

# KIC 008812206

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008812206-01	OBS	No	467.140115	284.378440	174.7	18.326	7.8	7.8	1.91	6250	2.96	3.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008812206-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—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.

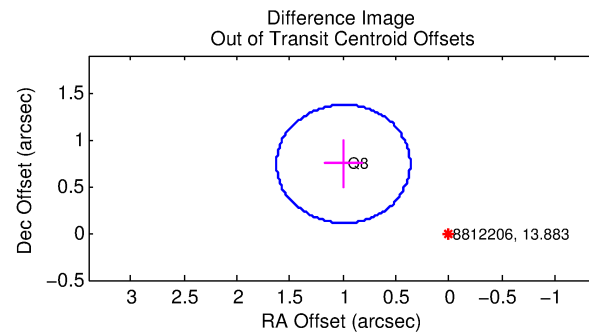
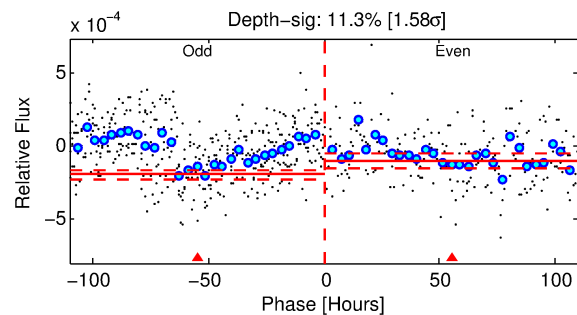
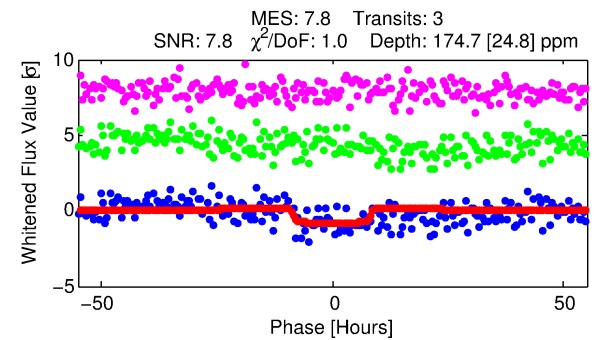
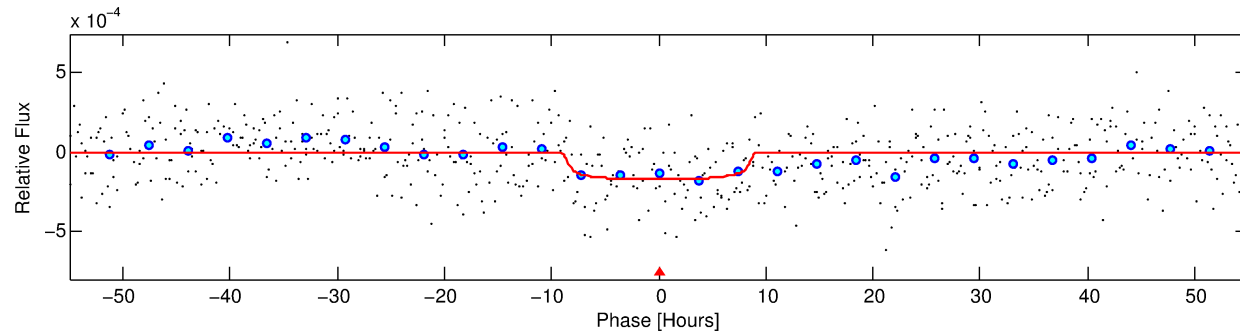
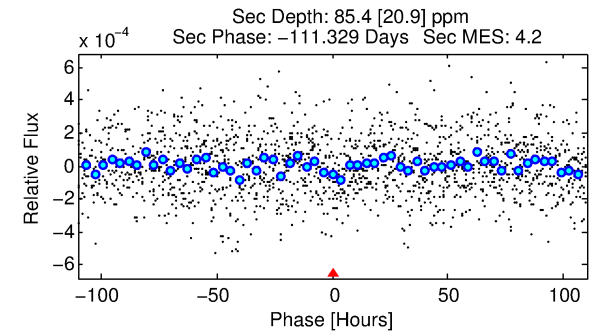
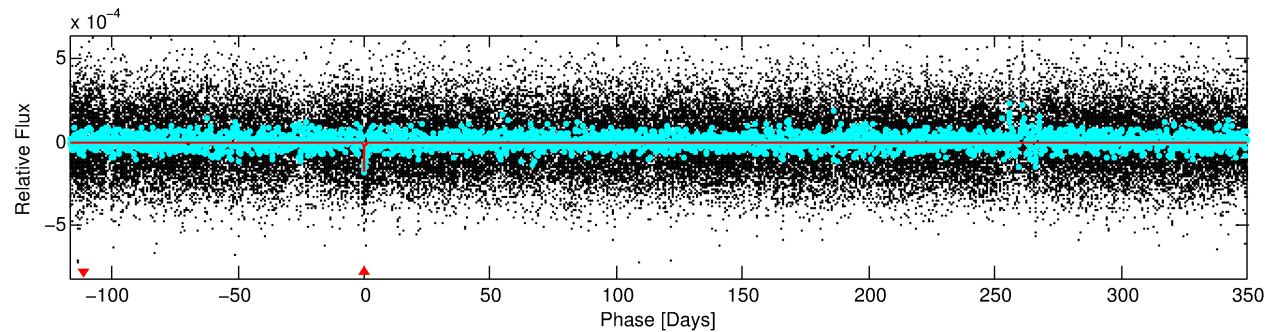
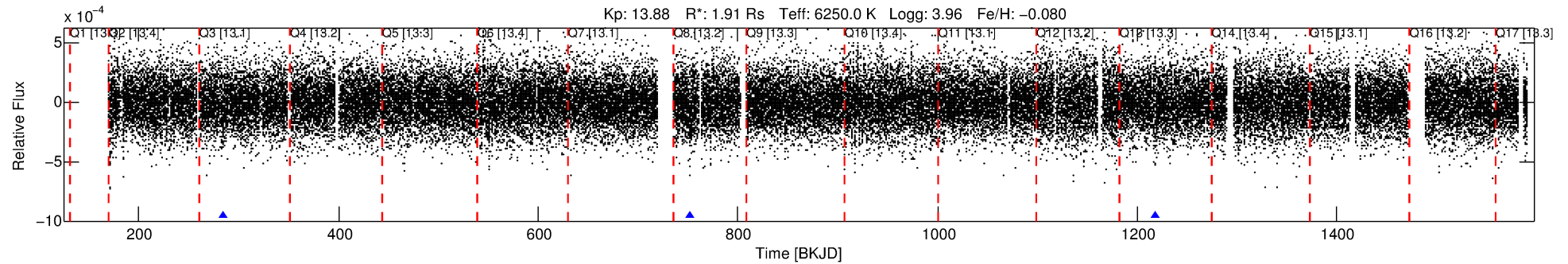
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008812206-01

No Significant Match Found

# DV One-Page Summary

KIC: 8812206 Candidate: 1 of 1 Period: 467.140 d



## DV Fit Results:

Period = 467.14011 [0.02373] d  
Epoch = 284.3784 [0.0313] BKJD  
Rp/R\* = 0.0142 [0.0024]  
a/R\* = 91.02 [76.19]  
b = 0.90 [0.18]  
Seff = 3.13 [1.97]  
Teq = 339 [53] K  
Rp = 2.96 [1.28] Re  
a = 1.2619 [0.4813] AU  
Ag = 8534.71 [6323.49] [1.35σ]  
Teffp = 5041 [567] K [8.26σ]

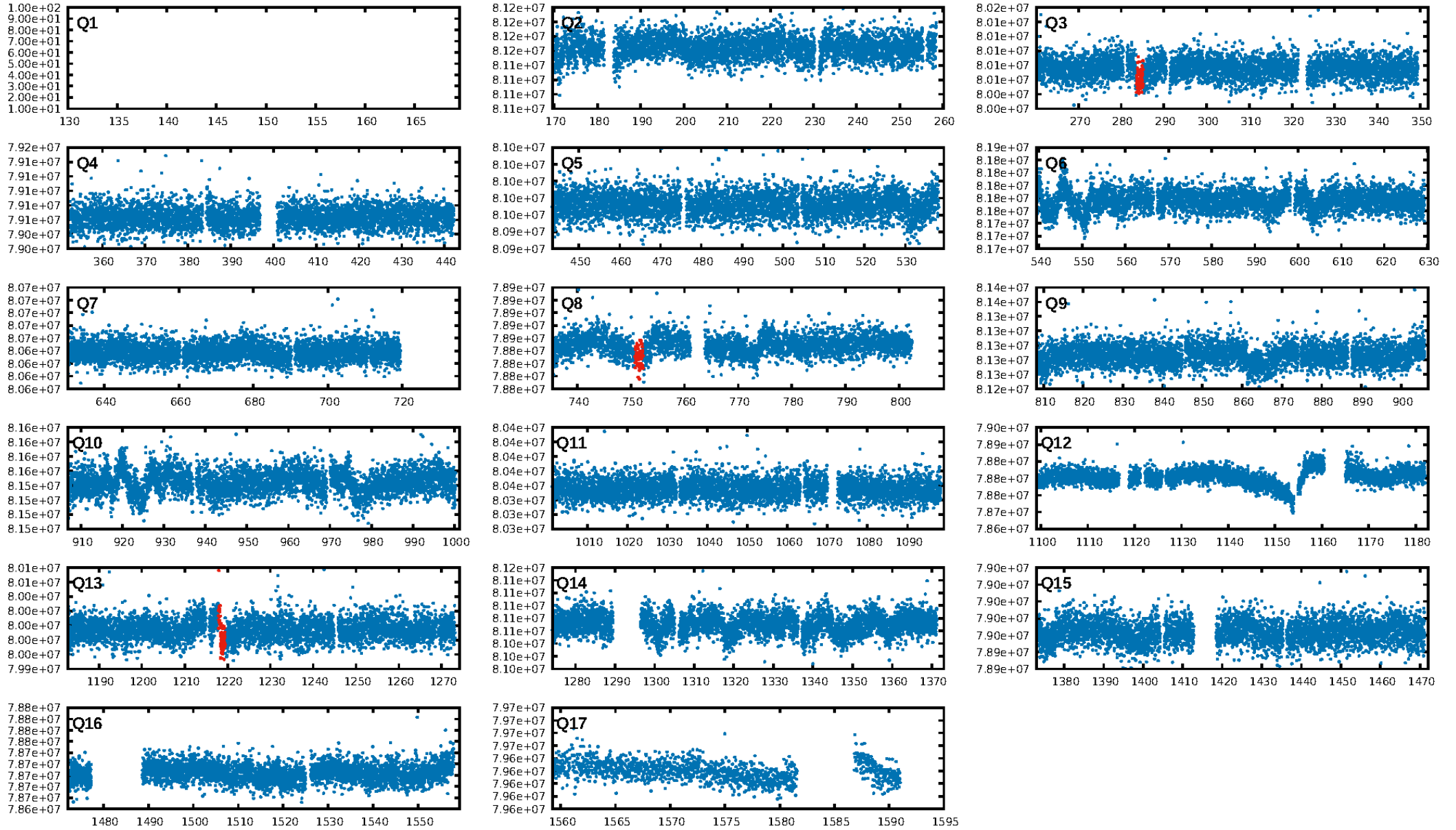
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 49.4%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 6.88e-11**  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.07968**  
**Centroid-sig: 0.2%**  
Centroid-so: 4.057 arcsec [2.61σ]  
**OotOffset-rm: 1.239 arcsec [5.89σ]**  
**KicOffset-rm: 1.225 arcsec [5.65σ]**  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [2/2]

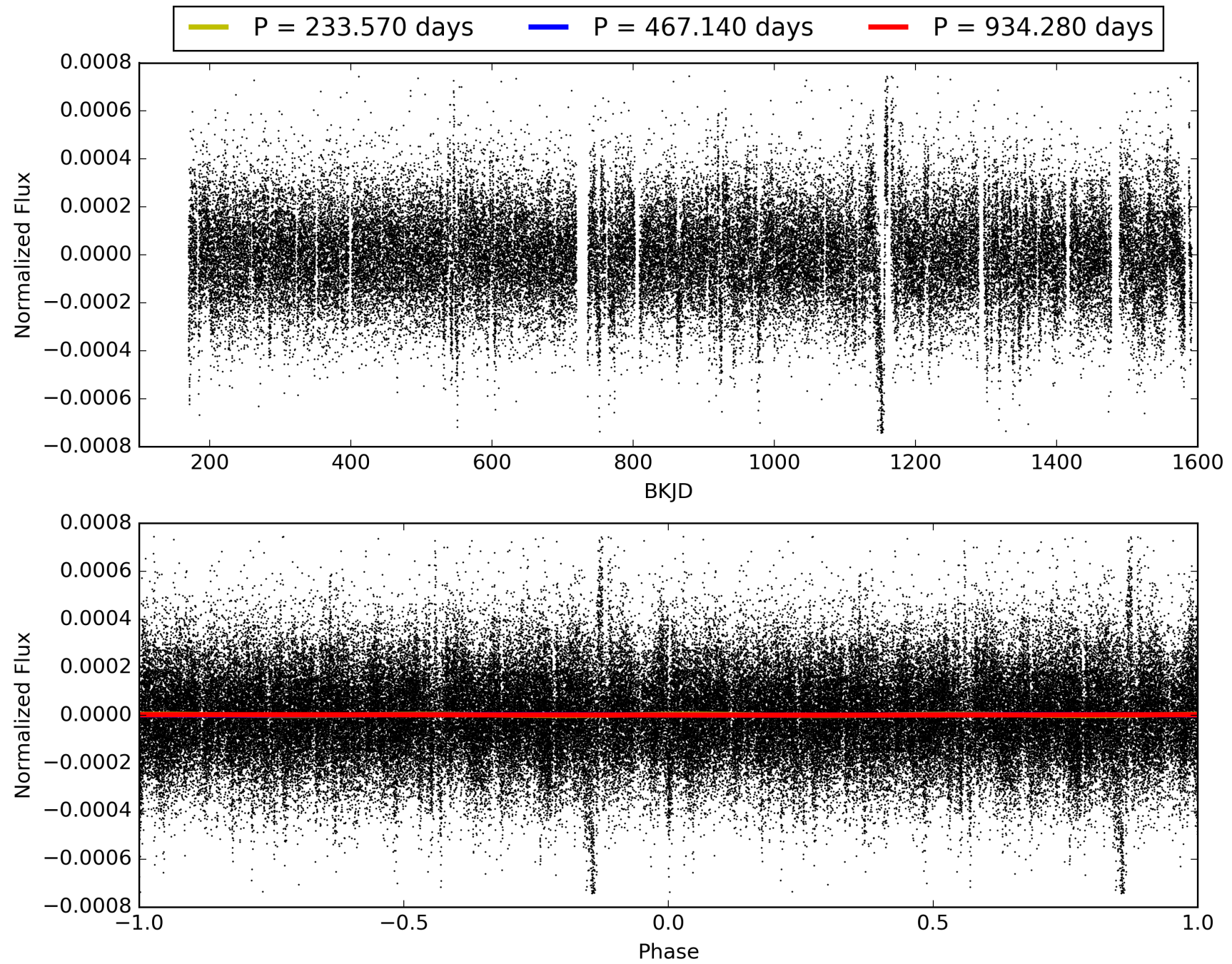
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:36:46 Z

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

# TCE 008812206-01, PDC Light Curves

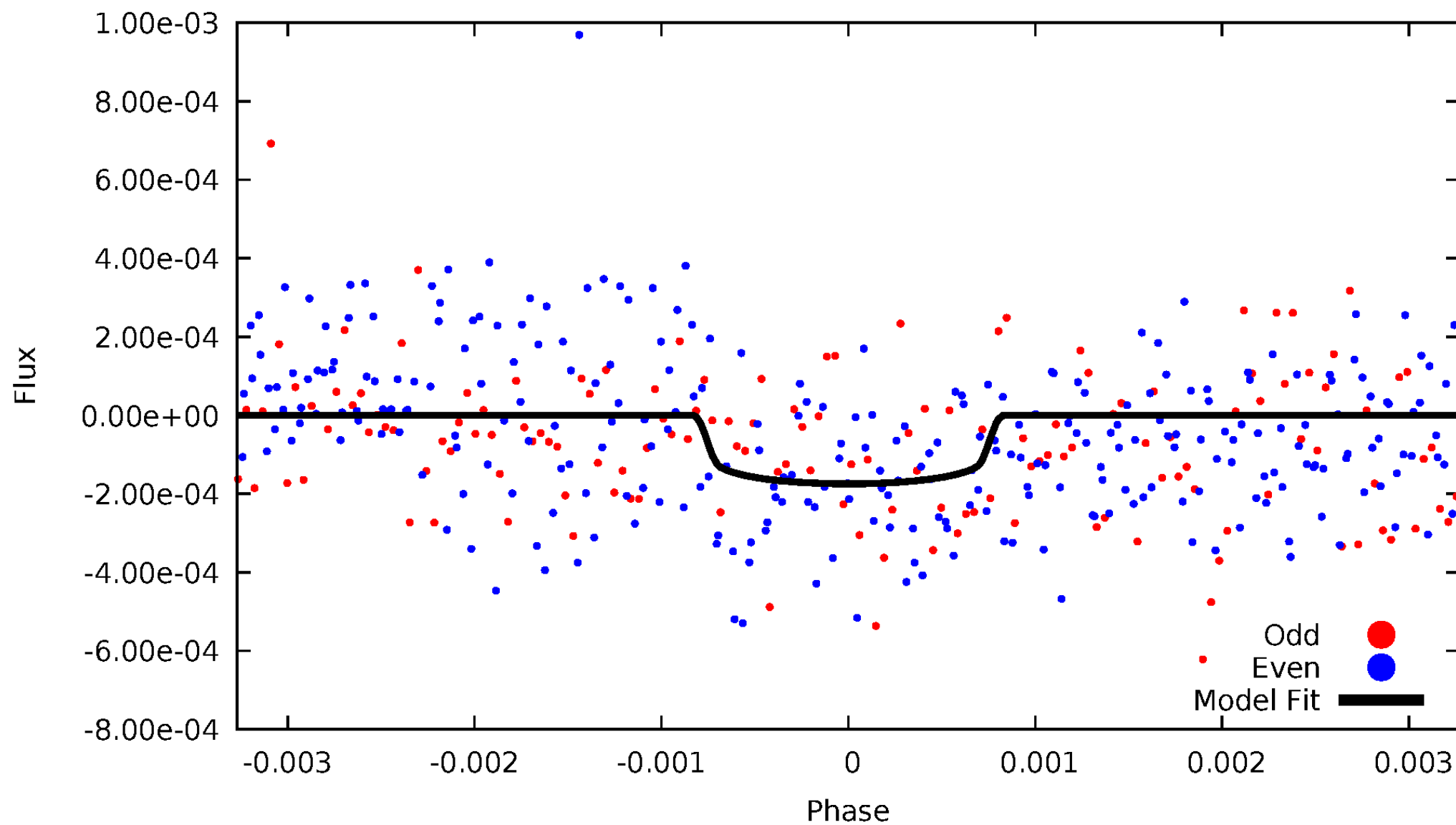


TCE 008812206-01



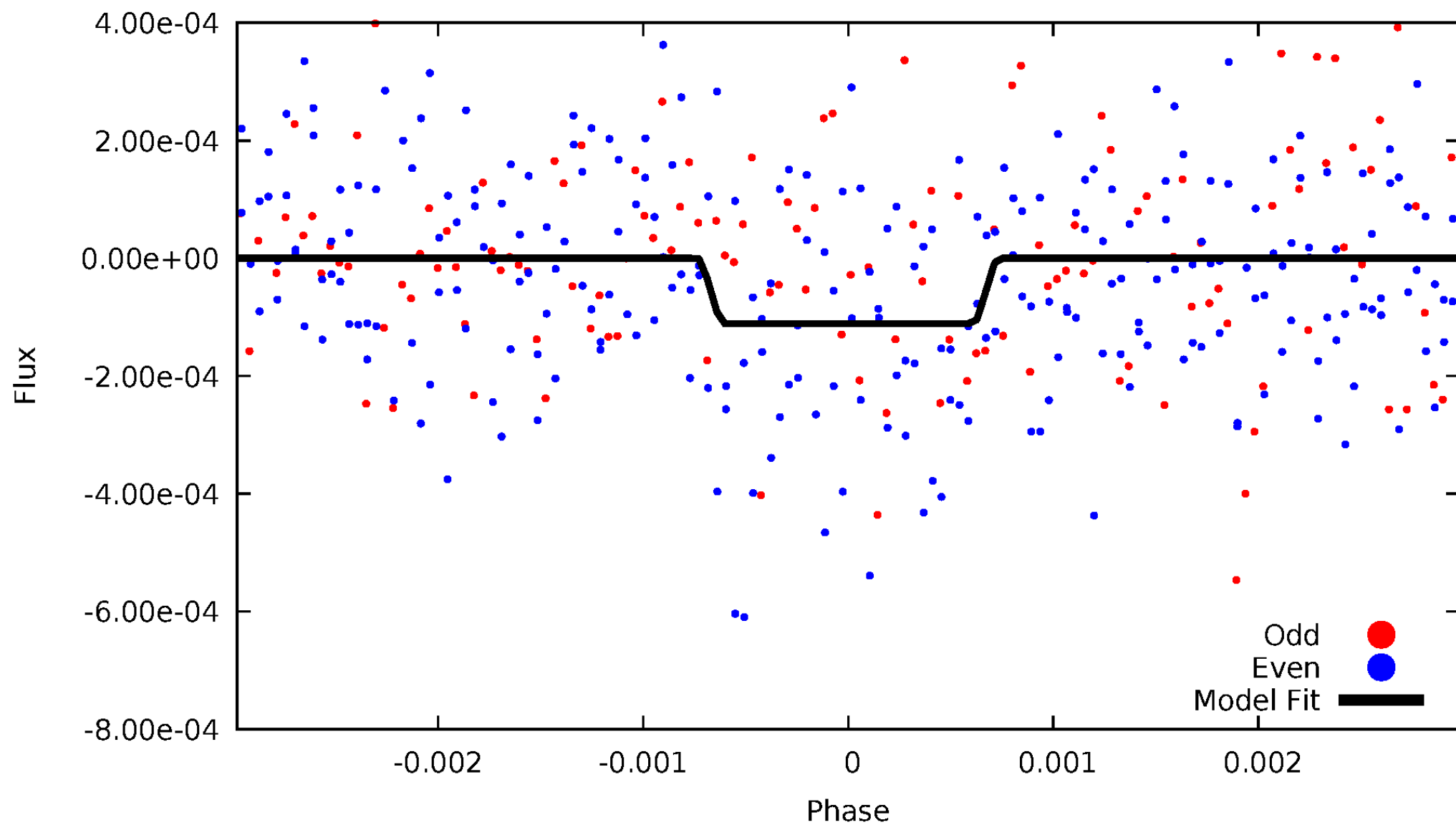
# DV Odd/Even

TCE 008812206-01



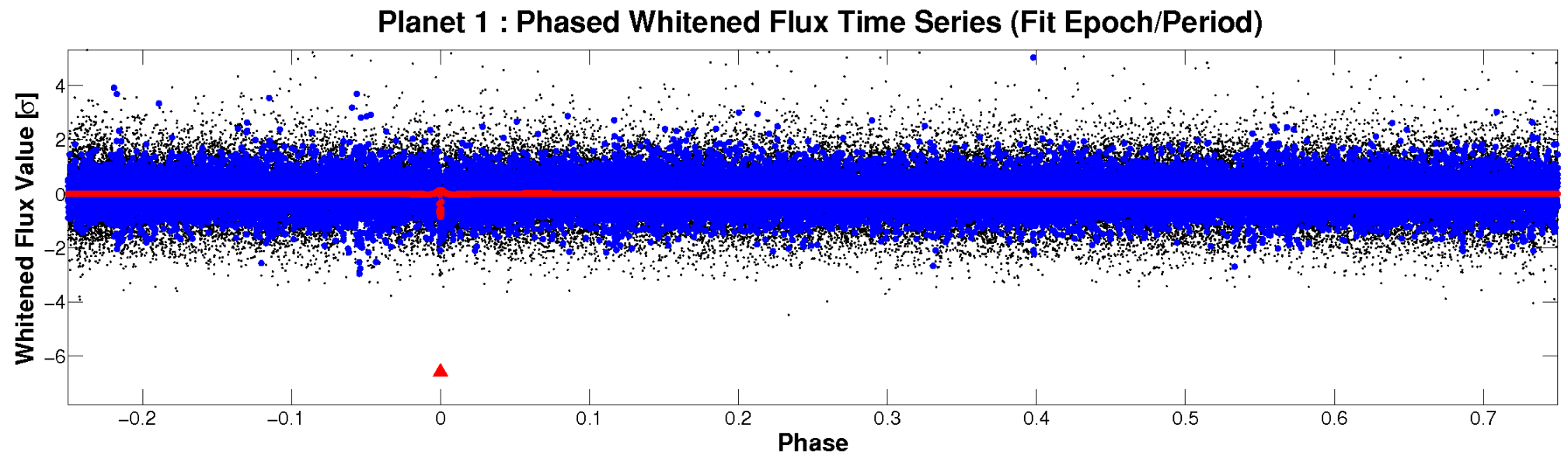
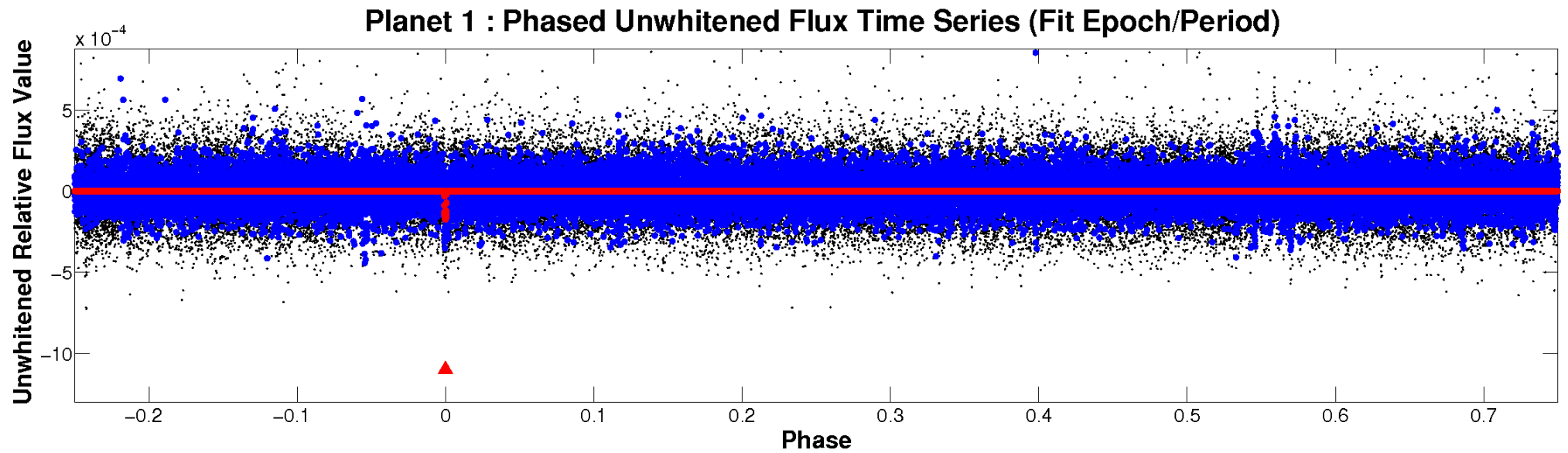
# ALT Odd/Even

TCE 008812206-01





# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

TCE 008812206-01 P=467.140115 Days  $T_0=284.378440$  (BKJD)





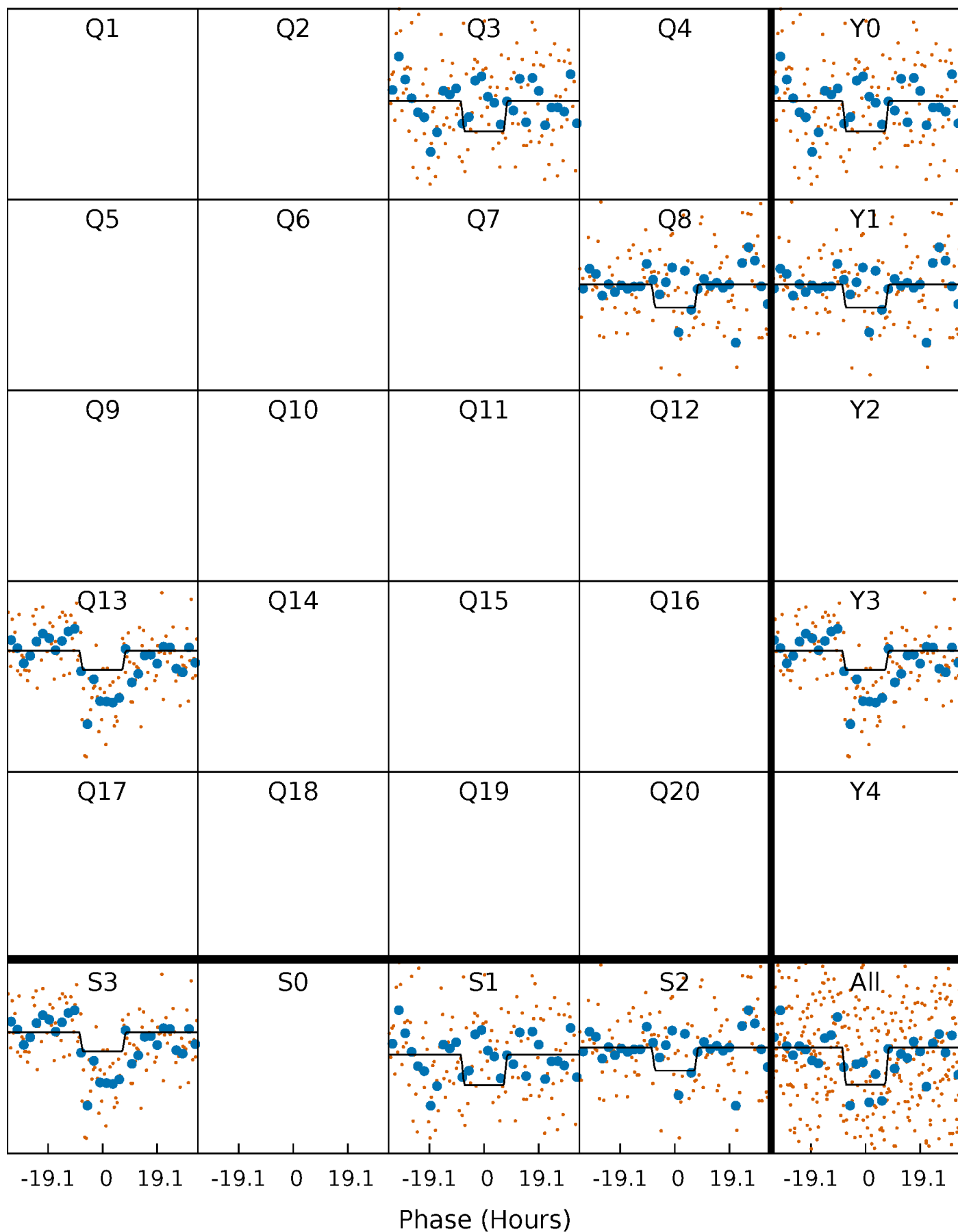
# DV Quarter-Phased Transit Curves

TCE 008812206-01 P=467.140115 Days  $T_0=284.378440$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

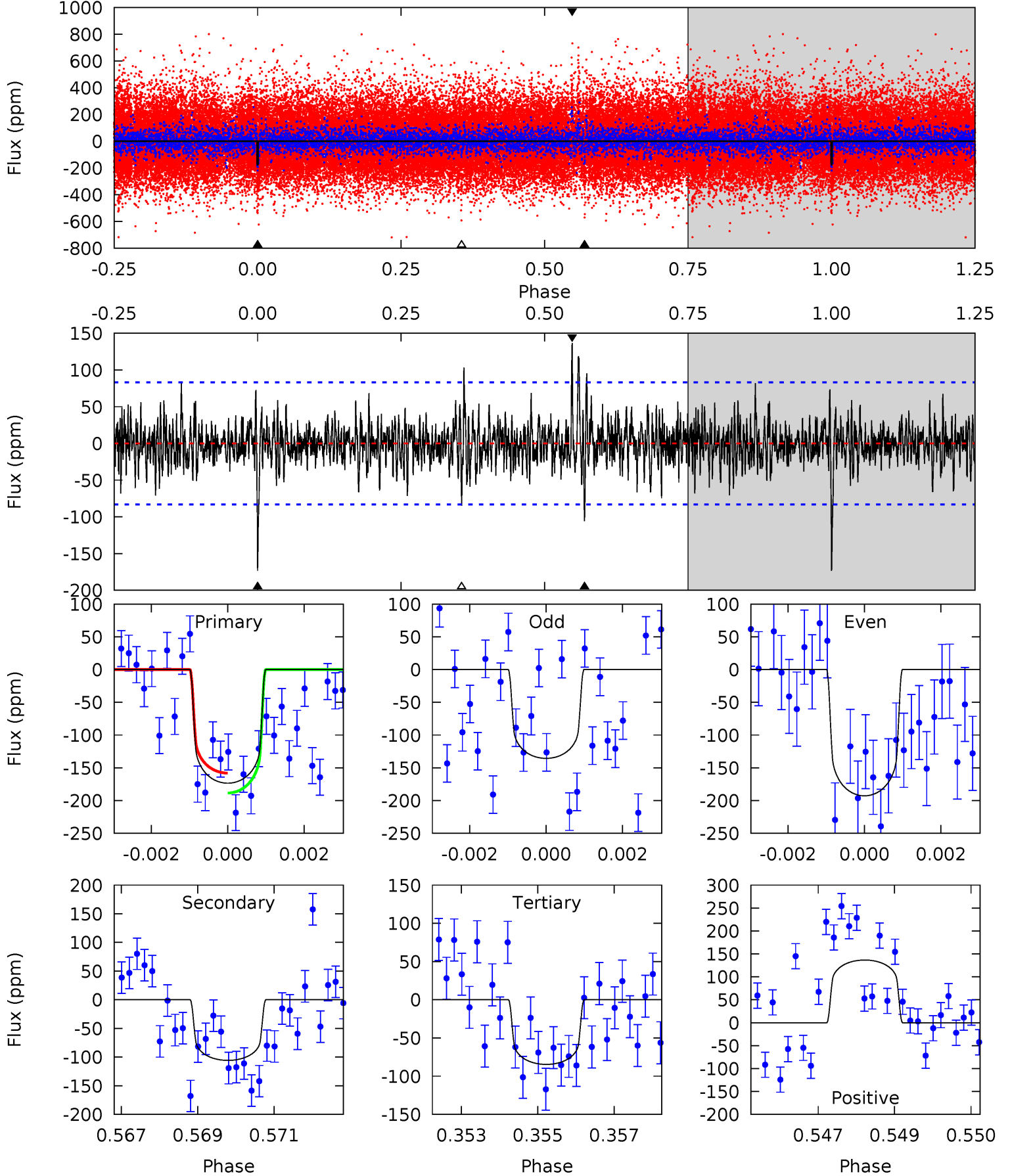
TCE 008812206-01 P=467.111182 Days  $T_0=284.409800$  (BKJD)



# DV Model-Shift Uniqueness Test

008812206-01, P = 467.140115 Days, E = 284.378440 Days

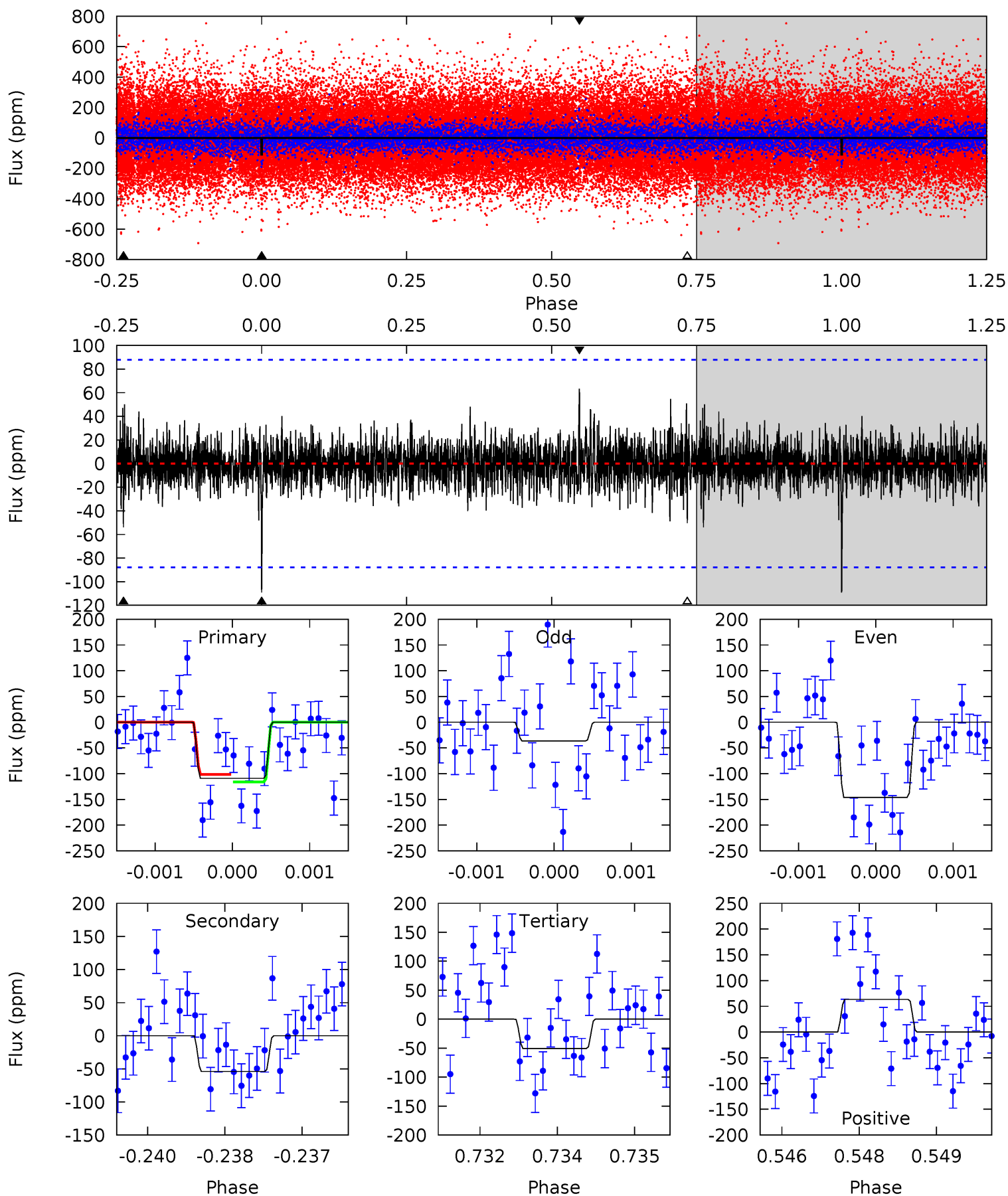
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	6.81	5.45	8.80	5.36	3.14	1.51	5.72	2.37	1.36	-1.99	1.73	1.21	0.44	0.98



# Alt Model-Shift Uniqueness Test

008812206-01, P = 467.111182 Days, E = 284.409800 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
6.68	3.31	3.09	3.88	5.39	3.19	0.78	3.59	2.80	0.22	-0.57	3.20	2.96	0.37	0.45



### Stellar Parameters For KIC 008812206

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6250^{+198}_{-242}$	$3.965^{+0.357}_{-0.153}$	$-0.080^{+0.250}_{-0.300}$	$1.910^{+0.506}_{-0.760}$	$1.227^{+0.191}_{-0.212}$	$0.248^{+0.678}_{-0.105}$
	+3%/-4%	+9%/-4%	+312%/-375%	+26%/-40%	+16%/-17%	+273%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008812206-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-106 \pm 16$	$2.81^{+0.72}_{-0.66}$	$466^{+38}_{-49}$	$5358^{+587}_{-423}$	$11968^{+8597}_{-4605}$
Alt.	$-54 \pm 16$	$2.11^{+0.66}_{-0.59}$	$468^{+35}_{-50}$	$5200^{+694}_{-569}$	$10306^{+9873}_{-4759}$

$T_{\text{max}}$  = 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

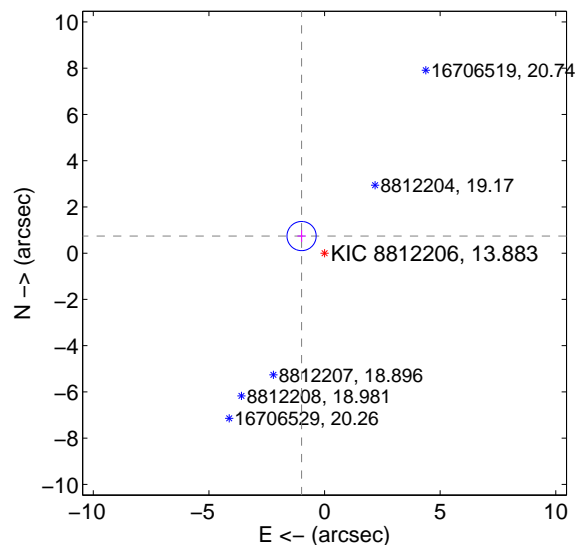
Supplemental centroid analysis for 008812206-01. Kepler magnitude: 13.88. Transit SNR 7.84

There are 1 quarters with good PRF difference image offsets

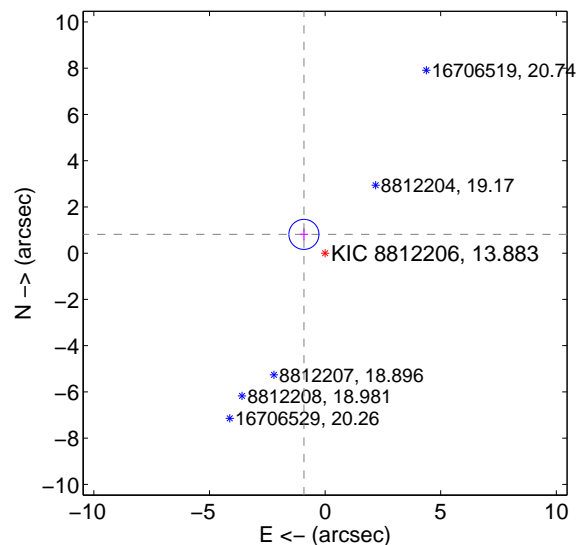
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>1.239 <math>\pm</math> 0.210</b>	<b>5.89</b>	$0.993 \pm 0.182$	$0.740 \pm 0.254$
PRF-fit source offset from KIC position	<b>1.225 <math>\pm</math> 0.217</b>	<b>5.65</b>	$0.916 \pm 0.182$	$0.813 \pm 0.254$
photometric centroid source offset	$4.06 \pm 1.55$	2.61	$3.66 \pm 1.56$	$1.75 \pm 1.54$

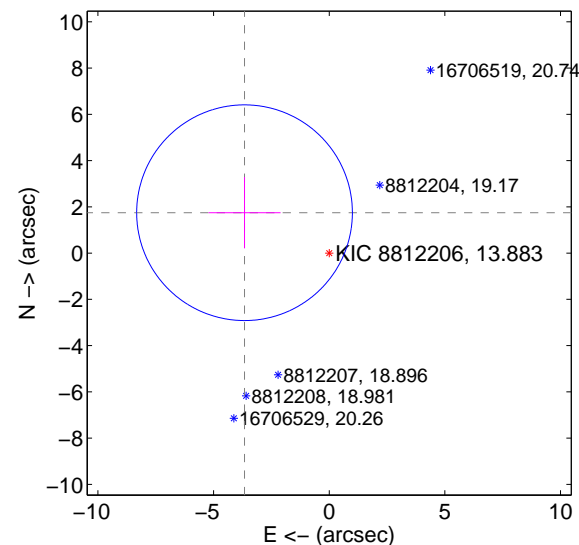
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



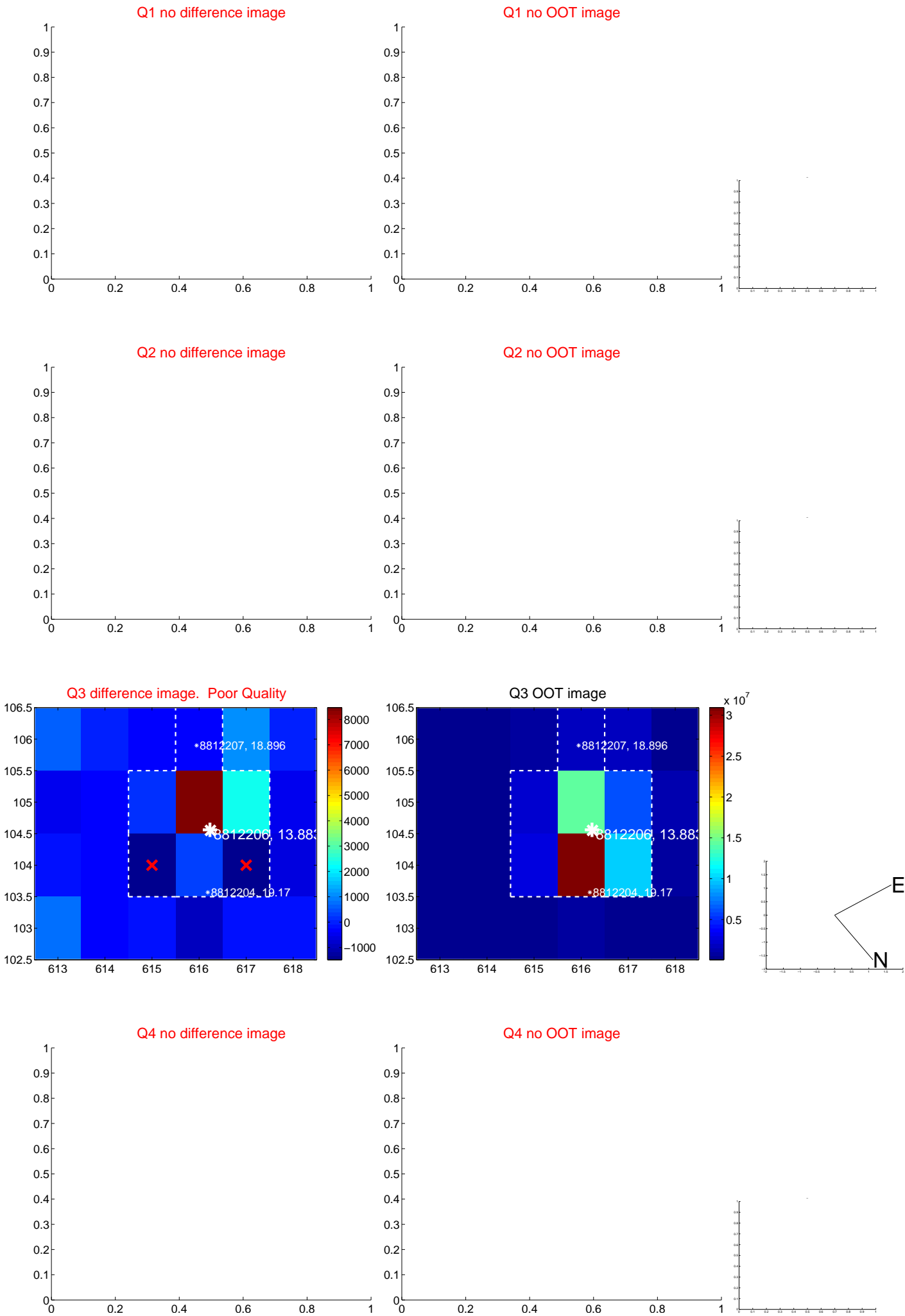
offset from photometric centroids



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.

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



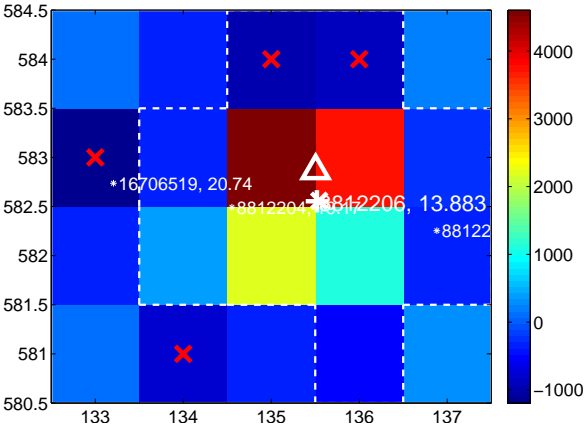
Q7 no difference image



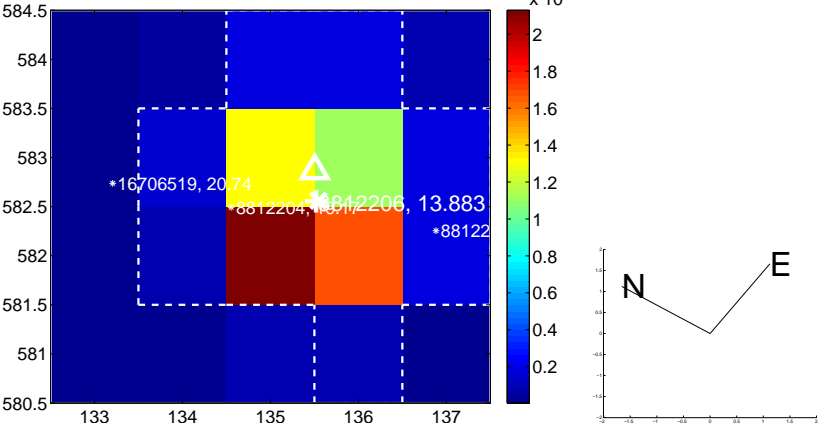
Q7 no OOT image



Q8 difference image



Q8 OOT image



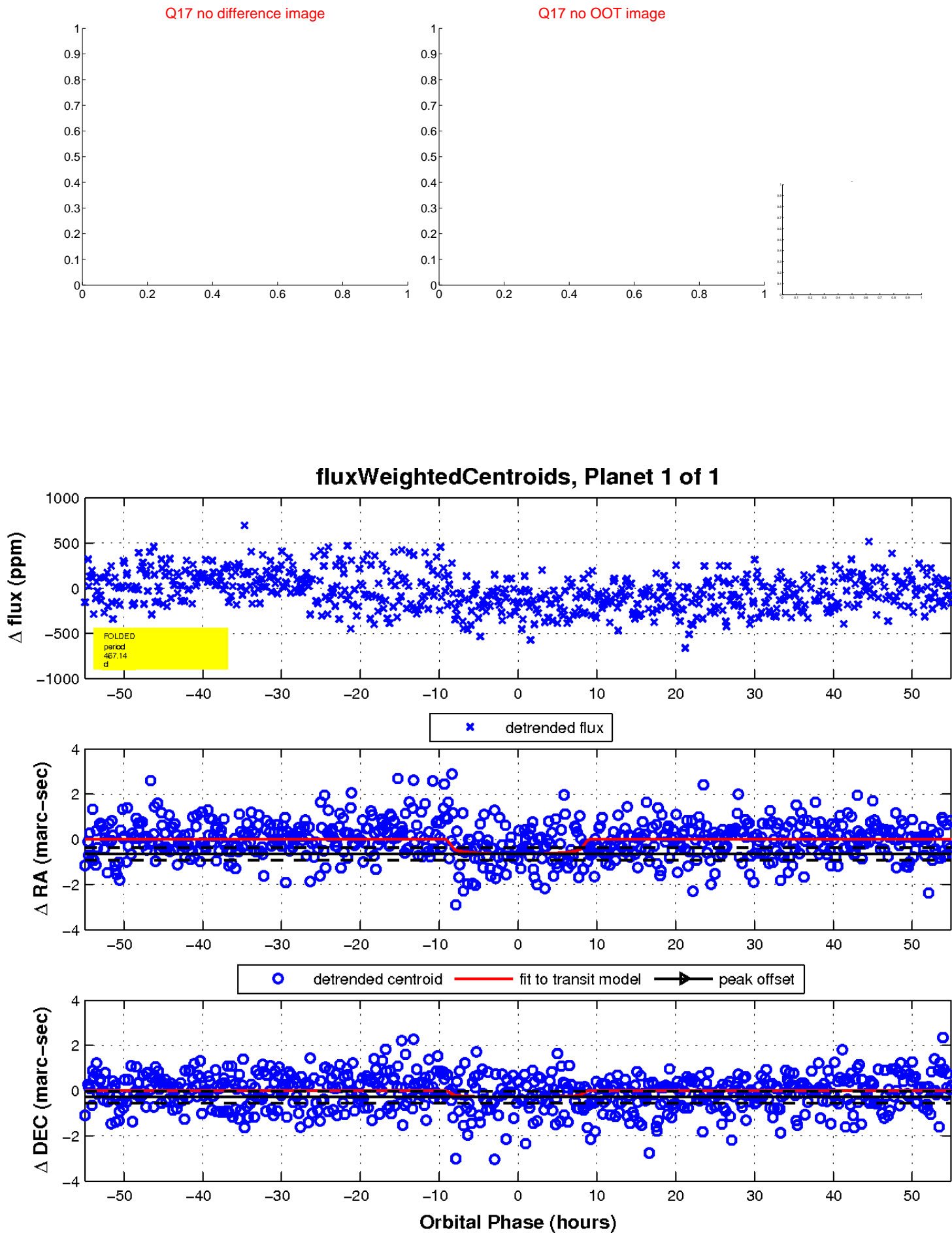
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



# UKIRT Image

Declination

