

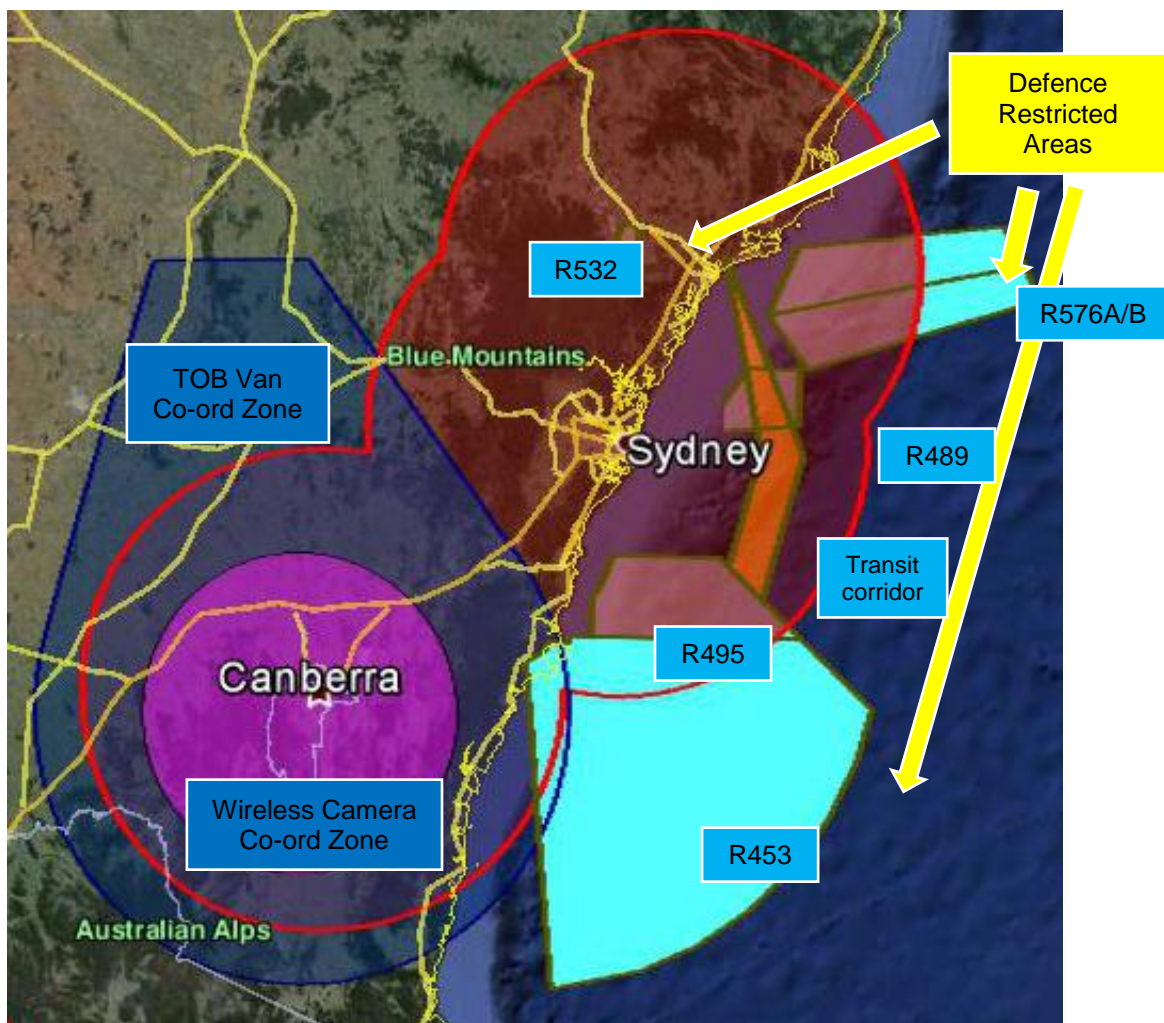
**1. SCOPE**

Free TV Operational Practice OP 64 is a guideline for use of radio frequency spectrum bands for the application of electronic news gathering (ENG) and television outside broadcast (TVOB) in the Sydney / Canberra area.

This Operational Practice has been developed to assist all those involved in ENG and TVOB operations in the Sydney / Canberra area with relevant instructions for access to and coordination of the bands assigned by the Australian Communications and Media Authority for ENG and TVOB operations as specified in ACMA's Radiocommunications Advisory Licensing instruction (RALI) FX 21.

**2. FREQUENCY BAND ASSIGNED and LICENSED to ENG and TVOB**

This Operational Practice applies in the Sydney / Canberra areas and their surrounds as defined by defined by the combined area of the red line in Figure 1 (hereafter referred to as the "red zone"). This zone is an area 150km radius from the Sydney and Canberra CBDs and the main Newcastle broadcast site at Mt. Sugarloaf.



**Figure 1 Sydney / Canberra Area Definition**

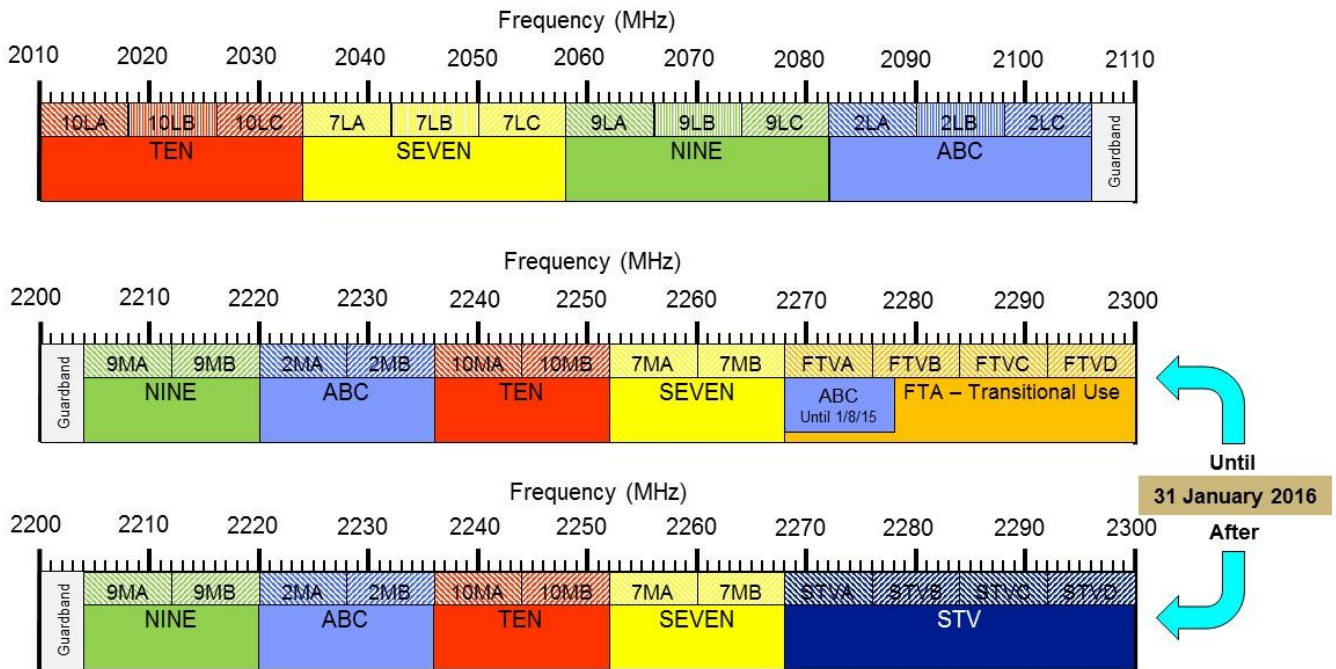
**FREE TV AUSTRALIA OPERATIONAL PRACTICE OP 64**

Spectrum usage for ENG and TVOB Operations in Sydney / Canberra Area

Channel arrangements for TOB services in the frequency bands 2010 - 2110 MHz and 2200 - 2300 MHz are to be implemented in a phased approach across Australia. For the Sydney / Canberra region this re-allocation period commenced November 2013 and will conclude on 31 January 2016. These arrangements are illustrated in Figure 2, showing the major change being the allocation of the band 2268 – 2300 MHz to free to air broadcasters for transition until 31 January 2016 and to subscription television thereafter. Each channel in the raster is identified by a three or four character code used by broadcasters for coordination and planning.

In the sub-band 2268 – 2300 MHz, until 31 January 2016, the prime objective is to facilitate the transition of ABC, Seven Network, Nine Network Australia and the Network Ten TOB operations from the 2.5 GHz band. However, it should be noted that the ABC have licenced 2268 – 2278 MHz until 1st August 2015.

After 31 January 2016, the sub-band 2268-2300 MHz will be available for use by FOX Sports who will coordinate the subscription television (STV) use of this sub-band.



**Figure 2: 2 GHz and 2.2 GHz TOB channelling arrangements**

**3. PERMISSABLE EQUIPMENT SPECIFICATIONS FOR ENG and TVOB OPERATIONS**

Across the 3 bands in which TVOB and ENG are permitted to operate, there are a range of power, height and equipment type limits that apply in various band segments. These are shown in Table 1

The figures provide for effective isotropic radiated power (EIRP) radiated within an 8 MHz channel. Wireless cameras are nominally operated at 2 metres above the local ground height.

**Table 1 TOB Equipment Permitted in the 2 GHz and 2.2 GHz Bands**

Frequency Range (MHz)	Wireless Cameras	TVOB Vans and Temporary Links	Helicopters and other airborne links
	EIRP	EIRP	EIRP
2010 -2110	26 dBm	62.5 dBm	62.5 dBm
2200 -2268	26 dBm	62.5 dBm	<b>Not permitted</b>
2268 - 2300	26 dBm	62.5 dBm	<b>Not permitted</b>

**4. FREQUENCY COORDINATION**

**4.1 Interference to ENG and TVOB receivers**

In the 2 GHz band, all fixed microwave links are cleared within the red zone so no interference should be encountered.

The Canberra Deep Space Communication Complex (CDSCC) at Tidbinbilla, just to the west of Canberra has access to the complete band for uplinks to various space missions. Although the uplink powers are very high, the large antennas at the Complex result in low EIRPs towards the horizon. The Complex is located within a deep valley along the Paddys River, hence natural shielding is provided by the local terrain, so no interference is anticipated to links operating in the Canberra region.

Use of TOB / ENG links within the Paddys River valley and near the CDSCC Tidbinbilla earth station is very low and it would be prudent to check the uplink schedule to pick a clear channel if a link were to be established in the vicinity.

The upper edge of the 2 GHz band may encounter some interference from public telecommunications services in the adjacent band, so guardbands have been assigned in the TVOB / ENG channel plans to cater for this interference.

In the 2.2 GHz band, all fixed microwave links are cleared within the red zone so no interference should be encountered from these services. In this band the satellite services are downlinks, so no interference to TOB / ENG should be encountered.

The Department of Defence operates aeronautical mobile telemetry (AMT) systems in the band 2200 - 2300 MHz in NSW in Restricted Areas R453, R489, R495, R532, R576A, R576B and a transit corridor from RAAF Base Williamtown to the zones off Jervis Bay as shown in Figure 1. . The restricted zones are outlined in brown and filled in cyan. Licensed frequencies are at 2255 MHz, 2265 MHz and 2275 MHz, each with a 2 MHz bandwidth.

Therefore, before deploying links in the 2.2 GHz band, broadcasters should check the advice from Defence to assess if the link will suffer any interference, but this would most likely be only immediately adjacent to the coast, or in the Hunter Valley between Singleton and Newcastle.

The upper edge of the bands may encounter some interference from public telecommunications services in the adjacent band, but a 2 MHz guardband exists immediately above 2300 MHz, to the likelihood of interference is reduced.

**4.2 Interference from ENG and TVOB transmitters**

In the 2 GHz band, operation of TVOB / ENG services will not interfere with other services.

In the 2.2 GHz band, coordination is required with CDSCC when operating TOB links with the blue and purple zones of Figure 1, i.e. south or west of a line between Bathurst, though Bowral to Berry on the south coast.

For further information regarding coordination in the 2010-2110 and 2200-2300MHz bands within the “dark blue” and “purple” zones in Figure 1, contact TOB licensees.

**4.3 Summary**

Table 2 summarises the types of equipment that may be used in different segments of the 2 GHz and 2.2 GHz bands and co-ordination with other services. If a band segment row is all green, no co-ordination is required.

**Table 2 Co-ordination / Spectrum Sharing Summary - 2 GHz and 2.2 GHz Bands**

Frequency Range (MHz)	Typical TOB Equipment	Interferors			Co-ordination Requirements	
		Fixed Links	Earth Stations	Defence	Where TOB may be the victim	Where TOB may be the interferor
2010 - 2110	All types of TOB links					
2200 - 2268	All types of TOB links except helicopters				Defence to advise broadcasters of AMT operations	Coordinate any operation in the blue / purple zones with Tidbinbilla
2268 - 2300	All types of TOB links except helicopters.				Defence to advise broadcasters of AMT operations	Coordinate any operation in the blue / purple zones with Tidbinbilla Co-ordinate as required with other TOB operations

**Legend**

	No TOB operations allowed, so not applicable
	No spectrum sharing so no co-ordination required
	Spectrum Sharing with low interference impact, to TOB / ENG, no co-ordination required by broadcasters or TOB operators, check advice provided by other users of the spectrum
	Spectrum sharing with low interference impact from TOB / ENG, co-ordination required by broadcasters with other spectrum users

**5. REFERENCES FOR SPECTRUM USAGE FOR ENG AND TVOB OPERATIONS**

RALI FX-21 Television Outside Broadcasting Services in the Bands 1980-2110 MHz and 2170-2300 MHz.

Go to [www.acma.gov.au](http://www.acma.gov.au) and search for RALI FX 21