

# KIC 008686624

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008686624-01	OBS	No	468.347273	186.068488	673.8	3.422	7.5	8.8	0.94	6049	2.80	0.76

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008686624-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—ALL_TRANS_CHASES—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.

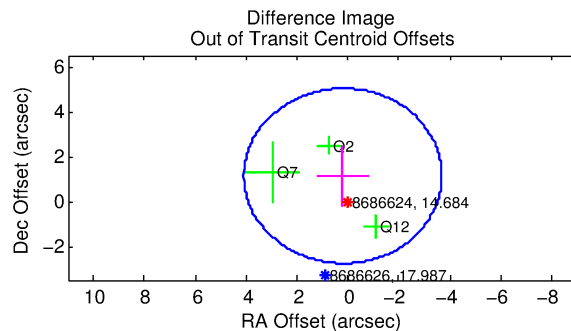
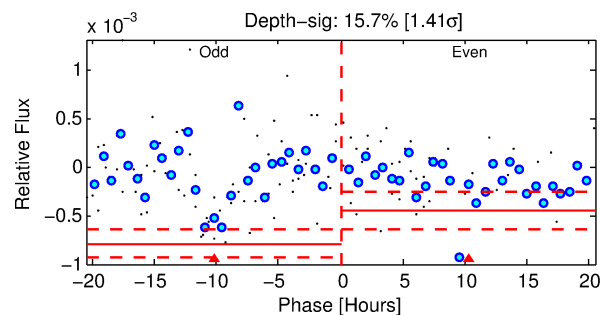
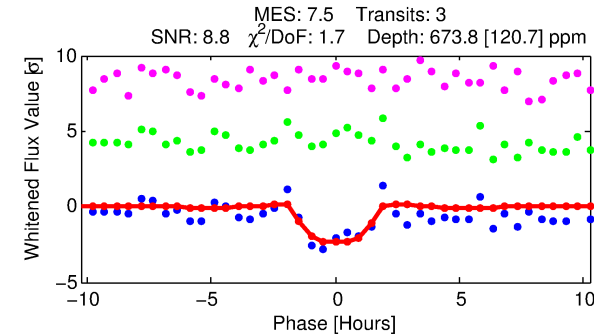
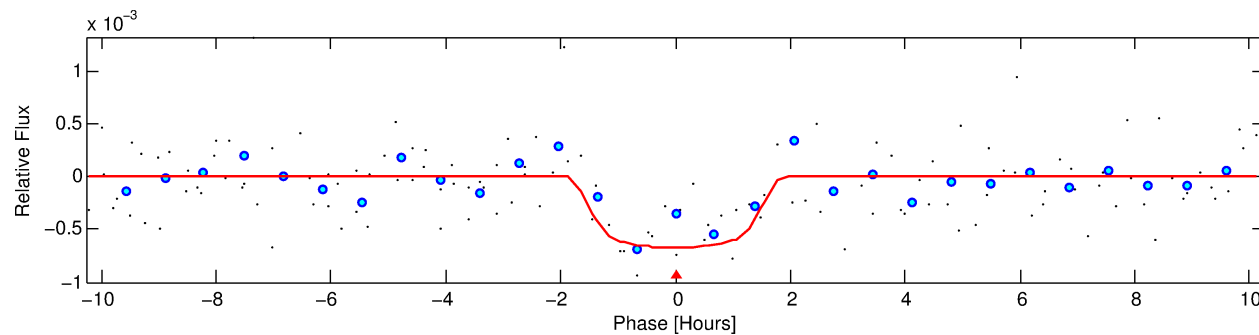
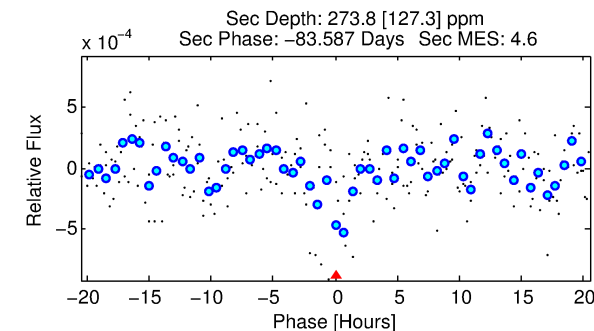
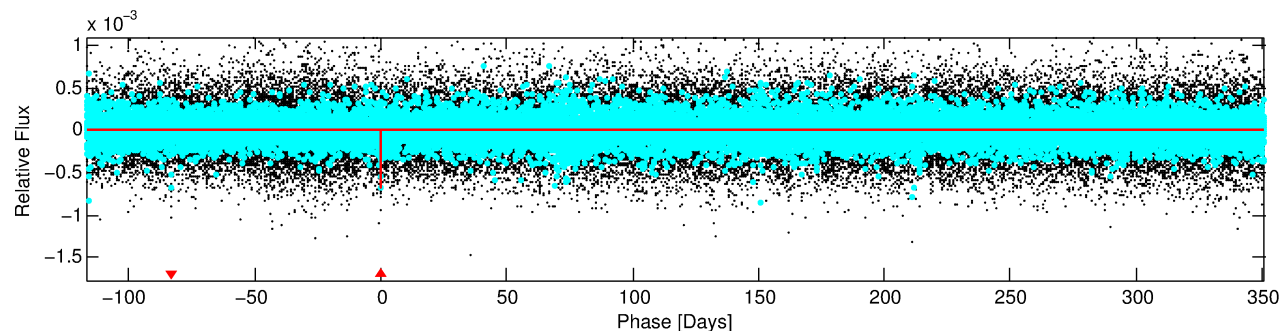
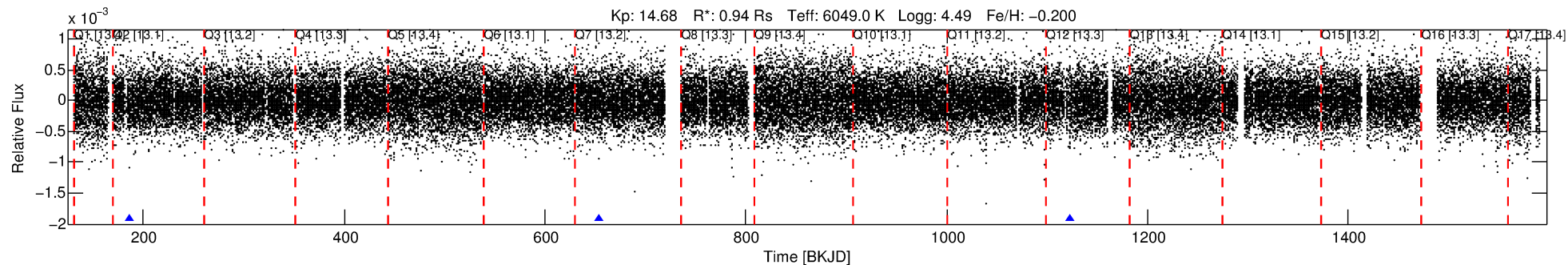
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008686624-01

No Significant Match Found

# DV One-Page Summary

KIC: 8686624 Candidate: 1 of 1 Period: 468.347 d



## DV Fit Results:

Period = 468.34727 [0.00787] d  
Epoch = 186.0685 [0.0104] BKJD  
Rp/R\* = 0.0273 [0.0217]  
a/R\* = 578.88 [2304.41]  
b = 0.87 [1.17]  
Seff = 0.76 [0.32]  
Teff = 238 [25] K  
Rp = 2.80 [2.41] Re  
a = 1.1789 [0.3244] AU  
Ag = 26646.75 [45410.88] [0.59 $\sigma$ ]  
Teffp = 4710 [1956] K [2.29 $\sigma$ ]

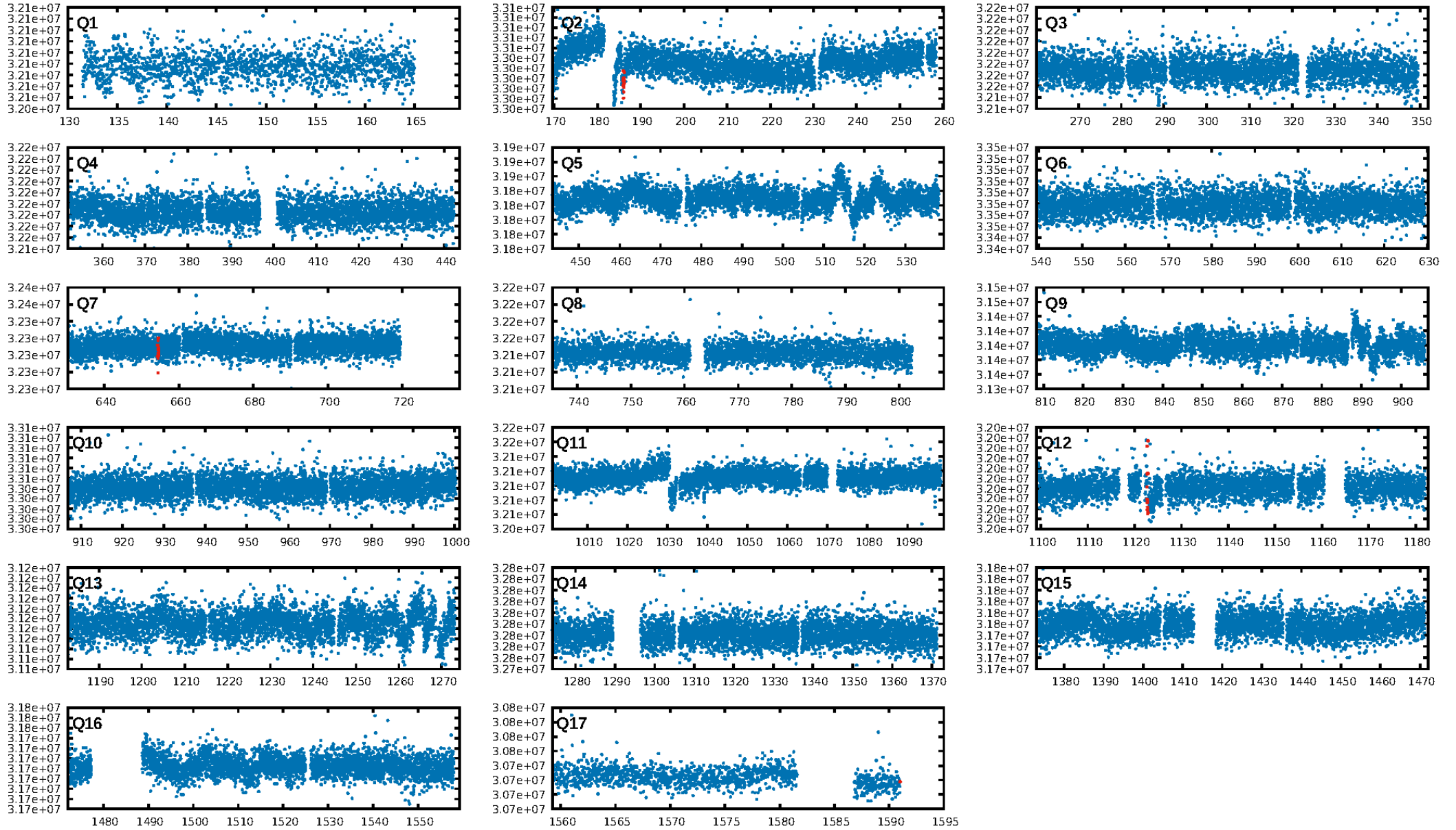
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 5.8%  
ModelChiSquareGof-sig: 88.4%  
**Bootstrap-pfa: 6.81e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -4.477  
Centroid-sig: 46.6%  
Centroid-so: 1.095 arcsec [0.71 $\sigma$ ]  
OotOffset-rm: 1.148 arcsec [0.88 $\sigma$ ]  
KicOffset-rm: 1.182 arcsec [0.90 $\sigma$ ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

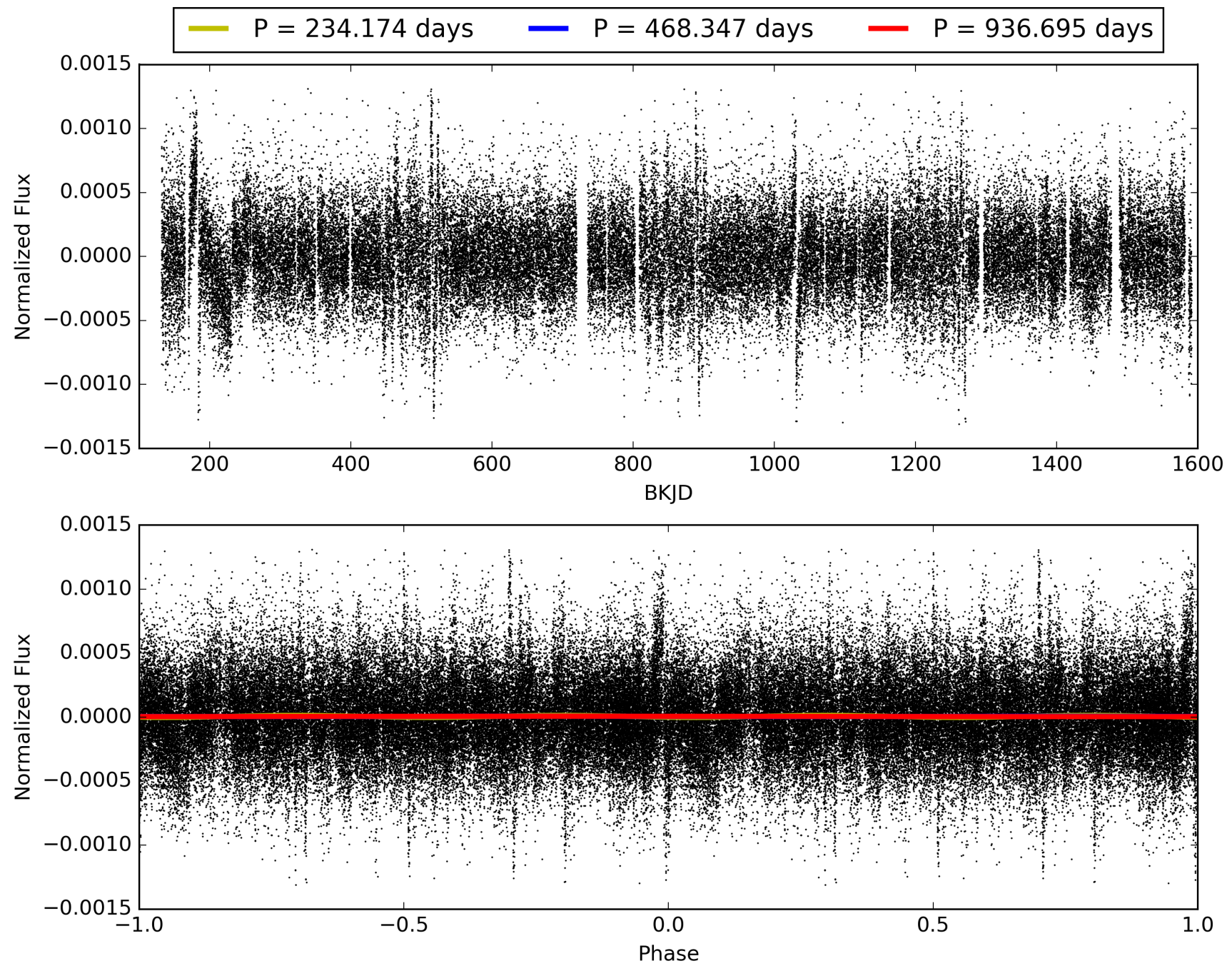
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:36:05 Z

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

# TCE 008686624-01, PDC Light Curves

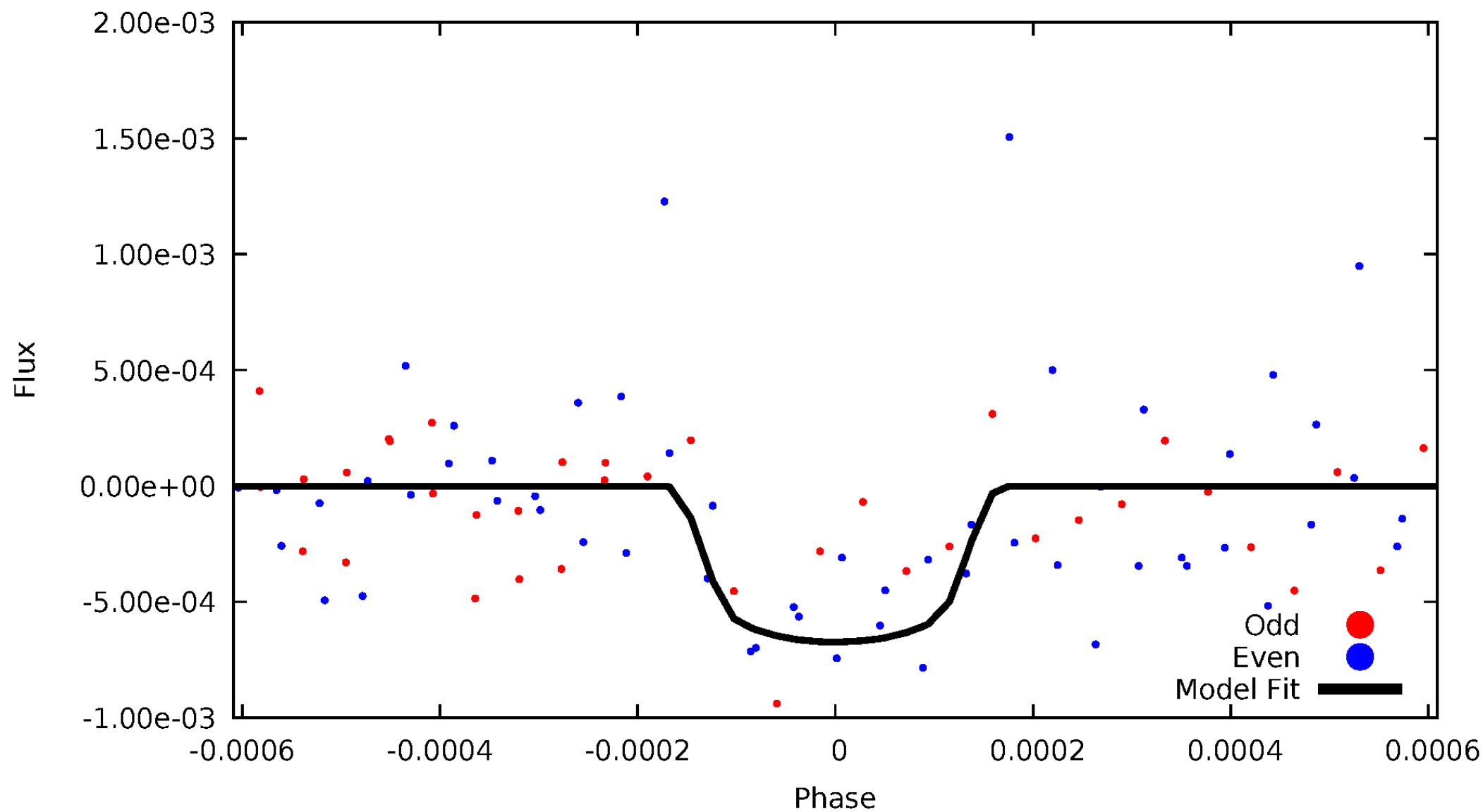


TCE 008686624-01



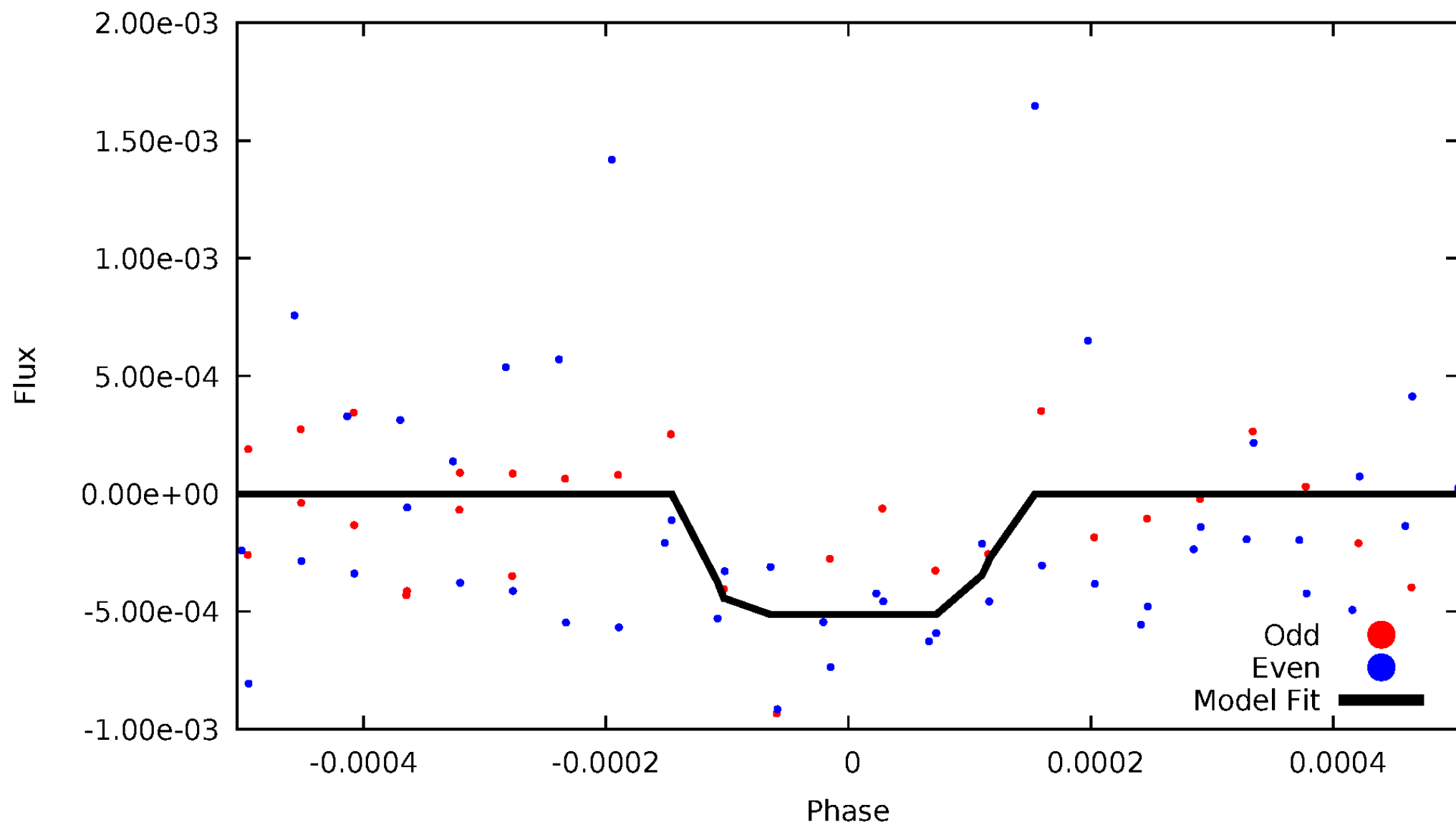
# DV Odd/Even

TCE 008686624-01



# ALT Odd/Even

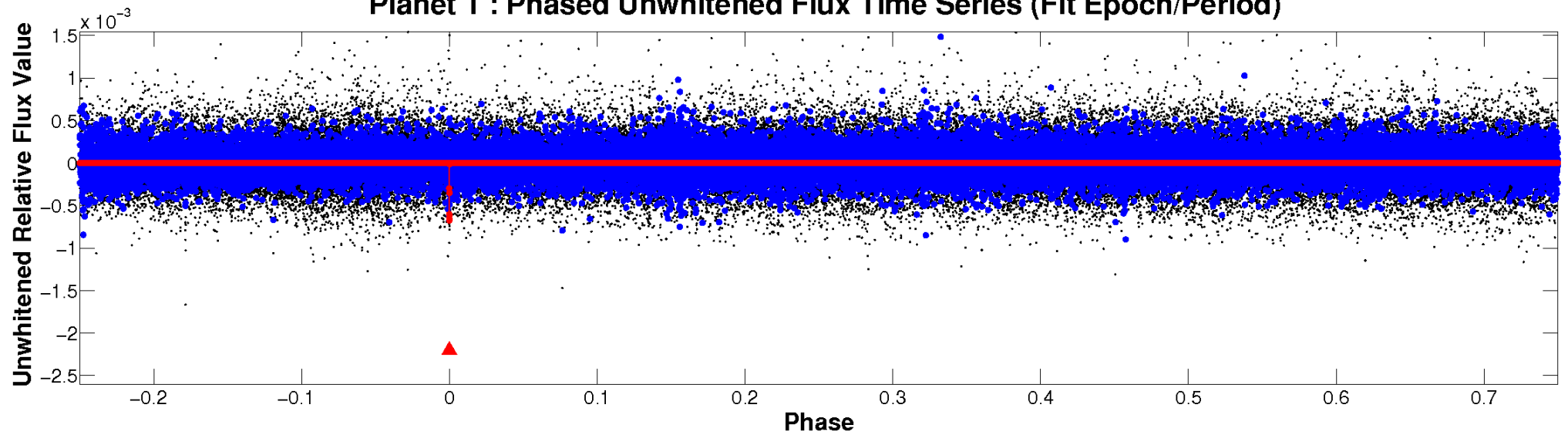
TCE 008686624-01



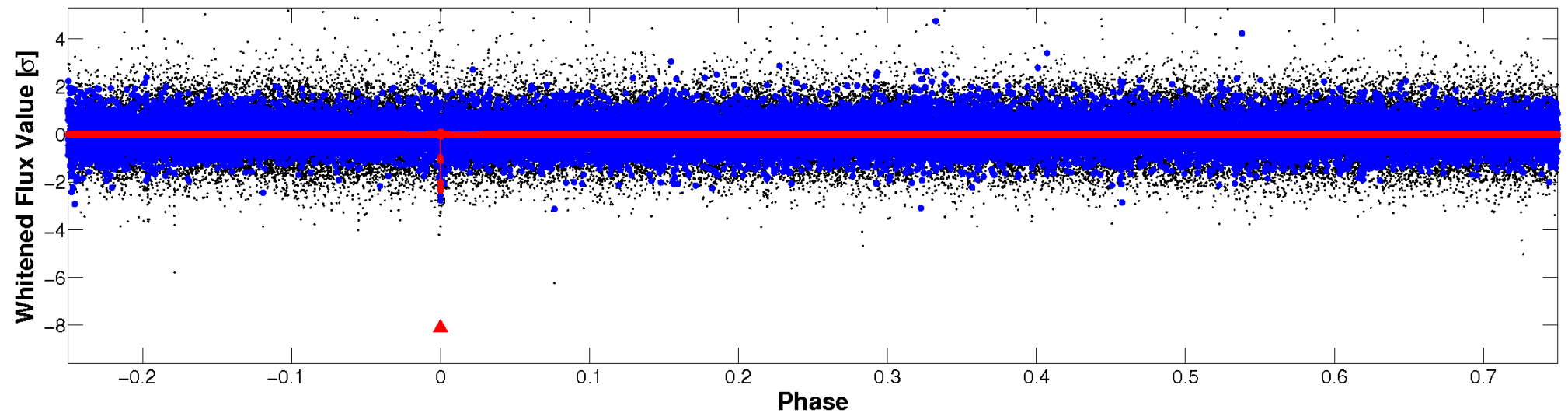


# Non-Whitened Vs. Whitened Light Curve

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

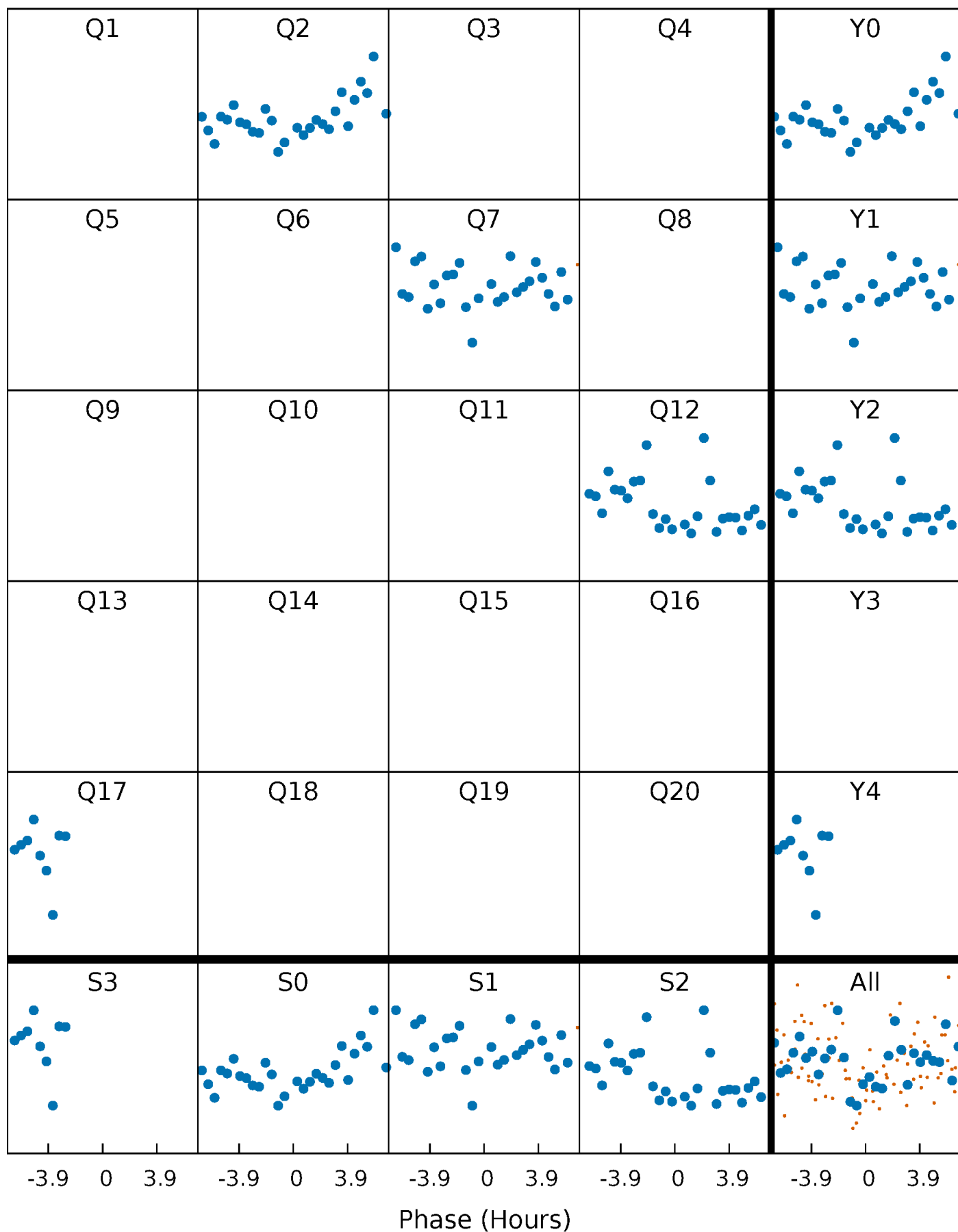


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

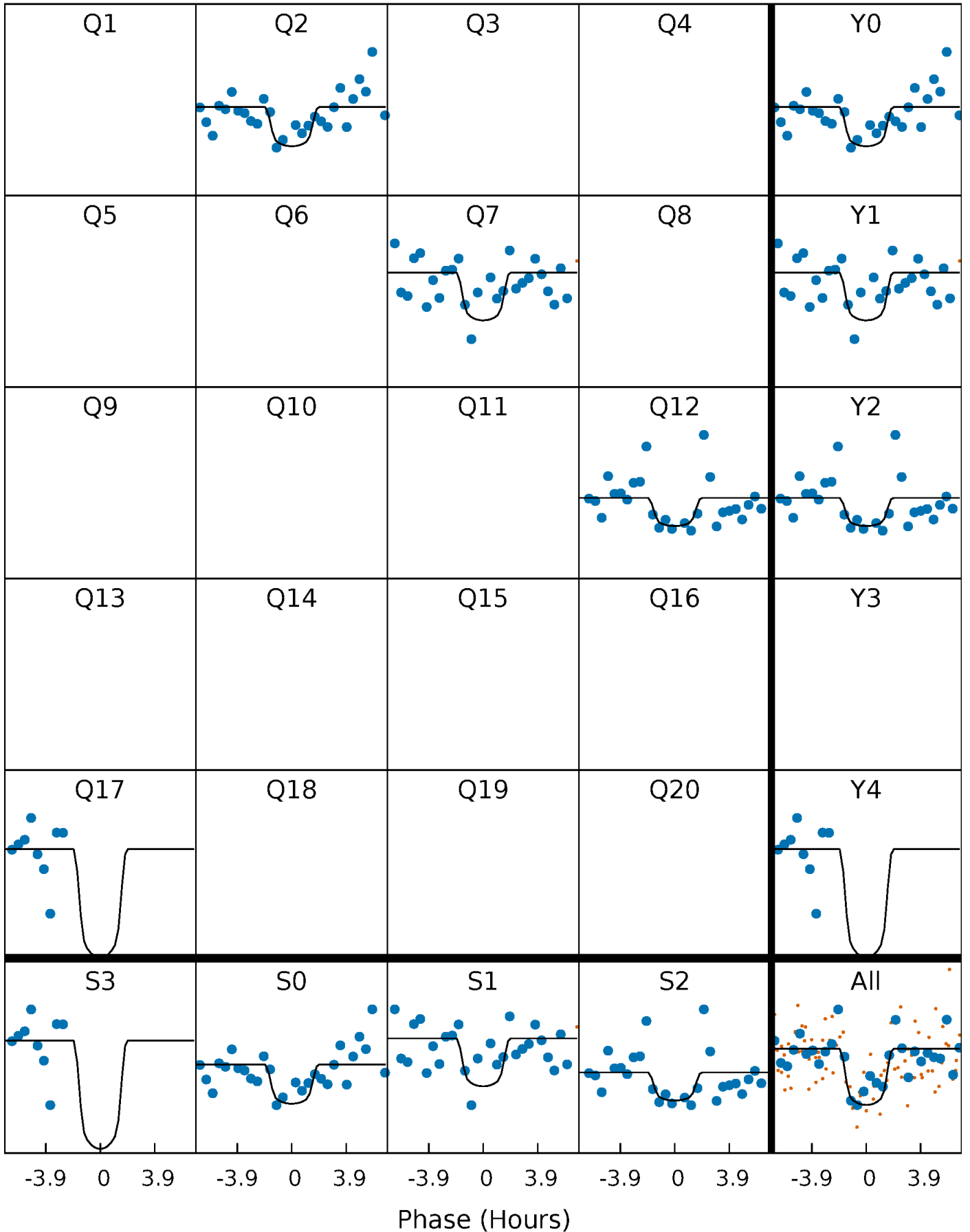
TCE 008686624-01 P=468.347273 Days  $T_0=186.068488$  (BKJD)





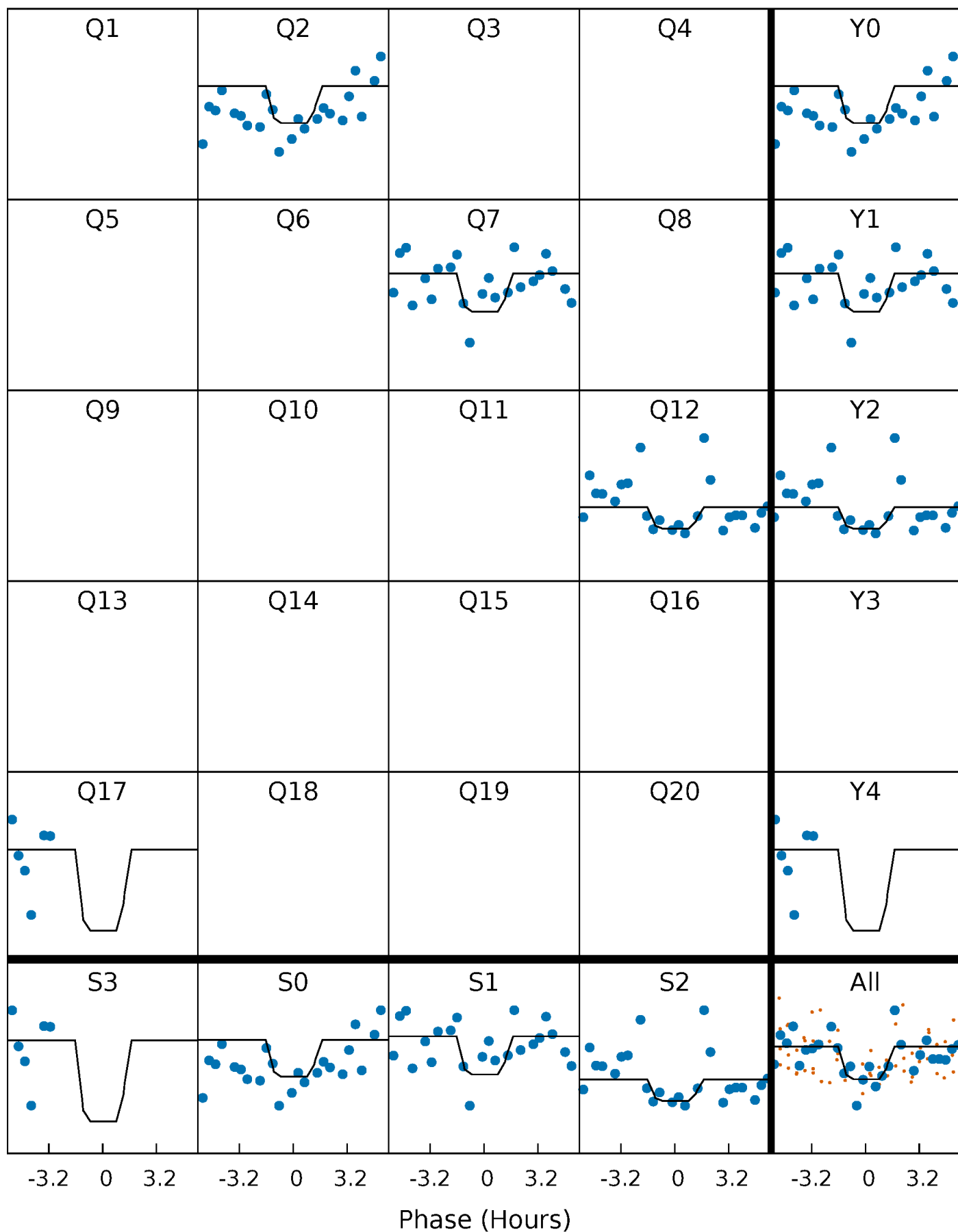
# DV Quarter-Phased Transit Curves

TCE 008686624-01 P=468.347273 Days  $T_0=186.068488$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

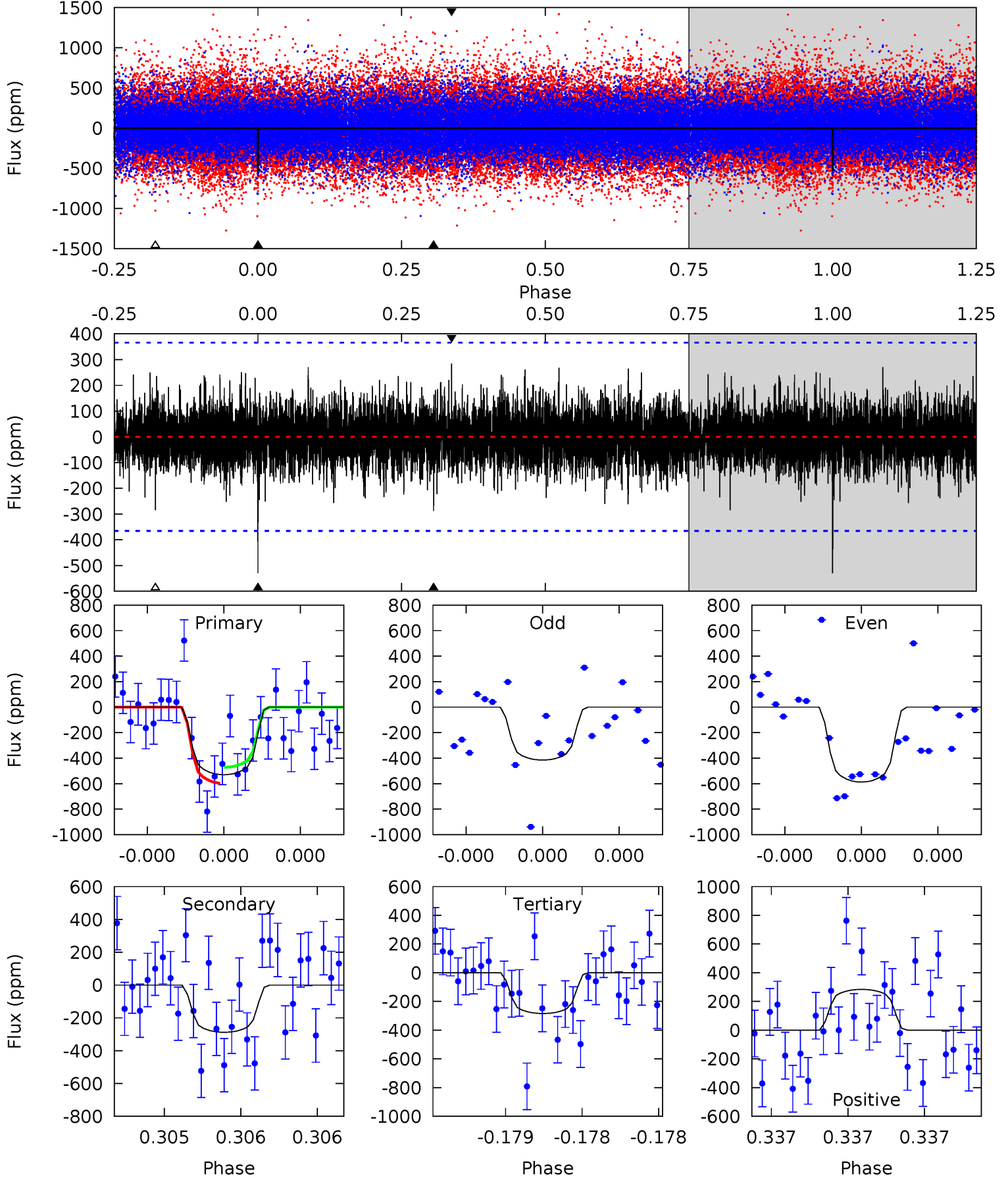
TCE 008686624-01 P=468.357629 Days  $T_0=186.058143$  (BKJD)



# DV Model-Shift Uniqueness Test

008686624-01, P = 468.347273 Days, E = 186.068488 Days

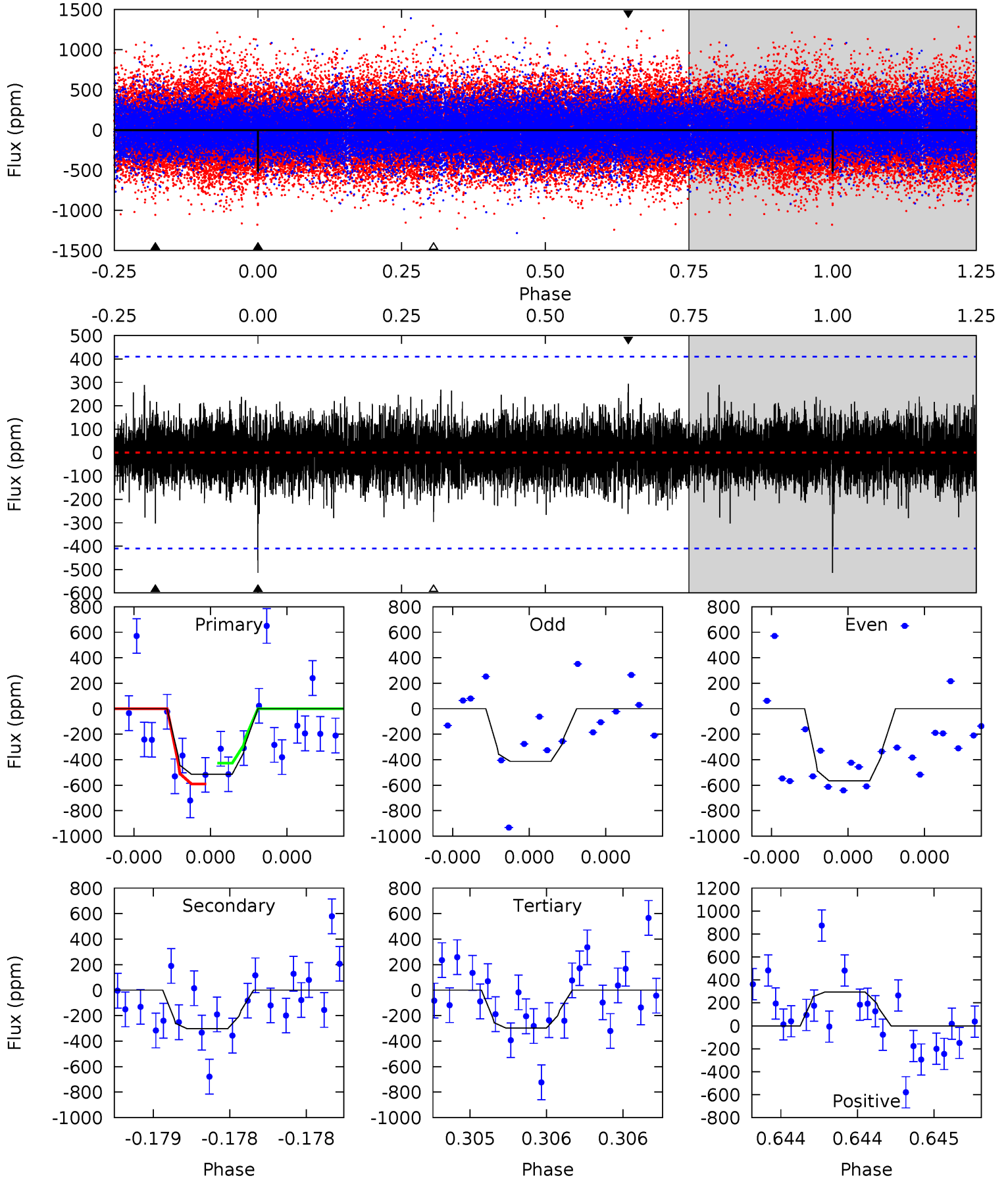
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.20	4.46	4.40	4.40	5.66	3.61	1.09	3.80	3.80	0.06	0.06	1.22	1.14	0.35	0.97



# Alt Model-Shift Uniqueness Test

008686624-01, P = 468.357629 Days, E = 186.058143 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
7.13	4.20	4.12	4.07	5.69	3.66	0.99	3.02	3.06	0.08	0.12	0.98	1.05	0.36	1.12



### Stellar Parameters For KIC 008686624

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6049^{+181}_{-181}$	$4.489^{+0.054}_{-0.216}$	$-0.200^{+0.250}_{-0.300}$	$0.941^{+0.310}_{-0.097}$	$0.989^{+0.143}_{-0.117}$	$1.672^{+0.478}_{-0.930}$
	+3%/-3%	+1%/-5%	+125%/-150%	+33%/-10%	+14%/-12%	+29%/-56%
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 008686624-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-288 \pm 65$	$3.32^{+2.16}_{-1.95}$	$341^{+25}_{-17}$	$4645^{+2505}_{-833}$	$19159^{+105358}_{-12318}$
Alt.	$-302 \pm 72$	$2.83^{+2.43}_{-1.75}$	$342^{+26}_{-18}$	$5077^{+2992}_{-1144}$	$29015^{+162000}_{-21077}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

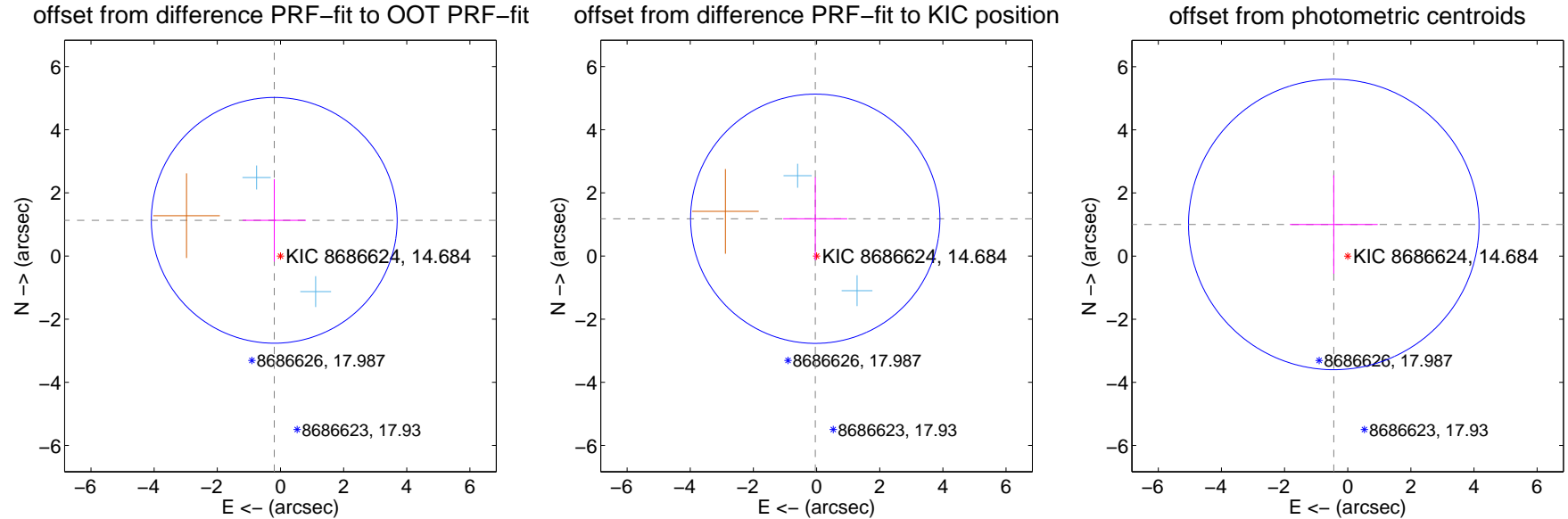
## DV Centroid Data

Supplemental centroid analysis for 008686624-01. Kepler magnitude: 14.68. Transit SNR 8.83

There are 2 quarters with good PRF difference image offsets

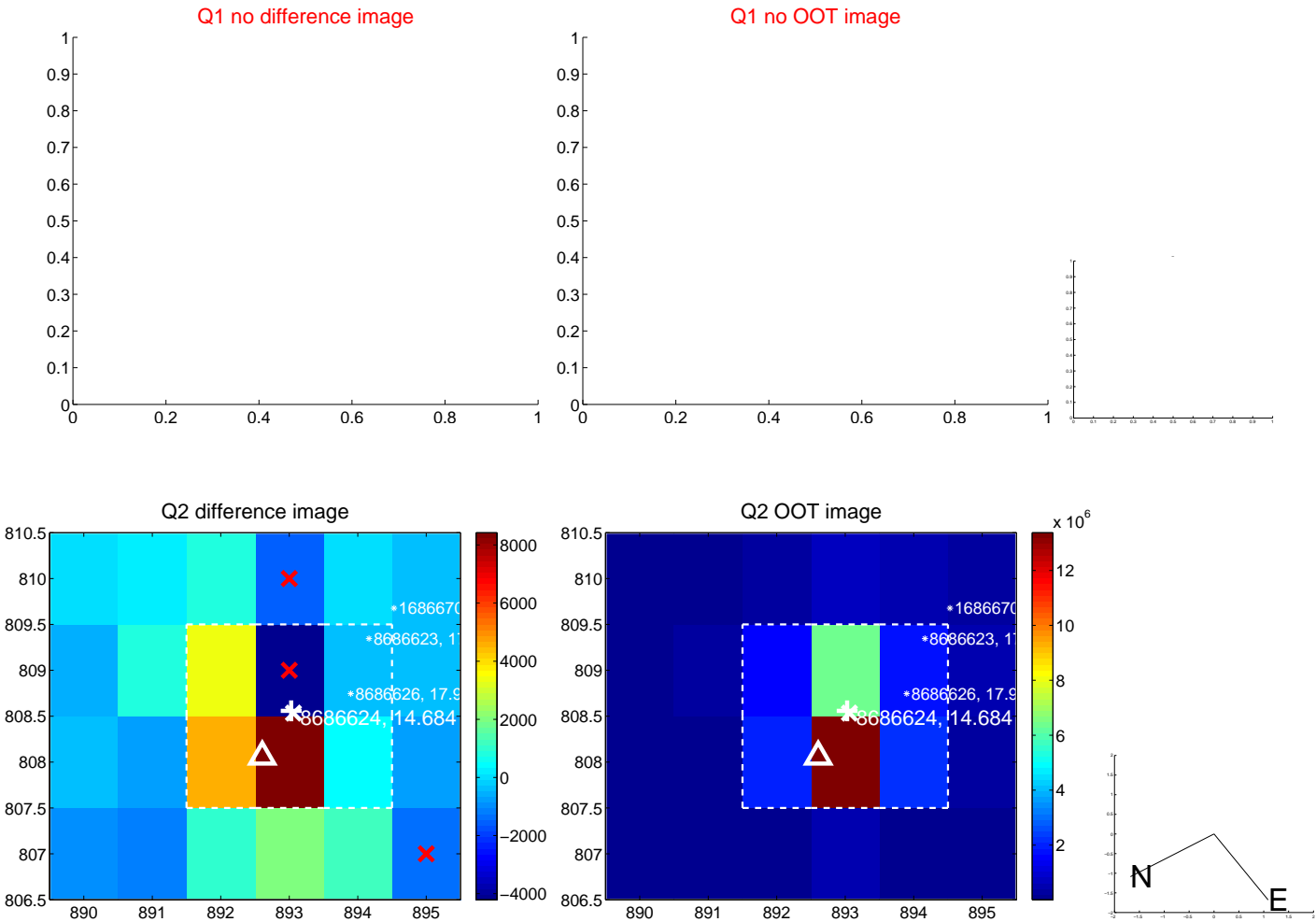
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.148 \pm 1.298$	0.88	$0.197 \pm 1.003$	$1.131 \pm 1.306$
PRF-fit source offset from KIC position	$1.182 \pm 1.316$	0.90	$0.042 \pm 1.015$	$1.181 \pm 1.316$
photometric centroid source offset	$1.10 \pm 1.53$	0.71	$0.44 \pm 1.39$	$1.00 \pm 1.56$



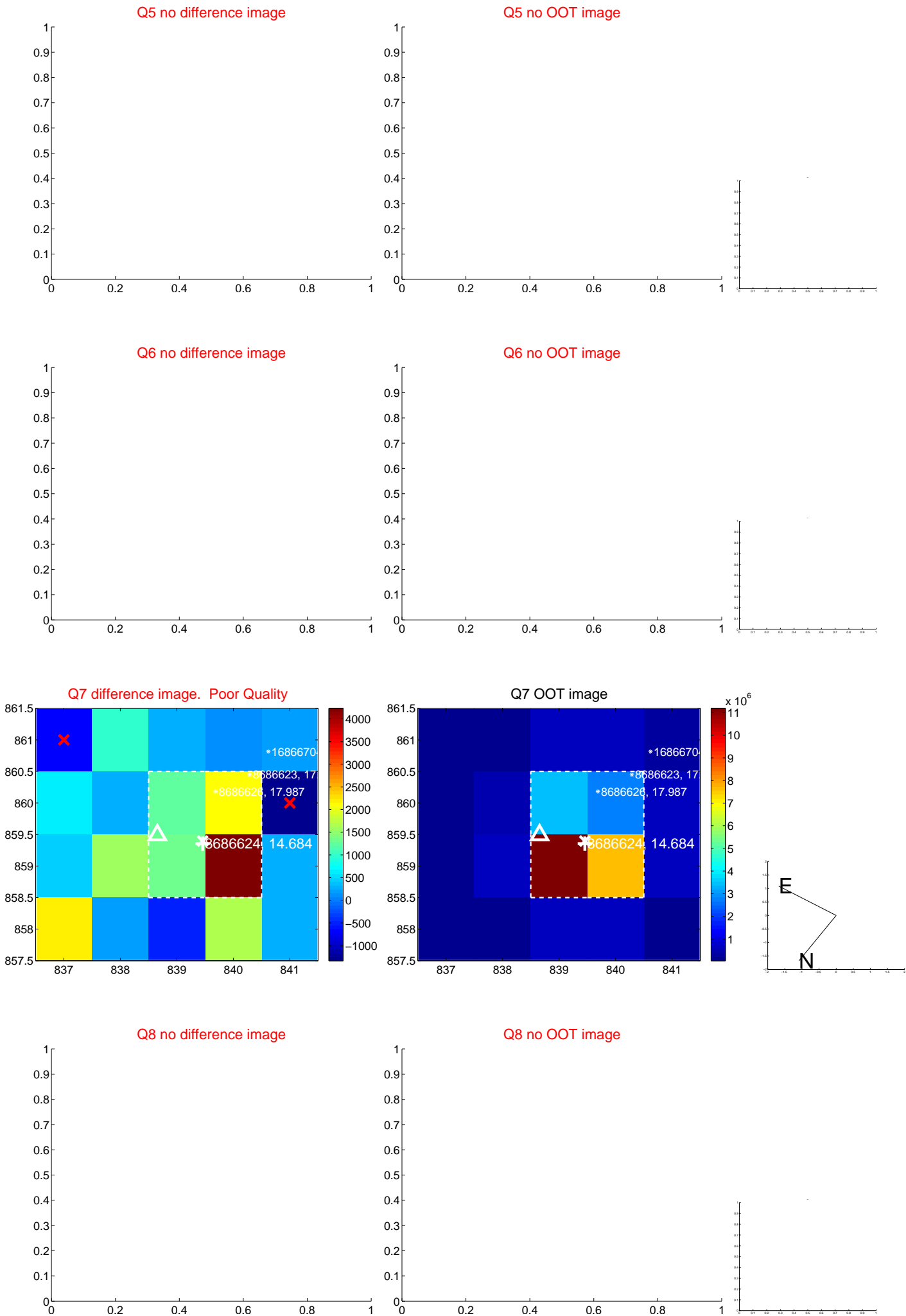
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

Q9 no difference image



Q9 no OOT image



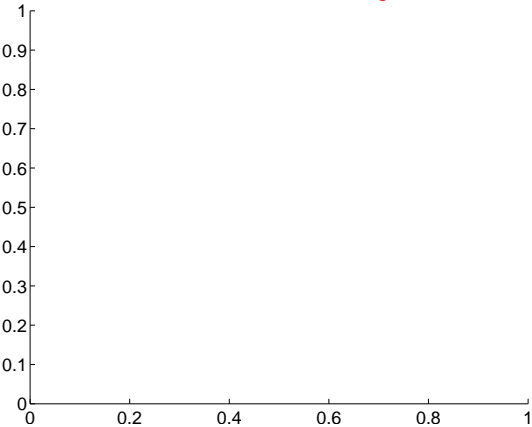
Q10 no difference image



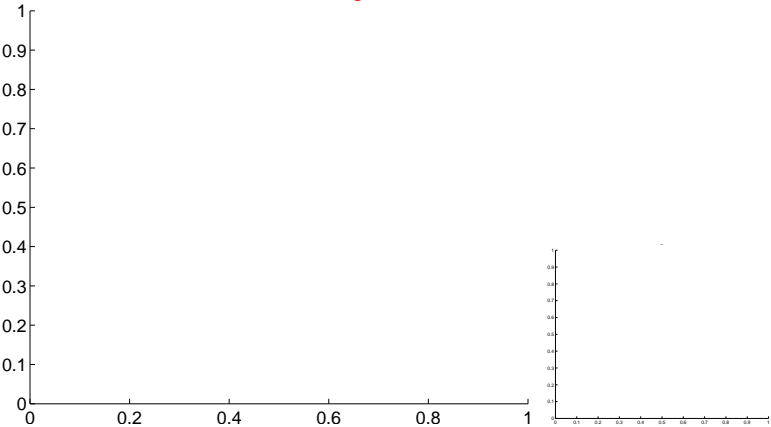
Q10 no OOT image



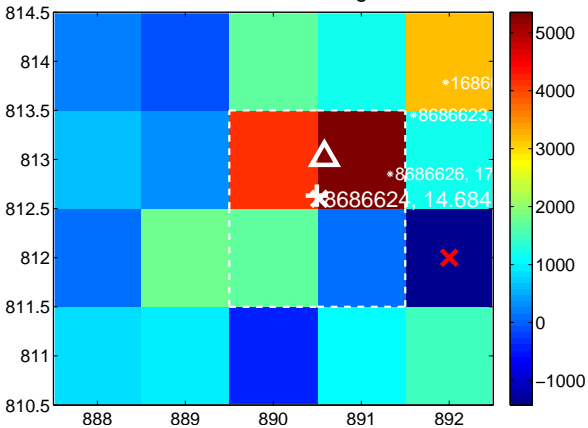
Q11 no difference image



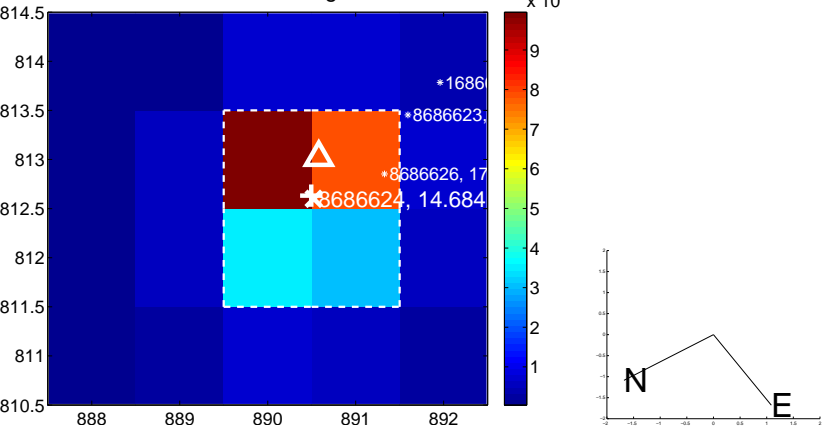
Q11 no OOT image



Q12 difference image



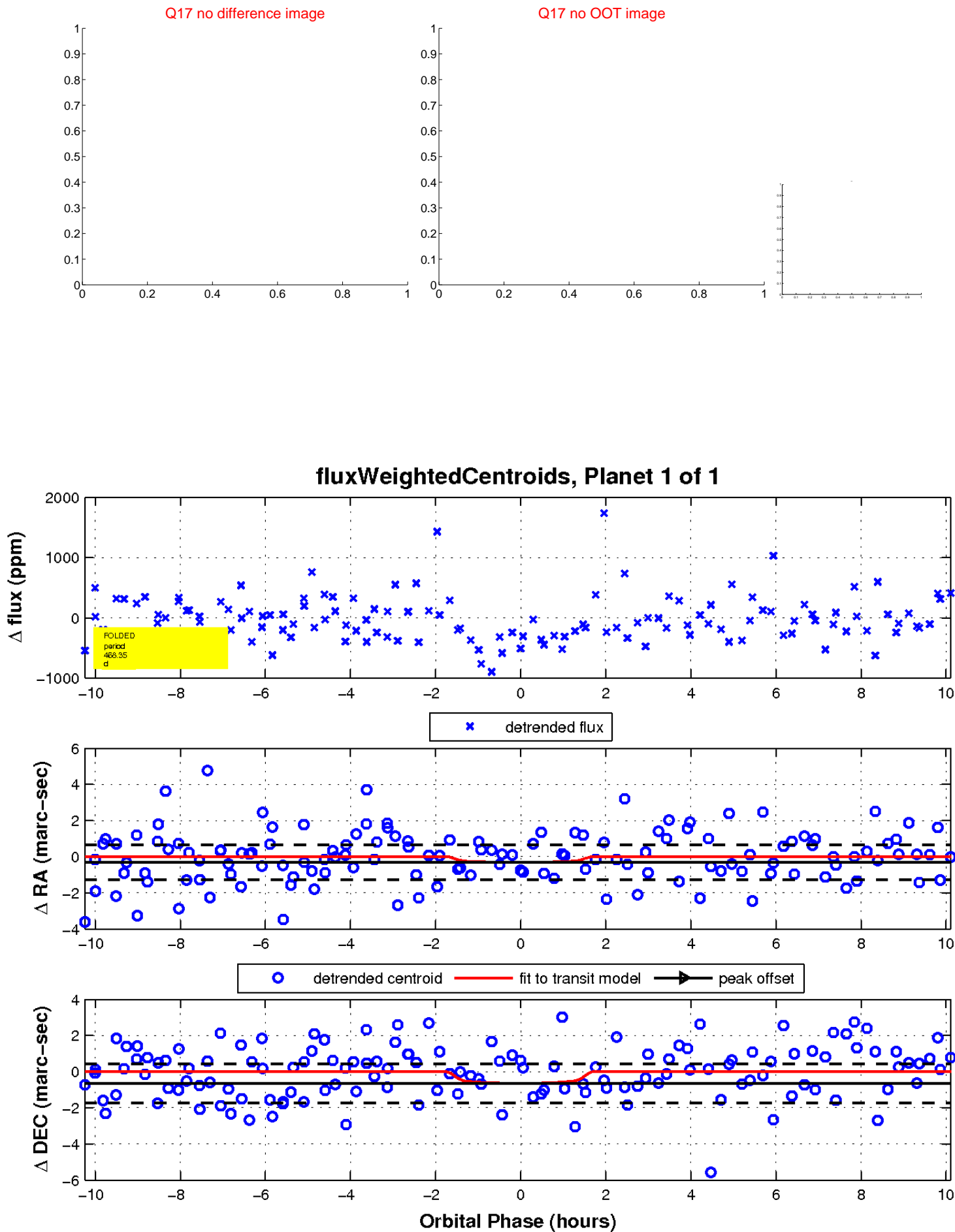
Q12 OOT image



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

