The Manager
Spectrum Planning Section
Spectrum Planning and Engineering Branch
Australian Communications and Media Authority
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Email: freqplan@acma.gov.au

Subject: 3.4 GHz and 3.6 GHz band spectrum licence technical framework, Consultation Paper

Dear Manager,

Huawei welcomes the opportunity to make this submission to the ACMA (Australian Communications and Media Authority) in response to its *3.4 GHz and 3.6 GHz band spectrum licence technical framework, Consultation paper May 2018*.

We also thank the ACMA for providing Huawei an opportunity to participate in the Technical Liaison Group (TLG) process, which was held from early March to the end of April, to contribute to the forum for the development of this spectrum band technical framework.

In general, Huawei supports the ACMA's considerations and proposals with subject to below bullet points. Our responses and suggestions to this paper are listed below.

Further reasoning and background information to these can be found in our April 2018 submission to the ACMA "*Development of the 3.6 GHz spectrum licence technical framework, Technical Liaison Group (TLG) consultation paper for version 2.1*" on the Spectrum licence technical liaison groups share-point site. (https://tlg.acma.gov.au/lm_auth_proxy?DoLMLogin?curl=L2f&curlid=4056214334-1720785663)

- We support the ACMA's recommendation to have **a single technical framework covering both the 3.4 GHz band and 3.6 GHz band** as per a key outcome from the TLG process.

- Huawei appreciates the ACMA for outlining pros and cons for all proposed options. Among the three (3) options proposed by the ACMA, we **support Option 1** with the identification of a common synchronisation requirement across both the 3.4 GHz and 3.6 GHz bands. The required emission limits proposed for Option 1 are also consistent with the latest 3GPP standardisations.

  We also appreciated the ACMA's effort in reviewing and updating the spurious emission calculation techniques with Total Radiated Power (TRP) values for the suitability with emerging 5G technologies including a consideration of active antennas system (AAS).

  We understand and support the ACMA's propositions of a stricter unwanted emissions limits in regards to transmitter out-of-band emission limits. Stricter unwanted emission limits of -47 dBm per cell/sector for 3.1 GHz ≤ f ≤ 3.38 GHz frequency range would address the co-existence requirements with adjacent band radiolocation.

  Huawei complements the ACMA for its efforts in working with the Department of Defence to determine specific locations for a restriction for transmitter out-of-band emission with -47 dBm/MHz.

If Electronic Communications Committee (ECC) decides to adopt a stricter out-of-band emission limits of -52 dBm in the 3.1 GHz to 3.38 GHz, it would be appropriate to follow suit and apply the same limits in Australia. This would further benefit Australian carriers, enabling them to utilise universal radiocommunications equipment and chipset for wider Europe and Australia.

The proposed out-of-band TRP values for AAS with an additional 9 dB consideration at other frequency ranges composed of 9 kHz ≤ f ≤ 3.1 GHz and 3.38 GHz ≤ f ≤ 19 GHz are reasonable and are consistent with the latest 3GPP TSS38.104 specification.

- In addition, we strongly suggest the ACMA to adopt the **frame structure downlink uplink ratio 8:2 for New Radio deployment** as it can be well synchronised with TDD LTE operates at downlink uplink ratio of 3:1 configuration.

  We recommend the ACMA to include this configuration requirement in both the Radiocommunications Advisory Guidelines (RAG) and the Radiocommunications Assignments and Licensing Instructions (RALI) documents for the 3.4 GHz- 3.7 GHz licence spectrum range (when a decision is reached on which Option will be adopted).

- Huawei noted the ACMA's identification of having alternative approaches to Option 1, namely Sub-option 1a and Sub-option 1b.

  The ACMA's paper noted that the interim period of Sub-option 1a will not be later than the end of the 3.6 GHz band re-allocation period for six (6) metropolitan areas. It may also have an early access arrangement for the successful 3.6 GHz band auction bidders. The 3.4 GHz licences would be adjusted to adopt the new licence core conditions. Subject to our understanding for the actual duration of interim period, we **prefer Sub-option 1a** over Sub-option 1b.

  We commend the ACMA for working closely with all stakeholders in providing fair and transparent guidance to the existing and potential licensees in ensuring the highest value use of this spectrum band as well as enabling an early 5G deployment opportunity for Australia.

- The ACMA's proposed exemption from registration requirements for a transmitter operating with an in-band radiated power of less than or equal to 28 dBm per occupied bandwidth is suitable, as it accommodates future devices with more E-UTRA carrier aggregation and larger NR channels.

It is also important to note that differing from internationally harmonised technologies and standardisation, the commercial availability of equipment and chipset, and cost of radiocommunications equipment, could all affect not only the value use of the 3.4 – 3.7 GHz spectrum but also greatly affect the supply and demand for the 5G market development in Australia.

Please do not hesitate to contact us for further clarification or insight to our responses or suggestions.

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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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