

# KIC 012418612

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012418612-01	OBS	No	294.793272	185.684071	111.9	12.468	7.4	6.6	2.68	6032	3.16	9.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012418612-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—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.

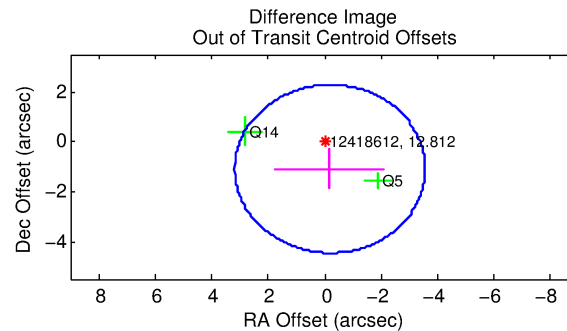
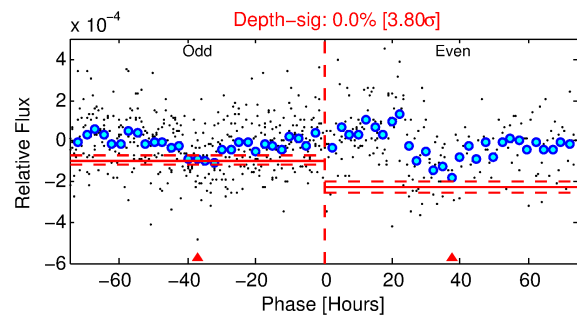
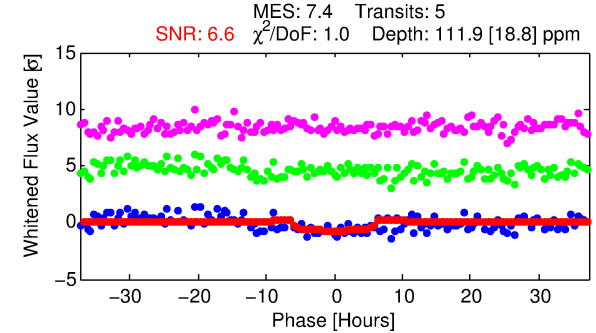
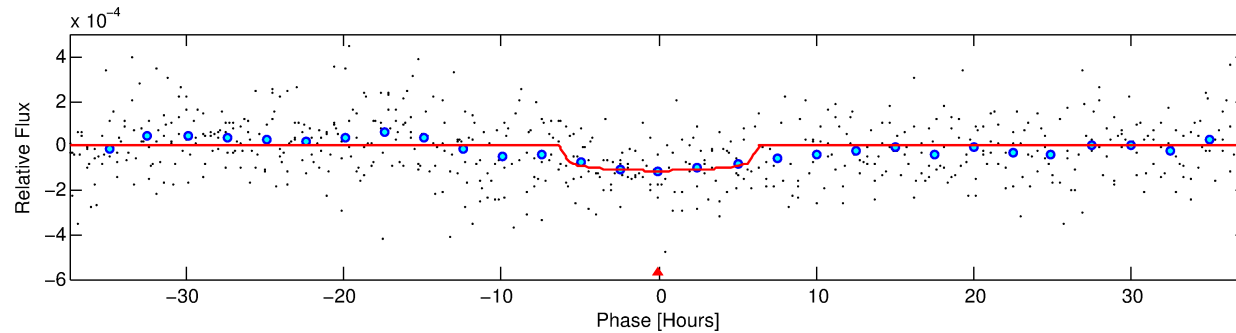
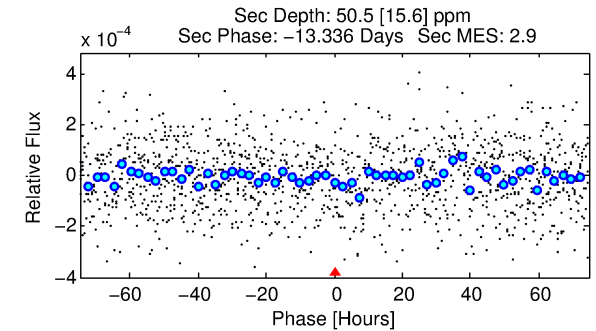
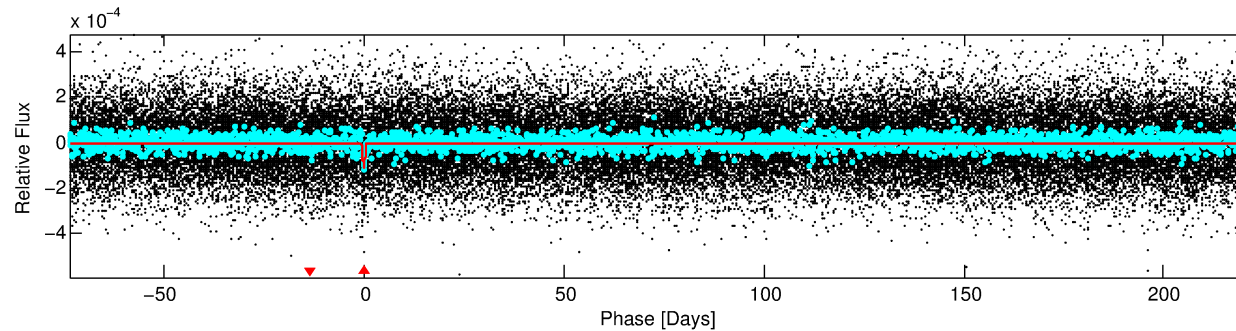
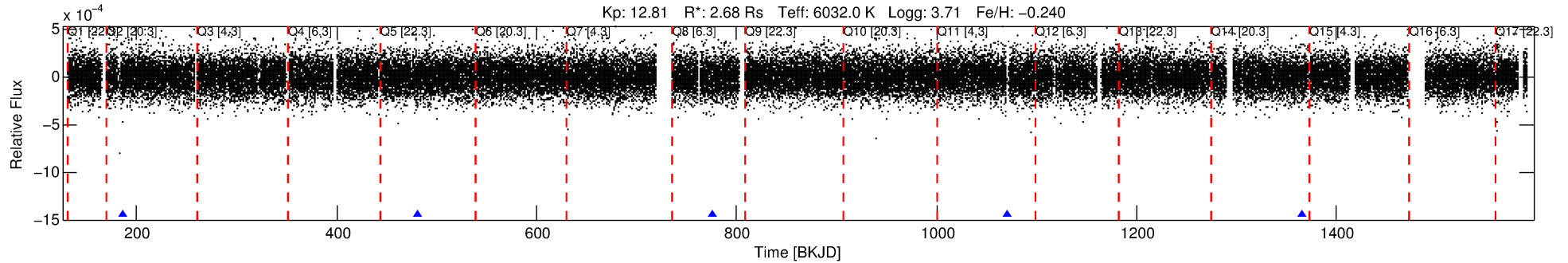
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012418612-01

No Significant Match Found

# DV One-Page Summary

KIC: 12418612 Candidate: 1 of 1 Period: 294.793 d



## DV Fit Results:

Period = 294.79327 [0.00955] d  
Epoch = 185.6841 [0.0232] BKJD  
Rp/R\* = 0.0108 [0.0046]  
a/R\* = 107.61 [232.34]  
b = 0.82 [0.88]  
Seff = 9.35 [5.45]  
Teq = 446 [65] K  
Rp = 3.16 [1.77] Re  
a = 0.9550 [0.3383] AU  
Ag = 2534.33 [2714.37] [0.93σ]  
Teffp = 4892 [1118] K [3.97σ]

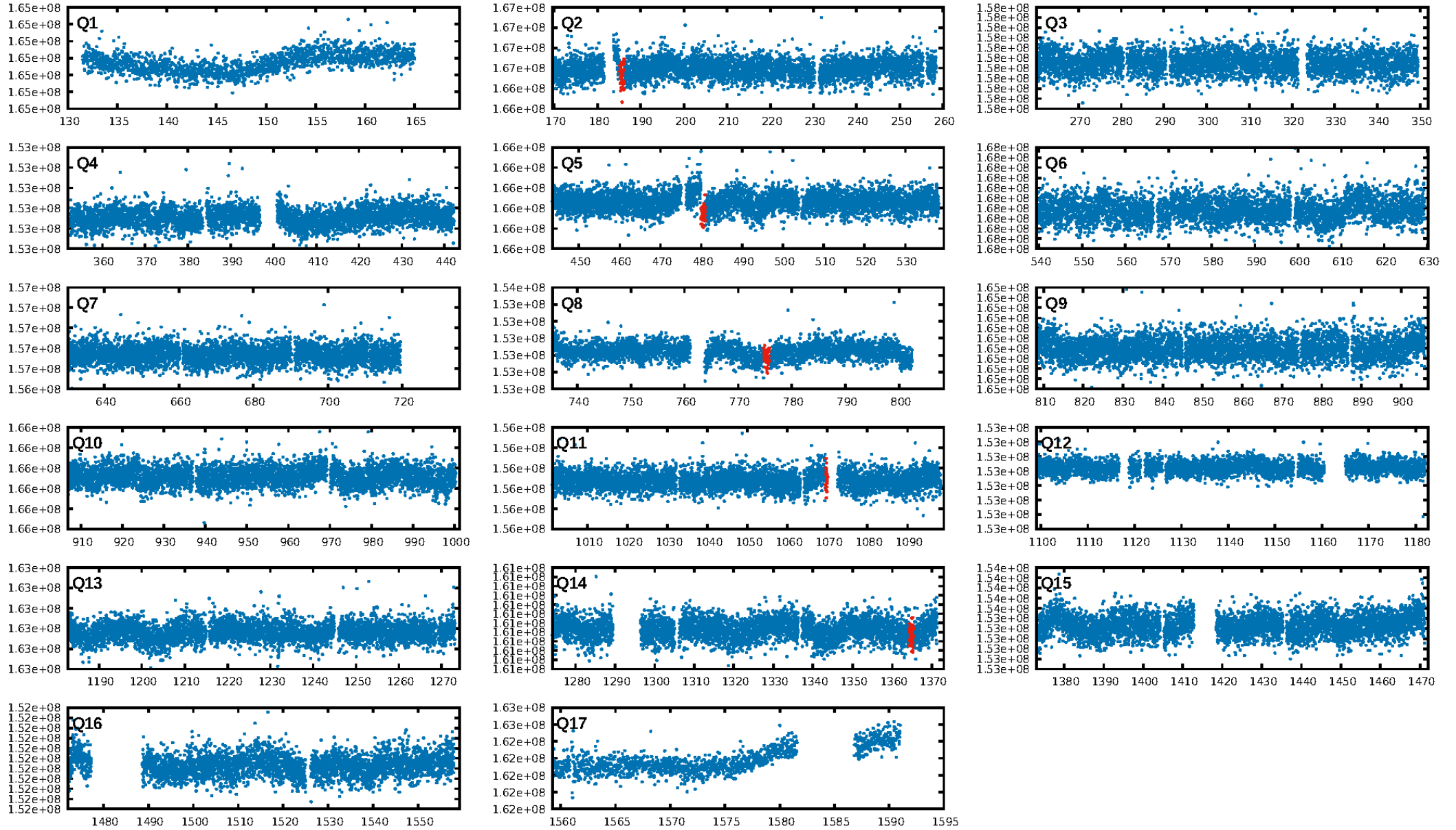
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 12.0%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.17e-12**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -1.206  
Centroid-sig: 21.4%  
Centroid-so: 2.634 arcsec [1.24σ]  
OotOffset-rm: 1.107 arcsec [0.99σ]  
KicOffset-rm: 1.042 arcsec [0.89σ]  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [4/4]

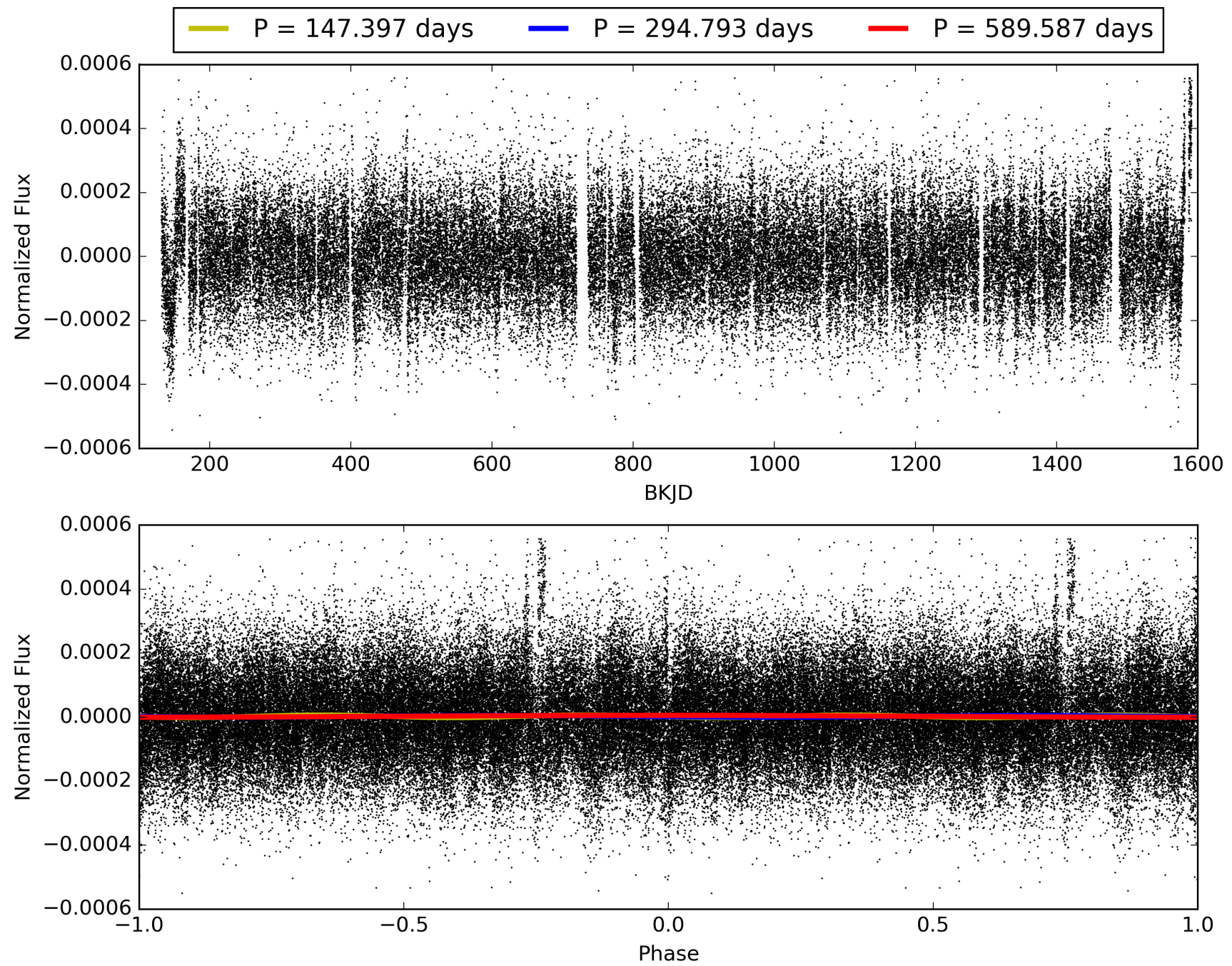
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 22:58:11 Z

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

# TCE 012418612-01, PDC Light Curves

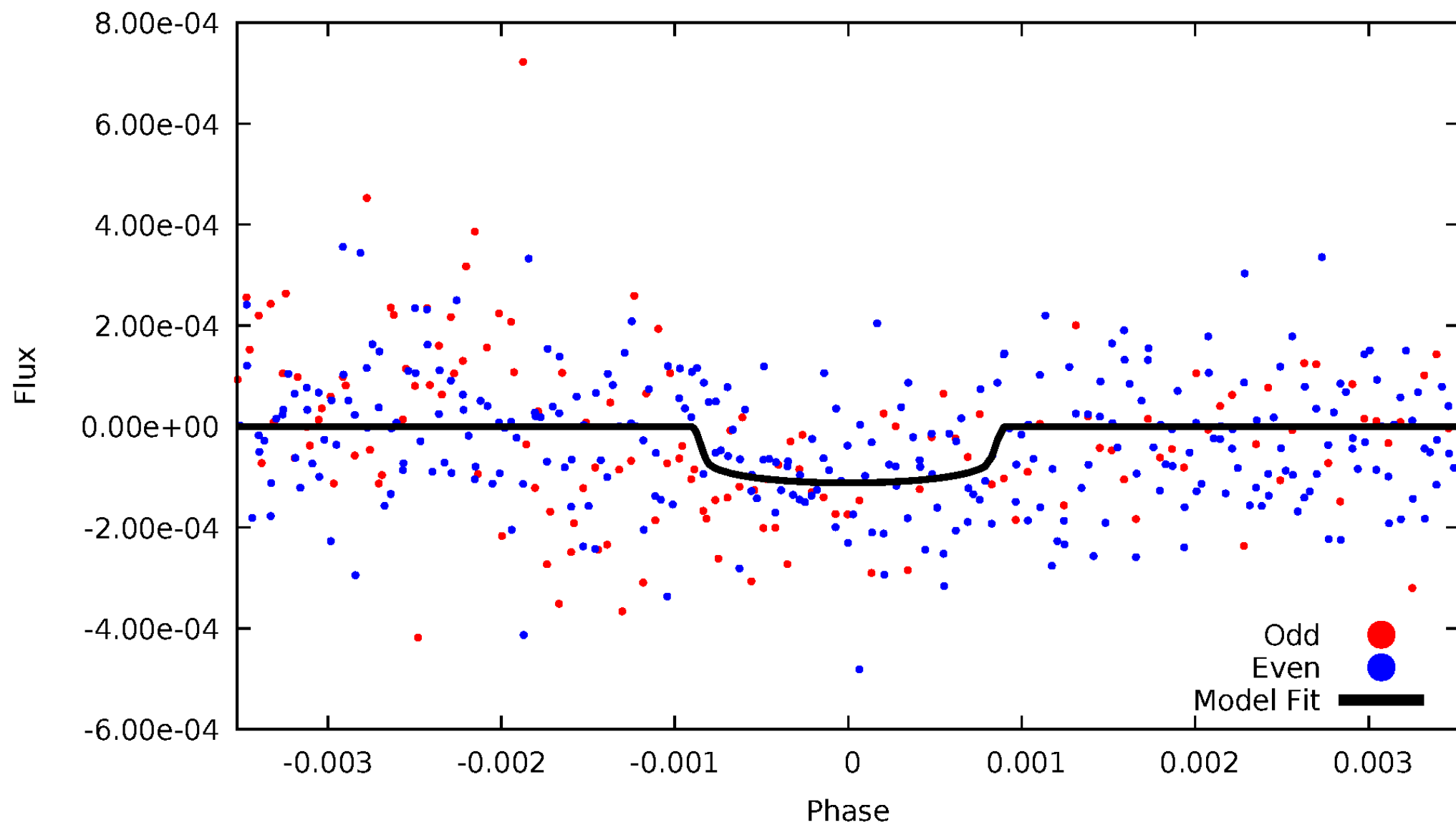


# TCE 012418612-01



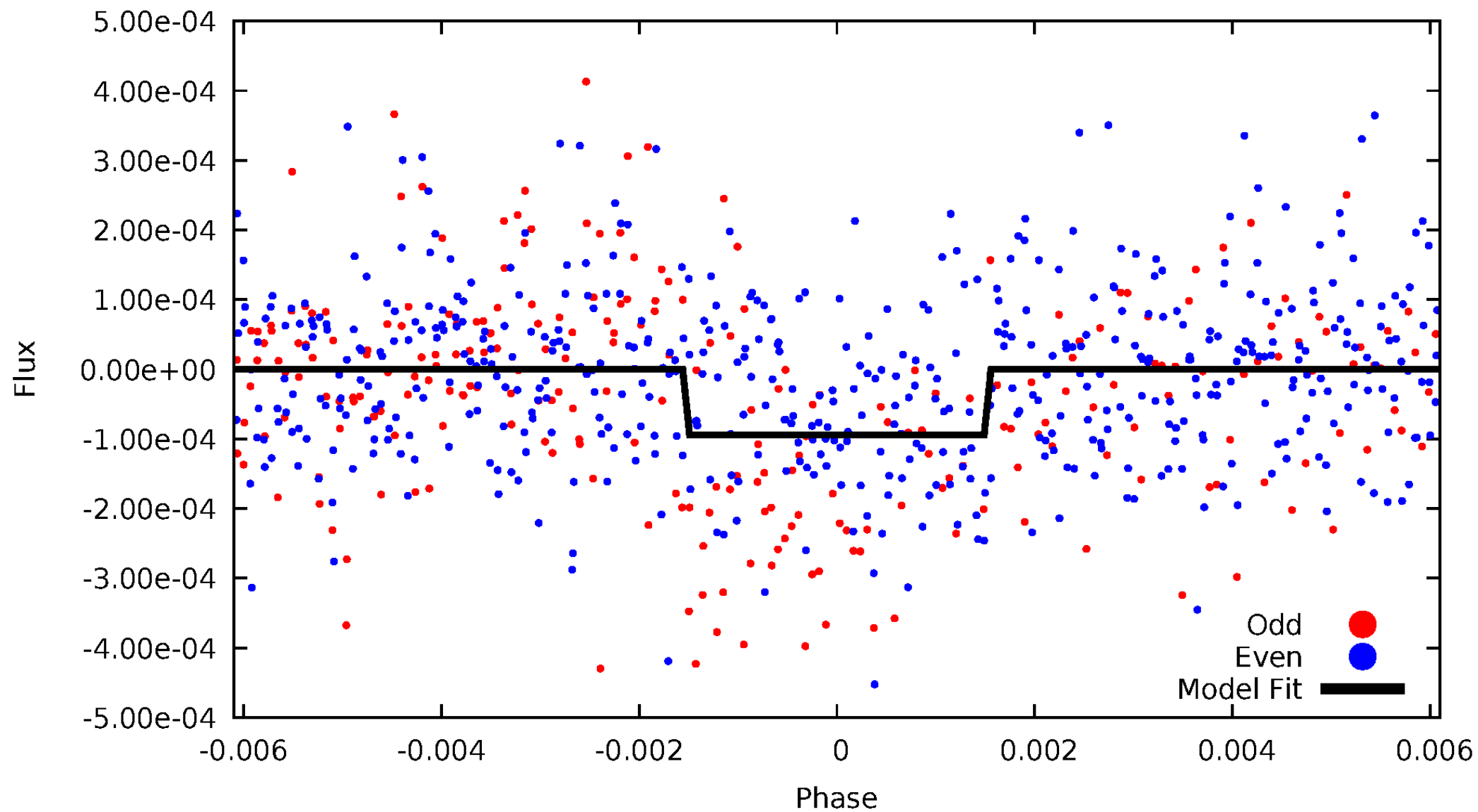
# DV Odd/Even

TCE 012418612-01



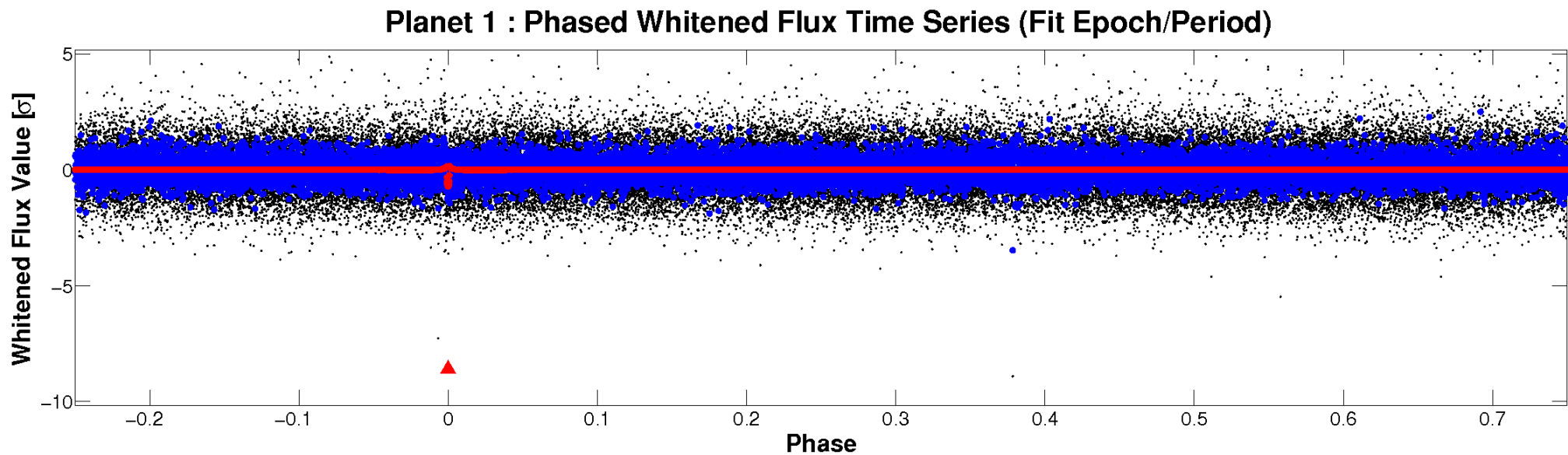
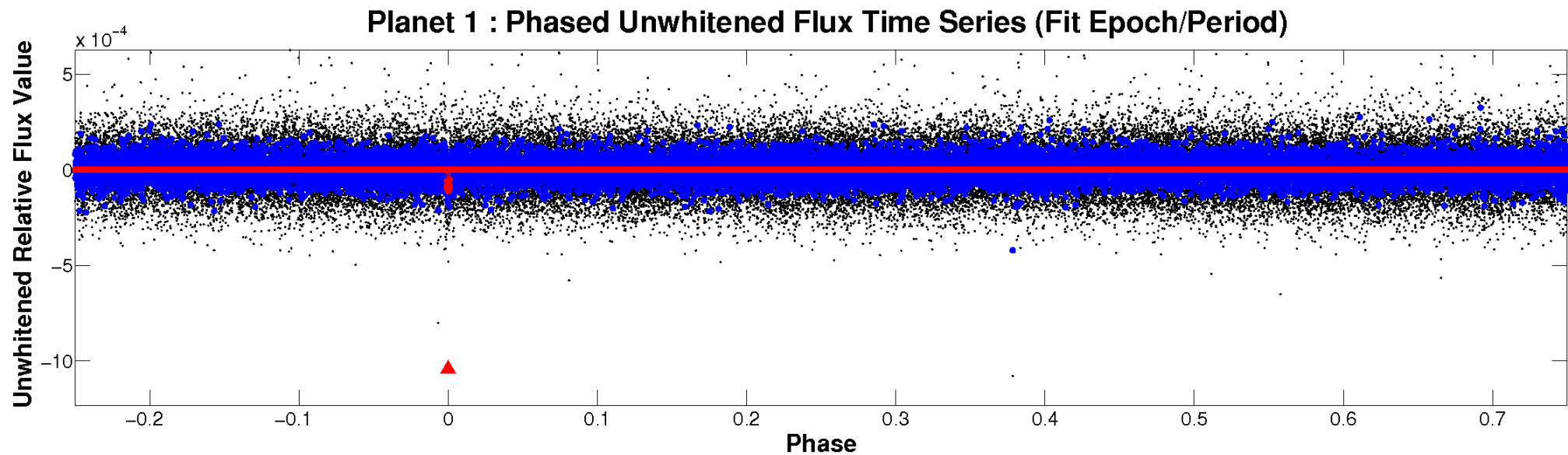
# ALT Odd/Even

TCE 012418612-01





# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

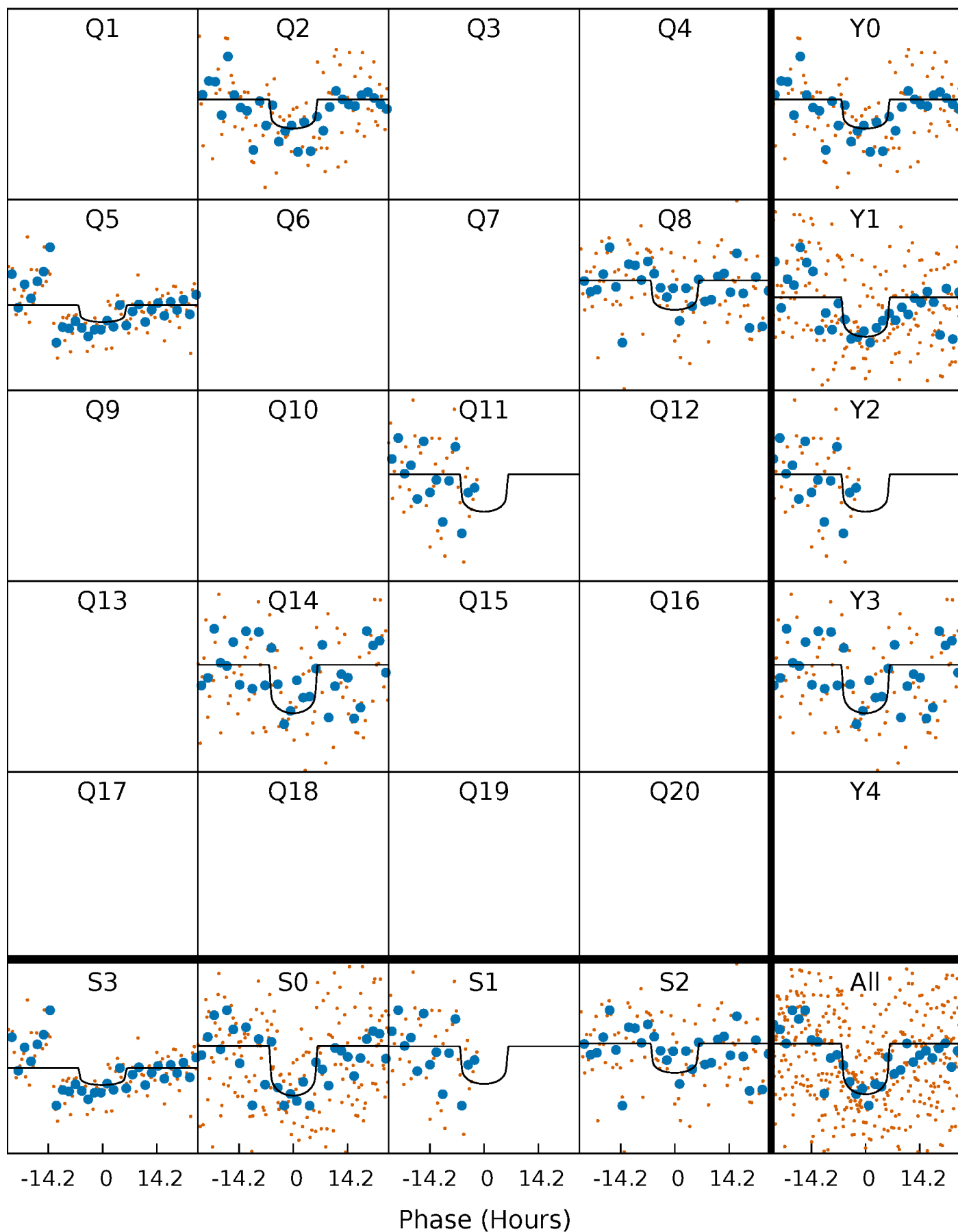
TCE 012418612-01 P=294.793272 Days  $T_0=185.684071$  (BKJD)





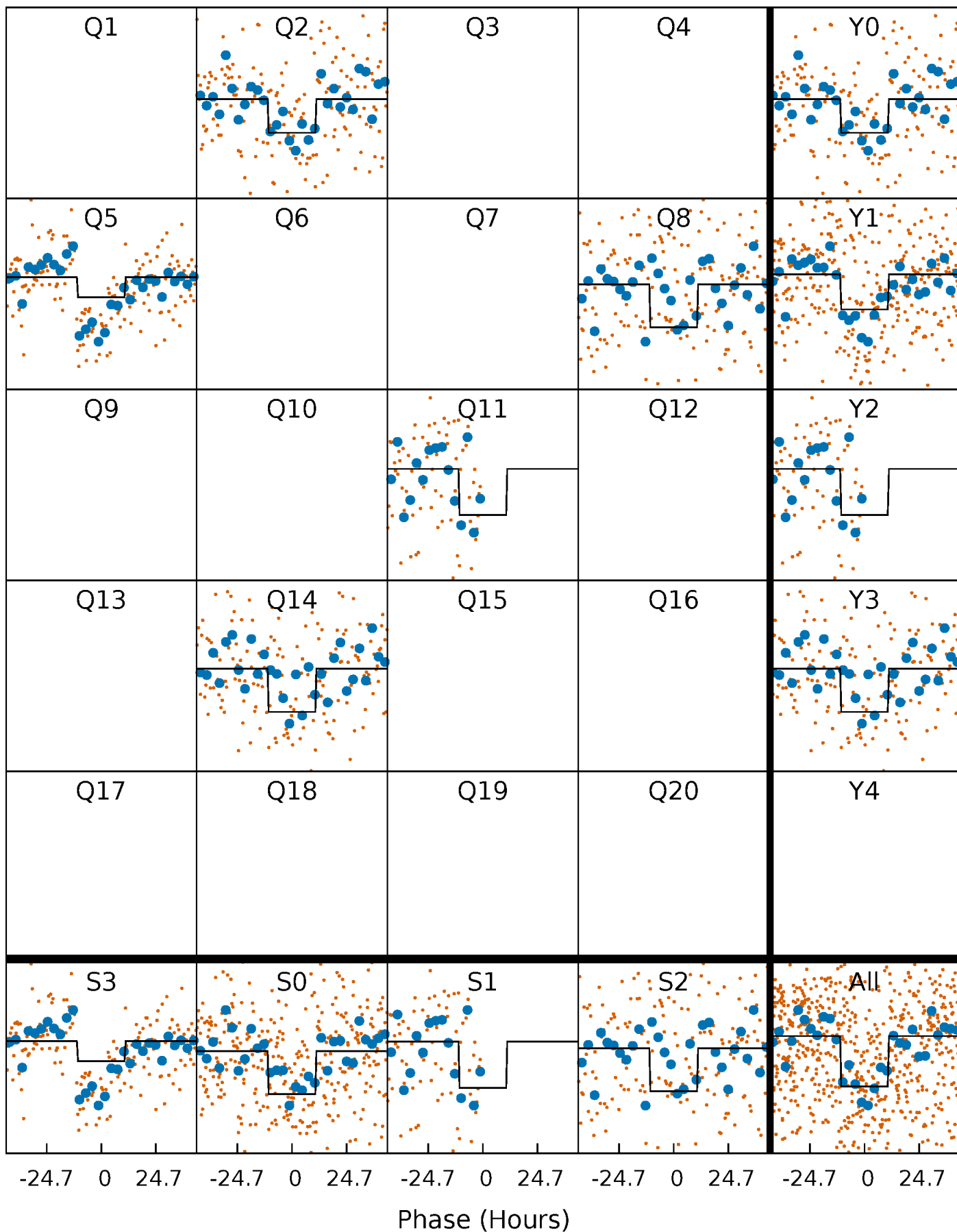
# DV Quarter-Phased Transit Curves

TCE 012418612-01 P=294.793272 Days  $T_0=185.684071$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

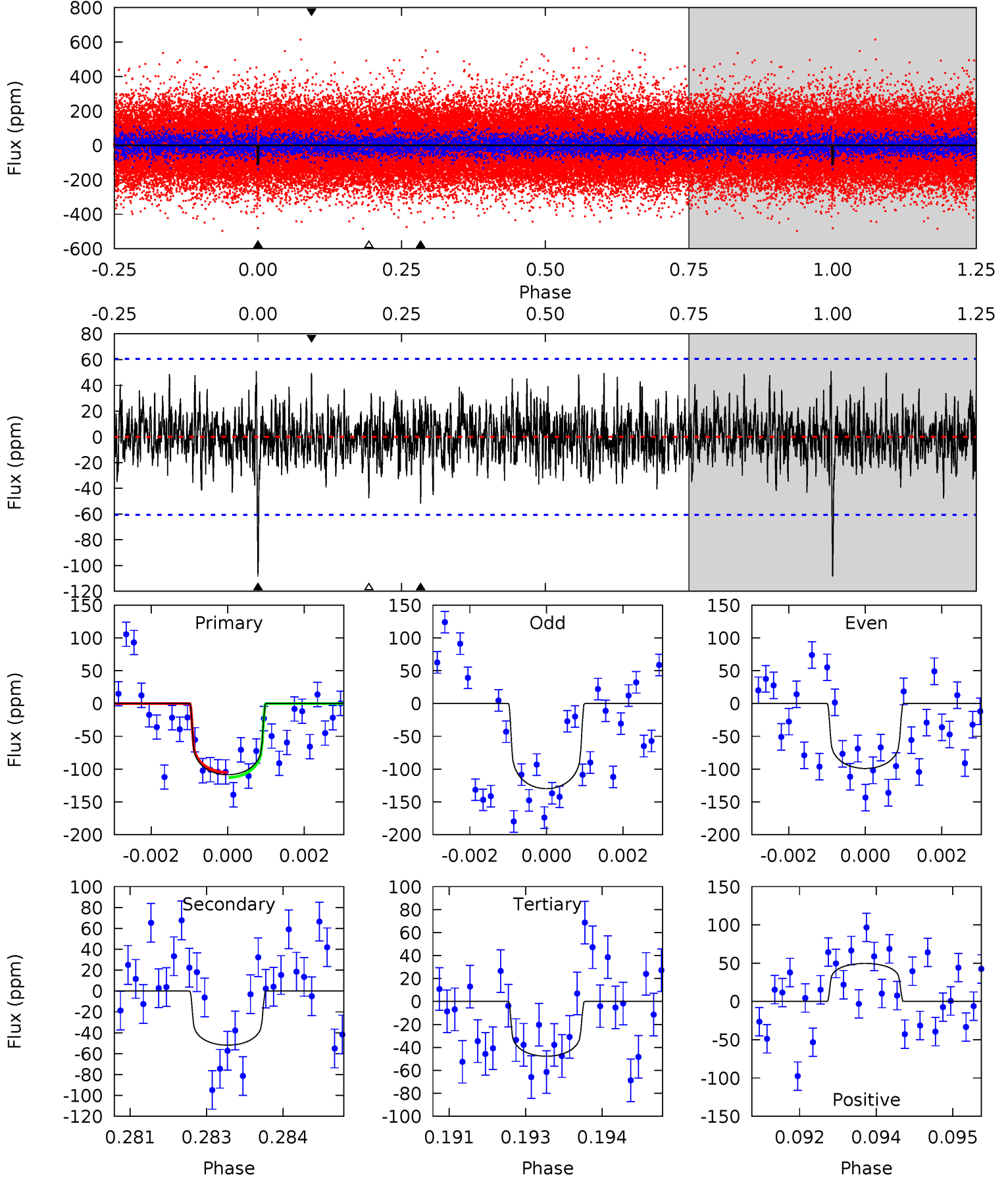
TCE 012418612-01 P=294.815404 Days  $T_0=185.590866$  (BKJD)



# DV Model-Shift Uniqueness Test

012418612-01, P = 294.793272 Days, E = 185.684071 Days

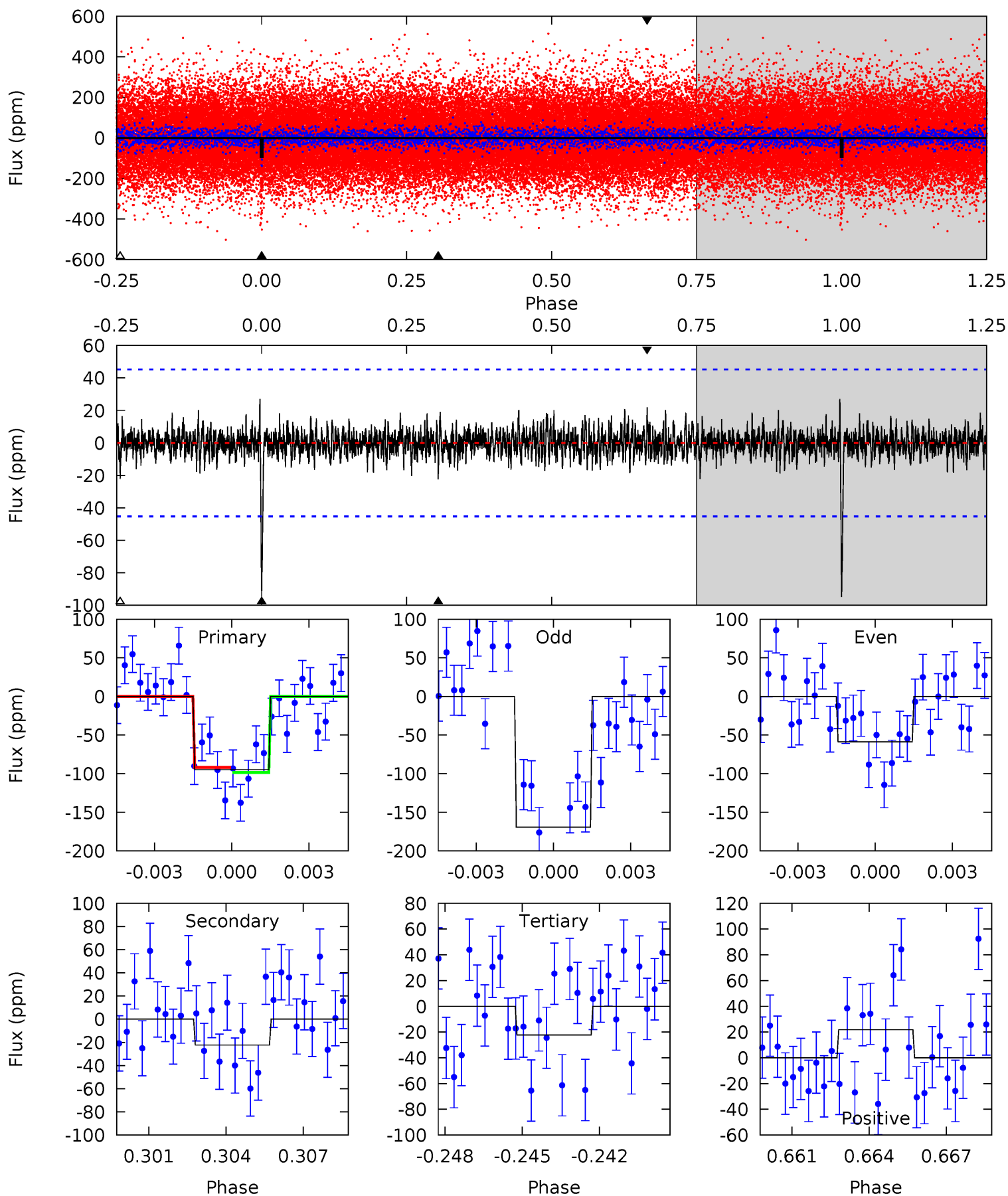
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.57	4.57	4.21	4.38	5.34	3.12	1.26	5.37	5.19	0.37	0.19	1.26	1.16	0.32	0.34



# Alt Model-Shift Uniqueness Test

012418612-01, P = 294.815404 Days, E = 185.590866 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
11.0	2.59	2.57	2.53	5.25	2.96	0.69	8.41	8.45	0.01	0.06	6.00	1.34	0.22	0.38



### Stellar Parameters For KIC 012418612

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6032^{+180}_{-162}$	$3.707^{+0.336}_{-0.105}$	$-0.240^{+0.350}_{-0.300}$	$2.682^{+0.451}_{-0.977}$	$1.338^{+0.207}_{-0.310}$	$0.098^{+0.231}_{-0.032}$
	+3%/-3%	+9%/-3%	+146%/-125%	+17%/-36%	+15%/-23%	+236%/-33%
Source	PHO1	FLK73	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 012418612-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	-52±11	$2.90^{+1.59}_{-1.23}$	$613^{+37}_{-58}$	$5033^{+1376}_{-711}$	$3089^{+5724}_{-1791}$
Alt.	-22±9	$2.64^{+1.33}_{-1.31}$	$611^{+40}_{-56}$	$4389^{+1397}_{-623}$	$1555^{+4589}_{-919}$

$T_{max}$  = 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

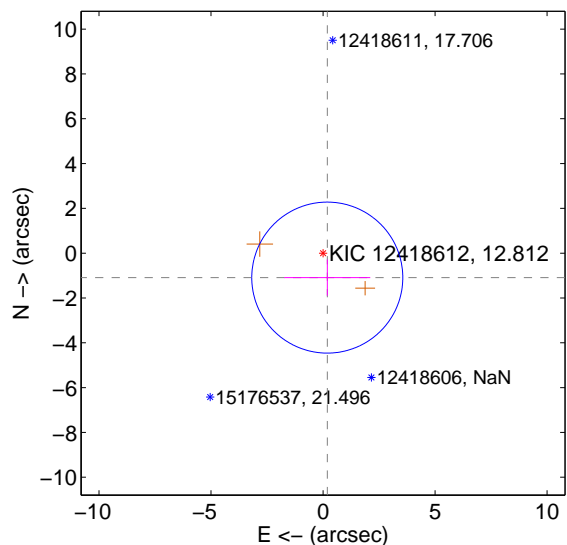
Supplemental centroid analysis for 012418612-01. Kepler magnitude: 12.81. Transit SNR 6.64

There are 0 quarters with good PRF difference image offsets

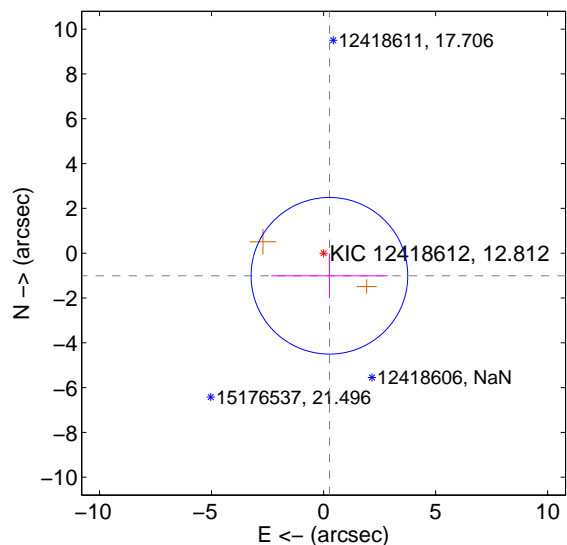
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.107 \pm 1.123$	0.99	$-0.189 \pm 1.921$	$-1.090 \pm 0.808$
PRF-fit source offset from KIC position	$1.042 \pm 1.165$	0.89	$-0.261 \pm 2.596$	$-1.009 \pm 0.999$
photometric centroid source offset	$2.63 \pm 2.12$	1.24	$-2.49 \pm 2.10$	$-0.85 \pm 2.29$

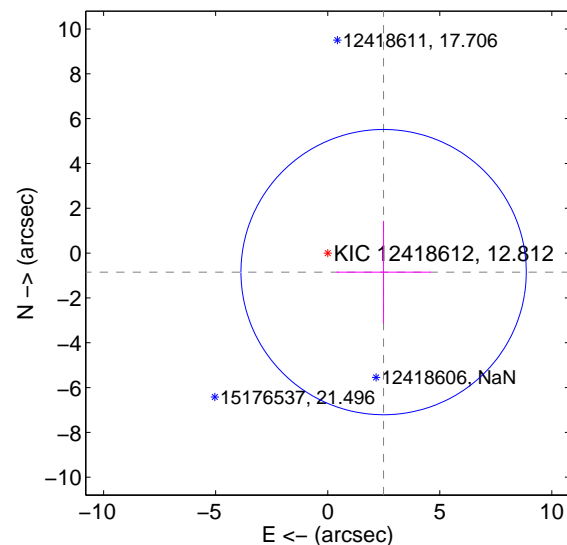
offset from difference PRF-fit to OOT PRF-fit



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.

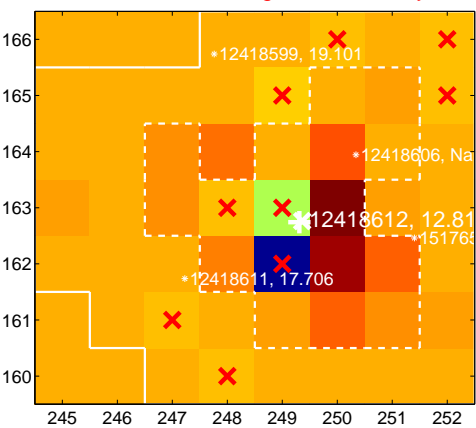
Q1 no difference image



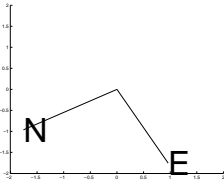
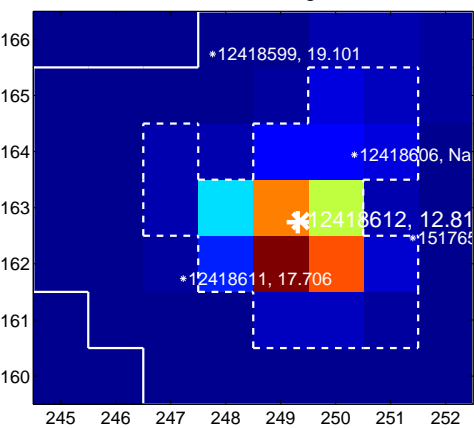
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



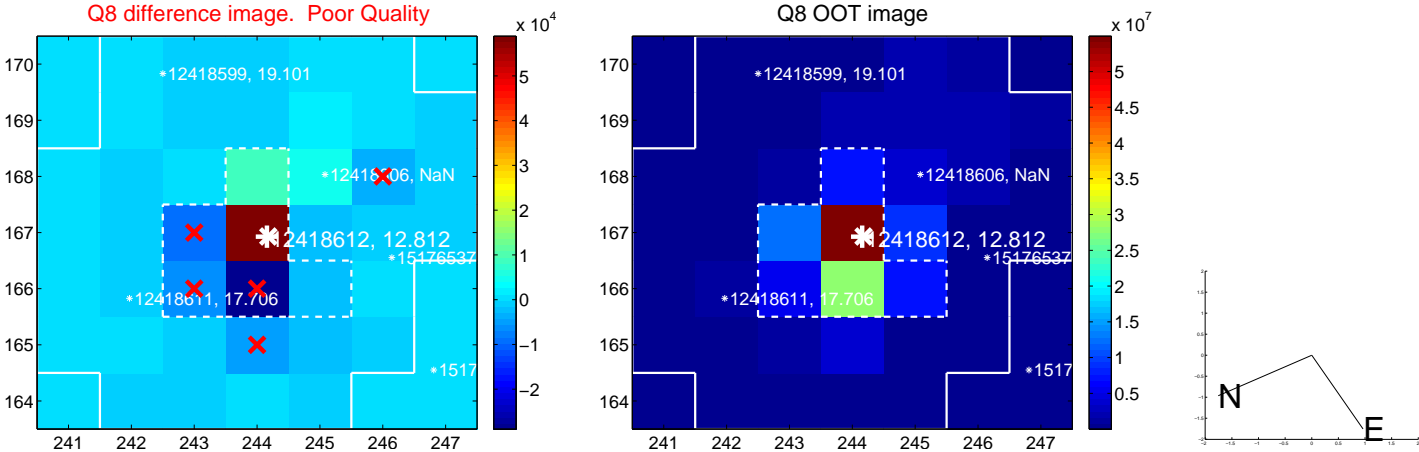
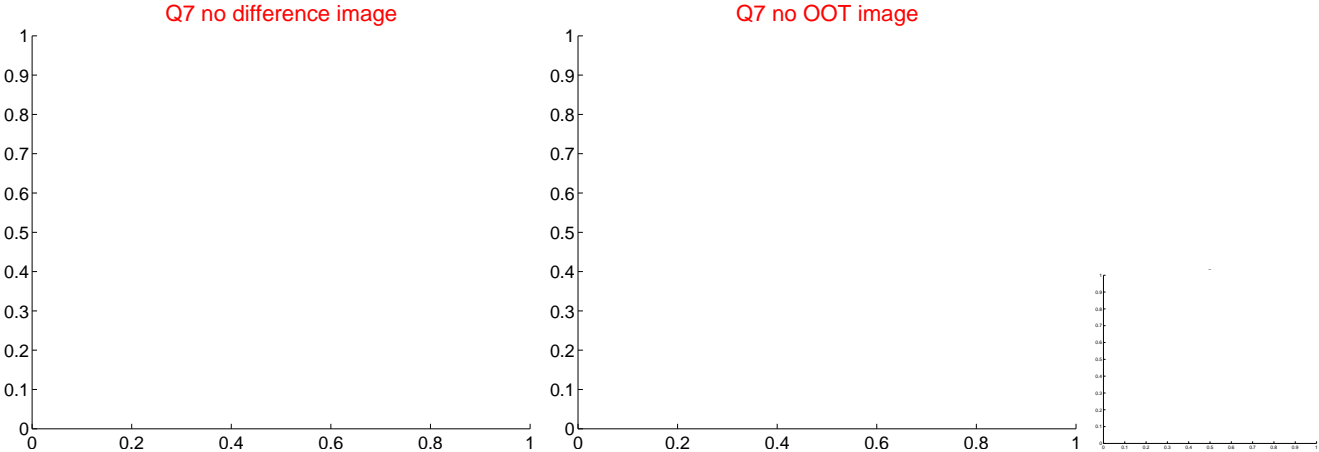
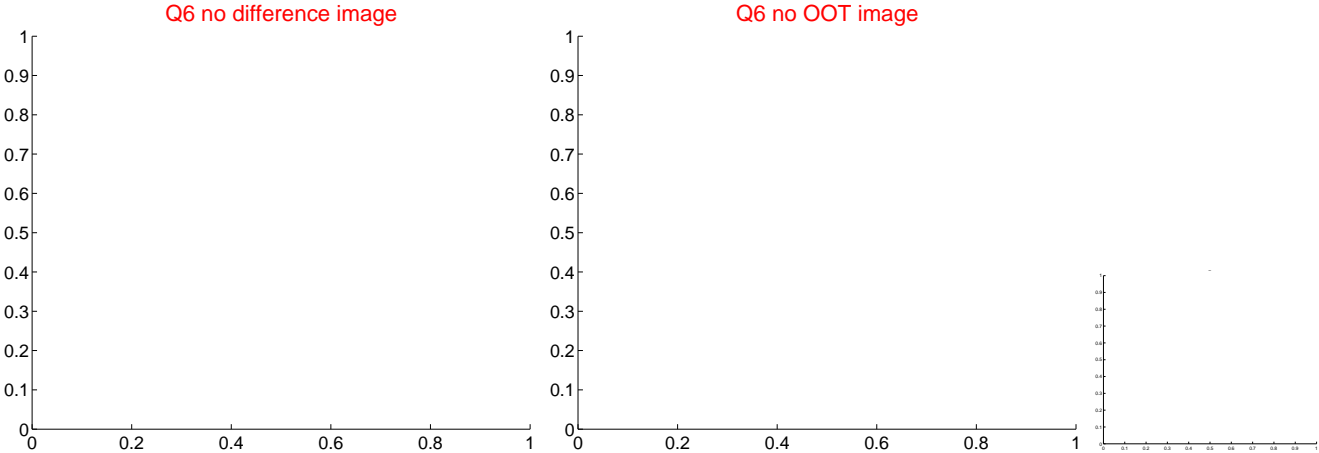
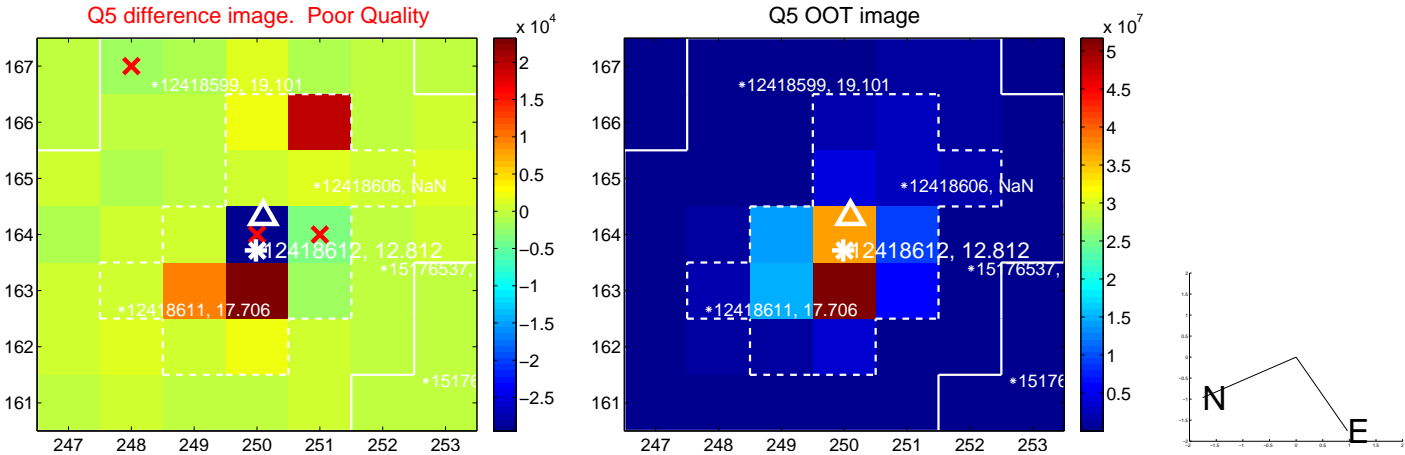
Q4 no difference image



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.

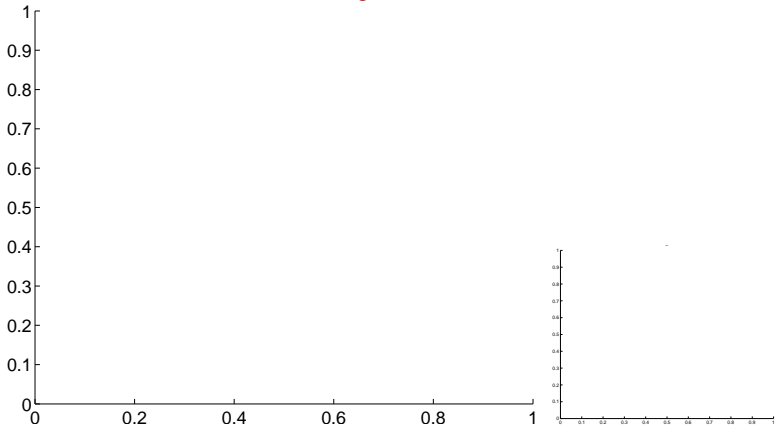


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

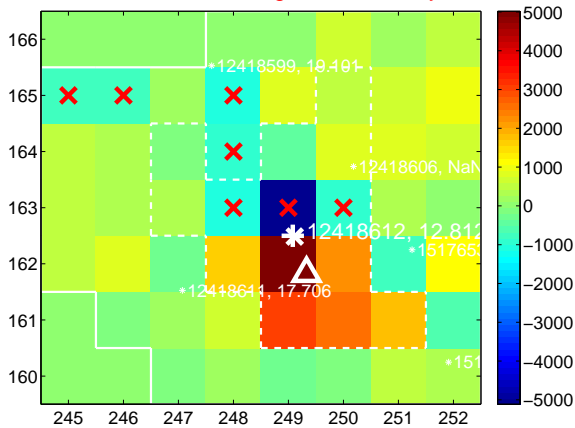
Q13 no difference image



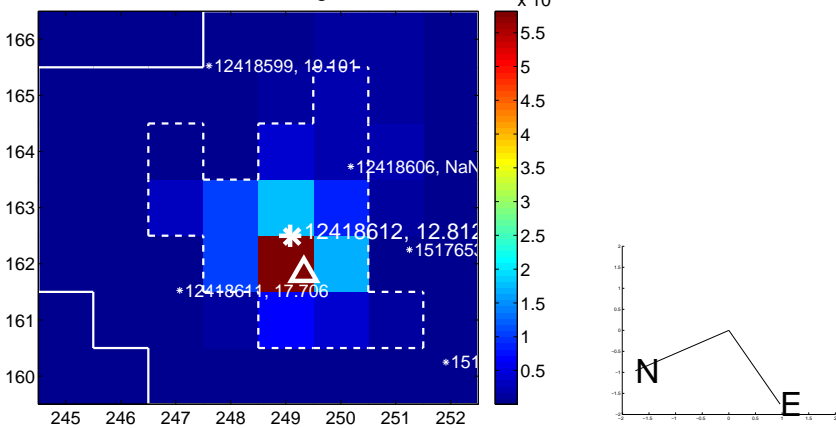
Q13 no OOT image



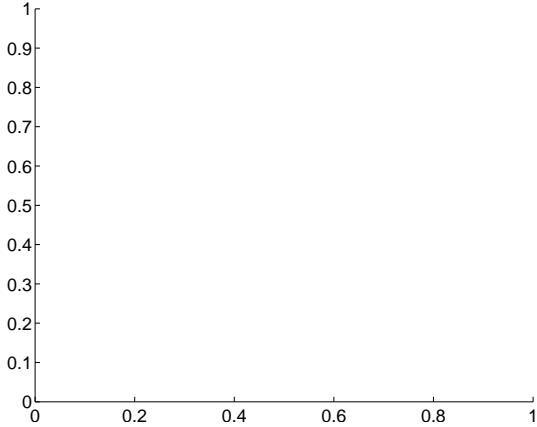
Q14 difference image. Poor Quality



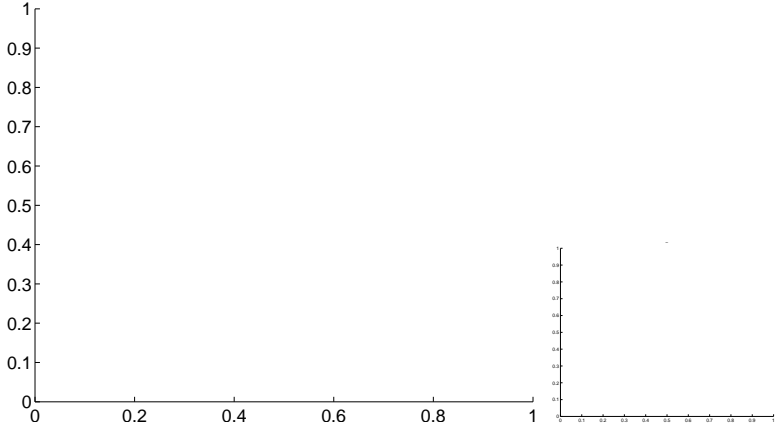
Q14 OOT image



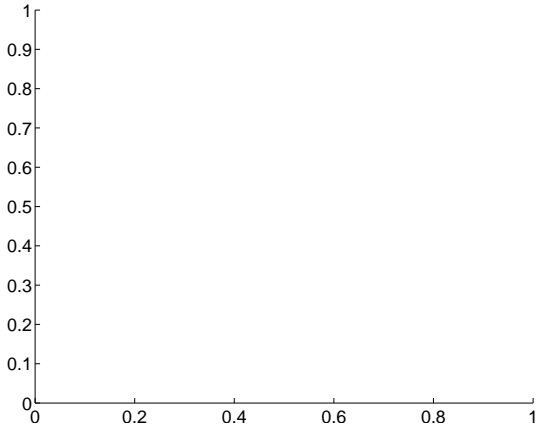
Q15 no difference image



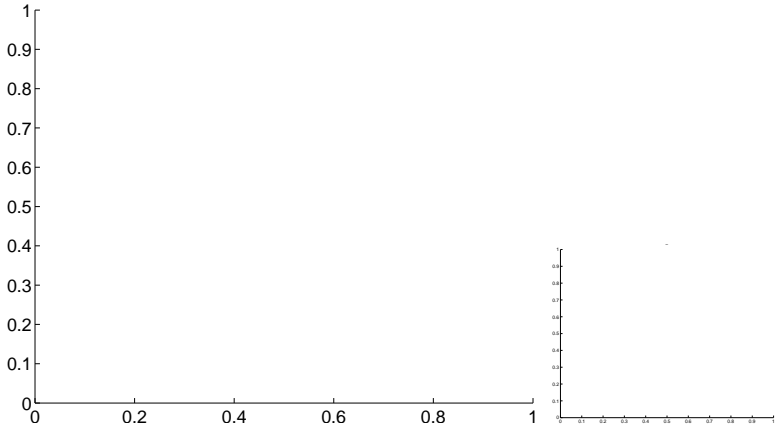
Q15 no OOT image



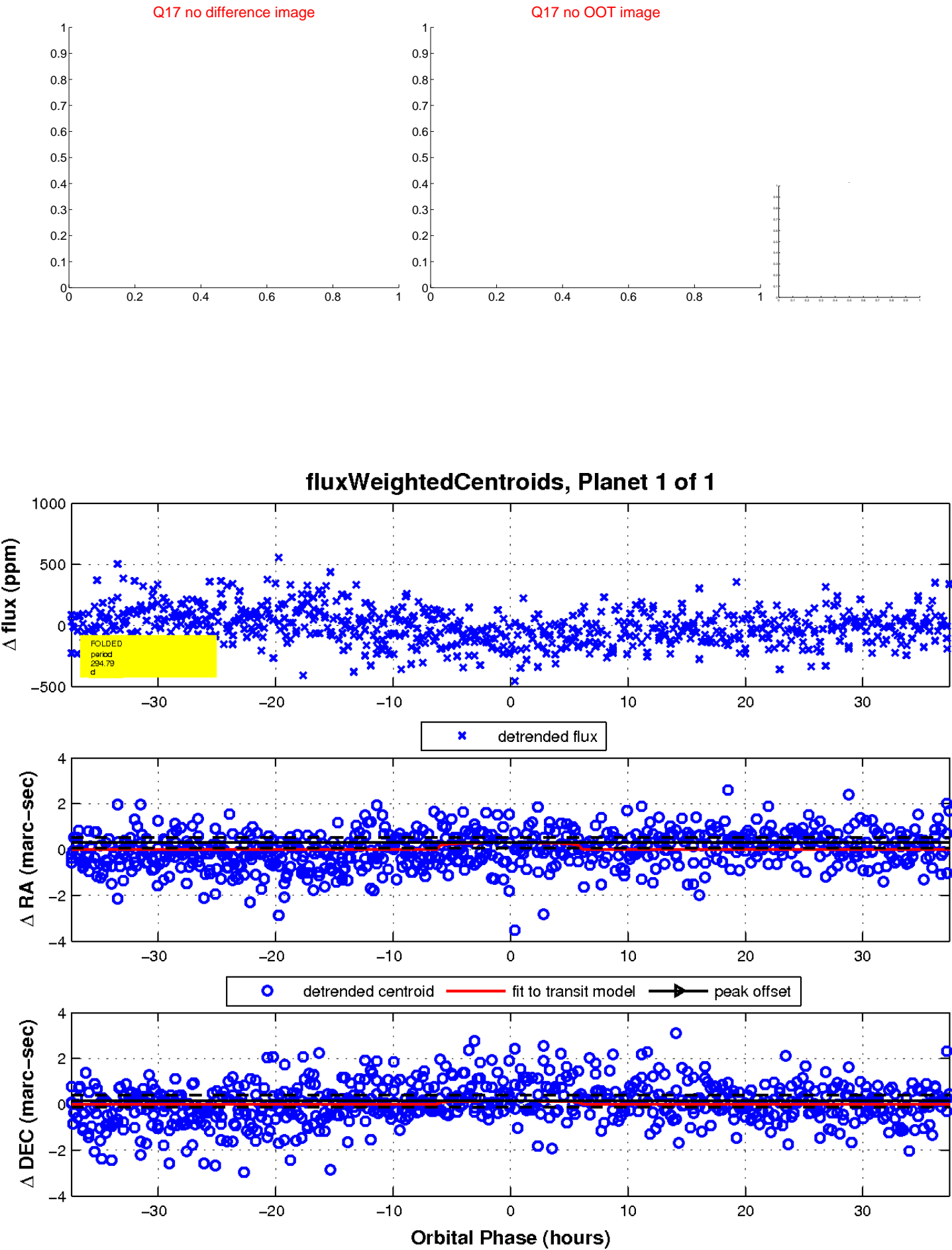
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

