



Design, Supply, Install, test and commission
Lights and automated lighting systems for Radio Building

i. **General Conditions:**

- 1.1. The work should involve, but not be limited to the following items mentioned in these specifications. As the successful tenderer shall do all work necessary to complete the project satisfactorily even if it is not mentioned in the specifications or BOQ and if contractor does not mention the extra work in BOQ , contractor is obliged to achieve work with out any charges.
- 1.2. The entire works shall be carried out in strict accordance with the latest issues of the rules and regulations of the electrical installation works issued by the Ministry of Electricity and Water.
- 1.3. All electrical installations are to be supervised by a licensed electrical supervisor and carried out by an approved electrical contractor authorized by **KSE**.
- 1.4. Contractor shall be of CTC grade 4.
- 1.5. Contractor shall submit a compliance sheet with the technical and financial offer.
- 1.6. All electrical installation materials should be the best of their kinds in terms of technology and quality including : socket outlets, power track light fittings, switches, wires, PVC pipes red sign and all accessories. Samples of all materials are to be submitted for approval before commencing the work.
- 1.7. Shop drawings for power, lighting, cables, DB layouts are to submitted for approval before commencing the work.
- 1.8. All lux calculations are to be calculated and submitted using DILUX program and shall be approved by MOI engineer.

- 1.9. If found any additional either electrical works or materials are required to complete the works satisfactory but not mentioned in the specifications or in BOQ , the electrical contractor shall be responsible to supply and execute the additional works without extra time and money .
- 1.10. All materials submitted shall have an attached certificate letter from the manufacturer confirming that the materials comply with standards mentioned below (see ii. Codes and Standards).
- 1.11. All materials shall have an approval from MEW and the approval shall be submitted to MOI engineer for confirmation.
- 1.12. Contractor shall remove all existing lights and transport them to MOI stores.
- 1.13. Any required modification in ceilings shall be mentioned and priced in priced BOQ or else shall be carried out without extra costs.
- 1.14. Upon completion of all works, MOI engineer is to be given a three sets of as built AutoCAD drawings of the complete works 2 hard copies depicting all works.
- 1.15. Five year guarantee and warranty for all electrical works from the date of issuing P.H.O certificate.

ii. Codes and Standards:

1. All lightings, and lighting systems and installation shall strictly comply with the following standards :

- a. IEC/BS EN 60598-1 Luminaires - Part 1: General requirements and tests
- b. IEC/BS EN 60598-2-1 Luminaires. Part 2-1: Particular requirements - Fixed general purpose luminaires
- c. IESNA TM-21-11 projecting Long Term Lumen Maintenance of LED Light Sources
- d. IES/IESNA LM-80-08 Approved Method for Measuring Lumen Maintenance of LED Light Sources
- e. IEC/BS EN 60529 Degrees of protection provided by enclosures
- f. IEC/BS EN 62262 Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
- g. EC/BS EN 62471 Photobiological safety of lamps and lamp systems
- h. BS EN 55015 Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
- i. IEC/BS EN 61547 Equipment for general lighting purposes - EMC immunity requirements
- j. IEC/BS EN 61000-3-2 Electromagnetic compatibility (EMC) Limits. Limits for harmonic current emissions (equipment input current \leq 16 A per phase)
- k. IEC/BS EN 61000-3-3 Electromagnetic compatibility (EMC) Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current \leq 16 A per phase
- l. IEEE 519-1992 IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems. IEEE C62.41.2-2002 Recommended Practice on Characterization of Surges in Low-Voltage (1000V and Less) AC Power Circuits

iii. **Submittals:**

1. Contractor is to submit lighting and lighting systems catalogues from manufacturing company showing that products comply with standards mentioned above.
2. Contractor is to submit a fully detailed technical manufacturing catalogue showing all details ; type of LED fitting proposed, overall dimensions, photometric data, rated voltage, insulation class, degree of protection, maximum working temperature and size of internal wiring.
3. Contractor is to submit lighting calculations using the newest version of DIALUX or any other certified lighting installation software.
4. Lighting distribution shall be per 1000 lumens .
5. Sample of each type of the proposed lighting fitting and lighting system components.
6. An initial design shall be submitted to MOI engineer for approval Initial Layout for lights and light fixtures including all power points and breakers and switches relevant to lights and initial layout must be approved by MOI engineer. , . (1 copy).
7. A final design shall be submitted showing all works done including lights, light fittings, power outlets, lux for each light, switches, ...etc (see General conditions 1.10).

iv. Scope of Work:

This project aims to design, supply, install, commission lights and automated lighting systems for the radio building in the ministry of information. The project shall cover the basement (both levels) , ground floor, first floor and second floor. The project shall achieve the new MEW standards of switching the

entire lighting systems in Kuwait to an eco-friendly LED systems with programmed occupancy sensors to save energy and power.

The work shall be done in strict accordance to the specifications mentioned in this tender, however any missing items or work needed to accomplish this project and hasn't been mentioned in the specifications or BOQ shall be priced after the site survey or else contractor will achieve the job with the necessary requirements without any extra expenses.

The work shall include (but not limited to) :

- a. Design Criteria: contractor is to submit an initial design prior to commencing work for MOI engineer's approval and any modifications noted by engineer shall be done.
- b. Submittals:
 - a. All lux Calculations using DIALUX software.
 - b. Initial Layout for lights and light fixtures including all power points and breakers and switches relevant to lights and initial layout must be approved by MOI engineer.
 - c. Detailed manufacturer catalogue and manual.
 - d. Standards certificates.
 - e. Samples of all equipment (lights, fixtures, wirings, etc)
 - f. Final design layout (3 copies both softcopy and hardcopy).
- c. Lights:
 - Contractor shall supply, install and commission LED lights for all radio building floors and rooms according to specifications mentioned in document.
 - Dismantled light points that shall not be used later, shall be covered with covers made of suitable materials according to material of ceilings at site.

d. Light Fixtures:

- Contractor shall supply, install and commission light fixtures according to specifications mentioned in document.

e. Switches :

- Contractor shall supply and install and test and commission switches for lights.

f. Occupancy Sensors:

- Contractor shall design, supply, install and commission occupancy sensors for specified locations mentioned later by MOI engineer .

g. Maintenance and spare parts:

- Contractor is responsible for providing spare parts to all equipment in case of defection occurrence or need for replacement during warranty period.

h. Guarantee:

- Contractor shall provide guarantee for all equipment.

i. Warranty:

- All equipment and works in this project shall have a warranty of 5 years.

Technical Specifications:

1. Lights:

1.1 Contractor shall supply, install and commission LED lights for Radio building

- a. First Basement
- b. Ground Floor
- c. First Floor
- d. Second Floor
- e. When dismantling lights, and not reusing light points for new installations, points shall be covered with covers suitable for materials of the ceilings.

1.2 Lights shall be the best of their kinds and shall comply with all standards mentioned in the document.

1.3 Lights shall be dust proof, water proof and oil proof and shall have an IP of 55 or above.

1.4. Lights shall have a color rendering index (CRI) of 80+ and above .

1.5 Lights shall be no less than 50,000 hours of light.

1.6 Lights shall be:

- a. 60 x 60 low glare 19 and shall
- b. downlights

note: each type shall be installed according to existing fitting to avoid ceiling modifications.

1.7 Lux shall be not less than the average : 500 Lux

1.8 LED chip shall be creed / vs from:

- a. Philips
- b. Osram
- c. LG

d. Samsung

1.9 Lights shall tolerate and operate at -10 degree Celsius and maximum 50+ degree Celsius.

1.10 Corridors shall have an average lux of 250 lux and shall have aluminum body and reflector.

1.11 Ladders and stairways shall have an average 75-100 Lux.

1.12 Lights voltage shall operate at 220 - 240 v and frequency of 60 Hz and pf 0.9.

1.13 Lights shall have an overheating protection.

1.14 Lights shall allow any future occupancy sensor connections.

1.15 Lights shall be made to fit offices and commercial buildings and color shall be white and daylight cool ranging from 4 K.

1.16 Lights shall be Lens type No glare lights

1.17 Light lamination shall be evenly distributed.

1.18 Where there should be critical equipment, lights shall be wire-glow tested prior to installation and shall be approved by MOI engineer.

1.19 Lights shall be one from the following:

- Philips lighting
- Orsam Lighting
- Iluma
- Or equivalent

2. Drivers:

2.1 Drivers shall be of a highly reliable quality and shall have a guarantee of life time of minimum 10 years if operated in no more than 45 degree Celsius.

2.2 Drivers shall have minimum efficiency of 85%

2.3 Driver shall have an over-heat thermal protection in the form of automatic dimming or stepping down when operating in high temperatures, thermal cut-outs are not acceptable.

2.4 The driver's output current must be fully tested and must be compatible with the exact LED engine luminaire

2.5 Drivers shall operate at 240 v, 50 Hz and single phase and $PF > 0.90$

2.6 Drivers shall have a total luminaire harmonic distortion $< 20\%$.

2.7 LED drivers shall be EU tested and shall be from the following:

- Philips
- Osram
- Tridonic
- TCI

3. Light Fittings:

3.1 All light fittings shall be first class quality.

3.2 All fittings shall withstand a maximum temperature of 45 degree Celsius indoors.

3.3 All fittings shall be of class 1 insulation and shall be protected against dust and humidity.

3.4 Fittings for LED panel lights shall be slim type and shall be light weighed made with aluminum.

3.5 Earthing Terminal shall be provided for each terminal.

3.6 Lights shall be recessed mounted.

3.7 Body and Reflectors shall be aluminum.

4. Internal Wirings:

4.1 Contractor shall install and test and commission lights with their wirings and wire works.

4.2 Internal wiring shall be made with silicon rubber insulation or high temperature rated PVC.

4.3 If ceiling roses are to be used . terminals shall be clearly marked to indicate phases and neutral.

4.4 For all cables relevant to the lights whether new or dismantled, cables being fed from DB shall be covered with heat shrinkable sleeve tubes for the purpose of protection.

4.5 Any cable works required and not mentioned shall be priced in priced BOQ or else, contractor shall commence work without any extra costs or time.

5. Switches:

5.1 Switches shall be brass finished matt chrome.

5.2 Switches shall be from 5 to 15 amps and grids shall have an earthing terminal.

5.3 Switches shall be push to make and push to break type.

6. Occupancy Sensors:

6.1 Occupancy sensors shall have a built in switch and shall be installed to save energy no less than 35% in areas specified by MOI engineer.

6.2 Occupancy sensors shall be passive infrared technology and shall have a timer to control the circuit and shall have a sufficient ampere to support lighting fixtures,

6.3 Occupancy sensors should be functional after 3 pm until 6 am.

6.4 Sensors shall have adjustable switch-off delay from 30 s to 20 minutes.

6.5. Sensors shall cover areas according to length of areas and contractor shall design occupancy sensors according to width and length of given corridors.

6.6. Sensors shall operate at 110-240 v, with maximum load based on light fixtures.

6.7 Sensors should be ceiling mounted with suitable bracket. .

6.8 System / Setup functionality shall match the requirements of the location occupants / employees . ie: practical to the most effective.

7. Warranty:

All works shall have a warranty of 5 years.

