



**ممارسة  
توريد وتركيب وضمان مجففات هواء لخطوط التغذية لمحطات  
الارسال الاذاعي في الجليعة والمقوع والجيوان**

**CONTENTS:**

**CHAPTER 1:**  
**SCOPE OF WORKS**

**CHAPTER 2:**  
**GENERAL AND SPECIAL TECHNICAL CONDITIONS**

**CHAPTER 3:**  
**TECHNICAL SPECIFICATIONS**

**CHAPTER 4:**  
**BILL OF QUANTITIES**

## **CHAPTER 1**

### **SCOPE OF WORKS**

- 1.1. Introduction
- 1.2. Objectives
- 1.3. Time Scale

## **1.1 Introduction:**

The Ministry of Information (MOI) invites **Specialized Bidders only** to submit their offers of FM/AM dehydrator system for the radio station along with all accessories with related hardware and software systems. Offers shall be in full compliance with the general conditions, special conditions, technical specifications, and all other requirements stipulated in this document, all offered equipment shall be of the latest state-of-the-art technology.

The conditions and specifications stated in this document represent the minimum requirements needed to execute the project. Any other work/s needed to fulfill this target and not explicitly mentioned in this document must be stated and priced in the BOQs as indispensable items, otherwise, it/they will be executed by the contractor free of any charge to MOI.

## **1.2 Objectives:**

1.2.1- *FM /AM dehydrator* System for the FM/AM radio stations with all accessories.

1.2.2- Power Supply.

1.2.3- The entire work shall include supply, installation, commissioning, and warranty.

## **1.3 Time Scale:**

1. The project shall be completed and commissioned within (3) months from the date of signing the contract.
2. Following the successful commissioning, a one-week period shall be needed for testing the reliability of the whole system, before issuing the Final handing-over certificate (FHOC).
3. The guarantee period (24) months shall start from the date of issuing the FHOC.

## **CHAPTER 2**

### **GENERAL AND SPECIAL TECHNICAL CONDITIONS**

- 2.1. Standards, Recommendations and Regulations.
- 2.2. Prevailing Conditions in the State of Kuwait.
- 2.3. System Engineering, Integration and Verification.
- 2.4. Project Responsibility.
- 2.5. Approval of Materials and System Drawings.
- 2.6. Manuals, and Catalogues.
- 2.7. Guarantee.
- 2.8. Final Handing-Over Certificate (FHOC).
- 2.9. Site Visit.

## **2.1. Standards, Recommendations and Regulations:**

The systems, equipment, and constructions included in this project shall meet the following recommendations and regulations:

1. ITU-R Recommendations.
2. Ministry of Electricity and Water (MEW) Regulations.
3. Ministry of Communications (MOC) Regulations.
4. Kuwait Civil Aviation Department Regulations.
5. EBU/ IEC Standard.
6. Public safety agency.

## **2.2. Prevailing Conditions In The State of Kuwait:**

### **2.2.1. Environmental Conditions:**

- i. Temperature:
  - Max. Ambient shade temperature: 50 °C.
  - Min. Temperature can go below freezing point on some nights.
- ii. Humidity:
  - Max. Humidity: 98%
- iii. Wind Speed:
  - Max. Wind Speed: 100 Km/hr
- iv. Rain:
  - Max. Annual rainfall: 100 mm
  - Max. Rainfall in one day: 35 mm
- v. Dust: The site is characterized by sever sandstorms. Therefore, special attention shall be given to the high dust contents in the outside atmosphere, and special precautions shall be provided to prevent the ingress of dust into the installations.

*(Note: The above conditions are applicable only on outdoor equipment)*

### **2.2.2. Mains Power Supply:**

Phases: 3 Phase and neutral;  
Line and Phase Voltage: 415/240V +/- 6 %;  
Frequency: 50Hz +/- 2Hz.

**2.3. System Engineering, Integration, and Verification:**

- 2.3.1. The required systems shall be designed to the latest state-of-art technology to provide reliable high-quality performance of the FM /AM dehydrator system.
- 2.3.2. The integrated equipment will be subject to verification testing by MOI and the Contractor engineers as a part of the commissioning to ensure that performance characteristics have been met.
- 2.3.3. The bidder must submit a detailed system description in his offer and all related technical documents of the offered products.
- 2.3.4. The offered equipment must be from reputable, worldwide known manufacturers.

**2.4. Project Responsibility:**

This project or its parts shall be executed and handed over to MOI under the full responsibility of the contractor.

**2.5. Approval of Materials and System Drawings:**

Approval of materials and system drawings must be obtained from MOI at least 5 days before use at the site. Accessibility of components/units and ease of maintenance shall be taken into consideration in the layout of different equipment/units.

**2.6. Manuals, and Catalogues:**

Before testing and commissioning of the whole system, the Contractor shall submit **three (hard copies) and three (soft copies)** of the following:

- 2.6.1. Detailed description of equipment.
- 2.6.2. Operation/Instruction/Service Manual/s.

All manuals must be comprehensive, well-explained and well-documented. The delivery of these manuals and all documents (Soft/ Hard copy) necessary for the proper operation and maintenance shall be pre-requisite before issuing the project Final Handing-Over Certificate (FHOC). All documents shall be in English.

**2.7. Guarantee:**

The Contractor shall guarantee all sub-systems of the project, for a period of 24 months after the date of Final Handing-Over Certificate (FHOC). All defective units or components during this period shall be replaced or repaired by the Contractor, free of any charge to MOI. If during the guarantee period repetitive faults take place in such a way that affects the performance, reliability of any of the project sub-systems, the contractor shall bear full responsibility to rectify these problems in a good engineering practice free of any charge to MOI.

**2.8. Final Handing-Over Certificate (FHOC):**

This FHOC shall be issued one week after Test completion. In case of abnormal defects, FHOC shall be delayed until restoring the equipment to the normal acceptable state.

**2.9. Site Visits:**

For proper/realistic pricing of the offers, all Bidders **MUST visit** the station. The visit shall be made after the pre-tender meeting.

## **CHAPTER 3**

### **TECHNICAL SPECIFICATIONS**

**The required FM/AM systems must comply with the features mentioned below:**

#### **3.1 FM dehydrator specification (Qty=2):**

##### **3.1.1 Output Ratings**

60 Hz	0.7 SCFM (0.32 liter/sec)
50 Hz	0.58 SCFM (0.27 liter/sec)
Output Dew Point	-40°F (-40°C)
Ambient Inlet Temp.	33°F-120°F (1°C -49°C)
Ambient Humidity	95% Maximum

##### **3.1.2 Output Pressure for common Version**

Factory Set (on - off)	3-5 psig (20.7/34.5 kPa)
Field Adjustable range	1-10 psig (6.9 - 69 kPa)
Differential	2 psig (13.8 kPa) typical
Compressor Ratings	1/4 hp
Power Consumption	Pumping 600 watts Idle 10 watts
Low Pressure Alarm	1 psig (6.9 kPa)
Output Fitting	1/8 NPT x 3/8" OD tubing

### 3.1.3 MAXIMUM DEHYDRATOR CAPACITY

Transmission Line	Feet	meter
7/8"	73,000	22200
1-5/8 "	24,000	7300
3-1/8"	7,300	2200
6-1/8"	1,700	500
6 to 12 GHz waveguide	28,000	8500
4 to 5 GHz waveguide	14,000	4300

### 3.1.4 FM Exciter (Qty=1):

For the existing FM Transmitter shall supply PTX-LCD100 or compatible with installation.

### 3.1.5 Automatic Program Changeover Unit (Qty=8):

- They used to automatically select between two identical stereo program paths and in emergency switch over to a reserve path.
- LEDs indicate program signal.
- XLR connectors.
- LED for Alarm or Fail.

## **3.2 AM dehydrator specification (Qty=5):**

### Output rating

50 HZ	0.58 SCFM (0.27 liter/sec)
Normal Capacity	6000 SCFD
Emergency Capacity	7000 SCFD
Electrical Requirement	220V, 50Hz, 1ph

Compressor	1 HP
Operating Current	13 amps
Compressor Protection	10 amp C.B.
Circuit Protection	0.5 amp C.B.

### **3.3 Power Supply:**

- Output Power 1000W or higher on one module.
- (14) PSU with (7) chassis model E2322.
- (10) PSU model E2088.
- Output Voltage Range 43V to 58V.
- Output Current 21A.
- Hot swap capable.
- Overvoltage and Overcurrent Protection.
- Front panel indicators.

## **CHAPTER 4**

### **BILLS OF QUANTITIES (BOQ)/**

- 4.1 IMPORTANT NOTES
- 4.2 PRICE SCHEDULES

## **4.1. Important Notes:**

4.1.1. Any items/works not mentioned in the previous pages and/or the attached BOQ but indispensable for proper installations/implementations/performance of the different sub-systems of this project **MUST** be inserted, described, and priced in the relevant schedule/s. Otherwise, these items/works shall be provided/done free of any charge to MOI, before PHO.

4.1.2. The contractor **MUST** include in their Detailed BOQ all the Items/works either mentioned/required in all previous pages or in the BOQ.

4.1.3. Detailed breakdown lists of all offered items/works **MUST** be submitted in the requested BOQ including the manufacturer name and product's part number. The technical evaluation will be performed based **only** on the part numbers/models mentioned in the detailed BOQ.

4.1.4. All items must be priced. No option items will be accepted in the BOQ.

#### 4.2 PRICE SCHEDULE (BOQ):

<b>Item</b>	<b>Description</b>	<b>Qty.</b>	<b>Unit Price KD</b>	<b>Total Price KD</b>
1	FM dehydrator	<b>2</b>		
2	AM dehydrator	<b>5</b>		
3	Power Supply E2322 with chassis (mention 3.3)	<b>14</b>		
4	Power Supply E2088 (mention 3.3)	<b>10</b>		
5	System Engineering and installation work.	<b>L.S.</b>		
6	Automatic Program Changeover Unit	<b>8</b>		
7	FM Exciter	<b>1</b>		
8	Other Indispensable Items [Detailed list shall be submitted]	<b>L.S.</b>		
<b>Total Price</b>				