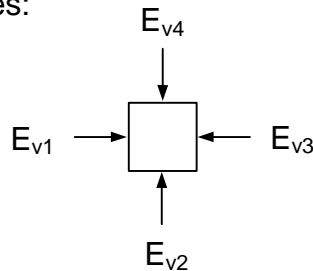


# “Robot Stadium Salalah“ - High Mast Lighting System

The total number of floodlights is **446 x „MAXILUX“** with lamp **HIT-DE 2000 W/D/S** and **44 x „Rectalux-A“** with lamp **HIT 2000 W/D**:

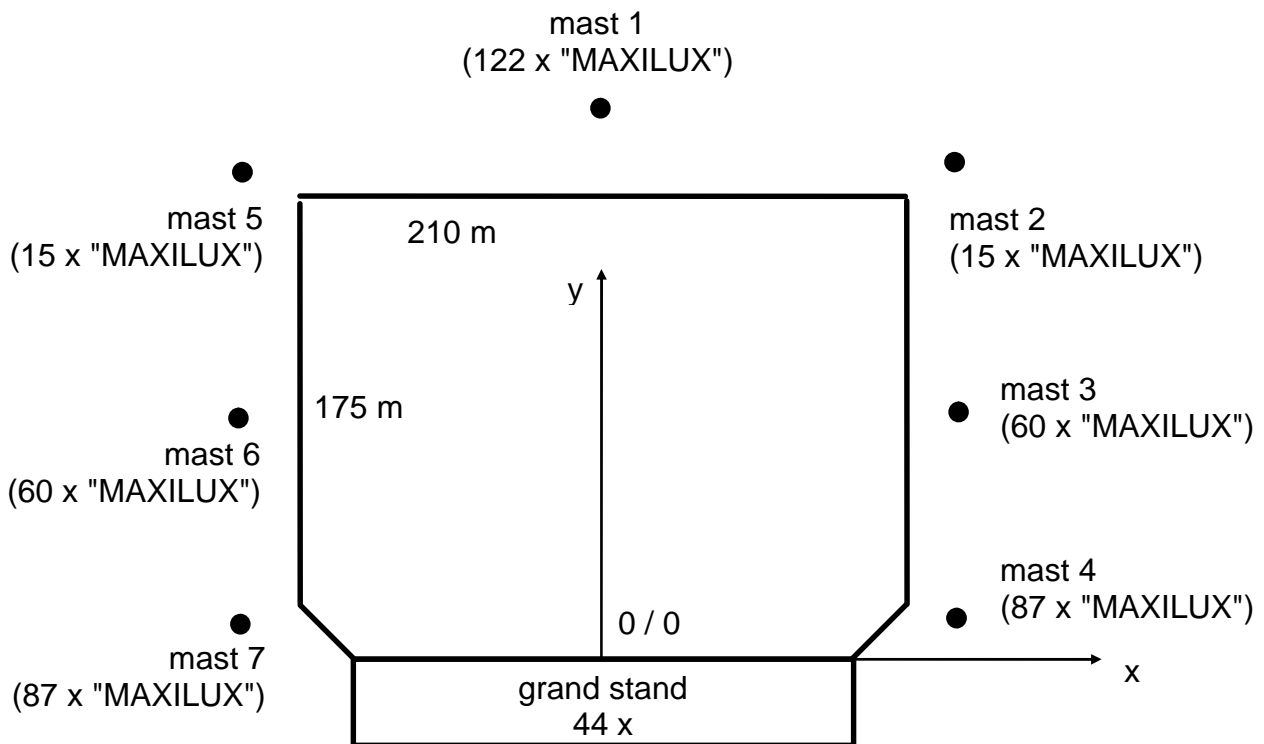
<b>96</b>	„MAXILUX-T“	(7-4201-1237)
<b>220</b>	„MAXILUX-TB“	(7-4202-1237)
<b>68</b>	„MAXILUX-B“	(7-4203-1237)
<b>62</b>	„MAXILUX-SB“	(7-4204-1237)
<b>44</b>	„RECTALUX“	(7-1351-1227)

- design data:
  - maintenance factor = **0,8**
  - horizontal illuminance: uniformity  $E_{\min} / E_{\max} = \mathbf{0,5}$
  - vertical illuminance: uniformity  $E_{\min} / E_{\max} = \mathbf{0,4}$
  - height of the utilisation plane = **0 m** (horizontal illuminances)
  - height of the reference plane = **2 m** (vertical illuminances) - because horses are used
  - calculation grid: **10 m**
  - directions of vertical illuminances:



- luminaire data:
  - tv:
    - type 1: 2 „MAXILUX-T“ (7-4201-1237) per aiming point
    - type 2: 2 „MAXILUX-TB“ (7-4202-1237) per aiming point
    - type 3: 2 „MAXILUX-B“ (7-4203-1237) per aiming point
    - type 4: 1 „MAXILUX-SB“ (7-4204-1237) per aiming point
    - type 5: 1 „RECTALUX“ (7-1351-1227) per aiming point
- 5 masts (height = 50 m) and 2 masts (height = 25 m; masts 2 / 5) - see sketch; there are an additional platform with a height of 25 m (masts 1 / 3 / 4 / 6 / 7) - to get enough vertical illuminance on the edge of the area
- 44 „RECTALUX“ are mounted under the roof of the grand stand.

TV -  $E_v = 900/700/500$  lx:



- number of floodlights per mast or grandstand:

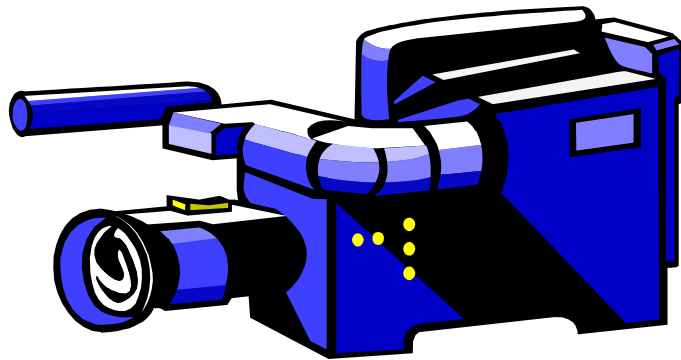
• mast 1:	<b>122</b>	„Maxilux“	
		• on additional platform (25 m):	22
		• on headframe (50 / 55 m):	100
• mast 2 / 5:	<b>15</b>	„Maxilux“	
		• on headframe (25 m):	15
• mast 3 / 6:	<b>60</b>	„Maxilux“	
		• on additional platform (25 m):	16
		• on headframe (50 / 55 m):	44
• mast 4 / 7:	<b>87</b>	„Maxilux“	
		• on additional platform (25 m):	7
		• on headframe (50 / 55 m):	80
• grandstand:	<b>44</b>	„RECTALUX“	

There is a summary of the most important results in the following tables.

Lighting level	CTV		
Calculation number	980550		
Floodlights	<b>96</b> „MAXILUX-T“ (7-4201-1237) <b>220</b> „MAXILUX-TB“ (7-4202-1237) <b>68</b> „MAXILUX-B“ (7-4203-1237) <b>62</b> „MAXILUX-SB“ (7-4204-1237) <b>44</b> „RECTALUX“ (7-1351-1227)		
Lamps	<b>446</b> HIT-DE 2000 W/D/S <b>44</b> HIT 2000 W/D		
Lighted area	<b>Whole area 500 lx</b>	<b>75% area 700 lx</b>	<b>50 % area 900 lx</b>
Horizontal illuminance $E_h$	<b>1200 Lux</b>	<b>1190 Lux</b>	<b>1160 Lux</b>
$E_{min} / E_{max}$	<b>0,54</b>	<b>0,56</b>	<b>0,66</b>
Vertical illuminance $E_{v1}$	<b>961 Lux</b>	<b>995 Lux</b>	<b>1040 Lux</b>
$E_{min} / E_{max}$	<b>0,42</b>	<b>0,40</b>	<b>0,51</b>
Vertical illuminance $E_{v2}$	<b>860 Lux</b>	<b>878 Lux</b>	<b>899 Lux</b>
$E_{min} / E_{max}$	<b>0,40</b>	<b>0,40</b>	<b>0,42</b>
Vertical illuminance $E_{v3}$	<b>936 Lux</b>	<b>974 Lux</b>	<b>1020 Lux</b>
$E_{min} / E_{max}$	<b>0,41</b>	<b>0,40</b>	<b>0,50</b>
Vertical illuminance $E_{v4}$	<b>880 Lux</b>	<b>882 Lux</b>	<b>898 Lux</b>
$E_{min} / E_{max}$	<b>0,44</b>	<b>0,49</b>	<b>0,48</b>

other requirements (glare ratings, uniformities) are fulfilled (see lighting design)

# Robot Stadium Salalah



**TV**

**(calc. no. 98-0550)**

**$E_v = 900/700/500$  lx**

**446 x "MAXILUX"**

**44 x "RECTALUX"**

**98-055 Robot Stadium Salalah - Final design****Colour T.V. - vertical illuminance  $E_v = 900/700/500$  Lux****446 x "MAXILUX" + 44 x "RECTALUX"****GEOMETRY OF INSTALLATION**

length of calculation area	210.00 m
width of calculation area	175.00 m
height of utilisation plane ( $E_h$ )	0.00 m
height of reference plane ( $E_h, E_v$ )	2.00 m

**SELECTED TYPES OF LUMINAIRES**

luminaire type 1	7-4201-1237/HIT-DE2000W / MAXILUX T/2000HIT-DE
luminaire type 2	7-4202-1237/2000HIT-DE / MAXILUX TB/2000HIT-DE
luminaire type 3	7-4203-1237/HIT-DE2000 / MAXILUX B/2000HIT-DE
luminaire type 4	7-4204-1237/HIT-DE2000 / MAXILUX SB/2000HIT-DE
luminaire type 5	7-1351-1227/HIT2000 / RECTALUX/2000HIT

**DESIGN DATA**

nominal illuminance	700 lx
maintenance factor	0.80
number of calculation points in x-direction	21
number of calculation points in y-direction	17

**REMARKS**

Basis for the lighting calculation are the data specified above. Variations between design data and results are possible due to method of calculation and deviation of luminaire data. These variations are within the limits given in national and international recommendations.

**98-055 Robot Stadium Salalah - Final design**  
**Colour T.V. - vertical illuminance Ev = 900/700/500 Lux**  
**446 x "MAXILUX" + 44 x "RECTALUX"**

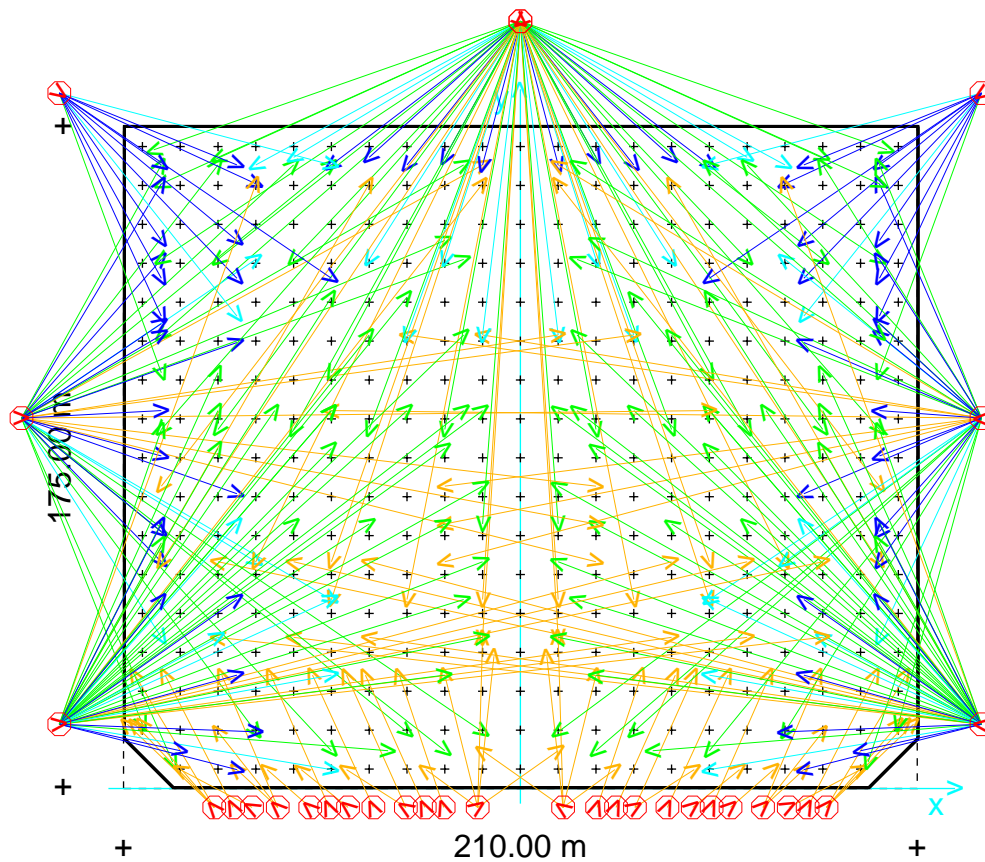
**LUMINAIRE AND LAMP DATA**

luminaire type 1	7-4201-1237/HIT-DE2000W / MAXILUX T/2000HIT-DE		
file name/number	BAG/BT05261		
number of luminaires	48	number of lamps per unit	1
light output ratio LOR	0.78	type of lamps	1*HIT-DE2000W
nominal luminous flux	400000 lm	colour appearance / CCT	tw
correction factor	1.00	colour rendering group / Ra	1A
total luminous flux	400000 lm		
luminaire type 2	7-4202-1237/2000HIT-DE / MAXILUX TB/2000HIT-DE		
file name/number	BAG/BT05262		
number of luminaires	110	number of lamps per unit	1
light output ratio LOR	0.79	type of lamps	1*HIT-DE 2000W
nominal luminous flux	400000 lm	colour appearance / CCT	tw
correction factor	1.00	colour rendering group / Ra	1A
total luminous flux	400000 lm		
luminaire type 3	7-4203-1237/HIT-DE2000 / MAXILUX B/2000HIT-DE		
file name/number	BAG/BT05263		
number of luminaires	34	number of lamps per unit	1
light output ratio LOR	0.79	type of lamps	1*HIT-DE 2000W
nominal luminous flux	400000 lm	colour appearance / CCT	tw
correction factor	1.00	colour rendering group / Ra	1A
total luminous flux	400000 lm		
luminaire type 4	7-4204-1237/HIT-DE2000 / MAXILUX SB/2000HIT-DE		
file name/number	BAG/BT05264		
number of luminaires	62	number of lamps per unit	1
light output ratio LOR	0.78	type of lamps	1*HIT-DE 2000W
nominal luminous flux	200000 lm	colour appearance / CCT	tw
correction factor	1.00	colour rendering group / Ra	1A
total luminous flux	200000 lm		
luminaire type 5	7-1351-1227/HIT2000 / RECTALUX/2000HIT		
file name/number	BAG/BT03023		
number of luminaires	44	number of lamps per unit	1
light output ratio LOR	0.73	type of lamps	1*HIT/2000W/D
nominal luminous flux	180000 lm	colour appearance / CCT	tw
correction factor	1.00	colour rendering group / Ra	1A
total luminous flux	180000 lm		

98-055 Robot Stadium Salalah - Final design  
Colour T.V. - vertical illuminance  $E_v = 900/700/500$  Lux  
446 x "MAXILUX" + 44 x "RECTALUX"

Scale 1 : 2000

### LUMINAIRE ARRANGEMENT, CALCULATION AREA WITH REFERENCE POINTS



**98-055 Robot Stadium Salalah - Final design**  
**Colour T.V. - vertical illuminance  $E_v = 900/700/500$  Lux**  
**446 x "MAXILUX" + 44 x "RECTALUX"**

**ILLUMINANCE DISTRIBUTION - UTILISATION PLANE - ( $I_x$ )**  
 horizontal illuminance  $E_h$

170	1190	1273	1244	1069	1072	963	1011	1150	1307	1421	1381
160	1135	1280	1258	1186	1072	1051	1091	1196	1427	1406	1337
149	1028	1145	1150	1174	988	1023	1028	1123	1291	1226	1115
139	905	1029	1168	1063	1022	938	1021	1137	1214	1141	1115
129	1029	1119	1156	1013	973	1026	1060	1124	1148	1140	1108
118	1168	1225	1167	1078	1091	1123	1143	1192	1206	1216	1191
108	1134	1321	1275	1234	1248	1235	1191	1097	1180	1050	1076
97.8	1301	1430	1454	1340	1350	1360	1309	1201	1151	1125	1053
87.5	1241	1382	1385	1303	1330	1264	1216	1228	1170	1186	1159
77.2	1279	1421	1269	1189	1245	1194	1202	1162	1223	1285	1242
66.9	1446	1463	1342	1292	1264	1265	1204	1272	1275	1314	1269
56.6	1346	1308	1309	1256	1201	1217	1140	1196	1199	1253	1231
46.3	1243	1327	1344	1164	1147	1127	1041	1094	1075	1194	1097
36.0	1175	1347	1357	1180	1088	1090	1033	1085	1094	1101	1039
25.7	1165	1338	1309	1127	1060	1012	1040	1040	1080	1017	964
15.4	1204	1501	1373	1225	1117	1068	1058	1045	1005	979	1026
5.1		1369	1662	1408	1334	1172	1140	1160	1186	1141	930
y / x	-100.0	-90.0	-80.0	-70.0	-60.0	-50.0	-40.0	-30.0	-20.0	-10.0	0.0
170	1452	1316	1149	1035	992	1093	1098	1255	1286	1218	
160	1433	1456	1206	1101	1075	1095	1184	1296	1272	1137	
149	1242	1323	1135	1023	1032	1011	1186	1140	1133	1048	
139	1155	1245	1153	1014	923	1041	1098	1174	1066	949	
129	1139	1152	1126	1057	1028	988	1044	1222	1195	1117	
118	1197	1179	1168	1134	1131	1117	1115	1220	1337	1347	
108	1041	1170	1089	1184	1241	1265	1256	1297	1390	1121	
97.8	1115	1140	1194	1303	1361	1365	1358	1473	1574	1411	
87.5	1172	1159	1218	1214	1272	1347	1332	1417	1511	1276	
77.2	1259	1192	1140	1199	1206	1272	1221	1331	1456	1351	
66.9	1288	1245	1255	1201	1278	1298	1346	1413	1522	1517	
56.6	1245	1180	1184	1144	1235	1242	1285	1359	1354	1394	
46.3	1188	1066	1087	1039	1139	1160	1185	1348	1341	1281	
36.0	1096	1094	1089	1037	1084	1084	1166	1350	1355	1191	
25.7	1026	1089	1058	1050	1016	1081	1124	1294	1355	1185	
15.4	999	1030	1065	1073	1068	1129	1234	1378	1528	1237	
5.1	1150	1187	1184	1139	1195	1331	1395	1665	1380		
y / x	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	

$E_{av} = 1200$  lx ,  $E_{min}/E_{av} = 0.76$  ,  $E_{min}/E_{max} = 0.54$



**98-055 Robot Stadium Salalah - Final design**  
**Colour T.V. - vertical illuminance  $E_v = 900/700/500$  Lux**  
**446 x "MAXILUX" + 44 x "RECTALUX"**

**ILLUMINANCE DISTRIBUTION - REFERENCE PLANE - (lx)**  
 vertical illuminance  $E_{v1}$

170	802	1151	962	1096	1070	899	816	718	720	793	650
160	827	1100	1154	1261	1238	1194	1079	1074	1222	1051	749
149	684	917	1067	1206	1057	1042	1058	1067	1154	939	718
139	616	910	1139	1073	989	970	1058	1158	1205	915	789
129	878	1092	1217	1098	986	1031	1049	1109	1061	1067	867
118	1005	1240	1132	1016	1043	1067	1073	1109	1090	1091	1108
108	890	1146	1058	1103	1155	1126	1186	1104	1169	1001	988
97.8	907	1098	1169	1171	1284	1233	1254	1236	1172	1112	948
87.5	978	1167	1198	1218	1313	1272	1308	1323	1325	1182	1138
77.2	821	1149	1161	1147	1191	1180	1275	1180	1267	1284	1205
66.9	917	1165	1275	1334	1247	1249	1171	1226	1274	1263	1183
56.6	926	1031	1198	1209	1191	1147	1125	1076	1232	1144	1080
46.3	793	1061	1121	1084	1114	1065	1064	1139	1183	1187	979
36.0	697	1017	1195	1116	1067	1094	1115	1208	1240	1066	925
25.7	651	1028	1112	1157	1135	1085	1249	1269	1174	949	899
15.4	672	1178	1091	1086	1092	1117	1203	1094	1004	898	863
5.1		809	882	834	968	923	1044	885	869	724	743
y / x	-100.0	-90.0	-80.0	-70.0	-60.0	-50.0	-40.0	-30.0	-20.0	-10.0	0.0
170	787	924	983	935	911	932	981	1001	867	705	
160	785	952	939	879	803	871	973	1008	1028	764	
149	713	837	872	821	840	802	937	1011	998	789	
139	766	806	810	775	750	813	816	891	757	702	
129	902	881	861	849	790	723	696	761	760	624	
118	1143	1076	1001	891	848	768	710	683	651	608	
108	891	907	860	858	862	791	793	733	687	558	
97.8	909	885	895	925	891	853	815	803	726	591	
87.5	1044	914	879	824	804	783	759	769	784	621	
77.2	1216	1167	1004	884	847	804	756	737	806	655	
66.9	1234	1225	1124	1068	1050	949	887	828	813	687	
56.6	1086	1225	1290	1246	1217	1073	968	837	750	707	
46.3	990	1006	1081	1102	1103	987	865	766	682	626	
36.0	903	968	1034	1051	1048	943	829	722	636	591	
25.7	814	781	749	758	723	676	616	581	631	596	
15.4	621	658	662	686	672	616	615	623	811	781	
5.1	597	821	613	748	675	722	856	824	989		
y / x	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	

$E_{av} = 961$  lx ,  $E_{min}/E_{av} = 0.58$  ,  $E_{min}/E_{max} = 0.42$

**98-055 Robot Stadium Salalah - Final design**  
**Colour T.V. - vertical illuminance  $E_v = 900/700/500$  Lux**  
**446 x "MAXILUX" + 44 x "RECTALUX"**

**ILLUMINANCE DISTRIBUTION - REFERENCE PLANE - (lx)**  
 vertical illuminance  $E_v2$

170	577	700	720	796	804	723	766	779	828	962	984
160	678	833	877	1055	953	922	976	959	1074	1091	1010
149	553	639	810	960	821	905	986	953	1059	960	869
139	547	668	824	834	860	898	968	1041	1100	917	974
129	720	861	837	816	898	1034	1042	1113	1036	1039	936
118	746	966	882	902	1046	1108	1122	1136	1087	1047	990
108	672	972	1053	1146	1198	1155	1166	1068	1077	906	965
97.8	713	1000	1199	1246	1322	1169	1147	1075	1012	951	885
87.5	753	994	1146	1172	1232	1104	1080	1047	987	901	904
77.2	767	935	907	951	988	921	953	845	874	812	758
66.9	1087	978	864	904	883	891	820	818	804	747	703
56.6	1081	915	891	766	740	727	746	723	766	685	675
46.3	817	888	832	684	638	603	613	661	667	674	628
36.0	676	801	783	637	572	564	585	649	672	646	633
25.7	569	818	749	639	586	583	653	683	706	698	725
15.4	544	902	800	697	623	609	633	639	696	667	756
5.1		643	932	928	745	613	618	562	768	718	527

y / x    -100.0    -90.0    -80.0    -70.0    -60.0    -50.0    -40.0    -30.0    -20.0    -10.0    0.0

170	993	842	789	773	744	821	821	775	713	592
160	1122	1102	956	999	986	1014	1048	924	862	691
149	966	1086	968	973	893	841	978	807	636	580
139	927	1134	1055	965	879	877	880	839	711	626
129	1041	1034	1118	1036	1028	911	850	918	900	848
118	1035	1073	1127	1118	1109	1058	926	919	1075	889
108	904	1073	1065	1163	1154	1202	1152	1058	1006	687
97.8	951	1012	1075	1147	1169	1322	1246	1199	1000	713
87.5	901	987	1047	1080	1104	1232	1172	1146	994	753
77.2	812	874	845	953	921	988	951	907	935	767
66.9	747	804	818	820	891	883	904	864	978	1087
56.6	685	766	723	746	727	740	766	891	915	1081
46.3	674	667	661	613	603	638	684	832	888	817
36.0	646	672	649	585	564	572	637	783	801	676
25.7	698	706	683	653	583	586	639	749	818	569
15.4	667	696	639	633	609	623	697	800	902	544
5.1	718	768	562	618	613	745	928	932	643	

y / x    10.0    20.0    30.0    40.0    50.0    60.0    70.0    80.0    90.0    100.0

$E_{av} = 860$  lx ,  $E_{min}/E_{av} = 0.61$  ,  $E_{min}/E_{max} = 0.4$

**98-055 Robot Stadium Salalah - Final design**  
**Colour T.V. - vertical illuminance  $E_v = 900/700/500$  Lux**  
**446 x "MAXILUX" + 44 x "RECTALUX"**

**ILLUMINANCE DISTRIBUTION - REFERENCE PLANE - (lx)**  
 vertical illuminance  $E_{v3}$

170	700	861	995	974	919	887	908	944	898	756	636
160	758	1022	1001	965	858	784	855	897	920	772	740
149	782	990	1003	927	793	820	796	841	819	703	708
139	695	750	881	805	800	736	755	791	770	755	783
129	618	754	750	682	709	777	838	846	856	874	849
118	600	642	671	693	753	837	886	1012	1114	1156	1109
108	548	674	720	785	786	860	873	853	902	876	962
97.8	580	714	792	808	854	902	934	891	874	899	928
87.5	613	773	757	751	776	795	821	876	918	1045	1112
77.2	647	798	727	746	793	831	878	1003	1193	1231	1193
66.9	675	802	817	876	933	1031	1057	1119	1254	1253	1181
56.6	699	740	826	957	1056	1200	1234	1274	1237	1084	1066
46.3	618	673	756	854	972	1091	1092	1076	997	979	964
36.0	584	629	713	820	932	1038	1041	1024	957	890	902
25.7	591	624	572	607	665	713	746	736	754	790	882
15.4	776	804	615	606	607	658	666	637	646	602	854
5.1		982	817	847	714	659	730	587	802	581	735
y / x	-100.0	-90.0	-80.0	-70.0	-60.0	-50.0	-40.0	-30.0	-20.0	-10.0	0.0
170	791	693	677	768	863	1016	1049	923	1077	741	
160	1066	1186	988	1043	1188	1206	1157	1085	1005	741	
149	922	1149	1025	974	962	1011	1137	978	829	614	
139	912	1223	1130	997	887	957	1051	1053	843	565	
129	1042	1019	1093	999	978	964	1077	1208	976	801	
118	1034	1048	1072	1040	1044	1041	1015	1096	1234	946	
108	965	1123	1071	1160	1107	1145	1081	995	1095	732	
97.8	1070	1144	1220	1238	1218	1272	1135	1086	1130	909	
87.5	1146	1285	1293	1289	1253	1292	1196	1123	1180	839	
77.2	1231	1235	1156	1253	1157	1191	1138	1135	1039	751	
66.9	1210	1227	1197	1150	1220	1245	1351	1275	1094	838	
56.6	1104	1197	1043	1099	1123	1191	1172	1158	980	865	
46.3	1153	1147	1092	1015	1027	1074	1048	1065	997	713	
36.0	1027	1209	1189	1055	1035	1006	1062	1128	952	635	
25.7	939	1131	1241	1225	1027	1094	1098	1035	978	593	
15.4	897	1014	1078	1175	1069	1049	1035	1061	1137	607	
5.1	713	815	878	1002	893	935	793	828	760		
y / x	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	

$E_{av} = 936$  lx ,  $E_{min}/E_{av} = 0.58$  ,  $E_{min}/E_{max} = 0.41$

**98-055 Robot Stadium Salalah - Final design**  
**Colour T.V. - vertical illuminance  $E_v = 900/700/500$  Lux**  
**446 x "MAXILUX" + 44 x "RECTALUX"**

**ILLUMINANCE DISTRIBUTION - REFERENCE PLANE - (lx)**  
 vertical illuminance  $E_{v4}$

170	584	644	562	578	553	563	648	795	921	968	761
160	880	923	824	772	702	666	768	952	1161	1025	883
149	1019	1098	1028	940	783	815	800	952	1068	921	788
139	989	1067	1134	932	875	789	852	927	968	809	704
129	1154	1114	1144	938	826	832	865	826	821	775	703
118	1194	1123	1011	932	921	964	877	893	806	729	711
108	987	1057	952	940	919	956	978	816	817	727	661
97.8	783	907	1036	925	929	952	966	940	812	846	703
87.5	932	1113	1020	909	921	964	939	913	859	929	818
77.2	921	1172	998	886	906	987	993	953	996	1088	1109
66.9	965	1133	1039	1008	923	1049	992	1019	1088	1261	1256
56.6	1009	912	902	973	907	1079	881	996	942	1264	1084
46.3	869	794	727	756	813	938	825	882	854	1118	932
36.0	697	678	656	655	727	799	759	757	813	933	867
25.7	725	690	692	666	683	700	765	768	840	842	821
15.4	761	787	694	677	687	716	728	761	780	786	820
5.1		855	810	639	692	653	677	714	755	716	717
y / x	-100.0	-90.0	-80.0	-70.0	-60.0	-50.0	-40.0	-30.0	-20.0	-10.0	0.0
170	968	921	795	648	563	553	578	562	644	584	
160	1025	1161	952	768	666	702	772	824	923	880	
149	921	1068	952	800	815	783	940	1028	1098	1019	
139	809	968	927	852	789	875	932	1134	1067	989	
129	775	821	826	865	832	826	938	1144	1114	1154	
118	729	806	893	877	964	921	932	1011	1123	1194	
108	727	817	816	978	956	919	940	952	1057	987	
97.8	846	812	940	966	952	929	925	1036	908	785	
87.5	925	855	910	938	964	924	916	1025	1170	973	
77.2	1074	984	948	991	989	920	909	1038	1205	1022	
66.9	1240	1065	1011	992	1054	952	1074	1137	1208	1072	
56.6	1250	924	989	882	1093	951	1009	953	985	1135	
46.3	1110	844	868	817	944	825	774	731	830	918	
36.0	923	812	767	747	791	714	648	639	683	724	
25.7	859	848	786	793	690	696	660	667	730	783	
15.4	812	822	798	758	724	701	682	749	862	784	
5.1	730	744	757	678	666	705	632	808	869		
y / x	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	

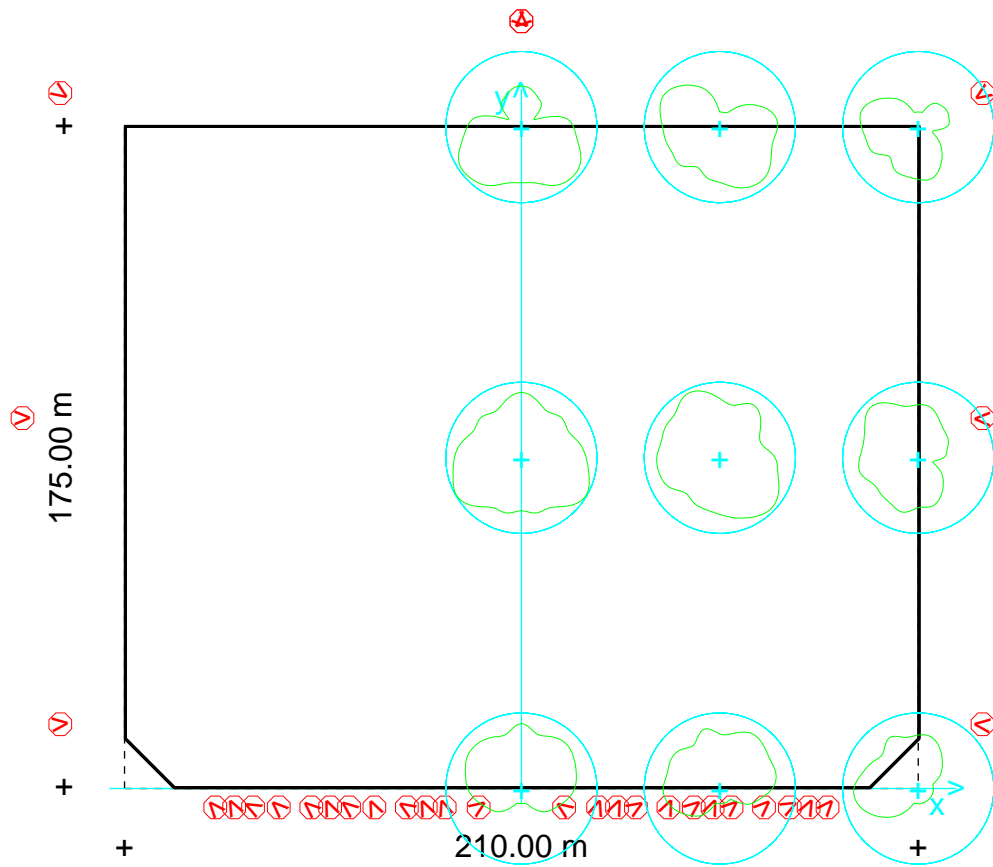
$E_{av} = 880$  lx ,  $E_{min}/E_{av} = 0.63$  ,  $E_{min}/E_{max} = 0.44$

98-055 Robot Stadium Salalah - Final design  
 Colour T.V. - vertical illuminance  $E_v = 900/700/500$  Lux  
 446 x "MAXILUX" + 44 x "RECTALUX"

Scale 1 : 2000

## DISTRIBUTION OF RELATIVE GLARE RATINGS

Reference glare rating GR rel. = 50



Glare rating (GR)	Glare assessment
90	unbearable
70	disturbing
50	just admissable
30	noticeable
10	unnoticeable