3 迎接電訊市場新挑戰
Meeting the New Challenges of the Telecommunications Market

積極準備迎接5G時代

在多條頻帶提供5G頻譜以推出5G服務

5G具有高速、高容量、超可靠、大規模連接和低時延通訊等尖端技術特性，採用5G技術將革新流動服務用戶的使用體驗。業界普遍預期，5G將為各種商業服務和智慧城市的應用帶來巨大發展潛力。

為促進商用5G服務推出，合共約4 500兆赫的頻譜已於2019年推出市場，包括以行政方式指配的26吉赫及28吉赫頻帶內4 100兆赫的頻譜，以及以拍賣方式指配的3.3吉赫、3.5吉赫及4.9吉赫頻帶內380兆赫的頻譜。

3.3吉赫頻帶、3.5吉赫頻帶及4.9吉赫頻帶的5G頻譜拍賣順利完成

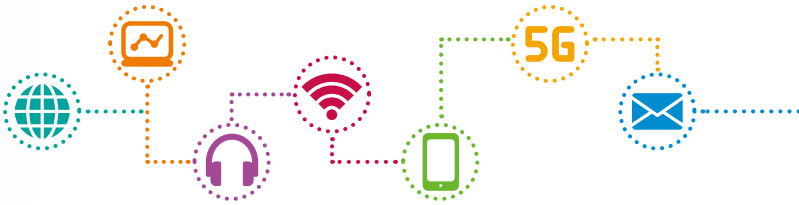
通訊辦在2019年10月至11月就3.3吉赫、3.5吉赫及4.9吉赫頻帶接連舉行三場拍賣，首先是3.5吉赫頻帶內200兆赫頻譜的拍賣，接着是4.9吉赫頻帶內80兆赫頻譜的拍賣，最後是3.3吉赫頻帶內100兆赫頻譜的拍賣。

四家現有流動網絡營辦商成功投得全部380兆赫的頻譜，頻譜使用費總額為港幣19億元，分別是3.5吉赫頻帶的港幣十億元、4.9吉赫頻帶的港幣2.4億元及3.3吉赫頻帶的港幣6.65億元。有關的頻譜已指配予成功競投人，為期15年。

以行政方式指配26吉赫及28吉赫頻帶內的頻譜

鑑於26吉赫及28吉赫頻帶內的頻譜供應充裕，通訊局採用行政方式指配該等頻帶內的頻譜。在可供指配的4 100兆赫頻譜中，有3 700兆赫的頻譜已預留作非共用頻譜，用作提供大規模公共流動服務，包括5G服務。三家現有流動網絡營辦商於2019年4月各按其申請獲指配400兆赫非共用頻譜。通訊辦將協助通訊局於2020年年底左右邀請業界就26吉赫及28吉赫頻帶內的非共用頻譜提出第二輪指配申請。

此外，在26吉赫及28吉赫頻帶內有400兆赫的頻譜預留以按地區劃分的共用模式，指配予非共用頻譜受配者以外的機構，從而讓該等機構在各指定地點（例如大學校園、工業邨、機場及科技園）提供地區性無線寬頻服務。通訊辦已由2019年7月起接受牌照申請，以指配最多400兆赫的共用頻譜作提供地區性無線寬頻服務之用。2019年10月，通訊辦協助通訊局向機場管理局批出首個地區性無線寬頻服務牌照，配合香港國際機場智能機場的發展。



Active Preparations for the 5G Era

Making 5G Spectrum Available in Multiple Frequency Bands for the Launch of 5G Services

The adoption of 5G technology will revolutionise mobile users' experience with 5G's cutting-edge technical capabilities for high speed, high capacity, high reliability, massive connectivity and low latency communications. It is widely expected that 5G will open up vast potential for various commercial and smart city applications.

To enable the commercial launch of 5G services, a total of about 4 500 MHz of spectrum has been made available to the market in 2019, including 4 100 MHz of spectrum in the 26 GHz and 28 GHz bands for administrative assignment and 380 MHz of spectrum in the 3.3 GHz, 3.5 GHz and 4.9 GHz bands for assignment by way of auction.

Successful Conclusion of the Auction of the 5G Spectrum in the 3.3 GHz Band, 3.5 GHz Band and 4.9 GHz Band

OFCA conducted three auctions for the 3.3 GHz, 3.5 GHz and 4.9 GHz bands in succession from October to November 2019, starting with the auction of 200 MHz of spectrum in the 3.5 GHz band, followed by the auction of 80 MHz of spectrum in the 4.9 GHz band and then the auction of 100 MHz of spectrum in the 3.3 GHz band.

All of the 380 MHz of spectrum was successfully auctioned off to the four incumbent MNOs at a total spectrum utilisation fee (SUF) of HK$1.9 billion, i.e. HK$1 billion for the 3.5 GHz band, HK$240 million for the 4.9 GHz band and HK$665 million for the 3.3 GHz band. The spectrum concerned has been assigned to the successful bidders for a period of 15 years.

Administrative Assignment of the Spectrum in the 26 GHz and 28 GHz Bands

In view of the ample supply of spectrum in the 26 GHz and 28 GHz bands, the CA has adopted an administrative approach for assignment of spectrum in the bands. Among the 4 100 MHz of spectrum available, 3 700 MHz of spectrum has been set aside as non-shared spectrum for the provision of large scale public mobile services including 5G services. In April 2019, three incumbent MNOs were each assigned 400 MHz of the non-shared spectrum as per their applications. OFCA will provide support to the CA to launch a second round of invitation for applications for 26 GHz and 28 GHz bands non-shared spectrum assignment around the end of 2020.

In addition, 400 MHz of spectrum in the 26 GHz and 28 GHz bands is set aside for assignment on a geographically shared basis to entities other than assignees of the non-shared spectrum for the provision of LWBS in specified locations such as university campuses, industrial estates, the airport and technology parks. Licence application for assignment of up to 400 MHz of the shared spectrum for the provision of LWBS was open from July 2019. In October 2019, OFCA supported the CA in granting the first LWBS Licence to the Airport Authority for the development of the smart airport initiative at the Hong Kong International Airport.

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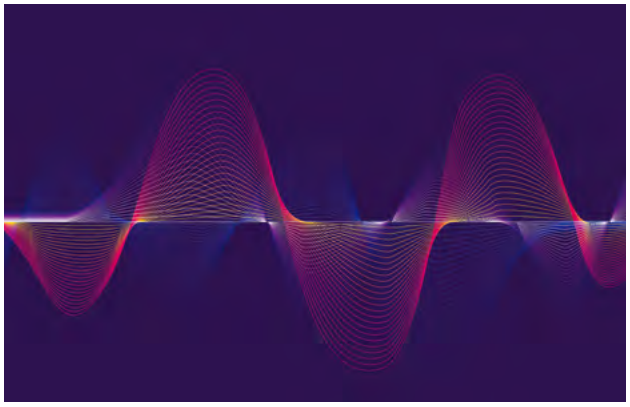
提供更多新的5G頻譜以滿足營辦商的需求

通訊辦繼續致力選定和提供其他合適的頻譜，用作發展5G及其他創新服務。除了在4.9吉赫頻帶額外提供80兆赫頻譜外，通訊局亦會在2020年11月30日終止模擬廣播後，在騰空的600兆赫及700兆赫頻帶內提供合共140兆赫的頻譜，用作提供公共流動服務（包括5G服務）。為此，通訊辦協助通訊局和商務及經濟發展局局長（商經局局長）於2020年7月及8月，就4.9吉赫頻帶和600兆赫及700兆赫頻帶內的頻譜編配和指配安排及相關頻譜使用費分別展開聯合公眾諮詢，以徵詢業界及其他有興趣人士的意見。在考慮公眾諮詢期間所收到的意見後，頻譜指配安排的決定將於2021年公布。



便利5G網絡鋪設

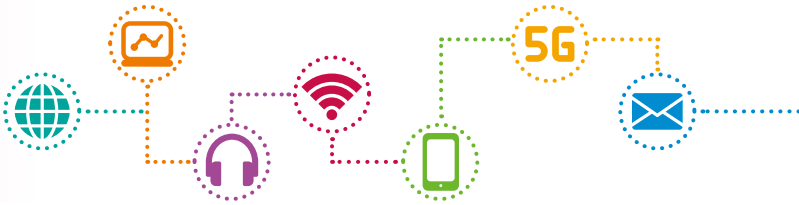
流動網絡營辦商在香港推展5G服務，將需設置較以往幾代流動服務更多的無線電基站。為便利5G網絡迅速和有效地鋪設，通訊辦於2019年3月推行先導計劃，開放超過1 000個合適的政府場所予流動網絡營辦商安裝無線電基站，並簡化相關審批程序。通訊辦已成立專責小組，負責在有關事宜上協調流動網絡營辦商與相關政府部門，並發出《在先導計劃下於選定政府場地安裝無線電基站的申請須知》，闡釋該計劃下的相關原則、要求和簡化的申請及審批程序。截至2020年9月，政府共收到126份根據該計劃提出的申請，並已批准當中的25份申請。為進一步推行《2019年施政報告》內便利5G網絡鋪設的政策措施，通訊辦將以「需求主導」的模式協助營辦商物色和進入更多合適的政府場所安裝無線電基站。

通訊辦亦一直與相關政府部門協調，以便利流動網絡營辦商於合適的街道裝置及公眾設施（例如公眾收費電話亭及有蓋巴士站）安裝無線電基站。2020年4月，我們發出《使用公眾收費電話亭安裝無線電基站以提供公共流動服務的指引》，以便利業界使用公眾收費電話亭安裝無線電基站。通訊辦會繼續各項有關工作，包括便利營辦商就使用有蓋巴士站安裝無線電基站進行技術測試，以及制訂相關指引，闡明有關申請程序和要求。

為確保5G網絡在3.3吉赫及3.5吉赫頻帶內能有效率地運作，通訊辦向通訊局提供技術支援，並在諮詢所有流動網絡營辦商後，協助通訊局於2020年4月發出《以時分雙工模式於3.3－3.6吉赫頻帶運作的流動網絡制定幀結構的指引》。通訊辦會繼續在有需要時為業界提供技術指引，以便利香港有效推行5G網絡的建設。

推動業界進行5G技術和應用測試

為協助業界就推出5G服務作好準備，截至2020年3月31日，通訊辦在考慮業界的申請後，向流動網絡營辦商及設備供應商合共發出了57個測試許可證，並臨時指配頻譜供他們作測試之用，費用全免。



Making Available Additional New 5G Spectrum to Meet the Demand of Operators

OFCA has been continuing its efforts to identify and make available other suitable spectrum for the development of 5G and other innovative services. Apart from the availability of an additional 80 MHz of spectrum in the 4.9 GHz band, the CA will also make available a total of 140 MHz of spectrum in the 600 MHz and 700 MHz bands, which will be vacated after ASO on 30 November 2020, for the provision of public mobile services (including 5G services). In this connection, OFCA provided support to the CA and Secretary for Commerce and Economic Development (SCED) for joint public consultations launched in July and August 2020 respectively to seek the views of the industry and other interested parties on the arrangements for frequency allocation and assignment for the spectrum in the 4.9 GHz band and 600 MHz and 700 MHz bands as well as the related SUF. The decisions on spectrum assignment arrangements will be promulgated in 2021 after taking into account feedback received in the public consultations.

Facilitating the Rollout of 5G Networks

For the deployment of 5G services in Hong Kong, MNOs will need to establish a larger number of radio base stations as compared with previous generations of mobile services. To facilitate the expedient and effective rollout of 5G networks, OFCA launched a pilot scheme in March 2019 to open up more than 1 000 suitable government premises for MNOs to install radio base stations with a streamlined approval process. OFCA has set up a dedicated team to coordinate with MNOs and relevant government departments on the matters concerned, and issued the "Guidance Notes for Submission of Applications under the Pilot Scheme for Installation of Radio Base Stations at Selected Government Venues" to set out the principles, requirements and streamlined procedures in respect of the applications under the scheme. As at September 2020, 126 applications were received under the scheme and 25 were approved. As a further policy initiative to facilitate 5G network rollout under the Policy Address 2019, OFCA will assist operators under a "demand-led" model to identify and gain access to additional suitable government premises for installation of radio base stations.

OFCA has also been coordinating with the relevant government departments to facilitate MNOs' access to suitable street furniture and public facilities such as public payphone kiosks and sheltered bus stops for the installation of radio base stations. In April 2020, we issued the "Guidelines on the Use of Public Payphone Kiosks for the Installation of Radio Base Stations for Provision of Public Mobile Services" to facilitate the industry's use of the public payphone kiosks for installation of radio base stations. OFCA will continue the relevant work, including facilitating operators to conduct technical trials and formulating relevant guidance on application procedures and requirements for use of sheltered bus stops to install radio base stations.

In order to ensure efficient operation of 5G networks in the 3.3 GHz and 3.5 GHz bands, having consulted all MNOs, OFCA provided technical support to the CA in issue of the "Guidelines for Setting the Frame Structure of Mobile Networks Operating in Time-Division-Duplex Mode in the 3.3 – 3.6 GHz Band" in April 2020. OFCA will continue to provide technical guidance to the industry as necessary to facilitate effective implementation of 5G networks in Hong Kong.

Facilitating the Industry to Conduct Trials for 5G Technologies and Applications

To better prepare for the launch of 5G services, as of 31 March 2020, OFCA had considered applications from the industry and issued a total of 57 trial permits to MNOs and equipment vendors with temporary, free-of-charge spectrum assignment for test purposes.

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解決限制區的問題

使3.5吉赫頻帶的頻譜短期內可在特定情況下於限制區內應用

鑑於3.4－3.6吉赫（3.5吉赫）頻帶從2020年4月1日開始由固定衛星服務重新編配予流動服務，通訊局於大埔及赤柱劃出了兩個限制區，務求使在同一頻帶和相鄰頻帶操作的遙測、追蹤及控制在軌持牌衛星的現有衛星地球站（遙測、追蹤及控制站）可與公共流動服務系統並存。

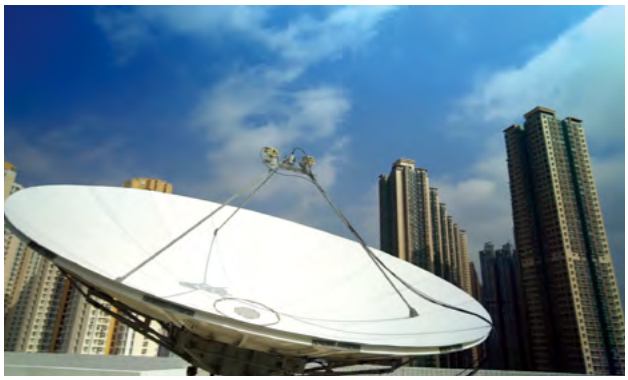
同時，為回應流動業界對限制區的關注，通訊辦於2018年6月成立工作小組，研究所需的技術安排，在受控的情況下可於限制區內設置在3.5吉赫頻帶內操作的無線電基站，而不會對現有遙測、追蹤及控制站造成干擾。工作小組由相關持份者組成，包括流動網絡營辦商、遙測、追蹤及控制站的營辦商、香港科技園和香港應用科技研究院的代表。工作小組進行多項研究後，通訊局批准其報告，並於2019年7月發出題為「於通訊事務管理局所訂立的限制區內裝設在3.4－3.6吉赫頻帶操作的無線電基站的指引」文件。相關規定已納入向3.5吉赫頻譜成功競投人個別獲發的牌照內，使流動網絡營辦商可在受控的情況下於限制區設置3.5吉赫無線電基站。

協助移除大埔的5G限制區

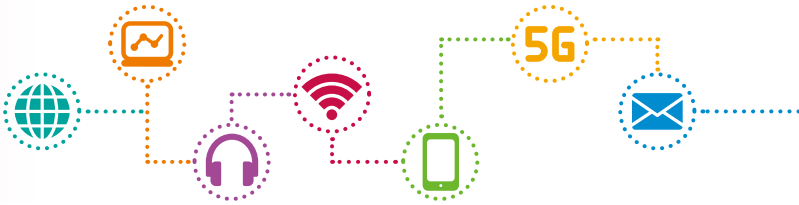
為了長遠解決大埔限制區之事，通訊辦一直與有關衛星營辦商商討，搬遷他們在3.5吉赫頻帶操作的大埔衛星地球站至春坎角電訊港，令流動網絡營辦商可更廣泛使用香港現時可用的5G頻帶（包括3.5吉赫頻帶）提供5G服務。搬遷衛星地球站涉及複雜的土地及技術事宜，包括選址、批地、土地平整、建設工程和另建新一組的衛星天線，並要確保現有在軌衛星的操作不受影響。通訊辦正與相關政策局及部門合作，協助有關衛星地球站設施的搬遷，預計需時數年完成。

實施衛星電視共用天線系統升級資助計劃

鑑於3.4－3.7吉赫頻帶從2020年4月1日開始由固定衛星服務重新編配予流動服務，以提供5G服務，所有安裝在大廈內用以接收和分發衛星電視訊號給住戶的衛星電視共用天線系統此後只可在3.7－4.2吉赫頻帶內操作。現有衛星電視共用天線系統亦須進行技術升級，方可於2020年4月1日後與在相鄰的3.4－3.6吉赫頻帶內操作的5G系統並存。



通訊局注意到，現時為公眾服務的衛星電視共用天線系統如需升級，將會涉及開支，因此在2019年11月27日至2020年11月26日期間推行資助計劃，支援有關系統升級。根據該資助計劃，約1 600個在2018年3月28日或之前已涵蓋在現有牌照中的衛星電視共用天線系統將符合資格申請一次性的資助，金額為每個衛星電視共用天線系統港幣兩萬元。資助計劃由3.4－3.6吉赫頻帶的頻譜受配者（即四家流動網絡營辦商）共同承擔經費，由通訊辦代為管理。



Solving of Restriction Zones Issues

Enabling Controlled Deployment of Spectrum in the 3.5 GHz Band within the Restriction Zones in the Short Run

Since the 3.4 – 3.6 GHz (3.5 GHz) band will be re-allocated from fixed satellite service to mobile service with effect on 1 April 2020, the CA has delineated two restriction zones in Tai Po and Stanley to enable the coexistence of the existing earth stations for telemetry, tracking and control of the licensed satellites in orbit (TT&C stations) and systems of public mobile services operating in the same and adjacent bands.

In tandem, to address the concern raised by the mobile industry on the restriction zones, OFCA established a working group in June 2018 comprising stakeholders including representatives of MNOs, operators of the TT&C stations, Hong Kong Science and Technology Park and Hong Kong Applied Science and Technology Research Institute to study technical arrangements for enabling controlled deployment of radio base stations operating in the 3.5 GHz band within the restriction zones without causing interference to the existing TT&C stations. After various studies of the working group, the CA approved its report and accordingly issued the guidelines entitled "Guidelines for Installation of Radio Base Stations Operating in the 3.4 – 3.6 GHz Band within the Restriction Zones Delineated by the Communications Authority" in July 2019. Relevant requirements have been incorporated in the respective licences issued to the successful bidders of the 3.5 GHz spectrum, such that MNOs can deploy 3.5 GHz radio base stations within the restriction zones in a controlled manner.

Facilitating the Removal of the 5G Restriction Zone in Tai Po

To resolve the issue of restriction zone in Tai Po in the long run, OFCA has been discussing with the concerned satellite operators the relocation of their satellite earth stations operating at the 3.5 GHz band from Tai Po to the Chung Hom Kok Teleport, so that MNOs can make wider use of all the available 5G bands (including the 3.5 GHz band) in Hong Kong for the provision of 5G services. Relocation of the satellite earth stations involves complex land and technical issues, including site selection, land grants, site formation, construction works and establishment of another set of satellite antennae, as well as the need to ensure that operation of the existing satellites in orbit will not be affected. OFCA is working with the relevant bureaux and departments to facilitate the relocation of the concerned satellite earth station facilities, which is expected to take several years to complete.

Implementing the Subsidy Scheme for Upgrading Satellite Master Antenna Television Systems

Also arising from the re-allocation of the 3.4 – 3.7 GHz band from fixed satellite service to mobile service from 1 April 2020 for the provision of 5G services, all SMATV systems installed in buildings for receiving and distributing satellite TV signals to serve occupants should only operate in the 3.7 – 4.2 GHz band from then on. The existing SMATV systems should also have technical upgrades implemented in order to co-exist with 5G systems operating in the adjacent 3.4 – 3.6 GHz band after 1 April 2020.

The CA is mindful of the costs required for upgrading the existing SMATV systems which serve the general public and has implemented a subsidy scheme which runs from 27 November 2019 to 26 November 2020 to support the concerned system upgrades. Under the scheme, some 1 600 SMATV systems covered by existing licences on or before 28 March 2018 would be eligible to apply for a one-off subsidy of HK$20,000 per SMATV system. The scheme is collectively funded by all successful spectrum assignees of the 3.4 – 3.6 GHz band, i.e. the four MNOs, while OFCA administers the subsidy scheme on their behalf.

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促進無線物聯網服務和地區性無線寬頻服務的發展

通訊局在2017年12月就使用920－925兆赫共用頻帶提供無線物聯網平台及服務設立了新牌照制度，至今已發出三個無線物聯網牌照。此外，現有流動網絡營辦商亦可使用根據綜合傳送者牌照獲指配的頻譜，採用支援大量物聯網連接的流動技術（例如窄頻帶物聯網和5G技術）提供無線物聯網服務。通訊辦會繼續協助通訊局促進無線物聯網服務在香港的發展及具競爭性的供應。

通訊辦於2019年7月設立地區性無線寬頻服務牌照，以按地區劃分的共用模式，讓業界使用27.95－28.35吉赫內的400兆赫頻譜提供創新無線寬頻服務。通訊辦自2019年10月發出首個地區性無線寬頻服務牌照後，一直協助通訊局處理該牌照的新申請，以促進在大學校園、工業邨和科技園等不同地點發展創新的5G和智慧城市應用。

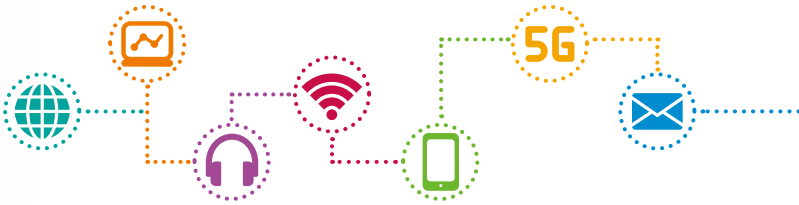
落實重新指配在900兆赫及1800兆赫頻帶內的頻譜

在900兆赫頻帶內的50兆赫頻譜及在1800兆赫頻帶內的150兆赫頻譜的現有指配期將分別於2021年1月及9月屆滿。四家現有流動網絡營辦商將通過行政方式各獲重新指配1800兆赫頻帶內20兆赫的頻譜。至於餘下的120兆赫頻譜（包括在900兆赫頻帶內的50兆赫頻譜及在1800兆赫頻帶內的70兆赫頻譜）則會按照2018年12月的拍賣結果重新指配予該四家營辦商。因此，該兩條頻帶有部分頻率指配將在新的15年指配期開始時易手。

通訊辦於2019年5月成立技術工作小組，以協調營辦商重新配置現有網絡及／或鋪設新網絡基礎建設的相關技術安排，工作小組成員包括全部四家流動網絡營辦商的代表。通訊辦會繼續有關工作，務求確保在900兆赫及1800兆赫頻帶內的頻譜分別於2021年1月和9月重新指配時，可順利交接。

就重新指配850兆赫及2.5／2.6吉赫頻帶內的頻譜擬備建議

850兆赫頻帶內的15兆赫頻譜及2.5／2.6吉赫頻帶內的90兆赫頻譜的現有指配期分別將於2023年11月及2024年3月屆滿。通訊辦協助通訊局和商經局局長就該兩條頻帶的頻譜在現有指配期屆滿後的重新指配安排及相關頻譜使用費分別於2020年8月及9月展開聯合公眾諮詢，以徵詢業界和其他有興趣人士的意見。在考慮公眾諮詢期間收到的意見後，重新指配頻譜安排的決定將於2021年公布。



Facilitating Development of Wireless Internet of Things Services and Localised Wireless Broadband Services

Since the creation of a new licensing regime for the provision of Wireless Internet of Things (WIoT) platforms and services using the shared frequency band of 920 – 925 MHz by the CA in December 2017, three WIoT licences have been issued. In addition, the existing MNOs may also make use of the frequency spectrum assigned to them under the Unified Carrier Licence to provide WIoT services by adopting mobile technologies such as Narrowband IoT and 5G technologies that enable massive IoT connections. OFCA will continue to support the CA to facilitate the development and competitive supply of WIoT services in Hong Kong.

The LWBS Licence was created in July 2019 to enable the use of 400 MHz of spectrum in the frequency range of 27.95 – 28.35 GHz on a geographically shared basis for the provision of innovative wireless broadband services. Following the issue of the first LWBS Licence in October 2019, OFCA provided support to the CA to process new LWBS licence applications so as to facilitate the development of innovative 5G and smart city applications at different locations, such as university campuses, industrial estates and technology parks.

Implementation of the Re-assignment of Frequency Spectrum in the 900 MHz and 1800 MHz Bands

The current assignments of 50 MHz of spectrum in the 900 MHz band and 150 MHz of spectrum in the 1800 MHz band will expire in January and September 2021 respectively. While 20 MHz of spectrum in the 1800 MHz band will be re-assigned administratively to each of the four incumbent MNOs, the remaining 120 MHz of spectrum (comprising 50 MHz of spectrum in the 900 MHz band and 70 MHz of spectrum in the 1800 MHz band) will be re-assigned to the four operators pursuant to the results of the auction in December 2018, resulting in some of the frequency assignments in the two bands changing hands upon commencement of the new 15-year term of assignments.

OFCA convened a technical working group in May 2019 comprising representatives of all four MNOs to coordinate the relevant technical arrangements to reconfigure their existing networks and/or roll out additional network infrastructures. OFCA will continue the work to ensure a seamless change over at the time of re-assignment of the spectrum in the 900 MHz band and 1800 MHz band in January and September 2021 respectively.

Preparing Proposals for Re-assignment of Frequency Spectrum in the 850 MHz and 2.5/2.6 GHz Bands

The current assignments of 15 MHz of spectrum in the 850 MHz band and 90 MHz of spectrum in the 2.5/2.6 GHz bands will expire in November 2023 and March 2024 respectively. OFCA provided support to the CA and SCED for the joint public consultations launched in August and September 2020 respectively to seek the views of the industry and other interested parties on the arrangements for re-assignment of the spectrum concerned upon the expiry of the existing assignments and the related SUF. The decisions on spectrum re-assignment arrangements will be promulgated in 2021 after taking into account feedback received in the public consultations.

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政府進行電訊規管架構檢討

在2019／20年度，通訊辦支援商經局檢討《電訊條例》下的電訊規管架構，以配合5G及物聯網科技的發展，並便利業界營商。通訊辦會繼續就商經局所進行的電訊規管架構檢討和未來對《電訊條例》作出的法例修訂，為通訊局提供所需支援。同時，通訊辦亦會推出各種簡化的行政措施，以進一步便利業界營運。

實施要約提供電訊服務類別牌照登記制度

要約提供電訊服務類別牌照旨在規管在沒有設置任何電訊設備的情況下向公眾要約提供電訊服務的人士。通訊辦協助通訊局在2019年4月完成對該類別牌照發牌制度的檢討，務求為消費者提供更佳的保障。在經修訂的制度下，服務訂用數量達10 000或以上的牌照持有人須向通訊局登記業務資料。通訊辦於2019年8月發出一套指引，便利類別牌照持有人進行登記。截至2020年9月，已有20個類別牌照持有人登記。通訊辦會繼續協助通訊局確保登記制度運作暢順。

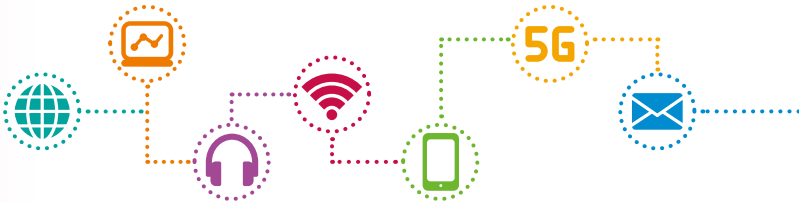
完善服務營辦商發牌制度

通訊辦協助通訊局完善服務營辦商的發牌制度，包括把服務營辦商牌照的有效期由一年延長至兩年，以加強規管的確定性；精簡服務營辦商牌照所授權提供服務的類別；以及採用新的牌照費架構，以確保在服務營辦商牌照內施加的規管措施與其他牌照一致。上述措施由2020年8月起生效。

檢討根據全面服務責任提供的公眾收費電話機數目

公眾收費電話機服務是基礎電話服務之一，由全面服務供應商按其全面服務責任提供。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，通訊辦協助通訊局於2017年6月展開檢討，以決定在全面服務責任下的公眾收費電話機的合理數目。

有關檢討於2019年完成。就室內公眾收費電話機而言，通訊局決定從全面服務責任中剔除515個電話機（約佔室內公眾收費電話機總數的35%）。全面服務供應商已將所有被剔除的室內公眾收費電話機移除。另外，通訊局決定從全面服務責任中剔除765個電話亭公眾收費電話機（約佔電話亭公眾收費電話機總數的50%）。全面服務供應商已開始在有關地點移除被剔除的電話亭公眾收費電話機，截至2020年3月，當中23%的電話機已被拆除。



Review of the Telecommunications Regulatory Framework by the Government

In 2019/20, OFCA provided support for CEDB in the review of the telecommunications regulatory framework under the Telecommunications Ordinance (TO) with a view to embracing the developments of 5G and Internet of Things technologies and facilitating the trade. OFCA will continue to provide necessary support to the CA in relation to the review of the telecommunications regulatory framework conducted by CEDB and any future legislative amendments to the TO. In parallel, OFCA will also introduce various streamlined administrative measures with the aim of further facilitating the operation of the industry.

Implementation of the Registration System for Class Licence for Offer of Telecommunications Services

CLOTS regulates persons who offer telecommunications services to the general public without the establishment of any means of telecommunications. OFCA assisted the CA to complete a review of the licensing regime of the CLOTS in April 2019 for better consumer protection. Under the revised regime, licensees with a customer base of 10 000 subscriptions or more are required to register their business information with the CA. OFCA issued a set of guidelines in August 2019 to facilitate CLOTS licensees to make registration. As of September 2020, 20 CLOTS licensees had been registered. OFCA will continue to assist the CA to ensure smooth operation of the registration system.

Enhancement of Licensing Regime for Services-based Operators

OFCA supported the CA to enhance the Services-based Operators (SBO) licensing regime through extending the period of validity of the SBO Licence from one year to two years to enhance regulatory certainty, streamlining the categories of services authorised under the SBO Licence, and adopting a new licence fee structure to ensure regulatory symmetry between the SBO Licence and other licences. The above enhancements have taken effect from August 2020.

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

Public payphone service is a form of basic telephone service which the universal service provider (USP) is required to provide under its universal service obligation (USO). The cost of providing a 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, OFCA supported the CA to kick off a review of the reasonable number of public payphones that should be subject to the USO in June 2017.

The review was completed in 2019. For in-building type public payphones, the CA decided to exclude 515 in-building type public payphones (about 35% of the total number of in-building type public payphones) from the USO. All the excluded in-building type public payphones have been removed by the USP. For kiosk type public payphones, the CA decided to exclude 765 kiosk type public payphones (about 50% of the total number of kiosk type public payphones) from the USO. The USP has started to remove the excluded kiosk type public payphones from the relevant locations, with about 23% of them dismantled as of March 2020.

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實施擴展光纖網絡至偏遠地區鄉村資助計劃

為支持政府的政策措施，通訊辦推行一項資助計劃，以提供經濟誘因，鼓勵電訊營辦商擴展光纖網絡至位於偏遠地區的鄉村，並獲得立法會財務委員會批出港幣7.7億元撥款實施。

資助計劃涵蓋新界及離島九個地區共235條鄉村，該等鄉村遠離固網營辦商現有光纖主幹網，村民只可選用透過銅線網絡提供、速度只有每秒10兆比特或以下的寬頻服務。

通訊辦把該235條鄉村組合成六個投標項目進行招標，並在2019年11月至2020年5月期間向獲選的固網營辦商批出所有項目。獲選的固網營辦商將鋪設光纖連接線路至有關鄉村的村口附近，以及建設三條海底光纖電纜，分別連接香港島至南丫島、大嶼山至長洲及大嶼山至坪洲。為引入市場競爭，獲選的固網營辦商須開放獲資助鋪設的網絡設施，以及海底光纖電纜至少一半的容量予其他固網營辦商免費使用。

通訊辦現正密切監察資助計劃的實施進度，並與有關的政府部門協調，協助獲選的固網營辦商申請各項許可證，以進行掘路、鋪設光纖網絡和建設海底光纖電纜等工程。新建的光纖網絡將於2021年起分階段拓展至有關鄉村。

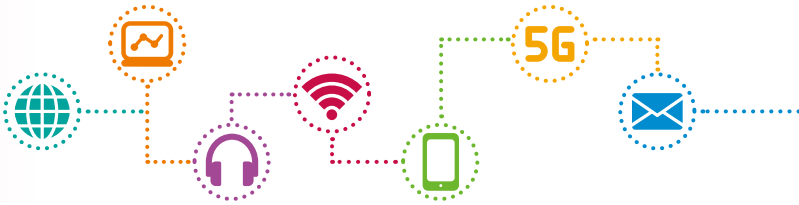
固網寬頻服務的發展

隨着固網營辦商持續鋪設網絡，香港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2020年3月，香港約有280萬住宅及商業固網寬頻用戶，住戶滲透率為94%。目前寬頻服務的速度可高達每秒10吉比特。大約82%的固網寬頻用戶使用速度達每秒100兆比特或以上的寬頻服務。

根據歐洲光纖到戶議會於2019年3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64個經濟體系中排名第六。

新的海底電纜系統在香港登陸

在通訊辦所提供的綜合聯絡服務的協助下，九個新的區域及洲際海底電纜系統和兩個本地系統正在興建或籌劃中，並計劃在2020年至2023年間投入服務。本地海底電纜Ultra Express Link（將軍澳至小西灣）則已在2019年12月投入服務。通訊辦將繼續協助營辦商申請新海底電纜系統在香港興建及登陸所需的法定許可。



Implementation of the Subsidy Scheme to Extend Fibre-based Networks to Villages in Remote Areas

In support of the Government's policy initiative to provide financial incentives to telecommunications operators for encouraging the extension of fibre-based networks to remote villages, OFCA has implemented a subsidy scheme with a funding of HK$770 million approved by the Finance Committee of the LegCo.

The Subsidy Scheme covers 235 villages across nine districts in the New Territories and outlying islands, which are located far away from the existing fibre-based backbone networks of fixed network operators, where villagers can only choose broadband services delivered over copper-based networks at a speed of 10 Mbps or below.

The 235 villages were grouped under six projects for tendering purpose, and all projects were awarded to selected fixed network operators between November 2019 and May 2020 through tendering exercises. The selected fixed network operators will roll out fibre-based lead-in connections to the vicinity of the entrances of the villages concerned, and three submarine fibre-based cables connecting Lamma Island from Hong Kong Island, Cheung Chau from Lantau Island, and Peng Chau from Lantau Island respectively. To introduce competition, selected fixed network operators have to open up at least half of the capacity of the network facilities and submarine fibre-based cables subsidised under the scheme for use by other fixed network operators for free.

OFCA is closely monitoring the implementation progress of the Subsidy Scheme and coordinate with the government departments concerned on matters relating to applications for permits and approvals for excavation works as well as the roll-out of fibre-based networks and submarine fibre-based cables by the selected fixed network operators. The newly-built fibre-based networks will be extended to the villages concerned in phases from 2021 onwards.

Development of Fixed Broadband Services

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 of March 2020, there were around 2.80 million residential and commercial fixed-broadband subscriptions, with a household penetration rate of 94%. Broadband services are now available at speeds of up to 10 Gbps. Around 82% of the fixed broadband subscriptions are supported by broadband services with speeds of 100 Mbps or above.

According to a report issued by the Fibre to the Home Council Europe in March 2019, Hong Kong was ranked sixth worldwide in fibre to home/building household penetration among the 64 economies under comparison.

Landing of New Submarine Cable Systems in Hong Kong

With the support of OFCA's single-point-of-contact service, nine new regional and transcontinental submarine cable systems, as well as two domestic systems are being constructed and planned for putting into service between 2020 and 2023. In December 2019, the domestic submarine cable Ultra Express Link (between Tseung Kwan O and Siu Sai Wan) was put into service. OFCA will continue to assist operators in applying for the necessary statutory approvals for construction and landing of new submarine cable systems in Hong Kong.

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協助在春坎角電訊港配置土地以建設對外電訊設施

為加強香港作為區域電訊樞紐的角色，並滿足香港在對外電訊基建設施方面日益殷切的需求，我們會在春坎角電訊港提供合適土地，供建設對外電訊基建設施之用，以進一步提升香港對外電訊網絡的整體容量和分流能力。

春坎角電訊港有關土地的招標準備工作已經展開。通訊辦正與相關政策局及部門合作，務求在未來數年提供有關土地以建設對外電訊設施。

香港衛星網絡的發展

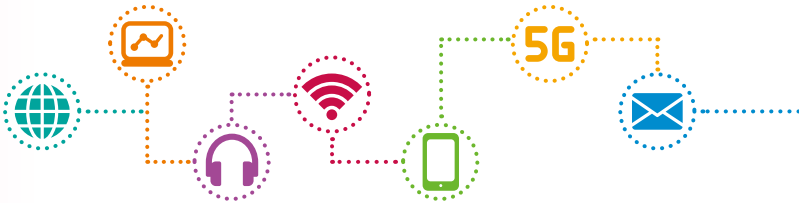
衛星頻譜和軌道位置屬珍貴天然資源。在香港註冊的通訊衛星在使用該等資源時須符合國際電聯的協調及通知規定。就此，通訊辦支援香港持牌衛星營辦商不時出席與外國當局舉行的衛星網絡協調會議，並協助處理發射衛星和操作在軌衛星的牌照事宜。在一枚衛星於2019年離開軌道後，現時共有11枚在軌衛星由香港兩家提供衛星通訊服務的持牌公司操作。

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2019／20年度，通訊局經諮詢無線電頻譜及技術標準諮詢委員會後，批准和發出了四項涵蓋5G基站和用戶設備的新訂技術標準，以及一項涵蓋醫療植入通訊系統器件的經修訂技術標準。

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為各種電訊設備提供測試和驗證服務，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2019／20年度，本地和海外認證機構簽發了442份設備認證，以應付電訊設備市場需求。

為確保所有提供電訊設備測試和驗證服務的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。



Facilitating the Disposal of Land Lots in Chung Hom Kok Teleport for Construction of External Telecommunications Facilities

In order to reinforce Hong Kong's role as a regional telecommunications hub as well as to meet the growing demand for external telecommunications infrastructure in Hong Kong, we will provide suitable land lots in the Chung Hom Kok Teleport for external telecommunications infrastructure, with a view to further enhancing the overall capacity and diversity of Hong Kong's external telecommunications networks.

Preparatory work for tendering of the relevant land lots in the Chung Hom Kok Teleport has commenced. OFCA is working with the relevant bureaux and departments to make the relevant land lots available for the construction of external telecommunications facilities in the coming few years.

Development of Hong Kong's 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 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. Following the de-orbit of one satellite in 2019, there are now 11 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 2019/20, four new technical standards covering 5G base station and user equipment and one revised technical standard covering medical implant communication system devices 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 various kinds of 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 2019/20, LCBs and foreign certification bodies issued 442 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.