

# KIC 004246864

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004246864-01	OBS	No	344.643849	404.491695	489.5	19.923	7.9	6.2	0.65	4564	3.07	0.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004246864-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—INCONSISTENT_TRANS—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.

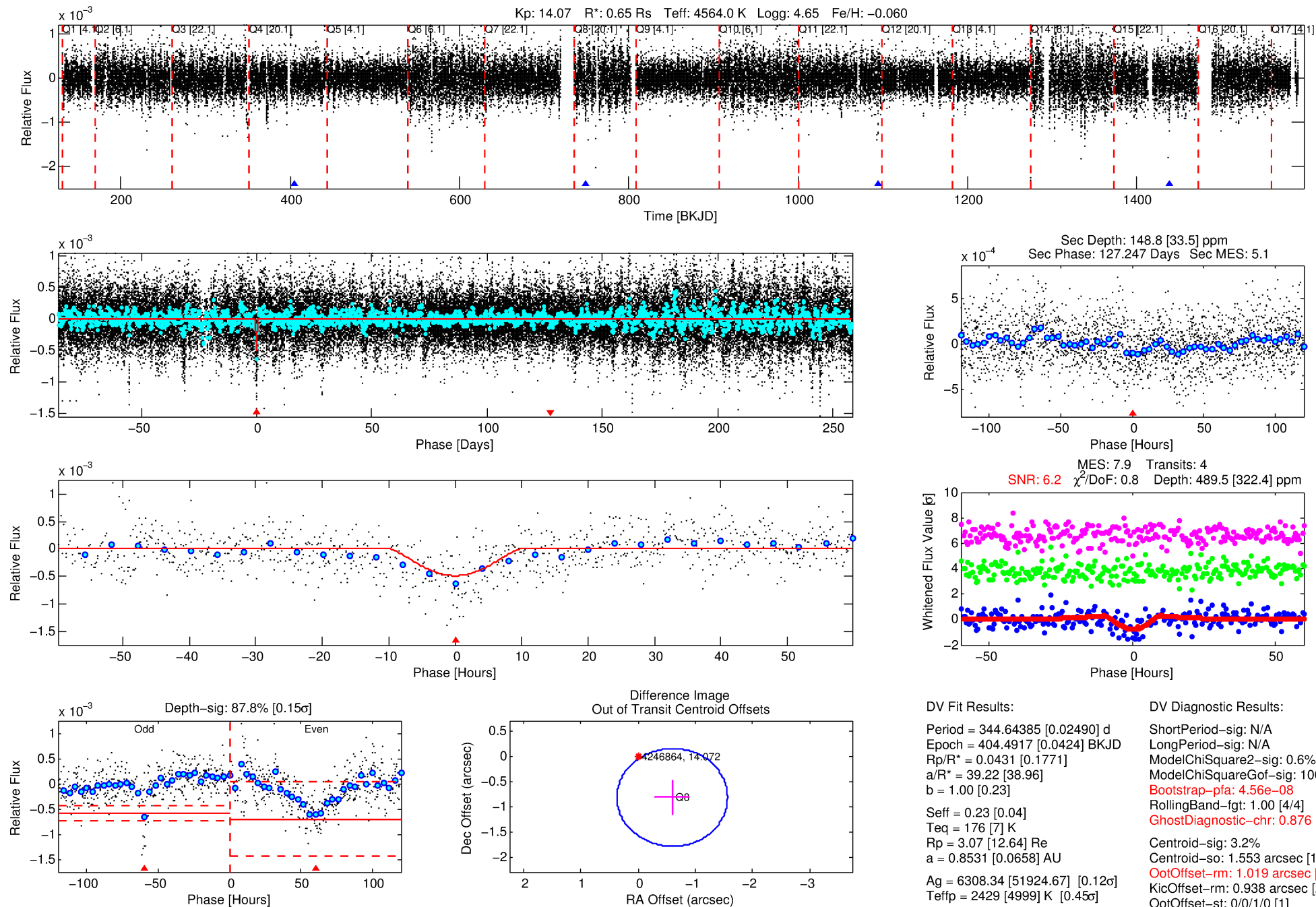
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004246864-01

No Significant Match Found

# DV One-Page Summary

KIC: 4246864 Candidate: 1 of 1 Period: 344.644 d



## DV Fit Results:

Period = 344.64385 [0.02490] d  
Epoch = 404.4917 [0.0424] BKJD  
Rp/R\* = 0.0431 [0.1771]  
a/R\* = 39.22 [38.96]  
b = 1.00 [0.23]  
Seff = 0.23 [0.04]  
Teq = 176 [7] K  
Rp = 3.07 [12.64] Re  
a = 0.8531 [0.0658] AU  
Ag = 6308.34 [51924.67] [0.12 $\sigma$ ]  
Teffp = 2429 [4999] K [0.45 $\sigma$ ]

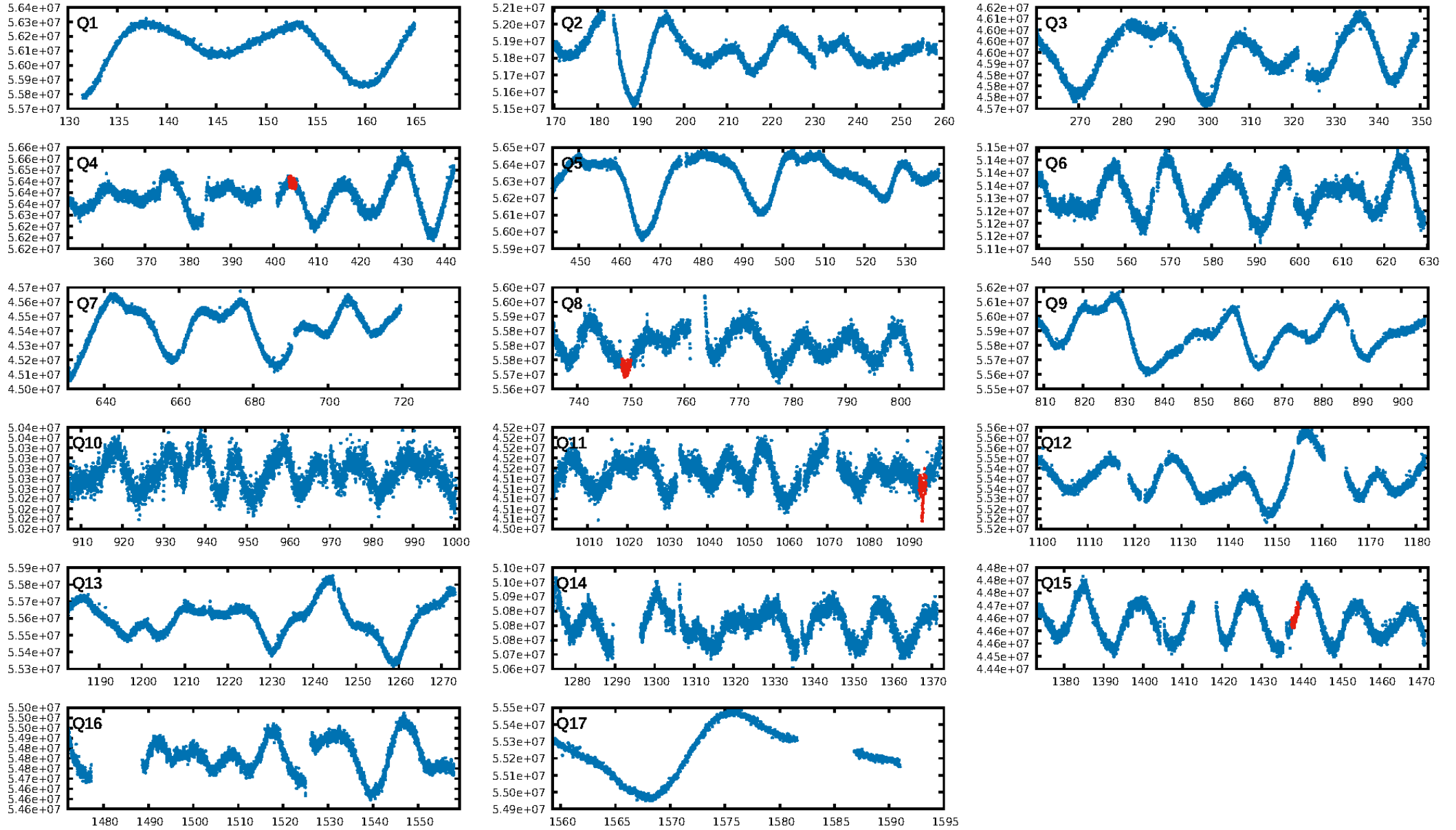
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.56e-08  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.876  
Centroid-sig: 3.2%  
Centroid-so: 1.553 arcsec [1.85 $\sigma$ ]  
OotOffset-rm: 1.019 arcsec [3.16 $\sigma$ ]  
KicOffset-rm: 0.938 arcsec [2.91 $\sigma$ ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [2/2]

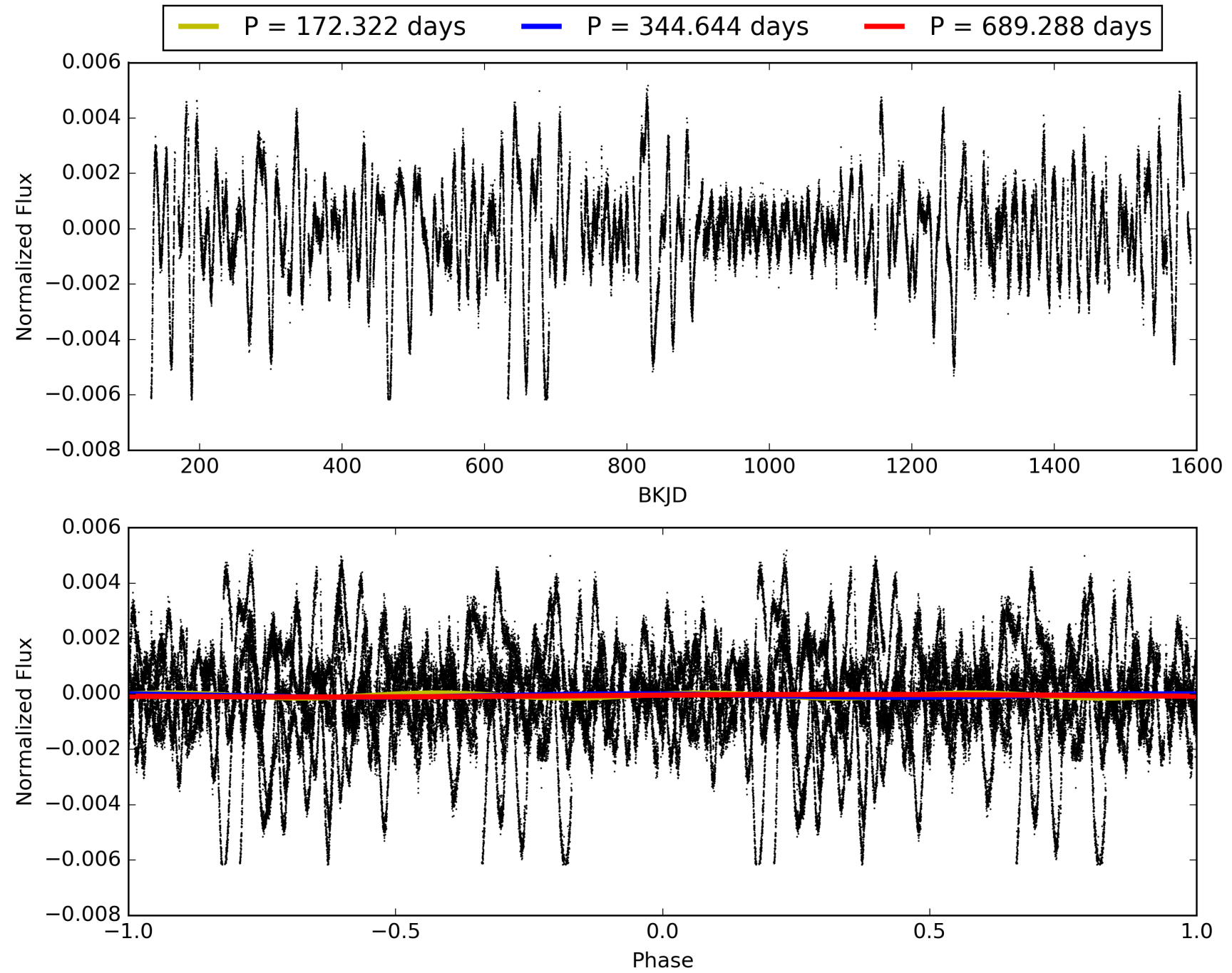
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:02:45 Z

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

# TCE 004246864-01, PDC Light Curves

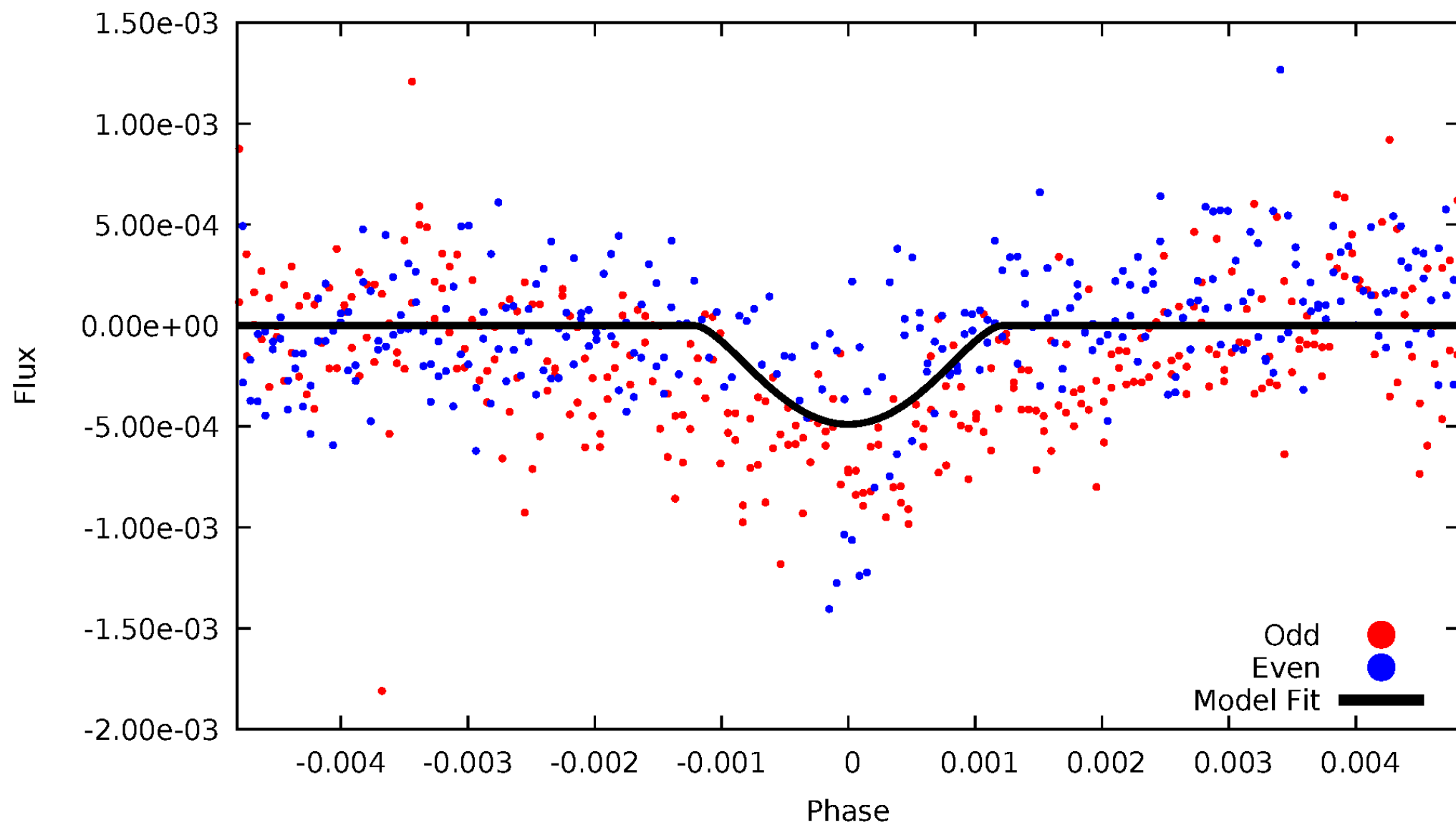


TCE 004246864-01



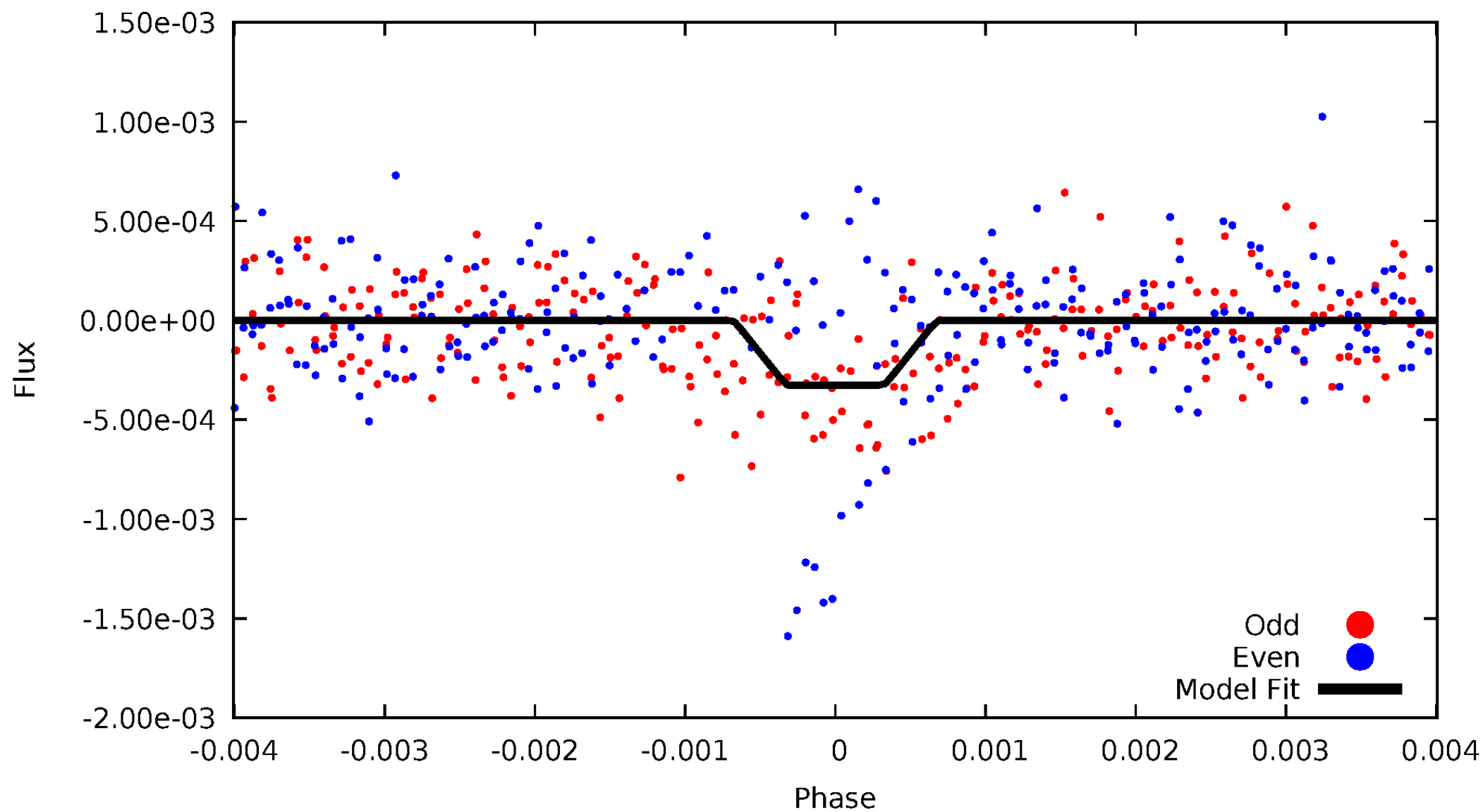
# DV Odd/Even

TCE 004246864-01



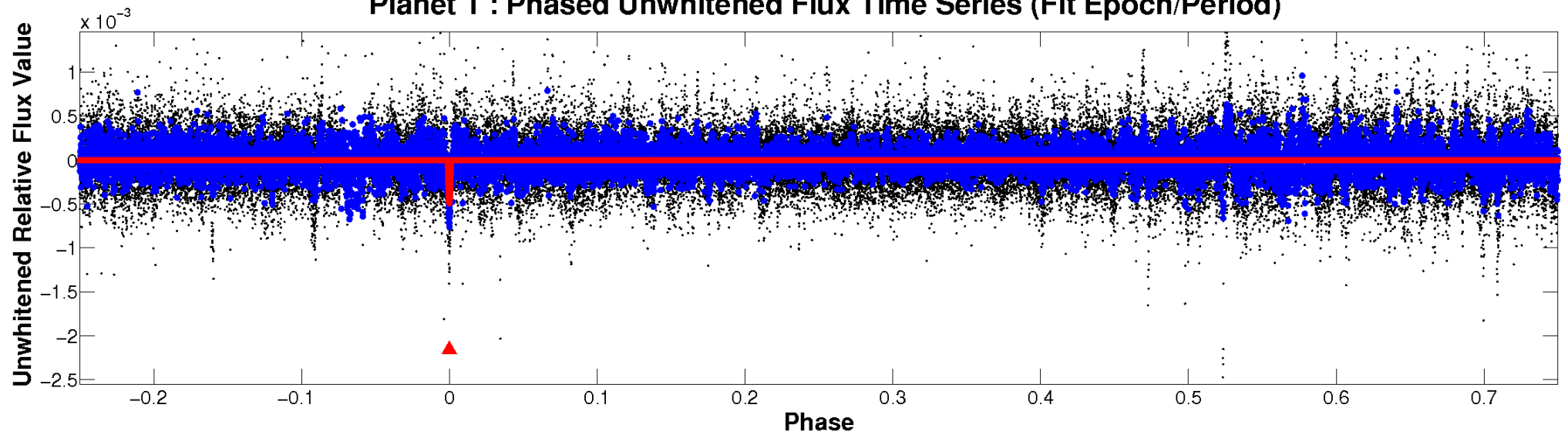
# ALT Odd/Even

TCE 004246864-01

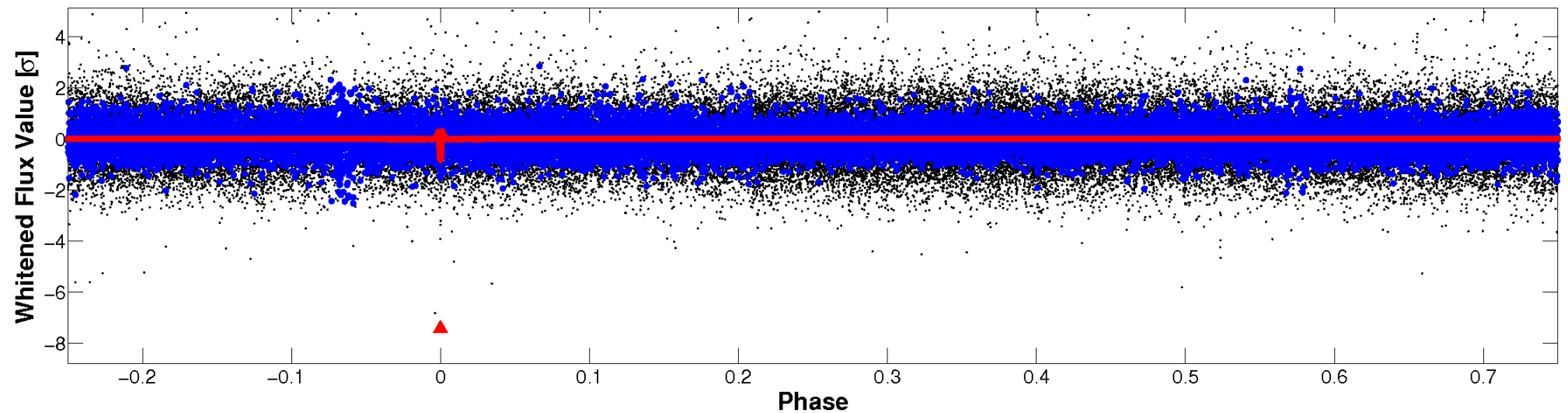


# Non-Whitened Vs. Whitened Light Curve

**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

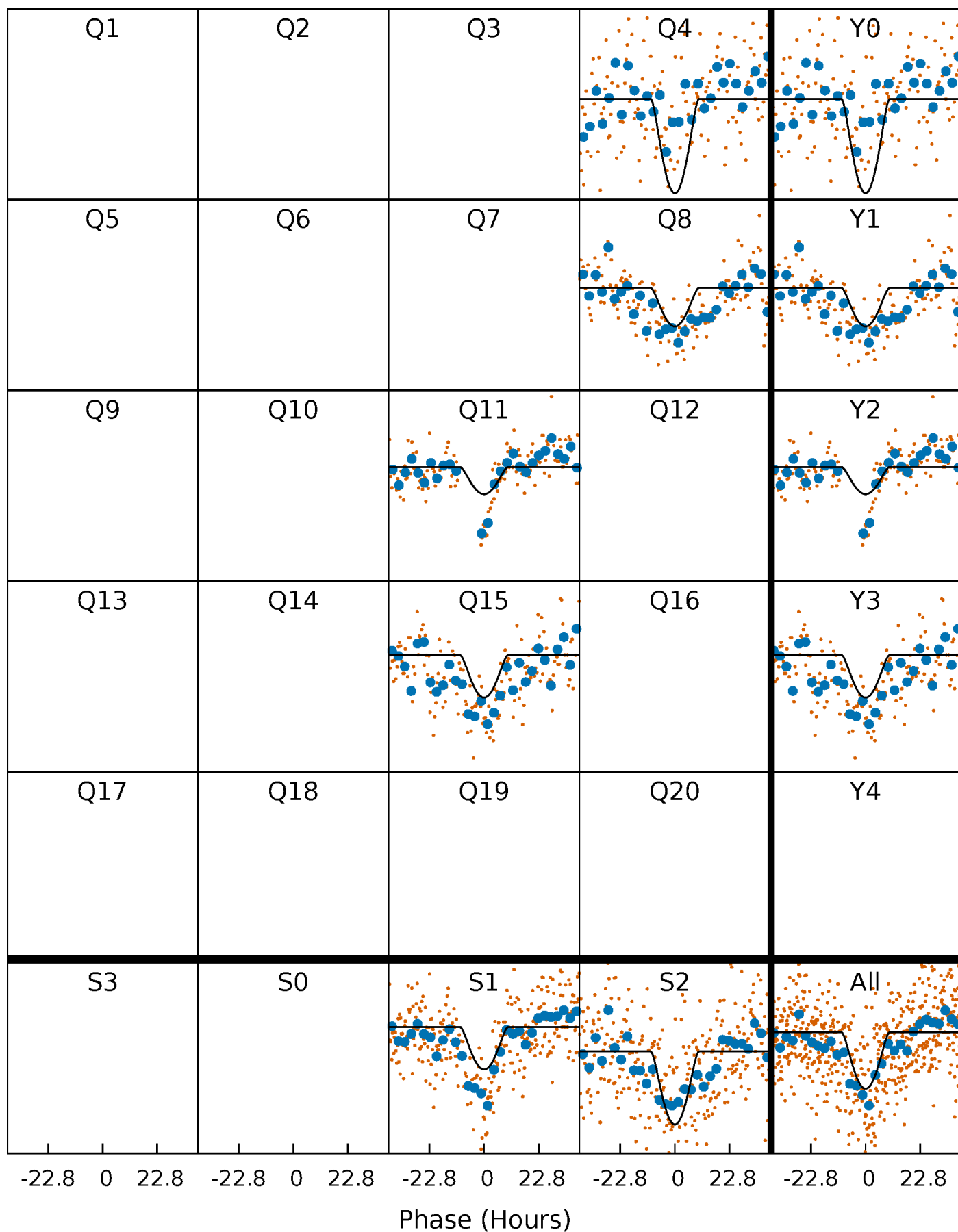
TCE 004246864-01 P=344.643849 Days  $T_0=404.491695$  (BKJD)





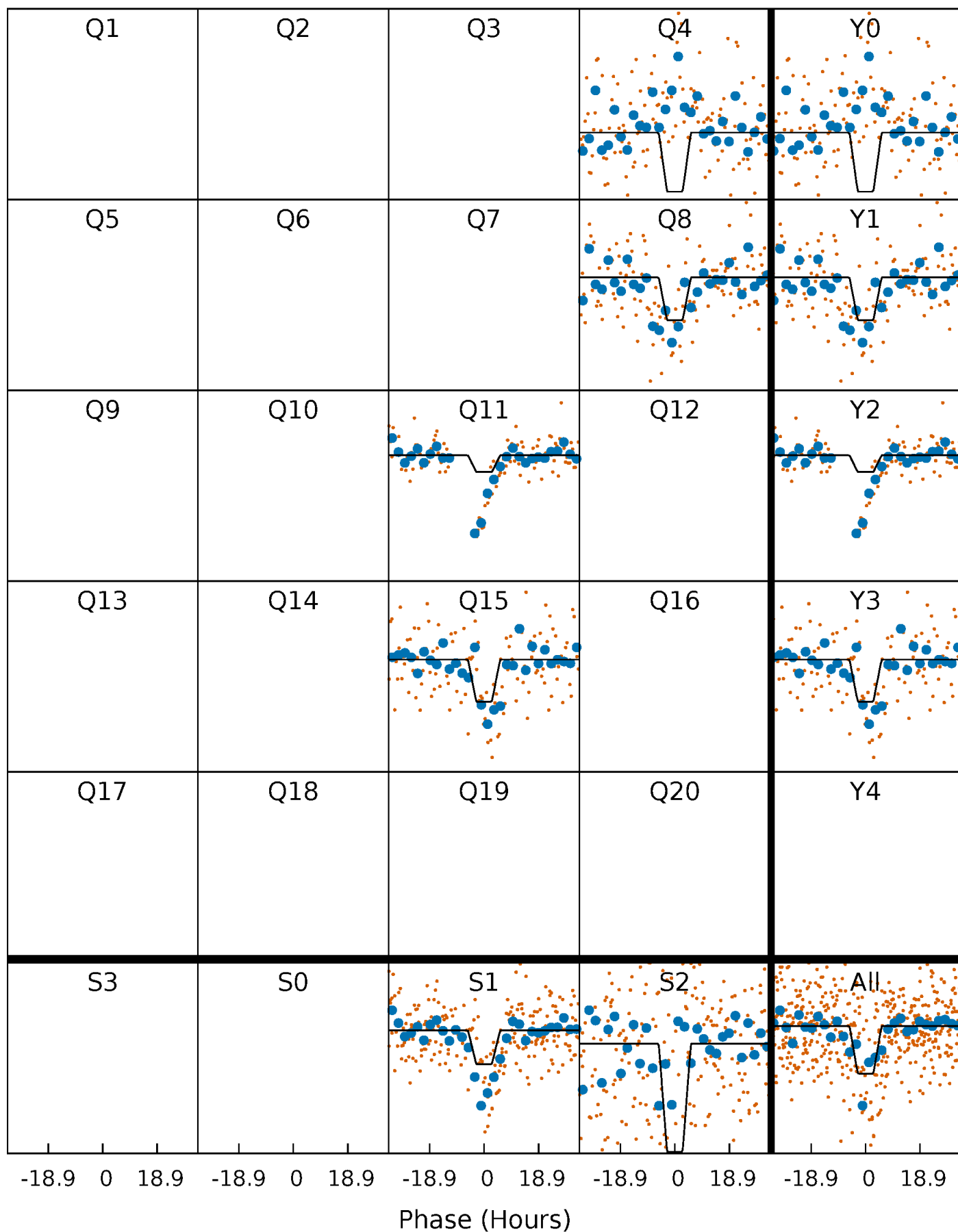
# DV Quarter-Phased Transit Curves

TCE 004246864-01 P=344.643849 Days  $T_0=404.491695$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

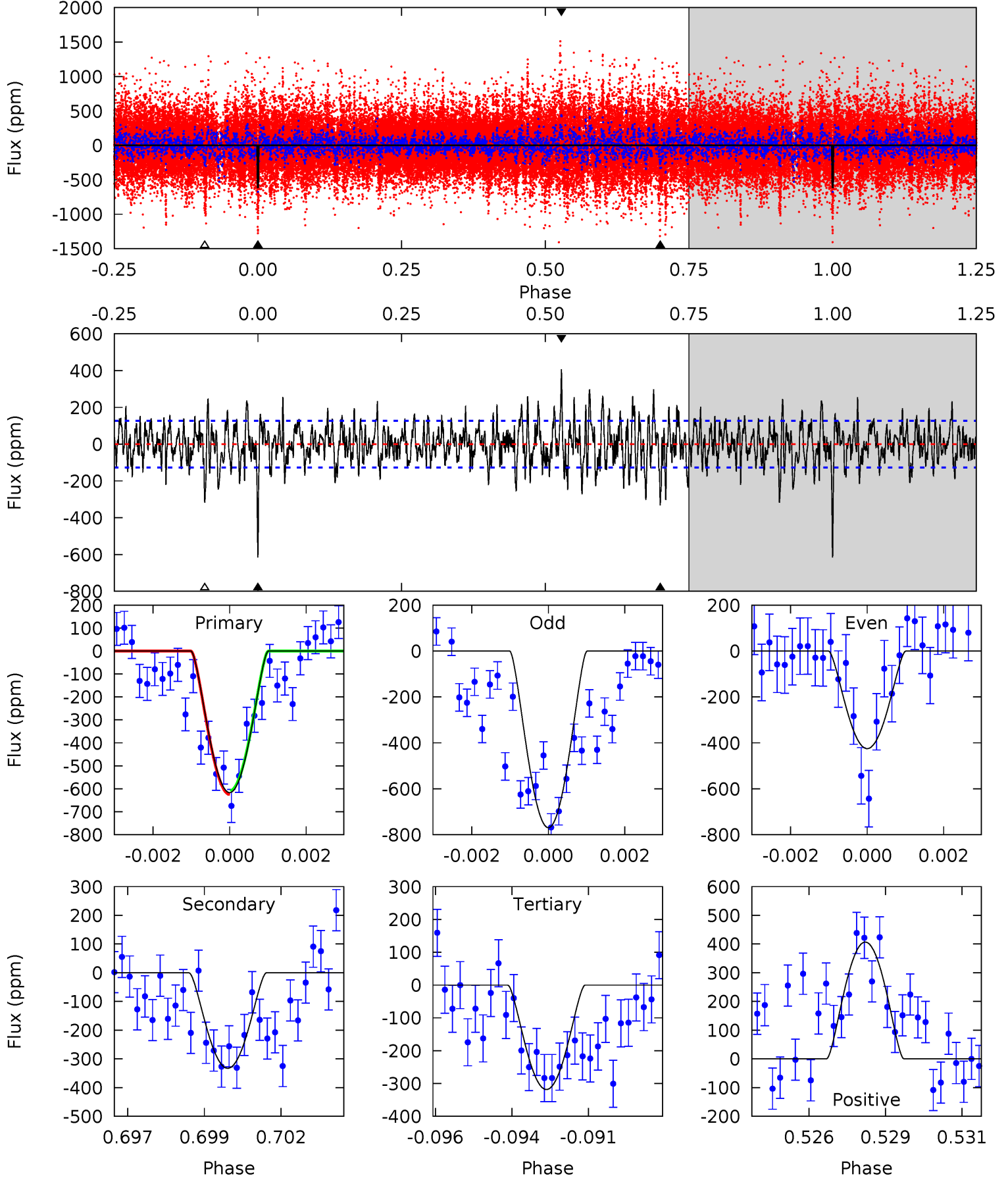
TCE 004246864-01 P=344.632423 Days  $T_0=404.571816$  (BKJD)



# DV Model-Shift Uniqueness Test

004246864-01, P = 344.643849 Days, E = 59.847846 Days

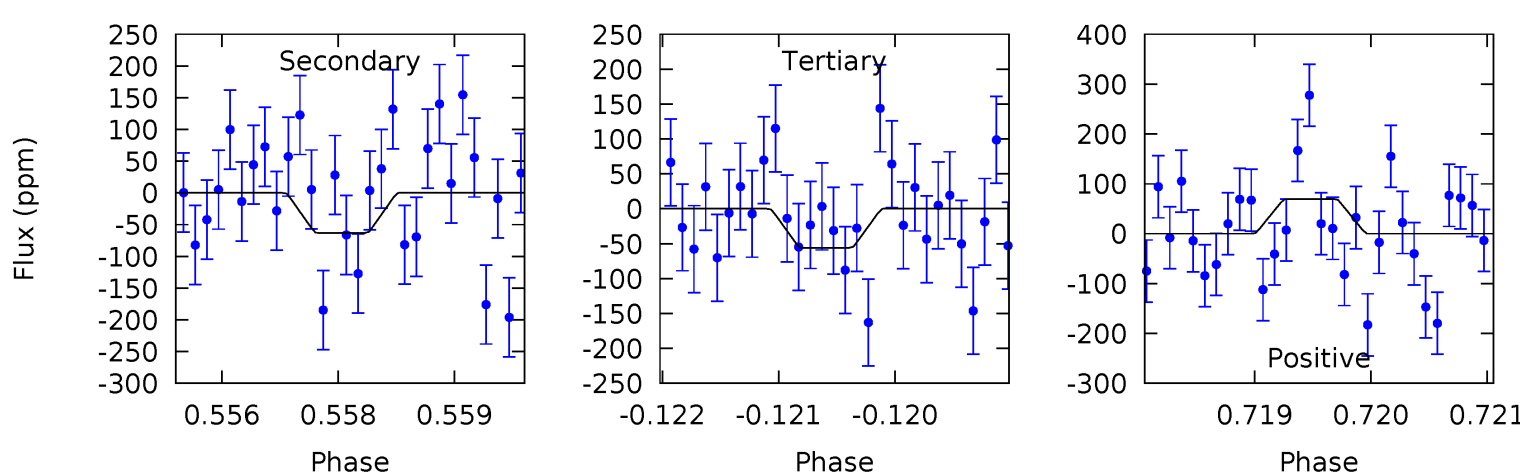
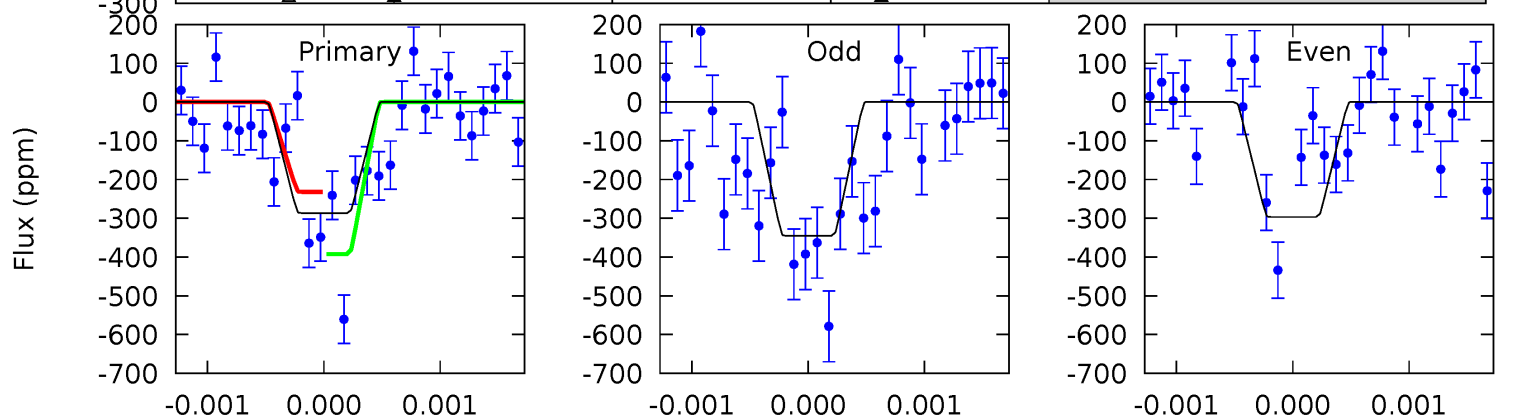
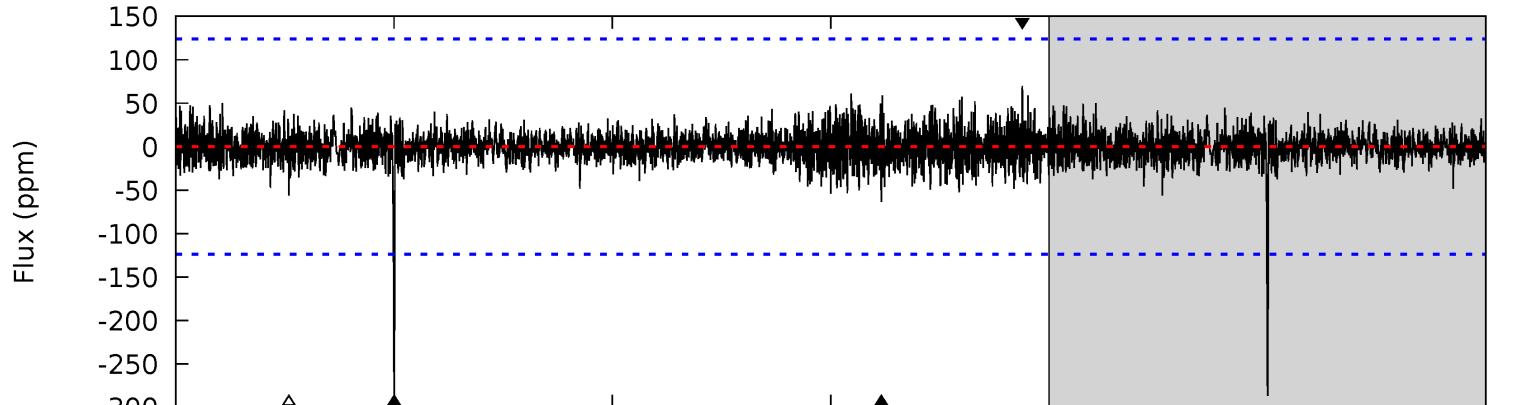
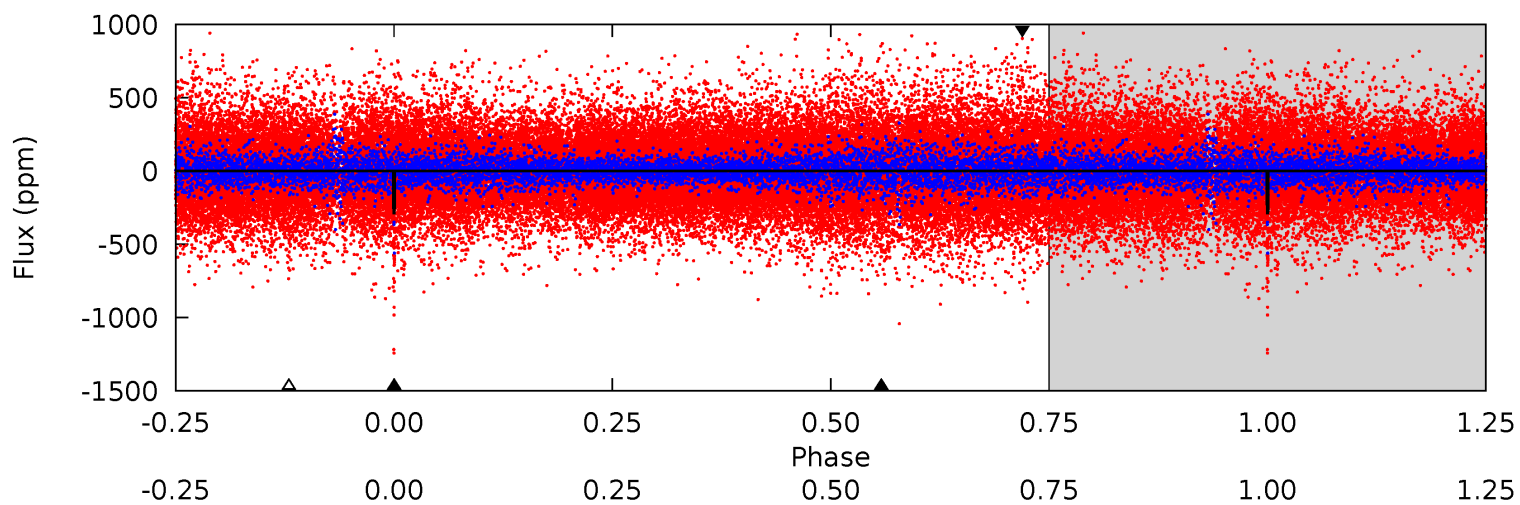
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.7	13.9	13.3	17.0	5.29	3.04	3.90	12.4	8.75	0.60	-3.08	7.13	0.83	0.40	0.31



# Alt Model-Shift Uniqueness Test

004246864-01, P = 344.632423 Days, E = 59.939393 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
12.5	2.75	2.44	3.03	5.39	3.19	0.63	10.0	9.45	0.31	-0.28	1.09	1.06	0.20	3.38



### Stellar Parameters For KIC 004246864

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4564^{+134}_{-134}$	$4.650^{+0.024}_{-0.049}$	$-0.060^{+0.300}_{-0.300}$	$0.654^{+0.066}_{-0.044}$	$0.715^{+0.048}_{-0.072}$	$3.593^{+0.459}_{-0.718}$
	+3%/-3%	+1%/-1%	+500%/-500%	+10%/-7%	+7%/-10%	+13%/-20%
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 004246864-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-333 \pm 24$	$10.30^{+10.98}_{-6.86}$	$248^{+9}_{-8}$	$2452^{+846}_{-373}$	$1286^{+10236}_{-995}$
Alt.	$-63 \pm 23$	$9.69^{+8.95}_{-6.66}$	$248^{+9}_{-9}$	$2055^{+639}_{-283}$	$265^{+2300}_{-204}$

$T_{\text{max}}$  = 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

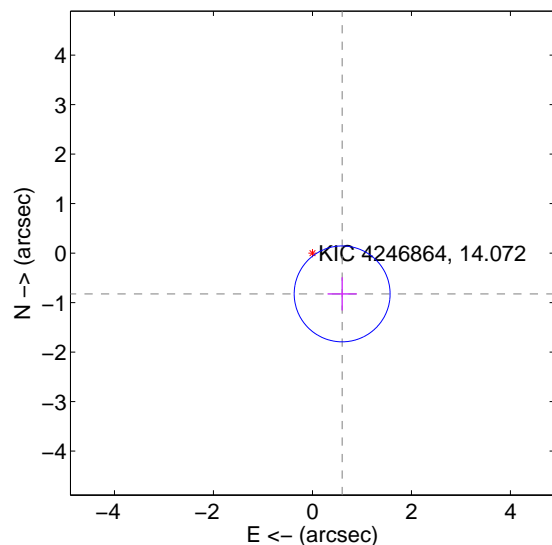
Supplemental centroid analysis for 004246864-01. Kepler magnitude: 14.07. Transit SNR 6.23

There are 1 quarters with good PRF difference image offsets

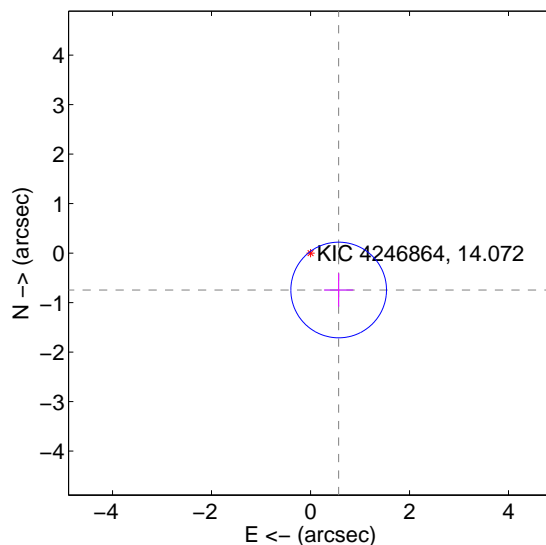
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.019 \pm 0.323$	3.16	$-0.600 \pm 0.296$	$-0.824 \pm 0.336$
PRF-fit source offset from KIC position	$0.938 \pm 0.322$	2.91	$-0.569 \pm 0.296$	$-0.745 \pm 0.336$
photometric centroid source offset	$1.55 \pm 0.84$	1.85	$1.52 \pm 0.84$	$-0.33 \pm 0.78$

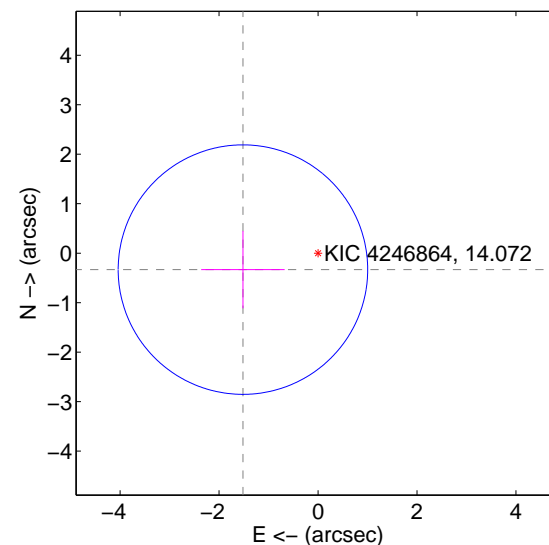
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

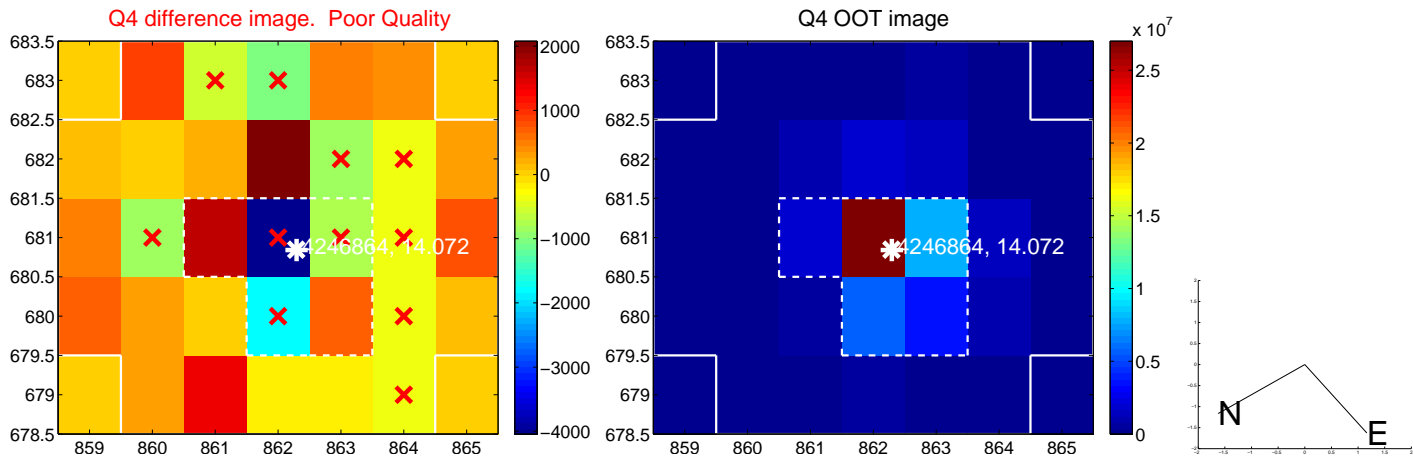


offset from photometric centroids

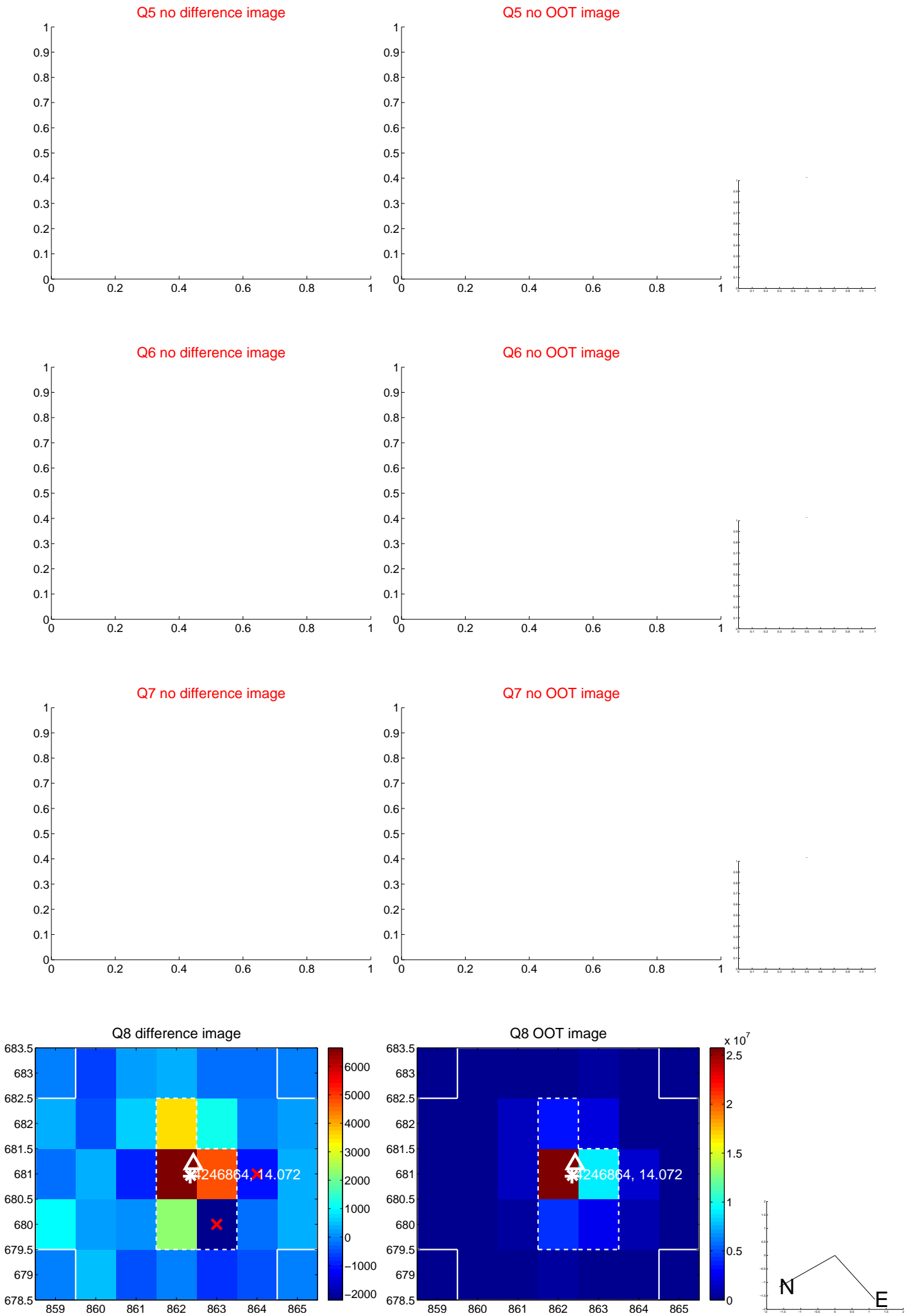


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





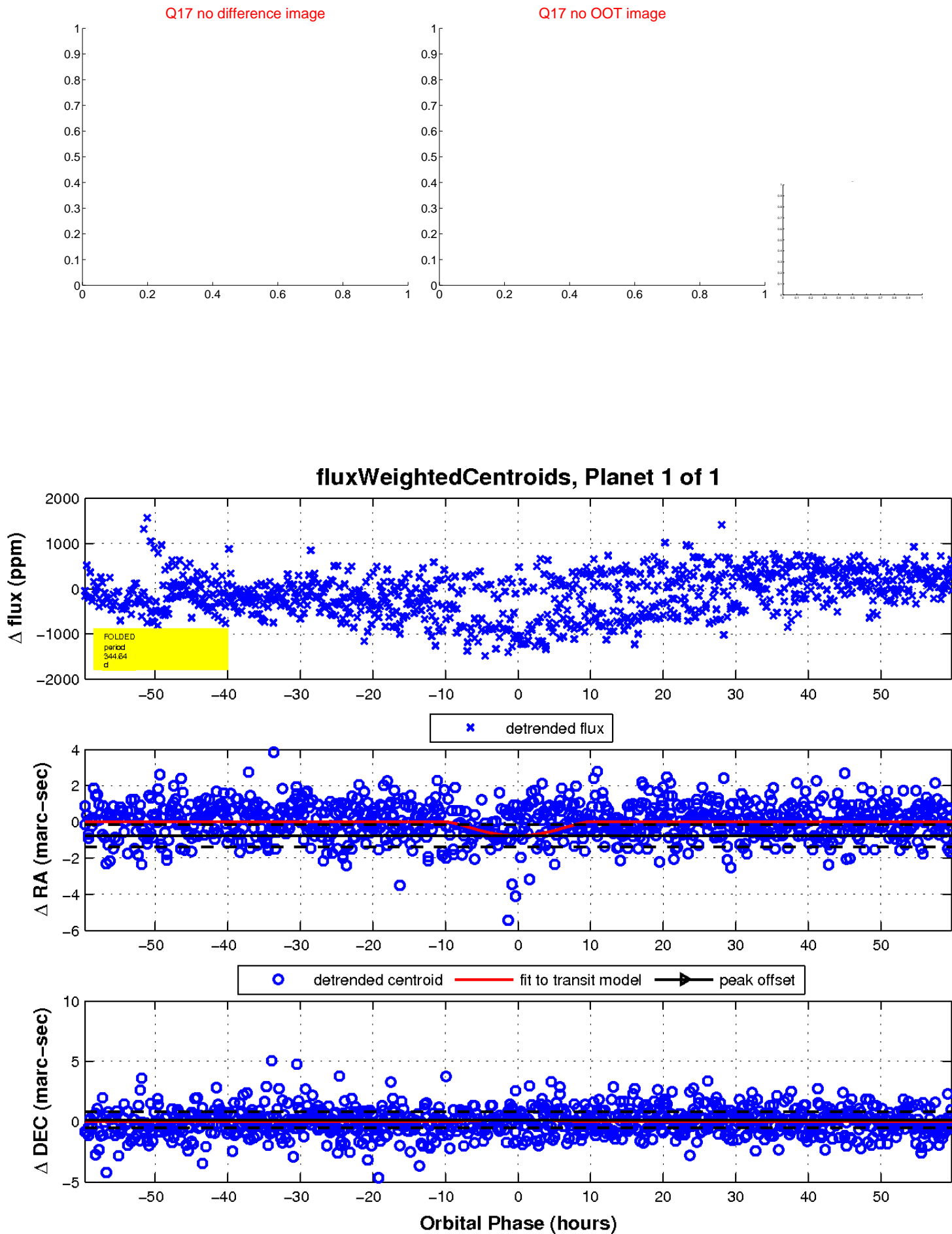
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

