

# Radio Frequency Interference Status

---

Jimi Green (on behalf of Science Operations)

June 2016

## Summary

This is a brief document summarizing the current Radio Frequency Environment (RFI) at Parkes for the user community. There are a number of links available on the Australia Telescope National Facility webpages providing information and the results of the RFI Monitor (see below). The characterization of the RFI environment is an ongoing process, led onsite by Mal Smith. Current known RFI bands are listed in the appendix.

### RFI Monitor

Parkes has a dedicated RFI monitor, an antenna on the RFI Monitoring Tower, operating between 400MHz and 3 GHz. The antenna is on a rotator with a step motor, and is controlled by the monitoring application Monica. The antenna rotates through 360 degrees every 20 minutes, 10 degrees per scan, rotating East from due North. Data is processed on a machine in Narrabri (raptor). See separate documentation for full details.

# Current Developments

## Electric fences of nearby farms

It has been noted that the electric fences of nearby farms produce RFI, particularly noticeable in high time resolution studies. These are generally only turned on when cattle are present. CSIRO has no jurisdiction over these farms, unless encroaching Australian Communications and Media Authority (ACMA) Radio Astronomy bands. If they were found to clearly encroach the astronomy bands it would require a fairly lengthy process to follow up, and additionally may harm local relations.

## RFI Monitor improvements

The RFI monitor used to only be able to write to text files, but is now able to write to standard FITS format. The archiving is currently not automated, but efforts are underway to increase the speed of archiving and access through automation, such that observers will be able to access RFI information within ~5-10 mins, as is currently the case at the Murchison Radio Observatory.

## Mobile Phone RFI on 10/50cm receiver (50cm band)

The 50 cm band of the 10/50cm receiver is badly affected by RFI, most likely mobile phones and their communications with base stations. Questions remain as to whether this is highway mobile phones or onsite mobile phones.

# Appendix A Known RFI Bands

Frequency Band (MHz)	Description	Type	Note
<b>460 -- 470</b>	<i>Meteorological Satellite Band</i>	-	<i>Allocated Band</i>
<b>627.50</b>	Digital TV	Beacon	
<b>634.50</b>	Digital TV	Beacon	
<b>641.50</b>	Digital TV	Beacon	
<b>646.25</b>	Digital TV	Beacon	
<b>648.79</b>	Translator PC	Focus Cabin	
<b>651.75</b>	Digital TV	Beacon	
<b>655.50</b>	Digital TV	Beacon	
<b>667.25</b>	Digital TV	Beacon	
<b>668.45</b>	Translator PC	Focus Cabin	
<b>669.50</b>	Digital TV	Beacon	
<b>672.75</b>	Digital TV	Beacon	
<b>678.28</b>	Translator PC	Focus Cabin	
<b>688.11</b>	Translator PC	Focus Cabin	
<b>690.5</b>	Digital TV	Beacon	
<b>709.25</b>	Digital TV	Beacon	
<b>714.75</b>	Digital TV	Beacon	
<b>718.625</b>	Digital TV	Beacon	
<b>750</b>	4G Mobile Phone		
<b>825 -- 835</b>	<i>Advanced Mobile Phone Service A (AMPS A)</i>	-	<i>Allocated Band</i>
<b>835 -- 845</b>	<i>Advanced Mobile Phone Service B (AMPS B)</i>	-	<i>Allocated Band</i>
<b>857 -- 865</b>	<i>Cordless Telephone Second Generation (CT2)</i>	-	<i>Allocated Band</i>
<b>1018</b>	Parkes Airport (DME) Beacon	Beacon	Originally 1168 MHz
<b>1164.5 – 1188.5</b>	Department of Defence	Satellite	
<b>1176.45</b>	GPS	Satellite	
<b>1207.14</b>	Glonass	Satellite	
<b>1215.6 – 1239.6</b>	Department of Defence	Satellite	
<b>1226.577 -- 1228.623</b>	GPS	Satellite	
<b>1246.4375 – 1256.5</b>	Glonass	Satellite	
<b>1374.94</b>	Translator PC	Focus Cabin	
<b>1381.05</b>	GPS	Satellite	
<b>1386.09</b>	Translator PC	Focus Cabin	
<b>1395.87</b>	Translator PC	Focus Cabin	
<b>1397.76</b>	?		
<b>1398.153</b>	?		
<b>1399.265</b>	?		
<b>1408.0</b>	MB Sampler Clock	1 <sup>st</sup> Floor	
<b>1416.93</b>	GPIB Bus Extender	Focus Cabin	
<b>1438.5</b>	?		
<b>1499.0</b>	?		
<b>1427 -- 1535</b>	<i>Digital Radio Concentrator Service</i>	-	<i>Allocated Band</i>
<b>1525 – 1530</b>	KITComm	?	
<b>1535.5 – 1548.0</b>	Inmarsat	Satellite	
<b>1545 -- 1559</b>	Optus Mobilesat	Satellite	
<b>1563.4 – 1587.4</b>	Department of Defence	?	
<b>1574.5 – 1576.5</b>	Inmarsat	Satellite	
<b>1575.4</b>	GPS	Satellite	

<b>1602.5625 – 1615.5</b>	Glonass	Beacon	
<b>1610.0 -- 1626.5</b>	Globalstar	Satellite	
<b>1621.35 -- 1626.5</b>	Iridium	Satellite	
<b>1645.5 -- 1660.5</b>	Immarsat	Satellite	
<b>1670 -- 1673</b>	<i>Meteorological Satellite Band</i>	-	<i>Allocated Band</i>
<b>1725 -- 1785</b>	<i>ACMA Spectrum 1800 MHz Band Auction</i>		<i>Allocated Band</i>
<b>1800</b>	4G Mobile Phone		
<b>1820 -- 1880</b>	<i>ACMA Spectrum 1800 MHz Band Auction</i>		<i>Allocated Band</i>
<b>1880 -- 1900</b>	<i>Cordless Telephone Third Generation (CT3)</i>	-	<i>Allocated Band</i>
<b>2483.5 – 2500.0</b>	Globalstar	Satellite	
<b>2700</b>	4G Mobile Phone		

- See also [http://www.parkes.atnf.csiro.au/observing/rfi/parkes\\_rfi\\_survey/frequency\\_list.html](http://www.parkes.atnf.csiro.au/observing/rfi/parkes_rfi_survey/frequency_list.html)