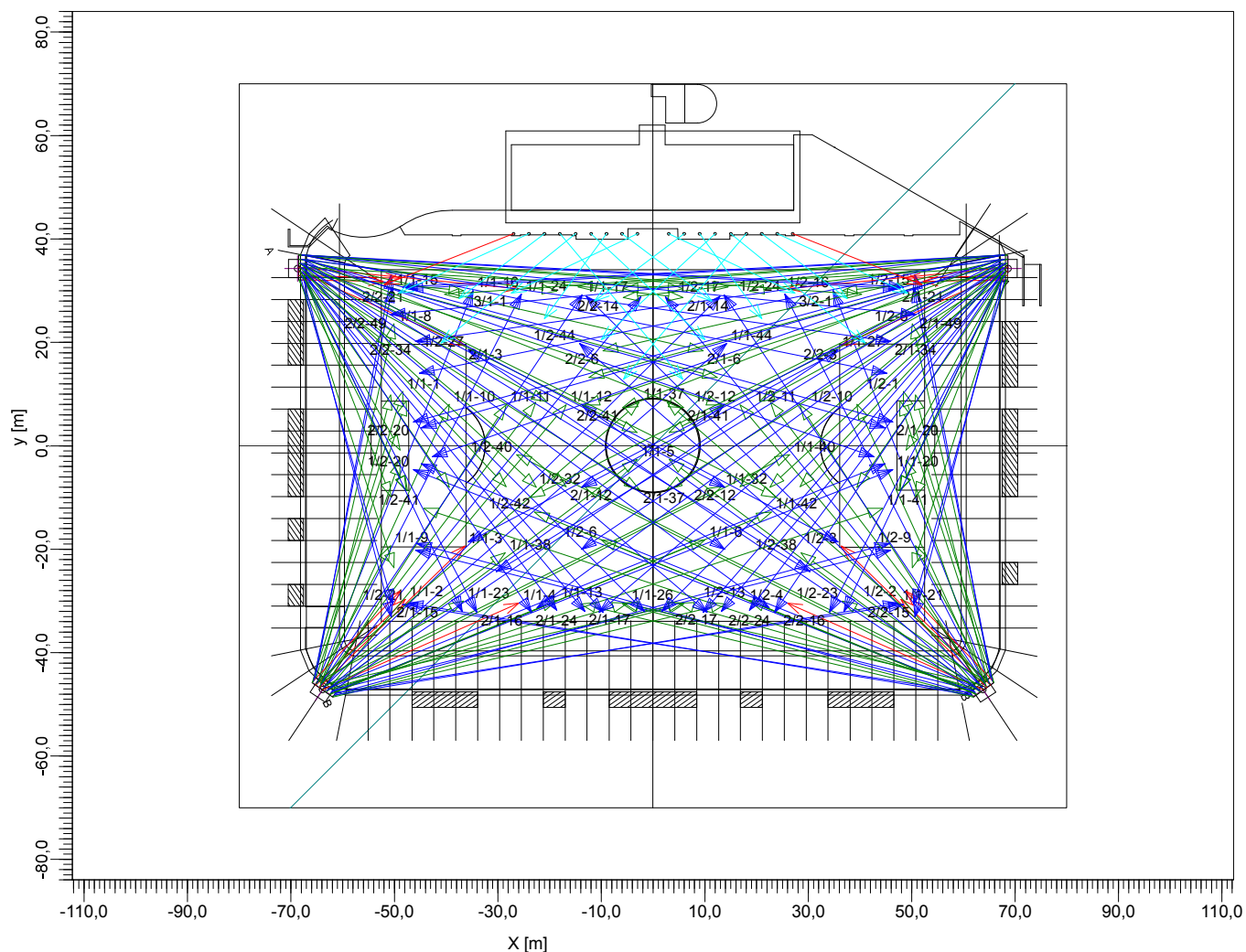
#### RESULTS (TRAINING)

			AVG	MIN/AVG	MIN/MAX
<b>HORIZONTAL</b>	GRID 5mtX5mt		383	0,70	0,52

Project : FOOTBALL STADIUM KARVINA  
Code : XFM8259V  
Customer : EXX  
Customer code :  
Date : 21/11/2014

### Aiming fittings

environment : FOOTBALL  
grid : GRID 5mtX5mt  
phase : UEFA Ev=1400lux  
observer : MAIN camera  
aiming : phase



**Project** : FOOTBALL STADIUM KARVINA  
**Code** : XFM8259V  
**Customer** : EXX  
**Customer code** :  
**Date** : 21/11/2014

### Dettaglio apparecchi

environment :

fitting			Position			aiming				lighting phases	
N° GRP.	PRG. APP.	Code	x[m]	y[m]	z[m]	L. NS°	ROT. °	PX [m]	PY [m]	1	2
1	1/1	1186 JM-TS 2000 FM HO	-65,87	-45,82	40,00	56	343	-48,40	10,50	+	+
1	1/2	1186 JM-TS 2000 FM HO	65,87	-45,82	40,00	56	17	48,40	10,50	+	+
1	2/1	1186 JM-TS 2000 FL HO	-65,21	-46,28	40,00	31	314	-47,90	-29,70	+	+
1	2/2	1186 JM-TS 2000 FL HO	65,21	-46,28	40,00	31	46	47,90	-29,70	+	+
1	3/1	1186 JM-TS 2000 FL HO	-64,56	-46,74	40,00	44	314	-36,40	-19,40	+	+
1	3/2	1186 JM-TS 2000 FL HO	64,56	-46,74	40,00	44	46	36,40	-19,40	+	+
1	4/1	1186 JM-TS 2000 FL HO	-63,90	-47,20	40,00	46	294	-26,00	-30,40	+	+
1	4/2	1186 JM-TS 2000 FL HO	63,90	-47,20	40,00	46	66	26,00	-30,40	+	+
1	5/1	1186 JM-TS 2000 FM HO	-63,24	-47,66	40,00	62	307	-3,10	-2,60	+	+
1	5/2	1186 JM-TS 2000 FM HO	63,24	-47,66	40,00	62	53	3,10	-2,60	+	+
1	6/1	1186 JM-TS 2000 FM HO	-62,59	-48,12	40,00	63	292	10,00	-18,20	+	+
1	6/2	1186 JM-TS 2000 FM HO	62,59	-48,12	40,00	63	68	-10,00	-18,20	+	+
1	7/1	1186 JM-TS 2000 FM HO	-61,93	-48,58	40,00	63	283	14,00	-30,60	+	+
1	7/2	1186 JM-TS 2000 FM HO	61,93	-48,58	40,00	63	77	-14,00	-30,60	+	+
1	8/1	1186 JM-TS 2000 FM HO	-65,72	-45,62	40,93	60	347	-50,10	23,60	+	-
1	8/2	1186 JM-TS 2000 FM HO	65,72	-45,62	40,93	60	13	50,10	23,60	+	-
1	9/1	1186 JM-TS 2000 FM HO	-65,07	-46,08	40,93	37	332	-50,70	-19,30	+	-
1	9/2	1186 JM-TS 2000 FM HO	65,07	-46,08	40,93	37	28	50,70	-19,30	+	-
1	10/1	1186 JM-TS 2000 FM HO	-64,41	-46,54	40,93	56	335	-39,40	8,00	+	-
1	10/2	1186 JM-TS 2000 FM HO	64,41	-46,54	40,93	56	25	39,40	8,00	+	-
1	11/1	1186 JM-TS 2000 FM HO	-63,76	-47,00	40,93	58	327	-28,40	7,90	+	+
1	11/2	1186 JM-TS 2000 FM HO	63,76	-47,00	40,93	58	33	28,40	7,90	+	+
1	12/1	1186 JM-TS 2000 FM HO	-63,10	-47,46	40,93	60	320	-16,80	7,90	+	+
1	12/2	1186 JM-TS 2000 FM HO	63,10	-47,46	40,93	60	40	16,80	7,90	+	-
1	13/1	1186 JM-TS 2000 FM HO	-62,45	-47,91	40,93	49	292	-18,60	-29,90	+	-
1	13/2	1186 JM-TS 2000 FM HO	62,45	-47,91	40,93	49	68	18,60	-29,90	+	-
1	14/1	1186 JM-TS 2000 FM HO	-61,79	-48,37	40,93	60	285	5,90	-30,60	+	-
1	14/2	1186 JM-TS 2000 FM HO	61,79	-48,37	40,93	60	75	-5,90	-30,60	+	-
1	15/1	1186 JM-TS 2000 FS HO	-65,58	-45,42	41,85	62	349	-50,40	30,60	+	-
1	15/2	1186 JM-TS 2000 FS HO	65,58	-45,42	41,85	62	11	50,40	30,60	+	-
1	16/1	1186 JM-TS 2000 FS HO	-64,93	-45,88	41,85	63	338	-34,80	30,00	+	-
1	16/2	1186 JM-TS 2000 FS HO	64,93	-45,88	41,85	63	22	34,80	30,00	+	-
1	17/1	1186 JM-TS 2000 FS HO	-64,27	-46,33	41,85	65	326	-13,70	29,20	+	-
1	17/2	1186 JM-TS 2000 FS HO	64,27	-46,33	41,85	65	34	13,70	29,20	+	-
1	18/1	1186 JM-TS 2000 FS HO	-63,61	-46,79	41,85	67	321	-2,40	28,80	+	-
1	18/2	1186 JM-TS 2000 FS HO	63,61	-46,79	41,85	67	39	2,40	28,80	+	-
1	19/1	1186 JM-TS 2000 FS HO	-62,96	-47,25	41,85	66	306	13,80	8,00	+	-
1	19/2	1186 JM-TS 2000 FS HO	62,96	-47,25	41,85	66	54	-13,80	8,00	+	-
1	20/1	1186 JM-TS 2000 FS HO	-62,30	-47,71	41,85	70	292	46,30	-4,60	+	-
1	20/2	1186 JM-TS 2000 FS HO	62,30	-47,71	41,85	70	68	-46,30	-4,60	+	-
1	21/1	1186 JM-TS 2000 FS HO	-61,65	-48,17	41,85	69	279	47,30	-30,40	+	-
1	21/2	1186 JM-TS 2000 FS HO	61,65	-48,17	41,85	69	81	-47,30	-30,40	+	-
1	22/1	1186 JM-TS 2000 FL HO	-65,44	-45,21	42,78	29	316	-48,90	-28,10	+	-
1	22/2	1186 JM-TS 2000 FL HO	65,44	-45,21	42,78	29	44	48,90	-28,10	+	-
1	23/1	1186 JM-TS 2000 FM HO	-64,78	-45,67	42,78	37	299	-36,60	-30,00	+	-
1	23/2	1186 JM-TS 2000 FM HO	64,78	-45,67	42,78	37	61	36,60	-30,00	+	-

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### Dettaglio apparecchi

environment :

fitting			Position			aiming				lighting phases	
N° GRP.	PRG. APP.	Code	x[m]	y[m]	z[m]	L. NS°	ROT. °	PX [m]	PY [m]	1	2
1	24/1	1186 JM-TS 2000 FS HO	-64,13	-46,13	42,78	63	333	-25,50	29,30	+	-
1	24/2	1186 JM-TS 2000 FS HO	64,13	-46,13	42,78	63	27	25,50	29,30	+	-
1	25/1	1186 JM-TS 2000 FS HO	-63,47	-46,59	42,78	68	315	12,90	28,90	+	-
1	25/2	1186 JM-TS 2000 FS HO	63,47	-46,59	42,78	68	45	-12,90	28,90	+	-
1	26/1	1186 JM-TS 2000 FM HO	-62,82	-47,05	42,78	55	286	-5,00	-30,40	+	-
1	26/2	1186 JM-TS 2000 FM HO	62,82	-47,05	42,78	55	74	5,00	-30,40	+	-
1	27/1	1186 JM-TS 2000 FS HO	-62,16	-47,51	42,78	70	304	35,70	18,60	+	-
1	27/2	1186 JM-TS 2000 FS HO	62,16	-47,51	42,78	70	56	-35,70	18,60	+	-
1	28/1	1186 JM-TS 2000 FS HO	-61,51	-47,97	42,78	69	285	45,70	-18,90	+	-
1	28/2	1186 JM-TS 2000 FS HO	61,51	-47,97	42,78	69	75	-45,70	-18,90	+	-
1	29/1	1186 JM-TS 2000 FS HO	-65,30	-45,01	43,71	61	349	-50,60	33,10	+	-
1	29/2	1186 JM-TS 2000 FS HO	65,30	-45,01	43,71	61	11	50,60	33,10	+	-
1	30/1	1186 JM-TS 2000 FM HO	-64,64	-45,47	43,71	53	346	-50,70	9,80	+	-
1	30/2	1186 JM-TS 2000 FM HO	64,64	-45,47	43,71	53	14	50,70	9,80	+	-
1	31/1	1186 JM-TS 2000 FM HO	-63,99	-45,93	43,71	57	323	-22,70	8,40	+	-
1	31/2	1186 JM-TS 2000 FM HO	63,99	-45,93	43,71	57	37	22,70	8,40	+	-
1	32/1	1186 JM-TS 2000 FM HO	-63,33	-46,39	43,71	63	297	13,20	-7,90	+	-
1	32/2	1186 JM-TS 2000 FM HO	63,33	-46,39	43,71	63	63	-13,20	-7,90	+	-
1	33/1	1186 JM-TS 2000 FS HO	-62,67	-46,84	43,71	69	292	44,80	-3,50	+	-
1	33/2	1186 JM-TS 2000 FS HO	62,67	-46,84	43,71	69	68	-44,80	-3,50	+	-
1	34/1	1186 JM-TS 2000 FS HO	-62,02	-47,30	43,71	69	284	45,90	-20,20	+	-
1	34/2	1186 JM-TS 2000 FS HO	62,02	-47,30	43,71	69	76	-45,90	-20,20	+	-
1	35/1	1186 JM-TS 2000 FS HO	-61,36	-47,76	43,71	69	279	48,40	-30,70	+	-
1	35/2	1186 JM-TS 2000 FS HO	61,36	-47,76	43,71	69	81	-48,40	-30,70	+	-
1	36/1	1186 JM-TS 2000 FM HO	-65,15	-44,81	44,64	52	342	-47,70	8,70	+	-
1	36/2	1186 JM-TS 2000 FM HO	65,15	-44,81	44,64	52	18	47,70	8,70	+	-
1	37/1	1186 JM-TS 2000 FM HO	-64,50	-45,26	44,64	61	311	-2,70	8,40	+	-
1	37/2	1186 JM-TS 2000 FM HO	64,50	-45,26	44,64	61	49	2,70	8,40	+	-
1	38/1	1186 JM-TS 2000 FM HO	-63,84	-45,72	44,64	44	305	-28,60	-20,70	+	-
1	38/2	1186 JM-TS 2000 FM HO	63,84	-45,72	44,64	44	55	28,60	-20,70	+	-
1	39/1	1186 JM-TS 2000 FM HO	-63,19	-46,18	44,64	58	283	5,70	-30,40	+	-
1	39/2	1186 JM-TS 2000 FM HO	63,19	-46,18	44,64	58	77	-5,70	-30,40	+	-
1	40/1	1186 JM-TS 2000 FM HO	-62,53	-46,64	44,64	66	297	26,40	-1,70	+	-
1	40/2	1186 JM-TS 2000 FM HO	62,53	-46,64	44,64	66	63	-26,40	-1,70	+	-
1	41/1	1186 JM-TS 2000 FM HO	-61,88	-47,10	44,64	68	288	44,30	-12,10	+	-
1	41/2	1186 JM-TS 2000 FM HO	61,88	-47,10	44,64	68	72	-44,30	-12,10	+	-
1	42/1	1186 JM-TS 2000 FM HO	-61,22	-47,56	44,64	64	292	22,90	-12,80	+	-
1	42/2	1186 JM-TS 2000 FM HO	61,22	-47,56	44,64	64	68	-22,90	-12,80	+	-
1	43/1	1186 JM-TS 2000 FM HO	-64,35	-46,44	41,35	48	341	-48,90	-2,80	+	-
1	43/2	1186 JM-TS 2000 FM HO	64,35	-46,44	41,35	48	19	48,90	-2,80	+	-
1	44/1	1186 JM-TS 2000 FS HO	-63,04	-47,36	41,35	68	311	14,20	19,78	+	-
1	44/2	1186 JM-TS 2000 FS HO	63,04	-47,36	41,35	68	49	-14,20	19,78	+	-
2	1/1	1186 JM-TS 2000 FM HO	-68,50	32,09	40,00	49	207	-47,50	-8,70	+	+
2	1/2	1186 JM-TS 2000 FM HO	68,50	32,09	40,00	49	153	47,50	-8,70	+	+
2	2/1	1186 JM-TS 2000 FL HO	-68,50	32,90	40,00	26	269	-48,80	32,40	+	+
2	2/2	1186 JM-TS 2000 FL HO	68,50	32,90	40,00	26	91	48,80	32,40	+	+

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environment :

fitting			Position			aiming				lighting phases	
N° GRP.	PRG. APP.	Code	x[m]	y[m]	z[m]	L. NS°	ROT. °	PX [m]	PY [m]	1	2
2	3/1	1186 JM-TS 2000 FL HO	-68,50	33,70	40,00	41	246	-36,40	19,40	+	+
2	3/2	1186 JM-TS 2000 FL HO	68,50	33,70	40,00	41	114	36,40	19,40	+	+
2	4/1	1186 JM-TS 2000 FL HO	-68,50	34,50	40,00	47	264	-26,00	30,40	+	+
2	4/2	1186 JM-TS 2000 FL HO	68,50	34,50	40,00	47	96	26,00	30,40	+	+
2	5/1	1186 JM-TS 2000 FM HO	-68,50	35,30	40,00	61	243	-3,10	2,60	+	+
2	5/2	1186 JM-TS 2000 FM HO	68,50	35,30	40,00	61	117	3,10	2,60	+	+
2	6/1	1186 JM-TS 2000 FM HO	-68,50	36,10	40,00	63	257	9,70	18,40	+	+
2	6/2	1186 JM-TS 2000 FM HO	68,50	36,10	40,00	63	103	-9,70	18,40	+	+
2	7/1	1186 JM-TS 2000 FM HO	-68,50	36,90	40,00	64	266	14,50	30,70	+	+
2	7/2	1186 JM-TS 2000 FM HO	68,50	36,90	40,00	64	94	-14,50	30,70	+	+
2	8/1	1186 JM-TS 2000 FM HO	-68,25	32,10	40,93	55	198	-50,10	-23,60	+	-
2	8/2	1186 JM-TS 2000 FM HO	68,25	32,10	40,93	55	162	50,10	-23,60	+	-
2	9/1	1186 JM-TS 2000 FM HO	-68,25	32,90	40,93	28	232	-50,70	19,30	+	-
2	9/2	1186 JM-TS 2000 FM HO	68,25	32,90	40,93	28	128	50,70	19,30	+	-
2	10/1	1186 JM-TS 2000 FM HO	-68,25	33,70	40,93	51	215	-39,40	-8,00	+	-
2	10/2	1186 JM-TS 2000 FM HO	68,25	33,70	40,93	51	145	39,40	-8,00	+	-
2	11/1	1186 JM-TS 2000 FM HO	-68,25	34,50	40,93	55	223	-28,40	-7,90	+	+
2	11/2	1186 JM-TS 2000 FM HO	68,25	34,50	40,93	55	137	28,40	-7,90	+	+
2	12/1	1186 JM-TS 2000 FM HO	-68,25	35,30	40,93	59	230	-16,80	-7,90	+	-
2	12/2	1186 JM-TS 2000 FM HO	68,25	35,30	40,93	59	130	16,80	-7,90	+	-
2	13/1	1186 JM-TS 2000 FM HO	-68,25	36,10	40,93	51	263	-18,60	29,90	+	-
2	13/2	1186 JM-TS 2000 FM HO	68,25	36,10	40,93	51	97	18,60	29,90	+	-
2	14/1	1186 JM-TS 2000 FM HO	-68,25	36,90	40,93	61	264	5,80	28,70	+	-
2	14/2	1186 JM-TS 2000 FM HO	68,25	36,90	40,93	61	96	-5,80	28,70	+	-
2	15/1	1186 JM-TS 2000 FS HO	-68,00	32,10	41,85	57	196	-50,40	-30,60	+	-
2	15/2	1186 JM-TS 2000 FS HO	68,00	32,10	41,85	57	164	50,40	-30,60	+	-
2	16/1	1186 JM-TS 2000 FS HO	-68,00	32,90	41,85	60	208	-34,10	-32,20	+	-
2	16/2	1186 JM-TS 2000 FS HO	68,00	32,90	41,85	60	152	34,10	-32,20	+	-
2	17/1	1186 JM-TS 2000 FS HO	-68,00	33,70	41,85	64	220	-13,20	-32,00	+	-
2	17/2	1186 JM-TS 2000 FS HO	68,00	33,70	41,85	64	140	13,20	-32,00	+	-
2	18/1	1186 JM-TS 2000 FS HO	-68,00	34,50	41,85	66	225	-1,70	-32,00	+	-
2	18/2	1186 JM-TS 2000 FS HO	68,00	34,50	41,85	66	135	1,70	-32,00	+	-
2	19/1	1186 JM-TS 2000 FS HO	-68,00	35,30	41,85	66	242	13,80	-8,00	+	-
2	19/2	1186 JM-TS 2000 FS HO	68,00	35,30	41,85	66	118	-13,80	-8,00	+	-
2	20/1	1186 JM-TS 2000 FS HO	-68,00	36,10	41,85	71	255	46,30	4,60	+	-
2	20/2	1186 JM-TS 2000 FS HO	68,00	36,10	41,85	71	105	-46,30	4,60	+	-
2	21/1	1186 JM-TS 2000 FS HO	-68,00	36,90	41,85	70	267	47,30	30,40	+	-
2	21/2	1186 JM-TS 2000 FS HO	68,00	36,90	41,85	70	93	-47,30	30,40	+	-
2	22/1	1186 JM-TS 2000 FL HO	-67,75	32,10	42,78	20	269	-52,20	31,80	+	-
2	22/2	1186 JM-TS 2000 FL HO	67,75	32,10	42,78	20	91	52,20	31,80	+	-
2	23/1	1186 JM-TS 2000 FM HO	-67,75	32,90	42,78	36	265	-36,60	30,00	+	-
2	23/2	1186 JM-TS 2000 FM HO	67,75	32,90	42,78	36	95	36,60	30,00	+	-
2	24/1	1186 JM-TS 2000 FS HO	-67,76	33,70	42,78	62	214	-23,50	-32,20	+	-
2	24/2	1186 JM-TS 2000 FS HO	67,76	33,70	42,78	62	146	23,50	-32,20	+	-
2	25/1	1186 JM-TS 2000 FS HO	-67,76	34,50	42,78	67	230	10,40	-32,20	+	-
2	25/2	1186 JM-TS 2000 FS HO	67,76	34,50	42,78	67	130	-10,40	-32,20	+	-



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environment :

fitting			Position			aiming				lighting phases	
N° GRP.	PRG. APP.	Code	x[m]	y[m]	z[m]	L. NS°	ROT. °	PX [m]	PY [m]	1	2
2	26/1	1186 JM-TS 2000 FM HO	-67,75	35,30	42,78	63	255	12,40	13,20	+	-
2	26/2	1186 JM-TS 2000 FM HO	67,75	35,30	42,78	63	105	-12,40	13,20	+	-
2	27/1	1186 JM-TS 2000 FS HO	-67,75	36,10	42,78	70	242	35,70	-18,60	+	-
2	27/2	1186 JM-TS 2000 FS HO	67,75	36,10	42,78	70	118	-35,70	-18,60	+	-
2	28/1	1186 JM-TS 2000 FS HO	-67,75	36,90	42,78	70	259	45,20	14,00	+	-
2	28/2	1186 JM-TS 2000 FS HO	67,75	36,90	42,78	70	101	-45,20	14,00	+	-
2	29/1	1186 JM-TS 2000 FS HO	-67,51	32,10	43,71	57	195	-50,60	-33,10	+	-
2	29/2	1186 JM-TS 2000 FS HO	67,51	32,10	43,71	57	165	50,60	-33,10	+	-
2	30/1	1186 JM-TS 2000 FM HO	-67,51	32,90	43,71	46	201	-50,70	-9,80	+	-
2	30/2	1186 JM-TS 2000 FM HO	67,51	32,90	43,71	46	159	50,70	-9,80	+	-
2	31/1	1186 JM-TS 2000 FM HO	-67,51	33,70	43,71	55	227	-22,60	-8,00	+	-
2	31/2	1186 JM-TS 2000 FM HO	67,51	33,70	43,71	55	133	22,60	-8,00	+	-
2	32/1	1186 JM-TS 2000 FM HO	-67,51	34,50	43,71	63	252	13,20	7,90	+	-
2	32/2	1186 JM-TS 2000 FM HO	67,51	34,50	43,71	63	108	-13,20	7,90	+	-
2	33/1	1186 JM-TS 2000 FS HO	-67,51	35,30	43,71	69	254	44,80	3,50	+	-
2	33/2	1186 JM-TS 2000 FS HO	67,51	35,30	43,71	69	106	-44,80	3,50	+	-
2	34/1	1186 JM-TS 2000 FS HO	-67,51	36,10	43,71	69	262	45,90	20,20	+	-
2	34/2	1186 JM-TS 2000 FS HO	67,51	36,10	43,71	69	98	-45,90	20,20	+	-
2	35/1	1186 JM-TS 2000 FS HO	-67,51	36,90	43,71	69	267	48,40	30,70	+	-
2	35/2	1186 JM-TS 2000 FS HO	67,51	36,90	43,71	69	93	-48,40	30,70	+	-
2	36/1	1186 JM-TS 2000 FM HO	-67,26	32,10	44,64	45	206	-47,70	-8,70	+	-
2	36/2	1186 JM-TS 2000 FM HO	67,26	32,10	44,64	45	154	47,70	-8,70	+	-
2	37/1	1186 JM-TS 2000 FM HO	-67,26	32,90	44,64	60	237	-2,70	-8,40	+	-
2	37/2	1186 JM-TS 2000 FM HO	67,26	32,90	44,64	60	123	2,70	-8,40	+	-
2	38/1	1186 JM-TS 2000 FM HO	-67,26	33,70	44,64	50	242	-20,60	8,60	+	-
2	38/2	1186 JM-TS 2000 FM HO	67,26	33,70	44,64	50	118	20,60	8,60	+	-
2	39/1	1186 JM-TS 2000 FM HO	-67,26	34,50	44,64	59	267	5,70	30,40	+	-
2	39/2	1186 JM-TS 2000 FM HO	67,26	34,50	44,64	59	93	-5,70	30,40	+	-
2	40/1	1186 JM-TS 2000 FM HO	-67,26	35,30	44,64	66	244	23,80	-10,00	+	-
2	40/2	1186 JM-TS 2000 FM HO	67,26	35,30	44,64	66	116	-23,80	-10,00	+	-
2	41/1	1186 JM-TS 2000 FM HO	-67,26	36,10	44,64	60	249	5,90	7,40	+	-
2	41/2	1186 JM-TS 2000 FM HO	67,26	36,10	44,64	60	111	-5,90	7,40	+	-
2	42/1	1186 JM-TS 2000 FM HO	-67,26	36,90	44,64	68	266	40,30	29,30	+	-
2	42/2	1186 JM-TS 2000 FM HO	67,26	36,90	44,64	68	94	-40,30	29,30	+	-
2	43/1	1186 JM-TS 2000 FS HO	-67,05	32,10	45,41	57	205	-36,90	-32,00	+	-
2	43/2	1186 JM-TS 2000 FS HO	67,05	32,10	45,41	57	155	36,90	-32,00	+	-
2	44/1	1186 JM-TS 2000 FS HO	-67,05	32,90	45,41	61	217	-18,60	-31,80	+	-
2	44/2	1186 JM-TS 2000 FS HO	67,05	32,90	45,41	61	143	18,60	-31,80	+	-
2	45/1	1186 JM-TS 2000 FS HO	-67,05	33,70	45,41	63	221	-9,70	-32,20	+	-
2	45/2	1186 JM-TS 2000 FS HO	67,05	33,70	45,41	63	139	9,70	-32,20	+	-
2	46/1	1186 JM-TS 2000 FS HO	-67,05	34,50	45,41	68	234	22,40	-31,30	+	-
2	46/2	1186 JM-TS 2000 FS HO	67,05	34,50	45,41	68	126	-22,40	-31,30	+	-
2	47/1	1186 JM-TS 2000 FS HO	-67,05	35,30	45,41	68	239	30,30	-24,30	+	-
2	47/2	1186 JM-TS 2000 FS HO	67,05	35,30	45,41	68	121	-30,30	-24,30	+	-
2	48/1	1186 JM-TS 2000 FS HO	-67,05	36,10	45,41	69	251	42,70	-2,10	+	-
2	48/2	1186 JM-TS 2000 FS HO	67,05	36,10	45,41	69	109	-42,70	-2,10	+	-

**Project** : **FOOTBALL STADIUM KARVINA**  
**Code** : **XFM8259V**  
**Customer** : **EXX**  
**Customer code** :  
**Date** : **21/11/2014**

### Dettaglio apparecchi

environment :

fitting			Position			aiming				lighting phases	
N° GRP.	PRG. APP.	Code	x[m]	y[m]	z[m]	L. NS°	ROT. °	PX [m]	PY [m]	1	2
2	49/1	1186 JM-TS 2000 FS HO	-67,05	36,90	45,41	69	264	50,70	25,40	+	-
2	49/2	1186 JM-TS 2000 FS HO	67,05	36,90	45,41	69	96	-50,70	25,40	+	-
2	50/1	1186 JM-TS 2000 FM HO	-68,14	33,70	41,35	44	209	-48,90	-0,80	+	-
2	50/2	1186 JM-TS 2000 FM HO	68,14	33,70	41,35	44	151	48,90	-0,80	+	-
2	51/1	1186 JM-TS 2000 FS HO	-68,14	35,30	41,35	67	236	13,80	-20,00	+	-
2	51/2	1186 JM-TS 2000 FS HO	68,14	35,30	41,35	67	124	-13,80	-20,00	+	-
3	1/1	1186 JM-TS 2000 XL HO	-3,00	41,00	14,00	63	115	-27,40	29,50	+	-
3	1/2	1186 JM-TS 2000 XL HO	3,00	41,00	14,00	63	245	27,40	29,50	+	-
3	2/1	1186 JM-TS 2000 XL HO	-6,00	41,00	14,00	57	233	11,30	28,00	+	-
3	2/2	1186 JM-TS 2000 XL HO	6,00	41,00	14,00	57	127	-11,30	28,00	+	-
3	3/1	1186 JM-TS 2000 XL HO	-9,00	41,00	14,00	55	144	-21,00	24,60	+	-
3	3/2	1186 JM-TS 2000 XL HO	9,00	41,00	14,00	55	216	21,00	24,60	+	-
3	4/1	1186 JM-TS 2000 XL HO	-12,00	41,00	14,00	65	227	10,00	20,50	+	-
3	4/2	1186 JM-TS 2000 XL HO	12,00	41,00	14,00	65	133	-10,00	20,50	+	-
3	5/1	1186 JM-TS 2000 XL HO	-15,00	41,00	14,00	67	129	-41,00	19,90	+	-
3	5/2	1186 JM-TS 2000 XL HO	15,00	41,00	14,00	67	231	41,00	19,90	+	-
3	6/1	1186 JM-TS 2000 XL HO	-18,00	41,00	14,00	69	220	5,70	12,90	+	-
3	6/2	1186 JM-TS 2000 XL HO	18,00	41,00	14,00	69	140	-5,70	12,90	+	-
3	7/1	1186 JM-TS 2000 XL HO	-21,00	41,00	14,00	56	127	-37,50	28,50	+	-
3	7/2	1186 JM-TS 2000 XL HO	21,00	41,00	14,00	56	233	37,50	28,50	+	-
3	8/1	1186 JM-TS 2000 XL HO	-24,00	41,00	14,00	63	115	-49,20	29,50	+	-
3	8/2	1186 JM-TS 2000 XL HO	24,00	41,00	14,00	63	245	49,20	29,50	+	-
3	9/1	1186 JM-TS 2000 FL HO	-27,00	41,00	14,00	62	111	-51,95	31,20	+	-
3	9/2	1186 JM-TS 2000 FL HO	27,00	41,00	14,00	62	249	51,95	31,20	+	-

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

**summary page**

environment : **FOOTBALL**  
 phase : **UEFA Ev=1400lux**

**Project data:**

Area position [m] : x = -80,0 y = -70,0 z = 0,0  
 Area dimensions [m] : x = 160,0 y = 140,0  
 Total installed power : 416000

**total fittings switched on 208 with 208 lamps(total flux = 45760 [klm] )**

N°	fitting	N°	lamp	flux	power
96	1186 JM-TS 2000 FM HO	96	MHN 2000 SB - HO	21120,00	192000
18	1186 JM-TS 2000 FL HO	18	MHN 2000 SB - HO	3960,00	36000
78	1186 JM-TS 2000 FS HO	78	MHN 2000 SB - HO	17160,00	156000
16	1186 JM-TS 2000 XL HO	16	MHN 2000 SB - HO	3520,00	32000

**Project** : FOOTBALL STADIUM KARVINA  
**Code** : XFM8259V  
**Customer** : EXX  
**Customer code** :  
**Date** : 21/11/2014

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 1/1 - rectangular platform : TOWER H=40mt**

Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
-63,90	-47,20	40,00	15°	325°	4,8	4,8

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
1	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,41	0,00	40,00	56	343	-48,40	10,50	100%
2	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	-1,60	0,00	40,00	31	314	-47,90	-29,70	100%
3	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	-0,80	0,00	40,00	44	314	-36,40	-19,40	100%
4	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	0,00	0,00	40,00	46	294	-26,00	-30,40	100%
5	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	0,00	40,00	62	307	-3,10	-2,60	100%
6	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	0,00	40,00	63	292	10,00	-18,20	100%
7	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	0,00	40,00	63	283	14,00	-30,60	100%
8	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	0,96	40,93	60	347	-50,10	23,60	100%
9	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	0,96	40,93	37	332	-50,70	-19,30	100%
10	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	0,96	40,93	56	335	-39,40	8,00	100%
11	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	0,96	40,93	58	327	-28,40	7,90	100%
12	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	0,96	40,93	60	320	-16,80	7,90	100%
13	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	0,96	40,93	49	292	-18,60	-29,90	100%
14	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	0,96	40,93	60	285	5,90	-30,60	100%
15	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	1,92	41,85	62	349	-50,40	30,60	100%
16	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	1,92	41,85	63	338	-34,80	30,00	100%
17	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	1,92	41,85	65	326	-13,70	29,20	100%
18	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	1,92	41,85	67	321	-2,40	28,80	100%
19	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	1,92	41,85	66	306	13,80	8,00	100%
20	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	1,92	41,85	70	292	46,30	-4,60	100%
21	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	1,92	41,85	69	279	47,30	-30,40	100%
22	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	-2,40	2,88	42,78	29	316	-48,90	-28,10	100%
23	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	2,88	42,78	37	299	-36,60	-30,00	100%
24	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	2,88	42,78	63	333	-25,50	29,30	100%
25	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	2,88	42,78	68	315	12,90	28,90	100%
26	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	2,88	42,78	55	286	-5,00	-30,40	100%
27	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	2,88	42,78	70	304	35,70	18,60	100%
28	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	2,88	42,78	69	285	45,70	-18,90	100%
29	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	3,84	43,71	61	349	-50,60	33,10	100%
30	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	3,84	43,71	53	346	-50,70	9,80	100%
31	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	3,84	43,71	57	323	-22,70	8,40	100%
32	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	3,84	43,71	63	297	13,20	-7,90	100%
33	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	3,84	43,71	69	292	44,80	-3,50	100%
34	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	3,84	43,71	69	284	45,90	-20,20	100%
35	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	3,84	43,71	69	279	48,40	-30,70	100%

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 1/1 - rectangular platform : TOWER H=40mt**

Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
-63,90	-47,20	40,00	15°	325°	4,8	4,8

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
36	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	4,80	44,64	52	342	-47,70	8,70	100%
37	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	4,80	44,64	61	311	-2,70	8,40	100%
38	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	4,80	44,64	44	305	-28,60	-20,70	100%
39	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	4,80	44,64	58	283	5,70	-30,40	100%
40	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	4,80	44,64	66	297	26,40	-1,70	100%
41	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	4,80	44,64	68	288	44,30	-12,10	100%
42	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	4,80	44,64	64	292	22,90	-12,80	100%
43	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	1,40	41,35	48	341	-48,90	-2,80	100%
44	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	1,40	41,35	68	311	14,20	19,78	100%

**Project** : FOOTBALL STADIUM KARVINA  
**Code** : XFM8259V  
**Customer** : EXX  
**Customer code** :  
**Date** : 21/11/2014

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 1/2 - rectangular platform : TOWER H=40mt**

Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
63,90	-47,20	40,00	15°	35°	4,8	4,8

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
1	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,41	0,00	40,00	56	17	48,40	10,50	100%
2	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	1,60	0,00	40,00	31	46	47,90	-29,70	100%
3	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	0,80	0,00	40,00	44	46	36,40	-19,40	100%
4	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	0,00	0,00	40,00	46	66	26,00	-30,40	100%
5	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	0,00	40,00	62	53	3,10	-2,60	100%
6	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	0,00	40,00	63	68	-10,00	-18,20	100%
7	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	0,00	40,00	63	77	-14,00	-30,60	100%
8	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	0,96	40,93	60	13	50,10	23,60	100%
9	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	0,96	40,93	37	28	50,70	-19,30	100%
10	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	0,96	40,93	56	25	39,40	8,00	100%
11	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	0,96	40,93	58	33	28,40	7,90	100%
12	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	0,96	40,93	60	40	16,80	7,90	100%
13	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	0,96	40,93	49	68	18,60	-29,90	100%
14	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	0,96	40,93	60	75	-5,90	-30,60	100%
15	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	1,92	41,85	62	11	50,40	30,60	100%
16	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	1,92	41,85	63	22	34,80	30,00	100%
17	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	1,92	41,85	65	34	13,70	29,20	100%
18	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	1,92	41,85	67	39	2,40	28,80	100%
19	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	1,92	41,85	66	54	-13,80	8,00	100%
20	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	1,92	41,85	70	68	-46,30	-4,60	100%
21	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	1,92	41,85	69	81	-47,30	-30,40	100%
22	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	2,40	2,88	42,78	29	44	48,90	-28,10	100%
23	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	2,88	42,78	37	61	36,60	-30,00	100%
24	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	2,88	42,78	63	27	25,50	29,30	100%
25	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	2,88	42,78	68	45	-12,90	28,90	100%
26	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	2,88	42,78	55	74	5,00	-30,40	100%
27	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	2,88	42,78	70	56	-35,70	18,60	100%
28	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	2,88	42,78	69	75	-45,70	-18,90	100%
29	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	3,84	43,71	61	11	50,60	33,10	100%
30	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	3,84	43,71	53	14	50,70	9,80	100%
31	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	3,84	43,71	57	37	22,70	8,40	100%
32	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	3,84	43,71	63	63	-13,20	-7,90	100%
33	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	3,84	43,71	69	68	-44,80	-3,50	100%
34	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	3,84	43,71	69	76	-45,90	-20,20	100%
35	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	3,84	43,71	69	81	-48,40	-30,70	100%

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 1/2 - rectangular platform : TOWER H=40mt**

Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
63,90	-47,20	40,00	15°	35°	4,8	4,8

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
36	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	4,80	44,64	52	18	47,70	8,70	100%
37	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	4,80	44,64	61	49	2,70	8,40	100%
38	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	4,80	44,64	44	55	28,60	-20,70	100%
39	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	4,80	44,64	58	77	-5,70	-30,40	100%
40	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	4,80	44,64	66	63	-26,40	-1,70	100%
41	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	4,80	44,64	68	72	-44,30	-12,10	100%
42	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	4,80	44,64	64	68	-22,90	-12,80	100%
43	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	1,40	41,35	48	19	48,90	-2,80	100%
44	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	1,40	41,35	68	49	-14,20	19,78	100%



**Project** : FOOTBALL STADIUM KARVINA  
**Code** : XFM8259V  
**Customer** : EXX  
**Customer code** :  
**Date** : 21/11/2014

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 2/1 - rectangular platform : TOWER H=40mt**

Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
-68,50	34,50	40,00	15°	270°	4,8	5,6

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
1	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,41	0,00	40,00	49	207	-47,50	-8,70	100%
2	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	1,60	0,00	40,00	26	269	-48,80	32,40	100%
3	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	0,80	0,00	40,00	41	246	-36,40	19,40	100%
4	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	0,00	0,00	40,00	47	264	-26,00	30,40	100%
5	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	0,00	40,00	61	243	-3,10	2,60	100%
6	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	0,00	40,00	63	257	9,70	18,40	100%
7	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	0,00	40,00	64	266	14,50	30,70	100%
8	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	0,96	40,93	55	198	-50,10	-23,60	100%
9	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	0,96	40,93	28	232	-50,70	19,30	100%
10	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	0,96	40,93	51	215	-39,40	-8,00	100%
11	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	0,96	40,93	55	223	-28,40	-7,90	100%
12	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	0,96	40,93	59	230	-16,80	-7,90	100%
13	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	0,96	40,93	51	263	-18,60	29,90	100%
14	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	0,96	40,93	61	264	5,80	28,70	100%
15	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	1,92	41,85	57	196	-50,40	-30,60	100%
16	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	1,92	41,85	60	208	-34,10	-32,20	100%
17	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	1,92	41,85	64	220	-13,20	-32,00	100%
18	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	1,92	41,85	66	225	-1,70	-32,00	100%
19	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	1,92	41,85	66	242	13,80	-8,00	100%
20	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	1,92	41,85	71	255	46,30	4,60	100%
21	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	1,92	41,85	70	267	47,30	30,40	100%
22	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	2,40	2,88	42,78	20	269	-52,20	31,80	100%
23	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	2,88	42,78	36	265	-36,60	30,00	100%
24	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	2,88	42,78	62	214	-23,50	-32,20	100%
25	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	2,88	42,78	67	230	10,40	-32,20	100%
26	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	2,88	42,78	63	255	12,40	13,20	100%
27	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	2,88	42,78	70	242	35,70	-18,60	100%
28	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	2,88	42,78	70	259	45,20	14,00	100%
29	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	3,84	43,71	57	195	-50,60	-33,10	100%
30	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	3,84	43,71	46	201	-50,70	-9,80	100%
31	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	3,84	43,71	55	227	-22,60	-8,00	100%
32	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	3,84	43,71	63	252	13,20	7,90	100%
33	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	3,84	43,71	69	254	44,80	3,50	100%
34	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	3,84	43,71	69	262	45,90	20,20	100%
35	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	3,84	43,71	69	267	48,40	30,70	100%

**Project** : FOOTBALL STADIUM KARVINA  
**Code** : XFM8259V  
**Customer** : EXX  
**Customer code** :  
**Date** : 21/11/2014

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 2/1 - rectangular platform : TOWER H=40mt**

Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
-68,50	34,50	40,00	15°	270°	4,8	5,6

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
36	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	4,80	44,64	45	206	-47,70	-8,70	100%
37	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	4,80	44,64	60	237	-2,70	-8,40	100%
38	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	4,80	44,64	50	242	-20,60	8,60	100%
39	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	4,80	44,64	59	267	5,70	30,40	100%
40	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	4,80	44,64	66	244	23,80	-10,00	100%
41	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	4,80	44,64	60	249	5,90	7,40	100%
42	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	4,80	44,64	68	266	40,30	29,30	100%
43	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	5,60	45,41	57	205	-36,90	-32,00	100%
44	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	5,60	45,41	61	217	-18,60	-31,80	100%
45	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	5,60	45,41	63	221	-9,70	-32,20	100%
46	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	5,60	45,41	68	234	22,40	-31,30	100%
47	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	5,60	45,41	68	239	30,30	-24,30	100%
48	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	5,60	45,41	69	251	42,70	-2,10	100%
49	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	5,60	45,41	69	264	50,70	25,40	100%
50	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	1,40	41,35	44	209	-48,90	-0,80	100%
51	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	1,40	41,35	67	236	13,80	-20,00	100%

**Project** : FOOTBALL STADIUM KARVINA  
**Code** : XFM8259V  
**Customer** : EXX  
**Customer code** :  
**Date** : 21/11/2014

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 2/2 - rectangular platform : TOWER H=40mt**

Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
68,50	34,50	40,00	15°	90°	4,8	5,6

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
1	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,41	0,00	40,00	49	153	47,50	-8,70	100%
2	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	-1,60	0,00	40,00	26	91	48,80	32,40	100%
3	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	-0,80	0,00	40,00	41	114	36,40	19,40	100%
4	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	0,00	0,00	40,00	47	96	26,00	30,40	100%
5	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	0,00	40,00	61	117	3,10	2,60	100%
6	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	0,00	40,00	63	103	-9,70	18,40	100%
7	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	0,00	40,00	64	94	-14,50	30,70	100%
8	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	0,96	40,93	55	162	50,10	-23,60	100%
9	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	0,96	40,93	28	128	50,70	19,30	100%
10	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	0,96	40,93	51	145	39,40	-8,00	100%
11	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	0,96	40,93	55	137	28,40	-7,90	100%
12	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	0,96	40,93	59	130	16,80	-7,90	100%
13	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	0,96	40,93	51	97	18,60	29,90	100%
14	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	0,96	40,93	61	96	-5,80	28,70	100%
15	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	1,92	41,85	57	164	50,40	-30,60	100%
16	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	1,92	41,85	60	152	34,10	-32,20	100%
17	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	1,92	41,85	64	140	13,20	-32,00	100%
18	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	1,92	41,85	66	135	1,70	-32,00	100%
19	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	1,92	41,85	66	118	-13,80	-8,00	100%
20	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	1,92	41,85	71	105	-46,30	4,60	100%
21	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	1,92	41,85	70	93	-47,30	30,40	100%
22	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	-2,40	2,88	42,78	20	91	52,20	31,80	100%
23	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	-1,60	2,88	42,78	36	95	36,60	30,00	100%
24	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	2,88	42,78	62	146	23,50	-32,20	100%
25	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	2,88	42,78	67	130	-10,40	-32,20	100%
26	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	2,88	42,78	63	105	-12,40	13,20	100%
27	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	2,88	42,78	70	118	-35,70	-18,60	100%
28	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	2,88	42,78	70	101	-45,20	14,00	100%
29	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	3,84	43,71	57	165	50,60	-33,10	100%
30	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	3,84	43,71	46	159	50,70	-9,80	100%
31	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	3,84	43,71	55	133	22,60	-8,00	100%
32	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	3,84	43,71	63	108	-13,20	7,90	100%
33	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	3,84	43,71	69	106	-44,80	3,50	100%
34	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	3,84	43,71	69	98	-45,90	20,20	100%
35	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	3,84	43,71	69	93	-48,40	30,70	100%

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 2/2 - rectangular platform : TOWER H=40mt**

Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
68,50	34,50	40,00	15°	90°	4,8	5,6

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
36	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-2,40	4,80	44,64	45	154	47,70	-8,70	100%
37	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-1,60	4,80	44,64	60	123	2,70	-8,40	100%
38	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	4,80	44,64	50	118	20,60	8,60	100%
39	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,00	4,80	44,64	59	93	-5,70	30,40	100%
40	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	0,80	4,80	44,64	66	116	-23,80	-10,00	100%
41	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	1,60	4,80	44,64	60	111	-5,90	7,40	100%
42	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	2,40	4,80	44,64	68	94	-40,30	29,30	100%
43	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-2,40	5,60	45,41	57	155	36,90	-32,00	100%
44	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-1,60	5,60	45,41	61	143	18,60	-31,80	100%
45	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	-0,80	5,60	45,41	63	139	9,70	-32,20	100%
46	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,00	5,60	45,41	68	126	-22,40	-31,30	100%
47	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	5,60	45,41	68	121	-30,30	-24,30	100%
48	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	1,60	5,60	45,41	69	109	-42,70	-2,10	100%
49	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	2,40	5,60	45,41	69	96	-50,70	25,40	100%
50	1186 JM-TS 2000 FM HO	MHN 2000 SB - HO	220000	-0,80	1,40	41,35	44	151	48,90	-0,80	100%
51	1186 JM-TS 2000 FS HO	MHN 2000 SB - HO	220000	0,80	1,40	41,35	67	124	-13,80	-20,00	100%

**Project** : FOOTBALL STADIUM KARVINA  
**Code** : XFM8259V  
**Customer** : EXX  
**Customer code** :  
**Date** : 21/11/2014

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 3/1 - continuous line : GROUP SEATS h=14mt**

POS. X first [m]	POS. Y first [m]	Pos. Z [m]	POS. X last [m]	POS. Y last [m]	rotation
-3,00	41,00	14,00	-27,00	41,00	180°

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
1	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	0,00	0,00	14,00	63	115	-27,40	29,50	100%
2	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	3,00	0,00	14,00	57	233	11,30	28,00	100%
3	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	6,00	0,00	14,00	55	144	-21,00	24,60	100%
4	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	9,00	0,00	14,00	65	227	10,00	20,50	100%
5	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	12,00	0,00	14,00	67	129	-41,00	19,90	100%
6	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	15,00	0,00	14,00	69	220	5,70	12,90	100%
7	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	18,00	0,00	14,00	56	127	-37,50	28,50	100%
8	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	21,00	0,00	14,00	63	115	-49,20	29,50	100%
9	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	24,00	0,00	14,00	62	111	-51,95	31,20	100%

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

### Fitting group data

**environment:** FOOTBALL  
**phase** : UEFA Ev=1400lux

**group N° 3/2 - continuous line : GROUP SEATS h=14mt**

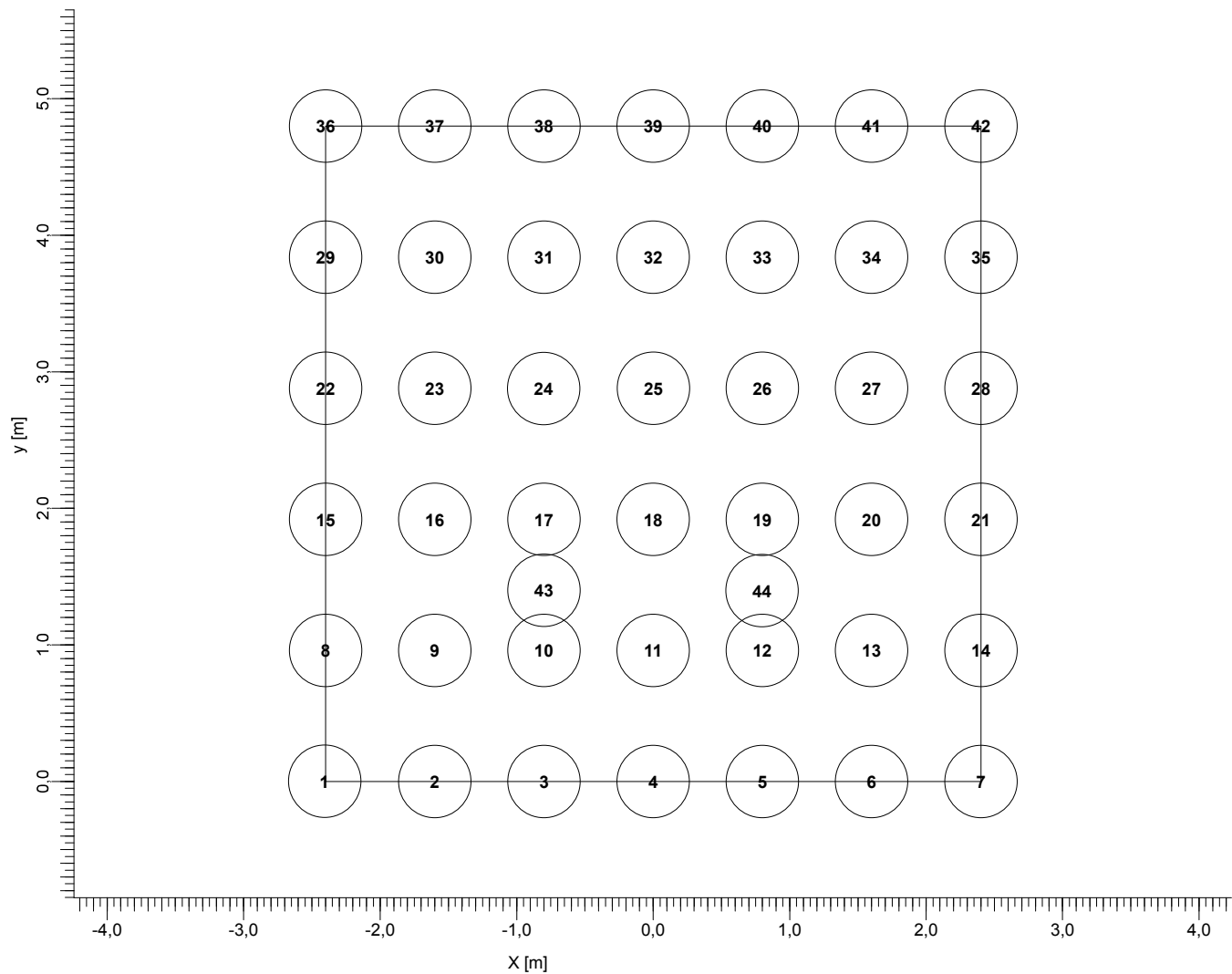
POS. X first [m]	POS. Y first [m]	Pos. Z [m]	POS. X last [m]	POS. Y last [m]	rotation
27,00	41,00	14,00	3,00	41,00	180°

N°	fitting	lamp	flux	rX[m]	rY[m]	z[m]	I. NS°	ROT. °	PX [m]	PY [m]	DIMMER
1	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	24,00	0,00	14,00	63	245	27,40	29,50	100%
2	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	21,00	0,00	14,00	57	127	-11,30	28,00	100%
3	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	18,00	0,00	14,00	55	216	21,00	24,60	100%
4	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	15,00	0,00	14,00	65	133	-10,00	20,50	100%
5	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	12,00	0,00	14,00	67	231	41,00	19,90	100%
6	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	9,00	0,00	14,00	69	140	-5,70	12,90	100%
7	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	6,00	0,00	14,00	56	233	37,50	28,50	100%
8	1186 JM-TS 2000 XL HO	MHN 2000 SB - HO	220000	3,00	0,00	14,00	63	245	49,20	29,50	100%
9	1186 JM-TS 2000 FL HO	MHN 2000 SB - HO	220000	0,00	0,00	14,00	62	249	51,95	31,20	100%

Project	: FOOTBALL STADIUM KARVINA
Code	: XFM8259V
Customer	: EXX
Customer code	:
Date	: 21/11/2014

LAYOUT group fitting

environment: FOOTBALL						
phase : UEFA Ev=1400lux						
group N° 1/1 - rectangular platform : TOWER H=40mt						
Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
-63,90	-47,20	40,00	15°	325°	4,8	4,8





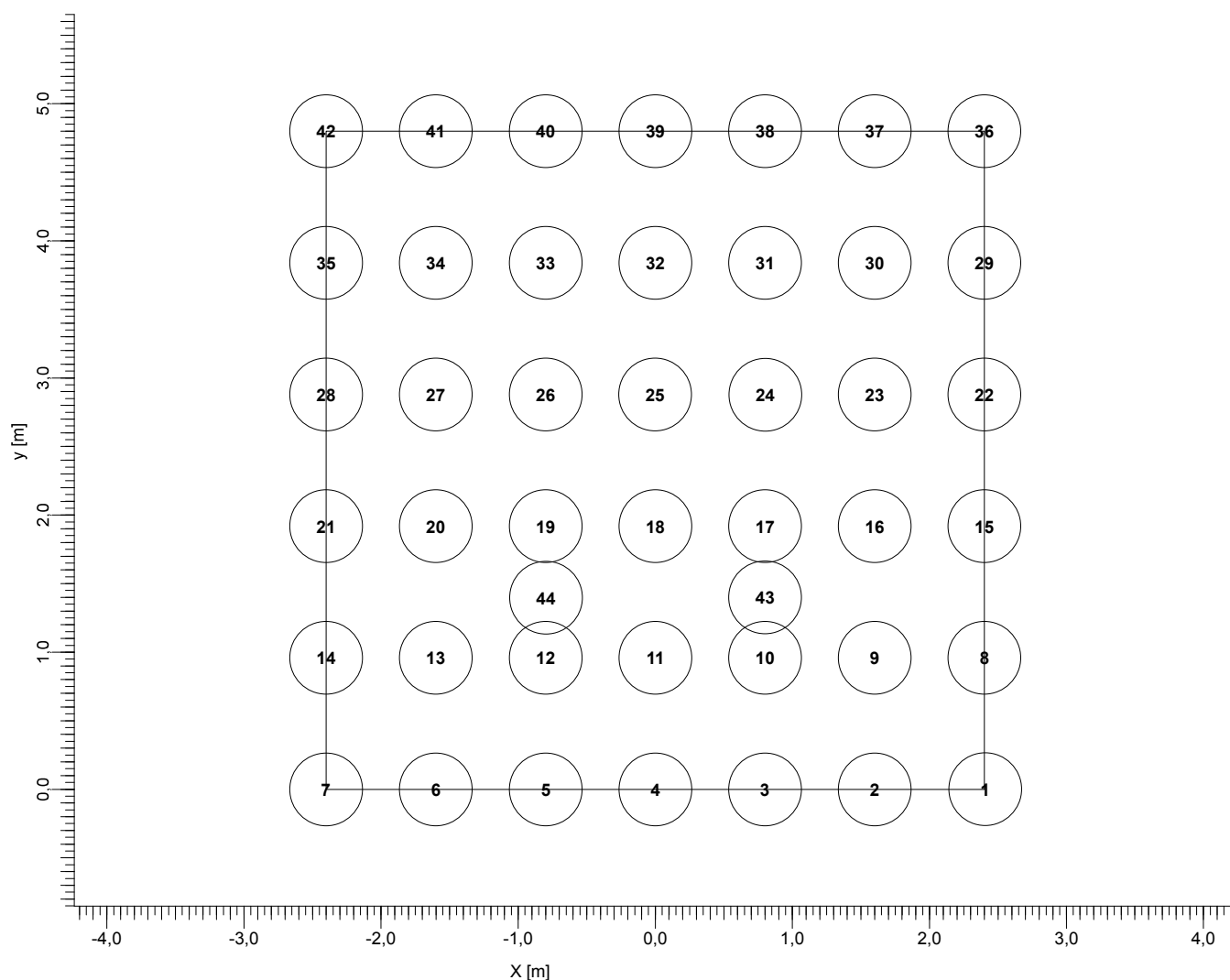
Project : **FOOTBALL STADIUM KARVINA**  
 Code : **XFM8259V**  
 Customer : **EXX**  
 Customer code :  
 Date : **21/11/2014**

### LAYOUT group fitting

environment: FOOTBALL  
 phase : UEFA Ev=1400lux

group N° 1/2 - rectangular platform : TOWER H=40mt

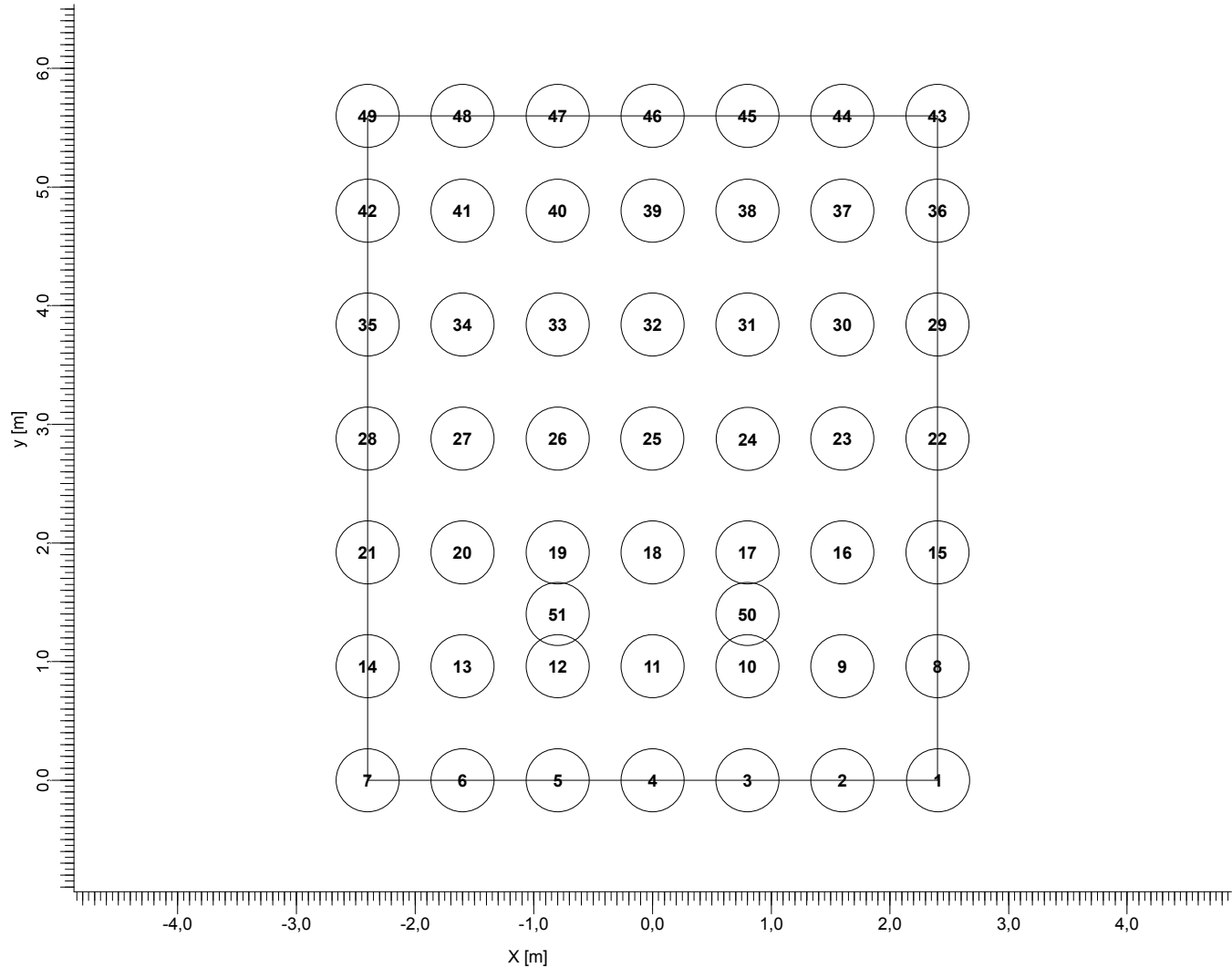
Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
63,90	-47,20	40,00	15°	35°	4,8	4,8



Project	: FOOTBALL STADIUM KARVINA
Code	: XFM8259V
Customer	: EXX
Customer code	:
Date	: 21/11/2014

LAYOUT group fitting

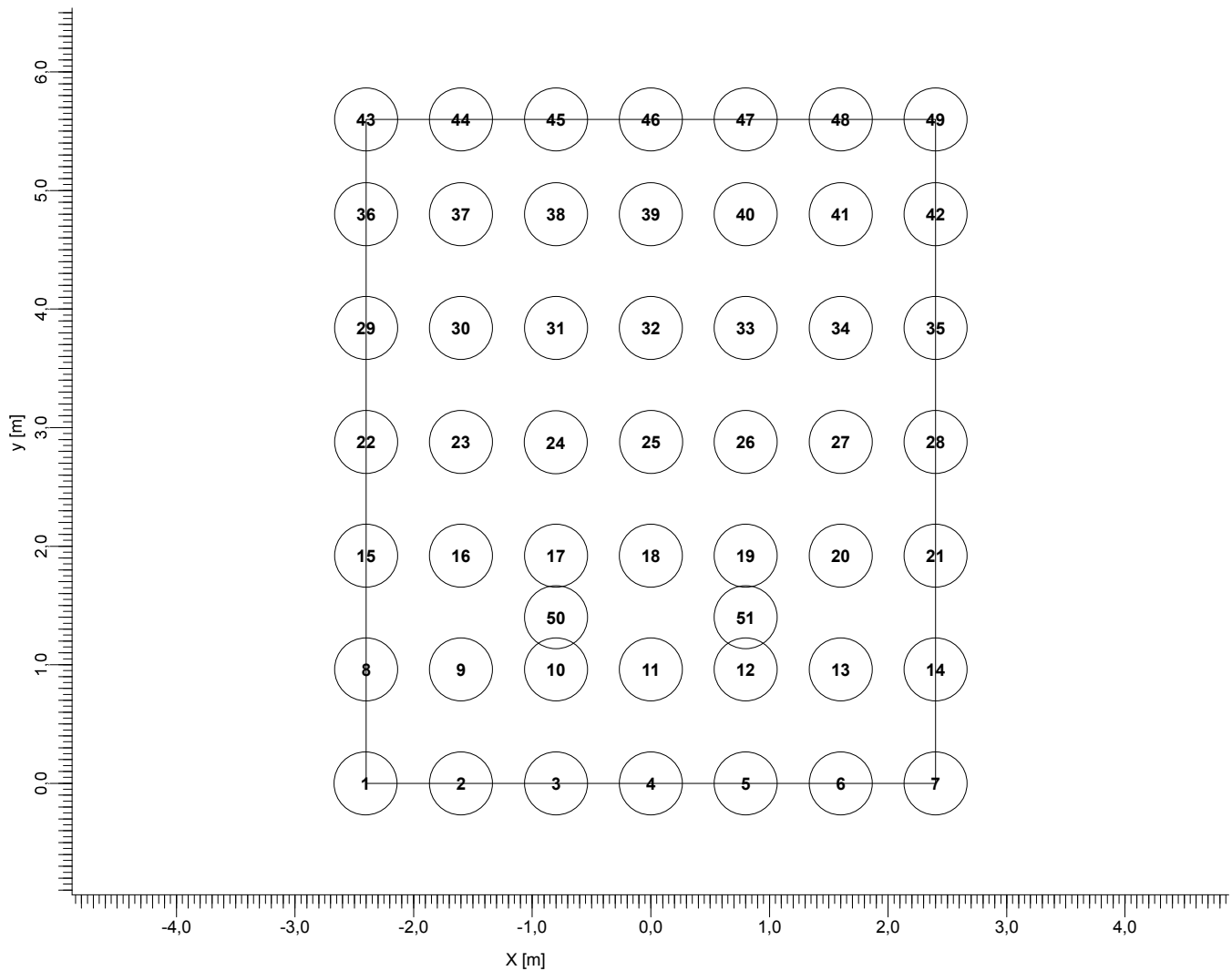
environment: FOOTBALL						
phase : UEFA Ev=1400lux						
group N° 2/1 - rectangular platform : TOWER H=40mt						
Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
-68,50	34,50	40,00	15°	270°	4,8	5,6



## LAYOUT group fitting

**group N° 2/2 - rectangular platform : TOWER H=40mt**

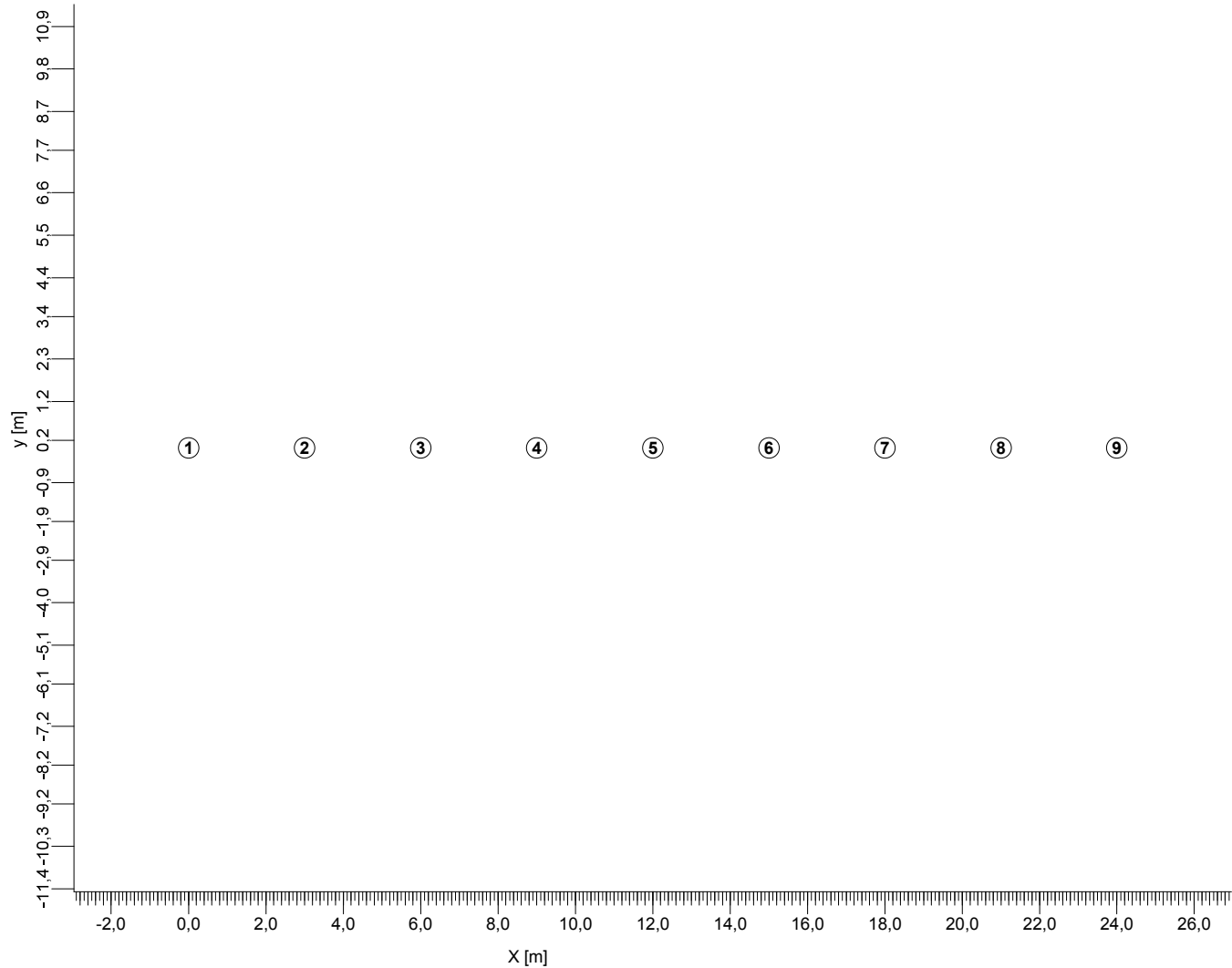
Pos. X [m]	Pos. Y [m]	Pos. Z [m]	INCL. NS	rotation	DIM. X [m]	DIM. Y [m]
68,50	34,50	40,00	15°	90°	4,8	5,6



Project	: FOOTBALL STADIUM KARVINA
Code	: XFM8259V
Customer	: EXX
Customer code	:
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LAYOUT group fitting

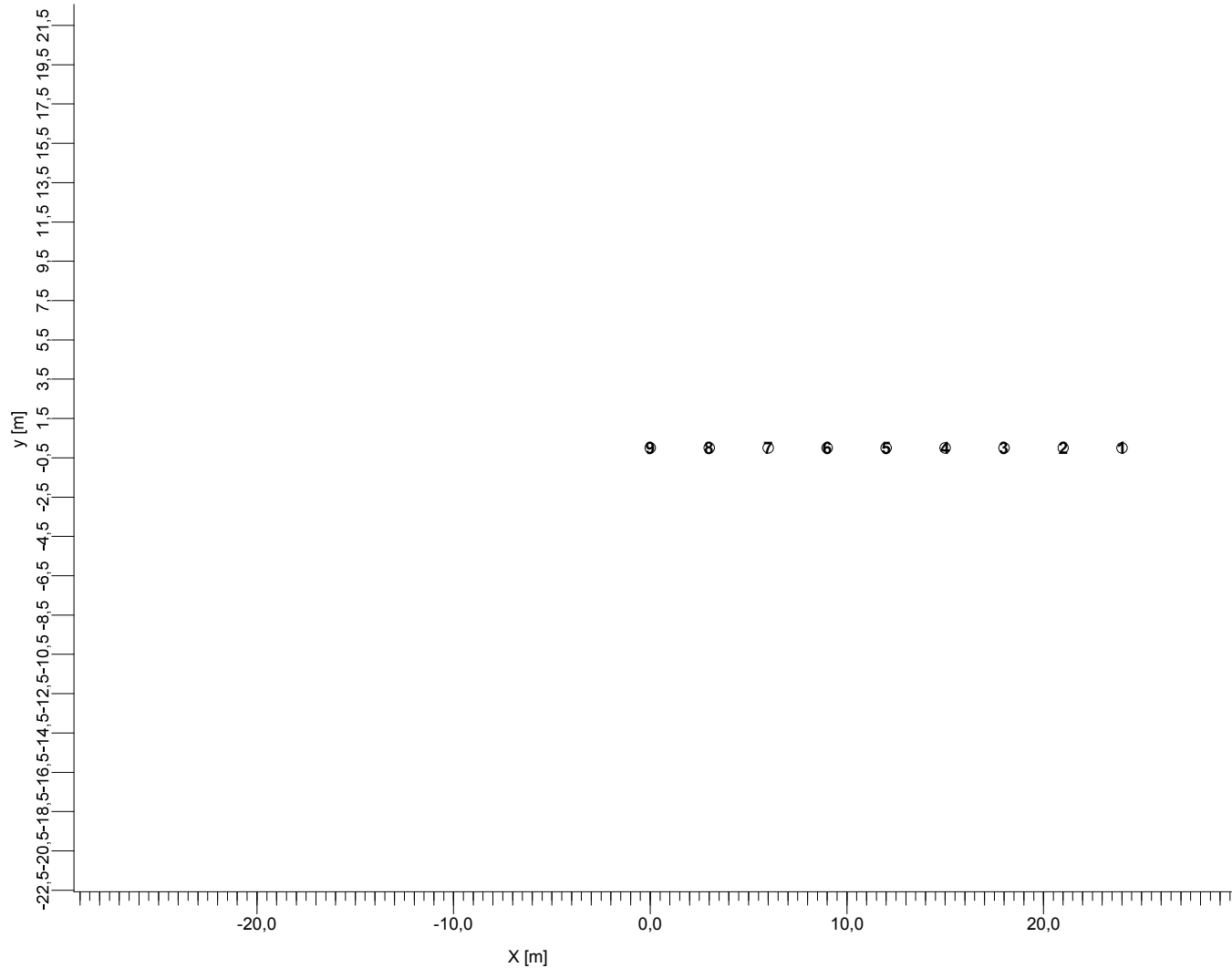
environment: FOOTBALL					
phase : UEFA Ev=1400lux					
group N° 3/1 - continuous line : GROUP SEATS h=14mt					
POS. X first [m]	POS. Y first [m]	Pos. Z [m]	POS. X last [m]	POS. Y last [m]	rotation
-3,00	41,00	14,00	-27,00	41,00	180°



Project	: FOOTBALL STADIUM KARVINA
Code	: XFM8259V
Customer	: EXX
Customer code	:
Date	: 21/11/2014

LAYOUT group fitting

environment: FOOTBALL					
phase : UEFA Ev=1400lux					
group N° 3/2 - continuous line : GROUP SEATS h=14mt					
POS. X first [m]	POS. Y first [m]	Pos. Z [m]	POS. X last [m]	POS. Y last [m]	rotation
27,00	41,00	14,00	3,00	41,00	180°



## Aiming fittings

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

### Table horizontal illuminance

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **MAIN camera**  
**aiming** : **phase**

**AVG.** : 2278 [Lux]      **MIN/MAX** : 0,68      **c. Utilization** : 0,55  
**MIN.** : 1988 [Lux]      **MIN/AVG** : 0,87      **TOT. Flux [klm]** : 45760,00  
**MAX.** : 2931 [Lux]      **MAX/AVG** : 1,29

31,73	2690	2634	2561	2744	2608	2341	2305	2484	2475	2692	2931	2692	2475	2484	2305	2341	2608
27,20	2723	2586	2675	2686	2516	2358	2337	2430	2456	2706	2824	2706	2456	2430	2337	2358	2516
22,67	2768	2493	2498	2487	2316	2243	2240	2279	2348	2489	2578	2489	2348	2279	2240	2243	2316
18,13	2433	2344	2325	2220	2170	2117	2120	2158	2207	2302	2364	2302	2207	2158	2120	2117	2170
13,60	2200	2191	2177	2087	2122	2122	2124	2121	2168	2258	2298	2258	2168	2121	2124	2122	2122
9,07	2053	2211	2140	2089	2121	2142	2176	2157	2186	2250	2247	2250	2186	2157	2176	2142	2121
4,53	2216	2353	2170	2137	2098	2184	2156	2138	2175	2236	2243	2236	2175	2138	2156	2184	2098
0,00	2474	2557	2313	2154	2158	2170	2169	2196	2203	2195	2189	2195	2203	2196	2169	2170	2158
-4,53	2575	2736	2378	2186	2101	2129	2099	2117	2120	2121	2127	2121	2120	2117	2099	2129	2101
-9,07	2548	2555	2332	2134	2102	2075	2081	2081	2052	2059	2070	2059	2052	2081	2081	2075	2102
-13,60	2295	2268	2167	2072	2159	2105	2027	1988	2008	2040	2047	2040	2008	1988	2027	2105	2159
-18,13	2351	2399	2224	2218	2276	2184	2129	2041	2058	2098	2143	2098	2058	2041	2129	2184	2276
-22,67	2465	2539	2518	2445	2360	2347	2262	2177	2172	2207	2231	2207	2172	2177	2262	2347	2360
-27,20	2391	2469	2704	2532	2322	2317	2289	2148	2178	2240	2267	2240	2178	2148	2289	2317	2322
-31,73	2203	2178	2311	2392	2115	2065	2086	2074	2061	2070	2030	2070	2061	2074	2086	2065	2115
[m]	-50,00	-45,00	-40,00	-35,00	-30,00	-25,00	-20,00	-15,00	-10,00	-5,00	0,00	5,00	10,00	15,00	20,00	25,00	30,00

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

**Table horizontal illuminance**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **MAIN camera**  
**aiming** : **phase**

AVG. :	2278 [Lux]	MIN/MAX :	0,68	c. Utilization :	0,55
MIN. :	1988 [Lux]	MIN/AVG :	0,87	TOT. Flux [klm] :	45760,00
MAX. :	2931 [Lux]	MAX/AVG :	1,29		

31,73	2744	2561	2634	2690
27,20	2686	2675	2586	2723
22,67	2487	2498	2493	2768
18,13	2220	2325	2344	2433
13,60	2087	2177	2191	2200
9,07	2089	2140	2211	2053
4,53	2137	2170	2353	2216
0,00	2154	2313	2557	2474
-4,53	2186	2378	2736	2575
-9,07	2134	2332	2555	2548
-13,60	2072	2167	2268	2295
-18,13	2218	2224	2399	2351
-22,67	2445	2518	2539	2465
-27,20	2532	2704	2469	2391
-31,73	2392	2311	2178	2203
[m]	35,00	40,00	45,00	50,00

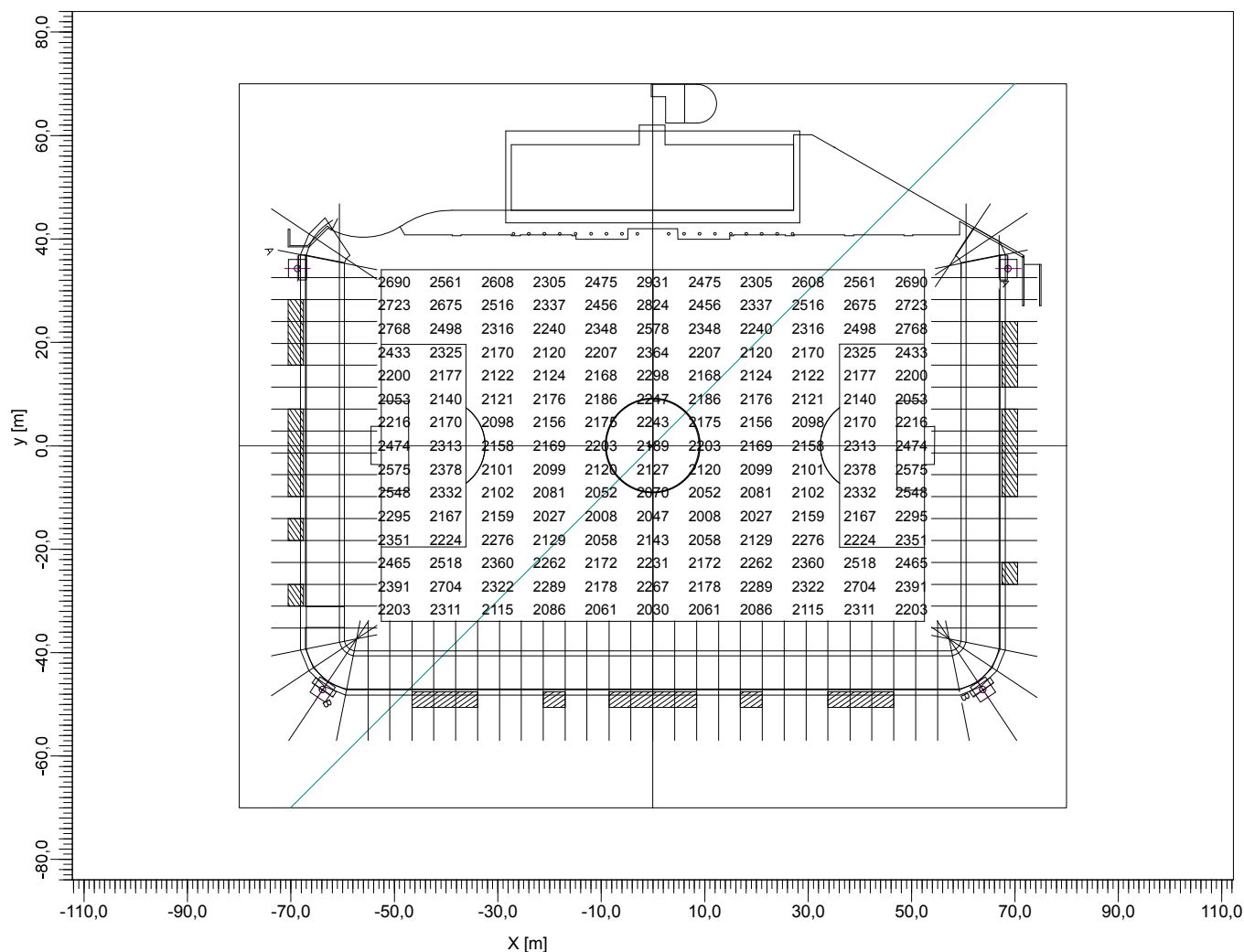


Project : **FOOTBALL STADIUM KARVINA**  
 Code : **XFM8259V**  
 Customer : **EXX**  
 Customer code :  
 Date : **21/11/2014**

### horizontal illuminance

environment : **FOOTBALL**  
 grid : **GRID 5mtX5mt**  
 phase : **UEFA Ev=1400lux**  
 observer : **MAIN camera**  
 aiming : **phase**

AVG. : 2278 [Lux]	MIN/MAX : 0,68	c. Utilization : 0,55
MIN. : 1988 [Lux]	MIN/AVG : 0,87	TOT. Flux [klm] : 45760,00
MAX. : 2931 [Lux]	MAX/AVG : 1,29	



**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

**Table vertical illuminance observer**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **MAIN camera**  
**aiming** : **phase**

**AVG.** : 1554 [Lux]      **MIN/MAX** : 0,51      **c. Utilization** : 0,37  
**MIN.** : 1230 [Lux]      **MIN/AVG** : 0,79      **TOT. Flux [klm]** : 45760,00  
**MAX.** : 2394 [Lux]      **MAX/AVG** : 1,54

31,73	2121	2359	2126	2339	2394	2017	1855	2006	1792	1859	2205	1859	1792	2006	1855	2017	2394
27,20	1857	1886	1963	2106	2163	1946	1760	1837	1769	1794	2159	1794	1769	1837	1760	1946	2163
22,67	1480	1628	1779	1928	1876	1738	1625	1571	1544	1701	1784	1701	1544	1571	1625	1738	1876
18,13	1326	1489	1629	1692	1644	1484	1375	1361	1434	1490	1510	1490	1434	1361	1375	1484	1644
13,60	1236	1363	1473	1512	1467	1318	1230	1340	1371	1418	1436	1418	1371	1340	1230	1318	1467
9,07	1272	1377	1424	1476	1445	1364	1292	1293	1340	1395	1397	1395	1340	1293	1292	1364	1445
4,53	1407	1471	1493	1492	1432	1352	1279	1290	1330	1407	1433	1407	1330	1290	1279	1352	1432
0,00	1591	1609	1536	1474	1430	1356	1367	1394	1409	1422	1448	1422	1409	1394	1367	1356	1430
-4,53	1699	1775	1604	1492	1425	1390	1424	1440	1454	1477	1470	1477	1454	1440	1424	1390	1425
-9,07	1710	1698	1564	1472	1447	1418	1492	1493	1494	1468	1470	1468	1494	1493	1492	1418	1447
-13,60	1532	1527	1476	1403	1472	1435	1497	1480	1467	1477	1472	1477	1467	1480	1497	1435	1472
-18,13	1431	1495	1490	1468	1480	1505	1523	1540	1529	1498	1483	1498	1529	1540	1523	1505	1480
-22,67	1503	1535	1617	1547	1525	1576	1562	1591	1559	1506	1495	1506	1559	1591	1562	1576	1525
-27,20	1567	1498	1619	1580	1501	1567	1606	1615	1521	1496	1439	1496	1521	1615	1606	1567	1501
-31,73	1431	1330	1381	1473	1366	1426	1476	1440	1433	1334	1334	1334	1433	1440	1476	1426	1366
[m]	-50,00	-45,00	-40,00	-35,00	-30,00	-25,00	-20,00	-15,00	-10,00	-5,00	0,00	5,00	10,00	15,00	20,00	25,00	30,00

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

**Table vertical illuminance observer**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **MAIN camera**  
**aiming** : **phase**

AVG. :	1554 [Lux]	MIN/MAX :	0,51	c. Utilization :	0,37
MIN. :	1230 [Lux]	MIN/AVG :	0,79	TOT. Flux [klm] :	45760,00
MAX. :	2394 [Lux]	MAX/AVG :	1,54		

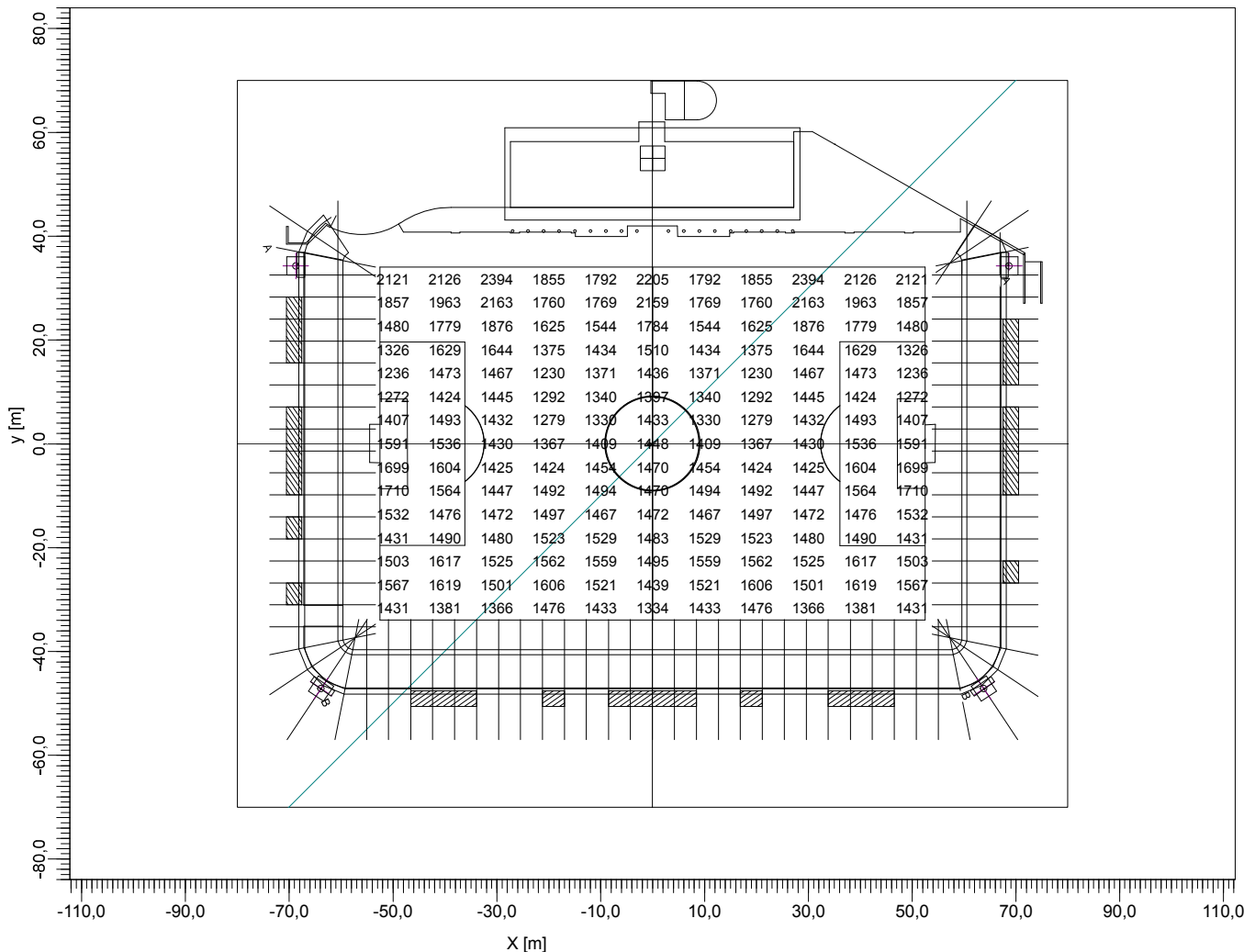
31,73	2339	2126	2359	2121
27,20	2106	1963	1886	1857
22,67	1928	1779	1628	1480
18,13	1692	1629	1489	1326
13,60	1512	1473	1363	1236
9,07	1476	1424	1377	1272
4,53	1492	1493	1471	1407
0,00	1474	1536	1609	1591
-4,53	1492	1604	1775	1699
-9,07	1472	1564	1698	1710
-13,60	1403	1476	1527	1532
-18,13	1468	1490	1495	1431
-22,67	1547	1617	1535	1503
-27,20	1580	1619	1498	1567
-31,73	1473	1381	1330	1431
[m]	35,00	40,00	45,00	50,00

Project : **FOOTBALL STADIUM KARVINA**  
 Code : **XFM8259V**  
 Customer : **EXX**  
 Customer code :  
 Date : **21/11/2014**

### vertical illuminance observer

environment : **FOOTBALL**  
 grid : **GRID 5mtX5mt**  
 phase : **UEFA Ev=1400lux**  
 observer : **MAIN camera**  
 aiming : **phase**

AVG. : 1554 [Lux]	MIN/MAX : 0,51	c. Utilization : 0,37
MIN. : 1230 [Lux]	MIN/AVG : 0,79	TOT. Flux [klm] : 45760,00
MAX. : 2394 [Lux]	MAX/AVG : 1,54	



**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

**Table vertical illuminance observer**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **TV2**  
**aiming** : **phase**

**AVG.** : 1518 [Lux]      **MIN/MAX** : 0,42      **c. Utilization** : 0,37  
**MIN.** : 1019 [Lux]      **MIN/AVG** : 0,67      **TOT. Flux [klm]** : 45760,00  
**MAX.** : 2419 [Lux]      **MAX/AVG** : 1,59

31,73	1946	2097	1723	1772	1657	1418	1178	1291	1364	1541	2021	2094	1964	2227	2076	2112	2419
27,20	1642	1567	1506	1511	1588	1463	1226	1346	1494	1746	2071	2003	2013	2108	2029	2126	2275
22,67	1256	1270	1335	1578	1466	1345	1148	1146	1297	1537	1773	1826	1913	1940	1968	2037	2077
18,13	1379	1391	1436	1420	1337	1221	1121	1019	1098	1312	1498	1607	1713	1752	1754	1845	1910
13,60	1277	1301	1338	1322	1282	1214	1147	1082	1024	1195	1375	1480	1557	1604	1626	1715	1776
9,07	1185	1243	1275	1297	1266	1233	1170	1109	1117	1146	1265	1360	1384	1471	1518	1638	1698
4,53	1361	1376	1353	1333	1299	1305	1216	1169	1158	1230	1222	1281	1275	1363	1401	1509	1568
0,00	1625	1620	1491	1404	1407	1388	1359	1318	1283	1278	1319	1293	1256	1351	1359	1388	1434
-4,53	1782	1844	1602	1464	1424	1440	1417	1377	1318	1326	1355	1398	1413	1444	1465	1481	1492
-9,07	1812	1737	1540	1419	1427	1451	1467	1404	1375	1353	1369	1385	1490	1553	1587	1573	1552
-13,60	1550	1467	1398	1302	1407	1439	1460	1403	1378	1382	1383	1394	1488	1571	1642	1649	1597
-18,13	1388	1389	1357	1336	1383	1482	1520	1509	1470	1426	1404	1414	1563	1628	1677	1677	1616
-22,67	1491	1463	1491	1418	1431	1549	1614	1607	1547	1463	1423	1489	1605	1686	1695	1681	1634
-27,20	1572	1434	1513	1484	1420	1564	1675	1679	1542	1473	1396	1527	1573	1662	1672	1602	1562
-31,73	1425	1253	1270	1366	1271	1387	1488	1510	1468	1331	1378	1405	1503	1510	1504	1461	1415
[m]	-50,00	-45,00	-40,00	-35,00	-30,00	-25,00	-20,00	-15,00	-10,00	-5,00	0,00	5,00	10,00	15,00	20,00	25,00	30,00

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

**Table vertical illuminance observer**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **TV2**  
**aiming** : **phase**

AVG. : 1518 [Lux]	MIN/MAX : 0,42	c. Utilization : 0,37
MIN. : 1019 [Lux]	MIN/AVG : 0,67	TOT. Flux [klm] : 45760,00
MAX. : 2419 [Lux]	MAX/AVG : 1,59	

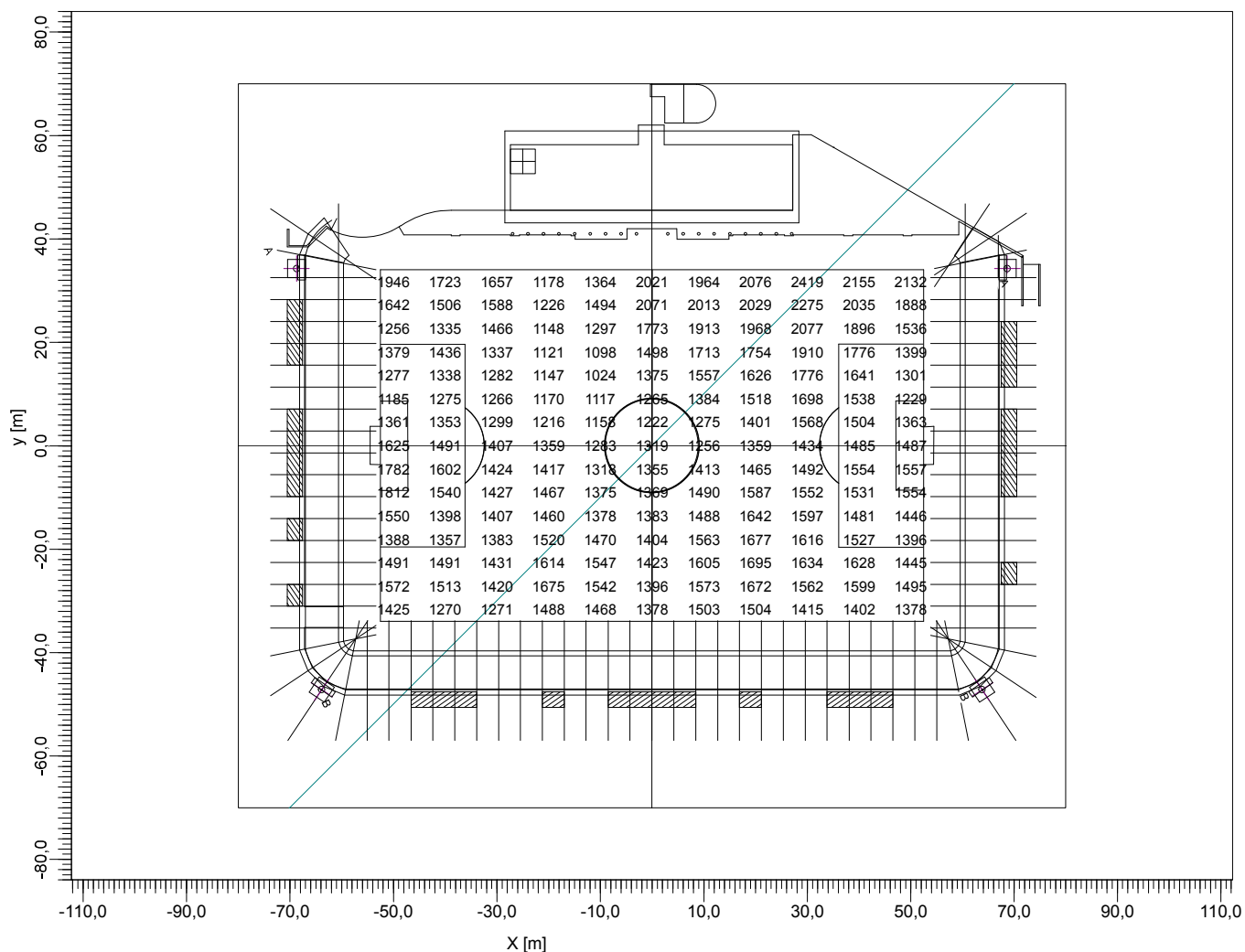
31,73	2368	2155	2366	2132
27,20	2195	2035	1935	1888
22,67	2075	1896	1710	1536
18,13	1896	1776	1593	1399
13,60	1742	1641	1484	1301
9,07	1676	1538	1392	1229
4,53	1576	1504	1391	1363
0,00	1449	1485	1509	1487
-4,53	1519	1554	1624	1557
-9,07	1529	1531	1568	1554
-13,60	1490	1481	1472	1446
-18,13	1566	1527	1482	1396
-22,67	1621	1628	1514	1445
-27,20	1599	1599	1476	1495
-31,73	1486	1402	1331	1378
[m]	35,00	40,00	45,00	50,00

Project : **FOOTBALL STADIUM KARVINA**  
 Code : **XFM8259V**  
 Customer : **EXX**  
 Customer code :  
 Date : **21/11/2014**

### vertical illuminance observer

environment : **FOOTBALL**  
 grid : **GRID 5mtX5mt**  
 phase : **UEFA Ev=1400lux**  
 observer : **TV2**  
 aiming : **phase**

AVG. : 1518 [Lux]	MIN/MAX : 0,42	c. Utilization : 0,37
MIN. : 1019 [Lux]	MIN/AVG : 0,67	TOT. Flux [klm] : 45760,00
MAX. : 2419 [Lux]	MAX/AVG : 1,59	



**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

**Table vertical illuminance observer**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **TV3**  
**aiming** : **phase**

**AVG.** : 1520 [Lux]      **MIN/MAX** : 0,46      **c. Utilization** : 0,37  
**MIN.** : 915 [Lux]      **MIN/AVG** : 0,60      **TOT. Flux [klm]** : 45760,00  
**MAX.** : 2004 [Lux]      **MAX/AVG** : 1,32

31,73	1125	1027	1067	1182	1116	1135	1144	1132	1181	1324	1535	1663	1564	1625	1636	1618	1807
27,20	1246	1109	1222	1315	1227	1294	1292	1304	1281	1484	1694	1789	1721	1671	1659	1704	1803
22,67	1298	1155	1269	1309	1311	1311	1372	1370	1383	1545	1722	1882	1858	1793	1772	1784	1815
18,13	1226	1172	1274	1225	1308	1321	1387	1363	1406	1580	1775	1900	1914	1819	1769	1801	1825
13,60	1246	1209	1236	1174	1275	1330	1396	1377	1441	1613	1822	1941	1957	1860	1813	1834	1827
9,07	1333	1293	1240	1200	1276	1365	1437	1423	1522	1662	1824	1948	1939	1901	1851	1861	1842
4,53	1067	1239	1150	1214	1277	1435	1462	1479	1514	1687	1830	1959	1966	1876	1818	1811	1788
0,00	1081	1210	1169	1171	1312	1429	1502	1532	1568	1666	1794	1942	1970	1909	1819	1767	1750
-4,53	1428	1411	1254	1194	1249	1356	1413	1467	1483	1599	1763	1958	1970	1895	1847	1824	1783
-9,07	1633	1486	1211	1147	1204	1259	1328	1351	1413	1560	1723	1862	1969	1990	1959	1917	1856
-13,60	1370	1265	1108	1026	1179	1219	1266	1290	1376	1530	1696	1844	1937	1963	1982	1968	1838
-18,13	1217	1191	1093	1042	1183	1300	1370	1389	1447	1577	1740	1870	1939	1933	1942	1901	1803
-22,67	1351	1264	1268	1175	1294	1491	1580	1571	1598	1678	1768	1857	1911	1899	1818	1763	1717
-27,20	1447	1256	1337	1310	1346	1609	1736	1728	1693	1735	1760	1803	1713	1626	1571	1490	1492
-31,73	1294	1084	1084	1280	1244	1424	1613	1680	1661	1634	1584	1565	1502	1393	1330	1299	1284
[m]	-50,00	-45,00	-40,00	-35,00	-30,00	-25,00	-20,00	-15,00	-10,00	-5,00	0,00	5,00	10,00	15,00	20,00	25,00	30,00



**Project** : **FOOTBALL STADIUM KARVINA**  
**Code** : **XFM8259V**  
**Customer** : **EXX**  
**Customer code** :  
**Date** : **21/11/2014**

**Table vertical illuminance observer**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **TV3**  
**aiming** : **phase**

AVG. :	1520 [Lux]	MIN/MAX :	0,46	c. Utilization :	0,37
MIN. :	915 [Lux]	MIN/AVG :	0,60	TOT. Flux [klm] :	45760,00
MAX. :	2004 [Lux]	MAX/AVG :	1,32		

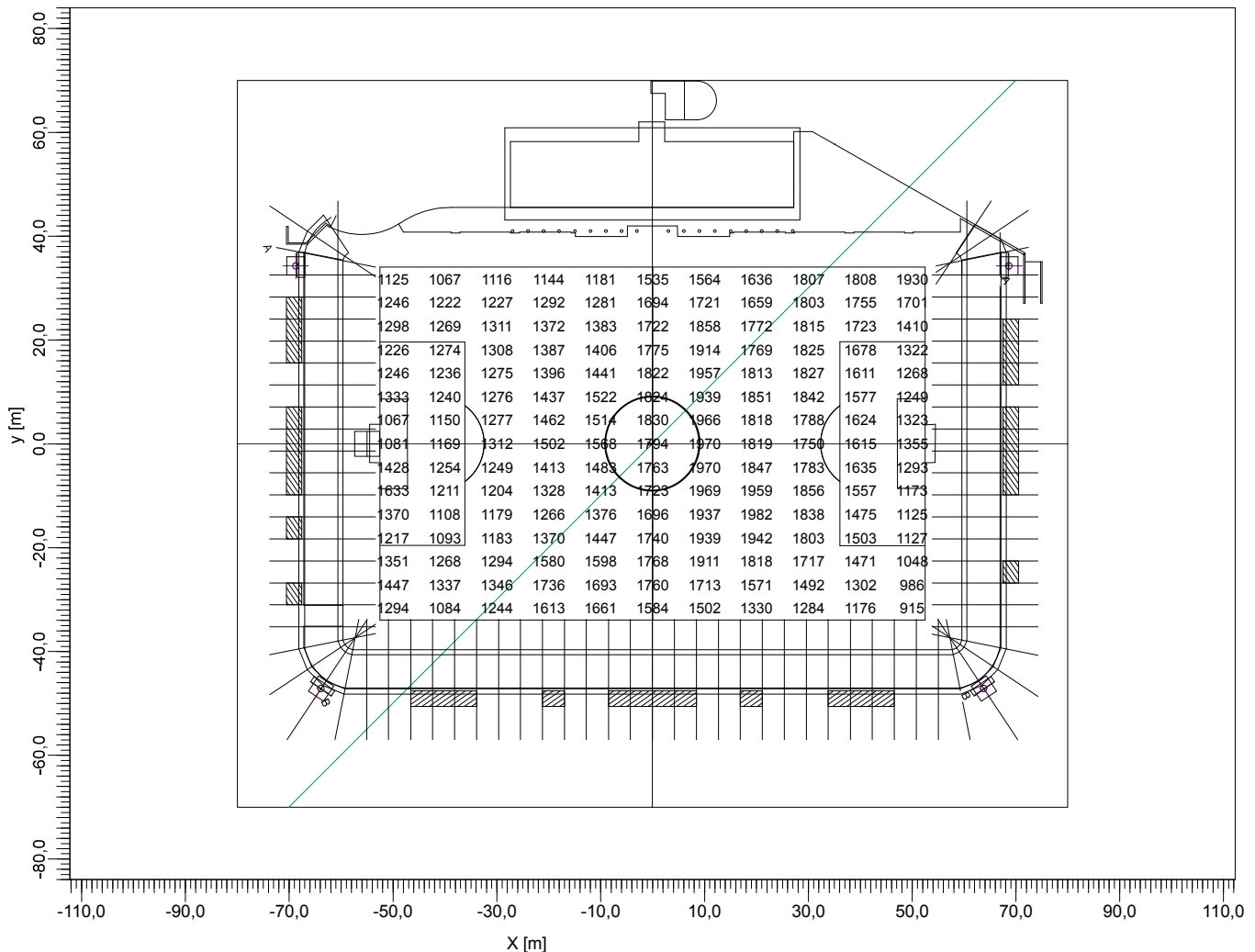
31,73	1882	1808	2004	1930
27,20	1818	1755	1689	1701
22,67	1815	1723	1563	1410
18,13	1800	1678	1503	1322
13,60	1740	1611	1446	1268
9,07	1747	1577	1412	1249
4,53	1734	1624	1484	1323
0,00	1707	1615	1494	1355
-4,53	1735	1635	1496	1293
-9,07	1733	1557	1356	1173
-13,60	1652	1475	1294	1125
-18,13	1677	1503	1314	1127
-22,67	1627	1471	1253	1048
-27,20	1422	1302	1152	986
-31,73	1248	1176	1041	915
[m]	35,00	40,00	45,00	50,00

Project : **FOOTBALL STADIUM KARVINA**  
 Code : **XFM8259V**  
 Customer : **EXX**  
 Customer code :  
 Date : **21/11/2014**

### vertical illuminance observer

environment : **FOOTBALL**  
 grid : **GRID 5mtX5mt**  
 phase : **UEFA Ev=1400lux**  
 observer : **TV3**  
 aiming : **phase**

AVG. : 1520 [Lux]	MIN/MAX : 0,46	c. Utilization : 0,37
MIN. : 915 [Lux]	MIN/AVG : 0,60	TOT. Flux [klm] : 45760,00
MAX. : 2004 [Lux]	MAX/AVG : 1,32	



**Project** : **FOOTBALL STADIUM KARVINA**  
**Code** : **XFM8259V**  
**Customer** : **EXX**  
**Customer code** :  
**Date** : **21/11/2014**

**Table vertical illuminance observer**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **TV4**  
**aiming** : **phase**

**AVG.** : 1460 [Lux]      **MIN/MAX** : 0,47      **c. Utilization** : 0,35  
**MIN.** : 1066 [Lux]      **MIN/AVG** : 0,73      **TOT. Flux [klm]** : 45760,00  
**MAX.** : 2251 [Lux]      **MAX/AVG** : 1,54

31,73	2052	2251	2057	2228	2233	1965	1940	2018	1729	1646	1452	1646	1729	2018	1940	1965	2233
27,20	1833	1878	1970	2103	2154	2003	1883	1873	1650	1601	1535	1601	1650	1873	1883	2003	2154
22,67	1508	1675	1849	2001	1985	1912	1783	1636	1524	1370	1332	1370	1524	1636	1783	1912	1985
18,13	1376	1559	1726	1823	1804	1690	1518	1401	1305	1165	1163	1165	1305	1401	1518	1690	1804
13,60	1276	1445	1582	1652	1639	1513	1328	1238	1150	1144	1138	1144	1150	1238	1328	1513	1639
9,07	1199	1343	1464	1561	1527	1391	1168	1098	1119	1152	1145	1152	1119	1098	1168	1391	1527
4,53	1236	1323	1409	1437	1371	1237	1066	1093	1134	1190	1209	1190	1134	1093	1066	1237	1371
0,00	1339	1356	1355	1337	1287	1201	1148	1196	1219	1230	1252	1230	1219	1196	1148	1200	1287
-4,53	1417	1473	1401	1347	1294	1254	1230	1261	1288	1306	1297	1306	1288	1261	1230	1254	1294
-9,07	1438	1447	1391	1354	1337	1322	1322	1339	1344	1319	1319	1319	1344	1339	1322	1322	1337
-13,60	1353	1366	1351	1319	1381	1381	1354	1346	1335	1344	1339	1344	1335	1346	1354	1381	1381
-18,13	1309	1376	1392	1391	1401	1427	1391	1408	1404	1377	1364	1377	1404	1408	1391	1427	1401
-22,67	1373	1420	1504	1458	1438	1469	1452	1461	1440	1397	1389	1397	1440	1461	1452	1469	1438
-27,20	1435	1395	1502	1476	1410	1454	1505	1488	1413	1399	1349	1399	1413	1488	1505	1454	1410
-31,73	1328	1256	1307	1384	1289	1335	1372	1346	1341	1256	1259	1256	1341	1346	1372	1335	1289
[m]	-50,00	-45,00	-40,00	-35,00	-30,00	-25,00	-20,00	-15,00	-10,00	-5,00	0,00	5,00	10,00	15,00	20,00	25,00	30,00

**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

**Table vertical illuminance observer**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **UEFA Ev=1400lux**  
**observer** : **TV4**  
**aiming** : **phase**

AVG. :	1460 [Lux]	MIN/MAX :	0,47	c. Utilization :	0,35
MIN. :	1066 [Lux]	MIN/AVG :	0,73	TOT. Flux [klm] :	45760,00
MAX. :	2251 [Lux]	MAX/AVG :	1,54		

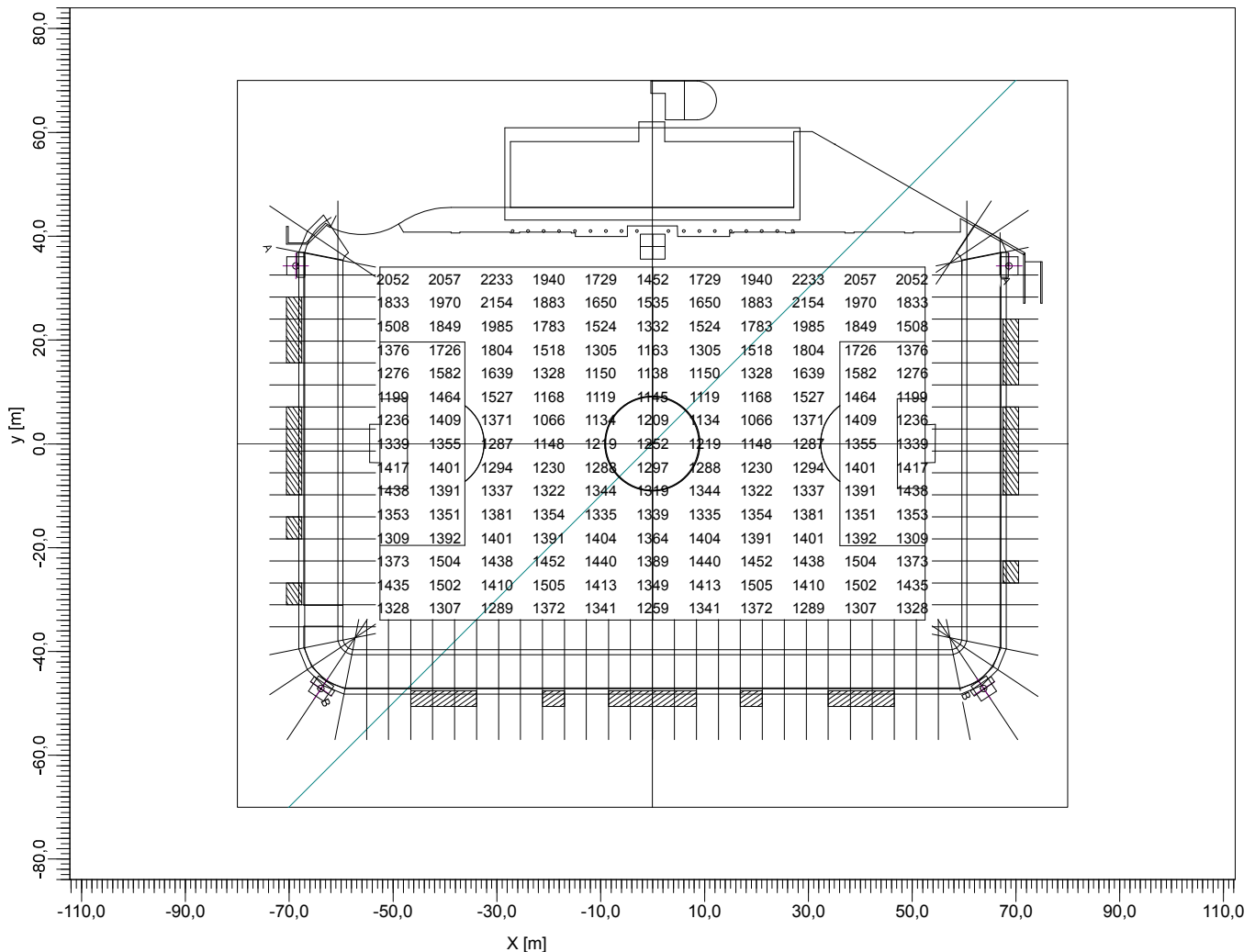
31,73	2228	2057	2251	2052
27,20	2103	1970	1878	1833
22,67	2001	1849	1675	1508
18,13	1823	1726	1559	1376
13,60	1652	1582	1445	1276
9,07	1561	1464	1343	1199
4,53	1437	1409	1323	1236
0,00	1337	1355	1356	1339
-4,53	1347	1401	1473	1417
-9,07	1354	1391	1447	1438
-13,60	1319	1351	1366	1353
-18,13	1391	1392	1376	1309
-22,67	1458	1504	1420	1373
-27,20	1476	1502	1395	1435
-31,73	1384	1307	1256	1328
[m]	35,00	40,00	45,00	50,00

Project : **FOOTBALL STADIUM KARVINA**  
 Code : **XFM8259V**  
 Customer : **EXX**  
 Customer code :  
 Date : **21/11/2014**

### vertical illuminance observer

environment : **FOOTBALL**  
 grid : **GRID 5mtX5mt**  
 phase : **UEFA Ev=1400lux**  
 observer : **TV4**  
 aiming : **phase**

AVG. :	1460 [Lux]	MIN/MAX :	0,47	c. Utilization :	0,35
MIN. :	1066 [Lux]	MIN/AVG :	0,73	TOT. Flux [klm] :	45760,00
MAX. :	2251 [Lux]	MAX/AVG :	1,54		

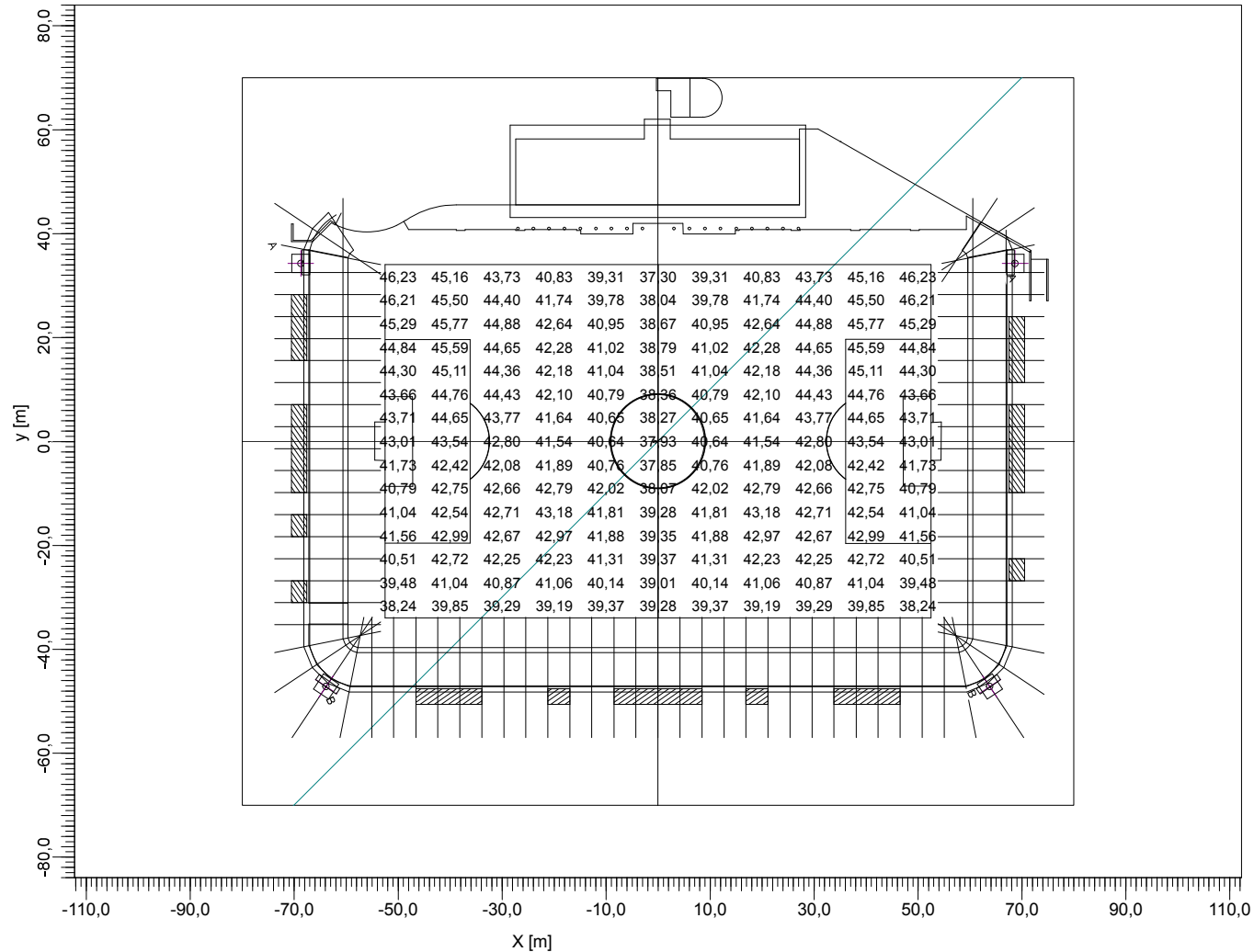


Project	: FOOTBALL STADIUM KARVINA
Code	: XFM8259V
Customer	: EXX
Customer code	:
Date	: 21/11/2014

Max Glare Index (Grid)

environment : FOOTBALL  
grid : GRID 5mtX5mt  
phase : UEFA Ev=1400lux

surface reflection: 25%	cone of vision: 2 *60°	ILL. Horizontal average LUX: 2278	veiling luminance area: 6,34
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**Project** : **FOOTBALL STADIUM KARVINA**  
**Code** : **XFM8259V**  
**Customer** : **EXX**  
**Customer code** :  
**Date** : **21/11/2014**

**summary page**

**environment** : **FOOTBALL**  
**phase** : **Training**

**Project data:**

Area position [m] : x = -80,0    y = -70,0    z = 0,0  
 Area dimensions [m] : x = 160,0    y = 140,0  
 Total installed power : 64000

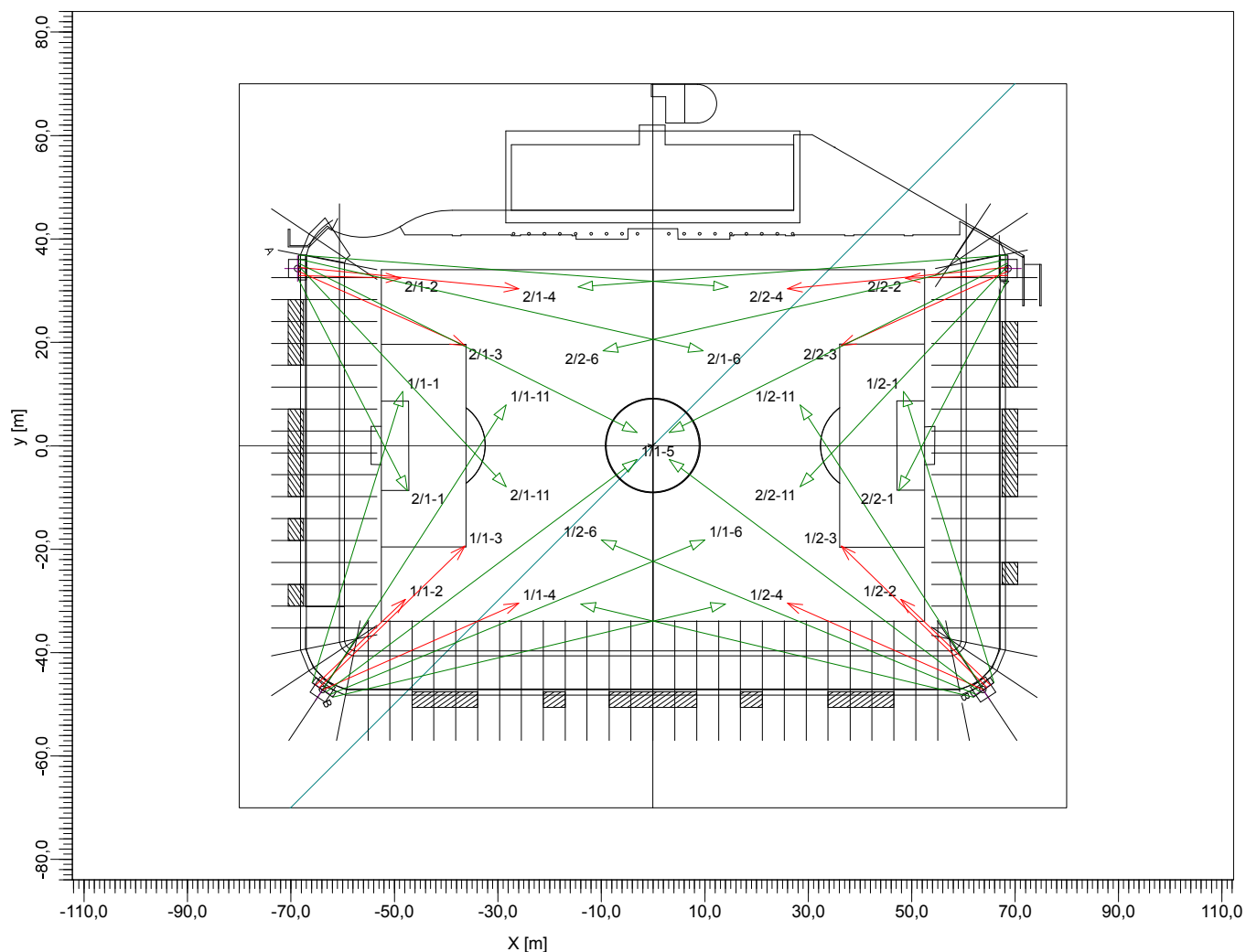
**total fittings switched on 32 with 32 lamps(total flux = 7040 [klm] )**

N°	fitting	N°	lamp	flux	power
20	1186 JM-TS 2000 FM HO	20	MHN 2000 SB - HO	4400,00	40000
12	1186 JM-TS 2000 FL HO	12	MHN 2000 SB - HO	2640,00	24000

Project : **FOOTBALL STADIUM KARVINA**  
Code : **XFM8259V**  
Customer : **EXX**  
Customer code :  
Date : **21/11/2014**

### Aiming fittings

environment : **FOOTBALL**  
grid : **GRID 5mtX5mt**  
phase : **Training**  
observer : **TV4**  
aiming : **phase**





**Project** : *FOOTBALL STADIUM KARVINA*  
**Code** : *XFM8259V*  
**Customer** : *EXX*  
**Customer code** :  
**Date** : *21/11/2014*

**Table horizontal illuminance**

**environment** : **FOOTBALL**  
**grid** : **GRID 5mtX5mt**  
**phase** : **Training**  
**observer** : **TV4**  
**aiming** : **phase**

AVG. :	383 [Lux]	MIN/MAX :	0,52	c. Utilization :	0,60
MIN. :	270 [Lux]	MIN/AVG :	0,70	TOT. Flux [klm] :	7040,00
MAX. :	516 [Lux]	MAX/AVG :	1,35		

31,73	514	470	390	362	344	311	288	280	277	287	304	287	277	280	288	311	344
27,20	471	491	446	422	390	354	322	317	333	357	372	357	333	317	322	354	390
22,67	394	455	484	453	417	373	335	330	356	376	374	376	356	330	335	373	417
18,13	351	410	476	441	410	341	308	315	347	383	391	383	347	315	308	341	410
13,60	345	390	438	416	376	322	321	328	364	413	434	413	364	328	321	322	376
9,07	331	385	384	395	366	345	357	364	389	449	471	449	389	364	357	345	366
4,53	314	355	356	395	361	369	345	371	397	442	450	442	397	371	345	369	361
0,00	366	352	372	425	425	377	350	368	435	437	436	437	435	368	350	377	425
-4,53	388	442	409	434	399	400	357	359	400	437	460	437	400	359	357	400	399
-9,07	438	445	443	430	399	362	354	366	380	433	449	433	380	366	354	362	399
-13,60	399	389	439	414	401	336	327	344	360	388	390	388	360	344	327	336	401
-18,13	352	421	447	431	405	375	333	325	338	350	382	350	338	325	333	375	405
-22,67	383	465	472	439	400	372	349	331	342	346	349	346	342	331	349	372	400
-27,20	454	516	470	430	393	348	332	318	330	345	330	345	330	318	332	348	393
-31,73	456	468	422	389	372	329	301	287	270	274	298	274	270	287	301	329	372
[m]	-50,00	-45,00	-40,00	-35,00	-30,00	-25,00	-20,00	-15,00	-10,00	-5,00	0,00	5,00	10,00	15,00	20,00	25,00	30,00

Project : **FOOTBALL STADIUM KARVINA**  
 Code : **XFM8259V**  
 Customer : **EXX**  
 Customer code :  
 Date : **21/11/2014**

**Table horizontal illuminance**

environment : **FOOTBALL**  
 grid : **GRID 5mtX5mt**  
 phase : **Training**  
 observer : **TV4**  
 aiming : **phase**

AVG. :	383 [Lux]	MIN/MAX :	0,52	c. Utilization :	0,60
MIN. :	270 [Lux]	MIN/AVG :	0,70	TOT. Flux [klm] :	7040,00
MAX. :	516 [Lux]	MAX/AVG :	1,35		

31,73	362	390	470	514
27,20	422	446	491	471
22,67	453	484	455	394
18,13	441	476	410	351
13,60	416	438	390	345
9,07	395	384	385	331
4,53	395	356	355	314
0,00	425	372	352	366
-4,53	434	409	442	388
-9,07	430	443	445	438
-13,60	414	439	389	399
-18,13	431	447	421	352
-22,67	439	472	465	383
-27,20	430	470	516	454
-31,73	389	422	468	456
[m]	35,00	40,00	45,00	50,00

Project	: FOOTBALL STADIUM KARVINA
Code	: XFM8259V
Customer	: EXX
Customer code	:
Date	: 21/11/2014

horizontal illuminance

environment	: FOOTBALL
grid	: GRID 5mtX5mt
phase	: Training
observer	: TV4
aiming	: phase

AVG. :	383 [Lux]	MIN/MAX :	0,52	c. Utilization :	0,60
MIN. :	270 [Lux]	MIN/AVG :	0,70	TOT. Flux [klm] :	7040,00
MAX. :	516 [Lux]	MAX/AVG :	1,35		

