

Mk4/DiFX fourfit 3.21 rev 2937

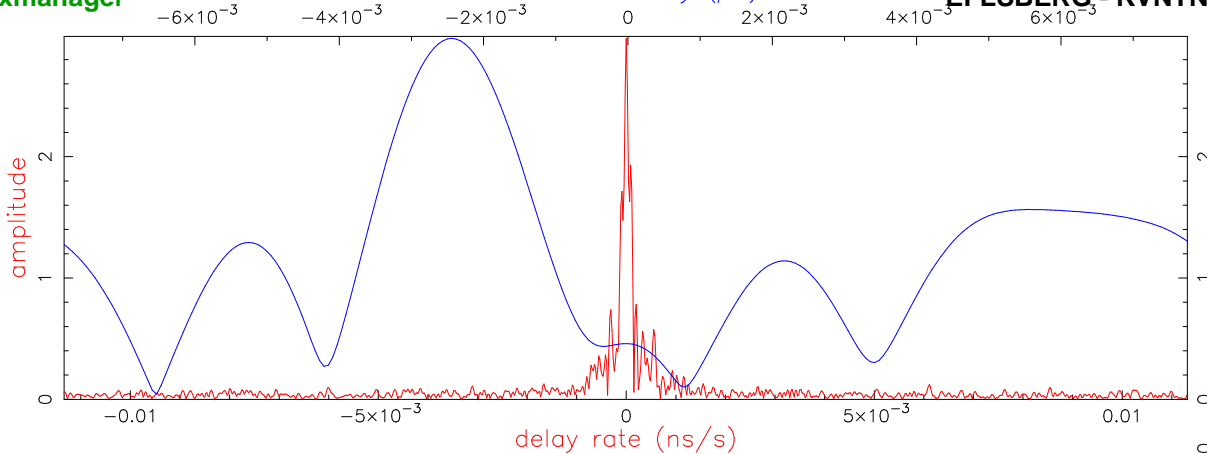
fxmanager

NRAO150.1WZMQH, No0029, Bt

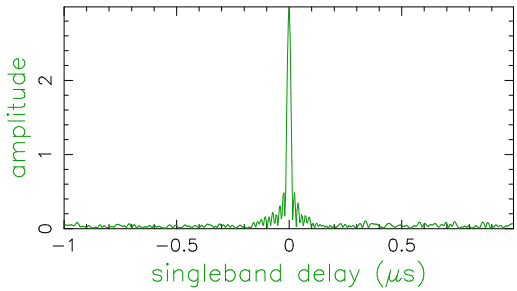
EFLSBERG - KVNTN, fgroup W, pol RR

multiband delay ( $\mu$ s)

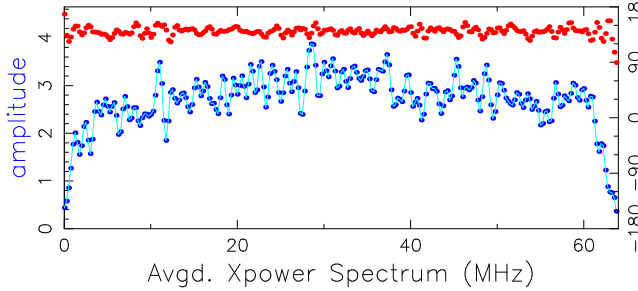
Fringe quality 3



SNR 101.9  
Int time 155.134  
Amp 2.991  
Phase 157.2  
PFD 0.0e+00  
Delays (us)  
SBD -0.001011  
MBD -0.002472  
Fringe rate (Hz)  
-0.000416  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512

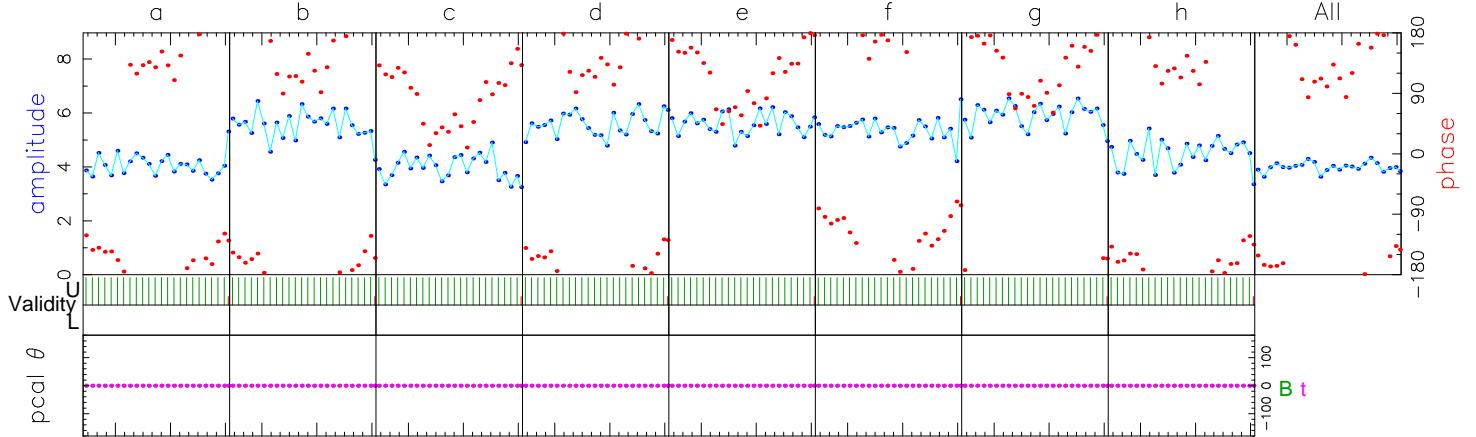


delay rate (ns/s)



Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080424.70  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:113958  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All   |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|-------|
| U/L | 179.8    | 166.0    | 82.4     | 169.5    | 116.4    | -136.8   | 134.6    | 174.1    | Phase      | 157.2 |
| B   | 3.1      | 4.1      | 3.0      | 4.2      | 4.1      | 4.0      | 4.4      | 3.4      | Ampl.      | 3.8   |
| t   | 255.1    | 256.8    | 257.5    | 257.3    | 257.6    | 257.4    | 257.3    | 256.0    | Sbd box    | 256.7 |
| B   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | APs used   |       |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |       |
| B:t | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | PC phase   |       |
| B:t | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | Mani PC    |       |
| B   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC amp     |       |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |       |
| B   | W00UR    | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    | Chan ids   |       |
| t   | W00UR    | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    | Tracks     |       |

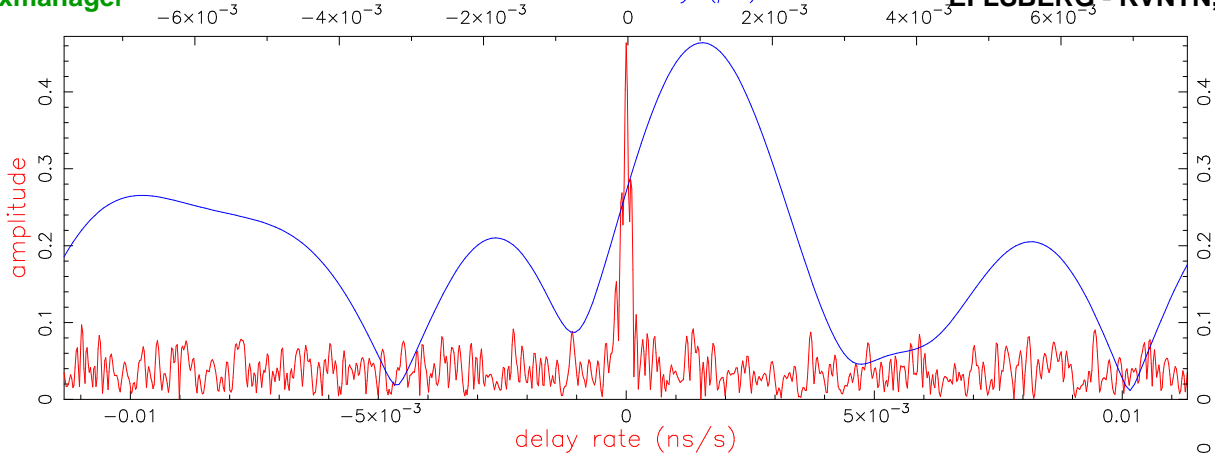
|                         |                    |                          |                    |                      |              |     |         |
|-------------------------|--------------------|--------------------------|--------------------|----------------------|--------------|-----|---------|
| Group delay (usec)(sbd) | -2.93391854641E+03 | Apriori delay (usec)     | -2.93391607422E+03 | Resid mbdelay (usec) | -2.47219E-03 | +/- | 1.1E-05 |
| Sband delay (usec)      | -2.93391708547E+03 | Apriori clock (usec)     | -2.1798210E+01     | Resid sbdelay (usec) | -1.01125E-03 | +/- | 8.5E-05 |
| Phase delay (usec)      | -2.93391606916E+03 | Apriori clockrate (us/s) | 4.9999999E-08      | Resid phdelay (usec) | 5.06891E-06  | +/- | 3.6E-08 |
| Delay rate (us/s)       | 1.15035301186E+00  | Apriori rate (us/s)      | 1.15035301670E+00  | Resid rate (us/s)    | -4.83378E-09 | +/- | 4.0E-10 |
| Total phase (deg)       | -70.9              | Apriori accel (us/s/s)   | 3.50574150944E-05  | Resid phase (deg)    | 157.2        | +/- | 1.1     |

|              |      |                  |       |                |                 |                        |                             |                      |                   |                  |              |
|--------------|------|------------------|-------|----------------|-----------------|------------------------|-----------------------------|----------------------|-------------------|------------------|--------------|
| ph/seg (deg) | 42.7 | RMS              | 2.8   | Theor.         | 2.991 +/- 0.029 | PCal mode:             | MANUAL, MANUAL              | PC period (AP's)     | 5, 5              |                  |              |
| amp/seg (%)  | 34.2 | Search (1024X32) | 2.955 | Amplitude      | 2.991 +/- 0.029 | PCal rate:             | 0.000E+00, 0.000E+00 (us/s) | sb window (us)       | -1.000 1.000      |                  |              |
| ph/frq (deg) | 46.8 | Inc. seg. avg.   | 3.996 | Interp.        | 0.000           | Bits/sample:           | 2x2                         | SampCntNorm: enabled | mb window (us)    | -0.008 0.008     |              |
| amp/frq (%)  | 31.3 | Inc. frq. avg.   | 3.781 | Inc. seg. avg. | 3.996           | Sample rate (MSamp/s): | 128                         | nlags: 256           | t_cohere infinite | dr window (ns/s) | -0.011 0.011 |
|              |      |                  |       | Inc. frq. avg. | 3.781           | Data rate (Mb/s):      | 2048                        |                      | ion window (TEC)  | 0.00 0.00        |              |

B: az 57.0 el 42.6 pa -58.1 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) -10419.164 4743.164 simultaneous interpolator

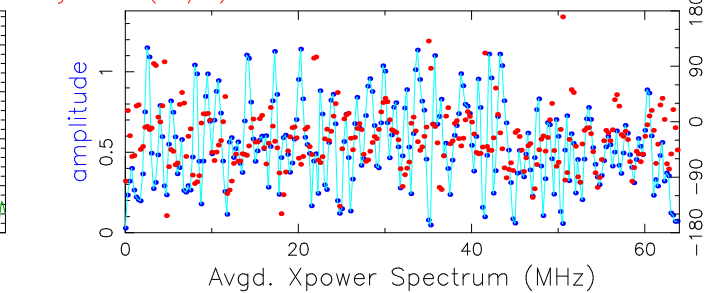
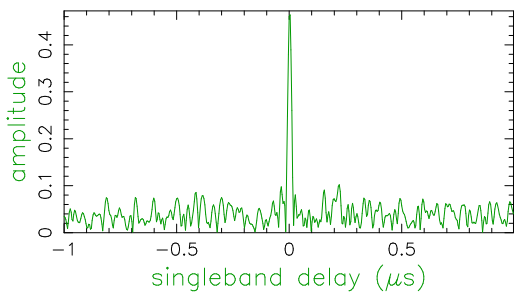
Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/Bt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/Bt.W.14.1WZMQH

multiband delay ( $\mu$ s)



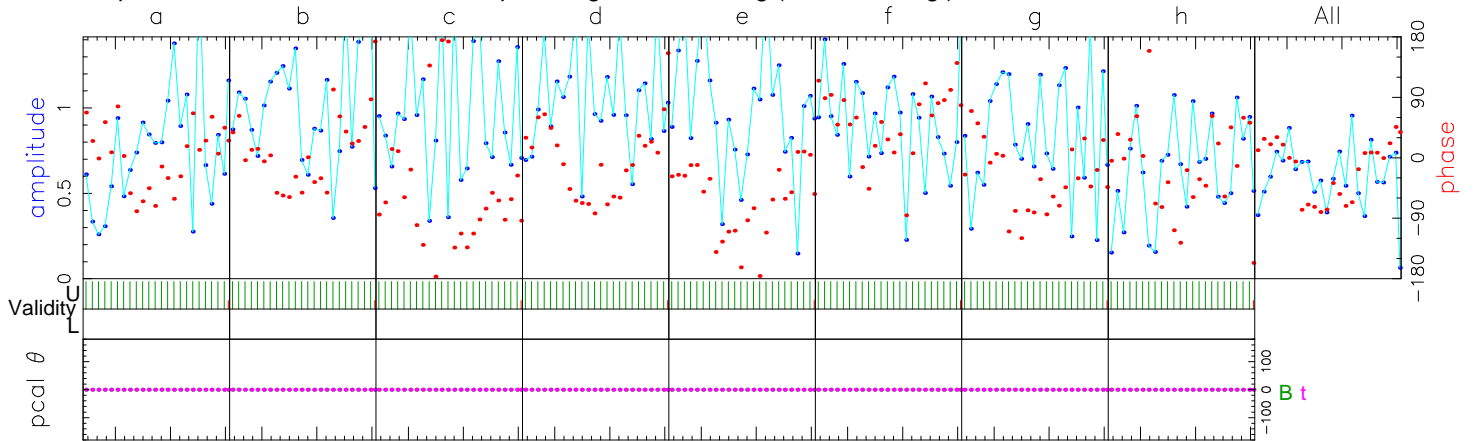
Fringe quality 8

SNR 16.1  
Int time 155.134  
Amp 0.472  
Phase -16.9  
PFD 0.0e+00  
Delays (us)  
SBD 0.002129  
MBD 0.000989  
Fringe rate (Hz)  
-0.000189  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512



Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080424.70  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114001  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All      |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|----------|
|     | -6.7     | 5.0      | -88.6    | -10.3    | -54.1    | 58.2     | -34.5    | -6.1     |            | Phase    |
|     | 0.5      | 0.7      | 0.6      | 0.7      | 0.7      | 0.7      | 0.6      | 0.3      |            | Ampl.    |
|     | 256.4    | 257.2    | 258.0    | 258.3    | 258.4    | 258.5    | 258.1    | 257.9    |            | Sbd box  |
| U/L | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    |            | APs used |
| B   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            | PC freqs |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            | PC freqs |
| B:t | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |            | PC phase |
| B:t | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |            | Manl PC  |
| B   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            | PC amp   |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |          |
| B   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    |            | Chan ids |
| t   | W00UR    | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    |            | Tracks   |

|                         |                    |                          |                    |                      |              |     |         |
|-------------------------|--------------------|--------------------------|--------------------|----------------------|--------------|-----|---------|
| Group delay (usec)(sbd) | -2.93391508529E+03 | Apriori delay (usec)     | -2.93391607422E+03 | Resid mbdelay (usec) | 9.88937E-04  | +/- | 6.7E-05 |
| Sband delay (usec)      | -2.93391394522E+03 | Apriori clock (usec)     | -2.1798210E+01     | Resid sbdelay (usec) | 2.12900E-03  | +/- | 5.4E-04 |
| Phase delay (usec)      | -2.93391607477E+03 | Apriori clockrate (us/s) | 4.9999999E-08      | Resid phdelay (usec) | -5.45028E-07 | +/- | 2.3E-07 |
| Delay rate (us/s)       | 1.15035301451E+00  | Apriori rate (us/s)      | 1.15035301670E+00  | Resid rate (us/s)    | -2.19086E-09 | +/- | 2.6E-09 |
| Total phase (deg)       | -245.0             | Apriori accel (us/s/s)   | 3.50574150944E-05  | Resid phase (deg)    | -16.9        | +/- | 7.1     |

|              |      |                  |       |                |                 |                        |                             |                      |                |              |
|--------------|------|------------------|-------|----------------|-----------------|------------------------|-----------------------------|----------------------|----------------|--------------|
| ph/seg (deg) | 42.0 | Theor.           | 17.4  | Amplitude      | 0.472 +/- 0.029 | Pcal mode:             | MANUAL, MANUAL              | PC period (AP's)     | 5, 5           |              |
| amp/seg (%)  | 46.2 | Search (1024X32) | 0.463 | Search         | 0.000           | Pcal rate:             | 0.000E+00, 0.000E+00 (us/s) | sb window (us)       | -1.000 1.000   |              |
| ph/frq (deg) | 46.9 | Inc. seg. avg.   | 0.590 | Inc. seg. avg. | 0.590           | Bits/sample:           | 2x2                         | SampCntNorm: enabled | mb window (us) | -0.008 0.008 |
| amp/frq (%)  | 37.2 | Inc. frq. avg.   | 0.597 | Inc. frq. avg. | 0.597           | Sample rate (MSamp/s): | 128                         | dr window (ns/s)     | -0.011 0.011   |              |
|              |      |                  |       |                |                 | Data rate (Mb/s):      | 2048                        | ion window (TEC)     | 0.00 0.00      |              |

B: az 57.0 el 42.6 pa -58.1 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) -10419.164 4743.164 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/Bt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/Bt.W.32.1WZMQH

Mk4/DiFX fourfit 3.21 rev 2937

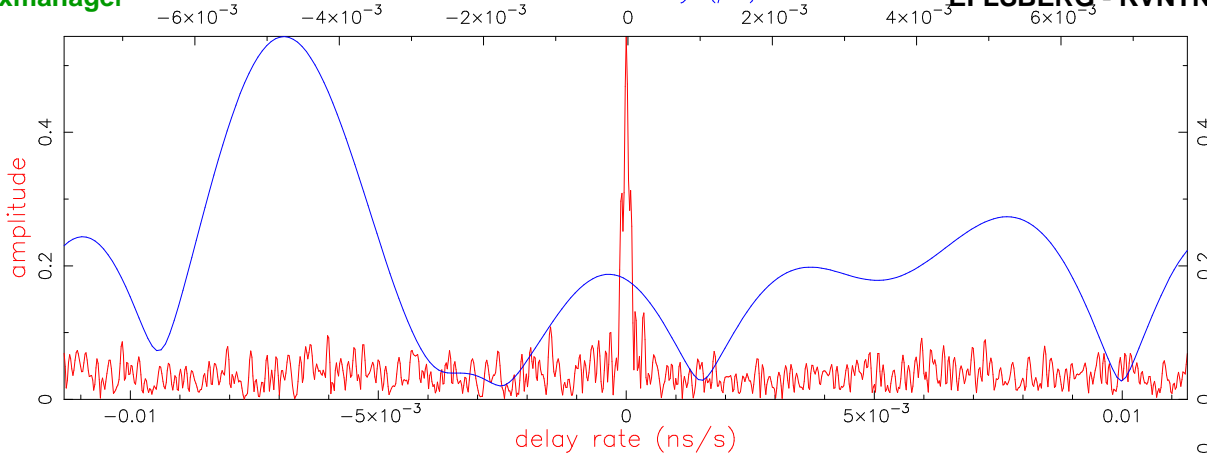
fxmanager

NRAO150.1WZMQH, No0029, Bt

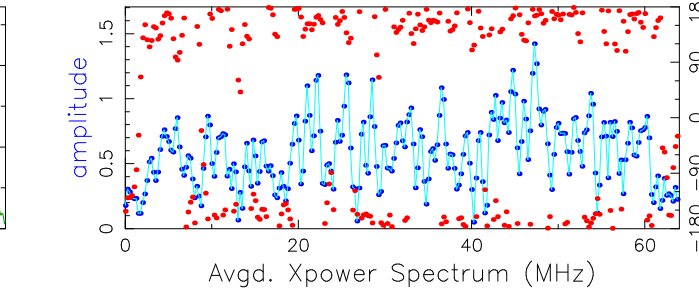
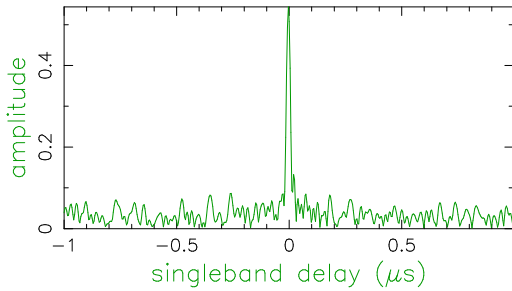
EFLSBERG - KVNTN, fgroup W, pol RL

multiband delay ( $\mu$ s)

Fringe quality 8

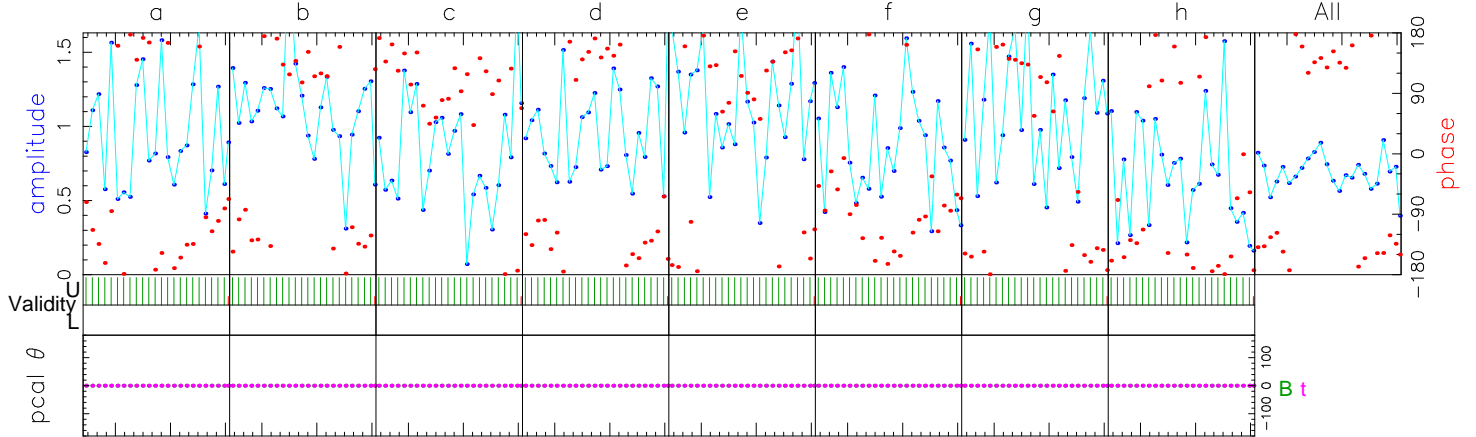


SNR 18.5  
 Int time 155.134  
 Amp 0.544  
 Phase -176.3  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.003566  
 MBD -0.004762  
 Fringe rate (Hz)  
 -0.000398  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114003  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All    |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|--------|
|     | -149.0   | -176.7   | 123.4    | -162.9   | 157.8    | -101.5   | 171.5    | -171.9   | Phase      | -176.3 |
|     | 0.7      | 0.7      | 0.6      | 0.7      | 0.8      | 0.5      | 0.8      | 0.5      | Ampl.      | 0.6    |
|     | 254.6    | 256.1    | 256.5    | 256.7    | 257.1    | 256.0    | 256.4    | 255.8    | Sbd box    | 256.1  |
| U/L | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | APs used   |        |
| B   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |        |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |        |
| B:t | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | PC phase   |        |
| B:t | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | Mani PC    |        |
| B   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC amp     |        |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |        |
| B   | W00UR    | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    | Chan ids   |        |
| t   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Tracks     |        |

|                         |                    |                          |                    |                      |              |     |         |
|-------------------------|--------------------|--------------------------|--------------------|----------------------|--------------|-----|---------|
| Group delay (usec)(sbd) | -2.93392083616E+03 | Apriori delay (usec)     | -2.93391607422E+03 | Resid mbdelay (usec) | -4.76194E-03 | +/- | 5.9E-05 |
| Sband delay (usec)      | -2.93391963997E+03 | Apriori clock (usec)     | -2.1798210E+01     | Resid sbdelay (usec) | -3.56575E-03 | +/- | 4.7E-04 |
| Phase delay (usec)      | -2.93391607991E+03 | Apriori clockrate (us/s) | 4.9999999E-08      | Resid phdelay (usec) | -5.68429E-06 | +/- | 2.0E-07 |
| Delay rate (us/s)       | 1.15035301208E+00  | Apriori rate (us/s)      | 1.15035301670E+00  | Resid rate (us/s)    | -4.62121E-09 | +/- | 2.2E-09 |
| Total phase (deg)       | -44.4              | Apriori accel (us/s/s)   | 3.50574150944E-05  | Resid phase (deg)    | -176.3       | +/- | 6.2     |

|              |      |                  |       |                        |                             |                  |                 |                   |                |                  |         |                |              |                  |           |
|--------------|------|------------------|-------|------------------------|-----------------------------|------------------|-----------------|-------------------|----------------|------------------|---------|----------------|--------------|------------------|-----------|
| ph/seg (deg) | 39.2 | RMS              | 39.2  | Theor.                 | 15.2                        | Amplitude        | 0.544 +/- 0.029 | Pcal mode:        | MANUAL, MANUAL | PC period (AP's) | 5, 5    |                |              |                  |           |
| amp/seg (%)  | 34.2 | Search (1024X32) | 0.537 | Pcal rate:             | 0.000E+00, 0.000E+00 (us/s) | sb window (us)   | -1.000 1.000    | Bits/sample:      | 2x2            | SampCntNorm:     | enabled | mb window (us) | -0.008 0.008 |                  |           |
| ph/frq (deg) | 42.8 | Inc. seg. avg.   | 0.675 | Sample rate (MSamp/s): | 128                         | dr window (ns/s) | -0.011 0.011    | Data rate (Mb/s): | 2048           | nlags:           | 256     | t_cohere       | infinite     | ion window (TEC) | 0.00 0.00 |
| amp/frq (%)  | 27.9 | Inc. frq. avg.   | 0.649 |                        |                             |                  |                 |                   |                |                  |         |                |              |                  |           |

B: az 57.0 el 42.6 pa -58.1 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) -10419.164 4743.164 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/Bt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/Bt.W.38.1WZMQH

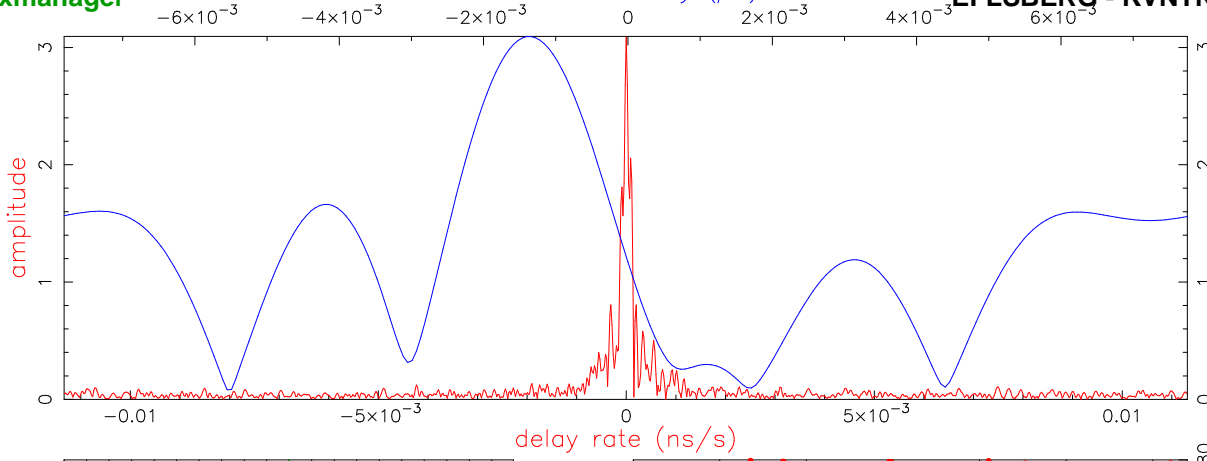
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, Bt

EFLSBERG - KVNTN, fgroup W, pol LL

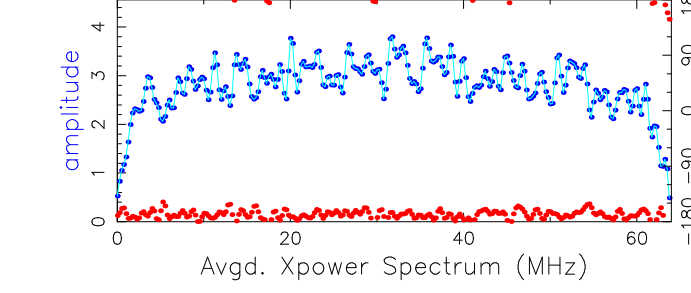
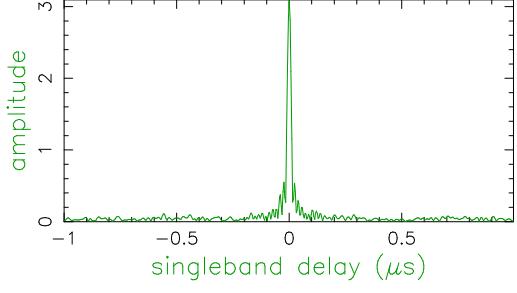
multiband delay ( $\mu$ s)



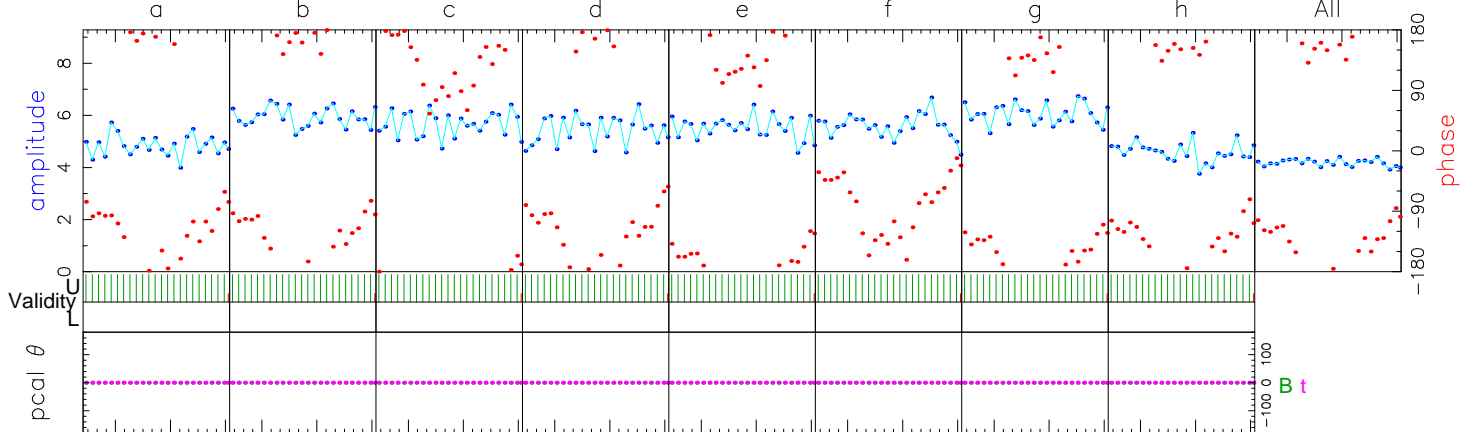
Fringe quality 3

SNR 105.4  
 Int time 155.134  
 Amp 3.094  
 Phase -153.6  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.000048  
 MBD -0.001370  
 Fringe rate (Hz) -0.000427  
 Ion TEC 0.000  
 Ref freq (MHz) 86140.0000  
 AP (sec) 0.512

Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:113957  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"



Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|  | 86012.00           | 86076.00 | 86140.00 | 86204.00 | 86268.00           | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All |
|--|--------------------|----------|----------|----------|--------------------|----------|----------|----------|------------|-----|
| U/L                                    | 303/0              | 303/0    | 303/0    | 303/0    | 303/0              | 303/0    | 303/0    | 303/0    |            |     |
| B                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |            |     |
| t                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |            |     |
| B:t                                    | 0:0                | 0:0      | 0:0      | 0:0      | 0:0                | 0:0      | 0:0      | 0:0      |            |     |
| B:t                                    | 0:0                | 0:0      | 0:0      | 0:0      | 0:0                | 0:0      | 0:0      | 0:0      |            |     |
| B                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |            |     |
| t                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |            |     |
| B                                      | W00UL              | W01UL    | W02UL    | W03UL    | W04UL              | W05UL    | W06UL    | W07UL    |            |     |
| t                                      | W00UL              | W01UL    | W02UL    | W03UL    | W04UL              | W05UL    | W06UL    | W07UL    |            |     |
| Group delay (usec)(sbd)                | -2.93391744391E+03 |          |          |          | -2.93391607422E+03 |          |          |          |            |     |
| Sband delay (usec)                     | -2.93391612222E+03 |          |          |          | -2.1798210E+01     |          |          |          |            |     |
| Phase delay (usec)                     | -2.93391607918E+03 |          |          |          | 4.9999999E-08      |          |          |          |            |     |
| Delay rate (us/s)                      | 1.15035301174E+00  |          |          |          | 1.15035301670E+00  |          |          |          |            |     |
| Total phase (deg)                      |                    |          | -21.7    |          | 3.50574150944E-05  |          |          |          |            |     |
| Apriori delay (usec)                   |                    |          |          |          |                    |          |          |          |            |     |
| Apriori clock (usec)                   |                    |          |          |          |                    |          |          |          |            |     |
| Apriori clockrate (us/s)               |                    |          |          |          |                    |          |          |          |            |     |
| Apriori rate (us/s)                    |                    |          |          |          |                    |          |          |          |            |     |
| Apriori accel (us/s/s)                 |                    |          |          |          |                    |          |          |          |            |     |
| Resid mbdelay (usec)                   |                    |          |          |          |                    |          |          |          |            |     |
| Resid sbdelay (usec)                   |                    |          |          |          |                    |          |          |          |            |     |
| Resid phdelay (usec)                   |                    |          |          |          |                    |          |          |          |            |     |
| Resid rate (us/s)                      |                    |          |          |          |                    |          |          |          |            |     |
| Resid phase (deg)                      |                    |          |          |          |                    |          |          |          |            |     |
| Pcal mode: MANUAL, MANUAL              |                    |          |          |          |                    |          |          |          |            |     |
| Pcal rate: 0.000E+00, 0.000E+00 (us/s) |                    |          |          |          |                    |          |          |          |            |     |
| Bits/sample: 2x2                       |                    |          |          |          |                    |          |          |          |            |     |
| Sample rate(MISamp/s): 128             |                    |          |          |          |                    |          |          |          |            |     |
| Data rate(Mb/s): 2048                  |                    |          |          |          |                    |          |          |          |            |     |
| nlags: 256                             |                    |          |          |          |                    |          |          |          |            |     |
| t_cohere infinite                      |                    |          |          |          |                    |          |          |          |            |     |
| sb window (us)                         |                    |          |          |          |                    |          |          |          |            |     |
| mb window (us)                         |                    |          |          |          |                    |          |          |          |            |     |
| dr window (ns/s)                       |                    |          |          |          |                    |          |          |          |            |     |
| ion window (TEC)                       |                    |          |          |          |                    |          |          |          |            |     |

ph/seg (deg) 43.2 2.7 Search (1024X32) 3.059 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
 amp/seg (%) 35.6 4.6 Interp. 0.000 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
 ph/frq (deg) 47.0 1.5 Inc. seg. avg. 4.184 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
 amp/frq (%) 32.5 2.7 Inc. frq. avg. 4.024 Sample rate(MISamp/s): 128 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite dr window (ns/s) -0.011 0.011  
 B: az 57.0 el 42.6 pa -58.1 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) -10419.164 4743.164 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite ion window (TEC) 0.00 0.00  
 Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/Bt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/Bt.W.6.1WZMQH simultaneous interpolator

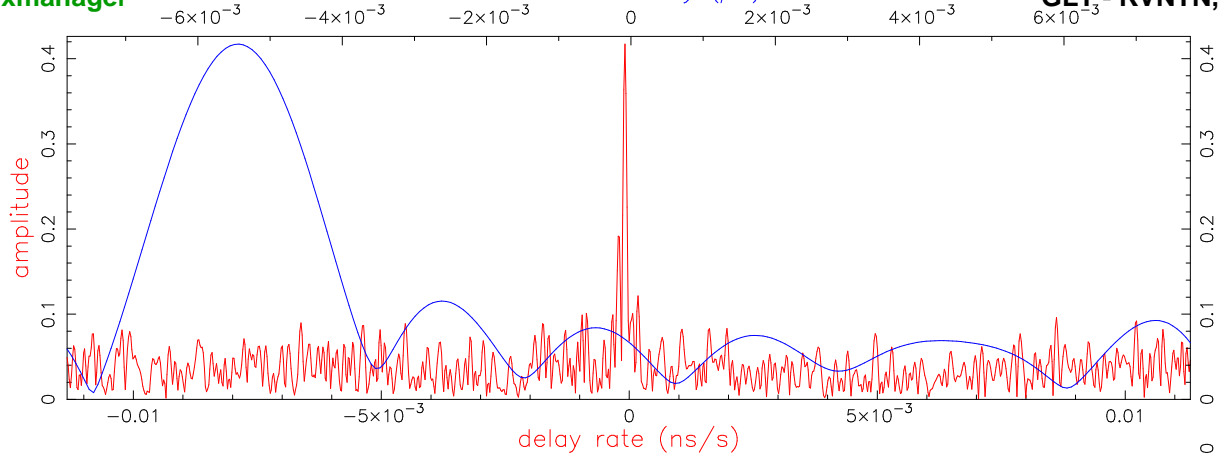
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, gt

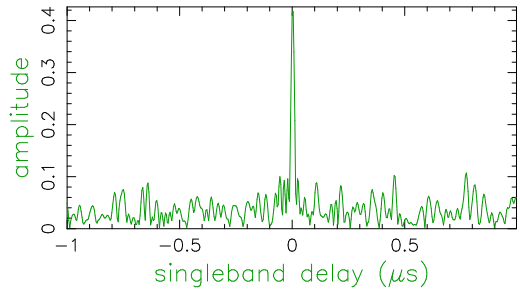
GLT - KVNTN, fgroup W, pol RR

multiband delay ( $\mu$ s)

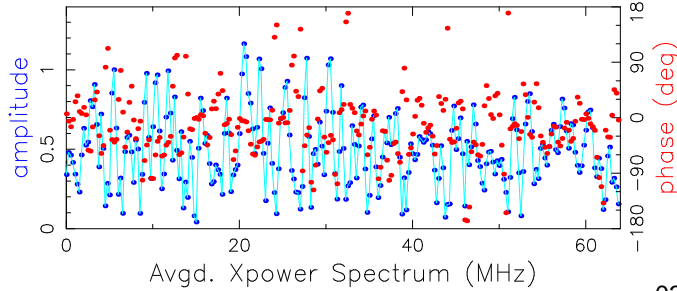


Fringe quality 9

SNR 14.5  
 Int time 155.134  
 Amp 0.426  
 Phase 69.7  
 PFD 2.9e-39  
 Delays (us)  
 SBD 0.002124  
 MBD -0.005437  
 Fringe rate (Hz)  
 -0.007271  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

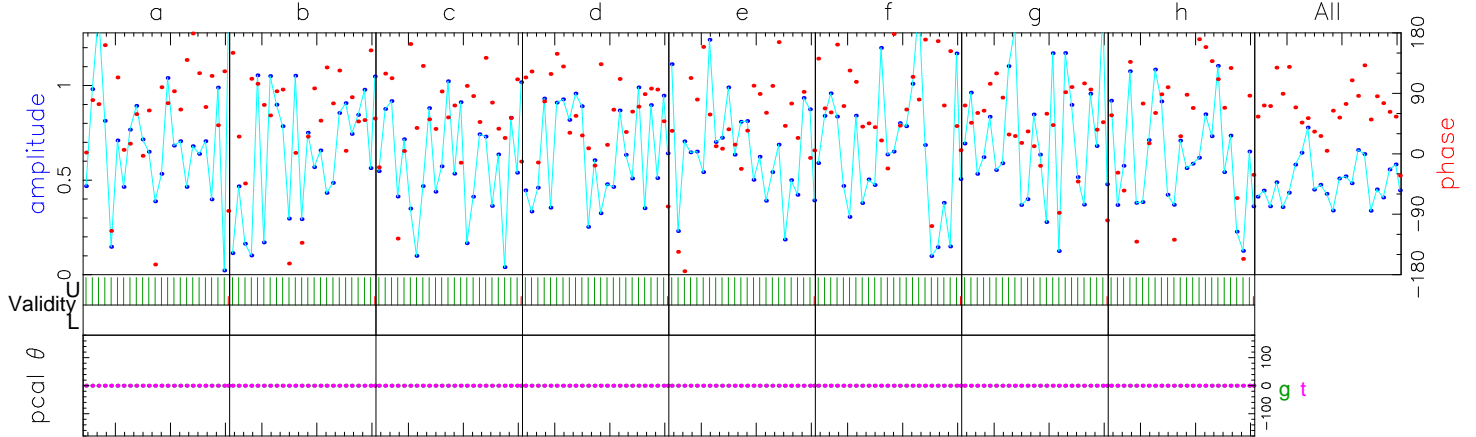


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:113959  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec

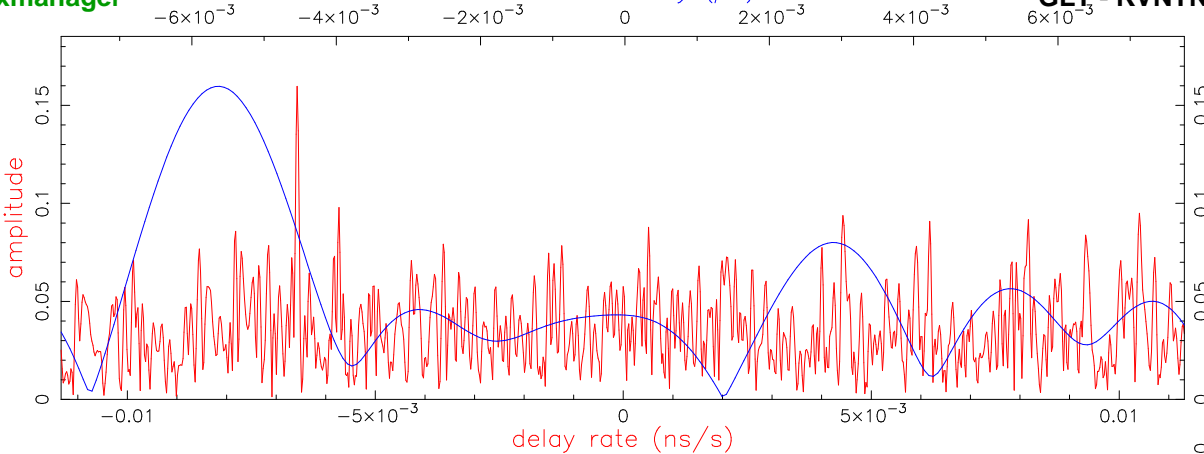


|  | 86012.00           | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All |
|--|--------------------|----------|----------|----------|----------|----------|----------|----------|------------|-----|
| U/L  | 303/0              | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    |            |     |
| g  | 0                  | 0        | 0        | 0        | 0        | 0        | 0        | 0        |            |     |
| t  | 1000               | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| g:t  | 0:0                | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |            |     |
| g:t  | 0:0                | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |            |     |
| g  | 1000               | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| t  | 1000               | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| g  | W00UR              | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    |            |     |
| t  | W00UR              | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    |            |     |
| Group delay (usec)(sbd)                                | -4.16774634560E+03 |          |          |          |          |          |          |          |            |     |
| Sband delay (usec)                                     | -4.16773878390E+03 |          |          |          |          |          |          |          |            |     |
| Phase delay (usec)                                     | -4.16774090616E+03 |          |          |          |          |          |          |          |            |     |
| Delay rate (us/s)                                      | 6.43986065632E-01  |          |          |          |          |          |          |          |            |     |
| Total phase (deg)                                      |                    |          | -236.3   |          |          |          |          |          |            |     |
| Apriori delay (usec)                                   |                    |          |          |          |          |          |          |          |            |     |
| Apriori clock (usec)                                   |                    |          |          |          |          |          |          |          |            |     |
| Apriori clockrate (us/s)                               |                    |          |          |          |          |          |          |          |            |     |
| Apriori rate (us/s)                                    |                    |          |          |          |          |          |          |          |            |     |
| Apriori accel (us/s/s)                                 |                    |          |          |          |          |          |          |          |            |     |
| Resid mbdelay (usec)                                   |                    |          |          |          |          |          |          |          |            |     |
| Resid sbdelay (usec)                                   |                    |          |          |          |          |          |          |          |            |     |
| Resid phdelay (usec)                                   |                    |          |          |          |          |          |          |          |            |     |
| Resid rate (us/s)                                      |                    |          |          |          |          |          |          |          |            |     |
| Resid phase (deg)                                      |                    |          |          |          |          |          |          |          |            |     |
| Pcal mode: MANUAL, MANUAL                              |                    |          |          |          |          |          |          |          |            |     |
| Pcal rate: 0.000E+00, 0.000E+00 (us/s)                 |                    |          |          |          |          |          |          |          |            |     |
| Bits/sample: 2x2                                       |                    |          |          |          |          |          |          |          |            |     |
| Sample rate(MISamp/s): 128                             |                    |          |          |          |          |          |          |          |            |     |
| Data rate(Mb/s): 2048                                  |                    |          |          |          |          |          |          |          |            |     |
| nlags: 256   |                    |          |          |          |          |          |          |          |            |     |
| t_cohere infinite                                      |                    |          |          |          |          |          |          |          |            |     |
| sb window (us)   |                    |          |          |          |          |          |          |          |            |     |
| mb window (us)   |                    |          |          |          |          |          |          |          |            |     |
| dr window (ns/s)                                       |                    |          |          |          |          |          |          |          |            |     |
| ion window (TEC)                                       |                    |          |          |          |          |          |          |          |            |     |
| pcal $\theta$  |                    |          |          |          |          |          |          |          |            |     |
| Tracks   |                    |          |          |          |          |          |          |          |            |     |
| Chan ids   |                    |          |          |          |          |          |          |          |            |     |
| Tracks   |                    |          |          |          |          |          |          |          |            |     |
| Chan ids   |                    |          |          |          |          |          |          |          |            |     |
| Tracks   |                    |          |          |          |          |          |          |          |            |     |
| sb window (us)   |                    |          |          |          |          |          |          |          |            |     |
| mb window (us)   |                    |          |          |          |          |          |          |          |            |     |
| dr window (ns/s)                                       |                    |          |          |          |          |          |          |          |            |     |
| ion window (TEC)                                       |                    |          |          |          |          |          |          |          |            |     |
| pcal mode: MANUAL, MANUAL                              |                    |          |          |          |          |          |          |          |            |     |
| PC period (AP's) 5, 5                                  |                    |          |          |          |          |          |          |          |            |     |
| sb window (us)   |                    |          |          |          |          |          |          |          |            |     |
| mb window (us)   |                    |          |          |          |          |          |          |          |            |     |
| dr window (ns/s)                                       |                    |          |          |          |          |          |          |          |            |     |
| ion window (TEC)                                       |                    |          |          |          |          |          |          |          |            |     |
| g: az 20.3 el 38.6 pa -7.6                             |                    |          |          |          |          |          |          |          |            |     |
| t: az 313.4 el 55.6 pa 105.4                           |                    |          |          |          |          |          |          |          |            |     |
| u,v (fr/asec) -5772.026 8185.117                       |                    |          |          |          |          |          |          |          |            |     |
| Control file: cf_1234_gmva                             |                    |          |          |          |          |          |          |          |            |     |
| Input file: /Exps/c211c/v1/1234/No0029/gt..1WZMQH      |                    |          |          |          |          |          |          |          |            |     |
| Output file: /Exps/c211c/v1/1234/No0029/gt.W.20.1WZMQH |                    |          |          |          |          |          |          |          |            |     |

simultaneous interpolator

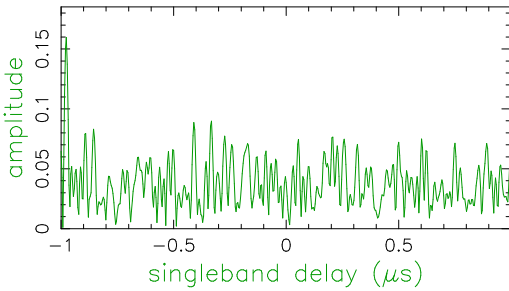


multiband delay ( $\mu$ s)

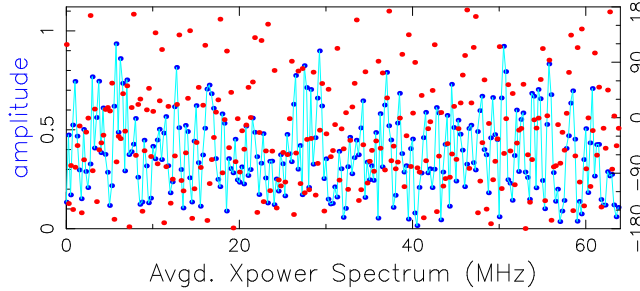


Fringe quality 0

SNR 5.5  
 Int time 155.134  
 Amp 0.185  
 Phase -83.7  
 PFD 1.0e+00  
 Delays (us)  
 SBD -0.977410  
 MBD -0.005650  
 Fringe rate (Hz)  
 -0.567946  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

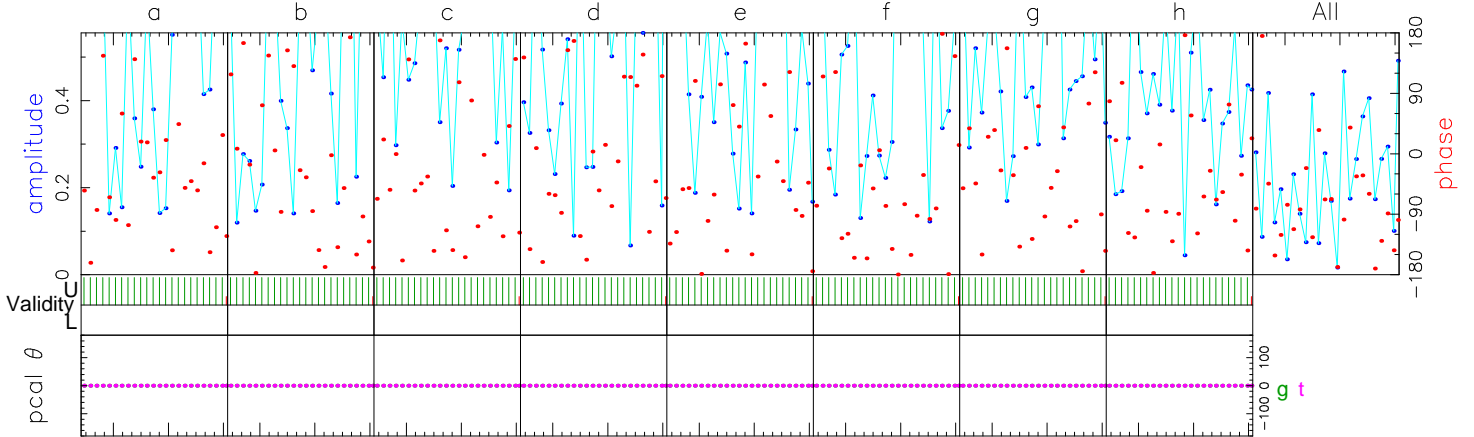


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114001  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

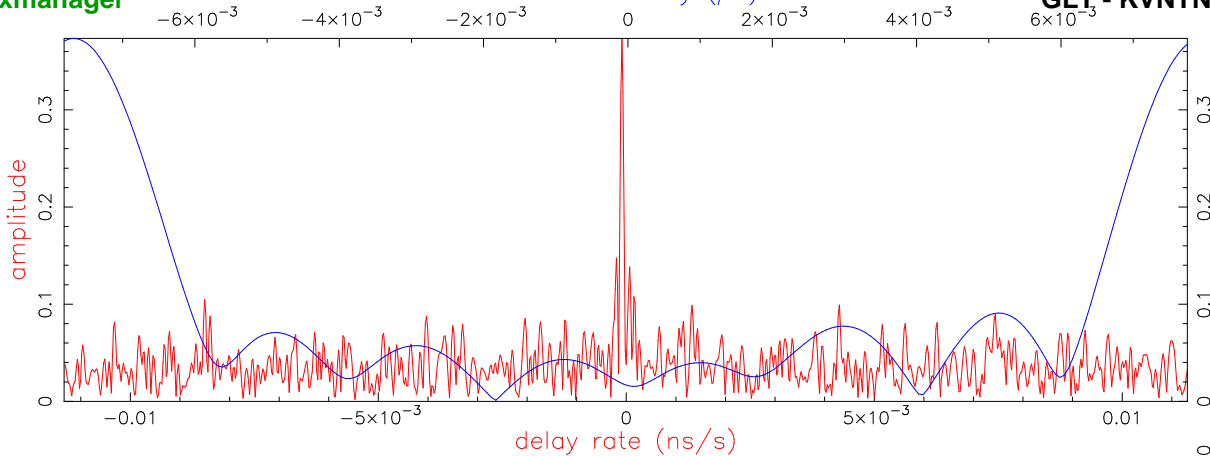
Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



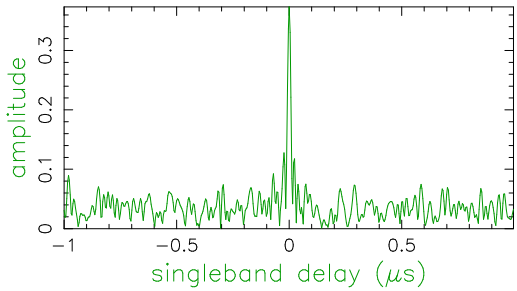
|                         | 86012.00           | 86076.00 | 86140.00                 | 86204.00 | 86268.00           | 86332.00 | 86396.00             | 86460.00 | Freq (MHz)   | All         |
|-------------------------|--------------------|----------|--------------------------|----------|--------------------|----------|----------------------|----------|--------------|-------------|
|                         | -63.5              | -126.1   | -87.7                    | -74.6    | -62.3              | -116.7   | -48.5                | -83.7    | Phase        | -83.7       |
|                         | 0.3                | 0.2      | 0.2                      | 0.1      | 0.1                | 0.3      | 0.2                  | 0.2      | Ampl.        | 0.2         |
|                         | 179.1              | 270.5    | 38.8                     | 260.4    | 23.2               | 127.1    | 485.9                | 282.5    | Sbd box      | 6.8         |
| U/L                     | 303/0              | 303/0    | 303/0                    | 303/0    | 303/0              | 303/0    | 303/0                | 303/0    | APs used     |             |
| g                       | 0                  | 0        | 0                        | 0        | 0                  | 0        | 0                    | 0        | PC freqs     |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| g:t                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | PC phase     |             |
| g:t                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | Mani PC      |             |
| g                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC amp       |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     |              |             |
| g                       | W00UL              | W01UL    | W02UL                    | W03UL    | W04UL              | W05UL    | W06UL                | W07UL    | Chan ids     |             |
| t                       | W00UR              | W01UR    | W02UR                    | W03UR    | W04UR              | W05UR    | W06UR                | W07UR    | Tracks       |             |
|                         |                    |          |                          |          |                    |          |                      |          | Chan ids     |             |
|                         |                    |          |                          |          |                    |          |                      |          | Tracks       |             |
| Group delay (usec)(sbd) | -4.16871530806E+03 |          | Apriori delay (usec)     |          | -4.16774090840E+03 |          | Resid mbdelay (usec) |          | -5.64966E-03 | +/- 2.0E-04 |
| Sband delay (usec)      | -4.16871831865E+03 |          | Apriori clock (usec)     |          | 7.0120811E-01      |          | Resid sbdelay (usec) |          | -9.77410E-01 | +/- 1.6E-03 |
| Phase delay (usec)      | -4.16774091110E+03 |          | Apriori clockrate (us/s) |          | 1.2200000E-07      |          | Resid phdelay (usec) |          | -2.70054E-06 | +/- 6.8E-07 |
| Delay rate (us/s)       | 6.43979556752E-01  |          | Apriori rate (us/s)      |          | 6.43986150045E-01  |          | Resid rate (us/s)    |          | -6.59329E-06 | +/- 7.5E-09 |
| Total phase (deg)       |                    |          | Apriori accel (us/s/s)   |          | 5.93954494826E-05  |          | Resid phase (deg)    |          | -83.7        | +/- 21.0    |

ph/seg (deg) 58.7 51.3 Search (1024X32) 0.156 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
 amp/seg (%) 91.0 89.6 Interp. 0.000 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
 ph/frq (deg) 29.1 29.6 Inc. seg. avg. 0.184 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
 amp/frq (%) 30.7 51.7 Inc. frq. avg. 0.180 Sample rate(MISamp/s): 128 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite dr window (ns/s) -0.011 0.011  
 g: az 20.3 el 38.6 pa -7.6 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) -5772.026 8185.117 simultaneous interpolator  
 Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/gt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/gt.W.33.1WZMQH

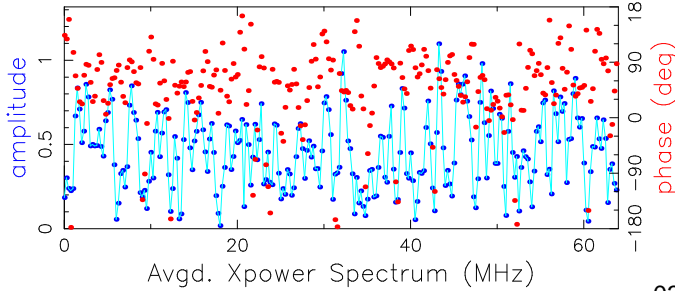
multiband delay ( $\mu\text{s}$ )



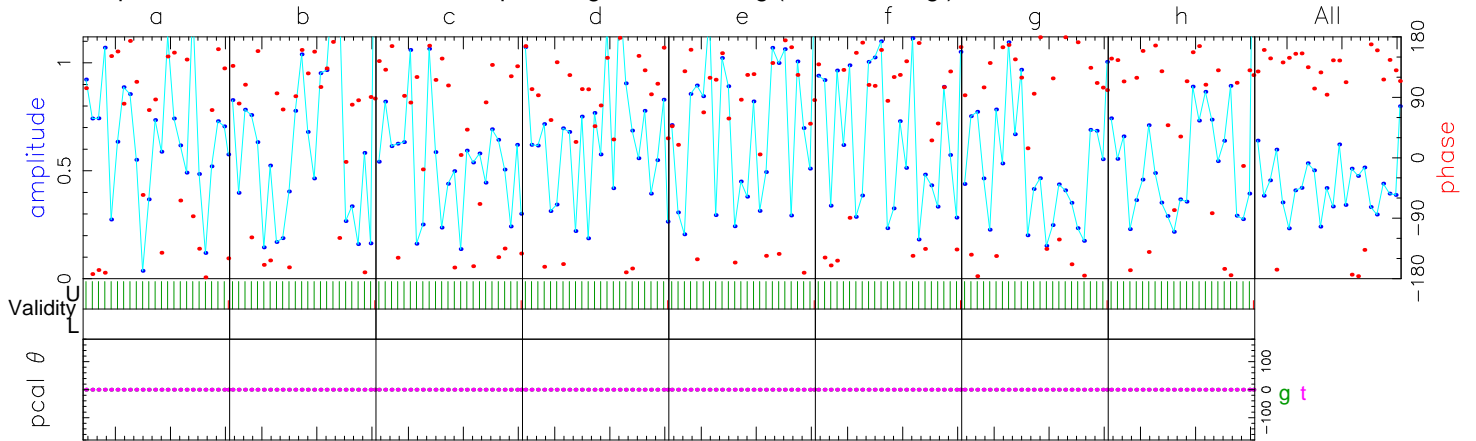
Fringe quality 9  
SNR 12.7  
Int time 155.134  
Amp 0.374  
Phase 147.8  
PFD 1.2e-28  
Delays (us)  
SBD -0.000142  
MBD -0.007679  
Fringe rate (Hz) -0.007202  
Ion TEC 0.000  
Ref freq (MHz) 86140.0000  
AP (sec) 0.512  
Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080424.70  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114003  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"



delay rate (ns/s)



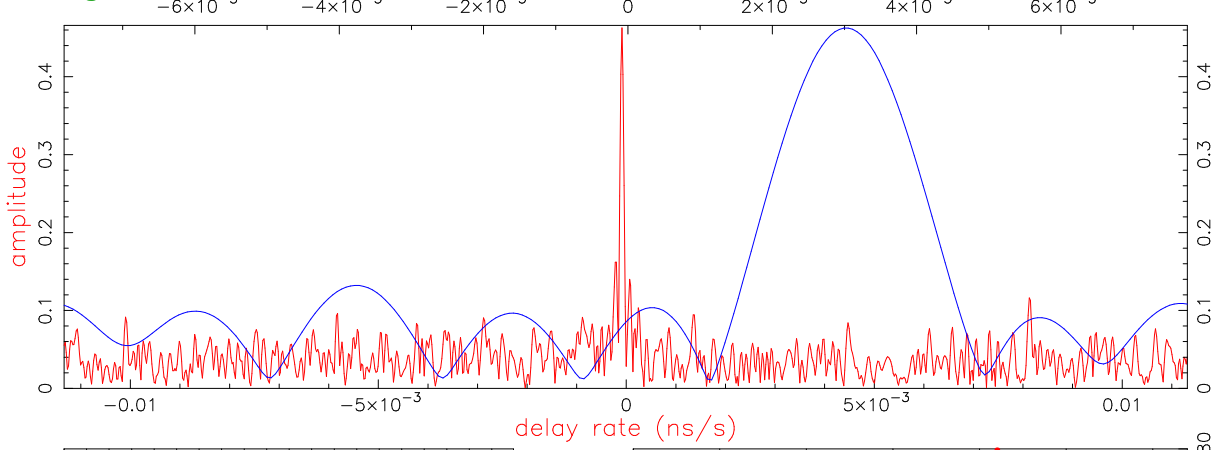
Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



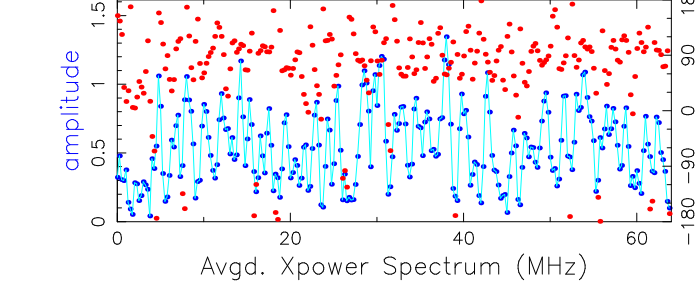
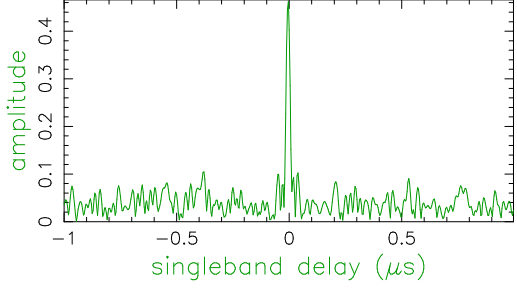
|  | 86012.00           | 86076.00 | 86140.00 | 86204.00 | 86268.00           | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All     |
|--|--------------------|----------|----------|----------|--------------------|----------|----------|----------|------------|---------|
| U/L                                    | 303/0              | 303/0    | 303/0    | 303/0    | 303/0              | 303/0    | 303/0    | 303/0    |            |         |
| g                                      | 0                  | 0        | 0        | 0        | 0                  | 0        | 0        | 0        |            |         |
| t                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |            |         |
| g:t                                    | 0:0                | 0:0      | 0:0      | 0:0      | 0:0                | 0:0      | 0:0      | 0:0      |            |         |
| g                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |            |         |
| t                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |            |         |
| g                                      | W00UR              | W01UR    | W02UR    | W03UR    | W04UR              | W05UR    | W06UR    | W07UR    |            |         |
| t                                      | W00UL              | W01UL    | W02UL    | W03UL    | W04UL              | W05UL    | W06UL    | W07UL    |            |         |
| Group delay (usec)(sbd)                | -4.16774858722E+03 |          |          |          | -4.16774090840E+03 |          |          |          |            |         |
| Sband delay (usec)                     | -4.16774105040E+03 |          |          |          | 7.0120811E-01      |          |          |          |            |         |
| Phase delay (usec)                     | -4.16774090364E+03 |          |          |          | 1.2200000E-07      |          |          |          |            |         |
| Delay rate (us/s)                      | 6.43986066439E-01  |          |          |          | 6.43986150045E-01  |          |          |          |            |         |
| Total phase (deg)                      |                    |          | -158.1   |          | 5.93954494826E-05  |          |          |          |            |         |
| Apriori delay (usec)                   |                    |          |          |          |                    |          |          |          |            |         |
| Apriori clock (usec)                   |                    |          |          |          |                    |          |          |          |            |         |
| Apriori clockrate (us/s)               |                    |          |          |          |                    |          |          |          |            |         |
| Apriori rate (us/s)                    |                    |          |          |          |                    |          |          |          |            |         |
| Apriori accel (us/s/s)                 |                    |          |          |          |                    |          |          |          |            |         |
| Resid mbdelay (usec)                   |                    |          |          |          |                    |          |          |          |            |         |
| Resid sbdelay (usec)                   |                    |          |          |          |                    |          |          |          |            |         |
| Resid phdelay (usec)                   |                    |          |          |          |                    |          |          |          |            |         |
| Resid rate (us/s)                      |                    |          |          |          |                    |          |          |          |            |         |
| Resid phase (deg)                      |                    |          |          |          |                    |          |          |          | 147.8      | +/- 9.0 |
| Pcal mode: MANUAL, MANUAL              |                    |          |          |          |                    |          |          |          |            |         |
| Pcal rate: 0.000E+00, 0.000E+00 (us/s) |                    |          |          |          |                    |          |          |          |            |         |
| Bits/sample: 2x2                       |                    |          |          |          |                    |          |          |          |            |         |
| Sample rate(MISamp/s): 128             |                    |          |          |          |                    |          |          |          |            |         |
| Data rate(Mb/s): 2048                  |                    |          |          |          |                    |          |          |          |            |         |
| nlags: 256                             |                    |          |          |          |                    |          |          |          |            |         |
| t_cohere infinite                      |                    |          |          |          |                    |          |          |          |            |         |
| sb window (us)                         |                    |          |          |          |                    |          |          |          | -1.000     | 1.000   |
| mb window (us)                         |                    |          |          |          |                    |          |          |          | -0.008     | 0.008   |
| dr window (ns/s)                       |                    |          |          |          |                    |          |          |          | -0.011     | 0.011   |
| ion window (TEC)                       |                    |          |          |          |                    |          |          |          | 0.00       | 0.00    |
| simultaneous interpolator              |                    |          |          |          |                    |          |          |          |            |         |

ph/seg (deg) 29.5 22.1 Search (1024X32) 0.367 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
amp/seg (%) 34.9 38.5 Interp. 0.000 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
ph/frq (deg) 9.2 12.7 Inc. seg. avg. 0.403 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
amp/frq (%) 10.5 22.2 Inc. frq. avg. 0.368 Sample rate(MISamp/s): 128 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite dr window (ns/s) -0.011 0.011  
g: az 20.3 el 38.6 pa -7.6 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) -5772.026 8185.117 ion window (TEC) 0.00 0.00  
Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/gt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/gt.W.41.1WZMQH

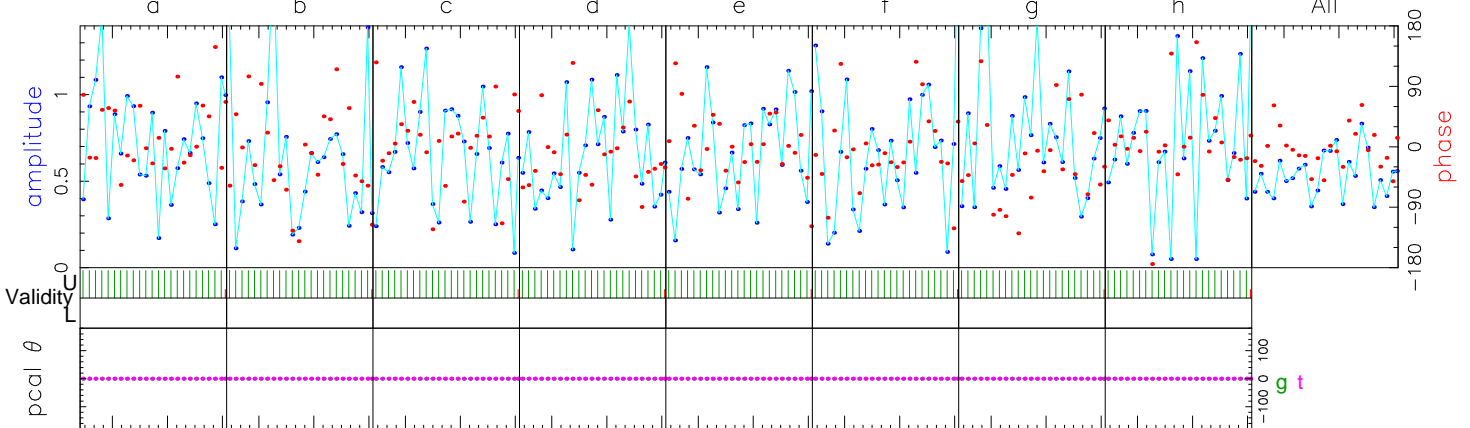
multiband delay ( $\mu$ s)



Fringe quality 9  
SNR 15.9  
Int time 155.134  
Amp 0.466  
Phase -3.2  
PFD 0.0e+00  
Delays (us)  
SBD -0.005040  
MBD 0.003014  
Fringe rate (Hz)  
-0.007140  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512  
Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080424.70  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:113957  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"



Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|           | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All   |
|-----------|----------|----------|----------|----------|----------|----------|----------|----------|------------|-------|
| 7.1       | -21.9    | 3.9      | -14.8    | 2.3      | -1.8     | -15.5    | 4.6      |          | Phase      | -3.2  |
| 0.5       | 0.4      | 0.5      | 0.5      | 0.5      | 0.5      | 0.4      | 0.4      |          | Ampl.      | 0.5   |
| 256.1     | 254.9    | 256.0    | 255.7    | 255.6    | 256.2    | 255.9    | 255.3    |          | Sbd box    | 255.7 |
| U/L 303/0 | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    |          | APs used   |       |
| g 0       | 0        | 0        | 0        | 0        | 0        | 0        | 0        |          | PC freqs   |       |
| t 1000    | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |          | PC freqs   |       |
| g:t 0:0   | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |          | PC phase   |       |
| g:t 0:0   | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |          | Mani PC    |       |
| g 1000    | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |          | PC amp     |       |
| t 1000    | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |          |            |       |
| g         | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Chan ids   |       |
| t         | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Tracks     |       |
|           |          |          |          |          |          |          |          |          | Chan ids   |       |
|           |          |          |          |          |          |          |          |          | Tracks     |       |

|                         |                    |                          |                    |                      |              |     |         |
|-------------------------|--------------------|--------------------------|--------------------|----------------------|--------------|-----|---------|
| Group delay (usec)(sbd) | -4.16775351932E+03 | Apriori delay (usec)     | -4.16774090840E+03 | Resid mbdelay (usec) | 3.01409E-03  | +/- | 6.8E-05 |
| Sband delay (usec)      | -4.16774594790E+03 | Apriori clock (usec)     | 7.0120811E-01      | Resid sbdelay (usec) | -5.03950E-03 | +/- | 5.4E-04 |
| Phase delay (usec)      | -4.16774090851E+03 | Apriori clockrate (us/s) | 1.2200000E-07      | Resid phdelay (usec) | -1.04079E-07 | +/- | 2.3E-07 |
| Delay rate (us/s)       | 6.43986067155E-01  | Apriori rate (us/s)      | 6.43986150045E-01  | Resid rate (us/s)    | -8.28899E-08 | +/- | 2.6E-09 |
| Total phase (deg)       | -309.1             | Apriori accel (us/s/s)   | 5.93954494826E-05  | Resid phase (deg)    | -3.2         | +/- | 7.2     |

|              |          |             |                            |                 |       |  |                            |                   |                  |       |      |
|--------------|----------|-------------|----------------------------|-----------------|-------|--|----------------------------|-------------------|------------------|-------|------|
| ph/seg (deg) | RMS 30.7 | Theor. 17.7 | Amplitude Search (1024X32) | 0.466 +/- 0.029 | 0.456 | Pcal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5      | sb window (us)    | -1.000           | 1.000 |      |
| amp/seg (%)  | 31.2     | 30.9        | Interp.                    | 0.000           | 0.000 | Pcal rate: 0.000E+00, 0.000E+00 (us/s) | SampCntNorm: enabled       | mb window (us)    | -0.008           | 0.008 |      |
| ph/frq (deg) | 12.1     | 10.2        | Inc. seg. avg.             | 0.514           | 0.514 | Bits/sample: 2x2                       | Sample rate(MISamp/s): 128 | dr window (ns/s)  | -0.011           | 0.011 |      |
| amp/frq (%)  | 16.4     | 17.8        | Inc. frq. avg.             | 0.462           | 0.462 | Data rate(Mb/s): 2048                  | nlags: 256                 | t_cohere infinite | ion window (TEC) | 0.00  | 0.00 |

g: az 20.3 el 38.6 pa -7.6 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) -5772.026 8185.117 simultaneous interpolator  
Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/gt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/gt.W.9.1WZMQH



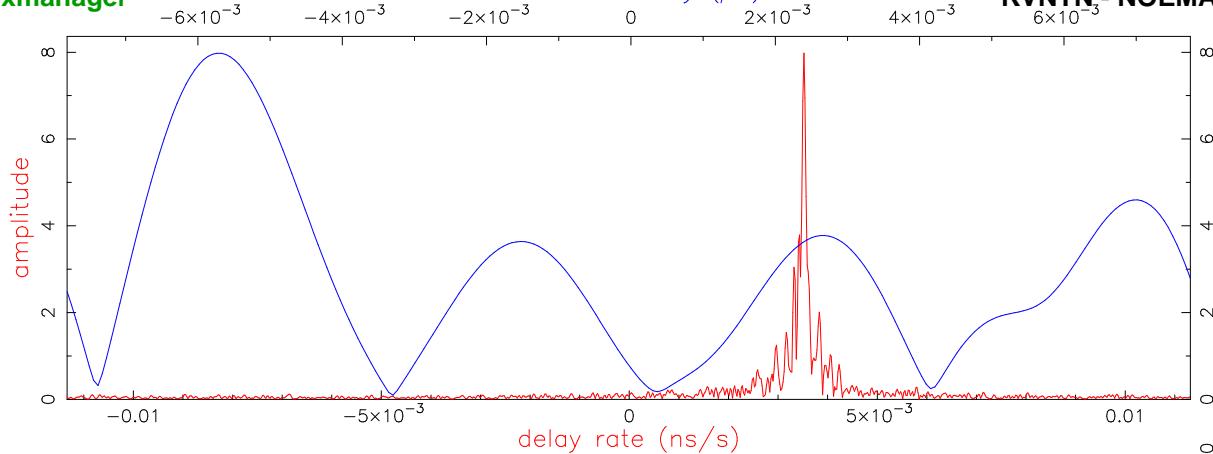
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tN

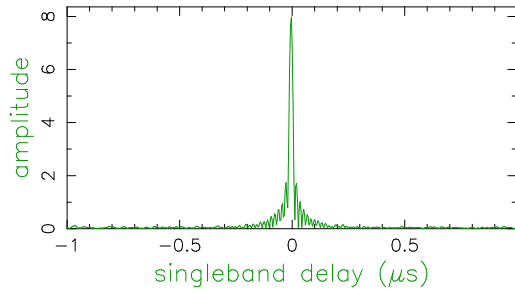
KVNTN - NOEMA, fgroup W, pol LL

multiband delay ( $\mu$ s)

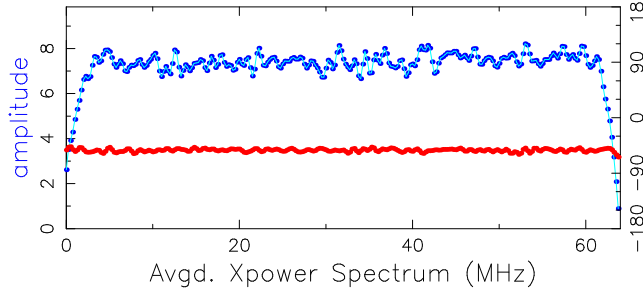


Fringe quality 3

SNR 273.7  
 Int time 155.134  
 Amp 8.366  
 Phase -44.1  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.004955  
 MBD -0.005713  
 Fringe rate (Hz)  
 0.303749  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

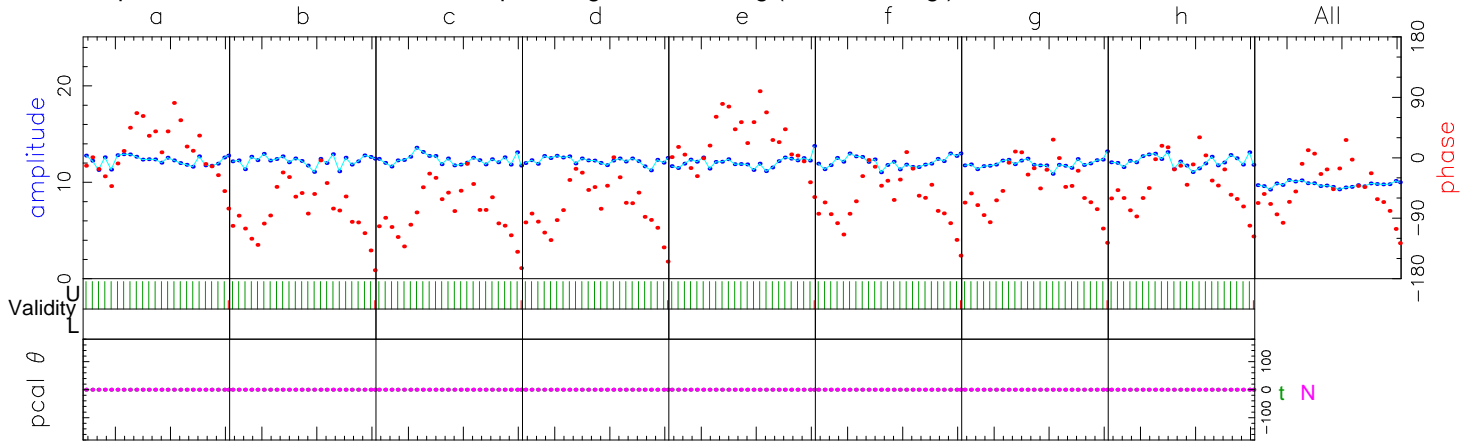


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114003  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|-----|
| U/L | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    |            |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | APs used   |     |
| N   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |     |
| t:N | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | PC phase   |     |
| t:N | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | Mani PC    |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC amp     |     |
| N   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| t   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Chan ids   |     |
| N   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Tracks     |     |

|                         |                    |                          |                        |                    |                      |                   |              |       |         |     |
|-------------------------|--------------------|--------------------------|------------------------|--------------------|----------------------|-------------------|--------------|-------|---------|-----|
| Group delay (usec)(sbd) | 4.01351253120E+03  | Apriori delay (usec)     |                        | 4.01351824469E+03  | Resid mbdelay (usec) |                   | -5.71349E-03 | +/-   | 4.0E-06 |     |
| Sband delay (usec)      | 4.01351328944E+03  | Apriori clock (usec)     |                        | 1.2980960E+01      | Resid sbdelay (usec) |                   | -4.95525E-03 | +/-   | 3.1E-05 |     |
| Phase delay (usec)      | 4.01351824327E+03  | Apriori clockrate (us/s) |                        | 4.3390001E-06      | Resid phdelay (usec) |                   | -1.42116E-06 | +/-   | 1.3E-08 |     |
| Delay rate (us/s)       | -1.22527919330E+00 | Apriori rate (us/s)      |                        | -1.22528271952E+00 | Resid rate (us/s)    |                   | 3.52622E-06  | +/-   | 1.5E-10 |     |
| Total phase (deg)       | 171.1              |                          | Apriori accel (us/s/s) |                    | -3.47762692106E-05   | Resid phase (deg) |              | -44.1 | +/-     | 0.4 |

|              |          |            |                  |                       |  |            |                       |                   |                  |           |
|--------------|----------|------------|------------------|-----------------------|--|------------|-----------------------|-------------------|------------------|-----------|
| ph/seg (deg) | RMS 35.8 | Theor. 1.0 | Amplitude        | 8.366 +/- 0.031       | Pcal mode: MANUAL, MANUAL              |            | PC period (AP's) 5, 5 |                   |                  |           |
| amp/seg (%)  | 21.7     | 1.8        | Search (1024X32) | 7.790                 | Pcal rate: 0.000E+00, 0.000E+00 (us/s) |            | sb window (us)        | -1.000 1.000      |                  |           |
| ph/frq (deg) | 43.2     | 0.6        | Inc. seg. avg.   | 10.156                | Bits/sample: 2x2                       |            | SampCntNorm: enabled  | mb window (us)    | -0.008 0.008     |           |
| amp/frq (%)  | 23.7     | 1.0        | Inc. frq. avg.   | 10.341                | Sample rate(MISamp/s): 128             |            | dr window (ns/s)      | -0.011 0.011      |                  |           |
|              |          |            |                  | Data rate(Mb/s): 2048 |  | nlags: 256 |                       | t_cohere infinite | ion window (TEC) | 0.00 0.00 |

t: az 313.4 el 55.6 pa 105.4 N: az 52.5 el 38.7 pa -64.5 u,v (fr/asec) 11100.826 -4336.529 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tN..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tN.W.44.1WZMQH

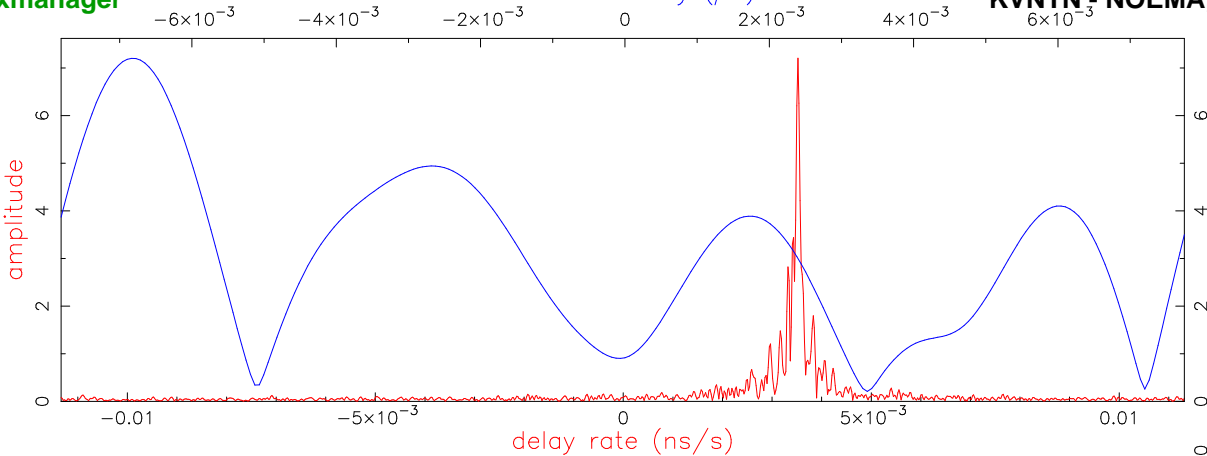
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tN

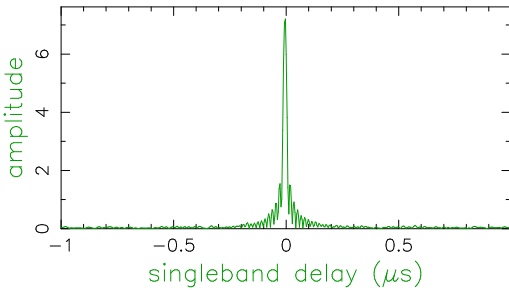
KVNTN - NOEMA, fgroup W, pol RR

multiband delay ( $\mu$ s)

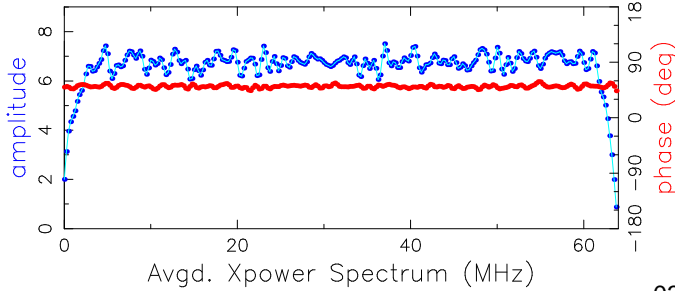


Fringe quality 3

SNR 249.4  
 Int time 155.134  
 Amp 7.622  
 Phase 66.2  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.005493  
 MBD -0.006822  
 Fringe rate (Hz)  
 0.303811  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

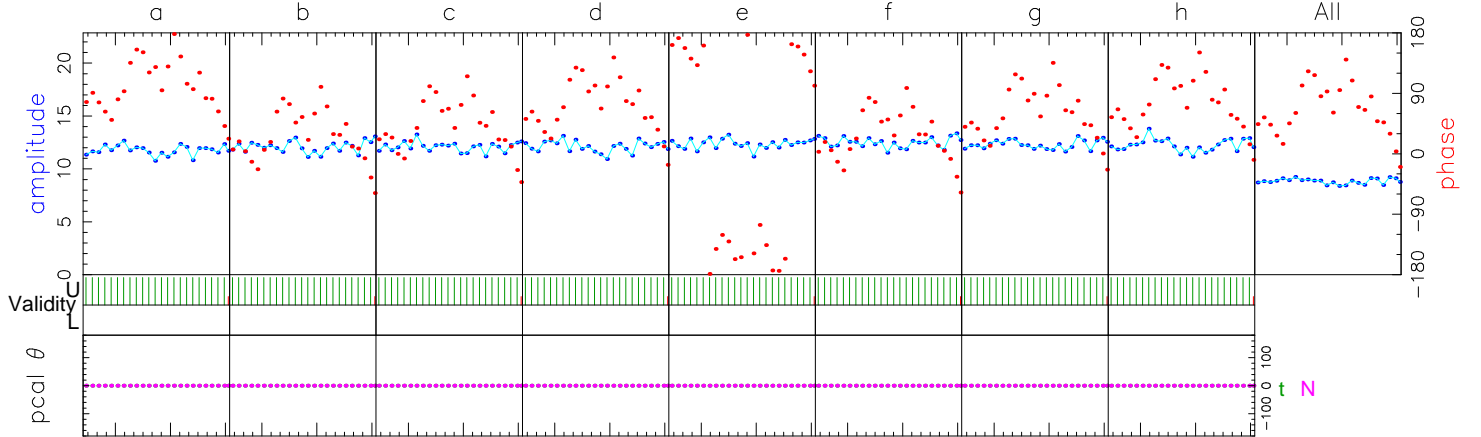


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114005  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                         | 86012.00           | 86076.00 | 86140.00                 | 86204.00 | 86268.00           | 86332.00 | 86396.00             | 86460.00 | Freq (MHz)   | All         |
|-------------------------|--------------------|----------|--------------------------|----------|--------------------|----------|----------------------|----------|--------------|-------------|
| U/L                     | 303/0              | 303/0    | 303/0                    | 303/0    | 303/0              | 303/0    | 303/0                | 303/0    |              |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | APs used     |             |
| N                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| t:N                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | PC phase     |             |
| t:N                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | Mani PC      |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC amp       |             |
| N                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     |              |             |
| t                       | W00UR              | W01UR    | W02UR                    | W03UR    | W04UR              | W05UR    | W06UR                | W07UR    | Chan ids     |             |
| N                       | W00UR              | W01UR    | W02UR                    | W03UR    | W04UR              | W05UR    | W06UR                | W07UR    | Tracks       |             |
| Group delay (usec)(sbd) | 4.01351142232E+03  |          | Apriori delay (usec)     |          | 4.01351824469E+03  |          | Resid mbdelay (usec) |          | -6.82237E-03 | +/- 4.4E-06 |
| Sband delay (usec)      | 4.01351275144E+03  |          | Apriori clock (usec)     |          | 1.2980960E+01      |          | Resid sbdelay (usec) |          | -5.49325E-03 | +/- 3.5E-05 |
| Phase delay (usec)      | 4.01351824682E+03  |          | Apriori clockrate (us/s) |          | 4.3390001E-06      |          | Resid phdelay (usec) |          | 2.13411E-06  | +/- 1.5E-08 |
| Delay rate (us/s)       | -1.22527919259E+00 |          | Apriori rate (us/s)      |          | -1.22528271952E+00 |          | Resid rate (us/s)    |          | 3.52694E-06  | +/- 1.7E-10 |
| Total phase (deg)       | 281.3              |          | Apriori accel (us/s/s)   |          | -3.47762692106E-05 |          | Resid phase (deg)    |          | 66.2         | +/- 0.5     |

|              | RMS  | Theor. | Amplitude        | 7.622 +/- 0.031 | Pcal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5         |                             |
|--------------|------|--------|------------------|-----------------|--|-------------------------------|-----------------------------|
| ph/seg (deg) | 36.3 | 1.1    | Search (1024X32) | 6.915           | Pcal rate: 0.000E+00, 0.000E+00 (us/s) | sb window (us) -1.000 1.000   |                             |
| amp/seg (%)  | 21.0 | 2.0    | Interp.          | 0.000           | Bits/sample: 2x2                       | SampCntNorm: enabled          | mb window (us) -0.008 0.008 |
| ph/frq (deg) | 55.7 | 0.6    | Inc. seg. avg.   | 9.203           | Sample rate(MISamp/s): 128             | dr window (ns/s) -0.011 0.011 |                             |
| amp/frq (%)  | 36.0 | 1.1    | Inc. frq. avg.   | 10.359          | Data rate(Mb/s): 2048                  | nlags: 256 t_cohere infinite  | ion window (TEC) 0.00 0.00  |

t: az 313.4 el 55.6 pa 105.4 N: az 52.5 el 38.7 pa -64.5 u,v (fr/asec) 11100.826 -4336.529 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tN..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tN.W.59.1WZMQH

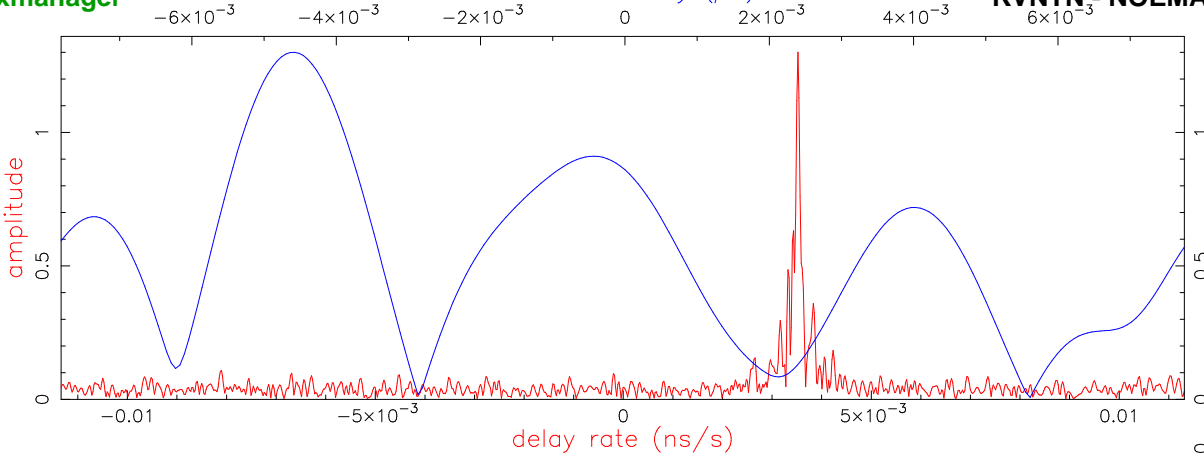
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tN

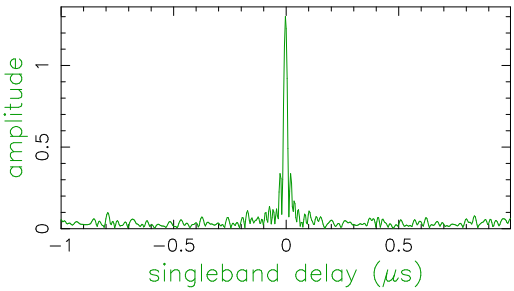
KVNTN- NOEMA, fgroup W, pol LR

multiband delay ( $\mu$ s)

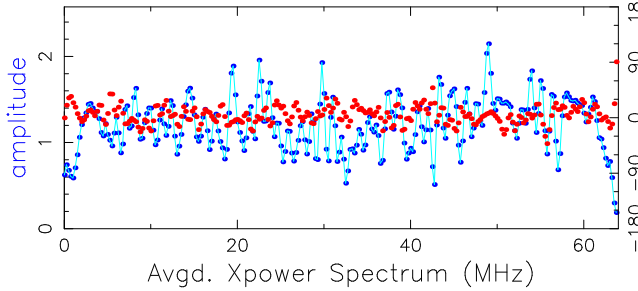


Fringe quality 5

SNR 44.5  
 Int time 155.134  
 Amp 1.360  
 Phase 21.2  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.003087  
 MBD -0.004597  
 Fringe rate (Hz)  
 0.303789  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

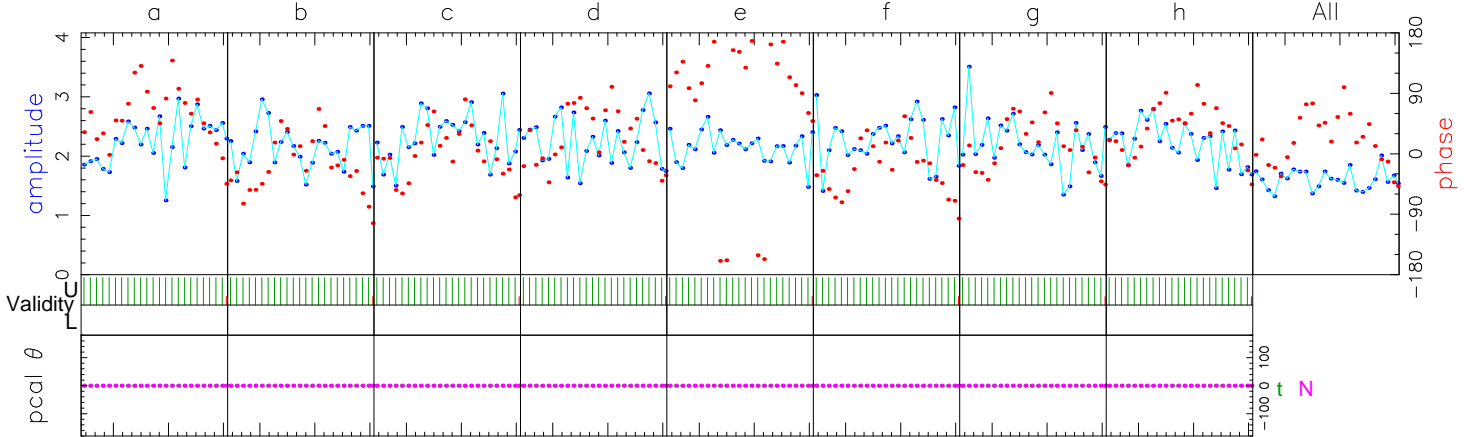


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114007  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|-----|
| U/L | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    |            |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |     |
| N   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |     |
| t:N | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | PC phase   |     |
| t:N | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | Mani PC    |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC amp     |     |
| N   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| t   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Chan ids   |     |
| N   | W00UR    | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    | Tracks     |     |

|                         |                    |                          |                        |                    |                      |                   |              |      |         |     |
|-------------------------|--------------------|--------------------------|------------------------|--------------------|----------------------|-------------------|--------------|------|---------|-----|
| Group delay (usec)(sbd) | 4.01351364798E+03  | Apriori delay (usec)     |                        | 4.01351824469E+03  | Resid mbdelay (usec) |                   | -4.59671E-03 | +/-  | 2.4E-05 |     |
| Sband delay (usec)      | 4.01351515794E+03  | Apriori clock (usec)     |                        | 1.2980960E+01      | Resid sbdelay (usec) |                   | -3.08675E-03 | +/-  | 1.9E-04 |     |
| Phase delay (usec)      | 4.01351824537E+03  | Apriori clockrate (us/s) |                        | 4.3390001E-06      | Resid phdelay (usec) |                   | 6.82108E-07  | +/-  | 8.3E-08 |     |
| Delay rate (us/s)       | -1.22527919284E+00 | Apriori rate (us/s)      |                        | -1.22528271952E+00 | Resid rate (us/s)    |                   | 3.52668E-06  | +/-  | 9.3E-10 |     |
| Total phase (deg)       | 236.3              |                          | Apriori accel (us/s/s) |                    | -3.47762692106E-05   | Resid phase (deg) |              | 21.2 | +/-     | 2.6 |

|              |      |      |                  |                       |  |            |                       |                   |                  |           |
|--------------|------|------|------------------|-----------------------|--|------------|-----------------------|-------------------|------------------|-----------|
| ph/seg (deg) | 37.0 | 6.3  | Search (1024X32) | 1.279                 | Pcal mode: MANUAL, MANUAL              |            | PC period (AP's) 5, 5 |                   |                  |           |
| amp/seg (%)  | 26.4 | 11.0 | Interp.          | 0.000                 | Pcal rate: 0.000E+00, 0.000E+00 (us/s) |            | sb window (us)        | -1.000 1.000      |                  |           |
| ph/frq (deg) | 56.4 | 3.6  | Inc. seg. avg.   | 1.666                 | Bits/sample: 2x2                       |            | SampCntNorm: enabled  | mb window (us)    | -0.008 0.008     |           |
| amp/frq (%)  | 36.5 | 6.4  | Inc. frq. avg.   | 1.845                 | Sample rate(MISamp/s): 128             |            | dr window (ns/s)      | -0.011 0.011      |                  |           |
|              |      |      |                  | Data rate(Mb/s): 2048 |  | nlags: 256 |                       | t_cohere infinite | ion window (TEC) | 0.00 0.00 |

t: az 313.4 el 55.6 pa 105.4 N: az 52.5 el 38.7 pa -64.5 u,v (fr/asec) 11100.826 -4336.529 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tN..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tN.W.68.1WZMQH

Mk4/DiFX fourfit 3.21 rev 2937

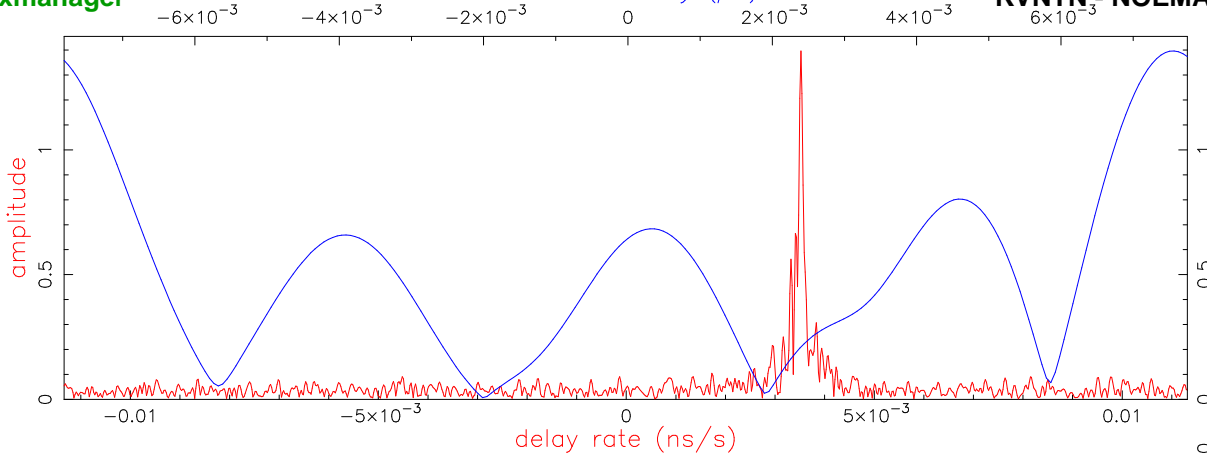
fxmanager

NRAO150.1WZMQH, No0029, tN

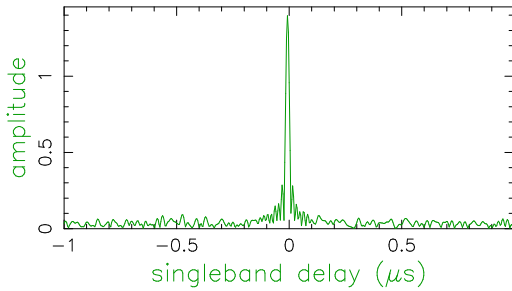
KVNTN- NOEMA, fgroup W, pol RL

multiband delay ( $\mu$ s)

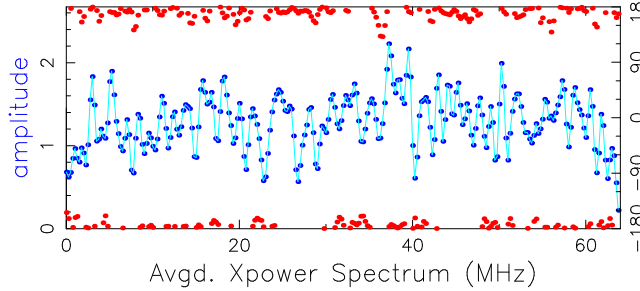
Fringe quality 5



SNR 47.6  
 Int time 155.134  
 Amp 1.455  
 Phase -177.5  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.007488  
 MBD -0.008070  
 Fringe rate (Hz)  
 0.303964  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

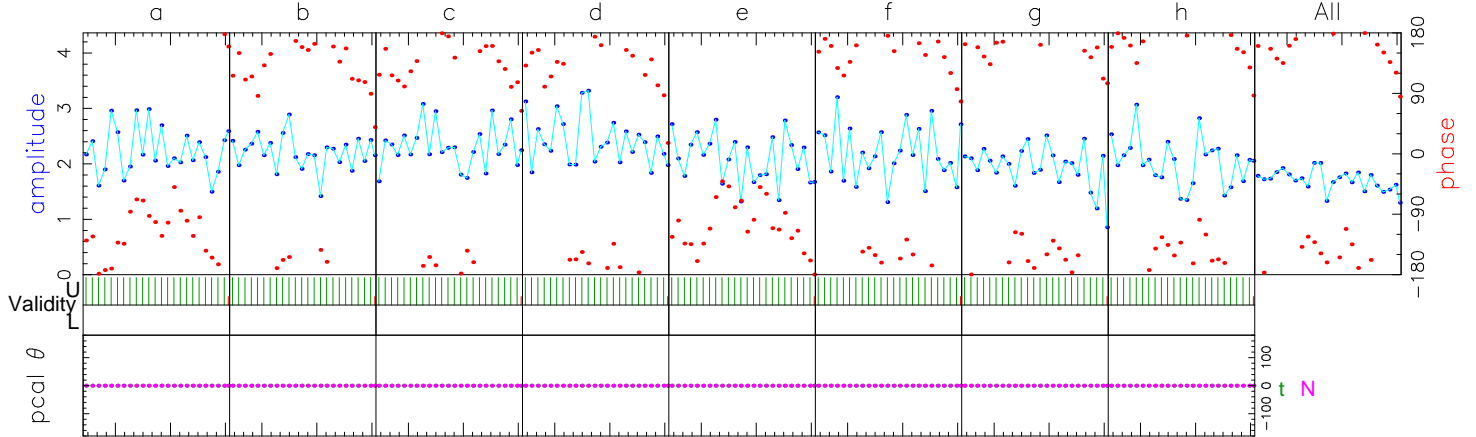


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114009  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                         | 86012.00           | 86076.00 | 86140.00                 | 86204.00 | 86268.00           | 86332.00 | 86396.00             | 86460.00 | Freq (MHz)   | All         |
|-------------------------|--------------------|----------|--------------------------|----------|--------------------|----------|----------------------|----------|--------------|-------------|
|                         | -119.9             | 144.8    | 150.7                    | 157.4    | -106.2             | 169.4    | -179.1               | -172.3   | Phase        | -177.5      |
|                         | 1.8                | 1.8      | 2.0                      | 2.0      | 1.8                | 1.8      | 1.7                  | 1.7      | Ampl.        | 1.8         |
|                         | 254.9              | 255.0    | 255.2                    | 255.0    | 255.0              | 255.3    | 255.3                | 255.2    | Sbd box      | 255.1       |
| U/L                     | 303/0              | 303/0    | 303/0                    | 303/0    | 303/0              | 303/0    | 303/0                | 303/0    | APs used     |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| N                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| t:N                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | PC phase     |             |
| t:N                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | Mani PC      |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC amp       |             |
| N                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     |              |             |
| t                       | W00UR              | W01UR    | W02UR                    | W03UR    | W04UR              | W05UR    | W06UR                | W07UR    | Chan ids     |             |
| N                       | W00UL              | W01UL    | W02UL                    | W03UL    | W04UL              | W05UL    | W06UL                | W07UL    | Tracks       |             |
|                         |                    |          |                          |          |                    |          |                      |          | Tracks       |             |
| Group delay (usec)(sbd) | 4.01351017491E+03  |          | Apriori delay (usec)     |          | 4.01351824469E+03  |          | Resid mbdelay (usec) |          | -8.06978E-03 | +/- 2.3E-05 |
| Sband delay (usec)      | 4.01351075719E+03  |          | Apriori clock (usec)     |          | 1.2980960E+01      |          | Resid sbdelay (usec) |          | -7.48750E-03 | +/- 1.8E-04 |
| Phase delay (usec)      | 4.01351823897E+03  |          | Apriori clockrate (us/s) |          | 4.3390001E-06      |          | Resid phdelay (usec) |          | -5.72282E-06 | +/- 7.8E-08 |
| Delay rate (us/s)       | -1.22527919080E+00 |          | Apriori rate (us/s)      |          | -1.22528271952E+00 |          | Resid rate (us/s)    |          | 3.52872E-06  | +/- 8.7E-10 |
| Total phase (deg)       | 37.7               |          | Apriori accel (us/s/s)   |          | -3.47762692106E-05 |          | Resid phase (deg)    |          | -177.5       | +/- 2.4     |

|              | RMS  | Theor. | Amplitude        | 1.455 +/- 0.031 | Pcal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5 | sb window (us)   | -1.000 | 1.000 |
|--------------|------|--------|------------------|-----------------|--|-----------------------|------------------|--------|-------|
| ph/seg (deg) | 36.4 | 5.9    | Search (1024X32) | 1.360           | Pcal rate: 0.000E+00, 0.000E+00 (us/s) | SampCntNorm: enabled  | mb window (us)   | -0.008 | 0.008 |
| amp/seg (%)  | 25.7 | 10.3   | Interp.          | 0.000           | Sample rate(MISamp/s): 128             | nlags: 256            | dr window (ns/s) | -0.011 | 0.011 |
| ph/frq (deg) | 44.1 | 3.4    | Inc. seg. avg.   | 1.776           | Data rate(Mb/s): 2048                  | t_cohere infinite     | ion window (TEC) | 0.00   | 0.00  |
| amp/frq (%)  | 26.5 | 5.9    | Inc. frq. avg.   | 1.826           |  |                       |                  |        |       |

t: az 313.4 el 55.6 pa 105.4 N: az 52.5 el 38.7 pa -64.5 u,v (fr/asec) 11100.826 -4336.529 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tN..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tN.W.89.1WZMQH

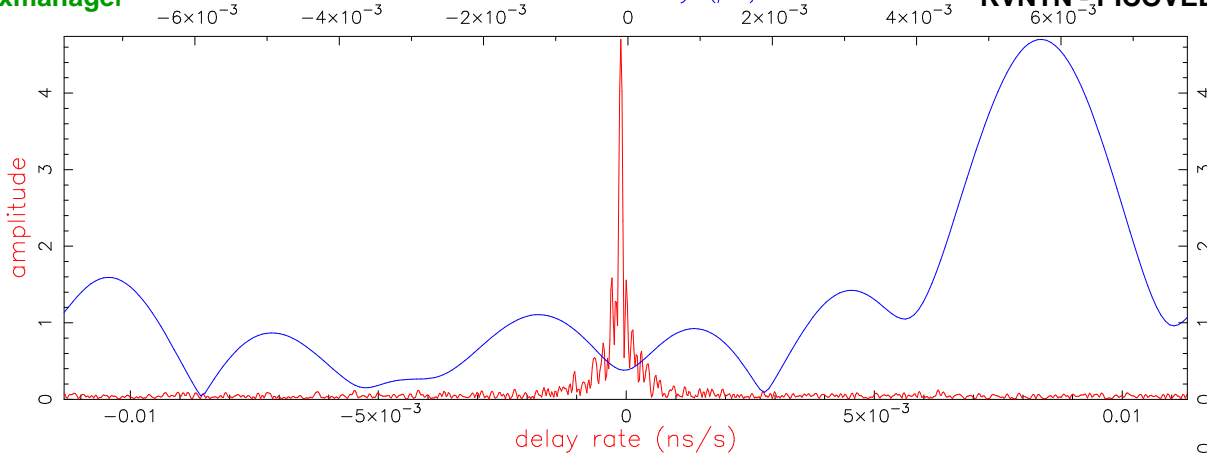
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tP

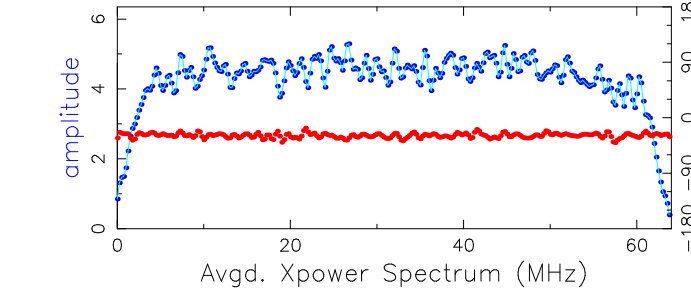
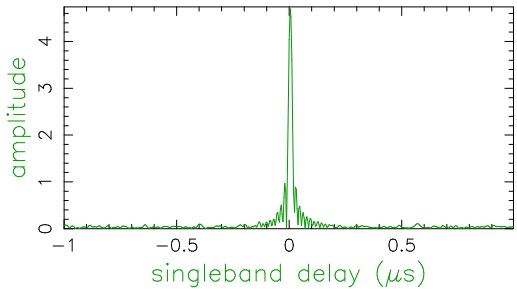
KVNTN - PICOVEL, fgroup W, pol LL

multiband delay ( $\mu$ s)



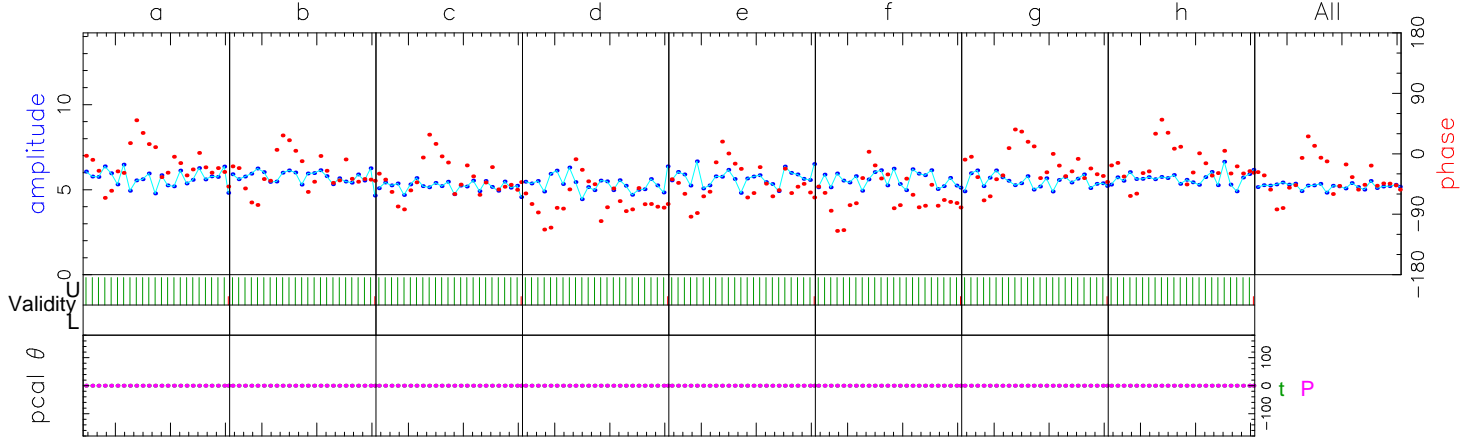
Fringe quality 5

SNR 161.5  
 Int time 155.134  
 Amp 4.741  
 Phase -36.4  
 PFD 0.0e+00  
 Delays (us)  
 SBD 0.005089  
 MBD 0.005730  
 Fringe rate (Hz)  
 -0.008639  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114004  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|-----|
| U/L | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    |            |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| P   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| t:P | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |            |     |
| t:P | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |            |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| P   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| t   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    |            |     |
| P   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    |            |     |

|                         |                    |                          |  |                    |                      |  |              |     |         |
|-------------------------|--------------------|--------------------------|--|--------------------|----------------------|--|--------------|-----|---------|
| Group delay (usec)(sbd) | 7.15055854588E+03  | Apriori delay (usec)     |  | 7.15055281570E+03  | Resid mbdelay (usec) |  | 5.73018E-03  | +/- | 6.7E-06 |
| Sband delay (usec)      | 7.15055790420E+03  | Apriori clock (usec)     |  | 7.7469635E-01      | Resid sbdelay (usec) |  | 5.08850E-03  | +/- | 5.3E-05 |
| Phase delay (usec)      | 7.15055281453E+03  | Apriori clockrate (us/s) |  | 5.4999999E-07      | Resid phdelay (usec) |  | -1.17403E-06 | +/- | 2.3E-08 |
| Delay rate (us/s)       | -1.32196664827E+00 | Apriori rate (us/s)      |  | -1.32196654798E+00 | Resid rate (us/s)    |  | -1.00292E-07 | +/- | 2.6E-10 |
| Total phase (deg)       | 159.6              | Apriori accel (us/s/s)   |  | -4.27621648430E-05 | Resid phase (deg)    |  | -36.4        | +/- | 0.7     |

|              |      |     |                  |       |  |  |                       |                   |                  |           |
|--------------|------|-----|------------------|-------|--|--|-----------------------|-------------------|------------------|-----------|
| ph/seg (deg) | 26.0 | 1.7 | Search (1024X32) | 4.502 | Pcal mode: MANUAL, MANUAL              |  | PC period (AP's) 5, 5 |                   |                  |           |
| amp/seg (%)  | 10.5 | 3.0 | Interp.          | 0.000 | Pcal rate: 0.000E+00, 0.000E+00 (us/s) |  | sb window (us)        | -1.000 1.000      |                  |           |
| ph/frq (deg) | 23.0 | 1.0 | Inc. seg. avg.   | 5.213 | Bits/sample: 2x2                       |  | SampCntNorm: enabled  | mb window (us)    | -0.008 0.008     |           |
| amp/frq (%)  | 6.3  | 1.8 | Inc. frq. avg.   | 4.995 | Sample rate(MISamp/s): 128             |  | dr window (ns/s)      | -0.011 0.011      |                  |           |
|              |      |     |                  |       | Data rate(Mb/s): 2048                  |  | nlags: 256            | t_cohere infinite | ion window (TEC) | 0.00 0.00 |

t: az 313.4 el 55.6 pa 105.4 P: az 45.7 el 28.4 pa -65.9 u,v (fr/asec) 11966.441 -4563.175 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tP..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tP.W.53.1WZMQH



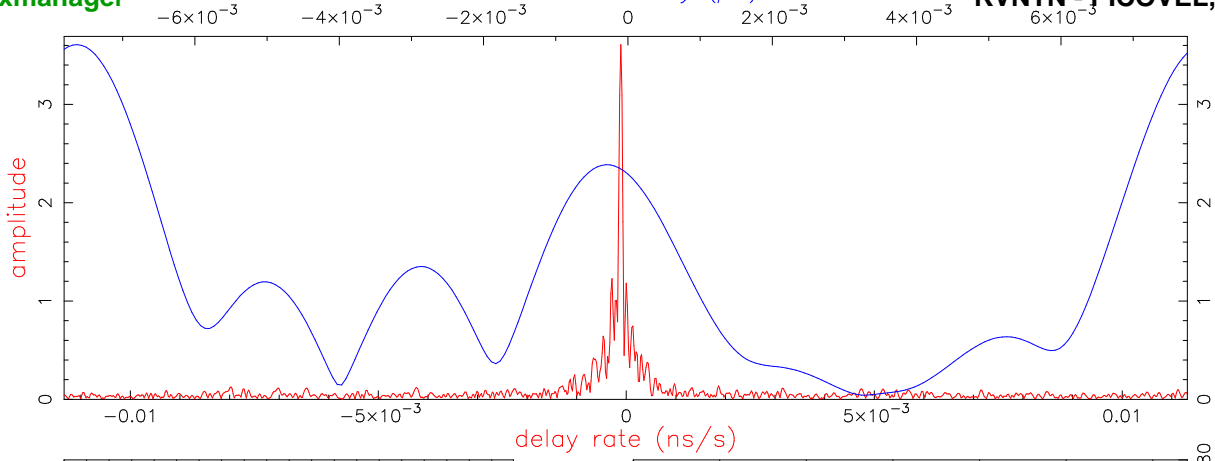
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tP

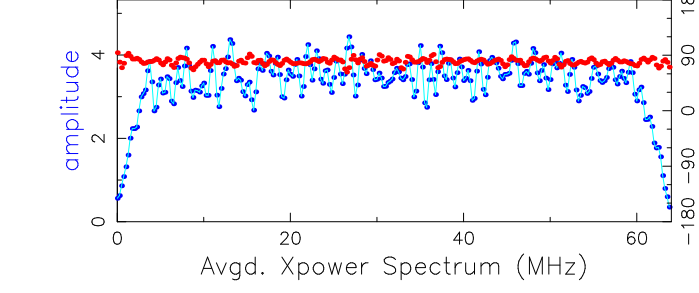
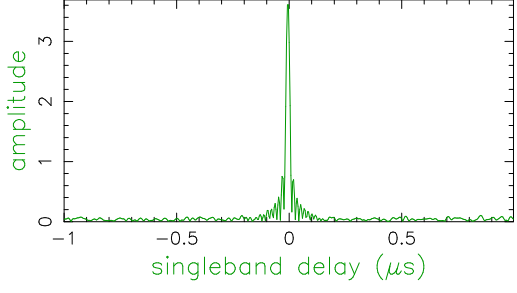
KVNTN - PICOVEL, fgroup W, pol RR

multiband delay ( $\mu$ s)



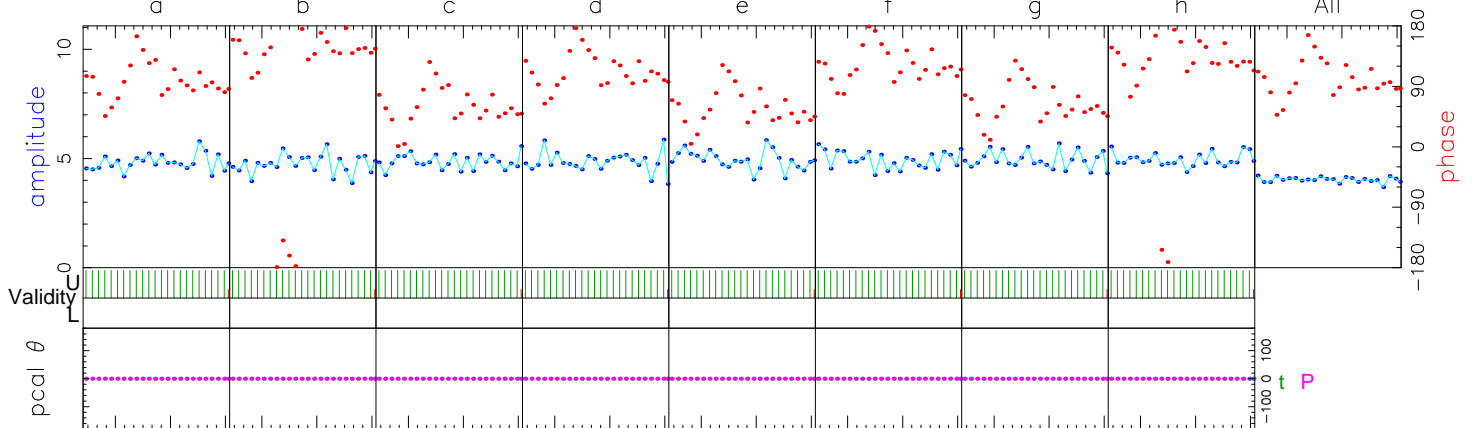
Fringe quality 5

SNR 125.7  
 Int time 155.134  
 Amp 3.692  
 Phase 100.2  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.005854  
 MBD -0.007625  
 Fringe rate (Hz)  
 -0.008649  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114006  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                         | 86012.00           | 86076.00 | 86140.00         | 86204.00 | 86268.00 | 86332.00           | 86396.00 | 86460.00 | Freq (MHz)                             | All                   |                   |                  |           |
|-------------------------|--------------------|----------|------------------|----------|----------|--------------------|----------|----------|--|-----------------------|-------------------|------------------|-----------|
| U/L                     | 303/0              | 303/0    | 303/0            | 303/0    | 303/0    | 303/0              | 303/0    | 303/0    |  |                       |                   |                  |           |
| t                       | 1000               | 1000     | 1000             | 1000     | 1000     | 1000               | 1000     | 1000     |  |                       |                   |                  |           |
| P                       | 1000               | 1000     | 1000             | 1000     | 1000     | 1000               | 1000     | 1000     |  |                       |                   |                  |           |
| t:P                     | 0:0                | 0:0      | 0:0              | 0:0      | 0:0      | 0:0                | 0:0      | 0:0      |  |                       |                   |                  |           |
| t:P                     | 0:0                | 0:0      | 0:0              | 0:0      | 0:0      | 0:0                | 0:0      | 0:0      |  |                       |                   |                  |           |
| t                       | 1000               | 1000     | 1000             | 1000     | 1000     | 1000               | 1000     | 1000     |  |                       |                   |                  |           |
| P                       | 1000               | 1000     | 1000             | 1000     | 1000     | 1000               | 1000     | 1000     |  |                       |                   |                  |           |
| t                       | W00UR              | W01UR    | W02UR            | W03UR    | W04UR    | W05UR              | W06UR    | W07UR    |  |                       |                   |                  |           |
| P                       | W00UR              | W01UR    | W02UR            | W03UR    | W04UR    | W05UR              | W06UR    | W07UR    |  |                       |                   |                  |           |
| Group delay (usec)(sbd) | 7.15054519063E+03  |          |                  |          |          | 7.15055281570E+03  |          |          | Resid mbdelay (usec)                   | -7.62507E-03          | +/- 8.6E-06       |                  |           |
| Sband delay (usec)      | 7.15054696120E+03  |          |                  |          |          | 7.7469635E-01      |          |          | Resid sbdelay (usec)                   | -5.85450E-03          | +/- 6.9E-05       |                  |           |
| Phase delay (usec)      | 7.15055281893E+03  |          |                  |          |          | 5.4999999E-07      |          |          | Resid phdelay (usec)                   | 3.23043E-06           | +/- 2.9E-08       |                  |           |
| Delay rate (us/s)       | -1.32196664838E+00 |          |                  |          |          | -1.32196654798E+00 |          |          | Resid rate (us/s)                      | -1.00401E-07          | +/- 3.3E-10       |                  |           |
| Total phase (deg)       |                    | 296.2    |                  |          |          | -4.27621648430E-05 |          |          | Resid phase (deg)                      | 100.2                 | +/- 0.9           |                  |           |
| ph/seg (deg)            | 27.1               | 2.2      | Search (1024X32) | 3.444    |          |                    |          |          | Pcal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5 |                   |                  |           |
| amp/seg (%)             | 10.0               | 3.9      | Interp.          | 0.000    |          |                    |          |          | Pcal rate: 0.000E+00, 0.000E+00 (us/s) | sb window (us)        | -1.000 1.000      |                  |           |
| ph/frq (deg)            | 40.1               | 1.3      | Inc. seg. avg.   | 4.035    |          |                    |          |          | Bits/sample: 2x2                       | SampCntNorm: enabled  | mb window (us)    | -0.008 0.008     |           |
| amp/frq (%)             | 18.3               | 2.2      | Inc. frq. avg.   | 4.365    |          |                    |          |          | Sample rate(MISamp/s): 128             |                       | dr window (ns/s)  | -0.011 0.011     |           |
|                         |                    |          |                  |          |          |                    |          |          | Data rate(Mb/s): 2048                  | nlags: 256            | t_cohere infinite | ion window (TEC) | 0.00 0.00 |

t: az 313.4 el 55.6 pa 105.4 P: az 45.7 el 28.4 pa -65.9 u,v (fr/asec) 11966.441 -4563.175 simultaneous interpolator  
 Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tP..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tP.W.64.1WZMQH

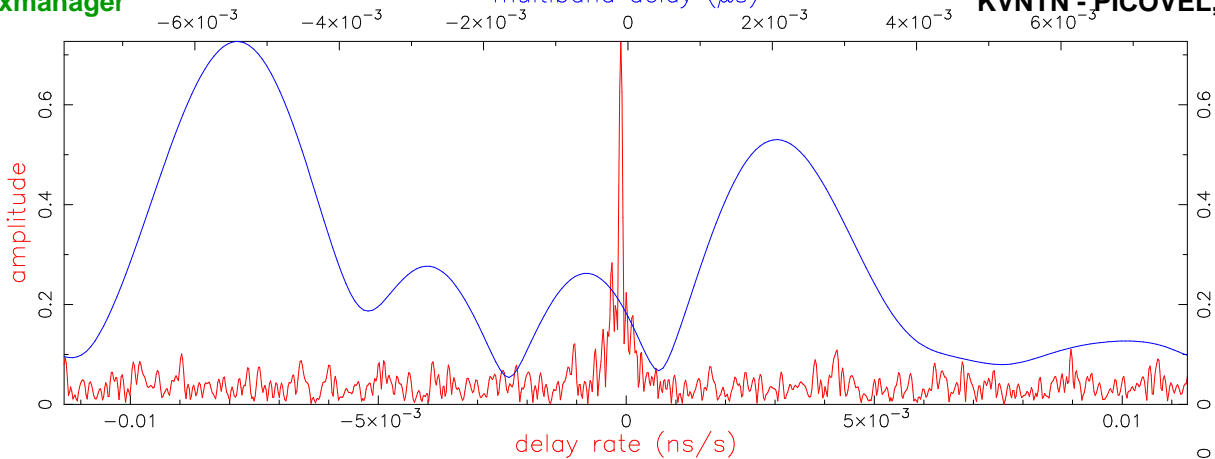
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tP

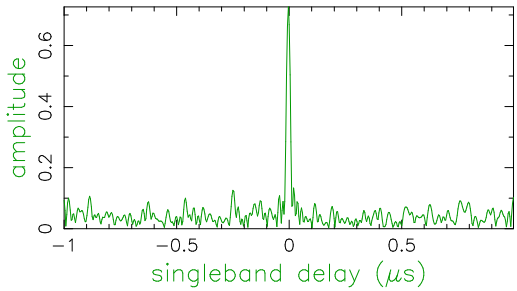
KVNTN - PICOVEL, fgroup W, pol LR

multiband delay ( $\mu$ s)

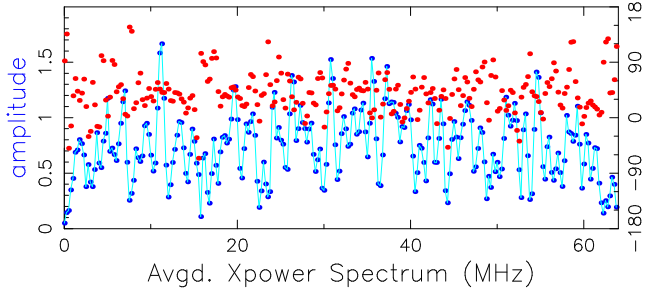


Fringe quality 7

SNR 24.8  
 Int time 155.134  
 Amp 0.727  
 Phase 57.6  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.003798  
 MBD -0.005414  
 Fringe rate (Hz)  
 -0.008707  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

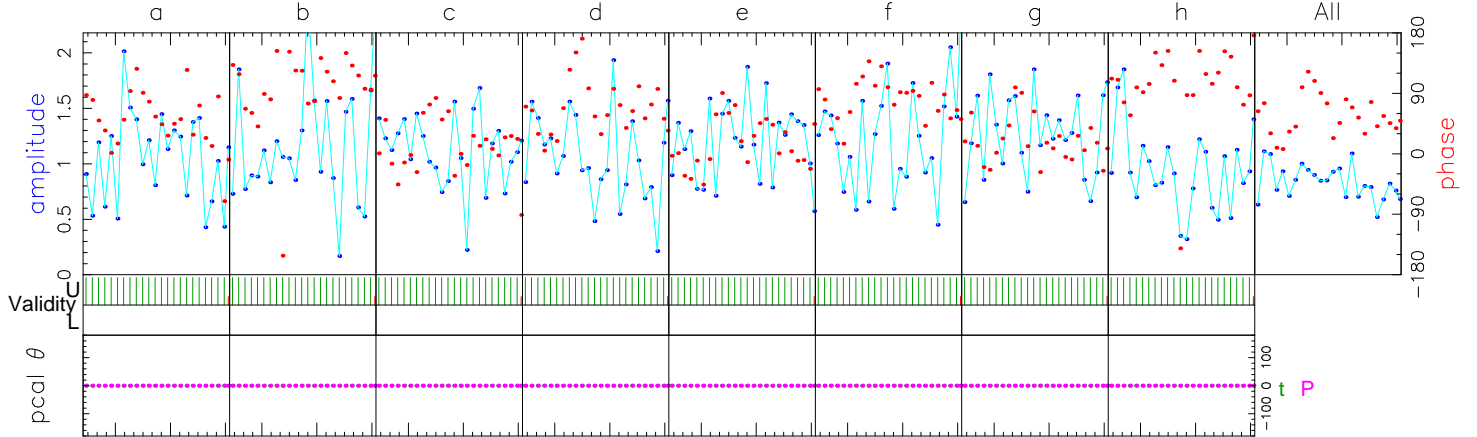


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114008  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                         | 86012.00 | 86076.00           | 86140.00                  | 86204.00               | 86268.00                               | 86332.00                   | 86396.00          | 86460.00 | Freq (MHz)           | All          |             |
|-------------------------|----------|--------------------|---------------------------|------------------------|--|----------------------------|-------------------|----------|----------------------|--------------|-------------|
| U/L                     | 303/0    | 303/0              | 303/0                     | 303/0                  | 303/0                                  | 303/0                      | 303/0             | 303/0    |                      |              |             |
| t                       | 1000     | 1000               | 1000                      | 1000                   | 1000                                   | 1000                       | 1000              | 1000     |                      |              |             |
| P                       | 1000     | 1000               | 1000                      | 1000                   | 1000                                   | 1000                       | 1000              | 1000     |                      |              |             |
| t:P                     | 0:0      | 0:0                | 0:0                       | 0:0                    | 0:0                                    | 0:0                        | 0:0               | 0:0      |                      |              |             |
| t:P                     | 0:0      | 0:0                | 0:0                       | 0:0                    | 0:0                                    | 0:0                        | 0:0               | 0:0      |                      |              |             |
| t                       | 1000     | 1000               | 1000                      | 1000                   | 1000                                   | 1000                       | 1000              | 1000     |                      |              |             |
| P                       | 1000     | 1000               | 1000                      | 1000                   | 1000                                   | 1000                       | 1000              | 1000     |                      |              |             |
| t                       | W00UL    | W01UL              | W02UL                     | W03UL                  | W04UL                                  | W05UL                      | W06UL             | W07UL    |                      |              |             |
| P                       | W00UR    | W01UR              | W02UR                     | W03UR                  | W04UR                                  | W05UR                      | W06UR             | W07UR    |                      |              |             |
| Group delay (usec)(sbd) |          | 7.15054740176E+03  |                           |                        | 7.15055281570E+03                      |                            |                   |          | Resid mbdelay (usec) | -5.41395E-03 | +/- 4.4E-05 |
| Sband delay (usec)      |          | 7.15054901745E+03  |                           |                        | 7.7469635E-01                          |                            |                   |          | Resid sbdelay (usec) | -3.79825E-03 | +/- 3.5E-04 |
| Phase delay (usec)      |          | 7.15055281756E+03  |                           |                        | 5.4999999E-07                          |                            |                   |          | Resid phdelay (usec) | 1.85622E-03  | +/- 1.5E-07 |
| Delay rate (us/s)       |          | -1.32196664906E+00 |                           |                        | -1.32196654798E+00                     |                            |                   |          | Resid rate (us/s)    | -1.01080E-07 | +/- 1.7E-09 |
| Total phase (deg)       |          |                    | 253.6                     |                        | -4.27621648430E-05                     |                            |                   |          | Resid phase (deg)    | 57.6         | +/- 4.6     |
| ph/seg (deg)            | RMS 29.8 | Theor. 11.3        | Amplitude 0.727 +/- 0.029 | Search (1024X32) 0.705 | PCal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5      |                   |          | sb window (us)       | -1.000       | 1.000       |
| amp/seg (%)             | 25.9     | 19.8               | Interp. 0.000             |                        | PCal rate: 0.000E+00, 0.000E+00 (us/s) | SampCntNorm: enabled       |                   |          | mb window (us)       | -0.008       | 0.008       |
| ph/frq (deg)            | 44.9     | 6.5                | Inc. seg. avg. 0.825      |                        | Bits/sample: 2x2                       | Sample rate(MISamp/s): 128 |                   |          | dr window (ns/s)     | -0.011       | 0.011       |
| amp/frq (%)             | 30.8     | 11.4               | Inc. frq. avg. 0.923      |                        | Data rate(Mb/s): 2048                  | nlags: 256                 | t_cohere infinite |          | ion window (TEC)     | 0.00         | 0.00        |

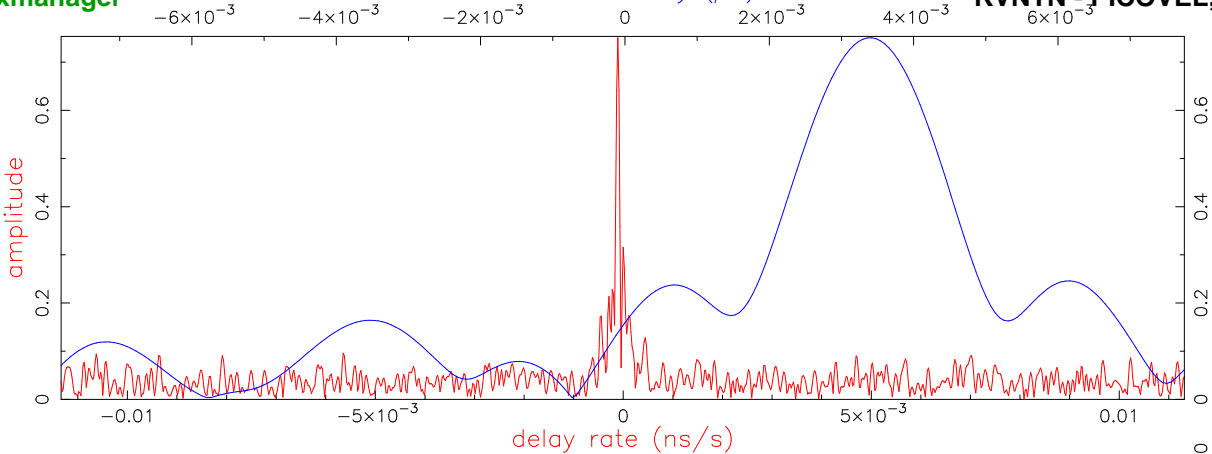
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tP

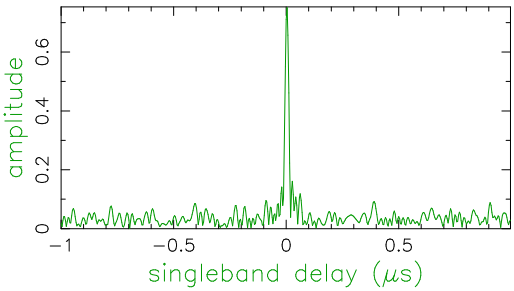
KVNTN - PICOVEL, fgroup W, pol RL

multiband delay ( $\mu$ s)

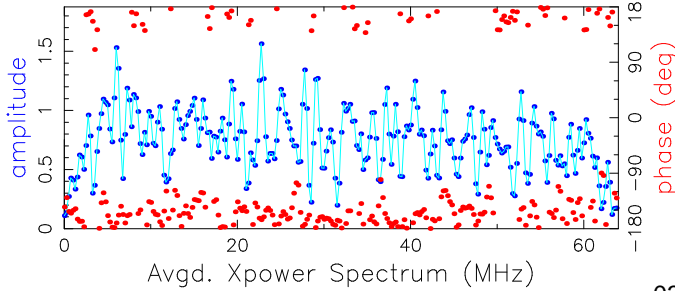


Fringe quality 8

SNR 25.7  
 Int time 155.134  
 Amp 0.754  
 Phase -165.7  
 PFD 0.0e+00  
 Delays (us)  
 SBD 0.003121  
 MBD 0.003396  
 Fringe rate (Hz)  
 -0.008655  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

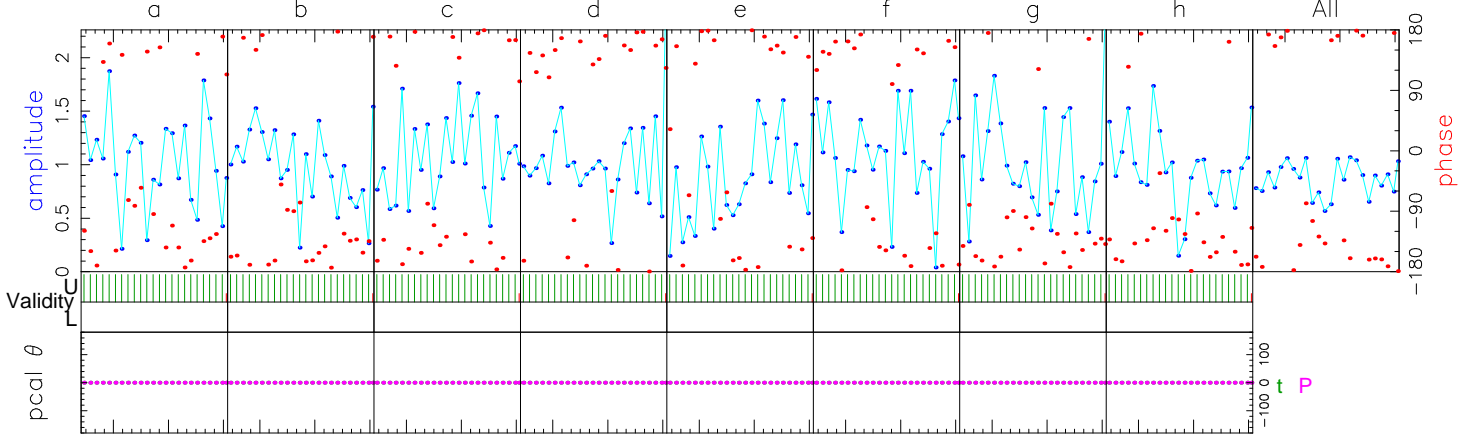


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114009  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All    |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|--------|
|     | -144.4   | -154.8   | -167.3   | 161.8    | -177.5   | 172.0    | -147.5   | -143.4   | Phase      | -165.7 |
|     | 0.7      | 0.8      | 0.9      | 0.9      | 0.7      | 0.9      | 0.9      | 0.7      | Ampl.      | 0.8    |
|     | 257.6    | 257.8    | 256.9    | 257.8    | 257.4    | 258.2    | 258.3    | 257.8    | Sbd box    | 257.8  |
| U/L | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | APs used   |        |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |        |
| P   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |        |
| t:P | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | PC phase   |        |
| t:P | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | Mani PC    |        |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC amp     |        |
| P   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |        |
| t   | W00UR    | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    | Chan ids   |        |
| P   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Tracks     |        |

|                         |                    |                          |                    |                      |              |     |         |
|-------------------------|--------------------|--------------------------|--------------------|----------------------|--------------|-----|---------|
| Group delay (usec)(sbd) | 7.15055621138E+03  | Apriori delay (usec)     | 7.15055281570E+03  | Resid mbdelay (usec) | 3.39568E-03  | +/- | 4.2E-05 |
| Sband delay (usec)      | 7.15055593720E+03  | Apriori clock (usec)     | 7.7469635E-01      | Resid sbdelay (usec) | 3.12150E-03  | +/- | 3.4E-04 |
| Phase delay (usec)      | 7.15055281036E+03  | Apriori clockrate (us/s) | 5.4999999E-07      | Resid phdelay (usec) | -5.34310E-06 | +/- | 1.4E-07 |
| Delay rate (us/s)       | -1.32196664845E+00 | Apriori rate (us/s)      | -1.32196654798E+00 | Resid rate (us/s)    | -1.00472E-07 | +/- | 1.6E-09 |
| Total phase (deg)       | 30.3               | Apriori accel (us/s/s)   | -4.27621648430E-05 | Resid phase (deg)    | -165.7       | +/- | 4.5     |

|              |          |             |                            |                 |       |  |                            |                   |                  |       |      |
|--------------|----------|-------------|----------------------------|-----------------|-------|--|----------------------------|-------------------|------------------|-------|------|
| ph/seg (deg) | RMS 30.2 | Theor. 10.9 | Amplitude Search (1024X32) | 0.754 +/- 0.029 | 0.725 | Pcal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5      | sb window (us)    | -1.000           | 1.000 |      |
| amp/seg (%)  | 24.4     | 19.1        | Interp.                    | 0.000           | 0.725 | Pcal rate: 0.000E+00, 0.000E+00 (us/s) | SampCntNorm: enabled       | mb window (us)    | -0.008           | 0.008 |      |
| ph/frq (deg) | 22.7     | 6.3         | Inc. seg. avg.             | 0.845           | 0.725 | Bits/sample: 2x2                       | Sample rate(MISamp/s): 128 | dr window (ns/s)  | -0.011           | 0.011 |      |
| amp/frq (%)  | 11.4     | 11.0        | Inc. frq. avg.             | 0.793           | 0.725 | Data rate(Mb/s): 2048                  | nlags: 256                 | t_cohere infinite | ion window (TEC) | 0.00  | 0.00 |

t: az 313.4 el 55.6 pa 105.4 P: az 45.7 el 28.4 pa -65.9 u,v (fr/asec) 11966.441 -4563.175 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tP..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tP.W.88.1WZMQH

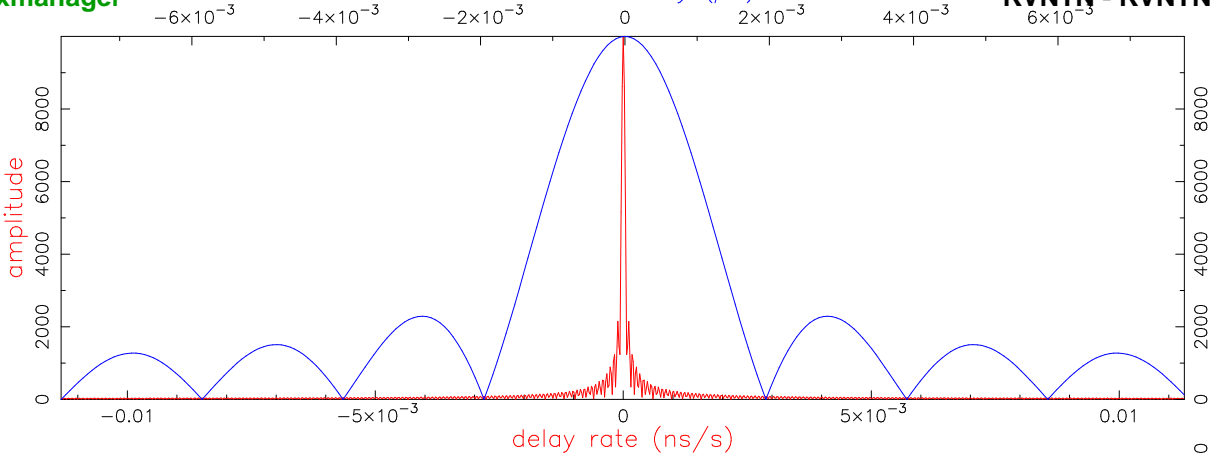
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tt

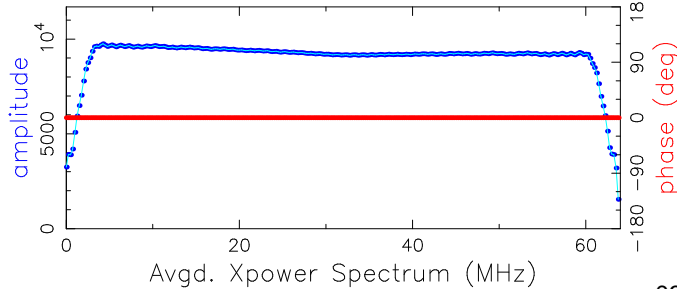
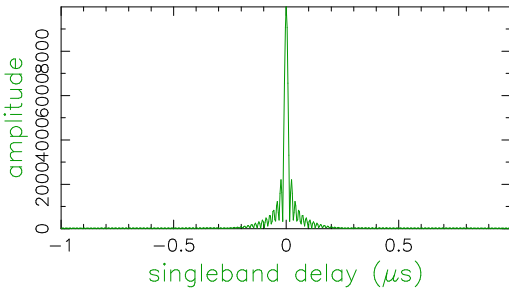
KVNTN - KVNTN, fgroup W, pol LL

multiband delay ( $\mu$ s)



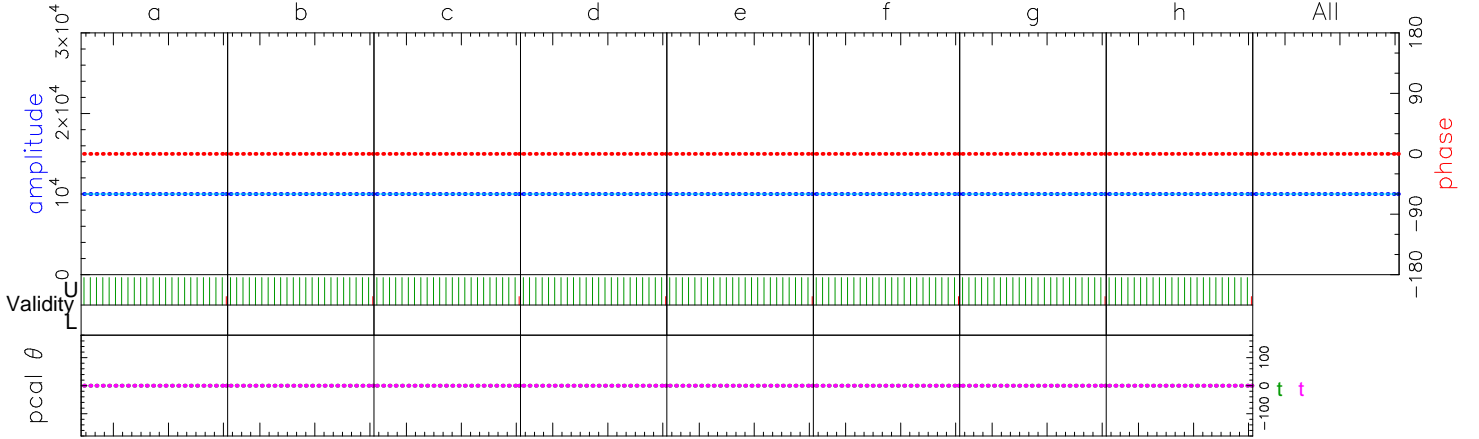
Fringe quality 9

SNR 340605.6  
Int time 155.134  
Amp 9999.999  
Phase 0.0  
PFD 0.0e+00  
Delays (us)  
SBD 0.000000  
MBD 0.000000  
Fringe rate (Hz)  
0.000000  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512



Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080424.70  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114003  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"

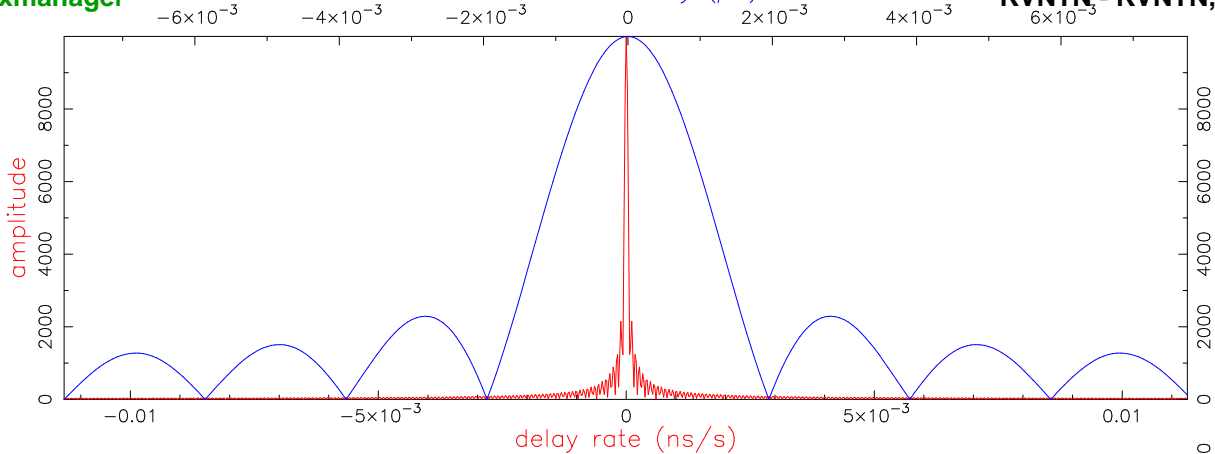
Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                         | 86012.00           | 86076.00           | 86140.00           | 86204.00           | 86268.00           | 86332.00           | 86396.00           | 86460.00           | Freq (MHz)   | All         |
|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------|-------------|
| U/L                     | 303/0              | 303/0              | 303/0              | 303/0              | 303/0              | 303/0              | 303/0              | 303/0              | 10000.0      | 10000.0     |
| t                       | 1000               | 1000               | 1000               | 1000               | 1000               | 1000               | 1000               | 1000               | 10000.0      | 10000.0     |
| t:t                     | 0:0                | 0:0                | 0:0                | 0:0                | 0:0                | 0:0                | 0:0                | 0:0                | 10000.0      | 10000.0     |
| t:t                     | 0:0                | 0:0                | 0:0                | 0:0                | 0:0                | 0:0                | 0:0                | 0:0                | 10000.0      | 10000.0     |
| t                       | 1000               | 1000               | 1000               | 1000               | 1000               | 1000               | 1000               | 1000               | 10000.0      | 10000.0     |
| t                       | 1000               | 1000               | 1000               | 1000               | 1000               | 1000               | 1000               | 1000               | 10000.0      | 10000.0     |
| t                       | W00UL              | W01UL              | W02UL              | W03UL              | W04UL              | W05UL              | W06UL              | W07UL              |              |             |
| t                       | W00UL              | W01UL              | W02UL              | W03UL              | W04UL              | W05UL              | W06UL              | W07UL              |              |             |
| Group delay (usec)(sbd) | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000E+00 | +/- 3.2E-09 |
| Sband delay (usec)      | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000E+00 | +/- 2.5E-08 |
| Phase delay (usec)      | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000E+00 | +/- 1.1E-11 |
| Delay rate (us/s)       | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000E+00 | +/- 1.2E-13 |
| Total phase (deg)       |                    |                    | 0.0                |                    |                    |                    |                    |                    | 0.0          | +/- 0.0     |

RMS Theor. Amplitude 9999.999 +/- 0.029 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
 ph/seg (deg) 0.0 0.0 Search (1024X32) 10000.000 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
 amp/seg (%) 0.0 0.0 Interp. 0.000 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
 ph/frq (deg) 0.0 0.0 Inc. seg. avg. 10000.000 Sample rate(MISamp/s): 128 dr window (ns/s) -0.011 0.011  
 amp/frq (%) 0.0 0.0 Inc. frq. avg. 10000.000 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite ion window (TEC) 0.00 0.00  
 t: az 313.4 el 55.6 pa 105.4 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) 0.000 0.000 simultaneous interpolator  
 Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tt.W.45.1WZMQH

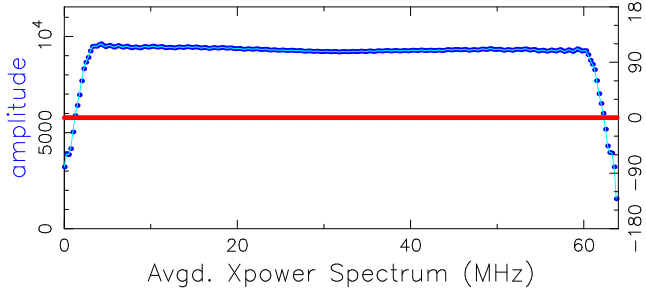
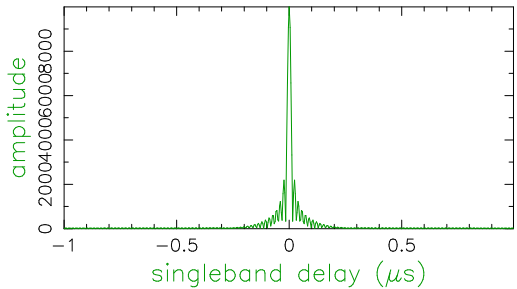
multiband delay ( $\mu$ s)



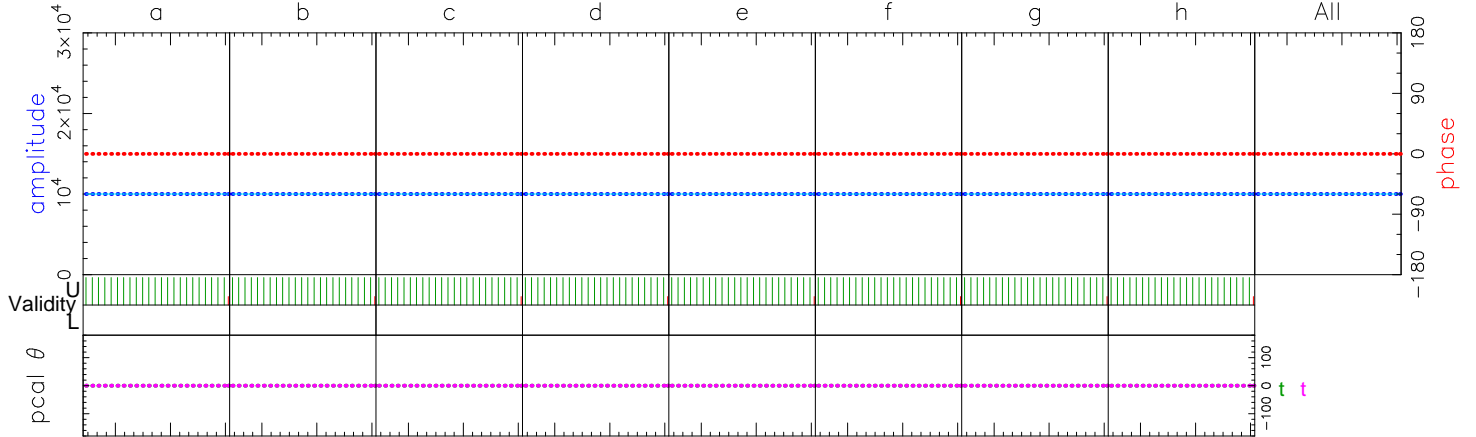
Fringe quality 9

SNR 340605.6  
Int time 155.134  
Amp 9999.999  
Phase 0.0  
PFD 0.0e+00  
Delays (us)  
SBD 0.000000  
MBD 0.000000  
Fringe rate (Hz) 0.000000  
Ion TEC 0.000  
Ref freq (MHz) 86140.0000  
AP (sec) 0.512

Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080424.70  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114005  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"



Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec

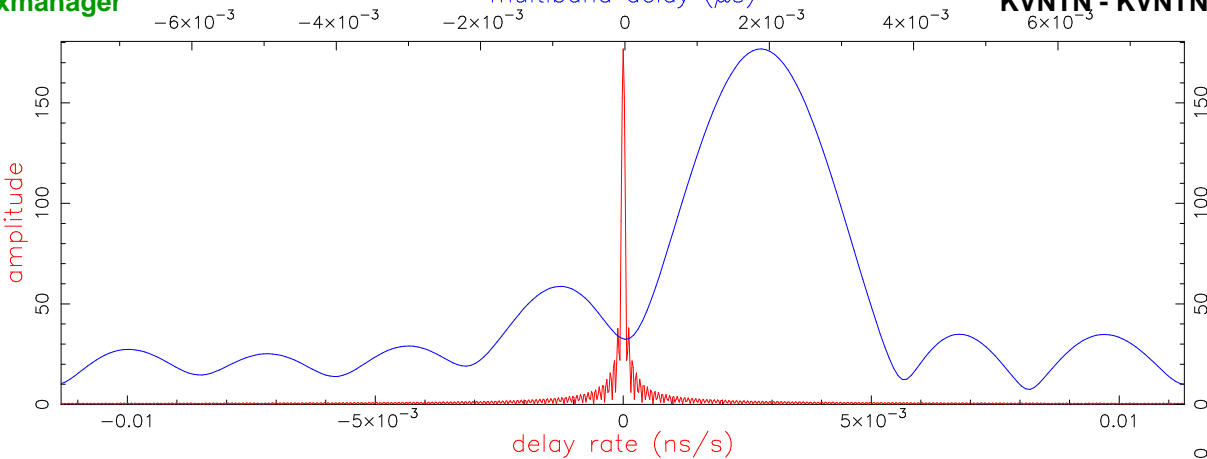


|                         | 86012.00           | 86076.00           | 86140.00           | 86204.00                 | 86268.00           | 86332.00           | 86396.00             | 86460.00           | Freq (MHz) | All         |
|-------------------------|--------------------|--------------------|--------------------|--------------------------|--------------------|--------------------|----------------------|--------------------|------------|-------------|
| U/L                     | 303/0              | 303/0              | 303/0              | 303/0                    | 303/0              | 303/0              | 303/0                | 303/0              |            |             |
| t                       | 1000               | 1000               | 1000               | 1000                     | 1000               | 1000               | 1000                 | 1000               |            |             |
| t:t                     | 0:0                | 0:0                | 0:0                | 0:0                      | 0:0                | 0:0                | 0:0                  | 0:0                |            |             |
| t:t                     | 0:0                | 0:0                | 0:0                | 0:0                      | 0:0                | 0:0                | 0:0                  | 0:0                |            |             |
| t                       | 1000               | 1000               | 1000               | 1000                     | 1000               | 1000               | 1000                 | 1000               |            |             |
| t                       | 1000               | 1000               | 1000               | 1000                     | 1000               | 1000               | 1000                 | 1000               |            |             |
| t                       | W00UR              | W01UR              | W02UR              | W03UR                    | W04UR              | W05UR              | W06UR                | W07UR              |            |             |
| t                       | W00UR              | W01UR              | W02UR              | W03UR                    | W04UR              | W05UR              | W06UR                | W07UR              |            |             |
| Group delay (usec)(sbd) | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00       | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00   | 0.000000000000E+00 |            |             |
| Sband delay (usec)      | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00       | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00   | 0.000000000000E+00 |            |             |
| Phase delay (usec)      | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00       | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00   | 0.000000000000E+00 |            |             |
| Delay rate (us/s)       | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00       | 0.000000000000E+00 | 0.000000000000E+00 | 0.000000000000E+00   | 0.000000000000E+00 |            |             |
| Total phase (deg)       |                    |                    | 0.0                |                          |                    |                    |                      |                    |            |             |
|                         |                    |                    |                    | Apriori delay (usec)     | 0.000000000000E+00 |                    | Resid mbdelay (usec) | 0.000000E+00       |            | +/- 3.2E-09 |
|                         |                    |                    |                    | Apriori clock (usec)     | 0.000000000000E+00 |                    | Resid sbdelay (usec) | 0.000000E+00       |            | +/- 2.5E-08 |
|                         |                    |                    |                    | Apriori clockrate (us/s) | 0.000000000000E+00 |                    | Resid phdelay (usec) | 0.000000E+00       |            | +/- 1.1E-11 |
|                         |                    |                    |                    | Apriori rate (us/s)      | 0.000000000000E+00 |                    | Resid rate (us/s)    | 0.000000E+00       |            | +/- 1.2E-13 |
|                         |                    |                    |                    | Apriori accel (us/s/s)   | 0.000000000000E+00 |                    | Resid phase (deg)    | 0.0                |            | +/- 0.0     |

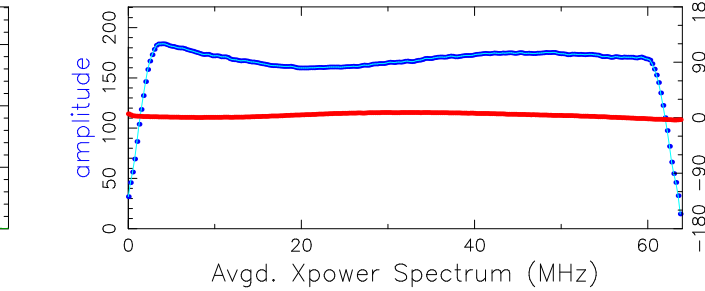
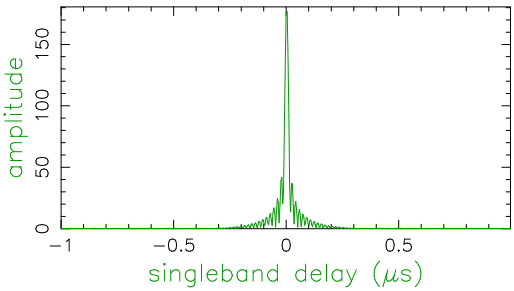
ph/seg (deg) 0.0 0.0 Theor. Amplitude 9999.999 +/- 0.029 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
 amp/seg (%) 0.0 0.0 Search (1024X32) 10000.000 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
 ph/frq (deg) 0.0 0.0 Interp. 0.000 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
 amp/frq (%) 0.0 0.0 Inc. seg. avg. 10000.000 Sample rate(MISamp/s): 128 dr window (ns/s) -0.011 0.011  
 t: az 313.4 el 55.6 pa 105.4 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) 0.000 0.000 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite ion window (TEC) 0.00 0.00  
 Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tt.W56.1WZMQH simultaneous interpolator



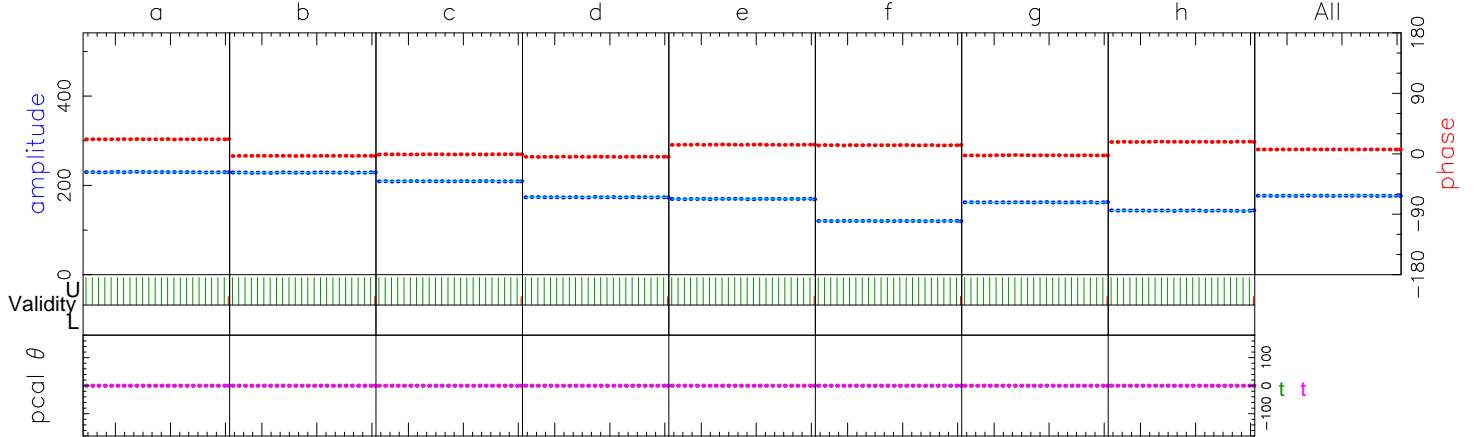
multiband delay ( $\mu$ s)



Fringe quality 7  
SNR 6152.0  
Int time 155.134  
Amp 180.619  
Phase 6.5  
PFD 0.0e+00  
Delays (us)  
SBD 0.002079  
MBD 0.001879  
Fringe rate (Hz)  
-0.000000  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512  
Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080424.70  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114007  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"



Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                          | 86012.00           | 86076.00 | 86140.00 | 86204.00 | 86268.00          | 86332.00 | 86396.00 | 86460.00 | Freq (MHz)                             | All                           |
|--------------------------|--------------------|----------|----------|----------|-------------------|----------|----------|----------|--|-------------------------------|
| U/L                      | 303/0              | 303/0    | 303/0    | 303/0    | 303/0             | 303/0    | 303/0    | 303/0    |  |                               |
| t                        | 1000               | 1000     | 1000     | 1000     | 1000              | 1000     | 1000     | 1000     | PC freqs                               |                               |
| t:t                      | 0:0                | 0:0      | 0:0      | 0:0      | 0:0               | 0:0      | 0:0      | 0:0      | PC phase                               |                               |
| t:t                      | 0:0                | 0:0      | 0:0      | 0:0      | 0:0               | 0:0      | 0:0      | 0:0      | Mani PC                                |                               |
| t                        | 1000               | 1000     | 1000     | 1000     | 1000              | 1000     | 1000     | 1000     | PC amp                                 |                               |
| t                        | 1000               | 1000     | 1000     | 1000     | 1000              | 1000     | 1000     | 1000     |  |                               |
| t                        | W00UL              | W01UL    | W02UL    | W03UL    | W04UL             | W05UL    | W06UL    | W07UL    | Chan ids                               |                               |
| t                        | W00UR              | W01UR    | W02UR    | W03UR    | W04UR             | W05UR    | W06UR    | W07UR    | Tracks                                 |                               |
| Group delay (usec)(sbd)  | 1.87934375000E-03  |          |          |          |                   |          |          |          | 1.87934E-03                            | +/- 1.8E-07                   |
| Sband delay (usec)       | 2.07925000000E-03  |          |          |          |                   |          |          |          | 2.07925E-03                            | +/- 1.4E-06                   |
| Phase delay (usec)       | 2.08292408260E-07  |          |          |          |                   |          |          |          | 2.08292E-07                            | +/- 6.0E-10                   |
| Delay rate (us/s)        | -2.83423047834E-12 |          |          |          |                   |          |          |          | -2.83423E-12                           | +/- 6.7E-12                   |
| Total phase (deg)        |                    |          | 6.5      |          |                   |          |          |          | 6.5                                    | +/- 0.0                       |
| Apriori delay (usec)     |                    |          |          |          | 0.00000000000E+00 |          |          |          | Resid mbdelay (usec)                   |                               |
| Apriori clock (usec)     |                    |          |          |          | 0.0000000E+00     |          |          |          | Resid sbdelay (usec)                   |                               |
| Apriori clockrate (us/s) |                    |          |          |          | 0.0000000E+00     |          |          |          | Resid phdelay (usec)                   |                               |
| Apriori rate (us/s)      |                    |          |          |          | 0.00000000000E+00 |          |          |          | Resid rate (us/s)                      |                               |
| Apriori accel (us/s/s)   |                    |          |          |          | 0.00000000000E+00 |          |          |          | Resid phase (deg)                      |                               |
| ph/seg (deg)             | 0.1                | 0.0      |          |          | 180.619 +/- 0.029 |          |          |          | PCal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5         |
| amp/seg (%)              | 2.1                | 0.1      |          |          | 176.481           |          |          |          | PCal rate: 0.000E+00, 0.000E+00 (us/s) | sb window (us) -1.000 1.000   |
| ph/frq (deg)             | 11.5               | 0.0      |          |          | 0.000             |          |          |          | Bits/sample: 2x2                       | SampCntNorm: enabled          |
| amp/frq (%)              | 20.6               | 0.0      |          |          | 176.858           |          |          |          | Sample rate(MISamp/s): 128             | dr window (ns/s) -0.011 0.011 |
|                          |                    |          |          |          | 179.697           |          |          |          | Data rate(Mb/s): 2048                  | nlags: 256 t_cohere infinite  |
|                          |                    |          |          |          |                   |          |          |          |  | ion window (TEC) 0.00 0.00    |

t: az 313.4 el 55.6 pa 105.4 t: az 313.4 el 55.6 pa 105.4 u,v (fr/asec) 0.000 0.000 simultaneous interpolator  
Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tt..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tt.W.66.1WZMQH

Mk4/DiFX fourfit 3.21 rev 2937

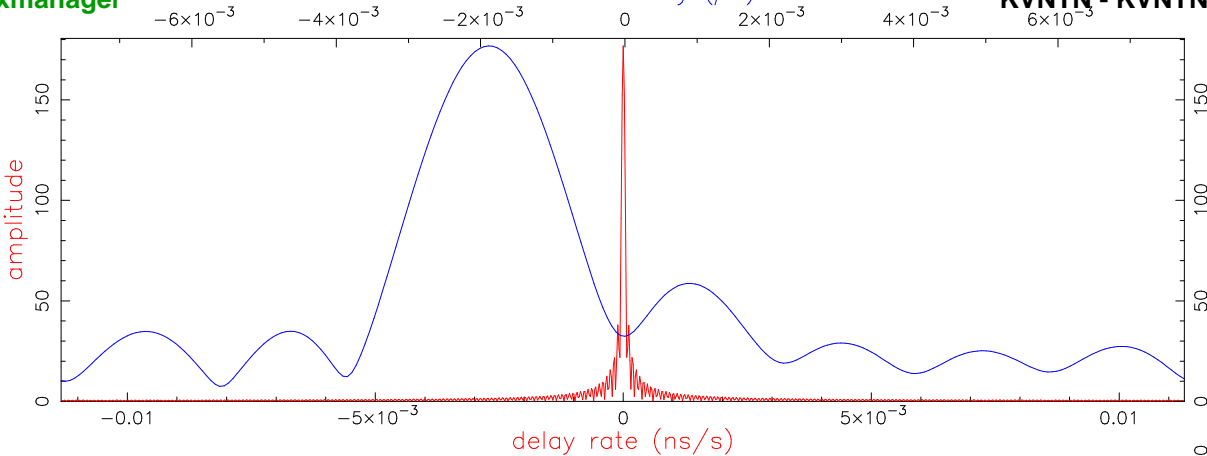
fxmanager

NRAO150.1WZMQH, No0029, tt

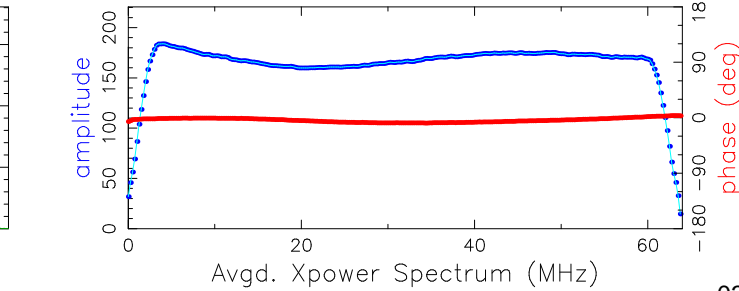
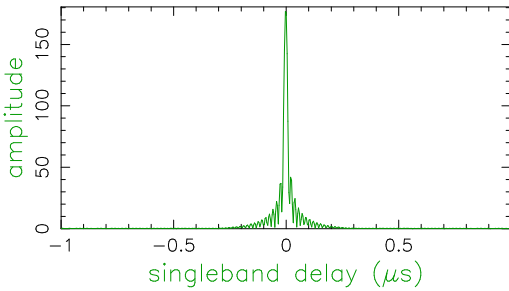
KVNTN - KVNTN, fgroup W, pol RL

multiband delay ( $\mu$ s)

Fringe quality 7

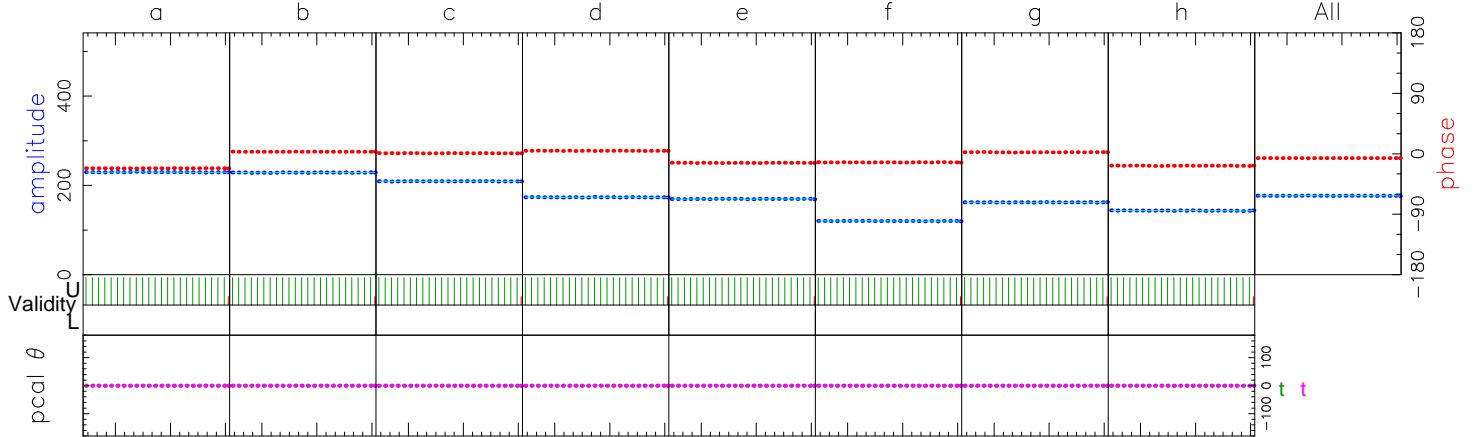


SNR 6152.0  
 Int time 155.134  
 Amp 180.619  
 Phase -6.5  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.002079  
 MBD -0.001879  
 Fringe rate (Hz)  
 0.000000  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114009  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec

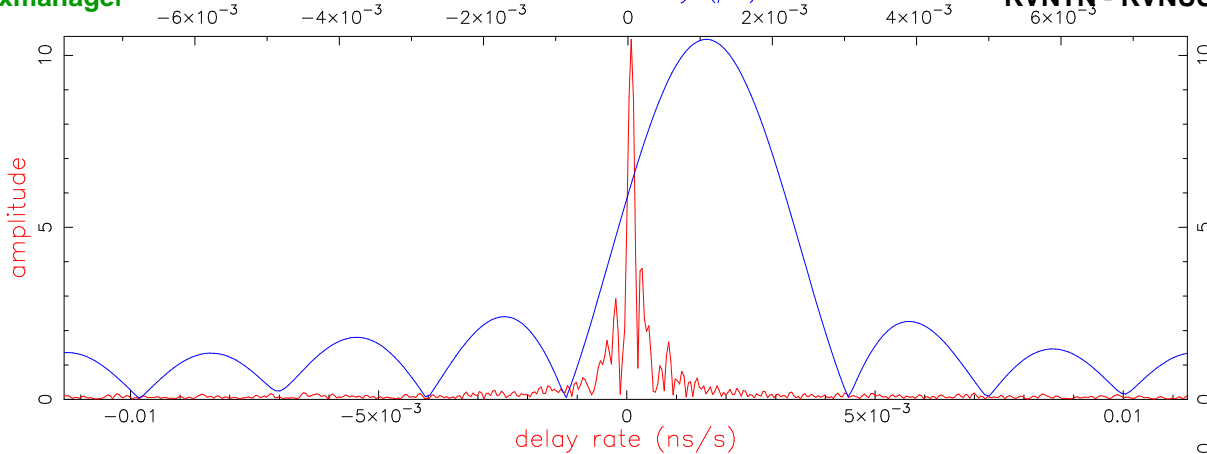


|                         | 86012.00           | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz)                             | All   |
|-------------------------|--------------------|----------|----------|----------|----------|----------|----------|----------|--|---|
| U/L                     | 303/0              | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    |  |   |
| t                       | 1000               | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | APs used                               |   |
| t:t                     | 0:0                | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | PC freqs                               |   |
| t:t                     | 0:0                | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | PC phase                               |   |
| t                       | 1000               | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | Mani PC                                |   |
| t                       | 1000               | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC amp                                 |   |
| t                       | W00UR              | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    | Chan ids                               |   |
| t                       | W00UL              | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Tracks                                 |   |
| Group delay (usec)(sbd) | -1.87934375000E-03 |          |          |          |          |          |          |          | Resid mbdelay (usec)                   | -1.87934E-03 +/- 1.8E-07                                |
| Sband delay (usec)      | -2.07925000000E-03 |          |          |          |          |          |          |          | Resid sbdelay (usec)                   | -2.07925E-03 +/- 1.4E-06                                |
| Phase delay (usec)      | -2.08292408425E-07 |          |          |          |          |          |          |          | Resid phdelay (usec)                   | -2.08292E-07 +/- 6.0E-10                                |
| Delay rate (us/s)       | 2.83423047834E-12  |          |          |          |          |          |          |          | Resid rate (us/s)                      | 2.83423E-12 +/- 6.7E-12                                 |
| Total phase (deg)       |                    |          | -6.5     |          |          |          |          |          | Resid phase (deg)                      | -6.5 +/- 0.0  |
| ph/seg (deg)            | 0.1                | 0.0      |          |          |          |          |          |          | PCal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5                                   |
| amp/seg (%)             | 2.1                | 0.1      |          |          |          |          |          |          | PCal rate: 0.000E+00, 0.000E+00 (us/s) | sb window (us) -1.000 1.000                             |
| ph/frq (deg)            | 11.5               | 0.0      |          |          |          |          |          |          | Bits/sample: 2x2                       | SampCntNorm: enabled mb window (us) -0.008 0.008        |
| amp/frq (%)             | 20.6               | 0.0      |          |          |          |          |          |          | Sample rate(MISamp/s): 128             | dr window (ns/s) -0.011 0.011                           |
|                         |                    |          |          |          |          |          |          |          | Data rate(Mb/s): 2048                  | nlags: 256 t_cohere infinite ion window (TEC) 0.00 0.00 |

t: az 313.4 el 55.6 pa 105.4      t: az 313.4 el 55.6 pa 105.4      u,v (fr/asec) 0.000 0.000      simultaneous interpolator

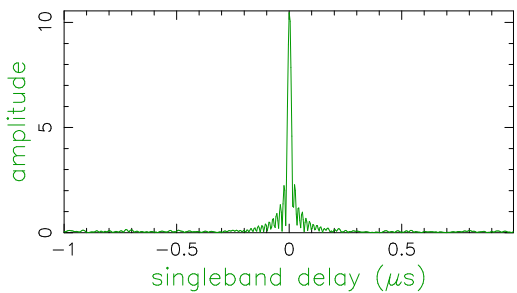
Control file: cf\_1234\_gmva    Input file: /Exps/c211c/v1/1234/No0029/tt..1WZMQH    Output file: /Exps/c211c/v1/1234/No0029/tt.W.81.1WZMQH

multiband delay ( $\mu\text{s}$ )

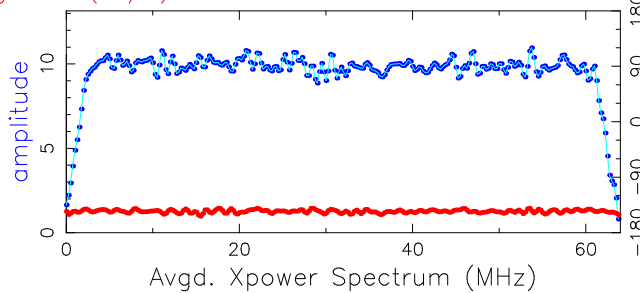


Fringe quality 7

SNR 266.4  
Int time 85.236  
Amp 10.552  
Phase -144.9  
PFD 0.0e+00  
Delays (us)  
SBD 0.001139  
MBD 0.001087  
Fringe rate (Hz)  
0.007388  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512

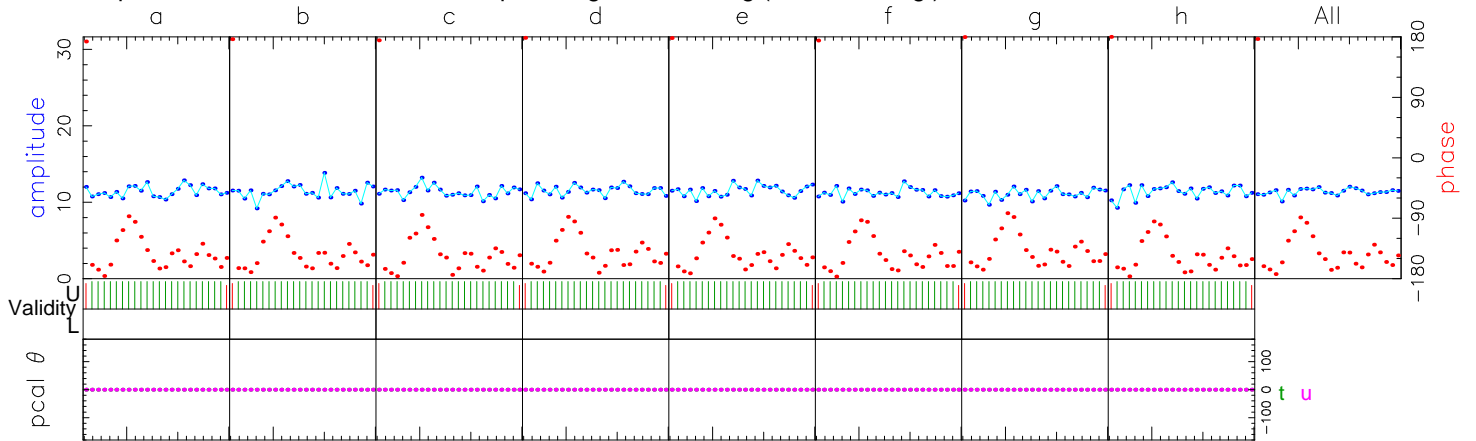


delay rate (ns/s)



Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080534.34  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114005  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 7 APs / seg (3.58 sec / seg.), time ticks 5 sec



|                         | 86012.00          | 86076.00 | 86140.00                 | 86204.00 | 86268.00           | 86332.00 | 86396.00             | 86460.00 | Freq (MHz)   | All         |
|-------------------------|-------------------|----------|--------------------------|----------|--------------------|----------|----------------------|----------|--------------|-------------|
|                         | -144.6            | -144.7   | -146.9                   | -142.9   | -145.3             | -146.1   | -140.6               | -147.7   | Phase        | -144.9      |
|                         | 10.5              | 10.6     | 10.4                     | 10.6     | 10.7               | 10.3     | 10.2                 | 10.5     | Ampl.        | 10.5        |
|                         | 257.3             | 257.2    | 257.3                    | 257.3    | 257.2              | 257.3    | 257.3                | 257.2    | Sbd box      | 257.3       |
| U/L                     | 167/0             | 167/0    | 167/0                    | 167/0    | 167/0              | 167/0    | 167/0                | 167/0    | APs used     |             |
| t                       | 1000              | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| u                       | 1000              | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| t:u                     | 0:0               | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | PC phase     |             |
| tu                      | 0:0               | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | Mani PC      |             |
| t                       | 1000              | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC amp       |             |
| u                       | 1000              | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC amp       |             |
| t                       | W00UL             | W01UL    | W02UL                    | W03UL    | W04UL              | W05UL    | W06UL                | W07UL    | Chan ids     |             |
| u                       | W00UL             | W01UL    | W02UL                    | W03UL    | W04UL              | W05UL    | W06UL                | W07UL    | Tracks       |             |
|                         |                   |          |                          |          |                    |          |                      |          | Chan ids     |             |
|                         |                   |          |                          |          |                    |          |                      |          | Tracks       |             |
| Group delay (usec)(sbd) | 3.43548629021E+01 |          | Apriori delay (usec)     |          | 3.43537757184E+01  |          | Resid mbdelay (usec) |          | 1.08718E-03  | +/- 4.1E-06 |
| Sband delay (usec)      | 3.43549147184E+01 |          | Apriori clock (usec)     |          | -1.4962090E+01     |          | Resid sbdelay (usec) |          | 1.13900E-03  | +/- 3.2E-05 |
| Phase delay (usec)      | 3.43537710469E+01 |          | Apriori clockrate (us/s) |          | -1.1770000E-06     |          | Resid phdelay (usec) |          | -4.67151E-06 | +/- 1.4E-08 |
| Delay rate (us/s)       | 1.38998257826E-02 |          | Apriori rate (us/s)      |          | 1.38997400103E-02  |          | Resid rate (us/s)    |          | 8.57723E-08  | +/- 2.8E-10 |
| Total phase (deg)       |                   |          | Apriori accel (us/s/s)   |          | -3.10747975087E-06 |          | Resid phase (deg)    |          | -144.9       | +/- 0.4     |

|              | RMS  | Theor. | Amplitude       | 10.552 +/- 0.040 | Pcal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5         |
|--------------|------|--------|-----------------|------------------|--|-------------------------------|
| ph/seg (deg) | 23.3 | 1.1    | Search (512X32) | 10.390           | Pcal rate: 0.000E+00, 0.000E+00 (us/s) | sb window (us) -1.000 1.000   |
| amp/seg (%)  | 8.8  | 1.8    | Interp.         | 0.000            | Bits/sample: 2x2                       | SampCntNorm: enabled          |
| ph/frq (deg) | 2.4  | 0.6    | Inc. seg. avg.  | 11.378           | Sample rate(MISamp/s): 128             | dr window (ns/s) -0.011 0.011 |
| amp/frq (%)  | 1.6  | 1.1    | Inc. frq. avg.  | 10.474           | Data rate(Mb/s): 2048                  | nlags: 256 t_cohere infinite  |
|              |      |        |                 |                  |  | ion window (TEC) 0.00 0.00    |

t: az 313.4 el 55.6 pa 105.4 u: az 310.3 el 55.4 pa 98.7 u,v (fr/asec) -131.175 -481.265 simultaneous interpolator  
Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tu..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tu.W.57.1WZMQH

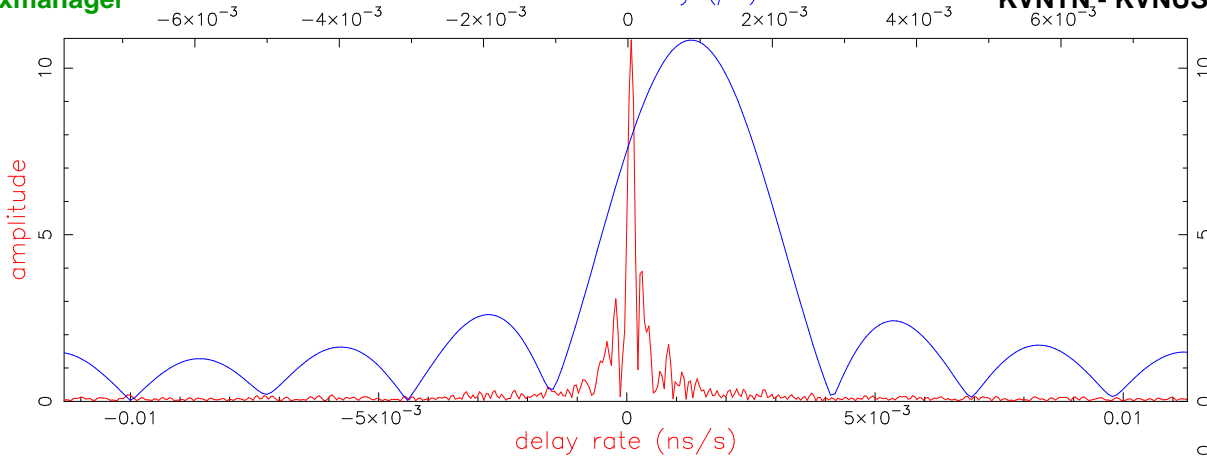
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tu

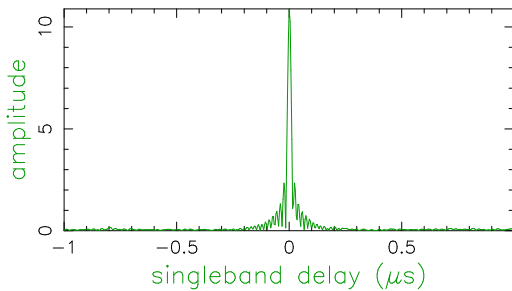
KVNTN- KVNUS, fgroup W, pol RR

multiband delay ( $\mu$ s)

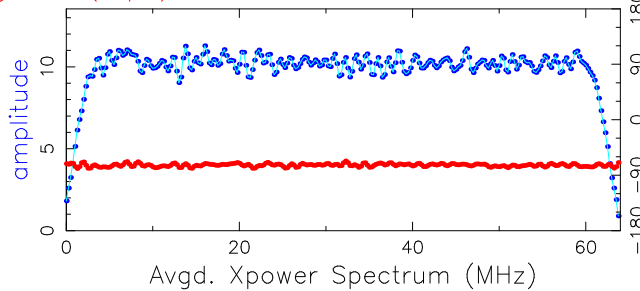


Fringe quality 7

SNR 275.0  
Int time 85.236  
Amp 10.893  
Phase -74.1  
PFD 0.0e+00  
Delays (us)  
SBD 0.000845  
MBD 0.000878  
Fringe rate (Hz)  
0.007380  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512

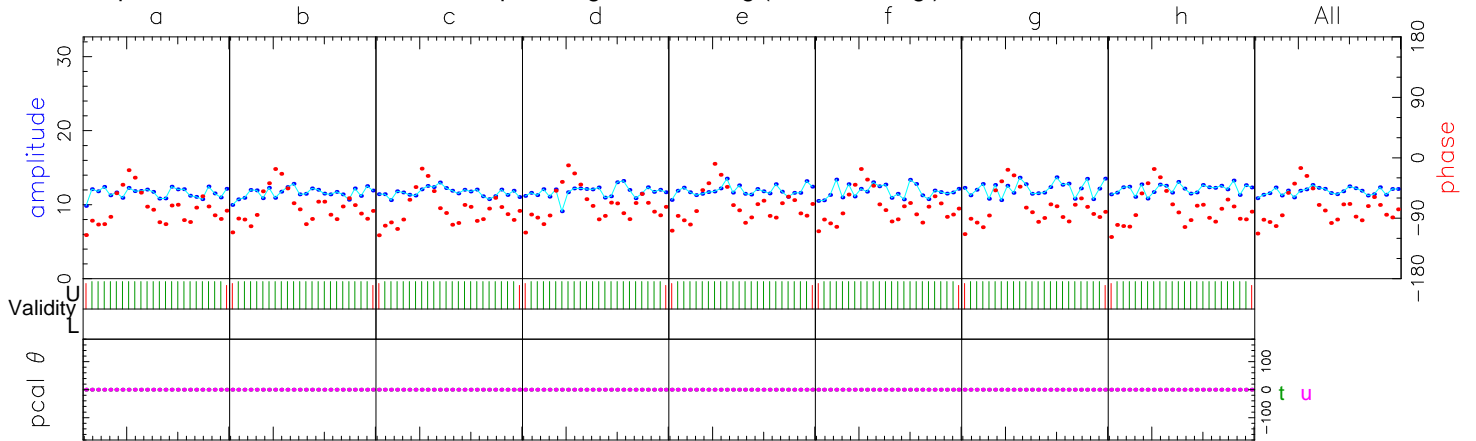


delay rate (ns/s)



Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080534.34  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114006  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 7 APs / seg (3.58 sec / seg.), time ticks 5 sec



|                         | 86012.00          | 86076.00 | 86140.00                 | 86204.00 | 86268.00           | 86332.00 | 86396.00             | 86460.00 | Freq (MHz)   | All         |
|-------------------------|-------------------|----------|--------------------------|----------|--------------------|----------|----------------------|----------|--------------|-------------|
| U/L                     | 167/0             | 167/0    | 167/0                    | 167/0    | 167/0              | 167/0    | 167/0                | 167/0    |              |             |
| t                       | 1000              | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | APs used     |             |
| u                       | 1000              | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| t:u                     | 0:0               | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | PC phase     |             |
| tu                      | 0:0               | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | Mani PC      |             |
| t                       | 1000              | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC amp       |             |
| u                       | 1000              | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     |              |             |
| t                       | W00UR             | W01UR    | W02UR                    | W03UR    | W04UR              | W05UR    | W06UR                | W07UR    | Chan ids     |             |
| u                       | W00UR             | W01UR    | W02UR                    | W03UR    | W04UR              | W05UR    | W06UR                | W07UR    | Tracks       |             |
|                         |                   |          |                          |          |                    |          |                      |          | Chan ids     |             |
|                         |                   |          |                          |          |                    |          |                      |          | Tracks       |             |
| Group delay (usec)(sbd) | 3.43546538396E+01 |          | Apriori delay (usec)     |          | 3.43537757184E+01  |          | Resid mbdelay (usec) |          | 8.78121E-04  | +/- 3.9E-06 |
| Sband delay (usec)      | 3.43546209684E+01 |          | Apriori clock (usec)     |          | -1.4962090E+01     |          | Resid sbdelay (usec) |          | 8.45250E-04  | +/- 3.1E-05 |
| Phase delay (usec)      | 3.43537733285E+01 |          | Apriori clockrate (us/s) |          | -1.1770000E-02     |          | Resid phdelay (usec) |          | -2.38991E-06 | +/- 1.3E-08 |
| Delay rate (us/s)       | 1.38998256806E-02 |          | Apriori rate (us/s)      |          | 1.38997400103E-02  |          | Resid rate (us/s)    |          | 8.56703E-08  | +/- 2.7E-10 |
| Total phase (deg)       | 12.4              |          | Apriori accel (us/s/s)   |          | -3.10747975087E-06 |          | Resid phase (deg)    |          | -74.1        | +/- 0.4     |

|              | RMS  | Theor. | Amplitude       | 10.893 +/- 0.040 | Pcal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5        | sb window (us)   | -1.000 1.000 |
|--------------|------|--------|-----------------|------------------|--|------------------------------|------------------|--------------|
| ph/seg (deg) | 23.7 | 1.0    | Search (512X32) | 10.793           | Pcal rate: 0.000E+00, 0.000E+00 (us/s) |                              | mb window (us)   | -0.008 0.008 |
| amp/seg (%)  | 9.5  | 1.8    | Interp.         | 0.000            | Bits/sample: 2x2                       | SampCntNorm: enabled         | dr window (ns/s) | -0.011 0.011 |
| ph/frq (deg) | 2.8  | 0.6    | Inc. seg. avg.  | 11.805           | Sample rate(MISamp/s): 128             |                              | ion window (TEC) | 0.00 0.00    |
| amp/frq (%)  | 1.6  | 1.0    | Inc. frq. avg.  | 10.854           | Data rate(Mb/s): 2048                  | nlags: 256 t_cohere infinite |                  |              |

t: az 313.4 el 55.6 pa 105.4 u: az 310.3 el 55.4 pa 98.7 u,v (fr/asec) -131.175 -481.265 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tu..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tu.W.62.1WZMQH

Mk4/DiFX fourfit 3.21 rev 2937

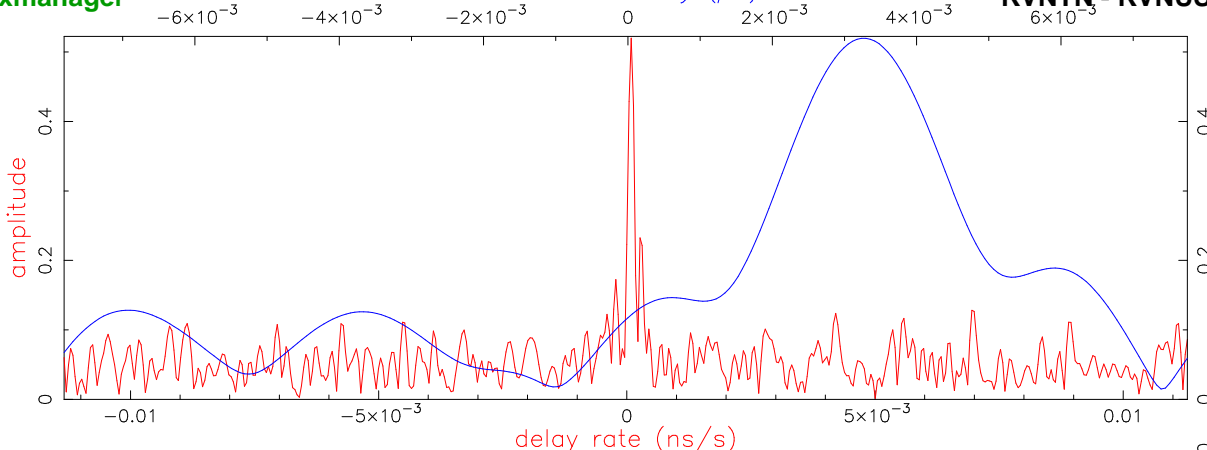
fxmanager

NRAO150.1WZMQH, No0029, tu

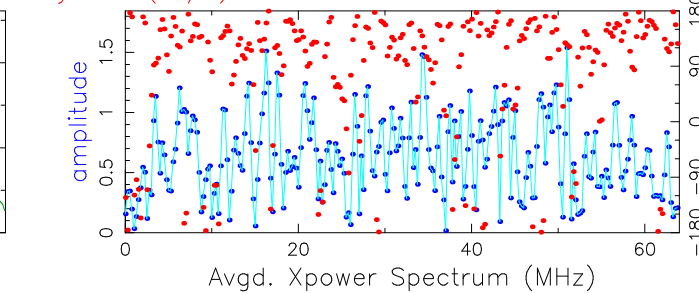
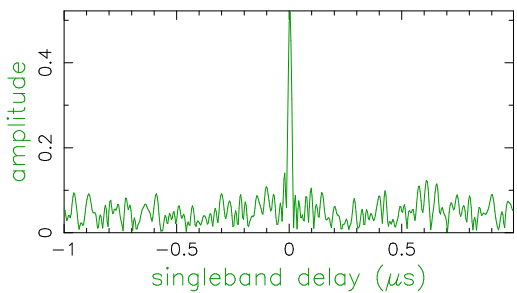
KVNTN - KVNUS, fgroup W, pol LR

multiband delay ( $\mu$ s)

Fringe quality 9

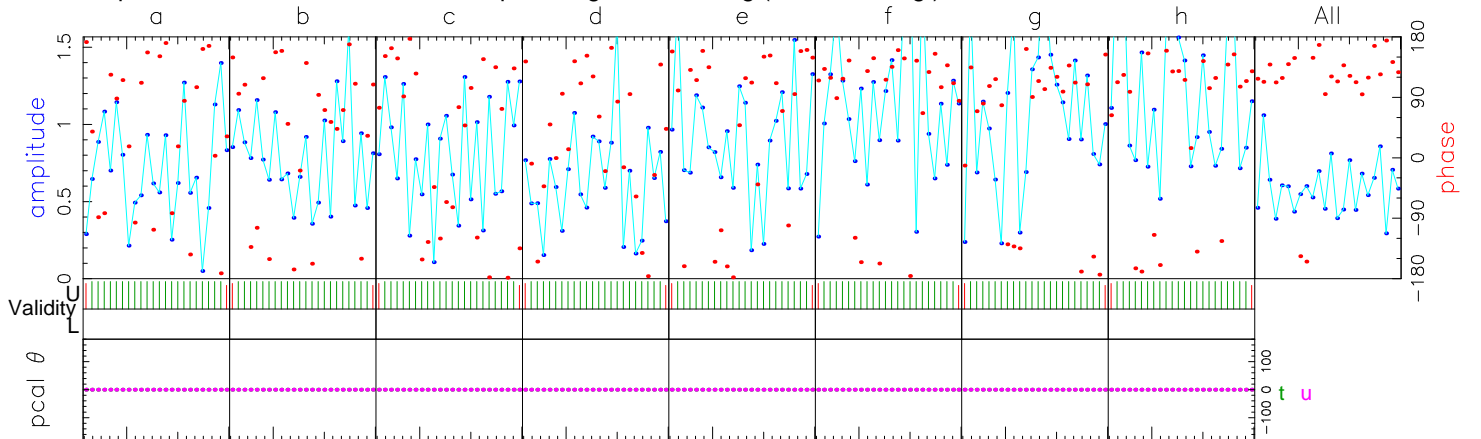


SNR 13.2  
 Int time 85.236  
 Amp 0.522  
 Phase 134.0  
 PFD 1.4e-31  
 Delays (us)  
 SBD 0.002997  
 MBD 0.003261  
 Fringe rate (Hz) 0.007267  
 Ion TEC 0.000  
 Ref freq (MHz) 86140.0000  
 AP (sec) 0.512



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080534.34  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114007  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 7 APs / seg (3.58 sec / seg.), time ticks 5 sec



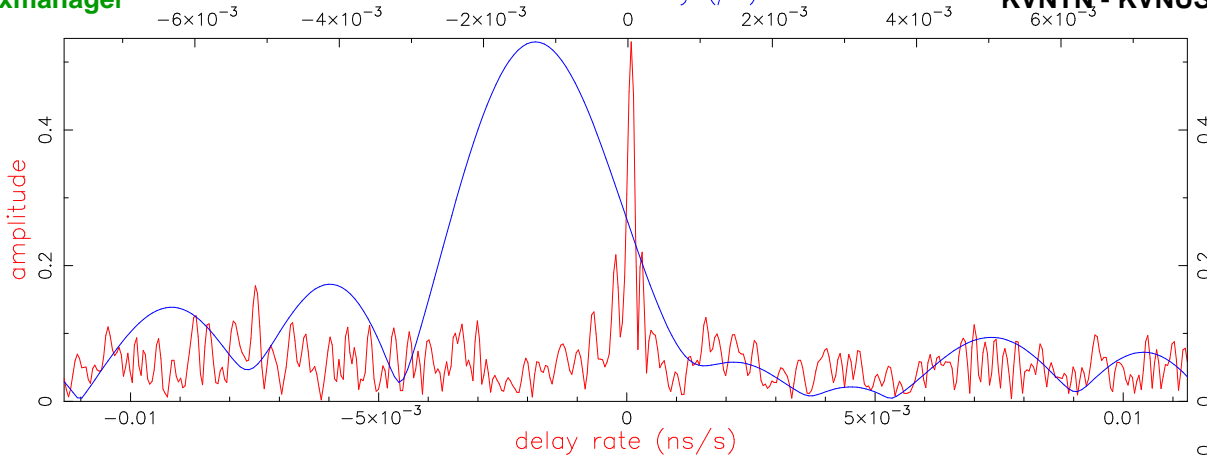
|                              | 86012.00                    | 86076.00    | 86140.00                        | 86204.00 | 86268.00                               | 86332.00 | 86396.00                     | 86460.00 | Freq (MHz)                | All          |
|------------------------------|-----------------------------|-------------|---------------------------------|----------|--|----------|------------------------------|----------|---------------------------|--------------|
| U/L                          | 167/0                       | 167/0       | 167/0                           | 167/0    | 167/0                                  | 167/0    | 167/0                        | 167/0    |                           |              |
| t                            | 1000                        | 1000        | 1000                            | 1000     | 1000                                   | 1000     | 1000                         | 1000     |                           |              |
| u                            | 1000                        | 1000        | 1000                            | 1000     | 1000                                   | 1000     | 1000                         | 1000     |                           |              |
| t:u                          | 0:0                         | 0:0         | 0:0                             | 0:0      | 0:0                                    | 0:0      | 0:0                          | 0:0      |                           |              |
| tu                           | 0:0                         | 0:0         | 0:0                             | 0:0      | 0:0                                    | 0:0      | 0:0                          | 0:0      |                           |              |
| t                            | 1000                        | 1000        | 1000                            | 1000     | 1000                                   | 1000     | 1000                         | 1000     |                           |              |
| u                            | 1000                        | 1000        | 1000                            | 1000     | 1000                                   | 1000     | 1000                         | 1000     |                           |              |
| t                            | W00UL                       | W01UL       | W02UL                           | W03UL    | W04UL                                  | W05UL    | W06UL                        | W07UL    |                           |              |
| u                            | W00UR                       | W01UR       | W02UR                           | W03UR    | W04UR                                  | W05UR    | W06UR                        | W07UR    |                           |              |
| Group delay (usec)(sbd)      | 3.43570363083E+01           |             | Apriori delay (usec)            |          | 3.43537757184E+01                      |          | Resid mbdelay (usec)         |          | 3.26059E-03               | +/- 8.2E-05  |
| Sband delay (usec)           | 3.43567729684E+01           |             | Apriori clock (usec)            |          | -1.4962090E+01                         |          | Resid sbdelay (usec)         |          | 2.99725E-03               | +/- 6.5E-04  |
| Phase delay (usec)           | 3.43537800410E+01           |             | Apriori clockrate (us/s)        |          | -1.1770000E-02                         |          | Resid phdelay (usec)         |          | 4.32259E-06               | +/- 2.8E-07  |
| Delay rate (us/s)            | 1.38998243684E-02           |             | Apriori rate (us/s)             |          | 1.38997400103E-02                      |          | Resid rate (us/s)            |          | 8.43580E-08               | +/- 5.7E-09  |
| Total phase (deg)            | 220.6                       |             | Apriori accel (us/s/s)          |          | -3.10747975087E-06                     |          | Resid phase (deg)            |          | 134.0                     | +/- 8.7      |
| ph/seg (deg)                 | RMS 30.3                    | Theor. 21.3 | Amplitude 0.522 +/- 0.040       |          | Pcal mode: MANUAL, MANUAL              |          | PC period (AP's) 5, 5        |          | sb window (us)            | -1.000 1.000 |
| amp/seg (%)                  | 35.2                        | 37.1        | Search (512X32) 0.515           |          | Pcal rate: 0.000E+00, 0.000E+00 (us/s) |          | SampCntNorm: enabled         |          | mb window (us)            | -0.008 0.008 |
| ph/frq (deg)                 | 19.4                        | 12.3        | Interp. 0.000                   |          | Bits/sample: 2x2                       |          | Sample rate(MISamp/s): 128   |          | dr window (ns/s)          | -0.011 0.011 |
| amp/frq (%)                  | 50.6                        | 21.4        | Inc. seg. avg. 0.554            |          | Data rate(Mb/s): 2048                  |          | nlags: 256 t_cohere infinite |          | ion window (TEC)          | 0.00 0.00    |
| t: az 313.4 el 55.6 pa 105.4 | u: az 310.3 el 55.4 pa 98.7 |             | u,v (fr/asec) -131.175 -481.265 |          |  |          |                              |          | simultaneous interpolator |              |

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tu..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tu.W.67.1WZMQH

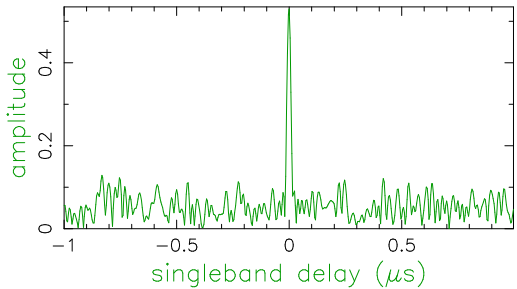


multiband delay ( $\mu\text{s}$ )

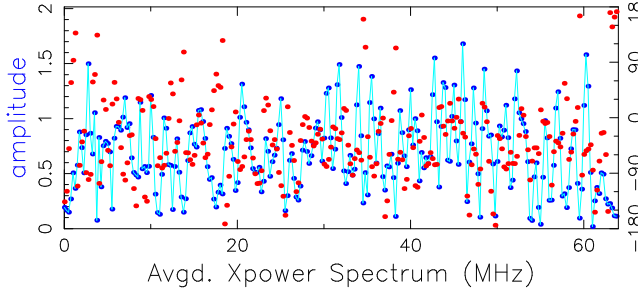
Fringe quality 9



SNR 13.5  
Int time 85.236  
Amp 0.535  
Phase -45.8  
PFD 2.1e-33  
Delays (us)  
SBD -0.001341  
MBD -0.001300  
Fringe rate (Hz) 0.007318  
Ion TEC 0.000  
Ref freq (MHz) 86140.0000  
AP (sec) 0.512

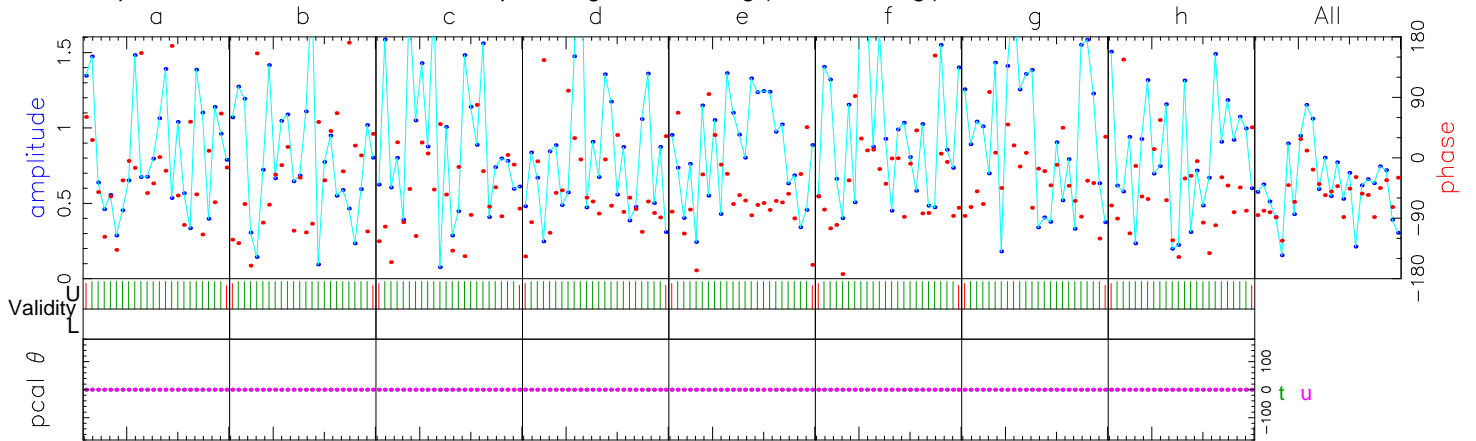


delay rate (ns/s)



Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080534.34  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114008  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 7 APs / seg (3.58 sec / seg.), time ticks 5 sec



|                         | 86012.00          | 86076.00 | 86140.00                 | 86204.00        | 86268.00           | 86332.00                               | 86396.00             | 86460.00              | Freq (MHz)        | All              |       |      |
|-------------------------|-------------------|----------|--------------------------|-----------------|--------------------|--|----------------------|-----------------------|-------------------|------------------|-------|------|
|                         | -27.4             | -64.3    | -54.6                    | -49.4           | -57.7              | -30.2                                  | -28.3                | -60.2                 | Phase             | -45.8            |       |      |
|                         | 0.5               | 0.4      | 0.5                      | 0.5             | 0.6                | 0.6                                    | 0.7                  | 0.6                   | Ampl.             | 0.5              |       |      |
|                         | 256.4             | 255.8    | 256.9                    | 257.7           | 257.2              | 257.0                                  | 256.0                | 256.1                 | Sbd box           | 256.7            |       |      |
| U/L                     | 167/0             | 167/0    | 167/0                    | 167/0           | 167/0              | 167/0                                  | 167/0                | 167/0                 | APs used          |                  |       |      |
| t                       | 1000              | 1000     | 1000                     | 1000            | 1000               | 1000                                   | 1000                 | 1000                  | PC freqs          |                  |       |      |
| u                       | 1000              | 1000     | 1000                     | 1000            | 1000               | 1000                                   | 1000                 | 1000                  | PC freqs          |                  |       |      |
| t:u                     | 0:0               | 0:0      | 0:0                      | 0:0             | 0:0                | 0:0                                    | 0:0                  | 0:0                   | PC phase          |                  |       |      |
| tu                      | 0:0               | 0:0      | 0:0                      | 0:0             | 0:0                | 0:0                                    | 0:0                  | 0:0                   | Manl PC           |                  |       |      |
| t                       | 1000              | 1000     | 1000                     | 1000            | 1000               | 1000                                   | 1000                 | 1000                  | PC amp            |                  |       |      |
| u                       | 1000              | 1000     | 1000                     | 1000            | 1000               | 1000                                   | 1000                 | 1000                  | PC amp            |                  |       |      |
| t                       | W00UR             | W01UR    | W02UR                    | W03UR           | W04UR              | W05UR                                  | W06UR                | W07UR                 | Chan ids          |                  |       |      |
| u                       | W00UL             | W01UL    | W02UL                    | W03UL           | W04UL              | W05UL                                  | W06UL                | W07UL                 | Tracks            |                  |       |      |
|                         |                   |          |                          |                 |                    |  |                      |                       | Tracks            |                  |       |      |
| Group delay (usec)(sbd) | 3.43524761208E+01 |          | Apriori delay (usec)     |                 | 3.43537757184E+01  |  | Resid mbdelay (usec) |                       | -1.29960E-03      | +/- 8.0E-05      |       |      |
| Sband delay (usec)      | 3.43524349684E+01 |          | Apriori clock (usec)     |                 | -1.4962090E+01     |  | Resid sbdelay (usec) |                       | -1.34075E-03      | +/- 6.4E-04      |       |      |
| Phase delay (usec)      | 3.43537742412E+01 |          | Apriori clockrate (us/s) |                 | -1.1770000E-02     |  | Resid phdelay (usec) |                       | -1.47720E-06      | +/- 2.7E-07      |       |      |
| Delay rate (us/s)       | 1.38998249692E-02 |          | Apriori rate (us/s)      |                 | 1.38997400103E-02  |  | Resid rate (us/s)    |                       | 8.49589E-08       | +/- 5.5E-09      |       |      |
| Total phase (deg)       |                   |          | Apriori accel (us/s/s)   |                 | -3.10747975087E-06 |  | Resid phase (deg)    |                       | -45.8             | +/- 8.5          |       |      |
|                         | RMS               | Theor.   | Amplitude                | 0.535 +/- 0.040 |                    | Pcal mode: MANUAL, MANUAL              |                      | PC period (AP's) 5, 5 |                   |                  |       |      |
| ph/seg (deg)            | 33.5              | 20.8     | Search (512X32)          | 0.521           |                    | Pcal rate: 0.000E+00, 0.000E+00 (us/s) |                      | sb window (us)        | -1.000            | 1.000            |       |      |
| amp/seg (%)             | 48.2              | 36.3     | Interp.                  | 0.000           |                    | Bits/sample: 2x2                       |                      | SampCntNorm: enabled  | mb window (us)    | -0.008           | 0.008 |      |
| ph/frq (deg)            | 16.7              | 12.0     | Inc. seg. avg.           | 0.589           |                    | Sample rate(MISamp/s): 128             |                      | dr window (ns/s)      | -0.011            | 0.011            |       |      |
| amp/frq (%)             | 13.8              | 20.9     | Inc. frq. avg.           | 0.535           |                    | Data rate(Mb/s): 2048                  |                      | nlags: 256            | t_cohere infinite | ion window (TEC) | 0.00  | 0.00 |

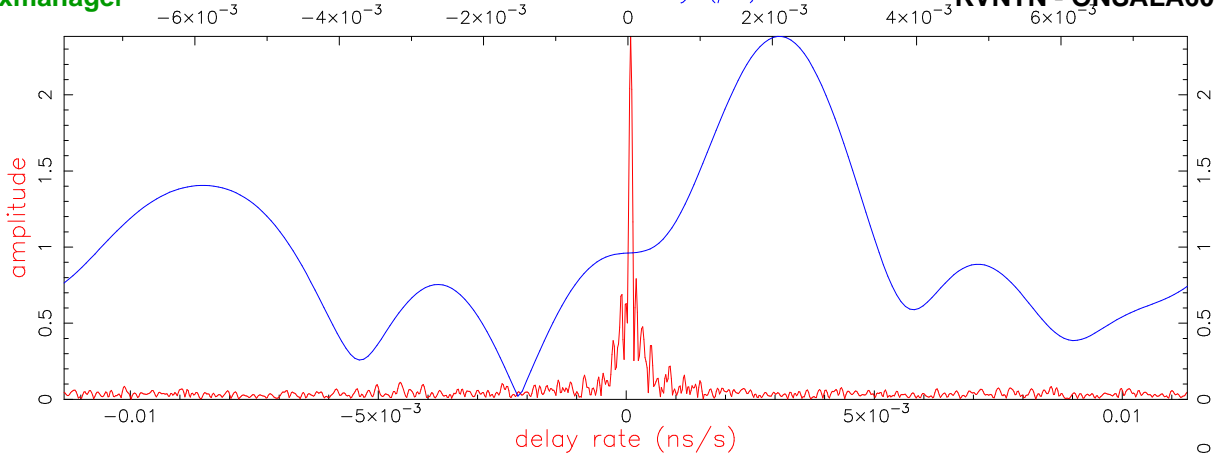
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tX

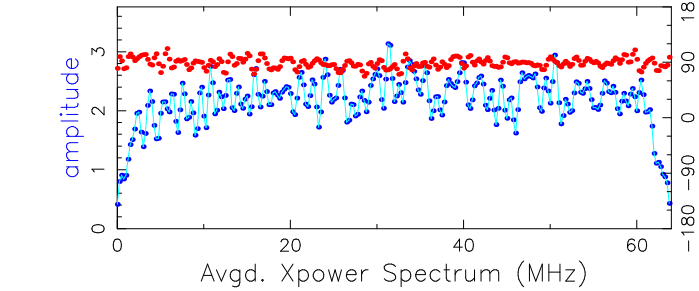
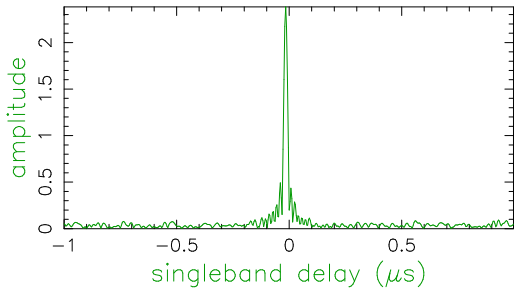
KVNTN - ONSALA60, fgroup W, pol LL

multiband delay ( $\mu$ s)



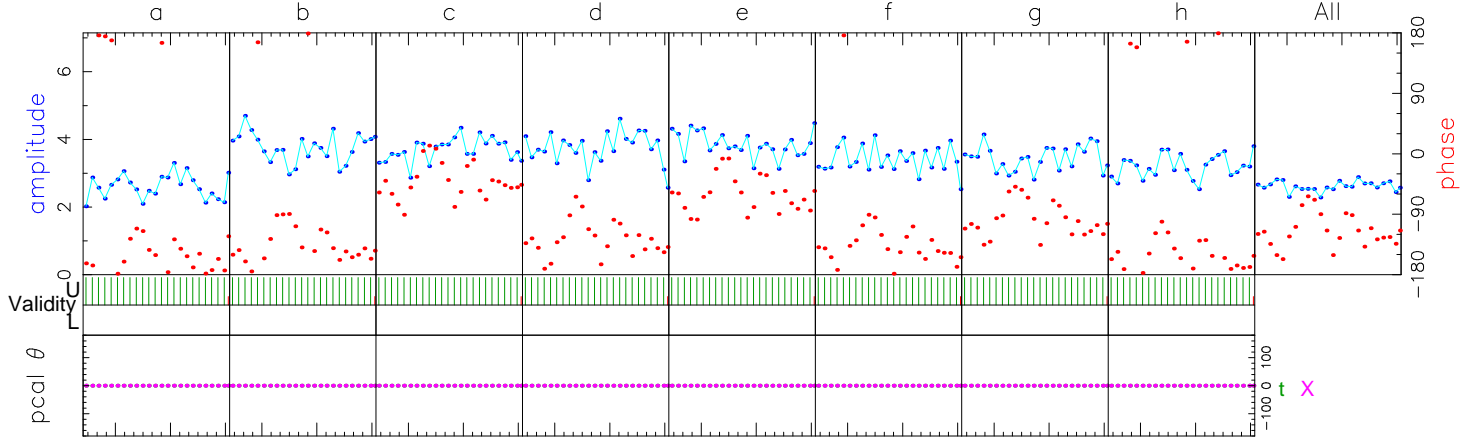
Fringe quality 4

SNR 81.2  
 Int time 155.134  
 Amp 2.384  
 Phase -116.0  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.015650  
 MBD 0.002098  
 Fringe rate (Hz)  
 0.007171  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114006  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                         | 86012.00           | 86076.00 | 86140.00                 | 86204.00 | 86268.00           | 86332.00 | 86396.00             | 86460.00 | Freq (MHz)   | All         |
|-------------------------|--------------------|----------|--------------------------|----------|--------------------|----------|----------------------|----------|--------------|-------------|
|                         | -159.1             | -141.9   | -42.1                    | -127.1   | -60.9              | -139.7   | -99.8                | -157.1   |              | -116.0      |
|                         | 2.4                | 3.4      | 3.3                      | 3.4      | 3.4                | 3.1      | 3.1                  | 2.9      | Ampl.        | 3.1         |
|                         | 255.0              | 253.0    | 252.6                    | 252.6    | 252.5              | 252.3    | 252.6                | 252.8    | Sbd box      | 253.0       |
| U/L                     | 303/0              | 303/0    | 303/0                    | 303/0    | 303/0              | 303/0    | 303/0                | 303/0    | APs used     |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| X                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| t:X                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | PC phase     |             |
| t:X                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | Manl PC      |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC amp       |             |
| X                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     |              |             |
| t                       | W00UL              | W01UL    | W02UL                    | W03UL    | W04UL              | W05UL    | W06UL                | W07UL    | Chan ids     |             |
| X                       | W00UL              | W01UL    | W02UL                    | W03UL    | W04UL              | W05UL    | W06UL                | W07UL    | Tracks       |             |
|                         |                    |          |                          |          |                    |          |                      |          | Tracks       |             |
| Group delay (usec)(sbd) | 1.34515916126E+03  |          | Apriori delay (usec)     |          | 1.34517268837E+03  |          | Resid mbdelay (usec) |          | 2.09788E-03  | +/- 1.3E-05 |
| Sband delay (usec)      | 1.34515703837E+03  |          | Apriori clock (usec)     |          | -5.6743858E+01     |          | Resid sbdelay (usec) |          | -1.56500E-02 | +/- 1.1E-04 |
| Phase delay (usec)      | 1.34517268463E+03  |          | Apriori clockrate (us/s) |          | -5.7800000E-07     |          | Resid phdelay (usec) |          | -3.74181E-06 | +/- 4.6E-08 |
| Delay rate (us/s)       | -1.04617976040E+00 |          | Apriori rate (us/s)      |          | -1.04617984364E+00 |          | Resid rate (us/s)    |          | 8.32442E-08  | +/- 5.1E-10 |
| Total phase (deg)       | 19.5               |          | Apriori accel (us/s/s)   |          | -3.32236984134E-05 |          | Resid phase (deg)    |          | -116.0       | +/- 1.4     |

|              | RMS  | Theor. | Amplitude        | 2.384 +/- 0.029 | Pcal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5         |                             |
|--------------|------|--------|------------------|-----------------|--|-------------------------------|-----------------------------|
| ph/seg (deg) | 24.8 | 3.5    | Search (1024X32) | 2.339           | Pcal rate: 0.000E+00, 0.000E+00 (us/s) | sb window (us) -1.000 1.000   |                             |
| amp/seg (%)  | 11.6 | 6.0    | Interp.          | 0.000           | Bits/sample: 2x2                       | SampCntNorm: enabled          | mb window (us) -0.008 0.008 |
| ph/frq (deg) | 47.7 | 2.0    | Inc. seg. avg.   | 2.613           | Sample rate(MISamp/s): 128             | dr window (ns/s) -0.011 0.011 |                             |
| amp/frq (%)  | 34.5 | 3.5    | Inc. frq. avg.   | 3.134           | Data rate(Mb/s): 2048                  | nlags: 256 t_cohere infinite  | ion window (TEC) 0.00 0.00  |

t: az 313.4 el 55.6 pa 105.4 X: az 65.8 el 48.5 pa -51.7 u,v (fr/asec) 9474.785 -4950.190 simultaneous interpolator

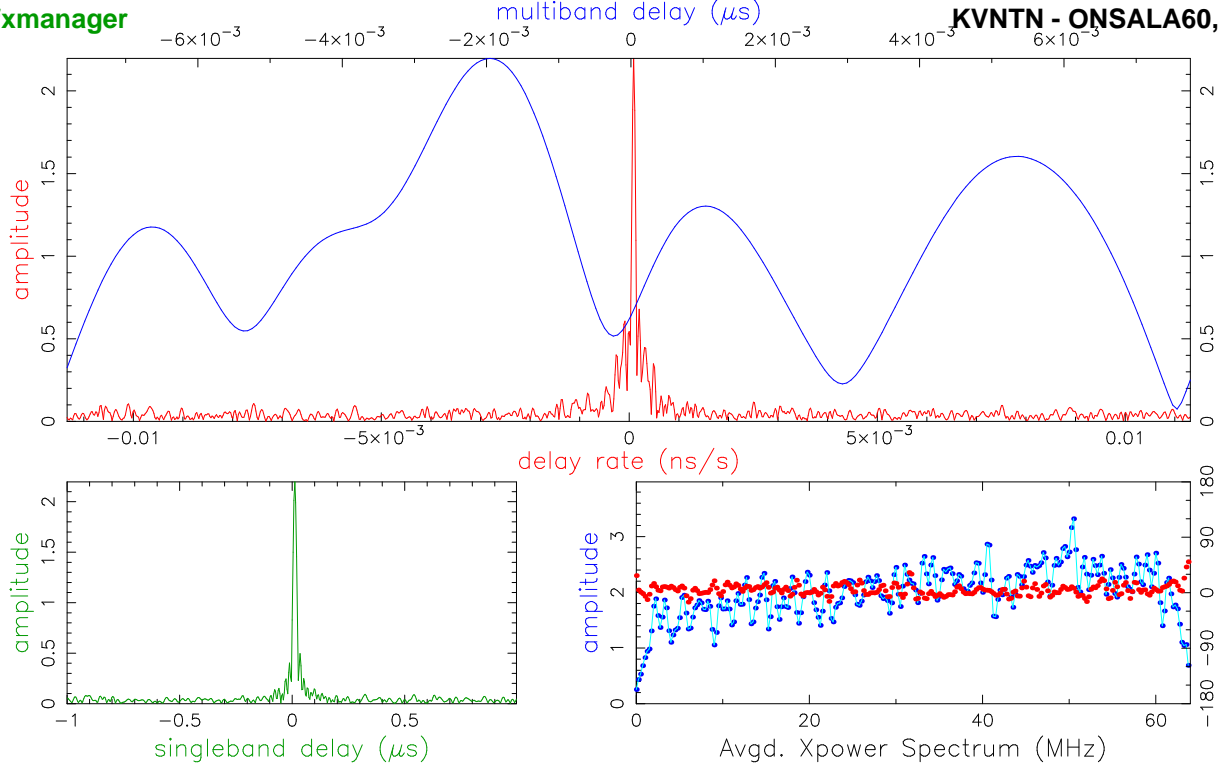
Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tX..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tX.W.60.1WZMQH

Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tX

KVNTN - ONSALA60, fgroup W, pol RR

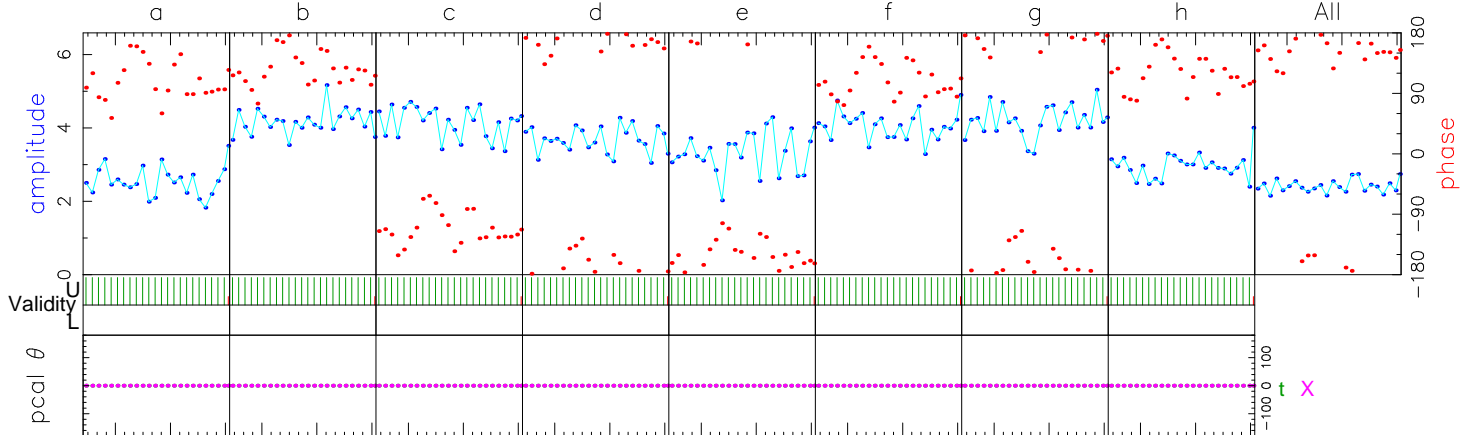


Fringe quality 3

SNR 74.8  
 Int time 155.134  
 Amp 2.197  
 Phase 160.4  
 PFD 0.0e+00  
 Delays (us)  
 SBD 0.011596  
 MBD -0.001958  
 Fringe rate (Hz)  
 0.007135  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114007  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                         | 86012.00 | 86076.00           | 86140.00         | 86204.00        | 86268.00           | 86332.00 | 86396.00 | 86460.00 | Freq (MHz)                             | All                   |                   |                  |           |
|-------------------------|----------|--------------------|------------------|-----------------|--------------------|----------|----------|----------|--|-----------------------|-------------------|------------------|-----------|
| U/L                     | 303/0    | 303/0              | 303/0            | 303/0           | 303/0              | 303/0    | 303/0    | 303/0    |  |                       |                   |                  |           |
| t                       | 1000     | 1000               | 1000             | 1000            | 1000               | 1000     | 1000     | 1000     | APs used                               | 1000                  |                   |                  |           |
| X                       | 1000     | 1000               | 1000             | 1000            | 1000               | 1000     | 1000     | 1000     | PC freqs                               | 1000                  |                   |                  |           |
| t:X                     | 0:0      | 0:0                | 0:0              | 0:0             | 0:0                | 0:0      | 0:0      | 0:0      | PC phase                               | 0:0                   |                   |                  |           |
| t:X                     | 0:0      | 0:0                | 0:0              | 0:0             | 0:0                | 0:0      | 0:0      | 0:0      | Manl PC                                | 0:0                   |                   |                  |           |
| t                       | 1000     | 1000               | 1000             | 1000            | 1000               | 1000     | 1000     | 1000     | PC amp                                 | 1000                  |                   |                  |           |
| X                       | 1000     | 1000               | 1000             | 1000            | 1000               | 1000     | 1000     | 1000     |  |                       |                   |                  |           |
| t                       | W00UR    | W01UR              | W02UR            | W03UR           | W04UR              | W05UR    | W06UR    | W07UR    | Chan ids                               |                       |                   |                  |           |
| X                       | W00UR    | W01UR              | W02UR            | W03UR           | W04UR              | W05UR    | W06UR    | W07UR    | Tracks                                 |                       |                   |                  |           |
|                         |          |                    |                  |                 |                    |          |          |          | Tracks                                 |                       |                   |                  |           |
| Group delay (usec)(sbd) |          | 1.34518635510E+03  |                  |                 | 1.34517268837E+03  |          |          |          | Resid mbdelay (usec)                   | -1.95827E-03          | +/- 1.5E-05       |                  |           |
| Sband delay (usec)      |          | 1.34518428462E+03  |                  |                 | -5.6743858E+01     |          |          |          | Resid sbdelay (usec)                   | 1.15963E-02           | +/- 1.2E-04       |                  |           |
| Phase delay (usec)      |          | 1.34517269355E+03  |                  |                 | -5.7800000E-07     |          |          |          | Resid phdelay (usec)                   | 5.17251E-06           | +/- 4.9E-08       |                  |           |
| Delay rate (us/s)       |          | -1.04617976081E+00 |                  |                 | -1.04617984364E+00 |          |          |          | Resid rate (us/s)                      | 8.28318E-08           | +/- 5.5E-10       |                  |           |
| Total phase (deg)       |          |                    | 296.0            |                 |                    |          |          |          | Resid phase (deg)                      | 160.4                 | +/- 1.5           |                  |           |
|                         | RMS      | Theor.             | Amplitude        | 2.197 +/- 0.029 |                    |          |          |          | PCal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5 |                   |                  |           |
| ph/seg (deg)            | 24.5     | 3.8                | Search (1024X32) | 2.173           |                    |          |          |          | PCal rate: 0.000E+00, 0.000E+00 (us/s) | sb window (us)        | -1.000 1.000      |                  |           |
| amp/seg (%)             | 12.1     | 6.5                | Interp.          | 0.000           |                    |          |          |          | Bits/sample: 2x2                       | SampCntNorm: enabled  | mb window (us)    | -0.008 0.008     |           |
| ph/frq (deg)            | 56.8     | 2.2                | Inc. seg. avg.   | 2.402           |                    |          |          |          | Sample rate(MISamp/s): 128             |                       | dr window (ns/s)  | -0.011 0.011     |           |
| amp/frq (%)             | 56.4     | 3.8                | Inc. frq. avg.   | 3.295           |                    |          |          |          | Data rate(Mb/s): 2048                  | nlags: 256            | t_cohere infinite | ion window (TEC) | 0.00 0.00 |

t: az 313.4 el 55.6 pa 105.4 X: az 65.8 el 48.5 pa -51.7 u,v (fr/asec) 9474.785 -4950.190 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tX..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tX.W.72.1WZMQH

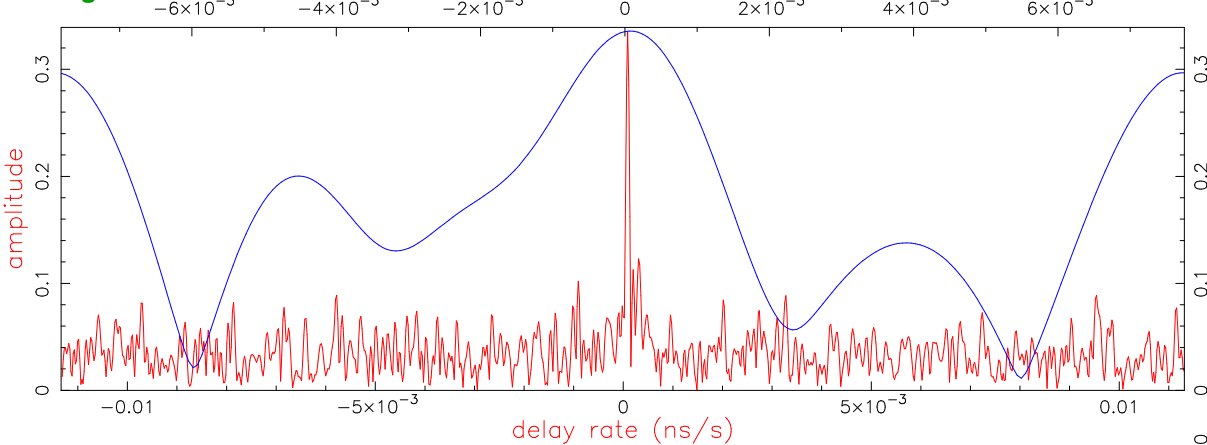
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tX

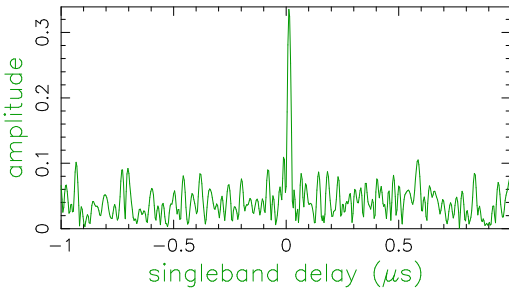
KVNTN - ONSALA60, fgroup W, pol LR

multiband delay ( $\mu$ s)

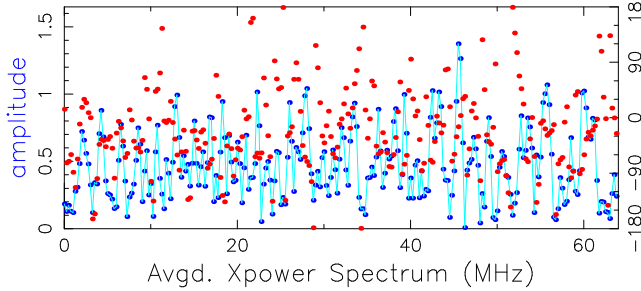


Fringe quality 9

SNR 11.6  
 Int time 155.134  
 Amp 0.339  
 Phase 119.8  
 PFD 1.7e-22  
 Delays (us)  
 SBD 0.013016  
 MBD 0.000134  
 Fringe rate (Hz)  
 0.006850  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

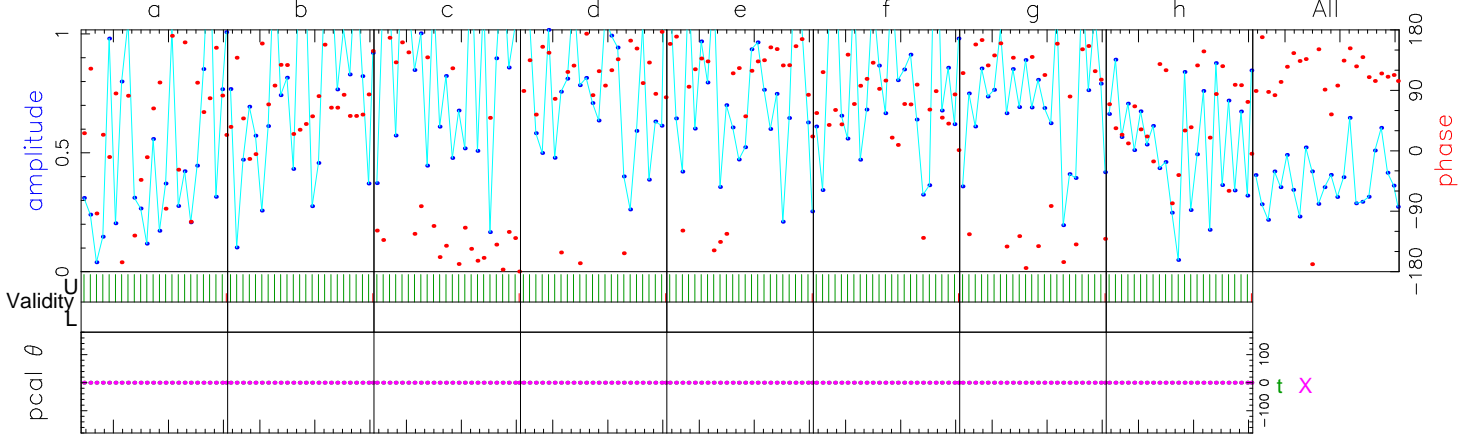


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114009  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                         | 86012.00 | 86076.00           | 86140.00 | 86204.00                 | 86268.00           | 86332.00 | 86396.00             | 86460.00    | Freq (MHz) | All     |
|-------------------------|----------|--------------------|----------|--------------------------|--------------------|----------|----------------------|-------------|------------|---------|
|                         | 83.2     | 67.3               | -156.7   | 126.9                    | 144.4              | 71.2     | 161.0                | 54.9        | Phase      | 119.8   |
|                         | 0.2      | 0.6                | 0.7      | 0.6                      | 0.6                | 0.5      | 0.3                  | 0.3         | Ampl.      | 0.5     |
|                         | 261.9    | 260.7              | 260.3    | 260.0                    | 259.2              | 260.7    | 260.1                | 259.5       | Sbd box    | 260.3   |
| U/L                     | 303/0    | 303/0              | 303/0    | 303/0                    | 303/0              | 303/0    | 303/0                | 303/0       | APs used   |         |
| t                       | 1000     | 1000               | 1000     | 1000                     | 1000               | 1000     | 1000                 | 1000        | PC freqs   |         |
| X                       | 1000     | 1000               | 1000     | 1000                     | 1000               | 1000     | 1000                 | 1000        | PC freqs   |         |
| t:X                     | 0:0      | 0:0                | 0:0      | 0:0                      | 0:0                | 0:0      | 0:0                  | 0:0         | PC phase   |         |
| t:X                     | 0:0      | 0:0                | 0:0      | 0:0                      | 0:0                | 0:0      | 0:0                  | 0:0         | Mani PC    |         |
| t                       | 1000     | 1000               | 1000     | 1000                     | 1000               | 1000     | 1000                 | 1000        | PC amp     |         |
| X                       | 1000     | 1000               | 1000     | 1000                     | 1000               | 1000     | 1000                 | 1000        |            |         |
| t                       | W00UL    | W01UL              | W02UL    | W03UL                    | W04UL              | W05UL    | W06UL                | W07UL       | Chan ids   |         |
| X                       | W00UR    | W01UR              | W02UR    | W03UR                    | W04UR              | W05UR    | W06UR                | W07UR       | Tracks     |         |
|                         |          |                    |          |                          |                    |          |                      |             | Tracks     |         |
| Group delay (usec)(sbd) |          | 1.34518844716E+03  |          | Apriori delay (usec)     | 1.34517268837E+03  |          | Resid mbdelay (usec) | 1.33788E-04 | +/-        | 9.4E-05 |
| Sband delay (usec)      |          | 1.34518570412E+03  |          | Apriori clock (usec)     | -5.6743858E+01     |          | Resid sbdelay (usec) | 1.30157E-02 | +/-        | 7.5E-04 |
| Phase delay (usec)      |          | 1.34517269224E+03  |          | Apriori clockrate (us/s) | -5.7800000E-07     |          | Resid phdelay (usec) | 3.86482E-06 | +/-        | 3.2E-07 |
| Delay rate (us/s)       |          | -1.04617976412E+00 |          | Apriori rate (us/s)      | -1.04617984364E+00 |          | Resid rate (us/s)    | 7.95257E-08 | +/-        | 3.6E-09 |
| Total phase (deg)       |          | 255.4              |          | Apriori accel (us/s/s)   | -3.32236984134E-05 |          | Resid phase (deg)    | 119.8       | +/-        | 9.9     |

ph/seg (deg) 30.2 24.3 Amplitude 0.339 +/- 0.029 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
 amp/seg (%) 34.8 42.4 Search (1024X32) 0.325 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
 ph/frq (deg) 57.7 14.0 Interp. 0.000 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
 amp/frq (%) 70.7 24.5 Inc. seg. avg. 0.354 Sample rate(MISamp/s): 128 dr window (ns/s) -0.011 0.011  
 Inc. frq. avg. 0.504 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite ion window (TEC) 0.00 0.00

t: az 313.4 el 55.6 pa 105.4 X: az 65.8 el 48.5 pa -51.7 u,v (fr/asec) 9474.785 -4950.190 simultaneous interpolator  
 Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tX..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tX.W.86.1WZMQH

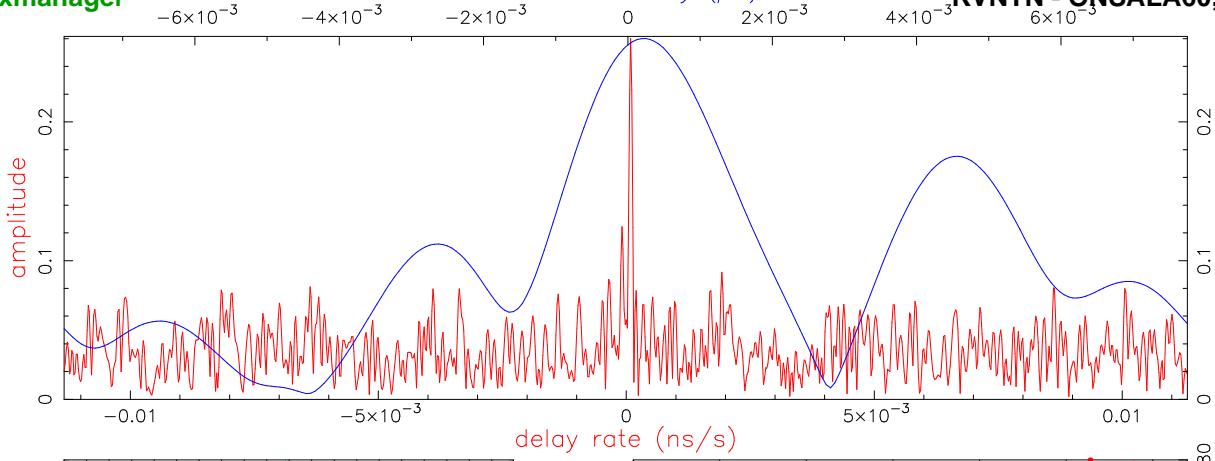
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tX

KVNTN - ONSALA60, fgroup W, pol RL

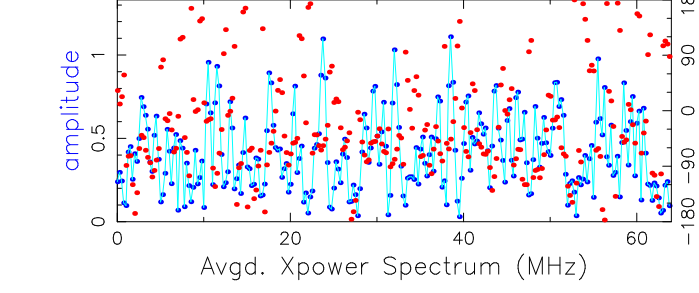
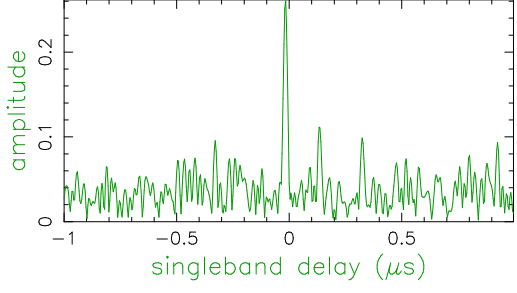
multiband delay ( $\mu$ s)



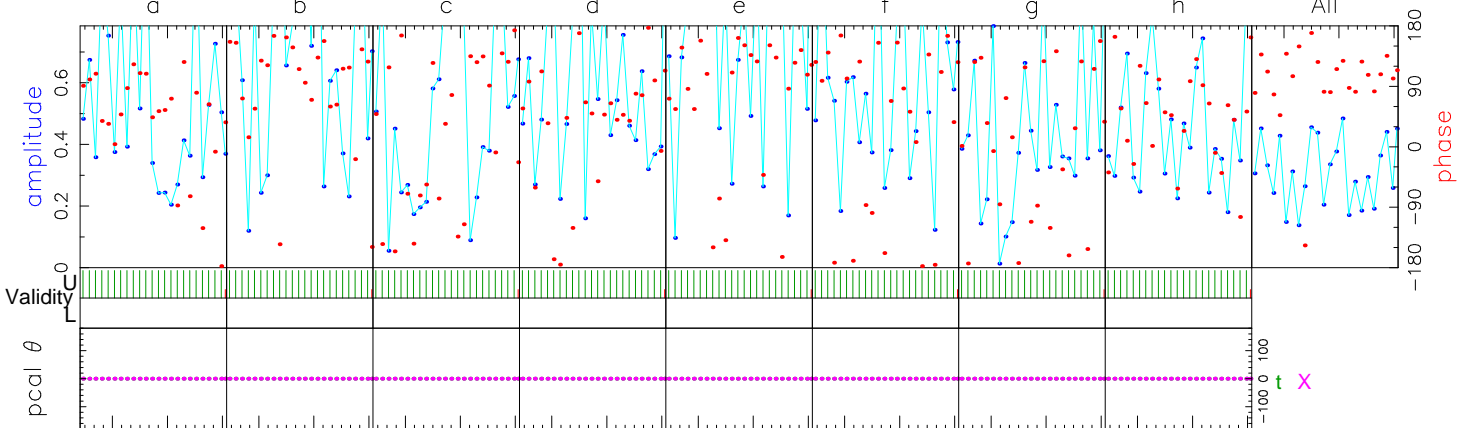
Fringe quality 9

SNR 8.9  
 Int time 155.134  
 Amp 0.262  
 Phase 112.7  
 PFD 9.5e-11  
 Delays (us)  
 SBD -0.016726  
 MBD 0.000197  
 Fringe rate (Hz)  
 0.007297  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114011  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"



Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|-----|
| U/L | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    |            |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | APs used   |     |
| X   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |     |
| t:X | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | PC phase   |     |
| t:X | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | Mani PC    |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC amp     |     |
| X   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| t   | W00UR    | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    | Chan ids   |     |
| X   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Tracks     |     |

|                         |                    |                          |                    |                      |              |     |         |
|-------------------------|--------------------|--------------------------|--------------------|----------------------|--------------|-----|---------|
| Group delay (usec)(sbd) | 1.34515725994E+03  | Apriori delay (usec)     | 1.34517268837E+03  | Resid mbdelay (usec) | 1.96570E-04  | +/- | 1.2E-04 |
| Sband delay (usec)      | 1.34515596212E+03  | Apriori clock (usec)     | -5.6743858E+01     | Resid sbdelay (usec) | -1.67262E-02 | +/- | 9.7E-04 |
| Phase delay (usec)      | 1.34517269201E+03  | Apriori clockrate (us/s) | -5.7800000E-07     | Resid phdelay (usec) | 3.63303E-06  | +/- | 4.1E-07 |
| Delay rate (us/s)       | -1.04617975893E+00 | Apriori rate (us/s)      | -1.04617984364E+00 | Resid rate (us/s)    | 8.47166E-08  | +/- | 4.6E-09 |
| Total phase (deg)       | 248.2              | Apriori accel (us/s/s)   | -3.32236984134E-05 | Resid phase (deg)    | 112.7        | +/- | 12.9    |

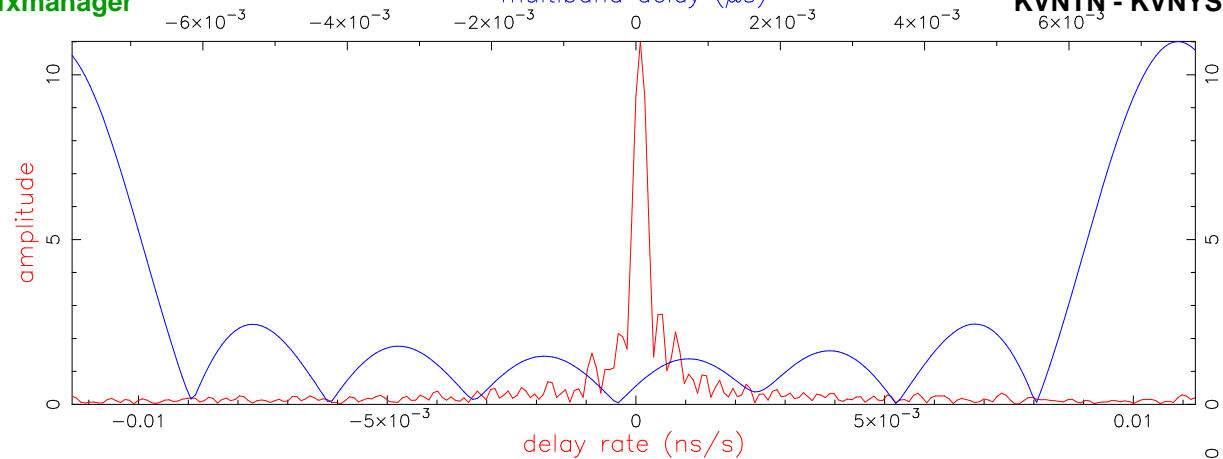
|              |      |                  |       |  |                 |                           |                       |
|--------------|------|------------------|-------|--|-----------------|---------------------------|-----------------------|
| ph/seg (deg) | 34.9 | Theor.           | 31.5  | Amplitude                              | 0.262 +/- 0.029 | Pcal mode: MANUAL, MANUAL | PC period (AP's) 5, 5 |
| amp/seg (%)  | 44.5 | Search (1024X32) | 0.255 | Pcal rate: 0.000E+00, 0.000E+00 (us/s) |                 | sb window (us)            | -1.000 1.000          |
| ph/frq (deg) | 41.6 | Inc. seg. avg.   | 0.270 | Bits/sample: 2x2                       |                 | mb window (us)            | -0.008 0.008          |
| amp/frq (%)  | 54.2 | Inc. frq. avg.   | 0.295 | Sample rate(MISamp/s): 128             |                 | dr window (ns/s)          | -0.011 0.011          |
|              |      |                  |       | Data rate(Mb/s): 2048                  |                 | ion window (TEC)          | 0.00 0.00             |

t: az 313.4 el 55.6 pa 105.4 X: az 65.8 el 48.5 pa -51.7 u,v (fr/asec) 9474.785 -4950.190 simultaneous interpolator

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tX..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tX.W.97.1WZMQH

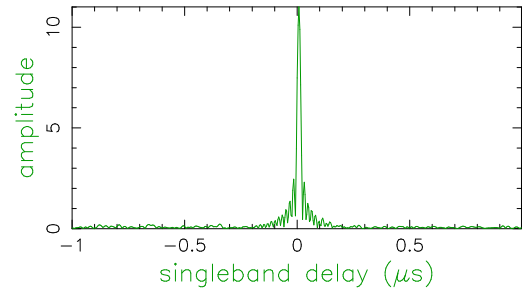


multiband delay ( $\mu$ s)

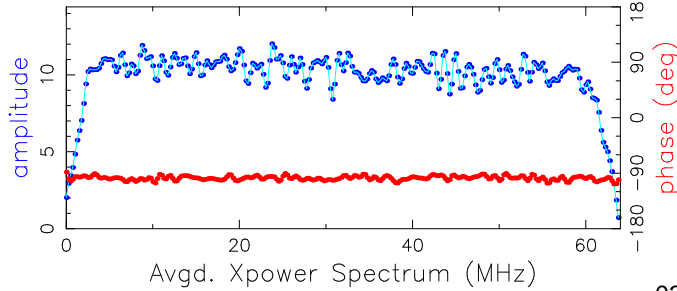


Fringe quality 8

SNR 192.5  
Int time 40.852  
Amp 11.013  
Phase -96.8  
PFD 0.0e+00  
Delays (us)  
SBD 0.007598  
MBD 0.007511  
Fringe rate (Hz)  
0.009723  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512

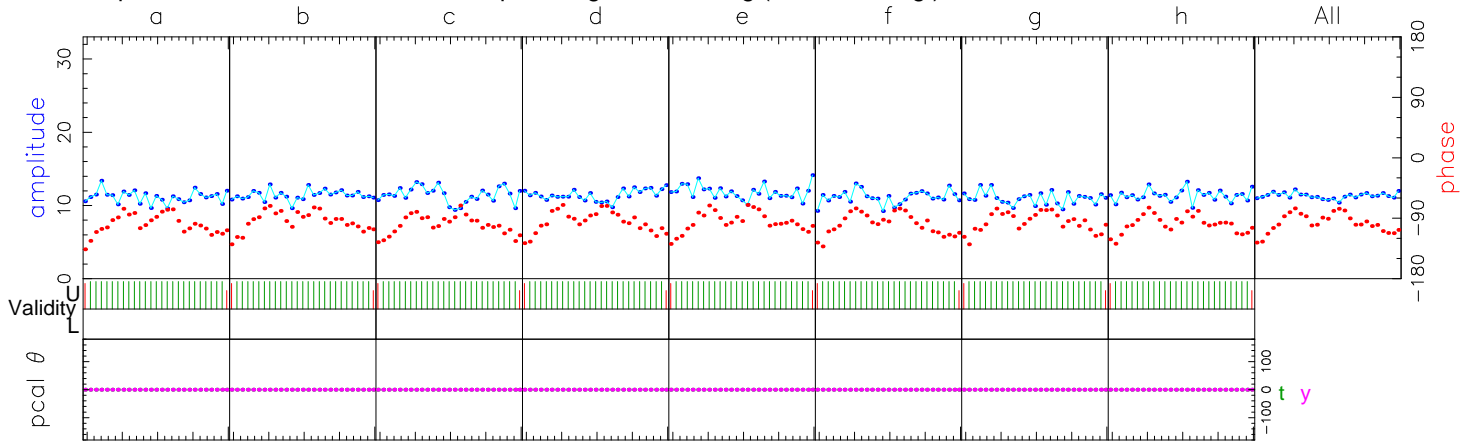


delay rate (ns/s)



Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080618.88  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114007  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"

Amp. and Phase vs. time for each freq., 27 segs, 3 APs / seg (1.54 sec / seg.), time ticks 2 sec

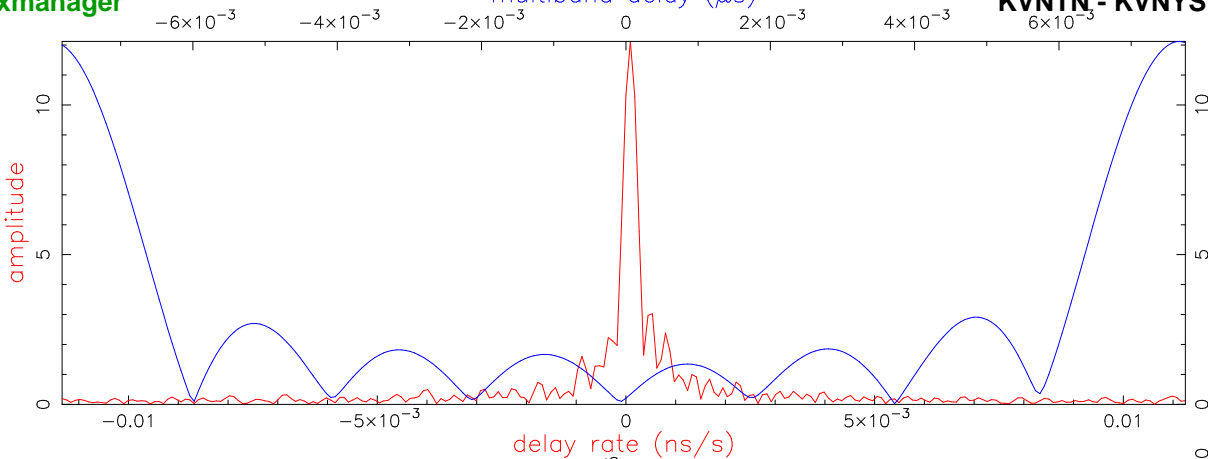


|                         | 86012.00           | 86076.00 | 86140.00                 | 86204.00 | 86268.00           | 86332.00 | 86396.00             | 86460.00 | Freq (MHz)   | All         |
|-------------------------|--------------------|----------|--------------------------|----------|--------------------|----------|----------------------|----------|--------------|-------------|
|                         | -99.1              | -93.6    | -99.6                    | -95.2    | -94.9              | -98.3    | -95.6                | -98.2    | Phase        | -96.8       |
|                         | 10.8               | 11.1     | 11.2                     | 11.0     | 11.5               | 10.8     | 10.7                 | 11.1     | Ampl.        | 11.0        |
|                         | 259.0              | 259.0    | 258.8                    | 259.1    | 258.8              | 259.0    | 259.0                | 258.8    | Sbd box      | 258.9       |
| U/L                     | 80/0               | 80/0     | 80/0                     | 80/0     | 80/0               | 80/0     | 80/0                 | 80/0     | APs used     |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| y                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| t:y                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | PC phase     |             |
| t:y                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | Manl PC      |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC amp       |             |
| y                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     |              |             |
| t                       | W00UL              | W01UL    | W02UL                    | W03UL    | W04UL              | W05UL    | W06UL                | W07UL    | Chan ids     |             |
| y                       | W00UL              | W01UL    | W02UL                    | W03UL    | W04UL              | W05UL    | W06UL                | W07UL    | Tracks       |             |
|                         |                    |          |                          |          |                    |          |                      |          | Tracks       |             |
| Group delay (usec)(sbd) | -5.11540916480E+02 |          | Apriori delay (usec)     |          | -5.11548427625E+02 |          | Resid mbdelay (usec) |          | 7.51114E-03  | +/- 5.6E-06 |
| Sband delay (usec)      | -5.11540829625E+02 |          | Apriori clock (usec)     |          | -9.6879005E-01     |          | Resid sbdelay (usec) |          | 7.59800E-03  | +/- 4.5E-05 |
| Phase delay (usec)      | -5.11548430746E+02 |          | Apriori clockrate (us/s) |          | -4.9999999E-08     |          | Resid phdelay (usec) |          | -3.12138E-06 | +/- 1.9E-08 |
| Delay rate (us/s)       | -2.31209194463E-02 |          | Apriori rate (us/s)      |          | -2.31210323224E-02 |          | Resid rate (us/s)    |          | 1.12876E-07  | +/- 8.1E-10 |
| Total phase (deg)       |                    |          | Apriori accel (us/s/s)   |          | -2.61218776055E-06 |          | Resid phase (deg)    |          | -96.8        | +/- 0.6     |

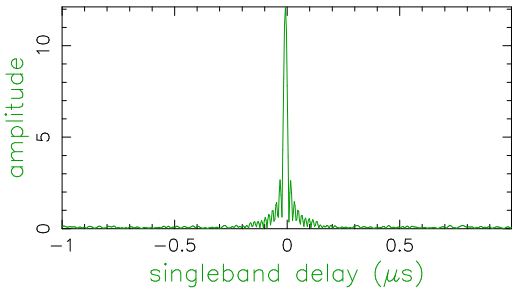
ph/seg (deg) 13.7 1.5 Search (256X32) 11.013 +/- 0.057 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
amp/seg (%) 4.5 2.7 Interp. 0.000 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
ph/frq (deg) 2.4 0.8 Inc. seg. avg. 11.324 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
amp/frq (%) 2.1 1.5 Inc. frq. avg. 11.016 Sample rate(MISamp/s): 128 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite dr window (ns/s) -0.011 0.011  
t: az 313.4 el 55.6 pa 105.4 y: az 308.3 el 58.1 pa 97.9 u,v (fr/asec) 207.127 -594.007 simultaneous interpolator  
Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/ty..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/ty.W.69.1WZMQH

multiband delay ( $\mu$ s)

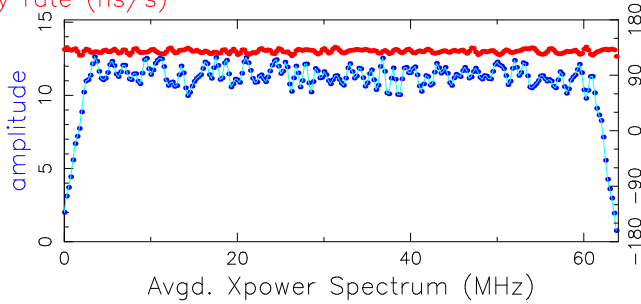
Fringe quality 8



SNR 211.9  
Int time 40.852  
Amp 12.124  
Phase 128.4  
PFD 0.0e+00  
Delays (us)  
SBD -0.008003  
MBD -0.007959  
Fringe rate (Hz)  
0.009809  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512

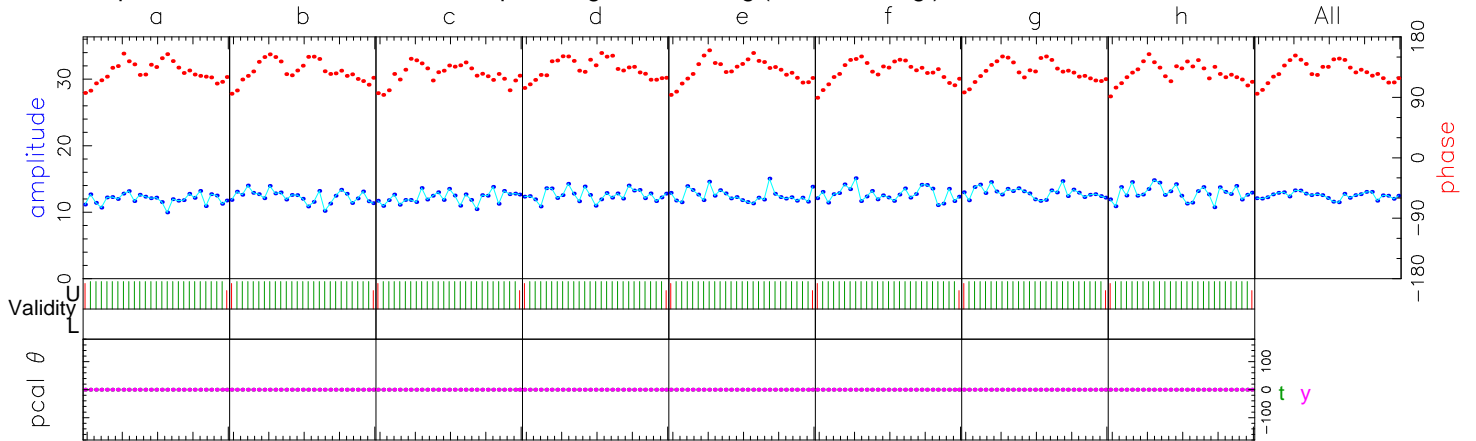


delay rate (ns/s)



Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080618.88  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114008  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"

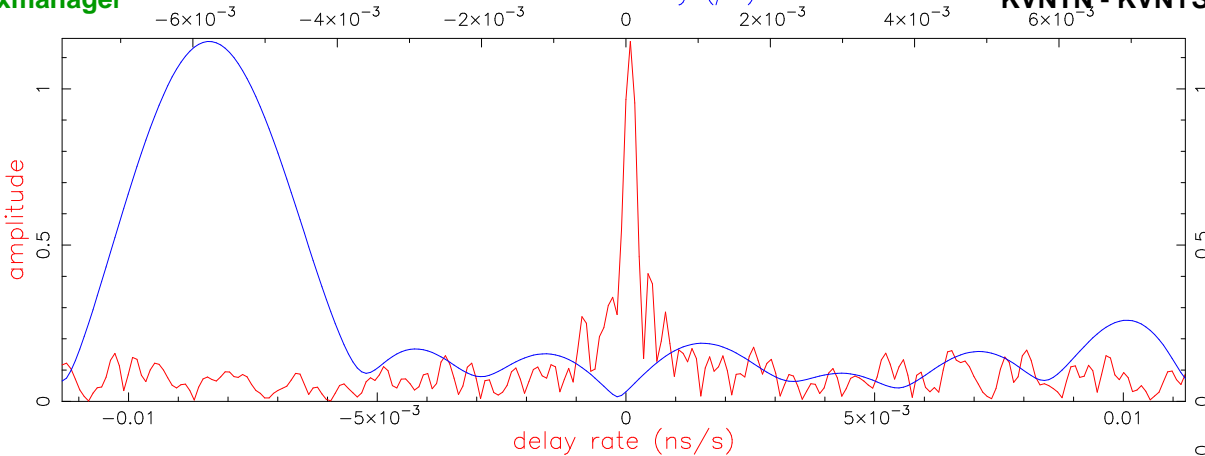
Amp. and Phase vs. time for each freq., 27 segs, 3 APs / seg (1.54 sec / seg.), time ticks 2 sec



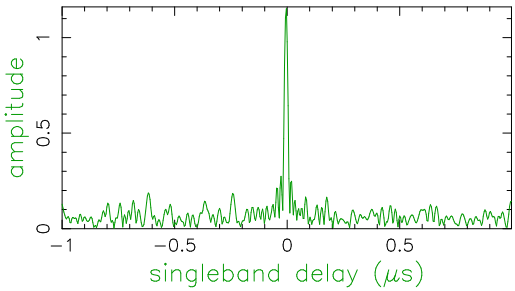
|                         | 86012.00           | 86076.00 | 86140.00        | 86204.00         | 86268.00           | 86332.00 | 86396.00 | 86460.00 | Freq (MHz)                             | All                         |                               |                            |
|-------------------------|--------------------|----------|-----------------|------------------|--------------------|----------|----------|----------|--|-----------------------------|-------------------------------|----------------------------|
| U/L                     | 80/0               | 80/0     | 80/0            | 80/0             | 80/0               | 80/0     | 80/0     | 80/0     |  |                             |                               |                            |
| t                       | 1000               | 1000     | 1000            | 1000             | 1000               | 1000     | 1000     | 1000     | APs used                               |                             |                               |                            |
| y                       | 1000               | 1000     | 1000            | 1000             | 1000               | 1000     | 1000     | 1000     | PC freqs                               |                             |                               |                            |
| t:y                     | 0:0                | 0:0      | 0:0             | 0:0              | 0:0                | 0:0      | 0:0      | 0:0      | PC phase                               |                             |                               |                            |
| t:y                     | 0:0                | 0:0      | 0:0             | 0:0              | 0:0                | 0:0      | 0:0      | 0:0      | ManI PC                                |                             |                               |                            |
| t                       | 1000               | 1000     | 1000            | 1000             | 1000               | 1000     | 1000     | 1000     | PC amp                                 |                             |                               |                            |
| y                       | 1000               | 1000     | 1000            | 1000             | 1000               | 1000     | 1000     | 1000     |  |                             |                               |                            |
| t                       | W00UR              | W01UR    | W02UR           | W03UR            | W04UR              | W05UR    | W06UR    | W07UR    | Chan ids                               |                             |                               |                            |
| y                       | W00UR              | W01UR    | W02UR           | W03UR            | W04UR              | W05UR    | W06UR    | W07UR    | Tracks                                 |                             |                               |                            |
|                         |                    |          |                 |                  |                    |          |          |          | Chan ids                               |                             |                               |                            |
|                         |                    |          |                 |                  |                    |          |          |          | Tracks                                 |                             |                               |                            |
| Group delay (usec)(sbd) | -5.11556386812E+02 |          |                 |                  | -5.11548427625E+02 |          |          |          | Resid mbdelay (usec)                   | -7.95919E-03 +/- 5.1E-06    |                               |                            |
| Sband delay (usec)      | -5.11556430125E+02 |          |                 |                  | -9.6879005E-01     |          |          |          | Resid sbdelay (usec)                   | -8.00250E-03 +/- 4.1E-05    |                               |                            |
| Phase delay (usec)      | -5.11548423483E+02 |          |                 |                  | -4.9999999E-08     |          |          |          | Resid phdelay (usec)                   | 4.14152E-06 +/- 1.7E-08     |                               |                            |
| Delay rate (us/s)       | -2.31209184487E-02 |          |                 |                  | -2.31210323224E-02 |          |          |          | Resid rate (us/s)                      | 1.13874E-07 +/- 7.4E-10     |                               |                            |
| Total phase (deg)       |                    |          | -71.6           |                  | -2.61218776055E-06 |          |          |          | Resid phase (deg)                      | 128.4 +/- 0.5               |                               |                            |
|                         | RMS                | Theor.   | Amplitude       | 12.124 +/- 0.057 |                    |          |          |          | PCal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5       |                               |                            |
| ph/seg (deg)            | 14.3               | 1.4      | Search (256X32) | 11.881           |                    |          |          |          | PCal rate: 0.000E+00, 0.000E+00 (us/s) | sb window (us) -1.000 1.000 |                               |                            |
| amp/seg (%)             | 5.0                | 2.5      | Interp.         | 0.000            |                    |          |          |          | Bits/sample: 2x2                       | SampCntNorm: enabled        | mb window (us) -0.008 0.008   |                            |
| ph/frq (deg)            | 2.6                | 0.8      | Inc. seg. avg.  | 12.496           |                    |          |          |          | Sample rate(MISamp/s): 128             |                             | dr window (ns/s) -0.011 0.011 |                            |
| amp/frq (%)             | 2.6                | 1.3      | Inc. frq. avg.  | 12.130           |                    |          |          |          | Data rate(Mb/s): 2048                  | nlags: 256                  | t_cohere infinite             | ion window (TEC) 0.00 0.00 |

multiband delay ( $\mu$ s)

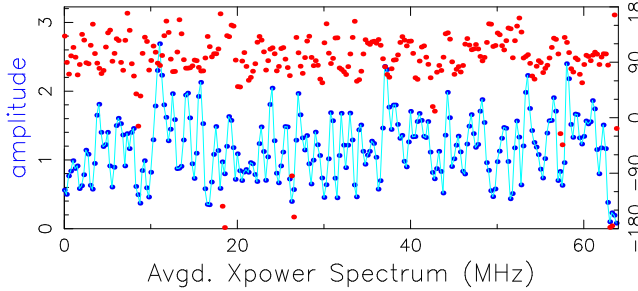
Fringe quality 9



SNR 20.3  
 Int time 40.852  
 Amp 1.161  
 Phase 109.8  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.005036  
 MBD -0.005790  
 Fringe rate (Hz)  
 0.008721  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512

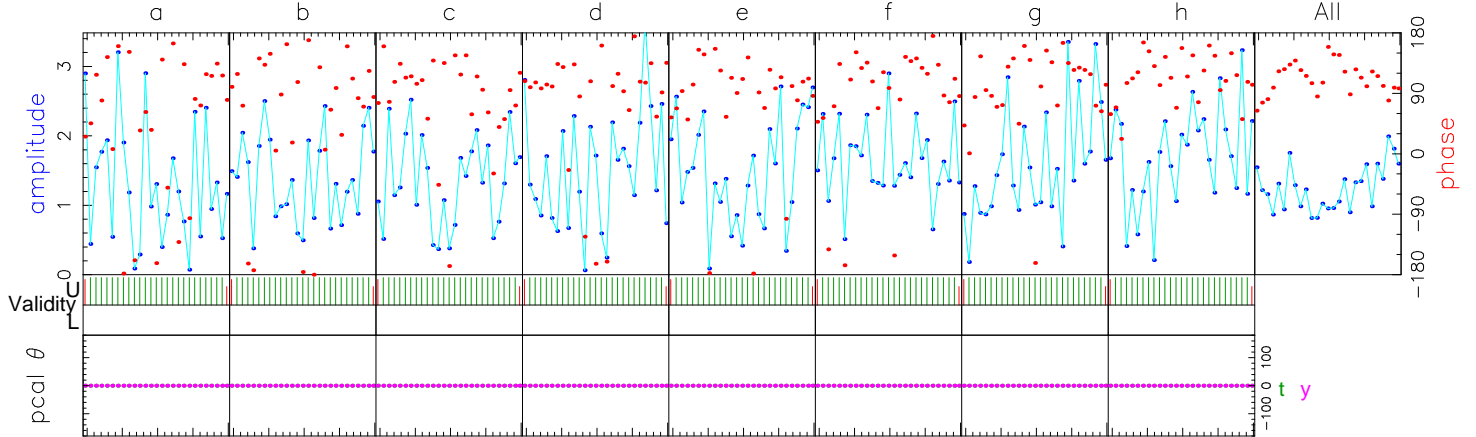


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080618.88  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114009  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

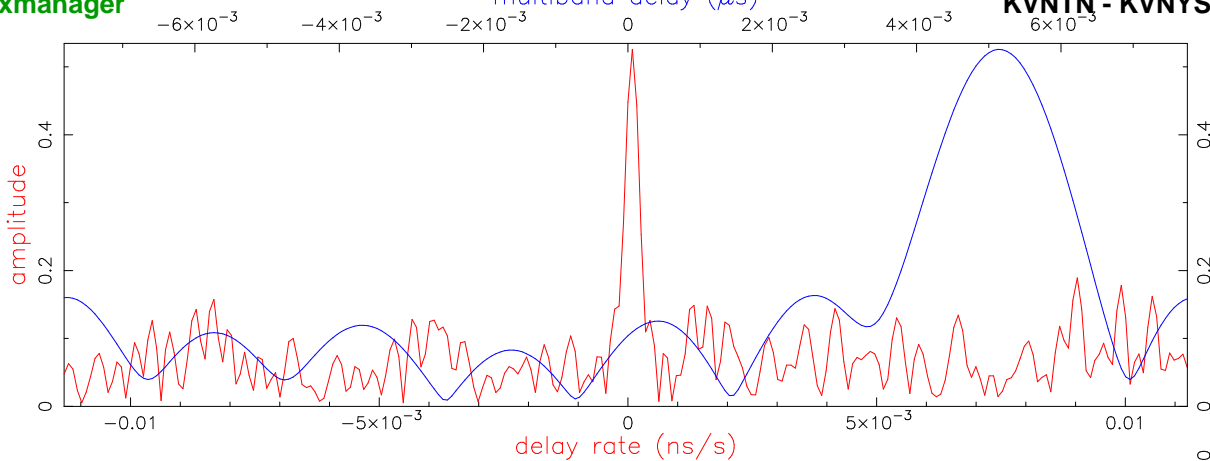
Amp. and Phase vs. time for each freq., 27 segs, 3 APs / seg (1.54 sec / seg.), time ticks 2 sec



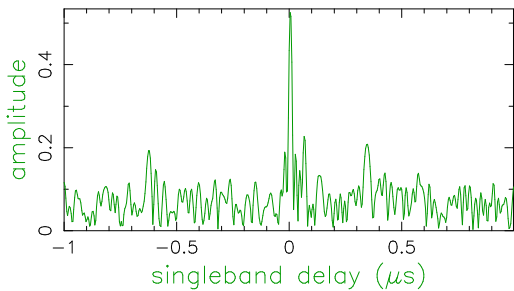
|                         | 86012.00 | 86076.00           | 86140.00 | 86204.00                 | 86268.00 | 86332.00           | 86396.00                               | 86460.00 | Freq (MHz)            | All               |                  |              |
|-------------------------|----------|--------------------|----------|--------------------------|----------|--------------------|--|----------|-----------------------|-------------------|------------------|--------------|
| U/L                     | 80/0     | 80/0               | 80/0     | 80/0                     | 80/0     | 80/0               | 80/0                                   | 80/0     |                       |                   |                  |              |
| t                       | 1000     | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000                                   | 1000     |                       |                   |                  |              |
| y                       | 1000     | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000                                   | 1000     |                       |                   |                  |              |
| t:y                     | 0:0      | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0                                    | 0:0      |                       |                   |                  |              |
| t:y                     | 0:0      | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0                                    | 0:0      |                       |                   |                  |              |
| t                       | 1000     | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000                                   | 1000     |                       |                   |                  |              |
| y                       | 1000     | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000                                   | 1000     |                       |                   |                  |              |
| t                       | W00UL    | W01UL              | W02UL    | W03UL                    | W04UL    | W05UL              | W06UL                                  | W07UL    |                       |                   |                  |              |
| y                       | W00UR    | W01UR              | W02UR    | W03UR                    | W04UR    | W05UR              | W06UR                                  | W07UR    |                       |                   |                  |              |
| Group delay (usec)(sbd) |          | -5.11554218074E+02 |          |                          |          | -5.11548427625E+02 |  |          |                       |                   |                  |              |
| Sband delay (usec)      |          | -5.11553463625E+02 |          |                          |          | -9.6879005E-01     |  |          |                       |                   |                  |              |
| Phase delay (usec)      |          | -5.11548424083E+02 |          |                          |          | -4.9999999E-08     |  |          |                       |                   |                  |              |
| Delay rate (us/s)       |          | -2.31209310780E-02 |          |                          |          | -2.31210323224E-02 |  |          |                       |                   |                  |              |
| Total phase (deg)       |          |                    | -90.2    |                          |          | -2.61218776055E-06 |  |          |                       |                   |                  |              |
|                         |          |                    |          | Apriori delay (usec)     |          |                    | Resid mbdelay (usec)                   |          | -5.79045E-03          | +/- 5.3E-05       |                  |              |
|                         |          |                    |          | Apriori clock (usec)     |          |                    | Resid sbdelay (usec)                   |          | -5.03600E-03          | +/- 4.2E-04       |                  |              |
|                         |          |                    |          | Apriori clockrate (us/s) |          |                    | Resid phdelay (usec)                   |          | 3.54149E-06           | +/- 1.8E-07       |                  |              |
|                         |          |                    |          | Apriori rate (us/s)      |          |                    | Resid rate (us/s)                      |          | 1.01244E-07           | +/- 7.7E-09       |                  |              |
|                         |          |                    |          | Apriori accel (us/s/s)   |          |                    | Resid phase (deg)                      |          | 109.8                 | +/- 5.6           |                  |              |
|                         |          |                    |          |                          |          |                    |  |          |                       |                   |                  |              |
| ph/seg (deg)            | 23.2     | 14.7               |          | Search (256X32)          | 1.142    |                    | Pcal mode: MANUAL, MANUAL              |          | PC period (AP's) 5, 5 |                   |                  |              |
| amp/seg (%)             | 28.6     | 25.6               |          | Interp.                  | 0.000    |                    | Pcal rate: 0.000E+00, 0.000E+00 (us/s) |          | sb window (us)        | -1.000 1.000      |                  |              |
| ph/frq (deg)            | 6.1      | 8.0                |          | Inc. seg. avg.           | 1.209    |                    | Bits/sample: 2x2                       |          | SampCntNorm: enabled  | mb window (us)    | -0.008 0.008     |              |
| amp/frq (%)             | 17.8     | 13.9               |          | Inc. frq. avg.           | 1.145    |                    | Sample rate(MISamp/s): 128             |          | nlags: 256            | t_cohere infinite | dr window (ns/s) | -0.011 0.011 |
|                         |          |                    |          |                          |          |                    | Data rate(Mb/s): 2048                  |          |                       | ion window (TEC)  | 0.00 0.00        |              |

multiband delay ( $\mu$ s)

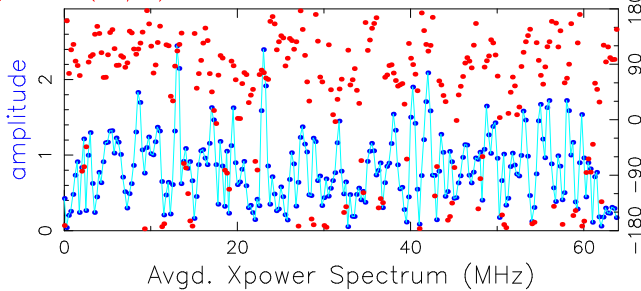
Fringe quality 9



SNR 9.3  
Int time 40.852  
Amp 0.535  
Phase 110.7  
PFD 4.6e-13  
Delays (us)  
SBD 0.005495  
MBD 0.005134  
Fringe rate (Hz)  
0.010236  
Ion TEC 0.000  
Ref freq (MHz)  
86140.0000  
AP (sec) 0.512

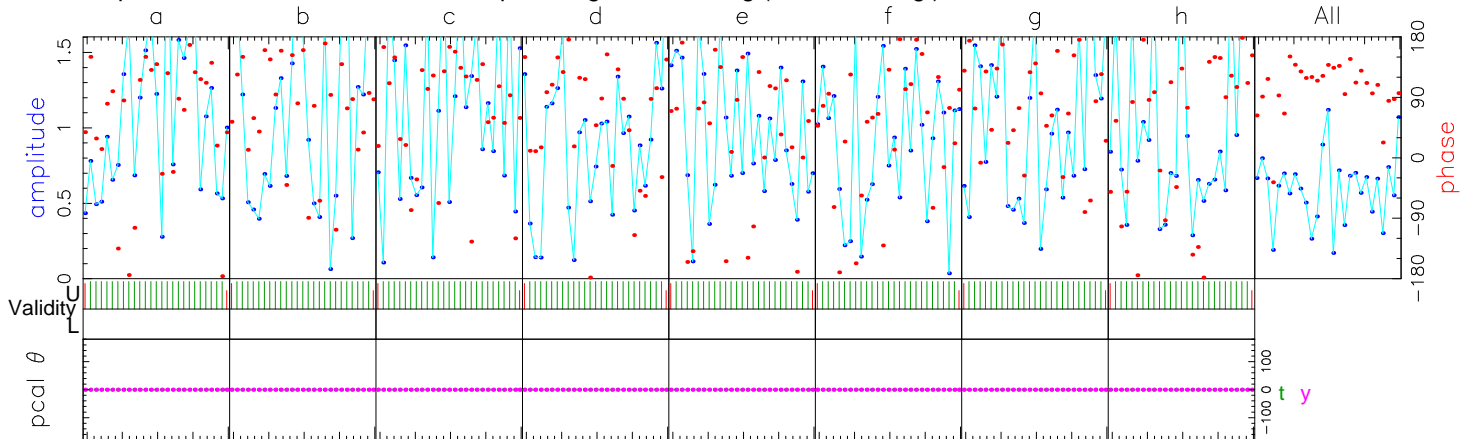


delay rate (ns/s)



Exp. c211c  
Exper # 16383  
Yr:day 2021:116  
Start 080618.88  
Stop 080659.84  
FRT 080330.00  
Corr/FF/build  
2021:302:193655  
2021:303:114010  
2021:252:122852  
RA & Dec (J2000)  
03h59m29.747267s  
+50°57'50.161694"

Amp. and Phase vs. time for each freq., 27 segs, 3 APs / seg (1.54 sec / seg.), time ticks 2 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|-----|
| U/L | 80/0     | 80/0     | 80/0     | 80/0     | 80/0     | 80/0     | 80/0     | 80/0     |            |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| y   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| t:y | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |            |     |
| t:y | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      |            |     |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| y   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |     |
| t   | W00UR    | W01UR    | W02UR    | W03UR    | W04UR    | W05UR    | W06UR    | W07UR    |            |     |
| y   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    |            |     |

|                         |                    |                          |                    |                      |             |     |         |
|-------------------------|--------------------|--------------------------|--------------------|----------------------|-------------|-----|---------|
| Group delay (usec)(sbd) | -5.11543293918E+02 | Apriori delay (usec)     | -5.11548427625E+02 | Resid mbdelay (usec) | 5.13371E-03 | +/- | 1.2E-04 |
| Sband delay (usec)      | -5.11542933125E+02 | Apriori clock (usec)     | -9.6879005E-01     | Resid sbdelay (usec) | 5.49450E-03 | +/- | 9.2E-04 |
| Phase delay (usec)      | -5.11548424056E+02 | Apriori clockrate (us/s) | -4.9999999E-08     | Resid phdelay (usec) | 3.56908E-06 | +/- | 4.0E-07 |
| Delay rate (us/s)       | -2.31209134888E-02 | Apriori rate (us/s)      | -2.31210323224E-02 | Resid rate (us/s)    | 1.18834E-07 | +/- | 1.7E-08 |
| Total phase (deg)       | -89.3              | Apriori accel (us/s/s)   | -2.61218776055E-06 | Resid phase (deg)    | 110.7       | +/- | 12.3    |

|              |      |        |      |                 |                 |                        |                             |                      |                |                   |                  |           |
|--------------|------|--------|------|-----------------|-----------------|------------------------|-----------------------------|----------------------|----------------|-------------------|------------------|-----------|
| ph/seg (deg) | 40.1 | Theor. | 31.9 | Amplitude       | 0.535 +/- 0.057 | Pcal mode:             | MANUAL, MANUAL              | PC period (AP's)     | 5, 5           |                   |                  |           |
| amp/seg (%)  | 43.2 |        | 55.6 | Search (256X32) | 0.507           | Pcal rate:             | 0.000E+00, 0.000E+00 (us/s) | sb window (us)       | -1.000 1.000   |                   |                  |           |
| ph/frq (deg) | 10.1 |        | 17.3 | Interp.         | 0.000           | Bits/sample:           | 2x2                         | SampCntNorm: enabled | mb window (us) | -0.008 0.008      |                  |           |
| amp/frq (%)  | 25.0 |        | 30.3 | Inc. seg. avg.  | 0.519           | Sample rate (MSamp/s): | 128                         | dr window (ns/s)     | -0.011 0.011   |                   |                  |           |
|              |      |        |      | Inc. frq. avg.  | 0.509           | Data rate (Mb/s):      | 2048                        | nlags:               | 256            | t_cohere infinite | ion window (TEC) | 0.00 0.00 |

t: az 313.4 el 55.6 pa 105.4 y: az 308.3 el 58.1 pa 97.9 u,v (fr/asec) 207.127 -594.007 simultaneous interpolator  
Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/ty..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/ty.W.94.1WZMQH

Mk4/DiFX fourfit 3.21 rev 2937

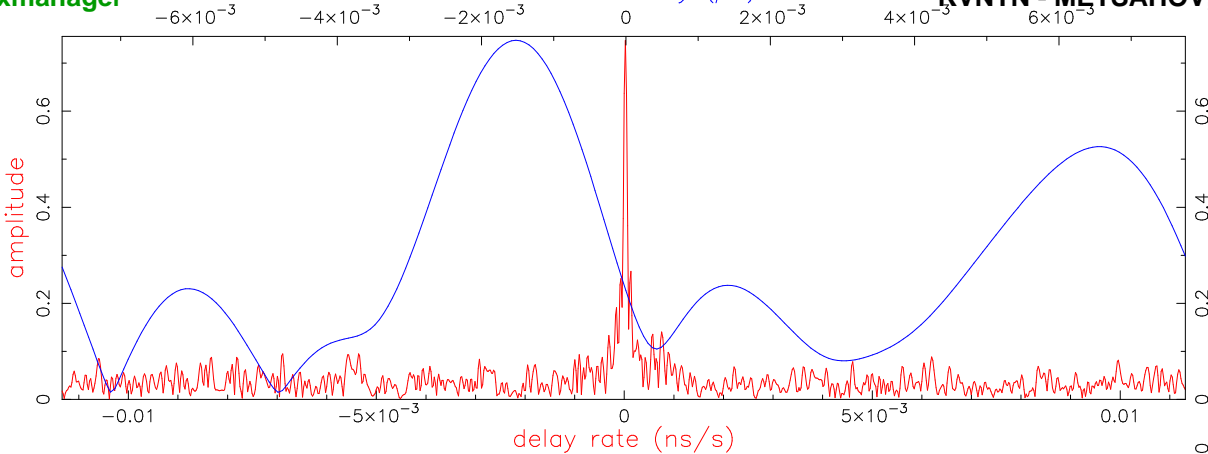
fxmanager

NRAO150.1WZMQH, No0029, tZ

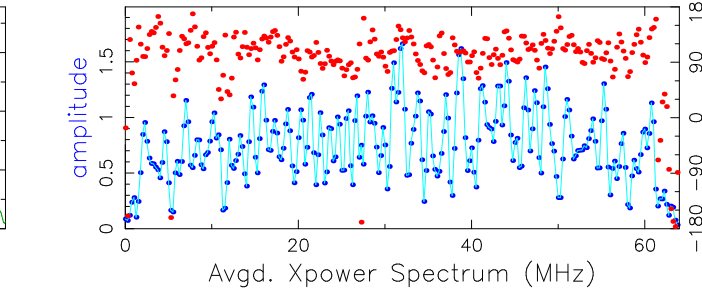
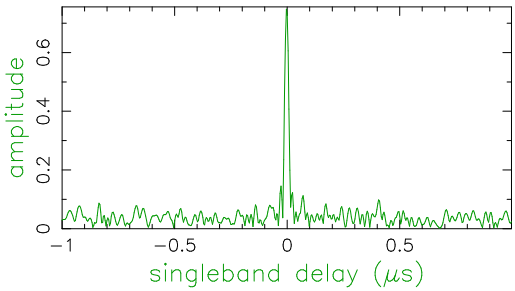
KVNTN - METSAHOV, fgroup W, pol RR

multiband delay ( $\mu$ s)

Fringe quality 7

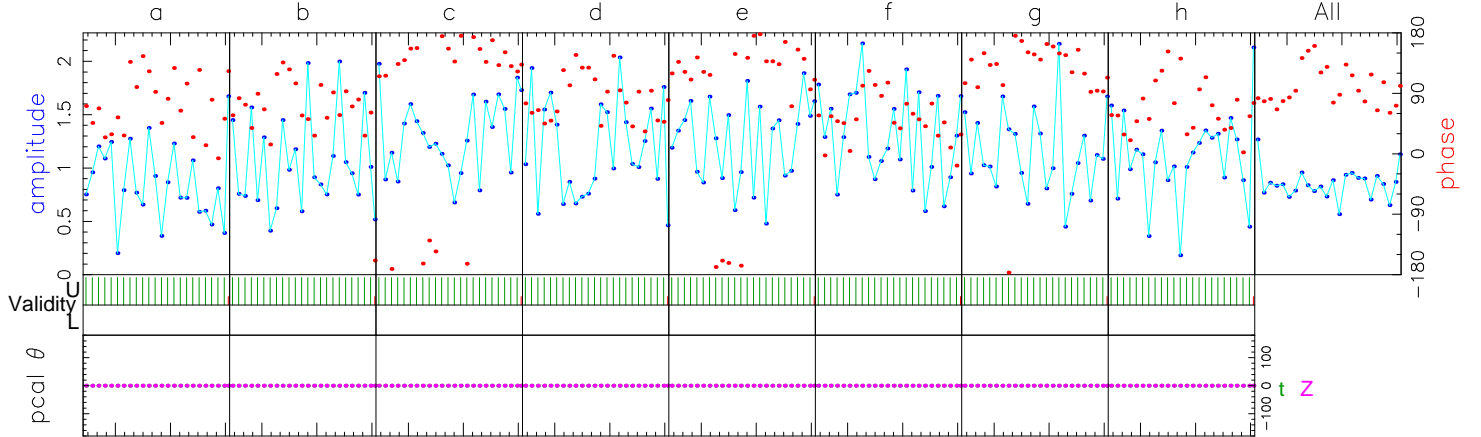


SNR 25.7  
 Int time 155.063  
 Amp 0.756  
 Phase 98.3  
 PFD 0.0e+00  
 Delays (us)  
 SBD -0.002465  
 MBD -0.001500  
 Fringe rate (Hz)  
 0.002744  
 Ion TEC 0.000  
 Ref freq (MHz)  
 86140.0000  
 AP (sec) 0.512



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114011  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



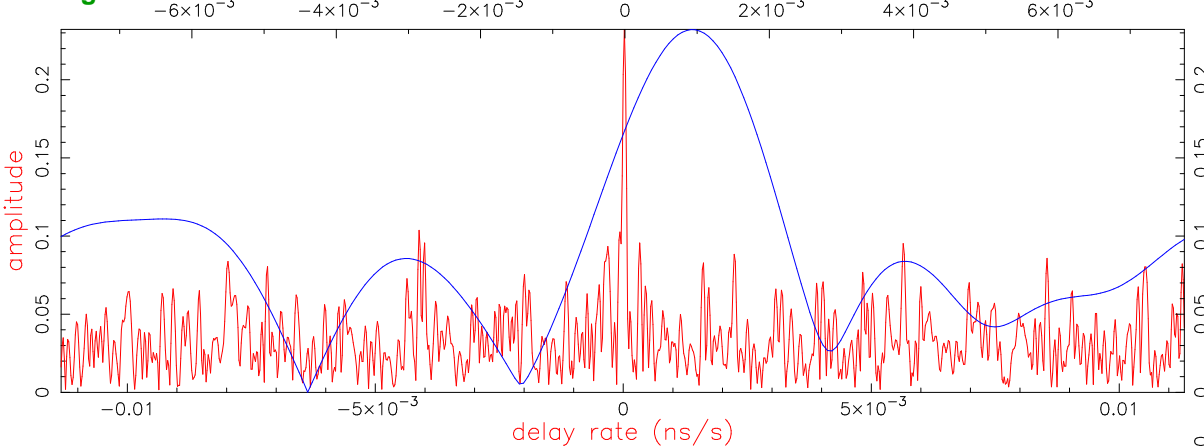
|                              | 86012.00           | 86076.00                    | 86140.00         | 86204.00                         | 86268.00           | 86332.00 | 86396.00 | 86460.00 | Freq (MHz)                             | All                           |
|------------------------------|--------------------|-----------------------------|------------------|----------------------------------|--------------------|----------|----------|----------|--|-------------------------------|
| U/L                          | 303/0              | 303/0                       | 303/0            | 303/0                            | 303/0              | 303/0    | 303/0    | 303/0    |  |                               |
| t                            | 1000               | 1000                        | 1000             | 1000                             | 1000               | 1000     | 1000     | 1000     | PC freqs                               |                               |
| Z                            | 1000               | 1000                        | 1000             | 1000                             | 1000               | 1000     | 1000     | 1000     | PC freqs                               |                               |
| t:Z                          | 0:0                | 0:0                         | 0:0              | 0:0                              | 0:0                | 0:0      | 0:0      | 0:0      | PC phase                               |                               |
| t:Z                          | 0:0                | 0:0                         | 0:0              | 0:0                              | 0:0                | 0:0      | 0:0      | 0:0      | Mani PC                                |                               |
| t                            | 1000               | 1000                        | 1000             | 1000                             | 1000               | 1000     | 1000     | 1000     | PC amp                                 |                               |
| Z                            | 1000               | 1000                        | 1000             | 1000                             | 1000               | 1000     | 1000     | 1000     |  |                               |
| t                            | W00UR              | W01UR                       | W02UR            | W03UR                            | W04UR              | W05UR    | W06UR    | W07UR    | Chan ids                               |                               |
| Z                            | W00UR              | W01UR                       | W02UR            | W03UR                            | W04UR              | W05UR    | W06UR    | W07UR    | Tracks                                 |                               |
|                              |                    |                             |                  |                                  |                    |          |          |          | Tracks                                 |                               |
| Group delay (usec)(sbd)      | -1.82973958223E+02 |                             |                  |                                  | -1.82972458287E+02 |          |          |          | Resid mbdelay (usec)                   | -1.49994E-03 +/- 4.2E-05      |
| Sband delay (usec)           | -1.82974923537E+02 |                             |                  |                                  | 4.5111847E-01      |          |          |          | Resid sbdelay (usec)                   | -2.46525E-03 +/- 3.3E-04      |
| Phase delay (usec)           | -1.82972455117E+02 |                             |                  |                                  | -6.6000001E-08     |          |          |          | Resid phdelay (usec)                   | 3.17007E-06 +/- 1.4E-07       |
| Delay rate (us/s)            | -9.65086384083E-01 |                             |                  |                                  | -9.65086415943E-01 |          |          |          | Resid rate (us/s)                      | 3.18596E-08 +/- 1.6E-09       |
| Total phase (deg)            |                    |                             | -102.2           |                                  | -2.70386264312E-05 |          |          |          | Resid phase (deg)                      | 98.3 +/- 4.5                  |
|                              | RMS                | Theor.                      | Amplitude        | 0.756 +/- 0.029                  |                    |          |          |          | PCal mode: MANUAL, MANUAL              | PC period (AP's) 5, 5         |
| ph/seg (deg)                 | 28.6               | 10.9                        | Search (1024X32) | 0.724                            |                    |          |          |          | PCal rate: 0.000E+00, 0.000E+00 (us/s) | sb window (us) -1.000 1.000   |
| amp/seg (%)                  | 21.6               | 19.0                        | Interp.          | 0.000                            |                    |          |          |          | Bits/sample: 2x2                       | mb window (us) -0.008 0.008   |
| ph/frq (deg)                 | 44.0               | 6.3                         | Inc. seg. avg.   | 0.832                            |                    |          |          |          | Sample rate(MISamp/s): 128             | dr window (ns/s) -0.011 0.011 |
| amp/frq (%)                  | 34.0               | 11.0                        | Inc. frq. avg.   | 0.957                            |                    |          |          |          | Data rate(Mb/s): 2048                  | ion window (TEC) 0.00 0.00    |
| t: az 313.4 el 55.6 pa 105.4 |                    | Z: az 77.3 el 55.6 pa -50.2 |                  | u,v (fr/asec) 8747.012 -4485.666 |                    |          |          |          | nlags: 256 t_cohere infinite           | simultaneous interpolator     |

Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tZ..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tZ.W.100.1WZMQH

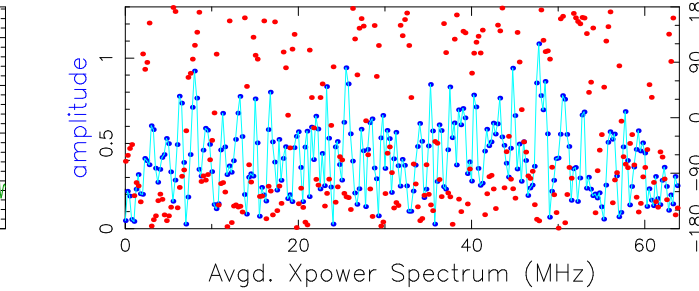
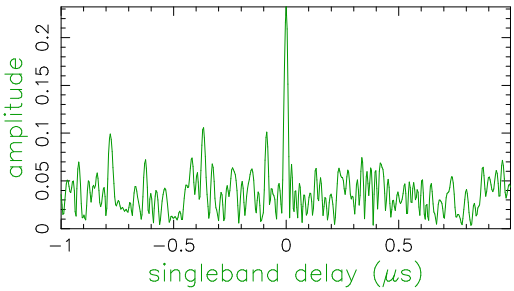


multiband delay ( $\mu$ s)

Fringe quality 9

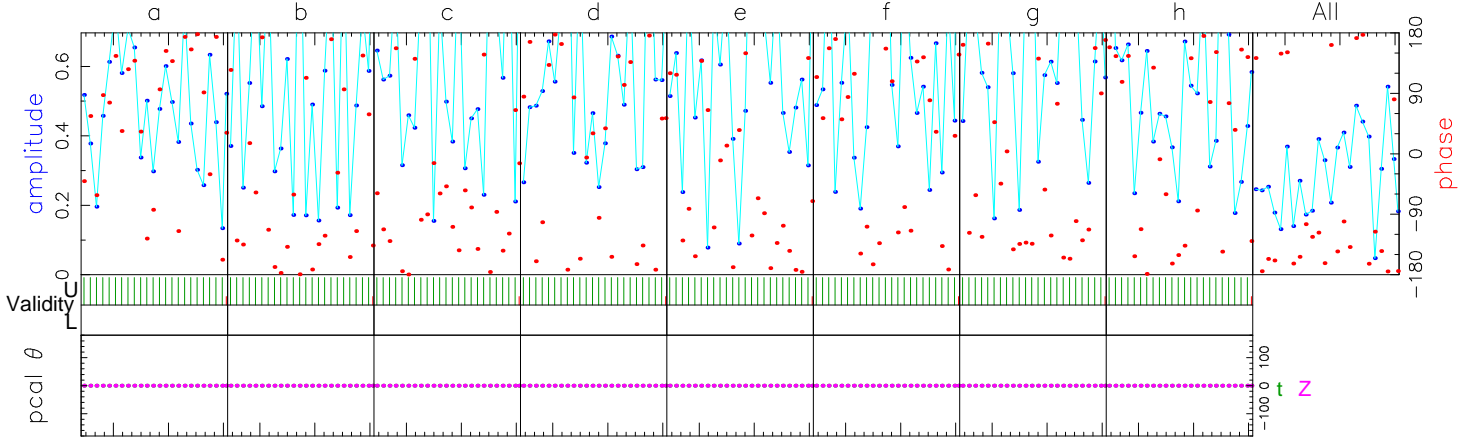


SNR 7.9  
 Int time 155.063  
 Amp 0.232  
 Phase -164.6  
 PFD 4.4e-07  
 Delays (us)  
 SBD -0.000315  
 MBD 0.000932  
 Fringe rate (Hz) 0.002341  
 Ion TEC 0.000  
 Ref freq (MHz) 86140.0000  
 AP (sec) 0.512



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114012  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|  | 86012.00           | 86076.00 | 86140.00 | 86204.00 | 86268.00           | 86332.00 | 86396.00 | 86460.00 | Freq (MHz)   | All         |
|--|--------------------|----------|----------|----------|--------------------|----------|----------|----------|--------------|-------------|
| U/L                                    | 303/0              | 303/0    | 303/0    | 303/0    | 303/0              | 303/0    | 303/0    | 303/0    |              |             |
| t                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |              |             |
| Z                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |              |             |
| t:Z                                    | 0:0                | 0:0      | 0:0      | 0:0      | 0:0                | 0:0      | 0:0      | 0:0      |              |             |
| t:Z                                    | 0:0                | 0:0      | 0:0      | 0:0      | 0:0                | 0:0      | 0:0      | 0:0      |              |             |
| t                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |              |             |
| Z                                      | 1000               | 1000     | 1000     | 1000     | 1000               | 1000     | 1000     | 1000     |              |             |
| t                                      | W00UL              | W01UL    | W02UL    | W03UL    | W04UL              | W05UL    | W06UL    | W07UL    |              |             |
| Z                                      | W00UR              | W01UR    | W02UR    | W03UR    | W04UR              | W05UR    | W06UR    | W07UR    |              |             |
| Group delay (usec)(sbd)                | -1.82971525910E+02 |          |          |          | -1.82972458287E+02 |          |          |          | 9.32377E-04  | +/- 1.4E-04 |
| Sband delay (usec)                     | -1.82972773787E+02 |          |          |          | 4.5111847E-01      |          |          |          | -3.15500E-04 | +/- 1.1E-03 |
| Phase delay (usec)                     | -1.82972463595E+02 |          |          |          | -6.6000001E-08     |          |          |          | -5.30812E-06 | +/- 4.7E-07 |
| Delay rate (us/s)                      | -9.65086388767E-01 |          |          |          | -9.65086415943E-01 |          |          |          | 2.71760E-08  | +/- 5.2E-09 |
| Total phase (deg)                      |                    |          | -5.1     |          | -2.70386264312E-05 |          |          |          | -164.6       | +/- 14.5    |
| Apriori delay (usec)                   |                    |          |          |          |                    |          |          |          |              |             |
| Apriori clock (usec)                   |                    |          |          |          |                    |          |          |          |              |             |
| Apriori clockrate (us/s)               |                    |          |          |          |                    |          |          |          |              |             |
| Apriori rate (us/s)                    |                    |          |          |          |                    |          |          |          |              |             |
| Apriori accel (us/s/s)                 |                    |          |          |          |                    |          |          |          |              |             |
| Resid mbdelay (usec)                   |                    |          |          |          |                    |          |          |          |              |             |
| Resid sbdelay (usec)                   |                    |          |          |          |                    |          |          |          |              |             |
| Resid phdelay (usec)                   |                    |          |          |          |                    |          |          |          |              |             |
| Resid rate (us/s)                      |                    |          |          |          |                    |          |          |          |              |             |
| Resid phase (deg)                      |                    |          |          |          |                    |          |          |          |              |             |
| Pcal mode: MANUAL, MANUAL              |                    |          |          |          |                    |          |          |          |              |             |
| Pcal rate: 0.000E+00, 0.000E+00 (us/s) |                    |          |          |          |                    |          |          |          |              |             |
| Bits/sample: 2x2                       |                    |          |          |          |                    |          |          |          |              |             |
| Sample rate(MISamp/s): 128             |                    |          |          |          |                    |          |          |          |              |             |
| Data rate(Mb/s): 2048                  |                    |          |          |          |                    |          |          |          |              |             |
| nlags: 256                             |                    |          |          |          |                    |          |          |          |              |             |
| t_cohere infinite                      |                    |          |          |          |                    |          |          |          |              |             |
| sb window (us)                         |                    |          |          |          |                    |          |          |          | -1.000       | 1.000       |
| mb window (us)                         |                    |          |          |          |                    |          |          |          | -0.008       | 0.008       |
| dr window (ns/s)                       |                    |          |          |          |                    |          |          |          | -0.011       | 0.011       |
| ion window (TEC)                       |                    |          |          |          |                    |          |          |          | 0.00         | 0.00        |

ph/seg (deg) 40.3 35.5 Search (1024X32) 0.230 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
 amp/seg (%) 57.9 61.9 Interp. 0.000 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
 ph/frq (deg) 43.5 20.5 Inc. seg. avg. 0.245 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
 amp/frq (%) 34.2 35.8 Inc. frq. avg. 0.269 Sample rate(MISamp/s): 128 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite dr window (ns/s) -0.011 0.011  
 t: az 313.4 el 55.6 pa 105.4 Z: az 77.3 el 55.6 pa -50.2 u,v (fr/asec) 8747.012 -4485.666 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite ion window (TEC) 0.00 0.00  
 Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tZ..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tZ.W.112.1WZMQH simultaneous interpolator



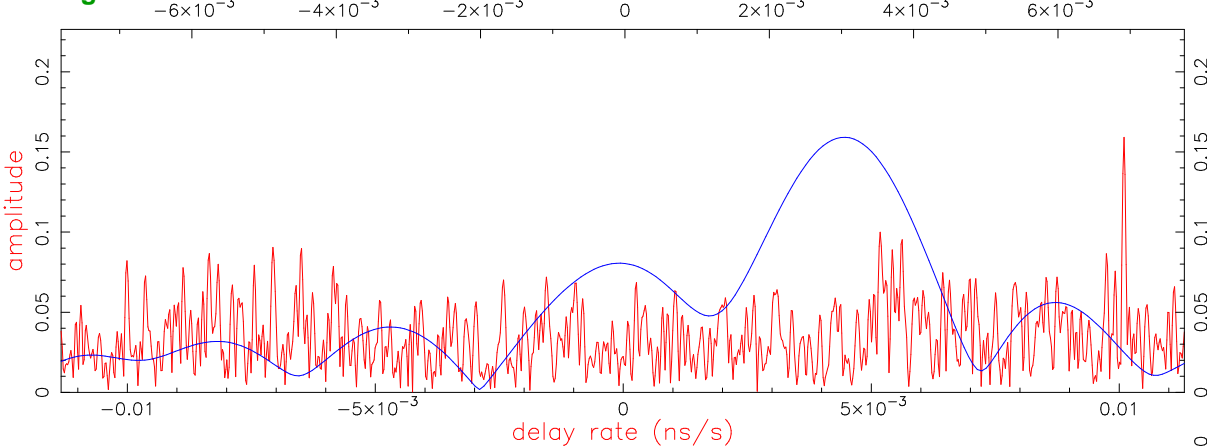
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tZ

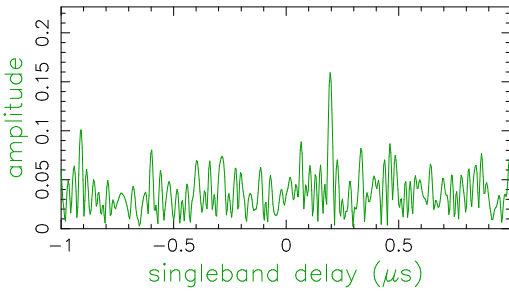
KVNTN - METSAHOV, fgroup W, pol RL

multiband delay ( $\mu$ s)

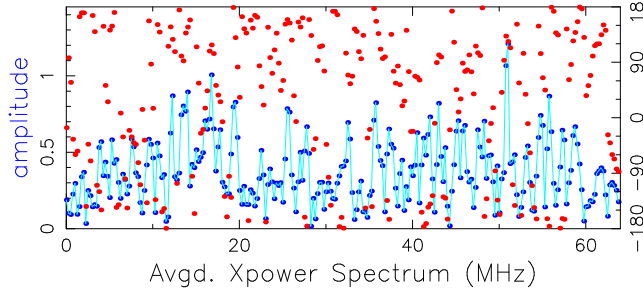


Fringe quality 0

SNR 5.4  
 Int time 155.063  
 Amp 0.226  
 Phase -168.8  
 PFD 1.0e+00  
 Delays (us)  
 SBD 0.195572  
 MBD 0.003043  
 Fringe rate (Hz) 0.871801  
 Ion TEC 0.000  
 Ref freq (MHz) 86140.0000  
 AP (sec) 0.512

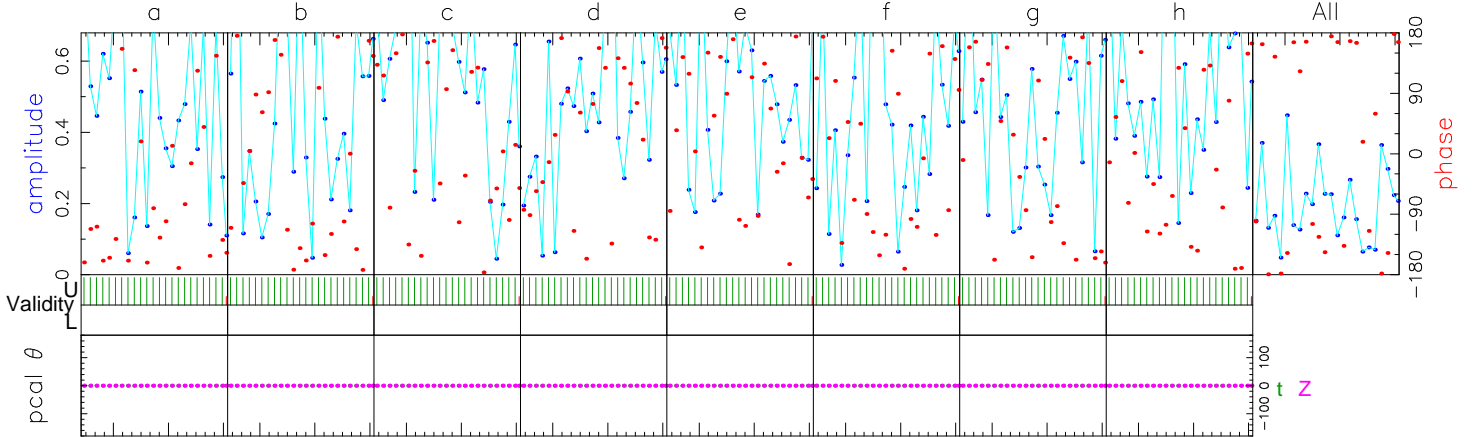


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build 2021:302:193655  
 2021:303:114014  
 2021:252:122852  
 RA & Dec (J2000) 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|                         | 86012.00           | 86076.00 | 86140.00                 | 86204.00 | 86268.00           | 86332.00 | 86396.00             | 86460.00 | Freq (MHz)   | All         |
|-------------------------|--------------------|----------|--------------------------|----------|--------------------|----------|----------------------|----------|--------------|-------------|
|                         | -139.0             | -171.1   | 176.2                    | 155.9    | 173.8              | -155.9   | 177.9                | -105.6   | Phase        | -168.8      |
|                         | 0.3                | 0.4      | 0.3                      | 0.2      | 0.1                | 0.2      | 0.3                  | 0.1      | Ampl.        | 0.2         |
|                         | 156.1              | 307.2    | 37.9                     | 253.8    | 419.1              | 158.5    | 308.8                | 290.1    | Sbd box      | 307.1       |
| U/L                     | 303/0              | 303/0    | 303/0                    | 303/0    | 303/0              | 303/0    | 303/0                | 303/0    | APs used     |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| Z                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC freqs     |             |
| t:Z                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | PC phase     |             |
| t:Z                     | 0:0                | 0:0      | 0:0                      | 0:0      | 0:0                | 0:0      | 0:0                  | 0:0      | Mani PC      |             |
| t                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     | PC amp       |             |
| Z                       | 1000               | 1000     | 1000                     | 1000     | 1000               | 1000     | 1000                 | 1000     |              |             |
| t                       | W00UR              | W01UR    | W02UR                    | W03UR    | W04UR              | W05UR    | W06UR                | W07UR    | Chan ids     |             |
| Z                       | W00UL              | W01UL    | W02UL                    | W03UL    | W04UL              | W05UL    | W06UL                | W07UL    | Tracks       |             |
|                         |                    |          |                          |          |                    |          |                      |          | Tracks       |             |
| Group delay (usec)(sbd) | -1.82781915651E+02 |          | Apriori delay (usec)     |          | -1.82972458287E+02 |          | Resid mbdelay (usec) |          | 3.04264E-03  | +/- 2.0E-04 |
| Sband delay (usec)      | -1.82776886037E+02 |          | Apriori clock (usec)     |          | 4.5111847E-01      |          | Resid sbdelay (usec) |          | 1.95572E-01  | +/- 1.6E-03 |
| Phase delay (usec)      | -1.82972463730E+02 |          | Apriori clockrate (us/s) |          | -6.6000001E-08     |          | Resid phdelay (usec) |          | -5.44315E-06 | +/- 6.8E-07 |
| Delay rate (us/s)       | -9.65076295192E-01 |          | Apriori rate (us/s)      |          | -9.65086415943E-01 |          | Resid rate (us/s)    |          | 1.01208E-05  | +/- 7.6E-09 |
| Total phase (deg)       |                    |          | Apriori accel (us/s/s)   |          | -2.70386264312E-05 |          | Resid phase (deg)    |          | -168.8       | +/- 21.1    |

ph/seg (deg) 56.8 51.8 Search (1024X32) 0.155 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
 amp/seg (%) 71.7 90.4 Interp. 0.000 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
 ph/frq (deg) 34.2 29.9 Inc. seg. avg. 0.203 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
 amp/frq (%) 39.9 52.2 Inc. frq. avg. 0.218 Sample rate(MSamp/s): 128 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite dr window (ns/s) -0.011 0.011  
 t: az 313.4 el 55.6 pa 105.4 Z: az 77.3 el 55.6 pa -50.2 u,v (fr/asec) 8747.012 -4485.666 simultaneous interpolator  
 Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tZ..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tZ.W.130.1WZMQH

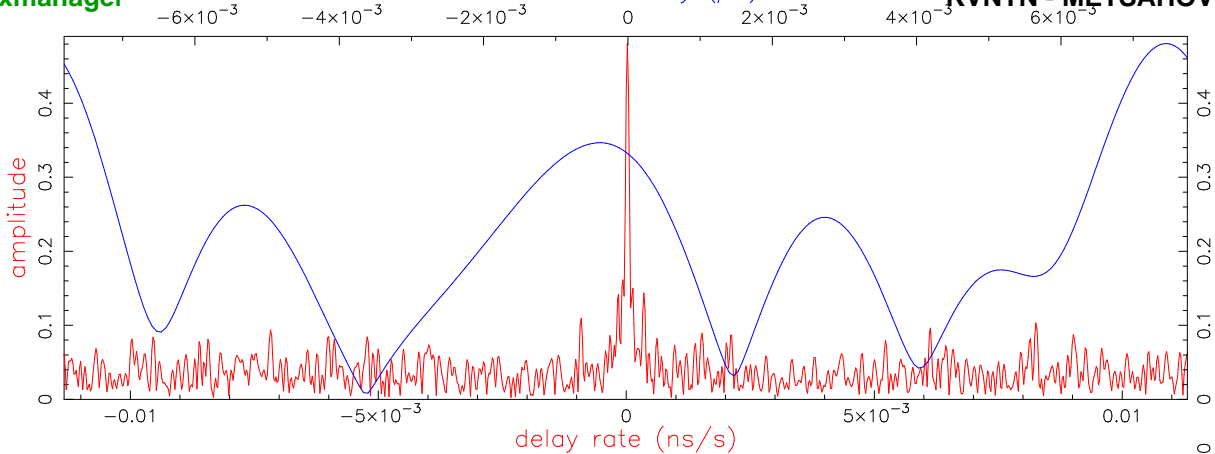
Mk4/DiFX fourfit 3.21 rev 2937

fxmanager

NRAO150.1WZMQH, No0029, tZ

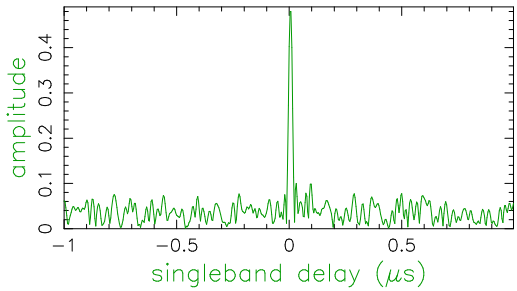
KVNTN - METSAHOV, fgroup W, pol LL

multiband delay ( $\mu$ s)

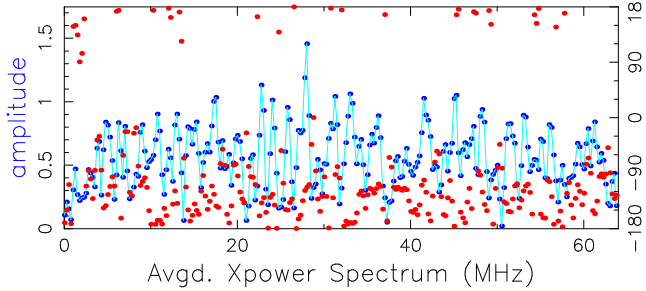


Fringe quality 7

SNR 16.7  
 Int time 155.063  
 Amp 0.490  
 Phase -151.9  
 PFD 0.0e+00  
 Delays (us)  
 SBD 0.005845  
 MBD 0.007507  
 Fringe rate (Hz) 0.002573  
 Ion TEC 0.000  
 Ref freq (MHz) 86140.0000  
 AP (sec) 0.512

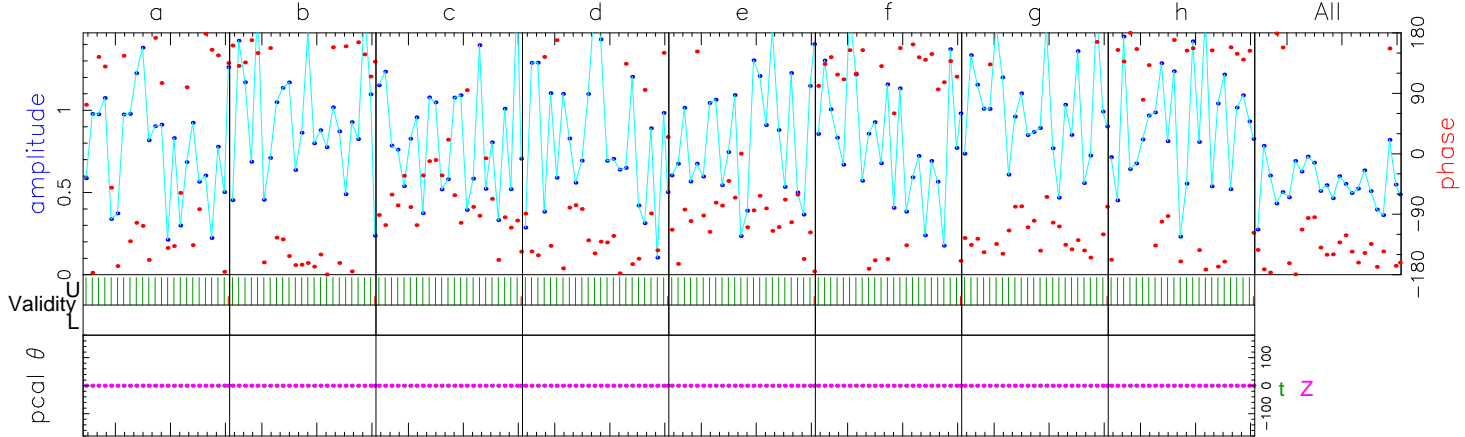


delay rate (ns/s)



Exp. c211c  
 Exper # 16383  
 Yr:day 2021:116  
 Start 080424.70  
 Stop 080659.84  
 FRT 080330.00  
 Corr/FF/build  
 2021:302:193655  
 2021:303:114009  
 2021:252:122852  
 RA & Dec (J2000)  
 03h59m29.747267s  
 +50°57'50.161694"

Amp. and Phase vs. time for each freq., 24 segs, 13 APs / seg (6.66 sec / seg.), time ticks 10 sec



|     | 86012.00 | 86076.00 | 86140.00 | 86204.00 | 86268.00 | 86332.00 | 86396.00 | 86460.00 | Freq (MHz) | All    |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|------------|--------|
|     | -173.3   | 174.8    | -74.2    | -144.9   | -95.6    | 144.7    | -127.8   | 174.9    | Phase      | -151.9 |
|     | 0.4      | 0.8      | 0.6      | 0.6      | 0.7      | 0.7      | 0.8      | 0.7      | Ampl.      | 0.7    |
|     | 260.0    | 258.6    | 258.0    | 258.1    | 257.6    | 257.8    | 258.2    | 258.7    | Sbd box    | 258.5  |
| U/L | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | 303/0    | APs used   |        |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |        |
| Z   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC freqs   |        |
| t:Z | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | PC phase   |        |
| t:Z | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | 0:0      | Mani PC    |        |
| t   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | PC amp     |        |
| Z   | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |            |        |
| t   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Chan ids   |        |
| Z   | W00UL    | W01UL    | W02UL    | W03UL    | W04UL    | W05UL    | W06UL    | W07UL    | Tracks     |        |

Group delay (usec)(sbd) -1.82964950816E+02 Apriori delay (usec) -1.82972458287E+02 Resid mbdelay (usec) 7.50747E-03 +/- 6.5E-05  
 Sband delay (usec) -1.82966613537E+02 Apriori clock (usec) 4.5111847E-01 Resid sbdelay (usec) 5.84475E-03 +/- 5.2E-04  
 Phase delay (usec) -1.82972463185E+02 Apriori clockrate (us/s) -6.6000001E-08 Resid phdelay (usec) -4.89776E-06 +/- 2.2E-07  
 Delay rate (us/s) -9.65086386078E-01 Apriori rate (us/s) -9.65086415943E-01 Resid rate (us/s) 2.98643E-08 +/- 2.5E-09  
 Total phase (deg) -352.3 Apriori accel (us/s/s) -2.70386264312E-05 Resid phase (deg) -151.9 +/- 6.9

RMS Theor. Amplitude 0.490 +/- 0.029 Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5  
 ph/seg (deg) 28.2 16.8 Search (1024X32) 0.468 Pcal rate: 0.000E+00, 0.000E+00 (us/s) sb window (us) -1.000 1.000  
 amp/seg (%) 29.2 29.3 Interp. 0.000 Bits/sample: 2x2 SampCntNorm: enabled mb window (us) -0.008 0.008  
 ph/frq (deg) 52.5 9.7 Inc. seg. avg. 0.531 Sample rate(MISamp/s): 128 dr window (ns/s) -0.011 0.011  
 amp/frq (%) 43.5 16.9 Inc. frq. avg. 0.662 Data rate(Mb/s): 2048 nlags: 256 t\_cohere infinite ion window (TEC) 0.00 0.00

t: az 313.4 el 55.6 pa 105.4 Z: az 77.3 el 55.6 pa -50.2 u,v (fr/asec) 8747.012 -4485.666 simultaneous interpolator  
 Control file: cf\_1234\_gmva Input file: /Exps/c211c/v1/1234/No0029/tZ..1WZMQH Output file: /Exps/c211c/v1/1234/No0029/tZ.W.87.1WZMQH