

APPENDIX 1: RF Channel Arrangements and Assignment Instructions

This appendix to the RALI FX 3 “*Microwave Fixed Services Frequency Co-ordination*” specifies radio frequency channel arrangements and important assignment instructions for the fixed service microwave frequency bands currently supported in Australia. The interpretation and application of the information provided in this appendix is subject to the provisions of the relevant parts (Parts 2, 3 and 4) of RALI FX 3. The arrangements are based mainly upon ITU-R Recommendations and have been implemented by ACMA and its predecessors through a process of progressive development over many years.

For ease of reference and in order to facilitate the ongoing maintenance of the document, the arrangements are provided in a modular format for each band. Each individual band module incorporates the applicable RF channel arrangements, assignment instructions and other band specific coordination criteria in the form of antenna requirements, protection ratios and protection ratio correction factors, as described in the coordination methodology detailed in Part 4 of this RALI. Relevant ITU-R recommendations, complementary RALIs and other supporting documents are also referenced. In each module, specific assignment instructions are provided for the following assignment criteria :

- Typical Use;
- Assignment Priority;
- Minimum Path Length;
- Antenna Requirements; and
- Notes covering special arrangements, such as restrictions.

Every microwave fixed service assignment application should be routinely checked for compliance against all relevant RALI specified assignment criteria. Detailed guidance regarding the above assignment instructions and their application is provided in Part 3.1 of the RALI and Appendix 6 “*Application of Assignment Policy Rules*”. Where a specific assignment instruction refers to another document, eg. another RALI or a Band Plan, then the user must take steps to ensure that any resulting action also complies with the relevant provisions given in the referenced document.

Any consistent anomalies resulting from the application of the assignment instructions or where clarification of the scope and/or application of a specific assignment instruction is considered necessary, policy advice should be sought from the Manager, Spectrum Engineering Section, Spectrum Planning Branch, ACMA.

A short form summary of the currently supported Australian microwave fixed service bands is provided in the following pages and is intended as a guide only. Specific information should be checked against the relevant detailed frequency band module(s).

MICROWAVE FIXED SERVICE BANDS - TYPICAL UTILISATION PARAMETERS

| Band (GHz) | Frequency Range (MHz) | Designated Use | Typical Use | Typical Capacity | Min Path Length (km) | Channel Width(s) (MHz) | RF Channel Arrangement |
|------------|----------------------------|--|--|------------------------|----------------------|------------------------|------------------------|
| 1.5 | 1427 - 1535 ¹ | Low & Med. Capacity P-P | Radio Relay | 2 Mbit/s | 20 | 4 | - |
| 1.5 DRCS | 1427 - 1535 ¹ | Fixed Radio Access | Rural & Remote area (USO) services | 0.7 – 2 Mbit/s | - | 2 | ITU-R Rec. F.701 |
| 1.8 | 1700 - 1900 ³ | Low & Med. Capacity P-P | Radio Relay | 8/17 Mbit/s | 20 | 14 | ITU-R Rec. F.283-5 |
| 1.8 | 1710 - 1880 ² | <i>Spectrum Licensed Band⁵ (typically GSM/GPRS Mobile services)</i> | | | | | |
| 2.1 | 1900 – 2170 ² | <i>Spectrum Licensed Band⁵ (typically 3G Mobile services)</i> | | | | | |
| 2.1 | 1900 - 2300 ² | Low & Med. Capacity P-P | Radio Relay, FM Video | 34 Mbit/s | 20 | 29 | ITU-R Rec. F.382-6 |
| 2.2 | 2025 - 2285 ^{2,3} | Medium Capacity P-P | Radio Relay | 34 Mbit/s | 20 | 14 | ITU-R Rec. F.1098-1 |
| 2.3 | 2302 - 2400 ² | <i>Spectrum Licensed Band (typically FWA subscriber-access services)</i> | | | | | |
| 2.5 | 2500 - 2690 ² | <i>Spectrum Licensed Band</i> | | | | | |
| 3.4 | 3400 - 3700 | <i>Spectrum Licensed Band</i> | | | | | |
| 3.8 | 3580 – 4200 ⁴ | High Capacity | Long Haul (Intercapital) Radio Relay | 140/155 Mbit/s | 20 | 40 | ITU-R Rec. F.635-2 |
| 5 | 4400 - 5000 | <i>Defence Use</i> | | | | | |
| 6 | 5925 - 6425 | Med. & High Capacity P-P | Medium Haul Radio Relay | 34/197 Mbit/s | 20 | 29.65/59.3 | ITU-R Rec. F.383-5 |
| 6.7 | 6425 - 7110 | High Capacity | Long Haul (Intercapital) Radio Relay | 140/155/298 Mbit/s | 20 | 40/80 | ITU-R Rec. F.384-5 |
| 7.2 | 7100 - 7425 | Television Outside Broadcast (TOB) | Itinerant use TOB video links | FM Video | - | 8 | - |
| 7.5 | 7425 - 7725 | Low & Med. Capacity P-P | Medium Haul Radio Relay | 2 – 17 Mbit/s | 20 | 14/7/3.5/1.75 | ITU-R Rec. F.385-6 |
| 8 | 7725 - 8275 | Med. & High Capacity P-P | Medium Haul Radio Relay | 34/197 Mbit/s | 10 | 29.65/59.3 | ITU-R Rec. F.386-4 |
| 8.3 | 8275 - 8400 | TOB | Itinerant use TOB video links | FM Video | - | 28 | - |
| 10 | 10.55 - 10.68 | Low & Med. Capacity P-P | Urban Networks | 2-34 Mbit/s & FM Video | 5 | 14/7 | ITU-R Rec. F.747 |
| 11 | 10.7 - 11.7 | High Capacity | Medium Haul Radio Relay & Urban Networks | 155/298 Mbit/s | 5 | 40/80 | ITU-R Rec. F.387-6 |

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Microwave Fixed Service Bands - Typical Utilisation Parameters (...continued from previous page)

| Band (GHz) | Frequency Range (GHz) | Designated Use | Typical Use | Typical Capacity | Min Path Length (km) | Channel Width(s) (MHz) | RF Channel Arrangement |
|-------------------|------------------------------|---|--|-------------------------|-----------------------------|-------------------------------|-------------------------------|
| 13 | 12.75 - 13.25 | Med. Capacity P-P & TOB | Video links in urban areas | FM Video & 34/68 Mbit/s | - | 28 | ITU-R Rec. F.497-4 |
| 15 | 14.5 - 15.35 | Low & Med. Capacity P-P | Urban Networks | 2-68 Mbit/s | 5 | 28/14/7 | ITU-R Rec. F.636-3 |
| 18 | 17.7 - 19.7 ² | Low to High Capacity P-P | Urban Networks | 2-155 Mbit/s | 2 | 55/27.5/13.75/7.5 | ITU-R Rec. F.595-4 |
| 22 | 21.2 - 23.6 | Low & Med. Capacity P-P & TOB | Urban networks & itinerant TOB video links | 2-34 Mbit/s, FM video | - | 56/50/28/14/7 | ITU-R Rec. F.637-2 |
| 27 | 26.5 – 27.5 ² | <i>Spectrum Licensed Band⁵ (typically FWA/LMDS services)</i> | | | | | |
| 28 | 27.5 – 29.5 | High Capacity P-P | Urban & MTS backhaul | 155-310 Mbit/s | - | 28/56/112 | ITU-R Rec. F.749-1 |
| 38 | 37 - 39.5 | Low & Med. Capacity P-P | Urban & MTS backhaul | 2-34 Mbit/s | - | 28/14/7 | ITU-R Rec. F.749-1 |
| 49 | 49.2 - 49.95 | Itinerant P-P | Temporary Links | - | - | 40 | - |
| 50 | 50.4 - 51.15 | Low Capacity P-P | Urban Networks | - | - | 40 | |

1. Use of the 1.5 GHz (1427-1535 MHz) band is subject to the provisions of the “1.5GHz Band Plan”, December 1996.
2. These bands are subject to a spectrum embargo, as specified in RALI MS 3 “*Spectrum Embargoes*”.
3. Only parts of the 1.8, 2.1 and 2.2 GHz bands are available for use by apparatus licensed microwave fixed services due to spectrum licensing in the band. Refer to the relevant Assignment Restrictions for the affected frequency ranges and areas. Methods for coordination with the spectrum licensed bands and areas are set out in the 1.8, 2.1 and 2.2 GHz Channel Arrangements, Assignment Instructions and Assignment restrictions and also Appendix 7.
4. ITU-R Rec. F.635-2 specifies the channel arrangement for this band, but channels 1-6 are no longer available for assignment. Refer to the 3.8 band details in Appendix 1.