

# KIC 009712350

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009712350-01	OBS	2613.01	51.573900	158.068053	999.0	3.259	11.4	12.7	0.81	5380	3.30	7.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009712350-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT

**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 009712350-01

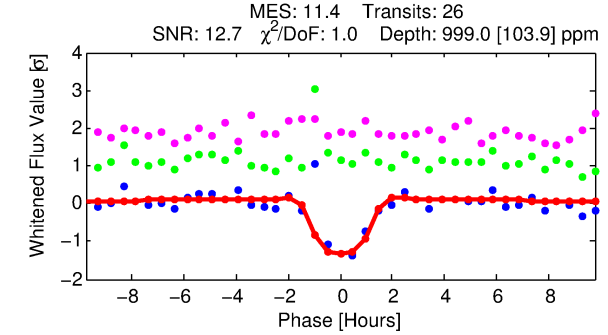
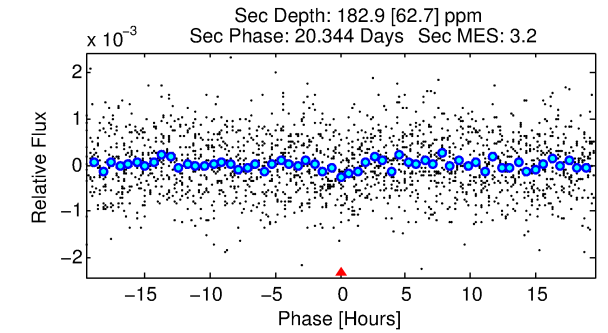
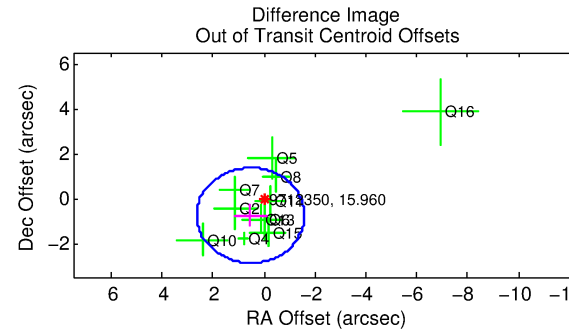
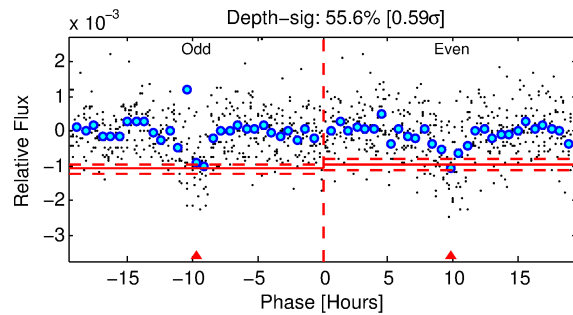
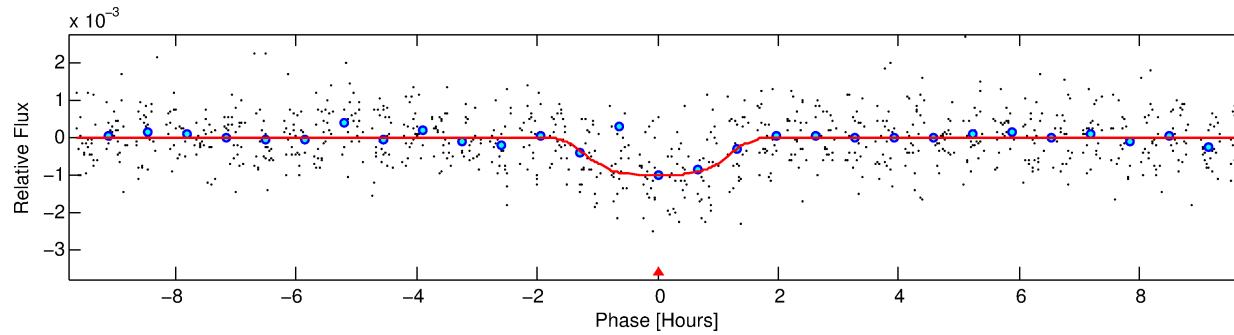
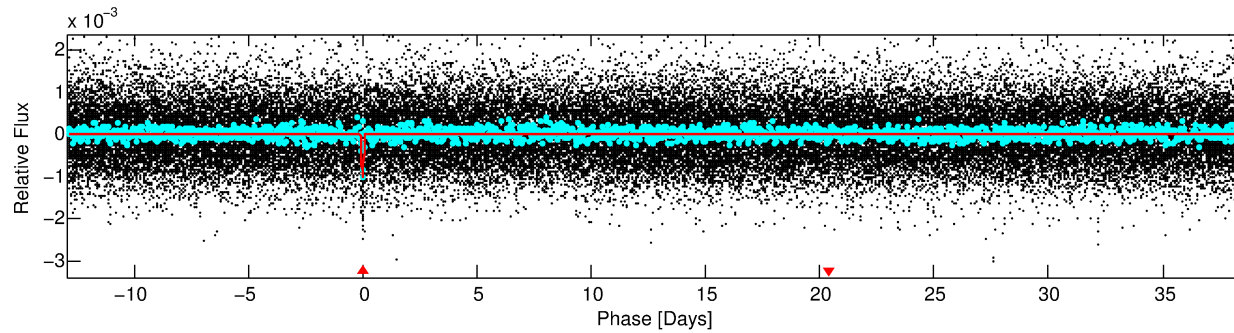
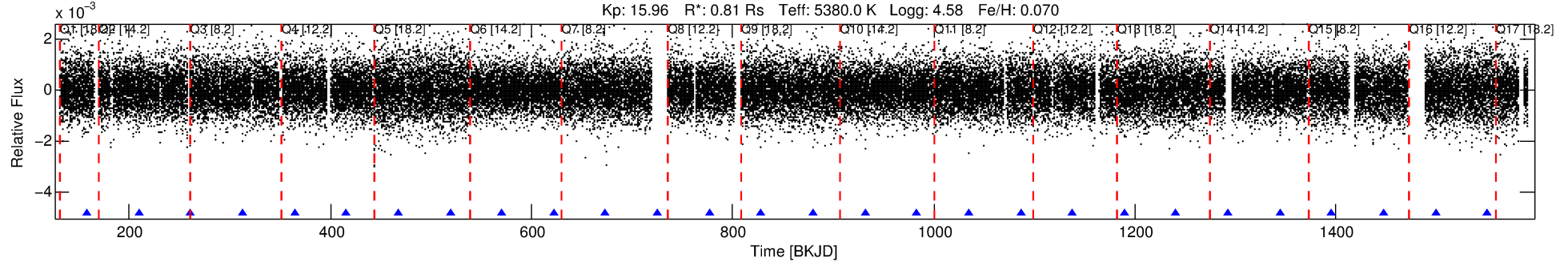
No Significant Match Found

# DV One-Page Summary

KIC: 9712350 Candidate: 1 of 1 Period: 51.574 d

KOI: K02613.01 Corr: 0.936

Kp: 15.96 R\*: 0.81 Rs Teff: 5380.0 K Logg: 4.58 Fe/H: 0.070



## DV Fit Results:

Period = 51.57390 [0.00039] d  
Epoch = 158.0681 [0.0058] BKJD  
Rp/R\* = 0.0372 [0.0038]  
a/R\* = 52.03 [14.73]  
b = 0.94 [0.04]  
Seff = 7.14 [2.07]  
Teq = 417 [30] K  
Rp = 3.30 [0.73] Re  
a = 0.2637 [0.0455] AU  
Ag = 641.78 [304.76] [2.10σ]  
Teffp = 3243 [340] K [8.29σ]

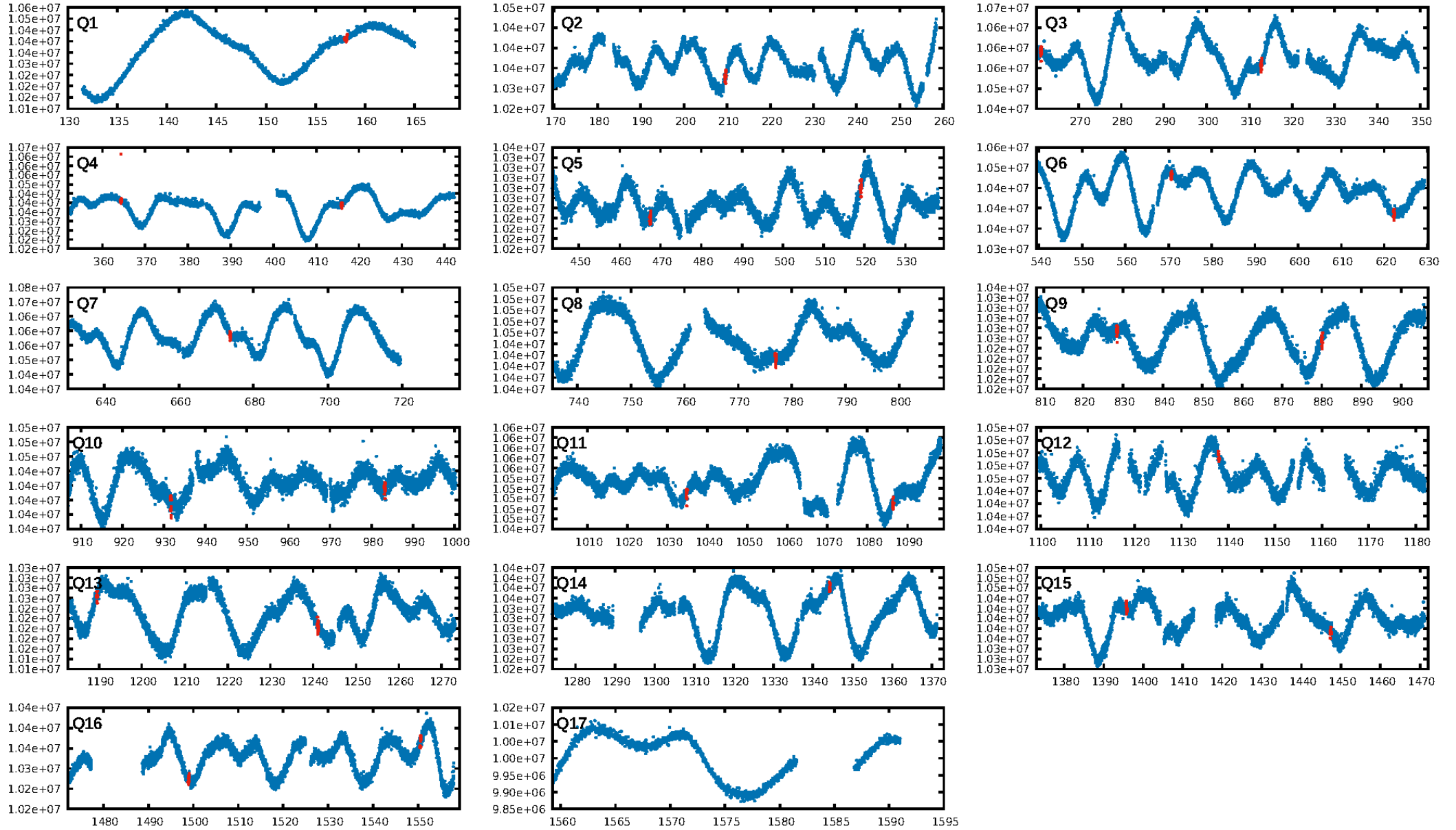
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 81.4%  
ModelChiSquareGof-sig: 99.1%  
Bootstrap-pfa: 7.20e-28  
RollingBand-fgt: 1.00 [25/25]  
GhostDiagnostic-chr: 3.604  
Centroid-sig: 2.0%  
Centroid-so: 1.428 arcsec [1.18σ]  
OotOffset-rm: 0.925 arcsec [1.31σ]  
KicOffset-rm: 0.978 arcsec [1.36σ]  
OotOffset-st: 3/3/3/2 [11]  
KicOffset-st: 3/3/3/2 [11]  
DiffImageQuality-fgm: 0.55 [6/11]  
DiffImageOverlap-fno: 1.00 [16/16]

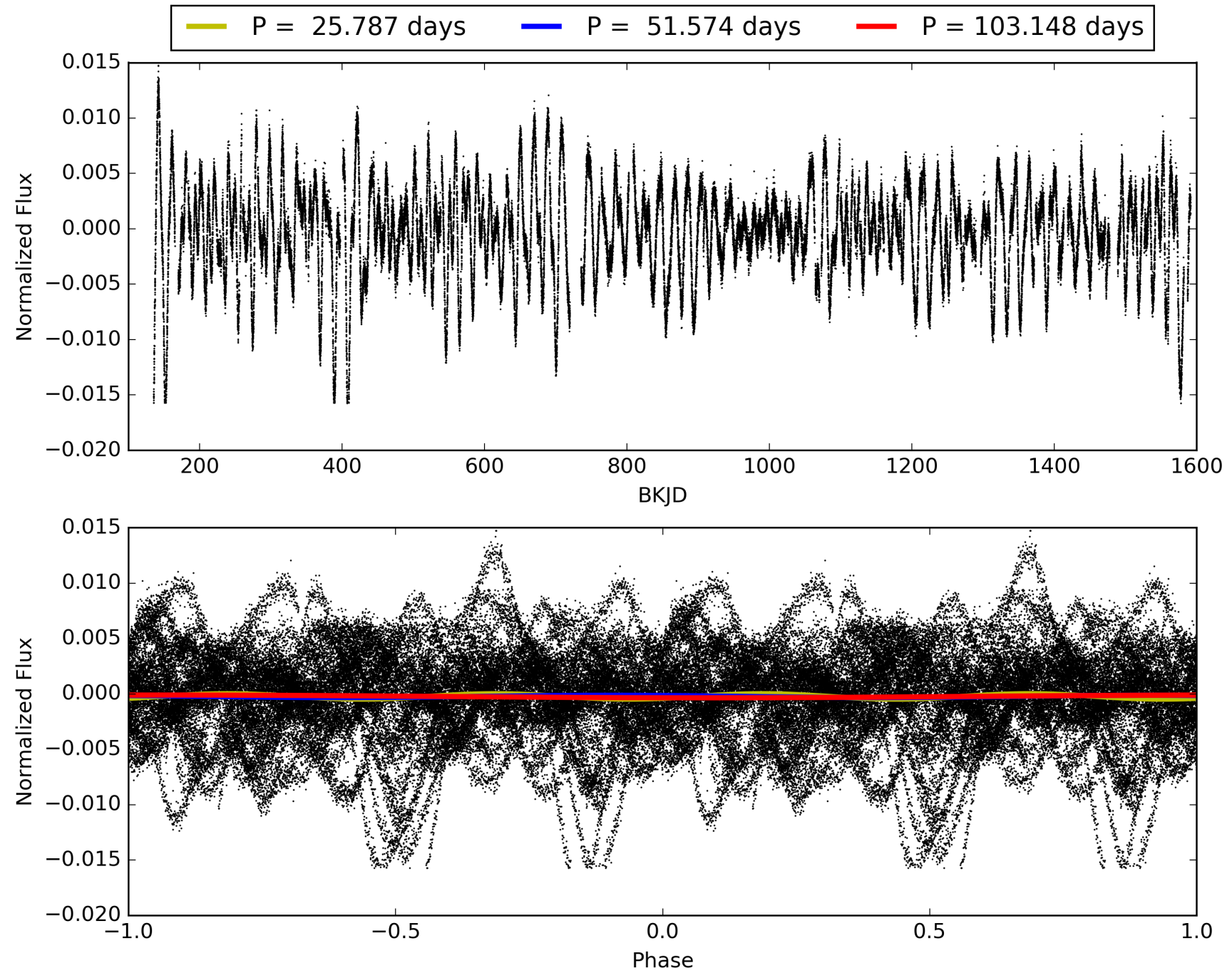
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:39:24 Z

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

# TCE 009712350-01, PDC Light Curves

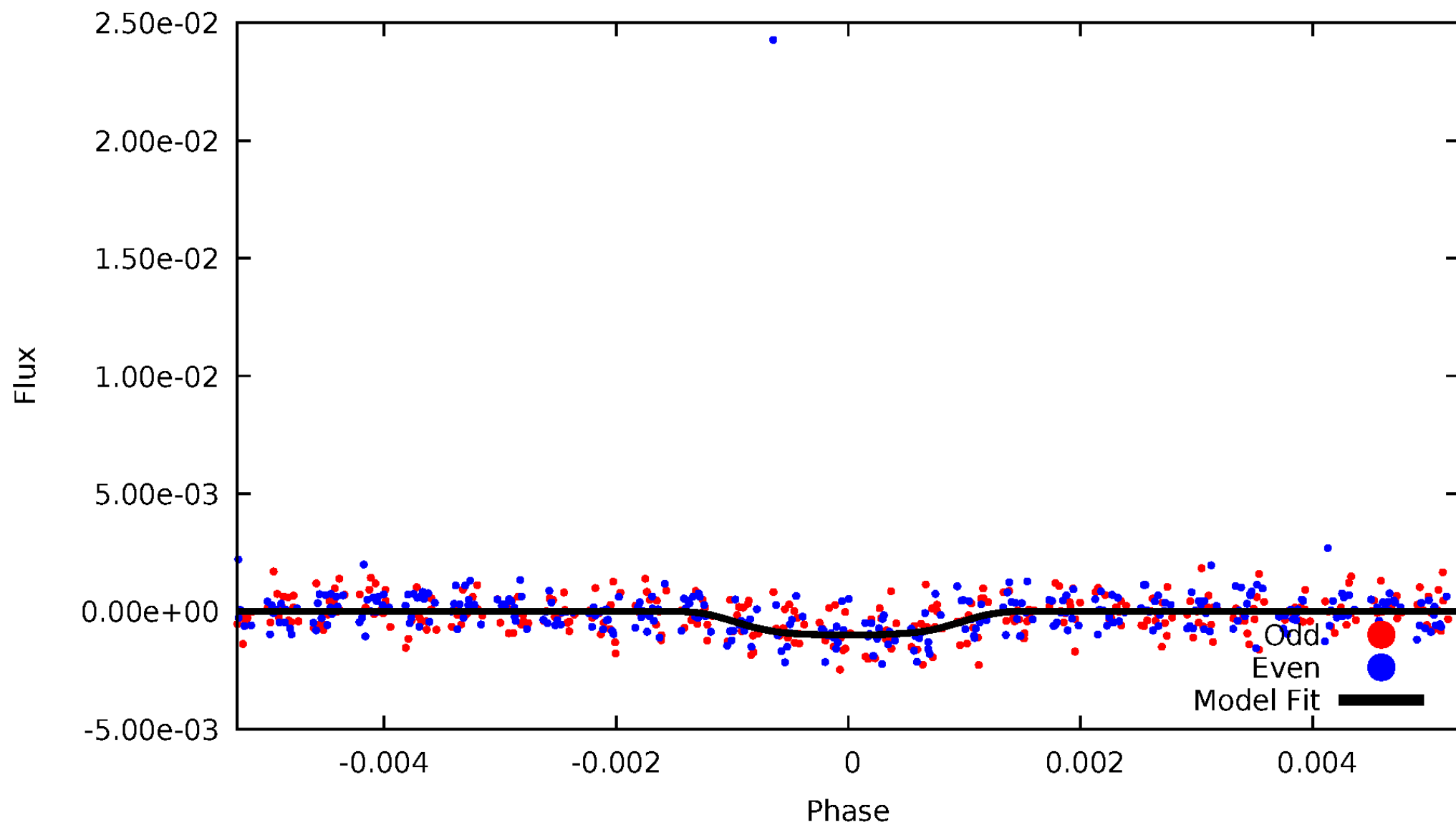


TCE 009712350-01



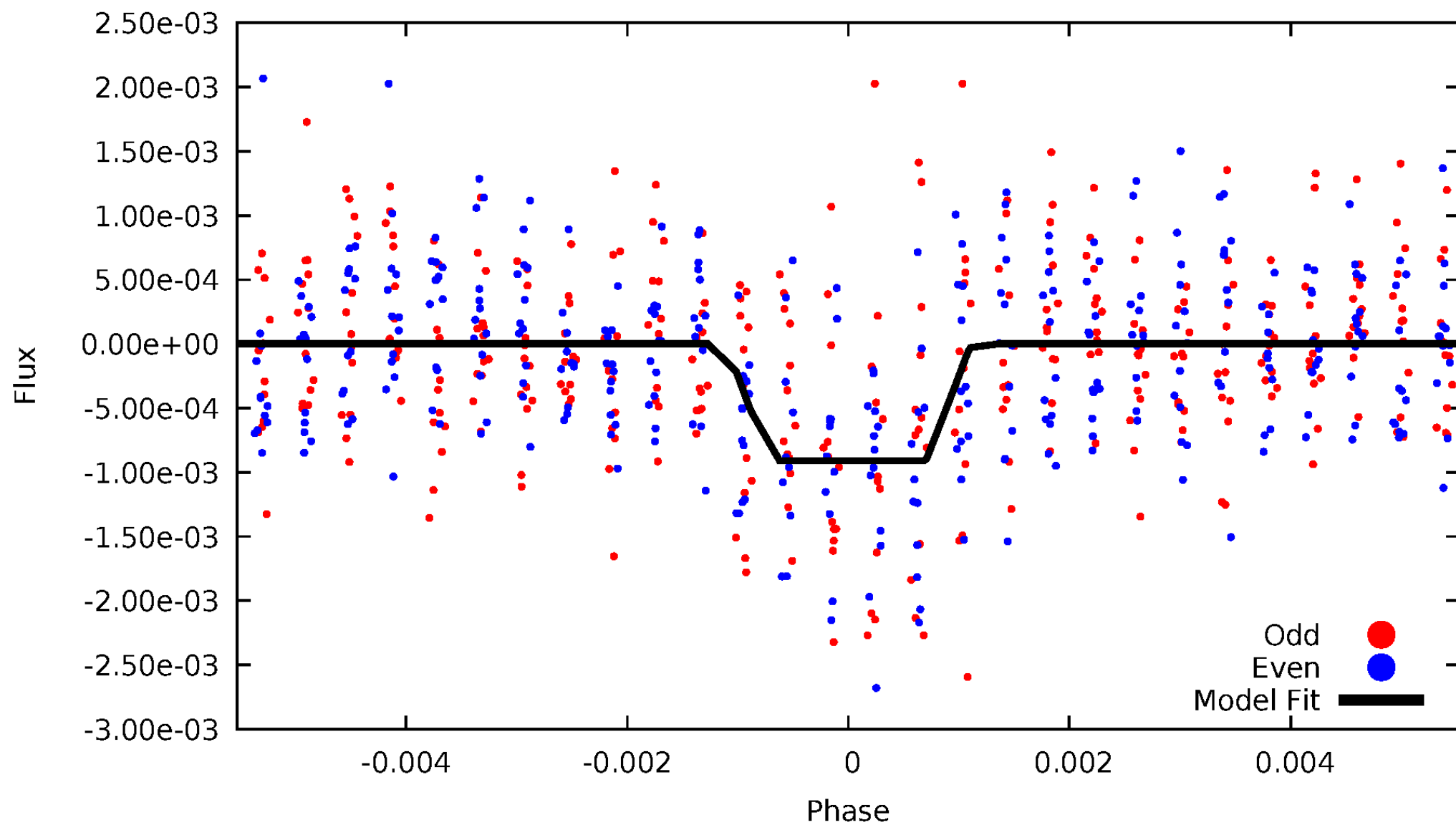
# DV Odd/Even

TCE 009712350-01



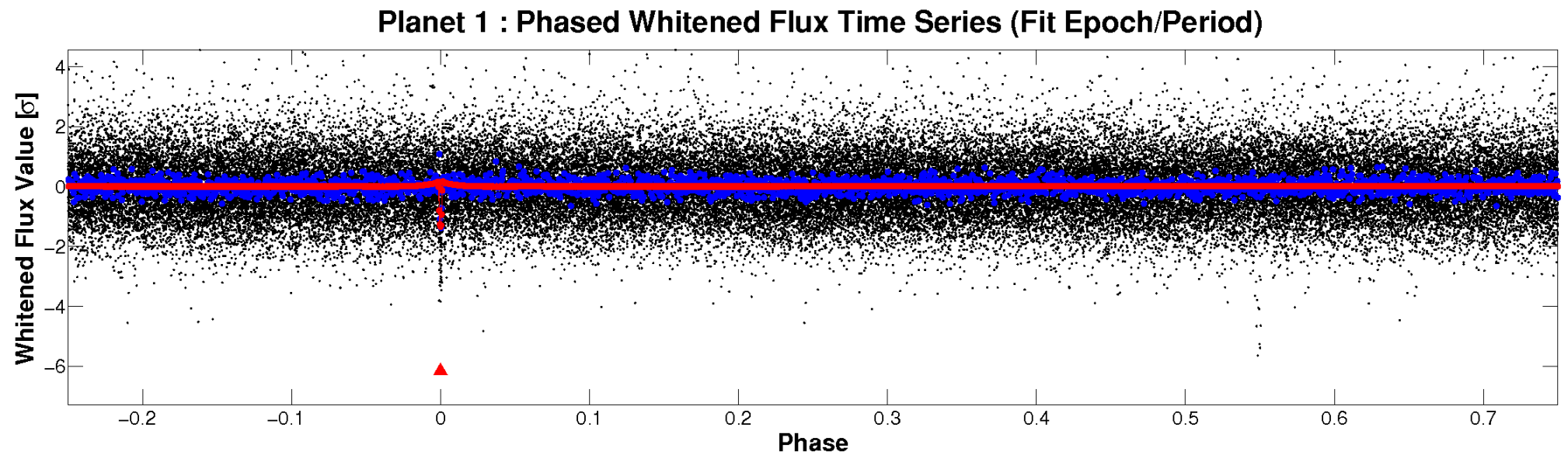
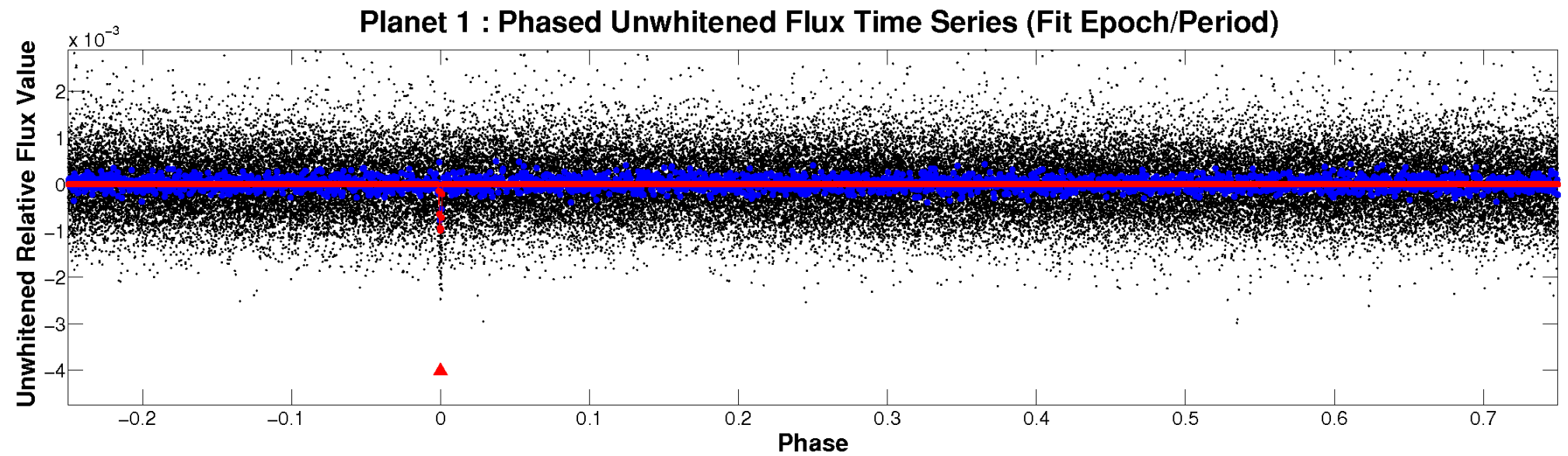
# ALT Odd/Even

TCE 009712350-01



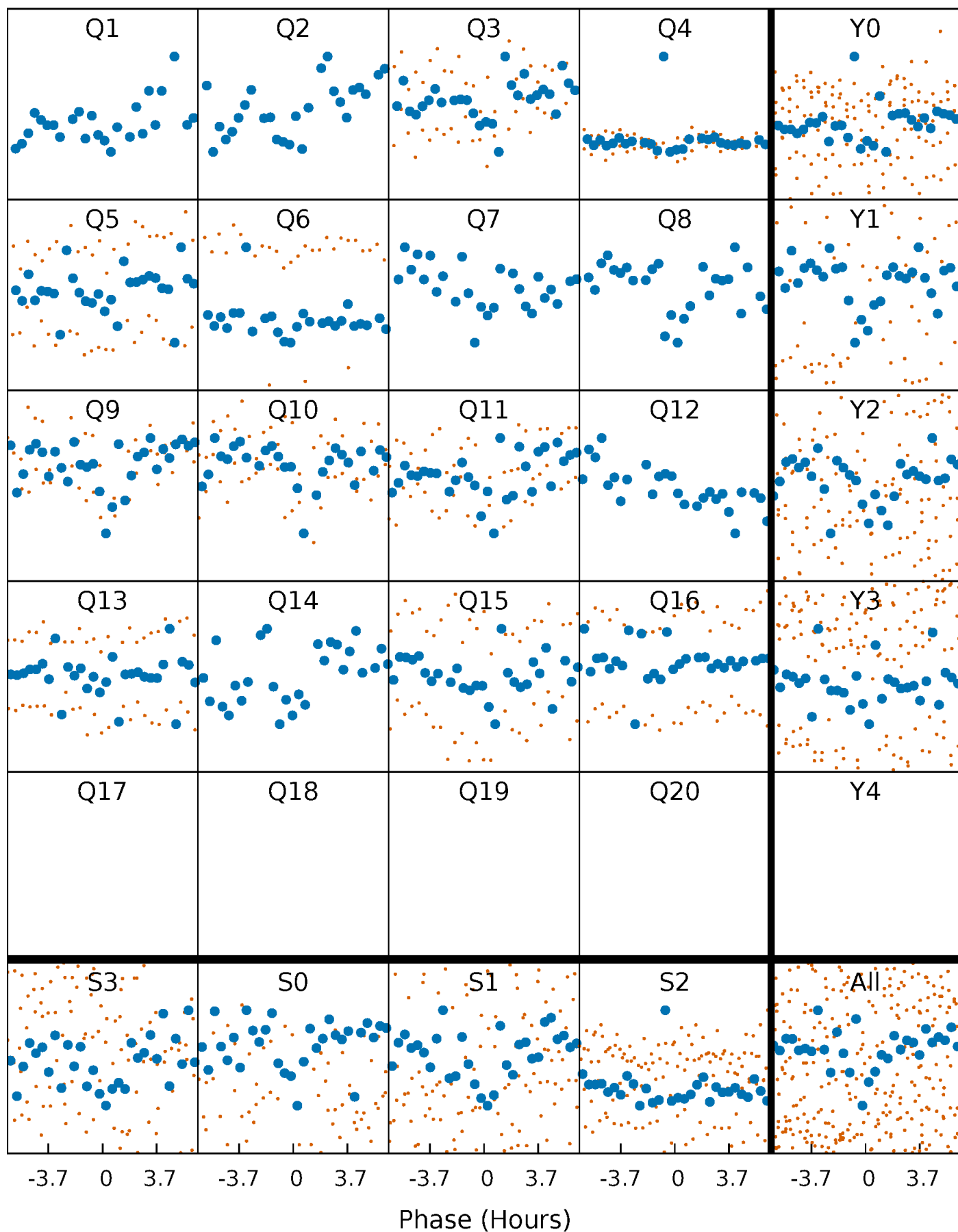


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

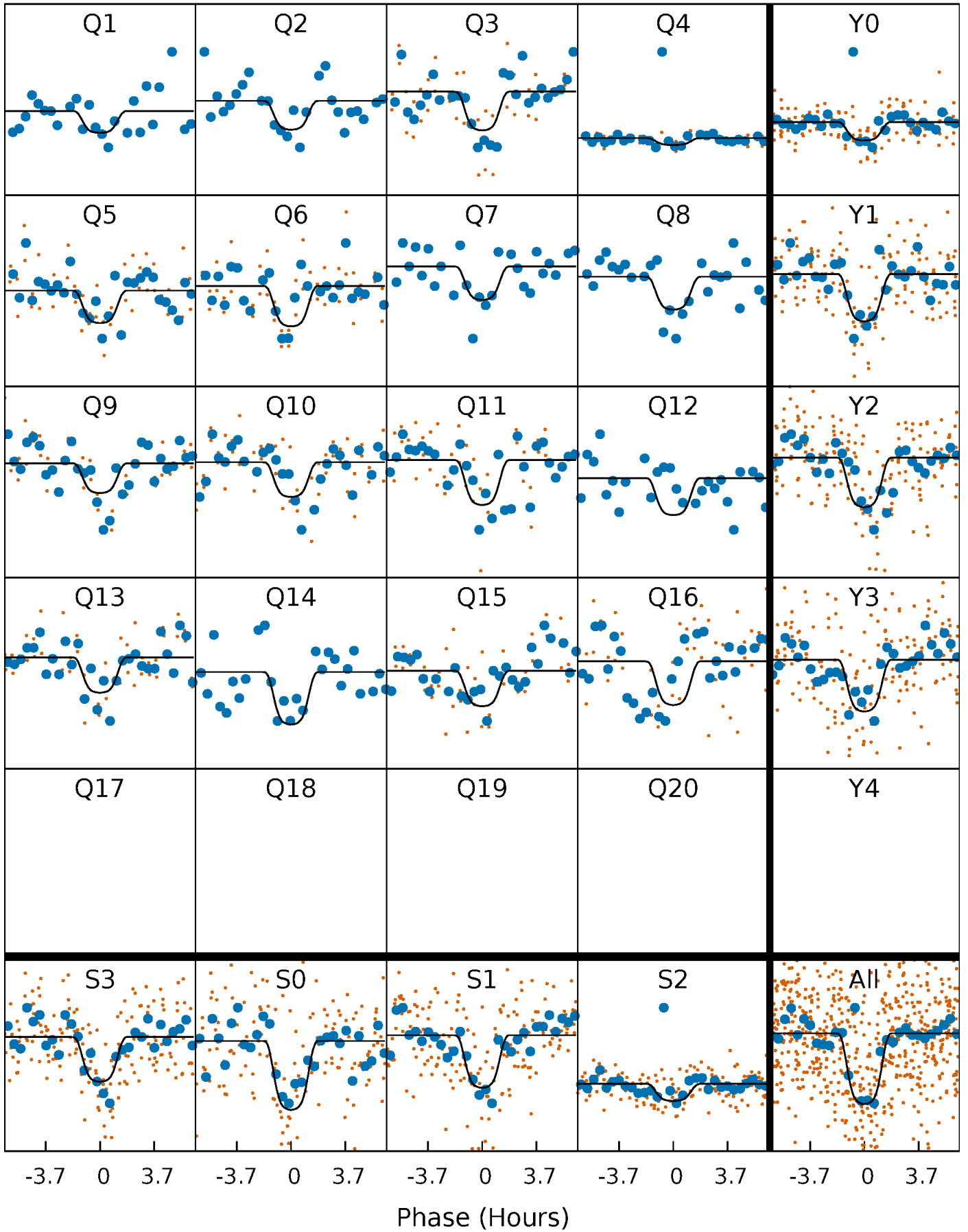
TCE 009712350-01 P= 51.573900 Days  $T_0=158.068053$  (BKJD)





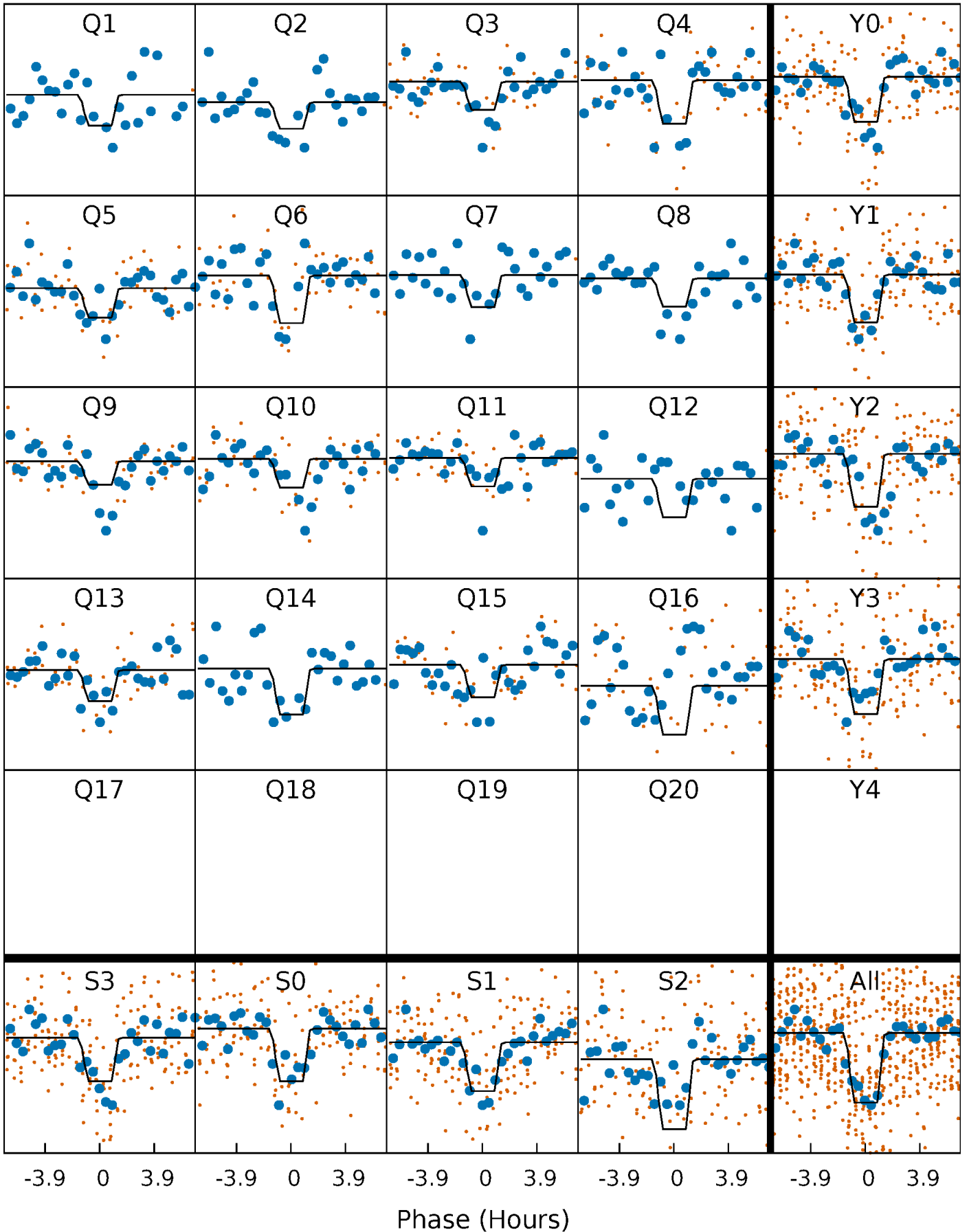
# DV Quarter-Phased Transit Curves

TCE 009712350-01 P= 51.573900 Days  $T_0=158.068053$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

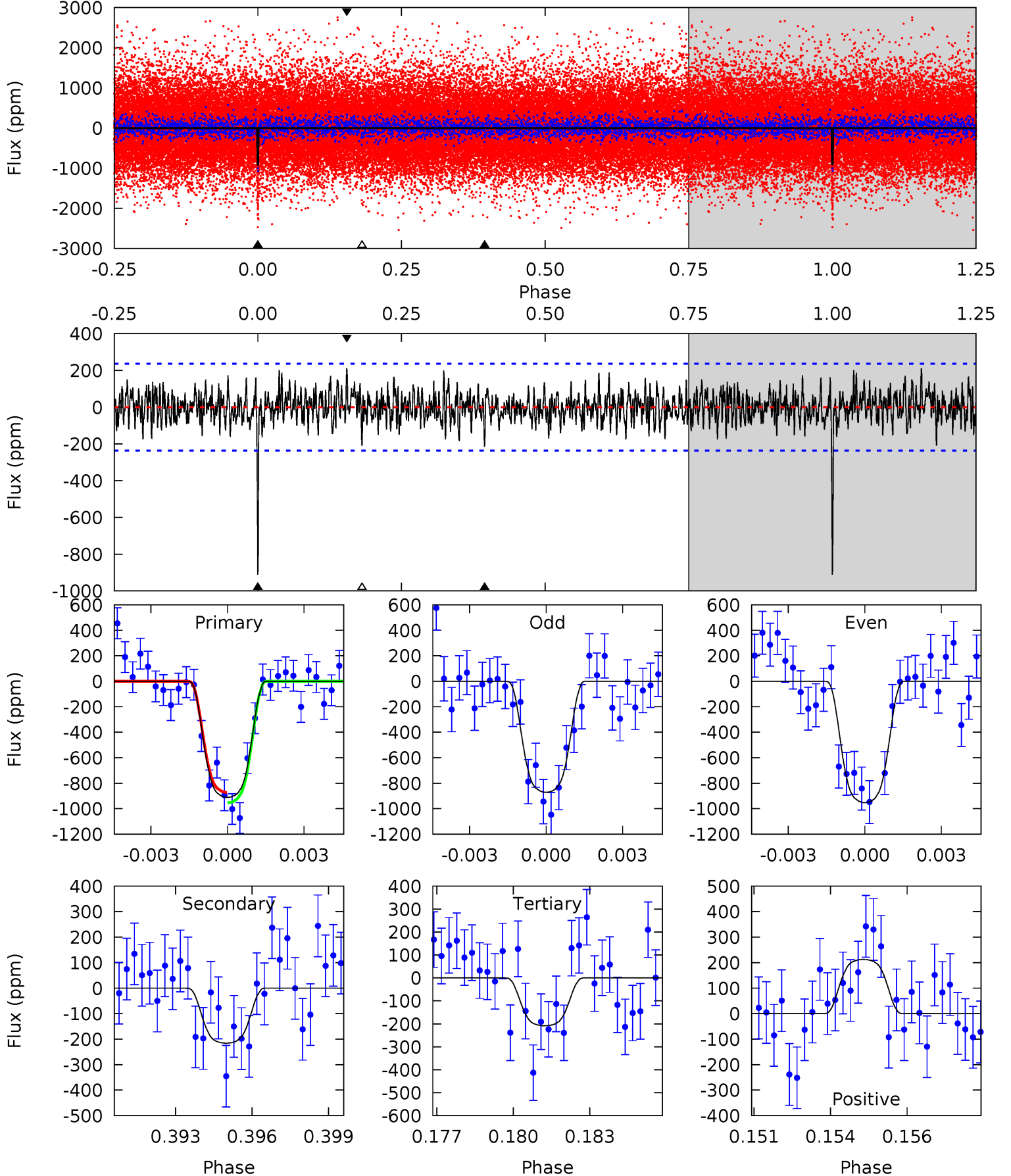
TCE 009712350-01 P= 51.574257 Days  $T_0=158.065006$  (BKJD)



# DV Model-Shift Uniqueness Test

009712350-01,  $P = 51.573900$  Days,  $E = 106.494153$  Days

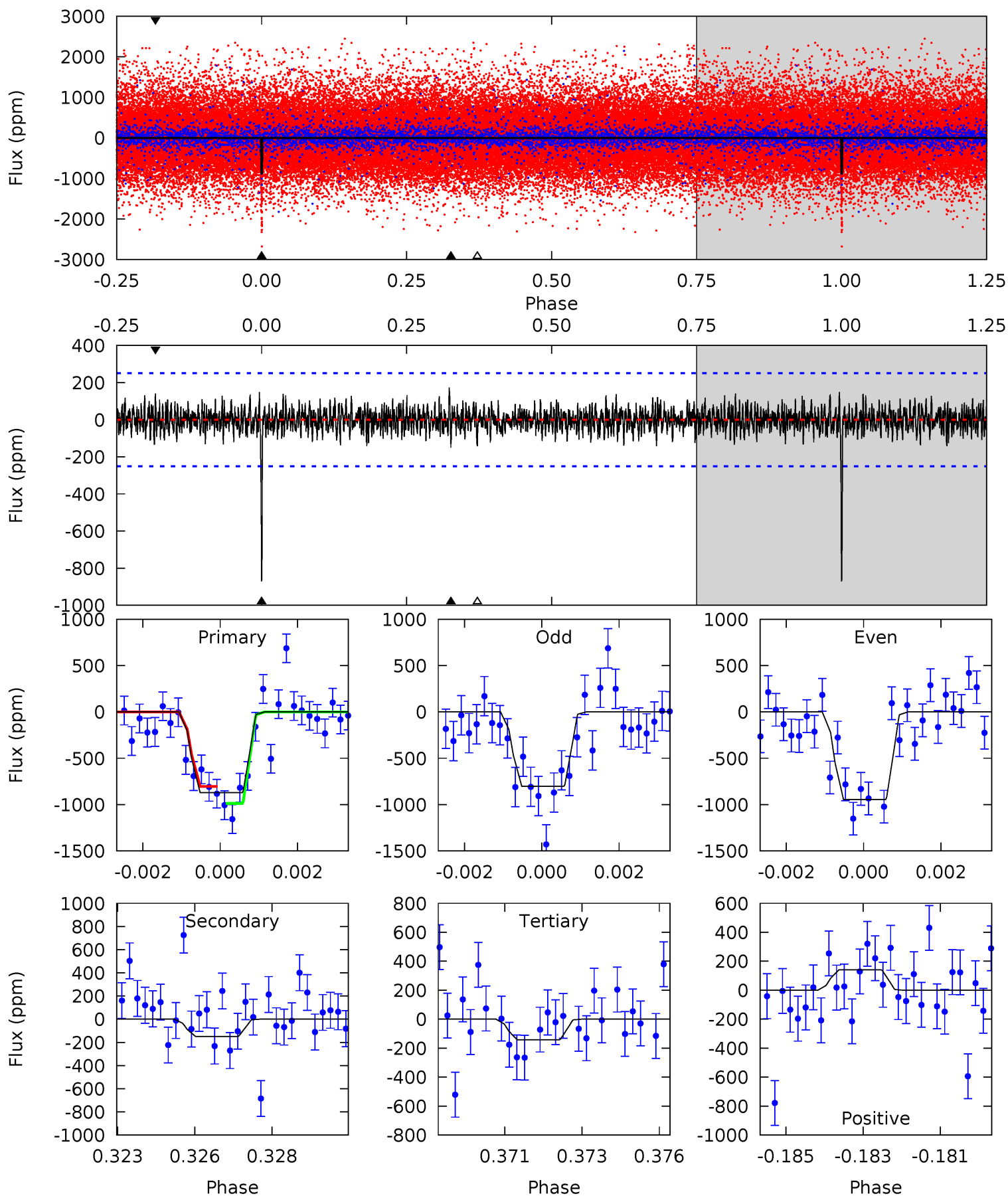
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.3	4.80	4.64	4.73	5.26	2.97	1.43	15.6	15.5	0.16	0.07	0.90	0.66	0.19	0.91



# Alt Model-Shift Uniqueness Test

009712350-01,  $P = 51.574257$  Days,  $E = 106.490749$  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
18.4	3.16	3.00	2.96	5.30	3.04	0.98	15.4	15.4	0.16	0.20	1.52	0.97	0.17	1.93



### Stellar Parameters For KIC 009712350

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5380^{+175}_{-159}$	$4.581^{+0.026}_{-0.145}$	$0.070^{+0.250}_{-0.300}$	$0.813^{+0.161}_{-0.057}$	$0.924^{+0.066}_{-0.099}$	$2.425^{+0.333}_{-0.976}$
	+3%/-3%	+1%/-3%	+357%/-429%	+20%/-7%	+7%/-11%	+14%/-40%
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 009712350-01 / KOI 2613.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-216 \pm 45$	$3.44^{+0.48}_{-0.43}$	$597^{+29}_{-25}$	$3766^{+193}_{-194}$	$696^{+237}_{-209}$
Alt.	$-150 \pm 47$	$2.78^{+0.41}_{-0.37}$	$595^{+31}_{-25}$	$3770^{+277}_{-273}$	$693^{+362}_{-243}$

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

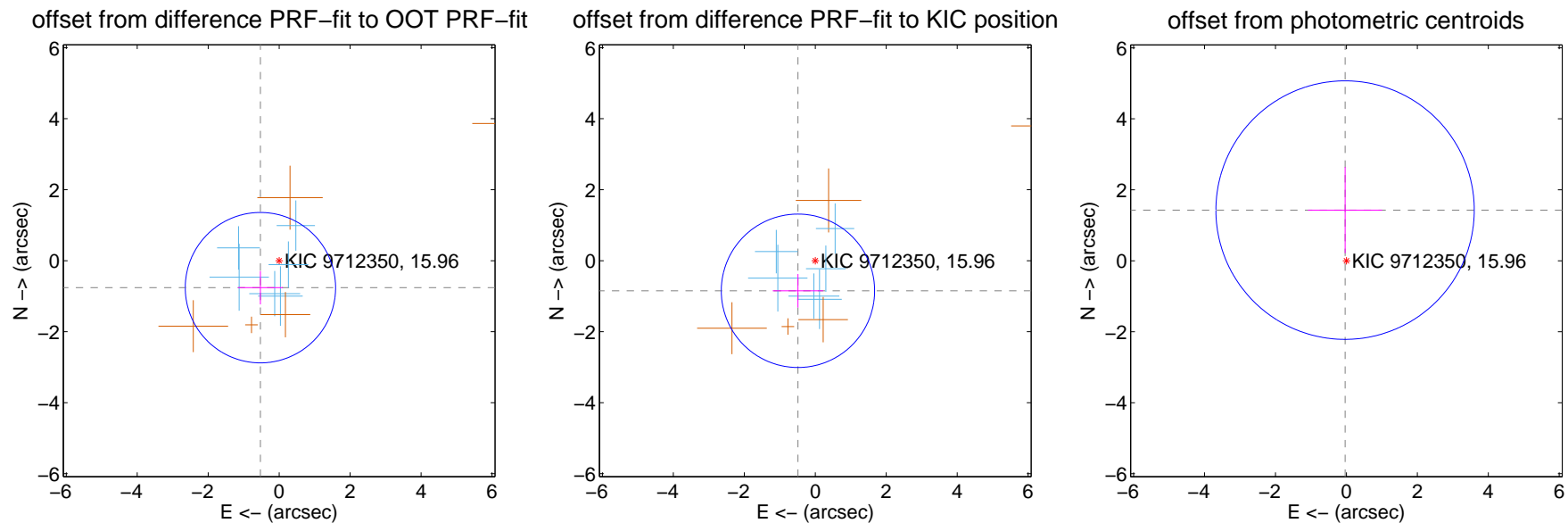
## DV Centroid Data

Supplemental centroid analysis for 009712350-01. Kepler magnitude: 15.96. Transit SNR 12.70

There are 6 quarters with good PRF difference image offsets

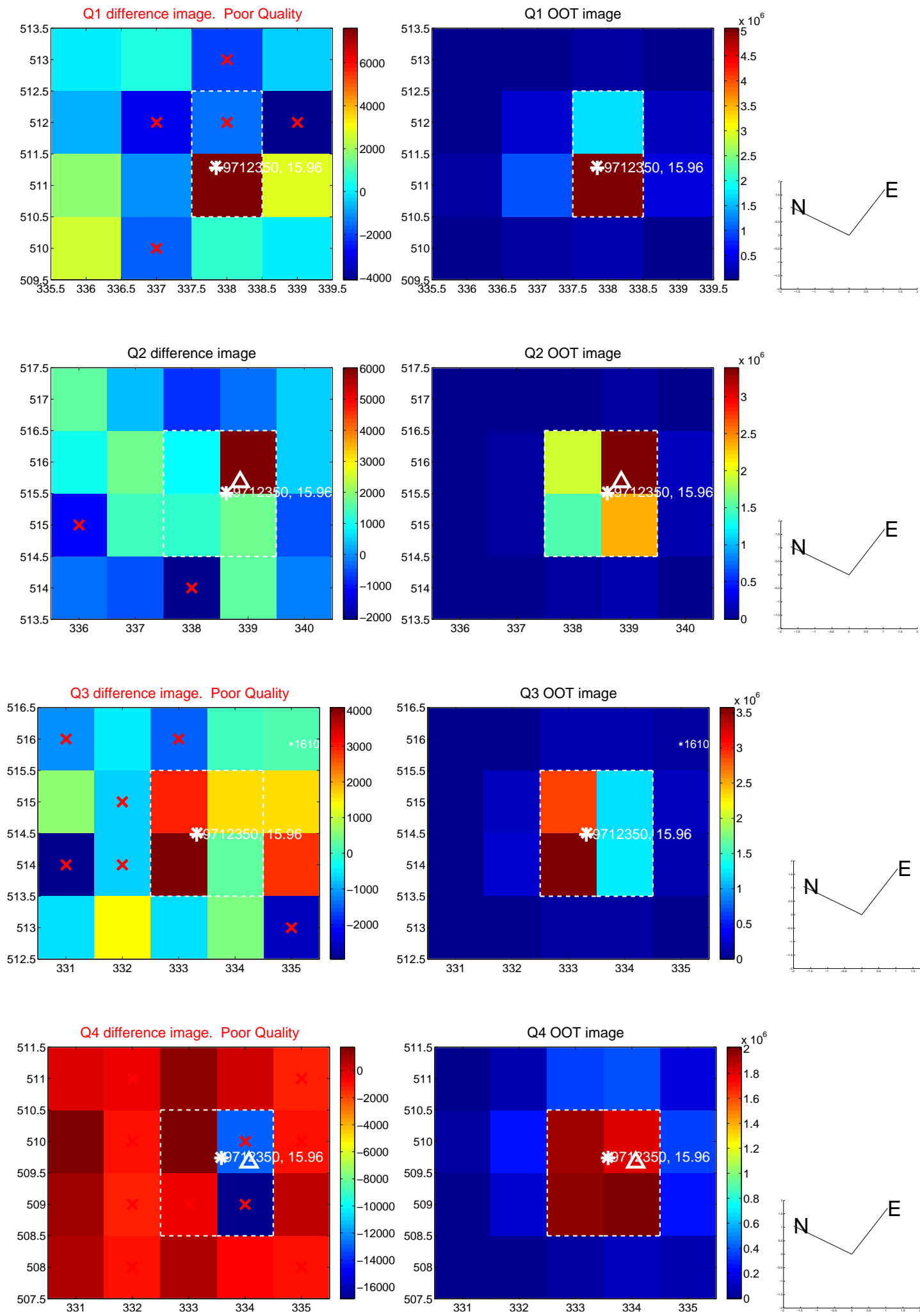
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.925 \pm 0.706$	1.31	$0.528 \pm 0.633$	$-0.760 \pm 0.470$
PRF-fit source offset from KIC position	$0.978 \pm 0.720$	1.36	$0.488 \pm 0.711$	$-0.848 \pm 0.473$
photometric centroid source offset	$1.43 \pm 1.21$	1.18	$0.04 \pm 1.04$	$1.43 \pm 1.21$



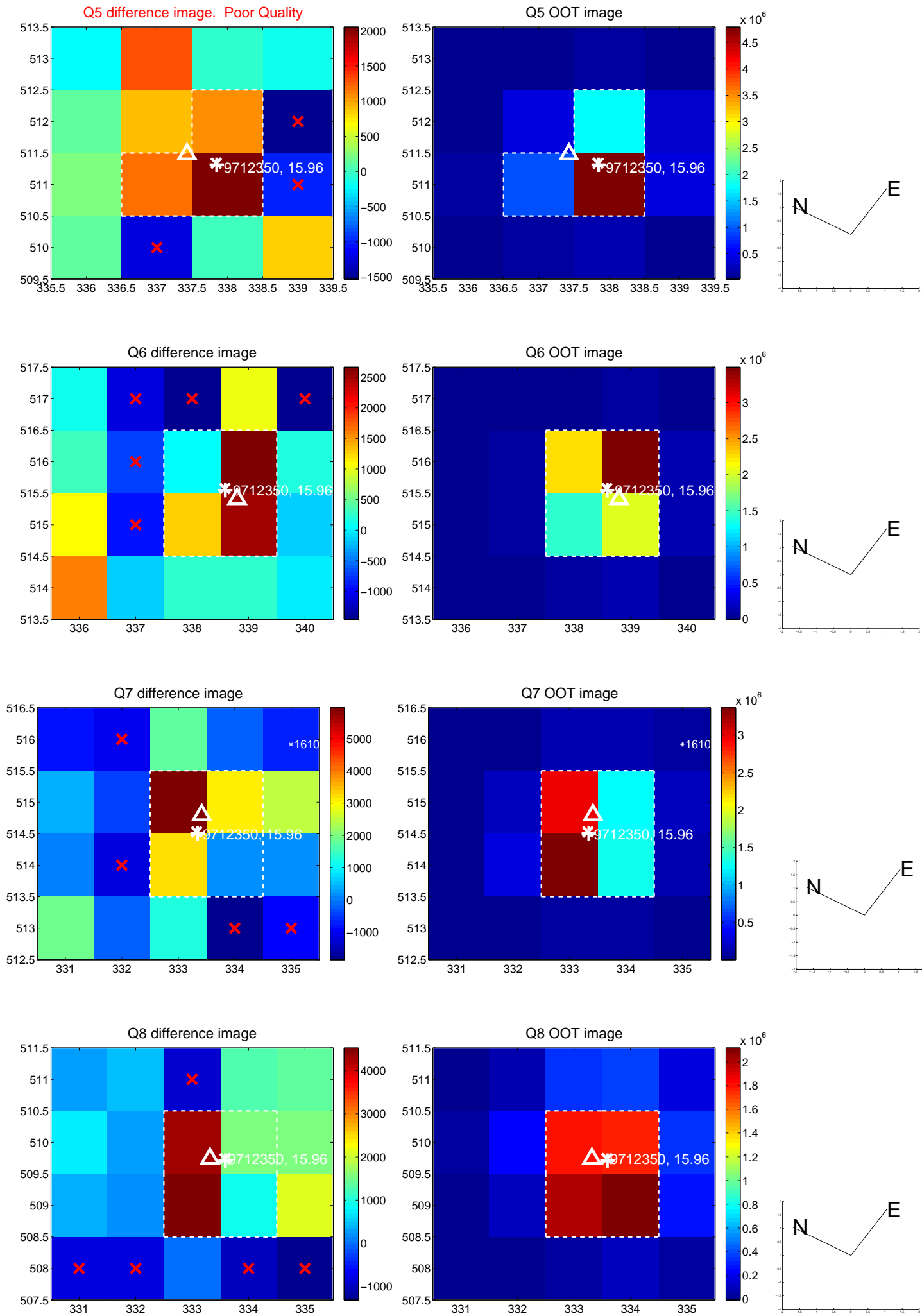
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

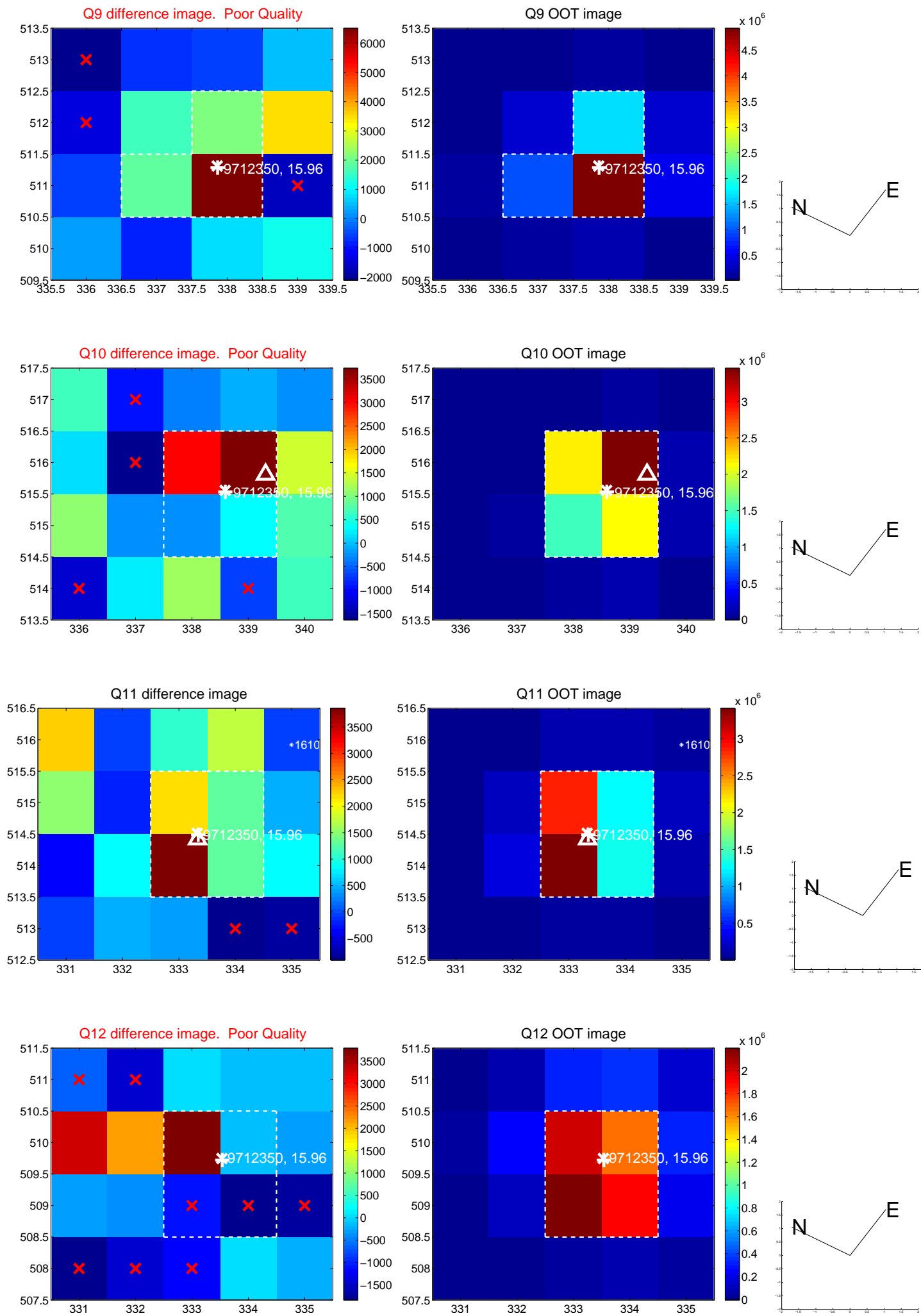




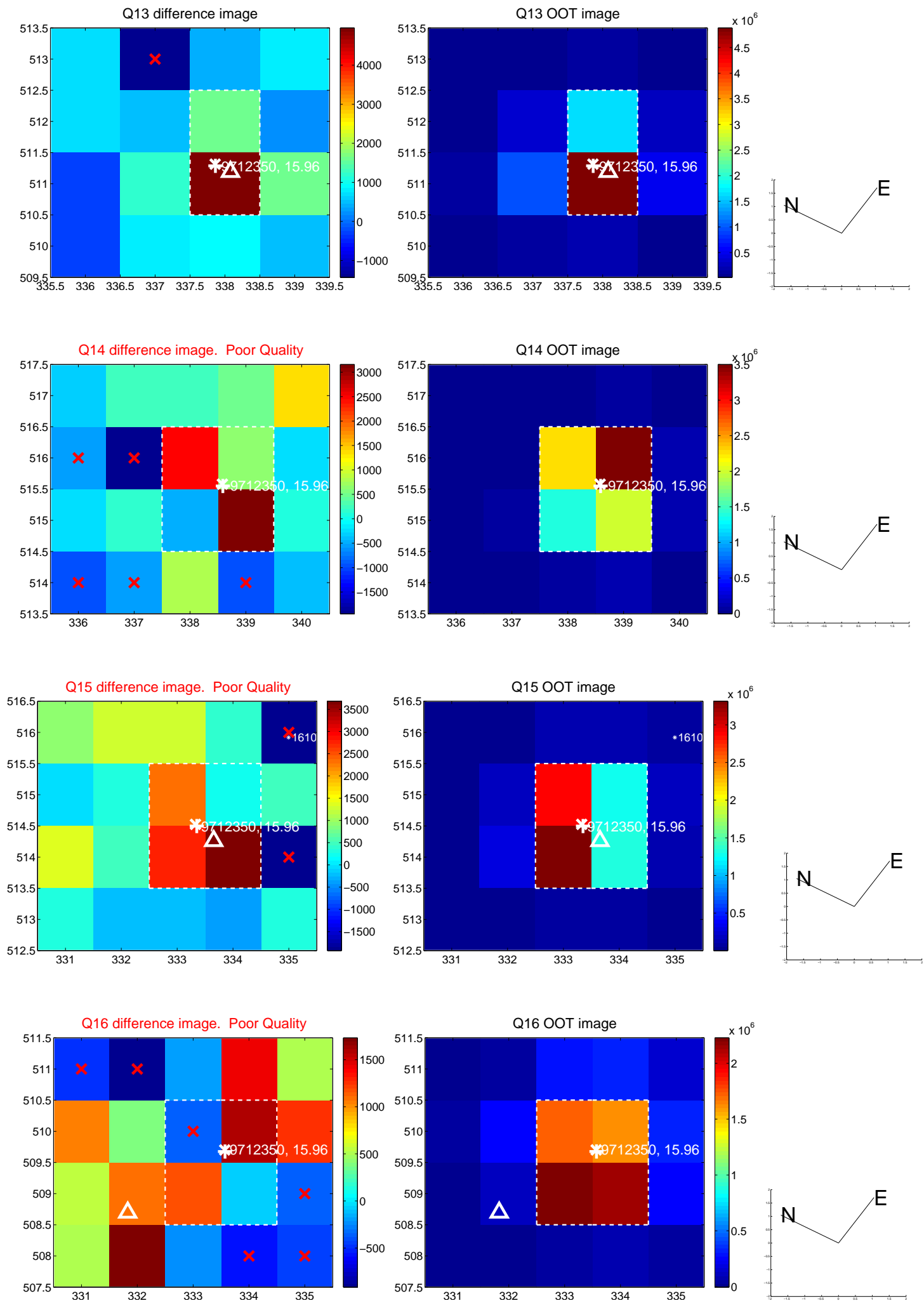
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



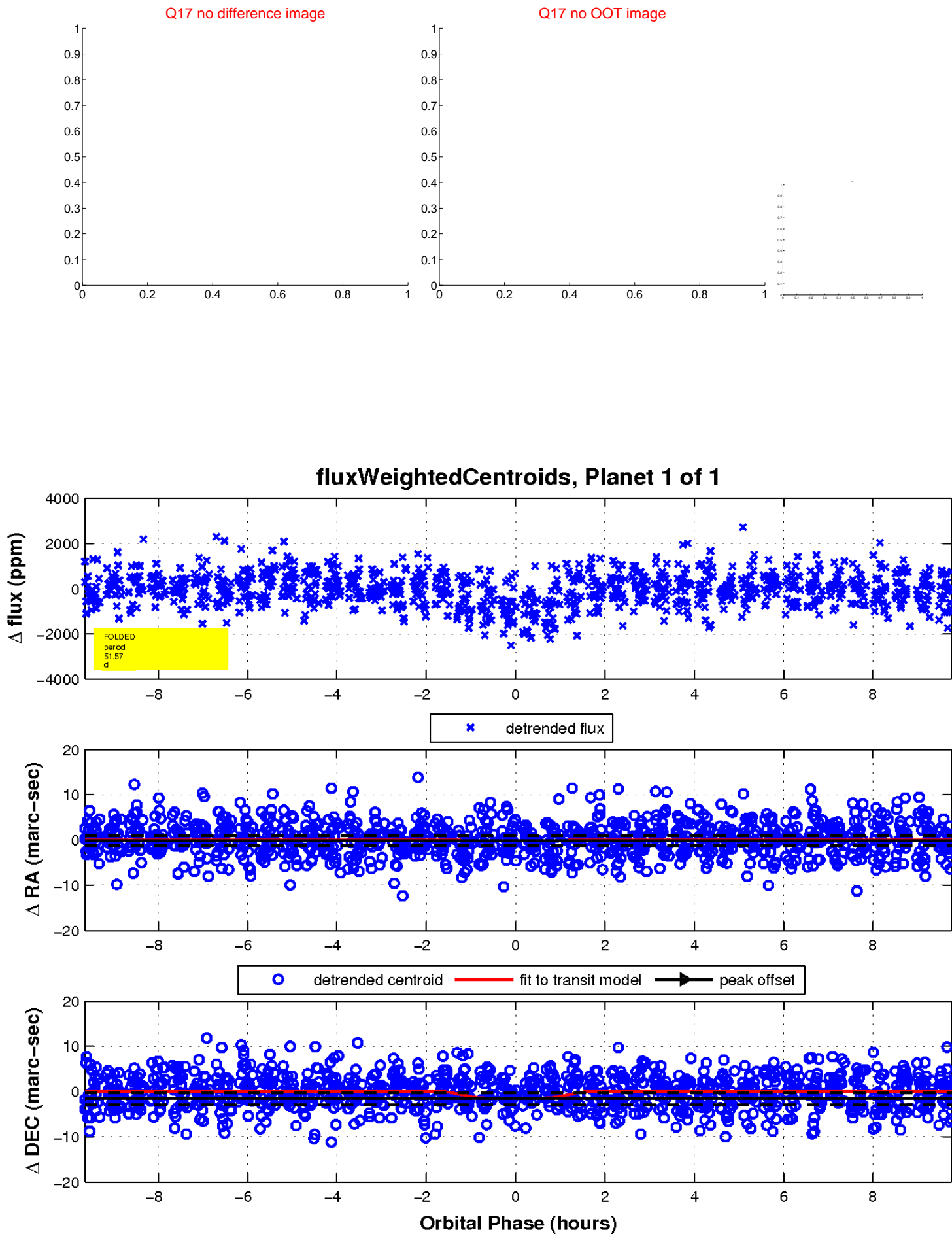
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

