

**Pakistan Telecommunication Authority**  
**Headquarters, F-5/1, Islamabad**  
[www.pta.gov.pk](http://www.pta.gov.pk)

No. 8-1/04/Ltd Mob/LL&M/PTA

July 13, 2005

**Determination on Implementation of Limited Mobility**

**1 Background:**

1.1 Telecom Deregulation Policy of the Government of Pakistan: With the expiry of the PTCL's monopoly on December 31, 2002, Government of Pakistan embarked on an aggressive policy by introducing telecommunication sector reforms with a vision to increase private sector participation. These reforms were introduced in the form of three distinct telecommunication policies which were aimed at promoting:

- (a) Fixedline Telecommunication Systems and Services
- (b) Competition in cellular systems and Services
- (c) Proliferation of non-voice and internet systems and services

1.2 The Fixedline Telecom Deregulation Policy ( 13 July 2003) for Telecom Sector was announced by Government of Pakistan with a view to promote fixedline subscriber penetration, infrastructure development and increase in service choice for customers of telecommunication services at competitive and affordable rates. The policy proposed issuance of technology neutral fixedline Telecom Service Licenses. Fixedline connectivity means laying of copper or fiber cable for the last mile solution, i.e., local exchange to subscribers' premises, which is expensive and in some cases cost prohibitive. Therefore, 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 fixedline, GoP also restricted the WLL operators to limit their wireless last mile solution within "a single Cell" that under no circumstance this single cell could extend its service/mobility beyond the **local call charging radius**.

Section 4.1.10 of the Telecom Deregulation Policy ( 13 July 2003) clearly stated the following conditions for the Local Loop operators:

***“LL licensees who opt for wireless solutions may provide limited mobility within a cell, but not beyond local call charging radius. No inter-cell handovers and roaming to other networks will be allowed”.***

## **2 Regulatory Preparations at PTA**

2.1 Pakistan Telecommunication Authority, while implementing the Policy, kept the telecom industry and stakeholders fully informed through Investors’ Conferences, interactive correspondences, Emails, up-to-date information on its website (<http://www.pta.gov.pk>) and also prepared a very detailed and informative Information Memorandum (IM) for LDI, LL **Fixed Line Telecommunication Licenses dated March 8 ,2004**. The IM included information regarding Pakistan telecommunication sector, rights and obligations of LL licensees, instruction for applicants, bidding procedure for assignment of the spectrum, information on available frequency spectrum and text of LL Licenses etc.

2.2 Rule 2(1)(m) of APC Rules, 2004 has defines Limited Mobility Communication Service as under :

**“Limited Mobility Communication Service”** means 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 network; (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.

### **3. Spectrum Auction**

3.1 Prior to the auctioning of the spectrum, PTA through the help of an International consultant laid down very nominal 'Base Spectrum Price' for all bands. It was also stated that, if in case the applicants are equal to or less than the available spectrum carriers/ bands then the same shall be allocated at the base price.

3.2 In August 2004, WLL spectrum auction was held wherein spectrum was allotted to different companies through an open and fair competition. Some bands were issued at very nominal base price due to limited number of applications received.

3.3 In some lucrative bands especially the 1900MHz band the competition was tough and the investors seemed prepared to bid aggressively.

### **4. Issues**

4.1 Concerns of the Local Loop Operators with limited mobility option: Immediately after the receipt of WLL licenses, the operators raised the issue of poor Quality of Service (QoS) due to the 'single cell Limited Mobility' restrictions. In November 2004, M/S Telegard, M/S PTCL and M/S World Call presented Papers on the issue of single cell Limited Mobility restrictions highlighting the following concerns:

- (a) Call drops
- (b) Call set up failures
- (c) Degraded voice quality

4.2 Counter Concerns of Cellular Mobile Operators: Mobile Operators also raised their concerns and expressed doubts on the intentions of the LL operators who opted for limited mobility. They were of the view that WLL licenses 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. Therefore, mobility beyond a single cell will lead them into the domain of cellular mobile operations.. In May, 2005 the mobile cellular operators formally filed a complaint against one of the WLL

operator, i.e., M/s Telecard alleging that service provider was offering mobility significantly outside the limits imposed by the Wireless Local Loop License.

## **5 PTA's Consultation Strategy & Search for a Viable Solution**

5.1 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. Which included consultation with neutral and notable industry experts from within Pakistan, and from abroad, i.e., discussions with CDMA lead group – Qualcomm, and other experts including the cellular operators, the WLL operators, CDMA equipment manufacturers and above all repeated meetings with the "Policy Makers" i.e. Ministry of Information Technology (MoIT).

5.2 Constitution of a Dedicated PTA Task Force: Keeping in view the concerns of the WLL operators, PTA dedicated a team of senior officers in order to carry out the study, understand the problem, analyze the arguments in detail, probe all those avenues through which Quality of Service could be improved for the improved business model of the Limited Mobility, LL operators and the consumers benefit at large and recommend an optimally acceptable solution for all the parties. Throughout the major half of this year PTA's dedicated team consisting of financial, technical and legal experts through extensive deliberations, conducted a consultation process and tried explored every possible means to find an optimal solution acceptable to all.

5.3 Arrangement of Seminar – January 2005 and concerns of the operators: PTA planned a seminar in January 2005 regarding implementation of limited mobility in WLL networks. All WLL operators, Cellular Mobile operators, university professors/researchers and neutral telecom experts were requested to submit Papers concerning the issue of Limited Mobility. The papers, presented by the following at the seminar held on January 27, 2005 were also scrutinized and useful information was received:

- (a) Dr. Thomas O' Neil, *Qualcomm USA (WLL)*
- (b) Mr. Ameer ud Din, *Chief Technical Officer & Member IT, PTCL (WLL)*
- (c) Mr. Irfan Wahab, SEVP, *M/S Telenor Pakistan (Cellular Operator)*
- (d) Mr Jamal Nasir, *Chief Technical Officer M/S Telecard (WLL Operator)*
- (e) Mr. Frederic Brion, *Millicom, Vietnam (Cellular Operator)*

(f) Dr. Muhammad Saleem Mian, *UET Lahore (Independent)*

- 5.3.1 The **WLL operators** claimed that restricting mobility to single cell without Soft-handoff would result in poor Quality of Service. Additionally, they requested ‘mobility’ allowance in a cluster of six BTS or in a geographical zone (a metropolitan) with much more mobility than that which was envisaged in the Policy.
- 5.3.2 The **cellular mobile operators** proposed that the scope of mobility should not be changed and that mobility should be limited to a single Cell and no handovers or handoffs should be allowed. They precisely emphasized on the implementation of Limited Mobility as per the Policy of the Government of Pakistan. They claimed that, failure to implement Limited Mobility within the spirit of Policy 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 US\$ 291 million per license. They also argued that both the policies, i.e., Cellular Policy & Fixed line deregulation policies were known to all the concerned parties prior to betting on the auction and nothing should be changed.
- 5.3.3 Representative of **Qualcomm, USA** recommended reconsidering and removing the restriction on Soft-handoffs so as to allow proper functioning of the CDMA network. He suggested that CDMA subscribers on WLL networks be permitted to maintain simultaneous communication and handover capability within a set of cells.
- 5.3.4 Experts from UET **Lahore** highlighted the importance of CDMA based Local Loop Services as per the Policy issued by the Government of Pakistan. A few experts proposed the use of Fixed Wireless Terminals (FWT) instead of handsets with allowance of Soft-handoff so as to restrict mobility. Experts projected the idea of “location based technology” within CDMA to determine the distance of the subscriber from the cell and be disconnected or not allowed any service beyond a certain limit.

- 5.3.5 The seminar helped in bringing all the parties to a common platform and helped the opposing fractions, i.e., “Mobile Cellular Versus WLL” to understand the severity of the problem from each others perspective. Further deliberations/studies were advised by the Authority as the issue was not concluded due to significant varying views of the stakeholders.

## **6 Additional Meetings**

6.1 Meetings with Qualcomm USA: Meetings were held with the representatives of Qualcomm USA in order to get inputs regarding the implementation of Limited Mobility. The representatives believed that restricting mobility to a single Cell without Soft-handoff would create technical hurdles for the operators and hence recommended Mobility within a geographical zone or a cluster of Cells.

6.2 Meetings with GSM Association Representative: Two meetings were also held with the representative of GSM Association in which they emphasized upon the importance of plans of Cellular operators to bring foreign direct investment into Pakistan to the tune of a couple of billion dollars as a result of the progressive policies of the government of Pakistan.

6.3 Meetings with Cellular Mobile Operators: In February 2005, Cellular Mobile Operators jointly arranged a meeting at Marriott, Islamabad to discuss the issue. The meeting was attended by the Minister for Information Technology, Chairman PTA along with senior officials of both the ministry and PTA. The cellular mobile operators once again raised their concern regarding back door entry of the WLL operators through a Cellular like service if mobility was not restricted as per the Policy. They further urged the implementation and the compliance of Government Policy in letter and in spirit, which in their view restricts the mobility of WLL subscriber to one Cell with no handoff/handover of the calls to the neighboring Cells.

6.4 Meetings with WLL Operators: On March 8, 2005, PTA arranged a meeting at Marriott Islamabad so as to provide an opportunity to WLL Operators to discuss the issue in the presence of the Minister for Information Technology. WLL operators requested change in the Policy by the federal government; however, the same was turned down with the advice to find a solution

within the spirit of the Policy. The process of informal meetings with the operators continued for long time.

6.5 Meetings with Neutral Experts. Dr. Tanveer ul Haq PhD from Purdue University, USA and Dr. Syed Ismail PhD in Electrical Engineering from University of Pittsburgh, USA, the two neutral experts, carried out their independent studies. In their opinion the mobility in a single cell is absolutely possible and the operators could implement the same if desired. Their stance is that limited mobility is actually an option within the fixedline policy and the LL operators are expected to use all methods available to expand their penetration be it through copper, cable or fiber with an option to utilize wireless technologies. Unless their business plan doesn't cover all these options they are bound to direct their attention eventually towards a full mobility cellular service.

## **7 Meetings with Equipment Vendors.**

7.1 ZTE: ZTE team in its presentation to the Authority clearly highlighted the implementation of Mobility only in a single Cell by allowing the Soft-handoff and softer handoff within the Home-Cells to overcome the QoS issues as raised by the WLL operators. They claim that their solution is standard CDMA solution.

7.2 Samsung: They heard the issue, promised to get back but did not respond.

7.3 Huawei: In their opinion they have a standard special solution for Pakistan which will improve quality of service and implement the policy but for some subscribers they may not guarantee quality of service.

7.4 Lucent: They claimed that they have the capability to resolve the issue. However, they said that if Soft-handoff is not allowed they are not interested in doing business in Pakistan.

7.5 Motorola: They are of the view that they are not interested in anything less than a cluster based solution and that the policy needs an immediate revision to utilize the technology to its best.

## **8. COMPLAINT FILED BY MOBILE OPERATORS AND SUBSEQUENT PRELIMINARY HEARING:**

8.1 Cellular Mobile Operators i.e., M/s Telenor Pakistan (Private) Limited ,M/s Warid Telecom (Private) Limited, M/s Paktel Limited, M/s Pakistan Mobile Communication Limited ( Mobilink) ; filed a complaint against M/s Telecard under Sections 23 and 31, read with Sections 4(f), 5(2)(b) and 6(a) of the Pakistan Telecommunications (Re-organization) Act, 1996 to the Authority and subsequently preliminary hearing was held on **13 June 2005 at 1000hrs** and following attended the same:

Mr. AHMAD HOSAIN	LEGAL COUNSEL, TELECARD
Mr. FAZAL HUSSAIN	CEO TELECARD
Mr. JAMSHED MASOOD	VP TELECARD
Mr. BRIG ® S. N. BUTT	REGULATORY AFFAIRS, TELECARD
Mr. SAVERA KIANI	LEGAL CONSULTANT, TELECARD
Mr. OMER KHAN	LEGAL COUNSEL TELENOR
Mr. M. ASLAM HAYAT	LEGAL ADVISOR TELENOR
Mr. KHALID IBRAHIM	IBRAHIM& CHIMA FOR MOBILINK
Mr. SHAHZAD ALAHI	CORNELIUS LANE & MUFTI
Mr. BABUR SUHAIL	DIRECTOR LEGAL AFFAIR PMCL
Mr. ZARRAR KHAN	MANAGER (ENGG) MOBILINK
Mr. NAEEM ZAMINDAR	HEAD OF STRETAGY MOBILINK
Mr. BRIG® F.R ADHAMI	R.A. MOBILINK
Mr. SHAN UL HAQ	REGULATORY AFFAIRS TELENOR
Mr. ABDUL MOBEEN	REGULATORY AFFAIRS TELENOR
Mr. ABDUL KHALIQ AWAN	PAKTEL LIMITED.

8.2 Grievances stated in the complaint: The Complainants in their complaints have stated that “they are aggrieved that while they are (presently) the only parties licensed to provide mobile telecommunication services in the whole of Pakistan, and have (collectively) invested billions of dollars in this behalf, the Respondent (under the pretext of the Local Loop License issued to it) is effectively positioning its network roll out and service plans for providing mobile telecommunication services in the territory covered by its license, and has already in some instances marketed and provided mobile communication services free of restrictions imposed under its license. The Complainants are aggrieved that this amounts to clear violation of the Pakistan Telecommunications (Re-organization) Act 1996 (“Act”) and their licenses. The Respondent’s acts infringe the rights of the Complainants acquired on the basis of solemn representations of the Federal Government stipulated in the De-Regulation Policy of the Telecommunication Sector and the Mobile Cellular Policy which were translated into the terms of the licenses issued by the Pakistan Telecommunication Authority”.

## **9. Final Presentations by WLL Operators Meetings with CMT and WLL Operators**

9.1 On June 4 2005, PTA arranged a meeting at PTA Headquarters to provide another opportunity to WLL Operators to discuss the issue in the presence of the Minister for Information Technology. The Operators, in their presentations, requested the Minister to allow Mobility in a cluster of several BTSs or to a geographical zone.7.2 The Minister on behalf of the federal government advised the operators to follow the Policy.

9.2 On June 23, 2005 final meeting with Mobile operators was held at PTA HQ, Islamabad. The meeting was chaired by Chairman PTA and attended by CEOs/SEVPs of all mobile operators, PTA dedicated Task Force working on the issue and the neutral experts i.e. Dr. Tanveer ul Haq and Dr. Syed Ismail Shah. In the meeting, PTA's solution was presented and discussed. The Soft-handoff within Home-Cell and definition of Cell was discussed. The mobile operators in principle agreed to the solution and definition of Cell, however, requested PTA that the draft should be provided to them so that they can check its language and make editorial correction in it, if needed. The PTA agreed to their request and provided them draft of the determination for editorial correction and extending the same within seven days of forwarding them the same.

9.3 However, WLL operators, some equipment vendors and Qualcomm offered their comments. They highlighted call setup failure at the edges of the Home-Cell. Qualcomm commented that on the edges of Cell Terminal Equipment if detects a stronger signal from a neighbor Cell, it will perform idle handoff/handover to neighbor Cell. This idle handoff/handover will result in failed call origination and call termination. However, Qualcomm asserted that due to varying RF channel conditions (Cell breathing effect), call drops might occur.

9.4 In May 2005, Qualcomm published a paper/presentation on ***Policy and Regulatory Challenges – Technology Provider' View*** which affirms;

“- Retaining soft-handoff improves coverage, capacity, quality and data rates.

- Multi-path (signal received from multiple sites) improves voice quality and system capacity.

- Cell breathing is not a concern → more effective network planning and optimization.”

9.5 On June 24, 2005 a final meeting with WLL operators was held at PTA HQ, Islamabad. The meeting was chaired by Chairman PTA and attended by CEOs of WLL operators, PTA dedicated a Task Force and neutral experts, i.e., Dr. Tanveer ul Haq and Dr. Syed Ismail Shah to comprehensively present and discuss PTA’s solution. WLL operators proposed that the solution should be the standard CDMA solution. The neutral experts argued that CDMA standard is originally developed for full mobility communication network and therefore, some minor addition in the standard would be needed to implement the solution. The neutral experts emphasized that this addition would not change the main standard and can easily be done. In the meeting it was also highlighted that ZTE and Hwawei have already implemented the solution. After a thorough discussion and extensive deliberations, the WLL operators agreed to the solution and requested that the draft determination should be provided to them so that they may check its language and make editorial correction if needed. PTA agreed to their request and provided them the draft determination for submission of their editorial correction within seven days of forwarding them the same. The Mobile operators offered their combined comments and proposed minor changes in the determination.

## **10. License implications in Terms of Fee etc.**

10.1 Cost of Cellular License: **The cost of a mobile cellular license is US\$ 291 Million** Dollars. The Term of mobile cellular license is **15 years**.

10.2 Cost of WLL License: Cost of 5 MHz in 1900 MHz Band and 5 MHz in 450 MHz Band ( total of 10 MHz) for all telecom regions is Rs: 5998 Million (3847 M+ 2151M ). In US Dollar the amount comes out to US\$ 99.9 Million. Cost of initial license fee for the all telecom region is US\$ 10000x14 = US\$ 0.14 Million. The total cost of WLL licenses for all telecom regions with 10+10 MHz CDMA band for a period of **20 years is US\$100 Million**. The cost of WLL licenses for all Telecom Region with 10 + 10 MHz CDMA band for a period of 15 years comes out to US\$75 Million.

10.3 The cost of cellular mobile and WLL licenses as given above visualize that the cost of cellular mobile license is approximately 4 times higher than the cost of WLL Licenses for all Telecom Regions.

## 11. Available Options

11.1 Detailed consultation process endowed the following four options for implementation of Limited Mobility.

**Option – I**: Mobility in single Cell with no Soft-handoff

**Option – II**: Mobility within a cluster of Cells

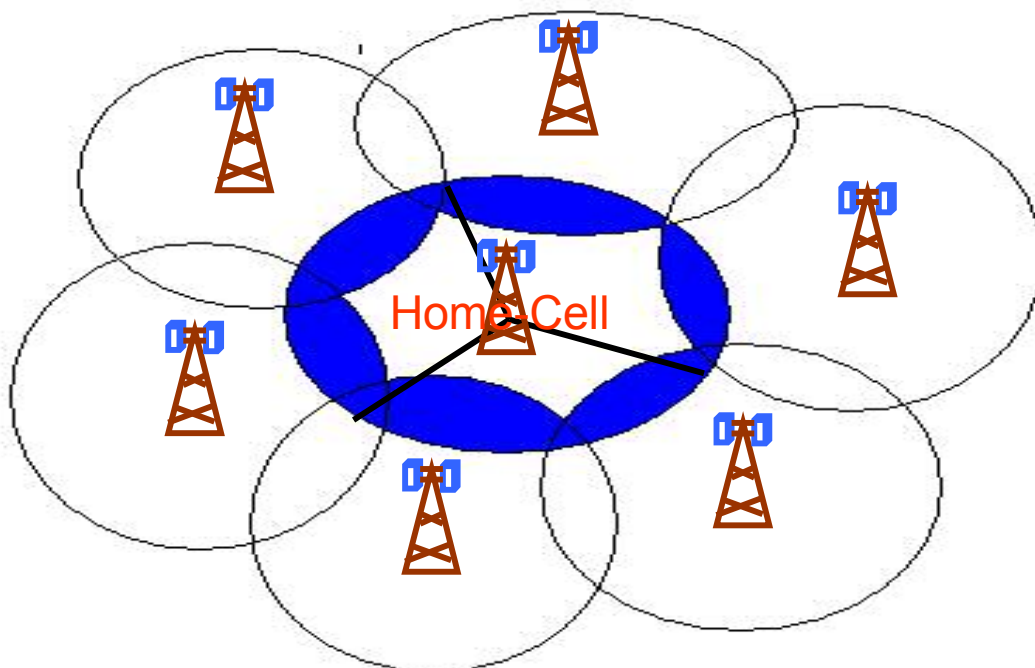
**Option – III**: Mobility within a Geographical zone

**Option – IV**: Mobility in **single Cell** with Soft-handoff

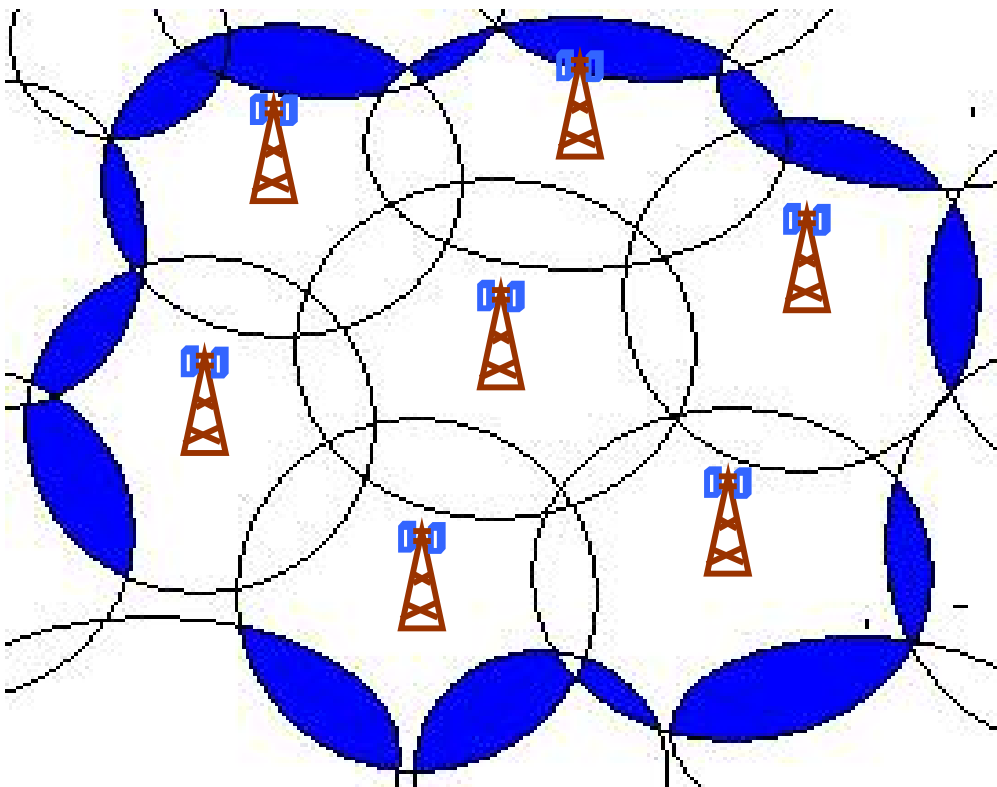
11.1.1 Option – I: Mobility in single Cell with no Soft-handoff: This option is technically implementable but can result in the following problems in the coverage overlapping areas:

- (a) Call drops
- (b) Call Set up failures
- (c) Degraded voice quality

Furthermore, in the coverage overlapping areas proper communication is not guaranteed as a result the single Cell is virtually further restricted. The graphical presentation of option 1 is given below:



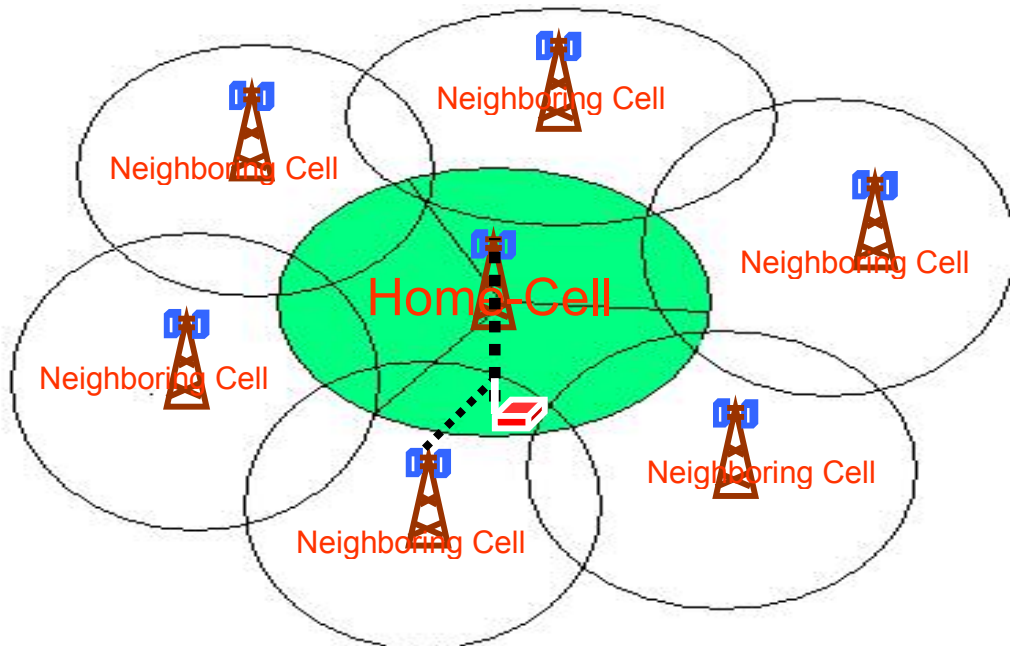
11.1.2 Option – II : Mobility within a cluster of Cells: This option was proposed by WLL Operators. In this option mobility would be much beyond single Cell which is violation of the Policy and the license conditions. The mobility in this case would be within seven (07) Cells i.e. seven times greater than what is given in the Policy. Except few big cities, a cluster would cover the whole city and mobility would be provided within the whole city. This is against the spirit of the Policy and would hurt the cellular mobile operators businesses. It was also studied that the QoS issues would still be present on the boundaries of the cluster. The graphical presentation of option 2 is given below:



11.1.3 Option – III : Mobility within a Geographical zone: This option was also proposed by WLL Operators. In this option mobility would be beyond single Cell which is violation of the policy and the license conditions. This would allow large scale mobility and be very difficult to define multiple geographical zones within a city for all WLL operators as every operator usually has its own network coverage plan. Defining geographical zones within each city and for every

individual operator is impracticable. It is impossible to divide all cities into geographical zones for the WLL operators whose network plan and allocated frequency bands are totally different. Implementation of such solution would be extremely complex. Furthermore, the QoS on the boundaries of zones would be poor due to radio coverage overlapping on the boundaries of such zones.

11.1.4 Option – IV : Mobility in single Cell with Soft-handoff : In this option, the Terminal Equipment having rake receiver would be able to receive Home-Cell's signals as well as other signals and superimpose them to improve QoS. The Terminal Equipment would be able to communicate as long as it receives Home-Cell's signals. The moment Home-Cell signal, i.e., traffic channel, disappears service should be denied to the Terminal Equipment. This option fulfils the license conditions and easy to implement in WLL networks. It restricts mobility to a single Cell. Due to capacity requirements, mobility may be 1-2 Kms in big cities and up to 25 Kms in rural areas. The Soft-handoff within Home-Cell resolves the interference issue and hence provides good QoS. This solution is supported by ZTE, PTCL (Huawei), Dr. Tanveer ul Haq and Dr. Syed Ismail Shah. This option is within the spirit of Policy and resolves the apprehensions of WLL operators regarding poor QoS. The graphical presentation of option 4 is given below:



11.1.5 Keeping in view the pros & con of above four options, the Policy and license conditions, Option 4 is the most appropriate option/solution therefore, approved by the Authority for implementation of Limited Mobility in WLL networks.

## **12. PTA's Solution & Implementation Directives**

12.1 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 laws of Pakistan and policies issued by the government of Pakistan through its judicious and progressive policies. Keeping in view the recommendations of the independent foreign qualified local experts, meetings with majority of the vendors, and intense study of the PTA Task Force, the Authority finally recommends the solution which guarantees Quality of Service, extend reasonable liberty in Mobility, promotes a healthy business opportunity and shall not leave a room for overlapping of jurisdictions except for what was already envisioned in the Policy directives, for WLL operators.

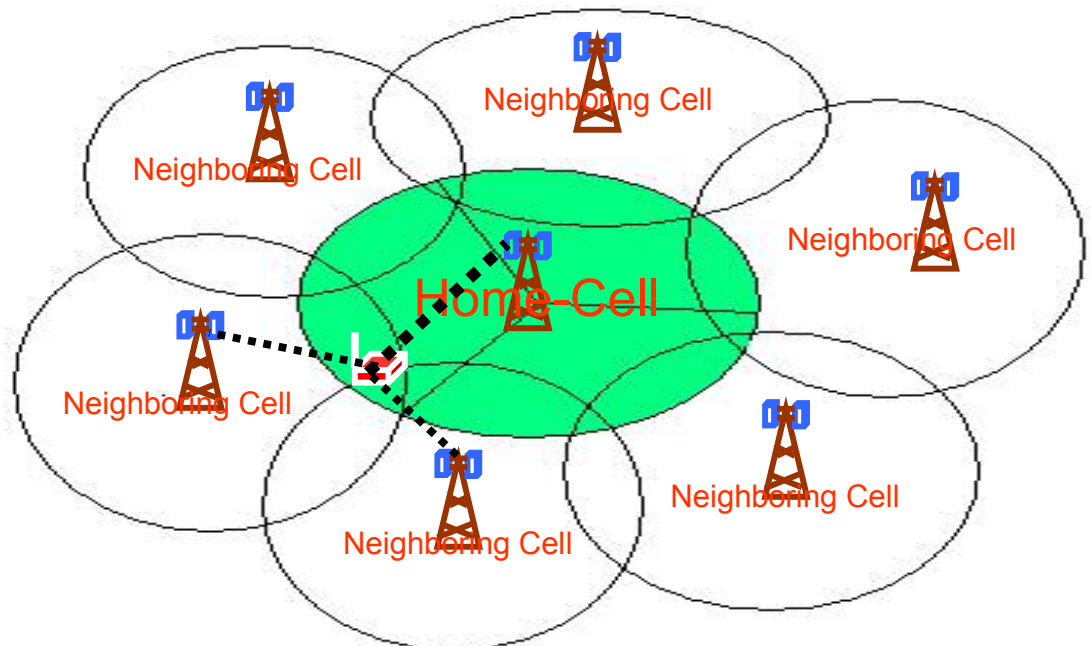
12.2 The solution to implement limited mobility in WLL network is, hereby, resolved without modifications in the policy through proper technical understanding of the CDMA technology, which shall be on WLL Operators.

12.3 The solution and implementation directives for compliance by all WLL operators are provided hereunder:

- (a) "Cell" 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 band;
- (b) "Home-Cell" means the Cell with which Terminal Equipment(s) is/are associated for the provision of Limited Mobility Communication Service;

- (c) “Terminal Equipment” means equipment which is directly or indirectly connected to any network termination point and which is used directly by users in order to access Limited Mobility Communication Services;
- (d) “Handover or Handoff”: an event in the WLL radio network in which the control of a call in progress is transferred from one Cell to another or control of the Terminal Equipment in idle state is transferred from one Cell to another. When the handover/handoff is completed the first Cell is no more in communication with the Terminal Equipment;
- (e) “Soft-handoff” means an event in WLL radio network’s Home-Cell during which the Terminal Equipment may superimpose other signals belonging to the single allocated frequency band over the Home-Cell signal while a call is in progress to improve QoS within the Home-Cell;
- (f) The handover, which is restricted under the Policy, is an event in radio network in which the control of a call in progress is transferred from one Cell to another Cell or one frequency to another frequency. When the handover is completed the first Cell is no more in communication with the Terminal Equipment or the Terminal Equipment is no more communicating on the same frequency. The call in progress shall be dropped in the case of crossing over into the neighboring Cell. The Policy does not restrict the superimposition by Terminal Equipment of traffic channel(s) that are at the same frequency as long as a traffic channel from the Home-Cell is a contributor to the communication. It is emphasized that under this determination inter frequency handover from 450 MHz to 1900 MHz or 479 MHz etc shall not be allowed.
- (g) A Terminal Equipment shall only be associated with a single Cell which is called Home-Cell.

- (h) A Terminal Equipment shall initiate and terminate calls within its Home-Cell boundary. The Terminal Equipment under no circumstance shall be allowed to initiate or terminate calls outside its Home-Cell boundary.
- (i) Mobility in WLL system shall be restricted to a single Home-Cell as defined above. No handover/handoff to any of the neighboring Cell is allowed. When the traffic channel(s) of the Home-Cell is not part of the call in progress the call shall be dropped;
- (j) Graphical representation of mobility in a single Cell (BTS) with Soft-handoff is shown below. A Terminal Equipment shall be able to operate within Home-Cell only; however, Terminal Equipment may receive any number of signals for the QoS improvement as long as the traffic channel(s) from the Home-Cell is contributor to the communication. The call in progress shall be dropped in the case of crossing over into the neighboring Cells.



12.4 All equipment Vendors who are providing networks to WLL operators in Pakistan are advised to adhere to the solution provided in this determination with regard to type approval etc. purposes.

### **Enforcement Order:**

(1) All WLL operators are directed to implement single Cell limited mobility as per solution given in this determination within 45 days from the date of issuance of this determination and submit a compliance report in this regard to the Authority without any delay.

(2) PTA dedicated teams at Zonal Offices shall be deputed to ensure the implementation PTA's Solution & Implementation Directives on the limited mobility after 45 days from the date of issuance of this determination as per solution under the sub-title "**PTA's Solution & Implementation Directives**" above . The following methodologies shall be used to ensure that implementation directives are properly adhered to:

(a) Surprise drive tests by PTA authorized team;

(b) Call Detail Records (CDRs) reconciliation shall be done to confirm that a customer can make calls only from its Home-Cell or receive calls only within its Home-Cell;

(c) Submission of CDRs by WLL Operators as and when desired by PTA; and

(d) Surprise checks of the CDRs and HLR by PTA authorized team.

(3) This determination shall be followed by all WLL Operators in letter and spirit. Legal action, under the provisions Pakistan Telecommunication (Re-Organization) Act, 1996, shall be initiated against the licensees for the said violation.

**Member (Finance)**

**Chairman**