

# WLAN use in the 6GHz band

30 June 2021

C H ● R U S

## Introduction and summary

1. This is Chorus' response to Radio Spectrum Management's (RSM) consultation paper 'WLAN use in the 6 GHz band Discussion document June 2021' (discussion document).
2. Chorus welcomes RSM's recognition of the growing demand for and benefits of Wi-Fi in New Zealand. Chorus has seen both average data use and peak usage on our network double in the past three years.
3. New Zealand is coming to the end of the UFB infrastructure roll-out, which has delivered a step-change in broadband capacity for the vast majority of New Zealand households. To fully realise the benefits of the fibre network, and to achieve uninterrupted access to new and future services that will rely on high-speed internet to function, the in-home Wi-Fi service needs to match the demand. Having sufficient spectrum available is a key part of this.
4. More traffic generated on NZ mobile devices is carried by Wi-Fi than by mobile networks. Globally, we have seen an increase in the demand for Wi-Fi as lockdown has resulted in more people working, learning and socialising from home and 63% of mobile traffic is offloaded to Wi-Fi.<sup>1</sup> Wi-Fi performance is the greatest issue for consumers and can constrain their ability to fully benefit from their fibre connection.
5. Wi-Fi using 6GHz (Wi-Fi 6E) would double the bandwidth available compared to using 2.4GHz and 5GHz bands and have a better chance of achieving peak speed of 2Gbps due to less interference. Globally there have been 338 million Wi-Fi 6E device shipments to date and this will continue to grow – New Zealand consumers need the infrastructure to be able to support these products.
6. We therefore support the proposal to make the lower 6 GHz band (5925 – 6245 MHz) available for wireless local area network (WLAN) use in New Zealand. We also see real opportunity from making the upper 6 GHz band available for indoor WLAN use in future, but more work is needed to manage the potential impacts on incumbent users.
7. In summary, across the full 1200 MHz our view is:
  - 7.1 Lower 6 GHz band indoor: should be allocated to WLAN use; the Effective Isotropic Radiated Power (EIRP) should be 30 dBm rather than 24 dBm.
  - 7.2 Lower 6 GHz band outdoor: should be a form of safeguard to prevent interference for incumbent users. The safeguard could be either licensing or an automated frequency coordination (AFC) system.
  - 7.3 Upper 6 GHz band indoor: see value in making this spectrum available for indoor WLAN use with appropriate controls, but more work is needed to ensure interference for incumbent users can be managed.
  - 7.4 Upper 6 GHz band outdoor: outdoor wi-fi use must have safeguards to prevent interference for incumbent users. The safeguard could be either licensing or AFC. We do not see how IMT could operate outdoor without interference.

---

<sup>1</sup> Wi-Fi Alliance, 11 March 2021.

## Responses to questions

*Q1. Do you **agree with RSM's proposal on making the 5925-6425 MHz available for WLAN use?***

8. As discussed above, Chorus supports the proposal of allocating 5925 – 6425 MHz for WLAN use. In the response to question 3 we discuss the power limits that should apply.

*Q2. What are your views on the potential future use of 6425-7125 MHz for new applications (eg Wi-Fi or IMT)?*

9. We see real opportunity from making the upper 6 GHz band available for indoor WLAN use in future provided appropriate controls are in place, but more work is needed to confirm which controls are needed to manage the potential impacts on incumbent users.
10. Poor Wi-Fi performance, often due to interference in the crowded 5GHz band, has been an issue for some customers and service providers. The emergence of Wi-Fi 6 and mesh system technology is providing some improvements to efficient use of that band, but more radio bandwidth is needed to keep up with the growing demand for data and the growing consumer expectation for a more consistent and reliable experience.
11. The next evolution step beyond Wi-Fi 6E is Wi-Fi 7 which includes support for support for 320MHz channels. Allocating the full 1200MHz for indoor Wi-Fi would support the potential of Wi-Fi 7 in New Zealand.
12. However, there are incumbent uses in the upper 6 GHz band who could be substantially affected by additional use of this spectrum. More work is needed to ensure that impacts on incumbent users can be managed following an allocation of the upper 6 GHz band to WLAN.
13. We do not see any way in which outdoor IMT use can coexist with incumbent users in the upper 6 GHz band. For IMT purposes we expect mobile operators would seek to use the band nationally and hold a license, effectively displacing the incumbents.

*Q3. Do you agree that RSM should include 5925-6425 MHz in the GURL-SRD for WLAN low power indoor and very low power use?*

14. We **note RSM's proposal to set low power (24 dBm indoor) limits for WLAN devices** operating in the lower 6 GHz band. We believe the proposed power limits are likely to be too low and the EIRP should instead be set at 30 dBm for indoor use. This would maximise consumer benefits by improving wi-fi coverage within the home, without the need for consumers to purchase mesh network systems, without risking excessive interference.
15. Also, the discussion document specifies both an EIRP (24 dBm) and a PSD (11 dBm) but does not specify how the two parameters apply and scale to different channel

sizes. In other jurisdictions, parties have provided more detail about how to apply and scale the parameters. For example, it would be feasible to specify both 30 dBm and 11 dBm as limiting factors, which would lead to the channel limits specified in the table:

Channel	EIRP	PSD
20 MHz	24 dBm	11 dBm/MHz
40 MHz	27 dBm	11 dBm/MHz
80 MHz	30 dBm	11 dBm/MHz
160 MHz	30 dBm	8 dBm/MHz
320 MHz	30 dBm	5 dBm/MHz

*Q4. Do you agree that RSM should mandate ETSI EN 3030 687 as the radio standard for WLAN use in the 6 GHz band? Is there any other regulatory compliance standard we should consider?*

16. ETSI EN 303 687 is still in draft form. We understand the radio services and input assumptions in those two reports are similar to New Zealand. However, we have concerns about agreeing to the mandating of a draft standard. This should be reconsidered when the standard is finalised.

*Q5. What are your views on using a licensing approach to support 30dBm EIRP WLAN devices?*

*Q6. What are your views on supporting 36 dBm EIRP standard power devices using Automatic Frequency Coordination (AFC) system? Do you have any proposals to provide AFC systems to New Zealand?*

- 17. With regard to the use of standard power devices outdoors, it is important to ensure the risks to existing licence holders are mitigated.
- 18. We consider that either a licensing approach or an AFC system could manage those risks, although both approaches would have costs.
- 19. If an AFC system is to be established, those costs should not fall on incumbent license holders. While RSM would look to industry to develop and manage the AFC system, RSM would still need to own the database for all the licensed transmitters.