



INFORMATION MEMORANDUM

**SPECTRUM AUCTION FOR NEXT GENERATION
MOBILE SERVICES (NGMS) IN PAKISTAN 2021**

5th August 2021

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1. Executive Summary

1.1 Preamble and Purpose

- 1.1.1 Pakistan Telecommunication Authority (**PTA**), established under Section 3 of the Pakistan Telecommunication (Re-organization) Act, 1996 (**The Act**), in compliance with the Policy Directive dated 4th August 2021 issued under section 8 of the Act by the Federal Government (the **Policy Directive**), is planning to award Licenses for the use of radio frequency spectrum in the 1800 MHz and 2100 MHz bands through an Auction and to grant the successful Bidders the right to establish, maintain and operate the Licensed System and to provide Mobile Communication Services across Pakistan (excluding Azad Jammu & Kashmir and Gilgit-Baltistan).
- 1.1.2 The process of the award is titled as Spectrum Auction for Next Generation Mobile Services (NGMS) in Pakistan 2021 (the **Spectrum Auction**).
- 1.1.3 This Information Memorandum (**IM**) sets out the rules, process, planned timelines and other background information for prospective Applicants to participate in the Spectrum Auction. An overview of Pakistan's telecommunications sector is given at **Annex A**.
- 1.1.4 Prospective Applicants are advised to seek their own expert advice on whether or not to participate in the Spectrum Auction and on any other matters concerning financial, legal, technical or other implications of the Spectrum Auction and associated policies.
- 1.1.5 PTA may also conduct an information session for prospective Applicants to explain the Spectrum Auction process and rules and to respond to Applicants' questions. This information session may take place after the IM is published and its only purpose will be to clarify any questions that prospective Applicants may have about the Spectrum Auction.
- 1.1.6 Furthermore, PTA will conduct a mock Auction of the Electronic Auction Stage with relevant **Qualified Applicants** so that all relevant Qualified Applicants are familiar with the Electronic Auction Stage and **Auction Management System**.
- 1.1.7 While every effort has been made to ensure the information contained in this IM is accurate as at the time of publishing on PTA's website. Neither **PTA/Frequency Allocation Board (FAB)** nor the Government of Pakistan (**GoP**) or any of their respective officers, employees, consultants or advisors make any representation or warranty or have any liability in relation to the accuracy or completeness of the information contained in this IM or any other written or oral information made available to any interested party or its advisors, whether prior to or after the date of issuance of this IM. PTA/FAB and GoP expressly disclaim any responsibility or liability in respect of any such information or any inaccuracy in this IM or omission from this IM.

Note: Specialist terms used in this IM are defined in Section 7.

1.2 Legal Framework

- 1.2.1 The legal framework applicable to all Applicants is:
 - a) The Pakistan Telecommunication (Re-Organization) Act, 1996, including all rules and regulations made thereunder from time to time;
 - b) All relevant policies / directives of GoP; and

- c) All PTA determinations / directives / decision / guidelines / Standard Operating Procedures (SOPs) issued from time to time including relevant decisions of the FAB.

1.2.2 For information, the key organizations of the institutional framework, *in addition to PTA and FAB*, is the Ministry of Information Technology and Telecommunication (**MoIT&T**). The functions of these three organizations are described on their respective websites:

- a) MoIT&T: <http://www.moitt.gov.pk>
- b) PTA: <http://www.pta.gov.pk>
- c) FAB: <http://www.fab.gov.pk/>

1.2.3 All documents relevant to the legal framework are available on the PTA's website. For convenience, some are listed below:

- a) Telecommunications Policy 2015
- b) Rolling Spectrum Strategy 2020-2023
- c) Policy Directive for the Spectrum Auction 2021 Dated 4th August 2021

1.3 Overview of the Spectrum

1.3.1 The Spectrum Auction is for the use of spectrum from the internationally harmonised 1800 MHz and 2100 MHz bands. The spectrum included in the Spectrum Auction comprises:

- a) 2 x 12.8 MHz in the 1800 MHz band; and
- b) 2x15 MHz (1960-1975 MHz / 2150–2165 MHz) in the 2100 MHz band.

1800 MHz

1.3.2 The 2 x 12.8 MHz of spectrum in the 1800 MHz band will be packaged as one block of 2x5 MHz and 39 blocks of 2x0.2 MHz.

1.3.3 Applicants are subject to the spectrum cap of 30 MHz (40% of the total spectrum) across the 1800 MHz band. This spectrum cap is further discussed in section 1.6 below.

2100 MHz

1.3.4 The 2 x 15 MHz of spectrum in the 2100 MHz band will be packaged as three blocks of 2x5 MHz:

- a) 2x5 MHz (1960-1965 MHz / 2150-2155 MHz) ;
- b) 2x5 MHz (1965-1970 MHz / 2155-2160 MHz) ; and
- c) 2x5 MHz (1970-1975 MHz / 2160-2165 MHz).

1.3.5 The current allocation of spectrum bands is defined in the Pakistan Table of Frequency Allocations, which is consistent with the International Telecommunications Union (**ITU**) allocations for Region 3. The Table of Frequency Allocations provides for the 1800 MHz and 2100 MHz bands to be allocated to mobile services on a primary basis in Pakistan.

1.4 Spectrum Auction Process

1.4.1 Licenses, to use the spectrum will be awarded, *for a duration of fifteen years*, by means of a two stage process. Section 3 of this IM describes this process in more detail while Section 4 of this IM explains the bidding process and rules in detail for the Electronic

Auction Stage, if so required. The draft License template applicable to spectrum in the 1800 MHz and 2100 MHz bands is attached as Annex F to this IM.

Stage 1 of the Spectrum Auction (Application Form, Sealed-Bid Form and Pre-bid Deposit)

- 1.4.2 In this stage, all Applicants will be required to provide information as per the Application Form given in Annex B. All Applicants will also be required to submit, along with their application, an irrevocable **Sealed-Bid Form** as per Annex E.
- 1.4.3 In the Sealed-Bid Form and subject to the rules set out in this IM, each Applicant will be required to state their interest out of the following spectrum at the Base Price:
 - a) Product 1: 39 blocks of 2x0.2 MHz in 1800 MHz;
 - b) Product 2: One block of 2x5 MHz in 1800 MHz;
 - c) Three specific blocks of 2x5 MHz in 2100 MHz:
 - i.) Block 9 (1960-1965 MHz / 2150-2155 MHz)
 - ii.) Block 10 (1965-1970 MHz / 2155-2160 MHz)
 - iii.) Block 11 (1970-1975 MHz / 2160-2165 MHz)
- 1.4.4 All Applicants must state their interest in Product 2 in 1800 MHz if they are interested in acquiring more than 2x4.8 MHz within the 1800 MHz band. In addition, Applicants are subject to the spectrum cap of 30 MHz within the 1800 MHz band, comprising existing spectrum holdings (including any sub-judice spectrum for the purpose of spectrum cap only) and spectrum available for Auction.
- 1.4.5 Applicants will also be required to submit a Pre-Bid Deposit at this stage for 20% of the cumulative Base Price for those blocks on which they have expressed their interest, as per **Annex E**.
- 1.4.6 The information submitted by Applicants will be assessed by the PTA and those considered suitable for participation and who have submitted the correct Pre-Bid Deposit will, as per the timelines set, be informed by the PTA that they are Qualified Applicants.
- 1.4.7 For all remaining Applicants (i.e. those that are not Qualified Applicants), PTA will return the Pre-Bid Deposit and submitted information within 30 days of concluding the Spectrum Auction process.
- 1.4.8 PTA will then assess the demand for spectrum across the 1800 MHz band and 2100MHz band in the Sealed-Bid Forms from all Qualified Applicants. This is to determine whether total demand for any Category in the Sealed-Bid Form exceeds the total spectrum available in that Category, as this determines the need to move to the Electronic Auction Stage for these Categories. When determining demand for 2100 MHz spectrum PTA will include any demand resulting from the Eligibility Adjustment in that band. The Eligibility Adjustment is discussed in Section 3.5 below.
 - a) If total demand for spectrum in each Category in the Sealed-Bid Form matches or is less than total spectrum available in that Category, PTA will provisionally assign the 1800 MHz and 2100 MHz spectrum based on the Sealed-Bid to each Qualified Applicant at the Base Price (i.e. no Electronic Auction Stage is required).
 - b) If total demand in any Category (Product 1, Product 2, Block 9, Block 10 or Block 11) from all Qualified Applicants exceeds the spectrum made available in that Category, PTA will proceed to the **Electronic Auction Stage**. In that case, PTA

will notify the Qualified Applicants within three days about the upcoming Electronic Auction Stage.

- i.) If there is excess demand for the 1800 MHz spectrum, but no excess demand for blocks 9, 10 or 11 (after the Eligibility Adjustment, discussed below), blocks 9, 10 and 11 will be provisionally assigned at the Base Price, while the 1800MHz spectrum will be allocated using the Electronic Auction Stage (see Section 4.1 for more details on the Electronic Auction Stage for 1800MHz Auction). Equally, if there is excess demand for just one product in the 1800MHz band (either Product 1 or Product 2), only the product with excess demand will be allocated using the Electronic Auction Stage, while the other product (with no excess demand) will be provisionally assigned at the Base Price.
- ii.) Similarly, if there is no excess demand for Product 1 and Product 2, but there is excess demand for at least one Block in the 2100 MHz band (Blocks 9, 10 or 11), PTA will proceed to provisionally assign the 1800 MHz spectrum at the Base Price and allocate the 2100 MHz spectrum using the Electronic Auction Stage (see Section 4.2 for more details on the Electronic Auction Stage for 2100 MHz Auction).
- iii.) Finally, if there is excess demand for both the 1800 MHz and 2100 MHz spectrum, then the 1800MHz and the 2100 MHz spectrum will be allocated using the Electronic Auction Stage (i.e. in separate and sequential electronic auctions, as set out further below).

Stage 2 of the Spectrum Auction (Electronic Auction Stage)

1.4.9 The Electronic Auction Stage will be conducted sequentially:

- a) First - A **Clock Auction** for the 1800MHz spectrum; and
- b) Second - A Simultaneous Multi-Round Ascending Auction (**SMRA**) for the 2100MHz spectrum.

1.4.10 For the avoidance of doubt, a Qualified Applicant does not need to participate in the Clock Auction of 1800 MHz spectrum in order to participate in the SMRA for the 2100 MHz spectrum, and *vice versa*.

1.5 Rationalisation of 1800 MHz Spectrum

1.5.1 In line with the written consent given by all CMOs, and as per Policy Directive, PTA / FAB shall undertake a process for the rationalisation of spectrum in the 1800 MHz band to achieve contiguity, where feasible (the **Rationalisation Process**).

1.5.2 The Rationalisation Process will involve entire spectrum in 1800 MHz band and all CMOs, irrespective of their participation in the Auction. The Rationalisation Process will be conducted in accordance with the time lines set out in Section 1.7 of this IM.

1.5.3 Under the Rationalisation Process, PTA will endeavour to group together, in the 1800 MHz band, each CMO's Existing Spectrum and the auctioned spectrum.

1.5.4 This may involve a CMO's Existing Spectrum changing from its current position, either up or down in the band.

EXAMPLE

Suppose one CMO has 2x8.8 MHz of Existing Spectrum and that it acquires 2x1.2 MHz in the Auction. In that case, PTA will group its 2x8.8 MHz of Existing Spectrum adjacent to its 1.2 MHz of Auction Spectrum, to make a contiguous block of 2x10 MHz.

- 1.5.5 PTA in consultation with FAB shall publish a Rationalisation Plan (which takes into account to achieve contiguity) as per timelines mentioned in Table 1.
- 1.5.6 In that Rationalisation Plan, PTA will specify the date for each CMO to implement the re-assignment or change of the spectrum within its network, with a view to minimise disruption to each CMO(s), *where practicable*, in achieving this re-assignment or change. CMOs will be required to implement the re-assignment or change in accordance with the Rationalisation Plan within thirty days (30) days as per the undertaking provided as part of the Application Form in Annex B of the IM.
- 1.5.7 Although the Rationalisation Process will involve a CMO changing its position in the 1800 MHz band, and reassignment of previously occupied spectrum to another CMO, with a view to ensuring the optimal utilization of contiguous and standard spectrum holdings, as there will be no reduction in any CMO's Existing Spectrum.
- 1.5.8 Any reassignment/change as contemplated by the Rationalisation Process will not require the payment of compensation by PTA. Furthermore, no CMO will claim for any sort of compensation for readjustment.
- 1.5.9 PTA in consultation with FAB will endeavour to undertake Rationalisation Process for spectrum within the 2100 MHz band at a later date, with mutual consent of CMOs.

1.6 Spectrum Cap

- 1.6.1 In order to avoid asymmetric spectrum holdings and to ensure that all CMOs have a chance to standardise their spectrum holdings in the 1800 MHz band, a spectrum cap has been imposed in the 1800 MHz band which will limit the amount of spectrum that can be acquired in the 1800 MHz band in the Spectrum Auction. This is set at 40% of all spectrum in this band – 2x30 MHz in total, taking into account each CMO's Existing Spectrum including sub-judice.
- 1.6.2 Given each CMO's Existing Spectrum in the Band:
 - a) Jazz will be able to bid on up to 2x5.2 MHz as Jazz is currently using 2x24.8 MHz of spectrum in the 1800 MHz band;
 - b) Zong will be able to bid on up to 2x7.4 MHz as Zong is currently using 2x22.6 MHz of spectrum in the 1800 MHz band (2x16 MHz of its licensed spectrum plus temporary additional 2x6.6 MHz spectrum being sub-judice in a Court of Law); and
 - c) Telenor and Ufone are not constrained by this spectrum cap, given that each of them currently holds less than 2x10 MHz of 1800 MHz spectrum.

1.7 Timelines for the Spectrum Auction

1.7.1 PTA reserves the right to determine and amend the overall timelines of the Spectrum Auction, taking into account of all the circumstances prevailing at the specific time. However, in order to assist prospective Applicants in the preparation of their applications, Table 1 below provides an indication of the intended timelines:

Table 1

No	Process	Timeline (T0*/T1 + No. of days)
1.	Publication of Information Memorandum	T0
2.	Consultation period on the Spectrum Auction rules and procedures as set out in the Information Memorandum	T0 + [21]
3.	Notification of changes to the Spectrum Auction rules and procedures, if any, and publication of any changes to the IM	T0 + [26]
4.	Information session for prospective Applicants (last opportunity for prospective Applicants to ask questions and get clarification on specifics of the Spectrum Auction), if required	T0 + [28]
5.	Deadline for prospective Applicants to submit Application Form and Sealed-Bid Form with Pre-Bid Deposits (Annex B and Annex E)	T1 = T0 + [35] (till 4 pm Pakistan Standard Time)
6.	PTA notifies Qualified Applicant(s) and further inform all Qualified Applicants whether the Auction shall move to the Electronic Auction Stage or PTA declares Qualified Applicants as Provisional Winners.	T1 + [3]
7.	If PTA proceeds with the Electronic Auction Stage, an information package containing confidential information and instructions to participate in the Electronic Auction Stage is provided to those Qualified Applicants eligible to participate in that Stage.	T1 + [4]
8.	Mock Clock Auction (1800 MHz), if required, for eligible Qualified Applicants	T1 + [7]
9.	Clock Auction bidding starts, if required	T1 + [10]
10.	Mock SMRA Auction (2100 MHz), if required, for eligible Qualified Applicants	[2] days after completion of the Clock Auction
11.	SMRA Auction bidding starts, if required, for eligible Qualified Applicants	[2] days after Mock SMRA Auction
12.	Provisional Winners announced for both spectrum bands	No more than [1] day after completion of the Electronic Auction Stage, if required
13.	Initial Spectrum Fees due from Provisional Winners for all Spectrum Blocks acquired in the Spectrum Auction (i.e. 50% or 100% payment of the Initial Spectrum Fee.	According to the schedule in Section 2.5 of this IM
14.	PTA in consultation with FAB to issue Rationalisation Plan for the 1800MHz band to all CMOs	After receipt of all relevant Initial Spectrum Fee
15.	Deadline for CMOs to implement Rationalisation Plan for the 1800MHz band	Within 30 days of PTA having published the Rationalisation Plan

No	Process	Timeline (T0*/T1 + No. of days)
16.	Grant of Licenses/Assignment of right to use of spectrum	After having received the 50% or 100% of the Initial Spectrum Fee and implementation of Rationalization Plan
*T0 (5 th August 2021) is the date of publication of the IM. These dates/timelines are subject to change as deemed necessary by the PTA.		

1.8 Measures to Promote Market Entry, Innovation and Competition

1.8.1 The Spectrum Auction will enable market entry, innovation and competition through a number of GoP policies and directives. These include, but are not limited to:

a) Market Entry

- i.) All the existing CMOs and potential **New Entrant(s)** may apply to participate in the Auction process; and
- ii.) A potential New Entrant in the Cellular Mobile Market gaining spectrum in the Spectrum Auction is encouraged to negotiate national roaming with existing CMOs.

b) Significant Market Power (SMP)

If PTA determines that a Licensee possesses SMP in a relevant geographical market, the Licensee shall comply with orders/decisions of PTA that are intended to prohibit abuse of its SMP position through anti-competitive conduct or to promote competition in respect of that relevant market or markets ancillary thereto. These include certain remedies specified in the License.

c) National Roaming

All CMOs are encouraged to provide national roaming to another operator on request, in the interest of quick rollout of services in the country, specifically in rural areas, national highways / motorways and to achieve the objective of Universal Services Fund.

d) International Roaming

CMOs shall use their best efforts to enter into the necessary agreements with foreign operators in order to enable and provide international roaming to their subscribers. CMOs must follow PTA guidelines / direction(s) on international roaming which may be issued from time to time.

e) Infrastructure Sharing and Spectrum Trading

- i.) CMOs are required to share their existing and future infrastructure with other operators, on request by that other operator. As a minimum, the infrastructure to be shared shall be: site sharing and mast sharing; and
- ii.) CMOs may enter into commercial arrangements with each other for active sharing, however such arrangement shall not take effect until such time as the relevant guidelines are in place and subject to the formal approval and comprehensive framework of PTA. CMOs may enter into commercial arrangements with each other for Spectrum Sharing and Trading, however,

such arrangement shall not take effect until it is approved by the PTA as per the framework developed under the GoP Policy.

f) Mobile Virtual Network Operators (MVNOs)

CMOs are encouraged to support MVNO Services, as required under the framework prepared and published by PTA from time to time.

g) Numbering

Numbering resources already allocated to CMOs may also be used for spectrum awarded in the Spectrum Auction. A New Entrant can request numbering series as per the procedure and regulations devised by PTA. New Entrant in the Cellular Mobile Market shall be provided a unique network identity code.

h) Mobile Number Portability (MNP)

The CMOs shall implement MNP according to the regulations/ guidelines issued by PTA from time to time.

i) Quality of Service (QoS)

A Winner of the spectrum shall provide services with QoS standards defined in Section 2.3 of this IM and as set out in their License.

1.9 Structure of the Information Memorandum

1.9.1 The remainder of this IM is structured as follows:

Section 2 – Description of spectrum available and the License templates

Section 3 – Description of the Spectrum Auction process

Section 4 - Overview of the bidding procedures and rules for the Electronic Auction Stage

Section 5 – Terms and Conditions, including payment terms relating to the Spectrum Auction

Section 6 – Detailed application instructions

Section 7 – Definition of Terms

2. License Description

2.1 License Structure

a) Overview:

A License for spectrum awarded in the Spectrum Auction provides non-exclusive right for use of the frequencies assigned to that successful Applicant. The services permitted are governed by each specific License (*see paragraph C below*). The territorial extent of each License is the whole of Pakistan, excluding Azad Jammu & Kashmir (**AJ&K**) and Gilgit Baltistan (**GB**).

b) License Duration:

The duration of the License shall be fifteen (15) years, which may be renewable on terms and conditions under GoP policy applicable at the time of renewal.

c) License:

License Template is attached at Annex F. If there are any differences between the Licensee's¹ rights and obligations described in this IM and the License template at Annex F, then the License template shall prevail.

2.2 Definition of Spectrum Being Offered

2.2.1 The current assignment of frequencies to CMOs and other stakeholders in Pakistan is available on the FAB website (www.fab.gov.pk). The spectrum offered in the Spectrum Auction is described in Section 1.3 of this IM.

a) Limitations on Use

- i.) The successful Applicant for the spectrum will be granted a non-exclusive License on a technology neutral basis for the establishment, maintenance and operation of the Licensed System to provide licensed services in Pakistan, excluding AJ&K and GB;
- ii.) The Licensee shall ensure compliance with 3GPP Technical Specifications and will have to take all possible measures while installing, maintaining and operating its network to ensure that the out-of-band emissions are under the permissible limits defined by ETSI, ANSI, ITU, IEC standards etc. The Licensee will also have to take all possible measures while installing, maintaining and operating its network to ensure that there is no interference to other Licensees' networks and to ensure that any unwanted signals from other spectrum users are sufficiently mitigated. In case there is any intermittent receiver blocking phenomenon experienced by other Licensees or the Licensee is experiencing intermittent receiver blocking phenomenon from Wireless Local Loop (**WLL**) operators operating in the band adjacent to the 2100 MHz band, the Licensee will have to make adjustments to its network to eliminate interference as per the above referred standards. The Licensee will also be required to make all reasonable efforts to coordinate use of the

¹ In this IM, the PTA refers to CMOs and New Entrants that acquire a License in this Spectrum Auction as Licensees

² Including demand resulting from the Eligibility Adjustment in the 2100 MHz band.

spectrum with operators using adjacent frequencies as identified by the FAB; and

- iii.) The License shall be personal to the Licensee and shall not be assigned, sub-licensed to, or held on trust for another person, without the prior written approval of PTA.

b) The Spectrum Blocks offered in this Auction

- i.) Spectrum will be assigned as specific Spectrum Blocks, structured on the following basis:

Table 2: Spectrum Blocks included in the Spectrum Auction

Spectrum Band	Spectrum Quantity	Blocks
1800 MHz	2 x 12.8 MHz	Packaged as one block of 2x5 MHz and 39 blocks of 2x0.2 MHz
2100 MHz	2x15 MHz	Packaged as three blocks of 2x5 MHz

- ii.) Applicants are subject to a spectrum cap of 40% of the total spectrum in the 1800 MHz band, covering both their Existing Spectrum (including any spectrum which is currently sub-judice) and Spectrum being Auctioned. This spectrum cap has also been discussed in Section 1.6 above.

c) Technical Requirements

- i.) The Auctioned Spectrum will be assigned on a technology neutral basis. However, Licensees must meet certain procedural requirements for spectrum management to minimise interference and to enhance QoS, etc:
 - (1) Technologies implemented shall use the Frequency Division Duplex (**FDD**) access method and be compliant with the out-of-block (**OOB**) emission limits stipulated in the relevant 3GPP Technical Specifications. The Licensee shall be solely responsible for meeting all regulatory obligations;
 - (2) The Licensee shall operate radio communication apparatus and devices in compliance with all requirements of PTA; and FAB pertaining to emissions, frequencies for operation, site clearance, technical characteristics, power and aerial characteristics etc; and
 - (3) The Licensee shall allow inspection of any premises by a representative of PTA at any time and shall furnish to the representative such information as may be required by PTA.

2.3 Coverage and Quality of Service Obligations

- 2.3.1 PTA encourages the provision of mobile communications services throughout Pakistan by all CMOs. PTA envisions maximum population of Pakistan to be served with high quality Voice and Mobile Broadband Services; targeting a maximum population of Pakistan in 2-6 years. A Licensee will be obliged to roll out its network as defined in the License template attached at Annex F (which provides necessary details).
- 2.3.2 The Licensee shall maintain the QoS throughout the coverage area as defined in the License. This will include Key Performance Indicators (**KPIs**) to ensure that voice and

data performance levels achieve the desired standards. KPI thresholds regarding user data throughput and signal strength must be achieved as per Table 4 below.

Table 4: Quality of Service Requirements / KPIs

Key Performance Indicator	Benchmark for technologies standardized for 3G	Remarks
User data throughput	An average download data rate of 512 kbps, which would be increased to 1 Mbps in two year from the Effective Date. For upload, throughput to be at least 25% of download throughput.	To be measured at random locations within the areas covered 3G MBB will not be tested where 4G MBB is being provided
Signal Strength (RSCP)	A minimum outdoor signal strength of -100 dBm must be achievable with 90% confidence.	

Key Performance Indicator	Benchmark for technologies standardized for 4G	Remarks
User data throughput	An average download data rate of 2 Mbps, which would be increased to 4 Mbps in two year from the Effective Date. For upload throughput to be at least 25% of download throughput.	To be measured at random locations within the areas covered
Signal Strength (RSRP)	A minimum outdoor signal strength of -100 dBm must be achievable with 90% confidence.	

2.3.3 A full list of performance requirements is defined in Appendix 3 of the License template in Annex F. PTA may revise the QoS standards and above-mentioned targets at any time. In addition, any QoS KPIs revised in future and regulations made thereto by the PTA for licensed services shall be strictly followed by the Licensee.

2.4 Other License Terms and Conditions

2.4.1 The service obligations defined in the License template are summarised in Table 5. These are presented in detail in the License template at Annex F. Capitalised terms included in Table 5 are defined in the License Template.

Table 5: Other Service Obligations

Obligations	Requirements
Emergency services	Provision of mandatory emergency services as determined by PTA.
Lawful interception	Cooperation with Law Enforcement and Security Agencies. The Licensee shall also comply with Critical Telecom Data and Infrastructure Security Regulations, 2020 and its amendments (if any) issued from time to time.
Non-discrimination	The services shall not discriminate between end-users, in particular with regard but not limited to, quality, availability and reliability of the service
Tariffs	Tariffs must be offered in accordance with Telecom Consumers Protection Regulations, 2009 and other related regulations/determinations/orders available or issued from time to time. The Tariffs shall not be unfair, burdensome or anti-competitive.

Obligations	Requirements
	If PTA determines that the Licensee possesses SMP in a relevant market, PTA may regulate the licensee's prices, terms and conditions for those Licensed Services in the SMP market and any Licensed Services incidental thereto. The method of regulation shall be determined by PTA and may include a requirement for prior approval of PTA for any price term or condition, or the maximum or minimum price, or both, for the Licensed Services.
Billing	Provision of detailed and precise billing to end-users upon request
Data protection	Compliance with laws regarding privacy and data protection
Provision of information	The Licensee shall provide technical details for the deployed network equipment upon request. The Licensee shall provide up to date information in the manner as and when required by PTA
Interconnection	On request of another Licensee, the Licensee shall enter into an agreement to connect and keep connected the Licensee's Licensed System to the Telecommunications Network run by the requesting operator at specified points of interconnection and to provide such other mobile communications services as are reasonably requested in order for the requesting person to provide mobile communications services to its customers. If PTA determines that the Licensee has SMP in the relevant telecommunications market under the Rules issued from time to time then termination charges shall be offered at cost based rates, as determined by or in line with the methodology set by PTA, with reasonable margin or in line with the methodology set by PTA through industry consultation.
Site clearance	Obligations with regard to clearance of cell sites as per Standard Operating Procedure of PTA/FAB. In addition to SOP for BTS site clearance, the Licensee shall follow "Protection from Health Related Effects of Radio Base Station Antennas Regulation 2008" including amendments, while installing and operating radio base station antennas.
Access for inspection	The Licensee shall provide access to all radio equipment for inspection upon request.
National Security	Obligations with regard to National Security including but not limited to provision of Lawful Interception System, CDRs, and IPDRs etc.
Relations with Customers	Requirements for the Licensee to submit standard service contracts and Code of Commercial Practice to PTA for approval and establishment of complaint system
Performance Bond	The Licensee will provide the performance bond as described in section 5.4, as security against its network coverage obligations.
Quality of service	The Licensee shall at all times meet or exceed the Quality of Service standards described in Appendix-3 of the License template. In addition, any QoS KPIs devised in future and regulations made thereto by PTA for the Licensed Services shall be strictly followed by the Licensee.

2.5 Fees

2.5.1 Table 6 below describes the relevant fees associated with the License. In addition to Table 6, all relevant taxes, fees, levies imposed by GoP shall be applicable.

Table 6: Fee structure

Fee/charges	Amount due
Initial Spectrum Fee (ISF)	<p>The ISF shall be the Auction Winning Price as determined in the process of the Spectrum Auction for Next Generation Mobile Services (NGMS) in Pakistan 2021 that shall be determined in US Dollars. The ISF shall be paid in US Dollars or its equivalent in Pak Rupees to be converted at the National Bank of Pakistan (NBP) Telegraphic Transfer (TT) selling rate prevailing on the day preceding the date of payment.</p> <p>The ISF shall be payable within 15 calendar days of the written intimation to Provisional Winner by PTA, taking into account the Pre-Bid Deposit. The Provisional Winner may opt following for payment of ISF:</p> <p>The Provisional Winner may opt for 100% payment of the ISF given in clause 4.1.1 of the License as a onetime upfront payment as per timelines provided above.</p> <p><u>OR</u></p> <p>Pay 50% of the ISF amount given in clause 4.1.1 of the License as per timeline provided above. The remaining 50% of the ISF shall be payable in 5 equal annual instalments with mark-up calculated at the one-year LIBOR rate + 3% for the period from the Effective Date of the License to the payment date.</p> <p>Additionally, the Licensee may pay the remaining balance of the ISF at any time before the end of 5 years, without any pre-payment penalties. However, the mark up at LIBOR + 3% shall be payable on the balance amount for the period from the Effective Date of the License or payment date of last instalment, whichever is later, to the payment date.</p> <p>In case of delay in any subsequent payments to PTA, the Licensee shall pay Late Payment Additional Fee at the rate 2% per month or part thereof from the due date until the date of payment.</p> <p>In case the LIBOR rate or NBP exchange rate issuance is discontinued by the issuing authorities/organisations during payment tenor under the License, rates announced by Ministry of Finance, Pakistan or State Bank of Pakistan in replacement of said rate shall be used with effect from the date of its discontinuance.</p> <p>If any payment of the ISF, including any instalment, becomes overdue, PTA may serve upon the Licensee a show cause notice stating the default and seeking explanation, allowing it not less than seven days, as to why its License shall not be suspended or revoked. On considering the Licensee's explanation, PTA may suspend or revoke the License as deemed appropriate. PTA and the Licensee have agreed to this term in the light of the spirit of Section 28 of the Contract Act, 1872 and despite Section 23 of the Act read with Rule 9 of the Pakistan Telecom Rules, 2000.</p>

Fee/charges	Amount due
	<p>Note:</p> <ul style="list-style-type: none"> i. For the purpose of clarity, calculation of mark-up for the 1st instalment, the one year LIBOR rate prevailing at the Effective Date of the License shall be used and for subsequent years the one year LIBOR rate prevailing on the payment date of previous (last year's) instalment shall be used. ii. In case the successful winner initially opt for 50% payment plan, the winner can make payment of remaining 50% before signing of license without any early payment penalty or charges or mark up or LPAF.
Annual License Fee (ALF)	<p>The Licensee shall pay the ALF to PTA, an amount equivalent to 0.5% of the Licensee's annual gross revenue from Licensed Services for the relevant financial year, minus inter-operator costs and related PTA / FAB mandated payments. In the case of PTA / FAB mandated payments including contributions, this deduction will be allowed only if these amounts have actually been paid and not on accrual basis.</p> <p>However, payment of ILF/ISF, any amount paid/payable to foreign carriers, leased line charges, collection charges, late payment additional fee, penalties, and other expenses imposed by PTA, if any, shall not be deducted from the gross revenue.</p>
Universal Service Fund (USF) Contribution	<p>The Licensee shall pay an annual USF contribution, an amount equivalent to 1.5% of the Licensee's annual gross revenue from Licensed Services for the relevant financial year, minus inter-operator costs and related PTA / FAB mandated payments including contributions. In the case of PTA / FAB mandated payments, this deduction will be allowed only if these amounts have actually been paid and not on accrual basis.</p> <p>However, payment of ISF/ILF, any amount paid/payable to foreign carriers, leased line charges, collection charges, late payment additional fee, penalties and other expenses imposed by PTA, if any, shall not be deducted from the gross revenue.</p>
R&D Fund Contribution	<p>The Licensee shall pay an Annual R&D Fund contribution, an amount equivalent to 0.5% of the Licensee's annual gross revenue from Licensed Services for the relevant financial year, minus inter-operator costs and related PTA/FAB mandated payments. In the case of PTA / FAB mandated payments including contributions, this deduction will be allowed only if these amounts have actually been paid and not on accrual basis.</p> <p>However, payment of ISF/ILF, any amount paid/payable to foreign carriers, leased line charges, collection charges, late payment additional fee, penalties and other expenses imposed by PTA, if any, shall not be deducted from the gross revenue.</p>
Annual Spectrum Administrative Fee (ASAF)	<p>The Licensee shall pay to PTA an ASAF in an amount calculated by PTA on the basis of the proportion of access spectrum assigned to the Licensee out of the total spectrum assigned to all CMOs, to recover 75 % of FAB's total budgeted expenditure for the next Financial Year. The ASAF shall be applicable for the next financial year starting from 1st July every year and is payable in advance latest by 30th June of every year. PTA shall notify the Licensee, when GoP</p>

Fee/charges	Amount due
	introduces a separate regime for backhaul spectrum charging. This will be binding on the Licensee; and payable in addition to applicable ASAF referred above. For the first year ASAF will be billed on proportionate basis pursuant to additional spectrum assigned to CMOs during this auction.
Annual Numbering Charges	For each number allocated to the Licensee, annual number charges are payable in advance to PTA by the due date on 30th June each year in accordance with the Numbering Allocation & Administration Regulations, 2018, including amendment made from time to time.
Late Payment Additional Fee (LPAF)	In case of delay in any payment of any fees, charges, contributions, the Licensee shall pay LPAF at the rate of 2% per month or part thereof from the due date until the date of payment.

2.6 Base Price

2.6.1 The Base Price for each Spectrum Block is detailed in Table 8. These Base Prices will be the **Starting Prices** for the Spectrum Blocks offered in the Auction. These are based on the per MHz Base Prices (paired spectrum) as set out in the Policy Directive, as replicated below in Table 7.

Table 7: Base price expressed on a Per MHz basis (Paired Spectrum)

Spectrum band	Spectrum quantity	Base Price
1800 MHz	2x1 MHz	USD 31 million
2100 MHz	2x1 MHz	USD 29 million

2.6.2 Overall, this means that the Spectrum Blocks that are available for Auction and outlined in Section 1.3 have the following Base Prices:

Table 8: Base price

Spectrum band	Size	Base Price
1800 MHz – Blocks in Product 1	2x0.2 MHz	USD 6.2 million
1800 MHz – Blocks in Product 2	2x5.0 MHz	USD 155 million
2100 MHz Blocks	2x5.0 MHz	USD 145 million

2.6.3 Spectrum Blocks will not be sold at a price lower than the Base Prices shown in Table 8 of the IM.

2.7 Future Harmonisation of Licenses

2.7.1 PTA envisages that, *in due course*, it is likely to be efficient to harmonise the terms and conditions of all existing mobile service Licenses with the form of the License in Annex F. That will mean that there will be a consistent set of terms and conditions applicable to all mobile spectrum. PTA will consult CMOs regarding any future harmonisation of License terms and conditions, including tenure of the License, It is expected that this consultation would take place at some point after the Auction process is complete and the Licenses issued.

3. Overview of the Spectrum Auction

The Spectrum Auction will consist of following steps:

3.1 Consultation period

- 3.1.1 The consultation period will start with the publication of this IM on the date indicated in the award timetable of Section 1.7. During this consultation period, prospective Applicants will be allowed to submit clarification questions to PTA. PTA may respond to questions and publish the same on its website without providing the identity of the party making the question or comment. No prospective Applicant will receive preferential treatment or receive special information from PTA in this process.
- 3.1.2 PTA reserves the right to determine what comments are relevant and require modification of the Spectrum Auction and hence require it to publish amendments to this IM. All questions and comments can be submitted by email to the below provided email address: [pak-lic@pta.gov.pk]
- 3.1.3 Queries not considered relevant, till 24 hours before the end of the consultation period, may not be responded by PTA by publishing on PTA's website.

3.2 Information Session for Prospective Applicants

- 3.2.1 Following the consultation period, there may be an information session for prospective Applicants so that they can better understand the Spectrum Auction. This session would be the last opportunity for prospective Applicants to ask questions and get clarification on specifics of the Auction process and rules.
- 3.2.2 Applicants must register with PTA prior to attending this session by sending an email to: [pak-lic@pta.gov.pk]
- 3.2.3 During this session, PTA will only respond to clarification questions related to the Spectrum Auction and only those Applicants who successfully registered in advance will be allowed to participate.

3.3 Application Process

- 3.3.1 The application process will start on the date indicated in Section 1.7. This should allow sufficient time for prospective Applicants to evaluate the business opportunity and to prepare the required documentation to participate in the Spectrum Auction.
- 3.3.2 The Spectrum Auction will comprise two stages. During the first Stage, Applicants must submit, by the date indicated in the timetable of Section 1.7, both Annex B (**Application Form**), and Annex E (**Sealed-Bid Form**) of this IM, along with all the required supporting documentation. Applicants are also required to submit a Pre-Bid Deposit at this stage. PTA will review the Application Form and Sealed-bid Forms, and will qualify those Applicants that are deemed to be suitable and who paid the correct Pre-Bid Deposit. PTA will then determine whether the Auction will proceed to the second stage, based on the demand in the Auction (including the Eligibility Adjustments) as expressed in the Sealed-Bid Forms submitted by Qualified Applicants (see Section 3.5 of this IM).

3.4 Stage 1: Sealed Bid Stage

- 3.4.1 In this stage, all Applicants will be required to complete the Application Form given in Annex B and provide the information required by the Application Form. An Applicant will also be required to submit, along with its application, an irrevocable Sealed-Bid Form, given in Annex E. Applicants will also be required to submit a Pre-Bid Deposit at this stage for 20% of the cumulative amount of the Base Price for those Spectrum Blocks in which they have expressed interest, as per the Sealed-Bid Form.
- 3.4.2 On their Application Form, Applicants will be asked to provide contact details for an Authorised Representative for the purposes of, among others, that representative receiving all information related to the Spectrum Auction, including the Bidder Information Package, if the Applicant is qualified to participate in the second stage. Please note that this representative needs to be fully available during the entire Auction.
- 3.4.3 Upon receipt of the Application Forms, PTA will review whether or not each Applicant complies with all the requirements. Where an application is deficient, PTA may, but is not required to, ask the Applicant to provide any missing information or additional documentation but the Applicant will not be asked to, nor can he/she change, any of the information already provided in Annex E.
- 3.4.4 The information submitted by Applicants will be assessed by PTA. Those who are considered suitable for participation and have submitted the correct Pre-bid Deposit in the prescribed form and manner; will be informed, as per the timelines, that they are Qualified Applicants. The Pre-Bid Deposit for any Applicant who does not become a Qualified Applicant will be returned by PTA in due course, subject to that Applicant having complied with the rules of the Spectrum Auction process.
- 3.4.5 In the Sealed-Bid Form, each Applicant will be required to state their interest in the following Spectrum Blocks at the Base Price:
- a) Product 1: 39 blocks of 2x0.2 MHz in 1800 MHz;
 - b) Product 2: One block of 2x5 MHz in 1800 MHz; and
 - c) Three specific 2x5 MHz blocks in the 2100 MHz band:
 - i.) Block 9 (1960-1965 MHz / 2150-2155 MHz);
 - ii.) Block 10 (1965-1970 MHz / 2155-2160 MHz); and
 - iii.) Block 11 (1970-1975 MHz / 2160-2165 MHz).
- 3.4.6 Applicants who intend to bid on 2x5 MHz of 1800 MHz spectrum or more will have to bid on Product 2 (2x5MHz), with the remainder of their demand (if any) expressed through bids on Product 1, as per the spectrum cap

EXAMPLE

If an Applicant wants to acquire 2x6 MHz of 1800 MHz, it will have to bid on 5 Lots in Product 1 and 1 Lot in Product 2. It will not be allowed to bid on 30 Lots in Product 1.

- 3.4.7 In addition, Applicants are subject to the spectrum cap of 2x30 MHz within the 1800 MHz band (described in Section 1.6). No spectrum cap applies to the 2100 MHz band.

Eligibility Points

- 3.4.8 The number of Spectrum Blocks stated in the Sealed-bid Form and supported by a corresponding Pre-bid Deposit, in the prescribed form and manner, will constitute a Qualified Applicant's **Initial Eligibility** for the 1800 MHz and 2100 MHz spectrum Auction.
- 3.4.9 Each Spectrum Block will be associated with a certain number of Eligibility Points:
- a) 1 Eligibility Point for a 2x0.2 MHz block within 1800 MHz (Product 1);
 - b) 25 Eligibility Points for the 2x5 MHz block within 1800 MHz (Product 2); and
 - c) 25 Eligibility Points for each of the 2x5 MHz blocks within 2100 MHz (block 9, block 10 or block 11).
- 3.4.10 The minimum Initial Eligibility a Qualified Applicant can have is 1 point. It will allow this Qualified Applicant to bid on 1 Spectrum Block in Product 1 in the Electronic Auction Stage, if required, for that Product. The maximum eligibility a Qualified Applicant can have is determined by the spectrum cap (described in Section 1.6).

EXAMPLE

1. If a Qualified Applicant bids on five Blocks in Product 1, one Block in Product 2 and Block 9 in the 2100 MHz in Stage 1 of the Auction, this Qualified Applicant will have 55 eligibility points.
2. If a Qualified Applicant bids on 10 Blocks in Product 1, one Block in Product 2, and blocks 9 and 10 in the 2100 MHz band, it will have 85 points, etc.

Eligibility Adjustment

- 3.4.11 Applicants who expressed demand for Product 2 (2x5 MHz of 1800 MHz spectrum) will be able to benefit from an Eligibility Adjustment, if they wish to do so. The Eligibility Adjustment will allow Bidders in the Electronic Auction Stage to carry over their Eligibility Points from 1800MHz spectrum to 2100MHz spectrum if they are not successful in winning Product 2.
- 3.4.12 In order to facilitate the Eligibility Adjustment, eligible Applicants (i.e. those who bid on Product 2) will be asked in their Sealed-Bid Form whether they want to carry over their Initial Eligibility from 1800 MHz to 2100 MHz. This Eligibility Adjustment would only apply if the Qualified Applicant is then not successful in winning Product 2. In the Sealed-Bid Form, eligible Applicants would need to specify whether they want to use the Eligibility Adjustment and, if so, which specific block of 2100MHz spectrum they would want to transfer that eligibility to.
- 3.4.13 The Eligibility Adjustment will not be applied if Qualified Applicants do not state clearly in the Sealed-Bid Form that they want to use it.

3.5 Assessment of Stated Demand for Spectrum to be Auctioned

- 3.5.1 Once Qualified Applicants have been determined, PTA will assess the demand for spectrum across the 1800 MHz band and 2100 MHz bands (including the Eligibility Adjustments) as expressed in the Sealed-Bid Forms from all Qualified Applicants. This is to determine whether total demand for any Category in the Sealed-Bid Form exceeds

the total spectrum available in that Category, and therefore, whether still there is a need to proceed to the Electronic Auction Stage. This assessment includes any demand resulting from the Eligibility Adjustment in that band (see previous section).

- a) If total demand in the Sealed-Bid Forms in any Category (Product 1, Product 2, block 9, block 10 or block 11) from all Qualified Applicants exceeds supply of spectrum in that particular Category, PTA will then proceed to the Electronic Auction Stage for those Categories. In that case, PTA will notify the Qualified Applicants three days after the receipt of applications about the upcoming Electronic Auction Stage; and
- b) If total demand for spectrum in each Category² matches or is less than total spectrum available in that Category, PTA will provisionally assign the 1800 MHz and 2100 MHz spectrum based on the Sealed-Bid Forms to each Qualified Applicant at the Base Price:
 - i.) If there is no excess demand for Product 1 and Product 2, but there is excess demand for at least one block in the 2100 MHz band (blocks 9, 10 or 11), PTA will proceed to provisionally assign that 1800 MHz spectrum for which there is demand at the Base Price and move to the Electronic Auction Stage for the 2100 MHz spectrum (see Section 4.2 for more details on the Electronic Auction Stage for 2100 MHz spectrum);
 - ii.) Similarly, if there is excess demand for one product in the 1800 MHz band but no excess demand for blocks 9, 10 or 11 (after the Eligibility Adjustment discussed above), blocks 9, 10 and 11 will be provisionally assigned at the Base Price (assuming there is demand for those blocks at the Base Price), while the 1800MHz product for which there is excess demand will be allocated using the Electronic Auction Stage (see Section 4.1 for more details on the Electronic Auction Stage for 1800 MHz spectrum); and
 - iii.) Finally, if there is excess demand for just one product in the 1800 MHz band (either Product 1 or Product 2), only the product with excess demand will be sold using the Electronic Auction Stage, while the other product (with no excess demand) will be provisionally assigned at the Base Price.

3.6 Mock Auction

- 3.6.1 Should the Spectrum Auction be required to proceed to the Electronic Auction Stage, Qualified Applicants who placed bids, in their Sealed-Bid Forms, for those products going forward to the Electronic Auction Stage, will be invited to participate in a mock Auction Bidder training session. This will cover one or both of the Electronic Auctions for 1800 MHz and 2100 MHz spectrum, depending on which bands proceed to the Electronic Auction Stage³. PTA will provide instructions to participate in the mock Auction as part of the Bidder Information Package. It is recommended that all Qualified Applicants who will be taking part in the Electronic Auction Stage for the relevant band or bands, take part in the mock Auction in order to familiarise themselves with the Auction Management System.

² Including demand resulting from the Eligibility Adjustment in the 2100 MHz band.

³ A Qualified Applicant who takes part in the Electronic Auction Stage is known as a Bidder.

3.7 Stage 2: Electronic Auction Stage for the 1800MHz and 2100MHz spectrum bands

3.7.1 The Electronic Auction Stage will be conducted sequentially:

- a) First - A Clock Auction for the 1800 MHz spectrum; and
- b) Second - A SMRA (Simultaneous Multi-Round Ascending Auction) for the 2100 MHz spectrum.

3.7.2 These two different approaches are needed because:

- a) There are 39 generic blocks of 2x0.2 MHz spectrum, and one block of 2x5 MHz in the 1800 MHz band. A Clock Auction is best suited for the allocation of a large number of identical generic blocks; and
- b) There are 3 specific 2x5 MHz blocks (blocks 9, 10 and 11) in the 2100 MHz band. Specific blocks are best allocated using a SMRA.

3.7.3 The PTA will first conduct the Clock Auction for the 1800 MHz spectrum, followed by the SMRA Auction for the 2100 MHz spectrum. For the avoidance of doubt, a Qualified Applicant need not participate in the Clock Auction for 1800 MHz spectrum in order to participate in the SMRA Auction for 2100 MHz spectrum.

3.7.4 The Electronic Auction Stage will be conducted through an electronic Auction Management System. The Auction Management System will:

- a) Provide all the information which will be made available to the Bidder (i.e., a Qualified Applicant taking part in the Electronic Auction Stage) on the progress of the Auction as set out in this IM;
- b) Provide the electronic forms necessary for Bidders to make bids during the Clock and SMRA Auctions;
- c) Enable Bidders to receive announcements from PTA following the System Live date; and
- d) Enable Bidders to communicate with PTA using the secure messaging tool.

3.7.5 The Auction Management System will be hosted on servers operated by the Auction Software Provider. Bidders will be provided in advance with a login ID and password in order to access the Auction Management System. They will also be provided with an Electronic Certificate that must be installed on the machine from which they intend to participate in the Electronic Auction Stage. Details of the machine to be shared with PTA, accordingly.

3.7.6 Only Bidders will be able to log into the electronic Auction Management System at the date and time indicated by PTA. In order to do so, Bidders will require the login ID, password and electronic certificate provided to them in advance. Bidders will be prompted to change the password given to them on the first successful login attempt. To access and use the Auction Management System, Bidders will need a minimum specification of broadband Internet connection and PC. Bidders are directed to the detailed instructions that will be set out in the User Manual for the Auction Management System for full details of the specifications required.

- 3.7.7 All Applicants should note that the Auction Management System incorporates Secure Socket Layer (SSL) encryption and all transactions are encrypted across the communication channels. The data stored is secure and access to data is restricted. Appropriate security measures are in place for the data storage along with physical and electronic security enforcement. High performance hardware, network and software support will be provided by the Auction Management System to ensure secure and reliable communication to and from PTA and the Auction Software Provider.
- 3.7.8 If a Bidder faces communication difficulties during the Electronic Auction Stage, PTA will accept emergency bidding either through submitting bids physically or through faxed bids, duly signed and stamped by the Bidder's Authorised Representative (already communicated to PTA). Details of the **Emergency Bidding Procedure** will be provided to Qualified Applicants.
- 3.7.9 Section 4.1 and Section 4.2 describe the process for the Clock Auction and SMRA in more detail.

3.8 Announcement of Provisional Winners

- 3.8.1 The Spectrum Auction will end once demand is less than or equal to supply in each Category. At this point, which may either be at the end of Stage 1 or Stage 2 (Electronic Auction Stage), the Provisional Winners will be announced by the PTA, in line with the timelines set out in Section 1.7 of this IM.
- 3.8.2 The PTA shall also notify the Provisional Winners in writing, of the quantity of spectrum they have provisionally won in each band and the price payable as per section 1.7 of the IM.
- 3.8.3 The Government, however, reserves the right to withhold the spectrum for a future Auction or award it as deemed appropriate.

3.9 Rationalisation phase

- 3.9.1 As discussed in Section 1.5 of IM, PTA in consultation with FAB, shall undertake a post-Auction process for the rationalisation of spectrum in the 1800MHz band to achieve contiguity. As part of this post-Auction Rationalisation Process, PTA in consultation with FAB, will endeavour to minimise any movement of CMOs' spectrum holdings. The Rationalisation Process shall be applicable on CMOs regardless of whether or not they participate in the Spectrum Auction and shall be implemented by all CMOs within 30 days of publication of the Rationalisation Plan.

3.10 License Fees

- 3.10.1 Fees will be in accordance with Section 2.5 of this IM.

3.11 Grant of License

- 3.11.1 The License will be granted in accordance with section 1.7 of the IM.

4. The Electronic Auction Stage

- a) This section explains in detail the bidding procedure during the Electronic Auction Stage.
- b) As stated in Section 3.5 above, should the Auction proceed to the Electronic Auction Stage, the PTA will use different mechanisms to allocate spectrum in the 1800 MHz and 2100 MHz bands - a Clock Auction to allocate the 1800MHz spectrum and a SMRA to allocate the 2100MHz spectrum. These two different approaches are needed because:
 - i.) There are 39 generic blocks of 2x0.2 MHz spectrum, and one block of 2x5 MHz in the 1800 MHz band. A Clock Auction is best suited for the allocation of a large number of identical generic blocks; and
 - ii.) There are 3 specific 2x5 MHz blocks (blocks 9, 10 and 11) in the 2100 MHz band. Specific blocks are best allocated using an SMRA.
- c) The PTA will first conduct the Clock Auction for the 1800 MHz spectrum, followed by the SMRA Auction for the 2100 MHz spectrum. For the avoidance of doubt, a Bidder need not participate in the Electronic Auction Stage for the award of 1800 MHz spectrum in order to participate in the Electronic Auction Stage for 2100 MHz award, or vice versa.

4.1 Electronic Auction Stage for 1800 MHz Spectrum: Ascending Clock Auction

4.1.1 As set out in Section 3.5 above, there will be two Products in the 1800 MHz Spectrum:

- a) Product 1: 39 blocks of 2x0.2 MHz; and
- b) Product 2: one block of 2x5 MHz.

4.1.2 At a high level and assuming that there is excess demand for both Product 1 and Product 2, the bidding in the Clock Auction will proceed as follows:

- a) Bidding will take place in series of rounds;
- b) In each round, Bidders (i.e. Qualified Applicants who participate in the Electronic Auction Stage) place bids at the announced prices for a number of Spectrum Blocks in Product 1 and up to one Spectrum Block of Product 2. As the Auction progresses, Bidders can maintain or reduce demand for each Product, but they cannot increase demand. For example, if in its Sealed-Bid Form, a Bidder bids for 5 x Spectrum Blocks on Product 1 and 1 x Spectrum Block of Product 2, this Bidder can continue bidding on 5 x Spectrum Blocks of Product 1 and one x Spectrum Block of Product 2, or it can reduce demand for either or both Products, with a corresponding reduction in its Eligibility Points. However, it cannot, for example, bid on 6 x Spectrum Blocks of Product 1;
- c) The price for each Product will increase from round to round as long as there is excess demand for that Product;
- d) Total demand for each Product will be made available to Bidders after each round;

- e) If, in a given round, aggregate demand for each Product is equal to supply, the Auction will close and the Spectrum Blocks will be provisionally allocated to Bidders according to their bids in that round;
- f) If, in a given round, a single Bidder drops demand causing aggregate demand for one of the two Products to fall below supply, the auction for that Product will end and the Product will be allocated at the price in the previous round. All Bidders who did not drop demand will be allocated the quantity that they demand in the final round, and the single Bidder who dropped demand will be allocated the remaining quantity of the Product;
- g) If, in a given round, multiple Bidders drop demand causing aggregate demand for any of the two Products to fall below supply, the Auction will proceed to the refinement stage for that Product, with Bidders who reduced demand in the final round being required to submit additional bids to ensure that all spectrum is sold. Examples of the refinement stage are set out in Annex H.

4.1.3 Below, the Clock Auction rules are set out in more detail.

a) Information provided to Bidders before the Clock Auction

- i.) Prior to the start of the Clock Auction, Bidders will receive the following information:
 - (1) The schedule for the first day of bidding;
 - (2) Information on the identities of all Bidders;
 - (3) Information on their individual eligibilities and required 100% activity for round 1 of the Clock Auction; and
 - (4) The Base Price for Product 1 and Product 2 as set out in Section 2.6.

b) A Bidding Round

- i.) Bidding rounds will have a fixed start time and end time. Bidders should have sufficient time until the end time of a round to submit a bid. Bidders can modify their bids any time during the Bidding Period. However, the last bid recorded by the Auction Management System will be deemed the Valid Bid;⁴
- ii.) If a Bidder faces communication difficulties during the Clock Auction, PTA will accept emergency bidding over the phone with fax bids, signed and stamped verification and confirmation received within the Bidding Period. Details of the Emergency Bidding Procedure will be provided to Bidders.

⁴ While Bidders can submit their bids at any point during the bidding round, it is recommended that the Bidders should try to make their bidding decisions as early in the round as possible to make sure their bids are registered before the close of the round as well as have time to resolve any issues in the bid submission process (if any issues arise).

- iii.) A Bidding Period will be followed by a Reporting Period. During the Reporting Period, Bidders will receive information on the previous round (See Section h) below).

c) Considered bids

- i.) A bid is an offer to purchase one or more generic Spectrum Blocks of Product 1 and / or 1 Spectrum Block in Product 2 at the announced prices. In every round, Bidders will select the number of Spectrum Blocks they are willing to purchase at the announced price and for which they have sufficient Eligibility Points to bid on;
- ii.) A bid is a binding offer that cannot be rescinded;
- iii.) All bids placed in the latest bidding round are considered; and
- iv.) An absent or null bid means that a Bidder does not place any bid in a round. In practice, an absent bid on a Product, on which a Bidder has positive demand in the previous round, will be considered as a bid for zero Spectrum Blocks at the current clock price, with a corresponding reduction in Eligibility Points for that Bidder in the next round. This means, in practice, that the Bidder will no longer be able to place bids for any Blocks in that Product.

d) Prices and Bid Increments

- i.) If, in any given round, demand for Product 1 is greater than 39, the price for that Product will increase in the next round. Similarly, if demand for Product 2 is greater than 1, the price for Product 2 will increase in the next round. The price increment rules will be determined for each round by PTA. During the Reporting Period, PTA will inform Bidders via the Auction Management System of the bid increment that will be applied to Spectrum Blocks for the next round; and
- ii.) By placing a new Valid Bid, the Bidder indicates that it is willing to purchase those Spectrum Blocks at the current price for that round, i.e. the price announced by PTA for each Spectrum Block via the Auction Management System at the start of the Bidding Round.

e) Round 1 Minimum Bids

In the first round, the price of Product 1 and Product 2 will be set at the Base Price and Bidders' demand from the Sealed-Bid Form will be used to pre-fill the bid automatically. In other words, Bidders will be required to submit this bid, which is equal to their Initial Eligibility. If a Bidder fails to submit a Valid Bid in round 1 of the Clock Auction, PTA reserves the right to submit the bid on the Bidder's behalf.

f) Bids after Round 1

After the first round and subsequent rounds, Bidders could maintain their Initial Eligibility or choose to lower their eligibility by reducing, on one or both Products, the number of blocks on which they place a bid. A Bidder's eligibility in subsequent rounds can never increase; it can remain the same or decrease as the Clock Auction progresses.

g) Activity Requirements

Bidders will be required to maintain 100% activity in each round on each Product or lose eligibility. A Bidder's eligibility in one round on a given Product will be equal to its activity in the previous round on that Product. To maintain its eligibility, a Bidder must bid on the same number of Spectrum Blocks as in the previous round. Otherwise, its eligibility will be reduced for the next round. For example, if a Bidder has 5 Eligibility Points and is bidding on 5 Spectrum Blocks of Product 1, it can continue bidding on 5 Spectrum Blocks of Product 1. Alternatively, it can reduce its demand to 4 or fewer Spectrum Blocks of Product 1. However, in that case, the Bidders' Eligibility Points will be reduced to 4 or fewer. If the Bidder reduced demand to 4 Spectrum Blocks of Product 1, in future rounds the Bidder can bid on no more than 4 Spectrum Blocks of Product 1.

h) Information provided to Bidders at the start of Each Round

- i.) At the start of each Bidding Period, Bidders will receive the following information:
 - (1) Aggregate demand for Product 1 and Product 2;
 - (2) Bidder's current eligibility;
 - (3) Each Product's clock prices; from the previous round; and
 - (4) Current clock prices.

i) Closing Rules for Clock Auction

- i.) The Clock Auction will close when there is no excess demand for the Product(s) in the Clock Auction. If, in a given round, aggregate demand for both Products is equal to supply, the Clock Auction closes and all Bidders in this final round are provisionally assigned the quantity demanded at the final round prices. This final price is referred to as the Auction Winning Price, and the amount of spectrum provisionally assigned to each Bidder as the Winning Allocation.
- ii.) However, if there is a drop in aggregate demand below supply for one or both Products, Bidders who reduced demand for that Product, causing aggregate demand to fall below supply, will be required to participate in a refinement round.

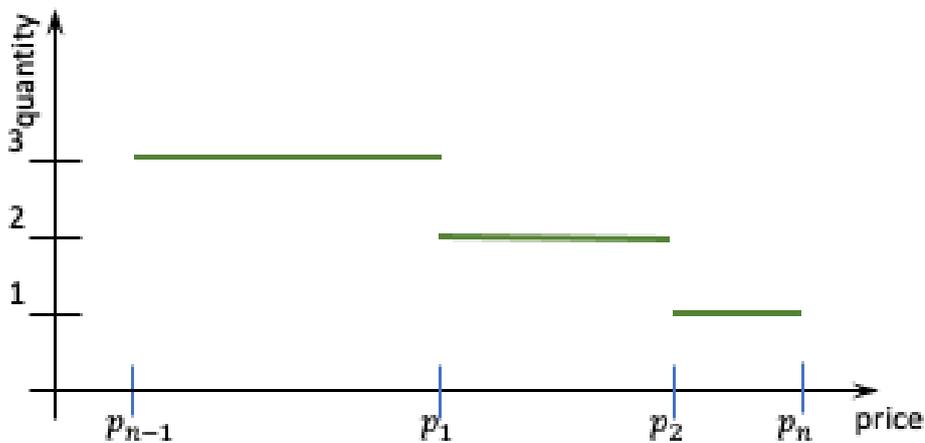
j) Refinement Round

- i.) A refinement round will only be conducted if multiple Bidders drop demand causing aggregate demand for Product 1 or Product 2 to fall below supply. The objective of the refinement round is to ensure that all spectrum, for which there was demand at the Base Price, is sold; and
- ii.) If multiple Bidders drop demand causing aggregate demand to fall below supply, Bidders who dropped demand in the final round will be required to state the price at which their demand falls, including potentially stating multiple

prices if the Bidder dropped demand by more than one Spectrum Block. However, the Bidder could choose to indicate that it would drop its demand for multiple blocks all at the same price.

EXAMPLE

In this example, Bidders drop demand such that aggregate demand falls below supply. One of the Bidders drops demand from 3 Blocks of Product 1 at price p_{n-1} to 1 Block at p_n . As multiple Bidders dropped demand, the auction will enter a refinement round and the Bidder will be required to provide the maximum price (between p_{n-1} and p_n) at which it is still willing to buy 3 Blocks and the maximum price at which it is willing to buy 2 Blocks (see the diagram below).



Let us assume that at price p_2 aggregate demand for Product 1 is equal to supply. In this case price p_2 per Block is the market clearing price.

However, if after the refinement round, there is no price identified at which demand is equal to supply, the prices with the lowest excess supply and the lowest excess demand will be identified. For instance, call the price with the lowest excess supply P_S and the price with the lowest excess demand is P_D .

- All Product 1 Blocks will be allocated at the price P_D – the auction clearing price for Product 1.
- The allocation will be as follows:
 - o all bidders who placed bids at price P_S or at a higher price will be allocated their quantities demanded - Q_S .
 - o any unallocated blocks of the spectrum will then be allocated using the tie-breaking method (described below).

This is referred to as the Winning Allocation.

- iii.) If a single Bidder drops demand causing aggregate demand to fall below supply, the Product will be allocated at the price in the previous round the auction without a refinement round. All Bidders who did not drop demand will be allocated the quantity that they demand in the final round, and the single Bidder who dropped demand will be allocated the remaining quantity of the Product.⁵
- iv.) If a Bidder who is required to submit Valid Bids in the refinement round fails to do so, the PTA reserves the right to place bids on behalf of the Bidder at the final clock price minus US\$1. If a Bidder experiences technical issues during the refinement round and requires more time to submit its Valid Bids, it should communicate this to the PTA and the refinement round will be extended, as will be described further in the Bidder Information Package.

Note: Each Bidder is allowed only a single extension. Thereafter any Bidder who is facing such a challenge shall use the Emergency Bidding Procedure.

- v.) Further examples of the Clock Auction and the refinement stage are set out in Annex H.

k) Breaking ties

In order to break ties, random numbers will be assigned automatically in the Auction Management System to all considered bids and ties will be broken using the highest random number.

l) Final Allocations

- a) Provisional Winners will be announced for the 1800 MHz spectrum based on the results of the final round and the refinement round (if applicable), in line with the process set out in Section 1.7 of this IM. Each Provisional Winner will be required to pay its Initial Spectrum Fees (calculated and defined as set out above), based on the Auction Winning price (as defined above) multiplied by the number of Spectrum Blocks of Product 1 and Product 2 provisionally allocated to this Provisional Winner in the Winning Allocation; and
- b) Once the PTA has received payment of the ISF from a Provisional Winner and confirmed it has been made correctly in accordance with Section 2.5, that Provisional Winner shall be declared a Winner of spectrum in the Spectrum Auction.

4.2 Electronic Auction Stage for 2100 MHz spectrum: SMRA

4.2.1 During this stage, the Blocks 9, 10 and 11 will be allocated using a SMRA. At a high level, the bidding rounds in an SMRA Auction are as follows:

- a) Bidding takes place in series of rounds;

⁵ In cases where the total quantity demanded by Bidders who did not reduce their demand is equal to aggregate supply, the remaining quantity of the Product will be equal to 0 and the Bidder that dropped its demand will not be allocated any of the Product.

- b) Bidders start the Auction with a number of points, known as Eligibility Points. The number of Eligibility Points will be determined based on the Sealed-Bid Form, including the Eligibility Adjustment, if applicable;
- c) In each round, Bidders place bids at the announced prices for the specific Spectrum Blocks they wish to acquire based on their Eligibility Points;
- d) A bid is an offer to purchase a given Spectrum Block at the announced price. If a Bidder wants to buy two or three Spectrum Blocks, it will have to place two or three bids respectively;
- e) Bidders can only bid up to their eligibility, less the Eligibility Points associated with their Standing High Bids. Bidders can also increase the bid on the Spectrum Block on which they are the Standing High Bidder (SHB), if they wish to do so. If there is only one new bid on a Spectrum Block, the Bidder placing that bid will be the SHB for that Spectrum Block going into the next round. If there is more than one bid for a particular Spectrum Block, the SHB will be determined randomly. The SHB will remain as such until another higher bid is placed on that same Spectrum Block in a subsequent round;
- f) The price for Spectrum Blocks with new Standing High Bids will increase from round to round;
- g) PTA will determine the price increments from round to round;
- h) Information on total eligibility in the Auction (i.e. the sum of all Bidders' Eligibility Points) will be made available at the end of each round. The SHB will also be notified that they are SHB on a given Spectrum Block. However, the identity of the SHB will not be disclosed to other Bidders;
- i) The Auction will have an activity rule, to penalise Bidders who are inactive by reducing their Eligibility Points; and
- j) The rounds continue until there is a round in which there is no activity (no new bids or waivers are submitted). The SHBs on each Spectrum Block at the close of bidding will be deemed the Provisional Winners of those Spectrum Blocks.

4.2.2 More detailed rules are set out below.

a) Information provided to Bidders before the Auction

- i.) Prior to the SMRA Auction, Bidders will receive the following information:
 - (1) The schedule for the first day of bidding;
 - (2) Information on the identities of all Bidders;
 - (3) Each Bidder will receive information on their individual eligibilities (including the Eligibility Adjustment if applicable);and

(4) The Base Price for each Spectrum Block available as set out in Section 2.6.

b) Bidder's Eligibility

- i.) The number of Spectrum Blocks stated in the Sealed-Bid Form (including the Eligibility Adjustment, taking into account the provisional results of the Auction of 1800 MHz spectrum) and supported by a Pre-bid Deposit will constitute that Bidder's Initial Eligibility for the 2100 MHz spectrum Auction.

EXAMPLE

If, in the Sealed-Bid Form, a Qualified Applicant (now Bidder) expressed demand for Block 9 and also opted for the Eligibility Adjustment, expressing demand for block 10 in the 2100 MHz, its Initial Eligibility in the 2100 MHz SMRA will be as follows:

- if the Bidder was not successful in winning Product 2, its Initial Eligibility in the 2100MHz SMRA Auction will be 50 points and it will be able to bid on blocks 9 and 10 in Round 1 of the SMRA;
- if, on the other hand, the Bidder was successful in winning Product 2, its Initial Eligibility in the 2100 MHz award will be 25 points and it will only be able to bid on block 9 in Round 1 of the SMRA.

c) A Bidding Round

- i.) Bidding rounds will have a fixed start time and end time. Bidders will have until the end time of a round to submit a bid. Bidders can modify their bids during the Bidding Period. However, the last bid recorded by the Auction Management System will be deemed the Valid Bid⁶;
- ii.) If a Bidders faces communication difficulties during the Auction, PTA will accept emergency bidding over the phone with fax bids, signed and stamped verification and confirmation. Details of the Emergency Bidding Procedure will be provided to Bidders; and
- iii.) A Bidding Period will be followed by a Reporting Period. During the Reporting Period, participating Bidders will receive information on the previous round.

d) Bids and Standing High Bids

- i.) A bid is an offer to purchase a specific Spectrum Block at the announced price. If a Bidder wants to acquire multiple Spectrum Blocks, the Bidder will need to submit multiple bids. In every round, Bidders will select the Spectrum Blocks they wish to purchase at the announced price and for which they have sufficient Eligibility Points to bid on;

⁶ While bidders can submit their bids at any point during the bidding round, it is recommended that the bidders should try to make their bidding decisions as early in the round as possible to make sure their bids are registered before the close of the round as well as have time to resolve any issues in the bid submission process (if any issues arise).

- ii.) If a Spectrum Block receives a bid at the announced price for that round, the Bidder submitting the bid will become the SHB of that Spectrum Block. In case there are several bids on the same Spectrum Block, one of the Bidders placing a new bid will be determined to be the SHB by the Auction Management System (using random numbers to determine the SHB);
- iii.) At the end of the Bidding Period, the SHB will be informed that it is SHB in its individual Bidder's report. Non-SHBs will only know there is an SHB on that Spectrum Block but will not know the identity of the SHB; and
- iv.) If a Bidder is a holder of Standing High Bid, that Bidder will only be allowed to make bids equivalent to its Eligibility Points, minus those that are committed in a standing high bid.

EXAMPLE

If a Bidder has 50 Eligibility Points and is currently SHB on Block 9, it will need to bid on Block 10 or 11 to maintain its 50 point eligibility. If the Bidder does not bid on Block 10 or 11, its eligibility will be reduced to 25 points. Note that the Bidder is not required to bid on block 9 if it is currently the SHB on block 9.

e) Bids and Bid Increments

- i.) If a Spectrum Block receives a bid in a round, the Bidder or one of the Bidders making that bid will become the SHB and the price for that Spectrum Block will increase by a fixed increment in the next round. The price increment percentages will be determined for each round by PTA. PTA will inform Bidders via the Auction Management System, prior to the next round, of the bid increment that will be applied to Spectrum Blocks that receive new bids on a round;
- ii.) By placing a new bid, the Bidder indicates that it is willing to purchase a given Spectrum Block at the current price for that round, i.e. the price announced by PTA for each Spectrum Block via the Auction Management System at the start of the bidding round; and
- iii.) A bid is a binding offer that cannot be rescinded.

f) Round 1 Minimum Bids

- i.) In round 1, a Bidder will be required to bid on the same blocks as stated in the Sealed-Bid Form, including the Eligibility Adjustment; and
- ii.) The Auction Management System will not allow a Bidder to submit a bid in round 1 of the SMRA Auction which is below its demand expressed in the Sealed Bid Form, including, if relevant, the Eligibility Adjustment. If a Bidder fails to submit a Valid Bid in round 1 of the Auction, PTA reserves the right to submit the bid on the Bidder's behalf.

g) Activity Requirements

- i.) After the first round and subsequent rounds, Bidders should maintain activity or their eligibility will be reduced. A Bidder's eligibility can never increase; it can remain the same or decrease as the Auction progresses.
- ii.) Bidders will be required to maintain 100% activity in each round or lose eligibility. A Bidder's eligibility in one round will be equal to its activity in the previous round. As a Bidder can never bid on more points than for which it has eligibility, the Bidder's eligibility for one round is therefore the minimum of its Initial Eligibility and activity from the previous round.
- iii.) If a Bidder is not a SHB on any Spectrum Block, this Bidder must bid on the number of Spectrum Blocks equal to their current Eligibility Points or their eligibility will be reduced for the next round. Eligibility Points lost cannot be recovered.

EXAMPLE

If a Bidder is eligible to bid for 3 Spectrum Blocks of 2x5 MHz (75 Eligibility Points) and bids on 2 Spectrum Blocks of 2x5 MHz in a round (50 Eligibility Points) without also being the SHB on the third block, that Bidder will only be able to bid for no more than 2 Spectrum Blocks of 2x5 MHz in any subsequent round of the SMRA Auction.

h) Activity

- i.) A Bidder is considered to be active on a Spectrum Block in a round if either it has a Standing High Bid from the previous round or places a new bid in the current round. Bidders are allowed to bid on any Spectrum Block by using their free Eligibility Points or they will reduce points from round to round. Free Eligibility Points are those that are not tied to a Spectrum Block where a Bidder is the SHB. The points associated with the Standing High Bid are already committed and cannot be bid on other Spectrum Blocks.

EXAMPLE

If a Bidder has eligibility of 75 points and there are 3 Lots of 2x5 MHz, that Bidder may:

- Have a Standing High Bid on two Lots of 2x5 MHz and therefore must bid 25 points on another 2x5 MHz Lot or its eligibility for the next round will be reduced by 25 points
- Have a Standing High Bid on one Lot of 2x5 MHz and therefore can bid 50 points on 2 Lots of 2x5 MHz, or bid for fewer Lots with reduced eligibility for the next round.
- Have no Standing High Bids and therefore can bid 75 points on 3 Lots of 2x5 MHz, or bid on fewer Lots with reduced eligibility for the next round.

i) Information provided to Bidders at the start of each round

- i.) At the start of each Bidding Period, Bidders will receive the following information:
 - (1) Previous round prices for each block;
 - (2) Current price for each block;
 - (3) Total Eligibility Points in the Auction, which is the sum of all Bidders' Eligibility Points at the end of each round; and
 - (4) Total number of waivers the Bidder has and how many are left across all Bidders (see Section 4.1j)).
- a) Each Bidder will also be notified whether they are the SHB on any given Spectrum Block. However, the SHB's identity will not be disclosed to other Bidders.

j) Waiver

- i.) If a Bidder is considering reducing demand (reducing eligibility) and needs more time to make this decision, it can proactively submit a waiver (below referred to as "proactive waiver") using the Auction Management System. Therefore, a proactive waiver is an action taken by the Bidder to express their decision not to place any bids in a round, but without losing their Eligibility Points. Waivers can thus act as a "time-out," allowing a Bidder to not bid in a round;
- ii.) Bidders will be granted one waiver in this Auction;
- iii.) A waiver cannot be submitted in the first round of the Auction. If a Bidder does not enter a bid in a subsequent round, then a waiver will be submitted automatically; and
- iv.) If a Bidder's activity in a round is positive but below the Bidder's eligibility and the Bidder has waiver remaining in the Auction, the Bidder's eligibility will be reduced and an automatic waiver will not be used to maintain the Bidder's eligibility.

k) Close of the SMRA Auction

- i.) The SMRA Auction shall close when a round concludes with:
 - (1) no Valid Bids being submitted; and
 - (2) no proactive waivers having been submitted or unused waivers are left.
- ii.) The SHB on each Spectrum Block upon the close of the SMRA Auction will be declared the Provisional Winner of that Spectrum Block.

I) Final Allocations

The Provisional Winners will be provisionally assigned the 2100 MHz Spectrum Blocks for which they had a SHB at the end of the SMRA Auction. Each Provisional Winner will be required to pay an Initial Spectrum Fee determined from the Auction Winning Price, i.e., the highest submitted bid that the Bidder offered during the SMRA for those Spectrum Blocks.

4.3 Auction Payments

- 4.3.1 Following written notification from the PTA, Provisional Winners shall, within 15 calendar days of the PTA issuing this notification, deposit the ISF as per clause 2.5 above in the PTA designated bank account, after adjustment for the Pre-Bid Deposit, failing which the Pre-bid deposit of the Provisional Winner shall stand forfeited. After making the payment, the Provisional Winner shall submit evidence of the payment deposit to PTA's Director General (Licensing) or his designate.
- 4.3.2 If the Provisional Winner fails to make the payment within the stipulated time as referred to above, the next highest Bidder(s), in order of the bid(s), will be offered the Spectrum on the same Auction Winning Price and same terms and conditions. If none of the Bidders offers to match the Auction Winning Price, the License/ spectrum will not be awarded or assigned and the GoP will be informed accordingly for further directions.
- 4.3.3 The License/spectrum shall only be awarded or assigned after payment of 100% or 50% of the Initial Spectrum Fee, whichever is applicable, within the stipulated timelines in clause 2.5 above and, where relevant, upon the Winner conforming with the Rationalisation Plan for the 1800 MHz band.

5. Legal Terms and Conditions

5.1 Important Notice

- 5.1.1 This IM is for information purposes only. It does not form part of any contract, whether explicit or implied. Terms and conditions in a License will prevail if there is a discrepancy between the License and this IM. Prospective and Qualified Applicants are advised to seek their own expert advice on whether or not to participate in the Spectrum Auction and on any other matters concerning financial, legal, technical or other implications of the Spectrum Auction and associated policies and the Auction Management Software.
- 5.1.2 PTA does not warrant the accuracy of the information herein, and PTA reserves the right to update, amend or modify or add or omit any information in this IM. Any such change, alteration, modification, amendment, addition, omission, supplemental or replacement or any deletion will be communicated to the prospective Applicants via PTA website or any other mode of communication and shall become an integral part of the IM and the Auction process.
- 5.1.3 PTA reserves the right, in its sole discretion, to take any action, including amendment of this IM, which it considers necessary to ensure that the Auction is carried out in a fair, open and transparent manner, in accordance with law and in a manner that discourages and strongly penalises any attempted collusion or predatory bidding that may inhibit an efficient outcome.
- 5.1.4 PTA reserves the right to add, modify, amend, supplement, cancel, annul or replace any or all of the Auction process at any stage without incurring any liability to the affected Bidders or any obligations thereunder. PTA further reserves the right to modify or terminate the Auction process at any time in its sole discretion and, in such an event, a Pre-Bid Deposit defined in Section 5.3 below would be returned to the Applicant within thirty (30) days without bearing any liability, unless the amount is otherwise required to be forfeited.
- 5.1.5 This IM and any License or spectrum issued pursuant to the Auction process described in the IM shall be exclusively subject to, and interpreted in accordance with, the provisions of the Act, and the Rules and Regulations and Policies of GOP issued thereunder.
- 5.1.6 Any dispute, controversy or claim arising out of, or in connection with, this IM, or the breach, termination or invalidity thereof, shall be settled by PTA and its decision shall be final and binding. The process for the Spectrum Auction, the accompanying documents, and all correspondence relating to the Auction process announced in this IM shall be submitted in the English language.
- 5.1.7 No suit, prosecution or any other legal proceedings shall lie against PTA or any member or employee or consultant or contractor of PTA/FAB or any other Government functionary in respect of anything done or intended to be done in good faith in connection with this IM.

5.2 Conditions of Participation in the Spectrum Auction Process

- 5.2.1 **Company Registration:** Each Applicant must be a company registered with SECP in Pakistan.

- 5.2.2 Ownership Disclosure Requirements: All Applicants must disclose their complete ownership information with details of shareholding on the Application Form.
- 5.2.3 Changes in Composition of Applicants: No change in the composition of an Applicant is allowed following submission of the Application Form and at least up to the date that the License is awarded.
- 5.2.4 Collusion: All Applicants (whereby this term also, for the avoidance of doubt, includes Qualified Applicants and Bidders) are warned not to indulge in collusion. In case there is any evidence of collusion, PTA reserves the right to disqualify that Applicant from the Spectrum Auction process. If PTA confirms evidence of collusive bidding before or during the Spectrum Auction, PTA has the right to cancel the Spectrum Auction and for all colluding Applicants, to forfeit their Pre-Bid Deposits, and claim damages from them.
- 5.2.5 Confidential Information: Confidential Information means any information which, if known to other Applicants, would be likely to affect the price that other Applicants would be prepared to bid in the Auction. Such information would include, but not necessarily be limited to, the Applicant's business case, Auction strategy and the highest price it is willing to bid for the Spectrum. Any party to whom Confidential Information in relation to an Applicant is disclosed is deemed to be an "Insider" in relation to that Applicant. Applicants and Insiders must not convey Confidential Information to any other Applicant or Insider. In case of such evidence, PTA reserves the right to exclude these Applicants from the Auction and to retain their Pre-Bid Deposits.
- 5.2.6 Disqualification: Without prejudice to any other remedy that may be available to it, PTA reserves the right to disqualify any Applicant and forfeit its Pre-Bid Deposit for any of the reasons set out below:
- a) If a Provisional Winner abandons the bid or fails to pay Initial Spectrum Fee as per Section 2.5;
 - b) Inaccuracy or misrepresentation of any facts in any part of the Application Form;
 - c) Illegal conduct, disruption during the Auction, or indulgence in improper attempts to influence the outcome, or delay the process, or collusion;
 - d) Any "corrupt practice", meaning undue influence, personating, aiding, abetting, counselling or the offering, giving, receiving or soliciting of anything of value to influence a public official in relation to Auction process;
 - e) Any fraudulent practice or misrepresentation of facts in order to influence the results of the Auction process established by the IM; and
 - f) In the event of an Applicant being disqualified from the process, PTA reserves the right to impose a penalty on the Applicant which will result in forfeiture of its full Pre-Bid Deposit and damages.

5.3 Payment Terms

Pre-Bid Deposit

- 5.3.1 Each Applicant shall submit a Pre-Bid Deposit, defined as 20% of the Base Price for the quantity of spectrum for which that Applicant expresses an irrevocable interest in the Sealed-Bid Form, in US Dollars or its equivalent in Pak Rupees converted at the National Bank of Pakistan (NBP) Telegraphic Transfer (TT) selling rate prevailing on the day preceding the date of payment along with the application.
- 5.3.2 If the payment of Pre-Bid Deposit to PTA is being remitted from abroad in foreign currency, it should be remitted through SWIFT Telegraphic Transfer in State Bank of Pakistan Account Number 021085172-PAKIS, SBP SWIFT Code SBPPPKKA, (Bank Name: Federal Reserve Bank of New York, New York, USA, SWIFT Code: FRNYUS33) under intimation to DG Licensing, PTA and reference "Deposit of Telecom License Fee in the Central (Non-Food) Account No 1 - Spectrum Auction for NGMS in Pakistan 2021".
- 5.3.3 If the payment of Pre-Bid Deposit is being made from sources in Pakistan, it should be made only through wire transfer or through RTGS in PTA's Collection Account No. 3000942222 (IBAN PK39NBPA2221003000942222) maintained with Corporate Branch, National Bank of Pakistan, Islamabad, under intimation to DG Licensing, PTA and reference "Spectrum Auction for NGMS in Pakistan 2021".
- 5.3.4 PTA, after verification of applications and Pre-Bid Deposits, will inform each Applicant whether it is a Qualified Applicant as per the schedule provided in Table 1 of this IM.
- 5.3.5 The Pre-Bid Deposit of a Provisional Winner will be adjusted against the Auction Winning Price (Initial Spectrum Fee) without bearing any liability towards exchange rate, interest, indexation, inflation or deflation, while the Pre-Bid Deposit of the unsuccessful Applicants will be returned to the Applicant in local currency, on request, after the conclusion of Spectrum Auction process without PTA bearing any liability towards exchange rate, interest, indexation, inflation or deflation.
- 5.3.6 Any delays in transfer of funds should be taken up by the Applicants and enough time should be allowed to ensure that all amounts are received in PTA's bank account by the given deadline.
- 5.3.7 The applicant shall ensure that full amount of irrevocable Pre-Bid Deposit has been credited/transferred in above referred bank accounts by the due date as mentioned in Section 1.7 of this IM.

Final Payments

- 5.3.8 The Initial Spectrum Fee (ISF) shall be the Auction Winning Price for the spectrum blocks provisionally assigned to the Provisional Winner. It shall be determined in US Dollars. ISF shall be paid in US Dollars or its equivalent in Pak Rupees converted at the National Bank of Pakistan (NBP) Telegraphic Transfer (TT) selling rate prevailing on the day preceding the date of payment. ISF shall be payable within 15 calendar days of the PTA written intimation to Provisional Winners of the same as per the payment options stipulated in paragraph 4.1.1 of the License (Annex F).
- 5.3.9 The Provisional Winners of the Auction may opt for 100% payment of the ISF as a one-time upfront amount to be paid as per timelines mentioned in Section 2.5 or 50% payment of the ISF of the to be paid as per timelines mentioned in Section 2.5 and the

remaining 50% of the ISF shall be payable in five equal annual instalments with cumulative mark-up calculated at the rate of one year LIBOR rate + 3% for the period from the Effective Date of the License to the payment date. The Licensee may pay the remaining balance of the ISF at any time before the end of the five years, without any pre-payment penalties. However, the mark-up at LIBOR + 3% shall be payable on the balance amount for the period from the Effective Date of the License or payment date of last instalment, whichever is later, to the payment date of remaining amount.

5.3.10 In case of delay in any payment to PTA, the Licensee shall pay Late Payment Additional Fee at the rate 2% per month or part thereof from the due date until the date of payment.

5.3.11 If any payment of the Initial License Fee, including any instalment, becomes overdue, PTA may serve upon the Licensee a show cause notice stating the default and seeking explanation, allowing it not less than seven days, as to why its License shall not be suspended or revoked. On considering the Licensee's explanation, PTA may suspend or revoke the License as deemed appropriate.

5.4 Performance Bond

5.4.1 As a guarantee for the performance of a Licensee's network rollout obligations as mentioned above in Section 2.3, any Provisional Winner who does not already, through an existing licence to use 1800 MHz and 2100 MHz spectrum, have a valid Performance Bond of equivalent value lodged with the PTA, shall deliver to PTA unconditional, irrevocable and continuing Performance Bonds in the shape of Bank Guarantees from a local bank in Pakistan with credit rating of AA+ and above, or a foreign bank having credit rating of A1 and above, acceptable to PTA for the amount of US\$15,000,000 (US Dollars Fifteen Million only) or its equivalent in Pakistan Rupees of the value prior to Effective Date.

5.4.2 A draft template for performance bank guarantee is attached as Annex-G.

5.4.3 In case any phased roll-out obligation is not fulfilled, the Performance Bond proportionate to the roll-out obligation not met shall be encashed by PTA, in line with the Performance Bond Release Schedule set out in Appendix-1 A2 of the License. The Performance Bond shall remain in force until six months after the associated phase of the network rollout is completed.

6. Application Instructions

- 6.1 An Applicant must complete the Application Form in Annex B and must submit all the required information and supporting company documentation, the completed Sealed-Bid Form and a Pre-Bid Deposit. As part of this process, an Applicant must declare it is willing to buy offered spectrum at the Base Price. This declaration will be irrevocably binding on the Applicant. After submission, the application will not be allowed to be modified. However, PTA reserves the right to request additional information and/or clarification from an Applicant.
- 6.2 The Applicant shall bear all its costs associated with the preparation and submission of its Application and PTA shall in no case be responsible for these or any other costs, regardless of the conduct or outcome of the application process.
- 6.3 PTA reserves the right to accept or reject all or any Application without assigning any reason and incurring any liability whatsoever. However, in case it rejects an Application, the Pre-Bid Deposit will be returned, unless the amount is otherwise required to be forfeited.
- 6.4 Applicants may raise questions and queries in writing through email to PTA concerning this IM, by the date mentioned in Section 1.7. PTA may not respond to questions and queries received after the end date for submission of queries as given in Section 1.7. Furthermore, PTA reserves the right not to reply to questions. However, to the extent that it does, it will publish reply to the question at the PTA website without disclosing the name of the Applicant.
- 6.5 PTA will notify the Applicants by courier or letter or fax or e-mail as per the timeline mentioned in Section 1.7 whether that the Applicant is entitled to participate in the Auction. Any of the above will be considered sufficient for the purpose of notice.
- 6.6 **Contact Details for Questions**
- 6.6.1 All deliveries, notices or other communications made to Applicants in connection with the application process shall be sent by designated fax or email or letter (courier) to the contact office of the Applicant(s), as specified by the Applicant to PTA in its Application Form.
- 6.6.2 All correspondence relating to this IM, information session (if required), submission of Application documents, Auction procedure and issuance of License should be duly marked "Spectrum Auction for Next Generation Mobile Services (NGMS) in Pakistan 2021" and addressed to:
- Director (Wireless)
Pakistan Telecommunication Authority
H/Qs F-5/1, Islamabad 44,000
Pakistan
- Phone: (+92 51) 2878111
Fax: (+92 51) 2878129
E-mail: [pak-lic@pta.gov.pk]
- 6.6.3 PTA will review and consider comments and correspondence on this IM submitted by the date given in Section 1.7 of the IM.

6.6.4 PTA may also conduct an information session for prospective Applicants to explain the Auction process, rules, and respond to all questions and concerns. This information session will take place after the final IM is published and its only purpose will be to clarify any questions that prospective Applicants may have about the Auction.

7. Definition of Terms

7.1 Terms used in this document shall have the meanings defined in Table 9.

Table 9: Definition of terms

Term	Definition
3GPP	3rd Generation Partnership Project – responsible for development of GSM, EDGE, UMTS and LTE standards
Act	The Pakistan Telecommunication (Reorganization) Act, 1996
Applicant	A company that submits an Application for the Spectrum Auction. For the avoidance of doubt, a Qualified Applicant and a Bidder is also an Applicant.
Application Form	Form to be completed by all Applicants in order to participate in the Spectrum Auction. A template of this form is set out in Annex B of this IM.
Auction	Auction is a process that includes all the steps from submission of application till the announcement of (provisional) winner(s). Even if a single Bidder participates in the Auction process, it will also be treated as an Auction.
Auction Management Software	The software system that will, if required, be used to conduct the Electronic Auction Stage and which is described in Section 4 of this IM.
Auction Spectrum	Spectrum on which an Applicant places a bid in this Auction.
Auction Winning Price	The price as determined at the conclusion of the Auction Spectrum. The price for a given Product at which the Auction clears, whereby demand is equal to supply in the Electronic Auction Stage, or where, in the Sealed-Bid Stage, demand is equal to or less than supply, in which case the Auction Winning Price is the Base Price for that Product, and which shall be used to determine the Initial Spectrum Fee.
Authorised Representative	An Applicant's Authorised Contact Representative, as set out in its Application Form.
Base Price	The minimum price for each Spectrum Block available in the Spectrum Auction, as shown in Table 8 of Section 2.6 of the IM
Bidder	A Qualified Applicant who participates in the Auction
Information Package	The information package that will be provided to Qualified Applicants eligible to participate in the Electronic Auction Stage, setting out the details of that Stage, including the User Manual for the Auction Management System and details of the Emergency Bidding Procedure.
Bidding Period	Time period during which Bidders can submit a Valid Bid within each bidding round in the Electronic Auction Stage.
Clock Auction	Auction format used to assign the generic Spectrum Blocks in the 1800 MHz band within the Electronic Auction Stage.
CMO	Cellular Mobile Operator; an operator that has an existing License to provide mobile communications services in Pakistan
Category	This refers to any product (Product 1, Product 2) within 1800 MHz and any blocks (block 9, block 10 or block 11) within 2100 MHz
Day	Calendar day, unless specified otherwise. If a specific deadline falls onto a weekend or a national public holiday in

Term	Definition
	Pakistan, that specific deadline is automatically extended to the next working day thereafter.
Electronic Auction Stage	Second stage of the Spectrum Auction process, if required, as described in Section 4
Eligibility Adjustment	Adjustment that allows Bidders to carry over their Eligibility Points from Product 2 in the 1800MHz band to 2100MHz spectrum, if they are not declared a Provisional Winner of Product 2.
Eligibility Points	Points associated with each Spectrum Block, as described in Section 3.4 of this IM.
Emergency Bidding Procedure	The process a Bidder may follow if it is unable to submit a bid in any Bidding Period via the Auction Management System, details of which will be included in the Information Package.
GoP	Government of Pakistan
IM	This Information Memorandum, setting out the rules, process, planned timelines and other background information for prospective Applicants to participate in the Spectrum Auction of the Next Generation Mobile Services (NGMS) in Pakistan 2021.
IMT	International Mobile Telecommunications. A term used by the ITU to describe the collection of approved standards used for delivery of mobile services
Initial Eligibility	The number of Eligibility Points a Bidder has at the start of the Clock Auction or SMRA Auction, as appropriate.
Initial Spectrum Fee (ISF)	The payment due for the License as detailed in Section 2.5 and Paragraph 4.1.1 of the License
ITU	International Telecommunications Union
License	The License awarded to a CMO or new Entrant in the Spectrum Auction
Market Entrant/New Entrant/Potential Market Entrant	An entity not currently holding Spectrum in the 900 MHz, 2100MHz or 1800 MHz bands in Pakistan
Pakistan Table of Frequency Allocations	A document that defines the Spectrum Allocation for each frequency band in Pakistan and is available at FAB website.
Pre-Bid Deposit	Financial deposit required to be made by Applicants as part of their Application for the Spectrum Auction, based on the template set out in Annex E of this document.
Policy Directive	The Policy Directive dated 4 th August 2021 issued under section 8 of the Act by the Federal Government
Provisional Winner	A Qualified Applicant who, following the completion of Stage 1 and / or Stage 2 of the Auction, as applicable, is provisionally declared a winning Bidder.
PTA	Pakistan Telecommunication Authority
Qualified Applicant	An Applicant who has been deemed qualified by PTA after assessment of its application for further processing
Rationalisation Process	PTA / FAB led process for the rationalisation of existing and auctioned spectrum in the 1800 MHz band to achieve contiguity, where feasible, as further set out in Section 1.5 of this IM.
Rationalisation Plan	Rationalisation of 1800 MHz spectrum shared by PTA/FAB with CMOs after the Provisional Winners have been announced.

Term	Definition
Reporting Period	Time period during which the auction administrator evaluates all bids placed by Bidders to determine the Standing High Bids, etc. for the next bidding round in the Electronic Auction Stage.
Sealed-Bid Form	A form required by Applicants to be submitted as part of their application for the Spectrum Auction, setting out their interest in each Spectrum Block at the Base Price. The Sealed-Bid Form template is set out in Annex E of this document.
SMRA	Simultaneous Multi-Round Ascending Auction format.
Spectrum Auction	The award of 1800 MHz and 2100 MHz spectrum in Pakistan in 2021 as contemplated by this IM
Block/Spectrum Block	A quantity of spectrum which is auctioned as a non-divisible unit
Starting Price	Same as Base Price
Standing High Bid	Highest Valid Bid placed by Bidders on a given Block in the SMRA.
Standing High Bidder (SHB)	The Bidder in the SMRA Auction that has placed the Standing High Bid. In situations where multiple Bidders have placed the Standing High Bid, this will be randomly allocated to an individual Bidder.
System Live Date	The date on which the Auction Management System will be accessible to Bidders
Valid Bid	A bid placed by a Bidder in the Spectrum Auction that conforms with all auction rules.

Annexes

Annex A – Pakistan’s Telecommunication Sector

Annex B – Application Form to participate in the Spectrum Auction

Annex C – Company Resolution

Annex D – Power of Attorney

Annex E – Sealed-Bid Form

Annex F – License Template

Annex G – Performance Bank Guarantee

Annex H – Refinement Stage Example

Annex A – Pakistan’s Telecommunication Sector

1. Economy of Pakistan

- 1.1 Pakistan has the 5th largest population in the world with an estimated population of around 224 million, making it an attractive market for investors around the globe. Its population is rising at a steady pace and is expected to grow at a rate of around 2% per annum by 2025 according to international sources. In addition, Pakistan also has one of the highest urbanisation rates across South Asia, where the urban population is expected to reach nearly 50% by 2025.
- 1.2 Pakistan’s economy has recorded an annual growth rate of around 4%-5% between 2014 and 2018 before dropping to a recession in 2020 due to the effects of COVID-19. However, despite the challenges of the global pandemic, growth rate for 2021 is estimated at 4% showing a strong recovery. Further, international sources suggest that Pakistan’s GDP will recover and grow at an average rate of over 4.5% per annum by 2025. This again shows that Pakistan is an attractive market for investors due to the expected improvement in income and demand in the future.
- 1.3 Pakistan has one of the most liberal foreign investment regimes in South Asia. One hundred percent foreign equity is permitted in the manufacturing and infrastructure sectors. The Protection of Economic Reforms Act, 1992, safeguards local and foreign investments in Pakistan, and there is also no bar on repatriation of capital gains, dividends, and profits. This is highlighted by the strong inflow of foreign direct investment (FDI) within Pakistan where total FDI over the last three years amounted to USD 10.2 billion (12.6% of the total FDI inflow was in the telecom sector).
- 1.4 Pakistan has negotiated Bilateral Investment Treaties with 32 countries globally⁷ (these treaties generally include dispute settlement provisions) and it further has bilateral and/or double taxation treaties or agreements with over 66 countries⁸.

2. Overview of the Telecom Sector

- 2.1 The telecom sector in Pakistan has grown rapidly in the past decade and offers significant opportunities to New Entrants. In recognition of the catalytic effect of telecommunications services on economic growth, the Federal Government has granted high priority to fostering the provisioning of telecommunications services across the country to achieve sustainable growth in all sectors of the economy. The regulatory framework of Pakistan’s telecom sector provides conducive environment for domestic and international investment and provision of advanced telecom services.

⁷ These countries include Australia, Bahrain, Belgium-Luxembourg European Union (BLEU), Bosnia, People’s Republic of China, Denmark, France, Germany, Iran, Italy, Japan, Kazakhstan, Kuwait, Laos, Netherlands, Republic of Korea, Lebanon, Mauritius, Oman, Portugal, Romania, Singapore, Spain, Sri Lanka, Sweden, Switzerland, Syria, Tajikistan, Turkey, United Arab Emirates, United Kingdom and Uzbekistan,

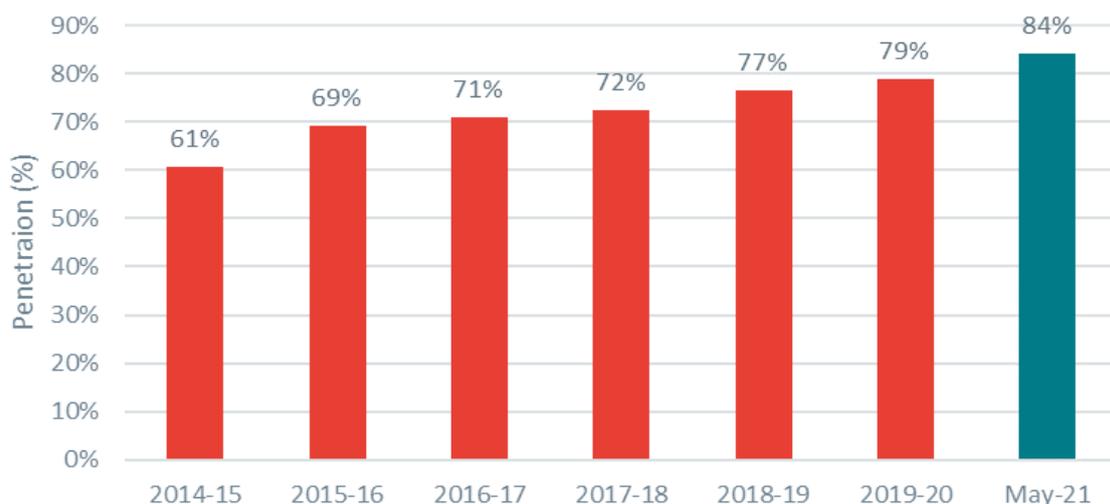
⁸ These countries include Austria, Azerbaijan, Bahrain, Bangladesh, Belgium, Belarus, Bosnia and Herzegovina, Brunei, Bulgaria, Canada, People’s Republic of China, Czech Republic, Denmark, Egypt, Finland, France, Germany, Hong Kong, Hungary, Indonesia, Iran, Ireland, Italy, Japan, Joran, Kazakhstan, Republic of Korea, Kuwait, Kyrgyz Republic, Libya, Lebanon, Malaysia, Malta, Mauritius, Morocco, Nepal, Netherlands, Nigeria, Norway, Oman, Philippines, Poland, Portugal, Qatar, Romania, Saudi Arabia, Serbia, Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syria, Tajikistan, Thailand, Tunisia, Turkey, Turkmenistan, Ukraine, United Ara Emirates, United Kingdom, United States of America, Uzbekistan, Vietnam and Yemen.

- 2.2 In line with global and regional trends, the cellular mobile market has experienced significant growth in recent years and now represents the vast majority of telecommunications service connections and associated revenues within Pakistan. For example, 4G technology licensed coverage has reached 69% while total cellular mobile revenues accounted for 79% of total telecom revenue in 2019-20. The other segments within the telecom sector include Fixed Local Loop (FLL), Wireless Local Loop (WLL) and Long Distance International (LDI) services.
- 2.3 Please note that the License for this spectrum award only covers the region of Pakistan excluding Azad Jammu and Kashmir (AJ&K) and Gilgit-Baltistan (GB).

3. Mobile Communication Services

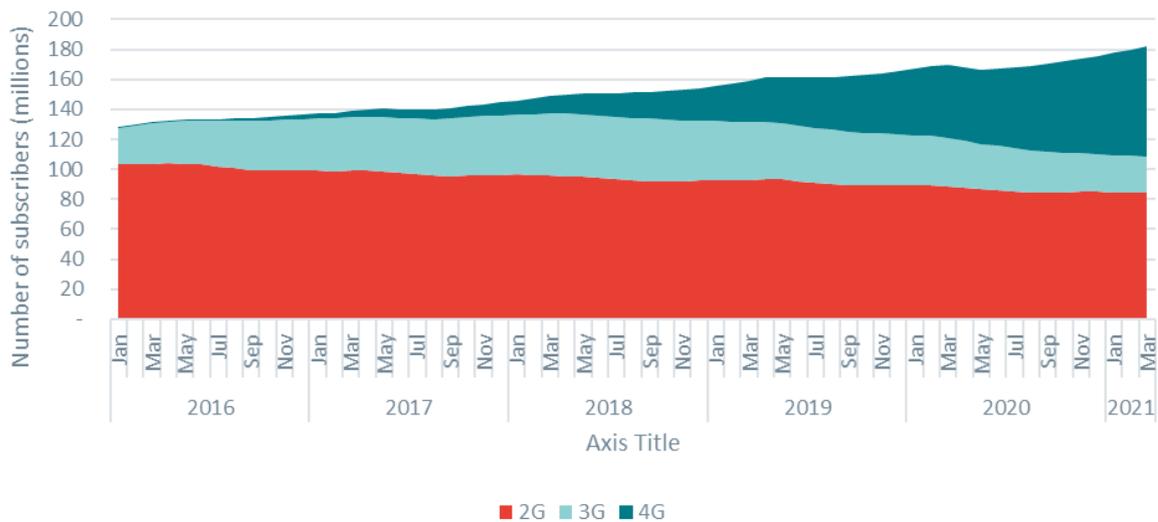
- 3.1 Pakistan carried out its first Next Generation Mobile Services (NGMS) spectrum Auction in 2014 where 3G and 4G Licenses were awarded to the CMOs after a competitive and transparent Auction. Resultantly, mobile broadband services were commercially launched in May 2014 by the CMOs. The immediate success and exponential uptake of mobile broadband services pushed the Government to carry out two further rounds of NGMS spectrum Auctions in 2016 and 2017 where the spectrum was acquired by Telenor in the 850 MHz band and Jazz in the 1800 MHz band respectively.
- 3.2 The cellular telecommunication sector in Pakistan has subsequently shown significant growth in the recent years and this can be observed in the figure below. However, despite the recent growth, Pakistan's mobile penetration (number of mobile subscribers per 100 inhabitants) and internet usage is still low in comparison to many countries. Due to the fact that there is a substantial population that is devoid of telecommunication services, there exists potential for growth of cellular services in the country.

Figure 1: Cellular tele-density or penetration, 2014-2021



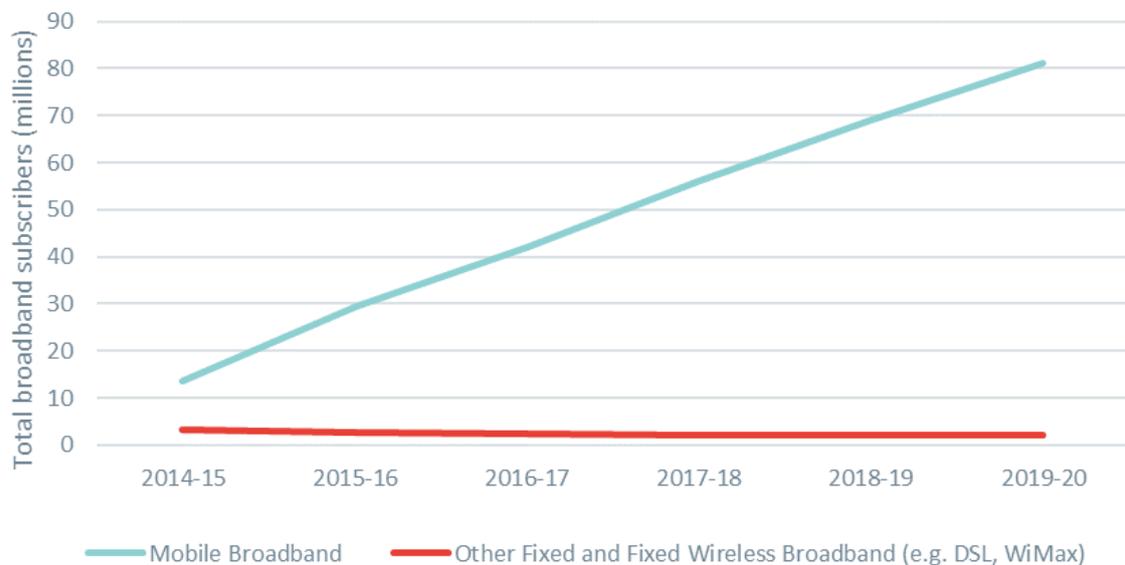
- 3.3 The take-up of NGMS services has also grown in recent years where 3G and 4G mobile connections have more than doubled over the last four years, exceeding 100 million in June 2021 (compared to 40 million in early 2017). This shows that, on average, more than one million additional 3G/4G mobile connections have materialised each month during that period.

Figure 2 : Take-up of 2G, 3G and 4G mobile connections, 2016-2021

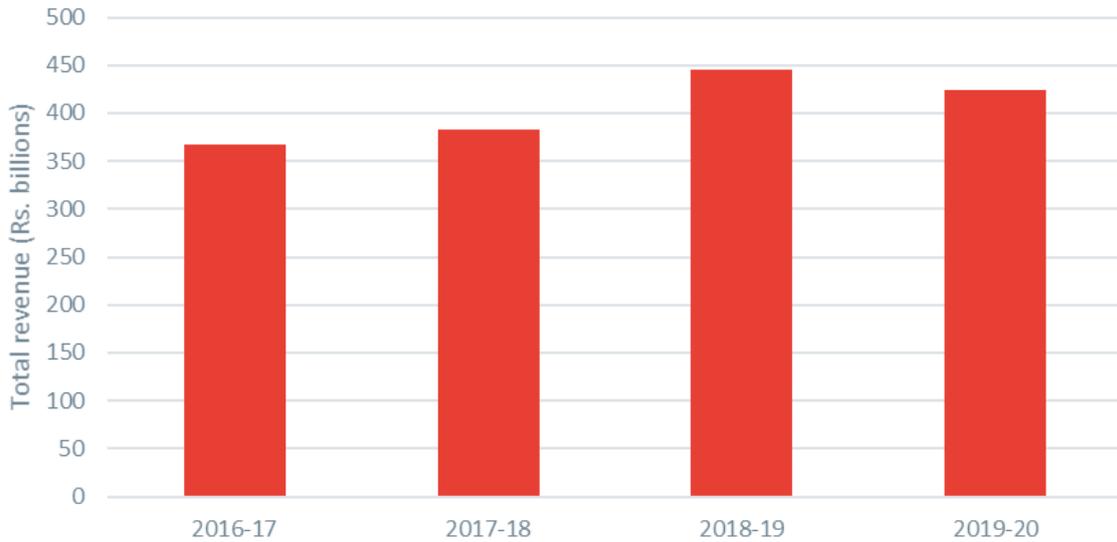


3.4 3G and 4G mobile broadband services account for the vast majority of total broadband connections within Pakistan. This can be observed in the figure below where mobile broadband services accounted for 98% of total broadband connection within Pakistan in 2019-20. However, despite this significant growth in take-up over recent years, total mobile broadband penetration levels is still relatively low compared to total mobile penetration rates (i.e., around 46% of total population and 84% of population respectively in March 2021) and this therefore represents an important opportunity for investors in the market going forward.

Figure 3: Broadband take-up by technology, 2014-20

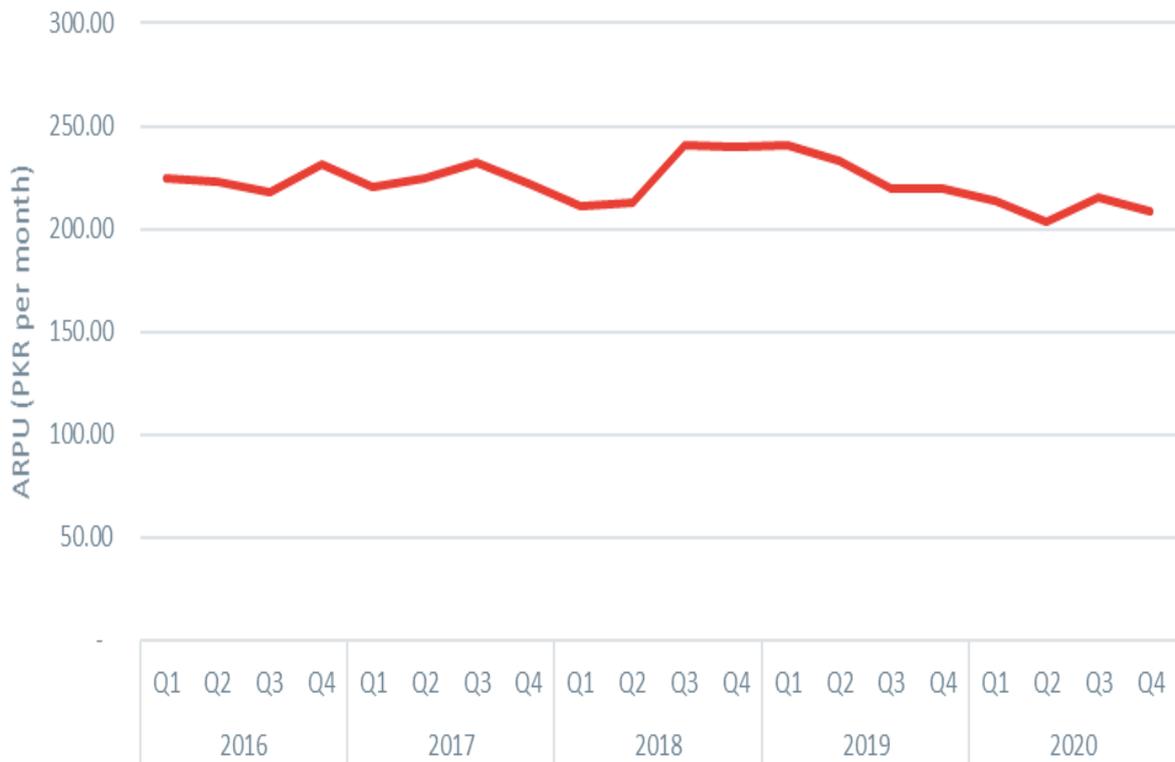


3.5 The increase in total mobile connections in Pakistan has largely corresponded with an increase in total market revenues where total revenue exceeded Rs. 424 billion by 2019-20.



3.6 ARPU is the average revenue being generated by cellular mobile operators from a user on their network in a given month. The average ARPU per SIM of the cellular segment has remained relatively stable with an average of Rs. 223 between Q1 2016 and Q4 2020 per month. This stable ARPU combined with higher penetration means that total market revenue has increased from Rs. 368 billion in 2016-17 to Rs. 424 billion in 2019-20.

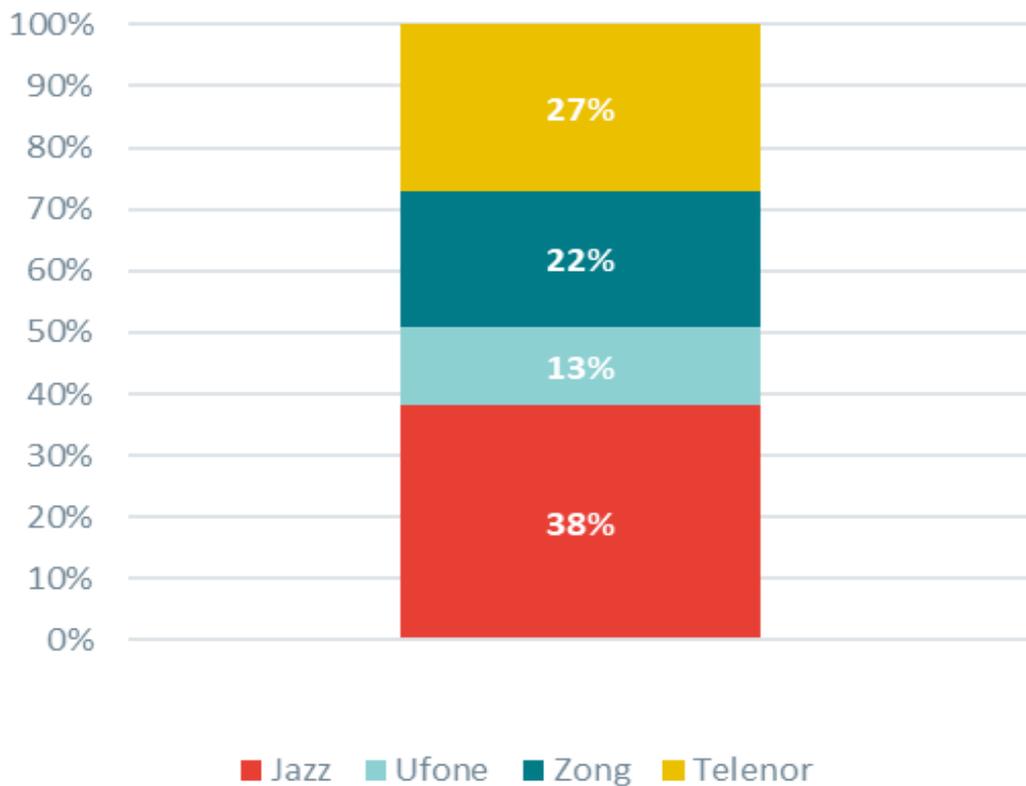
Figure 5 : Average cellular ARPU over time, 2016-2020



3.7 Cellular Mobile Services Provider Profiles

There are currently four CMOs in Pakistan (excluding operators in AJK & GB) and the figure below shows that Jazz is the market leader followed by Telenor, Zong and Ufone. The following paragraphs provide a brief description of each of the four existing CMOs.

Figure 6 : Market share of subscribers in May 2021



3.7.1 Pakistan Mobile Communication Limited -PMCL (JAZZ)

Jazz was formed through a merger between Warid and Mobilink in 2016. Jazz launched 3G services in 2014 (under its pre-merger entities) and also launched 4G services in the same year (under the Warid brand). It is currently 100% owned by Netherlands registered VEON. Jazz has the highest number of mobile connections in the market as of May 2021, i.e. 69.5 million.

3.7.2 Telenor

Telenor Pakistan entered the Pakistani mobile market in 2004 after winning spectrum in the 1800 MHz band. It launched 3G services after acquiring spectrum in the 2014 Auction and 4G services after the 2016 Auction. Telenor Pakistan is wholly owned by Telenor Norway. Telenor has the second largest share of connections in the market with 49.0 million mobile connections as of May 2021.

3.7.3 CMPak Limited (ZONG)

Zong was founded as Paktel by Cable & Wireless in 1991 and was acquired by China Mobile in 2007. Paktel (Zong) first launched GSM services in 2004 and then launched commercial 3G and 4G services in 2014, after winning spectrum in both 1800 MHz and 2100 MHz spectrum. It has the third highest connection share in the market with 40.2 million mobile connections by May 2021.

3.7.4 Pakistan Telecommunication Mobile Limited - PTML (UFONE)

Ufone was established in 1998 as a subsidiary of the fixed line incumbent of Pakistan Telecommunication Company Ltd (PTCL) and launched commercial mobile services in 2001. It then launched 3G services in 2014 and began offering 4G services in 2019 across a few cities. Ufone (PTCL) is 26% owned by Etisalat and 62% owned by the Government of Pakistan. Ufone has the fourth highest connection share with 23.2 million mobile connections by May 2021.

3.8 Future Release of Spectrum

- a) MoIT&T, with support from PTA and FAB, has recently published its Spectrum Master Plan, which outlines a future roadmap of spectrum allocation and spectrum related policy reviews that are anticipated to take place between 2020 and 2023;
- b) PTA/FAB will be looking to make the following changes to its spectrum plan in the coming years:
 - i.) **700 MHz:** This is a highly sought after band due to global harmonisation (enabling economies of scale and ease of roaming) and better propagation characteristics. PTA/FAB has earmarked the 700MHz band for mobile services. This band is currently used by government systems and there is a need to reform this band;
 - ii.) **2300 MHz:** This band is currently used for government systems as well as commercial fixed links. PTA/FAB intend to make this band available in the future with a timeframe of 2020-2022 but the priority will be lower than other potential bands due the lack of low cost devices operating in his band;
 - iii.) **2500 MHz:** This band is currently occupied by Southern Network Limited (SunTV) for operating its MMDS system that is used to deliver Pay-TV services. The PTA/FAB is in the process of reforming the 2500MHz band and plans to recover the band but the timing is dependent on the judiciary process. This band has also been identified by ITU for IMT (5G) deployment. GoP in its Policy Directive for Test & Trials of Future Technologies, has also identified it as potential band for IMT deployment in Pakistan;
 - iv.) **3300 – 3400 MHz:** This band has been identified by ITU for IMT (5G). As such, PTA/FAB will stop assigning frequencies in this band and will work with existing users to migrate their systems to alternative bands. PTA/FAB plan to release this band for mobile purposes within the timeframe of 2021-2022; and

- v.) **3400 – 3600 MHz:** This band has been allocated to operators for the deployment of fixed wireless broadband services. At this point, the band is not fully utilised with only three operators offering services. This band has also been identified by ITU for IMT (5G) deployment. GoP in its Policy Directive for Test & Trials of Future Technologies, has also identified it as potential band for IMT deployment in Pakistan. PTA/FAB expect this band to see demand from mobile operators in the future for IMT (5G) and will allow more players to bid for the spectrum when the existing Licenses expire.

Annex B – Application Form

APPLICATION FORM TO PARTICIPATE IN THE SPECTRUM AUCTION OF NEXT GENERATION MOBILE SERVICES (NGMS) IN PAKISTAN 2021

APPLICATION SUBMISSION INSTRUCTIONS:

The Application Form must be in English language and one (1) original signed by the Applicant's authorized representative plus (2) two copies must be submitted to the following address of PTA by 4pm Pakistan Standard Time as per the timeline in Section 1.5:

Director (Wireless)
Pakistan Telecommunication Authority
H/Qs F-5/1, Islamabad 44,000
Pakistan

Phone: (+92 51) 2878111
Fax: (+92 51) 2878129
Email: [pak-lic@pta.gov.pk]

Applications shall be submitted in sealed envelopes and the envelopes shall be clearly marked "ORIGINAL" or "COPY". If there are any discrepancies between the original and the copies of the proposal, the original application will be taken as the correct one. The envelope shall be titled as "Application for Spectrum Auction for Next Generation Mobile Services (NGMS) in Pakistan 2021" and include (i) the submission address and date, (ii) the name of the Applicant.

APPLICATION FORM:

[Letterhead of Applicant]

Director (Wireless)
Pakistan Telecommunication Authority
H/Qs F-5/1, Islamabad 44,000
Pakistan

Phone: (+92 51) 2878111
Fax: (+92 51) 2878129
Email: [pak-lic@pta.gov.pk]

This is our Application Form for the Spectrum Auction of the Next Generation Mobile Services (NGMS) in Pakistan 2021.

We attach the following documents as part of the Application Form in support of our application:

Note: *Please check mark with "yes" if provided or explain why a document is not provided. Please note that, for information marked with (#), where there are no changes to the information provided by a CMO in respect of the previous NGMS Auction process, please indicate "previously provided". For information marked with (#), if there are any changes to that information, please note the changes only. Please provide a cover letter along with each requested document including title and number of pages. Information marked with (*) is only required to be provided by New Entrants into the mobile market in Pakistan.

Description	Provided (yes/no)	If no, please explain
1. Applicant information		
a. The name of the Applicant		
b. The name, title, capacity and signature of at least one person legally authorized to fully represent the Applicant by virtue of the law.		
c. Certificate of Incorporation/registration duly attested / certified by SECP (#)		
d. List of Directors with details of their shareholdings, and relation to other CMOs and Applicants for a License (#)		
e. Shareholders with details of their shareholdings (#)		
f. Ownership. A clear, comprehensive and detailed view of the Applicant's ownership structure (#)		
g. National Identity Card (for Pakistan National)/ Passport (for foreign nationals) and other antecedents like contact details of the Directors and authorized representatives of the company (#)		
2. Proof or a statement on word of honour by the Applicant:		
a. That the Company or its Directors have never been declared insolvent by a court of law or government organization		
b. That the Directors of the company have never been convicted by a court of law for major offences or unethical/ immoral turpitude (other than minor offences)		
c. That neither the Applicant Company nor its group/ consortium members are defaulter(s) of PTA and to other PTA Licensees/transactions		
3. National Income Tax Number (#)		
4. Certificate on original letterhead from the Group /Joint venture/Consortium members that they are the authorized participants for Spectrum Auction for Next Generation Mobile Services (NGMS) in Pakistan 2021 through the Applicant.(Annex B)		
5. Resolution of the Board of Directors of the Applicant authorizing: a. The person who submits and signs the Application; and b. Legally authorized to fully represent the Applicant by virtue of the law		
6. Special Power of Attorney granted to the person who submits and signs the Letter of Application		
7. Company Resolution Format (Annex C)		
8. Authorized Contact Representatives nominated and duly authorized by the Applicant		
9. Brief Description of Telecommunications Qualifications and Experience of the Applicant, its key management personnel and its shareholders (*)		
10. Capital Cost of service/ project for the first year and the sources of finance in the form of equity and long term debt (*)		

Description	Provided (yes/no)	If no, please explain
11. Source of funds in the form of equity and debt for Auction Winning Price.(*)		
12. Brief Description of the project and forecast balance sheets and profit loss accounts/ income statements and cash flow statements for the first 5 years of operation (*)		
13. Brief description of committed financial resources to meet Capex of the project for the 1st year in the form of bank statement of the company's account duly signed and stamped by bank manager, confirmed commitments, letter of intent, MOU signed by the bank and CFO/ Authorized officer of the company for any long term debt (*)		
14. Technical Plan (*)		
15. Bank account details for any reimbursement after the Auction		
16. Annex D – Power of Attorney		
17. Annex E – Pre-bid Deposit Form		
18. Pre-Bid Deposit paid to PTA with: Pay order-demand draft number: _____ Dated: _____ OR SWIFT code number: _____ Dated: _____ OR Direct deposit Receipt Number: _____ Dated: _____ as per Annex-E		
19. Processing Fee 500 USD or equivalent PKR		

AUTHORIZED CONTACT REPRESENTATIVES

We confirm the following persons as our Principal Authorized Contact Representative and Backup Authorized Contact Representative, together the Authorized Contact Representatives, for purposes of receiving all Auction-related documentation and for communications with PTA on matters relating to the Spectrum allocation process.

We will ensure that an Authorized Contact Representative is available for all matters related to the licensing process and this is the person who will receive all official communications and confidential information. These Representatives will be the only people allowed to submit official communications on our behalf to the PTA during the process.

The Authorized Contact Representatives have been duly authorized by the Applicant's Board of Directors.

The contact details are as follows:

PRINCIPAL AUTHORIZED CONTACT REPRESENTATIVE

[insert]

[FIRST, LAST NAME]
PHYSICAL ADDRESS
LANDLINE TELEPHONE
CELL PHONE NUMBER
FAX NUMBER
EMAIL ADDRESS

BACKUP AUTHORIZED CONTACT REPRESENTATIVE

[insert]

[FIRST, LAST NAME]
PHYSICAL ADDRESS
LANDLINE TELEPHONE
CELL PHONE NUMBER
FAX NUMBER
EMAIL ADDRESS

UNDERTAKING

We hereby undertake that we accept and agree to be bound by all provisions of the PTA's Information Memorandum, including the rules and requirements related to the Spectrum Auction, and that we agree to be bound by, and to undertake to implement the re-assignment or change of spectrum in the 1800MHz band in accordance with, the Rationalisation Plan published by the PTA in consultation with FAB and referred to in the Information Memorandum.

For and on behalf of:

[Name of Applicant]

Seal of the Company

WITNESSES:

1. _____

National ID/NICOP/CNIC NO. _____

Passport Number (in case of foreign national). _____

2. _____

National ID/NICOP/CNIC NO. _____

Passport Number (in case of foreign national). _____

Annex C – Company Resolution

[Letterhead of the Company]

I, _____, Company Secretary of [HERE GIVE FULL NAME AND ADDRESS OF THE APPLICANT ENTITY] (the "Company"), do hereby certify that the following is a true and correct copy of a Resolution duly adopted at a meeting of the Board of Directors of the Company duly convened and held on _____, and at this resolution has not been modified, rescinded or revoked, and is at present in full force and effect:

RESOLVED THAT the Company be and is hereby authorized to apply for the award of [here describe the nature of the Spectrum being applied for], ("the Spectrum") and to comply with all requirements of its application process and the terms of the License, if any, granted as a consequence;

FURTHER RESOLVED THAT Mr/Ms. _____, son/daughter of Mr. _____, bearing CNIC/Passport No _____ resident of _____ [here give designation of the appointee] be and is hereby appointed as an authorized representative of the Company (the "Authorized Representative"), for and on its behalf, to execute all documents and take all actions as may be required, necessary or incidental in connection with submission and grant of the application of the License, including submission of the Power of Attorney in the form and manner prescribed at Annex D of the Information Memorandum issued by the Pakistan Telecommunication Authority for which all necessary instructions and information has been provided to him;

FURTHER RESOLVED THAT Mr/Ms _____, son/daughter of Mr. _____, bearing CNIC/Passport No _____, director/secretary of the Company be and is hereby authorized on behalf of the Company to execute a Power of Attorney in favour of the Authorized Representative on such terms as may be deemed expedient and in the form prescribed by the Pakistan Telecommunication Authority.

Certified to be a true copy:
Company Secretary

Company Seal and Stamp

Annex D – Power of Attorney

POWER OF ATTORNEY

[To be submitted on a stamp paper of Rs.100]

KNOW ALL MEN BY THESE PRESENTS THAT WE _____,
("Company Name")

Incorporated in _____ (country) having our registered office at _____
_____ (hereinafter called the "Applicant") on approval by the [Board of
Directors] and after meeting all necessary requirements for appointing a Special Attorney do
hereby nominate, constitute, appoint and execute _____
[here give name, parentage identity document number and address of the Special Attorney]
(hereinafter to be called as "Attorney") to be and to act as our lawful attorney, for us, in our
name and on our behalf to exercise any and all of the powers herein contained and ancillary
thereto, that is to say:

- a) to sign, execute and/or authenticate all applications or other correspondence, statements and documents required to be submitted to Pakistan Telecommunication Authority (hereinafter the "Authority") and to act for and on our behalf in all matters including negotiating the terms and conditions of the award and signing any and all documents relating to award of the spectrum for provision of mobile communications services in Pakistan;
- b) to fulfil all the requirements and formalities as may be required to be fulfilled for the award of Spectrum for provision of mobile communications services and grant of the License applied for and on behalf of the Applicant in this regard;
- c) to attend all meetings with and hearings before the Authority or any other governmental officer or entity and to provide any and all necessary documents and material information or assistance as may be required by the Authority for its satisfaction to issue the License for mobile communications services applied for by the Applicant;
- d) to execute any and all such documents and undertake all such acts as may be necessary in order to comply with the directions, decisions and orders of the Authority relating to award of spectrum for mobile communications services and issuance of License applied for by the Applicant; and
- e) generally to do any and all such acts as may be necessary or incidental for the award of spectrum for mobile communications services and grant of the License applied for by the Applicant.

We hereby agree and undertake to bind ourselves irrevocably to all commitments made, acts done, agreements made and arrangements entered into by the Attorney and hereby anticipatorily and irrevocably confirm and ratify all acts, deeds and things which the said Attorney shall lawfully do or cause to be done in express and implied exercise of any of the powers contained herein.

This Power of Attorney shall not be revoked without prior written notice reasonably in advance to the Authority and such revocation shall not invalidate any and all action taken by the

Attorney before the revocation in exercise of the powers vested hereby. In witness whereof we have signed this power of attorney at this day_____of _____, 2021.

EXECUTANT

Seal of the Company

WITNESSES:

1. _____

National ID/NICOP/CNIC NO. _____

Passport Number (in case of foreign national). _____

2. _____

National ID/NICOP/CNIC NO. _____

Passport Number (in case of foreign national). _____

Annex E – Sealed-Bid Form

Name of Applicant:

STATEMENT OF SPECTRUM THE APPLICANT IS INTERESTED IN BUYING AT THE BASE PRICE FOR THE SPECTRUM AUCTION OF NEXT GENERATION MOBILE SERVICES (NGMS) IN PAKISTAN 2021

Please state in Tables 1, 2, 3 and 4 below the total quantity of spectrum that you are interested in acquiring in the 1800 MHz and 2100 MHz bands. Please further fill out Table 5 below with your total Pre-Bid Deposit amount and proof of payment.

1800 MHz

Product 1

State, in Column D of Table 1 below, the total number of 2x0.2 MHz blocks for which you are interested in acquiring and pay the Pre-Bid Deposit. N You can only enter a number between 1 and 39 in column D. Then fill out the total Base Price in Column E (multiply Column B by Column D) and total Pre-Bid Deposit in Column F (multiply Column C by Column D). If you are not interested, please leave columns D, E and F blank in Table 1.

Please note that You must specify that you are interested to buy the 2x5 MHz block under Product 2 if you are interested in buying more than 2x4.8 MHz in the 1800 MHz band.

Table 1

	A	B	C	D	E	F
Radio frequency blocks	Base Price for 2x1 MHz (USD)*	Base Price per 2x0.2 MHz block (USD)* (A x 0.2)	Pre-Bid Deposit per 2x0.2 MHz (USD)* (B x 20%)	Number of blocks	Base Price based on total demand (USD)* (B x D)	Pre-Bid Deposit based on total demand (USD)* (C x D)
0.2 MHz blocks	31,000,000	6,200,000	1,240,000			

Product 2

State, in Column D of Table 2 below, whether you are interested to buy usage rights and pay the Pre-Bid Deposit for a 2x5 MHz block. You can only enter Yes or No in Column D.

Table 2

	A	B	C	D
Radio frequency blocks	Base Price for 2x1 MHz (USD)*	Base Price for 2x5 MHz (USD)* (A x 5)	Total Pre-Bid Deposit for 2x5 MHz (USD)* (B x 20%)	Interest (Yes/No)
2x5 MHz block	31,000,000	155,000,000	31,000,000	

Your choices above in Tables 1 and 2 are irrevocably binding. In addition, Your choices in Tables 1 and 2 plus your existing holdings within 1800 MHz must satisfy the spectrum cap of 2x30 MHz within 1800 MHz band.

Note: Please see Table 4 below for transfer of eligibility points, if relevant.

2100 MHz

State, in Column E of Table 3 below, whether you are interested to buy usage rights and pay the Pre-Bid Deposit for specific blocks of 2x5 MHz within 2100 MHz. You can only enter Yes or No in column E. **Please only state your interest in a specific block in Table 3 below if you have not already expressed your interest in that block as part of the Eligibility Adjustment in Table 4.**

Table 3

Radio frequency blocks	A	B	C	D	E
	Frequency (MHz)	Base Price for 2x1 MHz (USD)*	Base Price for 2x5 MHz (USD)* (B x 5)	Total pre-bid deposit for 2x5 MHz (USD)* (C x 20%)	Interest (Yes/No)
Block 9	1960-1965 / 2150-2155	29,000,000	145,000,000	29,000,000	
Block 10	1965-1970 / 2155-2160	29,000,000	145,000,000	29,000,000	
Block 11	1970-1975 / 2160-2165	29,000,000	145,000,000	29,000,000	

Note that your choices above in Table 3 is irrevocably binding on the Applicant.

Only for Bidders that stated their interest in Product 2 of 1800 MHz in Table 2

Specify whether you would like to use the Eligibility Adjustment (if applicable) in Column A. That is, if you are not successful in winning Product 2 as part of the 1800 MHz Auction, please specify whether you would like to transfer your eligibility from Product 2 to a block in the 2100MHz band. Note that you can only enter Y or N in Column A. If so, please specify which block you want to use the eligibility for in Column B. Note that you can only enter block 9, block 10 or block 11 in Column B. In case you are interested in more than 2x5 MHz in 2100 MHz band, please ensure that you specify a block which is different from those included in Table 3 above.

Please note that if you are successful in winning Product 2, you will not be able to use the Eligibility Adjustment in Table 4.

Table 4

Radio frequency blocks	A	B
	Interest in using the Eligibility Adjustment (Y/N)	If interested in using Eligibility Adjustment, please state the specific block in 2100 MHz (block 9/ block 10 / block 11)
Eligibility Adjustment		

Please note that your choices above in Table 4 are irrevocably binding on the Applicant.

Summary

Add up your total Pre-Bid Deposits from Tables 1, 2 and 3 above and fill out Column A in Table 5 below with that total. This is the total amount of Pre-Bid Deposit you must submit/attach with your Application. Also enter the date and number of instruments used for payment of Pre-Bid Deposit in Column B.

Table 5

	A	B
	Total Pre-Bid Deposit for 1800 MHz and 2100 MHz spectrum (USD)*	Proof of Payment - Financial Instrument(s) Details
Total		

*Pre-Bid Deposit Amount shall be paid in US Dollars or its equivalent in Pak Rupees to be converted at the National Bank of Pakistan (NBP) Telegraphic Transfer (TT) selling rate prevailing on the day preceding the date of payment.

I declare and irrevocably commit that the Applicant Company will pay for the blocks set out in Tables 1, 2 and 3 above, at the Base Price, if awarded such spectrum in the case where demand for spectrum does not exceed the supply of spectrum.

In addition to the above declaration and commitment, I declare and irrevocably commit that the Applicant Company shall pay for the spectrum blocks subject to payment options at the end of the Auction, for which it is declared Provisional Winner.

I solemnly declare that the number of stated spectrum blocks in this Application binds the Applicant Company to pay for this amount of spectrum at the Base Price for each spectrum block stated in the above tables if awarded such spectrum in this Spectrum Auction.

Date: _____

Name and Signature of Authorized Representative _____

Warning

Applicants will note that the application must be complete when it is submitted, with the correct amount of copies, with neither mistakes nor omissions. The application shall also be submitted during the hours indicated, and at the latest by the date specified by PTA. PTA will provide a receipt of application with checkmarks on the submitted documentation. If these requirements are not met, the application can be turned down and PTA may only provide 24 hours to complete.

Annex F – License Template

Template of the License is part of this IM and is attached as a separate document at (Annex F).

Annex G – Performance Bank Guarantee (PBG)

Guarantor: [Name of local bank in Pakistan with credit rating of AA+ and above, or a foreign bank having credit rating of A1 and above, acceptable to the Authority] (the “**Guarantor**”), [Bank’s address]

Beneficiary: Pakistan Telecommunication Authority (PTA), PTA Headquarters Building F-5/1 Islamabad, Pakistan, (the “**Beneficiary**”).

Principal: Licensee Name _____, a company incorporated under the laws of Pakistan with its registered offices at _____ (the “**Principal**”).

Guarantee Amount: USD 15,000,000 (US Dollars fifteen million) or equivalent Pakistan Rupees at the T.T Selling rate of National Bank of Pakistan on the preceding working day of the conversion date (the “**Guarantee Amount**”)

PBG Date: License Effective Date

Licence: The Licence granted to the Principal dated _____.

Rollout Obligations: The roll out obligations in Appendix-1 of the License, being rollout obligations to be fulfilled in 2 years (the “**2 Year Rollout Obligations**”), in 4 years (the “**4 Year Rollout Obligations**”) and 6 years (the “**6 Year Rollout Obligations**”).

Expiry Date: Expiry date shall be set in accordance with Roll out Obligations, in each case with an additional grace period of 6 months, at the counters of the Guarantor

WHEREAS:

- a) The Principal has committed to furnish an unconditional, irrevocable and continuing Performance Bond in the form of Bank Guarantee (the “Guarantee”) of (Name of Bank) _____ for the Guarantee Amount as security for compliance with the Roll out Obligations; and
- b) The Guarantor has executed this unconditional, without recourse to the Beneficiary, irrevocable and continuing Performance Bond in the shape of Bank Guarantee at the request of the Principal for the performance of Principal’s Rollout Obligations.

NOW THEREFORE the parties agree as follows:

- a) Subject to the terms of this Guarantee, the Guarantor hereby un-conditionally, irrevocably and continuingly guarantee without recourse to the Beneficiary, i.e. PTA, as primary obligor and as a guarantor of payment, the due, complete and punctual payment within 3 working days upon receipt of written notice of claim from the Beneficiary (in the form attached hereto as Annex A);
- b) The maximum aggregate liability of the Guarantor under or in connection with this Guarantee shall be limited to the Guarantee Amount, together with interest thereon at the prevailing one (1) month Karachi Interbank Offer Rate (KIBOR) from the date from which payment is due to the Beneficiary until receipt of payment by the Beneficiary or collection thereof against the Principal and the Guarantor;
- c) This Guarantee is un-conditional, irrevocable and continuing, and:

- i.) the Principal shall be entitled to have a proportion of this Guarantee released on its request upon successful completion of the Year 2 Rollout Obligations met by the Principal/Licensee and duly approved by Beneficiary/PTA (in all other respects, this Guarantee remains in effect); and
 - ii.) the Principal shall be entitled to have this Guarantee returned on its request upon successful completion of all of the Rollout Obligations met by the Principal/Licensee and duly approved by Beneficiary/PTA.
- d) In case any phased network Roll-out Obligation is not fulfilled, the Performance Bond against the defined network Roll-out Obligation not met shall be encashed by the Authority. This Performance Bond shall remain in force and valid until 6 months after the associated phase of the network Roll-out Obligation.
- e) If any payment by the Principal or any discharge given by the Beneficiary is avoided or reduced as a result of insolvency or any similar event:
- i.) the liability of the Guarantor shall continue as if the payment, discharge, avoidance or reduction had not occurred; and
 - ii.) the Beneficiary shall be entitled to recover the value or payment from the Guarantor, as if the payment discharge, avoidance or reduction had not occurred.
- f) Subject to clause 3 above, this Guarantee is valid until the Expiry Date for the relevant Rollout Obligation, by which date notice of claims in respect of that Rollout Obligation, if any, must have been given to the Guarantor, and failing such notice of claim by close of business on the Expiry Date, this guarantee shall be null and void in respect of that Rollout Obligation.
- g) Any claim or notice made or given by the Beneficiary to the Guarantor under this Guarantee shall be deemed to be sufficiently made and given if in writing in the form attached in Annex A and delivered at the counters of the Guarantor at the following address:
- Bank Name: _____
- Address: _____
- h) This Guarantee shall be governed by and construed in accordance with the Uniform Customs and Practice for Documentary Credits, 2007 Revision, ICC Publication No. 600 (UCP) and/or Uniform Rules for Demand Guarantees, 2010 Revision, ICC Publication No.758 (URDG) and their updated versions, whichever is applicable, to the extent that such provisions are not inconsistent with this Guarantee and the laws of Pakistan, and engages us in accordance with the terms thereof. No recourse is permissible upon the occurrence of events listed in Article 17 (UCP) or Article 26 (URDG), to any other branch, subsidiary or affiliate of(Bank Name).

For matters not covered by the Publication, the laws of Pakistan shall be applicable and the Guarantee related matters will be governed, accordingly. We hereby unconditionally and irrevocably understand and accept the exclusive jurisdiction of the Courts of Pakistan at Islamabad.

Notwithstanding anything contained herein above, the Guarantor's liability under this Guarantee is limited to the Guarantee Amount, together with interest thereon at the prevailing one (1) month Karachi Interbank Offer Rate (KIBOR) from the date the payment is due to the Beneficiary until receipt of payment by the Beneficiary and reasonable expenses not exceeding in the aggregate 2% of the Guarantee Amount incurred by the Beneficiary in collection thereof against the Principal and the Guarantor. Claims under this Guarantee will be payable and must be lodged and received (accompanied by the original instrument of Bank Guarantee) solely at the counters of [Bank's name] [Bank Address] on or before the Expiry Date for the relevant Rollout Obligation and will be payable solely by [Bank's name] at Islamabad, Pakistan. Except for any claims duly received at the Guarantor's counters in Islamabad before close of business on the Expiry Date for the relevant Rollout Obligation, the Guarantor shall stand discharged and released of all its obligations under this Guarantee in respect of that Rollout Obligation at close of business on the Expiry Date and shall not be liable for any claims lodged thereafter, notwithstanding that Beneficiary may have failed to return the original instrument of Bank Guarantee to the Guarantor duly cancelled at expiry hereof.

Bank Guarantee No. _____ duly issued on the _____ (PBG Date)
for and on behalf of _____ (Licensee Name) as Guarantor.

By

Name (Bank's Representative):

Title: In the presence of:

Witnesses:

1- Name: _____

Address:

Occupation:

CNIC No.:

2- Name: _____

Address:

Occupation:

CNIC No.:

ANNEX-A

Beneficiary's Demand under Unconditional, Irrevocable & Continuing Bank Guarantee / Letter of Credit No. _____

Issued by _____ (Bank Name) at Islamabad Branch

Drawn under Letter of Credit No. _____ (Insert Bank Guarantee/Letter of Credit Number and Date)

To _____ (Name and Address of Issuing Bank)

The undersigned hereby demands that [name of issuing bank] _____ pay to the order of the undersigned (Beneficiary/PTA) before close of the 3rd business day after receipt of the notice a sum of USD 15,000,000 (US Dollar fifteen million) or equivalent Pakistan Rupees at the T.T Selling rate of National Bank of Pakistan on the preceding working day of the payment/encashment, together with interest thereon at the prevailing one (1) month Karachi Interbank Offer Rate (KIBOR) from the date the payment is due to the Beneficiary until receipt of payment by the Beneficiary and reasonable expenses not exceeding in the aggregate 2% of the Guarantee Amount incurred by the Beneficiary in collection thereof against the Principal and the Guarantor. The Bank Guarantee / Letter of credit is enclosed for endorsement by _____ (Bank Name) at Islamabad Branch of the amount drawn for cancellation/encashment.

Dated:- -----

Pakistan Telecommunication Authority

Chairman _____

Annex H – Refinement Stage Examples

This Annex sets out illustrative examples of how a Clock Auction determines market clearing prices. It considers four (4) examples:

- a) A Clock Auction where an equilibrium is achieved without a refinement round;
- b) A Clock Auction where one Bidder reduces demand leading to a refinement round;
- c) A Clock Auction where multiple Bidders reduce demand leading to a refinement round where an equilibrium is reached without a tiebreaker; and
- d) A Clock Auction where multiple Bidders reduce demand leading to a refinement round where an equilibrium is reached through a tiebreaker.

All examples are highly stylised and are designed to show how the auction will determine market clearing price in the simplest possible way.

Example 1 - A Clock Auction where an equilibrium is achieved without a refinement round

This stylised example has the following characteristics:

- a) There are three Bidders⁹ bidding for a product with total supply of 10 units;
- b) In round n the three bidders express their demand for the product at a price of \$50. At \$50, aggregate demand across the three Bidders is greater than supply; and
- c) In round $n+1$, the three Bidders express their demand for the product at a price of \$60. As the price has increased from \$50, the Bidders have decreased their demand. Now aggregate demand across the three Bidders is equal to 10 units. As supply now equals demand, the market clearing price is found to be \$60.

Table H1: Example 1 - A Clock Auction where an equilibrium is achieved without a refinement round

	Round n	Round $n + 1$
Clock Price	\$50	\$60
Bidder One	3	3
Bidder Two	5	3
Bidder Three	8	4
Aggregate Demand	16	10
	Demand > Supply	Demand = Supply

⁹ For simplicity, all examples in this Annex use three bidders, however the results and conclusions from each example could easily be extended to examples with four or more bidders.

In this scenario there is no need for a refinement round as the nature of the bidders' decrease in demand means that an allocation is found where supply equals demand.

Example 2 - A Clock Auction where one Bidder reduces demand leading to aggregate demand falling below supply

This stylised example has the following characteristics:

- a) As above, there are three Bidders bidding for a product with supply of 10 units. In round n+1, the three Bidders express their demand for the product at a price of \$60.
- b) In this example, Bidder Three has decreased its demand to 0 while the other two Bidders have not changed their demand. The nature of the decrease in Bidder Three's demand means that at a price of \$60 the demand for the product is less than the supply.¹⁰

Table H2: Example 2 - A Clock Auction where one Bidder drops demand leading to aggregate demand falling below supply

	Round n	Round n + 1
Clock Price	\$50	\$60
Bidder One	3	3
Bidder Two	5	5
Bidder Three	3	0
Aggregate Demand	11	8
Demand < Supply		

In this example, as a single Bidder has caused demand to fall below supply, the Product will be allocated at the price in the previous round (i.e. \$50). All Bidders who did not drop demand will be allocated the quantity that they demanded in the final round, and the single Bidder who dropped demand will be allocated the remaining quantity of the Product. Therefore, Bidder One and Two receive 3 and 5 units respectively, and Bidder Three receives the remaining two units. This is set out in the Table below.

Table H3: Example 2 - Final allocation

Clearing price: \$50	Quantity
-----------------------------	-----------------

¹⁰ Note that if Bidder Three had decreased its demand to 2 (instead of 0) an equilibrium would be found in the clock round. If Bidder Three had decreased its demand to an amount greater than 2 the auction would continue as demand would remain greater than supply.

Bidder One	3
Bidder Two	5
Bidder Three	2

a)

Example 3 - A Clock Auction where multiple Bidders reduce demand leading to a refinement round

This stylised example has the following characteristics:

- a) As above, there are three Bidders bidding for a product with supply of 10 units. In round n the three Bidders express their demand for the product at a price of \$50. At \$50, aggregate demand across the three Bidders is greater than aggregate supply; and
- b) In round $n+1$, the three Bidders express their demand for the product at a price of \$60. In this example, two Bidders have decreased their demand while the other Bidder has not changed its demand. The nature of the decrease in Bidder Two and Three's demand means that at a price of \$60 the aggregate demand for the product is less than the supply and so a refinement round is needed to ensure that the entirety of the product is allocated.¹¹

Table H4: Example 3 - A Clock Auction where multiple Bidders drop demand leading to a refinement round where an equilibrium is reached without a tiebreaker

	Round n	Round $n + 1$
Clock Price	\$50	\$60
Bidder One	3	3
Bidder Two	5	3
Bidder Three	3	0
Aggregate Demand	11	6
	Demand > Supply	Demand < Supply

As multiple Bidders have dropped demand, this auction now enters a refinement round. In this example:

¹¹ Note that if Bidder Two and Three had decreased their demand such that they demanded a total of 7 units between them, a refinement round would not be necessary as the market clearing price would have been found. If Bidder Two and Three decreased their demand such that they demanded more than 7 units between them the auction would continue as demand would remain greater than supply.

- a) Bidder One does not participate in the refinement round as it did not change its demand between the penultimate and the final round; and
- b) Bidder Two and Three enter their valuations for each lot where they dropped demand. This is shown in the tables below.

Table H5: Example 3 – Bidder 2's valuation in the refinement round

Requested quantity	Requested price	Bid
4	\$52	\$208
3	\$54	\$162

Table H6: Example 3 – Bidder 3's valuation in the refinement round

Requested quantity	Requested price	Bid
2	\$54	\$108
1	\$56	\$56
0	\$58	\$0

In this example, Bidder Two indicates that:

- a) At prices between \$50 and \$51.99, it is still willing to buy 5 units;
- b) At \$52, its demand drops to 4 units;
- c) At prices between \$52 and \$53.99 it is willing to buy 4 units;
- d) At \$54, its demand drops to 3 units; and
- e) At prices between \$54 and \$60, it is willing to buy 3 units.

And Bidder Three indicates that:

- a) At prices between \$50 and \$53.99, it is still willing to buy 3 units;
- b) At \$54, its demand drops to 2 units;
- c) At prices between \$54 and \$55.99 it is willing to buy 2 units;
- d) At \$56, its demand drops to 1 units;
- e) At prices between \$56 and \$57.99 it is willing to buy 1 units;

- f) At \$58, its demand drops to 0 units; and
- g) At prices between \$58 and \$60, it is not willing to buy any units.

The Table below combines Bidder Two and Three’s valuations with Bidder One’s valuation to calculate a market clearing price.

Table H7: Example 3 - A refinement round where multiple Bidders drop demand

Price	\$50	\$52	\$54	\$56	\$58	\$60
Bidder One	3	3	3	3	3	3
Bidder Two	5	4	3	3	3	3
Bidder Three	3	3	2	1	0	0
Demand	11	10	8	7	6	6
	D > S	D = S	D < S	D < S	D < S	D < S

The Bidders’ valuations mean that \$52 is the market clearing price. Bidder One is allocated 3 units, Bidder Two is allocated 4 units and Bidder Three is allocated 3 units.

Example 4 - A Clock Auction where multiple Bidders reduce demand leading to a refinement round where an equilibrium is reached through a tiebreaker

This stylised example has the following characteristics:

- a) As with all examples above, there are three Bidders bidding for a product with supply of 10 units. In round n the three Bidders express their demand for the product at a price of \$50. At \$50, aggregate demand across the three Bidders is greater than supply; and
- b) In round $n+1$, the three Bidders express their demand for the product at a price of \$60. In this example, all three Bidders have decreased their demand. As with example 3, the nature of the decrease in bidders’ demand means that at a price of \$60 the demand for the product is less than the supply and so a refinement round is needed to ensure that the entirety of the product is allocated.

Table H8: Example 4 - A Clock Auction where multiple Bidders reduce demand leading to a refinement round where an equilibrium is reached through a tiebreaker

	Round n	Round $n + 1$
Clock Price	\$50	\$60
Bidder One	3	2
Bidder Two	4	3

Bidder Three	4	3
Aggregate Demand	11	8
	Demand > Supply	Demand < Supply

As with Example 3, this auction now enters a refinement round. In this example, all three Bidders enter their valuations for Lots where they dropped demand. In this case,

- a) Bidder One indicates it reduces its demand from 3 to 2 units at \$54¹²;
- b) Bidder Two indicates it reduces its demand from 4 to 3 units at \$54¹³; and
- c) Bidder Three also indicates it reduces its demand from 4 to 3 units at \$54¹⁴.

This leads to the valuations set out in the table below:

Table H9: Example 4 - A refinement round where multiple Bidders drop demand

Price	\$50	\$54	\$60
Bidder One	3	2	2
Bidder Two	4	3	3
Bidder Three	4	3	3
Demand	11	8	8
	D > S	D < S	D < S

In this example a tie-break round is needed because:

- a) Multiple Bidders (in this case all three Bidders) have indicated that their demand falls at exactly the same price point. At this point supply exceeds aggregate demand; and

¹² This means that Bidder One is willing to buy 3 units between \$50 and \$53.99.

¹³ This means that Bidder Two is willing to buy 4 units between \$50 and \$53.99, and 3 units at any price between \$54 and \$60.

¹⁴ This means that Bidder Two is willing to buy 4 units between \$50 and \$53.99, and 3 units between \$54 and \$60.

- b) The nature of the Bidders' decrease in demand at this price point means that aggregate demand is less than aggregate supply.¹⁵

In the tie-breaker round the Auction Management Software assigns all three bidders random numbers, for example as in the table below.

Table H10: Example 4 - Tie-breaker round

	Bidder selection number
Bidder One	0.10052
Bidder Two	0.43303
Bidder Three	0.49537

As Bidder Three is assigned the highest random number, it receives one additional unit. Bidder Two is assigned the second highest number. Hence, Bidder Two receives the second unallocated unit.

In this example, \$54 is the market clearing price as it is the price at which the auction switched from excess supply to excess demand. Bidder One is allocated the 2 units it demanded at this price. Bidder Two and Three are each allocated 4 units (the 3 they demanded at \$54 plus 1 assigned through the tiebreaker).

Table H11: Example 4 - Final allocation

Clearing price: \$54	Quantity
Bidder One	2
Bidder Two	4
Bidder Three	4

¹⁵ In a scenario where demand dropped by an amount greater than the number of bidders that reduced demand, bidders who reduced their demand would be assigned the excess units up until a point where a tie-breaker was needed. For example, in a scenario where three Bidders dropped demand at the same price point leading to an excess demand of 4 units, each Bidder will be assigned 1 unit and the remaining unit will be assigned in a tie-breaker round.