

# KIC 010866952

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010866952-01	OBS	No	348.939861	353.017744	94.2	20.407	9.2	8.5	0.98	5995	1.18	1.42

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010866952-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED

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

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

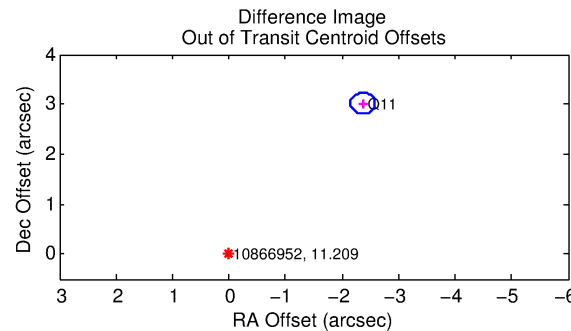
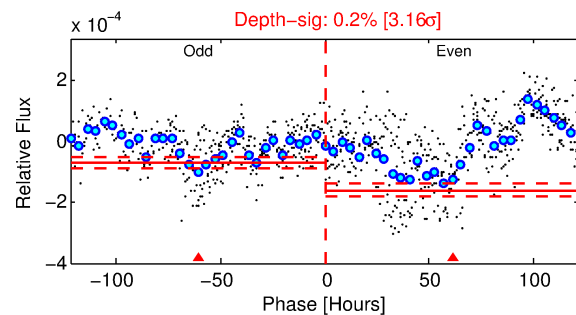
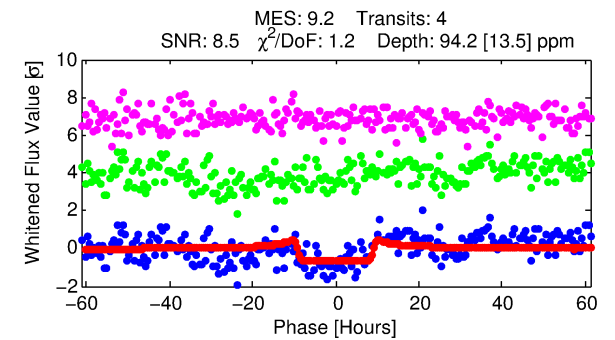
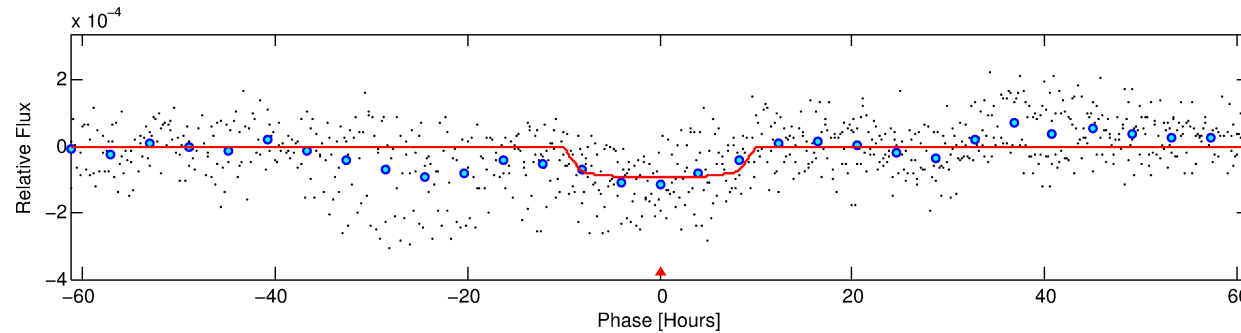
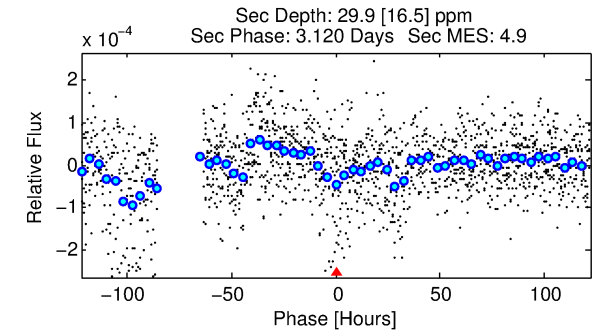
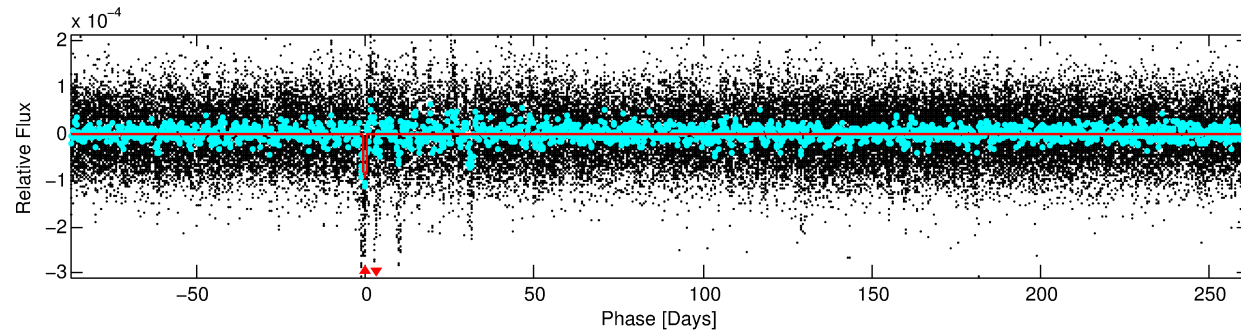
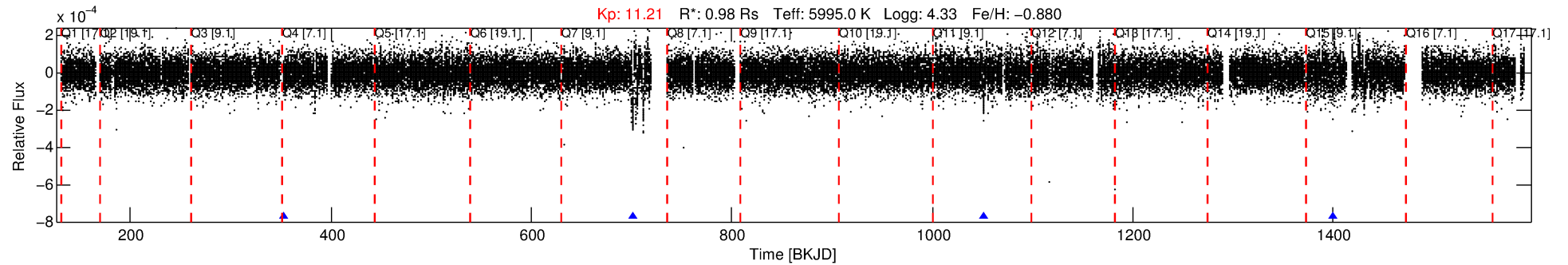
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010866952-01

No Significant Match Found

# DV One-Page Summary

KIC: 10866952 Candidate: 1 of 1 Period: 348.940 d



## DV Fit Results:

Period = 348.93986 [0.01415] d  
Epoch = 353.0177 [0.0254] BKJD  
Rp/R\* = 0.0110 [0.0011]  
a/R\* = 45.43 [14.86]  
b = 0.95 [0.03]  
Seff = 1.42 [0.51]  
Teq = 279 [25] K  
Rp = 1.18 [0.27] Re  
a = 0.8825 [0.1839] AU  
Ag = 9263.67 [6261.99] [1.48σ]  
Teffp = 4225 [626] K [6.30σ]

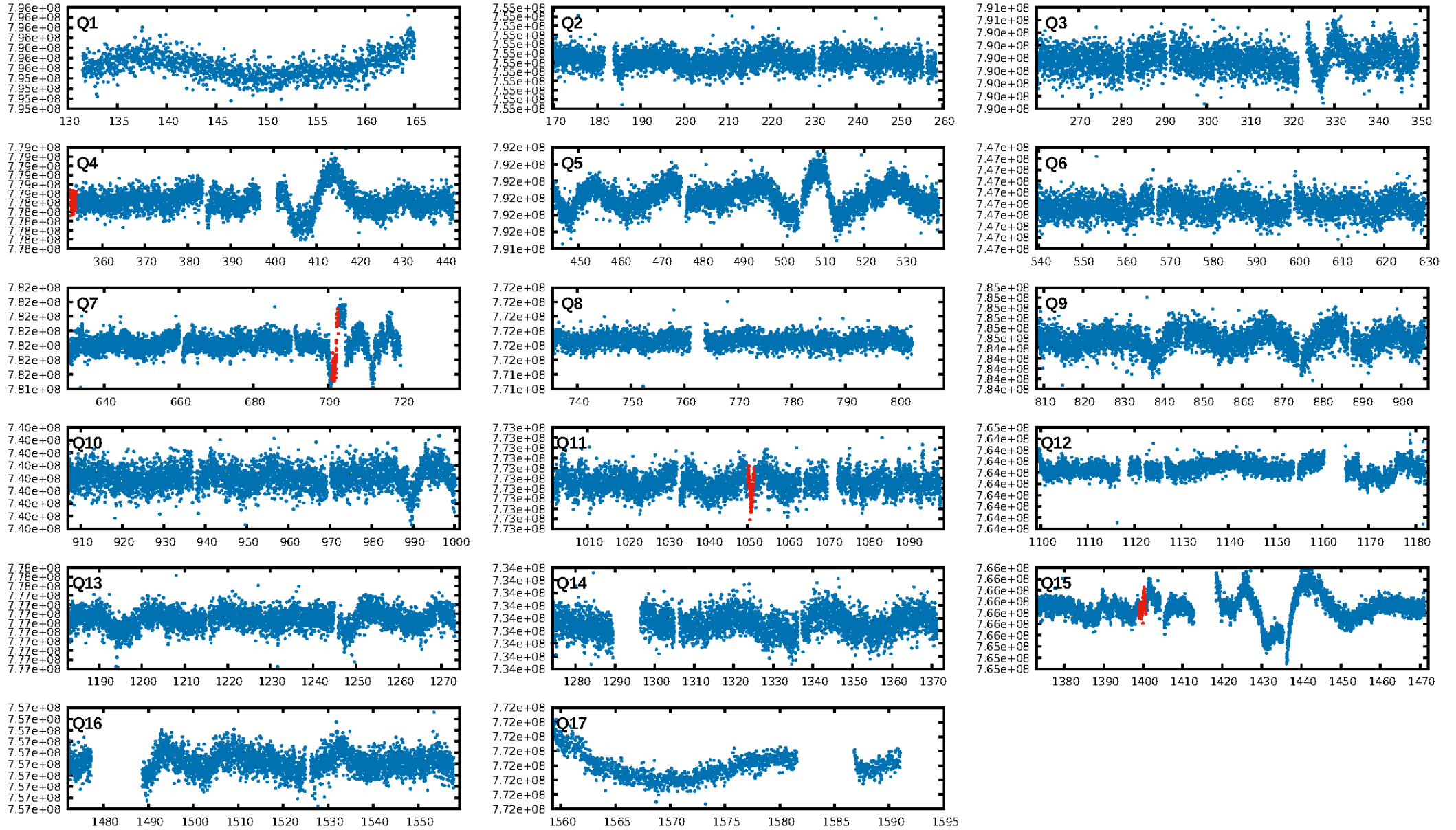
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGoF-sig: 95.2%  
Bootstrap-pfa: 7.90e-13  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.7121  
Centroid-sig: 33.3%  
Centroid-so: 0.353 arcsec [0.20σ]  
OotOffset-rm: 3.835 arcsec [53.79σ]  
KicOffset-rm: 2.676 arcsec [37.88σ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [3/3]

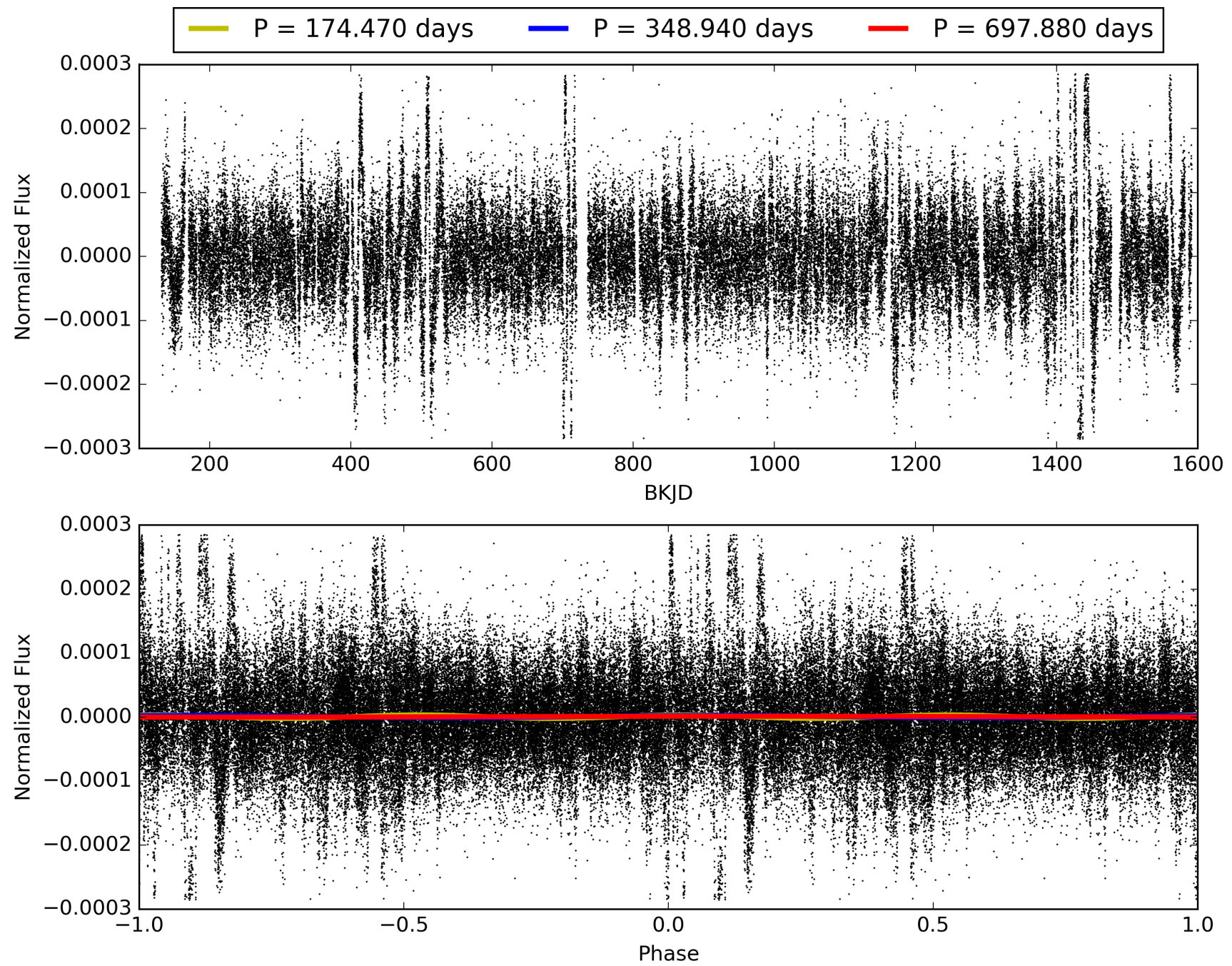
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 20:58:21 Z

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

# TCE 010866952-01, PDC Light Curves

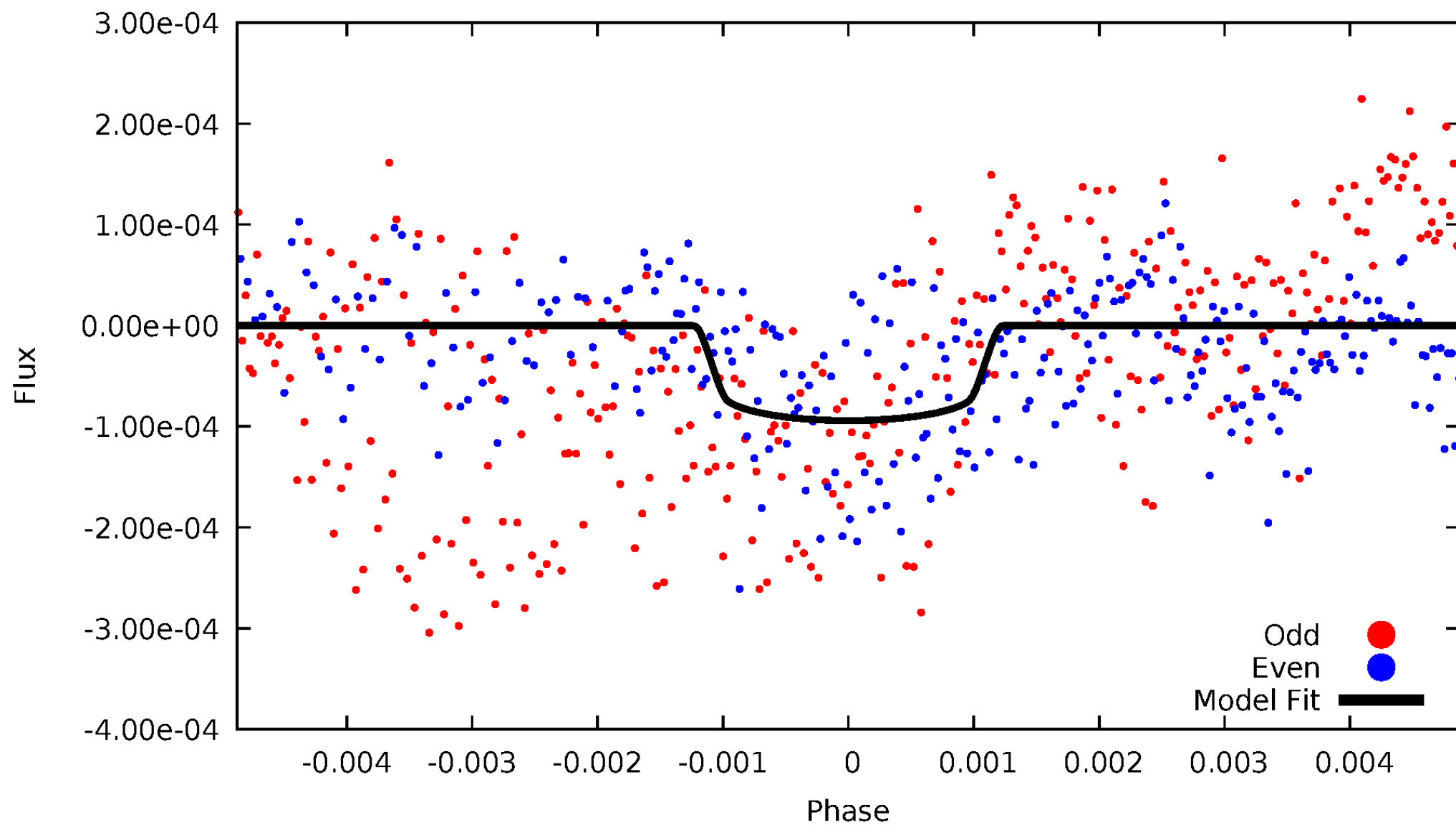


TCE 010866952-01



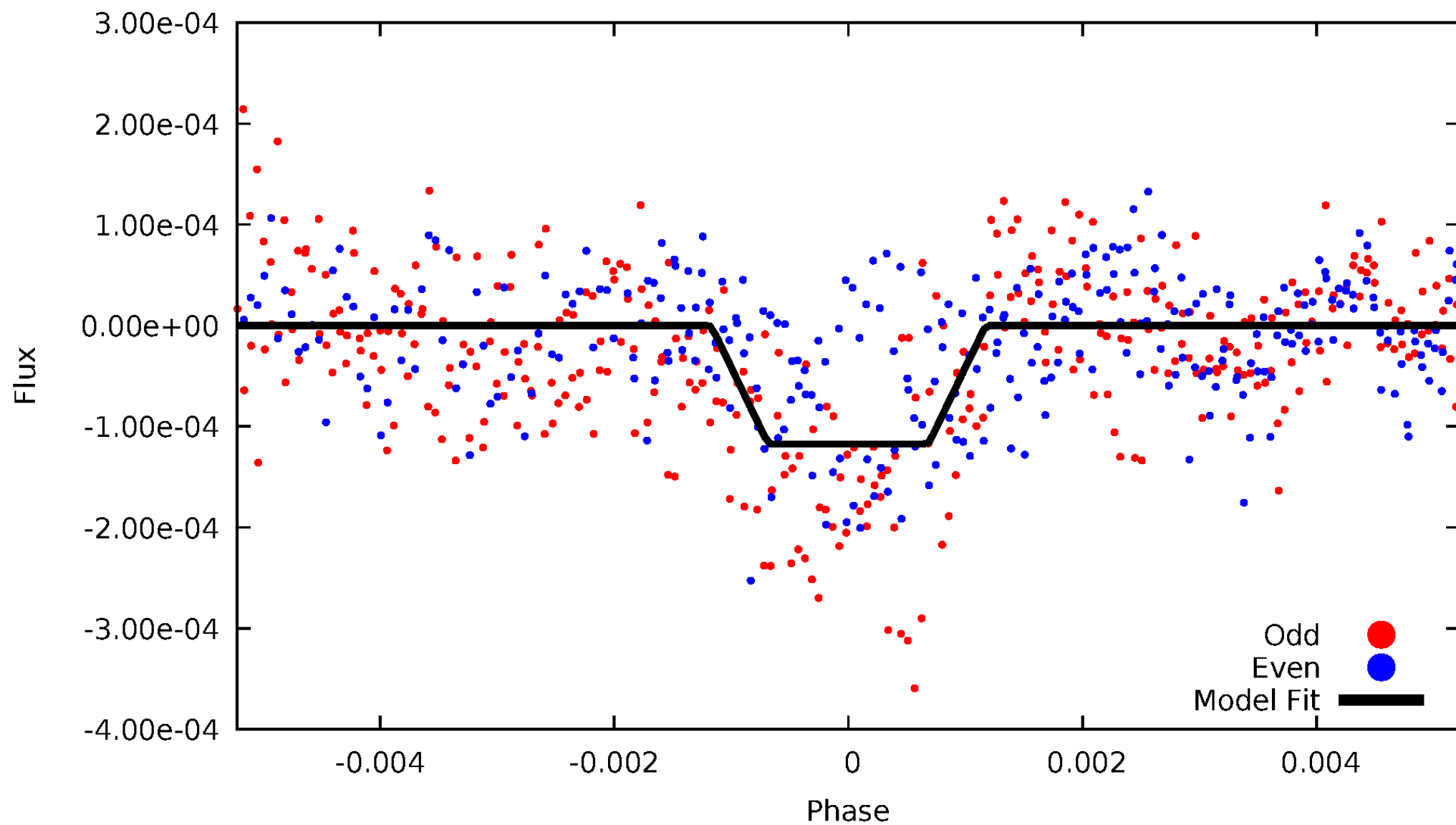
# DV Odd/Even

TCE 010866952-01



# ALT Odd/Even

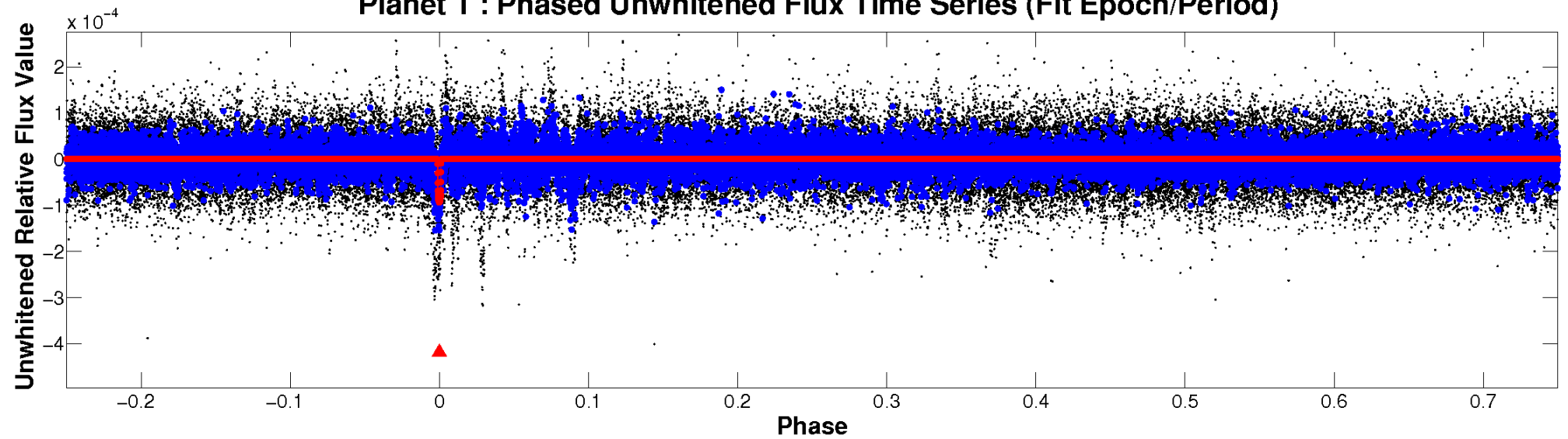
TCE 010866952-01



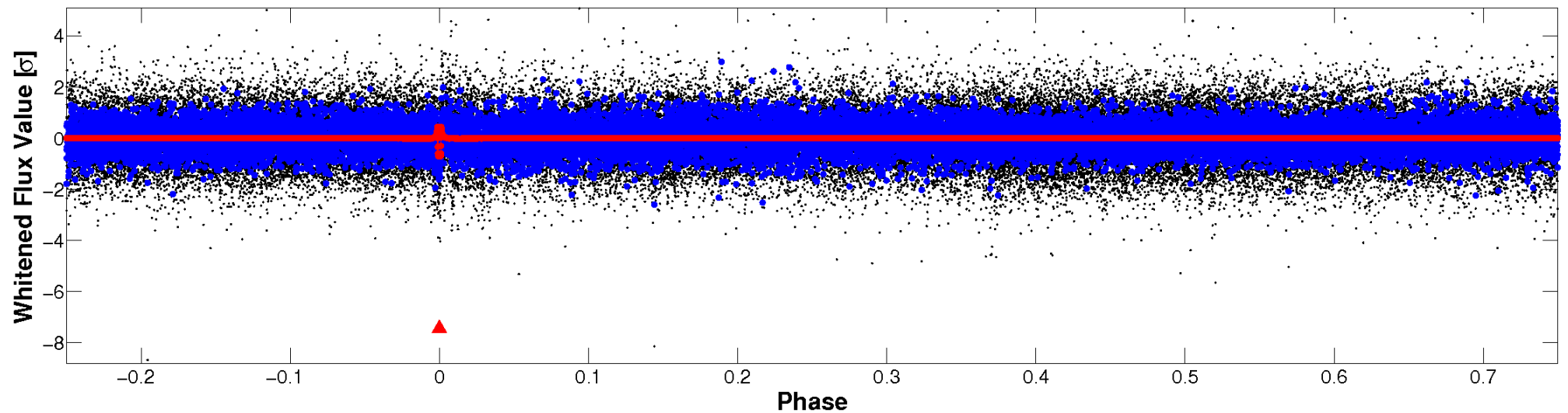


# Non-Whitened Vs. Whitened Light Curve

**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 010866952-01 P=348.939861 Days  $T_0=353.017744$  (BKJD)





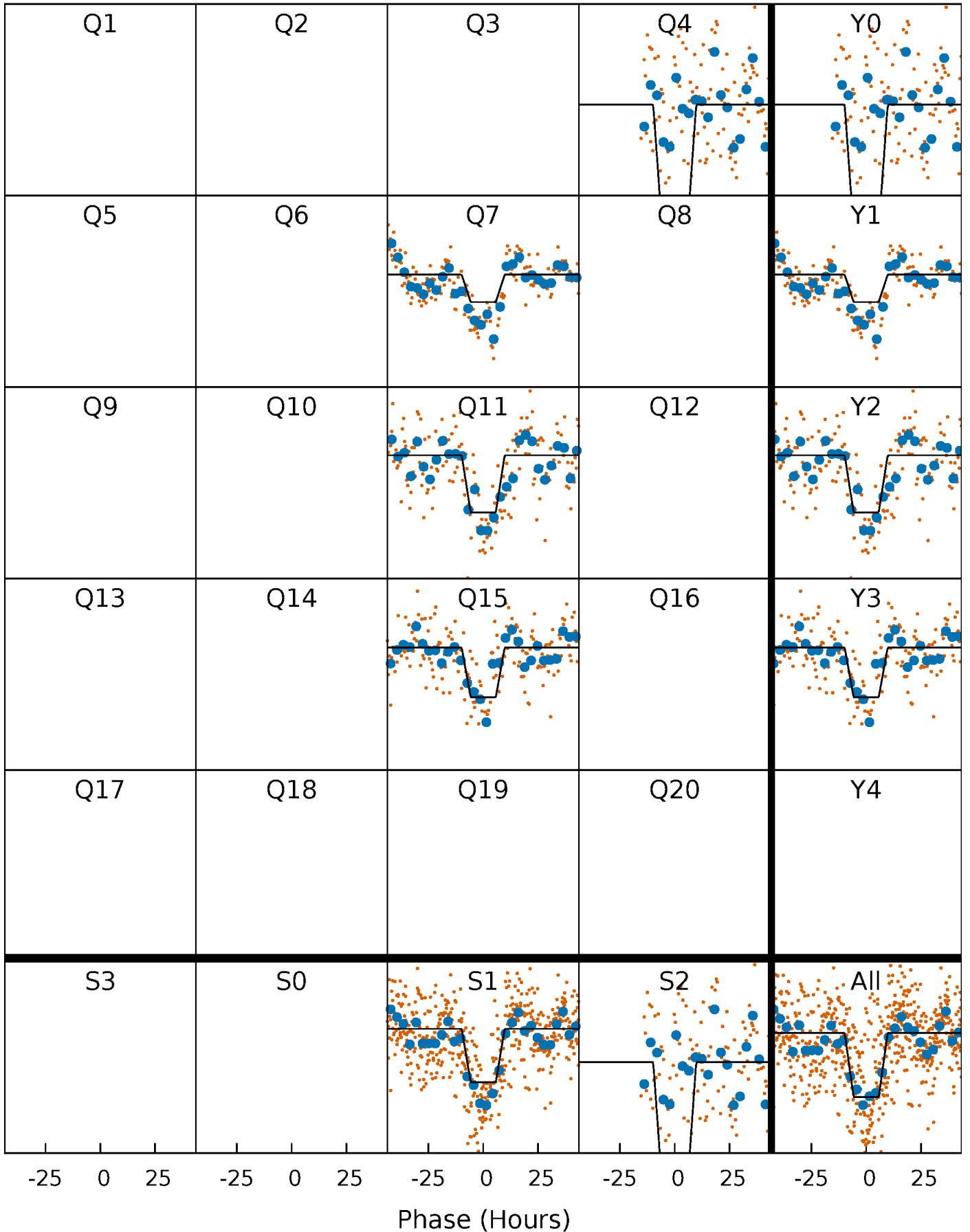
# DV Quarter-Phased Transit Curves

TCE 010866952-01 P=348.939861 Days  $T_0=353.017744$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

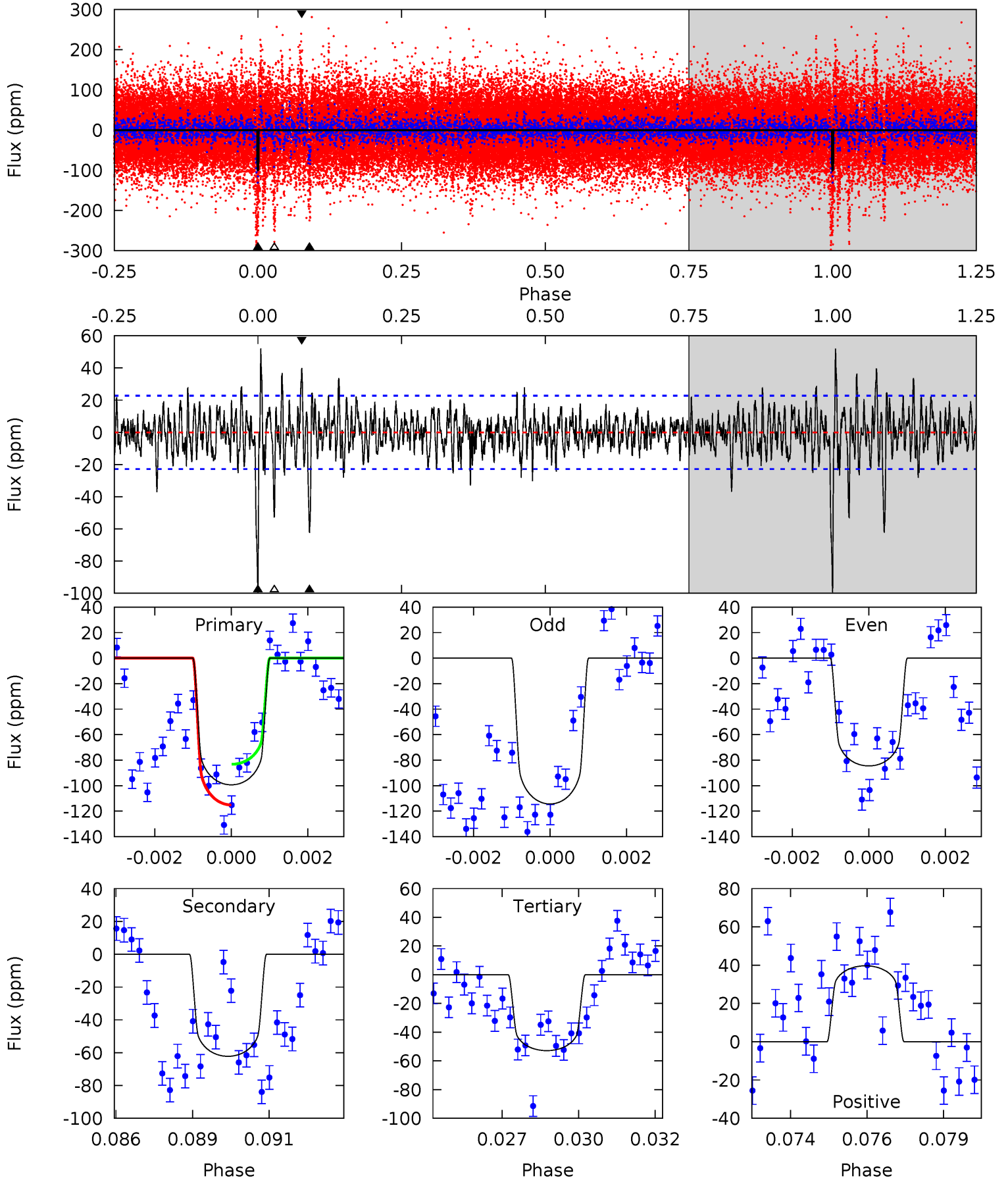
TCE 010866952-01 P=348.923471 Days  $T_0=353.038917$  (BKJD)



# DV Model-Shift Uniqueness Test

010866952-01, P = 348.939861 Days, E = 4.077883 Days

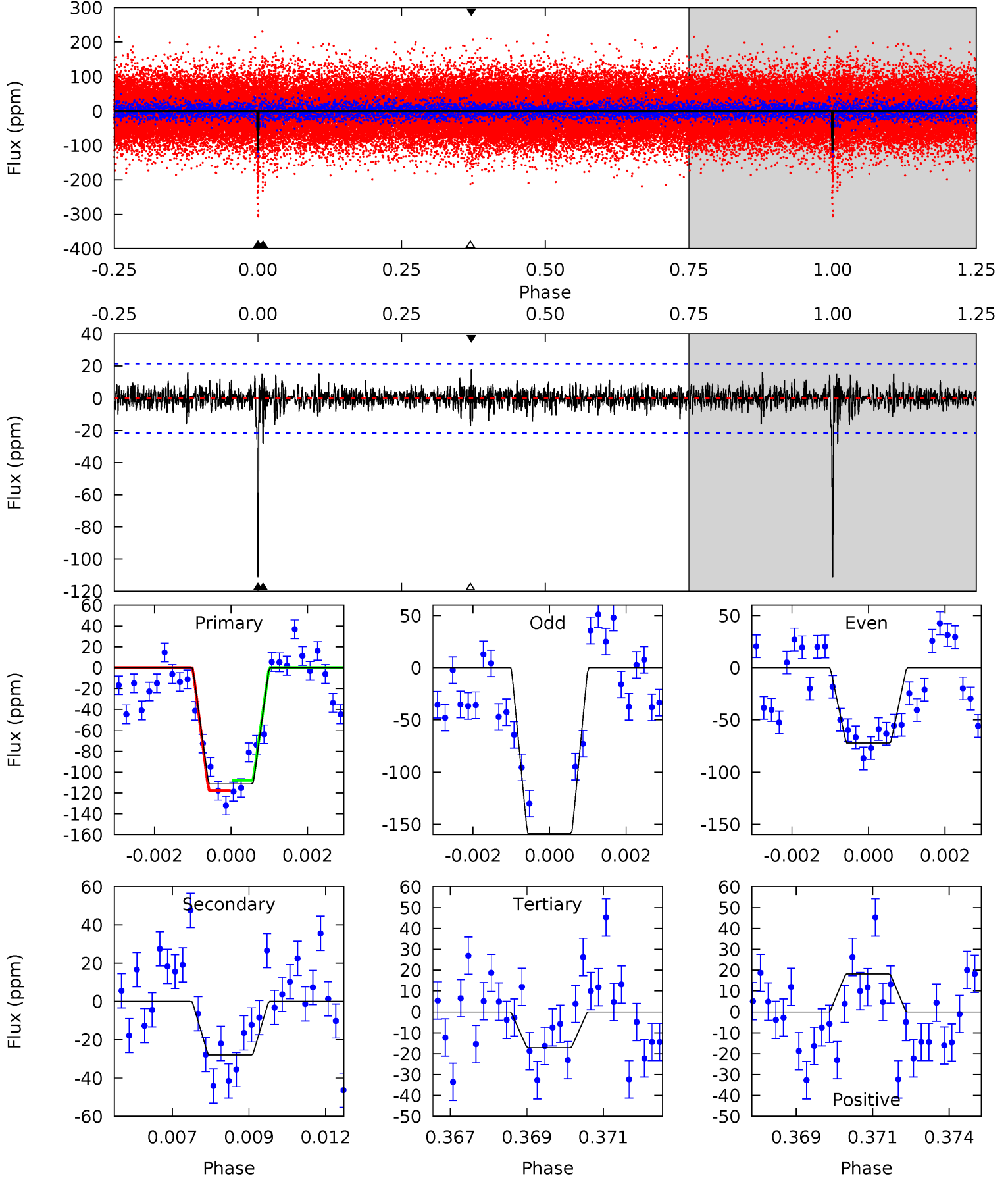
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.1	14.4	12.3	9.21	5.29	3.03	2.44	10.8	13.9	2.17	5.23	3.48	1.01	0.34	3.69



# Alt Model-Shift Uniqueness Test

010866952-01, P = 348.923471 Days, E = 4.115446 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
27.3	6.86	4.19	4.45	5.30	3.04	1.02	23.1	22.9	2.67	2.41	10.7	0.98	0.14	1.17



### Stellar Parameters For KIC 010866952

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5995^{+161}_{-161}$	$4.333^{+0.204}_{-0.136}$	$-0.880^{+0.300}_{-0.300}$	$0.979^{+0.202}_{-0.202}$	$0.751^{+0.085}_{-0.036}$	$1.129^{+1.103}_{-0.487}$
	+3%/-3%	+5%/-3%	+34%/-34%	+21%/-21%	+11%/-5%	+98%/-43%
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 010866952-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-62 \pm 4$	$1.17^{+0.19}_{-0.17}$	$388^{+24}_{-27}$	$5141^{+247}_{-246}$	$19756^{+7706}_{-5023}$
Alt.	$-28 \pm 4$	$1.16^{+0.17}_{-0.17}$	$388^{+23}_{-25}$	$4391^{+233}_{-197}$	$9137^{+3574}_{-2373}$

$T_{\text{max}}$  = 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

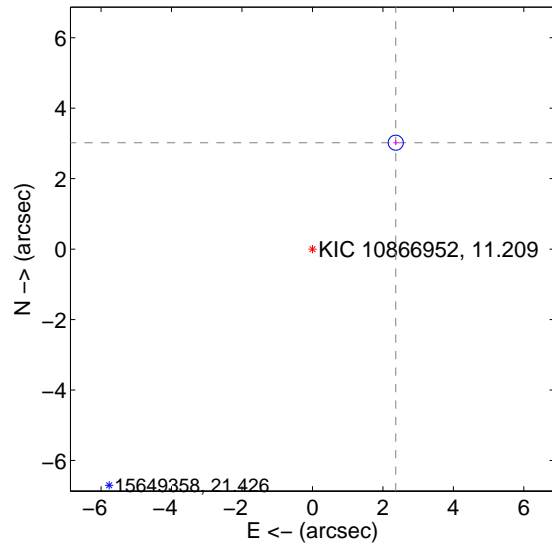
Supplemental centroid analysis for 010866952-01. **Kepler magnitude: 11.21.** Transit SNR 8.52

**There are 0 quarters with good PRF difference image offsets**

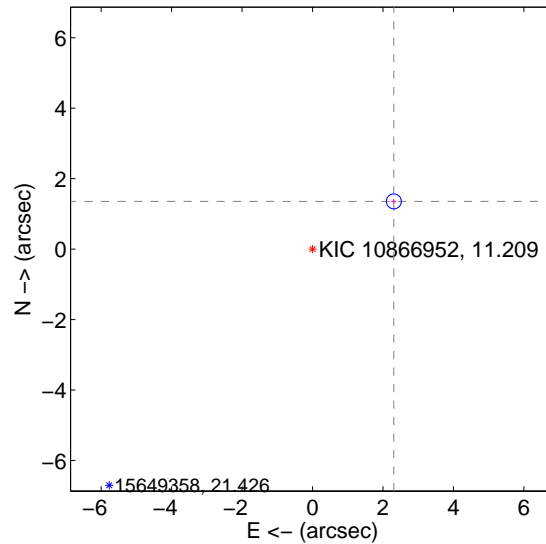
The direct PRF centroid is offset from the target star catalog position by about 1.67 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>3.835 \pm 0.071</math></b>	<b>53.79</b>	$-2.365 \pm 0.070$	$3.020 \pm 0.072$
PRF-fit source offset from KIC position	<b><math>2.676 \pm 0.071</math></b>	<b>37.88</b>	$-2.308 \pm 0.070$	$1.354 \pm 0.072$
photometric centroid source offset	$0.35 \pm 1.79$	0.20	$-0.18 \pm 2.07$	$0.30 \pm 1.68$

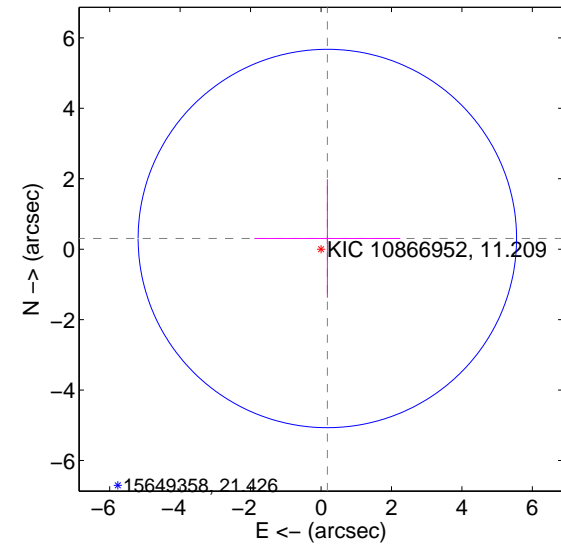
offset from difference PRF-fit to OOT PRF-fit



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



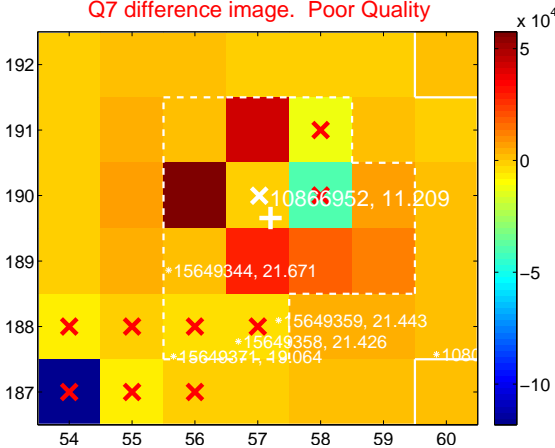
Q6 no difference image



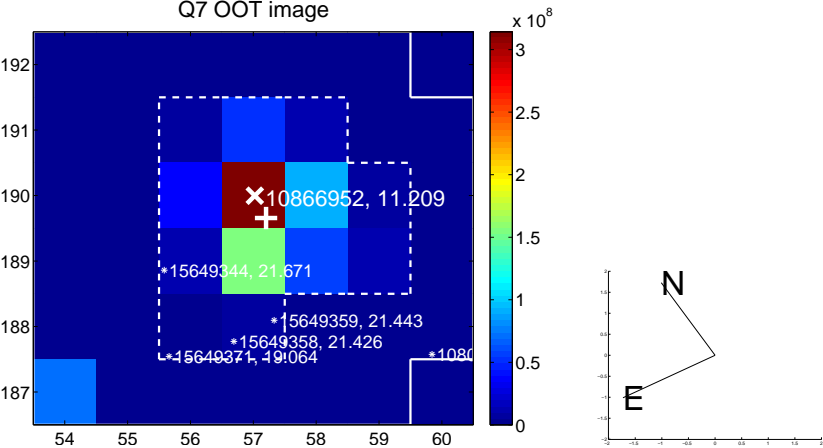
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



Q8 no OOT image



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

Q9 no difference image



Q9 no OOT image



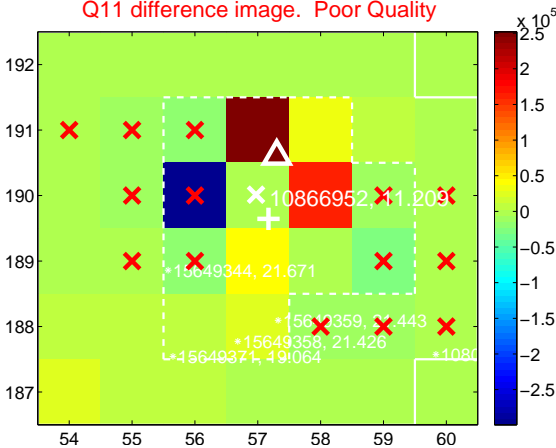
Q10 no difference image



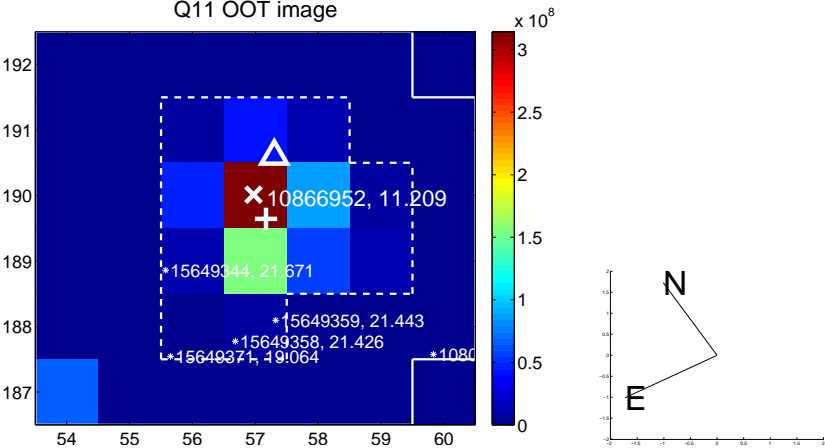
Q10 no OOT image



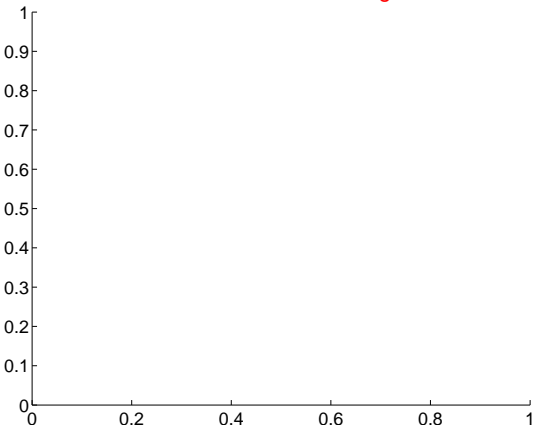
Q11 difference image. Poor Quality



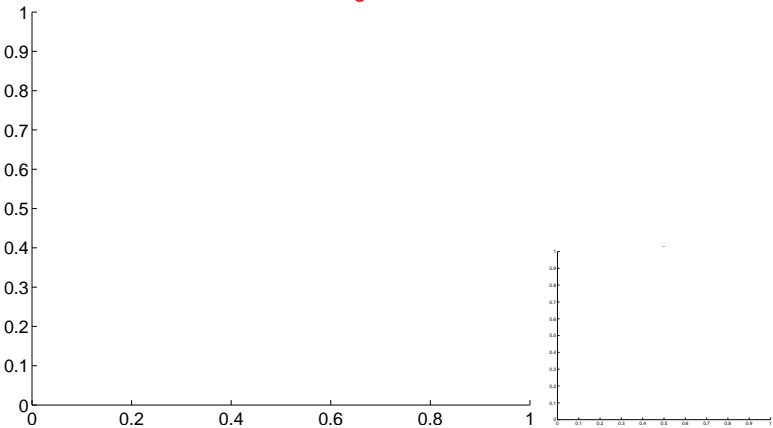
Q11 OOT image



Q12 no difference image



Q12 no OOT image

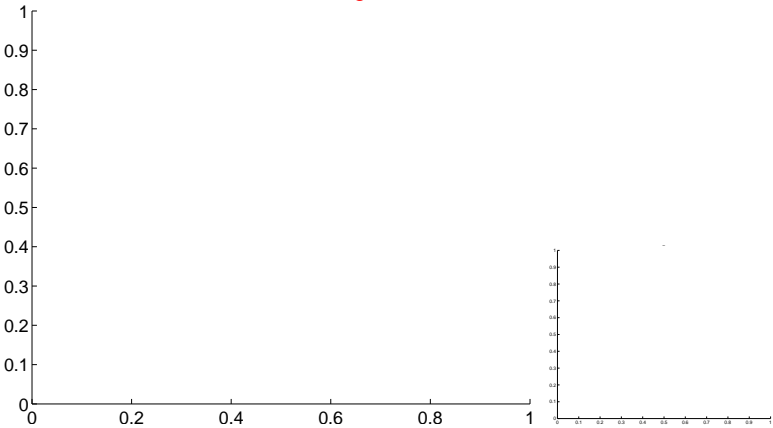


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q13 no difference image



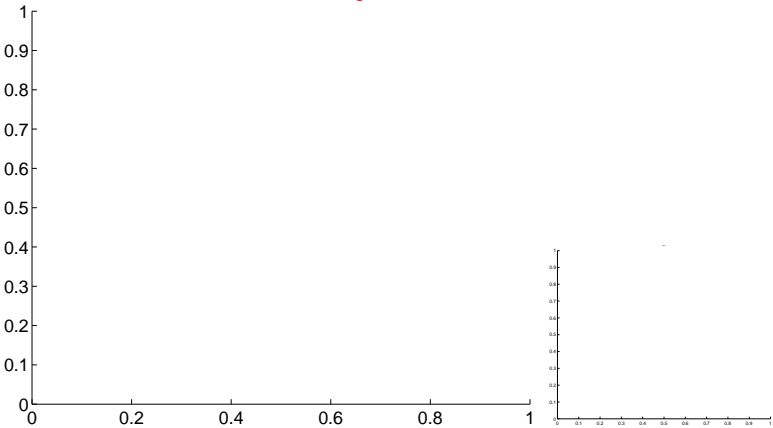
Q13 no OOT image



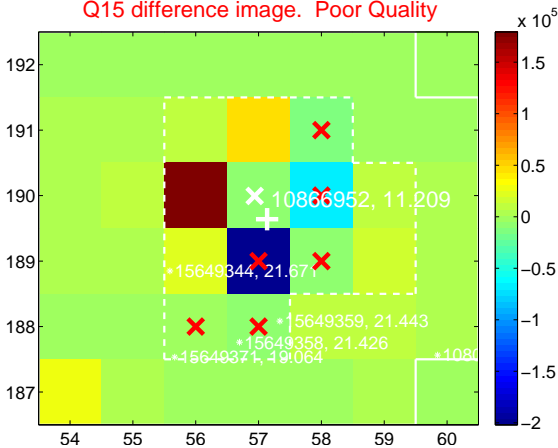
Q14 no difference image



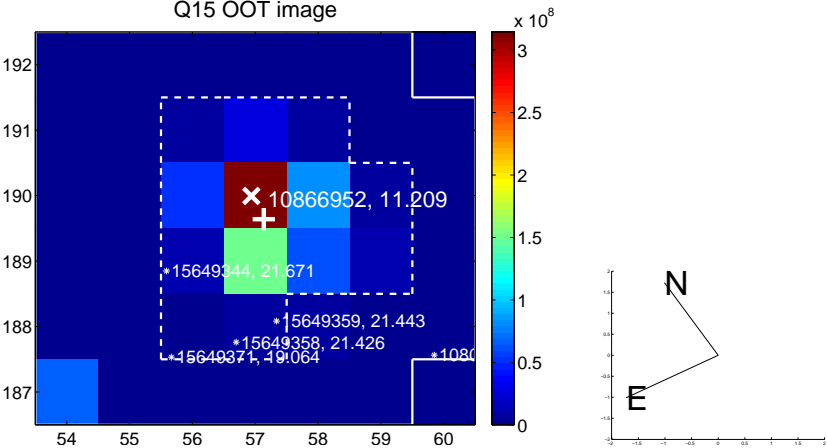
Q14 no OOT image



Q15 difference image. Poor Quality



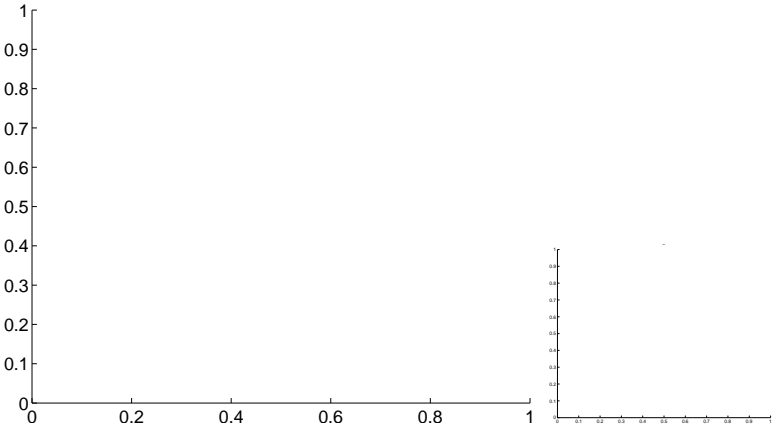
Q15 OOT image



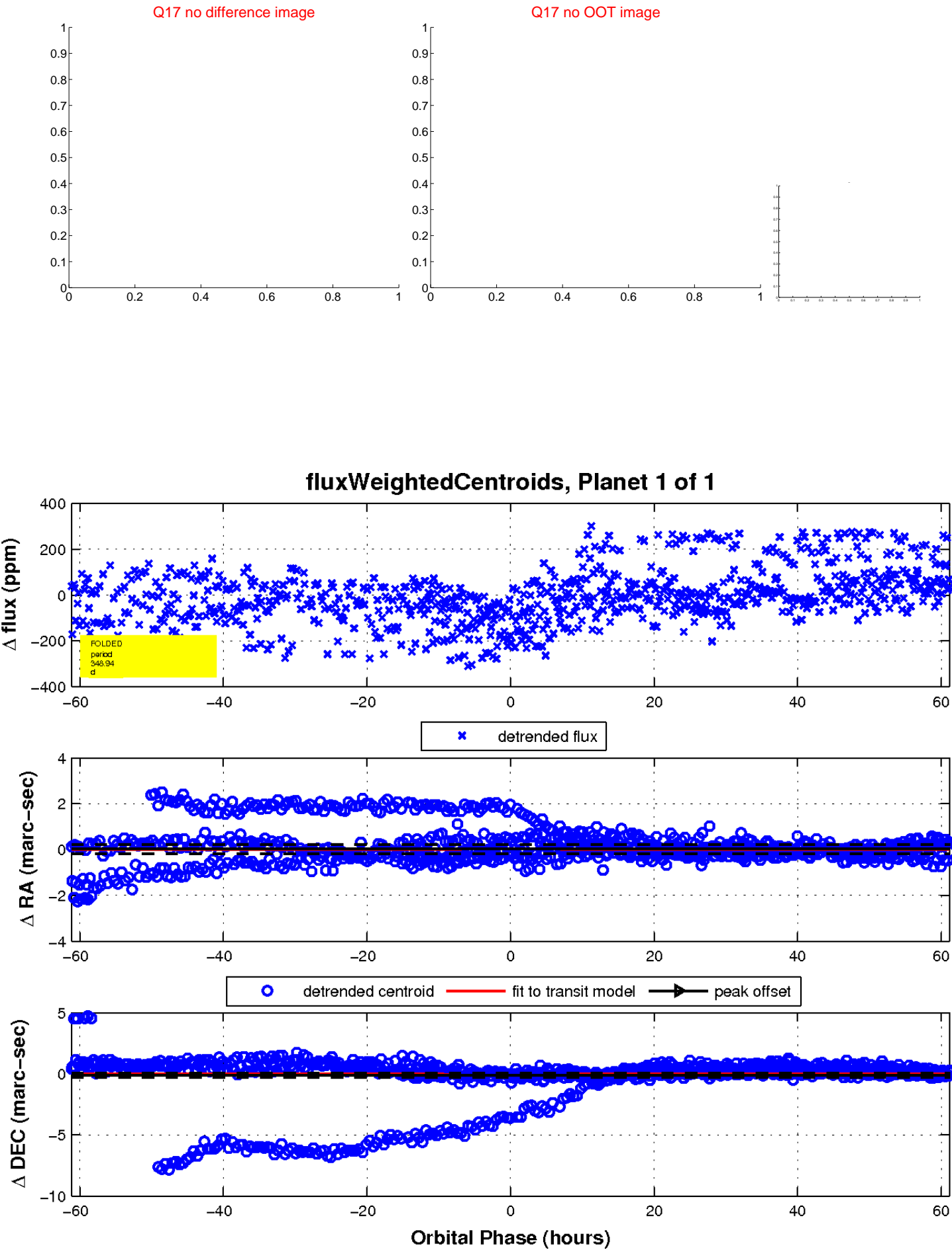
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

