



## TENDER NOTICE

No. EA/01-18-2010

### **Consultancy for Third Party Network Audit of Etisalat Mobile Network & Root Cause Analysis**

Sealed Bids are invited from companies of repute or their authorized agents on CIF/DDP (Kabul) basis for Consultancy for Third Party Network Audit of Etisalat Mobile Network & Root cause Analysis according to Etisalat Afghanistan requirements as per RFP. The bid Documents are available in Etisalat head office and can be obtained from Contracts Coordinator or downloaded from Etisalat website ([www.etisalat.af](http://www.etisalat.af) )

2. Sealed Bids shall be submitted to Etisalat Afghanistan main office Kabul by 20-May-2010 till 15:00 hours. The bids shall be submitted in two separate envelopes one marked as "Technical offer" and second as "Commercial/Financial offer". The bids shall be submitted in English language.

3. Bid received after the above deadline shall not be accepted

4. Etisalat Afghanistan reserves the right to reject any or all bids and to annul the bidding process at any time, without thereby incurring any liability to the affected bidder(s) or any obligations to inform the affected bidder(s) of the grounds for Etisalat Afghanistan action

5. All correspondence on the subject may be addressed to the undersigned

**Director, Procurement & Inventory Control**  
Supreme Tower, Shar-e-Naw Etisalat Afghanistan  
E-mail: [ushah@etisalat.af](mailto:ushah@etisalat.af)  
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# REQUIREMENT PROPOSAL

For conducting a

## Consultancy for Third Party Network Audit of Etisalat Mobile Network & Root Cause Analysis



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## 1. DEFINITIONS

In this document, the following terms and meanings shall be interpreted as indicated:

### *Terms*

**“Approved” or “approval”** means approved in writing.

**“Bidding”** means a formal procurement procedure under which sealed bids are invited, received, opened, examined and evaluated for the purpose of awarding a contract.

**“Bid/Tender Document”** means the Bid/Tender documents issued by Etisalat Afghanistan for invitation of Bids/Offers along with subsequent amendments and clarifications.

**“DDP.”** means “Delivery, & Duty Paid” as specified in INCOTERM 2000

**“CIF”** means delivery duty unpaid as specified in INCOTERM 2000

**“Competent Authority”** means the officer or functionary authorized by Etisalat Afghanistan to deal finally with the matter in issue.

**“Completion Date”** means the date by which the Contractor is required to complete the Contract.

**“Contract”** means the Contract between Etisalat Afghanistan and the Contractor and comprising documents enumerated therein, such as the Conditions of Contract, the Scope of Works, the Specifications and the Contractor’s offer and correspondence relating thereto, the Bill of Quantities with unit prices to be provided by the Contractor after completion of the detailed design work, (where applicable) or as approved by Etisalat Afghanistan based on the accepted bid with agreed to adjustments



Appendices and Addenda as well as any amendments made to any such documents in accordance with the Contract.

**“Contractor”** mean the individual or firm ultimately responsible for delivery of the services as per scope of work and deliverables on time and cost under this contract of Etisalat

**“Contractor’s Representative”** means the person nominated by the Contractor and named as such in the Contract and approved by Etisalat Afghanistan in the manner provided in the Contract.

**“Contract Documents”** means the documents listed in Article (Contract Documents) of the Form of Contract (including any amendments thereto) or in any other article in this contract.

**“Contract Price”** means the price payable to the Contractor under the Contract for the full and proper performance of its contractual obligations.

**“Day”** means calendar day of the Gregorian calendar.

**“Documentation”** means documentation specified in the relevant Article(s).

**“Force Majeure”** means Acts of God, Government restrictions, financial hardships, war and hostilities, invasion, act of foreign enemies, rebellion, revolution, riot, industrial disputes, commotion, natural disasters and other similar risks that are outside of Contractor’s and Etisalat Afghanistan’s control.

**“Financing”** means the source of funds from which or according to which the payments to the supplier are made, and the terms and conditions of re-payments in case it is not from cash resources.



**“Liquidated Damages”** mean the monetary damages imposed upon the contractor and the money payable to Etisalat Afghanistan by the contractor on account of late delivery of the whole or part of the goods.

**“L.C”** means an unconditional irrevocable letter of credit opened by Etisalat Afghanistan at Etisalat Afghanistan’s Cost or at Contractor’s/Supplier’s cost as specified in the contract.

**“L.O.A”** means a Letter of Award issued by Etisalat Afghanistan to successful bidder with regard to the award of Contract.

**“Month”** means calendar month of the Gregorian calendar.

**“Offer”** means the quotation/bid and all subsequent clarifications submitted by the Bidder and accepted by Etisalat Afghanistan in response to and in relation with the Bid Documents.

**“Performance Bond/Security”** means an unconditional irrevocable guarantee issued by a bank located in Afghanistan and acceptable to Etisalat Afghanistan. The value of the Performance bond/Security shall be as specified in the contract but in no case less than 10% (Ten Percent) of the total contract value.

**“Etisalat Afghanistan”** means Etisalat Telecommunication Company, Headquarters Supreme Tower, Shar-e-Naw Kabul in person or any person duly authorised by it for the purpose of specific tasks within the contract and notified to the contractor in writing.



**“Etisalat Afghanistan’s Representative”** shall mean the representative to be appointed by Etisalat Afghanistan to act for and on behalf of Etisalat Afghanistan with respect to this Contract.

**“Services”** means any scope of contract which relates to supply, warranty, and other services and obligations of the Contractor as provided in the Contract.

**“Supplier/Vendor”** (used interchangeably) means the individual or firm ultimately responsible for supplying the services on time and to cost under the Contract acting individually alone or as a “prime contractor” for a consortium.

**“Supplier’s Representative”** means the person nominated by the Contractor and named as such in the Contract and approved by Etisalat Afghanistan in the manner provided in the Contract.

**“Subcontractor including Vendors”** means any person to whom execution of any part of the services is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.

### ***Interpretations***

Words importing persons or parties shall include firms and corporations and any organization having legal capacity. Words importing the singular or so include the plural and vice versa where the context requires. Words importing one gender also include other gender.

### ***Headings***

The headings and marginal notes in the General Conditions of Contract are included for ease of reference, and shall neither constitute a part of the Contract nor affect its interpretation.



### ***Persons***

Words importing persons or parties shall include firms, companies and government entities.

### ***INCOTERMS - 2000***

Unless inconsistent with any provision of the Contract, the meaning of any trade terms and the rights and obligations of parties there under shall be as prescribed by INCOTERMS.

"INCOTERMS" means international rules or interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Course Albert 1<sup>er</sup>, and 75008 Paris, France.

### ***Entire Agreement / Contract***

The Contract together with annexes referred to in the contract document constitutes the entire agreement between Etisalat Afghanistan and Contractor with respect to the matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) with respect thereto made prior to the date of Contract.

#### **i. Amendment**

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is agreed in writing duly signed by authorized representative of each party.

#### **ii. Independent Contractor**

The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint



venture or other joint relationship between the parties hereto. Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives or sub-contractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of Etisalat Afghanistan, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or subcontractors and Etisalat Afghanistan.

### *Joint Venture or Consortium*

If the Contractor is a joint venture or consortium of two or more persons, or firms/companies all such persons or firms shall be jointly and severally bound to Etisalat Afghanistan for the fulfilment of the provisions of the Contract and shall designate one of such persons or firm to act as a leader with authority to bind the joint venture or consortium. The composition or the constitution of the joint venture or consortium shall not be altered without the prior consent of Etisalat Afghanistan.

### *Severability*

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or un-enforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract



## 1.0 INTRODUCTION

- 1.1 As an incumbent Operator and market leader in Afghanistan, ETISALAT Afghanistan is running a successful and high quality 2G/2.5G mobile network. In the current open telecom market, it is imperative to continually monitor the network performance and Quality of Services to sustain a leading competitive edge and have further improvement.
- 1.2 ETISALAT Afghanistan, the incumbent telecommunication service provider in Afghanistan, invites proposals from reputed firms having the required technical expertise and experience for consultancy services to conduct an overall network quality audit by tracking data from various sources.
- 1.3 There are 34 provinces in Afghanistan with a land area of approximately 647456 km<sup>2</sup> with a population of 28.150 millions habitants.
- 1.4 The main Office of ETISALAT Afghanistan is located in Kabul; capital of Afghanistan.
- 1.5 ETISALAT Afghanistan got the fourth GSM license in the country in 2007, and has approximately 3 millions GSM mobile phones out of which 96% are prepaid, Other services offered are IN services, SMS, WAP, GPRS/EDGE bearer, MMS, etc. All services are offered using the latest and state of the art technology to cater to the growing demand for telecom related services.
- 1.6 The objective of this exercise is to ascertain the effectiveness of Etisalat mobile network by conducting a third party audit to identify issues in network, analyze their root causes, correlate to the quality of customer experience and pin point with reasons to remedy & mitigate the causes.

## 2.0 SCOPE OF WORK SUMMARY

- 2.1 ETISALAT Afghanistan intends to obtain a proposal for consultancy services for complete E2E mobile network audit in a multi vendor multi technology environment for 2G & 2.5G in order to establish a baseline to measure the overall network performance & identify and characterize the areas where improvements can be achieved.
- 2.2 The End to End network audit shall be by means of network health check and evaluation to identify & pin point issues having an impact on Quality of service and network performance, their root cause analysis and correlation with system data.
- 2.3 Etisalat Afghanistan mobile network is geographically split into three regions - Southern region ( Kandahar, Hilmand, Zabul, Uruzgan, Daykundi, Ghor, Nimrooz and Farah), Northern region ( Badakhshan,



Takhar, Baghlan, Kunduz, Samangan, Balkh, Sar-e-pul, Jawzan, Faryab, Badghiz and Herat) and grand Kabul region ( Kabul, parwan, pansheir, Kapissa, Kunar, Pnoristan, Laghman, Pnanganhar, Logar, Paktia, Paktika, Ghazni, Wardak, Bamyan and Khost). The radio network deployment in southern region and Kabul region is from ZTE, and the one deployed in the north is from Huawei. The core network is from ZTE.

- 2.4 The extent of audit & scope of work shall be by means of the following:
  - 2.4.1 Afghanistan-wide drive tests to simulate the customer experience of network quality for voice & data services
  - 2.4.2 Commercial handset validation and interoperability testing to detect any short comings from network side or handset side and take necessary remedial measures
  - 2.4.3 Validation of network data - traffic stats, frequency plan, resource utilization, dimensioning ,consistency of database parameters to audit the network performance & conduct root cause analysis & correlation from 2.4.1 & 2.4.2
  - 2.4.4 Validation of the methods and formulae used to calculate KPIs for Quality of service in order to align the customer perception with network performance.
- 2.5 Time frame for the completion of tasks as per 2.4.1, 2.4.2, 2.4.3 & 2.4.4 is 3 months. Upon completion of each Region, a report is to be submitted, and presentation to be conducted for Management.
- 2.6 The proposal shall contain a detailed methodology and approach to attain the objectives and deliverables.
- 2.7 The proposal shall outline the methodology, resource requirements and man-days, hardware/software tools and expertise that will be required etc.
- 2.8 The definition of a man-day for drive tests shall be for actual data logging for not less than 8 Hrs .The Afghanistan drive test route plan is attached as Annexure -1 and is a suggested guideline to formulate man-days estimation. Annexure -2 is the suggested format of time sheet to be used by Consultant upon award of this Order to agree upon actual man-days utilized.
- 2.9 Upon award and signing of the contract, this assignment shall be coordinated by the Network planning and optimization department of Etisalat Afghanistan.
- 2.10 Consultants are advised to use this document as a guideline to formulate a suitable proposal within the defined parameters of this document to meet ETISALAT requirements.
- 2.11 They shall include in their proposal any relevant information as deemed necessary to ensure the outcome of the audit will provide important information to improve the mobile network performance.
- 2.12 Potential CONSULTANTS have the option to advise and recommend alternative and suitable methodology to satisfy the requirements of ETISALAT.
- 2.13 CONSULTANT shall provide all required hardware test equipment related software and tools required to conduct the audit and any



equipment needed for post-test processing to obtain the reports which shall be brought at CONSULTANTs expenses.

- 2.14 CONSULTANT shall be responsible for the transportation and clearing of all equipment, obtain license required to operate the necessary software required for the test.
- 2.15 Based on the success of network audit and the effectiveness of the improvement initiatives, ETISALAT shall determine the continuity of the assignment in the future.
- 2.16 Etisalat SIM cards (post-paid) shall be provided to the Consultant for drive testing purposes without international access. Calls made to number other than Test number shall be considered unofficial and charged to the Consultant. Also Consultant shall make own arrangements for commercial handsets which shall support dual band 2G,2.5G & 3G with a host of multimedia features for handset validation & interoperability tests.

### 3.0 AFGHANISTAN WIDE DRIVE TESTS & POST PROCESSING

- 3.1 Selected CONSULTANT is expected to conduct Afghanistan wide drive tests to simulate customer experience. The following drive tests are specified:
  - 3.1.1 GSM - Voice calls on CS short & long type
  - 3.1.2 GPRS/EDGE - Data call type to be designed to include all protocols and Services on PS domain. (HTTP, FTP, MMS & Video streaming)
- 3.2 The short calls shall be used for KPI reporting and benchmarking with other telecom service providers, the long calls shall be for call Retain ability tests until the call drops for trouble shooting & handover analysis. Both types of calls i.e. MOC & MTC in equal ratio shall be made.
- 3.3 The Drive tests to be done sequentially by deploying 4 teams in each of the regions (Northern, southern and Kabul).
- 3.4 Provide reports and give conclusive presentations / Recommendations based on the findings of the test with an improvement plan upon completion of each region activity.
- 3.5 Ensure all requirements are satisfied as per the proposal summary requirements outlined in this document. Any non-compliances or deviations shall be clearly stated.



3.6 Drive test shall as a minimum cover the following:

3.6.1 DRIVE TEST (OUTDOOR)

The entire coverage area needs to be covered in the survey in accordance with an accepted coverage validation methodology. The areas to be tested shall include all interconnecting highways, major and minor roads within cities, dense urban and rural community localities.

The following preferences may be noted.

3.6.1.1 Drive tests in dense urban regions to be conducted in the busy hours.

3.6.1.2 The mobile station antenna must be placed inside the vehicle during drive tests.

3.6.1.3 Repeated drive tests shall be carried out in order to highlight an area with a problem.

3.6.2 HOT SPOTS (INDOOR/OUTDOOR)

Key areas or important landmarks with appropriate potential for substantial voice and data traffic as per the measurement plan for services such as AMR speech, FTP download, video telephony, streaming - audio/ video ,web page download & e-mail etc. *However, the Hotspots are only optional.*

3.6.3 WALK TEST (INDOOR)

This shall compliment existing drive test surveys by testing coverage in areas that are not accessible by vehicle (e.g. parks, coastal areas, pedestrian areas in town and city centers, markets, community centers, bus terminals, etc). *However, the walk tests are only optional.*

3.6.4 The Consultant shall quote for man-days needed for 3.6.2 & 3.6.3 separately & Etisalat shall have the option to accept or decline in part or full.

3.6.5 INCIDENT REPORTS

Instances of call drops, call setup failures, repeated handover failures, ping-pong handovers, poor signal strength, bad signal quality and poor speech/video quality shall be reported as incident reports within 2 days of incident occurrence.

3.6.6 THE THRESHOLDS FOR SIGNAL STRENGTH AND QUALITY ARE:

3.6.6.1 For GSM, poor signal strength (Rxlev) < -90dBm on a continuous stretch for 210 mts in dense urban, 330 mts in city and 500 mts on highways

3.6.6.2 For GSM, bad signal quality (Rx Qual) = 6, 7 on a continuous stretch for 138 mts in dense urban, 220



- in city & 333 mts on highways.
  - 3.6.6.3 For data, RSCP -90dBm or below
  - 3.6.6.4 For data, Eb/Io -10 or below
- Suggested format of Incident report is attached as Annexure-3

#### 4.0 END TO END ANALYSIS - IDENTIFY ROOT CAUSES

- 4.1 Analysis of network dimensioning, OMC stats & signaling - traffic trends, QoS KPIs, & findings from drive tests
- 4.2 Identify BSS hardware issues and worst performing cells.
- 4.3 Neighbor list audit to identify missing relations and redundant or one way definitions
- 4.4 Frequency plan audit to identify interference issues, excessive overlap coverage areas, identification of external and internal sources of interference
- 4.5 Audit of frequency hopping strategy and required hopping parameters
- 4.6 Audit of database settings related to
  - 4.6.1 Handover parameters
  - 4.6.2 Power control thresholds
  - 4.6.3 Voting and averaging mechanisms
  - 4.6.4 Call setup and handover timers
  - 4.6.5 C1/C2 cell reselection parameters
  - 4.6.6 Half rate and AMR
  - 4.6.7 Advanced traffic management algorithms
  - 4.6.8 GPRS & EDGE parameters fine tuning
- 4.7 Audit of all BSS databases to identify inconsistencies and descriptiveness and check with planned configuration data
- 4.8 Analysis of RF design and capacity growth requirements
- 4.9 Evaluation of implemented BSS capacity and quality features & ascertain if expected benefits are actually achieved
- 4.10 BSS dimensioning to ensure the optimum allocation of resources for TCH/SDCCH, Paging & Location area dimensioning
- 4.11 NSS audit to analyze abnormal call drops, failure cause values undefined or unspecified, location area failures and handover failures, call traces and signaling message analysis to detect the cause of problems.
- 4.12 Transmission network audit to identify any bottlenecks with availability and capacity



## 5.0 COMMERCIAL HANDSET TESTS AND INTEROPERABILITY TESTS

- 5.1 The widely used handsets in Etisalat network & Afghanistan market to be used to make test calls under various scenarios to simulate the actual customer experiences and collect the information from network to analyze the problems. A list of handsets names about 10 Nos to be tested will be provided by Etisalat.
- 5.2 Test the commercial handsets from the aspects of application and radio , with the network conditions to make sure that a fault is attributed to the right entity (handset manufacturer, network vendor, or operator).To test the different network conditions to analyze their behavior in the most comprehensive possible manner to trace the faults due to network condition and to provide accurate radio quality performances of the handsets

## 6.0 KPI VALIDATION

- 6.1 Validate the methods and formulae of the current KPIs related to Quality of service for mobile network performance for CS & PS in a multi vendor , multi technology domain (such as call setup success rate, call success rate, call drop rate traffic channel congestion and control channel congestion) , their calculations methodology, the process and tools utilized.
- 6.2 Audit & ascertain that counters and data are accurately pegged and available and the KPIs that are measured transpose to perceived QoS by customers and suggest developing appropriate performance metrics to monitor QoS relative to user perceptions for various services. Verify the behavior of counters in reality versus vendor recommendations.

## 7.0 GENERAL TERMS AND CONDITIONS

- 7.1 The CONSULTANT shall undertake to provide an impartial, factual, and professional study of the network exposing all areas required bringing focus and clarity to all issues; technical and general.
- 7.2 The CONSULTANT shall undertake to treat with highest secrecy and confidentiality all the materials, information, and studies relating to this consultancy assignment. An explicit undertaking in this regard will be required and shall agree to sign a non-disclosure agreement before the commencement of this assignment.
- 7.3 The CONSULTANT shall have no affiliation or interest with any vendors, which could jeopardize the success an impartiality of the test. All recommendations for external services must be based on an unbiased perspective and assessment



- 7.4 All reports including study, the observations and recommendations shall be submitted under confidential cover to the Head of the Network Planning & development Department, which shall automatically become the property of ETISALAT. Based on the advice of Corporate Quality Department, further presentations and reports as necessary shall be provided by the Consultants. The final written report and Management presentation shall be submitted in 5 hard copies and 3 soft copies.
- 7.5 The CONSULTANT is required to complete a point to point statement of compliance using an appropriate and clear format to indicate the compliance giving a details with deviations if any clearly indicating non complied clauses and optional or alternatives offered instead.
- 7.6 All conditions applicable shall be stated in the response with details regarding the proposal without giving the reasons.
- 7.7 Any other information pertaining to the proposal and applicable to the solution intended by ETISALAT shall be provided.
- 7.8 ETISALAT has the right to accept or reject full or part of the offer in the proposal.
- 7.9 CONSULTANT shall list out all the resources (including human, equipments, etc) that would be deployed for different phases of the project listing out the resource content, quantity and time period for utilization. In the event, due to any unforeseen circumstance, the resources would not available, the CONSULTANT shall plan proactively to provide alternatives, which, the loss or transition shall have, no affect on the project.
- 7.10 All information provided shall be clear and in simple language. Incomplete and/or vague description will be considered as "not-complied" to the clause under reference.
- 7.11 After satisfactory completion of the project, CONSULTANT shall demonstrate to the users as a group and individually, the methodology, features and operations of any instruments, software, and applications for day-to-day operations as appropriate and house keeping activities.
- 7.12 Short listed CONSULTANTS may be requested to make a formal presentation for Management on their intended solution after conducting a sample drive tests in Kabul for two days for which vehicle & SIM will be arranged by Etisalat. Any costs associated with such a presentation shall be borne by the CONSULTANT.



## 8.0 CORPORATE AND MARKET PROFILE

8.1 CONSULTANT shall state the following, with documents to support, from the principal.

8.1.1 Principle Company and incorporated year and country.

8.1.2 Local Agent's/In country Representative's and details of the agency (if available). If an agent is not present, CONSULTANT shall state how he expects to support the service offered.

8.1.3 Year the agent/distributor was incorporated as a company in Afghanistan with details of trade license of agent if available.

8.1.4 Number of personnel available full time to provide expertise and support for the assignment with their qualifications, training and experience in similar projects.

8.1.5 Name of Principal, address, contact details; name with tel., mobile, fax and e-mail.

8.1.6 Name of Local Agent's/In country Representative's address, contact details; name with tel., mobile, fax and e-mail.

8.2 CONSULTANT shall provide a list of clients in the world to whom services have been offered with the details of assignments taken up /completed and the year.

8.2.1 The profile of the Company/CONSULTANT along with references of the similar tests conducted earlier.

8.2.2 Details shall include Name and address of client, contact person, services undertaken/offered, year completed.

8.2.3 Sample reports to be provided.

8.2.4 If necessary, ETISALAT shall send representatives to make a study tour of the clients serviced by the CONSULTANT. CONSULTANT shall agree to assist ETISALAT to arrange and visit any of the clients from the list of clients that CONSULTANT shall provide to determine the effectiveness of the services for the CONSULTANT. Any costs associated with such a visit shall be provided upon request by ETISALAT, but shall provide details of the cost components for such a visit in their proposal.

## 9.0 REQUIREMENT SUMMARY

### 9.1 GENERAL

9.1.1 An overview of the CONSULTANT understanding of the requirements with a detailed plan detail extent of work intended to be undertaken in line with the scope of work spelled in this document outlining the time periods and specific



ownerships and resource requirements/utilization.

- 9.1.2 The proposal to be submitted by the Consultants shall cover all aspects of the work involved in providing the required expertise by the CONSULTANT.

## 9.2 PLANNING

- 9.2.1 Provide a comprehensive project implementation plan for the whole exercise identifying the key mile stones and the project organization structure and the task schedule.
- 9.2.2 Details of manpower that will be made available for the exercise by the CONSULTANTS with their experience and qualifications to carryout such a test.
- 9.2.3 Details of man-days needed by the CONSULTANT to cover the geographical area of Afghanistan for the drive test with details and sampling methodology that shall be used.
- 9.2.4 Details of hardware and software that shall be used by the CONSULTANT.
- 9.2.5 Details of the outcome with sample reports.
- 9.2.6 The Proposal is expected to give a schedule of general work plan indicating the scope of work intended to be carried out covering the entire network to ensure the success of this audit and ensuing improvements.
- 9.2.7 The methodology/approach used to perform the audit.
- 9.2.8 Detailed cost clearly itemizing service rendered i.e. cost Schedule for each Milestone/Activity with **detailed break-up** and associated deliverables. Annexure-4 is the format to provide a detailed breakdown - Resources, duration, man-days and cost.
- 9.2.9 The required number of manpower and other resources from ETISALAT to work on the plan along with time allocation per resource.
- 9.2.10 Compliance statement of the specification document.
- 9.2.11 The potential CONSULTANT shall include in the proposal all requirements as appropriate and any other requirement deemed necessary in fulfillment of the proposal, which may be quoted individually or as a turnkey contract. To fulfill the requirement, separate quotations with appropriate sub titles with description and list of services offered shall be stated.



9.2.12 Plan : To be given with the proposal : Implementation plan , task schedule along with project organization and reporting structure ,method of the drive test, period, areas that shall be covered and any other requirements and details.

9.2.13 Resources : to be given with the proposal :  
Resources that will be utilized by the CONSULTANT and resources that needs to be sourced by and required by ETISALAT. CVs of Consultants who will be assigned for this project to be provided for Etisalat review.

9.2.14 Duration: to be given with the proposal  
Duration of the drive test and how long it shall take with number of man-days that will be used.  
CONSULTANT shall also propose the start date, and when the report will be finalized and presented to Management.

9.2.15 Survey area maps : to be arranged by Consultant and to be mentioned with the proposal  
CONSULTANT shall arrange all required digital maps for this purpose and shall indicate the listing of areas with availability of maps that shall be covered for the test.

9.2.16 During Project implementation: Log files burned on a CD /DVD upon completion of drive test for each city/region, Incident reports within 2 working days of incident occurrence such as call drop, call setup failure, repeated handover failures, ping-pong effect, poor signal strength, bad signal quality.

### 9.3 ANALYSIS

9.3.1 Comprehensively analyze the data that is being generated by the audit to understand the network performance and required improvements that needs to be addressed to further optimize the network performance.

9.3.2 Provide description, analysis and recommended solution for any problem observed.

9.3.3 The information thus produced shall highlight critical performance parameters, problems and or faults conditions that are contributing to low performance/deterioration of the network.

9.3.4 Study network behavior at both the macroscopic as well as microscopic levels using cause/effect concept



- 9.3.5 Analyze End-to-End data performance and co-relate the problems by tracking data from multiple sources
- 9.3.6 Analyze gathered data and if required analysis of related protocols for troubleshooting problems.
- 9.3.7 Perform detailed statistical analysis using timeline charts and distribution charts.
- 9.3.8 Investigate the information within the post processing environment with the staff of Etisalat who shall be involved.

#### 9.4 REPORTS

- 9.4.1 Present to the corporate quality department a provisional presentation and report on the outcome and improvement opportunities with a plan before conducting a final presentation with a report to the Management of ETISALAT upon approval from Corporate Quality Department. CONSULTANT shall agree to the above as deemed necessary.
- 9.4.2 Any review and corrections required after the provisional report shall be advised accordingly to the CONSULTANT before it is presented to the Management at one or up to a maximum of three meetings/discussions.

#### 9.5 IMPROVEMENT

- 9.5.1 Recommendations shall be clear and actionable and include details of improvement opportunities identified during the audit.
- 9.5.2 Advise strategy for network performance and review with the Corporate Quality department further enhancements that needs to be implemented in the network.

#### 9.6 TECHNICAL FEATURES

- 9.6.1 The drive test tools that will be used shall support at least the following features:
  - 9.6.2 FR, EFR & HR and AMR
  - 9.6.3 GSM 900, GSM 1800, PGSM & EGSM bands
  - 9.6.4 All Phase 2+ features
  - 9.6.5 Received sub levels
  - 9.6.6 Discontinuous transmission
  - 9.6.7 Power control uplink & downlink



9.6.8 GPRS CSI-4 + EDGE

9.6.9 GSM/GPRS/EDGE/WCDMA/HSDPA

## 10.0 ADDITIONAL REQUIREMENTS

### 10.1 DOCUMENTATION

10.1.1 All documentation pertaining to the methodology of audit, equipment used, reports generated, methods used for analysis, recommendations, benchmarking, etc shall be made available to ETISALAT as part of the out come without any extra charges.

10.1.2 Proposal shall also contain a compliance statement, and a price list indicating the total price and details of man-days for each sub activity and resources to be used.

10.1.3 The proposal shall include documents and literature requested which shall be bound, clearly titled and numbered with a list of contents at the beginning for easy reference. All documents shall be comprehensive and descriptive in nature, clearly printed and in English language.

### 10.2 BENCHMARKING

10.2.1 Scope of this benchmarking is to compare the quality of Etisalat mobile network with other similar networks

10.2.2 Based on drive tests i.e. from the subscriber's point of view. It is expected to be objectively compared with other operators globally with emphasis on the Quality of Services for GSM/GPRS/EDGE.

10.2.3 All parameters derived at the drive tests shall be benchmarked with at least ten other similar operators covering all types of economies in the world. The sample size i.e. number of calls made shall be provided as part of benchmarking.

10.2.4 Based on OSS stats i.e. from network performance point of view. Quality of Service parameters for GSM/GPRS/EDGE networks. The details of number of subscribers, equipment vendors, number of nodes in service, technology used shall be provided as



part of benchmarking

10.2.5 Sources of the benchmarking information shall be stated for e.g. project name and year of completion without specifying the name of the Service provider.

## 11.0 DELIVERABLES

- 11.1 CONSULTANT shall provide a report on the outcome of the test with details of
  - 11.1.1 areas that were tested and why these areas were selected,
  - 11.1.2 limitations and exclusions in the test,
  - 11.1.3 assumptions that were made during the test,
  - 11.1.4 areas for improvements for each area tested,
- 11.2 the expected levels of measurements against that of the results obtained,
- 11.3 detail analysis of the findings and causes,
- 11.4 total time of drive test (data logging hrs)
  
- 11.5 total distance covered in Kms
- 11.6 Benchmark with at least 10 other operators which should have more than 5 million subscribers and a penetration of more than 70%.
- 11.7 benchmark of Etisalat Afghanistan network performance KPIs with other service providers
- 11.8 performance of roaming
- 11.9 Recommendations for short term i.e. quick wins or immediate (within 3 months) and long term (more than 3 months) improvements actions.
  
- 11.10 A verification of the coverage and handovers using drive test equipment along the drive test route
  
- 11.11 Test cases with an analysis of the related mobile originated and mobile terminated events, if required for trouble shooting
  
- 11.12 Performance of in bound roaming either national or international to Etisalat network under various scenarios
  
- 11.13 The drive test shall analyze the following in addition to deliverables that are not limited to:



- 11.13.1 Call set-up success rate,
  - 11.13.2 Call set-up time cumulative distribution,
  - 11.13.3 Blocked call rate,
  - 11.13.4 Dropped/failed call rate,
  - 11.13.5 Overall call success rate,
  - 11.13.6 Handover success rate (global and intra/inter band or intra/inter layer, soft),
  - 11.13.7 Signal strength cumulative distribution,
  - 11.13.8 Bit error rate cumulative distribution and mobile output power cumulative distribution.
  - 11.13.9 Analysis of Mobile TX power levels, TA and FER
  - 11.13.10 Analysis of layer 2 & layer 3 messages for any abnormal events.
  - 11.13.11 Frequency scans for any identified interference problem
  - 11.13.12 Requirements for additional sectors/cells
  - 11.13.13 Cells neighbors definitions optimization (reduction), shall be proposed, if any.
  - 11.13.14 BLER, throughput, delay & jitter
  - 11.13.15 Dropped PDP context/attach
  - 11.13.16 Attach time, PDP context activation times
  - 11.13.17 Service access time, Service access reproduction for video streaming
  - 11.13.18 Round trip time
- 11.14 The network audit based on OSS stats & network data shall provide findings with in-depth analysis into the following areas but not limited to
- 11.14.1 Worst performing cells in the network and their causes, faulty TRX and time slots
  - 11.14.2 BSS installation assessments & overshooting cells
  - 11.14.3 Availability of interfaces such as A, A-bis,
  - 11.14.4 Call setup failures due to congestion & all drops call with root cause analysis
  - 11.14.5 Problems with neighbor relations and handovers
  - 11.14.6 Frequency plan, RF design and interference issues
  - 11.14.7 Deployment of BSS features for capacity enhancements and their trade off with quality
  - 11.14.8 Dimensioning issues and related bottle necks
  - 11.14.9 Failure cause values in OSS undefined or unspecified
  - 11.14.10 Transport network design to ensure future proof



- bandwidth requirements for data services
- 11.14.11 Consistency of parameters applied and thresholds
- 11.14.12 Point out short comings observed in the networks in each of the Regions & Vendors equipments and provide a synopsis with justification and objective findings on Network design, Frequency planning, Performance of the network
  
- 11.15 The Commercial handset tests shall pinpoint anomalies occurring with either the handsets or due to network conditions by correlating data from NSS based on IMSI analysis.
  
- 11.16 The validation of KPIs for Management reporting shall provide findings with regards to definitions and methodology of calculations to ensure that measured parameters translate to reality of actual quality perceived by subscribers.

## ANNEXURE -1

## Afghanistan drive test route plan

REGION	CITY/AREA NAME	NO OF WORKING DAYS
Kabul	Kabul City	4
	Jalal abad	1
	Parwan	1
	Paghman	1
Northern Region	Mazar-e-sharif	3
	Sheberghan	1
	Baghlan	1
	Takhar	1
	Heart	2
	Kunduz	1
Southern Region	Kandahar	2
	Zabul	1
	Lashkargha	1
	Farah	1

## Annexure-2

## Time -Sheet

Region	CITY/AREA NAME	Drive test date	Log file Name	Log time	Drive tester name	Man-days
Kabul	Kabul City					SUM (Log time) / 8
	Jalal abad					
	Parwan					
	Paghman					
	<b>TOTAL</b>			SUM(Log time)		
Northern Region	Mazar-e-sharif					SUM (Log time) / 8
	Sheberghan					
	Baghlan					
	Takhar					
	Heart					
	Kunduz					
	<b>TOTAL</b>			SUM(Log time)		
Southern Region	Kandahar					
	Zabul					
	Lashkargha					
	Farah					
	<b>TOTAL</b>			SUM(Log time)		

ANNEXURE-3

INCIDENT REPORT FORMAT  
 Summary

Incident Report

Date

Region:

Calling No:

Called No:

_____	
=====	
=====	
MS1	MS2
_____	_____
_____	

Short Calls(MS1)					
City	Poor Coverage	Poor Quality	Dropped Calls	Handover failures	Call set Up failures

\* Plots to be referred in the second worksheet.

Long Calls(MS2)					
City	Poor Coverage	Poor Quality	Dropped Calls	Handover failures	Call set Up failures

**Details**

Incident ID	Optimization Consultant	Log File	Location	Plot *	Incident Identification				LAT	LON	Nature of the problem
					Date	Start time	End time	Serving cell			

Handover Failures			
Timestamp	From Cell (BSIC/BCCH)	To Cell (BSIC/BCCH)	Remarks

Missing Handovers (Rx_Level of Best Neighbour - Rx_Level of Server > Threshold)							
Start Timestamp	End Timestamp	Start Latitude	Start Longitude	Serving Cell	Average Server Rx Level	Best Neighbour	Average Neighbour Rx Level



Schedule of Detailed Breakdown

SoW	Activity	Kabul Grand Region				Northern Region				Southern Region				Afghanistan (Total)			
		Resource	Duration	Man-days	Cost	Resource	Duration	Man-days	Cost	Resource	Duration	Man-days	Cost	Resource	Duration	Total - Man days	Cost of activity
1	GSM (2G) Drive test data collection Voice calls - (Short & Long calls) UAE wide																
	Data drive test - data call design to include all services and protocols to be tested on GPRS/EDGE & 3G PS,HSDPA - HTTP,FTP,RTT,MMS, Video Streaming																
	Post processing , analysis and Reporting for 2G /CS																
	Post processing , analysis and Reporting for 2.5G -PS																
	Hot Spots to test CS /PS																
	Walk tests to test CS / PS																
2	Audit based on OSS and Network data , End to End analysis for Root Causes																
3	Commercial Handset testing and Interoperability tests																
4	KPI Validation																