

# KIC 009227215

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009227215-01	OBS	7931.01	242.049869	181.708111	379.6	12.579	7.5	7.9	1.12	6086	2.90	2.58

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009227215-01	OBS	PC	0.49	0	0	0	0	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.

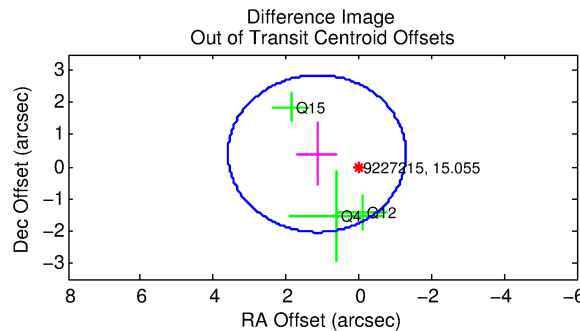
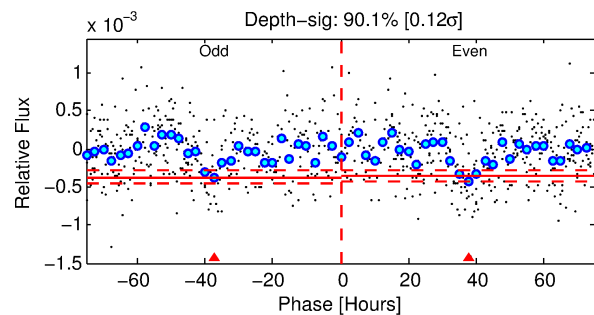
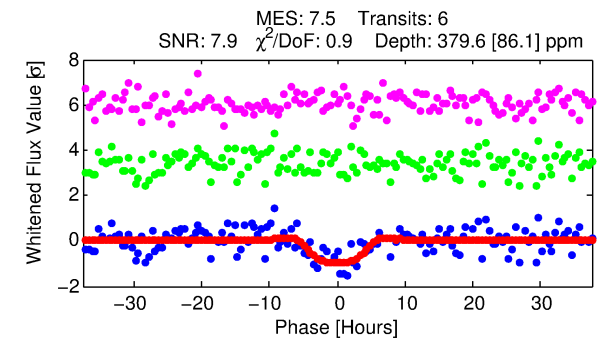
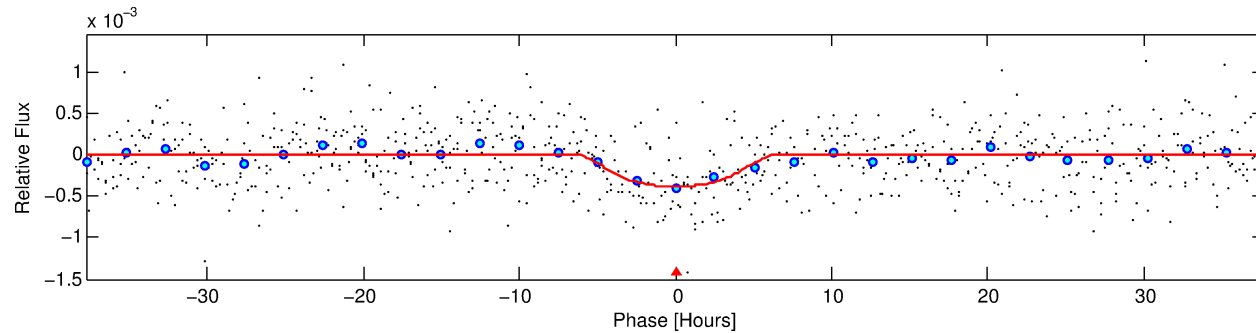
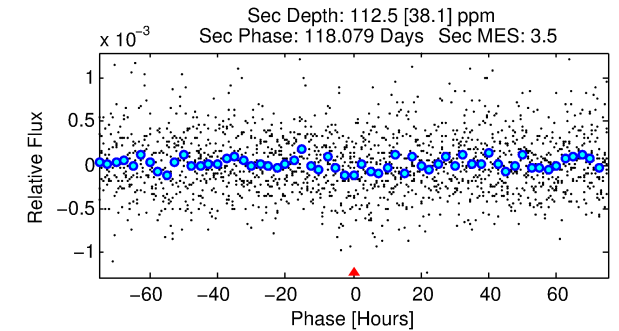
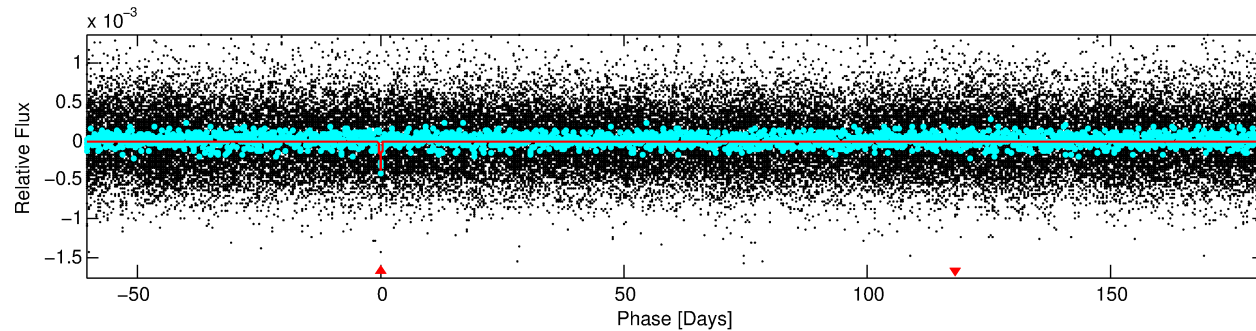
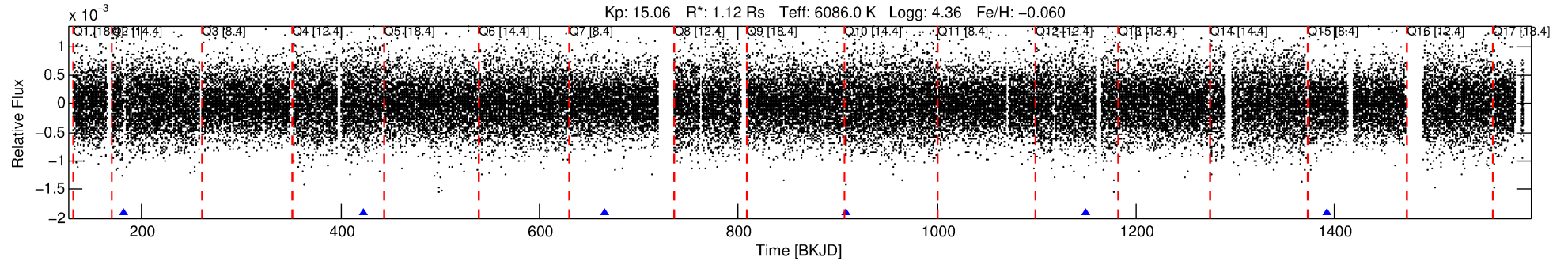
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009227215-01

No Significant Match Found

# DV One-Page Summary

KIC: 9227215 Candidate: 1 of 1 Period: 242.050 d



## DV Fit Results:

Period = 242.04987 [0.01206] d  
Epoch = 181.7081 [0.0410] BKJD  
Rp/R\* = 0.0238 [0.0040]  
a/R\* = 45.77 [11.69]  
b = 0.98 [0.02]  
Seff = 2.58 [1.02]  
Teq = 323 [32] K  
Rp = 2.90 [1.01] Re  
a = 0.7704 [0.1965] AU  
Ag = 4355.03 [2618.84] [1.66σ]  
Teffp = 4059 [502] K [7.42σ]

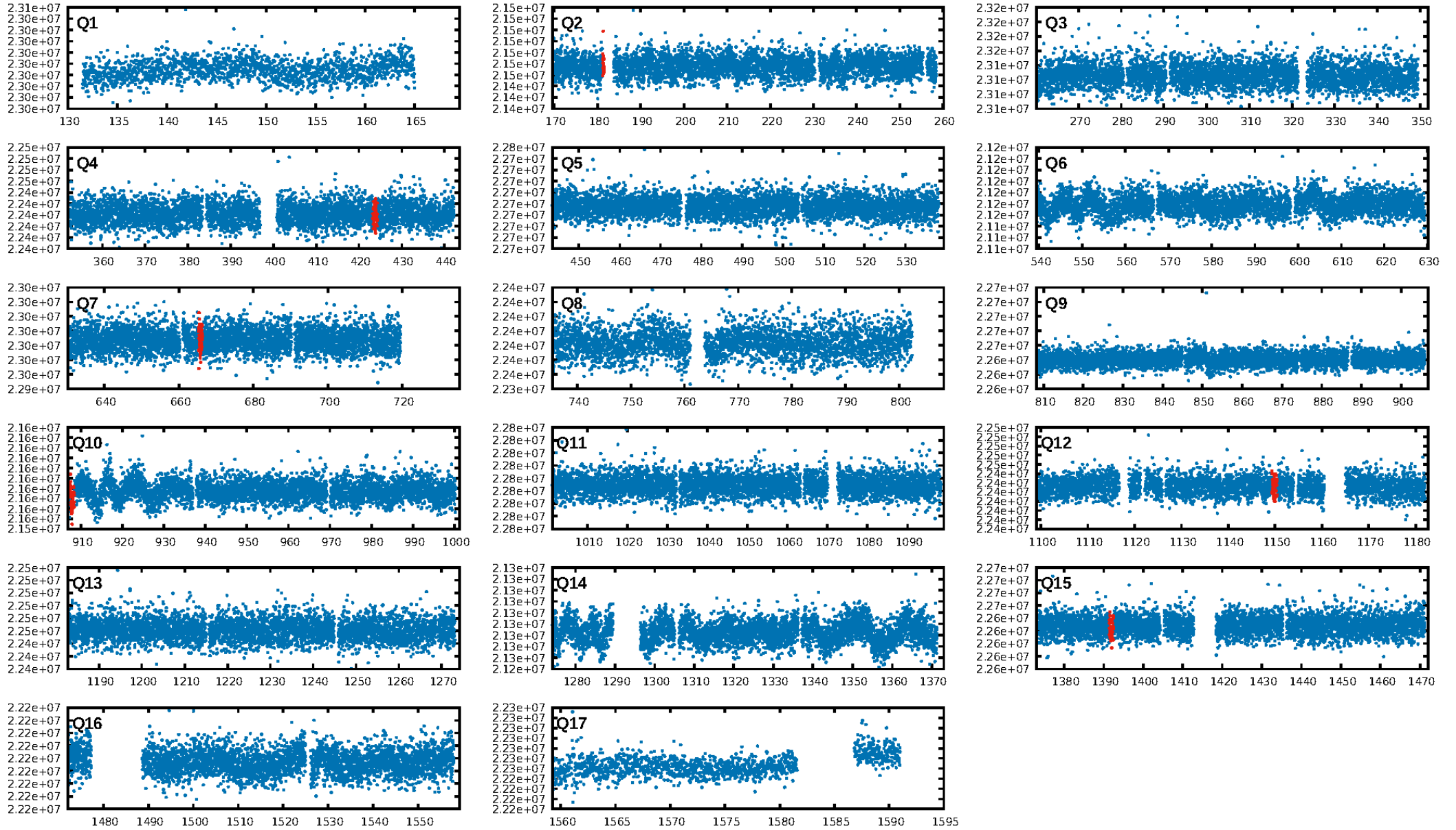
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 22.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.06e-14  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 4.516  
Centroid-sig: 22.6%  
Centroid-so: 2.228 arcsec [1.10σ]  
OotOffset-rm: 1.219 arcsec [1.49σ]  
KicOffset-rm: 1.046 arcsec [1.37σ]  
OotOffset-st: 0/1/2/0 [3]  
KicOffset-st: 0/1/2/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [4/4]

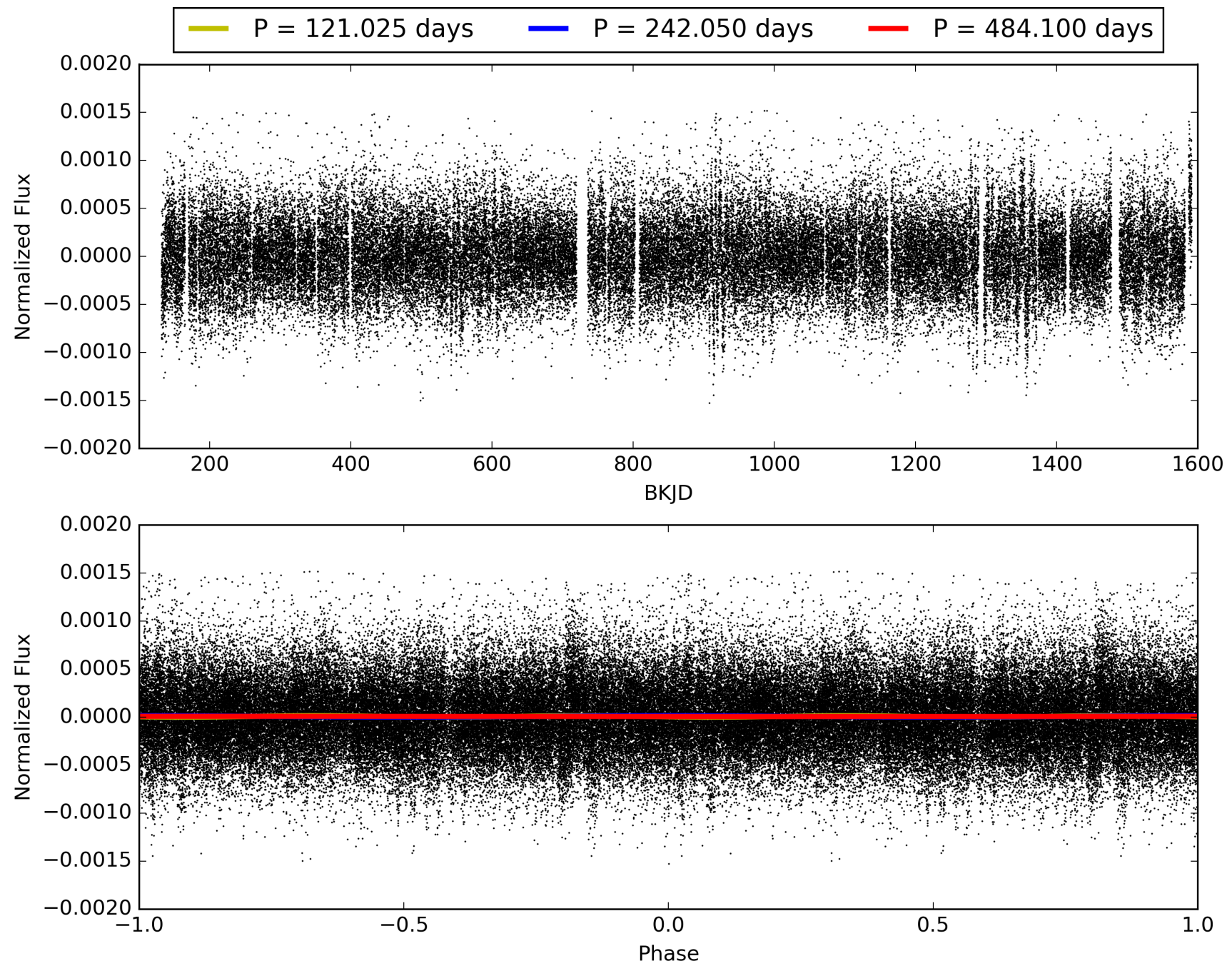
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:10:29 Z

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

# TCE 009227215-01, PDC Light Curves

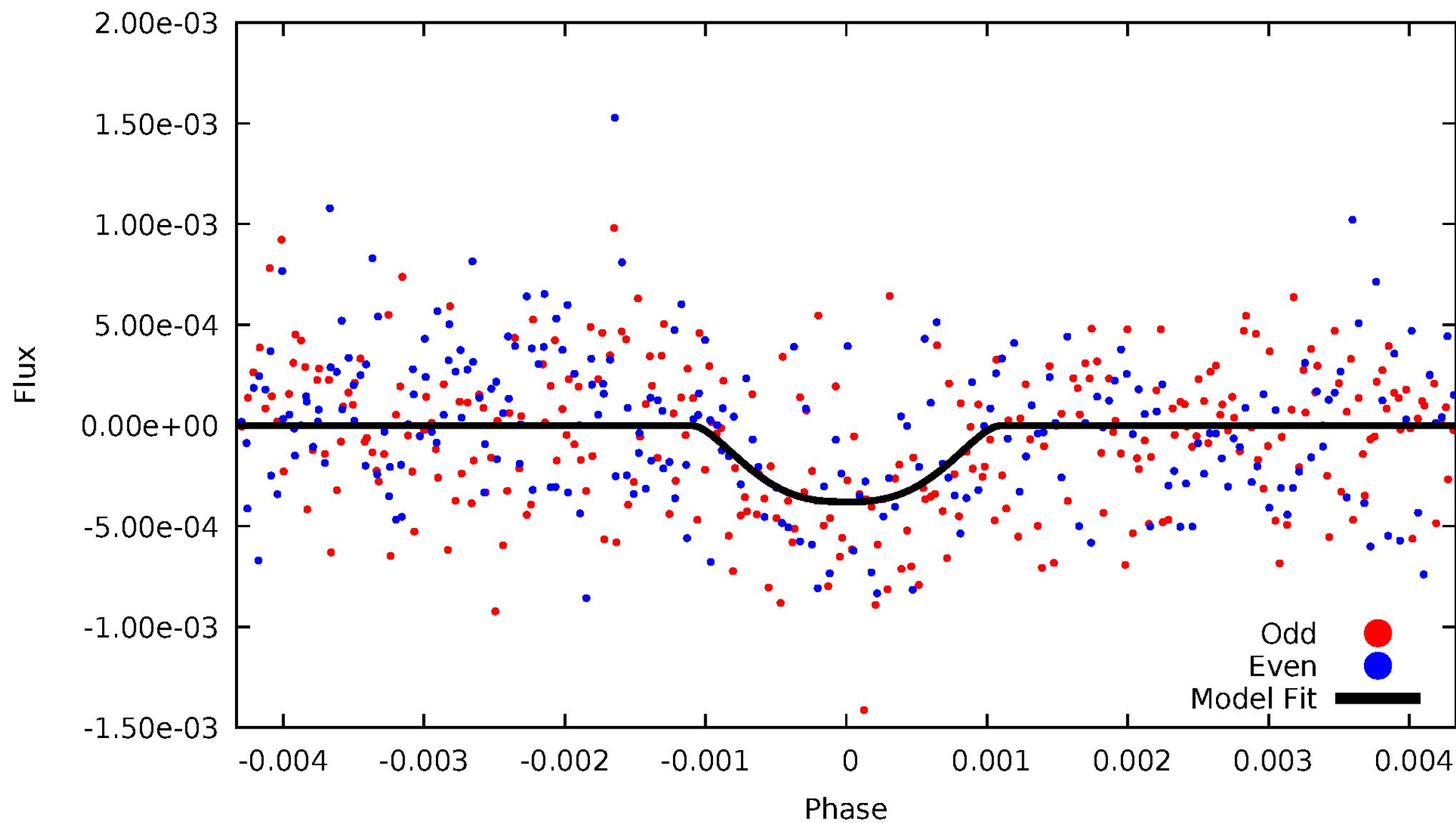


TCE 009227215-01



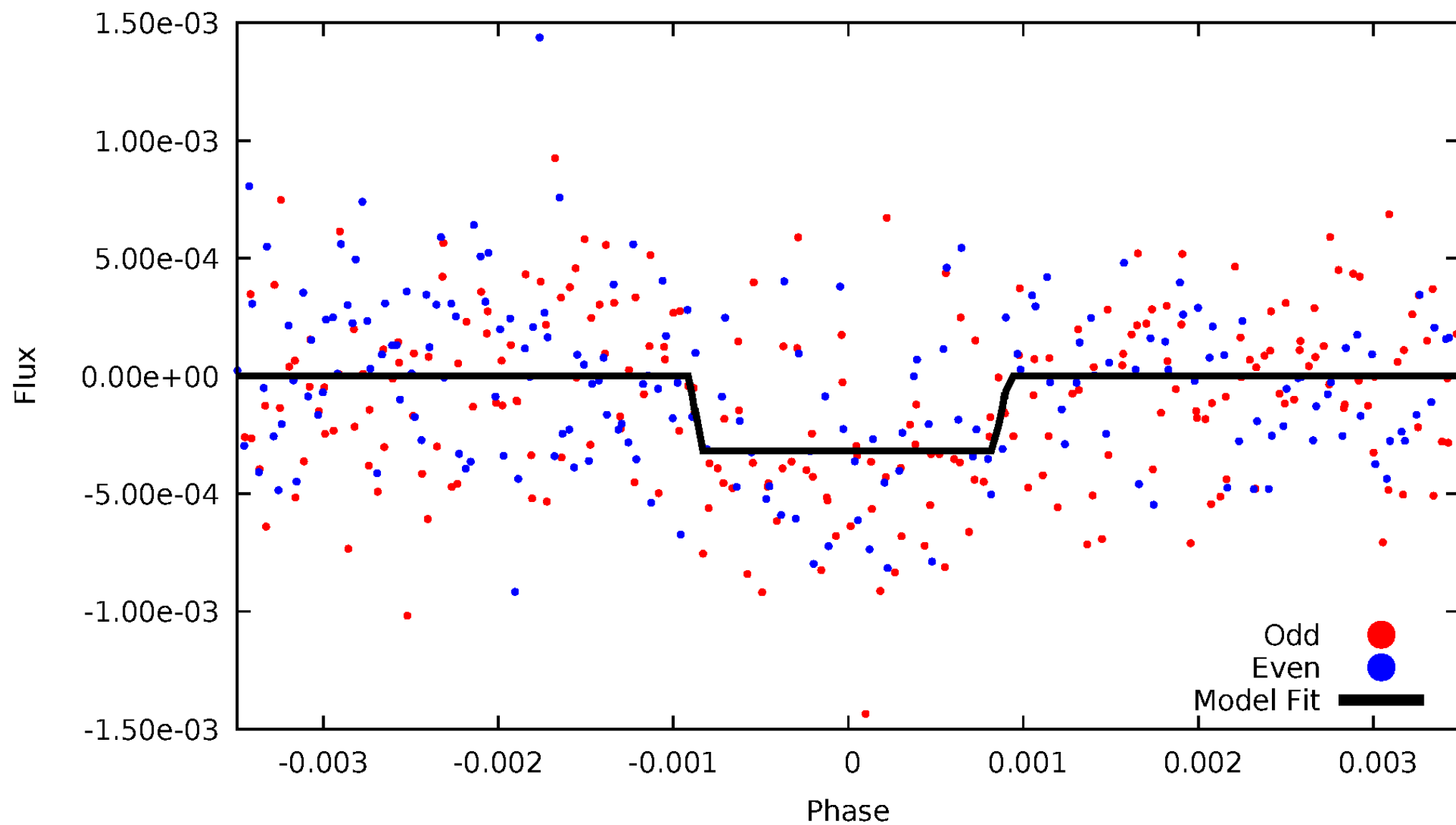
# DV Odd/Even

TCE 009227215-01

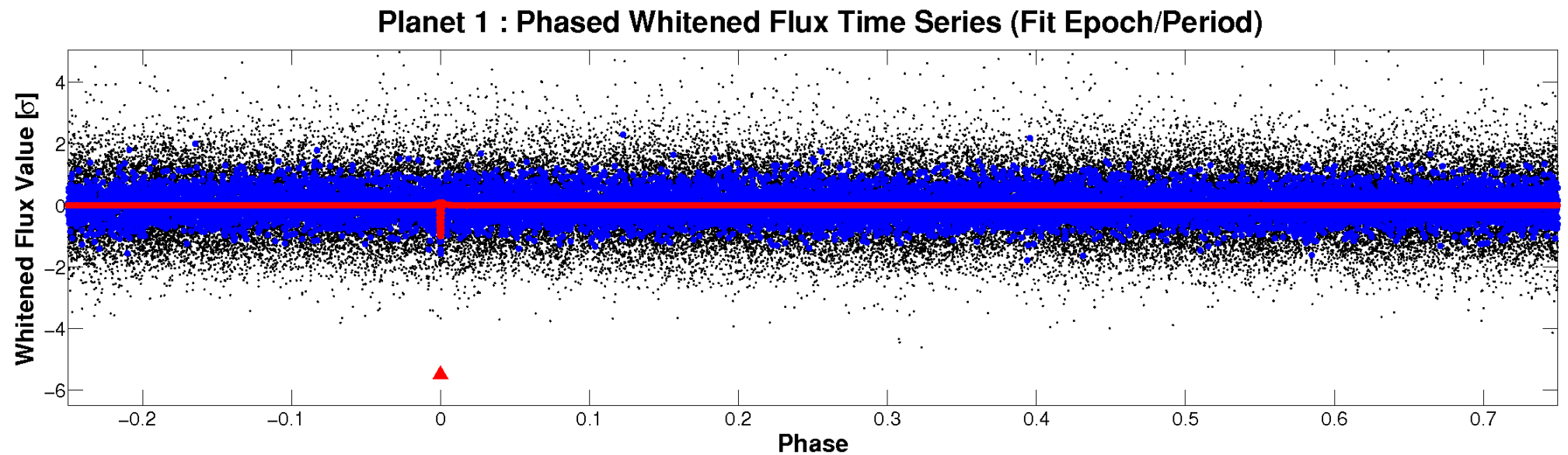
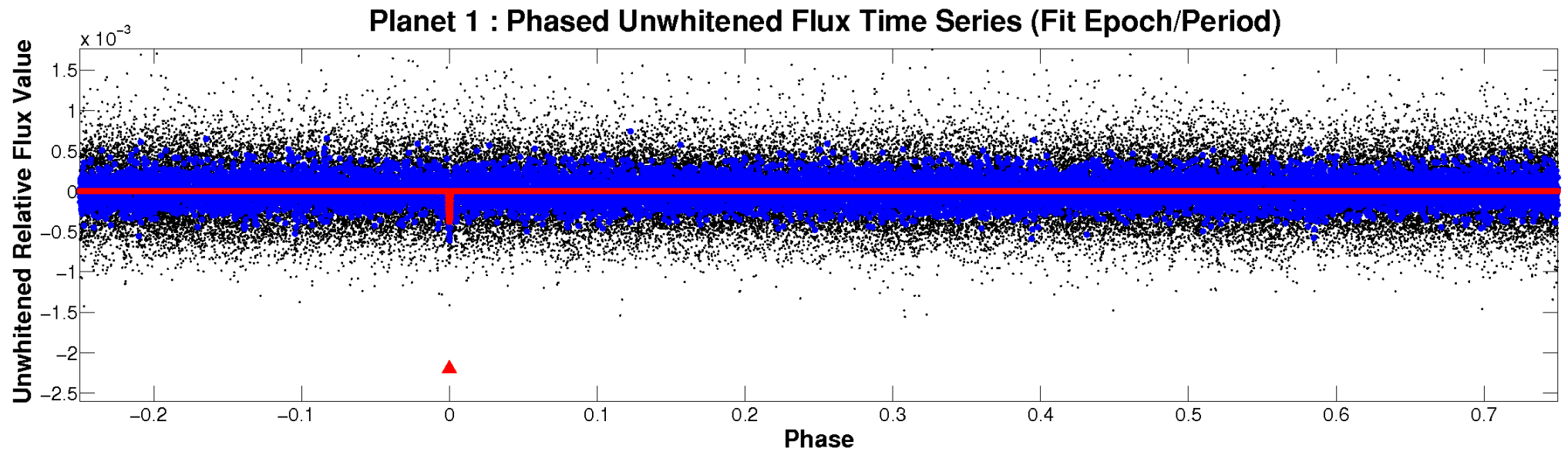


# ALT Odd/Even

TCE 009227215-01

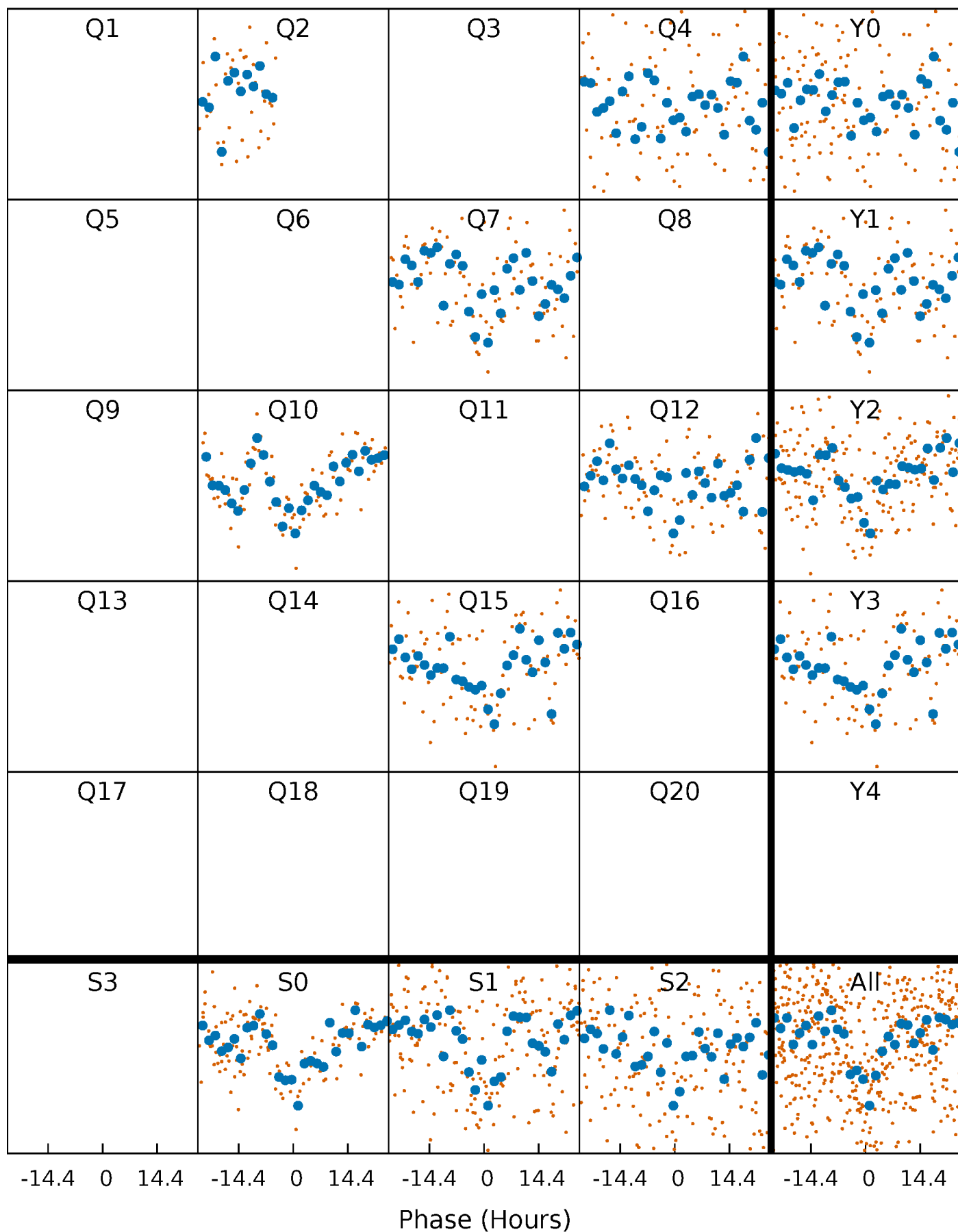


# Non-Whitened Vs. Whitened Light Curve



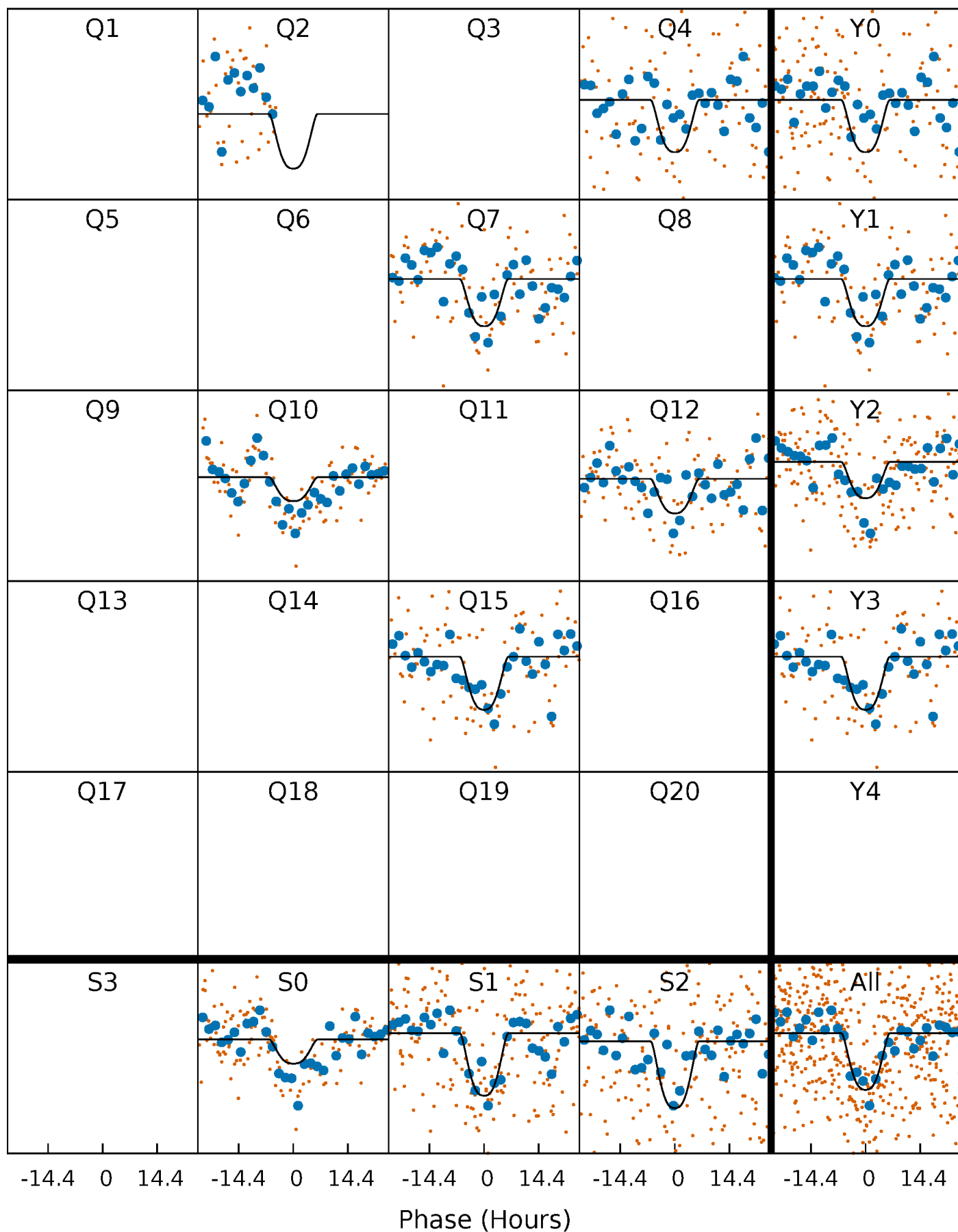
# PDC Quarter-Phased Transit Curves

TCE 009227215-01 P=242.049869 Days  $T_0=181.708111$  (BKJD)



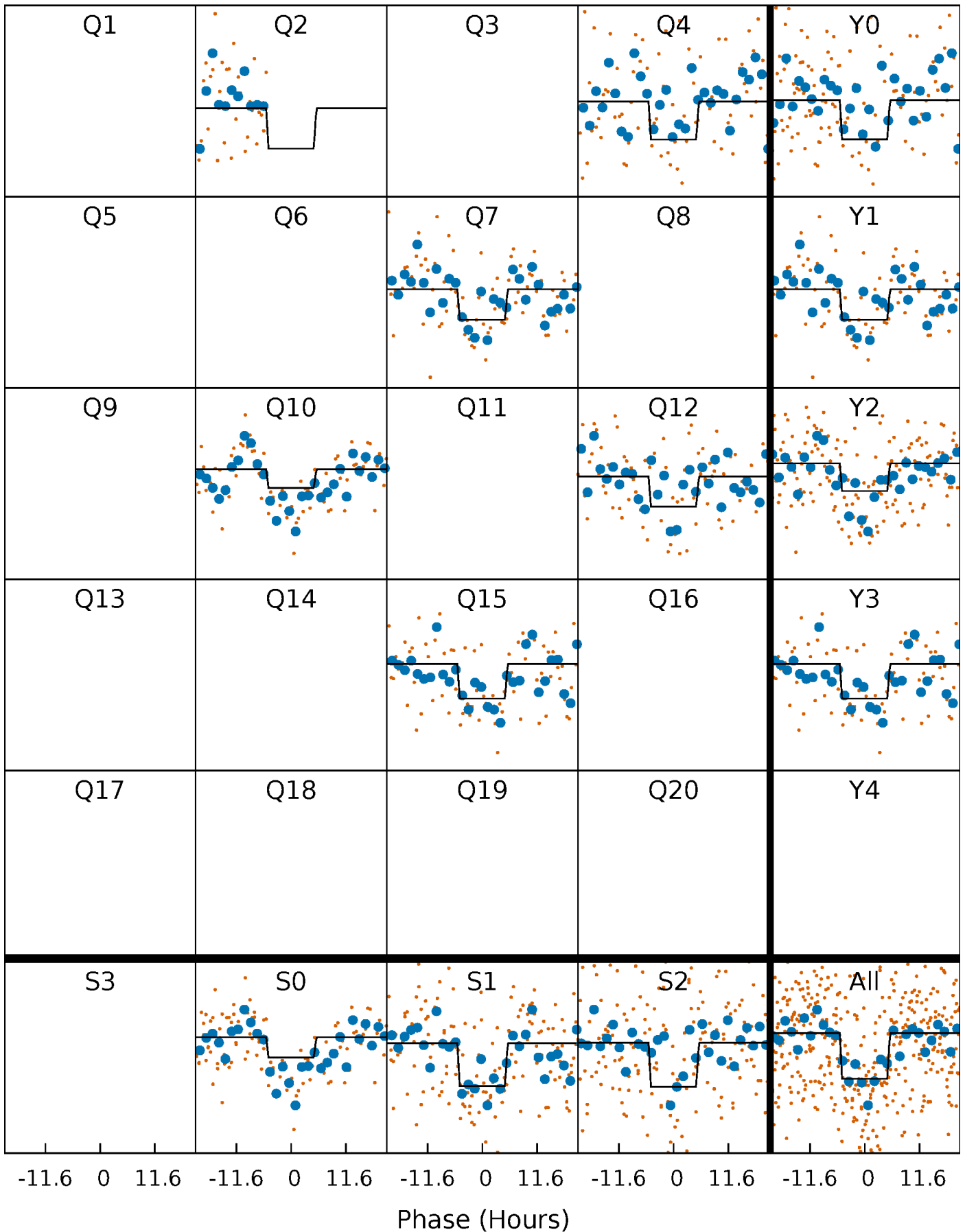
# DV Quarter-Phased Transit Curves

TCE 009227215-01 P=242.049869 Days  $T_0=181.708111$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

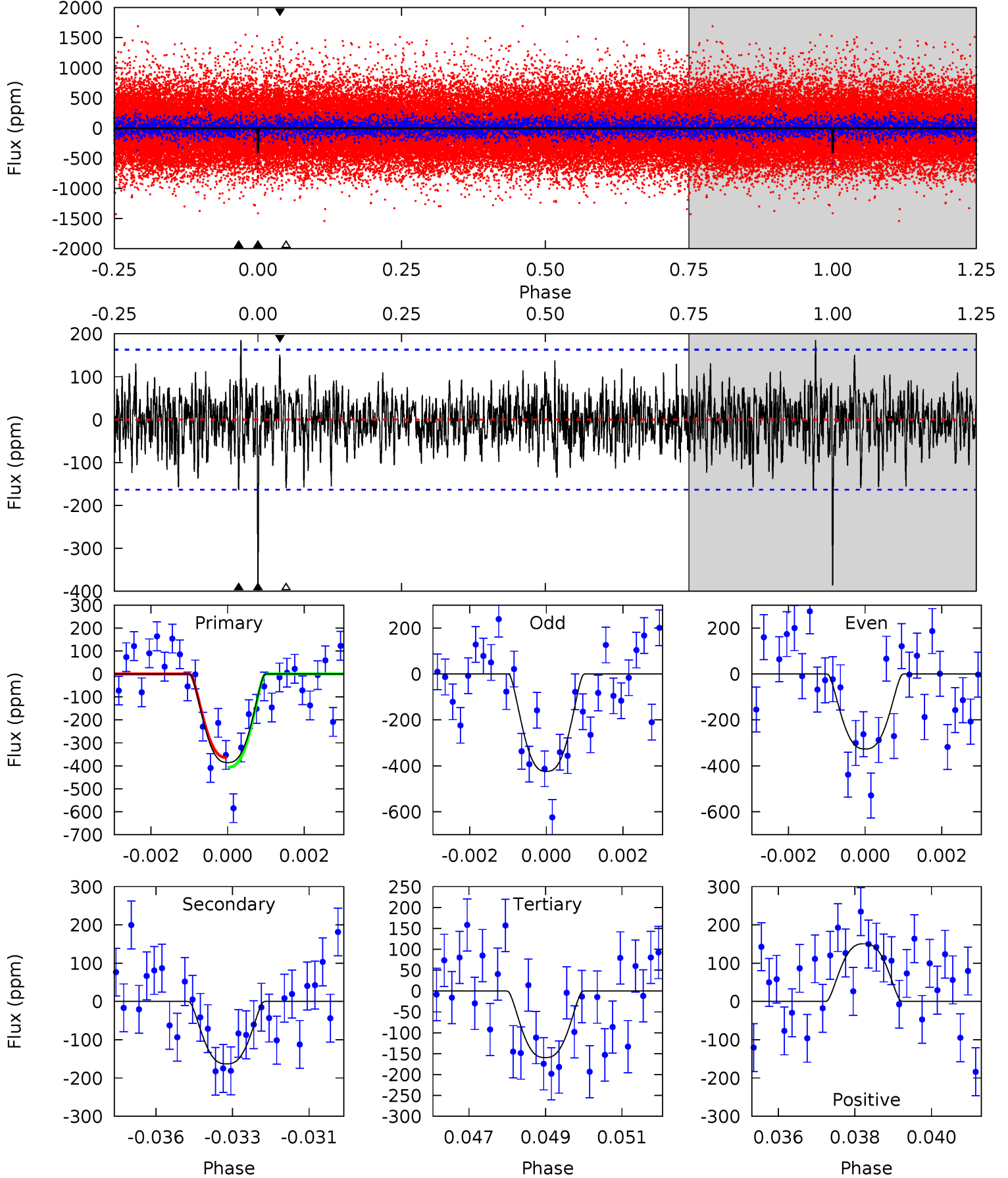
TCE 009227215-01 P=242.042329 Days  $T_0=181.737080$  (BKJD)



# DV Model-Shift Uniqueness Test

009227215-01, P = 242.049869 Days, E = 181.708111 Days

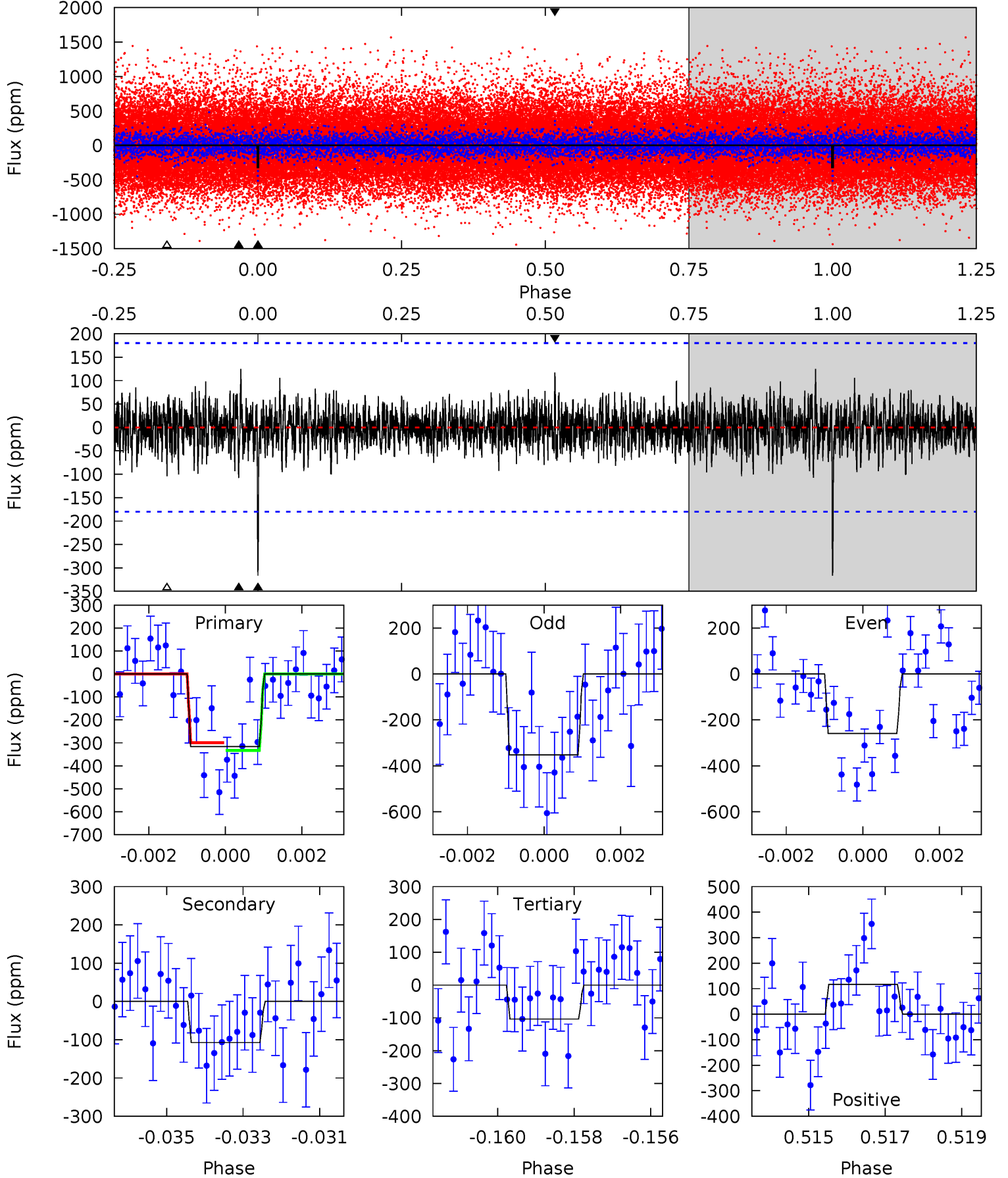
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	5.31	5.19	4.91	5.31	3.06	1.49	7.36	7.65	0.12	0.40	1.57	1.00	0.32	0.68



# Alt Model-Shift Uniqueness Test

009227215-01, P = 242.042329 Days, E = 181.737080 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
9.38	3.19	3.08	3.48	5.34	3.12	0.91	6.31	5.90	0.11	-0.30	1.35	1.05	0.28	0.50



### Stellar Parameters For KIC 009227215

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6086^{+193}_{-214}$	$4.360^{+0.108}_{-0.201}$	$-0.060^{+0.250}_{-0.300}$	$1.116^{+0.340}_{-0.183}$	$1.037^{+0.167}_{-0.125}$	$1.052^{+0.537}_{-0.570}$
	+3%/-4%	+2%/-5%	+417%/-500%	+30%/-16%	+16%/-12%	+51%/-54%
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 009227215-01 / KOI 7931.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-163 \pm 31$	$2.95^{+0.68}_{-0.58}$	$457^{+33}_{-28}$	$4631^{+409}_{-364}$	$6005^{+3562}_{-2211}$
Alt.	$-107 \pm 34$	$2.23^{+0.62}_{-0.47}$	$459^{+37}_{-29}$	$4770^{+606}_{-522}$	$6887^{+5549}_{-3197}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

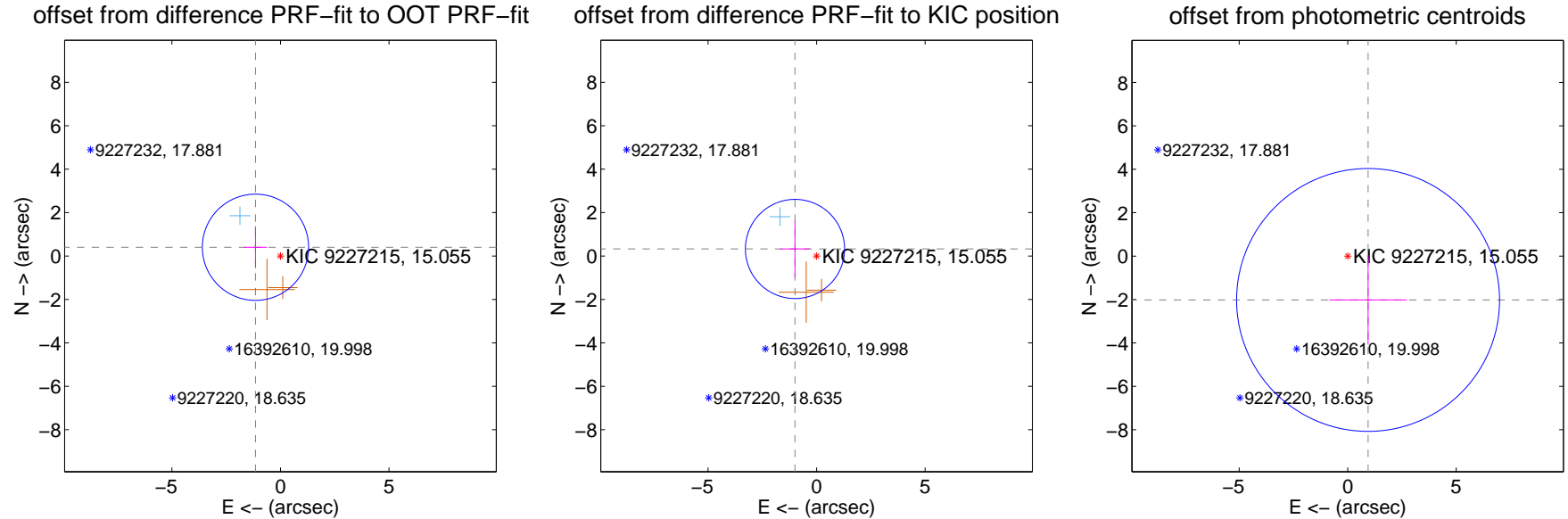
## DV Centroid Data

Supplemental centroid analysis for 009227215-01. Kepler magnitude: 15.05. Transit SNR 7.94

There are 1 quarters with good PRF difference image offsets

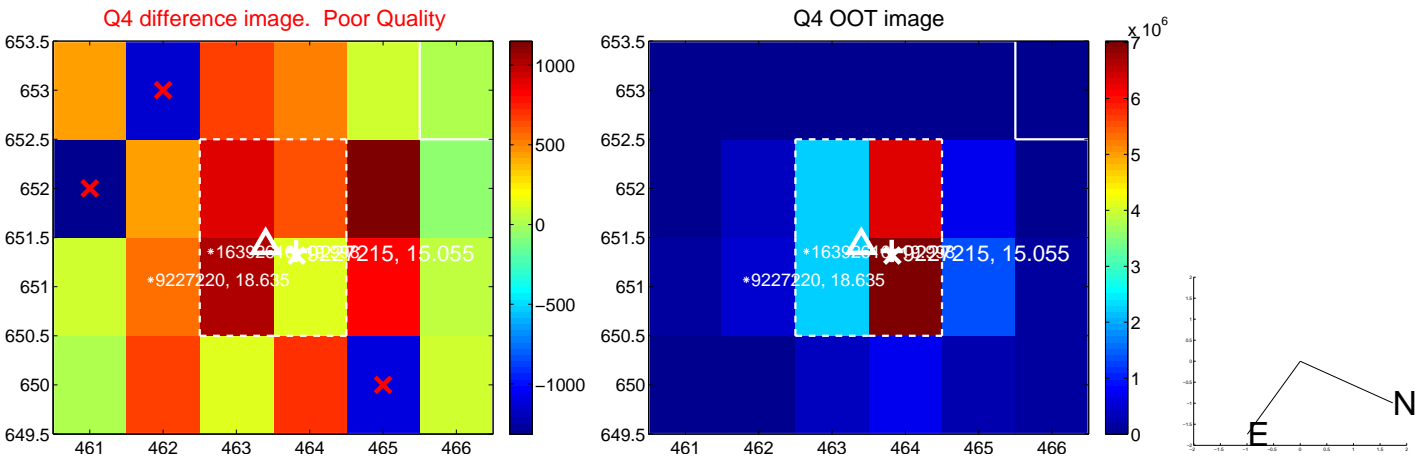
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.219 \pm 0.816$	1.49	$1.151 \pm 0.531$	$0.403 \pm 0.964$
PRF-fit source offset from KIC position	$1.046 \pm 0.761$	1.37	$0.994 \pm 0.677$	$0.325 \pm 1.308$
photometric centroid source offset	$2.23 \pm 2.02$	1.10	$-0.94 \pm 1.79$	$-2.02 \pm 2.07$



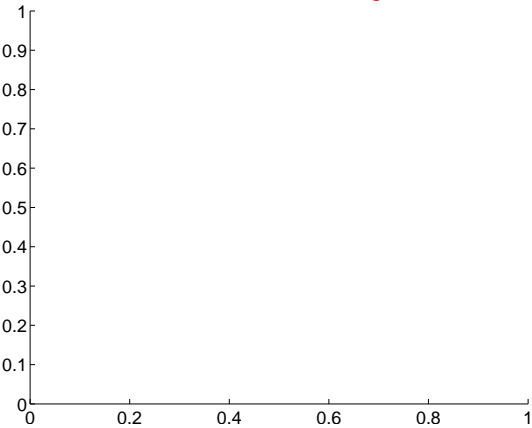
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

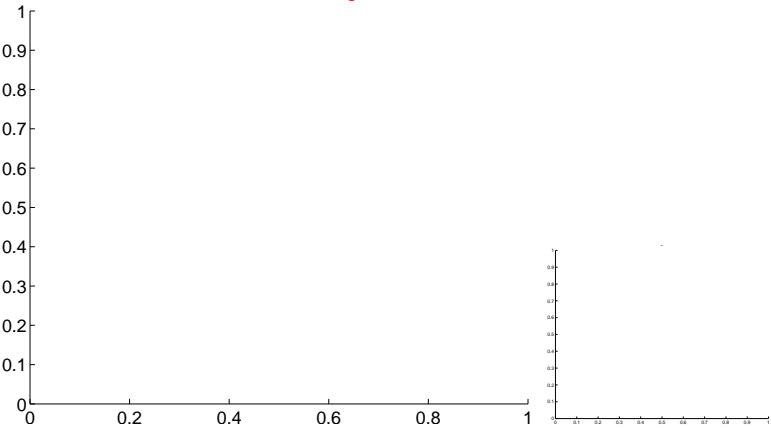


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

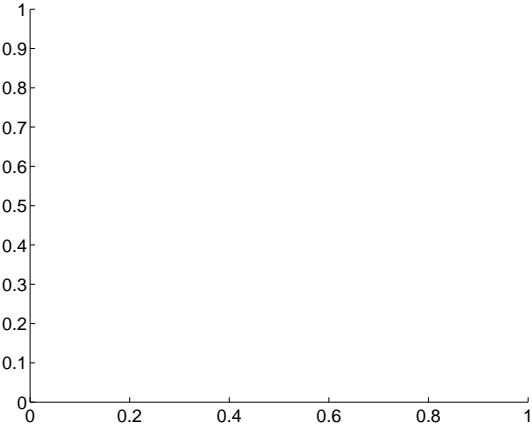
Q5 no difference image



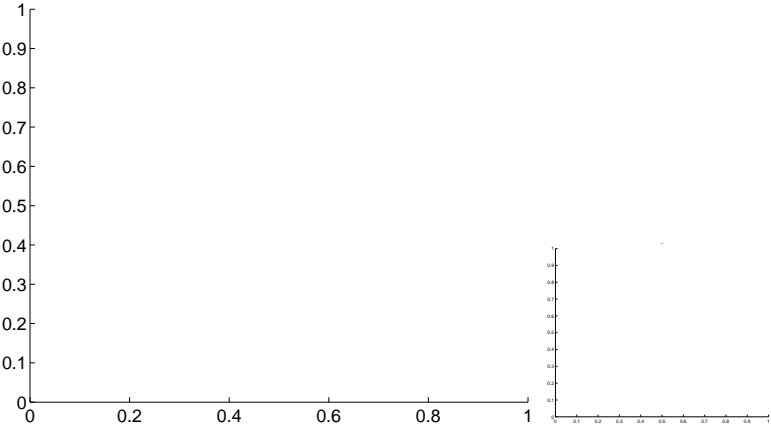
Q5 no OOT image



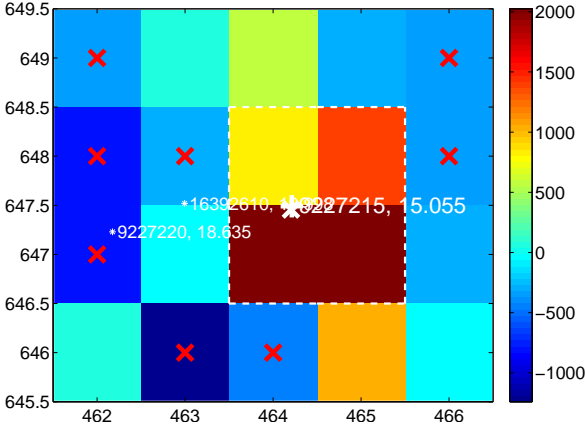
Q6 no difference image



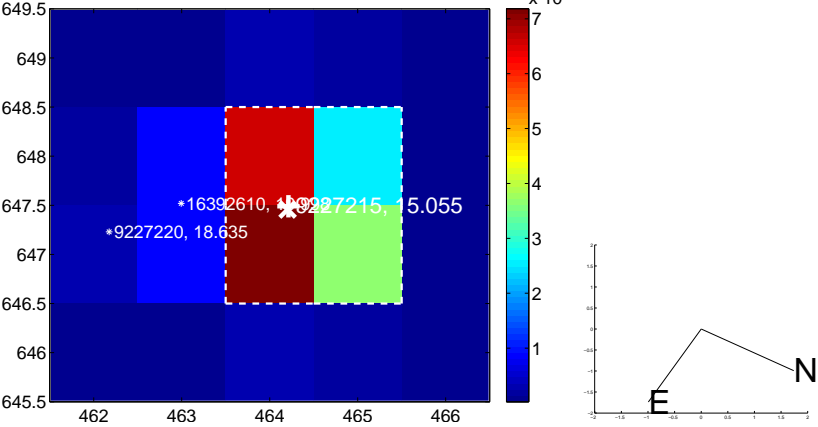
Q6 no OOT image



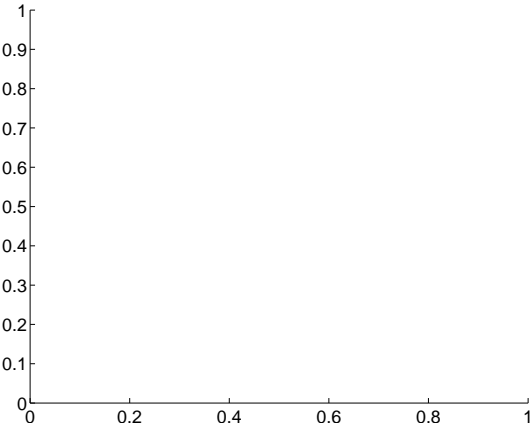
Q7 difference image. Poor Quality



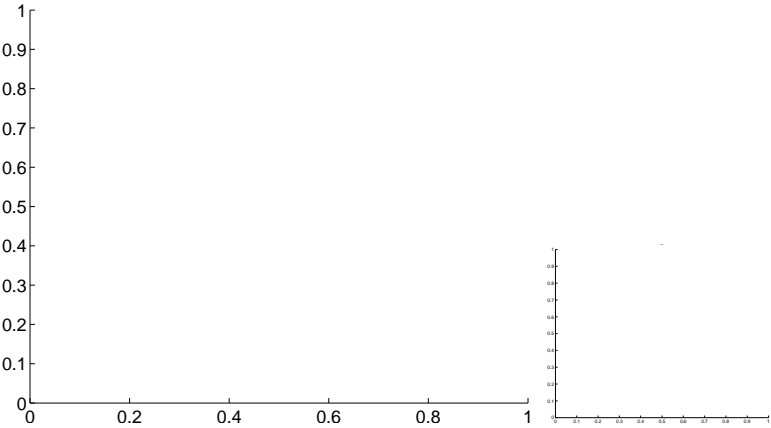
Q7 OOT image



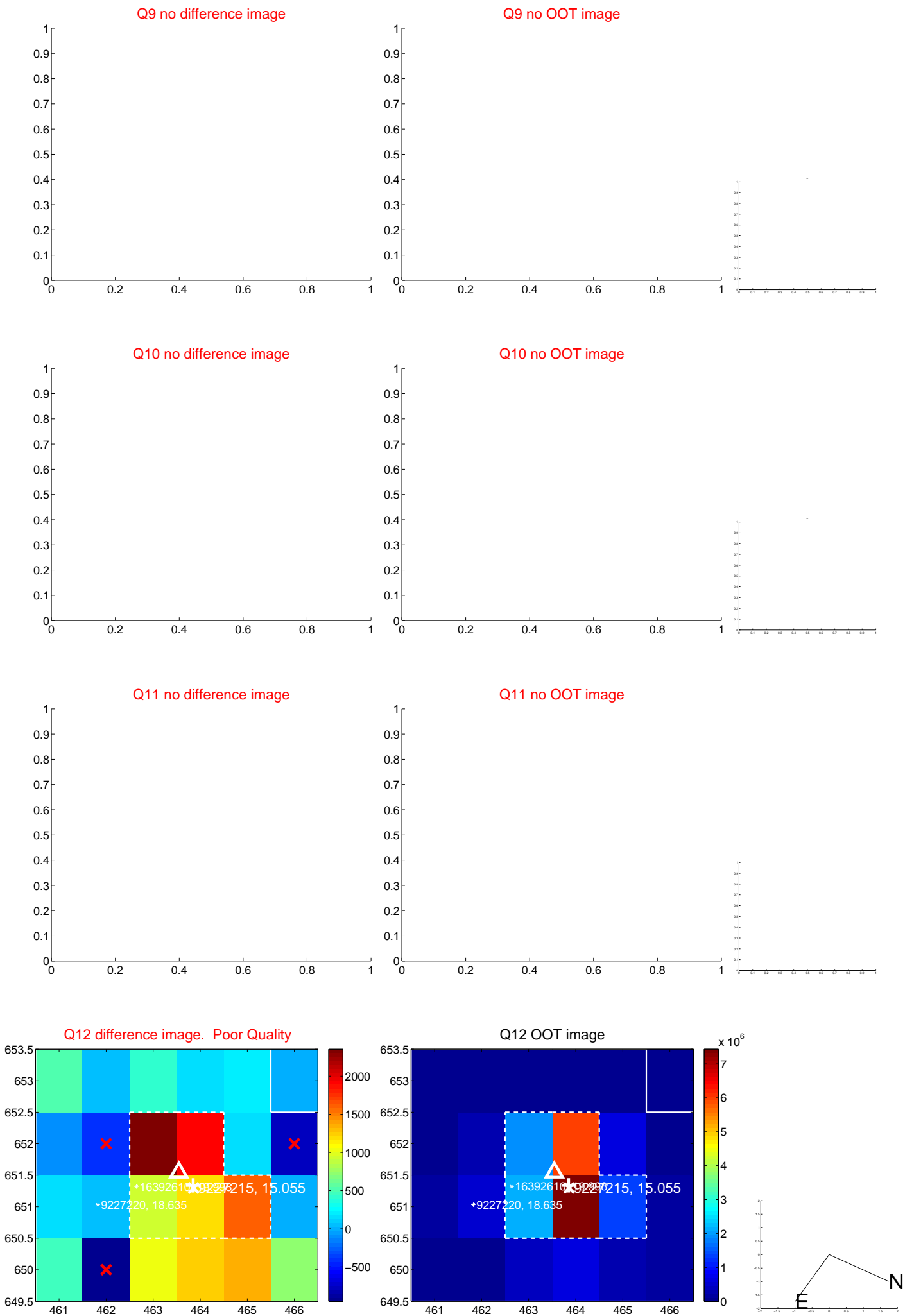
Q8 no difference image



Q8 no OOT image

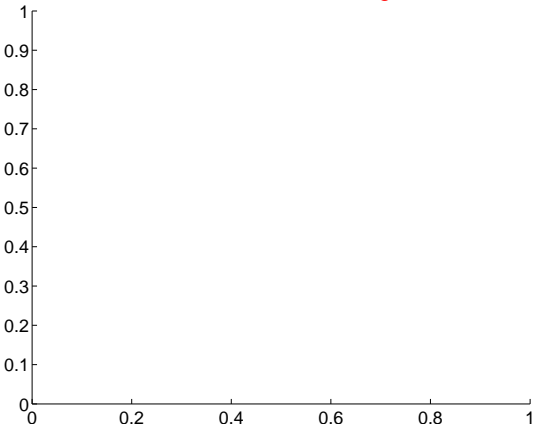


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

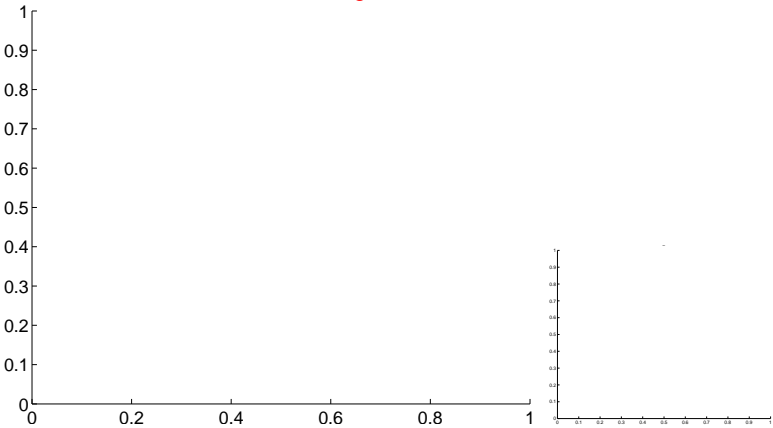


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

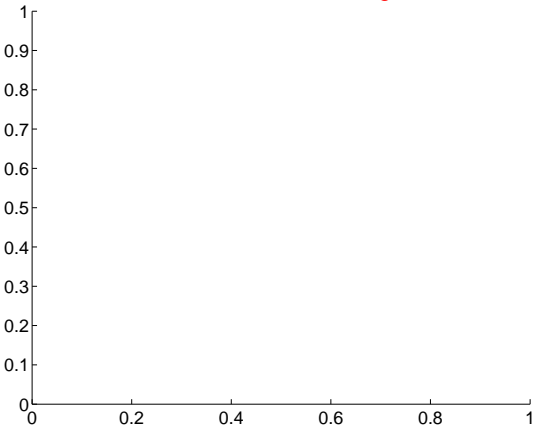
Q13 no difference image



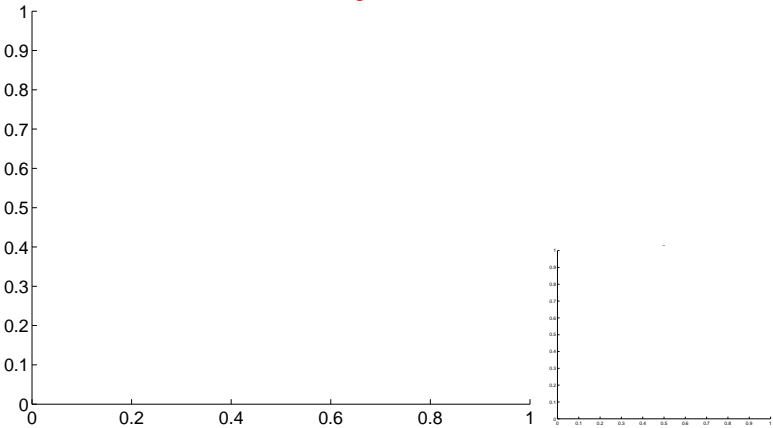
Q13 no OOT image



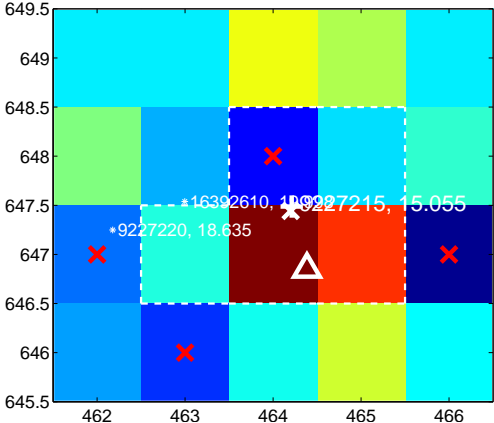
Q14 no difference image



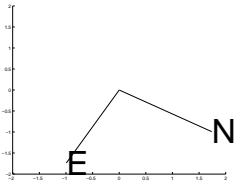
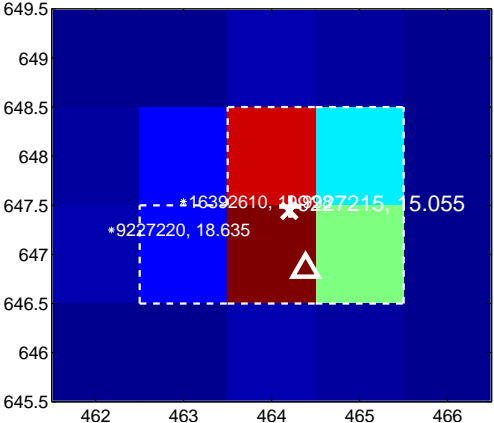
Q14 no OOT image



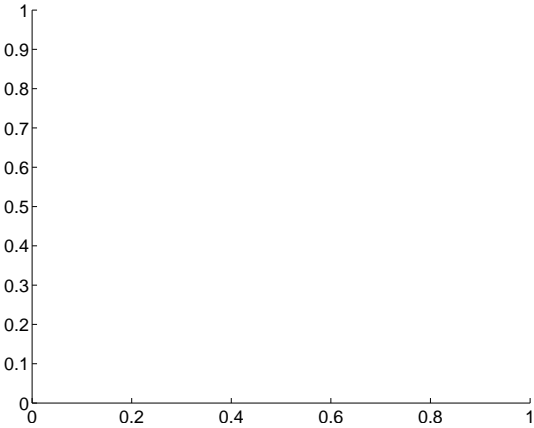
Q15 difference image



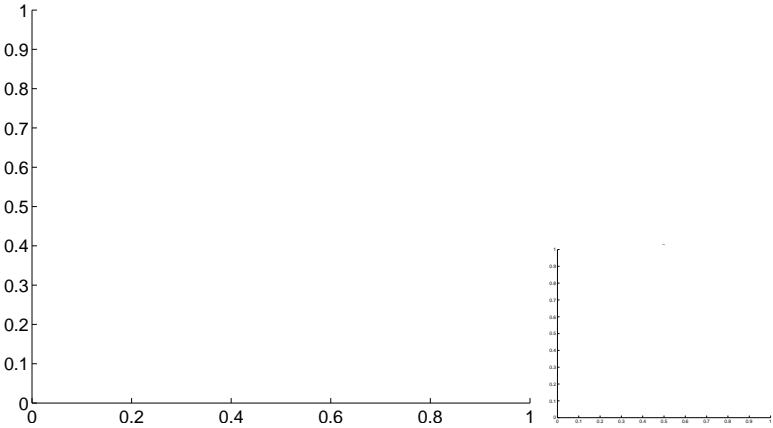
Q15 OOT image



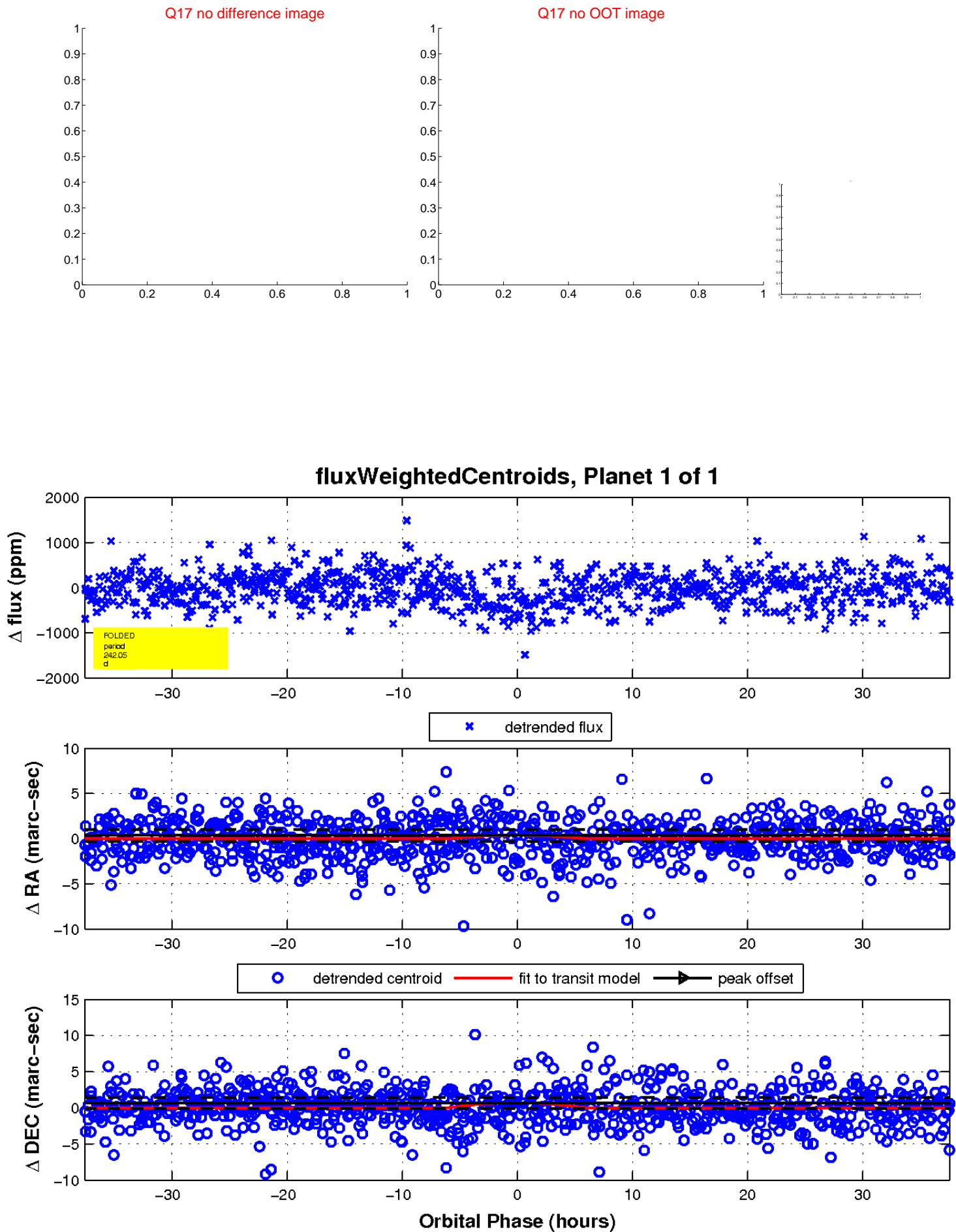
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

