

# KIC 004864734

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004864734-01	OBS	3944.01	1.845591	131.812717	290.5	1.692	23.3	26.1	2.98	5974	6.00	9283.77

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004864734-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET

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

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

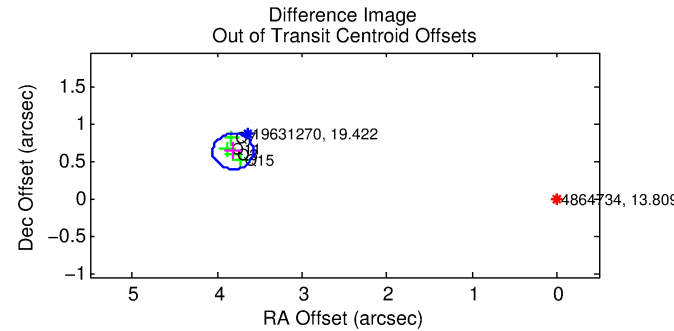
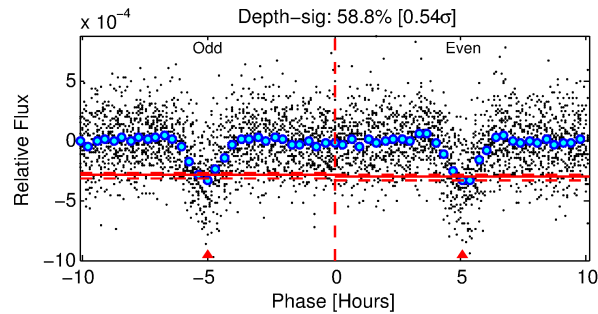
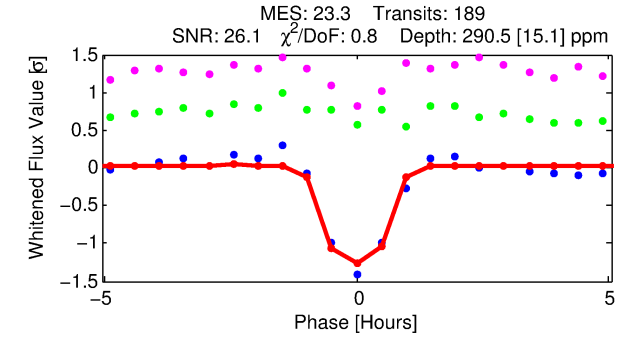
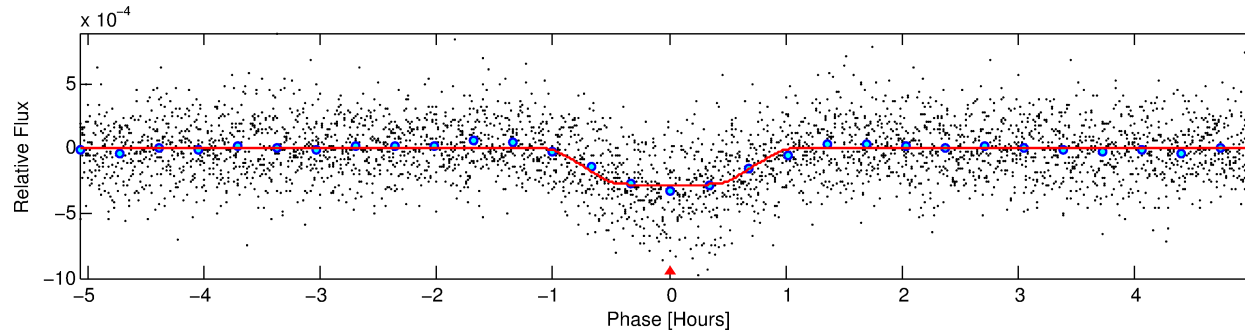
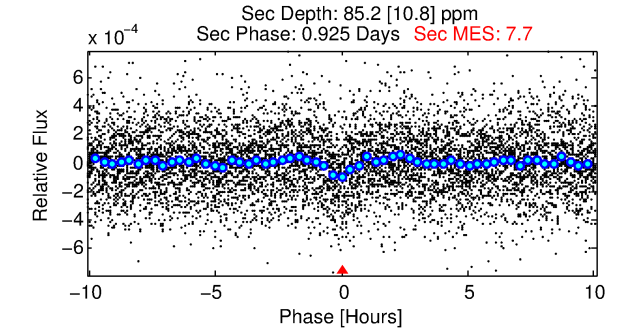
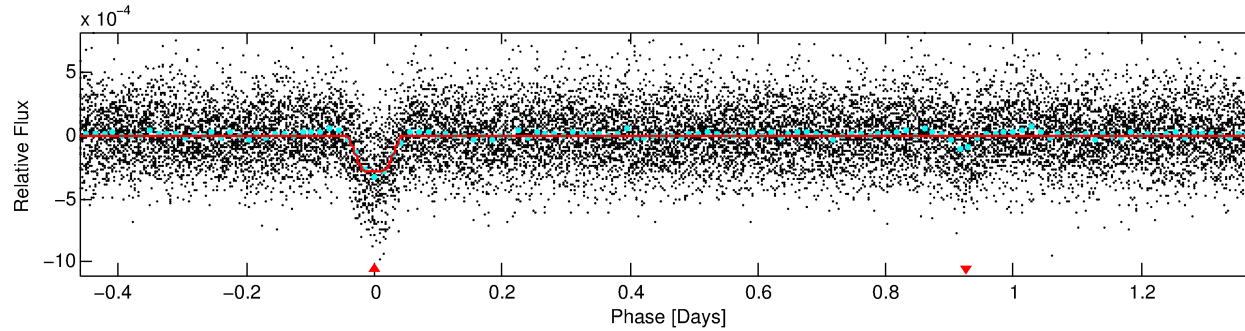
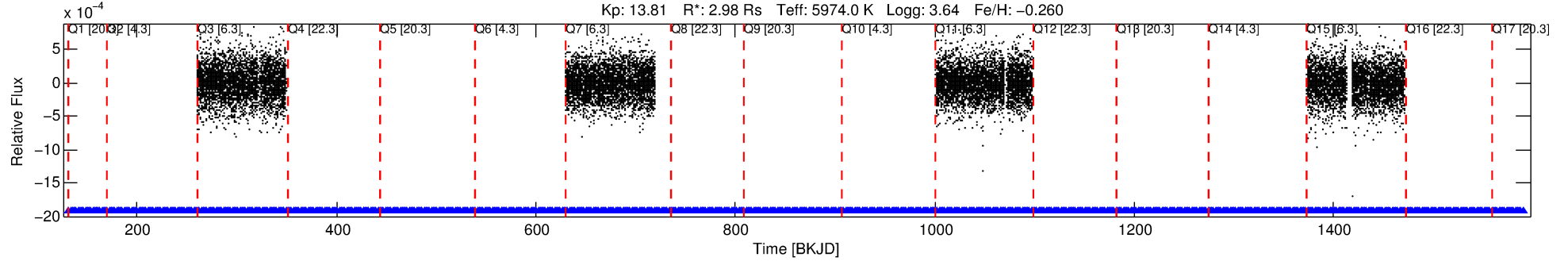
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004864734-01

No Significant Match Found

# DV One-Page Summary

KIC: 4864734 Candidate: 1 of 1 Period: 1.846 d  
KOI: K03944.01 Corr: 0.835



## DV Fit Results:

Period = 1.84559 [0.00000] d  
Epoch = 131.8127 [0.0010] BKJD  
Rp/R\* = 0.0184 [0.0044]  
a/R\* = 4.07 [4.71]  
b = 0.90 [0.26]  
Seff = 9283.77 [10699.90]  
Teq = 2503 [721] K  
Rp = 6.00 [3.91] Re  
a = 0.0330 [0.0222] AU  
Ag = 1.42 [1.77] [0.24σ]  
Teffp = 4226 [541] K [1.91σ]

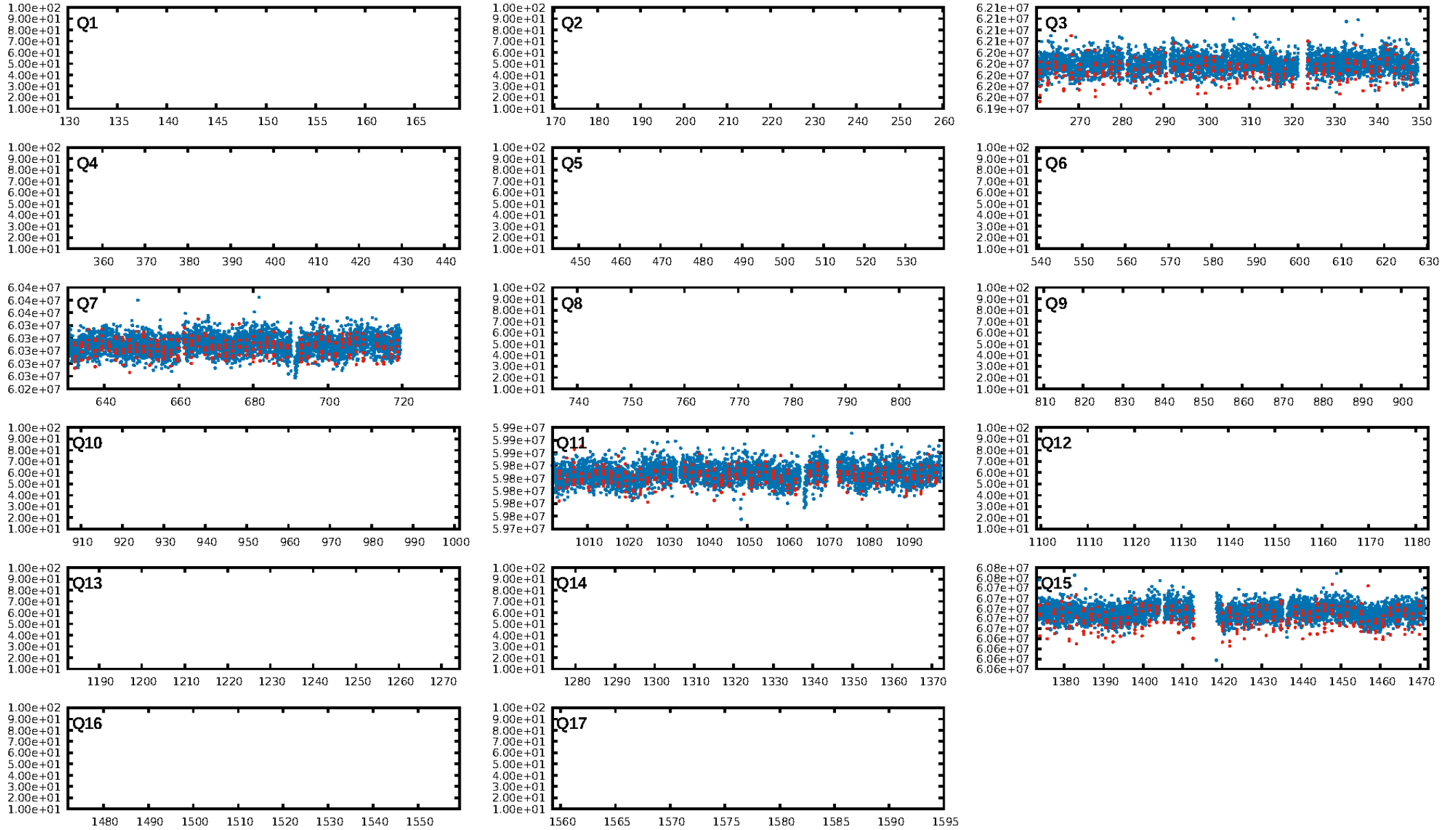
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 78.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.12e-116  
RollingBand-fgt: 1.00 [189/189]  
GhostDiagnostic-chr: 0.5464  
Centroid-sig: 0.0%  
Centroid-so: 6.725 arcsec [14.77σ]  
OotOffset-rm: 3.863 arcsec [48.47σ]  
KicOffset-rm: 4.024 arcsec [34.75σ]  
OotOffset-st: 0/4/0/0 [4]  
KicOffset-st: 0/4/0/0 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 1.00 [4/4]

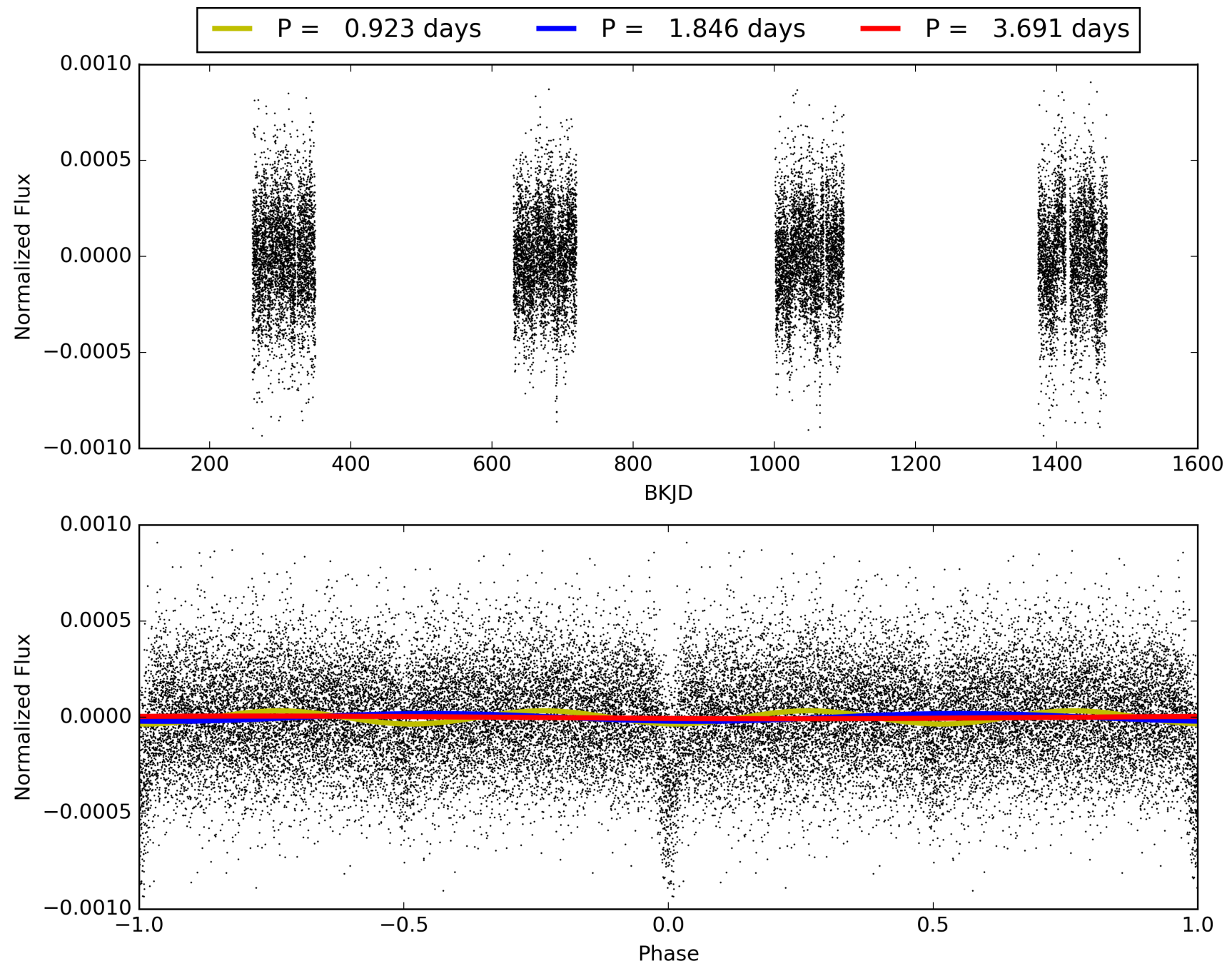
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 10:33:12 Z

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

# TCE 004864734-01, PDC Light Curves

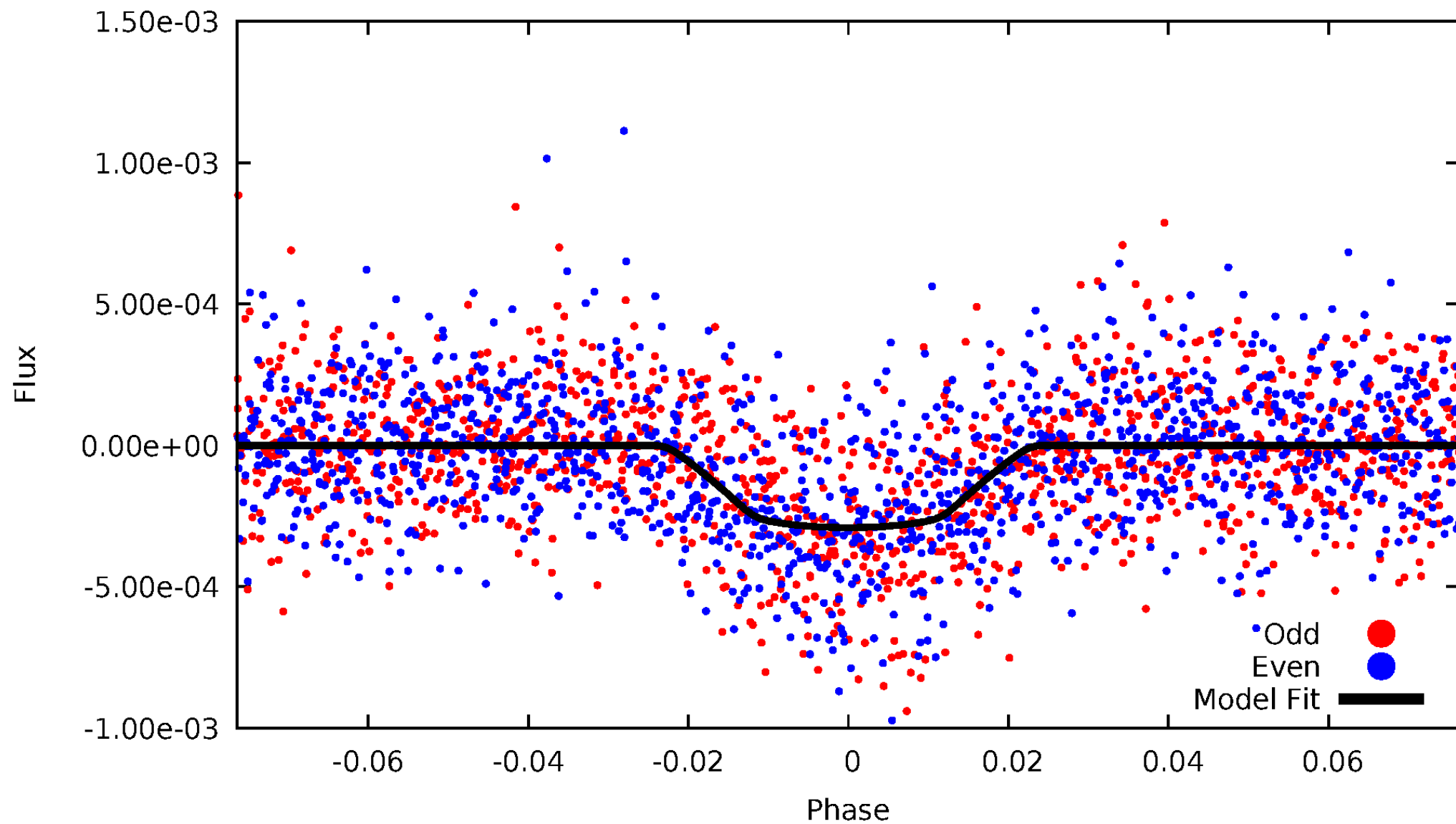


TCE 004864734-01



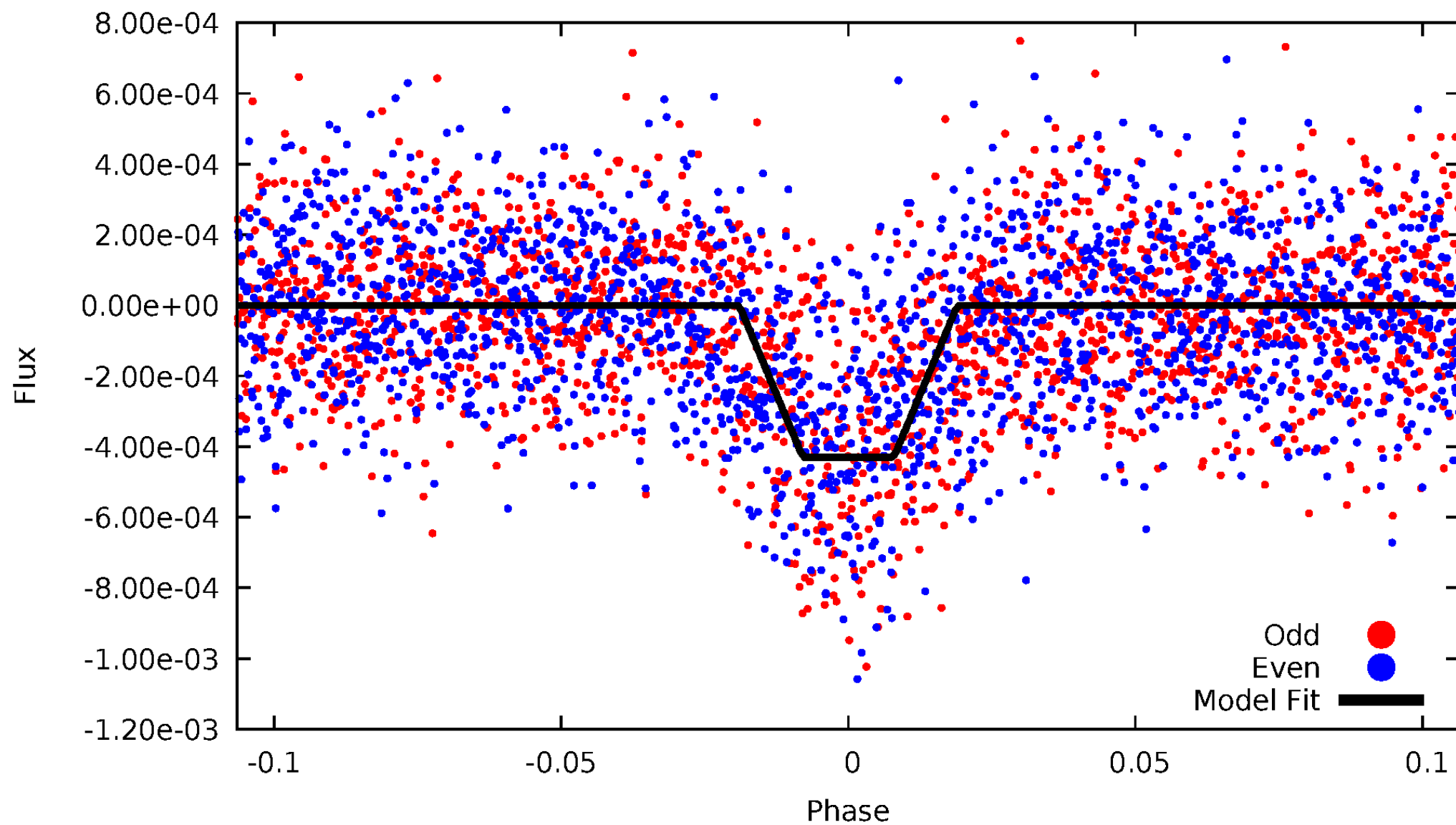
# DV Odd/Even

TCE 004864734-01



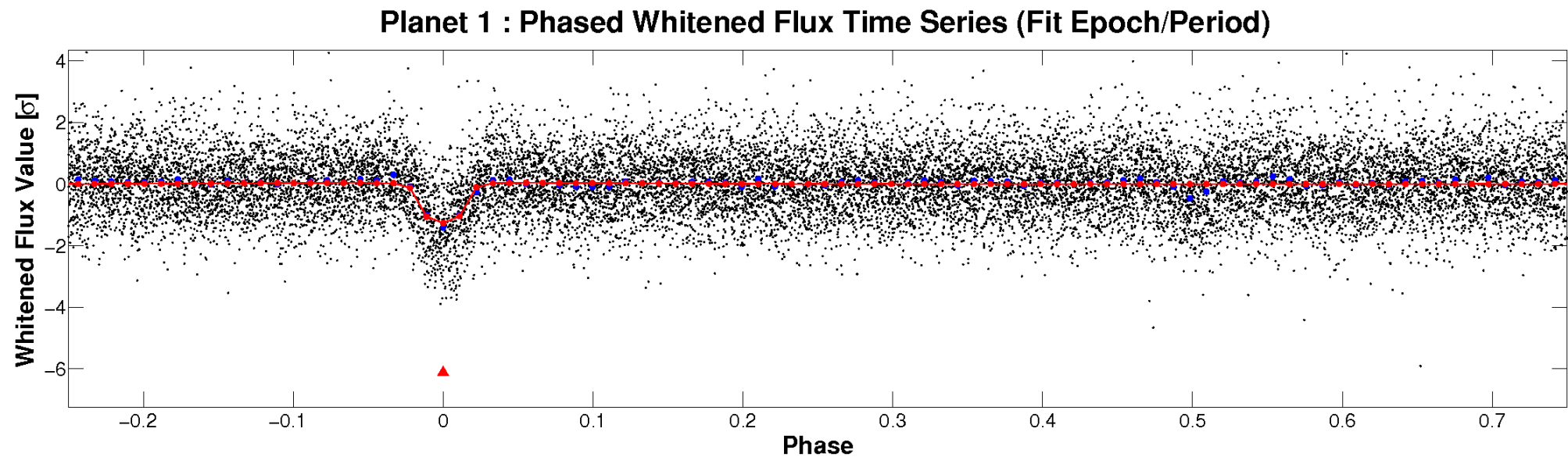
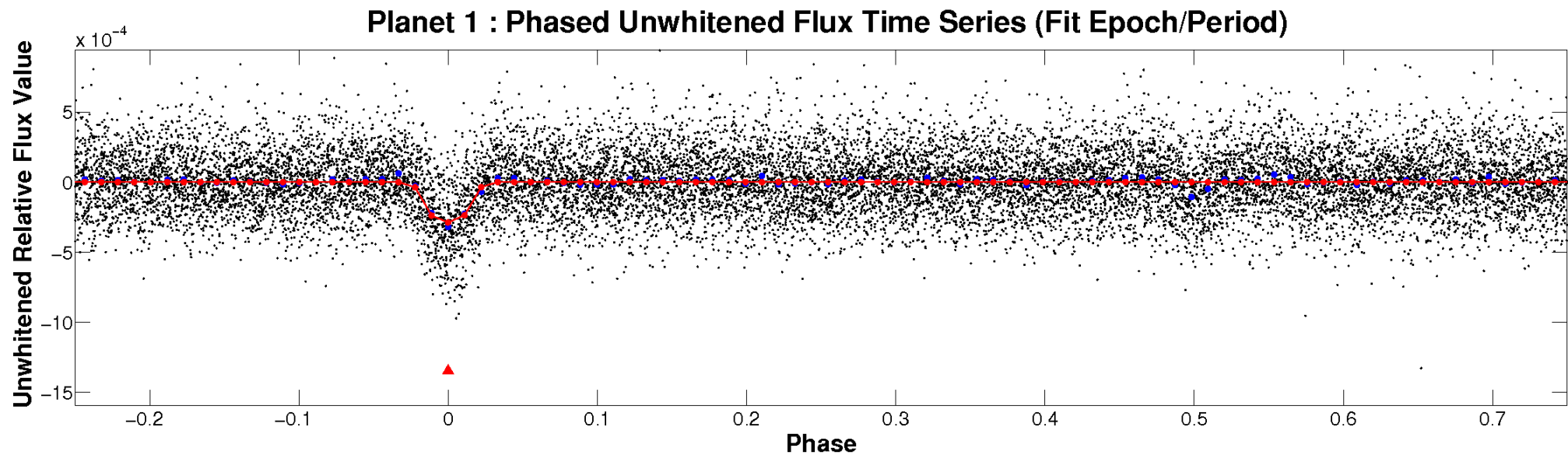
# ALT Odd/Even

TCE 004864734-01



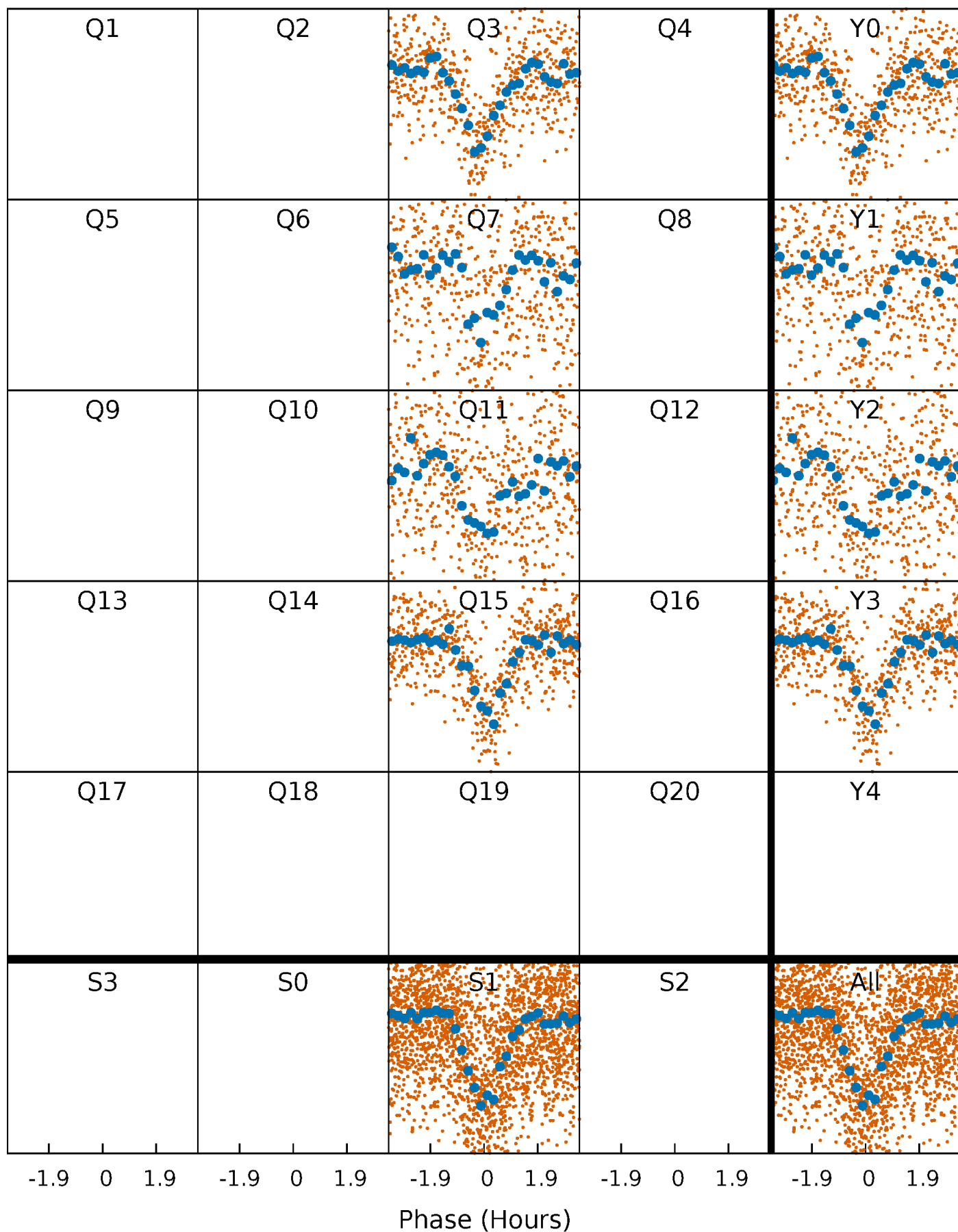


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

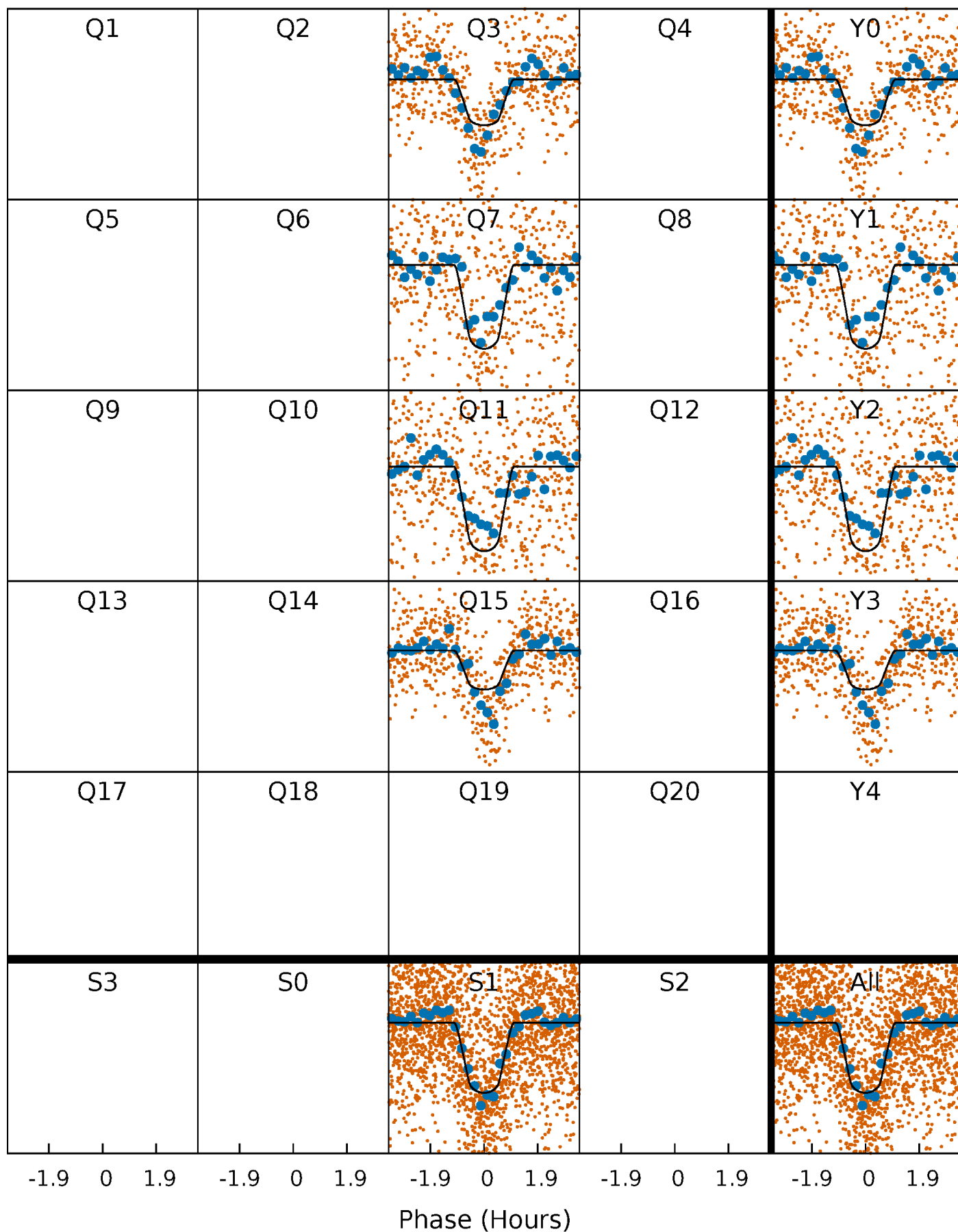
TCE 004864734-01 P= 1.845591 Days  $T_0=131.812717$  (BKJD)





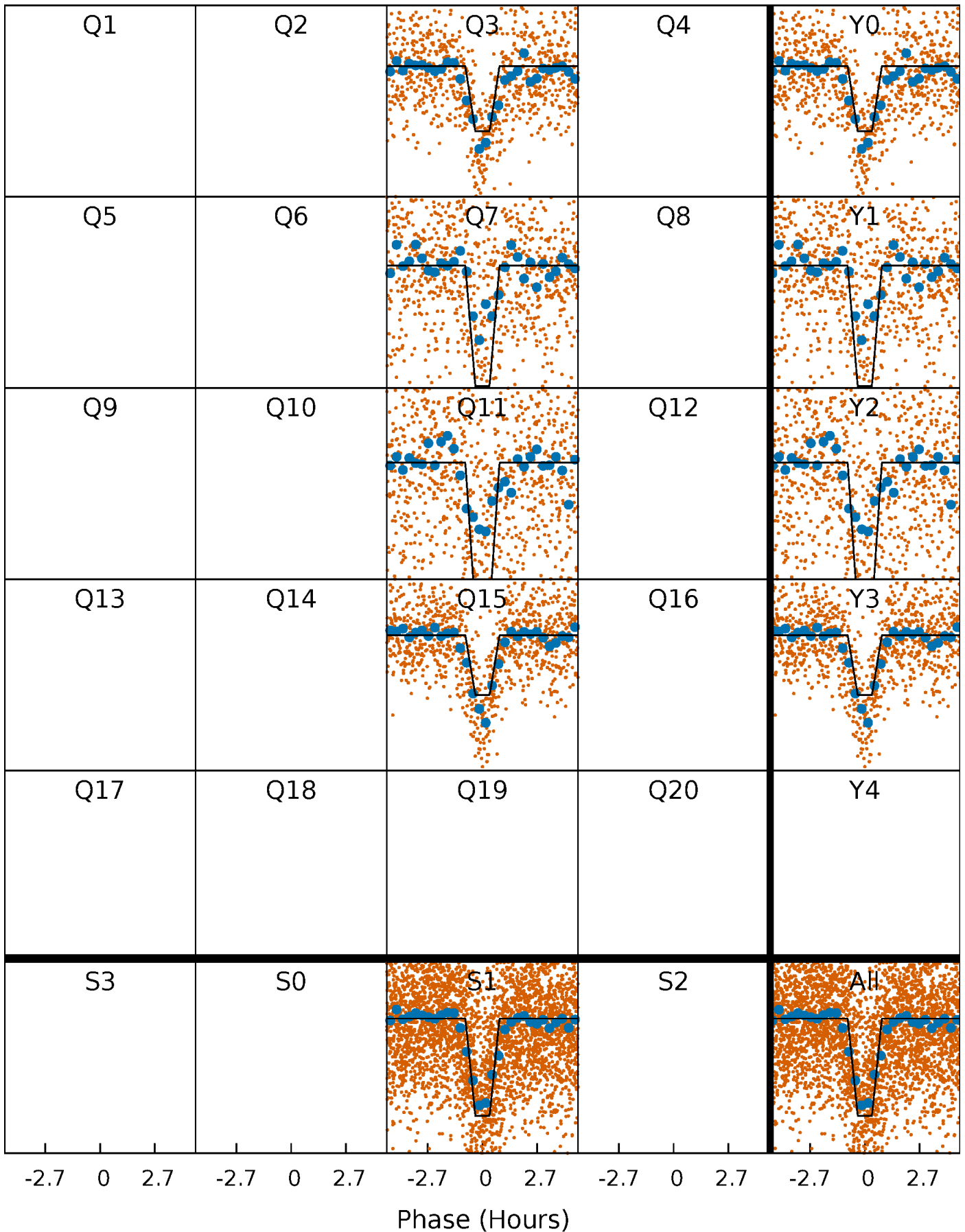
# DV Quarter-Phased Transit Curves

TCE 004864734-01   P= 1.845591 Days    $T_0=131.812717$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

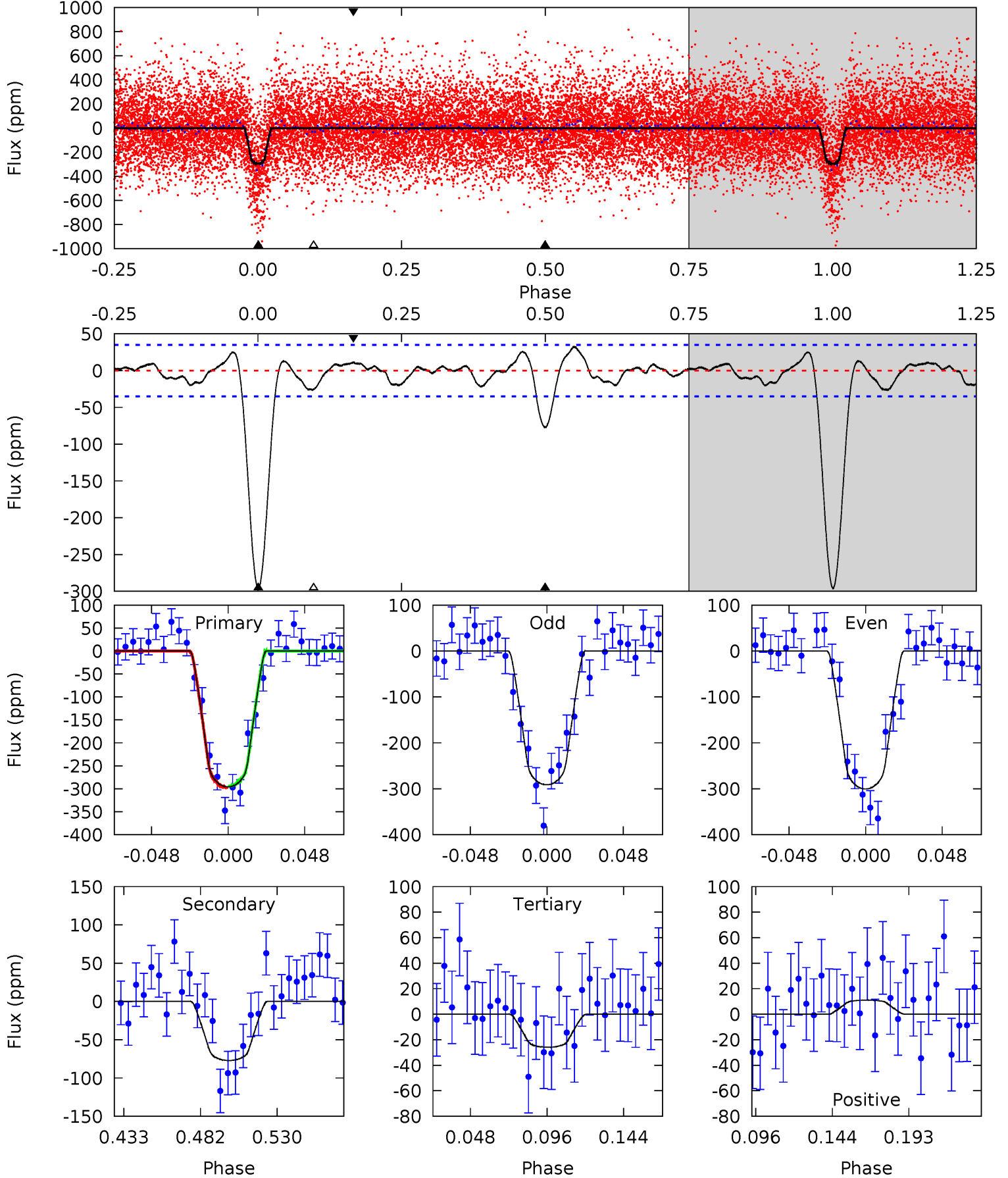
TCE 004864734-01 P= 1.845613 Days  $T_0=131.804708$  (BKJD)



# DV Model-Shift Uniqueness Test

004864734-01, P = 1.845591 Days, E = 131.812717 Days

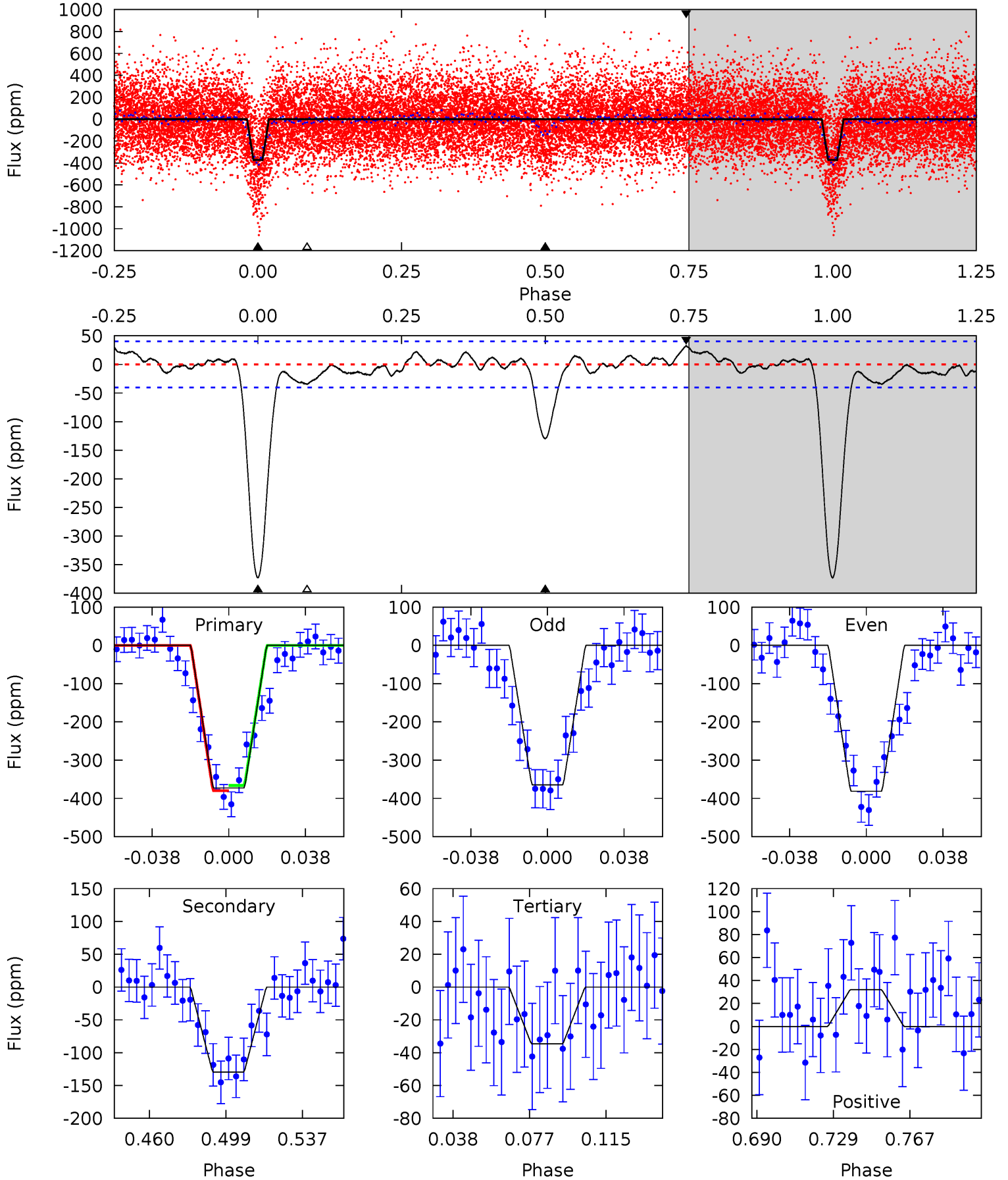
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.8	10.4	3.48	1.48	4.72	1.98	1.41	36.3	38.3	6.90	8.90	0.61	1.03	0.10	0.21



# Alt Model-Shift Uniqueness Test

004864734-01, P = 1.845613 Days, E = 131.804708 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
44.1	15.3	4.09	3.79	4.76	2.07	1.54	40.0	40.3	11.2	11.5	1.00	1.07	0.08	0.81



### Stellar Parameters For KIC 004864734

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5974^{+209}_{-188}$	$3.639^{+0.697}_{-0.164}$	$-0.260^{+0.300}_{-0.250}$	$2.978^{+0.775}_{-1.809}$	$1.408^{+0.167}_{-0.502}$	$0.075^{+0.824}_{-0.035}$
	+3%/-3%	+19%/-5%	+115%/-96%	+26%/-61%	+12%/-36%	+1097%/-47%
Source	KIC0	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 004864734-01 / KOI 3944.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-77 \pm 7$	$5.29^{+2.20}_{-1.93}$	$3398^{+323}_{-591}$	$4204^{+523}_{-476}$	$1.643^{+2.226}_{-0.810}$
Alt.	$-130 \pm 8$	$6.01^{+2.35}_{-1.91}$	$3392^{+343}_{-559}$	$4432^{+494}_{-397}$	$2.067^{+2.340}_{-0.938}$

$T_{\text{max}}$  = 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

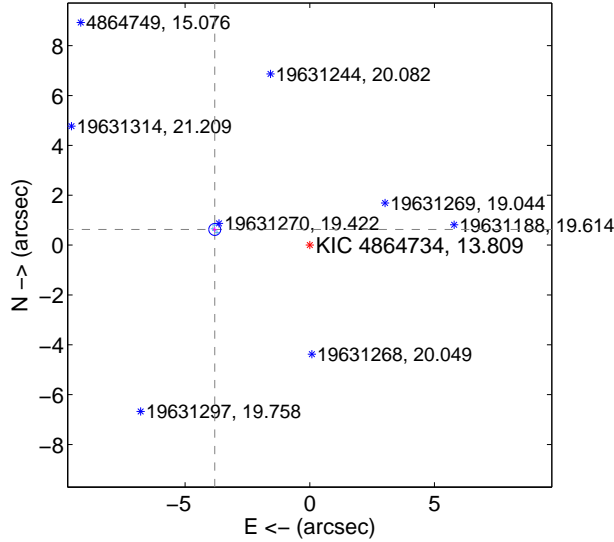
Supplemental centroid analysis for 004864734-01. Kepler magnitude: 13.81. Transit SNR 26.09

There are 4 quarters with good PRF difference image offsets

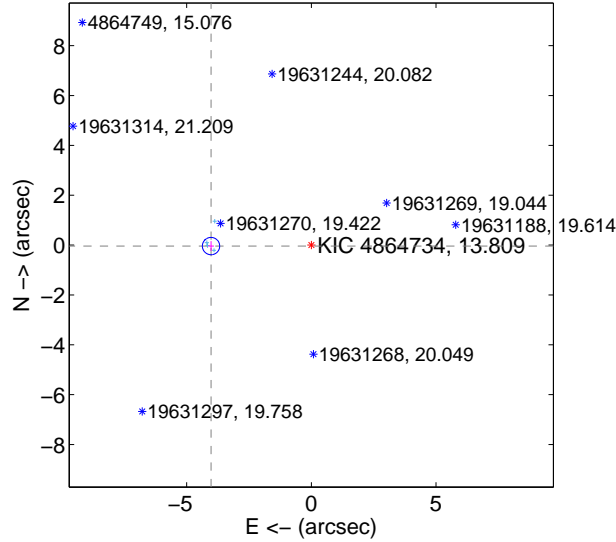
The direct PRF centroid is offset from the target star catalog position by about 0.74 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.863 \pm 0.080$	48.47	$3.812 \pm 0.079$	$0.627 \pm 0.100$
PRF-fit source offset from KIC position	$4.024 \pm 0.116$	34.75	$4.024 \pm 0.116$	$-0.039 \pm 0.196$
photometric centroid source offset	$6.73 \pm 0.46$	14.77	$6.66 \pm 0.45$	$0.93 \pm 0.48$

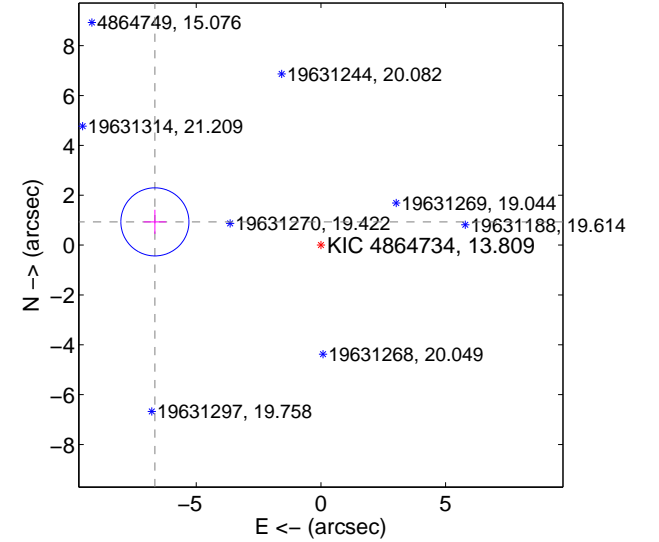
offset from difference PRF-fit to OOT PRF-fit



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.

Q1 no difference image



Q1 no OOT image



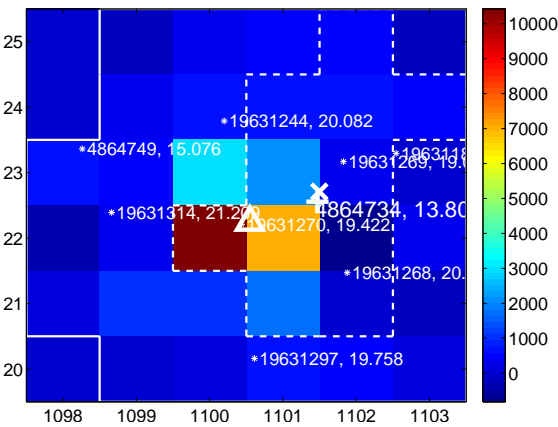
Q2 no difference image



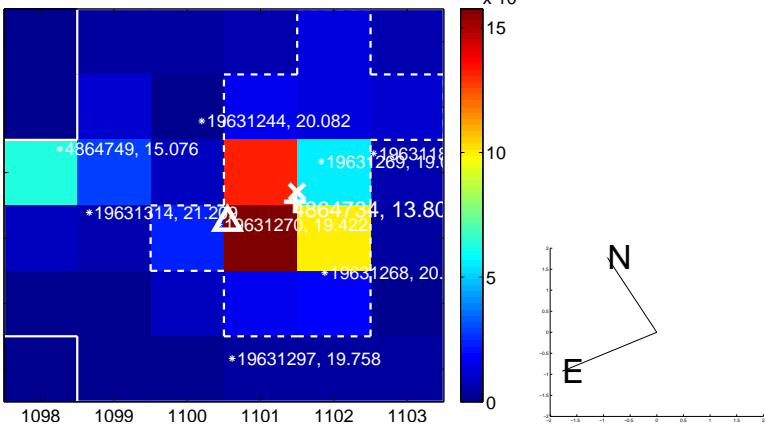
Q2 no OOT image



Q3 difference image



Q3 OOT image



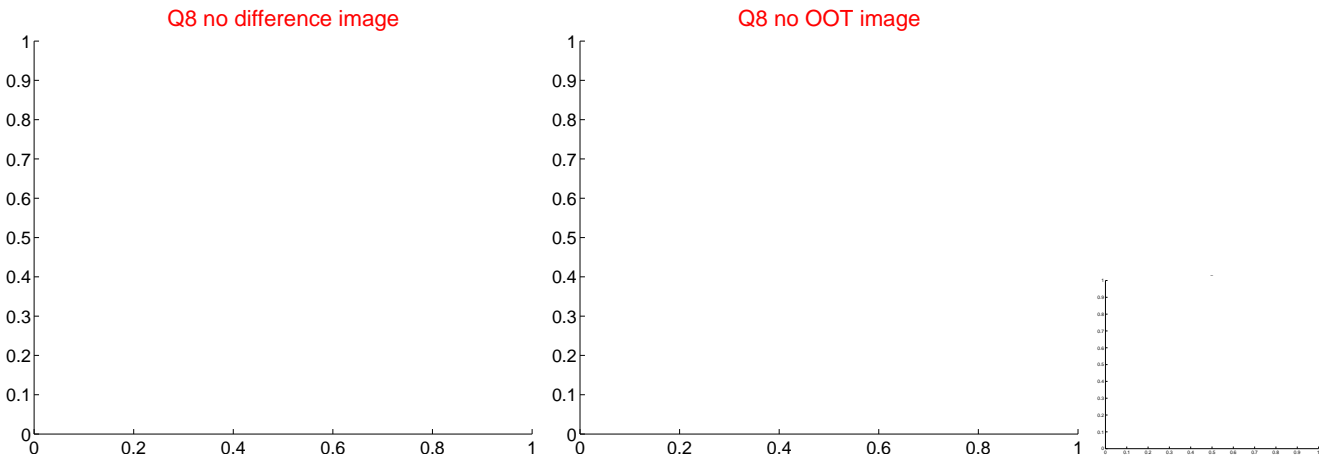
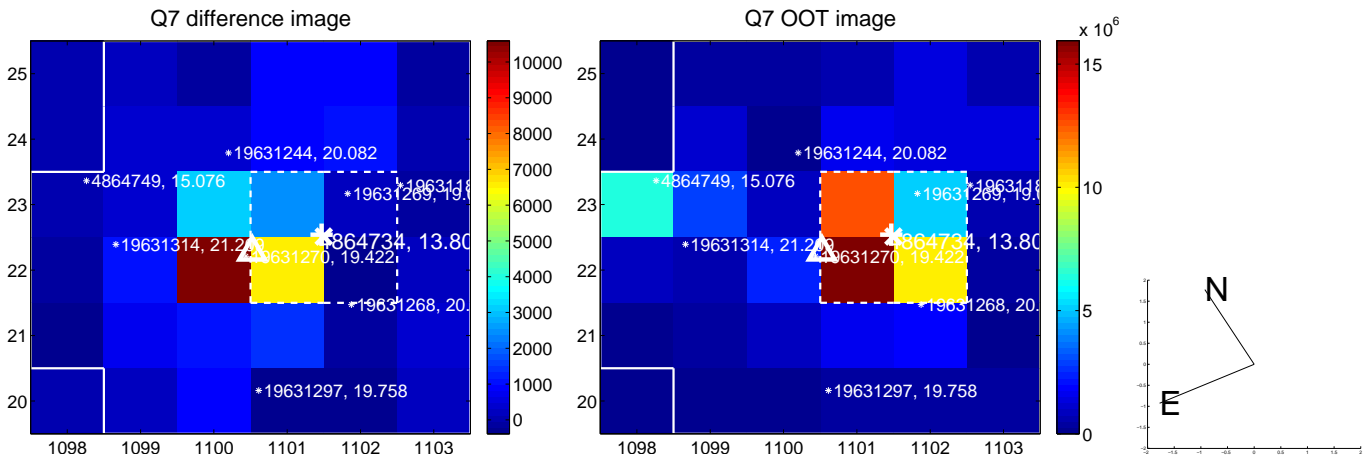
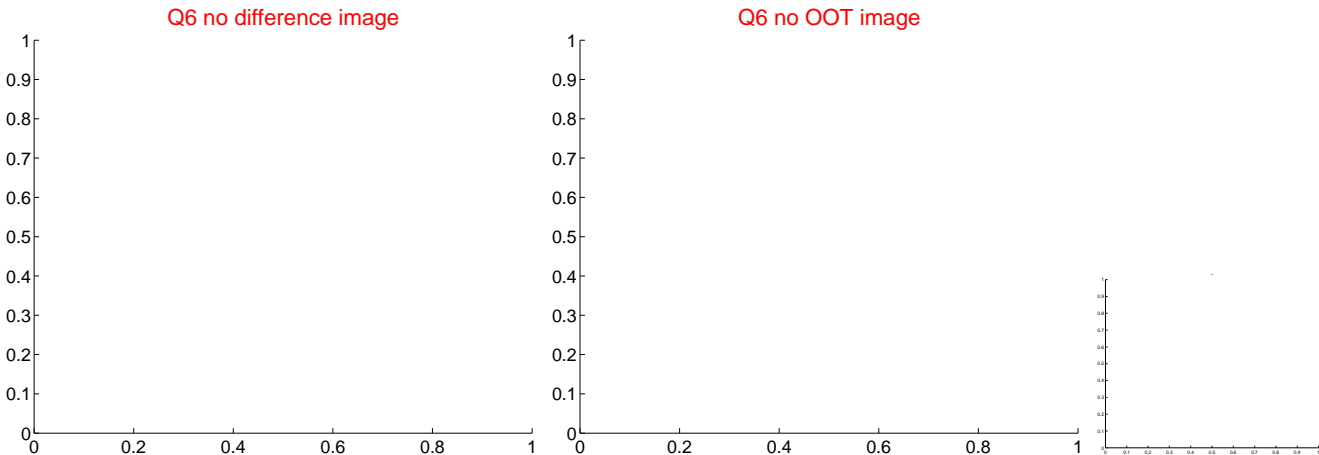
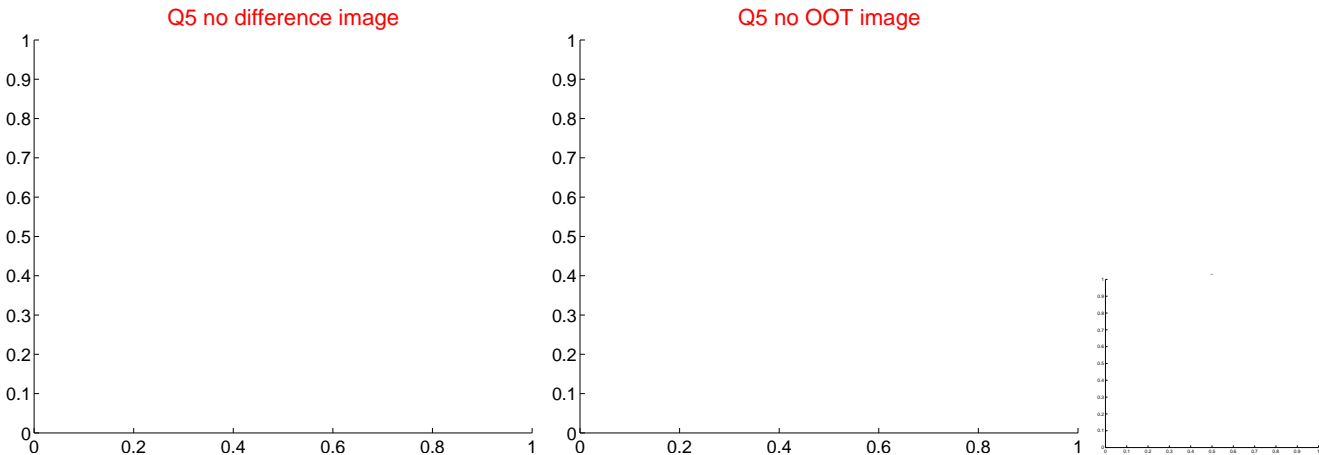
Q4 no difference image



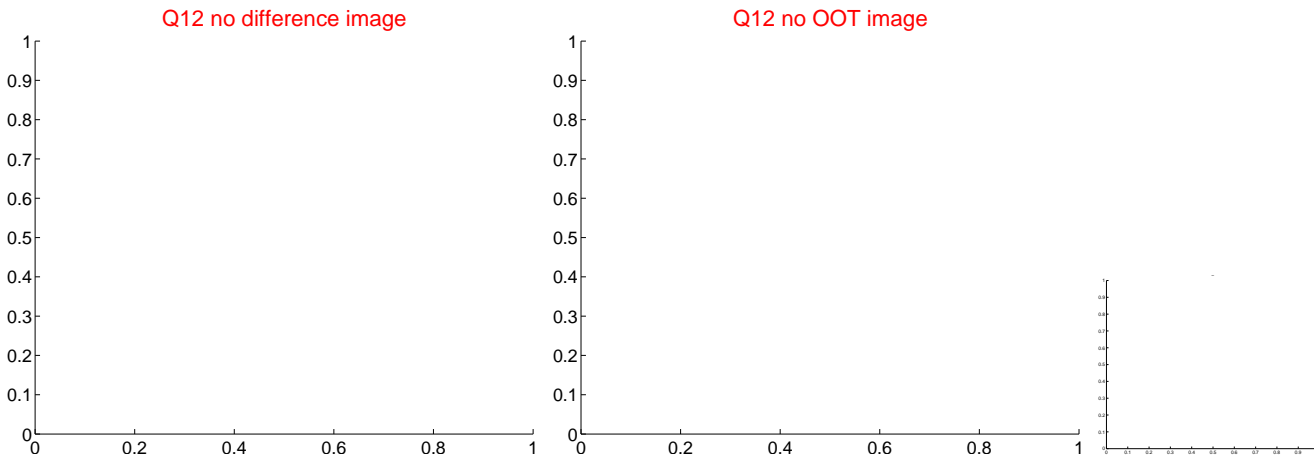
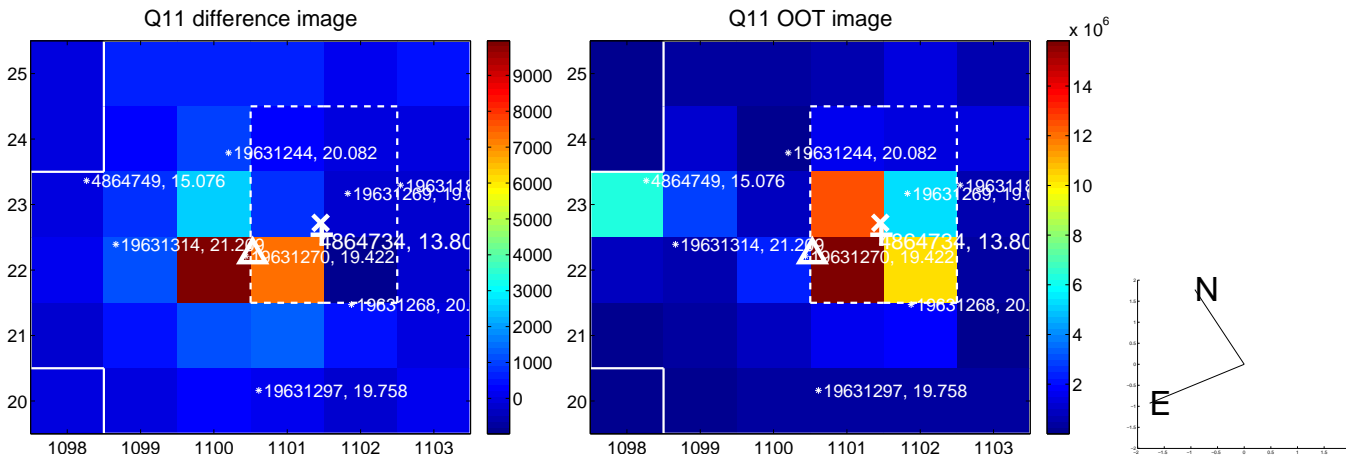
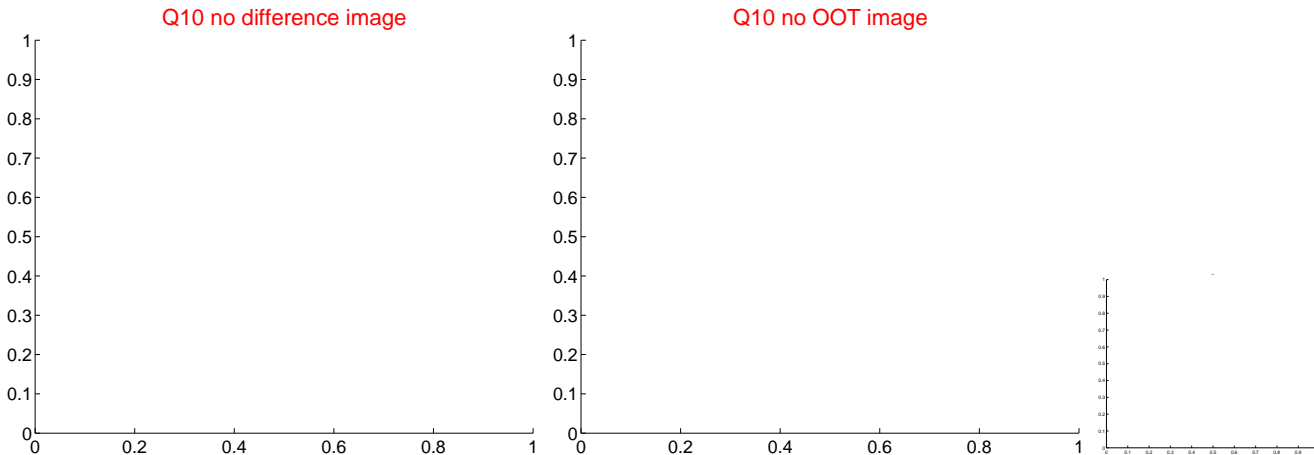
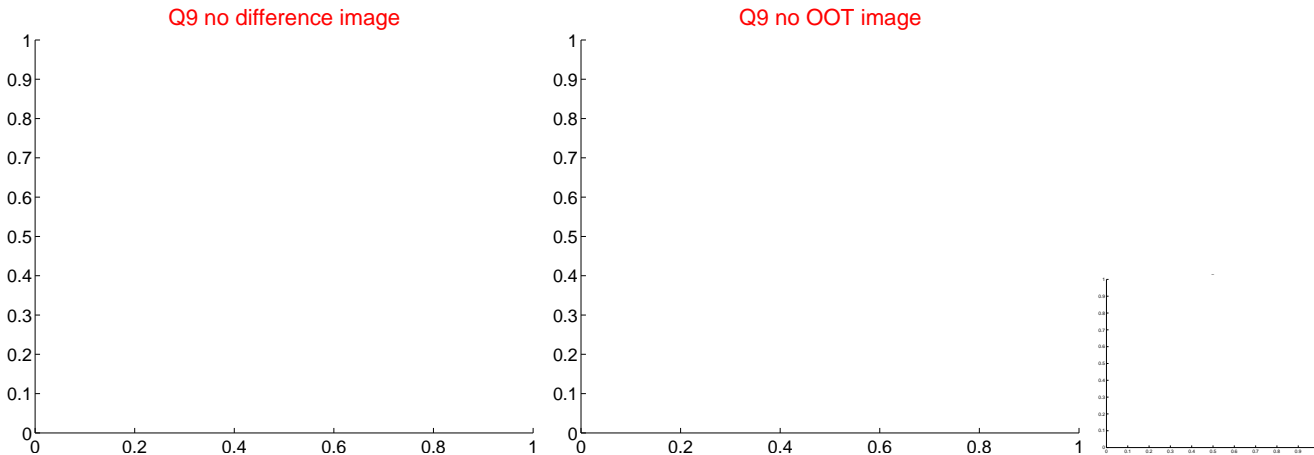
Q4 no OOT image



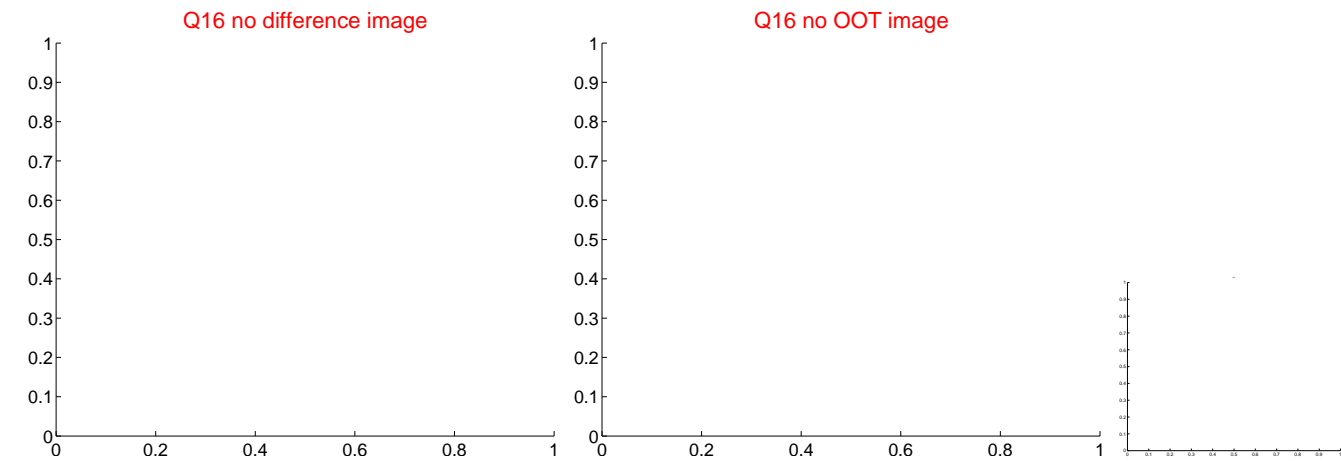
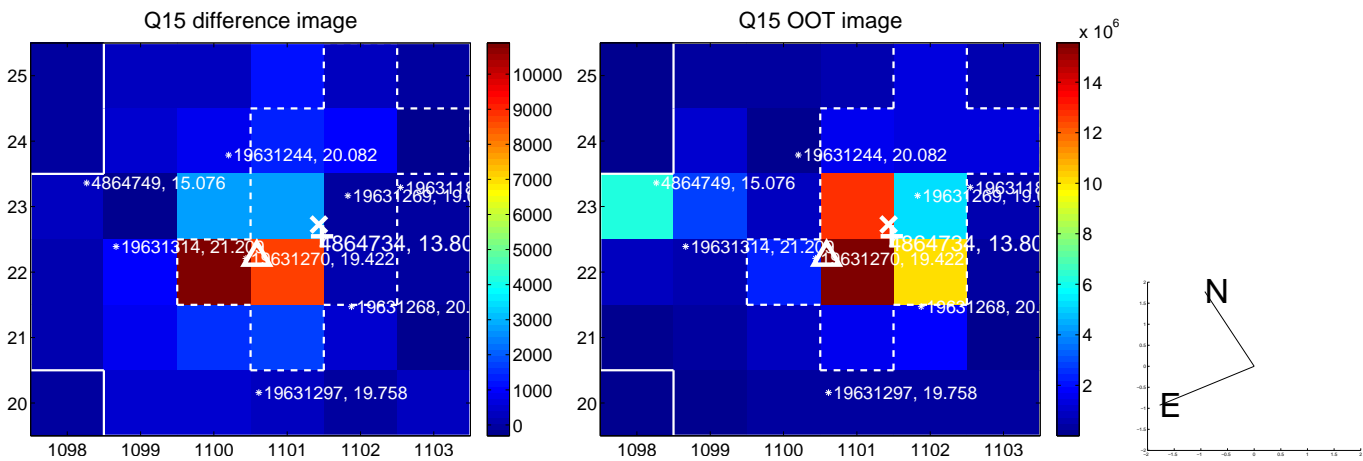
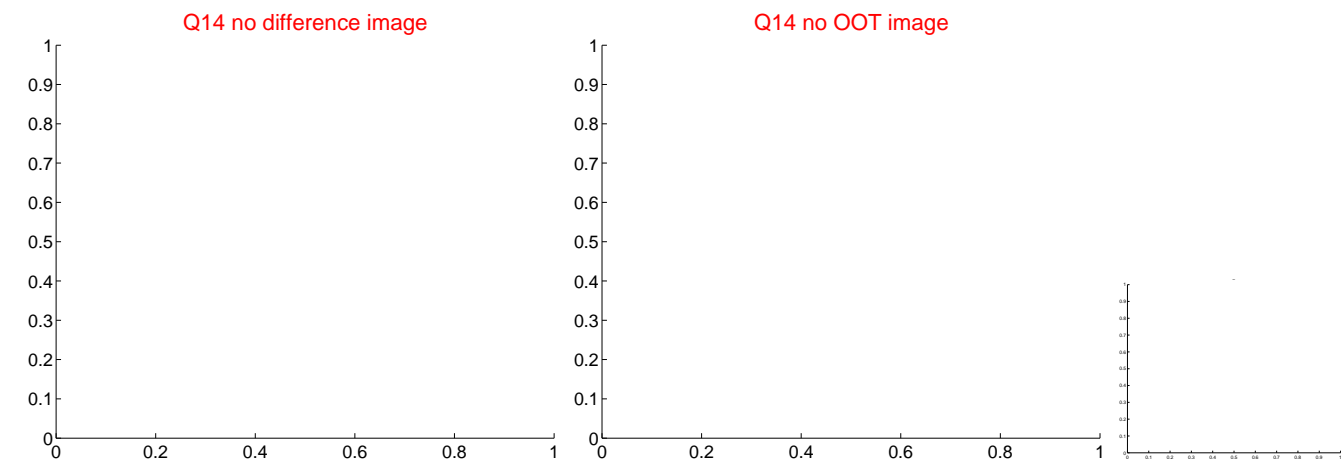
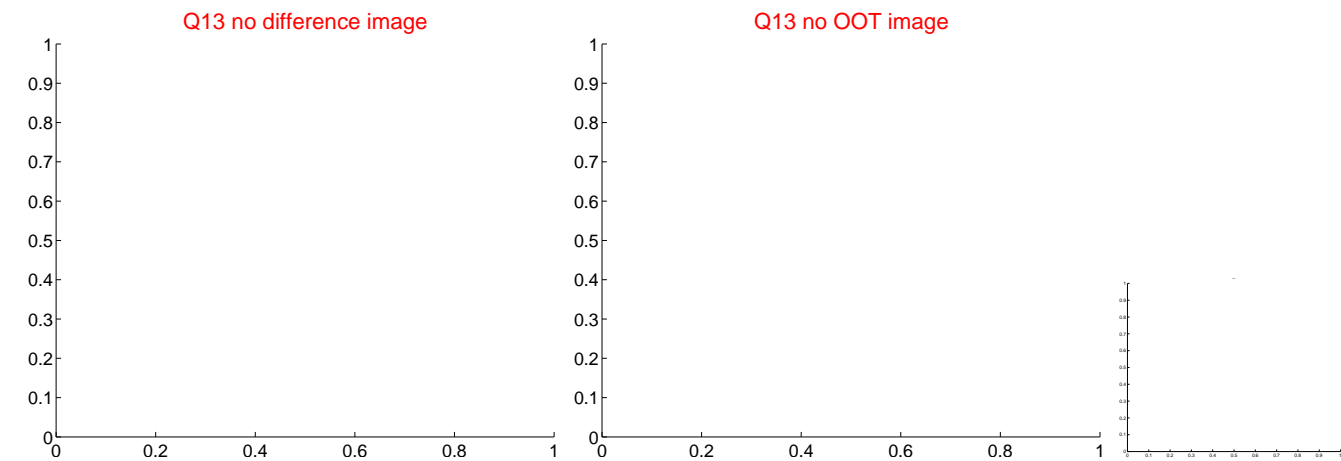
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



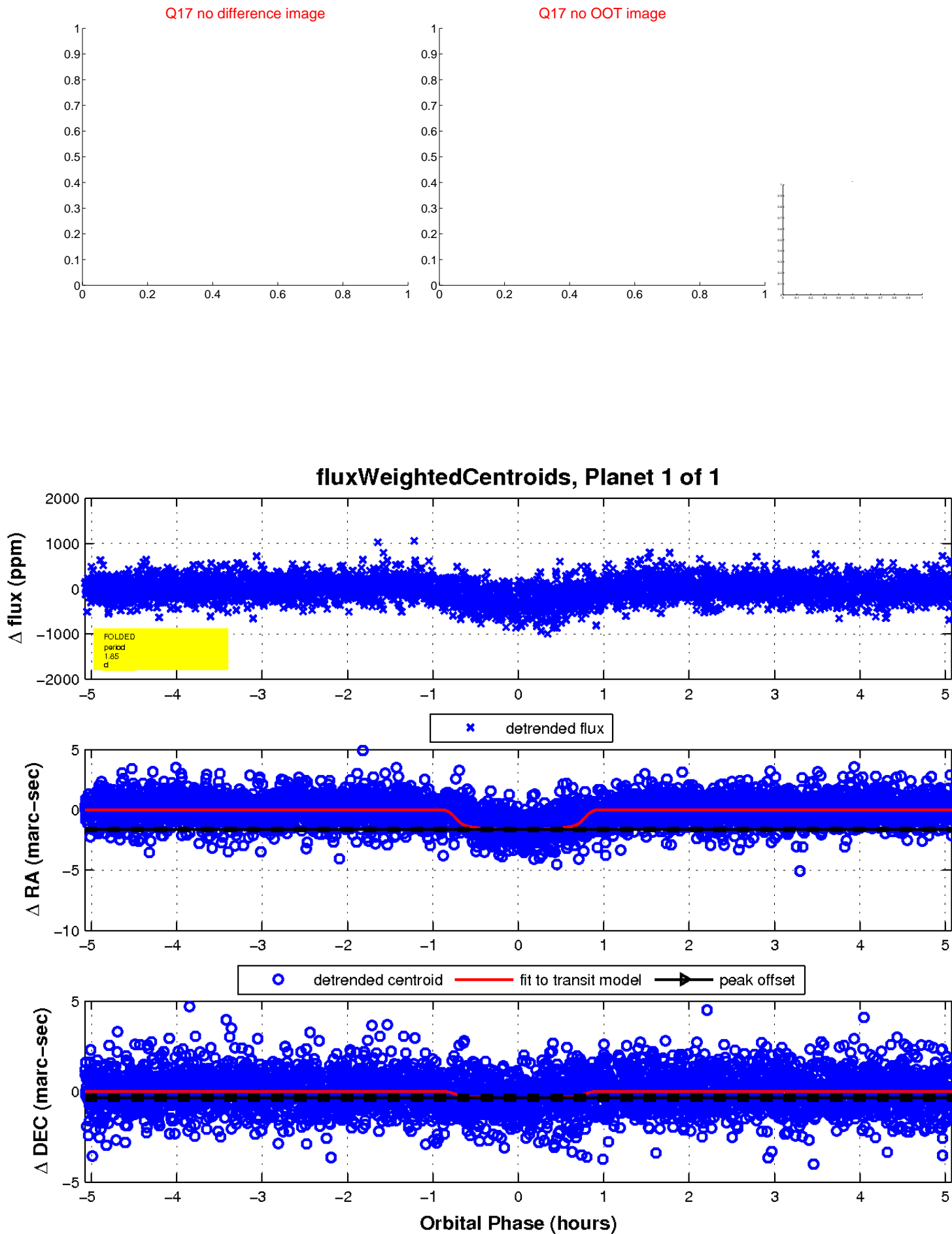
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image

