# C-band RFI compression Follow-Up

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August 1st 2023

# Summarizing

- High compression in C-band observations seen by the SRDP team
  - In a few antennas
  - A & B config
  - 3-bit samplers
- We have tested a few SBs and detected them in our test
  - Compression induced by the microwave link RFI
  - Two frequencies: 6.2 and 6.4 GHz
- We proposed a solution of RCT mixing 3-bit and 8-bit sampler
  - It fixed the issue. No compression was seen on the data.

# What is new?

- We have evaluated the effect on the data (thanks to AL and RP)
  - We have rerun a user SB that was severely affected by the compression with the RCT
  - During the epoch, I ran a short test SB with the usual RCT to confirm the RFI was still there.
  - AL has run the pipeline and compared the images of booths RCTs.

- We have discussed a new RCT to suggest to the users (Thank you, LS, EM)
  - The RCT used in the test has subband overlaps and crossing boundaries that we want to avoid.
- Thanks to David Schafer, we now have a precise map of the microwave link and which stations are affected in A and B configs.

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# Project: 20B231

- Source IC310
  - Point source
  - Flux density: ~ 100 mJy
  - ~ 3 hours on-source

Image affects - dynamic range - 20B231 - Point Source

- default RCT
  - maxpix 146 mJy - rms 5.5uJy
  - dynamic range - 2.65e4

3-bit/8-bit RCT

- maxpix 150 mJy - rms 4.7 uJy
- dynamic range - 3.19e4

Improvement of 20%

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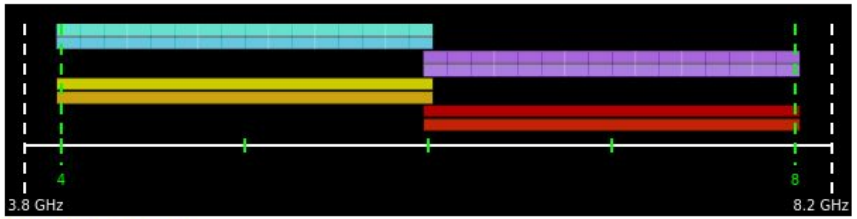
# RCTs

Default Version

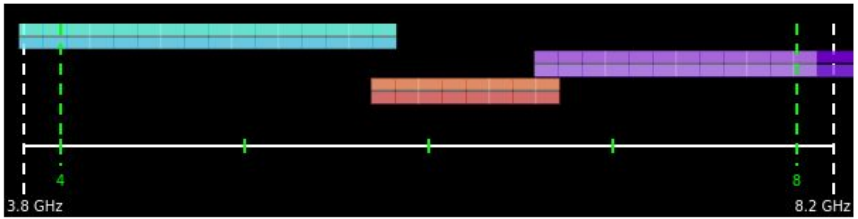
**NRAO Defaults » C32f2A**




| | |
|---|---|
| **Total BI. BPs Used:** | 32 of 64 |
| **Total Data Rate:** | 11.85 MB/s or 42.64 GB/h |
| **Total Spectral Points:** | 2048 |
| **Total Bandwidth:** | 4.096GHz |
| **Capability Mode:** | General observing |

Test Version

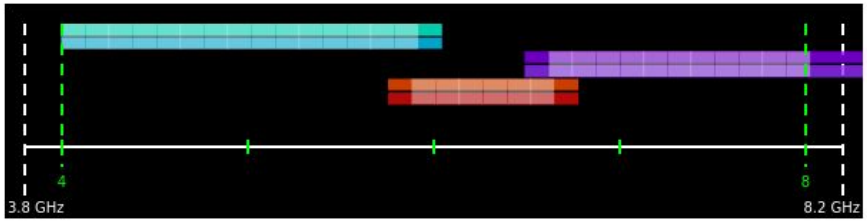
**3-bit.plus.8-bit » C-Full-3-and-8-bit**




| | |
|---|---|
| **Total BI. BPs Used:** | 36 of 64 |
| **Total Data Rate:** | 13.33 MB/s or 47.97 GB/h |
| **Total Spectral Points:** | 2304 |
| **Total Bandwidth:** | 4.608GHz |
| **Capability Mode:** | General observing |

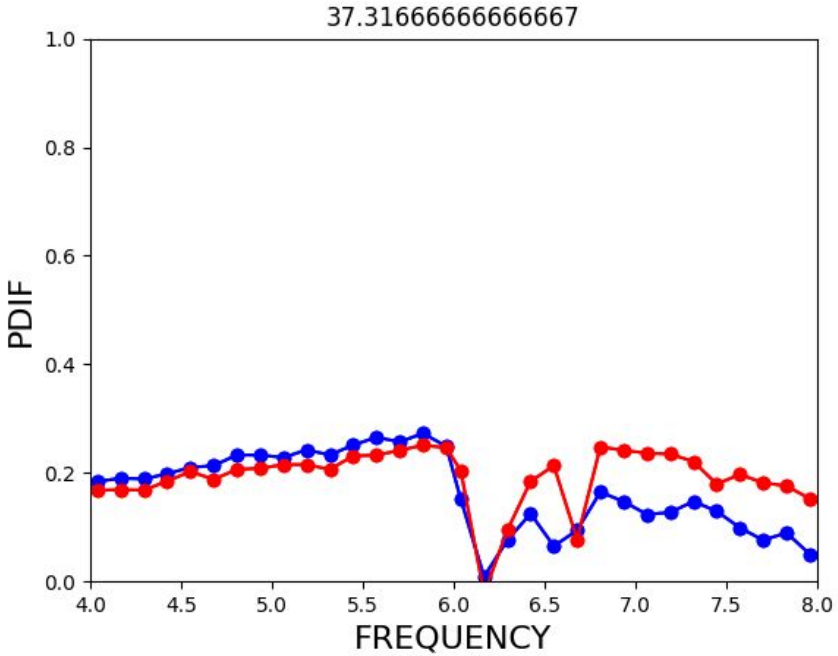
User Version
Tested yesterday

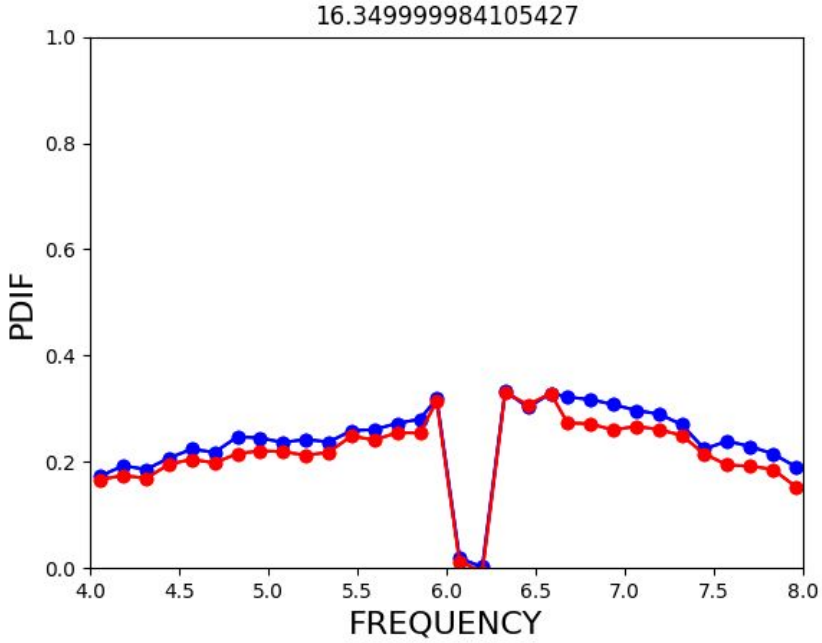
**3-bit.plus.8-bit » C32f2A.v3**




| | |
|---|---|
| **Total BI. BPs Used:** | 32 of 64 |
| **Total Data Rate:** | 11.85 MB/s or 42.64 GB/h |
| **Total Spectral Points:** | 2048 |
| **Total Bandwidth:** | 4.096GHz |
| **Capability Mode:** | General observing |

# 3 bit and mixed ⅜ bit sampler PDIF



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# Microwave Link

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Stations affected:

B config: N28 and W36 - some cases N24 and N32

A config: W40, E40, E48, E56 - somecases N24, N32 and E32

For reasons that are still unclear, ea17 is much worse when it is on the microwave link path

# Next Steps

- Once the setup is approved: allow version with 2s, 3s and 5s dump time
- Add some text in the observation guide

Any other place?