Mk4/DiFX fourfit 3.23 rev 3383

aux01

multiband delay (μs)

-6×10^{-3} -4×10^{-3} -2×10^{-3} 0 2×10^{-3} 4×10^{-3} 6×10^{-3}

delay rate (ns/s)

−0.01 -5×10^{-3} 0 5×10^{-3} 0.01

singleband delay (μs)

−4 −2 0 2

Avgd. Xpower Spectrum (MHz)

0 20 40 60

Fringe quality	5
SNR	331.7
Int time	299.920
Amp	7.007
Phase	-83.0
PFD	0.0e+00
Delays (us)	
SBD	0.686831
MBD	-0.000671
Fringe rate (Hz)	
	0.033058
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
	2022:090:145148
	2022:090:145428
	2021:308:113728
RA & Dec (J2000)	
	22h02m43.291370s
	+42°16'39.979885"

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec

a b c d e f g h All

Validity

U
L

pcal θ

B X

	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	Freq (MHz)	All
	-75.6	-88.3	-86.2	-90.3	-89.9	-70.0	-80.0	-83.8	Phase	-83.0
	7.1	7.1	7.2	7.0	7.4	7.1	7.3	6.1	Ampl.	7.0
	1200.8	1200.3	1201.1	1200.7	1201.1	1200.8	1200.8	1200.3	Sbd box	1200.8
U/L	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0	APs used	
B	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
B:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
B:X	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	
X	1000	1000	1000	1000	1000	1000	1000	1000		
B	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	
X	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	

Group delay (usec) (SBD)	3.64607746233E+02	Apriori delay (usec)	3.63920917427E+02	Resid mbdelay (usec)	-6.71194E-04	+/- 3.3E-06
Sband delay (usec)	3.64607747927E+02	Apriori clock (usec)	-1.0322331E+02	Resid sbdelay (usec)	6.86831E-01	+/- 2.6E-05
Phase delay (usec)	3.63920914749E+02	Apriori clockrate (us/s)	-8.1200004E-07	Resid phdelay (usec)	-2.67765E-06	+/- 1.1E-08
Delay rate (us/s)	-6.50408375744E-02	Apriori rate (us/s)	-6.50412213405E-02	Resid rate (us/s)	3.83766E-07	+/- 6.4E-11
Total phase (deg)	214.7	Apriori accel (us/s/s)	-7.85691515601E-06	Resid phase (deg)	-83.0	+/- 0.3

	RMS	Theor.	Amplitude	7.007 +/- 0.021	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5		
ph/seg (deg)	46.0	0.8	Search (2048X32)	6.711	Pcal rate: 0.000E+00, 0.000E+00 (us/s)		sb window (us)	-4.000 4.000
amp/seg (%)	42.7	1.4	Interp.	0.000	Bits/sample: 2x2	SampCntNorm: enabled	mb window (us)	-0.008 0.008
ph/frq (deg)	7.9	0.5	Inc. seg. avg.	9.961	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us		dr window (ns/s)	-0.011 0.011
amp/frq (%)	5.4	0.9	Inc. frq. avg.	7.039	Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

B: az 280.1 el 51.6 pa 57.8   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 489.894 -1031.360   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//BX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//BX.W.14.24ULKL

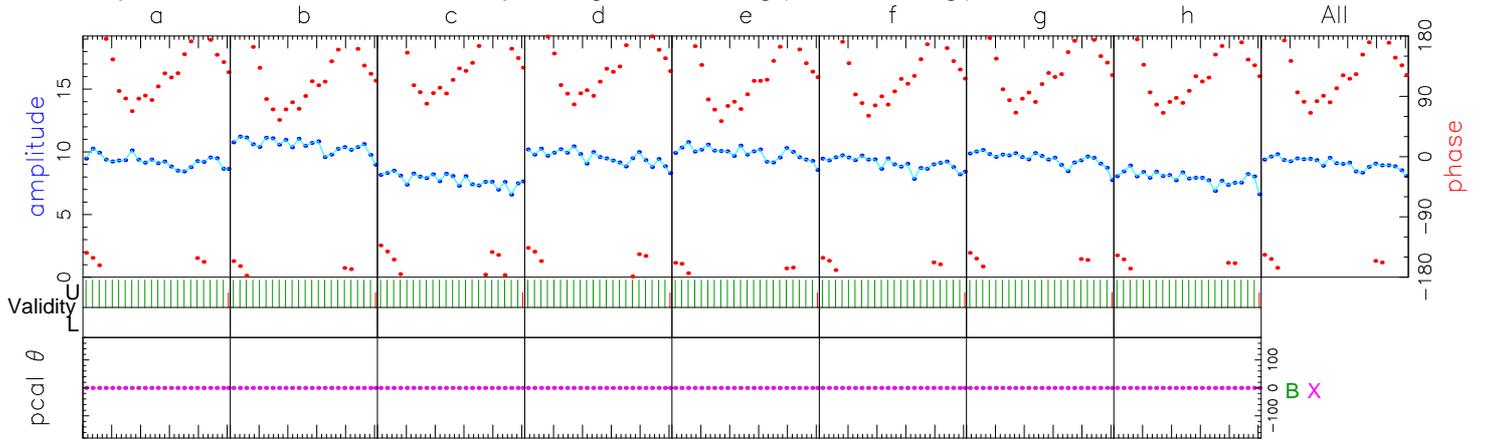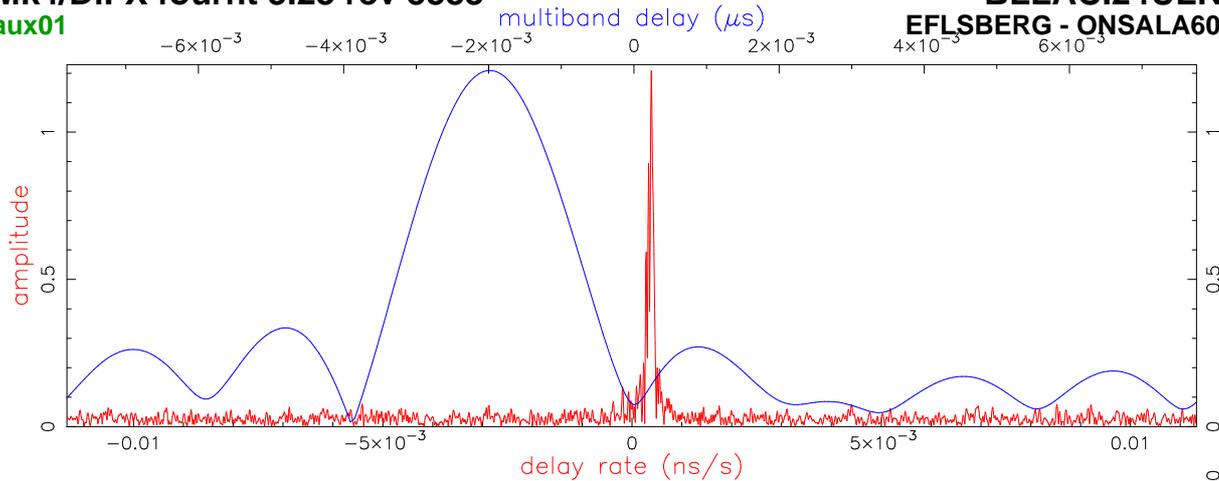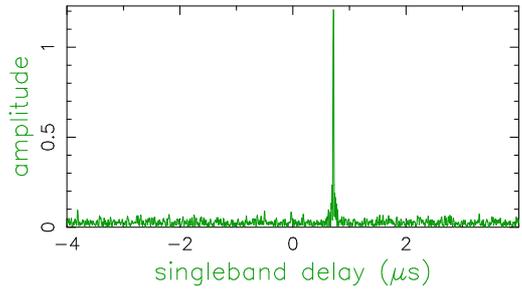# Mk4/DiFX fourfit 3.23 rev 3383

aux01

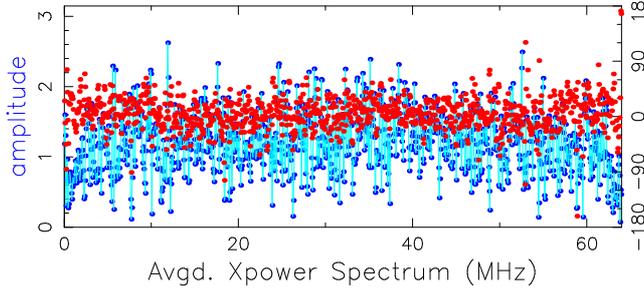**BLLAC.24ULKL, No0004, BX**
EFLSBERG - ONSALA60, fgroup W, pol RR

multiband delay (µs)

delay rate (ns/s)

singleband delay (µs)

Avgd. Xpower Spectrum (MHz)

Fringe quality	5
SNR	303.6
Int time	299.920
Amp	6.414
Phase	138.5
PFD	0.0e+00
Delays (µs)	
SBD	0.715213
MBD	-0.003419
Fringe rate (Hz)	
	0.033055
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
	2022:090:145148
	2022:090:145440
	2021:308:113728
RA & Dec (J2000)	
	22h02m43.291370s
	+42°16'39.979885"

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec

a b c d e f g h All

Validity U L

pcal θ   B X

Freq (MHz)	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	All
Phase	141.6	127.8	150.5	148.7	130.2	134.3	141.6	136.1	138.5
Ampl.	6.5	7.4	5.5	6.8	7.0	6.4	6.7	5.6	6.5
Sbd box	1207.5	1208.1	1208.5	1207.9	1208.0	1208.3	1208.3	1207.6	1208.1
APs used U/L	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0	
PC freqs B	1000	1000	1000	1000	1000	1000	1000	1000	
PC freqs X	1000	1000	1000	1000	1000	1000	1000	1000	
PC phase B:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
Manl PC B:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
PC amp B	1000	1000	1000	1000	1000	1000	1000	1000	
PC amp X	1000	1000	1000	1000	1000	1000	1000	1000	
Chan ids Tracks B	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	
Chan ids Tracks X	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	

Group delay (usec) (SBD)	3.64636248264E+02	Apriori delay (usec)	3.63920917427E+02	Resid mbdelay (usec) -3.41916E-03 +/- 3.6E-06
Sband delay (usec)	3.64636130927E+02	Apriori clock (usec)	-1.0322331E+02	Resid sbdelay (usec) 7.15213E-01 +/- 2.8E-05
Phase delay (usec)	3.63920921893E+02	Apriori clockrate (us/s)	-8.1200004E-07	Resid phdelay (usec) 4.46603E-06 +/- 1.2E-08
Delay rate (us/s)	-6.50408375999E-02	Apriori rate (us/s)	-6.50412213405E-02	Resid rate (us/s) 3.83741E-07 +/- 7.0E-11
Total phase (deg)	76.3	Apriori accel (us/s/s)	-7.85691515601E-06	Resid phase (deg) 138.5 +/- 0.4

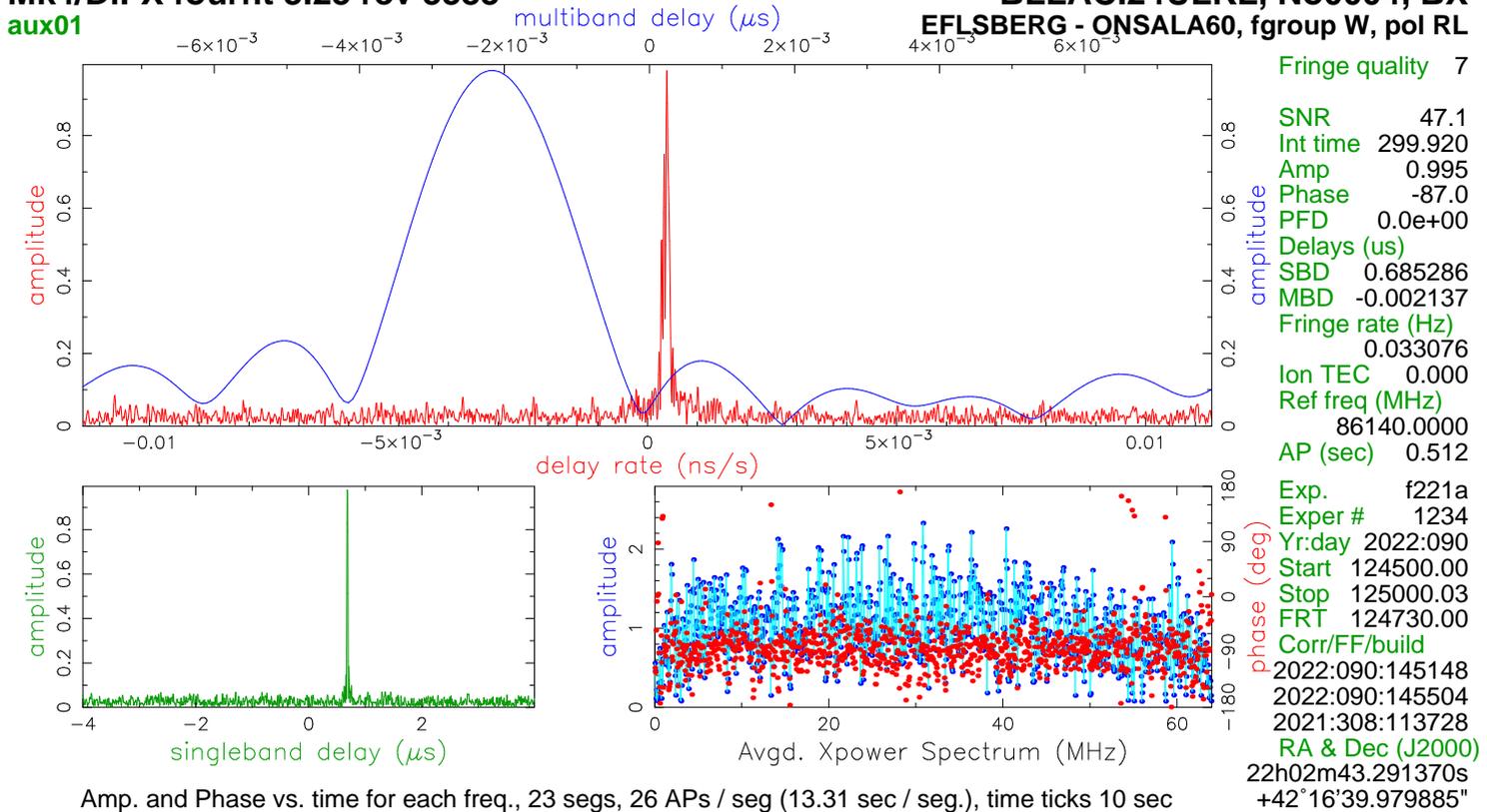|	RMS	Theor.	Amplitude	6.414 +/- 0.021		
ph/seg (deg)	45.7	0.9	Search (2048X32)	6.267	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5
amp/seg (%)	42.4	1.6	Interp.	0.000	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us) -4.000 4.000
ph/frq (deg)	8.9	0.5	Inc. seg. avg.	9.102	Bits/sample: 2x2 SampCntNorm: enabled	mb window (us) -0.008 0.008
amp/frq (%)	9.7	0.9	Inc. frq. avg.	6.468	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s) -0.011 0.011
					Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC) 0.00 0.00

B: az 280.1 el 51.6 pa 57.8   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 489.894 -1031.360   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004/BX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004/BX.W.30.24ULKL
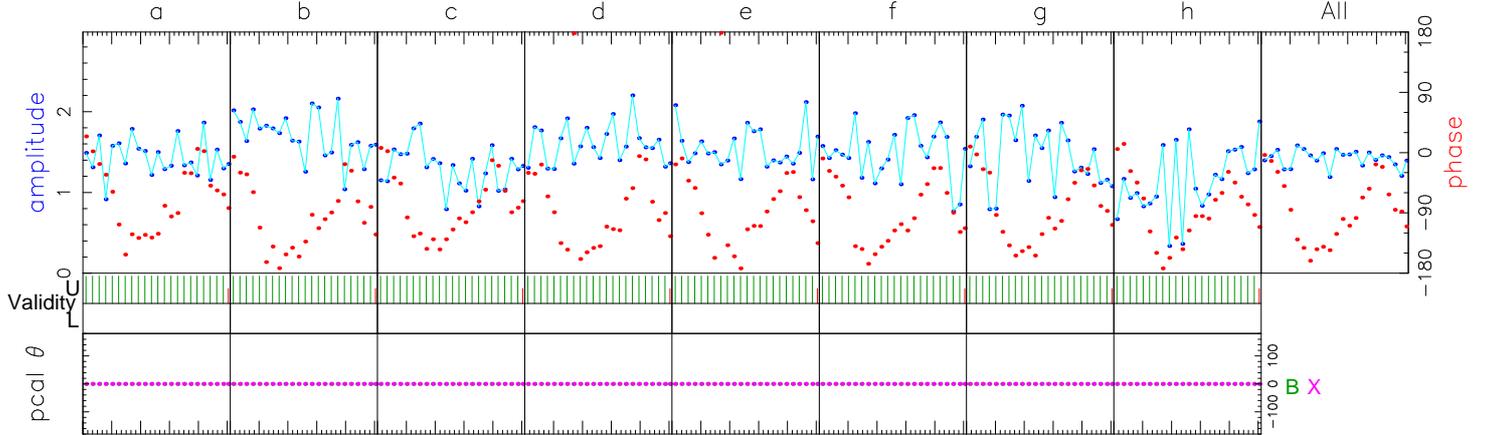
Mk4/DiFX fourfit 3.23 rev 3383
aux01

BLLAC.24ULKL, No0004, BX
EFLSBERG - ONSALA60, fgroup W, pol LR

multiband delay (μs)

−6×10⁻³ −4×10⁻³ −2×10⁻³ 0 2×10⁻³ 4×10⁻³ 6×10⁻³

delay rate (ns/s)

singleband delay (μs)

Avgd. Xpower Spectrum (MHz)

Fringe quality	6
SNR	58.2
Int time	299.920
Amp	1.229
Phase	1.6
PFD	0.0e+00
Delays (us)	
SBD	0.716515
MBD	-0.001931
Fringe rate (Hz)	
	0.033137
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
2022:090:145148	
2022:090:145452	
2021:308:113728	
RA & Dec (J2000)	
22h02m43.291370s	
+42°16'39.979885"	

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec

a b c d e f g h All

Validity

pcal θ
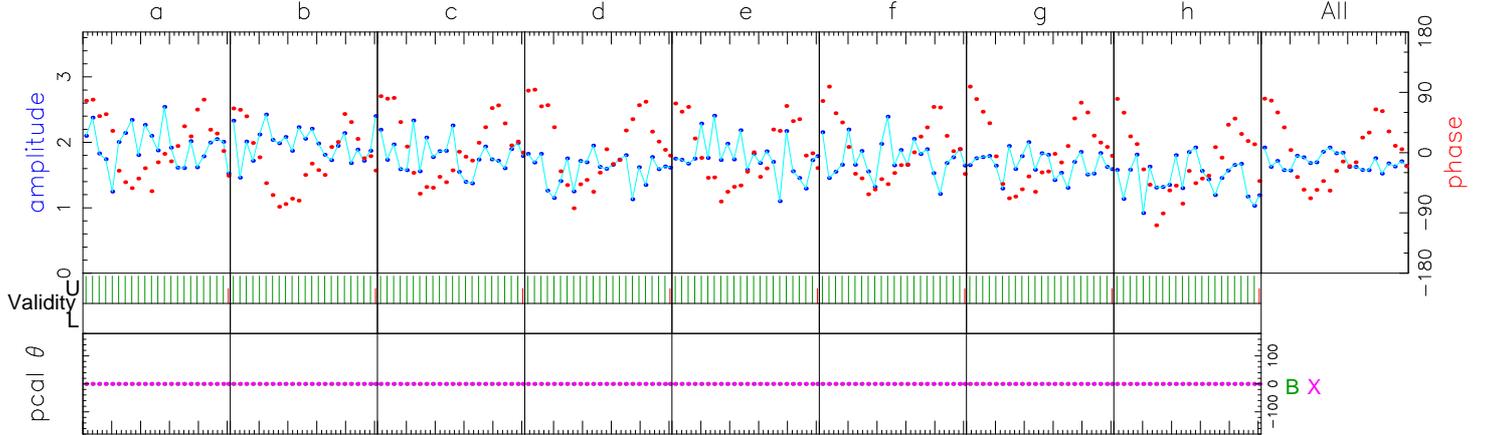
								Freq (MHz)	All
86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00		
10.8	-11.6	9.5	11.1	-1.9	3.6	3.5	-13.1	Phase	1.6
1.4	1.4	1.3	1.0	1.3	1.3	1.1	1.0	Ampl.	1.2
1208.1	1208.6	1208.5	1208.6	1208.3	1208.5	1208.4	1208.0	Sbd box	1208.4
U/L 586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0	APs used	
B 1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X 1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
B:X 0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
B:X 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	
X 1000	1000	1000	1000	1000	1000	1000	1000		
B W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	
X W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	Chan ids Tracks	

Group delay (usec) (SBD)	3.64637736202E+02	Apriori delay (usec)	3.63920917427E+02	Resid mbdelay (usec)	-1.93123E-03 +/- 1.9E-05
Sband delay (usec)	3.64637431927E+02	Apriori clock (usec)	-1.0322331E+02	Resid sbdelay (usec)	7.16515E-01 +/- 1.5E-04
Phase delay (usec)	3.63920917479E+02	Apriori clockrate (us/s)	-8.1200004E-07	Resid phdelay (usec)	5.19928E-08 +/- 6.4E-08
Delay rate (us/s)	-6.50408366561E-02	Apriori rate (us/s)	-6.50412213405E-02	Resid rate (us/s)	3.84684E-07 +/- 3.7E-10
Total phase (deg)	299.4	Apriori accel (us/s/s)	-7.85691515601E-06	Resid phase (deg)	1.6 +/- 2.0

	RMS	Theor.	Amplitude	1.229 +/- 0.021		
ph/seg (deg)	45.5	4.7	Search (2048X32)	1.189	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5
amp/seg (%)	39.8	8.2	Interp.	0.000	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us) -4.000 4.000
ph/frq (deg)	10.4	2.8	Inc. seg. avg.	1.699	Bits/sample: 2x2	mb window (us) -0.008 0.008
amp/frq (%)	12.0	4.9	Inc. frq. avg.	1.222	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s) -0.011 0.011
					Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC) 0.00 0.00

B: az 280.1 el 51.6 pa 57.8   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 489.894 -1031.360   simultaneous interpolator
Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004/BX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004/BX.W.44.24ULKL

Mk4/DiFX fourfit 3.23 rev 3383
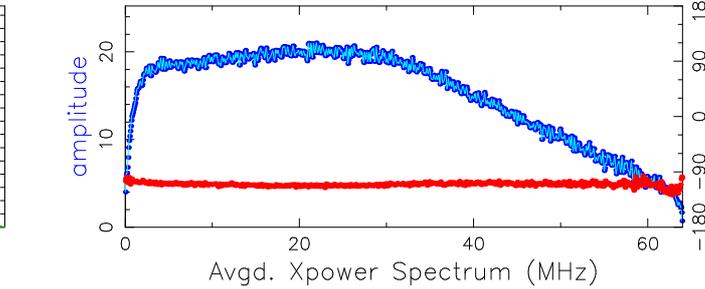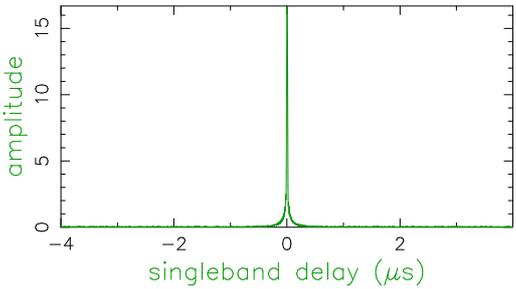**aux01**

BLLAC.24ULKL, No0004, BX
EFLSBERG - ONSALA60, fgroup W, pol RL

multiband delay (μs)

-6×10^{-3} -4×10^{-3} -2×10^{-3} 0 2×10^{-3} 4×10^{-3} 6×10^{-3}

delay rate (ns/s)

singleband delay (μs)

Avgd. Xpower Spectrum (MHz)

Fringe quality	7
SNR	47.1
Int time	299.920
Amp	0.995
Phase	-87.0
PFD	0.0e+00
Delays (us)	
SBD	0.685286
MBD	-0.002137
Fringe rate (Hz)	
	0.033076
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
	2022:090:145148
	2022:090:145504
	2021:308:113728
RA & Dec (J2000)	
22h02m43.291370s	
+42˚16'39.979885"	

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec

a b c d e f g h All

Validity

pcal θ

B X

Freq (MHz)	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	All
Phase	-68.4	-96.3	-83.7	-94.2	-90.3	-86.2	-89.0	-83.5	-87.0
Ampl.	0.9	1.2	0.9	1.0	1.1	1.0	1.0	0.8	1.0
Sbd box	1199.9	1200.1	1200.8	1200.2	1200.7	1200.5	1200.9	1200.4	1200.4
U/L APs used	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0	
B PC freqs	1000	1000	1000	1000	1000	1000	1000	1000	
X PC freqs	1000	1000	1000	1000	1000	1000	1000	1000	
B:X PC phase	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
B:X Manl PC	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
B PC amp	1000	1000	1000	1000	1000	1000	1000	1000	
X PC amp	1000	1000	1000	1000	1000	1000	1000	1000	
B Chan ids Tracks	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	
X Chan ids Tracks	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	

Group delay (usec) (SBD)	3.64606280483E+02	Apriori delay (usec)	3.63920917427E+02	Resid mbdelay (usec)	-2.13694E-03 +/- 2.3E-05
Sband delay (usec)	3.64606202927E+02	Apriori clock (usec)	-1.0322331E+02	Resid sbdelay (usec)	6.85286E-01 +/- 1.8E-04
Phase delay (usec)	3.63920914623E+02	Apriori clockrate (us/s)	-8.1200004E-07	Resid phdelay (usec)	-2.80402E-06 +/- 7.8E-08
Delay rate (us/s)	-6.50408373561E-02	Apriori rate (us/s)	-6.50412213405E-02	Resid rate (us/s)	3.83984E-07 +/- 4.5E-10
Total phase (deg)	210.8	Apriori accel (us/s/s)	-7.85691515601E-06	Resid phase (deg)	-87.0 +/- 2.4

	RMS	Theor.	Amplitude	0.995 +/- 0.021			
ph/seg (deg)	47.4	5.8	Search (2048X32)	0.947	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5	
amp/seg (%)	43.9	10.2	Interp.	0.000	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000 4.000
ph/frq (deg)	9.3	3.4	Inc. seg. avg.	1.413	Bits/sample: 2x2	mb window (us)	-0.008 0.008
amp/frq (%)	9.9	6.0	Inc. frq. avg.	0.987	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011 0.011
					Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

B: az 280.1 el 51.6 pa 57.8   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 489.894 -1031.360   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//BX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004/BX.W.58.24ULKL

Mk4/DiFX fourfit 3.23 rev 3383
aux01

BLLAC.24ULKL, No0004, NX
**NOEMA - ONSALA60, fgroup W, pol RR**

multiband delay (μs)

delay rate (ns/s)

singleband delay (μs)

Avgd. Xpower Spectrum (MHz)
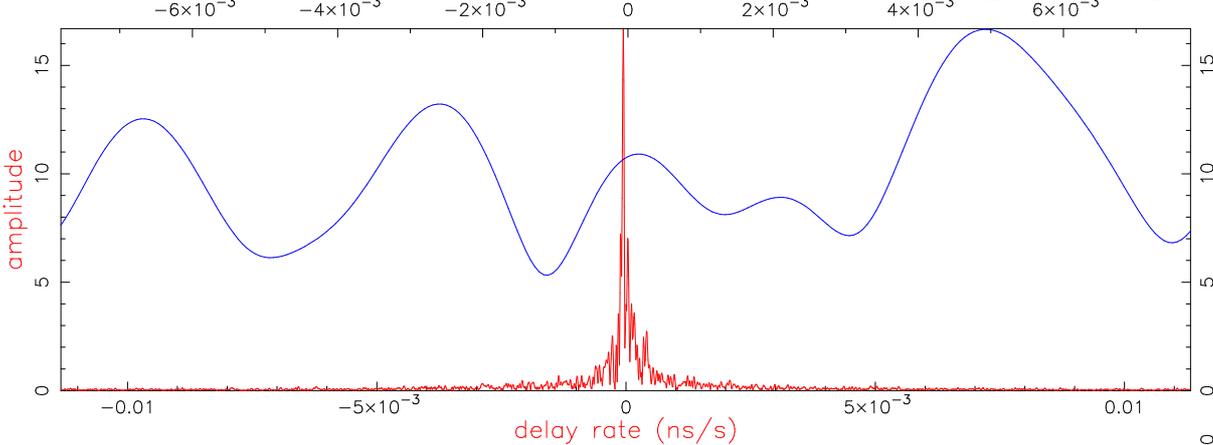
Fringe quality	2
SNR	790.5
Int time	299.920
Amp	16.692
Phase	-128.1
PFD	0.0e+00
Delays (us)	
SBD	0.003295
MBD	0.004935
Fringe rate (Hz)	-0.005192
Ion TEC	0.000
Ref freq (MHz)	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
	2022:090:145148
	2022:090:145439
	2021:308:113728
RA & Dec (J2000)	
	22h02m43.291370s
	+42°16'39.979885"

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec
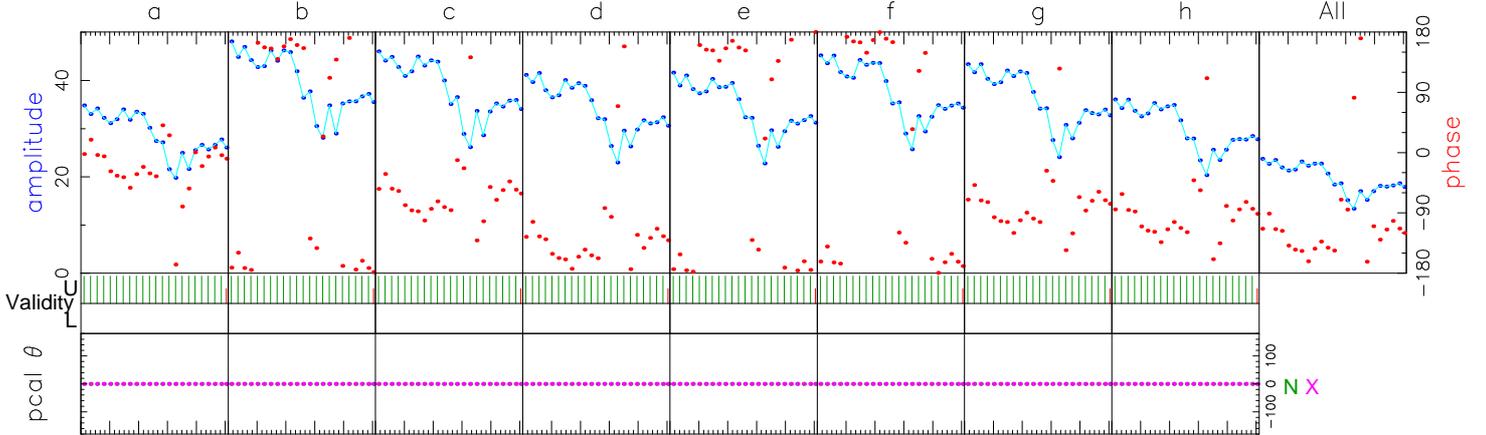
	a	b	c	d	e	f	g	h	All	
Freq (MHz)	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00		All
Phase	-17.7	173.6	-68.6	-139.9	171.0	-177.1	-85.2	-99.3		-128.1
Ampl.	24.3	33.3	32.2	28.9	28.9	31.9	30.6	25.4		29.4
Sbd box	1027.1	1025.9	1025.6	1025.2	1025.0	1025.5	1025.7	1026.7		1025.8
U/L	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0		APs used
N PC freqs	1000	1000	1000	1000	1000	1000	1000	1000		
X PC freqs	1000	1000	1000	1000	1000	1000	1000	1000		
N:X PC phase	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0		
N:X Manl PC	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0		
N PC amp	1000	1000	1000	1000	1000	1000	1000	1000		
X PC amp	1000	1000	1000	1000	1000	1000	1000	1000		
N Chan ids Tracks	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR		
X Chan ids Tracks	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR		

Group delay (usec) (SBD)	2.05375458859E+02	Apriori delay (usec)	2.05370523867E+02	Resid mbdelay (usec) 4.93499E-03 +/- 1.4E-06
Sband delay (usec)	2.05373819117E+02	Apriori clock (usec)	-8.6602798E+01	Resid sbdelay (usec) 3.29525E-03 +/- 1.1E-05
Phase delay (usec)	2.05370519736E+02	Apriori clockrate (us/s)	-6.3100003E-07	Resid phdelay (usec) -4.13058E-06 +/- 4.7E-09
Delay rate (us/s)	-1.30135970864E-01	Apriori rate (us/s)	-1.30135910586E-01	Resid rate (us/s) -6.02784E-08 +/- 2.7E-11
Total phase (deg)	205.2	Apriori accel (us/s/s)	-1.21864448685E-05	Resid phase (deg) -128.1 +/- 0.1

	RMS	Theor.	Amplitude	16.692 +/- 0.021	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5	
ph/seg (deg)	41.4	0.3	Search (2048X32)	16.152	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000 4.000
amp/seg (%)	25.3	0.6	Interp.	0.000	Bits/sample: 2x2	SampCntNorm: enabled	mb window (us) -0.008 0.008
ph/frq (deg)	68.4	0.2	Inc. seg. avg.	19.699	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s) -0.011 0.011
amp/frq (%)	78.5	0.4	Inc. frq. avg.	29.448	Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC) 0.00 0.00

N: az 286.7 el 50.9 pa 67.1   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 986.323 -1800.345   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//NX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//NX.W.25.24ULKL

Mk4/DiFX fourfit 3.23 rev 3383
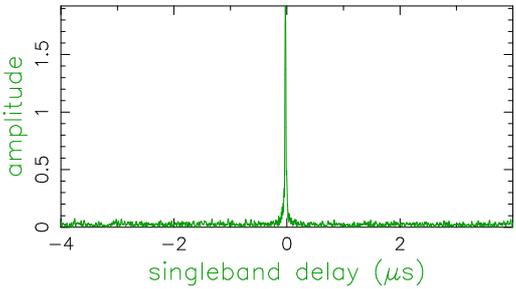**aux01**

BLLAC.24ULKL, No0004, NX
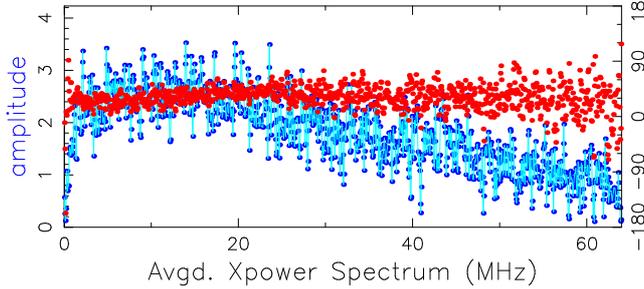**NOEMA - ONSALA60, fgroup W, pol LR**

multiband delay (µs)
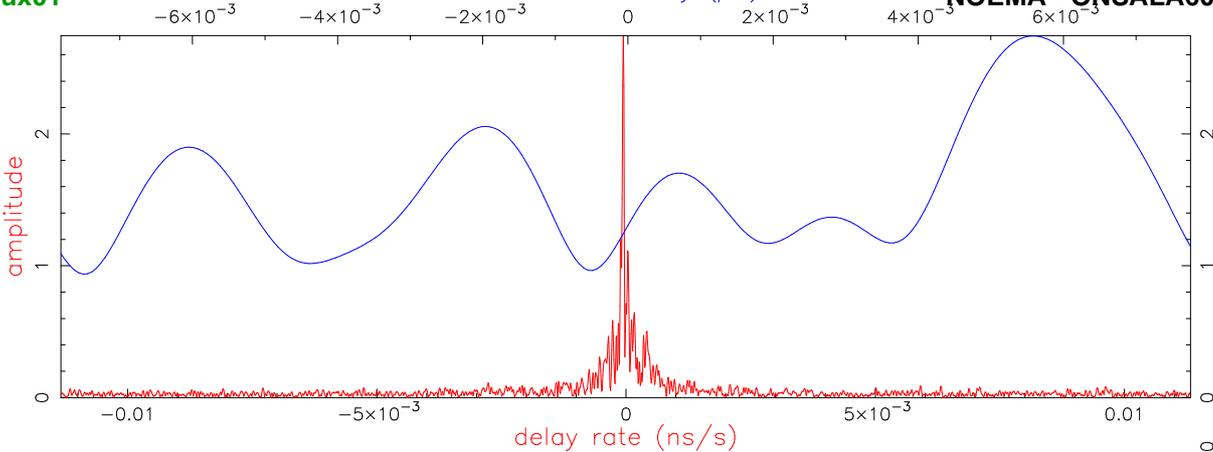
Fringe quality	2
SNR	130.0
Int time	299.920
Amp	2.745
Phase	-134.3
PFD	0.0e+00

Delays (us)
SBD	0.004275
MBD	0.005579

Fringe rate (Hz)
-0.005242

Ion TEC	0.000

Ref freq (MHz)
86140.0000
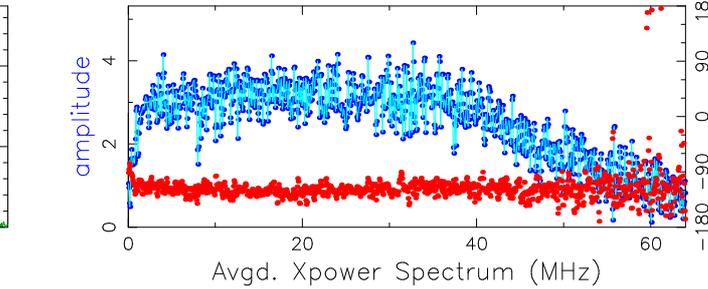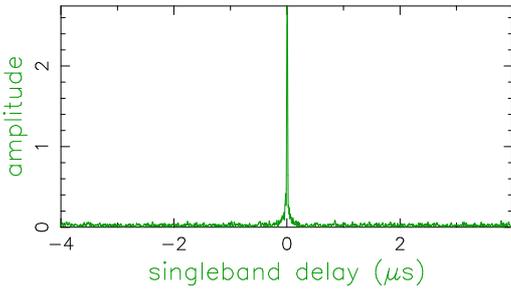
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00

Corr/FF/build
2022:090:145148
2022:090:145451
2021:308:113728

RA & Dec (J2000)
22h02m43.291370s
+42°16'39.979885"

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec

	a	b	c	d	e	f	g	h	All
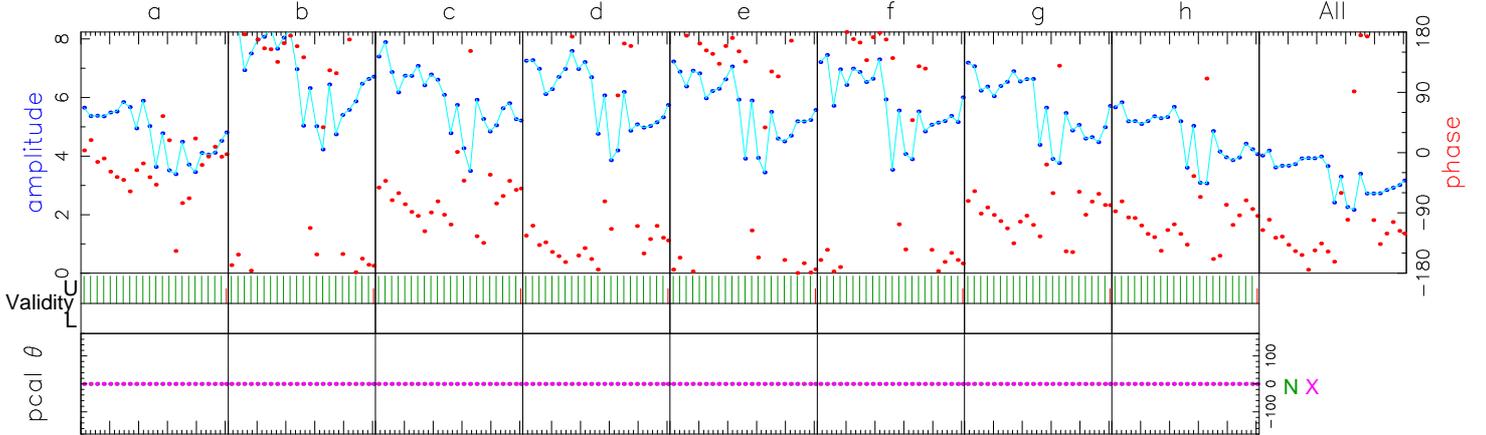
									Freq (MHz)	All
	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00		
Phase	-19.5	173.5	-74.3	-144.8	168.8	-178.7	-92.8	-105.6	Phase	-134.3
Ampl.	3.9	5.6	4.9	4.9	4.7	4.8	4.6	3.9	Ampl.	4.7
Sbd box	1027.2	1026.3	1025.6	1025.4	1025.1	1025.6	1025.9	1026.8	Sbd box	1026.1
U/L	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0	APs used	
N	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
N:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
N:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	Manl PC	
N	1000	1000	1000	1000	1000	1000	1000	1000	PC amp	
X	1000	1000	1000	1000	1000	1000	1000	1000		
N	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	
X	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	Chan ids Tracks	

Group delay (usec) (SBD)	2.05376103359E+02	Apriori delay (usec)	2.05370523867E+02	Resid mbdelay (usec)	5.57949E-03	+/- 8.3E-06
Sband delay (usec)	2.05374798367E+02	Apriori clock (usec)	-8.6602798E+01	Resid sbdelay (usec)	4.27450E-03	+/- 6.6E-05
Phase delay (usec)	2.05370519535E+02	Apriori clockrate (us/s)	-6.3100003E-07	Resid phdelay (usec)	-4.33195E-06	+/- 2.8E-08
Delay rate (us/s)	-1.30135971436E-01	Apriori rate (us/s)	-1.30135910586E-01	Resid rate (us/s)	-6.08502E-08	+/- 1.6E-10
Total phase (deg)	199.0	Apriori accel (us/s/s)	-1.21864448685E-05	Resid phase (deg)	-134.3	+/- 0.9

	RMS	Theor.	Amplitude	2.745 +/- 0.021	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5		
ph/seg (deg)	40.9	2.1	Search (2048X32)	2.611	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000	4.000
amp/seg (%)	30.0	3.7	Interp.	0.000	Bits/sample: 2x2	mb window (us)	-0.008	0.008
ph/frq (deg)	67.5	1.2	Inc. seg. avg.	3.302	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011	0.011
amp/frq (%)	72.6	2.2	Inc. frq. avg.	4.663	Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC)	0.00	0.00

N: az 286.7 el 50.9 pa 67.1   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 986.323 -1800.345   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004/NX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//NX.W.41.24ULKL

Mk4/DiFX fourfit 3.23 rev 3383
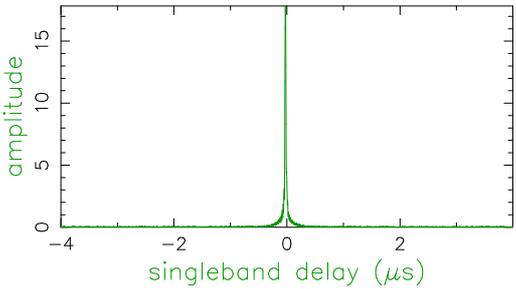
aux01

BLLAC.24ULKL, No0004, NX
NOEMA - ONSALA60, fgroup W, pol RL

multiband delay (μs)

delay rate (ns/s)

singleband delay (μs)

Avgd. Xpower Spectrum (MHz)
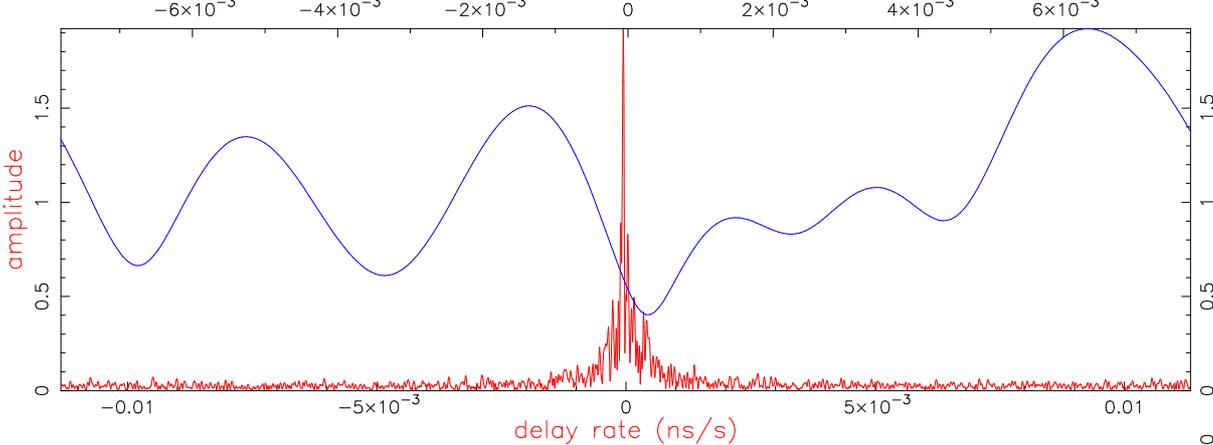
Fringe quality	2
SNR	91.0
Int time	299.920
Amp	1.922
Phase	5.8
PFD	0.0e+00
Delays (us)	
SBD	-0.027222
MBD	0.006327
Fringe rate (Hz)	
	-0.005190
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
2022:090:145148	
2022:090:145503	
2021:308:113728	
RA & Dec (J2000)	
22h02m43.291370s	
+42°16'39.979885"	

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec

a   b   c   d   e   f   g   h   All

Validity

pcal θ

N X
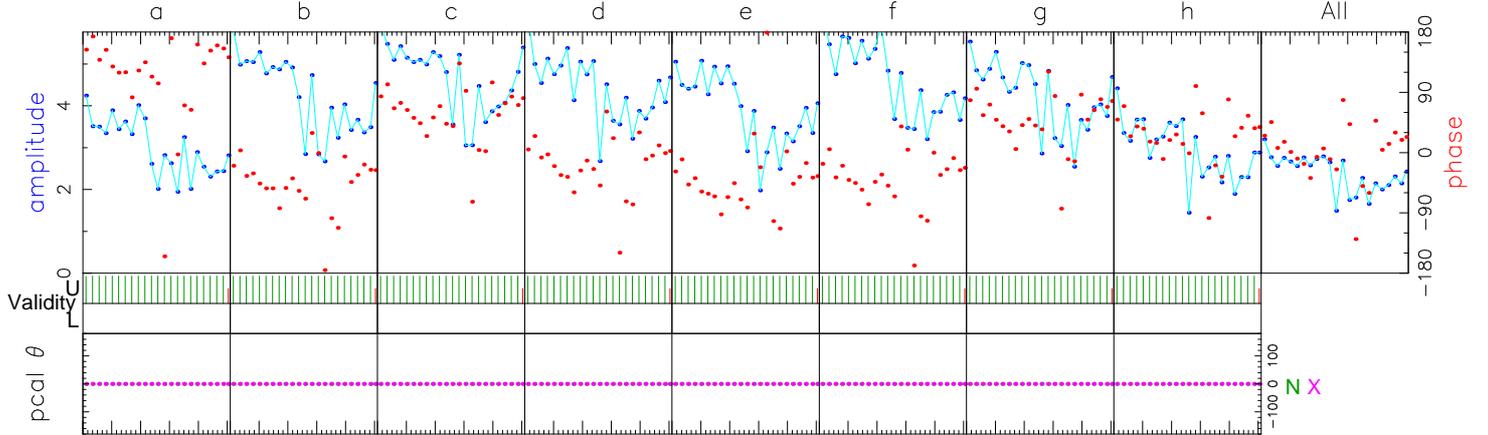
Freq (MHz)	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	All
Phase	133.9	-39.9	63.6	-13.4	-49.4	-34.9	54.8	29.7	5.8
Ampl.	2.4	3.5	3.8	3.5	3.1	3.8	3.4	2.4	3.2
Sbd box	1019.9	1018.0	1018.0	1017.5	1017.6	1017.8	1018.1	1018.6	1018.0
U/L APs used	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0	
N PC freqs	1000	1000	1000	1000	1000	1000	1000	1000	
X PC freqs	1000	1000	1000	1000	1000	1000	1000	1000	
N:X PC phase	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
N:X Manl PC	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
N PC amp	1000	1000	1000	1000	1000	1000	1000	1000	
X	1000	1000	1000	1000	1000	1000	1000	1000	
N Chan ids Tracks	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	
X Chan ids Tracks	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	

Group delay (usec) (SBD)	2.05345601015E+02	Apriori delay (usec)	2.05370523867E+02	Resid mbdelay (usec)	6.32715E-03 +/- 1.2E-05
Sband delay (usec)	2.05343302367E+02	Apriori clock (usec)	-8.6602798E+01	Resid sbdelay (usec)	-2.72215E-02 +/- 9.5E-05
Phase delay (usec)	2.05370524055E+02	Apriori clockrate (us/s)	-6.3100003E-07	Resid phdelay (usec)	1.87521E-07 +/- 4.1E-08
Delay rate (us/s)	-1.30135970835E-01	Apriori rate (us/s)	-1.30135910586E-01	Resid rate (us/s)	-6.02494E-08 +/- 2.3E-10
Total phase (deg)	339.1	Apriori accel (us/s/s)	-1.21864448685E-05	Resid phase (deg)	5.8 +/- 1.3

	RMS	Theor.	Amplitude	1.922 +/- 0.021	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5	
ph/seg (deg)	42.7	3.0	Search (2048X32)	1.864	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000 4.000
amp/seg (%)	32.8	5.3	Interp.	0.000	Bits/sample: 2x2	SampCntNorm: enabled	mb window (us)	-0.008 0.008
ph/frq (deg)	70.6	1.8	Inc. seg. avg.	2.382	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011 0.011
amp/frq (%)	74.1	3.1	Inc. frq. avg.	3.247	Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

N: az 286.7 el 50.9 pa 67.1   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 986.323 -1800.345   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004/NX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//NX.W.56.24ULKL

Mk4/DiFX fourfit 3.23 rev 3383
aux01

BLLAC.24ULKL, No0004, NX
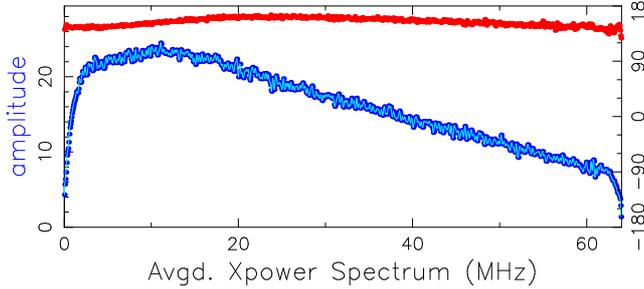**NOEMA - ONSALA60, fgroup W, pol LL**

multiband delay (µs)
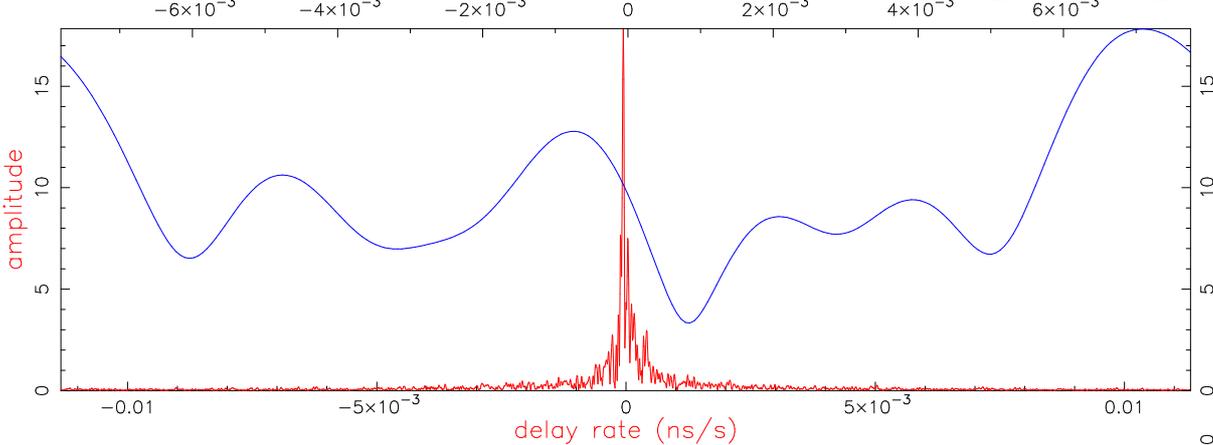
Fringe quality	2
SNR	844.8
Int time	299.920
Amp	17.838
Phase	122.7
PFD	0.0e+00
Delays (us)	
SBD	-0.026903
MBD	0.007068
Fringe rate (Hz)	
	-0.005211
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
2022:090:145148	
2022:090:145427	
2021:308:113728	
RA & Dec (J2000)	
22h02m43.291370s	
+42°16'39.979885"	

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec
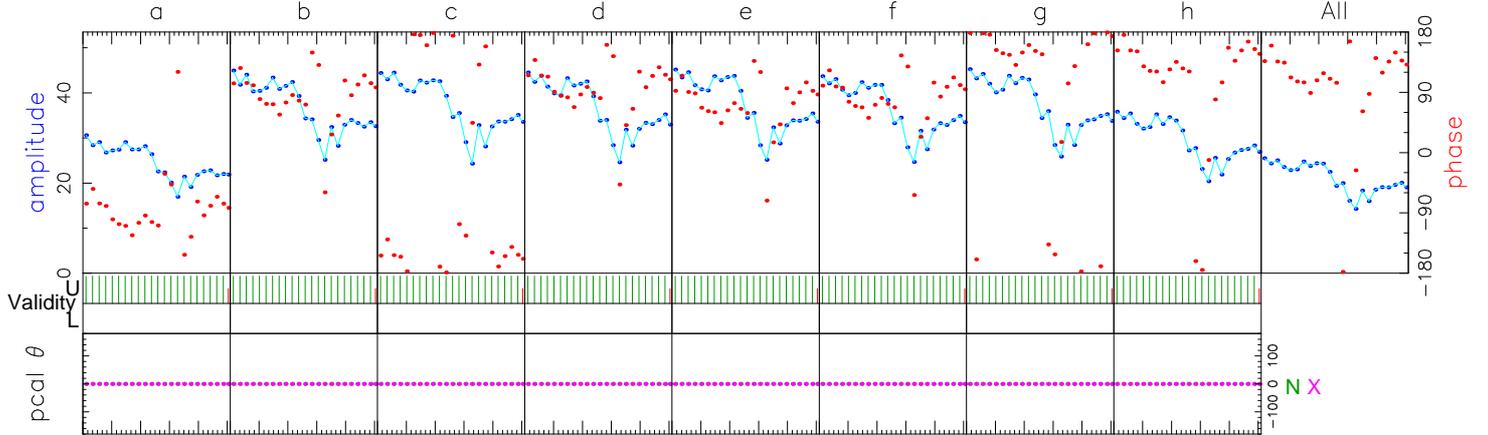
	a	b	c	d	e	f	g	h	All	
Freq (MHz)	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00		All
Phase	-90.6	89.5	-166.6	101.3	77.7	86.0	164.5	139.3		122.7
Ampl.	20.8	31.1	31.4	31.1	31.7	30.7	31.6	25.0		29.2
Sbd box	1020.0	1018.3	1018.1	1017.6	1017.9	1017.8	1018.2	1019.0		1018.1
U/L APs used	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0		
N PC freqs	1000	1000	1000	1000	1000	1000	1000	1000		
X PC freqs	1000	1000	1000	1000	1000	1000	1000	1000		
N:X PC phase	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0		
N:X Manl PC	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0		
N PC amp	1000	1000	1000	1000	1000	1000	1000	1000		
X	1000	1000	1000	1000	1000	1000	1000	1000		
N Chan ids Tracks	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL		
X Chan ids Tracks	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL		

Group delay (usec) (SBD)	2.05346341422E+02	Apriori delay (usec)	2.05370523867E+02	Resid mbdelay (usec)	7.06755E-03	+/- 1.3E-06
Sband delay (usec)	2.05343620867E+02	Apriori clock (usec)	-8.6602798E+01	Resid sbdelay (usec)	-2.69030E-02	+/- 1.0E-05
Phase delay (usec)	2.05370527825E+02	Apriori clockrate (us/s)	-6.3100003E-07	Resid phdelay (usec)	3.95790E-06	+/- 4.4E-09
Delay rate (us/s)	-1.30135971077E-01	Apriori rate (us/s)	-1.30135910586E-01	Resid rate (us/s)	-6.04910E-08	+/- 2.5E-11
Total phase (deg)	96.1	Apriori accel (us/s/s)	-1.21864448685E-05	Resid phase (deg)	122.7	+/- 0.1

	RMS	Theor.	Amplitude	17.838 +/- 0.021	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5	
ph/seg (deg)	41.4	0.3	Search (2048X32)	17.098	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000 4.000
amp/seg (%)	25.5	0.6	Interp.	0.000	Bits/sample: 2x2	SampCntNorm: enabled	mb window (us)	-0.008 0.008
ph/frq (deg)	74.7	0.2	Inc. seg. avg.	21.064	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011 0.011
amp/frq (%)	67.0	0.3	Inc. frq. avg.	29.177	Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

N: az 286.7 el 50.9 pa 67.1   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 986.323 -1800.345   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//NX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//NX.W.8.24ULKL

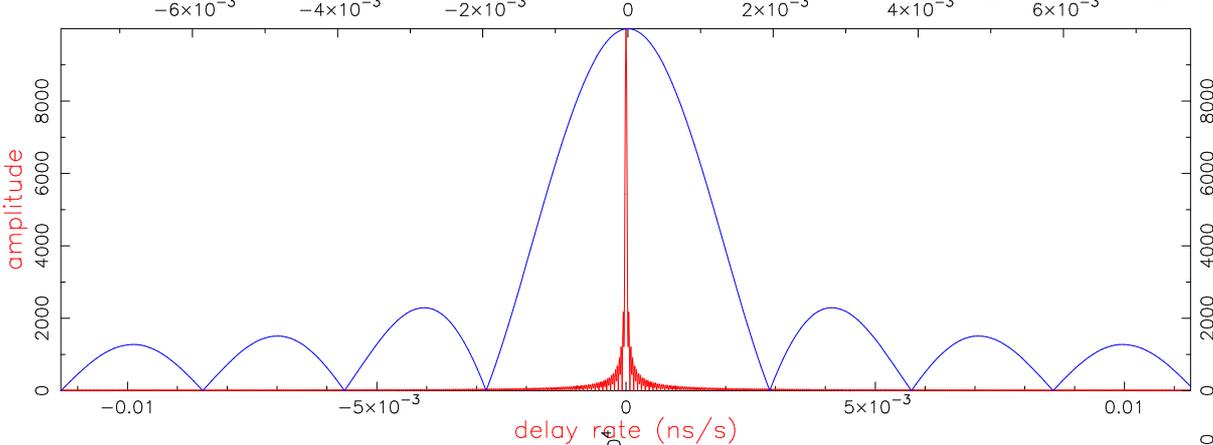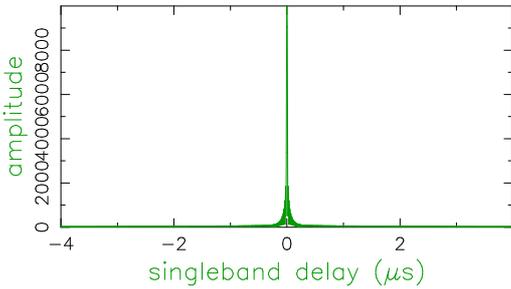# Mk4/DiFX fourfit 3.23 rev 3383
aux01

BLLAC.24ULKL, No0004, XX
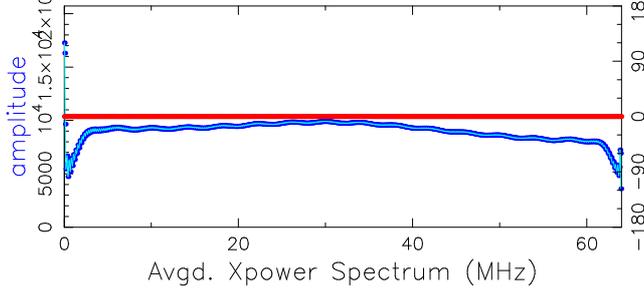### ONSALA60 - ONSALA60, fgroup W, pol LL

multiband delay (µs)

delay rate (ns/s)

singleband delay (µs)

Avgd. Xpower Spectrum (MHz)

Fringe quality	9
SNR	473587.8
Int time	299.920
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.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
2022:090:145148	
2022:090:145427	
2021:308:113728	
RA & Dec (J2000)	
22h02m43.291370s	
+42°16'39.979885"	

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec

a   b   c   d   e   f   g   h   All

	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	Freq (MHz)	All
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Phase	0.0
	10000.0	10000.0	10000.0	10000.0	10000.0	10000.0	10000.0	10000.0	Ampl.	10000.0
	1025.0	1025.0	1025.0	1025.0	1025.0	1025.0	1025.0	1025.0	Sbd box	1025.0
U/L	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0	APs used	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
X:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	Manl PC	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC amp	
X	1000	1000	1000	1000	1000	1000	1000	1000		
X	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	
X	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	

Group delay (usec) (SBD)	0.00000000000E+00	Apriori delay (usec)	0.00000000000E+00	Resid mbdelay (usec)	0.00000E+00 +/- 2.3E-09
Sband delay (usec)	0.00000000000E+00	Apriori clock (usec)	0.0000000000E+00	Resid sbdelay (usec)	0.00000E+00 +/- 1.8E-08
Phase delay (usec)	0.00000000000E+00	Apriori clockrate (us/s)	0.0000000000E+00	Resid phdelay (usec)	0.00000E+00 +/- 7.8E-12
Delay rate (us/s)	0.00000000000E+00	Apriori rate (us/s)	0.00000000000E+00	Resid rate (us/s)	0.00000E+00 +/- 4.5E-14
Total phase (deg)	0.0	Apriori accel (us/s/s)	0.00000000000E+00	Resid phase (deg)	0.0 +/- 0.0

	RMS	Theor.	Amplitude	9999.999 +/- 0.021	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5		
ph/seg (deg)	0.0	0.0	Search (2048X32)	9999.999	Pcal rate: 0.000E+00, 0.00E+00 (us/s)		sb window (us)	-4.000 4.000
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	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us		dr window (ns/s)	-0.011 0.011
amp/frq (%)	0.0	0.0	Inc. frq. avg.	9999.999	Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

X: az 275.4 el 49.6 pa 46.5   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 0.000 0.000   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//XX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//XX.W.12.24ULKL

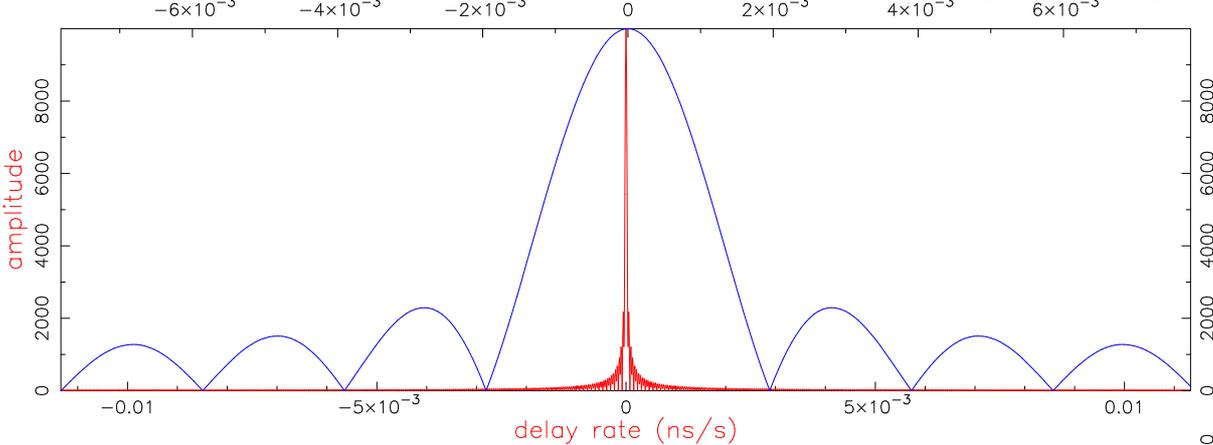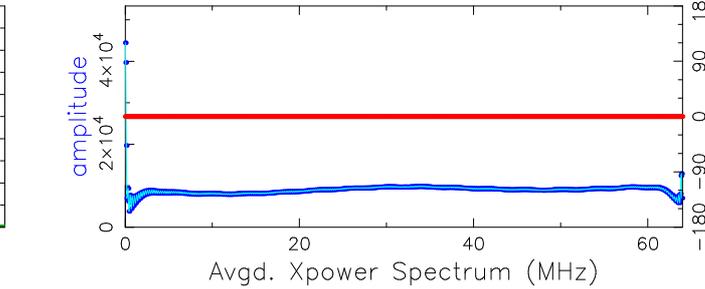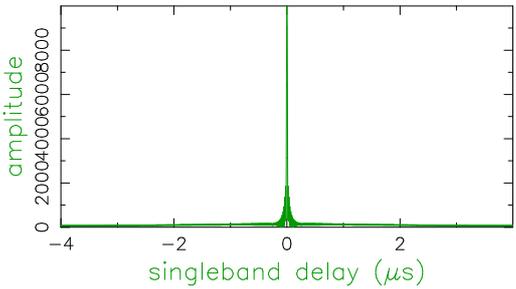**Mk4/DiFX fourfit 3.23 rev 3383**
aux01

BLLAC.24ULKL, No0004, XX
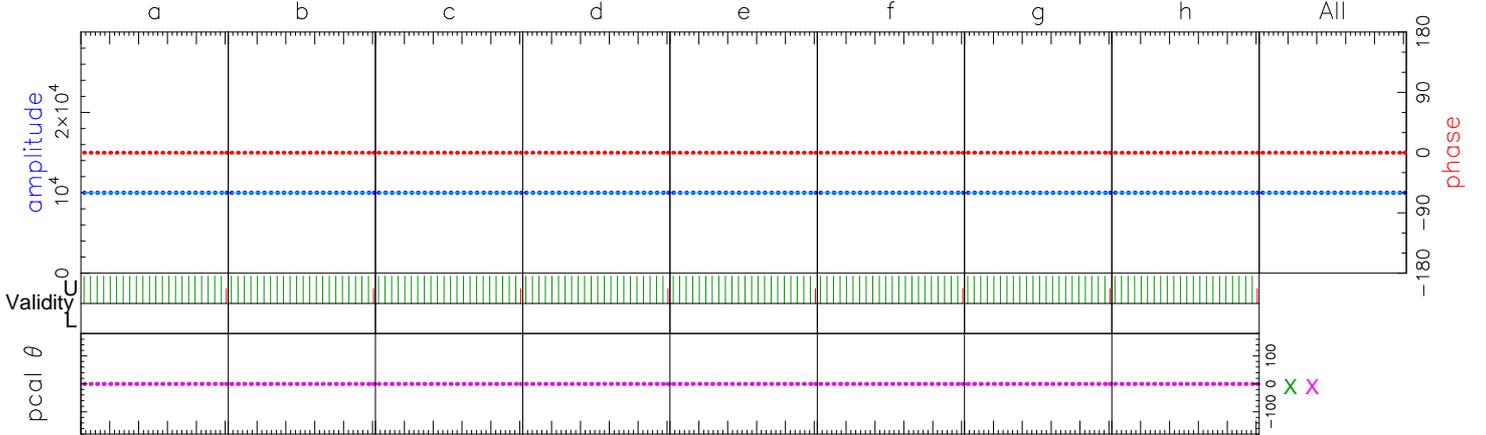ONSALA60 - ONSALA60, fgroup W, pol RR

Fringe quality 9

SNR 473587.8
Int time 299.920
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. f221a
Exper # 1234
Yr:day 2022:090
Start 124500.00
Stop 125000.03
FRT 124730.00
Corr/FF/build
2022:090:145148
2022:090:145438
2021:308:113728
RA & Dec (J2000)
22h02m43.291370s
+42°16'39.979885"

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec

	a	b	c	d	e	f	g	h	All	Freq (MHz)	All
	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00		Freq (MHz)	All
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		Phase	0.0
	10000.0	10000.0	10000.0	10000.0	10000.0	10000.0	10000.0	10000.0		Ampl.	10000.0
	1025.0	1025.0	1025.0	1025.0	1025.0	1025.0	1025.0	1025.0		Sbd box	1025.0
U/L	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0		APs used	
X	1000	1000	1000	1000	1000	1000	1000	1000		PC freqs	
X	1000	1000	1000	1000	1000	1000	1000	1000		PC freqs	
X:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0		PC phase	
X:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0		Manl PC	
X	1000	1000	1000	1000	1000	1000	1000	1000		PC amp	
X	1000	1000	1000	1000	1000	1000	1000	1000			
X	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR		Chan ids Tracks	
X	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR		Chan ids Tracks	

Group delay (usec) (SBD)	0.00000000000E+00	Apriori delay (usec)	0.00000000000E+00	Resid mbdelay (usec)	0.00000E+00	+/- 2.3E-09
Sband delay (usec)	0.00000000000E+00	Apriori clock (usec)	0.0000000000E+00	Resid sbdelay (usec)	0.00000E+00	+/- 1.8E-08
Phase delay (usec)	0.00000000000E+00	Apriori clockrate (us/s)	0.0000000000E+00	Resid phdelay (usec)	0.00000E+00	+/- 7.8E-12
Delay rate (us/s)	0.00000000000E+00	Apriori rate (us/s)	0.0000000000E+00	Resid rate (us/s)	0.00000E+00	+/- 4.5E-14
Total phase (deg)	0.0	Apriori accel (us/s/s)	0.00000000000E+00	Resid phase (deg)	0.0	+/- 0.0

	RMS	Theor.	Amplitude	9999.999 +/- 0.021	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5		
ph/seg (deg)	0.0	0.0	Search (2048X32)	9999.999	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000	4.000
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	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011	0.011
amp/frq (%)	0.0	0.0	Inc. frq. avg.	9999.999	Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC)	0.00	0.00

X: az 275.4 el 49.6 pa 46.5   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 0.000 0.000   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//XX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//XX.W.21.24ULKL

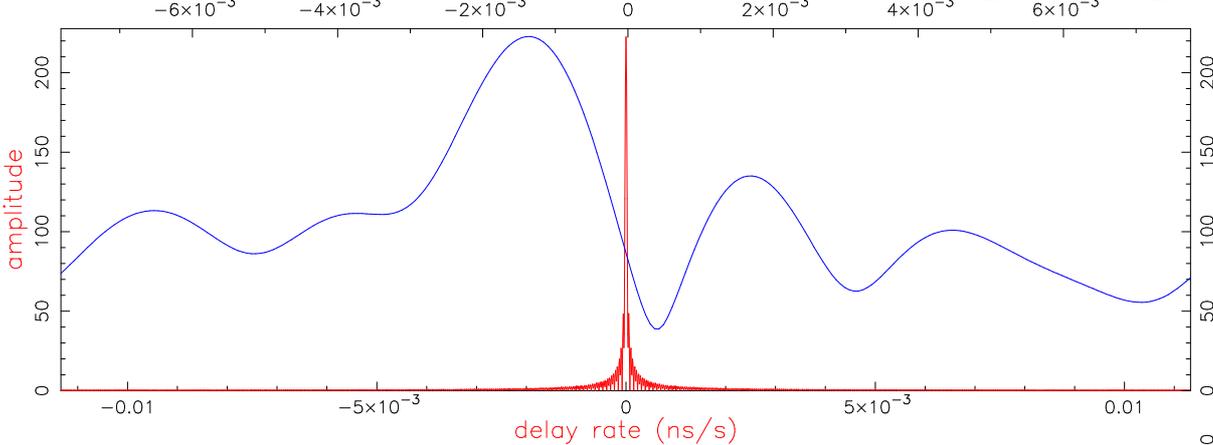# Mk4/DiFX fourfit 3.23 rev 3383

aux01

BLLAC.24ULKL, No0004, XX
ONSALA60 - ONSALA60, fgroup W, pol LR

multiband delay (µs)

Fringe quality	5
Error code	G
SNR	10783.9
Int time	299.920
Amp	227.707
Phase	159.5
PFD	0.0e+00
Delays (us)	
SBD	0.032752
MBD	-0.001312
Fringe rate (Hz)	
	-0.000001
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
	2022:090:145148
	2022:090:145450
	2021:308:113728
RA & Dec (J2000)	
	22h02m43.291370s
	+42°16'39.979885"
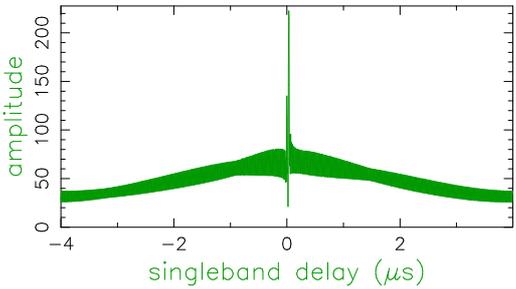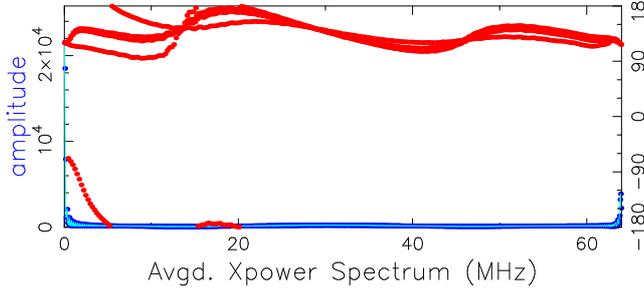
Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec
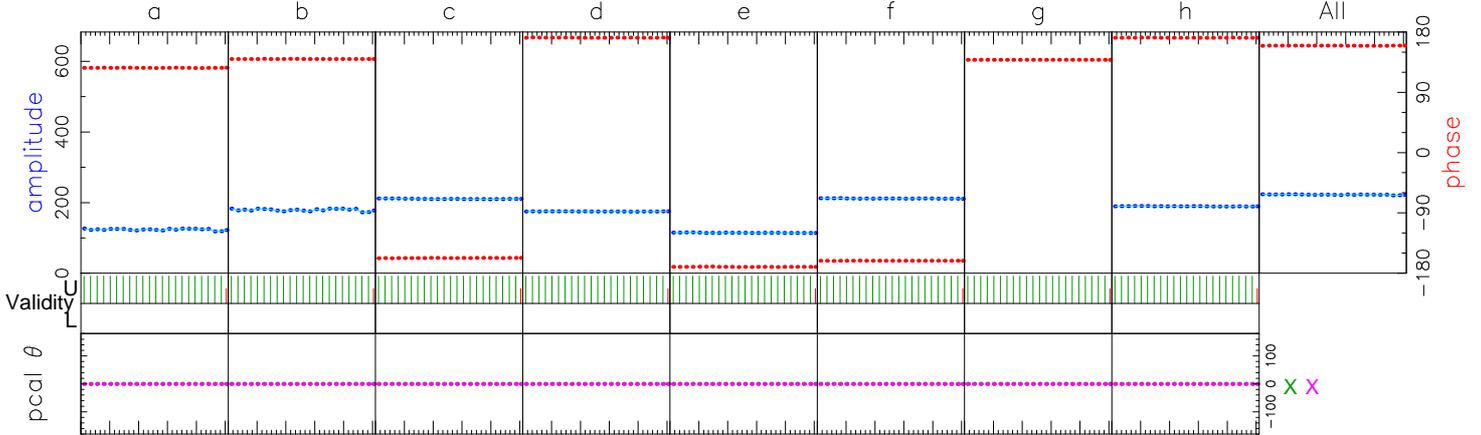
	a	b	c	d	e	f	g	h	All	Freq (MHz)	All
	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00		Freq (MHz)	All
	126.5	139.6	-157.2	171.5	-170.5	-161.3	138.4	171.4		Phase	159.5
	123.8	179.3	210.6	175.0	114.6	211.6	787.2	189.6		Ampl.	249.0
	1032.1	1033.9	1032.7	1032.6	1034.2	1032.2	1033.1	1024.7		Sbd box	1033.4
U/L	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0		APs used	
X	1000	1000	1000	1000	1000	1000	1000	1000		PC freqs	
X	1000	1000	1000	1000	1000	1000	1000	1000		PC freqs	
X:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0		PC phase	
X:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0		Manl PC	
X	1000	1000	1000	1000	1000	1000	1000	1000		PC amp	
X	1000	1000	1000	1000	1000	1000	1000	1000			
X	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL		Chan ids Tracks	
X	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR		Chan ids Tracks	

Group delay (usec) (SBD)	2.99382812500E-02	Apriori delay (usec)	0.00000000000E+00	Resid mbdelay (usec)	-1.31172E-03	+/- 1.0E-07
Sband delay (usec)	3.27522500000E-02	Apriori clock (usec)	0.0000000000E+00	Resid sbdelay (usec)	3.27522E-02	+/- 8.0E-07
Phase delay (usec)	5.14300357883E-06	Apriori clockrate (us/s)	0.0000000000E+00	Resid phdelay (usec)	5.14300E-06	+/- 3.4E-10
Delay rate (us/s)	-6.37701857626E-12	Apriori rate (us/s)	0.00000000000E+00	Resid rate (us/s)	-6.37702E-12	+/- 2.0E-12
Total phase (deg)	159.5	Apriori accel (us/s/s)	0.00000000000E+00	Resid phase (deg)	159.5	+/- 0.0

	RMS	Theor.	Amplitude	227.707 +/- 0.021	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5		
ph/seg (deg)	0.1	0.0	Search (2048X32)	222.016	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000	4.000
amp/seg (%)	2.3	0.0	Interp.	0.000	Bits/sample: 2x2	SampCntNorm: enabled	mb window (us)	-0.008	0.008
ph/frq (deg)	33.0	0.0	Inc. seg. avg.	222.530	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011	0.011
amp/frq (%)	91.0	0.0	Inc. frq. avg.	248.965	Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC)	0.00	0.00

X: az 275.4 el 49.6 pa 46.5   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 0.000 0.000   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//XX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//XX.W.33.24ULKL
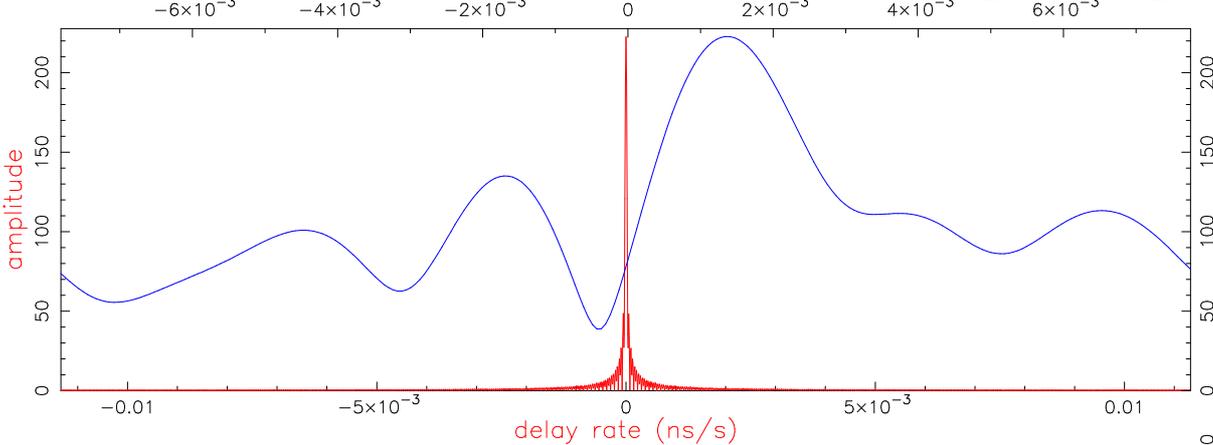
Mk4/DiFX fourfit 3.23 rev 3383
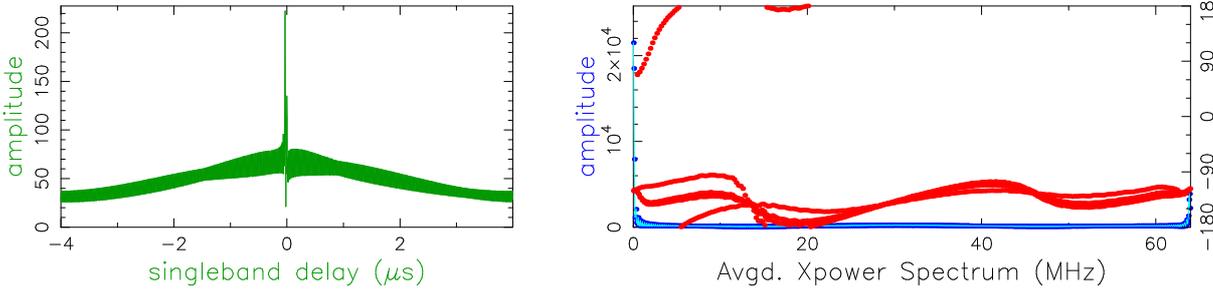aux01

BLLAC.24ULKL, No0004, XX
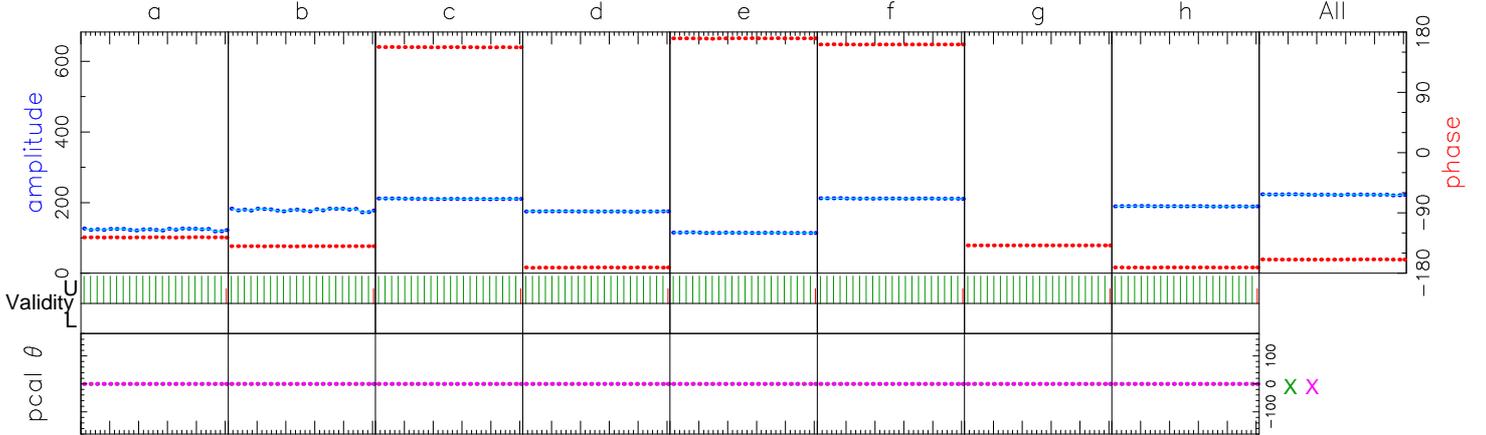**ONSALA60 - ONSALA60, fgroup W, pol RL**

multiband delay (μs)

-6×10^{-3} -4×10^{-3} -2×10^{-3} 0 2×10^{-3} 4×10^{-3} 6×10^{-3}

delay rate (ns/s)

singleband delay (μs)

Avgd. Xpower Spectrum (MHz)

Fringe quality	5
Error code	G
SNR	10783.9
Int time	299.920
Amp	227.707
Phase	-159.5
PFD	0.0e+00
Delays (us)	
SBD	-0.032752
MBD	0.001312
Fringe rate (Hz)	
	0.000001
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124500.00
Stop	125000.03
FRT	124730.00
Corr/FF/build	
	2022:090:145148
	2022:090:145501
	2021:308:113728
RA & Dec (J2000)	
22h02m43.291370s	
+42°16'39.979885"	

Amp. and Phase vs. time for each freq., 23 segs, 26 APs / seg (13.31 sec / seg.), time ticks 10 sec

a   b   c   d   e   f   g   h   All

Validity

pcal θ

Freq (MHz)	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	All
Phase	-126.5	-139.6	157.2	-171.5	170.5	161.3	-138.4	-171.4	-159.5
Ampl.	123.8	179.3	210.6	175.0	114.6	211.6	787.2	189.6	249.0
Sbd box	1017.9	1016.1	1017.3	1017.4	1015.8	1017.8	1016.9	1025.3	1016.6
APs used U/L	586/0	586/0	586/0	586/0	586/0	586/0	586/0	586/0	
PC freqs X	1000	1000	1000	1000	1000	1000	1000	1000	
PC freqs X	1000	1000	1000	1000	1000	1000	1000	1000	
PC phase X:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
Manl PC X:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
PC amp X	1000	1000	1000	1000	1000	1000	1000	1000	
X	1000	1000	1000	1000	1000	1000	1000	1000	
Chan ids Tracks X	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	
Chan ids Tracks X	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	

Group delay (usec) (SBD)	-2.99382812500E-02	Apriori delay (usec)	0.00000000000E+00	Resid mbdelay (usec)	1.31172E-03	+/- 1.0E-07
Sband delay (usec)	-3.27522500000E-02	Apriori clock (usec)	0.0000000000E+00	Resid sbdelay (usec)	-3.27522E-02	+/- 8.0E-07
Phase delay (usec)	-5.14300357887E-06	Apriori clockrate (us/s)	0.0000000000E+00	Resid phdelay (usec)	-5.14300E-06	+/- 3.4E-10
Delay rate (us/s)	6.37701857626E-12	Apriori rate (us/s)	0.00000000000E+00	Resid rate (us/s)	6.37702E-12	+/- 2.0E-12
Total phase (deg)	-159.5	Apriori accel (us/s/s)	0.00000000000E+00	Resid phase (deg)	-159.5	+/- 0.0

	RMS	Theor.	Amplitude	227.707 +/- 0.021	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5		
ph/seg (deg)	0.1	0.0	Search (2048X32)	222.016	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000	4.000
amp/seg (%)	2.3	0.0	Interp.	0.000	Bits/sample: 2x2	mb window (us)	-0.008	0.008
ph/frq (deg)	33.0	0.0	Inc. seg. avg.	222.530	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011	0.011
amp/frq (%)	91.0	0.0	Inc. frq. avg.	248.965	Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC)	0.00	0.00

X: az 275.4 el 49.6 pa 46.5   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 0.000 0.000   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//XX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//XX.W.46.24ULKL
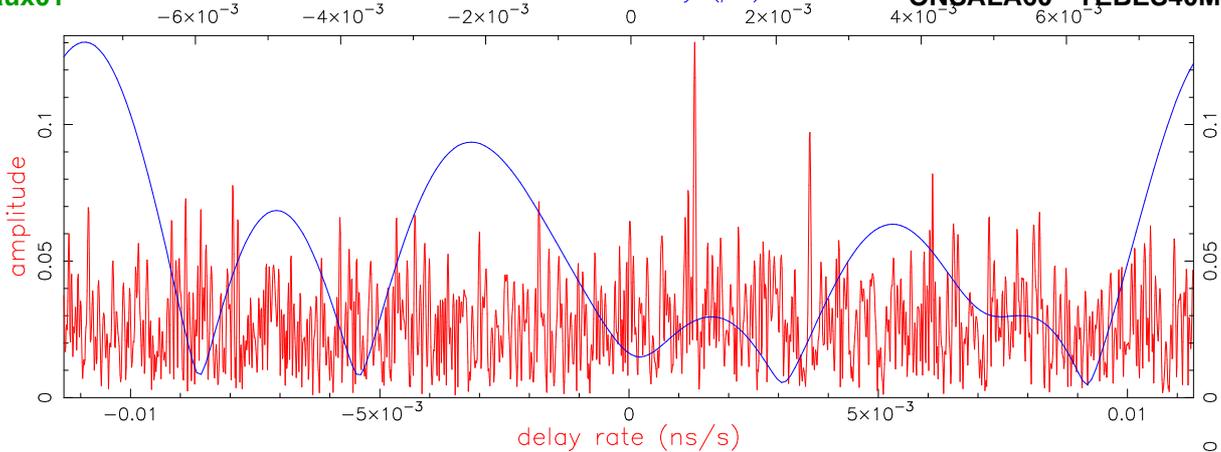
Mk4/DiFX fourfit 3.23 rev 3383
aux01

BLLAC.24ULKL, No0004, XY
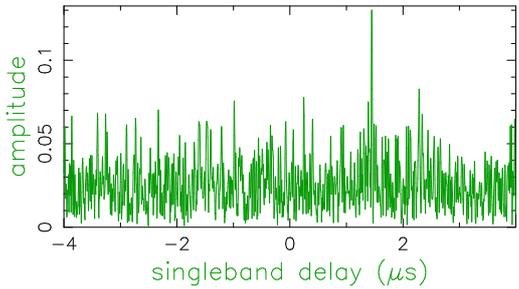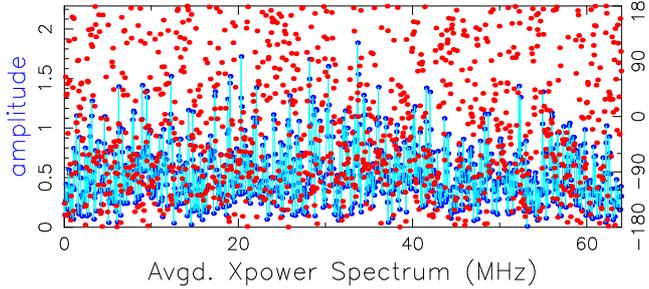**ONSALA60 - YEBES40M, fgroup W, pol LL**

multiband delay (µs)

Fringe quality	**0**
SNR	6.1
Int time	281.867
Amp	0.133
Phase	118.4
PFD	7.8e-01
Delays (us)	
SBD	1.447595
MBD	-0.007569
Fringe rate (Hz)	
	0.114084
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124517.41
Stop	125000.03
FRT	124730.00
Corr/FF/build	
2022:090:145148	
2022:090:145427	
2021:308:113728	
RA & Dec (J2000)	
22h02m43.291370s	
+42°16'39.979885"	

delay rate (ns/s)

singleband delay (µs)   Avgd. Xpower Spectrum (MHz)

Amp. and Phase vs. time for each freq., 23 segs, 25 APs / seg (12.80 sec / seg.), time ticks 10 sec

	a	b	c	d	e	f	g	h	All

									Freq (MHz)	All
	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00		
	90.0	153.2	-163.8	96.6	135.6	32.6	132.2	120.2	Phase	118.4
	0.2	0.2	0.1	0.2	0.1	0.1	0.3	0.2	Ampl.	0.1
	176.6	766.2	1580.5	1395.6	579.4	23.9	1396.4	2031.1	Sbd box	1395.6
U/L	552/0	552/0	552/0	552/0	552/0	552/0	552/0	552/0	APs used	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
Y	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X:Y	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
X:Y	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	Manl PC	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC amp	
Y	1000	1000	1000	1000	1000	1000	1000	1000		
X	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	
Y	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	

Group delay (usec) (SBD)	-1.34955168924E+03	Apriori delay (usec)	-1.35099724537E+03	Resid mbdelay (usec)	-7.56887E-03	+/- 1.8E-04
Sband delay (usec)	-1.34954965012E+03	Apriori clock (usec)	7.2645020E+01	Resid sbdelay (usec)	1.44760E+00	+/- 1.4E-03
Phase delay (usec)	-1.35099724155E+03	Apriori clockrate (us/s)	2.1110002E-06	Resid phdelay (usec)	3.81698E-06	+/- 6.1E-07
Delay rate (us/s)	9.02284028470E-02	Apriori rate (us/s)	9.02270784429E-02	Resid rate (us/s)	1.32440E-06	+/- 3.7E-09
Total phase (deg)	-139.5	Apriori accel (us/s/s)	2.22367536432E-05	Resid phase (deg)	118.4	+/- 18.9

	RMS	Theor.	Amplitude	0.133 +/- 0.022	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5	
ph/seg (deg)	60.9	45.4	Search (2048X32)	0.127	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000 4.000
amp/seg (%)	91.8	79.2	Interp.	0.000	Bits/sample: 2x2	SampCntNorm: enabled	mb window (us)	-0.008 0.008
ph/frq (deg)	52.3	26.8	Inc. seg. avg.	0.149	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011 0.011
amp/frq (%)	53.7	46.7	Inc. frq. avg.	0.142	Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

X: az 275.4 el 49.6 pa 46.5   Y: az 288.6 el 56.0 pa 76.9   u,v (fr/asec) -659.052 2863.904   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//XY..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//XY.W.10.24ULKL
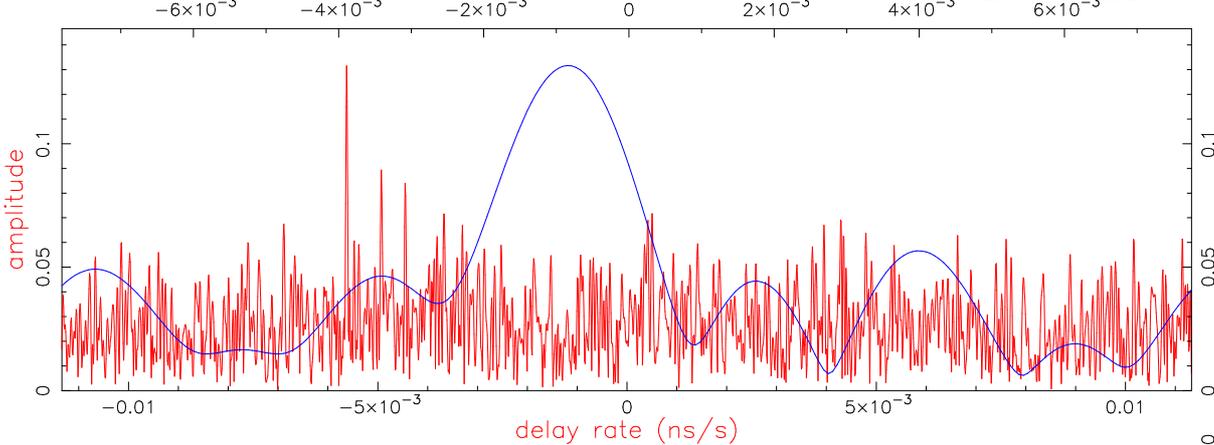
Mk4/DiFX fourfit 3.23 rev 3383
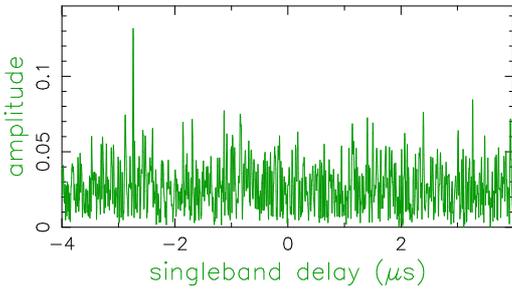**aux01**

BLLAC.24ULKL, No0004, XY
ONSALA60 - YEBES40M, fgroup W, pol RR

multiband delay (µs)

-6×10^{-3} -4×10^{-3} -2×10^{-3} 0 2×10^{-3} 4×10^{-3} 6×10^{-3}

delay rate (ns/s)
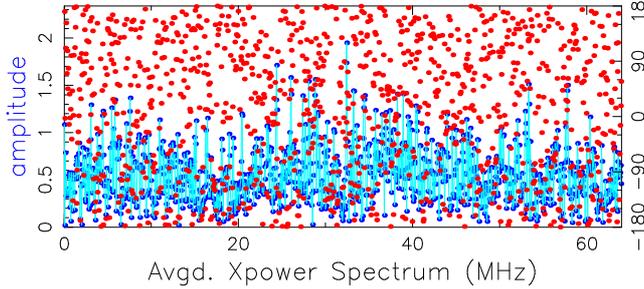
singleband delay (µs)

Avgd. Xpower Spectrum (MHz)

Fringe quality 0

SNR 6.1
Int time 281.867
Amp 0.147
Phase -104.1
PFD 7.4e-01
Delays (us)
SBD -2.737410
MBD -0.000801
Fringe rate (Hz)
-0.484955
Ion TEC 0.000
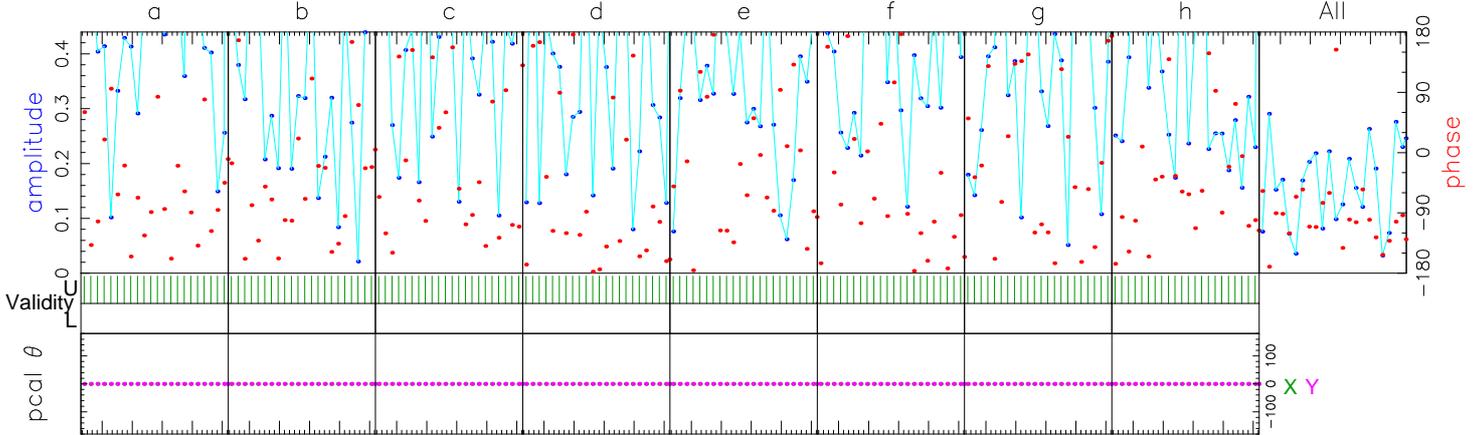Ref freq (MHz)
86140.0000
AP (sec) 0.512

Exp. f221a
Exper # 1234
Yr:day 2022:090
Start 124517.41
Stop 125000.03
FRT 124730.00
Corr/FF/build
2022:090:145148
2022:090:145439
2021:308:113728
RA & Dec (J2000)
22h02m43.291370s
+42°16'39.979885"

Amp. and Phase vs. time for each freq., 23 segs, 25 APs / seg (12.80 sec / seg.), time ticks 10 sec

a b c d e f g h All

Validity

pcal θ

								Freq (MHz)	All
86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00		
-86.4	-84.6	-111.6	-141.9	-83.3	-120.1	-133.8	-75.0	Phase	-104.1
0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	Ampl.	0.1
1273.4	196.1	786.2	857.0	1803.0	51.7	1979.6	326.9	Sbd box	324.2
552/0	552/0	552/0	552/0	552/0	552/0	552/0	552/0	APs used U/L	
1000	1000	1000	1000	1000	1000	1000	1000	PC freqs X	
1000	1000	1000	1000	1000	1000	1000	1000	PC freqs Y	
0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase X:Y	
0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	Manl PC X:Y	
1000	1000	1000	1000	1000	1000	1000	1000	PC amp X	
1000	1000	1000	1000	1000	1000	1000	1000	PC amp Y	
W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	Chan ids Tracks X	
W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	Chan ids Tracks Y	

Group delay (usec) (SBD)	-1.35373242131E+03	Apriori delay (usec)	-1.35099724537E+03	Resid mbdelay (usec)	-8.00937E-04 +/- 1.8E-04
Sband delay (usec)	-1.35373465537E+03	Apriori clock (usec)	7.2645020E+01	Resid sbdelay (usec)	-2.73741E+00 +/- 1.4E-03
Phase delay (usec)	-1.35099724873E+03	Apriori clockrate (us/s)	2.1110002E-06	Resid phdelay (usec)	-3.35646E-06 +/- 6.1E-07
Delay rate (us/s)	9.02214485991E-02	Apriori rate (us/s)	9.02270784429E-02	Resid rate (us/s)	-5.62984E-06 +/- 3.7E-09
Total phase (deg)	-2.0	Apriori accel (us/s/s)	2.22367536432E-05	Resid phase (deg)	-104.1 +/- 18.9

	RMS	Theor.	Amplitude				
ph/seg (deg)	38.1	45.3	Search (2048X32)	0.127	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5	
amp/seg (%)	60.3	79.0	Interp.	0.000	Pcal rate: 0.000E+00, 0.000E+00 (us/s)		sb window (us) -4.000 4.000
ph/frq (deg)	27.7	26.7	Inc. seg. avg.	0.133	Bits/sample: 2x2	SampCntNorm: enabled	mb window (us) -0.008 0.008
amp/frq (%)	26.4	46.6	Inc. frq. avg.	0.145	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us		dr window (ns/s) -0.011 0.011
					Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC) 0.00 0.00

Search 0.127
Amplitude 0.147 +/- 0.024

X: az 275.4 el 49.6 pa 46.5   Y: az 288.6 el 56.0 pa 76.9   u,v (fr/asec) -659.052 2863.904   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//XY..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//XY.W.26.24ULKL
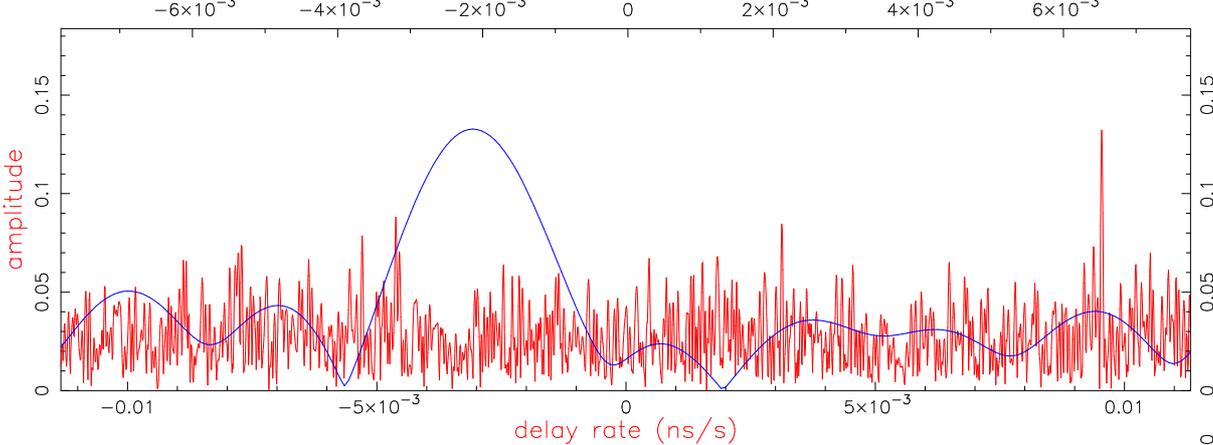
Mk4/DiFX fourfit 3.23 rev 3383
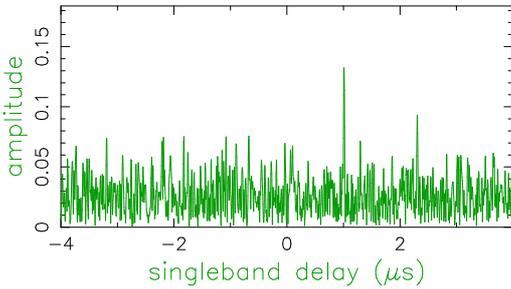**aux01**

BLLAC.24ULKL, No0004, XY
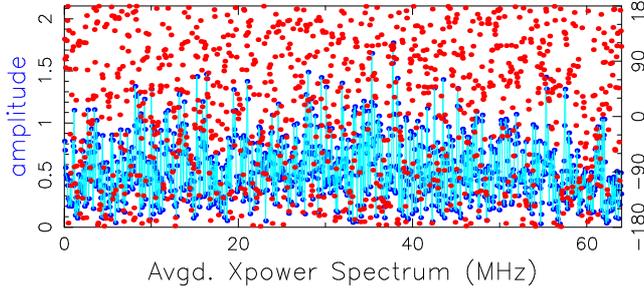**ONSALA60 - YEBES40M, fgroup W, pol LR**

multiband delay (μs)

delay rate (ns/s)

singleband delay (μs)

Avgd. Xpower Spectrum (MHz)

Amp. and Phase vs. time for each freq., 23 segs, 25 APs / seg (12.80 sec / seg.), time ticks 10 sec

	Fringe quality	0
	SNR	6.2
	Int time	281.867
	Amp	0.184
	Phase	-113.4
	PFD	5.0e-01
	Delays (us)	
	SBD	1.009912
	MBD	-0.002225
	Fringe rate (Hz)	
		0.823730
	Ion TEC	0.000
	Ref freq (MHz)	
		86140.0000
	AP (sec)	0.512
	Exp.	f221a
	Exper #	1234
	Yr:day	2022:090
	Start	124517.41
	Stop	125000.03
	FRT	124730.00
	Corr/FF/build	
	2022:090:145148	
	2022:090:145451	
	2021:308:113728	
	RA & Dec (J2000)	
	22h02m43.291370s	
	+42°16'39.979885"	

Freq panels: a b c d e f g h All

	a	b	c	d	e	f	g	h		All
Freq (MHz)	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00		All
Phase	-109.2	-141.0	-113.1	-116.5	-100.8	-108.2	-103.8	-113.0	Phase	-113.4
Ampl.	0.2	0.2	0.2	0.1	0.3	0.1	0.1	0.2	Ampl.	0.2
Sbd box	559.9	1636.2	231.9	1076.7	924.1	686.2	199.3	1802.0	Sbd box	1283.5
U/L	552/0	552/0	552/0	552/0	552/0	552/0	552/0	552/0	APs used	
X PC freqs	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
Y PC freqs	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X:Y	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
X:Y	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	Manl PC	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC amp	
Y	1000	1000	1000	1000	1000	1000	1000	1000		
X	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	
Y	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	Chan ids Tracks	

Group delay (usec) (SBD)	-1.34998384548E+03	Apriori delay (usec)	-1.35099724537E+03	Resid mbdelay (usec)	-2.22510E-03	+/-	1.8E-04
Sband delay (usec)	-1.34998733312E+03	Apriori clock (usec)	7.2645020E+01	Resid sbdelay (usec)	1.00991E+00	+/-	1.4E-03
Phase delay (usec)	-1.35099724903E+03	Apriori clockrate (us/s)	2.1110002E-06	Resid phdelay (usec)	-3.65526E-06	+/-	6.0E-07
Delay rate (us/s)	9.02366411266E-02	Apriori rate (us/s)	9.02270784429E-02	Resid rate (us/s)	9.56268E-06	+/-	3.7E-09
Total phase (deg)	-11.2	Apriori accel (us/s/s)	2.22367536432E-05	Resid phase (deg)	-113.4	+/-	18.6

	RMS	Theor.	Amplitude	0.184 +/- 0.030	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5	
ph/seg (deg)	53.3	44.5	Search (2048X32)	0.132	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000 4.000
amp/seg (%)	81.8	77.6	Interp.	0.000	Bits/sample: 2x2 SampCntNorm: enabled	mb window (us)	-0.008 0.008
ph/frq (deg)	13.3	26.2	Inc. seg. avg.	0.198	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011 0.011
amp/frq (%)	37.8	45.8	Inc. frq. avg.	0.168	Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

X: az 275.4 el 49.6 pa 46.5   Y: az 288.6 el 56.0 pa 76.9   u,v (fr/asec) -659.052 2863.904   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//XY..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//XY.W.39.24ULKL

BLLAC.24ULKL, No0004, XY
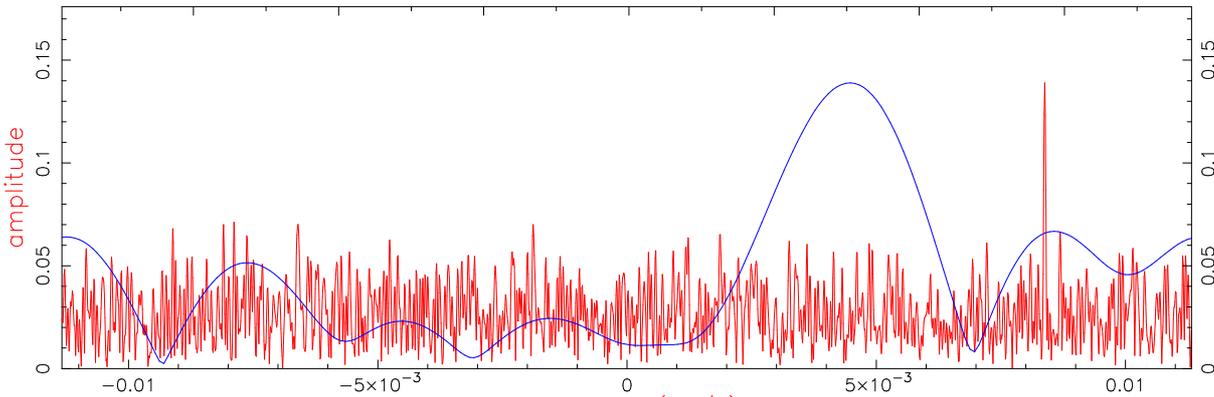**ONSALA60 - YEBES40M, fgroup W, pol RL**

multiband delay (μs)

$-6×10^{-3}$ $-4×10^{-3}$ $-2×10^{-3}$ 0 $2×10^{-3}$ $4×10^{-3}$ $6×10^{-3}$

Fringe quality	0
SNR	6.4
Int time	281.867
Amp	0.176
Phase	72.0
PFD	1.8e-01
Delays (us)	
SBD	-0.078272
MBD	0.003040
Fringe rate (Hz)	
	0.722700
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512
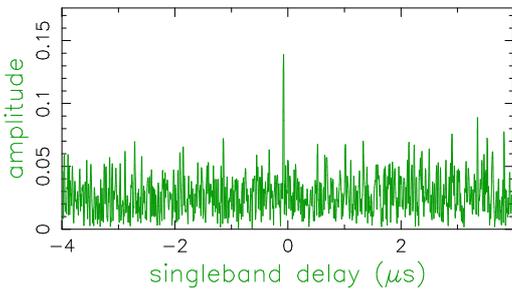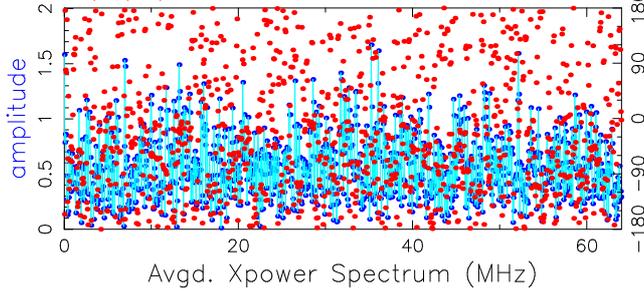
delay rate (ns/s)

Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124517.41
Stop	125000.03
FRT	124730.00
Corr/FF/build	
	2022:090:145148
	2022:090:145503
	2021:308:113728
RA & Dec (J2000)	
22h02m43.291370s	
+42°16'39.979885"	

singleband delay (μs)

Avgd. Xpower Spectrum (MHz)

Amp. and Phase vs. time for each freq., 23 segs, 25 APs / seg (12.80 sec / seg.), time ticks 10 sec

a b c d e f g h All

Validity

pcal θ

X Y
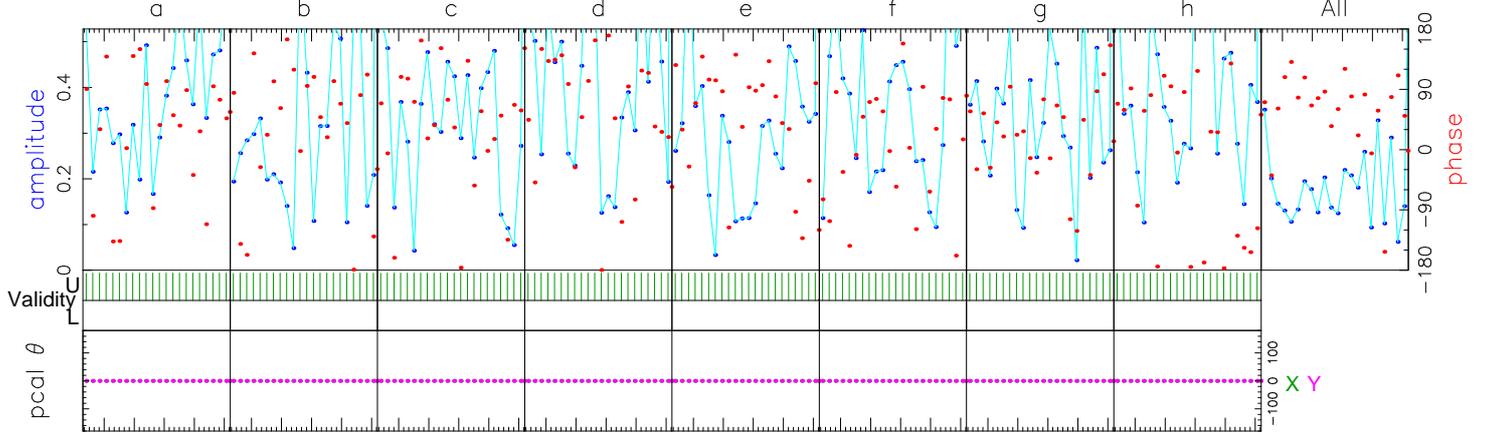
86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	Freq (MHz)	All
69.6	82.1	61.2	96.1	68.4	35.3	36.6	117.3	Phase	72.0
0.2	0.2	0.2	0.2	0.1	0.1	0.3	0.2	Ampl.	0.2
58.2	388.1	15.9	557.4	1151.6	1062.5	1006.3	368.5	Sbd box	1005.0
U/L 552/0	552/0	552/0	552/0	552/0	552/0	552/0	552/0	APs used	
X 1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
Y 1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X:Y 0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
X:Y 0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	Manl PC	
X 1000	1000	1000	1000	1000	1000	1000	1000	PC amp	
Y 1000	1000	1000	1000	1000	1000	1000	1000		
X W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	Chan ids Tracks	
Y W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	

Group delay (usec) (SBD)	-1.35107233034E+03	Apriori delay (usec)	-1.35099724537E+03	Resid mbdelay (usec)	3.04003E-03	+/- 1.7E-04
Sband delay (usec)	-1.35107551712E+03	Apriori clock (usec)	7.2645020E+01	Resid sbdelay (usec)	-7.82717E-02	+/- 1.4E-03
Phase delay (usec)	-1.35099724305E+03	Apriori clockrate (us/s)	2.1110002E-06	Resid phdelay (usec)	2.32203E-06	+/- 5.8E-07
Delay rate (us/s)	9.02354682760E-02	Apriori rate (us/s)	9.02270784429E-02	Resid rate (us/s)	8.38983E-06	+/- 3.5E-09
Total phase (deg)	-185.9	Apriori accel (us/s/s)	2.22367536432E-05	Resid phase (deg)	72.0	+/- 18.0

	RMS	Theor.	Amplitude	0.176 +/- 0.028	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5		
ph/seg (deg)	48.6	43.1	Search (2048X32)	0.138	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000	4.000
amp/seg (%)	61.6	75.2	Interp.	0.000	Bits/sample: 2x2	mb window (us)	-0.008	0.008
ph/frq (deg)	30.2	25.4	Inc. seg. avg.	0.176	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011	0.011
amp/frq (%)	31.7	44.3	Inc. frq. avg.	0.179	Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC)	0.00	0.00

X: az 275.4 el 49.6 pa 46.5   Y: az 288.6 el 56.0 pa 76.9   u,v (fr/asec) -659.052 2863.904   simultaneous interpolator
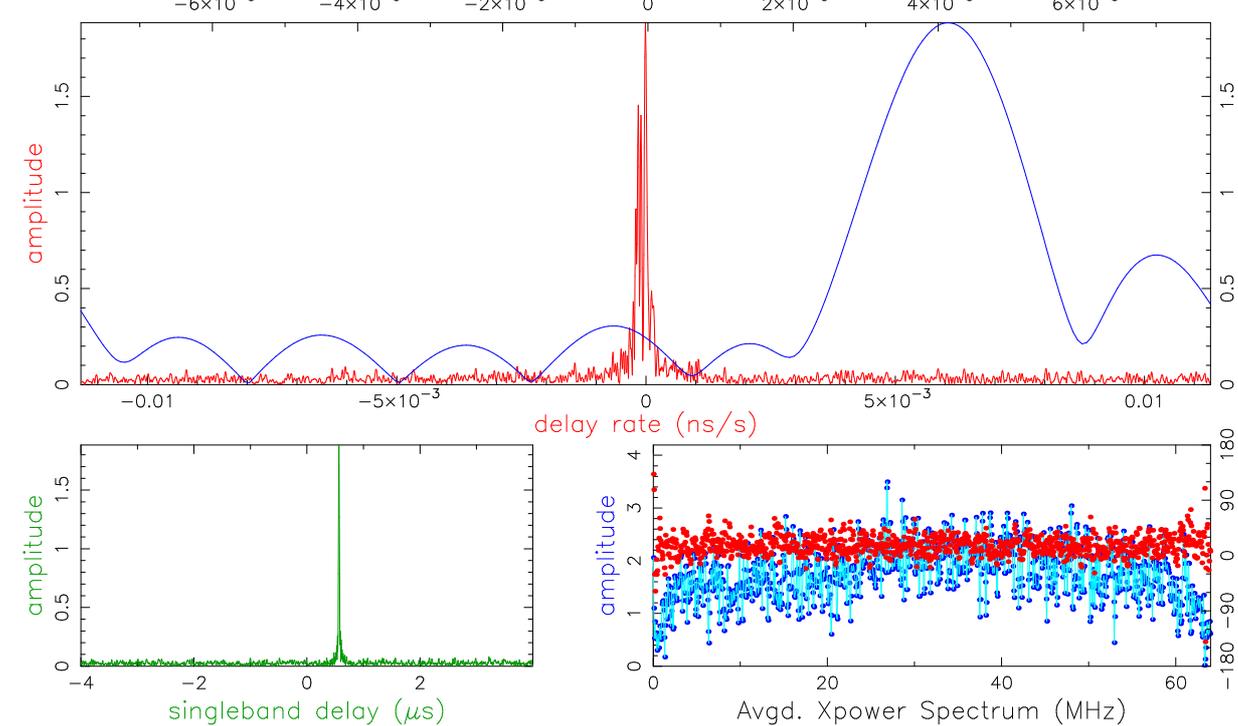
Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//XY..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//XY.W.53.24ULKL

BLLAC.24ULKL, No0004, ZX
METSAHOV - ONSALA60, fgroup W, pol RR

multiband delay (µs)

−6×10⁻³   −4×10⁻³   −2×10⁻³   0   2×10⁻³   4×10⁻³   6×10⁻³

Fringe quality	4
SNR	87.1
Int time	285.841
Amp	1.884
Phase	11.2
PFD	0.0e+00
Delays (us)	
SBD	0.566188
MBD	0.004131
Fringe rate (Hz)	
	−0.000527
Ion TEC	0.000
Ref freq (MHz)	
	86140.0000
AP (sec)	0.512

delay rate (ns/s)

singleband delay (µs)

Avgd. Xpower Spectrum (MHz)

Exp.	f221a
Exper #	1234
Yr:day	2022:090
Start	124513.31
Stop	125000.03
FRT	124730.00
Corr/FF/build	
	2022:090:145148
	2022:090:145438
	2021:308:113728
RA & Dec (J2000)	
	22h02m43.291370s
	+42°16'39.979885"

Amp. and Phase vs. time for each freq., 23 segs, 25 APs / seg (12.80 sec / seg.), time ticks 10 sec

a   b   c   d   e   f   g   h   All

Validity

pcal θ

Freq (MHz)	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	All
Phase	14.9	14.4	17.7	15.5	−6.1	−7.2	9.9	36.3	11.2
Ampl.	1.8	1.8	1.9	1.8	2.0	2.2	2.0	1.8	1.9
Sbd box	1169.6	1169.7	1170.0	1170.0	1169.9	1170.1	1170.3	1170.2	1169.9
U/L APs used	560/0	560/0	560/0	560/0	560/0	560/0	560/0	560/0	
Z PC freqs	1000	1000	1000	1000	1000	1000	1000	1000	
X PC freqs	1000	1000	1000	1000	1000	1000	1000	1000	
Z:X PC phase	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
Z:X Manl PC	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	
Z PC amp	1000	1000	1000	1000	1000	1000	1000	1000	
X	1000	1000	1000	1000	1000	1000	1000	1000	
Z Chan ids Tracks	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	
X Chan ids Tracks	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	

Group delay (usec) (SBD)	-1.59606911777E+03	Apriori delay (usec)	-1.59663574860E+03	Resid mbdelay (usec)	4.13083E-03 +/- 1.2E-05
Sband delay (usec)	-1.59606956060E+03	Apriori clock (usec)	-7.3563278E+01	Resid sbdelay (usec)	5.66188E-01 +/- 9.9E-05
Phase delay (usec)	-1.59663574824E+03	Apriori clockrate (us/s)	-4.4800001E-07	Resid phdelay (usec)	3.62755E-07 +/- 4.2E-08
Delay rate (us/s)	-3.84359455997E-03	Apriori rate (us/s)	-3.84358844157E-03	Resid rate (us/s)	-6.11840E-09 +/- 2.6E-10
Total phase (deg)	-127.2	Apriori accel (us/s/s)	1.00454062725E-05	Resid phase (deg)	11.2 +/- 1.3

	RMS	Theor.	Amplitude	1.884 +/- 0.022	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5		
ph/seg (deg)	58.3	3.2	Search (2048X32)	1.806	Pcal rate: 0.000E+00, 0.000E+00 (us/s)		sb window (us)	-4.000 4.000
amp/seg (%)	53.2	5.5	Interp.	0.000	Bits/sample: 2x2	SampCntNorm: enabled	mb window (us)	-0.008 0.008
ph/frq (deg)	15.0	1.9	Inc. seg. avg.	2.863	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us		dr window (ns/s)	-0.011 0.011
amp/frq (%)	7.0	3.2	Inc. frq. avg.	1.933	Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

Z: az 282.1 el 43.6 pa 41.0   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 47.409 886.971   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//ZX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//ZX.W.19.24ULKL

Mk4/DiFX fourfit 3.23 rev 3383
aux01

BLLAC.24ULKL, No0004, ZX
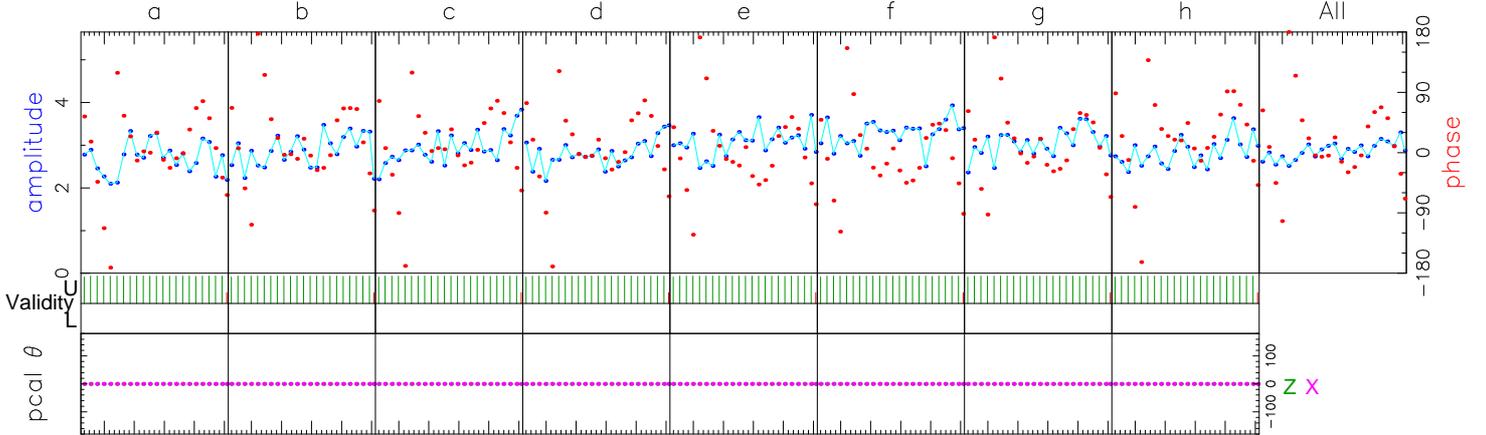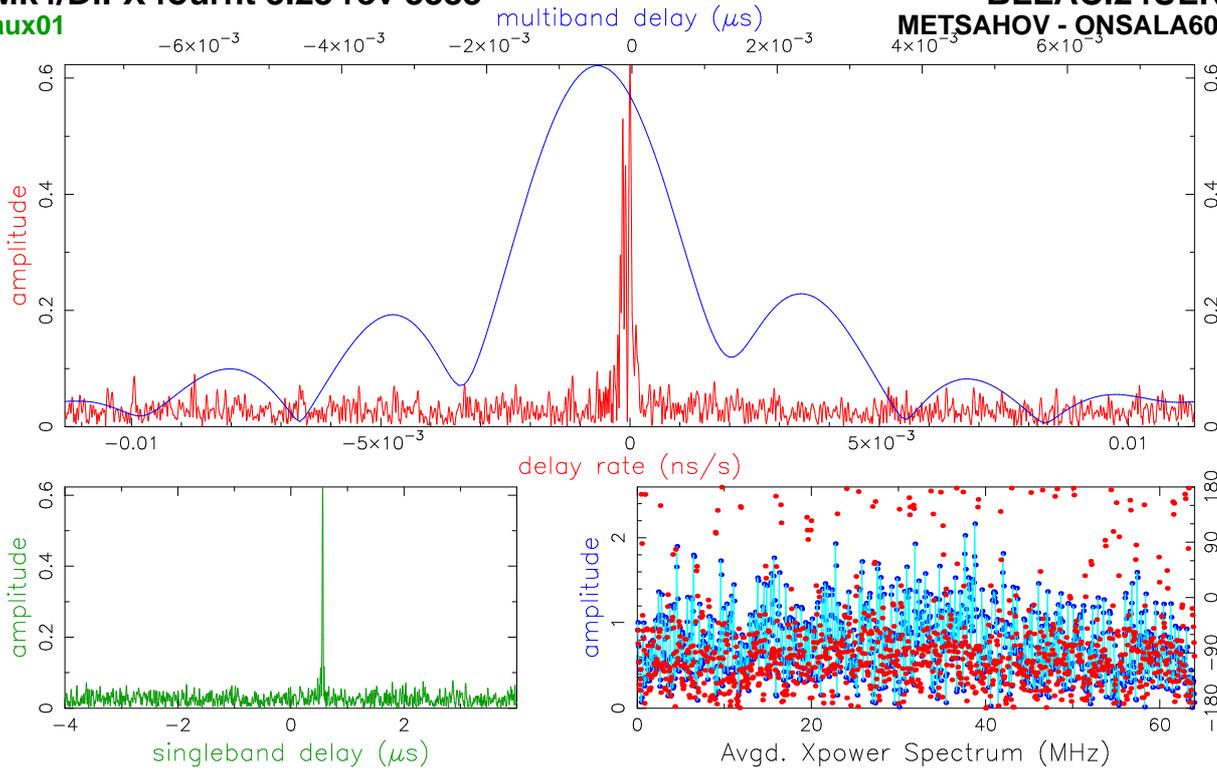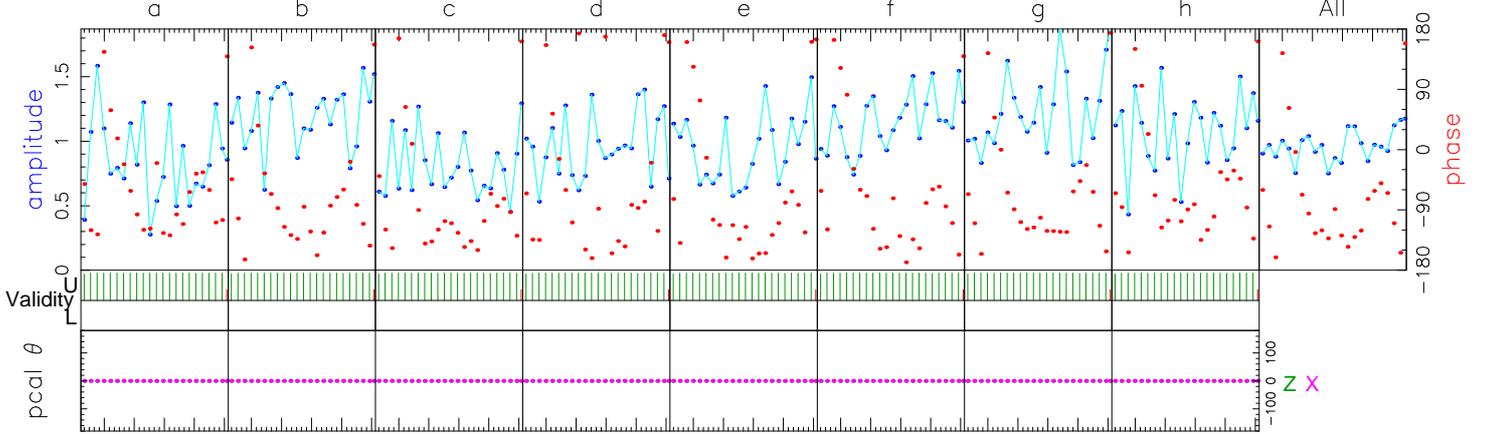**METSAHOV - ONSALA60, fgroup W, pol LR**

multiband delay (μs)

delay rate (ns/s)

singleband delay (μs)

Avgd. Xpower Spectrum (MHz)

Fringe quality									6
SNR									28.8
Int time									285.841
Amp									0.623
Phase									-108.7
PFD									0.0e+00
Delays (us)									
SBD									0.561792
MBD									-0.000496
Fringe rate (Hz)									-0.000477
Ion TEC									0.000
Ref freq (MHz)									86140.0000
AP (sec)									0.512
Exp.									f221a
Exper #									1234
Yr:day									2022:090
Start									124513.31
Stop									125000.03
FRT									124730.00
Corr/FF/build									
									2022:090:145148
									2022:090:145449
									2021:308:113728
RA & Dec (J2000)									
									22h02m43.291370s
									+42°16'39.979885"

Amp. and Phase vs. time for each freq., 23 segs, 25 APs / seg (12.80 sec / seg.), time ticks 10 sec

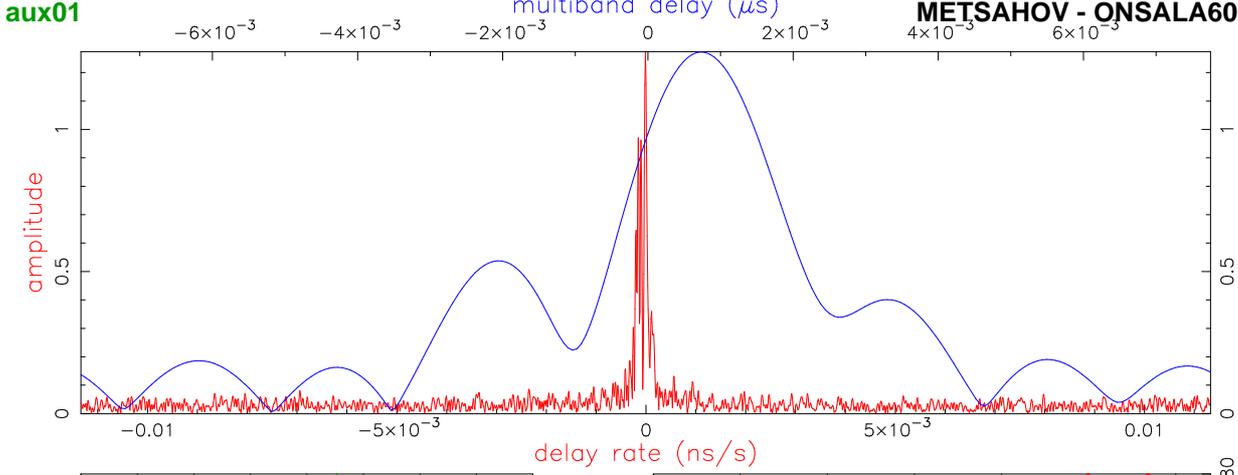| a	b	c	d	e	f	g	h	All

Validity

pcal θ

	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	Freq (MHz)	All
	-94.8	-101.7	-117.0	-121.2	-134.3	-114.8	-102.2	-89.9	Phase	-108.7
	0.5	0.8	0.5	0.5	0.6	0.7	0.8	0.7	Ampl.	0.6
	1168.1	1168.9	1168.3	1168.9	1168.7	1169.1	1169.1	1169.6	Sbd box	1168.8
U/L	560/0	560/0	560/0	560/0	560/0	560/0	560/0	560/0	APs used	
Z	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
Z:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
Z:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	Manl PC	
Z	1000	1000	1000	1000	1000	1000	1000	1000	PC amp	
X	1000	1000	1000	1000	1000	1000	1000	1000		
Z	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	
X	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	Chan ids Tracks	

Group delay (usec) (SBD)	-1.59607374433E+03	Apriori delay (usec)	-1.59663574860E+03	Resid mbdelay (usec)	-4.95729E-04	+/- 3.8E-05
Sband delay (usec)	-1.59607395685E+03	Apriori clock (usec)	-7.3563278E+01	Resid sbdelay (usec)	5.61792E-01	+/- 3.0E-04
Phase delay (usec)	-1.59663575211E+03	Apriori clockrate (us/s)	-4.4800001E-07	Resid phdelay (usec)	-3.50435E-06	+/- 1.3E-07
Delay rate (us/s)	-3.84359397612E-03	Apriori rate (us/s)	-3.84358844157E-03	Resid rate (us/s)	-5.53454E-09	+/- 7.7E-10
Total phase (deg)	-247.2	Apriori accel (us/s/s)	1.00454062725E-05	Resid phase (deg)	-108.7	+/- 4.0

	RMS	Theor.	Amplitude	0.623 +/- 0.022	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5		
ph/seg (deg)	58.5	9.5	Search (2048X32)	0.606	Pcal rate: 0.000E+00, 0.000E+00 (us/s)		sb window (us)	-4.000 4.000
amp/seg (%)	57.1	16.6	Interp.	0.000	Bits/sample: 2x2	SampCntNorm: enabled	mb window (us)	-0.008 0.008
ph/frq (deg)	16.1	5.6	Inc. seg. avg.	0.948	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us		dr window (ns/s)	-0.011 0.011
amp/frq (%)	17.3	9.8	Inc. frq. avg.	0.636	Data rate(Mb/s): 2048	nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

Z: az 282.1 el 43.6 pa 41.0   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 47.409 886.971   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//ZX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004//ZX.W.32.24ULKL

Mk4/DiFX fourfit 3.23 rev 3383
aux01
BLLAC.24ULKL, No0004, ZX
METSAHOV - ONSALA60, fgroup W, pol LL

multiband delay (µs)

−6×10⁻³   −4×10⁻³   −2×10⁻³   0   2×10⁻³   4×10⁻³   6×10⁻³

amplitude

delay rate (ns/s)

amplitude

singleband delay (µs)

Avgd. Xpower Spectrum (MHz)

phase (deg)

Fringe quality   3

SNR   58.9
Int time   285.841
Amp   1.274
Phase   105.0
PFD   0.0e+00
Delays (us)
SBD   0.531698
MBD   0.000745
Fringe rate (Hz)
          -0.000607
Ion TEC   0.000
Ref freq (MHz)
          86140.0000
AP (sec)   0.512

Exp.   f221a
Exper #   1234
Yr:day   2022:090
Start   124513.31
Stop   125000.03
FRT   124730.00
Corr/FF/build
2022:090:145148
2022:090:145426
2021:308:113728
RA & Dec (J2000)
22h02m43.291370s
+42˚16'39.979885"
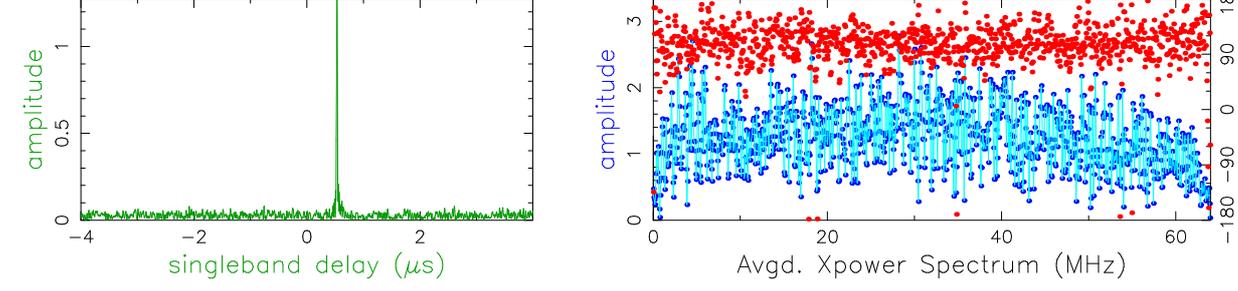
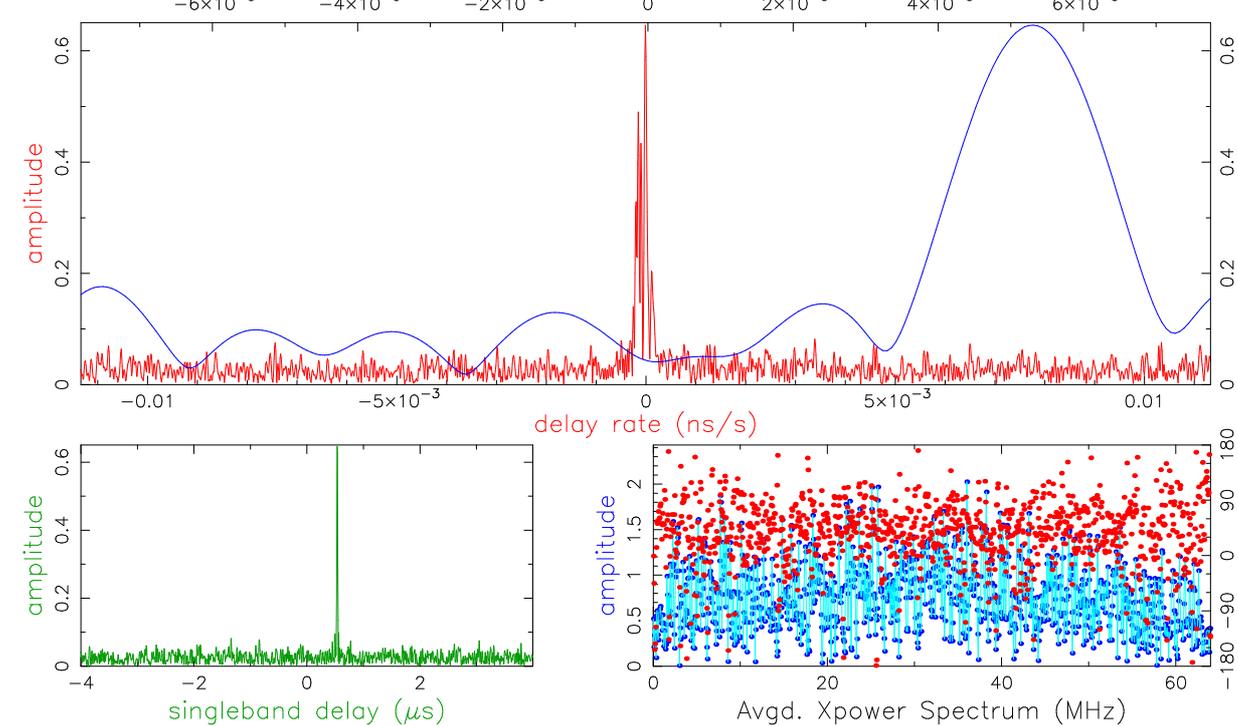Amp. and Phase vs. time for each freq., 23 segs, 25 APs / seg (12.80 sec / seg.), time ticks 10 sec

a   b   c   d   e   f   g   h   All

amplitude   phase

Validity

pcal θ   Z X
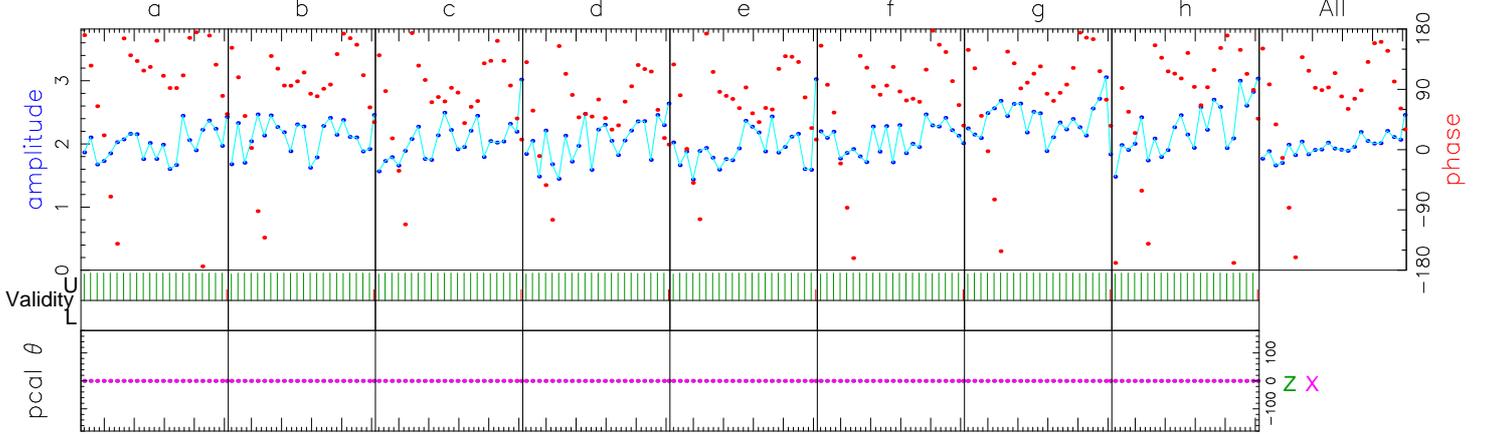
	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	Freq (MHz)	All
	134.7	114.1	91.4	67.3	83.9	107.3	115.0	119.0	Phase	105.0
	1.3	1.3	1.3	1.3	1.2	1.4	1.5	1.4	Ampl.	1.4
	1160.8	1160.5	1160.9	1161.0	1161.7	1161.0	1161.5	1161.4	Sbd box	1161.1
U/L	560/0	560/0	560/0	560/0	560/0	560/0	560/0	560/0	APs used	
Z	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
Z:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
Z:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	Manl PC	
Z	1000	1000	1000	1000	1000	1000	1000	1000	PC amp	
X	1000	1000	1000	1000	1000	1000	1000	1000		
Z	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	
X	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	

Group delay (usec) (SBD)	-1.59610375380E+03	Apriori delay (usec)	-1.59663574860E+03	Resid mbdelay (usec) 7.44802E-04 +/- 1.8E-05
Sband delay (usec)	-1.59610405060E+03	Apriori clock (usec)	-7.3563278E+01	Resid sbdelay (usec) 5.31698E-01 +/- 1.5E-04
Phase delay (usec)	-1.59663574522E+03	Apriori clockrate (us/s)	-4.4800001E-07	Resid phdelay (usec) 3.38461E-06 +/- 6.3E-08
Delay rate (us/s)	-3.84359549101E-03	Apriori rate (us/s)	-3.84358844157E-03	Resid rate (us/s) -7.04944E-09 +/- 3.8E-10
Total phase (deg)	-33.5	Apriori accel (us/s/s)	1.00454062725E-05	Resid phase (deg) 105.0 +/- 1.9

	RMS	Theor.	Amplitude	1.274 +/- 0.022	Pcal mode: MANUAL, MANUAL PC period (AP's) 5, 5	
ph/seg (deg)	58.2	4.7	Search (2048X32)	1.226	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us) -4.000 4.000
amp/seg (%)	55.0	8.1	Interp.	0.000	Bits/sample: 2x2	mb window (us) -0.008 0.008
ph/frq (deg)	23.5	2.8	Inc. seg. avg.	1.950	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s) -0.011 0.011
amp/frq (%)	9.3	4.8	Inc. frq. avg.	1.352	Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC) 0.00 0.00

Z: az 282.1 el 43.6 pa 41.0   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 47.409 886.971   simultaneous interpolator

Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//ZX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004/ZX.W.4.24ULKL

BLLAC.24ULKL, No0004, ZX
METSAHOV - ONSALA60, fgroup W, pol RL

multiband delay (μs)

Fringe quality   6

SNR   30.1
Int time   285.841
Amp   0.651
Phase   40.1
PFD   0.0e+00
Delays (us)
SBD   0.536320
MBD   0.005328
Fringe rate (Hz)
            -0.000526
Ion TEC   0.000
Ref freq (MHz)
         86140.0000
AP (sec)   0.512

Exp.   f221a
Exper #   1234
Yr:day   2022:090
Start   124513.31
Stop   125000.03
FRT   124730.00
Corr/FF/build
2022:090:145148
2022:090:145501
2021:308:113728
RA & Dec (J2000)
22h02m43.291370s
+42˚16'39.979885"

delay rate (ns/s)

singleband delay (μs)

Avgd. Xpower Spectrum (MHz)

Amp. and Phase vs. time for each freq., 23 segs, 25 APs / seg (12.80 sec / seg.), time ticks 10 sec

a   b   c   d   e   f   g   h   All

Validity

pcal θ   Z X
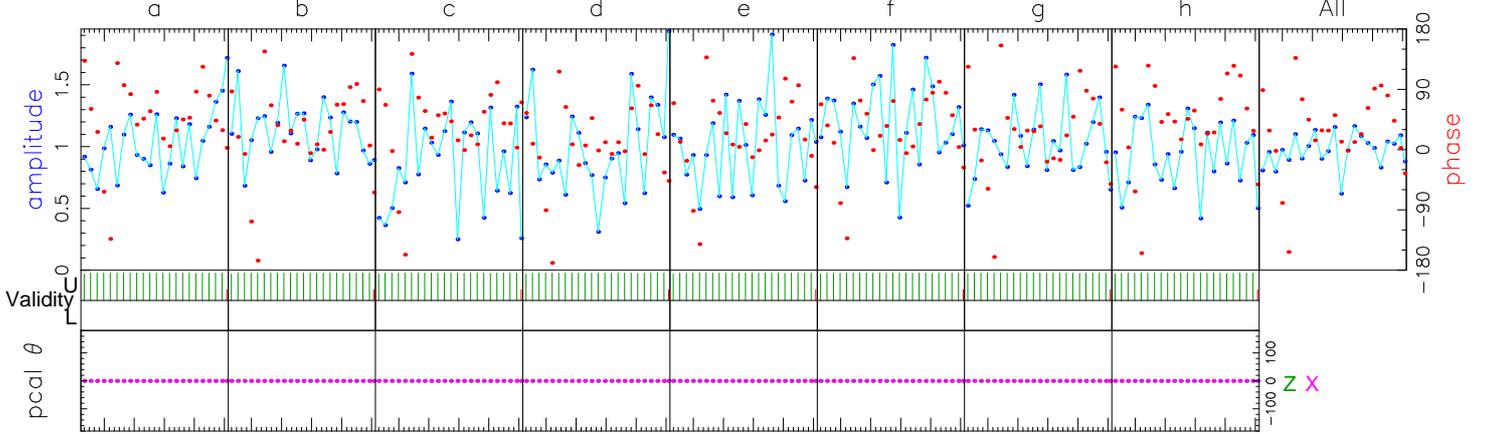
	a	b	c	d	e	f	g	h		All
	86012.00	86076.00	86140.00	86204.00	86268.00	86332.00	86396.00	86460.00	Freq (MHz)	All
	57.6	39.8	45.3	20.4	28.0	43.5	26.6	62.2	Phase	40.1
	0.7	0.7	0.6	0.7	0.7	0.8	0.6	0.6	Ampl.	0.7
	1162.3	1161.8	1162.7	1162.0	1162.5	1162.2	1162.5	1162.8	Sbd box	1162.3
U/L	560/0	560/0	560/0	560/0	560/0	560/0	560/0	560/0	APs used	
Z	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
X	1000	1000	1000	1000	1000	1000	1000	1000	PC freqs	
Z:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	PC phase	
Z:X	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	Manl PC	
Z	1000	1000	1000	1000	1000	1000	1000	1000	PC amp	
X	1000	1000	1000	1000	1000	1000	1000	1000		
Z	W00UR	W01UR	W02UR	W03UR	W04UR	W05UR	W06UR	W07UR	Chan ids Tracks	
X	W00UL	W01UL	W02UL	W03UL	W04UL	W05UL	W06UL	W07UL	Chan ids Tracks	

Group delay (usec) (SBD)	-1.59609917068E+03	Apriori delay (usec)	-1.59663574860E+03	Resid mbdelay (usec)	5.32793E-03	+/- 3.6E-05
Sband delay (usec)	-1.59609942835E+03	Apriori clock (usec)	-7.3563278E+01	Resid sbdelay (usec)	5.36320E-01	+/- 2.9E-04
Phase delay (usec)	-1.59663574731E+03	Apriori clockrate (us/s)	-4.4800001E-07	Resid phdelay (usec)	1.29251E-06	+/- 1.2E-07
Delay rate (us/s)	-3.84359454225E-03	Apriori rate (us/s)	-3.84358844157E-03	Resid rate (us/s)	-6.10068E-09	+/- 7.4E-10
Total phase (deg)	-98.4	Apriori accel (us/s/s)	1.00454062725E-05	Resid phase (deg)	40.1	+/- 3.8

	RMS	Theor.	Amplitude	0.651 +/- 0.022	Pcal mode: MANUAL, MANUAL	PC period (AP's) 5, 5	
ph/seg (deg)	57.2	9.1	Search (2048X32)	0.631	Pcal rate: 0.000E+00, 0.000E+00 (us/s)	sb window (us)	-4.000 4.000
amp/seg (%)	53.5	15.9	Interp.	0.000	Bits/sample: 2x2	mb window (us)	-0.008 0.008
ph/frq (deg)	16.1	5.4	Inc. seg. avg.	0.962	Data rate(MSamp/s): 128 MBpts 32 Amb 0.016 us	dr window (ns/s)	-0.011 0.011
amp/frq (%)	11.3	9.4	Inc. frq. avg.	0.662	Data rate(Mb/s): 2048 nlags: 1024 t_cohere infinite	ion window (TEC)	0.00 0.00

Z: az 282.1 el 43.6 pa 41.0   X: az 275.4 el 49.6 pa 46.5   u,v (fr/asec) 47.409 886.971   simultaneous interpolator
Control file: cf_1234_gmva   Input file: /Exps/f221a/FRINGE/1234/No0004//ZX..24ULKL   Output file: /Exps/f221a/FRINGE/1234/No0004/ZX.W.47.24ULKL