



Press release

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## Global Mobile Industry Ready to Start Full-Scale Development of 5G NR

### 3GPP first 5G NR standard is completed

Today the 3GPP TSG RAN Plenary Meeting in Lisbon successfully completed the first implementable 5G NR specification. AT&T, BT, China Mobile, China Telecom, China Unicom, Deutsche Telekom, Ericsson, Fujitsu, Huawei, Intel, KT Corporation, LG Electronics, LG Uplus, MediaTek Inc., NEC Corporation, Nokia, NTT DOCOMO, Orange, Qualcomm Technologies, Inc., Samsung Electronics, SK Telecom, Sony Mobile Communications Inc., Sprint, TIM, Telefonica, Telia Company, T-Mobile USA, Verizon, Vodafone, and ZTE have made a statement that the completion of the first 5G NR standard has set the stage for the global mobile industry to start full-scale development of 5G NR for large-scale trials and commercial deployments as early as in 2019.

On February 27, 2017 in Barcelona, global mobile industry leaders announced their support for the acceleration of the 5G NR standardization schedule, which introduced an intermediate milestone to complete the first implementable specification for Non-Standalone 5G NR operation. As a result of this announcement, the schedule acceleration was agreed at the 3GPP RAN Plenary Meeting on March 9 in Dubrovnik, Croatia. This first specification was completed as part of 3GPP Release 15.

This standard completion is an essential milestone to enable cost-effective and full-scale development of 5G NR, which will greatly enhance the capabilities of 3GPP systems, as well as facilitate the creation of vertical market opportunities. 3GPP plans to continue to develop Release 15, including the addition of support for Standalone 5G NR operation also agreed upon by 3GPP in Dubrovnik. The 5G NR lower layer specifications have been designed so that they can support Standalone and Non-Standalone 5G NR operation in a unified way, to ensure that 3GPP benefits the global industry with a large-scale single 5G NR ecosystem. We express our appreciation for the tremendous efforts that 3GPP has dedicated to accomplishing this challenging standardization schedule.

#### **AT&T**

“We’re proud to see the completion of this set of standards. Reaching this milestone enables the next phase of equipment availability and movement to interoperability testing and early 5G availability,” said Hank Kafka, VP Access Architecture and Analytics at AT&T. “It showcases the dedication and leadership of the industry participants in 3GPP to follow through on accelerating standards to allow for faster technology deployments.”

#### **BT**

“BT welcomes the first significant step to 5G deployment and we remain excited about the further innovations that 5G will bring.” said Neil J. McRae, Chief Architect at BT, “We are proud to have played a part in this and BT is committed to continuing to drive further 5G standardisation at pace to benefit our customers and communities.”

#### **China Mobile**

“The first version of 5G NR not only provides a NSA solution for 5G deployment but also completes the common part of NSA and SA, which lay a solid foundation for a global unified 5G system with global market scale. We believe the next important milestone that is SA standard providing end to end 5G new capability could be completed by June of 2018, which is very crucial to enable the

operators to explore the enterprise and vertical markets. China Mobile is actively working with industry partners for 5G commercialization in year of 2020 and providing various services to customer. ” said Zhengmao Li, EVP of China Mobile Group.

#### **China Telecom**

“China Telecom is proud of being part of the 3GPP standard efforts that led to the completion of the first implementable 5G new radio specification. We expect that this important milestone, together with the SA part to be completed later, will promote and accelerate the development of 5G products, trials and commercial deployment in the coming years,” said Liu Guiqing, EVP of China Telecom. “With this successful completion of the 5G new radio standard, China Telecom plans to lead the 5G effort by launching field trials in many major cities in China as early as 2018, and prepare for the possible commercialization thereafter.”

#### **China Unicom**

Guanglu Shao, EVP of China Unicom Group, said: “It is the significant step for both 3GPP and the whole industry. This first version of 5G NR standardization provides essential functionalities for NSA and SA deployment, which are equally important for operators. We believe in that the industry could joint together further to make 5G more advanced for both human and vertical societies. We welcome the 5G era’s coming, and will continue collaborate with industry partners to make successful 5G commercialization.”

#### **Deutsche Telekom**

“We view both the Non-Standalone and Standalone modes of New Radio as equally important for the completeness of the 5G standard specification. This timely finalization of NSA is one important step on that journey and in the development of the 5G ecosystem,” said Bruno Jacobfeuerborn, CTO Deutsche Telekom. “It is crucial that the industry now redoubles its focus on the Standalone mode to achieve progress towards a full 5G system, so we can bring key 5G innovations such as network slicing to our customers.”

#### **Ericsson**

Erik Ekudden, CTO at Ericsson, said: “3GPP has done a tremendous job to complete the first 5G specifications according to industry demand and expectations. As a prime contributor to 5G standardization, Ericsson has worked with industry partners in the evolution of mobile technology to a global network platform for consumers and enterprises. Our research team has worked on 5G since 2010 including early 5G testbed efforts created together with these industry partners. The open contribution-driven specification work and the rapid completion of the first 5G standards for global deployment demonstrates the strength of the 5G eco-system.”

#### **Fujitsu**

Masayuki Seno, EVP and Head of Network Products Business Unit at Fujitsu, said: “I’m very pleased that the first 5G NR standard has been completed today. Fujitsu will accelerate development of 5G NR products based on the first 3GPP 5G NR specifications and provide them to worldwide markets to support our customers’ trials and commercial deployments.”

#### **Huawei**

Yang Chaobin, president of Huawei 5G product line, said: “As one of the key players, Huawei has committed to develop a single global 5G standard. With the a successful cooperation and join efforts with global organizations including governments, regulatory agencies, research organizations, academia, industries, and many more sectors, 3GPP 5G NR standardization Phase 1 has been completed with great progress. Huawei will keep working with global partners to bring 5G into the period of large-scale global commercial deployment from 2018.”

#### **Intel**

“We are pleased to work in cooperation and close alignment with global mobile industry leaders to support the new 3GPP Non-Standalone 5G NR standard and to accelerate the first NR trials,” said

Asha Keddy, Intel vice president and general manager, Next Generation and Standards. “As part of this coordinated effort, Intel will continue to play a leading role across the network, cloud and client devices; and with our first commercial 5G modems, we will help the ecosystem lead the way to 5G deployments worldwide.”

#### **KT Corporation**

Dongmyun Lee, Chief Technology Officer and Head of Institute of Convergence Technology, KT said: “As one of the 5G leaders, we are greatly excited to witness the first ever release of 5G NR NSA specification that the whole industry including KT has endeavored to achieve in recent years and therefore make a strong commitment to finally bring full-scale services of the true 5G standards to commercial market as early as 2019.”

KT expects that such 3GPP’s efforts meeting the market needs will further accelerate the realization of the 4th Industrial Revolution for telecommunication industry.”

#### **LG Electronics**

I.P. Park, Chief Technology Officer, said: “LG Electronics is pleased to be one of key contributors to the first global 5G NR standard completed in a timely manner, which will play a pivotal role in enabling innovative IoT services and expediting the convergence of diverse industry sectors. Along with continued contributions to evolved 5G standards, we will make all the efforts to introduce new innovative 5G convergence products and services in the market.”

#### **LG Uplus**

Joosik Choi, Head of 5G Strategy Planning, said: “We would like to thank to 3GPP and all companies for great effort on initial 5G NR NSA standard which will accelerate promising future. As one of the big contributor for RF analysis on LTE band, 3.5GHz and 28GHz dual connectivity operation, LG Uplus will keep endeavor for bring 5G NR deployment and advanced standard into industry for this ecosystem.”

#### **MediaTek Inc.**

“The milestone reached is significant as it is an important step towards making 5G NR a commercial reality,” said Dr. Kevin Jou, Corporate Sr. Vice President and Chief Technology Officer, MediaTek. “As a leading baseband chip provider, MediaTek has actively contributed to the standardization of 5G NR and will continue to do so. With the standard becoming stable, our focus is now on delivering viable commercial solutions that will enable the use of 5G NR technology to its full potential.”

#### **NEC Corporation**

Atsuo Kawamura, executive vice president and head of the Telecom Carrier Business Unit at NEC Corporation, said: “Completion of Non-Standalone 5G NR standardization is a significant milestone for the realization of full-scale 5G services. NEC is strongly committed to driving the progress of standardization for a global mobile system, and believes future 5G services will benefit society in an unprecedented manner by utilizing advanced information and communications technologies. NEC is creating secure and intelligent technologies to realize such services.”

#### **Nokia**

Marcus Weldon, president of Nokia Bell Labs and chief technology officer, Nokia, said: “This is a key milestone in bringing 5G to market, and one in which Nokia is proud to have played a significant role. 5G will advance new possibilities for the role of wireless technology in society, leading to dynamic innovation in mobile broadband and in industrial automation for industry 4.0, enabling the creation of exciting new applications that connect and control our physical and digital worlds.”

#### **NTT DOCOMO**

Dr. Hiroshi Nakamura, Executive Vice President and Chief Technology Officer, NTT DOCOMO said: “I would like to express my deepest gratitude for 3GPP’s great effort to successfully complete the first release of 5G NR specification six months ahead of schedule. NTT DOCOMO has made tremendous contributions to the standardization as a world-leading mobile operator. We have been collaborating

with various partners across industries to co-create 5G services through '5G Trial Sites' since this May. This completion will accelerate these activities and we will launch 5G services with Non-Standalone 5G NR by 2020."

### **Orange**

Arnaud Vamparys, SVP Radio Networks said: "Orange welcomes this inaugural first release of a worldwide standard for 5G. With subsequent 3GPP releases expected from mid 2018 that will accelerate application and IoT development, Orange sees a myriad of opportunities to deliver a differentiated and high quality network, and is therefore fully committed to working with the industry to roll out 5G."

### **Qualcomm Technologies, Inc.**

"We are excited to be part of this significant milestone, and to once again be at the forefront making the 5G vision a reality in 2019," said Cristiano Amon, executive vice president, Qualcomm Technologies, Inc. and president, Qualcomm CDMA Technologies. "We look forward to continue working with our mobile industry peers to bring 5G NR commercial networks and devices in 2019 in smartphone and other form factors, for both sub-6Ghz and mmWave frequency bands, and to continue developing 5G technologies to connect new industries and enable new services and user experiences in the years to come."

### **Samsung Electronics Co., Ltd.**

DJ Koh, President and Head of IT and Mobile Communications Division at Samsung Electronics, said: "As a global leader in the mobile industry, Samsung has been collaborating with the whole industry to achieve this milestone in 5G standards. With the completion of 5G NSA NR standard, we will be able to expedite 5G commercial deployments including chipsets, devices and network equipment. Samsung will continue making every effort to deliver complete Rel-15 NR standards. Rel-15 NR and its further evolution will be a key milestone for the industry to meet the increasing global demand for enhanced mobile broadband services and exploring new business opportunities and services inspired by 5G."

### **SK Telecom**

"Having global 3GPP 5G NR standard by 2017 is one of key milestones to bring 5G into early commercial service in 2019", said Jinhyo Park, EVP, Head of ICT R&D Center, "SK Telecom is proud to be one of key contributors to the accelerated 3GPP 5G NSA-NR standardization. We will continue to work on further development of 3GPP 5G NR to ensure readiness for early 5G commercial deployment."

### **Sony Mobile Communications Inc.**

Mr. Izumi Kawanishi, Director, EVP, Sony Mobile Communications Inc., said: "Sony has been part of the 5G NR and NSA standardization and recognizes the progress in 3GPP to reach this important milestone with features targeting evolved mobile broadband and ultra low latency communications. Sony Mobile is ready for full-scale development of 5G NR smartphones to take benefit of the opportunities offered by the new standard."

### **Sprint**

"We're excited to help usher in the next generation of wireless networks that will drive new levels of innovation and progress around the world," said Dr. John Saw, Sprint CTO. "We congratulate 3GPP and its delegates on this important milestone, and we look forward to working with our industry partners to deploy 5G NR in our 2.5 GHz (NR band n41) spectrum."

### **TIM**

Mr. Giovanni Ferigo, CTO, said: "TIM has already defined a sound track towards 5G and is collaborating with key industry players, municipalities and public Institutions to unleash the full potential of 5G for people and vertical markets by 2020 expanding the footprint of LTE-A. The extraordinary work done in 3GPP in a few months to keep the promise of a first set of standards

coping with the strict requirements of a new radio interface is a fundamental step in this roadmap. We are looking forward to contributing to the next 3GPP milestones which will complete the work on Release 15.”

### **Telefonica**

Mr. Enrique Blanco, Telefonica’s Global Systems and Networks Director, said: “Telefonica greatly appreciates the efforts made by the industry for completing this major milestone towards 5G. Telefonica acknowledges the full potential of 5G, and encourages the industry to keep developing ambitious ideas in order to deliver outstanding connectivity and bring the best possible experience to our customers. Telefonica is fully committed to working with the industry in this direction.”

### **Telia Company**

“We are happy to see that the acceleration of 5G standardization that we and the whole industry called for in February has been achieved. This allows for the early commercial deployments needed to open up for innovation and new business opportunities that our customers expect from us”, says Mauro Costa, Director Network Architecture & Strategy, Telia Company. “In order for the industry and society to take advantage of the full potential of 5G, it is vital that the standardization now continues with a focus to complete also the stand alone version.”

### **T-Mobile USA**

“This is an important moment and a crucial development toward making 5G NR happen,” said Neville Ray, Chief Technology Officer for T-Mobile US. “At T-Mobile, we’re committed to drive a 5G rollout across the US in 2020, and the efforts of 3GPP will help us to realize this great win for our customers.”

### **Verizon**

“Verizon is delighted that the 3GPP is moving quickly to release a global standard for mobile 5G,” said Ed Chan, Chief Technology Architect and Network Planning. “With this important 3GPP milestone, Verizon is once again well positioned to deliver next-generation technology to customers just as we did with 4G LTE.”

### **Vodafone**

Luke Ibbetson, Head of Vodafone Group R&D said: “Completion of the 5G standard six months earlier than originally anticipated is a significant milestone that should enable compliant network infrastructure and phones to be delivered in line with our requirements. This first version of 5G will build on the success of 4G, providing fast and highly efficient mobile broadband services to our customers and setting the foundation for the Gigabit Society.”

### **ZTE**

Mr. Xu Huijun, CTO of ZTE Corporation, said: “The completion of the Non-Standalone 5G NR standardization is a critical milestone in the industry. I really appreciate 3GPP’s efforts in meeting this challenging schedule. As one of the contributors to the 5G standards-making process, ZTE will partner with the fellow mobile industry players to commit to accelerating the 5G NR large-scale trials and deployments.”

### **About Orange**

Orange is one of the world’s leading telecommunications operators with sales of 40,9 billion euros in 2016 and 152,000 employees worldwide at 30 September 2017, including 93,000 employees in France. Present in 29 countries, the Group has a total customer base of 269 million customers worldwide at 30 September 2017, including 208 million mobile customers and 19 million fixed broadband customers. Orange is also a leading provider of global IT and telecommunication services to multinational companies, under the brand Orange Business Services. In March 2015, the Group presented its new strategic plan “Essentials2020” which places customer experience at the heart of its strategy with the aim of allowing them to benefit fully from the digital universe and the power of its new generation networks.

Orange is listed on Euronext Paris (symbol ORA) and on the New York Stock Exchange (symbol ORAN).

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