

PAKISTAN TELECOMMUNICATION
AUTHORITY

Consultation Paper
on
Regulatory Remedies and
Solutions for Limited
Mobility Service
Provision by WLL
Operators
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1. Preface

The Fixed line Telecom Deregulation Policy was announced by the Government of Pakistan on July 13, 2003 with a view to promote fixed line subscriber penetration, develop infrastructure and increase in service choice for customers of telecommunication services at competitive and affordable rates. The policy proposed issuance of technology neutral fixed line Telecom Service Licenses. Generally, Fixed line connectivity is provided by laying copper or fiber cable for the last mile solution, i.e. local exchange to subscribers premises, which is not only expensive but also is cost prohibitive in some cases. Therefore, GoP authorized the Local Loop Operator to use wireless local loop (WLL) solution in the Local Loop confining to Limited Mobility i.e. mobility within a cell not beyond the Local Call charging radius. WLL licenses were issued in 2004 and the operators were assigned spectrum in 450, 479, 1900 and 3500 MHz.

2. Legislative Framework

As per section 8(1) of the Pakistan Telecommunication (Re-Organization) Act, 1996, Federal Government (MoIT) may, as and when necessary issue policy directive on the matters relating to telecommunication policy. The Telecommunication Policy 2015 was issued by Federal Government to facilitate ICT infrastructure in the country by exploring the advanced technical trends and providing remedial solutions of existing regulatory framework. As per Section 5.4 of the said policy "Service Provision" services provided by the WLL operators shall be restricted by:

- a. Geographical area
- b. Limited Mobility

However, the Policy desires PTA to develop a framework for regulatory remedies and solutions within six months.

3. Scope of WLL Services

The scope of the service that can be provided by the WLL operators are duly identified in their respective licenses as follows:

The Licensee shall provide the following Mandatory Services in each Licensed Region:

- (a) Basic Public Telephone Access Service, including:
 - (i) access to emergency services,
 - (ii) access to directory enquiry services,
 - (iii) access to operator assistance services, and
 - (iv) access to Long Distance And International Public Voice Telephone Services.
- (b) such other Telecommunication Services as the Authority may, by Regulation, require.

4. Defining Limited Mobility

4.1 WLL License

The WLL license defines limited mobility as a service where the Licensee shall comply with the following:

- i. A customer shall only be enabled and permitted to access a designated single radio base station, and the designated radio base station shall only be changed with the consent of the customer
- ii. The numbering plan for Basic Public Telephone Access Services adopted by the Authority,
- iii. Not authorizing or facilitating a customer of its Limited Mobility Communication Service to authenticate or use Terminal Equipment with the Mobile communication service of another operator,
- iv. Not permitting the use with its Limited Mobility Communication Service of Terminal Equipment that is authenticated for, or permitted to be used with, the Mobile communication service of another operator,
- v. Not entering into any agreement or arrangement to jointly bill a customer for the Licensee's Limited Mobility Communication Service and another Operator's Mobile Communication Service provided to that customer, and
- vi. Shall ensure that operating range of each radio base station does not extend beyond the limits of the Local Calling Area in which the radio base station is situated, except with the prior approval of the Authority.

4.2 APC Rules 2004

Limited Mobility Communication Service has been defined in Rule 2(1)(m) of APC Rules,2004 as:-

“ a wireless based telecommunication service that satisfies all of the following conditions: (a) it follows the numbering plan established by the Authority for the public fixed switched networks; (b) in which customers cannot authenticate or use their terminal equipment with a telecommunication system of another licensee; (c) in which a customer’s terminal equipment may obtain access to the Service using a single pre-defined cell, having maximum radius upto Local Call Charging Area, and (d) in which no inter-cell hand over and roaming with other networks is allowed”.

5. Determination on Limited Mobility

Immediately after the receipt of LL Licenses, the operators using wireless solution raised the issue of poor ‘**Quality of Service**’ due to the ‘**Single Cell Limited Mobility**’ restrictions. The Operators complaint on the issue of single cell Limited Mobility restrictions highlighting the following concerns:

- i. Call drops;
- ii. Call set up failures; and
- iii. Degraded voice quality.

Mobile Operator also raised their concerns and expressed doubts on the intentions of the LL operators who opted for wireless solution. They were of the view that LL licenses allowing wireless local loop are fixed line telecommunication licenses in which the service providers have to identify a subscriber with respect to a fixed address (either home or an office) allowing

the subscriber to move about within a cell whereas mobility beyond a single cell would lead them into the domain of cellular mobile operations.

Keeping in view the issues raised by the operators, PTA embarked on a multi-pronged strategy by involving all essential players who could help to resolve the issue and consulting neutral and notable industry experts in Pakistan as well as from abroad i.e. CDMA lead group, Qualcomm, experts from cellular mobile operators, the WLL operators, CDMA equipment manufacturers and the "Policy Makers" i.e. Ministry of Information Technology (MoIT).

Finally, after consultation with all concerned and holding conferences and seminars on the issue, a comprehensive *Limited Mobility Determination* was issued on *July 13, 2005* with following salient features:

- i. Terminal Equipment (TE) may superimpose home cell¹ signals with neighboring cells' signals to improve quality of service.
- ii. TE will only communicate when its connected with the home cell.
- iii. Soft hand-overs will be allowed within the home cell.

After issuance of determination, operators showed dissatisfaction and requested for an industry meeting. PTA entertained their request and after necessary deliberation issued amendments as follows:-

- i. Mobility within cluster of cell² is not allowed, however, a call once setup within a home-cell may also continue outside the boundary of home-cell. But, for call setup it would be mandatory for the terminal equipment to remain within its home-cell and that outside the home-cell call shall not setup whatsoever the case may be; and
- ii. The Authority allowed use of Removable user Identity Module (RUIM).
- iii. Handheld terminals are not allowed in general.

6. Status of WLL Industry in Pakistan

Four frequency bands were opened in Pakistan for WLL services, i.e. 450, 479 MHz, 1900 MHz and 3.5 GHz. WLL operators opted for CDMA and Wi-MAX technologies for rollout of their networks.

6.1 CDMA

Most of the Pakistan's WLL industry initially deployed CDMA 2000 technology in 2004-05 and then upgraded the network with EVDO-Rev-A, Rev-B. At present the operators are migrating their network to LTE for achieving higher data rate using advanced modulation and carrier aggregation techniques.

6.2 Wi-MAX

Wi-MAX is an IP based, wireless broadband access technology that provides performance similar to 802.11/Wi-Fi networks with the coverage and QoS (Quality of Service) of cellular networks. Wi-MAX is also an acronym meaning "Worldwide

¹ Home Cell means the cell with which terminal equipment (s) is/are associated for the provision of limited mobility communication service."

² Cell" means the geographical area covered by a predefined radio base station (RBS/BTS), consisting of one or more sectors of the single allocated band.

Interoperability for Microwave Access (Wi-MAX). Wi-MAX can provide broadband wireless access (BWA) up to 30 miles (50 km) for fixed stations, and 3 - 10 miles (5 - 15 km) for mobile stations based on the frequency ranges. With Wi-MAX, WiFi-like data rates are easily supported, but the issue of interference is lessened. Wi-MAX operates on both licensed and non-licensed frequencies, providing a regulated environment and viable economic model for wireless carriers.

6.3 Long Term Evolution (LTE)

LTE is a standard for wireless communication of high-speed data. LTE, having natural upgrade path for carriers with both GSM, WCDMA, WiMAX and CDMA networks is the most optimum choice for network deployment due to availability in different frequency bands identified by international standardization organizations. The standards are developed by the International standardization bodies. The standard is developed by the 3GPP (3rd Generation Partnership Project) and is specified in its Release 8 document series, with minor enhancements described in Release 9. Upgrade releases are still in process. LTE is used both in TDD and FDD mode. Some of the existing WLL operators are migrating their existing network to LTE. The present status of WLL subscribers is mentioned in Table³ below:

Sr. No	Operator	No of Subscribers	WLL Spectrum
		Dec 15	MHz
1	PTCL	1,485,777	450,1900,3500
2	Telecard	8,321	450,1900
3	Mytel	33	3500
4	WorldCall	45	450,479,1900,3500
5	Wateen	10,388	3500
6	Sharp	57,891	3500
7	Wi-Tribe	131,174	3500
8	LinkDotNet	2,121	3500
9	Cyber Internet Services	4	3500
	Total	1,695,754	

7. Initial Consultation

PTA team initiated a kick start meeting with WLL and Cellular industry separately to identify their view and concerns on subject consultation which are summarized below:

7.1 WLL Industry Stance

As per correspondence and interaction over the period of time, the WLL operators have maintained a contrasting point of view with regards to limited mobility issue. One of the

³ Licensees' Data

operators has also challenged implementation of limited mobility on data services altogether and a case to this effect is pending at the Honorable court. Most of the operators cite the constraint of Fixed Wireless terminal subsidy, limited mobility and handheld terminals coupled with exorbitant duties as the main barrier for growth of WLL sector over the past. They were of the view that custom duties were imposed on WLL terminals to protect the local manufacturing industry, whereas the capacity of the local industry remained limited and nearly all the demand has been met through imports.

Some are of the view that WLL industry never threatened the cellular industry as the target market of cellular is quite different with addressable market of 160 million compared to addressable household of 15-20 million market for WLL. Cellular mobile operators have already achieved a customer base of 150 million whereas WLL operators have a customer base of 2.3 million (0.8 million voice, 1.3 million EVO, 0.25 million WIMAX). CMTOs have reached 80% of the total addressable market, whereas WLL operators have achieved just over 10% of the total addressable market.

WLL operators are actually paying more for restricted services. The spectrum cost per connection of WLL services is US \$0.42 considering 20 million homes of addressable market whereas the spectrum cost per connection for cellular services is US\$ 0.09 considering 160 million persons of addressable market.

A few operators, however, say that limited mobility must be implemented strictly in the light of license conditions, PTA determination, APC Rules, etc. As per this school of thought, mobility in WLL services does not only violate the existing regulatory provisions but also gives the incumbent operator undue advantage over rest of the industry due to its nationwide presence.

7.2. CMOs' Point of View

There has been a similar debate in the past where cellular industry is also of the divergent views on limited mobility issue. Most of the Cellular operators are of the view that mobility be restricted even shorter of single cell coverage if it happens to cross the local call charging areas.

They believe that scope of mobility should not be changed and mobility should be limited to a single Cell and no handovers or handoffs should be allowed. The said issue was also raised at the time of auction of NGMS license where Cellular operators were given assurance that restriction of single cell mobility will be enforced in true letter and spirit. Any intention to open up the debate once again on definition of cell will have serious repercussions in terms of compensation etc to those operators who invested in 3G/4G spectrum. Further, failure to implement Limited Mobility within the spirit of telecom Policy - 2015 would allow the LL Operators to step-over cellular business and will end up acting like a cellular operator through back door, thereby, eroding the business plans of the cellular operators who obtained cellular licenses against an auction price of approximate US\$ 310 million. A level playing field for all the licensees is required so that equal business opportunities exist and no one trespasses anyone else's jurisdiction. The existing framework is quite clear which should be implemented by the Regulator by exercising the powers under the Pakistan Telecommunications Re-

organization Act 1996. An additional option that can be considered by the regulator is to withdraw of existing spectrum assignments from the WLL Operators. Refarmed spectrum should then be made available for open auction to all the operators (including CMOs) with the same term and conditions of cellular licenses.

One of the CMOs is of the view that since most of the CDMA operators do not have one frequency range for the whole country but still they been able to use this most valuable spectrum at an optimum level due to availability of non-geographical (IP oriented) access solutions. Therefore a phased approach may be adopted as a possible solution through a consensus of all stakeholders

- i. WLL licenses be asked to provide licensed services in their respective licensed region(s) without limitation on data services only.
- ii. Licensing review be carried out considering technological trends and objective to maximize the utility of a scarce resource i.e. spectrum in line with best technical and economic trends around the world.

8. International trends

8.1 India

In India, the Indian Basic Service Operators (BSO) initially offered limited mobility WLL service in their coverage area in 2001. However since the limited mobility proved to be a major short coming for the WLL operators the Telecom Regulatory Authority of India (TRAI) introduced the Unified Licensing Concept in Nov 2003. Under the unified access licensing regime existing BSOs and cellular carriers were given the option to either continue to operate under the old licensing regime or migrate to the new regime. Operators migrating to the UASL regime continue to provide wireless services over existing allocated spectrum, with no additional spectrum allotted under the migration process. No additional entry fees was charged for cellular carriers to migrate to the new UASL license. BSOs, however, were required to pay an entry fee for migration.

Under the unified license operators were allowed to offer complete range of telecommunication services including basic, cellular, unified access service, NLD, ILD, GMPCS, Broadcasting Services, Internet Telephony, etc. As a result, both BSOs and cellular carriers gained the freedom to offer basic and/or cellular mobile services using any technology.

8.2 Bangladesh

In Bangladesh Broadband Wireless Access (BWA) licenses were issued to two operators for establishing broadband network using WiMAX technology in 2008. The operators and end-users were allowed to use their equipment in fixed locations, in a nomadic manner or with a fully mobile capability, at their choice⁴. The licensees were allowed to use cable, fiber or any other means appropriate in conjunction with WiMAX as last mile solution. The end user distribution can also be done in conjunction with WiFi (2.4 and

⁴ http://www.btrc.gov.bd/guideline/bwa_guidelines.pdf

5.7 GHz ISM band).Voice Application will be provided with separate numbering plan. All voice calls are routed through Interconnection Exchange Service (ICX) and IGW (International Gateway) as per ILDTS Policy 2007.

During auction, Bangladesh Telecommunication Regulatory Commission (BTRC) assigned 35 MHz frequency to Augere Wireless Broadband Ltd. from 2.3GHz band and same to the Banglalion Communication Ltd. from 2.5 GHz band⁵. After awarding this license, the internet penetration of the country has increased. At present, the number of broadband customer in Bangladesh is about 0.4 million. 56 percent of the district towns of Bangladesh are now under wireless broadband network. To make this possible, BTRC has lowered the bandwidth price after analyzing the overall scenario and consulting with the ministry. Lowering the price of bandwidth will have effect on spreading the internet service at the grass-root level and developing the telecommunication infrastructure. But it has also been observed that the cost of establishing the infrastructure to reach the internet to the people of remote areas' of Bangladesh is very high. If the infrastructure cost can be reduced then it is possible to rip the benefit of lowering the bandwidth price.

8.3 Indonesia

In Indonesia, there are two GSM operators and five CDMA operators who have deployed CDMA 2000 1x, EV-DO Rev A, EV-DO Rev B technologies. Telekomunikasi Indonesia with TelkomFlexi as its product, Indosat , Bakrie Telecom , Ceria Mobile, Smartfren telecom are the CDMA operators who are providing prepaid and postpaid WLL services nationwide⁶. The major CDMA players - Flexi, Smartfren and Bakrie Telecom - have all been suffering financial troubles. However the operators are now focusing to migrate from CDMA to GSM, HSPA and LTE based operations due to sheer decline in CDMA business.

8.4 Nigeria

In Nigeria, the Regulator Nigerian Communications Commission (NCC) issued Fixed Wireless Access⁷ (FWA) licenses for provision of services involving the use of wireless technology to replace copper to connect subscribers to the telephone network in 2002. The FWA licenses were issued for duration 5 years⁸ with an automatic renewal for another five years provided that the Licensee has paid the necessary regulatory dues. FWA licenses were a variant of wireless broadband which provides an alternative in the so-called 'last mile' connectivity between the subscriber and the fixed telecommunications network. FWA could either be narrowband or broadband and it was predominantly deployed using the Code Division Multiple Access (CDMA) technology.

⁵ <http://www.btrc.gov.bd/broadband-wireless-access>

⁶ <http://livinginindonesia.info/item/mobile-telephone-services>

⁷ <http://arxiv.org/ftp/arxiv/papers/1108/1108.1152.pdf>

⁸ http://www.ncc.gov.ng/files/Licensing-Auction_FWA_Information_Memorandum.pdf

In March 2006⁹, the Nigerian Communications Commission (NCC) formally introduced the Unified Access Service Licence (UASL). The UASL covers a range of services, including: Fixed telephony whether wired or wireless;

- Digital mobile services;
- International gateway services;
- National long distance services; and
- Regional long distance services.

The NCC has indicated that Fixed Wireless Access (FWA) and Private Network Links (PWL) licensees are permitted to provide mobile services in the UASL regime, subject to the frequency assignment and geographical limitations contained in the original licences. Digital Mobile licensees are permitted to provide fixed and data services. All Unified Access Service licensees are able to provide ISP services, Value-added services, and Payphone services. The NCC has also clarified that international gateway services may be provided for the licensee itself or for third parties. The UASL licence term is 10 years with an option for renewal for the same term.

Unified Access Service operations have been opened to competition, subject to the availability of spectrum resources.

The UASL is subject to a broad variety of terms and conditions. . Of particular interest are the following terms and conditions (some of which apply specifically to existing licensees that have migrated to the UASL licensing regime):

- Service area: The service areas for existing licensees migrating to the UASL regime are the same as the service area in the original license issued to the migrating licensee.
- Network rollout requirements: The UASL is not subject to specific network rollout obligations. The NCC opted to address universal access issues in a separate universal access regulation.
- Numbering resources: The UASL entitles the licensee to obtain numbering resources from the NCC, including resources with a unique code number that serves as a routing designator to all calls terminating on the licensee's network, where applicable. However, licensees are required to conform to the numbering plan approved by the NCC and any directions given by the NCC in relation to the numbering plan, including directions related to number portability.
- Interconnection: The Nigerian Communications Act, 2003 imposes an obligation to interconnect. Therefore, there are no interconnection obligations contained in the terms and conditions of the UASL.
- Radio spectrum: Matters relating to the use of the radio spectrum are addressed separately from the UASL.
- Quality of Service: Licensees are required to adhere to the quality of service standard prescribed by the NCC.

⁹ <http://www.ictregulationtoolkit.org/en/toolkit/notes/PracticeNote/3132>

8.5 UK¹⁰

In June 2003 the Radio communications Agency auctioned 15 regional 3.5 GHz Public Fixed Wireless Access Operator licenses (the '2003 auction'). The 15 regions together comprised the whole of the UK. UK Broadband (then known as Pound Radio) was awarded a license for 13 of the regions and subsequently purchased the companies that had won the other two licenses. In March 2007, following a request from UK Broadband, Ofcom agreed to the replacement of these three licenses with a single UK license that includes conditions that are effectively identical to those in the licenses granted in July 2003. UK Broadband further submitted a request to Ofcom in March 2007 to vary its license in two ways:

- i. to allow technology and application neutrality by removing mobility restrictions; and
- ii. to increase the allowed power levels

Consultation by Ofcom

On 18 June 2007 Ofcom published a consultation document (the 'June consultation document') assessing UK Broadband's request and seeking comments from stakeholders on the issues raised. The main points included in assessment of a license variation to allow technology and application neutrality were:

- i. UK Broadband's license did not limit the technologies it may use;
- ii. there appeared to be no reason to refuse the variation of UK Broadband's license to remove the limitation to fixed applications;
- iii. the effects on consumers' interests, the optimal use of the spectrum, competition related issues, the requirement to ensure that license conditions are objectively justified and other legal considerations.

Industry Response

Support in favor was mainly on the basis that competition in the provision of mobile and nomadic broadband services would be enhanced, bringing benefits to consumers, and efficient utilization of spectrum. Most of these responses were from equipment vendors or companies with an interest in providing broadband access. A number of them made the point that the 3.5 GHz band had been identified internationally as suitable for mobile broadband services.

Four of the five mobile network operators (MNOs) however, opposed the variation for the reason that granting application neutrality to the 3.5 GHz band would alter the market model and create uncertainty that would deter future investment. UK Broadband would be able to offer services at a much lower cost than the 3G operators because of the lack of rollout obligations and the lower cost of its spectrum. They also

¹⁰ http://stakeholders.ofcom.org.uk/binaries/consultations/bb_application/statement/bbstatement.pdf

argued that the mobile market was already fiercely competitive and operators did not have the flexibility to compete on pricing.

Ofcom's Decision

From the consultation process, Ofcom concluded that if the proposed variation were made:

- i. consumers could benefit from the increased choice and competition that would follow from UK Broadband's ability to offer a wider variety of services and UK Broadband would be able to make better use of the spectrum in responding to new consumer demands;
- ii. competition in the mobile communications market is unlikely to be distorted and competition in the provision of broadband data services is likely to be enhanced.

Therefore continuation of the restriction on mobile use in UK Broadband's license is not justified and the examination of responses suggests that there are no compelling reasons not to vary the license as proposed in the June consultation document. Ofcom decided to vary UK Broadband's license to remove restrictions on terminal devices and limitations of limited mobility.

9. Consultation Summary

PTA believes in establishing a level playing field for all of its licensees so that equal business opportunities exist and no one trespasses anyone else's jurisdiction. It believes in maintaining separately identified market baskets as envisioned by the government of Pakistan through its judicious and progressive policies till such time new Licensing regime is in place. PTA facilitates broadband growth but only restricts the licensees to provide services within their scope of license. No Government Policy can encourage violation of license terms and conditions. The newer policy does not permit entry into mobile service through local loop license. Giving relaxation to one segment will hurt the other segment and will have adverse effect on the competitive environment. In case of Wireless Local Loop (WLL) licensees, limited mobility is the service that uses the system to communicate with Base Station with restriction irrespective of the service as per the existing provisions. This also includes to employ numbering to identify a user for provision of services to the end users with the terminal.

GoP authorized the Local-Loop operators to use Limited Mobility option through use of wireless solutions in the local loop. However, in order to maintain a clear distinction between Cellular and Fixed line, GoP also restricted the WLL operators to limit their wireless last mile solution within "a single Cell" such that under no circumstance this single cell could extend its service beyond the local call charging radius and inter-cell handovers and roaming to other networks were also not allowed. The Authority after a prolonged consultation, in order to ensure Quality of Service, allowed reasonable liberty in Mobility, a healthy business

opportunity and no overlapping of jurisdictions except for what was already envisioned in the Policy directives, for WLL operators.

In order to further facilitate the telecom Licensees, the Authority after consultation further allowed that a call once setup within a home-cell may also continue outside the boundary of home-cell. But, for call setup it would be mandatory for the terminal equipment to remain within its home-cell and that outside the home-cell call shall not setup whatsoever the case may be.

Cell was also defined for WLL which means the geographical area covered by a predefined radio base station (RBS/BTS), consisting of one or up to three sectors of the single allocated frequency.

Operators during the previous discussion and consultation wanted to redefine the cell for mobility but never suggested or proposed solutions while maintaining the level playing field with rest of the telecom sector. Telecom Policy 2015 has now included to deliberate and come up with framework for regulatory measures and solutions. It is to note that consultation will be strictly restricted to Limited mobility within the telecom regions and therefore other scenarios like interregional mobility, roaming to other Networks are out of scope. PTA therefore will only concentrate and deliberate on possibility of redefining the limited mobility within telecom region only based on best international practices adopted by the countries to resolve limited mobility issues and broadband proliferation.

In India, the Indian Basic Service Operators (BSO) initially offered limited mobility WLL service in their coverage area , however the licenses were later on offered unified licensing with additional payment in line with cost of mobile spectrum. In Bangladesh Broadband Wireless Access (BWA) licenses were issued for establishing broadband network using WiMAX technology. The operators and end-users were allowed to use their equipment in fixed locations, in a nomadic manner or with a fully mobile capability, at their choice. In UK, OFCOM issued 15 regional FWA licenses to UK Broadband which were then converted into a single nationwide license with restriction on power limits and use of fixed wireless terminal. After detailed consultation with stakeholders these two restrictions were relaxed and operator was allowed to provide services using mobile devices without any additional cost. Nigeria has a licensing regime for FWA services. However, since 2006-07 Universal Access Service License (UASL) has also been introduced where a licensee can provide other type of services by paying amounts specified by the Nigerian Communication Commission. For instance, FWA licensee can provide mobile services and mobile licensee can provide fixed service with payment of additional fees.

In order to address the technology advantages and regulatory constraints while knowing the fact of heavy cost of mobile License, PTA will analyze the situation so that significant growth in WLL segment may be ensured. Before reaching to conclusion for finalizing the regulatory measures and solution under the Telecom Policy 2015, PTA has decided to initiate the consultation paper in order to obtain comments and details from the stakeholders.

9.1 Regulatory Remedies and Solution

The Telecom Policy 2015 emphasizes on restrictions in terms of geographical area and mobility to keep clear the boundaries for telecom operators. The policy also clarifies that such restrictions/limitations shall apply irrespective of the type of service as well as price plan. In this context

Question 1: What is your understanding of regulatory measures and solution required under Telecom Policy 2015 clause 5.4.6?

9.2 Implementation of Limited Mobility by WLL Operators

After the determination issued by PTA on Limited Mobility, all WLL operators were bound to implement the same irrespective of service (Voice, Data) being provided under their WLL License. However violation was found on single cell restriction. PTA instructed those violators to implement limited mobility irrespective of services (Voice, Data).

Question 2: Do you think that limited mobility has been implemented in true letter and spirit by all WLL operators. In case of no, please justify your response considering the possible hurdles in its non implementation?

9.3 Technological Constraints

The determination on Limited Mobility was issued and its subsequent additions/clarifications were made in order to address the quality of service issues raised by the WLL operators in providing voice services through CDMA technology. But keeping up with the latest industry trends the WLL operators have now moved to or thinking/planning to move to LTE both in 1900 MHz and 3.5 GHz band. It is also a fact that operators providing data services through WiMAX technology never raised any such issue.

Question 3: Does the Telecom sector still foresee any technical issues in implementing the Limited mobility? If yes, please elaborate in detail.

9.4 Impact of Mobility Restriction on WLLs

WLL operators were assigned spectrum in 450, 479, 1900 and 3500 MHz on Frequency division duplexing (FDD) basis in 2004. The operators deployed CDMA technology in 450,479, 1900 (MHz) spectrum and started provision of services. Some of the operators further requested to change their spectrum in 3500 (MHz) from FDD to TDD for provision of WiMAX services in 2007. Accordingly the regulator in consultation with stakeholders and FAB amended the spectrum assignment in 3500MHz from FDD to TDD. It was in 2008 when WiMAX Broadband Internet was officially rolled out in Pakistan. The launch of WiMAX wireless internet in Pakistan positioned Pakistan as the first country to roll out WiMAX services throughout the

whole country in the world. This milestone was achieved by Wateen WiMAX. Following that Wi-tribe, Link Direct and Sharp (Qubee) rolled out their WiMAX network. During 2010 the number of WiMAX subscribers crossed 100,000 mark however the same figure started declining after the penetration of cellular services and introduction of next generation mobile services. As a result the WIMAX subscribers have reduced to 246,000 as shown in Figure-1¹¹.

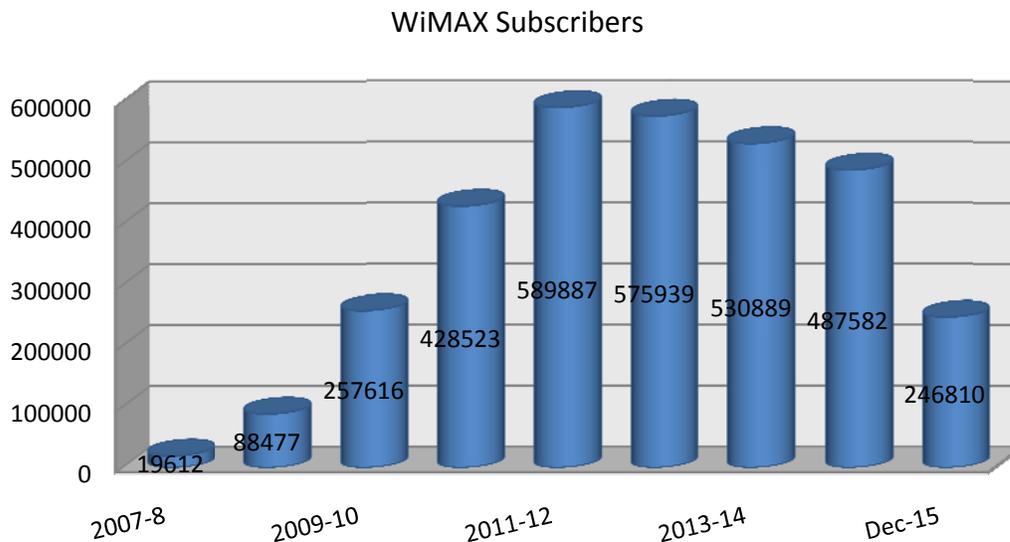


Figure 1-WIMAX Subscribers

Question 4: Do you think that there has been any impact on WLL operators due to restriction of limited mobility (LM). Is the present decline in WLL subscribers is related to LM restriction or some other reasons. Please justify with facts and figures.

9.5 Impact of Limited Mobility Violation on CMOs' Revenues

PTA has received several complaints from the CMOs that WLL operators are infringing their rights by provision of services which violate limited mobility restrictions. It was analyzed during limited mobility determination that the cost of Cellular license is approximately 4 times higher than WLL license with similar spectrum. That is why Cellular licenses are allowed to provide mobile services while WLL licenses are permitted to provide fixed services using wireless solution with limited mobility compliance terminals.

The teledensity of WLL services is very less as compared to cellular services due to high prices of terminals, lack of network infrastructure and availability of terminals as shown in Figure-2¹².

¹¹ PTA website-Telecom indicators

¹² http://www.pta.gov.pk/index.php?option=com_content&task=view&id=269&Itemid=658

Teledensity of WLL and Cellular

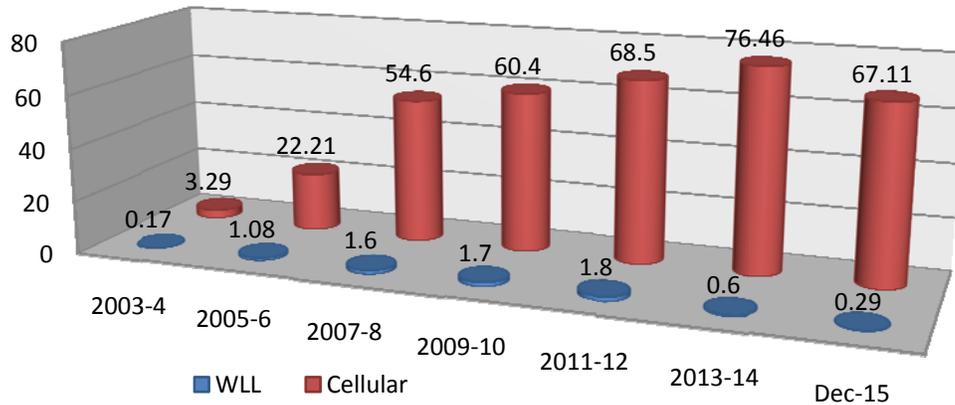


Figure 2- Teledensity of WLL and Cellular

Question 5: Do you think that there has been any impact on revenue of CMOs due to complaint/violation of limited mobility by WLL operators even with very lesser teledensity. CMOs to provide their analysis with brief working.

9.6 Flexibility in Mobility Area

Mobility area for WLL system was defined in LM Determination where WLL system were restricted to single home cell without handoff/handover to the neighboring cell, which was further extended in a way that if a call once setup within a home cell may also continue outside the boundary of home cell, but the call should not be setup outside the home cell, whatsoever the case may be as shown in figure.

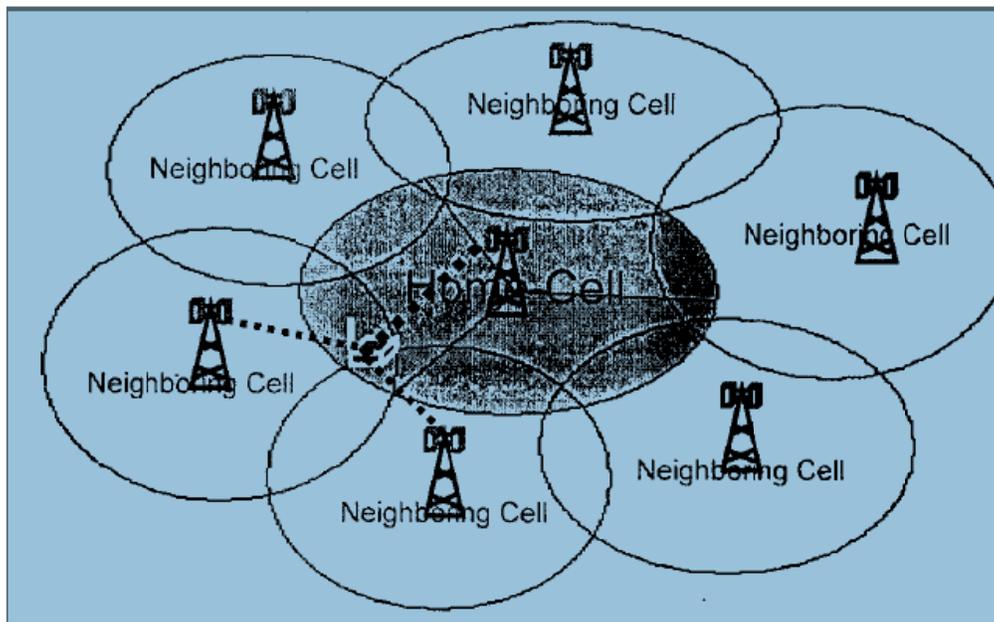


Figure 3-Mobility Area

Question 6: Do you think that there is a need to redefine the area for mobility i.e restricting voice to single cell and enhancing data by inclusion of cluster, city area, national dialing code (NDC) area or any other remaining within a telecom/licensed region / **OR** / it should be kept unchanged. If yes then justify with the additional requirement to be met by WLL operators for not infringing cellular operators' rights.

9.7 Use of Handheld Terminals

WLL operators were restricted to use handheld terminals to implement limited mobility in letter and spirit. It has been reported by WLL industry that restriction of handheld terminals has resulted WLL operators to bear huge financial burden for provision of terminals on subsidized costs, whereas the Cellular handsets with diversified product range are available at affordable cost.

Question 7: Do you think that allowing WLL to use handheld terminals and Dongles will flourish the industry growth without any adverse effect on implementation of LM. Justify with reasons?

9.8 Cost Relation With Increased Limited Mobility Area

The restriction on mobility was the main reason for low price of WLL spectrum compared to mobile spectrum. Any increase in the mobility area must come at a suitable price. The type of services, market absorption/demand, and other important aspects must be taken into account while devising such a pricing plan.

Question 8: What should be the additional cost to be met by WLL if limited mobility area is redefined which provides win-win solution to both (WLL , CMOs) industry. Do you think that present spectrum price of both segments effects the provision of services due to Per MHz, per connection cost?

9.9 Impact of Revised Limited Mobility Area on CMOs

If a viable solution is implemented as a result of 9.6 by revising the limited mobility area definition, it might result into adjustment of CMOs business/commercial plans.

Question 9: To what extent any change in the limited mobility definition would affect the financial/business plans of other telecom sector players especially the CMOs?

9.10 Revision of Licensing Framework

Clause 5.2 of the Telecom Policy 2015 envisages revision of the existing licensing regime based on the best international practices and in line with the latest technological trends. It is important to note that fixed and mobile networks are changing to all IP Next Generation Networks (NGNs). The voice and data networks are getting integrated. The voice is shifting from PSTN to

packets using NGN. There is emergence of VoIP and growing trend of voice moving from PSTN to IP which has lead to fixed mobile convergence (FMC) and unified licensing.

Question 10: Do you see any drastic change required in the existing licensing regime to cater for the issues pertaining to limited mobility, FMC, spectrum trading, spectrum sharing, agreements/arrangements between WLLs and CMOs, integration of licenses and smooth transition of existing LL, LDI, CMO licenses. If yes, then provide best international practices and suggest practical solutions to support your argument.

10. How to respond:

The stake holders are requested to respond back to this consultation by 24th June, 2016. All responses should be sent electronically to DD (WLL) PTA HQs at mudassar@pta.gov.pk with a copy to Director Wireless (Licensing) PTA HQs at amjad@pta.gov.pk and muhammadyousaf@pta.gov.pk.

The comments received after 24th June, 2016 would not be considered.

PTA assures the stakeholder that all the comments received would be duly analyzed and would be taken into account while preparing the framework for regulatory measures and solutions.