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LICENSING OF DIGITAL PUSH-TO-TALK SERVICE IN PAKISTAN

Public Consultation Document

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i. Introduction:

Historically since the advent of radio in 19th century the radio systems have been designed for catering the internal needs of private companies and organizations. The situation remained as it is till the advent of public land mobile systems such as GSM by the end of 20th century, when the telecom service provision reached out to general public. However, the legacy private mobile radio has still been used by closed circuit users such as public safety organizations, industrial firms, transportation & security organizations etc. The reason why legacy private systems are still being used by such users is that they have their own needs and requirements that can not be fulfilled by public mobile radio systems e.g. immediate access to radio channel, high reliability, irregular channel traffic, priority access in case of emergencies, coverage in deserted areas where public mobile radio operators may not have access due to unavailability of business etc.

In order to bridge this gap between legacy analogue private mobile systems and modern digital public land mobile systems such as GSM, UMTS etc. a new genre of technologies have been developed that can serve the needs of closed circuit Radio users. These technologies include TETRA(Europe), iDEN (USA and Canada), IDRA (Japan), TETRAPOL and Project 25 (See Appendix A).

According to Statistics Bureau of Pakistan there are about 47.65 million employed industrial workers in Pakistan as estimated in 2006/2007 (See appendix B). A good majority of these workers associated with agriculture, forestry, fishing industry, security organizations, factories, refineries, construction organizations, transport related businesses etc., heavily rely on private mobile radios in VHF band for carrying out their dispatch related activities, and hence, are potential users of digital PTT system. Considering the potentially high demand of the Digital Push-to-Talk (PTT) service evident from these statistics, PTA has decided to auction spectrum in 800 MHz band for roll out of Digital PTT network in Pakistan. This consultation paper is for acquiring industry comments on the regulatory framework to be adopted for licensing of digital PTT service in Pakistan and the auctioning mechanism for frequency bands: 806 – 811 MHz and 851-856 MHz identified for this service in Pakistan's National Spectrum Plan.

ii. Form of Response:

PTA invites comments on all issues highlighted in this document. Commenting parties are requested to provide detailed comments backed by sound reasoning, case studies of world's best practices and ITU/APT recommendations. PTA ensures that all comments from interested parties will be thoroughly analyzed and the useful inputs will be considered during the licensing process, however, these comments are not binding on PTA and all responses will remain the property of PTA.

All Comments on the consultation paper may be forwarded via email to mudassirrashid@pta.gov.pk, or via post to
RBS Directorate
PTA Head Quarters,
F-5/1, Islamabad.

1. Feasibility of Digital PTT Technology:

Digital PTT technology has the potential to bring several benefits to several sectors of Pakistan's population. Applications of this technology will include all forms of distress signaling, emergency calling, health services, services for fire and security personnel, Intelligence / border surveillance-type communication and in main-stream businesses perhaps a ready-fit for logistics and transport type operations where an instructor or superintendent is advising instructions to several junior / field staff. In Pakistan frequency bands: 806 – 811MHz & 851-856 MHz have been identified for trunk radio services in the National Frequency Plan. iDEN is one of the few technologies that is capable of providing digital PTT service to various closed-circuit sectors of Pakistan over these bands. PTA is planning to auction this spectrum for Digital PTT service adoption in Pakistan and in this regard requires useful comments of the industry.

Q.1. Should PTA allow the deployment of iDEN based Network in Pakistan for providing digital PTT services or should it encourage WLL/CMTO Licensees to use platforms like PoC (Push to Talk over Cellular) for providing such services and reserve bands 806 – 811MHz & 851-856 MHz for future use? The detailed response should include specifically the limitations of PoC like platforms as opposed to iDEN based PTT technology in fulfilling the needs of Private Mobile Radio users of Pakistan.

2. Regulatory Framework:

Current regulatory framework for licensing PTT/Trunk Radio services include Pakistan Telecom (Re-organization) Act, 1996, Pakistan Telecom Rules, 2000 and CVALs regulations, 2007, which all are available on PTA's website. The changes proposed in this regulatory frame work for adoption of Digital PTT technology are being discussed in the following sections.

2.1 Interconnect:

The first change proposed by PTA in current regulatory framework is the prohibition of the interconnect provision available to CVALs licensees. The purpose of proposed change is to cater the needs of Private Mobile Radio user community in Pakistan while protecting the CMTO and WLL markets from over competition by blocking a possible back-door entry by any PTT licensee.

Q.2. Should PTA allow Interconnect by PTT licensees? If yes, please explain in detail the positive and negative impacts of this provision on Cellular Market.

2.2 Scope of PTT Service:

The second change proposed by PTA in current regulatory framework is the restriction of service provision to Closed Circuit Group users only. The reason for not allowing service provision to general public is to maintain the distinction between PTT and WLL/CMTO service sectors.

Q.3. Should PTA allow the service provision to general public in addition to Private users? If no, please support your argument with reasoning and case studies? The possibility of phased implementation approach beginning from Private User provision to general public provision may also be discussed.

Q.4. If answer to above question is yes please give detailed analysis of the positive and negative impacts of this provision on WLL and Cellular Markets?

2.3 Rollout Obligations:

To make sure that PTT services are available in all sectors and geographic locations of Pakistan, PTA may impose network roll out obligations which are not currently imposed on CVALs licensees.

Q.5. Should PTA impose Roll Out obligations on Digital PTT licensees? If yes, what form of coverage basis should PTA adopt for imposing such obligations: Population, Geographic Area, Selected Locations or a mixture?

Q.6. What should be the Network Roll out Schedule and time frame? Please highlight the difficulties that might incur in the due course?

2.4 QoS Obligations:

Class Value Added licensees are required to meet QoS obligations given at page 13 of CVALs IM available on PTA's website to satisfy the customers and to comply with the Act, Rules, Regulations and the terms and conditions of the license. Considering the specialized needs of the users of PTT service and different network design of PTT networks for fulfilling these needs, PTA is intending to review the QoS obligations set forth for the CVALs licensees.

Q.7. Should PTA retain the QoS obligations set for CVALs licenses for PTT service? If no please give detailed comments on the proposed changes and additions in these obligations indicating the reasons for including additional parameters for monitoring QoS.

3. Spectrum Assignment Methodology:

Considering the fact that spectrum allocated for Trunk Radio Services in 800 MHz band is limited and also considering the potential demand of the Digital PTT service, PTA has decided to auction the spectrum pursuant to section 5 (r) of the Pakistan Telecom (Re-organization) Act, 1996. The frequency pair available for Digital PTT service in Pakistan is 806 – 811 MHz / 851-856 MHz: 5MHz each. PTA is intending to segregate the spectrum on the basis of frequency bandwidth as well as the geographical area for its auctioning.

Q.8. What type of Methodology should PTA adopt for auctioning of 800 MHz bands? Type of bidding options available are: open, closed, closed followed by open, sequential, simultaneous, bundled etc. Please give detailed comments on the appropriate auctioning methodology in light of world's best practices.

Q.9. What should be the segregation basis for auctioning the spectrum? The options available include frequency, Geographic area or a mixture of both. The comments shall include the detailed justification of the most appropriate approach including that of the proposed segregation on the basis of frequency bandwidth (e.g.5, 2 + 3, 1+1+3, 1+1+1+1 MHz) and that of geographic area (Nationwide, PTCL region wise, province wise) of the spectrum to be auctioned.

Q.10. What should be the base price for the auctioning of 800 MHz bands? Comments may include the justification for the recommended value taking into consideration the potential demand of the Digital PTT service in Pakistan.

Appendix A¹

DIMRS^{*} is a communications system in Canada based on existing time division multiplex technology and which offers six communication circuits over a single 25 kHz channel, combining the services and capabilities usually associated with a dispatch system, a cellular-like system and an advanced and paging network.

IDRA is a dispatch standard and system developed in Japan which incorporates standard two-way radio features with advanced data services in a common infrastructure and subscriber unit. IDRA is an amended version of the Japanese existing digital trunking standard, a TDMA, 16 QAM standard which fits six voice conversations into a 25 kHz RF channel.

Project 25 is a standard developed through the combined efforts of United States local, state and federal government users, in collaboration with the Telecommunications Industry Association, TIA. Project 25 is targeted at enabling public safety agencies to gracefully migrate from analogue FM systems to narrow-band digital systems offering enhanced voice and data functionality. Project 25 consists of two phases. Phase I is an FDMA system using compatible FM and QPSK modulations in 12.5 kHz. Phase II has added FDMA at 6.25 kHz bandwidths. Phase II is also addressing TDMA alternatives to achieve 6.25 kHz equivalency, high speed data, and a number of system enhancements.

TETRA: the Terrestrial Trunked Radio system, is a high performance radio system which has been developed primarily for professional users and which provides a wide variety of voice and data services. TETRA is a TDMA standard using $\pi/4$ DQPSK modulation to fit four voice circuits into a 25 kHz channel.

TETRAPOL is a publicly available specification of a fully operational digital trunked private mobile radio system, developed by a forum of manufacturers for security and emergency services. TETRAPOL uses FDMA technology with GMSK modulation in a carrier spacing of 12.5 kHz and 10 kHz to allow easy migration from analogue to digital.

¹ ITU-R Report M.2014 (Digital land mobile systems for dispatch traffic)

* Also known as *iDEN*.

Appendix B²

I. Employed Workers in Pakistan:

Table-9
EMPLOYED - PAKISTAN AND PROVINCES

(Million)

Province/Area	Employed					
	2005-06			2006-07		
	Total	Male	Female	Total	Male	Female
Pakistan	46.94	37.81	9.13	47.65	38.11	9.54
Rural	32.48	25.01	7.47	33.11	25.12	7.99
Urban	14.46	12.80	1.66	14.54	12.99	1.55
Balochistan	2.19	1.93	0.26	2.14	1.87	0.27
Rural	1.76	1.52	0.24	1.73	1.48	0.25
Urban	0.43	0.41	0.02	0.41	0.39	0.02
NWFP	5.22	4.52	0.70	5.08	4.50	0.58
Rural	4.42	3.79	0.63	4.25	3.73	0.52
Urban	0.80	0.73	0.07	0.83	0.77	0.06
Punjab	28.46	21.34	7.12	29.13	21.66	7.47
Rural	20.42	14.51	5.91	21.00	14.66	6.34
Urban	8.04	6.83	1.21	8.13	7.00	1.13
Sindh	11.07	10.02	1.05	11.30	10.08	1.22
Rural	5.88	5.19	0.69	6.13	5.25	0.88
Urban	5.19	4.83	0.36	5.17	4.83	0.34

Source:- Statistical Appendix Tables 11 to 11.4 of LFS 2005-06 and 2006-07.

II. Employed Workers: Distribution by Major Industry Divisions:

Table-10
EMPLOYED - DISTRIBUTION BY MAJOR INDUSTRY DIVISIONS

(%)

Major Industry Divisions	2005-06			2006-07		
	Total	Male	Female	Total	Male	Female
Total	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture, forestry, hunting and fishing	43.4	37.2	68.8	43.6	36.4	72.4
Manufacturing	13.8	13.7	14.6	13.5	13.9	12.0
Construction	6.1	7.5	0.4	6.6	8.1	0.6
Wholesale and retail trade	14.7	17.7	2.1	14.4	17.5	2.2
Transport, storage and communication	5.7	7.1	0.3	5.4	6.7	0.2
Community, social and personal services	14.4	14.5	13.6	14.4	14.9	12.4
*Others	1.9	2.3	0.2	2.1	2.5	0.2

* Others (includes mining & quarrying, electricity, gas & water, financing, insurance, real estate & business services and activities not adequately defined)

² http://www.statpak.gov.pk/depts/fbs/publications/lfs2006_07/results.pdf

III. Employed Workers: Distribution by Major Occupational Groups:

Table-11
EMPLOYED - DISTRIBUTION BY MAJOR OCCUPATIONAL GROUPS

(%)

Major Occupational Groups	2005-06			2006-07		
	Total	Male	Female	Total	Male	Female
Total	100.0	100.0	100.0	100.0	100.0	100.0
Legislators, senior officials and managers	12.0	14.4	2.1	12.3	14.9	2.1
Professionals	1.7	1.8	1.2	1.6	1.8	1.0
Technicians and associate professionals	5.1	4.4	7.8	5.0	4.4	7.2
Clerks	1.4	1.7	0.3	1.4	1.7	0.2
Service workers and shop & market sales workers	5.4	6.5	0.9	5.6	6.8	0.8
Skilled agricultural and fishery workers	35.3	30.8	54.1	36.4	30.9	58.1
Craft and related trades workers	15.8	16.0	14.6	15.3	16.0	12.3
Plant and machine operators and assemblers	4.1	5.1	0.2	4.1	5.1	0.2
Elementary (unskilled) occupations	19.2	19.3	18.8	18.3	18.4	18.1