

# KIC 007620660

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007620660-01	OBS	3832.01	5.366463	134.868694	587.2	7.224	64.5	30.1	0.85	5858	2.56	220.25
007620660-02	OBS	No	0.683747	131.634686	24.8	7.123	8.4	4.2	0.85	5858	0.43	3435.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007620660-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—SEASONAL_DEPTH_DV—CENT_RESOLVED_OFFSET
007620660-02	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_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.

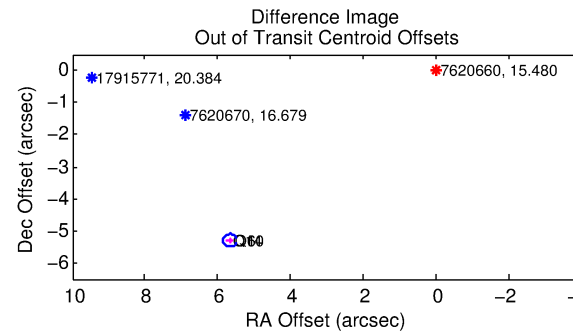
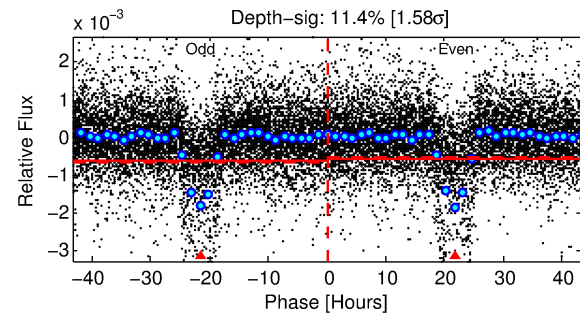
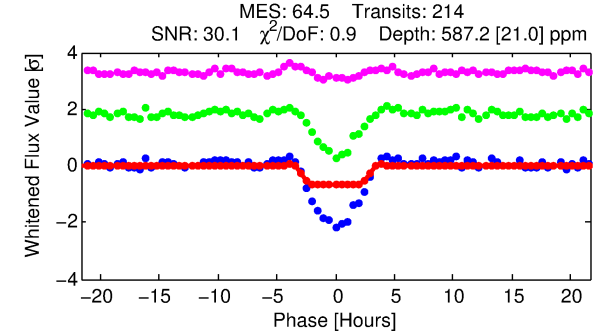
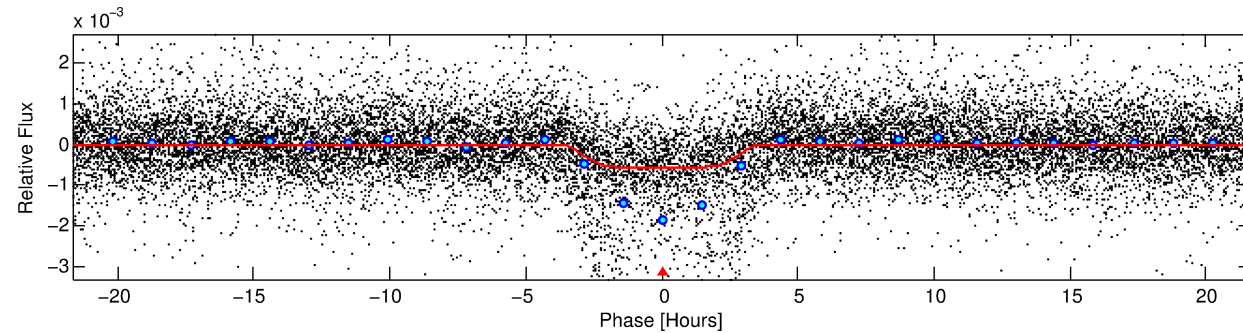
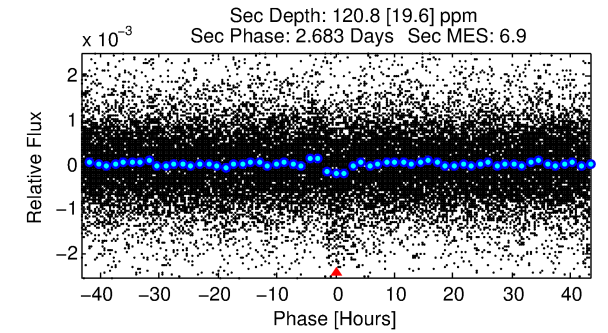
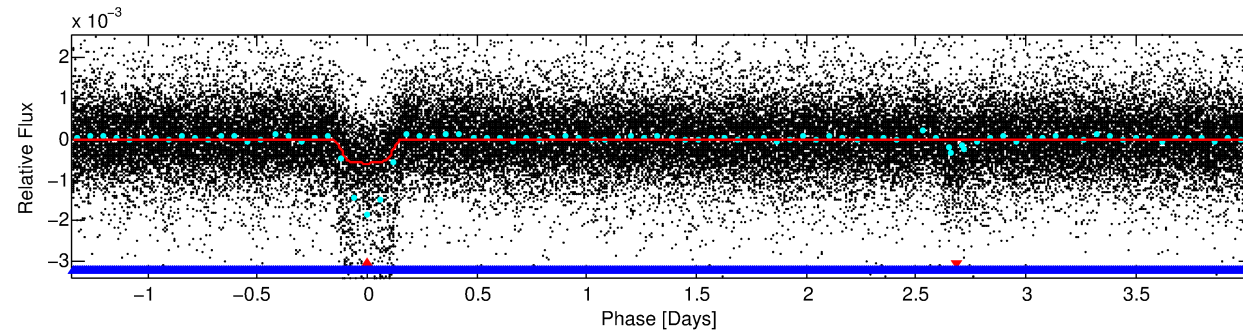
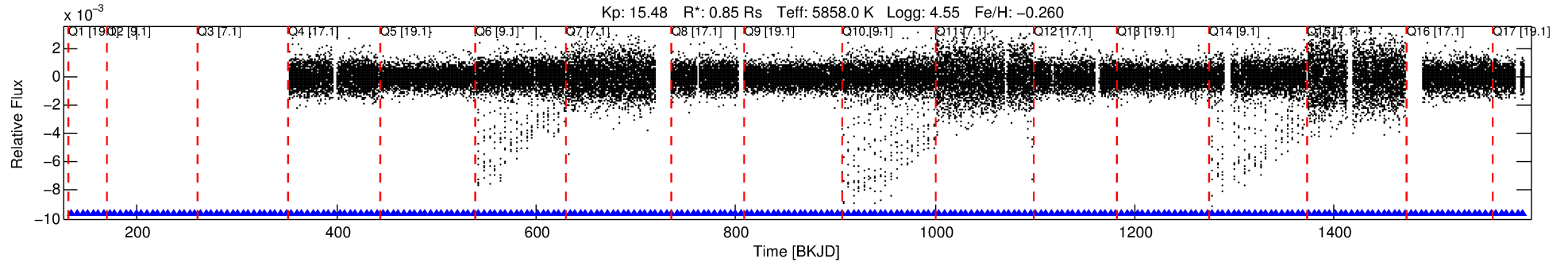
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007620660-01

No Significant Match Found

# DV One-Page Summary

KIC: 7620660 Candidate: 1 of 2 Period: 5.366 d  
KOI: K03832.01 Corr: 0.926



## DV Fit Results:

Period = 5.36646 [0.00004] d  
Epoch = 134.8687 [0.0054] BKJD  
Rp/R\* = 0.0276 [0.0008]  
a/R\* = 2.52 [0.21]  
b = 0.94 [0.01]  
Seff = 220.25 [84.18]  
Teff = 982 [94] K  
Rp = 2.56 [0.76] Re  
a = 0.0588 [0.0145] AU  
Ag = 35.03 [13.81] [2.46σ]  
Teffp = 3695 [207] K [11.94σ]

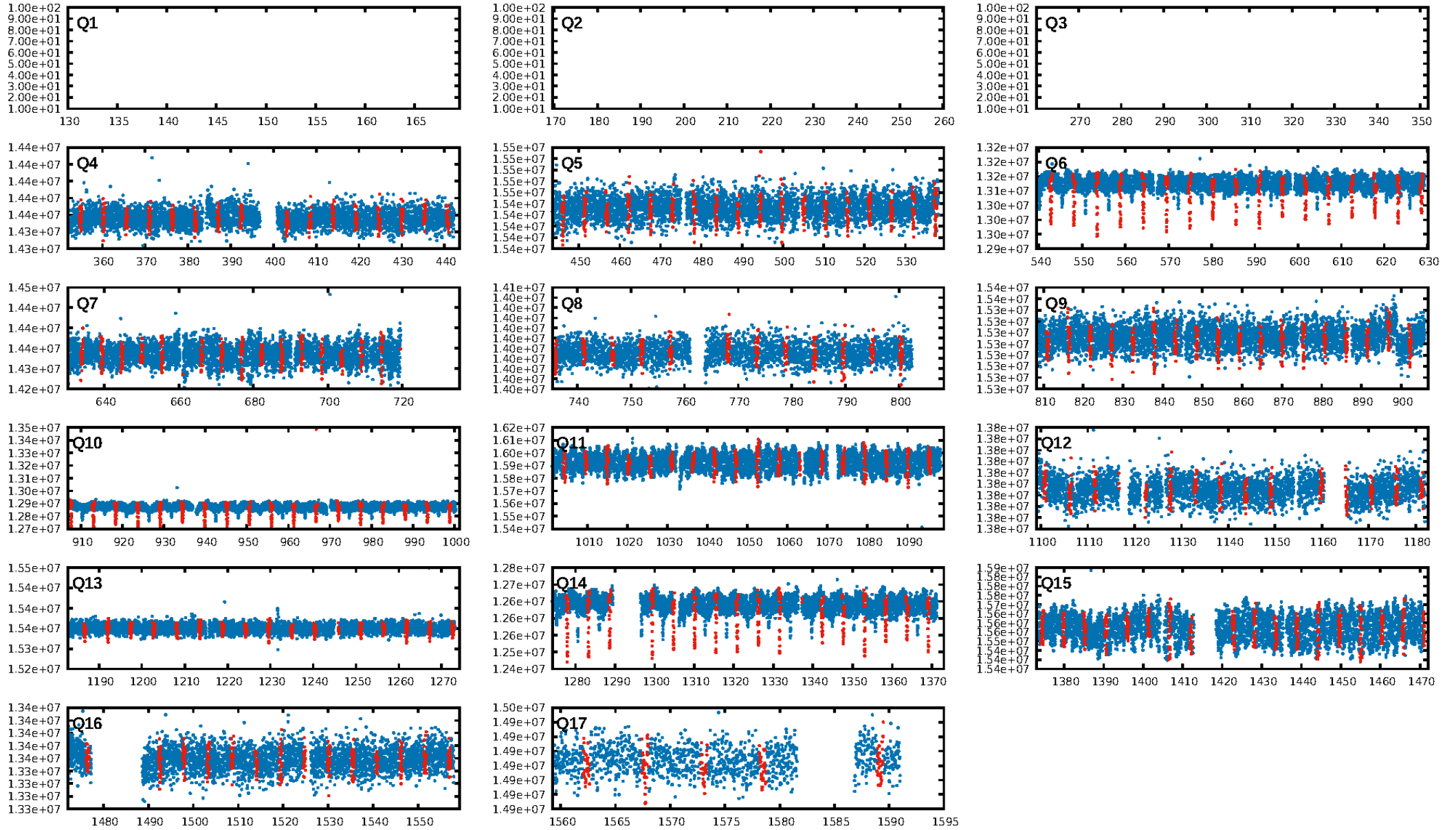
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.08σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [209/209]  
GhostDiagnostic-chr: -1.226  
Centroid-sig: N/A  
Centroid-so: 30.630 arcsec [193.27σ]  
OotOffset-rm: 7.764 arcsec [113.51σ]  
KicOffset-rm: 6.999 arcsec [91.81σ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/3/4/0 [10]  
DiffImageQuality-fgm: 1.00 [10/10]  
DiffImageOverlap-fno: 0.00 [0/14]

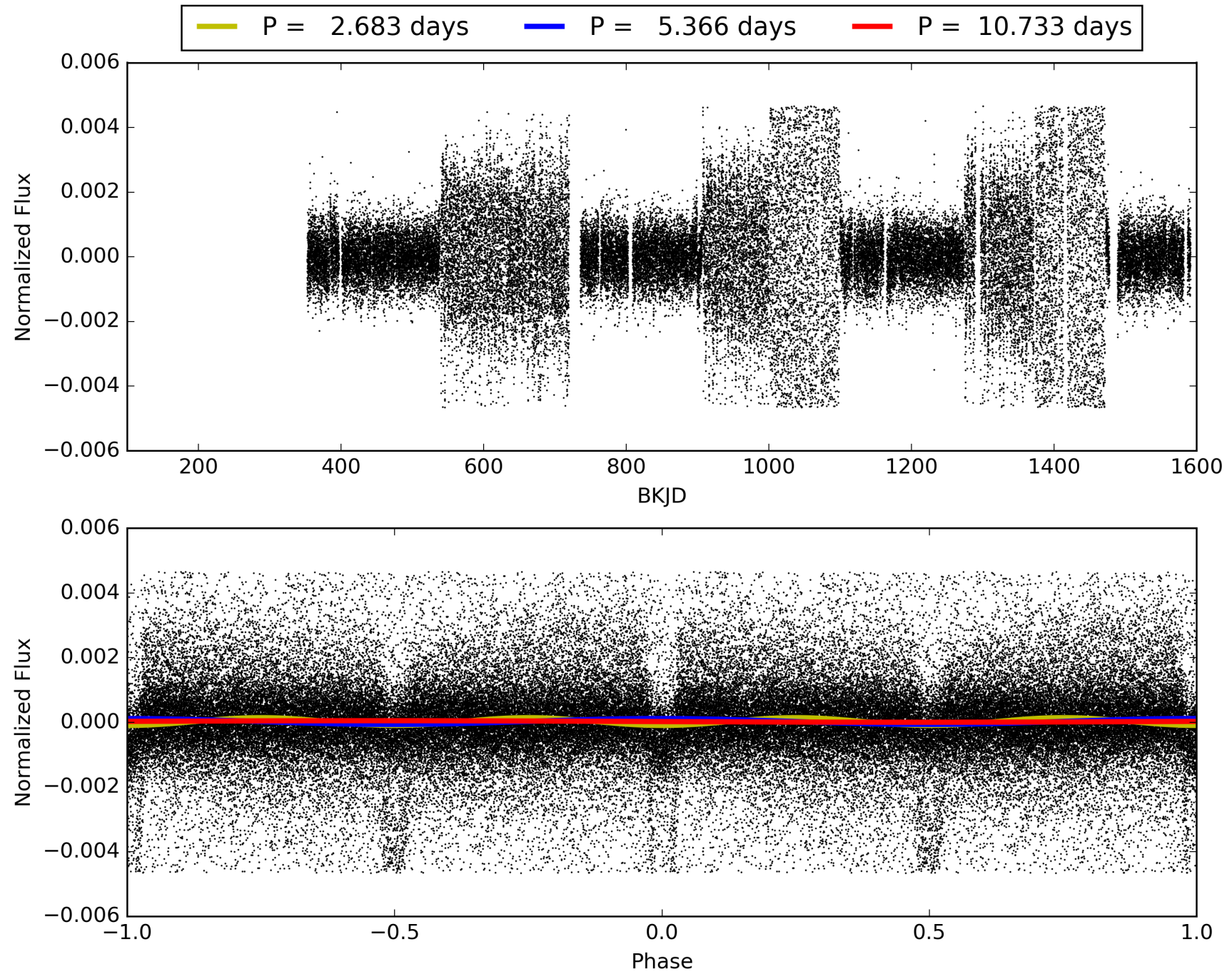
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:47:43 Z

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

# TCE 007620660-01, PDC Light Curves

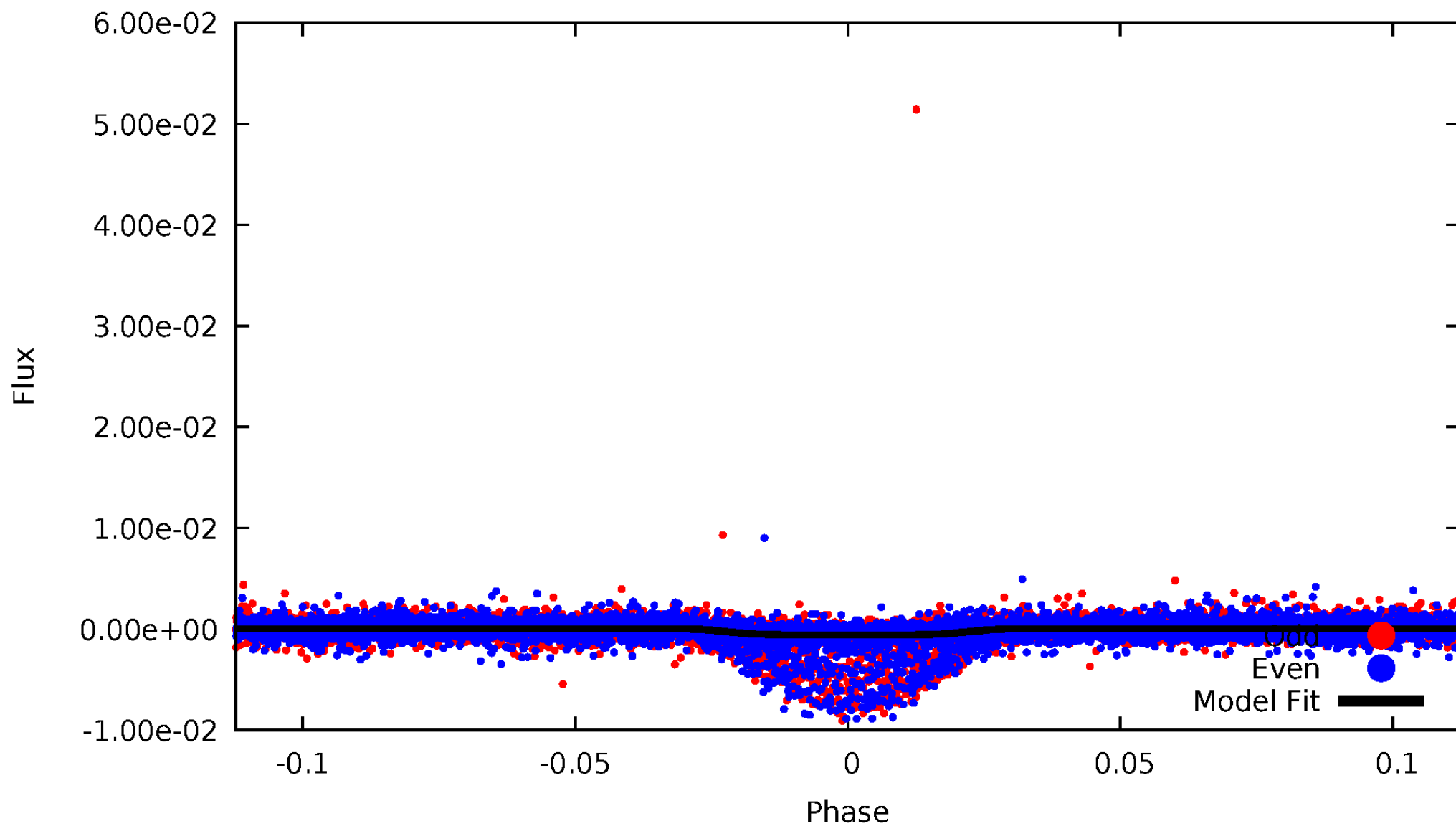


TCE 007620660-01



# DV Odd/Even

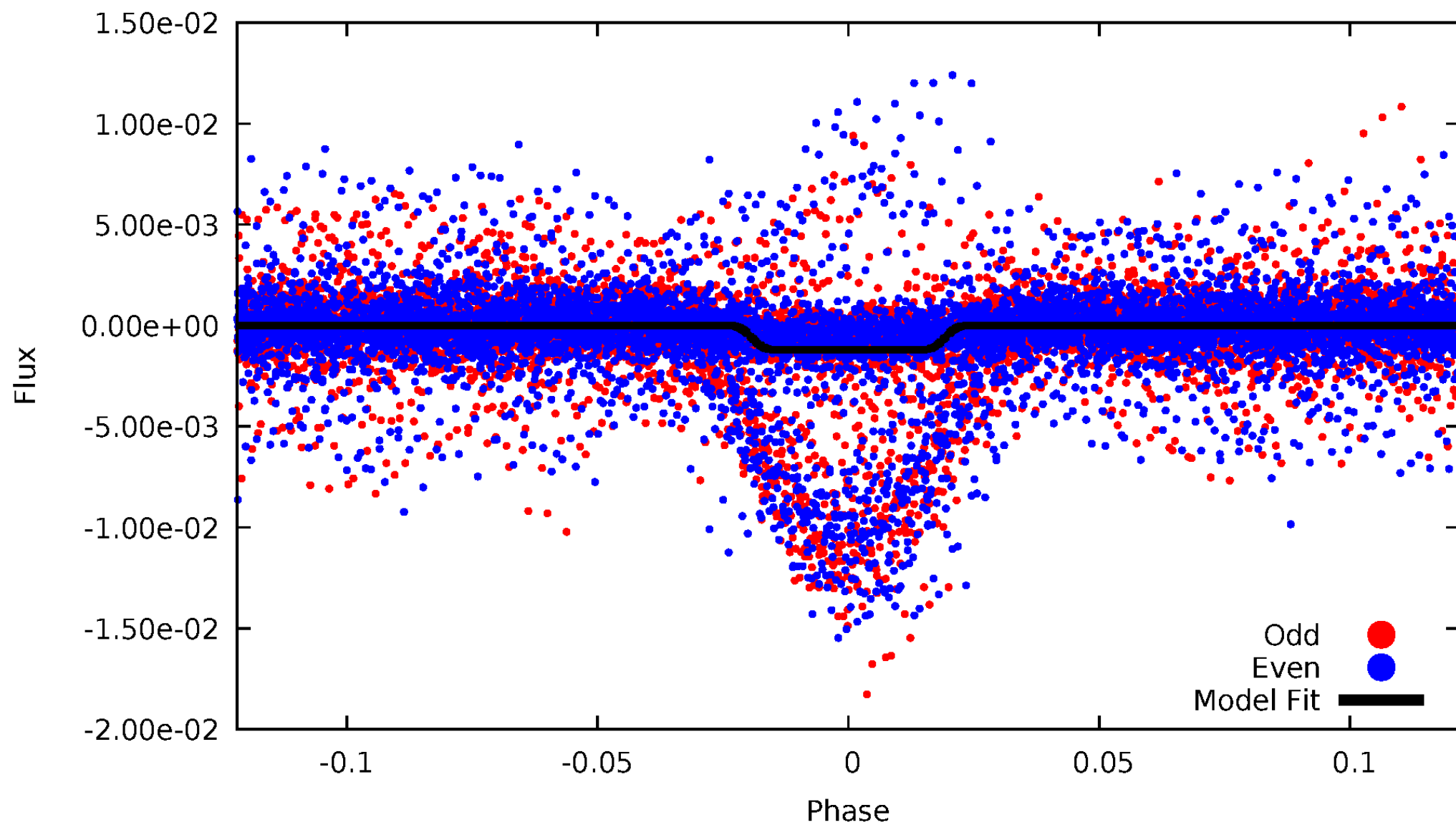
TCE 007620660-01



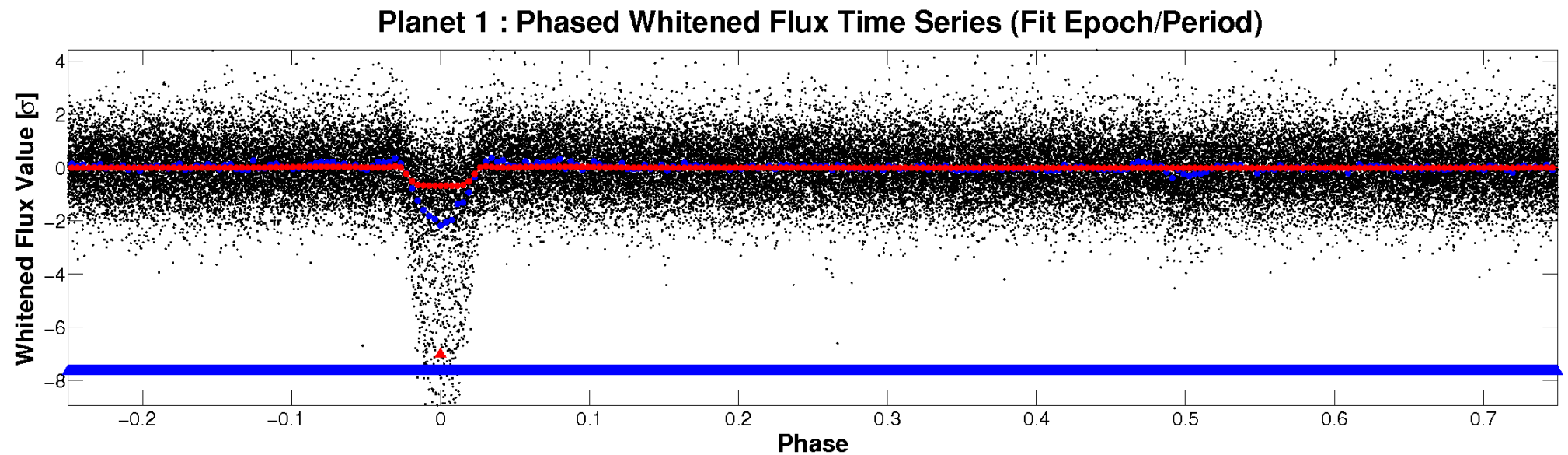
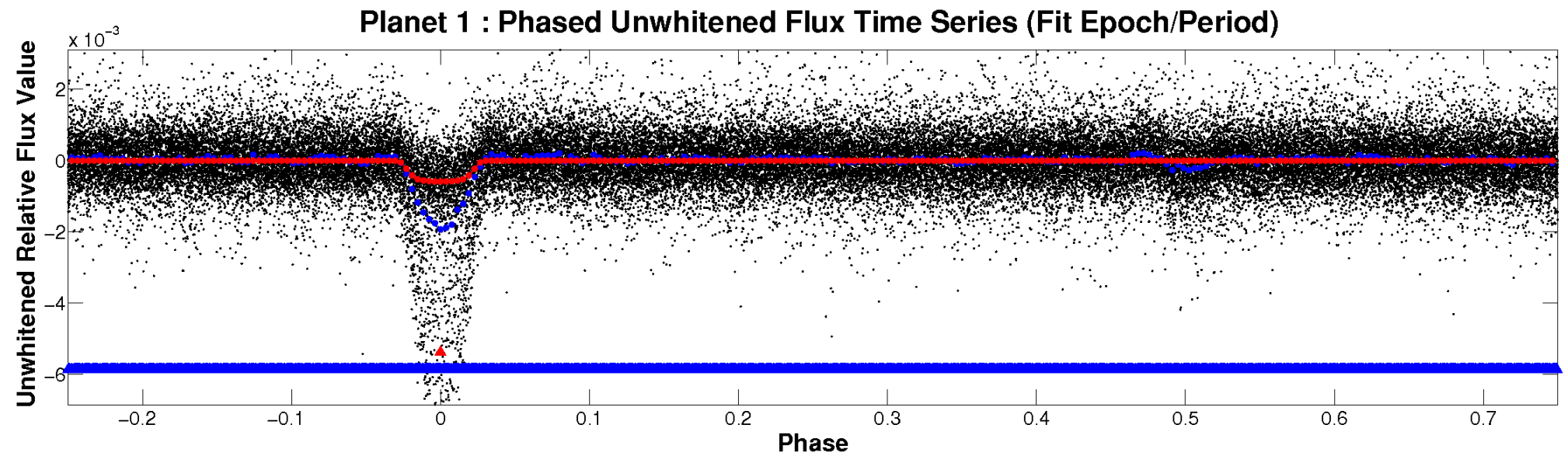


# ALT Odd/Even

TCE 007620660-01

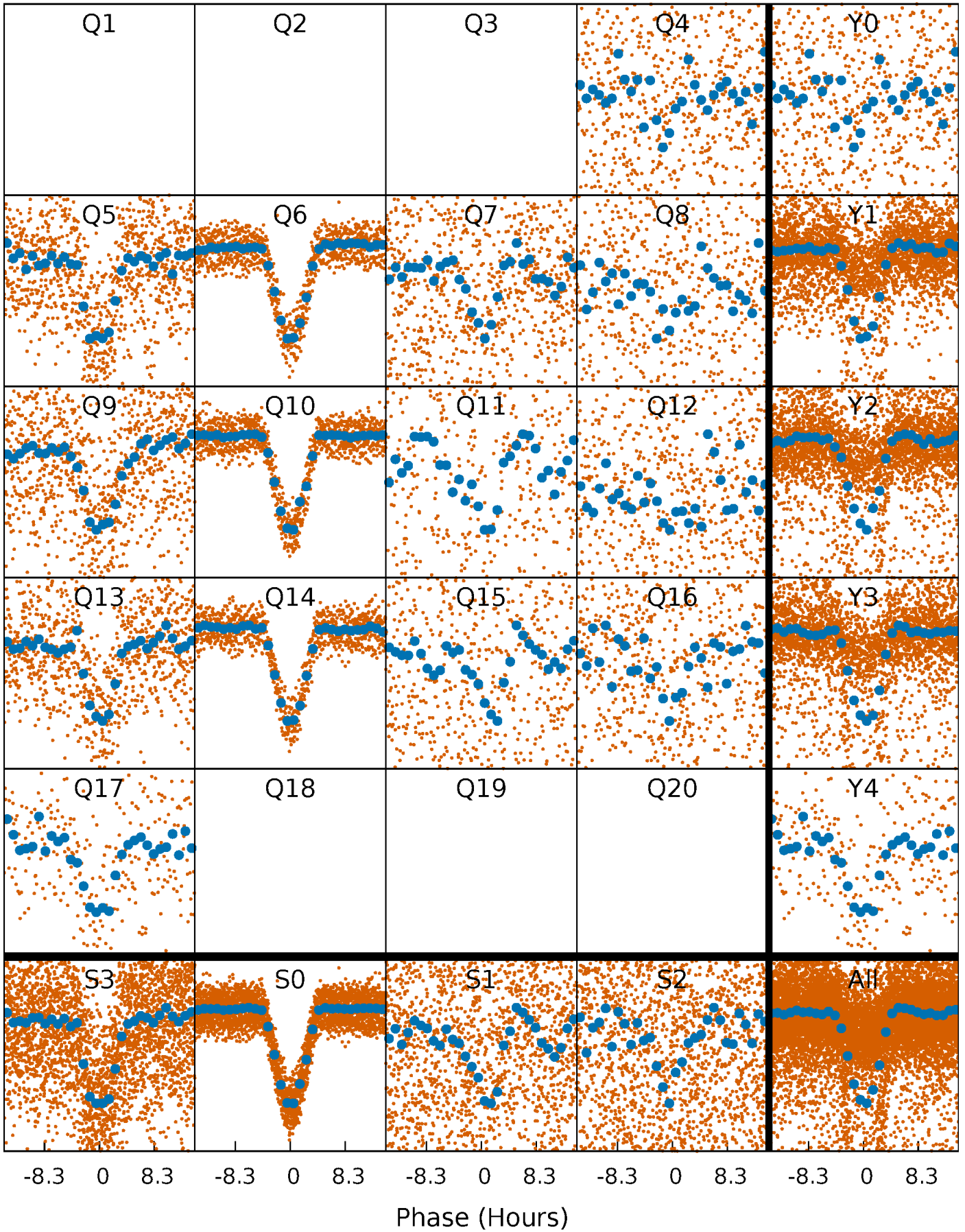


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

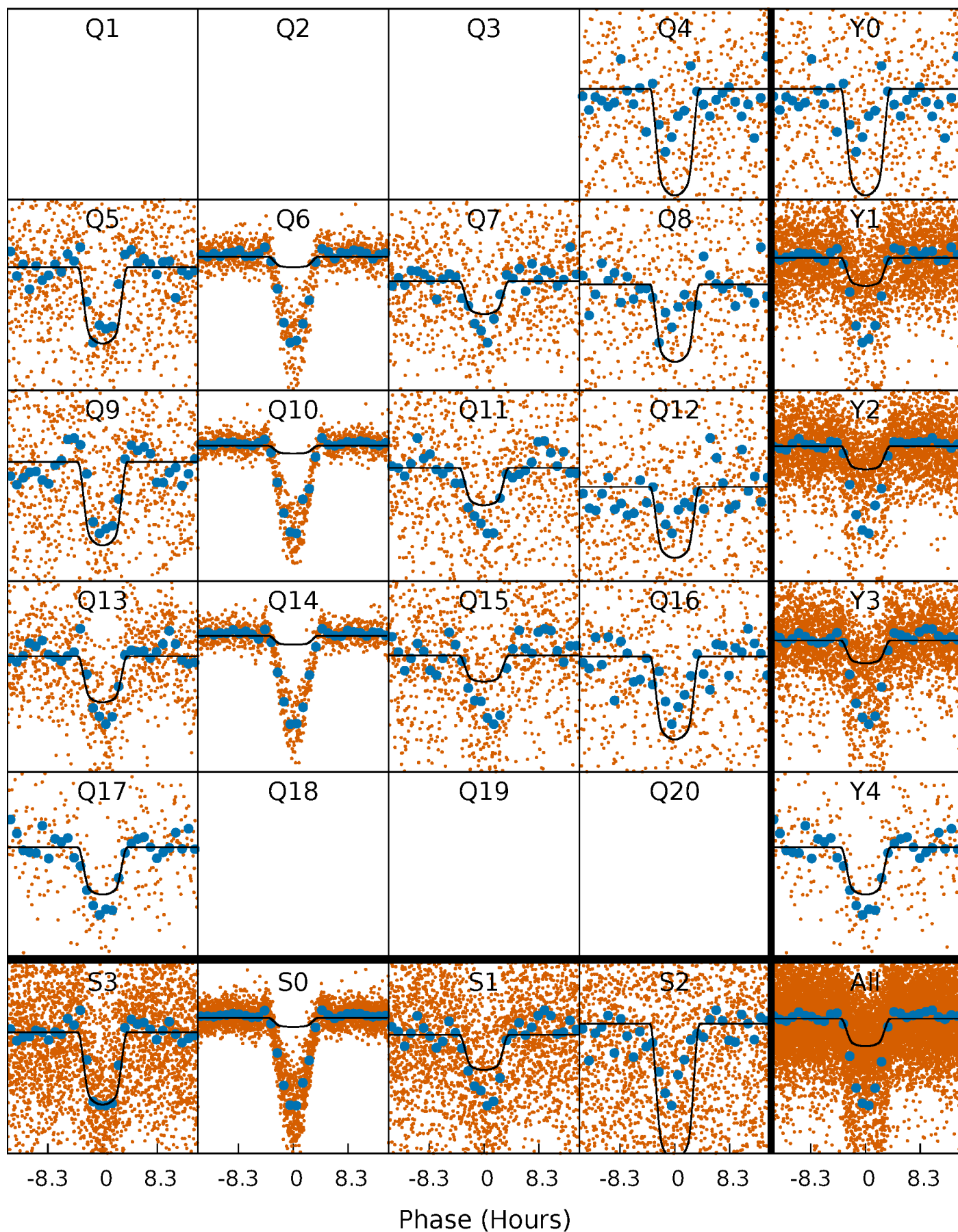
TCE 007620660-01 P= 5.366463 Days  $T_0=134.868694$  (BKJD)





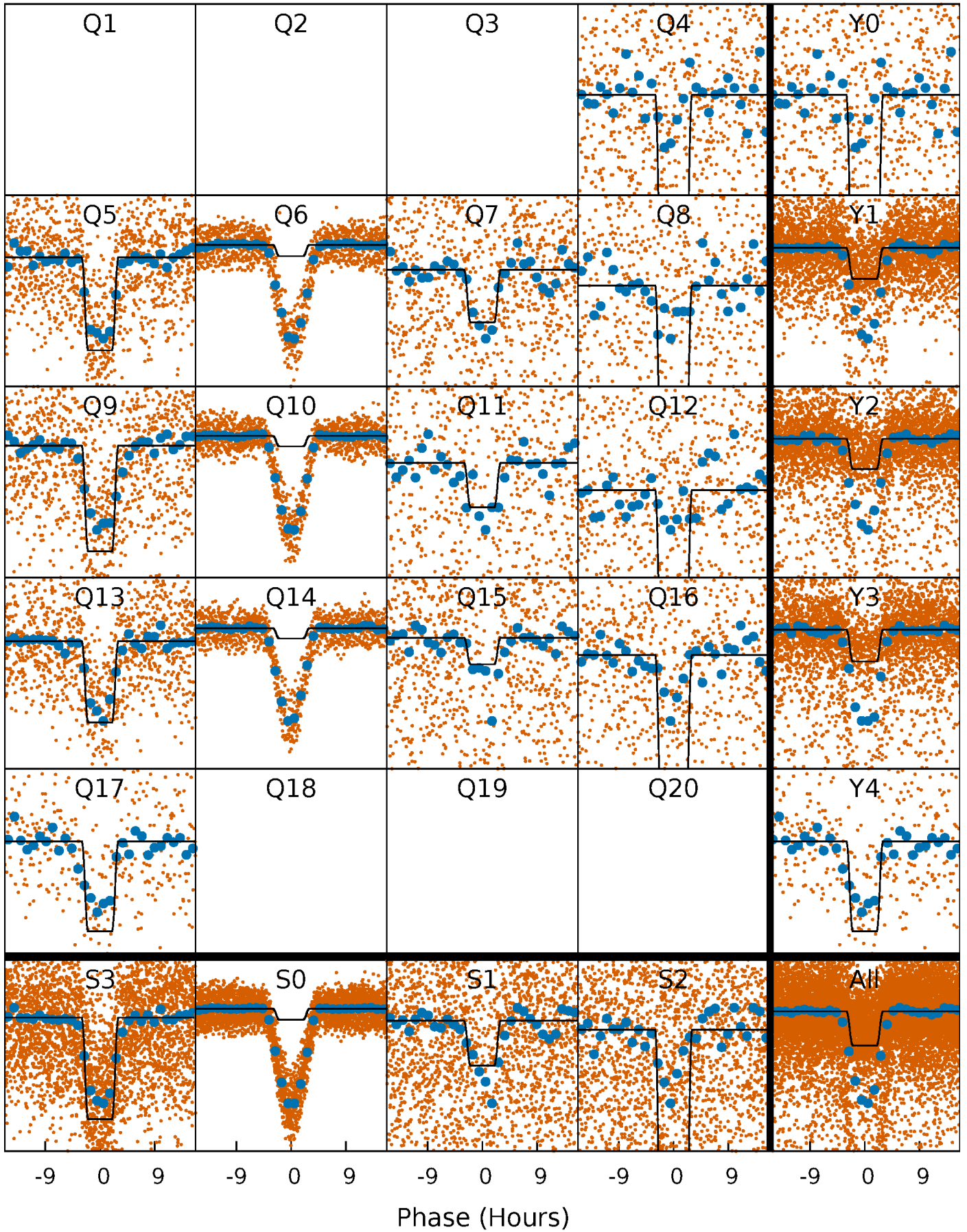
# DV Quarter-Phased Transit Curves

TCE 007620660-01 P= 5.366463 Days  $T_0=134.868694$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

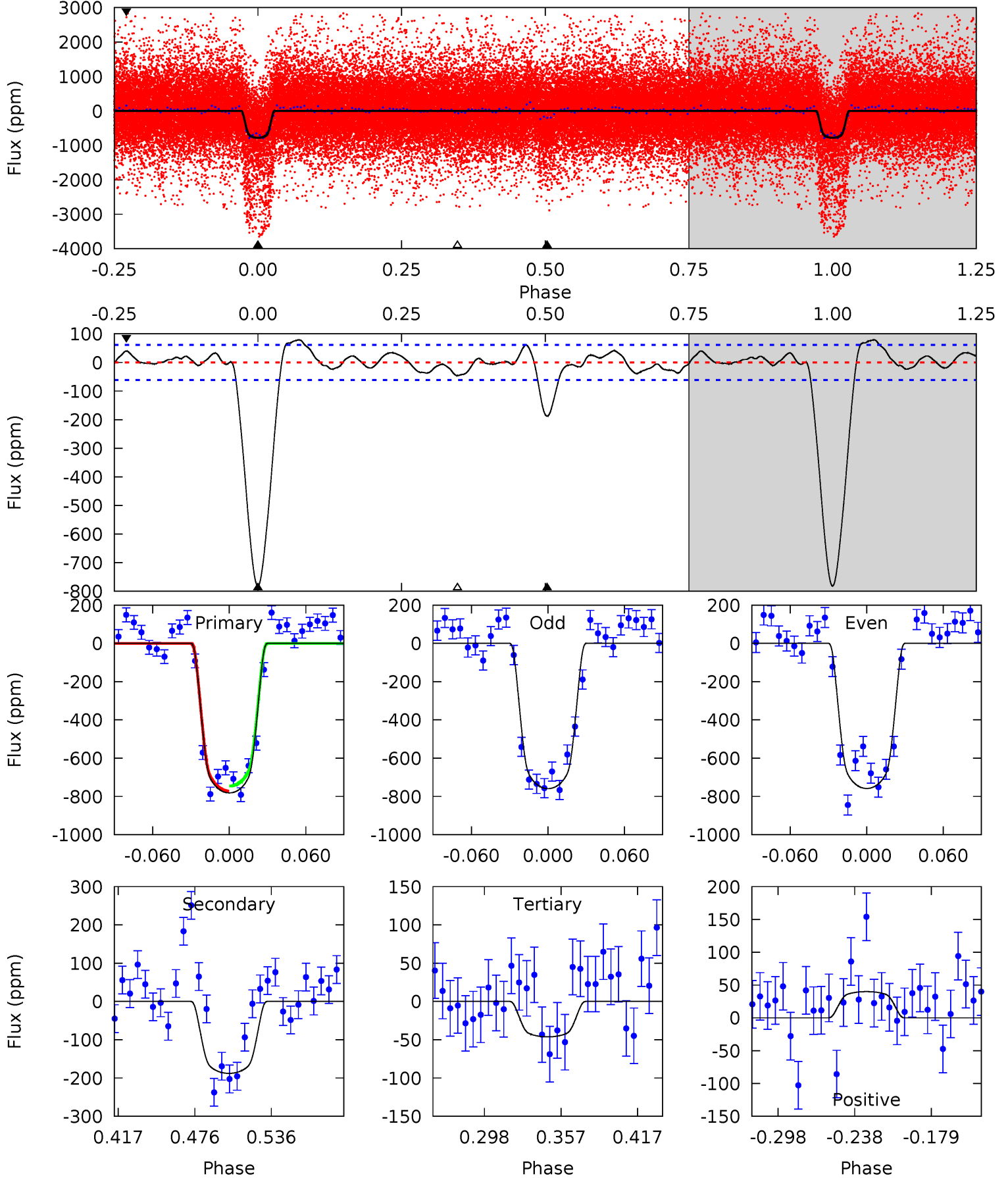
TCE 007620660-01 P= 5.366530 Days  $T_0=134.860033$  (BKJD)



# DV Model-Shift Uniqueness Test

007620660-01, P = 5.366463 Days, E = 134.868694 Days

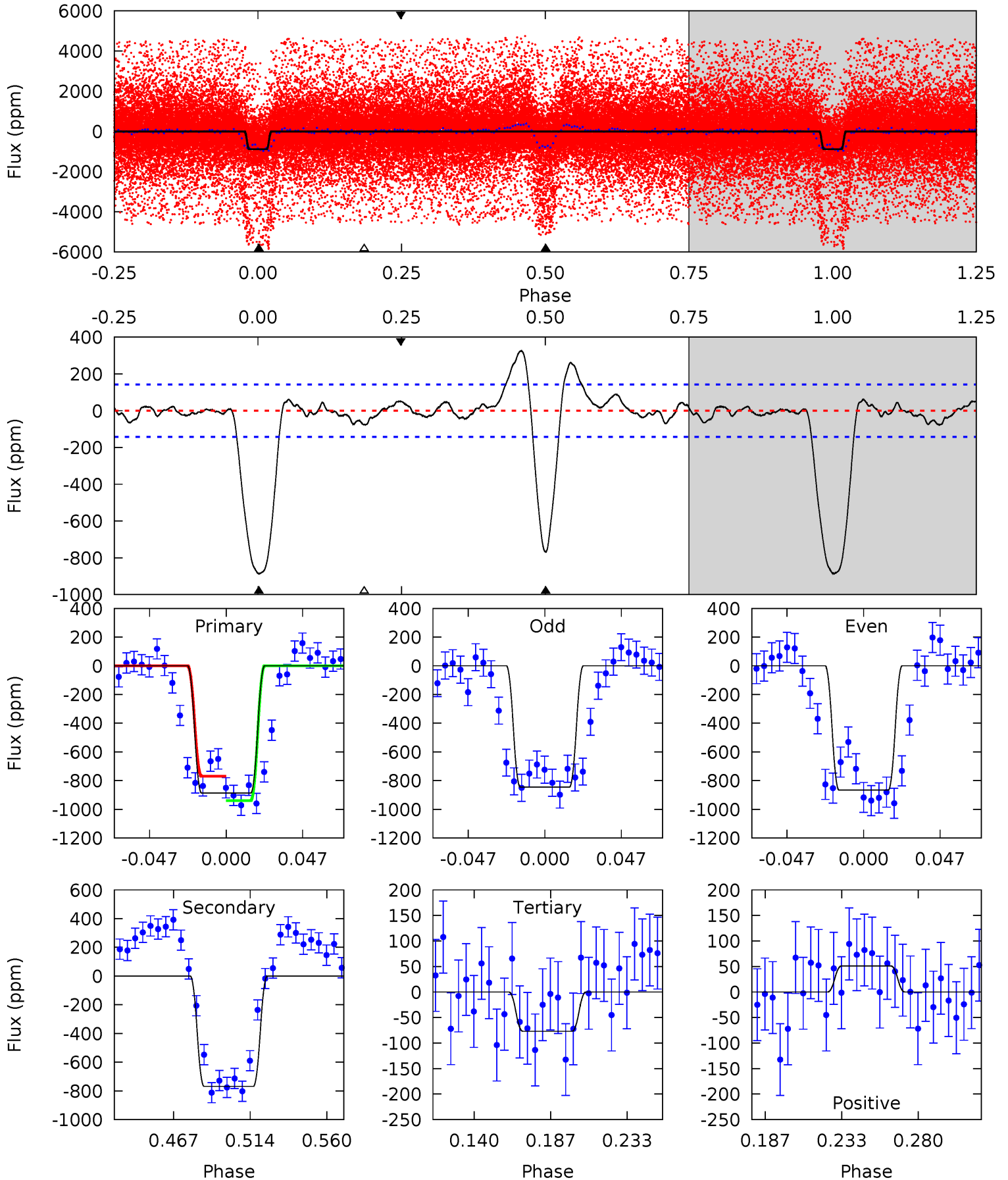
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.3	14.3	3.51	3.03	4.67	1.88	1.91	55.8	56.3	10.7	11.2	0.03	2.39	0.09	0.99



# Alt Model-Shift Uniqueness Test

007620660-01, P = 5.366530 Days, E = 134.860033 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
29.4	25.5	2.56	1.70	4.72	1.99	1.97	26.9	27.7	23.0	23.8	0.37	3.20	0.27	0



### Stellar Parameters For KIC 007620660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5858^{+174}_{-209}$	$4.553^{+0.036}_{-0.192}$	$-0.260^{+0.300}_{-0.300}$	$0.849^{+0.251}_{-0.084}$	$0.940^{+0.099}_{-0.121}$	$2.167^{+0.425}_{-1.108}$
	+3%/-4%	+1%/-4%	+115%/-115%	+30%/-10%	+11%/-13%	+20%/-51%
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 007620660-01 / KOI 3832.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-188 \pm 13$	$2.66^{+0.42}_{-0.23}$	$1406^{+97}_{-66}$	$4341^{+126}_{-149}$	$49^{+9}_{-11}$
Alt.	$-768 \pm 30$	$3.30^{+0.48}_{-0.26}$	$1402^{+85}_{-61}$	$5281^{+158}_{-186}$	$130^{+19}_{-29}$

$T_{\text{max}}$  = 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

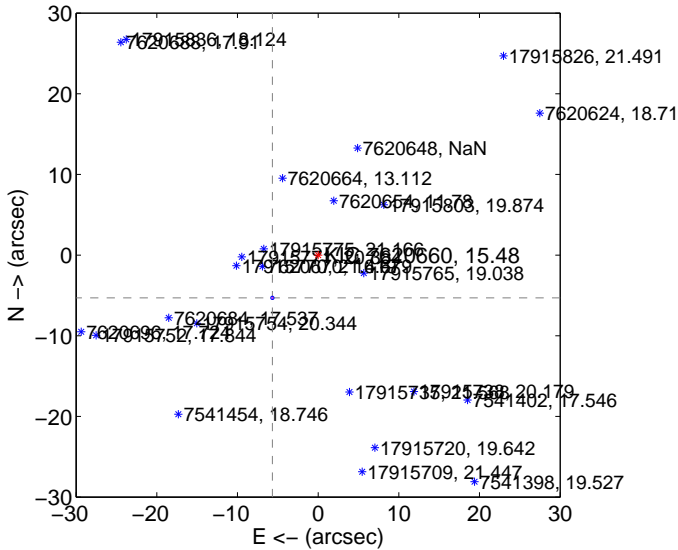
Supplemental centroid analysis for 007620660-01. Kepler magnitude: 15.48. Transit SNR 30.10

There are 10 quarters with good PRF difference image offsets

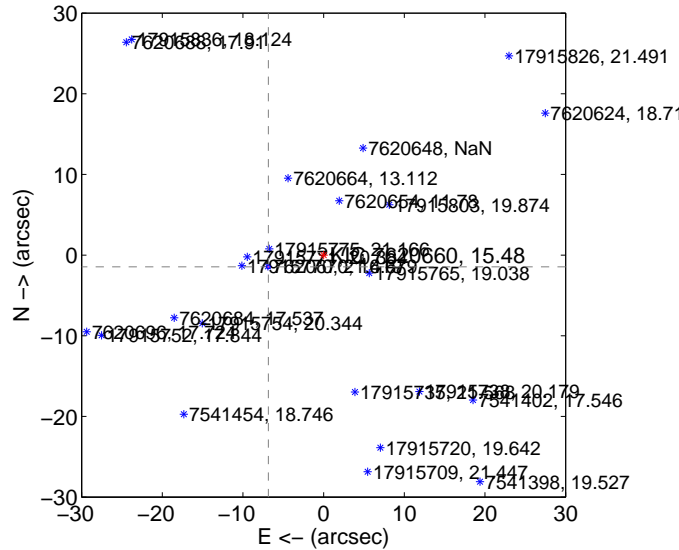
The OOT PRF centroid is offset from the target star catalog position by about 4.00 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.764 \pm 0.068$	113.51	$5.672 \pm 0.068$	$-5.301 \pm 0.068$
PRF-fit source offset from KIC position	$6.999 \pm 0.076$	91.81	$6.845 \pm 0.077$	$-1.460 \pm 0.068$
photometric centroid source offset	$30.63 \pm 0.16$	193.27	$22.68 \pm 0.14$	$-20.59 \pm 0.18$

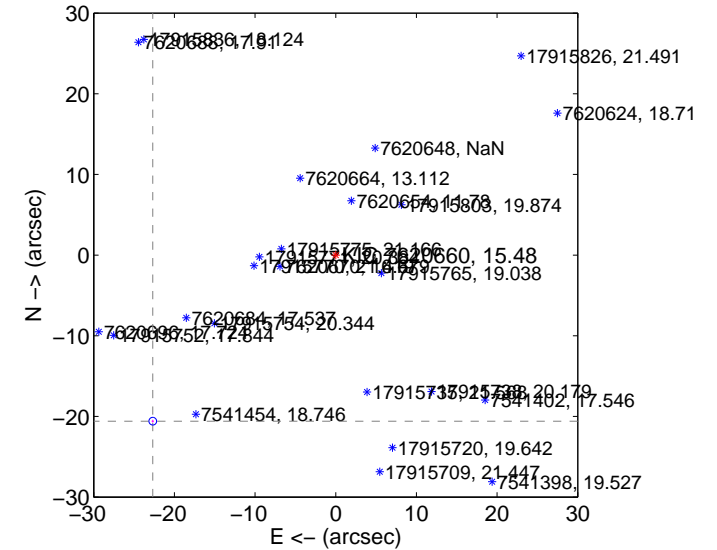
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

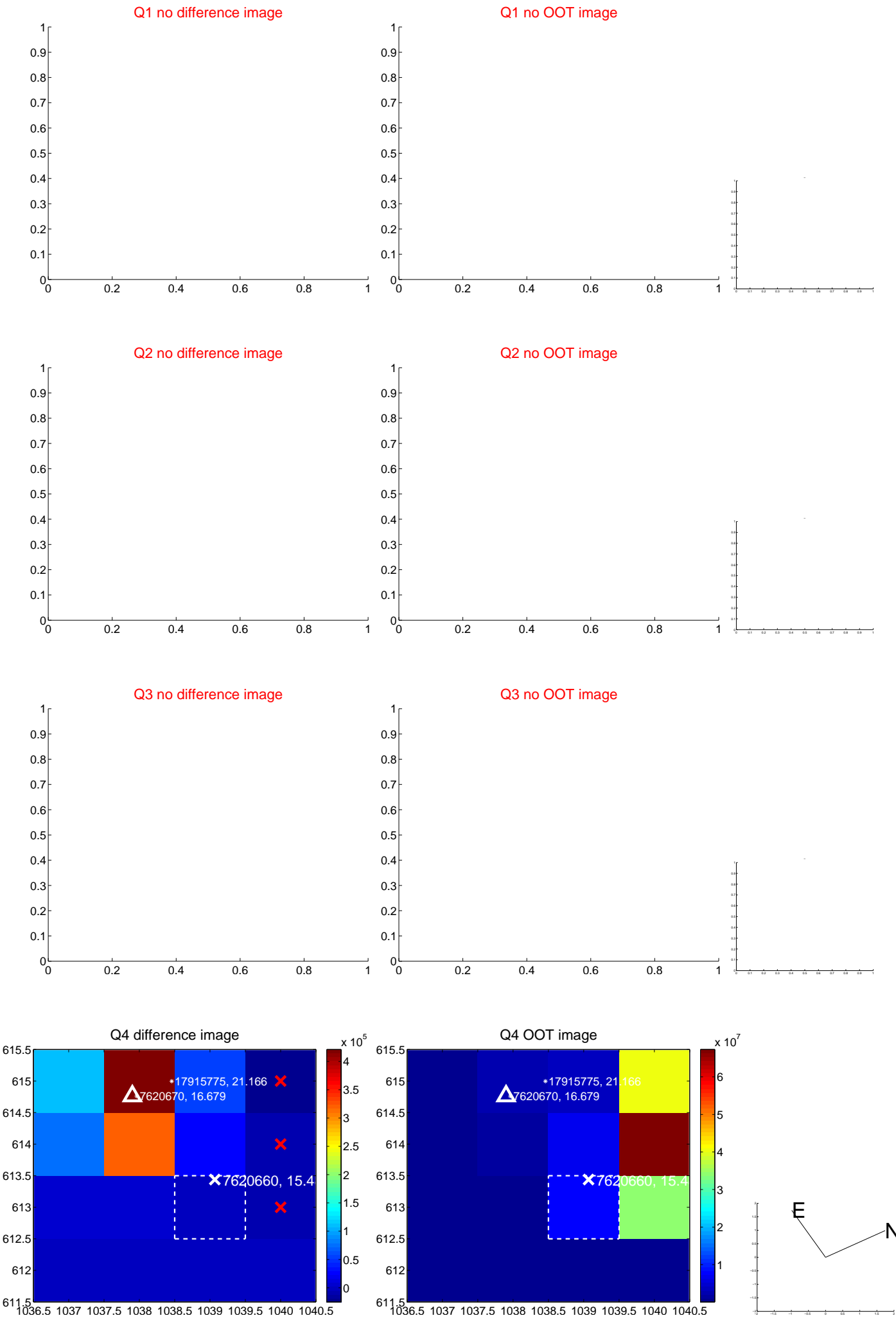


offset from photometric centroids

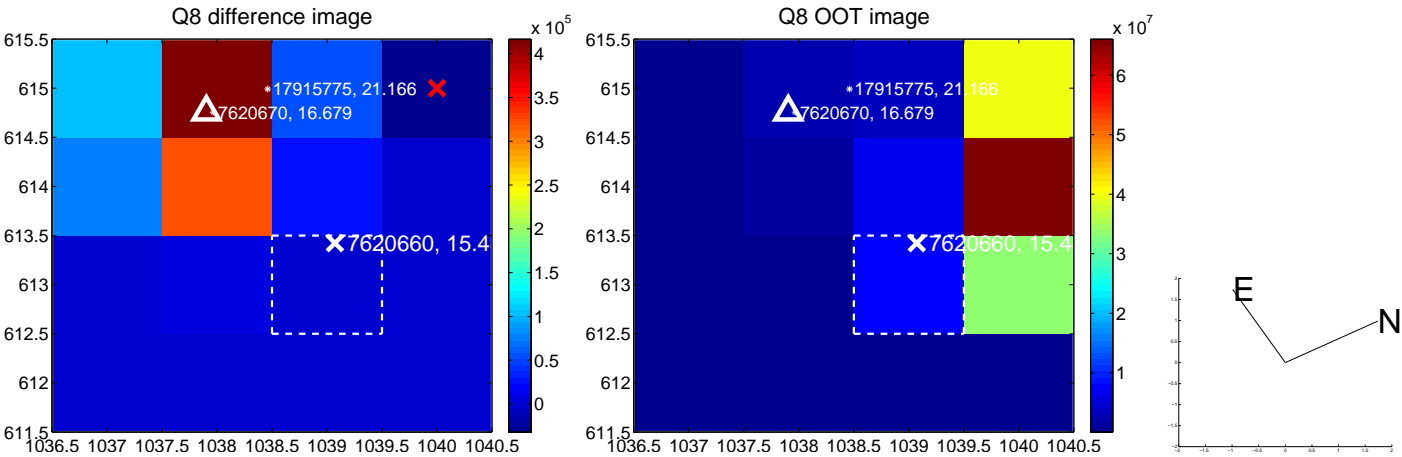
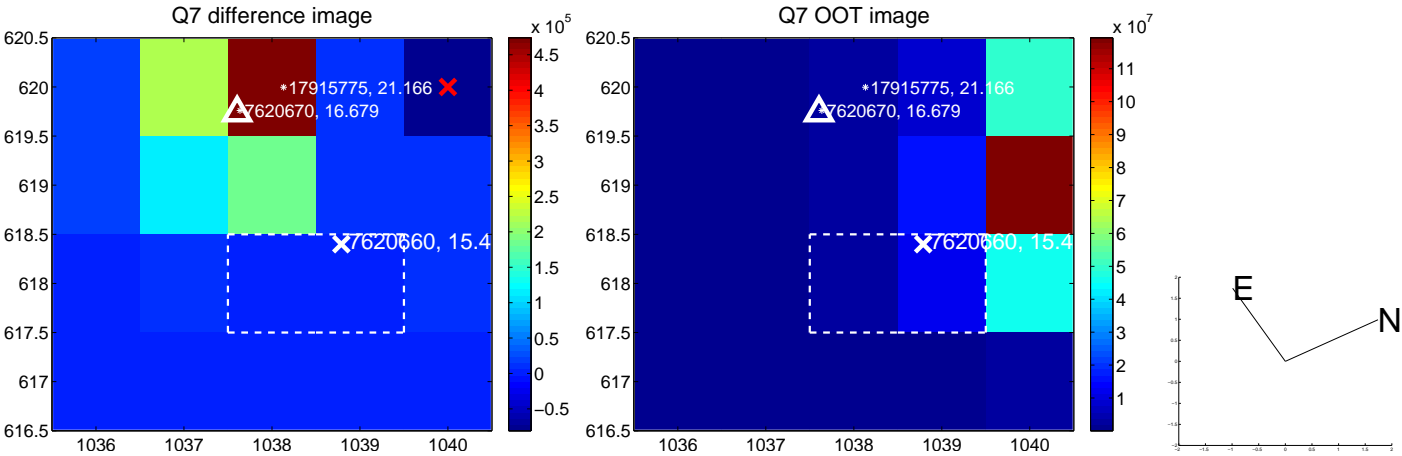
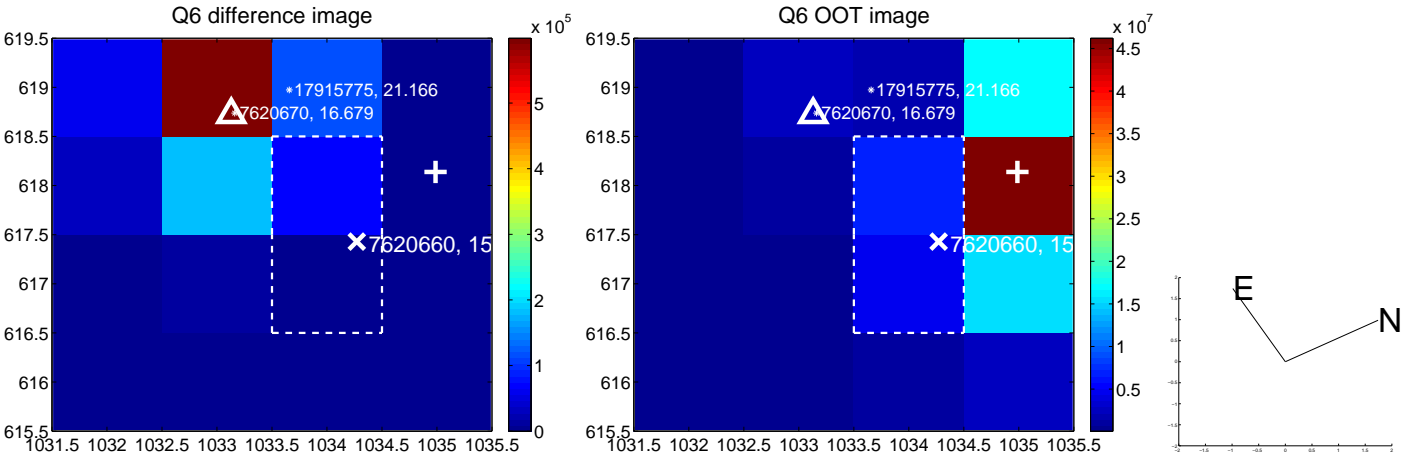
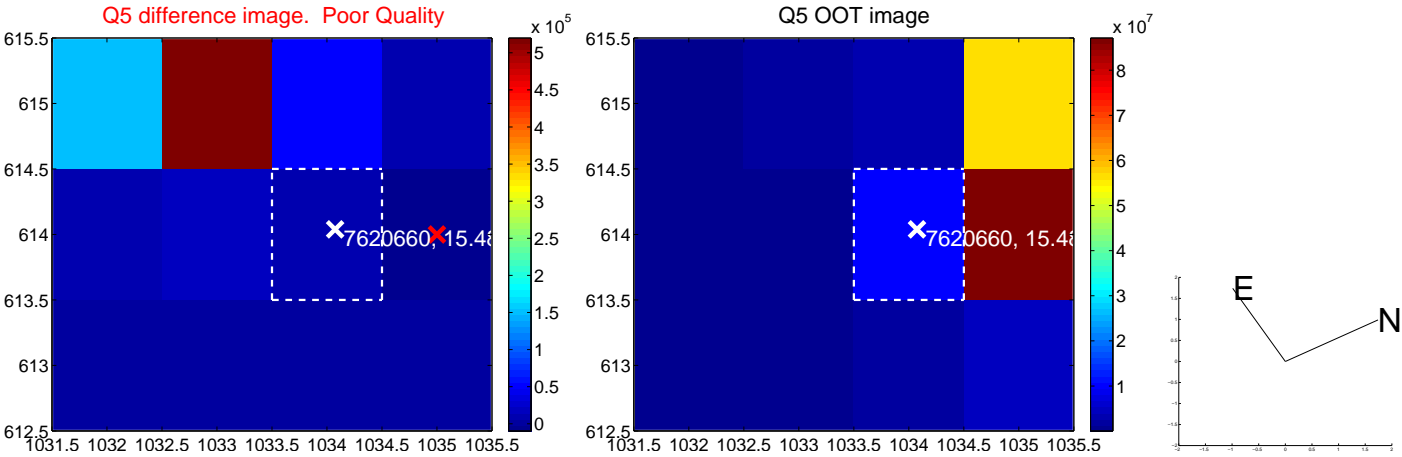


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

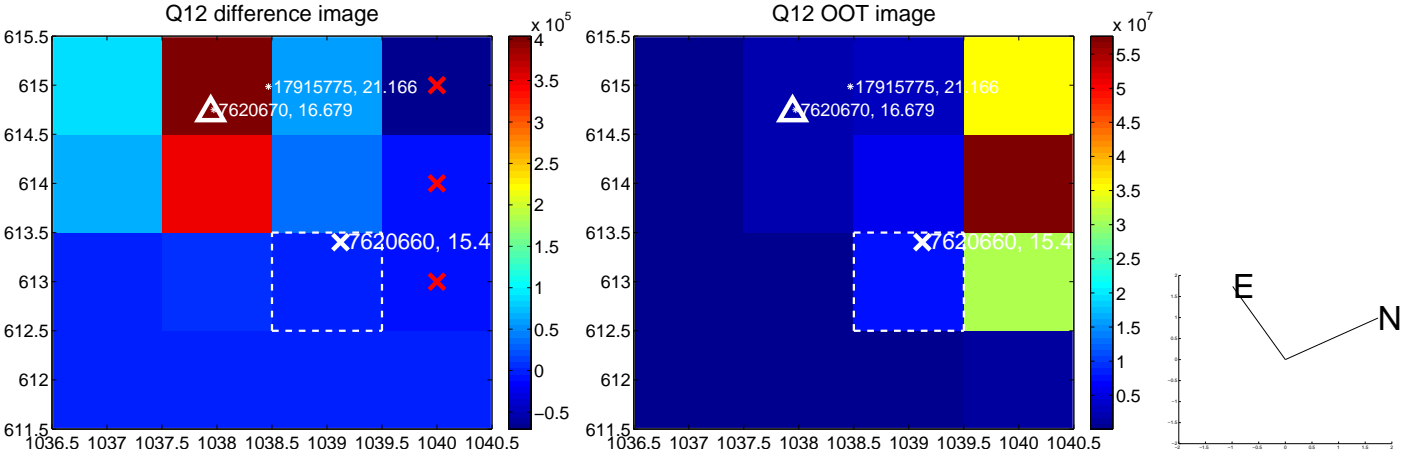
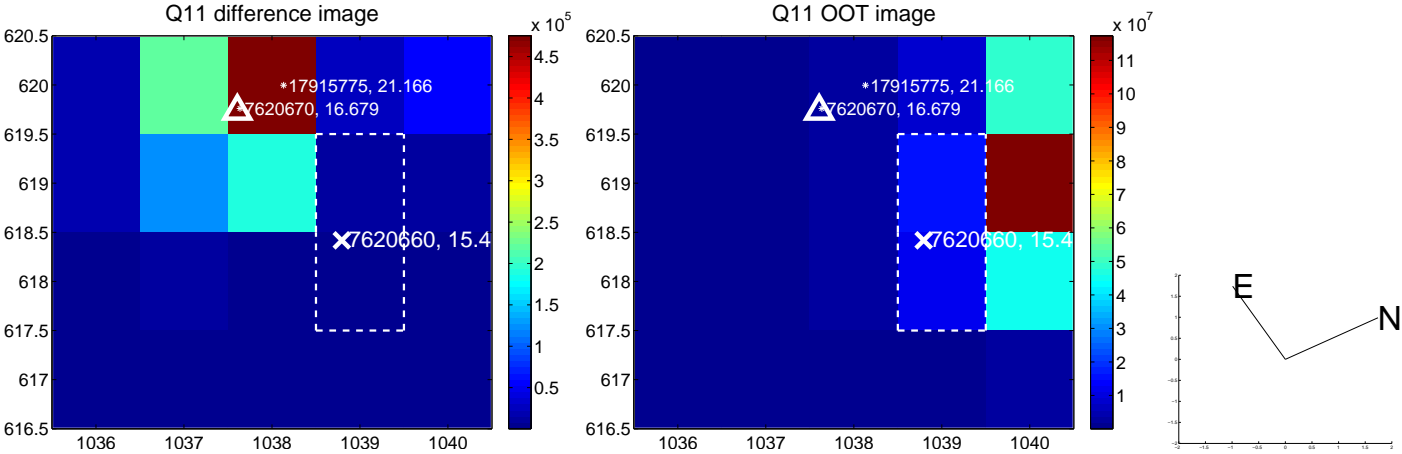
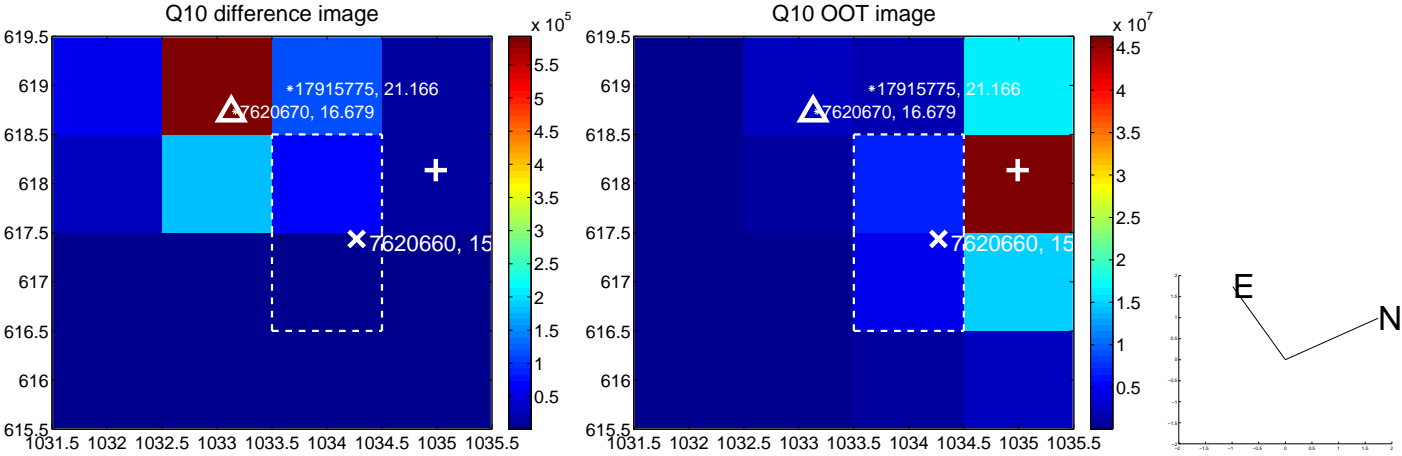
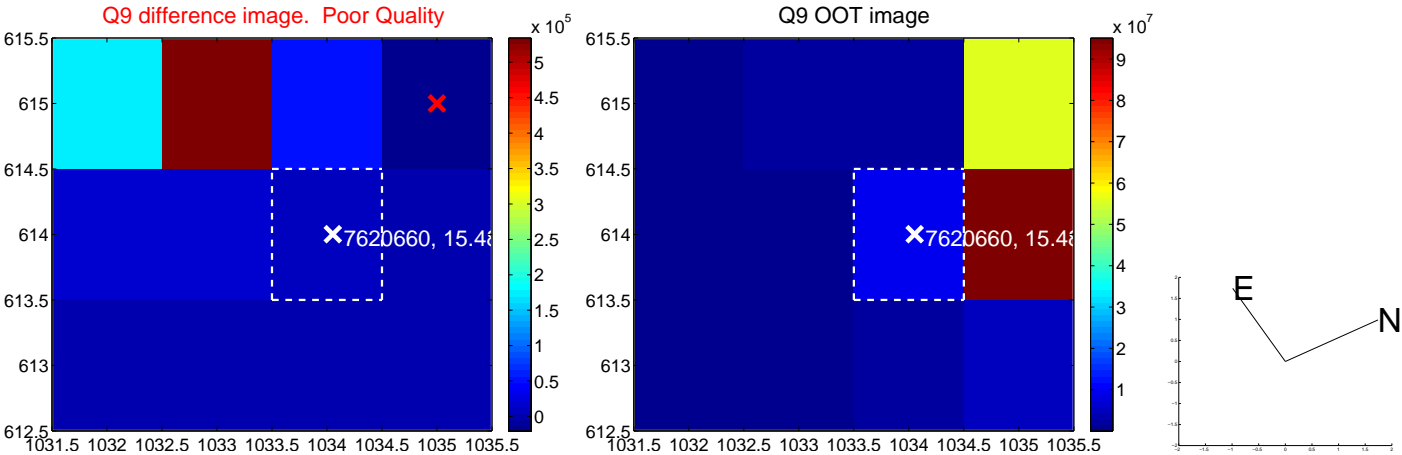
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



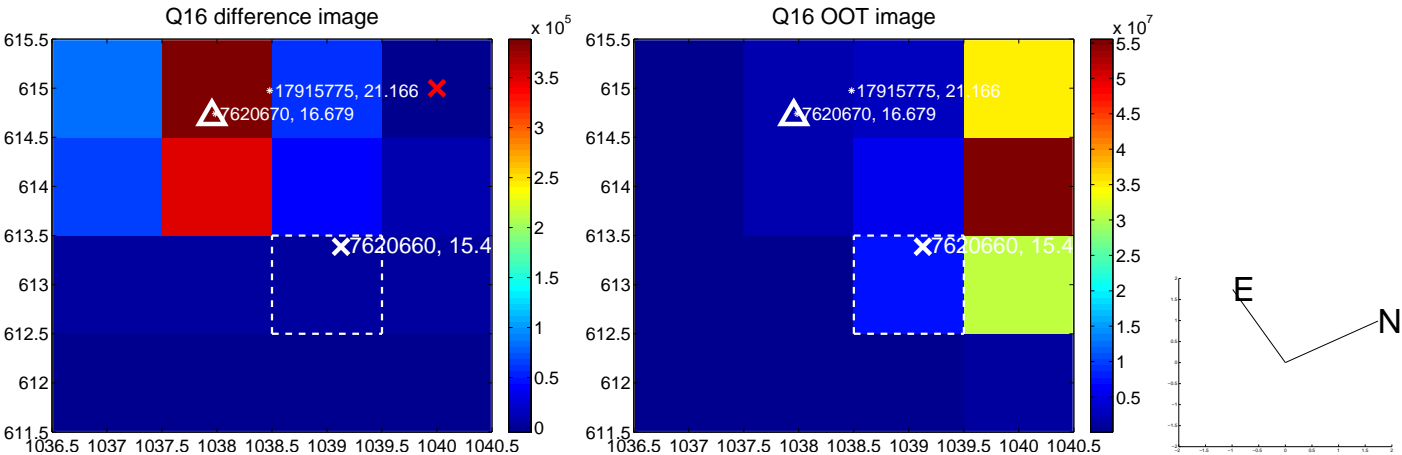
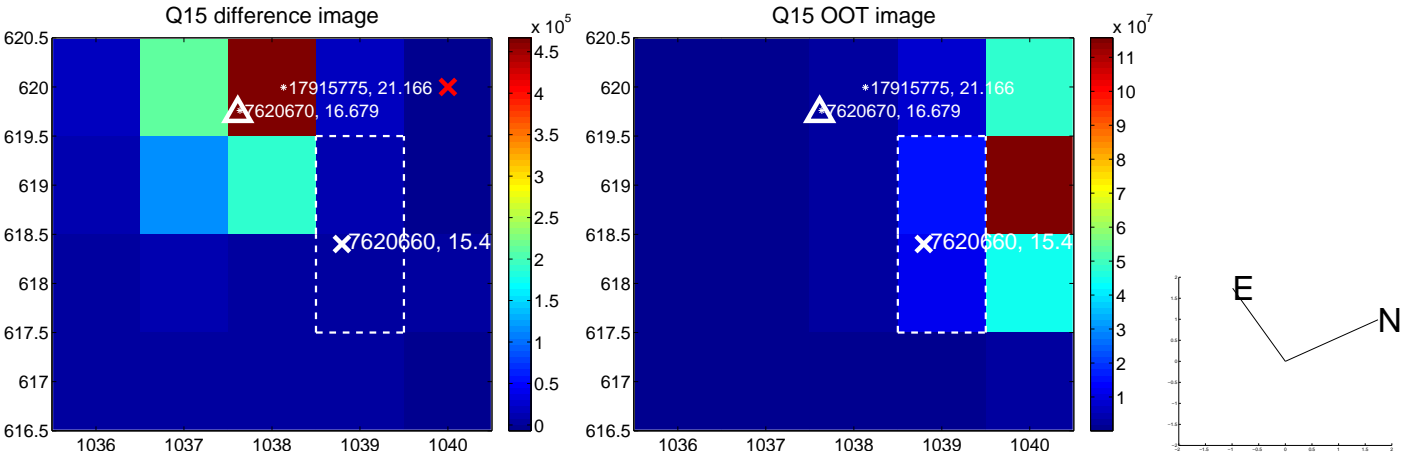
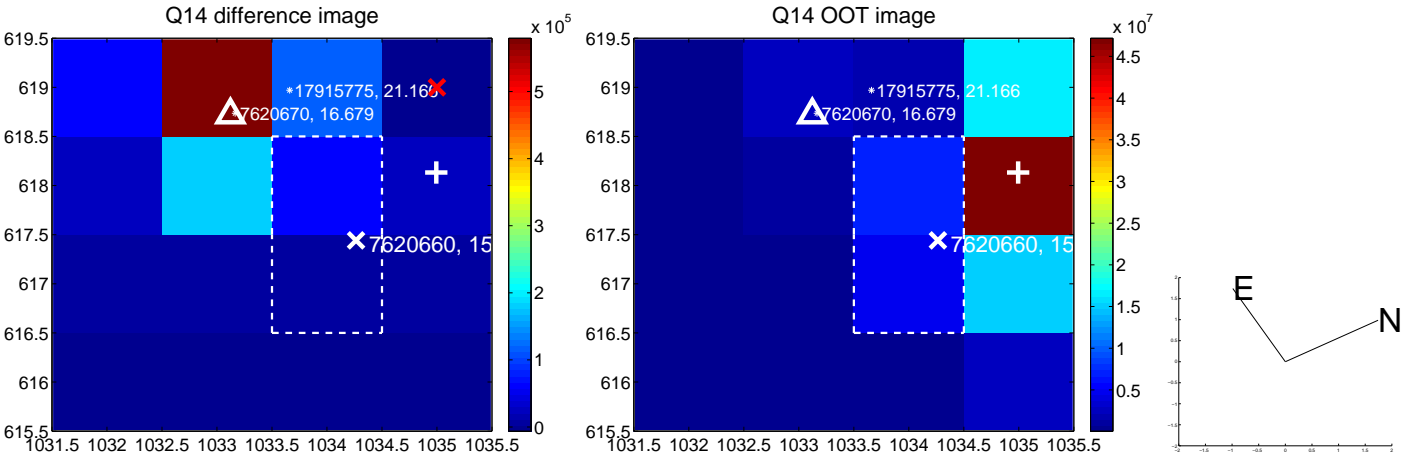
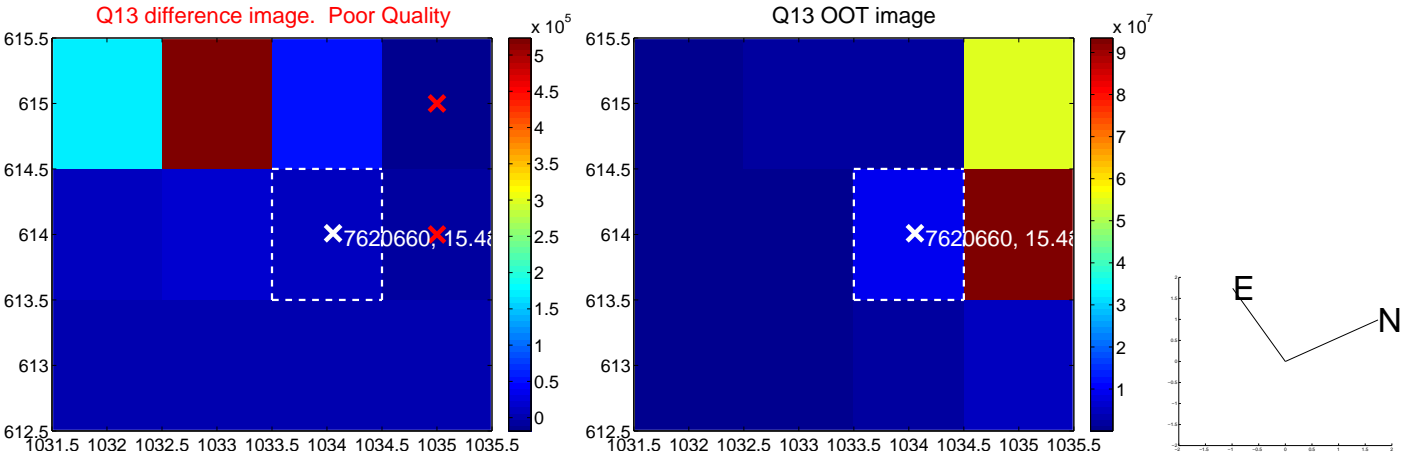
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

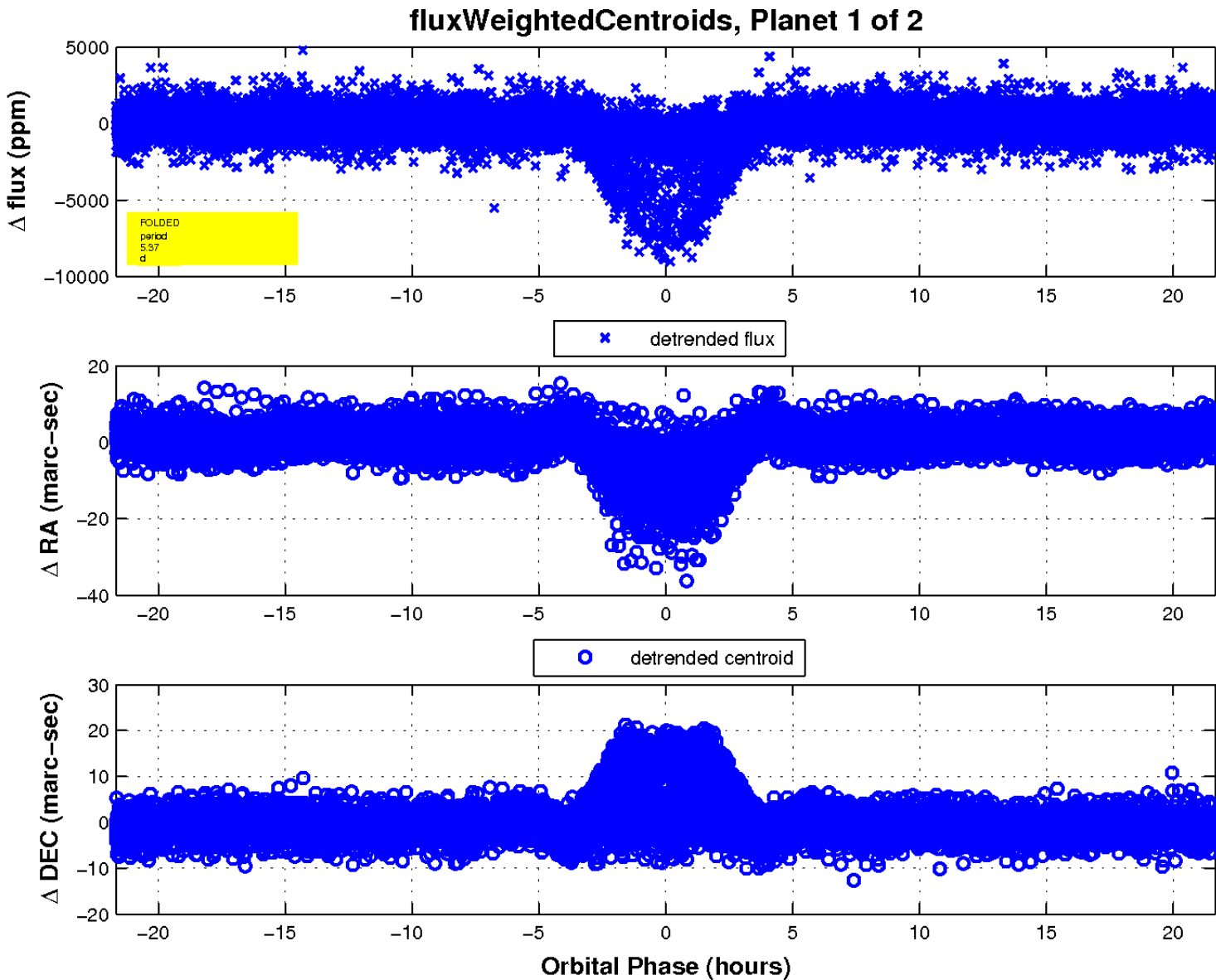
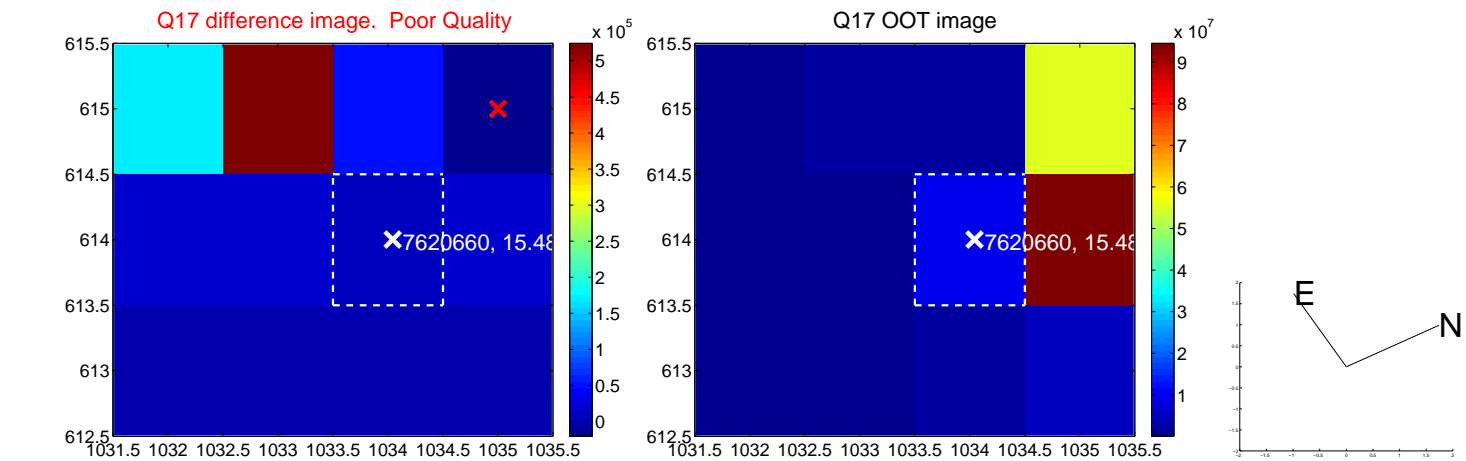


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



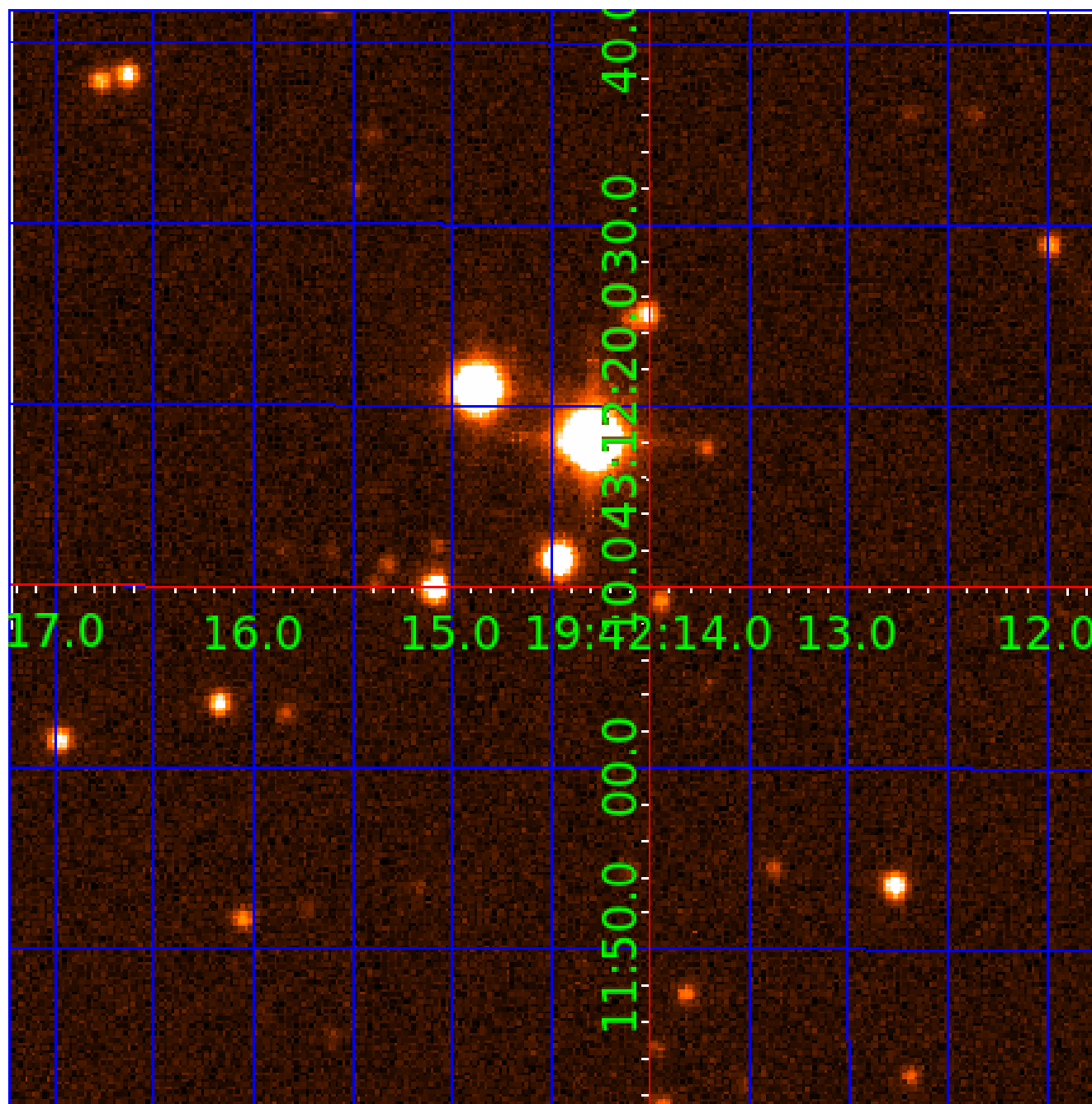


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007620660

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007620660-01	OBS	3832.01	5.366463	134.868694	587.2	7.224	64.5	30.1	0.85	5858	2.56	220.25
007620660-02	OBS	No	0.683747	131.634686	24.8	7.123	8.4	4.2	0.85	5858	0.43	3435.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007620660-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—SEASONAL_DEPTH_DV—CENT_RESOLVED_OFFSET
007620660-02	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_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 007620660-02

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	$\sigma_P$	$\sigma_T$
007620660-02	7620660	007620664-pri	7620664	1:1	10.5	-2	-2	13.11	15.48	4232.00	Direct-PRF	0	4.49	2.31

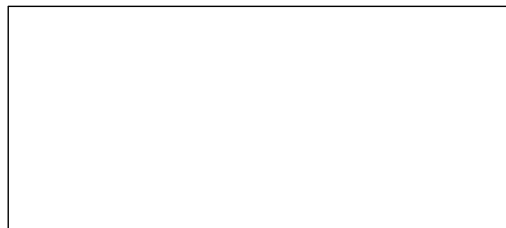
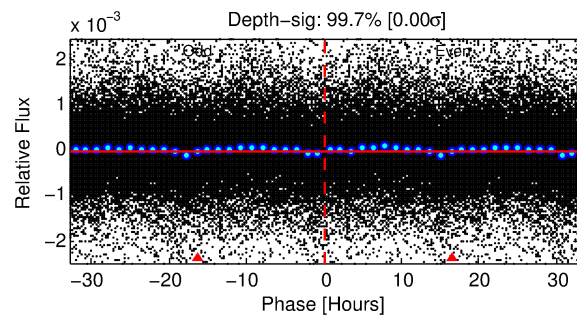
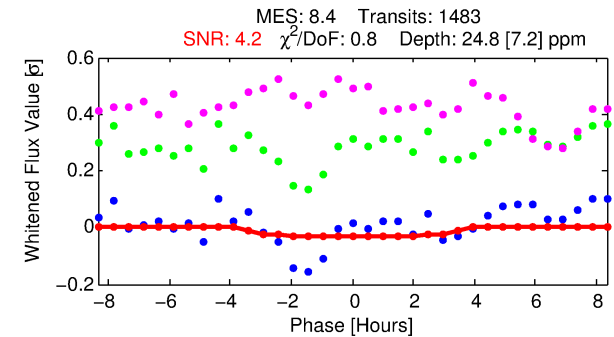
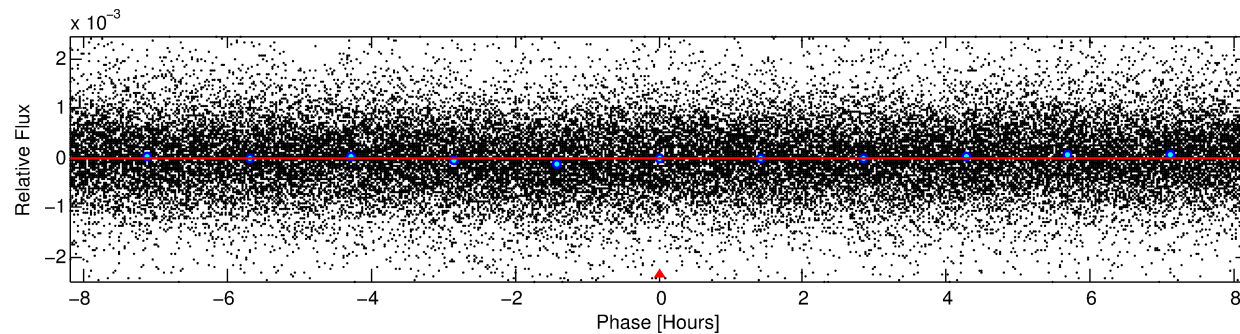
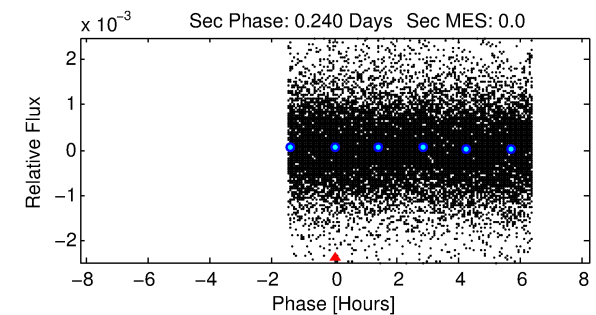
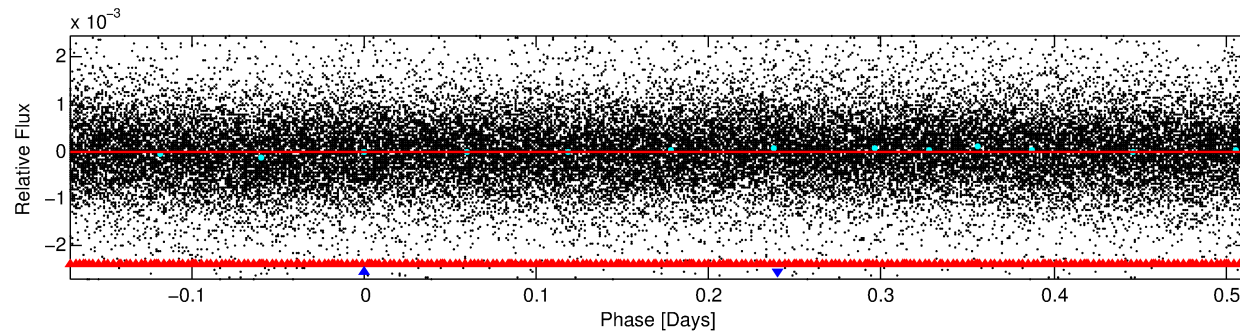
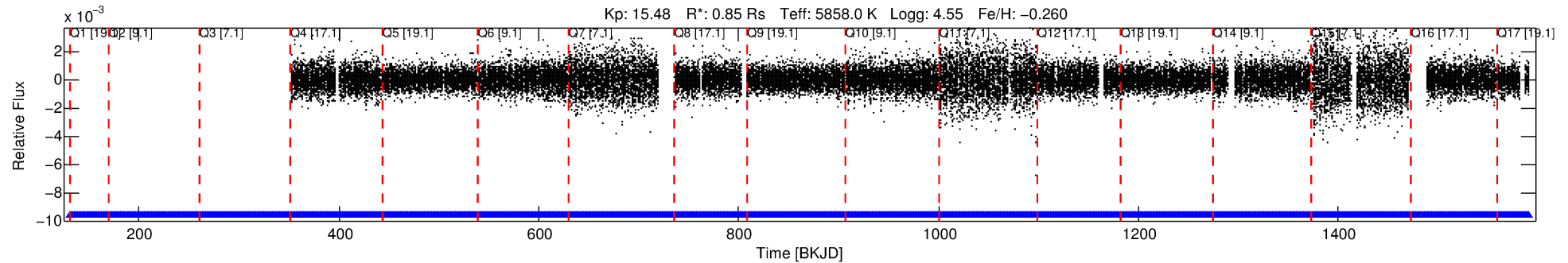
**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  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: 7620660 Candidate: 2 of 2 Period: 0.684 d

KOI: K03832 Corr: No Ephemeris Match

Kp: 15.48 R\*: 0.85 Rs Teff: 5858.0 K Logg: 4.55 Fe/H: -0.260



## DV Fit Results:

Period = 0.68375 [0.00003] d  
Epoch = 131.6347 [0.0177] BKJD  
Rp/R\* = 0.0047 [0.0109]  
a/R\* = 1.02 [0.44]  
b = 0.50 [16.76]  
Seff = 3435.34 [1313.00]  
Teff = 1952 [187] K  
Rp = 0.43 [1.01] Re  
a = 0.0149 [0.0037] AU  
Ag = N/A  
Teffp = N/A

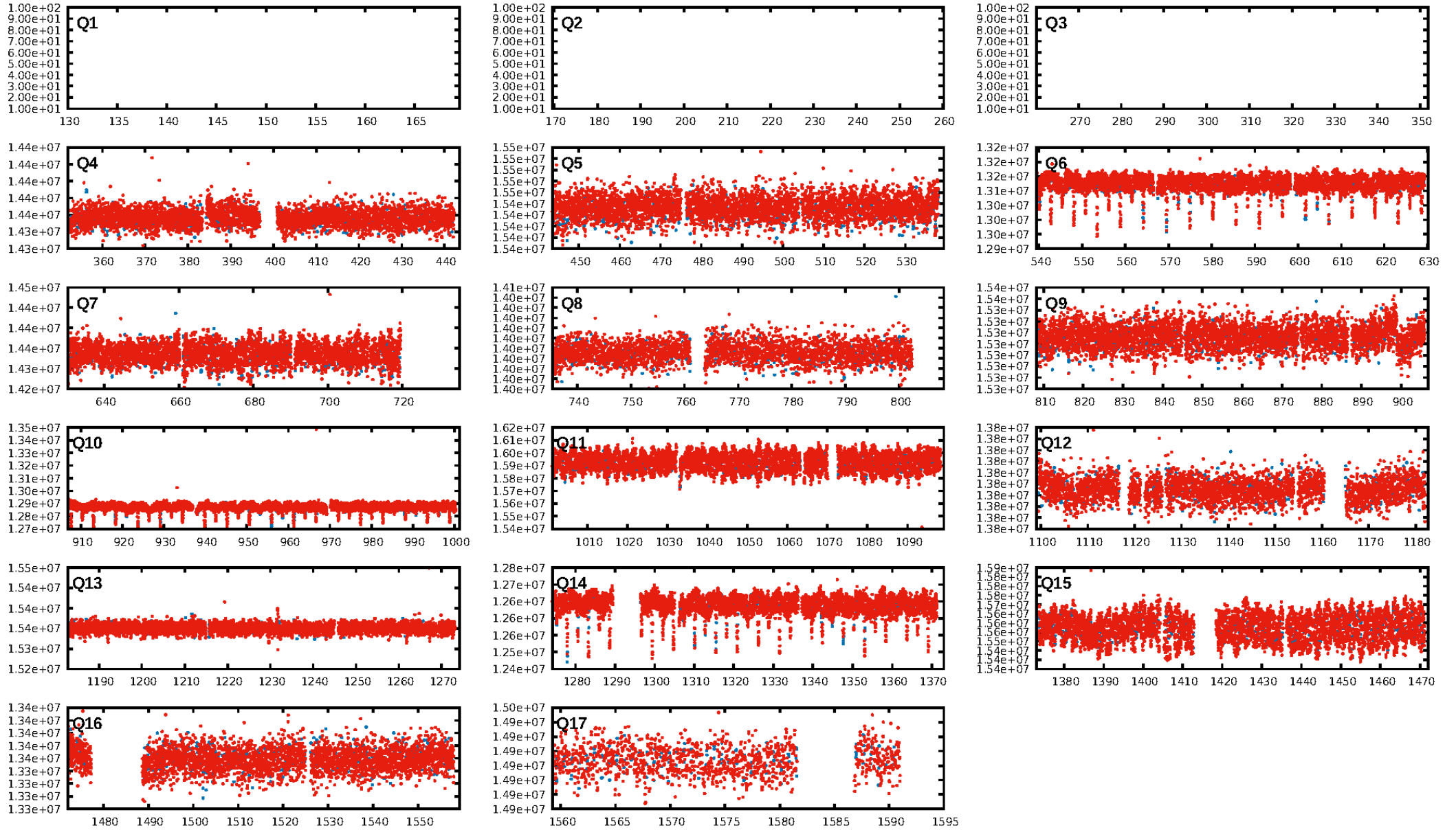
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [11.08σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1448/1448]  
GhostDiagnostic-chr: -0.5962  
Centroid-sig: N/A  
Centroid-so: 6.557 arcsec [5.02σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:48:02 Z

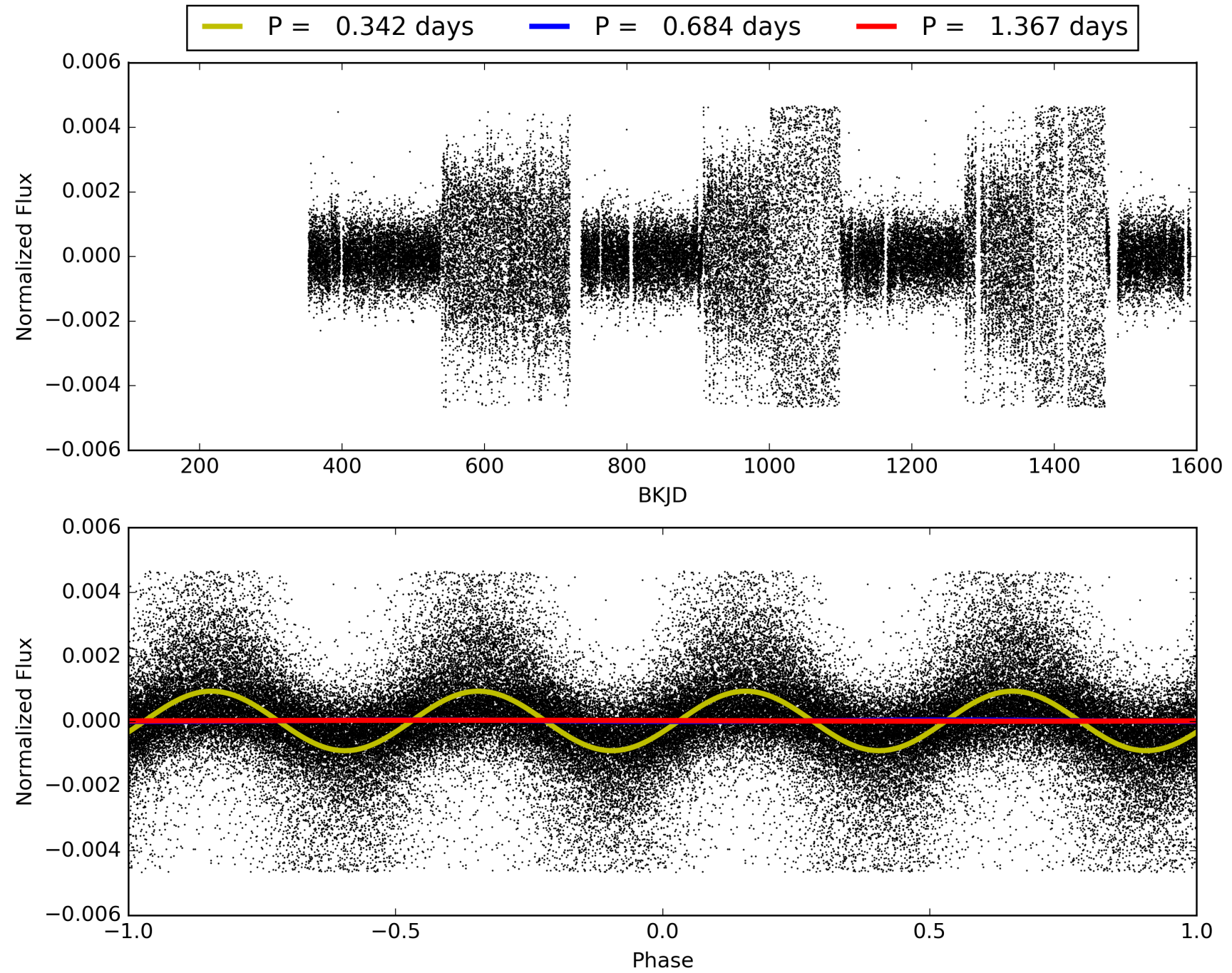
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007620660-02, PDC Light Curves



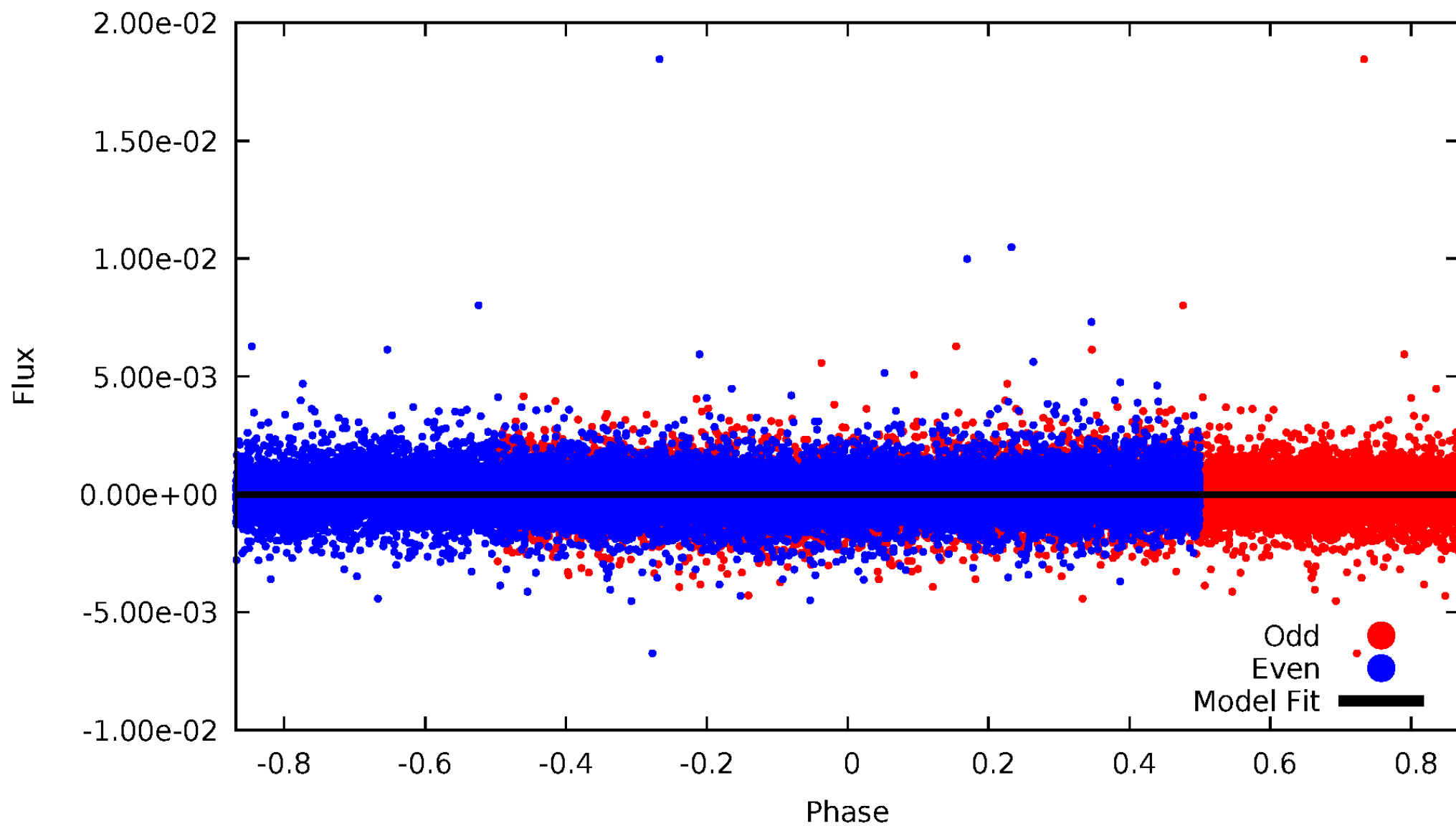


TCE 007620660-02



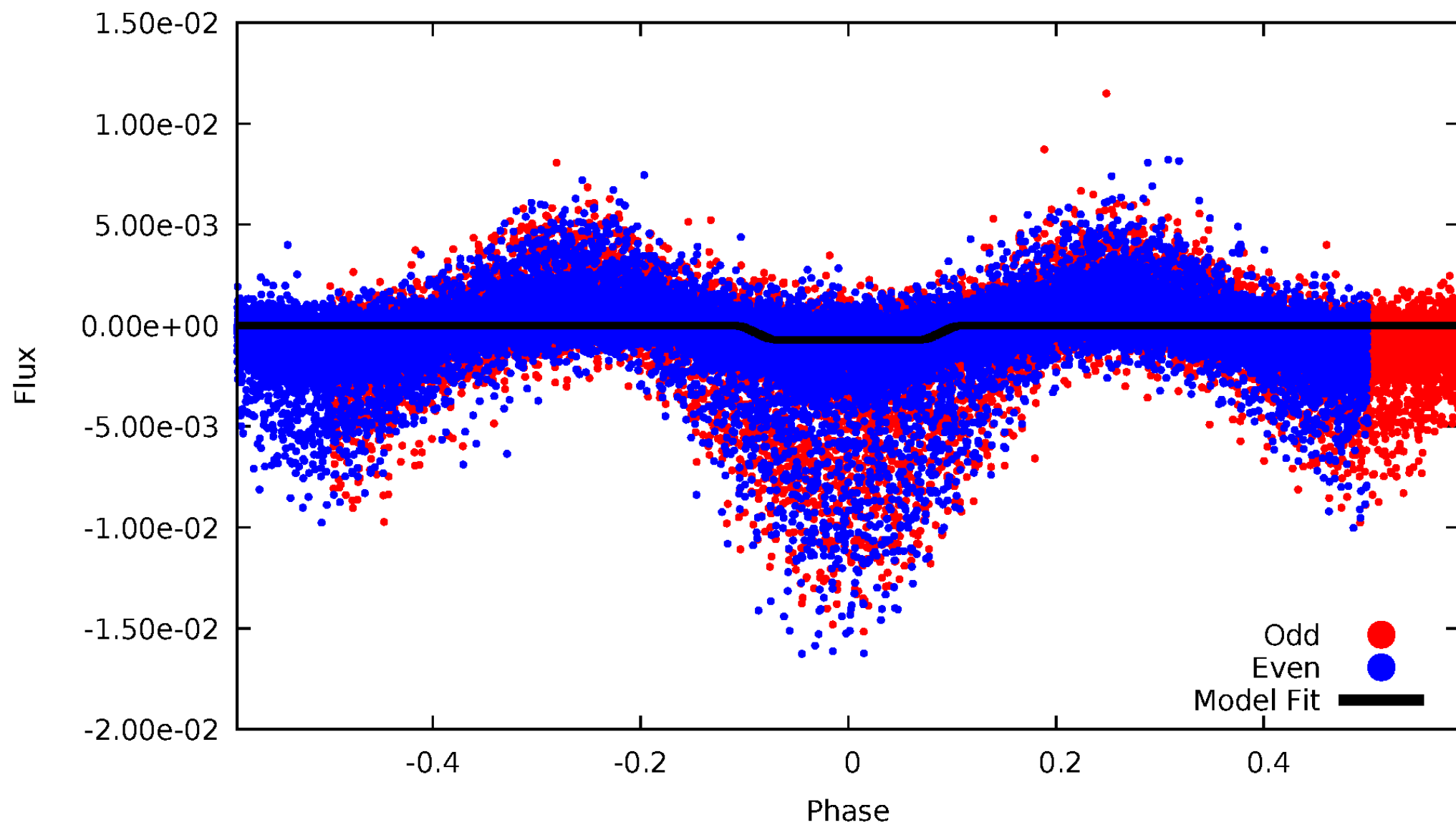
# DV Odd/Even

TCE 007620660-02



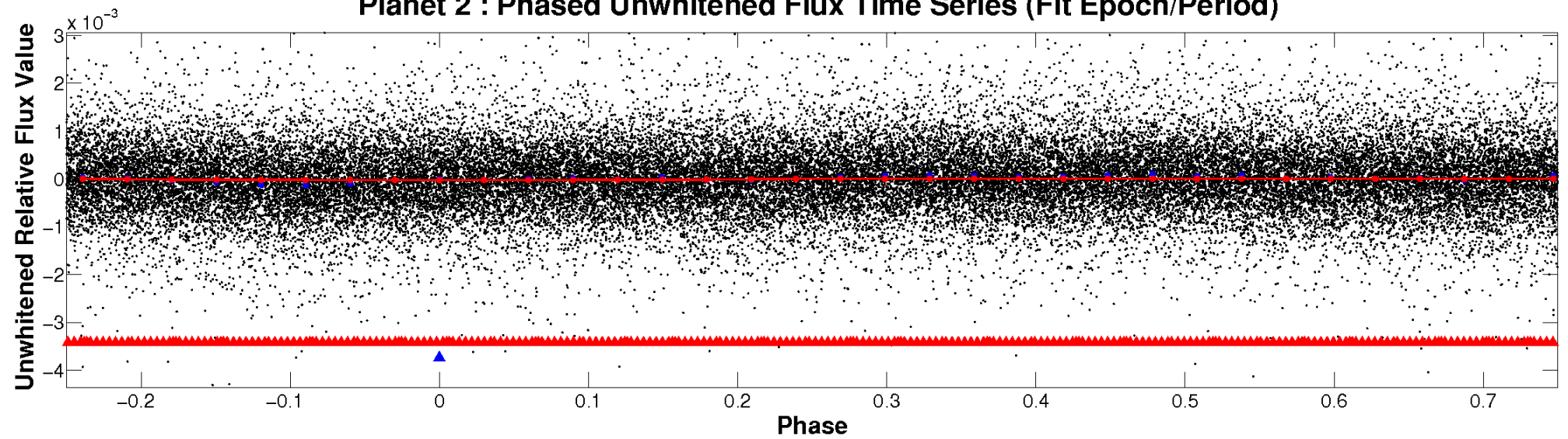
# ALT Odd/Even

TCE 007620660-02

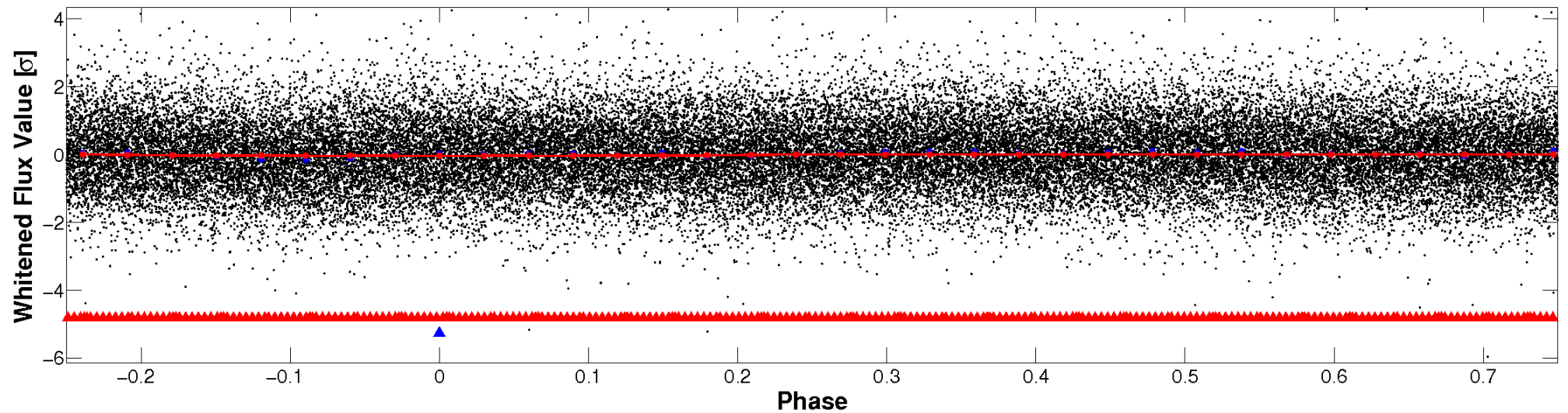


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



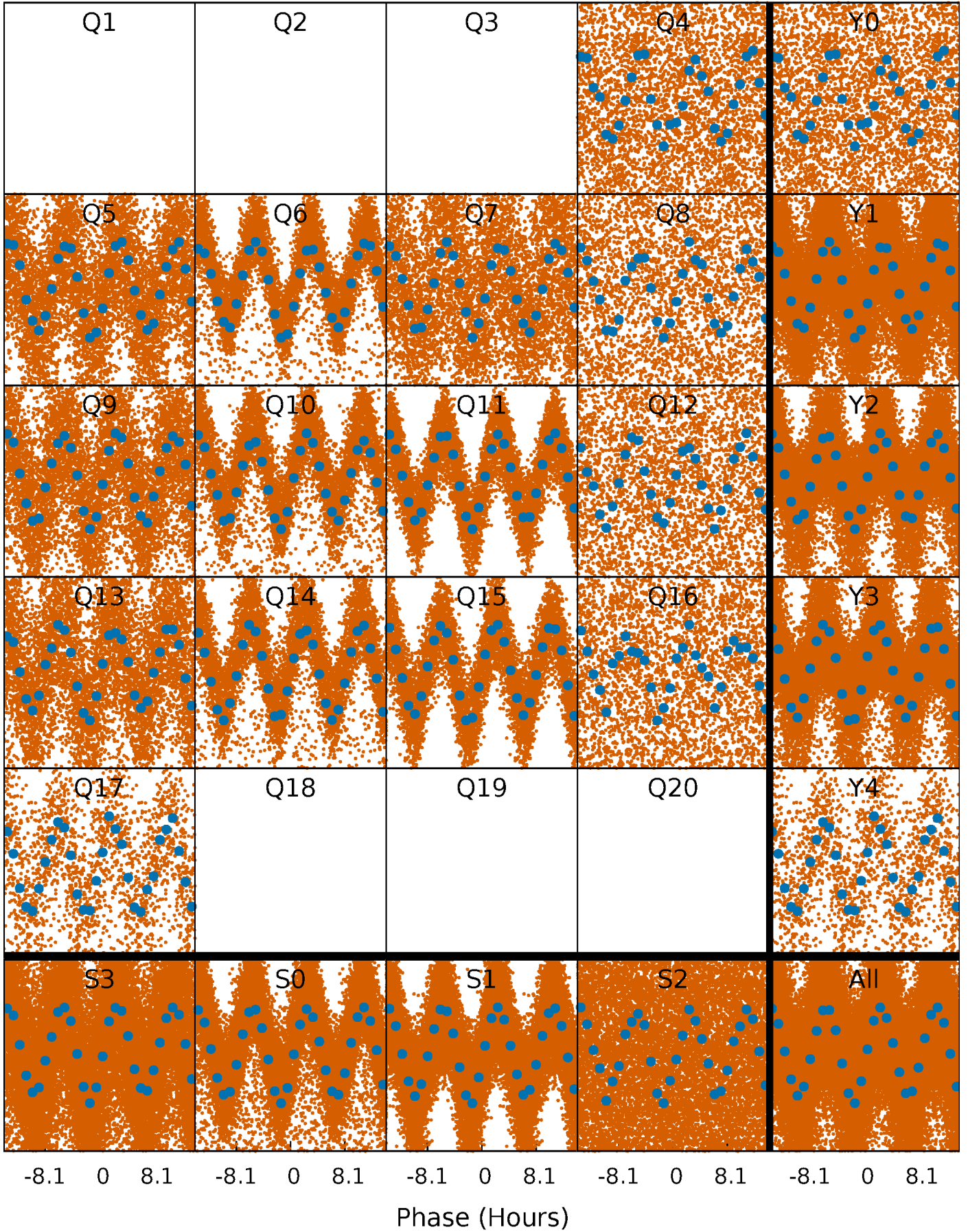
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

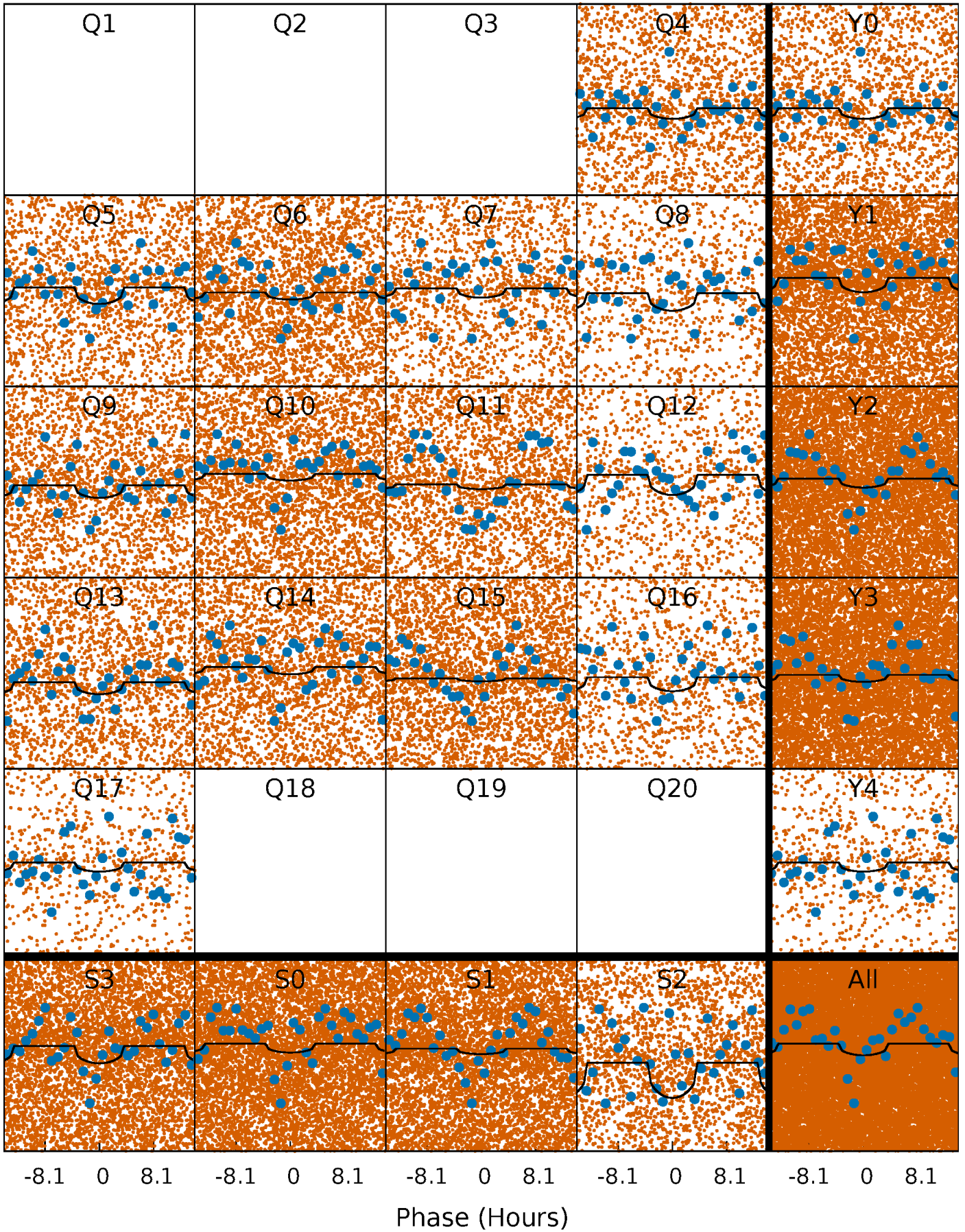
TCE 007620660-02   P= 0.683747 Days    $T_0=131.634686$  (BKJD)





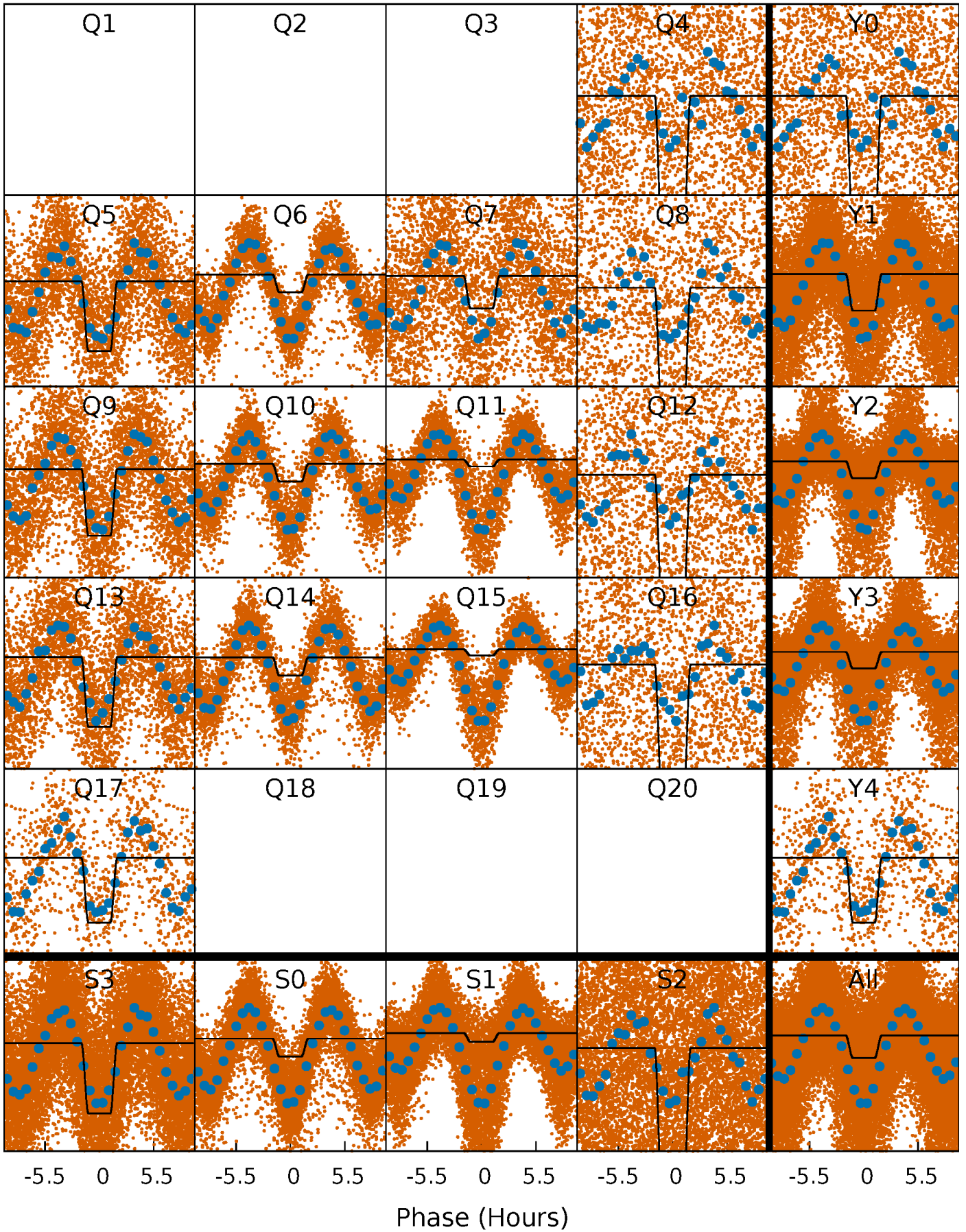
# DV Quarter-Phased Transit Curves

TCE 007620660-02   P= 0.683747 Days    $T_0=131.634686$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007620660-02 P= 0.683722 Days  $T_0=131.602328$  (BKJD)

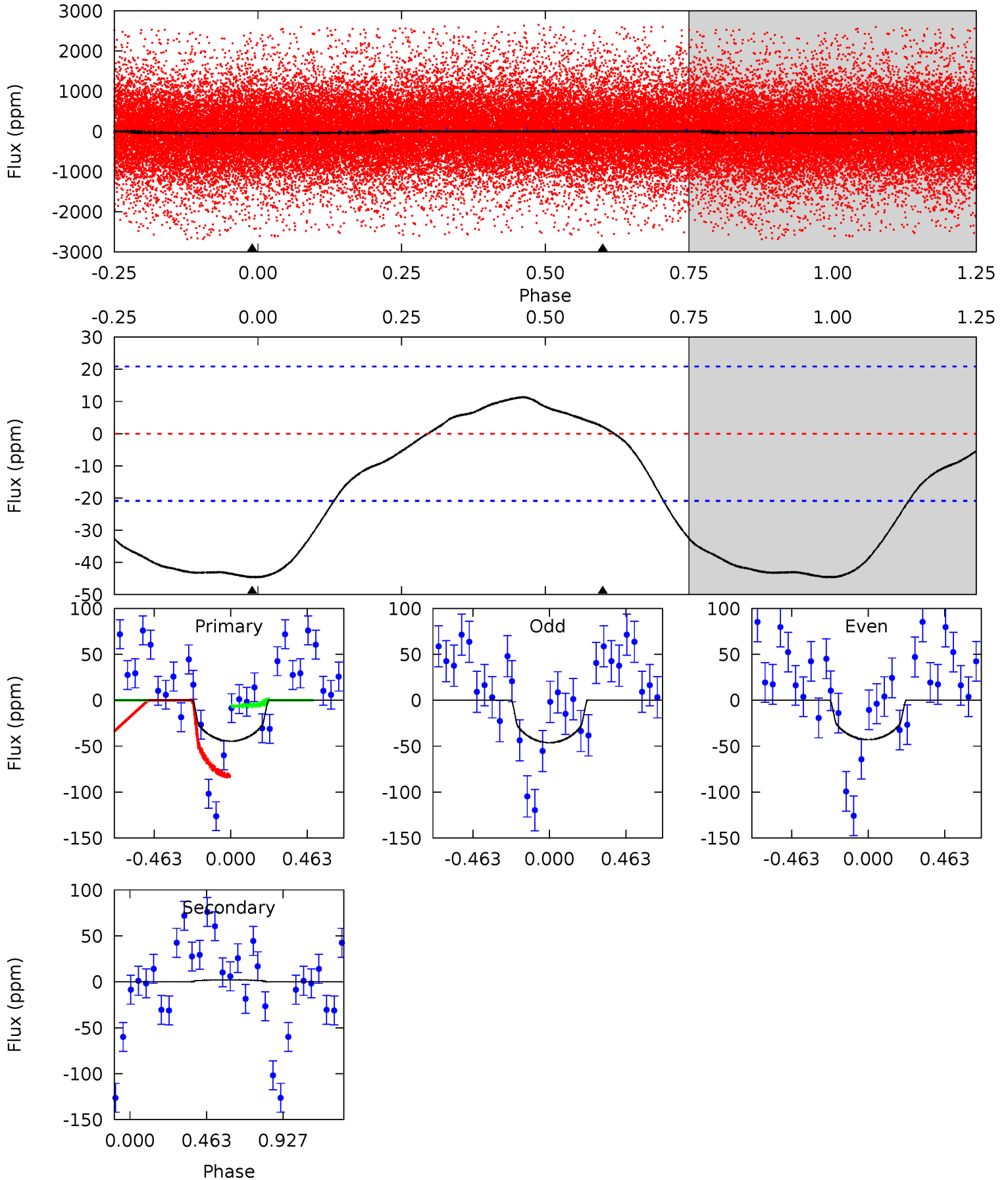




# DV Model-Shift Uniqueness Test

007620660-02, P = 0.683747 Days, E = 131.634686 Days

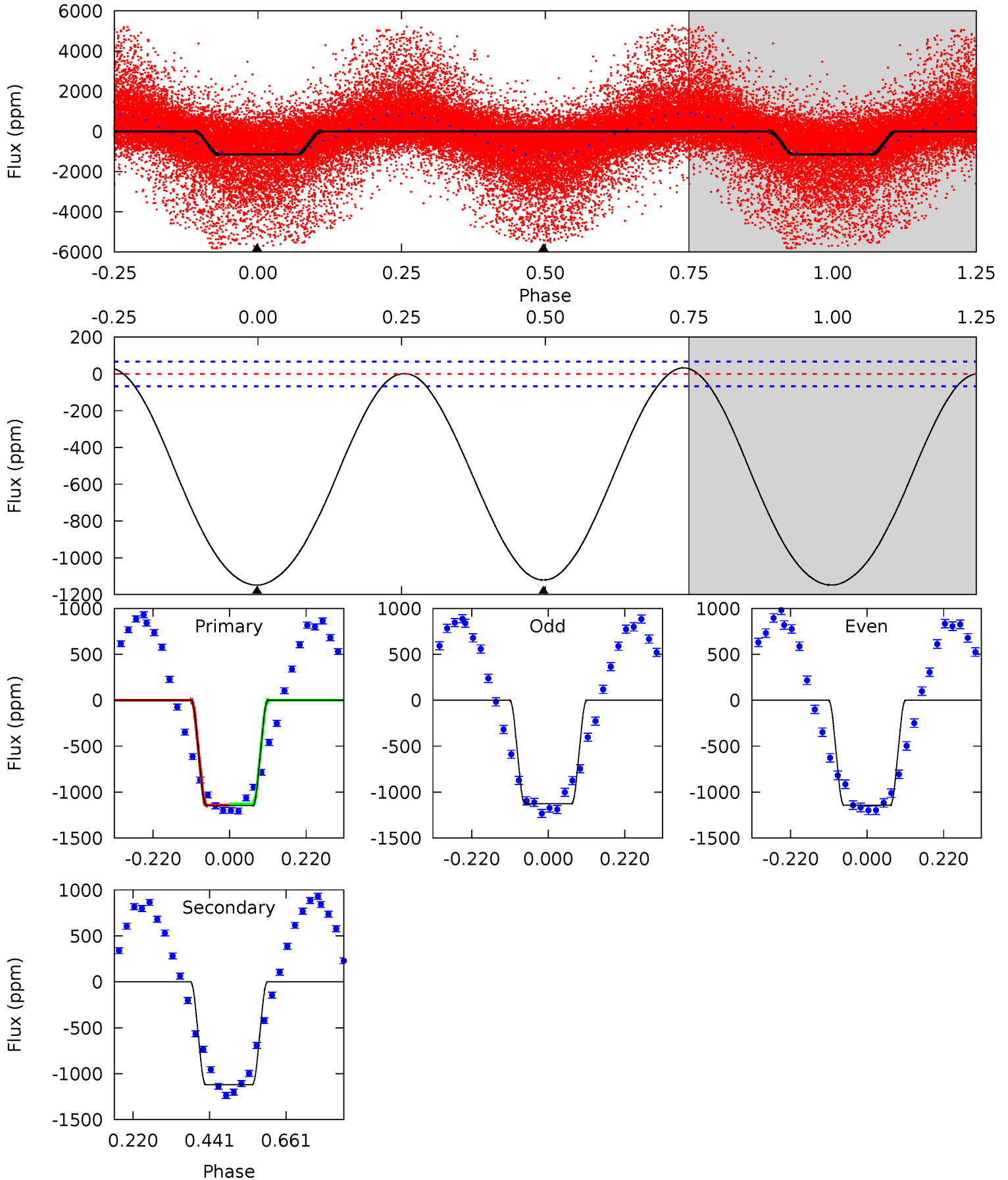
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.05	-0.43	0	0	4.23	0.73	0.68	9.05	9.05	-0.43	-0.43	0.34	1.72	0.20	7.88



# Alt Model-Shift Uniqueness Test

007620660-02, P = 0.683722 Days, E = 131.602328 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
75.3	73.5	0	0	4.40	1.23	1.46	75.3	75.3	73.5	73.5	0.48	2.51	0.03	0.48



### Stellar Parameters For KIC 007620660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5858^{+174}_{-209}$	$4.553^{+0.036}_{-0.192}$	$-0.260^{+0.300}_{-0.300}$	$0.849^{+0.251}_{-0.084}$	$0.940^{+0.099}_{-0.121}$	$2.167^{+0.425}_{-1.108}$
	+3%/-4%	+1%/-4%	+115%/-115%	+30%/-10%	+11%/-13%	+20%/-51%
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 007620660-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$2\pm5$	$0.94^{+0.91}_{-0.62}$	$2799^{+190}_{-129}$	$-3163^{+5592}_{-1082}$	$-0.147^{+0.516}_{-2.216}$
Alt.	$-1121\pm15$	$2.59^{+1.17}_{-0.97}$	$2797^{+182}_{-144}$	$6517^{+2007}_{-1051}$	$20^{+31}_{-10}$

$T_{max}$  = 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

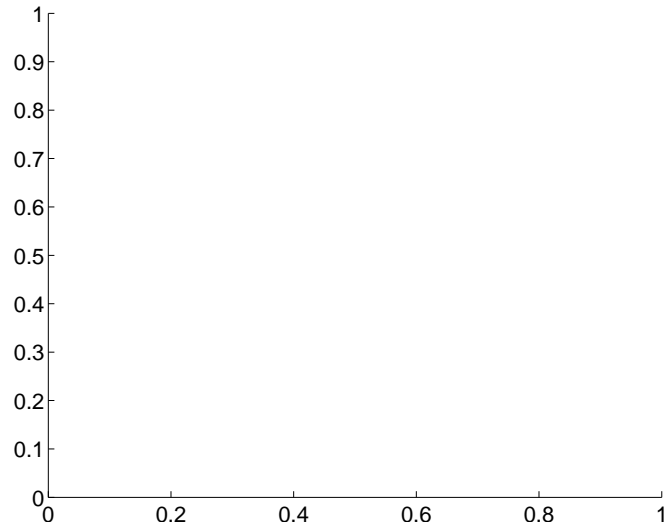
Supplemental centroid analysis for 007620660-02. Kepler magnitude: 15.48. Transit SNR 4.23

There are 0 quarters with good PRF difference image offsets

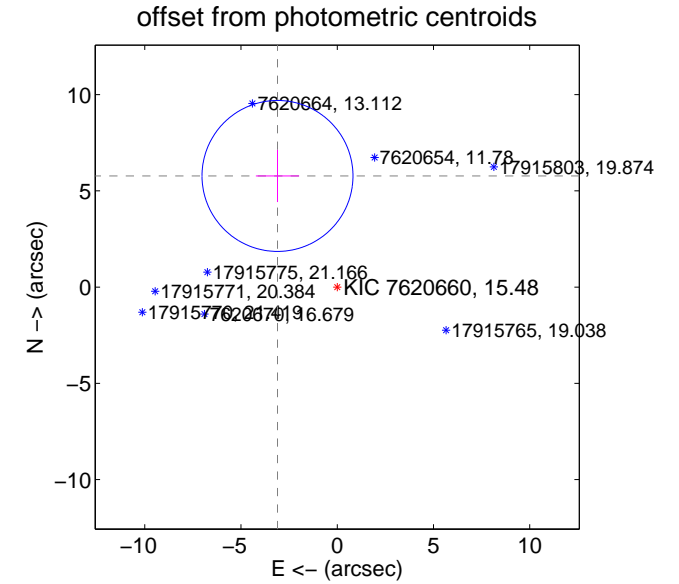
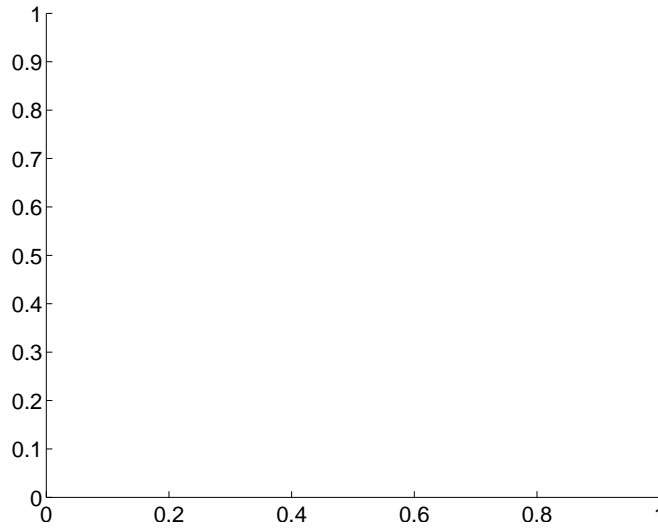
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$6.56 \pm 1.31$	5.02	$3.10 \pm 1.13$	$5.78 \pm 1.36$

There is no PRF-fit offset from OOT-fit



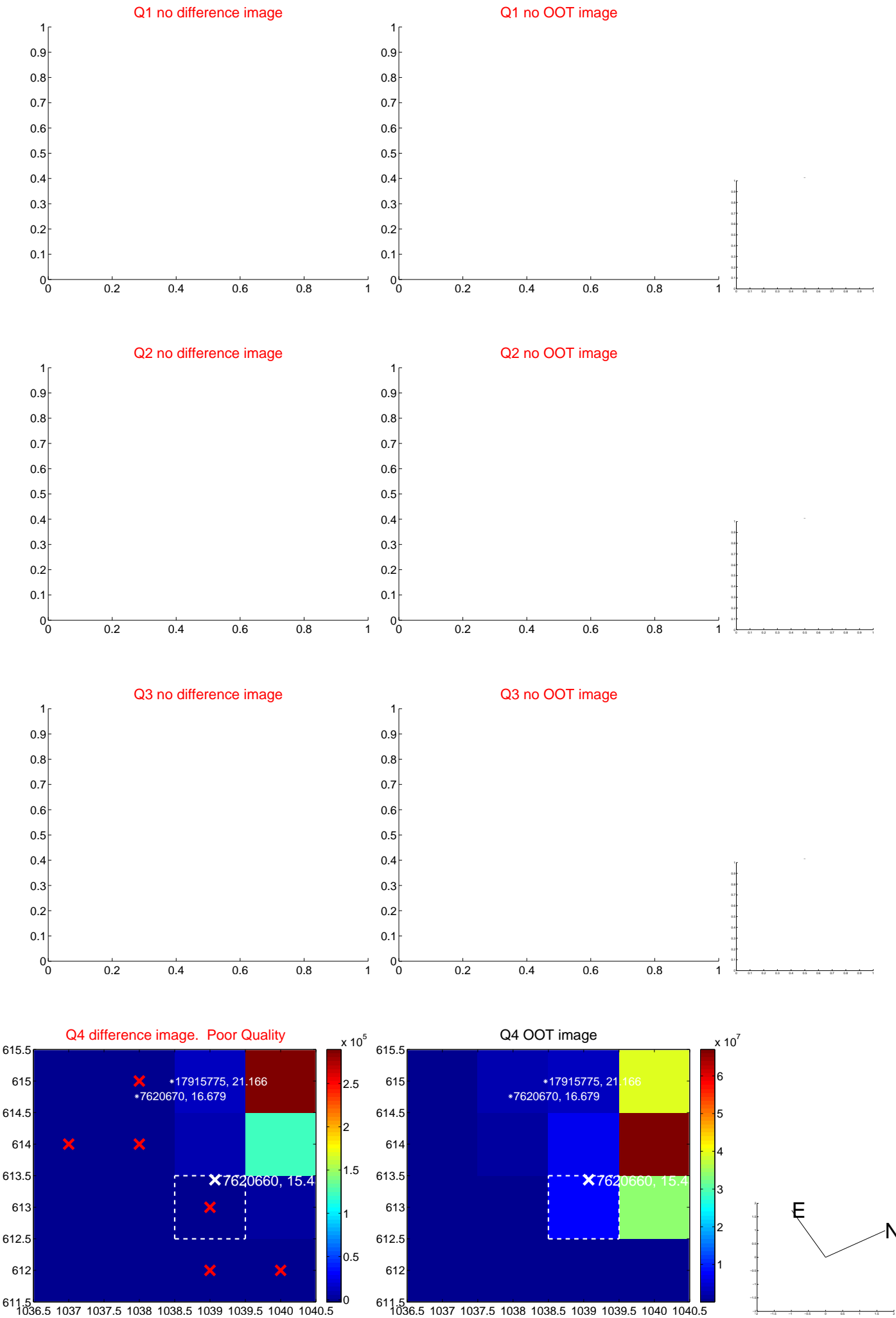
There is no PRF-fit offset from KIC



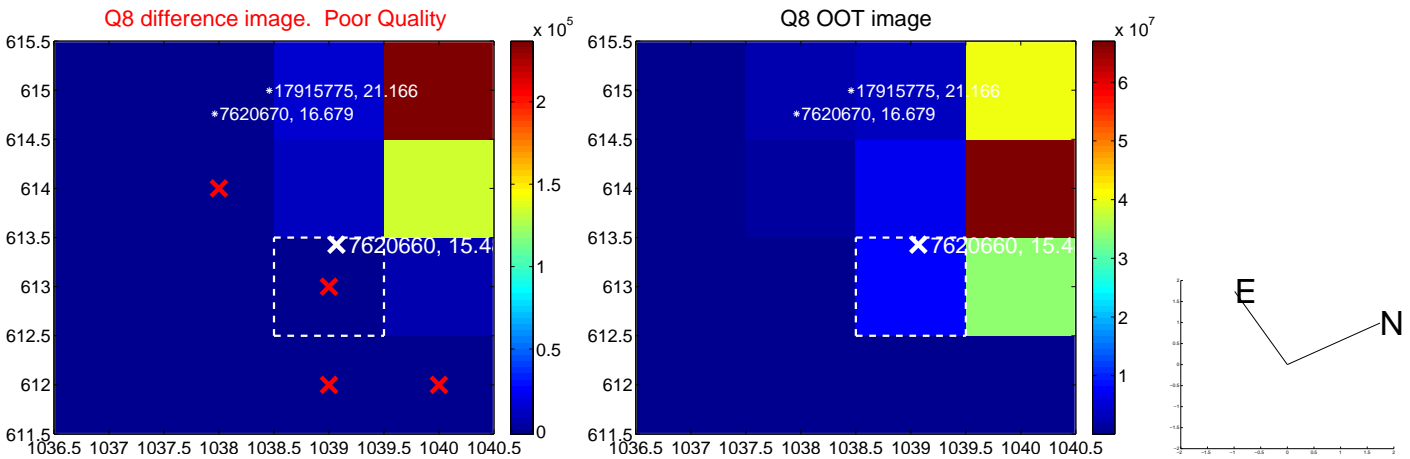
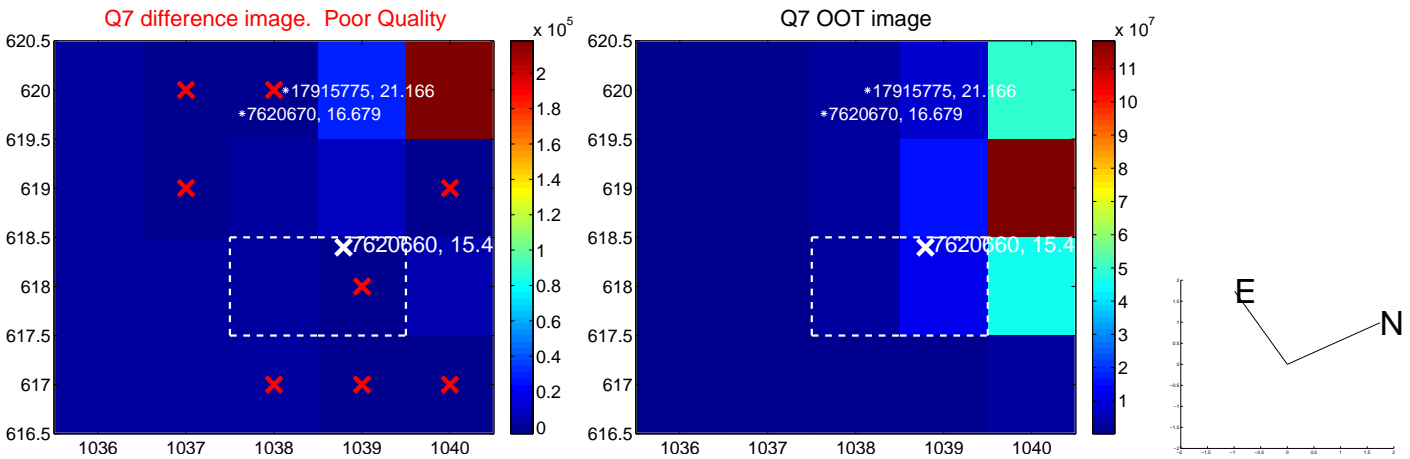
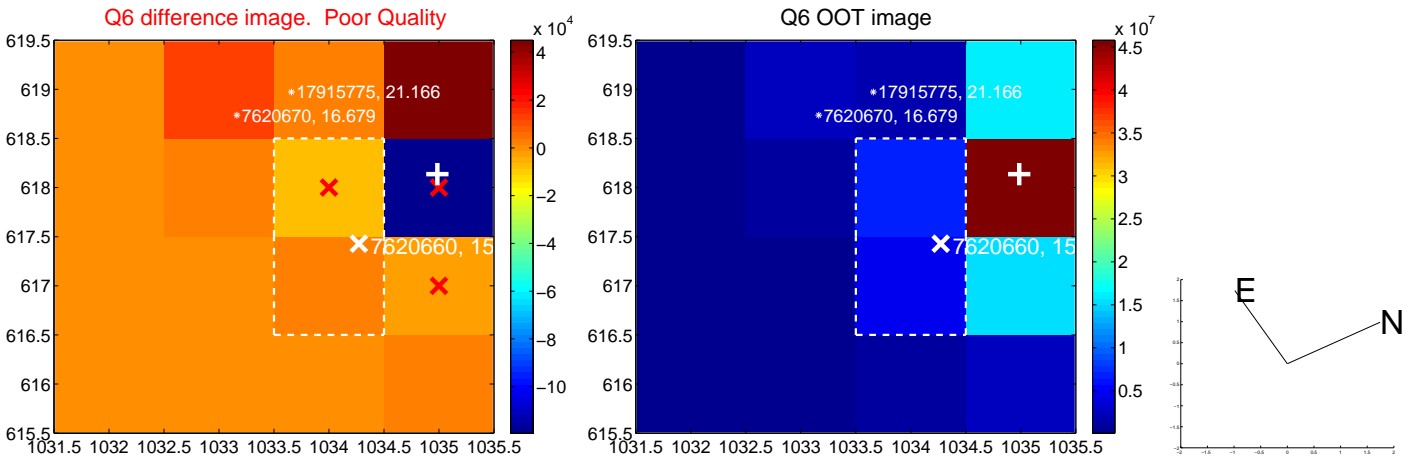
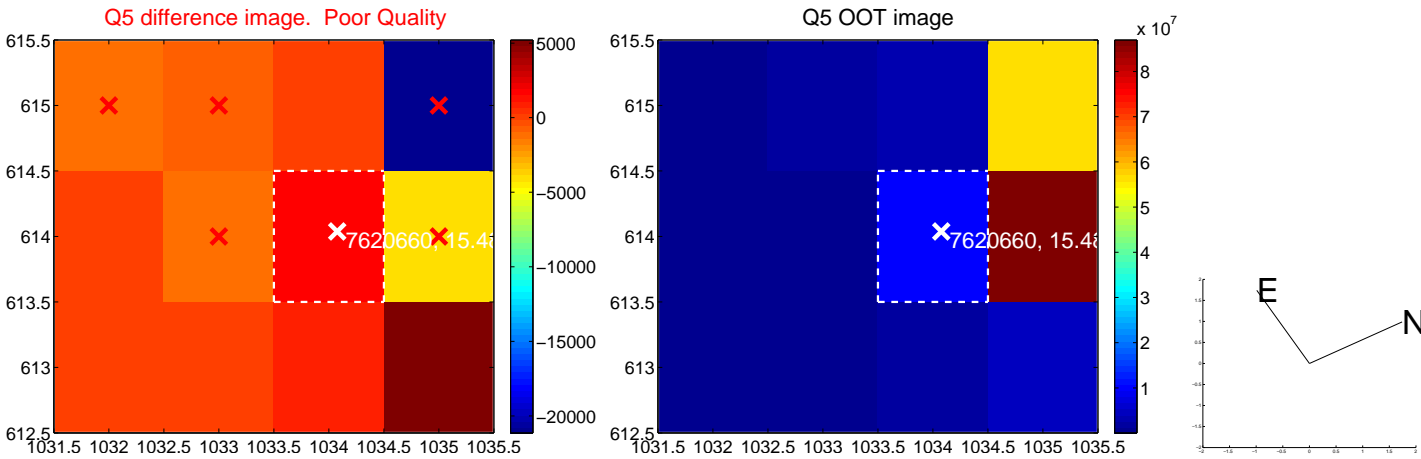
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



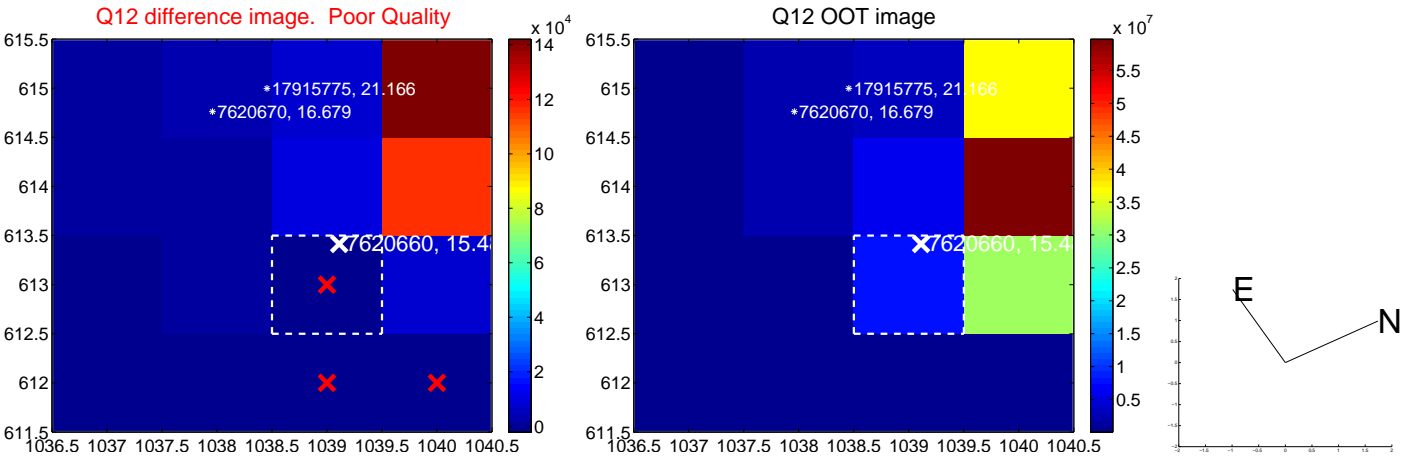
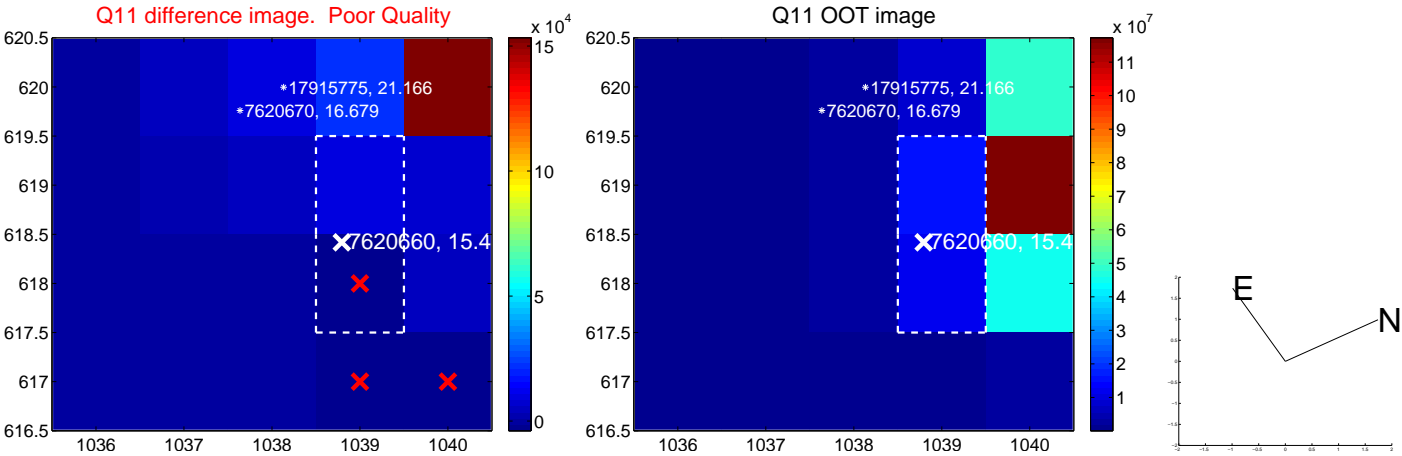
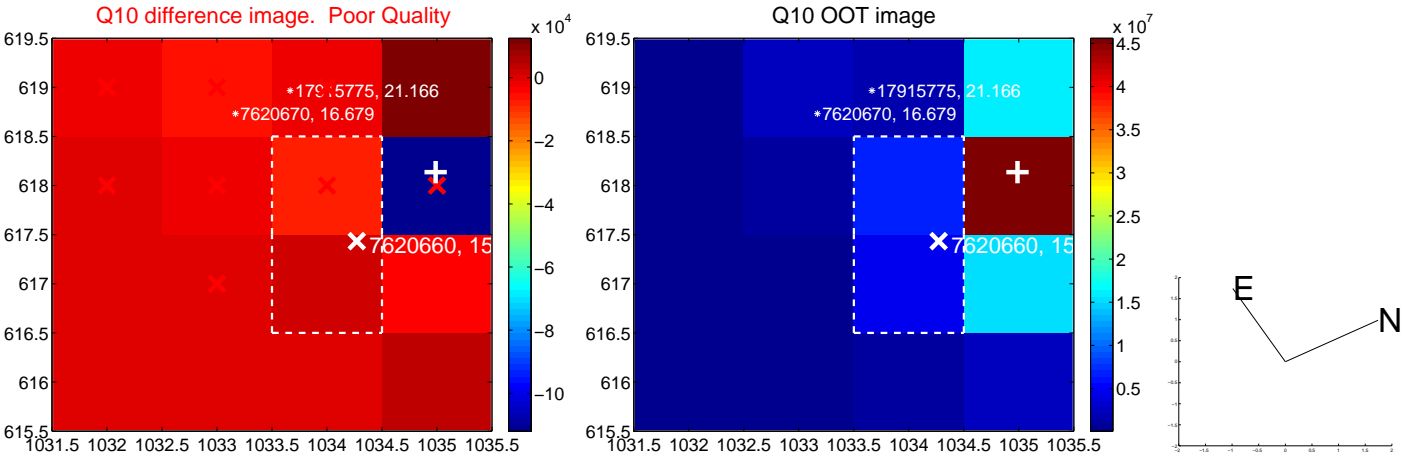
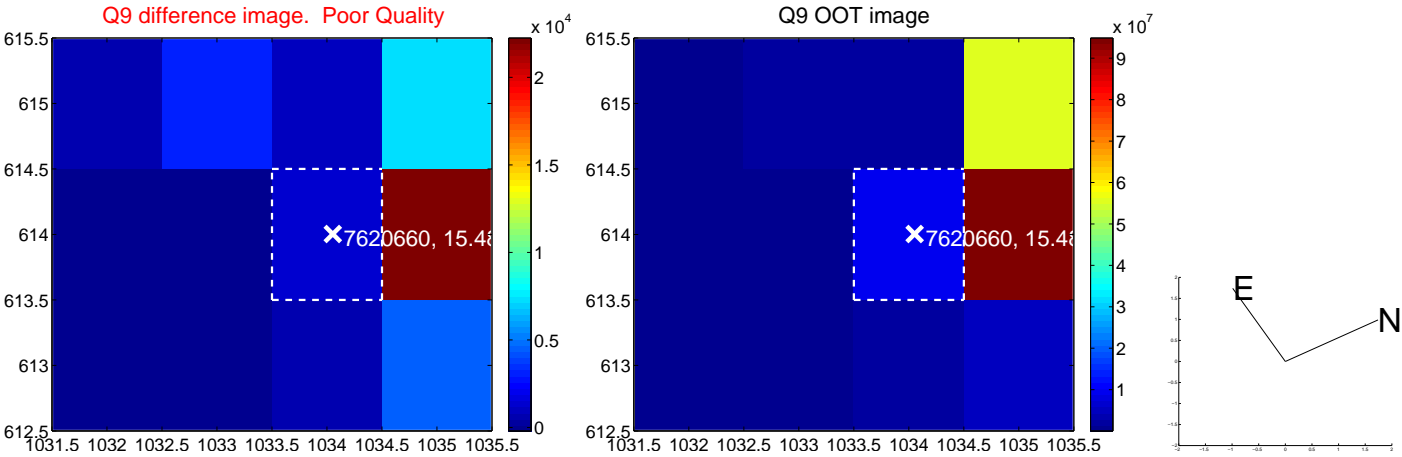
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



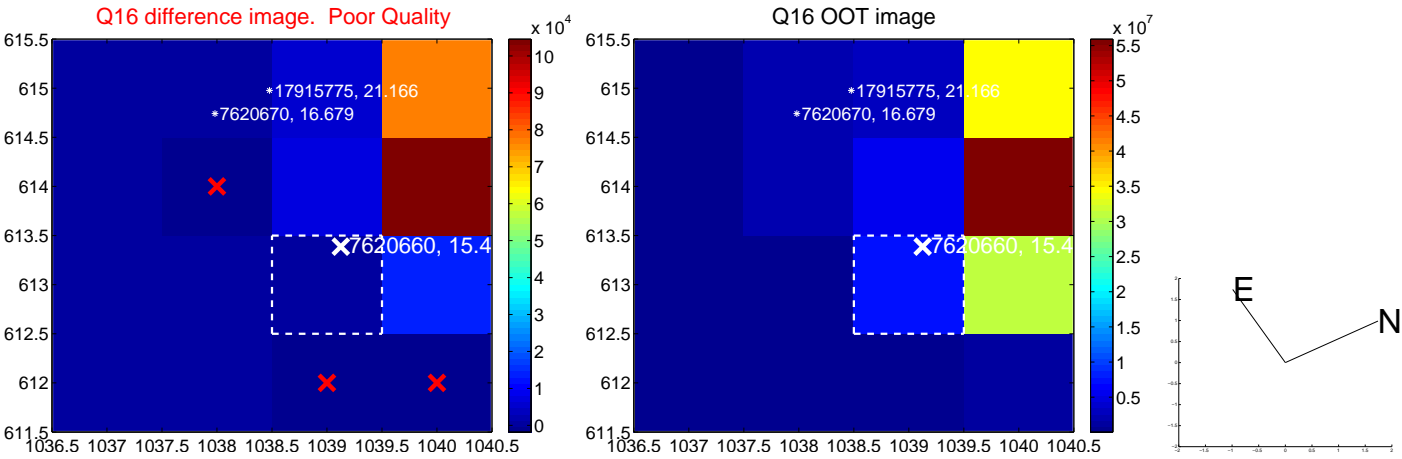
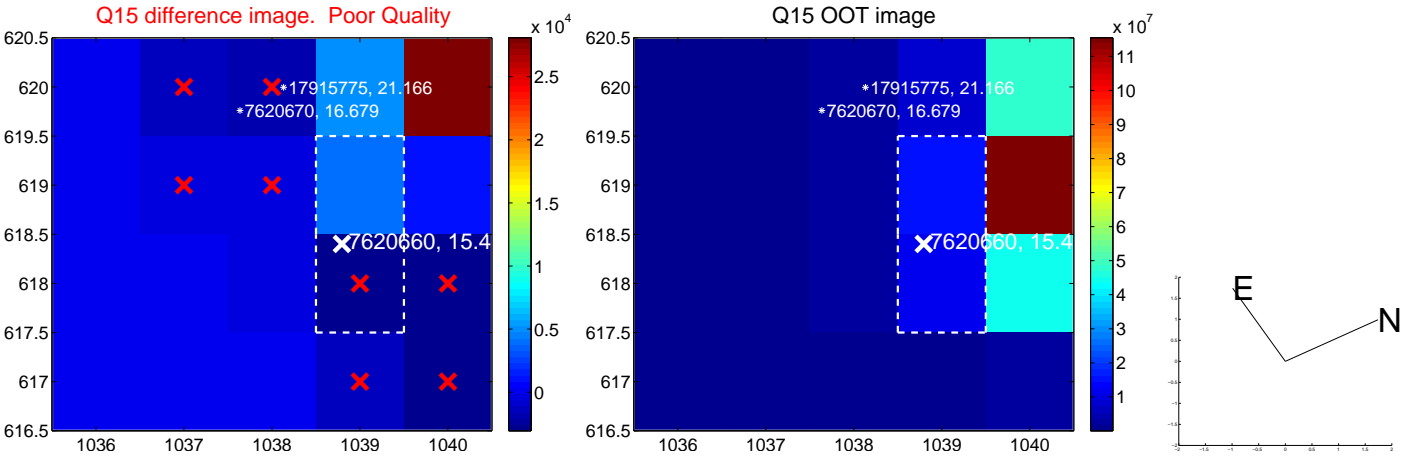
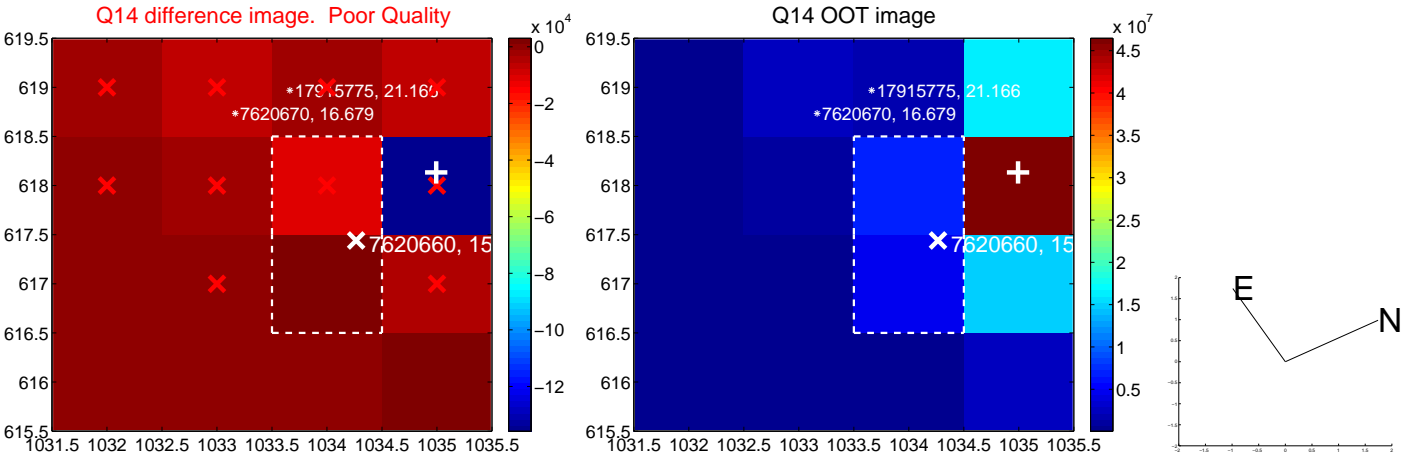
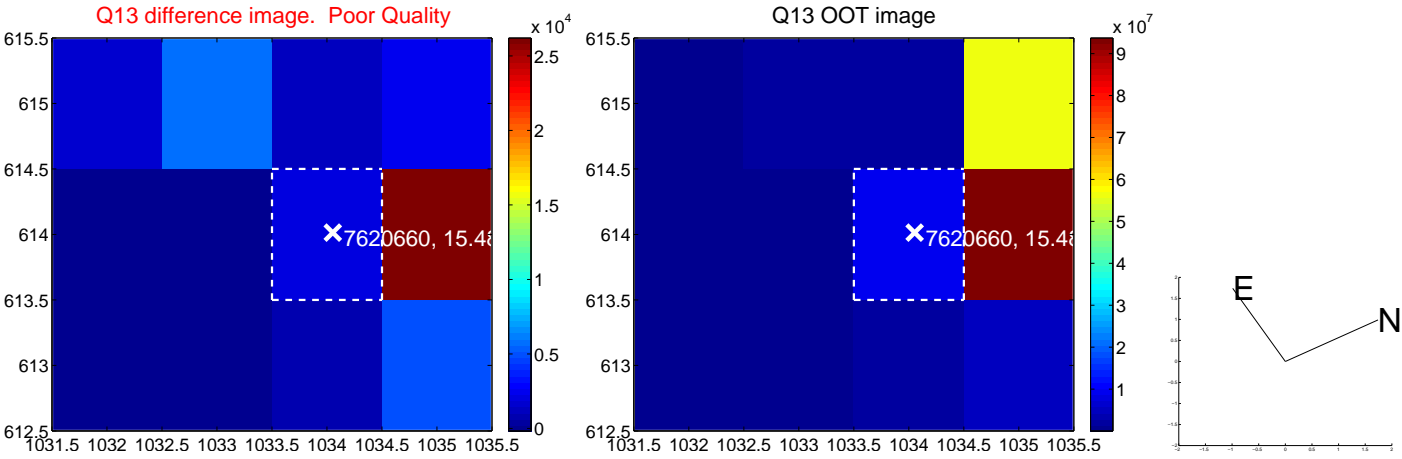
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



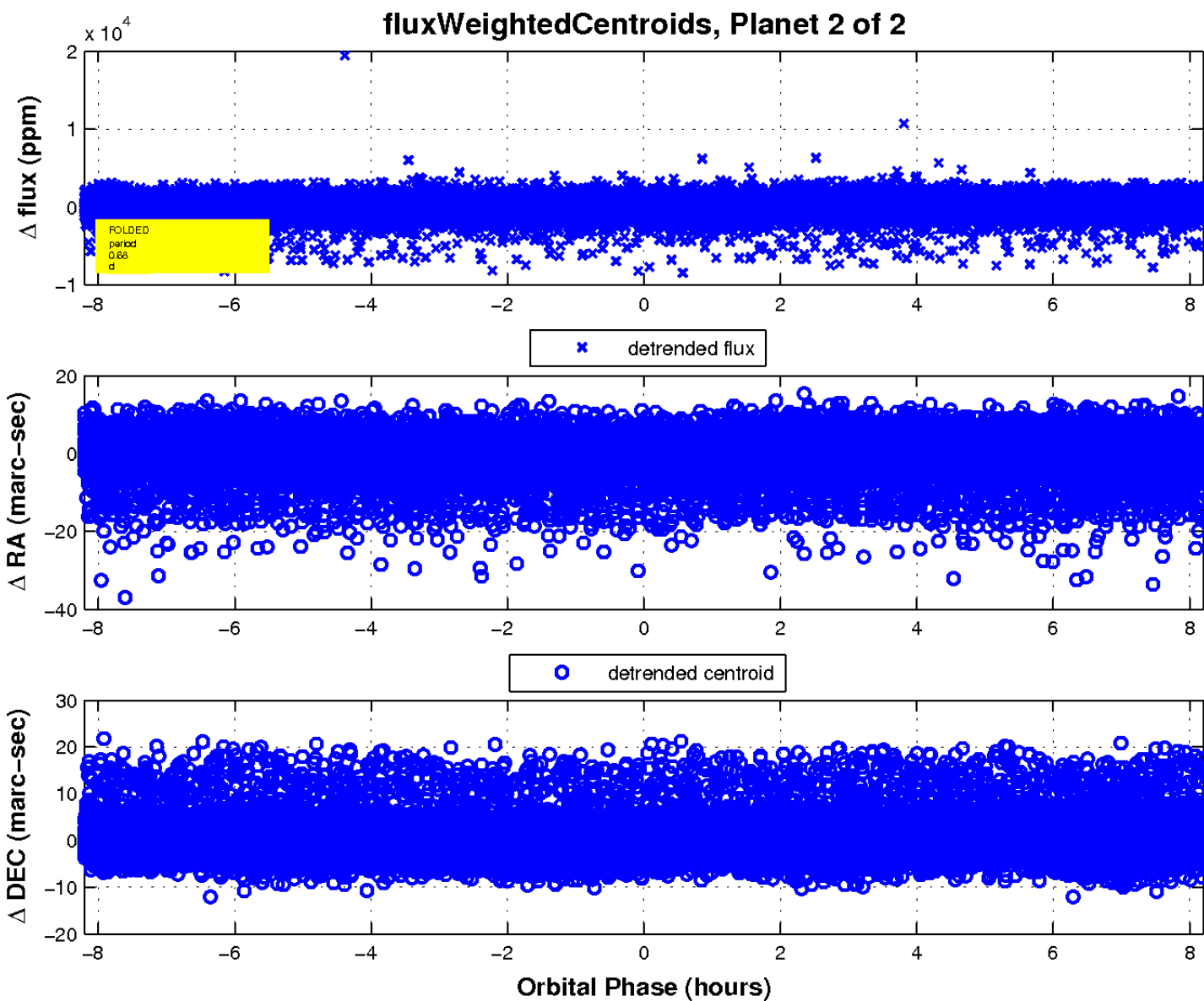
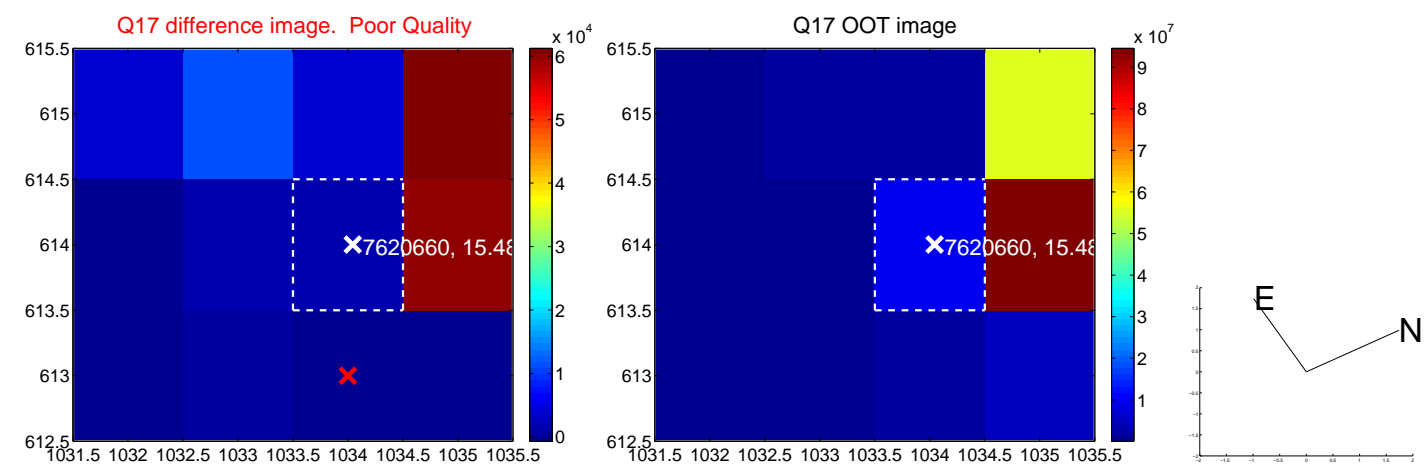
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

