

# KIC 009651234

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009651234-01	OBS	1938.01	96.915067	187.089923	862.1	6.161	40.6	39.9	0.79	5162	2.48	2.65

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009651234-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

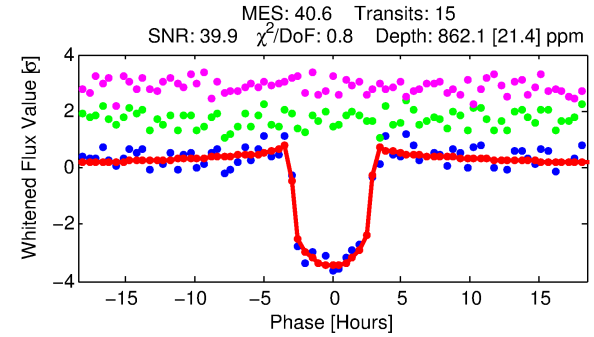
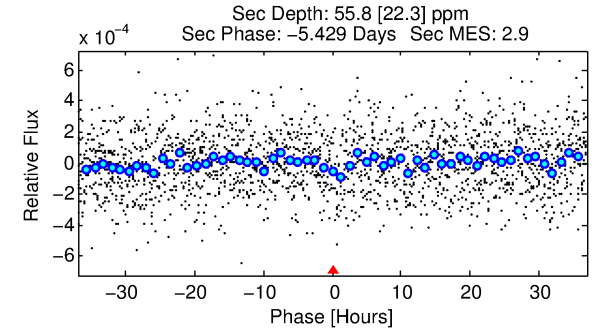
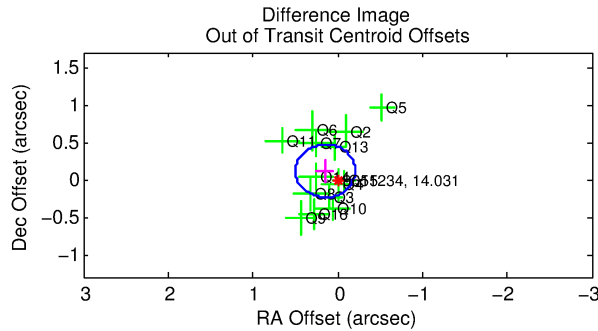
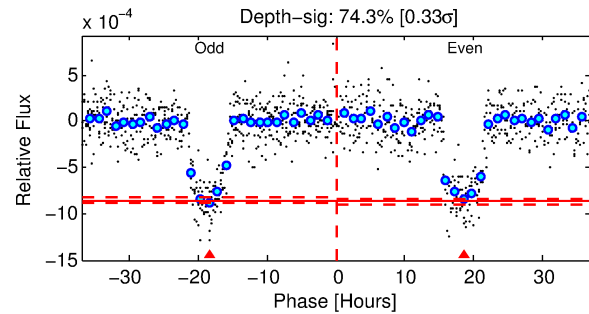
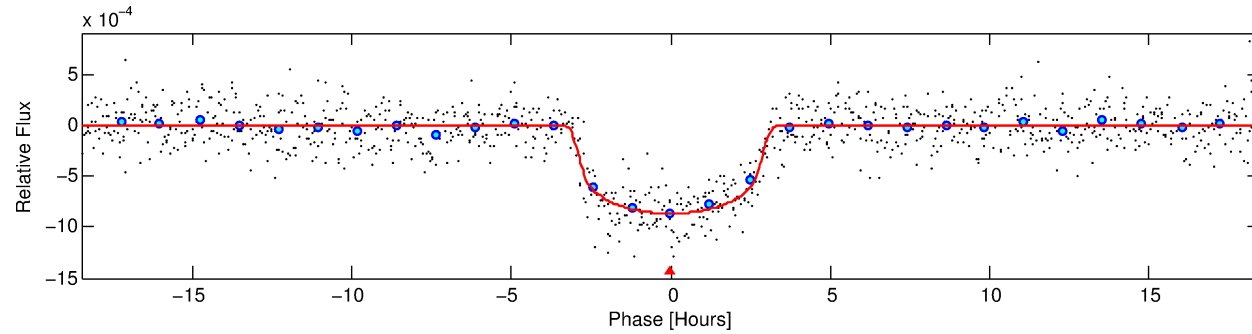
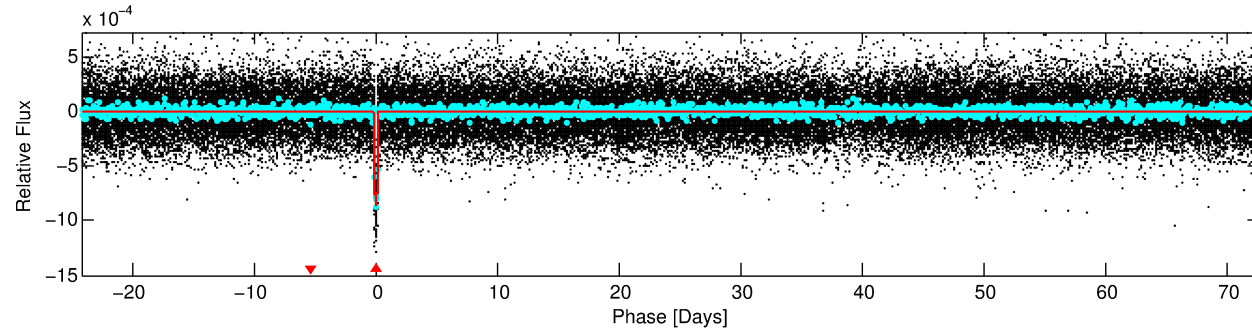
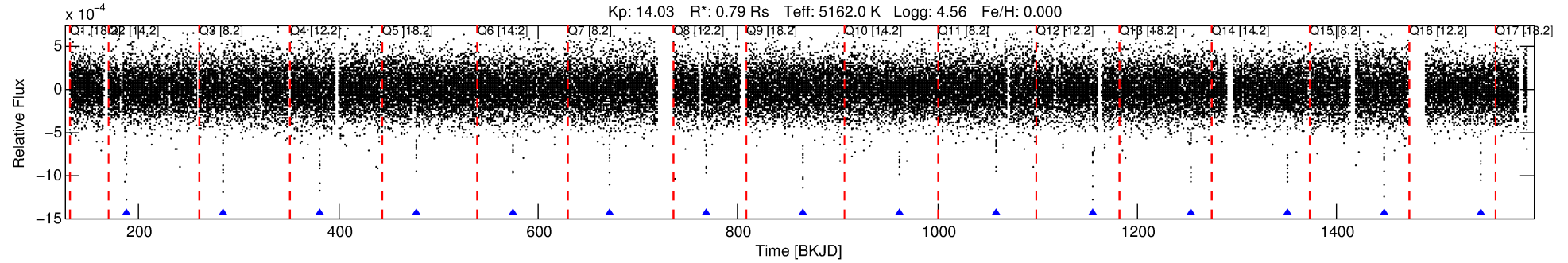
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009651234-01

No Significant Match Found

# DV One-Page Summary

KIC: 9651234 Candidate: 1 of 1 Period: 96.915 d  
KOI: K01938.01 Corr: 0.987



## DV Fit Results:

Period = 96.91507 [0.00030] d  
Epoch = 187.0899 [0.0026] BKJD  
Rp/R\* = 0.0287 [0.0046]  
a/R\* = 90.80 [52.92]  
b = 0.70 [0.44]  
Seff = 2.65 [0.33]  
Teff = 325 [10] K  
Rp = 2.48 [0.43] Re  
a = 0.3876 [0.0243] AU  
Ag = 752.21 [392.03] [1.92 $\sigma$ ]  
Teffp = 2634 [341] K [6.76 $\sigma$ ]

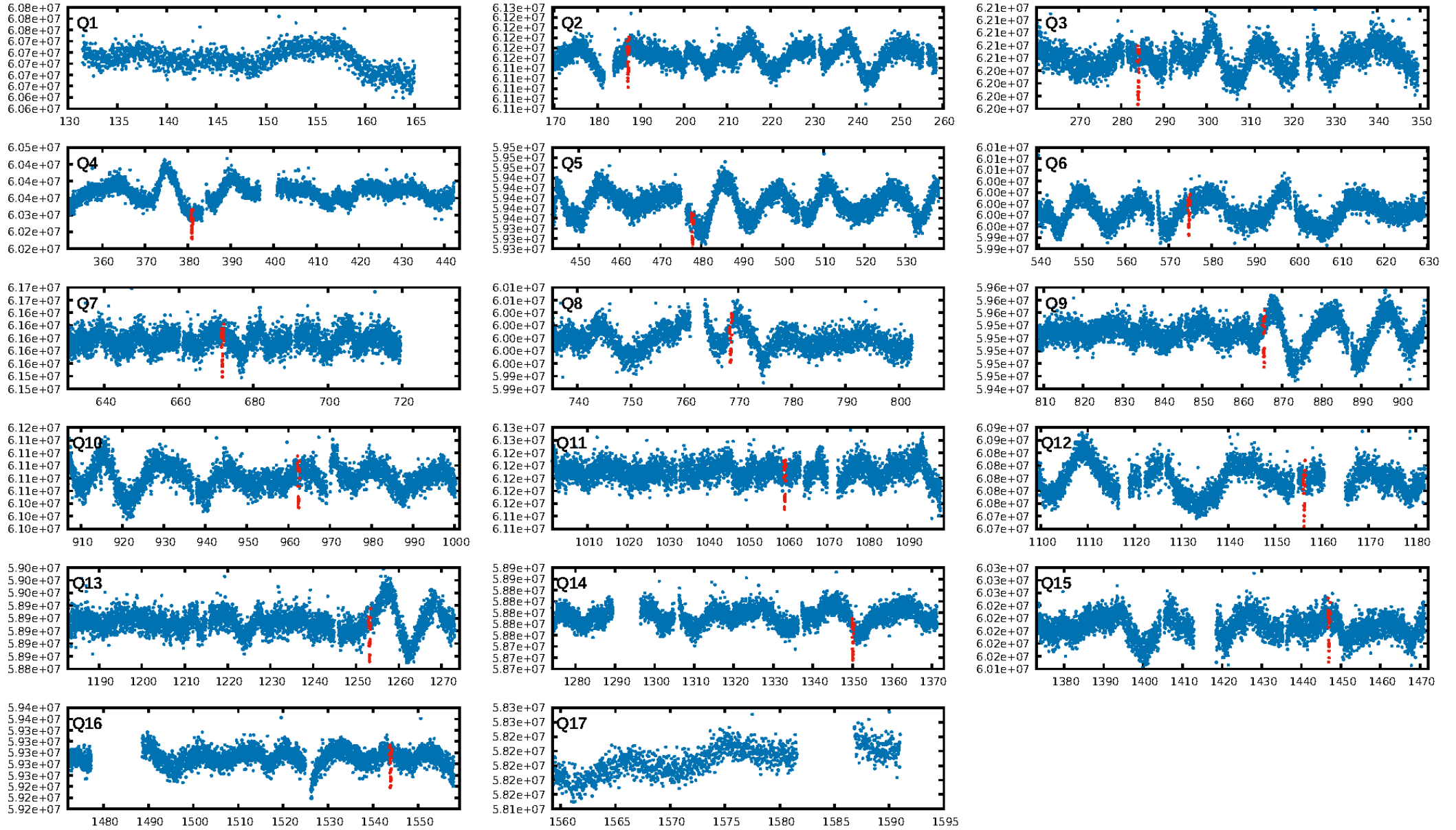
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 93.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 7.79e-267  
RollingBand-fgt: 1.00 [15/15]  
GhostDiagnostic-chr: 2.223  
Centroid-sig: 69.1%  
Centroid-so: 0.408 arcsec [1.39 $\sigma$ ]  
OotOffset-rm: 0.188 arcsec [1.60 $\sigma$ ]  
KicOffset-rm: 0.235 arcsec [1.54 $\sigma$ ]  
OotOffset-st: 4/4/3/3 [14]  
KicOffset-st: 4/4/3/3 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

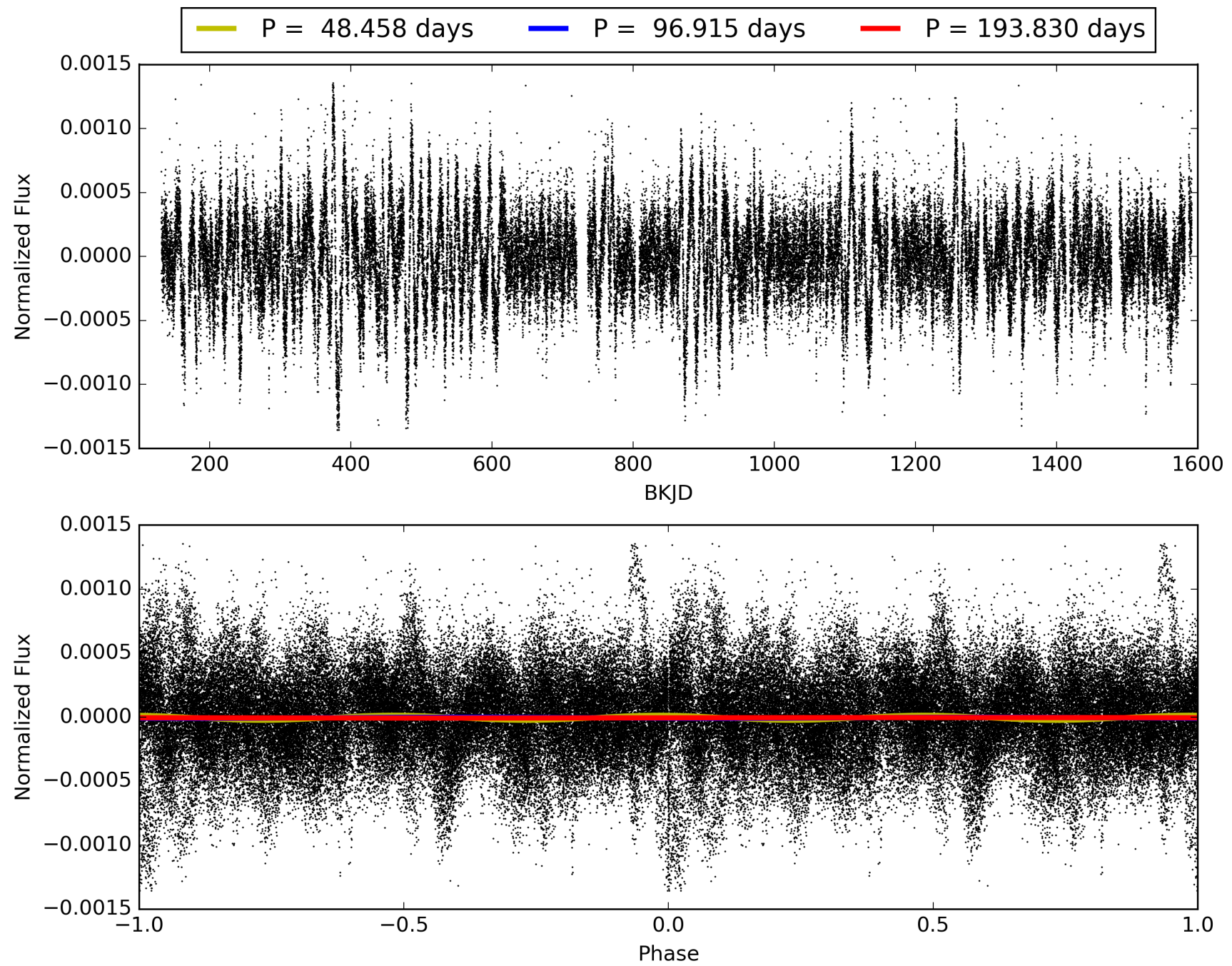
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:47:43 Z

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

# TCE 009651234-01, PDC Light Curves

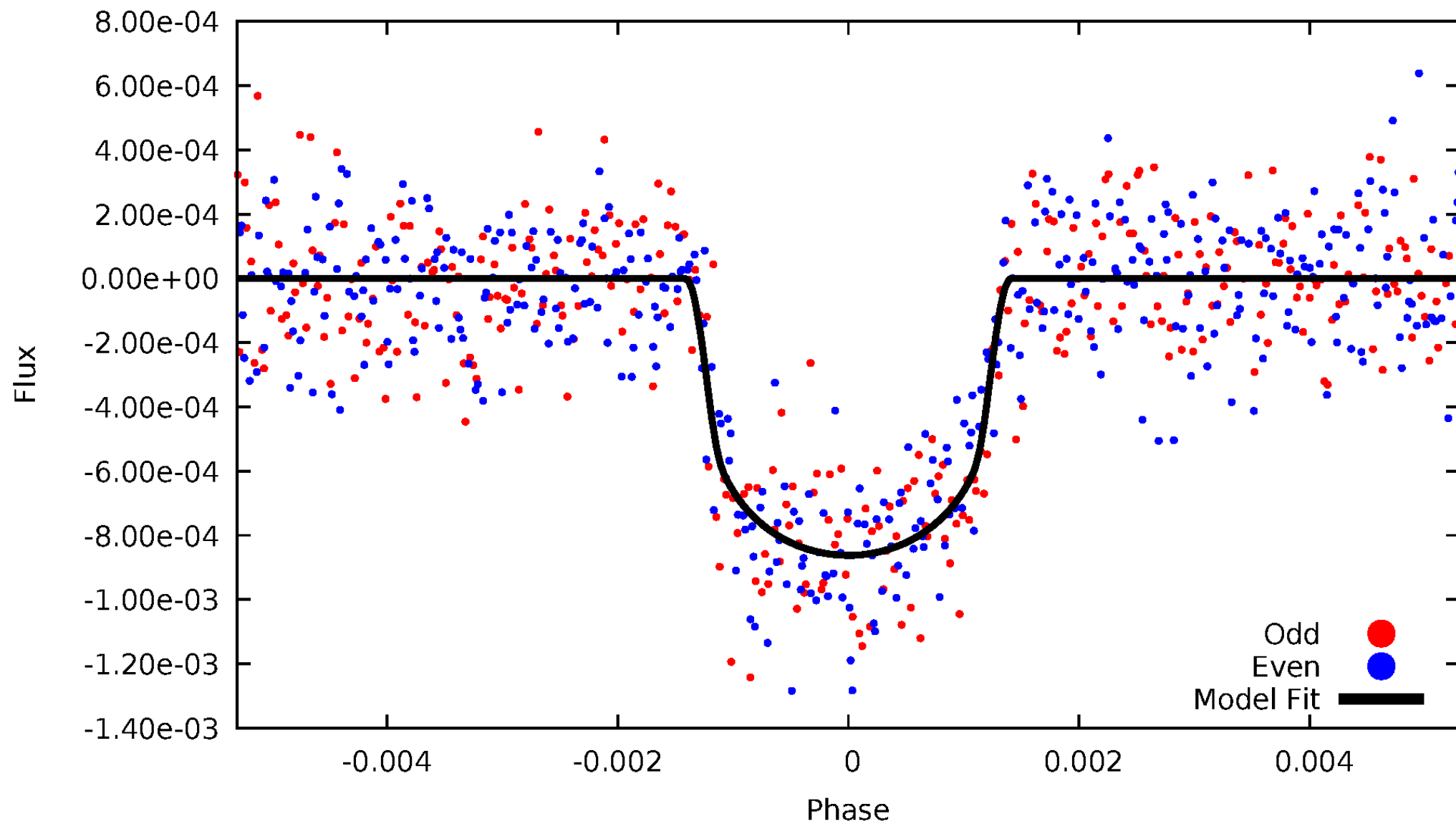


TCE 009651234-01



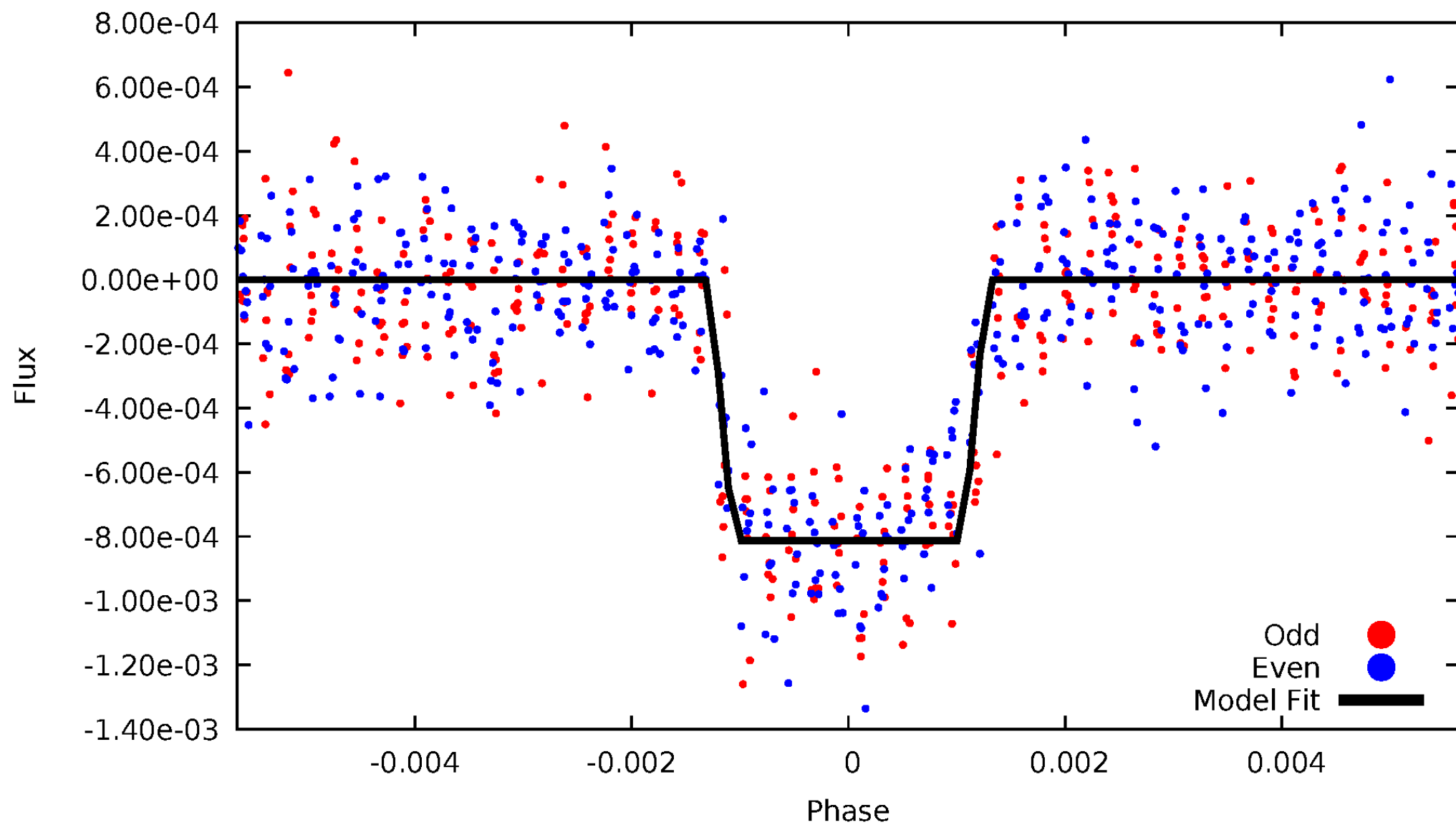
# DV Odd/Even

TCE 009651234-01



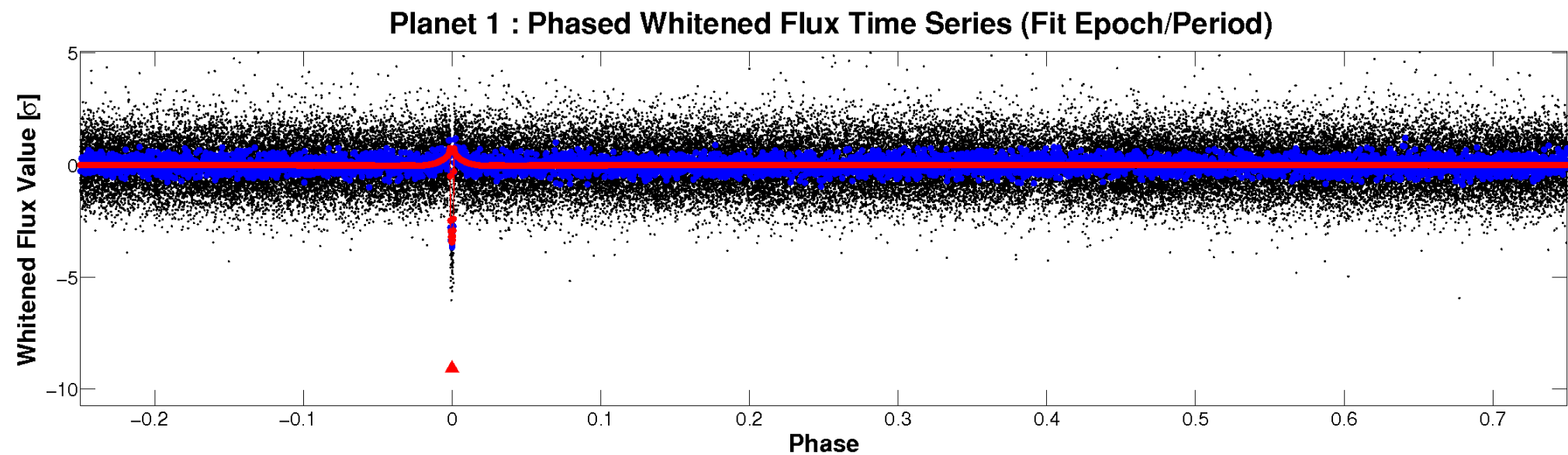
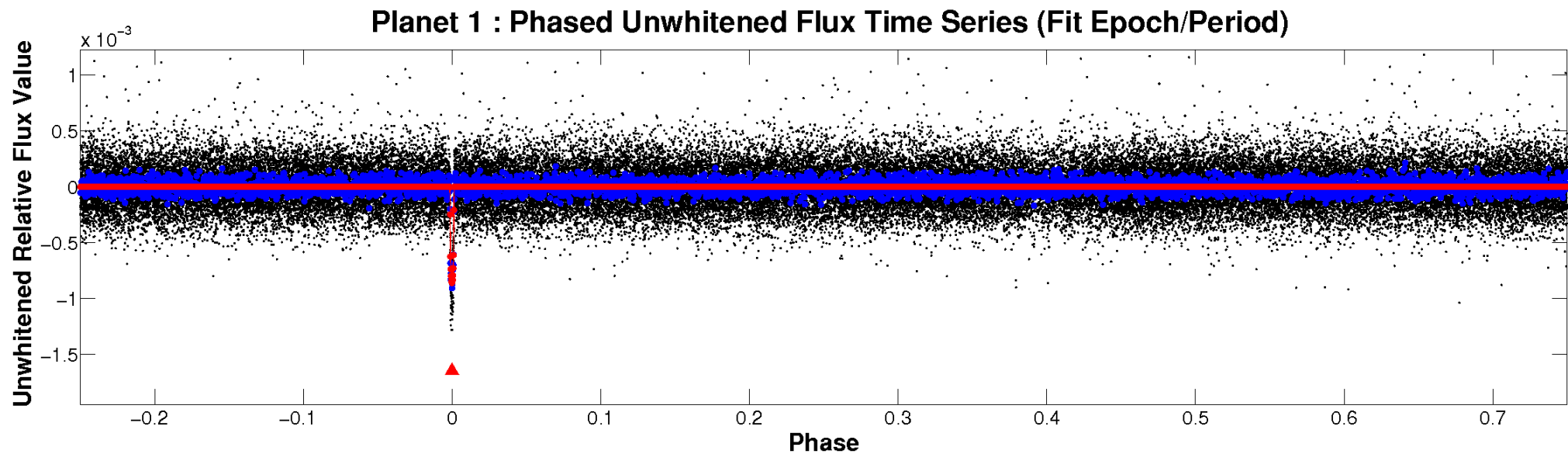
# ALT Odd/Even

TCE 009651234-01



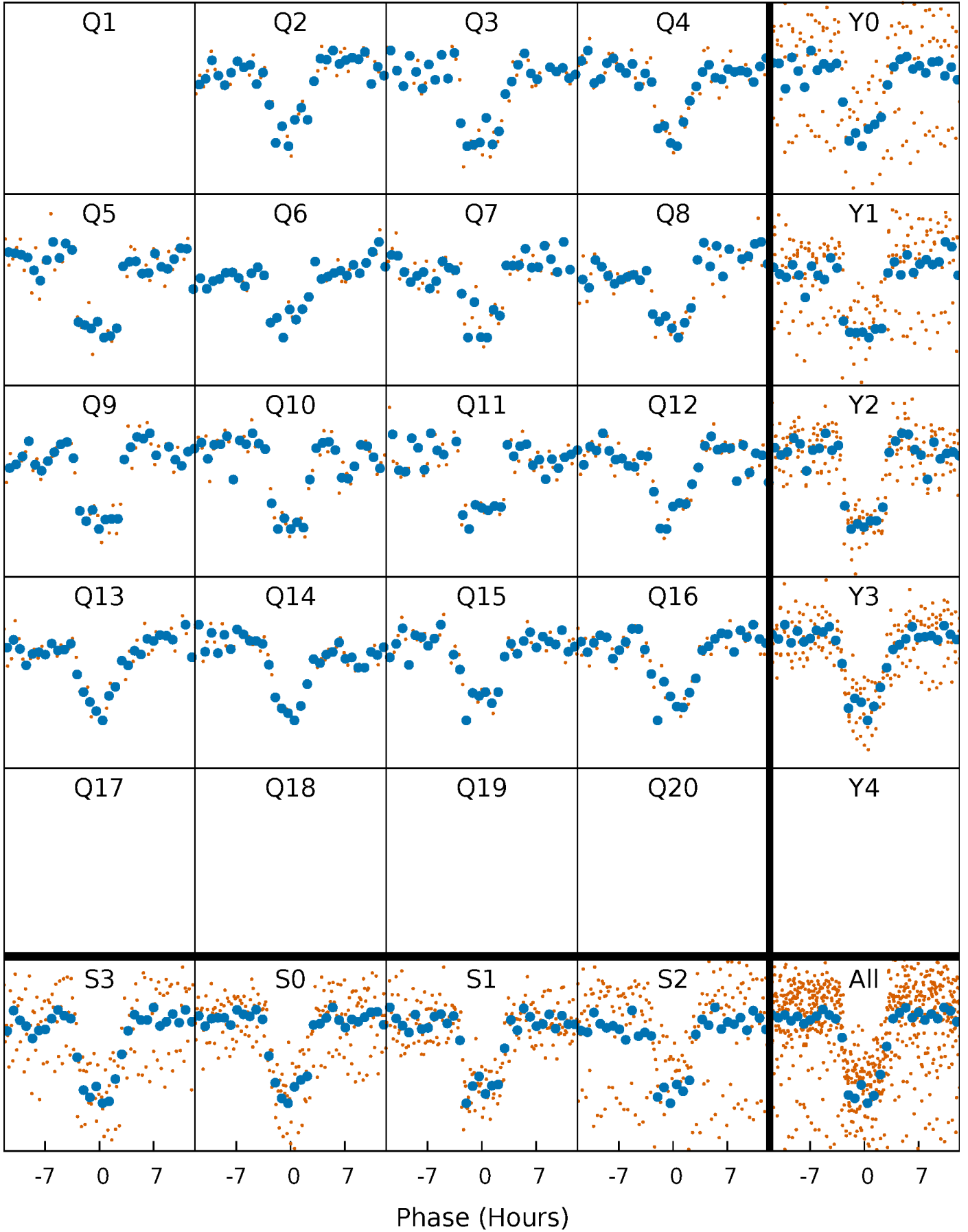


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

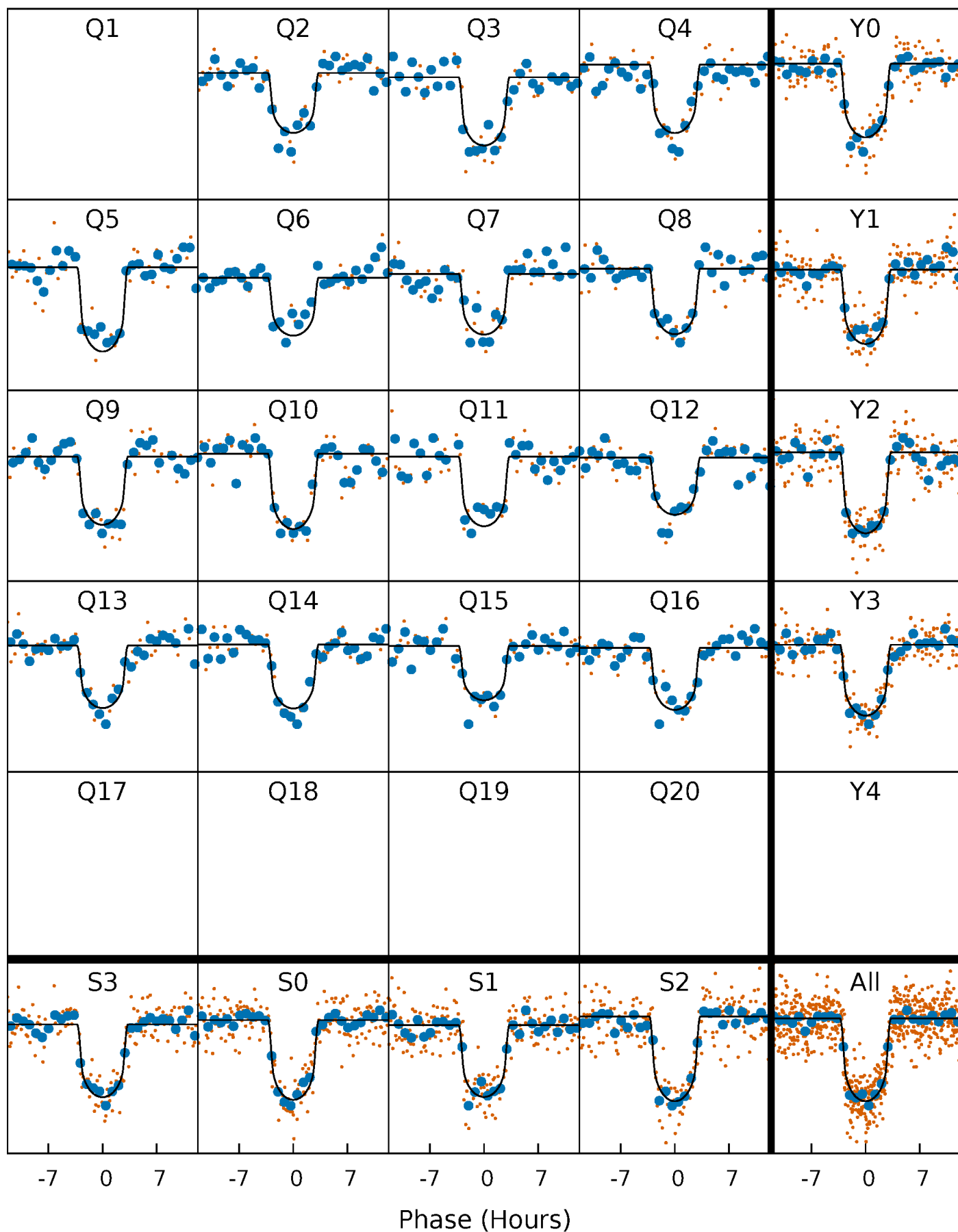
TCE 009651234-01 P= 96.915067 Days  $T_0=187.089923$  (BKJD)





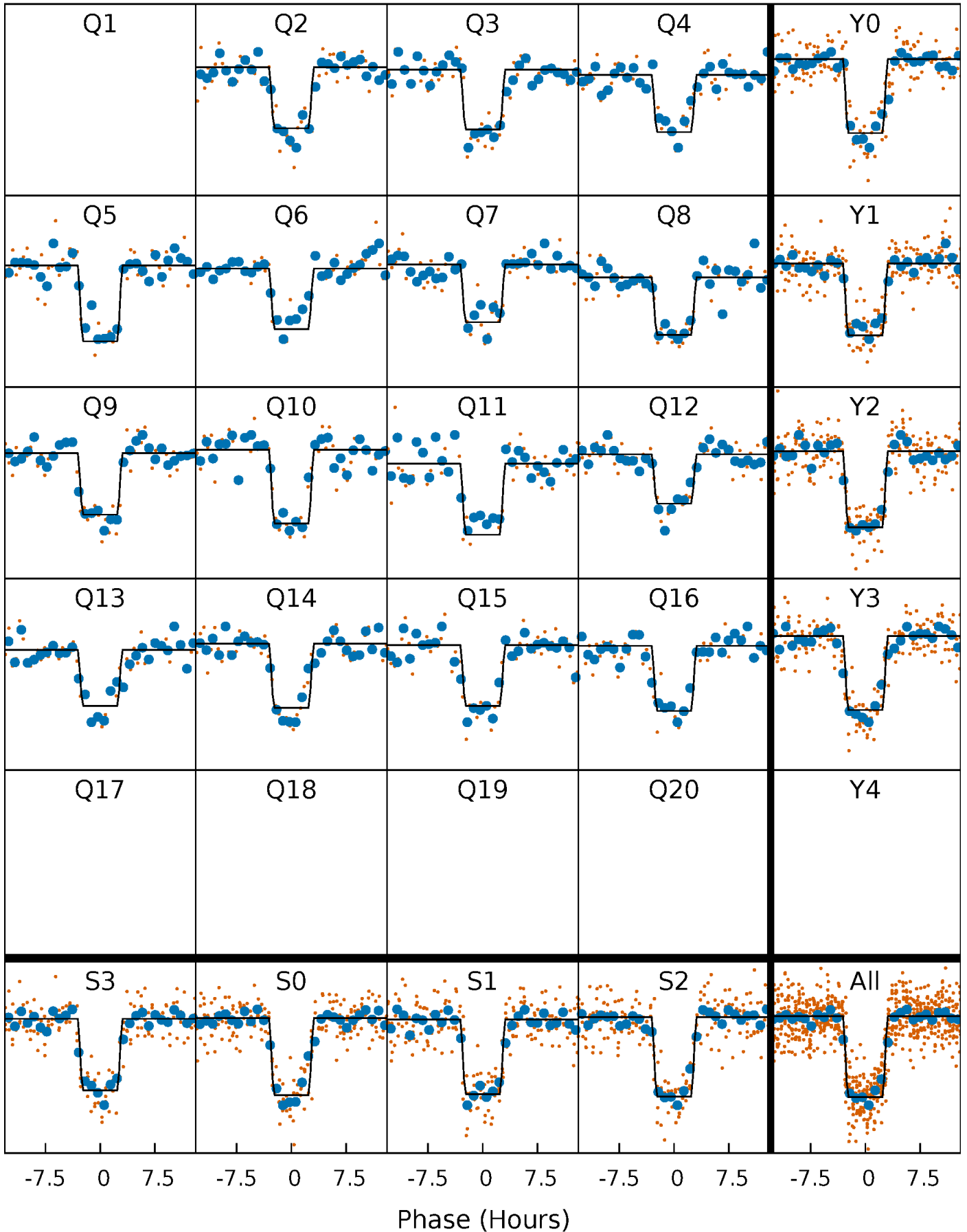
# DV Quarter-Phased Transit Curves

TCE 009651234-01 P= 96.915067 Days  $T_0=187.089923$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

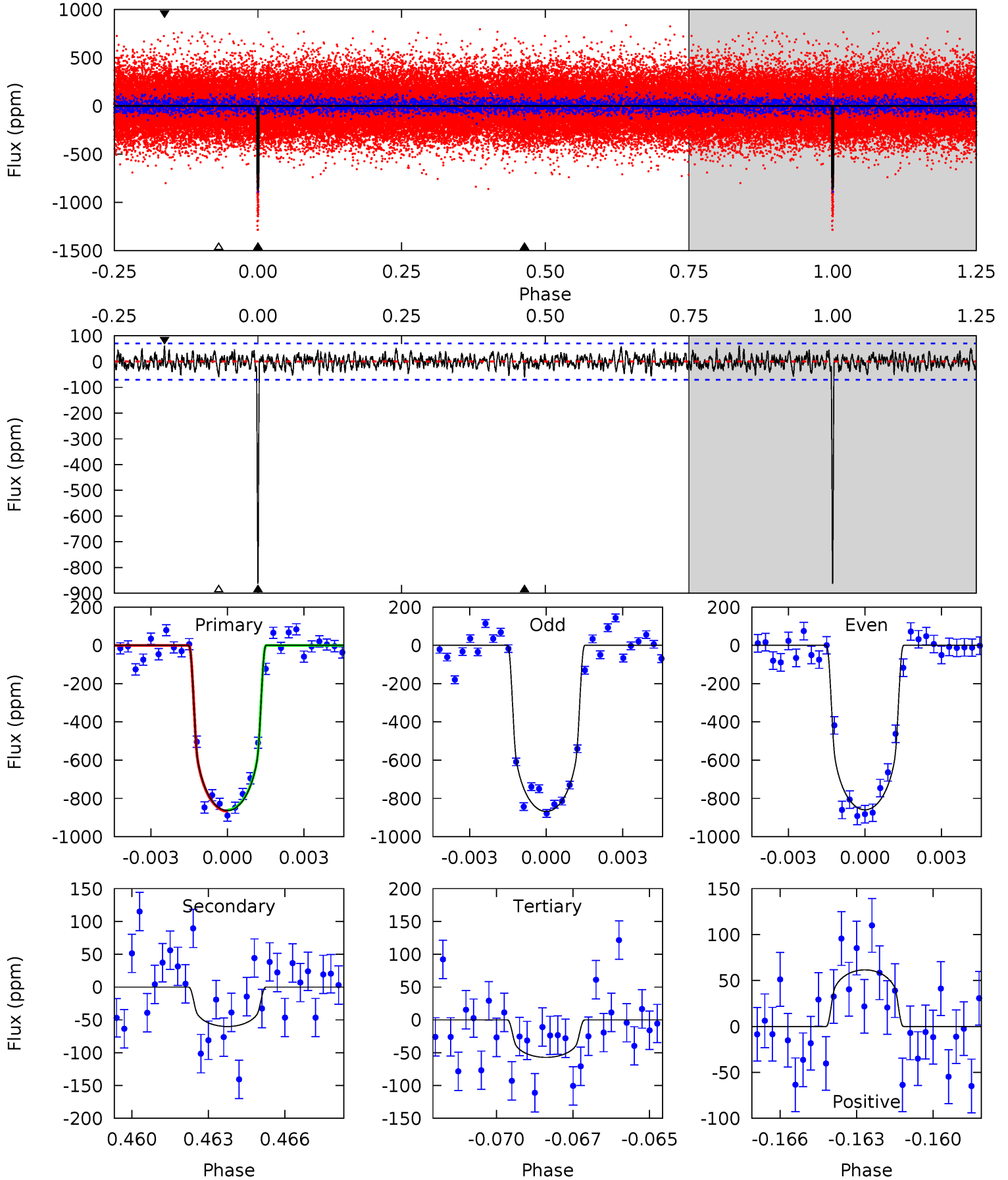
TCE 009651234-01 P= 96.916910 Days  $T_0=187.077722$  (BKJD)



# DV Model-Shift Uniqueness Test

009651234-01, P = 96.915067 Days, E = 90.174856 Days

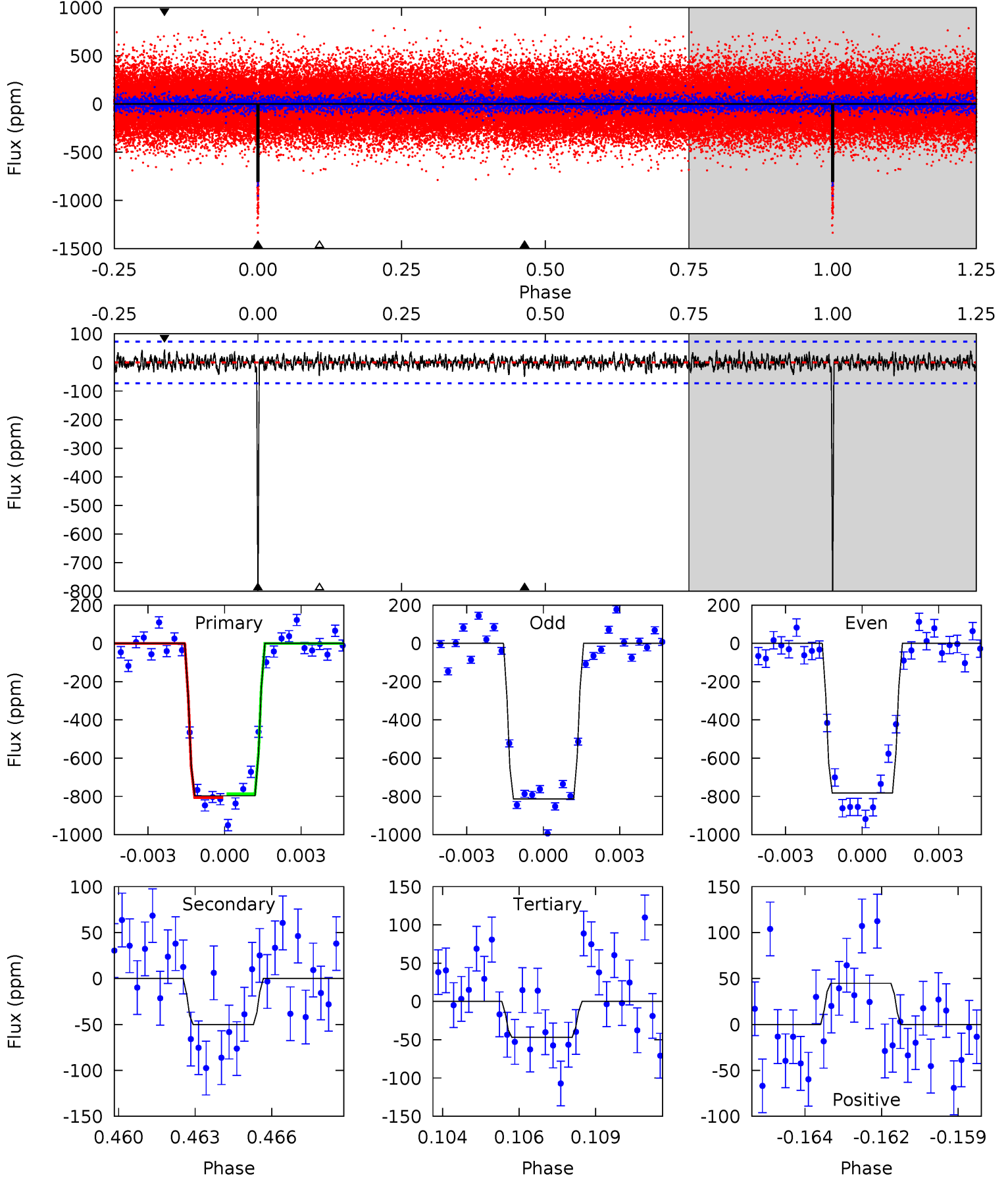
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
64.5	4.50	4.27	4.60	5.26	2.99	1.41	60.3	59.9	0.22	-0.11	0.32	0.99	0.07	0.23



# Alt Model-Shift Uniqueness Test

009651234-01, P = 96.916910 Days, E = 90.160812 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
57.8	3.64	3.39	3.24	5.28	3.02	1.00	54.4	54.5	0.25	0.40	1.10	1.01	0.05	0.68



### Stellar Parameters For KIC 009651234

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5162^{+103}_{-93}$	$4.559^{+0.036}_{-0.054}$	$0.000^{+0.150}_{-0.150}$	$0.791^{+0.056}_{-0.042}$	$0.826^{+0.046}_{-0.046}$	$2.350^{+0.322}_{-0.411}$
	+2%/-2%	+1%/-1%	+inf%/-inf%	+7%/-5%	+6%/-6%	+14%/-18%
Source	SPE57	SPE57	SPE57	DSEP		

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

### Secondary Eclipse Parameters for KIC 009651234-01 / KOI 1938.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-60 \pm 13$	$2.47^{+0.42}_{-0.39}$	$455^{+12}_{-11}$	$3232^{+215}_{-176}$	$805^{+418}_{-268}$
Alt.	$-50 \pm 14$	$2.46^{+0.41}_{-0.41}$	$457^{+12}_{-11}$	$3153^{+225}_{-185}$	$670^{+380}_{-228}$

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

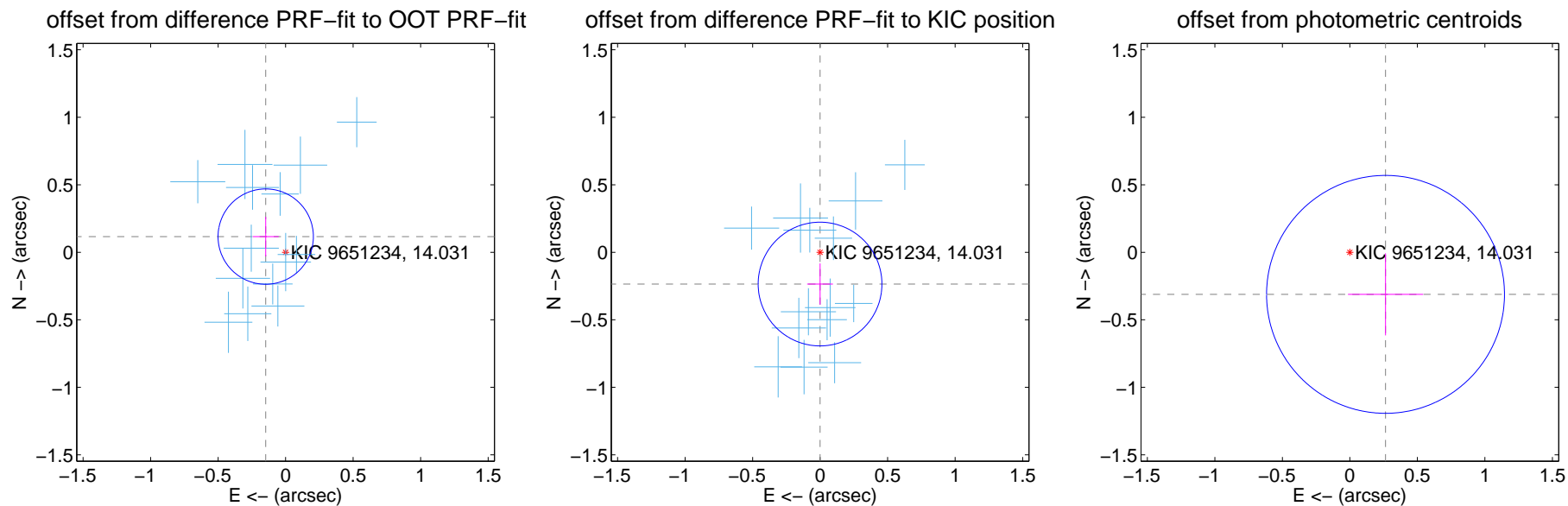
## DV Centroid Data

Supplemental centroid analysis for 009651234-01. Kepler magnitude: 14.03. Transit SNR 39.87

There are 14 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

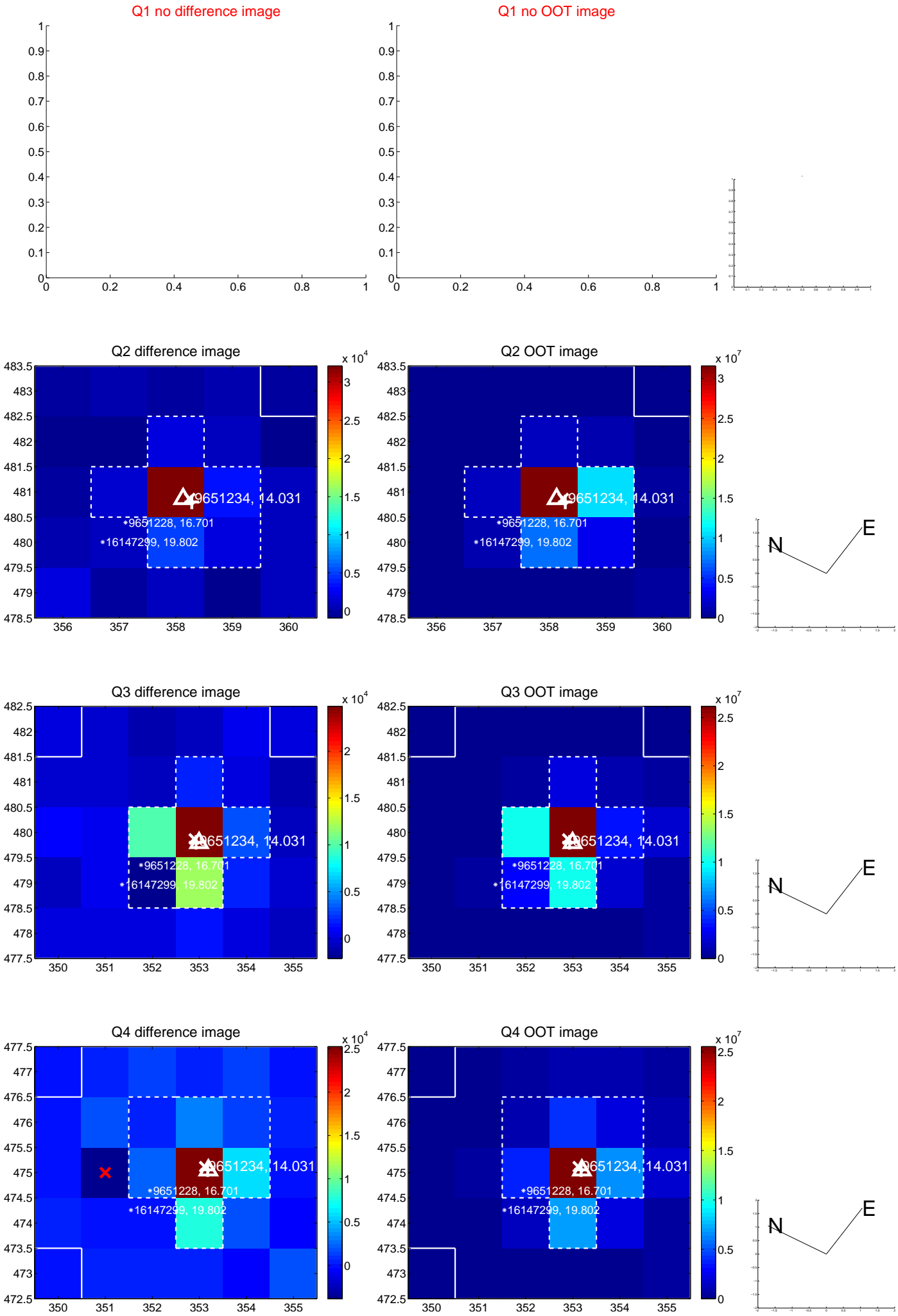
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.188 \pm 0.118$	1.60	$0.147 \pm 0.096$	$0.116 \pm 0.146$
PRF-fit source offset from KIC position	$0.235 \pm 0.153$	1.54	$0.001 \pm 0.096$	$-0.235 \pm 0.153$
photometric centroid source offset	$0.41 \pm 0.29$	1.39	$-0.26 \pm 0.28$	$-0.31 \pm 0.30$



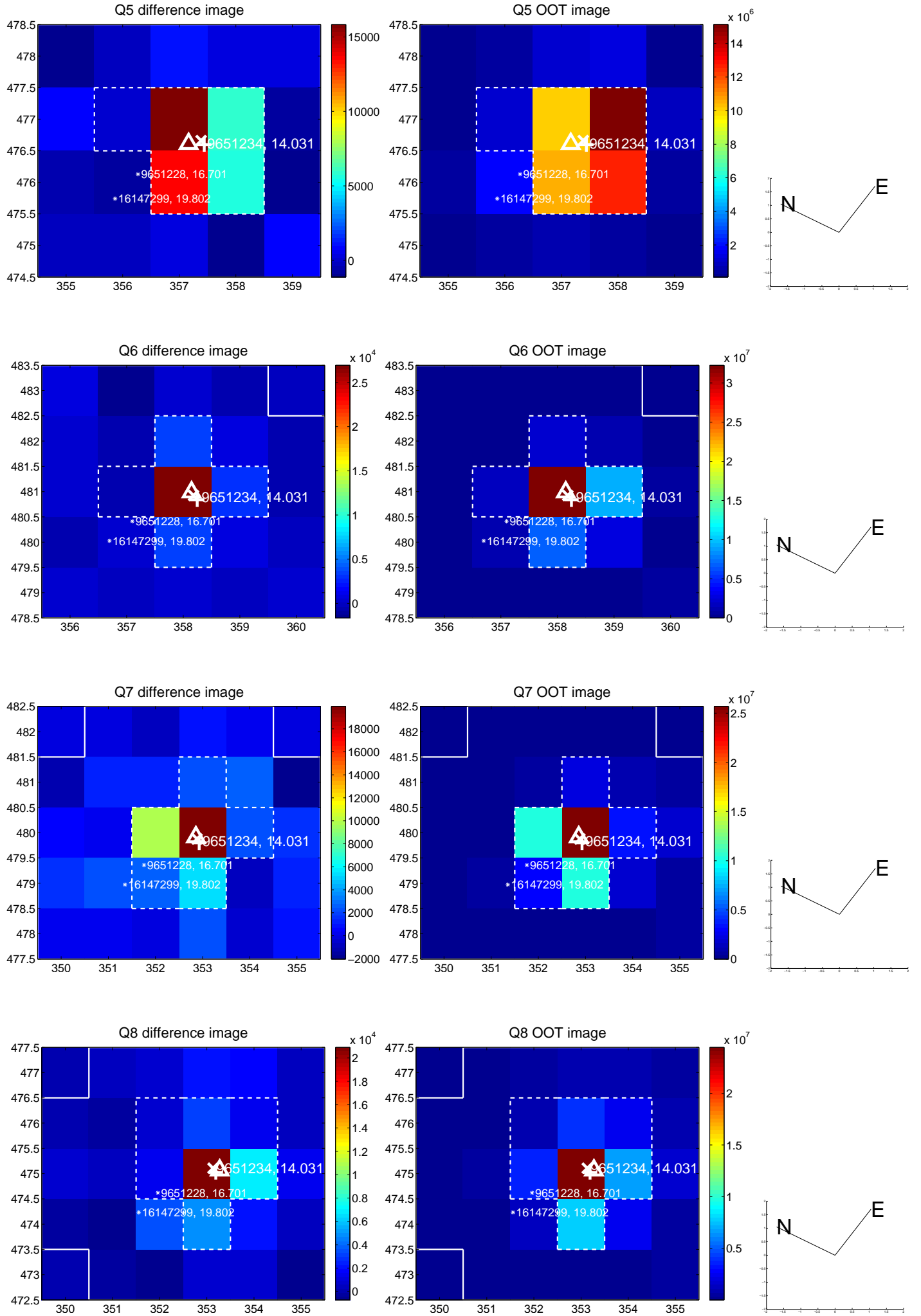
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



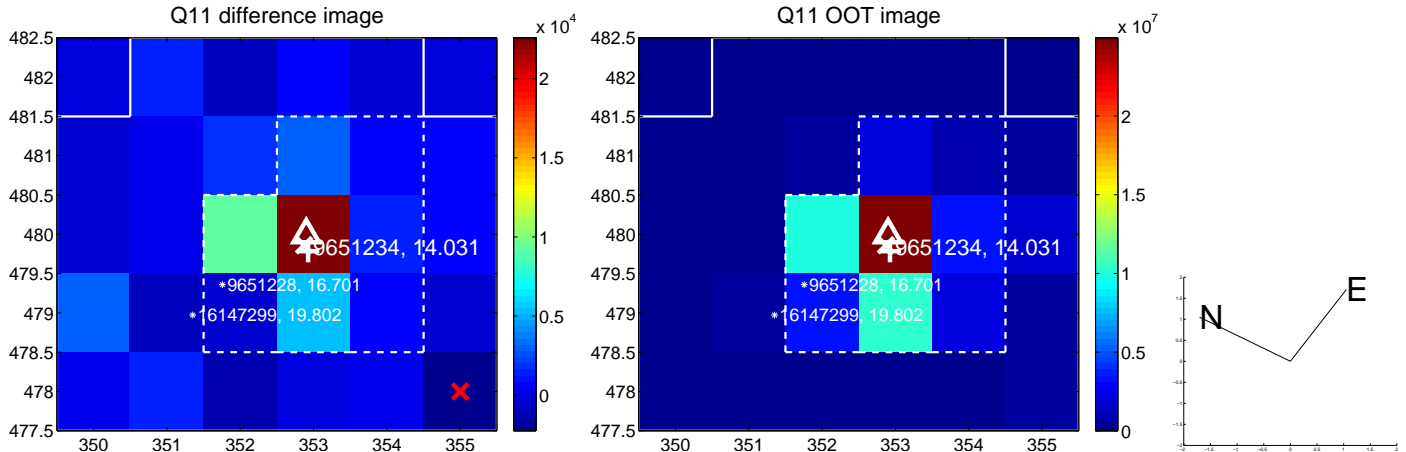
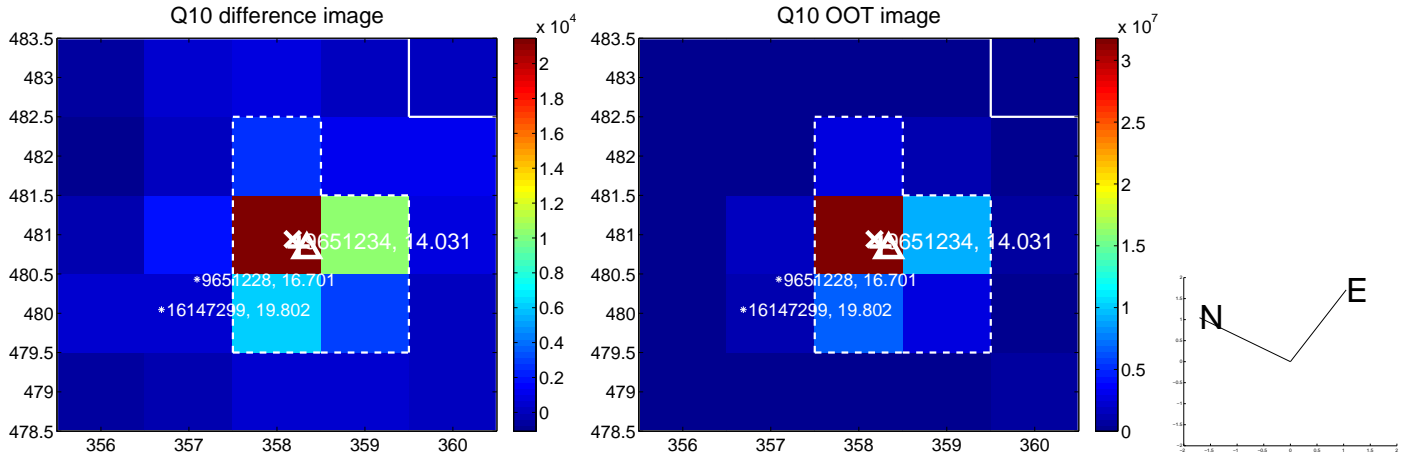
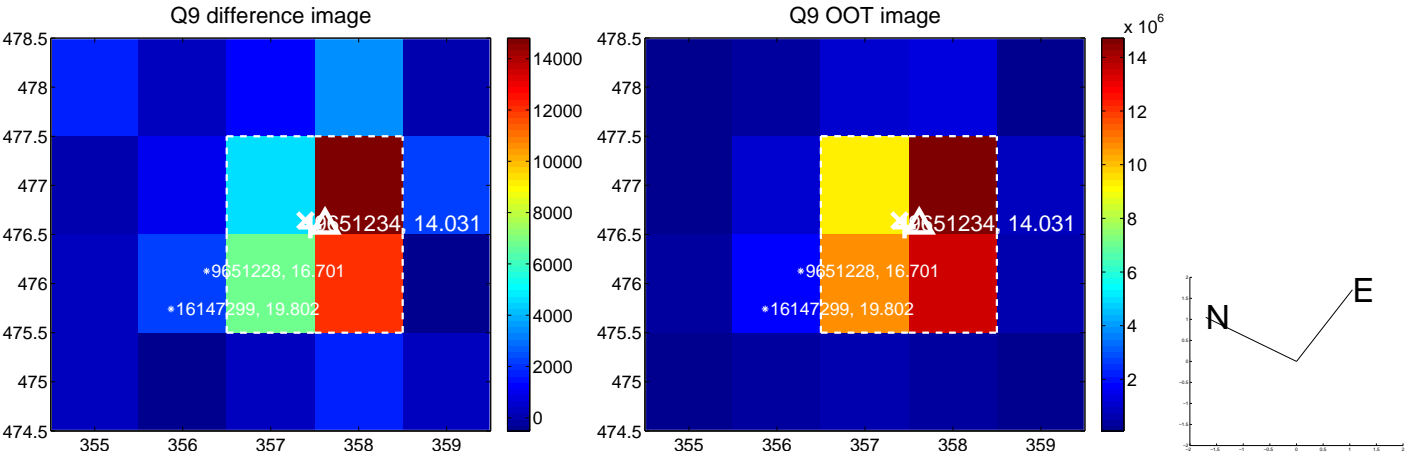
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



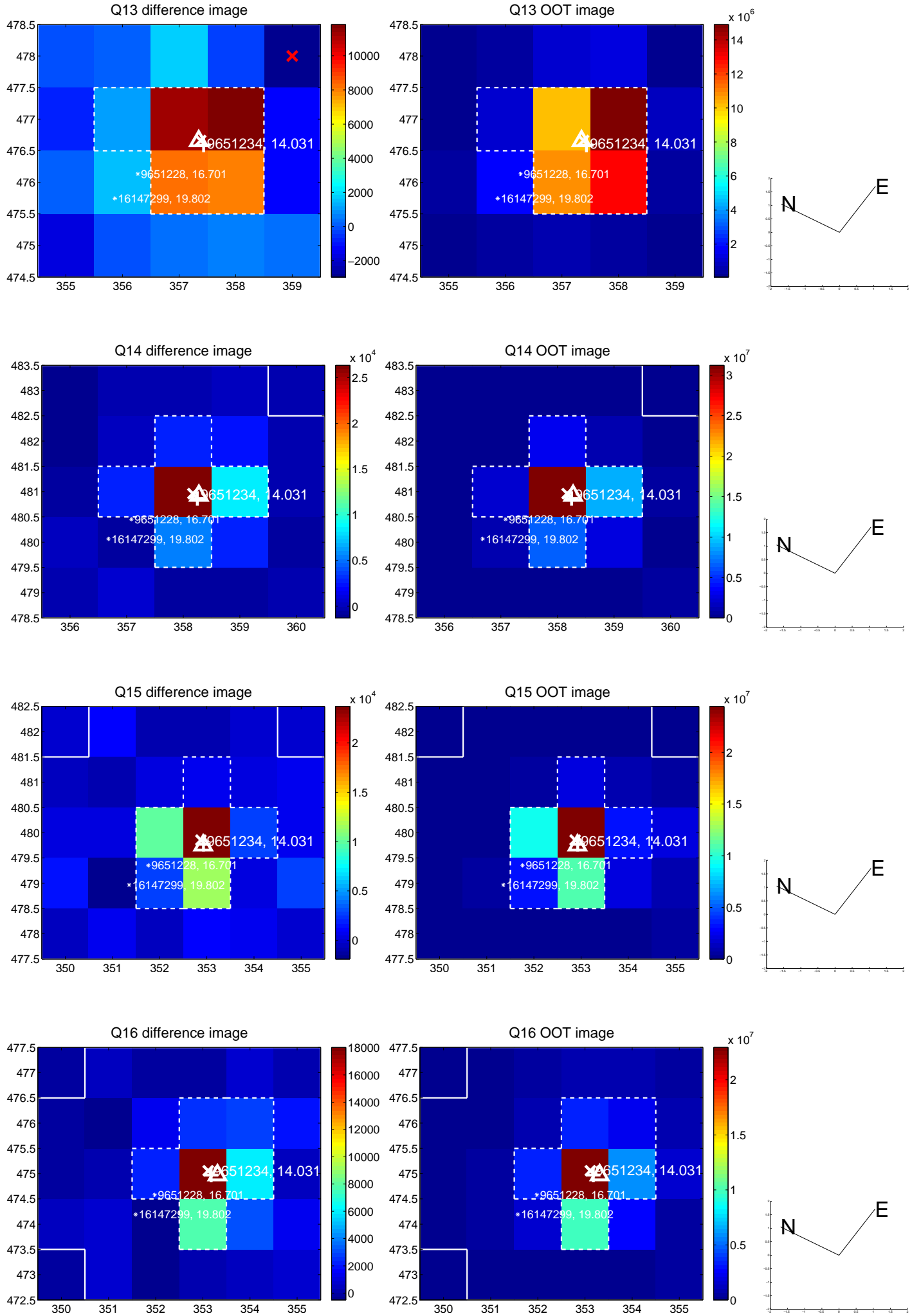
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



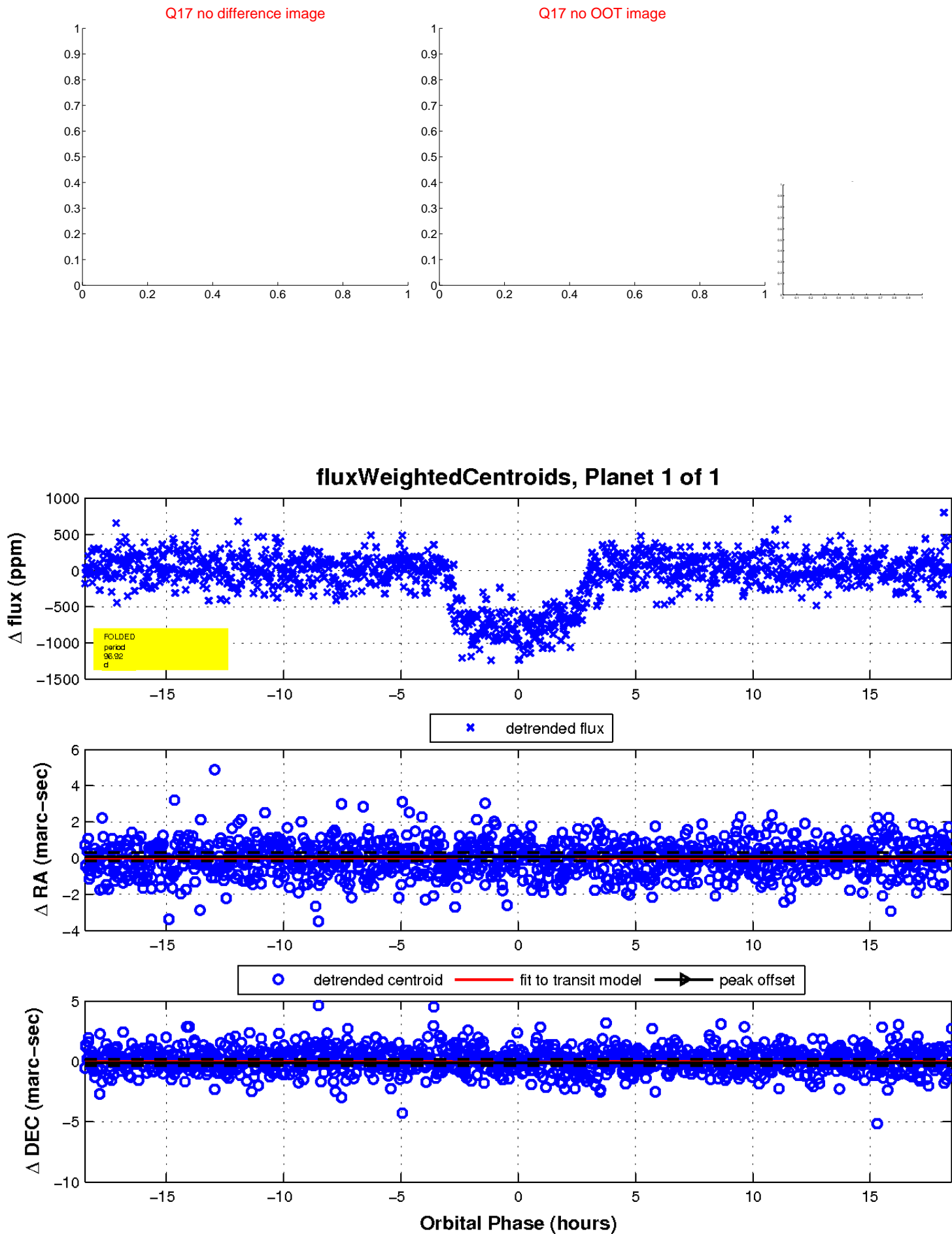
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

