
INFORMATION NOTE

Spectrum Management in Hong Kong

1. Introduction

1.1 This information note serves to provide reference on spectrum management for the deliberation of the Panel on Information Technology and Broadcasting on the proposals on a policy framework for radio spectrum.

2. Spectrum management

Definition of frequency spectrum

2.1 Frequency spectrum is a plot of the distribution of the intensity of some types of electromagnetic or acoustic radiation as a function of frequency.¹ For communications purposes, the usable frequency spectrum ranges from about 3Hz to about 300GHz.

Aim

2.2 The aim of spectrum management is to co-ordinate the use of radio frequencies so that these public resources are utilized efficiently and effectively. In essence, spectrum management is about tackling problems of interference amongst users of the radio spectrum.

Components

2.3 Spectrum management covers the following areas:

- (a) spectrum planning and allocation;
- (b) frequency assignment and licensing;
- (c) drafting and enforcing relevant rules and regulations;
- (d) frequency co-ordination; and
- (e) spectrum engineering.

¹ See Answers.com (2006).

Spectrum planning and allocation

2.4 Spectrum planning and allocation refer to the segmentation of the radio spectrum according to utilization, such as civil, government and military uses, in light of the guidelines of the International Telecommunications Union². This process involves negotiation and entering into agreements between the Office of the Telecommunications Authority (OFTA) and governments at the international, regional and local levels.

Frequency assignment and licensing

2.5 Frequency assignment is the granting of the use of a particular frequency at a particular time and a particular location by issuing a licence. The licence authorizes the licensee(s) to utilize spectrum-using equipment subject to restrictions being designed to avoid interference with other licensees in adjoining geographical areas or bands. A charge may be levied on the licensee(s) to cover the costs incurred in the management of the radio spectrum by OFTA.

Drafting and enforcing relevant rules and regulations

2.6 To accommodate changes in technology, OFTA reviews its rules and regulations regularly. OFTA looks at regulations recommended by the International Special Committee on Radio Interference (CISPR)³ which issues guidelines for equipment emitting radio frequency energy.⁴

2.7 To ensure that only the licensee(s) are using the radio spectrum, OFTA may set up road blocks and use a search vehicle⁵ to detect illegal radio spectrum users.

Frequency co-ordination

2.8 Frequency co-ordination involves the negotiation of the use of radio frequencies amongst neighbouring governments. Before a frequency is assigned to a particular user, OFTA examines whether the use of that frequency will interfere with other radio communication services in neighboring cities. For example, OFTA has such negotiation arrangements with Guangdong Province for terrestrial radio services. It also co-ordinates with other governments in the provision of satellite services.

² The International Telecommunications Union is a specialized agency of the United Nation responsible for developing strategies for the avoidance of radio interference and the equitable and efficient use of radio spectrum and satellite orbital resources.

³ The International Special Committee on Radio Interference is an international commission tasked with regulating radio interference.

⁴ In Hong Kong, equipment that causes interference or exceeds CISPR radiation limits is prohibited.

⁵ OFTA has a vehicle with detecting equipment which goes about in the general vicinity of where illegal users are thought to be.

Spectrum engineering

2.9 The identification of potential radio interference problems relies on the engineering software tools of the spectrum management computer system employed by OFTA. This system provides information on radio base stations such as addresses, grid locations, transmitting/receiving frequencies, transmitter power antenna radiation patterns, and other technical characteristics. It also stores records of the licensees, generates bills and stores payment records. The software tools help frequency assignments and processing of applications for the establishment of radio base stations in Hong Kong. They also support frequency co-ordination with the Guangdong government.

Responsible authorities

2.10 Under the Telecommunications Ordinance (Cap. 106), the Telecommunications Authority (TA) is a public officer appointed by the Chief Executive to promote the efficient allocation and use of the radio spectrum. OFTA, the executive arm of TA, is responsible for the assignment of radio frequencies, investigation into interference complaints, licensing of private telecommunications services, prosecution of illegal use of telecommunications equipment, and co-ordination with frequency management authorities outside Hong Kong to prevent interference among radio services.

2.11 Two advisory committees, namely the Radio Spectrum Advisory Committee⁶ and the Telecommunications Standards Advisory Committee⁷, provide advice to OFTA on the allocation of frequencies amongst radio services which share the same band of spectrum. They also advise on equipment standards, power levels, sharing of sites, deployment of antenna, and health and safety measures.

⁶ Membership of the Radio Spectrum Advisory Committee comprises representatives from OFTA (serving as the Convenor and Chair), the Consumer Council, the Hong Kong Institution of Engineers, the Hong Kong Wireless Technology Industry Association, the Communications Association of Hong Kong, relevant government departments such as the Civil Aviation Department and the Hong Kong Police Force, and the telecommunications and broadcasting industry, and persons appointed on an ad personam basis such as academics and specialists.

⁷ Membership of the Telecommunications Standards Advisory Committee comprises representatives from OFTA (serving as the Convenor and Chair), the Consumer Council, the Hong Kong Institution of Engineers, the Hong Kong Productivity Council, the Hong Kong Wireless Technology Industry Association, the Communications Association of Hong Kong, and the telecommunications and broadcasting industry, and persons appointed on an ad personam basis such as academics and specialists.

3. Review of spectrum policy

3.1 On 16 January 2006, the Government commissioned a consultancy study on spectrum policy review. The review aims to provide the Government with professional advice on the formulation of a responsive and transparent spectrum policy to enable the community to reap maximum economic benefits from spectrum deployment. On 25 October 2006, the Commerce, Industry and Technology Bureau announced a three-month public consultation on a proposed policy framework for managing the radio spectrum in Hong Kong.

3.2 The spectrum policy framework under the Government's proposals covers six aspects:

- (a) spectrum policy objectives;
- (b) guiding principles in spectrum management;
- (c) spectrum supply (including spectrum trading and liberalization);
- (d) spectrum rights;
- (e) spectrum pricing; and
- (f) spectrum for government services.

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References

1. *Answers.com*. (2006) Available from: <http://www.answers.com/topic/frequency-spectrum> [Accessed November 2006].
2. *Commerce, Industry and Technology Bureau, Communications and Technology Branch*. (2006) Available from: <http://www.citb.gov.hk/ctb/eng/about/index.htm> [Accessed November 2006].
3. *Commerce, Industry and Technology Bureau, Communications and Technology Branch*. (2006) *Press Release - Government seeks public views on spectrum policy framework* Available from: <http://www.citb.gov.hk/ctb/eng/press/pr25102006.htm> [Accessed November 2006].
4. Lau, Danny K.C. (2005) *Managing Radio Spectrum: Present and New Approaches*. Office of the Telecommunications Authority.
5. Office of the Telecommunications Authority. (2004) *Licensing of Mobile Services on Expiry of Existing Licences for Second Generation Mobile Services – Analysis of Comments Received, Preliminary Conclusions and Further Consultation*.
6. *Office of the Telecommunications Authority*. (2006) Available from: <http://www.ofta.gov.hk/en/index.html> [Accessed November 2006].
7. Office of the Telecommunications Authority. (2006a) *Spectrum Policy Review*. RSAC Paper 1/2006.
8. Office of the Telecommunications Authority. (2006b) *World Radiocommunication Conference 2007*. RSAC Paper 4/2006.
9. Telecommunications Research Project. (2003) *Spectrum Management*. Available from: http://www.trp.hku.hk/e_learning/spectrum/section1.html [Accessed November 2006].
10. *Telecommunications Research Project*. (2006) Available from: <http://www.trp.hku.hk/index.php> [Accessed November 2006].