Kordia Submission on VHF Band III Spectrum Allocation

27 May 2016

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1. Introduction

We would like to thank the Ministry for the opportunity to submit on the *Options for 174 – 230 MHz: Consultation Document*.

We make the following comments about allocation of Band III spectrum:

- No specific frequencies should be allocated to radio microphones, although a short term GURL may be appropriate
- Spectrum should be allocated for DAB. DAB is the default standard throughout the world (except USA) for audio broadcasting and New Zealand should align with this. There is growing interest from a number of organisations – many of whom are niche broadcasters for different cultural, religious and special interest groups - who can't access FM spectrum and have services that they are interested in broadcasting. DAB also has a number of technical and feature benefits over analogue solutions, and low power FM does not meet their requirements.
- An allocation of spectrum for LMR is appropriate if genuine need for the spectrum can be shown
- No spectrum should be allocated to Internet of Things at this stage, since Band III is not suitable and none of the main technologies utilise Band III
- We question whether utilities still deploy custom networks on custom spectrum these days
- We have no specific comment on any allocation to NZDF
- Spectrum should not be allocated to PPDR services since it is unlikely to be harmonised with the majority of other Asia-Pacific countries

Kordia operates over 100 transmission sites with many of these used for FM radio and Freeview digital television. We have operated a DAB trial in Auckland and Wellington for many years, and we believe we have a valid business case for the implementation of DAB. There is interest from broadcasters and a Kordia DAB Mux would be open to customers, following on from the proven success of our DTT access model.

Contact details for our submission are below:

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We would be happy to meet with the Ministry to discuss our submission further.

2. Kordia Submission on the Specific Questions

3. POTENTIAL USES OF 174-230 MHz

3.1 RADIO MICROPHONES

1) *Should spectrum in Band III be allocated for radio microphones? If so, how much spectrum would satisfy demand in this area?*

Kordia submission:

Spectrum should not be specifically allocated to radio microphones in Band III, given that there may be a limited range of new radio microphone equipment suitable for these frequencies.

However, on the basis that there should be some Band III spectrum that is not allocated following any decisions on Band III, we suggest that a GURL could be developed on a short term basis (e.g. a 3 year term) for part of the unallocated Band III spectrum for radio microphones – this can be renewed or cancelled as required depending on future demand for Band III spectrum.

3.2 Digital Audio Broadcasting

2) *Should spectrum in Band III be allocated for DAB? If yes, why? If not, why not?*

Kordia submission:

Yes. There is interest in developing and using DAB radio services in New Zealand, and Band III spectrum is the only realistic spectrum option for DAB.

We have had interest from a number of organisations who can't access FM spectrum and have services that they are interested in broadcasting. Many of these organisations are niche broadcasters for different cultural, religious and special interest groups.

We can point to our success with the establishment and development of digital terrestrial television (DTT) as an example of how successful DAB could be. DTT also had a limited start-up in 2008 with few existing analogue broadcasters but there are now 25+ services on Freeview's HD terrestrial platform and the vast majority of the new services - including regional services - have been introduced on Kordia's DTT muxes. Our DTT muxes are open to all, and we expect to have the same model and approach with DAB.

We do not believe that DAB is an orphaned technology. There has been an extensive DAB rollout in Australia, and several countries in Europe are actively planning for the switch off of FM radio services as DAB approaches a suitable threshold. We have not heard of any countries planning to switch off FM or DAB/digital radio because they believe audio IP streaming services are of sufficient coverage, quality and price point.

Lower cost DAB receivers are becoming available. One of our pilot customers has imported DAB radios understood to be ≈$50 each. More new cars are now being factory fitted with DAB receivers and some of these brands are available in New Zealand. While there are high price DAB receivers for

sale that may be in the $700 price range described by MBIE, these are usually multi-function receivers with CD, Wi-Fi, internet radio etc and their price skews the average. Many major electronics retailers in New Zealand are owned by Australian companies that are already selling DAB capable receivers, and will presumably extend their DAB receiver brands sold in Australia to New Zealand. We expect that there will be a similar parallel to DTT where Freeview HD receivers were originally more expensive but then prices dropped rapidly.

3) *Would an allocation of 14 MHz in the form of eight 1.536 MHz frequency blocks be an appropriate spectrum allocation for DAB in New Zealand? If not, how many multiplexes would be more appropriate for current demand?*

Kordia submission:

An allocation of 14 MHz for eight 1.536 MHz frequency blocks should be sufficient for proposed and likely future allocations - it is not necessary to assign all of Band III for DAB in New Zealand.

To address concerns about allocation of spectrum to DAB, one option may be to have a long term allocation for eight DAB blocks but with four of the DAB blocks subject to review in say 10 years to see whether there has been sufficient demand for the first four DAB blocks. DAB blocks could be allocated progressively towards any unallocated spectrum so if some DAB blocks were never allocated they could become part of the block of unallocated spectrum.

We agree that a management rights framework is suitable for DAB channels, but propose that spectrum licences are allocated to DAB mux operators rather than management rights – there appears to be little advantage in mux operators having a management right for a single indivisible DAB block.

We would support the inclusion of certain conditions on the licences to meet broadcasting policy goals. One possible licence condition could be a “use or lose” condition – this may be necessary to ensure that spectrum allocations are used, but we note that the “use” target should not be too aggressive given the new technology and the new population of receivers required. As a DAB mux operator, we would continue our current approach with DTT muxes where our mux is open to customers - it will be in our interest to fill a DAB mux with new services.

3.3 Land Mobile

4) *Should spectrum in Band III be allocated to LMR? If yes, how much spectrum would satisfy demand in this area?*

Kordia submission:

We do not have any specific concerns with the allocation of LMR in Band III. However, we would want to ensure that there is genuine congestion in other VHF LMR bands and that there is genuine demand for a Band III LMR allocation. Any LMR allocation must be compatible with the proposed DAB allocations and any other technologies proposed in Band III. 2x 5 MHz appears to be a significant allocation for LMR but there should be sufficient spectrum in Band III for such an allocation.

5) *If spectrum is allocated to LMR, should there be technological requirements around the use of this spectrum? If yes, why? If not, why not?*

Kordia submission:

Any allocation to LMR should use the latest technologies available to LMR systems in these bands. This should include a requirement that only digital technologies are used.

6) *If spectrum is allocated to LMR, is it appropriate to charge a fee for this use or transfer the spectrum to the management rights regime? If yes, why? If not, why not?*

Kordia submission:

Yes, there should be appropriate fees for the use of LMR spectrum in Band III. If LMR is congested in other bands and there is genuine demand to justify the allocation of LMR spectrum in Band III then this LMR spectrum should be priced to ensure it is not wasted.

We do not think that a management rights regime is appropriate for LMR. The varied use of LMR throughout New Zealand (i.e. some nationwide services, many regional or local services) would mean that a management rights regime is difficult to implement. Additionally, engineers who licence LMR licences may be predominantly ARCs and may not be familiar with, or able to certify, spectrum licences. An alternative approach to spectrum licences is to set appropriate annual radio licence fees for a Band III LMR allocation.

3.4 The Internet of Things

7) *Is there a demand for exclusive spectrum in Band III, either now or in the future, for IoT technologies? If yes, which IoT technologies are demanding this spectrum?*

Kordia submission:

We do not see that there is a current demand for Band III spectrum for IoT Technologies. Current IoT technologies are intended to operate as a low power WAN, and current implementations of the main IoT systems - LoRa, SIGFOX and LTE-M - don't operate at Band III.

IoT devices are intended to be small discreet items, usually integrated with the device to the managed, and it is unlikely these devices could support the large antenna sizes needed for Band III frequencies without significantly reducing the coverage area of IoT base stations. While some rural applications may support larger antennas the spectrum demand in a rural area would be very low.

It appears there will be unallocated spectrum in Band III even after any decisions about DAB, LMR etc and this unallocated spectrum could be used for IoT in future if there is a change in technologies.

8) *If spectrum is allocated to IoT, how much spectrum would satisfy demand in this area?*

Kordia submission:

There is no current need to allocate spectrum for IoT.

9) *Which type of licensing framework is most appropriate for spectrum allocated to IoT?*

Kordia submission:

There is no current need to allocate spectrum for IoT.

4. POTENTIAL USERS OF 174-230 MHz

4.1 Utilities

10) *Is there demand for exclusive Band III spectrum for utility companies? If yes, what types of uses are driving this demand and how much spectrum do these uses require?*

Kordia submission:

We are not aware of demand from utility companies. However, we wonder whether utility companies are starting to move away from implementing their own "custom systems" on custom spectrum for their communications needs.

4.2 New Zealand Defence Force

11) *Is there demand for NZDF use of spectrum between 225–230 MHz?*

Kordia submission:

We have no comment on this question.

12) *Should spectrum in Band III be allocated to NZDF? If yes, why? If not, why not?*

Kordia submission:

We have no comment on this question.

4.3 Public Protection and Disaster Relief

13) *Should New Zealand consider PPDR uses in Band III? If yes, why? If not, why not?*

Kordia submission:

New Zealand should not consider PPDR use in Band III, since there does not appear to be much international PPDR usage at Band III. In contrast, there is significant international discussion about PPDR at 700 and 800 MHz, and New Zealand should harmonise any PPDR spectrum with these countries.

14) If there is demand for PPDR in Band III, how much spectrum would satisfy this demand?

Kordia submission:

New Zealand should not allocate Band III spectrum for PPDR.

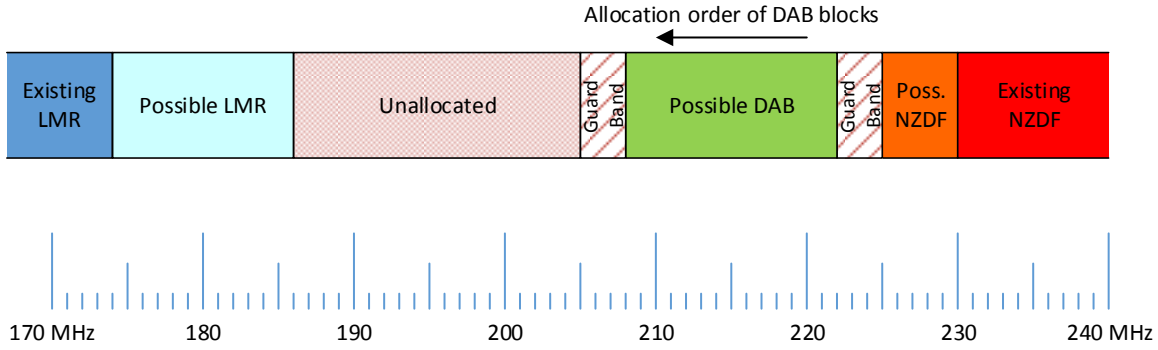
5 GENERAL QUESTIONS

15) Are there any other uses of Band III that should be considered? If yes, please describe.

Kordia submission:

We are not aware of any other uses of Band III that should be considered.

In summary, there appears to be sufficient Band III spectrum for a variety of services. The table and diagram below lists one possible scenario of spectrum allocation in Band III. These allocations and their frequencies are nominal only, as are the guard bands. The location of the LMR band will depend on commonly available bands and equipment. A DAB block is shown near the top of Band III to avoid existing EE band allocations – allocating DAB blocks from the top of the DAB band down will allow any unallocated blocks in the future to be added to the unallocated spectrum block.



Possible Allocation of Band III Spectrum

Technology	Spectrum Requirements
DAB	14 MHz + 2 x 3 MHz guard band estimate
LMR	2 x 5 MHz + 2 MHz interband gap estimate (gap could be used for simplex)
NZDF	5 MHz
Total requirement	**37 MHz**
Band III spectrum available	56 MHz
Unallocated spectrum for future demand	**19 MHz (and 6 MHz guard bands)**