State of Kuwait

Ministry of Information

سلطان(ممارسة)

سلطان توريد وتركيب وتشغيل وصيانة وضمان
سلطان أجهزة دمج وتشفير الأصوات على القنوات الإذاعية

Supply, Installation, Commissioning, Maintenance and Guarantee of radio Encoding and Multiplexing System for satellite uplink

2024

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1.1- Introduction

Ministry of Information (MOI) invites the Specialized Bidders to submit their offers for Supply, Installation, Testing, Commission, Training and Guarantee of complete radio headend for satellite uplink in Radio Master Control at Radio building, on a turnkey basis according to the stipulated requirements and specifications in this Tender Document (T.D.). The required satellite headend system is intended to work with the existing satellite earth station system to broadcast 16 radio stereo programs direct to home via Arabsat and Eutelsat. 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. The Multiplexers, smart ASI switch and network management system must be from a single manufacturer. All offered equipment and required works shall be of the **latest state-of-the-art technology** and in compliance with the following:

1.1.1 This T.D, explicitly.

1.2- Scope of work

Installation, Testing, Commission, Training and Guarantee:

- 1+1 Audio encoders that encode up to 16 audio programs to be converted to an Ethernet IP output.
- 1+1 Audio multiplexer handling the IP output from the encoders and multiplexing it to a final ASI signal to be inputted to the local earth stations, where the audio bouquet is embedded with video signal at the final stage on KUWAIT bouquets for both ARABSAT and Eutelsat.
- The site survey is **mandatory**.
- Smart switch shall be added to the system design to protect the ASI output.
- Monitoring IRD for both ASI and IP outputs.
- Warranty for 24 months.

1.3- Time scale

1.3.1 The required equipment shall be handed- over within 8 months from the date of signing the contract.

1.3.2 The guarantee period shall start from the date of Final Handing-Over Certificate (FHOC):

End Of Section

CHAPTER 2:

GENERAL AND SPECIAL TECHNICAL CONDITIONS

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2.10. Final Handing Over Certificate (FHOC)

2.1 System Engineering, Integration and Verification:

2.1.1 The required systems must be designed to the latest state-of-art technology to provide a reliable high-quality performance for the satellite earth station head end.

2.1.2 The project shall be executed by a well-known system integrator. The bidder is committed with the system integrator, and in any case of changing the integrator, the bidder must take the approval from the MOI engineers.

2.1.3 The bidder shall provide complete information about the system integrator and his previous experience/references.

2.1.4 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.

2.1.5 A list of previously executed similar works (when and where) must be submitted with the offer for the system integrator and contractor. If not complied, the bidder's offer will be excluded.

2.1.6 All bidders must provide "Manufacturer Authorization Letter" for the following:

Encoding equipment, Multiplexing equipment, NMS equipment.

2.1.7 As a turn-key project, the required system must be designed to the latest state-of-the-art technology to provide complete broadcast high-quality satellite headend.

2.2. Project Responsibility:

2.2.1. This project shall be executed and handed over to MOI under the full responsibility of the Contractor.

2.2.2. The contractor is in charge to install the equipment in the Radio Master Control (Radio Building).

2.2.3. Installation and testing equipment are the responsibility of the contractor.

2.2.4. MOI shall have the right to request replacement of items that are not considered suitable and/or compliant with all current laws and regulations.

2.2.5. MOI will not be responsible for any transfer, housing or per diem fees.

2.3. Insurance:

The Contractor must insure the materials and works in the joint name of the contract and Project name to full value against any loss or damage from whatever cause arising other than the standard "exclusion". The insurance shall incorporate both parties being covered during the period from the date of acceptance of the offer until the project will have been taken over by the issue of the "Final Handing over Certificate (FHOC)".

2.4. Approval of equipment and System Drawings:

Approval of equipment and system drawings must be submitted to the MOI at least 7 days before use at site. Accessibility of components/units and ease of maintenance shall be taken into consideration in the layout of different equipment/units.

2.5. As-Built Drawings, Manuals, and Catalogues:

Before final testing and commissioning of the entire system, the Contractor must submit **three** sets of soft and hard copies of the following:

2.5.1. As-Built Drawings, schematics, wiring …etc. of all project related areas.

2.5.2. Detailed description of equipment installed.

2.5.3. Operation / Instruction / Service manuals / User manuals.

2.5.4. Part List Catalogue (including mechanical parts), should be provided by the manufacturer, for maintenance, repairing or replacing

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

2.5.6. Comprehensive test point chain at every stage of video/audio input and output is required, in addition to provide the necessary documentations for the tests.

2.6. Availability of Spare Parts:

2.6.1. The Contractor shall undertake, as part of the contract to make available to MOI all necessary spares devices, its spare parts and software maintenance whenever needed During the warranty period without any charge.

2.7. Inspection, Testing, Commissioning and Design Review of Equipment:

2.7.1 Inspection, testing and commissioning of Equipment:

The offered Head-end components including Multiplexers, Encoders and management system must be inspected and tested in the factory by the manufacturer.

2.7.2 Test data sheets shall be revised and verified during commissioning at site and to be send to MOI for revision and approval. A qualified Engineer from the manufacturer shall carry out this commissioning. Any Test/Measuring Equipment needed for the commissioning shall be supplied by the Contractor, for this purpose only (i.e. shall not be the property of MOI).

2.8. Local Training:

2.8.1 Training of **8** Engineers and Technicians by manufacturers' certified trainers only. This training shall take place during the 5 days trial period after initial commissioning and before issuing the FHOC.

2.8.2 The training must cover theoretical concepts, demonstration of features, software, operational & maintenance instructions, faultfinding, component / module replacements, trouble shooting, preventive maintenance and other relevant topics, etc. Training material must be provided to each engineer.

2.9. Guarantee:

2.9.1. The Contractor must guarantee all sub-systems of the project for a period of **24 months** after the date of the Final Acceptance Certificate (FAC) free of any charge to MOI. If during the guarantee period repetitive or epidemic faults take place in such a way that affects the performance, reliability or availability of any of the project sub-systems, the Contractor must bear full

responsibility to correct and amend these problems in a good engineering practice free of any charge to MOI.

2.9.2. The Contractor's Warranty commitment should include the following services:

2.9.2.1. The warranty shall include the free replacement and/or repair of the defective component parts of the system that has demonstrated defects in materials and/or manufacturing and/or design, including the dispatch of a local technician within 48 hours of notification off failure.

2.9.2.2. The replacement and/or repair / operation solution of defective components shall be made in no later than 4 weeks.

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

2.9.2.4 The bidders shall include SLA service from the main manufacturer for the entire duration of the warranty. The services must include all the necessary software updates to ensure the proper functioning and operation of equipment placed in service.

2.10. Final Handing Over Certificate (FHOC):

This FHOC shall be issued by the Assistant under Secretary for Engineering Affairs (MOI), 30 days after Test Completion date. In case of abnormal defects, FHO shall be delayed until restoring the equipment to the normal acceptable state.

End Of Section

CHAPTER - 3

TECHNICAL SPECIFICATIONS OF REQUIRED EQUIPMENT

3.1- General Technical Description

The system shall be designed in 1+1 configuration with smart switching between the main and backup chains.

3.1.1 The contractor shall receive the audio signals from the existing audio distribution system and feed the main and backup system. Any required audio converters or distribution amplifiers have to be supplied and integrated by the contractor. All the audio signals shall be routed through audio patch panels and termination panels.

3.1.2 The contractor shall connect the output ASI signals from the new system to various destinations such as MOI earth station and Maqwa earth station through the existing new fiber network rack. The contractor shall verify the signal at the destination end points and ensure the re-multiplexing with the existing TV headends.

3.1.3 The required new system shall be equipped with a professional IRD and a loud speaker to monitor the on-air and off-air signals.

Audio Encoders:

- compressing: Linear PCM, MPEG-1/2 MPEG-4, HE-AAC or HE-AAC V2,
- Sampling Rate: 32kHz, 48 kHz
- Up to 16 audio channels.
- Transport Protocols: via IP: output of elementary streams via IP
- Transport via RTP (over UDP)
- Redundant power supply
- system configuration, control, and monitoring.

Multiplexer:

IP I/O

- IP Encapsulation: MPEG TS over UDP/IP/MAC 1 to 7 TS/IP
- MPEG Format: 188 B per TS
- MPEG Transport Streams: MPTS and SPTS
- I/O Processing: 1,000 sockets.

ASI I/O

- Type: ASI input/output
- ASI Ports: Eight ports min.
- I/O Direction: Configurable, input or output, per port
- MPEG Format: 188/204 B per TS
- I/O Processing: One MPTS/SPTS per port Up to 213 Mbps per input or output

MANAGEMENT INTERFACES

- Ethernet: 1000Base-TX
- Connectors: Two RJ45.

REMULTIPLEXING

- Routing: Any input to any output
- PID: Remapping, filtering, multicasting
- PSI/SI: Extraction, injection, spooling, regeneration
- Output Mirroring: Any to any

REDUNDANCY

- Device 1:1 Under management system or stand-alone GUI management
- Internal Any-to-any input TS, output mirroring Port redundancy, Service redundancy

POWER

- Power Supplies: Dual redundant
- Voltage 180-264 V

Smart ASI Switch

Features:

- Real-time monitoring of all incoming streams
- Automatic switch based on TS input analysis (Redundancy)
- Triggers ETR 290
- Seamless switching
- Configurable for up to 8 ASI outputs
- Smart bypass
- Dual AC PSUs

Master Control Room:

On the site visiting bidder will show the Master Control system and bidder shall be supply the equipment to compatible with existing system (Stage tec Brand) like mentioned below:

- XPSU: nexus backplane power supply, 5V/20A.
- XETR: AES Output cards, 4HP.
- XSF0C-LC: 2SFP+ ports.
- RFOC-LC: 4SFP ports.
- SFPM-FO-01: 4SFP ports.
- XDSP: Input and Output.

Fiber Optics connections

On the Master Control the Existing Fiber Equipment from Net Insight company and bidder must supply module for the existing Nimbra 300 MSR (8-Ports ASI Transport Access).

- **Bidder must supply, Installation, Configuration, Testing and Commission.**

End Of Section

CHAPTER - 4:
BILL OF QUANTITIES

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 FHO.

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 manufacturer name and product's part number. The technical evaluation will be performed based only on the part numbers/models that mentioned in the detailed BOQ.

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

4.2- BILL OF QUANTITIES (BOQ)

No.	Description	Qty.	Unit Price (KD)	Total Price (KD)
1	System Design, Engineering, Installation, Testing, and commissioning.	L.S.		
2	1+1 Satellite head-end Encoding and multiplexer	L.S.		
3	Smart ASI Switch	L.S.		
4	Complete Network management system including update and programing, server, switch, KVM, etc.	L.S.		
5	XPSU	1		
6	XETR	10		
7	XSF0C-LC	1		
8	RFOC-LC	1		
9	SFPM-FO-01	1		
10	XDSP	1		
11	8-port ASI Transport Access Module	1		
	Additional Equipment or works that are required to complete the system but not mentioned in the above specifications and any extra cost/materials not clearly mentioned above.	L.S.		
Grand Total in KD				

End Of Section

	Items	complain/non-complain	Page NO. at offer	Note
1.1	**latest state-of-the-art technology**			
1.2	**Warranty for 24 months**			
2.1.6	**Manufacturer Authorization Letter**			
3.1	**The system shall be designed in 1+1**			
Audio Encoders				
	Compressing			
	Sampling Rate			
	Up to 16 audio channels			
	Transport Protocols via IP			
	Redundant power supply			
Multiplexer				
	IP I/O			
	ASI I/O			
	REMULTIPLEXING			
	REDUNDANCY			
	Smart ASI Switch			
	XPSU			

	XETR			
	XSF0C-LC			
	RFOC-LC			
	SFPM-FO-01			
	XDSP			
	8-port ASI Transport Access Module			
	BOQ Details			

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All bidders shall fill it the complaint table.

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