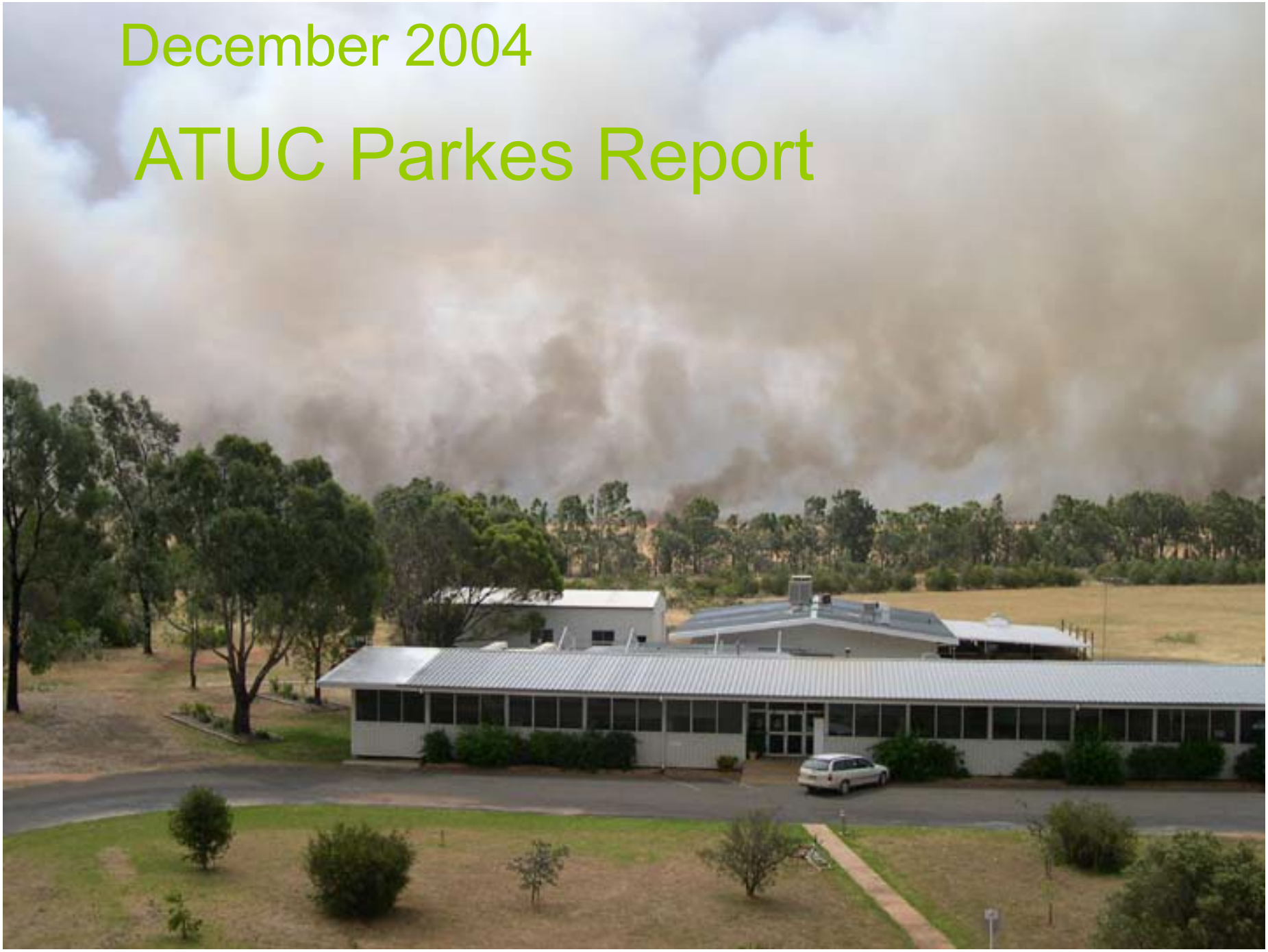
December 2004

ATUC Parkes Report



Staff changes

- Departed:
  - Laurelle Price (VC)
  - Jess Lees (Admin Trainee)
- New staff
  - Jeffery Vera (receiver tech)

Parkes Observing statistics

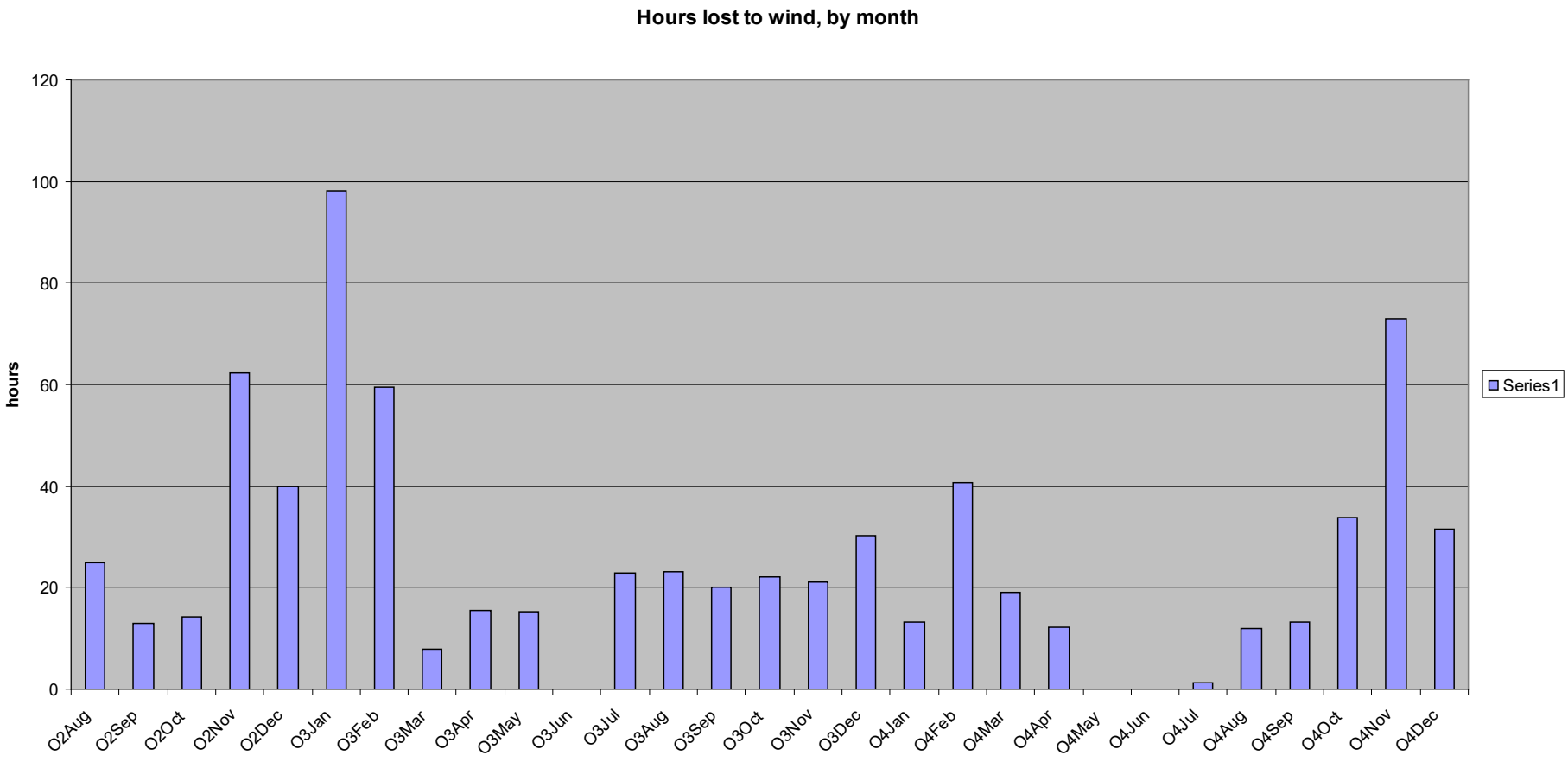
(2004; cf 2003, 2002)

- Scheduled observing
  75% (64.5%, 82%)
- NASA tracking : 3.6% (9.4%)
- Director's Time : 11.5% (6.7%)
- Maintenance/tests/shutdown
  9.9% (26.1% 18.0%)

Parkes downtime statistics
(YTD 2004, full year 2003)

- 1.1% (1.3% 1.4%) equipment faults
- 2.9% (3.8% 3.8%) weather
- > 1% RFI

Parkes: recent wind history



Parkes observer feedback

2004 YTD (2003, 2002, 2001)

- 17 (37,26,34) responses using WWW form

- Extreme scores
  - 9.4 (9.2, 9.2, 9.1) Tech support (in/out normal hours)
  - 9.3 (9.0, 9.1, 9.2) Admin support
  - 9.1 (9.0,) Training
  - 8.8 (8.9, 8.5, 8.8) Overall

    ……
  - 7.5 (7.6, 7.4, 7.6) Documentation
  - 7.5 (7.2, 6.1, 6.7) RFI (freedom from)
  - 7.8 (8.3, 7.4, 7.7) Offline software (ASAP needed!)
  - 8.2 (6.9, 8.3, 7.7) Library

Receiver Developments

- 21cm Multibeam returned Sep 2004
- 7-beam 6GHz MB, October 2005 ?
- K-band upgrade/new receiver 2005-2006?
- E-VLBI: ~1GHz BW compatibility?
- SETI Receiver : difficult!

20cm Multibeam Refurb Phase I

- Receiver re-installed Sep 2004
- Target (original specs or better) met
- 14 of 26 original LNAs replaced
- Worst of corrosion controlled

- A strange microphonic problem on some beams affecting pulsar searches.

20cm Multibeam Refurb Phase II

- Replace remaining 12 original LNAs
- Replace/redesign heat shield, 70K station
- Improve cooling

  but …..
- Expensive ($50-100k? + engineering time)
- Weight constraints
- Scheduling of work

Question for ATUC:
What is the useful lifetime of this receiver?

MMB (6-7GHz 7-beam MB) receiver

Target commissioning ~October 2005

Joint project with Jodrell Bank

Will not coexist happily with 20cm MB on current design:

→ 4-6 month initial installation period while 20cm MB refurb Phase II is effected?

K-band (13mm) upgrade

- User interest in upgraded system
- New feedhorns ready for Apr 2005 Term
  → ~2dB improvement in Tsys

Major upgrade depends on new LNAs, dependent on other priorities (such as ATCA 3mm LO upgrade, provision of spares for ATCA 13mm)

SETI receiver

- Receiver is huge!

- Probably easier to extend bandwidth coverage using other means (e.g. adapting SETI feeds to other receivers) rather than cover whole 1.2-2.8GHz band in a single package.

Other developments

- 4,8MHz filters for full 13 beams of MB
  - Dec 2004 target
- Merge MB & WB correlators
  → 13 beams x 2048ch x 2pols
  - Target Feb 2005
- New pulsar timing correlator
- ASAP spectral-line package
- E-VLBI
- GPS monument into ITRF

Data archiving

- Implementation paper circulated ~Oct 2004

- Observations database
  - Pulsar & spectral line
  - Single pointings, sky-subtraction, MB, scans, rasters, MX mode …..

target completion: Jan 2005

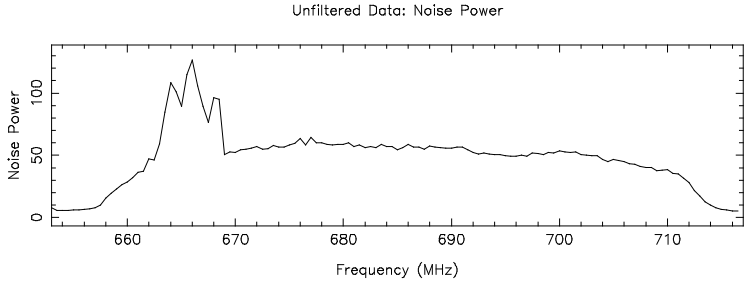
- Recovery of archived pulsar data
- Archival of new data (incl. MB filterbank, Jan 2005)

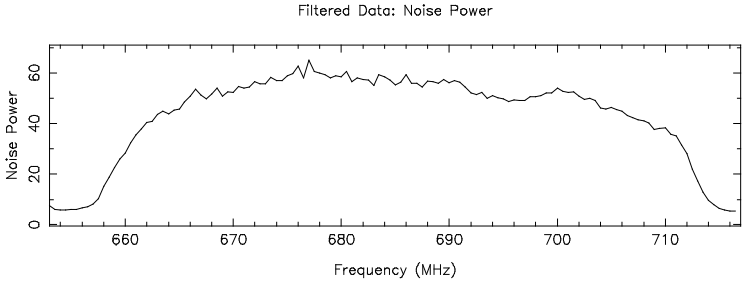
RFI activities

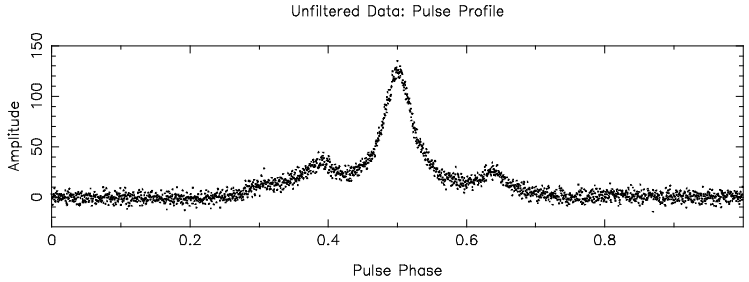
- WWW pages www.parkes.atnf.csiro.au/people/msmith/rfi
- Local characterisation, mitigation
- Active cancellation (50cm TVI)
  - Kesteven & Hobbs
  - Briggs & Little

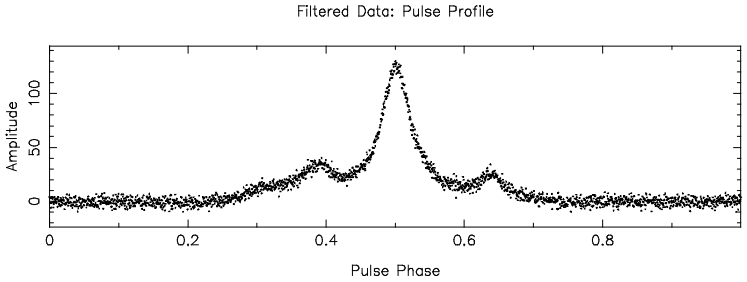
50cm RFI monitoring

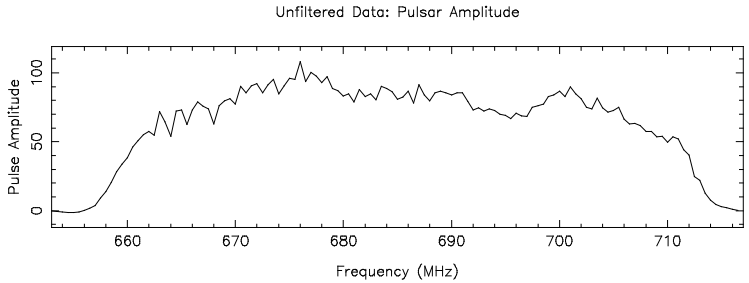
Active RFI cancellation, 50cm

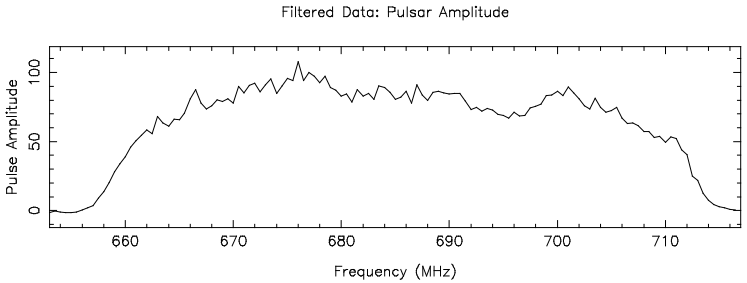


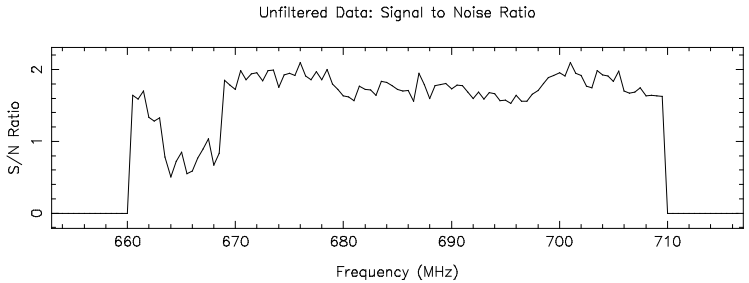


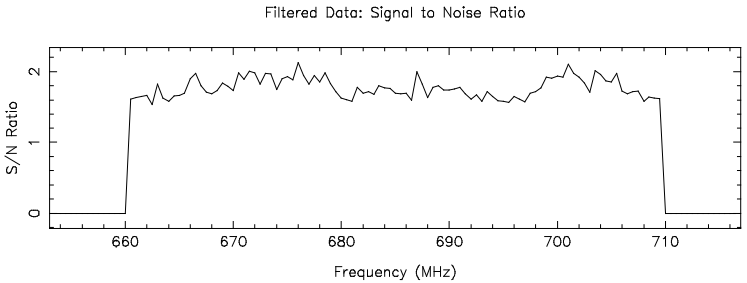




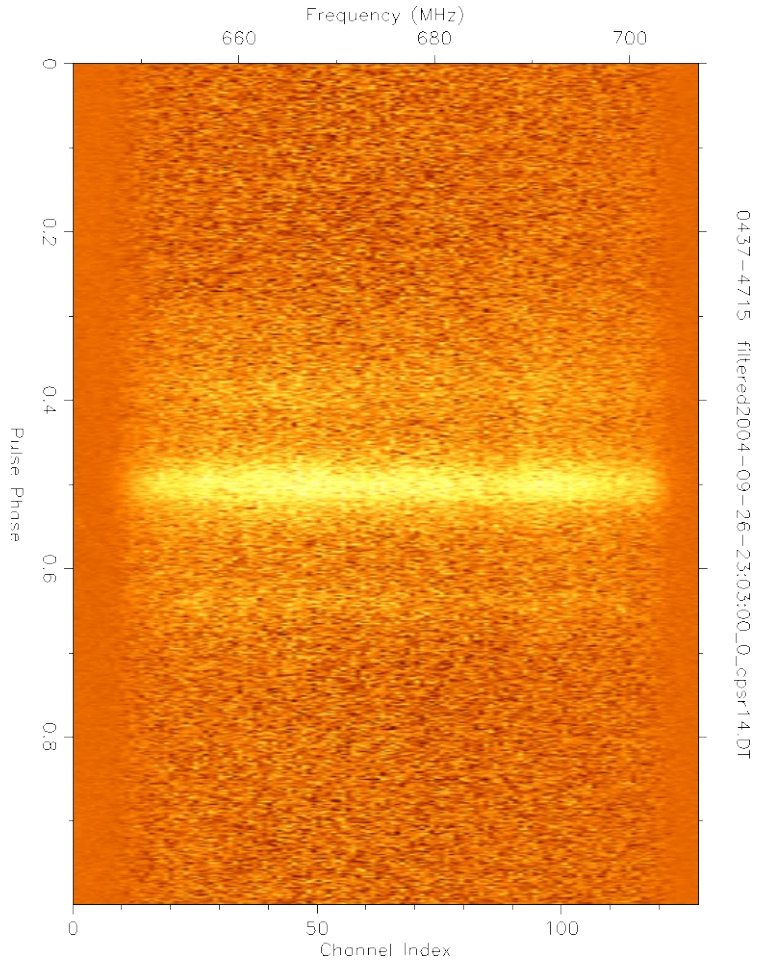


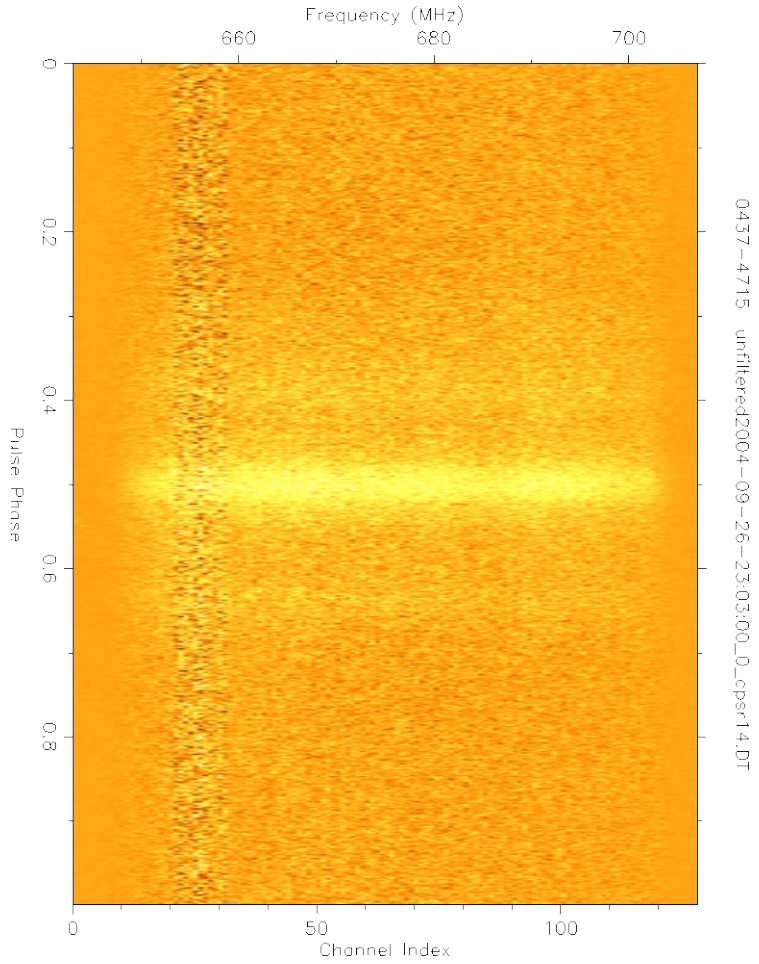




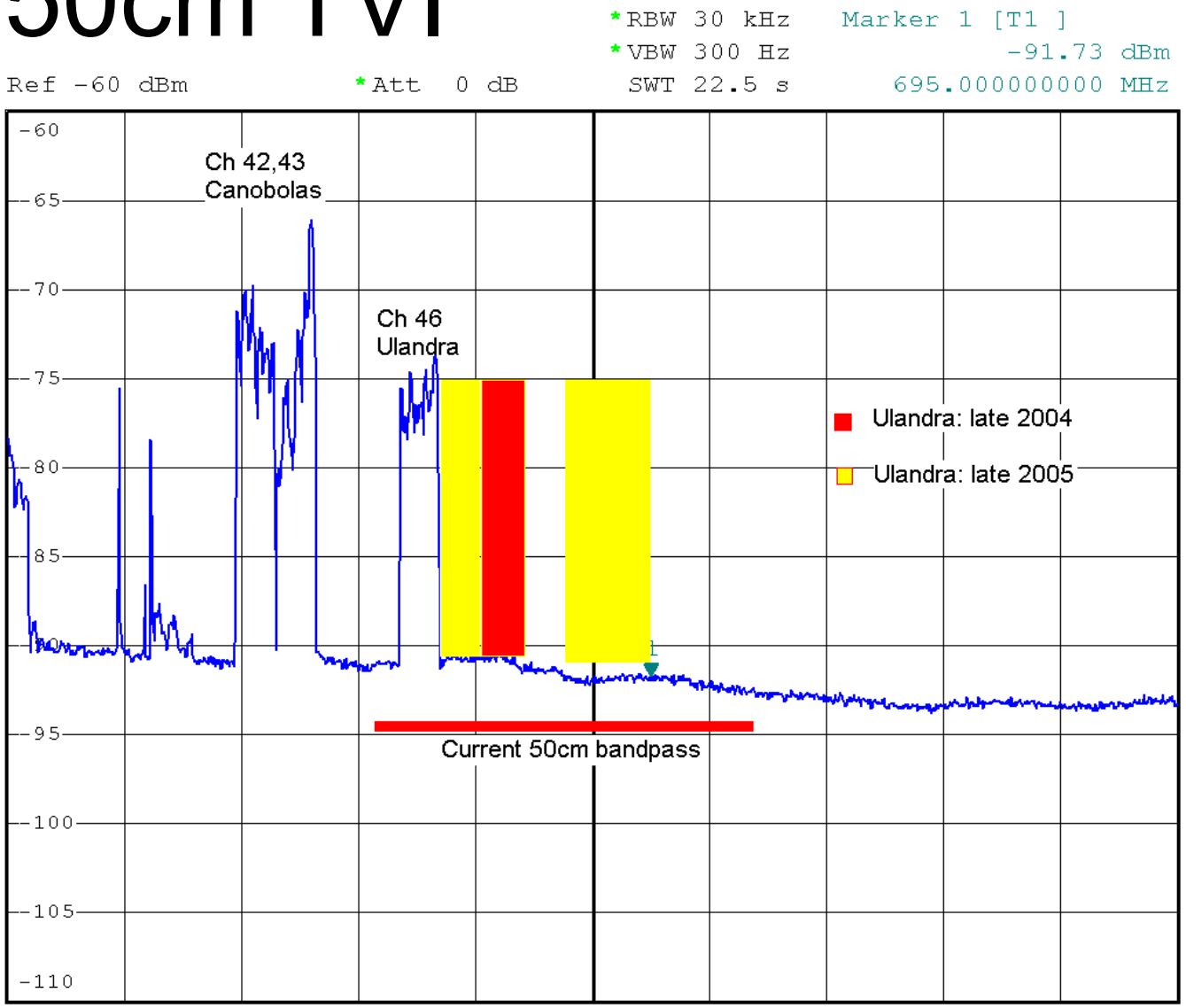


More 50cm RFI mitigation

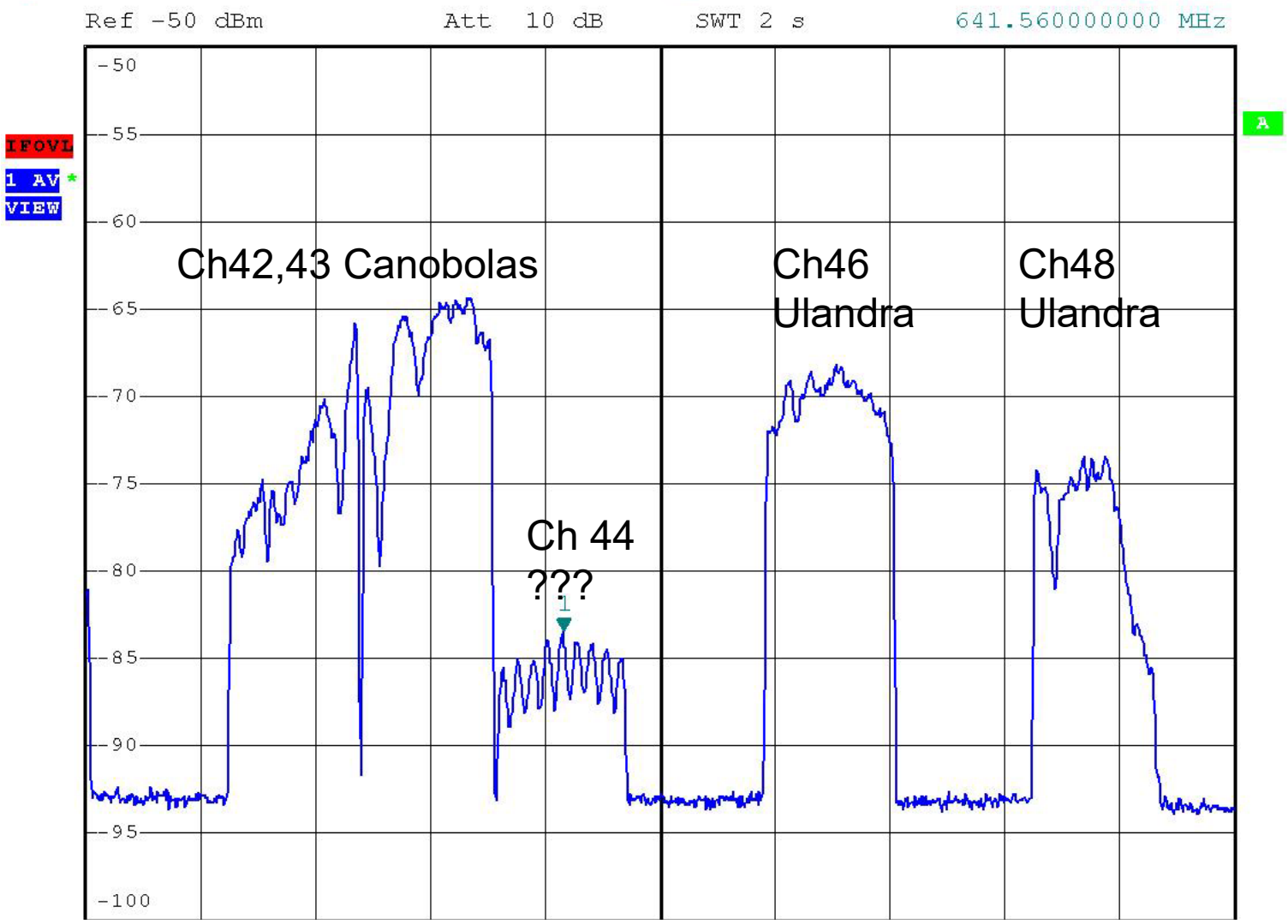




50cm TVI

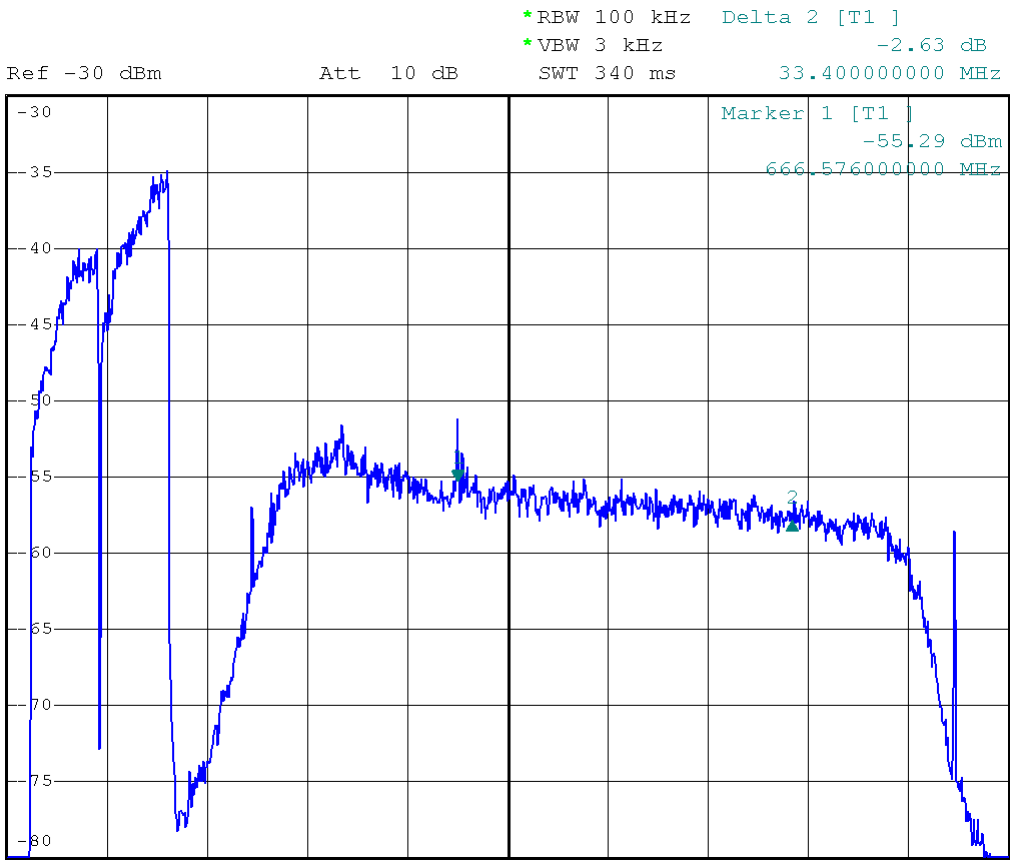

*RBW 30 kHz
*VBW 300 Hz
SWT 22.5 s
Marker 1 [T1]
-91.73 dBm
695.000000000 MHz
Ref -60 dBm
*Att 0 dB
-60
-65
-70
-75
-80
-85
-90
-95
-100
-105
-110
Ch 42,43
Canobolas
Ch 46
Ulandra
Ulandra: late 2004
Ulandra: late 2005
Current 50cm bandpass

50cm spectrum: the latest



50cm Receiver RFI mitigation

Front-end overload IMD problems:



Quarters

- New kitchen : concrete poured!
- Works on site access road in progress, stage I complete by Christmas.