



Government of Pakistan
PAKISTAN TELECOMMUNICATION AUTHORITY
www.pta.gov.pk

Invitation To Bids

Hiring Of Services For "3rd Party Quality Of Service (QoS) Monitoring & Benchmarking Of Mobile Service"

Pakistan Telecommunication Authority, a Government organization invites sealed bids from reputable companies registered with income tax and sales tax department and also on Active Tax Payer List of Federal Board of Revenue for provision of services for "3rd Party Quality of Service (QoS) Monitoring & Benchmarking of Mobile Services".

Bidding documents, containing detailed terms and conditions, method of procurement, procedure for submission of bids, bid security, bid validity, opening of bid, evaluation criteria, clarification / rejection of bids, performance guarantee etc. are available at the office of undersigned. Price of the bidding documents is Rs. 500/- (non-refundable in form of pay order in favour of PTA). Bidding Documents can also be downloaded from www.pta.gov.pk free of cost.

The bids, prepared in accordance with the instructions in the bidding documents, must reach at PTA HQs, F-5/1, Islamabad on or before 23rd February, 2022 at 11:00 AM. Technical bids will be opened the same day at 11:30 AM. This advertisement is also available on PPRA website at www.ppra.org.pk.

Kashif Ghafoor
Director (Enforcement-Wireless II)
PTA Head Quarters, F-5/1, Islamabad.
Ph.: 051-9202775, Fax: 051-2878139
Email Address: enf.qos@pta.gov.pk



Pakistan Telecommunication Authority

BIDDING DOCUMENT

**HIRING OF FIRMS FOR PROVISION OF
“3RD PARTY QUALITY OF SERVICE MONITORING & BENCHMARKING OF
CELLULAR MOBILE SERVICES”**

Pakistan Telecommunication Authority, Headquarters Building, F-5/1, Islamabad, Pakistan
URL: www.pta.gov.pk

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1. Introduction

- 1.1. Pakistan Telecommunication Authority (PTA) (*herein after called the “the Client” which in expression shall mean and include, unless the context otherwise requires, its successors in the office and assigns*), is a statutory body established under Section 3 of the Pakistan Telecommunication (Re-organization) Act, 1996 and Azad Jammu and Kashmir Council Adaptation of Pakistan Telecommunication (Re-organization Act,2005 & Gilgit Baltistan by virtue of GB Council adaptation of Laws Act, 2012,(*herein after referred to as “the Act” and “the AJK Act” and “GB Act”, respectively*).
- 1.2. The Client intends to hire services of bidder(s) for provisioning of **“3rd Party Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service”** for an initial period of **ONE (01) YEAR** and extendable maximum up to **FOUR (04) YEARS**, subject to satisfactory annual report, as per detailed in **SECTION 3, 4 & 5** of the bidding documents to:
 - 1.2.1. Benchmark Voice, SMS, Network Coverage and Mobile Broadband QoS of FOUR (4) operators in Pakistan and FIVE (5) in Azad Jammu & Kashmir & Gilgit Baltistan (GB).
 - 1.2.2. Measure all the QoS KPIs as mentioned in **PARA 4.3** of the bidding document.
 - 1.2.3. The QoS Tool of the bidder which will be used for Data Collection , Data Analysis, Data Validation & Reporting etc., should support all the technologies including but not limited to Global System for Mobile (GSM)/ Wideband Code Division Multiple Access (WCDMA)/ High Speed Download Packet Access (HSDPA)/ High Speed Upload Packet Access (HSUPA)/ High Speed Packet Access+ (HSPA+)/ Long Term Evolution (LTE)/ Voice over Long Term Evolution (VoLTE)/ Long Term Evolution Advance (LTE-Advance) etc. (*i.e. 2nd, 3rd & 4th Generation wireless technologies*) in all bands/spectrum, carrier aggregation in contiguous/noncontiguous bands/technologies and should be upgradeable to 5G, as and when required by the Client.
- 1.3. Bids are invited on the basis of the terms and conditions illustrated in bidding document, for which the bidder(s) shall submit the detailed Technical Proposal for provision of **“3rd Party Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service”**. The bidder(s) shall have proven expertise in measuring and benchmarking service quality of Cellular Mobile Services.
- 1.4. The **“3rd Party Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service”** are required for each province of Pakistan (*i.e. Punjab (including ICT), Sindh, Khyber Pakhtunkhwa and Balochistan*) and Azad Jammu & Kashmir (AJK) and Gilgit Baltistan (GB).
- 1.5. The bidder(s) are free to apply for any number of “combination of regions”, however, following must be adhered while choosing combination of the regions:
 - 1.5.1. Punjab (including ICT) & Khyber Pakhtunkhwa
 - 1.5.2. Sindh & Balochistan
 - 1.5.3. AJK & GB

- 1.6. The bidder(s) shall also provide evidence of providing similar services to at least **TWO (02)** Telecom Regulators / Operators / Vendors and / or any other Telecommunication Service Provider across the world.

2. Instructions to the Bidders

2.1. **General Instructions**

- 2.1.1. The bidder(s) having presence in Pakistan independently or through joint venture/ consortium/ authorized agent/ dealer having valid NTN & GST Registration being on Active Tax Payer List of FBR for both Income Tax and Sales Tax/ provincial revenue authority for sales tax are invited.
- 2.1.2. The bidder(s) should submit Technical Proposal and Financial Proposal, in a separately marked sealed envelopes as per Rule 36 (b) of Public Procurement Rules 2004 available on www.ppra.org.pk and as per scope of work outlined in **SECTION 3, 4 & 5** of the bidding document.
- 2.1.3. The bidder(s) may request any clarification of the bidding not later than **10 calendar DAYS** before the proposal submission due date. Any request for clarification must be sent in writing by paper mail, facsimile, or electronic mail to the Client's address given below:
Director (Enforcement Wireless-II)
Pakistan Telecommunication Authority
PTA HQs, F-5/1, Islamabad Pakistan
Email: enf.qos@pta.gov.pk
Tel: +92 (51) 9202775
Fax: +92 (51) 2878139
- 2.1.4. The Client will respond by facsimile or electronic mail to such requests and will publish on Client's website the response (*including an explanation of the query but without identifying the source of inquiry*) for information of all the intending bidders preferably within two to three working days after receipt of such request. *Also a pre bid query session will be arranged and notification of the pre-bid meeting will be published on PTA web-site.*
- 2.1.5. At any time before the submission of proposals, the Client may, for any reason, whether at its own initiative or in response to a clarification requested by the prospective bidder(s), amend the bidding documents. Any amendment shall be issued in writing through addenda. The Client shall advertise the addenda in the same manner as original advertisement. The addenda shall be considered an integral part of the bidding documents and will be binding. The Client may at its sole discretion extend the deadline for the submission of proposals.
- 2.1.6. The costs of preparing the proposal and of negotiating the contract, including visit(s) to the Client, are not reimbursable as a direct cost of the assignment.
- 2.1.7. The Client is not bound to accept any of the proposals submitted, however, upon request, ground of rejection of bid, shall be communicated to the bidder.
- 2.1.8. The bidder(s) are requested to submit proposals in English language.
- 2.1.9. While preparing the bid, the bidder(s) shall consider Recommendations of the International Telecommunication Union (ITU) related to service quality and standards adopted by the European Telecommunication Standardization Institute (ETSI) such as ETSI 102 250, ITU-T P.863 and ETSI TR 103 559 etc., The bidder shall also mention the standard being followed in the offered solution.
- 2.1.10. The bidder(s) shall nominate a focal person as a liaison officer to act as the primary Point of Contact (PoC) for correspondence with the Client.

2.2. Submission of the Bids

- 2.2.1. The submission and evaluation of bids will be carried out as per Rule 36 (b) “**Single Stage - Two Envelope Procedure**” of Public Procurement Rules 2004
- 2.2.2. The original proposal (comprising of Technical Proposal and Financial Proposal) shall be prepared without any inter-lineation or overwriting.
- 2.2.3. An authorized representative of the prospective bidder shall initial all pages of the proposal and sign in full on the last page of proposal, clearly mentioning the full name of the representative. The representative’s authorization is to be confirmed by a **written power of attorney** accompanying the proposal.
- 2.2.4. The bidder(s) shall prepare four copies of the proposal. Each Technical Proposal and Financial Proposal shall be marked “**ORIGINAL**” or “**COPY**”. If there are any discrepancies between the original and the copies of the proposal, the original proposal will be taken as the correct one.
- 2.2.5. The original and three copies of the Technical Proposal shall be placed in a sealed envelope clearly marked “**Technical Proposal**”. The original and all copies of the Financial Proposal shall be placed in sealed envelope clearly marked “**Financial Proposal**” with the words: “**DO NOT OPEN WITH THE TECHNICAL PROPOSAL**” clearly written on the envelope. Both envelopes shall be placed in an outer envelope and sealed. This outer envelope shall bear:
- (1). The submission address mentioned at **Para 2.1.3**
 - (2). Clearly marked, “**Bid for Provision of 3rd Party Quality of Service Monitoring and Benchmarking of Cellular Mobile Services**”.
- 2.2.6. The bids shall be submitted in a sealed package in such manner that the contents are fully enclosed and cannot be known until duly opened.
- 2.2.7. The completed Technical and Financial Proposals must be delivered at the submission address mentioned at **Para 2.1.3** by the date **23rd February, 2022**, not later than Pakistan Standard Time **1100 hrs.** (PST). Any proposal received after the closing time and date for submission of proposals shall be returned unopened.
- 2.2.8. Subject to meeting the minimum requirement as set out at **Sub-Para (1) of Para 6.2.1** of the bidding document, evaluation of the Technical Proposal will start in accordance with **Sub-Para (2) of Para 6.2.1** and at this stage the Financial Proposal shall remain unopened.
- 2.2.9. The Evaluation Committee constituted by the Client will seek demo as well as presentation from bidder(s), initially qualified as per **Sub-Para (1) of Para 6.2.1** of the bidding documents, through interactive session(s) via physical presence / conference calls etc. as per mutual convenience.

2.3. Bid Security

- 2.3.1. Bid security shall be PKR **Half (0.5) Million** for each “combination of region”, as explained at Para 1.5 above, separately, in the shape of pay order / demand draft in favor of Pakistan Telecommunication Authority.
- 2.3.2. Bid Security shall be attached with the Technical Proposal otherwise proposal will not be evaluated/accepted.
- 2.3.3. Bids without bid security will be rejected without any right of appeal.
- 2.3.4. Bid security of successful bidder shall be **adjusted** in PBG. Whereas, bid security of unsuccessful bidders will be returned after award of contract to successful bidder.

2.4. Performance Bank Guarantee (PBG)

2.4.1. A Performance Bank Guarantee (PBG) from a bank having credit rating of at least AA+ in the prescribed format, for an amount equal to **2 PERCENT** of the contract price in **PAK RUPEE**, shall be submitted before signing the contract for carrying out the assignment. PBG shall remain in force until **SIX (06) MONTHS** after the completion of the Contract. On satisfactory completion of assignment, this PBG shall be released. The PBG of four years shall be calculated, based upon the average drive test samples per quarter of all operators mentioned at **Para 5.2.**

2.5. Technical Proposal

2.5.1. The Bidders shall present detailed description of their QoS Tool which is going to be used for Data Collection, Data Analysis and Data Validation, supported by photographs, drawings, brochures, technical characteristics, product description of each offered segment/stage along-with sample reports etc., in such a way to enable the Client to make a clear judgment and evaluation of the Proposed Solution.

2.5.2. Technical Proposal shall not include any financial information.

2.5.3. Technical Proposal shall be in accordance with Formats attached at **Annexure I**, as per following details:

- (1). A Covering Letter as per **Annexure I.A**
 - (2). Details of Local Partners as per **Annexure I.B** (i.e. if any).
 - (3). A brief description of the bidder's organization and an outline of recent experience of providing "**3rd Party QoS Monitoring and Benchmarking of Cellular Mobile Services**" to Telecom Regulators/Vendors/Operators as per **Annexure I.C**
 - (4). Duly filled Initial Qualification Checklist alongwith supporting documents as per **Annexure I.D**
 - (5). Description, Specification and Working of Proposed Solution including but not limited to details mentioned at **Para 2.6.1** as a separate annex (i.e. **Annexure I.E***)
 - (6). List of QoS KPIs being measured by the QoS Tool of the bidder as a separate annex (i.e. **Annexure I.F***)
 - (7). Presentation of the Quoted Solution for demonstration both in hard and soft (on USB) form as a separate annex (i.e. **Annexure I.G***)
 - (8). Any other relevant details
- * Any suitable format can be used by the bidder

2.5.4. After initial qualification as per **Sub-Para (1) of Para 6.2.1** of the bidding document, the bidder will have to demonstrate the Quoted Solution in Islamabad, within **SEVEN (07) DAYS** of the request by the Client. This requirement is part of the technical evaluation of the Bid.

2.6. Financial Proposal

2.6.1. In preparing the Financial Proposal, the bidder is expected to take into account the requirements and conditions outlined in the bidding documents. The Financial Proposal should be in accordance with the table as attached at **Annexure II**. The bid price shall be inclusive of all taxes, duties, fees, levies, and other charges imposed under the applicable laws in Pakistan

- 2.6.2. The proposal must remain valid for a period of **SIX (6) MONTHS** from the date of opening of Technical Proposals. The Client will make its best effort to complete bidding process within this period.
- 2.6.3. The bidder should quote its unit rates + GST charges (if applicable) clearly for each segment, in the Financial Proposal and total price of each line segment as well as Grand Total which will be considered for financial evaluation.
- 2.6.4. Bid shall be in **PAK RUPEE** only and inclusive of all applicable taxes i.e. GST, duties etc. as per Government of Pakistan (GOP) rules.
- 2.6.5. The Financial Proposal shall be prepared keeping in view the QoS Survey requirements as detailed in **Section 5** of the bidding document, separately for each type of Drive Testing Approach mentioned at **Para 3.2**.
- 2.6.6. Bids should be inclusive of transportation/carriage charges and fixing charges and any other cost which is essentially required to complete the job.
- 2.6.7. Any change/revision in Sales Tax by Government of Pakistan /relevant Provincial Governments shall be adjusted/accepted by both the parties as per the applicable law and payment will be made accordingly to the successful bidder.
- 2.6.8. The Financial Proposal therefore, shall be submitted in the manner of this bidding documents as **Annexure II**, comprising the following:
 - (1). A covering letter as attached at Annexure II.A with supporting documents (original and three photocopies along with the soft copy).
 - (2). Quoted Solution Pricing as per Annexure II.B.

3. 3rd Party Services Minimum Requirements

3.1. Overview of 3rd Party Service

3.1.1. The “3rd Party Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service” shall consist of following:

- (1). Testing and benchmarking of Quality of Service (*QoS*) across number of mobile operators (*i.e. FOUR MOBILE NETWORKS in Pakistan and FIVE MOBILE NETWORKS in AJK & GB*), with the objective to reproduce end user experience in different mobile networks, device types and wireless technologies (*i.e. 2G/3G/4G etc.*) operational in Pakistan including AJK & GB.
- (2). Carryout field tests, measure, benchmark and generate report of QoS Key Performance Indicators (*KPIs*) defined in mobile services licensees issued from time to time to Cellular Mobile Operators (*CMOs*) in Pakistan and Cellular Mobile Network Quality of Service (QoS) Regulations 2021, as detailed in **Para 4.3**.
- (3). Record every minute measurements details of the network while testing.
- (4). Determine and plot the route and map it with respect to its GPS coordinates. Plotting shall only show the relative movements with reference to a starting reference point. All instances have to be time and day stamped.
- (5). Carryout indoor / walk test service quality and coverage measurement at any specific complained location.

3.1.2. The bidders shall be able to generate report of the QoS surveys on specified format by the Client, identify problematic areas, generate events, analyze root cause, and compare re-survey results with earlier survey results after analysis and corrective measures taken by Cellular Mobile Operators (*CMOs*). Details of reports required to be generated is given in **Para 5.5, 5.6 & 5.7**.

3.1.3. The bidders shall be able to provide monthly /quarterly /bi-annual /annual reports or any other tenure as and when required by the Client.

3.2. Drive Testing Approach

3.2.1. The bidder(s) can utilize any of the two data collection methods for QoS Monitoring and Benchmarking of Cellular Mobile Services:

- 3.2.1.1. **Conventional Drive Testing**. Data Collection of all the operators through QoS tool installed in a single vehicle.
- 3.2.1.2. **Contemporary Drive Testing**. Data Collection of all the operators through QoS tools installed in multiple vehicles (*i.e. by utilizing urban mobility riders*).

4. Technical and Functional Capabilities of QoS Tool

4.1. **Data Collection Tool**

- 4.1.1. NETWORKS BENCHMARKING. The equipment should be capable of continuous benchmarking of multiple scenarios of **Voice, SMS and Data** services of **FOUR (4)** or **FIVE (5)** networks in Pakistan and AJK & GB respectively.
- 4.1.2. TECHNOLOGY SUPPORT. The equipment shall support all major cellular technologies, including but not limited to GSM / EDGE /GPRS /CDMA /WCDMA /HSDPA /HSUPA/HSPA+/LTE/VoLTE/LTE-Advance etc. (i.e. 2nd, 3rd & 4th Generation wireless technologies) in all bands/spectrum carrier aggregation in contiguous / noncontiguous bands / technologies and should be upgradeable to 5G, as and when required.
- 4.1.3. AUDIO TESTING. It should support Perceptual Objective Listening Quality Analysis (POLQA) voice quality Mean Opinion Score (MOS) for both narrow and wide band.
- 4.1.4. TESTING SCENARIO. It should be able to benchmark all possible testing scenarios in auto technology and band locked mode. All the technologies 2G/3G/4G and all the bands can be locked and also there should be flexibility to lock/unlock any desired technology. Moreover, the tool should be able to lock and test specific Broadcast Control Channel (BCCH)/ Primary Scrambling Code (PSC)/ Physical Cell Identity (PCI)/ Absolute Radio Frequency Channel Number(ARFCN)/ Universal Mobile Telecommunication Service (UMTS) Absolute Radio Frequency Channel Number (UARFCN)/ Evolved Universal Terrestrial Radio Access (E-UTRA) Absolute Radio Frequency Channel Number (EARFCN) etc.
- 4.1.5. LOG FILES. The system should have the capability of:
- (1). Separate log file for each device/handset.
 - (2). Log files should be encrypted and cannot be modified afterwards.
 - (3). Log files should use Time stamp from the satellite using GPS and not from the laptop.
- 4.1.6. GEO MAPPING. The system should have ability to load Geo Maps, Google Maps, tab/shape and network files etc.
- 4.1.7. DATA EXPORT. Any parameter can be exported in multiple formats like csv, txt, tab, KML/KMZ etc. both as image and point.
- 4.1.8. DRIVE TEST ROUTES. The system should be capable:
- (1). To record drive test routes and the same can be imported/exported.
 - (2). To provide facility of navigation like Google Maps to cover the imported route in optimized manner.
- 4.1.9. TOOL DISPLAY. The equipment should be capable to:
- (1). Display, record, pause and replay the measurements.
 - (2). Display the progress of testing in the run time.
 - (3). Display and record all layer2/layer 3 messages, measurement reports and events etc.
 - (4). Display different parameter in grid and map and the legends should be configurable.
- 4.1.10. STANDARD SUPPORT. It should support the recommendations and standard of ITU and ETSI related to service quality such as ETSI 102 250 and ITU-T P.863 etc.

4.2. Data Analysis / Post Processing Tool

4.2.1 POST PROCESSING OF RF DATA. Post Processing Tool should automatically post-process RF data (indoor and outdoor). It should be capable of analyzing log files collected through RF Data Collection Tool.

4.2.2 POST PROCESSING CAPABILITIES. Post Processing Tool should have the following capabilities:

- (1). Carryout cell level and operator level analysis.
- (2). Extract user specific portion of log file for detail analysis and layer 2/Layer3 messages can easily be searched, filtered and analyzed.
- (3). Post processing tool should be able to provide KPIs per technology, if testing is done in auto mode.

4.2.3 REPORT GENERATION. Post Processing Tool should be able to generate user-defined reports and templates which can be used to create reports from any log file or multiple log files and to compare KPIs of multiple operators, technologies and timeframes. Following points need to be considered for the reports:

- (1). CUSTOMIZED KPIS. Support defining customized KPIs and inclusion of customized KPIs in the report, whether it is customized report or built in report.
- (2). GEO MAPS. Reports should use integrated geo Maps to visualize and analyze the data.
- (3). EXPORTING KPIS. Reports should display all the RF parameters/KPIs in grid and maps which can to be exported in different formats like txt, csv, xlx, xls, KML/KMZ etc.
- (4). TECHNOLOGY WISE SEGREGATION. Reports should be able to provide KPIs per technology, if testing is done in auto mode.
- (5). VISUAL EFFECTS. Generated reports should contain graphs, bar charts, tables, maps with different KPIs/events being displayed. The reports and can be extracted in different formats like pdf, word and excel etc.
- (6). BENCHMARKING REPORTS. There should be pre-defined reports for Benchmarking purpose providing comprehensive comparative analysis of multiple operators covering all technologies for voice, SMS and data services. Technology wise as well as overall Benchmarking of the operators will be required.
- (7). KPIS FORMULAE & INTERNATIONAL STANDARDS. All the Formulae used in all the reports need to be provided and should be in accordance with the ITU/ETSI etc., standards related to service quality.

4.2.4 REPORTED KPIS. The Data Analysis/Post Processing Tool should be able to:

- (1). Report the KPIs defined in **Para 4.3**, with possibility of including/removing KPIs as desired.
- (2). Configure customized thresholds values for each KPI/parameter.
- (3). Provide summary of all the desired KPIs of each operator for number of events below/above thresholds in a single report.

4.2.5 ANALYSIS OF ABNORMAL EVENTS. The Post Processing Tool/Solution should be able to:

- (1). Perform detailed analysis of abnormal events like Drop Call, Blocked Call, Handover Failure, Inter System Handover Failure etc.

- (2). Identify problematic areas like low coverage, low quality areas, high interference, Pilot Pollution etc.

4.2.6 LIST OF SUPPORTED KPIS. The bidder should provide the list of KPIS for all services (voice, data, SMS, FTP, UL / DL), Streaming Video, Web Browsing and Ping that will be reported by Post Processing Tool.

4.3. QoS KPI & RF Parameters

4.3.1. Following is the list of QoS KPIS/ parameters which has to be provided and tested for voice, SMS and Data services for all technologies (2G/3G/4G):

(1). NGMS Licensed/ QoS Regulations KPIS

- (i). Network Accessibility
- (ii). Grade of Service / Call Setup Failure Rate
- (iii). Service Accessibility / Call Setup Success Rate (CSSR)
- (iv). Call Connection Time
- (v). Call Completion Ratio / Drop Call Rate
- (vi). POLQA Wideband Mean Opinion Score (Average of A2B and/or B2A)
- (vii). Inter System Handover for Circuit Switched Voice Only
- (viii). SMS Success Rate
- (ix). SMS End-to-End Delivery Time
- (x). Download and Upload Data Throughput (3G & 4G)
- (xi). Signal Strength (Rx Level, RSCP & RSRP)
- (xii). RAB/E-RAB Setup Success Rate
- (xiii). Session Abnormal Release Rate
- (xiv). 2G Signal Strength RxLev (*No of samples in customizable Bins*)
- (xv). 3G Signal Strength RSCP (*No of samples in customizable Bins*)
- (xvi). 4G Signal Strength RSRP (*No of samples in customizable Bins*)
- (xvii). Latency
- (xviii). Web Page Loading Time

(2). Other QoS KPIS

- (i). 2G Signal Quality RxQual
- (ii). 3G Signal Quality Ec/No
- (iii). 4G Signal Quality RSRQ
- (iv). Number of Call Attempts, Calls Failed, Calls Established & Calls Dropped
- (v). Number of SMS Attempts, SMS Send & SMS Received
- (vi). CSFB Call Setup Time
- (vii). SMS Send Success Rate
- (viii). SMS Receive Success Rate
- (ix). SMS Send Time
- (x). Packet Loss
- (xi). Jitter
- (xii). Number of Data Download/Upload Session Attempts, Failed, Completed & Dropped etc.,

5. QoS Surveys

5.1. Quarterly QoS Survey Plan

- 5.1.1. The Client shall provide a Quarterly QoS Survey Plan.
- 5.1.2. In each quarter any combination of Cities, Towns and Motorways/Highways shall be checked. The Client has the right to include any city, town and Motorway / Highway of Punjab, Sindh, Khyber Pakhtunkhwa, Balochistan, Azad Jammu & Kashmir and Gilgit Baltistan in the Quarterly QoS Survey Plan.
- 5.1.3. In each quarter, number of cities to be surveyed may vary from **FOUR (04) to TWELVE (12) CITIES**, from any part of the country. The Client is free to include cities from any province of Pakistan and AJK & GB. However, the actual number of cities to be surveyed in each quarter may change depending upon the requirement of the Client.

5.2. Drive Test Samples

- 5.2.1. The average drive test samples to be collected in any quarter of the calendar year in each region for all operators shall be as under:

S. #.	Region	No. of Samples		
		Voice Calls	SMS	Data Sessions
1.	Punjab	4000	4000	4000
2.	Sindh	4000	4000	4000
3.	Khyber Pakhtunkhwa	4000	4000	4000
4.	Balochistan	4000	4000	4000
5.	Azad Jammu & Kashmir	4000	4000	4000
6.	Gilgit Baltistan	4000	4000	4000

- 5.2.2. In each region, the distribution of drive test samples shall be as per following categorization:

S. #.	Region	Type of City	Drive Test Samples		
			Calls	SMS	Data
Pakistan					
1.	Punjab	Capital (<i>including ICT</i>)	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
2.	Sindh	Capital	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
3.	Khyber Pakhtunkhwa	Capital	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
4.	Balochistan	Capital	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
AJK & GB					
5.	Azad Jammu & Kashmir	Capital	200	200	200
		Divisional HQs	200	200	200
		Other Cities	200	200	200
6.	Gilgit Baltistan	Capital	200	200	200
		Divisional HQs	200	200	200
		Other Cities	200	200	200

S. #.	Region	Type of City	Drive Test Samples		
			Calls	SMS	Data
Pakistan and AJK & GB					
7.	All Regions	Towns	100	100	100
8		May vary depending upon the length of Motorway/ Highway (As per requirement of the Client)			

5.2.3. The Client reserves the rights to change / modify the drive test samples distribution depending upon the different testing scenario.

5.3. Survey Route Selection & Timing

5.3.1. The survey routes shall be selected in such a manner to cover main roads, service roads and majority of sectors/colonies.

5.3.2. The survey shall be carried out in a particular city in such a manner to traverse maximum coverage / geographic area to cover majority of the network of CMOs. However, the Client can also provide some specific/fix route of survey in a particular city.

5.3.3. Drive test/ survey shall be carried out in such a way that it highlights coverage differences in the results. Any mobile operator shall get benefit for better coverage in any particular area in comparison to other Licensee which do not have presence or weak coverage for the said area.

5.3.4. The surveys shall be carried out on any day and time of the week, however, working days within timespan from 0900 hours to 2100 hours shall be preferred.

5.4. Testing Scenario

5.4.1. The testing shall be carried using different scenarios. Any combination of ON-NET, OFF-NET Calls, SMS and Mobile Broadband Data Testing shall be used.

5.4.2. HANDSET MODE. During Voice Calls, SMS and Data Session, the mobile handset can be kept in different modes, which are:

- (1). A-Party and / or B-Party in Auto Detect Mode
- (2). A-Party and / or B-Party in Band Locked Mode
- (3). A-Party and / or B-Party in Technology Locked Mode i.e. 2G, 3G/UMTS and 4G/LTE.

5.4.3. SAMPLES PERCENTAGE. Following scenario of Voice Calls and SMS Samples Percentage shall be collected, as per Client requirement:

- (1). All ON-NET or
- (2). Any Percentage of ON-NET and OFF-NET to be provided with Quarterly Plan

5.4.4. A-PARTY & B-PARTY.

- (1). A-Party (Originating Number) - Moving continuously during Drive Test
- (2). B-Party (Terminating Number) - Moving or Static

5.4.5. VOICE CALLS & SMS DISTRBUTION. A call of 120 seconds will be made in followed by an SMS from Party-A to Party-B, as per following:

Description	Duration
VOICE CALL SESSION	
Call Duration	120s
Window Duration	180s
Pause Between Consecutive Calls	30s
Maximum Call Setup Time	30s

Description	Duration
SMS SESSION	
SMS SEND	Duration
Send Timeout	30s
SMS Length	160 Characters
SMS Receive	
Maximum Test Duration	90s

5.4.6. DATA SAMPLES. The Mobile Handset shall be in auto or network dedicated / locked mode for data testing.

- (1). Small, Medium and Large Size Files shall be downloaded & uploaded in Auto Detect and / or Technology/Band Locked Modes.
- (2). Suitable servers shall be used for downloading & uploading of files. In a specific session the server shall remain uniform.
- (3). Small, Medium & Large National and International Webpage Accessing.
- (4). Ping Testing to any designated Servers/Webpage.
- (5). Any other testing as per requirement of the quarterly plan.

5.5. Survey Report

5.5.1. After completion of QoS survey in any particular city, the successful bidder shall carryout analysis and call by call/ SMS by SMS or file by file validations of each drive test session so that all the Dropped Calls/SMS/Session, Blocked/Failed Calls/SMS/Session and Inter System Handover Failures etc. are identified. Any failure due to QoS Tool malfunctioning during drive test session shall be identified, record and excluded from the calculation.

5.5.2. For each parameter that is reportable for a service, for each reporting area and for each reporting period, shall be set out in the format comprising the following information for each Licensee:

- (1). Name of Service;
- (2). Identification of the reporting area for which the measurements were taken;
- (3). Indication of any target for the parameter and service that has not been reached by the Licensee;
- (4). Any other information or comparison of service quality that the successful bidder determines to be appropriate possibly including information to help consumers to assess the performance of Licensees.

5.5.3. The minimum reporting requirements include following:

- (1). Executive Summary
- (2). Campaign Overview
- (3). Survey Results
 - (i). Composite Drive Test Results for each service i.e. Voice, SMS, Data of all CMOs
 - (ii). Detailed Survey Results of each CMOs as per **Annex-B** of the QoS Regulations
 - (iii). Route Report of each CMO
 - (iv). Arranged Session Log Files of each CMO
 - (v). Signal Strength: The 4G and 3G Signal Strength maps of each CMOs shall be provided separately. The Color Ranges to be

used are as defined in the table. Legend should be embedded in the snapshot showing both counts and percentage. The table shall also be provided separately.

Legends for Signal Strength			
Range (dBm)	Color	Count of Samples	Percentage
< 0 and \geq -65	Dark Green		
< -65 and \geq -75	Light Green		
< -75 and \geq -85	Yellow		
< -85 and \geq -100	Brown		
< -100 and \geq -140	Red		

- (vi). 3G Throughput: The 3G User Data Throughput maps of each CMOs shall be provided separately. The Color Ranges shall be used as defined in the table. Legend should be embedded in the snapshot showing both counts and percentage. The table shall also be provided separately.

Legends for 3G Throughput			
Range (Kbps)	Color	Count of Samples	Percentage
< 256	Red		
\geq 256 and < 512	Yellow		
\geq 512 and < 1024	Light Green		
\geq 1024 and < 2048	Dark Green		
\geq 2048 and < 4112	Light Blue		
\geq 4112	Dark Blue		

- (vii). 4G Throughput: The 4G User Data Throughput maps of each CMOs shall be provided separately. The Color Ranges shall be used as defined in the table. Legend should be embedded in the snapshot showing both counts and percentage. The table shall also be provided separately.

Legends for 4G Throughput			
Range (Mbps)	Color	Count of Samples	Percentage
< 2	Red		
\geq 2 and < 3	Yellow		
\geq 3 and < 4	Light Green		
\geq 4 and < 6	Dark Green		
\geq 6 and < 8	Light Blue		
\geq 8	Dark Blue		

- (3). Failure Events Plot. All Dropped Calls, Blocked/Failed Calls and Inter System Handover Failures need to be plotted together on RSCP & RSRP plot. The plot must contain legend for RSCP/RSRP and the events observed along with the count of events.
- (4). Speech Quality of CODEC Utilization of each CMO
- (5). Modulation & Resource Block Utilization

- (6). Technology Breakdown per Band in Voice and Data Service
- (7). Observation and Way Forward for Improvement of Service Quality

5.6. Re-Verification of Compliance Report

- 5.6.1. The successful bidder shall also evaluate the Compliance Report of Cellular Mobile Operators (CMOs) containing Route Cause Analysis and remedial measures taken to remove the shortfalls identified in the inspection report.
- 5.6.2. The Route Cause Analysis of CMOs shall consist of following:
 - (1). Detailed Root Cause Analysis of the degraded QoS KPIs, consisting of investigation of each abnormal event and patch wise examination where QoS KPI found degraded.
 - (2). Details of the problematic cells or area impacting the QoS KPI along with the steps taken to resolve the issue.
 - (3). The Confirmatory Testing to be performed on the identified Cells/Areas. Multiple tests will be performed to confirm the resolution of the identified issues only.
- 5.6.3. The successful bidder/ service provider shall provide the re-verification report to Client after analysis of compliance report submitted by CMOs.
- 5.6.4. In case of a requirement by the client, the successful bidder/ service provider shall also carryout re-verification drive test in specific area or sample cities as per the requirement of the Client to confirm/verify the claims of the CMOs.

5.7. Quarterly Report

- 5.7.1. The successful bidder shall submit a quarterly report to the Client as per the latest format available at the client website at <https://pta.gov.pk/en/consumer-support/qos-survey/qos-survey>.

5.8. Annual Performance Report

- 5.8.1. The successful bidder shall submit an Annual Performance Report within one month of the completion of **ONE (01) YEAR** of the Contract to the Client.
- 5.8.2. The Client shall issue Acceptance Certificate on satisfactory performance report.
- 5.8.3. The Annual Performance Report shall be submitted each year till the completion of the Contract Period.

5.9. Penalty

- 5.9.1. If the successful bidder fails to complete the **“3rd Party Quality of Service (QoS) Monitoring and Benchmarking of Mobile Services”** provided by the Client within the given timeline as per Quarterly QoS Survey Plan, Penalty @ 0.5% of the total Quarter Price will be charged per week (minimum four (04) or maximum six (06) days will be considered as one week) up to maximum of four weeks or beyond but limited to the amount of Performance Guarantee. Thereafter, work order will be cancelled, the agreement will be terminated and the Performance Guarantee after deduction of the penalty will be forfeited.

6. Evaluation of the Proposals

6.1. Evaluation Process

- 6.1.1. The proposal shall be evaluated in 2 phases: (1) Technical Evaluation and (2) Financial Evaluation.
- 6.1.2. After the deadline for submission of proposals, Technical Proposals shall be opened by the Client on 1130 PST on **23rd February, 2022** at the Client HQs, F-5/1, Islamabad, Pakistan.
- 6.1.3. Technical Proposal shall be evaluated in accordance with **Para 6.2.**
- 6.1.4. Financial Proposals shall remain sealed. Upon completion of evaluation of Technical Proposals, the Financial Proposal of qualified bidders will be opened in accordance with **Para 6.3.**
- 6.1.5. During evaluation of the bids, the Client may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing, and no change in the prices or substance of the bid shall be allowed, offered, or permitted.

6.2. Evaluation of Technical Proposals

- 6.2.1. The evaluation committee, appointed by the Client will evaluate each Technical Proposal by assessing the documents submitted with technical proposal based on the following Evaluation Criteria.
- (1). The bidder has to comply with the minimum mandatory requirements as set out at **Annexure I.D.**
 - (2). The initially qualified bidders as per **Sub-Para (1) of Para 6.2.1** will further be evaluated as per criteria defined below.

Domain	Description	Marks	Criteria
Data Collection & Analysis Tool	QoS Monitoring & Benchmarking Tool capabilities and effectiveness related to the project in accordance with Client's requirements.	30	Data Collection Tool (5 No. for each Tool) = 10; Data Analysis Tool (5 No. for each Tool)= 10; Log Files Generation and Customized Reporting = 10;
Proposed Work Plan	Relevance and effectiveness of the proposed work plan and the methodology adopted in responding to the requirements and conditions provided in the RFP.	20	Properly Proposed Work Plan (simultaneous testing in in two cities)= 5; Effective & Innovative Drive Test Methodology = 5; Comprehensive Reporting = 5; Re-verification Plan = 5

Qualifications & Experience	Qualifications and abilities of the main employees nominated to work on the Project.	6	Exp \geq 2 year = 2 Exp \geq 3year = 4 Exp \geq 4 year = 6
	Experience of the Key team members in the Drive Testing and Data Analysis & Validation	6	Exp of 2 year =1; Exp < 5 & \geq 3 =2; Exp < 8 & \geq 5 = 4; Exp \geq 8 = 6
	Experience of Key team members in preparation of Reports.	6	Exp \geq 2 year = 2 Exp \geq 3year = 4 Exp \geq 4 year = 6
	Experience of providing Similar Services to Telecom Industry including Regulator, Operators and Vendors	12	2 x marks for each Project
Proof of Concept	Demonstration of Data Collection & Data Analysis Tools and System Generated Report alongwith Overall Report	15	To be evaluated by the Technical Evaluation Committee
Proposal Submission	Proposal Submission	5	Proposals properly marked & sealed =1; Proposal properly arranged with page numbers =1; All required Annexures filled as per desired format =2; soft copies provided =1
Total		100	

6.2.2. A bidder will be declared technically qualified if it meets the required minimum specifications of the system defined at **sub-Para (1) of Para 6.2.1** above and obtains at least 70% marks in Technical Evaluation as per evaluation criteria mentioned at **Sub-Para (2) of Para 6.2.1**.

6.3. Evaluation of Financial Proposals

6.3.1. After Technical Proposal Evaluation is completed, Technical Evaluation Report shall be announced as per Rule 35 of PP Rules 2004 Financial Bids of unsuccessful bidders who did not meet the minimum qualifying marks (70%) or were considered nonresponsive to the minimum specification defined at **Sub-Para (1) of Para 6.2.1** of the bidding document, will be returned unopened after announcement of technical evaluation report. The Client, after seven days of announcement of technical evaluation report, shall notify the bidder(s) securing the minimum qualifying marks during Technical Evaluation, indicating the date and time set for opening the Financial Proposals. The opening date shall be informed in advance. The notification may be sent by courier letter/electronic mail/ facsimile etc.

6.3.2. The Financial Proposals shall be opened in the presence of the authorized representatives of the successful bidders of Stage 1 who choose to attend.

- 6.3.3. The name of the bidder, the technical evaluation scores, and the financial bid shall be read aloud and recorded. The Client shall prepare minutes of the financial bid opening session.
- 6.3.4. The financial evaluation shall be carried out separately for each type of Drive Testing Approach mentioned at **Para 3.2**, for each “combination of region” as provided at Para 1.5. The bid will be evaluated on least quoted amount for technically qualified bidders against each type of Drive Testing Approach for each “combination of region”. It means that the bidders which have qualified in the technical evaluation will become at par/equal and the bidder who has quoted the most advantageous bid for each “type of Drive Testing Approach” against each “combination of region”, as per scope of services shall be awarded contract.
- 6.3.5. If two bidders quoted equal financial bids then the firm who has obtained the higher marks in technical evaluation will get the contract.

6.4. Disqualifications

- 6.4.1. Offers are liable to be rejected if; there is any deviation from the instructions as laid down in the bidding document.
- 6.4.2. Partial pricing of Quoted Solution shall not be accepted as contract will be awarded to a single successful bidder for each “combination of regions”
- 6.4.3. Splitting of bid in parts is not allowed.
- 6.4.4. Technical bid is submitted without required bid security.
- 6.4.5. Offers are received after specified date and time.
- 6.4.6. GST and NTN certificates are not attached.
- 6.4.7. Details of Local Representation is not provided
- 6.4.8. If there is any overwriting and cutting in the submitted Technical and Financial Proposals

7. Award of Contract

The contract shall be awarded to the bidder selected after technical & financial evaluation. The assignment is expected to commence immediately upon Effective Date of Contract.

7.1. The Letter of Intent (LoI)

7.1.1. The Client shall issue a Letter of Intent (LoI) to the selected bidder immediately upon acceptance of the bid. The selected bidder, within 07 days of the issuance of the LoI, will sign the contract after fulfilling all the formalities/pre-conditions mentioned in the Letter of Intent. The selected bidder shall commence the assignment on receipt of LoI and as per schedule given by the Client.

7.2. Tenure of the Contract

7.2.1. The total tenure of the Contract shall be FOUR (04) Years. However, continuity of the Contract beyond ONE (01) Year shall be subjected to submission of Annual Performance Report by the Service provider(s) and the issuance of the acceptance certificate by the client.

7.3. Corrupt or Fraudulent Practices

7.3.1. The Client requires that bidders observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Client defines, for the purposes of this provision, the terms set forth below as follows:

“**Corrupt and Fraudulent Practices**” includes the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official or the Vendor or service provider in the procurement process or in contract execution to the detriment of the procuring agencies; or misrepresentation of facts in order to influence a procurement process or the execution of a contract, collusive practices among bidders (prior to or after bid submission) designed to establish bid prices at artificial, non-competitive levels and to deprive the procuring agencies of the benefits of free and open competition and any request for, or solicitation of anything of value by any public official in the course of the exercise of his duty;

7.3.2. Will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

7.3.3. Will declare a firm ineligible, either indefinitely or for a stated period of time, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for any contract within Pakistan.

Annexure I: List of Technical Proposal Forms

Annexure I.A Covering Letter

[Location, Date]

To:

Director (Enforcement)
Pakistan Telecommunication Authority
PTA HQs, F-5/1, Islamabad, Pakistan

Sir,

I/We, the undersigned, offer to provide service of **“3rd Party Quality of Service and Benchmarking of Cellular Mobile Service”** of FOUR (04) and/or FIVE (05) mobile operators in combination of regions i.e. _____ and/or _____ & _____, in accordance with your Bidding Document and our Proposal. I/We hereby submit our Proposal which includes separately sealed **Technical Proposal** and **Financial Proposal** along with required Bid Security in a sealed envelope.

I/We, undertake that all requirements mentioned at **SECTION 3, 4 & 5** of the Bidding Document have been fully responded in the Technical Proposal.

Our Proposal is binding upon us and cannot be modified after the submission and that we are willing to demonstrate our Solution in Islamabad as required by PTA.

I/We understand that you are not bound to accept our Proposal.

Yours,

Authorized Signature:

Name and Title of Signatory:

Name of Firm:

Address:

Cell:

Tel:

Fax:

Email:

Annexure I. B Details of Local Partners

General: < In addition to the questions and forms in this section, take as much space as desired for your responses. >

Number of Local Partners in Pakistan: _____

Using the format below, provide information on each local partner/authorized dealer/Vendor of your tool in Pakistan

Name of firm of Local Partner

Address

NTN Number

Name listed in ATL (YES/NO)

Date of Engagement with the Bidder's Firm

Nature of engagement with the Bidder's Firm

Name of Clients being Served in Pakistan by the above mentioned local Partner

Areas (Region) of Pakistan being served by the local Partner

Registration Documents as a Firm/Company

Details of POCs for Local Partner

#	Name	Designation	CNIC	Mobile Number	Landline Number	Email

Bidder's Name: _____

Signature:

Date:

Annexure I. C The Bidder Firm’s References

Provision of Similar 3rd Party Services to Other Regulators/Vendor/Operators That Best Illustrate Expertise

General: < In addition to the questions and forms in this section, take as much space as desired for your responses. >

Using the format below, provide information on each assignment for which your firm/entity, either individually or as a corporate entity was legally contracted.

Name of Client	
Type of Client (Regulator/Vendor/Operator)	
Country	
Type of Service Provided	
Type of QoS Tools Used	
Date and Year of Provision of Service	
Details of Service Provided	

Firm’s Name: _____

Annexure I. D Initial Qualification Check List

Part A) General Requirement

- 1 Firm has to produce Sales Tax and Income Tax Registration. (i.e. For companies registered in Pakistan only and bidders through JV/Consortium).
- 2 Affidavit on non-judicial stamp paper that firm/company has never been black listed from any Govt. /Semi Govt./ Autonomous body.
- 3 Bid security is enclosed with the technical bid.
- 4 Minimum 2 years of relevant experience of firm/company.
- 5 Provision of Similar 3rd Party Services to at least 2 or more Regulators/Vendors/Operators as per below table and the documentary proof is to be attached.

	1 st		2 nd	
	Name	Type	Name	Type
Name of Regulator/Vendor/Operator				
Country of Regulator/Vendor/Operator				
Date of Provision of 3 rd Party Managed Service				
All Mobile Operators to be Benchmarked Simultaneously for any service				
Supported Technologies to be benchmarked				
Brief description of Provided Services				

Note: Necessary supporting documents for all the requirements shall be enclosed with technical proposal to qualify.

Part B) Technical Requirement of QoS Tool

S/No	Category	Yes / No
1	Support 4 or 5 Operator in Pakistan and AJK & GB respectively, for voice, SMS & Data testing in parallel testing approach.	
2	Latest version of ETSI TS102 250 standard being followed	
3	Licensed KPIs defined in bidding document can be measured	
4	Generation of DT Maps using GPS	
5	Capability of Indoor testing	
6	Licensed KPIs can be reported using Post Processing Tool	
7	Measurement of 2G/3G/4G technologies simultaneously	
8	Support of POLQA narrowband and wideband (all versions)	
9	Script making for testing	

S/No	Category	Yes / No
10	Availability of Separate log file for each handset	
11	Encryption of Log file	
12	Data export in csv/tab/kmz/kml etc.	
13	Recording of Layer2/layer 3 messages , events etc.	
14	Availability of Cell Level & Operator Level Analysis	
15	Support for the analysis of Multiple log file simultaneously	
16	Availability KPI per Technology in auto mode testing	
17	Provision of Licensed KPI available in Report(s)	

Note: Necessary supporting documents for all the requirements shall be enclosed with technical proposal to qualify.

Annexure II. List of Financial Proposal Forms

Annexure II.A Financial Proposal Submission Form – Combination of Regions

[Location, Date]

To:

Director (Enforcement)
Pakistan Telecommunication Authority
PTA HQs, F-5/1, Islamabad Pakistan

Sir,

I/We, the undersigned, offer to provide **“3rd Party Quality of Service and Benchmarking of Cellular Mobile Service”** in accordance with your bid document (Technical and Financial Proposals). Our Financial Proposal (*i.e. amount inclusive of all applicable taxes*) for combination of regions *i.e.* _____, _____ & _____ is summarized as under, whereas the details proposal are attached as separate sheet for each year:

Total Price (inclusive of sales tax): *Based upon the average no of samples per quarter*

a. Conventional Drive Testing Approach – Summary of Price

S. #.	Region	Without Sales Tax		Sales Tax		Total	
		In Fig	In Words	In Fig	In Words	In Fig	In Words
YEAR # 1 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 2 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 3 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							

S. #.	Region	Without Sales Tax		Sales Tax		Total	
		In Fig	In Words	In Fig	In Words	In Fig	In Words
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 4 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							

Note: Only include those combination of regions for which the bidder has applied

b. Contemporary Drive Testing Approach – Summary of Price

S. #.	Region	Without Sales Tax		Sales Tax		Total	
		In Fig	In Words	In Fig	In Words	In Fig	In Words
YEAR # 1 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 2 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 3 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						

S. #.	Region	Without Sales Tax		Sales Tax		Total	
		In Fig	In Words	In Fig	In Words	In Fig	In Words
Total (5+6)							
YEAR # 4 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							

Note: Only include those combination of regions for which the bidder has applied

Note: Price to be based on A, B & C of Annexure-II.B. Further, the amount and rate of Sales Tax must be mentioned separately as per above table. Please also use separate sheet.

Our Financial Proposal shall be binding upon us and will remain valid for **ONE HUNDRED & EIGHTY (180) DAYS** from the date of opening of technical proposals_____

We understand that you are not bound to accept our Proposal.

Yours,
Authorized Signature:
Name and Title of Signatory:
Name of Firm:
Address:
Cell:
Tel:
Fax:
Email

Annexure II.B Pricing of Quoted Solution

Sample detailed breakdown is given for reference only. However, the bidder has to give the breakdown with justification for each portion separately as per the offered Service Solution.

A. Drive Test Samples

- i. The average drive test samples to be collected in any quarter of the calendar year throughout Pakistan, AJK and GB shall be as under:

S. #.	Region	No. of Samples		
		Voice Calls	SMS	Data Sessions
1.	Punjab	4000	4000	4000
2.	Sindh	4000	4000	4000
3.	Khyber Pakhtunkhwa	4000	4000	4000
4.	Balochistan	4000	4000	4000
5.	Azad Jammu & Kashmir	4000	4000	4000
6.	Gilgit Baltistan	4000	4000	4000

- ii. The number of cities, towns and motorway/highways may vary in each quarter depending upon the requirement of the Client.

B. Sample Size

- i. The average sample size for each type of city in each region

S. #.	Region	Type of City	Drive Test Samples		
			Calls	SMS	Data
Pakistan					
1.	Punjab	Capital (<i>including ICT</i>)	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
2.	Sindh	Capital	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
3.	Khyber Pakhtunkhwa	Capital	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
4.	Balochistan	Capital	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
AJK & GB					
5.	Azad Jammu & Kashmir	Capital	200	200	200
		Divisional HQs	200	200	200
		Other Cities	200	200	200
6.	Gilgit Baltistan	Capital	200	200	200
		Divisional HQs	200	200	200
		Other Cities	200	200	200
Pakistan and AJK & GB					
7.	All Regions	Towns	100	100	100
8.		May vary depending upon the length of Motorway/ Highway (<i>As per requirement of the Client</i>)			

- ii. The Client has the rights to change / modify the drive test samples distribution depending upon the different testing scenario.

C. **Cost / Pricing**

- i. Separate Cost shall be provided for each province of Pakistan (i.e. Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan) and Azad Jammu & Kashmir (AJK) and Gilgit Baltistan.
- ii. The Cost shall be segregated into following:
 - (a). Fixed Cost (i.e. Equipment/Tool, Shipment, Custom Clearance, Training, Insurance & Security etc.)
 - (b). Operational Cost (Fuel, DT Engineer, Travelling, Hotel Stay, SIMs Balance, Data Validation & Reporting etc.)
 - (c). Miscellaneous Charges (Details to be provided)
 - (d). Taxes
 - (e). Total Cost (Fixed, Operational & Taxes)
- iii. The Cost shall be provided per KM.
 - (a). For Conventional Drive Testing Approach - The QoS Tool shall be capable to carry out Voice, SMS & Data Testing in parallel, so that for the billing purpose only one value of number of KMs traversed may be provided for a particular city.
 - (b). For Contemporary Drive Testing Approach - For the billing purpose , total number of KMs traversed by each vehicle for Voice, SMS & Data session shall be provided.
- iv. The KM shall only be counted while carrying out QoS Testing. Transportation of QoS Tool from one city to other shall not be made part of the bill.

D. **Billing Format**

- i. The billing of QoS Survey in any particular city shall incorporate following:
 - (a). Drive Testing Approach Name
 - (b). Name of Region
 - (c). Type of Testing i.e. Parallel Testing of Voice, SMS & Date or Sequential Testing of Voice, SMS & Data
 - (d). Price/Rate Per KM
 - (d). Total No. of KM Traversed (i.e. Only One Value for Conventional Drive Testing Approach)
 - (e). Total No. of KM Traversed (i.e. Only One Value for Contemporary Drive Testing Approach to be calculated based upon averaging of KM for each testing for Voice, SMS & Data Session for all operators)
 - (f). City/Roads wise detailed breakup of KMs and Samples etc.

Note:

- (i). Please attach separate sheets for each year for each region
- (ii). Price per KM should be inclusive of all administrative expenses. The Client will not bear any extra cost incurred during the surveys.

Correction of Errors

Bids determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows: -

- a) if there is a discrepancy between unit prices and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected, unless in the opinion of the Client there is an obvious misplacement of the decimal point in the unit price, in which the total price as quoted shall govern and the unit price shall be corrected;
- b) If some obvious quantity is quoted as incorrect, the Client shall correct that quantity, and respective contingent entries shall also be rectified in the same manner, and hence the sub-totals and the final total shall be corrected.

- c) *If there is an error in a total corresponding to the addition or subtraction of sub-totals, the subtotals shall prevail and the total shall be corrected; and*
- d) *Where there is a discrepancy between the amounts in figures and in words, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to a) and b) above.*

The amount stated in the Bid will, be adjusted by the Client in accordance with the above procedure for the correction of errors and, with, the concurrence of the Bidder, shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, its Bid will then be rejected, and the Bid Security may be forfeited.

ANNEXURE III: CONTRACT AGREEMENT

3RD PARTY QUALITY OF SERVICE MONITORING & BENCHMARKING OF CELLULAR MOBILE SERVICES

Between

Pakistan Telecommunication Authority (PTA)

and

----- Name of bidder

Date: _____

(This Contract is signed in two sets of original, one each for both the parties)

Annexure III.A Form of CONTRACT

Lump-Sum

THIS Service Provisioning Agreement (the “Agreement”) to hire services for provision of **“3rd Party Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service”** (hereinafter referred to as **“the Services”**) through Data Collection, Data Analysis, Data Validation and related Services incidental thereto in _____, is made on this day _____ 2022;

By and Between

Pakistan Telecommunication Authority, a statutory body established under Pakistan Telecommunication (Re-organization) Act, 1996, having its principle office at PTA H/Q, F-5/1, Islamabad (hereinafter referred to as “Client” which expression shall where the context admits include its administrators and assigns) of the One Part

And

_____ through
Mr.....
bearing CNIC..... having place of business
at.....
..... hereinafter referred to as 3rd Party **“Service Provider,”** which expression shall where the context so allows include his/its successors-in-interest, executors, administrators, heirs and permitted assigns) of the **Other Part**

(If when and where applicable the Party of the One Part and Party of Other Part shall hereinafter be collectively referred to as ‘Parties’ and individually as ‘Party’ as the context of this Agreement requires).

WHEREAS

- A. Client is desirous to hire the services of “3rd Party Managed Services for Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service” through Data Collection, Data Analysis, Data Validation and related Services incidental thereto.
- B. The Service Provider is a _____ (*details of incorporation*) which represents to the Client that it has the relevant expertise and holds valid and subsisting licenses/permissions, authorizations/approvals required from the Government of Pakistan, and that it has the requisite expertise and resources to provide **the Services** through Data Collection, Data Analysis, Data Validation and other services incidental thereto, as per Bidding Documents, to the Client in accordance with highest industry standards and satisfaction of the Client. The Service provider undertakes that the Services shall be provided only through the staff/ labour/ workforce that has the requisite expertise and experience in this regard.
- C. Upon the basis of the representations and warranties of the 3rd Party Service Provider / Vendor contained herein, the Client wishes to appoint the Service Provider to provide **the Services** at the quoted price of as detailed at _____ inclusive of all taxes.

NOW THEREFORE, for the consideration provided herein the representation and warranties, covenants, conditions and promises contained herein below and intending to be legally bound, the Client and Service Provider hereby agree as follows:

1. Scope of Agreement

- 1.1. Subject to terms and conditions of this Agreement the **Service Provider** agrees to provide **the Services**, as per requirements prescribed under **Bidding Documents annexed to this agreement**;

2. Agreement Documents

2.1 In this Agreement, except as otherwise provided, the words, expressions and / or phrases shall have the meaning as defined in the Agreement. The following documents shall be deemed to form, and be read and construed as an integral part of this Agreement:

- (1). Invitation to bid
- (2). Bidding documents
- (3). Bill of Quantity (BoQ)
- (4). General conditions of Contract/ Special Stipulations.
- (5). Addenda and Corrigenda, if any, issued by the clients and duly accepted by the service provider at the signing of the Contract.
- (6). Bid security
- (7). Performance Bank Guarantee
- (8).
- (9). Clients order to commence the work.
- (10). Any Correspondence by the Client and Service Provider Service provider mutually accepted by the Client and the Service Provider.

3. Effective Date and Tenure of Agreement

3.1. Upon signing of this Agreement the Service Provider shall be under an obligation to commence work within ***07 days*** and complete it within projected time ***FOUR YEARS (i.e. on quarterly basis)*** subject to yearly satisfactory performance report by the Client. In case of failure the Client will be entitled to deduct any amount payable to the Service Provider and assign the work to any other 3rd Party Service Provider at its discretion.

4. Definitions

- 4.1. "Applicable Law" means the laws and any other instruments having the force of law in Pakistan from time to time.
- 4.2. "BIDDING DOCUMENTS" means the documents issued by the Client on _____, 2022 to hire "**3rd Party Managed Services for Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service**" through Data Collection, Data Analysis, Data Validation and related Services incidental thereto. "Client" means "Pakistan Telecommunication Authority", hiring **the Services** as specified in the CONTRACT.
- 4.3. "CONTRACT Price" means the total price payable to the Service Provider as specified in CONTRACT, subject to such additions and adjustments thereto or deductions there from, as may be made pursuant to the CONTRACT for provision of "3rd Party Managed Services for Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service".
- 4.4. "Day" means calendar day unless provided otherwise.
- 4.5. "Party" means the Client or the bidder/Service Provider, as the case may be, and "Parties" means both of them.
- 4.6. .
- 4.7. "the Services" means the provision of "**3rd Party Managed Services for Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service**" through Data Collection, Data Analysis , Data Validation and related Services incidental thereto by the Service Provider / Vendor under this CONTRACT. **The Services** shall be carried out using _____ Drive Testing Methodology in province _____, _____, _____ & _____ of Pakistan and Azad Jammu & Kashmir (AJK) and Gilgit Baltistan (GB). It shall consist of following:
- (1). Testing and benchmarking of QoS of *FOUR MOBILE NETWORKS in Pakistan and FIVE MOBILE NETWORKS in AJK & GB*, with the objective to reproduce end user experience in different mobile

networks, device types and wireless technologies (*i.e.* 2G/3G/4G *etc.*) operational in Pakistan including AJK & GB.

- (2). Carrying out field tests, measure, benchmark and generate report of QoS Key Performance Indicators (*KPIs*) defined in mobile services licensees issued from time to time to Cellular Mobile Operators (*CMOs*) in Pakistan and Cellular Mobile Network Quality of Service (QoS) Regulations 2021.

- 4.8. “Service Provider” means the juristic person, private or joint venture, consortium, or a combination of the above, whose bid to perform the CONTRACT has been accepted by the Client.

5. Law Governing Contract

- 5.1. This CONTRACT shall be construed and enforced according to the Laws of Pakistan

6. Language

- 6.1. This CONTRACT has been executed in English language, which shall be the binding on both parties for all matters relating to the meaning or interpretation of this CONTRACT.

7. Joint Venture, Consortium or Association

- 7.1. If the Service Provider is a joint venture, consortium, or association, all of the parties shall be jointly and severally liable to the Client for the fulfilment of the CONTRACT and shall designate one party to act as a leader with authority to bind the joint venture, consortium, or association as provided by the Service Provider in the bidding documents. The lead company serving as the authorized representative shall be responsible for the complete delivery of the solution. The composition or the constitution of the joint venture, consortium, or association shall not be altered without the prior consent of the Client.

8. Entire Agreement

- 8.1. The CONTRACT constitutes the entire agreement between the Client and the Service Provider and supersedes all communications, negotiations and agreements (whether written or oral) of the parties with respect thereto made to the effective date of CONTRACT.

9. Fraud and Corruption

- 9.1. Service Provider is under obligation to avoid and refrain from any fraudulent or corrupt practices directly or indirectly as defined under this CONTRACT. However, if the Client determines that the Service Provider or any of its personnel has engaged in corrupt, collusive, coercive, obstructive or continued delaying practices, in completing for or in executing the CONTRACT, then the Client may, after giving **FIFTEEN (15) DAYS** notice to the Service Provider, terminate the CONTRACT, and the provisions of **Clause 15.5** shall apply

- 9.2. For the purposes of this Sub-Clause, the terms set-forth below are defined as follows:

- 9.2.1. “**Corrupt and Fraudulent Practices**” includes the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official or the Service Provider or service provider in the procurement process or in contract execution to the detriment of the procuring agencies; or misrepresentation of facts in order to influence a procurement process or the execution of a contract, collusive practices among bidders (prior to or after bid submission) designed to establish bid prices at artificial, non-competitive levels and to deprive the procuring agencies of the benefits of free and open competition and

any request for, or solicitation of anything of value by any public official in the course of the exercise of his duty;

10. Notices

- 10.1. All notices, requests or consents required hereunder shall be in writing and shall have been properly served, delivered by hand, sent by mail, facsimile or telex or any other electronic means to the addresses given below, as applicable, or such different address as a Party may designate from time to time. Any notice, request or consent by mail shall be sent through Registered Post or Courier Services as the case may be. Any notice shall be deemed to have been given:
- on the day it is delivered, if delivered by hand;
 - the day it is sent, if sent by facsimile, e-mail or telex;
 - 5 days after the date of posting, if sent by registered post/courier.

The addresses are:

Client: Pakistan Telecommunication Authority, PTA Head Quarters
Building, F-5/1, Islamabad, Pakistan.
Attention: Director (Enforcement-Wireless II), PTA
Tel: +92-51-2878112
Fax: +92-51-2878139
Email enf.qos@pta.gov.pk

Bidder: _____
Authorized Representative: _____
Attention: _____
Tel: _____
Fax: _____
Email: _____

11. Waiver

- 11.1. No failure by either party to exercise any right or remedy available to it hereunder nor any delay to exercise any such right to remedy shall operate as a waiver of it nor shall any single or partial exercise of any right or remedy preclude any other or further exercise thereof or the exercise of any other right or remedy.

12. Severability

- 12.1. If any provision of this Contract shall be found by any Court, Arbitrator or Administrative body of Competent Jurisdiction to be invalid or unenforceable, such provision shall be deemed to have been deleted without affecting the remaining provisions of this Agreement.

13. Settlement of Disputes

13.1. Amicable Settlement of Disputes

14.1.1. Any dispute between the Parties as to matters arising pursuant to this CONTRACT that cannot be settled amicably within **FIFTEEN (15) DAYS** after receipt by one Party of the other Party's request for such amicable settlement may be submitted by either Party for settlement in accordance with the provisions specified in **Clause 13. Dispute Resolution**

13.1.1. If the parties are unable to reach an amicable settlement of a dispute under this contract, the parties agree that this dispute resolution mechanism shall be settled by arbitration in accordance with the provisions of the Arbitration Act, 1940 of Pakistan, at Islamabad Pakistan.

14. Taxes and Duties

- 14.1. The Service Provider shall pay all taxes, duties, fees, levies and other impositions levied under the applicable Laws of Pakistan, the amount of which is deemed to have been included in the CONTRACT Price and any taxes, duties, fees, levies and other impositions that may be levied by the Government after the signing of this CONTRACT, otherwise if not included, same shall be deducted (if required) from the payments of bidder, or payable by them as per applicable laws of Pakistan, for the time being enforced. Client will deduct the applicable taxes and duties as per law prevalent at the time of payment which may differ from the amount at the time of CONTRACT.
- 14.2. The bidder shall be liable to pay all taxes and duties in accordance with the laws of Islamic Republic of Pakistan.
- 14.3. Any changes/ revision in sales tax by Government of Pakistan/ relevant Provincial Government shall be adjusted/ accepted by both the parties as per the applicable law and payment will be made to the service provider accordingly.

15. Commencement, Completion, Modification and Termination of CONTRACT

- 15.1.1.
- 15.2. **Modifications or Variations**
- 15.2.1. The Client has the right to insert any modification or variation of the terms and conditions of this CONTRACT, including any modification or variation in provision of **the Services**, with prior intimation to the Service Provider. However, each Party shall give due consideration to any proposals for modification or variation made by the other Party.
- 15.3. **Termination**
- 15.3.1. **By the Client**
- The Client, in the following circumstances may terminate this contract by giving a notice in writing, for a period of **FIFTEEN (15) DAYS** unless otherwise required:
- (1). If the Client is not satisfied with the standard of **the Services**, it may by written notice require the service provider to remedy it within 15 days of the receipt of such a notice. The Client, however, may terminate this CONTRACT with immediate effect if it is not satisfied with the standard of any such remedial work under taken by the Service Provider/Vendor.
 - (2). If the Vendor becomes insolvent or bankrupt.
 - (3). If the Vendor or any of its personnel, in the reasonable judgment of the Client supported by evidence, has engaged in corrupt , fraudulent, collusive, coercive or obstructive practices as defined in **this Contract** , in competing for or in executing the CONTRACT.
 - (4). If the Advance in whole or part of any obligation under this CONTRACT is prevented or delayed by the reasons of Force Majeure defined in **Clause 16** for a period exceeding **NINTY (90) DAYS**.
 - (5). If the Service Provider fails to comply with any final decision reached as a result of arbitration proceedings pursuant to **Clause 13** , hereof.
 - (6). If the Client, in its sole discretion and for any reason whatsoever, decides to terminate this CONTRACT.
- 15.3.2. **By the Service Provider**
- The Service Provider , by giving a notice in writing, may terminate this CONTRACT, by not less than **FIFTEEN (15) DAYS** written

notice to the Client, such notice to be given after the occurrence of any of the events specified herein below :

- (1). If the Client fails to make payments due to the service provider pursuant to this CONTRACT and not subject to dispute pursuant to **Clause 13** hereof within one month after receiving written notice from the Service Provider that such payment is overdue.
- (2). If the Client fails to comply with any final decision reached as a result of arbitration pursuant to **clause 13.2** hereof.

Force Majeure Neither Party shall be held responsible for any loss or damage or failure to perform all or any of its obligations hereunder resulting from a Force Majeure event.

For the purpose of this Agreement a “Force Majeure Event” shall mean any cause(s) which render(s) a Party wholly or partly unable to perform its obligations under this Agreement and which are neither reasonably within the control of such Party nor the result of the fault or negligence of such Party, and which occur despite all reasonable attempts to avoid, mitigate or remedy, and shall include acts of God, war, riots, civil insurrections, cyclones, hurricanes, floods, fires, explosions, earthquakes, lightning, storms, chemical contamination, epidemics or plagues, acts or campaigns of terrorism or sabotage, blockades or acts of Governmental Authority after the date of this Agreement.

The Party initially affected by a Force Majeure shall promptly but not later than seven (07) days following the Force Majeure event notify the other of the estimated extent and duration of its inability to perform or delay in performing its obligations (“**Force Majeure Notification**”). Failure to notify within the afore-said period shall disentitle the Party suffering the Force Majeure from being excused for non-performance for the period for which the delay in notification persists.

Upon cessation of the effects of the Force Majeure the Party initially affected by a Force Majeure shall promptly notify the other of such cessation.

16. Obligations of the Client

16.1. Quarterly QoS Survey Plan

16.1.1. Survey Locations

- 16.1.1.1. The Client shall provide a Quarterly QoS Survey Plan.
- 16.1.1.2. In each quarter any combination of Cities, Towns and Motorways/Highways/Others shall be checked.
- 16.1.1.3. The Client has the right to include any city, town and Motorway/Highway/Others of _____, _____, _____ & _____ of Pakistan, _____ and _____ in the Quarterly QoS Survey Plan.

16.1.2. Drive Test Samples

- 16.1.2.1. The average drive test samples to be collected in any quarter of the calendar year in each region for all operators shall be as under:

S. #.	Region	No. of Samples		
		Voice Calls	SMS	Data Sessions
1.	Punjab	4000	4000	4000
2.	Sindh	4000	4000	4000
3.	Khyber Pakhtunkhwa	4000	4000	4000
4.	Balochistan	4000	4000	4000
5.	Azad Jammu & Kashmir	4000	4000	4000

6.	Gilgit Baltistan	4000	4000	4000
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16.1.2.2. The distribution of drive test samples shall be as per following categorization:

S. #.	Region	Type of City	Drive Test Samples		
			Calls	SMS	Data
Pakistan					
1.	Punjab	Capital (<i>including ICT</i>)	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
2.	Sindh	Capital	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
3.	Khyber Pakhtunkhwa	Capital	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
4.	Balochistan	Capital	350	350	350
		Divisional HQs	250	250	250
		Other Cities	200	200	200
AJK & GB					
5.	Azad Jammu & Kashmir	Capital	200	200	200
		Divisional HQs	200	200	200
		Other Cities	200	200	200
6.	Gilgit Baltistan	Capital	200	200	200
		Divisional HQs	200	200	200
		Other Cities	200	200	200
Pakistan and AJK & GB					
7.	All Regions	Towns	100	100	100
8		May vary depending upon the length of Motorway/ Highway (<i>As per requirement of the Client</i>)			

16.1.2.3. The Client reserves the rights to change / modify the drive test samples distribution depending upon the different testing scenario.

16.1.3. Survey Route Selection & Timing

16.1.3.1. The survey routes shall be selected in such a manner to cover main roads, service roads and majority of sectors/colonies. However, the Client can also provide some specific/fix route of survey in a particular city.

16.1.4. Change in the Applicable Law related to Taxes and Duties

16.1.4.1. If, after the date of this CONTRACT, there is any change in Applicable Law with respect to taxes and duties which increases or decreases the cost incurred by the bidder in provide the required tool, then the remuneration and reimbursable expenses otherwise payable to the Service Provider under this CONTRACT shall be increased or decreased accordingly by agreement between the parties, and corresponding adjustments shall be made to the amounts referred **in the Contract**. The applicable changes will only take effect when reduced to writing and signed by both the parties.

17. Obligations of the Service Provider

17.1. Standard of Advance

17.1.1. The Service Provider shall provide **the Service**, with due diligence, skill, professionalism efficiency with professional standards, observing sound management practices, materials and methods. The Service Provider shall always act, in respect of any matter relating to this CONTRACT. And shall at all times support and safeguard the Client's legitimate interests in any dealings with third Parties.

17.2. Conflict of Interest

17.2.1. The Service Provider shall hold the Client's interests paramount, without any consideration for future work, and strictly avoid conflict with other assignments or its own corporate interests.

17.2.2. Service Provider not to Benefit from Commissions, Discount

The payment of the Service Provider pursuant to **Clause 19** shall constitute the payment in connection with this CONTRACT, and the Service Provider shall not accept for its own benefit any trade commission, discount, or similar payment(s) in connection with activities pursuant to this CONTRACT or to the Related Services or in the discharge of its obligations under the CONTRACT, and the Service Provider shall use its best efforts to ensure that the Personnel, representatives, and agents of any of the Party to this CONTRACT shall not receive any such additional payment(s).

17.3. Confidentiality

17.3.1. Except with the prior written consent of the Client, the Service Provider/ and the Personnel shall not at any time communicate or disclose to any person or entity any confidential information acquired during the execution of this CONTRACT.

17.4. Quarterly QoS Survey

17.4.1. Execution of Plan

17.4.1.1. The Service Provider shall execute the Quarter QoS Survey Plan.

17.4.1.2. In case of any unavoidable circumstance, if the plan require any modification, prior permission of the Director (Enforcement-Wireless II) shall be obtained through email etc.

17.4.2. Traversing of Survey Route & Survey Timing

17.4.2.1. The survey shall be carried out in a particular city in such a manner to traverse maximum coverage / geographic area to cover majority of the network of CMOs.

17.4.2.2. The fix/predefined route shall also be covered.

17.4.2.3. Drive test/ survey shall be carried out in such a way that it highlights coverage differences in the results. Any CMO shall get benefit for better coverage in any particular area in comparison to other Licensee which do not have presence or weak coverage for the said area.

17.4.2.4. The surveys shall be carried out on any day and time of the weekdays within timespan from 0900 hours to 2100 hours.

17.4.3. Testing Scenario

17.4.3.1. The testing shall be carried using different scenarios provided by the Client. The Client has the right to provide any combination of ON-NET, OFF-NET Calls, SMS and Mobile Broadband Data Testing shall be used.

17.4.3.2. **HANDSET MODE**. During Voice Calls, SMS and Data Session, the mobile handset can be kept in different modes as per requirement of the Client, which are:

- (1). A-Party and / or B-Party in Auto Detect Mode
 - (2). A-Party and / or B-Party in Band Locked Mode
 - (3). A-Party and / or B-Party in Technology Locked Mode i.e. 2G, 3G/UMTS and 4G/LTE.
- 17.4.3.3. SAMPLES PERCENTAGE. Following scenario of Voice Calls and SMS Samples Percentage shall be collected, as per Client requirement:
- (1). All ON-NET
 - (2). Any Percentage of ON-NET and OFF-NET to be provided with Quarterly Plan
- 17.4.3.4. A-PARTY & B-PARTY.
- (1). A-Party (Originating Number) - Moving continuously during Drive Test
 - (2). B-Party (Terminating Number) - Moving or Static
- 17.4.3.5. VOICE CALLS & SMS DISTRBUTION. A call of 120 seconds will be made in followed by an SMS from Party-A to Party-B, as per following:

Description	Duration
VOICE CALL SESSION	
Call Duration	120s
Window Duration	180s
Pause Between Consecutive Calls	30s
Maximum Call Setup Time	30s
SMS SESSION	
SMS SEND	Duration
Send Timeout	30s
SMS Length	160 Characters
SMS Receive	
Maximum Test Duration	90s

- 17.4.3.6. DATA SAMPLES. The Mobile Handset shall be network dedicated / locked mode for data testing.
- (1). Small, Medium and Large Size Files shall be downloaded & uploaded in Auto Detect and / or Technology/Band Locked Modes.
 - (2). Suitable servers shall be used for downloading & uploading of files. In a specific session the server shall remain uniform.
 - (3). Small, Medium & Large National and International Webpage Accessing.
 - (4). Ping Testing to any designated Servers / Webpage.
 - (5). Any other testing as per requirement of the quarterly plan.

17.5. Inspection / Survey Report

- 17.5.1. After completion of QoS survey in any particular city, the Service Provider shall carryout analysis and call by call/ SMS by SMS or file by file validations of each drive test session so that all the Dropped Calls, Blocked/Failed Calls and Inter System Handover Failures etc. are identified. Any failure due to QoS Tool malfunctioning during drive test session shall be identified, record and excluded from the calculation.
- 17.5.2. For each parameter that is reportable for a service, for each reporting area and for each reporting period, shall be set out in the format comprising the following information for each Licensee:

- 17.5.2.1. Name of Service;
 - 17.5.2.2. Identification of the reporting area for which the measurements were taken;
 - 17.5.2.3. Indication of any target for the parameter and service that has not been reached by the Licensee;
 - 17.5.2.4. Any other information or comparison of service quality that the successful bidder determines to be appropriate possibly including information to help consumers to assess the performance of Licensees.
- 17.5.3. The minimum reporting requirements include following:
- 17.5.3.1. Executive Summary
 - 17.5.3.2. Campaign Overview
 - 17.5.3.3. Survey Results
 - (1). Composite Drive Test Results for each service i.e. Voice, SMS, Data of all CMOs.
 - (2). Detailed Survey Results of each CMOs.
 - (3). Route Report of each CMO
 - (4). Arranged Session Log Files of each CMO
 - (5). Signal Strength: The 4G and 3G Signal Strength maps of each CMOs shall be provided separately. The Color Ranges to be used are as defined in the table. Legend should be embedded in the snapshot showing both counts and percentage. The table shall also be provided separately.

Legends for Signal Strength			
Range (dBm)	Color	Count of Samples	Percentage
< 0 and \geq -65	Dark Green		
< -65 and \geq -75	Light Green		
< -75 and \geq -85	Yellow		
< -85 and \geq -100	Brown		
< -100 and \geq -140	Red		

- (6). 3G Throughput: Color Ranges shall be used as defined in the table. Legend should be embedded in the snapshot showing both counts and percentage. The table shall also be provided separately.

Legends for 3G Throughput			
Range (Kbps)	Color	Count of Samples	Percentage
< 256	Red		
\geq 256 and < 512	Yellow		
\geq 512 and < 1024	Light Green		
\geq 1024 and < 2048	Dark Green		
\geq 2048 and < 4112	Light Blue		
\geq 4112	Dark Blue		

- (7). 4G Throughput: Color Ranges shall be used as defined in the table. Legend should be embedded in the snapshot showing both counts and percentage. The table shall also be provided separately.

Legends for 4G Throughput			
Range (Mbps)	Color	Count of Samples	Percentage
< 2	Red		
≥ 2 and < 3	Yellow		
≥ 3 and < 4	Light Green		
≥ 4 and < 6	Dark Green		
≥ 6 and < 8	Light Blue		
≥ 8	Dark Blue		

- 17.5.3.4. Failure Events Plot. All Dropped Calls, Blocked/Failed Calls and Inter System Handover Failures need to be plotted together on RSCP & RSRP plot. The plot must contain legend for RSCP/RSRP and the events observed along with the count of events.
- 17.5.3.5. Speech Quality of CODEC Utilization of each CMO.
- 17.5.3.6. Modulation & Resource Block Utilization
- 17.5.3.7. Technology Breakdown per Band in Voice and Data Service.
- 17.5.3.8. Observation and Way Forward for Improvement of Service Quality.
- 17.6. Re-Verification of Compliance Report
- 17.6.1. The Service Provider shall evaluate the Compliance Report of CMOs containing Route Cause Analysis and remedial measures taken to remove the shortfalls identified in the inspection report.
- 17.6.2. The Route Cause Analysis of CMOs shall consist of following:
- 17.6.2.1. Detailed Root Cause Analysis of the degraded QoS KPIs, consisting of investigation of each abnormal event and patch wise examination where QoS KPI found degraded.
- 17.6.2.2. Details of the problematic cells or area impacting the QoS KPI along with the steps taken to resolve the issue.
- 17.6.2.3. The Confirmatory Testing to be performed on the identified Cells/Areas. Multiple tests will be performed to confirm the resolution of the identified issues only.
- 17.6.3. The Service Provider shall provide the re-verification report to Client after analysis of compliance report submitted by CMOs.
- 17.6.4. In case of a requirement by the client, the Service Provider/Vendor shall also carryout re-verification drive test in specific area or sample cities as per the requirement of the Client to confirm/verify the claims of the CMOs.
- 17.7. Quarterly Report
- 17.7.1. The successful bidder shall submit a quarterly report to the Client as per the latest format available at the client website at <https://pta.gov.pk/en/consumer-support/qos-survey/qos-survey>.
- 17.8. Annual Performance Report
- 17.8.1. The successful bidder shall submit an Annual Performance Report within one month of the completion of initial contract period of **ONE (01) YEAR** to the Client.
- 17.8.2. The Client shall issue Acceptance Certificate on satisfactory performance report and extend the contract period to further ONE (01) Year.
- 17.8.3. This process shall be repeated to the total period of **FOUR (04) YEARS**.

- 17.9. Client Approval
17.9.1. The Service Provider shall obtain the Client’s prior approval in writing before entering into a subcontract for the provision of “3rd Party Managed Services for Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service”.
- 17.10. Appointment of Liaison Officer
17.10.1. The Service Provider shall nominate a focal person as liaison officer to act as the primary point of contact for the Client. The Service Provider shall provide complete contact details of Liaison officer.
- 17.11. Confidentiality, Ethics and Code of Conduct
17.11.1. The bidder shall undertake to maintain complete confidentiality of all the information, facts, proceedings, decisions, and documents etc. provided to the Client.

18. Reporting

- 18.1. Document Prepared by the Service Provider to be the Property of the Client
18.1.1. All plans, specifications, designs, reports and other documents, submitted by the Service Provider under this CONTRACT shall become and remain the property of the Client with all allied rights and titles, including the Copy Rights and Intellectual Property Rights thereof, and the bidder shall, not later than upon termination or expiration of this CONTRACT, deliver all such documents to the Client, together with a detailed inventory thereof.

19. Payments to the Service Provider

- 19.1. Lump-Sum Payment
19.1.1. The total payment due to the Service Provider in consideration of the provision of “**3rd Party Managed Services for Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service**” under this Contract, shall not exceed the CONTRACT Price which is an all-inclusive fixed lump-sum covering all costs required to provide **the Services** as specified in Appendix-A and Appendix-B. The CONTRACT Price may only be increased above the amounts stated in **Clause 19** if the Parties have agreed to additional payments.
- 19.2. CONTRACT Price
19.2.1. The year-wise Contract price inclusive of all taxes, duties, fees, levies, and other charges imposed under the applicable law in Pakistan in PKR for each type of city, town and motorway/highway/road is given in Appendix-C.
- 19.3. Payment for Additional Services
19.3.1. For the purposes of determining the remuneration due for additional Goods and Related Services as may be agreed between the parties, a breakdown of the lump-sum price shall be provided.
19.3.2. Any addition or deletion in Samples (Calls, SMS & Data Session) price shall be accordingly adjusted, if the samples are changed from those mentioned in **Clause**
- 19.4. Terms and Condition of Payment
19.4.1. All the payments will be made in **PAK RUPEE** and on quarterly basis, subject to submission of Quarterly Report by the Service Provider and recommendation of Director (Enforcement-Wireless II).
19.4.2. Payment shall be made after deduction of applicable taxes at source as per Government Rules and penalty (if any).
19.4.3. No mobilization advance shall be paid to the Service Provider
19.4.4. No claim on Escalation during the currency of contract will be entertained.

- 19.4.5. Payment for each quarter will be made within 30 days of Service Provider Invoice receipt supported by Report Delivery Acknowledgment of corresponding quarter by the Client.
- 19.4.6. The payment shall be made after the conditions listed for such payment have been met, and the Service Provider has submitted the invoice with company's stamp to the Client after approval of the reports/deliverables by Client, inclusive of all taxes and duties specifying the amount due. The payment, however, will be made after deduction of all applicable taxes. As per regulation 2(2) of PPRA Eligible Bidders (Tax Compliance) Regulations 2015, payment to the bidder shall be linked with active tax payer status. If a Service Provider is not ATL, no payment shall be made until the Service Provider appears on ATL of FBR For the purpose of this contract, payment shall be considered having been made/effectuated, when the Client has delivered irrevocable payment instructions to its bank with copy for information to the bidder.
- 19.4.7. All payments shall be made on submission of a written invoice on Company's letter head duly signed by the Authorized representative, as per procedure laid down in this CONTRACT. The payment shall be due within one month of the receipt of invoice and after deduction of the applicable taxes and any other deduction(s) as per terms of the contract.

20. Remedial Work and Payment

- 20.1. If the Client is not satisfied with the standard of any part of the Services carried out by the Service Provider and requires the Service Provider to rectify any defective work or part of any related services, as the case may be, such remedial work or rectification as may be required shall be carried out by the Service Provider/ at its own expense and it shall not be entitled to any additional payments/charges in respect of such remedial work.

21. Performance Bank Guarantee

- 21.1. A Performance Bank Guarantee (PBG) from a bank having credit rating of at least AA+ in the prescribed format for an amount equal to **10 PERCENT** of the CONTRACT price in **PAK RUPEE** on the date of calling of the guarantee before signing the CONTRACT. For the purpose of Bank Guarantee, the CONTRACT price will mean the total amount as provided in Clause PBG shall remain in force until **06 MONTHS** after the completion of the Contract. On satisfactory completion of assignment, this PBG shall be released. The Proforma of PBG is enclosed at Appendix-D.

22. Penalty

- 22.1. If the Service Provider fails to complete the quarterly QoS Survey within the given timeline as per Quarterly QoS Survey Plan, Penalty @ 0.5% of the total Quarter Price will be charged per week (minimum four (04) or maximum six (06) days will be considered as one week) up to maximum of four weeks or beyond but limited to the amount of Performance Guarantee. Thereafter, work order will be cancelled, the agreement will be terminated and the Performance Guarantee after deduction of the penalty will be forfeited.

23. Good Faith

- 23.1. The Parties undertake to act in good faith with respect to each other's rights under this CONTRACT and to adopt all reasonable measures to ensure the realization of the objectives of this CONTRACT.

24. Relationship/Status of Parties

- 24.1. Nothing in this Contract and no action taken by the Parties pursuant to this CONTRACT shall form, interpreted or construed as creating a partnership, association, or joint venture or other co-operative entity between the parties, nor establish a relationship of agency between the Parties.
- 24.2. The Parties acknowledge that nothing in this CONTRACT shall give rise to the relationship of employer/employee between the Client and the Service Provider and /or any authorized representative/personnel and any substitute or replacement or any other persons providing Service to the Client or behalf of the Bidder under this Contract.
- 24.3. Neither Party shall have any right, power of authority to enter into any agreement, or act on behalf of, or to act as or to be an agent or representative of, or to otherwise bind the other Party unless expressly provided in the CONTRACT.

25. Limitation of Liability

- 25.1. Nothing in The aggregate liability of the Service Provider to the Client under this CONTRACT for any losses, damages, penalties, costs and professional and other expenses of any nature shall be limited to the value of the CONTRACT.

26. Intellectual Property Rights

- 26.1. The Intellectual Property Rights in all drawings, documents, and other materials containing data and information furnished to the Client by the Service Provider/Vendor herein shall remain vested in the Service Provider, or, if they are furnished to the Client directly or through the Service Provider by any third party, including Service Provider of materials, the copyright in such materials shall remain vested in such third party.

27. Integrity Pact

- 27.1. [Name of Service Provider] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan (GoP) or any administrative subdivision or agency thereof or any other entity owned or controlled by it through any corrupt business practice.
- 27.2. Without limiting the generality of the foregoing [Name of Service Provider/] represents and warrants that it has fully declared the brokerage, commission, fee etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultations fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP, except that which has been expressly declared pursuant hereto.
- 27.3. [Name of Service Provider/] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and has not taken any action or will not take any action to circumvent the above declaration, representative or warranty.
- 27.4. [Name of Service Provider/] accepts full responsibility and strict liability for making and false declaration, not making full disclosure, misrepresenting fact or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other right and remedies available to GoP under any law, contract or other instrument, be voidable at the option of GoP. Notwithstanding any rights and remedies exercised by GoP in this regard,

- 27.5. [Name of Service Provider] agrees to indemnify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by [Name of Service Provider] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP".
- 27.6. IN WITNESS WHEREOF, the parties hereto set their hands the day, month and year first above written.

For and Behalf of Client.

For and on Behalf of Service Provider

By : _____

By: _____

Name: _____

Title : _____

Title : _____

Name : _____

Signature : _____

Signature : _____

Date : _____

Date : _____

Witnesses

1. _____

2. _____

Name _____

Name _____

CNIC _____

CNIC _____

1. Overview of 3rd Party Services

1.1. The “**3rd Party Managed Services for Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service**”, shall have following capability:

1.1.1. Testing and benchmarking of Quality of Service (*QoS*) across number of mobile operators (*i.e. FOUR MOBILE NETWORKS in Pakistan and FIVE MOBILE NETWORKS in AJK & GB*), with the objective to reproduce end user experience in different mobile networks, device types and wireless technologies (*i.e. 2G/3G/4G etc.*) operational in Pakistan including AJK & GB.

1.1.2. Perform field tests, measure, benchmark and report QoS Key Performance Indicators (*KPIs*) as defined in mobile services licensees issued from time to time to Cellular Mobile Operators (*CMOs*) in Pakistan defined in **Para 2 of Annexure III.B**, PTA “Cellular Mobile Network Quality of Service (QoS) Regulations” and as well as global industry standards and best practices;

- (1). Record every detailed measurements of the network while testing.
- (2). Determine and plot the route and map it with respect to its GPS coordinates. Plotting shall only show the relative movements with reference to a starting reference point. All instances have to be time and day stamped.
- (3). Carryout indoor / walk test service quality and coverage measurement.
- (4). Monitor and Benchmark all the technologies including but not limited to GSM/ GPRS/ EDGE/ CDMA/ WCDMA/ HSDPA/ HSUPA/ HSPA+/ LTE/ VoLTE/ LTE-Advance etc. (*i.e. 2nd, 3rd & 4th Generation wireless technologies*) in all bands/spectrum and carrier aggregation of contiguous/noncontiguous bands/technologies and should measure 5G technologies as and when required by the Client.

1.1.3. The Service Provider/Vendor shall be able to generate report of the QoS surveys on specified format by the Client, identify problematic areas, generate events, analyze root cause, and compare re-survey results with earlier survey results after analysis and corrective measures taken by Cellular Mobile Operators (*CMOs*). Details of reports required to be generated is given in **GC Clause 19.5**.

1.1.4. The 3rd Party Service provider shall be able to retain and provide monthly / quarterly/ bi-annual/ annual reports or any other tenure as and when required.

1.2. Drive Testing Approach

2.1.1. The Service Provider/Vendor shall utilize any of the two data collection methods for QoS Monitoring and Benchmarking of Cellular Mobile Services:

- 2.1.1.1. **Conventional Drive Testing**. Data Collection of all the operators through QoS tool installed in a single vehicle.
- 2.1.1.2. **Contemporary Drive Testing**. Data Collection of all the operators through QoS tools installed in multiple vehicles (*i.e. by utilizing urban mobility riders*).

Annexure III.B

SERVICE REQUIREMENTS

1. Technical and Functional Capabilities of QoS Tool

1.1. Data Collection Tool

- 1.1.1. NETWORKS BENCHMARKING. The equipment should be capable of continuous benchmarking of Voice, SMS and Data services of FOUR (4) or FIVE (5) networks in Pakistan and AJK & GB respectively.
- 1.1.2. TECHNOLOGY SUPPORT. The equipment shall support all major cellular technologies, including but not limited to GSM/ GPRS/ EDGE/ CDMA/ WCDMA/ HSPDA/ HSUPA/ HSPA+/ LTE/ VoLTE/ LTE-Advance etc. (i.e. 2nd, 3rd & 4th Generation wireless technologies) in all bands/spectrum carrier aggregation in contiguous / noncontiguous bands / technologies and should be upgradeable to 5G, as and when required.
- 1.1.3. AUDIO TESTING. It should support Perceptual Objective Listening Quality Analysis (POLQA) voice quality Mean Opinion Score (MOS) for both narrow and wide band.
- 1.1.4. TESTING SCENARIO. It should be able to benchmark all possible testing scenarios in auto technology and band locked mode. All the technologies 2G/3G/4G and all the bands can be locked and also there should be flexibility to lock/unlock any desired technology. Moreover, the tool should be able to lock and test specific Broadcast Control Channel (BCCH)/ Primary Scrambling Code (PSC)/ Physical Cell Identity (PCI)/ Absolute Radio Frequency Channel Number (ARFCN)/ Universal Mobile Telecommunication Service (UMTS) Absolute Radio Frequency Channel Number (UARFCN)/ Evolved Universal Terrestrial Radio Access (E-UTRA) Absolute Radio Frequency Channel Number (EARFCN) etc.
- 1.1.5. LOG FILES. The system should have the capability of:
 - (1). Separate log file for each device/handset.
 - (2). Log files should be encrypted and cannot be modified afterwards.
 - (3). Log files should use Time stamp from the satellite using GPS and not from the laptop.
- 1.1.6. GEO MAPPING. The system should have ability to load Geo Maps, Google Maps, tab/shape and network files etc.
- 1.1.7. DATA EXPORT. Any parameter can be exported in multiple formats like csv, txt, tab, KML/KMZ etc. both as image and point.
- 1.1.8. DRIVE TEST ROUTES. The system should be capable:
 - (1). To record drive test routes and the same can be imported/exported.
 - (2). To provide facility of navigation like Google Maps to cover the imported route in optimized manner.
- 1.1.9. TOOL DISPLAY. The equipment should be capable to:
 - (1). Display, record, pause and replay the measurements.
 - (2). Display the progress of testing in the run time.
 - (3). Display and record all layer2/layer 3 messages, measurement reports and events etc.
 - (4). Display different parameter in grid and map and the legends should be configurable.
- 1.1.10. STANDARD SUPPORT. It should support the recommendations and standard of ITU and ETSI related to service quality such as ETSI 102 250 and ITU-T P.863 etc.

1.2. Data Analysis / Post Processing Tool

- 1.1. POST PROCESSING OF RF DATA. Post Processing Tool should automatically post-process RF data (indoor and outdoor). It should be capable of analyzing log files collected through RF Data Collection Tool.
- 1.2. POST PROCESSING CAPABILITIES. Post Processing Tool should have the following capabilities:
 - 1.2.1. Carryout cell level and operator level analysis.
 - 1.2.2. Extract user specific portion of log file for detail analysis and layer 2/Layer3 messages can easily be searched, filtered and analyzed.
 - 1.2.3. Post processing tool should be able to provide KPIs per technology, if testing is done in auto mode.
- 1.3. REPORT GENERATION. Post Processing Tool should be able to generate user-defined reports and templates which can be used to create reports from any log file or multiple log files and to compare KPIs of multiple operators, technologies and timeframes. Following points need to be considered for the reports:
 - 1.3.1. CUSTOMIZED KPIS. Support defining customized KPIs and inclusion of customized KPIs in the report, whether it is customized report or built in report.
 - 1.3.2. GEO MAPS. Reports should use integrated geo Maps to visualize and analyze the data.
 - 1.3.3. EXPORTING KPIS. Reports should display all the RF parameters/KPIs in grid and maps which can to be exported in different formats like txt, csv, xlx, xls, KML/KMZ etc.
 - 1.3.4. TECHNOLOGY WISE SEGREGATION. Reports should be able to provide KPIs per technology, if testing is done in auto mode.
 - 1.3.5. VISUAL EFFECTS. Generated reports should contain graphs, bar charts, tables, maps with different KPIs/events being displayed. The reports and can be extracted in different formats like pdf, word and excel etc.
 - 1.3.6. BENCHMARKING REPORTS. There should be pre-defined reports for Benchmarking purpose providing comprehensive comparative analysis of multiple operators covering all technologies for voice, SMS and data services. Technology wise as well as overall Benchmarking of the operators will be required.
 - 1.3.7. KPIS FORMULAE & INTERNATIONAL STANDARDS. All the Formulae used in all the reports need to be provided and should be in accordance with the ITU/ETSI etc., standards related to service quality.
- 1.4. REPORTED KPIS. The Data Analysis/Post Processing Tool should be able to:
 - 1.4.1. Report the KPIs defined in **Para 3**, with possibility of including/removing KPIs as desired.
 - 1.4.2. Configure customized thresholds values for each KPI/parameter.
 - 1.4.3. Provide summary of all the desired KPIs of each operator for number of events below/above thresholds in a single report.
- 1.5. ANALYSIS OF ABNORMAL EVENTS. The Post Processing Tool/Solution should be able to:
 - 1.5.1. Perform detailed analysis of abnormal events like Drop Call, Blocked Call, Handover Failure, Inter System Handover Failure etc., with needed recommendations.
 - 1.5.2. Identify problematic areas like low coverage, low quality areas, high interference, Pilot Pollution etc.
- 1.6. COVERAGE KPIS. It should be able to provide KPIs related to network coverage and quality measured in 2G, 3G and 4G technologies.
- 1.7. LIST OF SUPPORTED KPIS. The bidder should provide the list of KPIs for all services (voice, data, SMS, FTP, UL / DL), Streaming Video, Web Browsing and Ping that will be reported by Post Processing Tool.

2. QoS KPI & RF Parameters

2.1. Following is the list of QoS KPIs/ parameters which has to be provided for voice, SMS and Data services for all technologies (2G/3G/4G):

2.1.1. NGMS Licensed/ QoS Regulations KPIs

- (1) Network Accessibility
- (2) Grade of Service / Call Setup Failure Rate
- (3) Service Accessibility / Call Setup Success Rate (CSSR)
- (4) Call Connection Time
- (5) Call Completion Ratio / Drop Call Rate
- (6) POLQA Wideband Mean Opinion Score (Average of A2B and/or B2A)
- (7) Inter System Handover for Circuit Switched Voice Only
- (8) SMS Success Rate
- (9) SMS End-to-End Delivery Time
- (10) Download / Upload Data Throughput (3G & 4G)
- (11) Signal Strength (Rx Level, RSCP & RSRP)
- (12) RAB/E-RAB Setup Success Rate
- (13) Session Abnormal Release Rate
- (14) 2G Signal Strength RxLev *(No of samples in customizable Bins)*
- (15) 3G Signal Strength RSCP *(No of samples in customizable Bins)*
- (16) 4G Signal Strength RSRP *(No of samples in customizable Bins)*
- (17) Round Trip Time (Latency)
- (18) Web Page Loading Time

2.1.2. Other QoS KPIs

- (1) 2G Signal Quality RxQual
- (2) 3G Signal Quality Ec/No
- (3) 4G Signal Quality RSRQ
- (4) Number of Call Attempts, Calls Failed, Calls Established & Calls Dropped
- (5) Number of SMS Attempts, SMS Send & SMS Received
- (6) CSFB Call Setup Time
- (7) SMS Send Success Rate
- (8) SMS Receive Success Rate
- (9) SMS Send Time
- (10) Packet Loss
- (11) Jitter
- (12) Number of Data Download/Upload Session Attempts, Failed, Completed & Dropped etc.,

Annex III C PRICE OF THE 3RD PARTY SERVICES

a. Conventional Drive Testing Approach

S. #.	Region	Without Sale Tax		With Sale Tax		Total	
		In Fig	In Words	In Fig	In Words	In Fig	In Words
YEAR # 1 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 2 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 3 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 4 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							

b. Contemporary Drive Testing Approach

S. #.	Region	Without Sale Tax		With Sale Tax		Total	
		In Fig	In Words	In Fig	In Words	In Fig	In Words
YEAR # 1 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 2 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 3 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							
YEAR # 4 PRICE PER KM							
1.	Punjab						
2.	Khyber Pakhtunkhwa						
Total (1+2)							
3.	Sindh						
4.	Balochistan						
Total (3+4)							
5.	AJK						
6.	GB						
Total (5+6)							

Annexure III.D PERFORMANCE BANK GUARANTEE

FORM OF PERFORMANCE BANK GUARANTEE

Note: See GC Clause 23

Performance Guarantee for Advance Obligations

Date:-----

_____ [On a legal document/stamp paper]

Beneficiary: Pakistan Telecommunication Authority, Headquarters Building, F-5/1, Islamabad, Pakistan.

Date: _____

We, [name of Bank] are providing Advance Guarantee for _____ (hereinafter called "the Service Provider/Vendor") have entered into CONTRACT No. [Reference number of the CONTRACT] dated [insert date] with Pakistan Telecommunication Authority (hereinafter called the "Client"), for the provision of "3rd Party Managed Services for Quality of Service (QoS) Monitoring and Benchmarking of Cellular Mobile Service" (hereinafter called "the CONTRACT").

Furthermore, we understand that, according to the conditions of the CONTRACT, a Advance Guarantee in the sum of PKR _____ / [PAK RUPEE _____] (the amount equal to 2 % of the total CONTRACT Price) is to be made against the Advance obligations of the Service Provider/Vendor.

We [name of Bank] hereby irrevocably, unconditionally and continuingly guarantee without recourse to the Client, and undertake to pay to the Client any sum or sums not exceeding in total an amount of PKR _____ / PAK RUPEE _____ only) (the amount equal to 10% of the total CONTRACT Price) upon receipt by us of Client's first demand in writing accompanied by a written statement stating that "the Service Provider/Vendor" is in breach of their obligations under the CONTRACT.

This guarantee shall be released after successful completion of the CONTRACT.

[signature(s)]

Endorsed and guaranteed by Commercial Bank in Pakistan

[Bank Stamp & Signature(s)]

Note: All italicized text is for indicative purposes only to assist in preparing this form and shall be deleted from the final product. If the bank guarantee is arranged from a bank outside Pakistan that bank guarantee has to be backed by the bank guarantee of a local bank in Pakistan with a credit rating of at least AA+.

NON-DISCLOSURE AGREEMENT

THIS NON-DISCLOSURE AGREEMENT (“NDA”) is made and entered into at
Islamabad, Pakistan on the __ day of -----2022

BY AND BETWEEN

Pakistan Telecommunication Authority, a statutory regulatory authority established under Pakistan Telecommunication (Re-Organization) Act, 1996, having its Head Quarter at F-5/1, Islamabad through Director ICT (hereinafter called as the “CLIENT” which expression shall where the context admits, include successors-in-interest and assigns) of the One Part:

AND

(insert name of Service Provider) a Company/firm incorporated under the laws of having its registered office at-----through its authorized representative Mr..... (herein after called as “Service Provider”) which expression shall where the context so allows include his/its successors-in-interest, executors, administrators, heirs and permitted assigns) of the Other Part;

(The Party of the One Part and Party of the Other Part shall hereinafter be collectively referred to as ‘Parties’ and individually as ‘Party’ as the context of this NDA requires).

WHEREAS,

1. The parties have entered into Agreement dated, (the “Agreement”) whereby, the Client may have to disclose certain nonpublic and proprietary information in result of execution and subsequent operation of the Agreement to the Service provider, which may fairly be considered to be of confidential nature including, but not limited to, methods, practices and procedures with which the Parties conduct their respective businesses, Internal working, decisions or Standard operating Procedures (SOPs) which are not Public documents, strategies in dealing with the Operators, Licensees, licensee lists, contract terms, methods of operation, software specifications, software codes, functionality, know how, and financial information etc. the Know-How, information pertaining to its principles, pricing policy, commercial relationship, negotiations or parties’ work, affairs, finances or any information in respect of which the parties are bound by an obligation of confidentiality to any third party.
2. The Parties are desirous to set the terms and conditions hereunder and sign this NDA.

NOW, THEREFORE THIS AGREEMENT WITNESSETH, for good and valuable consideration, it is hereby agreed between the parties as under;

1. Under this Agreement the Service Provider is under an obligation to keep all such information that is disclosed in the course of the contract with PTA, confidential and not to use it to the detriment of the Authority. In particular, the Service Provider shall not use it for, or disclose it to, any of its new employer or client.

2. Any unauthorized disclosure or use of the Authority's confidential information could lead to litigation against the Service Provider and any new employer.
3. Definition of Confidentiality. In addition to the definition used in the Agreement, "Confidential Information" refers to any information which has commercial value and is either (i) technical information, including patent, copyright, trade secret and other proprietary information, techniques, sketches, drawings, models, inventions, know-how, processes, apparatus, equipment, algorithms, software programs, software source documents, and formulae related to the current, future and proposed products and functions of the Client, or (ii) non-technical information relating to Client's functions, responsibilities, operations including, without limitation, plans and strategies, finances, financial and accounting data and information, suppliers, stakeholders, purchasing data, strategically plans and any other information which is proprietary and confidential to Client.
4. Nondisclosure and Non-use Obligations. Subject to confidentiality clause under the Agreement, the Service Provider will maintain in confidence and will not disclose, disseminate or use any Confidential Information belonging to Client, whether or not in written form. Service provider agrees that Service Provider shall treat all Confidential Information of Client with at least the same degree of care as Service provider accords its own Confidential Information. Service provider further represents that Service provider exercises at least reasonable care to protect its own Confidential Information. the Service provider agrees that Service provider shall disclose Confidential Information only to those of its employees who need to know such information and certifies that such employees have previously signed a copy of this Agreement.
5. Survival. This Agreement shall govern all communications between the Parties. Service provider understands that its obligations under Paragraph 4 ("Nondisclosure and Non-use Obligations") shall survive for two years after the termination or expiry of the Agreement. Upon termination of any relationship between the Parties, Service provider will promptly deliver to Client, without retaining any copies, all documents and other materials furnished to Service provider by Client.
6. Governing Law. This NDA shall be governed in all respects in accordance with the laws of Pakistan.
7. The Service provider agrees and undertakes that upon termination of the Agreement by the Client.
 - a. shall return to Client all documents and property of Client, even if not marked "confidential" or "proprietary," including but not necessarily limited to drawings, reports, manuals, correspondence, customer lists, computer programs, and all other materials and all copies thereof relating in any way to Client, or in any way obtained by the Service provider during the course of the Agreement and shall not retain copies, notes or abstracts of the foregoing.

- b. The Client y may notify any future or prospective employer or third party of the existence of this Agreement.
- c. Injunctive Relief. A breach of any of the promises or agreements contained herein will result in irreparable and continuing damage to Client for which there will be no adequate remedy at law, and Client shall be entitled to injunctive relief and/or a decree for specific performance and such other relief as may be proper (including monetary damages if appropriate).

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the dates written below.

For and on Behalf of Client	For and on behalf of Service Provider
<p>Signed by_____</p> <p>Seal-----</p> <p>Witness_____</p>	<p>Signed by_____</p> <p>Seal_____</p> <p>Witness_____</p>