

# KIC 002852528

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002852528-01	OBS	3446.01	11.961565	131.892682	401.8	3.426	11.3	11.3	1.05	6142	2.51	121.93

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002852528-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH

**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.

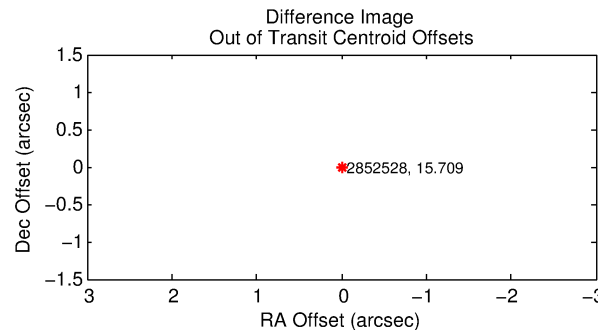
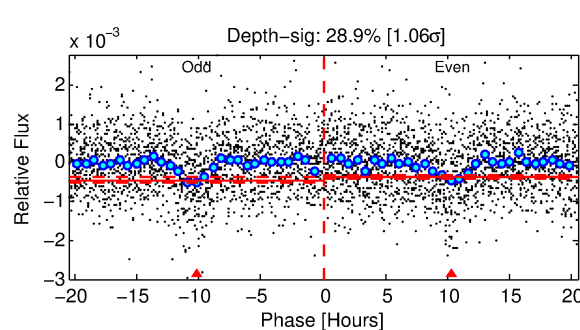
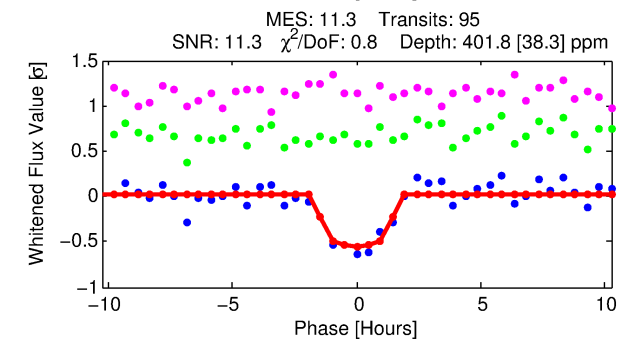
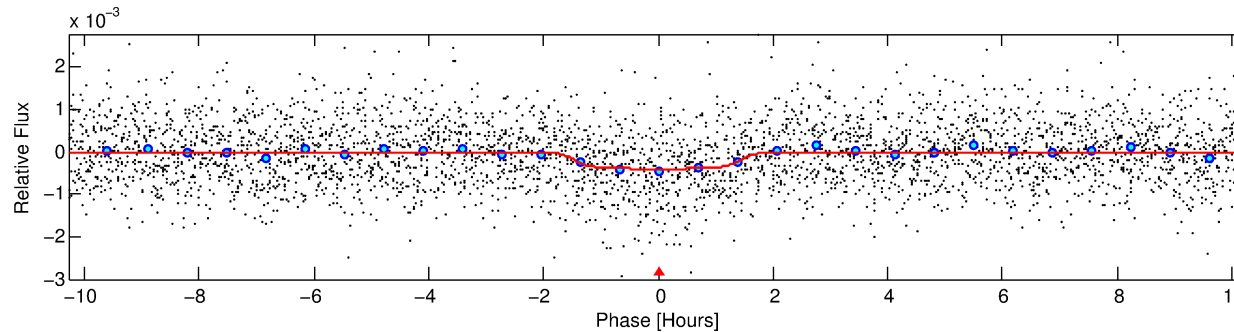
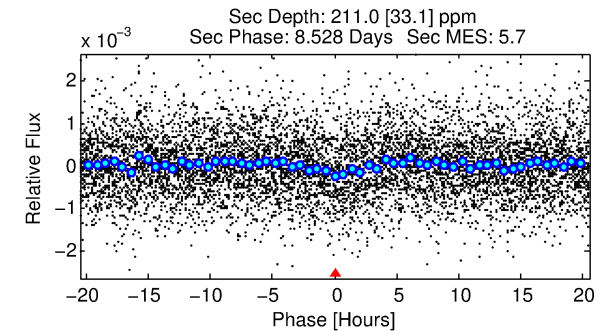
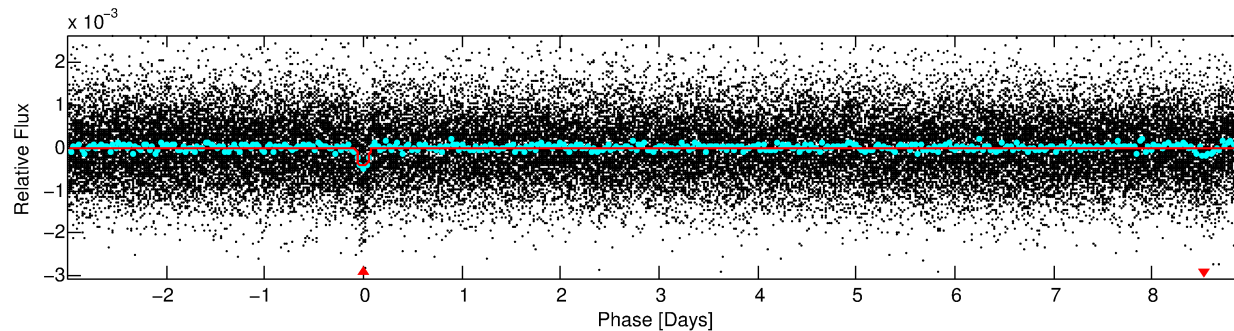
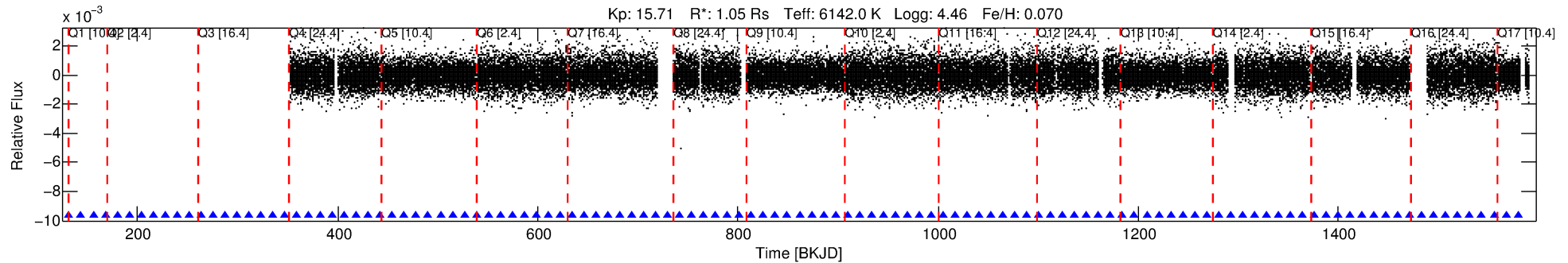
## Ephemeris Match Information For 002852528-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
002852528-01	2852528	6294.01	2852560	1:1	17.4	0	-4	15.31	15.71	806.89	Direct-PRF	0	0.78	0.61

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 2852528 Candidate: 1 of 1 Period: 11.962 d  
KOI: K03446.01 Corr: 0.946



## DV Fit Results:

Period = 11.96157 [0.00012] d  
Epoch = 131.8927 [0.0087] BKJD  
Rp/R\* = 0.0220 [0.0049]  
a/R\* = 12.21 [13.45]  
b = 0.91 [0.20]  
Seff = 121.93 [48.66]  
Teq = 847 [85] K  
Rp = 2.51 [0.92] Re  
a = 0.1070 [0.0263] AU  
Ag = 211.08 [126.40] [1.66σ]  
Teffp = 4993 [631] K [6.51σ]

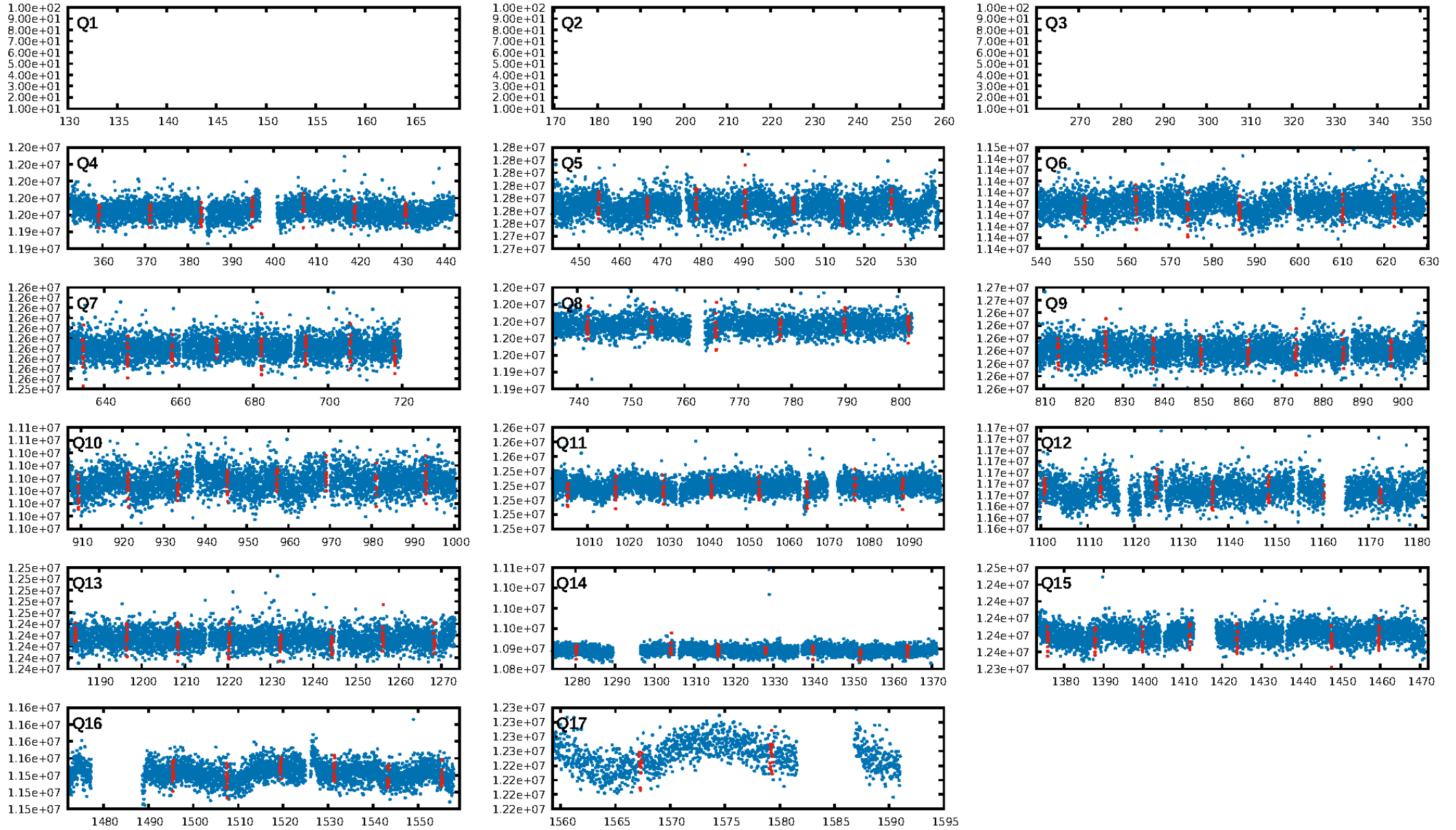
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.61e-28  
RollingBand-fgt: 1.00 [93/93]  
GhostDiagnostic-chr: -0.5184  
Centroid-sig: 0.0%  
Centroid-so: 30.105 arcsec [42.18σ]  
OotOffset-rm: N/A  
KicOffset-rm: 1.046 arcsec [0.73σ]  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/2/2 [4]  
DiffImageQuality-fgm: 0.00 [0/4]  
DiffImageOverlap-fno: 1.00 [14/14]

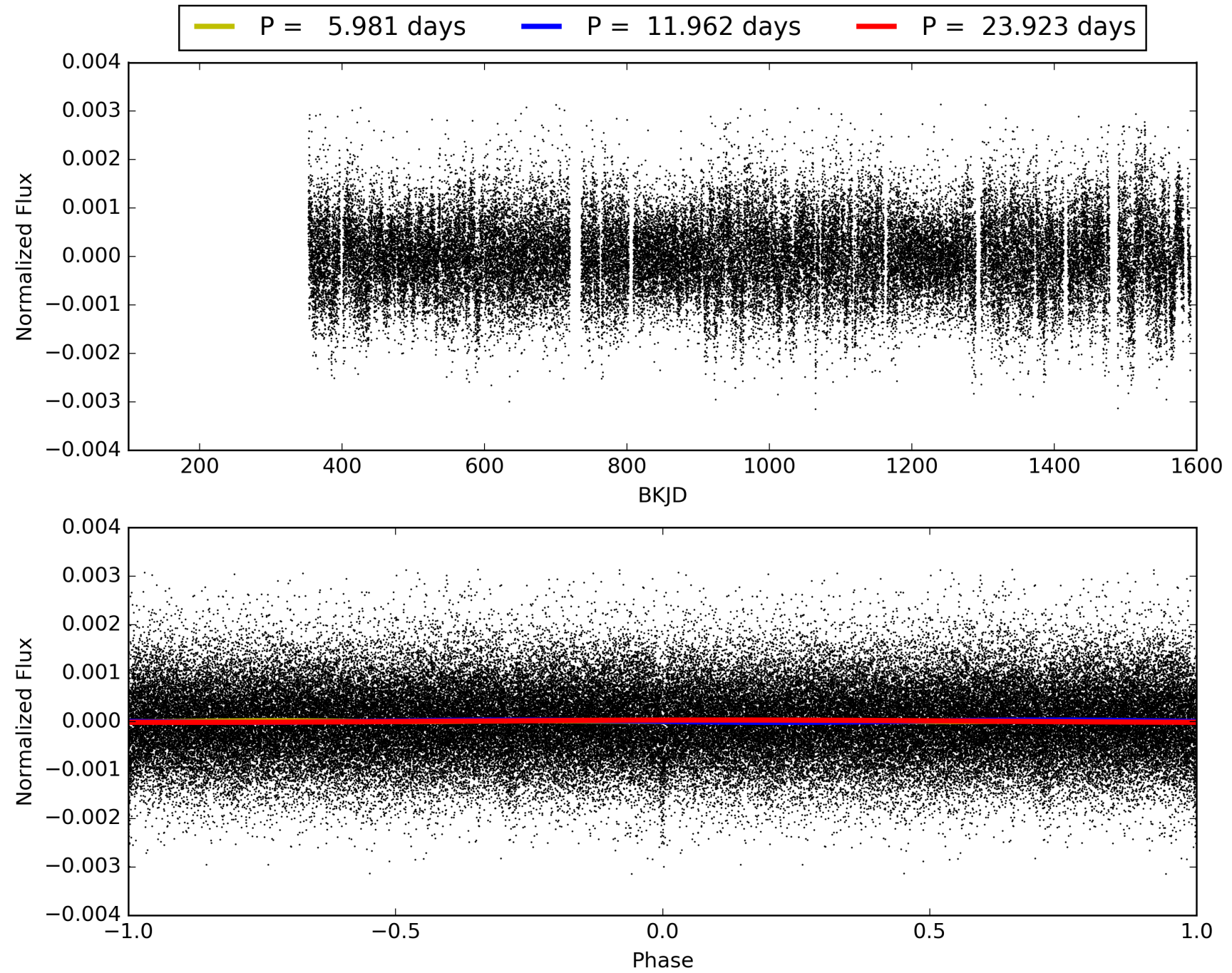
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:14:04 Z

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

# TCE 002852528-01, PDC Light Curves

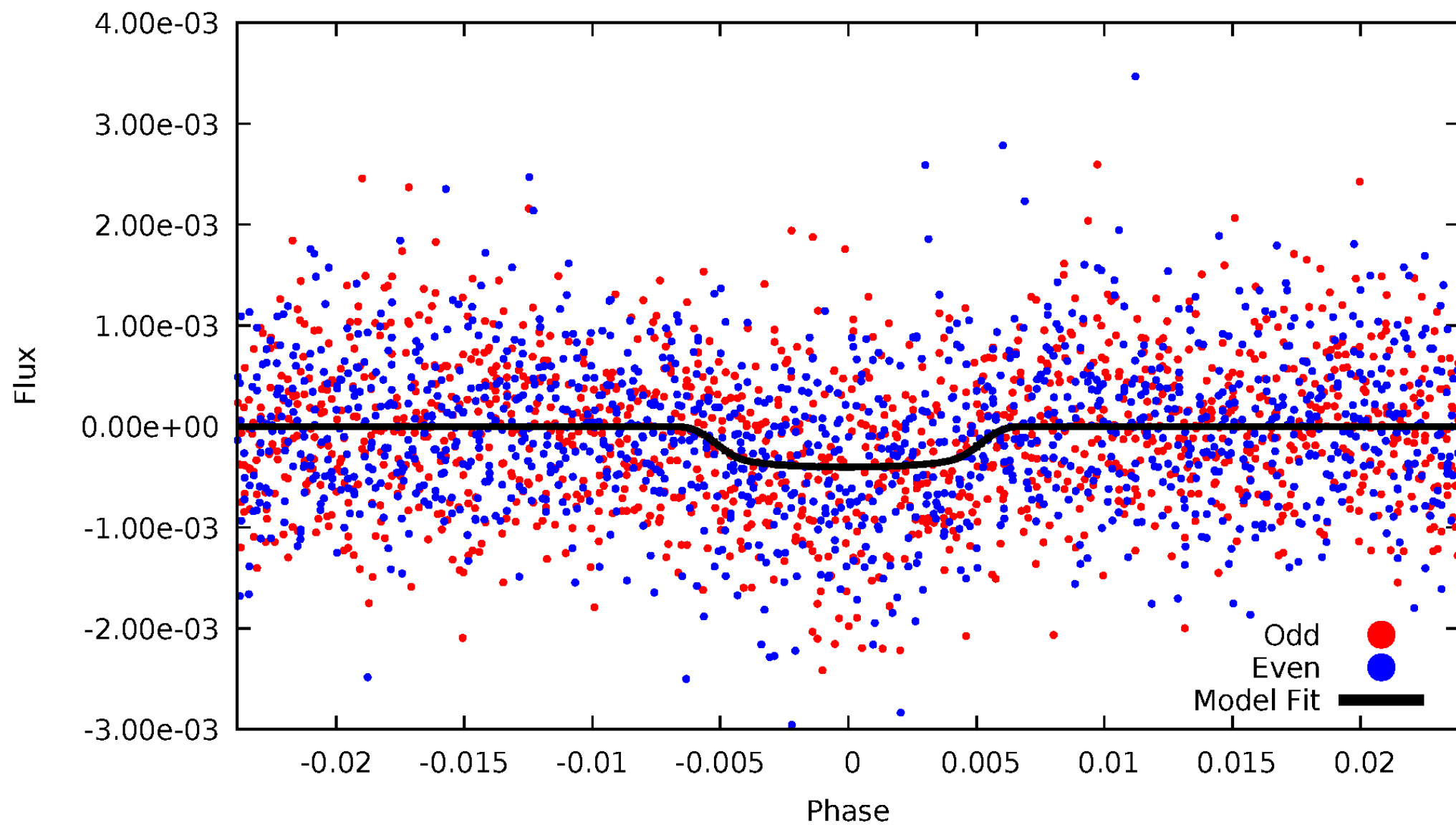


TCE 002852528-01



# DV Odd/Even

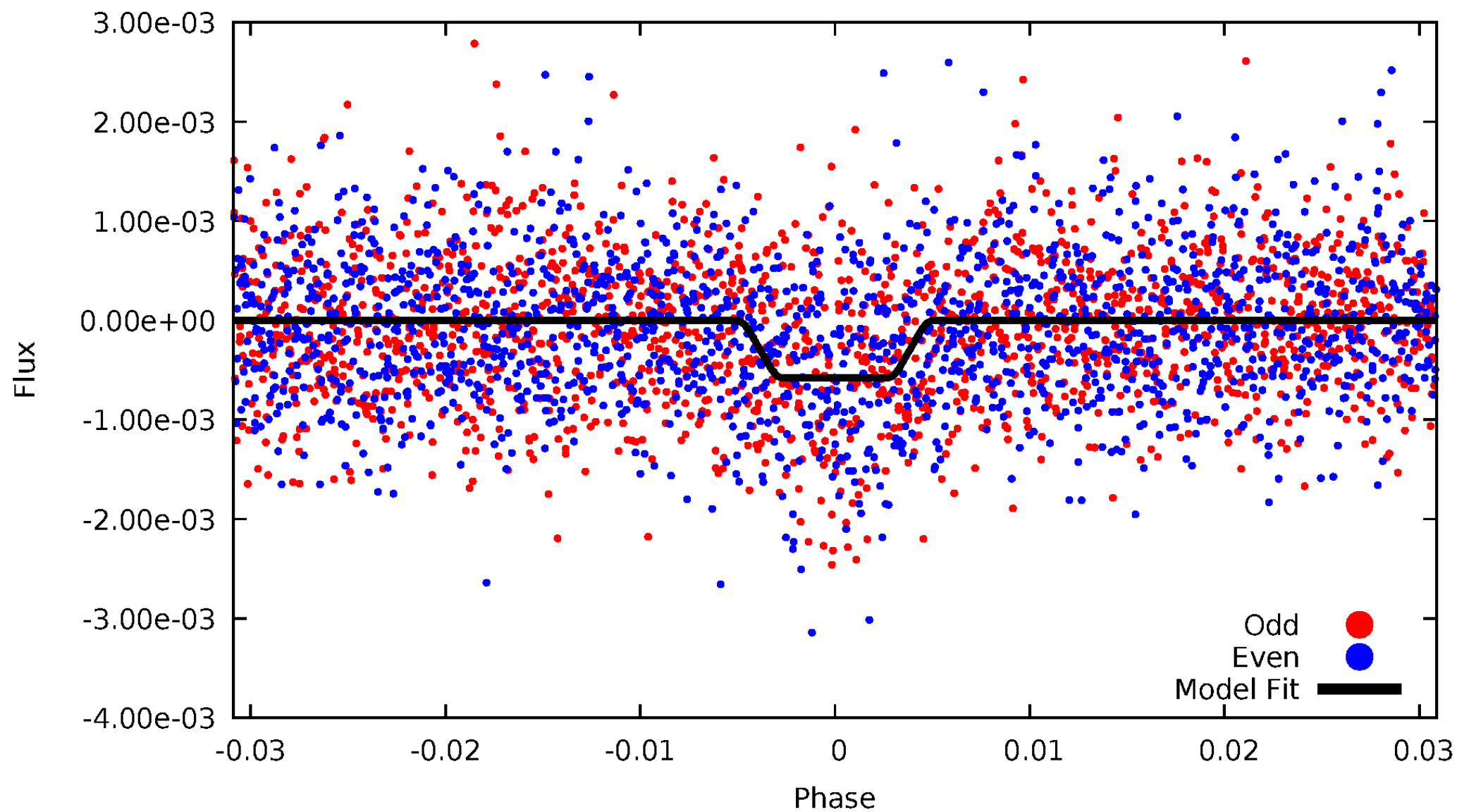
TCE 002852528-01





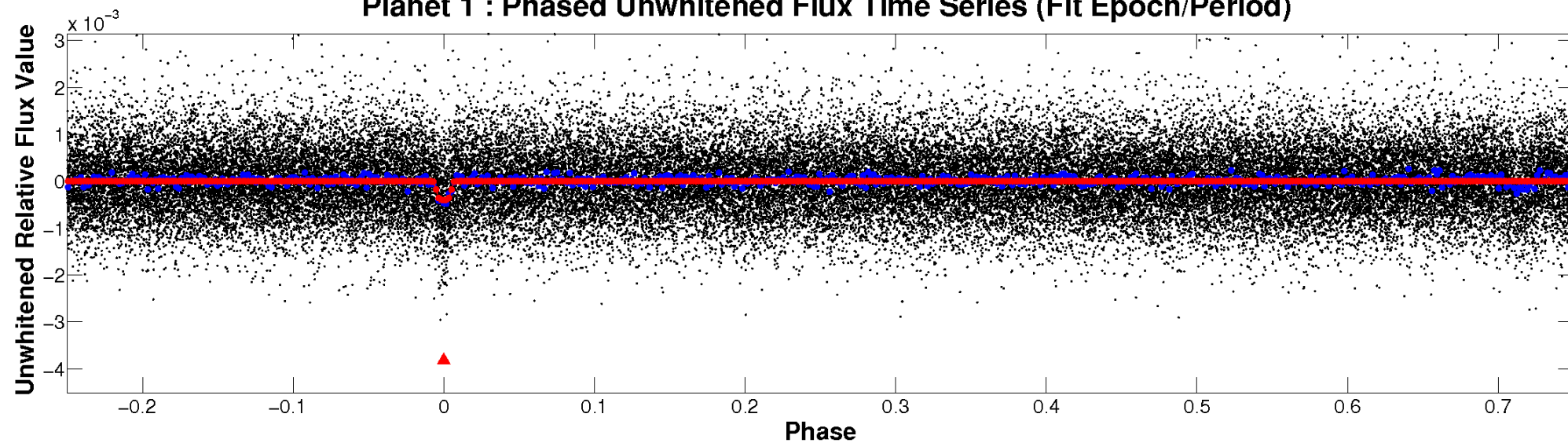
# ALT Odd/Even

TCE 002852528-01

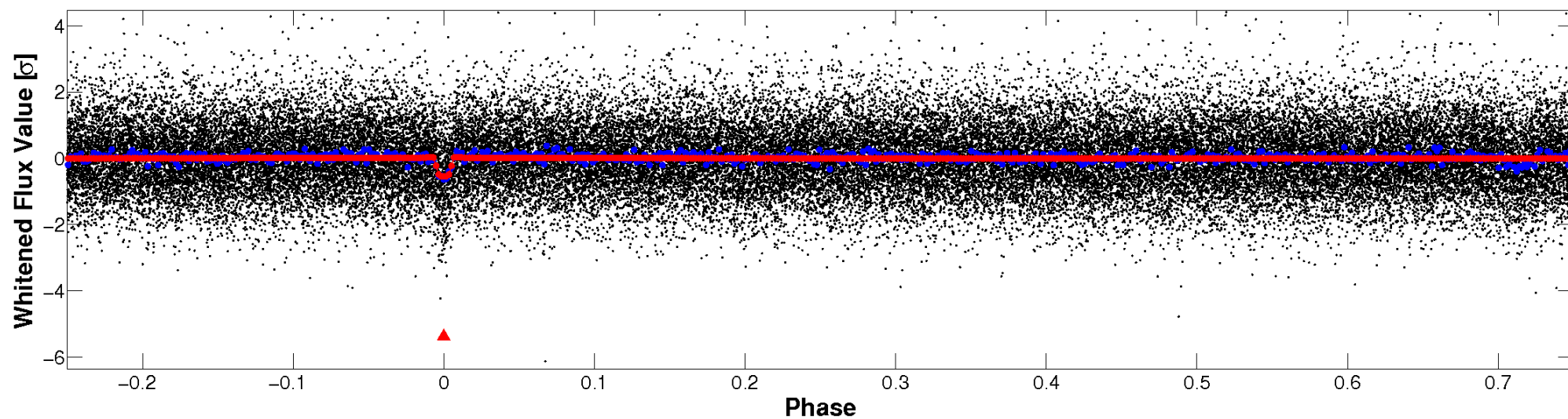


# Non-Whitened Vs. Whitened Light Curve

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

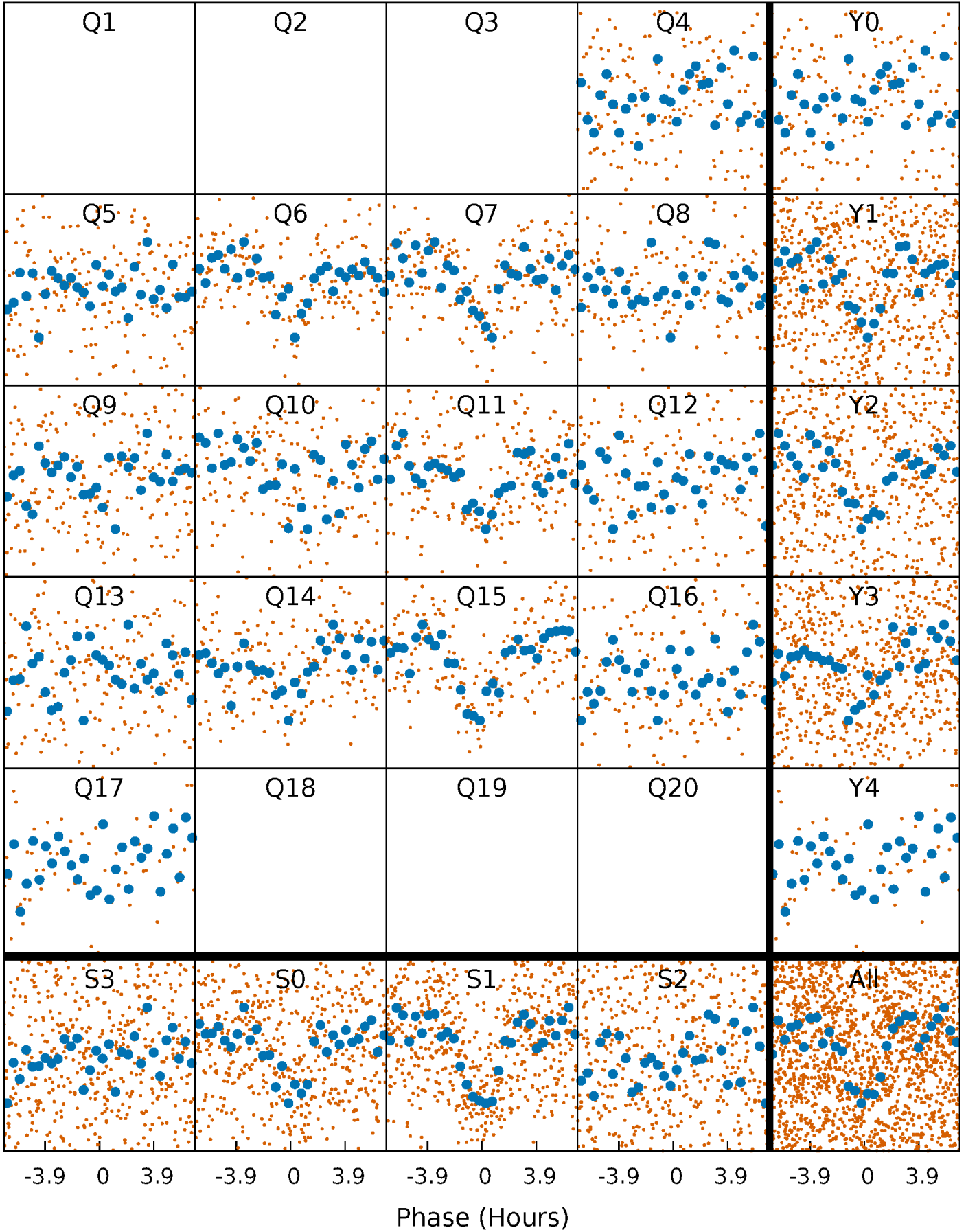


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

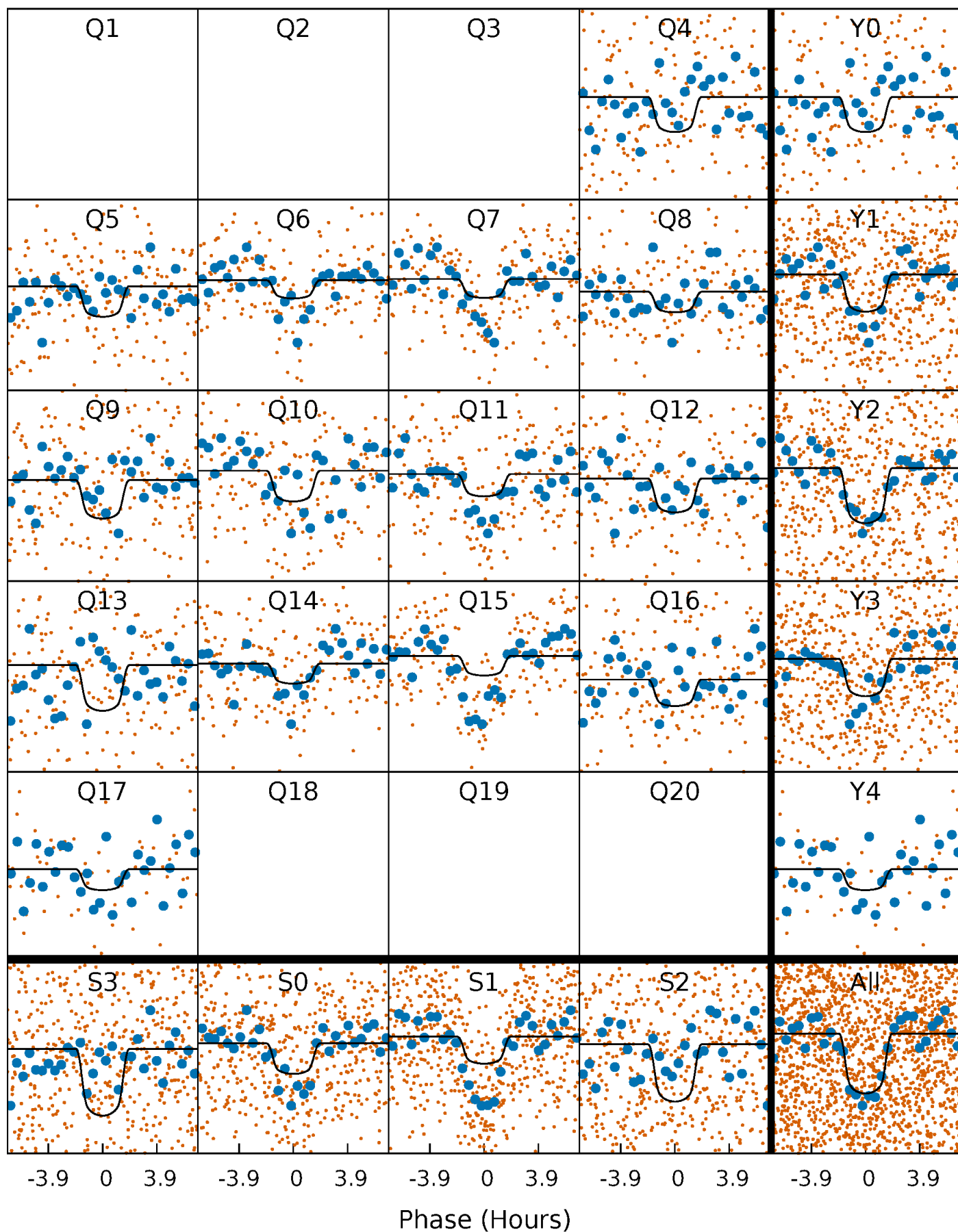
TCE 002852528-01 P= 11.961565 Days  $T_0=131.892682$  (BKJD)





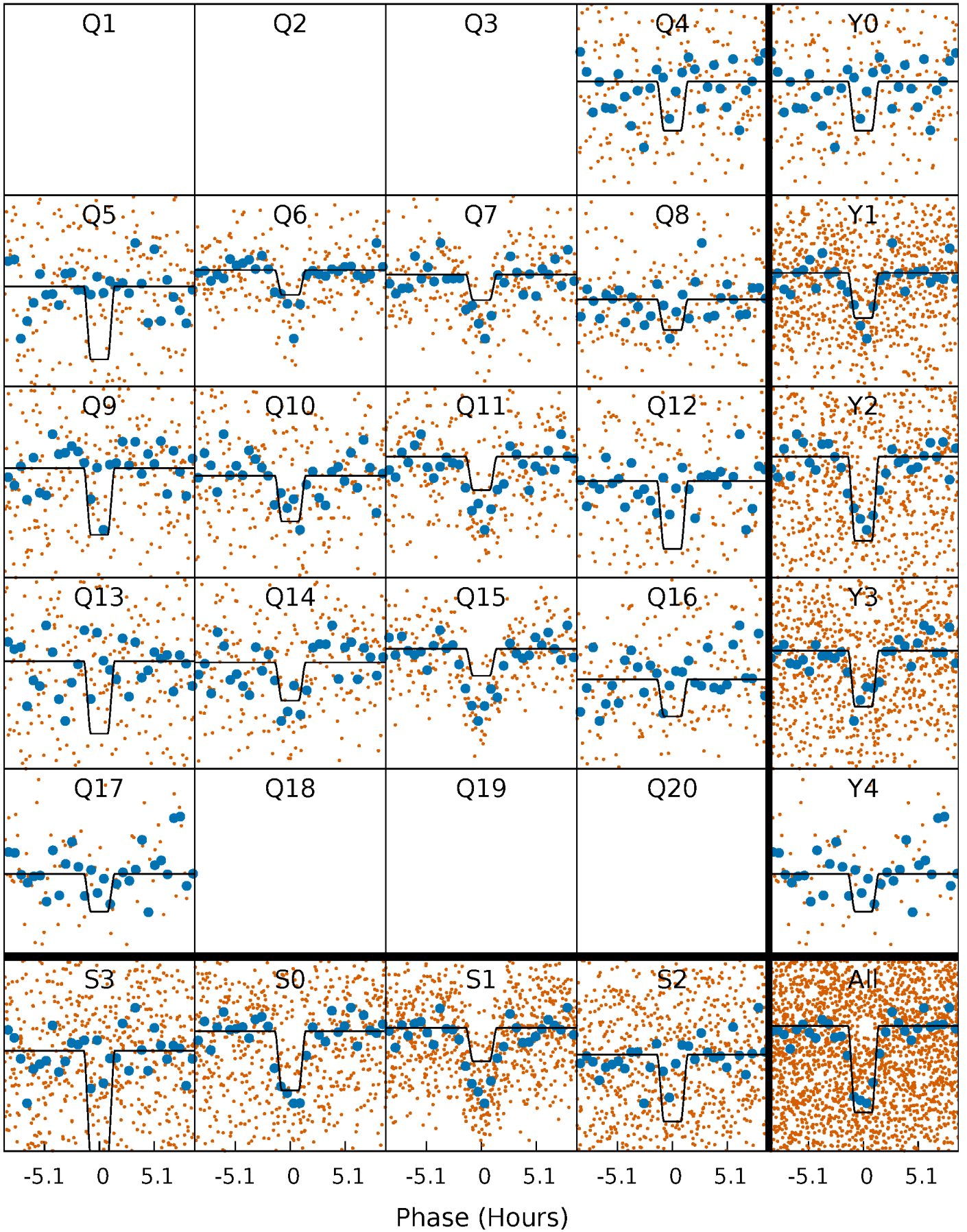
# DV Quarter-Phased Transit Curves

TCE 002852528-01 P= 11.961565 Days  $T_0=131.892682$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

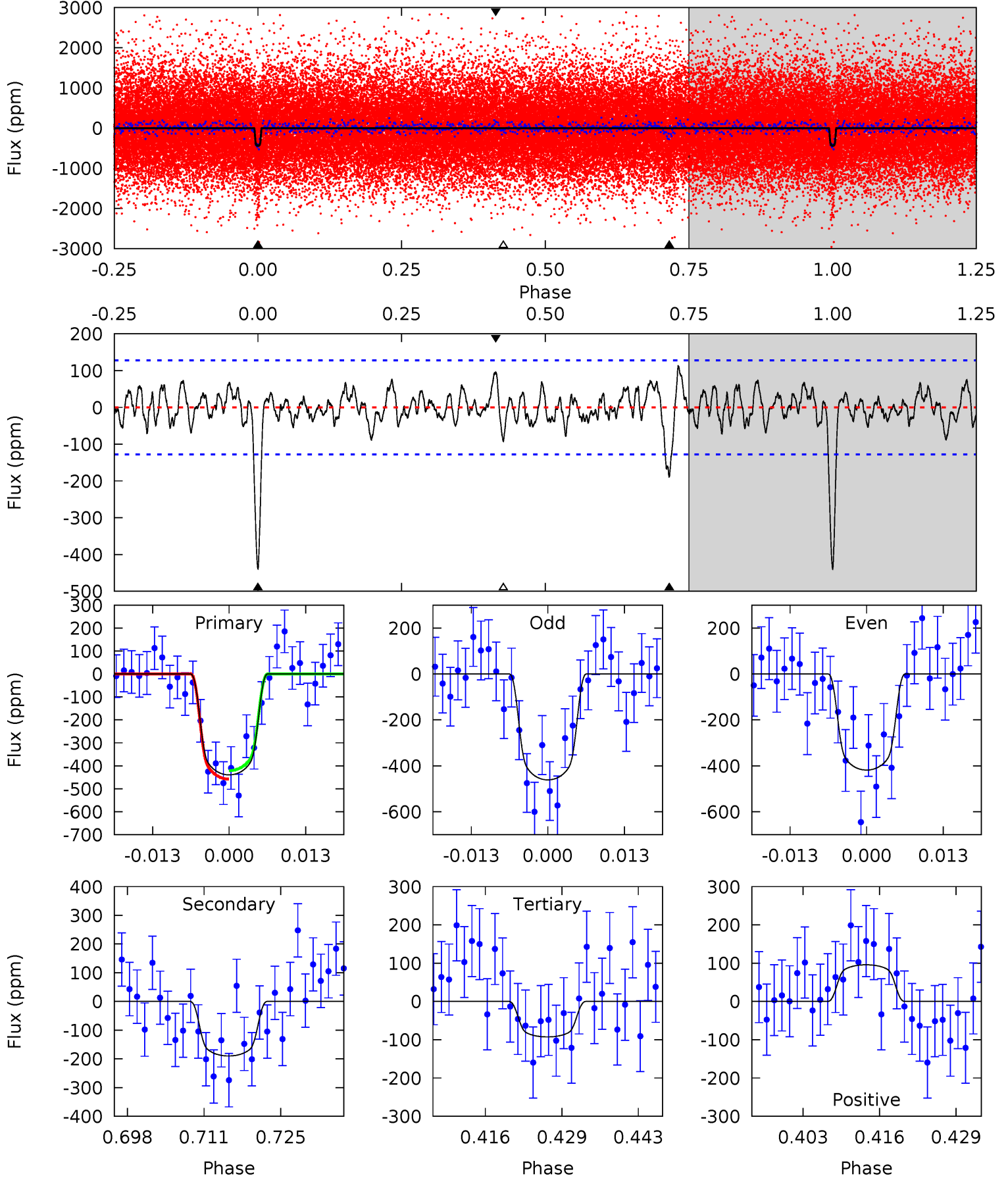
TCE 002852528-01 P= 11.961336 Days  $T_0=131.905601$  (BKJD)



# DV Model-Shift Uniqueness Test

002852528-01, P = 11.961565 Days, E = 131.892682 Days

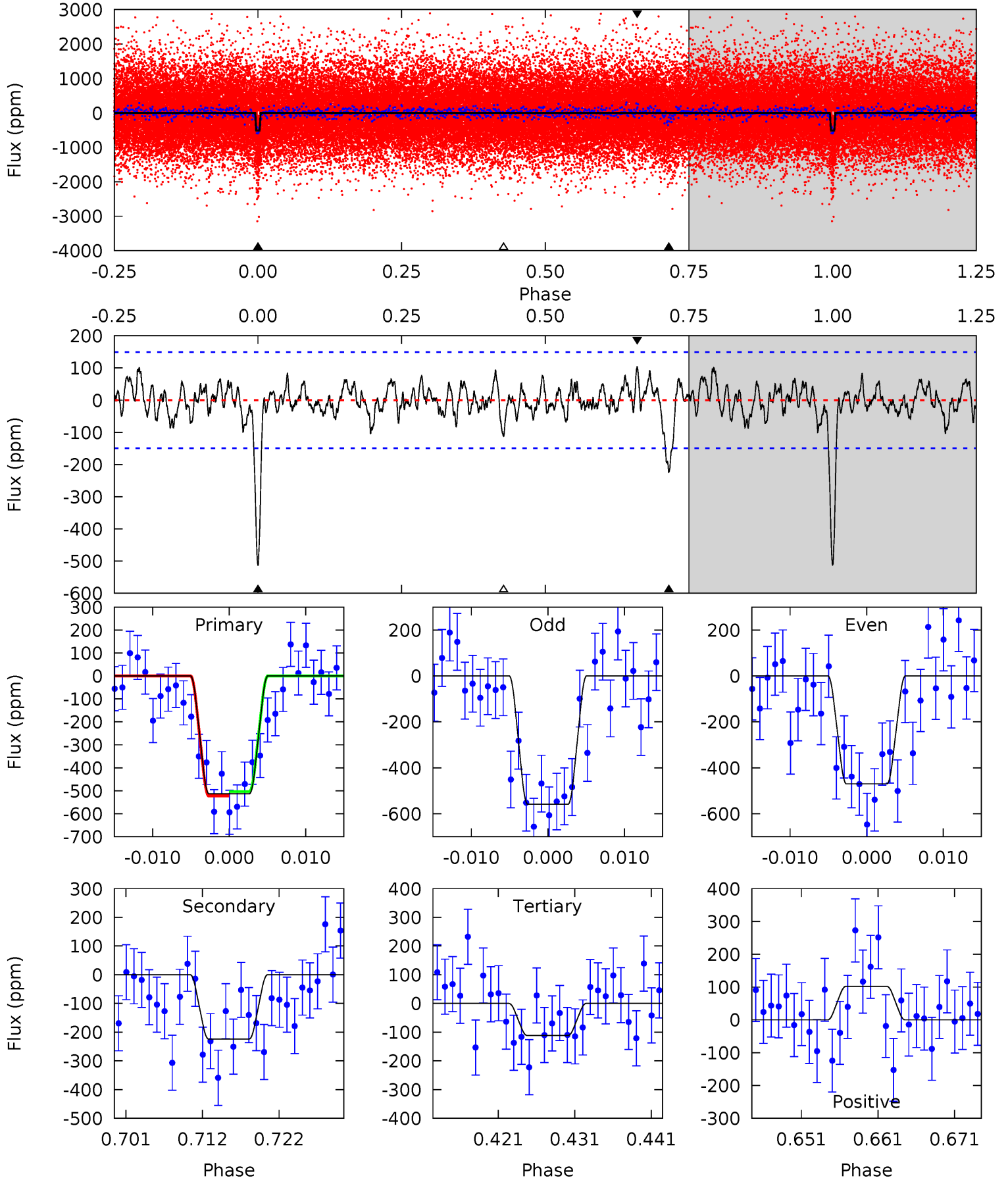
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	7.38	3.60	3.72	4.97	2.47	1.33	13.5	13.4	3.78	3.66	0.83	1.16	0.20	0.72



# Alt Model-Shift Uniqueness Test

002852528-01, P = 11.961336 Days, E = 131.905601 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
17.3	7.54	3.76	3.45	5.03	2.58	1.25	13.5	13.8	3.78	4.09	1.48	1.40	0.17	0.32



### Stellar Parameters For KIC 002852528

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6142^{+193}_{-258}$	$4.456^{+0.050}_{-0.200}$	$0.070^{+0.250}_{-0.350}$	$1.046^{+0.301}_{-0.108}$	$1.143^{+0.138}_{-0.169}$	$1.407^{+0.371}_{-0.707}$
	+3%/-4%	+1%/-4%	+357%/-500%	+29%/-10%	+12%/-15%	+26%/-50%
Source	KIC0	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 002852528-01 / KOI 3446.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-190 \pm 26$	$2.61^{+0.70}_{-0.57}$	$1211^{+85}_{-71}$	$4955^{+604}_{-422}$	$173^{+116}_{-67}$
Alt.	$-224 \pm 30$	$2.88^{+0.68}_{-0.65}$	$1210^{+84}_{-66}$	$4936^{+564}_{-414}$	$166^{+114}_{-58}$

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



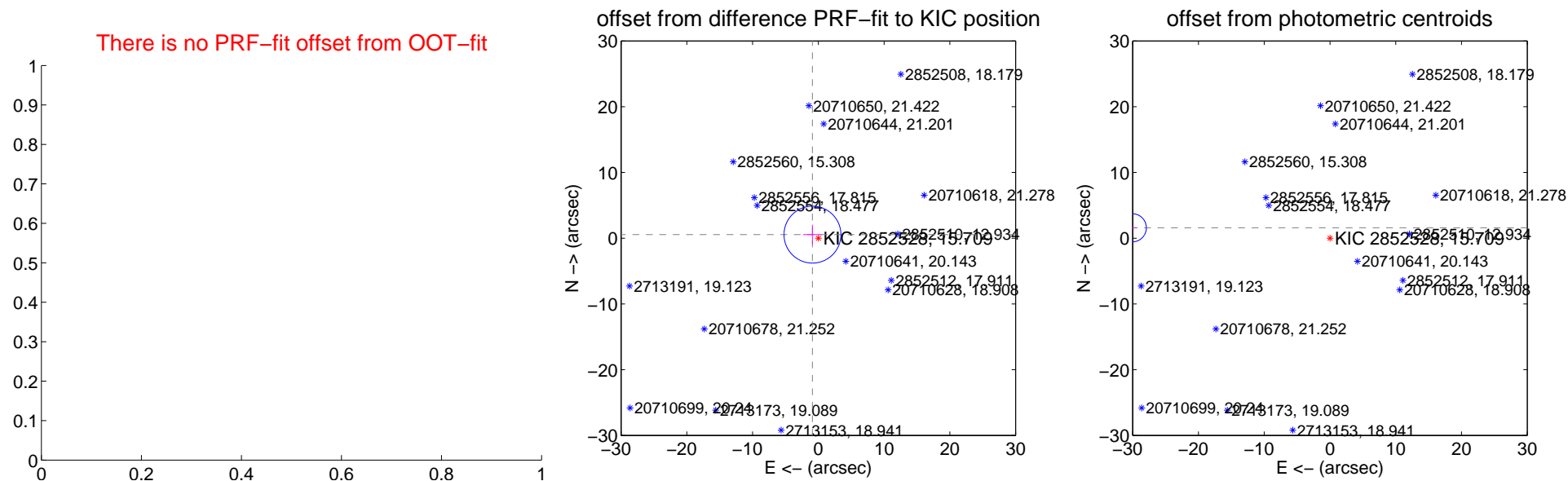
## DV Centroid Data

Supplemental centroid analysis for 002852528-01. Kepler magnitude: 15.71. Transit SNR 11.34

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	$1.046 \pm 1.442$	0.73	$0.895 \pm 1.425$	$0.541 \pm 1.489$
photometric centroid source offset	$30.10 \pm 0.71$	42.18	$30.06 \pm 0.71$	$1.58 \pm 0.42$



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.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



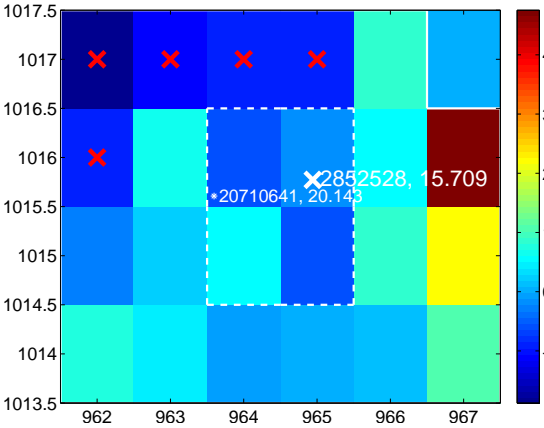
Q3 no difference image



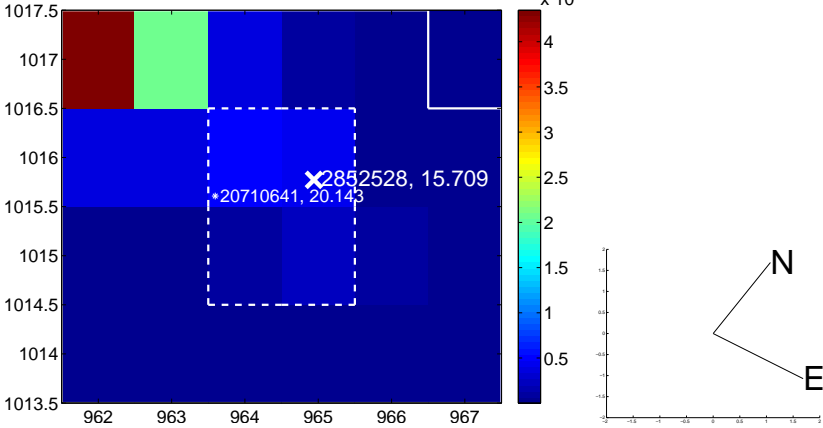
Q3 no OOT image



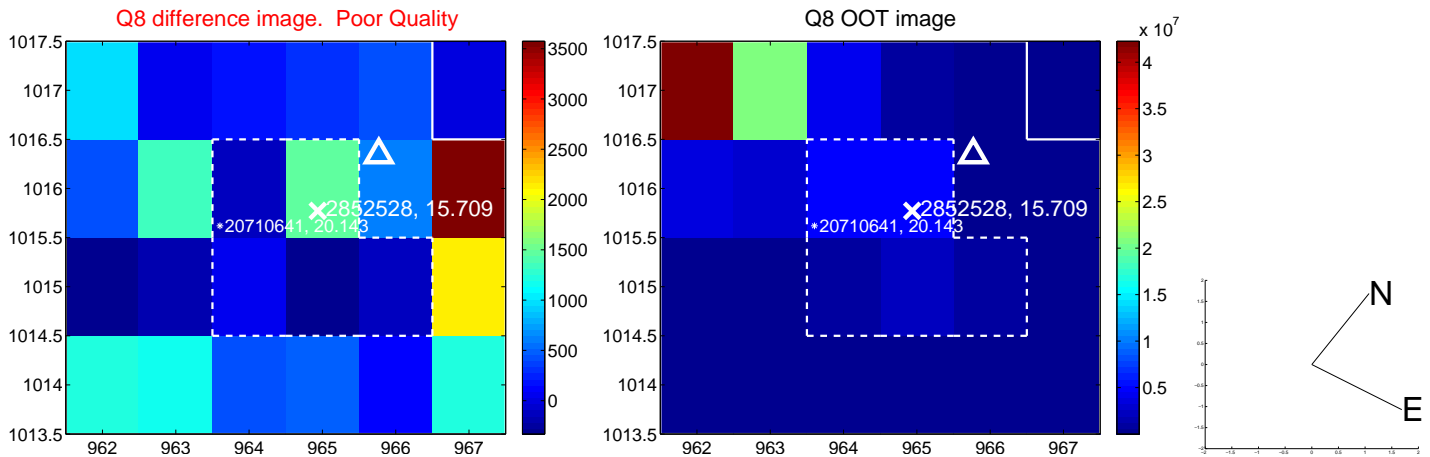
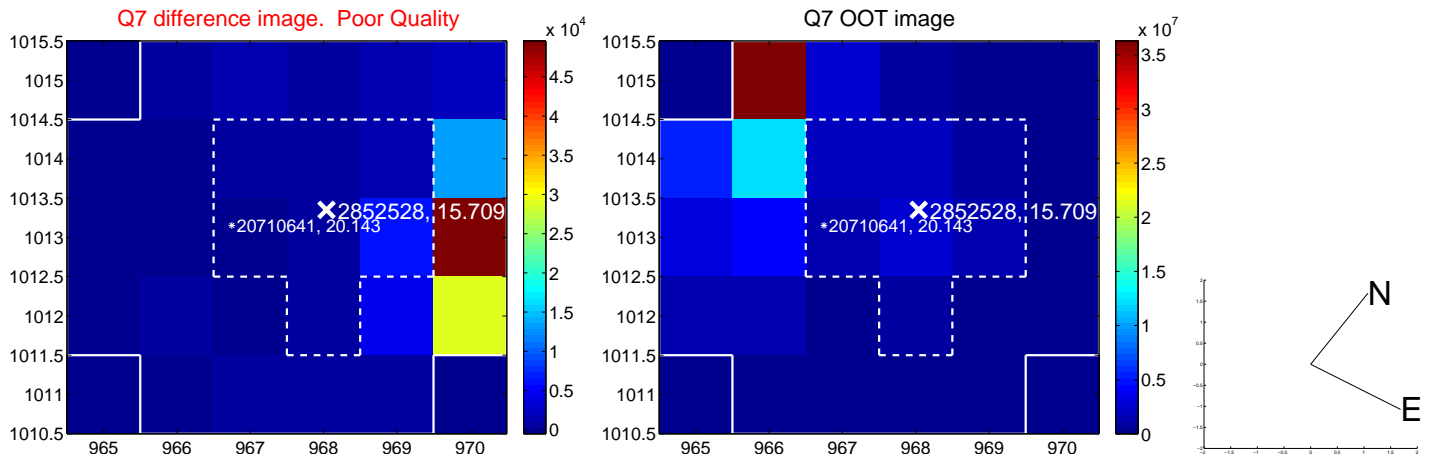
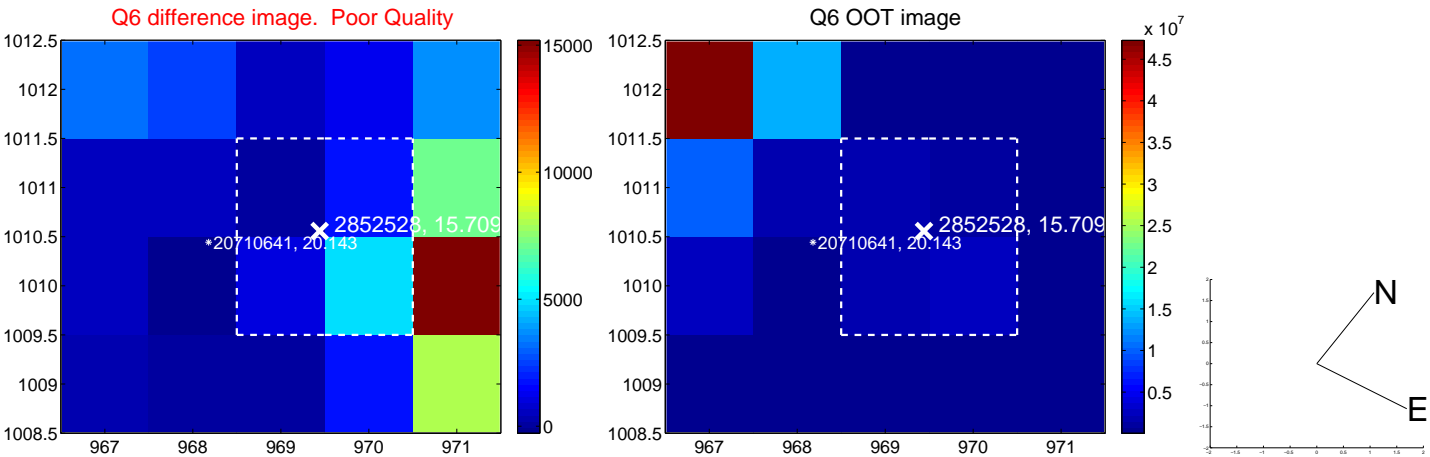
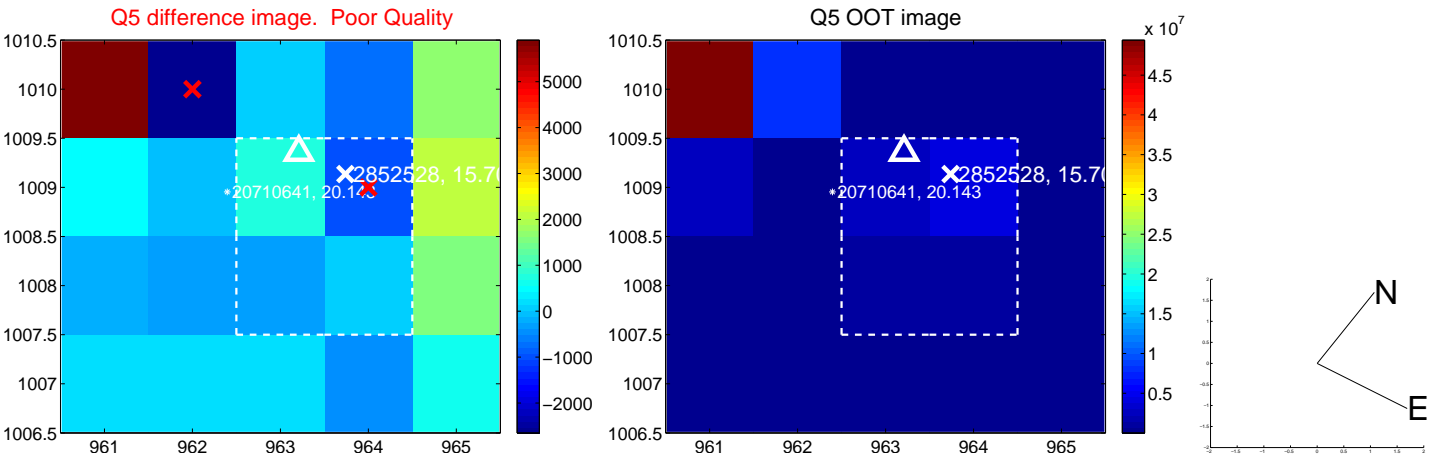
Q4 difference image. Poor Quality



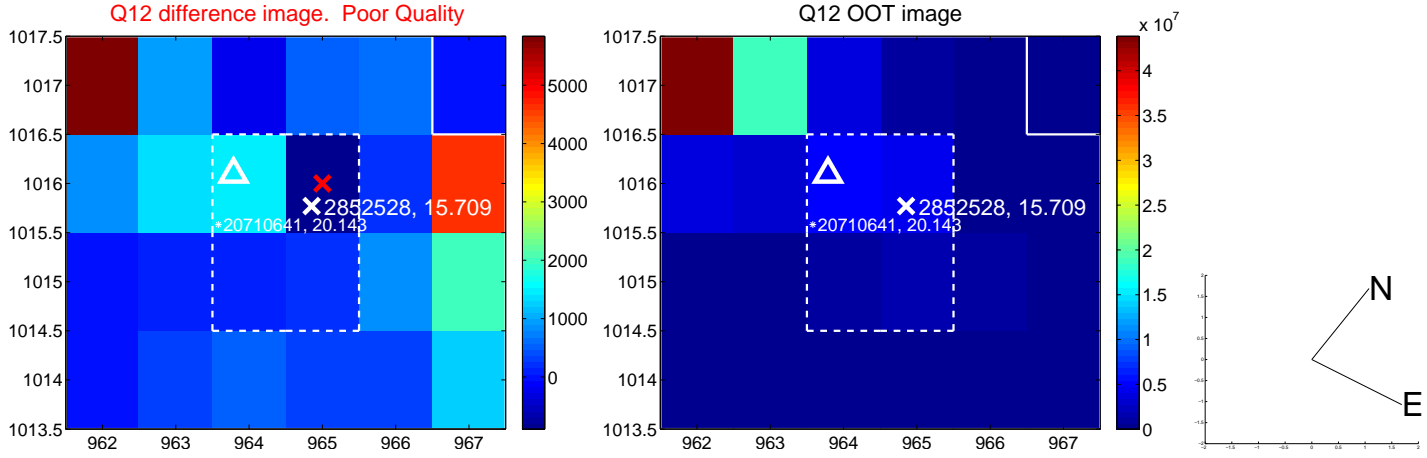
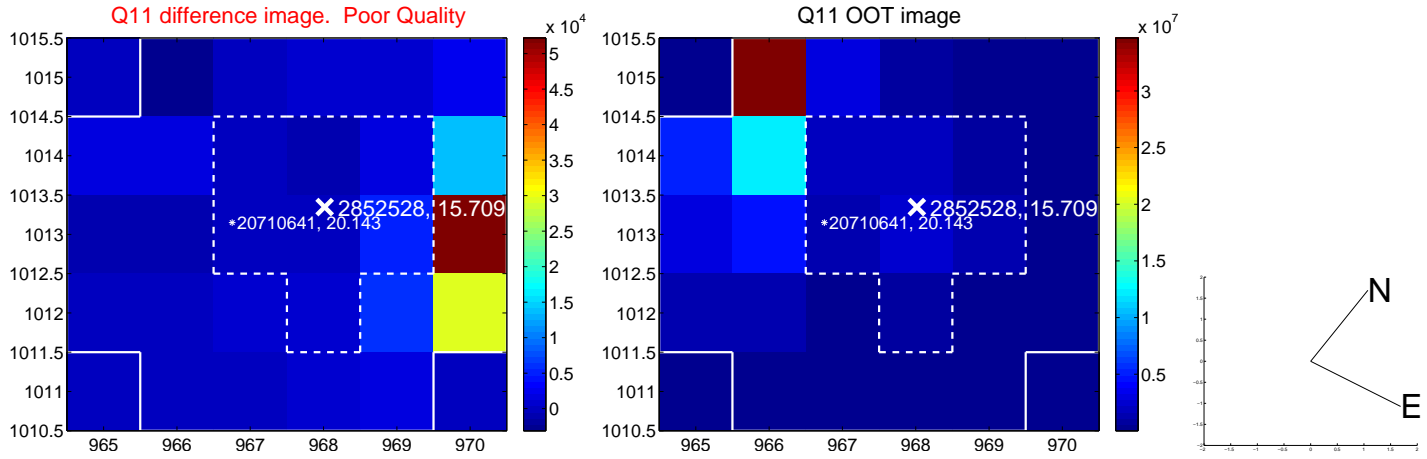
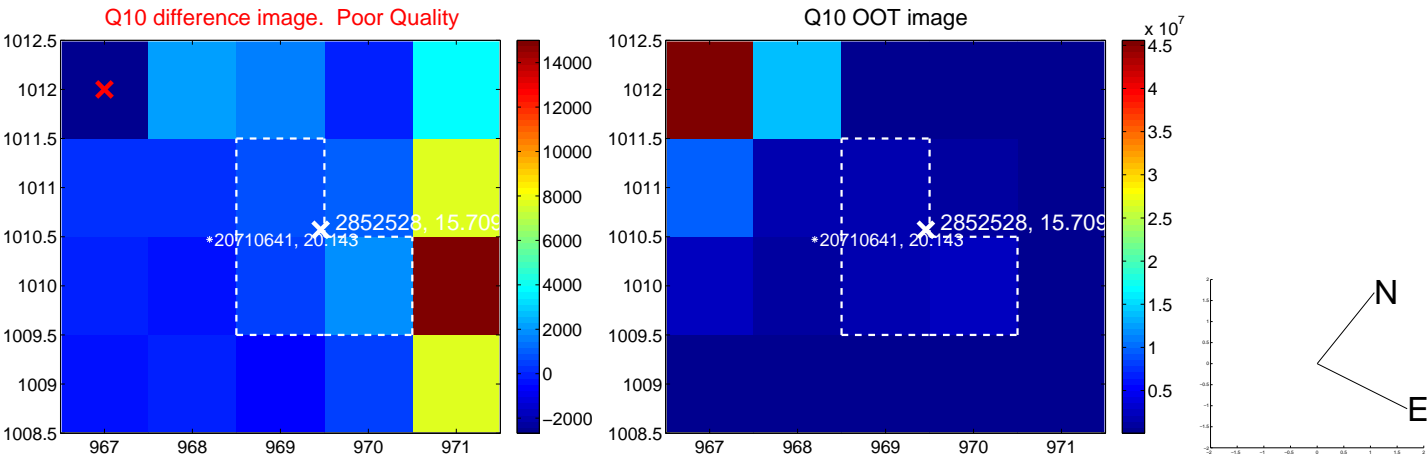
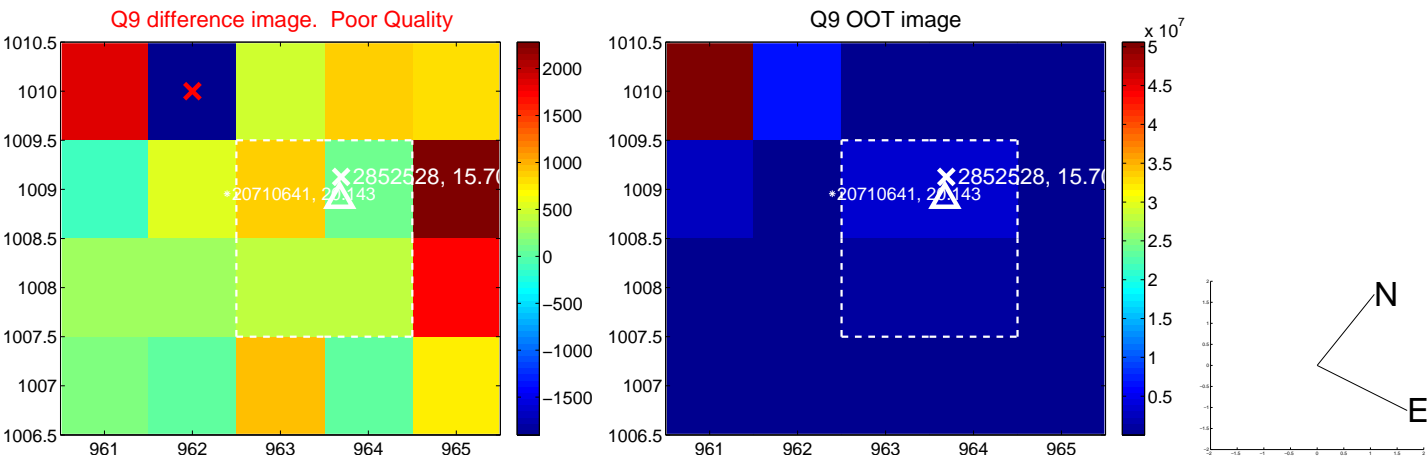
Q4 OOT image



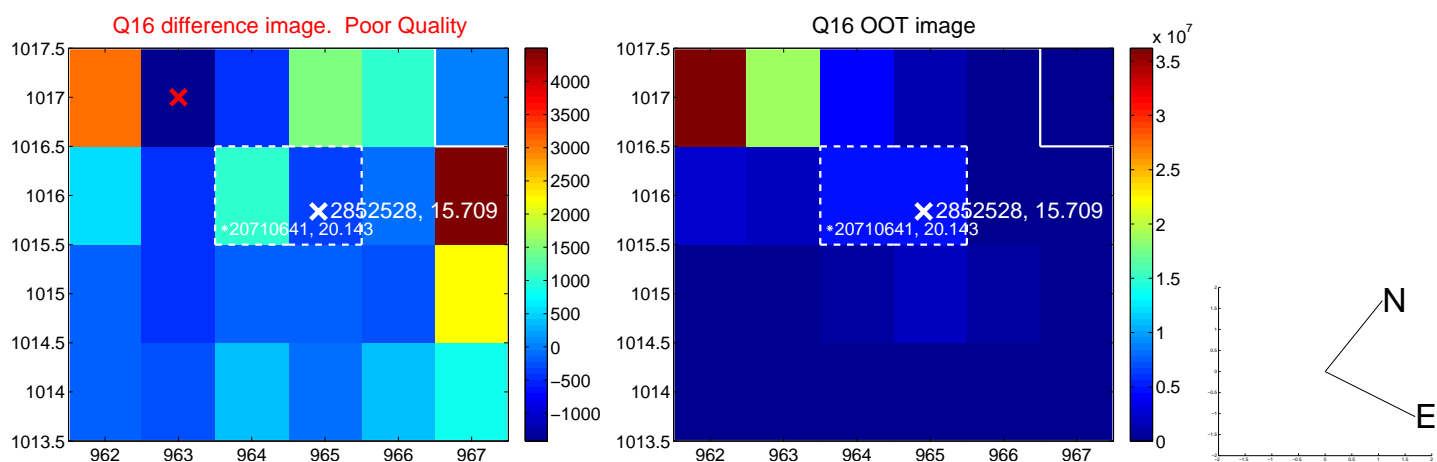
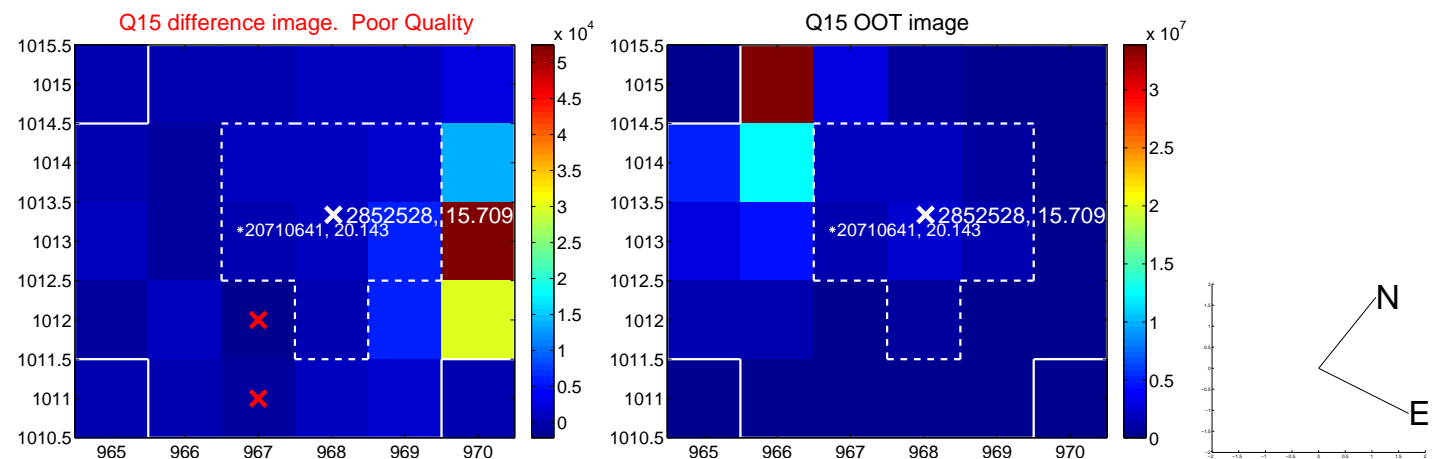
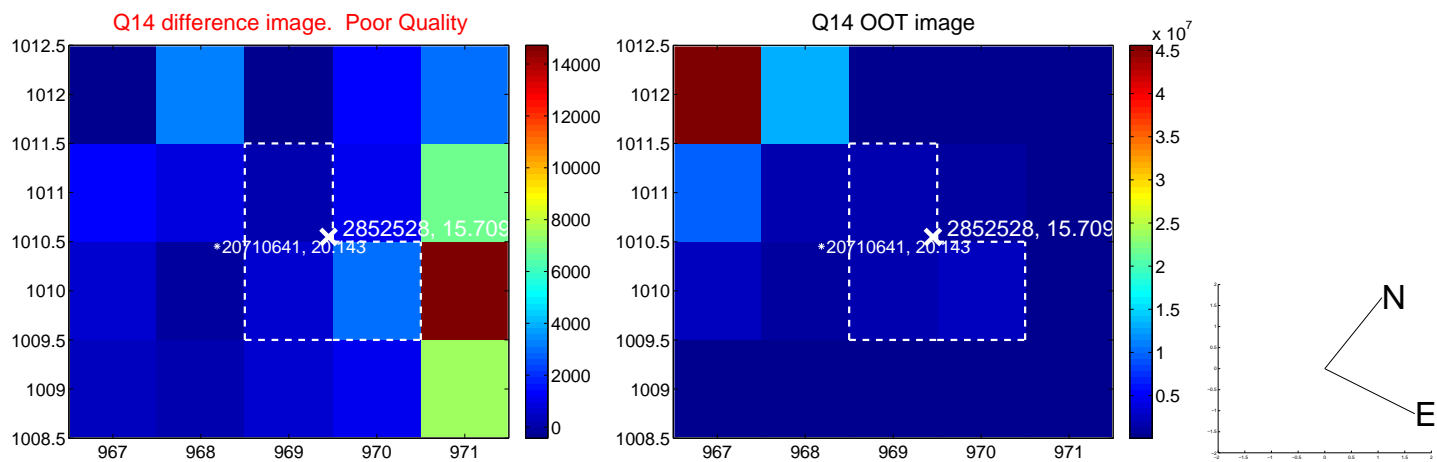
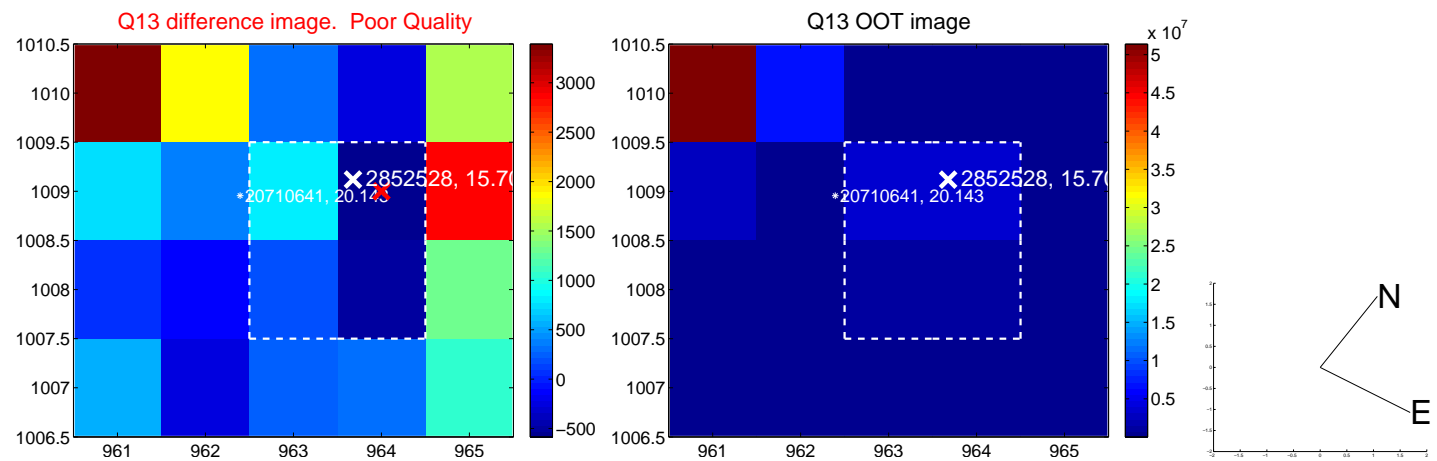
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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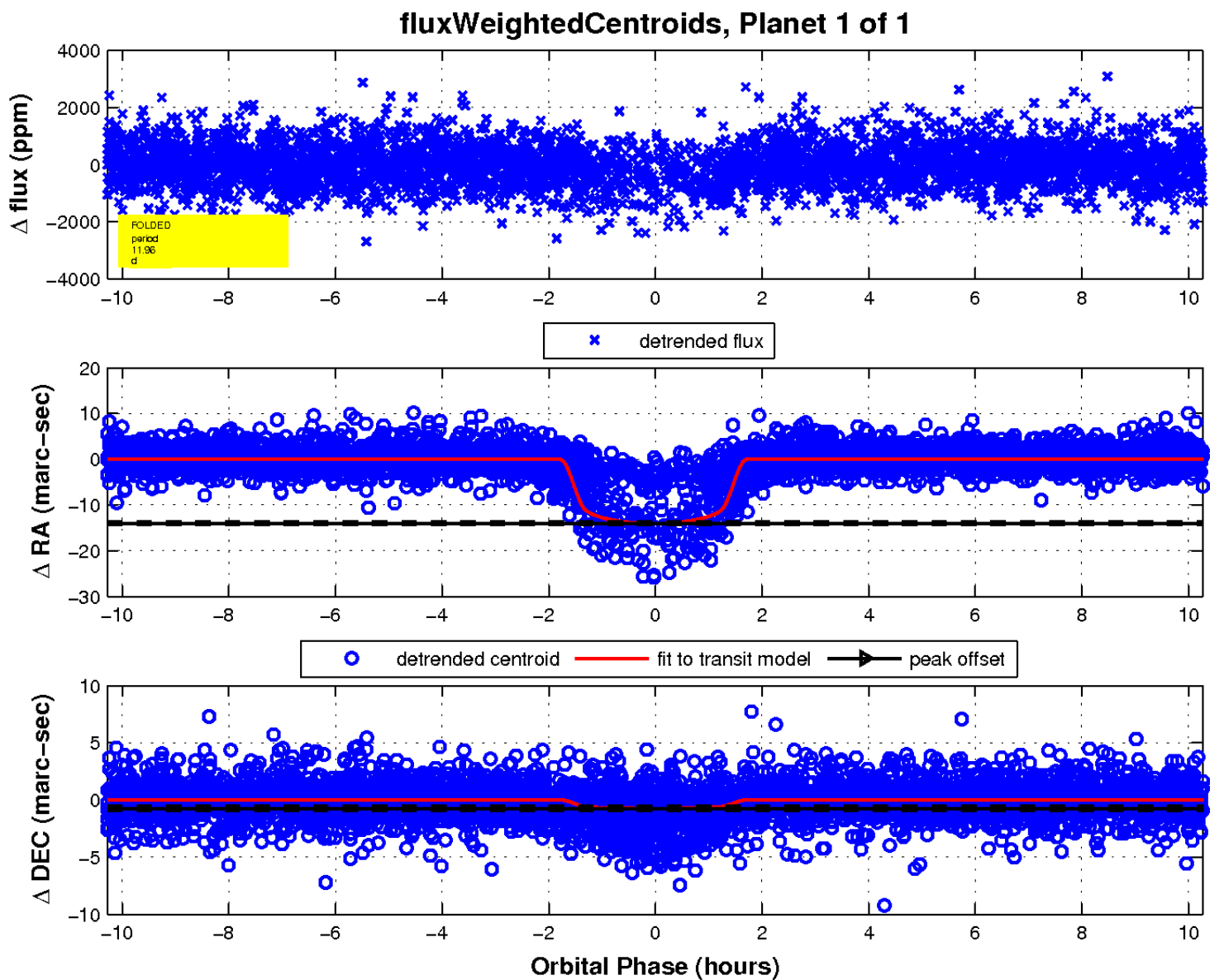
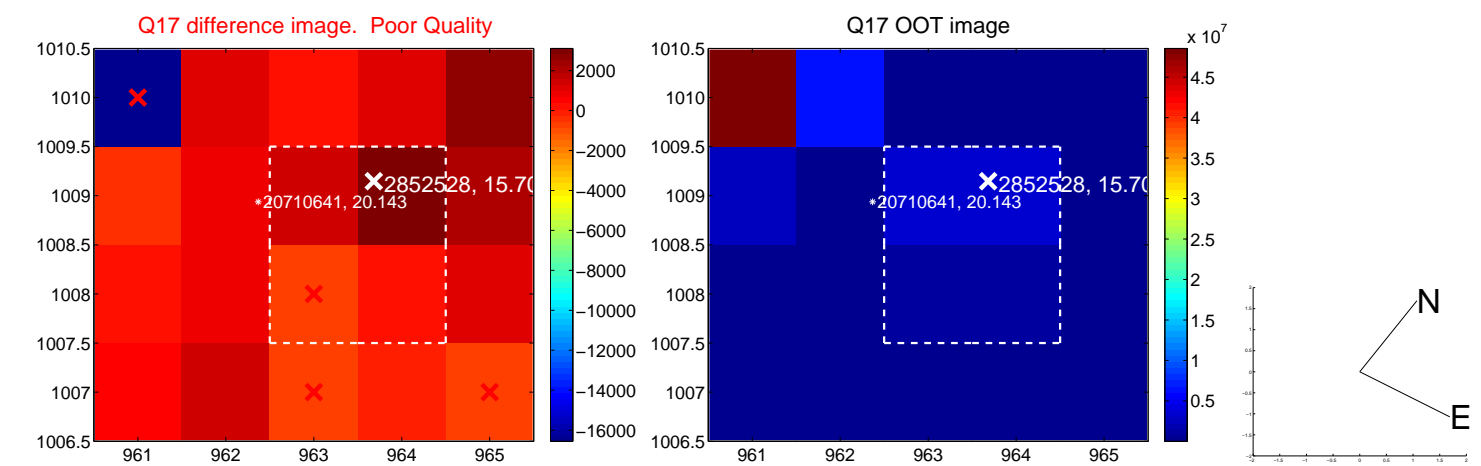


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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

