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Paper for the House Committee meeting on 8 February 2013

Report of the Subcommittee on Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) (Amendment) Order 2012

Purpose

This paper reports on the deliberations of the Subcommittee on Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) (Amendment) Order 2012 ("the Subcommittee").

Background

2. Under section 8(1) of the Telecommunications Ordinance (Cap. 106) ("the Ordinance"), licences are required for establishing or maintaining any means of telecommunications, or possessing, or using, dealing in the course of trade or business, or demonstrating, with a view to sale in the course of trade or business, radiocommunications apparatus. Under section 9 of the Ordinance, save under and in accordance with a permit granted by the Communications Authority ("CA")¹, no person shall import into Hong Kong or export therefrom any radiocommunications transmitting apparatus unless he is the holder of a licence authorizing him to deal in the course of trade or business in such apparatus. Section 39 of the Ordinance provides that the Chief Executive in Council may by order exempt any person or any class of persons from any of the provisions of the Ordinance as he thinks fit.

¹ Pursuant to the Communications Authority Ordinance (Cap. 616), with effect from 1 April 2012, all duties and powers of the Telecommunications Authority ("TA") were conferred on the CA, and all duties and powers of the Office of the Telecommunications Authority ("OFTA") were conferred on the Office of the Communications Authority ("OFCA"), the executive arm of CA.

3. The Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order (Cap. 106 sub. leg. Z) ("the principal Order"), which is made under section 39 of the Ordinance, exempts, among others, persons from the obligation to hold a licence under the Ordinance in respect of certain telecommunications apparatus operating within the 1895 - 1906.1 MHz band.

4. According to the Administration, the 1895 - 1906.1 MHz band has been used predominately for home cordless telephones based on the Personal Handy Phone System ("PHS")² since 1997. Having regard to the limited supply of PHS apparatus in the market, the typical life-time of a home cordless telephone, and the scanty radio spectrum utilization of the 1895 -1906.1 MHz band, the Administration considers that the allocation of the frequency band for PHS should be withdrawn. Part of the vacated frequency band can then be re-planned to meet the increasing public demand for mobile communications services, such as 3G or 4G services. The Administration therefore proposes to cease the licensing exemptions in respect of PHS apparatus operating within the 1895 - 1906.1 MHz band to effect the re-planning of the frequency band.

5. According to the Administration, the former TA first consulted the industry through the Radio Spectrum Advisory Committee³ at two meetings in October 2010 and March 2011 respectively on the proposed withdrawal of the relevant frequency allocation and the corresponding licensing exemptions. The former TA subsequently issued a consultation paper in November 2011 for a 10-week public consultation. Response to both consultation exercises indicated general support for the proposal. Having regard to the outcome of the public consultation, the former TA published a statement in March 2012 to announce his decision on the way forward for the proposed withdrawal of licensing exemptions in respect of PHS apparatus and the necessary legislative amendments.

² PHS is a short and medium-range mobile radiocommunications technology.

³ Membership of the Radio Spectrum Advisory Committee comprises representatives from the former OFTA (serving as the Convenor and Chair, as well as Secretary), the Consumer Council, the Hong Kong Institution of Engineers, Institution of Engineering and Technology Hong Kong, 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. One of the functions of this advisory committee is to advise the former TA on the planning of the use of the radio frequency spectrum.

The Amendment Order

6. The Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) (Amendment) Order 2012 ("the Amendment Order") was gazetted on 21 December 2012 and tabled at the Council meeting on 9 January 2013. Subject to the completion of the negative vetting process, the Amendment Order shall come into operation on a day to be appointed by the Director-General of Communications by notice published in the Gazette.

7. The Amendment Order amends the principal Order to withdraw the licensing exemptions for selling, importing or exporting the PHS apparatus operating within the 1895 - 1906.1 MHz band and provide transitional arrangement for the existing licensing exemptions in respect of establishment or maintenance, and possession or use of such apparatus. Under the Amendment Order, the licensing exemptions in respect of selling, importing or exporting the PHS apparatus will cease upon the commencement of the Amendment Order. The licensing exemptions in respect of establishment or maintenance, and possession or use of such apparatus will be withdrawn after midnight on the date immediately before the third anniversary of the commencement date of the Amendment Order.

The Subcommittee

8. At the House Committee meeting on 4 January 2013, Members agreed to form a subcommittee to study the Amendment Order. Hon Charles Peter MOK was elected Chairman of the Subcommittee. The membership list of the Subcommittee is in **Appendix I**. The Subcommittee has held two meetings with the Administration to examine the Amendment Order.

9. The scrutiny period of the Amendment Order has been extended to 27 February 2013 by resolution of the Council on 23 January 2013.

Deliberations of the Subcommittee

Estimated number of affected apparatus

10. The Subcommittee notes that in many market surveys conducted at retail level by the former OFTA, no PHS apparatus was found to be on sale in the local market. Since 2002, no applications have been received for the

certification of PHS apparatus. OFCA has diligently monitored the radio spectrum utilization of the 1895 - 1906.1 MHz band and found that there is scanty deployment of PHS in Hong Kong, resulting in inefficient use of the radio spectrum concerned.

11. The Subcommittee has discussed the estimation of the existing number of PHS apparatus in use in Hong Kong. Taking into account the estimated lifespan of such apparatus, the result of market survey in 2010 and the latest round of measurement of PHS signals, OFCA estimates that some 800 PHS cordless telephones are currently in use and that no more than 50 sets of such phones would remain functional by early 2014. Details of OFCA's measurement work and estimation are in **Appendix II**.

Transitional period

12. Some members consider it difficult for members of the public to ascertain whether a telecommunications apparatus is a PHS apparatus. These members suggest that the licensing exemptions in respect of possession or use of such apparatus be continued so as to minimize the impact on the Some other members suggest that the three-year transitional existing users. period allows for the possession or use of PHS apparatus after the commencement of the Amendment Order be extended to five or seven years, interference caused by PHS apparatus to 3G and 4Gas the telecommunication services is not as serious as envisaged.

13. The Administration has advised that most telecommunications apparatus certified by CA carry a label issued by CA, and a search engine for certified telecommunications equipment for use in Hong Kong is provided on the website of OFCA. Members of the public who are unsure whether a telecommunications equipment is allowed to be used in Hong Kong are welcome to bring the equipment to OFCA for free checking. A publicity campaign will be launched to educate the public on the implementation of the Amendment Order. However, the Administration considers that continuing the licensing exemptions in respect of possession or use of such apparatus will not be desirable, as the radio signals generated by such apparatus may cause interference to licensed telecommunications apparatus.

14. The Administration has further advised that it is not desirable to extend the transitional period as radio spectrum is a scarce public resource. It is the Administration's policy objective to facilitate the most efficient use of radio spectrum. In fact, the potential interference caused by PHS apparatus to 3G and 4G telecommunications services is not limited to indoor

environment. Signals from 3G and 4G base stations may also be subject to such interference.

Enforcement practice

15. Under section 20 of the Ordinance, any person who contravenes section 8(1) shall be guilty of an offence and shall be liable on summary conviction, to a fine at level 5 (i.e. \$50,000) and to imprisonment for 2 years, and on conviction on indictment, to a fine at level 6 (i.e. \$100,000) and to imprisonment for 5 years. Under section 36, a magistrate or the court may, upon application by the Director-General of Communications or any public officer, order that any apparatus in respect of which there has been a contravention of the Ordinance shall be forfeited.

16. The Subcommittee notes that in the past three years, there were a total of 283 cases of genuine mistake or misunderstanding of the offence in relation to the illegal possession or use of telecommunications apparatus for domestic purpose. OFCA did not institute prosecution in any of these cases. Only the subject apparatuses were confiscated. Some members have expressed concern whether the seemingly wide discretionary power of OFCA in determining the institution of prosecution may lead to abuse. These members have asked the Administration to explain the prosecution policy, in particular, the legal basis for determining whether to institute prosecution.

17. The Administration has explained that specific officers of various ranks in OFCA are authorized to lay before a magistrate information in respect of any offence under the Ordinance cognizable by a magistrate, and to act as a public prosecutor and conduct generally on behalf of the Secretary for Justice any prosecution before a magistrate for any offence alleged to have been committed contrary to the Ordinance. Given the primacy of Article 63 of the Basic Law which states that the Department of Justice shall control criminal prosecutions, free from any interference, OFCA would consult the Prosecutions Division and obtain legal advice on a need basis in relation to the institution and conduct of prosecutions.

18. According to the Statement of Prosecution Policy and Practice issued by the Department of Justice, in general, the prosecutor must consider two issues in deciding whether to prosecute: (i) whether or not the evidence is sufficient to justify the institution or continuation of proceedings; and (ii) if so, whether or not it is in the public interest to pursue a prosecution. Such policy is consistent with the policies applied by prosecution agencies throughout the common law world. The decision to prosecute will only be made when the evidence permits and when it is in the public interest to do so. It is spelt out in the Statement that if the offence was committed as a result of a genuine mistake or misunderstanding, it may be an indication that proceedings are not required, subject to the particular circumstances of the case.

19. Some members have expressed concern about the enforcement actions to be taken by OFCA in relation to the illegal possession or use of PHS apparatus for domestic purpose after the withdrawal of the licence exemption upon the coming into effect of the Amendment Order. The Administration has reassured members that in line with its enforcement practice, OFCA would not prosecute a person who commits, without knowledge, the offence in relation to the illegal possession or use of PHS apparatus for domestic purpose. Only the PHS apparatus would be confiscated. However, this practice would not apply to persons who knowingly do so.

Re-planning of the spectrum within the 1895 - 1906.1 MHz band

20. Noting that there is no precedence of removing any type of telecommunications apparatus from the exemption order to make available radio spectrum for other use in Hong Kong, some members have enquired about the Administration's plan to release the returned spectrum within the 1895 - 1906.1 MHz band to the market as a result of the implementation of the Amendment Order.

21. The Administration has advised that the industry is very concerned about the schedule and amount of spectrum release. CA makes public every year a spectrum release plan to inform the industry about the potential supply The plan covers those relating to mobile telecommunications of spectrum. in the coming three years. If the spectrum within the 1895 - 1906.1 MHz band may be made available for mobile telecommunications, the spectrum release plan will be updated accordingly. The industry and the public will also be consulted on the possible use of the spectrum concerned. After considering the outcome of the consultation and having regard to international developments, if the spectrum is finally determined to be used for the provision of mobile telecommunications, in general, the spectrum concerned will be released to the market by a market mechanism, for The whole process from consultation to by auction. example, announcement of the auction will typically take about one year.

Recommendation

22. The Subcommittee supports the Amendment Order and has not proposed any amendment to it.

Advice sought

23. Members are invited to note the deliberations of the Subcommittee.

Council Business Division 4 <u>Legislative Council Secretariat</u> 7 February 2013

Appendix I

Subcommittee on Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) (Amendment) Order 2012

Membership List

Chairman	Hon Charles Peter MOK				
Members	Hon James TO Kun-sun				
	Hon WONG Ting-kwong, SBS, JP				
	Hon Ronny TONG Ka-wah, SC				
	Hon WU Chi-wai, MH				
	Hon SIN Chung-kai, SBS, JP				
	Dr Hon Elizabeth QUAT, JP				
	(Total : 7 members)				
Clerk	Ms YUE Tin-po				
Legal Adviser	Mr Stephen LAM				

Appendix II

Estimation of the Number of PHS Cordless Telephones in use in Hong Kong and their Lifespan

An estimation of the existing number of Personal Handy-phone System ("PHS") apparatus in use in Hong Kong and its expected lifespan is set out in the paragraphs below.

PHS Signal Measurement

2. In Hong Kong, there is no requirement to register PHS cordless phone in use, given the licensing exemption provision. Measurement of PHS signals is therefore necessary to estimate the deployment of PHS cordless telephones in Hong Kong.

3. The emitted power level of PHS cordless telephone is 10mW. A PHS signal can be detected in a relatively short distance only. The detection range of PHS signals is calculated taking into account the parameters of the measuring equipment and technical models widely accepted by the International Telecommunication Union. The calculation is given at **Annex 1** and the estimated detection range is 100m.

4. Since the detection range is only 100m, on-site monitoring and measurements are necessary. For the latest round of measurement conducted from December 2012 to January 2013, the monitoring of PHS signals covered most densely populated areas of Hong Kong. A map outline of the monitored districts is given at **Annex 2**. A total of six PHS channels were detected in the following five districts with the PHS channel frequencies as follows –

- a) Southern: 1900.55 MHz;
- b) Kowloon City: 1900.55 MHz;
- c) Wong Tai Sin: 1899.35 MHz;
- d) Yau Tsim Mong: 1898.45 MHz and 1899.95 MHz;
- e) Sham Shui Po: 1899.95 MHz.

Estimation of the Number of PHS Cordless Telephone in use and remaining Lifespan

5. The number of PHS cordless telephones in use is estimated by referring to its typical equipment life in **Annex 3**. Assuming the variation of equipment life follows a normal distribution profile and making use of some technical information for typical battery, the number of PHS cordless telephones currently in use is estimated to be around 800. By early 2014, no more than 50 sets of PHS cordless phone would still be working, based on the normal distribution profile for the lifespan of rechargeable battery.

Conclusion

6. Since registration is not required for PHS cordless telephone, it is not possible to have an accurate estimate of the existing number of such apparatus still in use. However, judging from the limited number of type-approved models of PHS cordless telephone, the result of market survey in 2010, the result of signal monitoring lately, and the typical lifespan of rechargeable battery embedded in PHS cordless phone, it is considered that the number of remaining PHS cordless telephones in use in Hong Kong is in the order of several hundreds only. The number of such apparatus in use shall be no more than 50 by early 2014 assuming that the lifespan of rechargeable battery follows the normal distribution curve.

Office of the Communications Authority January 2013

Annex 1

Detection Range of PHS Signals

In calculating the detection range of PHS signals, the following assumptions have been made -

- a) Emission pattern of PHS antenna is the same as that of a dipole antenna. Therefore the emitted power will be reduced with increasing offset angle;
- b) Indoor-to-outdoor attenuation is 10 dB^1 ;
- c) The height of a ground floor is 4.5m and that of 2/F and above is 3m per floor;
- d) Measuring antenna at 1.5m height;
- e) The width of a typical street/road is 7.5m so that the horizontal distance between PHS cordless telephone and the receiving antenna is 7.5m;
- f) The width of a typical building is 15m so that the distance between PHS cordless telephone and the receiving antenna situated in the next street is (7.5 + 15)m;
- g) The blocking loss for radio wave passing through a building is 30 dB^2 ;
- h) Receiving antenna has an effective gain of 3.5 dB; and
- i) Receiver has a sensitivity of -119 dBm at the measuring frequencies.

2. Two scenarios have been considered in the calculation of the detection range of PHS signal:

a) under line-of-sight condition with PHS cordless telephone located on 1/F, 10/F and 20/F of a building along the street; and

¹ Report ITU-R SM.2057

² Report ITU-R SM.2057

b) blocking by a row of buildings and the PHS cordless telephone is located in a building next street.

The calculations are tabulated below -

Technical parameters	Line-of-sight			Separated by a row of building
rechnical parameters	Location of PHS cordless telephone			
	1/F	10/F	20/F	10/F
PHS output power (dBm)	10	10	10	10
PHS antenna gain (dBi)		0	0	0
indoor-to-outdoor attenuation (dB)	-10	-10	-10	-10
clutter loss (dB)	-30	-30	-30	-30
PHS base height (dB)	4.5	31.5	61.5	31.5
Measurement height (dB)	1.5	1.5	1.5	1.5
Distance (dB)	22.5	22.5	22.5	100
Offset angle (degree)	7.6	53.1	69.4	16.7
effective PHS antenna gain (dBi)	-1	-14	-17	-14
free space propagation (dB)	-65.1	-69.5	-74.2	-78.4
Receiving antenna gain (dBi)	3.5	3.5	3.5	3.5
Rx power (dBm)	-92.6	-110.0	-117.7	-118.9

3. When blocked by a row of building, the PHS signal will be attenuated to about -119 dBm at a distance of 100m, which just meets the sensitivity requirement of the measuring receiver. Therefore, the detection range of PHS signal is around 100m in an urban environment of Hong Kong.

Annex 2

Monitored Districts



Notes -

- 1) The monitored locations are marked in green.
- 2) The markings are for indication purpose only and are not drawn to scale.

Annex 3

Estimation of the Remaining Life Span of PHS Cordless Telephone from Battery Life

While electronic apparatus may have a life span of up to 10 years, those that use irreplaceable rechargeable battery, such as PHS cordless phones, have a much shorter life span. The life span of PHS cordless phone is dominated by its battery life, which is related to the charging/discharging cycles. The charging/discharging cycles of NiCd and NiMH batteries, which are the typical types of rechargeable batteries adopted for older apparatus, vary from 500 cycles to 1500 cycles according to information commonly available on the Internet. Thus, the mean and the standard deviation are assumed to be 1000 cycles and 250 cycles respectively.

2. If the mean battery life is five years (high side estimate), there would be 200 charging/discharging cycles per year. Therefore the standard deviation of 250 cycles is converted to 1.25 year.

3. The last application for type-approval of PHS cordless telephone was received in 2002. Assuming the peak sale period occurred in the following two years up to end 2004 and the adoption of PHS cordless telephone then was 5% household penetration (high side estimate), there might be 100,000 PHS cordless telephone users at that time, given a total household of about 2,000,000 in 2004. From end 2004 to early 2013, the eight years elapsed correspond to 2.4 times the standard deviation of the battery life beyond the mean life span of five years. Assuming the variation of battery life follows a normal distribution profile statistically, the remaining number of PHS cordless telephone in use is expected to be 820^1 currently. By early 2014^2 , there will be less than 50 sets of PHS cordless phone remaining to be functional, according to normal distribution statistics.

¹ From the table of normal distribution, the mean plus 2.4 times standard deviation corresponds to 99.180% of the population. Therefore the remaining PHS cordless telephone, if any, is 100,000 - 99,180 = 820.

² The mean plus 3.292 times standard deviation corresponds to 99.950% of the population, and 3.292 x 1.25 years plus 5 years after end 2004 correspond to early 2014.