

# KIC 009771141

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009771141-01	OBS	No	448.568210	525.722515	508.3	18.407	16.5	10.4	1.11	6335	2.81	1.31

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009771141-01	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.

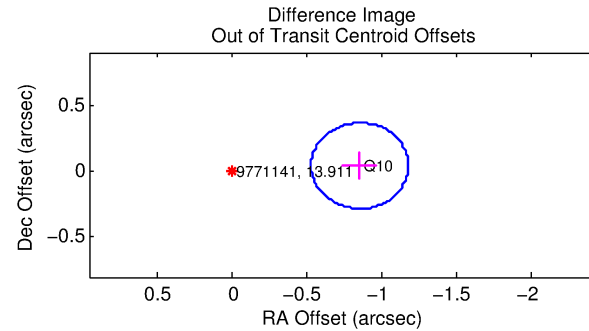
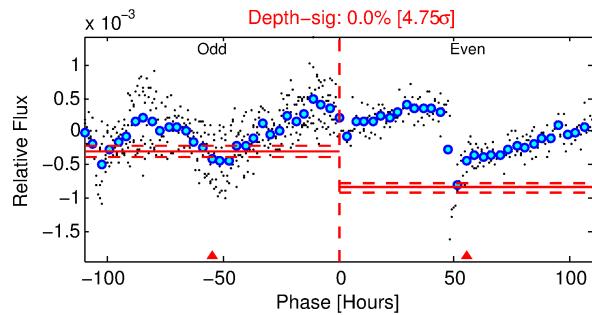
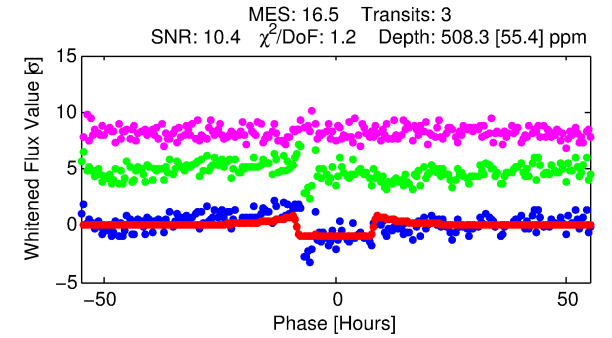
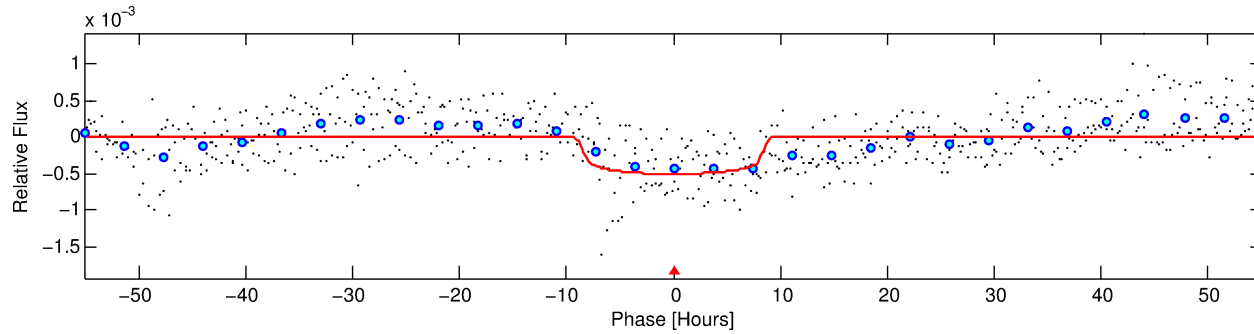
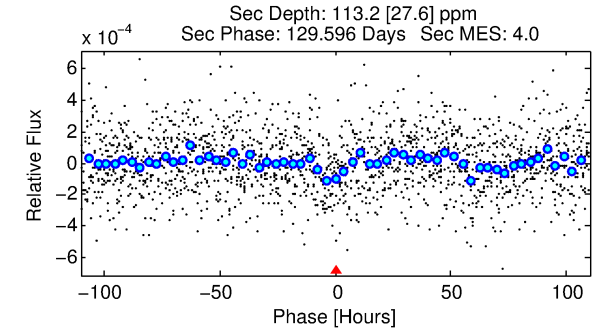
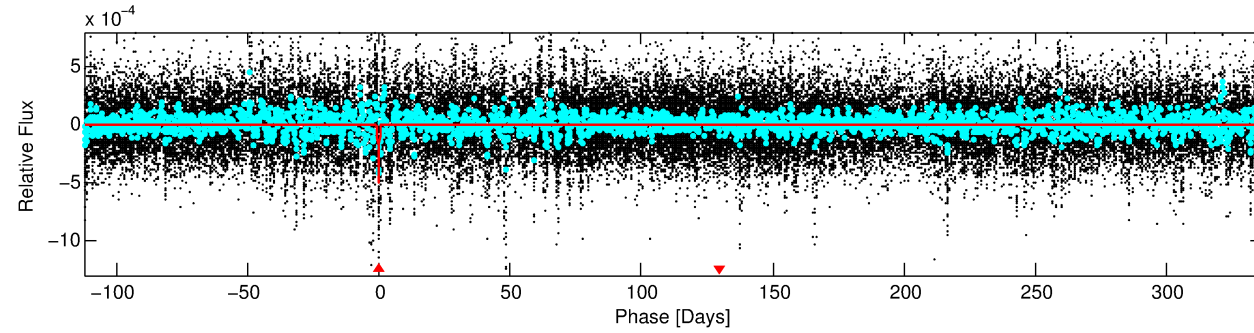
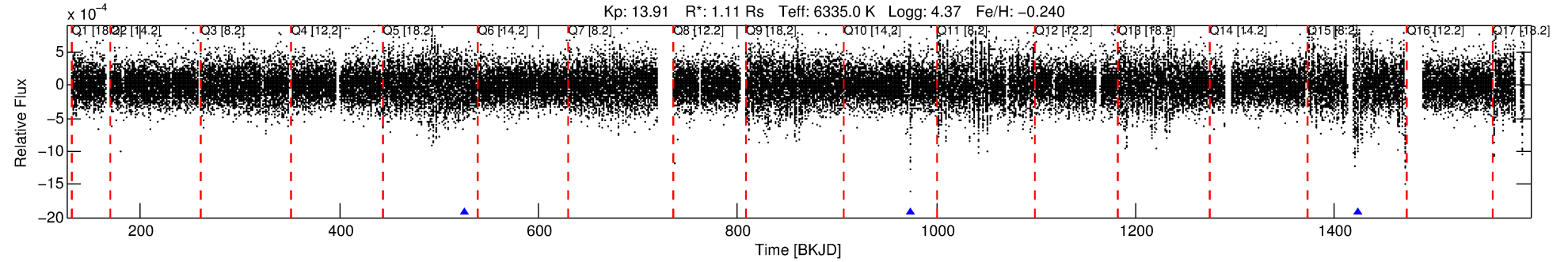
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009771141-01

No Significant Match Found

# DV One-Page Summary

KIC: 9771141 Candidate: 1 of 1 Period: 448.568 d



## DV Fit Results:

Period = 448.56821 [0.01374] d  
Epoch = 525.7225 [0.0163] BKJD  
Rp/R\* = 0.0233 [0.0022]  
a/R\* = 107.68 [40.80]  
b = 0.84 [0.13]  
Seff = 1.31 [0.52]  
Teff = 273 [27] K  
Rp = 2.81 [0.93] Re  
a = 1.1608 [0.3056] AU  
Ag = 10610.21 [5162.23] [2.06] $\sigma$   
Teffp = 4281 [358] K [11.17] $\sigma$

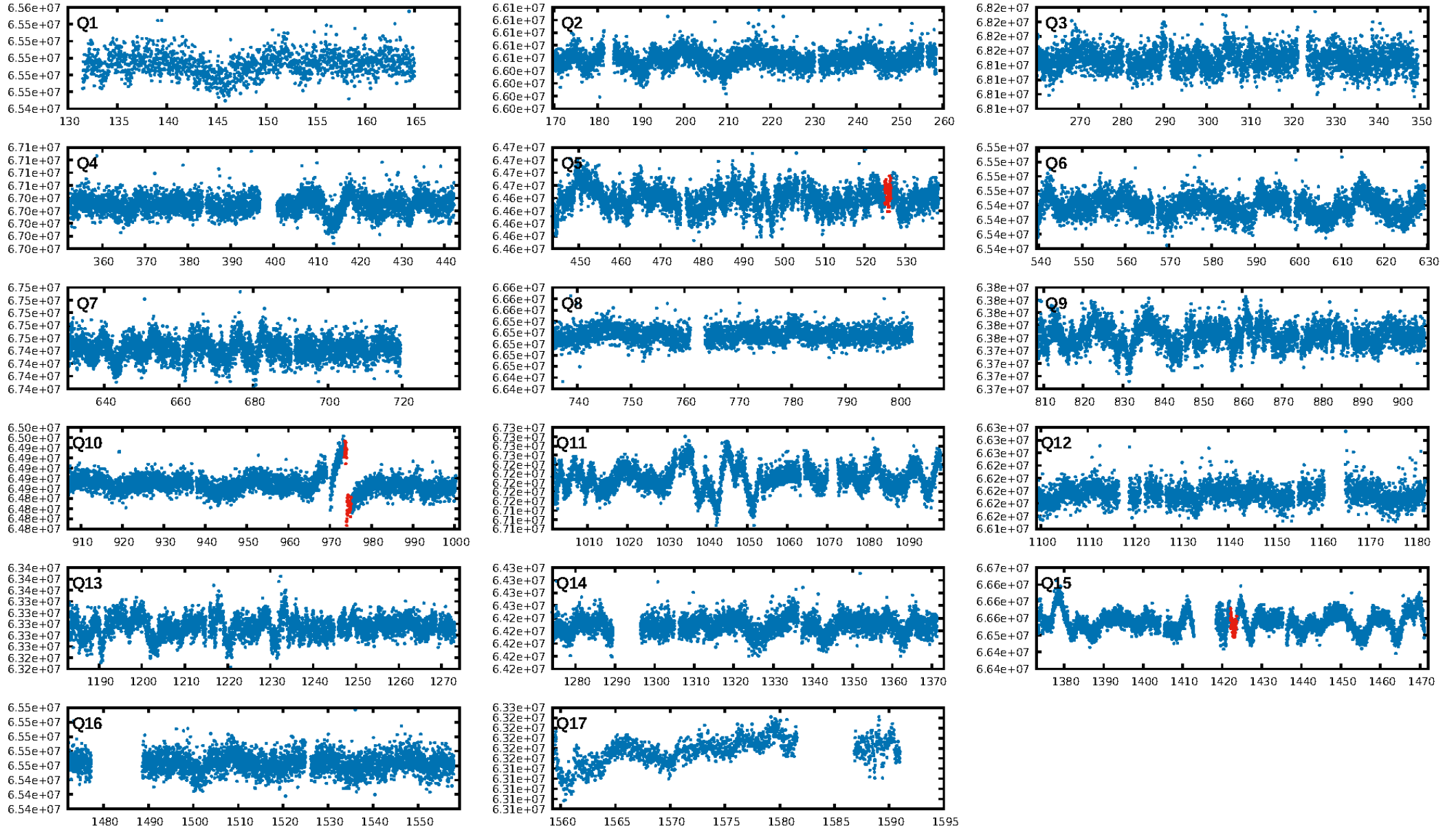
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 99.5%  
Bootstrap-pfa: 7.97e-26  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.082  
Centroid-sig: 2.5%  
Centroid-so: 1.835 arcsec [2.12] $\sigma$   
OotOffset-rm: 0.859 arcsec [7.93] $\sigma$   
KicOffset-rm: 0.867 arcsec [8.02] $\sigma$   
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [3/3]

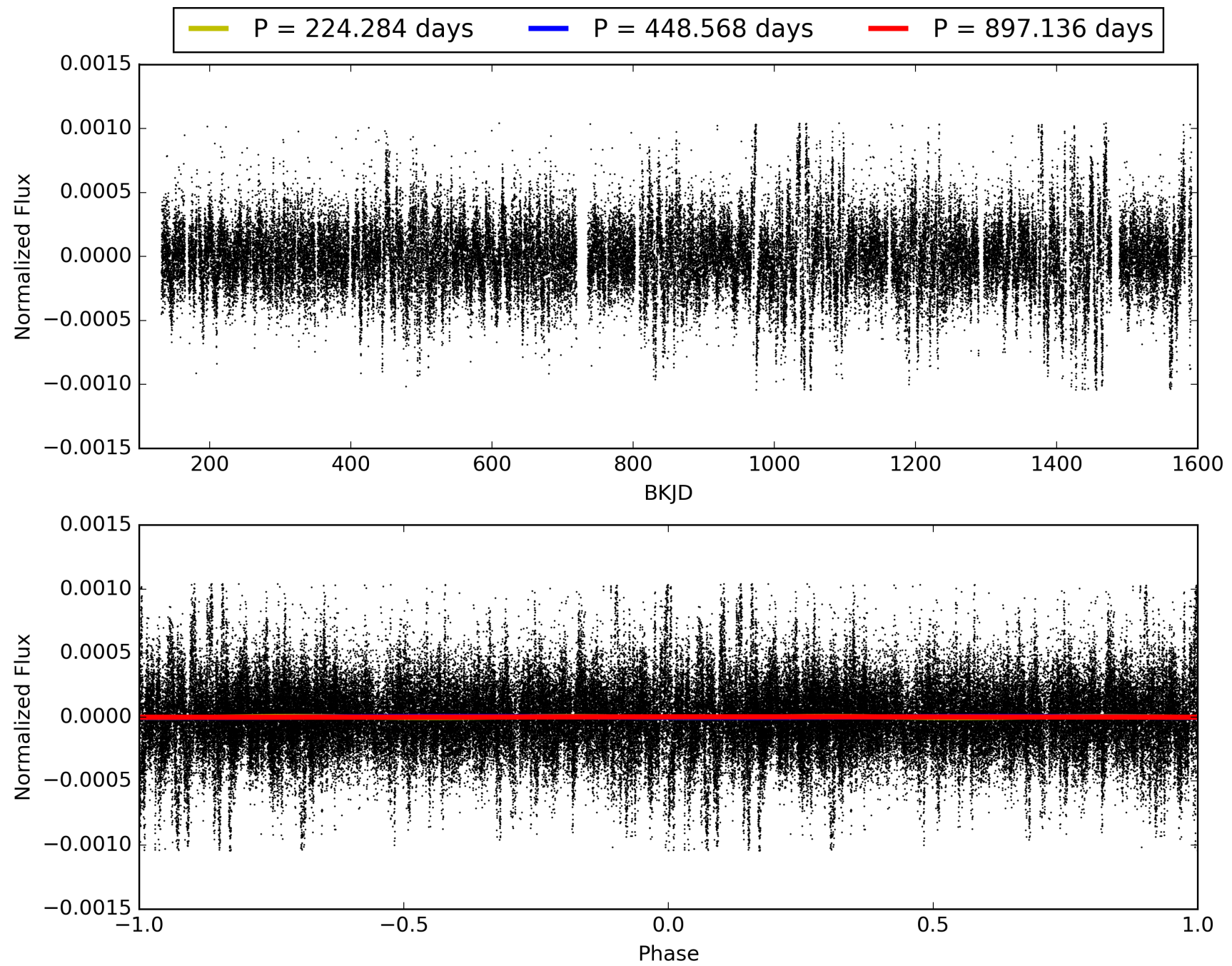
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:53:20 Z

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

# TCE 009771141-01, PDC Light Curves

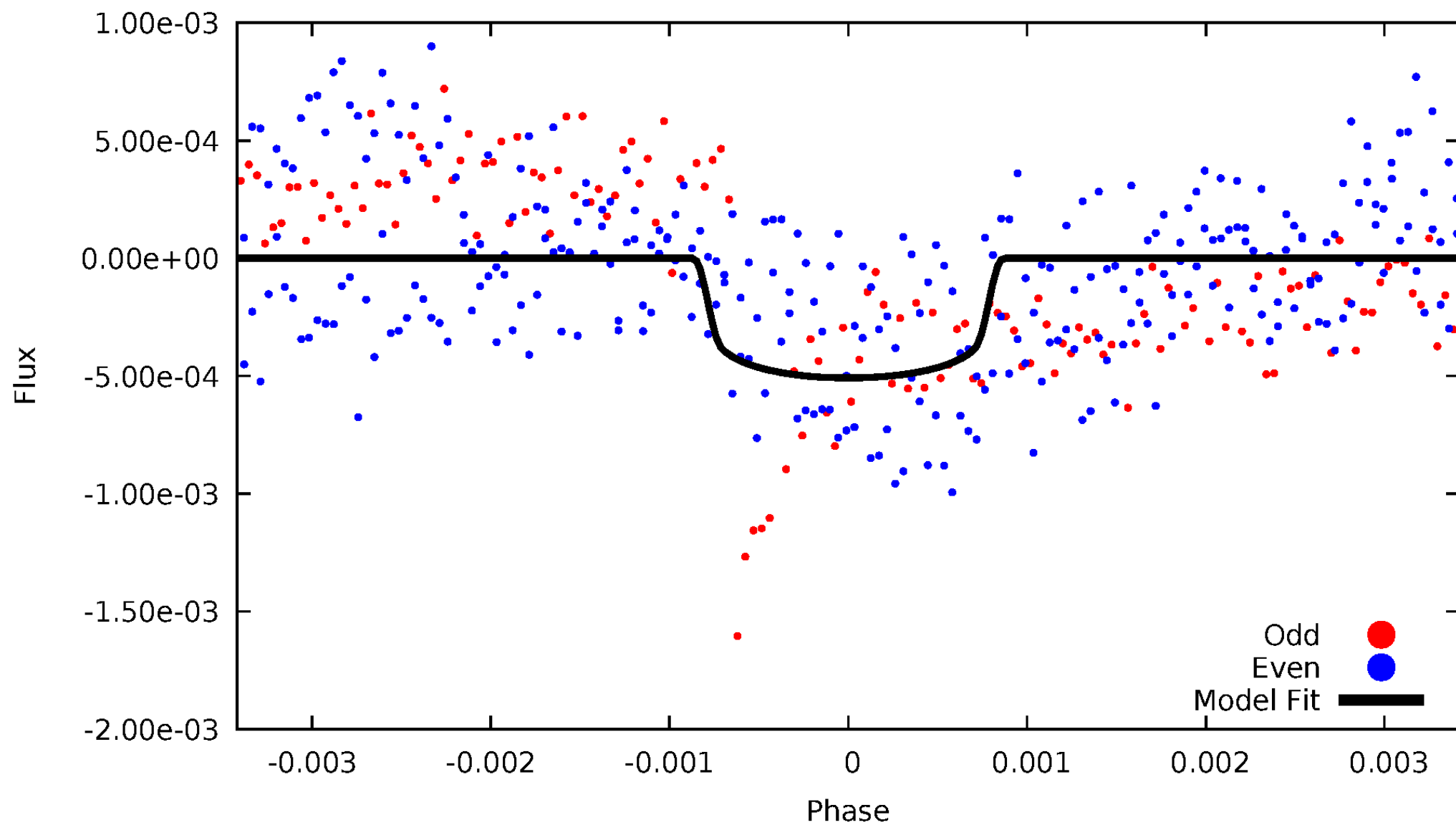


TCE 009771141-01



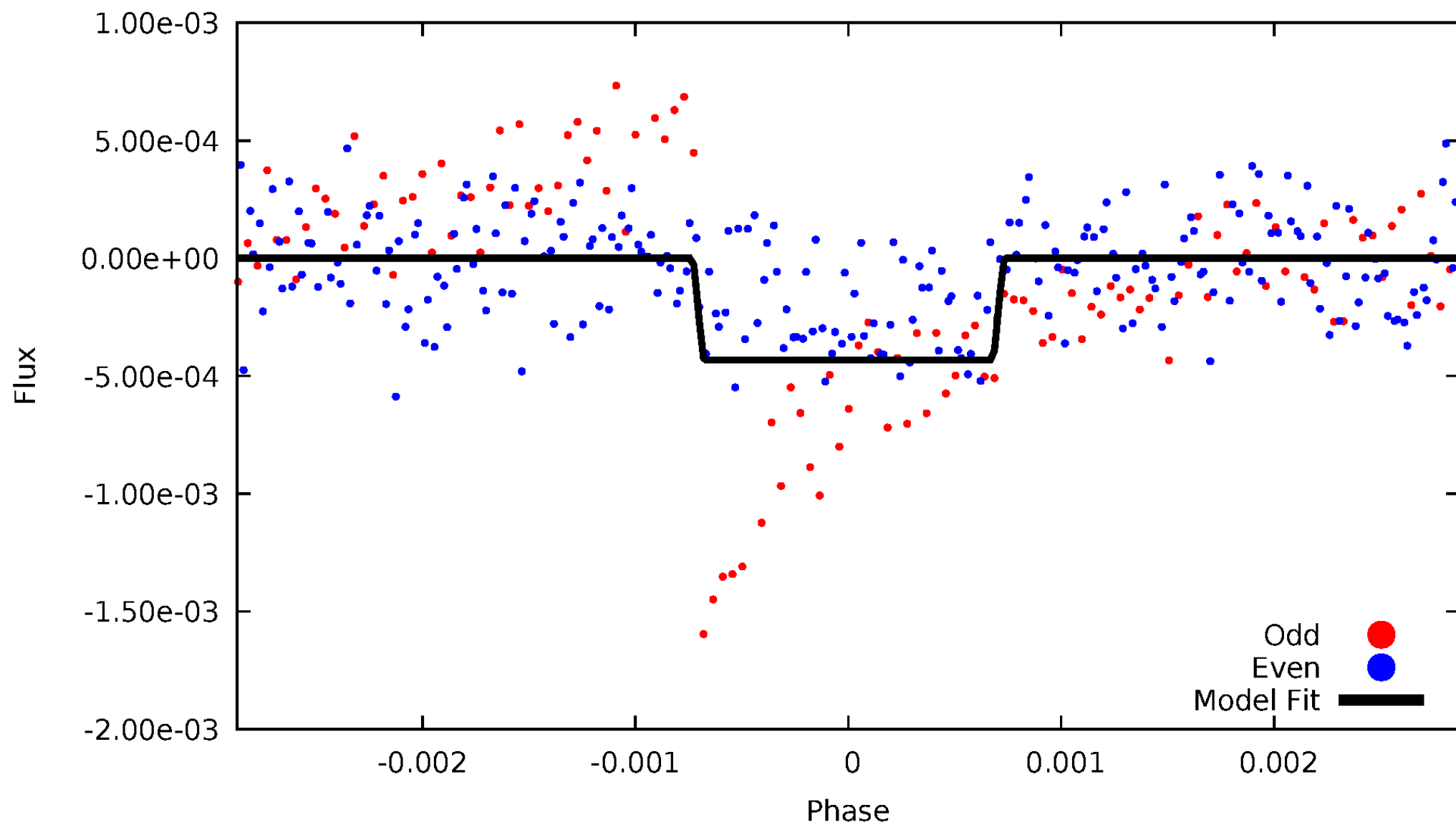
# DV Odd/Even

TCE 009771141-01



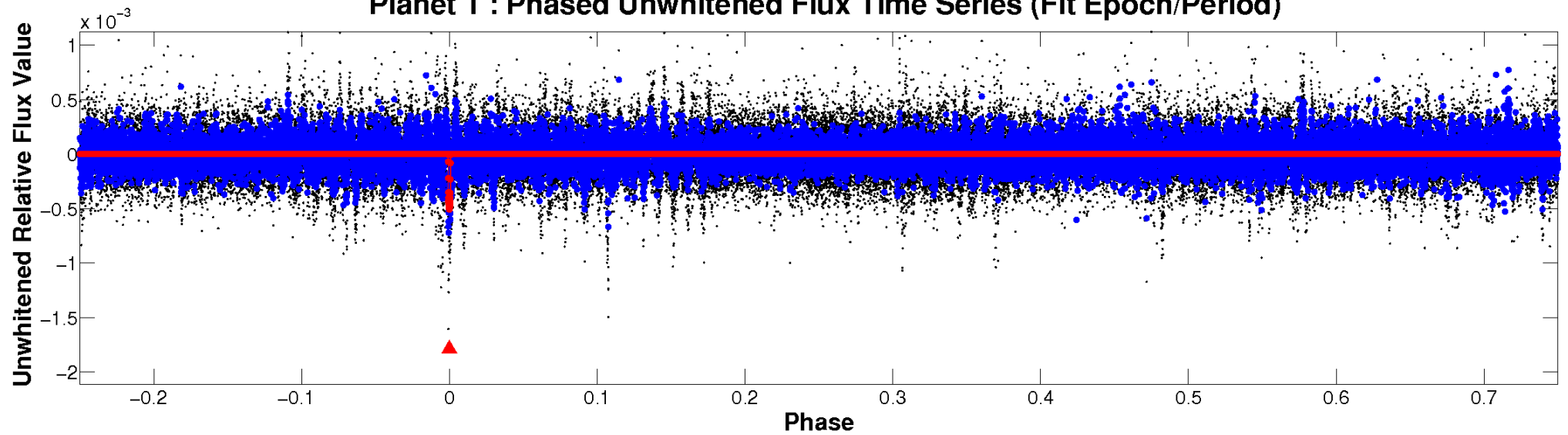
# ALT Odd/Even

TCE 009771141-01

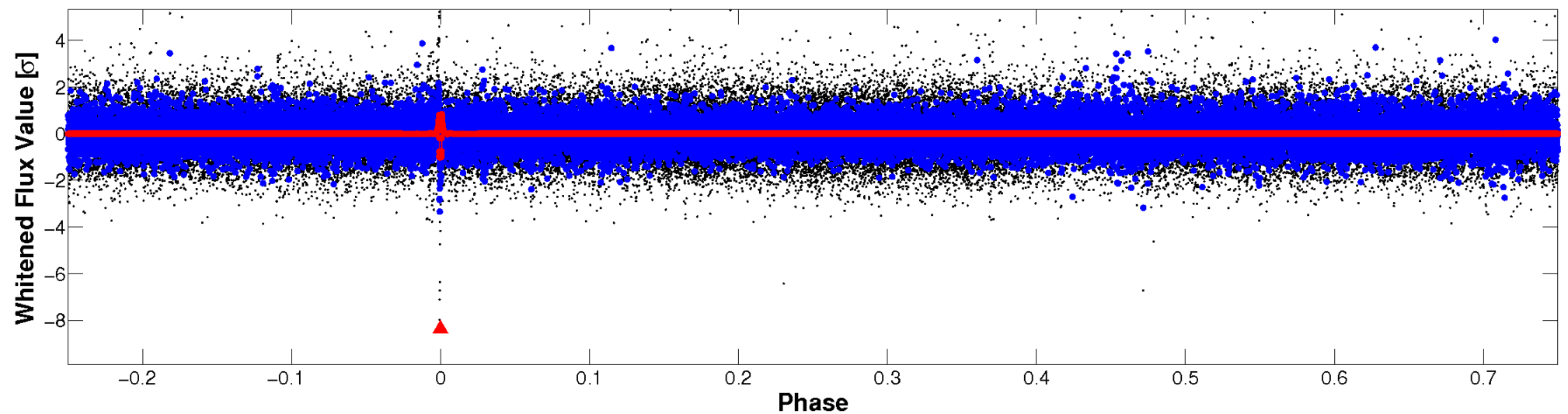


# Non-Whitened Vs. Whitened Light Curve

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



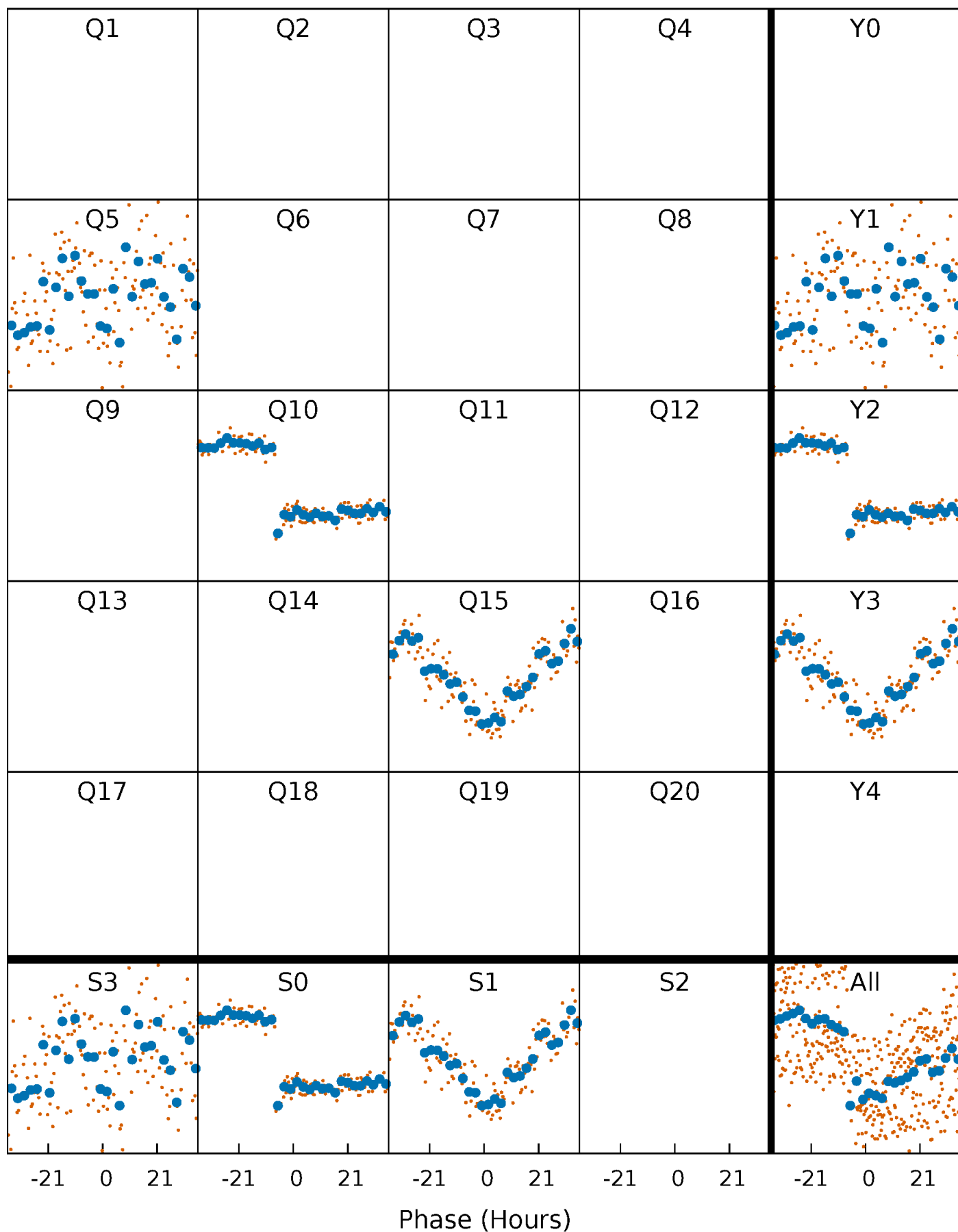
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

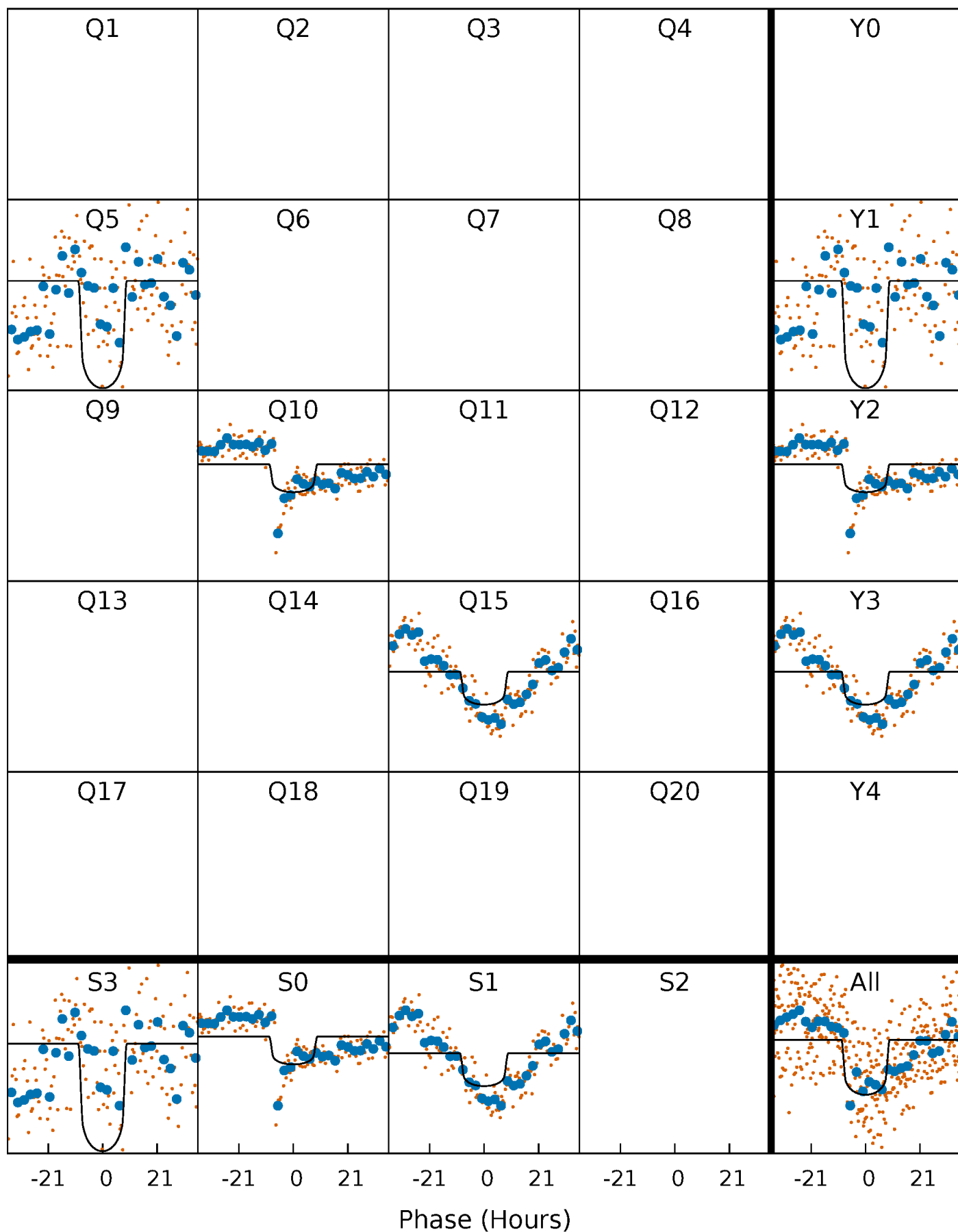
TCE 009771141-01 P=448.568210 Days  $T_0=525.722515$  (BKJD)





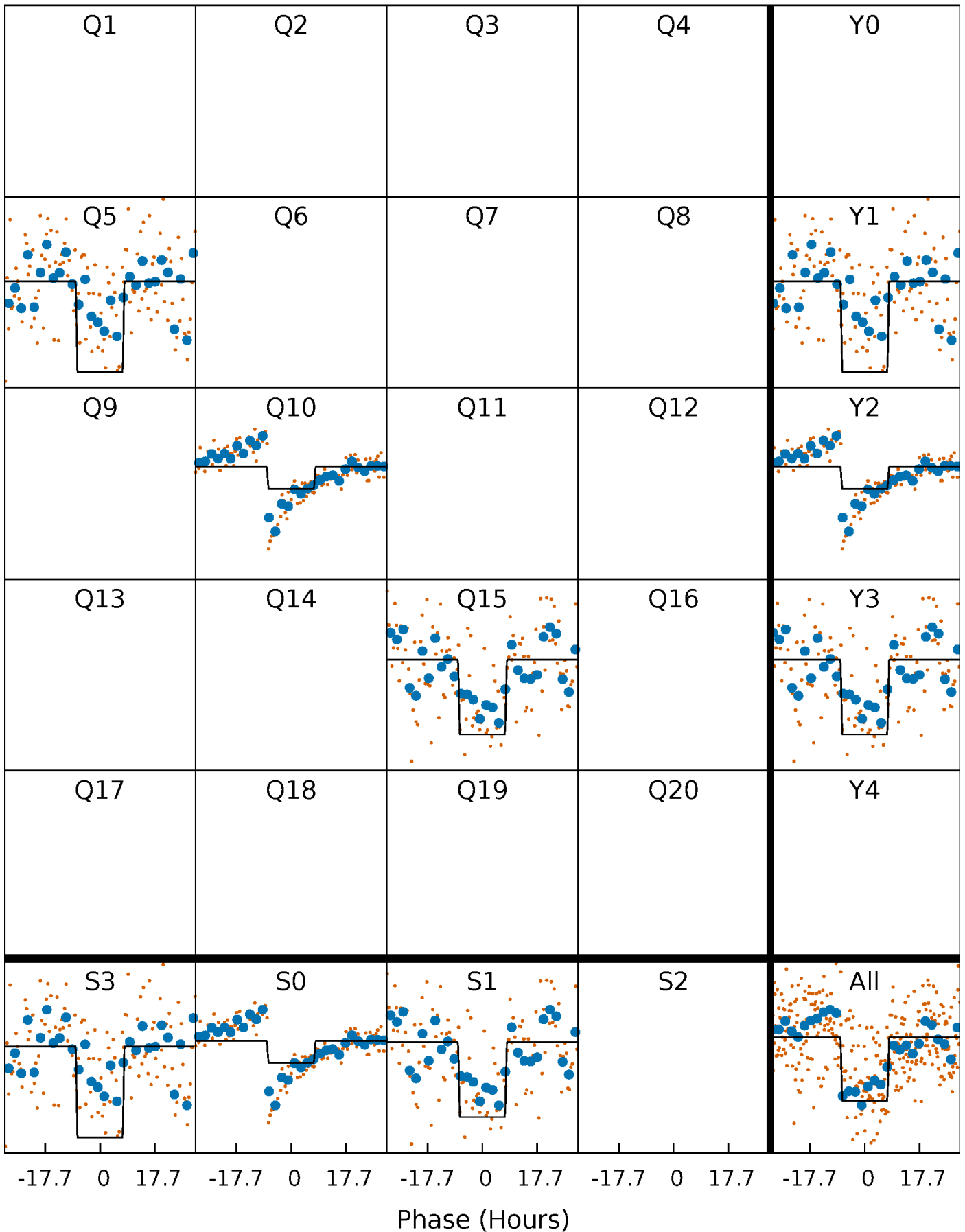
# DV Quarter-Phased Transit Curves

TCE 009771141-01 P=448.568210 Days  $T_0=525.722515$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

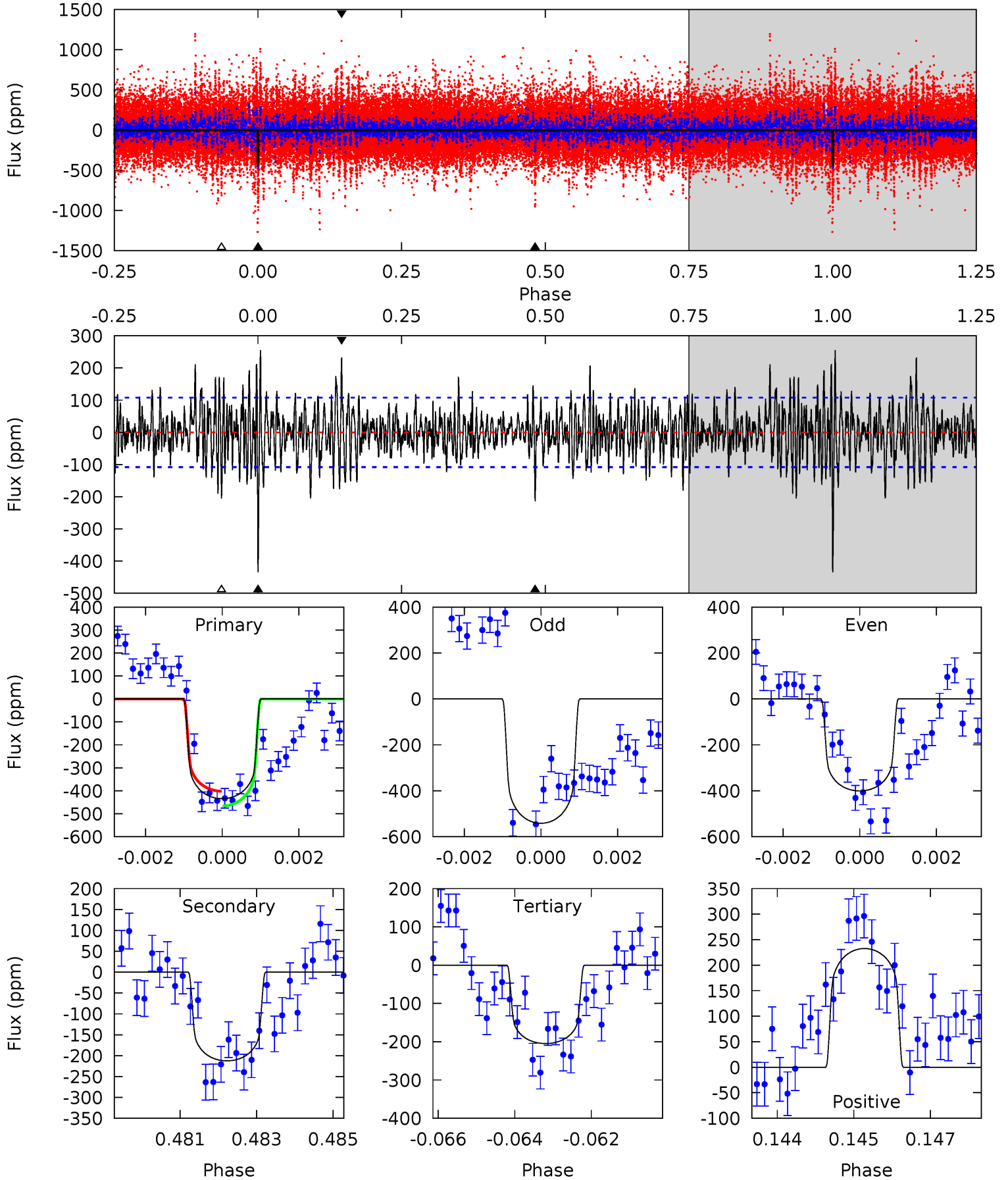
TCE 009771141-01 P=448.550698 Days  $T_0=525.766314$  (BKJD)



# DV Model-Shift Uniqueness Test

009771141-01, P = 448.568210 Days, E = 77.154305 Days

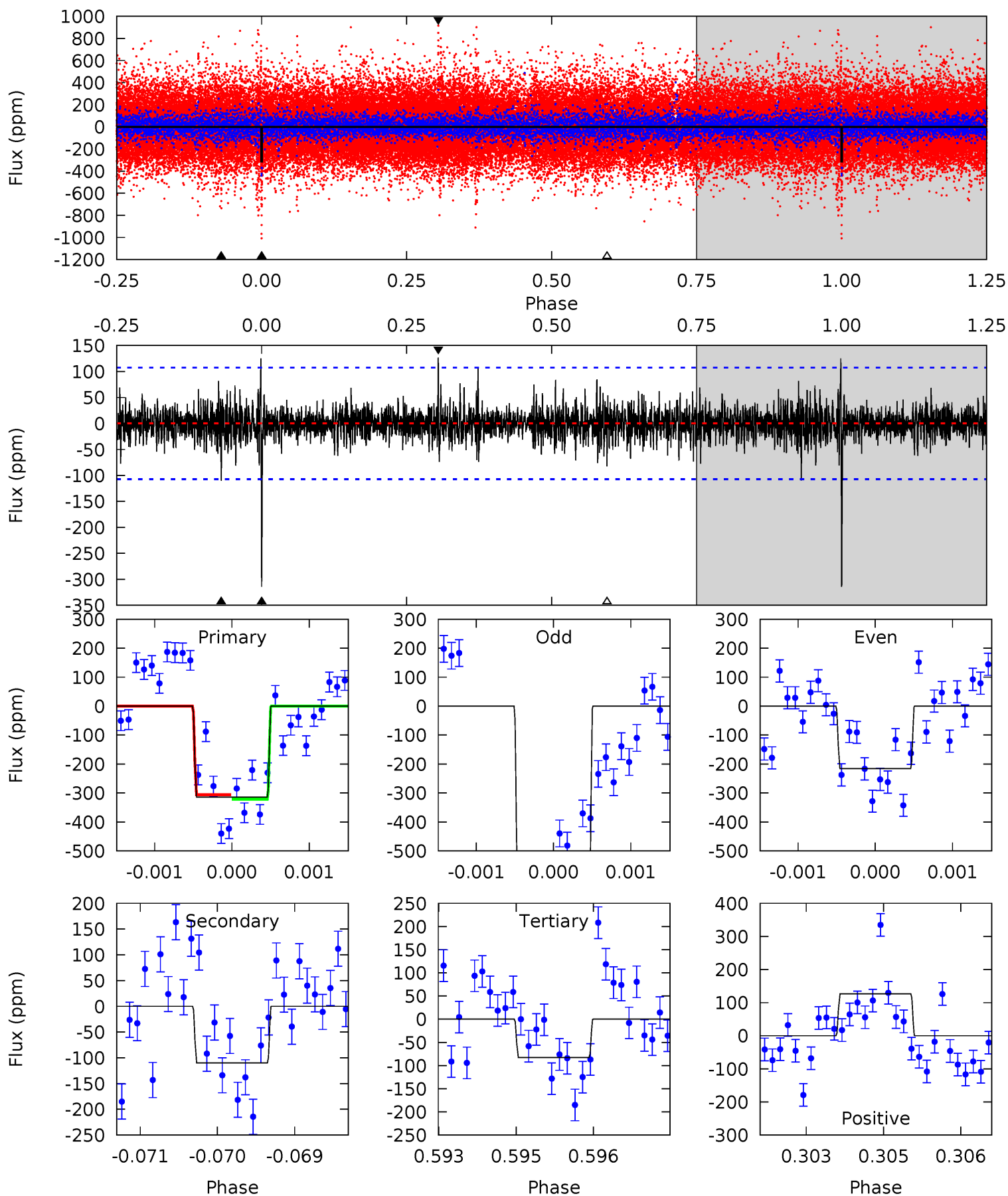
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.5	10.5	10.1	11.5	5.35	3.13	3.00	11.4	10.00	0.38	-0.99	3.29	0.83	0.37	1.58



# Alt Model-Shift Uniqueness Test

009771141-01, P = 448.550698 Days, E = 77.215616 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
15.8	5.50	4.14	6.35	5.38	3.18	1.11	11.6	9.42	1.37	-0.85	12.4	1.40	0.29	0.39



### Stellar Parameters For KIC 009771141

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6335^{+169}_{-207}$	$4.366^{+0.087}_{-0.203}$	$-0.240^{+0.250}_{-0.300}$	$1.106^{+0.352}_{-0.151}$	$1.033^{+0.172}_{-0.115}$	$1.075^{+0.420}_{-0.582}$
	+3%/-3%	+2%/-5%	+104%/-125%	+32%/-14%	+17%/-11%	+39%/-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 009771141-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-212 \pm 20$	$2.88^{+0.57}_{-0.36}$	$386^{+31}_{-20}$	$5092^{+269}_{-252}$	$18598^{+6287}_{-5482}$
Alt.	$-110 \pm 20$	$2.59^{+0.49}_{-0.34}$	$385^{+30}_{-20}$	$4638^{+280}_{-255}$	$12170^{+4637}_{-4074}$

$T_{max}$  = 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

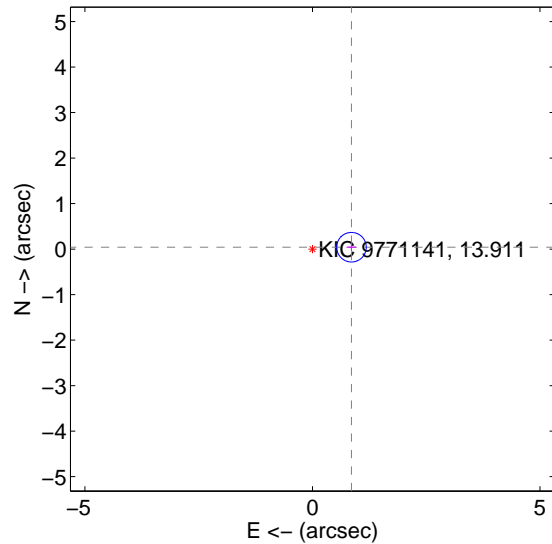
Supplemental centroid analysis for 009771141-01. Kepler magnitude: 13.91. Transit SNR 10.39

There are 1 quarters with good PRF difference image offsets

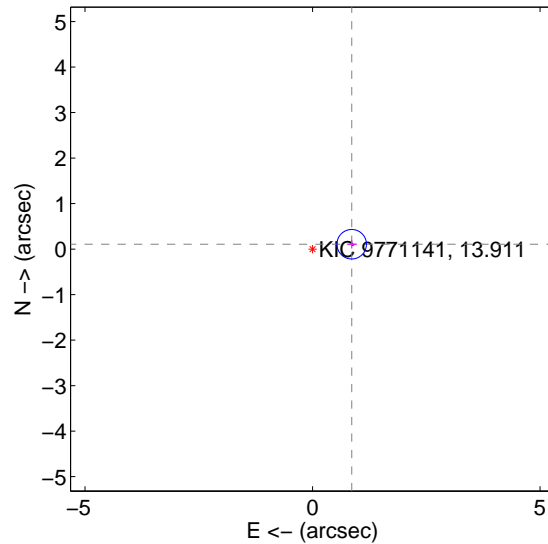
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.859 \pm 0.108$	7.93	$-0.858 \pm 0.108$	$0.041 \pm 0.095$
PRF-fit source offset from KIC position	$0.867 \pm 0.108$	8.02	$-0.861 \pm 0.108$	$0.107 \pm 0.095$
photometric centroid source offset	$1.83 \pm 0.87$	2.12	$-1.60 \pm 0.82$	$-0.91 \pm 1.01$

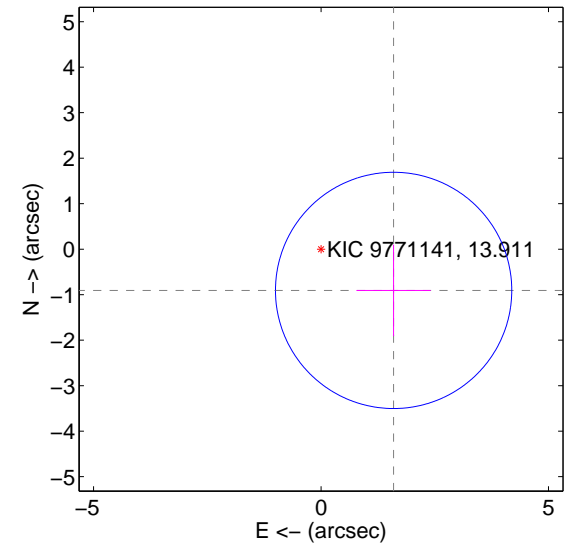
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



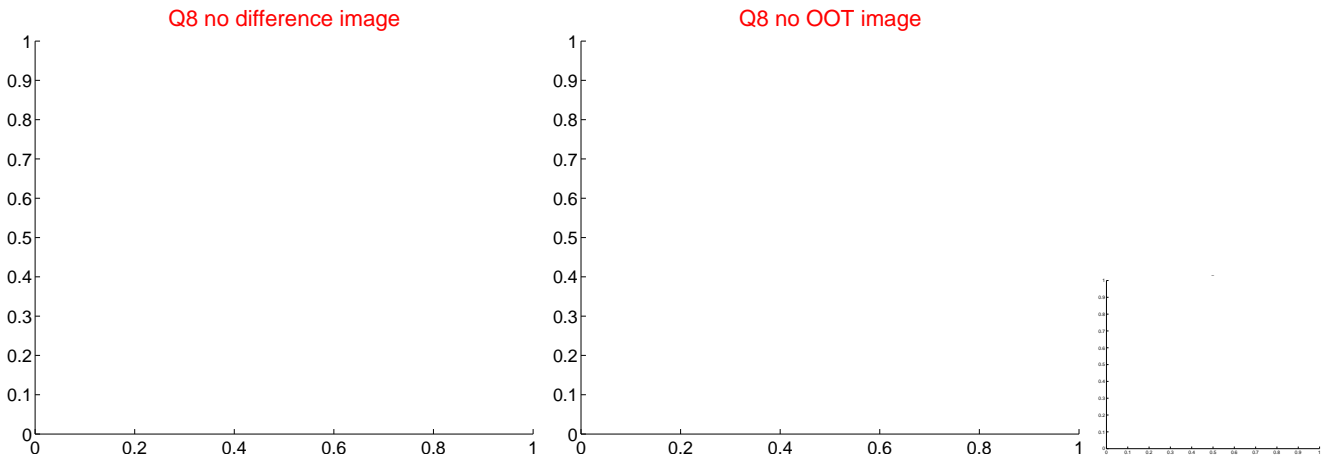
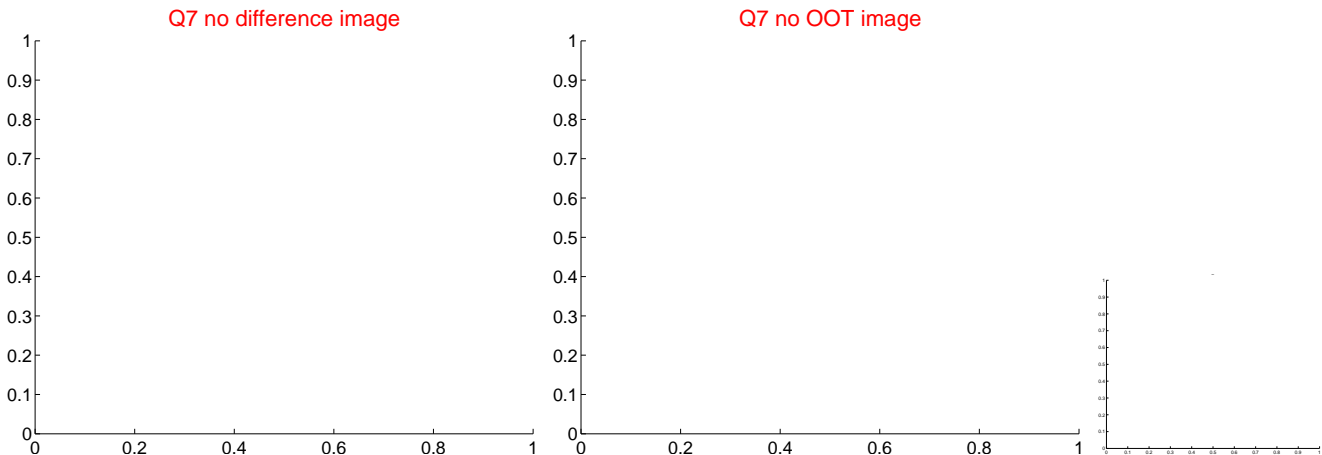
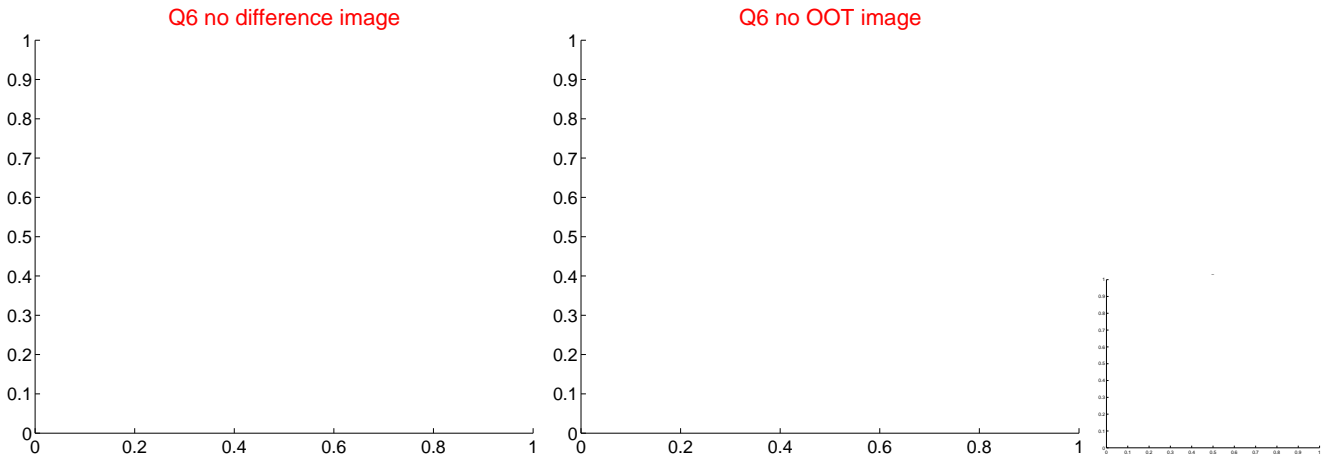
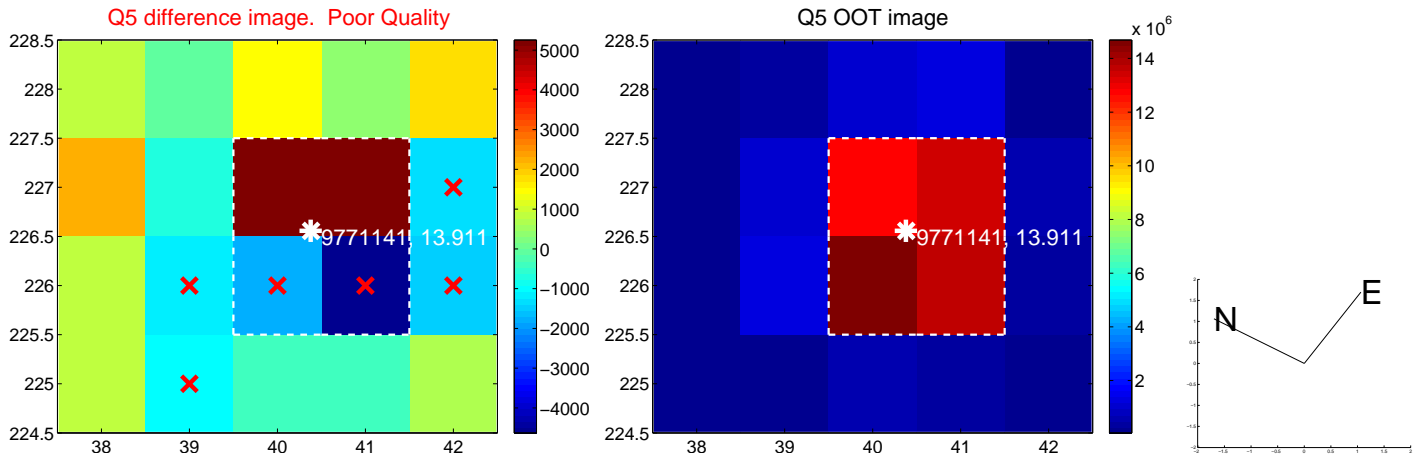
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

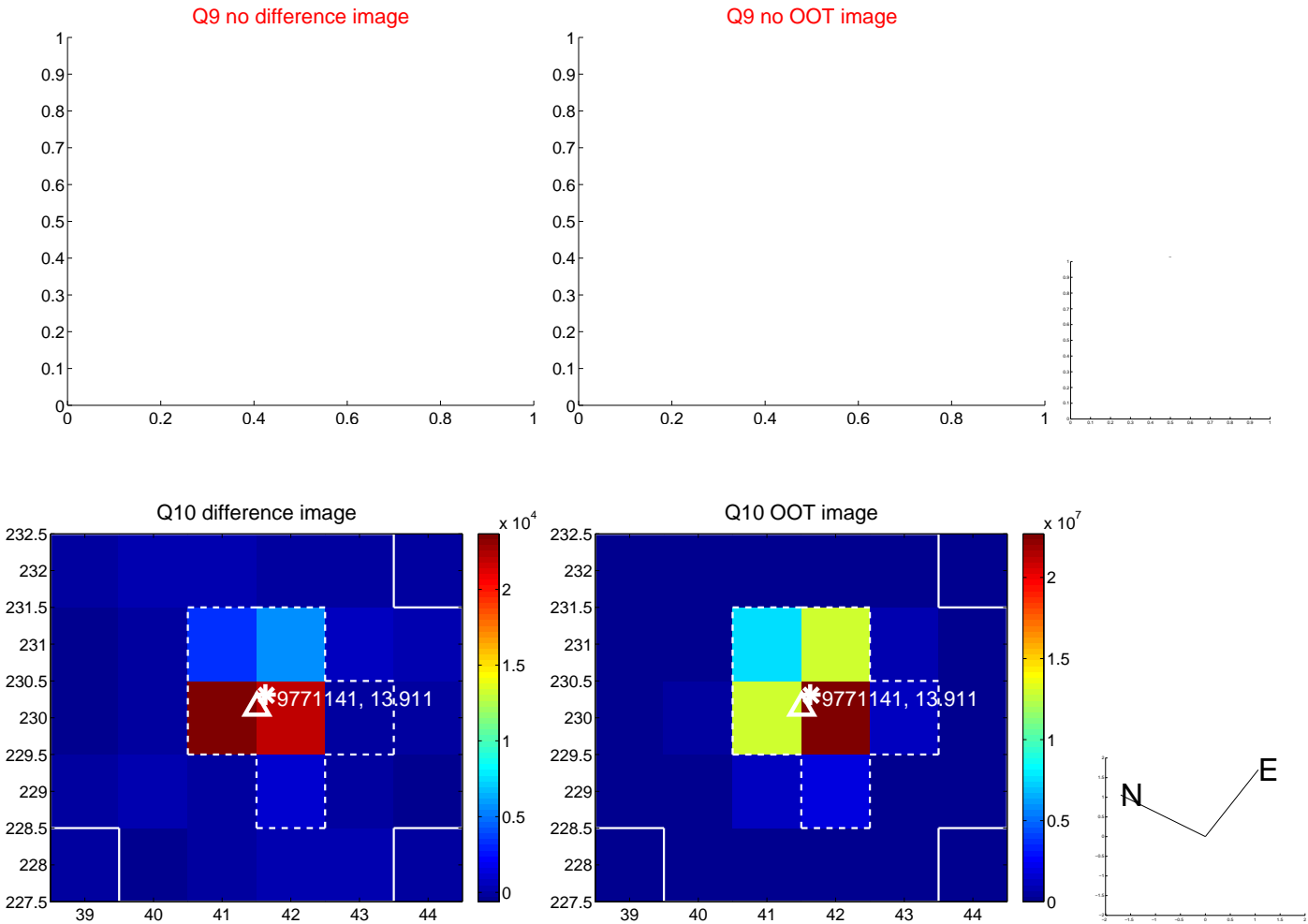




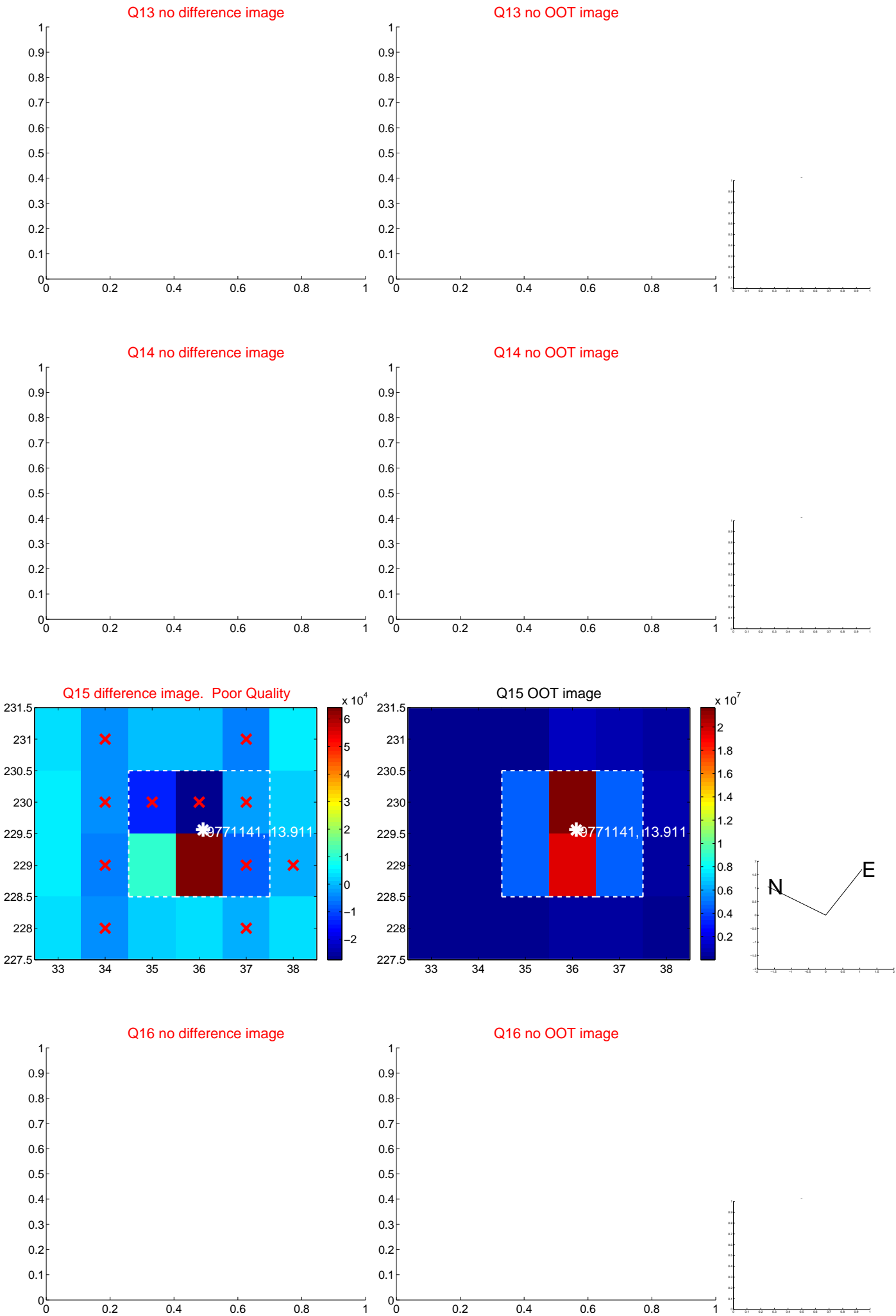
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



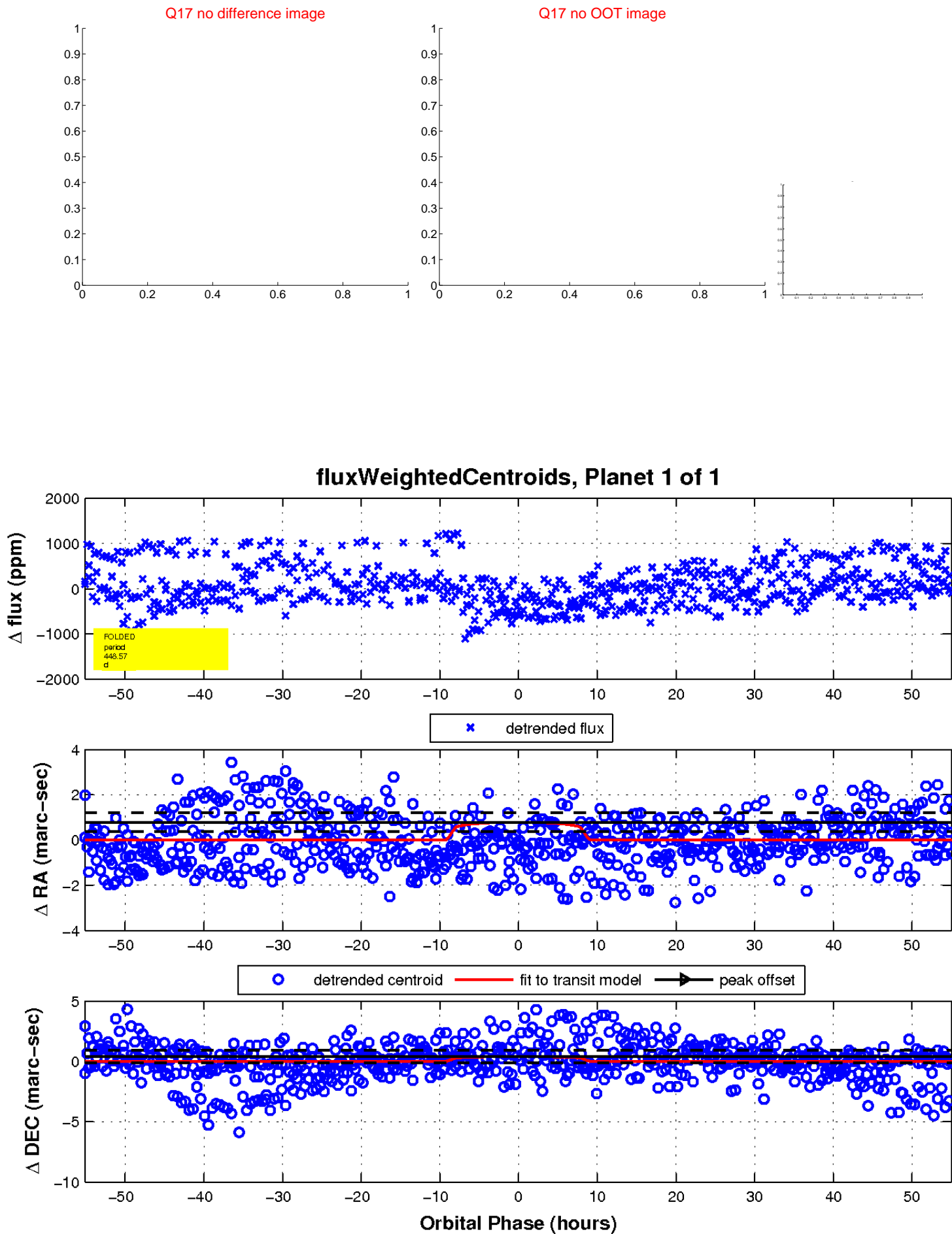
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

