

Submission of Responses for Public Consultation Paper on the proposal for Wireless Local Area Network (WLAN) in the 6GHz Frequency Band

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1.0 Introduction

Digi welcomes the opportunity to comment on the Public Consultation (“PC”) paper of Wireless Local Area Network (WLAN) in the 6GHz frequency band issued by the Malaysian Communications and Multimedia Commission (“MCMC”) on 12 August 2021. This paper provides Digi’s position in response to the PC. Our detailed responses to the recommendations set out in the PC are further explained in the rest of the document. There are responses marked as ‘**Confidential**’ in this document, while the remaining shall be deemed as non-confidential.

2.0 Executive Summary

The 6 GHz band today has been widely deployed across Malaysia by commercial telecommunication network operators, public safety organizations, and broadcasters, to provide critical communications infrastructure. MCMC play an important role in ensuring that Malaysia continues to manage access to radio spectrum in an effective and efficient manner that protects critical incumbent services while harnessing innovation and new technologies to the benefit of **Rakyat**. Digi supports MCMC exploring potential new services to the 6 GHz band and propose that this should include the use of 5925-7125 MHz for IMT.

Notably, the demand of the usage for unlicensed band here in Malaysia more specifically used for Wi-Fi services and the current allocated spectrum (2.4 GHz and 5GHz) is sufficient to provide best quality to the consumers for now. This aligns as well to meet the **National Aspiration of JENDELA**, 1 Gigabit Access Fixed Broadband target by 2025. With reference to the service offered currently in Malaysia, the top-of-the-line offering on the Fixed Broadband Service to the mass market (customer) stand at 1Gbps and Wi-Fi 5 most likely a popular option as it handily meets up to 1 Gbps requirement at affordable cost. Wi-Fi 6 has been available since 2018, and can support more than 3 Gbps for advanced use case. For enterprise customers using Wi-Fi, the issues are mainly coverage, reliability, and privacy which is solvable with the use of technology and innovation without the need of more spectrum allocation.

Therefore, our view is that there is no practical evidence to demonstrate the need for 6GHz band for Wi-Fi service. Further, AFC systems which is currently being assessed in the U.S. is a unique automatic coordination and interference management tool – the viability and success of this tool for interference management remains to be seen. Notwithstanding, we should follow FCC and U.S. closely on this and draw learnings for Malaysia. MCMC should also further investigate 5925-7125 MHz for alternative use e.g., IMT. Globally, both IMT and WiFi use in the 6GHz band has been explored. The U.S., South Korean and others related country has made the full 6 GHz band available for Wi-Fi. On the other hand, many European countries and the UK has only chosen partially 5925-6425 MHz for Wi-Fi (low-power) while China has chosen full 5925-7125 MHz for IMT.

Malaysia should therefore consider options for both IMT and WiFi use of the 6GHz band, evaluating ecosystem maturity for the 6GHz band, market demand from respective players for this spectrum, as well as the likely economic benefit that the use and user of this spectrum can ultimately generate for the Rakyat and Malaysia.



3.0 Responses to the Public Consultations

Question	Response
<p>Question 1: MCMC seeks your views and comments on the demand for spectrum for Wi-Fi in the 6 GHz frequency band.</p>	<p>Introducing Wi-Fi at 6GHz may not have significant impact in Malaysia market as Wi-Fi 6 at 5GHz already provide more than 3.2 Gbps download speed and can already cater for foreseeable future service requirement. Therefore, there is no immediate need to consider Wi-Fi 6E at 6GHz.</p> <p>Effective spectrum policy frameworks are needed for Malaysia network operators to meet the increasing demand for data and innovative new services.</p>
<p>Question 2 MCMC seeks your views and comments on the emerging technologies utilizing the 6 GHz frequency band.</p>	<p>According to the Statistical report (MCMC Pocket Book of Statistics) , there was an 33.66 % increase in Malaysia mobile broadband traffic from Jan 2020 to Jan 2021.</p> <p>The trend of wireless traffic growth is likely to increase significantly with the advent of 5th generation (5G) mobile wireless technology, because of new services and applications enabled by the ability of 5G eMBB, uRLLC, mMTC, slicing and new capabilities underdevelopment.</p> <p>The strength and resilience of Malaysian networks considering COVID-19 pandemic have been a point of importance for Malaysia.</p> <p>However, the pandemic has also highlighted that some Malaysian living in rural and remote areas do not always have the same connectivity options, as building fibre transport or any other wired transport is not economically sound. As on the new 6 GHz spectrum policy, it must take a measured and careful approach, keeping the impact on rural Malaysians in mind– who may depend extremely on mobile services .</p> <p>To address growth demand for data services, in the case where networks start becoming congested, access to new spectrum (both interference-free,</p>



	<p>licensed spectrum bands) can increase network capacity to meet this demand.</p> <p>Ensuring that mid-band spectrum continues to be available for current deployments of 5G and future next-generation IMT networks is critical in enhancing user experience e.g. high definition real-time broadband communication. Mid-band spectrum provides a balance between coverage and capacity, and it is a more cost effective and efficient option as compared to network built using high band, ex. mmWave. Due to the market size, China’s adoption of 6GHz spectrum for IMT technology , will means that there will potential to drive high number of device availability for this band in future.</p> <p>However, the release of 6GHz, mid-band spectrum or any spectrum by MCMC in general, should be market responsive, reflecting both technical and commercial realities of the use of the spectrum in delivering services to end users.</p>
<p>Question 3 MCMC seeks your views and comments on the frequency range within the 6 GHz frequency band that could be considered for Wi-Fi under the Class Assignment in Malaysia. Should MCMC consider allowing Wi-Fi to operate in the entire 1200 MHz (5925 MHz to 7125 MHz frequency band) or only in the 500 MHz (5925 MHz to 6425 MHz frequency band)?</p>	<p>As mentioned in the executive summary, Digi recommends that MCMC considers the use of 6GHz spectrum range for IMT. MCMC should consider reallocate 6GHz as a licensed band that will provides significant capacity for different services (e.g., IMT, FS, FSS etc.). Reallocations may be either in response to changing demands for legacy services or to take advantage of technological developments that allow for a more efficient use of the spectrum. Allowing Wi-Fi (unlicensed) services provides less latitude to later introduce new services that require certainty that only licensed spectrum can provide. Once a band is opened to Wi-Fi (unlicensed) and devices start using it, it may be difficult to reallocate the band to licensed use without notable interference concerns.</p> <p>Therefore, Digi is recommending that MCMC consider all potential uses for the 6GHz band including for IMT as per WRC-23.</p>
<p>Question 4 MCMC seeks your views and comments on:</p>	<p>Digi view that the coexistence between unlicensed usage and incumbent users has been assessed by the U.S. regulator. The FCC believes that it is possible for unlicensed and licensed to coexist, as long it is</p>



<p>i. the coexistence between Wi-Fi and incumbent services (i.e. fixed service and fixed-satellite service); and</p> <p>ii. the potential interference mitigation between these services.</p>	<p>enabled through a database approach which it terms automated frequency coordination (AFC).</p> <p>However, we do recommend that the MCMC closely review and consider the details of the studies performed by the FCC.</p>
<p>Question 5</p> <p>MCMC seeks your views and comments on the potential technical and operational conditions to be imposed if the 6 GHz frequency band is introduced for Wi-Fi under the Class Assignment. Should part of the frequency band be limited to indoor operation? Should standard power devices operating under the Automatic Frequency Coordination (AFC) system be adopted in Malaysia?</p>	<p>The AFC system deployment is important to ensure the licensed services are protected from an interfering signal (malicious or accidental) that could cause a link failure or system degradation.</p> <p>The frequency and antenna locations for a FSS and FS tend to be single points of failure, and although there may be redundant equipment, there may be significant network and end-user impacts. As such, standard-power should be further review its operation under an AFC system until the technology has proven itself for at least one to two years in U.S. country.</p> <p>The successful implementation of an AFC system in Malaysia will require accurate location and antenna height and operating frequency for each FS and FSS link in the 6 GHz band. The direction, i.e. Transmit vs Receive function for each site and frequency, must also be provided for each link to facilitate calculation of a suitable exclusion zone that maximizes access to spectrum by Wi-Fi while minimizing potential interference.</p> <p>Despite the efforts of the MCMC, of which we are appreciative, the current Spectrum Management System (SpMS) database continues to have significant challenges . The e-SPECTRA web (The Licensee interface system to the SpMS) need to be enhance to make it available during the application on the potential interference that may occur.</p> <p>The information required from standard-power Wi-Fi requesting permission to transmit include their location and antenna height. Experience gained from deployment of AFC in the U.S. will inform how location and height for each requesting Wi-Fi can be provided automatically, showing the value of delaying authorization of AFC for at least one to two</p>



	<p>years of real-world experience in the U.S. jurisdiction.</p> <p>Location information for the standard-power Wi-Fi connecting with the AFC system should be retained together with e-SPECTRA to facilitate identification of standard-power devices found to cause interference to FSS and FS.</p> <p>As such, incumbent FS and FSS service require by operator should be enabled to submit their application details to e-SPECTRA online portal established with the AFC system for this specific function. Incumbent licensees able to directly check and perform analysis for possible interference. In our view, timely and accurate data is paramount to ensure ongoing protection of licensed incumbents.</p>
<p>Question 6 What other key issues need to be considered in introducing Wi-Fi in the 6 GHz frequency range?</p>	<p>Beside Wi-Fi, Digi also notes the increased interest and deployment of drones, which are typically controlled using unlicensed radio signals.</p> <p>These devices could easily fly into the sight of FS links or FSS dish and cause considerable interference or even a total outage.</p> <p>The potential use of unlicensed of 6 GHz radio for drone control represents a risk to incumbent links without an obvious solution.</p>

Digi has reviewed the Consultation with the MCMC proposed usage of Wireless Local Area Network (WLAN) in the 6GHz Frequency Band. As a service provider in Malaysia, Digi has provided the input, suggestions, and recommendations on the questions raised in the Consultation.

Digi is pleased to have the opportunity to provide our inputs and comments to the important issues raised in this Consultation and hopes that our submission will provide a fuller view of these issues to the MCMC.