



3 Hong Kong and Huawei complete construction of an NB-IoT network to usher in an era of massive 5G connectivity

First to announce collaboration with start-ups in developing and commercialising NB-IoT technology

- **3 Hong Kong and Huawei complete a Narrowband Internet of Things (NB-IoT) network - a giant step towards full 5G connectivity.**
- **3 Hong Kong boosts network speed via deployment of 256QAM and 4x4 MIMO and Massive MIMO capabilities, thereby improving spectral efficiency and greatly enhancing the overall mobile experience.**
- **3 Hong Kong collaborates with corporations and start-ups to establish a local NB-IoT ecosystem. Enterprises are able to conduct NB-IoT application tests and research for various industries in a live environment, thereby accelerating commercialisation of applications, opening up NB-IoT business opportunities and expediting development of Hong Kong as a smart city.**

Hong Kong, 20 September 2017 - 3 Hong Kong, the mobile communications division of Hutchison Telecommunications Hong Kong Holdings Limited (HTHKH, stock code: 215), and network service provider Huawei today announced completion of work to construct end-to-end Narrowband IoT (NB-IoT) infrastructure.

At the same time, collaboration between 3 Hong Kong and the Hong Kong Science & Technology Parks Corporation is opening up business opportunities by enabling start-ups to develop NB-IoT applications for various industries and take them to market.

Local NB-IoT ecosystem established via innovative NB-IoT solutions

3 Hong Kong promotes network development for a new era around the innovative application of 5G technology and the smart city concept.

Unlike Internet of Things (IoT) technology, NB-IoT attributes include wide coverage, low energy consumption, safe transmission and high assurance of quality of service, while large-scale connection capacity boosts cost efficiency. In short, NB-IoT is the future of the IoT concept. 3 Hong Kong and Huawei have completed construction of an end-to-end NB-

IoT infrastructure with NB-IoT modules designed in accordance with the 3GPP standard to facilitate tests and development of NB-IoT applications.

Also adopted by 3 Hong Kong, Network Functions Virtualisation technology enables proof-of-concept activity around NB-IoT applications, while use of cloud technology negates need of additional hardware for testing. It also reduces investment risk and time to market.

HTHKH Executive Director and CEO Cliff Woo Chiu-man said: "3 Hong Kong again joins hands with Huawei in achievements involving use of spectrum and boosting network speed - all serving as yet another giant step towards 5G networking."

He added: "3 Hong Kong develops NB-IoT applications on a solid network foundation and behaves as a responsible corporate citizen by supporting start-ups focusing on developing innovative NB-IoT applications to establish a local NB-IoT ecosystem that will provide industries with commercial NB-IoT applications. The end result will be creation of more value for this city's business community at the same time as preparing 3 Hong Kong for a new era of massive connectivity via 5G technology."

Huawei's Peter Zhou, Chief Marketing Officer of the company's Wireless Network Product Line, said: "This announcement is of great significance to 3 Hong Kong. Huawei is keen to enter an era that will see all things connected via the Internet. We are therefore committed to raising industry standards, developing chips, building networks and cultivating business partners as part of an NB-IoT industrial ecosystem. Huawei's state-of-the-art NB-IoT solutions will enable 3 Hong Kong to build a network offering a truly superior customer experience, while developing IoT business opportunities in Hong Kong."

NB-IoT application trials will open up virtually limitless business opportunities

Looking forward to NB-IoT business opportunities, 3 Hong Kong collaborates with industrial corporations, partners and other CK Hutchison Group members to conduct research. In fact, 3 Hong Kong's newly-established NB-IoT network is at the very heart of developing solutions that can be commercialised.

3 Hong Kong is taking the lead with Power Assets Holdings Limited to research possibilities around NB-IoT applications. The work includes applying the high-penetration capability of NB-IoT technology to utility meters such as for supply of water and electricity. Such applications are also being developed for surveillance and management of oil pipelines, while others involve big data analysis and smart surveillance to save energy and boost operational efficiency.

Local support for start-ups, including those incubated by the Hong Kong Science and Technology Parks Corporation (HKSTP), received a shot in the arm when 3 Hong Kong offered assistance in developing NB-IoT ideas. In fact, 3 Hong Kong has joined HKSTP's "Technologies from Science Park" programme and will help start-up projects showing market potential with research, development and trialing of NB-IoT applications for various industries. Such start-ups will use 3 Hong Kong's NB-IoT network, now available at the Science Park.

In addition, 3 Hong Kong has established an inter-departmental taskforce that will make technical, as well as sales and marketing experts, available to start-ups. The idea is to help transform R&D results into marketable NB-IOT solutions that will popularise commercial use of the technology and speed up development of Hong Kong as a smart city.

Boosting network speed while paving the way to the 5G era

3 Hong Kong is the only mobile operator in Hong Kong to own blocks of spectrum that can be utilised throughout the 900MHz, 1800MHz, 2100MHz, 2300MHz and 2600MHz bands to provide service. This formidable network strength enables 3 Hong Kong to re-farm spectrum in order to deploy technologies that will greatly enhance network efficiency and speed up the advent of 5G. All this will provide customers with 5G networking performance and solutions, when standards have been finalised.

Deployment of 256 quadrature amplitude modulation has allowed 3 Hong Kong to boost network speed by up to 30%. The company has also started deploying 4x4 MIMO (Multi-Input Multi-Output) and Massive MIMO devices to increase spectral efficiency, with a view to delivering an even smoother and more stable mobile user experience.

Hong Kong's Communications Authority recently consulted the public over reallocating the 3.4 - 3.7 GHz frequency band to facilitate 5G development. In this regard, 3 Hong Kong has already obtained a temporary permit to conduct radio propagation tests via 3.5GHz in a live environment at a specific location. The move enables 3 Hong Kong to prepare for deployment of a 5G network, after obtaining the relevant licence.

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About 3 Hong Kong

3 Hong Kong is a leading mobile communications service provider and the only local operator to own blocks of spectrum across the 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2600 MHz bands. 3 Hong Kong offers cutting-edge data, voice and roaming services under the "3" brand via far-reaching advanced 4G LTE, 3G and 2G networks. 3 Hong Kong also works with renowned partners to offer a wealth of innovative mobile devices and value-added services, while providing high-speed Wi-Fi at "3HKWiFiService" hotspots to serve Hong Kong's major areas. 3 Hong Kong is the mobile division of Hutchison Telecommunications Hong Kong Holdings Limited (stock code: 215), a group member of CK Hutchison Holdings (stock code: 1).

For more information on 3 Hong Kong, please visit www.three.com.hk.

For more information on HTHKH, visit www.hthkh.com.

About Huawei

Huawei is a leading global information and communications technology (ICT) solutions provider. Our aim is to enrich life and improve efficiency through a better connected world, acting as a responsible corporate citizen, innovative enabler for the information society, and collaborative contributor to the industry. Driven by customer-centric innovation and open partnerships, Huawei has established an end-to-end ICT solutions portfolio that gives customers competitive advantages in telecom and enterprise networks, devices and cloud computing. Huawei's 180,000 employees worldwide are committed to creating maximum

value for telecom operators, enterprises and consumers. Our innovative ICT solutions, products and services are used in more than 170 countries and regions, serving over one-third of the world's population. Founded in 1987, Huawei is a private company fully owned by its employees.

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