



Malaysian Communications and Multimedia Commission
Suruhanjaya Komunikasi dan Multimedia Malaysia

Final Report

Allocation of spectrum bands for mobile
broadband service in Malaysia

31 December 2019

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1 Background

- 1.1 The Malaysian Communications and Multimedia Commission (“MCMC”) embarked on a Public Inquiry (“PI”) on 1 July 2019 and issued a PI document on the allocation of spectrum bands for mobile broadband service in Malaysia.
- 1.2 The PI document outlined MCMC’s preliminary positions on the allocation of the 700 MHz, 2300 MHz and 2600 MHz bands, which included proposals on the optimum bandwidth, the award mechanism, and the timelines for the assignment of these bands.
- 1.3 MCMC received fifteen (15) written submissions from various parties (***Annex 1***) at the end of the PI period on 30 August 2019.
- 1.4 MCMC considered all fifteen (15) submissions and published a report of the PI on 29 September 2019. The PI report highlighted the following:
 - i. MCMC intends to assess and re-evaluate its initial positions taken on the matters related to the PI, due to diverse opinions in the feedback obtained; and
 - ii. MCMC anticipates that it will arrive at a final position by the end of the year, which position will be made public.
- 1.5 After due consideration, MCMC now presents this document to set out its final position on the allocation of spectrum bands for mobile broadband service in Malaysia.
- 1.6 The position taken in this document reflects both MCMC’s deliberation of the submissions and an assessment of current developments globally in relation to 5G deployment and various critical Government policies, which have primarily taken place after the issuance of the PI document.

2 Consideration

Moving towards 5G

- 2.1 MCMC is of the view that it is important to be innovative, whilst taking into account the interest of various stakeholders including consumers as well as the service providers, in the management of spectrum to support the country's growing demand for data and high speed mobile broadband service.
- 2.2 The emergence of next generation mobile technology such as 5G enables gigabit speeds and offers low latency with high reliability for multiple types of use cases.
- 2.3 5G connectivity plays an important role in the National Fiberisation and Connectivity Plan ("NFCP") key targets, particularly in achieving average speeds of 30Mbps in 98% of populated areas by year 2023.
- 2.4 Fast and secure data connection has been identified as a basic requirement for the realisation of Industry 4.0, as outlined in the Industry 4WRD National Policy on Industry 4.0 document. This would be pertinent for smart technologies in industrial applications, which require wireless connectivity with different requirements in terms of throughput, latency, reliability and number of endpoints. All these would be made possible with the deployment of 5G technology.
- 2.5 Several Key Economic Growth Activities ("KEGA") outlined in the Shared Prosperity Vision 2030, such as Digital Economy and Industrial Revolution 4.0, would also be able to benefit from nationwide implementation of 5G technology.
- 2.6 Based on the responses provided during the PI process, there were suggestions that planning of spectrum at this stage should take into account 5G deployment.

5G in Malaysia

- 2.7 A national 5G Task Force was established in November 2018 to study and recommend a holistic strategy for 5G deployment in Malaysia. The 5G Task Force comprised of 114 organisations from the private sector, Ministries and agencies representing the demand and supply side of the ecosystem.
- 2.8 The 5G Task Force has identified two (2) frequency ranges as the first priority spectrum for 5G deployment in Malaysia, as follows:
- i. Frequency range of 3.3 to 3.8 GHz; and
 - ii. Frequency range of 24.25 to 29.5 GHz.
- 2.9 The above frequency ranges were selected based on global trends and ecosystem maturity.
- 2.10 The 5G Task Force has proposed for the assignment of 3.3 to 3.8 GHz band to be made by Quarter 3 of 2020 and commercialisation by Quarter 1 of 2021. For the 24.25 to 29.5 GHz band, the 5G Task Force proposed for the assignment to be made in Quarter 1 of 2021 and commercialisation by Quarter 3 of 2021.

Driving Collaboration

- 2.11 In the meantime, key players within the industry formed the NFCP Protem Committee in October 2019 to find the best solution to share their infrastructure and coordinate planning to meet some of the targets of the NFCP.
- 2.12 The NFCP Protem Committee considered network sharing and collaboration models taking into account various technical solutions and planning requirements. This is to ensure Quality of Service ("QoS") at optimum cost and to ensure that speed targets are consistently met as well as to facilitate future technology transition towards 5G.
- 2.13 In meeting the targets of the NFCP, the NFCP Protem Committee proposed the use of the 700 MHz band for 4G and where subsequently, the same could also be used for 5G via Dynamic Spectrum Sharing. The members of the NFCP Protem Committee have also stated their commitment to share spectrum as well as active and passive network elements to jointly roll-out 5G in appropriate areas.

Strategy and principles in determining spectrum allocation for mobile services

2.14 MCMC is of the view that there is a need to prepare for 5G deployment through the appropriate plan for spectrum immediately. This is to ensure that the right foundation is set as early as possible, so that Malaysia is able to leverage on both the technological advancements and economic benefits that 5G can deliver.

2.15 In preparing for 5G deployment and building a 5G ecosystem in Malaysia, MCMC has taken into consideration the following:

- i. The opportunities for optimal use of spectrum in the form of improvement to mobile broadband speeds and coverage to meet the national targets;
- ii. The impact on the future use of spectrum and introduction of new technology; and
- iii. The rapid development of the global 5G ecosystem in various identified spectrum bands.

2.16 Taking into consideration all of the above, MCMC is guided by four (4) principles in allocating spectrum for mobile cellular/broadband services, as outlined below:

i. Value creation

- a. MCMC intends to facilitate enterprise value creation across industry and licensees under MCMC's purview.
- b. All mobile service providers and network facilities providers have a role, including small and mid-sized licensees which form part of the ecosystem, undertaking implementation on a national/regional/localised basis.

ii. Consumer protection

- a. MCMC intends to continue to foster constructive competition whilst emphasising consumer protection.
- b. MCMC intends to create an environment of co-existence and inter-operability among operators.

iii. Cost efficiency

- a. MCMC is cognisant of the importance of cost efficiency and as such, intends to optimise past investments by ensuring that existing assets are leveraged upon.
- b. MCMC seeks to minimise the duplication of infrastructure going forward.
- c. MCMC encourages infrastructure multi-sharing wherever possible (including passive and active network elements and spectrum).

iv. Innovation-driven

There needs to be clear parameters set to drive innovation:

- a. To leverage on 5G beyond smart phones and fixed wireless access (FWA); using 5G for industry verticals and enterprise competitiveness where support for game changing applications will be created through a new National 5G Centre of Excellence.
- b. To leverage on 5G for fixed connectivity to complement fibre, in urban, suburban and rural areas.

3 Final Position

- 3.1 MCMC acknowledges the need for different frequency ranges with different characteristics to deliver widespread coverage of broadband services as well as to meet the requirements of future networks and 5G services and use cases.
- 3.2 MCMC has re-assessed and re-evaluated its initial positions regarding the allocation of spectrum bands for mobile broadband, taking into account the PI responses, the recommendation from the 5G Task Force and submissions from the NFCP Protem Committee.
- 3.3 This document also outlines MCMC's position on the 3.5 GHz and 26/28 GHz bands, which although not a part of the PI, is critical for 5G roll out. The 26/28 GHz bands support large bandwidths and high data rates, which are ideal for increasing the capacity of wireless networks. 3.5 GHz band contributes a critical portion of the spectrum for mobile broadband, offering a balance between the wide coverage of lower frequencies and high capacity of the millimetre-wave spectrum.
- 3.4 Upon taking into account all relevant inputs, MCMC has decided on the following:
 - i. The frequency bands identified for the roll out of 5G ("5G pioneer bands") are as follows:
 - a. 700 MHz band;
 - b. 3.4 GHz to 3.6 GHz ("3.5 GHz band"); and
 - c. 24.9 GHz to 28.1 GHz ("26/28 GHz bands").
 - ii. The use of 2300 MHz and 2600 MHz bands will be maintained per existing allocation until 31 December 2021 and the allocation of these bands will be reviewed prior to their expiry.

700 MHz and 3.5 GHz bands

Award mechanism

- 3.5 With the objective of achieving the speed and coverage goals of NFCP in the most cost-efficient manner as well as encouraging collaboration among operators, MCMC is considering the allocation of the 700 MHz and 3.5 GHz bands to a single entity comprising a consortium formed by multiple licensees instead of allocating these bands to individual licensees. Participants of the consortium may share the required resources to roll out the relevant infrastructure and the provisioning of relevant network services to support 5G.
- 3.6 MCMC is of the view that this approach will lower capital expenditure ("CAPEX") by minimising costs and prevent the duplication of infrastructure whilst leveraging on and optimising current resources owned and operated by the relevant licensees.
- 3.7 Taking into consideration the above, the 700 MHz and 3.5 GHz bands will be assigned in one (1) package through a tender process (beauty contest).
- 3.8 For the avoidance of doubt, MCMC has no preference in relation to the members of this consortium and will evaluate submissions received as per the tender process. Specific criteria for the corporate structure of this consortium will be indicated in the Marketing Plan to be issued by MCMC by Quarter 1 of 2020.

Spectrum available for assignment

- 3.9 MCMC will make available the spectrum bands in stages to ensure that any entity undertaking the deployment of infrastructure and provisioning of network services perform in accordance to the conditions set for the assignment of the relevant bands.
- 3.10 For the first stage, MCMC will make available 2x30 MHz of the 700 MHz band and 100 MHz of the 3.5 GHz band as the package in the tender (beauty contest) process.
- 3.11 The remaining frequencies within the 700 MHz and 3.5 GHz bands will be considered for assignment at a later stage.

Assignment method

- 3.12 The 700 MHz and 3.5 GHz bands will be assigned by way of Apparatus Assignment (“AA”).
- 3.13 MCMC will prepare an applicant information package (“AIP”) that sets out relevant information to assist interested parties to comply with the procedures for applying for assignment of the frequencies within the 700MHz and 3.5 GHz bands.
- 3.14 The beauty contest process is estimated to commence in Quarter 1 of 2020.

26/28GHz bands

Award mechanism

- 3.15 The 26/28 GHz bands will be assigned as follows:
- i. The frequency range of 24.9 GHz to 26.5 GHz will be assigned through a tender process (beauty contest) to licensees on a nationwide basis; and
 - ii. The remaining frequency range of 26.5 GHz to 28.1 GHz is to be assigned based on a first-come first-served basis and will be open to any party (including non-licensees) for the purpose of deploying localised and/or private networks for industrial and enterprise services and applications for, but not limited to, healthcare, ports, transportation, manufacturing, agriculture, public safety and smart city projects.

Any party that has successfully been assigned with the frequency range of 24.9 GHz to 26.5 GHz, following the tender exercise, will not be eligible to apply for the remaining frequency range of 26.5 GHz to 28.1 GHz.

Spectrum available for assignment

3.16 Total bandwidth of 3200 MHz will be made available, as follows :

- i. Four (4) blocks of 400 MHz (totalling 1600 MHz) from 24.9 GHz to 26.5 GHz will be available on a nationwide basis; and
- ii. The remaining four (4) blocks of 400 MHz (totalling 1600 MHz) from 26.5 GHz to 28.1 GHz will be open to any party for the purpose of deploying localised and/or private networks as outlined in paragraph 3.15 (ii).

Assignment method

3.17 For the frequency range of 24.9 GHz to 26.5 GHz that will be made available on a nationwide basis to the licensees:

- i. The assignment will be issued by way of AA;
- ii. MCMC will prepare an AIP that sets out relevant information to assist the eligible person to comply with the procedures for applying for assignment of frequencies within the band; and
- iii. The beauty contest process is estimated to commence in Quarter 1 of 2020.

3.18 For the frequency range of 26.5 GHz to 28.1 GHz for the purpose of deploying localised and/or private networks:

- i. The assignment will be issued by way of AA;
- ii. Issuance of AA shall be on a first-come first-served basis; and
- iii. MCMC will issue a notice on the start date to allow for the submission of the AA application.

2300 MHz and 2600 MHz bands

- 3.19 It is important to prioritise the planning for 5G. As such, the use of 2300 MHz and 2600 MHz bands will be maintained per existing allocation, pending maturity of these bands for 5G which is expected to be the earliest by year 2021.
- 3.20 Notwithstanding the above, the related service providers would still need to deploy mobile broadband service in the assigned frequency bands using currently available technology, in parallel to the necessary preparation for migration towards 5G.
- 3.21 In the event there is an existing collaborative agreement between licensees on the relevant frequency bands, the parties to such agreements would have to obtain MCMC's consent for the continuation of the same and if there are any changes to the collaboration. Any proposal for new collaborations would also require prior consent from MCMC. MCMC reserves the right to impose conditions on any collaboration so as to ensure optimised use of the relevant frequencies.
- 3.22 The assignment of these bands will be continued by way of AA until 31 December 2021.
- 3.23 MCMC will undertake a review of the position of these bands in 2021, taking into account existing utilisation, global trends and ecosystem of these bands.

/end

List of submissions for PI on “Allocation of Spectrum Bands for Mobile Broadband Service in Malaysia”

No.	Submitting Parties
1.	Altel Communication Sdn Bhd
2.	Asiaspace Broadband Sdn Bhd
3.	Celcom Axiata Berhad
4.	Digi Telecommunications Sdn Bhd
5.	Fujitsu Telecommunications Asia Sdn Bhd
6.	GSM Association (GSMA)
7.	Huawei Technologies (Malaysia) Sdn Bhd
8.	Joint submission of Telekom Malaysia Berhad and Webe Digital Sdn Bhd
9.	Maxis Berhad
10.	Mr. Lee Soon Huat
11.	PNMB Payfo Sdn Bhd
12.	REDtone Engineering and Network Services Sdn Bhd
13.	Sacofa Sdn Bhd
14.	U Mobile Sdn Bhd
15.	YTL Communications Sdn Bhd

