

SOURCE: The National Telecom Regulatory Authority (NTRA), Egypt

TITLE: Spectrum Regulatory Measures to Promote Wireless Broadband

Radio spectrum has become a strong platform for new technology developments that provide more and more advanced services. Providing extra frequency spectrum is an important driver towards a wide wireless broadband connectivity especially for countries lacking a widespread fixed infrastructure. Wireless solutions are considered as an essential platform to leapfrog the traditional technology evolution in fixed services and obtain widespread coverage of advanced telecommunications services.

Radio Spectrum has been foreseen as the last tier for providing wireless access. However, spectrum could be instead used as an incentive tool for the operators to promote fast deployment of broadband networks. **The NTRA of Egypt recommends the following spectrum regulatory measures in order to achieve that:**

- 1- **Using spectrum reverse auctions to provide connectivity in rural areas:** Regulators could provide spectrum in higher bands such as 3.5 GHz with no fees and could also subsidize such deployments. In some cases, such auction could result in having offers to deploy the network without any subsidies from the government as long as they are awarded the spectrum for free. Reverse auction would increase inter-platform competition and allow operators with limited coverage to extend their offerings and coverage service beyond the limits of their fixed networks.
- 2- **Holding a “Big Bang” spectrum auction:** In such case, all the broadband spectrum bands are auctioned in a single auction. Those bands include the 800 MHz, 900 and 1800 GSM bands, 2 GHz, 2.5 GHz and 3.5 GHz. This auction would include vacant and currently utilized spectrum bands putting into consideration the expiration date of existing licenses. In designing the auction, regulator should impose spectrum caps to the bidders in order to increase the competition and to force them to make innovative offerings in the broadband market. In addition, roll out conditions could be applied to ensure national coverage. Such type of auction was performed recently in Germany and Swiss.
- 3- **Allowing flexible usage of spectrum:** Flexibility will allow any specific service or technology to utilize the most suitable spectrum to it and so will help ensure that spectrum moves to more productive uses including mobile broadband. An example for that is allowing mobile operators to use their 2G spectrum to provide 3G & 4G services. Restrictions, especially over spectrum rights, may reduce the viability of the business model for prospective operators, resulting in a lower number of applicants and bidders. It may also limit potential investments of existing operators because they will restrict their business plans to the profitability derived by only one of the potential uses of the implemented broadband technology.
- 4- **Encouraging innovative spectrum access models:** This could be done through providing a portion of spectrum for unlicensed use to be used for innovative research. Technologies such as software defined radio (SDR) and cognitive radio (CR) are able to sense the environment and operate in the vacant frequency bands. It should be noted that such technologies don't necessarily preclude the licensing process as they could vary between being totally unlicensed or fully licensed according to the licensee meets specific requirement. In all cases, the regulator will have an inevitable role. For example, CR operates can be programmed according to each country regulation. Those regulations may include reducing transmitted power or using less channel bandwidth. CR could provide users with limited needs with the ability to access some of the unused spectrum from the large amount of dedicated spectrum for highly needs users.
- 5- **Making use of the digital dividend:** The effect of the virtual gain in capacity consequent on moving broadcast television from analogue to digital has generally been called the “Digital Dividend”. The Digital Dividend can potentially be utilized for broadband mobile access in outlying areas where fixed network

provision would be unviable. NTRA is currently considering the spectrum band 790-862 MHz and shall consider also the spectrum band 698 -790 MHz as a part of its long term national broadband plan.