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迎接電訊市場的新挑戰

Meeting the New Challenges of the Telecommunications Market

積極準備迎接5G時代

提供額外頻譜以促進5G發展

為讓香港能夠作好準備，適時推出第五代（「5G」）服務，香港需要更多頻譜在邁向2020年及之後作公共流動服務用途。

為落實通訊局於2017年3月公布為公共流動服務提供更多頻譜的工作計劃，通訊辦於2017年4月向26吉赫頻帶的頻譜受配者送達通知，知會他們將於2019年4月1日撤回其26吉赫頻帶內的頻率指配，以重新編配26吉赫頻帶作5G服務用途。2017年12月，通訊辦協助通訊局邀請有興趣人士就使用26吉赫及28吉赫頻帶內的4 100兆赫頻譜提供5G服務提交意向書。邀請提交意向書旨在估量本地業界對有關頻譜需求，以及向業界及有興趣人士收集相關事宜資料，從而協助通訊局考慮指配頻譜的適當安排。經檢視意向書中所收集到的資料，通訊辦支援通訊局籌備聯同商務及經濟發展局局長（「商經局局長」）就建議編配26/28吉赫頻帶予流動服務及相關頻譜指配和頻譜使用費的建議安排展開公眾諮詢。該聯合公眾諮詢已於2018年7月26日展開。

在2017年7月至9月期間，通訊辦協助通訊局就把3.4 – 3.7吉赫頻帶的頻率編配由固定衛星服務（空對地）改為流動服務的建議進行公眾諮詢，以把3.4 – 3.6吉赫頻帶內的200兆赫頻譜指配作提供公共流動服務用途，並保留3.6 – 3.7吉赫頻帶內的100兆赫頻譜作為分隔頻帶。此外，通訊辦委聘顧問公司研究緩解無線電干擾的措施，務求令衛星電視共用天線系統與流動服務系統可在3.4 – 4.2吉赫頻帶內並存。經審慎考慮在諮詢期間所收到的看法及意見、顧問研究的結果和業界的回應，通訊局於2018年3月28日決定由2020年4月1日起落實上述重新編配安排，以給予受影響的牌照持有人及各方兩年的預先通知期。



通訊辦亦接着協助通訊局作出準備，以聯同商經局局長就指配3.4 – 3.6吉赫頻帶內的頻譜作公共流動服務用途的建議安排及相關頻譜使用費展開公眾諮詢。該聯合公眾諮詢已於2018年5月展開。

通訊辦一直密切監察全球的5G服務頻譜規劃發展，並會繼續致力選定更多頻譜以支持香港發展5G服務。

推動業界進行5G技術和應用測試

通訊辦一直鼓勵和推動業界進行5G技術和應用測試，為推出5G流動服務作更佳準備。截至2018年3月31日，通訊局向設備供應商及流動網絡營辦商合共發出了七個測試許可證，並臨時指配頻譜供他們免費作測試用途。通訊辦歡迎其他有興趣人士申請進行更多5G測試。

促進無線物聯網服務的發展

物聯網是新興技術，提供通訊平台及服務讓各式各樣的互聯智能裝置，毋須經人手操作而能自動產生、交換和處理數據。通訊辦協助通訊局於2017年8月就設立新的無線物聯網牌照的建議進行業界諮詢。有關建議獲得業界普遍支持。

Gearing up to the 5G era

Making available additional spectrum for 5G development

To better prepare Hong Kong for the timely launch of the 5G services, there is a need for additional spectrum for public mobile services towards 2020 and beyond.

To implement the work plan issued by the CA in March 2017 for making available additional spectrum for public mobile services, OFCA served notice in April 2017 to spectrum assignees of the 26 GHz band, notifying them that their frequency assignments in the 26 GHz band will be withdrawn on 1 April 2019 with a view to re-allocating the 26 GHz band for 5G services. In December 2017, OFCA assisted the CA in issuing an invitation for expression of interest (“EOI”) in using the 4 100 MHz of spectrum in the 26 GHz and 28 GHz bands for the provision of 5G services. The EOI aimed to gauge the demand of the local industry for such spectrum and to solicit information from the industry and interested parties on relevant matters to facilitate the CA’s consideration of the appropriate arrangements for spectrum assignments. After reviewing the information received in the EOI, OFCA supported the CA in preparing a joint public consultation with the Secretary for Commerce and Economic Development (“SCED”) on the proposed allocation of the 26/28 GHz bands to mobile service and the associated arrangements for spectrum assignment, as well as the related Spectrum Utilization Fees (“SUF”). The joint public consultation was launched on 26 July 2018.

From July to September 2017, OFCA assisted the CA to conduct a public consultation on the proposal to change the frequency allocation of the 3.4 – 3.7 GHz band from fixed satellite service (space-to-Earth) to mobile service, to assign 200 MHz of spectrum in the 3.4 – 3.6 GHz band for the provision of public mobile services, and to reserve 100 MHz of spectrum in the 3.6 – 3.7 GHz band as a guard band. In addition, OFCA commissioned a consultancy study to examine radio

interference mitigating measures to enable the co-existence of satellite master antenna television systems and systems of mobile services within the 3.4 – 4.2 GHz band. Having duly considered the views and comments received during the consultation, findings of the consultancy study and feedback from the industry, the CA decided on 28 March 2018 to effect the aforesaid re-allocation from 1 April 2020, thereby giving an advance notice period of two years to the affected licensees and parties.

As the next step, OFCA also assisted the CA during the year to make preparations for launching a joint public consultation with SCED on the proposed arrangements for assignment of the spectrum in the 3.4 – 3.6 GHz band for the provision of public mobile services and the related SUF. The joint consultation was launched in May 2018.

OFCA has been closely monitoring the global development on spectrum planning for 5G services. It will continue its efforts in identifying more spectrum to support the development of 5G services in Hong Kong.

Facilitating the industry to conduct trials for 5G technologies and applications

OFCA has been encouraging and facilitating the industry to conduct trials of 5G technologies and applications to better prepare for the launch of 5G mobile services. As of 31 March 2018, the CA issued a total of seven trial permits, with temporary, free-of-charge spectrum assignment for test purposes, to equipment vendors and mobile network operators. OFCA welcomes applications from other interested parties for conducting further 5G trials.

Facilitating Development of Wireless Internet of Things Services

IoT is an emerging technology which enables the provision of communications platforms and services for interconnected devices to generate, exchange and consume data with minimal

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經仔細考慮所收到的看法和意見，通訊局於2017年12月1日公布設立可使用920 – 925兆赫共用頻帶以提供無線物聯網平台及服務的新牌照制度。迄今，通訊局已發出兩個無線物聯網牌照。

重新指配在900兆赫及1 800兆赫頻帶內的頻譜

在900兆赫及1 800兆赫頻帶內的頻譜現用於提供第二代（「2G」）、第三代（「3G」）及第四代（「4G」）流動服務。在900兆赫頻帶內49.8兆赫的頻譜及在1 800兆赫頻帶內148.8兆赫的頻譜的現有指配期將於2020年11月至2021年9月期間屆滿。計及在該兩個頻帶內現時未被指配的1.4兆赫頻譜，合共有200兆赫的頻譜可供指配或重新指配。通訊局聯同商經局局長於2016年及2017年分別進行了兩輪公眾諮詢，就重新指配頻譜的建議安排及相關頻譜使用費，徵詢業界及其他受影響各方的看法和意見。

經仔細考慮兩輪公眾諮詢所收到的看法和意見，以及外聘顧問就各個重新指配頻譜方案對服務質素可能造成的影響所進行的技術研究的結果，通訊局聯同商經局局長於2017年12月公布決定，在現有指配期屆滿後，採用行政指配兼市場主導的混合模式重新指配頻譜，並公布就相關頻譜使用費安排所作的決定。混合模式最能達至重新指配頻譜的四個目標，即確保客戶服務得以延續、善用頻譜、促進有效競爭，以及鼓勵投資和推廣創新服務。

在混合模式下，四家現有頻譜受配者均會獲賦予優先權，每家可獲重新指配1 800兆赫頻帶內20兆赫頻譜（即共80兆赫的重新指配頻譜），從而確保在港鐵範圍內的4G服務及全港的2G服務得以延續。1 800兆赫頻帶內餘下的70兆赫頻譜及900兆赫頻帶內全數50兆赫頻譜，將連同任何現有頻譜受配者不行使優先權以獲取的頻譜，於約2018年年底以拍賣方式指配。

為確保有關頻譜於2021年移交時可達至無縫過渡，通訊辦打算成立包括所有現有及新頻譜受配者代表的技術工作小組，以協調相關技術安排。

提供5吉赫共用頻帶作公共流動服務用途

隨着流動技術近年發展，5吉赫頻帶內的共用頻譜（「5吉赫共用頻帶」）可在不受保護和不經協調的情況下用於提供基於長期演進制式的4G流動服務。在5吉赫頻帶內所提供共580兆赫可作共用的頻譜，將可大幅增加現時指配予流動網絡營辦商用作提供公共流動服務的3吉赫和以下頻帶內合共552兆赫頻譜的容量。營辦商將可通過使用5吉赫共用頻帶提供更佳的服務質素及更高的網絡容量，令流動服務用戶受惠。

human intervention. OFCA provided support to the CA to conduct an industry consultation in August 2017 on the proposal to create a new Wireless Internet of Things (“WIoT”) Licence. The proposal received general support from the industry.

Having carefully considered the views and comments received, the CA announced on 1 December 2017 the creation of a new licensing regime for the provision of WIoT platforms and services using the shared frequency band of 920 – 925 MHz. So far, two WIoT licenses have been issued.

Re-assignment of Frequency Spectrum in the 900 MHz and 1 800 MHz Bands

Frequency spectrum in the 900 MHz and 1 800 MHz bands is being deployed for the provision of second generation (“2G”), third generation (“3G”) and fourth generation (“4G”) mobile services. The existing assignments for 49.8 MHz of spectrum in the 900 MHz band and 148.8 MHz of spectrum in the 1 800 MHz band will expire during the period between November 2020 and September 2021. Together with 1.4 MHz of currently unassigned spectrum in the two frequency bands, a total of 200 MHz of spectrum is available for assignment / re-assignment. The CA and SCED jointly conducted two rounds of public consultation in 2016 and 2017 respectively to solicit views and comments of the industry and other affected parties on the proposed arrangements for spectrum re-assignment and the related SUF.

Having carefully considered the views and comments received in the two rounds of public consultation and the findings of a technical study undertaken by an external consultant on the possible service impact arising from different spectrum re-assignment options, the CA and SCED jointly promulgated their decisions in December 2017 to adopt a hybrid administratively-assigned cum market-based approach for spectrum re-assignment upon expiry of the existing assignments and on

arrangements for the related SUF. The hybrid approach will best meet the four objectives in spectrum re-assignment, namely, ensuring customer service continuity, efficient spectrum utilisation, promotion of effective competition, and encouragement of investment and promotion of innovative services.

Under the hybrid approach, each of the four incumbent spectrum assignees will be offered a right of first refusal for re-assignment of 20 MHz of spectrum in the 1 800 MHz band (i.e. a total of 80 MHz of the re-assignment spectrum), so as to safeguard the provision of 4G services in the Mass Transit Railway premises and the provision of territory-wide 2G services. The remaining 70 MHz of spectrum in the 1 800 MHz band and all the 50 MHz of spectrum in the 900 MHz band, together with any spectrum in respect of which the incumbent spectrum assignees do not exercise their right of first refusal to take up the spectrum offered, will be assigned by way of auction in around the end of 2018.

To ensure a seamless transition when the spectrum is handed over in 2021, OFCA is minded to convene a technical working group comprising representatives of all the incumbent and new spectrum assignees, to coordinate the relevant technical arrangements.

Making Available the 5 GHz Shared Band for the Provision of Public Mobile Services

Recent advances in mobile technologies enable the use of the shared spectrum in the 5 GHz band (“5 GHz Shared Band”) for the provision of 4G mobile services based on the Long Term Evolution standard in an unprotected and uncoordinated manner. With a total 580 MHz of spectrum in the 5 GHz Shared Band made available for use on a sharing basis, this represents a significant addition to the existing total capacity of the 552 MHz of spectrum in the sub-3 GHz bands assigned to

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2018年2月，通訊辦協助通訊局就使用5吉赫共用頻帶提供公共流動服務的建議和相關的規管及發牌制度進行公眾諮詢。有關建議獲得業界普遍支持。

經仔細考慮所收到的看法和意見，通訊局於2018年6月公布決定提供5吉赫共用頻帶供流動網絡營辦商以共用方式提供公共流動服務，並公布相關的安排。這項決定將令香港成為全球其中一個最先開始在5吉赫共用頻帶使用先進流動技術提供更高速度公共流動服務的經濟體系。

加強流動虛擬網絡營辦商的發牌和規管制度

為確保流動虛擬網絡營辦商（「流動虛擬網絡商」）提供令人滿意的服務，從而保障消費者權益，通訊辦協助通訊局推行措施，加強流動虛擬網絡商的發牌和規管制度。2017年9月，經考慮業界和相關持份者的看法和意見，通訊局發出《流動虛擬網絡營辦商停止服務安排的業務守則》，在流動虛擬網絡商停止服務時，為持牌人提供實務指引，以加強保障消費者的權益。業務守則載列多項規定，確保流動虛擬網絡商及其宿主流動網絡營辦商作出更佳的協調，妥善處理停止服務的安排，並確保流動虛擬網

絡商停止服務前，受影響的服務用戶和公眾可獲給予合理的預先通知。這可讓受影響的服務用戶適時作出安排，減低所造成的不良影響。

下調電訊牌照費

2012年11月，通訊局與商經局局長發表聯合聲明，公布決定把綜合傳送者牌照下每100個顧客接駁點的接駁費用由800元調低至700元，以及把公共無線電通訊服務牌照（傳呼服務）和服務營辦商牌照（第三類服務）下每100個移動電台須繳付的移動電台費用由800元減至700元（「該決定」）。相關牌照費在完成立法程序後，已於2013年3月1日起生效。2013年2月，香港電話有限公司及Hong Kong Telecommunications (HKT) Limited（「香港電話和HKT」）就該決定申請提出司法覆核的許可。司法覆核程序最終上達終審法院。終審法院於2017年12月27日頒下判決，裁定香港電話和HKT上訴得直，以及宣告作出該決定的一方犯了法律上的錯誤。為落實終審法院的判決，商經局局長和通訊局已按照財經事務及庫務局建議修訂的財務安排檢討牌照費水平，並於2018年6月8日就調低根據《電訊條例》發出的五類牌照的牌照費及在綜合傳送者牌照下引入一項新收費項目的建議展開公眾諮詢。

實施更有效使用八位號碼計劃的措施

通訊辦協助通訊局於2015年10月就五項建議措施徵詢公眾意見，務求透過更有效使用現行八位電訊號碼計劃，為流動服務提供額外的號碼資源。為確保順利及適時實施該五項分三個階段推行的措施，通訊辦一直與業界緊密合作，並與相關營辦商跟進其網絡及系統所需作出的改動。在有關各方的合作和努力下，該等措施的第一階段已於2017年1月1日順利推行。



mobile network operators (“MNOs”) for the provision of public mobile services. Mobile users will benefit from the increased service quality and capacity to be provided by MNOs through the use of the 5 GHz Shared Band.

OFCA supported the CA in conducting a public consultation in February 2018 on the proposals to make available the 5 GHz Shared Band for the provision of public mobile services, and the associated regulatory and licensing regime. The proposals received general support from the industry.

Having carefully considered the views and comments received, the CA announced in June 2018 its decision to make available the 5 GHz Shared Band for the provision of public mobile services on a shared basis among the MNOs and the related arrangements. The decision would enable Hong Kong to become one of the first few economies in the world to adopt advanced mobile technologies in the 5 GHz Shared Band for the provision of higher speed public mobile services.

Strengthening the Licensing and Regulation of Mobile Virtual Network Operators

To ensure satisfactory provision of service by Mobile Virtual Network Operators (“MVNOs”) for the protection of consumer welfare, OFCA provided support to the CA to introduce measures to strengthen the licensing and regulation of the MVNOs. In September 2017, after taking into account views and comments received from the industry and relevant stakeholders, the CA issued a Code of Practice on the Cessation Arrangements for MVNO Services to provide practical guidance to the licensees in the event of cessation of MVNO services in order to better protect consumer interest. The Code of Practice sets out the requirements to ensure that MVNOs and their hosting mobile network operators would manage the service cessation arrangements in a better coordinated manner

and that a reasonable advance notice would be given to the affected service subscribers and the general public before any service cessation of an MVNO. This would enable affected service subscribers to make timely arrangements to reduce adverse impacts caused.

Reduction of Telecommunications Licence Fees

In November 2012, the CA and SCED issued a joint statement to promulgate their decisions (“the Decisions”) to reduce the customer connection fee level of Unified Carrier Licences from \$800 to \$700 for each set of 100 customer connections; and to reduce the mobile station fee level of Public Radiocommunications Service Licences (Paging) and Services-Based Operator Licences (Class 3) from \$800 to \$700 for each set of 100 mobile stations. Following the completion of the legislative procedure, the relevant licence fees took effect on 1 March 2013. In February 2013, PCCW-HKT Telephone Limited and Hong Kong Telecommunications (HKT) Limited (“PCCW and HKT”) applied for leave to lodge a judicial review (“JR”) against the Decisions. The JR proceedings ultimately reached the Court of Final Appeal (“CFA”), which handed down its judgement on 27 December 2017, allowing the appeal of PCCW and HKT and declaring that the Decisions were made upon error of laws. To give effect to the CFA judgement, SCED and the CA have reviewed the licence fee levels in accordance with the revised financial arrangements as advised by the Financial Services and the Treasury Bureau, and launched a public consultation on 8 June 2018 on the proposed reduction of licence fees for five types of licences issued under the Telecommunications Ordinance (“TO”), and the proposed introduction of a new fee component under unified carrier licence.

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隨着措施的第二階段於2017年7月1日推行，以「4」、「7」及「8」為新字首的流動號碼由2017年8月起可供編配。為提高市民對新字首的流動號碼的認識，通訊辦於2018年2月及3月透過新聞稿、社交媒體平台和社區講座向公眾推廣有關訊息。通訊辦亦去信香港多個行業組織，籲請他們協助向其會員宣揚有關訊息，並提醒會員對其系統作出所需的改動，以支援新字首的流動號碼。

措施的第三階段將於2021年7月1日展開。當分三個階段推行的五項措施全部實施後，將合共提供額外1 572萬個號碼以編配作流動服務之用，預計可應付最少至2029年的電話號碼需求增長。

檢討根據全面服務責任提供的公眾收費電話機數目

公眾收費電話機是基本的電話服務，由全面服務供應商按其全面服務責任提供。截至2018年3月31日，全面服務責任所涵蓋的公眾收費電話機約有2 800部。在全面服務責任下提供公眾收費電話機服務所需的成本，由固定及流動服務營辦商分擔。鑑於對公眾收費電話機服務的需求近年持續減少，通訊局於2017年6月29日公布展開檢討，以決定在全面服務責任下的公眾收費電話機的合理數目。

儘管檢討所針對的是使用率極低（即每日平均收入不多於一元）的公眾收費電話機，通訊辦會在檢討過程中與相關持份者（就室內公眾收費電話機而言，包括場地擁有人；就電話亭公眾收費電話機而言，包括區議會）保持溝通，務求在充分顧及有關地點或地區的特定需要和相關考慮因素後，才就有關的公眾收費電話機是否從全面服務責任下剔除作出決定。

就室內公眾收費電話機而言，諮詢場地擁有人的工作已於2018年2月完成，通訊辦決定從全面服務責任下剔除約35%的室內公眾收費電話機。就電話亭公眾收費電話機而言，諮詢區議會的工作已於2018年3月展開，預計整項檢討將於2019年年底完成。

固網寬頻服務的發展

透過寬頻上網使用各項應用程式及瀏覽內容，已成為香港市民日常生活的一部分。隨着固定網絡營辦商持續鋪設網絡，市民得以享用近乎覆蓋全港並採用各種技術提供的寬頻服務。截至2018年3月，香港約有266萬個住宅及商業固網寬頻用戶，住戶滲透率為93%。目前寬頻服務的速度可高達每秒10吉比特。大約83%的固網寬頻用戶使用速度達每秒10兆比特或以上的寬頻服務。



Implementation of Measures for More Efficient Use of the 8-digit Numbering Plan

OFCA assisted the CA in conducting a consultation on five proposed measures to make available additional number resources for mobile services through more efficient use of the existing 8-digit telecommunications numbering plan in October 2015. To ensure the smooth and timely implementation of the five measures in three phases, OFCA has been closely working with the industry and following up with the operators concerned in respect of the implementation of the necessary changes to their networks and systems. With the collaboration and efforts of all parties involved, Phase 1 of the measure was successfully implemented on 1 January 2017.

With the implementation of Phase 2 on 1 July 2017, allocation of mobile numbers with new prefixes '4', '7' and '8' has commenced from August 2017. To raise public awareness of mobile numbers with these new prefixes, OFCA delivered the message to the public through press release, social media platform and OFCA's Community Talks in February and March 2018. OFCA also wrote to a number of trade organisations in Hong Kong soliciting their help in disseminating the message to their members and reminding them to make the necessary changes to their systems in order to support the mobile numbers with the new prefixes.

Phase 3 of the measures will be launched on 1 July 2021. Following full implementation of the five measures in three phases, a total of 15.72 million additional numbers will become available for allocation to mobile services. They are expected to be able to cope with the demand growth up for telephone numbers to at least 2029.

Review of the Number of Public Payphones under the Universal Service Obligation

Public payphone is a form of basic telephone service which the universal service provider is required under its USO to provide. There were about 2 800 public payphones covered by USO as at 31 March 2018. The cost of providing public payphone service subject to the USO is shared by the fixed and mobile services operators. In view of the diminishing demand for public payphone service in recent years, the CA announced on 29 June 2017 to embark on a review to determine the reasonable number of public payphones that should be subject to the USO.

Whilst public payphones with an extremely low usage rate (i.e. with an average revenue not more than \$1 per day) would be the subject of the review, OFCA would engage the relevant stakeholders, including site owners for in-building type public payphones and District Councils for kiosk type public payphones, throughout the process such that any needs and considerations specific to the locations or districts will be well catered for before a decision to exclude specific public payphones from the USO is made.

For in-building type public payphones, consultations with the site owners were completed in February 2018. Altogether, OFCA decided to exclude about 35% of the in-building type public payphones from the USO. For kiosk type public payphones, consultations with District Councils have started since March 2018. It is expected that the entire review will be completed by end 2019.

Development of Fixed Broadband Services

Broadband access to various applications and content services has become an integral part of people's lives in Hong

根據歐洲光纖到戶議會於2018年2月發出的報告，香港住戶連接光纖到戶／光纖到樓的滲透率在全球65個經濟體系中排名第五。根據瑞士洛桑國際管理發展學院在2018年5月發表的《2018年世界競爭力年報》，香港的平均互聯網帶寬速度在全球63個經濟體系中排名第四。

新的海底電纜系統在香港登陸

在通訊辦提供的綜合聯絡服務協助下，一個新的洲際海底電纜系統（即Asia Africa Europe-1）及一個新的本地海底電纜系統（即Tseung Kwan O Express）分別由2017年12月及6月起在香港投入服務。此外，四個區域及洲際系統（即Pacific Light Cable Network、Hong Kong-Guam Cable System、Hong Kong-Americas Cable System及South East Asia-Japan 2 Cable System）及兩個本地系統（即Ultra Express Link及TKO Connect）正在興建中並計劃在2018年至2020年投入服務。通訊辦將繼續協助營辦商申請在香港興建新海底電纜系統所需的法定許可。



香港衛星網絡的發展

衛星頻譜和軌道位置屬珍貴天然資源。在香港註冊的通訊衛星在使用該等資源時須符合國際電訊聯盟的協調及通知規定。就此，通訊辦支援香港持牌衛星營辦商不時出席與外國當局舉行的衛星網絡協調會議，並協助處理發射衛星和操作在軌衛星的牌照事宜。在2017／18年度，通訊辦參與了三場分別與俄羅斯、英國和法國有關當局舉行的衛星網絡協調會議。隨着兩枚新衛星於近期（即2017年9月發射的亞洲9號衛星及2018年5月發射的亞太6C號衛星）發射，現時共有12枚在軌衛星由香港兩家提供衛星通訊服務的持牌公司操作。

制訂和執行電訊標準

通訊辦密切監察電訊技術標準化的國際發展趨勢，並更新本地技術標準，以滿足業界和公眾需要。在2017／18年度，通訊局經諮詢無線電頻譜及技術標準諮詢委員會後，批准和發出了新訂和經修訂的技術標準各一項。

現時，合資格的本地和海外測試實驗室根據通訊局訂定的技術標準提供電訊設備測試和驗證服務，而獲通訊局認可為本地認證機構的本地實驗室更可提供全面的電訊設備測試和驗證服務。在2017／18年度，本地和海外認證機構簽發了495份設備認證，以應付電訊設備市場需求。

為確保提供電訊設備測試和驗證服務的所有本地認證機構符合通訊辦規定的服務質素及表現標準，通訊辦會繼續密切監察認證機構的表現，包括定期查核文件、視察實驗場所和檢查他們的工作。目前，所有本地認證機構的表現均符合通訊辦訂明的要求。

Kong. With the continuous network rollout of fixed network operators, the Hong Kong community is able to enjoy nearly ubiquitous coverage of broadband networks deploying various technologies. As at March 2018 there were around 2.66 million residential and commercial fixed-broadband subscribers, with a household penetration rate of 93%. Broadband services are now available at speeds of up to 10 Gbps. Around 83% of fixed broadband subscribers use broadband services with a speed of 10 Mbps or above.

According to a report issued by the Fibre to the Home Council Europe in February 2018, Hong Kong ranked the fifth worldwide in fibre to home/building household penetration among the 65 economies under comparison. According to the World Competitiveness Yearbook 2018 published by the International Institute for Management Development in May 2018, Hong Kong was ranked the fourth out of 63 economies in terms of average Internet bandwidth speed.

Landing of New Submarine Cable Systems in Hong Kong

With the support of OFCA's single-point-of-contact service, a new transcontinental submarine cable system (namely, Asia Africa Europe-1) and a new domestic submarine cable system (namely, Tseung Kwan O Express) have been brought into service in Hong Kong from December and June 2017 respectively. In addition, four regional and transcontinental systems (namely, Pacific Light Cable Network, Hong Kong-Guam Cable System, Hong Kong-Americas Cable System and South East Asia-Japan 2 Cable System), as well as two domestic systems, (namely, Ultra Express Link and TKO Connect) are being constructed and planned for putting into service between 2018 and 2020. OFCA will continue to assist operators in applying for the necessary statutory approvals for construction of new submarine cable systems in Hong Kong.

Development of the Hong Kong Satellite Networks

Satellite spectrum and orbital positions are scarce natural resources. Use of these resources by communications satellites registered in Hong Kong should also comply with the coordination and notification requirements of the International Telecommunications Union ("ITU"). In this regard, OFCA supports the licensed satellite operators of Hong Kong to attend satellite network coordination meetings with foreign administrations from time to time and assists in the processing of licences for the launching and operation of satellites in space orbits. In 2017/18, OFCA participated in three satellite network coordination meetings with the administrations of Russia, the United Kingdom and France respectively. Following the launch of two new satellites, AsiaSat 9 in September 2017 and APSTAR 6C in May 2018 recently, there are now twelve satellites in orbit operated by two Hong Kong companies licensed to provide satellite communications services.

Setting and Enforcing Telecommunications Standards

OFCA closely monitors international developments in telecommunications standardisation, and updates local technical standards in order to meet the needs of the industry and the public. In 2017/18, one new and one revised technical standards were approved and issued by the CA after consulting the Radio Spectrum and Technical Standards Advisory Committee.

Qualified local and overseas testing laboratories are now providing testing and certification services for telecommunications equipment against technical standards prescribed by the CA. In particular, local laboratories accredited by the CA as local certification bodies ("LCBs") can offer a full range of telecommunications equipment testing and certification services. In 2017/18, LCBs and foreign certification

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迎接電訊市場的新挑戰

Meeting the New Challenges of the Telecommunications Market

促進大廈內同軸電纜分配系統頻道的使用

大廈內同軸電纜分配系統用於在多層大廈內傳送地面電視、閉路電視、衛星電視及電訊訊號等，讓大廈住戶可獲取和享用各項廣播及電訊服務。通訊局注意到，大廈內同軸電纜分配系統的頻道屬珍貴電訊資源，因此須對這類頻道的使用加以規管，確保能有效率地使用。在2017/18年度，通訊辦協助通訊局處理有線電視提出使用大廈內同軸電纜分配系統頻道傳送本身的本地收費電視服務；及奇妙電視有限公司的本地免費電視服務的申請。

繼續加強保障電訊服務消費者

持續實施防止流動通訊「帳單震撼」的措施

近年智能電話和先進流動裝置日趨普及，刺激了流動數據服務的增長和需求。與此同時，有關流動寬頻服務帳單爭議的消費者投訴亦備受消費者關注。這些投訴大多涉及流動通訊「帳單震撼」，即消費者因收到的流動通訊服務帳單款額遠高於預期而感受到的震撼。引致流動通訊「帳單震撼」的主因，是消費者在本地或身處香港境外時，不經意或不自覺地使用了流動數據或流動數據漫遊服務。

為解決這個問題，通訊辦自2010年5月起公布一系列供業界採用的預防措施，包括容許用戶選擇取消個別服務、設立收費上限、為各類根據用量收費的流動服務設立用量上限，以及向用量達到預設水平或已啟動漫遊數據服務的用戶發出提示短訊。

為增加相關服務資訊的透明度，通訊辦已在網站公布個別營辦商所採取的措施，並定期更新資料。除推行這些措施外，通訊辦亦舉辦一系列消費者教育活動，以加深消費者



對流動數據服務的認識和了解。通訊辦亦在網站提供數據用量計算機，讓消費者用以估算自己的數據用量。隨着流動網絡營辦商和流動虛擬網絡營辦商實施上述預防措施，加上我們持續推行消費者教育，有關流動通訊「帳單震撼」的投訴數字，已由2016年的156宗減至2017年的143宗，按年下降8%。

公平使用政策指引的實施進度

固網及流動寬頻服務供應商為消費者提供種類繁多的服務計劃，包括「無限用量」計劃。然而，某些「無限用量」服務計劃其實受限於服務供應商所實施，名為「公平使用政策」的使用限制。公平使用政策旨在防止個別用戶過度使用網絡資源，以免對網絡表現構成不良影響，妨礙其他用戶使用服務。舉例來說，對於數據用量已超出某些上限的用戶，服務供應商可能會實施限制，例如調低其使用網絡服務優先次序或減慢其數據接達速度等。可是，消費者未必會留意到公平使用政策的實施或了解相關的條款及條

bodies issued 495 equipment certificates to meet the needs of the telecommunications equipment market.

To ensure that all LCBs providing telecommunications equipment testing and certification services meet the service quality and performance standards required by OFCA, OFCA will continue to closely monitor their performance by conducting documentary checks, plant visits and reviews on a regular basis. So far, all LCBs have been performing up to the requirements set by OFCA.

Facilitating the Use of In-building Co-axial Cable Distribution Systems Channels

IBCCDS are used for carrying terrestrial television, closed circuit television, satellite television and telecommunications signals, etc. in multi-storey buildings that enable occupants in buildings to get access to and enjoy various broadcasting and telecommunications services. The CA is mindful of regulating the efficient use of IBCCDS channels which are scarce telecommunications resources. In 2017/18, OFCA assisted the CA in processing applications for the use of IBCCDS channels submitted by HKCTV for conveyance of its domestic pay TV services and the domestic free TV services provided by Fantastic TV.

Continued Efforts to Strengthen Consumer Protection in the Use of Telecommunications Services

Ongoing Implementation of “Mobile Bill Shock” Preventive Measures

The growing popularity of smartphones and advanced mobile devices has driven the growth of and demand for mobile data services in recent years. At the same time, consumer complaints relating to mobile broadband billing disputes is a common concern among consumers. Many of these complaints involve

“mobile bill shock”, which refers to the shock consumers experience upon receiving unexpectedly high mobile bill charges. “Mobile bill shock” is mainly caused by unintentional or inadvertent usage of mobile data services, locally or while roaming outside Hong Kong.

To address this problem, OFCA has promulgated a series of preventive measures for the industry since May 2010. These measures include allowing customers to opt out of individual services; setting a charge ceiling; setting a usage cap for all kinds of usage-based mobile services; and alerting customers through short messages when their pre-determined usage threshold is reached, or when their roaming data usage is triggered.

To increase the transparency of the relevant service information, OFCA has published measures implemented by individual operators on its website and provided regular updates. On top of these measures, OFCA has organised a series of consumer education programmes to enhance consumers’ awareness and knowledge of mobile data services. OFCA has also posted a data usage calculator on its website, which serves as a tool for consumers to estimate their data usage consumption. With the implementation of the abovementioned preventive measures by mobile network operators and MVNOs as well as our on-going consumer education efforts, the number of complaints in relation to “mobile bill shock” decreased from 156 cases in 2016 to 143 cases in 2017, representing a year-on-year decrease of 8%.

Progress of the Implementation of Fair Usage Policy Guidelines

Fixed and mobile broadband service providers offer a variety of service plans to consumers, including plans with “unlimited usage”. However, certain “unlimited usage” service plans are in fact subject to usage restrictions imposed by service providers in the name of Fair Usage Policy (“FUP”). The FUP is intended to prevent excessive usage of network resources by

件。對於使用「無限用量」服務計劃的用戶，當遇到數據用量因公平使用政策而受到限制時，更會感到不滿。

為保障消費者權益和增加服務資訊的透明度，通訊局於2011年11月發出《公平使用政策指引》，規管服務供應商實施其公平使用政策的情況。這份強制指引自2012年2月起已經生效。

在2017/18年度，通訊辦協助通訊局處理了九宗與公平使用政策相關的投訴個案，當中並無發現違反《公平使用政策指引》的個案。

提升寬頻表現測試系統

自2010年12月起，通訊辦推出寬頻表現測試系統，讓寬頻用戶測量其寬頻服務的連接表現，包括下載和上載速度、網絡時延、封包遺失和抖動。除桌面和手提電腦用戶外，採用iOS和Android作業系統的智能手機和平板電腦用戶也可使用該測試系統。

我們不時檢討和提升測試系統，以進一步加強系統的測試能力和表現。現時，測試系統可讓桌面電腦用戶及iOS和Android系統流動裝置用戶分別進行高達每秒1 000兆比特及600兆比特的速度測試。

該寬頻表現測試系統榮獲「2013香港資訊及通訊科技獎」項下的「最佳公共服務應用（網上／流動應用程式）獎」優異證書。自推出服務至2018年3月為止，系統已進行超過7 900萬次測試。

繼續促進業界實施自行規管措施

改善電訊服務合約業界實務守則

為向業界提供擬訂電訊服務合約的指引，以提升合約制訂過程的透明度和客戶滿意度，香港通訊業聯會（一個業界聯會）於2010年12月公布屬自行規管性質的《業界守則》，所有主要的固定和流動網絡營辦商已由2011年7月起實施該守則。

經考慮實施《業界守則》的經驗及消費者的回應後，通訊辦向香港通訊業聯會提出多項建議，以進一步改善《業界守則》。香港通訊業聯會與各參與營辦商商討後，在2014年10月修訂《業界守則》。經修訂的《業界守則》由2015年5月1日起生效。

自2011年7月實施《業界守則》以來，有關服務合約爭議的投訴數字持續下降，由2011年的1 277宗減少至2017年的419宗，在六年內下降67%。

公布家居寬頻服務供應商終止服務安排詳情

為增加服務資訊的透明度及令消費者有更充分的認識，通訊辦自2016年11月起在其網站刊載主要家居寬頻服務供應商就消費者提出終止服務申請所採取的安排。刊載的資料包括終止服務預先通知期的要求、接受終止服務申請的途徑及方式、認收及確認終止服務申請的安排，以及交還顧客設備的途徑。所刊載的資料可以讓消費者更加了解不同的服務供應商現時的終止服務安排，有助減少有關終止服務事宜的爭議。此外，通過比較不同服務供應商現時終止服務的安排，亦能協助消費者在選擇服務計劃時，因應自己的需要作出明智的決定，從而鼓勵營辦商不斷改善服

individual customers, which may adversely affect the network performance and hamper other customers' use of the service. For example, service providers may impose restrictions by lowering the network service priority or reducing the access speed for customers whose data usage has exceeded certain threshold. Nevertheless, consumers may not be aware of the existence of the FUP or understand the relevant terms and conditions. Customers of "unlimited service" plans in particular feel aggrieved when their data usage is subject to restriction because of the FUP.

In order to protect consumer interests and enhance the transparency of service information, the CA issued a set of FUP guidelines in November 2011, governing the way service providers should implement their FUP. The mandatory guidelines have been in effect since February 2012.

In 2017/18, OFCA assisted the CA in handling nine FUP-related complaint cases. None of them was found to be in contravention of the FUP guidelines.

Enhancement of the Broadband Performance Test System

Since December 2010, OFCA has launched a broadband performance test system to enable broadband service users to measure the performance of their broadband connections, including download and upload speeds, network latency, packet loss and jitter. Apart from users of desktop and notebook computers, users of smart phones and tablets running iOS and Android operating systems may also make use of the test system.

From time to time, we review and upgrade the test system to further enhance its capability and performance. Currently, it offers desktop users and users of iOS- and Android-based mobile devices speed tests of up to 1 000 Mbps and 600 Mbps respectively.

The broadband performance test system was accredited with a Certificate of Merit under the category of "Best Public Service Application (Web/Mobile Application) Award" in the "Hong Kong ICT Awards 2013". From service launch to March 2018, more than 79 million tests were performed under the system.

Continued Efforts to Facilitate the Implementation of Self-regulatory Measures

Enhancement of the Industry Code of Practice for Telecommunications Service Contracts

In order to provide guidelines for the industry in drawing up telecommunications service contracts with a view to improving transparency in the contracting process and increasing customer satisfaction, the CAHK, an industry association, promulgated a self-regulatory Industry Code in December 2010, which was implemented by all major fixed and mobile network operators starting from July 2011.

Having regard to the implementation experience and consumers' feedback, OFCA made a number of suggestions to CAHK to further enhance the Industry Code. CAHK revised the Industry Code in October 2014 following discussions with participating operators. The revised Industry Code took effect on 1 May 2015.

Since the implementation of the Industry Code in July 2011, the number of complaints related to service contract disputes has been decreasing continuously, from 1 277 cases in 2011 to 419 cases in 2017, representing a drop of 67% in six years.



- ▲ 通訊辦在其網站刊載家居寬頻服務終止安排詳情。
OFCA publishes on its website the details of residential broadband service termination arrangements.

務。通訊辦定期及在服務供應商推行新措施時更新所刊載的資料，並會繼續鼓勵服務供應商檢討其終止服務安排，以作進一步的改善。

收費流動內容服務守則

為保障消費者權益和增加有關流動內容服務價格資料的透明度，通訊辦與業界緊密合作，訂立了一份屬自願性質的《收費流動內容服務守則》。該守則由香港通訊業聯會於2010年1月公布和實施，規管第三方內容服務供應商提供流動內容服務的手法，並設立業界自行規管計劃。守則要求所有第三方內容服務供應商為客戶提供流動內容服務前，須向他們清楚表明該服務屬於收費服務，並要得到客戶明確同意才提供服務。此外，有關供應商亦須清楚訂明簡易方便的終止訂用服務機制。

自2010年1月實施《收費流動內容服務守則》後，通訊辦一直密切監察守則的成效，並留意到相關投訴數字持續下跌及維持於低水平。

鑑於過往的經驗、市場的最新情況，以及投訴數字在近年持續處於低水平，香港通訊業聯會經與業界和通訊辦商討後，由2017年4月1日起簡化了守則內的自行規管安排，讓流動網絡營辦商擔當更重要的角色，以確保內容服務供應商繼續遵守守則的規定。香港通訊業聯會為處理與守則相關的事宜而成立的行政機構由2017年4月1日起停止運作。

儘管經修訂的守則採用簡化安排，所有關於保障消費者權益，以及要求內容服務供應商提供具透明度的流動內容服務價格資料的措施，在經修訂的守則內仍維持不變。

在2017/18年度，我們只接獲兩宗關於流動內容服務的投訴，反映內容服務供應商普遍遵從屬自願性質的守則，客戶亦對流動內容服務感到滿意。

關於電訊服務帳單資料及收取帳款的實務守則

通訊局於2011年10月發出屬自願性質的《關於電訊服務帳單資料及收取帳款的實務守則》，旨在減少計帳爭議，並提高帳單資料的透明度。該實務守則就電訊服務帳單上所需包括的收費項目和收取帳款安排，為電訊營辦商提供指引。截至2018年3月，七家本地固定網絡營辦商和四家流動網絡營辦商已承諾遵從上述實務守則。我們已在通訊辦網站刊載消費者注意事項和所有營辦商遵從守則的情況摘要，供消費者參考。我們會繼續密切監察該實務守則的實施情況及成效。

Publications of the Service Termination Arrangements of Residential Broadband Service Providers

To enhance service information transparency and to better inform consumers, OFCA has since November 2016 published on its website details of the arrangements adopted by major residential broadband service providers to handle service termination requests from consumers. Information published covers the advance notice requirement, channels for accepting service termination requests and their relevant formats, arrangements to acknowledge and to confirm receipt of service termination requests, and channels for the return of customer equipment to service providers. The information will enable consumers to better understand existing practices of different service providers, which should help reduce disputes over service termination matters. The information would also go some way towards facilitating consumers in making informed decisions on service plans that best suit their needs, by comparing the existing termination arrangements of different service providers, thereby encouraging operators to introduce improvements on an on-going basis. OFCA updates the published information periodically, and when changes are introduced by service providers. OFCA will continue to encourage service providers to review their service termination arrangements with a view to making further improvements.

Code for the Provision of Chargeable Mobile Content Services

To safeguard consumer interests and to increase the transparency of the pricing information related to Mobile Content Services ("MCS"), OFCA has worked closely with the industry to draw up the voluntary "Code for the Provision of Chargeable Mobile Content Services". Promulgated and put into effect by CAHK in January 2010, the code governs the practices of third-party Content Service Providers ("CSPs") in providing MCS and the establishment of an industry self-

regulatory scheme. Under the code, all third-party CSPs are required to indicate clearly to their customers the chargeable nature of the services and to obtain their clear consent before initiating the delivery and provision of MCS. They are also required to set out clearly the unsubscribing mechanism, which should be simple and convenient.

Since the adoption of the code in January 2010, OFCA has been closely monitoring its effectiveness, and noted a continued decrease in the number of related complaints, which has remained at a low level.

In light of past experiences and latest market situation, as well as the persistently low level of complaints in recent years, CAHK, in consultation with the industry and OFCA, streamlined the self-regulatory arrangements under the code from 1 April 2017 such that mobile network operators would take up a more prominent role to ensure continued compliance with the code requirements by CSPs, and the Administrative Agency set up under CAHK for handling matters related to the code ceased operation from 1 April 2017.

Despite the adoption of the streamlined arrangements under the revised code, all the measures in respect of safeguarding consumer interests and provision of transparent pricing information related to MCS by CSPs remain the same in the revised code.

In 2017/18, only two complaints about MCS were received, reflecting the general compliance of CSPs with the voluntary code and satisfaction of customers with the MCS.

Code of Practice in Relation to Billing Information and Payment Collection for Telecommunications Services

In October 2011, the CA issued a voluntary code of practice entitled "Code of Practice in Relation to Billing and Payment Collection for Telecommunications Services", with a view to

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迎接電訊市場的新挑戰

Meeting the New Challenges of the Telecommunications Market

解決顧客投訴計劃

屬自願性質的「解決顧客投訴計劃」以調解方式協助電訊服務供應商與其住宅／個人顧客解決雙方已陷入僵局的計帳爭議。調解服務由香港通訊業聯會成立的一個獨立調解服務中心（「調解服務中心」）提供，香港所有主要的電訊服務供應商均已自願參與。通訊辦對該計劃的支持包括贊助所需經費、按有關受理準則審核申請，以及監察計劃的表現和管治工作。

在2017／18年度，該計劃共接獲82宗合資格申請，當中42宗轉介予調解服務中心跟進前已經解決，36宗轉介予調解服務中心後獲得圓滿解決，四宗個案經調解後未能解決。

為提高公眾對該計劃的認識，我們舉辦了一系列宣傳活動，包括在報章登載漫畫，在社交媒體平台刊出專題帖文，在網站展示橫幅廣告，以及舉辦巡迴展覽和公眾講座。通訊辦會繼續支持該計劃，以及監察其成效。

通訊達人·通訊辦 Communications Master · OFCA
September 1, 2017 ·

【電訊貼士】與電訊商有收費糾紛？電訊業的「解決顧客投訴計劃」幫到你。對於陷入僵局的收費爭議，這計劃的調解服務可協助爭議雙方達成靈活、保密及雙方都接受的解決方案，而且過程不牽涉正式的法律程序或昂貴的法律費用。查詢電話：2180 9521；網址：<http://ccss.caahk.hk>

The "Customer Complaint Settlement Scheme" for the telecommunications industry can help you resolve billing disputes with your telecommunications service providers. The mediation service under the Scheme helps the parties to reach a flexible, confidential and consensual solution to their billing dispute in deadlock, without involving legal formality and expensive legal costs. Enquiry number: 2180 9521; website: <http://ccss.caahk.hk>
See Translation

以調解服務解決收費爭議的好處

靈活 為雙方接受 保密

不牽涉正式法律程序 不需支付昂貴法律費用

查詢電話 Tel: 2180 9521
網址 Website: <http://ccss.caahk.hk>

電訊業的
解決顧客投訴計劃
Customer Complaint Settlement Scheme

OFCA 通訊事務管理局辦公室
OFFICE OF THE
COMMUNICATIONS AUTHORITY

- ▲ 通訊辦透過不同渠道加強宣傳「解決顧客投訴計劃」。
OFCA boosts the publicity of the Customer Complaint Settlement Scheme through various media channels.

reducing billing disputes and enhancing the transparency of billing information. This code of practice provides guidance to telecommunications operators on chargeable items to be included in their bills, and arrangements for payment collection. As at March 2018, seven local fixed network operators and four mobile network operators had pledged compliance with the code. We have published on our website a consumer alert as well as a summary of the compliance status of all operators for the information of consumers. We will continue to closely monitor the implementation and effectiveness of this code of practice.

Customer Complaint Settlement Scheme

The voluntary Customer Complaint Settlement Scheme (“CCSS”) helps resolve billing disputes in deadlock between telecommunications service providers and their residential / personal customers by means of mediation. The mediation service is provided by an independent mediation service centre (“CCSS Centre”) set up under CAHK with voluntary participation of all major telecommunications service providers in Hong Kong. OFCA supports the CCSS by contributing the necessary funding, vetting the CCSS applications against the acceptance criteria, and monitoring the performance and the governance of the scheme.

There were 82 eligible applications in 2017/18, 42 of which were resolved before referral to the CCSS Centre, 36 were satisfactorily settled upon referral to the CCSS Centre, and four cases were not settled after mediation.

To raise public awareness of the CCSS, a series of publicity activities were conducted, including publication of comic strips on newspapers, featured posts on social media platform and website banner advertisements, as well as roving exhibitions and public seminars. OFCA will continue to support the CCSS and monitor its effectiveness.