

# KIC 010459864

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010459864-01	OBS	No	339.282482	439.549491	2007.2	3.827	12.2	5.8	0.75	5045	3.35	0.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010459864-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS— HALO_GHOST

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

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

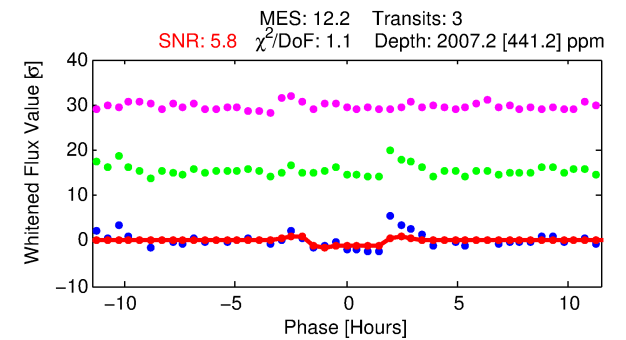
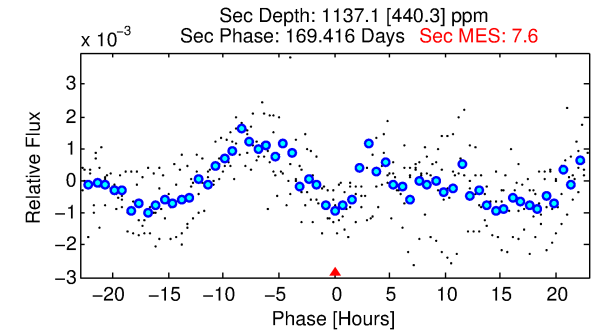
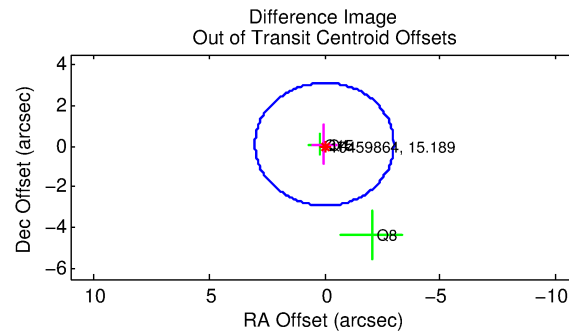
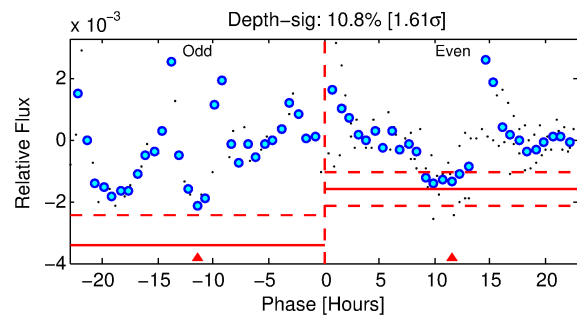
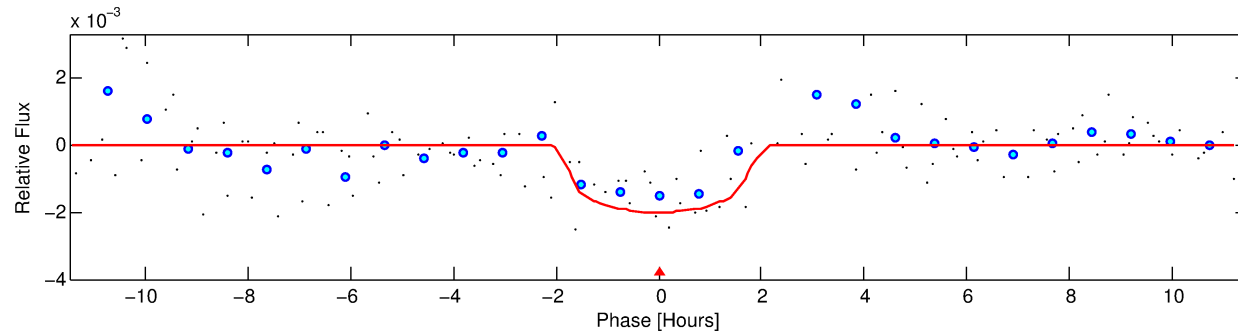
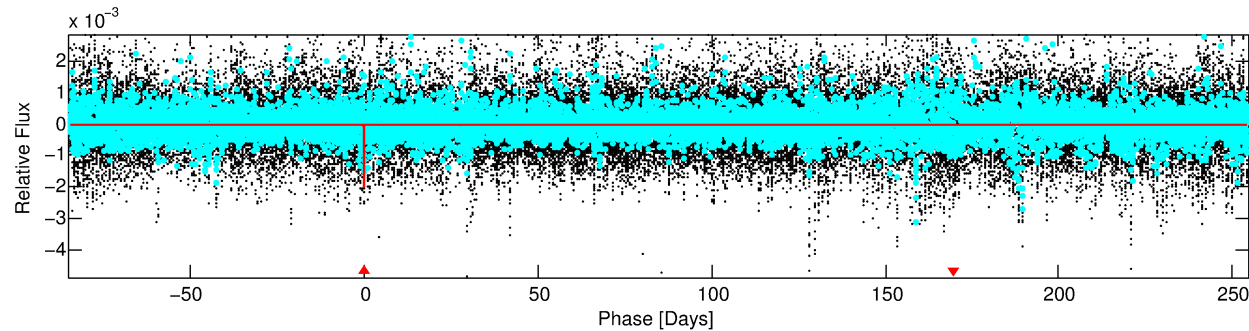
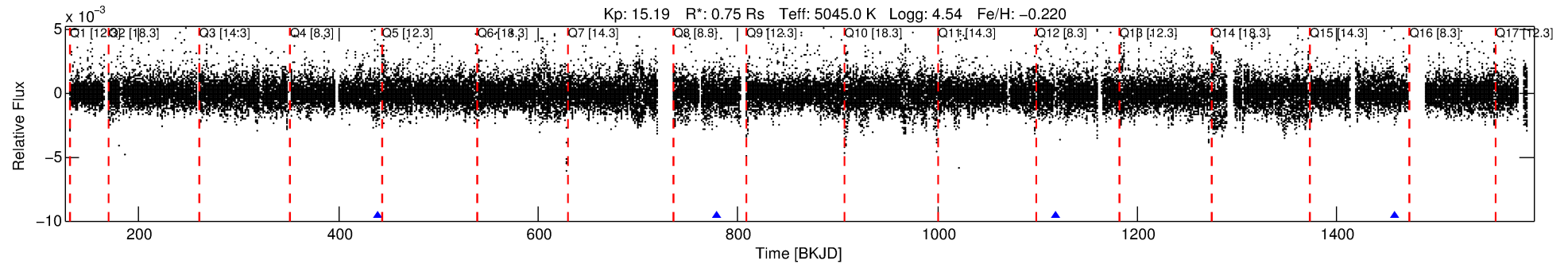
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010459864-01

No Significant Match Found

# DV One-Page Summary

KIC: 10459864 Candidate: 1 of 1 Period: 339.282 d



## DV Fit Results:

Period = 339.28248 [0.00346] d  
Epoch = 439.5495 [0.0068] BKJD  
Rp/R\* = 0.0407 [0.0834]  
a/R\* = 658.94 [4684.15]  
b = 0.37 [16.87]  
Seff = 0.45 [0.08]  
Teq = 209 [10] K  
Rp = 3.35 [6.86] Re  
a = 0.8536 [0.0786] AU  
Ag = 40739.33 [167666.98] [0.24 $\sigma$ ]  
Teffp = 4592 [4724] K [0.93 $\sigma$ ]

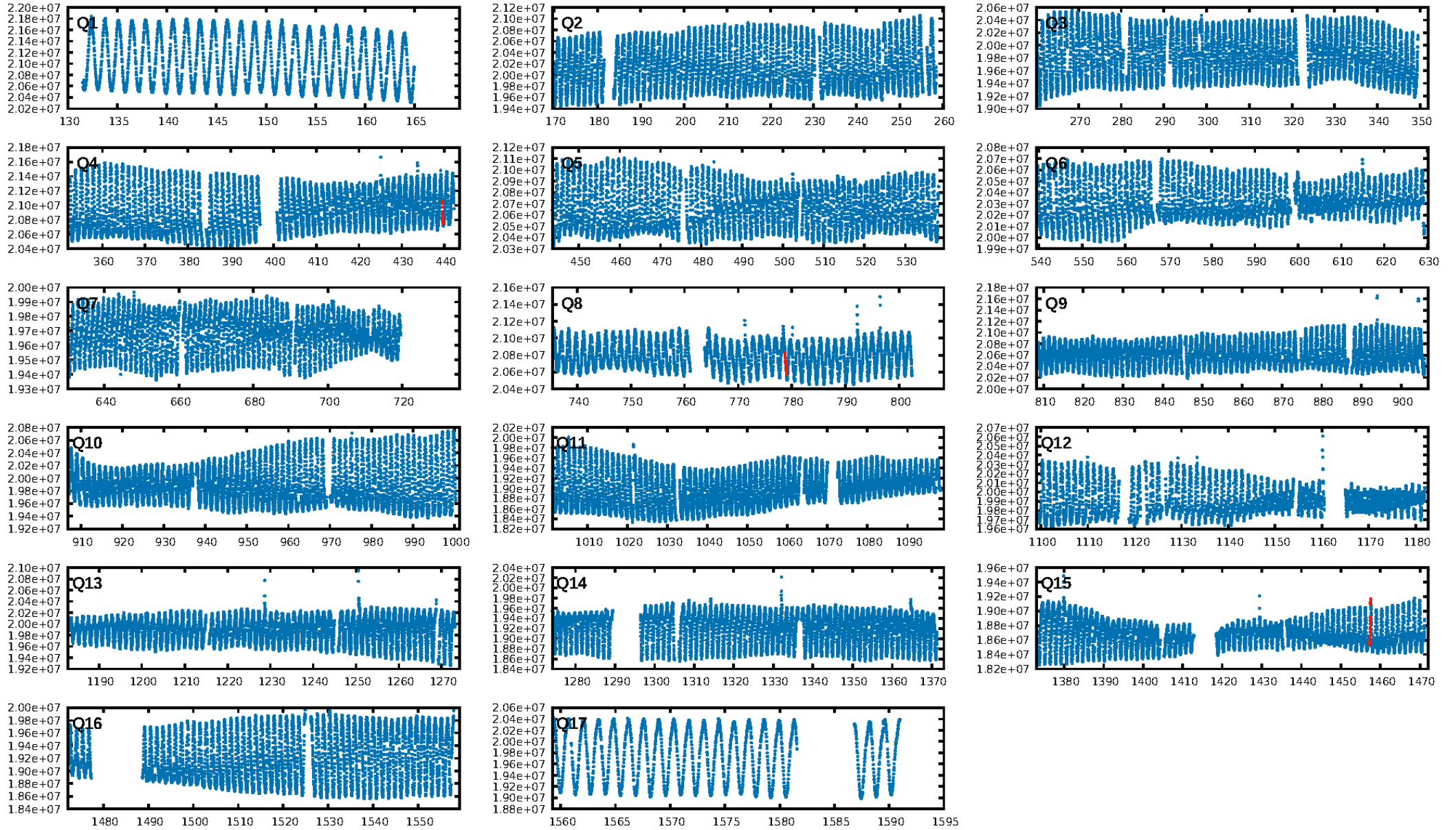
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.7%  
ModelChiSquareGof-sig: 69.3%  
**Bootstrap-pfa: 7.57e-11**  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: -0.01422**  
Centroid-sig: 33.0%  
Centroid-so: 0.709 arcsec [0.91 $\sigma$ ]  
OotOffset-rm: 0.098 arcsec [0.10 $\sigma$ ]  
OotOffset-st: 0/1/2/0 [3]  
KicOffset-rm: 0.213 arcsec [0.19 $\sigma$ ]  
KicOffset-st: 0/1/2/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

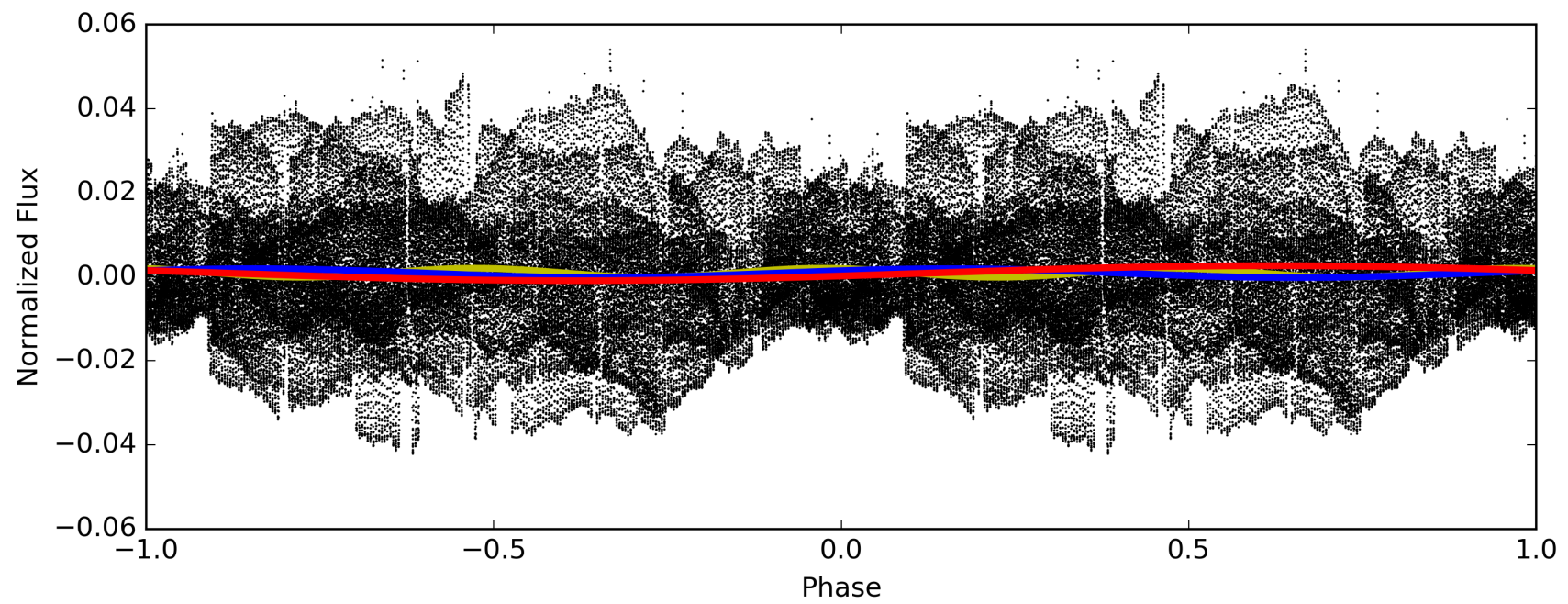
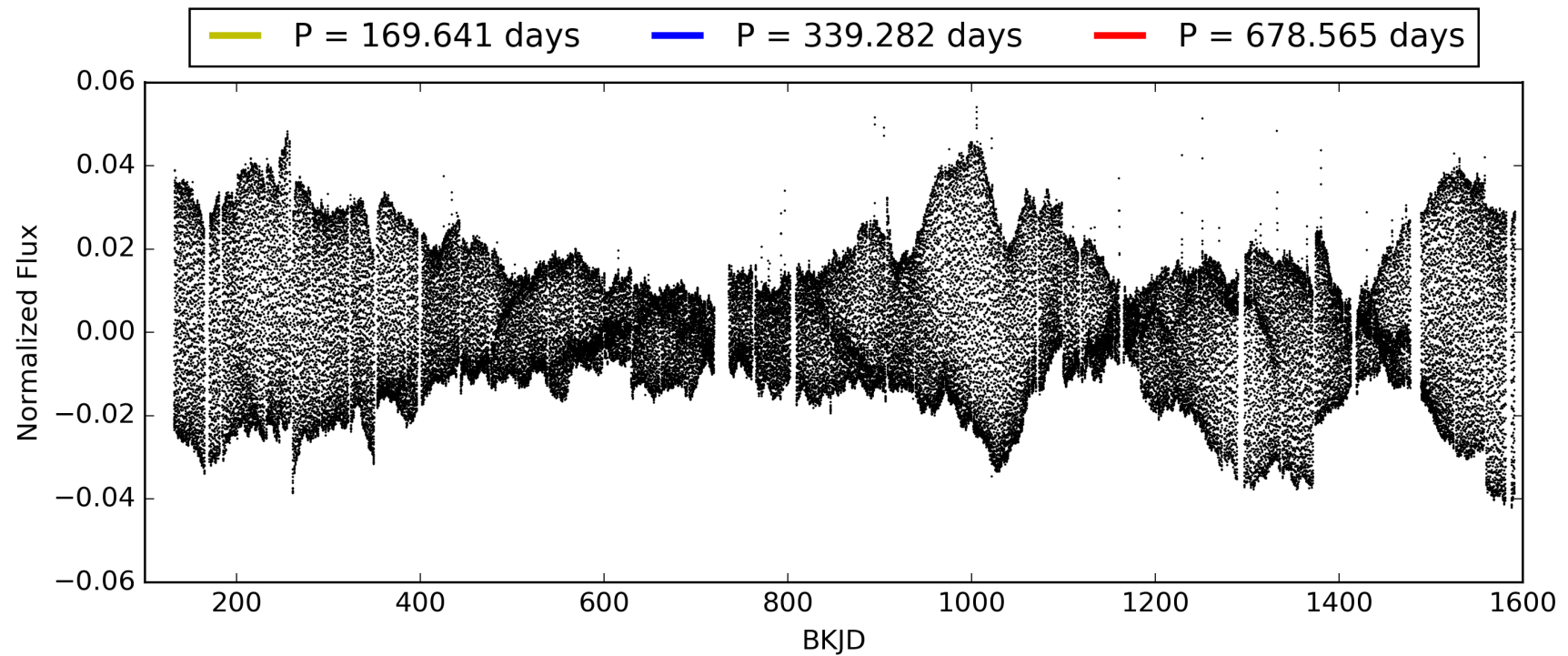
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:36:03 Z

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

# TCE 010459864-01, PDC Light Curves

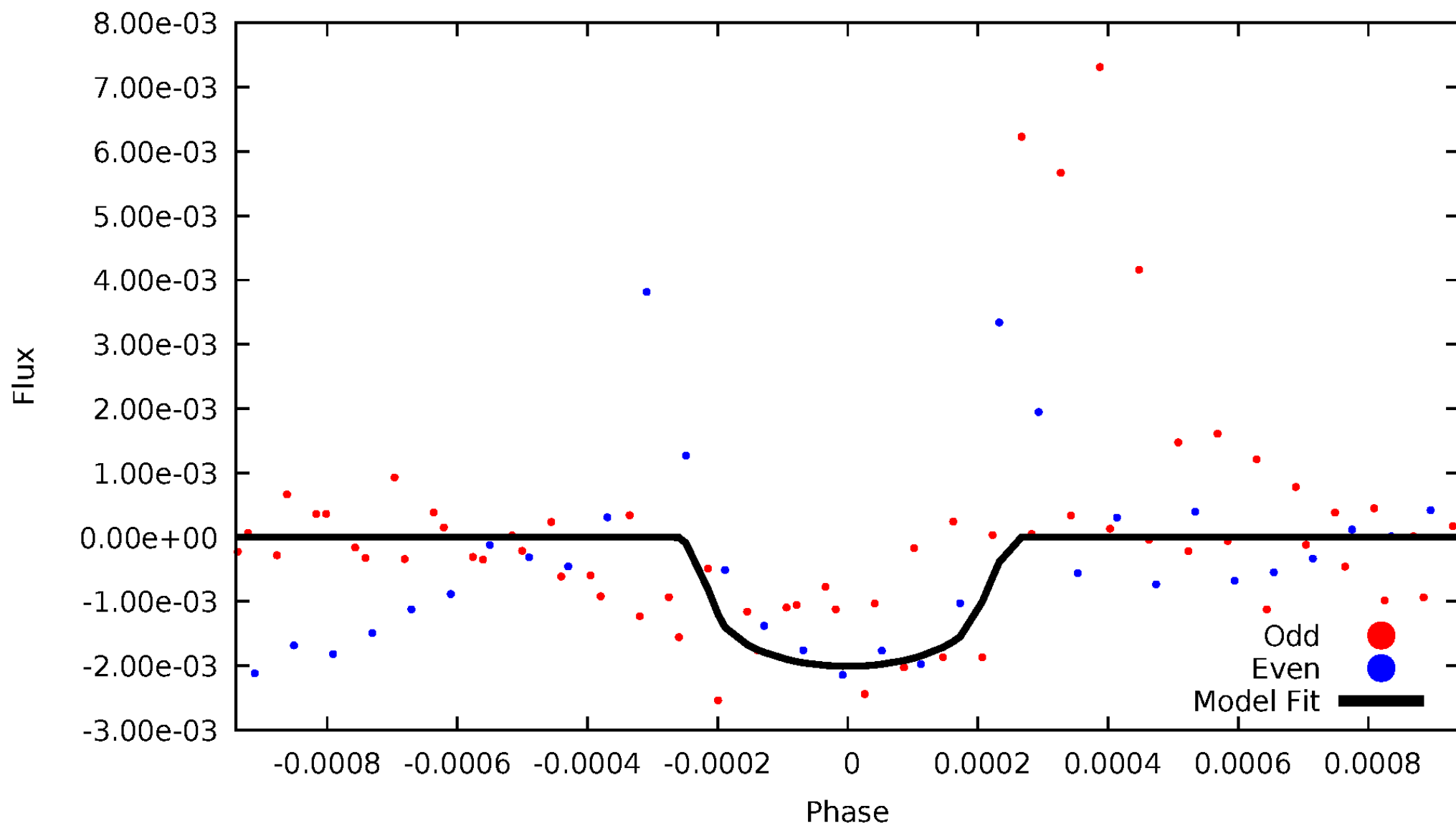


TCE 010459864-01



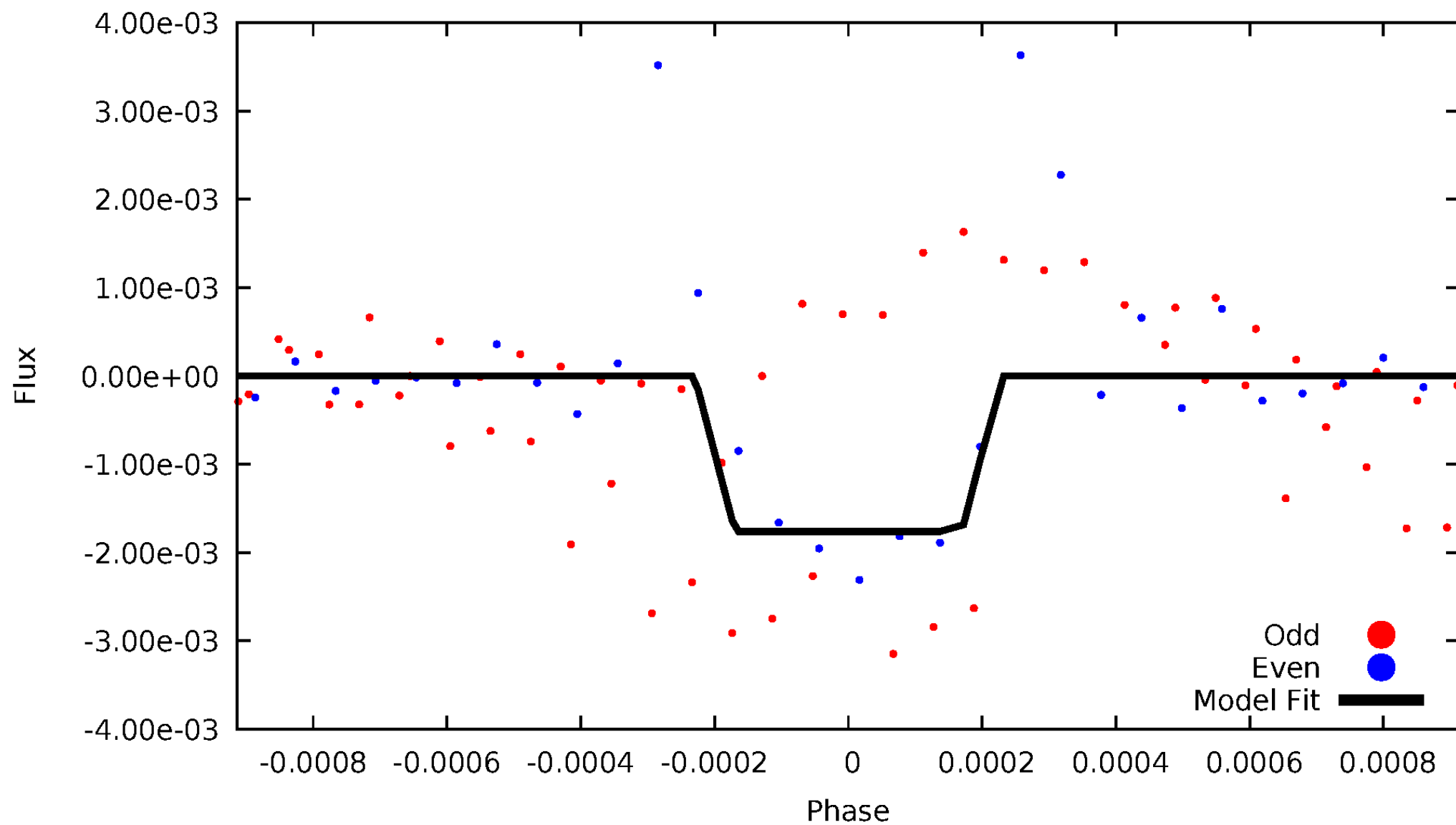
# DV Odd/Even

TCE 010459864-01



# ALT Odd/Even

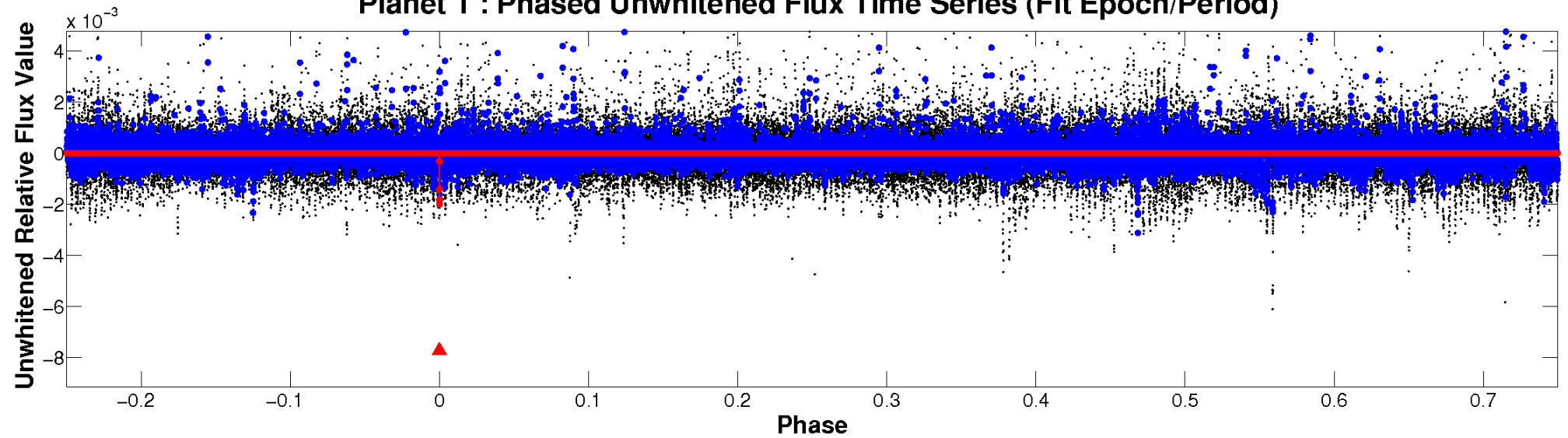
TCE 010459864-01



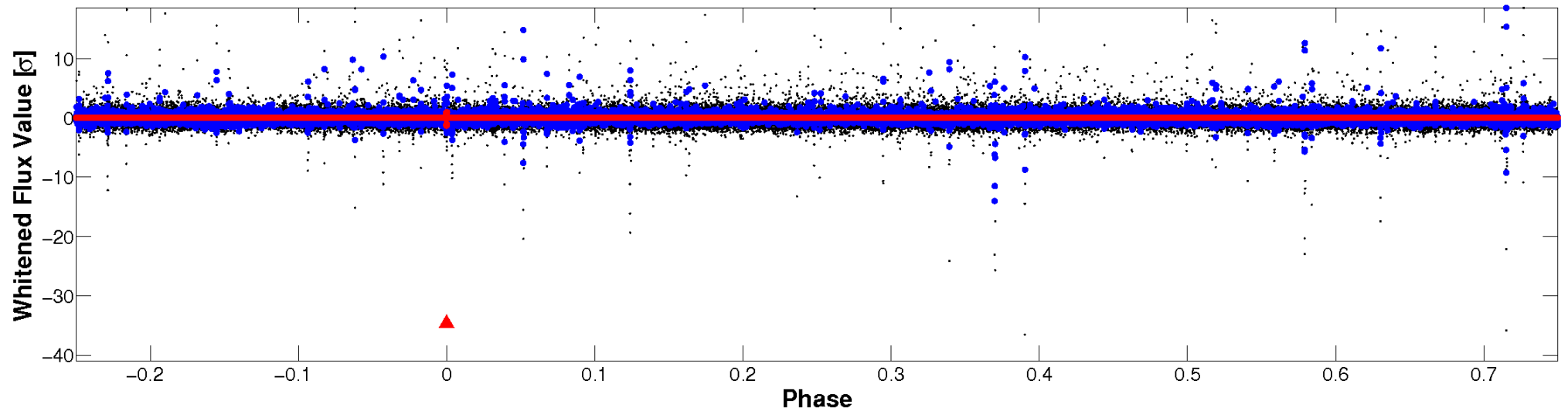


# Non-Whitened Vs. Whitened Light Curve

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

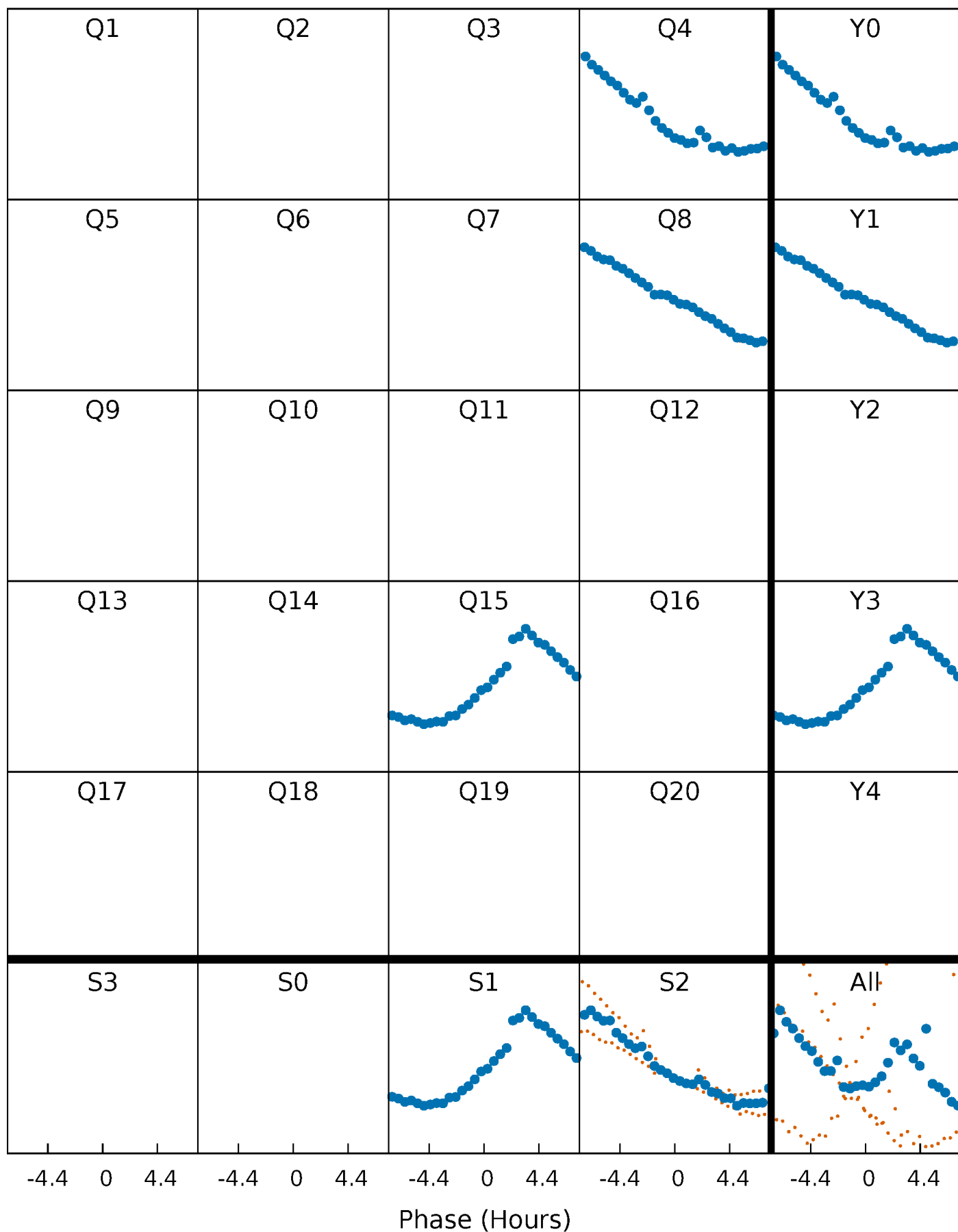


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

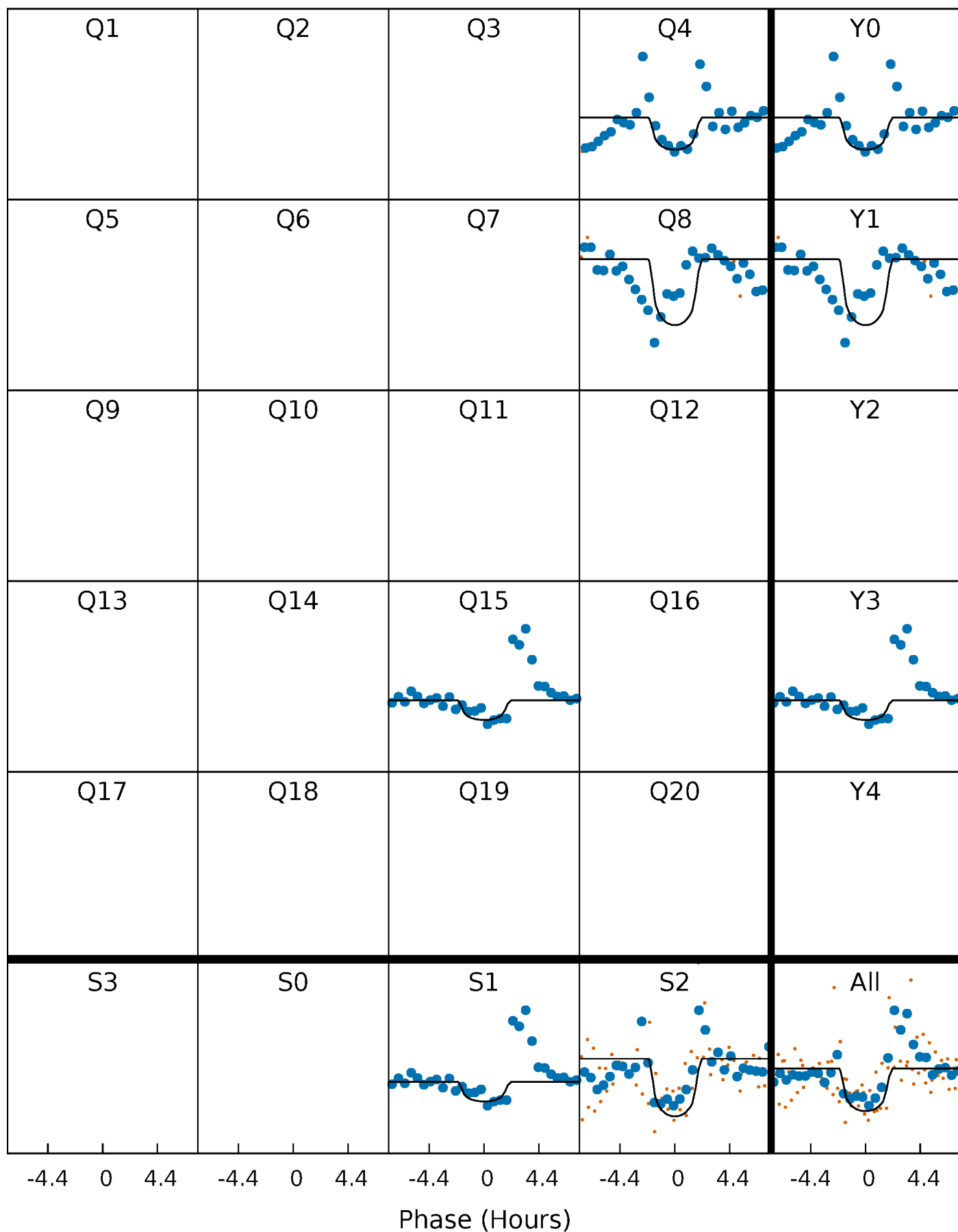
TCE 010459864-01 P=339.282482 Days  $T_0=439.549491$  (BKJD)





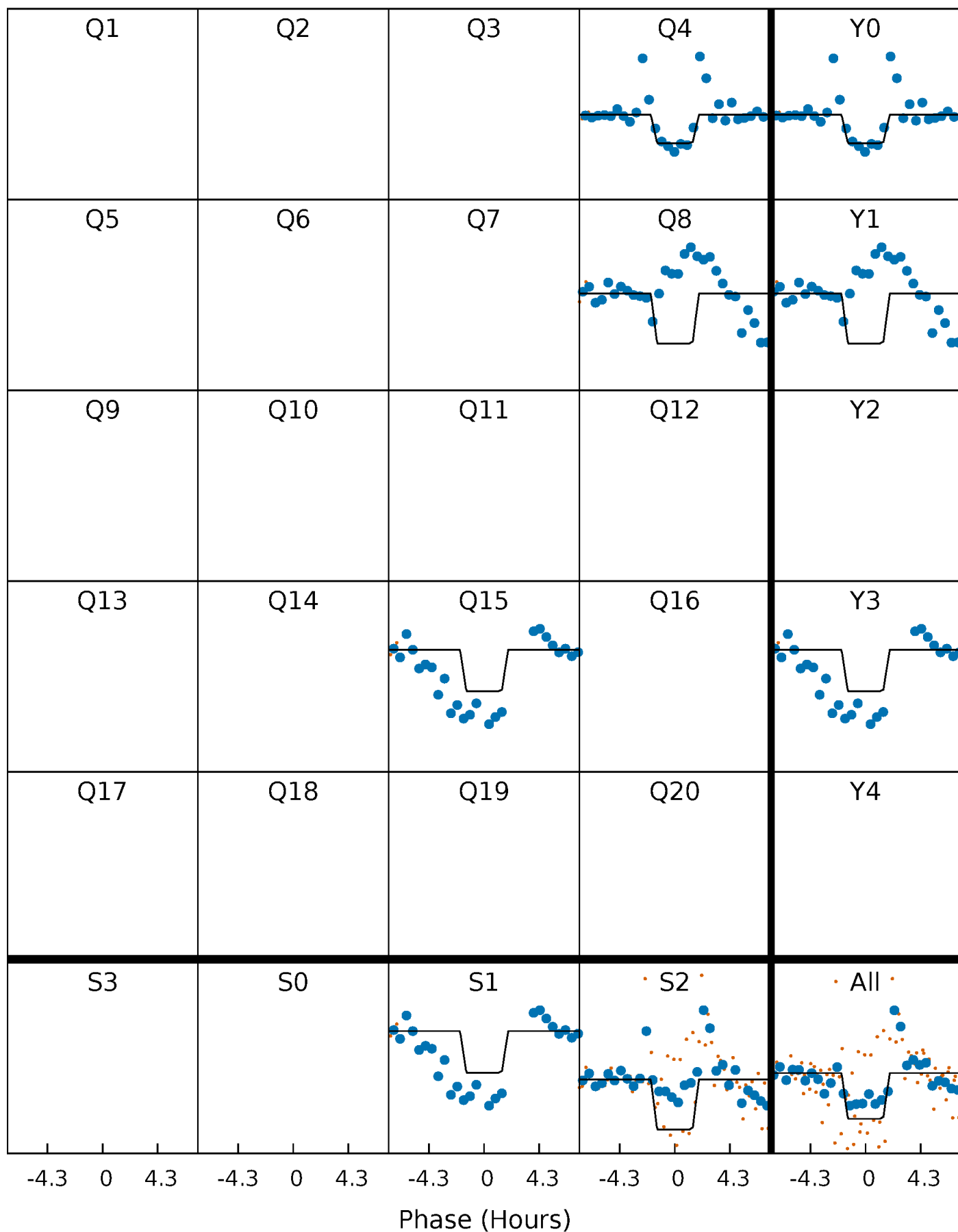
# DV Quarter-Phased Transit Curves

TCE 010459864-01 P=339.282482 Days  $T_0=439.549491$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

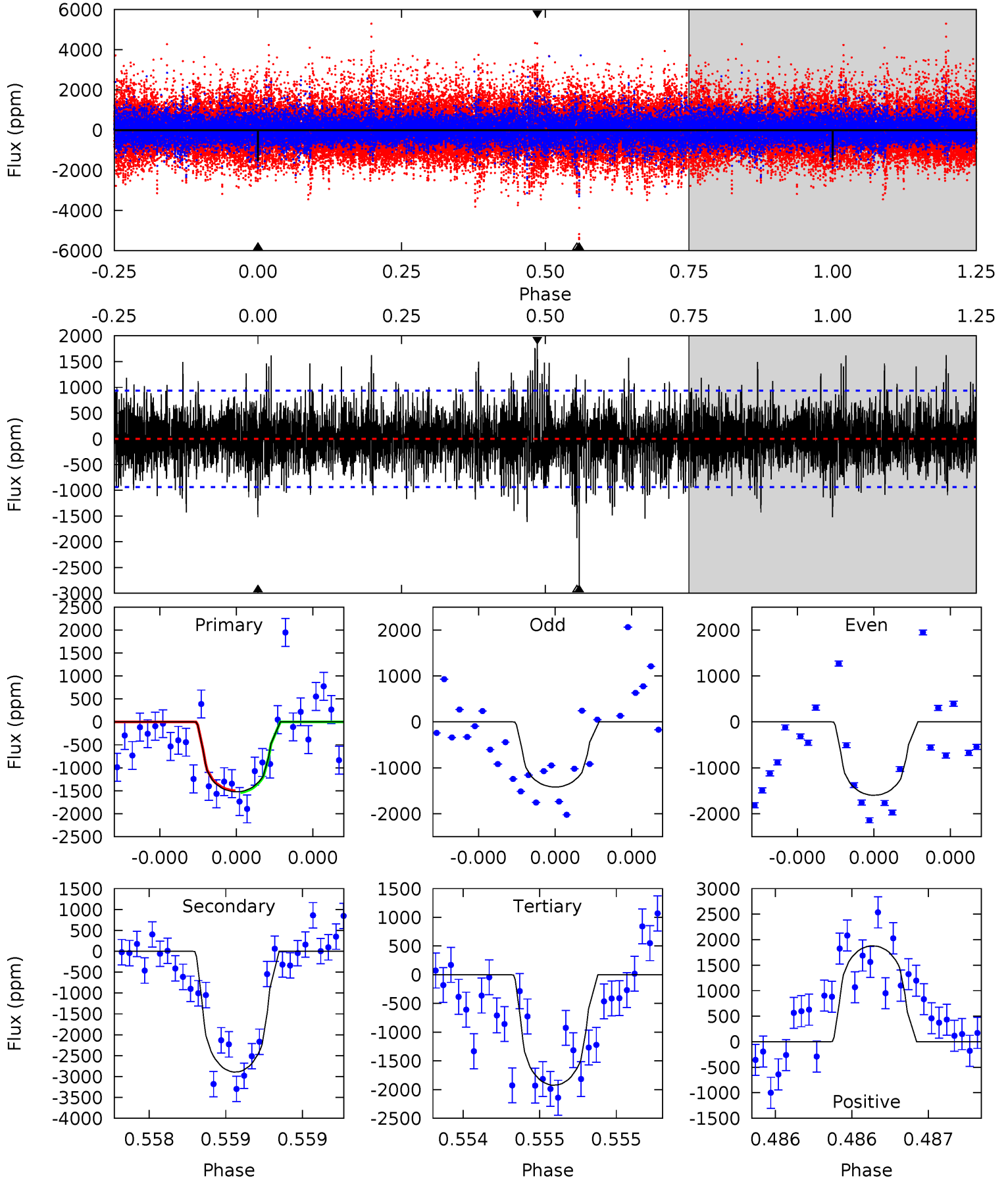
TCE 010459864-01 P=339.287407 Days  $T_0=439.541197$  (BKJD)



# DV Model-Shift Uniqueness Test

010459864-01, P = 339.282482 Days, E = 100.267009 Days

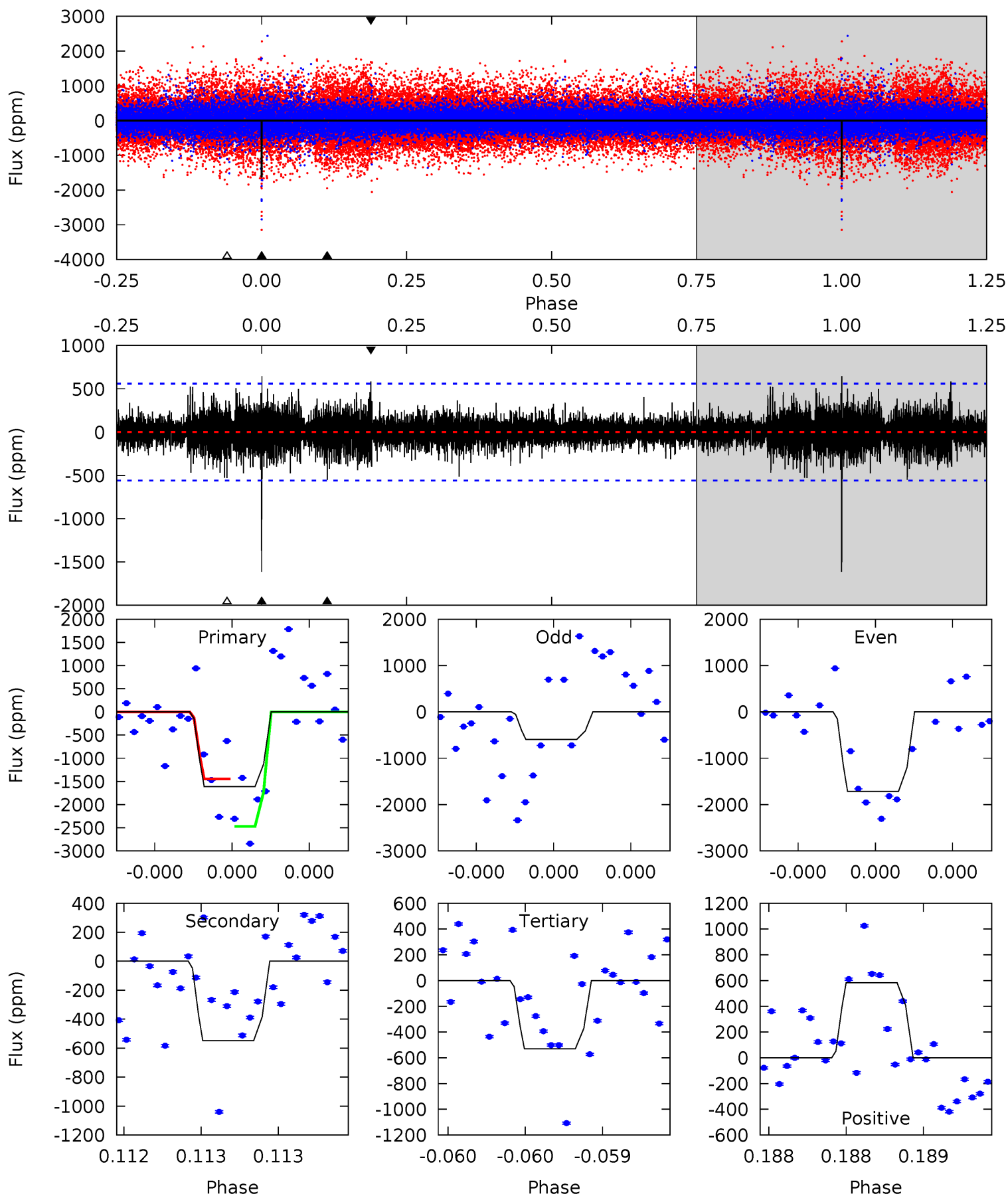
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.06	17.2	11.5	11.2	5.58	3.48	2.42	-2.40	-2.13	5.77	6.03	0.48	0.93	0.39	0.11



# Alt Model-Shift Uniqueness Test

010459864-01, P = 339.287407 Days, E = 100.253790 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
16.1	5.49	5.30	5.84	5.59	3.50	1.16	10.8	10.3	0.18	-0.35	6.01	0.76	0.29	4.81



### Stellar Parameters For KIC 010459864

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5045^{+151}_{-151}$	$4.542^{+0.078}_{-0.054}$	$-0.220^{+0.300}_{-0.300}$	$0.753^{+0.072}_{-0.079}$	$0.721^{+0.100}_{-0.050}$	$2.374^{+0.799}_{-0.464}$
	+3%/-3%	+2%/-1%	+136%/-136%	+10%/-10%	+14%/-7%	+34%/-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 010459864-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-2893 \pm 168$	$5.91^{+6.06}_{-3.98}$	$291^{+11}_{-11}$	$4485^{+3047}_{-989}$	$33499^{+289578}_{-25326}$
Alt.	$-549 \pm 100$	$5.85^{+6.23}_{-3.97}$	$291^{+11}_{-11}$	$3345^{+1695}_{-605}$	$6164^{+55638}_{-4704}$

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

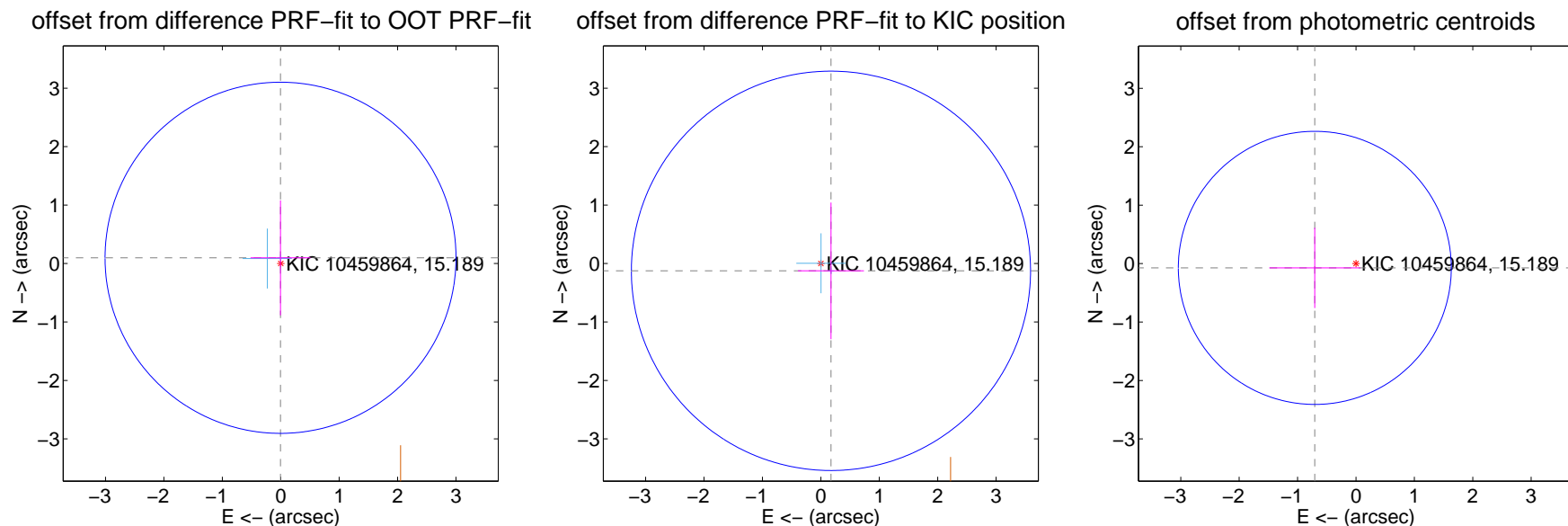
## DV Centroid Data

Supplemental centroid analysis for 010459864-01. Kepler magnitude: 15.19. Transit SNR 5.76

There are 2 quarters with good PRF difference image offsets

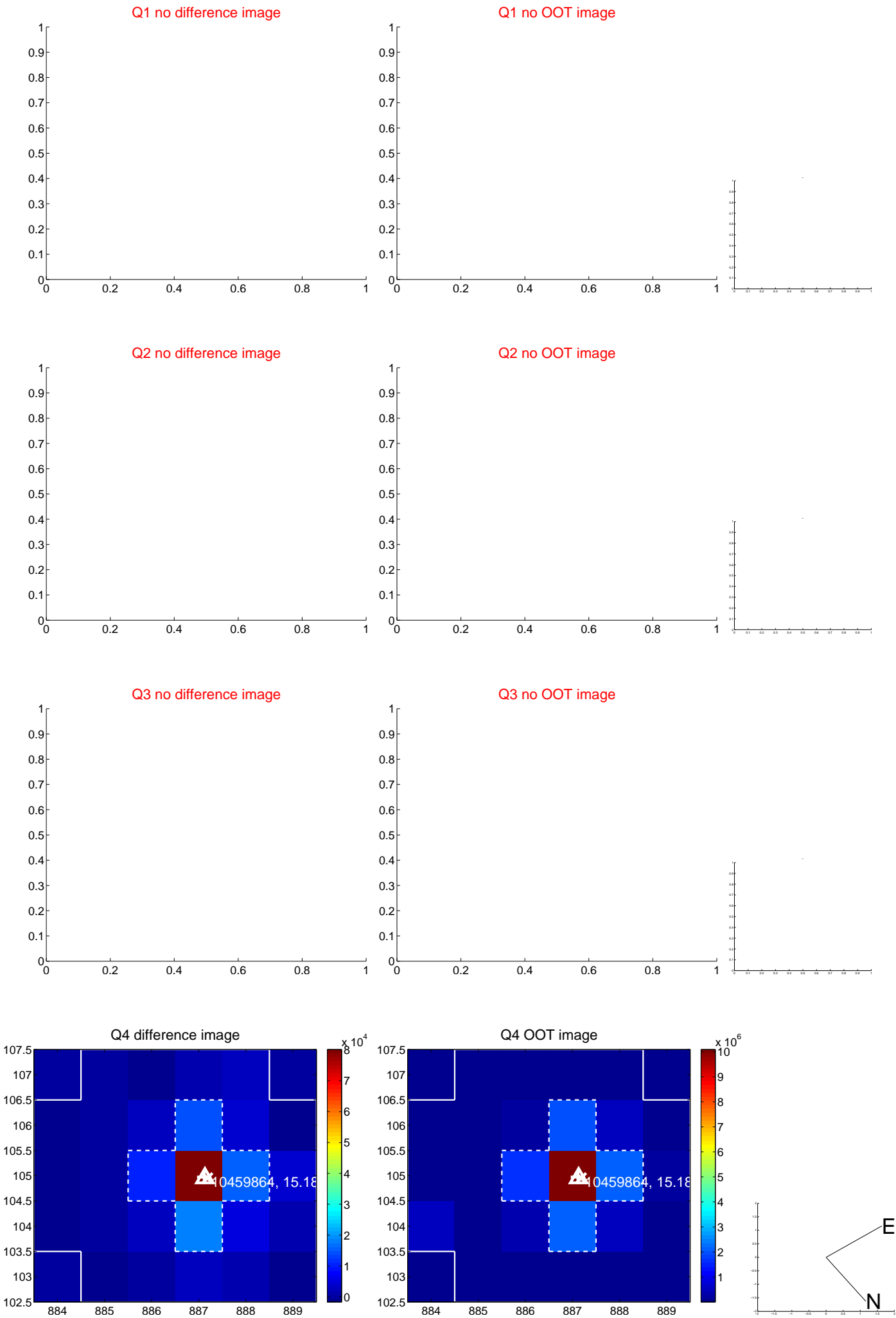
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.098 \pm 1.001$	0.10	$0.004 \pm 0.514$	$0.098 \pm 0.983$
PRF-fit source offset from KIC position	$0.213 \pm 1.139$	0.19	$-0.173 \pm 0.564$	$-0.125 \pm 1.169$
photometric centroid source offset	$0.71 \pm 0.78$	0.91	$0.70 \pm 0.78$	$-0.07 \pm 0.69$



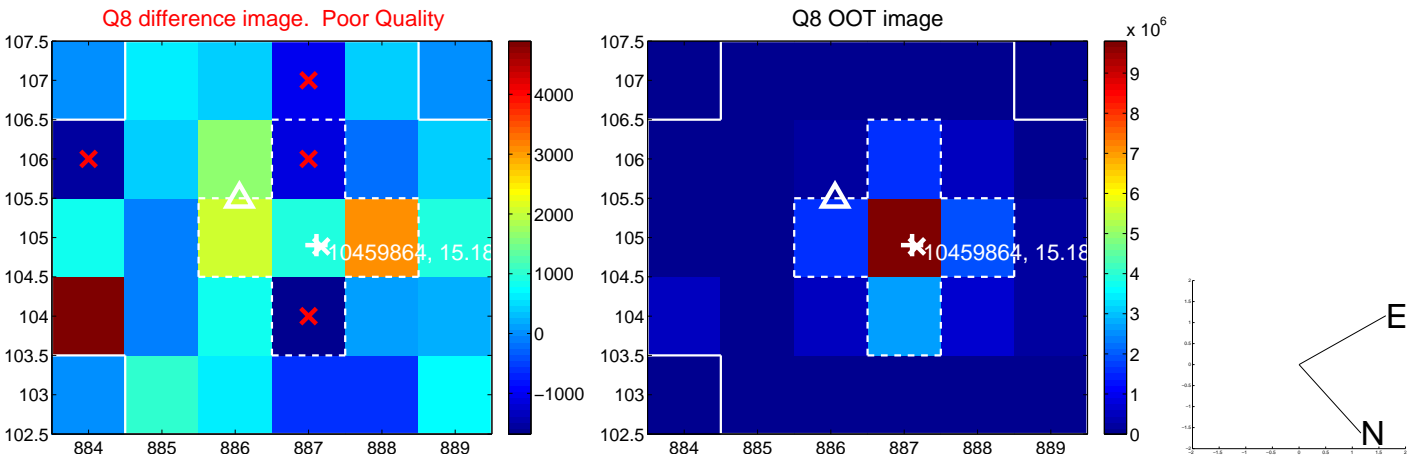
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





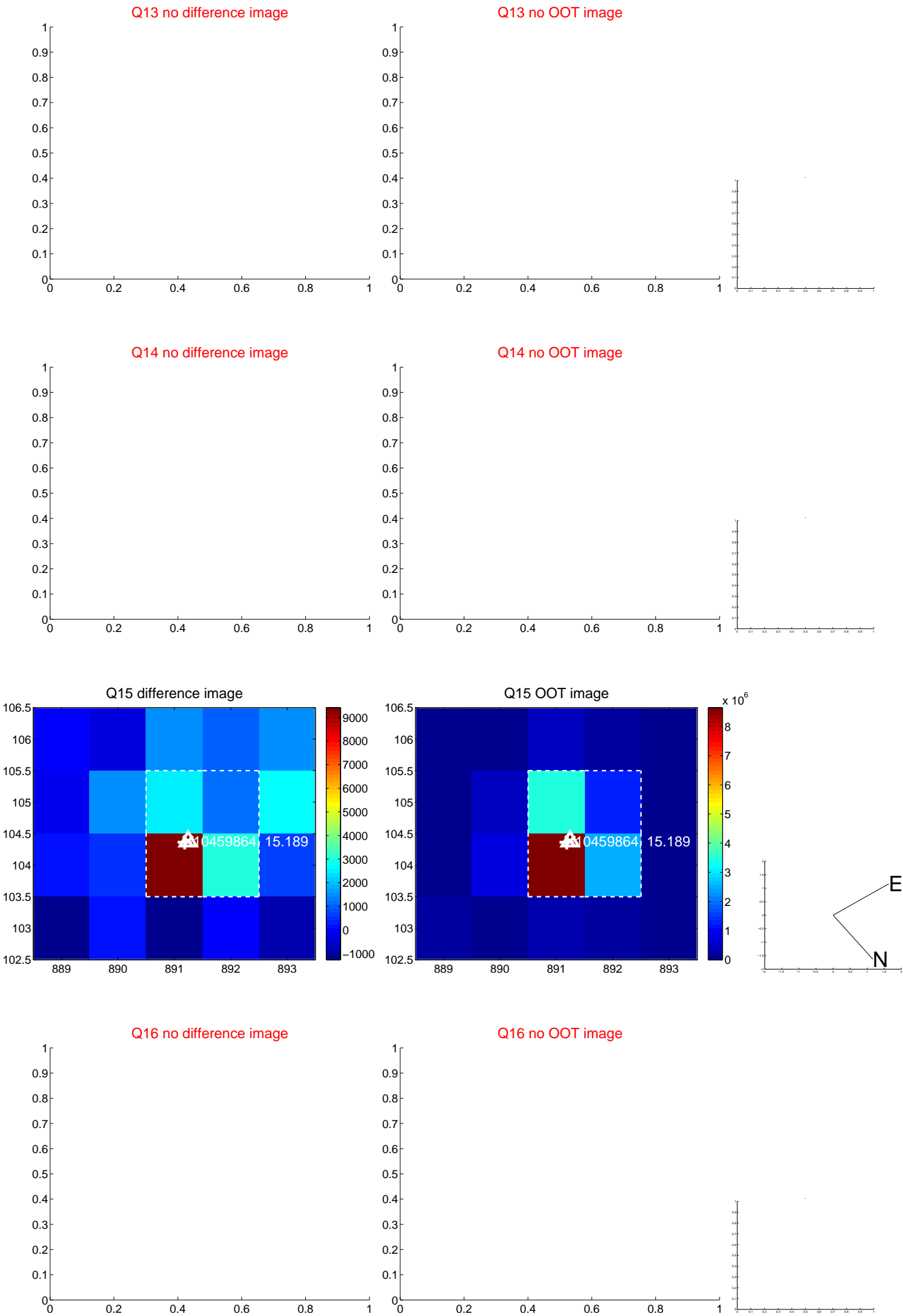
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



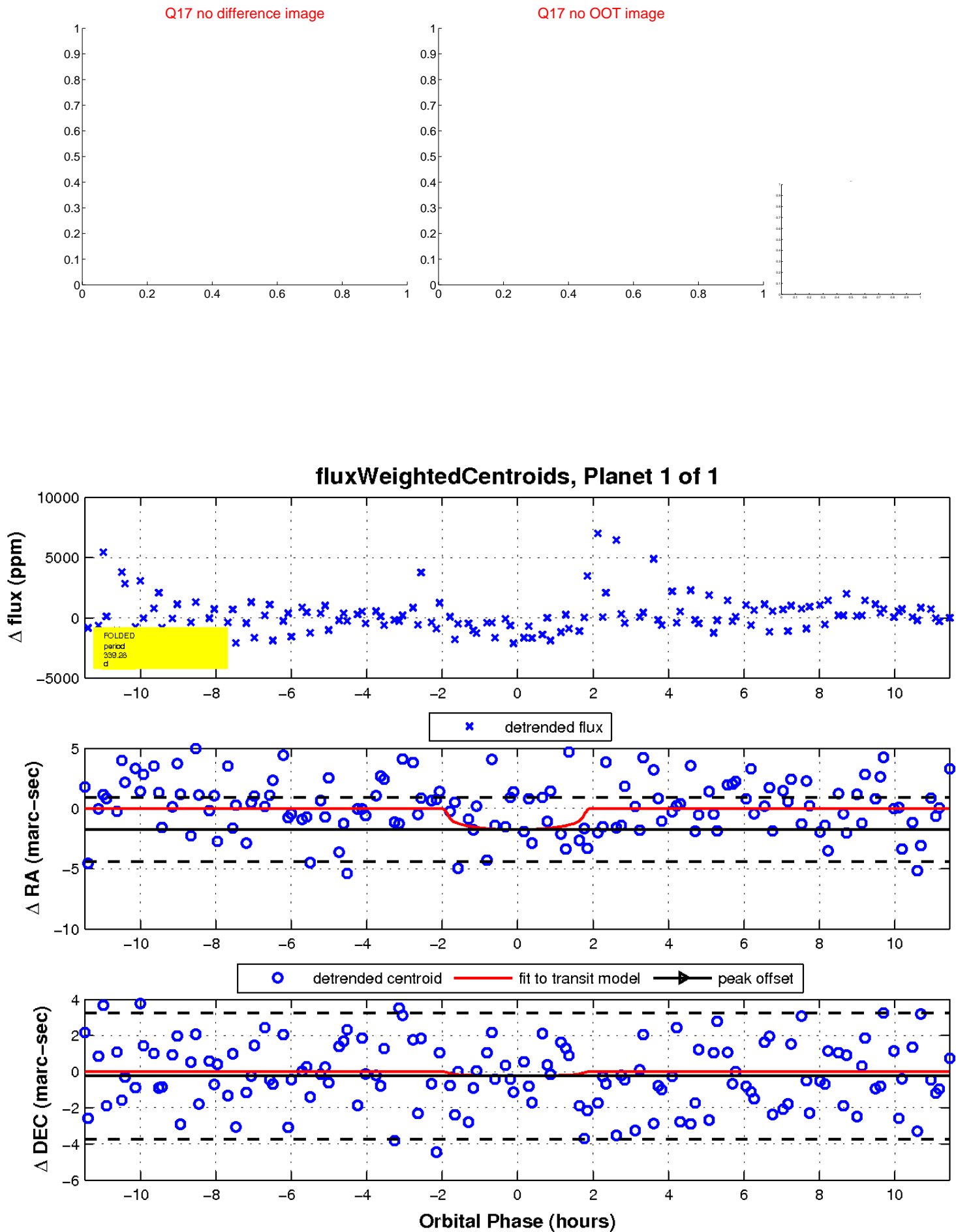
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

