

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

**The Administration's responses to the issues arising from the discussion at the meeting on 16 January 2013**

**The Consultation Process**

Regarding the proposed withdrawal of licensing exemptions in respect of Personal Handy Phone System ("PHS") apparatus, the former Telecommunications Authority ("TA") conducted two consultation exercises, namely an industry consultation and a public consultation.

2. The TA first consulted the industry through one of his advisory committees, the Radio Spectrum Advisory Committee<sup>1</sup>, at two meetings in October 2010 and March 2011 respectively on the proposed withdrawal of the relevant licensing exemptions. Subsequently, the former TA issued a consultation paper in November 2011 for a 10-week public consultation. Response to both consultation exercises indicated general support for the proposed withdrawal of licensing exemptions in respect of PHS apparatus. Having regard to the outcome of the public consultation, the TA published a statement in March 2012 to announce his decision on way forward with the proposal. Further details about the two consultation exercises are in Enclosure 1.

**Estimated number of affected apparatus**

3. Since 2002, the Office of the Communications Authority ("OFCA") or the former OFTA has not received any application for certification of PHS apparatus under its voluntary scheme. In a market

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<sup>1</sup> Membership of the Radio Spectrum Advisory Committee comprised representatives from the former Office of the Telecommunications Authority ("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 in the planning of the use of the radio frequency spectrum.

survey conducted in September 2010, the former OFTA also found that there was no PHS apparatus available in the local market for sale.

4. To gauge the utilisation of the PHS spectrum, OFCA regularly monitors the use of the PHS frequency band (i.e. 1895 – 1906.1MHz) in various districts. Based on the estimated lifespan of PHS apparatus, OFCA estimates that some 800 PHS cordless telephones are currently in use. Taking into account the battery life of the PHS apparatus, the best guesstimate of OFCA is that no more than 50 sets of PHS cordless phone would remain functional by early 2014. Details of OFCA’s measurement work and estimation are in Enclosure 2.

### **Previous record of prosecution**

5. In relation to illegal telecommunications apparatus, the enforcement statistics for the past three years (from July 2009 to June 2012) are set out as follows –

Number of cases with enforcement actions:	1,229
Number of prosecuted cases:	867
Number of non-prosecuted cases:	362
Number of confiscated telecommunications apparatus:	3,055

6. 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. The subject apparatuses were confiscated. OFCA will continue to adopt such enforcement practices in future.

**Commerce and Economic Development Bureau  
(Communications and Technology Branch) and  
Office of the Communications Authority  
January 2013**

**Consultation regarding withdrawal of licensing exemption in respect of PHS apparatus**

**Consultation with the Radio Spectrum Advisory Committee**

The former Office of the Telecommunications Authority (“OFTA”) consulted the Radio Spectrum Advisory Committee<sup>1</sup> (“RSAC”) on the proposed withdrawal of the frequency allocation to PHS at two meetings in October 2010 and March 2011 respectively. The meeting papers and minutes of meetings are in Annex A – D.

**Public Consultation**

2. The former OFTA published a public consultation paper “Withdrawal of Licensing Exemption for Personal Handy Phone System (PHS) Operating in the 1895 - 1906.1 MHz Band”<sup>2</sup> (Annex E) in November 2011, and invited views and comments from the industry and the public over a ten-week consultation period (including extension of the original consultation period by two weeks<sup>3</sup>) regarding a proposal to withdraw the frequency allocation for PHS as follows –

- (a) The licence exemption of PHS apparatus in respect of dealing in the course of trade, demonstration with a view to sale or import and export for personal use should cease immediately upon the amendment of the Exemption Order; and
- (b) The licence exemption of PHS apparatus in respect of establishment, maintenance, possession and use should cease three years from the date of the amendment of the Exemption Order.

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<sup>1</sup>The Radio Spectrum Advisory Committee was an advisory committee set up by the former Telecommunications Authority to give advice on the use of radio spectrum in Hong Kong. It comprised of representatives from the communications industry, as well as Consumer Council who would reflect views from consumers’ standpoint.

<sup>2</sup> Consultation paper was published at the following link –  
[http://tel\\_archives.ofca.gov.hk/en/report-paper-guide/paper/consultation/cp20111122.pdf](http://tel_archives.ofca.gov.hk/en/report-paper-guide/paper/consultation/cp20111122.pdf)

<sup>3</sup> A notice on extension of the consultation period was published at the following link –  
[http://tel\\_archives.ofca.gov.hk/en/report-paper-guide/paper/consultation/cp20120119.pdf](http://tel_archives.ofca.gov.hk/en/report-paper-guide/paper/consultation/cp20120119.pdf)

3. The consultation paper was posted on the former OFTA's website for free access by the industry and the public. As the proposal would affect the licensing exemptions granted in respect of the trading and sale of PHS apparatus, a wide range of industry players may be affected. Notification of the related trade and industry associations was considered appropriate to broaden the reach of the consultation exercise. Email notifications were accordingly sent to chambers of commerce, industry organisations, etc. These trade organizations were invited to offer views and comments on the consultation paper. However, no response was received from them.

4. Response to the public consultation was published on the former OFTA's website<sup>4</sup>. Only PCCW offered a response<sup>5</sup> ([Annex F](#)) that was supportive of the proposal to withdraw the licensing exemption granted in respect of PHS apparatus, and thus the corresponding frequency allocation.

5. Having considered the response to the public consultation, the former Telecommunications Authority ("TA") issued a [TA Statement "Withdrawal of Licensing Exemption for Personal Handy Phone System \(PHS\) Operating in the 1895 - 1906.1 MHz Band"](#) ([Annex G](#)) on 1 March 2012 on the way forward.

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<sup>4</sup> Response to the consultation was published at the following link – [http://tel\\_archives.ofca.gov.hk/en/report-paper-guide/paper/consultation/20120301/table.html](http://tel_archives.ofca.gov.hk/en/report-paper-guide/paper/consultation/20120301/table.html)

<sup>5</sup> PCCW's response was published at the following link – [http://tel\\_archives.ofca.gov.hk/en/report-paper-guide/paper/consultation/20120301/01.pdf](http://tel_archives.ofca.gov.hk/en/report-paper-guide/paper/consultation/20120301/01.pdf)



## Background for Review of PHS Spectrum

- In 2001/2002, RSAC reviewed the frequency allocations for cordless telephones including PHS
- Outcome of the RSAC discussions on PHS
  - PHS products were not available in most popular retailers
  - sharing between PHS and 3G TDD in the overlapping band (i.e. 1904.9 – 1906.1 MHz) might be feasible
  - OFTA would closely monitor the market and review the situation if and when necessary



## PHS Usage

- Based on RCR STD-28 issued by the Association of Radio Industries and Businesses (ARIB)
- Public telecommunications services
  - in China, Japan and Taiwan
  - service withdrawal in China by end 2011
- Cordless apparatus
  - in Australia, Hong Kong and Singapore
  - operated on a licence exempt basis



## PHS for Use in Hong Kong

- Licence-exempt cordless phone
  - not for provision of a public service
  - operation on a non-interference, non-protected basis
- Technical requirements
  - frequency range : 1895 – 1906.1 MHz
  - 37 channels with 300 kHz spacing
  - maximum radiated power : 10 mW erp
  - control carriers: 1903.85 MHz & 1905.65 MHz (set out in HKTA 1027)

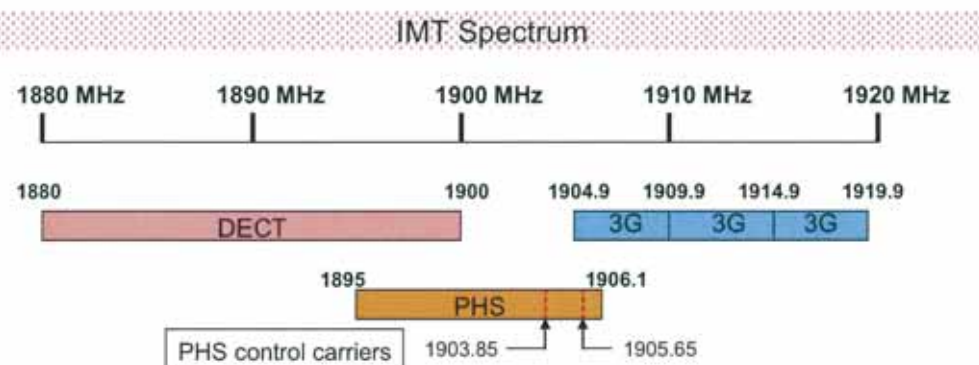


## Current PHS Situation in HK

- Limited product availability on the market
  - no PHS models type approved after 2002
  - market survey conducted in September 2010 in popular outlets
    - no PHS products found
- Limited use of PHS
  - measurements conducted in different parts of the territory in September 2010
    - sporadic PHS transmissions detected
    - a relatively small quantity of PHS equipment still in use in HK



## Potential Use of PHS Band



- The band 1900 – 1904.9 MHz falls within the IMT spectrum
  - potential use : public mobile services including Integrated Mobile Broadcast (IMB)



## Proposed Way Forward

- Decide on whether or not PHS should be phased out, taking into account:
  - current PHS deployment in HK
  - potential use of the band
  - feasibility of coexistence of PHS with the potential use





**RADIO SPECTRUM ADVISORY COMMITTEE****Minutes of the Thirty-Eighth Meeting  
held at 2:30 p.m., Thursday, 28 October 2010  
in OFTA Conference Room****Present**

Mr T F So	OFTA (Chairman)
Mr H W Chan	Representative of Institution of Engineering and Technology Hong Kong
Mr Y H Chan	Representative of Asia Satellite Telecommunications Company Limited (“AsiaSat”)
Mr Y C Chan	Representative of Broadcasters (Free TV)
Mr Carlson Chu	Representative of Broadcasters (Pay TV)
Mr H C Hung	Representative of External FTNS / Fixed Carrier / Unified Carrier (External Fixed Services) Licensees
Dr Victor Hung	Representative of Consumer Council
Ms Christine Iu	Ad personam
Mr Francis Kwok	Representative of Sound Broadcasters
Mr Cyrus Lai	Representative of SmarTone Mobile Communications Limited and Local FTNS / Fixed Carrier Licensees
Mr S M Shuen	Representative of CSL Limited (“CSL”)
Mr Johnny Siu	Representative of Amateur Radio Societies
Mr Fred Vong	Representative of AsiaSat
Mr Adam Wong	Representative of Hong Kong Telecommunications (HKT) Limited
Mr C K Yuen	Representative of Civil Aviation Department (“CAD”)
Mr L H Ting	OFTA (Secretary)

**Absent with Apologies**

Mr Henry Chan	Representative of Hutchison Telephone Company Limited
Mr Bruce Lam	Representative of Communications Association of Hong Kong
Dr Francis Lau	Ad personam
Dr C K Li	Representative of the Hong Kong Institution of Engineers

Mr Pan Li	Representative of APT Satellite Company Limited ("APT Satellite")
Mr Edward Luk	Representative of the Hong Kong Police Force
Mr Mike Pan	Representative of China Mobile Hong Kong Company Limited
Mr Raymond Wong	Representative of Radio Paging Operators
Mr Billy Yeung	Representative of Hong Kong Wireless Technology Industry Association

**Guest Speakers**

Mr Rupert Benson	Representative of IP Wireless
Mr Keith Sinclair	Representative of IP Wireless
Prof Qian Zhang	Professor, Hong Kong University of Science and Technology

**In Attendance**

Mr P H Ma	OFTA
Mr C S Li	OFTA
Mr W K Leung	OFTA
Mr Alex Tang	OFTA
Mr Raymond Ho	OFTA
Mr K K Wong	OFTA

**Observer**

Mr George Chan	Representative of HARTS
Mr Tony Lee	Representative of HARTS
Ms Vicky Wong	Representative of AsiaSat
Prof Yan Xu	Professor, Hong Kong University of Science and Technology

3. The Chairman welcomed new member who were appointed as RSAC Members under the new term of 2010-2012 and the guest speakers for agenda items 2 and 4.

## **Item 1: Matters Arising from the Previous Meeting**

### *Item 8 of the minutes of the 37<sup>th</sup> RSAC Meeting*

4. The Secretary reported that after the last RSAC meeting, the ITU-R study groups on WRC-12 had concluded their work, and OFTA had met with MIIT to exchange views on WRC-12 issues. Accordingly, OFTA worked out the Hong Kong's preliminary position, taking into consideration the industry views received, the outcomes of ITU-R studies and the result of discussion with MIIT. The item was further discussed at that meeting under agenda item 3.

### *Item 19 of the minutes of the 37<sup>th</sup> RSAC Meeting*

5. The Secretary reported that OFTA had received no further comment from Members on the allocation of the 433 MHz for short range device after the last RSAC meeting. OFTA would shortly arrange for a public consultation on the concerned regulatory framework, following the proposal set out in RSAC paper 5/2010.

## **Item 2: Presentation on Cognitive Radio Technology**

6. Prof Qian Zhang offered a presentation on Cognitive Radio ("CR") and Dynamic Spectrum Access ("DSA") technology. She briefed Members on some measurement results of spectrum utilization pattern and offered an impact analysis of CR and DSA deployment for various stakeholders. Prof Zhang's presentation also covered various topics for implementation of CR and DSA, covering economics, technology, prototype and experiments.

7. In response to the enquiry of Mr S M Shuen on standardisation, Prof Zhang said that the related standardisation work was in progress under various standardisation fora including IEEE, ETSI and ITU. Mr P H Ma asked about the problem of hidden transmitters in respect of the spectrum sensing technology used in CR. Prof Zhang replied that cooperative spectrum sensing might be adopted to minimize such problem. In response to the Chairman's enquiry on possible application of CR and DSA, Prof Zhang said that CR had already been adopted in various existing standards

like DECT, while DSA might be employed to tackle the constraint of limited spectrum supply.

8. Mr Adam Wong noted that CR and DSA implementation should not cause interference with existing radiocommunications services, and international standard should be followed when such technologies were deployed. Mr Y H Chan opined that not all frequency bands would be suitable for CR and DSA implementation, and those for satellite services should be excluded. Prof Zhang pointed out that in the US only TV bands were released for CR implementation, under a licence-free approach. Mr C S Li asked about the reliability of spectrum sensing technology to support CR. Prof Zhang responded that the concerned implementation in the US TV band demonstrated that it was stable and reliable.

9. The Chairman concluded that OFTA would keep in view the development of CR and DSA technologies, and review the regulatory framework as required to meet the changes brought about by such technologies. Members would be updated on the latest development of that technology from time to time.

**Item 3: Hong Kong's Preliminary Position on Agenda Items to be Discussed at World Radiocommunication Conference 2012 (WRC-12) (RSAC Paper 6/2010)**

10. Mr W K Leung introduced RSAC Paper 6/2010 that covered Hong Kong's Preliminary Position on Agenda Items to be discussed at World Radiocommunication Conference 2012 (WRC-12).

11. Members were briefed on the scope and proposal of the concerned ITU-R studies, as well as Hong Kong's preliminary positions on various Agenda Items ("AI") to be discussed at WRC-12. Mr Y H Chan offered a comment about the preliminary position on AI 1.22, noting that Short Range Device service was not a radiocommunications service under the Radio Regulations.

12. Mr H W Chan asked why the preliminary position on AI 1.17 was stated as neutral. Mr C S Li responded that the study of compatibility between mobile service and other services under the AI was primarily meant

to address the change in allocation of the band 790-862 MHz from broadcasting to mobile after the availability of the “digital dividend” in some European countries. The concerned frequency band in Hong Kong had already been deployed mainly for mobile services, so the implication of the proposal under AI 1.17 to Hong Kong would be minimal, if any. A neutral position was therefore considered appropriate. The Chairman added that one of the European initiatives was to re-allocate part of the broadcasting spectrum for IMT service, but noted that such frequency band in Hong Kong had already been used heavily and diversely, so frequency refarming in that band for IMT service would be difficult.

13. Mr C K Yuen reported that the 37<sup>th</sup> Assembly of the International Civil Aviation Organization (“ICAO”) was held from 28 September 2010 to 8 October 2010, in which Civil Aviation Administration of China (“CAAC”) participated and stated its position. He said that CAAC’s position was the same as that of ICAO with respect to aviation-specific AIs of WRC-12, and requested OFTA to take note of it in subsequent discussion with MIIT on WRC-12. Mr Yuen added that CAD had offered some comments on the RSAC paper to OFTA before the meeting.

14. In response to Mr C K Yuen’s enquiry on the 4<sup>th</sup> meeting of the APT Conference Preparatory Group for WRC-12 (“APG2012-4 meeting”) to be held in Hong Kong, Mr W K Leung said that the meeting would be held over 13-18 December 2010.

15. The Chairman suggested that Hong Kong’s preliminary positions on WRC-12 AIs should be settled within November 2010, in order to prepare for the APG2012-4 meeting in December 2010. He invited comments from Members on the preliminary positions expressed in the RSAC paper within 2 weeks, i.e. any comment should be submitted to the Secretary by 10 November 2010. The Chairman said that OFTA would be prepared to discuss further with Members specific issues outside the meeting, should any Member raise such a need.

#### **Item 4: Review of Frequency Allocation for Personal Handy Phone System (RSAC Paper 7/2010)**

16. Mr Alex Tang introduced RSAC Paper 7/2010 that covered a review of the frequency allocation for Personal Handy Phone (PHS) System.

17. Mr Tang said that the frequency allocation for cordless telephones including PHS phones was reviewed by RSAC in 2001, and it was timely for OFTA to revisit the issue again. He briefed Members on the background of PHS and its limited deployment in Hong Kong, based on a field survey conducted lately by OFTA. He noted that the band 1900 – 1904.9 MHz currently assigned for PHS fell within the IMT spectrum, and the spectrum assigned for PHS might be used for new mobile services like Integrated Mobile Broadcast (“IMB”). Nevertheless, the issue of interference between PHS and any new services in this band should be addressed.

18. Mr Rupert Benson offered a presentation on IMB technology and its applications. He also briefed Members on the UK experience of IMB deployment and the device availability. Mr Keith Sinclair offered a presentation on the co-existence of IMB and other technologies, covering detailed analysis of the potential interference between DECT and IMB, and a brief outline of the interference case with PHS.

19. Mr P H Ma asked how IMB would fare when compared to other mobile TV technologies like DVB-H and MediaFLO. Mr Rupert Benson responded that the DVB-H was a technology that required its own network infrastructure, while MediaFLO was a proprietary technology, so both were expensive. He noted that IMB implementation would share the 3G radio network infrastructure, but it would not drain the existing traffic capacity of the network. He opined that the cost of IMB implementation would be lower than that of other mobile TV technologies, while offering better video quality. He further quoted an example of the costs incurred for deploying IMB versus that for another technology.

20. Mr Johnny Siu asked about the set up cost and running cost of IMB implementation on a typical mobile network in Hong Kong. Mr Rupert Benson said that the cost would depend on the network configuration and number of video channels offered, but it would be low comparatively and might be recovered within a few years. Dr Victor Hung asked about the market structure when content services were delivered via IMB platform. Mr Benson noted that the existing practice among content service providers and mobile network operators would be equally applicable. Mr H W Chan asked whether voice services would be supported when a user was enjoying

IMB service. Mr Benson replied that IMB would allow the user to answer incoming calls under such scenario.

21. Mr C S Li asked whether IMB service could be deployed in a band adjacent to a TDD 3G service band. Mr Keith Sinclair responded that the compatibility between IMB service and FDD 3G services had been reviewed, but the interference between IMB band and TDD band needed to be further analysed.

22. Mr S M Shuen asked whether OFTA had any preliminary view on the PHS frequency allocation and its review. The Chairman replied that OFTA had no specific position on that issue and wished to seek industry feedback.

23. The Chairman invited network operators to consider the potential interference between IMB and TDD services in adjacent bands, and how the PHS band and TDD band as a whole might be best used. Comments from Members on the way forward for PHS frequency allocation as stated on the RSAC paper were invited within 2 weeks, i.e. any comment should be submitted to the Secretary by 10 November 2010.

**Item 5: Any Other Business**

24. There being no other business, the meeting was adjourned at 5:40 p.m.

**Office of the Telecommunications Authority  
November 2010**

**For Discussion  
on 24 March 2011**

**RSAC Paper 3/2011**

## **Withdrawal of Frequency Allocation for Personal Handy Telephone System (PHS)**

### **Purpose**

This paper seeks Members' views on withdrawal of frequency allocation for Personal Handy Telephone System ("PHS") in the frequency band 1895-1906.1 MHz in Hong Kong.

### **Background**

2. PHS is a cordless telecommunications system operating in the 1.9 GHz band. Cordless telephones ("CT") based on PHS were introduced into Hong Kong decades ago. The sale and use of PHS are currently exempted from licensing requirements by virtue of the Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order, Cap.106Z (the "Exemption Order").

3. Under the Exemption Order, PHS shall operate in the 1895-1906.1 MHz band with an effective radiated power not exceeding 10 mW. It shall not be used to provide a public telecommunications service.

4. The 1895-1906.1 MHz band falls within the spectrum identified by the ITU in 1992 for IMT services on a worldwide basis. Such band is used in some other territories for 3G services, for instance TD-SCDMA operating in the 1880-1920 MHz band in Mainland China. An example of new services that may be deployed in this band is Integrated Mobile Broadcast service.

### **Review of PHS Spectrum**

5. In 2002, the frequency allocations for CT including PHS were first reviewed by the RSAC. It was concluded then that the phasing out of PHS would be subject to further review. In September 2010, OFTA conducted a survey to assess deployment of PHS in Hong Kong. The outcome of the



survey revealed that PHS had very limited market availability and was then sparingly used in Hong Kong. The subject matter was further reviewed at the last RSAC meeting. A Member suggested that the existing frequency allocation for PHS should be withdrawn in order to make available the spectrum in the 1900-1904.9 MHz band<sup>1</sup> for other radiocommunications applications.

### **Withdrawal of PHS Frequency Allocation**

6. Spectrum is an important and scarce resource for radiocommunications and there is a need to promote efficient allocation and use of spectrum as a public resource in Hong Kong. OFTA is of the preliminary view that the allocation for the PHS band should be withdrawn in an orderly manner, having regard to the following -

- (a) the current deployment of PHS in Hong Kong;
- (b) the potential demand for the spectrum now being occupied by PHS;  
and
- (c) the incompatibility between PHS and the potential public mobile services sharing the band.

7. The technical aspects, including the potential applications, the band planning and electromagnetic compatibility issues, were thoroughly discussed at the last RSAC meeting (see [RSAC Paper 7/2010](#)).

8. The impact of withdrawing frequency allocation for PHS on end users and the industry players concerned is expected to be minimal. There has been little presence of PHS on the local market for a number of years, so there would be insignificant negative impact on the traders or manufacturers concerned. On the other hand, there are many alternative types of CT available on the market as replacement for PHS, so end users may easily switch to CT of other technologies, say DECT and those digital ones operating at 2.4 GHz.

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<sup>1</sup>The frequency bands 1880-1900 MHz and 1904.9-1919.9 MHz are allocated for Digital Enhanced Cordless Telecommunications ("DECT") and 3G services respectively. The frequency allocation for PHS overlaps with DECT and the 3G services at both ends in 1895-1900 MHz and 1904.9-1906.1 MHz. Accordingly, only the frequency band 1900-1904.9 MHz may be released for other radiocommunications applications after the frequency allocation for PHS is withdrawn.

## **Transitional Arrangements**

9. With the withdrawal of the PHS band (i.e. removal of the frequency band 1895-1906.1 MHz from the Exemption Order), sale and use of PHS will no longer be exempted from licensing requirements in Hong Kong. To mitigate the possible impact on the stakeholders, OFTA is of the preliminary view that the following transitional arrangements should be made -

- (a) licence exemption in respect of dealing in the course of trade, demonstration with a view to sale or personal import and export should cease six months after a formal notification on the band withdrawal is made; and
- (b) licence exemption in respect of establishment, maintenance, possession and use should cease three years after a formal notification on the band withdrawal is made.

## **Advice Sought**

10. Members are invited to offer their views and comments as to whether the frequency allocation for PHS should be withdrawn, and if affirmative, whether the transitional arrangements given in paragraph 9 should be made.

**Office of the Telecommunications Authority**  
**March 2011**

**RADIO SPECTRUM ADVISORY COMMITTEE**

**Minutes of the Thirty-Ninth Meeting  
held at 2:30 p.m., Thursday, 24 March 2011  
in OFTA Conference Room**

**Present**

Mr T F So	OFTA ( <i>Chairman</i> )
Mr H W Chan	Representative of Institution of Engineering and Technology Hong Kong
Mr Henry Chan	Representative of Hutchison Telephone Company Limited
Mr Y H Chan	Representative of Asia Satellite Telecommunications Company Limited
Mr Peter Chang	Representative of Broadcasters (Free TV)
Mr H M Cheung	Representative of the Hong Kong Police Force
Ms Joanna Chiu	Representative of CSL Limited
Mr Alan Choi	Representative of SmarTone Mobile Communications Limited and Local FTNS / Fixed Carrier Licensees
Mr Carlson Chu	Representative of Broadcasters (Pay TV)
Mr Francis Kwok	Representative of Sound Broadcasters
Mr Bruce Lam	Representative of Communications Association of Hong Kong
Mr S H Lam	Representative of External FTNS / Fixed Carrier / Unified Carrier (External Fixed Services) Licensees
Mr Mike Pan	Representative of China Mobile Hong Kong Company Limited
Mr Johnny Siu	Representative of Amateur Radio Societies
Mr W K Tsang	Representative of the Hong Kong Police Force
Mr Adam Wong	Representative of Hong Kong Telecommunications (HKT) Limited
Mr C K Yuen	Representative of Civil Aviation Department
Mr L H Ting	OFTA ( <i>Secretary</i> )

### **Absent with Apologies**

Dr Victor Hung	Representative of Consumer Council
Ms Christine Iu	Ad personam
Dr Francis Lau	Ad personam
Dr C K Li	Representative of the Hong Kong Institution of Engineers
Mr Pan Li	Representative of APT Satellite Company Limited
Mr Raymond Wong	Representative of Radio Paging Operators
Mr Billy Yeung	Representative of Hong Kong Wireless Technology Industry Association

### **In Attendance**

Mr P H Ma	OFTA
Mr C S Li	OFTA
Mr W K Leung	OFTA
Mr Alex Tang	OFTA

### **Observer**

Mr Patrick Ho	Representative of Nokia (HK)
Mr Michael Lee	Representative of EU ICT Council in Hong Kong & Macau
Dr Rui Zhang	Representative of Asia Satellite Telecommunications Company Limited

1. The Chairman welcomed Mr H M Cheung as new Member and Mr Michael Lee as an observer first attending the RSAC meeting.

## **Item 1: Matters Arising from the Previous Meetings**

### *Item 15 of the minutes of the 38th RSAC Meeting (WRC-12)*

2. The Secretary reported that after the last RSAC meeting, the final version of Hong Kong's Preliminary Position ("HKPP") on WRC-12 Agenda Items ("AIs") with Members' input consolidated had been distributed to Members on 22 November 2010. OFTA had subsequently submitted the HKPP to the Ministry of Industry and Information Technology ("MIIT") of China for its consideration in setting positions on the AIs.

3. The 4<sup>th</sup> Meeting of the APT Conference Preparatory Group for WRC-12 ("APG-4") and the 2<sup>nd</sup> session of the 2011 Conference Preparatory Meeting for WRC-12 ("CPM11-2") were held in December 2010 and February 2011 respectively. The Secretary reported that OFTA had participated in both meetings to monitor the development of the AIs. China submitted 12 papers at CPM11-2, covering maritime and aeronautical issues, radiolocation and amateur issues, fixed, mobile and broadcasting issues, satellite issues and future work programme issues. There was no conflicting position between HKPP and those put forth in China's submissions.

4. The Secretary noted that OFTA would study the CPM Report and keep reviewing the industry input and discussion with the MIIT.

### *Item 17 of the minutes of the 35th RSAC Meeting (Spectrum Utilization Fee)*

5. The Secretary reported that a public consultation paper on spectrum utilization fee had been issued in November 2010. By the closing date of the 3-month consultation, OFTA received 10 submissions from the industry. The comments received were under consideration.

**Item 2: Review of Spectrum Release Plan (RSAC Paper 1/2011)**

6. Mr K L Tang introduced RSAC Paper 1/2011 that covered a review of the potential spectrum supply for inclusion in the spectrum release plan (“SRP”) for the coming three years.

7. Mr Tang briefed Members on the trend of spectrum allocations elsewhere in the following frequency bands: 216 – 223 MHz band, 790 – 862 MHz band, 2.3 GHz band and 3.6 GHz band, followed by a report of the concerned frequency allocations in Hong Kong, and a summary of the spectrum auctions conducted by OFTA over the past year. Only the 2.3 GHz band was identified as the potential supply of spectrum for inclusion in the SRP for the coming three years.

8. Mr Adam Wong noted that there had been some progress at the 3GPP Rel. 10 meeting in Taiwan on the review of the 800 – 890 MHz band and the 3.4 – 3.6 GHz band for 3G services. He suggested OFTA take note of the concerned development. Mr C S Li commented that the 3.4 – 3.6 GHz band as once proposed for allocation to BWA services a few years ago might not be suitable for allocation to mobile services in the near future, given its potential interference with existing satellite services operating in the same frequency band.

9. The Chairman said that the OFTA intended to issue the updated SRP in April 2011 after considering Members’ input, if any. Mr Y H Chan asked whether the 3.4 – 3.6 GHz band would be included in the SRP, given the discussion just then. The Chairman replied that the 3.4 – 3.6 GHz band had not been included in the draft SRP annexed to the RSAC Paper, and it would unlikely be included in the final version. The Chairman invited comments from Members on the potential spectrum supply for inclusion in the SRP within 2 weeks, i.e. any comment should be submitted to the Secretary by 7 April 2011.

**Item 3: Allocation of 433 – 434 MHz Band for Short Range Devices (RSAC Paper 2/2011)**

10. Mr C S Li introduced [RSAC Paper 2/2011](#) that covered a proposal for allocation of the 433 – 434 MHz Band for Short Range Devices (“SRD”).

11. Mr Li pointed out that the subject matter had previously been discussed at the 37<sup>th</sup> RSAC meeting in July 2010, based on [RSAC Paper 5/2010](#). Further to the last discussion at RSAC, a public consultation paper<sup>1</sup> proposing a variation of the existing Class Licence for RFID Tag to cover 433 – 434 MHz SRD was issued on 11 March 2011. Mr Li outlined the concerned technical framework under the varied Class Licence. The Chairman added that Members might draw reference to the consultation paper for further details about the proposed frequency allocation for SRD.

12. Mr Johnny Siu pointed out that the 430 – 440 MHz band was allocated for Amateur Service on a secondary basis under both the ITU Radio Regulations (“RR”) and the Hong Kong Table of Frequency Allocations. He considered that SRD should fall under the ISM category and should not be qualified as a service defined by the RR. Accordingly, if there was a frequency allocation within this frequency band for SRD, the allocation status for a defined service like Amateur Service should also be clearly defined. Given that the 435 – 438 MHz band was allocated for Amateur-Satellite Service in Hong Kong, Mr Siu opined that harmful interference signal from SRD operating in the 433 – 434 MHz band would possibly affect the performance of satellite receiver operating in the 435 – 438 MHz band. The interference caused by SRD might affect not only amateur radio service but also other radiocommunications services operating in adjacent frequency bands. Mr Siu said that the amateur radio sector did not object to the proposed frequency allocation for SRD, but wished to seek OFTA’s clarification and views on the allocation status of Amateur Service in this band, and the measures for control of interference possibly induced by SRD.

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<sup>1</sup> The public consultation paper is available on OFTA web site at –

<http://www.ofta.gov.hk/en/report-paper-guide/paper/consultation/cp20110311.pdf>

13. Mr P H Ma said that there were regular liaison meetings between OFTA and the amateur radio sector, so any concern of the sector on SRD might be further discussed at those meetings. He noted that the 430 – 431 MHz band and the 435 – 440 MHz band had already been allocated for Amateur Services in Hong Kong. Regarding allocation of more frequency within the 430 – 440 MHz band for Amateur Service, Mr Ma suggested the amateur radio sector gather information about the use of such frequency band for Amateur Service elsewhere to facilitate discussion at the coming liaison meeting. As for the interference brought about by SRD, it was noted that Europe had already allowed the use of such devices for several years and so any interference impact experienced by European amateur radio users might also serve as reference for further discussion at the liaison meeting.

14. The Chairman noted that the amateur radio sector did not object to the proposed frequency allocation for SRD. He concluded that further frequency allocation for Amateur Service within the 430 – 440 MHz band needed further consideration, and any overseas reference offered by the amateur radio sector would be useful.

15. In response to the Chairman's enquiry, Mr Johnny Siu said that his comments on RSAC Paper 2/2011 submitted to OFTA before the meeting might be circulated to other Members for information, and that it might also serve as a response to the public consultation paper proposing a variation of the existing Class Licence for RFID Tag.

*[Post-meeting note: Mr Siu's comments on RSAC Paper 2/2011 were circulated to Members on 24 March 2011 after the meeting.]*

16. The Chairman invited comments from other Members on the proposed frequency allocation as stated on the RSAC paper by the same deadline as the public consultation paper, i.e. any comment should be submitted to the Secretary by 8 April 2011.

**Item 4: Withdrawal of Frequency Allocation for Personal Handy Phone System (RSAC Paper 3/2011)**

17. Mr L H Ting introduced RSAC Paper 3/2011 that covered a review of the frequency allocation for Personal Handy Phone System



("PHS") and a proposal for withdrawal of the concerned frequency allocation.

18. Mr Ting noted that the frequency allocation for PHS had been reviewed and discussed thoroughly at the last RSAC meeting. Subsequently, there was a proposal from a Member that the existing frequency allocation for PHS should be withdrawn in order to make available the frequency band 1900 – 1904.9 MHz for other radiocommunications applications. The proposal, which was circulated to other Members in December 2010, gained support from another Member.

19. Mr Ting considered that the frequency allocation for PHS should be withdrawn in an orderly manner, and that the impact of withdrawing frequency allocation for PHS on end users and the industry players concerned would be minimal. To mitigate the possible impact on the stakeholders, transitional arrangements were proposed such that the licence exemption in respect of various acts would cease in either six months or three years, after a formal notification on the band withdrawal was made.

20. The Chairman added that ceasing the licence exemption in full by three years' time was meant to allow the public be fully aware of the legislative changes to their cordless telephones in use, so that citizens' possession or use of PHS would not be changed from legal to illegal abruptly. Mr Adam Wong opined that a three-year period was too long. Mr C S Li noted that given the sporadic PHS signal detected in the field survey last year, there were still some PHS users in Hong Kong. The proposed period was considered reasonable for fully phasing out a consumer product still in use.

21. Mr H W Chan suggested that a balance should be struck between three years for ensuring public awareness and a shorter period as demanded by the industry for early service launch. He asked whether PHS might be compatible with the new service. Mr C S Li noted that there would possibly be unacceptable interference between PHS and the new service, in which case PHS would be incompatible with the new service. The Chairman

considered that the operator offering the new service might possibly offer some mitigation measures to address the issue of compatibility between PHS and the new service.

22. Mr Henry Chan asked what service might be deployed in that unpaired frequency band. Mr C S Li responded that Integrated Mobile Broadcast as discussed at the last RSAC meeting was a candidate service, but the exact service to be offered had yet to be identified as it would be a few years' time when the service was to be launched.

23. The Chairman invited comments from Members on the proposed withdrawal of PHS frequency allocation and the transitional arrangements as stated on the RSAC paper within 2 weeks, i.e. any comment should be submitted to the Secretary by 7 April 2011.

#### **Item 5: Any Other Business**

24. Mr Michael Lee noted that the 450 – 470 MHz band was allocated for IMT services in ITU WRC-07 and asked whether there was any plan to allocate such frequency band for IMT service in Hong Kong. Mr P H Ma responded that the IMT frequencies designated by ITU were not applicable on a global basis, but instead different administrations would adopt different frequency allocation plans. He added that the current utilization rate of the 450 – 470 MHz band in Hong Kong was fairly high. Given the existing heavy usage of such frequency band, significant spectrum refarming effort would be required in order to release the spectrum for IMT services. Mr Ma indicated that there was no plan to allocate the 450 – 470 MHz band for IMT services in Hong Kong.

25. Mr Adam Wong asked what frequency bands might be released for IMT services in Hong Kong in the long run, given the growing demand for mobile broadband services. He suggested drawing reference to the development in Europe. The Chairman responded that the frequency allocation plan in Hong Kong could not straightly follow those of the

European administrations. He said that OFTA would compile a paper covering the IMT frequency allocations and Hong Kong's band utilisation in these IMT allocations for discussion at the next RSAC meeting.

26. There being no other business, the meeting was adjourned at 3:40 p.m.

**Office of the Telecommunications Authority**  
**April 2011**

**Withdrawal of Licensing Exemption for  
Personal Handy Phone System (PHS)  
Operating in the 1895 - 1906.1 MHz Band**

**Consultation Paper  
23 November 2011**

**Introduction**

In Hong Kong, the 1895 - 1906.1 MHz band is allocated for Personal Handy Phone System (“PHS”). Under the Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order, Cap.106Z (the “Exemption Order”), the possession, use and dealing of radiocommunications apparatus operating in the 1895 - 1906.1 MHz band and conforming to the PHS standard and some other prescribed conditions are exempted from licensing requirements.

2. PHS is a short and medium-range mobile radiocommunications technology commonly deployed in the 1.9 GHz band for various applications, including cordless telephone, wireless local loop and wireless private automatic branch exchange (PABX). In Mainland China, PHS was once deployed extensively as a public mobile phone service with millions of subscribers. However, it is being phased out and replaced by 3G mobile services. In Hong Kong, PHS was introduced in 1996 for private use only and was deployed predominately for home cordless telephone.

3. Recent surveys conducted by the Office of the Telecommunications Authority (“OFTA”) revealed that PHS apparatus could hardly be found on sale in the local market and is sparingly used in Hong Kong. In this connection, the Telecommunications Authority (“TA”) proposes withdrawing the licensing exemption for PHS apparatus through amendment of the Exemption Order, thereby vacating part of the spectrum in the 1895 - 1906.1 MHz band for other telecommunications services. This consultation paper seeks to invite views and comments from members of the public and the industry on such a proposal.

## **Background**

4. Under Section 8(1) of the Telecommunications Ordinance (“the Ordinance”), a licence is required for the possession, use, and dealing of radiocommunications apparatus. Under Section 9 of the Ordinance, a licence or permit is required for importing or exporting radiocommunications transmitting apparatus. Section 39 of the Ordinance provides that the Chief Executive in Council may by order exempt any person from any of the provisions in the Ordinance.

5. The Exemption Order was made under Section 39 to exempt the possession, use and dealing of radiocommunications apparatus from the licensing requirement under Section 8(1) and to exempt the import and export of such apparatus for personal use from the licensing requirement under Section 9 of the Ordinance. Section 5 of the Exemption Order provides that the exempted radiocommunications apparatus shall operate in the frequency bands as specified in Schedule 2 to the Exemption Order.

## **Deployment of PHS in Hong Kong**

6. To make available a wide choice of exempted radiocommunications apparatus (e.g. cordless telephones, remote controls and wireless local area networks) to consumers in Hong Kong, a number of frequency bands have been specified in the Exemption Order. Under the Exemption Order, PHS apparatus has to operate in the 1895 - 1906.1 MHz band and conform to other prescribed technical criteria<sup>1</sup>. According to the provisions of the Exemption Order, users of PHS apparatus are exempted from licensing provided that the apparatus is not used for the provision of a public telecommunications service.

7. The deployment of PHS in Hong Kong has not been as successful as anticipated. In a market survey conducted by OFTA in September 2010, no PHS apparatus was found on sale in the local market. At present, manufacturers or suppliers are encouraged to apply to OFTA for certification of exempted radiocommunications apparatus against prescribed technical criteria before the apparatus is offered for sale in the market. The limited market availability of PHS apparatus is also evident from the fact that there have been

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<sup>1</sup> The technical criteria for PHS are set out in HKTA 1027 entitled “performance specification for PHS equipment for private use” prescribed under section 32D of the Ordinance.

no applications for certification of PHS apparatus since 2002.

8. PHS first appeared in the Hong Kong market in 1995<sup>2</sup>, and was deployed predominately for home cordless telephone. Considering the limited supply of PHS apparatus over the past decade and the typical life-time of a home cordless telephone, the volume of PHS apparatus still in use in Hong Kong is expected to be rather minimal. OFTA has also diligently monitored the radio spectrum utilisation of the 1895 - 1906.1 MHz band recently. The outcome of the monitoring indicates that there is scanty deployment of PHS in Hong Kong, resulting in inefficient use of the radio spectrum concerned.

### **Alternative use of the PHS Band**

9. Radio spectrum is a scarce public resource. As stipulated in Section 32G(1) of the Ordinance, the TA has a duty to promote efficient allocation and use of spectrum as a public resource in Hong Kong.

10. The mobile telecommunications service market has continued to expand in recent years. For example, the total mobile data usage has witnessed an explosive growth with a year-on-year increase of 189% lately, from 638 terabytes in December 2009 to 1,847 terabytes in December 2010. To meet the increasing public demand for mobile telecommunications services, the TA will have to make available radio spectrum required for service expansion in a timely manner.

11. The 1895 - 1906.1 MHz band allocated for PHS falls within the spectrum identified by the International Telecommunication Union for International Mobile Telecommunications-2000 ("IMT-2000") services on a worldwide basis<sup>3</sup>. The band has already been deployed in some other economies for 3G services, for instance TD-SCDMA<sup>4</sup> operating in the 1880 - 1920 MHz band in Mainland China. An example of new services that may be

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<sup>2</sup> Please refer to the reports at <http://www.ofta.gov.hk/en/report-paper-guide/intro.html>.

<sup>3</sup> According to footnote 5.388 of the Radio Regulations of the ITU, the band 1885 - 2025 MHz is intended or use, on a worldwide basis, by administrations wishing to implement IMT-2000. Such use does not preclude the use of the band by other services to which they are allocated.

<sup>4</sup> TD-SCDMA stands for Time Division Synchronous Code Division Multiple Access, which is one of the IMT-2000 services.

deployed in this band is the Integrated Mobile Broadcast<sup>5</sup> service. If the frequency allocation for PHS is withdrawn, part of the spectrum may be re-allocated for future telecommunications services to meet the demand for mobile data usage.

### **Consultation with the Radio Spectrum Advisory Committee**

12. The Radio Spectrum Advisory Committee<sup>6</sup> (“RSAC”) reviewed the deployment of PHS in Hong Kong and studied the possibility of band sharing between PHS and IMT-2000 services in March 2011. Members of RSAC generally supported the withdrawal of the frequency allocation for PHS to make available the 4.9 MHz spectrum between 1900 MHz and 1904.9 MHz<sup>7</sup> for other radiocommunications applications, such as IMT-2000 services.

### **The Proposal**

13. With the support of RSAC, the TA proposes withdrawing the frequency allocation for PHS by removing the 1895 - 1906.1 MHz band from Schedule 2 to the Exemption Order. After the Exemption Order is so amended, the use and sale of PHS apparatus will no longer be exempted from the licensing requirement in Hong Kong. To mitigate the possible impact on existing users of PHS apparatus, which are expected to be very small in number, the TA proposes that the withdrawal of the frequency allocation be implemented as follows:

- (a) The licence exemption of PHS apparatus in respect of dealing in the course of trade, demonstration with a view to sale or import and export for personal use should cease immediately upon the amendment of the Exemption Order; and

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<sup>5</sup> Integrated Mobile Broadcast is a mobile wireless technology that enables broadcast of content such as live TV channels and media files using the 3G or 4G technology for reception by mobile terminals.

<sup>6</sup> RSAC is an advisory committee set up by the TA to give advice on the use of radio spectrum in Hong Kong.

<sup>7</sup> The frequency bands 1880 - 1900 MHz and 1904.9 - 1919.9 MHz are allocated for DECT and 3G services respectively. The PHS band 1895 - 1906.1 MHz overlaps with the DECT and 3G bands at both ends in 1895 - 1900 MHz and 1904.9 - 1906.1 MHz. Accordingly, only the spectrum between 1900 MHz and 1904.9 MHz may be released for other radiocommunications applications after the PHS band is withdrawn.

- (b) The licence exemption of PHS apparatus in respect of establishment, maintenance, possession and use should cease three years from the date of the amendment of the Exemption Order.

14. Legislative amendments will be required to implement the proposal, if adopted, to remove the 1895 - 1906.1 MHz band from the Exemption Order. Assuming that the proposed withdrawal of the frequency allocation as described in paragraph 13 above will be implemented in around mid 2012, the sale of PHS apparatus will not be allowed in Hong Kong after mid 2012 and the use of PHS apparatus will not be allowed after mid 2015.

15. The TA will continue to monitor the mobile telecommunications market and the market demand for spectrum after the amendment of the Exemption Order. For avoidance of doubt, the TA reserves the right to release the 1900 - 1904.9 MHz band within the three year transitional period in paragraph 13 above with a view to making available the spectrum for other radiocommunications services in a timely manner.

### **Policy Consideration**

16. In accordance with the Radio Spectrum Policy Framework issued by the then Commerce, Industry and Technology Bureau (now the Commerce and Economic Development Bureau) in April 2007, Hong Kong's spectrum policy objective aims, among other things, to facilitate the most economically and socially efficient use of spectrum with a view to attaining maximum benefit for the community. In line with the policy objective, the withdrawal of licensing exemption for PHS and thus frequency allocation in the 1895 - 1906.1 MHz band will lead to a more efficient use of the scarce spectrum resource and generate economics benefits to Hong Kong.

### **Invitation of Views and Comments**

17. The TA invites views and comments on the proposal set out in this consultation paper. All persons who wish to provide their views and comments on this consultation paper must do so on or before 23 January 2012. They should be aware that the TA may publish all or any part of the views and



comments received and disclose the identity of the source in such manner as we see fit. They should also clearly mark and draw to the attention of the TA that all parts of their submissions which they consider are commercially confidential. The TA will consider and decide whether or not to disclose such information. All submissions should be addressed to:

Office of the Telecommunications Authority  
29/F, Wu Chung House  
213 Queen's Road East  
Wanchai  
Hong Kong  
Attention: Senior Telecommunications Engineer  
(Spectrum Planning)  
Fax: 2803 5112  
Email: [phs@ofta.gov.hk](mailto:phs@ofta.gov.hk)

An electronic copy of the submission should be provided by email to the address indicated above.

**Office of the Telecommunications Authority**  
**23 November 2011**



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## WITHDRAWAL OF LICENSING EXEMPTION FOR PERSONAL HANDY PHONE SYSTEM (PHS) OPERATING IN THE 1895 – 1906.1 MHZ BAND

### Introduction

1. Hong Kong Telecommunications (HKT) Limited ("HKT") presents its views and comments on the consultation paper issued by OFTA on 23 November 2011 concerning the withdrawal of the licensing exemption for PHS operating in the 1895 – 1906.1 MHz band ("**Consultation Paper**").

### The Proposals put forward by the Telecommunications Authority ("TA")

2. The TA proposes to withdraw the frequency allocation for PHS by removing the 1895 – 1906.1 MHz band from Schedule 2 to the Exemption Order<sup>1</sup>. This means that the use and sale of PHS equipment will no longer be exempt from licensing in Hong Kong.
3. The withdrawal of the licensing exemption for PHS apparatus will be implemented by the TA in two stages:
  - (a) Upon amendment of the Exemption Order, the licence exemption in relation to dealing in the course of trade, demonstration with a view to sale or import and export for personal use will cease immediately<sup>2</sup>;
  - (b) On the other hand, the licence exemption in relation to establishment, maintenance, possession and use of PHS apparatus will not cease until three years after the Exemption Order is amended<sup>3</sup>.
4. The result of withdrawing the frequency allocation for PHS is that the 1895 – 1906.1 MHz band currently occupied by PHS will become available for use by other telecommunications services. Specifically, however, as the frequency bands 1895 – 1900 MHz and 1904.9 – 1906.1 MHz located at either end of the vacated PHS band are also currently being used by DECT and 3G services respectively, the only part of the vacated band that does not overlap with other services is in the 1900 – 1904.9 MHz range.
5. Members of the Radio Spectrum Advisory Committee support the release of this 4.9 MHz block in the 1900 – 1904.9 MHz range for use in other radiocommunications applications. It is therefore the TA's intention to monitor the mobile telecommunications market and the market demand for spectrum after amendment of the Exemption Order in order to determine a suitable time

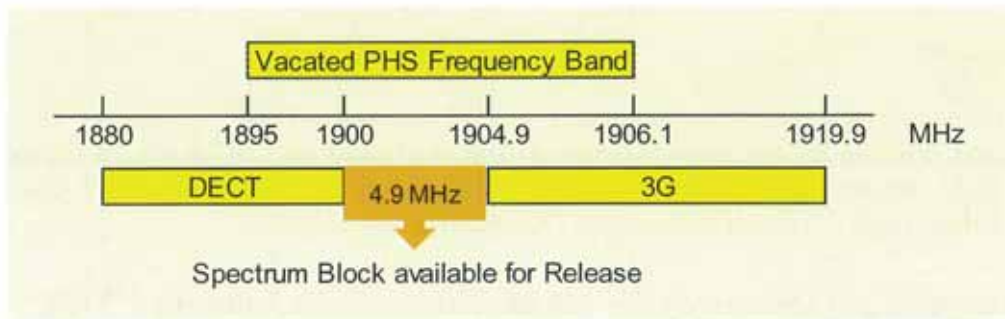
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<sup>1</sup> Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order, Cap.106Z.

<sup>2</sup> Based on the TA's expected timetable, this means that no PHS equipment may be sold in Hong Kong from mid-2012 onwards.

<sup>3</sup> Based on the TA's expected timetable, this means that no PHS equipment may be used in Hong Kong from mid-2015 onwards.

to make available the 1900 – 1904.9 MHz frequency block for other radiocommunications services.



### HKT's Comments

6. At the outset, HKT agrees with the TA's proposal to clear the frequency band presently occupied by PHS for other uses. As radio spectrum is a scarce resource, it does not make sense to continue allocating the 1895 – 1906.1 MHz band to a service which is now virtually unused in Hong Kong. Doing so would be an inefficient use of spectrum. Indeed, the surveys and work conducted by OFTA (as mentioned in the Consultation Paper) clearly show that:
  - PHS apparatus are no longer being sold in Hong Kong;
  - OFTA has received no applications for certification of PHS apparatus since 2002, i.e. for almost ten years, which indicates that the demand for new PHS equipment has ceased;
  - Given that PHS was predominantly deployed for home cordless phones, in view of the typical life span of such phones, the number of PHS apparatus still being used in Hong Kong today is likely to be very small; and
  - The utilization of spectrum in the 1895 – 1906.1 MHz range as detected by OFTA is very low and fragmented, thus the number of people still using PHS phones today is very small.

The frequency band presently allocated for PHS should therefore be cleared as soon as possible to facilitate the use of the spectrum by other radiocommunications services.

7. While HKT agrees that the sale of PHS equipment in Hong Kong should cease immediately upon amendment of the Exemption Order, it considers that the TA has granted too long a transitional period (3 years) for customers to cease using PHS equipment. Given that the extensive surveys and work conducted by OFTA clearly show that there is already very little use of such equipment in Hong Kong today, a transitional period of no more than 12

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months should be sufficient to give the remaining users ample warning to stop using their PHS devices.

8. Accelerating the deadline by which the 1895 – 1906.1 MHz band will be cleared will enable the 1900 – 1904.9 MHz frequency block to be opened up for other uses as quickly as possible and hence ensure the most efficient use of limited spectrum. As OFTA states in paragraph 16 of the Consultation Paper, Hong Kong's spectrum policy objective aims to facilitate the most economically and socially efficient use of spectrum with a view to attaining maximum benefit for the community. Minimizing the transitional period and re-allocating the available spectrum block as soon as possible would be wholly consistent with this policy objective.
9. In this regard, HKT notes that in paragraph 15 of the Consultation Paper it is stated that:

*[...] the TA reserves the right to release the 1900 – 1904.9 MHz band within the three year transitional period in paragraph 13 above with a view to making available the spectrum for other radiocommunications services in a timely manner.*
10. This indicates to HKT that even though it is the TA's intention to allow PHS equipment to use the 1895 – 1906.1 MHz spectrum for a further 3 years after the Exemption Order is amended, he will consider releasing use of the spectrum for other services before the end of the 3 year period.
11. Such an approach would be acceptable to HKT if the TA is reluctant to shorten the 3 year transitional period. The important thing is that the TA is able to re-allocate the 1900 – 1904.9 MHz spectrum block for other services if a need can be identified before expiry of the 3 year transitional period. This means that the TA does not need to wait unnecessarily for the deadline for use of PHS equipment to expire before awarding the available frequency band.

**Submitted by**  
**Hong Kong Telecommunications (HKT) Limited**  
**27 January 2012**

**Withdrawal of Licensing Exemption for  
Personal Handy Phone System (PHS)  
Operating in the 1895 - 1906.1 MHz Band**

**Statement of the Telecommunications Authority**

**1 March 2012**

**INTRODUCTION**

The 1895 - 1906.1 MHz band is allocated for Personal Handy Phone System (“PHS”) in Hong Kong. Under the Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order, Cap.106Z (“the Exemption Order”), the possession, use and dealing of radiocommunications apparatus operating in the 1895 - 1906.1 MHz band<sup>1</sup> are exempted from licensing requirements.

2. On 23 November 2011, the Telecommunications Authority (“the TA”) issued a consultation paper<sup>2</sup> to invite views and comments from members of the public and the industry on a proposal to withdraw the licensing exemption for PHS through amendment of the Exemption Order, thereby vacating part of the spectrum in the 1895 - 1906.1 MHz band for other telecommunications services. To mitigate the possible impact on existing users, the consultation paper proposes the following arrangements:

- (a) The licence exemption of PHS apparatus in respect of dealing in the course of trade, demonstration with a view to sale or import and export for personal use should cease immediately upon the amendment of the Exemption Order; and
- (b) The licence exemption of PHS apparatus in respect of the establishment, maintenance, possession and use should cease three years from the date of the amendment of the Exemption Order.

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<sup>1</sup> PHS under the Exemption Order shall also conform to other prescribed technical conditions.

<sup>2</sup> Consultation paper entitled “Withdrawal of Licensing Exemption for Personal Handy Phone System (PHS) Operating in the 1895-1906.1 MHz Band” issued on 23 November 2011, as published on OFTA web site - <http://www.ofta.gov.hk/en/report-paper-guide/paper/consultation/cp20111122.pdf>.

## **VIEWS AND COMMENTS FROM RESPONDENT**

3. By the extended deadline of 3 February 2012, the TA received one submission from “Hong Kong Telecommunications (HKT) Limited” (“HKT”) in support of the proposal to withdraw the frequency allocation for PHS and in agreement with the arrangement as proposed in paragraph 2 (a) above. On the arrangement proposed in paragraph 2 (b) above, HKT suggested that the transitional period be reduced from three years to 12 months in order to enable reallocation of the spectrum to other services as soon as possible. Nevertheless, HKT indicated that a three-year transitional period should be acceptable as the TA has the flexibility to re-allocate the 1900-1904.9 MHz band<sup>3</sup> within the transitional period to other radiocommunications services in a timely manner.

## **THE TA’S CONSIDERATIONS**

4. The TA takes note of HKT’s comments, in particular its views regarding the transitional period. As the proposed withdrawal of licensing exemption will render the use of PHS illegal in Hong Kong, it is therefore crucial that sufficient time be allowed for existing users to make preparations for the necessary changes. In this regard, the TA affirms his view that the three-year transitional period is justifiable. As highlighted in HKT’s submission, the transitional period does not preclude the TA from releasing the 1900-1904.9 MHz band for other radiocommunications services at an earlier date if there is such a need for him to do so.

## **WAY FORWARD**

5. Having regard to the outcome of the consultation, the TA concludes that the frequency allocation for PHS in the 1895-1906.1 MHz band should be withdrawn according to the proposal as set out in the consultation paper. The TA will make a recommendation to the Secretary for Commerce and Economic Development amending Cap. 106Z such that the 1895-1906.1 MHz band will be removed from Schedule 2 to the Exemption Order. Subject to the approval of the Legislative Council, it is expected that the amendment to the Exemption Order will take effect by end 2012. Following this timetable and the arrangements set out in

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<sup>3</sup> There are radiocommunications services operating in frequency bands 1895 – 1900 MHz and 1904.9-1906.1 MHz. If the frequency allocation for PHS band 1895-1906.1 MHz is withdrawn, only the spectrum in the band 1900-1904.9 MHz may be released.

paragraphs 2(a) and 2 (b) above, the dealing of PHS apparatus in Hong Kong will cease by end 2012, and the use of the apparatus will no longer be allowed by end 2015.

**Office of the Telecommunications Authority**  
**1 March 2012**

**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.

### **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<sup>1</sup>;
- 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<sup>2</sup>;
- 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

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<sup>1</sup> Report ITU-R SM.2057

<sup>2</sup> 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
	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	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	<b>-118.9</b>

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.

**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.

**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<sup>1</sup> currently. By early 2014<sup>2</sup>, there will be less than 50 sets of PHS cordless phone remaining to be functional, according to normal distribution statistics.

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<sup>1</sup> 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  $100,000 - 99,180 = 820$ .

<sup>2</sup> The mean plus 3.292 times standard deviation corresponds to 99.950% of the population, and  $3.292 \times 1.25$  years plus 5 years after end 2004 correspond to early 2014.