



Australian Government

Department of Defence

Chief Information Officer Group

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The Manager
Spectrum Planning Section
Australian Communications and Media Authority
PO Box 78, Belconnen, ACT 2616

DRAFT FREQUENCY COORDINATION REQUIREMENTS REVIEW WORK PROGRAM

References

- A. Spectrum planning framework: Draft frequency requirement review work program 2021-22
 - B. The ACMA's Spectrum Planning Report 2014/07 - Proposed Amendments to RALI FX3: Protection Ratios Assumptions and Methodology
 - C. Ofcom's publication - Ofw 446: Technical Frequency Assignment Criteria for Fixed Point-to-Point Services with Digital Modulation
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1. Defence appreciates the opportunity to comment on the spectrum planning framework provided in Reference A.
 2. Defence welcomes the initiative to further improve spectrum planning framework for apparatus licensed radiocommunications devices which will facilitate the introduction of the new technologies and, in general, will improve spectrum management efficiency.
 3. In particular, Defence supports the proposal to introduce wider bandwidths of 56 MHz and 112 MHz in the 15 GHz band as well as options for channel aggregation across other bands allocated to fixed services.
 4. Defence has already contributed some inputs to several Radiocommunications Assignments and Licensing Instructions (RALIs) via past technical liaison groups (TLGs). Defence will continue to engage with the ACMA on relevant and important issues through the 3400-4000 MHz TLG and other methods.
 5. Based on our extensive experience in coordination and licensing processes, Defence has identified several issues, listed in Annex A, to improve the spectrum planning framework.

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6. My point of contact is Dr Snezana Krusevac on (02) 5130 1169 or via email snezana.krusevac@defence.gov.au.

Yours sincerely

Paul Burford

Director Defence Spectrum Office

Chief Information Officer Group

Department of Defence

Tel: (02) 5130 1604

Paul.burford@defence.gov.au

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PROPOSED CHANGES TO RALI FX3

1. Defence has identified the following issues in RALI FX3 *‘Microwave Fixed Services Frequency Coordination’*:
2. **Equipment rules** – Defence understands that at the time of writing of the original RALI FX3, there was neither an Australian nor internationally established equipment standard for fixed links and as such the comments in Section 2.1.4 were relevant. However, in the meantime, the European Telecommunication Standards Institute (ETSI) has produced a series of detailed technical standards under EN 302 217. The 2014 RALI FX3 update and methodology were based on the ETSI Standard EN 302 217. The vast majority of fixed links equipment manufacturers have since listed compliance with either ETSI standards and/or FCC Rules Title 47 Part 101. Defence suggests listing of the Standards and Rules under the Section 2.1.4 of RALI FX3.
3. **Protection ratios** – Defence would appreciate an update of the old rule of thumb of 60/30/0 for protection ratios (PRs). Defence is of the view that with the advent of new spectrum tools that are commonly used, these protection ratios can be adjusted to improve spectrum efficiencies whilst still meeting the required performance standards for fixed links. Defence requests consideration of developing alternative methods suitable for future software driven coordination procedures. By utilising more sophisticated software tools, a more realistic coordination process can be applied leading to overall higher spectrum efficiency for fixed links.
4. Defence would also like to point out that the PRs were last updated in 2014. Defence is of the view that the main reason for these very high PRs is overestimation of the fade margin. Based on the 2014 Protection Ratios Calculation Methodology (Reference B), the PR is calculated as the sum of the receiver’s threshold level as per the ETSI Standard EN 302 217 fade margin which is calculated from Recommendation ITU-R 530-15 and the maximum allowable interference power level. Defence notes that these fade margins, for both multipath and rain, are calculated for a 0.01% outage. This ultimately leads to 99.99% availability for fixed links which may be unnecessary.
5. Defence would prefer an option to coordinate fixed links taking into account the actual required availability. This parameter should be provided by the link operator, and not be fixed by the regulator. By fixing the link availability to 99.99%, the fade margins are set at a very high level, which is not a requirement for the majority of fixed links and does not lead to improved spectrum efficiency. Defence notes that, Ofcom, for example, (refer Reference C) specifies only the minimum fade margin, and the actual fade margin is calculated by applying the required link availability as advised by the operator. The fade margin is required for testing wanted-to-unwanted signal ratio. It is our understanding that this process presents more realistic coordination scenarios leading to overall better spectrum usage and higher spectral efficiency.
6. **Minimum Path Length** – the minimum path length was initially introduced to encourage use of the higher frequency bands for shorter links. Defence is of the view that an alternative, such as that used by Ofcom (refer Reference C) could be used, whereby operators are able to apply for links of any viable path length in any of the co-ordinated frequency bands but an increased fee is incurred when diverging from the reference value.

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7. Defence would like to suggest a similar approach, but to encourage higher data rates. Defence's suggestion would be that for path lengths less than the reference level, higher data rate systems could be permitted such as, for example, class 4 and above equipment from ETSI standard EN 302 217. This would ultimately lead to higher spectrum efficiency.

8. **Antenna requirements** – Defence suggests a review of the minimum antenna requirement framework rather than only reviewing the front-to-back ratios. It is worth considering Ofcom's approach in Reference C which specifies the minimum class of antenna (in this case as specified in ETSI Standard 302 217 part 4) rather than simply considering front-to-back ratios.

PROPOSED UPDATE TO RALI LM8

1. Defence has invested in capabilities that have a growing spectrum demand for land mobile services and as such recognise the need to improve spectrum efficiency. Defence would like to propose the following update to the RALI LM8 '*Land Mobile Service*':

Terrain factor consideration in the coordination process - Defence appreciates continuous efforts to update the RALI LM8 especially on further improvements of spectrum efficiency by decreasing the frequency-distance separations. Considering the increased use of complex spectrum management tools, Defence would appreciate the development of coordination criteria that enables the use of terrain to enhance spectrum use.

PROPOSED UPDATE TO RALI MS46

1. Defence understands that area wide licences are still at an early stage of development, but would appreciate considering this type of licence for land mobile services operating in the 400 MHz and 800 MHz bands. Defence acknowledges that this option is not feasible for high and medium density areas, but it might be an achievable solution for land mobile systems operating in rural and remote areas. This would facilitate Defence usage of land mobile services in Defence's training areas across Australia.