

# KIC 009716262

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009716262-01	OBS	No	1.332493	132.092685	615.2	8.091	8.9	11.0	0.67	4472	2.14	362.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009716262-01	OBS	FP	0.00	1	0	0	1	LPP_DV—LPP_ALT—CENT_FEW_DIFFS—EPHEM_MATCH

**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.

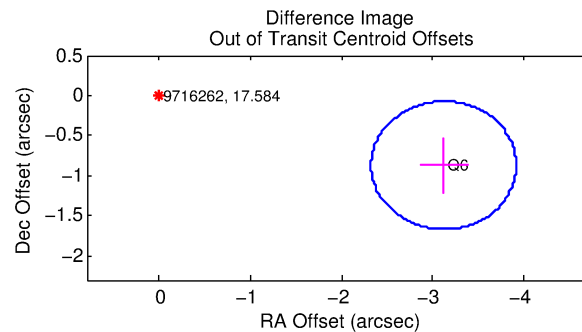
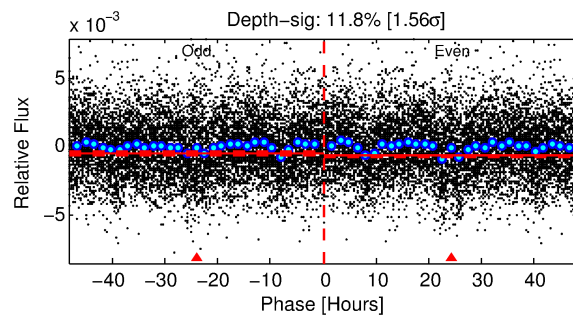
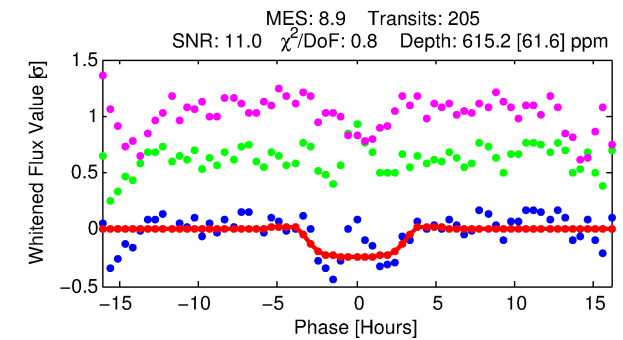
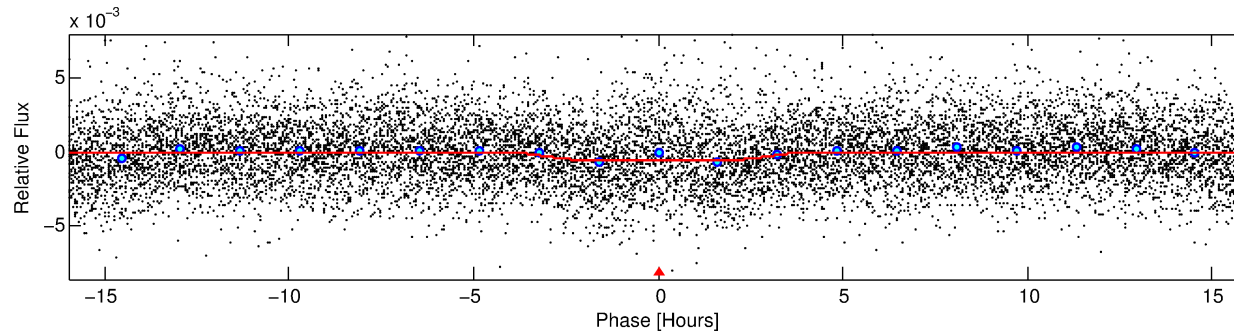
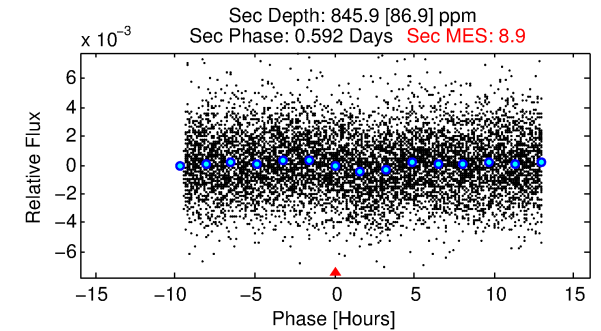
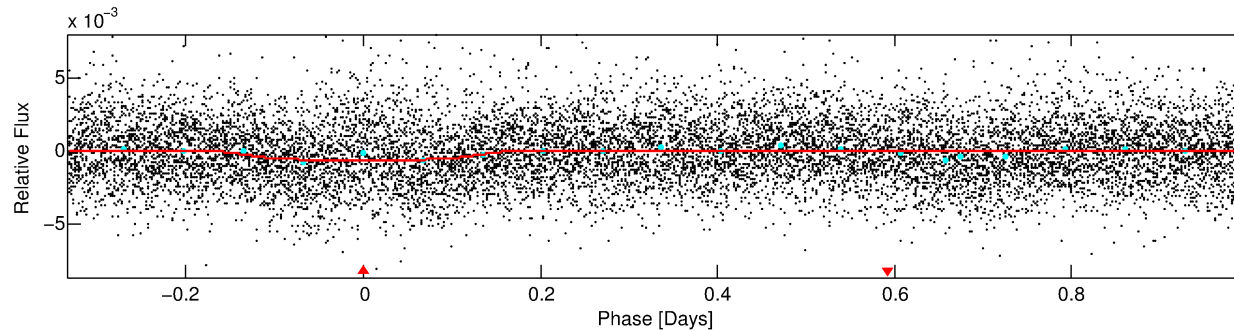
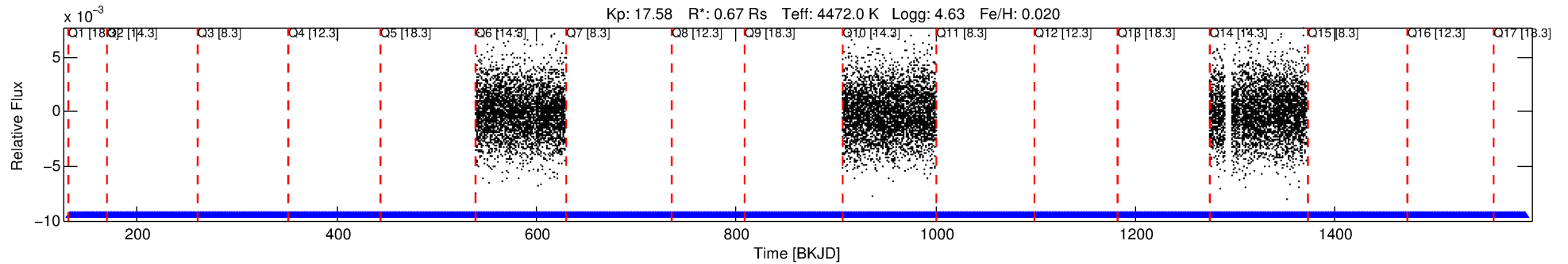
## Ephemeris Match Information For 009716262-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
009716262-01	9716262	009838414-01	9838414	1:1	1486.9	374	2	17.51	17.58	1.42	Col-Anomaly	1	2.81	3.65

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 9716262 Candidate: 1 of 1 Period: 1.332 d



## DV Fit Results:

Period = 1.33249 [0.00002] d  
Epoch = 132.0927 [0.0109] BKJD  
Rp/R\* = 0.0293 [0.0029]  
a/R\* = 1.12 [0.07]  
b = 0.93 [0.05]  
Seff = 362.58 [57.68]  
Teq = 1113 [44] K  
Rp = 2.14 [0.27] Re  
a = 0.0211 [0.0013] AU  
**Ag = 45.09 [10.70] [4.12σ]**  
**Teff = 4458 [295] K [11.22σ]**

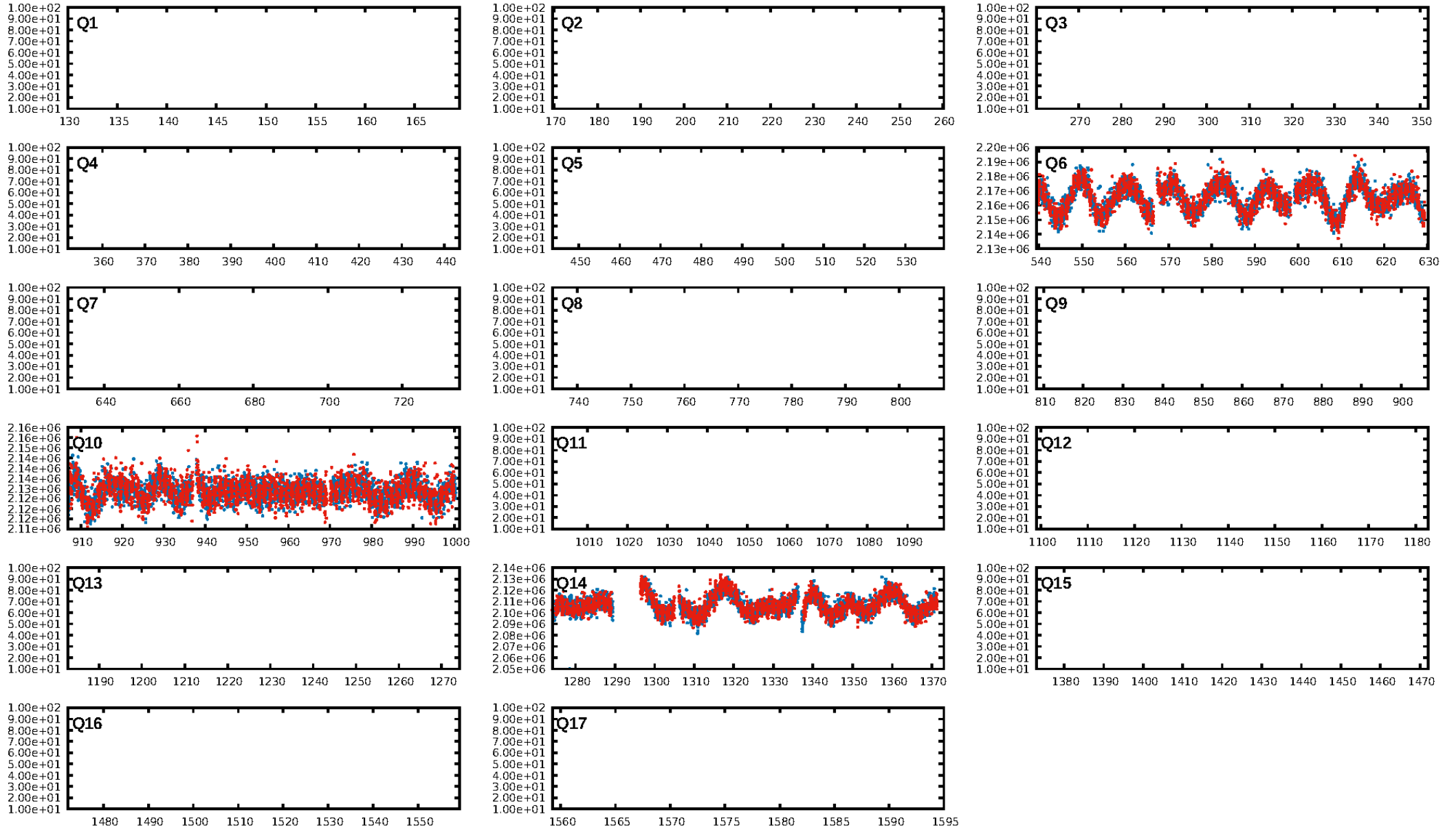
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 4.60e-10**  
RollingBand-fgt: 1.00 [205/205]  
GhostDiagnostic-chr: -3.815  
**Centroid-sig: 0.1%**  
Centroid-so: 2.329 arcsec [2.45σ]  
**OotOffset-rm: 3.244 arcsec [12.19σ]**  
**KicOffset-rm: 3.070 arcsec [11.59σ]**  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [3/3]

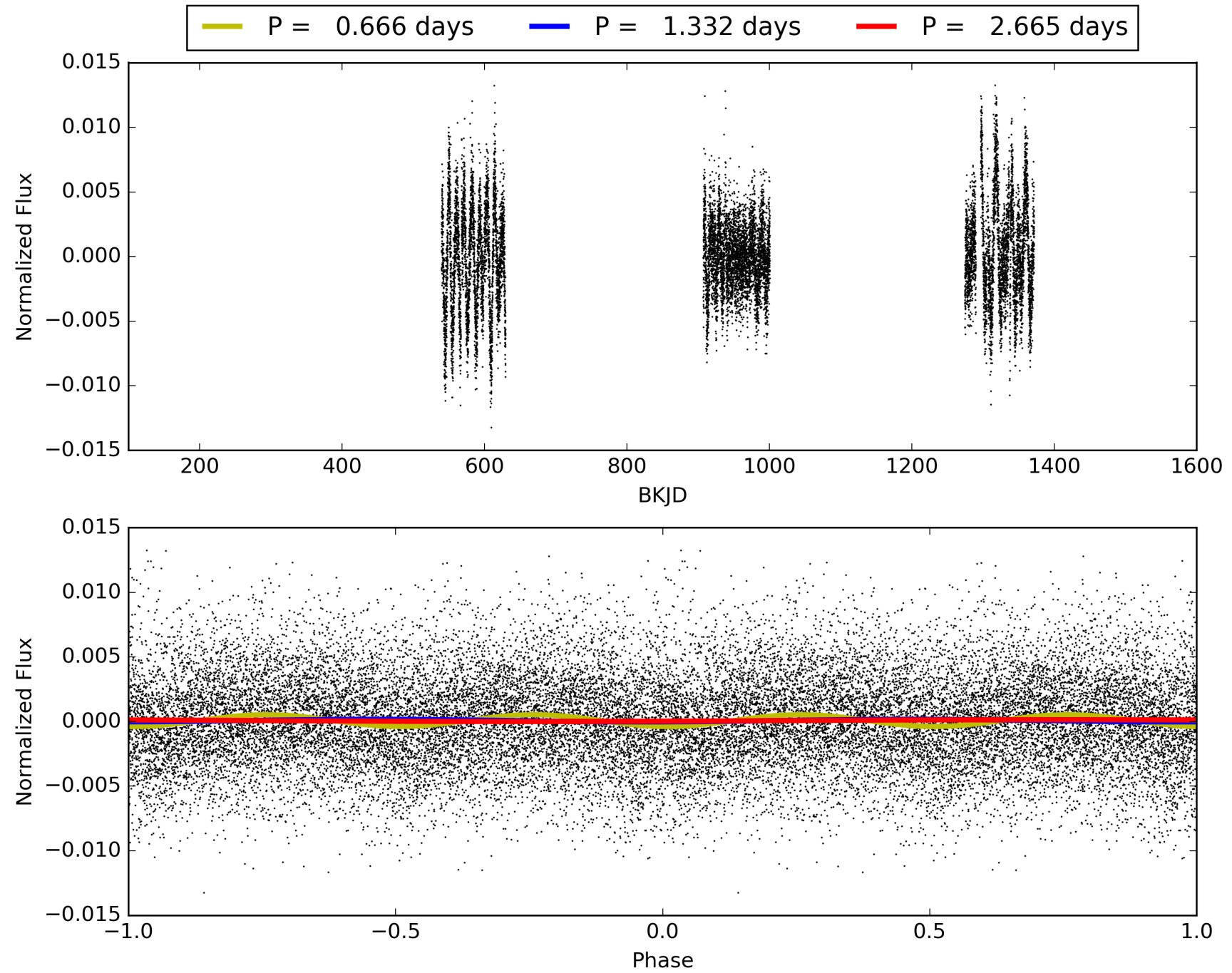
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:36:09 Z

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

# TCE 009716262-01, PDC Light Curves

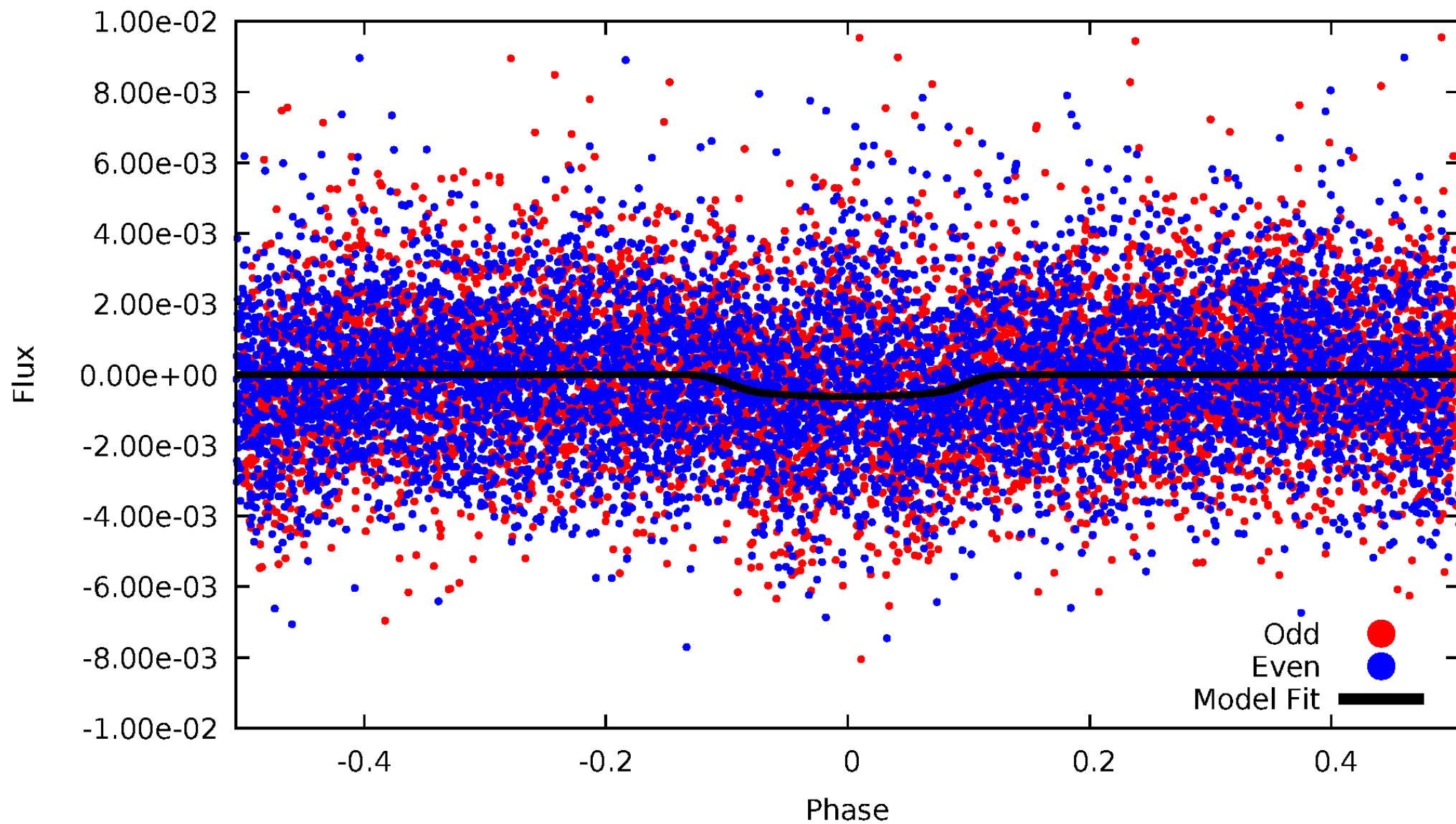


TCE 009716262-01



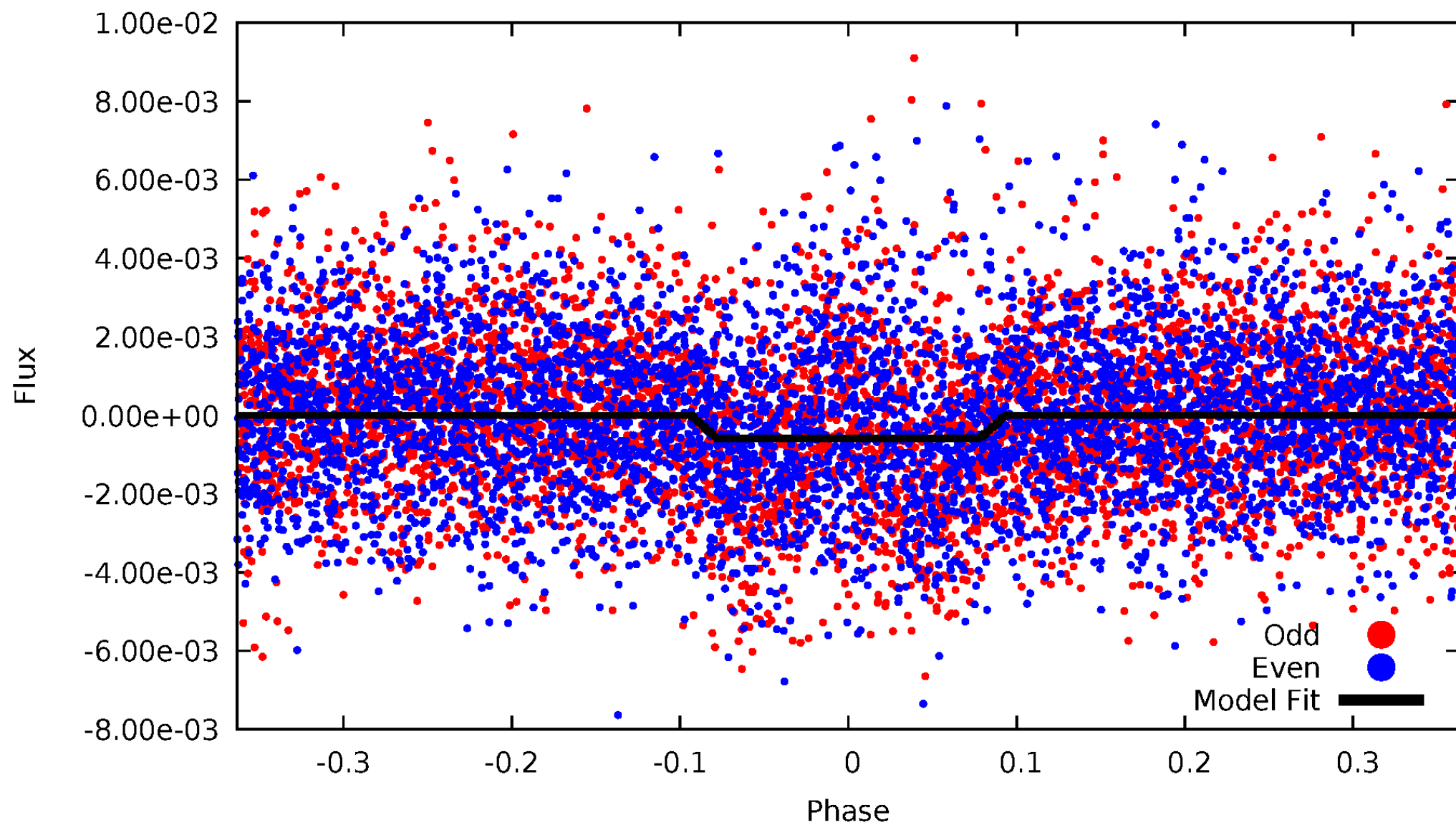
# DV Odd/Even

TCE 009716262-01



# ALT Odd/Even

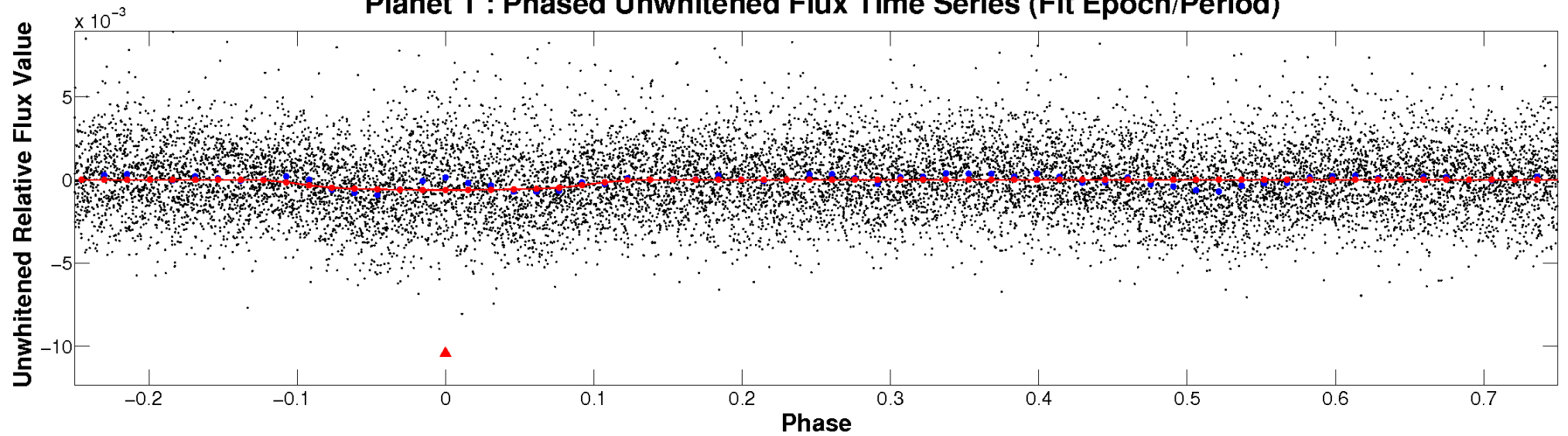
TCE 009716262-01



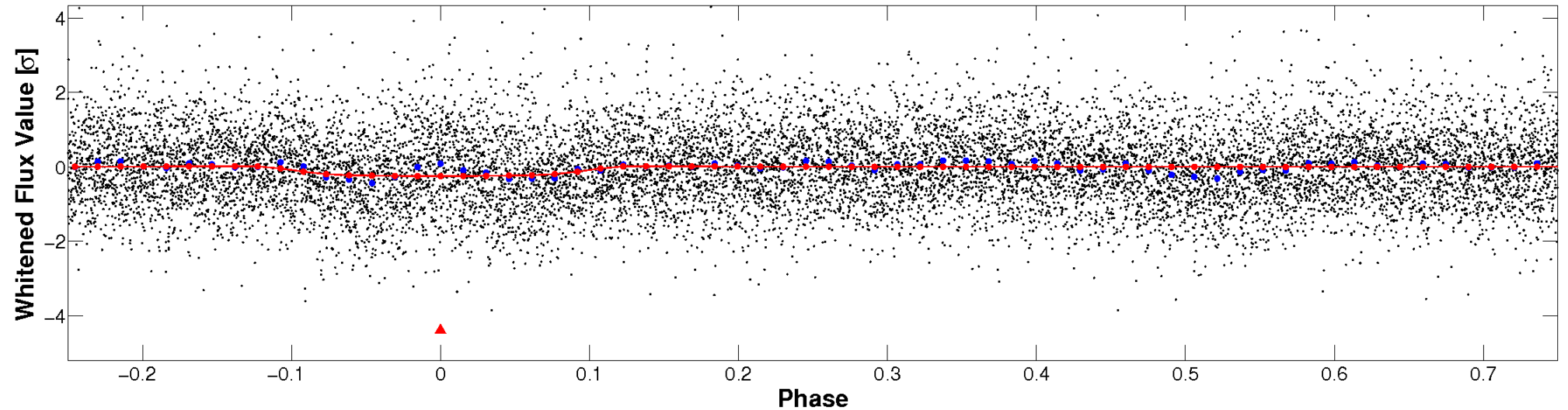


# Non-Whitened Vs. Whitened Light Curve

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

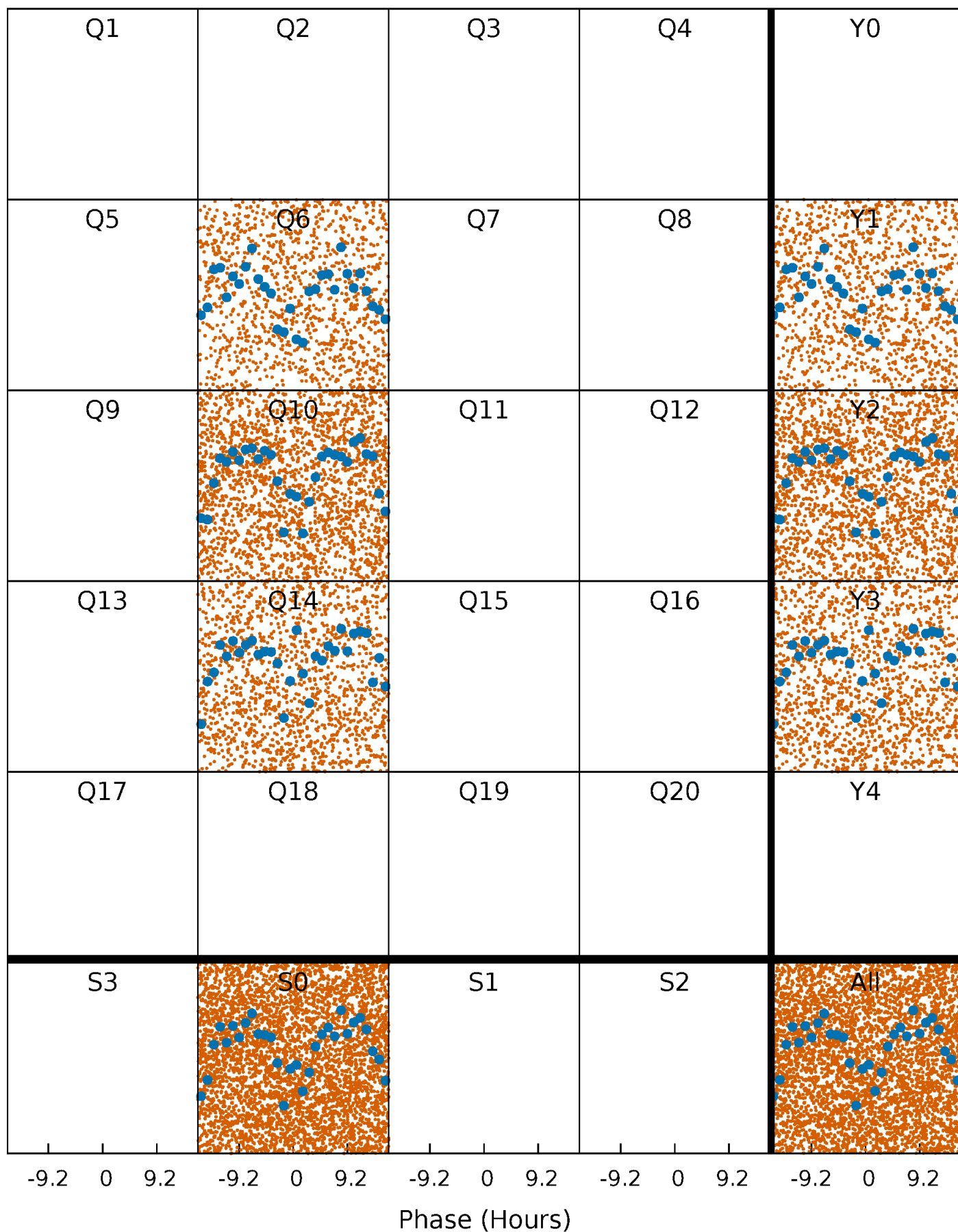


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

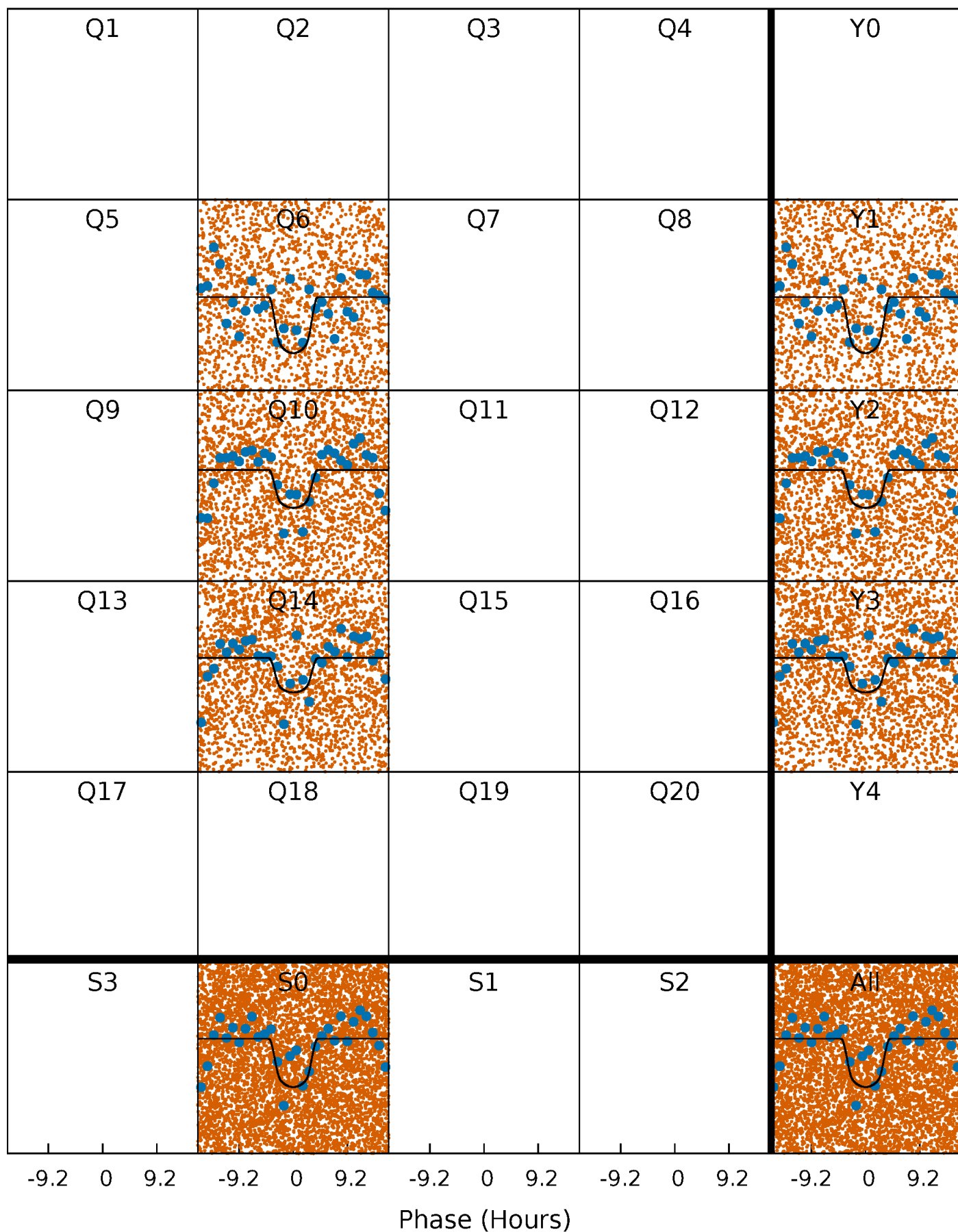
TCE 009716262-01 P= 1.332493 Days  $T_0=132.092685$  (BKJD)





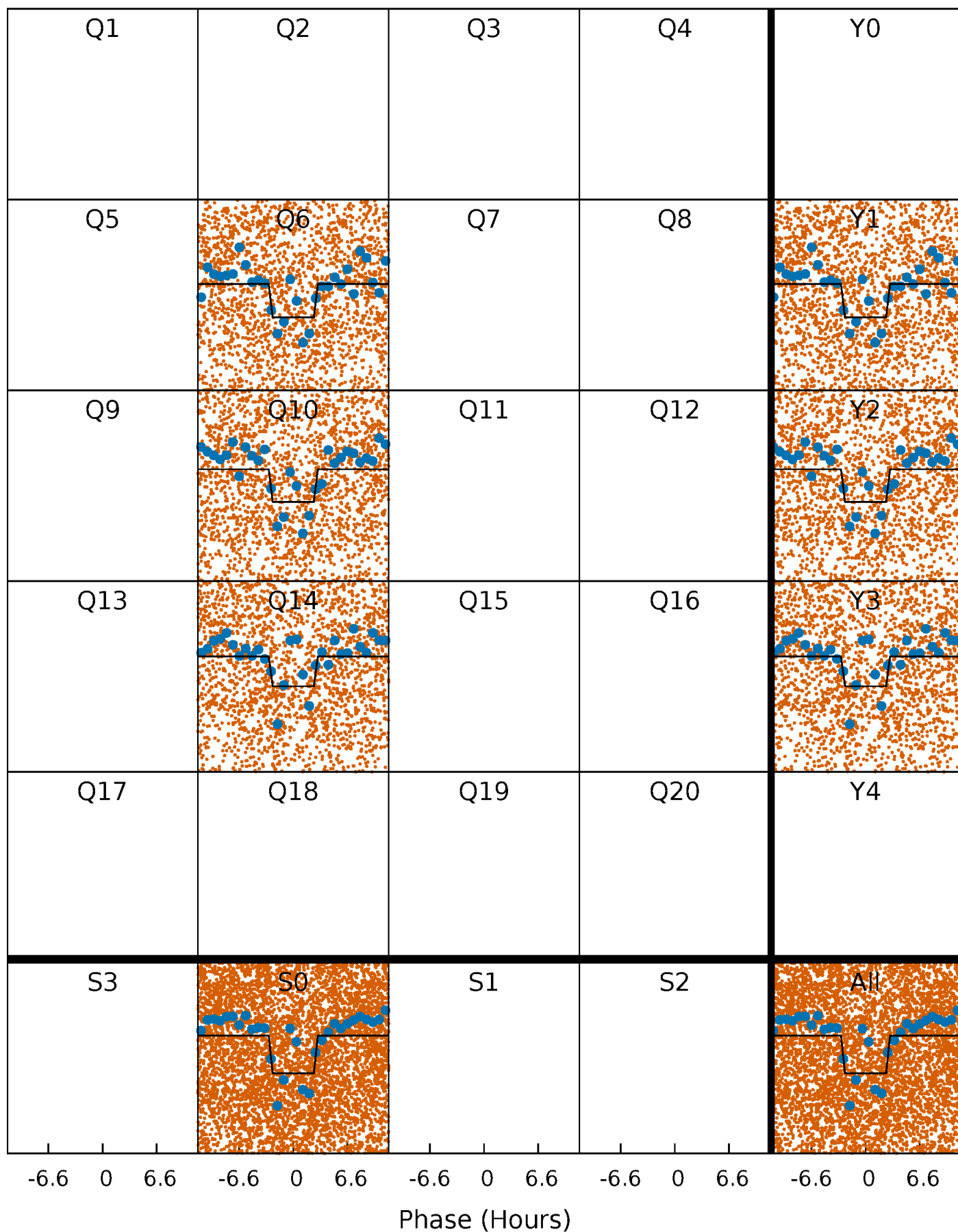
# DV Quarter-Phased Transit Curves

TCE 009716262-01 P= 1.332493 Days  $T_0=132.092685$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

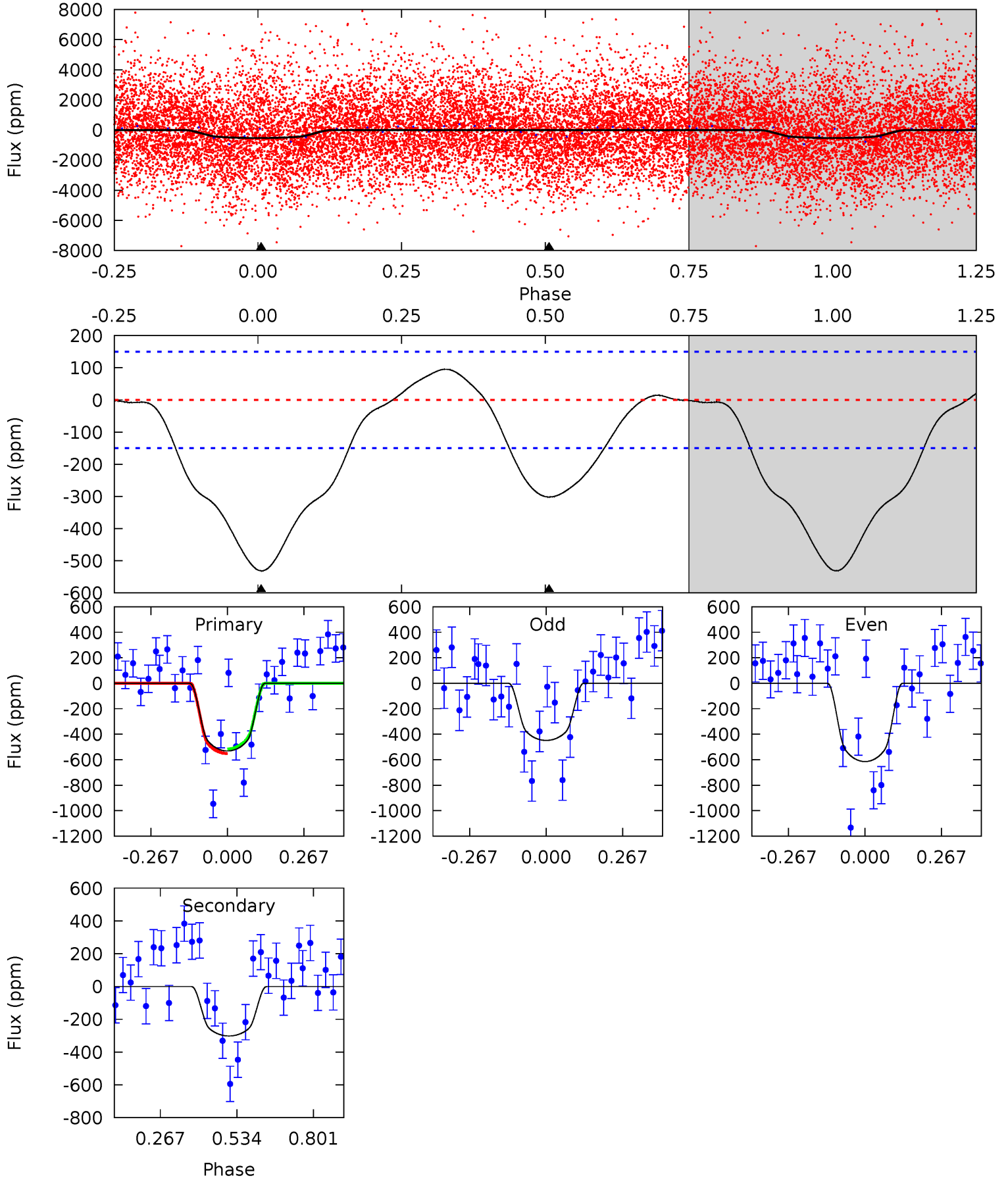
TCE 009716262-01   P= 1.332562 Days    $T_0=132.055669$  (BKJD)



# DV Model-Shift Uniqueness Test

009716262-01, P = 1.332493 Days, E = 132.092685 Days

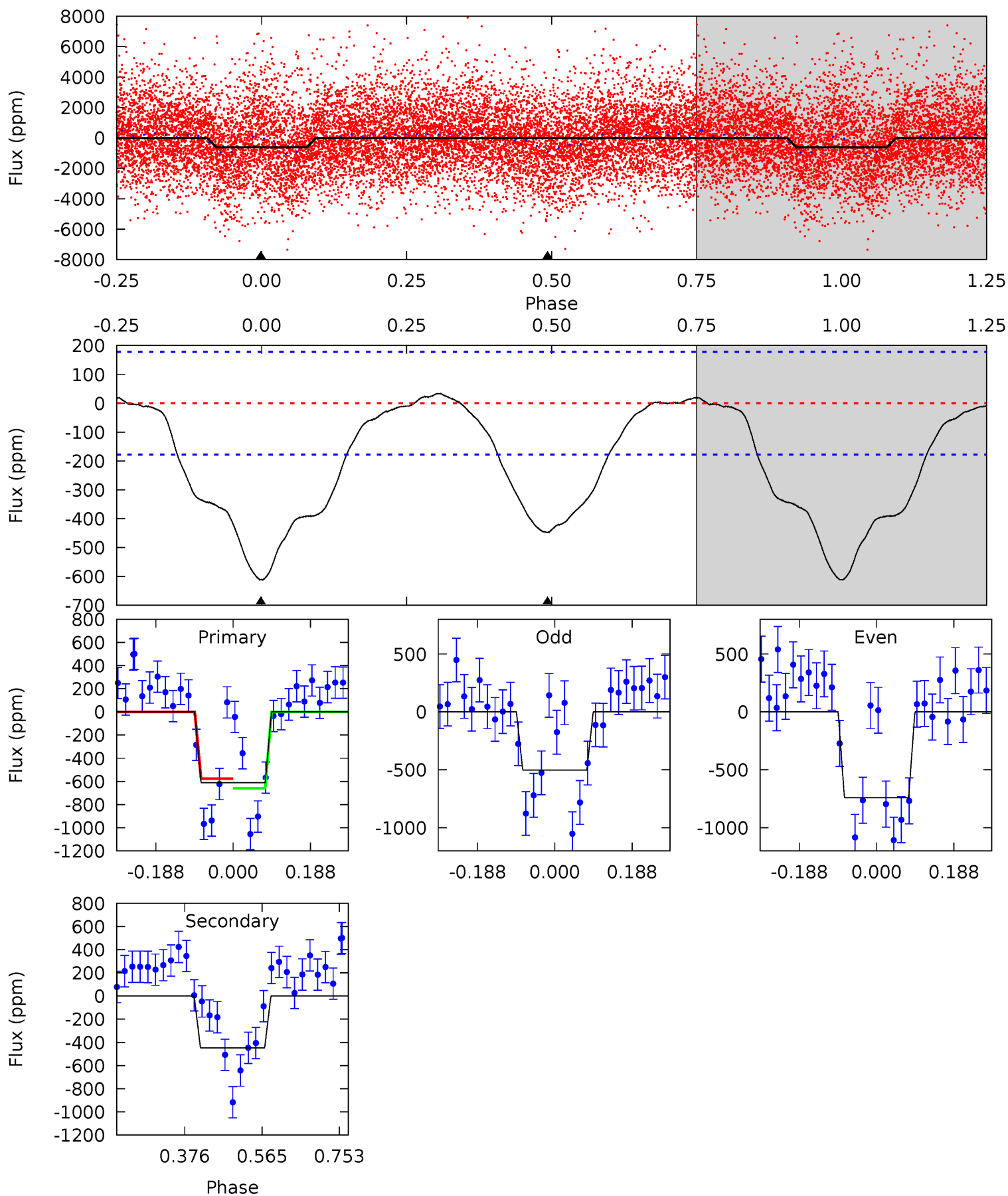
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.4	8.77	0	0	4.35	1.11	0.64	15.4	15.4	8.77	8.77	2.41	0.78	0.15	0.52



# Alt Model-Shift Uniqueness Test

009716262-01, P = 1.332562 Days, E = 132.055669 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
15.2	11.1	0	0	4.43	1.32	0.51	15.2	15.2	11.1	11.1	2.98	0.77	0.05	1.03



### Stellar Parameters For KIC 009716262

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4472^{+156}_{-156}$	$4.632^{+0.030}_{-0.036}$	$0.020^{+0.250}_{-0.300}$	$0.670^{+0.048}_{-0.053}$	$0.701^{+0.054}_{-0.066}$	$3.279^{+0.530}_{-0.457}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+7%/-8%	+8%/-9%	+16%/-14%
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 009716262-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-302 \pm 34$	$2.17^{+0.25}_{-0.24}$	$1559^{+62}_{-58}$	$3693^{+179}_{-176}$	$16^{+4}_{-3}$
Alt.	$-448 \pm 40$	$1.76^{+0.25}_{-0.22}$	$1557^{+62}_{-60}$	$4248^{+289}_{-260}$	$35^{+11}_{-9}$

$T_{\text{max}}$  = 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

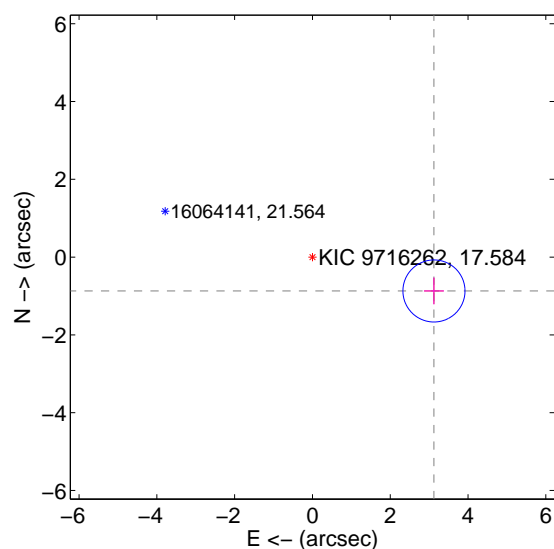
Supplemental centroid analysis for 009716262-01. Kepler magnitude: 17.58. Transit SNR 11.01

There are 0 quarters with good PRF difference image offsets

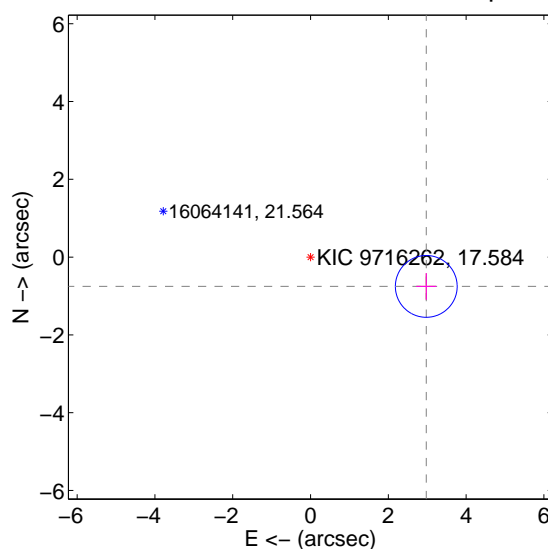
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.244 \pm 0.266$	12.19	$-3.125 \pm 0.259$	$-0.871 \pm 0.344$
PRF-fit source offset from KIC position	$3.070 \pm 0.265$	11.59	$-2.977 \pm 0.259$	$-0.754 \pm 0.344$
photometric centroid source offset	$2.33 \pm 0.95$	2.45	$1.40 \pm 0.96$	$1.86 \pm 0.95$

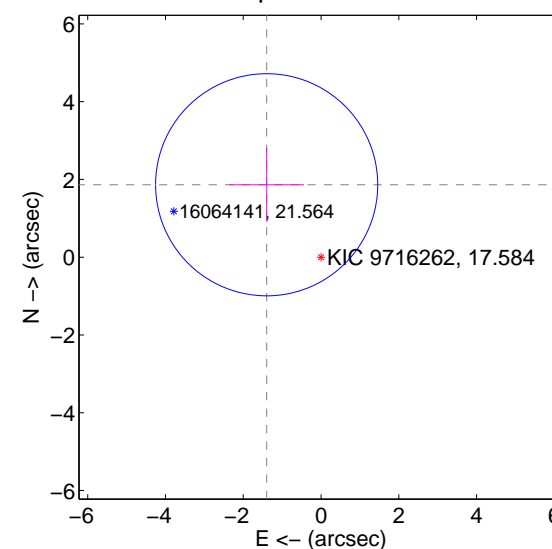
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



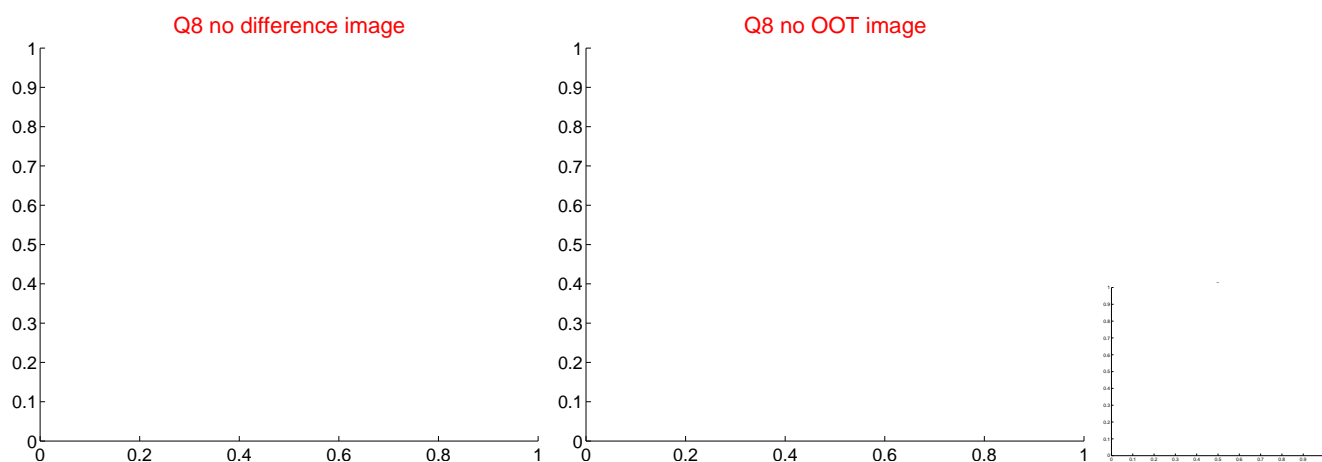
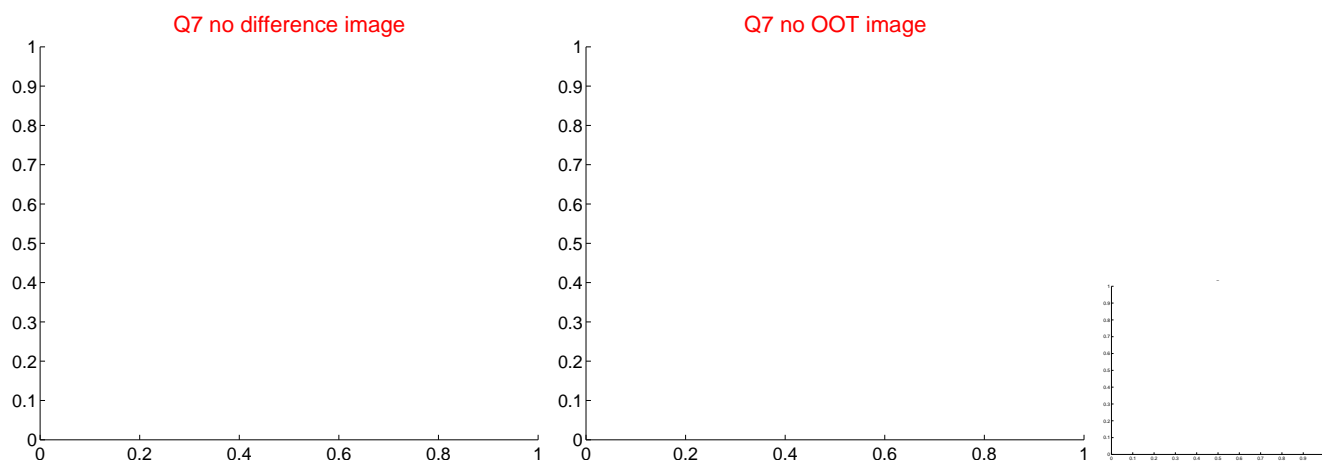
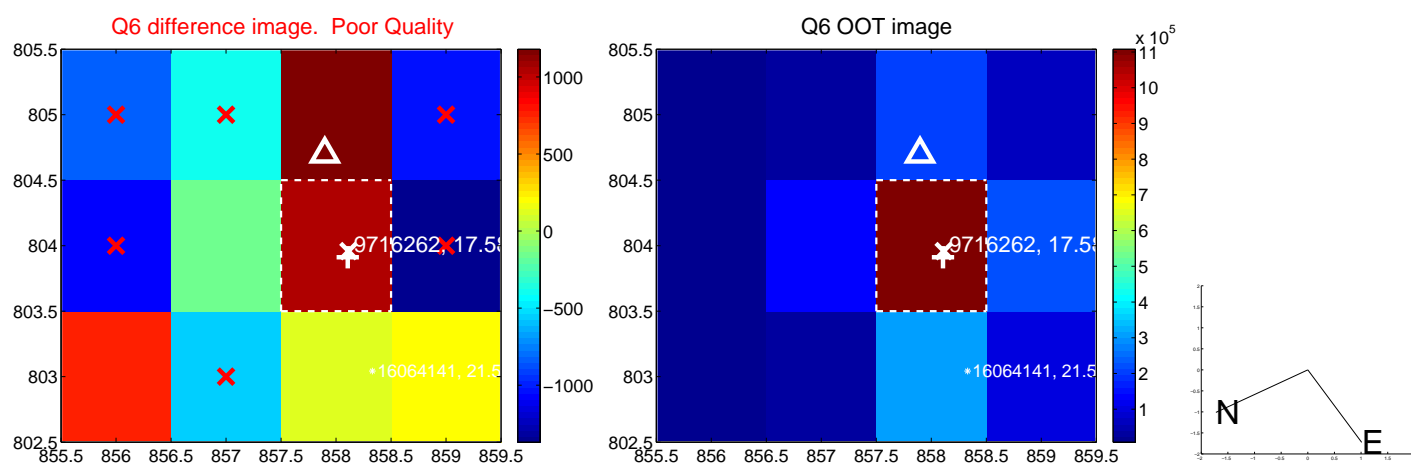
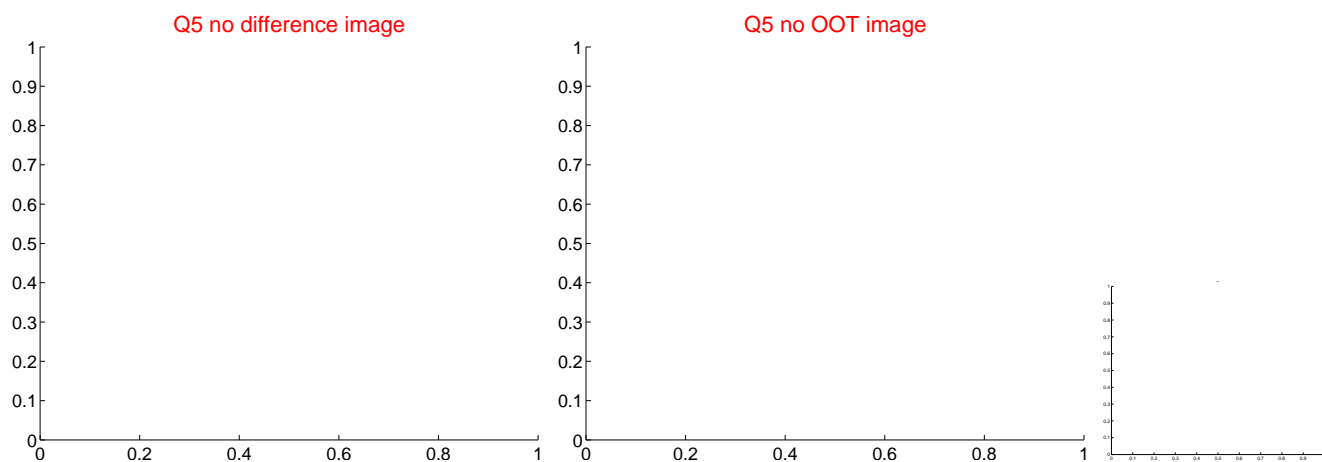
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



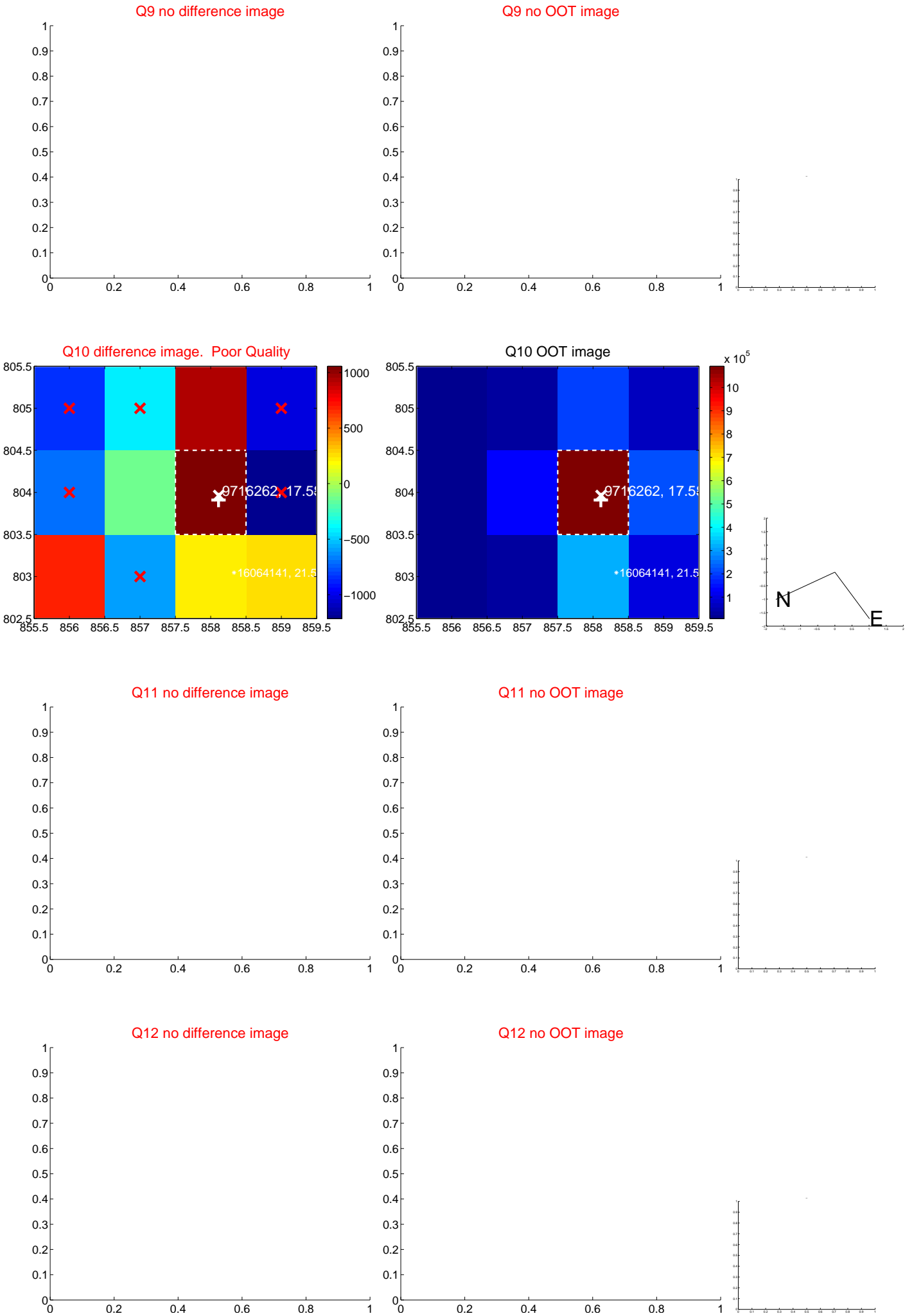
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



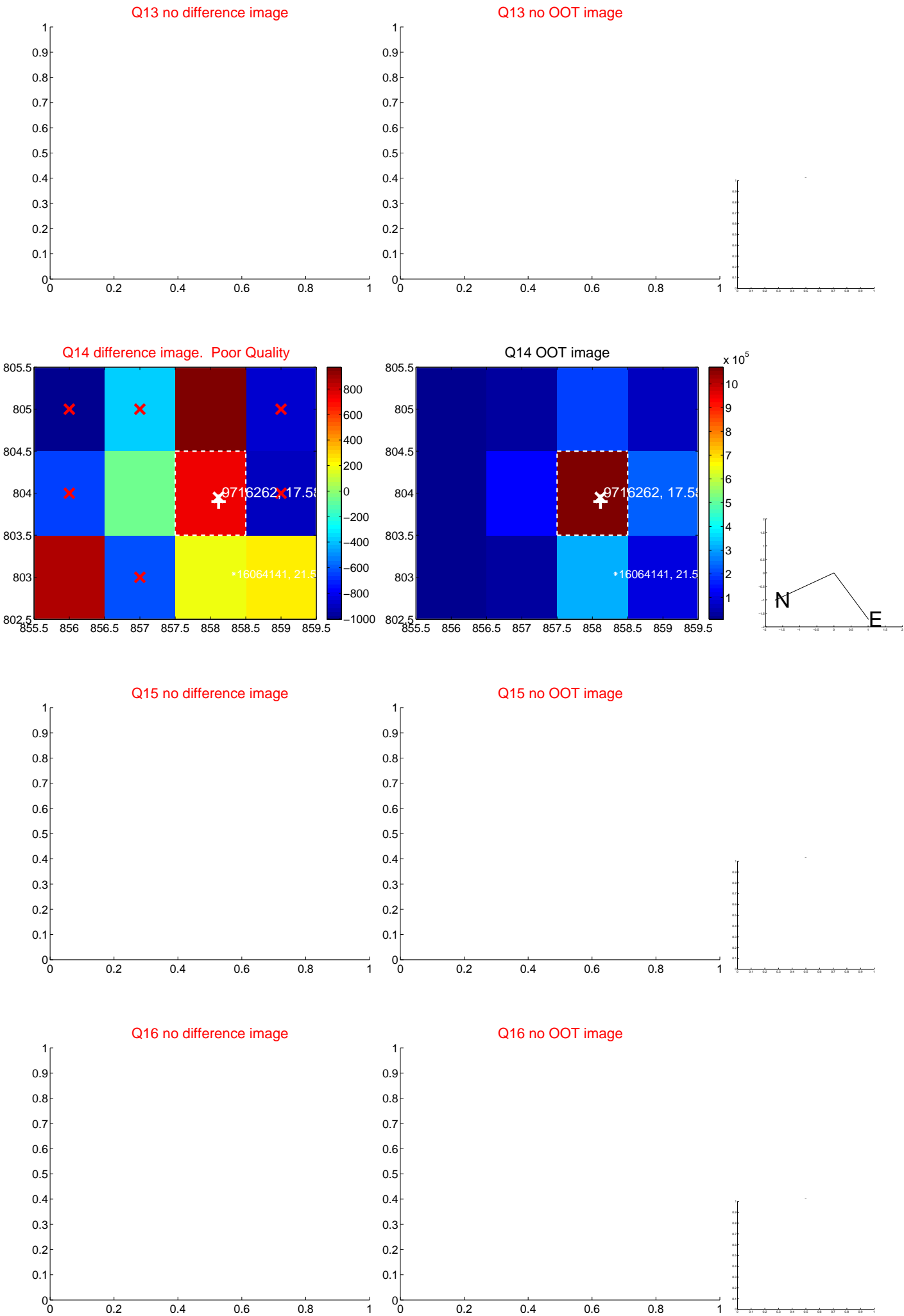
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



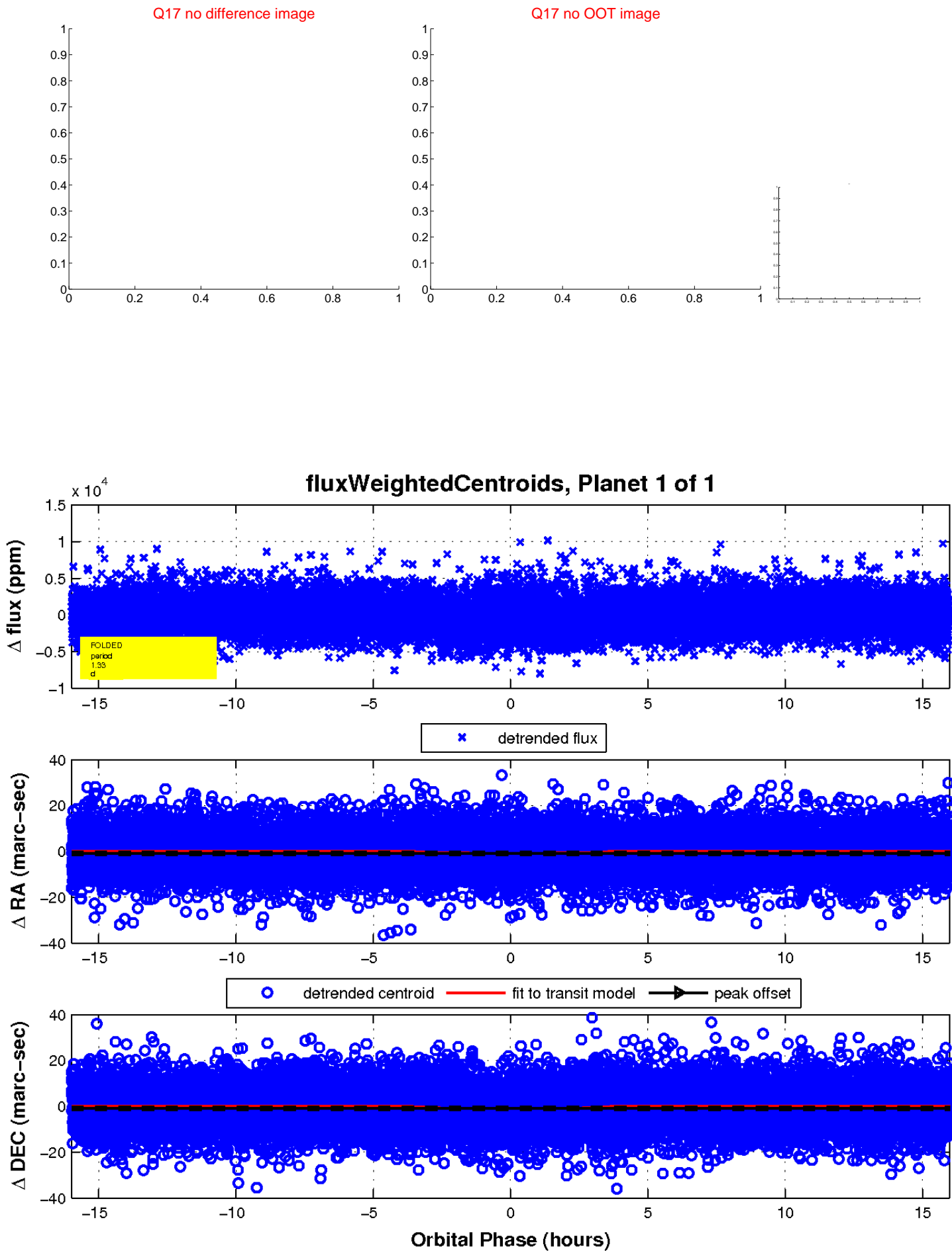
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UKIRT Image

Declination

