

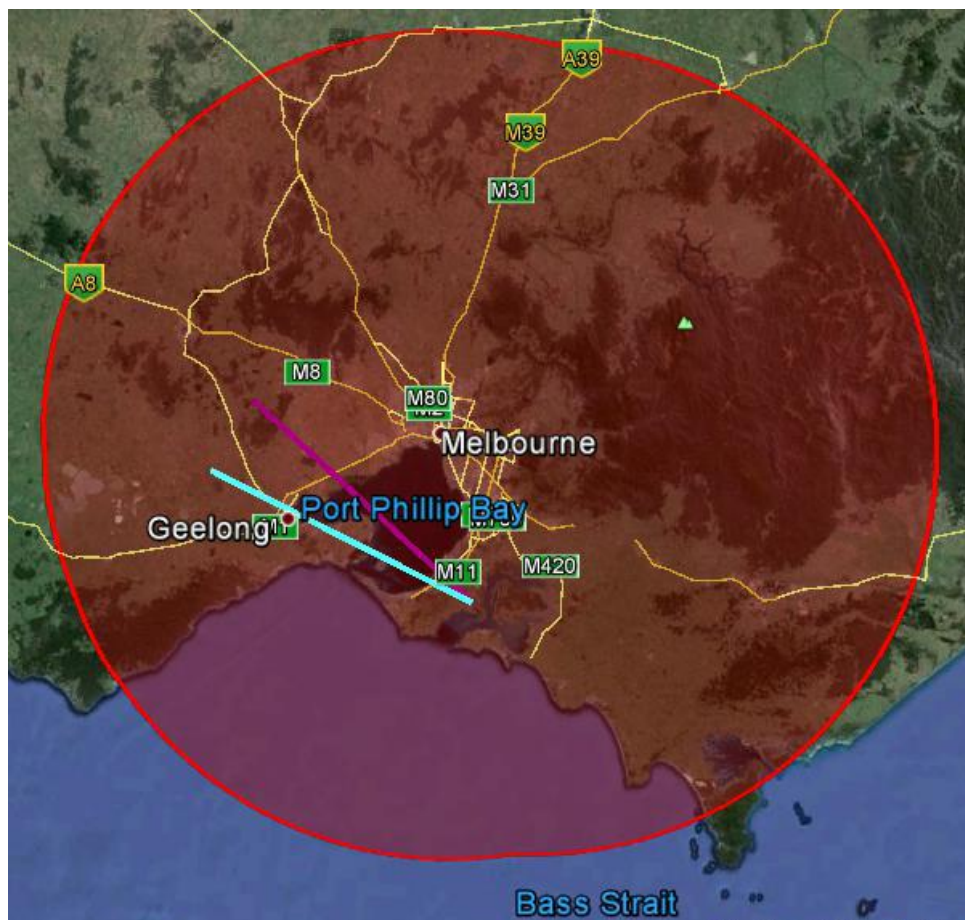
## 1. SCOPE

Free TV Operational Practice OP 65 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 Melbourne area.

This Operational Practice has been developed to assist all those involved in ENG and TVOB operations in the Melbourne 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 Melbourne and surrounding area as defined by the area of the red line in Figure 1 (hereafter referred to as the "red zone"). This zone is an area 150km radius from the Melbourne CBD and Mt. Dandenong.



**Figure 1 Melbourne Area Definition**

**FREE TV AUSTRALIA OPERATIONAL PRACTICE OP 65**

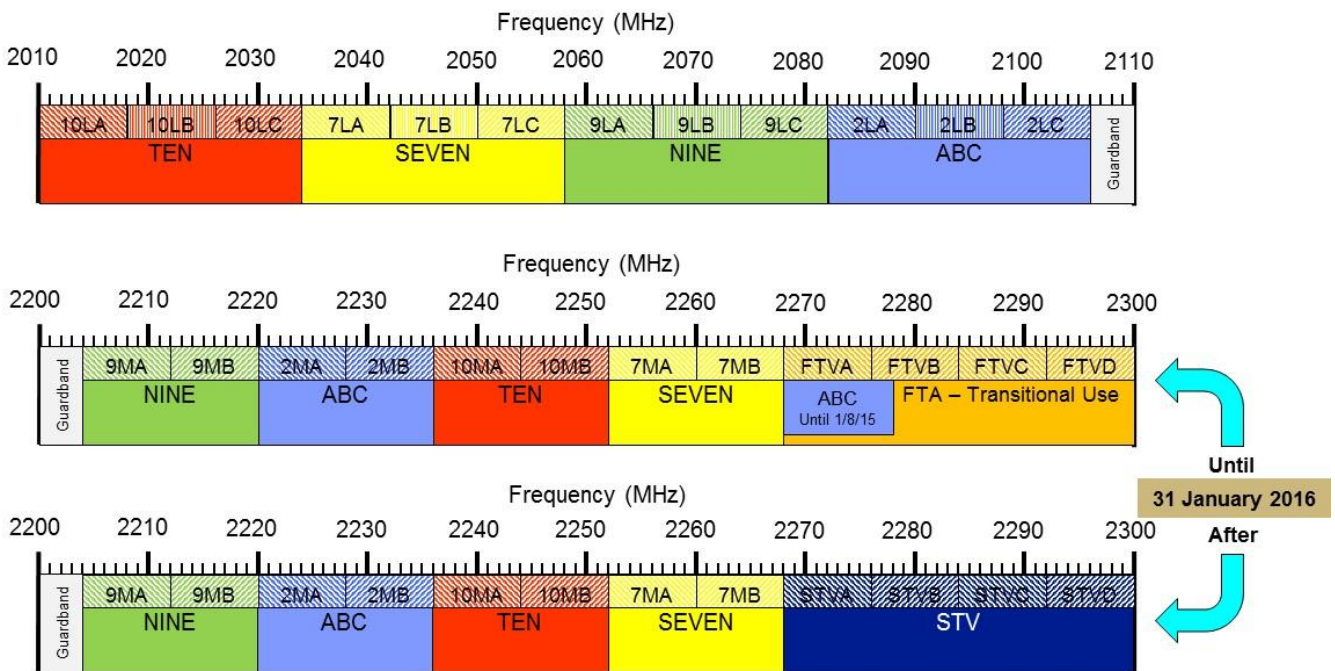
Spectrum usage for ENG and TVOB Operations in the Melbourne Area

Boresight Paths from BOM HMAS Cerberus	
	Azimuth 290.5°, elevation 15.7° to satellite at 86.5E
	Azimuth 306.3°, elevation 29.2° to satellite at 105E

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 Melbourne area 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 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**

<b>Frequency Range (MHz)</b>	<b>Wireless Cameras</b>	<b>TVOB Vans and Temporary Links</b>	<b>Helicopters and other airborne links</b>
	<b>EIRP</b>	<b>EIRP</b>	<b>EIRP</b>
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 Bureau of Meteorology (BOM) operates in the bands 2031.7-2032.7 MHz (which aligns with channel 10LC) and 2046-2047 MHz (which aligns with channel 7LB). TOB transmitters operating partially or fully in these bands cannot claim interference from the BOM HMAS Cerberus Earth station. Currently the BOM have operational uplinks to a satellite at 105E (purple path in Figure 1) and have an uplink capable of transmitting to a satellite at 86.5E (cyan path in Figure 1).

If possible avoid use of Channels 10LC and 7LB when the receiver is located along the cyan or purple paths in Figure 1.

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. However, none of these operations should occur near the Melbourne area so no interference should be encountered.

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 or 2.2 GHz bands in the Melbourne area, operation of TVOB / ENG services will not interfere with other services.

### 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				Avoid if possible receiving channels 10LC or 7 LB in Mt Martha to Safety Beach or Geelong to Little River areas	
2200 - 2268	All types of TOB links except helicopters					
2268 - 2300	All types of TOB links except helicopters.					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