توريد وتركيب وتشغيل وصيانة وضمان أجهزة دمج وتشفير بث إذاعي رقمي DAB+

Supply,Install and training DAB+ Headend System

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1.1 Introduction:

The Ministry of Information (MOI) invites **Specialized Bidders only** to submit their offers for upgrading the existing DAB+ Headend system along with all related hardware and software systems, on a **turnkey basis.** Offers shall be in full compliance with the general conditions, special conditions, technical specifications, and all other requirements stipulated in this document.

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- Upgrade the existing DAB+ headend located in the 14th floor to the latest system software.
1.2.2- The entire work shall include supply, installation, testing, commissioning, and training.

1.3 Time Scale:

1. The project shall be completed and commissioned within four (13) 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, twenty-four (24) months, shall start from the date of issuing the FHOC.

End of Chapter 1

CHAPTER 2

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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. Kuwait Fire Brigade (KFB) Regulations and Recommendations.
4. Ministry of Communications (MOC) Regulations.
5. Kuwait Civil Aviation Department Regulations.

2.2. Prevailing Conditions In The State of Kuwait:

2.2.1. Environmental Conditions:

i. Temperature:
- Max. Ambient shade temperature: 50 ºC.
  (Note:
- 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 DAB+ Headend 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 has to submit a detailed system description in his offer and all related technical documents of the offered products.

2.3.4. The cost that may arise to complete these verification tests shall be borne by the contractor. This cost must be estimated and included in the offer.

2.3.5. A list of previously executed similar works (when and where) shall be submitted with the offer.

2.3.6. All bidders must provide a "Manufacturer Authorization Letter" from the manufacturer of the offered encoding and multiplexing system. MOI will reject any non-authorized offers.

2.3.7. The offered equipment has to 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. As Built Drawings, 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. As-built drawings, schematics, wiring, etc. of all units.

2.6.2. Detailed description of equipment.

2.6.3. Operation/Instruction/Service Manual/s.

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 pre-requisite before issuing the project Final Handing-Over Certificate (FHOC). All documents shall be in English.

2.7. Compliance:

The tender shall be considered in full agreement with all the contents of this Tender Document (Arabic Text, all Chapters, and drawings). In case the Bidder has any reservation, disagreement, or deviation – whatsoever – from this document, he should clearly indicate so by filling separate table (Non-Compliance Schedules) originated by him and divided in Columns for:

Chapter	Page	Item	Reasons of Non Compliance

2.8. 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.

2.9. Local Training:

"Ten" Engineers and Technicians shall be trained at the site on the operation and maintenance for a period of 5 days, 6 hours/day.

2.10. 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.

2.11. Site Visits:

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

2.12. Pre-Tender Meeting:

A pre-tender meeting shall be done between Bidders and MOI representatives **one week** after announcing the Tender.

End of Chapter 2

CHAPTER 3

TECHNICAL SPECIFICATIONS

3.1 Upgrade the existing DAB+ headend located in 14th floor to the latest system software in 1+1 configuration.

3.2 The new system shall support sixteen stereo programs at least.

3.3 The upgrade of the existing system shall include Dolby encoding, data server, ensemble multiplexer, web GUI, and the required licenses of ALL data services such as PAD/NPA, Traffic/emergency announcements, etc.

3.4 The headend shall be equipped with two monitoring and analyzing systems to monitor and analyze the EDI/ETI. The monitoring and analyzing systems shall provide assurance throughout the broadcast chain, giving a full overview of the status health of the DAB+ multiplexing network.

3.5 The New system and all related hardware shall be accommodated in one rack with all required interconnections. All the audio input/outputs shall be routed thru patch panels and XLR termination panels.

3.6 The contractor shall provide all the necessary SFN configurations after installing the new headend. The required configurations shall include all the transmitter locations connected to the headend (LT, Mutlaa, Subiya, South Sabahiya, and Juliya). The bidder shall include this service in the offered detailed bill of quantity.

3.7 The ETI output signals from the main and backup systems shall be connected to the existing fiber and microwave networks. An automatic/Manual switch shall be used between the main and backup ETI/EDI signals.

3.8 The audio input equipment shall support AES67 and livewire.

3.9 The compression system shall support DAB+ (MPEG HE-AAC V2) and DAB (MPEG Layer II) audio encoding, supporting dynamic reconfigurations without interruption of the output signal.

3.10 The compression system shall support audio inputs: AES3: AES/EBU and Analogue, AES67: Ravenna, Livewire, Dante, Wheatstone, Webstreams: AAC, MP3, Icecast, SHOUTcast, Transport stream: MPEG2-TS from DVB-S/S2 and Audio File: WAV and MP3 files.

3.11 The data processor for PAD and NPAD (Non/Program Associated Data), shall be uploaded directly via a REST API. The data protocols shall be supported: DLS and Dynamic Label Plus (DL+), Slideshow (SLS), SPI and Transport Protocol Experts Group (TPEG).

3.12 The system controller shall control and monitor the entire platform, including system redundancy. The system shall store all the parameters in databases in the controller, including ensemble configurations, lists of defined service configurations and scheduling, information about the units present in the system and how they are connected, and log information.

3.13 The audio inputs shall be switched between the different sources seamlessly. Up to four audio sources can be assigned to an individual service, and should the primary source degrade or fall silent, the system controller automatically engages a backup source to keep the service on air. Each audio source can be assigned a priority level. All other non-effected programs will remain on their primary audio source.

3.14 The software shall include a comprehensive alarm system that detects any error in the system, provides concise alerts, and stores the series of events in a log which can be filtered and downloaded.

3.15 The required upgrade is intended to serve the existing DAB+ SFN network, hence the system shall be equipped with the necessary synchronization equipment.

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):

Item	Description	Qty.	Unit Price KD	Total Price KD
1.	Upgrade the existing DAB+ headend	L.S.		
2.	System Engineering and installation work.	L.S.		
3.	Local Training	10		
4.	Other Indispensable Items [Detailed list shall be submitted]	L.S.		
Total Price				

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END OF CHAPTER 4