

# KIC 005522339

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005522339-01	OBS	No	382.987121	200.846219	603.4	3.804	9.8	6.5	0.61	4280	1.68	0.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005522339-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

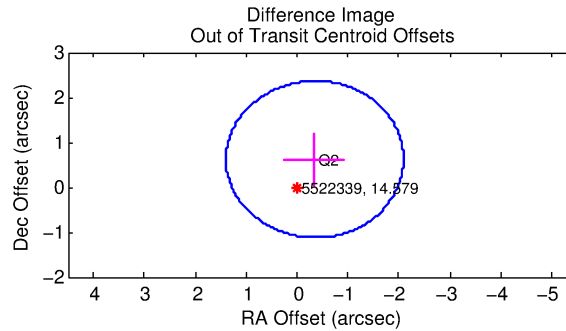
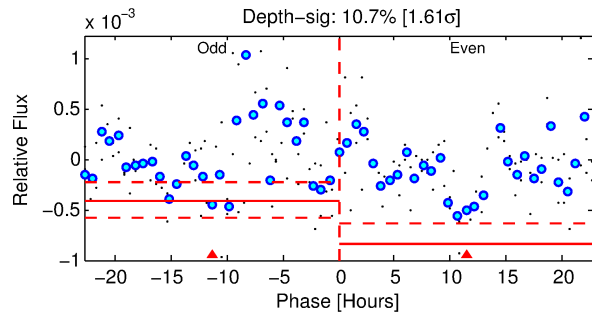
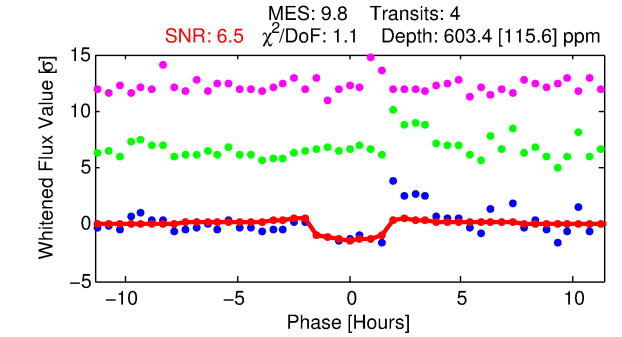
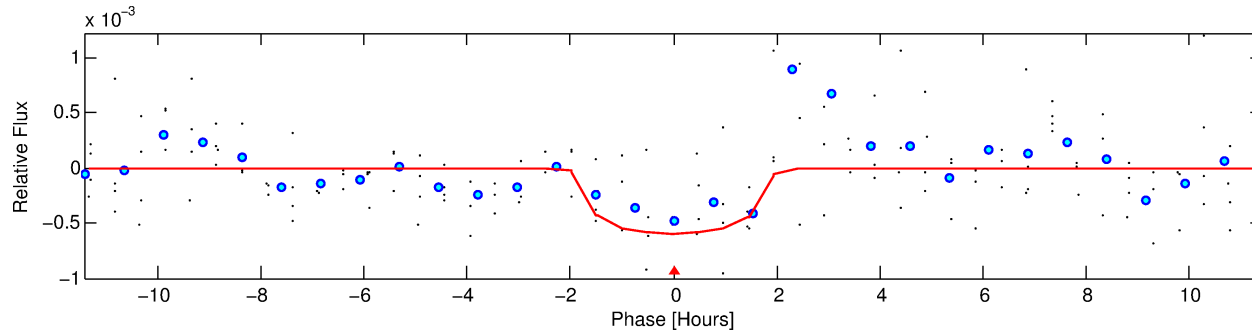
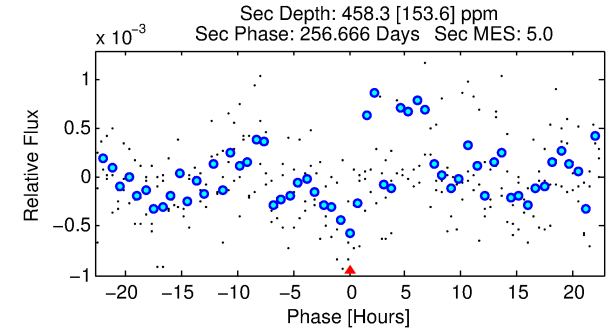
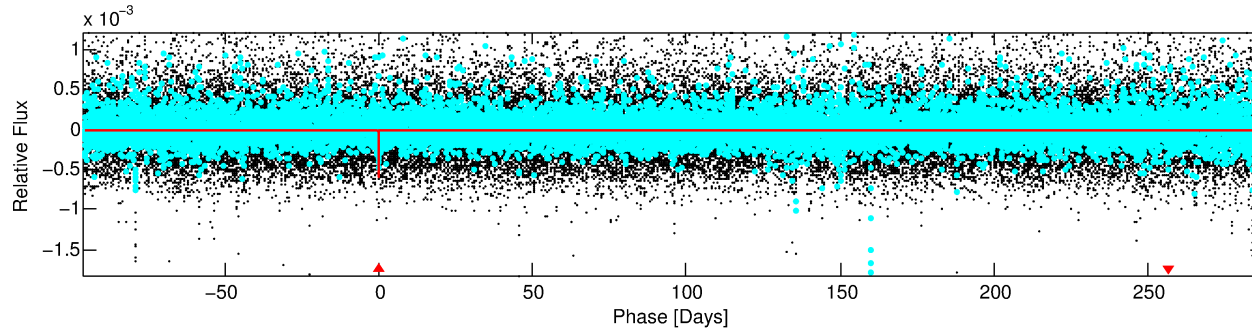
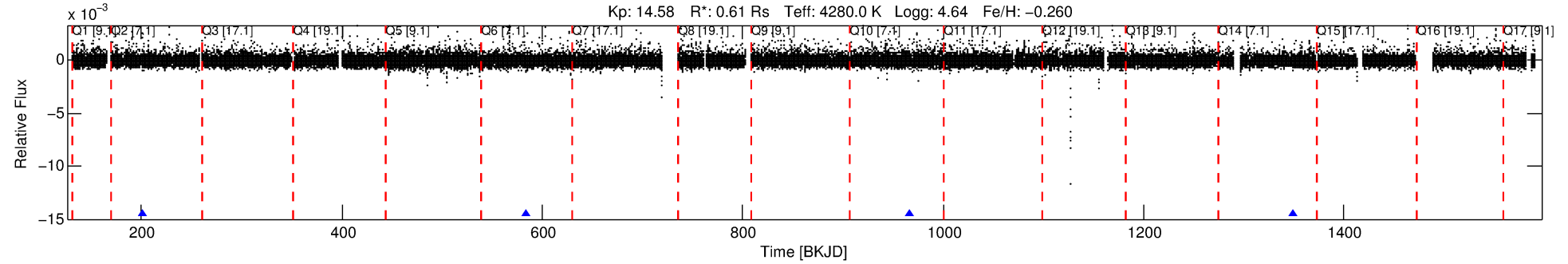
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005522339-01

No Significant Match Found

# DV One-Page Summary

KIC: 5522339 Candidate: 1 of 1 Period: 382.987 d



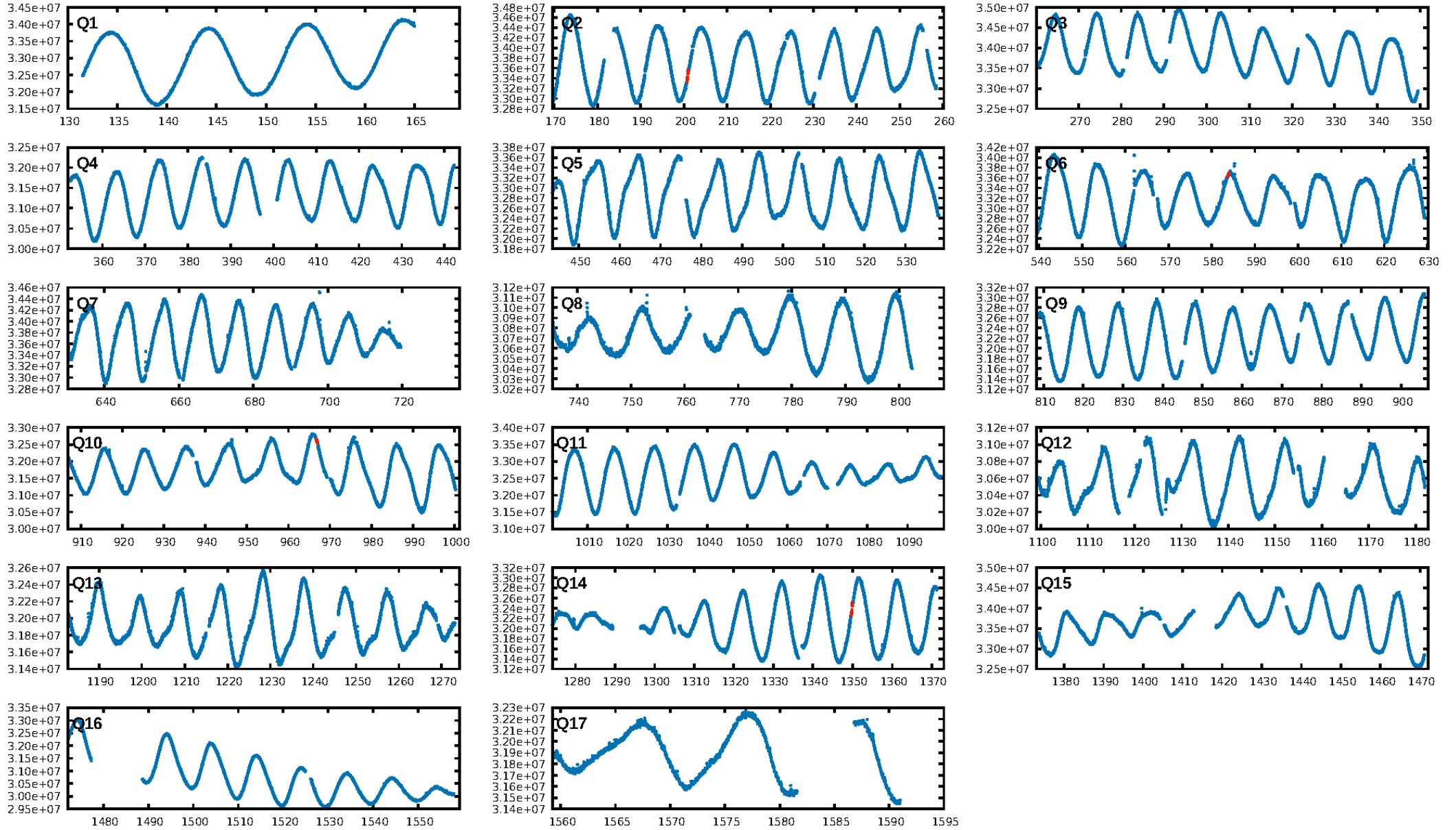
## DV Fit Results:

Period = 382.98712 [0.00623] d  
Epoch = 200.8462 [0.0110] BKJD  
Rp/R\* = 0.0251 [0.0291]  
a/R\* = 501.21 [2027.53]  
b = 0.79 [1.97]  
Seff = 0.15 [0.02]  
Teq = 158 [6] K  
Rp = 1.68 [1.95] Re  
a = 0.8705 [0.0674] AU  
Ag = 67654.88 [158568.58] [0.43 $\sigma$ ]  
Teffp = 3951 [2316] K [1.64 $\sigma$ ]

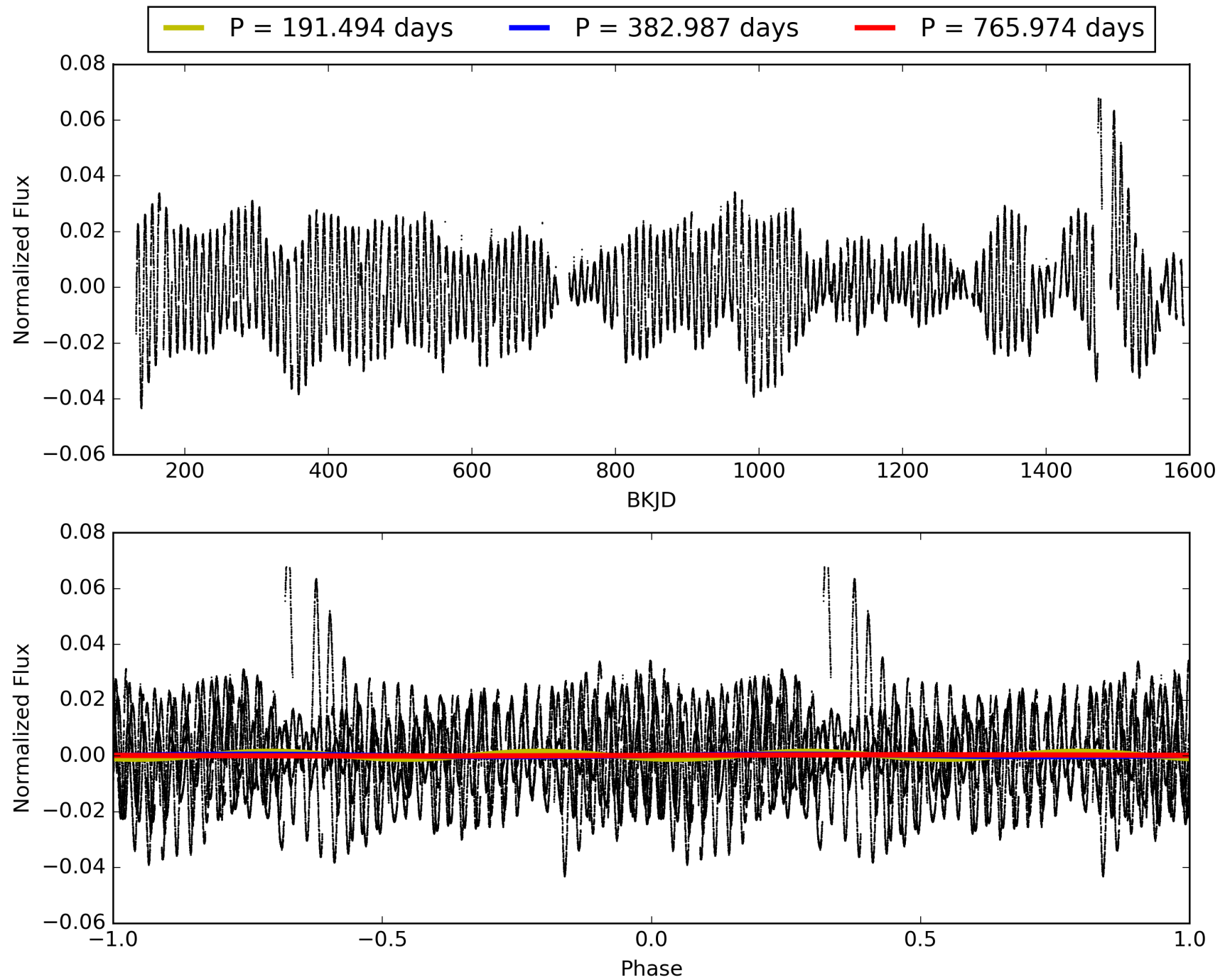
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.3%  
ModelChiSquareGof-sig: 81.8%  
**Bootstrap-pfa: 2.03e-10**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.197  
Centroid-sig: 29.5%  
Centroid-so: 1.149 arcsec [0.81 $\sigma$ ]  
OotOffset-rm: 0.711 arcsec [1.22 $\sigma$ ]  
KicOffset-rm: 0.620 arcsec [1.06 $\sigma$ ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 005522339-01, PDC Light Curves

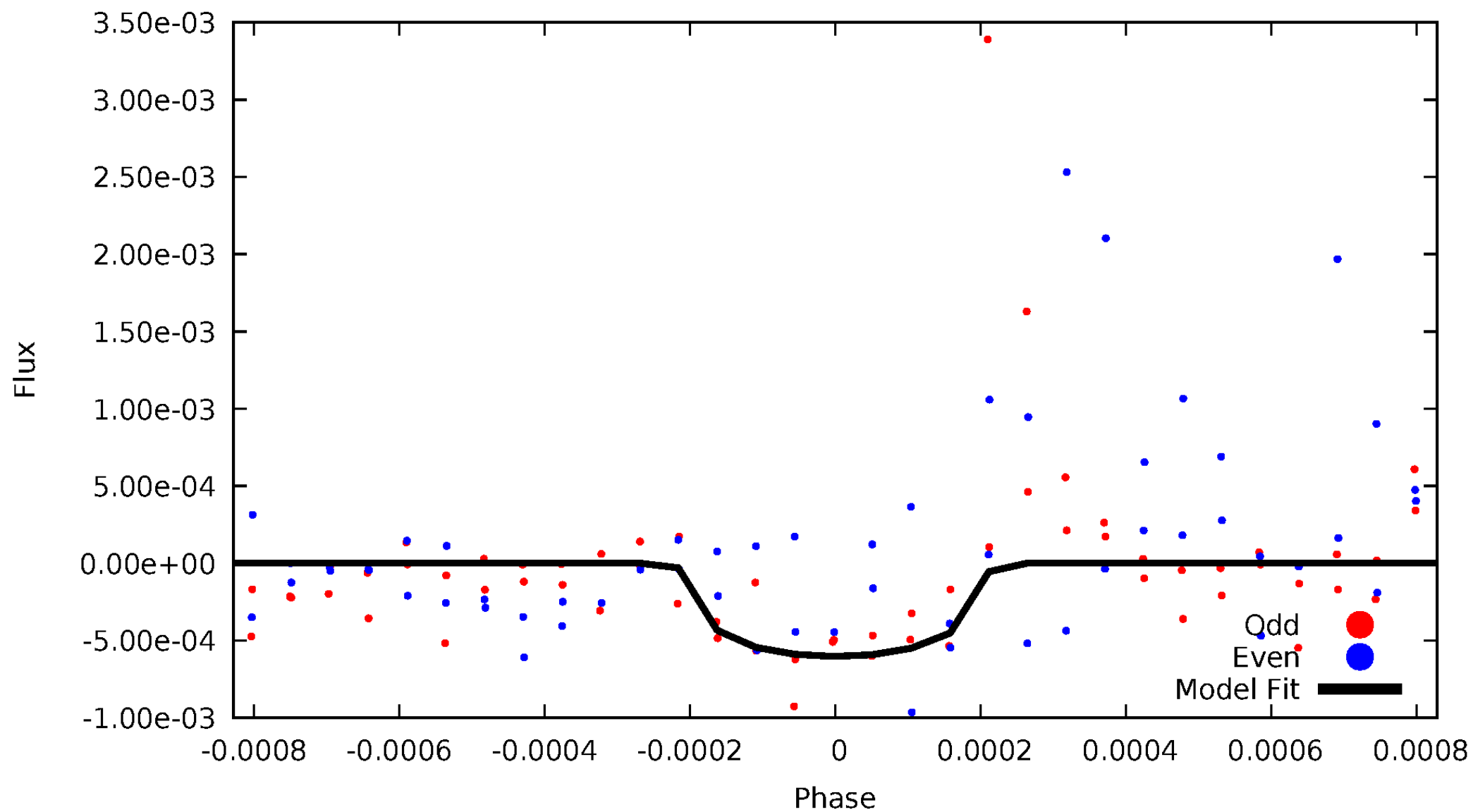


# TCE 005522339-01



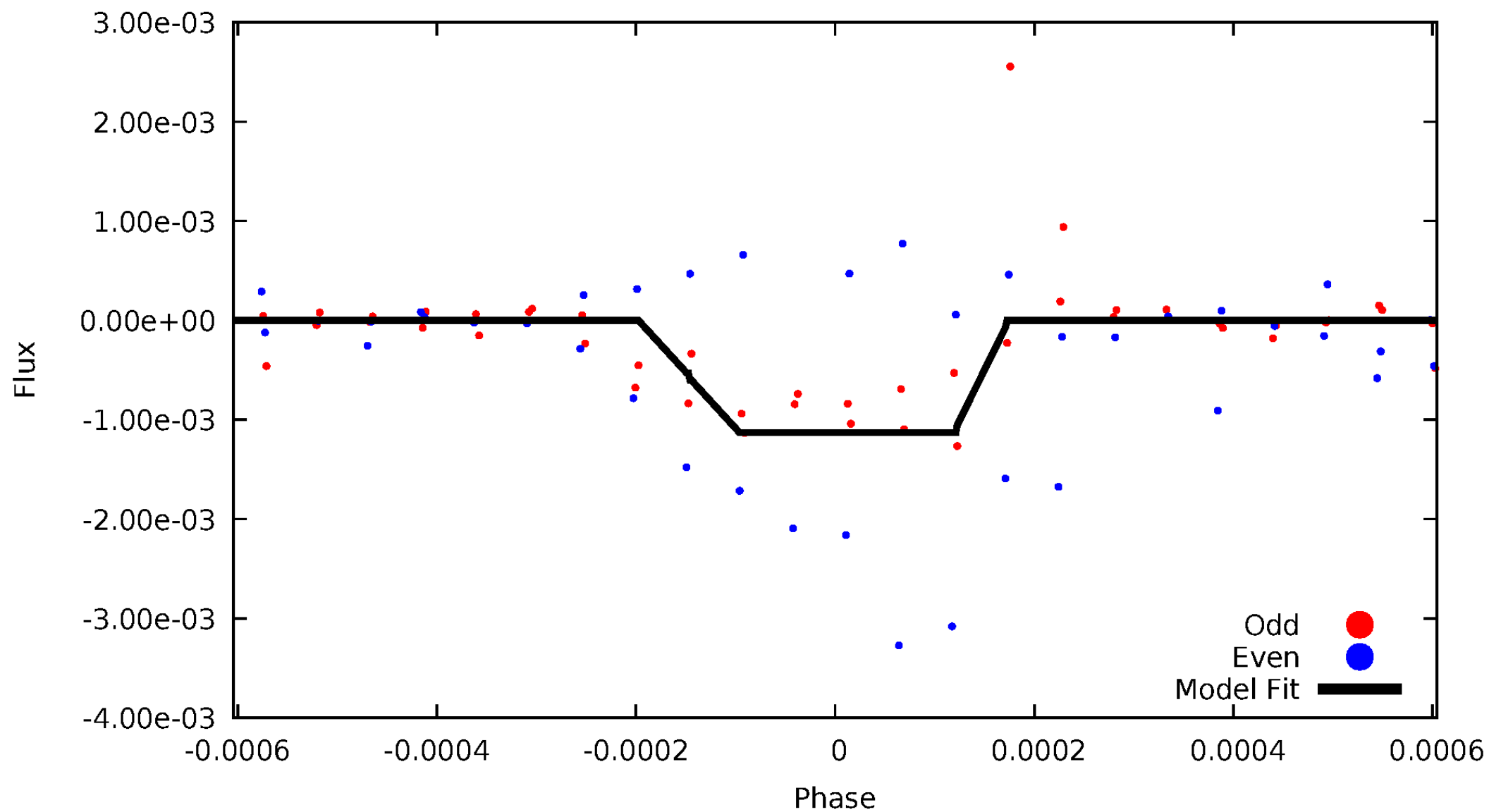
# DV Odd/Even

TCE 005522339-01



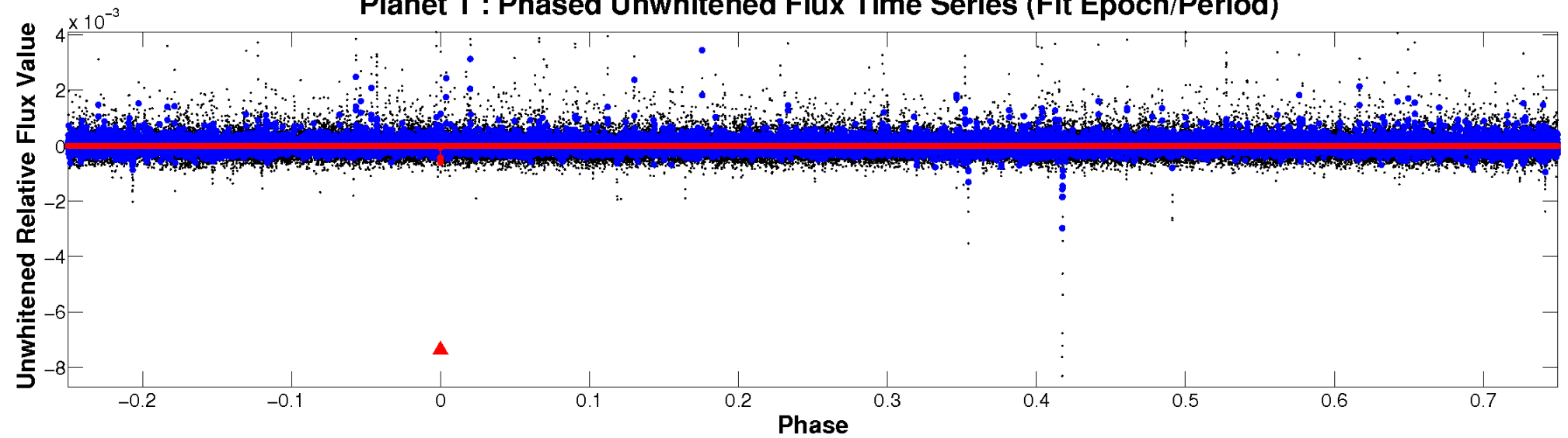
# ALT Odd/Even

TCE 005522339-01

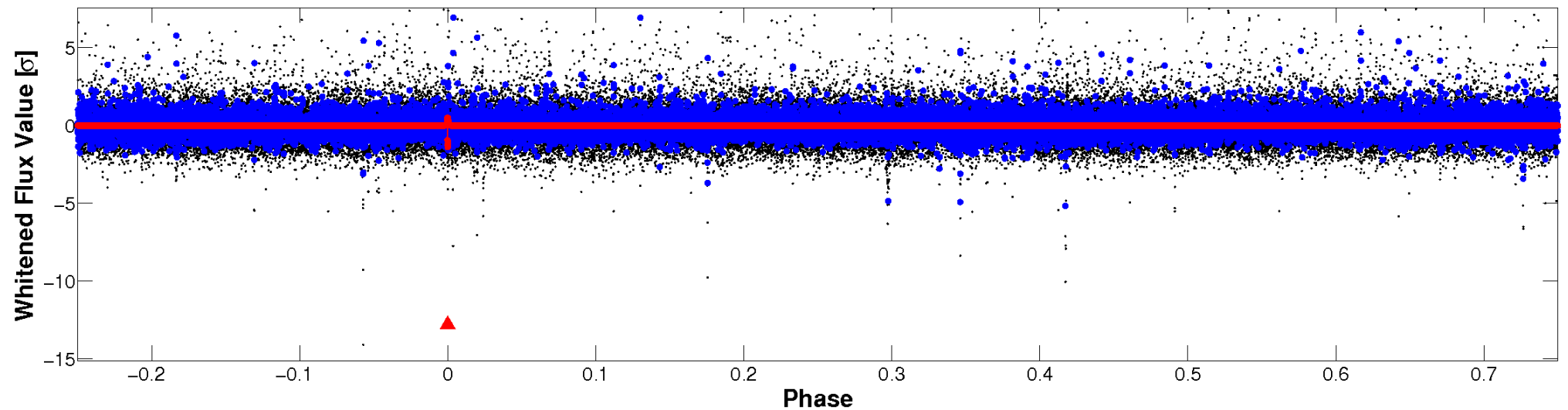


# Non-Whitened Vs. Whitened Light Curve

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

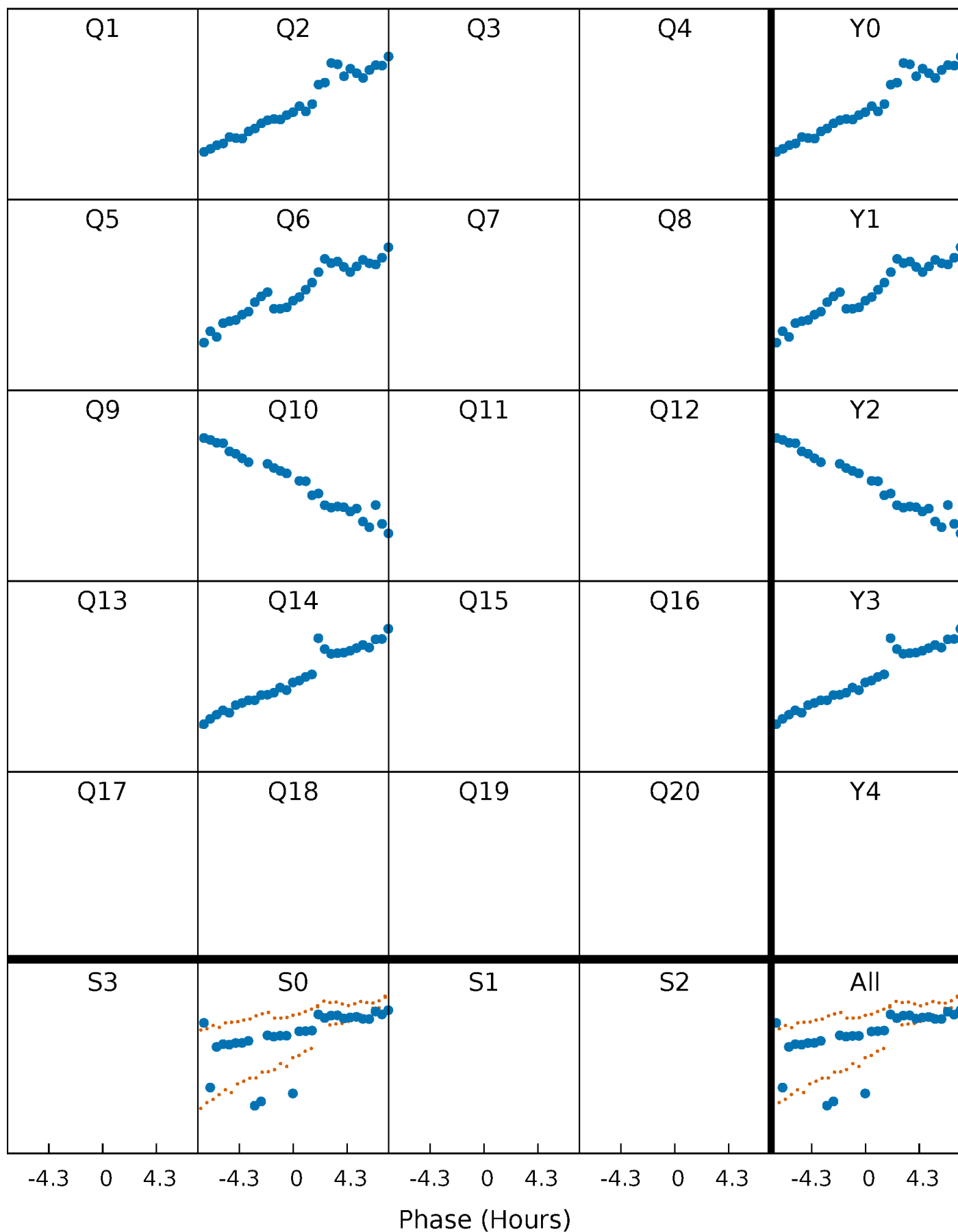


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

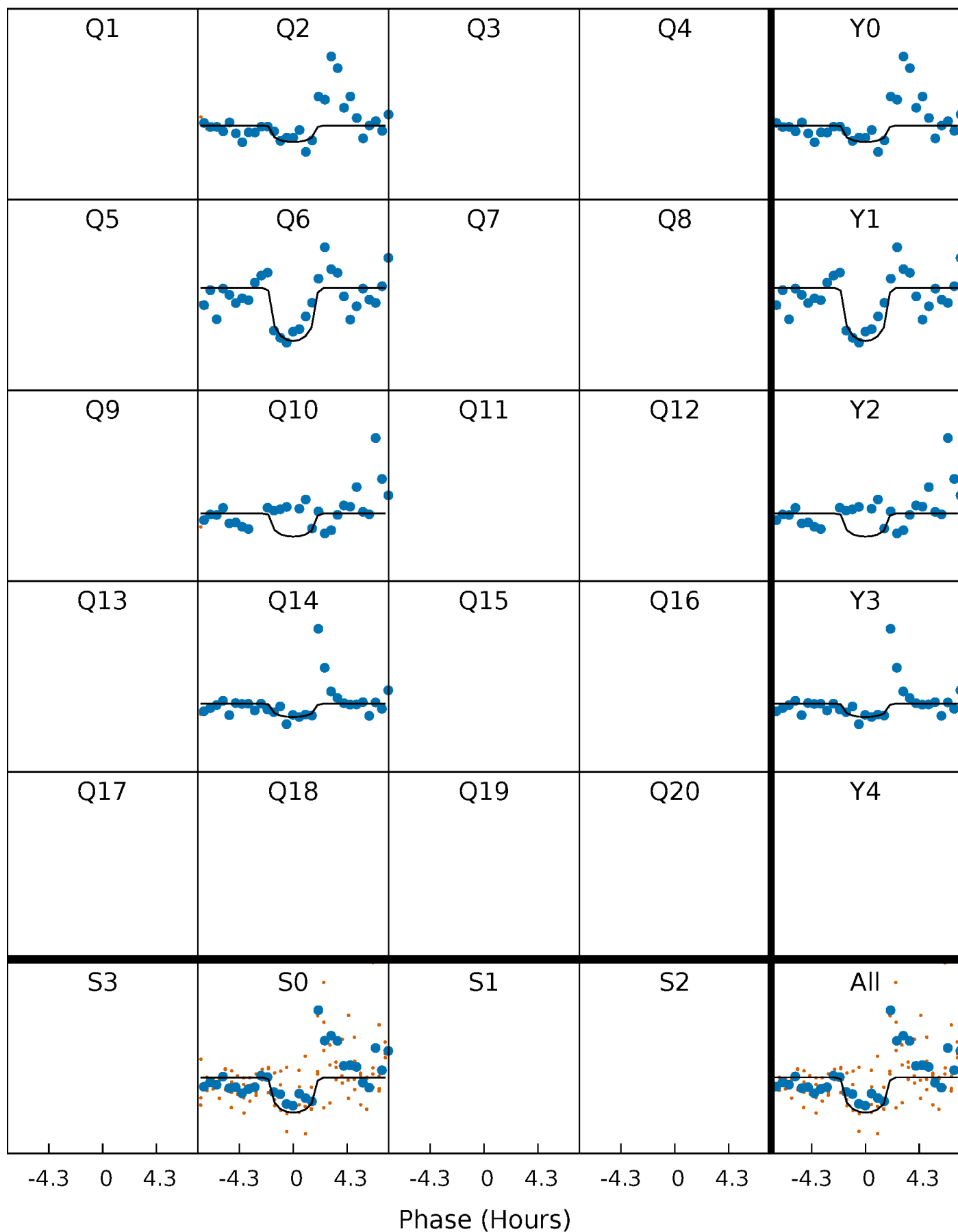
TCE 005522339-01 P=382.987121 Days  $T_0=200.846219$  (BKJD)





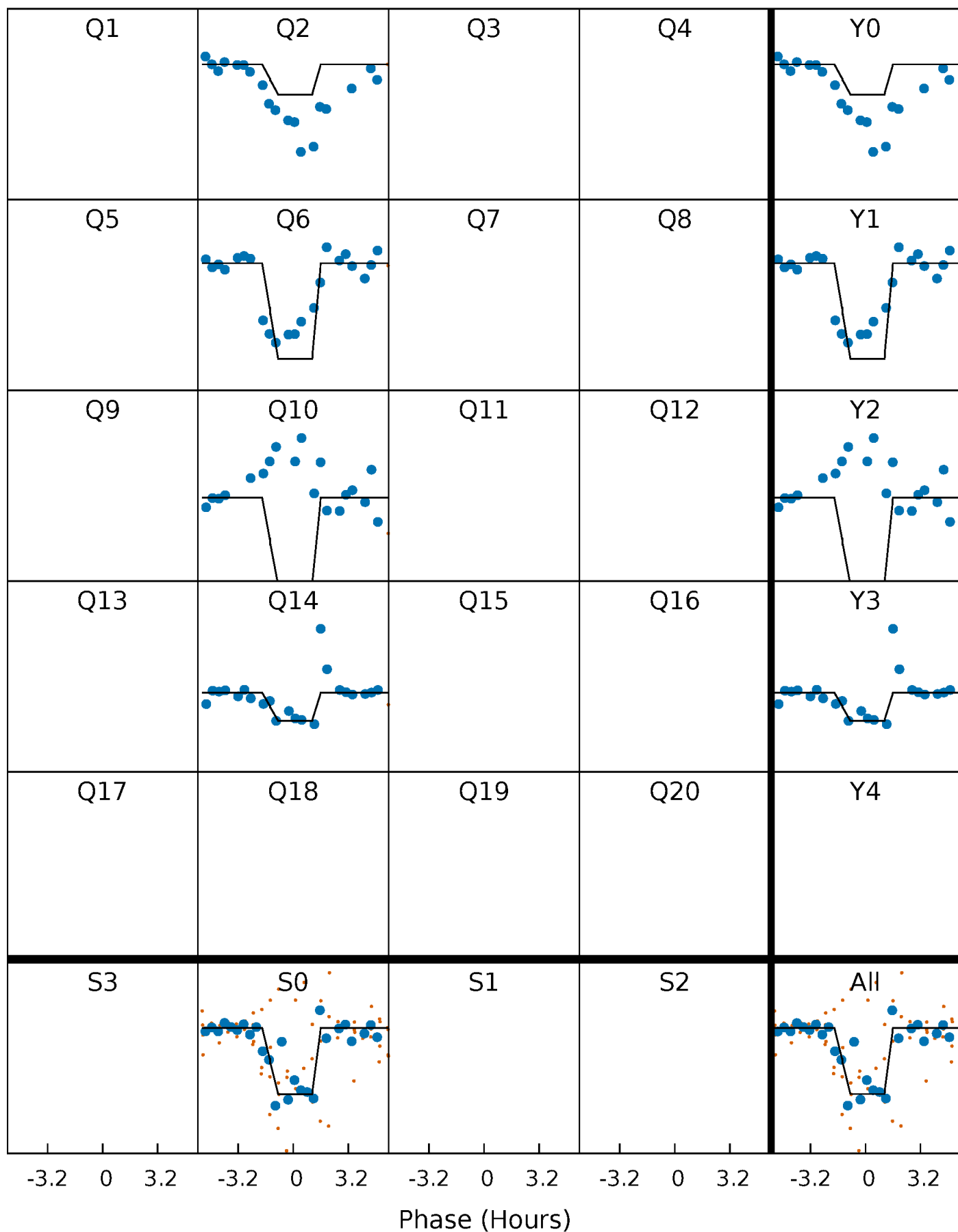
# DV Quarter-Phased Transit Curves

TCE 005522339-01 P=382.987121 Days  $T_0=200.846219$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

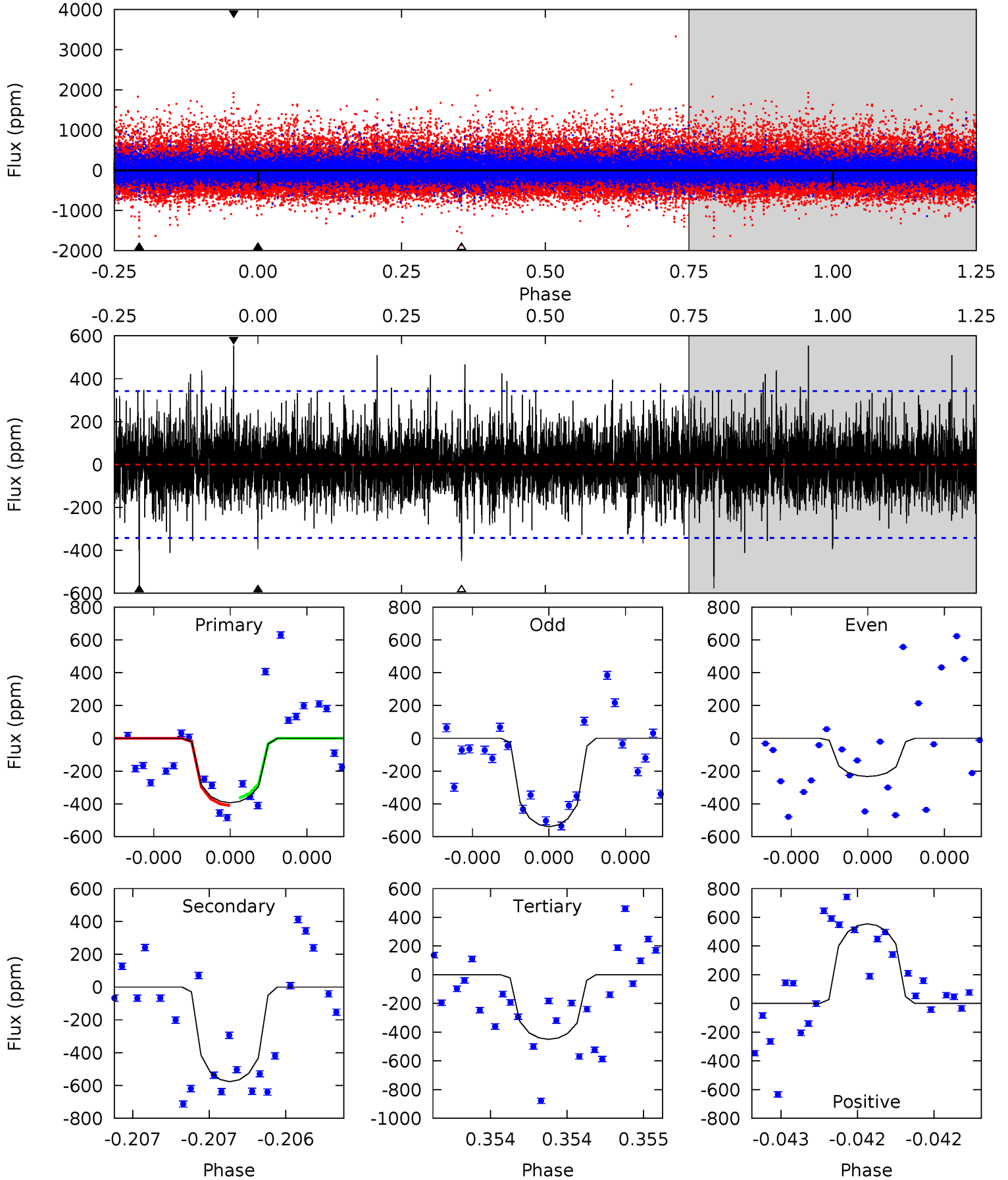
TCE 005522339-01 P=382.986215 Days  $T_0=200.862008$  (BKJD)



# DV Model-Shift Uniqueness Test

005522339-01, P = 382.987121 Days, E = 200.846219 Days

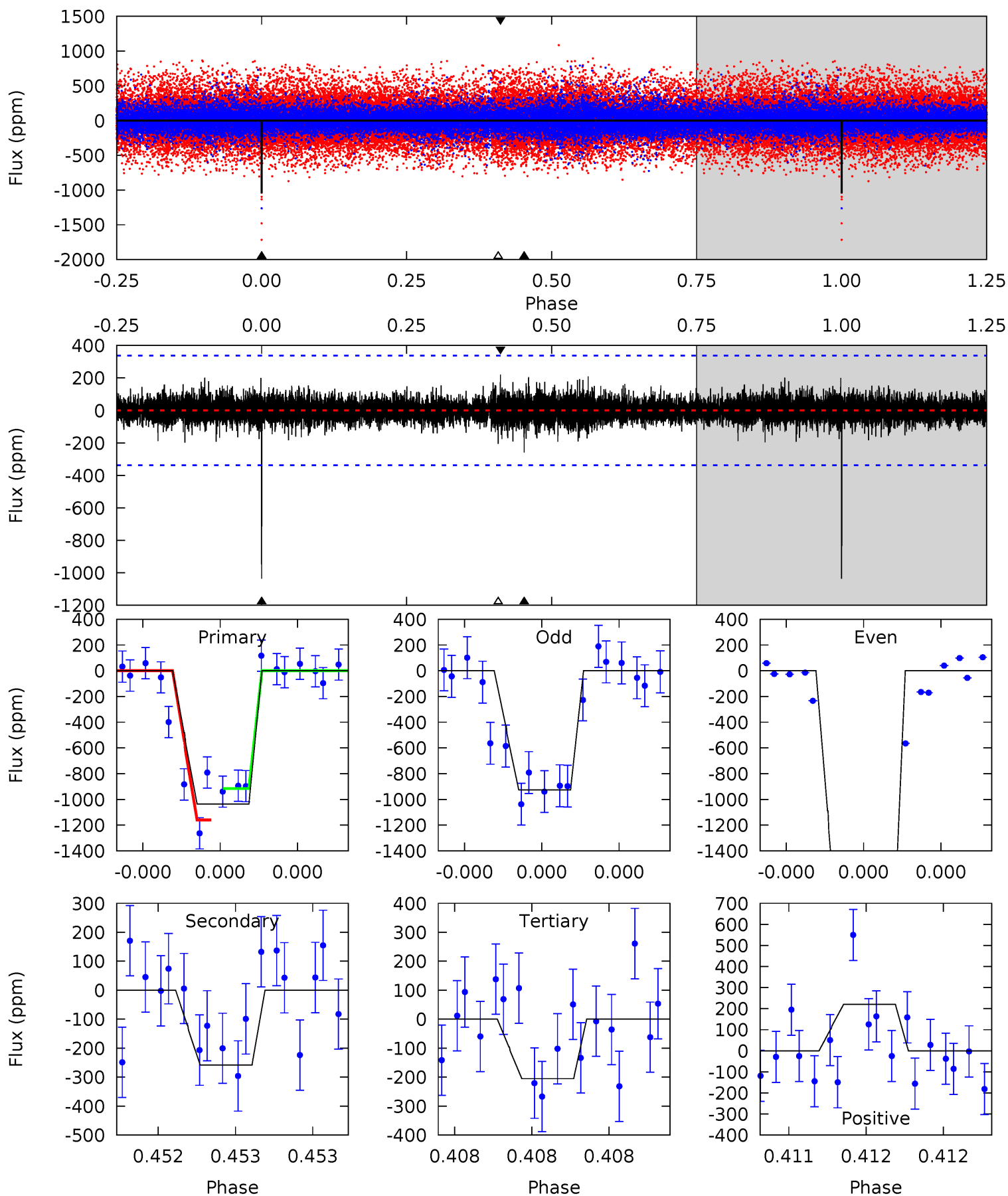
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.43	9.44	7.36	9.08	5.60	3.52	1.64	-0.93	-2.64	2.08	0.36	2.38	0.70	0.49	0.37



# Alt Model-Shift Uniqueness Test

005522339-01, P = 382.986215 Days, E = 200.862008 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
17.3	4.32	3.43	3.68	5.65	3.60	0.72	13.9	13.7	0.89	0.64	12.7	1.04	0.18	2.05



### Stellar Parameters For KIC 005522339

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4280^{+128}_{-128}$	$4.641^{+0.052}_{-0.021}$	$-0.260^{+0.300}_{-0.300}$	$0.613^{+0.045}_{-0.061}$	$0.599^{+0.066}_{-0.050}$	$3.664^{+0.851}_{-0.390}$
	+3%/-3%	+1%/-0%	+115%/-115%	+7%/-10%	+11%/-8%	+23%/-11%
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 005522339-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-577 \pm 61$	$2.05^{+1.84}_{-1.30}$	$220^{+7}_{-8}$	$3906^{+2041}_{-722}$	$56553^{+385445}_{-40637}$
Alt.	$-258 \pm 60$	$2.48^{+1.91}_{-1.51}$	$220^{+7}_{-7}$	$3219^{+1276}_{-482}$	$17062^{+100619}_{-11557}$

$T_{\text{max}}$  = 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

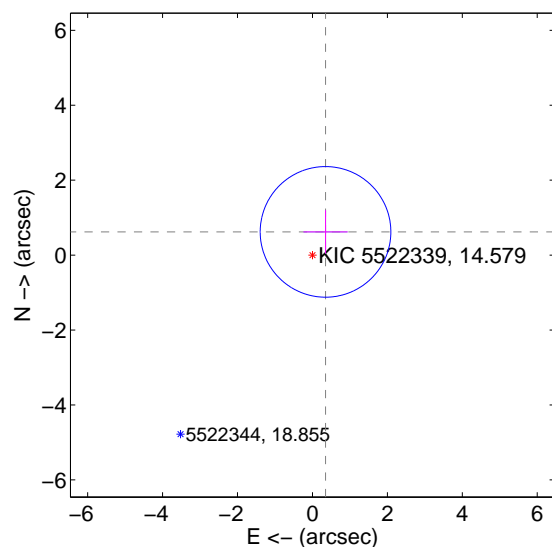
Supplemental centroid analysis for 005522339-01. Kepler magnitude: 14.58. Transit SNR 6.51

There are 1 quarters with good PRF difference image offsets

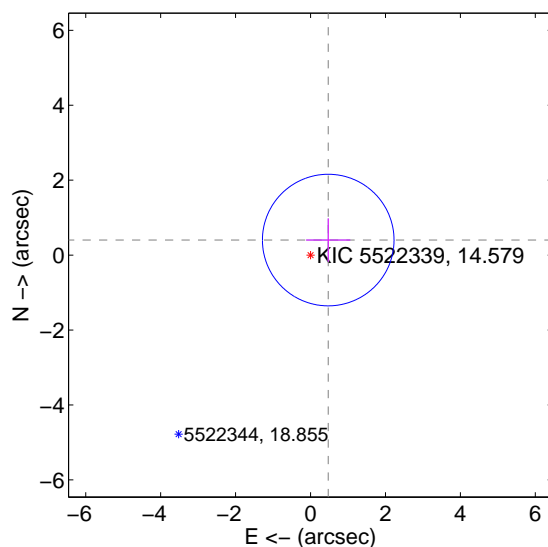
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.711 \pm 0.581$	1.22	$-0.349 \pm 0.591$	$0.620 \pm 0.578$
PRF-fit source offset from KIC position	$0.620 \pm 0.585$	1.06	$-0.473 \pm 0.591$	$0.402 \pm 0.578$
photometric centroid source offset	$1.15 \pm 1.41$	0.81	$0.67 \pm 1.43$	$-0.93 \pm 1.40$

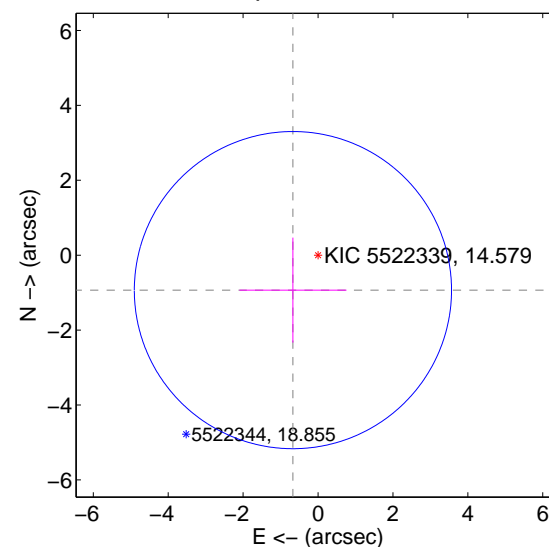
offset from difference PRF-fit to OOT PRF-fit



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.

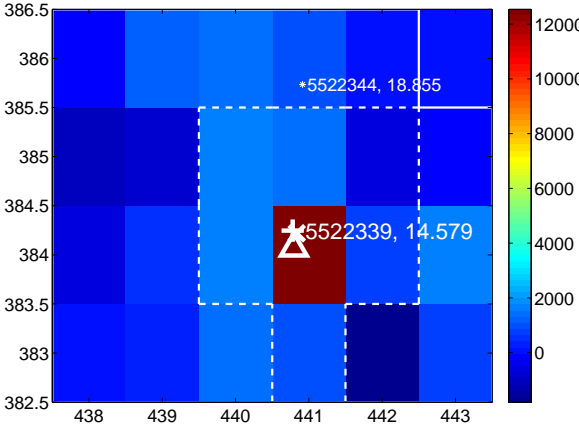
Q1 no difference image



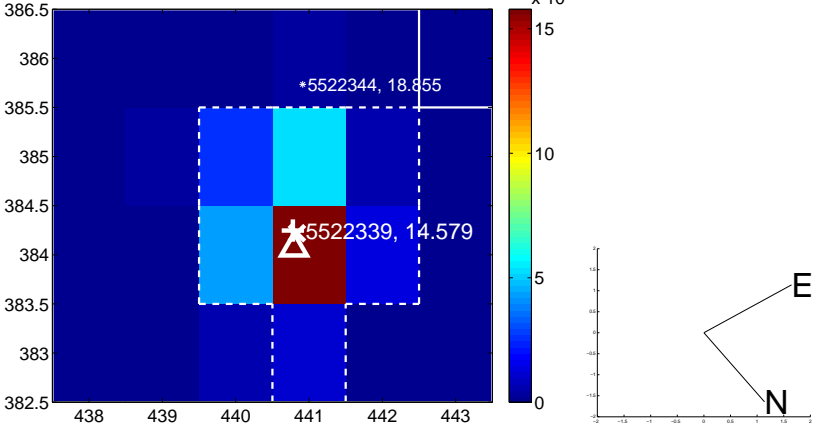
Q1 no OOT image



Q2 difference image



Q2 OOT image



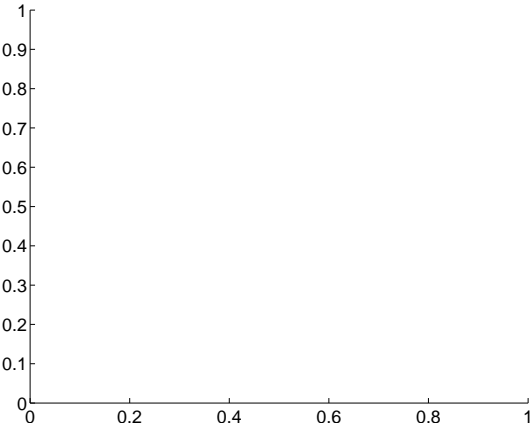
Q3 no difference image



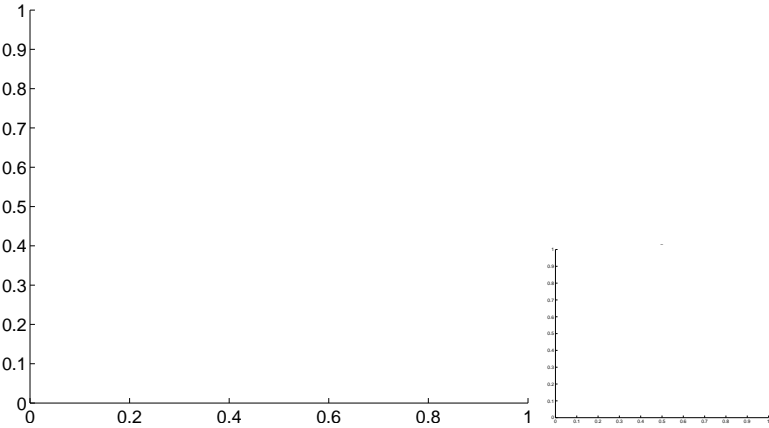
Q3 no OOT image



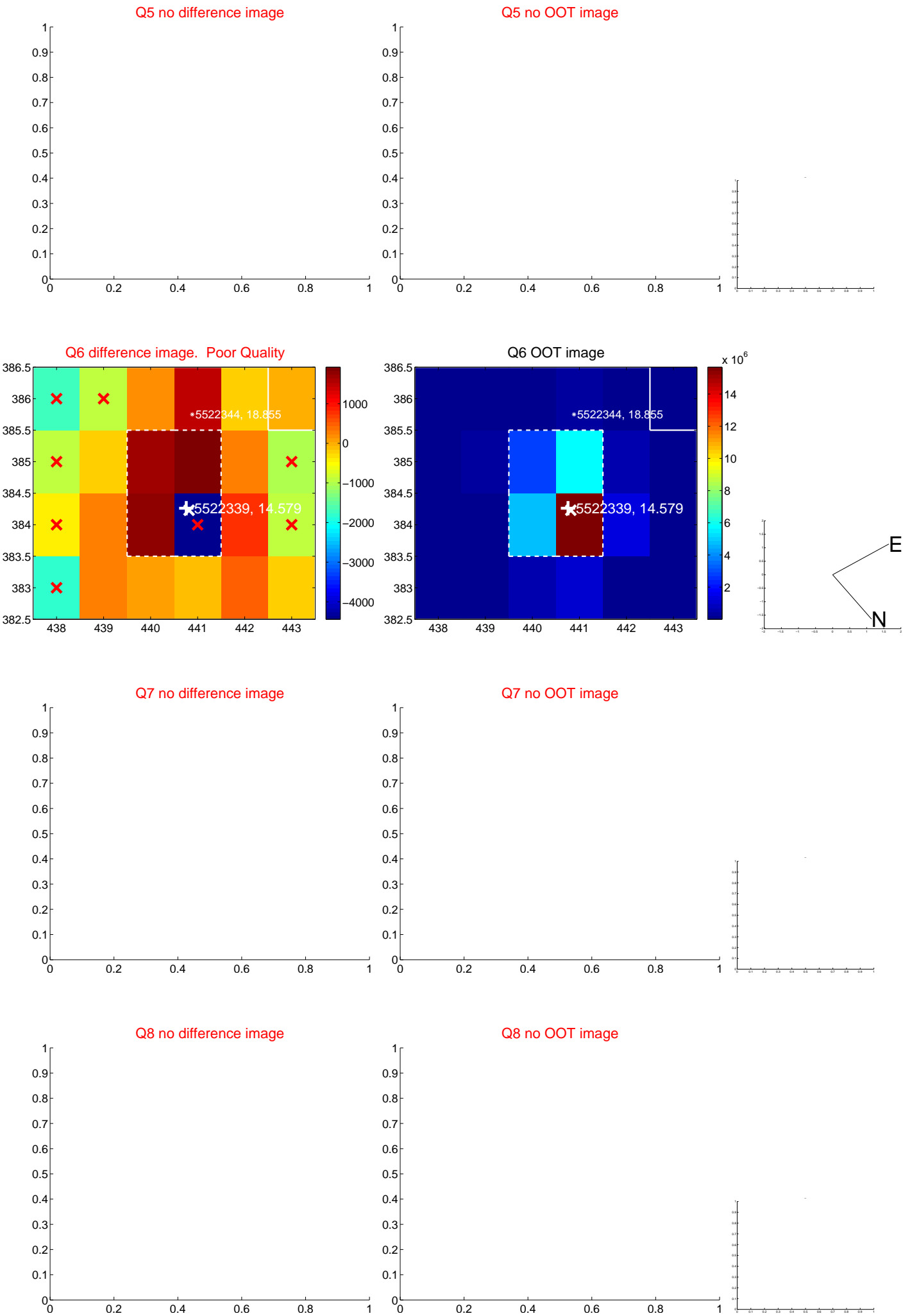
Q4 no difference image



Q4 no OOT image



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

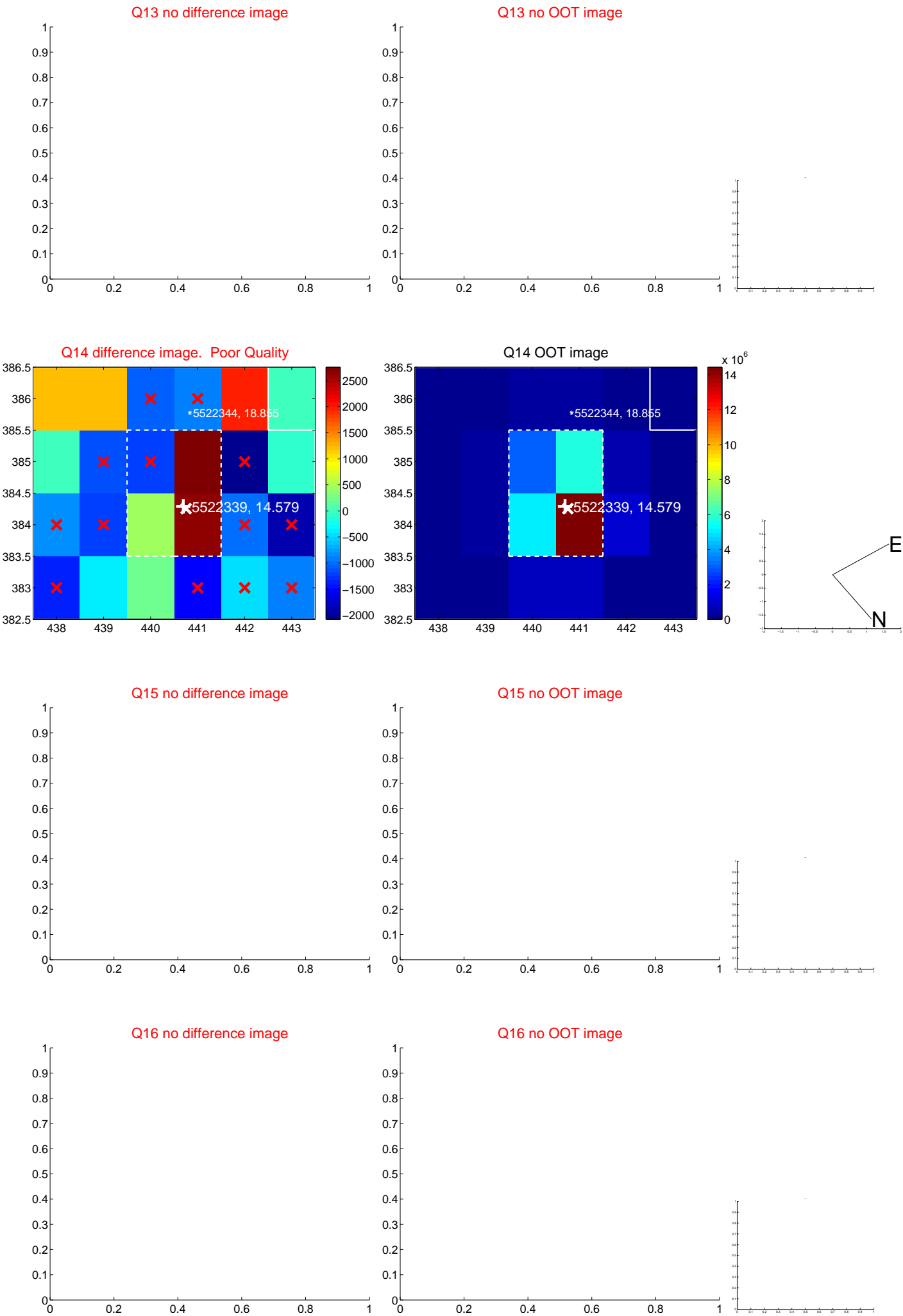




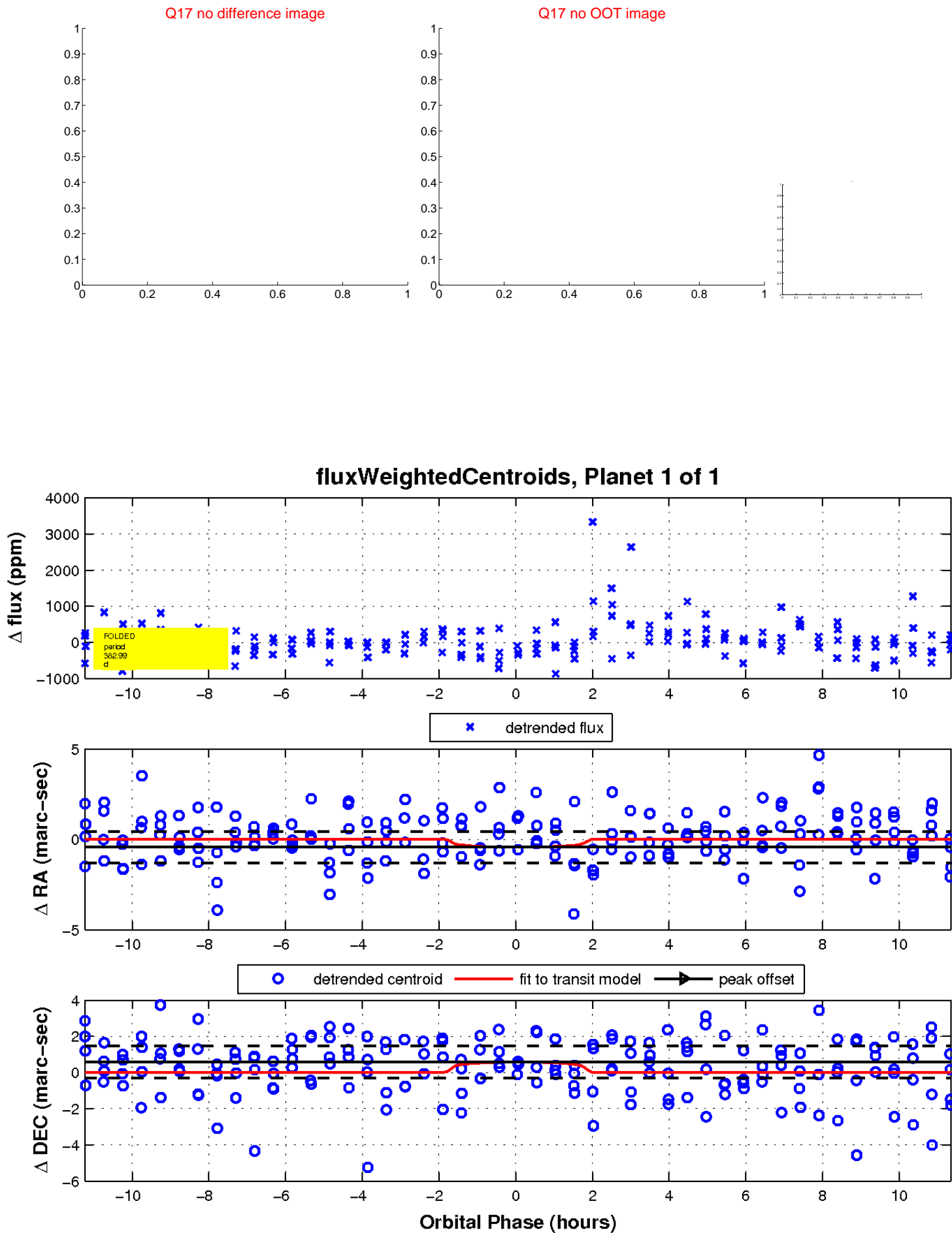
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : 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

