

# KIC 009008958

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009008958-01	OBS	No	350.952169	192.841416	403.0	16.448	8.9	8.2	1.06	6202	2.24	1.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009008958-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—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.

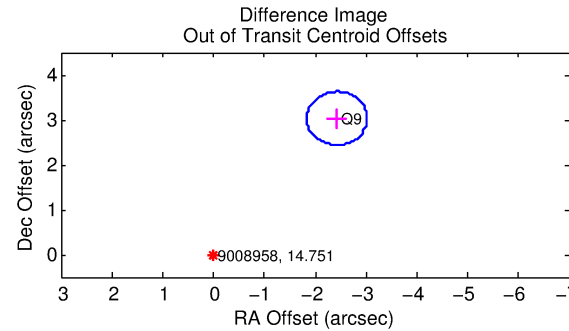
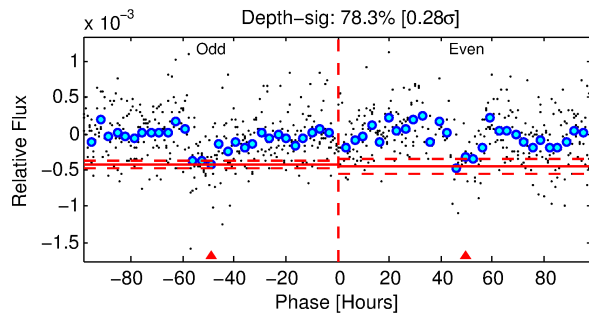
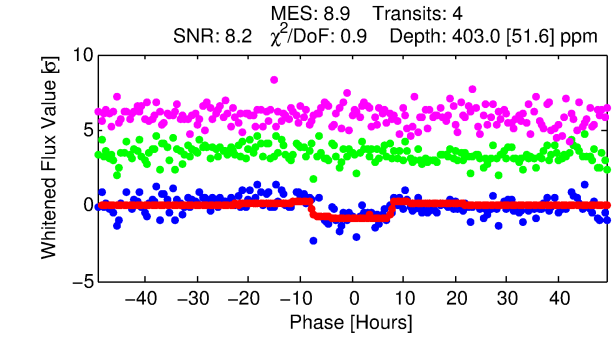
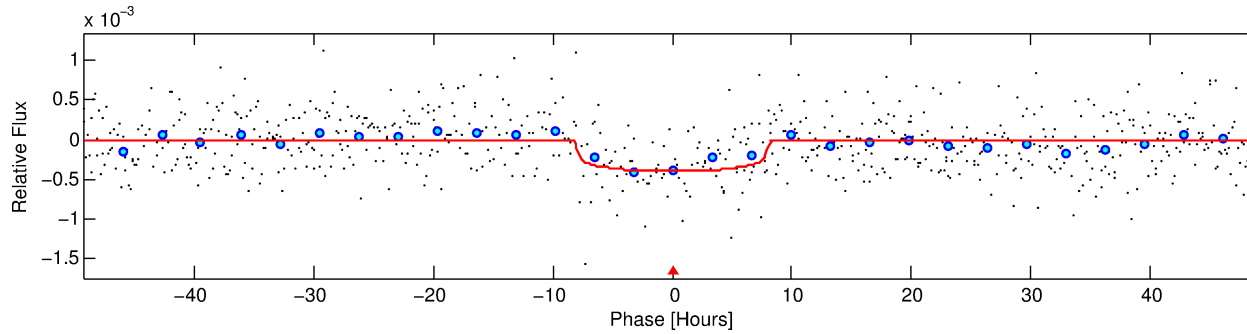
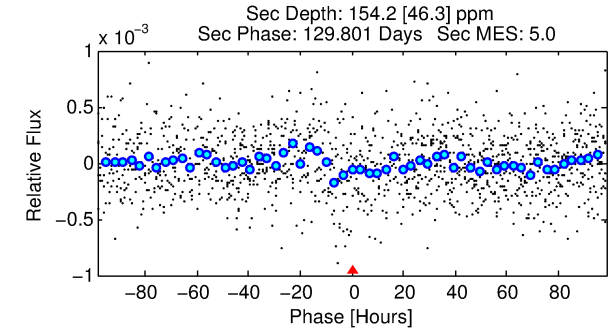
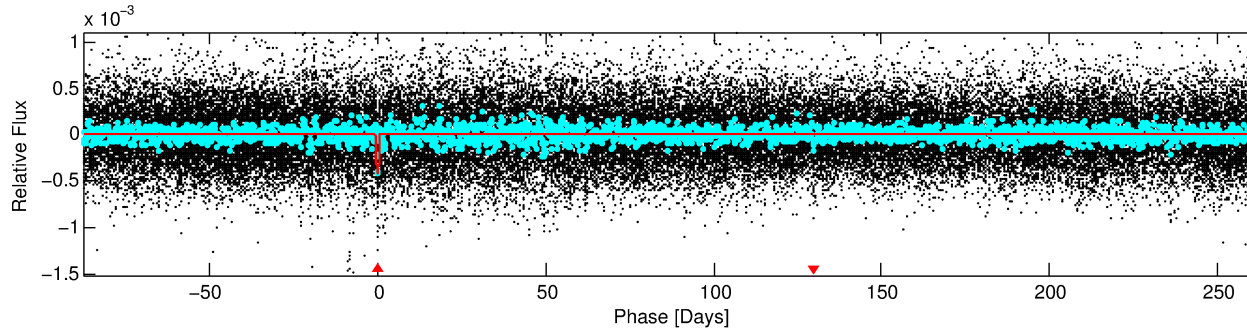
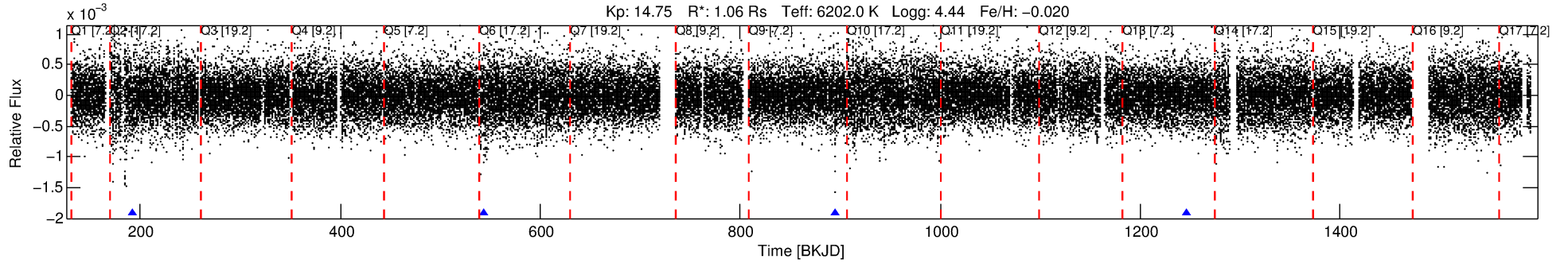
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009008958-01

No Significant Match Found

# DV One-Page Summary

KIC: 9008958 Candidate: 1 of 1 Period: 350.952 d



## DV Fit Results:

Period = 350.95217 [0.01228] d  
Epoch = 192.8414 [0.0213] BKJD  
Rp/R\* = 0.0193 [0.0070]  
a/R\* = 131.41 [231.98]  
b = 0.62 [1.74]  
Seff = 1.46 [0.54]  
Teq = 280 [26] K  
Rp = 2.24 [1.02] Re  
a = 1.0122 [0.2381] AU  
Ag = 17362.33 [14862.13] [1.17σ]  
Teffp = 4974 [991] K [4.74σ]

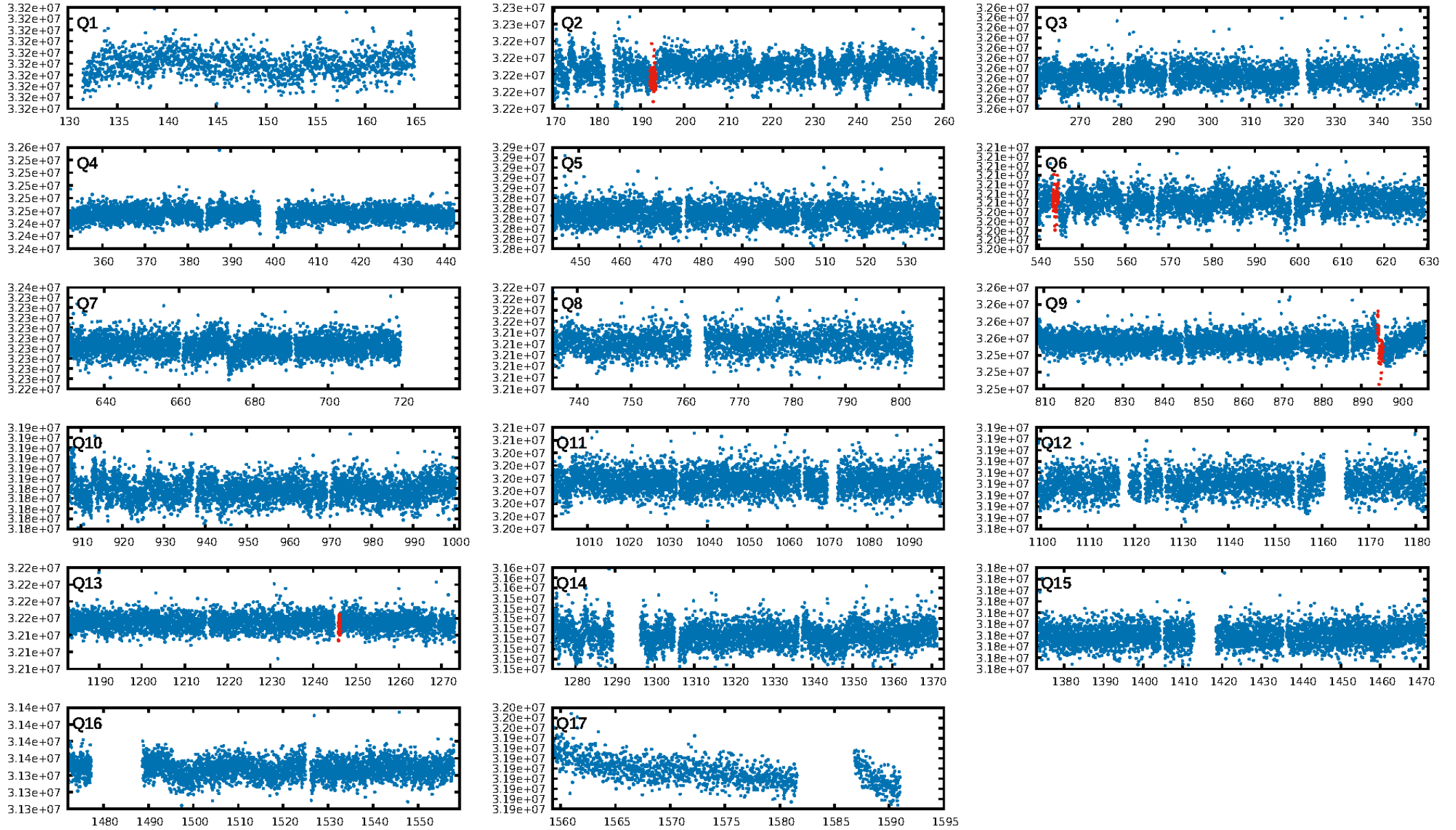
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 57.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.01e-14  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.885  
Centroid-sig: 11.1%  
Centroid-so: 1.515 arcsec [1.05σ]  
OotOffset-rm: 3.882 arcsec [19.58σ]  
KicOffset-rm: 3.773 arcsec [19.00σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [3/3]

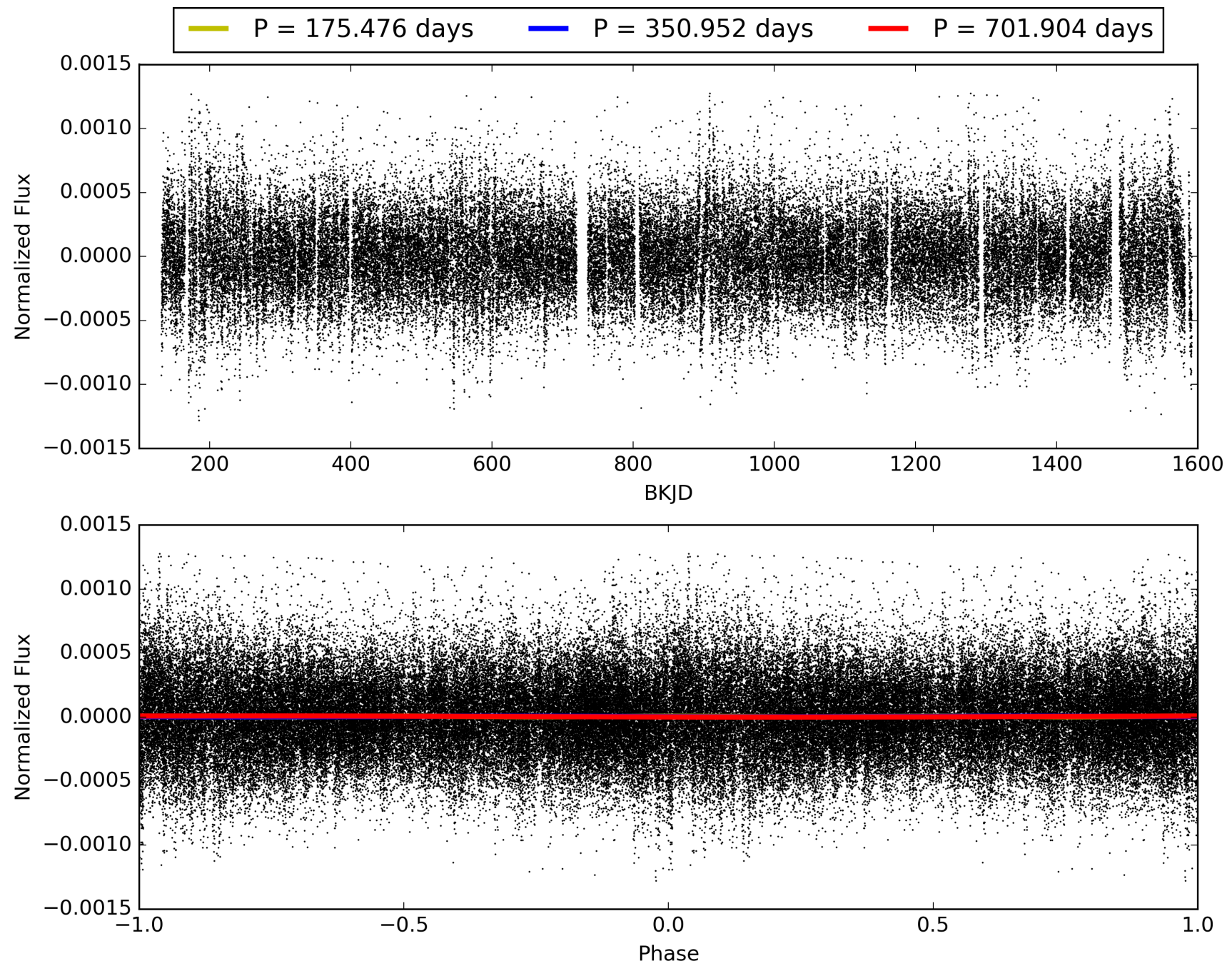
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 22:21:57 Z

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

# TCE 009008958-01, PDC Light Curves

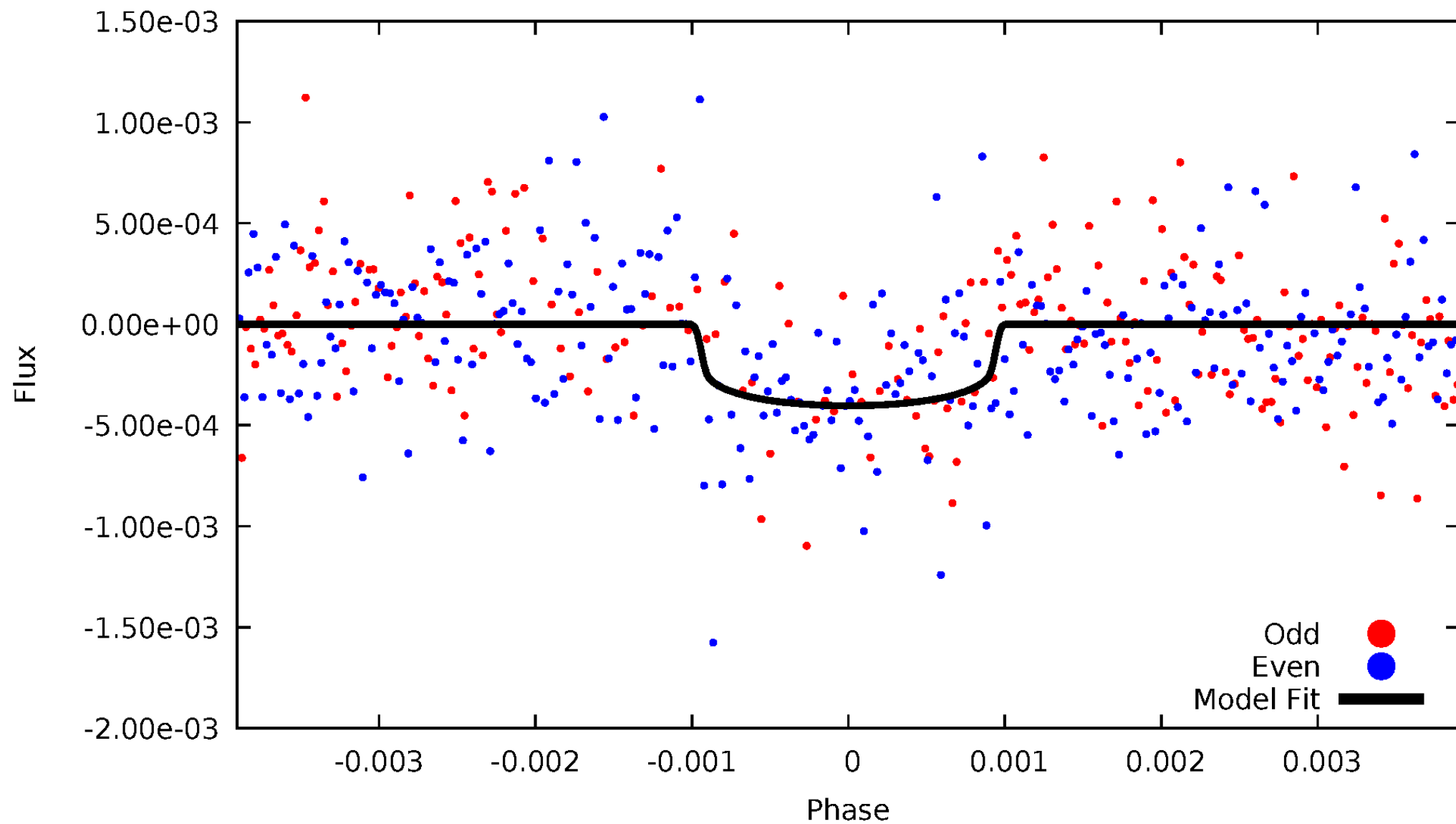


TCE 009008958-01



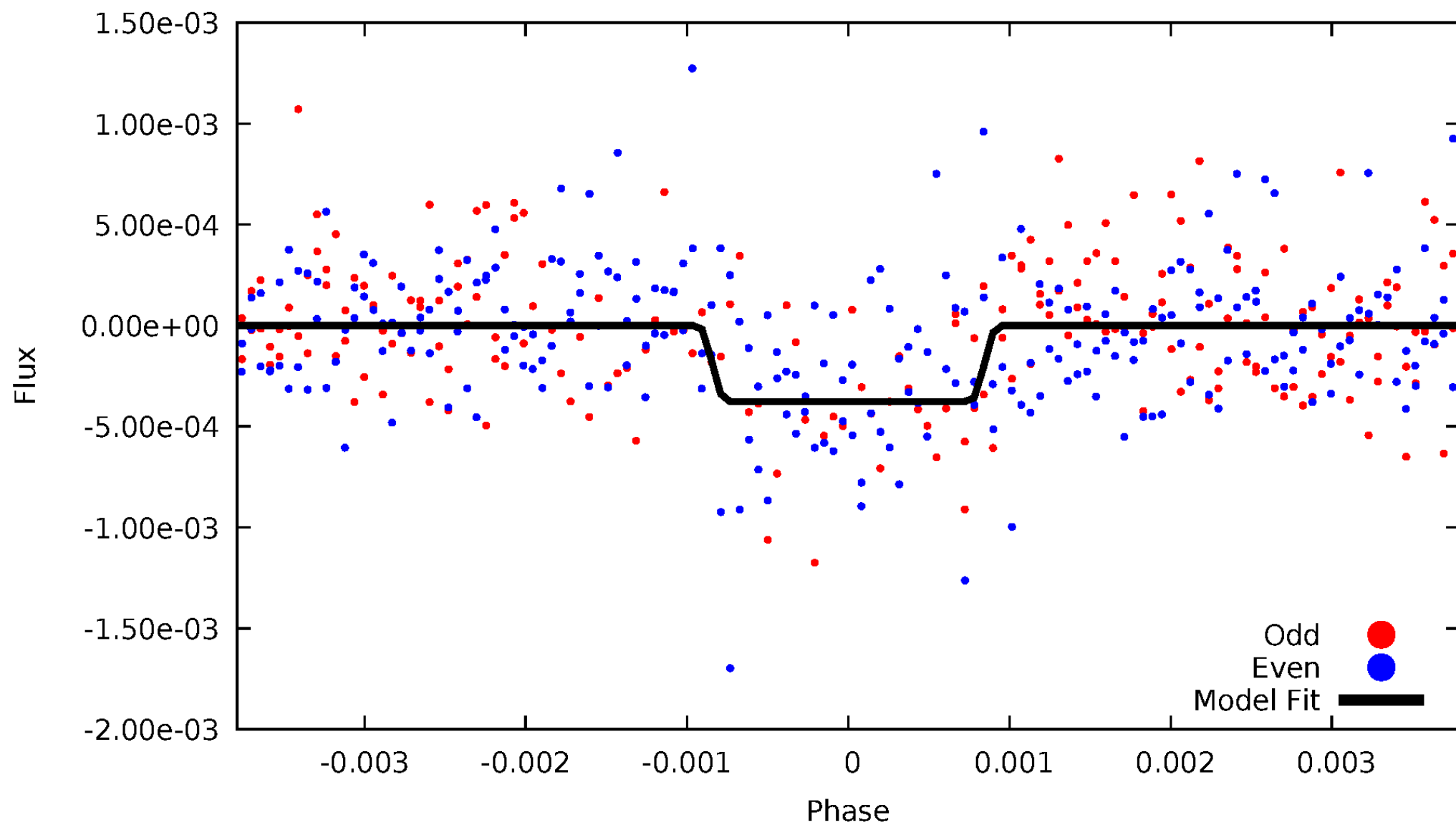
# DV Odd/Even

TCE 009008958-01



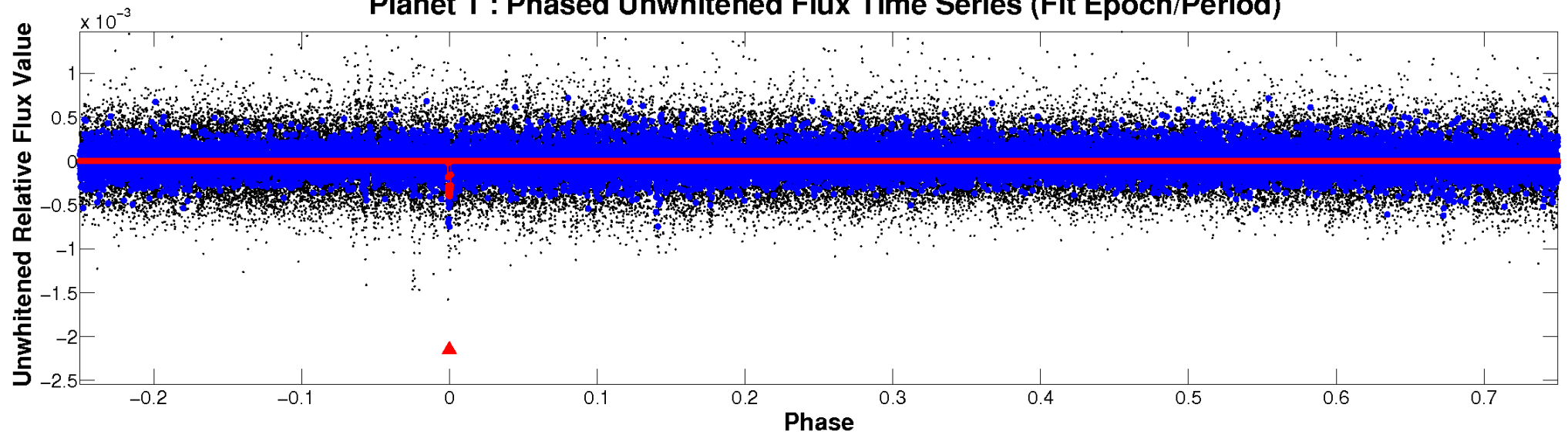
# ALT Odd/Even

TCE 009008958-01

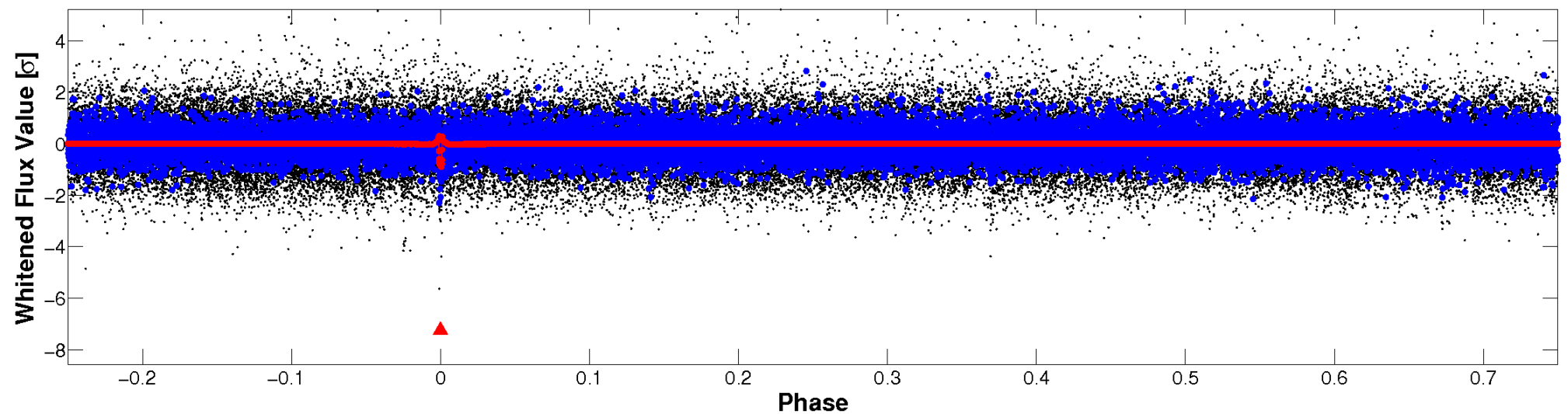


# Non-Whitened Vs. Whitened Light Curve

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



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



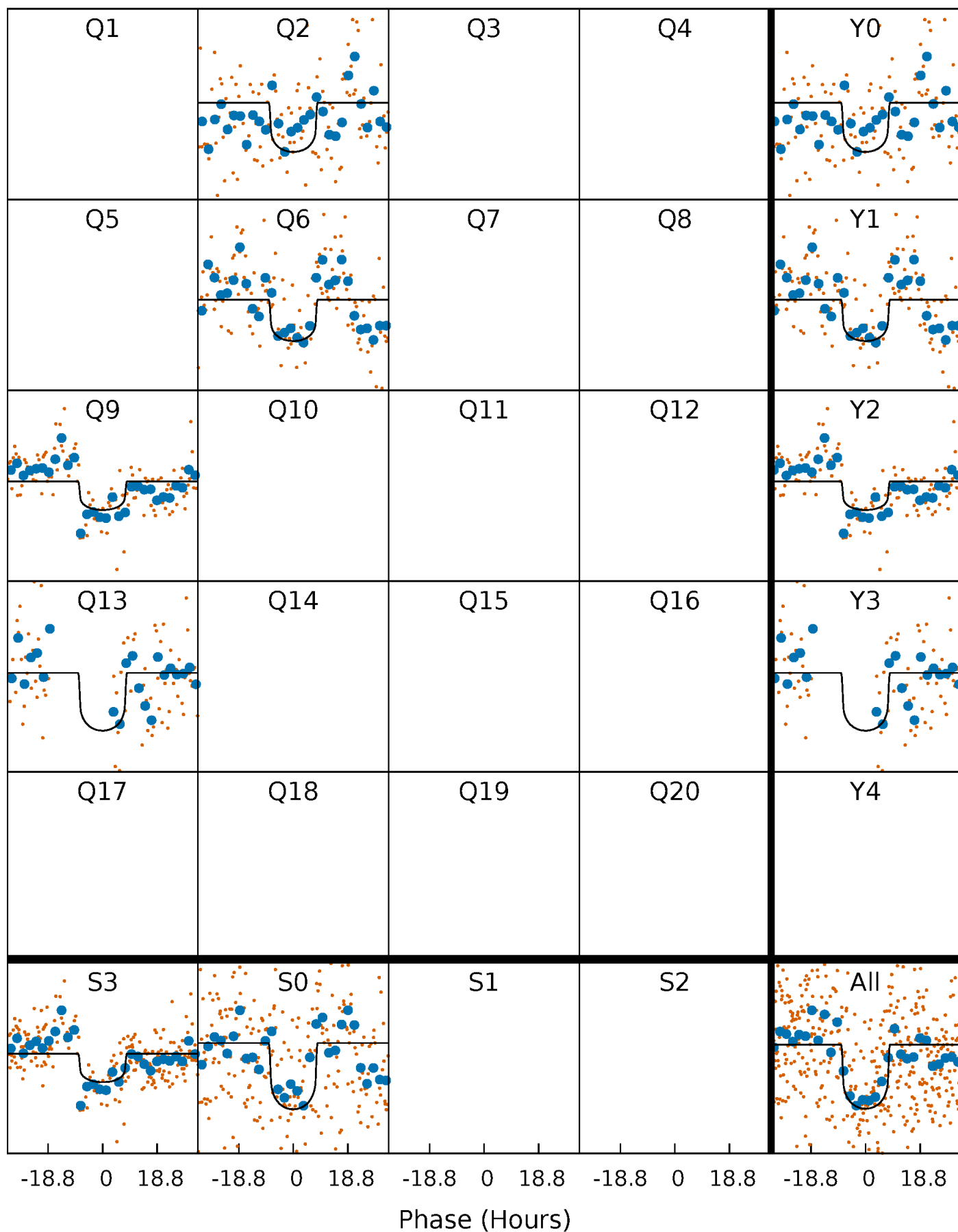
# PDC Quarter-Phased Transit Curves

TCE 009008958-01 P=350.952169 Days  $T_0=192.841416$  (BKJD)



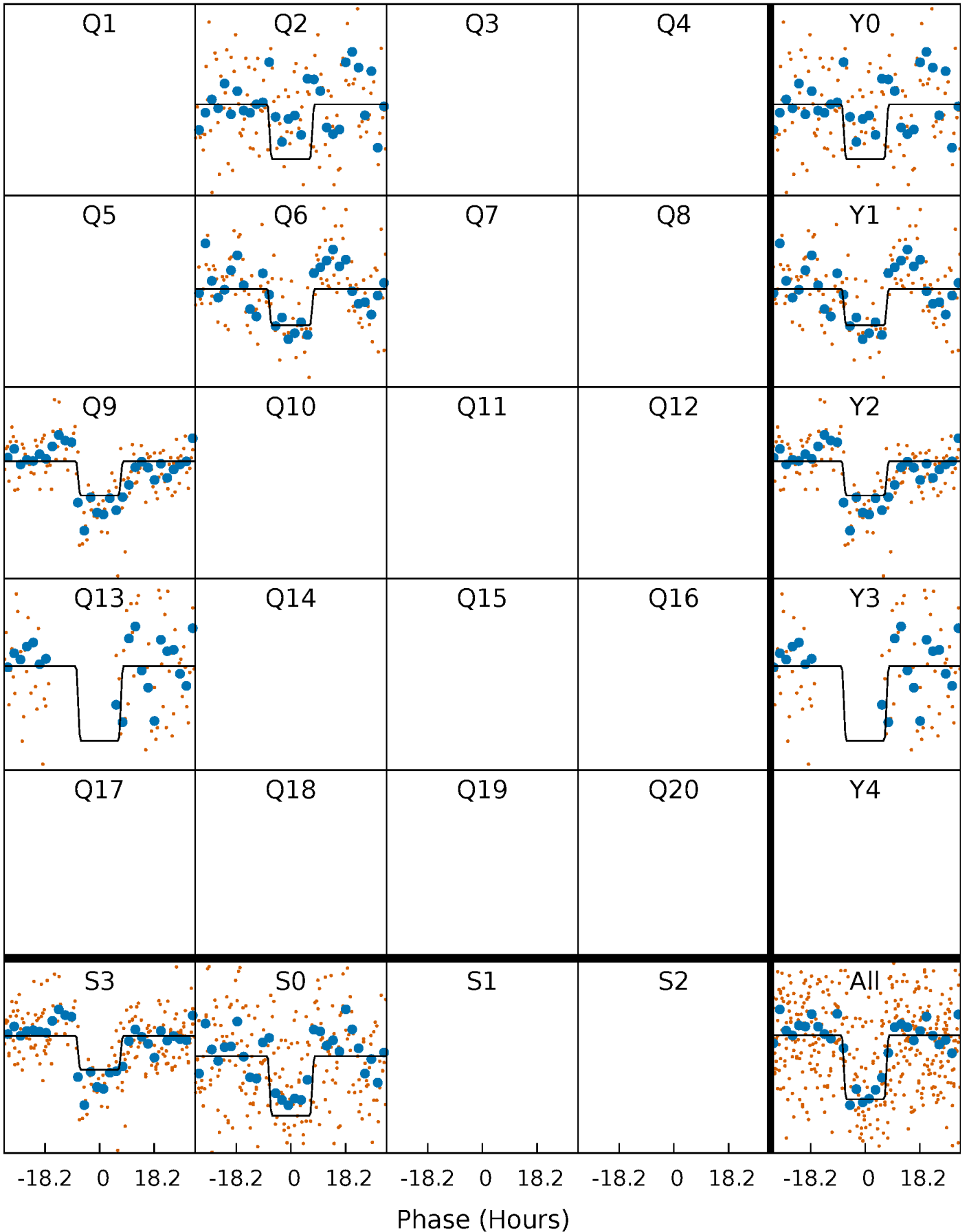
# DV Quarter-Phased Transit Curves

TCE 009008958-01 P=350.952169 Days  $T_0=192.841416$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

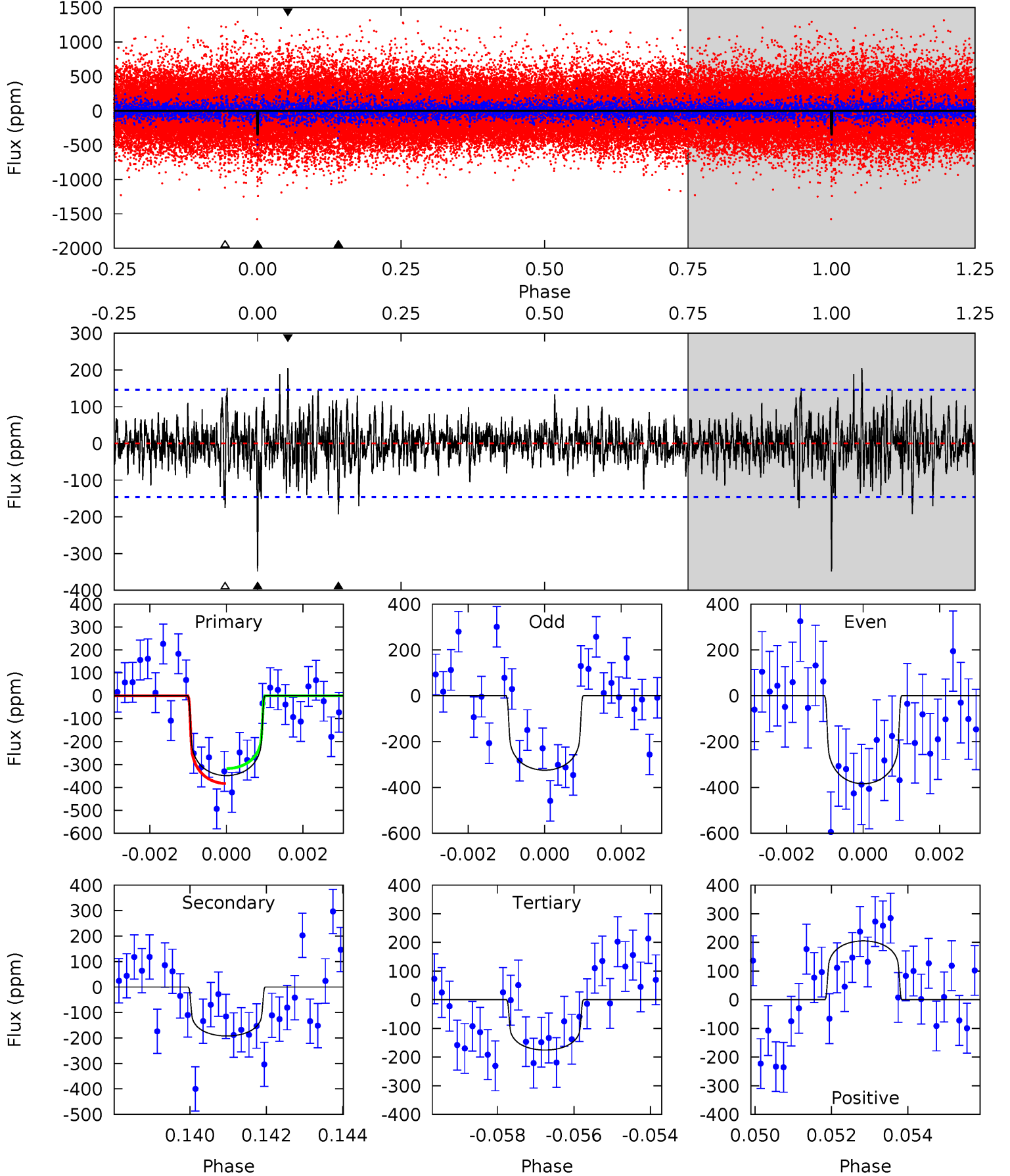
TCE 009008958-01 P=350.925959 Days  $T_0=192.847659$  (BKJD)



# DV Model-Shift Uniqueness Test

009008958-01, P = 350.952169 Days, E = 192.841416 Days

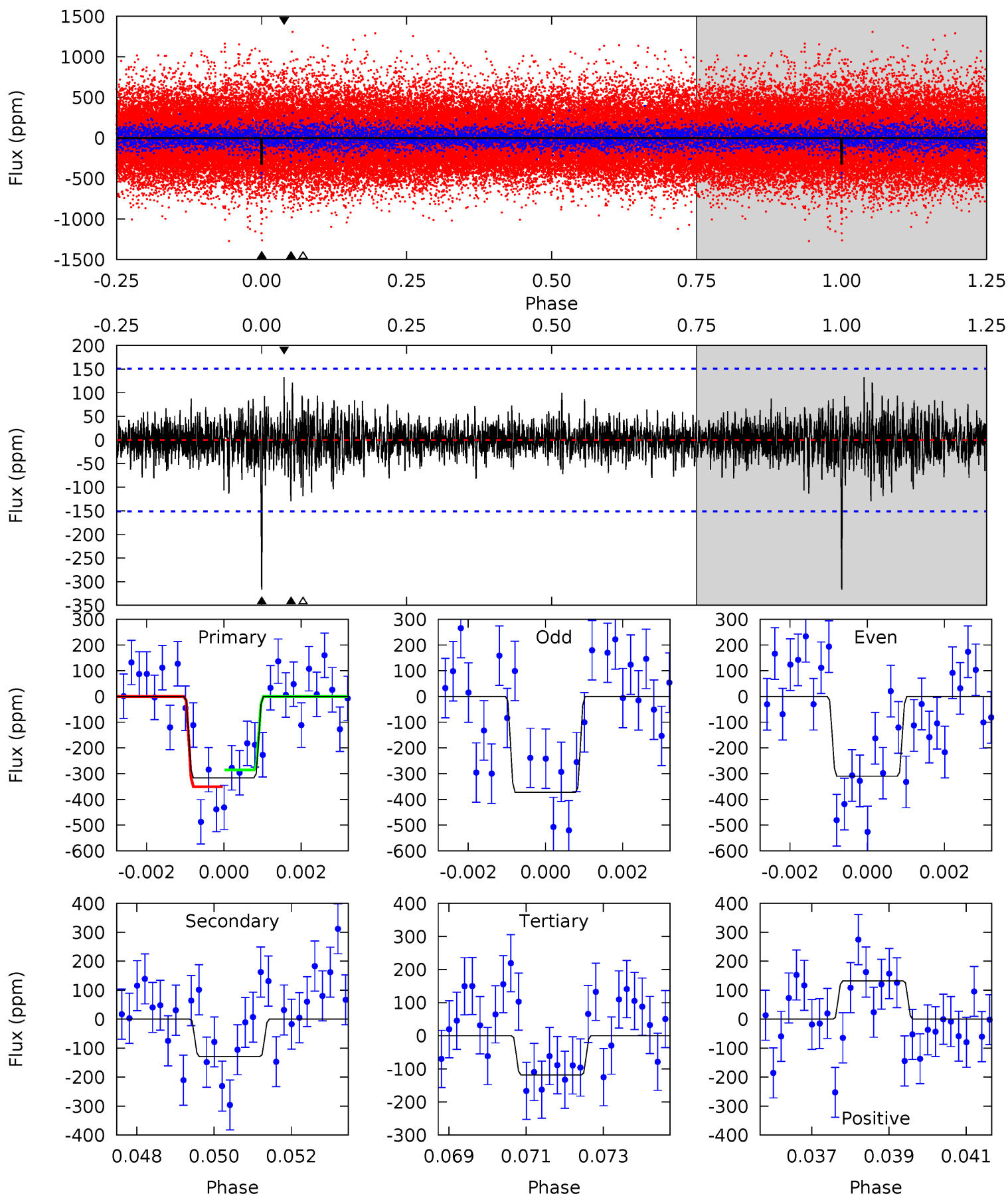
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	7.02	6.41	7.50	5.33	3.09	1.55	6.31	5.22	0.61	-0.48	1.05	1.07	0.37	1.19



# Alt Model-Shift Uniqueness Test

009008958-01, P = 350.925959 Days, E = 192.847659 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	4.57	4.19	4.67	5.34	3.11	0.97	7.00	6.51	0.38	-0.11	1.08	0.99	0.29	1.16



### Stellar Parameters For KIC 009008958

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6202^{+174}_{-217}$	$4.436^{+0.062}_{-0.188}$	$-0.020^{+0.250}_{-0.300}$	$1.062^{+0.296}_{-0.127}$	$1.122^{+0.145}_{-0.145}$	$1.320^{+0.346}_{-0.667}$
	+3%/-3%	+1%/-4%	+1250%/-1500%	+28%/-12%	+13%/-13%	+26%/-51%
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 009008958-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-192 \pm 27$	$2.34^{+0.88}_{-0.86}$	$398^{+26}_{-20}$	$5243^{+1318}_{-648}$	$19143^{+28316}_{-8881}$
Alt.	$-129 \pm 28$	$2.37^{+0.95}_{-0.85}$	$397^{+27}_{-19}$	$4829^{+1139}_{-620}$	$12817^{+20418}_{-6639}$

$T_{max}$  = 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

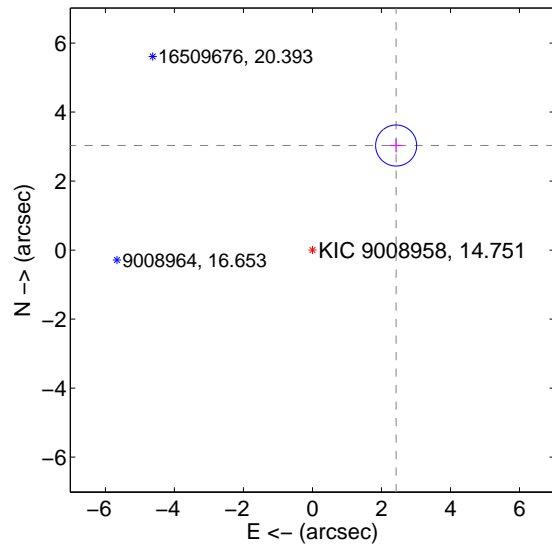
Supplemental centroid analysis for 009008958-01. Kepler magnitude: 14.75. Transit SNR 8.19

There are 1 quarters with good PRF difference image offsets

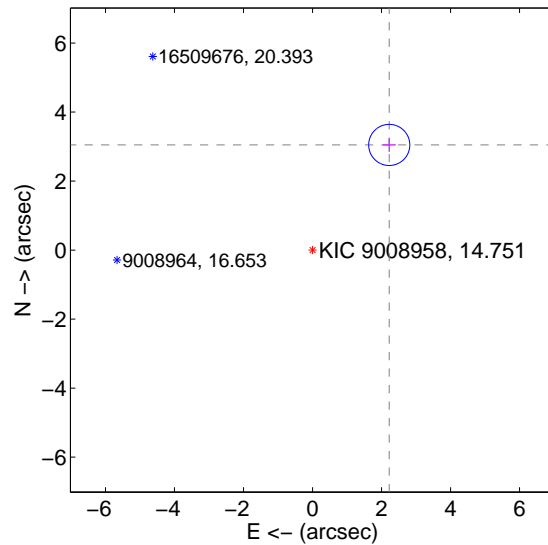
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.882 \pm 0.198$	19.58	$-2.426 \pm 0.193$	$3.031 \pm 0.202$
PRF-fit source offset from KIC position	$3.773 \pm 0.199$	19.00	$-2.223 \pm 0.193$	$3.048 \pm 0.202$
photometric centroid source offset	$1.51 \pm 1.44$	1.05	$-1.44 \pm 1.44$	$0.46 \pm 1.49$

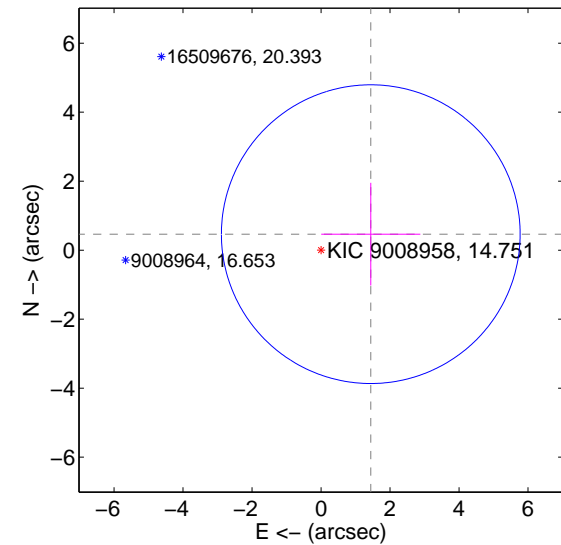
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

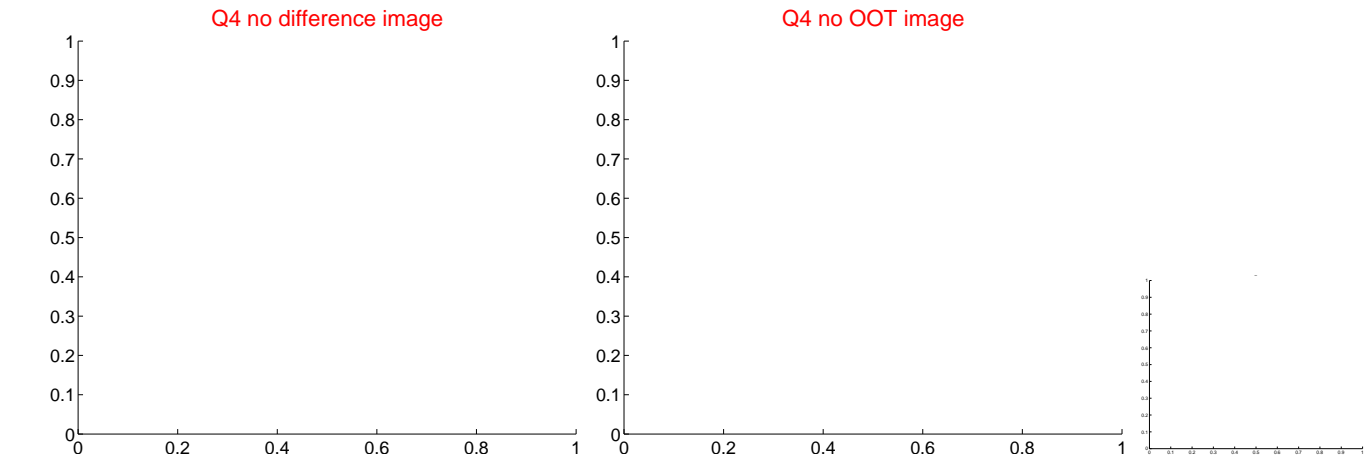
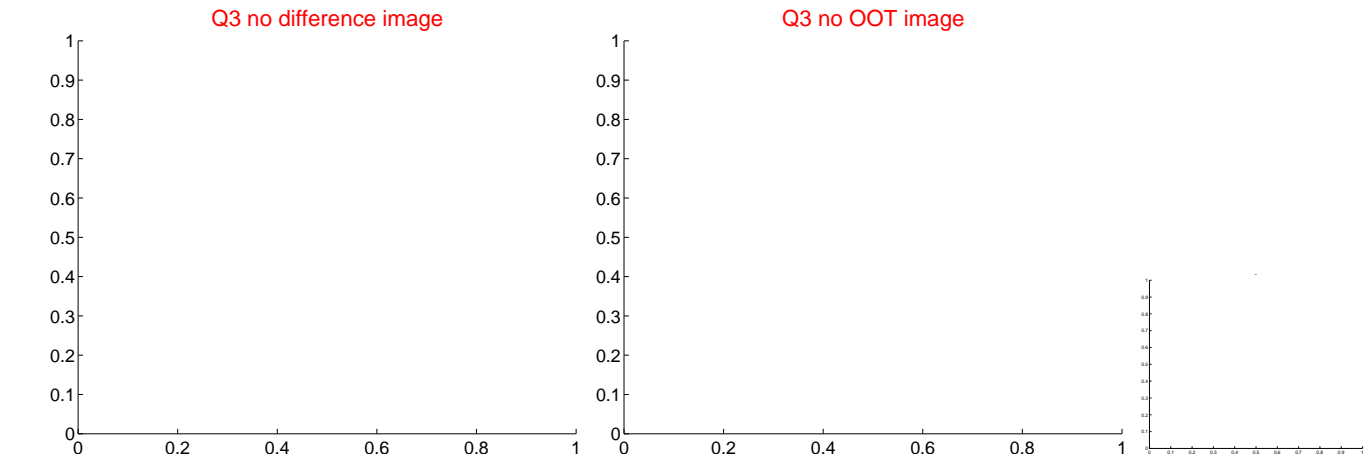
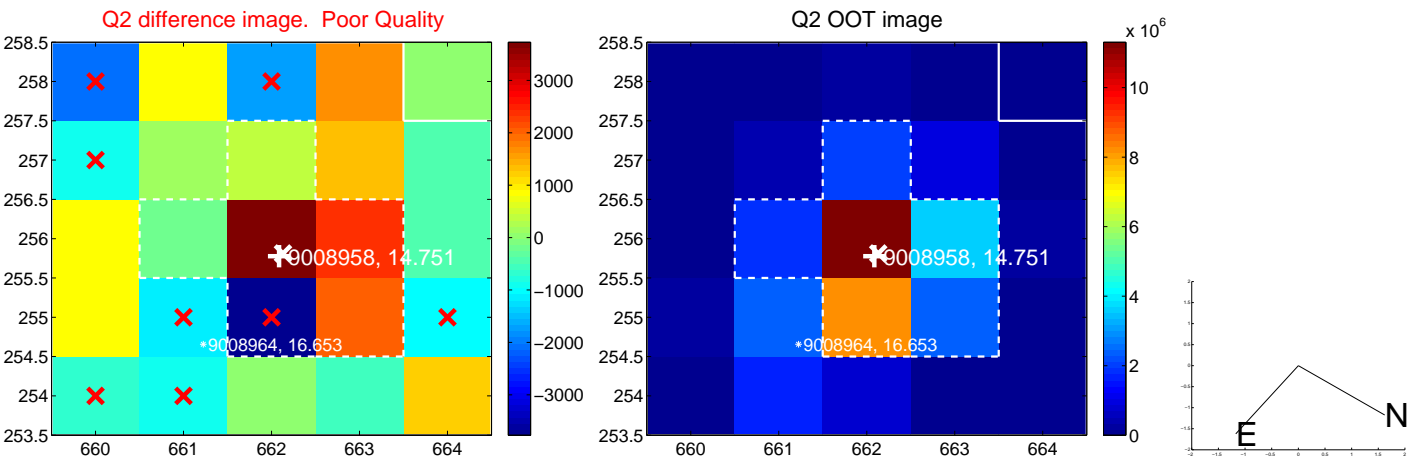
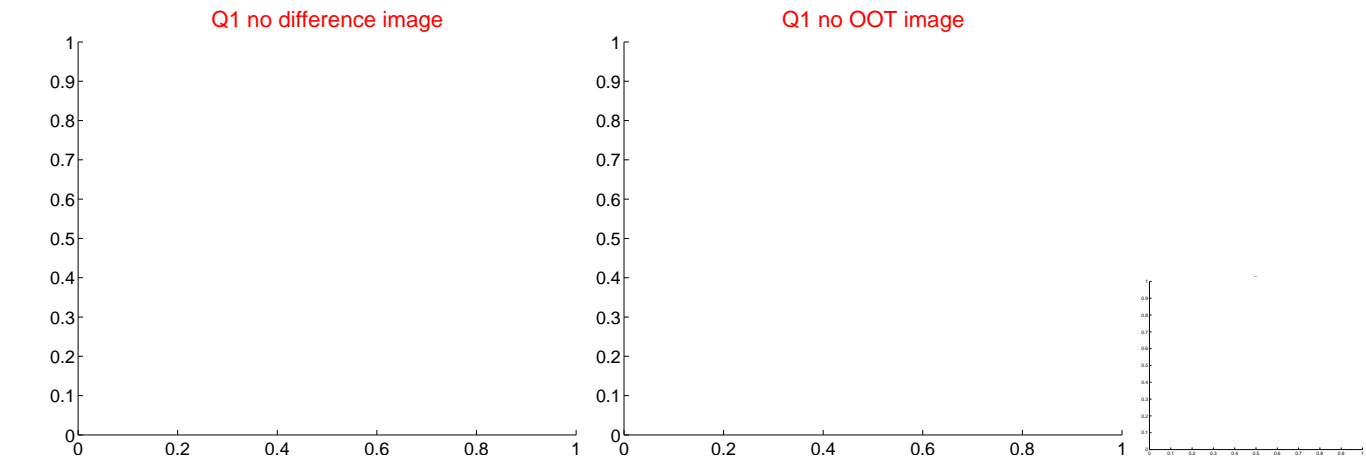


offset from photometric centroids

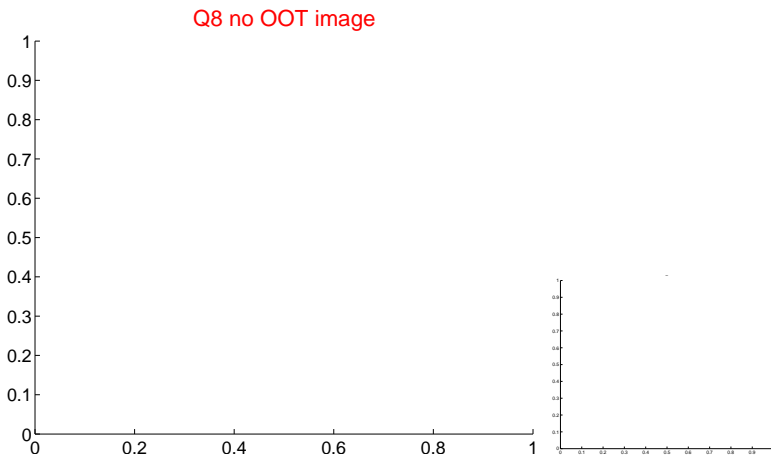
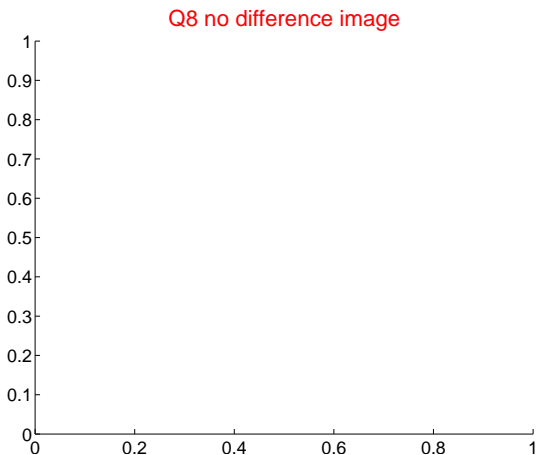
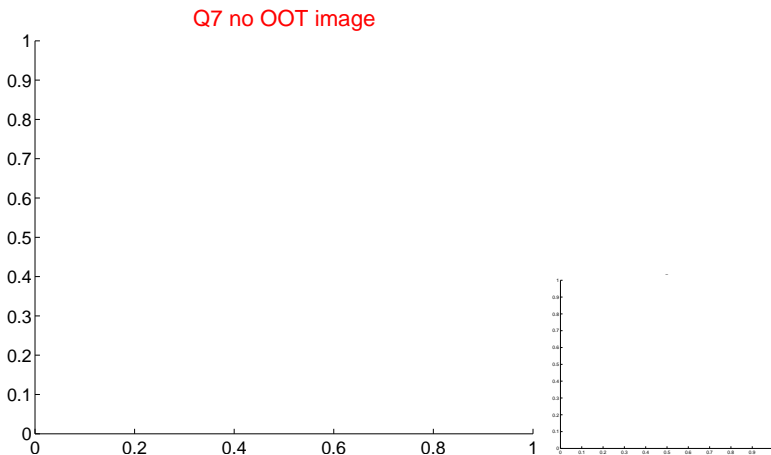
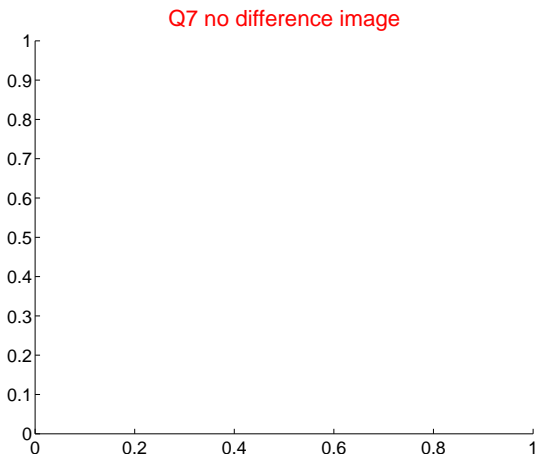
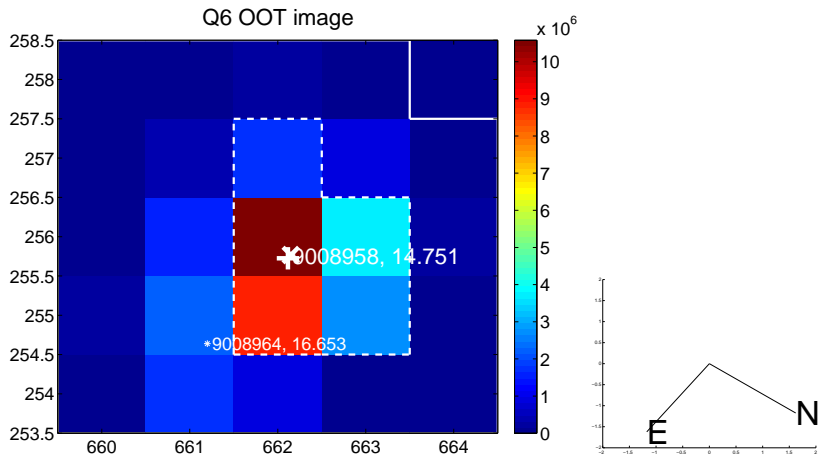
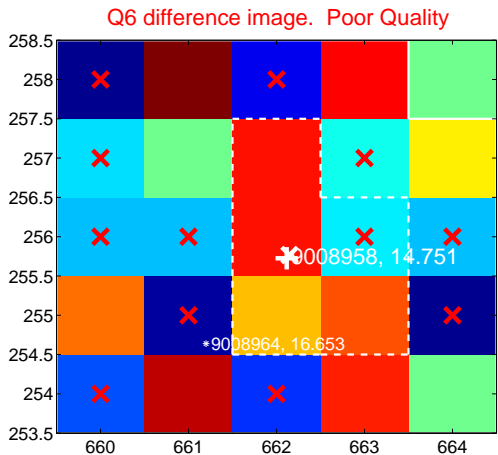
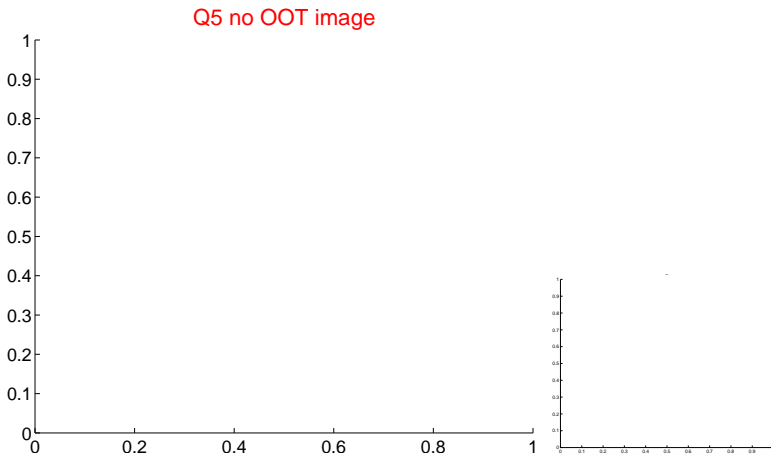
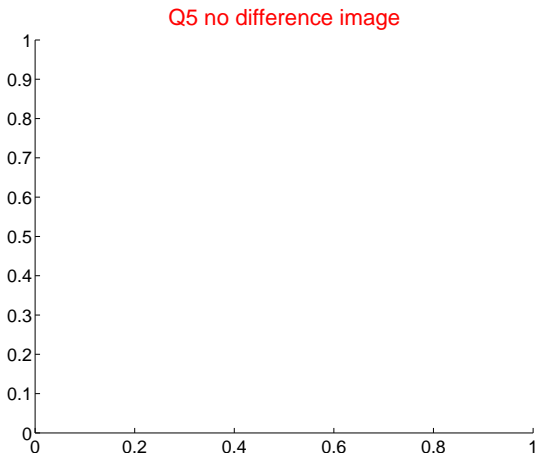


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

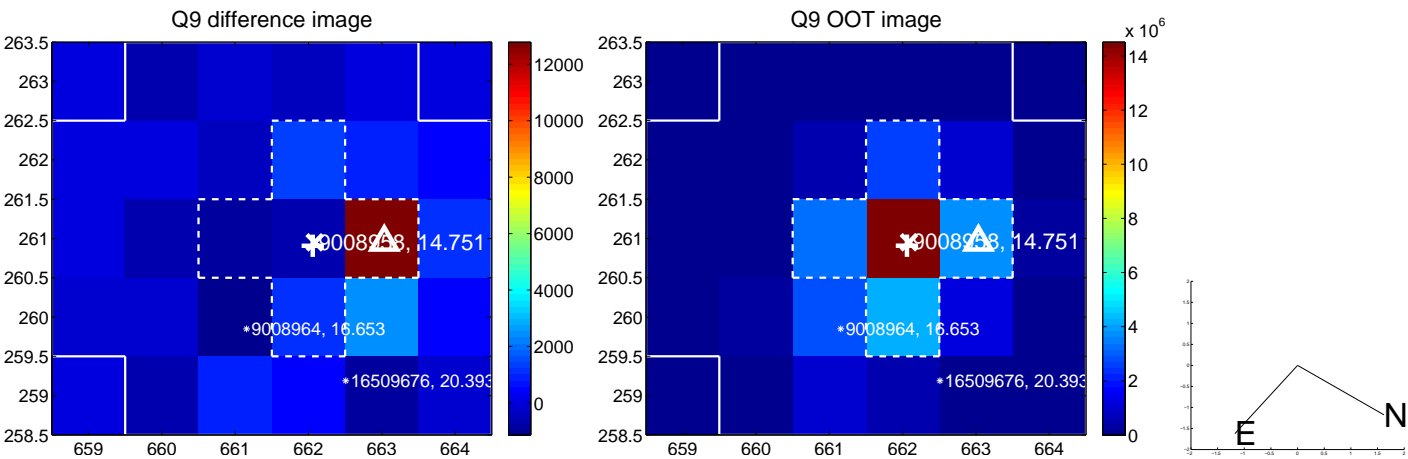
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



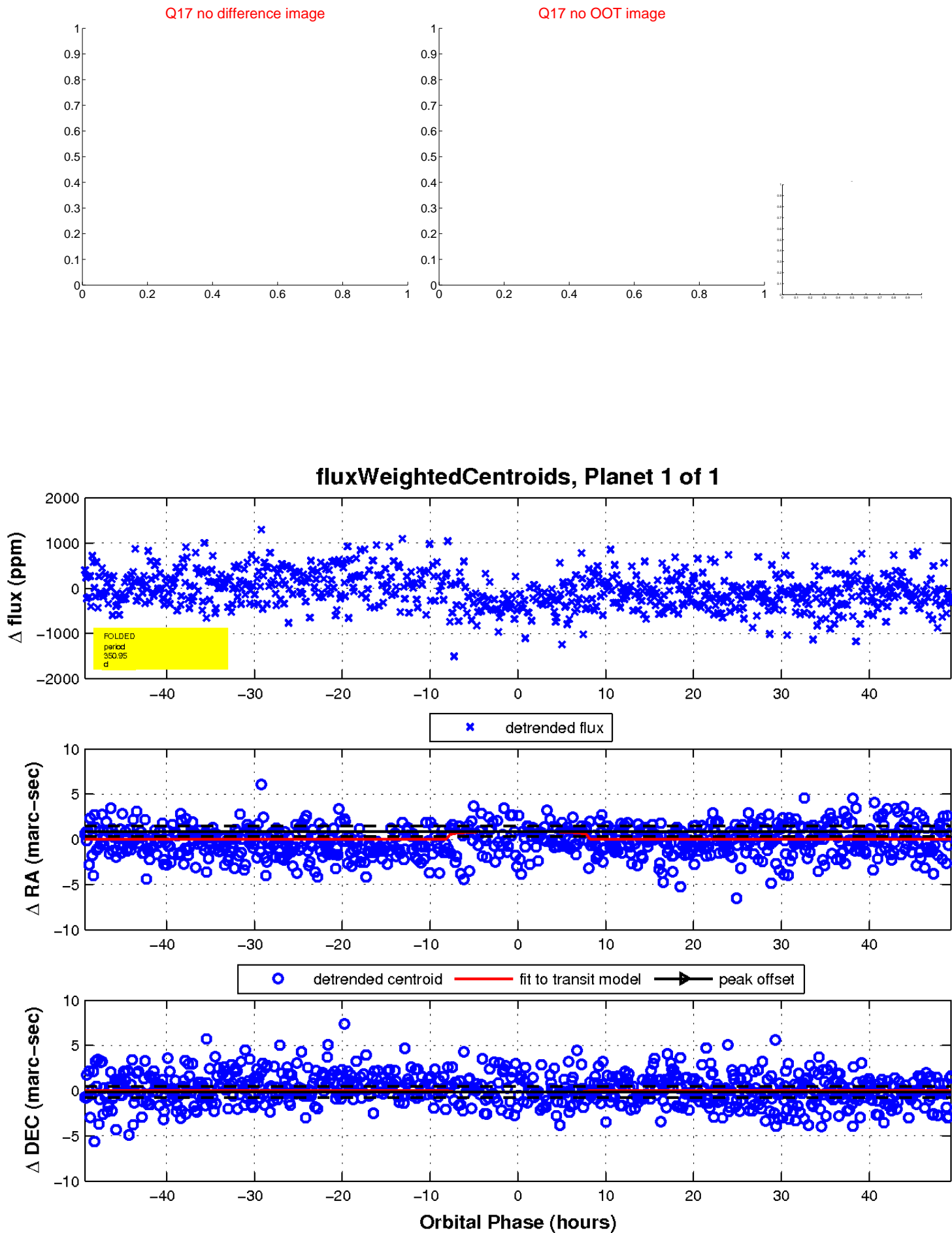
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

