

# KIC 011920468

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011920468-01	OBS	No	1.668321	133.130670	60.0	10.391	7.3	8.1	0.78	5277	0.61	689.33
011920468-02	OBS	No	26.887297	151.465463	1093.5	1.115	8.2	8.5	0.78	5277	2.79	16.93
011920468-03	OBS	No	89.196625	217.756302	1507.9	1.982	8.5	8.8	0.78	5277	3.35	3.42

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011920468-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011920468-02	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
011920468-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

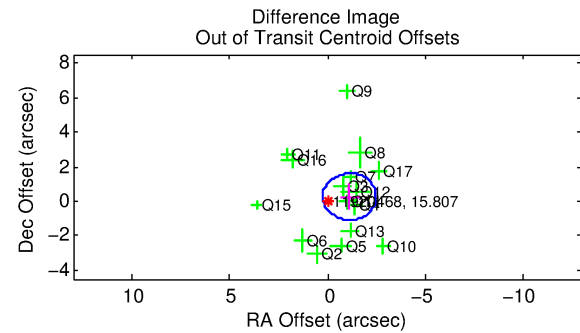
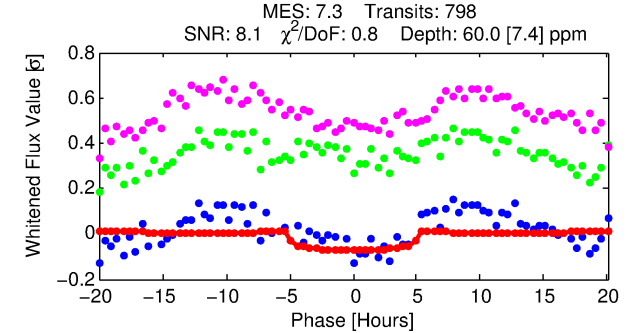
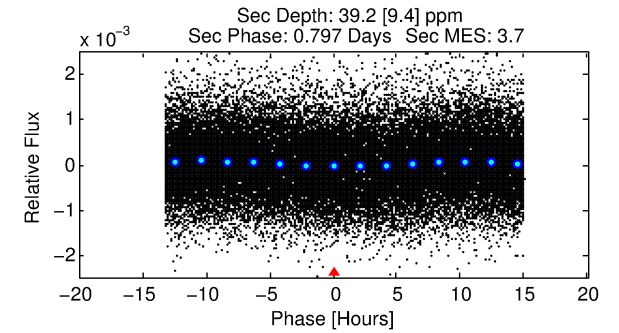
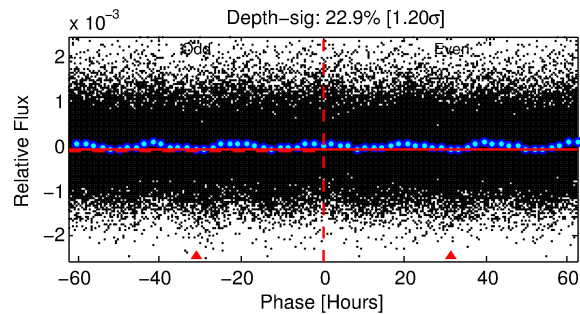
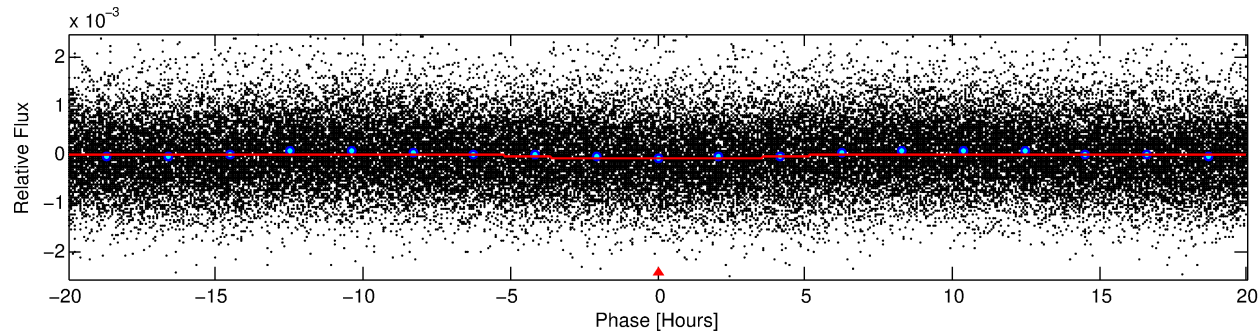
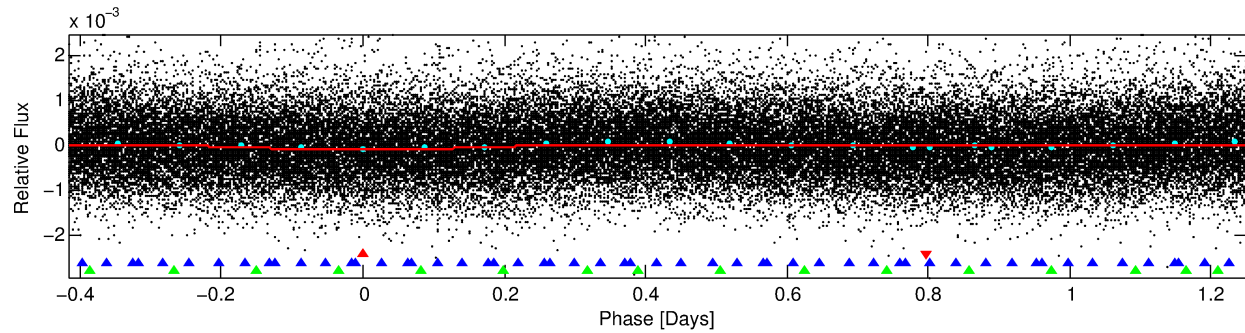
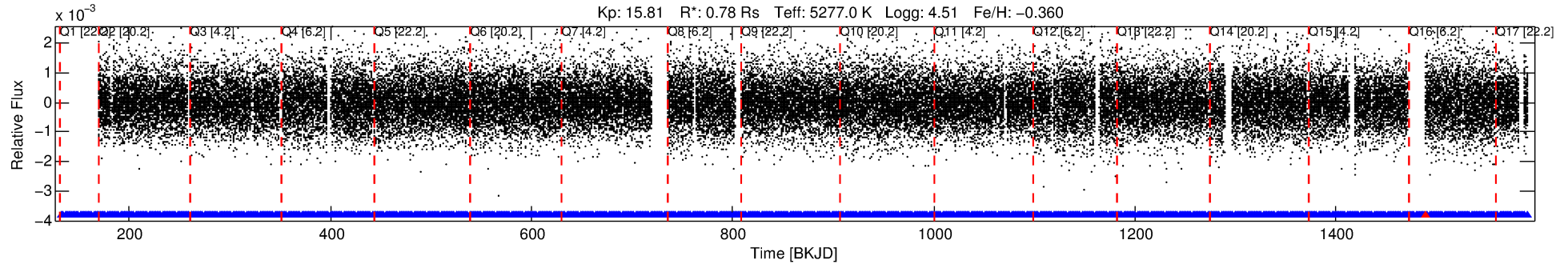
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011920468-01

No Significant Match Found

# DV One-Page Summary

KIC: 11920468 Candidate: 1 of 3 Period: 1.668 d



## DV Fit Results:

Period = 1.66832 [0.00004] d  
Epoch = 133.1307 [0.0117] BKJD  
Rp/R\* = 0.0072 [0.0099]  
a/R\* = 1.32 [3.05]  
b = 0.45 [9.80]  
Seff = 689.33 [146.32]  
Teq = 1307 [69] K  
Rp = 0.61 [0.85] Re  
a = 0.0247 [0.0029] AU  
Ag = 35.66 [99.63] [0.35 $\sigma$ ]  
Teffp = 4936 [3445] K [1.05 $\sigma$ ]

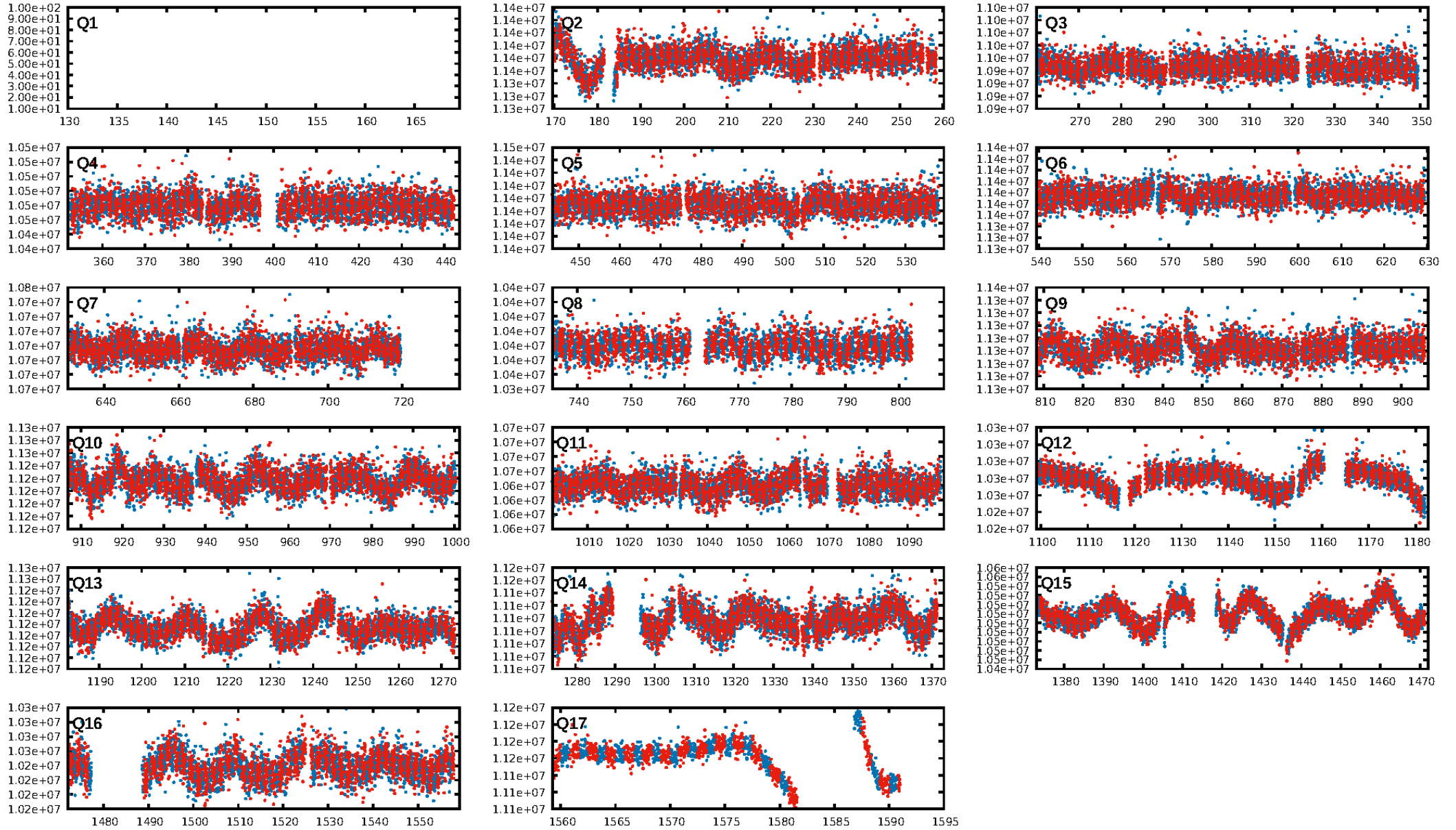
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [57.91 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 3.98e-11**  
RollingBand-fgt: 1.00 [781/782]  
GhostDiagnostic-chr: 1.342  
Centroid-sig: 70.7%  
Centroid-so: 0.960 arcsec [0.55 $\sigma$ ]  
OotOffset-rm: 1.146 arcsec [2.54 $\sigma$ ]  
KicOffset-rm: 1.152 arcsec [2.65 $\sigma$ ]  
OotOffset-st: 4/4/4 [16]  
KicOffset-st: 4/4/4 [16]  
DiffImageQuality-fgm: 0.06 [1/16]  
DiffImageOverlap-fno: 1.00 [16/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:28:27 Z

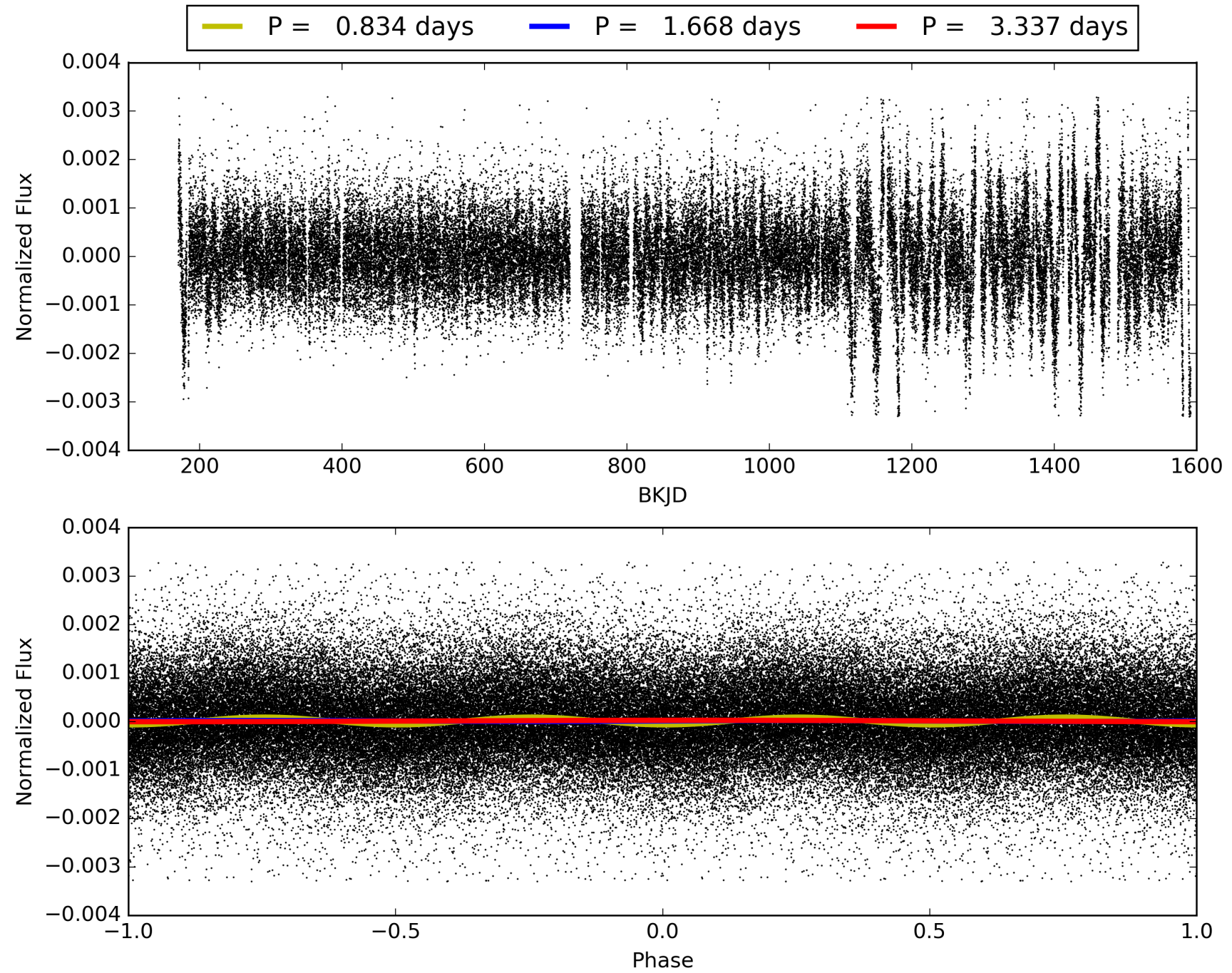
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011920468-01, PDC Light Curves





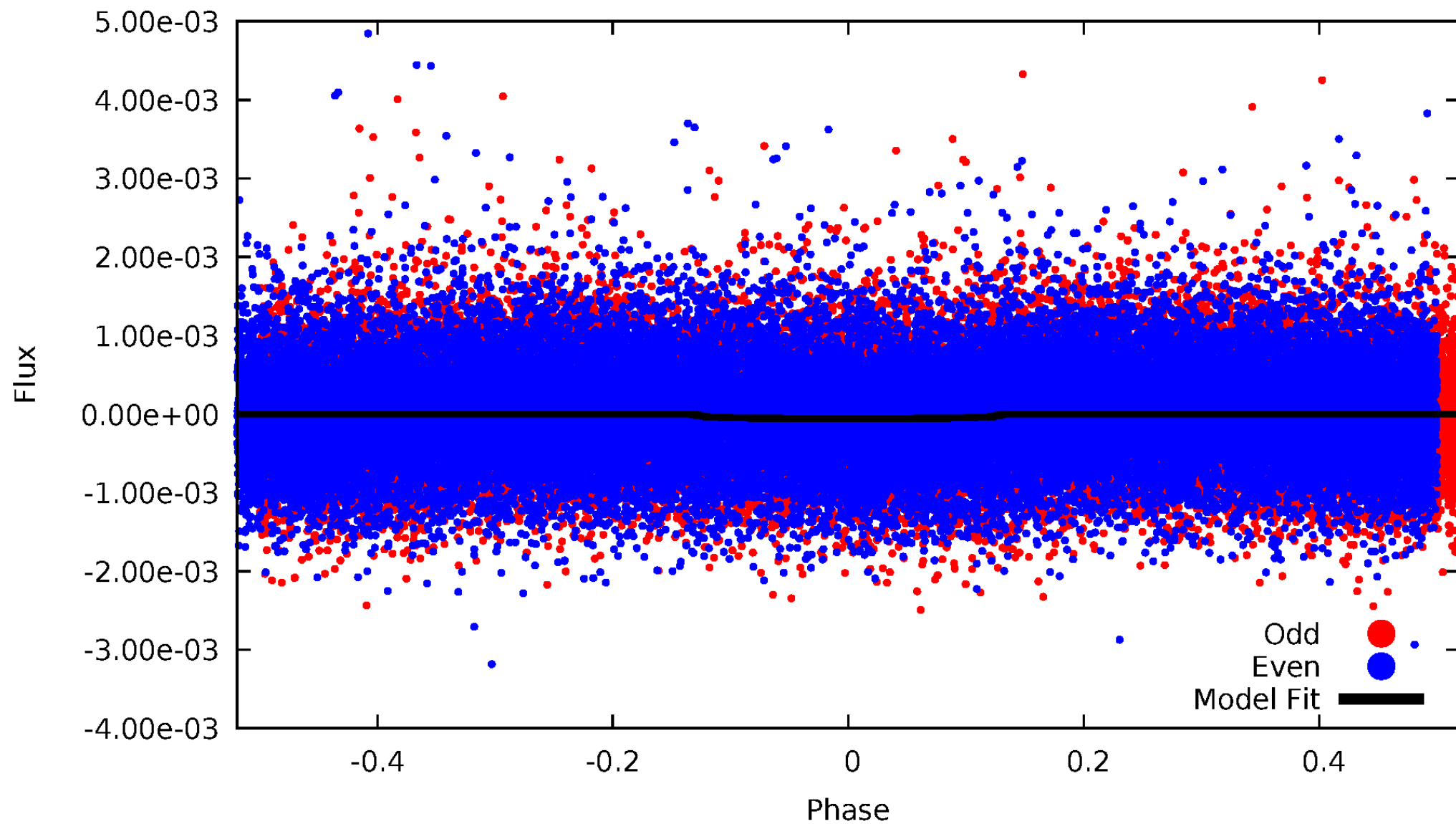
TCE 011920468-01





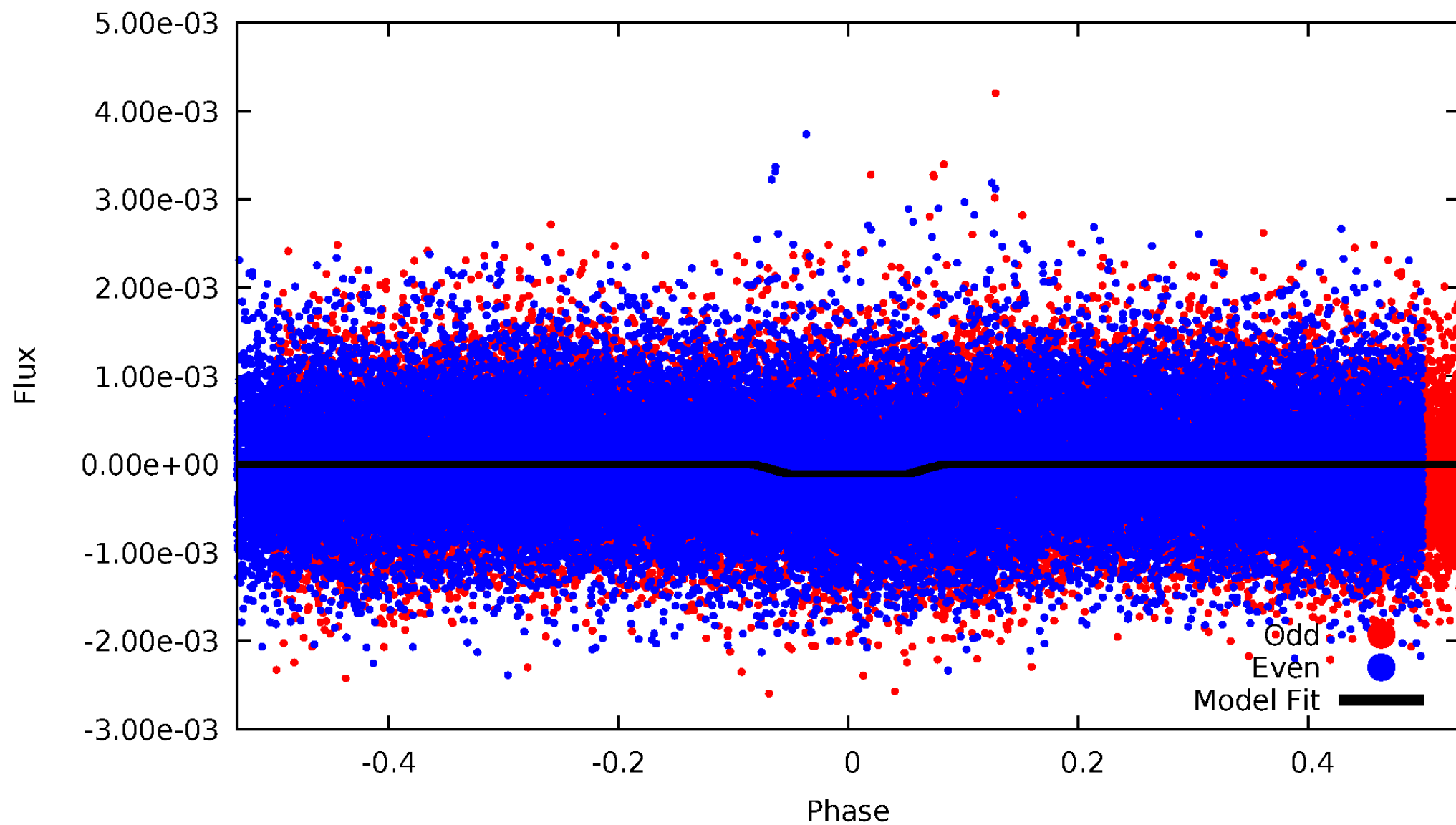
# DV Odd/Even

TCE 011920468-01



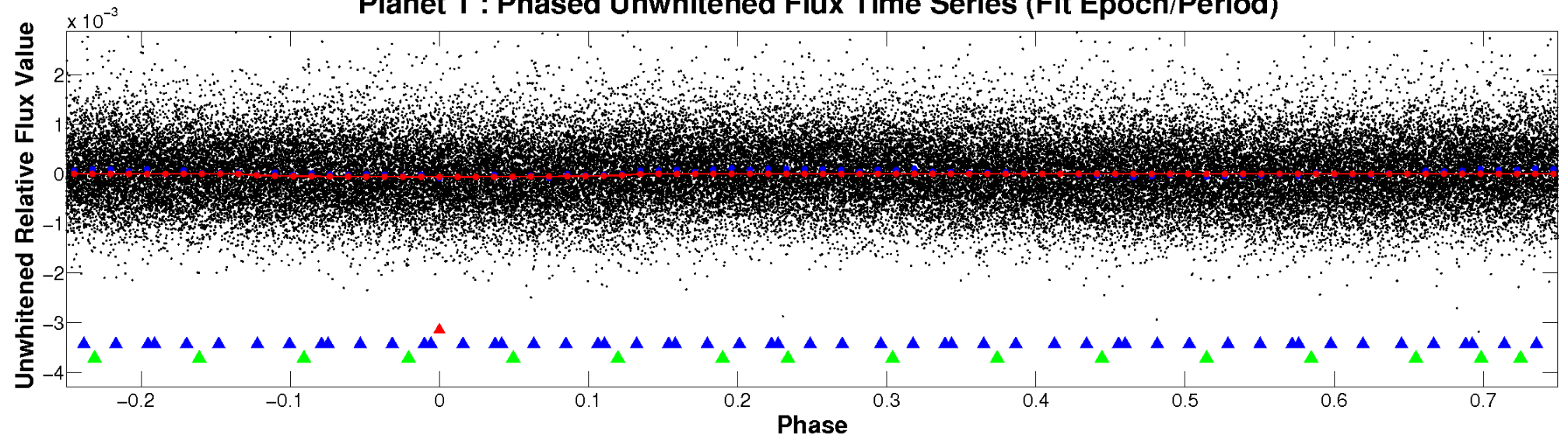
# ALT Odd/Even

TCE 011920468-01

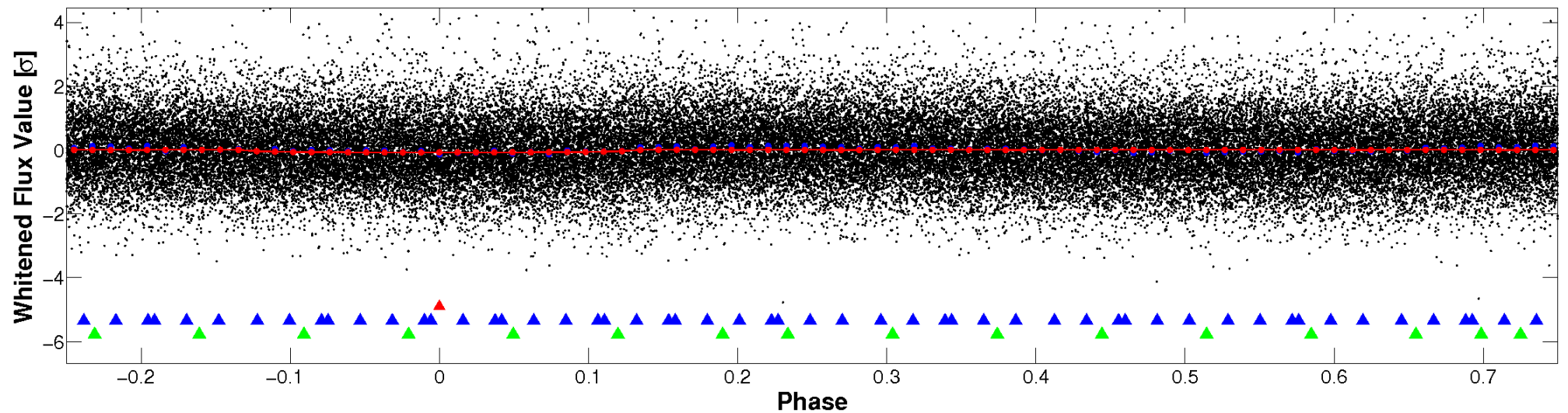


# Non-Whitened Vs. Whitened Light Curve

## Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



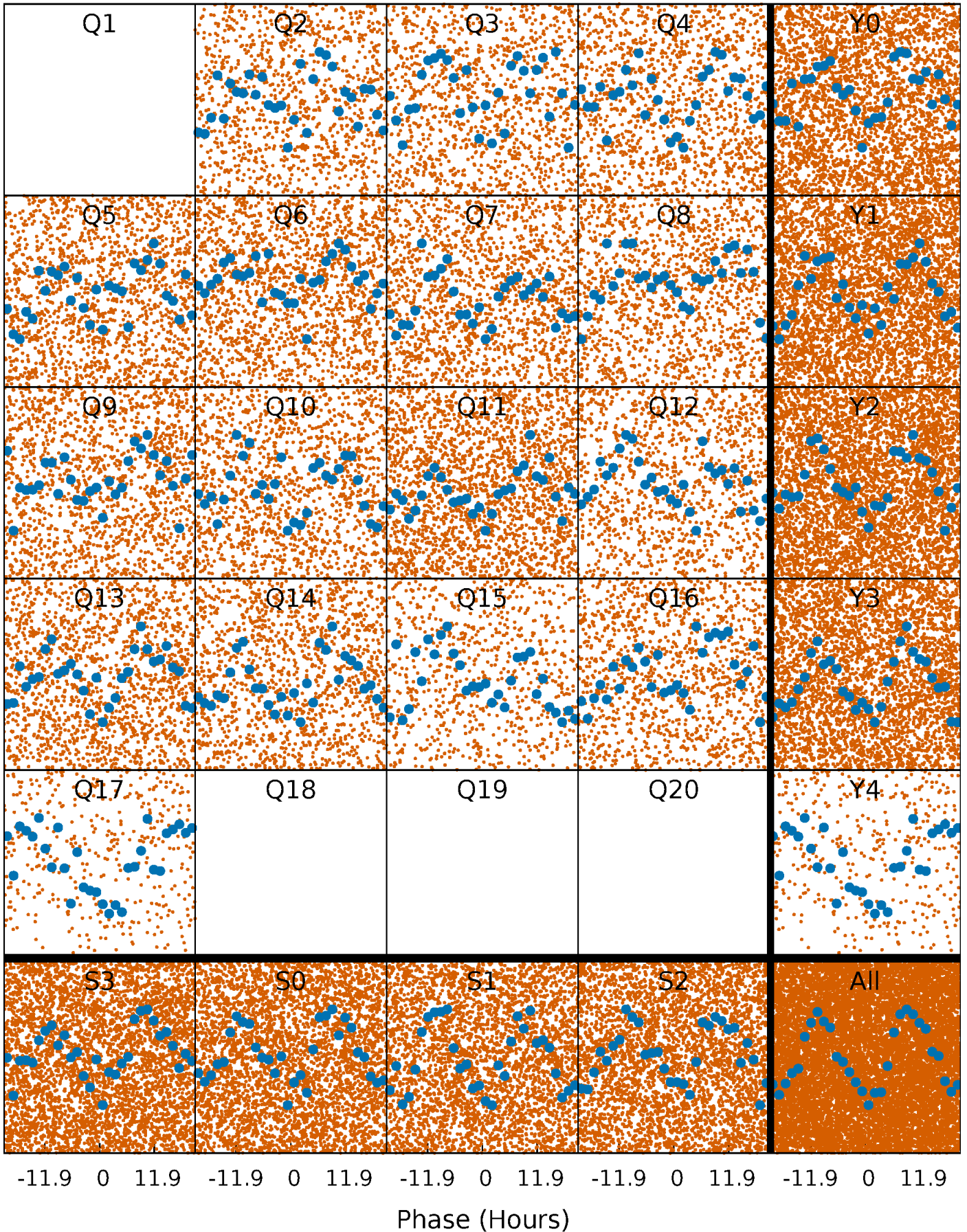
## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

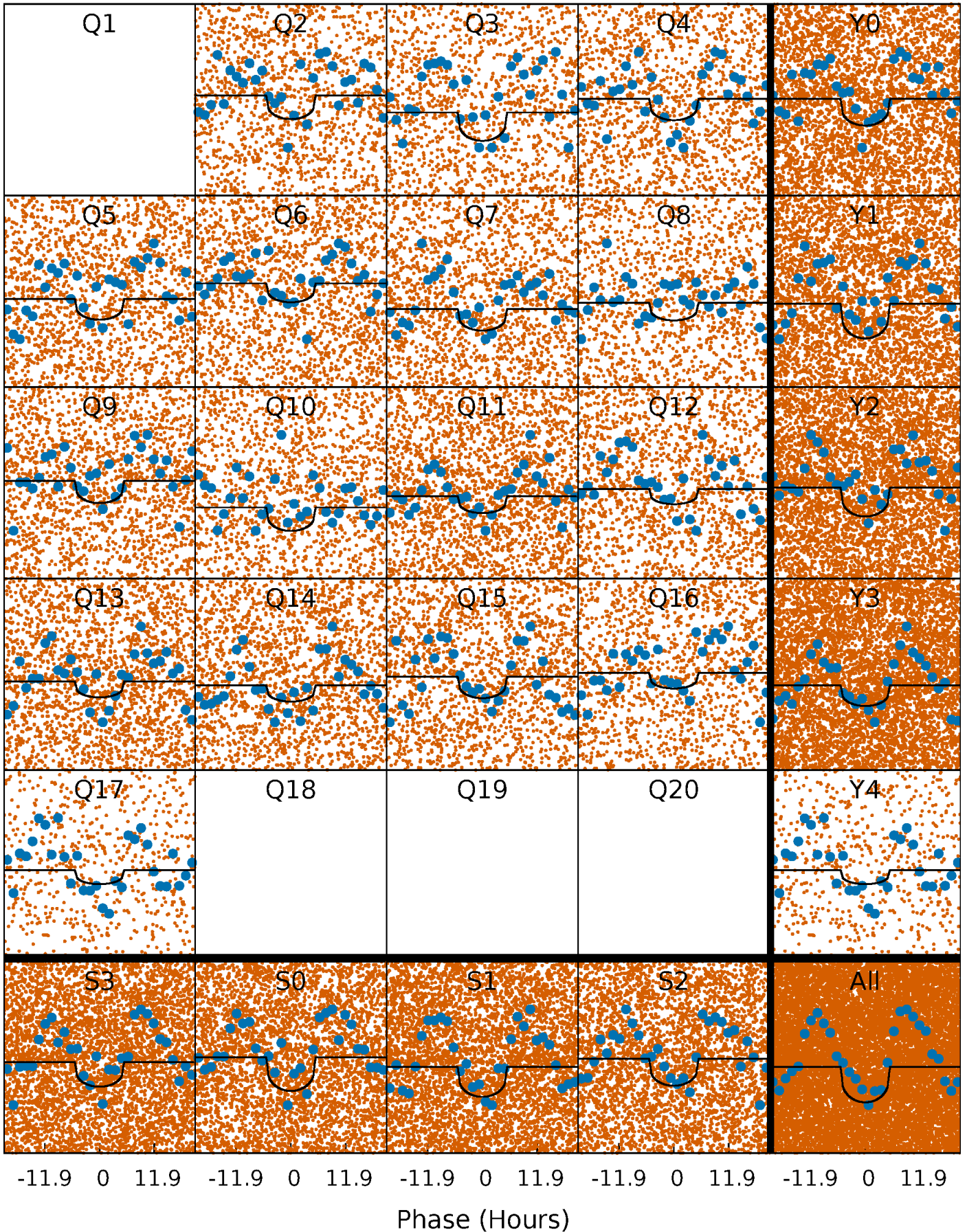
TCE 011920468-01 P= 1.668321 Days  $T_0=133.130670$  (BKJD)





# DV Quarter-Phased Transit Curves

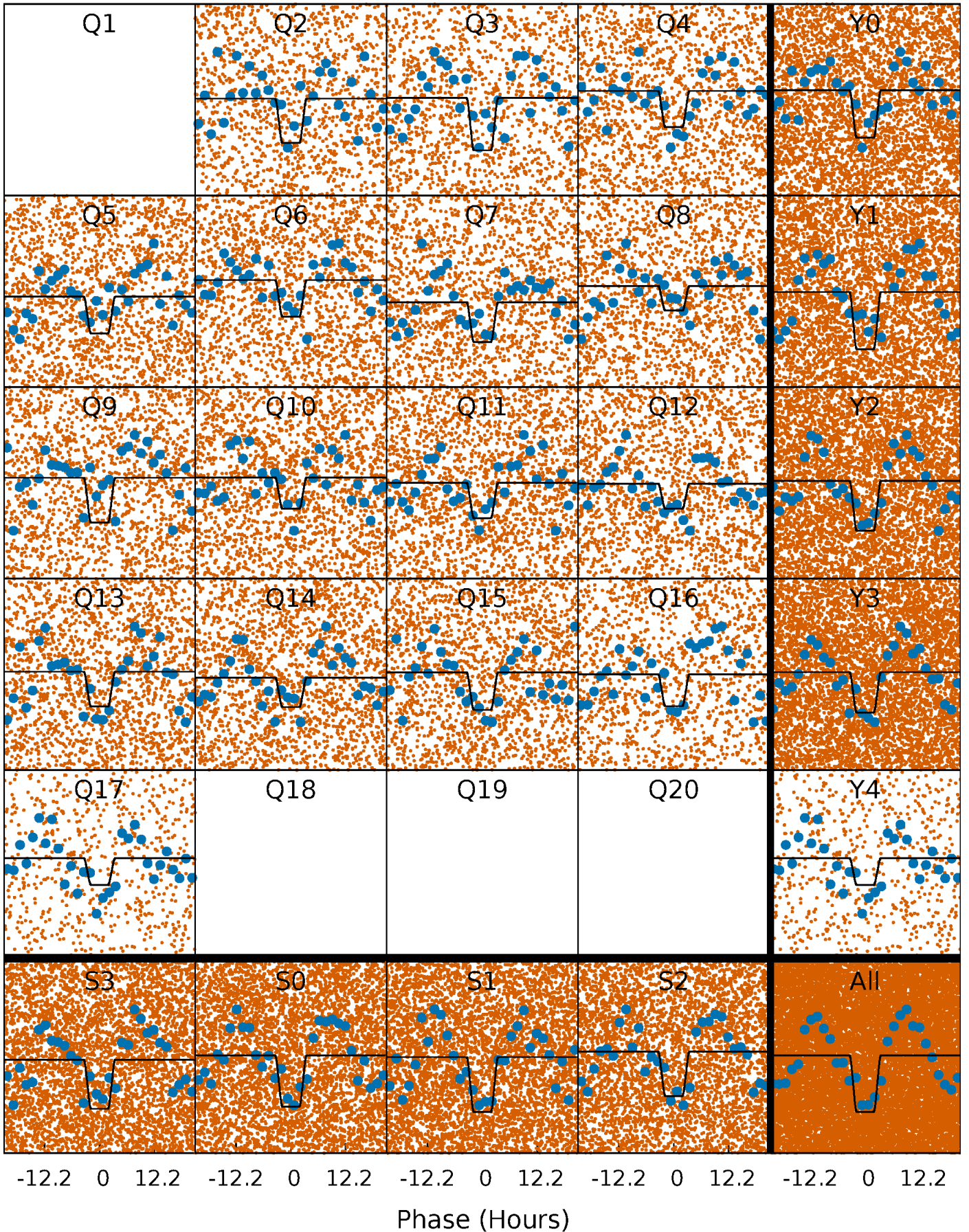
TCE 011920468-01 P= 1.668321 Days  $T_0=133.130670$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011920468-01 P= 1.668382 Days  $T_0=133.127643$  (BKJD)

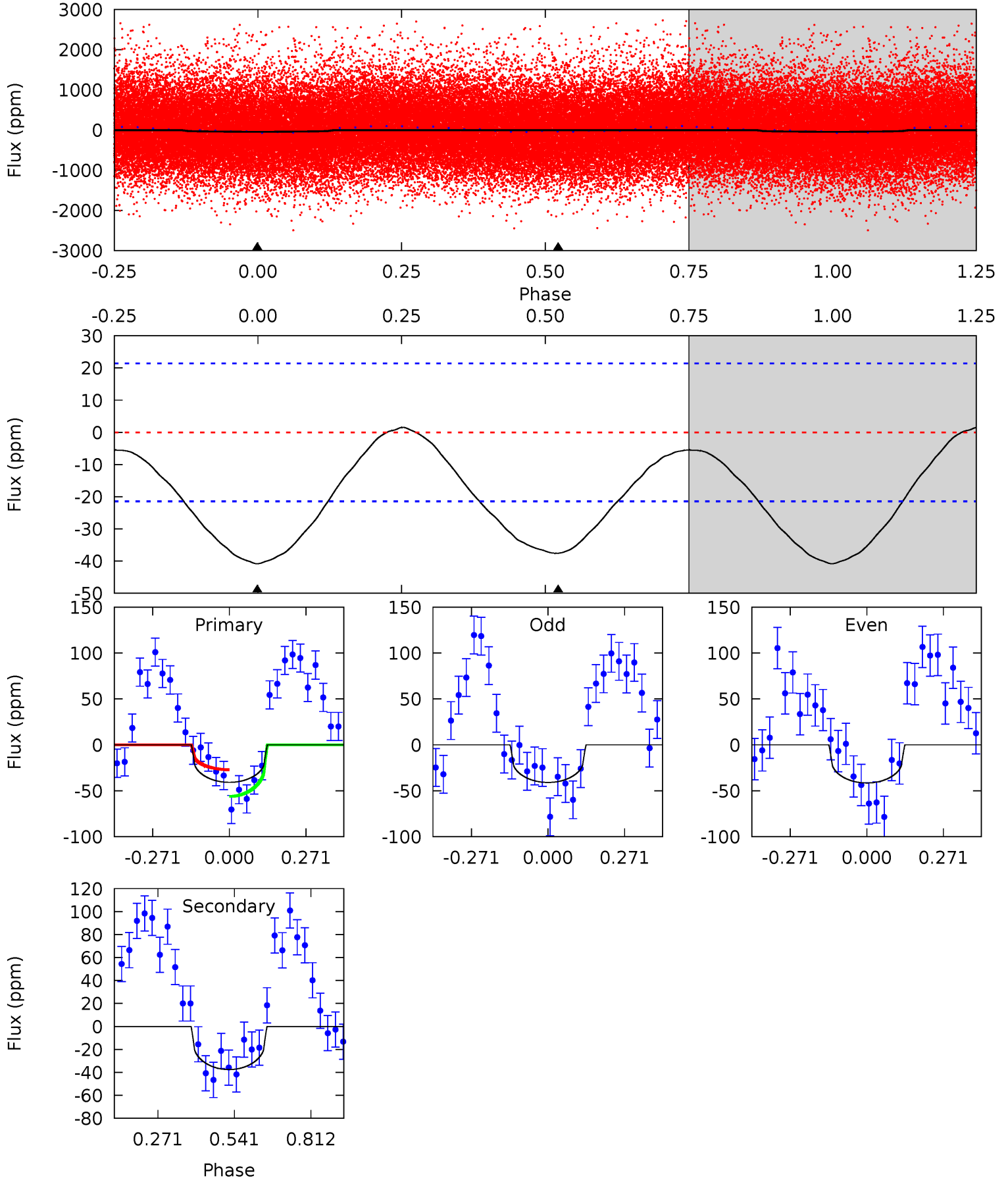




# DV Model-Shift Uniqueness Test

011920468-01, P = 1.668321 Days, E = 133.130670 Days

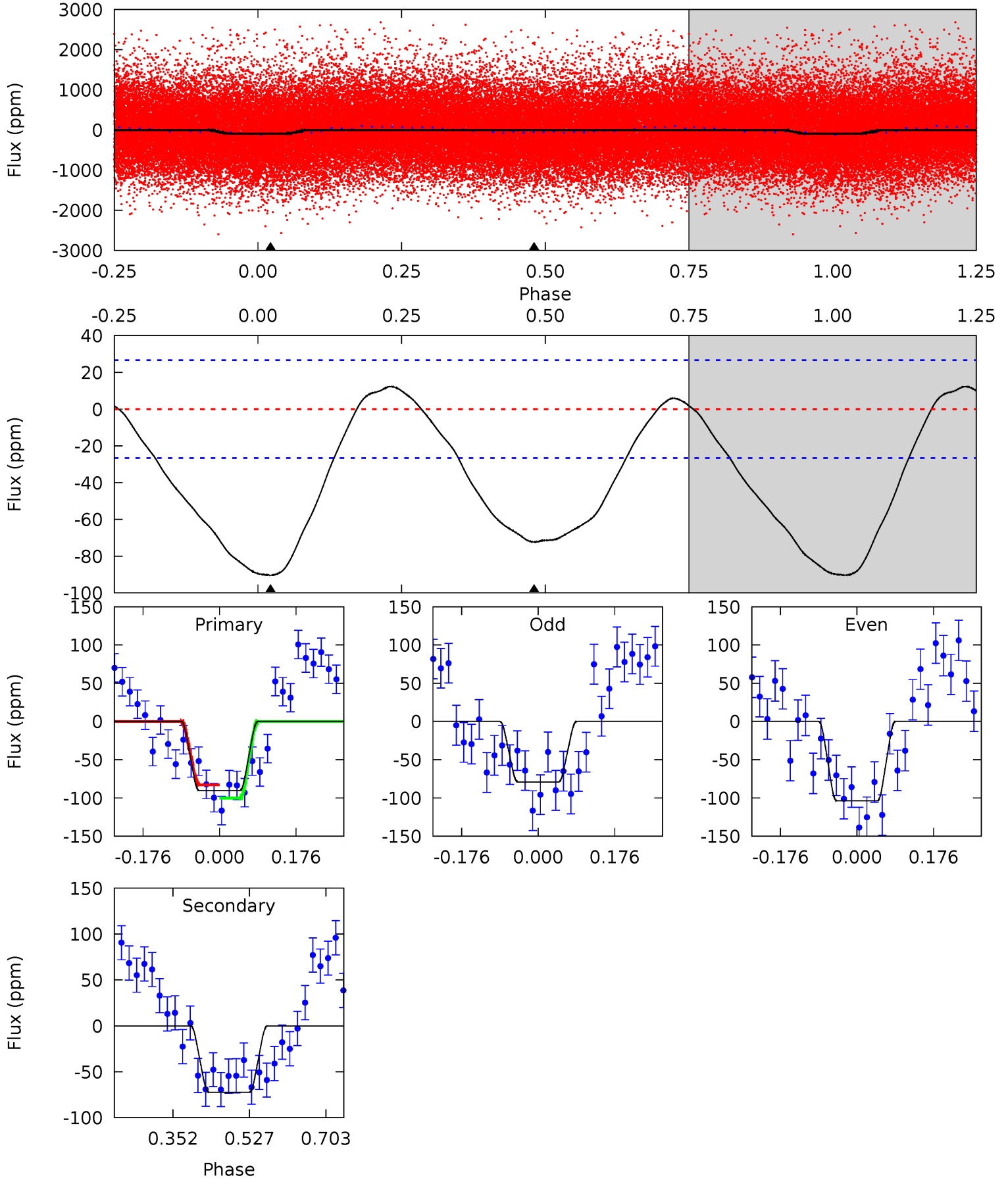
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.29	7.62	0	0	4.35	1.10	0.56	8.29	8.29	7.62	7.62	0.06	0.85	0.04	2.93



# Alt Model-Shift Uniqueness Test

011920468-01, P = 1.668382 Days, E = 133.127643 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.1	12.1	0	0	4.45	1.35	2.18	15.1	15.1	12.1	12.1	2.05	0.99	0.12	1.44



### Stellar Parameters For KIC 011920468

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5277^{+158}_{-158}$	$4.515^{+0.099}_{-0.081}$	$-0.360^{+0.350}_{-0.300}$	$0.779^{+0.092}_{-0.102}$	$0.725^{+0.107}_{-0.046}$	$2.161^{+0.865}_{-0.566}$
	+3%/-3%	+2%/-2%	+97%/-83%	+12%/-13%	+15%/-6%	+40%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011920468-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-38 \pm 5$	$0.91^{+0.70}_{-0.57}$	$1826^{+77}_{-88}$	$4183^{+2573}_{-773}$	$16^{+106}_{-11}$
Alt.	$-72 \pm 6$	$1.04^{+0.77}_{-0.65}$	$1826^{+77}_{-86}$	$4551^{+2694}_{-875}$	$22^{+144}_{-15}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$



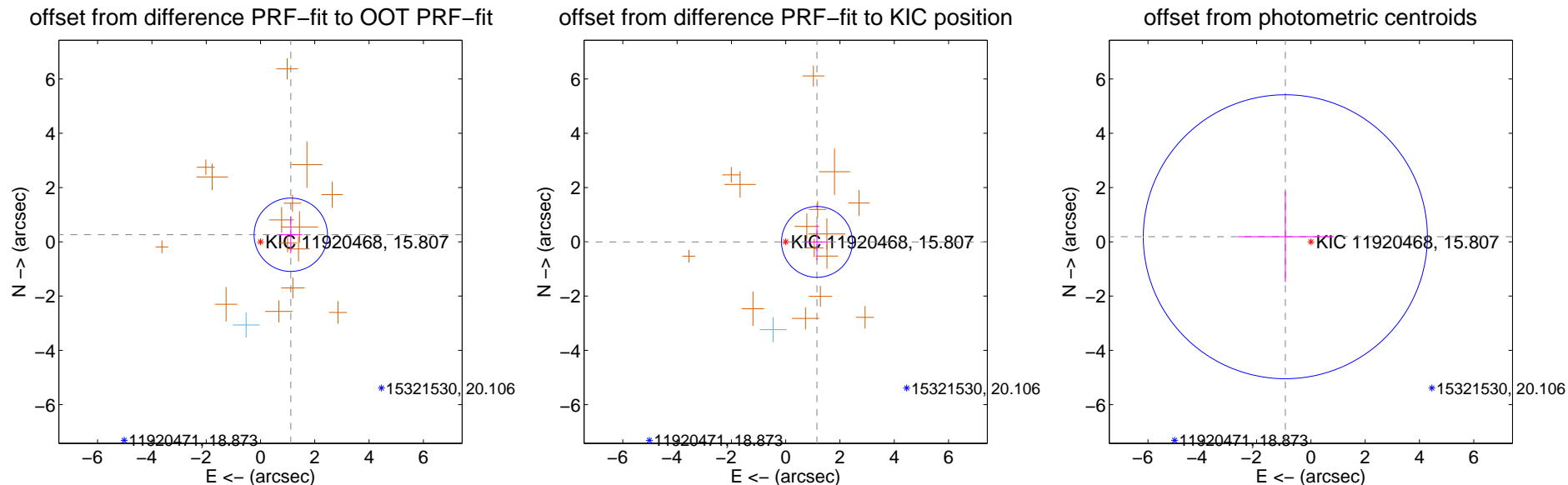
## DV Centroid Data

Supplemental centroid analysis for 011920468-01. Kepler magnitude: 15.81. Transit SNR 8.14

There are 1 quarters with good PRF difference image offsets

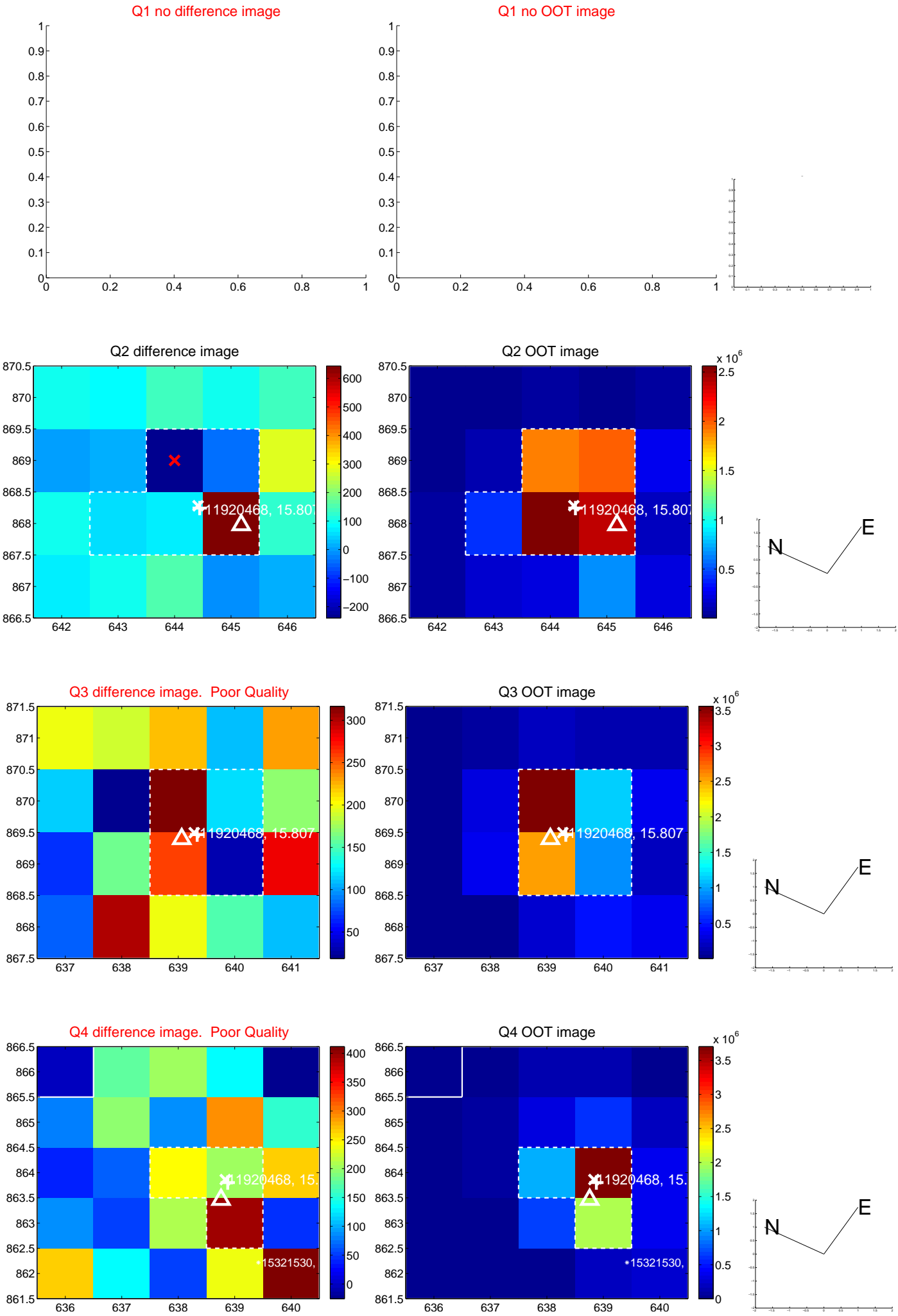
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.146 \pm 0.451$	2.54	$-1.116 \pm 0.426$	$0.260 \pm 0.685$
PRF-fit source offset from KIC position	$1.152 \pm 0.435$	2.65	$-1.152 \pm 0.435$	$-0.004 \pm 0.664$
photometric centroid source offset	$0.96 \pm 1.74$	0.55	$0.94 \pm 1.75$	$0.19 \pm 1.67$

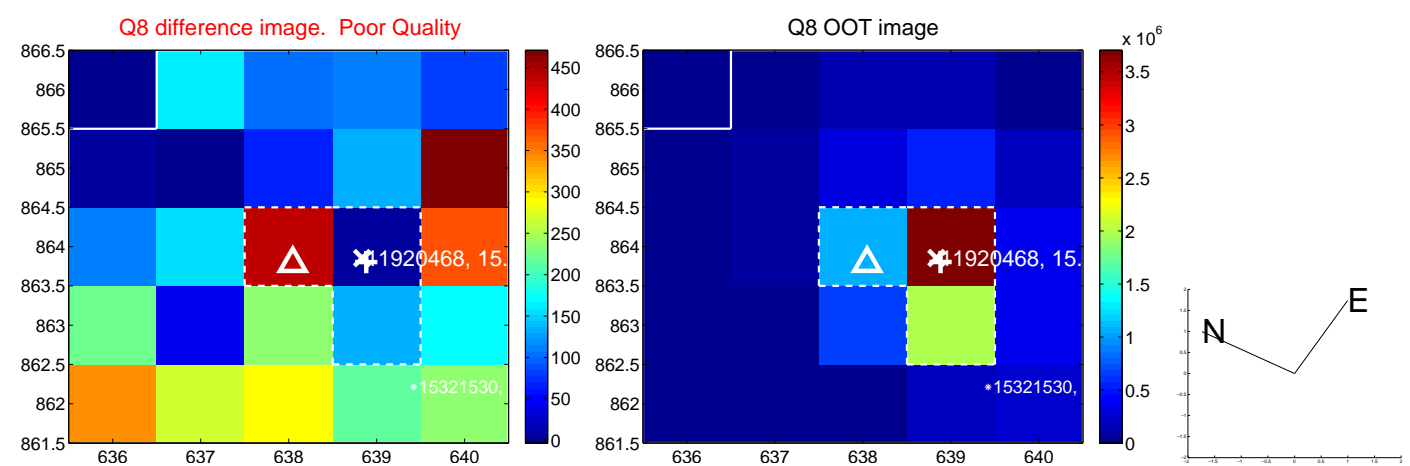
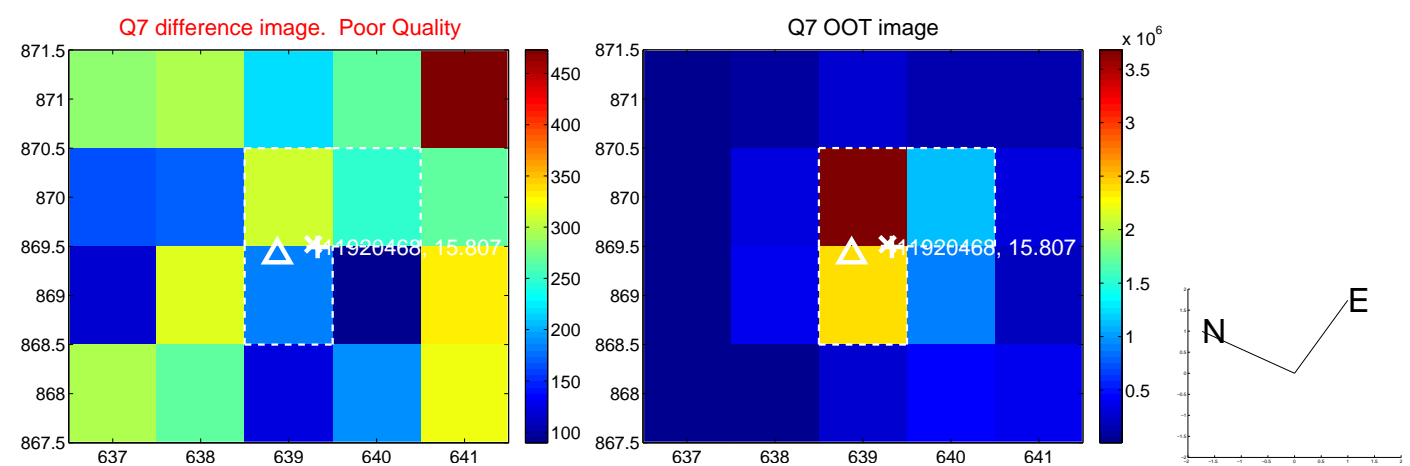
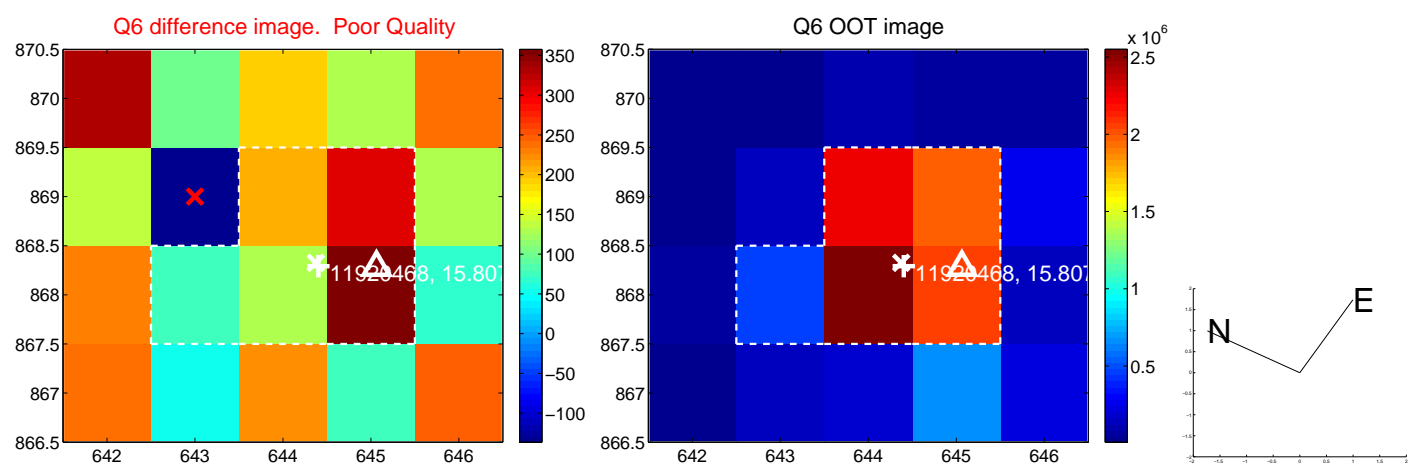
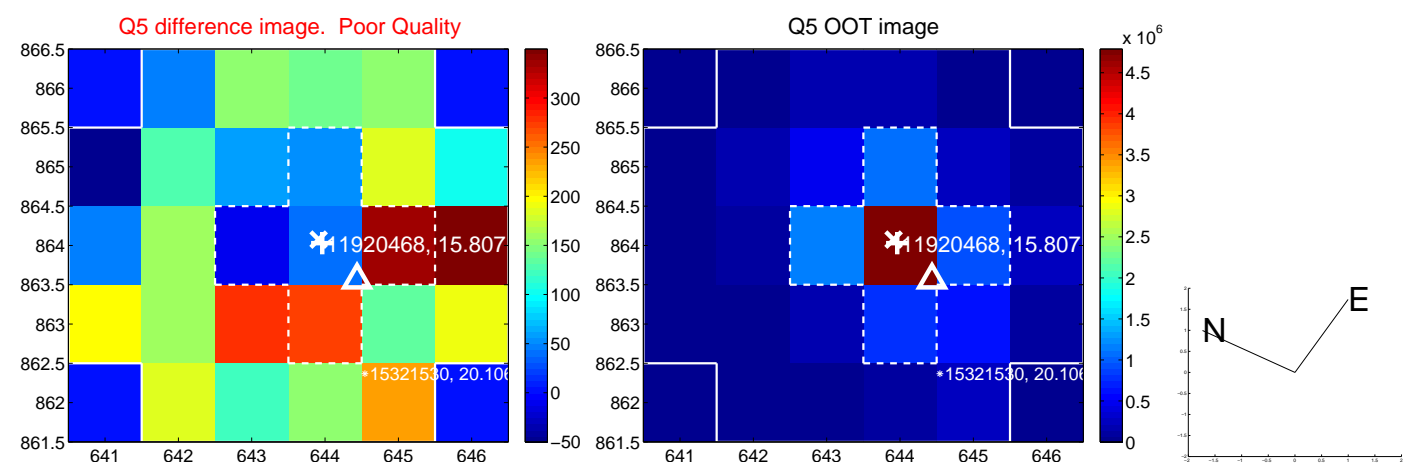


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

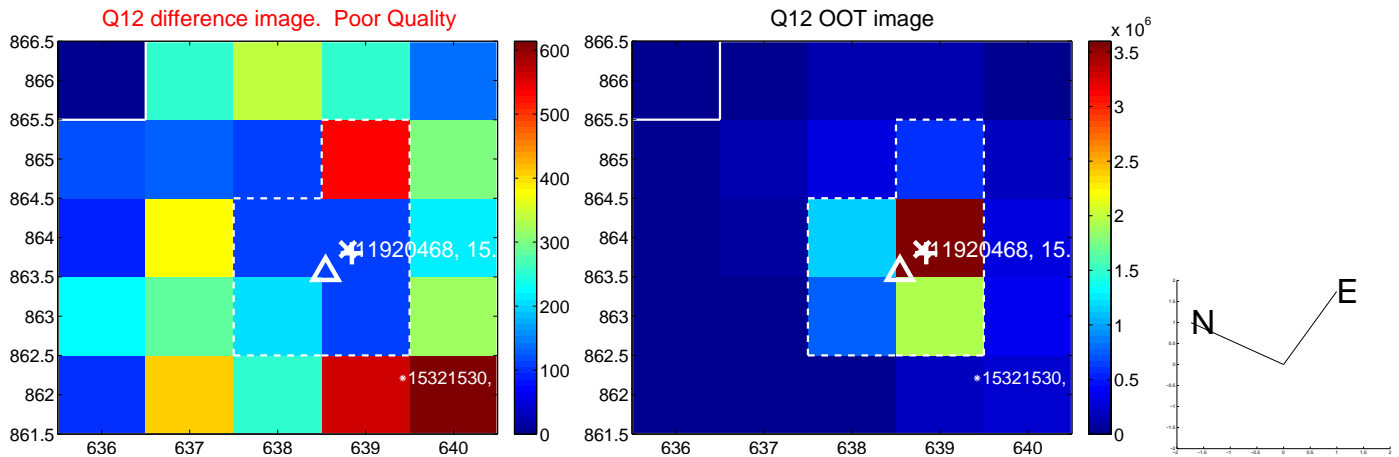
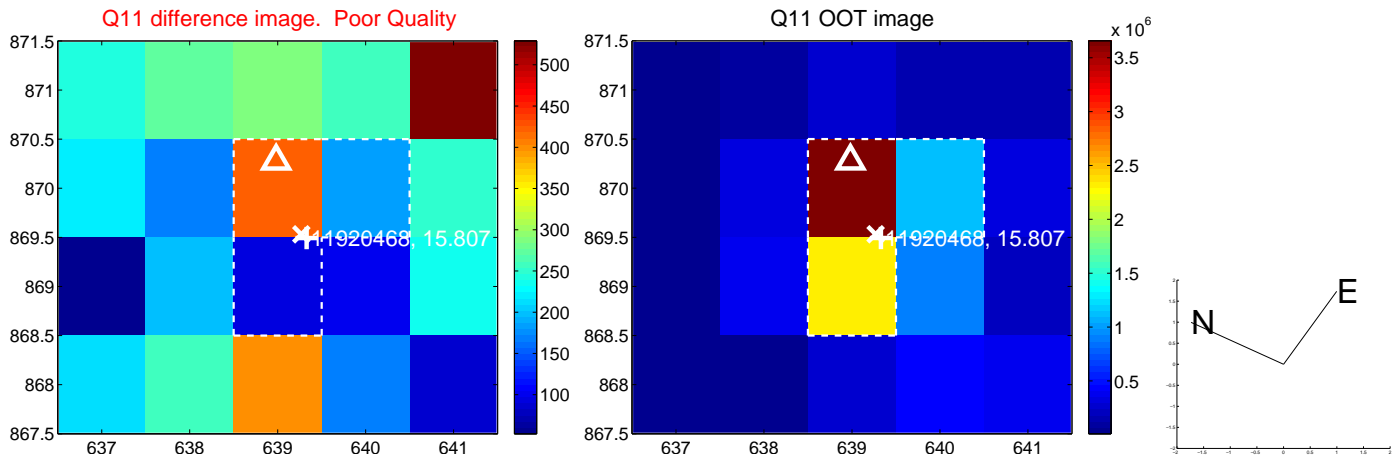
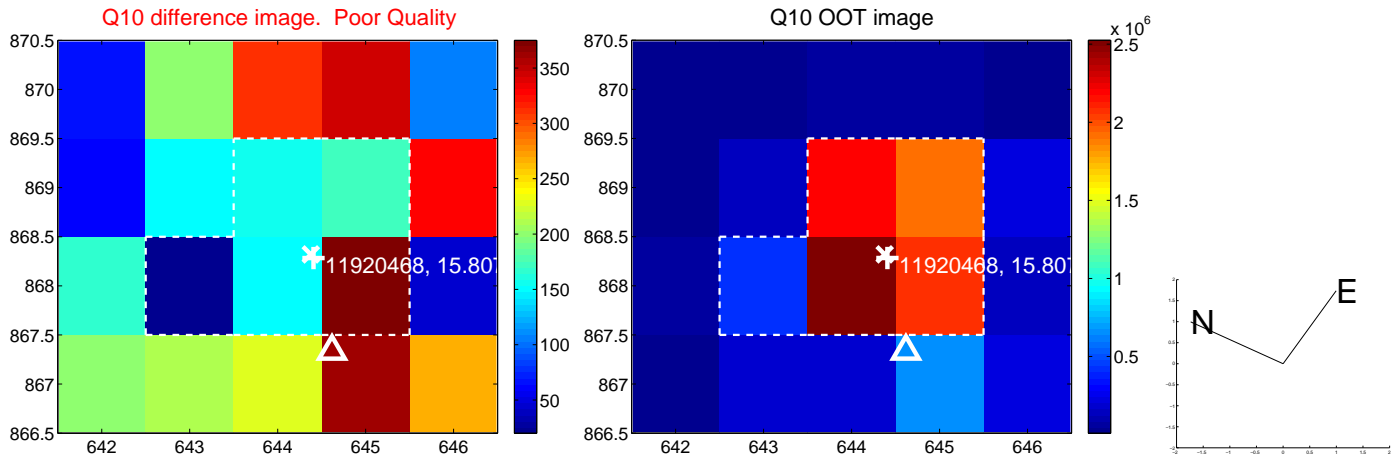
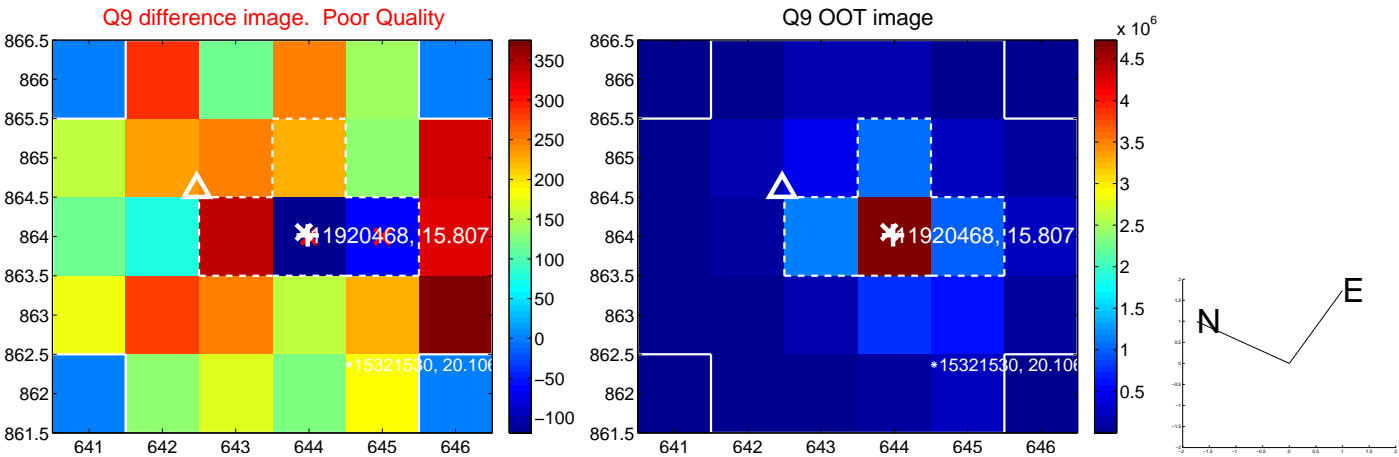


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

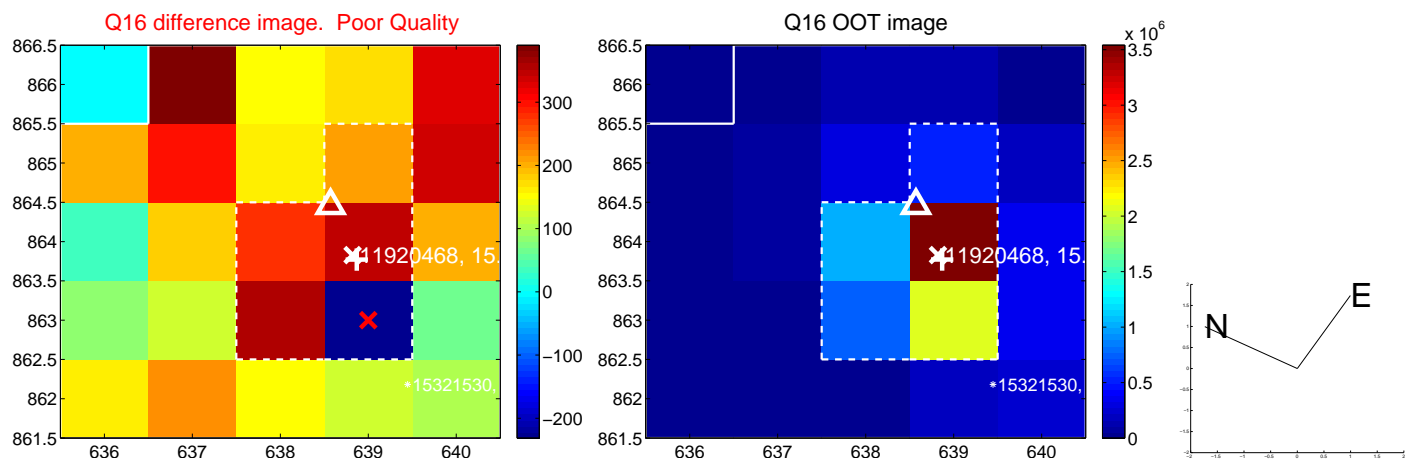
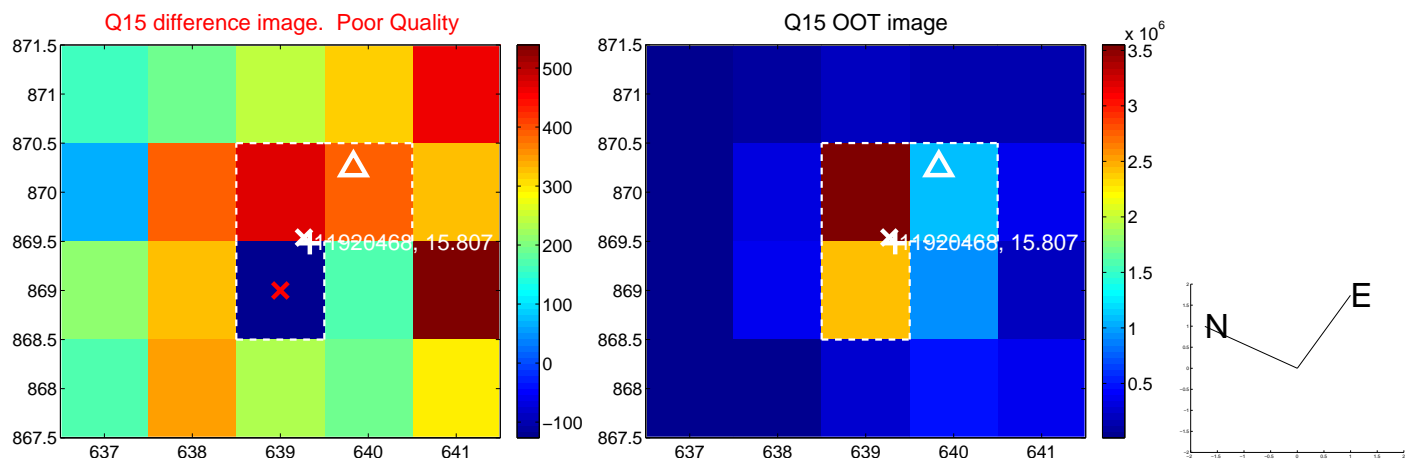
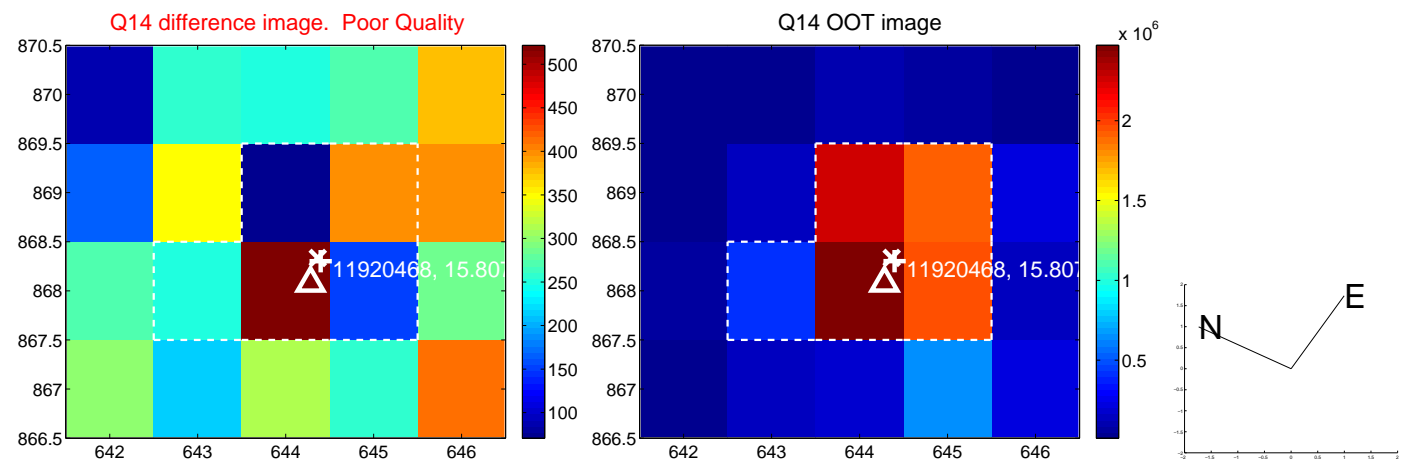
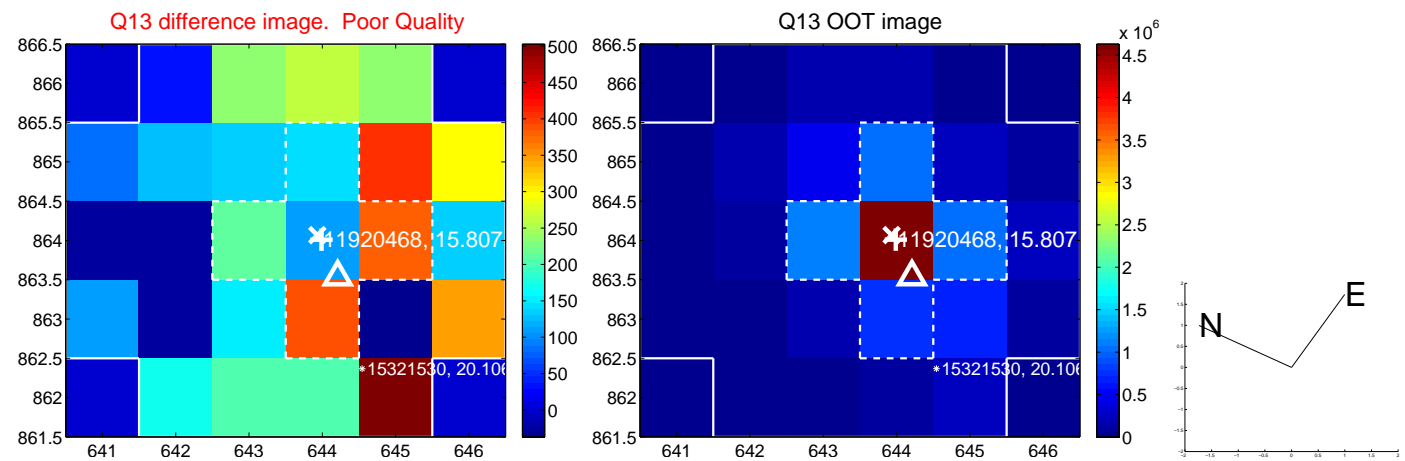




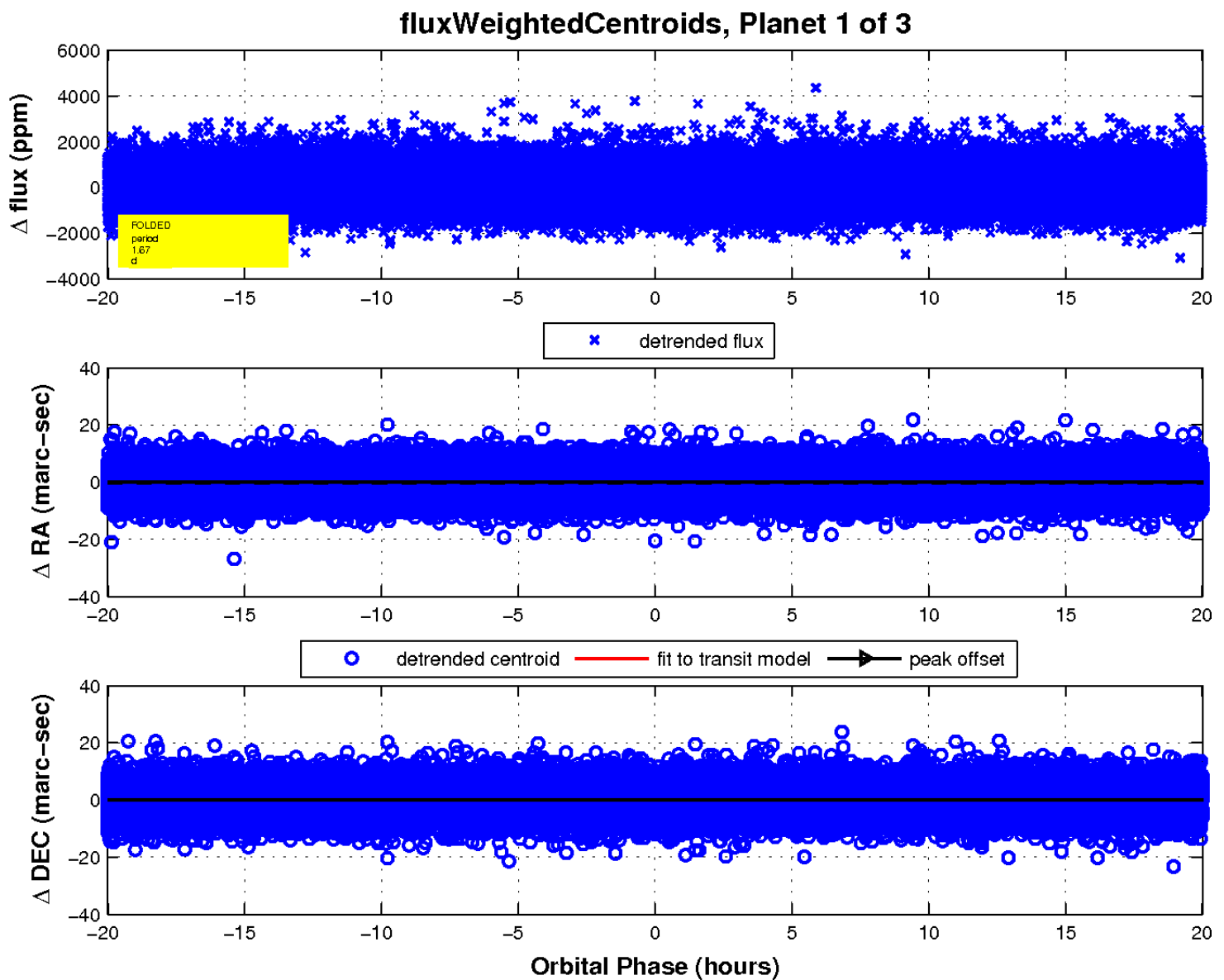
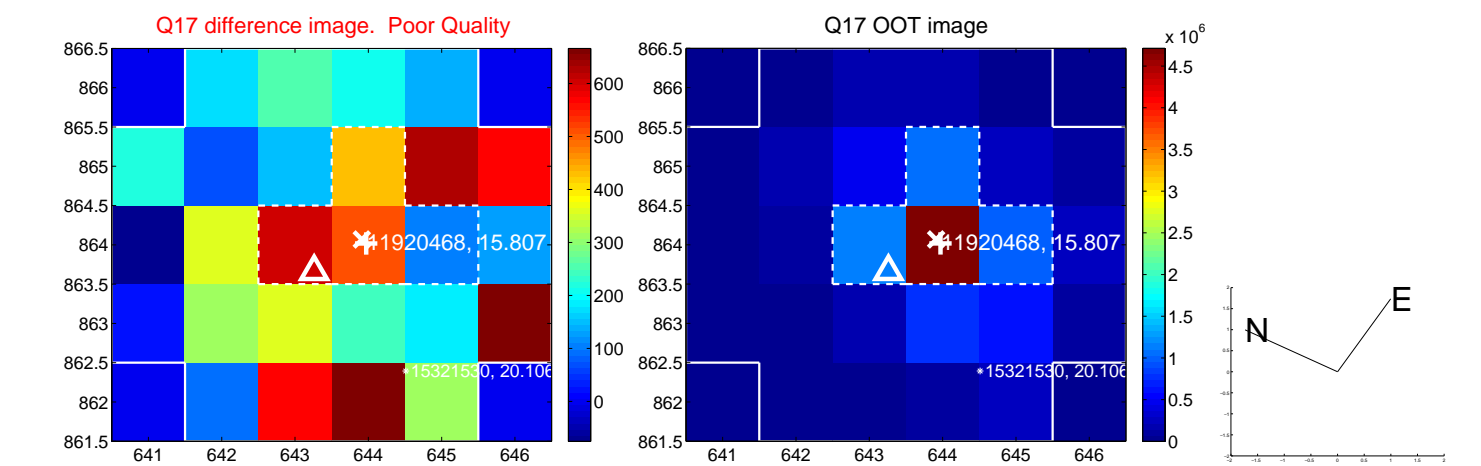
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

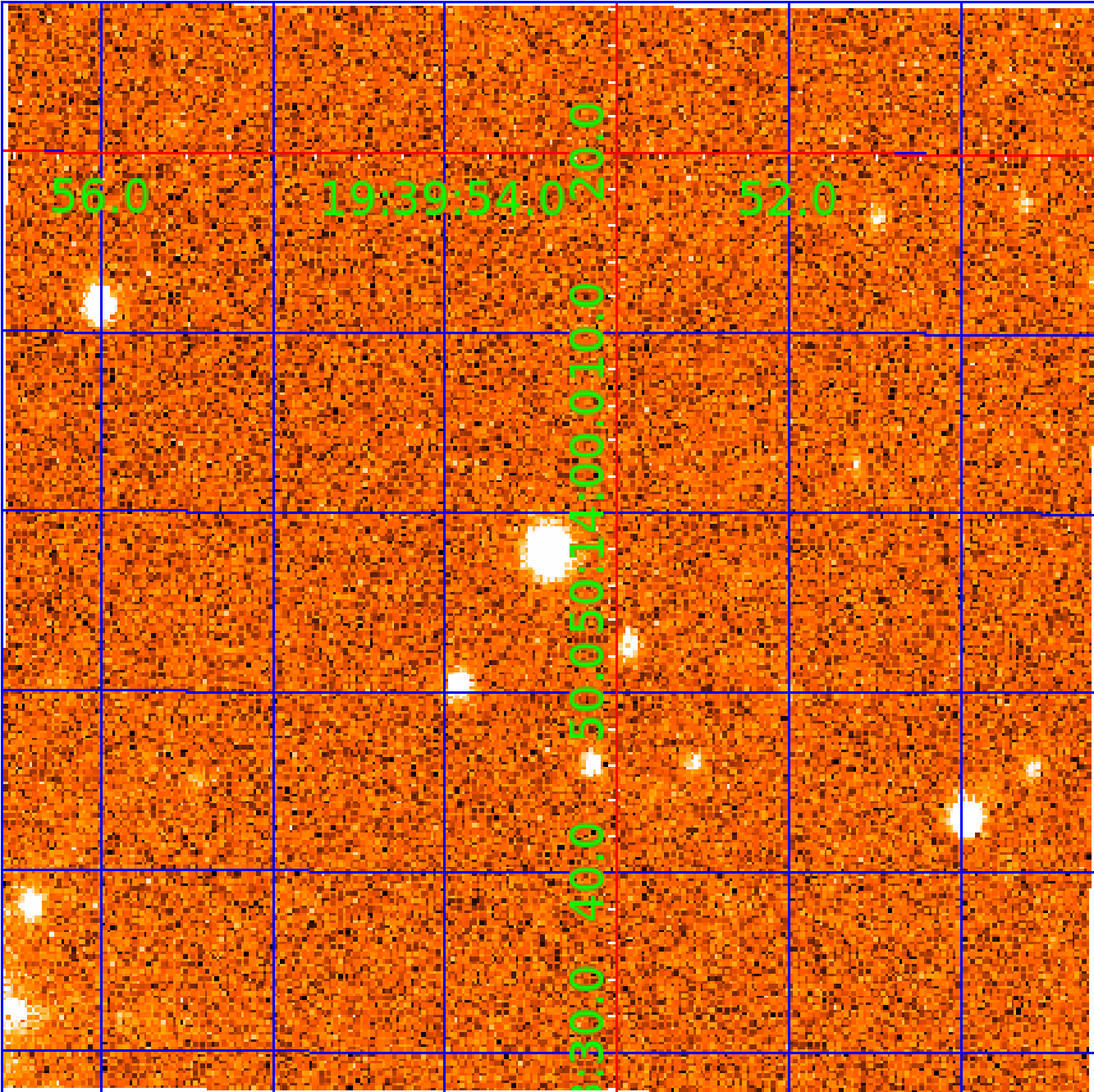


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011920468

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011920468-01	OBS	No	1.668321	133.130670	60.0	10.391	7.3	8.1	0.78	5277	0.61	689.33
011920468-02	OBS	No	26.887297	151.465463	1093.5	1.115	8.2	8.5	0.78	5277	2.79	16.93
011920468-03	OBS	No	89.196625	217.756302	1507.9	1.982	8.5	8.8	0.78	5277	3.35	3.42

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011920468-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011920468-02	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
011920468-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

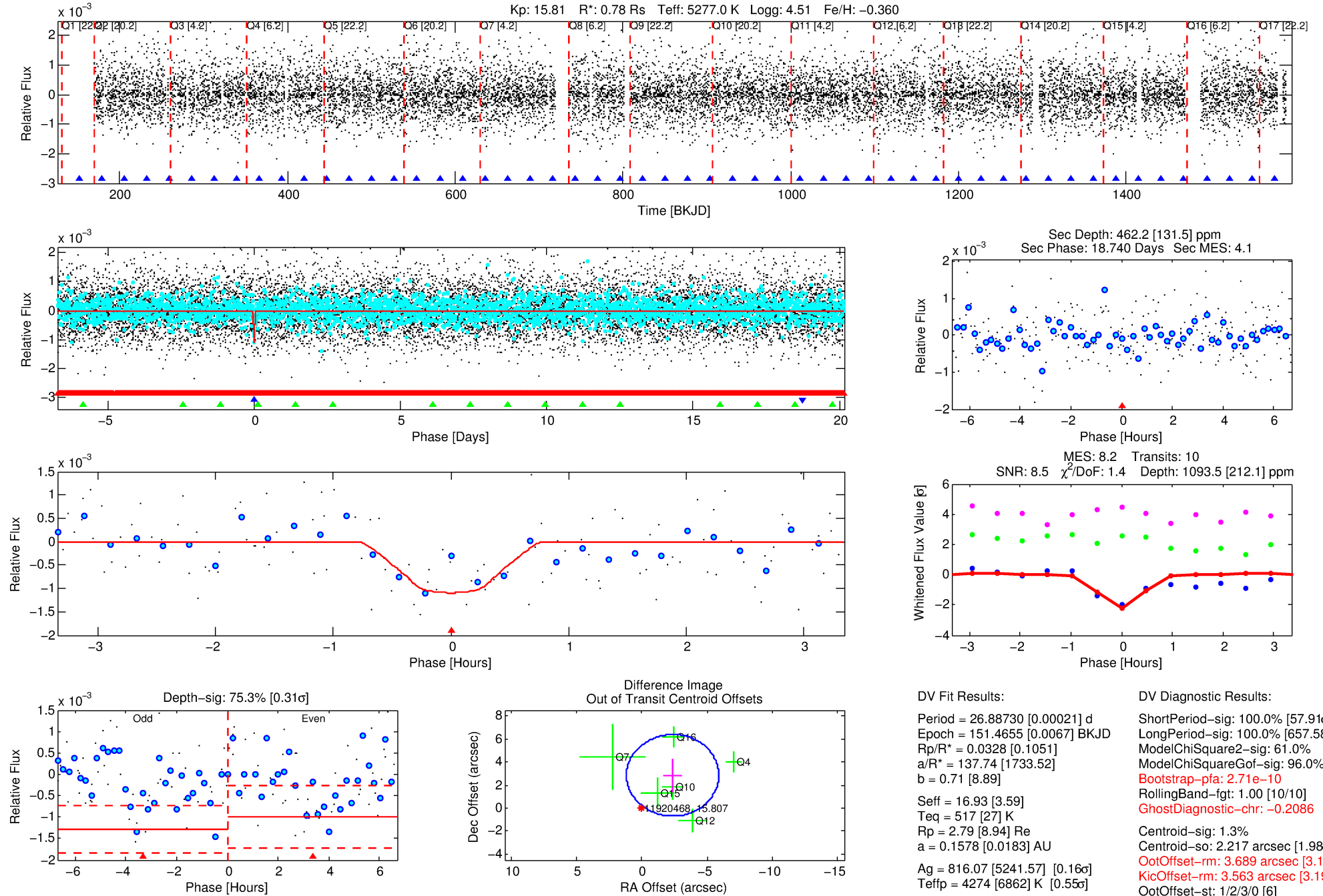
## Ephemeris Match Information For 011920468-02

No Significant Match Found



# DV One-Page Summary

KIC: 11920468 Candidate: 2 of 3 Period: 26.887 d



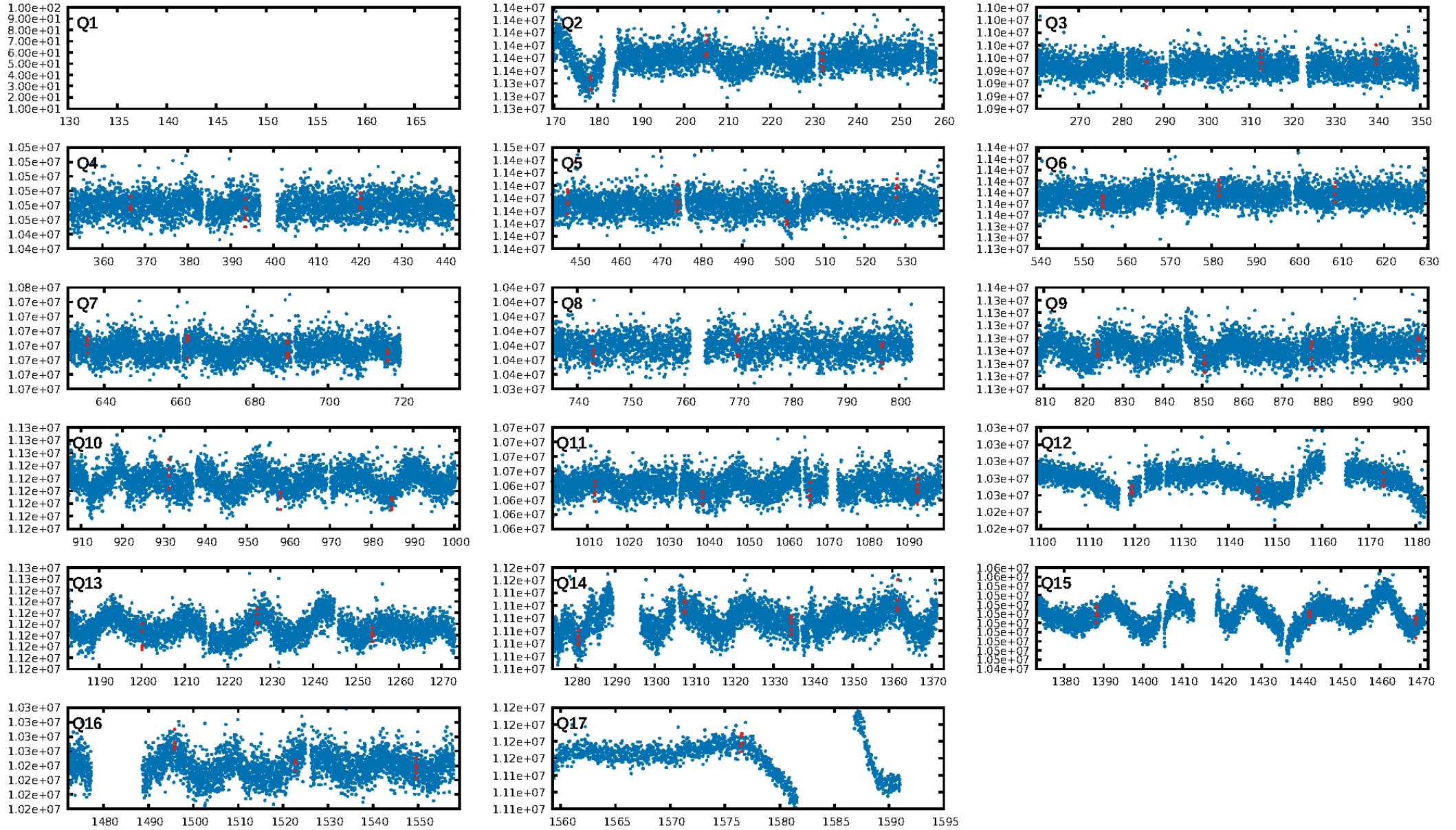
## DV Fit Results:

Period = 26.88730 [0.00021] d  
Epoch = 151.4655 [0.0067] BKJD  
Rp/R\* = 0.0328 [0.1051]  
a/R\* = 137.74 [1733.52]  
b = 0.71 [8.89]  
Seff = 16.93 [3.59]  
Teff = 517 [27] K  
Rp = 2.79 [8.94] Re  
a = 0.1578 [0.0183] AU  
Ag = 816.07 [5241.57] [0.16 $\sigma$ ]  
Teffp = 4274 [6862] K [0.55 $\sigma$ ]

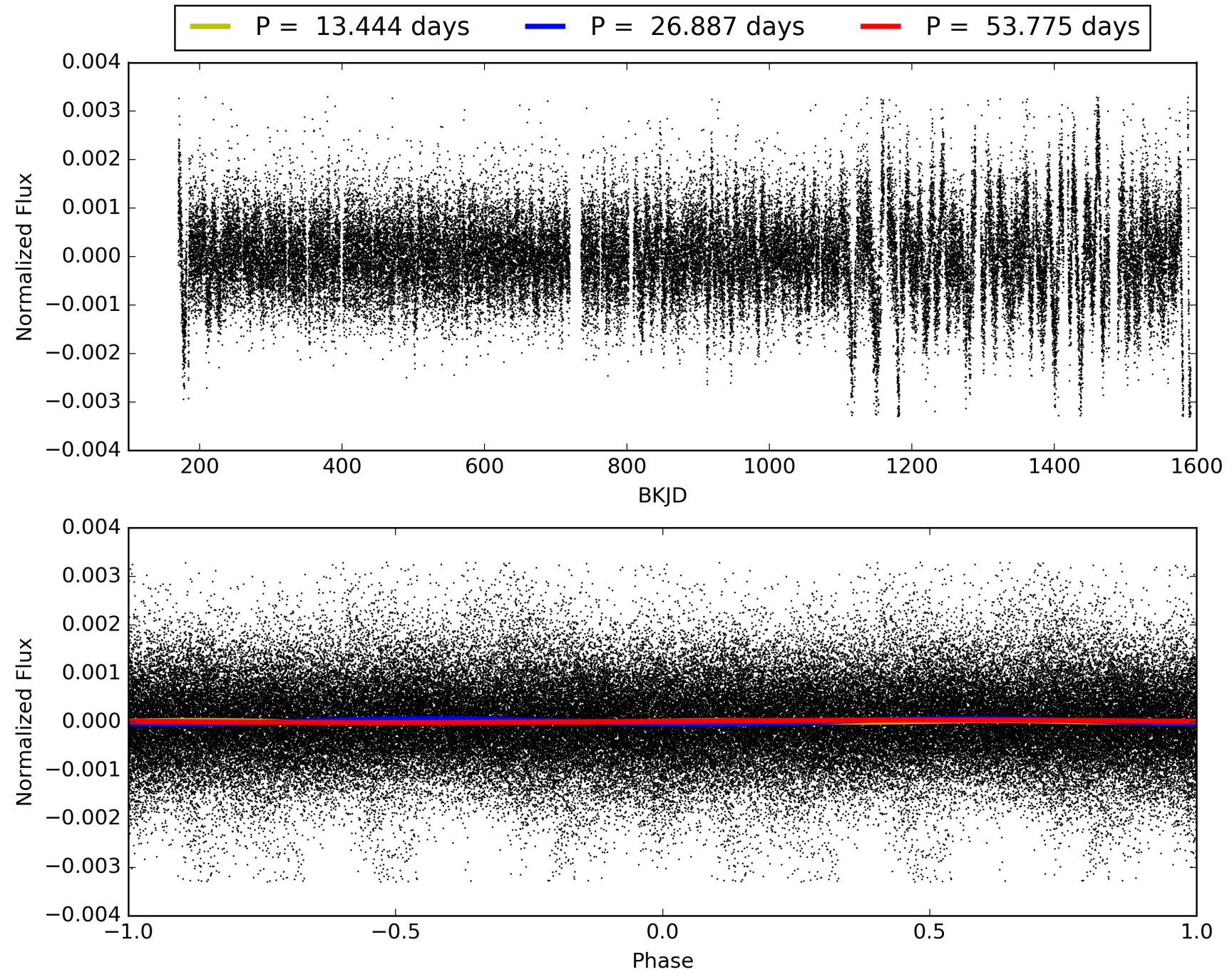
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [57.91 $\sigma$ ]  
LongPeriod-sig: 100.0% [657.58 $\sigma$ ]  
ModelChiSquare2-sig: 61.0%  
ModelChiSquareGof-sig: 96.0%  
**Bootstrap-pfa: 2.71e-10**  
RollingBand-fgt: 1.00 [10/10]  
**GhostDiagnostic-chr: -0.2086**  
Centroid-sig: 1.3%  
Centroid-so: 2.217 arcsec [1.98 $\sigma$ ]  
**OotOffset-rm: 3.689 arcsec [3.13 $\sigma$ ]**  
**KicOffset-rm: 3.563 arcsec [3.19 $\sigma$ ]**  
OotOffset-st: 1/2/3/0 [6]  
KicOffset-st: 1/2/3/0 [6]  
DiffImageQuality-fgm: 0.00 [0/6]  
DiffImageOverlap-fno: 0.56 [9/16]

# TCE 011920468-02, PDC Light Curves

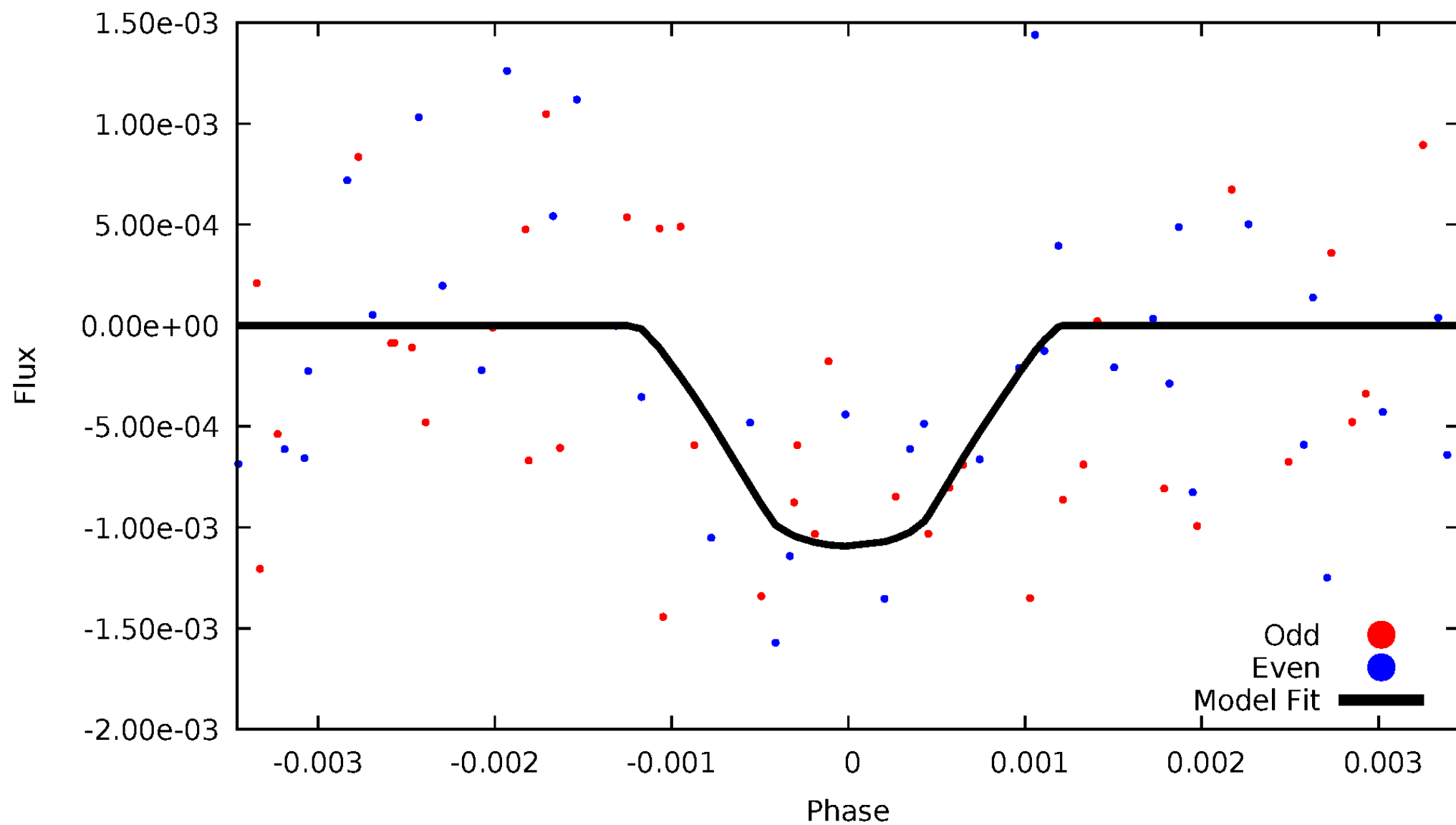


# TCE 011920468-02



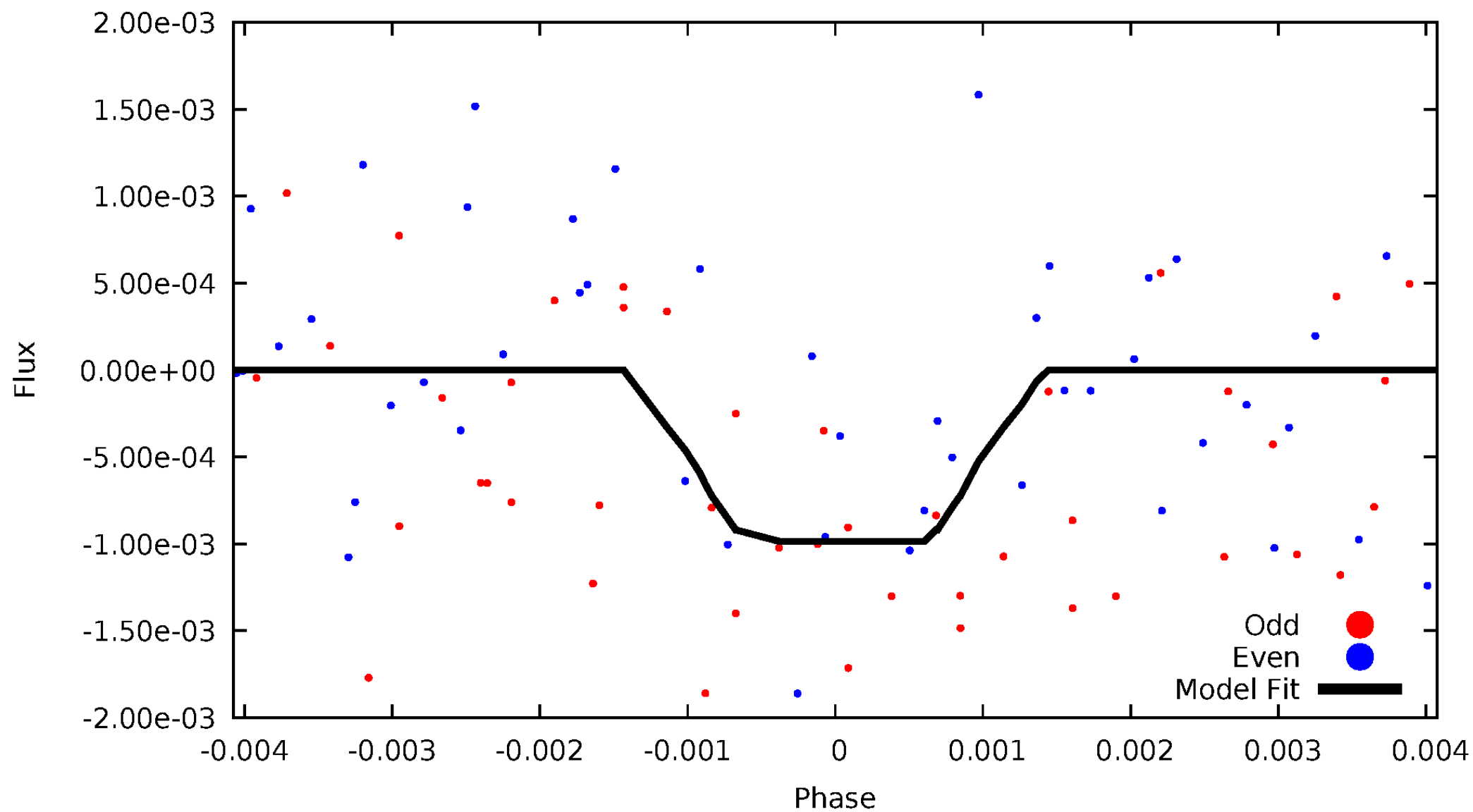
# DV Odd/Even

TCE 011920468-02



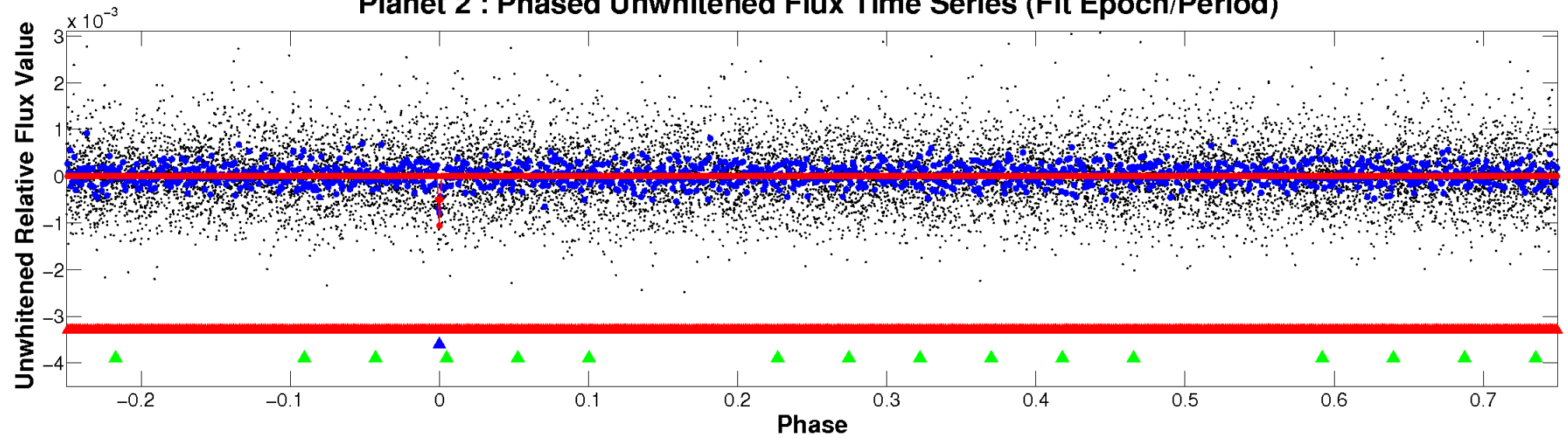
# ALT Odd/Even

TCE 011920468-02

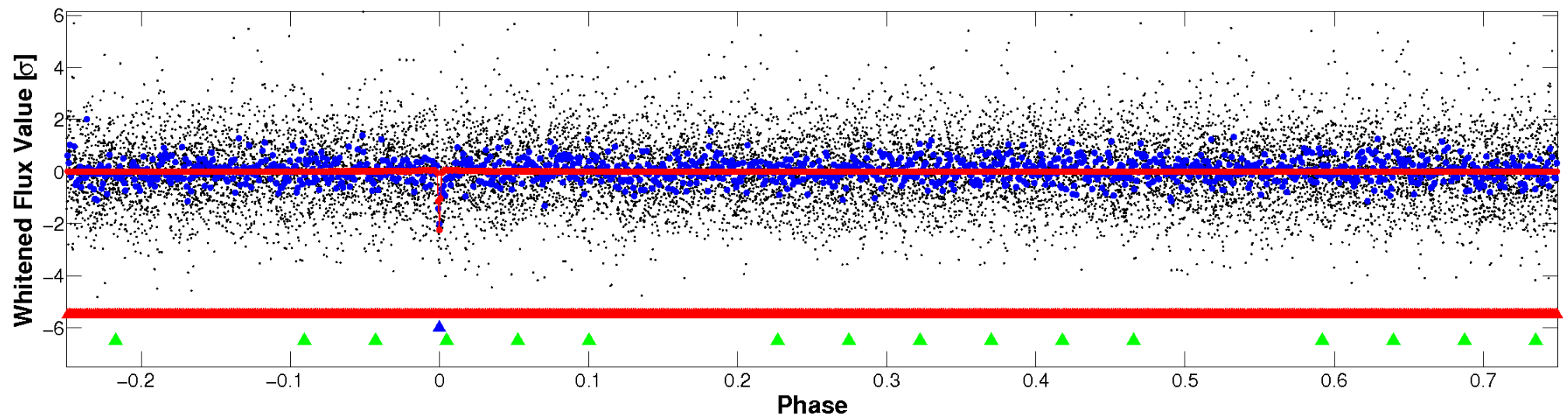


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



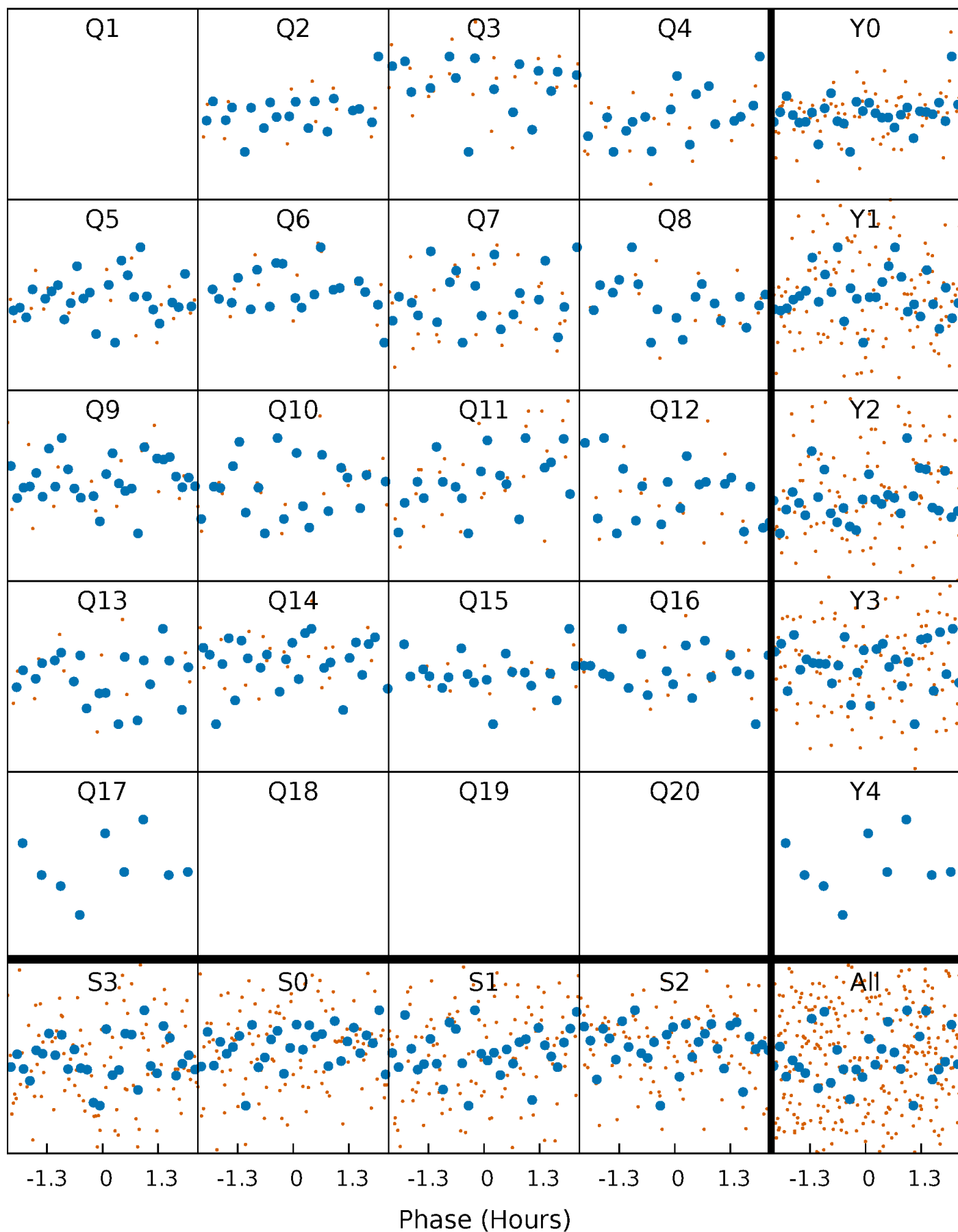
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





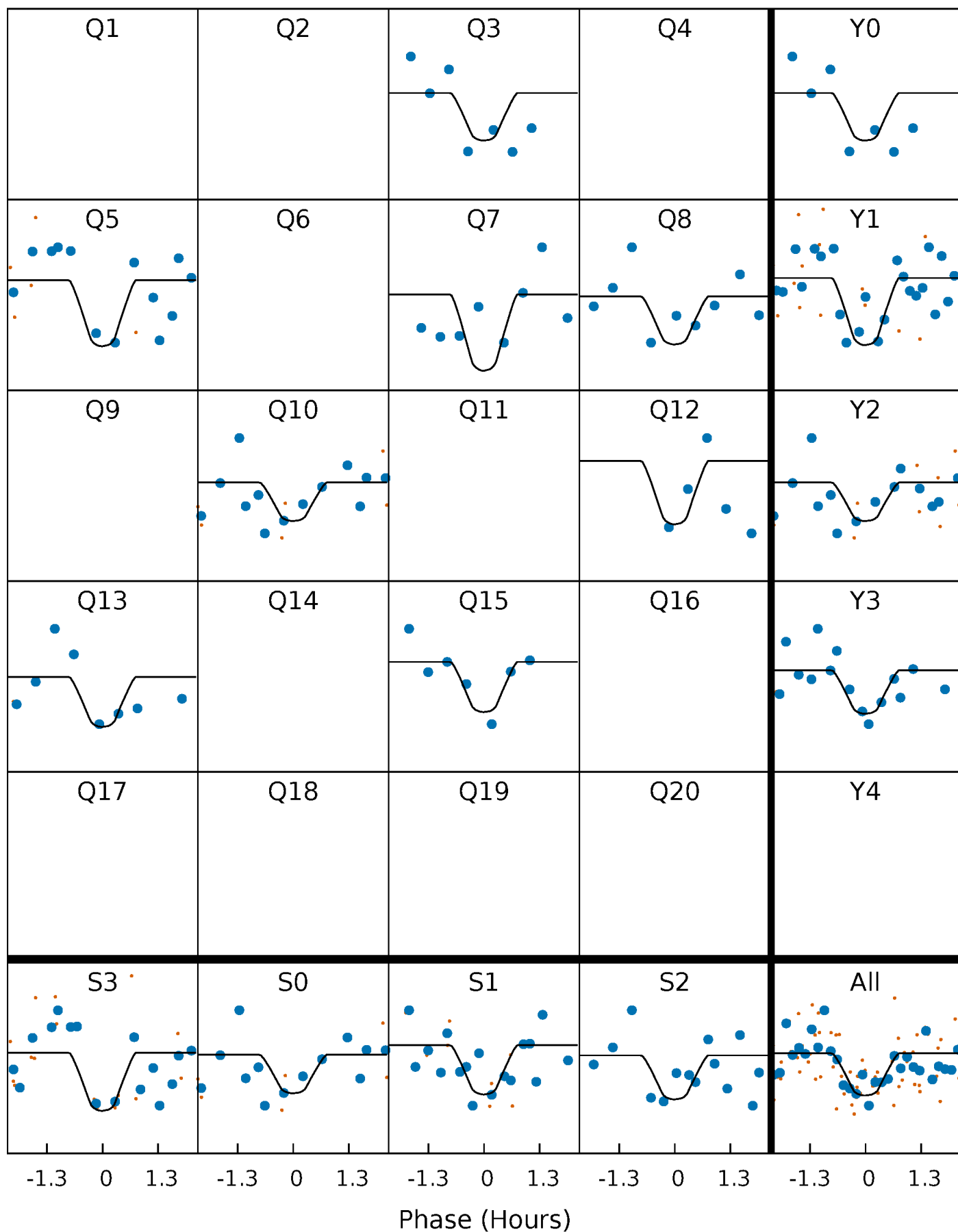
# PDC Quarter-Phased Transit Curves

TCE 011920468-02 P= 26.887297 Days  $T_0=151.465463$  (BKJD)



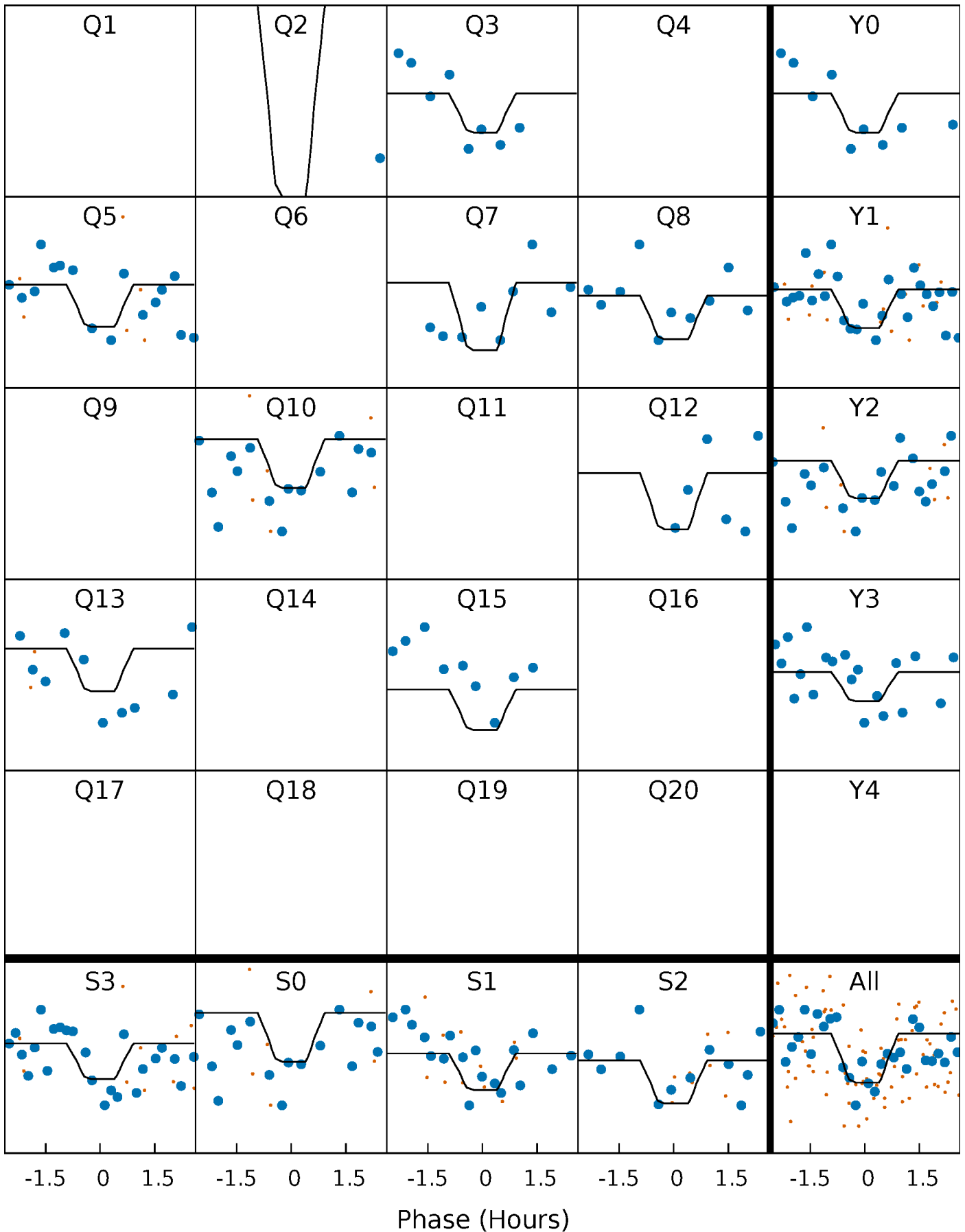
# DV Quarter-Phased Transit Curves

TCE 011920468-02   P= 26.887297 Days    $T_0=151.465463$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

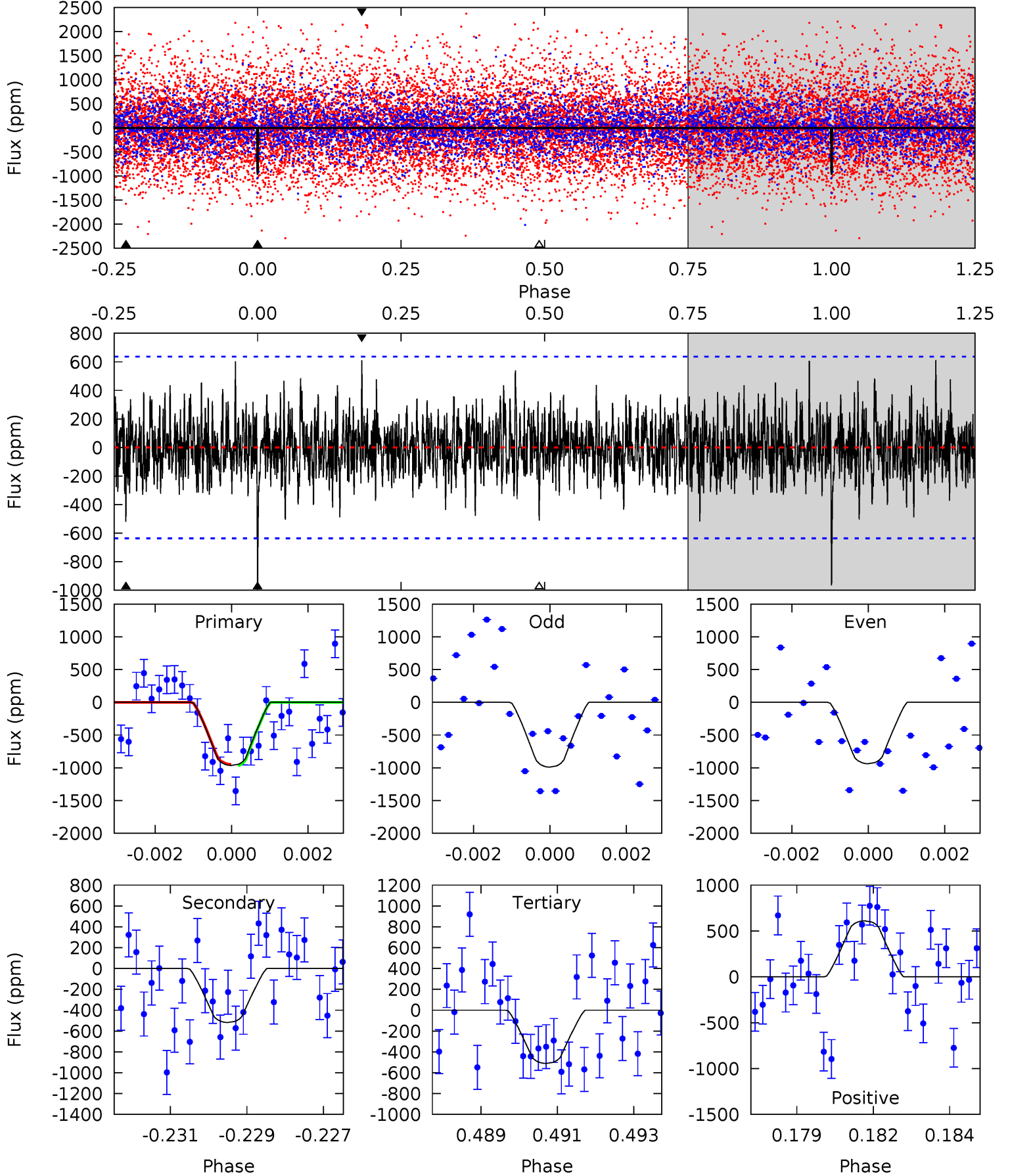
TCE 011920468-02 P= 26.886934 Days  $T_0=151.472142$  (BKJD)



# DV Model-Shift Uniqueness Test

011920468-02,  $P = 26.887297$  Days,  $E = 151.465463$  Days

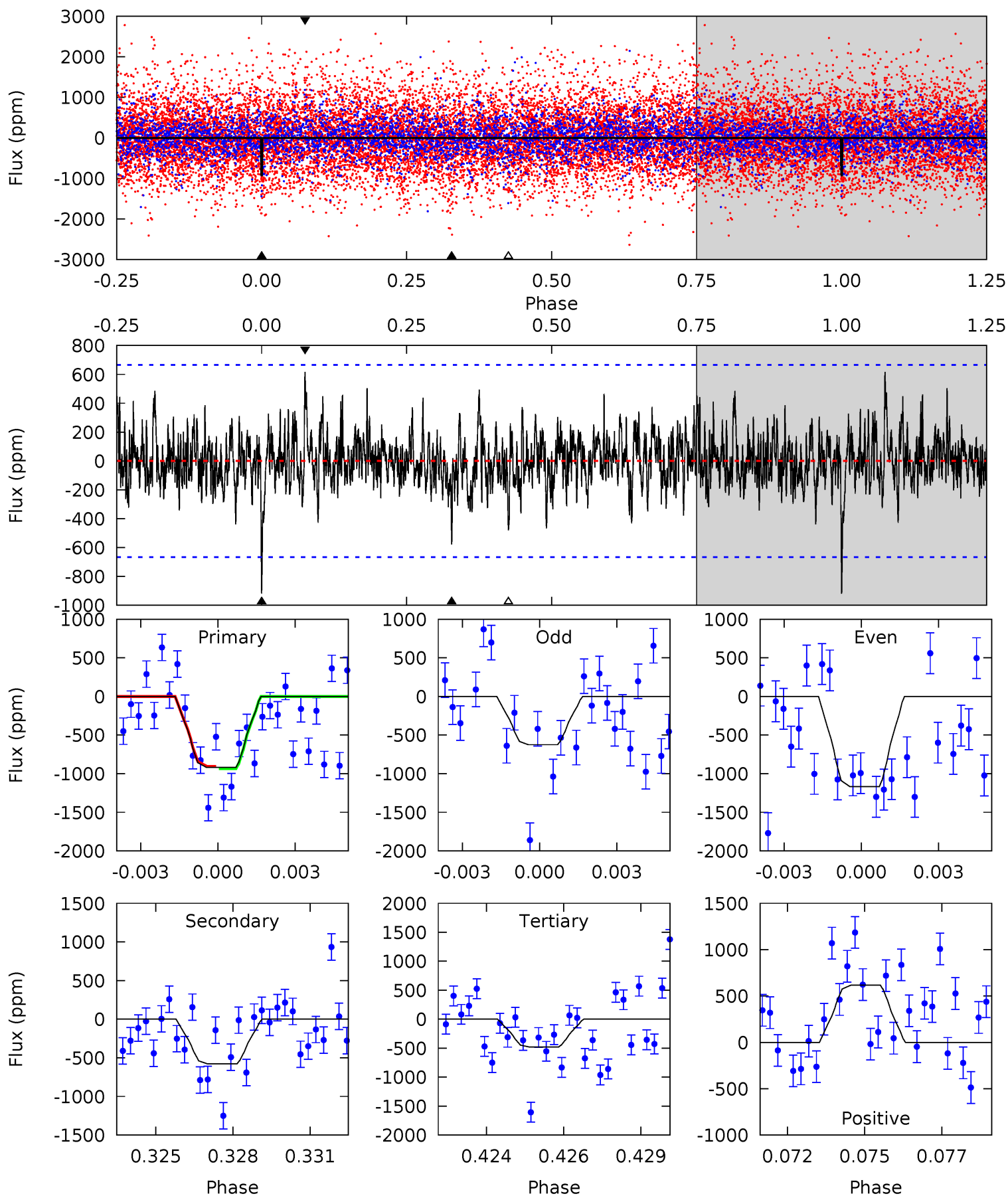
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.05	4.32	4.26	5.09	5.30	3.04	1.31	3.79	2.96	0.06	-0.77	0.22	1.00	0.39	0.09



# Alt Model-Shift Uniqueness Test

011920468-02, P = 26.886934 Days, E = 151.472142 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.29	4.59	3.80	4.89	5.28	3.01	1.22	3.49	2.40	0.79	-0.30	2.16	0.86	0.40	0.13



### Stellar Parameters For KIC 011920468

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5277^{+158}_{-158}$	$4.515^{+0.099}_{-0.081}$	$-0.360^{+0.350}_{-0.300}$	$0.779^{+0.092}_{-0.102}$	$0.725^{+0.107}_{-0.046}$	$2.161^{+0.865}_{-0.566}$
	+3%/-3%	+2%/-2%	+97%/-83%	+12%/-13%	+15%/-6%	+40%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011920468-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-518 \pm 120$	$7.43^{+7.29}_{-5.16}$	$725^{+28}_{-34}$	$3264^{+1647}_{-591}$	$137^{+1216}_{-106}$
Alt.	$-579 \pm 126$	$6.92^{+7.51}_{-4.74}$	$721^{+33}_{-30}$	$3374^{+1759}_{-650}$	$166^{+1654}_{-128}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$



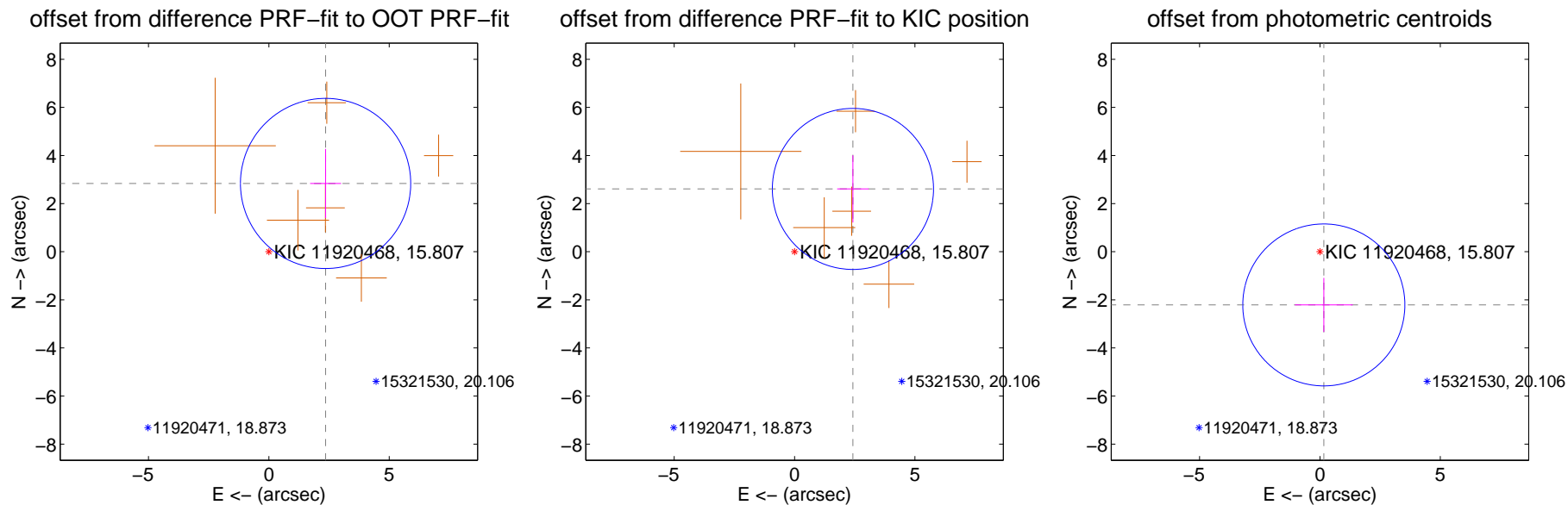
## DV Centroid Data

Supplemental centroid analysis for 011920468-02. Kepler magnitude: 15.81. Transit SNR 8.53

There are 0 quarters with good PRF difference image offsets

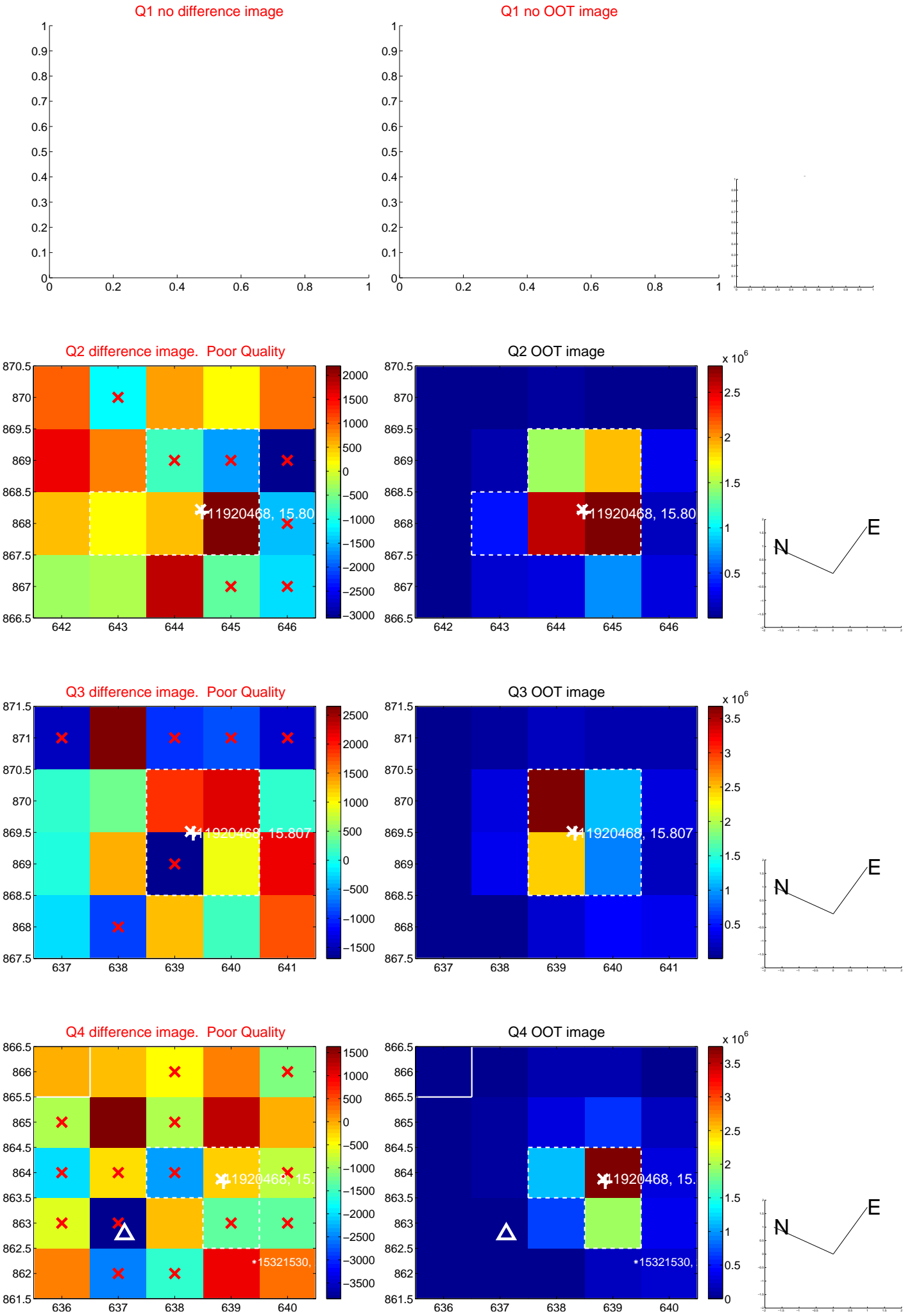
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.689 \pm 1.179$	3.13	$-2.356 \pm 0.644$	$2.838 \pm 1.436$
PRF-fit source offset from KIC position	$3.563 \pm 1.116$	3.19	$-2.424 \pm 0.653$	$2.610 \pm 1.397$
photometric centroid source offset	$2.22 \pm 1.12$	1.98	$-0.16 \pm 1.20$	$-2.21 \pm 1.12$

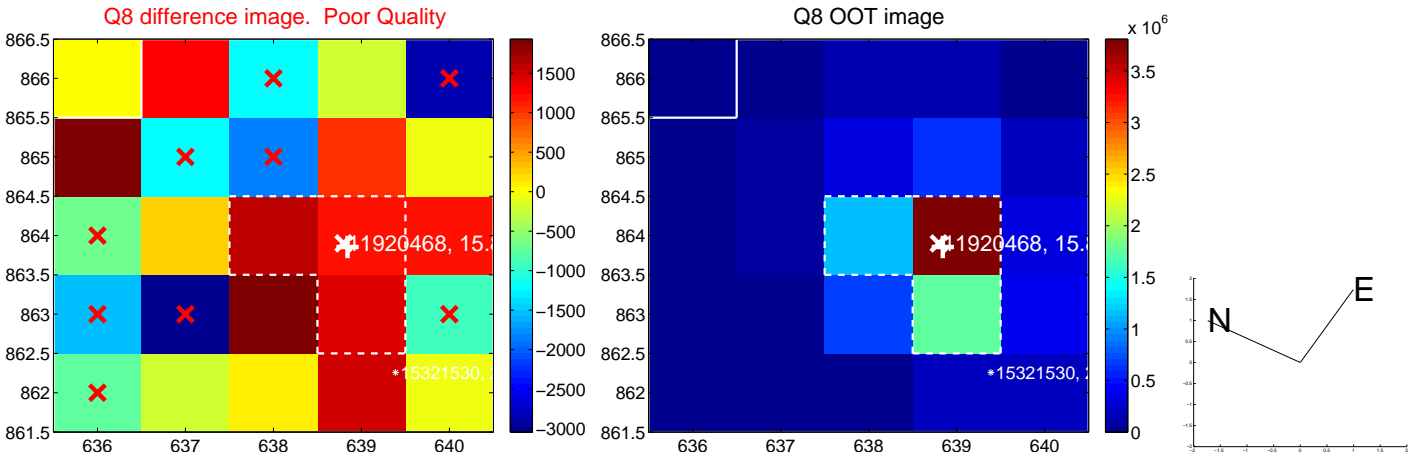
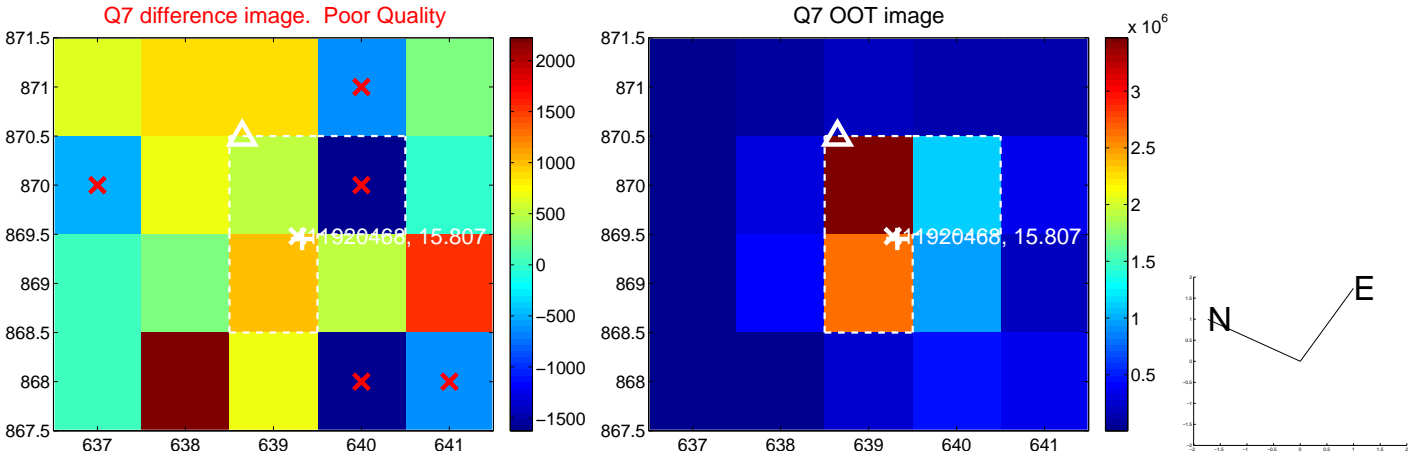
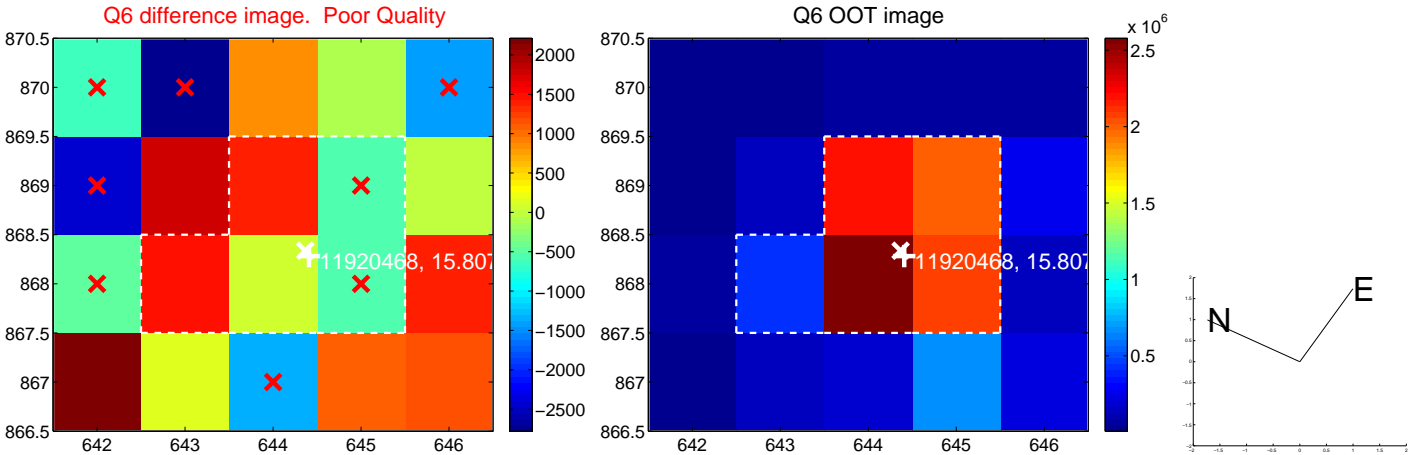
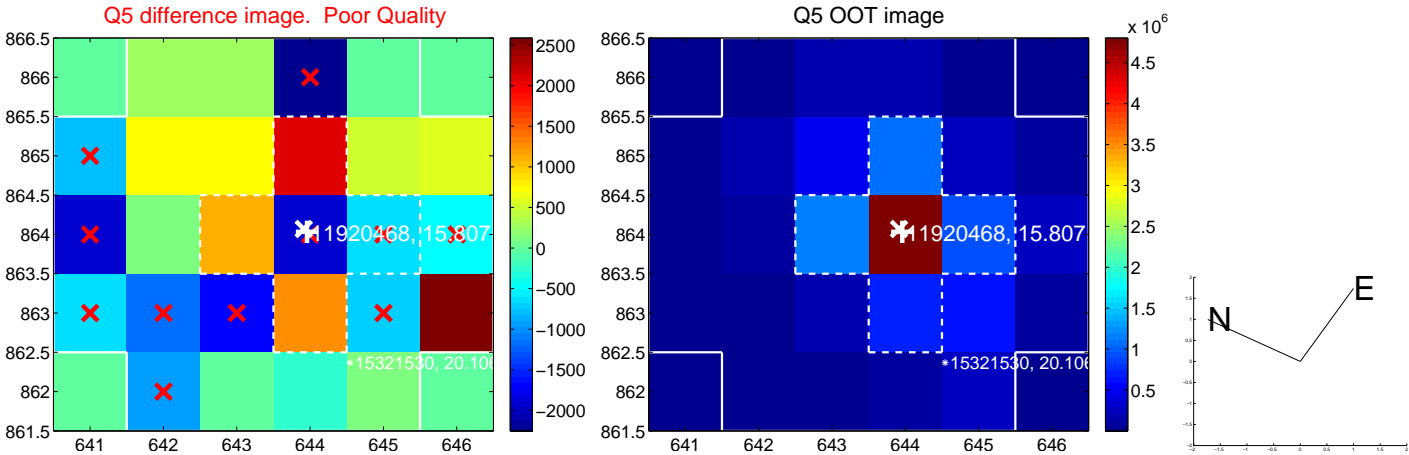


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

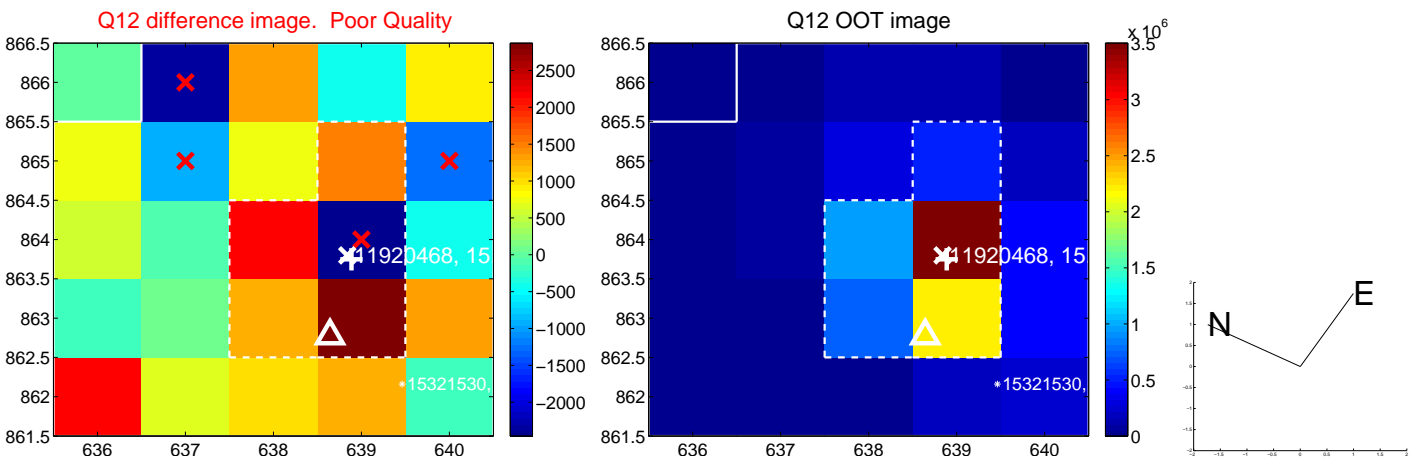
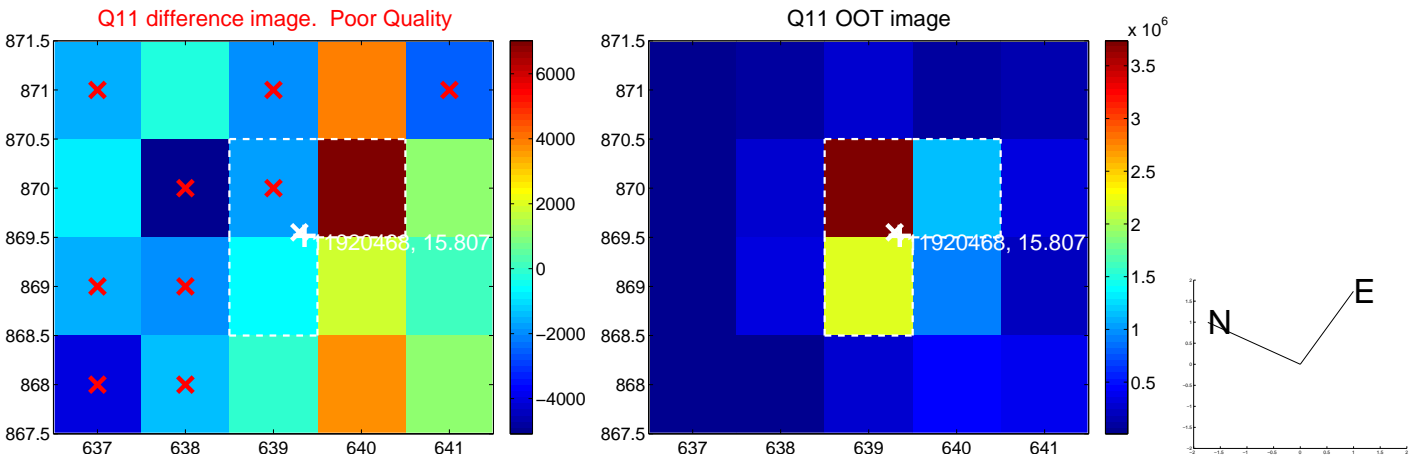
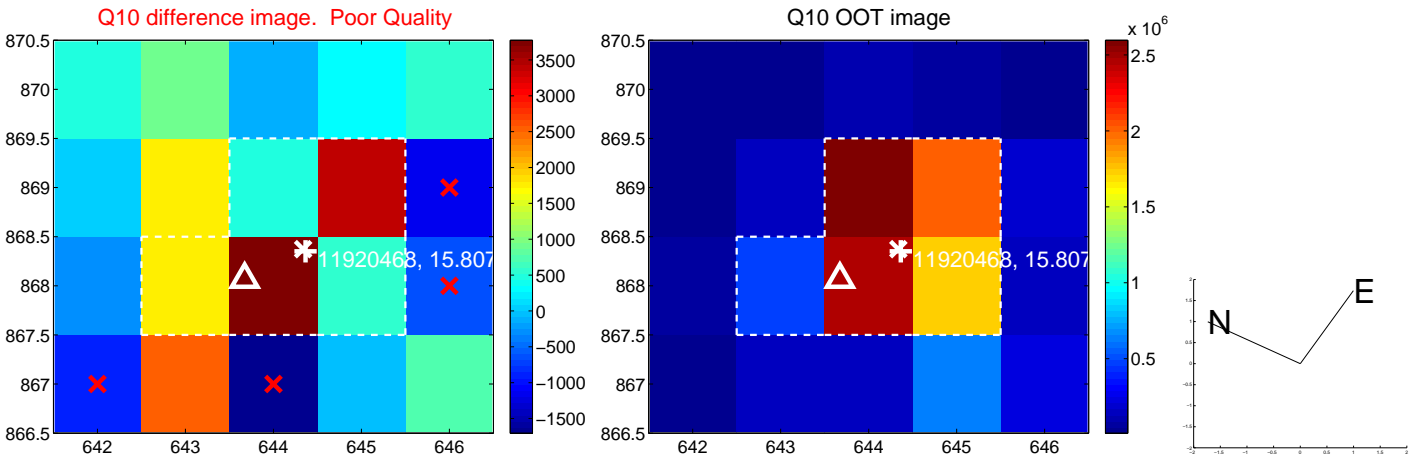
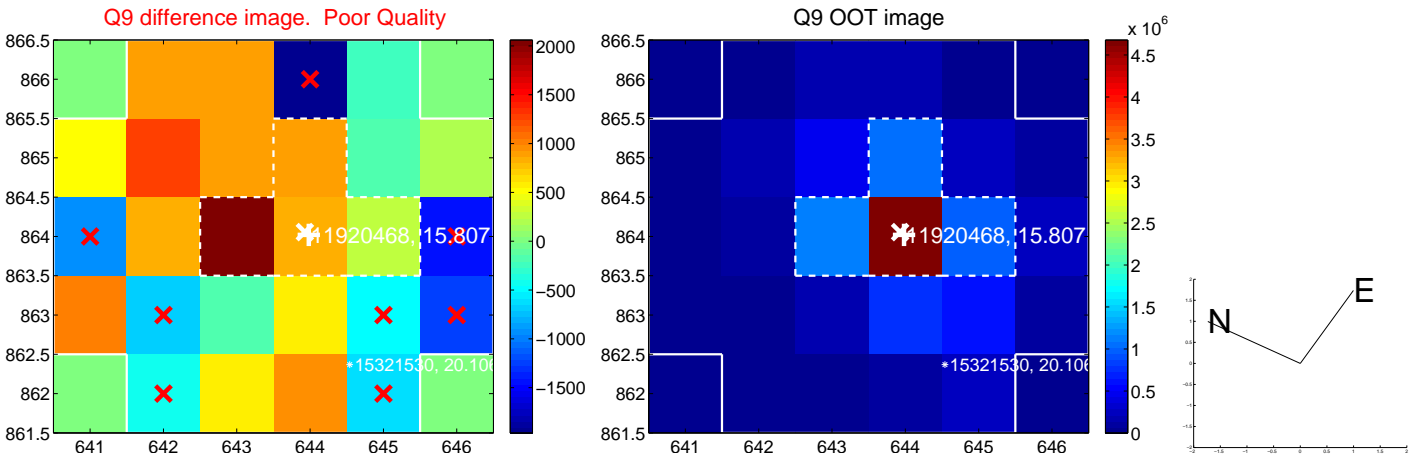
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

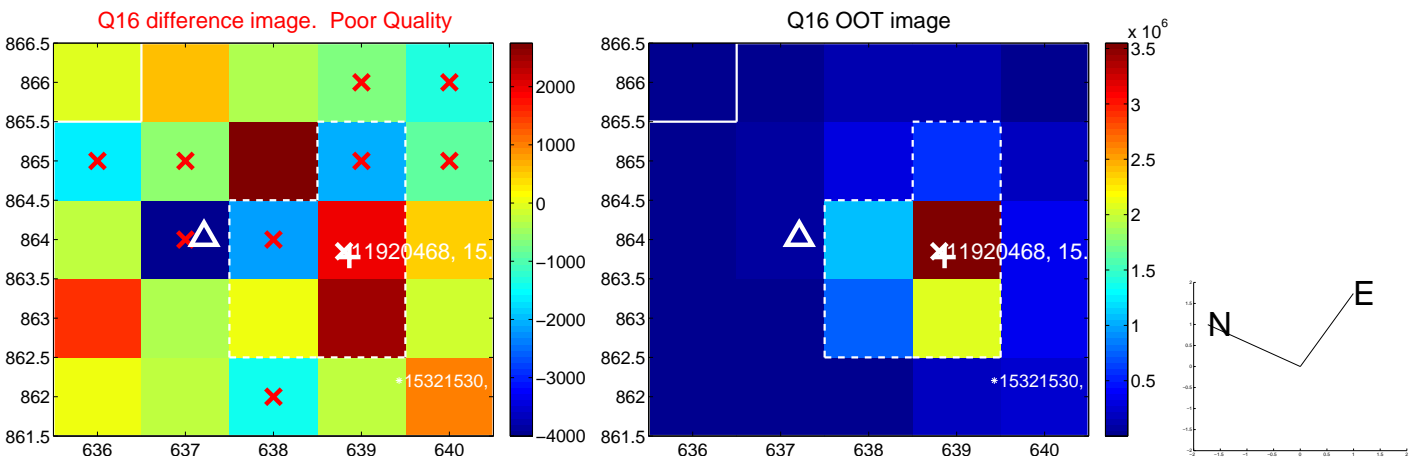
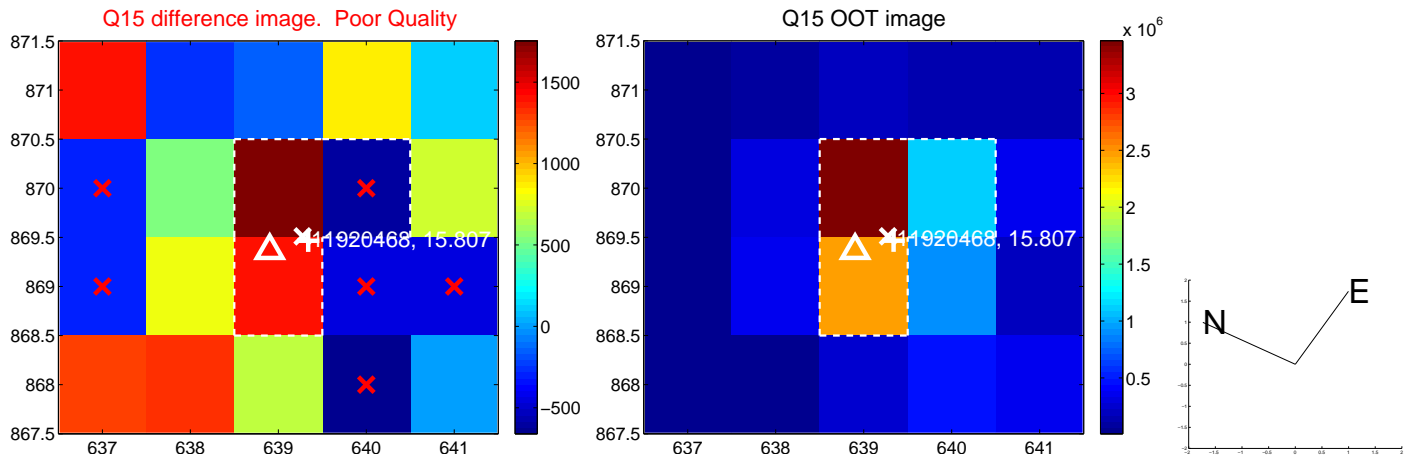
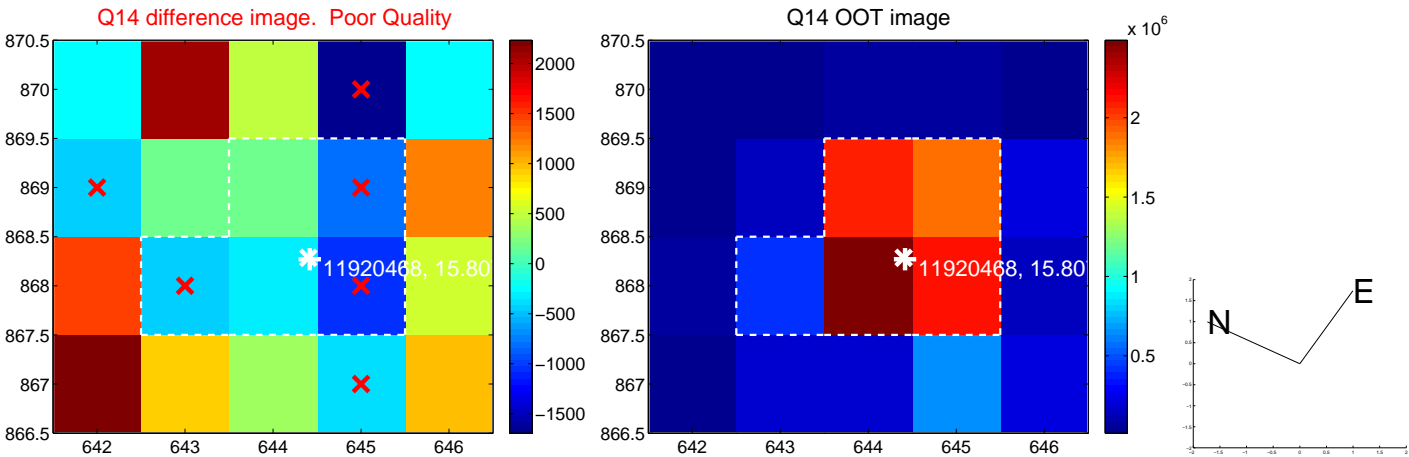
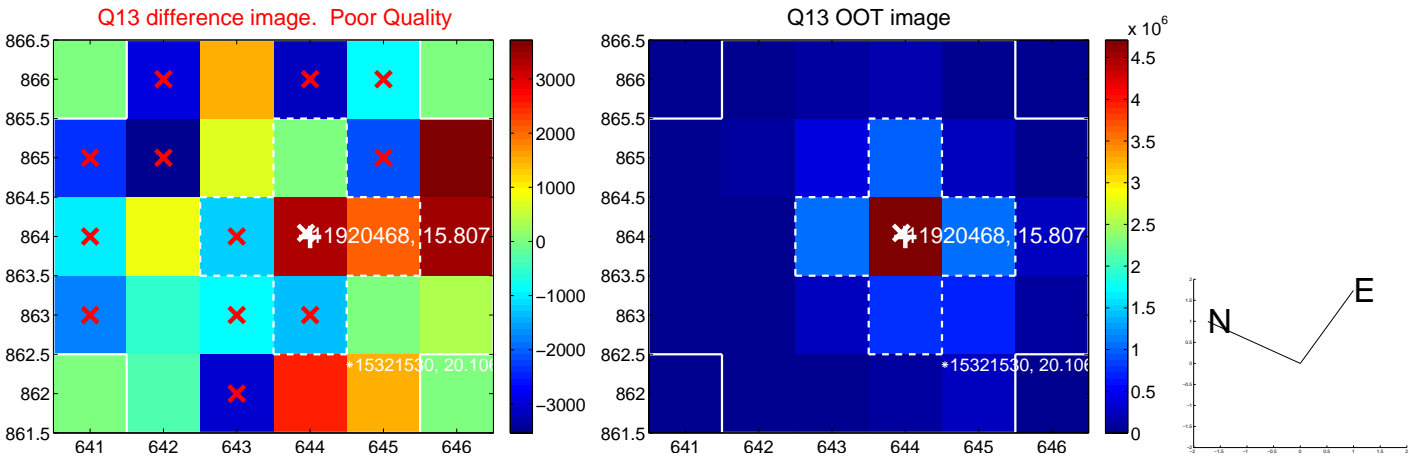


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

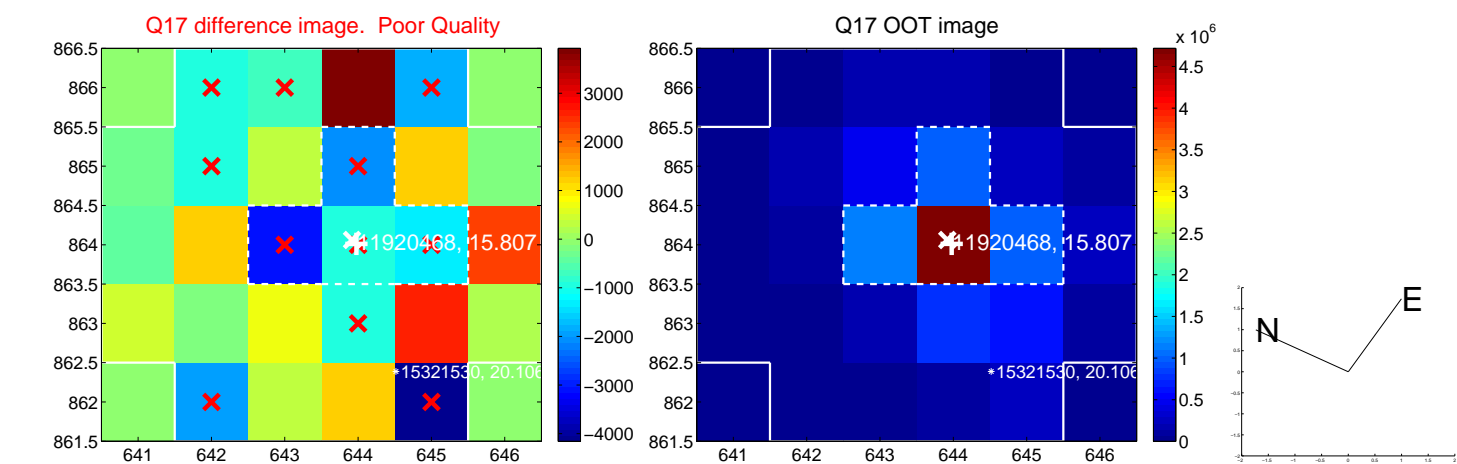




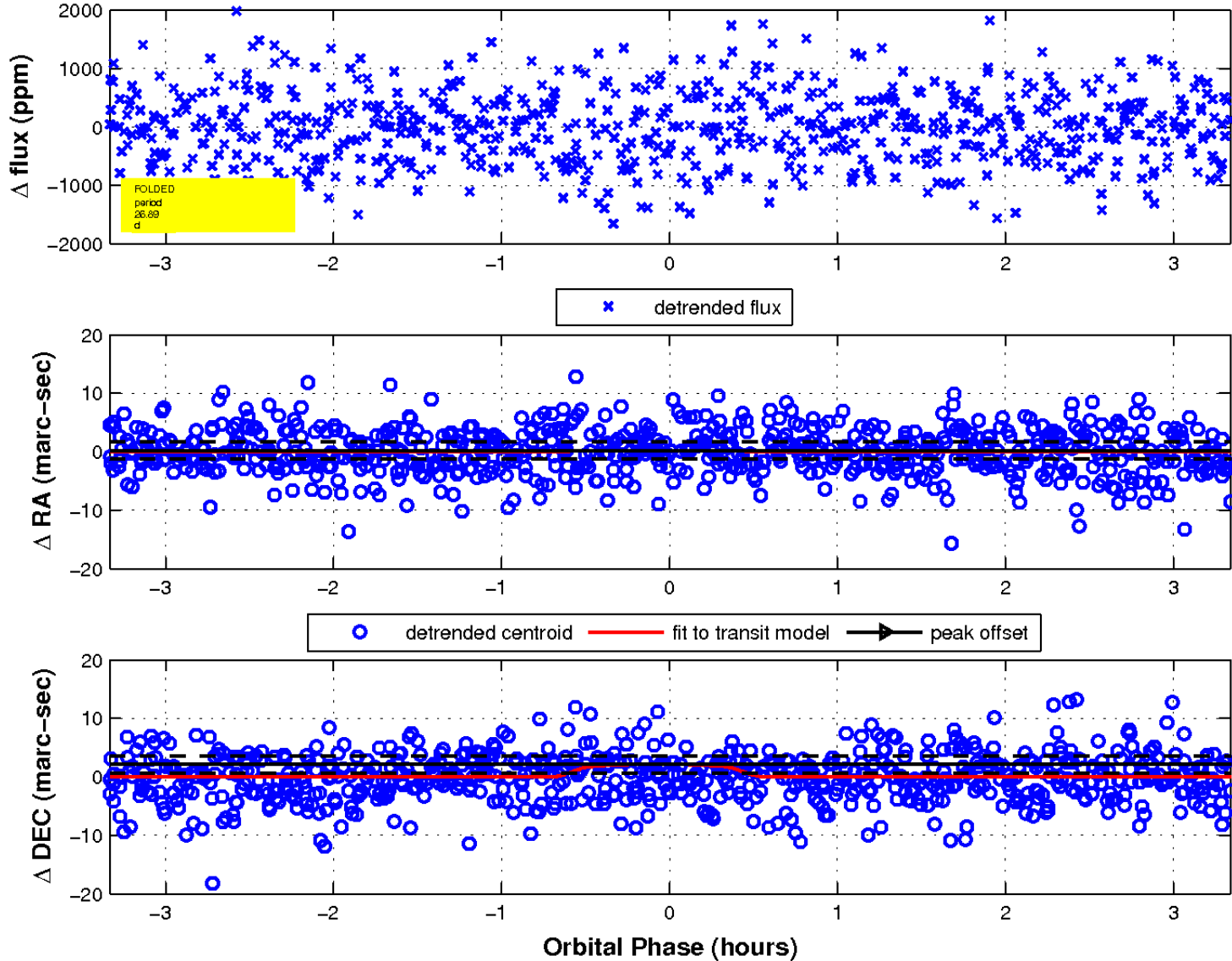
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

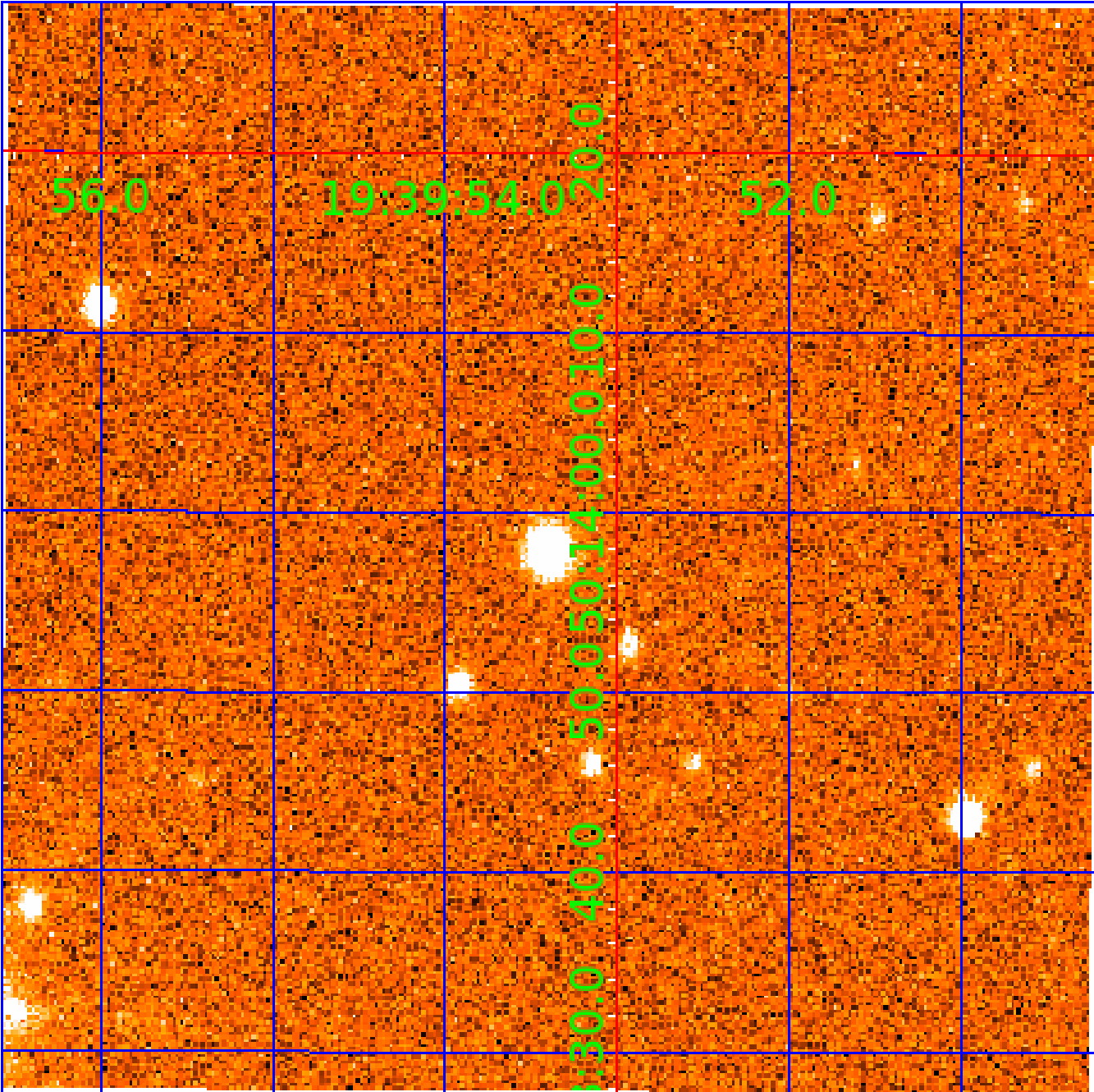


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 011920468

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011920468-01	OBS	No	1.668321	133.130670	60.0	10.391	7.3	8.1	0.78	5277	0.61	689.33
011920468-02	OBS	No	26.887297	151.465463	1093.5	1.115	8.2	8.5	0.78	5277	2.79	16.93
011920468-03	OBS	No	89.196625	217.756302	1507.9	1.982	8.5	8.8	0.78	5277	3.35	3.42

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011920468-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011920468-02	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
011920468-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

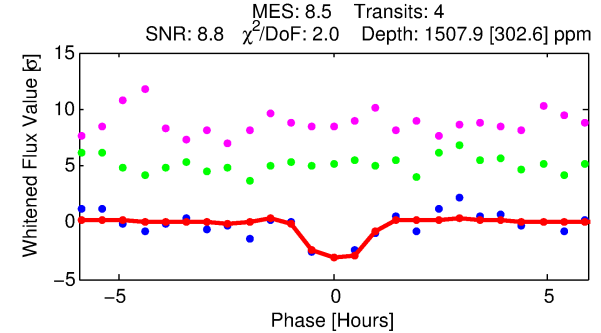
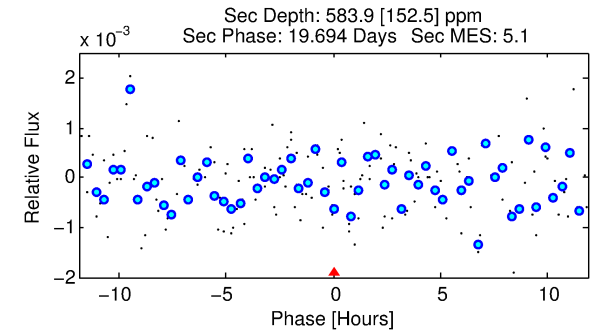
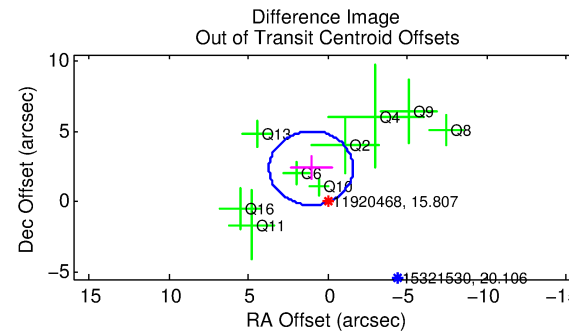
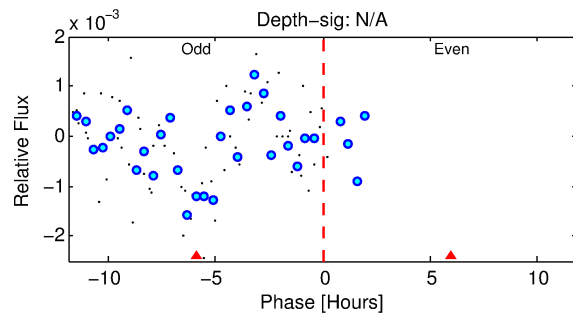
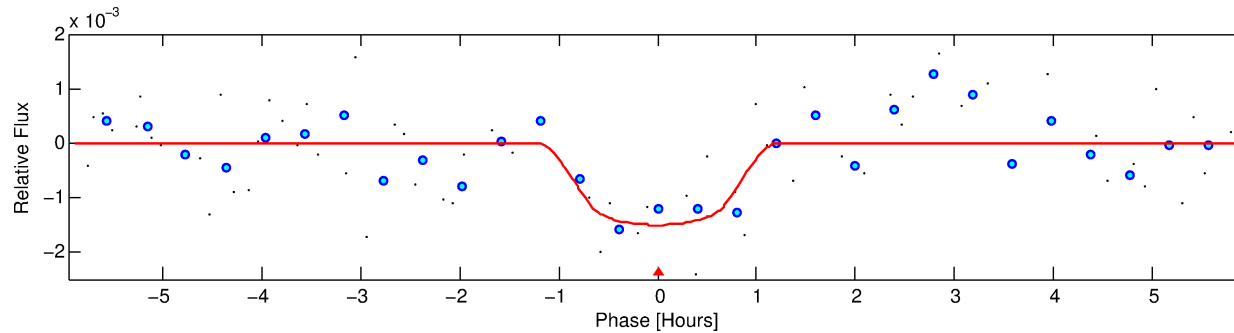
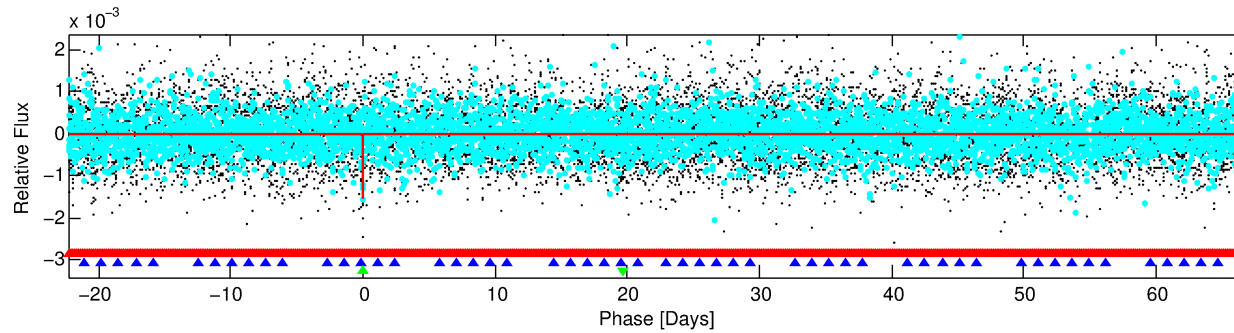
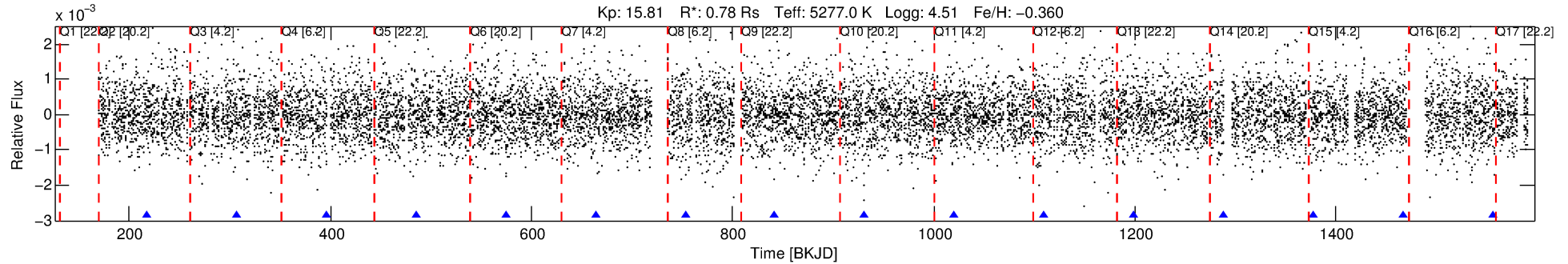
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011920468-03

No Significant Match Found

# DV One-Page Summary

KIC: 11920468 Candidate: 3 of 3 Period: 89.197 d



## DV Fit Results:

Period = 89.19662 [0.00302] d  
Epoch = 217.7563 [0.0167] BKJD  
Rp/R\* = 0.0394 [0.0723]  
a/R\* = 234.78 [1700.74]  
b = 0.78 [3.64]  
Seff = 3.42 [0.73]  
Teq = 347 [18] K  
Rp = 3.35 [6.16] Re  
a = 0.3510 [0.0406] AU  
Ag = 3525.36 [12980.26] [0.27σ]  
Teffp = 4132 [3801] K [1.00σ]

## DV Diagnostic Results:

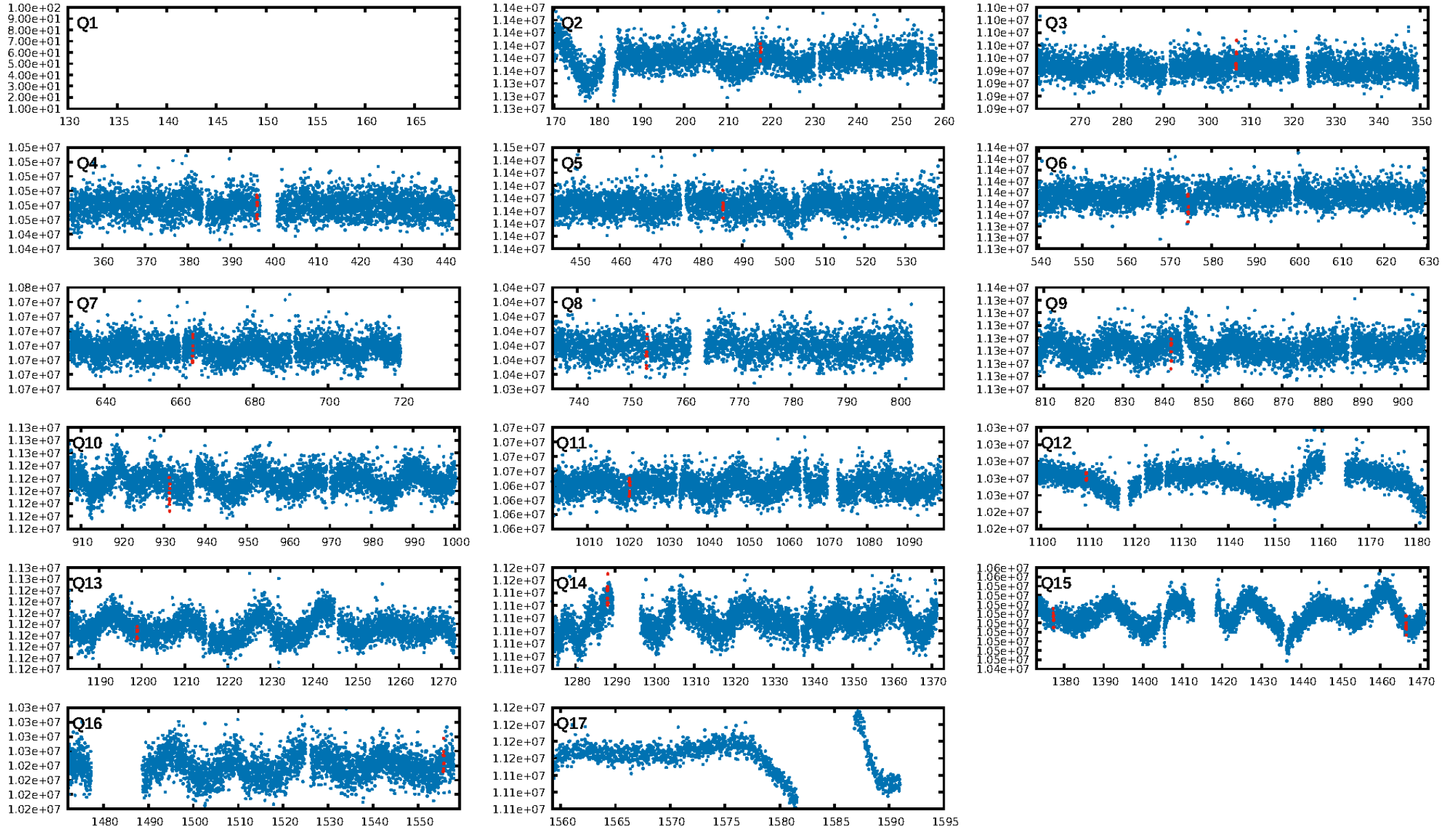
ShortPeriod-sig: 100.0% [657.58σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 29.5%  
ModelChiSquareGof-sig: 82.0%  
**Bootstrap-pfa: 4.17e-10**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -0.2535  
Centroid-sig: 5.5%  
Centroid-so: 1.304 arcsec [1.17σ]  
OotOffset-rm: 2.611 arcsec [2.97σ]  
KicOffset-rm: 2.372 arcsec [2.72σ]  
OotOffset-st: 3/1/3/2 [9]  
KicOffset-st: 3/1/3/2 [9]  
DiffImageQuality-fgm: 0.11 [1/9]  
DiffImageOverlap-fno: 0.40 [6/15]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:28:43 Z

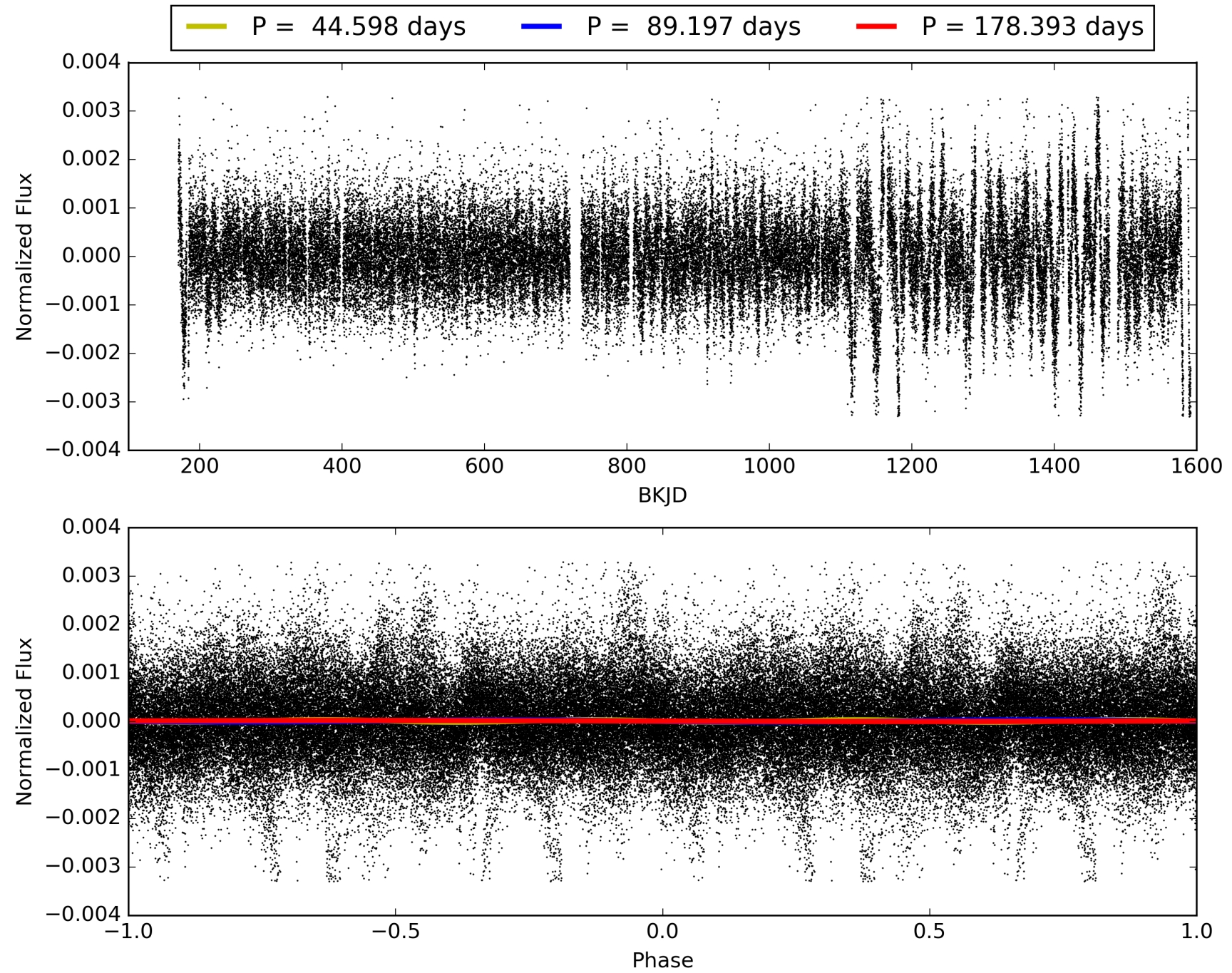
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 011920468-03, PDC Light Curves

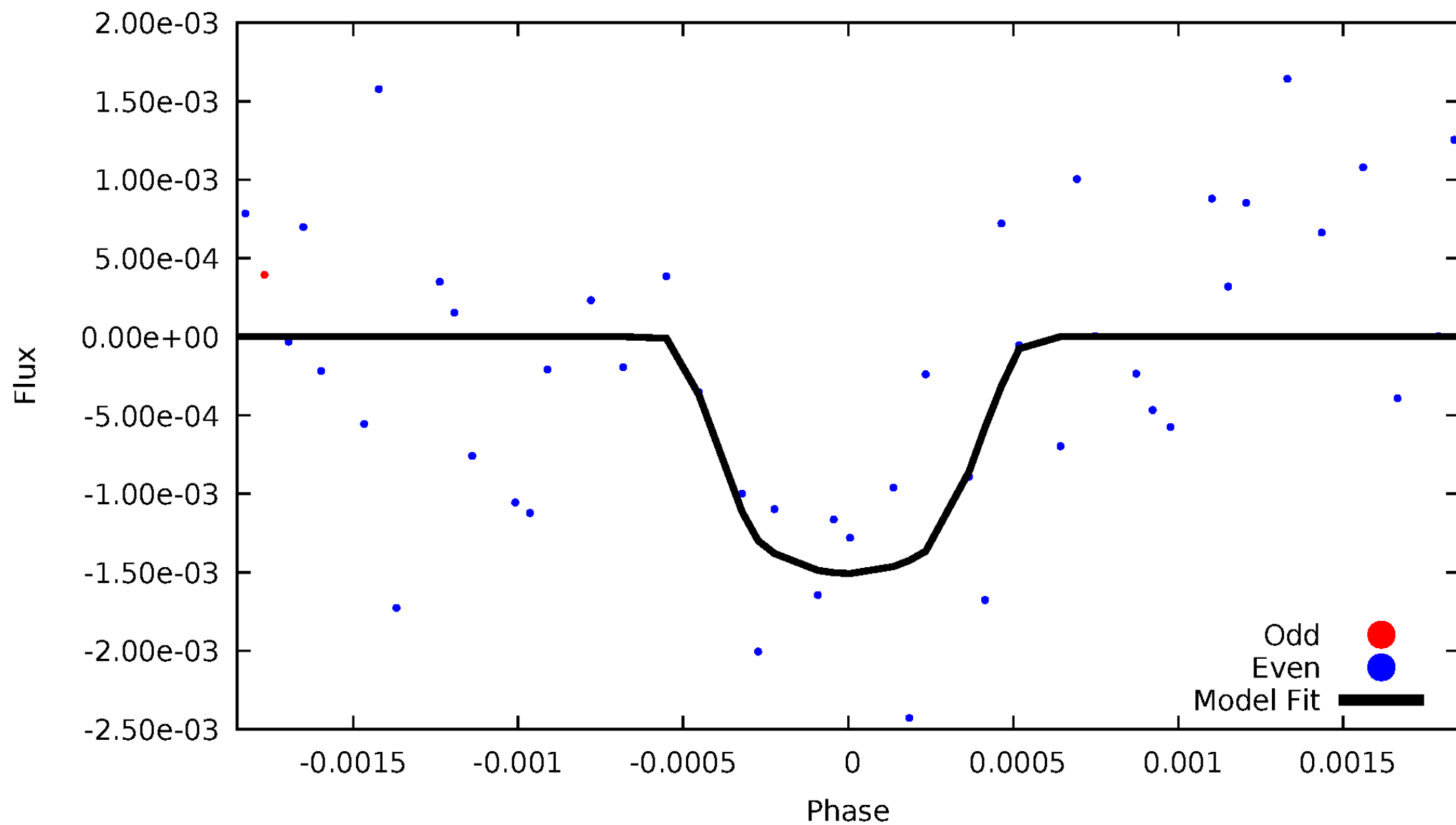


# TCE 011920468-03



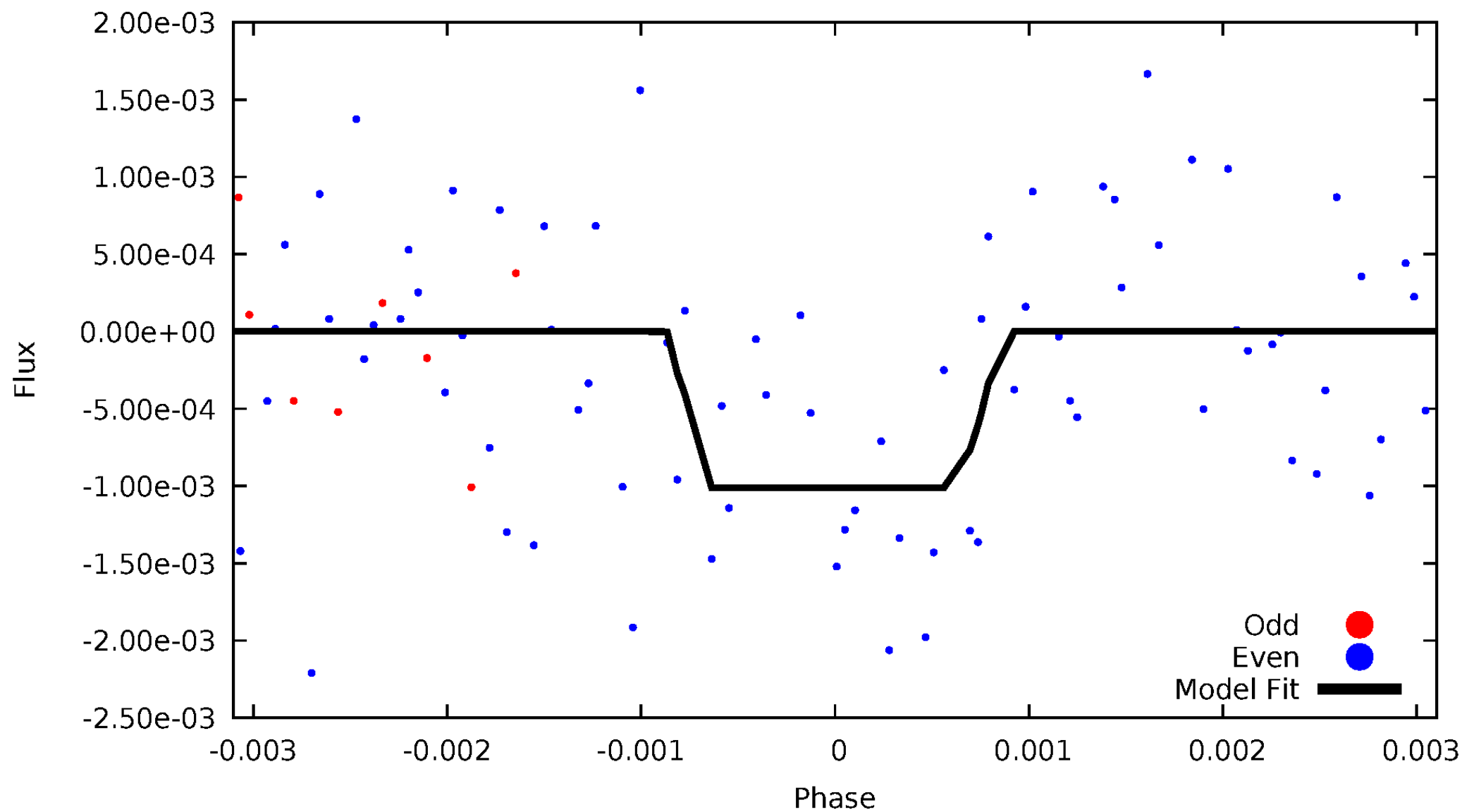
# DV Odd/Even

TCE 011920468-03



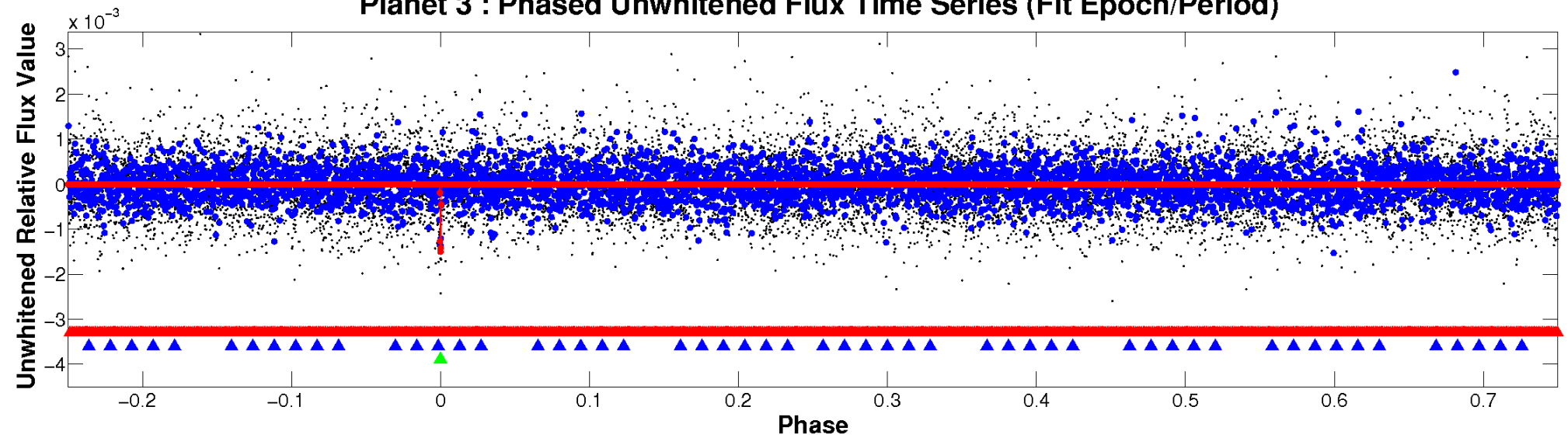
# ALT Odd/Even

TCE 011920468-03

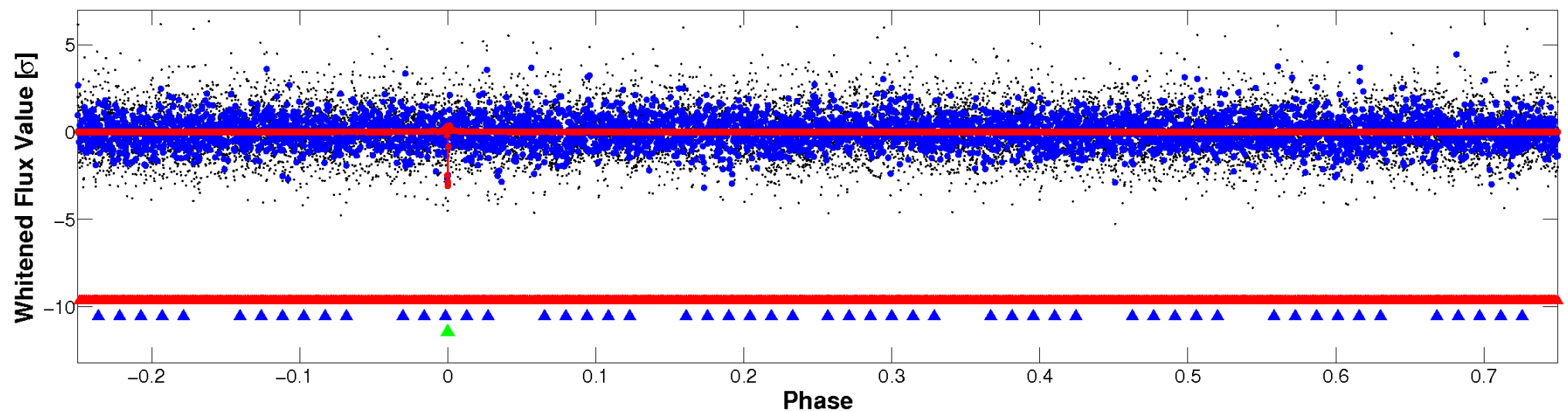


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



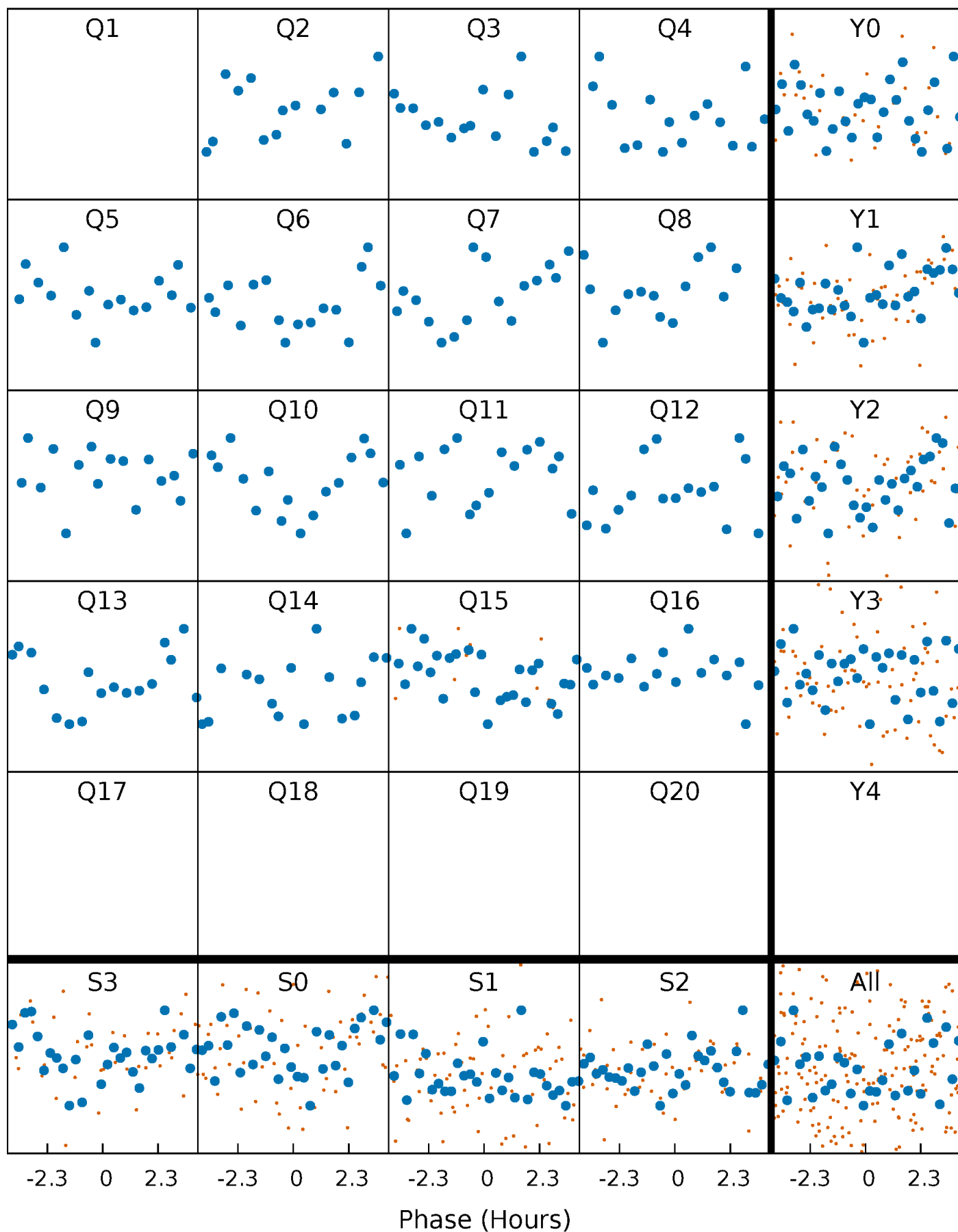
Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





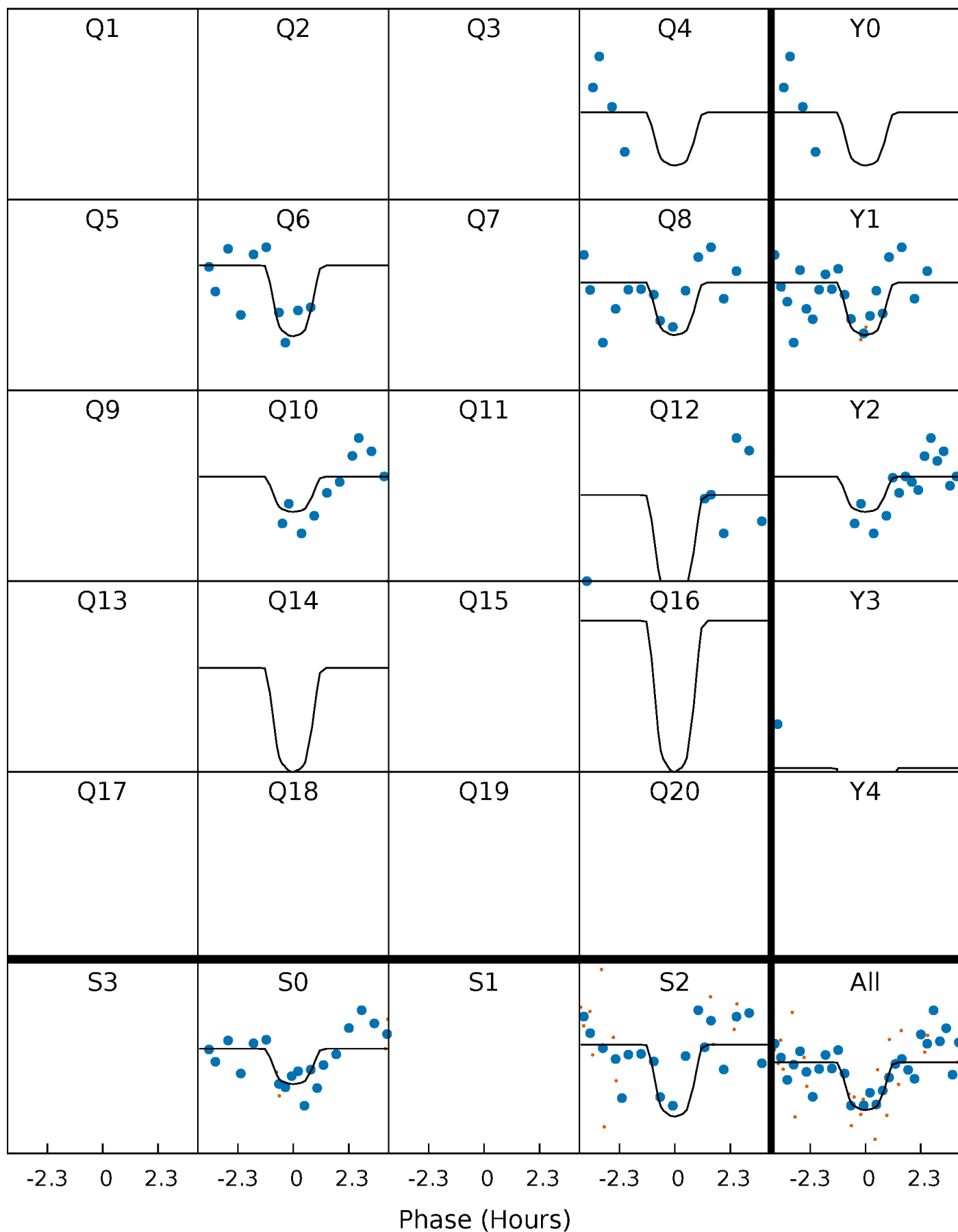
# PDC Quarter-Phased Transit Curves

TCE 011920468-03 P= 89.196625 Days  $T_0=217.756302$  (BKJD)



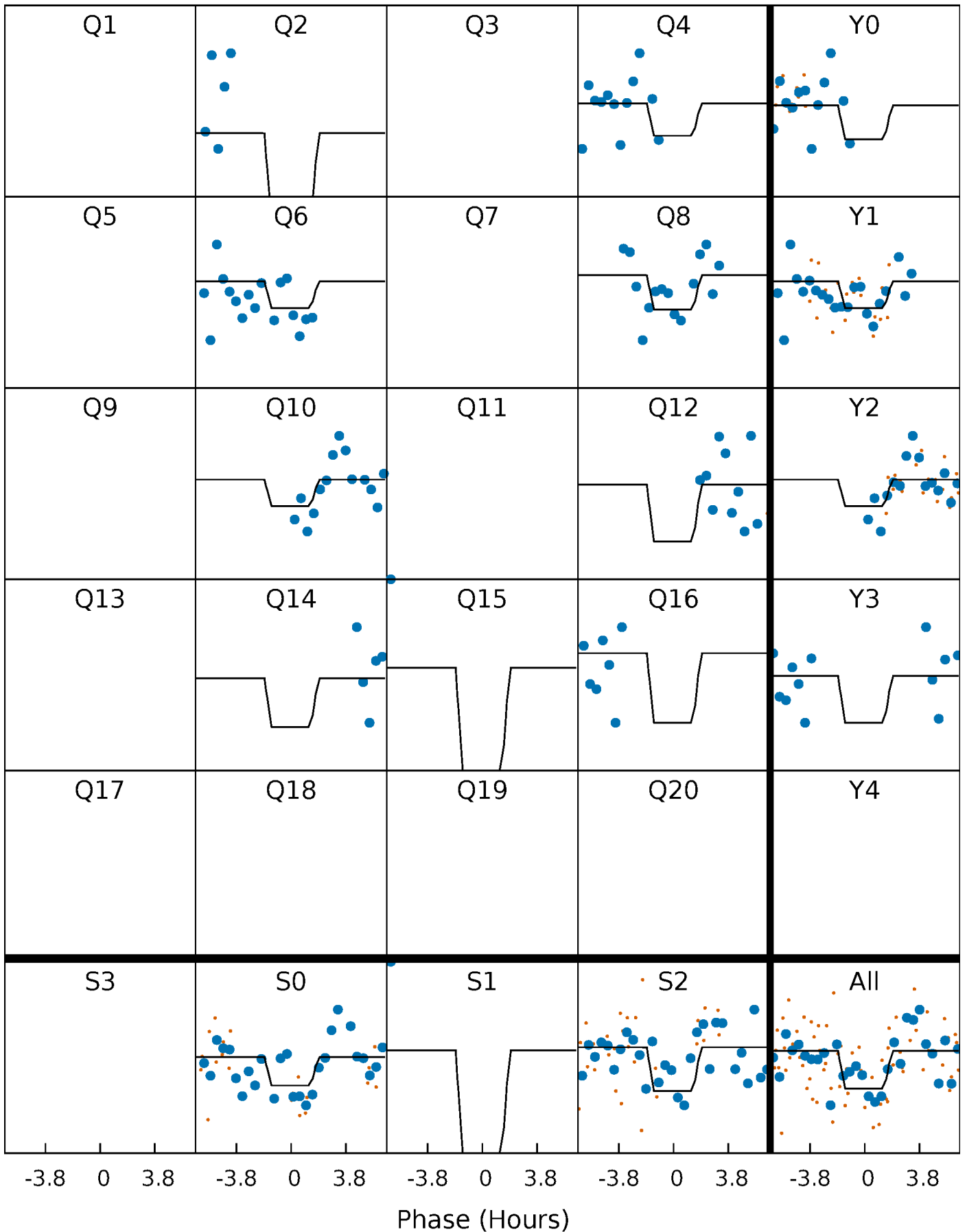
# DV Quarter-Phased Transit Curves

TCE 011920468-03 P= 89.196625 Days  $T_0=217.756302$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

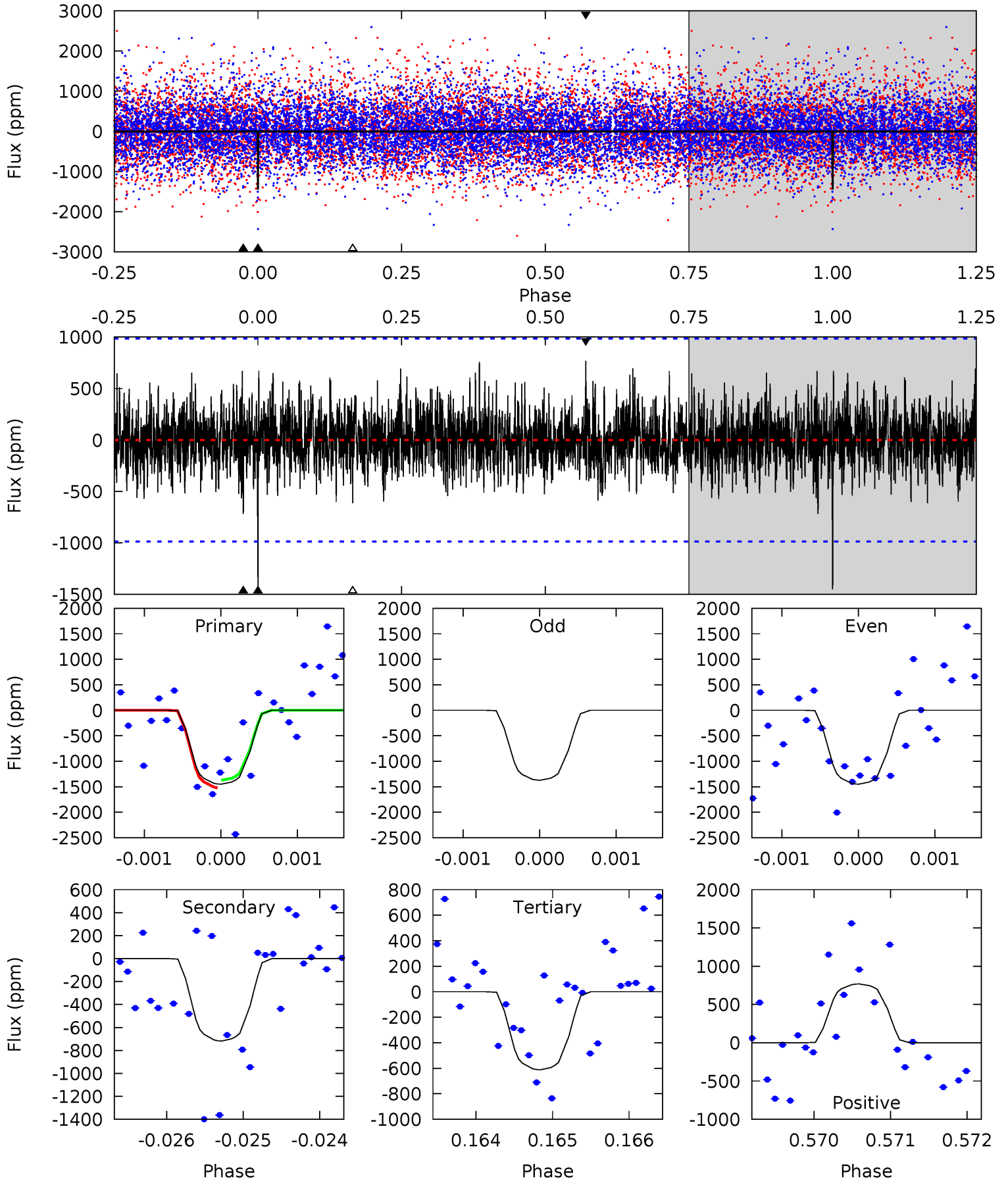
TCE 011920468-03   P= 89.198649 Days    $T_0=217.714971$  (BKJD)



# DV Model-Shift Uniqueness Test

011920468-03, P = 89.196625 Days, E = 128.559677 Days

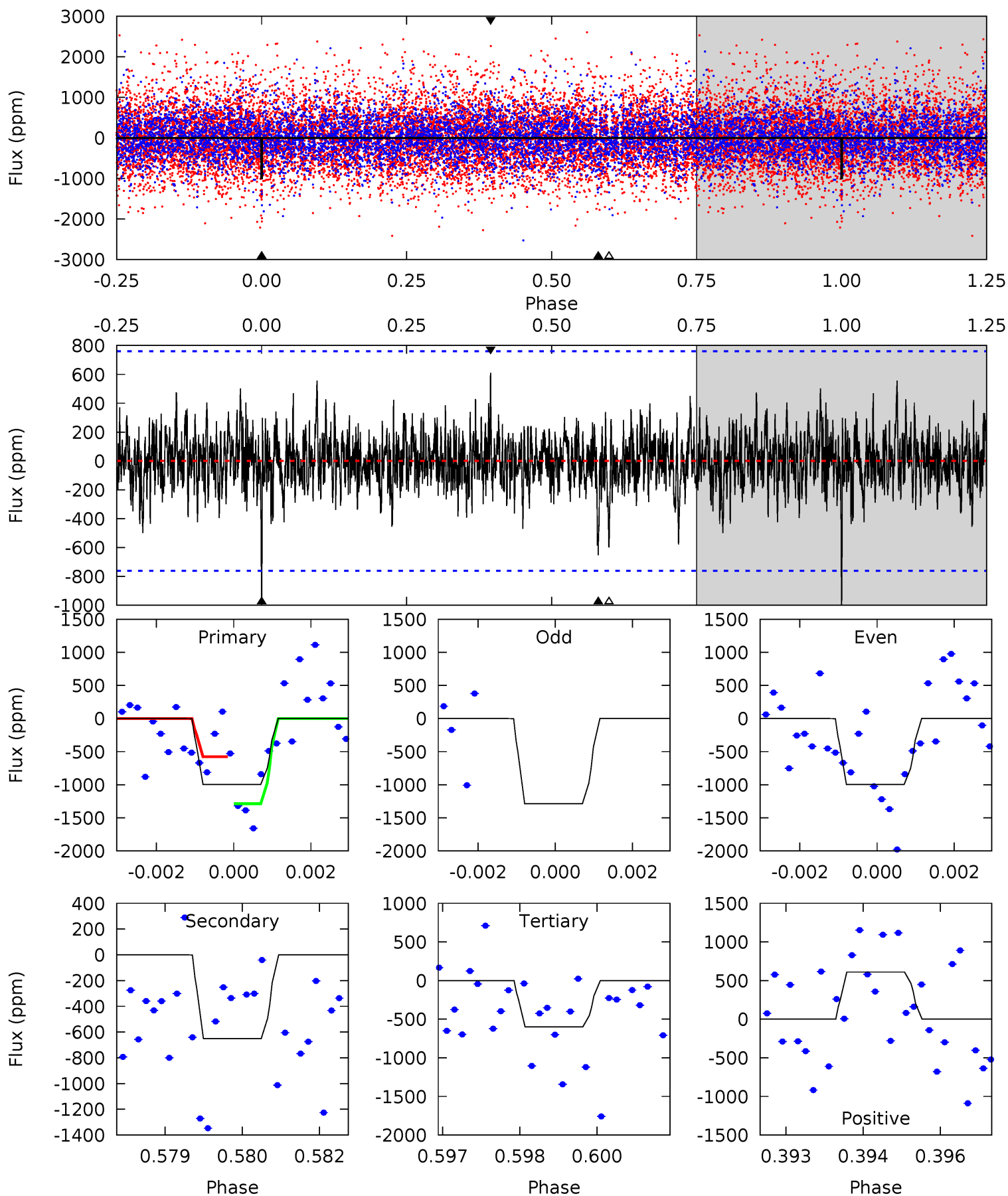
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.02	3.98	3.39	4.25	5.46	3.30	1.14	4.63	3.76	0.59	-0.28	0.26	1.06	0.35	0.41



# Alt Model-Shift Uniqueness Test

011920468-03, P = 89.198649 Days, E = 128.516322 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.02	4.60	4.23	4.30	5.37	3.16	1.07	2.79	2.72	0.37	0.30	1.25	1.02	0.38	2.45



### Stellar Parameters For KIC 011920468

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5277^{+158}_{-158}$	$4.515^{+0.099}_{-0.081}$	$-0.360^{+0.350}_{-0.300}$	$0.779^{+0.092}_{-0.102}$	$0.725^{+0.107}_{-0.046}$	$2.161^{+0.865}_{-0.566}$
	+3%/-3%	+2%/-2%	+97%/-83%	+12%/-13%	+15%/-6%	+40%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011920468-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-718 \pm 181$	$5.49^{+5.55}_{-3.60}$	$485^{+20}_{-21}$	$3727^{+1898}_{-706}$	$1590^{+11747}_{-1218}$
Alt.	$-652 \pm 142$	$5.38^{+5.26}_{-3.49}$	$484^{+21}_{-23}$	$3725^{+1814}_{-708}$	$1543^{+10907}_{-1164}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$



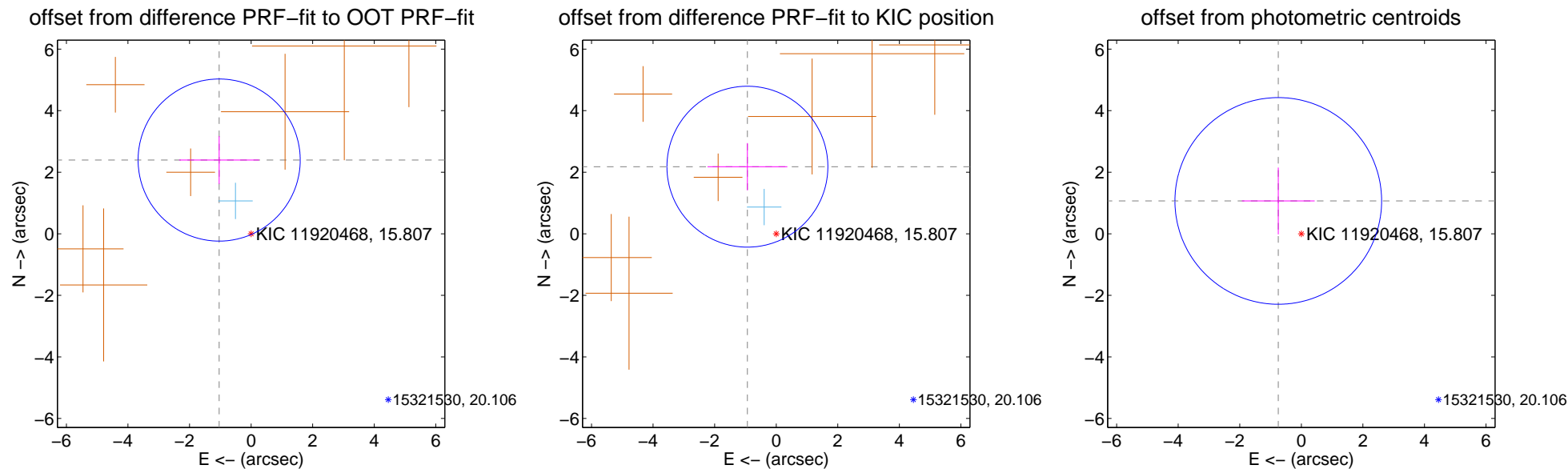
## DV Centroid Data

Supplemental centroid analysis for 011920468-03. Kepler magnitude: 15.81. Transit SNR 8.78

There are 1 quarters with good PRF difference image offsets

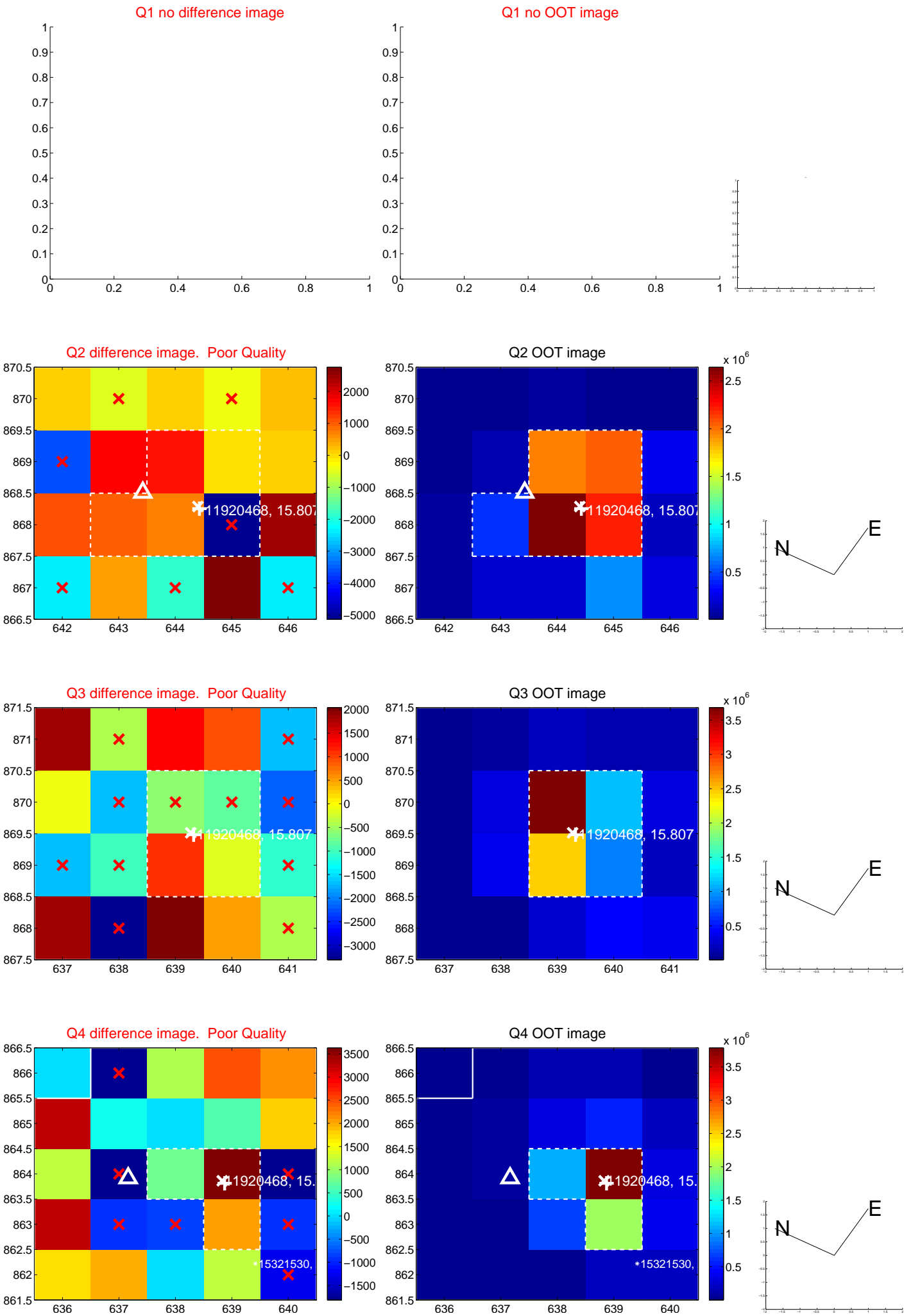
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.611 \pm 0.878$	2.97	$1.038 \pm 1.297$	$2.396 \pm 0.774$
PRF-fit source offset from KIC position	$2.372 \pm 0.871$	2.72	$0.936 \pm 1.297$	$2.180 \pm 0.767$
photometric centroid source offset	$1.30 \pm 1.12$	1.17	$0.75 \pm 1.18$	$1.07 \pm 1.09$

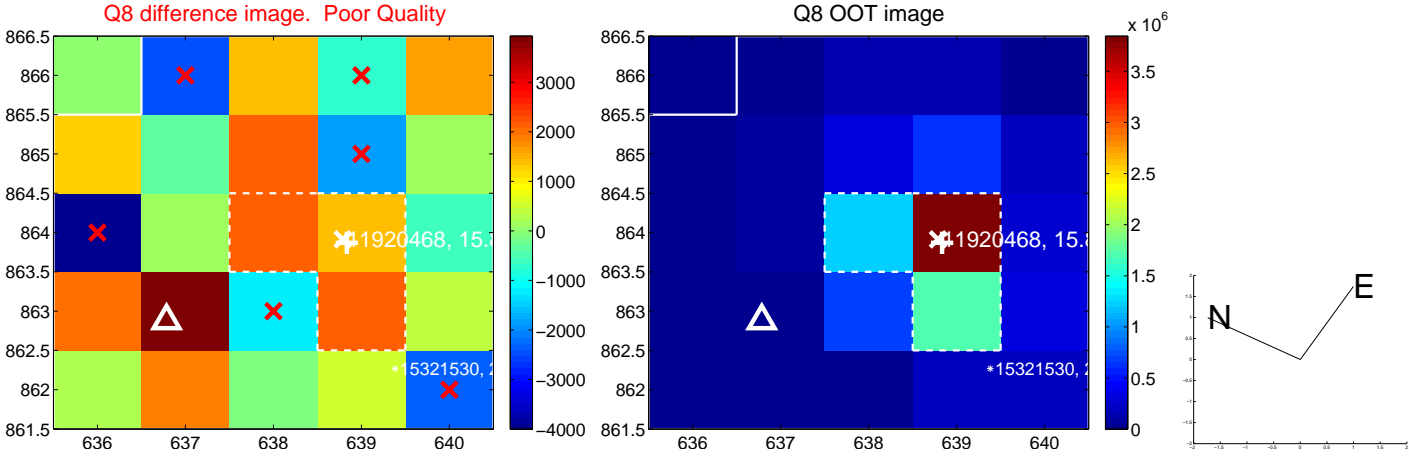
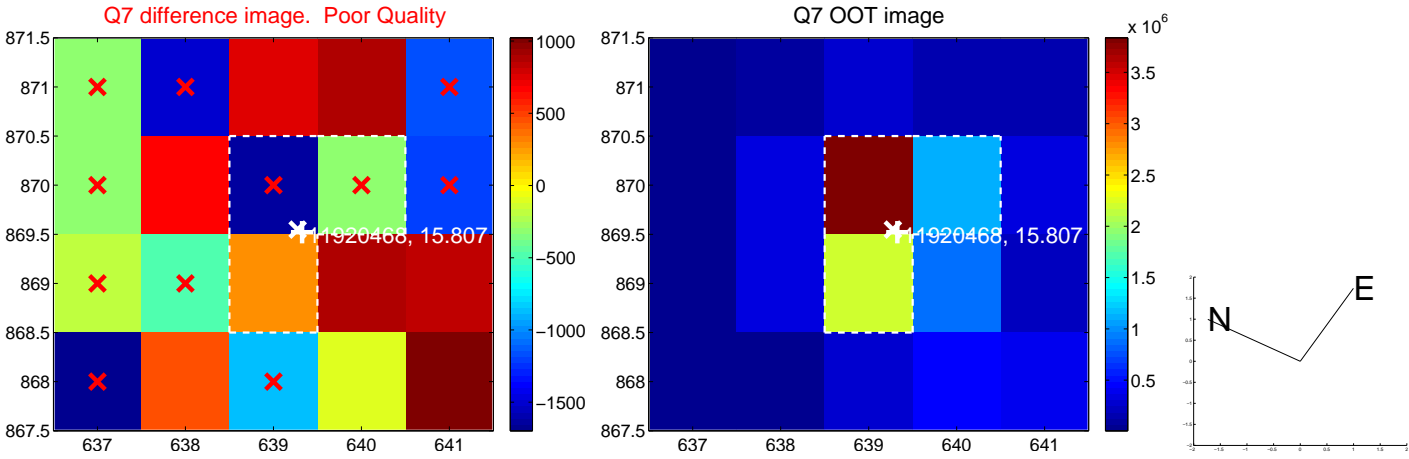
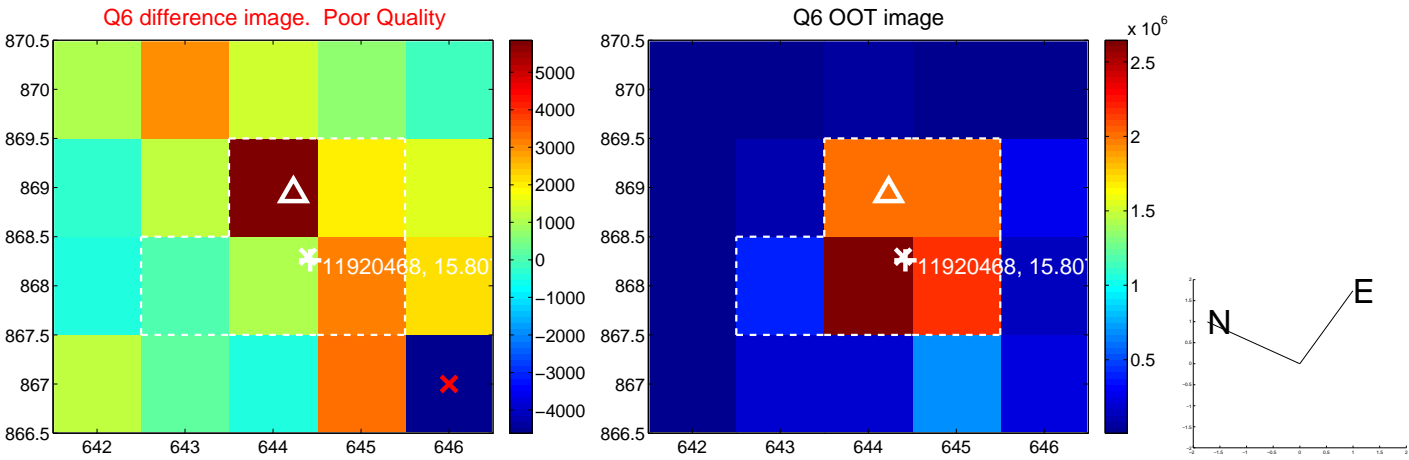
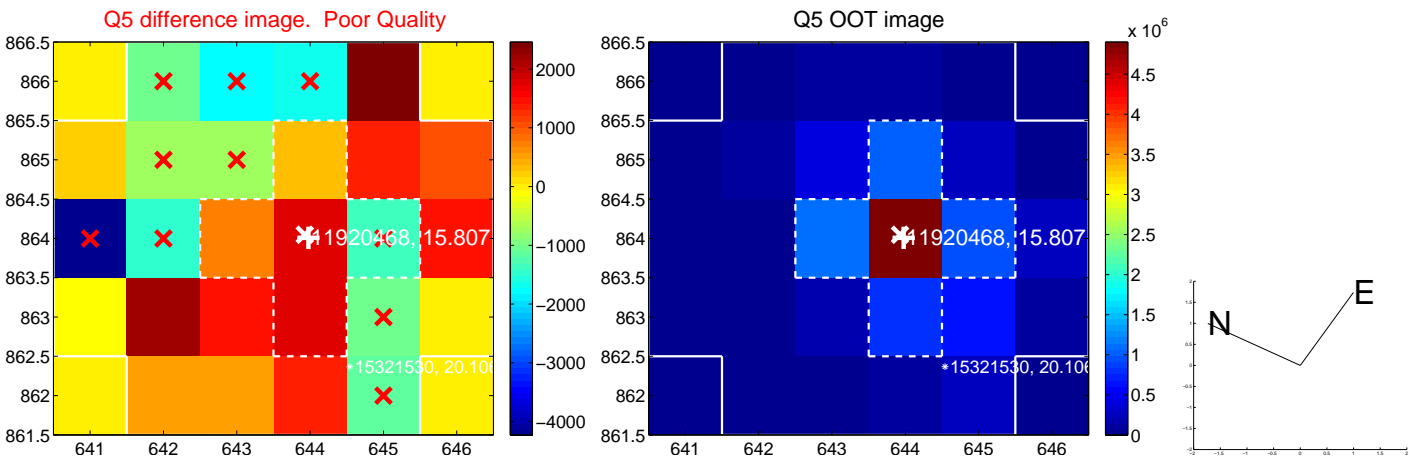


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

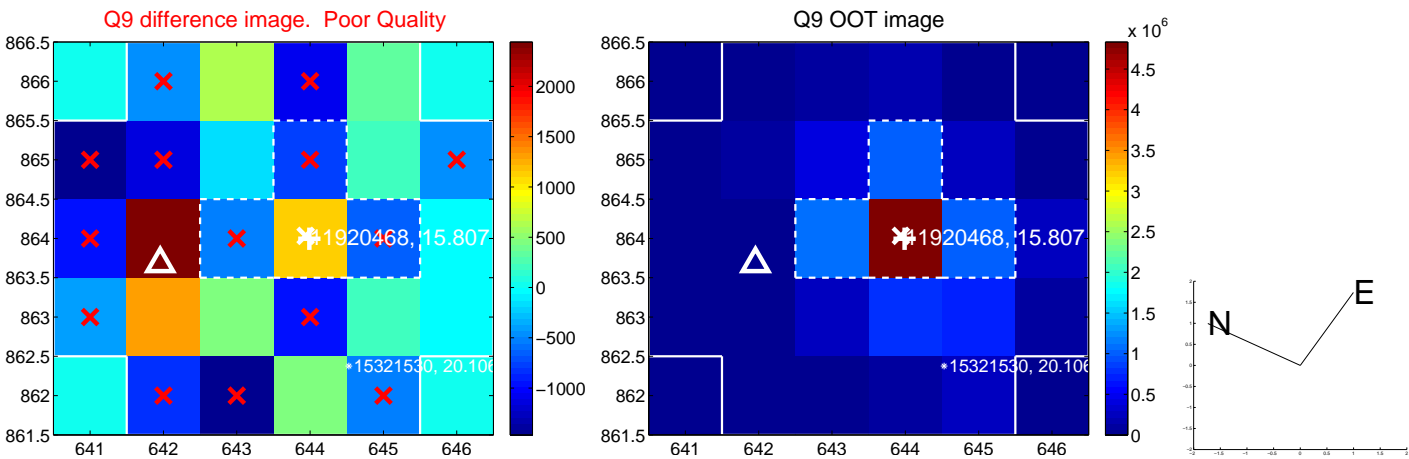
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



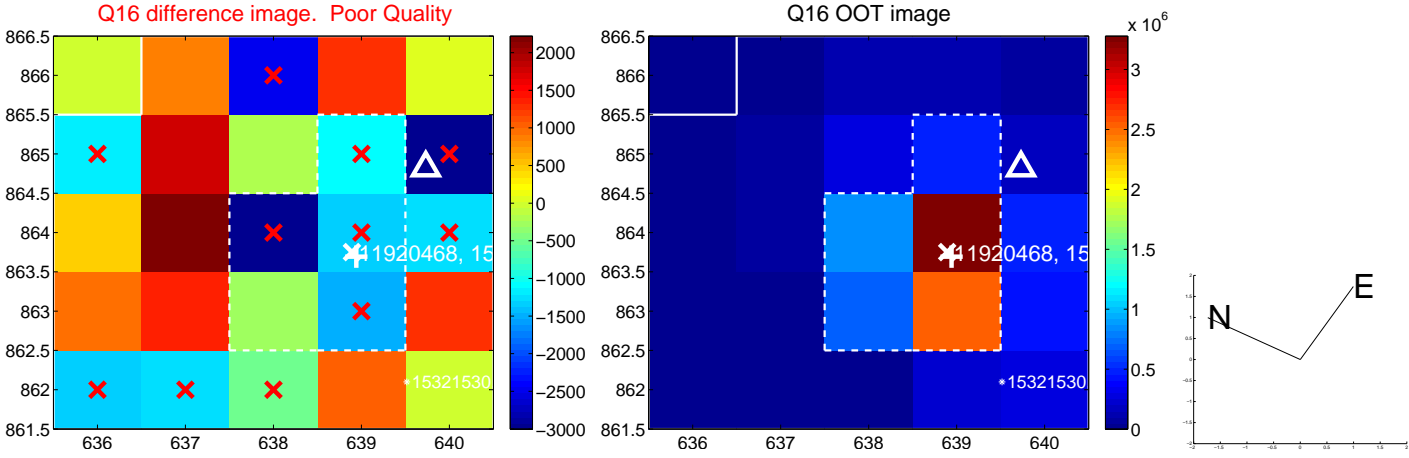
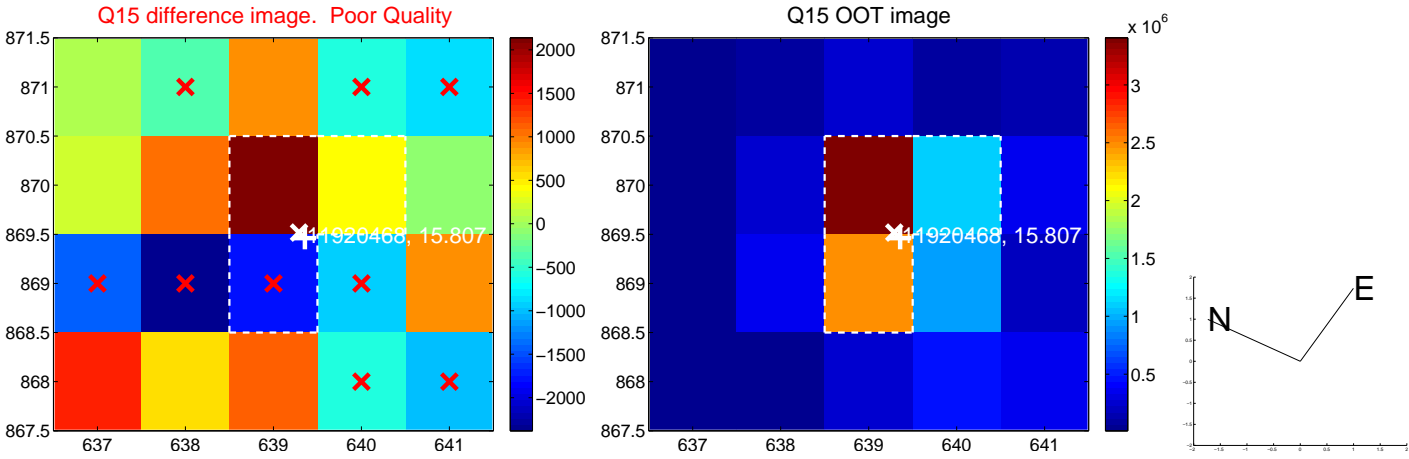
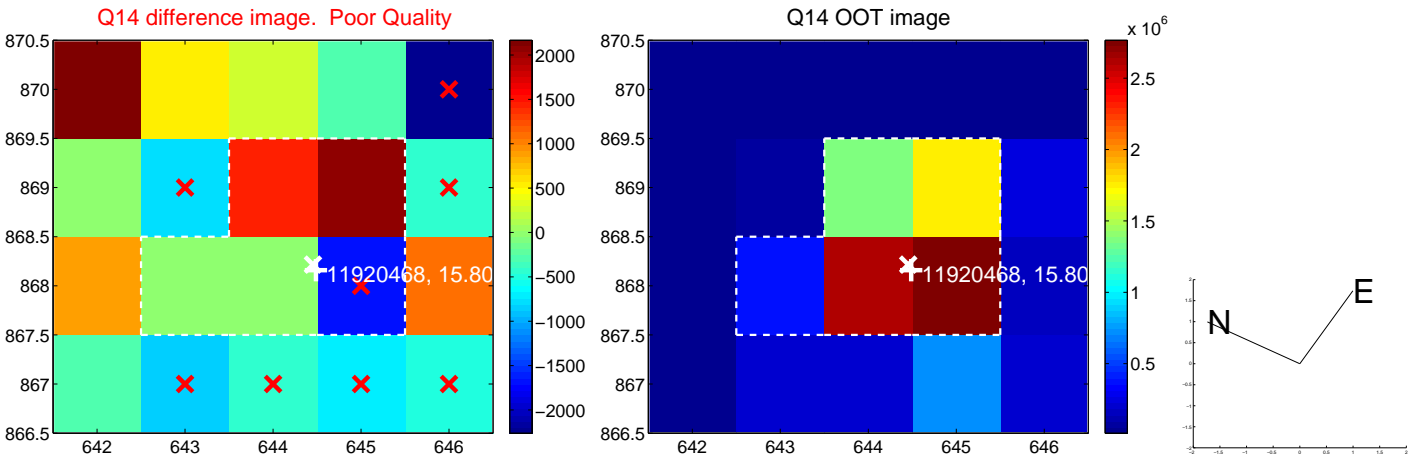
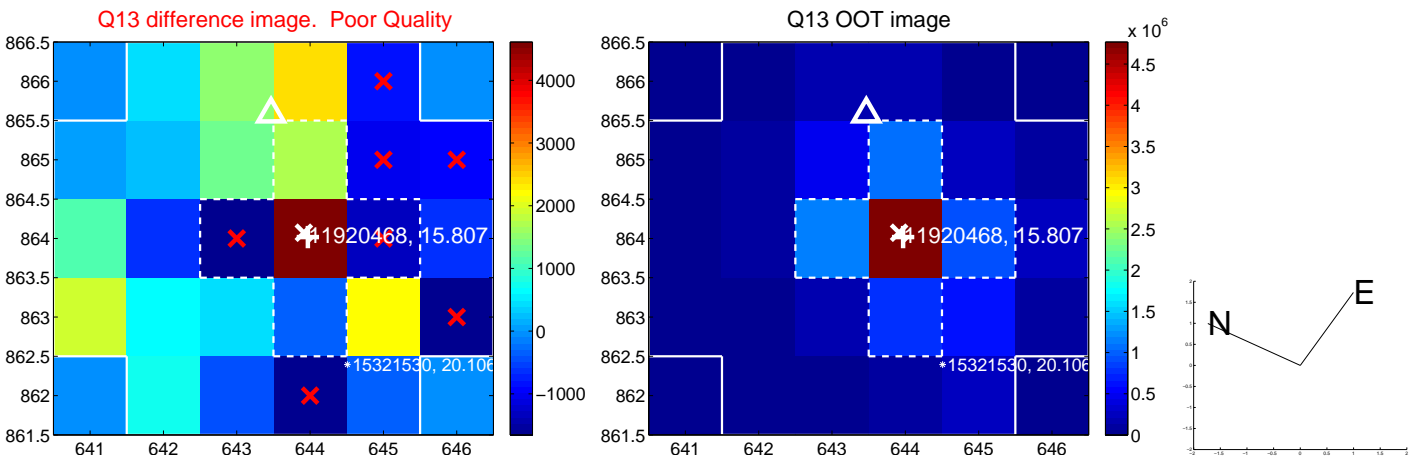
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



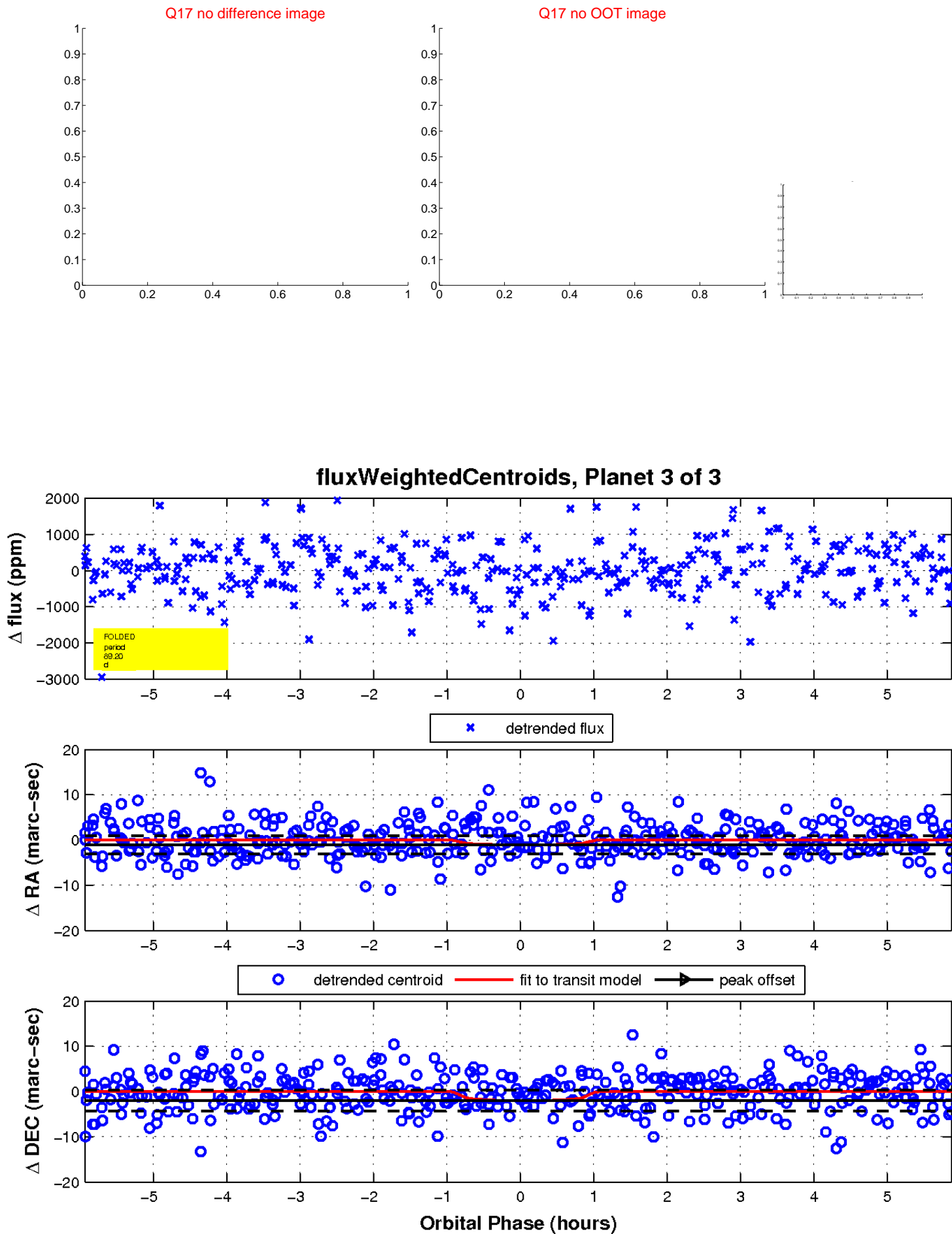
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





## UKIRT Image

Declination

