Submission in response to MBIE Consultation Paper

24 – 30 GHz use in New Zealand

Public Version

June 2021

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Discussion Document

April, 2021.

Optus has been providing New Zealand domestic and Trans-Tasman satellite services since the late 1980's using successive generations of Optus spacecraft with each generation providing increased capacity. These services have been in the 14/12 GHz Ku band from satellites located in the geostationary orbit between 152E and 164E.

Most Optus New Zealand satellite services are currently provided on the Optus D1 spacecraft located at 160.0E. This spacecraft will reach the end of its station-kept life in 2024 and Optus has contacted for the Optus-11 spacecraft to replace Optus-D1. The Optus-11 spacecraft is of the new software defined design and as well as supporting all the current New Zealand services provided on Optus-D1, it will allow use of additional frequency bands including the 27.0 to 30.0 GHz uplink band.

Optus is looking at procuring a similar spacecraft (Optus-12) to be located at 156E which would continue to provide New Zealand services currently provided on the Optus-10 spacecraft in Ku band. The Optus-12 spacecraft would also have the capability to operate in the 27.0 to 30.0 GHz band.

The 27.0 to 30.0 GHz band is only available for Gateway services on Optus-11 and 12 and any use in New Zealand would be limited to one Gateway site and would be subject to Frequency co-ordination agreements between the various satellite operators co-ordinated under ITU processes and also compliance with local regulatory arrangements.

Optus has not yet made any decision about whether to locate a Gateway in New Zealand to serve the Optus 11 and 12 Spacecraft. Please note that such a Gateway might also include segments of the 17.7 to 20.2 GHz, 37.5 to 42.0 GHz, 47.2 to 50.2 GHz and 50.4 to 52.4 GHz bands which are available on the Optus-11 and 12 spacecraft.

Responses to MBIE's Questions.

Q1. What are the most likely use cases in New Zealand for mmWave based 5G services?

Optus Response:- Optus is not commenting on this question.

Q2. What are the likely use cases for Ka band satellite services in New Zealand in the short and long term?

Optus Response:- Whilst Optus short term usage for Ka band satellite services in New Zealand would be limited to Gateway service only, future Optus satellites after Optus-12 might include additional usages such as VSATs, Direct to Home and ESIMs.

Q3. What are the spectrum requirements for ESIM use in New Zealand?

Optus Response:- Optus is not commenting on this question.

Q4. Do you think the existing fixed service licenses in 26 GHz can be migrated to the 23 GHz and/or 38 GHz fixed service bands?

Optus Response:- Optus is not commenting on this question.

Q5. If not, do you think the existing fixed services should be allowed in the 26 GHz?

Optus Response:- Optus is not commenting on this question.

Q6. Do you agree New Zealand should allocate 24.25 - 27.5 GHz primarily for IMT use?

Optus Response:- Optus is not commenting on this question.

Q7. How should RSM accommodate other use in this band such as space services?

Optus Response:- Optus is not commenting on this question.

Q8. How do you see our proposal of the 28 GHz band allocation?

Optus Response:- Optus expected initial use for the 28 GHz band in New Zealand is for Gateway services. However, Optus would like to keep options open for future Optus spacecraft serving New Zealand to be able to provide VSAT and/or ESIM services should the need arise.

Q9. Which option do you prefer for allocating 28 GHz band? Or is there any other option for managing the shared use of IMT, ESIMs and FSS in the 28 GHz band?

Optus Response:- Optus would prefer to limit IMT to the spectrum below 27.5 GHz and retain the spectrum from 27.5 to 29.5 GHz for satellite services or FWA.

Q10. If you prefer option 1, do you agree with the proposed sharing mechanism (defining satellite coordination zones) between IMT use and FSS ground stations?

Optus Response:- If IMT is to be allowed above 27.5 GHz with the limitation to private networks / FWA applications, then Optus would prefer this Option as it limits IMT to indoor usage above 28.35 GHz.

Q11. If you prefer option 2, how much spectrum do you think RSM should allocate to ESIM, IMT private network/FWA? And what's the preferred spectrum placement?

Optus Response:- Optus prefers Option 1.

Q12. Are there any other issues of sharing use between satellite earth stations and ESIMs that you would like to bring to our attention?

Optus Response:- Optus envisages that any sharing issues between satellite earth stations and ESIMs would comply with the relevant provisions in the International Radio Regulations and applicable ITU-R Recommendations.

Q13. Do you agree that the current satellite allocation and licensing regime for 29.5 - 30 GHz should remain?

Optus Response:- Optus recommends that the current satellite and licensing regime for 29.5 to 30.0 GHz remain. .

Q14. What's your preferred licensing option in 26/28 GHz spectrum?

Optus Response:- Optus makes no comment with respect to licensing options for the spectrum below 27.5 GHz. For the spectrum between 27.5 and 30.0 GHz, Optus proposes that Radio Licences be available for Satellite Gateways and that a General User Radio Licence be available for VSATs and ESIMs.

Q15. Do you see any need for general user licence spectrum for IMT? If so, what use case might there be?

Optus Response:- Optus is not commenting on this question.

Q16. If there is a need for general use spectrum for IMT and ESIM, how much spectrum should we set aside for it? Should RSM mandate technical conditions on the general use licence?

Optus Response:- Optus is not commenting on this question.

Q17. Do you agree RSM should adopt 3GPP NR FR2 based channel bandwidth to design a channel plan in the radio licence regime for IMT services?

Optus Response:- Optus is not commenting on this question.

Q18. Do you agree RSM should refer 3GPP standards to set the regulatory requirements for spectrum allocated to IMT?

Optus Response:- Optus is commenting on this question.

Q19. Should we introduce a break point for MR technical conditions mid-way through the duration of the MR? Or is it sufficient to set AFELs based on current technology and standards only?

Optus Response:- Optus is not commenting on this question.

Q20. Do you agree RSM should mandate equivalent ETSI harmonised standards for radio licences in Radio Standards Notices and review these standards regularly?

Optus Response:- Optus is not commenting on this question.

Q21. Which option do you prefer to set the unwanted emissions?

Optus Response:- Optus would prefer Option 1 which would have the RSM aligning with international methods by using TRP to define unwanted emissions.

Q22. If we use a TRP option for setting AFEL and UEL, do you have any recommended solutions on TRP measurement in field?

Optus Response:- Optus is not commenting on this question.

Q23. Do you agree that RSM should set unwanted emissions limits (in UELs and AFELs) base on 3GPP category B requirements? If no, please explain the reasons and provide your suggestions?

Optus Response:- Optus is not commenting on this question.

Q24. Do you agree that we should we implement (e.g. through UELs and AFELs) the ITU Radio Regulations, Resolution 750 limits, including the 1 September 2027 transition date and grandfathering clause for the protection of the EESS (Passive)

Band? If not, please explain what limits and transition dates you consider to be more appropriate

Optus Response:- Optus is not commenting on this question.

Q25. Do you have any insights on equipment availability at, or close to, the edge of 24.25 GHz that can meet both pre-1 September 2027 and post-1 September 2027 unwanted emission limits? Is there any additional technical solution such as frequency separation or filtering required for some equipment types?

Optus Response:- Optus is not commenting on this question.

Q26. Do you agree with RSM's position to not establish a framework for coordination zones for RAS?

Optus Response:- Optus is not commenting on this question.

Q27. Do you see a need for RSM to allow EESS and SRS earth stations to operate in the band?

Optus Response:- Optus is not commenting on this question.

Q28. Do you agree a semi-synchronised or unsynchronised network should be used in 5G high band deployment?

Optus Response:- Optus is not commenting on this question.

Q29. If the network is unsynchronised, what is the best way to manage the interference between unsynchronised operators?

Optus Response:- Optus is not commenting on this question.

Q30. If your preference is a semi-synchronised network, what is your suggestion on setting the synchronized parameter?

Optus Response:- Optus is not commenting on this question.

Q31. Do you agree that think RSM should implement ITU Radio Regulations, Resolution 242, resolves 2.1 in the management rights and licences conditions? If not please explain why or propose an alternative?

Optus Response:- Optus is not commenting on this question.

Q32. Do you see a need for RSM to allow continued FSS gateway access to 27.0 - 27.5 GHz on a case by case basis? If so, how should we coordinate FSS Earth stations and IMT?

Optus Response:- Optus believes that FSS gateway access should continue to be allowed in the 27.0 to 27.5 GHz band on a licensed case by case basis.

Q33. Do you have any comments regarding the spectrum sharing approach proposed by RSM between FSS and IMT FWA in the 28 GHz band?

Optus Response:- Optus is not commenting on this question.

Q34. If RSM were to apply an EIRP limit on horizontal plane for FSS, what is the maximum EIRP value we should assume?

Optus Response:- Optus is not commenting on this question.

Q35. Which option do you prefer for arranging the existing fixed service in the 26 GHz band?

Optus Response:- Optus is not commenting on this question.

Q36. Do you think RSM should mandate the regulatory requirements as laid out in Resolution 169 (WRC-19) for ESIM use if a shared use between 27.5 – 28.35 GHz?

Optus Response:- Optus is not commenting on this question.