**دولة الكويت**

**وزارة الإعلام**

MINISTRY OF INFORMATION

**Tender No:** **ممارسة رقم:**

**توريد وتركيب وفحص وتسليم وضمان وتدريب وتوفير أجهزة ونظام طوارئ لمراقبة الإرسال الفضائي**

# Supply, Install, Test, Commission, Guarantee, Train and Provide an emergency equipment and system for Satellite transmission Supervision

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# CHAPTER 1:

## 1. PROJECT SCOPE

### 1.1. Introduction

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# 1. PROJECT SCOPE

## 1.1. Introduction:

1.1.1. The Ministry of Information **(MOI)** invites **Specialised** Bidders to submit their offers for supply, installation, Testing, Commission, Guarantee, Training and Providing of a complete emergency system for a satellite broadcasting system, a spectrum analyser to inspect the broadcast signal, and other Radio Frequency equipment.

1.1.2. The project will be implemented in Al-Magwa Satellite Earth Station.

1.1.3. To be aware of the existing systems in the sites, the bidder shall be permitted a visit to the sites before the designing phase to assure the compatibility of the systems by its connections, power...etc.

1.1.4. The required work (Supply, Install, Test, Commission, Guarantee, Train and Provide) for the emergency system, spectrum analyser, and Radio Frequency equipment shall meet all the general conditions and technical specifications that are stated in this document, as this document is an essential part of the contract.

1.1.5. Conditions and specifications stated in this document represent the minimum requirements needed to execute the project. Any additional work is needed to fulfil this target and as indispensable items, otherwise it will be executed by the contractor free of charge to MOI.

1.1.6. All software licences needed to implement the emergency system, and any other equipment must be perpetual, ensuring indefinite validity without the need for renewal or additional fees.

1.1.7. The bidder must gather all the needed information for the required emergency system, and any other equipment.

1.1.8. All offered equipment must be the latest state-of-the-art technology due to the importance of such critical on-air systems. The participated bidder must have the required experience in the requested fields to execute the project with high quality standards for television broadcasting. All offered equipment and works must be **in compliance** with the **following**:

**a) This T.D., explicitly.**

**b) ITU Recommendations.**

**c) Arabsat specifications & requirements explicitly.**

**d) Eutelsat specifications & requirements explicitly.**

## 1.2. Objectives:

1.2.1. It is required to supply, install, Test, commission, guarantee, train and provide an emergency system.

1.2.2. The system shall include an automated content streaming and broadcasting a playout system for all Kuwait TV channels (DVB-S2) as specified in **Chapter (3)**, and an integrated receiver decoder (IRD) for **Two (2)** TV channels as specified in **Chapter (3).**

1.2.3. Provide the spectrum analyzer with the required training as specified in **Chapter (3).**

1.2.4. Provide the required Radio Frequency equipment as specified in **Chapter (3).**

1.2.5. Provide the required training to MOI's engineers and technicians in **Chapter (2).**

## 1.3. TIME SCALE:

1.3.1. The project must be completed and commissioned no later than **thirteen (13) months** from the date of site-handover.

1.3.2. Following the successful commissioning, **four (4) weeks** period shall be needed for testing the reliability of the whole system, before issuing the final handing-over certificate **(FHOC)**.

1.3.3. The warranty period, **twenty-four (24) months**, shall start from the date of issuing the FHOC.

# CHAPTER 2

# 2. GENERAL AND SPECIAL TECHNICAL CONDITIONS

**2.1 System Engineering, Integration and Verification**

**2.2 Project Responsibility**

**2.3 Approval of Materials and System Drawings**

**2.4 Inspection, Testing, Commissioning and Design Review of equipment**

**2.5 Compliance and Offer Qualification**

**2.6 Warranty**

**2.7 Selection, Rejection, Addition and/or Modification**

**2.8 Final Handing Over Certificate (FHOC)**

**2.9 Pre-Tender Meeting**

**2.10 Site Visits**

**2.11 Training**

# 2. GENERAL AND SPECIAL TECHNICAL CONDITIONS

## 2.1. System Engineering, Integration and Verification:

2.1.1. All offered technology and equipment must be of very high quality for broadcasting standards. shall be subjected to verification testing by the MOI, and the Contractor's Engineers. All bidders must provide a **(Manufacturer Authorization Letter).**

2.1.2. The bidder shall submit a compliance table indicating whether they are complying or not to each paragraph and sub-paragraph using the same numerical order. In case of not complying, the bidder shall provide a detailed explanation.

2.1.3. Operation and maintenance manuals include detailed diagrams, circuit description (no black boxes shall be accepted), printed circuit layout and datasheets to be supplied with the equipment. All documentation shall be in English.

2.1.4. The contractor shall ensure the state-of-the-art design including system integration, wiring, installation, and any work related to the project.

2.1.5. Due to the importance of the project, the participating bidder shall have the required experience in broadcasting to execute the project.

2.1.6. The bidder shall give a detailed price list for each item of the offer along with the brand, model, and licences of each item. The bidder shall give detailed prices of installation, commissioning and all the services in the Bill of quantity **(B.O.Q)** as well.

## 2.2. Project Responsibility:

2.2.1. The project shall be executed and handed over to **(MOI)** under the full responsibility of the Contractor.

2.2.2. Installation, and testing equipment are the responsibility of the contractor. **(MOI)** will not be responsible for any installation and testing.

2.2.3. MOI shall have the right to request replacement of item/s that are not compatible with existing systems, considered suitable and/or compliant with all current laws and regulations.

2.2.4. The given **(B.O.Q)** is for illustration only. It is the responsibility of the bidder to provide a solution as per specifications. Therefore, any item not mentioned here but necessary to make a flawless system shall be added and priced.

## 2.3. Approval of Materials and System Drawings:

The project timeline, system drawing, and materials must be submitted to the **(MOI)** before signing the contract.

## 2.4. Inspection, Testing, Commissioning and Design Review of Equipment:

The overall system performance must be according to the offered equipment parameters and MUST be submitted with the offer.

## 2.5. Compliance and Offer Qualification:

2.5.1. The bidder must confirm their complete agreement with the contents of this **(T.D)**, including the technical specifications, English syntax, all chapters, and annexes. They are required to respond to each point and subpoint of the specifications. If the bidder has any reservations, disagreements, or deviations from this **(T.D)**, they should clearly indicate them by completing separate tables (Non-Compliance Schedules). These tables should be organised into columns for Chapter No., Page No., Item No., and Reasons of Non-Compliance.

2.5.2. The bidder is obligated to furnish comprehensive and detailed datasheets for all proposed equipment, encompassing all pertinent technical information. Additionally, the bidder's offer must incorporate a system description and system block diagram to elucidate the proposed solution. It is important to note that any offer that does not comply with these requirements will be rejected by the **(MOI)**.

2.5.3. The bidder's proposal **must** include the price list for each item, and total price for the requirements as per **(B.O.Q)**. The detailed list must include the unit's brand, model and description of all features and licences included in each unit.

## 2.6. Warranty:

2.6.1. The Contractor shall guarantee all system/subsystems of the project for a period of **twenty-four (24) months** after the date of the Final Handing Over Certificate **(FHOC)** All defective units, devices or components during this period shall be replaced by the Contractor, at no extra cost or time added to the contract value and duration. During the warranty period if any repetitive or catastrophic failure takes place in such a way that affects the performance, reliability or availability of any of the project subsystems, the Contractor must bear full responsibility to correct and amend these problems in a good engineering practice at no extra cost to **(MOI)**.

2.6.2. The Contractor's Warranty commitment should include the following services:
The warranty shall include the free replacement and/or repair of the defective component parts of the system that have demonstrated defects in materials and/or manufacturing and/or design. In case of failure, or an issue in the provided equipment the contractor will be notified; the contractor is required to take a prompt action within **twenty-four (24) hours.**

2.6.3. The replacement and/or repair of defective components shall be within four **(4) weeks.**

2.6.4. Transport costs relating to the shipment of any repair parts shall be included in the warranty.

2.6.5. The Contractor, without charge and cost for the entire duration of the warranty, **must** provide all the necessary updates to ensure the proper function and operation of the equipment placed in service. es to ensure the proper functioning and operation of equipment placed in service.

## 2.7. Selection, Rejection, Addition and/or Modification:

- ***All Bidders shall submit their proposal with hardcopy as well as a softcopy on Flash memory, compliance sheets must be submitted in Microsoft Excel and PDF formats.***
- ***The Ministry of Information has the right to disqualify (exclude) any proposal that does not contain the softcopy (flash memory) and (CD) of the tender documents including technical and commercial offer.***

The **(MOI)** reserves the right to:

2.7.1. Select the most preferred Manufacturer to **(MOI)** in case the Bidder offers more than one manufacturer for the same type of product for any item, which must be in conformity with the Tender Documents' specifications and requirements.

2.7.2. It is confirmed that cancelled items – if any – shall not affect the overall performance of this turn-key system.

## 2.8. Final Handing Over Certificate (FHOC):

The Final Handing Over Certificate **(FHOC)** will be issued when the project is completed, tested and accepted by **(MOI)** engineers. However, if system failures occur, the issuance of **(FHOC)** may be delayed until the system's performance is restored to a state that is normal and acceptable to **MOI**.

## 2.9. Pre-Tender Meeting:

Pretender meeting shall be held between Bidders and **(MOI)** representatives after **one (1) week** from announcing the tender as per announcement.

## 2.10. Site Visits:

For proper & realistic quotation of the offers, all Bidders MUST visit the site. These visits shall be arranged during the pre-tender meeting.

## 2.11. Training:

2.11.1. General training for **ten (10)** Engineers and Technicians by manufacturers' certified trainers only. This training shall take place before issuing the **(FHOC**).

2.11.2. Specific training for the overall system is trained by professionals from the manufacturer for a period of **five (5) working days (4 hours/day)** with proper literatures. This training will be comprehensive, regarding theoretical and practical aspects of the offered equipment.

2.11.3. The training must cover theoretical concepts, demonstration of features, software, operational and maintenance instructions, fault finding, component / module replacements, troubleshooting, preventive maintenance and other relevant topics, etc. Training material must be provided to each engineer.

2.11.4. The training must be video recorded and kept as a **soft copy (Flash memory and CD)** to be a reference to the **(MOI)** engineers.

## CHAPTER 3:

# 3. TECHNICAL REQUIREMENTS

## 3.1 General Requirements and System Description

## 3.2 Scope of Work

## 3.3 Equipment Specification

# 3. TECHNICAL REQUIREMENTS

## 3.1. General Requirements and System Description:

This project is to Supply, Install, Test, Commission, Guarantee, Train and Provide an emergency satellite broadcasting system, a spectrum analyser, and other Radio Frequency equipment.

## 3.2. Scope of Work:

3.2.1. In emergency situations, an inclusive emergency system will be implemented to transmit media content across all Kuwait TV channels. The system will consist of a playout server to transmit a minimum **five (5)** HD channels for **twenty-four (24)** hours and will be manually connected to the patch panel.

3.2.2. The playout system will have a storage capacity of **twenty-four (24)** hours for each channel, allowing it to store recorded media content. This comprehensive system ensures the seamless transmission of media content during emergency scenarios.

3.2.3. Along with a parallel line that has **Two (2)** IRDs that will receive Ku-band transmission of **two (2) HD TV channels** on **two (2)** satellites receiving antenna with accessories, and the diameter of the receiving dishes 1.8m. Also, the IRDs will be manually connected to patch panels, which in turn will be connected to the existing system.

3.2.4. A spectrum analyser is essential for analysing broadcast signals, serving as a reference point for the transmitted signal.

3.2.5. Provide **two (2)** Outdoor High-Power Amplifiers with all the necessary accessories with Upconverter.

## 3.3. Equipment Specification

3.3.1. **Complete playout system for DVB-S2 Broadcasting at Al-Magwa satellite earth station.**

3.3.1.1. High performance hard drive with storage capacity of a minimum of **twenty-four (24)** hours

3.3.1.2. The bidder shall supply and install a video playout system for 5 HD video channels.

3.3.1.3. 5 HD video playout/record services for at least 75 hours.

3.3.1.4. 3G/HD/SD-SDI video interface

3.3.1.5. Separate resolution per channel

3.3.1.6. Each channel can be configured as input or output.

3.3.1.7. Wed browser control.

3.3.1.8. Redundant power supply

3.3.1.9. **Integrated receiver decoders - harmonic IRD-:**

3.3.1.10. Inputs:

3.3.1.10.1. ASI input transport stream input

3.3.1.10.2. MPEG transport stream over IP **(UDP/RTP Multicast/Unicast)**

3.3.1.10.3. 100/1000BaseT input

3.3.1.10.4. Enables SMPTE 2022 Pro-MPEG FEC capability for the IP input card

3.3.1.10.5. L-band inputs. (Low and High Frequencies Reception)

3.3.1.10.6. Symbol Rate 1-45 Msps

3.3.1.11. Outputs:

3.3.1.11.1. composite video output.

3.3.1.11.2. RGB/YPrPb Analog video output.

3.3.1.11.3. ASI/SDI/HD-SDI outputs.

3.3.1.11.4. Gbps HD-SDI output compatible with MPEG-4 4:2:2 1080p50/60 capability.

3.3.1.12. Web browser and SNMP remote control.

3.3.1.13. DVB-S2 QPSK, 8PSK, 16APSK demodulation.

3.3.1.14. DVB-S2 Variable Coding and Modulation (VCM) multi-transport stream capability.

3.3.1.15. Enables decoding or pass-through of Dolby Digital Audio.

3.3.1.16. Video decoding: MPEG-2, MPEG-4 AVC/H.264. HEVC/H.265.

3.3.1.17. Audio decoding: MPEG-1 Layer II, AAC, Dolby Digital, and Dolby Digital Plus

3.3.1.18. At least four AES/EBU outputs.

3.3.1.19. Symbol rate: 1-45 MHZ, low symbol rate

3.3.1.20. Operating Temperature: 0-50˚C

3.3.1.21. Conditional Access BISS 1 and E.

3.3.1.22. Voltage: 13, 18V / 350mA

3.3.1.23. Front panel control.

3.3.2. **Patch panels:**

3.3.2.1. Rack mounted panel with 32 insulated feed-thrus for BNC 75 Ohm lines.

3.3.2.2. Industry standard 2U panel.

3.3.2.3. Numerical labelling below each port.

3.3.2.4. Heavy gauge steel and black powder coating.

3.3.2.5. Coaxial 75 Ohm BNC Patch Panel.

3.3.2.6. Fits 19-inch Rack

3.3.3. Satellite system:

Two (2) Satellite dishes 1.8m with proper PLL LNB to receive Ku-Band with all necessary accessories IFL.

3.3.3.1. Antenna :1.8m

3.3.3.2. Operating Frequency (GHz) Receive: 10.70 - 12.75 GHz

3.3.3.3. Midband Gain (±0.3 dBi) 45 dBi

3.3.3.4. VSWR: 1.4:1 Max

3.3.3.5. 3 dB Beamwidth RX: 1.0°

3.3.3.6. Antenna Noise Temperature 30° EL: 35K

3.3.3.7. Antenna Cross-Polarization >30 dB (on axis)

3.3.3.8. Feed Interface: Rx: WR75 Flat.

3.3.3.9. Reflector: One Piece Glass Fiber Reinforced Polyester SMC

3.3.3.10. Wind loading operational: 72Km/h

3.3.4. **Spectrum & Broadcast Analyser-ProMax:**

3.3.4.1. Broadcast Standards: Digital satellite (DVB-S2), Analogue (Analogue terrestrial, FM RDS)

3.3.4.2. Display: multi-touch screen.

3.3.4.3. Inputs & outputs:

3.3.4.4. Universal RF input (N-type, female 75 Ω)

3.3.4.5. Optical input (FC/APC, female)

3.3.4.6. ASI/SDI input and output (BNC female, 75 Ω 3 Gbps)

3.3.4.7. SPF+ connector

3.3.4.8. Analogue audio/video input (3.5 mm jack)

3.3.4.9. Stereo headphone audio output

3.3.4.10. HDMI output

3.3.4.11. USB 3.0 host - USB 2.0 (Type C).

3.3.4.12. Ethernet (RJ45)

3.3.4.13. Functions:

3.3.4.13.1. Constellation diagram

3.3.4.13.2. StealthID

3.3.4.13.3. PLS

3.3.4.13.4. Ultra fast Spectrum analyzer

3.3.4.13.5. 4K decoder

3.3.4.13.6. MAX and MIN hold

3.3.4.13.7. FM RDS radio measurement and decoding

3.3.4.13.8. Screenshots and Data logger for measurement reports

3.3.4.13.9. Beacon-Flyaways SND and VSAT

3.3.4.13.10. Wideband LNB

3.3.4.13.11. WiFi

3.3.4.13.12. OTT

3.3.4.13.13. Service Recording

3.3.4.13.14. Field strength measurement

3.3.4.13.15. Task planner

3.3.4.13.16. Merogram

3.3.4.13.17. Spectrogram

3.3.4.13.18. Signal monitoring

3.3.4.13.19. Remote control (webControl)

3.3.4.13.20. MER by carrier

3.3.4.13.21. GPS (included) coverage analysis

3.3.4.13.22. Video/Audio Streaming

3.3.4.13.23. SCAN +TILT

3.3.4.13.24. TS recording

3.3.4.13.25. TS analysis

3.3.4.13.26. Shoulder attenuation

3.3.4.13.27. DVB-S2 MI analysis

3.3.4.13.28. Eye diagram (SDI)

3.3.4.13.29. Carrier Frequency Drift Test

3.3.4.13.30. Frequency margin measurements: 45 to 1000 MHz (terrestrial), 250 to 2350 MHz (satellite).

3.3.4.13.31. Video codecs: H.265 4k UHD, H.264 4k UHD, MPEG-4 HD/SD, MPEG-2

3.3.5.

3.3.5.1. Audio codecs:

3.3.5.1.1. MPEG-1, MPEG-2, AAC, HE-AAC, Dolby Digital, Dolby Digital Plus. Digital and analogue demodulation.

### 3.3.6. HPA: Outdoor High-Power Amplifier with Upconverter:

3.3.6.1. High Power Amplifier

3.3.6.2. Frequency Range: Ku-Band: 13.750-14.500 GHz

3.3.6.3. Input Frequency: 950-1700 MHZ

3.3.6.4. External Reference: 10 MHZ, ±5 dBm

3.3.6.5. Output power: 400 W.

3.3.6.6. Small signal Gain: 80 dB.

3.3.6.7. Gain adjustment: 20 dB in 0.1dB step.

3.3.6.8. Gain Variation: 1dB p-p /36 MHZ, 3 dB p-p / 500MHz

3.3.6.9. Linearity optimized for high order modulation and high data rate.

3.3.6.10. overdrive protection

3.3.6.11. Phase noise: -65dBc /HZ @ 100 HZ

3.3.6.12. Output Spurious: -60 dBc.

3.3.6.13. Operating Temperature: -40°C to +60°C.

3.3.6.14. Humidity: 0-100% condensing

3.3.6.15. RF output VSWR: 1.25:1

3.3.6.16. ETH remote control.

3.3.6.17. Two Spare fans for each PA unit

3.3.6.18. Power Consumption: @ PLin Output 1400 W, @ Rated Output 2300 W

# CHAPTER 4:

### 4.1. B.O.Q:

| No. | Description | Qty. | Unit Price | | Total Price | |
|---|---|---|---|---|---|---|
| | | | K.D. | Fils | K.D. | Fils |
| 1 | **Complete playout system for DVB-S2 Broadcasting** | 1 | | | | |
| 2 | **Integrated receiver decoders - Harmonic** | 2 | | | | |
| 3 | **Patch panels** | 2 | | | | |
| 4 | **Satellite Receiving antenna dishes** | 2 | | | | |
| 5 | **Spectrum & Broadcast Analyser - Promax** | 1 | | | | |
| 6 | **Outdoor High-Power Amplifier with Upconverter** | 2 | | | | |
| 7 | **System installation, Testing & Commissioning** | LS | | | | |
| 8 | **Additional indispensable items** | LS | | | | |
| **GRAND TOTAL: (K.D.)** | | | | | | |

**4.2. Important Notes:**

4.2.1. Any items/works not mentioned in the previous pages and/or the attached B.O.Q, 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 FHOC.

4.2.2. The contractor MUST include in their Detailed B.O.Q all the Items/work either mentioned or required for successfully completing this project.

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

4.2.4. All items must be priced. No option items will be accepted in the B.O.Q.