

PAKISTAN TELECOMMUNICATION  
AUTHORITY

Framework  
on Regulatory Remedies  
and Solutions for Service  
Provision by WLL  
Operators

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## 1. Abstract

The role of regulator is to create a fair regulatory regime to promote investment, encourage competition, protect consumer interest and ensure high quality ICT Services. In this regards, fixed line telecom Deregulation Policy was issued by the Ministry of Information Technology Government of Pakistan (GoP) in July 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 (Local Loop, Long Distance International). Generally, Fixed line connectivity is provided by laying copper or fiber cable for the last mile solution 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.

This framework is aimed at focusing on possible options for regulatory remedies for limited mobility services. With the increasing demand of high speed mobile broadband networks, technological advancement on the standards developed by ITU, IEEE, ETSI, 3GPP, 3GPP2 and the regulatory provisions on limited mobility, various solutions are being explored to ensure an acceptable outcome for fixed and mobile sector. The framework highlights the legislative issues and summarizes the consultation made with stakeholders for its implementation in the light of Section 5.4 of the Telecom Policy 2015.

## 2. Background

2.1 WLL licenses were issued in 2004 and the operators were assigned spectrum in 450, 479, 1900 and 3500 MHz. Immediately after the receipt of Licenses, the WLL operators raised the issue of poor 'Quality of Service' due to the 'Single Cell Limited Mobility' restrictions. Considering the issues raised by the operators, PTA embarked on a multi-pronged strategy by involving all stakeholders, experts from Qualcomm and industry to formulate a "**Limited Mobility Determination**" which was issued on **July 13, 2005** with following salient features:

- i. Terminal Equipment (TE) may superimpose home cell<sup>1</sup> 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.

Limited mobility communication service was defined 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;*

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

*(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".*

2.2 After issuance of limited mobility determination 2005, operators showed concerns and requested for an industry meeting which resulted in the following amendments in determination:-

- i. Mobility within cluster of cells<sup>2</sup> 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.

### 3. International trends

International trends were explored to find out optimum solution in the light of best international practices.

3.1 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 operators were 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.

3.2 Though WLL services with limited mobility were initially introduced in some parts of the world, the regime didn't last long. Various solutions were introduced e.g. unification of licenses and increasing scope of license to nationwide through payment of additional fees. At

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<sup>2</sup> 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.

present no such example of limited mobility implementation, as being practiced in Pakistan, has been found across the world.

## 4 Consultation Paper

4.1 PTA again initiated consultation on regulatory remedies for limited mobility services in April 2016 in the light of Section 5.4 of telecom policy. A consultation paper was floated in-house as well as with the stakeholders (industry) for their opinion on the following questions:

- a. Understanding of regulatory measures and solution required under Telecom Policy 2015 clause 5.4.6?
- b. Hurdles in Implementation of limited mobility in true letter and spirit by all WLL operators.
- c. Any technical issues requiring discussion in implementation of the Limited mobility?
- d. Impact on WLL operators due to restriction of limited mobility (LM). Is the present decline in WLL subscribers related to LM restriction or some other reasons.
- e. Any impact on revenue of CMOs due to complaint/violation of limited mobility by WLL operators even with very less teledensity.
- f. Is there 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.
- g. Will allowing WLL to use handheld terminals and Dongles flourish the industry growth without any adverse effect on implementation of LM.
- h. 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. Do you think that present spectrum price of both segments hurt due to Per MHz and per connection cost?
- i. To what extent any change in the limited mobility definition would affect the financial/business plans of other telecom sector players especially the CMOs?
- j. 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.

## 5 Consultation Analysis

5.1 The comments received as a result of the consultation process, as described in Section 4 above, reveal that CMTOs are of the considered view that limited mobility area should not be redefined as there are no technical constraints in its implementation with the advancements in technology. Moreover the WLL operators have not followed limited mobility in the past which needs to be strictly implemented through this framework. The low WLL subscriber penetration is only due to lack of business plan and commercial models and not because of restriction on

mobility. PTA should clearly define distinct boundaries for WLL and cellular services. However WLL operators insisted on redefinition of Limited Mobility to Region, city wise to enable WLL industry to flourish and allow them using CPE devices. WLL operators also shared spectrum price per subscriber in comparison with Cellular market using following assumptions.:

Table: 1 Market Comparison

Parameter	Cellular	WLL
Market Size	160 Million	40 Million
Customer Base	139 Million	2.3 Million
Market Reached	87.5 %	5.75%
Spectrum Cost per Subscriber	US \$ 0.09	US\$ 0.21

*The market size for WLL assumed 40 Million.*

The high spectrum cost per subscriber coupled with restrictions on mobility and hand held devices makes it impossible for WLL subscribers to compete with cellular broadband service providers.

The responses received from the stake holders have been summarized at **Annex-A**.

5.2 Though CMTOs emphasized on strict implementation of Limited Mobility, none of them justified if any relaxation to the WLL operators would hurt their business. Moreover sticking to the older regime makes the Telecom Policy clause 5.4 redundant. On the other hand WLL operators suggested relaxation on limited mobility for their survival. However they couldn't rationalize their suggestions with respect to existing statutory provisions.

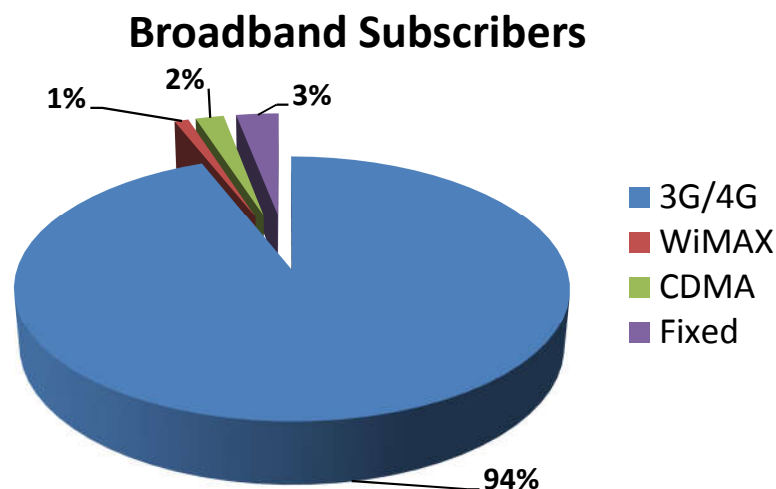
5.3 Analysis of the past data reveals that **Quality of Services (QoS)** has impacted provision of satisfactory services by WLL operators. WLL was introduced as an alternate to Local Loop Services for provision of services in far flung / remote areas where laying of fixed (copper, fiber) infrastructure was not feasible. However the operators focused on big cities where they couldn't meet the network deployment challenges to ensure QoS for competing with fixed line service providers. The technical constraints were further augmented by under par commercial arrangements including high investments and aggressive marketing.

5.4 The another alarming trend of WLL decline is the **closure of BTS** sites due to non feasible business. Most of the WLL operators are closing their services in various parts of the country and maintaining limited number of BTS for limited customers merely to fulfill license network roll out requirements. Wateen WiMAX, the introducer of WiMAX technology in the country, has closed more than 90% of its BTSs country wide. PTCL is also in process of closing VPhone services country wide as they intend to migrate their wireless network towards

deployment of LTE. However, Sharp and Wi-Tribe are still continuing to provide services at a larger scale in the competitive environment.

5.5 The WLL regime with limited mobility was introduced as an alternate for fixed line services. In order to maintain clear boundaries between WLL and cellular regime a **Restriction on use of handheld terminals** was placed. However this lead 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. Subscribers have diverse options to switch amongst cellular service provider while the WLL subscriber is always limited to operator specific CPE. Availability of smart phones or dongles for WLL operators can be thriving factor for sustaining WLL industry. The WLLOs can choose to use one standard CPE across the segment to give the customers the facility of switching their services as in the case of CMOs.

5.6 The **Market Share of WLL** in broadband proliferation is persistently very limited due to enormous growth in competitive mobile market. Despite the fact that WiMAX and CDMA services were introduced over a decade ago, mobile broadband i.e. 3G and 4G has taken 94% share in the broadband market within three years of introduction. In such a scenario WLL sector are no-where near to threaten the cellular industry. Though the WLL operators have offered lucrative packages but the customers' demand is more inclined towards the mobile services as per the statistics of March 2017 shown in the following graph:



5.7 PTA as a regulator has to maintain a balanced approach for all the telecom sectors so that the right of licenses and consumers be protected through fair regulatory regime. Accordingly a framework on Regulatory Remedies and Solutions for Service Provision by WLL Operators has been prepared, as per the Telecom Policy 2015, which is attached at **Annex-B**.

Annex-A

Summarized Industry Consultation with Industry Response

Sr #	Ufone	Telenor	Zong	Mobilink	Telecard	PTCL	World call	Sharp	Wi-tribe	Wateen
1.	Question-What is your understanding of regulatory measures and solution required under Telecom Policy (TP) 2015 clause 5.4.6?									
	PTA to develop a framework for regulatory remedies considering OTT , holistic market review and WLL market	PTA to develop a framework for enforcing current restrictions of LM.	LM is single cell mobility and those WLL who are violating be limited by not infringing CMO domain.	A framework be developed by PTA ensuing that there is no trespassing of jurisdictions of telecom licenses.	Section 5.4 was not included in the policy draft earlier circulated by MOIT/PTA. Regulatory measures be prepared as per TP.	WLL customers are allowed to move within PTA defined telecom regions irrespective of voice/data. Customized solutions are very expensive, non-scalable.	-	Framework be developed by PTA and following amendments be incorporated in policy (Active infrastructure, City wise LM, Sale of desktop, non portable terminals by WLL)	A highly recommended grounds needed to be accessed by allowing LM based on PTCL telecom regions with no soft handovers.	Regulatory measures are defined objectives, rules, frameworks, implementations and measures
2.	Do you think that LM has been implemented in true letter and spirit by all WLL operators?									
	Implementation of license condition be confined as per license.	Not implemented by WLL operators for Data Services	Handheld terminals be not allowed	LM not implemented by all WLL operators	No example of WLL limited mobility implementation in the whole world.	The imposition of single cell mobility to WLL is unfair. each user stays online for 500 minutes/day with average session time of 50 minutes exactly like DSL stats.	-	Not sure as it was challenging due to (Variation in RF signals, RSSI,SNR,CDMA,soft, softer handoffs).	Not implemented in totality by all WLL industry.	Implemented by Wateen, however not implemented by all other WLL operators
3.	Does the Telecom sector still foresee any technical issues in implementing the LM? If yes, please elaborate in detail									
	The frequency bands assigned to WLL and LM issues are not technology linked. however following	No technical Constraints	Single Cell mobility be enforced.	No technical issue in implementing LM	Use of Wireless technology to offer fixed location based service is biggest	No technology link however following inconsistencies exist. WiMAX BTS has small density, high attenuation.	-	CDMA is interference limited technology. WiMAX used 3 channels in 5Mhz channel that comabt interference. Call at cell edges is very	LM should not be possible in existing n/w infrastructure as no support exist from	No technical issue



	inconsistencies exist. WiMAXBTS has small density, high attenuation.				challenge.			challenging.	vendor in upgrading the network elements.	
4	Is the present decline in WLL subscribers is related to LM restriction or some other reasons. Please justify with facts and figures									
	WLL operators invested in nationwide deployment may provide all services(voice, data) within licensed region	It is because of WLL business model and their decisions.	No impact of LM on WLL decline.	Consumer acceptance, convenience, diverse services are the major reasons. PTCL has significant market share of 88% in WLL subscribers.	Infringement of CMOs in fixed line by desktop cellular phones, payphones, SIMbank, UAN has contributed to decline in WLL subscribers.	Recent decline in WLL is due to 3G/4G influx and non availability of WLL smart handsets	-	Technology used by WLL didn't flourish like cellular technologies and PTA enforcement on LM, high business cost and duties of WLL.	Only data business has considerably proliferated in WLL instead of voice business.	No impact
5	Has there been any impact on revenue of CMOs due to complaint/violation of LM by WLL operators. CMOs to provide their analysis with brief working.									
	As per Answer to Question 1 above.	Yes substitute offerings impact potential revenue of CMOs	Cellular license cost 4 times higher than WLL.	Every Penny earned by WLL while violating LM is potential revenue loss of CMO	Related to CMOs.	No impact of WLL services on Cellular services due to uncomparable customers base and revenue.	-	There shouldn't be any weighty impact	There has been no impact considering high growth of cellular subscribers.	Relevant to CMO
6	Is there a need to redefine the area for mobility or it should be kept unchanged.									
	WLL's invested in nationwide deployment may provide all services(voice, data) within licensed region	No reason to redefine the area, otherwise it will be a backdoor entry of WLL in cellular domain.	Only single cell mobility be allowed to WLL.	No need to redefine.	LM concept be applied on Licensed telecom region basis.	Single cell mobility should be redefined and restricted to PTA defined telecom regions.	Region wise mobility be allowed	City wise LM be allowed	Allowing LM based on 14 PTCL regions with a further restriction of no soft handovers between cell sites.	No reasonable advantage of enhanced mobility, instead partnership model be initiated.

7	Allowing WLL to use handheld terminals and Dongles will flourish the industry growth without any adverse effect on implementation of LM.									
	Use of handheld terminals is consumer prerogative and it shouldn't be linked with LM restrictions.	What so ever device be used mobility be restricted within single cell.	Allowing handheld terminals to WLL will go against PTA decision dt 13 July 2005.	Such devices should be 100% compliance to LM	Dongles and Wifi routers be restricted for cellular services.	Allowing handheld terminals to WLL would help the industry to survive.	-	Only WLL be allowed to use desktop or non portable terminals.	Allowing handheld voice terminals to WLL may allow backdoor entry in Cellular domain. however dongles, Wifi cloud devices be allowed.	Yes devices be allowed for WLL growth
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									
	WLL in a better position to respond.	The spectrum should be available to all through auction only after its valuation	-	Scope of LM should not be redefined.	Question of spectrum cost will arise when PTA revisit LM regime and make it technically/c ommercially viable for WLL.	WLL spectrum is already expensive considering addressable market .Any additional burden will kill WLL industry.	-	No additional cost be met by WLL as they are already paying more compared to a addressable market.	No additional cost required comparing to Cellular Market size, Customer base,market reached, spectrum cost /subscriber[1 60M,150M+, 80%,\$0.09] with WLL[20M,2.3 M,10%,\$0.42]	No additional cost required
9	To what extent any change in LM definition would affect the financial/business plans of the CMOs?									
	As per Answer to Question 1 above.	It will degrade the CMTOs business and	-	WLL shouldn't overstep in Cellular domain.	After the business boundaries are clearly	No effect on CMOs business plan.	-	No impact on CMOs if LM be redefined.	No effect	No effect on CMO as they have large clientele.

		negative impact on further investment decisions.			defined with consensus of both industries.					
10	Do you see any drastic change required in the existing licensing regime to cater for the advanced licensing issues & integration of licenses .									
	Our proposals given to MOIT/PTA from time 2 time be given due consideration	Licensing framework cannot be clubbed with narrow issue of LM.	-	CMTOs separate license being tech neutral can be unified which will be convenience for CMOs and regulator.	Spectrum trading sharing be allowed amongst all operators in the country.	Review of existing licenses be carried out separately.	-	Active infrastructure (Core, MSC, RAN) sharing model be useful for WLL, CMOs. Introduction of MVNO in the market.	Integration of licenses may not be a viable option due to variation in fees, however WLL be amended to include LM on region wise.	sharing, acquisition and mergers are good examples to survive for existence and competition

### Framework on Regulatory Remedies and Solutions for Service Provision by WLL Operators

1. Regulatory measures are always initiated by the regulators to promote the availability of a wide range of high quality, efficient, cost effective and competitive telecommunication services and facilitate rapid modernization of telecommunication systems and telecommunication services. PTA has to protect the rights of the licensees as well as interests of users. 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 i.e. Service Provision, of the said policy services provided by the WLL operators shall be restricted by:

- a. Geographical coverage
- b. Limited Mobility

Above in view, following framework for regulatory remedies and solutions for provision of services by WLL operators, has been put in place, irrespective of type of service (Voice and Data) on short and long term basis:

#### 2. **Short Term Measure:**

The WLL operators shall continue to follow Determination on Implementation of Limited Mobility dated July 13, 2005 and its subsequent amendments both for voice and data services. **Use of hand held devices is also allowed**, however no data connection will be provided without associating it with corresponding Mobile Directory Number (MDN) though BVS in order to maintain PTA's numbering plan and address security concerns. In addition WLL operators may adopt one of the following two approaches:

##### **2.1 Nomadic Connectivity**

The customers are allowed to establish connection from a fixed number of radio base stations (RBS) within the licensed region. These limited number of RBS could either be pre-defined for each user or be kept random, as per convenience of the respective licensee. At any given time, the RBS to which the customer is connected shall be considered as the designated radio based station, as defined in the WLL licenses.

The 14 Telecom Regions have been grouped in three tiers according to Auction Winning Price (AWP) for each region in 2005 Auction. The number of RBS allowed for each tier have been maintained keeping in view the number of locations a subscriber may visit frequently and the number of sites required for each location to provide quality coverage. Following number of RBS are allowed for each region:

Table: 2 Number of RBS per Region

Tier	Regions	Number of RBS
I	LTR & KTR	10
II	ITR, GTR, FTR, MTR,	08
III	RTR, NTR-2, HTR, CTR, STR-I, STR-V, WTR, NTR-I	05

## 2.2 Mobility within the Licensed Region

The customers shall be allowed to use their WLL connections with full mobility within the licensed region. In no circumstances inter-region mobility will be allowed. However, the licensee shall pay certain cost for availing such mobility. The mobility cost for each region has been calculated keeping in view following factors:

- Initial Spectrum Fee for WLL operators
- Initial Spectrum Fee for Cellular operators corresponding to each region
- License duration of WLL and Cellular operators
- Availability of end user equipment
- Potential market
- Technological advancements

Table: 3 Regional Mobility Cost per year for 1900 MHz and 3.5 GHz bands

Telecom Region	WLL Regional Mobility Price Per Year M (PKR)	
	1900 MHz	3.5 GHz
CTR	3.70	1.85
FTR	13.01	6.51
GTR	9.03	4.52
HTR	3.09	1.55
ITR	8.88	4.44
KTR	36.87	18.43
LTR	10.81	5.40
MTR	8.76	4.38
NTR-I	6.18	3.09
NTR-II	2.54	1.27
RTR	6.09	3.05
STR-1	4.10	2.05
STR-V	2.42	1.21
WTR	2.30	1.15
<b>Total</b>	<b>117.77</b>	<b>58.89</b>

The Regional Mobility price shall be paid on per annum basis. In case of renewal, a request along with corresponding fee must be submitted to PTA three months before the

expiry date. The interested licensees may apply as per the application form attached as Annex-C.

Note: This option shall not be applicable for 450 MHz and 479 MHz bands.

### **3. Long Term Measures**

3.1 Long terms measures will include the review of the existing Licensing Framework in accordance with the current market state, applicable telecom legal regulatory framework, and latest trends in telecommunication service provisions in line with the directions at section 5.2 and 8.14 of the Telecommunication Policy 2015 issued by Federal Government. The new licensing regime may propose unification of licenses thus providing an opportunity for WLL operators to re-define their business strategies.

3.2 Spectrum trading and sharing frame works are also being prepared enabling the wireless operators to increase spectrum efficiency resulting in provision of high quality services at competitive prices. Mutual agreements/arrangements between the WLL operators will provide a life line to ailing industry.

#### **General**

4. The proposed measures shall be applicable for only those WLL operators which do not have any dues outstanding towards PTA. In case the outstanding dues are subjudice at any forum, the concerned operator, wanting to avail any of the above measures, shall deposit 15% of revenue in an escrow account designated by PTA on annual basis until the amount equals outstanding dues or till the final outcome/adjudication of the case.

5. This framework will not be reviewed for the remaining life of the WLL licenses. All WLL licensees are required to adhere to the statutory provisions and remedies/solutions as envisaged in this frame work in letter and spirit. Any violation will be dealt as per the statutory provisions.

## **Annex-C**

For Official Use Only

File No. \_\_\_\_\_  
Company Name- \_\_\_\_\_  
Proposal Date \_\_\_\_ - \_\_\_\_\_

### **Check List for Applying Mobility within the licensed Region**

S. No.	Required Documents	Yes	No	Remarks PTA Use Only
1.	Application Letter mentioning the following:- i. WLL License No. with Expiry Date. ii. Telecom Regions requested for regional limited mobility as per Table-3 of the framework. iii. No. of years for which Regional Mobility shall be availed.			
2.	Board resolution for the said Request			
3.	Payment for Regional mobility. Demand Draft/Pay order No: _____ Amount: _____			
4.	Latest Form-29 and Form-A duly certified by SECP.			
5.	Copies of CNIC/Passport of CEO & Contact Persons.			
6.	Undertaking on duly notarized stamp paper: i. That the company or its Directors have never been declared insolvent by any court of Law ii. That the directors of the company have never been convicted by a court of law for turpitude (other than minor offences) iii. That neither the applicant company nor its shareholder directors are defaulter(s) of PTA.			

Signed for and on behalf of the License Holder: \_\_\_\_\_

Date of application: \_\_\_\_\_

Full Name (in block capitals): \_\_\_\_\_

Licensee/Company : \_\_\_\_\_

Completed forms may be submitted to:

**Director General (Licensing)**  
**PTA Headquarters Sector F-5/1**  
**Islamabad.**