

## KIC 007117444

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007117444-01	OBS	No	0.566779	131.850424	9.7	4.016	7.9	7.1	0.89	6089	0.28	5526.64
007117444-02	OBS	No	28.683667	158.533256	409.8	2.113	15.3	9.9	0.89	6089	1.81	29.52
007117444-04	OBS	No	24.620543	151.203318	365.0	1.357	12.4	8.0	0.89	6089	1.91	36.19
007117444-06	OBS	No	31.725644	159.932876	542.1	2.500	10.8	-1.0	0.89	6089	2.08	25.81
007117444-07	OBS	No	37.863077	148.204384	590.4	2.174	12.0	12.3	0.89	6089	3.74	20.39
007117444-08	OBS	No	25.017406	142.026280	590.0	0.948	11.5	11.2	0.89	6089	2.65	35.43
007117444-09	OBS	No	16.445934	141.504848	375.6	1.583	9.7	8.9	0.89	6089	2.05	61.98
007117444-10	OBS	No	8.496060	134.146611	514.7	2.000	8.8	-1.0	0.89	6089	2.02	149.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007117444-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
007117444-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
007117444-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
007117444-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
007117444-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
007117444-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—CENT_FEW_DIFFS
007117444-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS
007117444-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

**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.

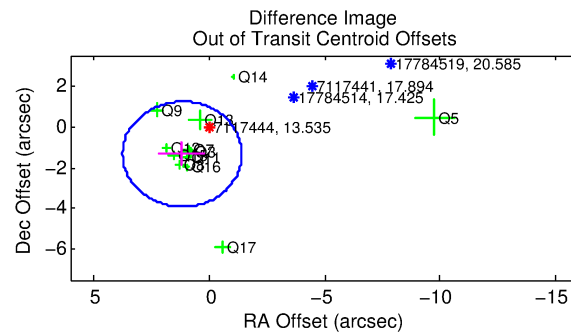
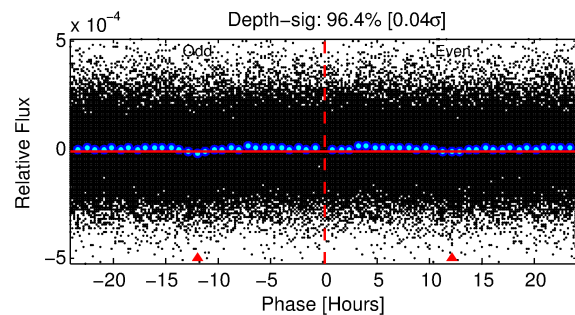
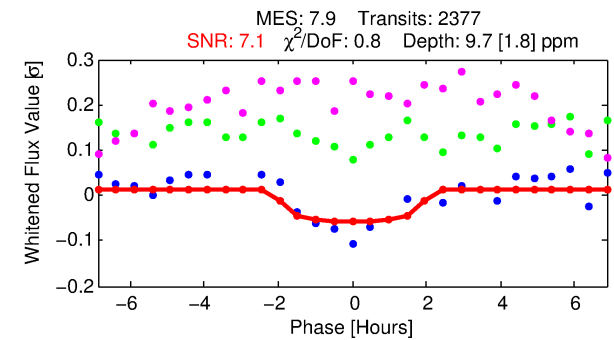
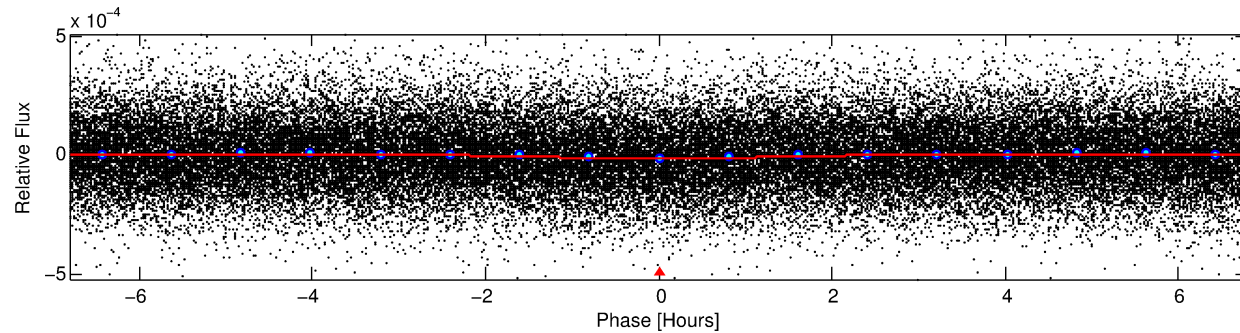
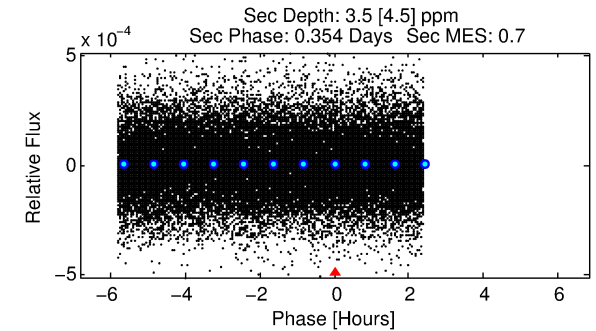
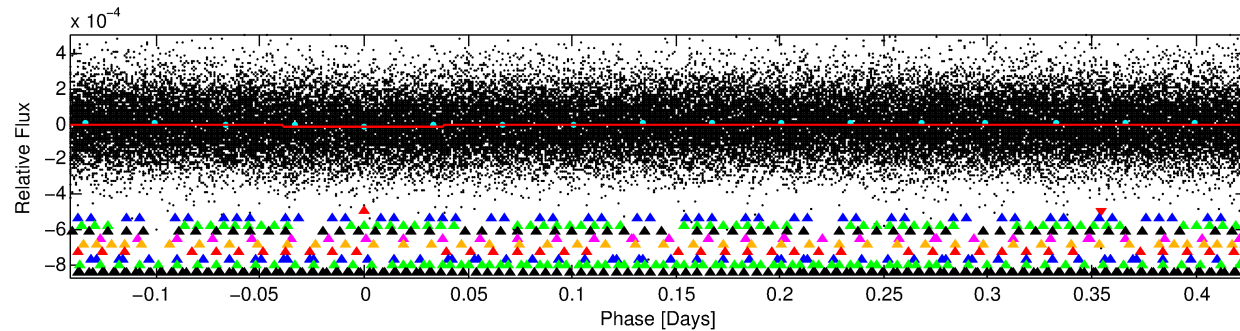
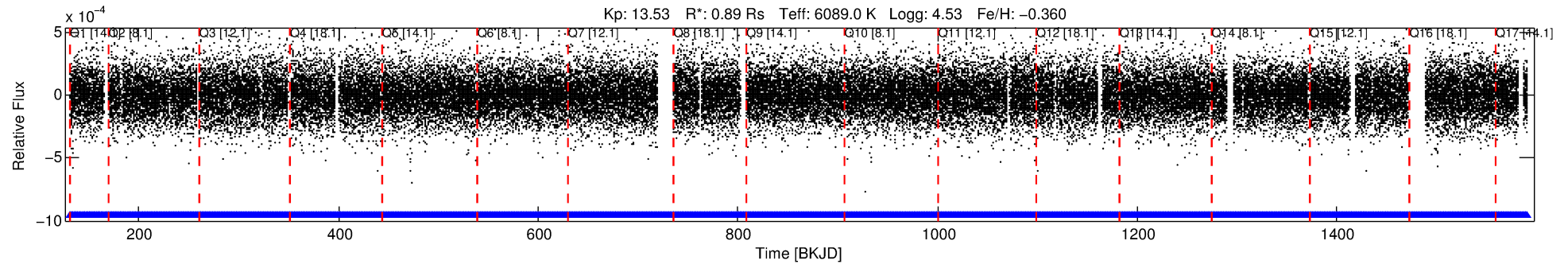
## Ephemeris Match Information For 007117444-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007117444-01	7117444	RR-Lyr-pri	7198959	1:1	961.1	208	123	7.86	13.53	62330.00	Direct-PRF	0	3.83	16.66

**Notes:** P<sub>1</sub>:P<sub>2</sub> 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<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> 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: 7117444 Candidate: 1 of 10 Period: 0.567 d



## DV Fit Results:

Period = 0.56678 [0.00001] d  
Epoch = 131.8504 [0.0057] BKJD  
Rp/R\* = 0.0029 [0.0028]  
a/R\* = 1.21 [1.82]  
b = 0.46 [8.49]  
Seff = 5526.64 [2148.42]  
Teff = 2199 [214] K  
Rp = 0.28 [0.28] Re  
a = 0.0133 [0.0033] AU  
Ag = 4.21 [9.82] [0.33σ]  
Teffp = 4870 [2806] K [0.95σ]

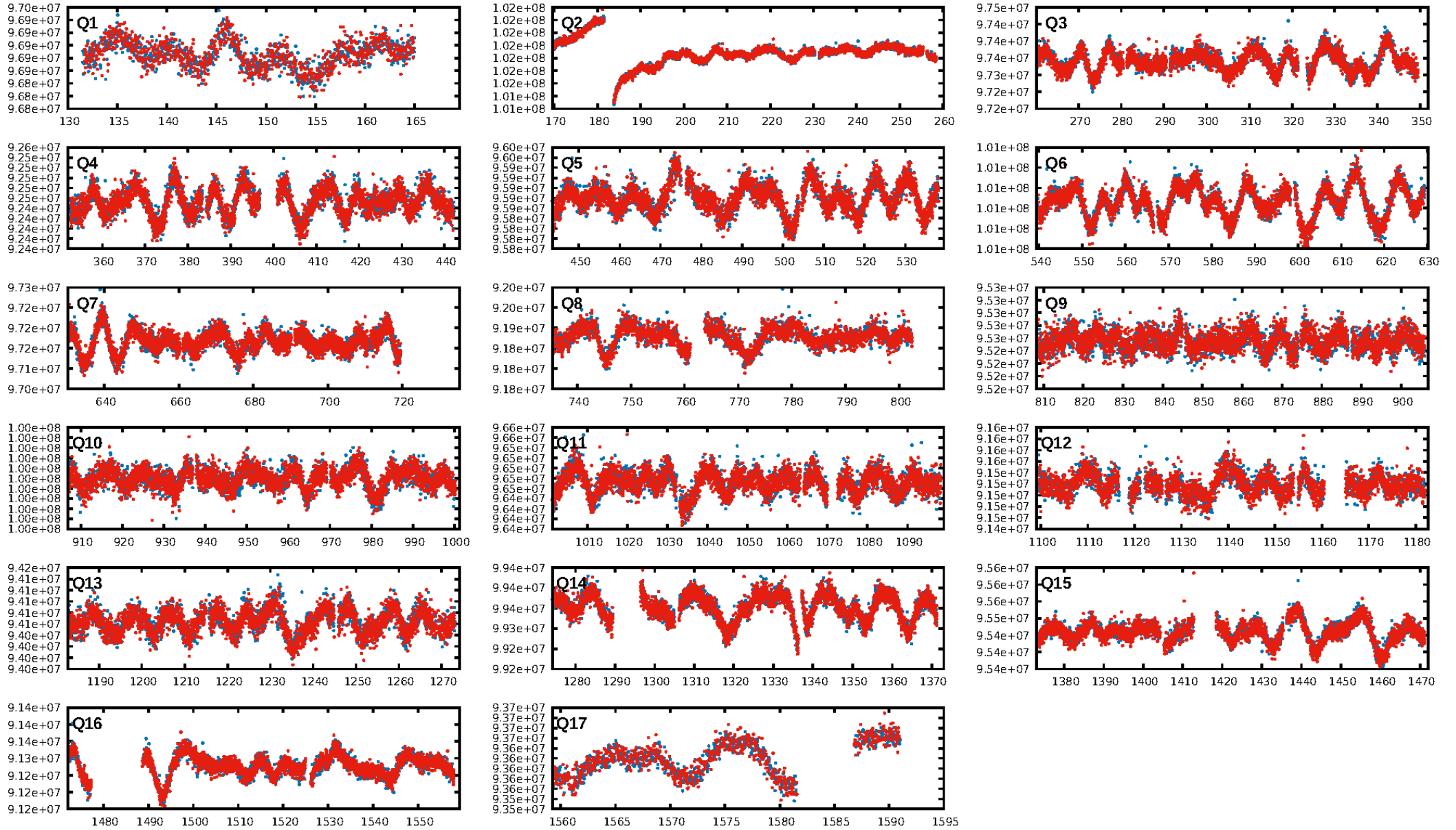
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [42.41σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2270/2270]  
GhostDiagnostic-chr: 0.1172  
Centroid-sig: 0.0%  
Centroid-so: 7.645 arcsec [4.80σ]  
OotOffset-rm: 1.775 arcsec [2.07σ]  
KicOffset-rm: 1.733 arcsec [2.20σ]  
OotOffset-st: 1/4/3/4 [12]  
KicOffset-st: 1/4/3/4 [12]  
DiffImageQuality-fgm: 0.42 [5/12]  
DiffImageOverlap-fno: 1.00 [17/17]

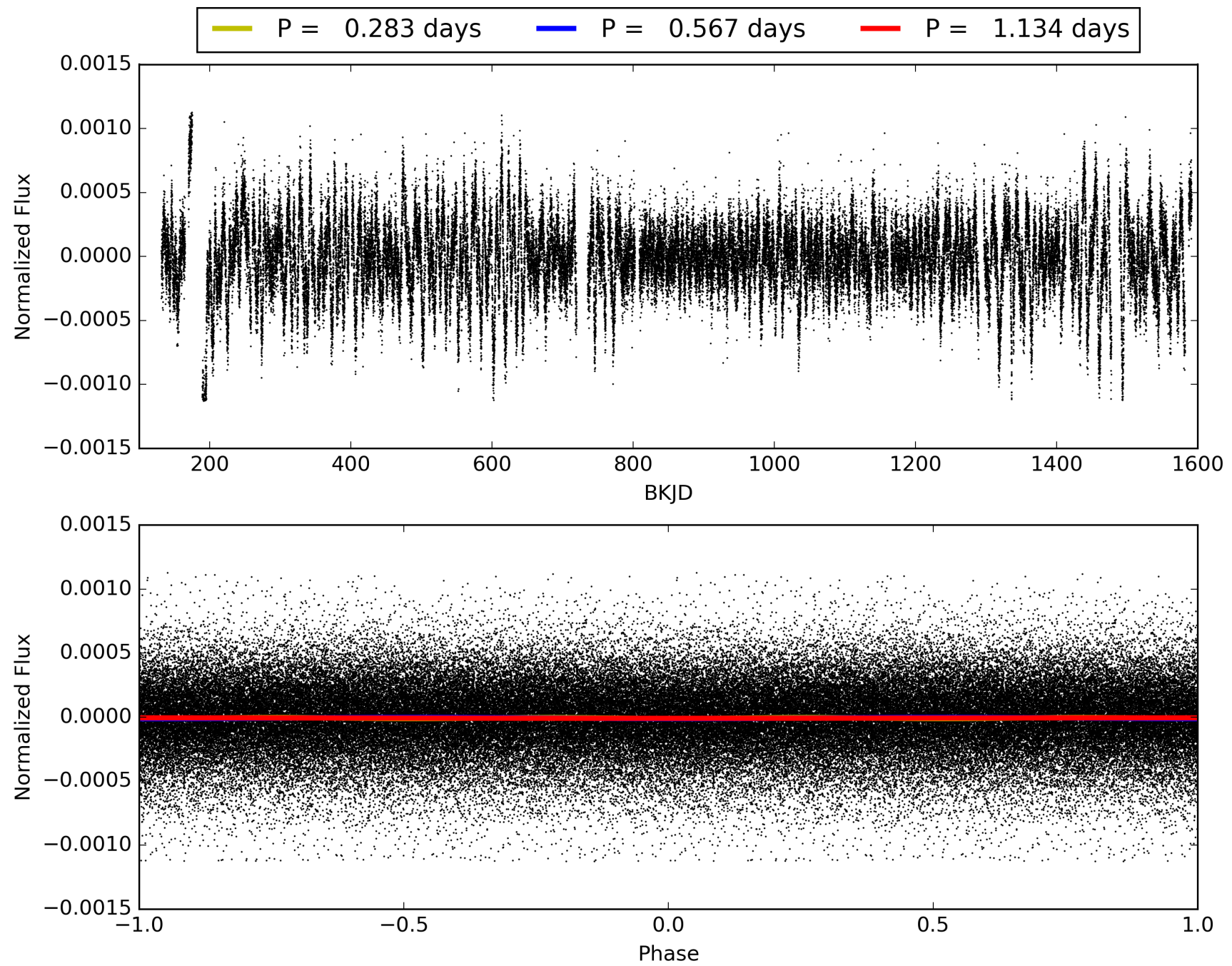
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:36:37 Z

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

# TCE 007117444-01, PDC Light Curves



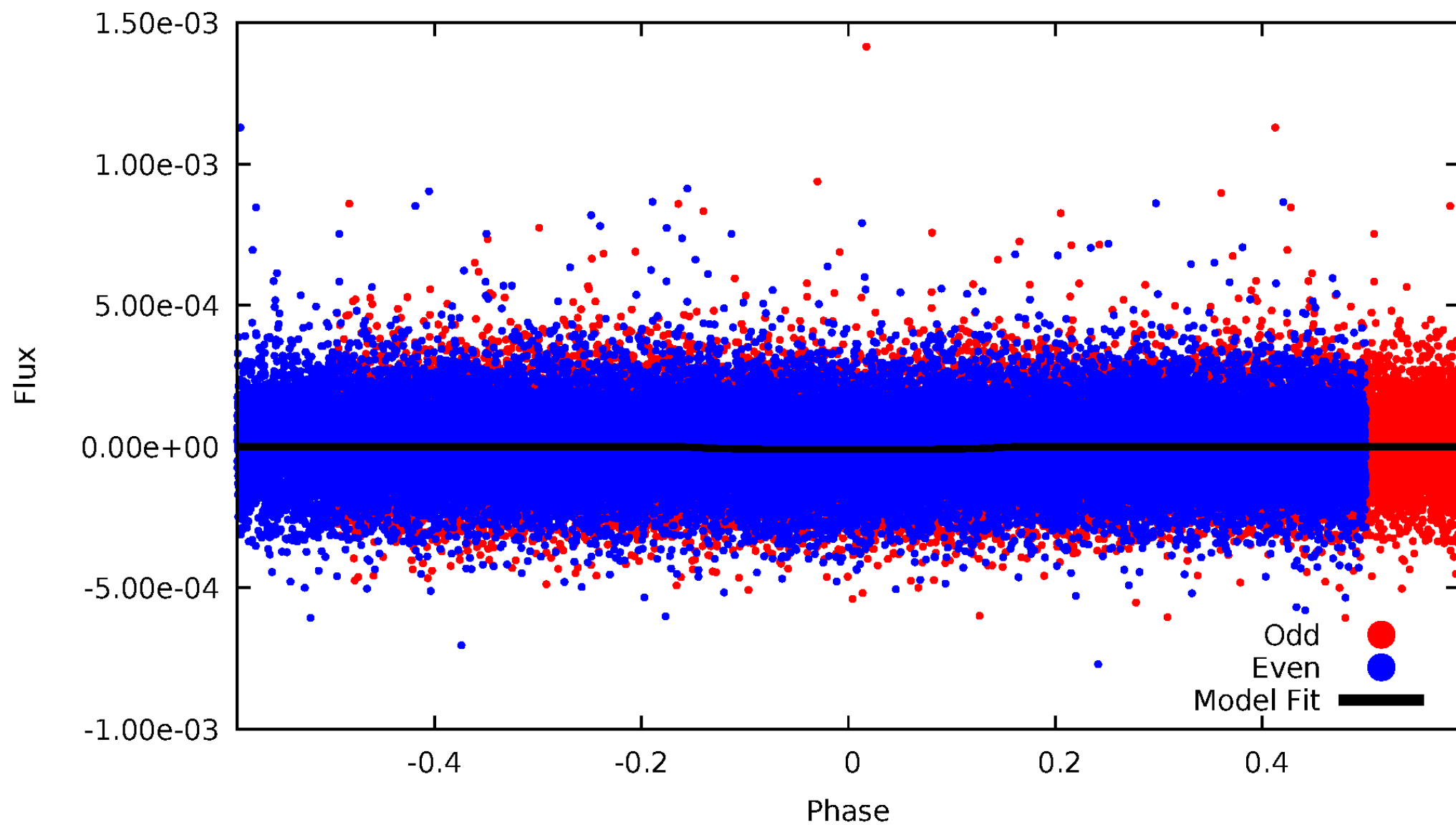
TCE 007117444-01





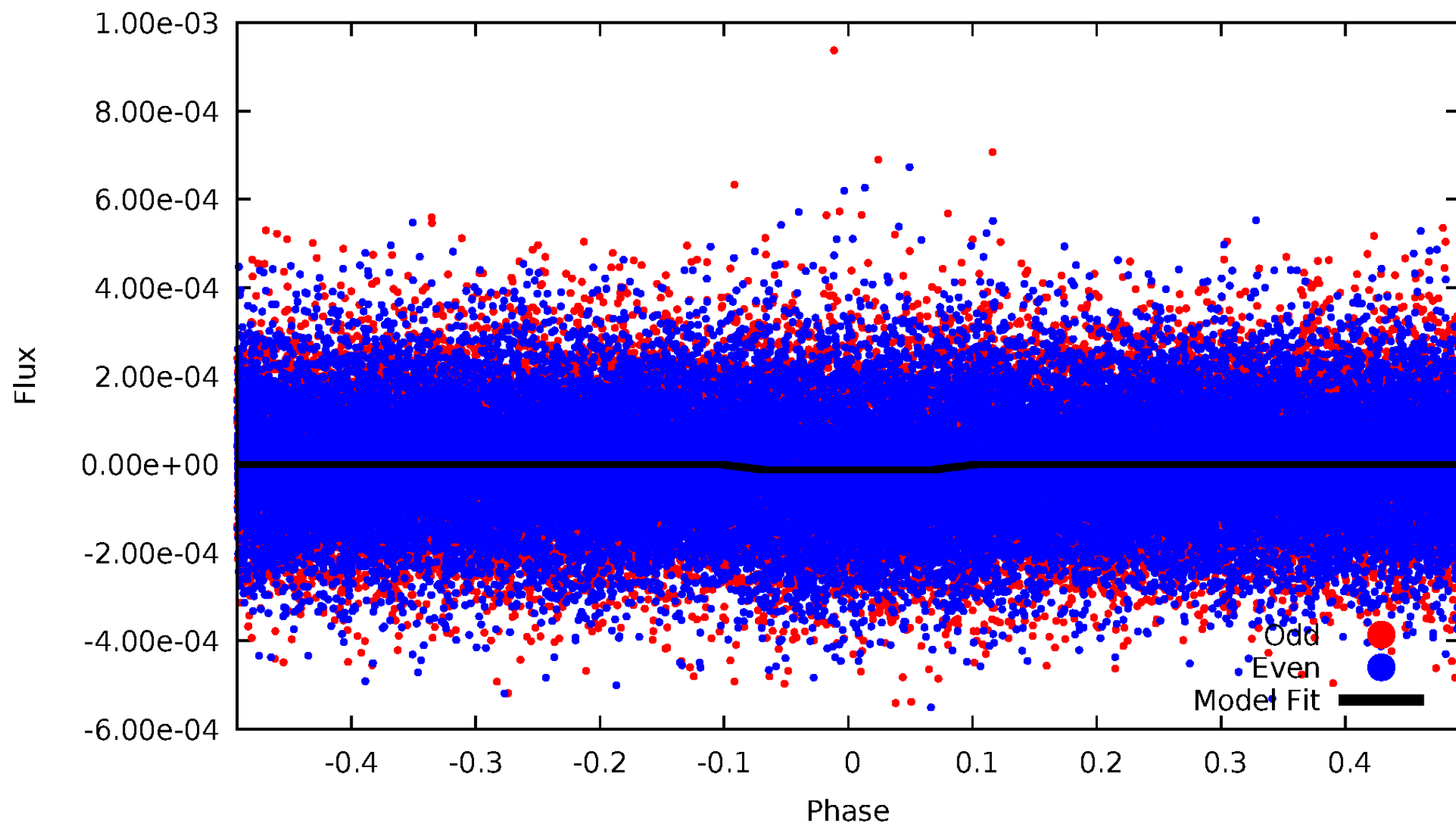
# DV Odd/Even

TCE 007117444-01



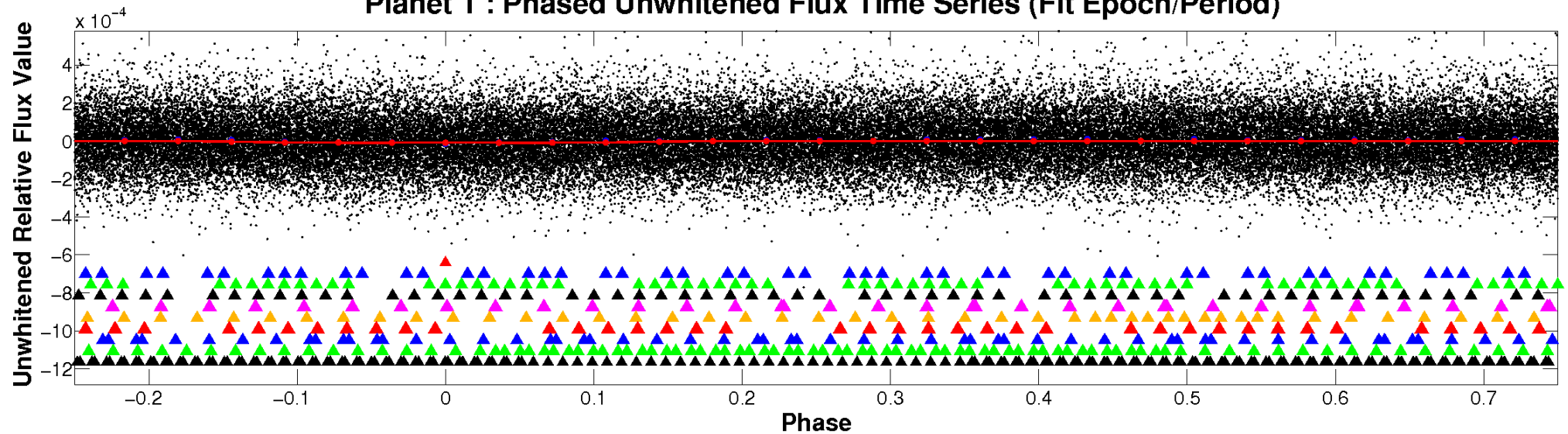
# ALT Odd/Even

TCE 007117444-01

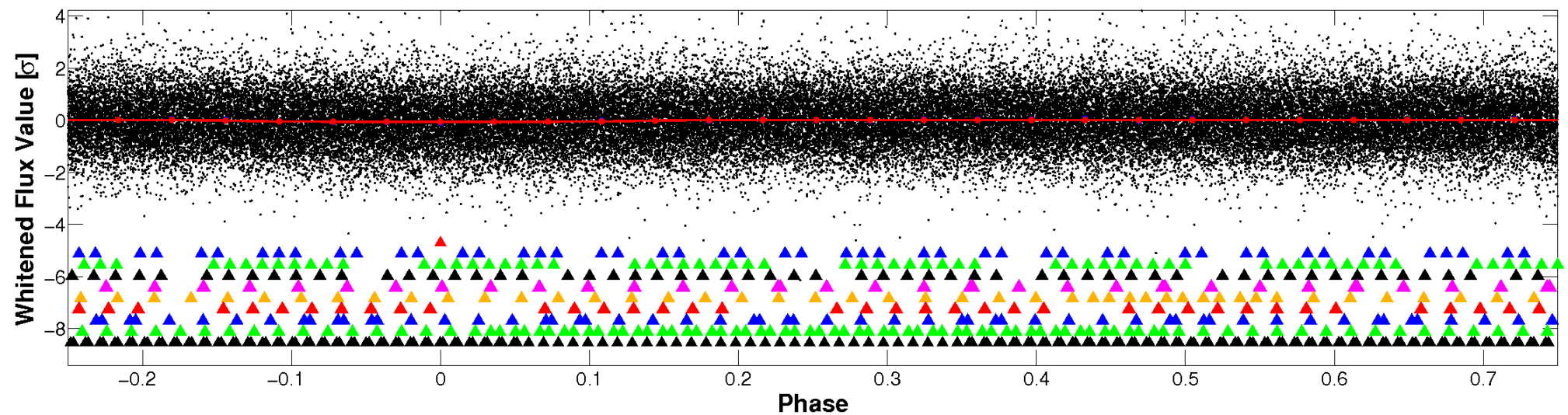


# Non-Whitened Vs. Whitened Light Curve

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

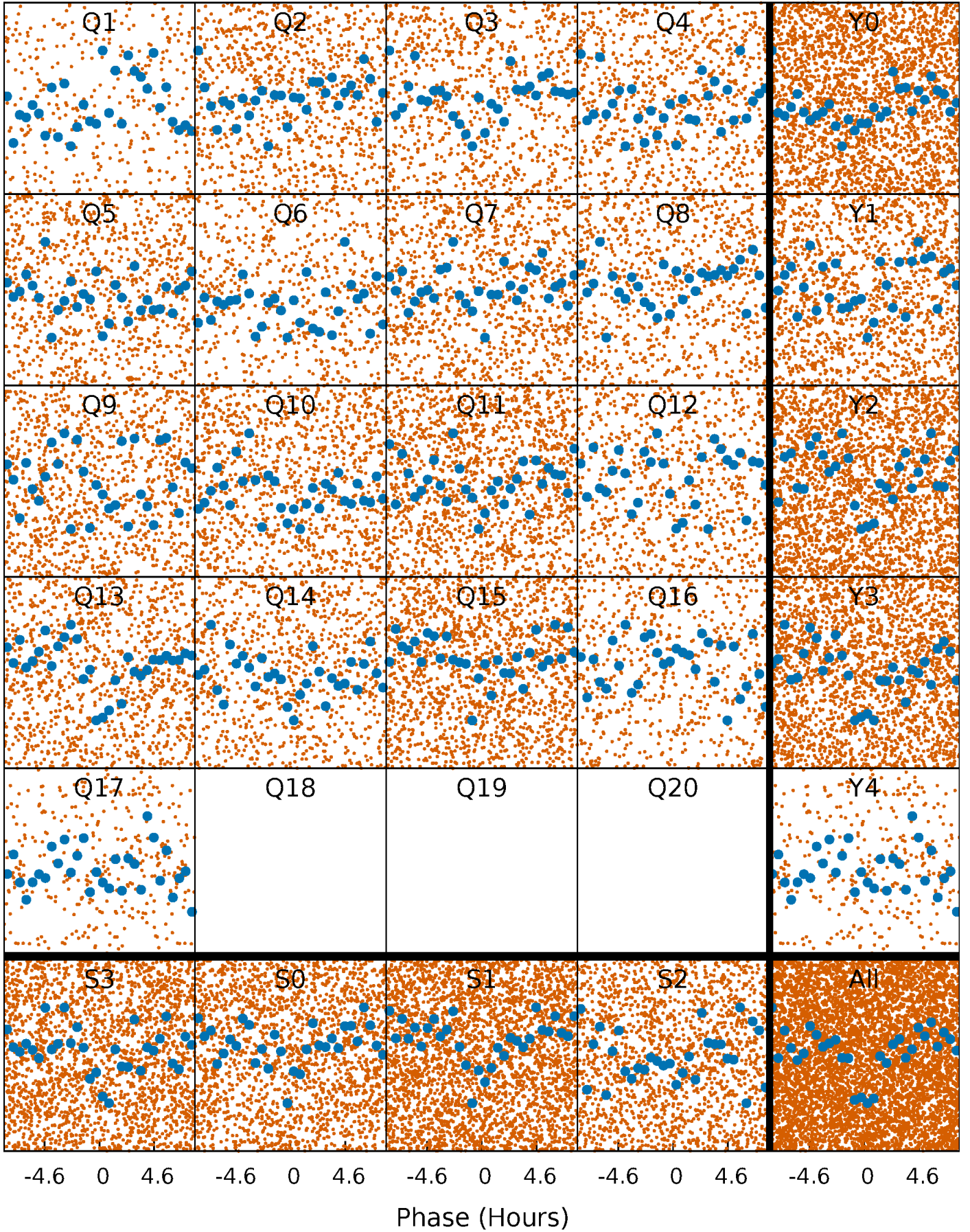


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

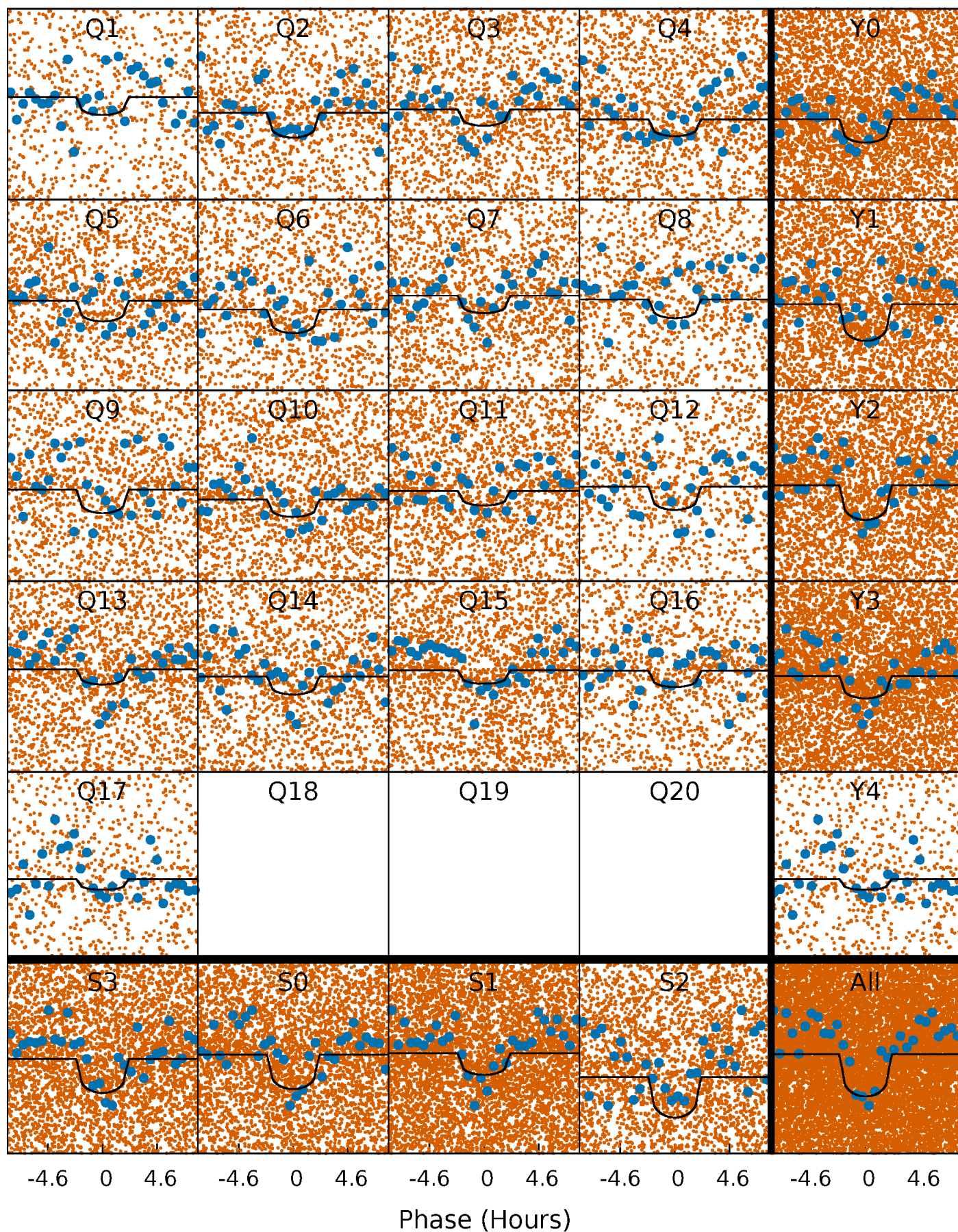
TCE 007117444-01 P= 0.566779 Days  $T_0=131.850424$  (BKJD)





# DV Quarter-Phased Transit Curves

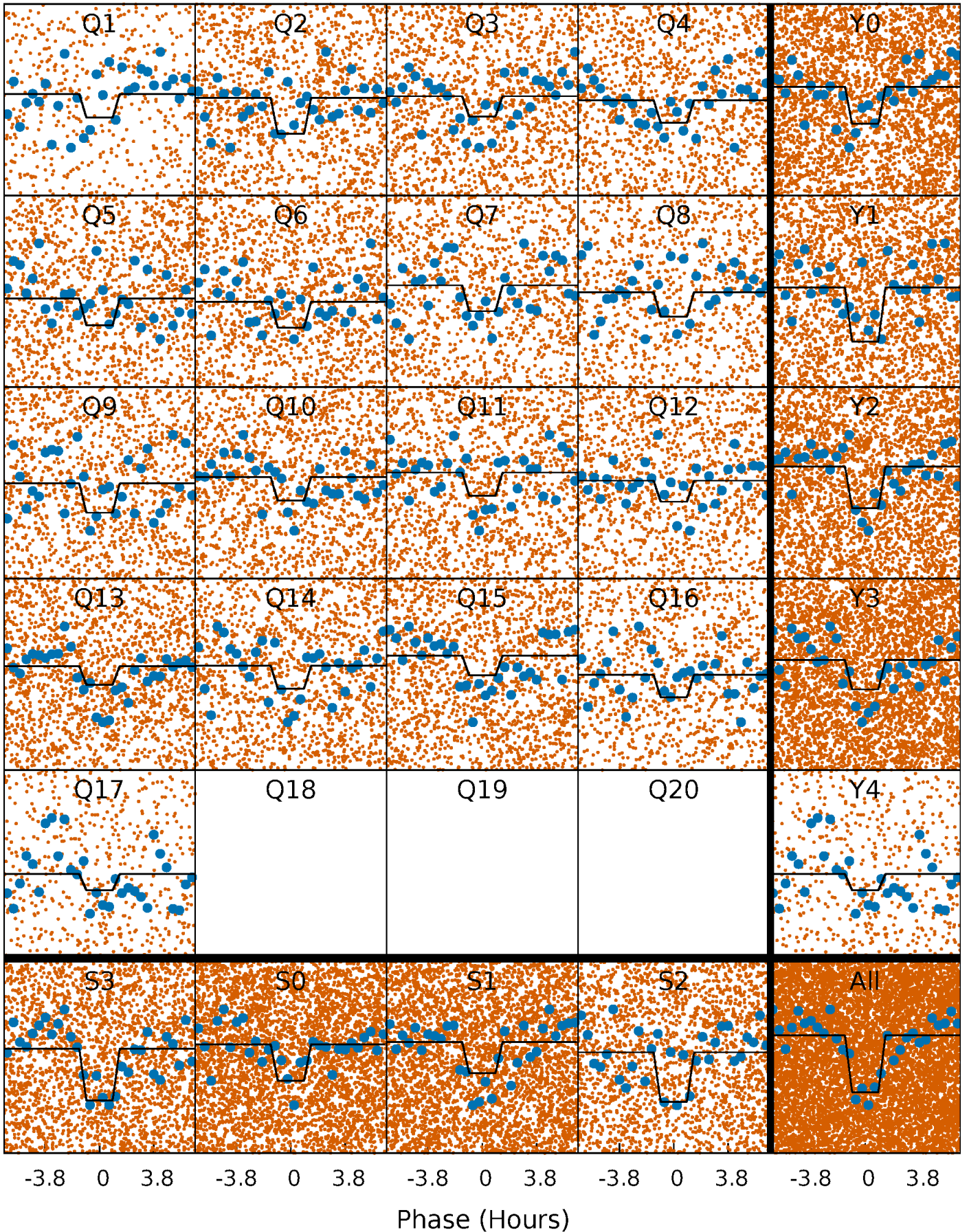
TCE 007117444-01 P= 0.566779 Days  $T_0=131.850424$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

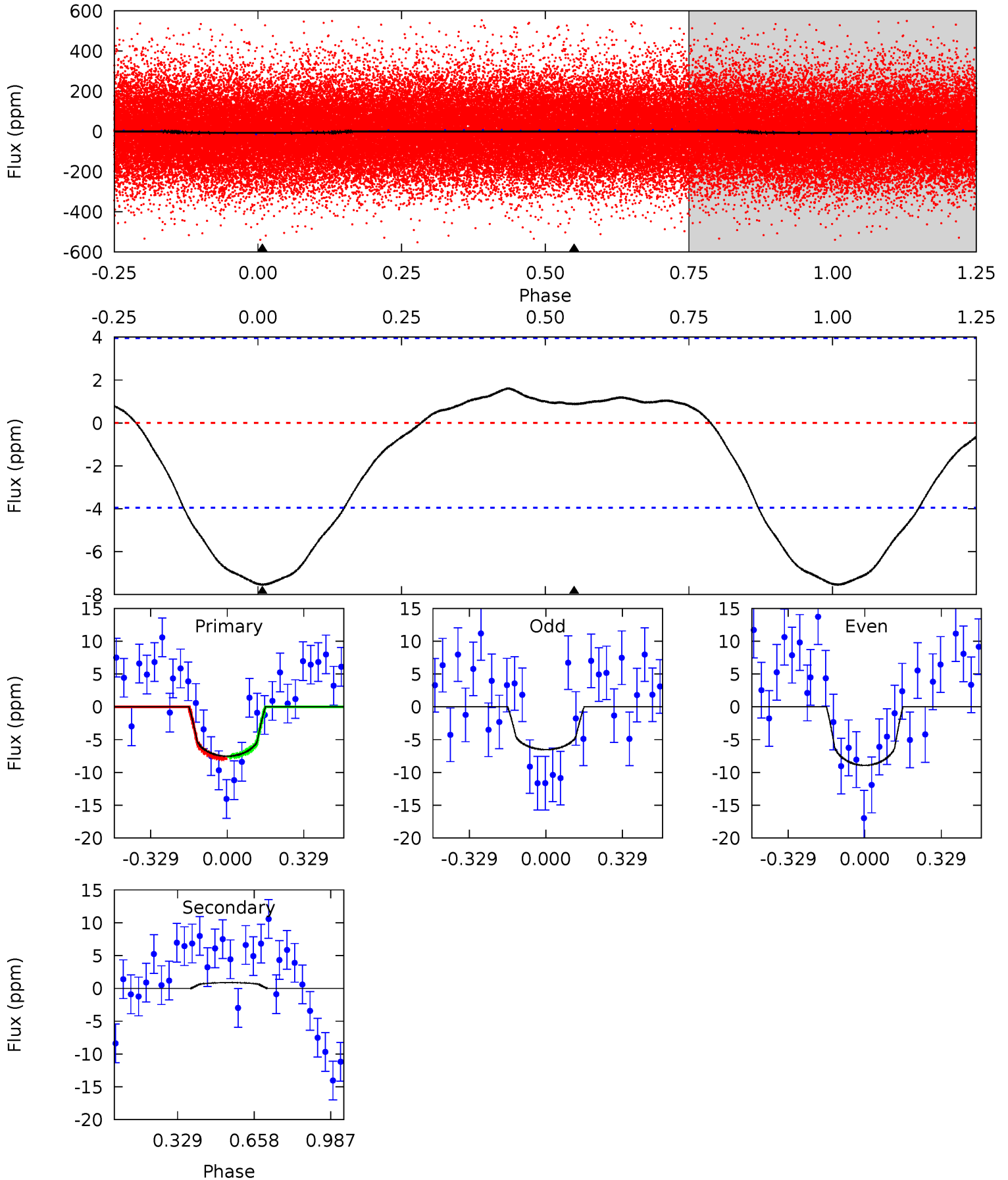
TCE 007117444-01 P= 0.566788 Days  $T_0=131.829174$  (BKJD)



# DV Model-Shift Uniqueness Test

007117444-01, P = 0.566779 Days, E = 131.283645 Days

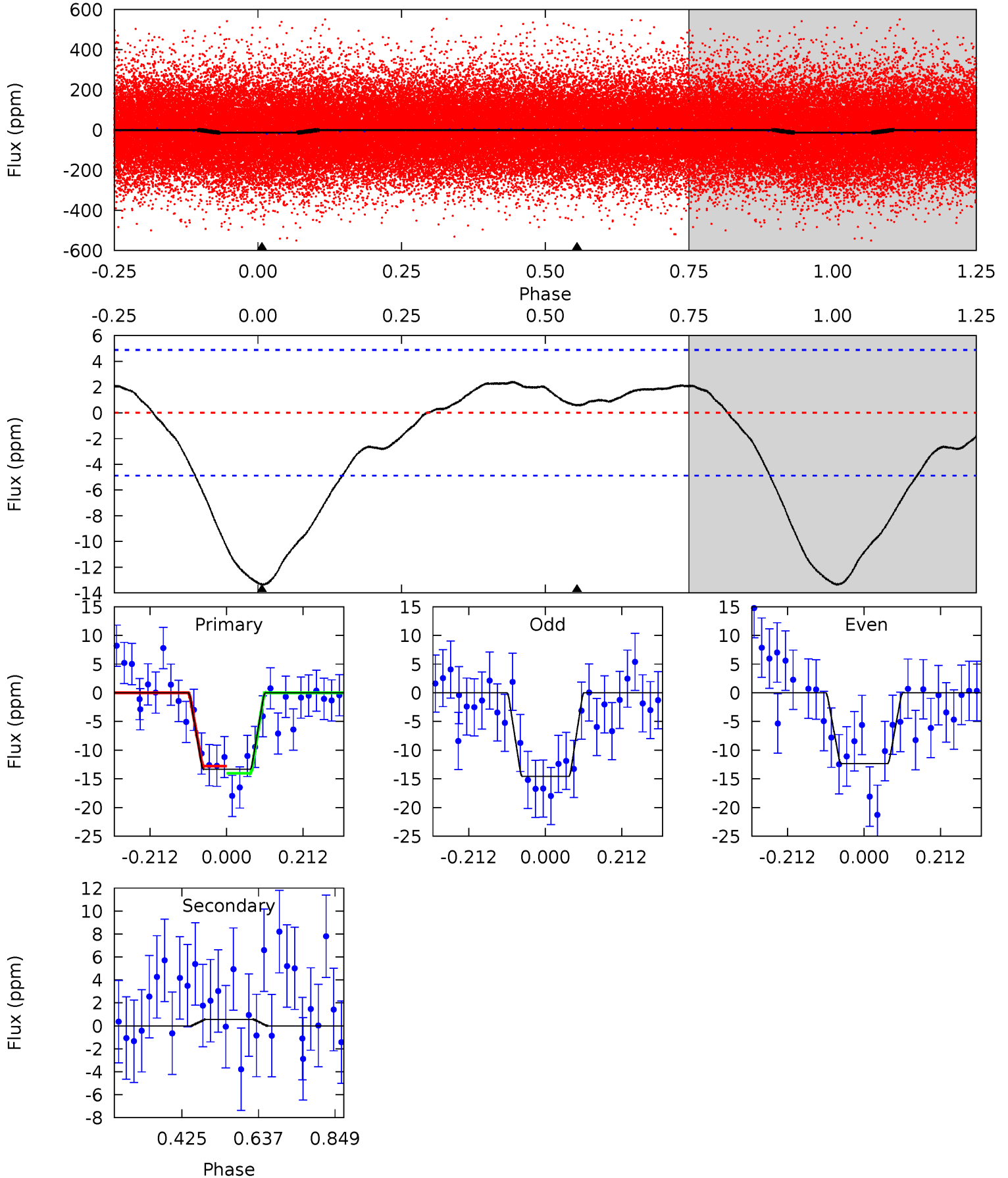
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.22	-0.95	0	0	4.31	0.98	0.55	8.22	8.22	-0.95	-0.95	1.32	1.02	0.18	0.15



# Alt Model-Shift Uniqueness Test

007117444-01, P = 0.566788 Days, E = 131.262386 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
12.0	-0.51	0	0	4.40	1.25	1.23	12.0	12.0	-0.51	-0.51	1.01	1.04	0.15	0.56





### Stellar Parameters For KIC 007117444

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6089^{+164}_{-183}$	$4.527^{+0.048}_{-0.204}$	$-0.360^{+0.300}_{-0.300}$	$0.889^{+0.262}_{-0.082}$	$0.971^{+0.118}_{-0.118}$	$1.944^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-5%	+83%/-83%	+29%/-9%	+12%/-12%	+20%/-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 007117444-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$1 \pm 1$	$0.34^{+0.29}_{-0.21}$	$3140^{+226}_{-144}$	$-3781^{+617}_{-1438}$	$-0.501^{+0.515}_{-3.765}$
Alt.	$1 \pm 1$	$0.41^{+0.26}_{-0.25}$	$3131^{+189}_{-136}$	$-3491^{+1199}_{-1068}$	$-0.232^{+0.508}_{-2.072}$

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

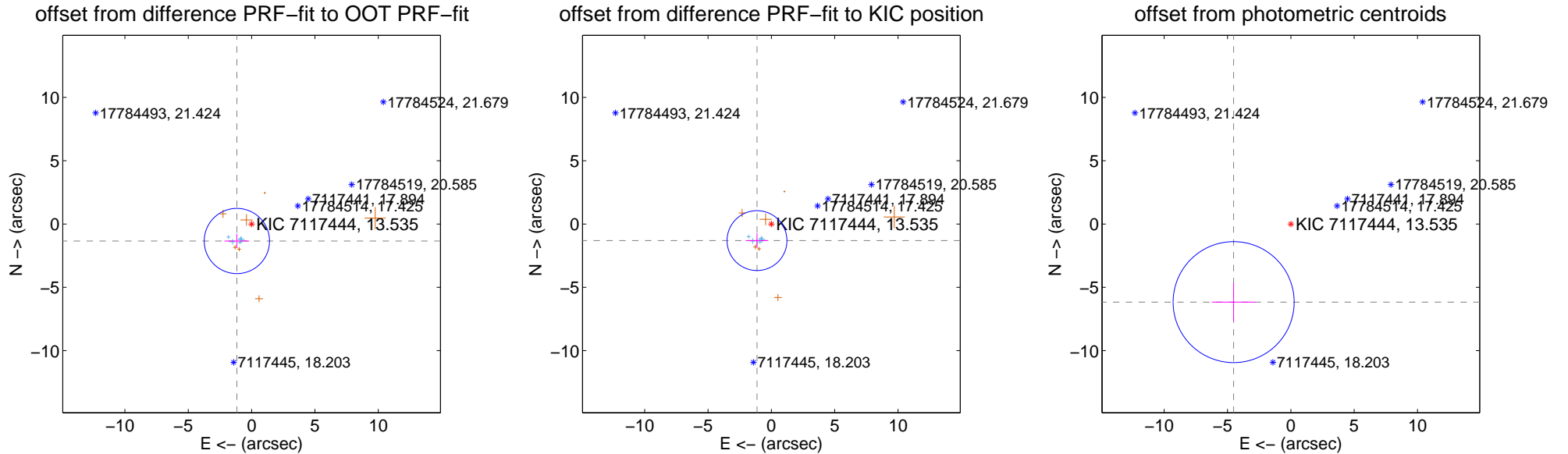
## DV Centroid Data

Supplemental centroid analysis for 007117444-01. Kepler magnitude: 13.54. Transit SNR 7.10

There are 5 quarters with good PRF difference image offsets

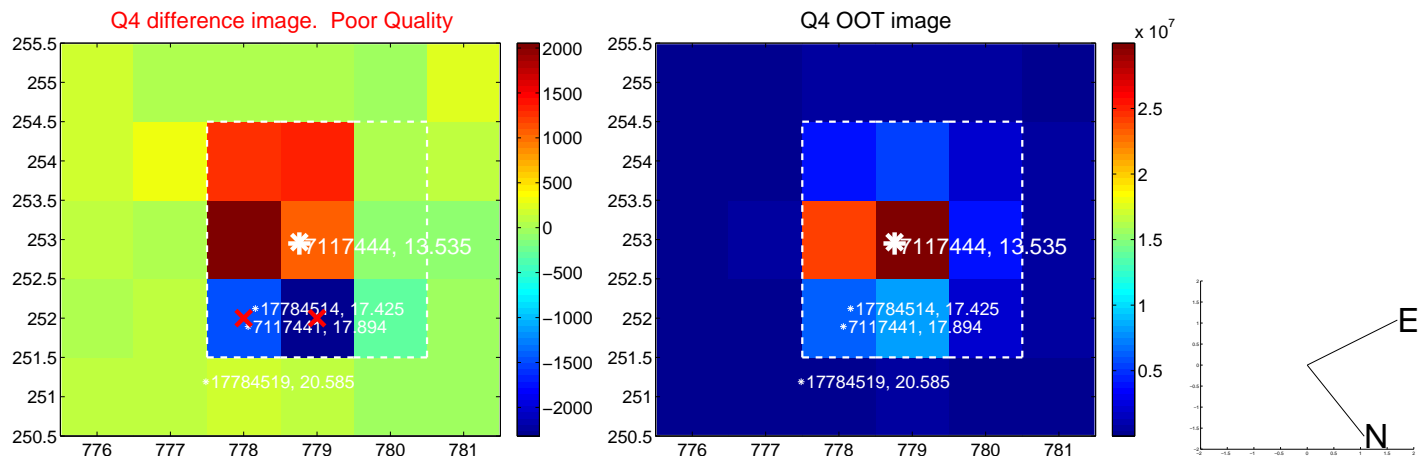
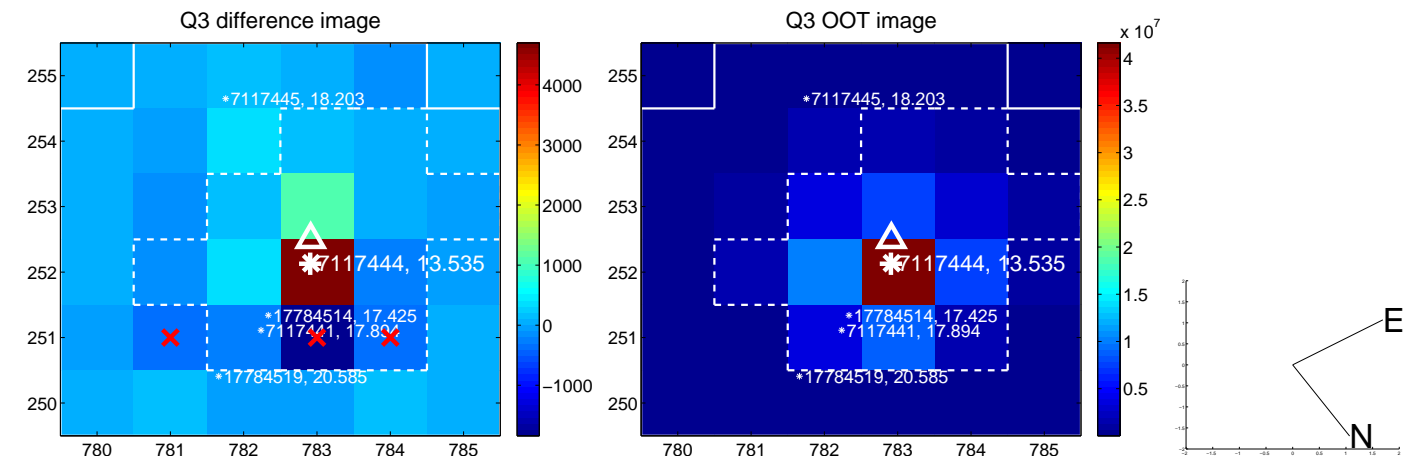
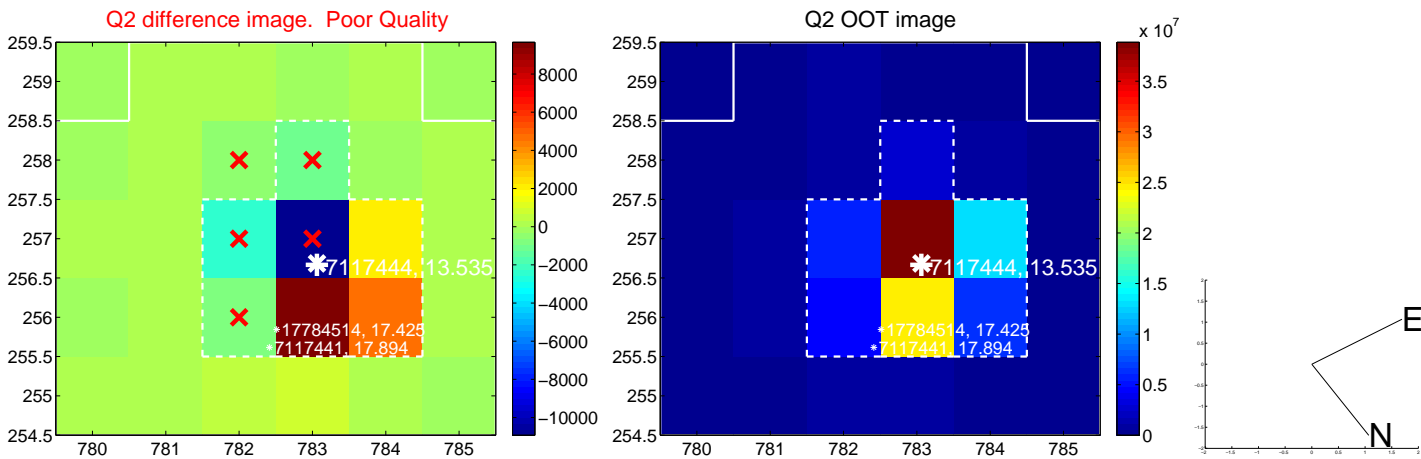
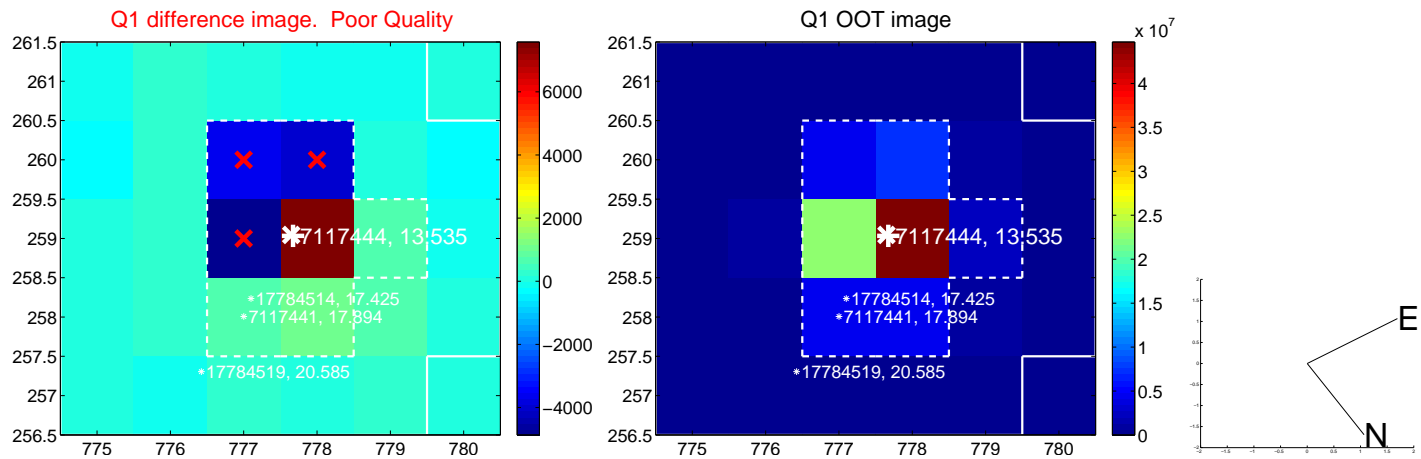
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.775 \pm 0.859$	2.07	$1.162 \pm 0.977$	$-1.342 \pm 0.561$
PRF-fit source offset from KIC position	$1.733 \pm 0.788$	2.20	$1.134 \pm 0.891$	$-1.310 \pm 0.585$
photometric centroid source offset	$7.65 \pm 1.59$	4.80	$4.52 \pm 1.72$	$-6.17 \pm 1.52$

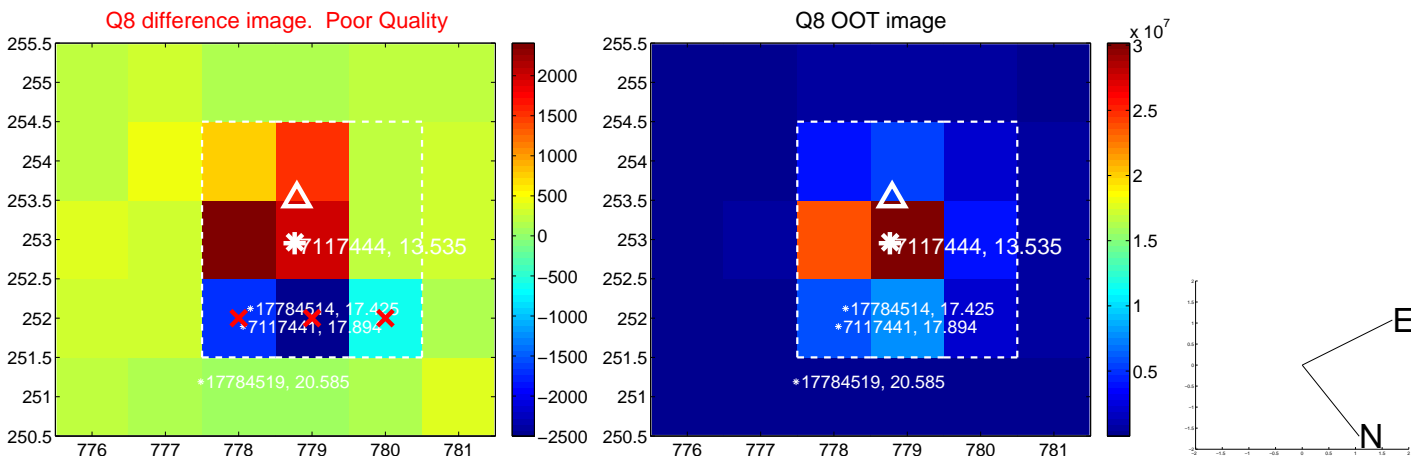
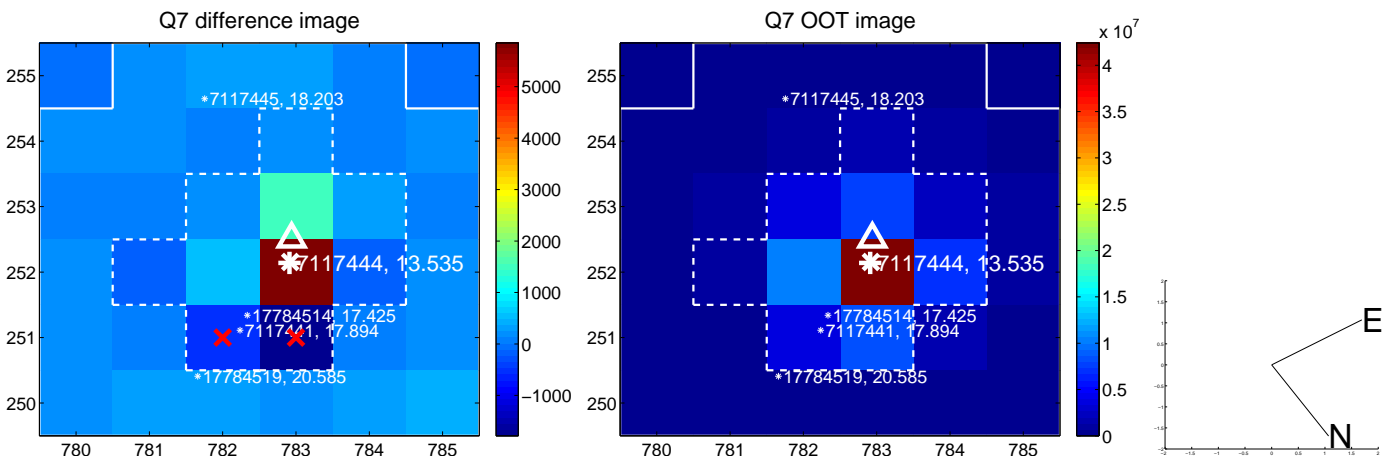
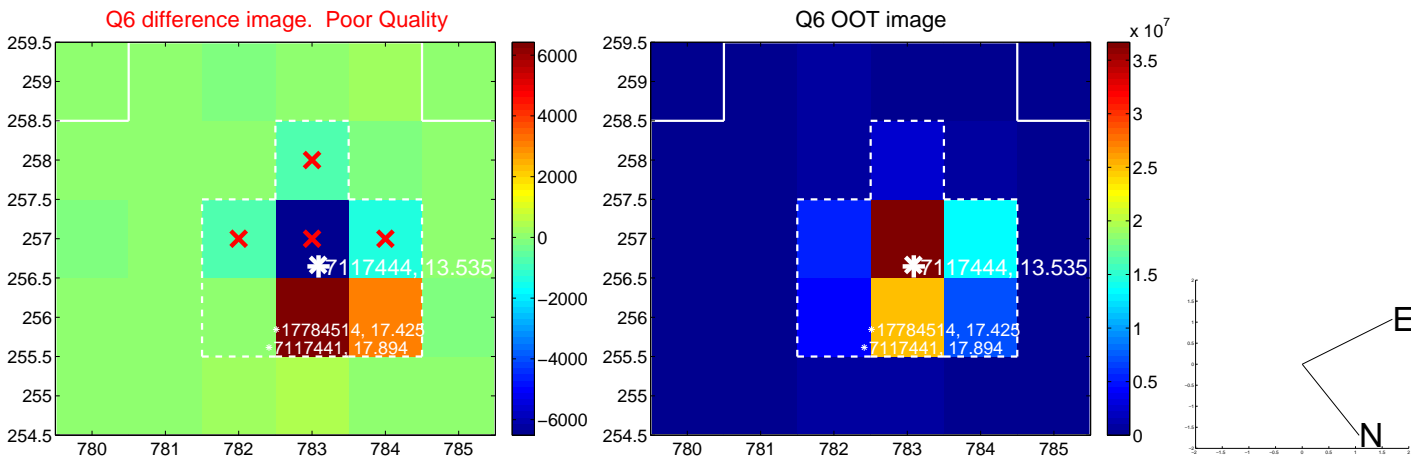
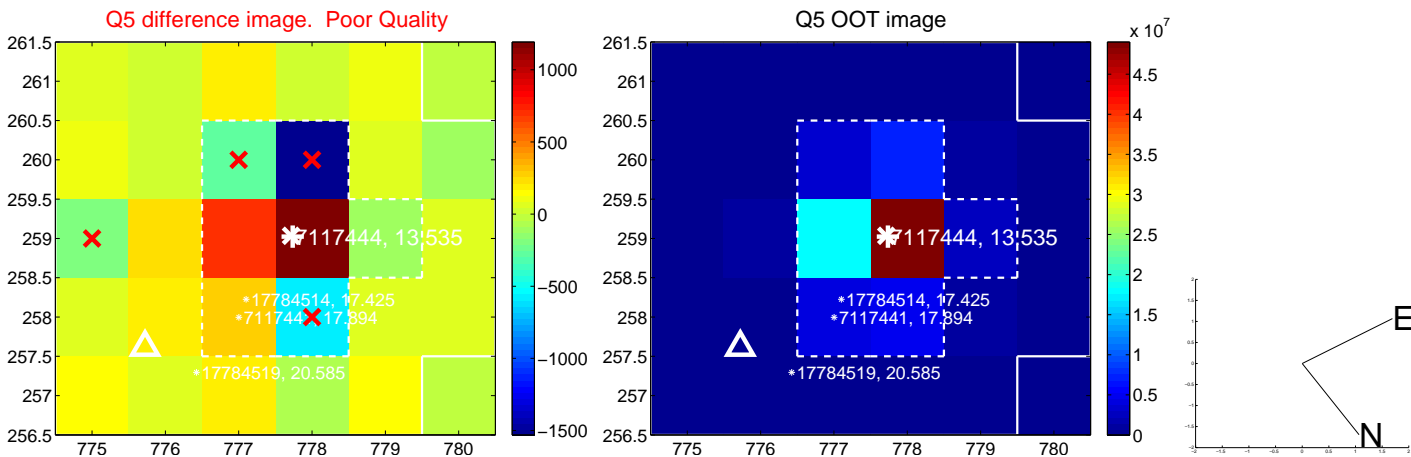


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

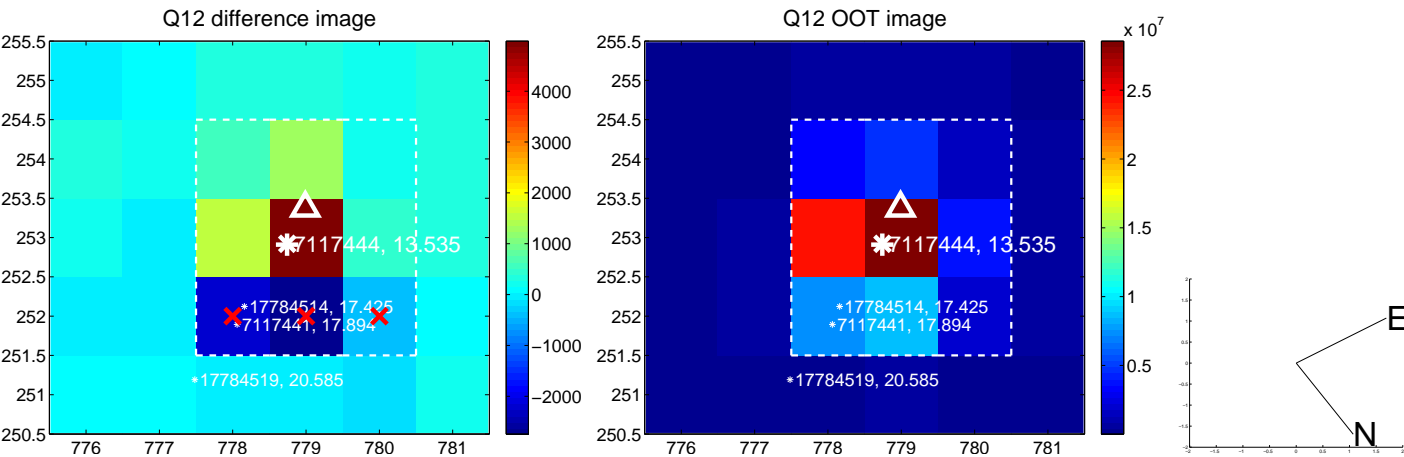
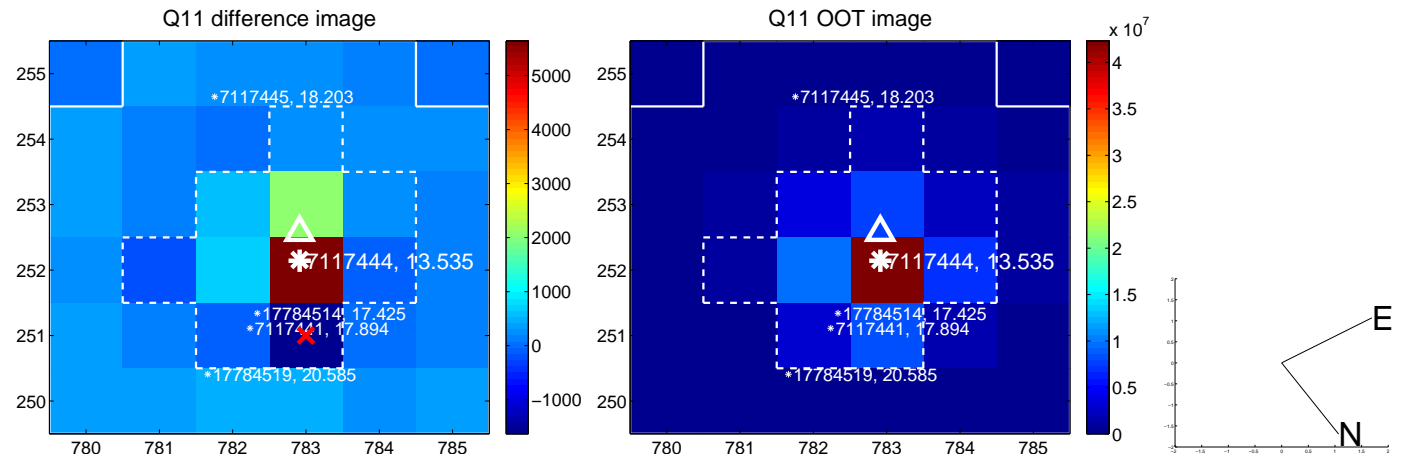
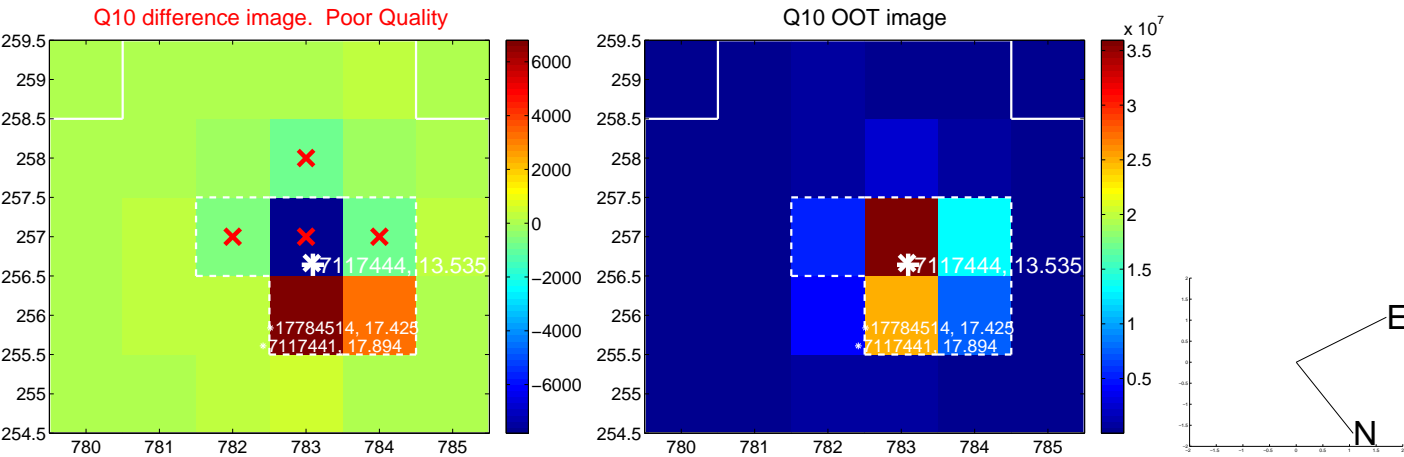
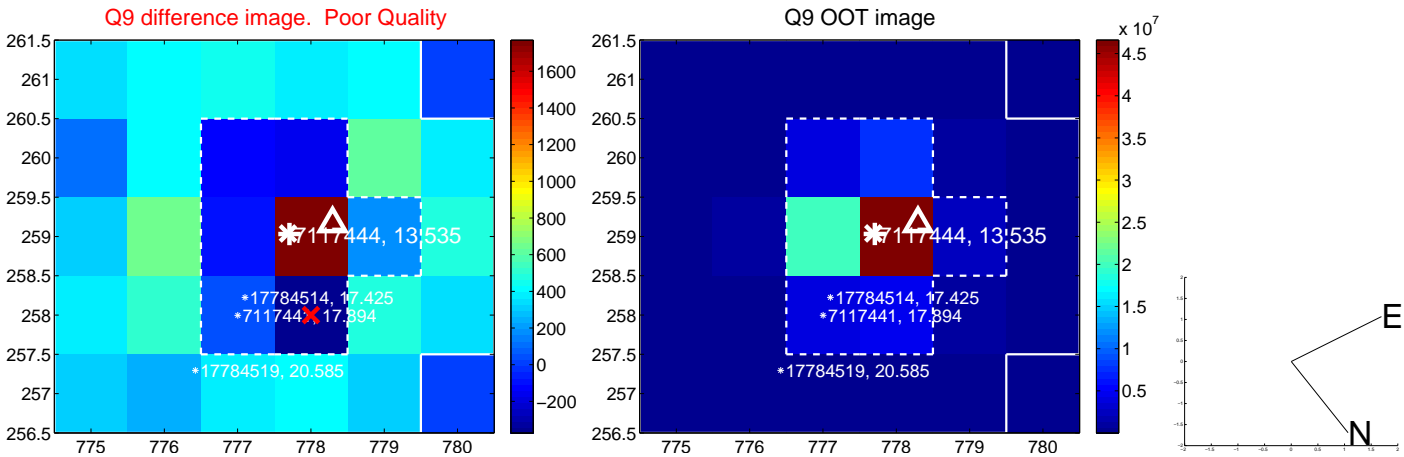


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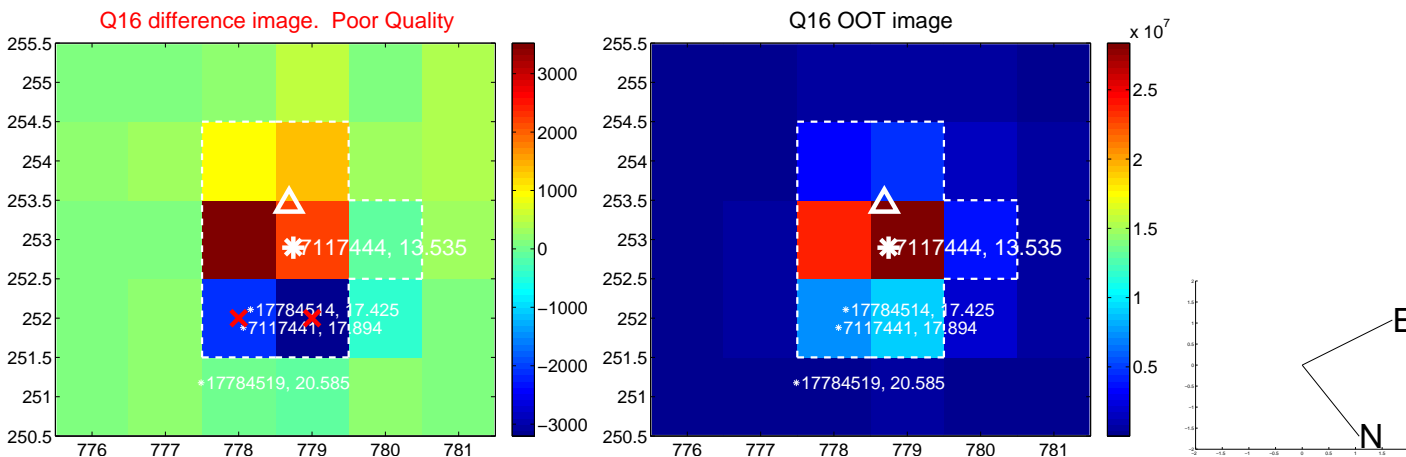
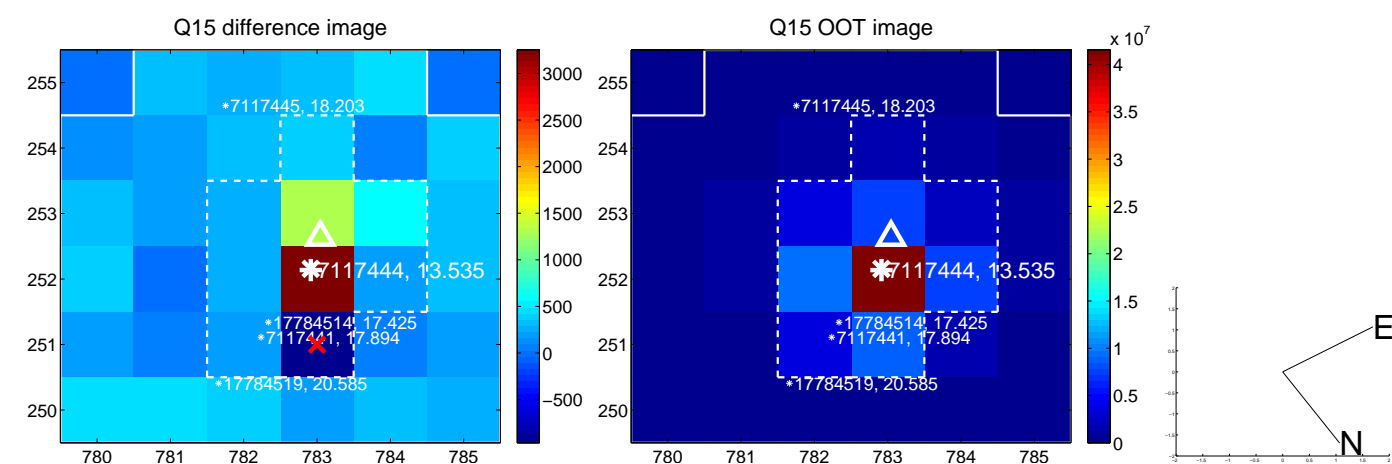
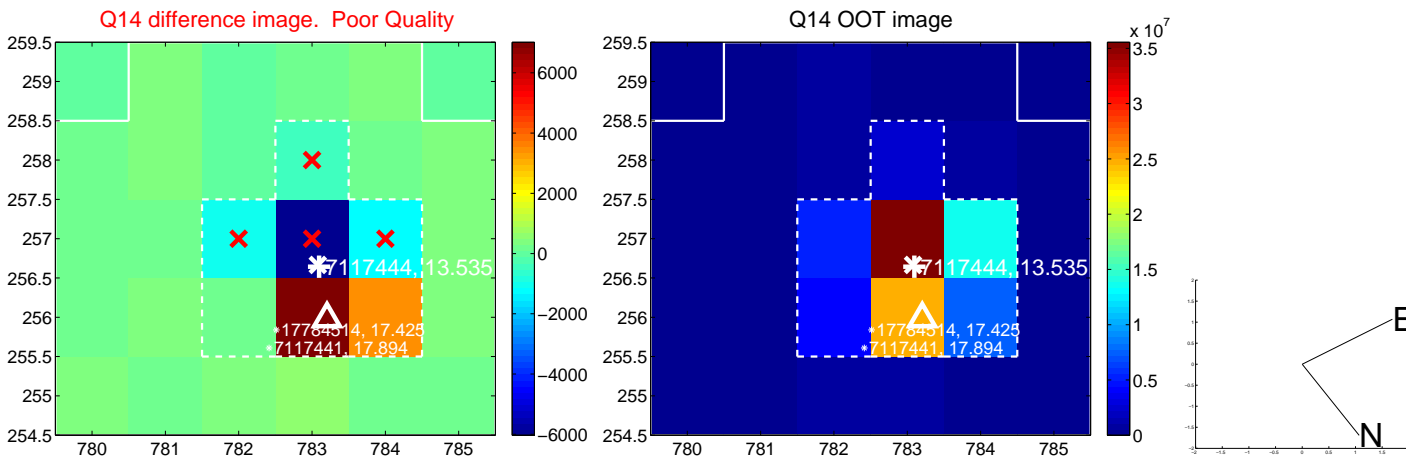
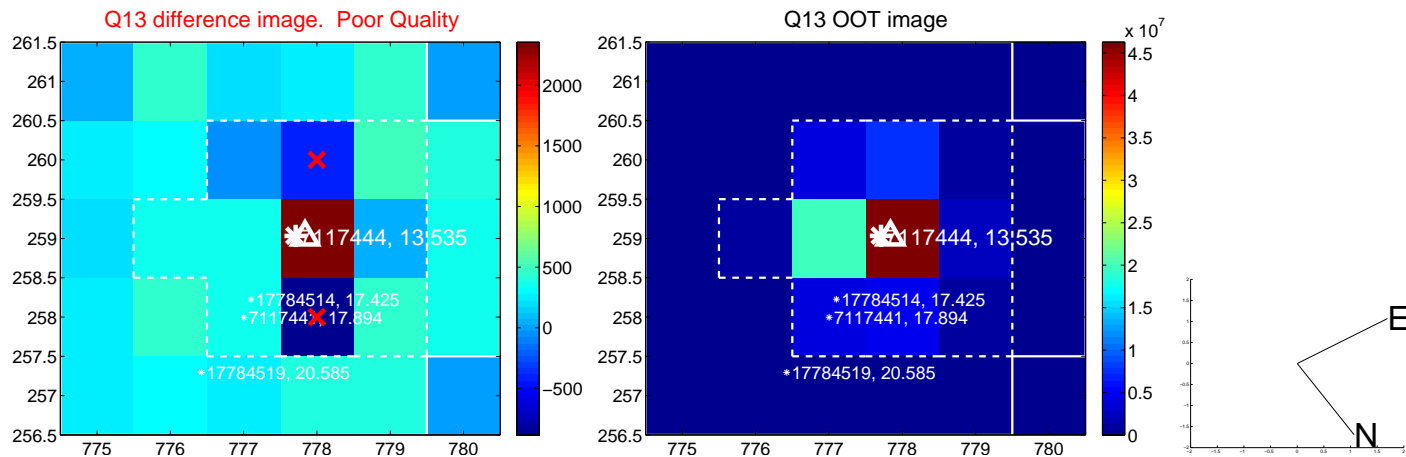




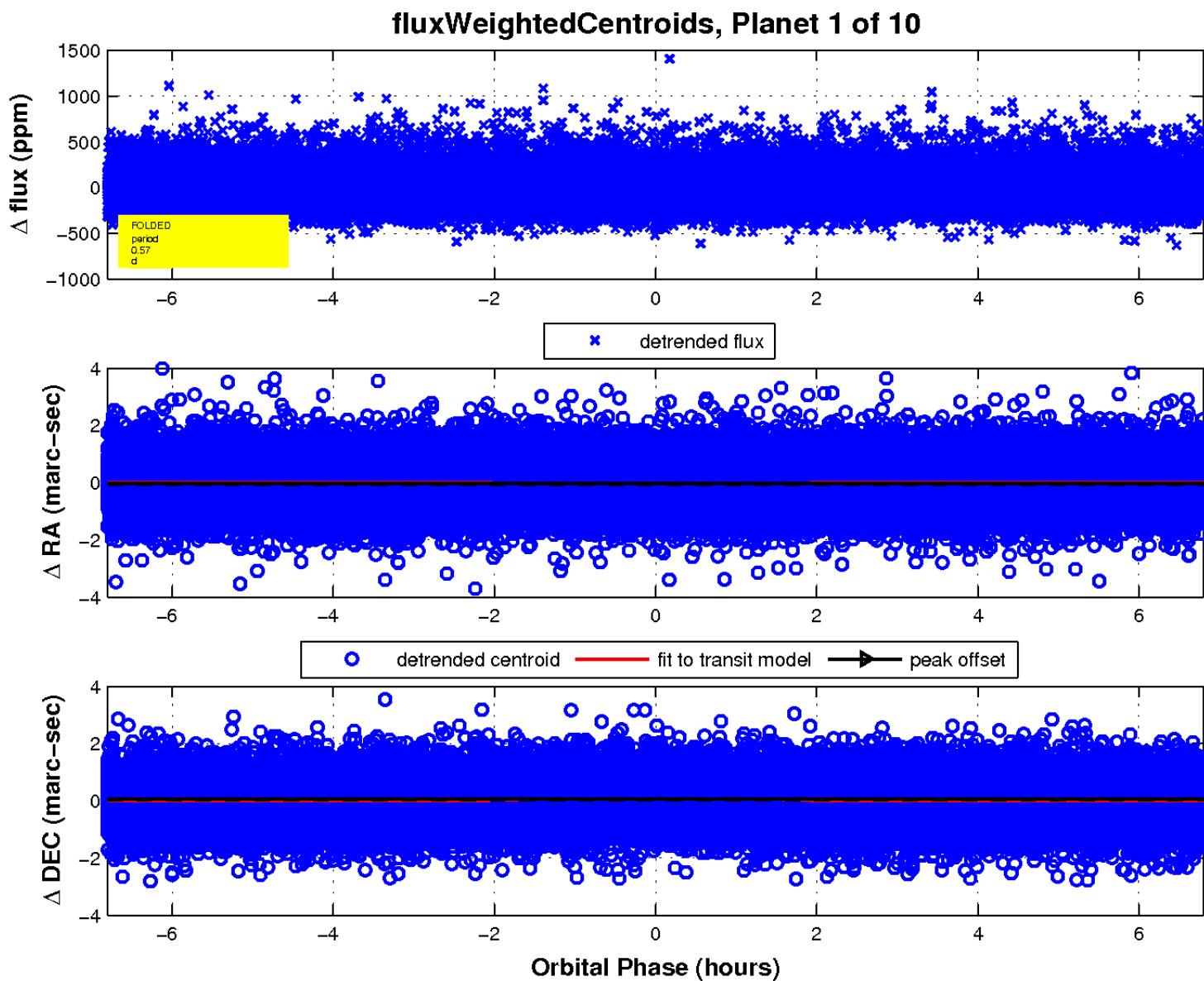
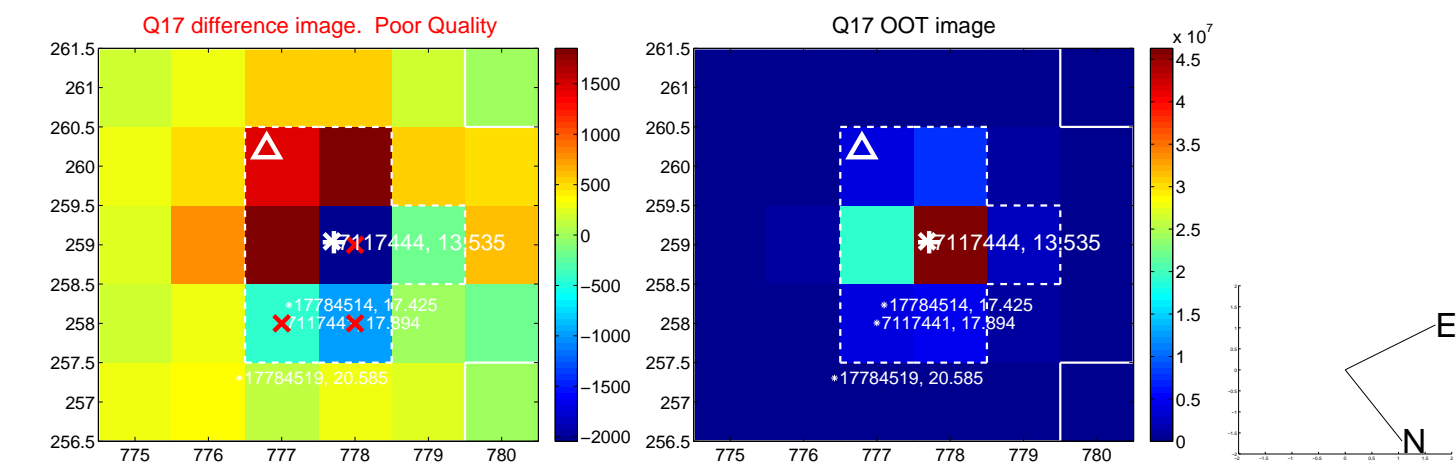
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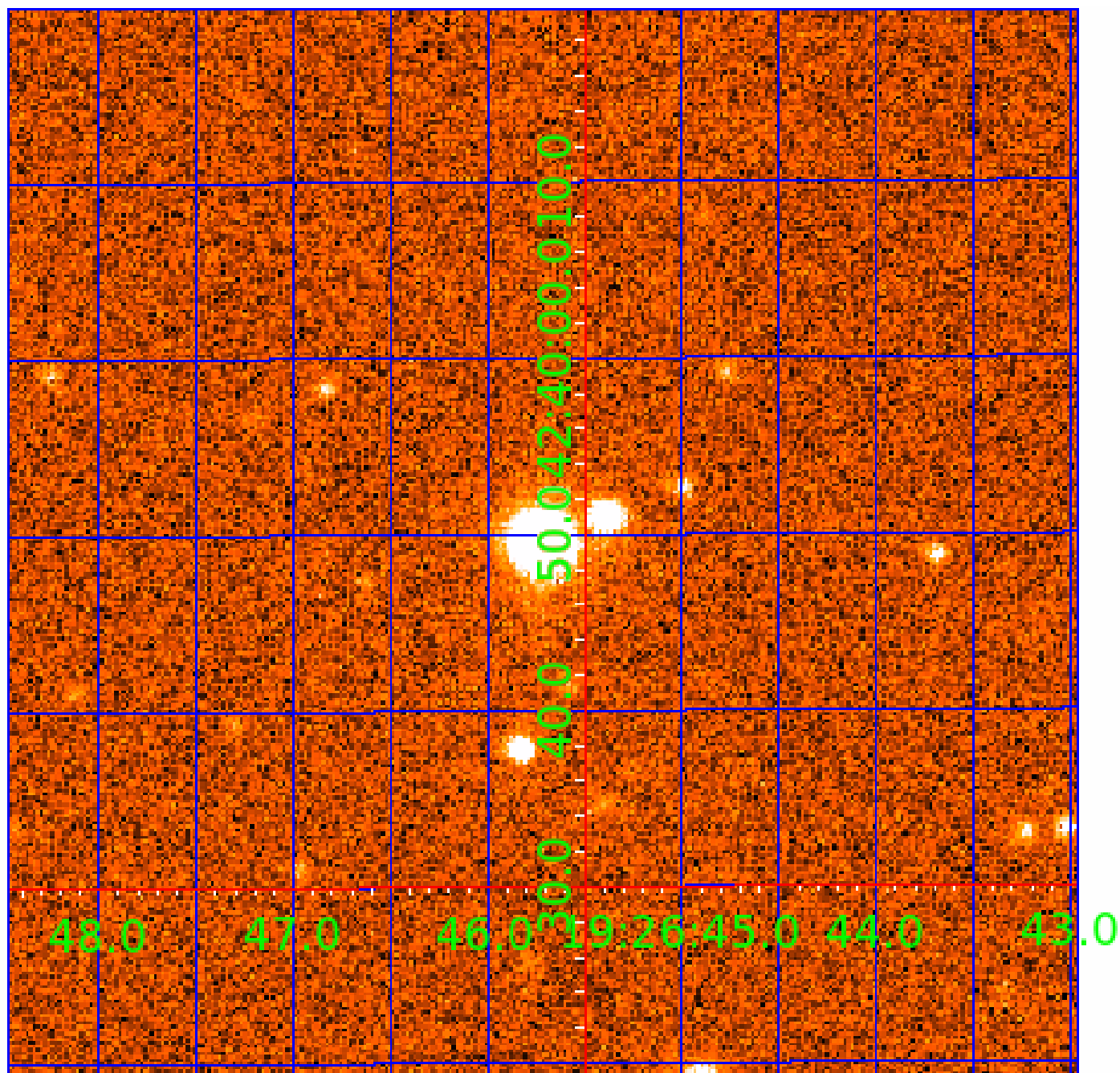


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# UKIRT Image

Declination





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N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

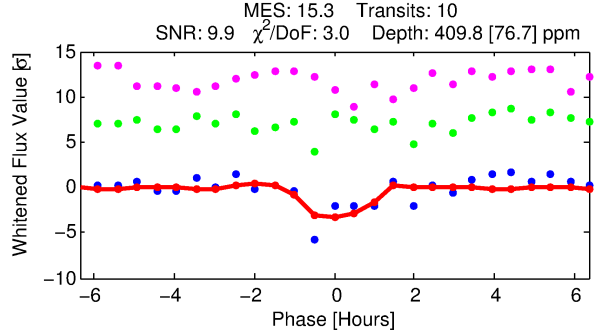
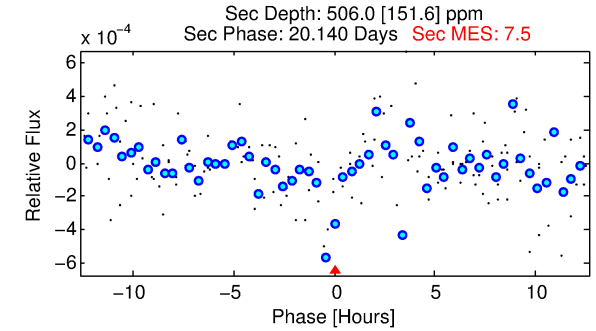
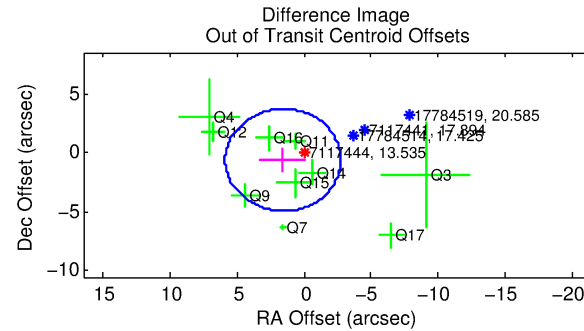
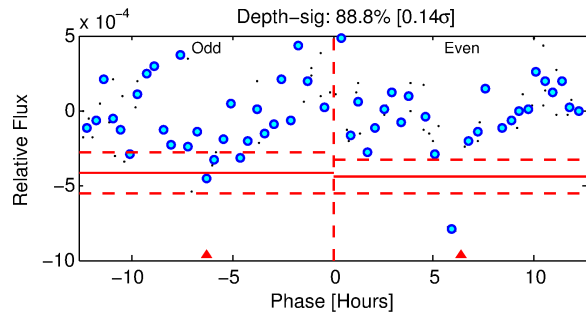
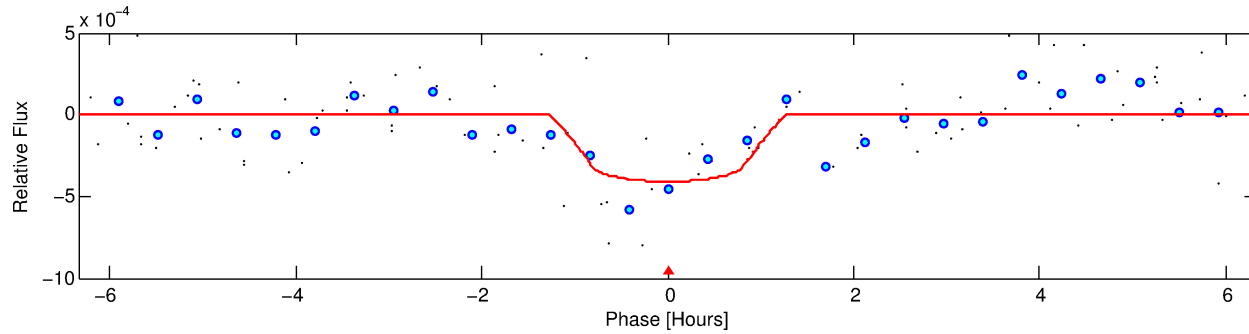
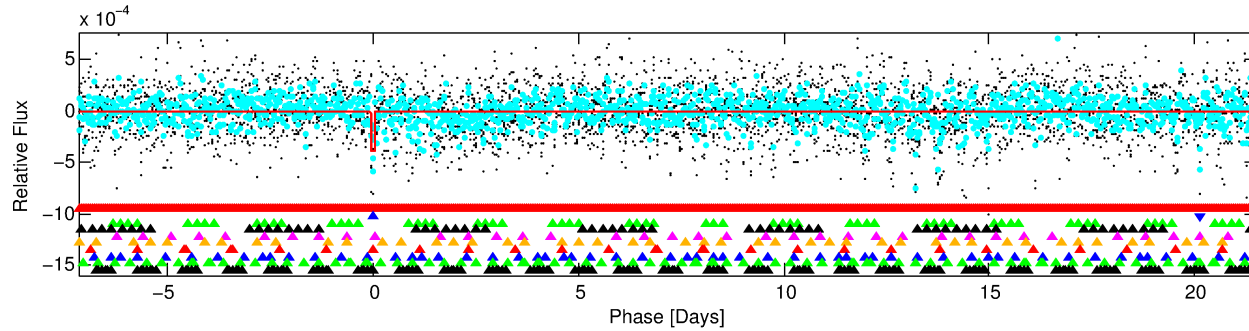
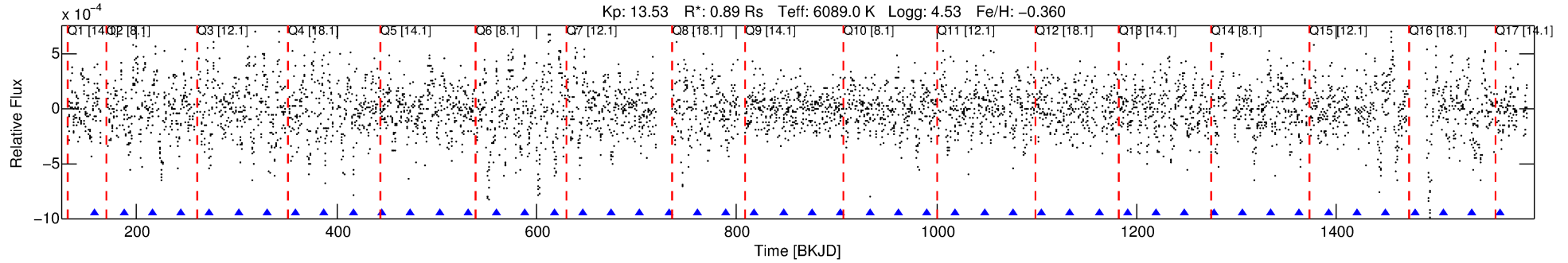
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007117444-02

No Significant Match Found

# DV One-Page Summary

KIC: 7117444 Candidate: 2 of 10 Period: 28.684 d



## DV Fit Results:

Period = 28.68367 [0.00056] d  
Epoch = 158.5333 [0.0138] BKJD  
Rp/R\* = 0.0187 [0.0441]  
a/R\* = 102.37 [1214.26]  
b = 0.25 [44.34]  
Seff = 29.52 [11.48]  
Teq = 594 [58] K  
Rp = 1.81 [4.31] Re  
a = 0.1816 [0.0456] AU  
Ag = 2786.28 [13207.02] [0.21 $\sigma$ ]  
Teffp = 6677 [7890] K [0.77 $\sigma$ ]

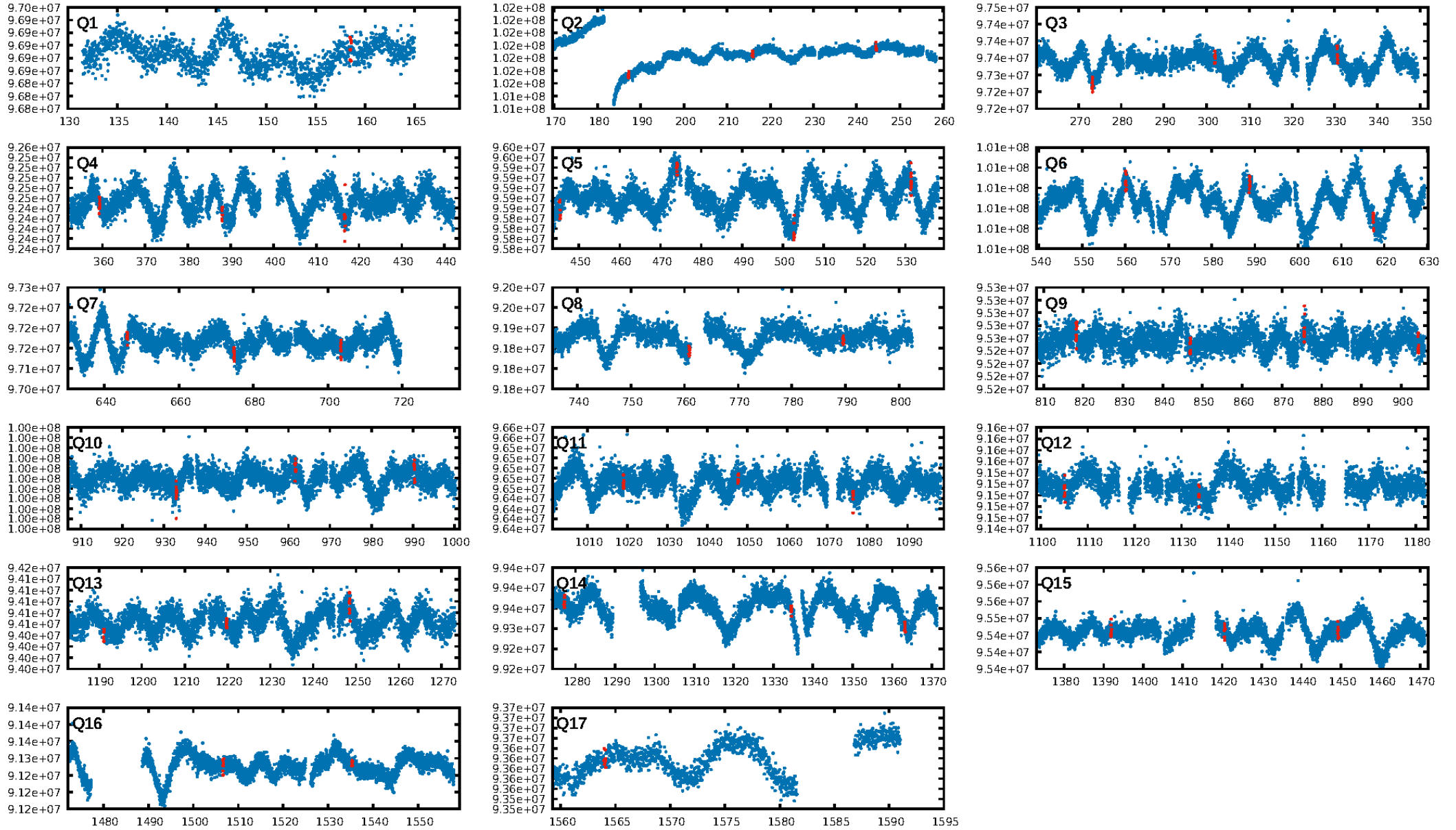
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [37.99 $\sigma$ ]  
LongPeriod-sig: 100.0% [22.30 $\sigma$ ]  
ModelChiSquare2-sig: 0.8%  
ModelChiSquareGof-sig: 92.5%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: -2.302  
Centroid-sig: 33.8%  
Centroid-so: 0.332 arcsec [0.92 $\sigma$ ]  
OotOffset-rm: 1.696 arcsec [1.18 $\sigma$ ]  
OotOffset-st: 1/4/3/2 [10]  
KicOffset-rm: 1.629 arcsec [1.20 $\sigma$ ]  
KicOffset-st: 1/4/3/2 [10]  
DiffImageQuality-fgm: 0.20 [2/10]  
DiffImageOverlap-fno: 0.00 [0/17]

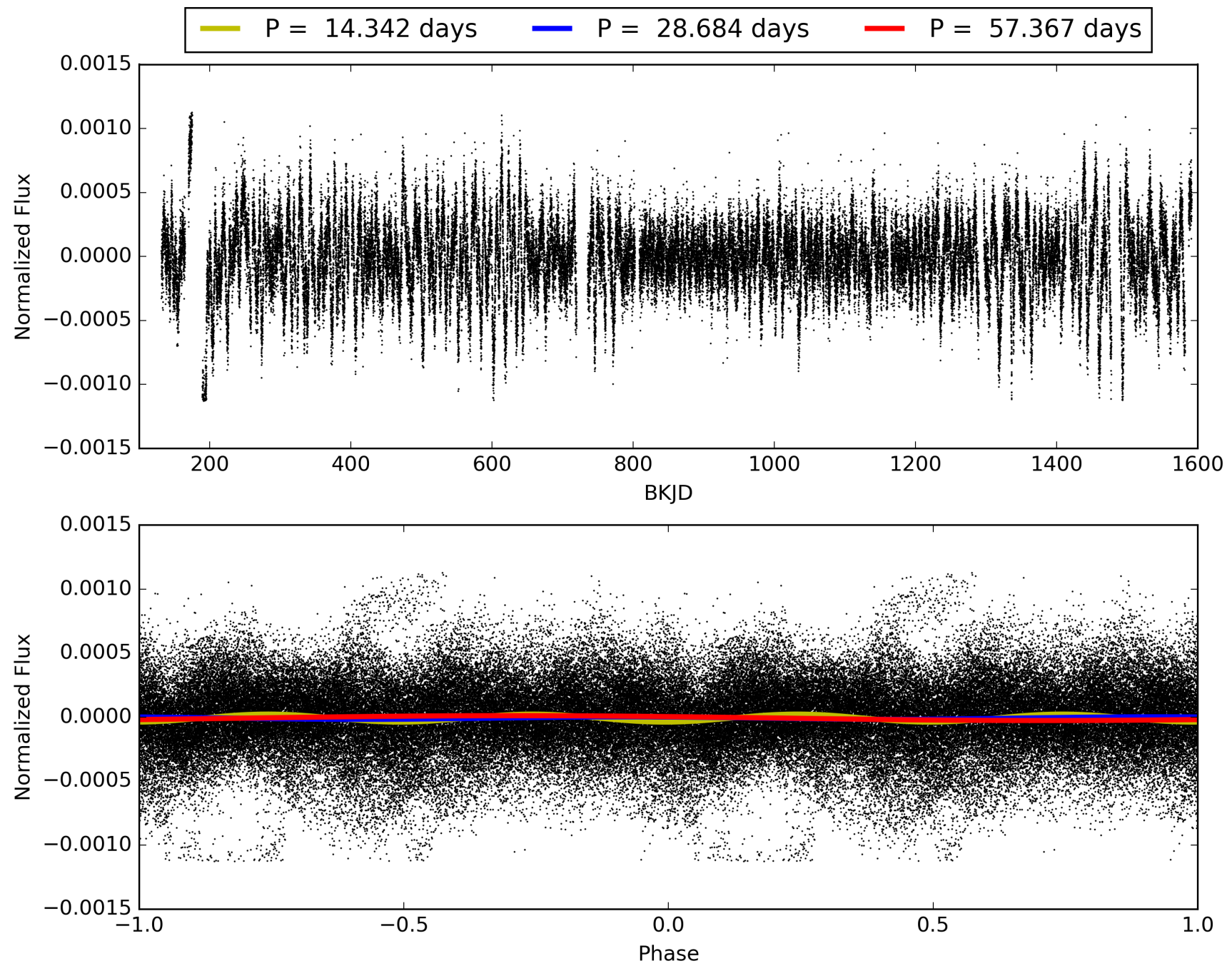
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:36:48 Z

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

# TCE 007117444-02, PDC Light Curves

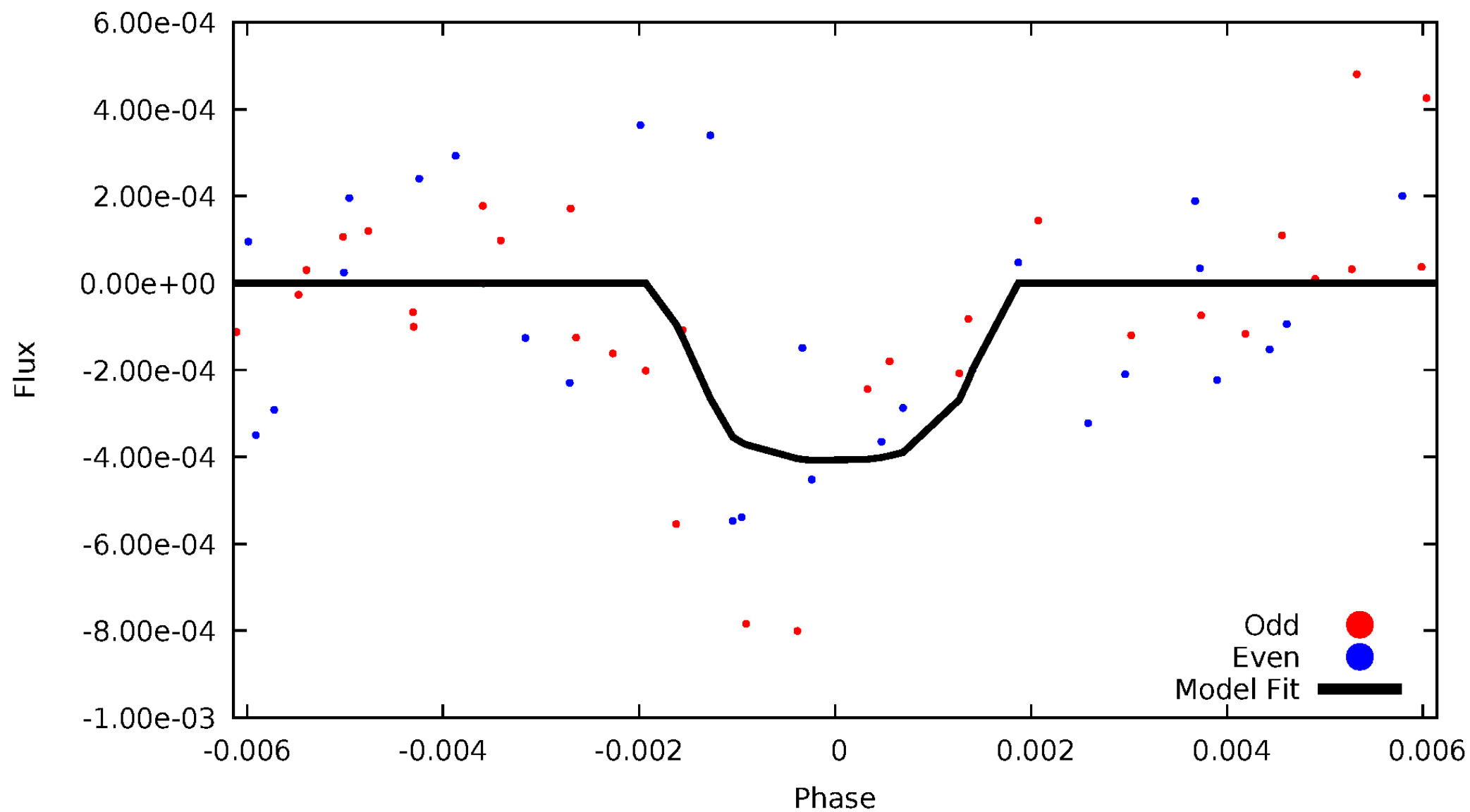


TCE 007117444-02



# DV Odd/Even

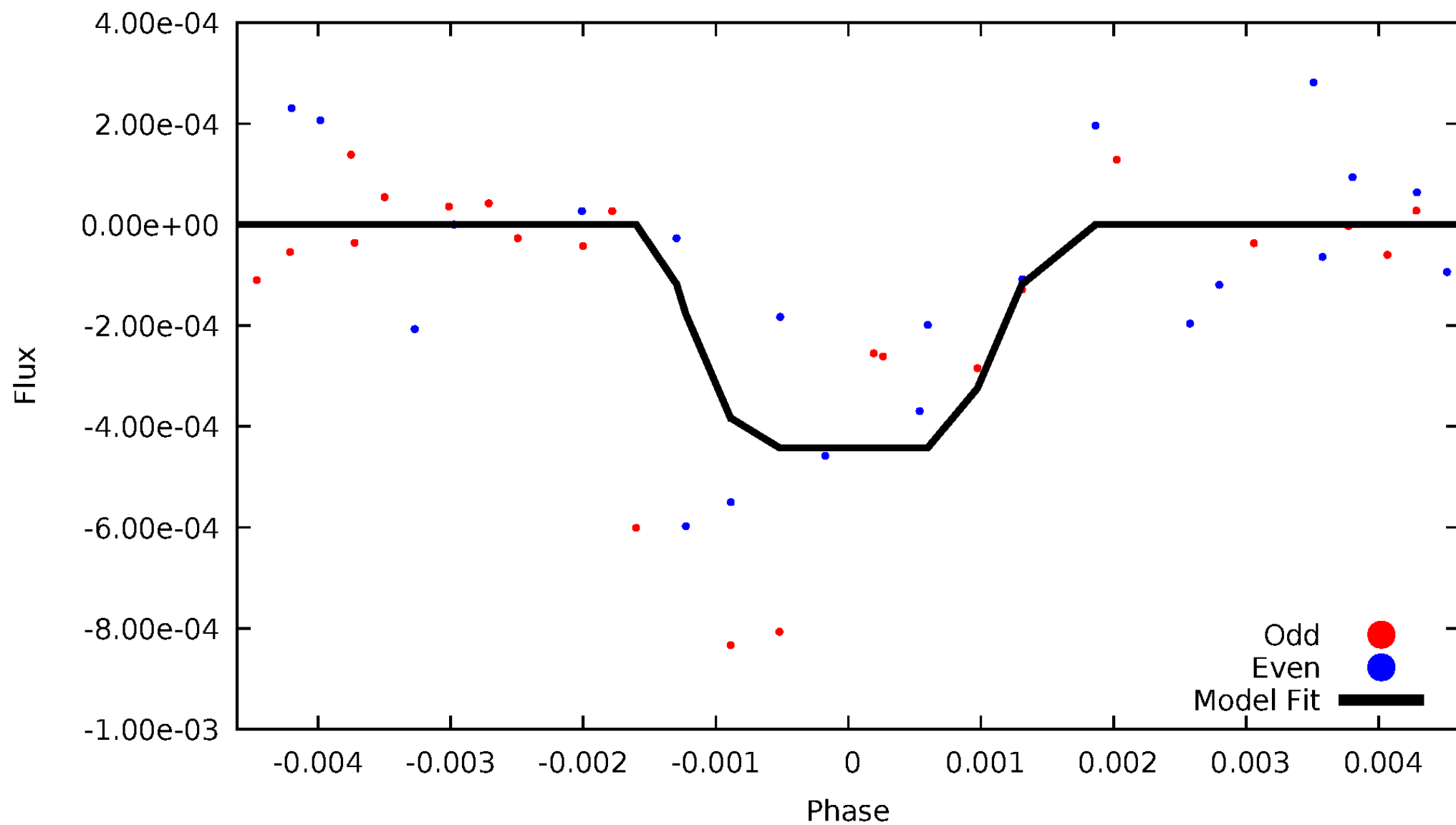
TCE 007117444-02





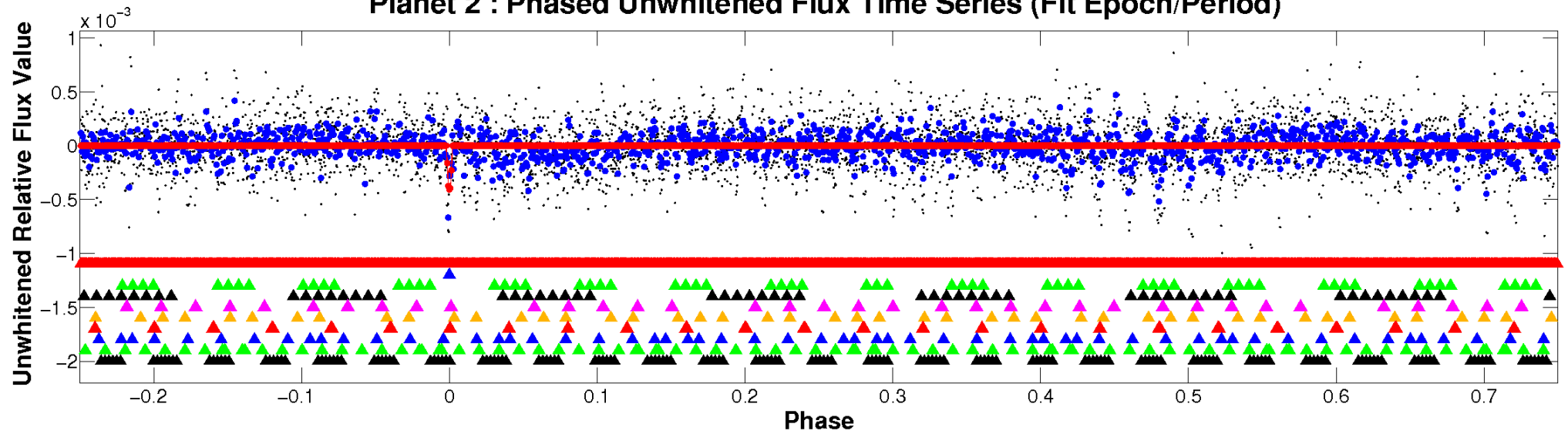
# ALT Odd/Even

TCE 007117444-02

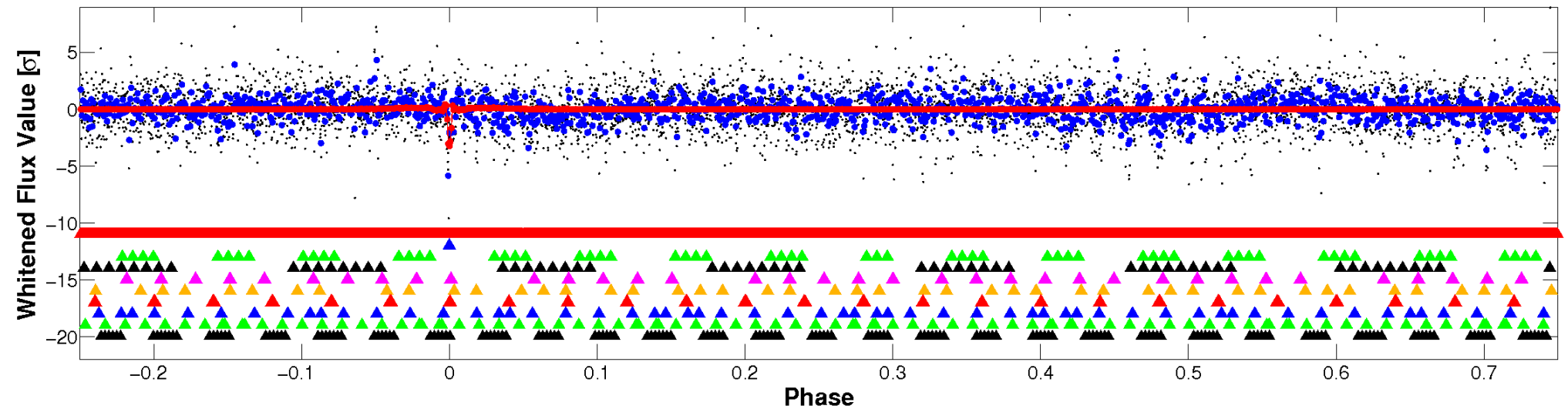


# Non-Whitened Vs. Whitened Light Curve

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

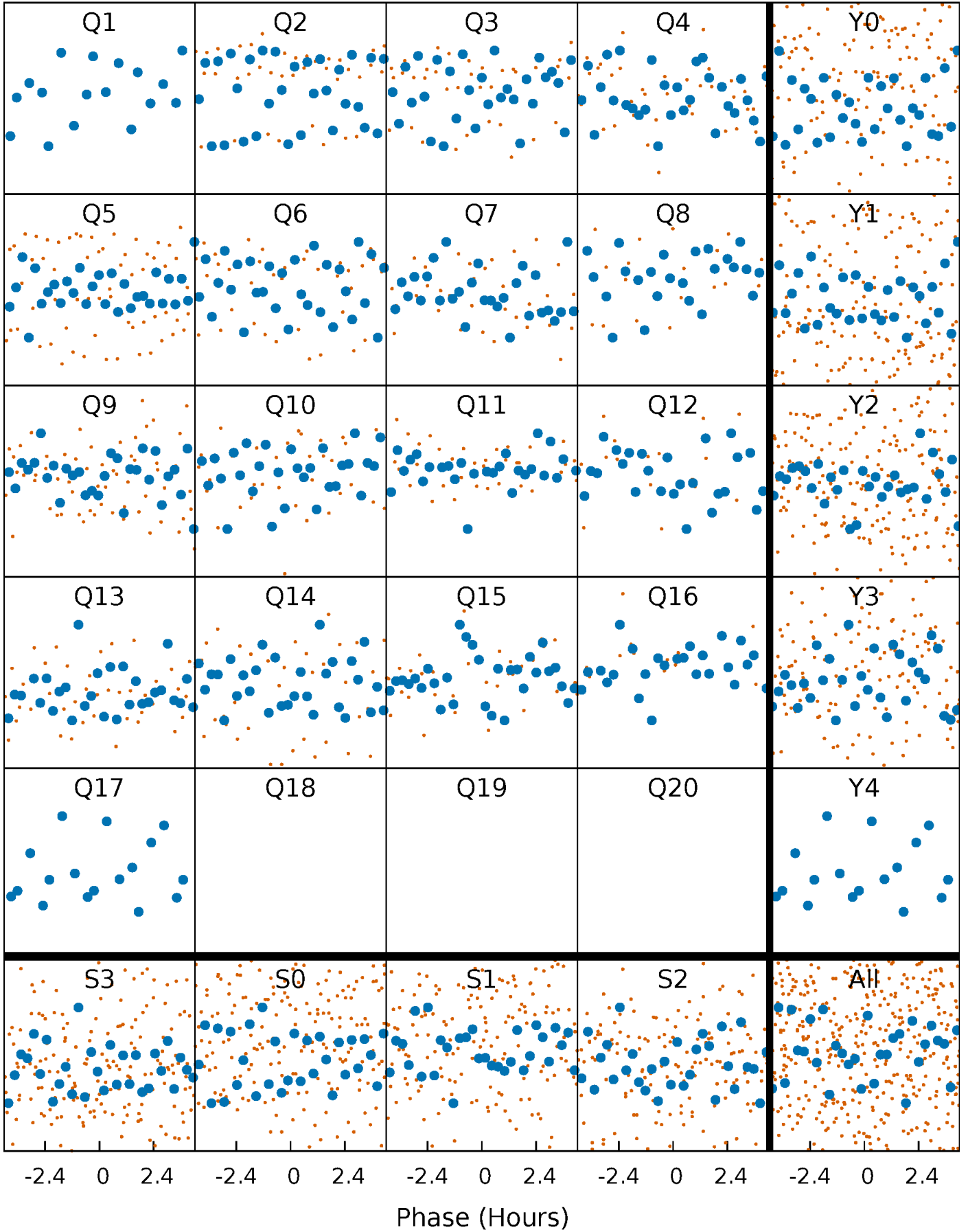


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



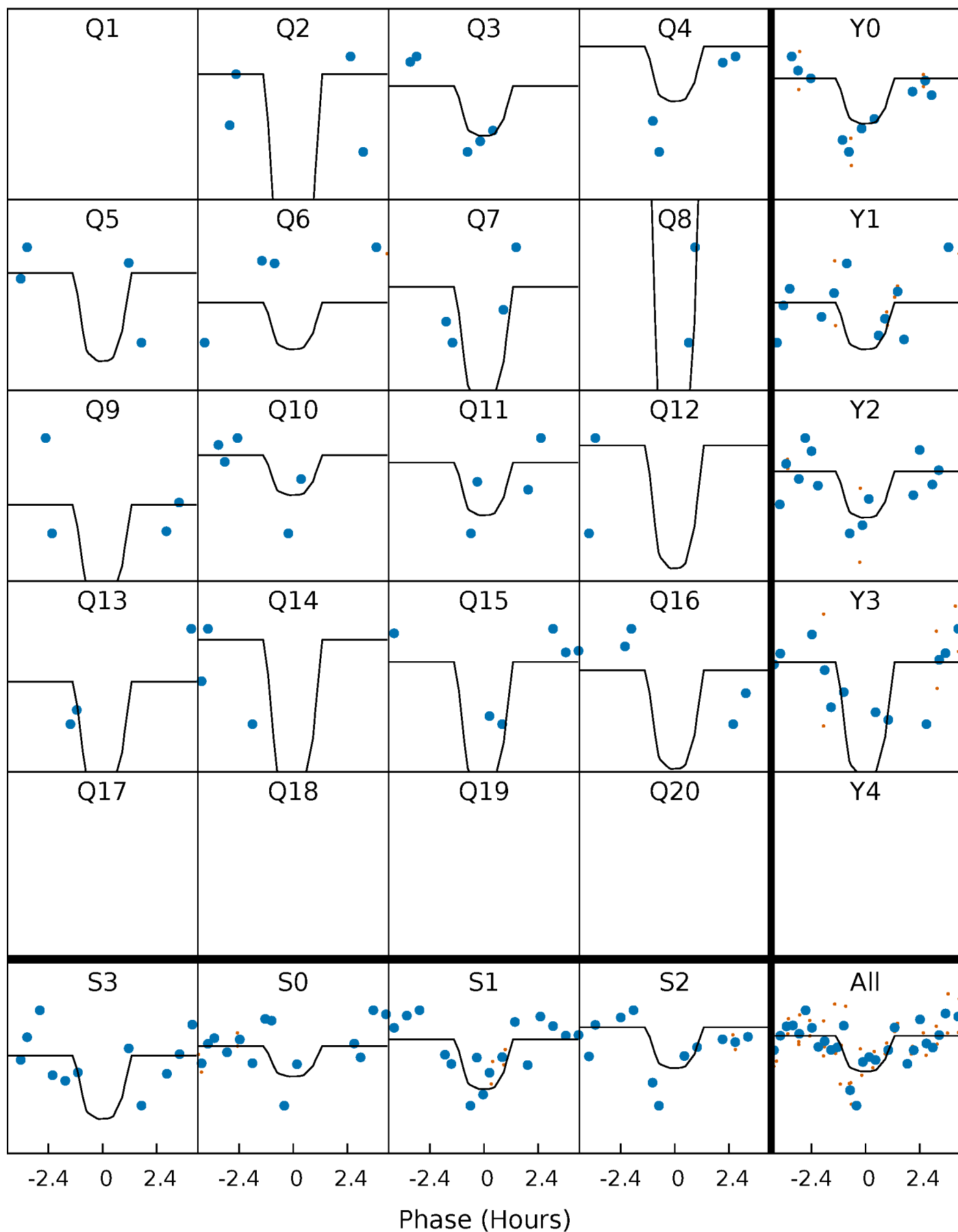
# PDC Quarter-Phased Transit Curves

TCE 007117444-02 P= 28.683667 Days  $T_0=158.533256$  (BKJD)



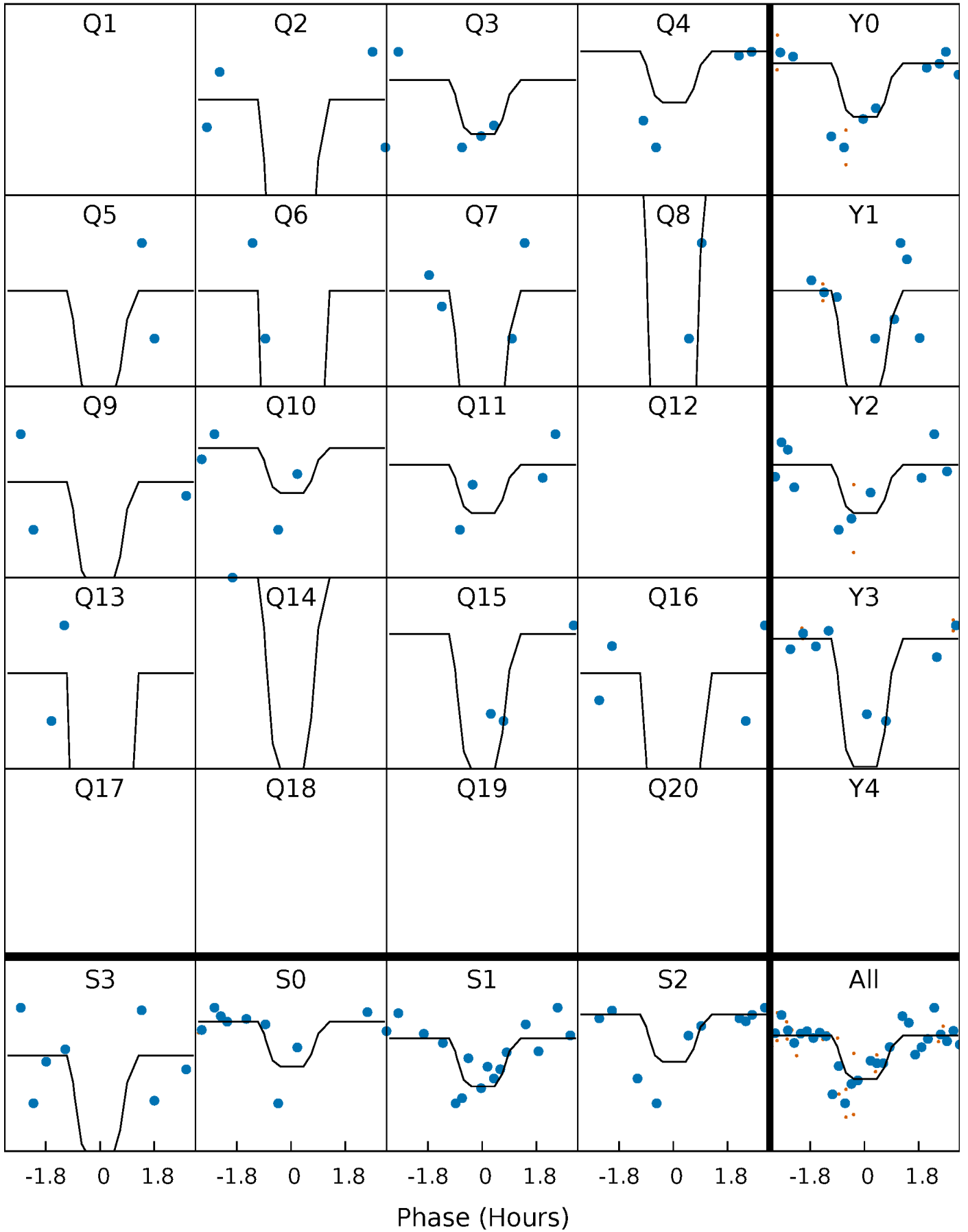
# DV Quarter-Phased Transit Curves

TCE 007117444-02 P= 28.683667 Days  $T_0=158.533256$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

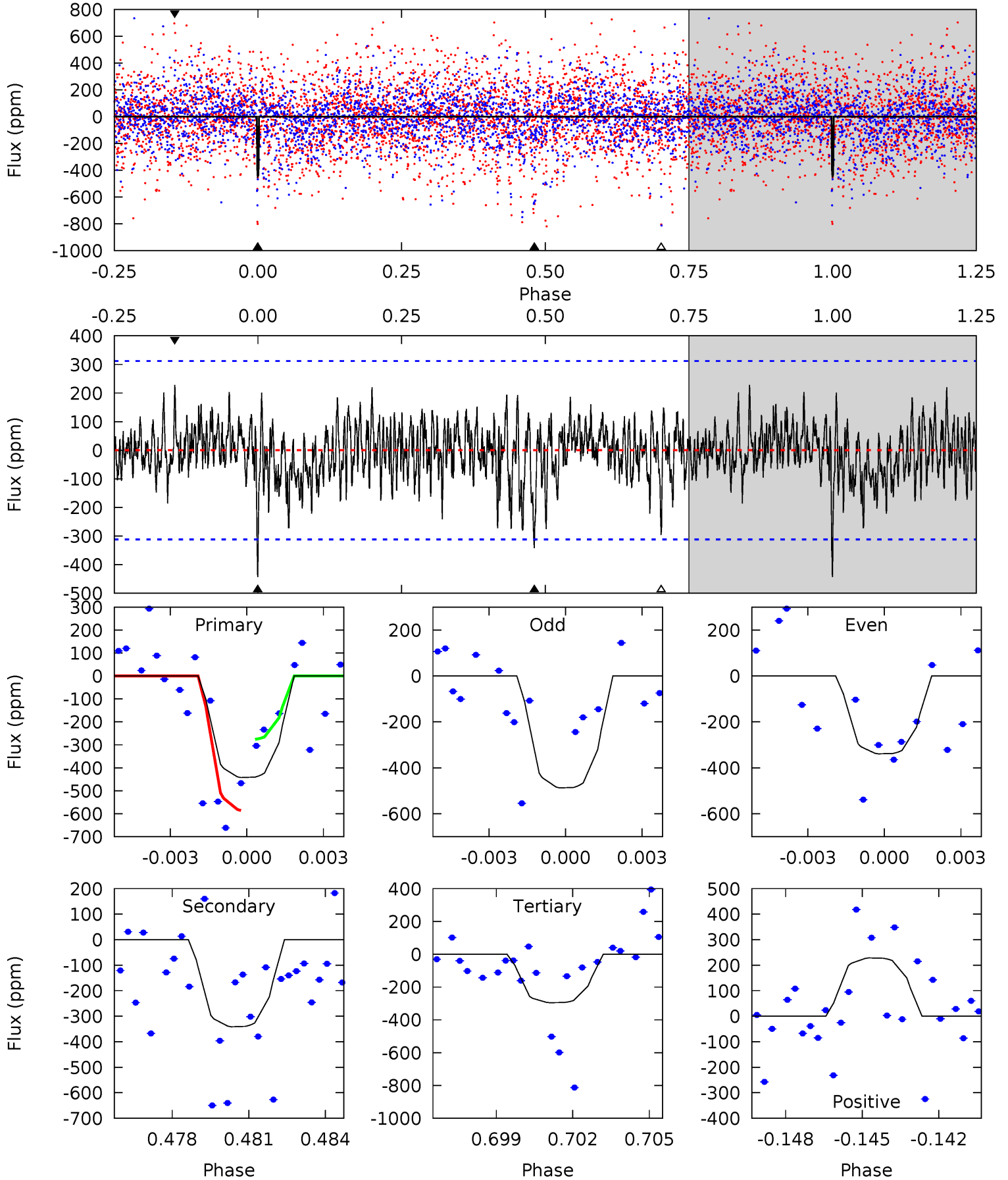
TCE 007117444-02 P= 28.683918 Days  $T_0=158.530406$  (BKJD)



# DV Model-Shift Uniqueness Test

007117444-02, P = 28.683667 Days, E = 129.849589 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
7.45	5.75	4.98	3.85	5.25	2.96	1.36	2.48	3.61	0.77	1.91	1.28	1.15	0.34	2.61

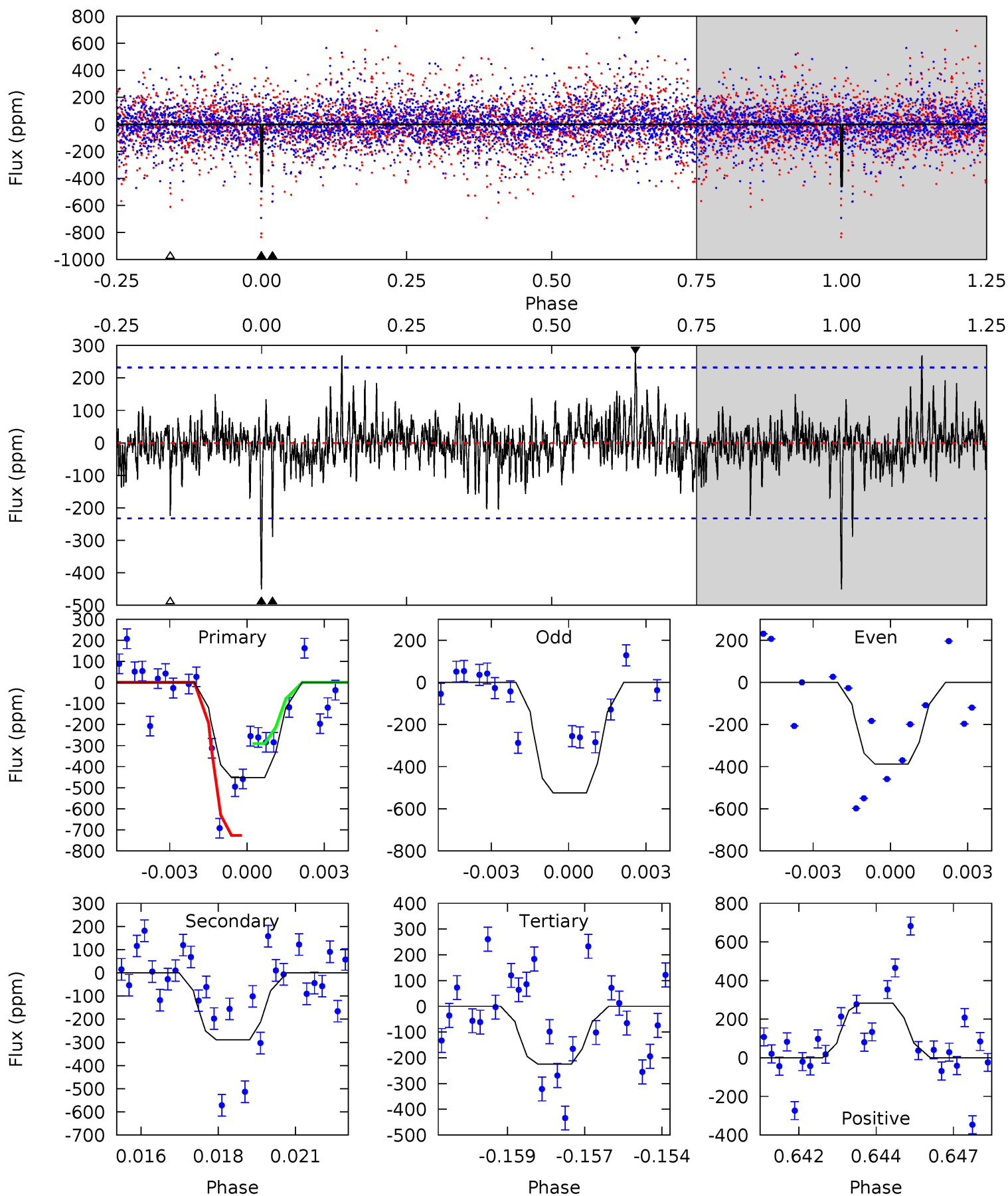




# Alt Model-Shift Uniqueness Test

007117444-02,  $P = 28.683918$  Days,  $E = 129.846488$  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
10.3	6.58	5.11	6.42	5.28	3.01	1.29	5.15	3.84	1.47	0.16	1.52	1.04	0.38	4.79



### Stellar Parameters For KIC 007117444

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6089^{+164}_{-183}$	$4.527^{+0.048}_{-0.204}$	$-0.360^{+0.300}_{-0.300}$	$0.889^{+0.262}_{-0.082}$	$0.971^{+0.118}_{-0.118}$	$1.944^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-5%	+83%/-83%	+29%/-9%	+12%/-12%	+20%/-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 007117444-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-342 \pm 59$	$3.77^{+4.08}_{-2.58}$	$847^{+56}_{-38}$	$4495^{+3158}_{-1042}$	$418^{+3822}_{-322}$
Alt.	$-289 \pm 44$	$3.92^{+3.96}_{-2.59}$	$850^{+55}_{-41}$	$4293^{+2815}_{-899}$	$335^{+2595}_{-256}$

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

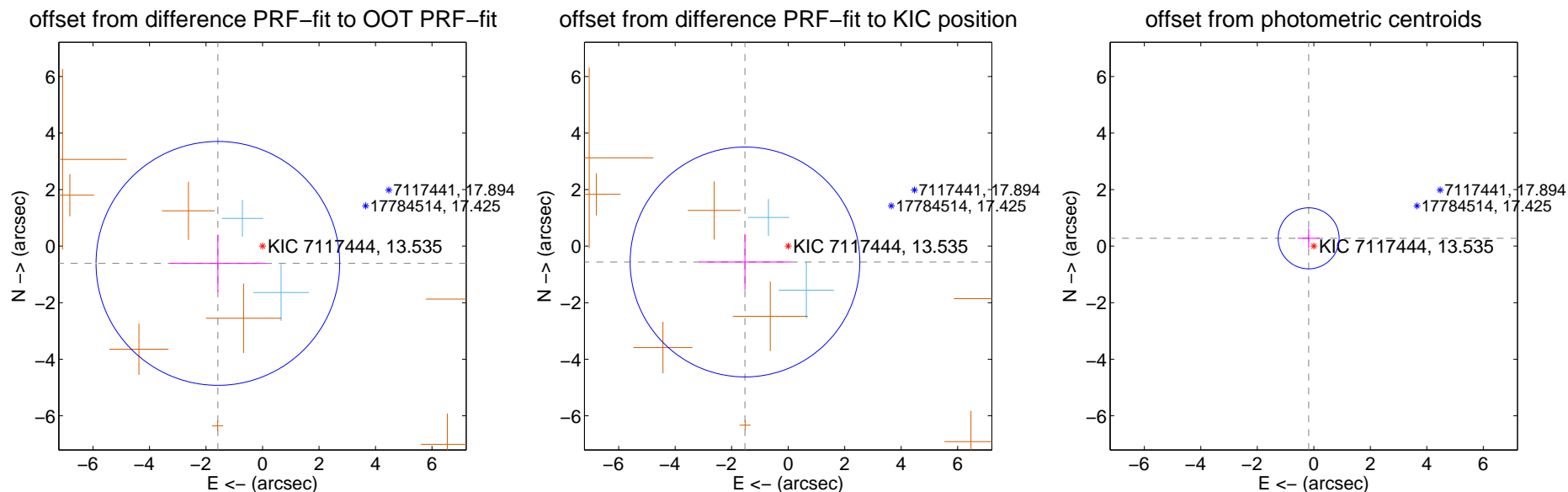
## DV Centroid Data

Supplemental centroid analysis for 007117444-02. Kepler magnitude: 13.54. Transit SNR 9.94

There are 2 quarters with good PRF difference image offsets

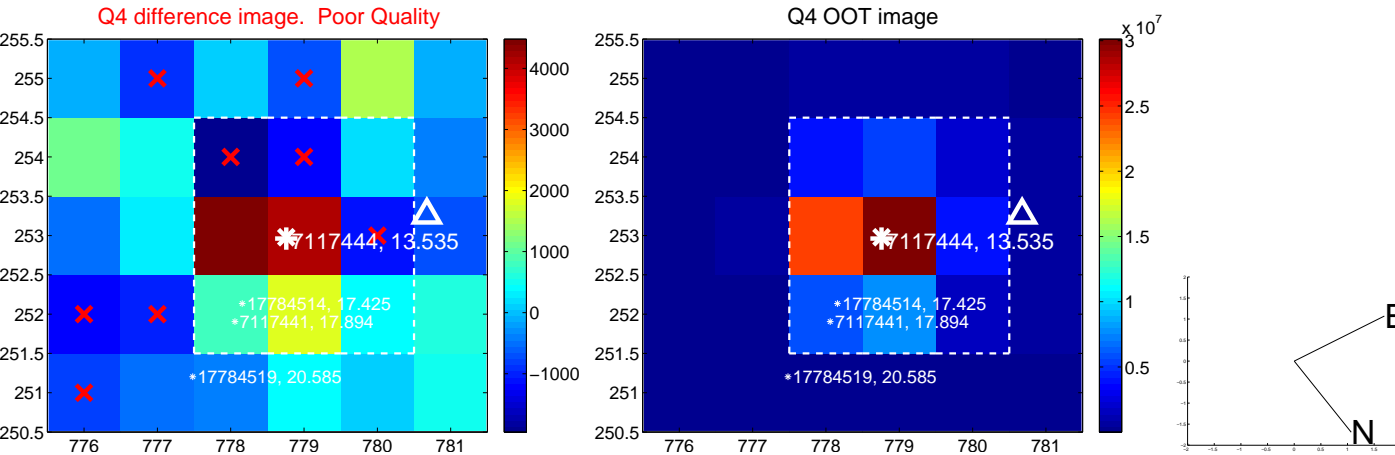
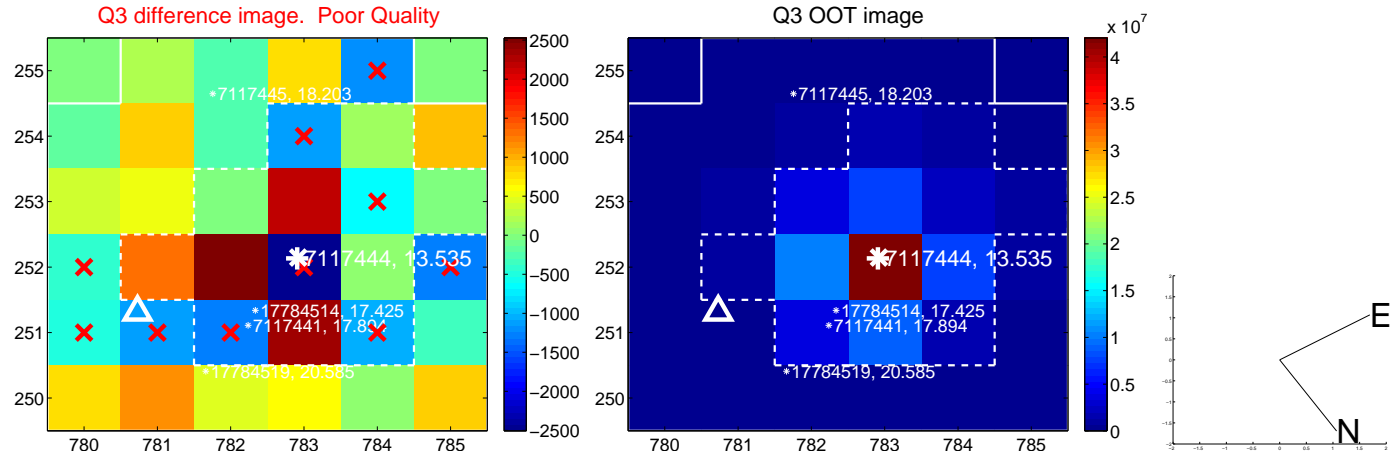
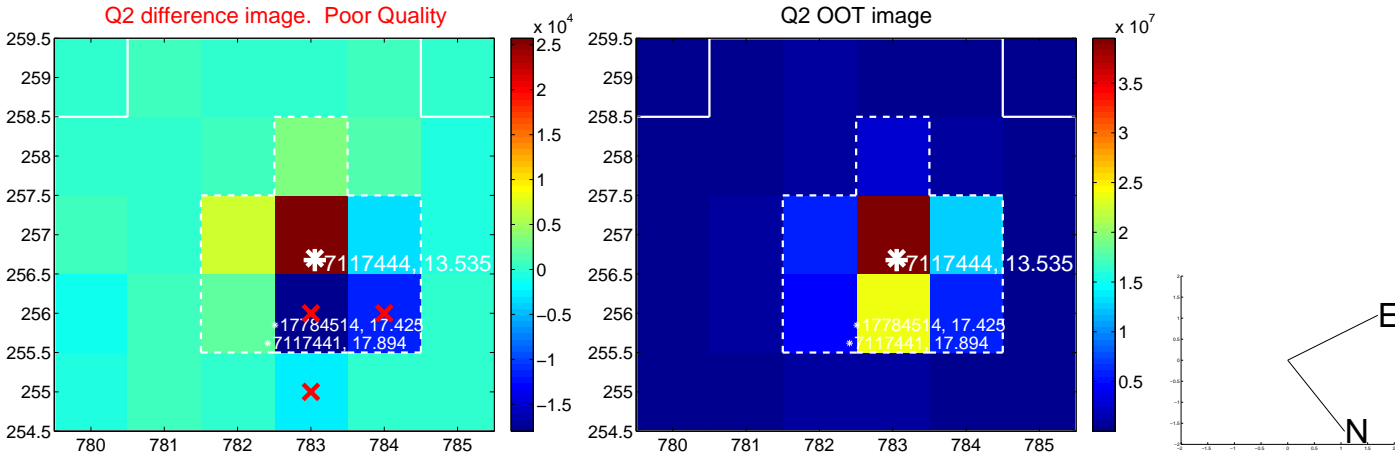
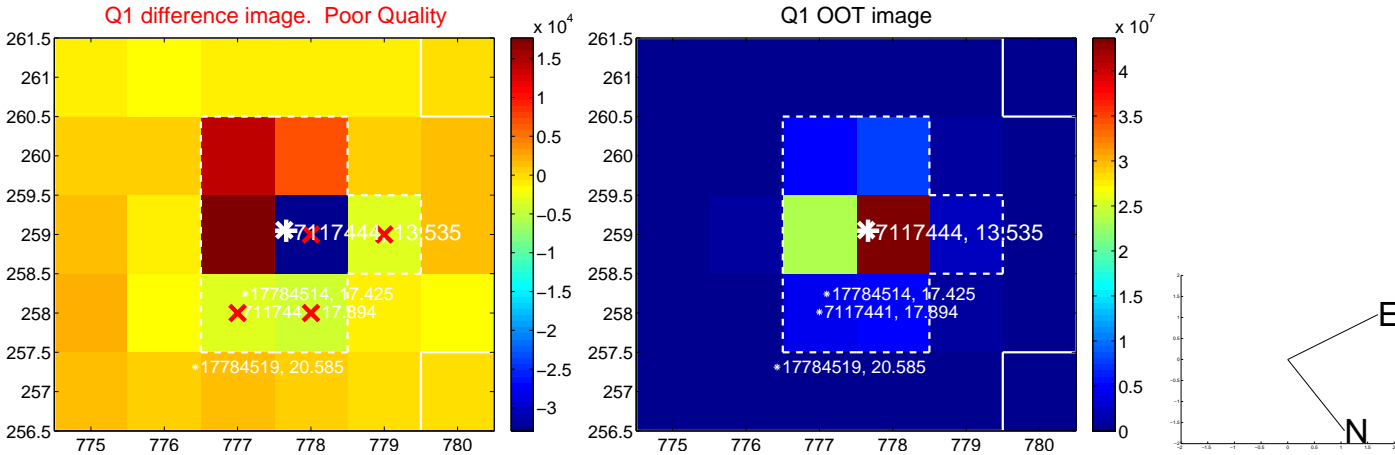
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.696 \pm 1.438$	1.18	$1.582 \pm 1.697$	$-0.610 \pm 1.005$
PRF-fit source offset from KIC position	$1.629 \pm 1.355$	1.20	$1.529 \pm 1.622$	$-0.560 \pm 0.989$
photometric centroid source offset	$0.33 \pm 0.36$	0.92	$0.18 \pm 0.38$	$0.28 \pm 0.35$

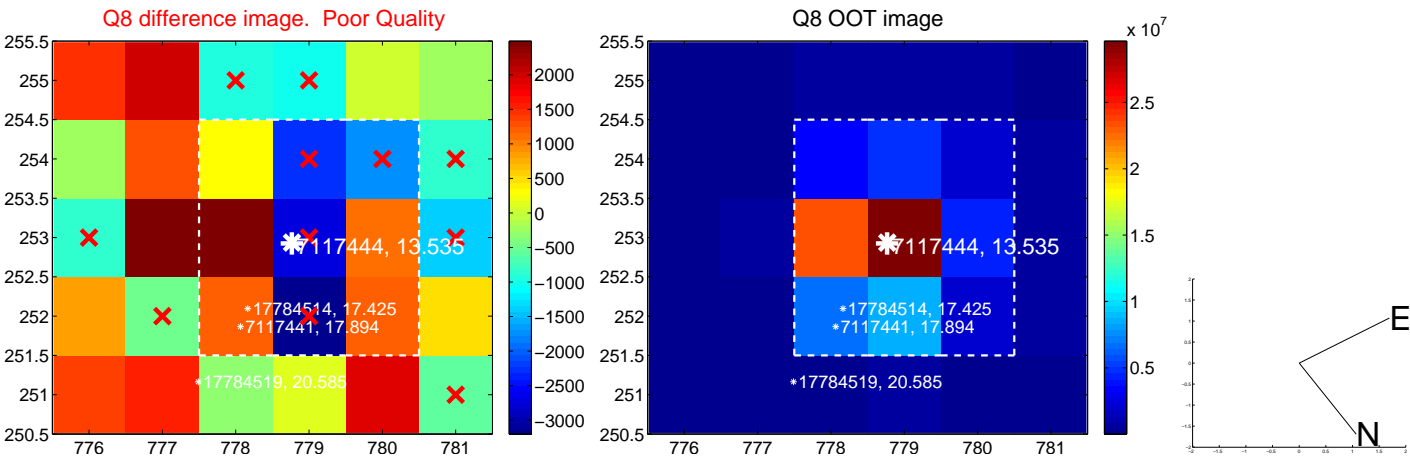
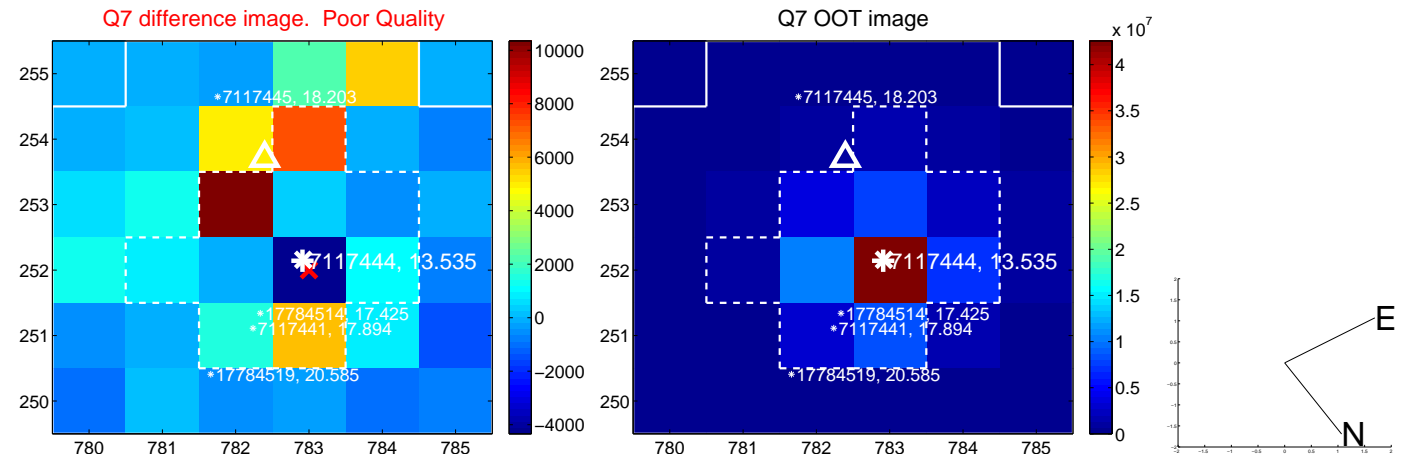
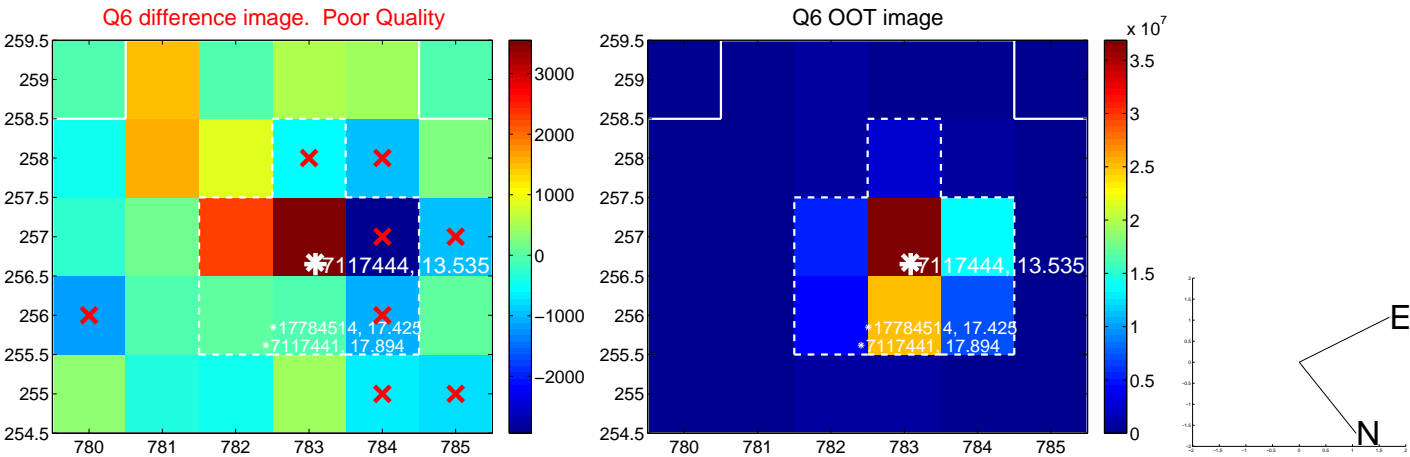
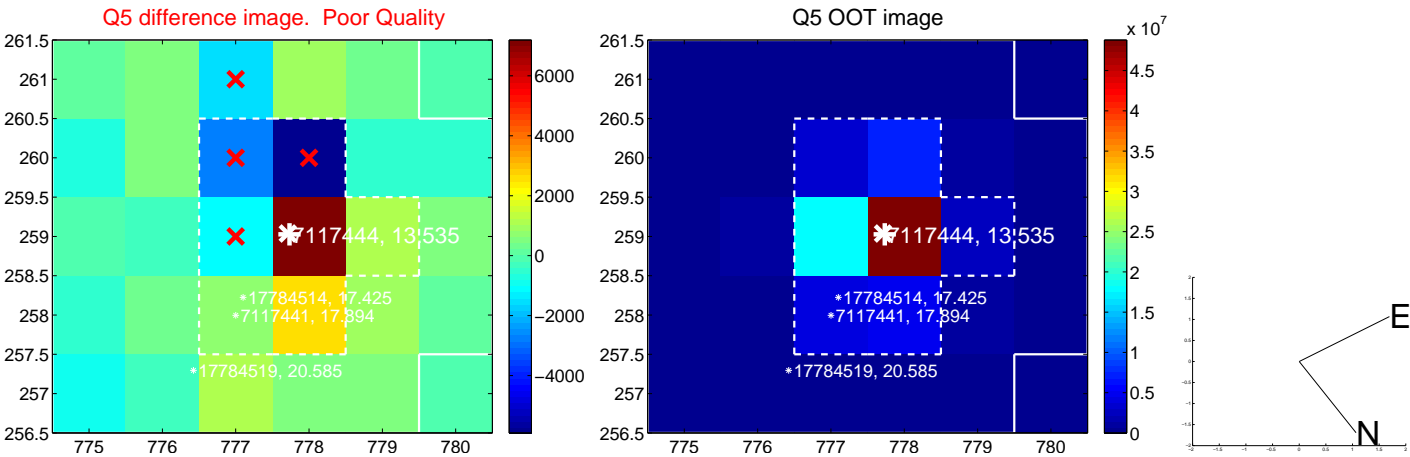


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

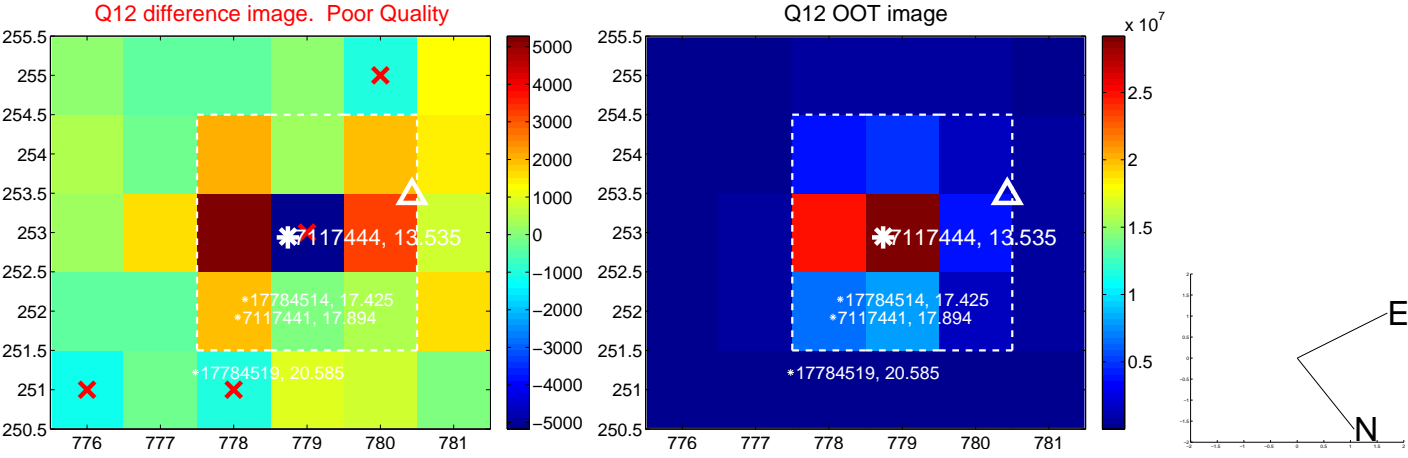
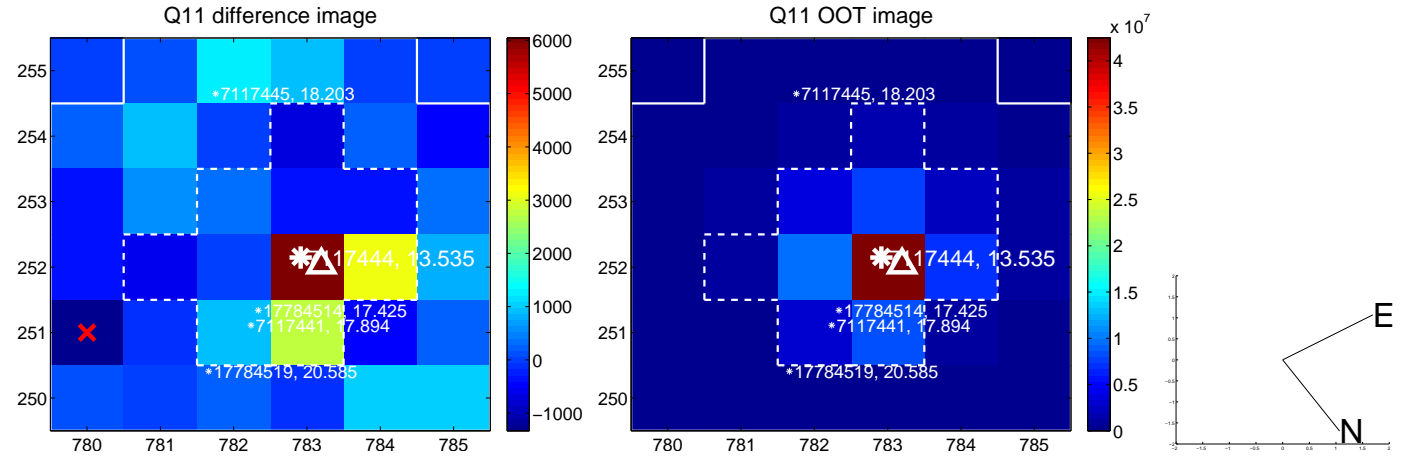
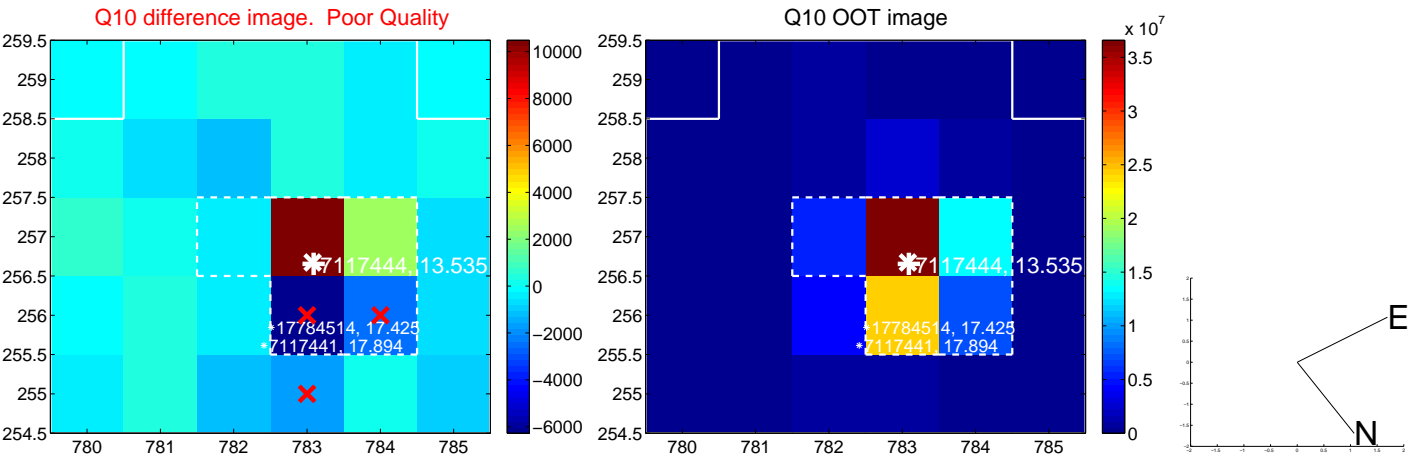
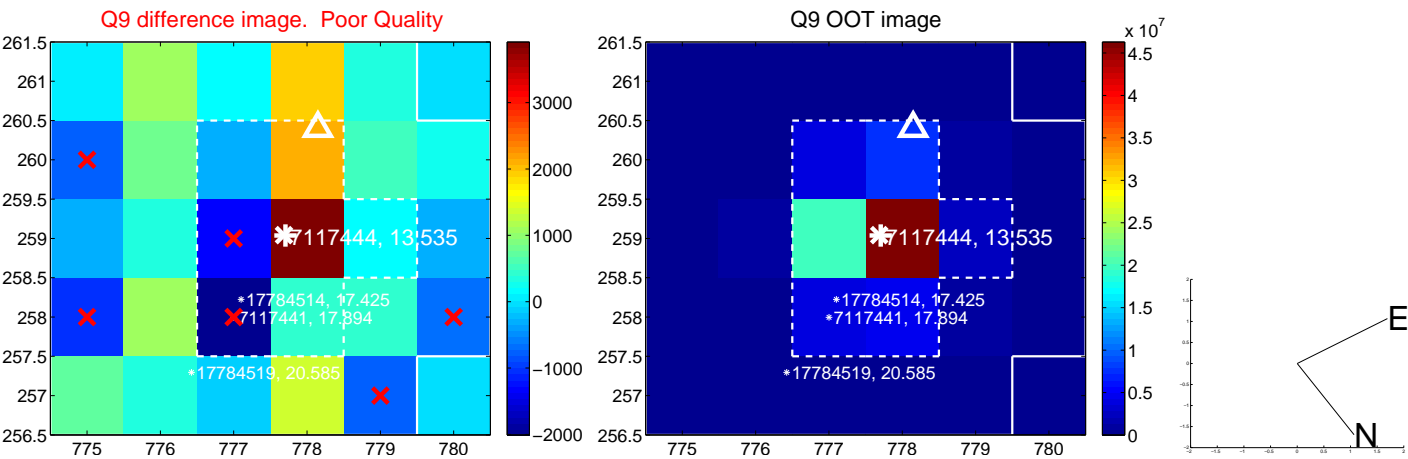
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

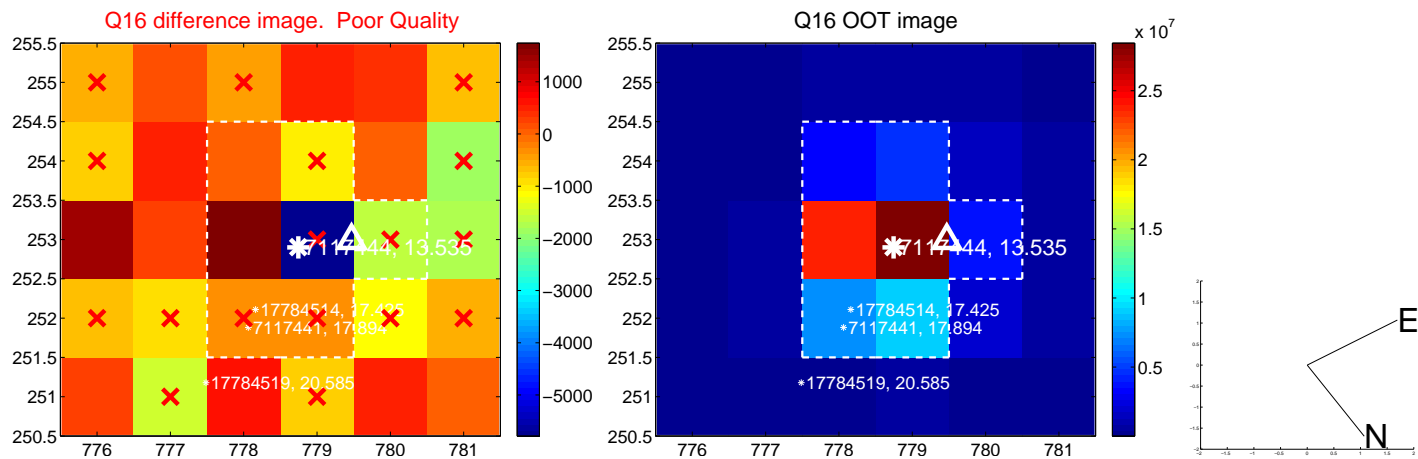
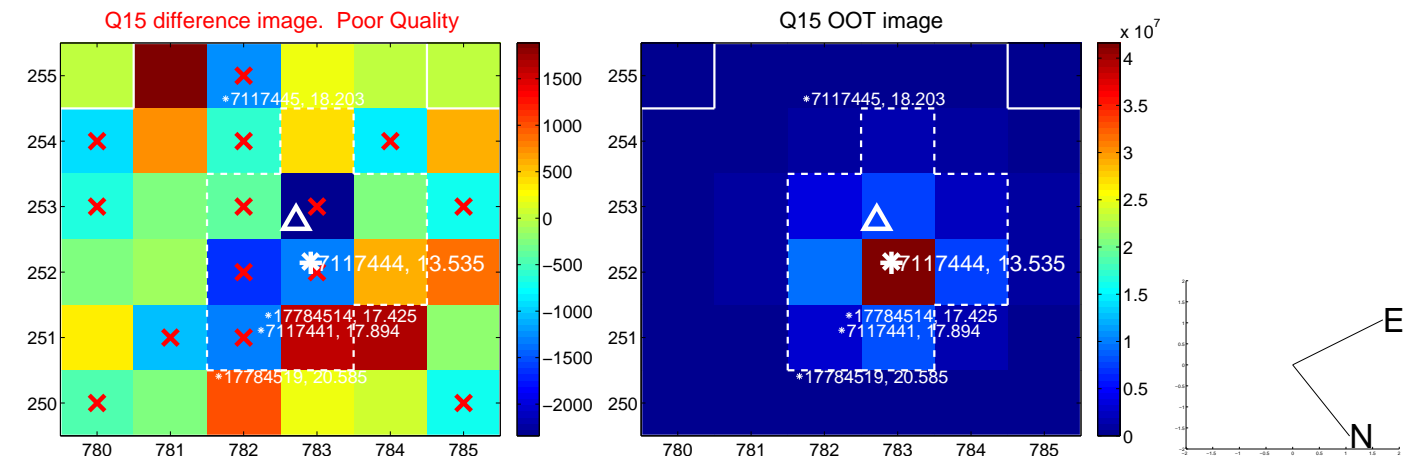
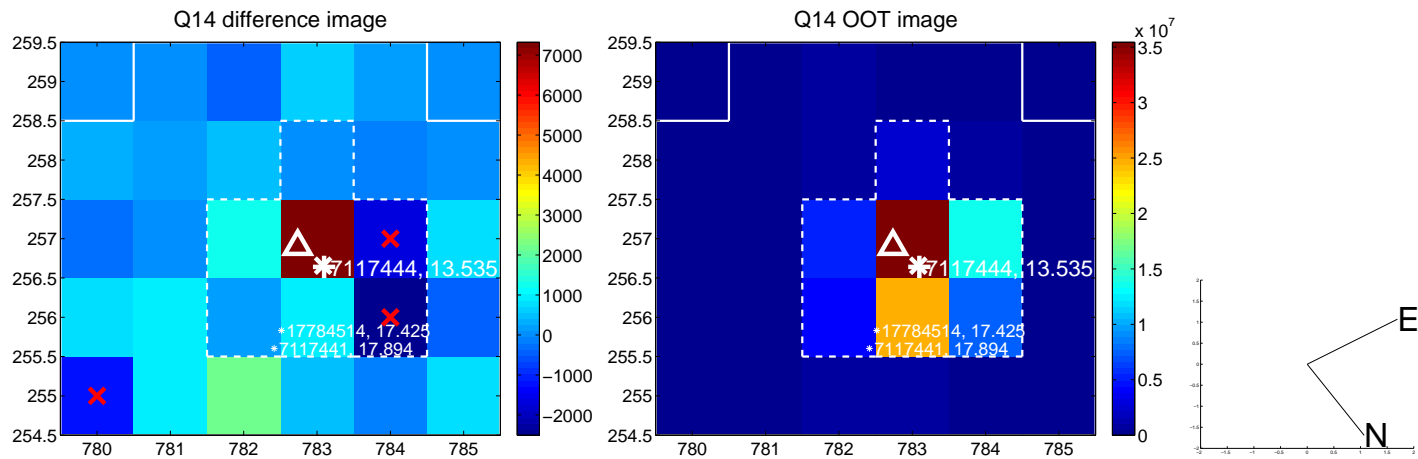
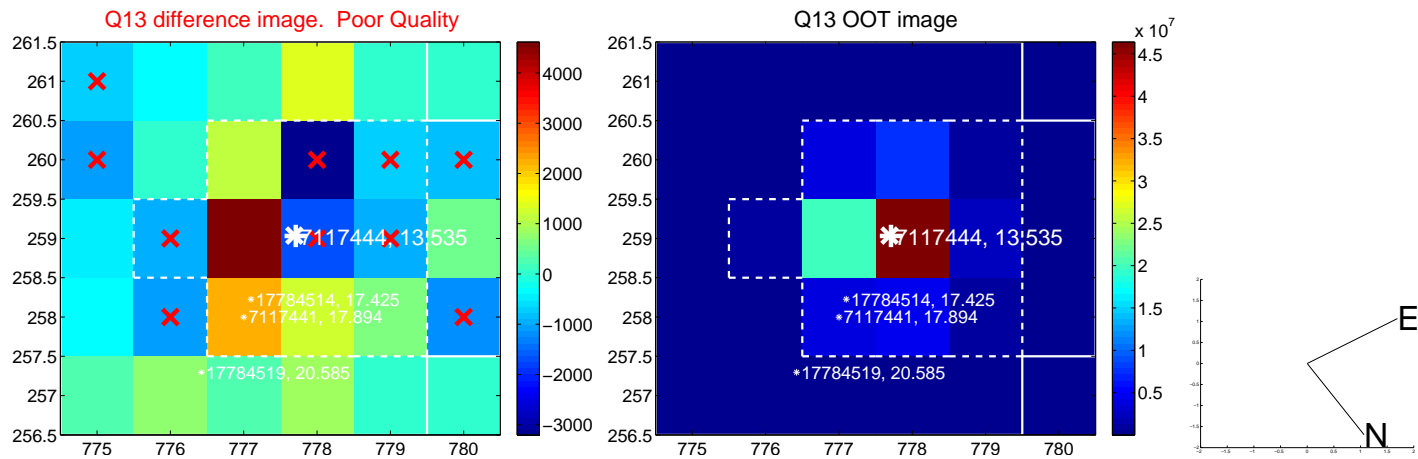


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

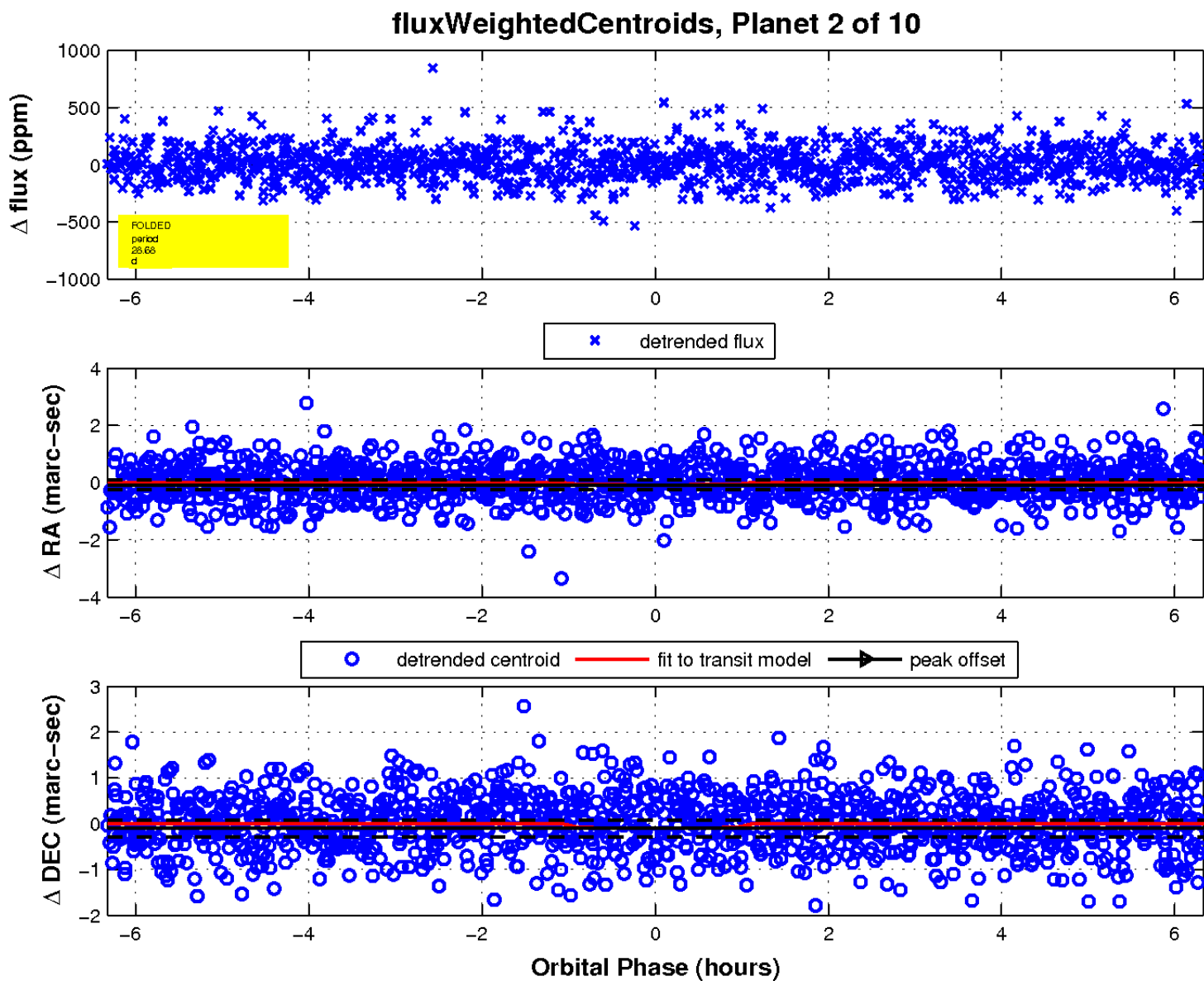
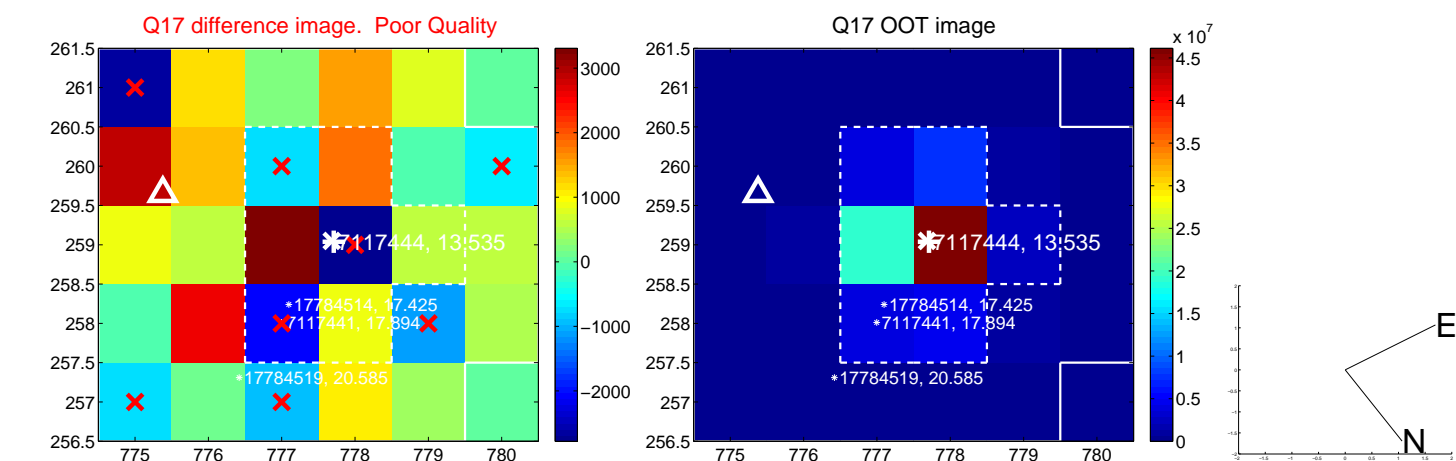




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

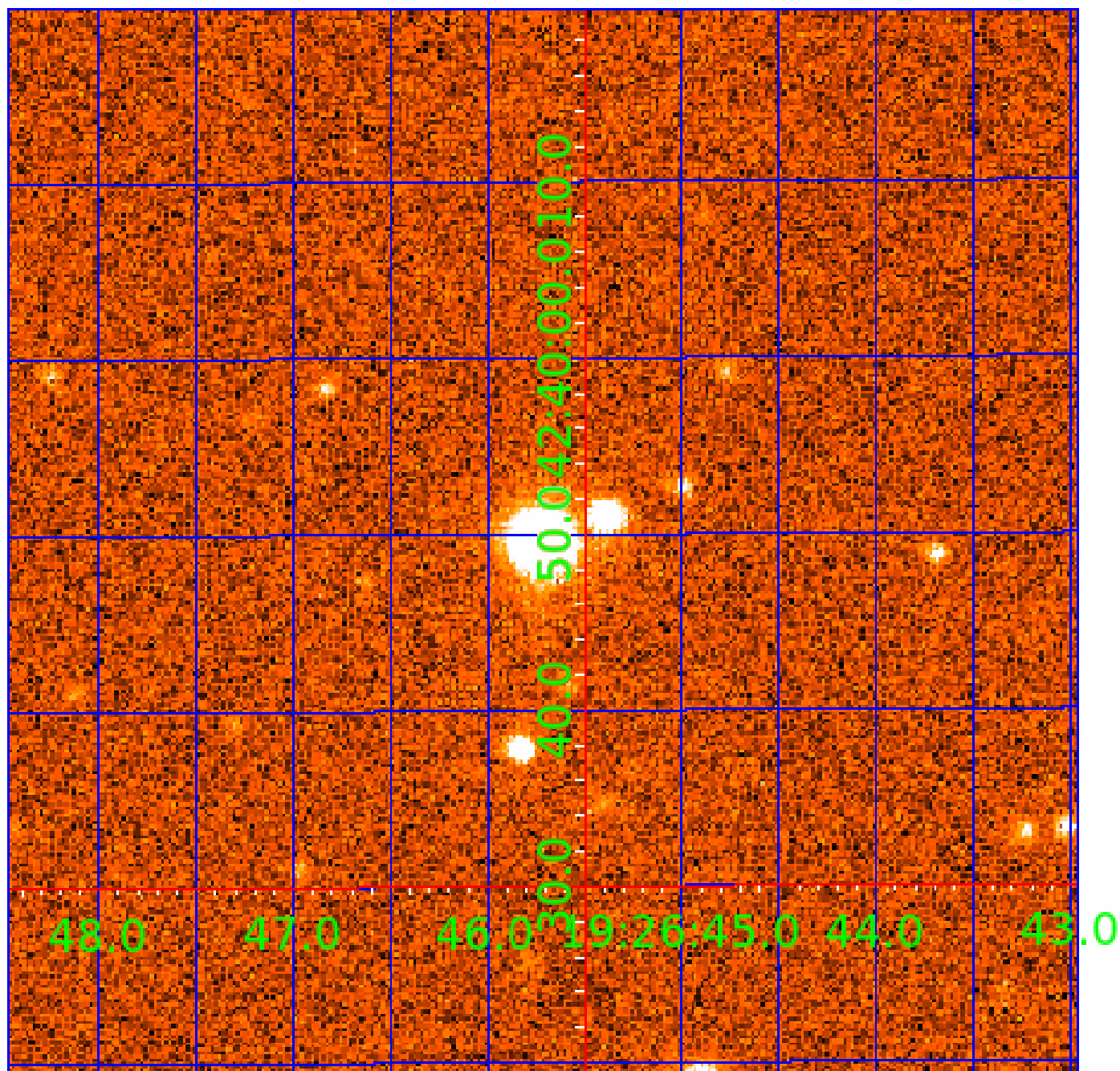


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 007117444

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007117444-01	OBS	No	0.566779	131.850424	9.7	4.016	7.9	7.1	0.89	6089	0.28	5526.64
007117444-02	OBS	No	28.683667	158.533256	409.8	2.113	15.3	9.9	0.89	6089	1.81	29.52
007117444-04	OBS	No	24.620543	151.203318	365.0	1.357	12.4	8.0	0.89	6089	1.91	36.19
007117444-06	OBS	No	31.725644	159.932876	542.1	2.500	10.8	-1.0	0.89	6089	2.08	25.81
007117444-07	OBS	No	37.863077	148.204384	590.4	2.174	12.0	12.3	0.89	6089	3.74	20.39
007117444-08	OBS	No	25.017406	142.026280	590.0	0.948	11.5	11.2	0.89	6089	2.65	35.43
007117444-09	OBS	No	16.445934	141.504848	375.6	1.583	9.7	8.9	0.89	6089	2.05	61.98
007117444-10	OBS	No	8.496060	134.146611	514.7	2.000	8.8	-1.0	0.89	6089	2.02	149.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007117444-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
007117444-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
007117444-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
007117444-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
007117444-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
007117444-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—CENT_FEW_DIFFS
007117444-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS
007117444-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

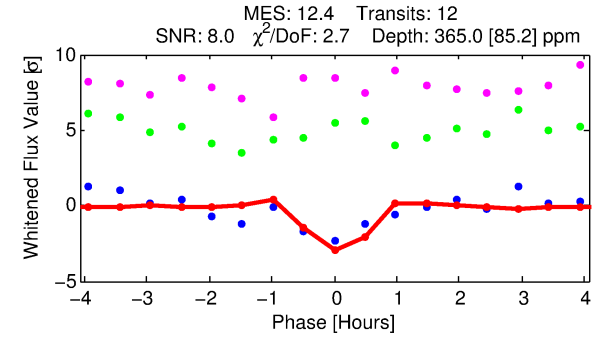
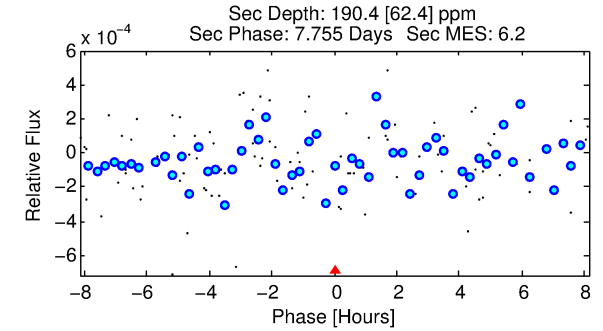
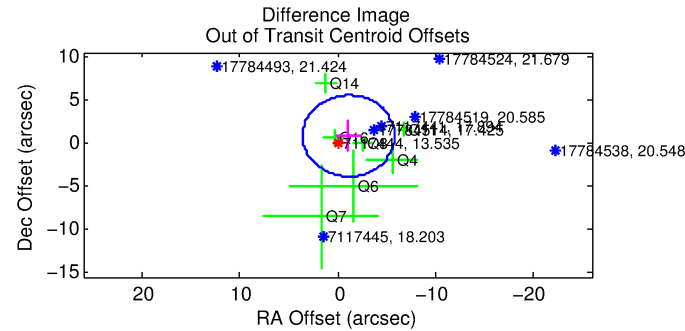
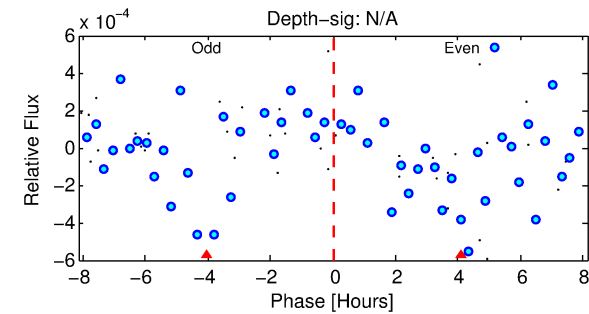
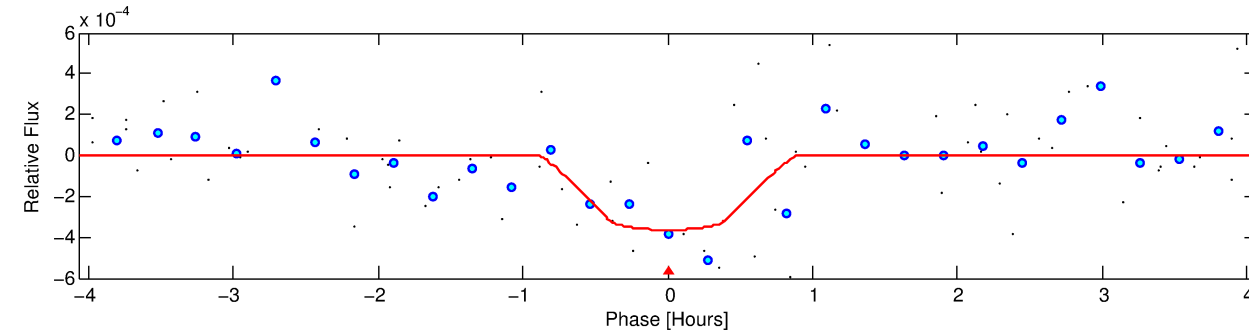
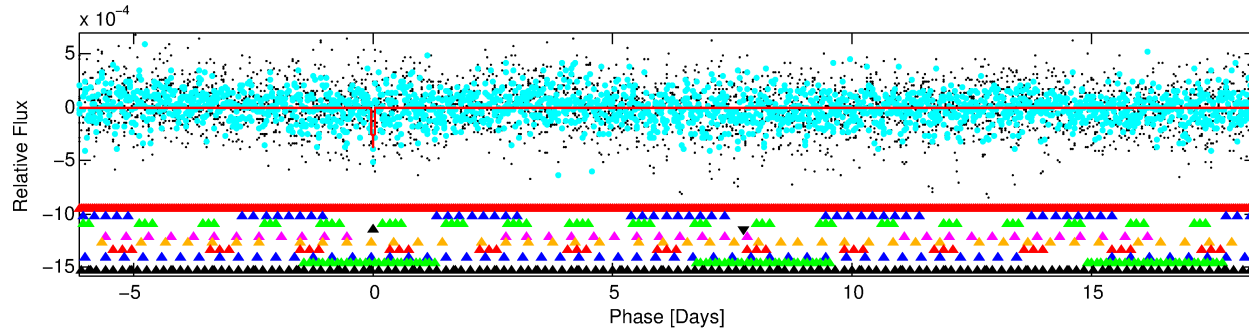
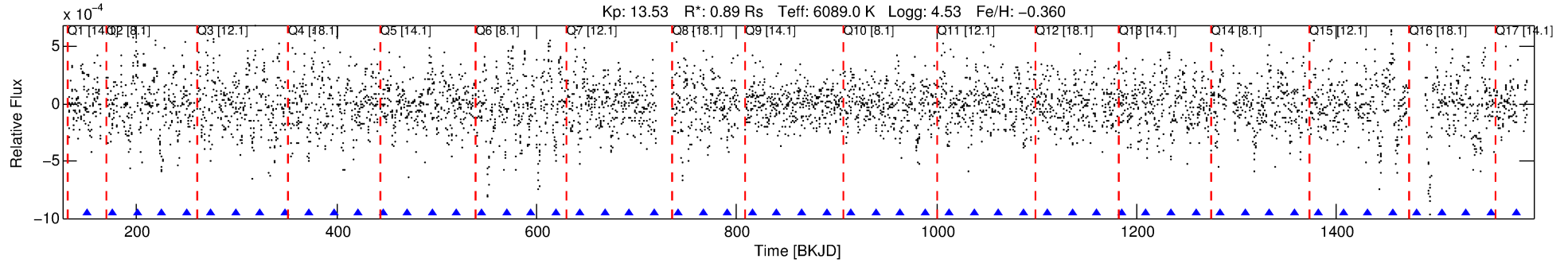
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007117444-04

No Significant Match Found

# DV One-Page Summary

KIC: 7117444 Candidate: 4 of 10 Period: 24.621 d



## DV Fit Results:

Period = 24.62054 [0.00020] d  
Epoch = 151.2033 [0.0066] BKJD  
Rp/R\* = 0.0197 [0.0226]  
a/R\* = 82.38 [485.43]  
b = 0.83 [2.26]  
Seff = 36.19 [14.07]  
Teq = 625 [61] K  
Rp = 1.91 [2.27] Re  
a = 0.1640 [0.0412] AU  
Ag = 770.51 [1811.22] [0.42 $\sigma$ ]  
Teffp = 5095 [2961] K [1.51 $\sigma$ ]

## DV Diagnostic Results:

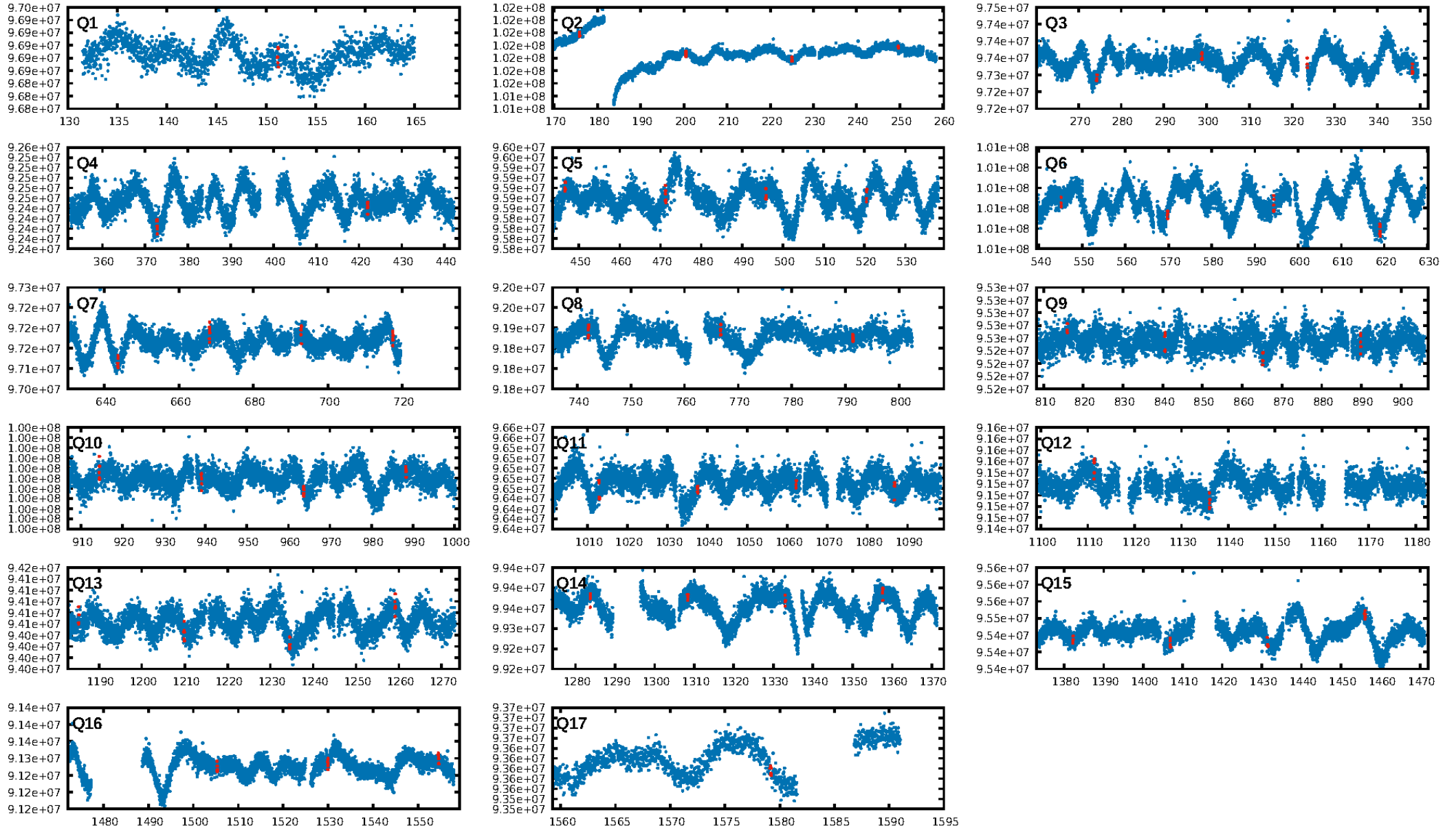
ShortPeriod-sig: 100.0% [18.95 $\sigma$ ]  
LongPeriod-sig: 100.0% [5.75 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 86.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [12/12]  
GhostDiagnostic-chr: 0.2048  
Centroid-sig: 12.9%  
Centroid-so: 0.518 arcsec [1.12 $\sigma$ ]  
OotOffset-rm: 1.393 arcsec [0.89 $\sigma$ ]  
OotOffset-st: 2/2/3/0 [7]  
KicOffset-rm: 1.413 arcsec [1.08 $\sigma$ ]  
KicOffset-st: 2/2/3/0 [7]  
DiffImageQuality-fgm: 0.00 [0/7]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:36:56 Z

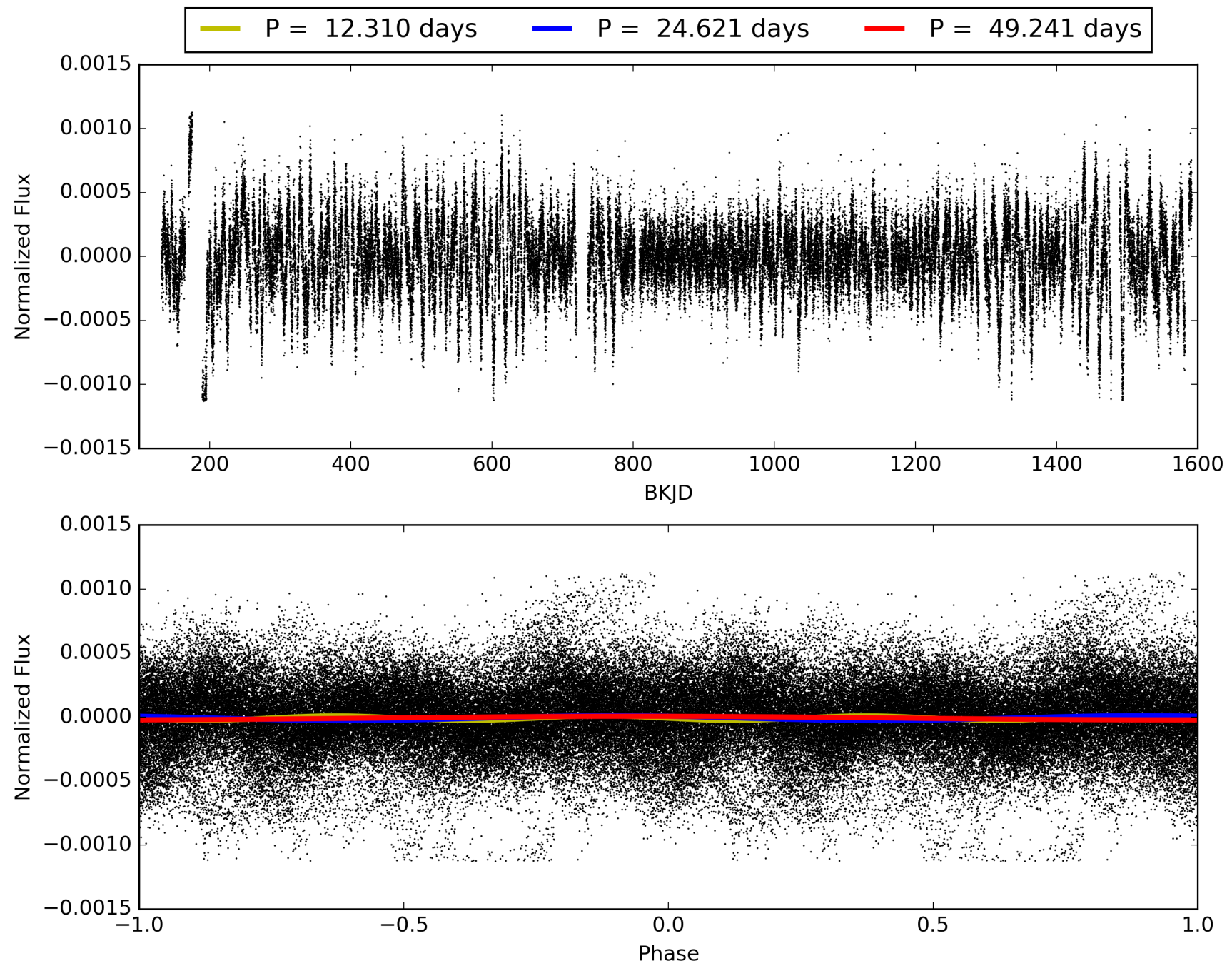
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 007117444-04, PDC Light Curves

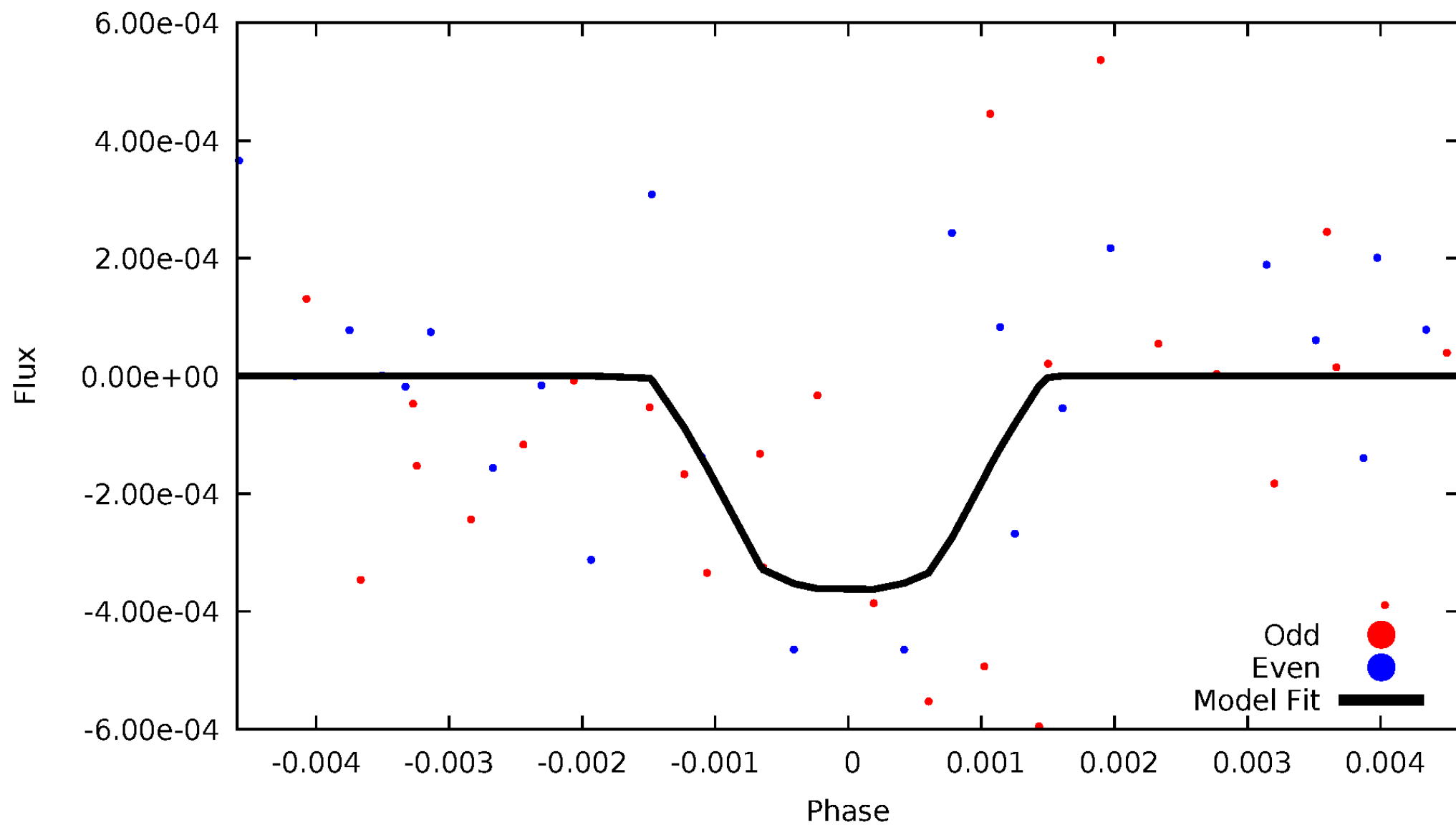


# TCE 007117444-04



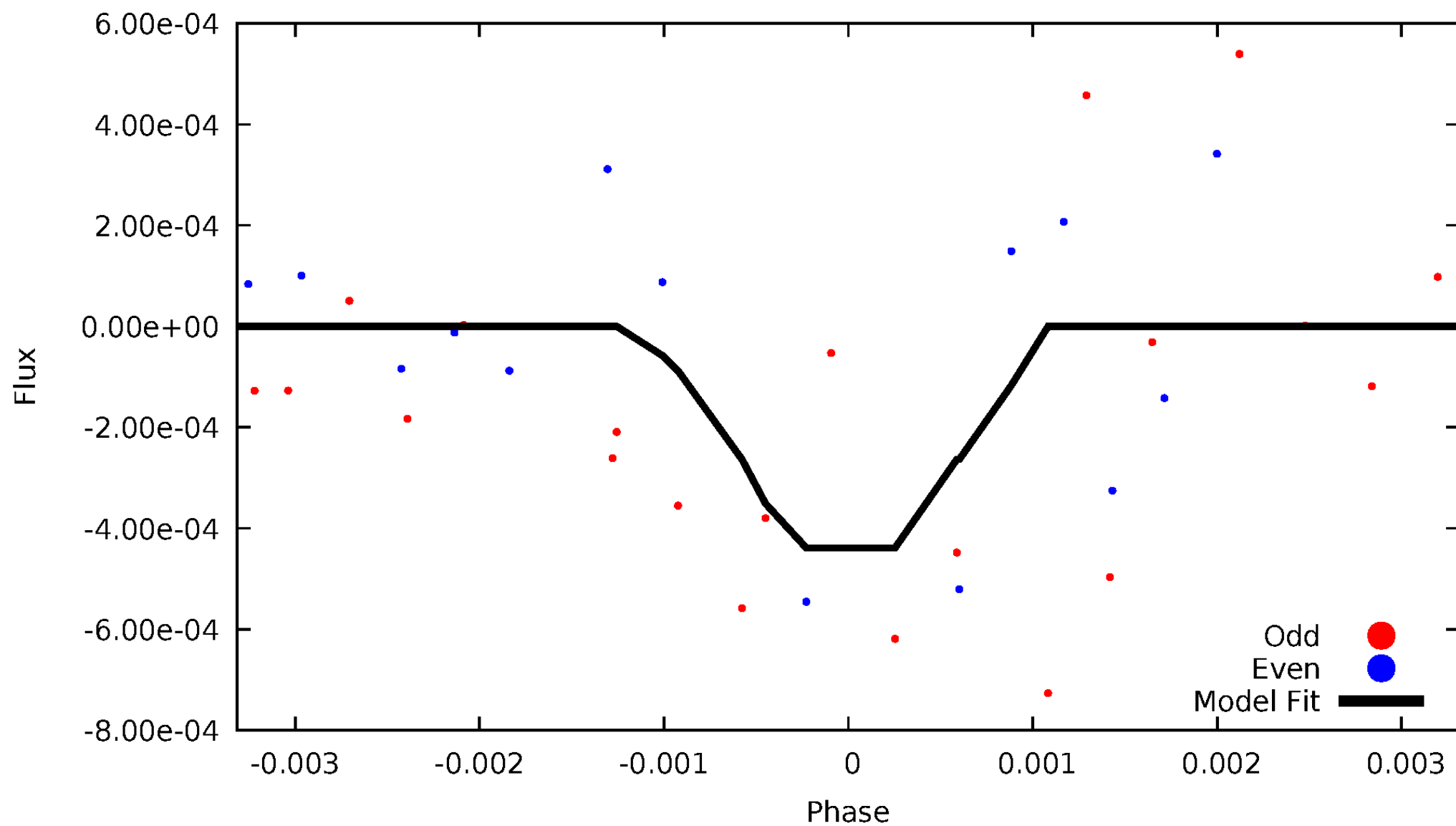
# DV Odd/Even

TCE 007117444-04



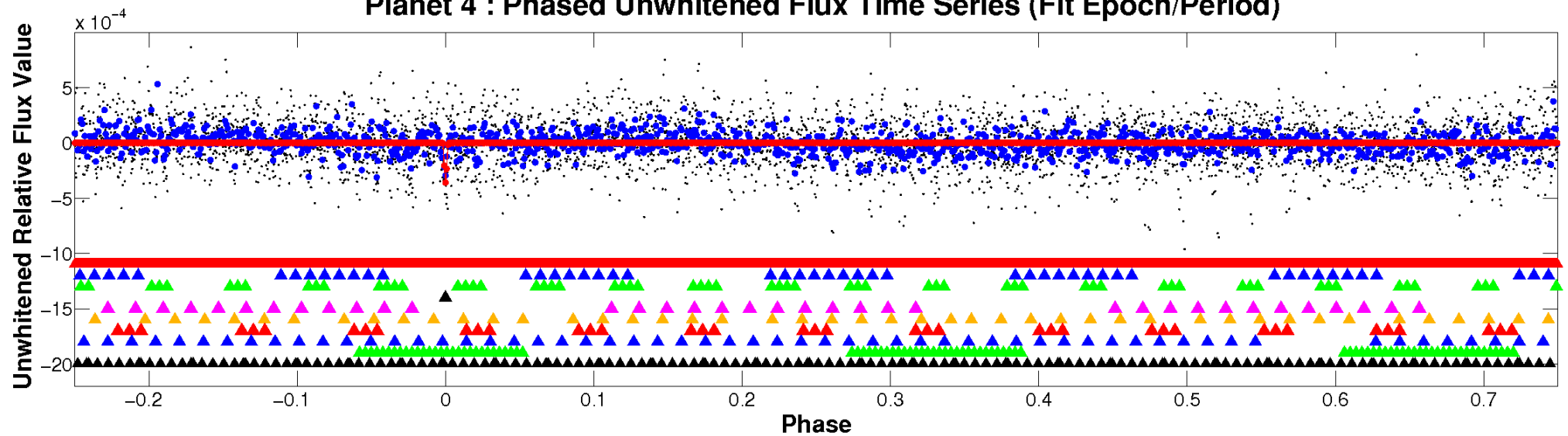
# ALT Odd/Even

TCE 007117444-04

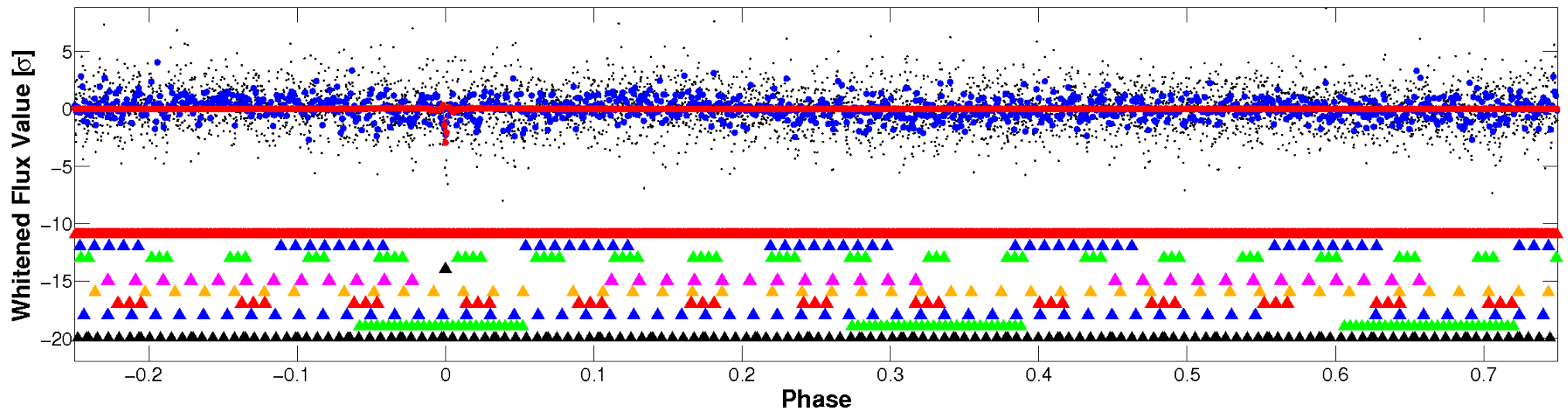


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

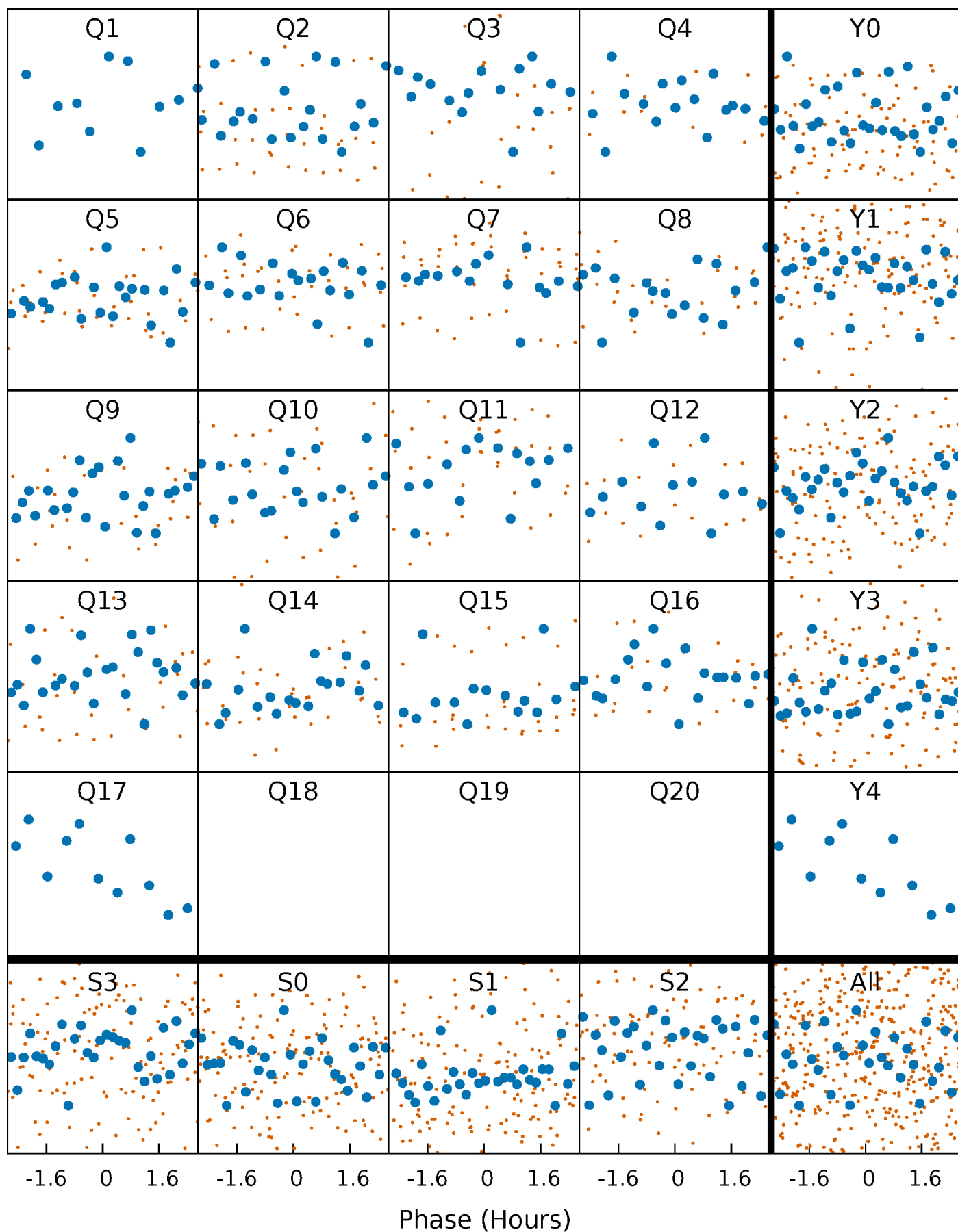


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

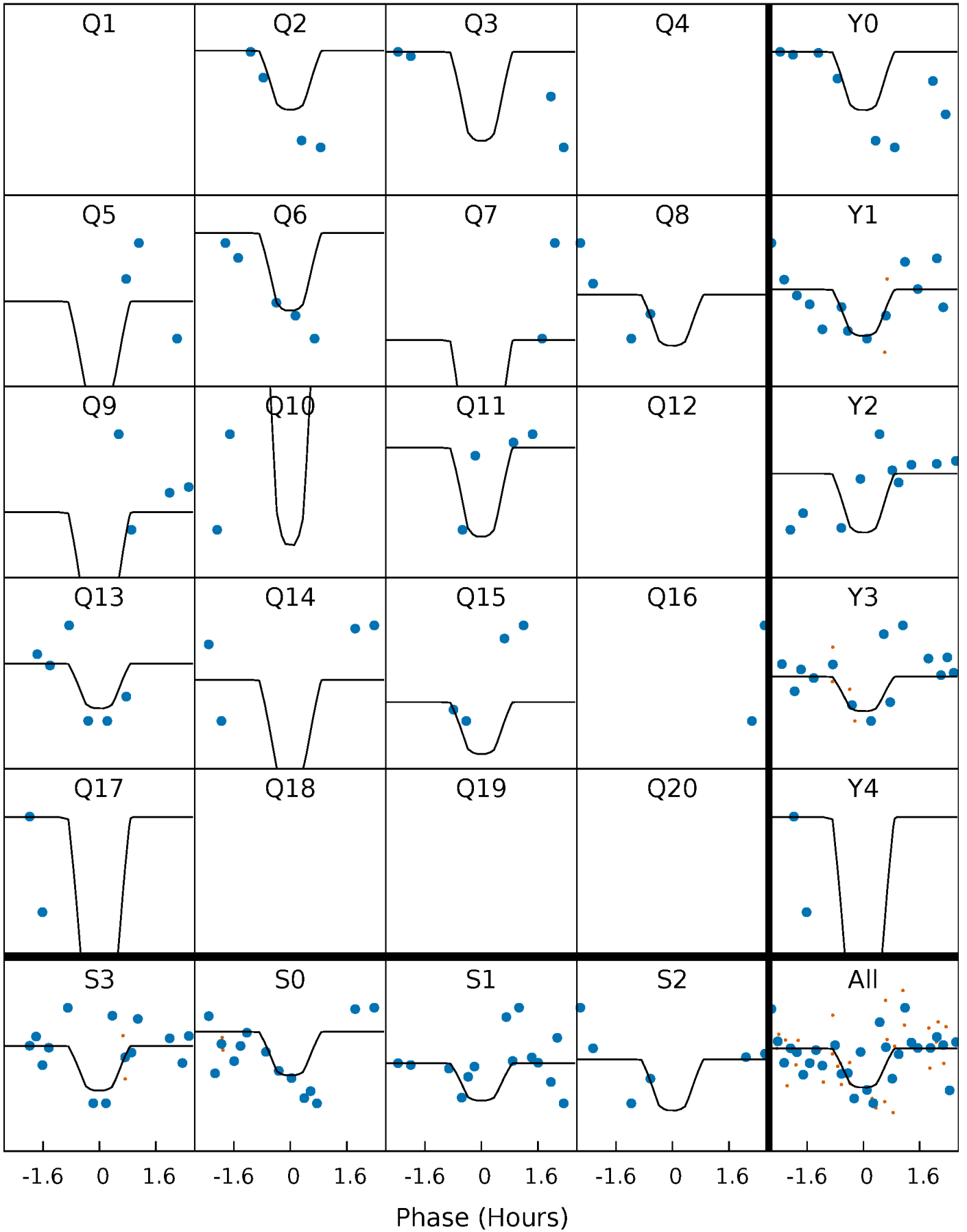
TCE 007117444-04   P= 24.620543 Days    $T_0=151.203318$  (BKJD)





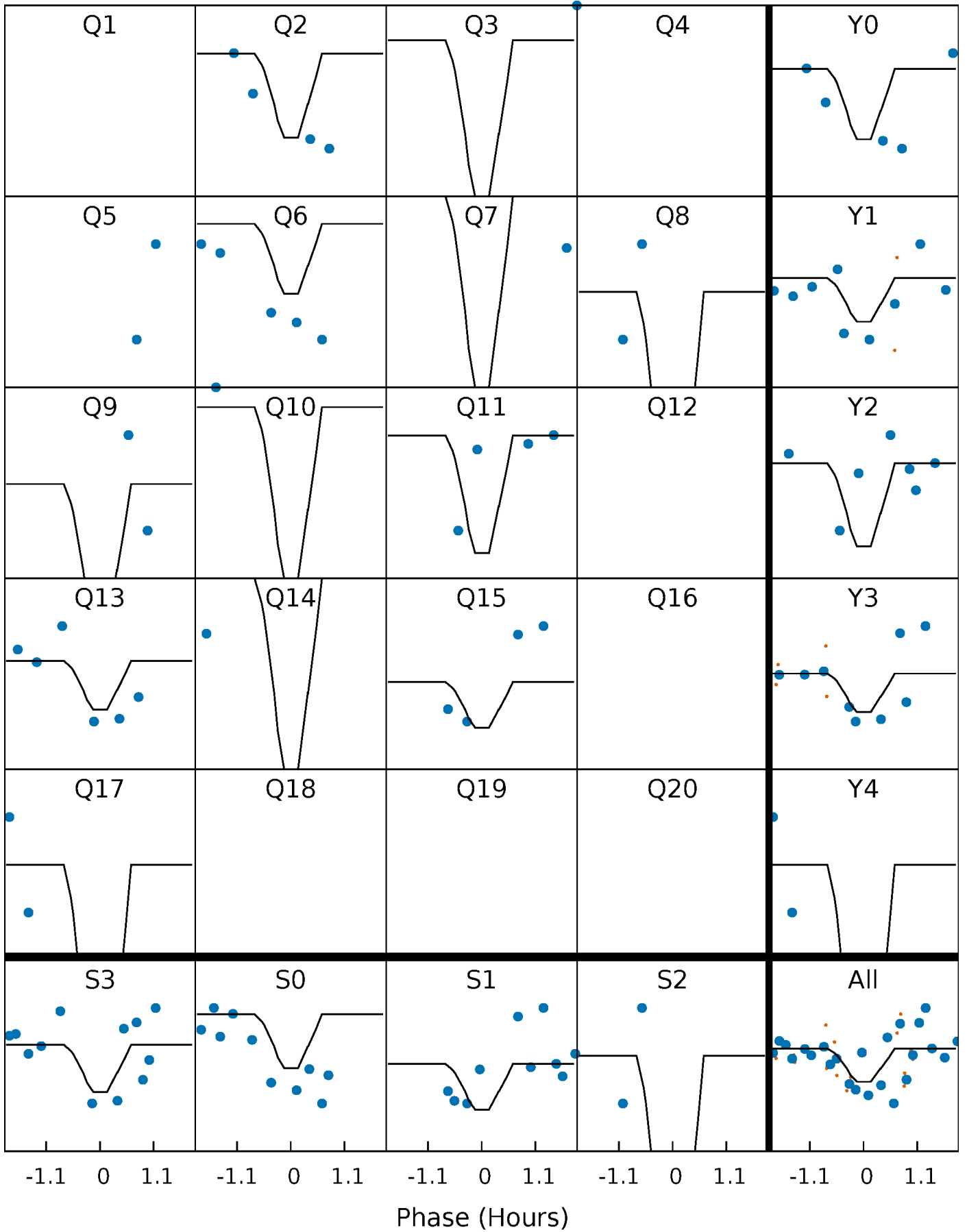
# DV Quarter-Phased Transit Curves

TCE 007117444-04 P= 24.620543 Days  $T_0=151.203318$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

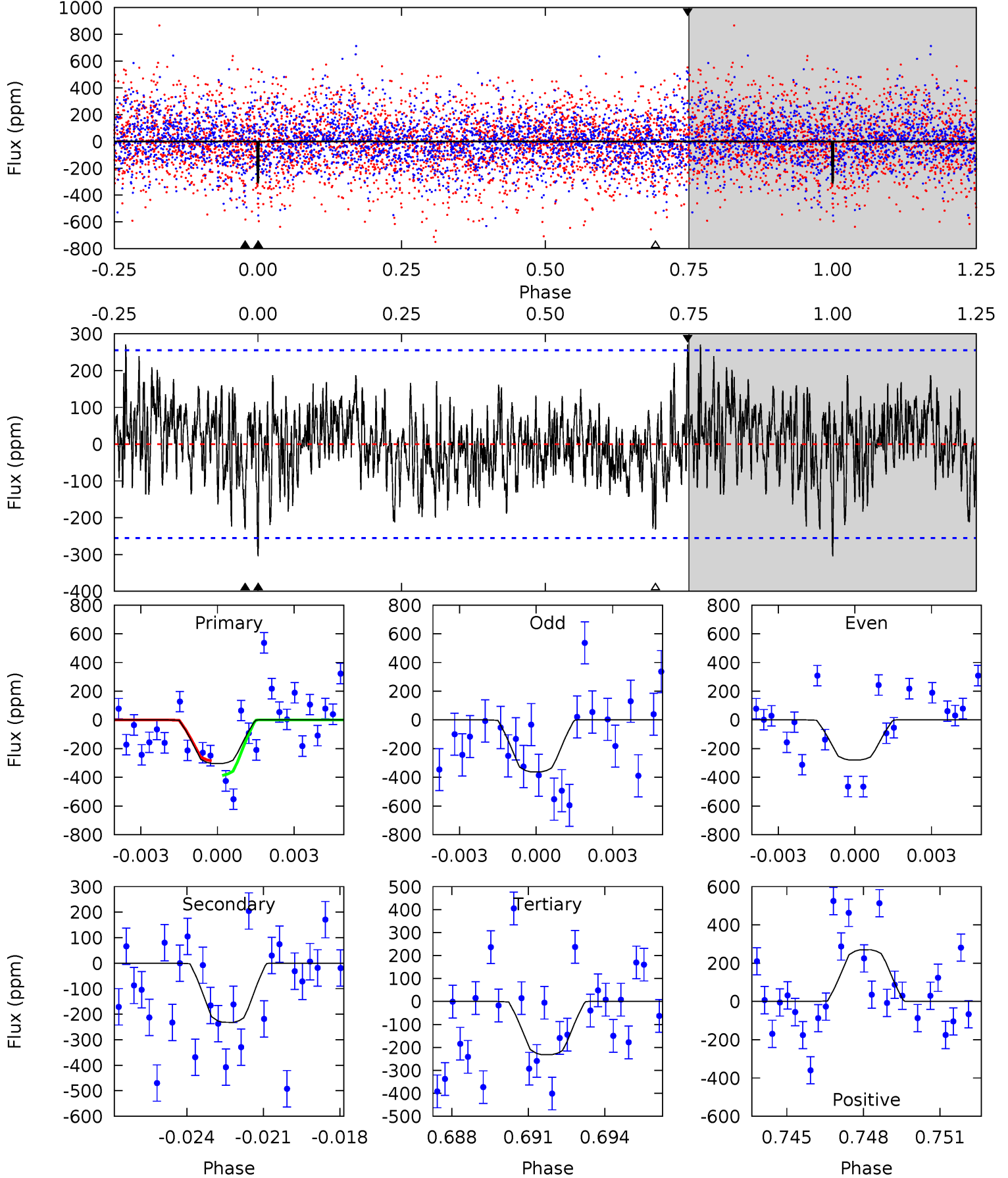
TCE 007117444-04   P= 24.620425 Days    $T_0=151.204051$  (BKJD)



# DV Model-Shift Uniqueness Test

007117444-04, P = 24.620543 Days, E = 126.582775 Days

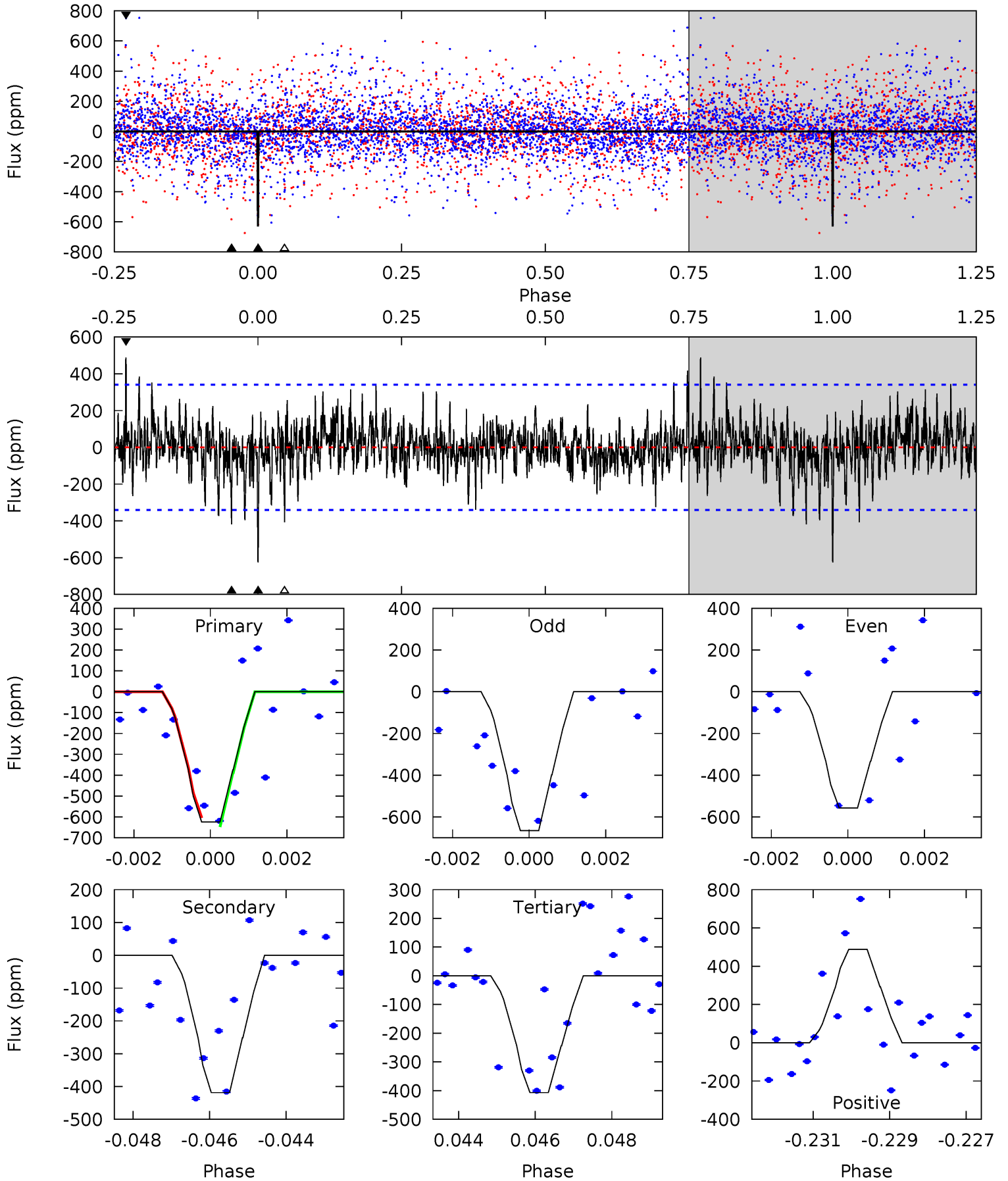
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.26	4.77	4.77	5.56	5.25	2.97	1.59	1.49	0.69	0.01	-0.79	0.81	0.84	0.47	1.02



# Alt Model-Shift Uniqueness Test

007117444-04, P = 24.620425 Days, E = 126.583626 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
9.77	6.55	6.37	7.64	5.33	3.09	1.55	3.41	2.14	0.18	-1.09	0.82	0.77	0.44	0



### Stellar Parameters For KIC 007117444

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6089^{+164}_{-183}$	$4.527^{+0.048}_{-0.204}$	$-0.360^{+0.300}_{-0.300}$	$0.889^{+0.262}_{-0.082}$	$0.971^{+0.118}_{-0.118}$	$1.944^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-5%	+83%/-83%	+29%/-9%	+12%/-12%	+20%/-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 007117444-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-232 \pm 49$	$2.53^{+2.12}_{-1.61}$	$892^{+63}_{-40}$	$4907^{+3075}_{-1061}$	$495^{+3309}_{-342}$
Alt.	$-419 \pm 64$	$2.53^{+2.18}_{-1.55}$	$894^{+63}_{-40}$	$5569^{+4080}_{-1306}$	$988^{+5692}_{-728}$

$T_{max}$  = 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

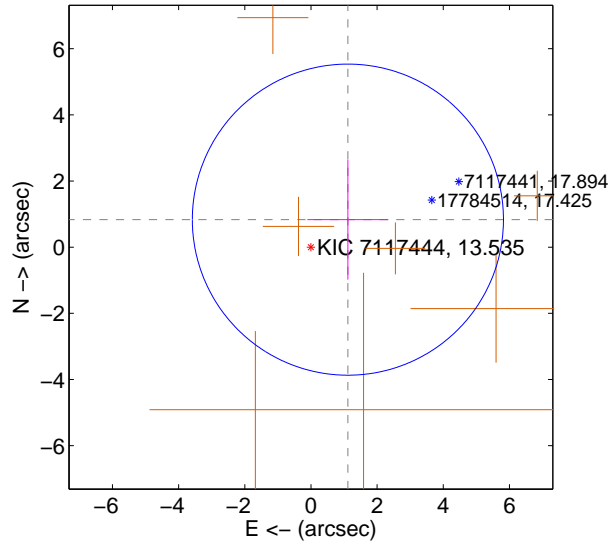
Supplemental centroid analysis for 007117444-04. Kepler magnitude: 13.54. Transit SNR 8.04

There are 0 quarters with good PRF difference image offsets

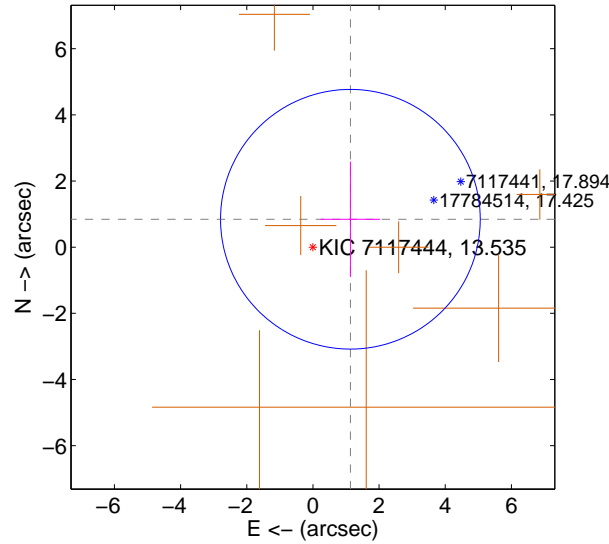
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.393 \pm 1.568$	0.89	$-1.117 \pm 1.225$	$0.832 \pm 1.812$
PRF-fit source offset from KIC position	$1.413 \pm 1.309$	1.08	$-1.133 \pm 0.902$	$0.844 \pm 1.743$
photometric centroid source offset	$0.52 \pm 0.46$	1.12	$-0.01 \pm 0.51$	$0.52 \pm 0.46$

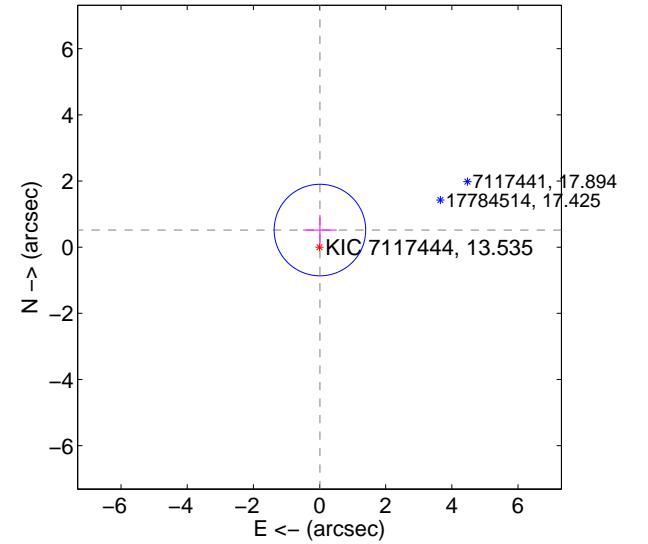
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



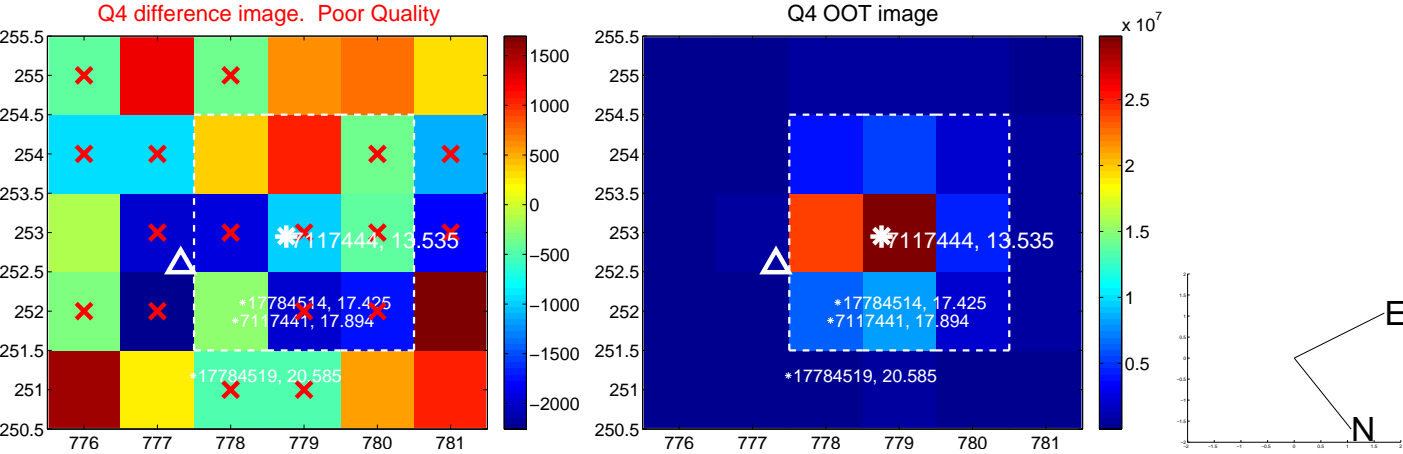
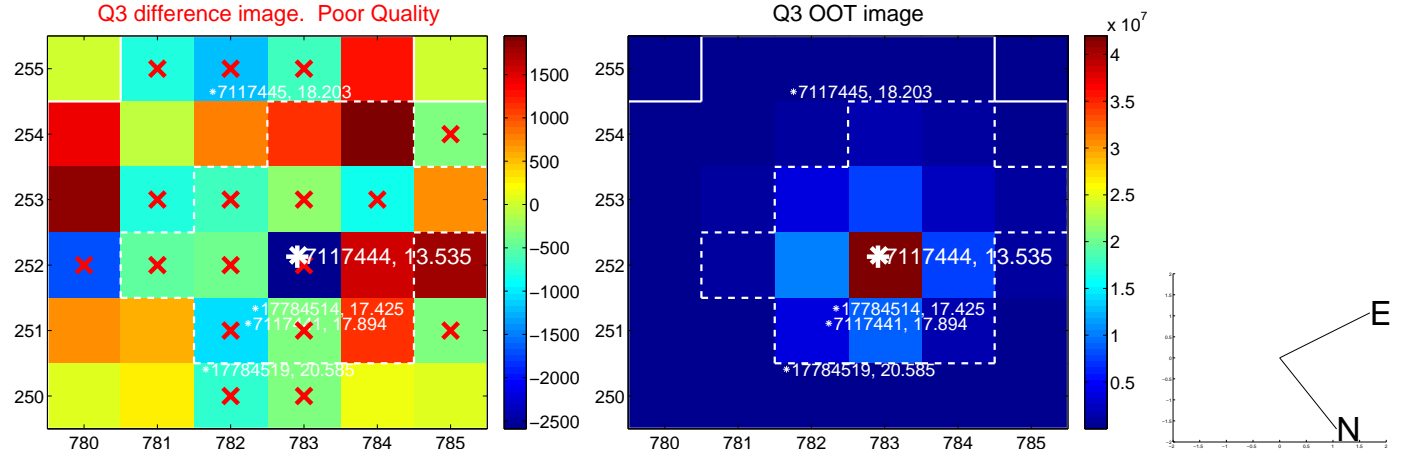
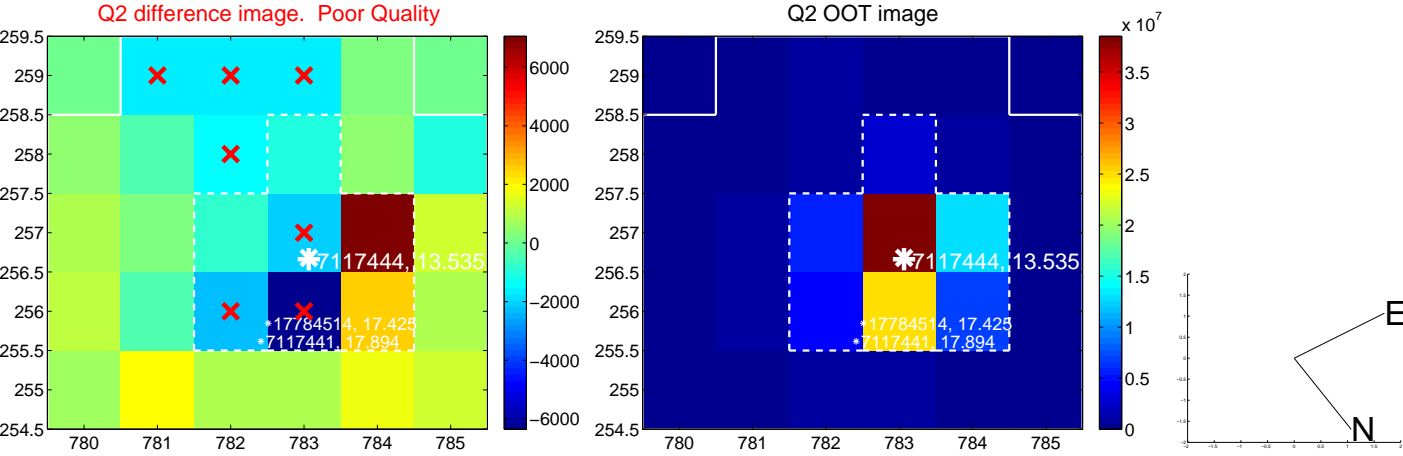
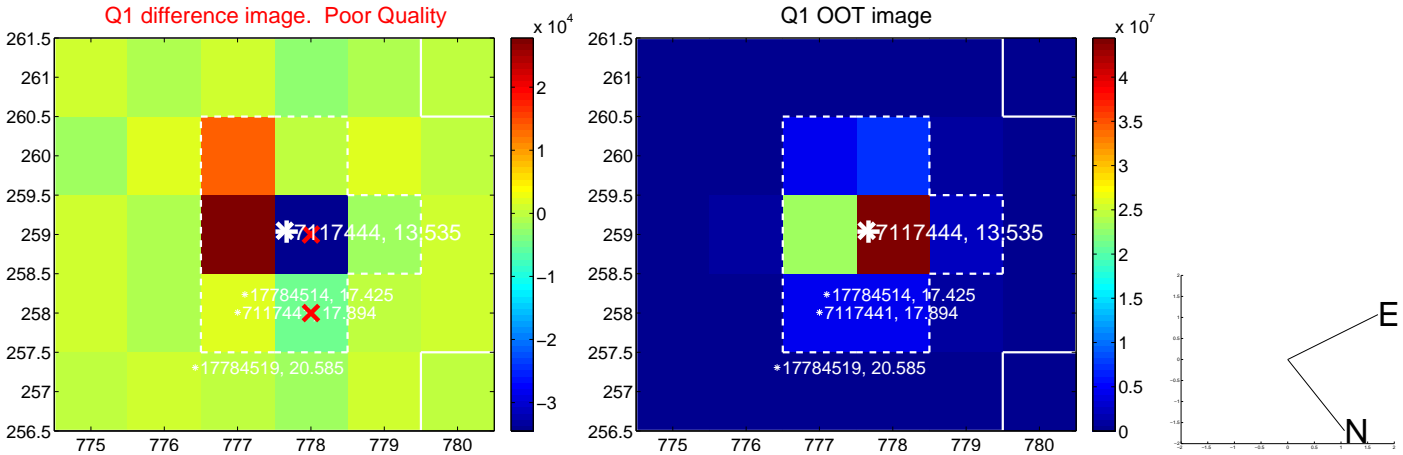
offset from photometric centroids



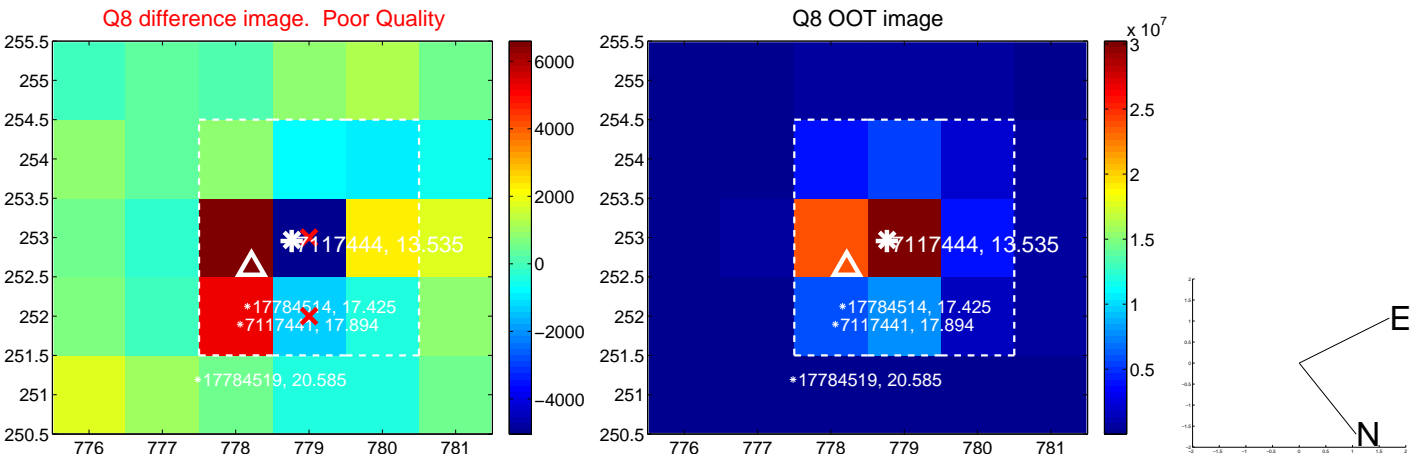
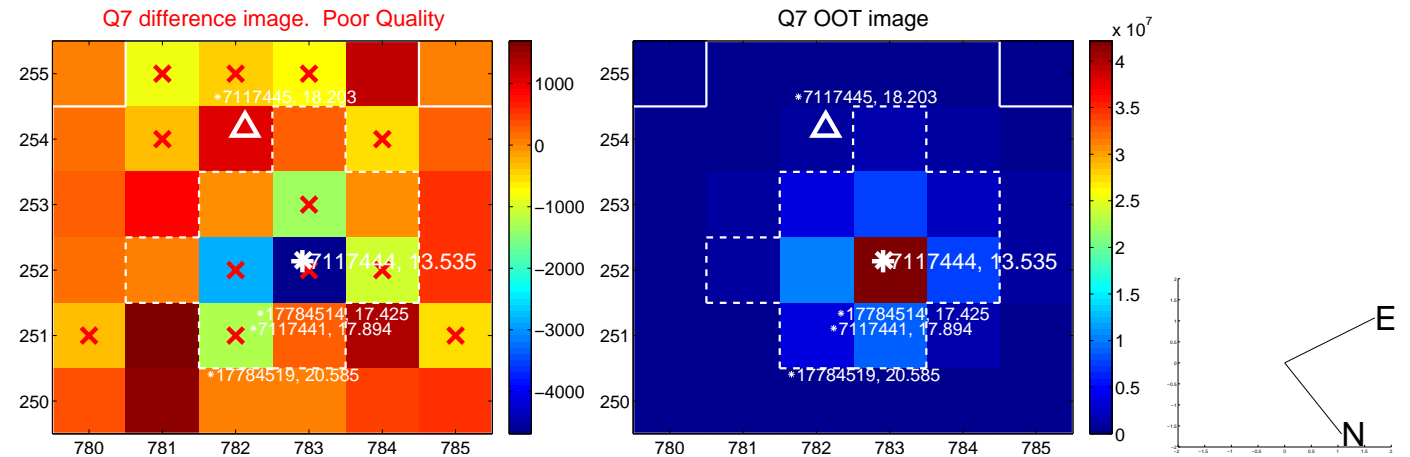
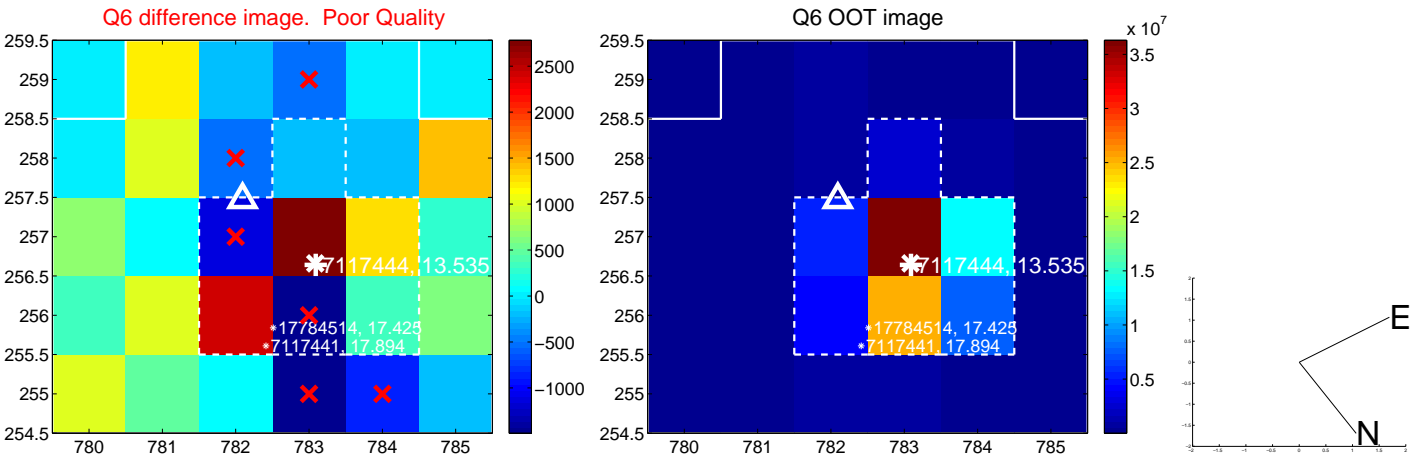
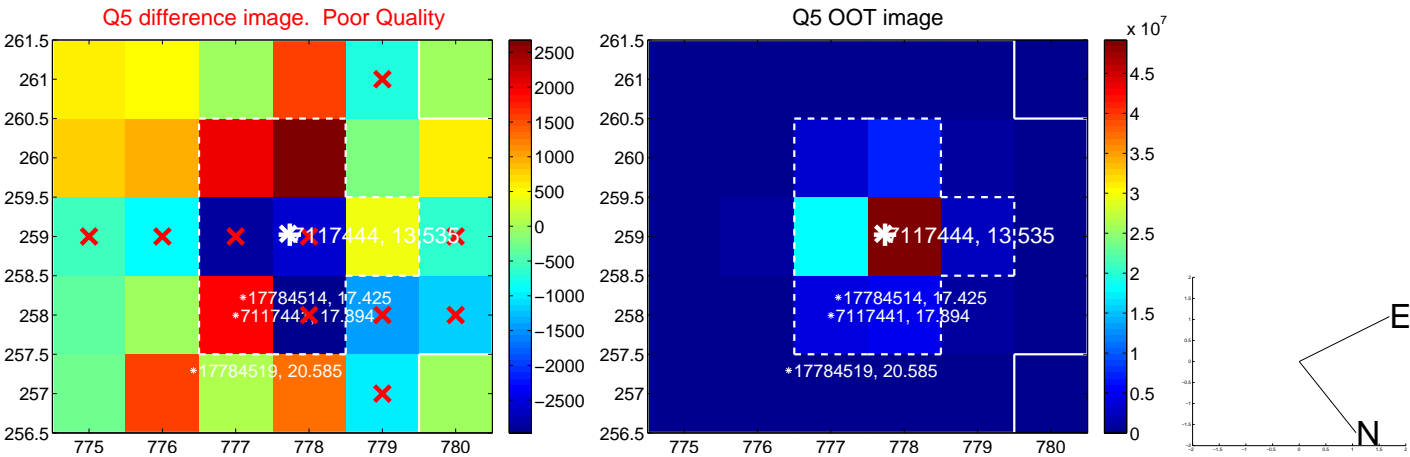
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



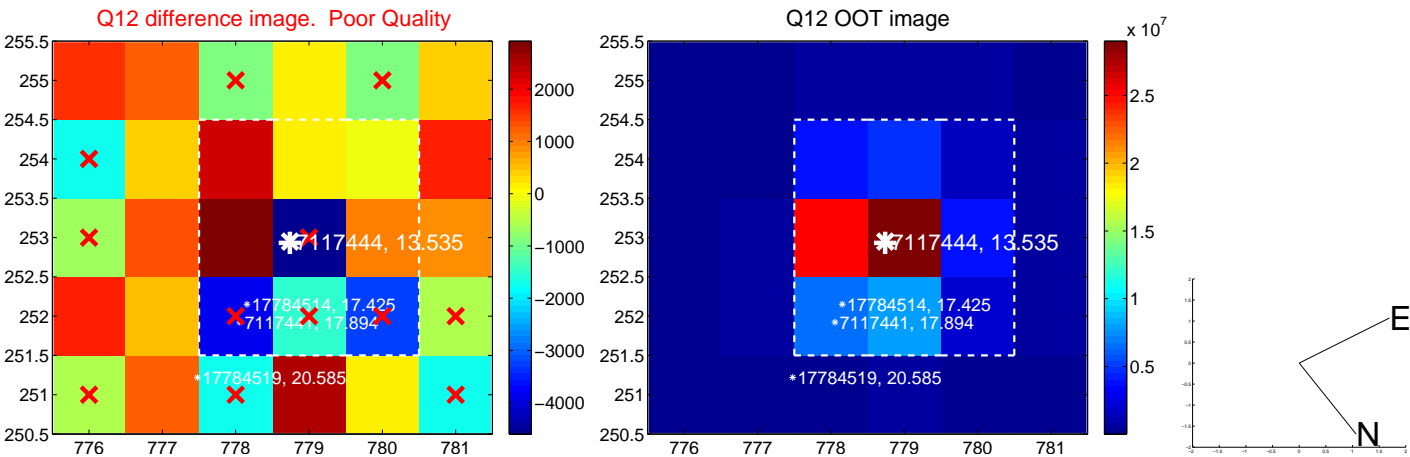
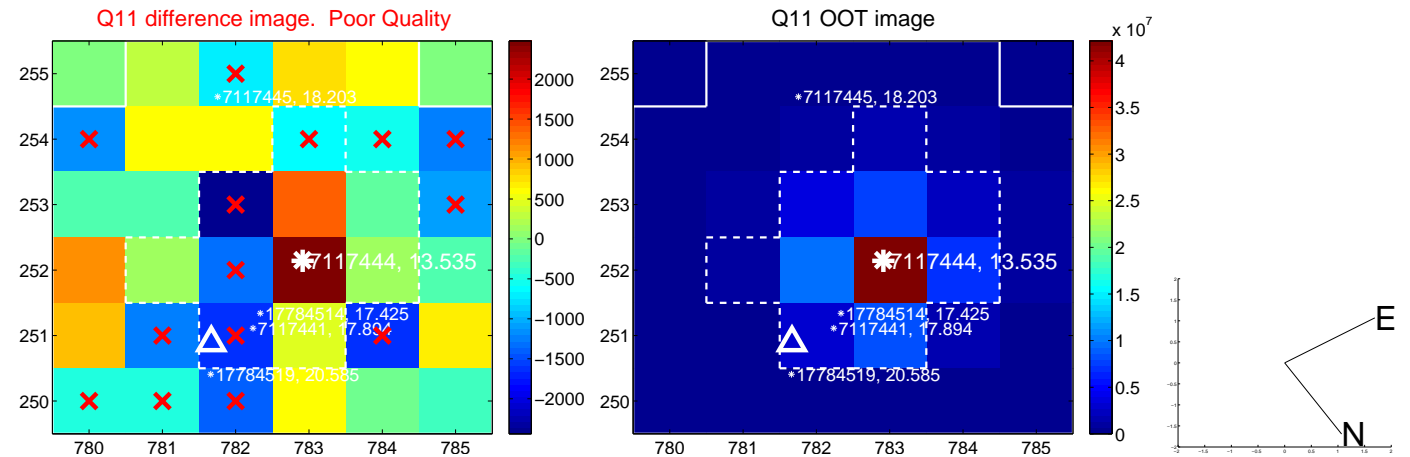
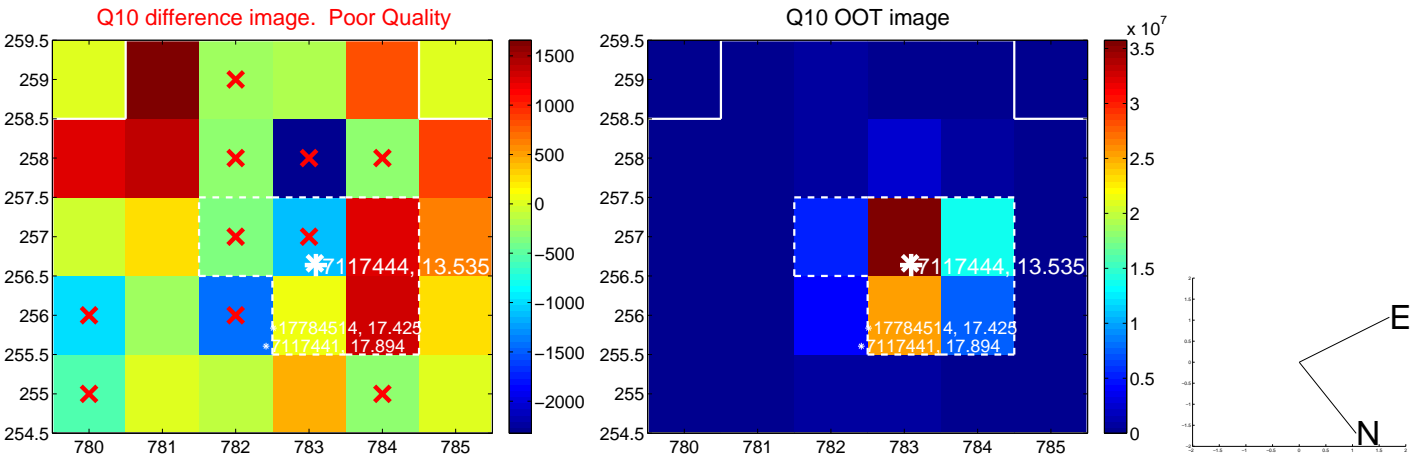
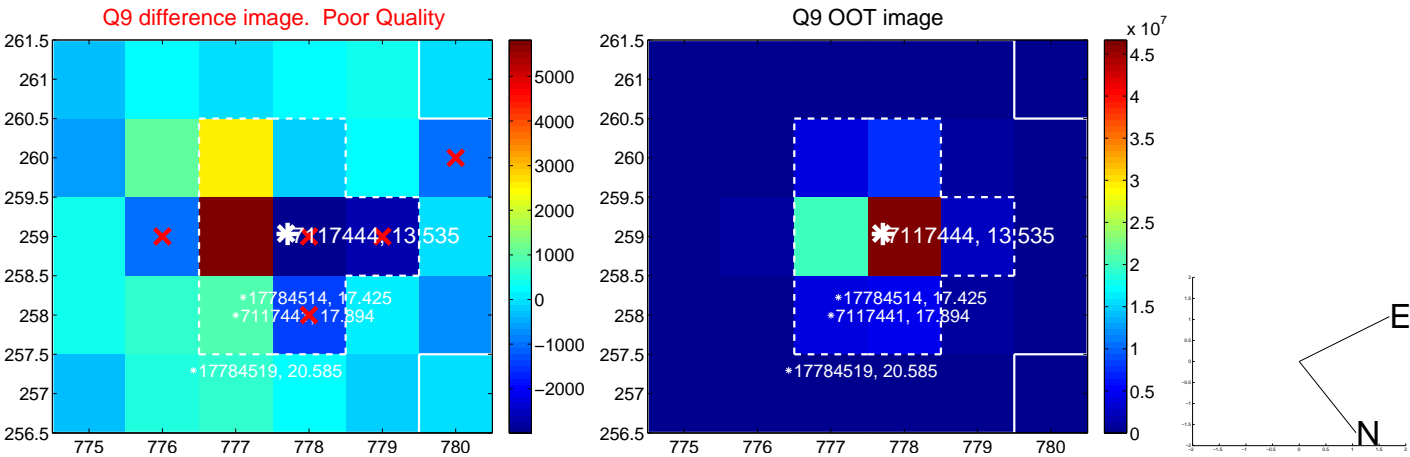
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



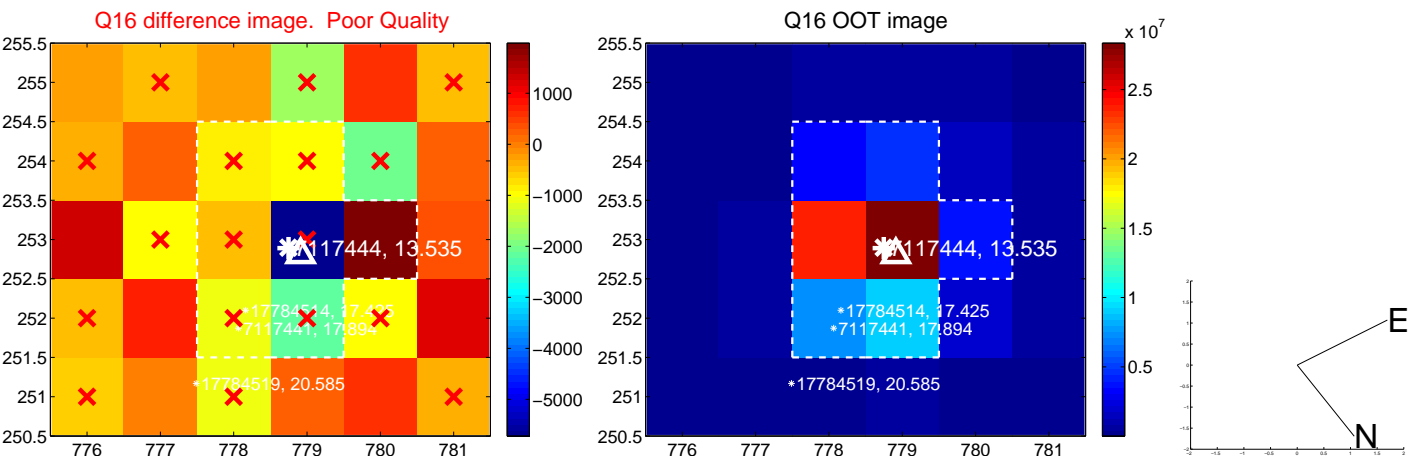
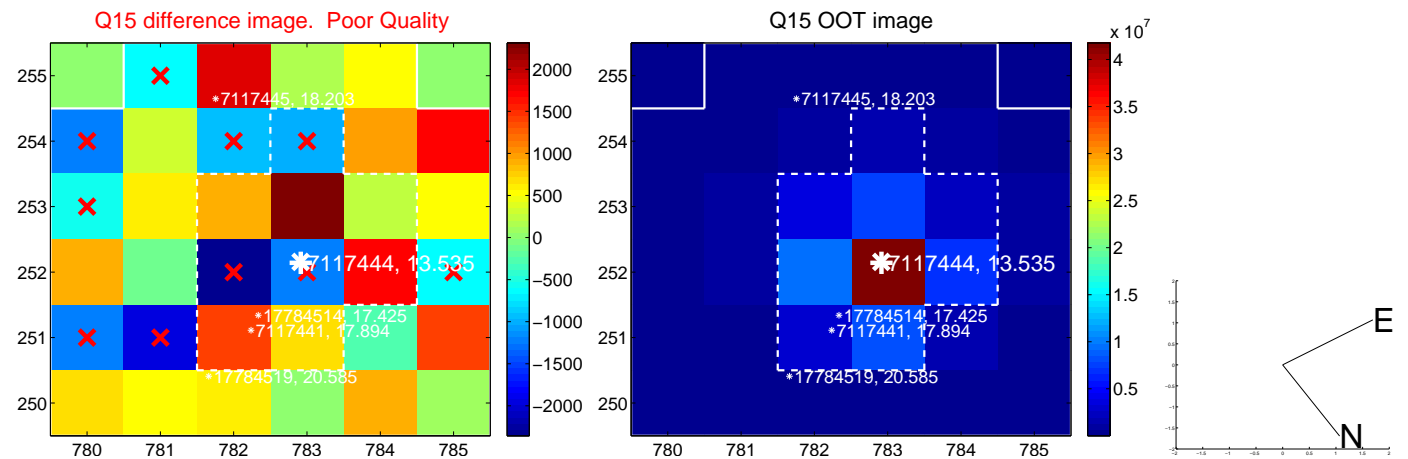
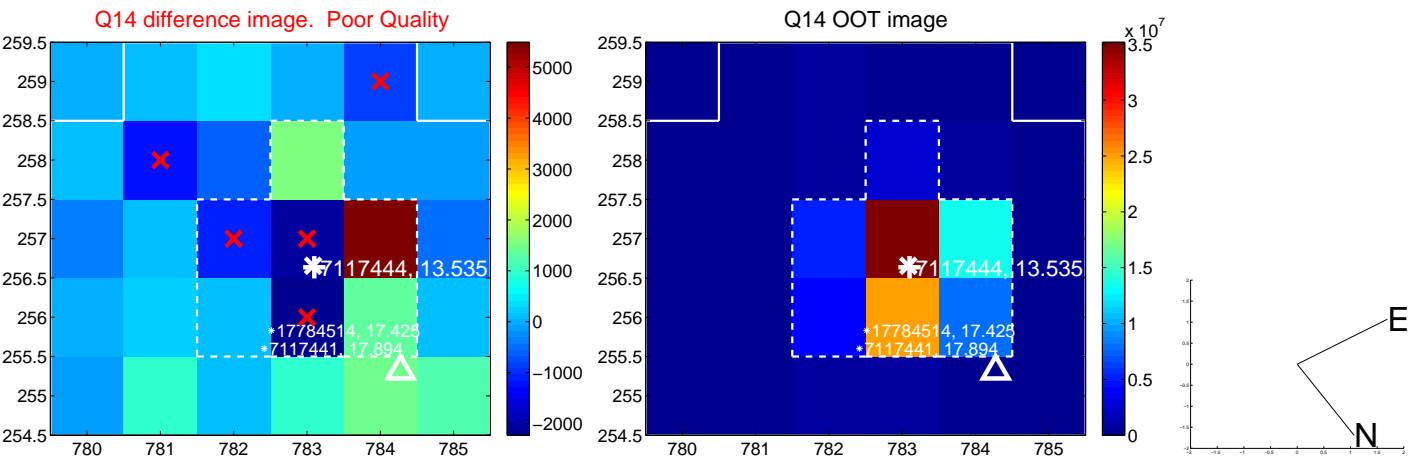
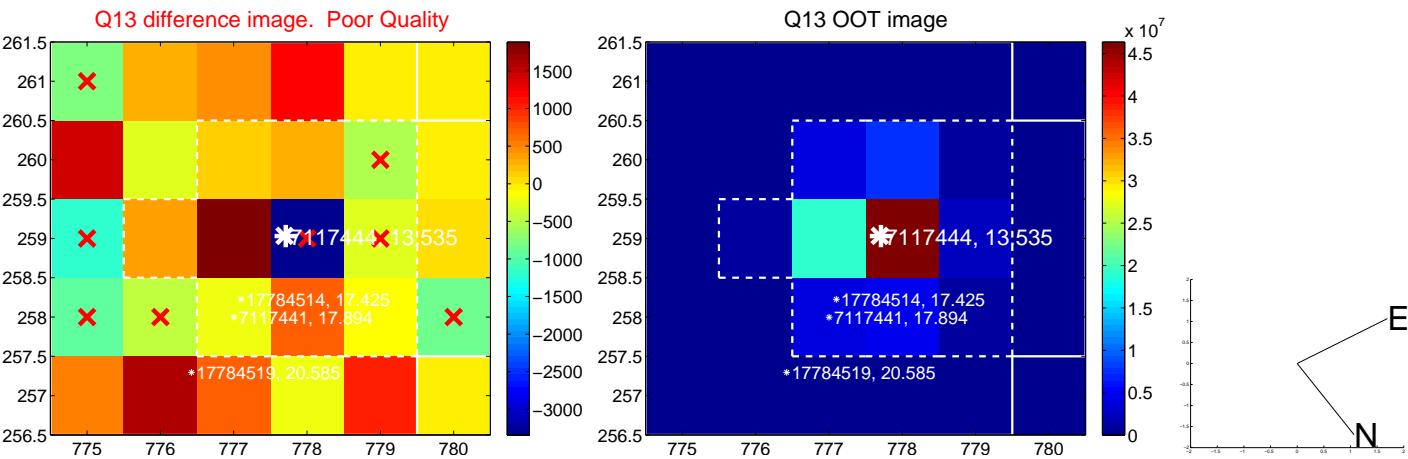
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



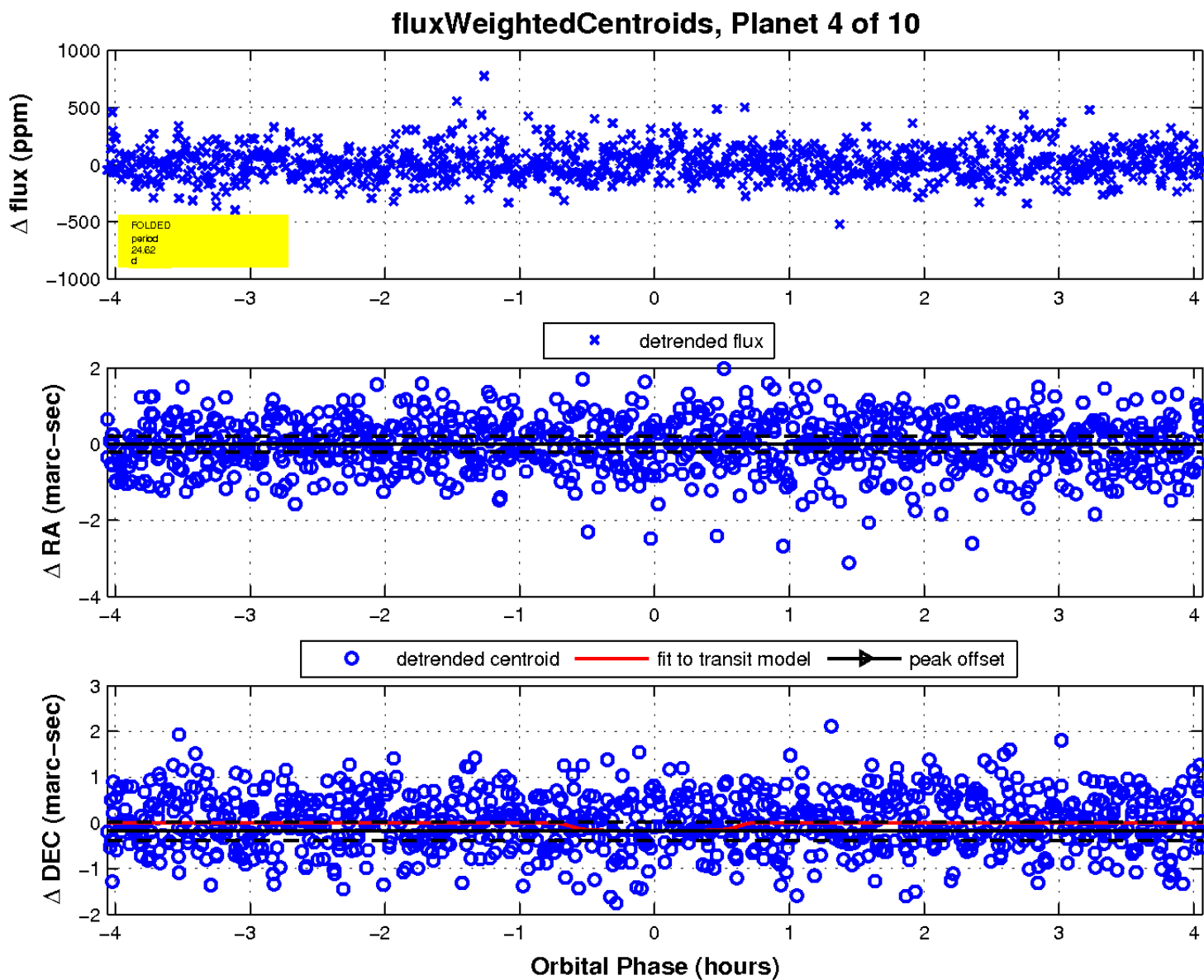
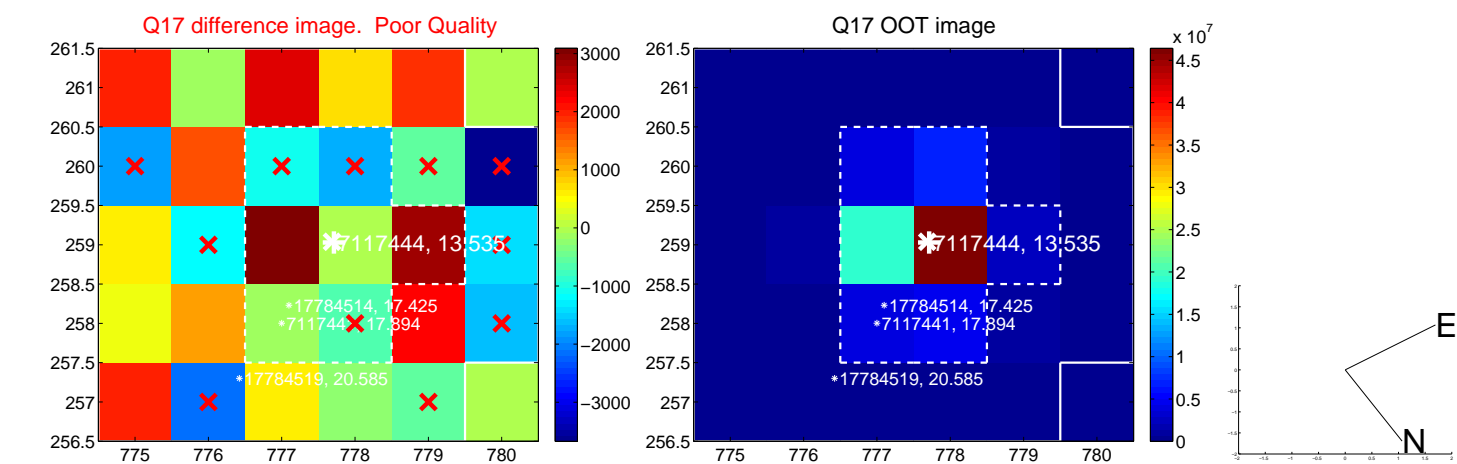
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

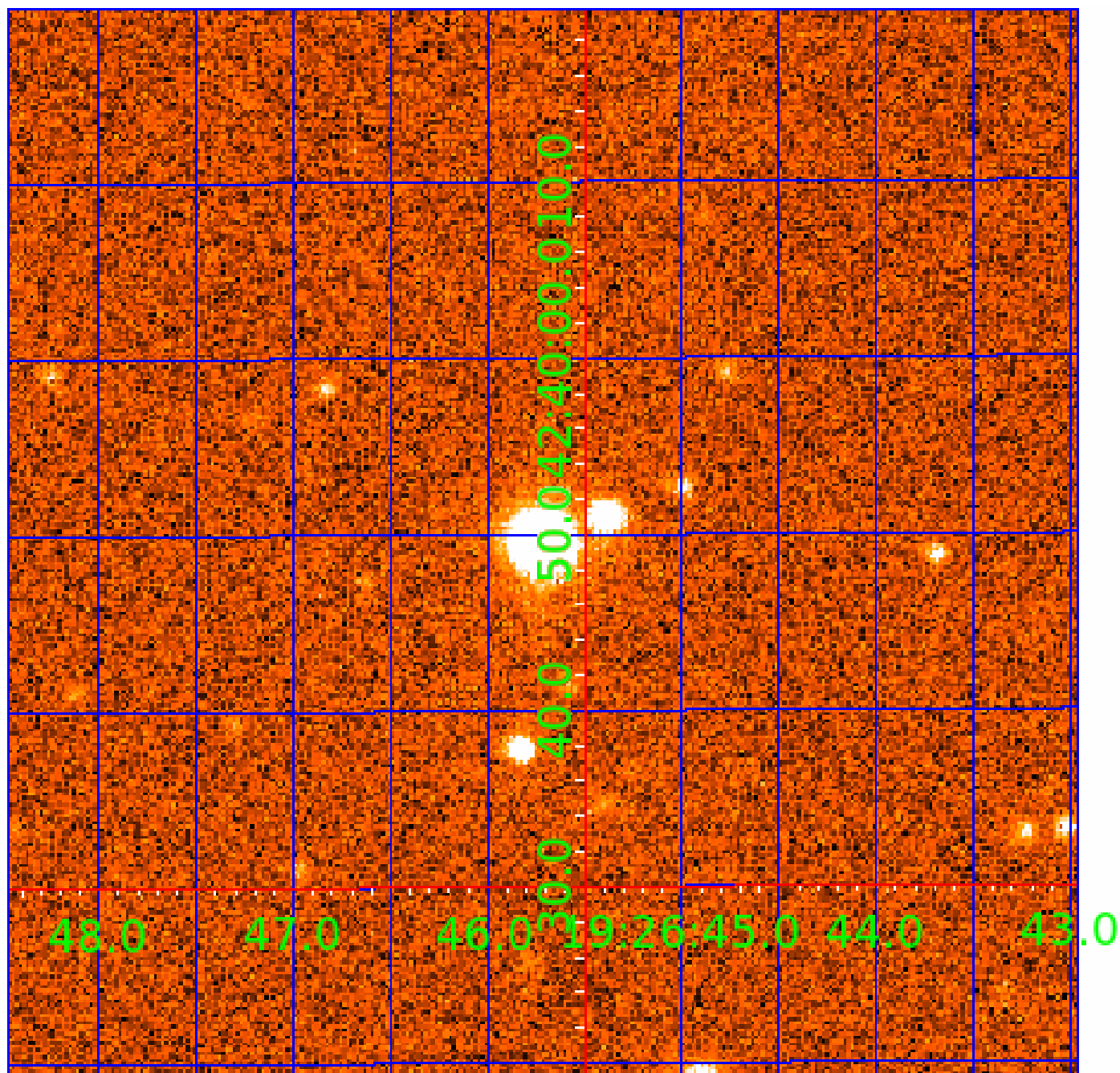


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 007117444

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007117444-01	OBS	No	0.566779	131.850424	9.7	4.016	7.9	7.1	0.89	6089	0.28	5526.64
007117444-02	OBS	No	28.683667	158.533256	409.8	2.113	15.3	9.9	0.89	6089	1.81	29.52
007117444-04	OBS	No	24.620543	151.203318	365.0	1.357	12.4	8.0	0.89	6089	1.91	36.19
007117444-06	OBS	No	31.725644	159.932876	542.1	2.500	10.8	-1.0	0.89	6089	2.08	25.81
007117444-07	OBS	No	37.863077	148.204384	590.4	2.174	12.0	12.3	0.89	6089	3.74	20.39
007117444-08	OBS	No	25.017406	142.026280	590.0	0.948	11.5	11.2	0.89	6089	2.65	35.43
007117444-09	OBS	No	16.445934	141.504848	375.6	1.583	9.7	8.9	0.89	6089	2.05	61.98
007117444-10	OBS	No	8.496060	134.146611	514.7	2.000	8.8	-1.0	0.89	6089	2.02	149.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007117444-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
007117444-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
007117444-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
007117444-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
007117444-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
007117444-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—CENT_FEW_DIFFS
007117444-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS
007117444-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

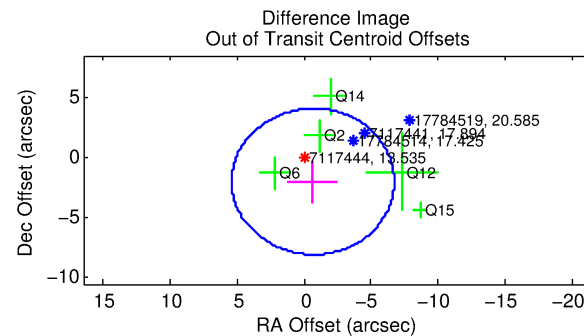
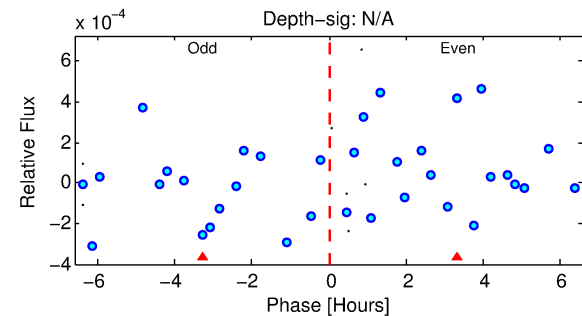
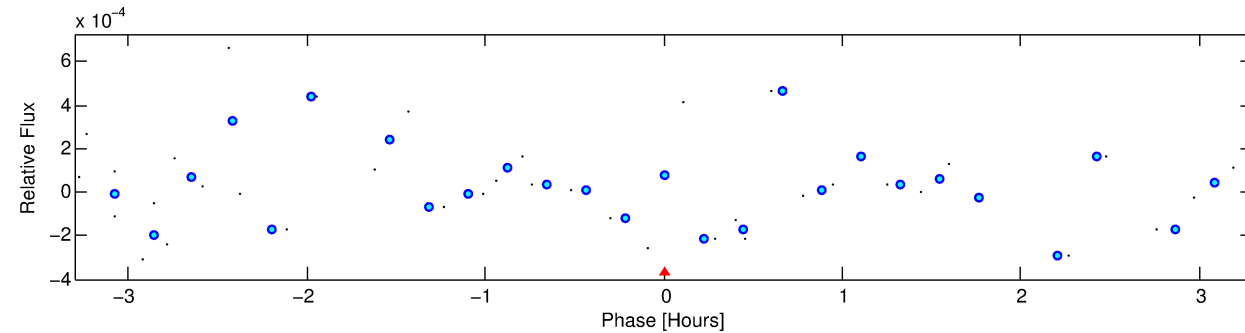
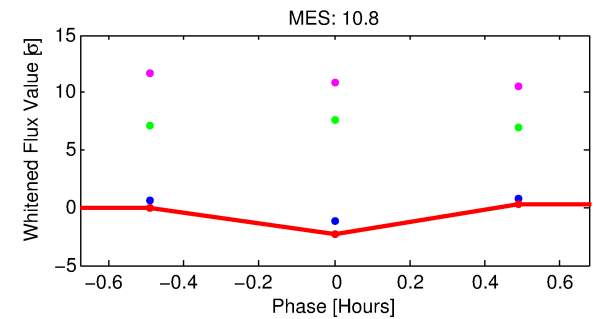
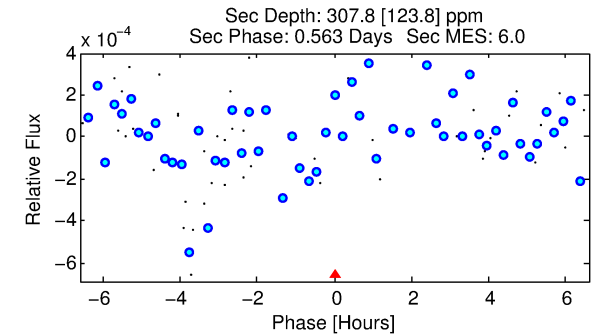
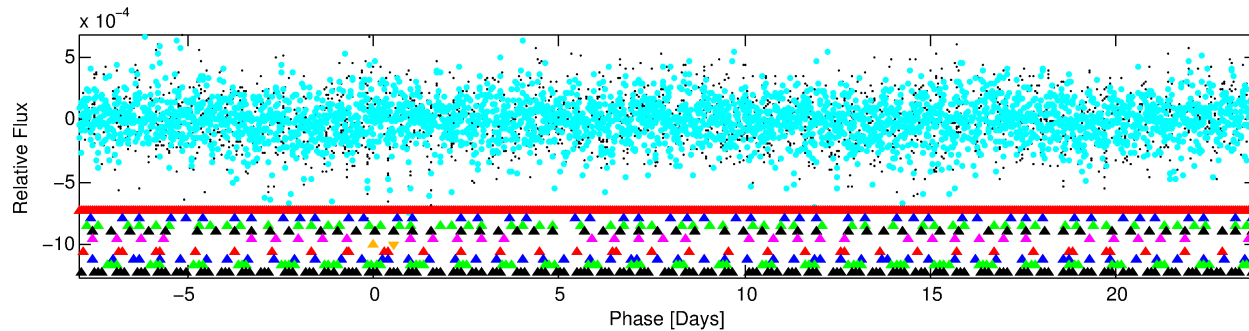
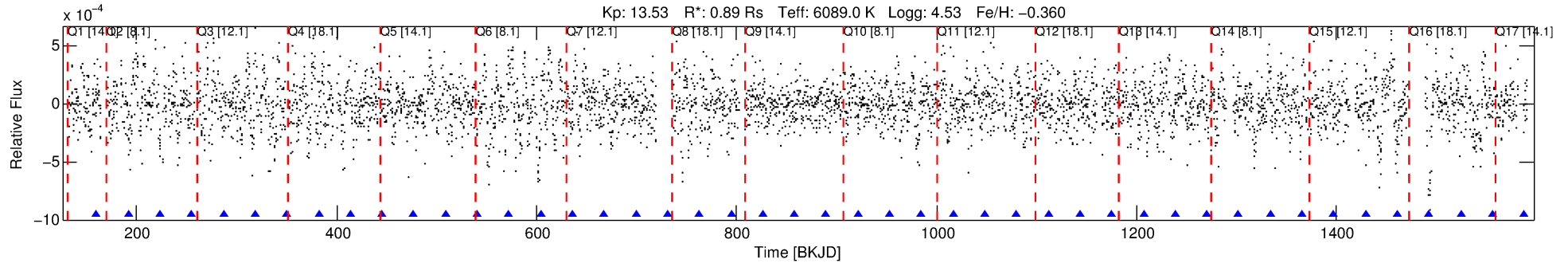
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007117444-06

No Significant Match Found

# DV One-Page Summary

KIC: 7117444 Candidate: 6 of 10 Period: 31.726 d



## TPS TCE Results:

Period = 31.72564 d  
Epoch = 159.9329 BKJD

DV fit results are unavailable

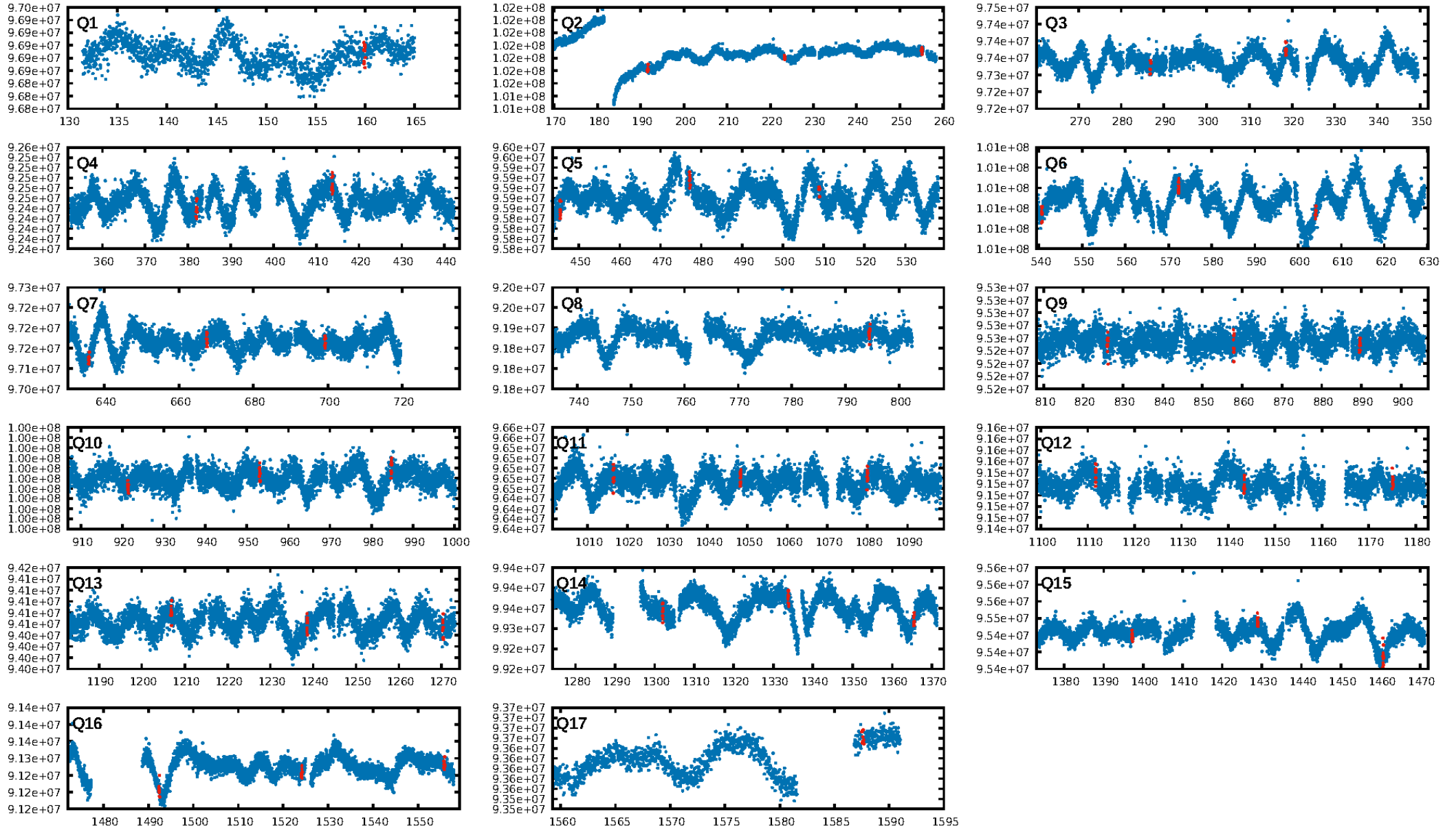
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.30 $\sigma$ ]  
LongPeriod-sig: 100.0% [44.46 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: -0.05942  
Centroid-sig: 1.9%  
Centroid-so: 5.281 arcsec [1.83 $\sigma$ ]  
OotOffset-rm: 2.086 arcsec [1.03 $\sigma$ ]  
KicOffset-rm: 2.037 arcsec [1.12 $\sigma$ ]  
OotOffset-st: 3/1/1/0 [5]  
KicOffset-st: 3/1/1/0 [5]  
DiffImageQuality-fgm: 0.00 [0/5]  
DiffImageOverlap-fno: 0.00 [0/16]

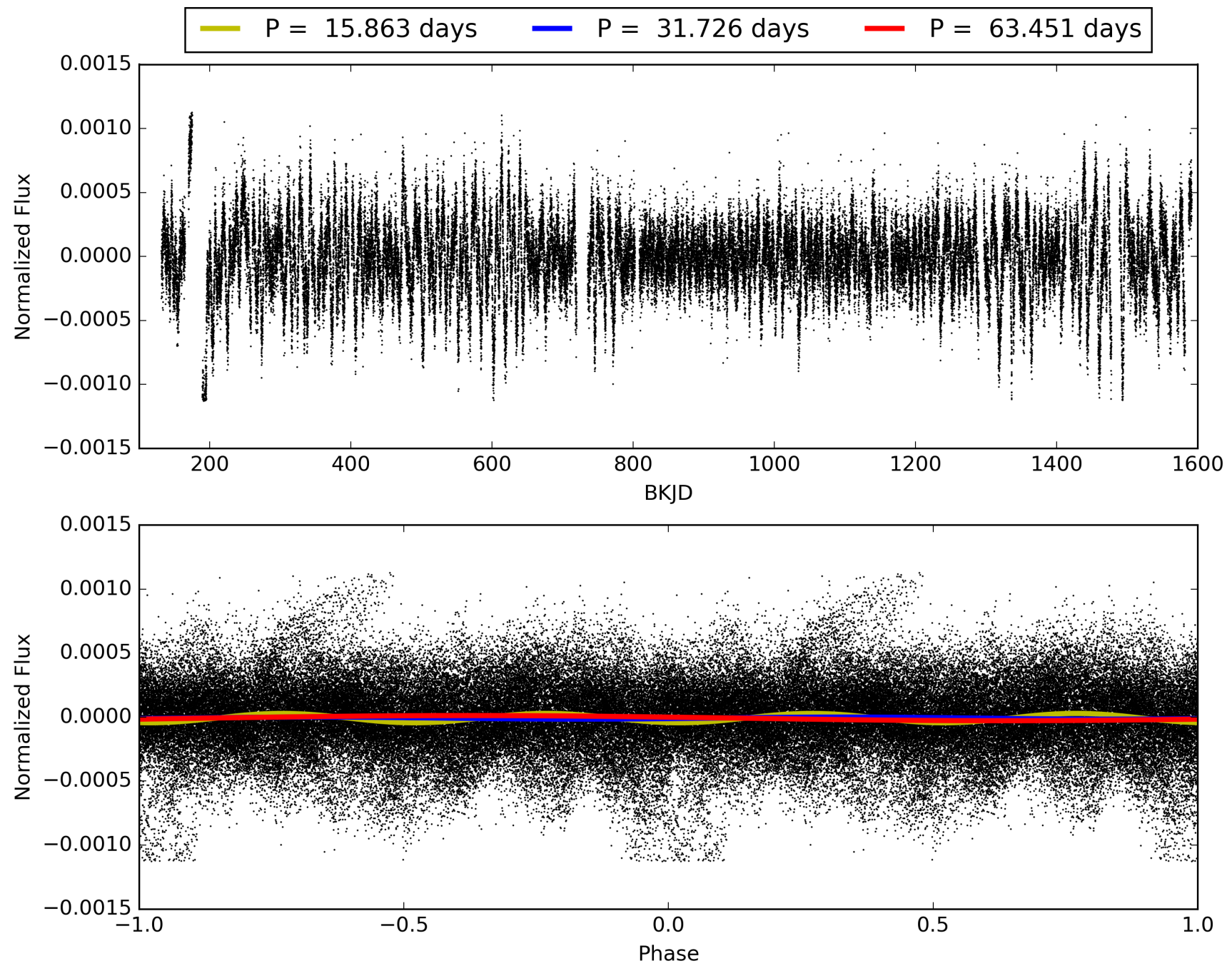
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:37:02 Z

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

# TCE 007117444-06, PDC Light Curves

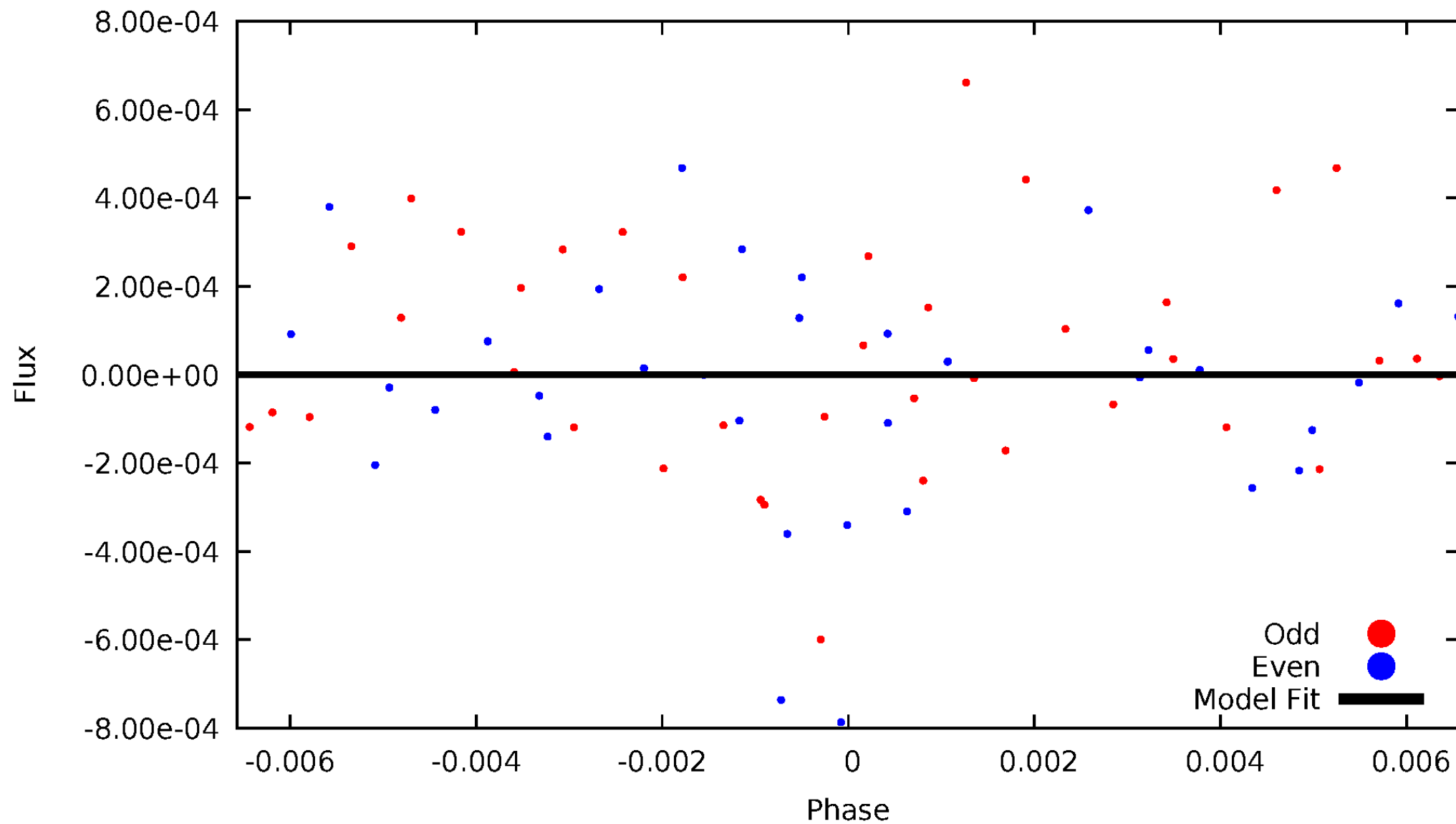


TCE 007117444-06



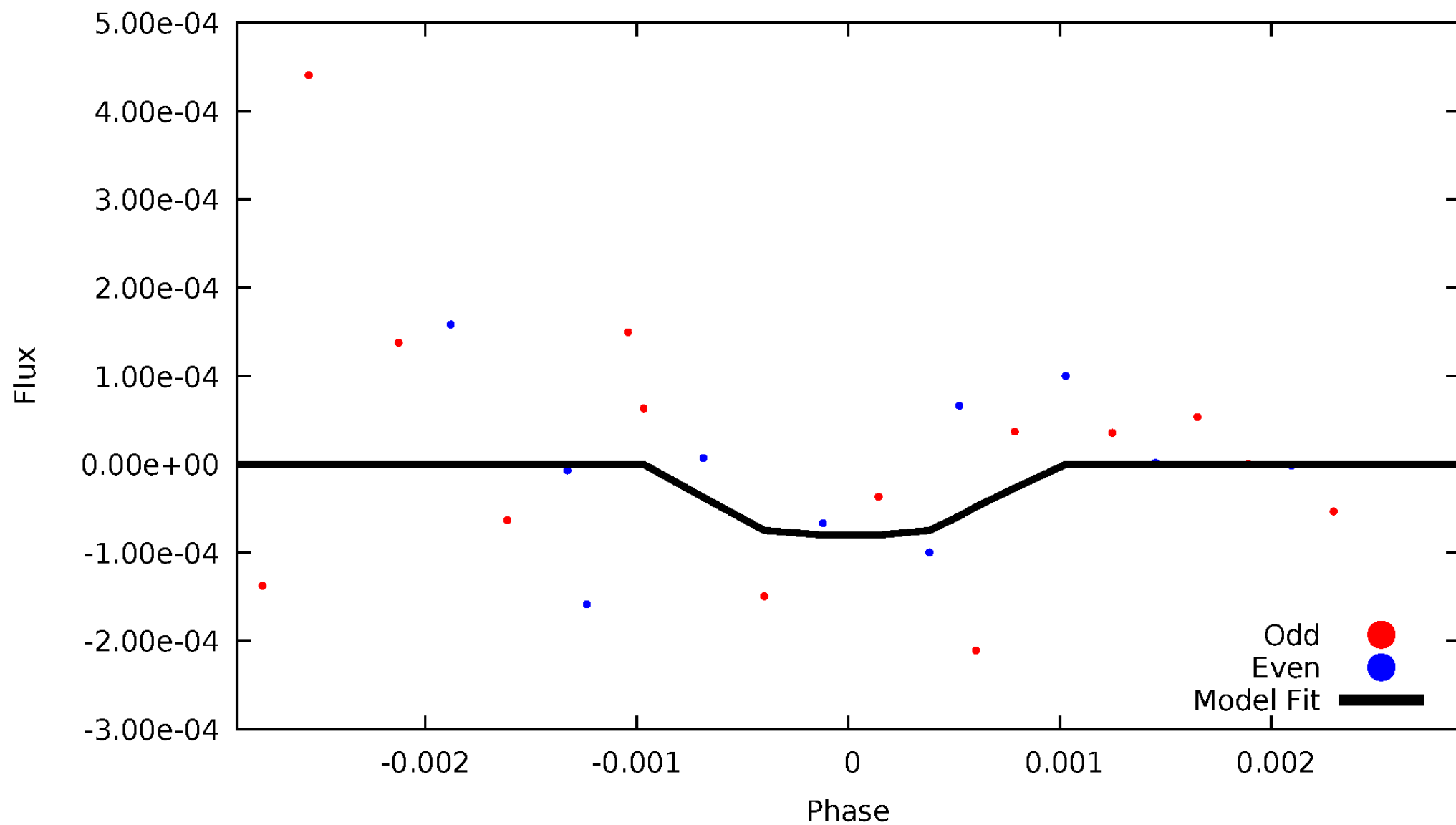
# DV Odd/Even

TCE 007117444-06



# ALT Odd/Even

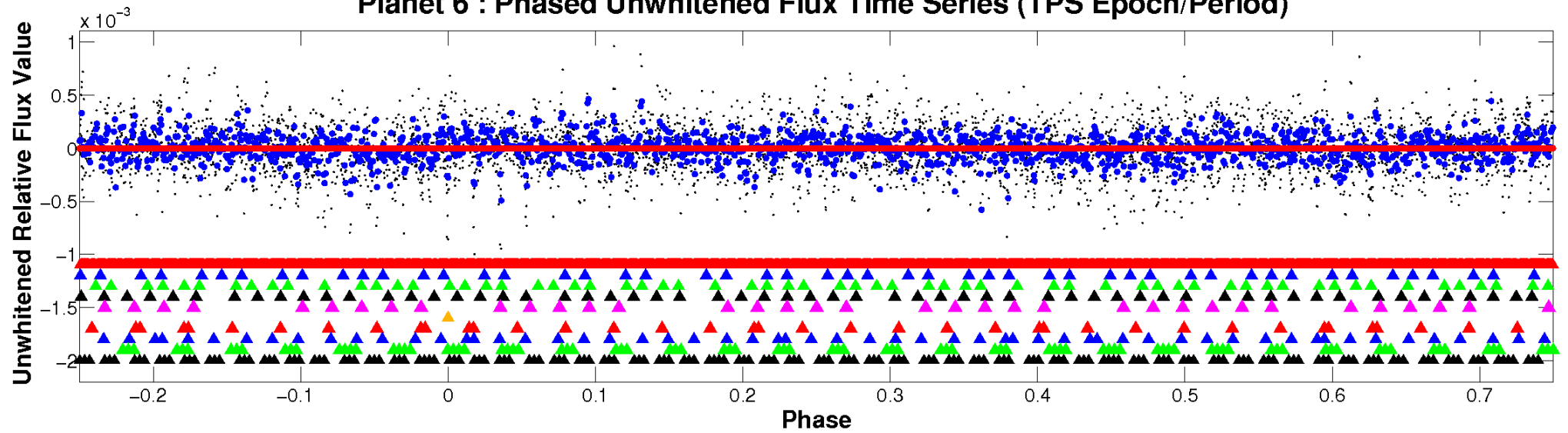
TCE 007117444-06



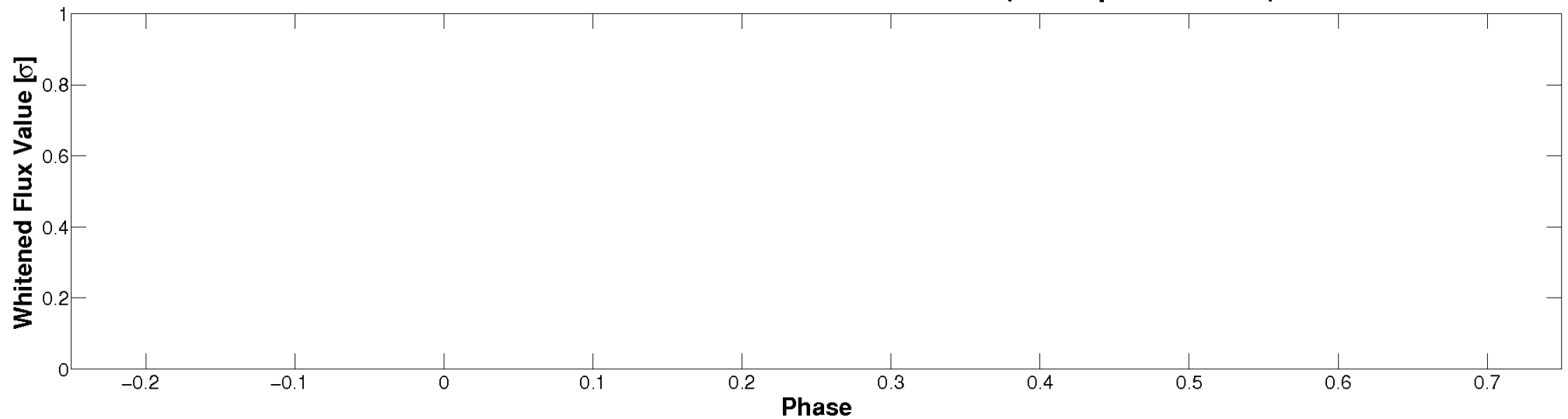


# Non-Whitened Vs. Whitened Light Curve

**Planet 6 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

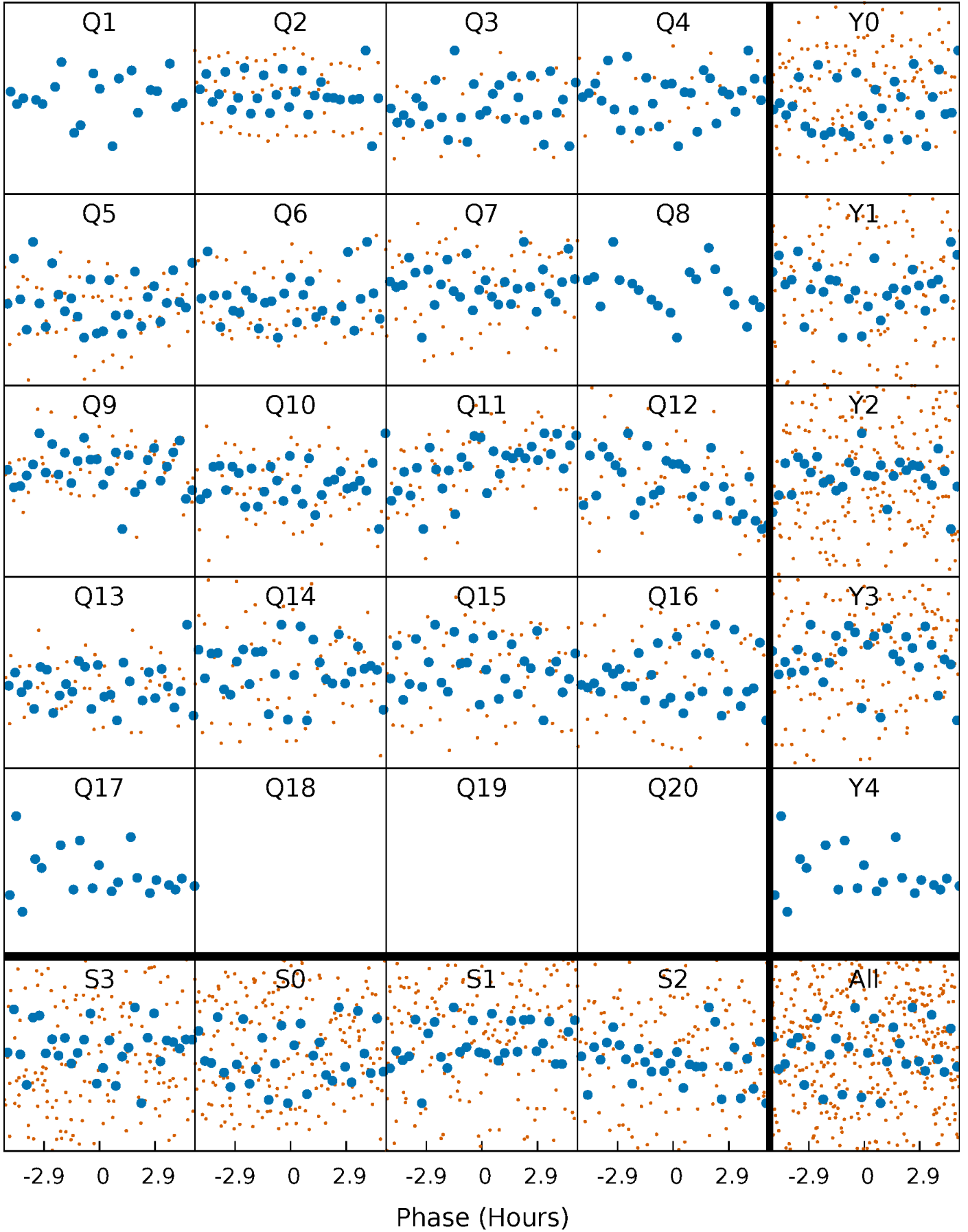


**Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



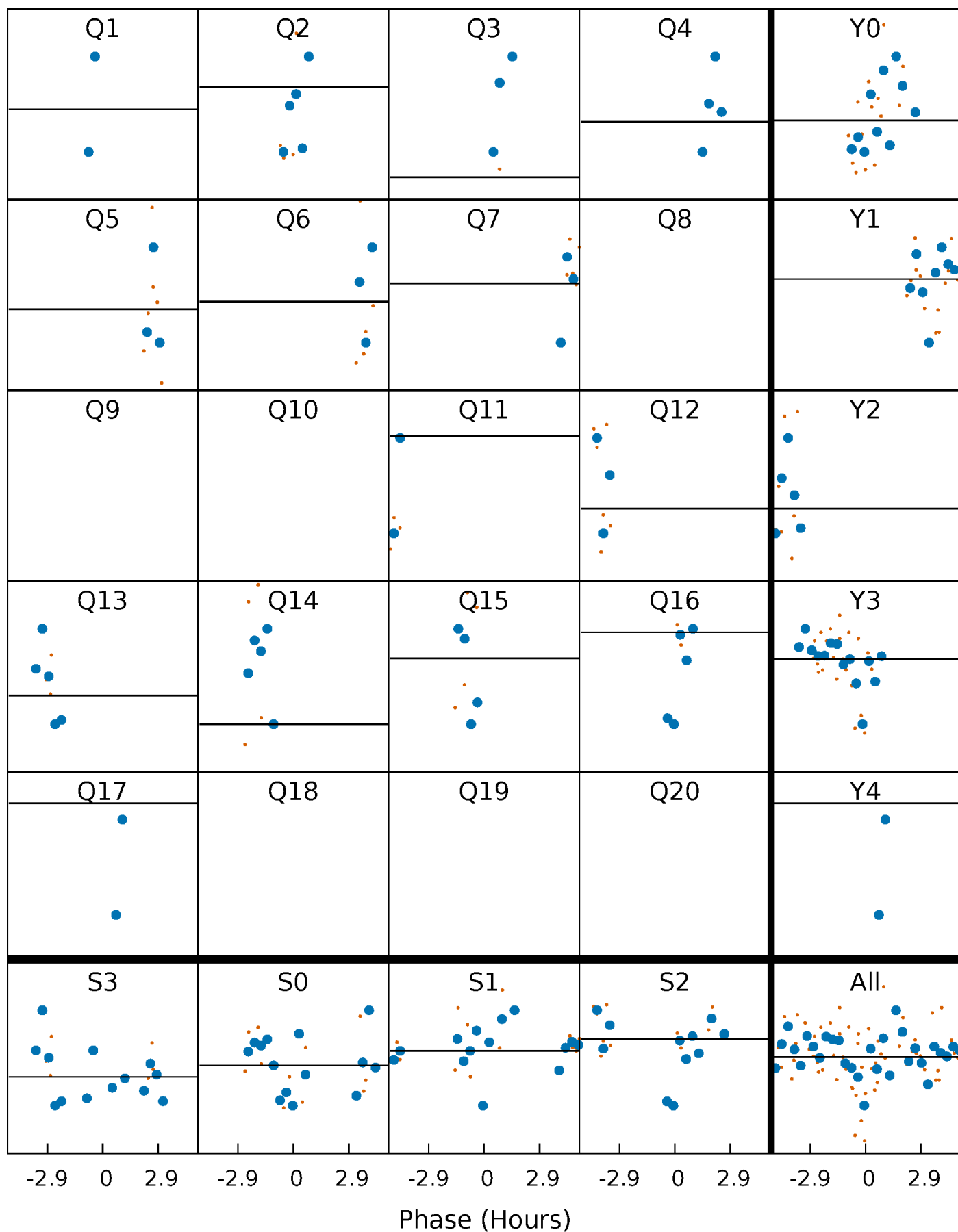
# PDC Quarter-Phased Transit Curves

TCE 007117444-06 P= 31.725644 Days  $T_0=159.932876$  (BKJD)



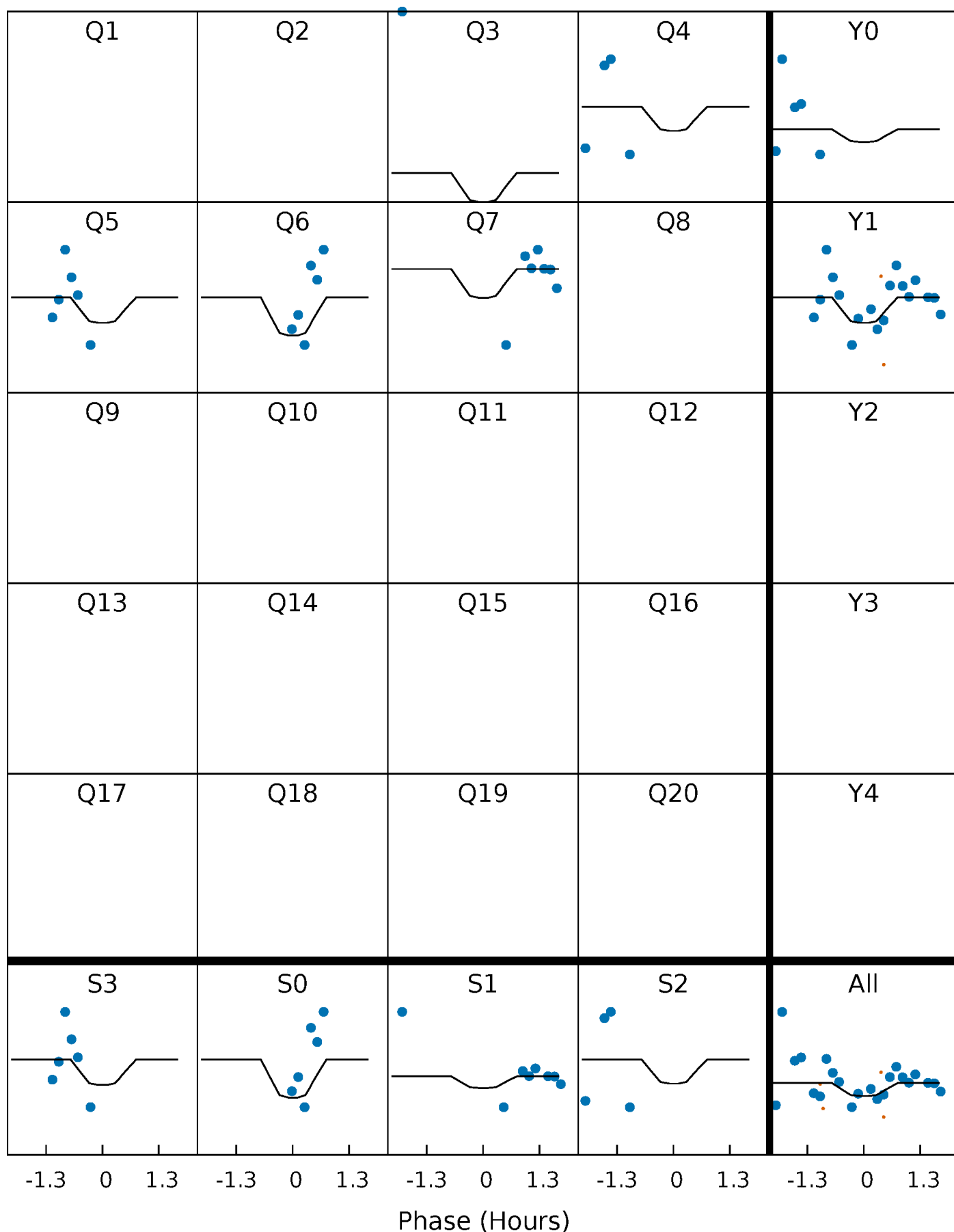
# DV Quarter-Phased Transit Curves

TCE 007117444-06 P= 31.725644 Days  $T_0=159.932876$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

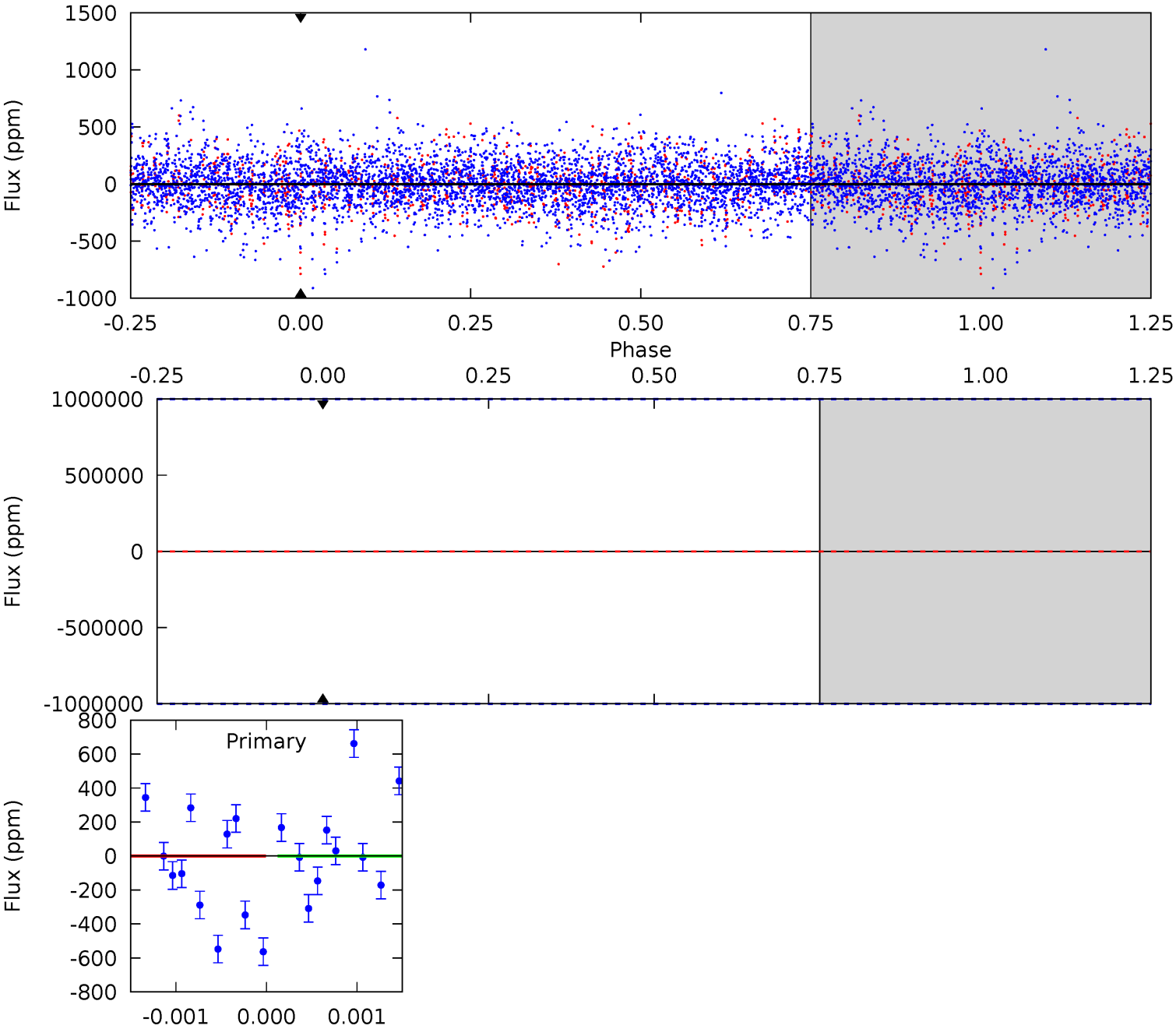
TCE 007117444-06 P= 31.725644 Days  $T_0=160.074369$  (BKJD)



# DV Model-Shift Uniqueness Test

007117444-06, P = 31.725644 Days, E = 128.207232 Days

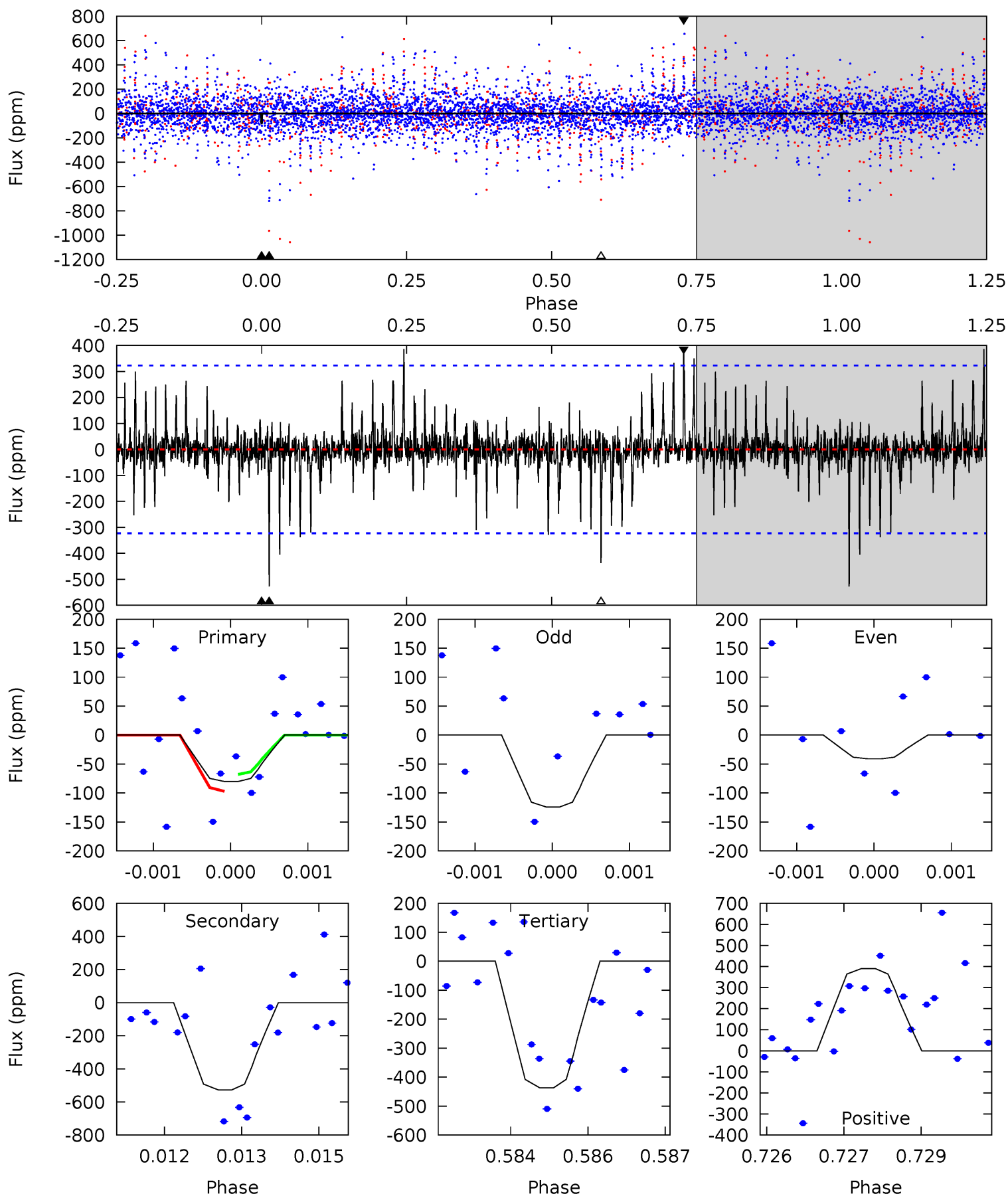
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007117444-06, P = 31.725644 Days, E = 128.348725 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
1.34	8.78	7.28	6.50	5.38	3.18	1.31	-5.95	-5.17	1.50	2.28	0.65	1.00	0.43	0.24



### Stellar Parameters For KIC 007117444

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6089^{+164}_{-183}$	$4.527^{+0.048}_{-0.204}$	$-0.360^{+0.300}_{-0.300}$	$0.889^{+0.262}_{-0.082}$	$0.971^{+0.118}_{-0.118}$	$1.944^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-5%	+83%/-83%	+29%/-9%	+12%/-12%	+20%/-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 007117444-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$8.09^{+8.36}_{-5.90}$	$820^{+56}_{-39}$	$-4312^{+26352}_{-20304}$	$-394.578^{+57977.943}_{-61123.333}$
Alt.	$-527 \pm 60$	$7.26^{+7.95}_{-5.09}$	$822^{+57}_{-39}$	$3843^{+2470}_{-786}$	$199^{+2093}_{-151}$

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



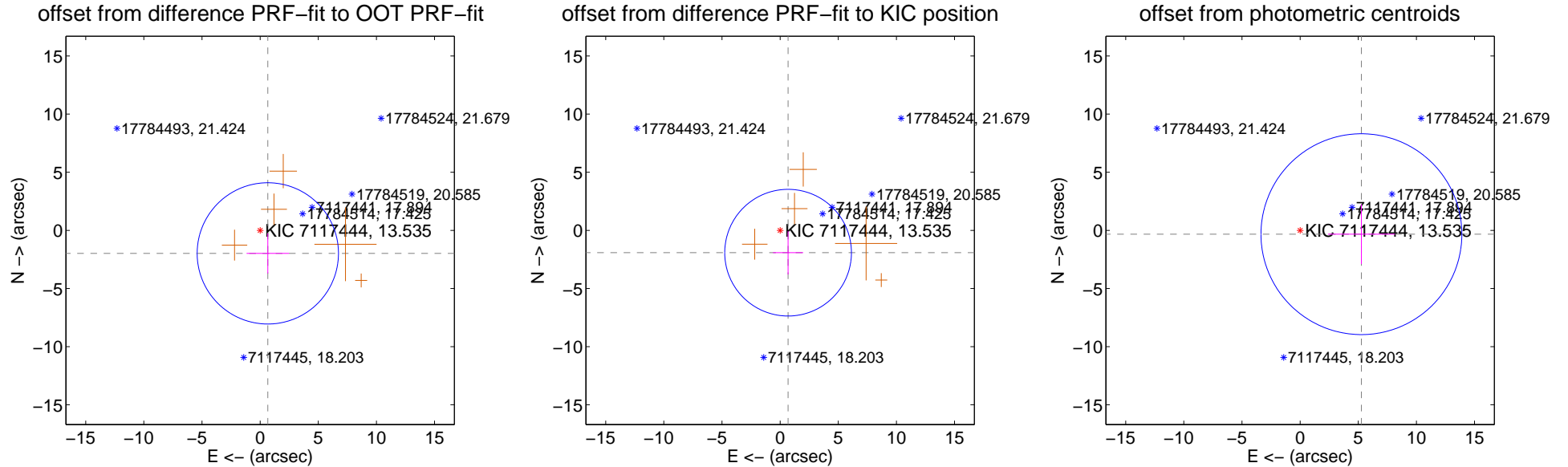
## DV Centroid Data

Supplemental centroid analysis for 007117444-06. Kepler magnitude: 13.54. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

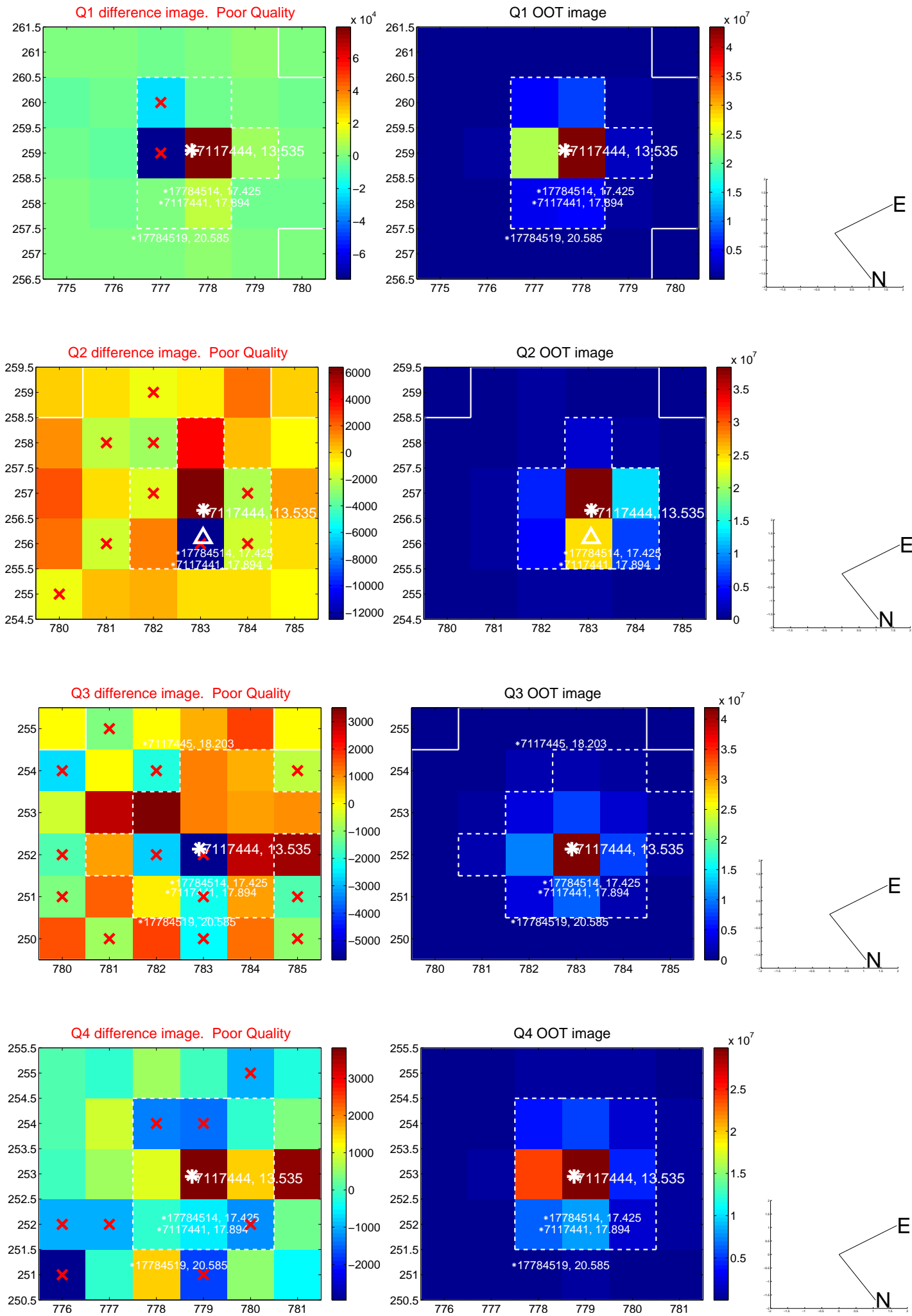
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.086 \pm 2.025$	1.03	$-0.660 \pm 1.824$	$-1.979 \pm 1.726$
PRF-fit source offset from KIC position	$2.037 \pm 1.816$	1.12	$-0.684 \pm 1.299$	$-1.919 \pm 1.871$
photometric centroid source offset	$5.28 \pm 2.88$	1.83	$-5.27 \pm 2.88$	$-0.33 \pm 2.57$

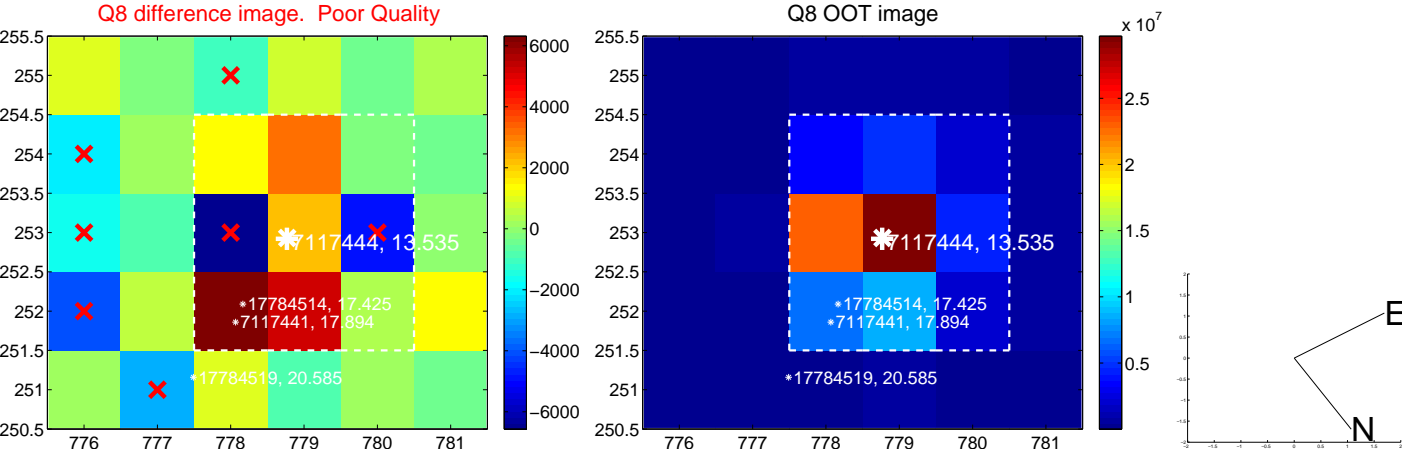
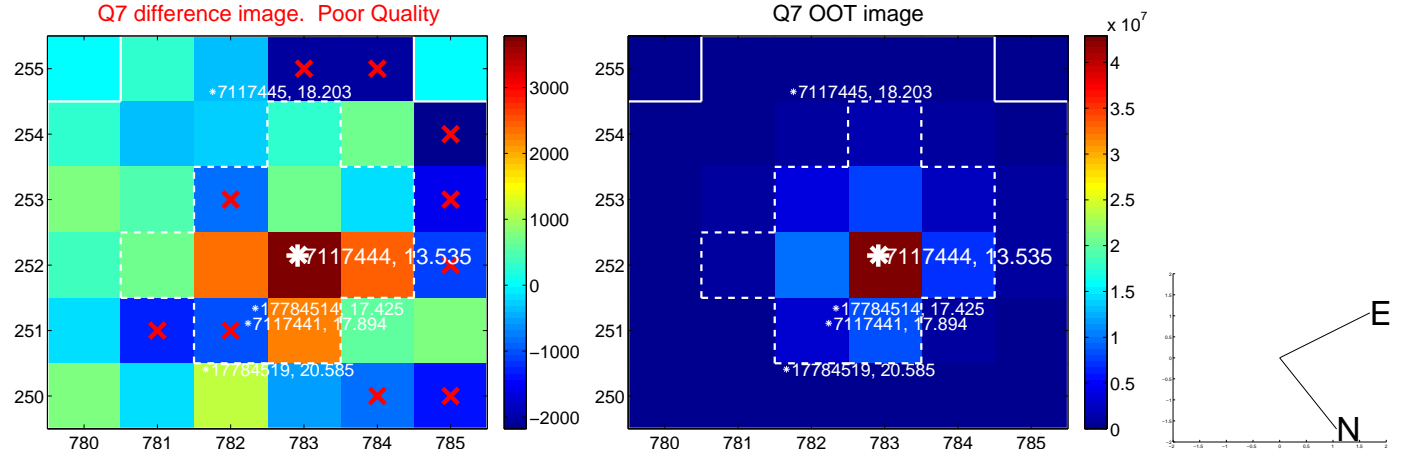
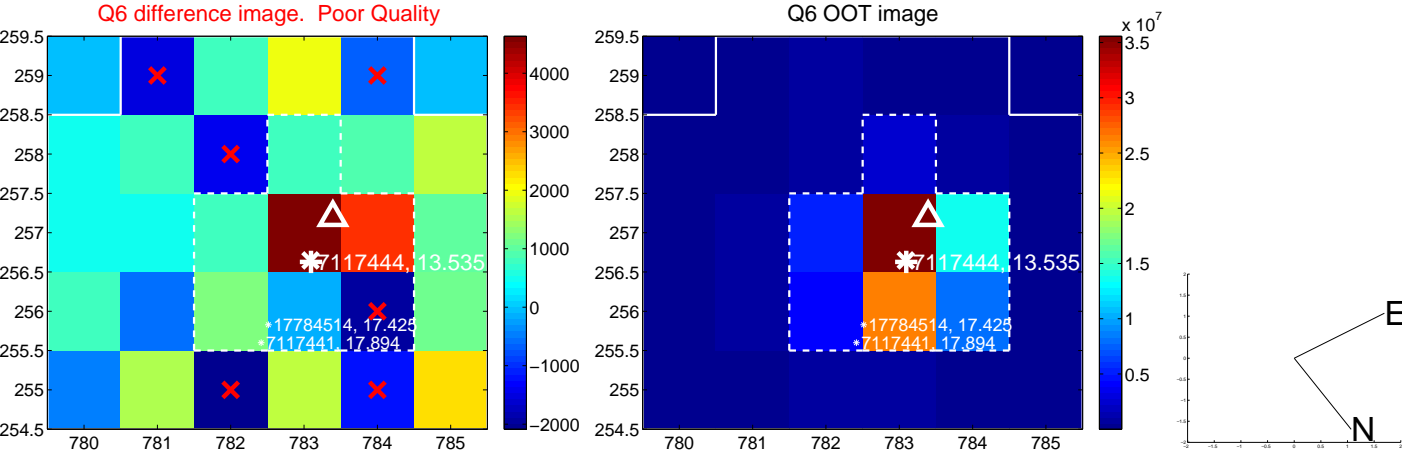
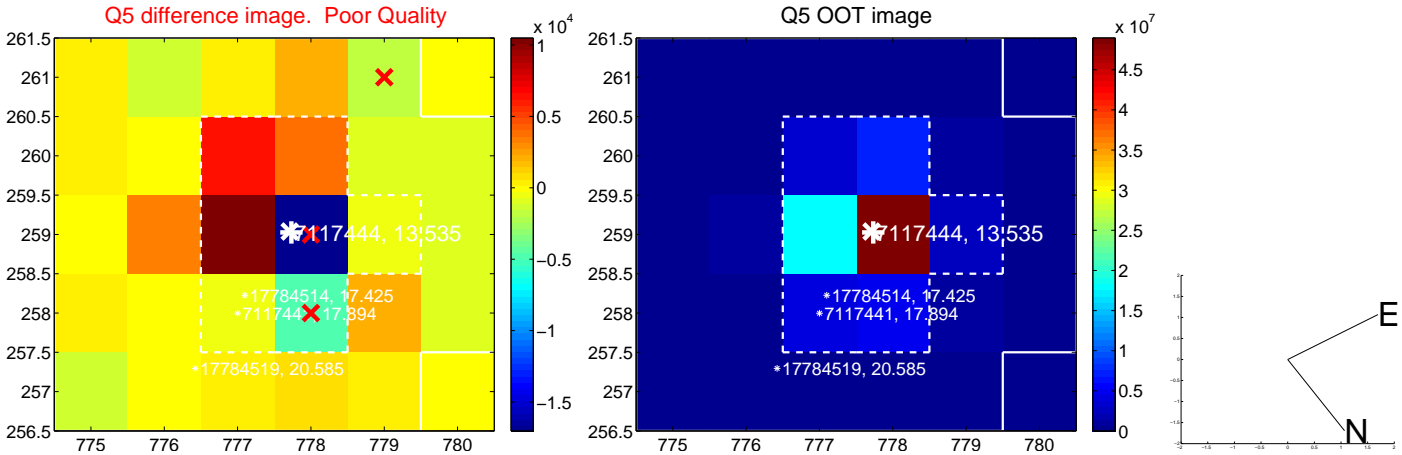


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

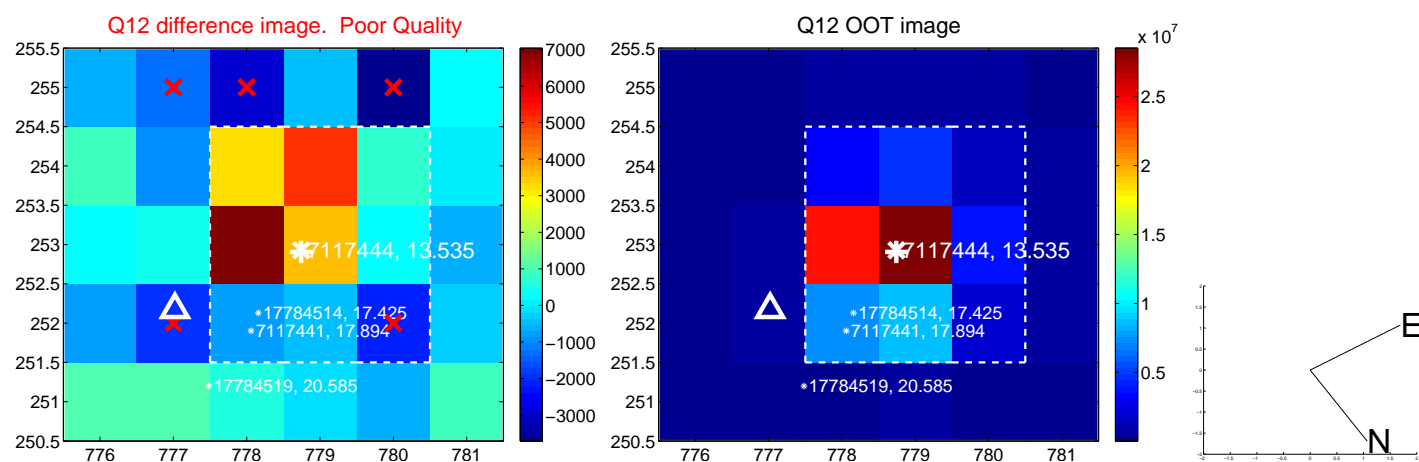
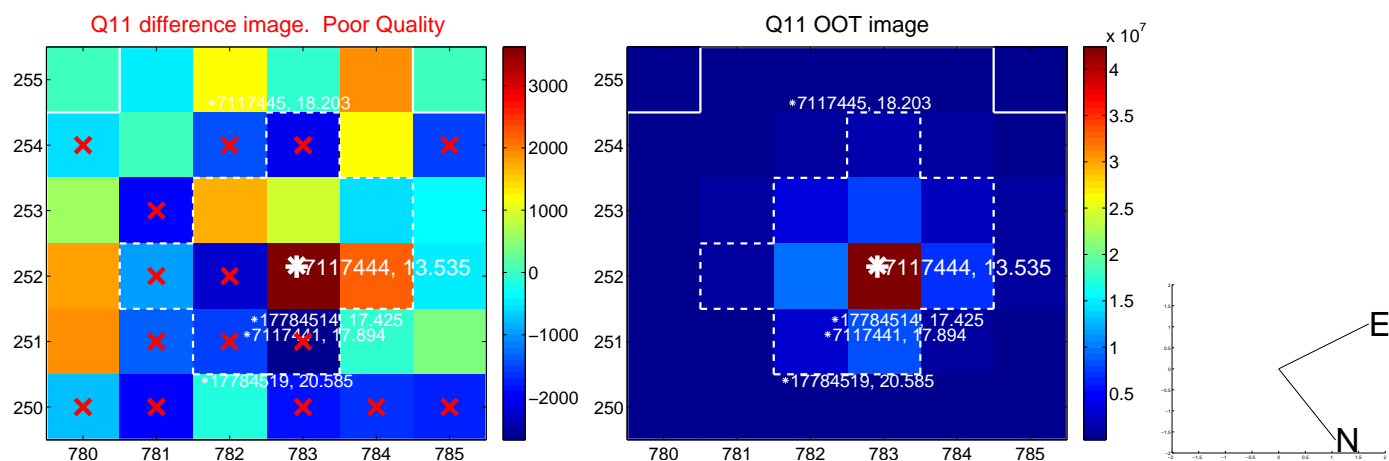
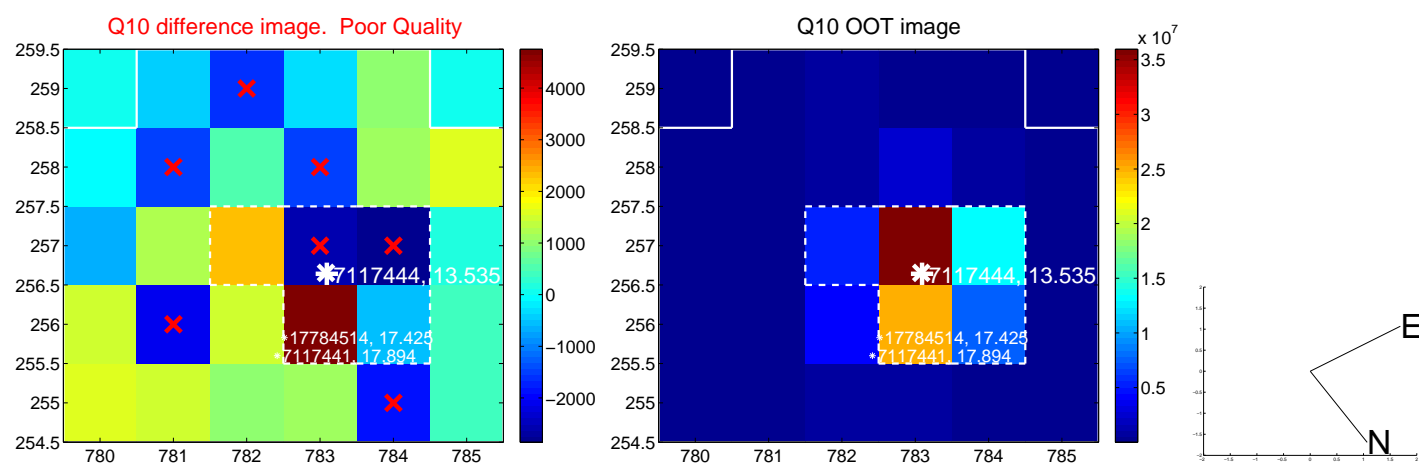
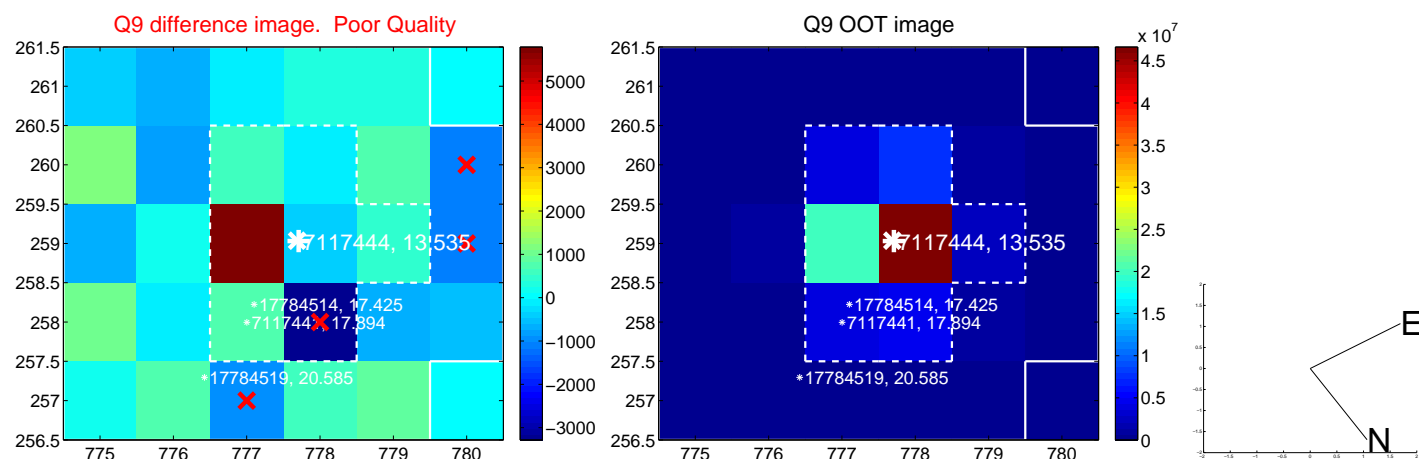
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



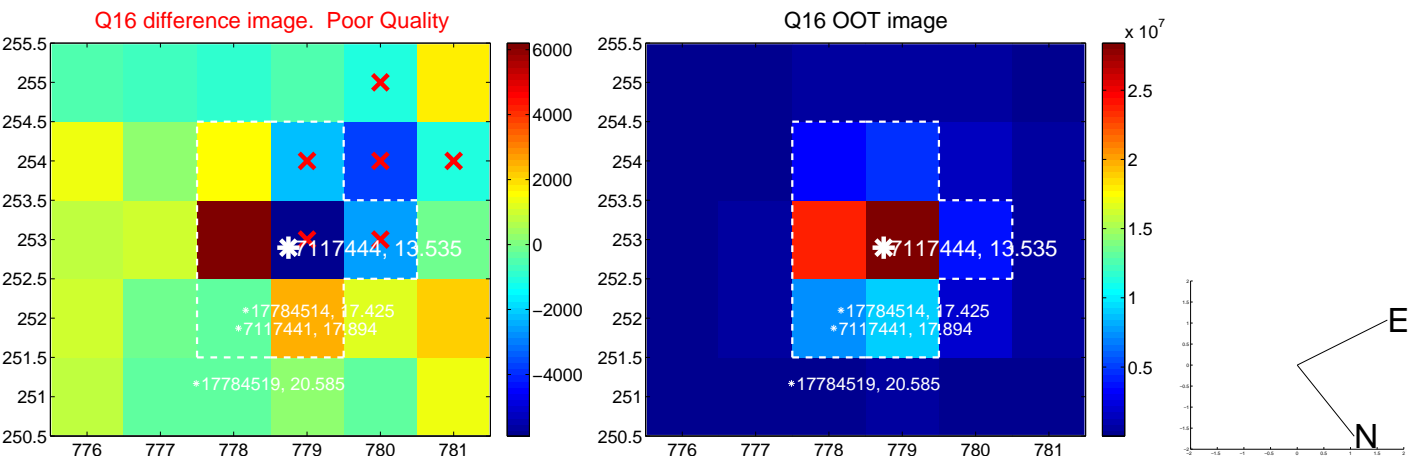
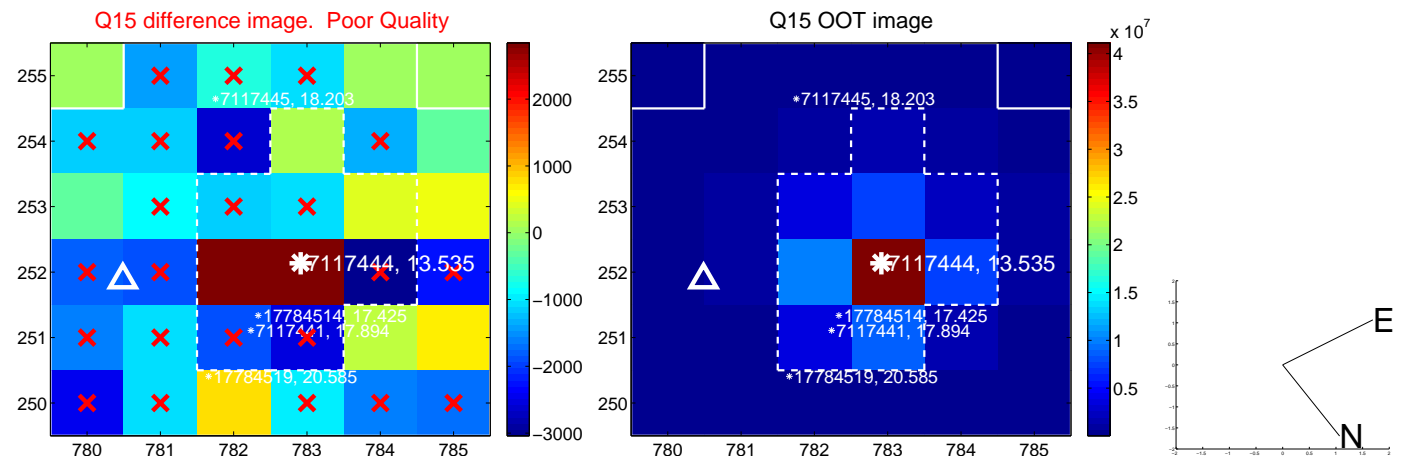
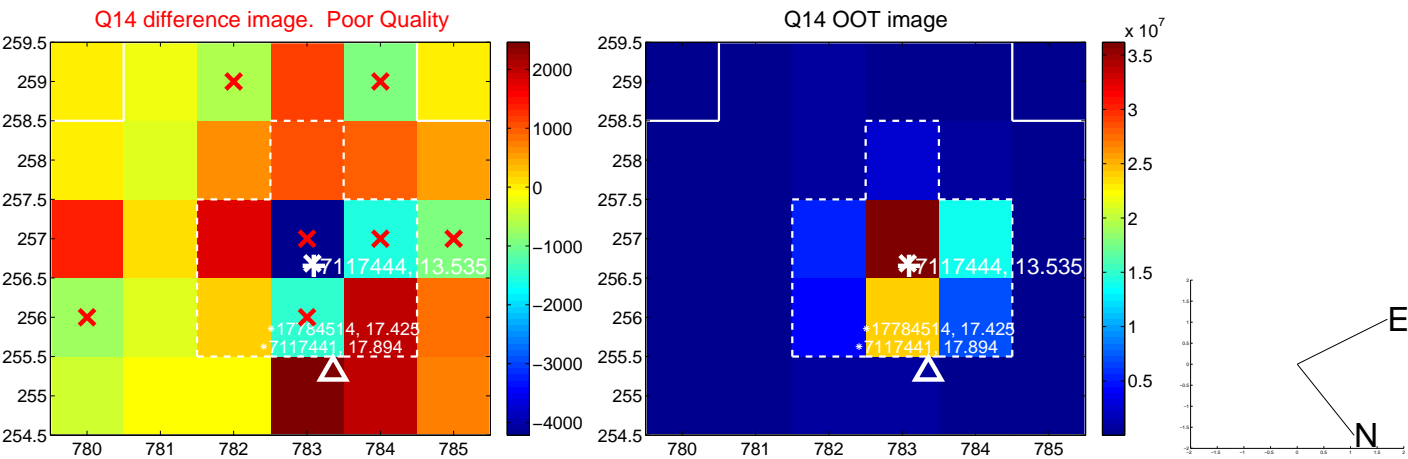
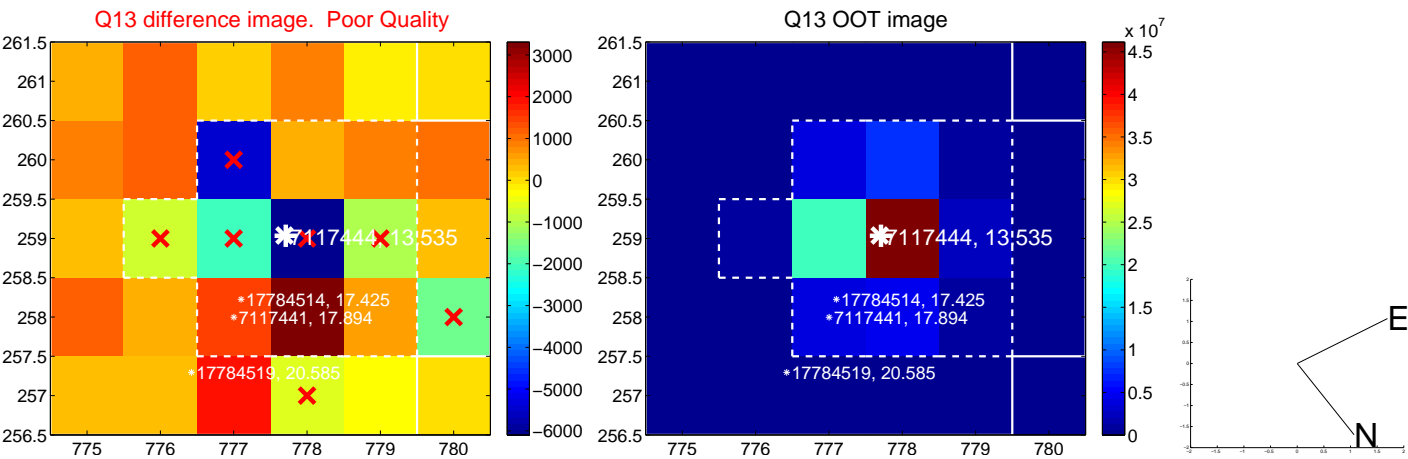
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



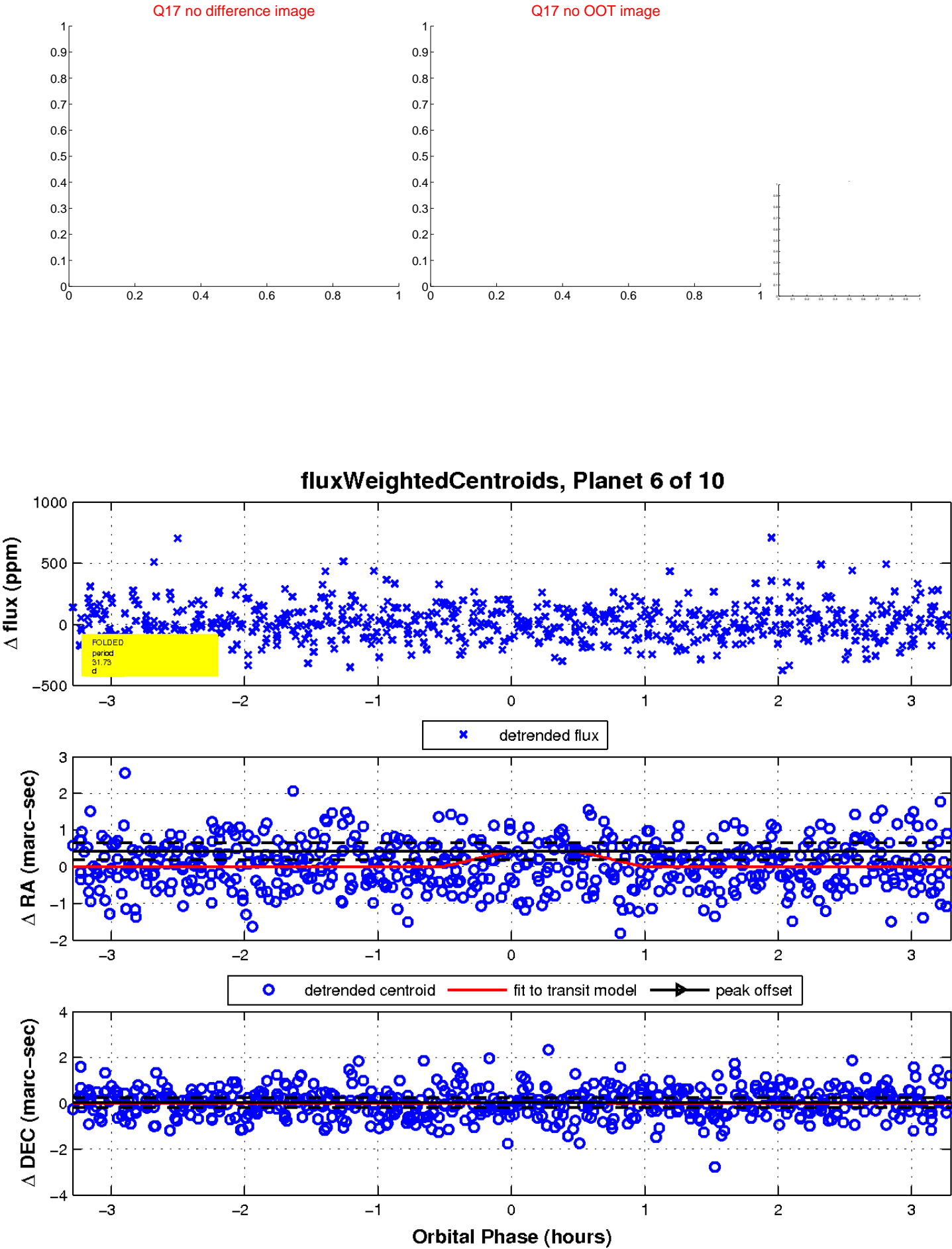
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

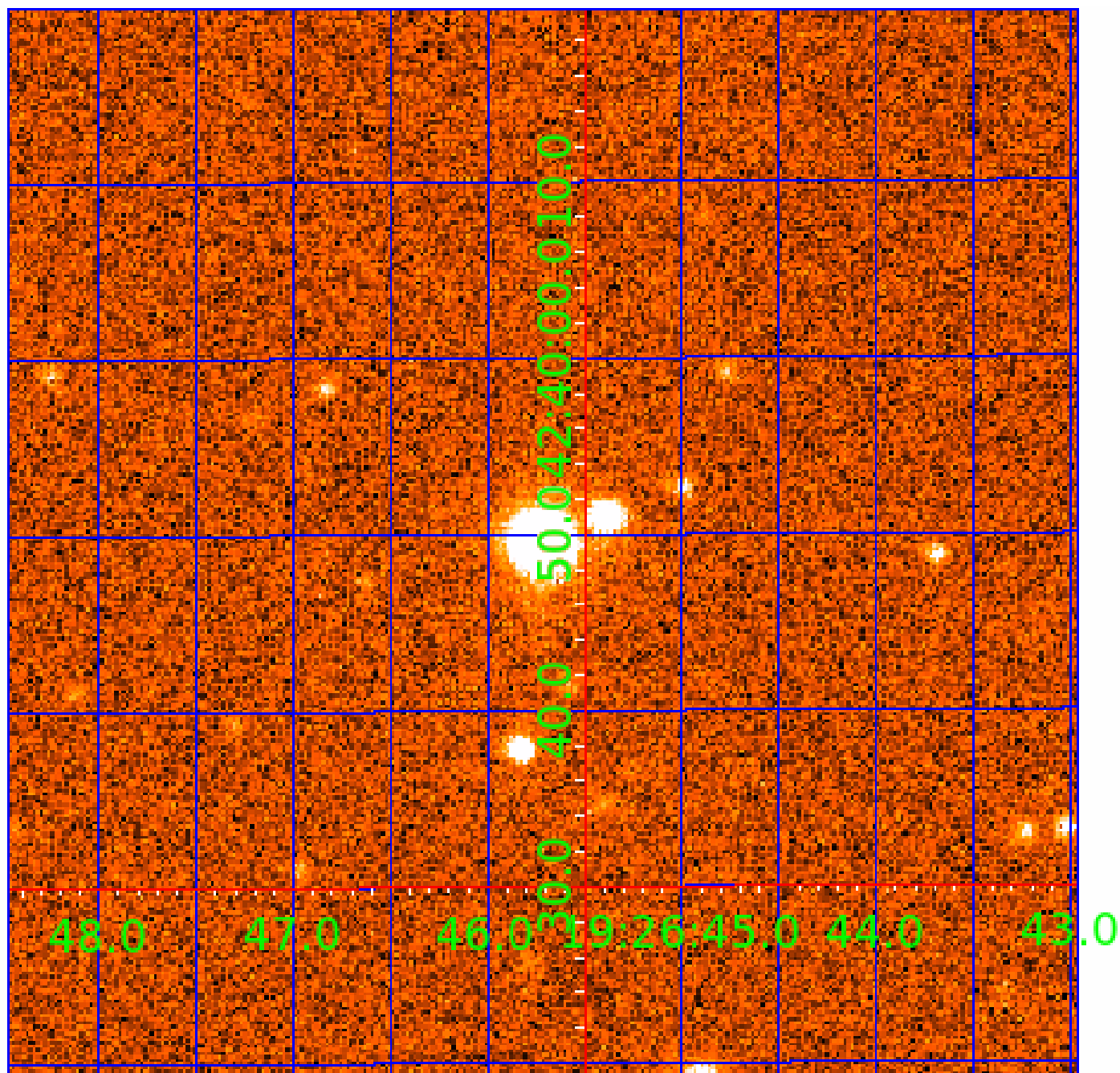


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 007117444

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007117444-01	OBS	No	0.566779	131.850424	9.7	4.016	7.9	7.1	0.89	6089	0.28	5526.64
007117444-02	OBS	No	28.683667	158.533256	409.8	2.113	15.3	9.9	0.89	6089	1.81	29.52
007117444-04	OBS	No	24.620543	151.203318	365.0	1.357	12.4	8.0	0.89	6089	1.91	36.19
007117444-06	OBS	No	31.725644	159.932876	542.1	2.500	10.8	-1.0	0.89	6089	2.08	25.81
007117444-07	OBS	No	37.863077	148.204384	590.4	2.174	12.0	12.3	0.89	6089	3.74	20.39
007117444-08	OBS	No	25.017406	142.026280	590.0	0.948	11.5	11.2	0.89	6089	2.65	35.43
007117444-09	OBS	No	16.445934	141.504848	375.6	1.583	9.7	8.9	0.89	6089	2.05	61.98
007117444-10	OBS	No	8.496060	134.146611	514.7	2.000	8.8	-1.0	0.89	6089	2.02	149.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007117444-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
007117444-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
007117444-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
007117444-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
007117444-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
007117444-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—CENT_FEW_DIFFS
007117444-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS
007117444-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

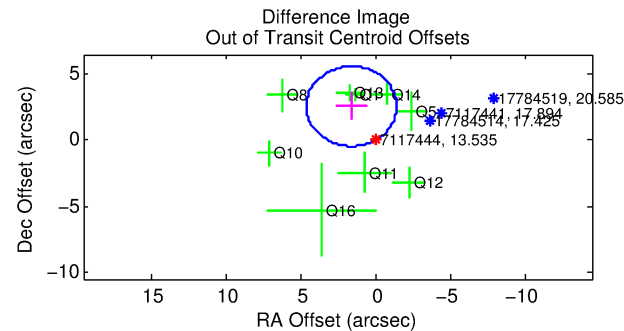
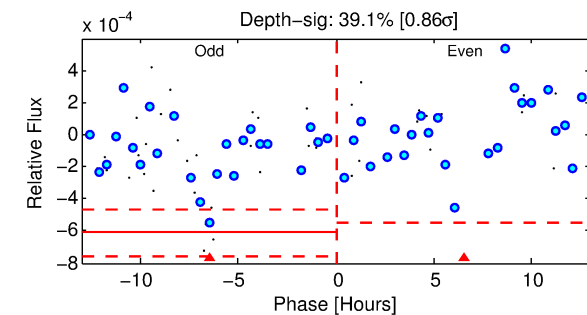
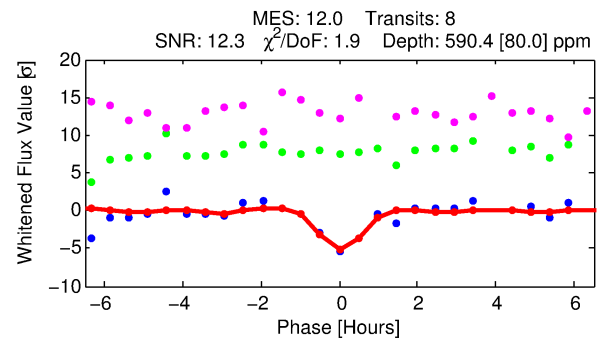
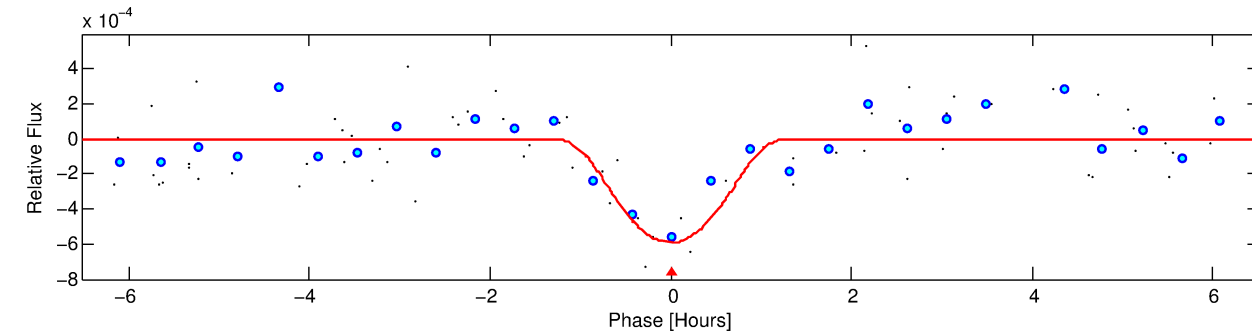
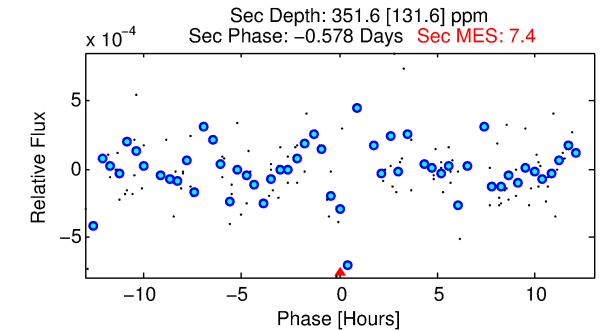
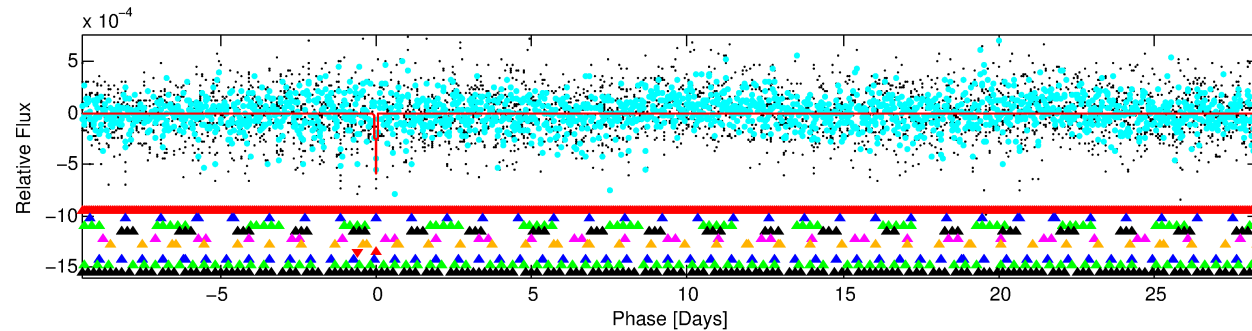
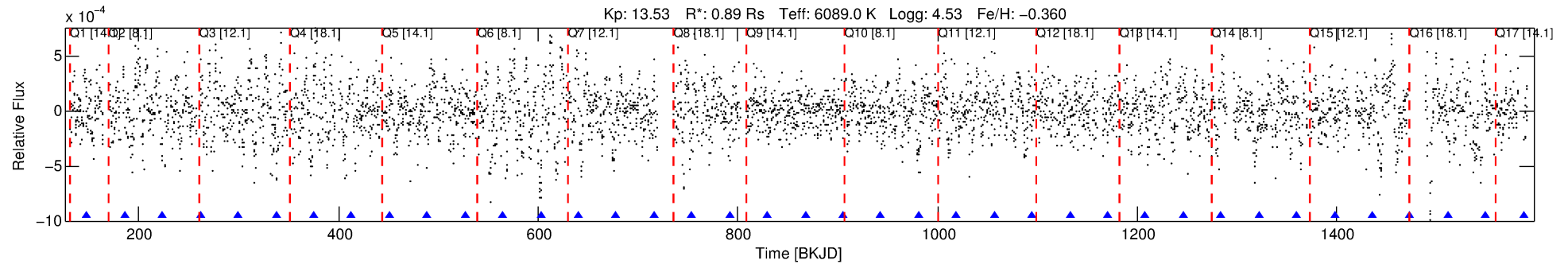
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007117444-07

No Significant Match Found

# DV One-Page Summary

KIC: 7117444 Candidate: 7 of 10 Period: 37.863 d



## DV Fit Results:

Period = 37.86308 [0.00036] d  
Epoch = 148.2044 [0.0069] BKJD  
Rp/R\* = 0.0386 [0.2083]  
a/R\* = 40.90 [71.11]  
b = 0.99 [0.35]  
Seff = 20.39 [7.93]  
Teq = 542 [53] K  
Rp = 3.74 [20.24] Re  
a = 0.2185 [0.0549] AU  
Ag = 659.12 [7127.02] [0.09 $\sigma$ ]  
Teffp = 4245 [11469] K [0.32 $\sigma$ ]

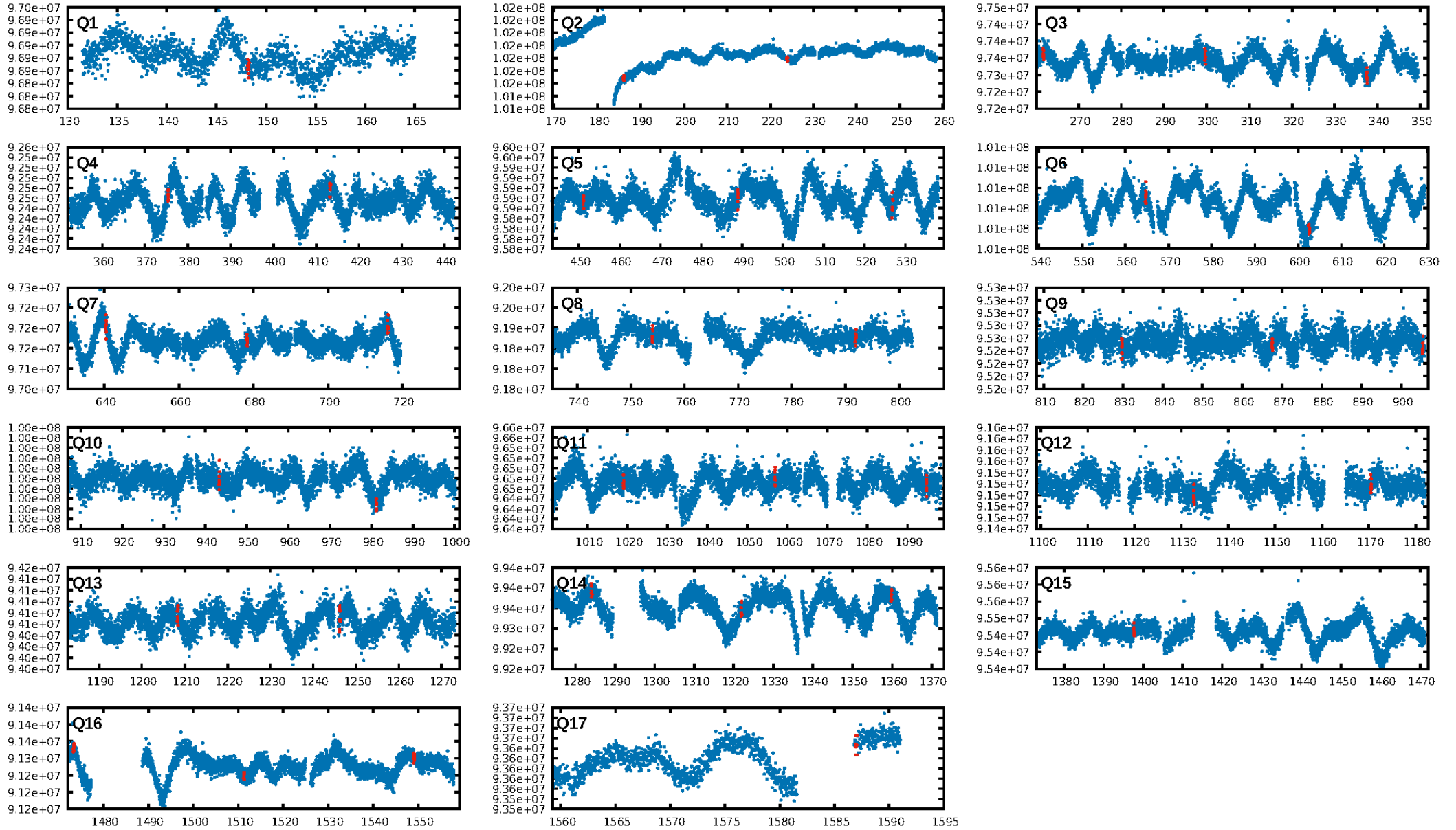
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [44.46 $\sigma$ ]  
LongPeriod-sig: 100.0% [29.20 $\sigma$ ]  
ModelChiSquare2-sig: 58.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 0.1727  
Centroid-sig: 72.2%  
Centroid-so: 0.192 arcsec [0.51 $\sigma$ ]  
OotOffset-rm: 3.014 arcsec [2.99 $\sigma$ ]  
OotOffset-st: 2/1/3/3 [9]  
KicOffset-rm: 3.105 arcsec [2.98 $\sigma$ ]  
KicOffset-st: 2/1/3/3 [9]  
DiffImageQuality-fgm: 0.00 [0/9]  
DiffImageOverlap-fno: 0.00 [0/16]

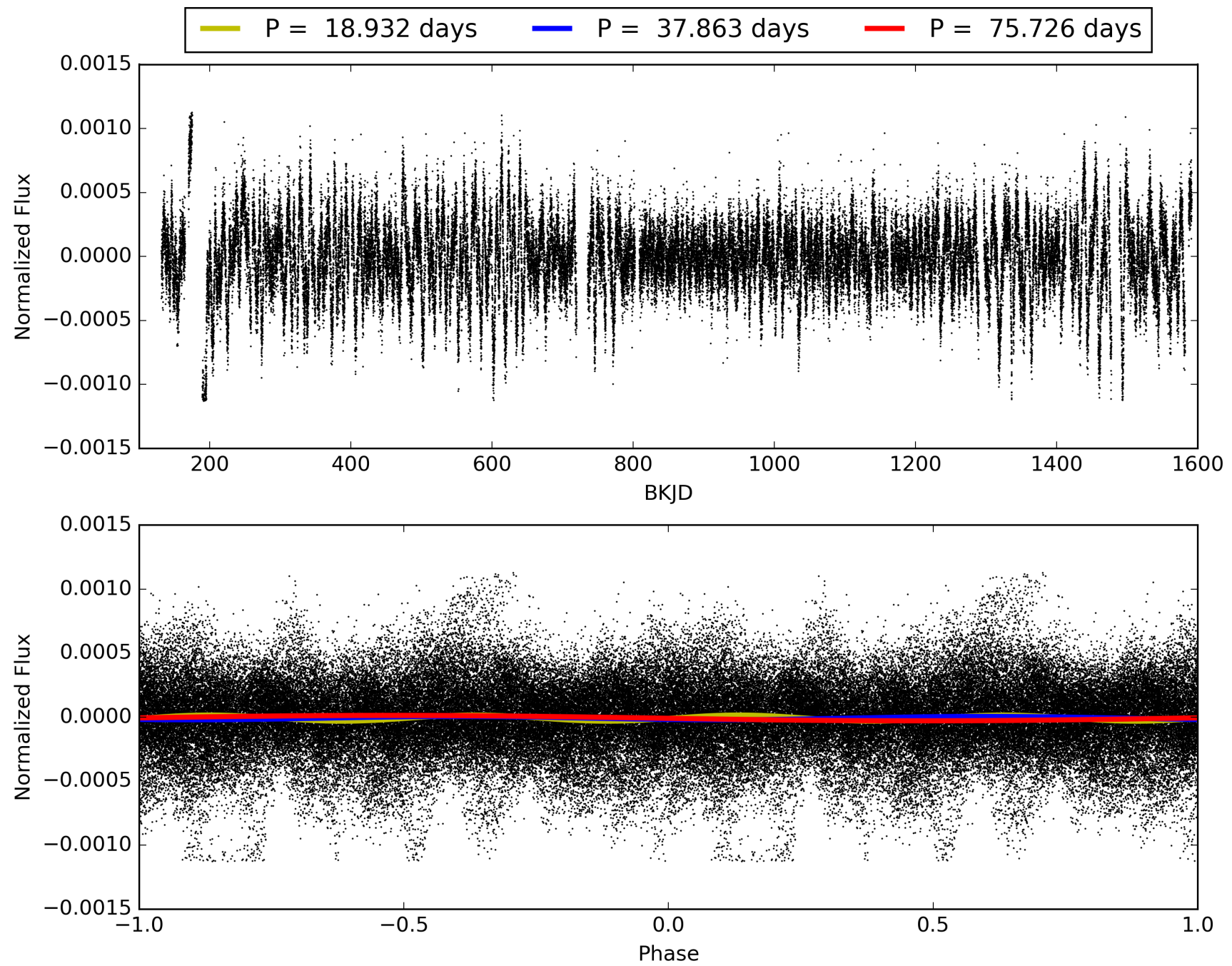
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:37:05 Z

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

# TCE 007117444-07, PDC Light Curves

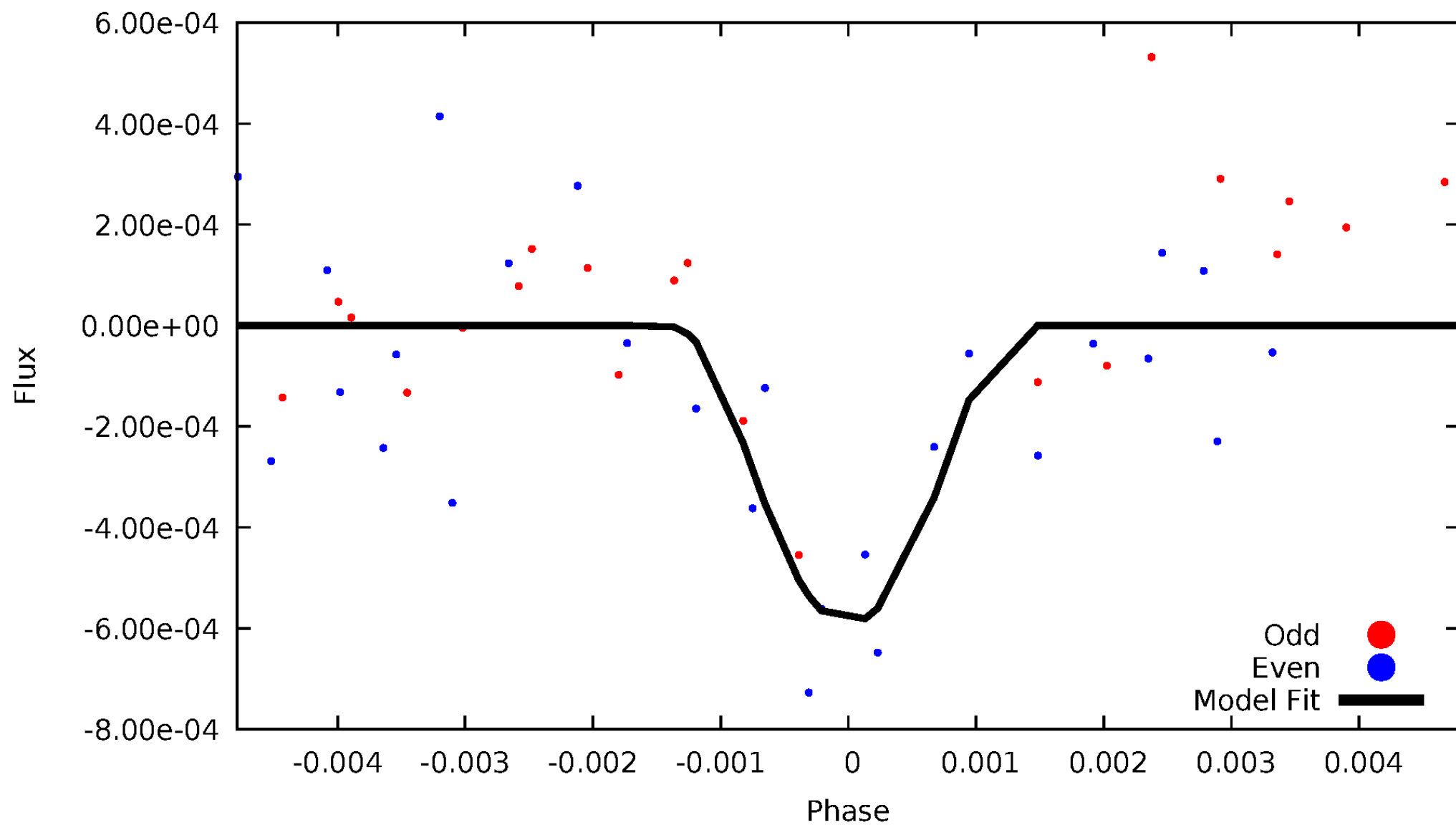


TCE 007117444-07



# DV Odd/Even

TCE 007117444-07





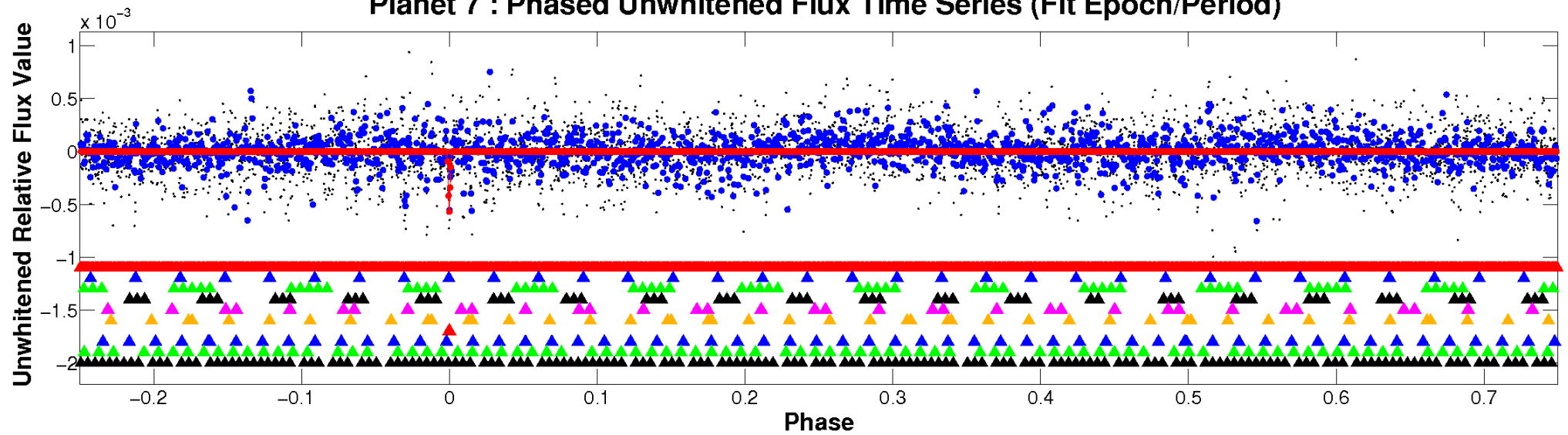
ALT Odd/Even

This plot does not exist for this TCE.

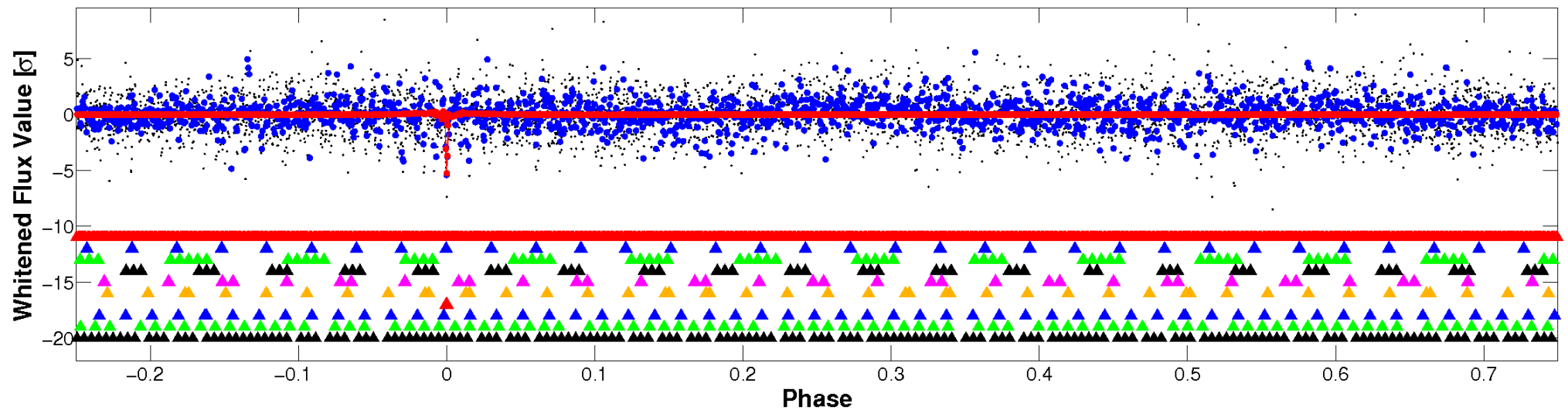


# Non-Whitened Vs. Whitened Light Curve

## Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

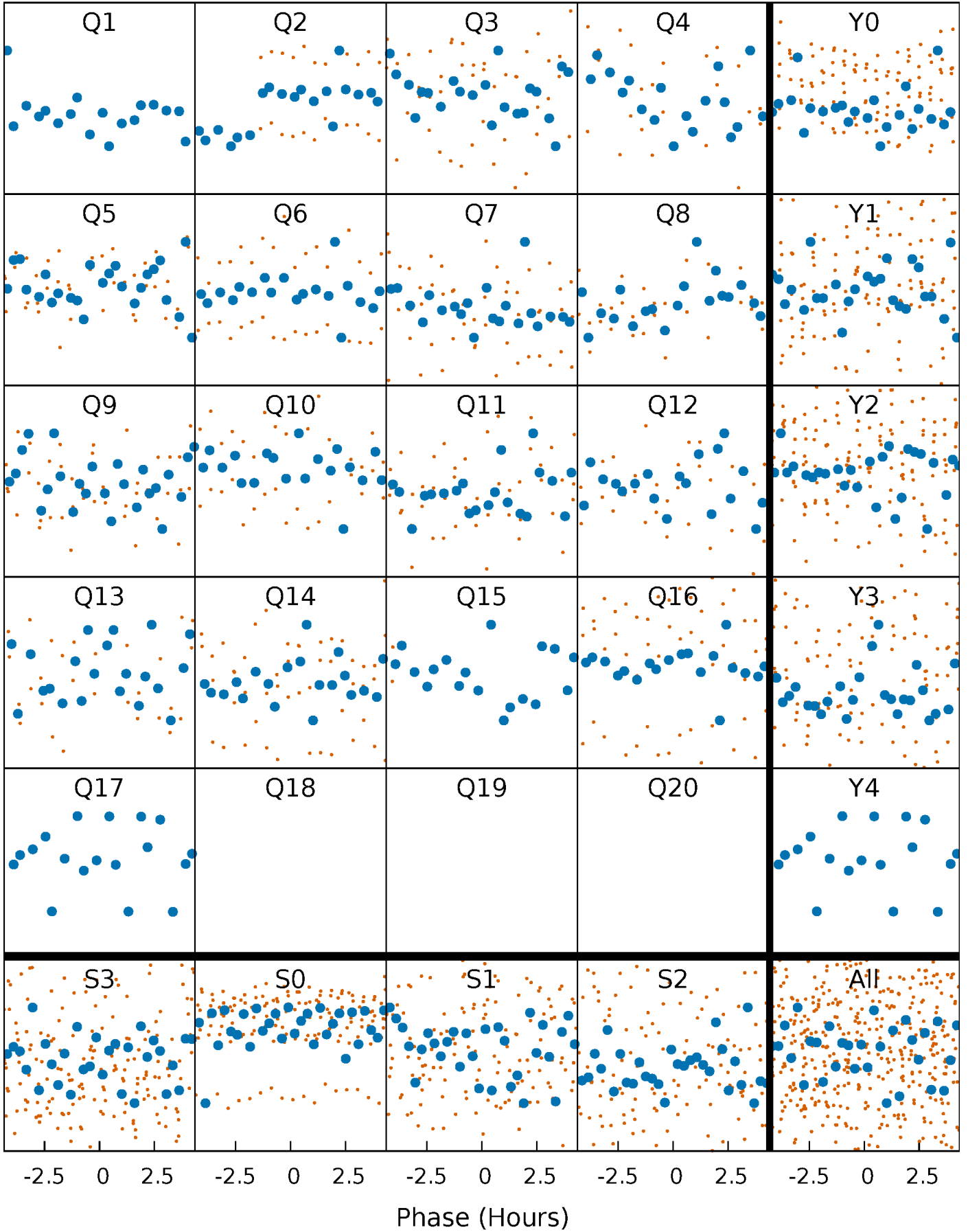


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



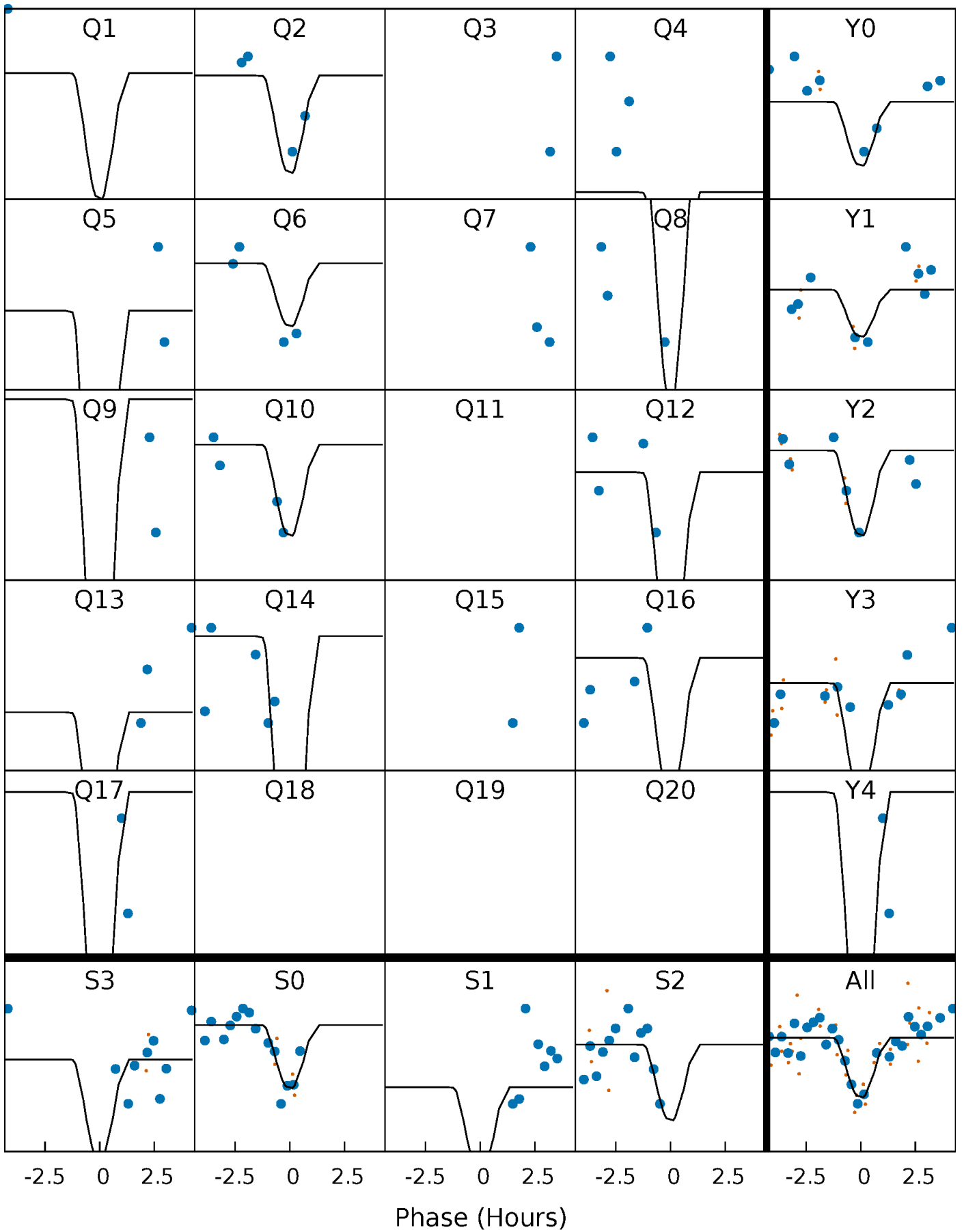
# PDC Quarter-Phased Transit Curves

TCE 007117444-07 P= 37.863077 Days  $T_0=148.204384$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 007117444-07 P= 37.863077 Days  $T_0=148.204384$  (BKJD)

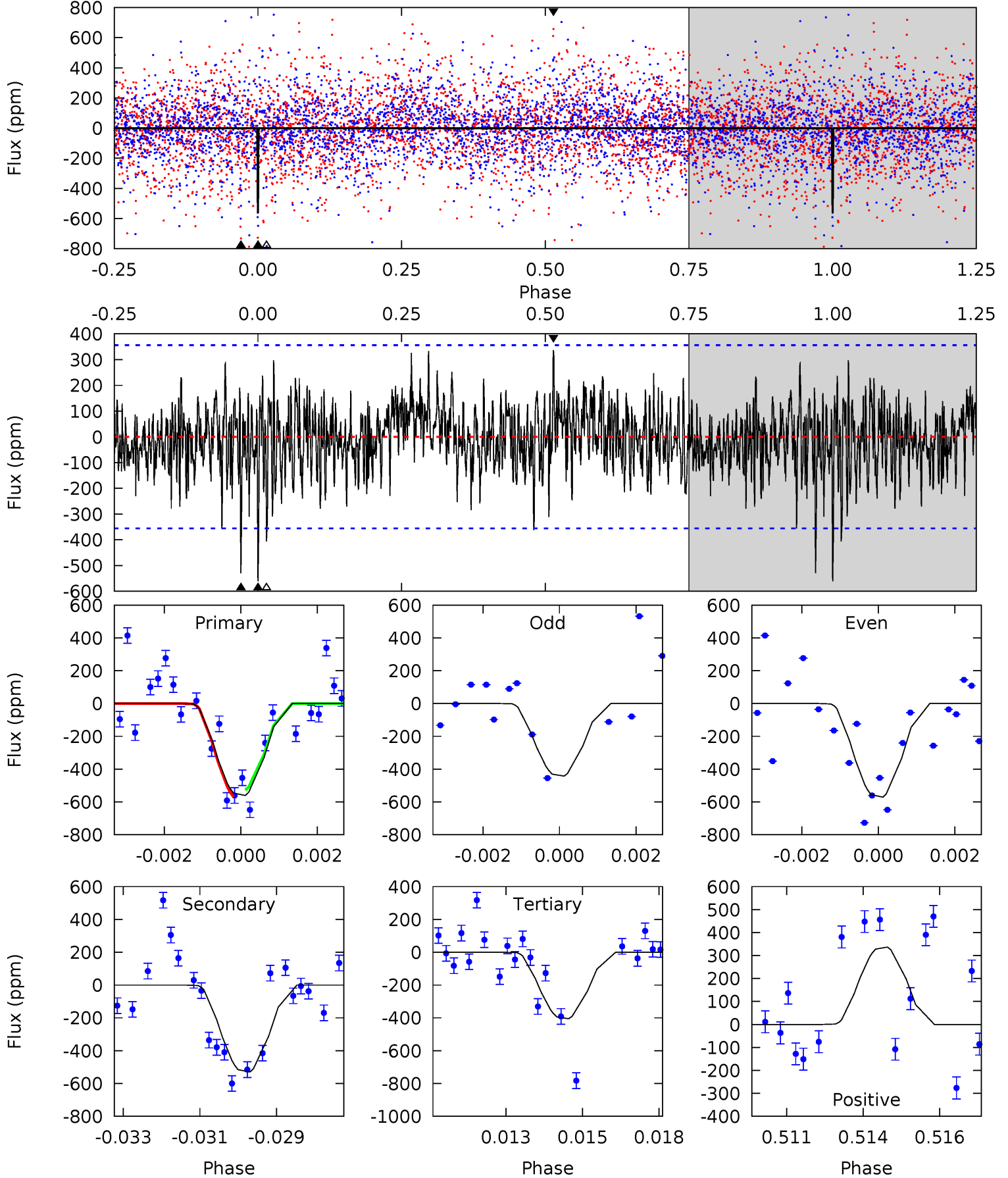


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

007117444-07,  $P = 37.863077$  Days,  $E = 110.341307$  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
8.38	7.91	6.05	5.03	5.31	3.06	1.56	2.33	3.35	1.86	2.88	0.76	1.06	0.38	0.28



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007117444

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6089^{+164}_{-183}$	$4.527^{+0.048}_{-0.204}$	$-0.360^{+0.300}_{-0.300}$	$0.889^{+0.262}_{-0.082}$	$0.971^{+0.118}_{-0.118}$	$1.944^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-5%	+83%/-83%	+29%/-9%	+12%/-12%	+20%/-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 007117444-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-530 \pm 67$	$16.27^{+16.33}_{-10.88}$	$772^{+56}_{-39}$	$2973^{+1384}_{-484}$	$51^{+428}_{-39}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{\text{max}}$  = 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

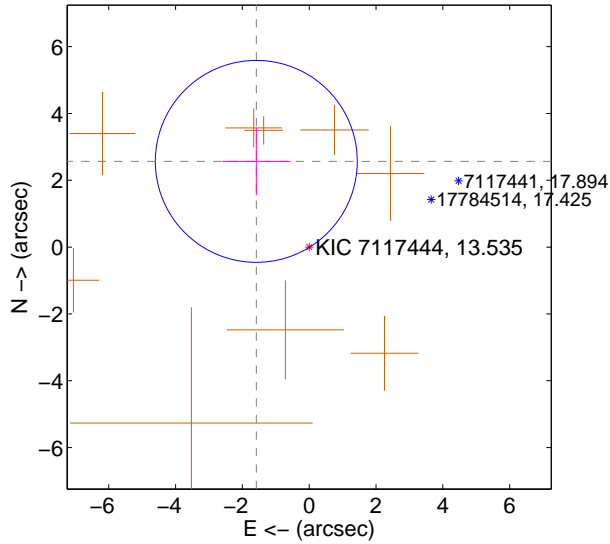
Supplemental centroid analysis for 007117444-07. Kepler magnitude: 13.54. Transit SNR 12.30

There are 0 quarters with good PRF difference image offsets

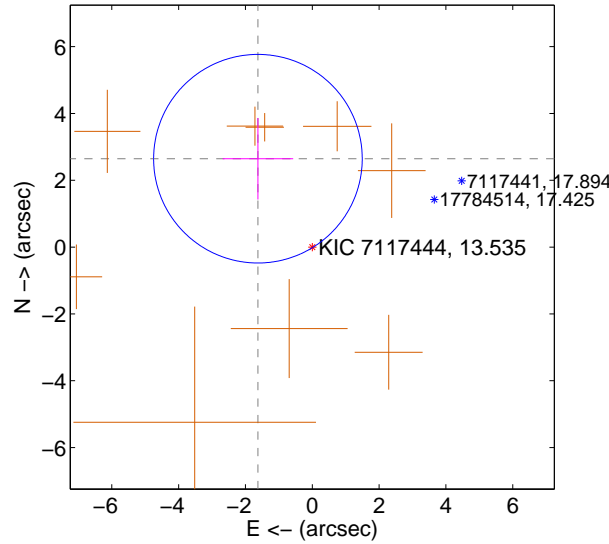
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.014 \pm 1.007$	2.99	$1.583 \pm 1.022$	$2.565 \pm 1.011$
PRF-fit source offset from KIC position	$3.105 \pm 1.040$	2.98	$1.626 \pm 1.054$	$2.646 \pm 1.220$
photometric centroid source offset	$0.19 \pm 0.38$	0.51	$0.14 \pm 0.39$	$0.13 \pm 0.35$

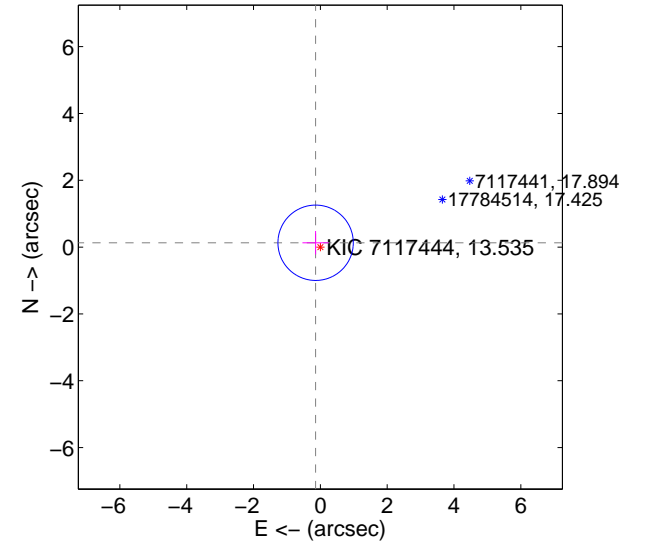
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

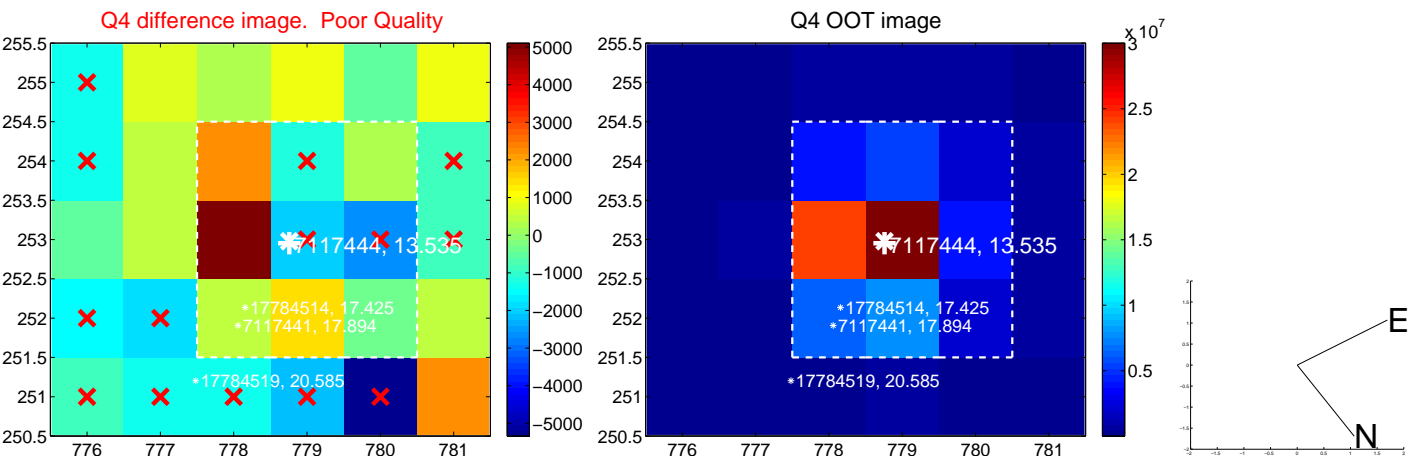
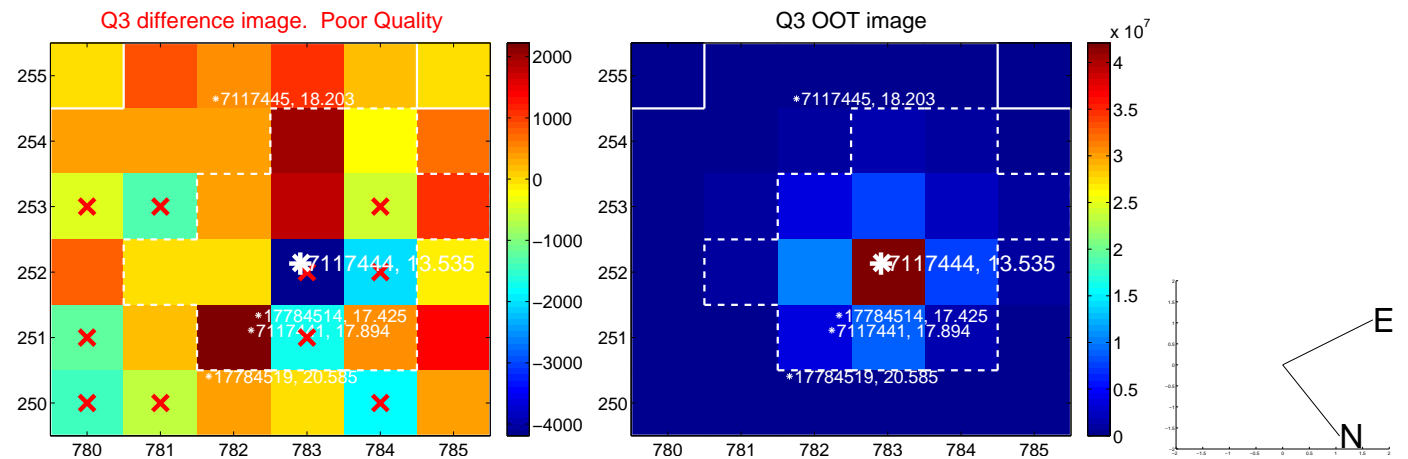
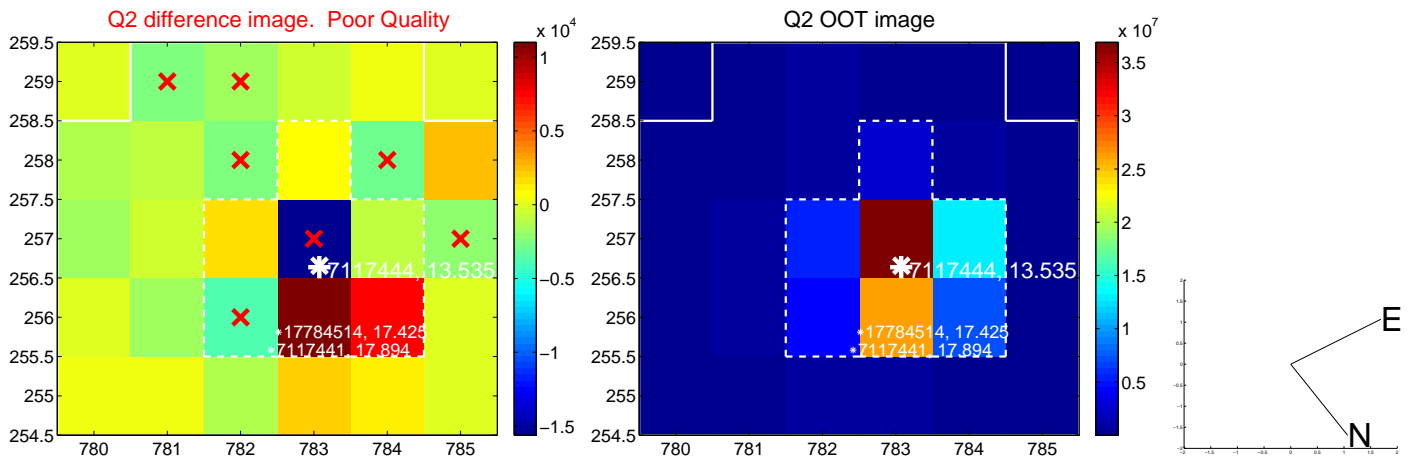
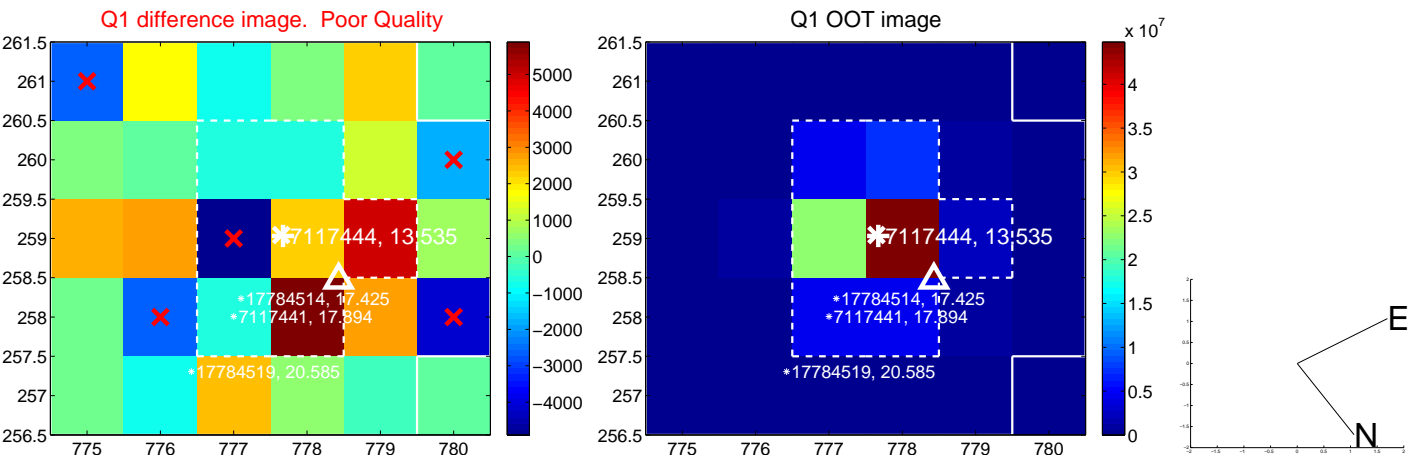


offset from photometric centroids

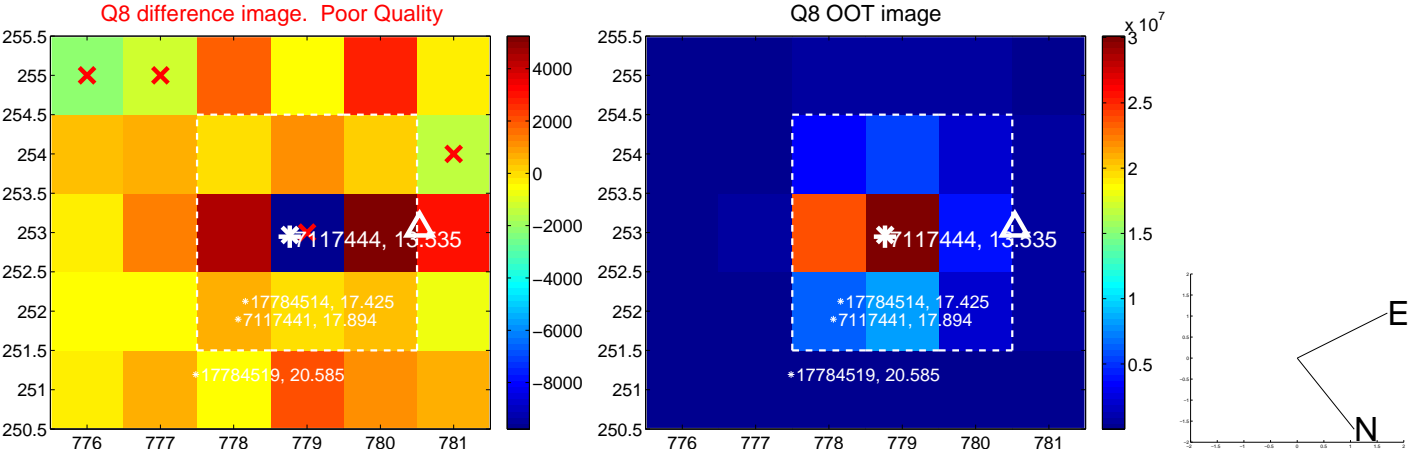
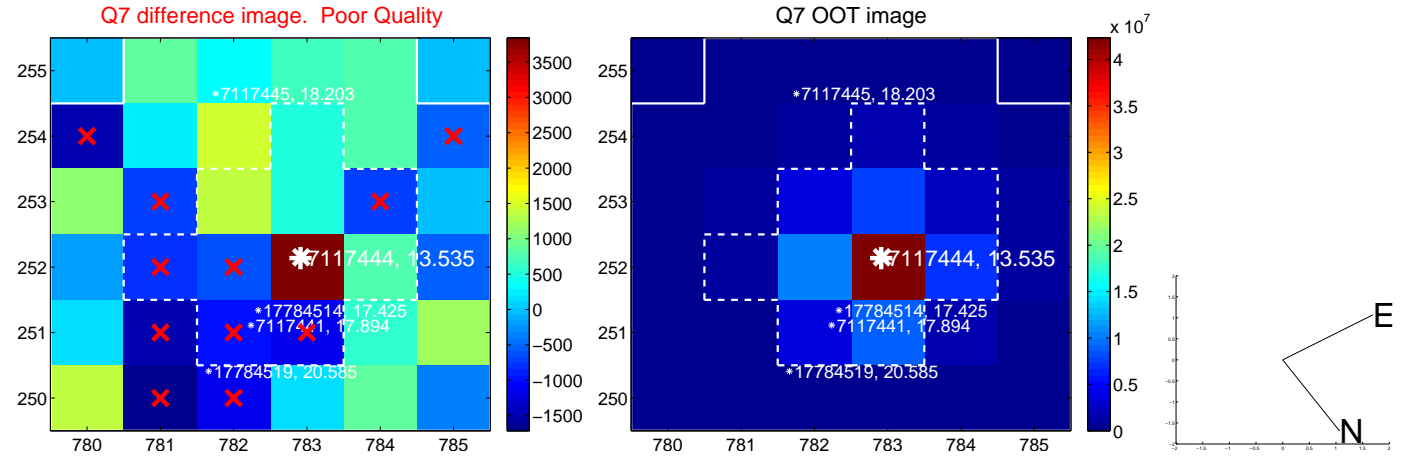
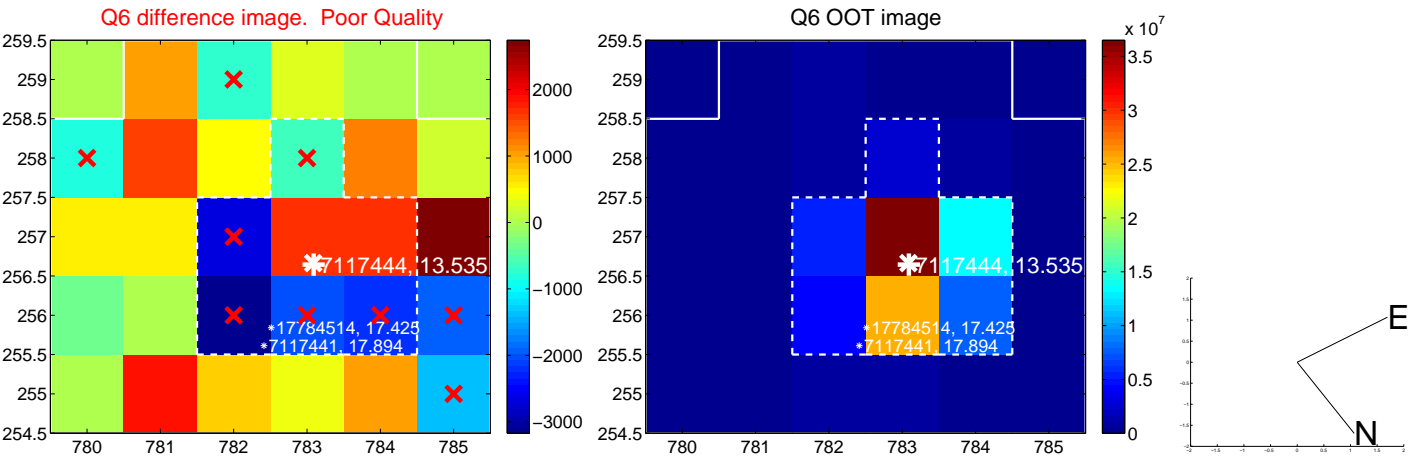
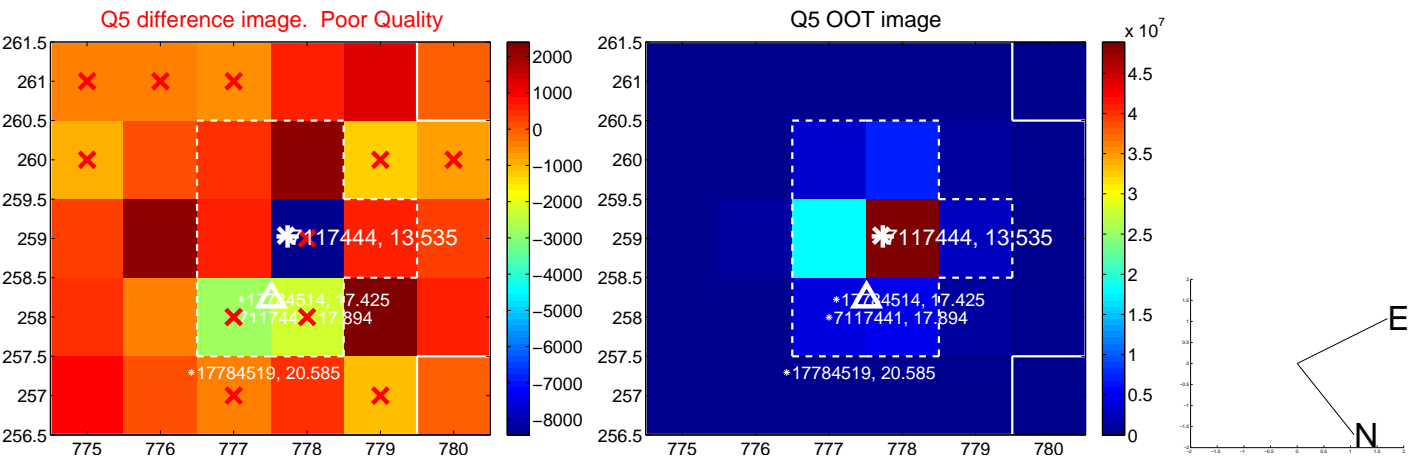


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

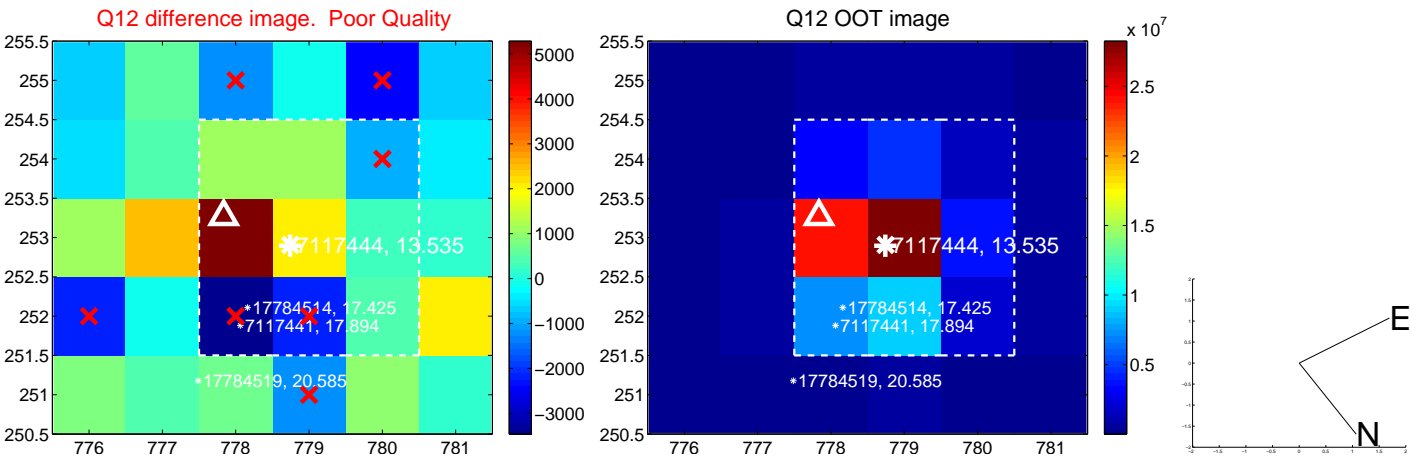
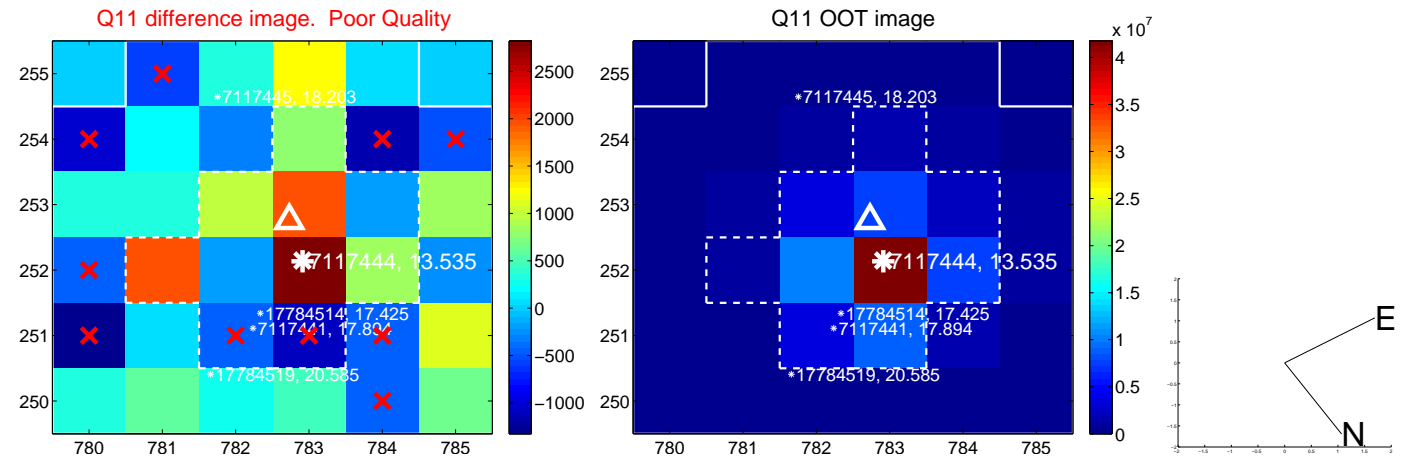
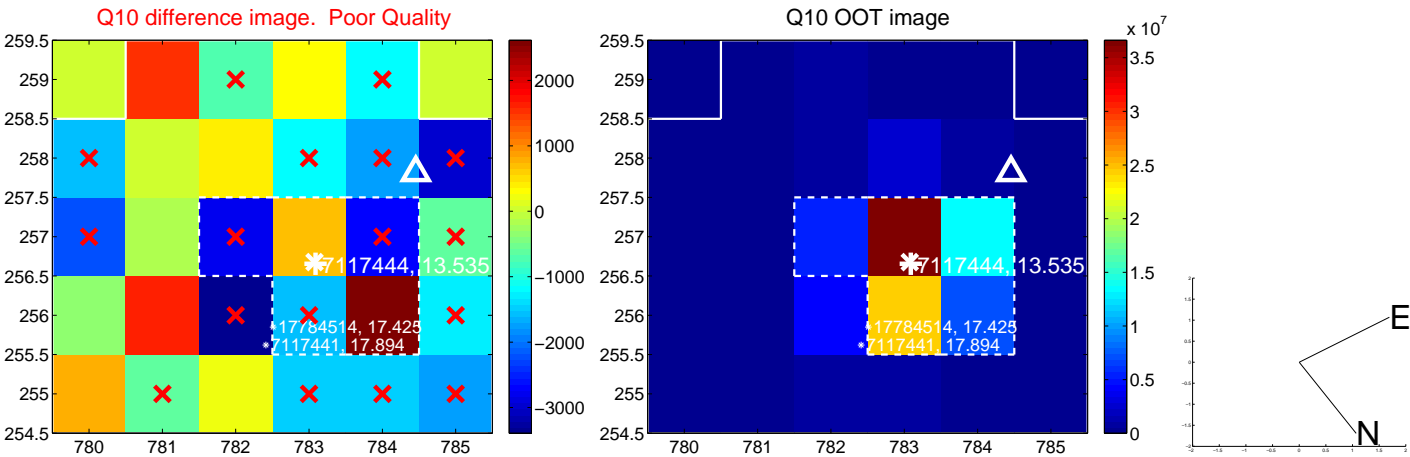
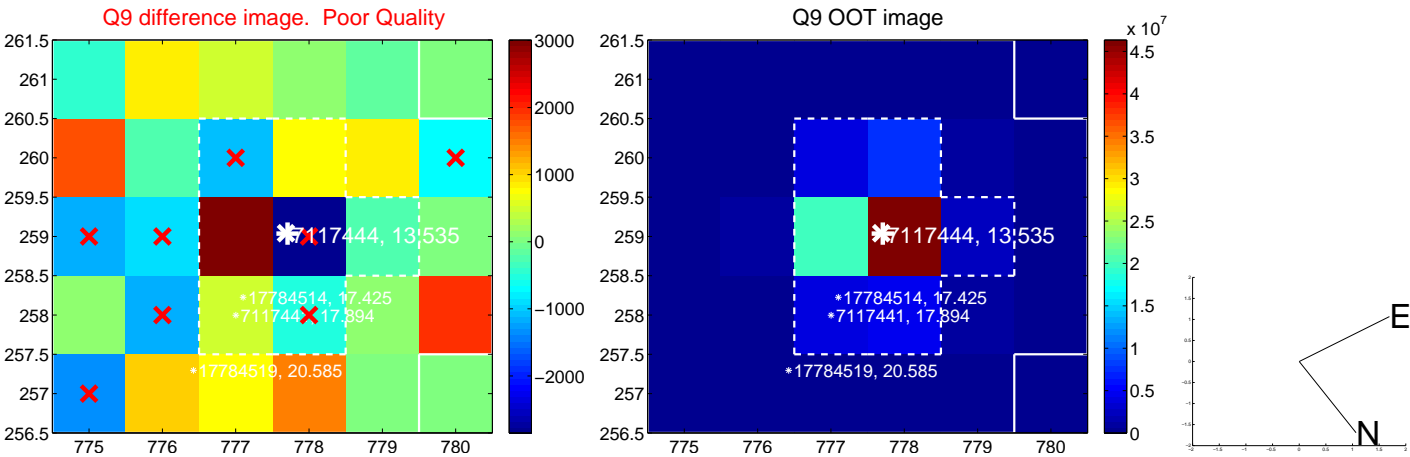
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



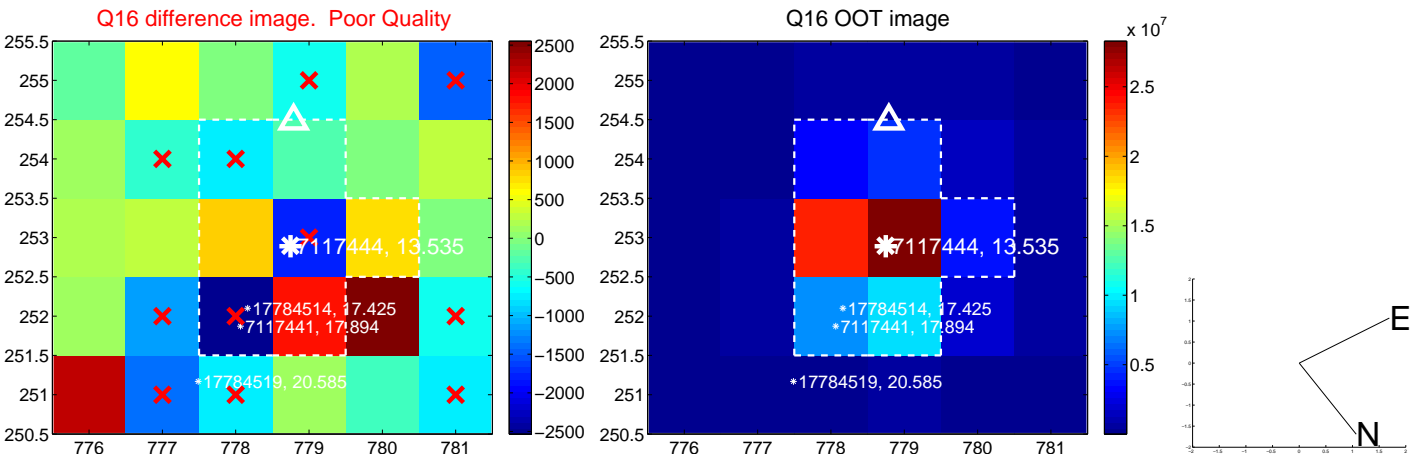
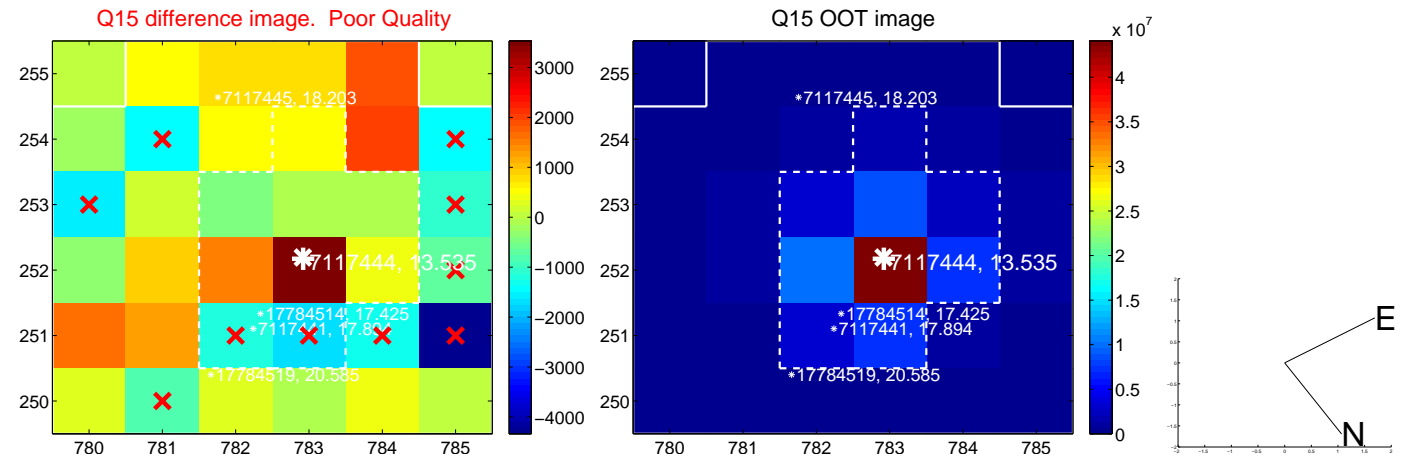
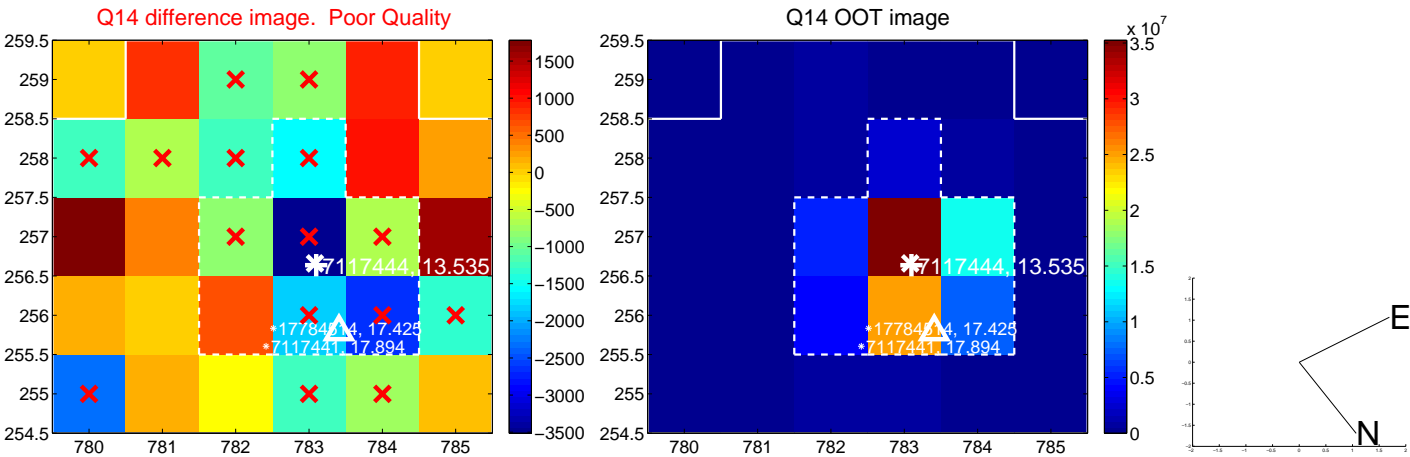
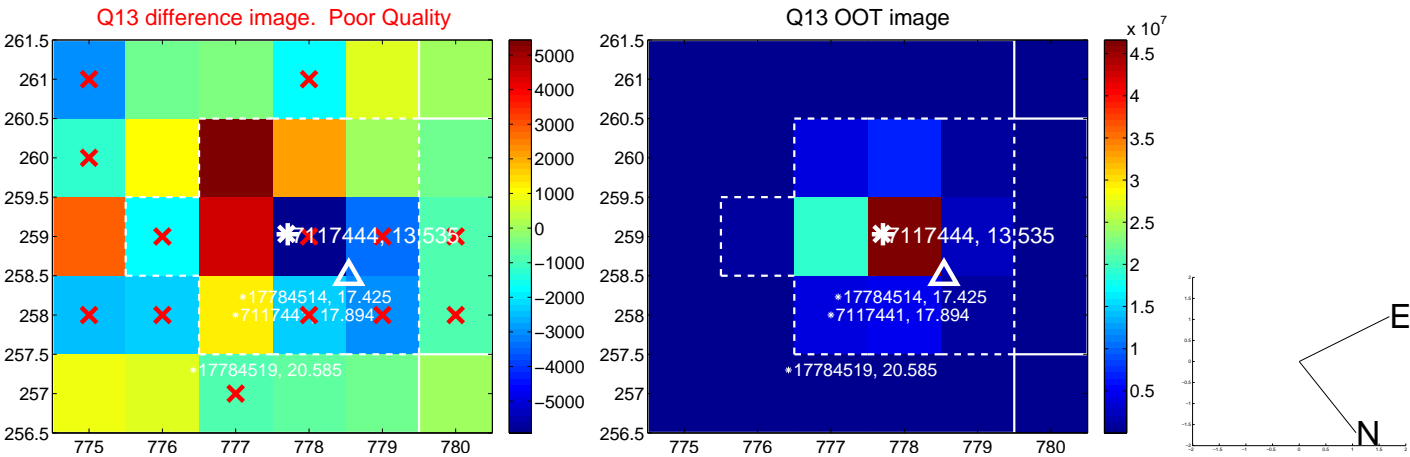
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



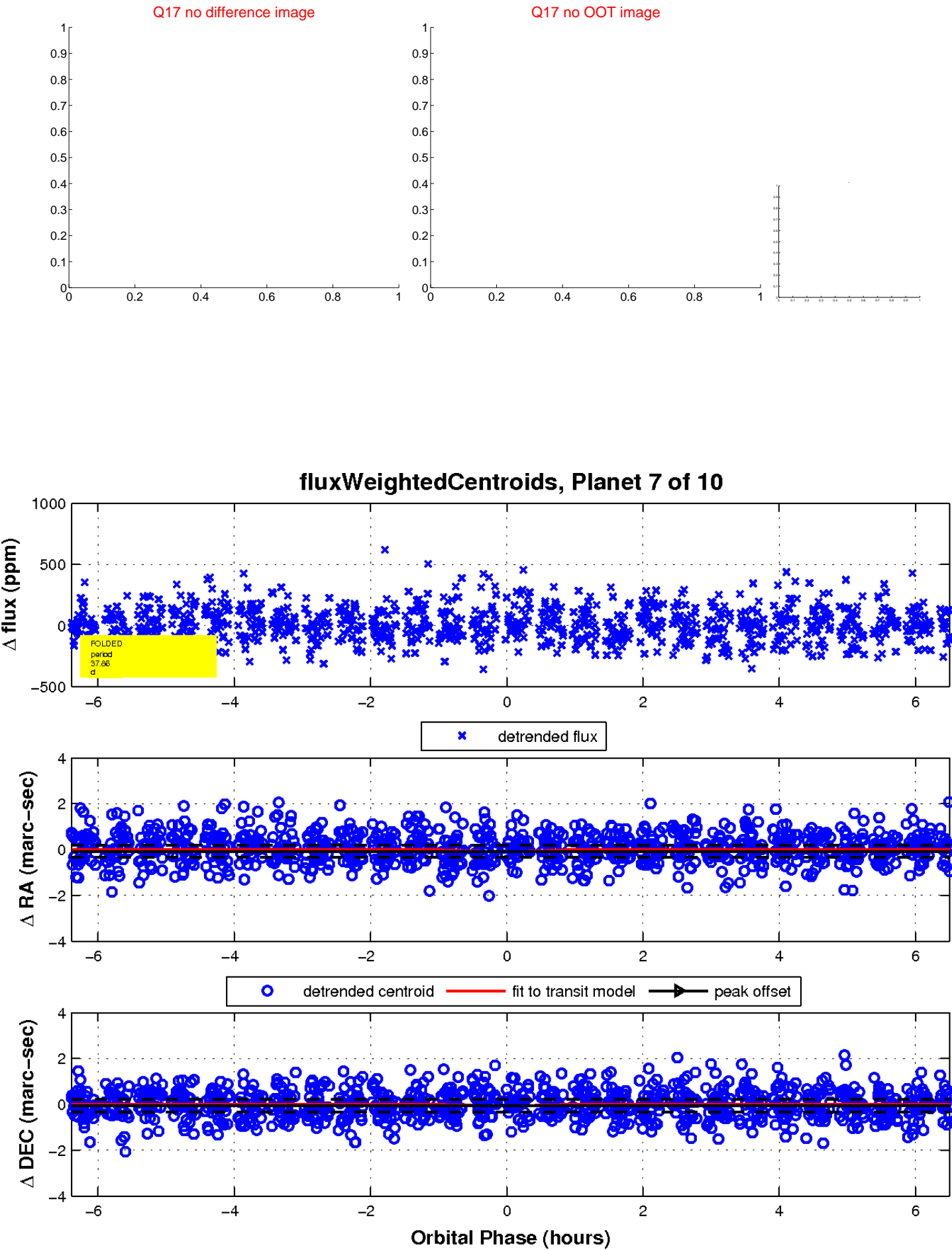
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

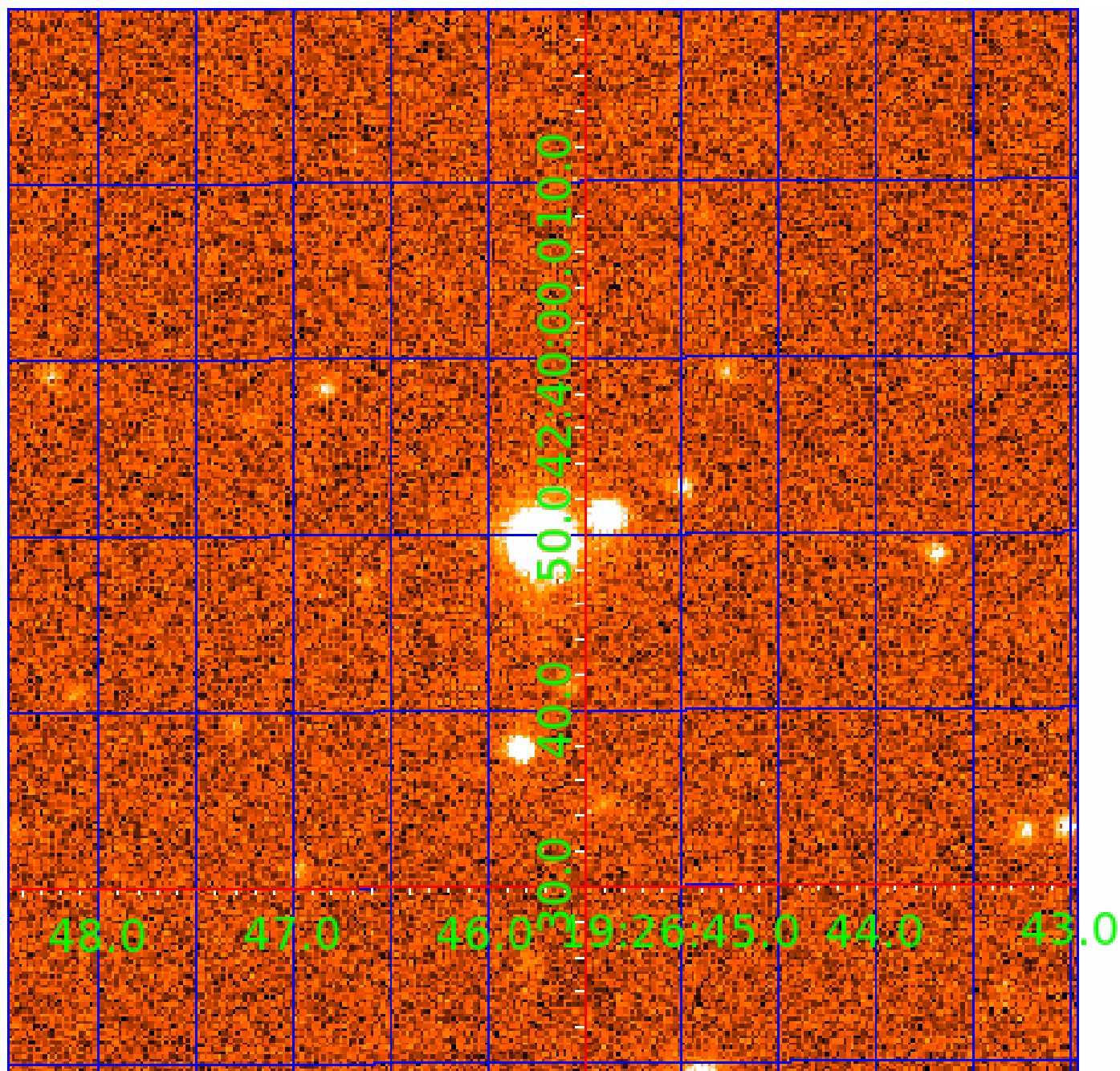


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 007117444

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007117444-01	OBS	No	0.566779	131.850424	9.7	4.016	7.9	7.1	0.89	6089	0.28	5526.64
007117444-02	OBS	No	28.683667	158.533256	409.8	2.113	15.3	9.9	0.89	6089	1.81	29.52
007117444-04	OBS	No	24.620543	151.203318	365.0	1.357	12.4	8.0	0.89	6089	1.91	36.19
007117444-06	OBS	No	31.725644	159.932876	542.1	2.500	10.8	-1.0	0.89	6089	2.08	25.81
007117444-07	OBS	No	37.863077	148.204384	590.4	2.174	12.0	12.3	0.89	6089	3.74	20.39
007117444-08	OBS	No	25.017406	142.026280	590.0	0.948	11.5	11.2	0.89	6089	2.65	35.43
007117444-09	OBS	No	16.445934	141.504848	375.6	1.583	9.7	8.9	0.89	6089	2.05	61.98
007117444-10	OBS	No	8.496060	134.146611	514.7	2.000	8.8	-1.0	0.89	6089	2.02	149.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007117444-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
007117444-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
007117444-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
007117444-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
007117444-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
007117444-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—CENT_FEW_DIFFS
007117444-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS
007117444-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

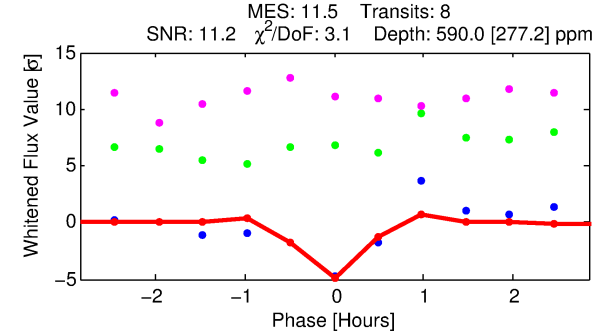
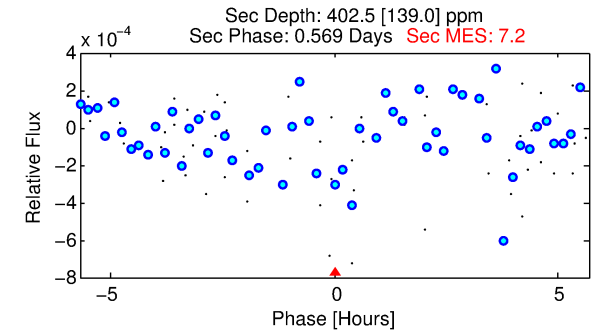
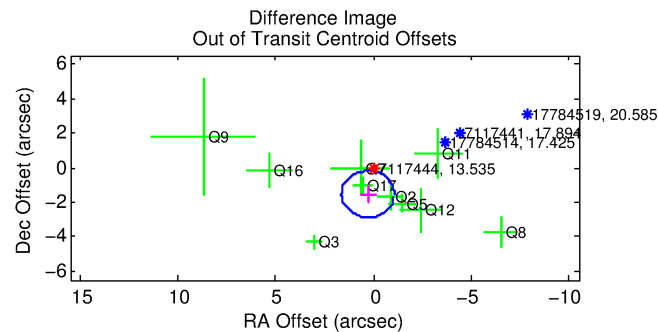
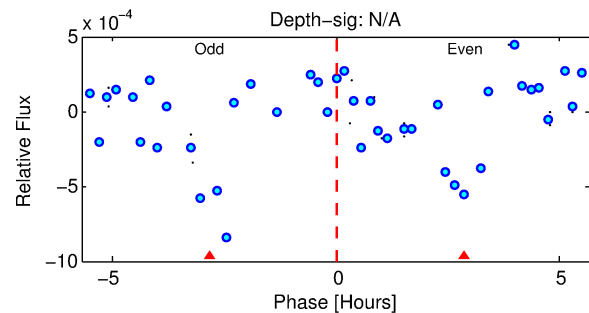
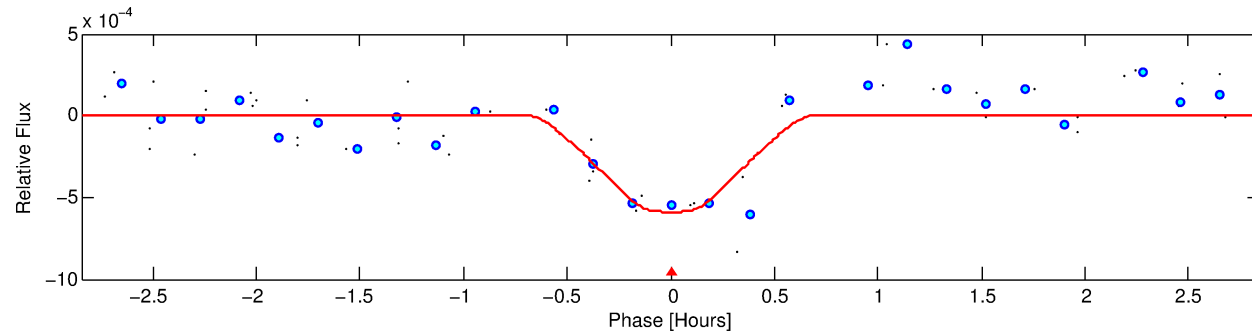
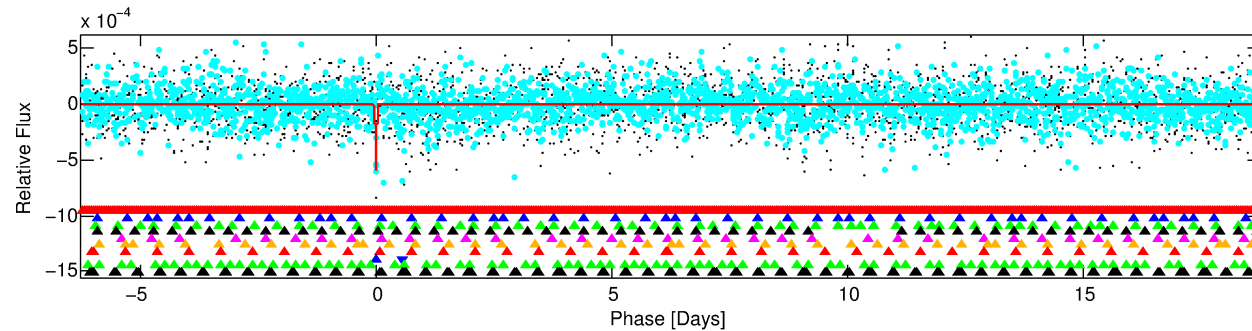
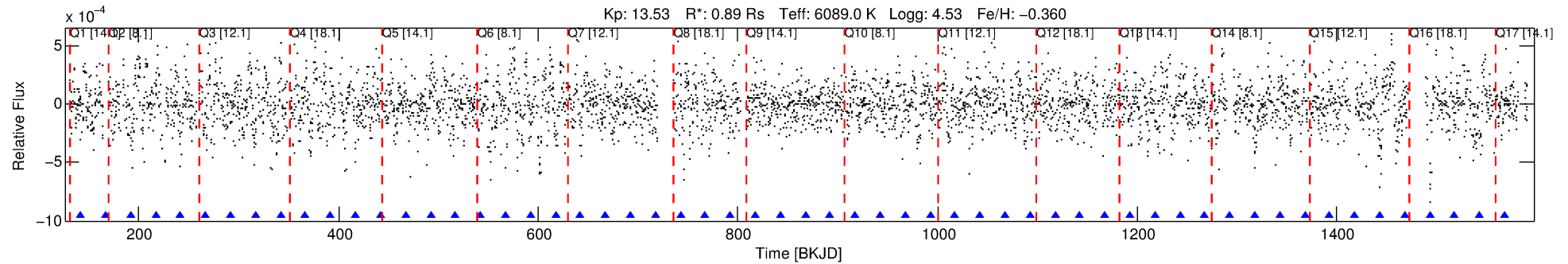
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007117444-08

No Significant Match Found

# DV One-Page Summary

KIC: 7117444 Candidate: 8 of 10 Period: 25.017 d



## DV Fit Results:

Period = 25.01741 [0.00014] d  
Epoch = 142.0263 [0.0044] BKJD  
Rp/R\* = 0.0273 [0.0294]  
a/R\* = 87.93 [422.01]  
b = 0.93 [0.73]  
Seff = 35.43 [13.77]  
Teq = 622 [60] K  
Rp = 2.65 [2.95] Re  
a = 0.1658 [0.0416] AU  
Ag = 867.05 [1915.13] [0.45σ]  
Teffp = 5219 [2846] K [1.62σ]

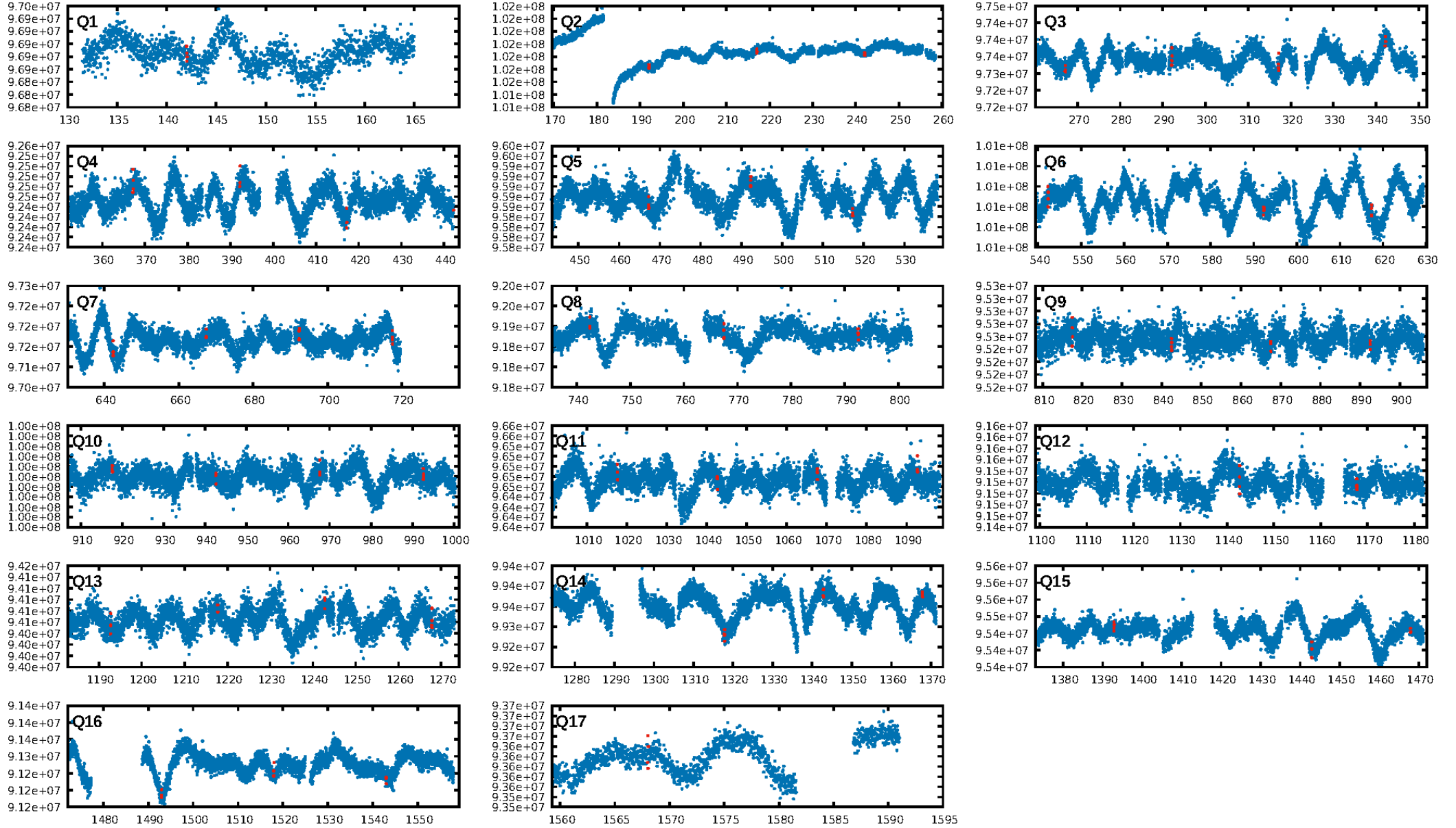
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.75σ]  
LongPeriod-sig: 100.0% [37.99σ]  
ModelChiSquare2-sig: 3.2%  
ModelChiSquareGof-sig: 69.9%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: 14.6  
Centroid-sig: 51.2%  
Centroid-so: 0.210 arcsec [0.55σ]  
OotOffset-rm: 1.561 arcsec [3.48σ]  
KicOffset-rm: 1.494 arcsec [3.08σ]  
OotOffset-st: 1/3/3/3 [10]  
KicOffset-st: 1/3/3/3 [10]  
DiffImageQuality-fgm: 0.10 [1/10]  
DiffImageOverlap-fno: 0.00 [0/17]

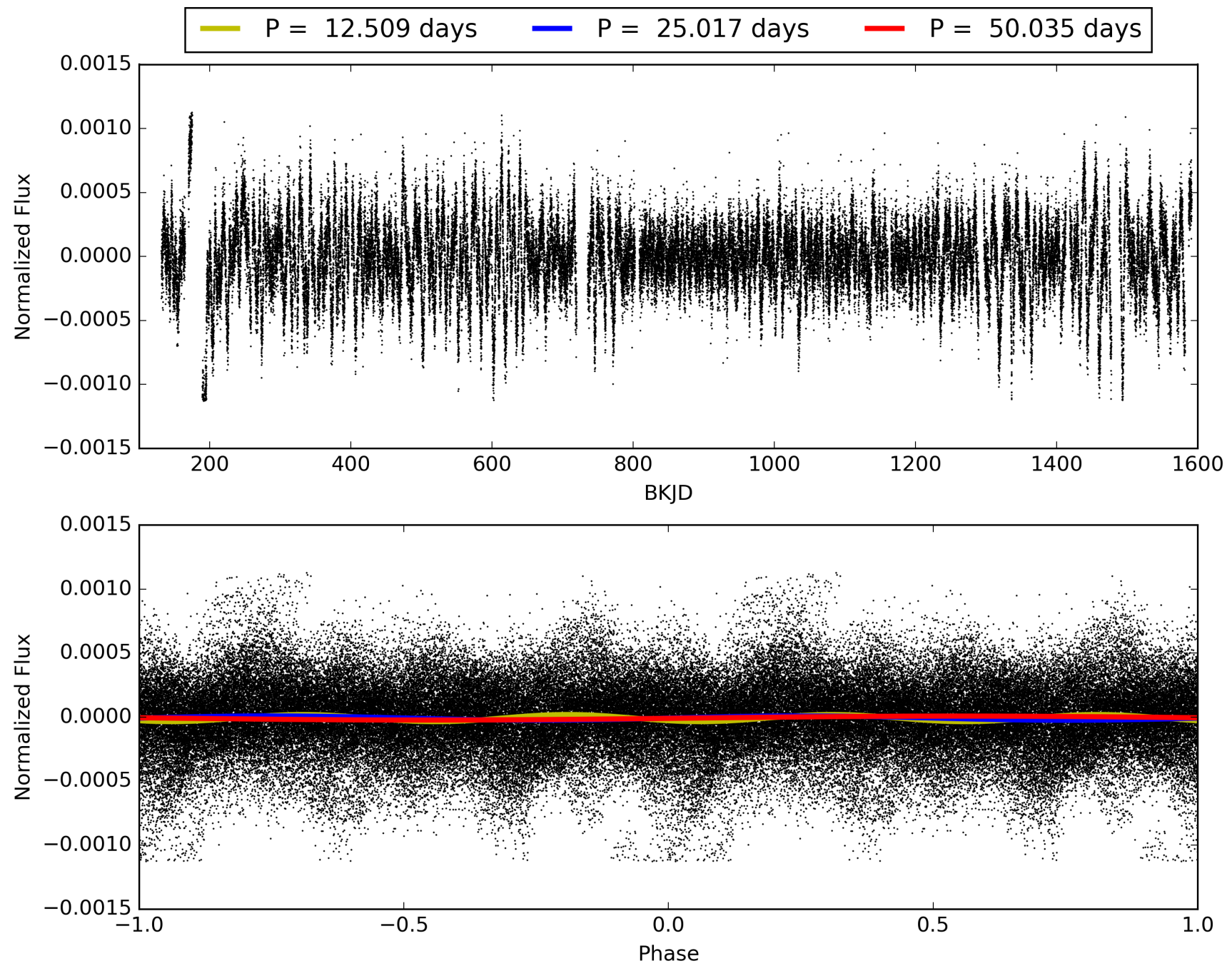
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:37:09 Z

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

# TCE 007117444-08, PDC Light Curves

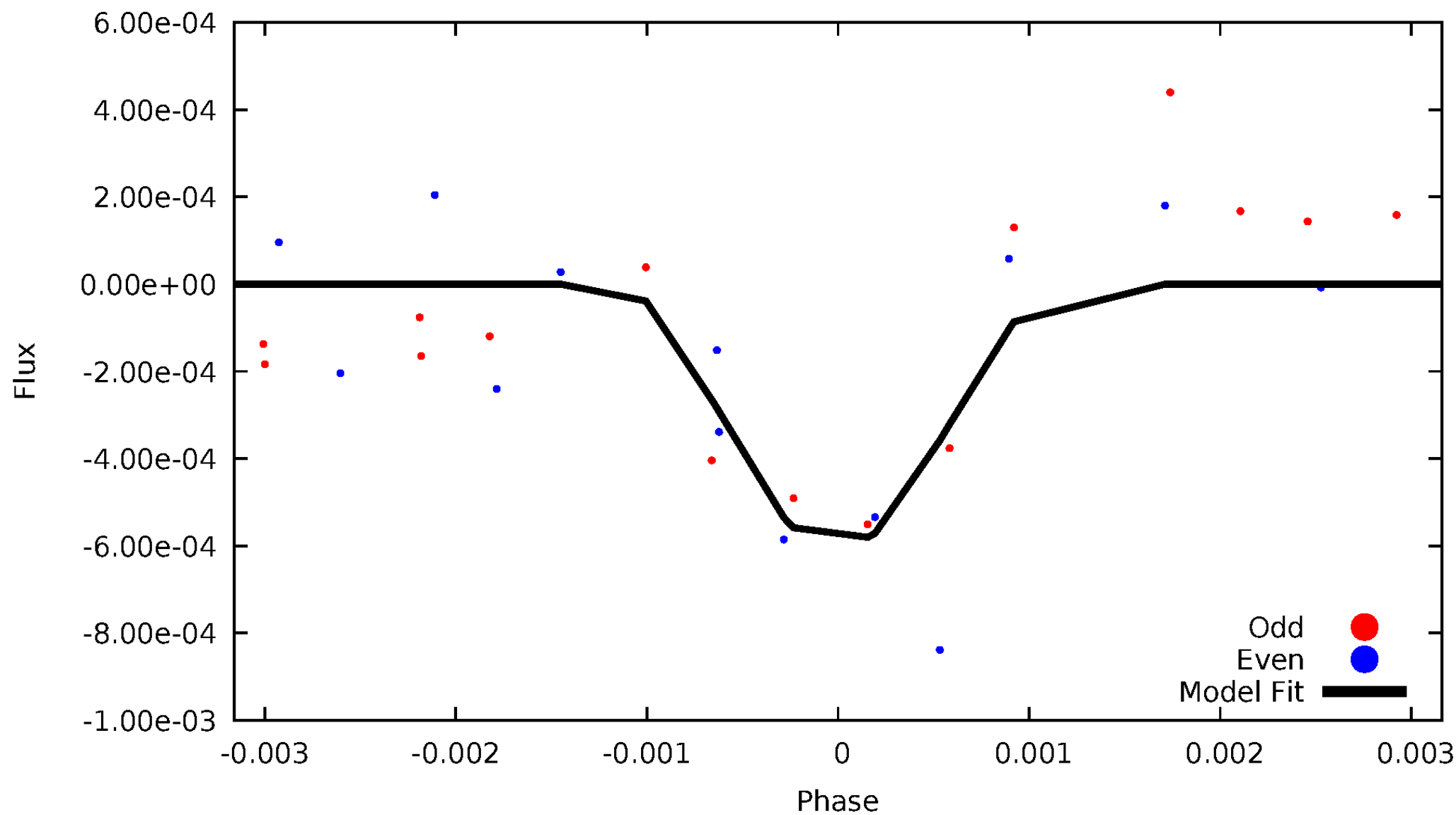


# TCE 007117444-08



# DV Odd/Even

TCE 007117444-08



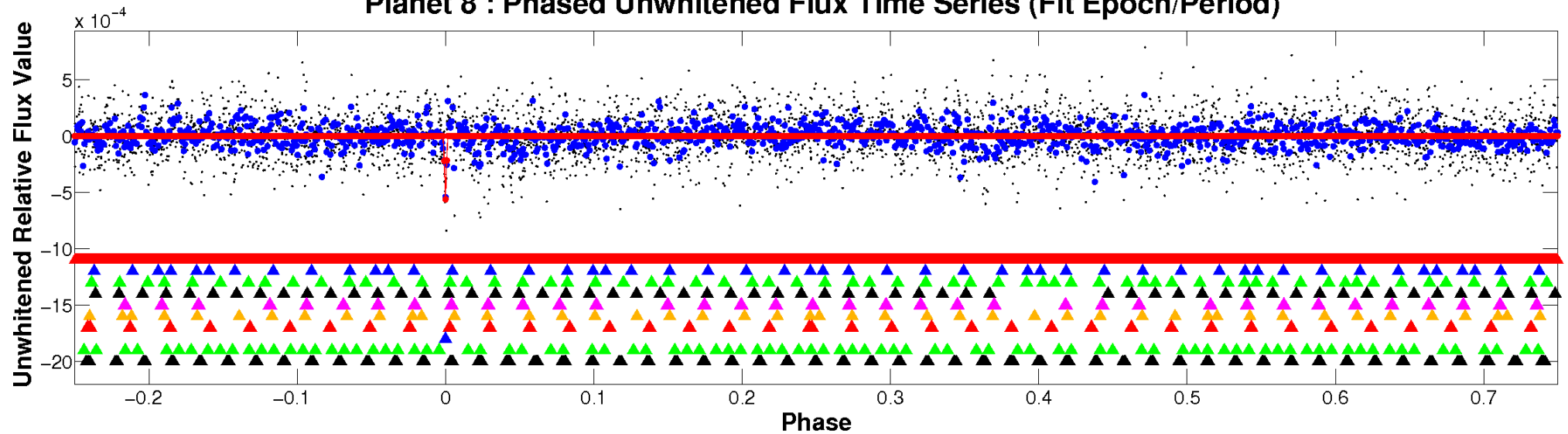


ALT Odd/Even

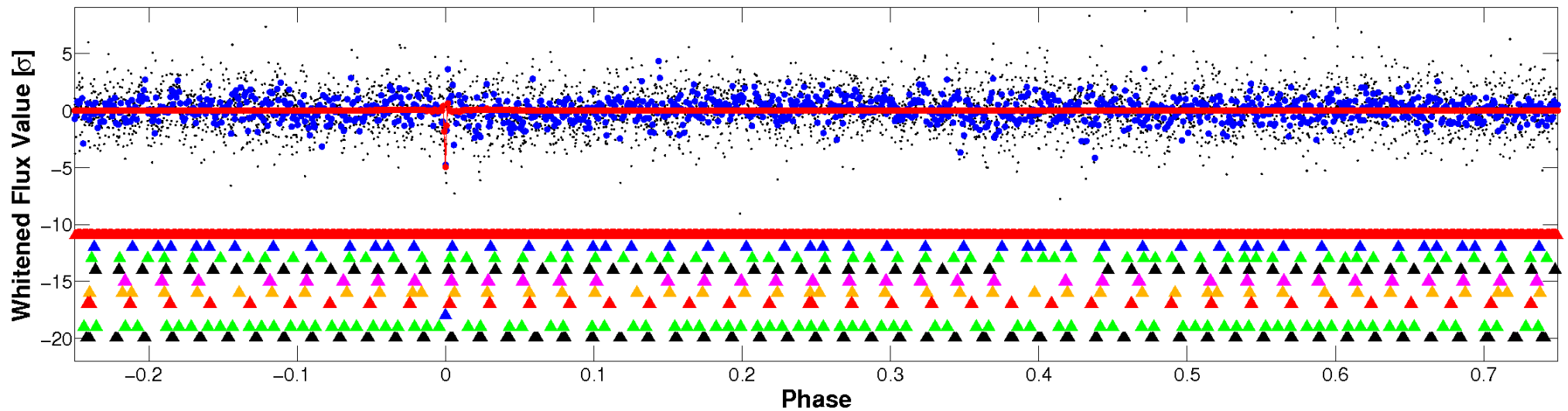
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

## Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



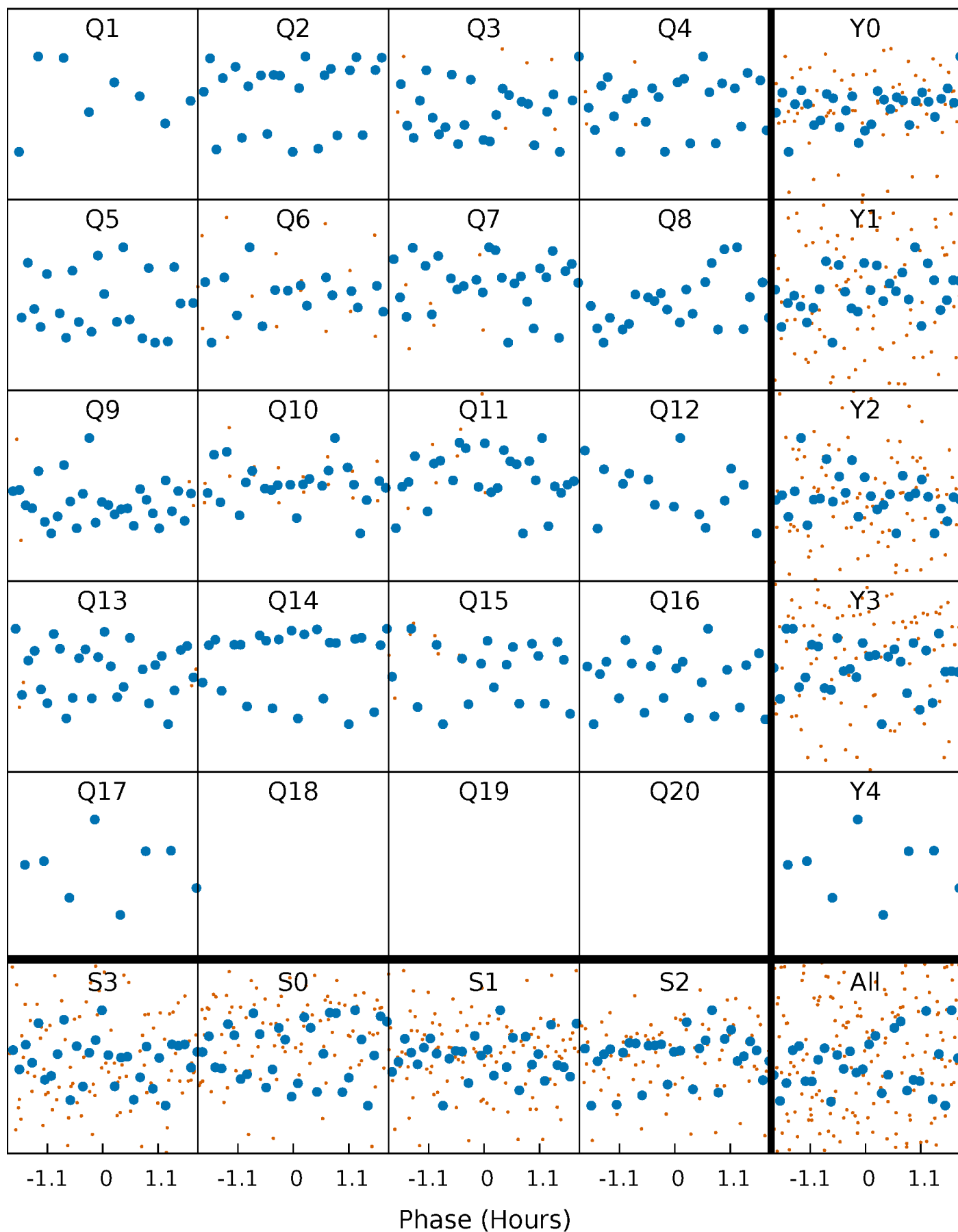
## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)





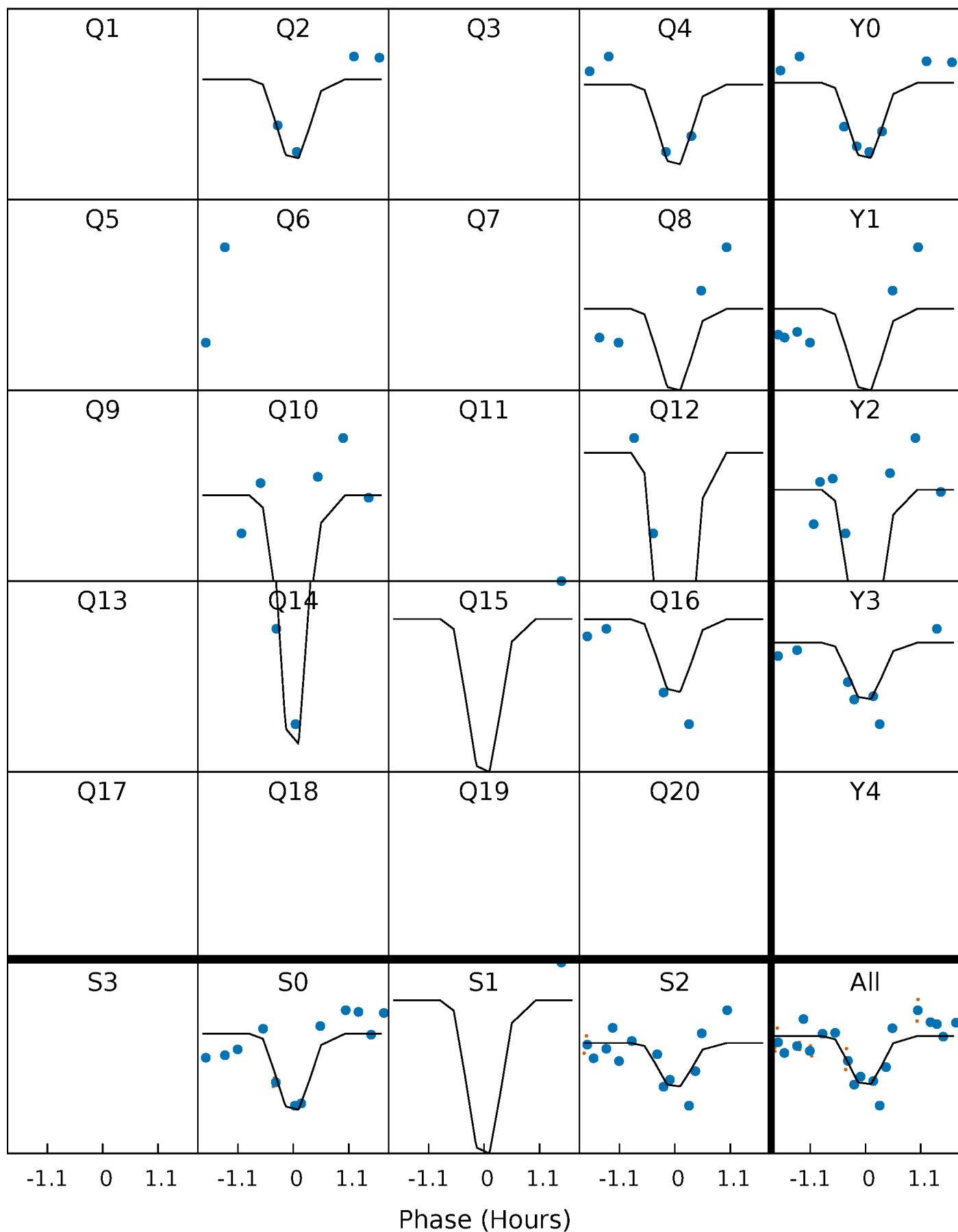
# PDC Quarter-Phased Transit Curves

TCE 007117444-08 P= 25.017406 Days  $T_0=142.026280$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 007117444-08 P= 25.017406 Days  $T_0=142.026280$  (BKJD)

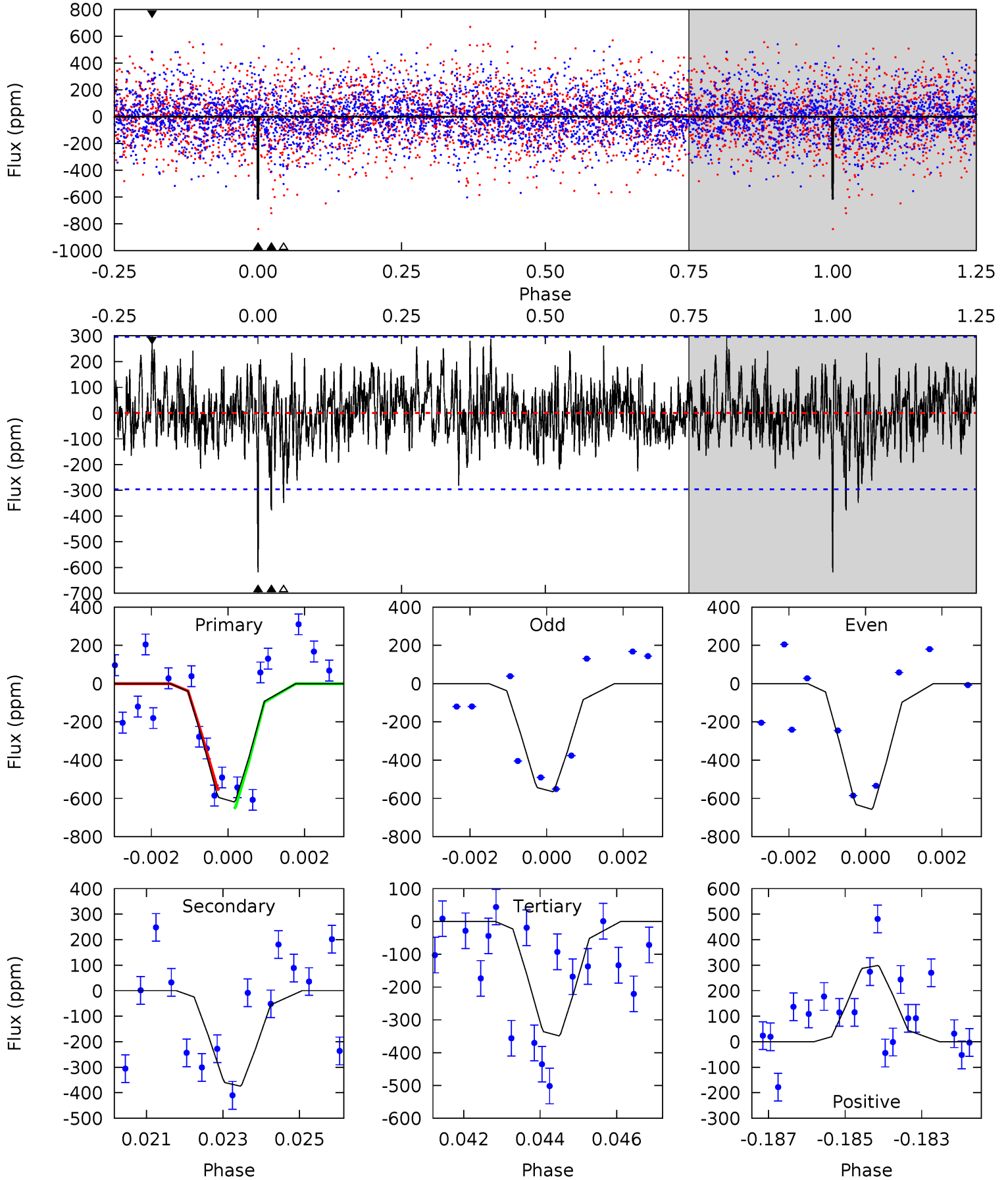


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

007117444-08,  $P = 25.017406$  Days,  $E = 117.008874$  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
11.1	6.73	6.28	5.38	5.33	3.10	1.57	4.85	5.75	0.45	1.35	0.81	1.10	0.33	0.86



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007117444

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6089^{+164}_{-183}$	$4.527^{+0.048}_{-0.204}$	$-0.360^{+0.300}_{-0.300}$	$0.889^{+0.262}_{-0.082}$	$0.971^{+0.118}_{-0.118}$	$1.944^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-5%	+83%/-83%	+29%/-9%	+12%/-12%	+20%/-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 007117444-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-374 \pm 56$	$3.39^{+3.03}_{-2.21}$	$888^{+60}_{-43}$	$4755^{+3382}_{-989}$	$462^{+3615}_{-326}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

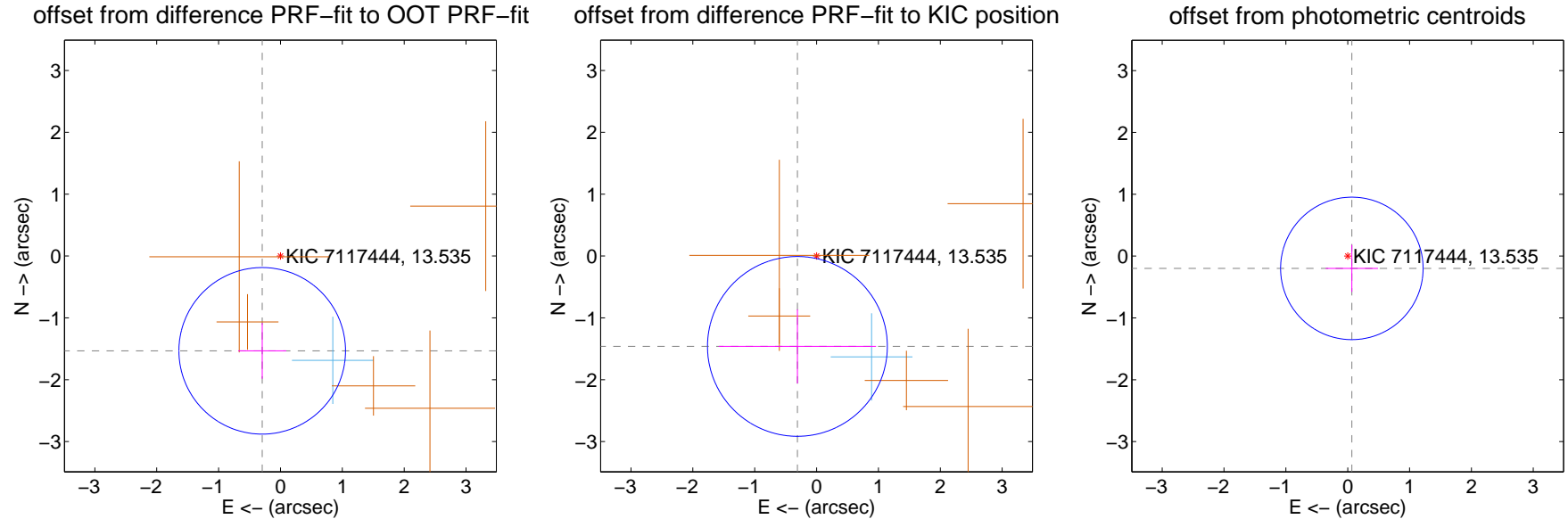
## DV Centroid Data

Supplemental centroid analysis for 007117444-08. Kepler magnitude: 13.54. Transit SNR 11.18

There are 1 quarters with good PRF difference image offsets

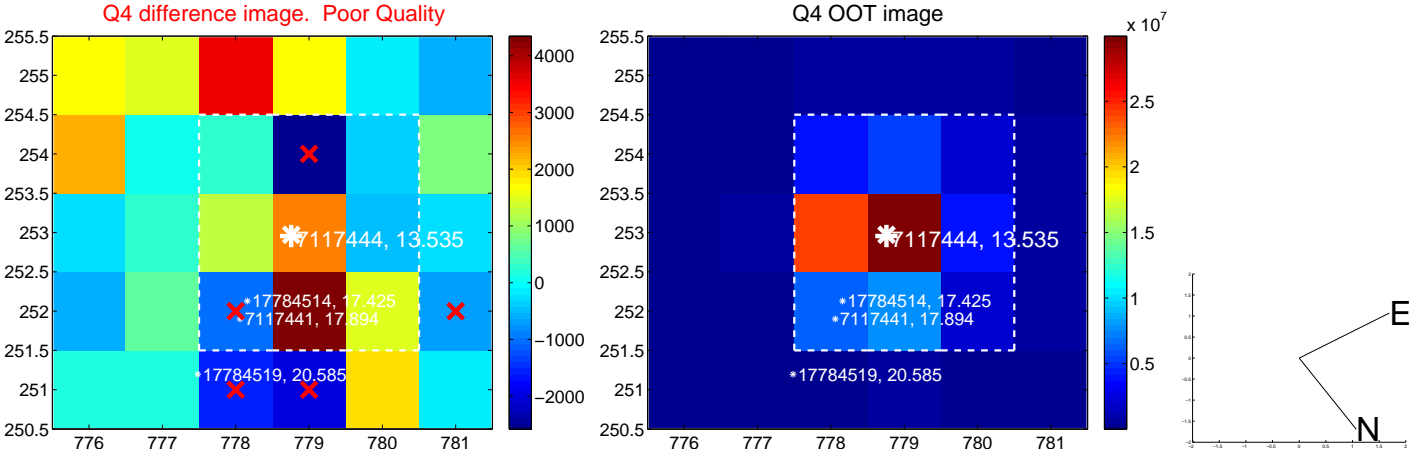
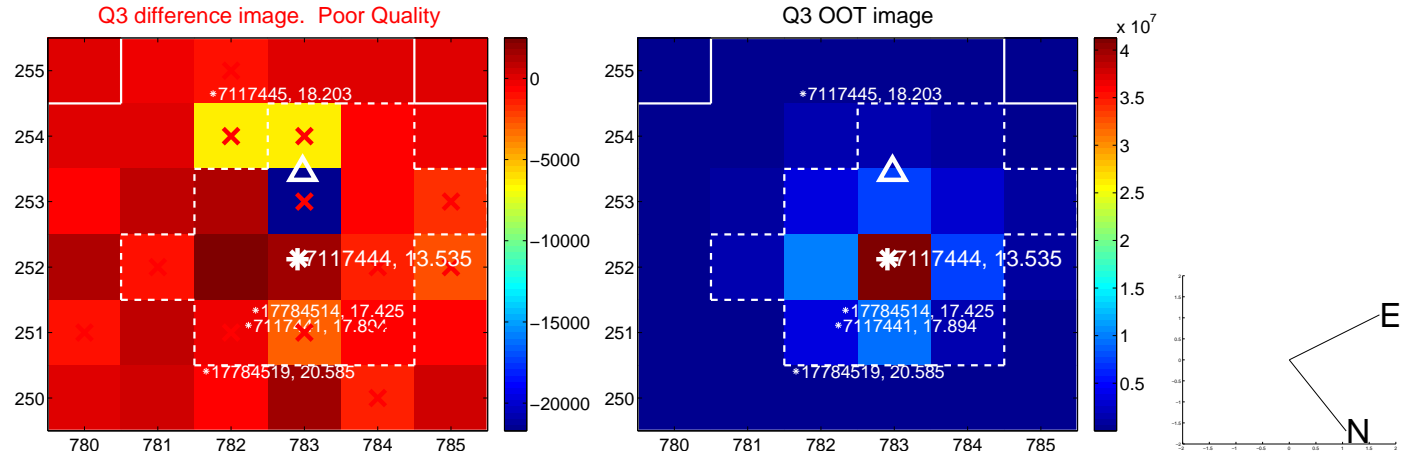
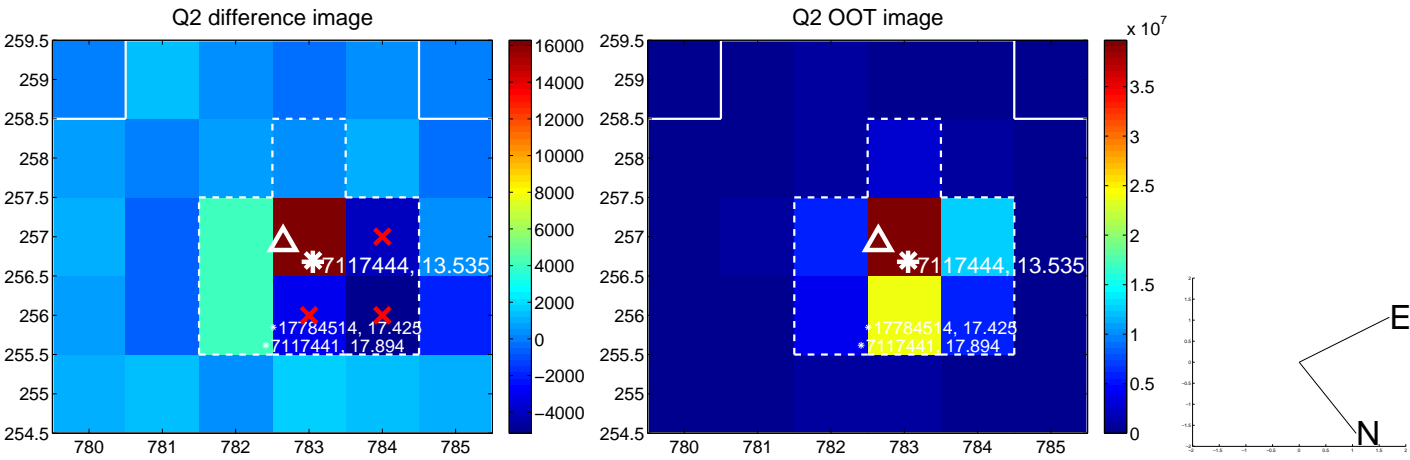
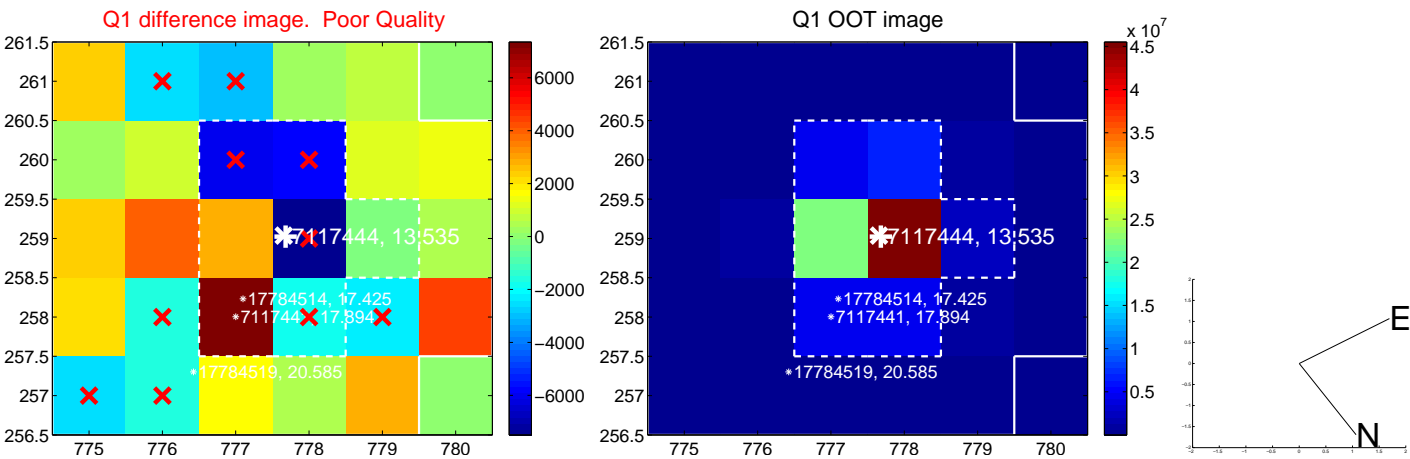
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.561 \pm 0.449$	3.48	$0.295 \pm 0.388$	$-1.533 \pm 0.451$
PRF-fit source offset from KIC position	$1.494 \pm 0.484$	3.08	$0.310 \pm 1.272$	$-1.461 \pm 0.598$
photometric centroid source offset	$0.21 \pm 0.38$	0.55	$-0.07 \pm 0.42$	$-0.20 \pm 0.38$



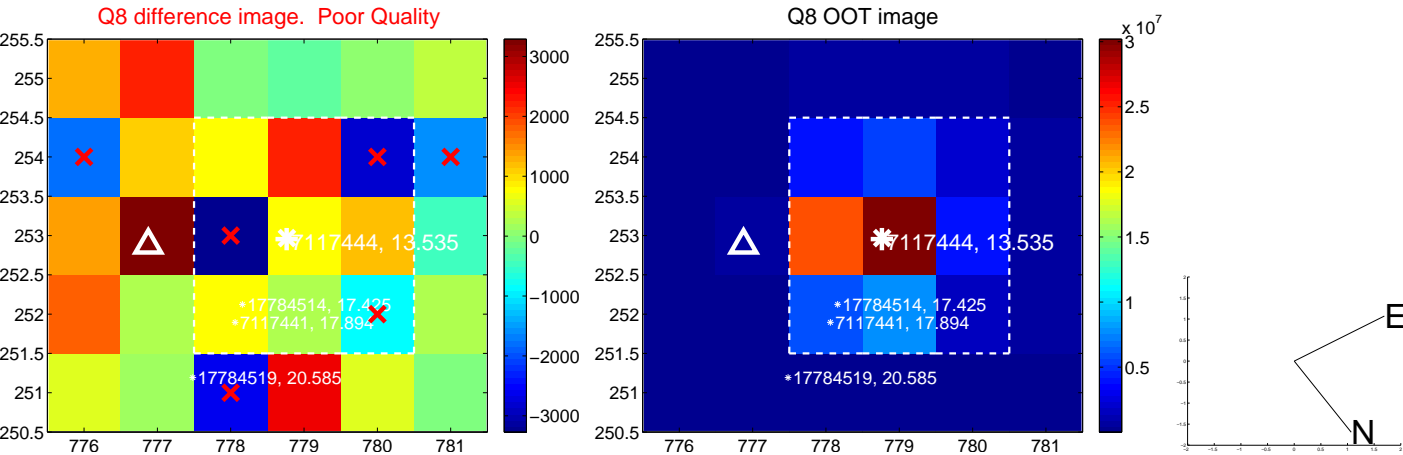
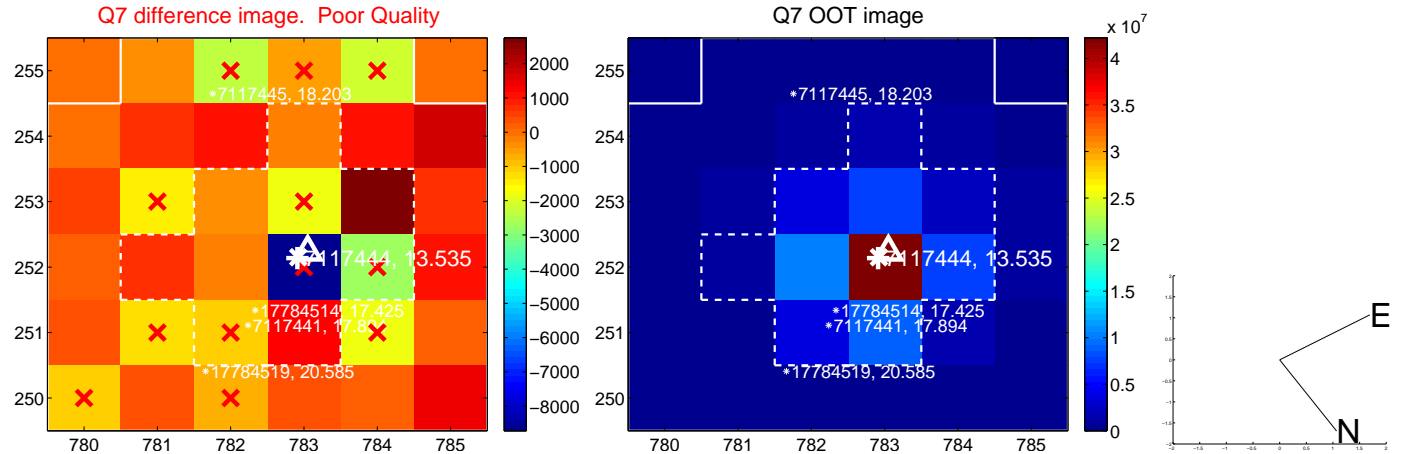
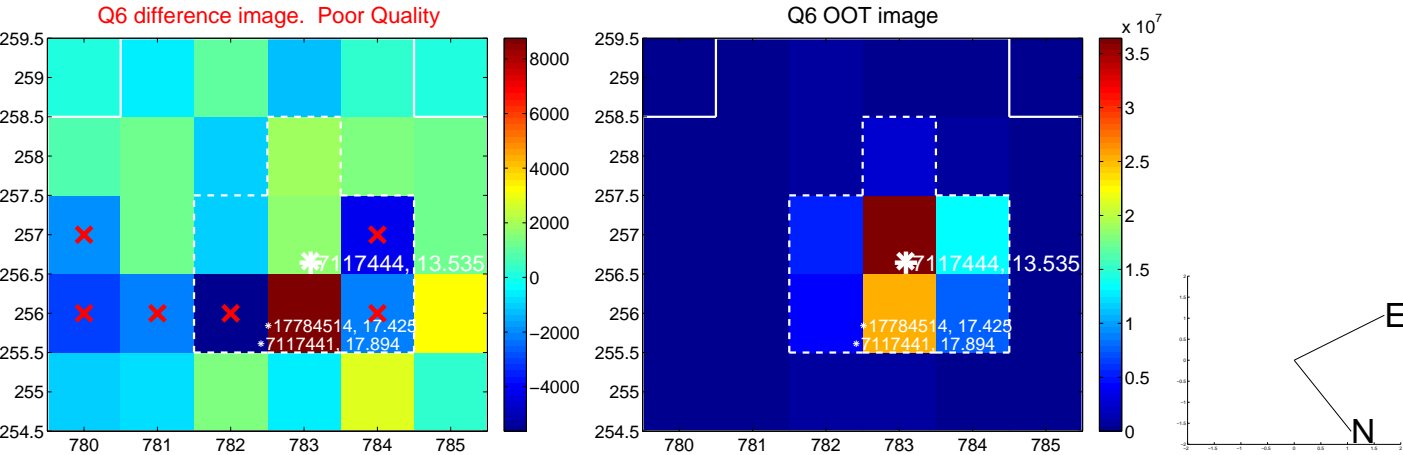
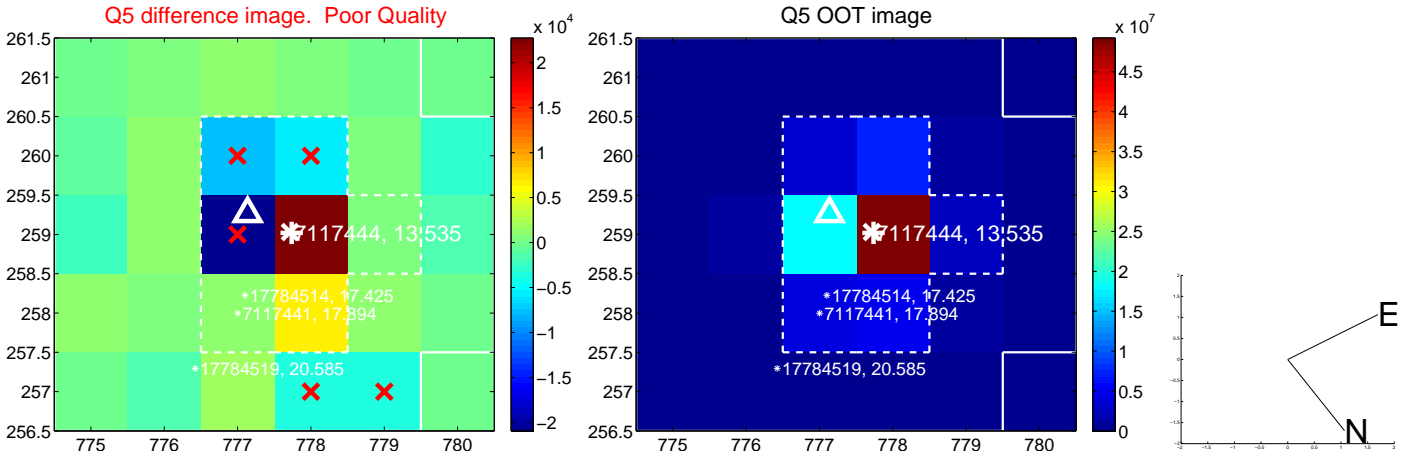
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

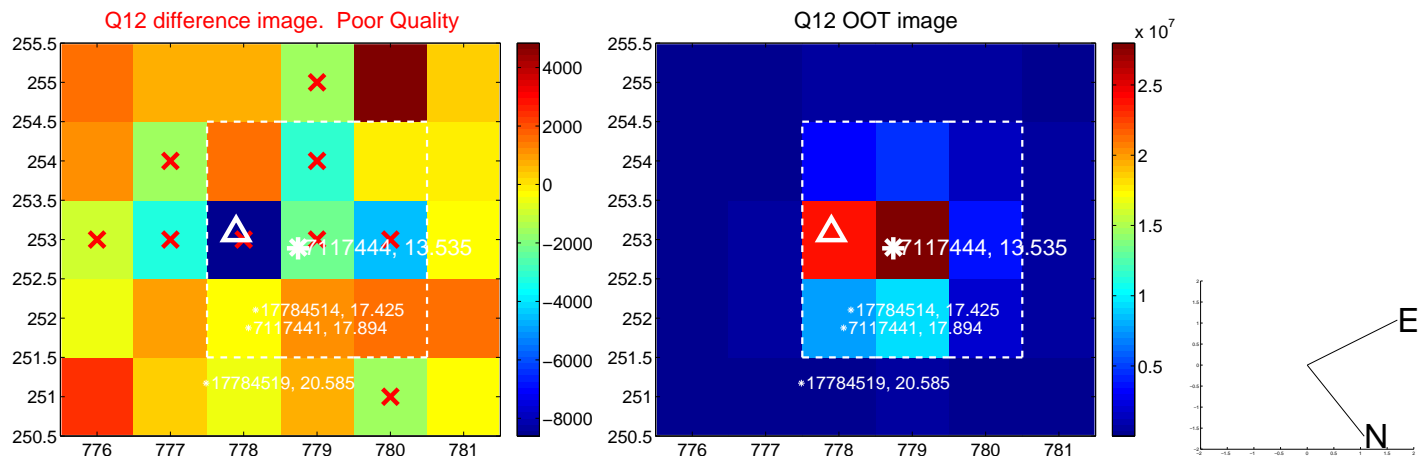
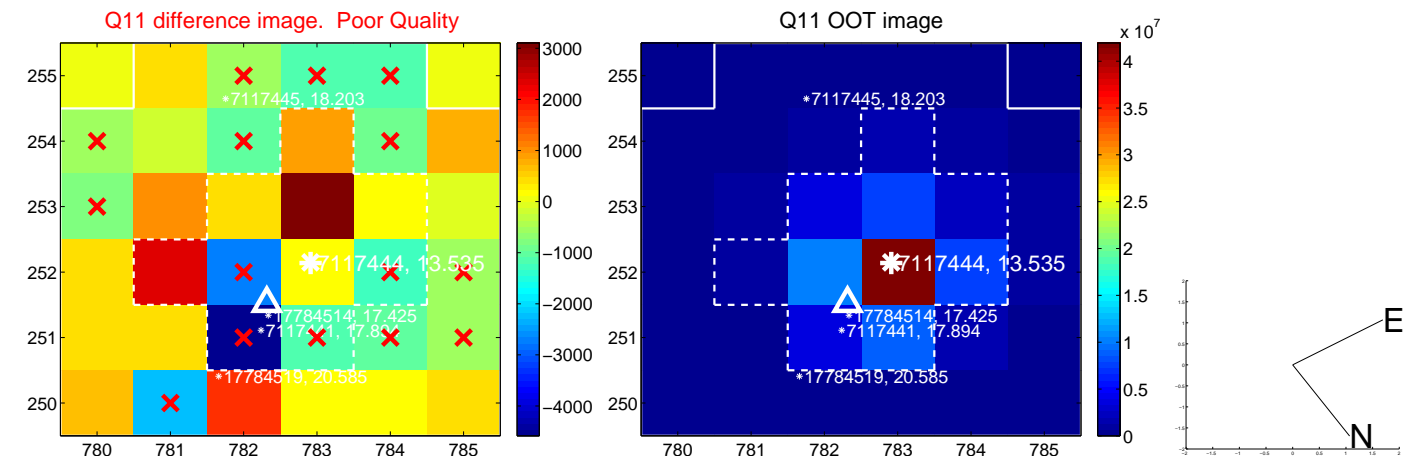
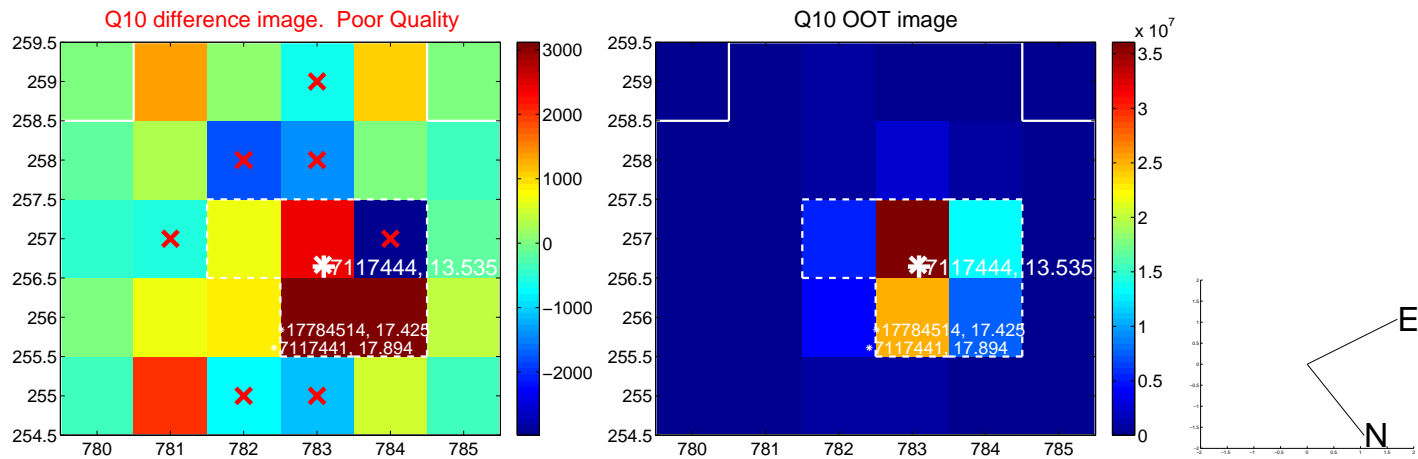
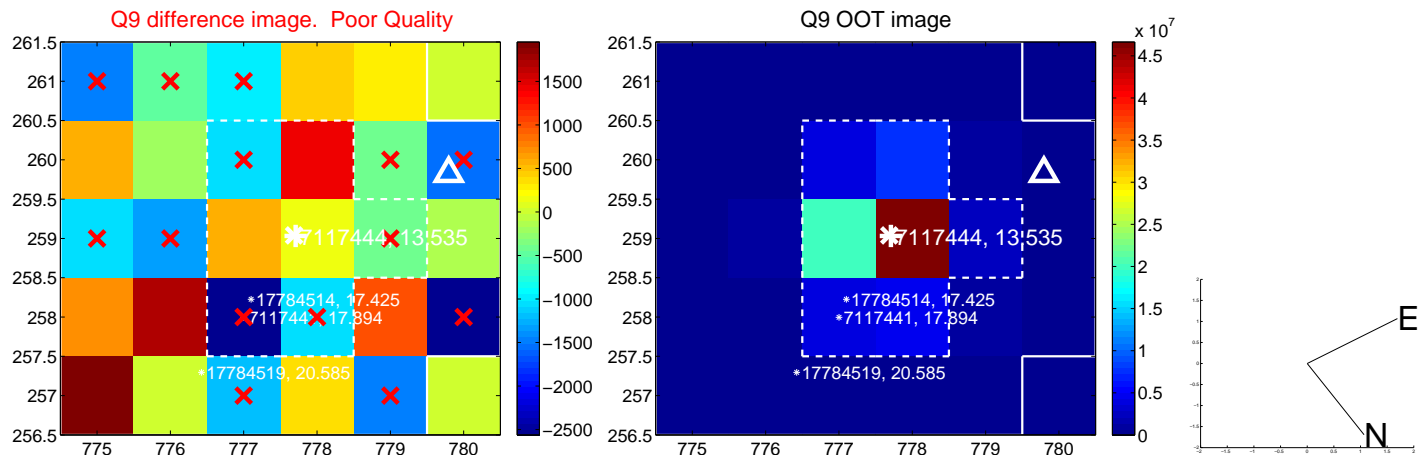




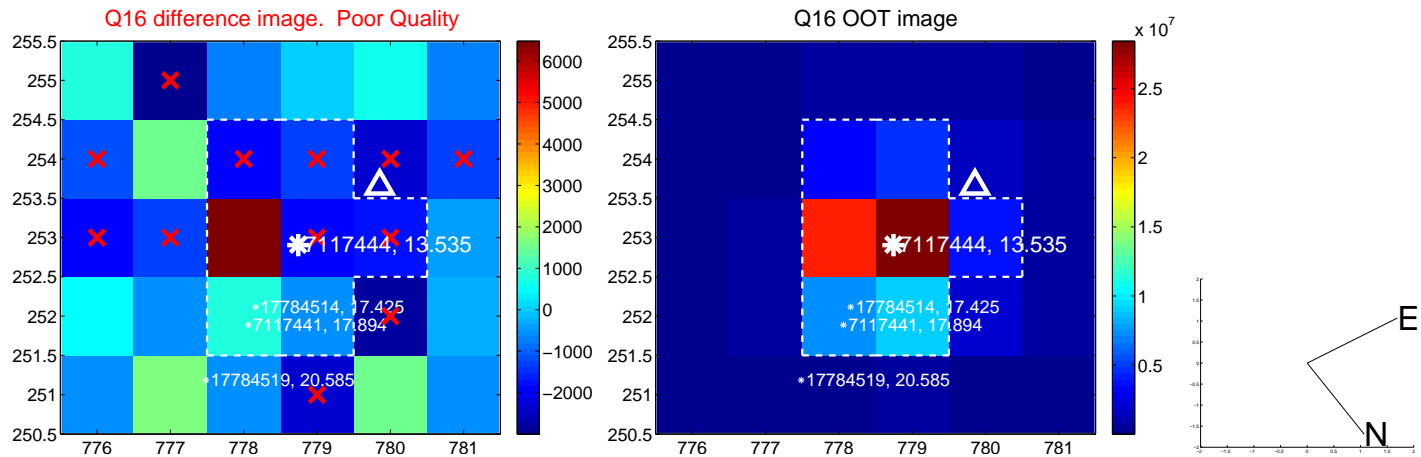
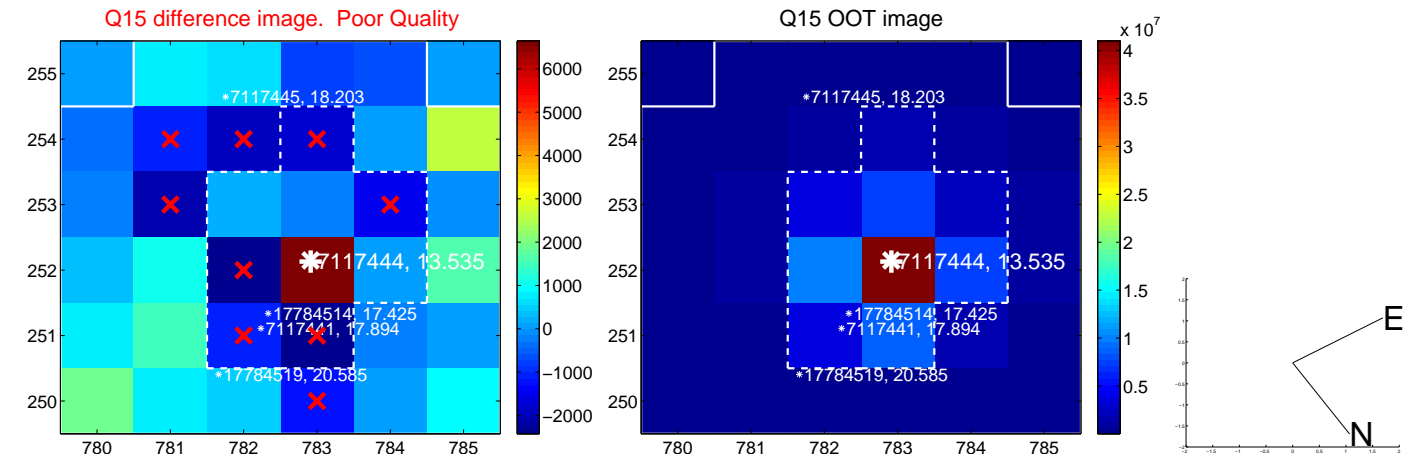
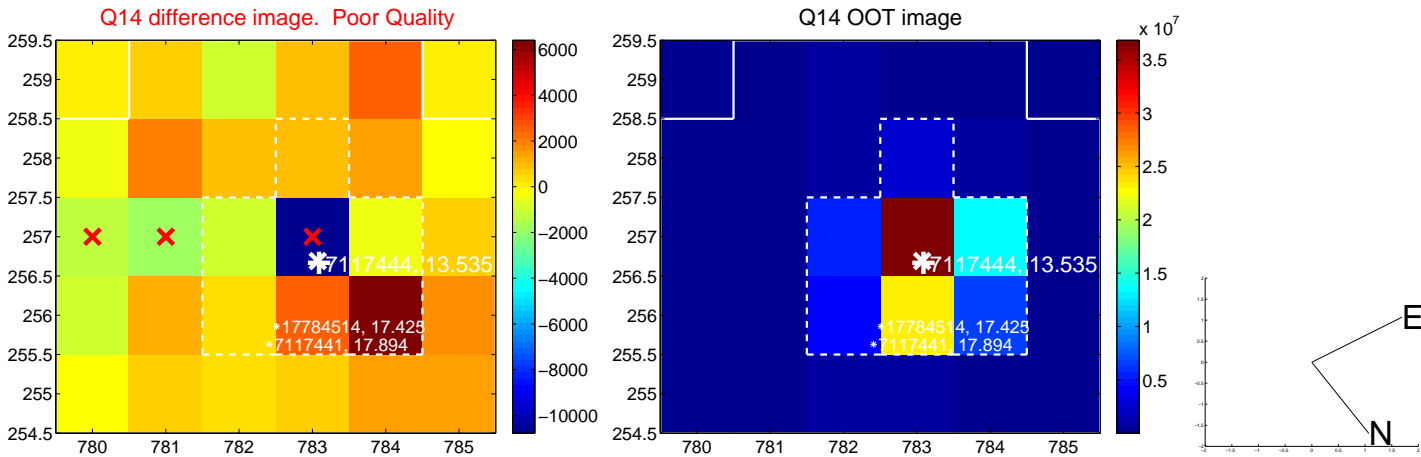
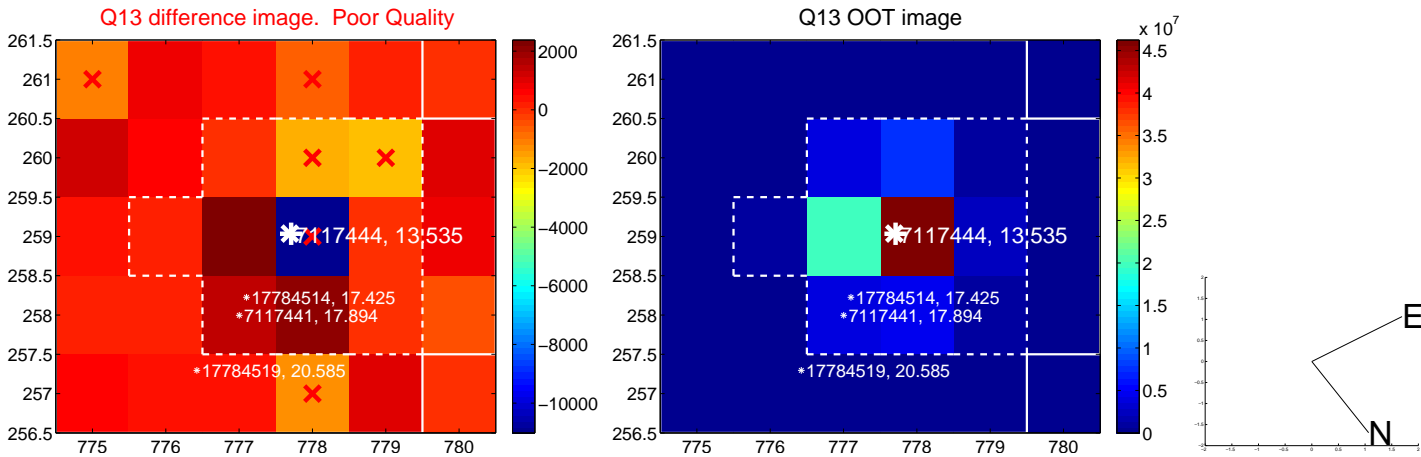
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



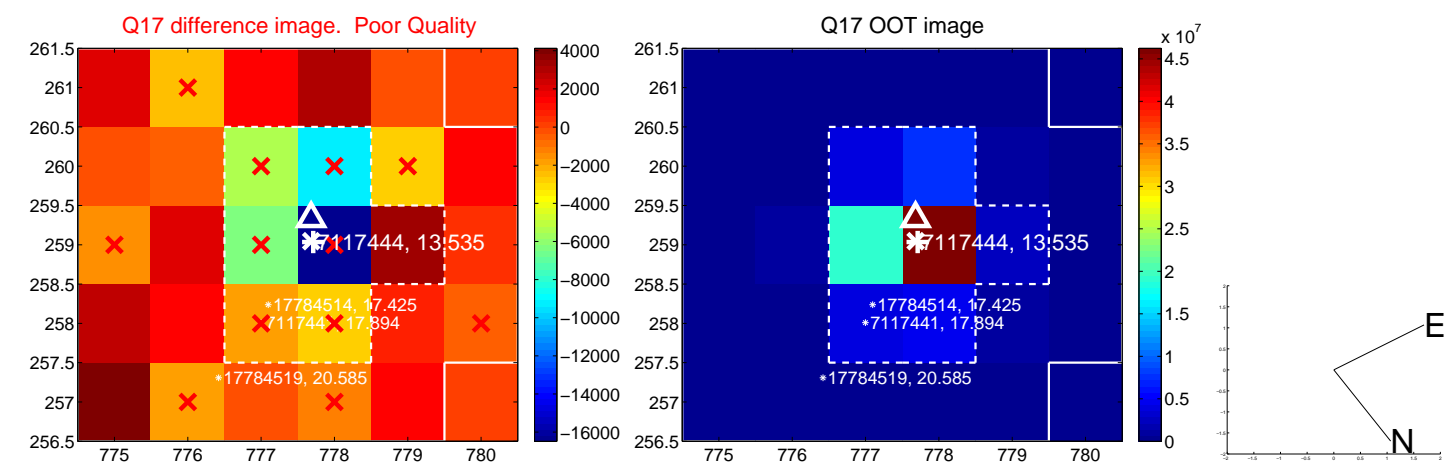
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



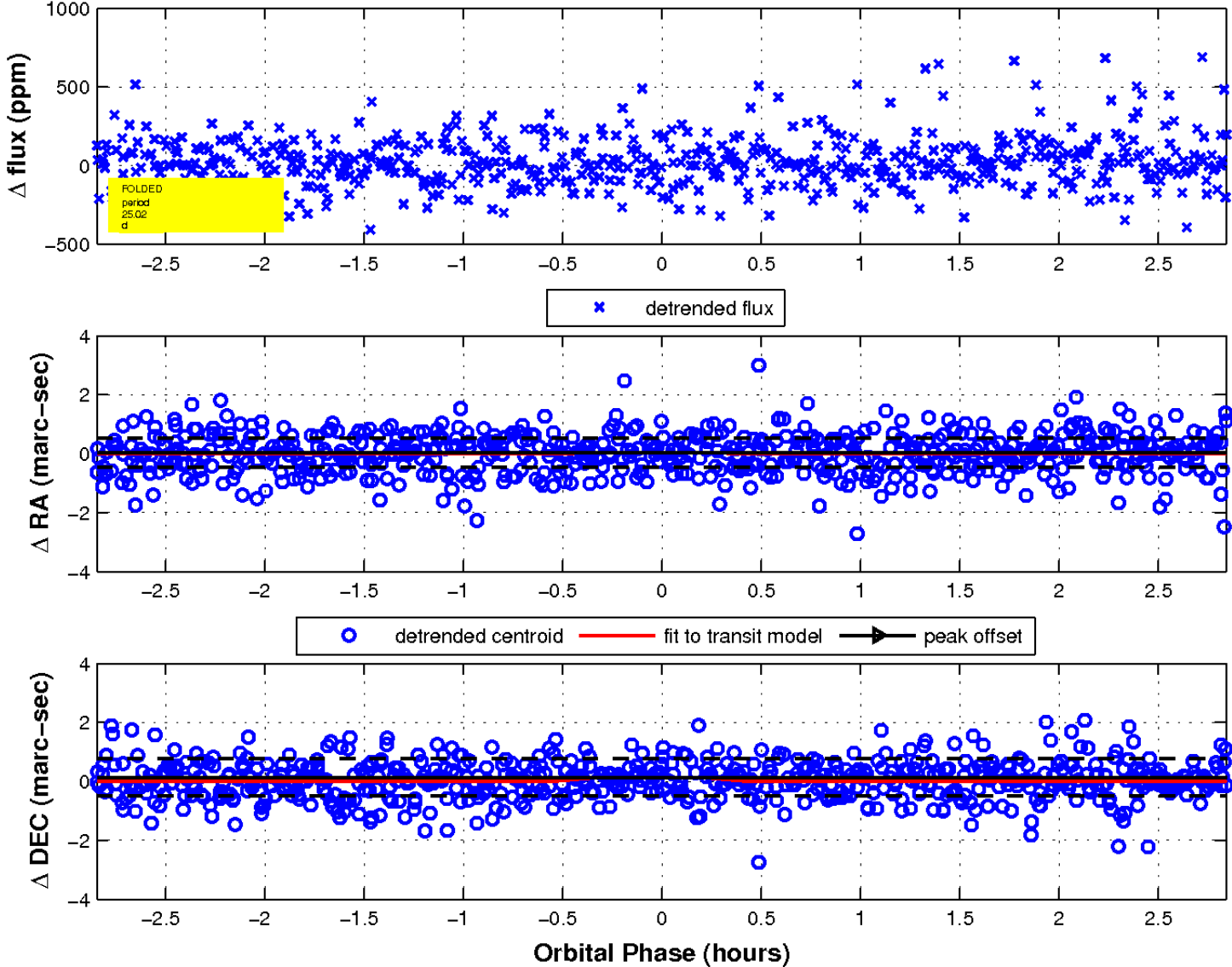
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

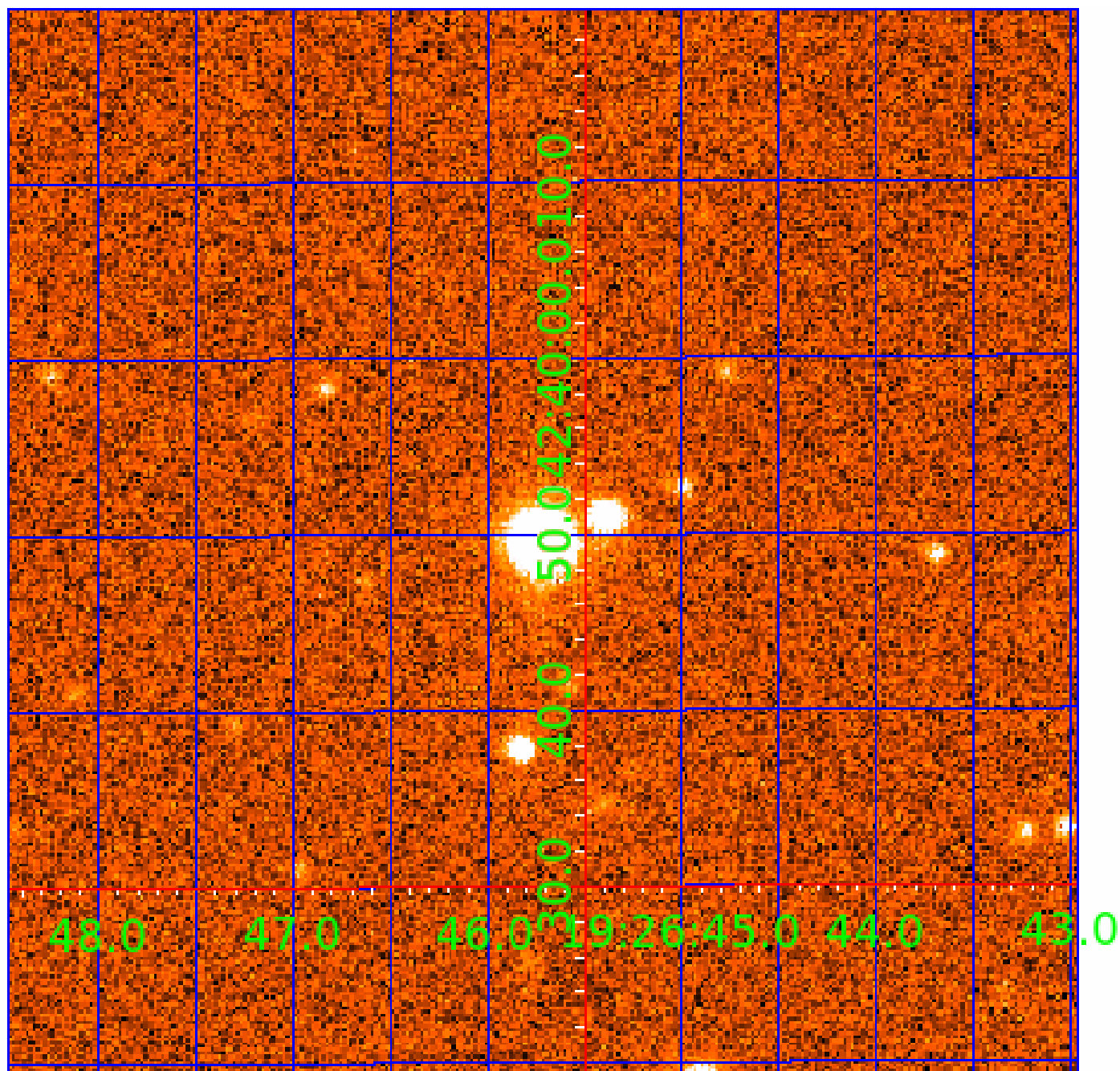


fluxWeightedCentroids, Planet 8 of 10



# UKIRT Image

Declination



# KIC 007117444

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007117444-01	OBS	No	0.566779	131.850424	9.7	4.016	7.9	7.1	0.89	6089	0.28	5526.64
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007117444-04	OBS	No	24.620543	151.203318	365.0	1.357	12.4	8.0	0.89	6089	1.91	36.19
007117444-06	OBS	No	31.725644	159.932876	542.1	2.500	10.8	-1.0	0.89	6089	2.08	25.81
007117444-07	OBS	No	37.863077	148.204384	590.4	2.174	12.0	12.3	0.89	6089	3.74	20.39
007117444-08	OBS	No	25.017406	142.026280	590.0	0.948	11.5	11.2	0.89	6089	2.65	35.43
007117444-09	OBS	No	16.445934	141.504848	375.6	1.583	9.7	8.9	0.89	6089	2.05	61.98
007117444-10	OBS	No	8.496060	134.146611	514.7	2.000	8.8	-1.0	0.89	6089	2.02	149.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007117444-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
007117444-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
007117444-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
007117444-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
007117444-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
007117444-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—CENT_FEW_DIFFS
007117444-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS
007117444-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

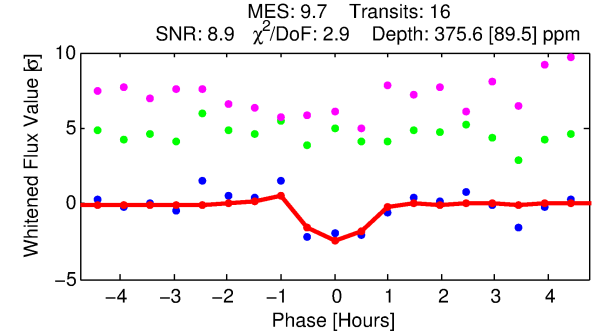
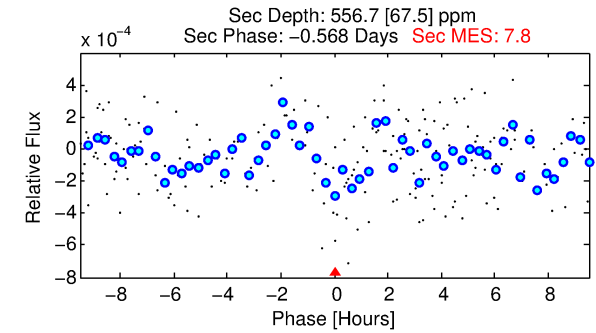
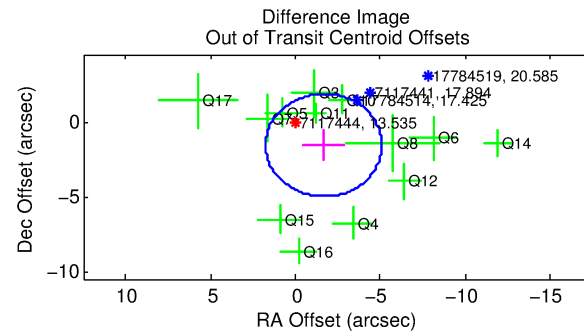
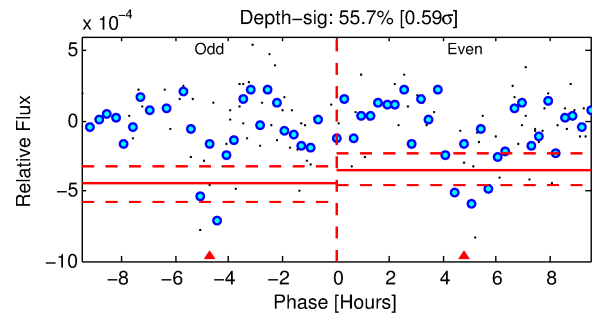
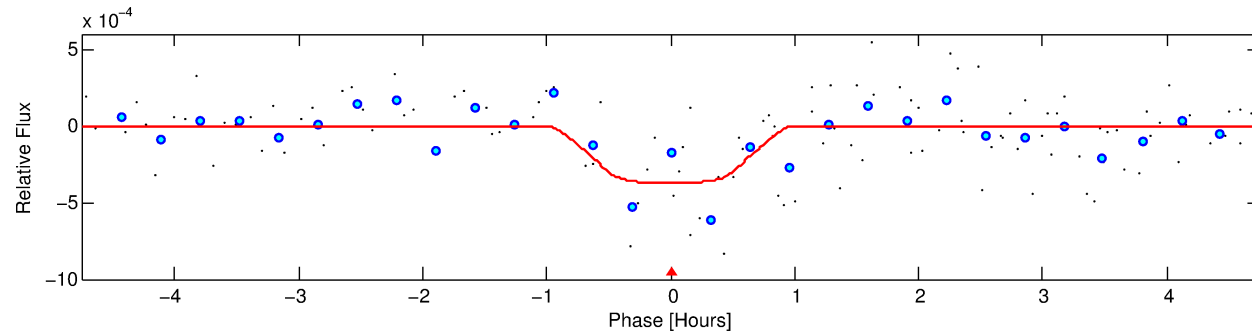
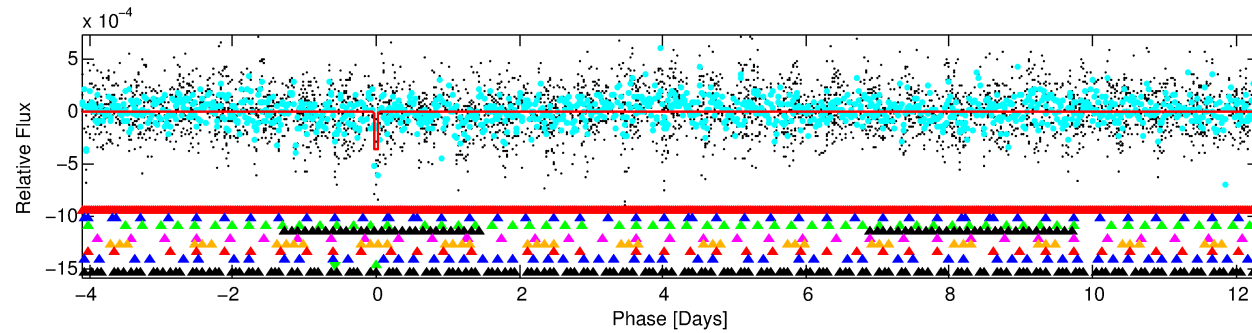
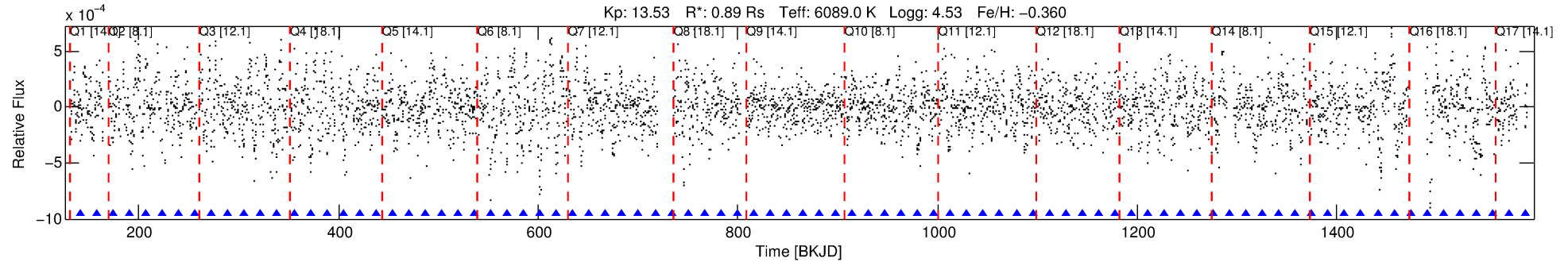
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007117444-09

No Significant Match Found

# DV One-Page Summary

KIC: 7117444 Candidate: 9 of 10 Period: 16.446 d



## DV Fit Results:

Period = 16.44593 [0.00018] d  
Epoch = 141.5048 [0.0085] BKJD  
Rp/R\* = 0.0211 [0.0213]  
a/R\* = 36.55 [192.85]  
b = 0.91 [1.01]  
Seff = 61.98 [24.10]  
Teq = 715 [70] K  
Rp = 2.05 [2.15] Re  
a = 0.1253 [0.0315] AU  
Ag = 1142.77 [2346.72] [0.49σ]  
Teffp = 6432 [3254] K [1.76σ]

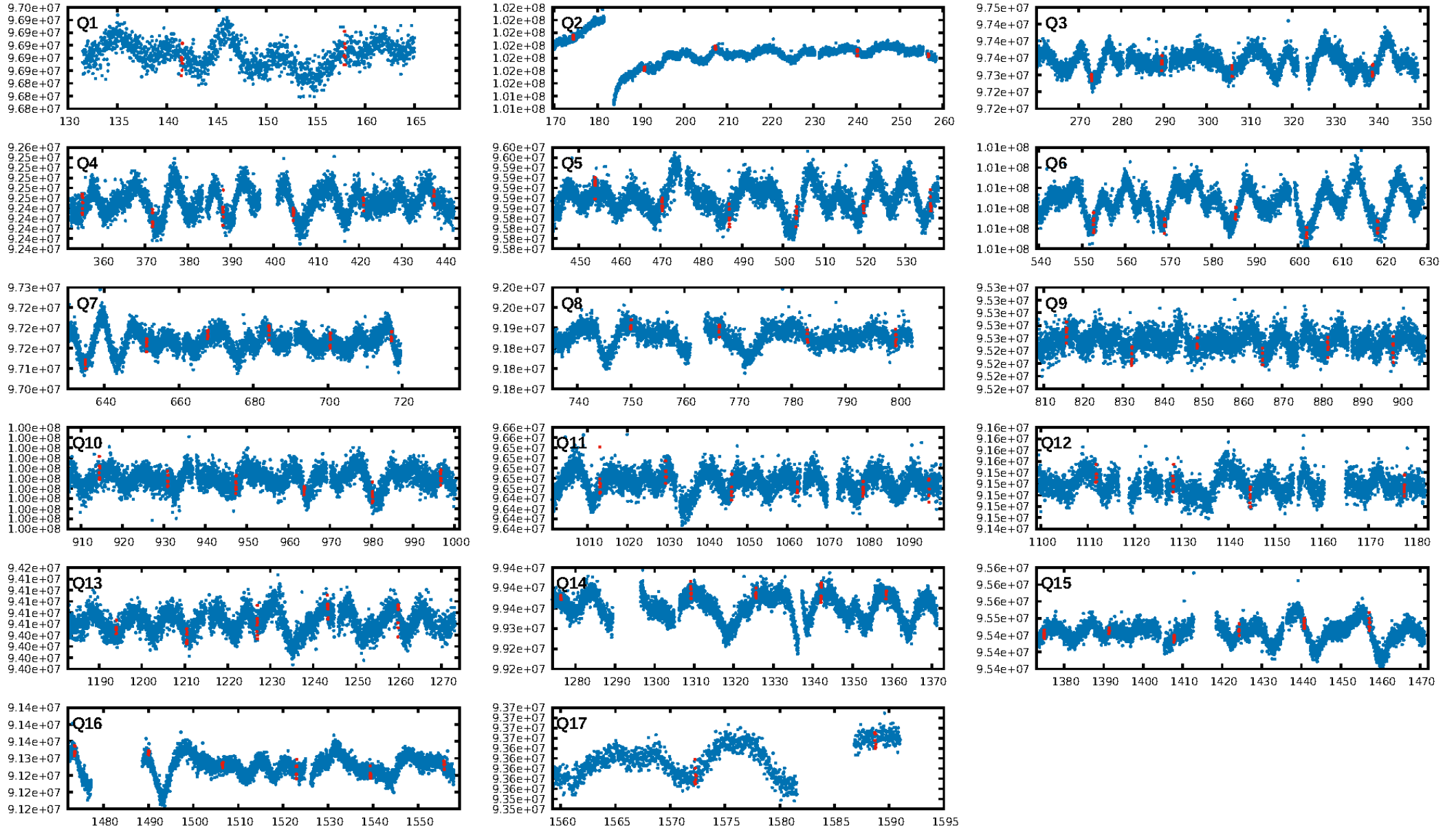
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [74.79σ]  
LongPeriod-sig: 100.0% [89.60σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 61.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [14/14]  
GhostDiagnostic-chr: -1.161  
Centroid-sig: 9.5%  
Centroid-so: 0.370 arcsec [1.05σ]  
OotOffset-rm: 2.294 arcsec [2.00σ]  
KicOffset-rm: 2.249 arcsec [1.92σ]  
OotOffset-st: 3/4/4/2 [13]  
KicOffset-st: 3/4/4/2 [13]  
DiffImageQuality-fgm: 0.23 [3/13]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:37:12 Z

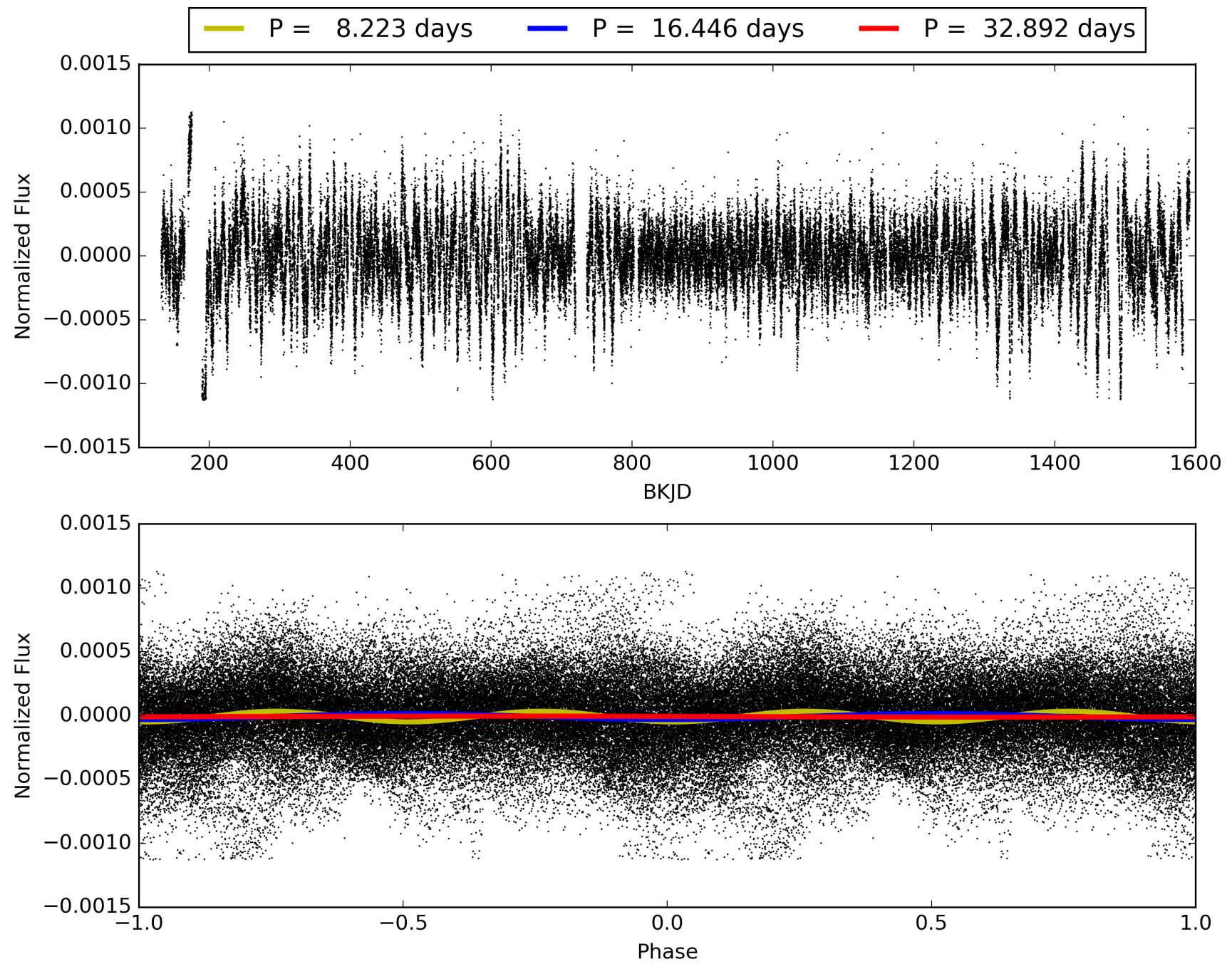
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007117444-09, PDC Light Curves



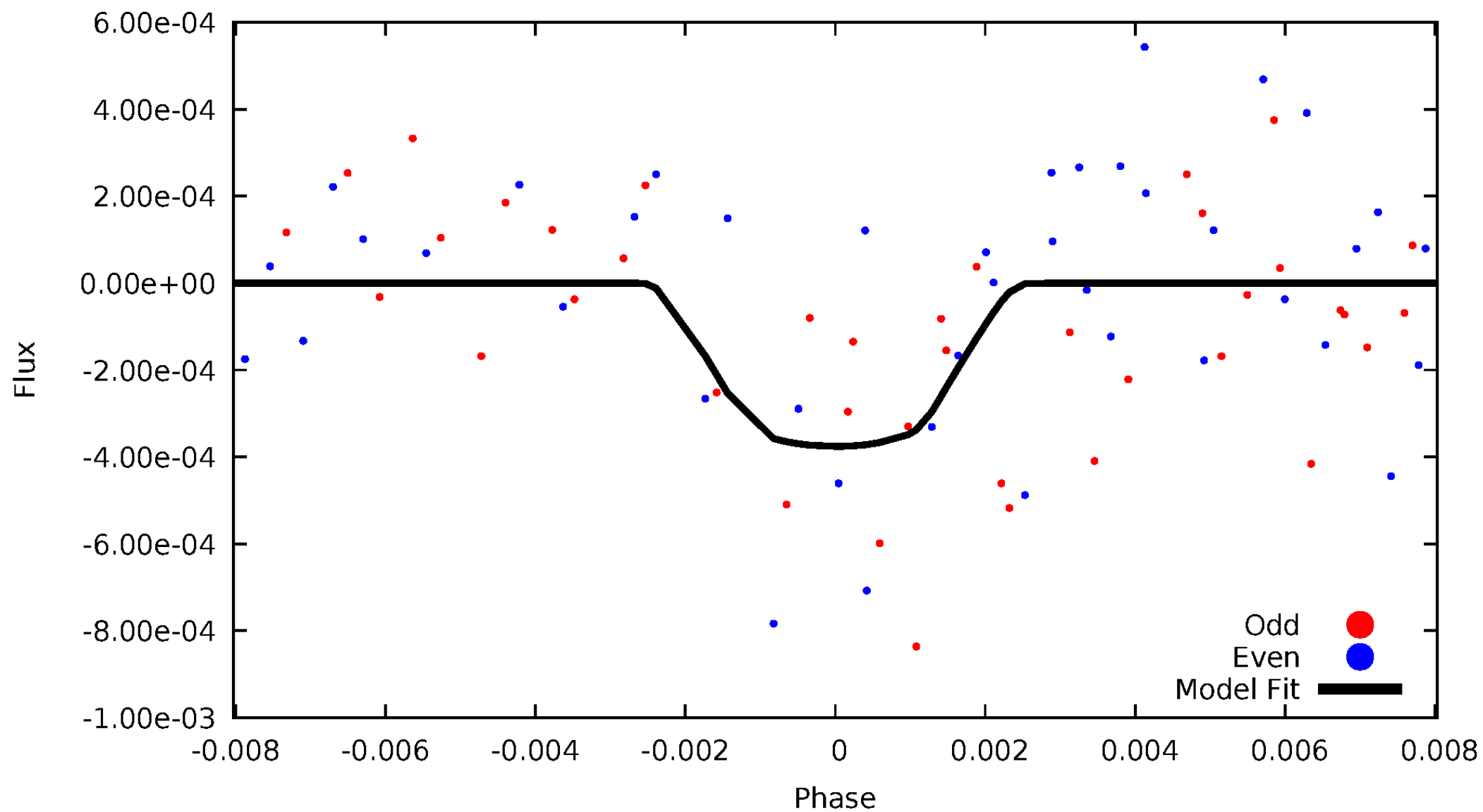


# TCE 007117444-09



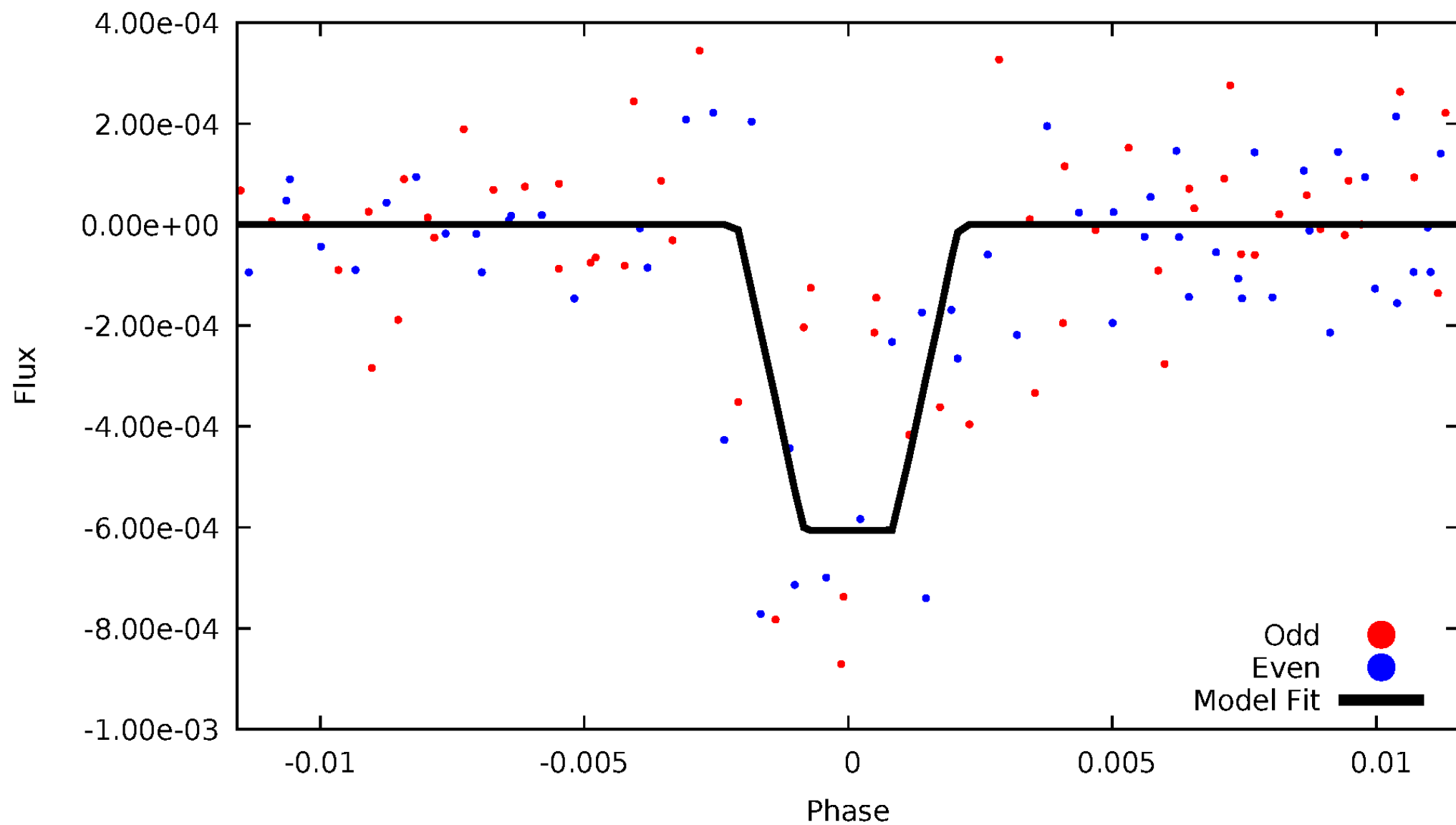
# DV Odd/Even

TCE 007117444-09



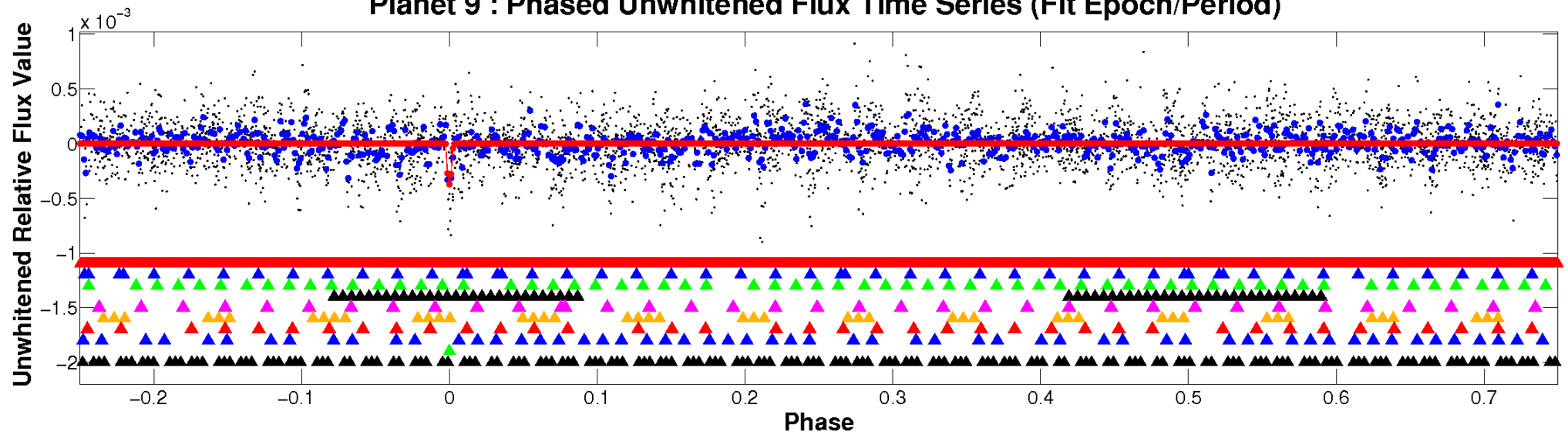
# ALT Odd/Even

TCE 007117444-09

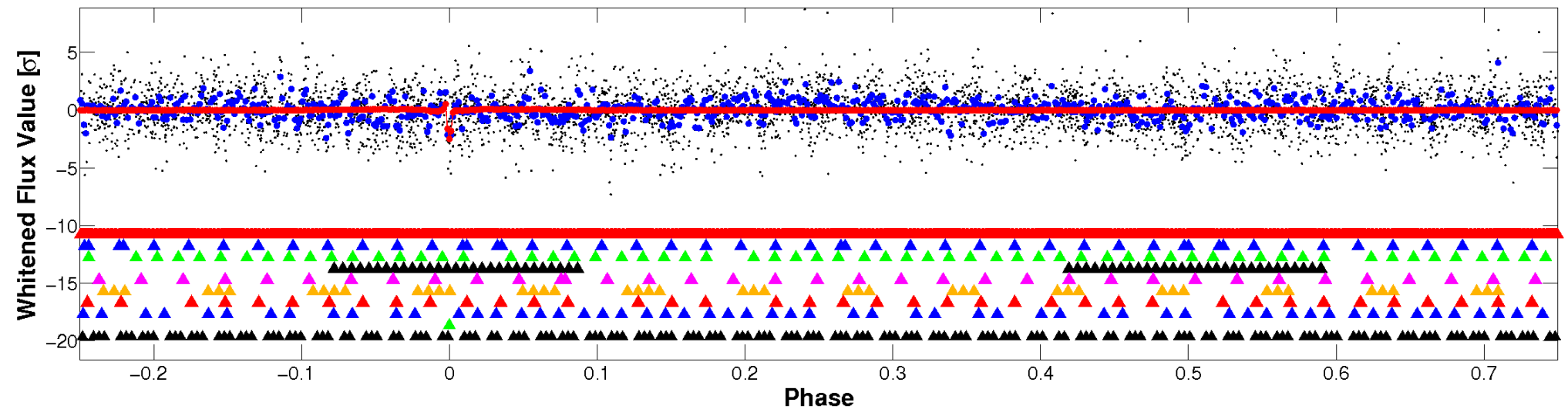


# Non-Whitened Vs. Whitened Light Curve

## Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

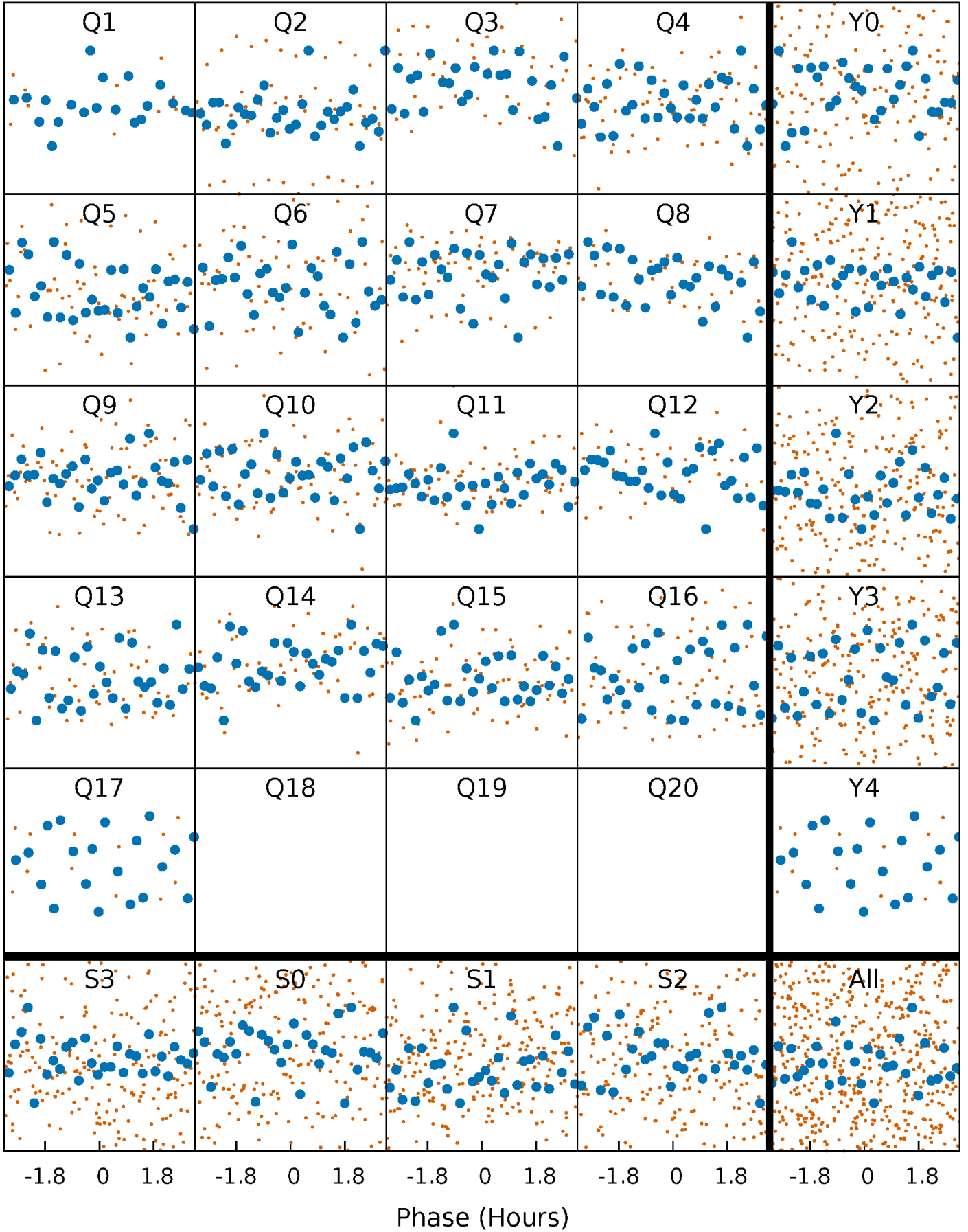


## Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



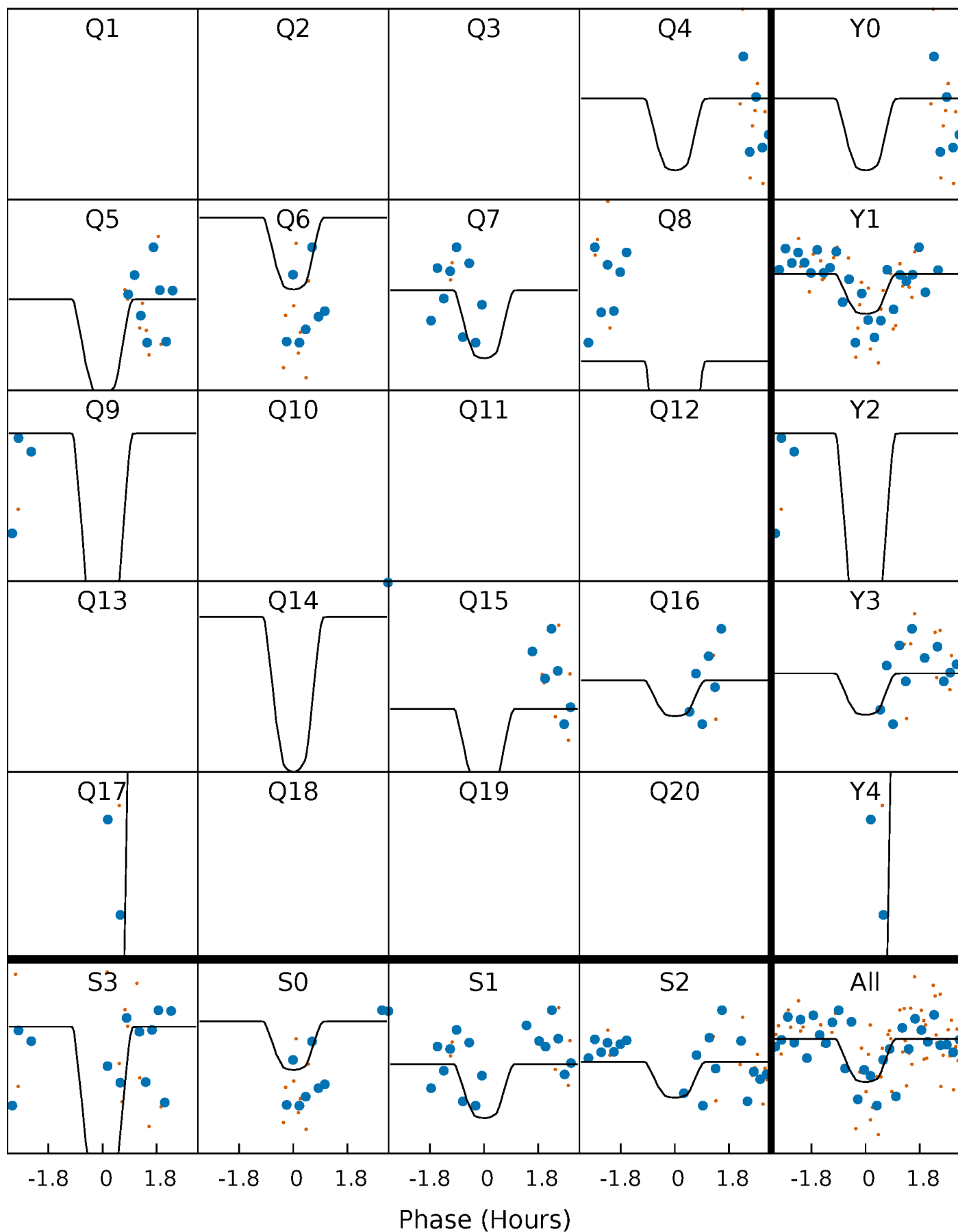
# PDC Quarter-Phased Transit Curves

TCE 007117444-09 P= 16.445934 Days  $T_0=141.504848$  (BKJD)



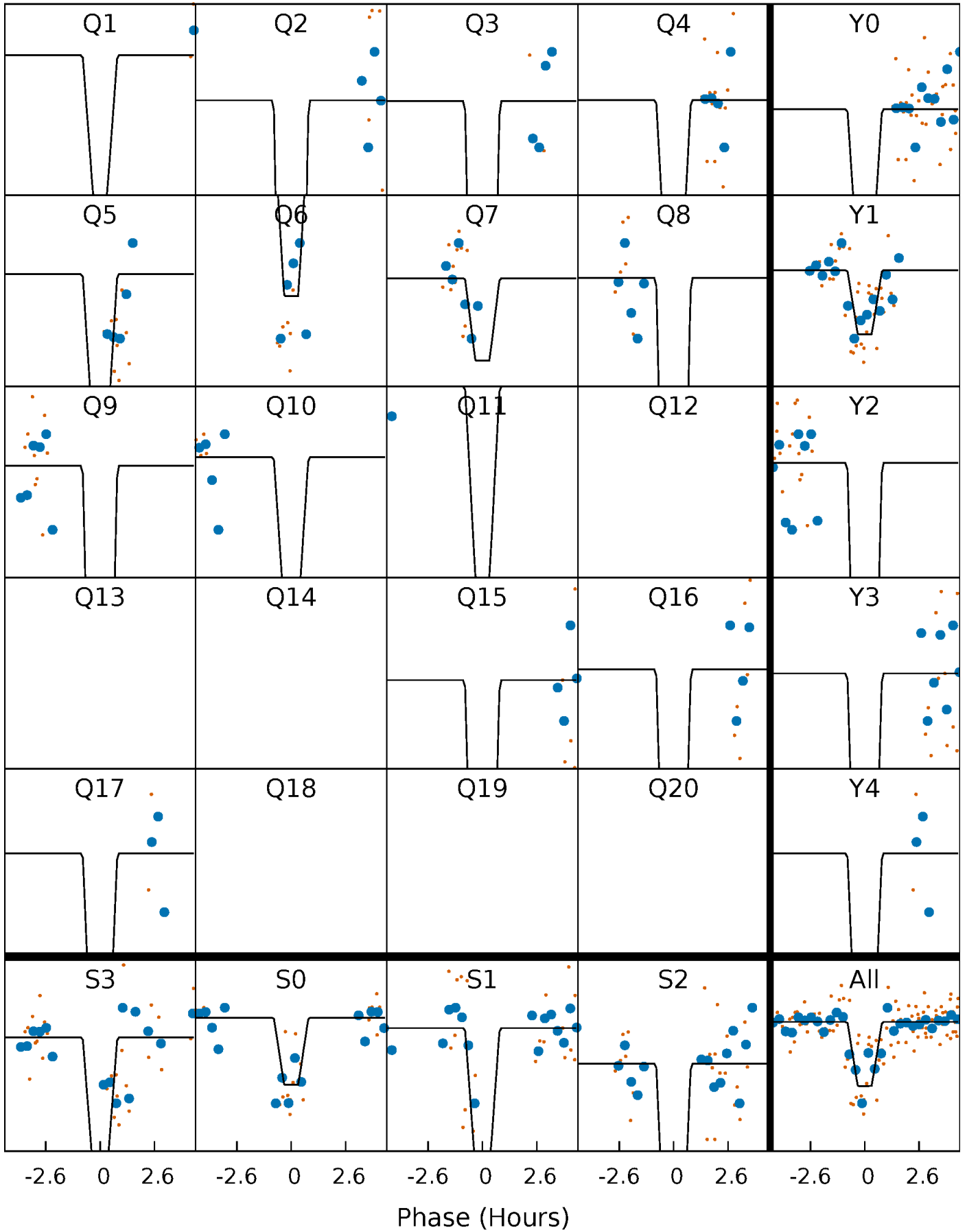
# DV Quarter-Phased Transit Curves

TCE 007117444-09 P= 16.445934 Days  $T_0=141.504848$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

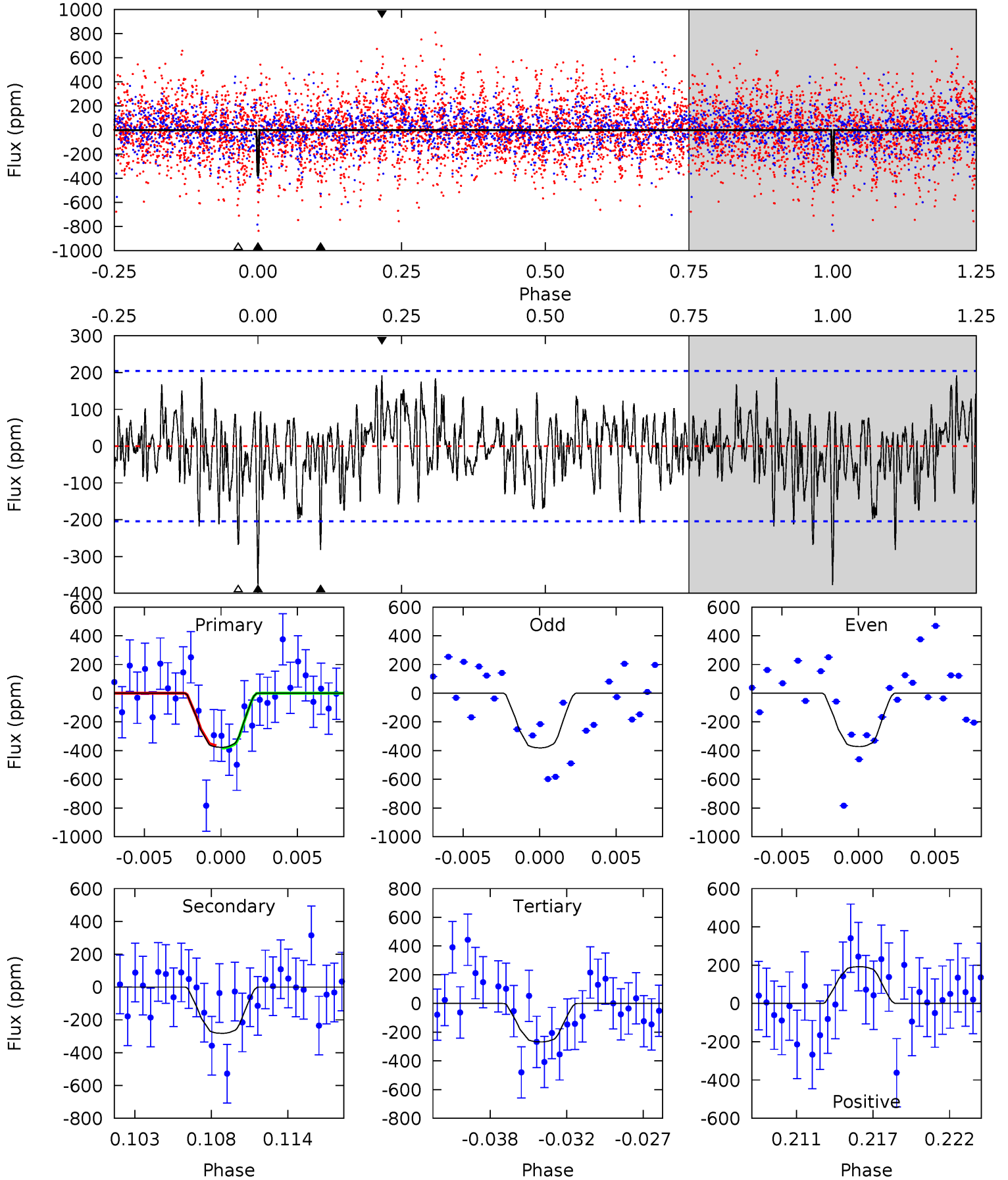
TCE 007117444-09 P= 16.444111 Days  $T_0=141.569680$  (BKJD)



# DV Model-Shift Uniqueness Test

007117444-09, P = 16.445934 Days, E = 125.058914 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
9.51	7.10	6.74	4.84	5.14	2.78	1.86	2.76	4.67	0.36	2.26	0.11	1.07	0.34	0.21

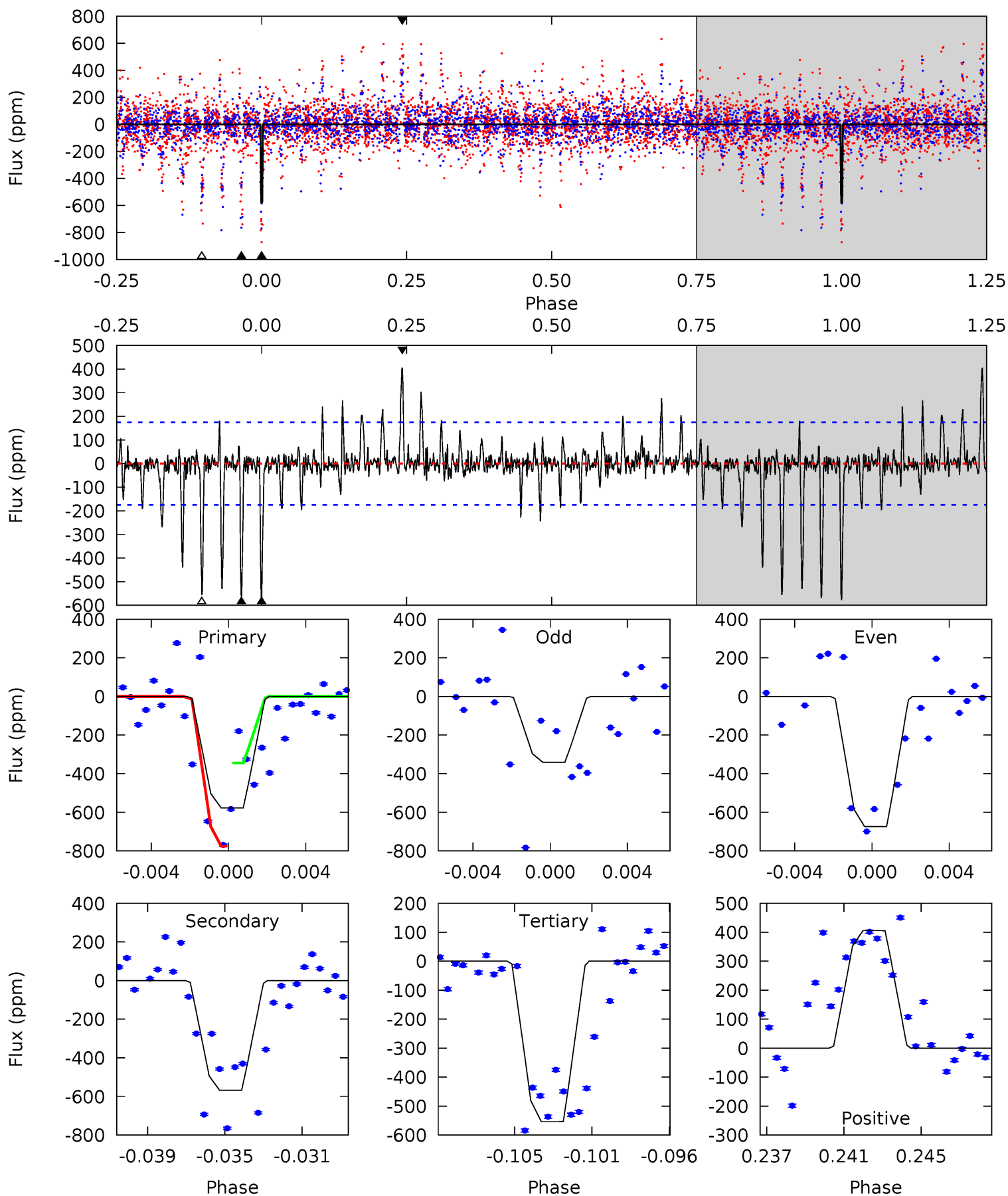




# Alt Model-Shift Uniqueness Test

007117444-09, P = 16.444111 Days, E = 125.125569 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	16.8	16.4	12.0	5.18	2.85	2.18	0.72	5.10	0.44	4.82	4.55	1.09	0.41	6.07



### Stellar Parameters For KIC 007117444

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6089^{+164}_{-183}$	$4.527^{+0.048}_{-0.204}$	$-0.360^{+0.300}_{-0.300}$	$0.889^{+0.262}_{-0.082}$	$0.971^{+0.118}_{-0.118}$	$1.944^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-5%	+83%/-83%	+29%/-9%	+12%/-12%	+20%/-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 007117444-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-282 \pm 40$	$2.56^{+2.15}_{-1.74}$	$1021^{+75}_{-47}$	$5043^{+4494}_{-1034}$	$372^{+3019}_{-262}$
Alt.	$-568 \pm 34$	$2.83^{+1.95}_{-1.84}$	$1016^{+75}_{-42}$	$5654^{+4556}_{-1127}$	$598^{+4233}_{-388}$

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

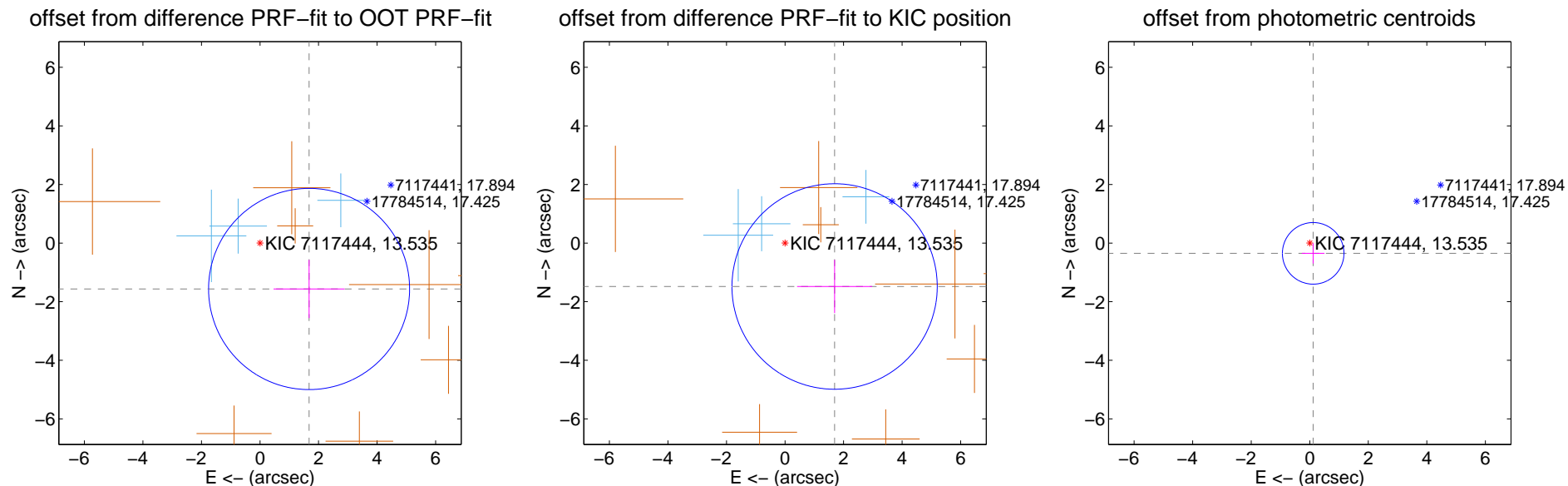
## DV Centroid Data

Supplemental centroid analysis for 007117444-09. Kepler magnitude: 13.54. Transit SNR 8.93

There are 3 quarters with good PRF difference image offsets

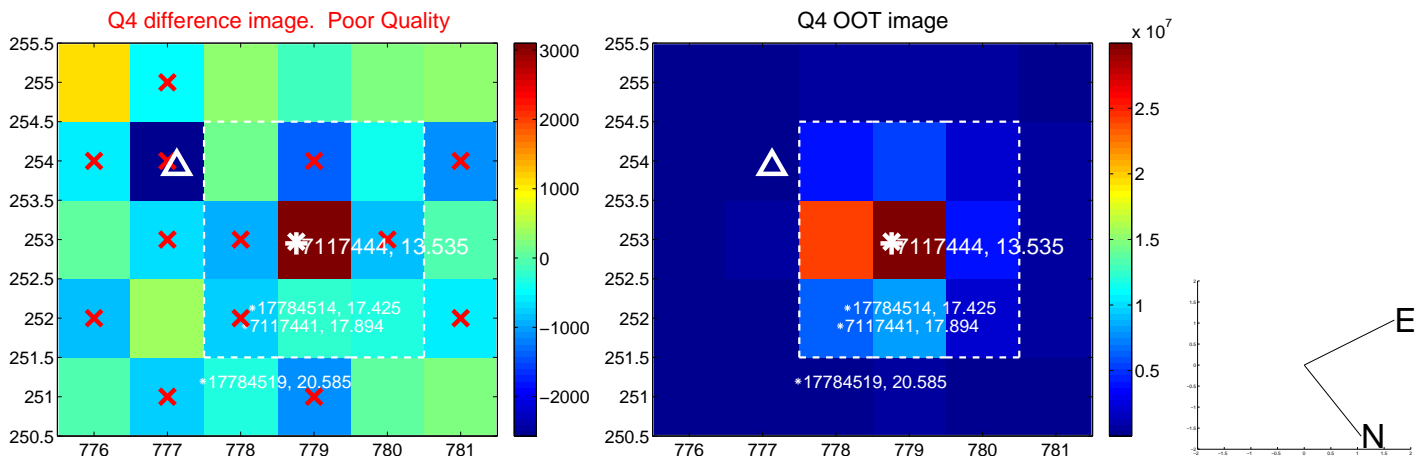
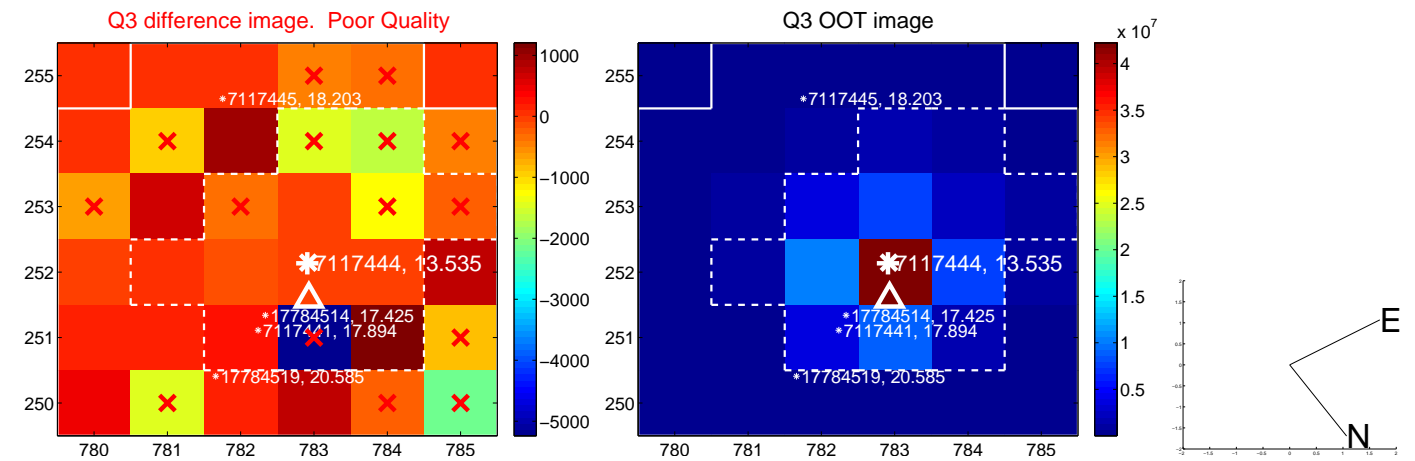
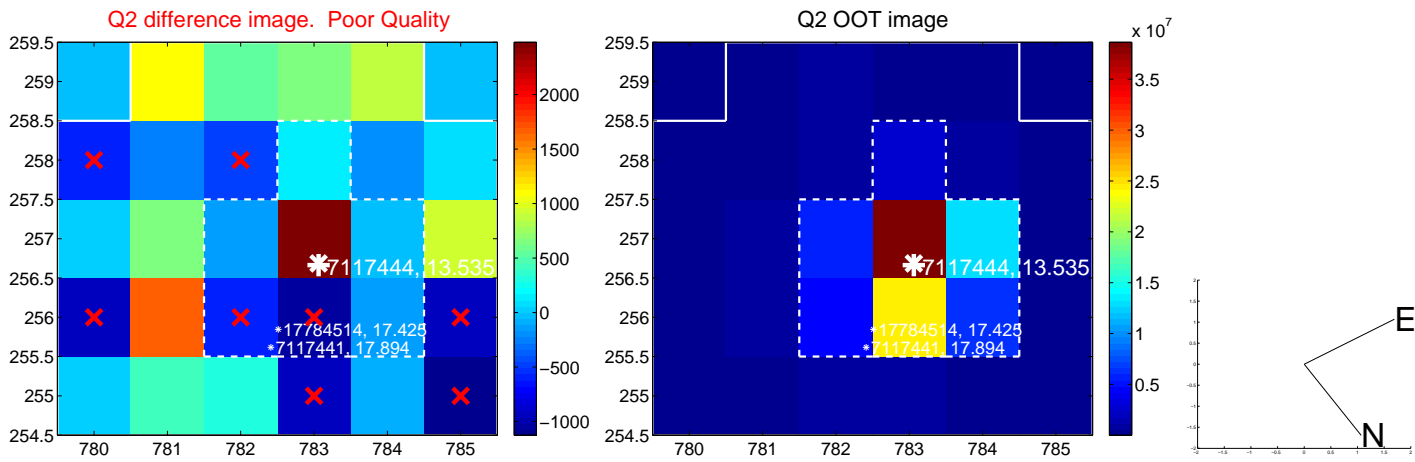
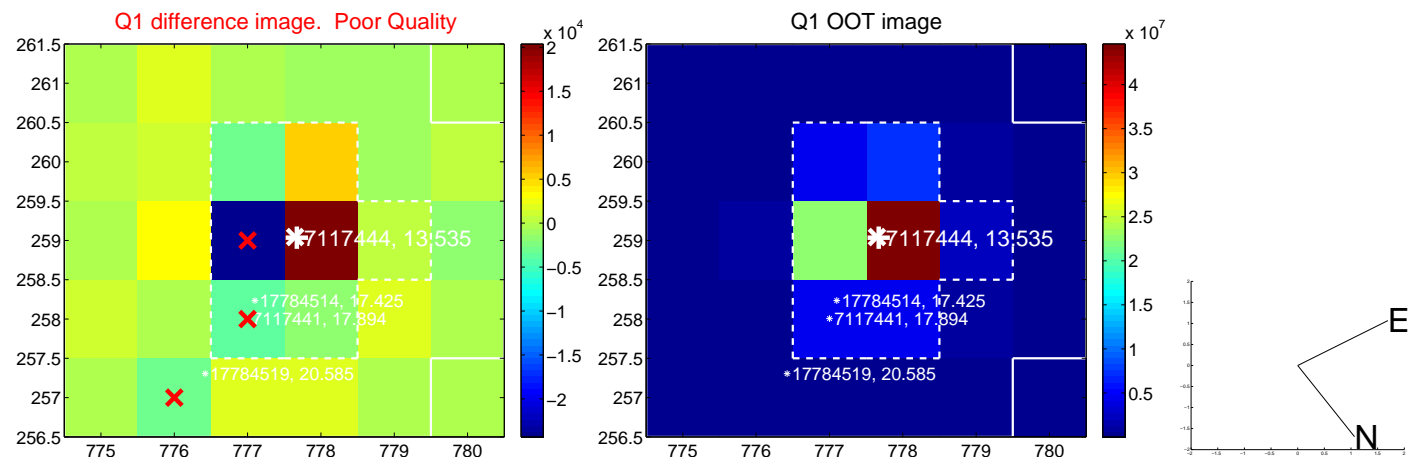
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.294 \pm 1.144$	2.00	$-1.676 \pm 1.212$	$-1.566 \pm 0.993$
PRF-fit source offset from KIC position	$2.249 \pm 1.169$	1.92	$-1.693 \pm 1.281$	$-1.481 \pm 0.907$
photometric centroid source offset	$0.37 \pm 0.35$	1.05	$-0.12 \pm 0.38$	$-0.35 \pm 0.35$

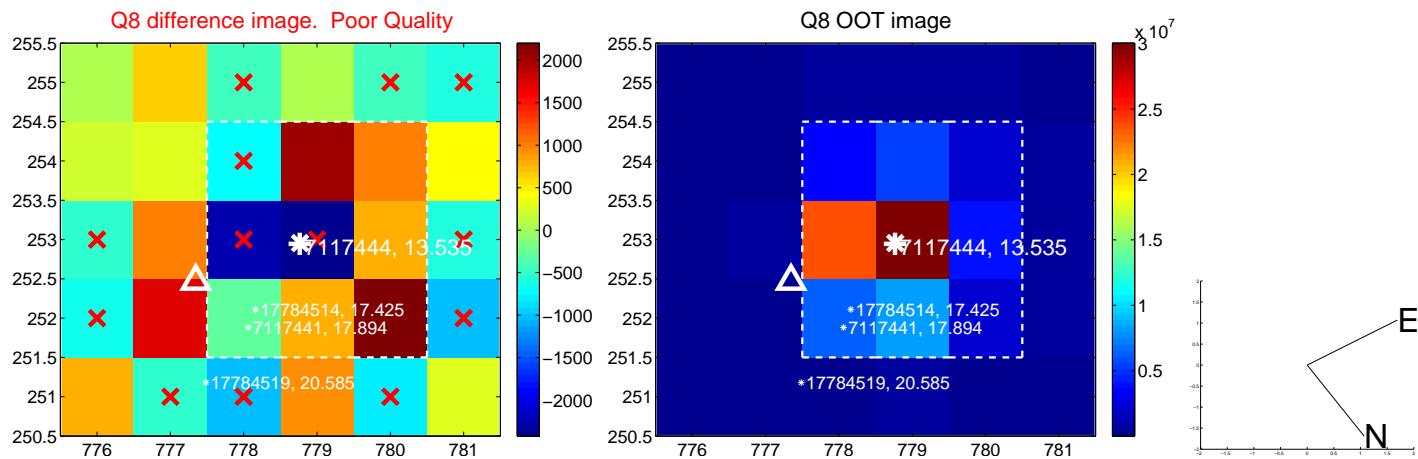
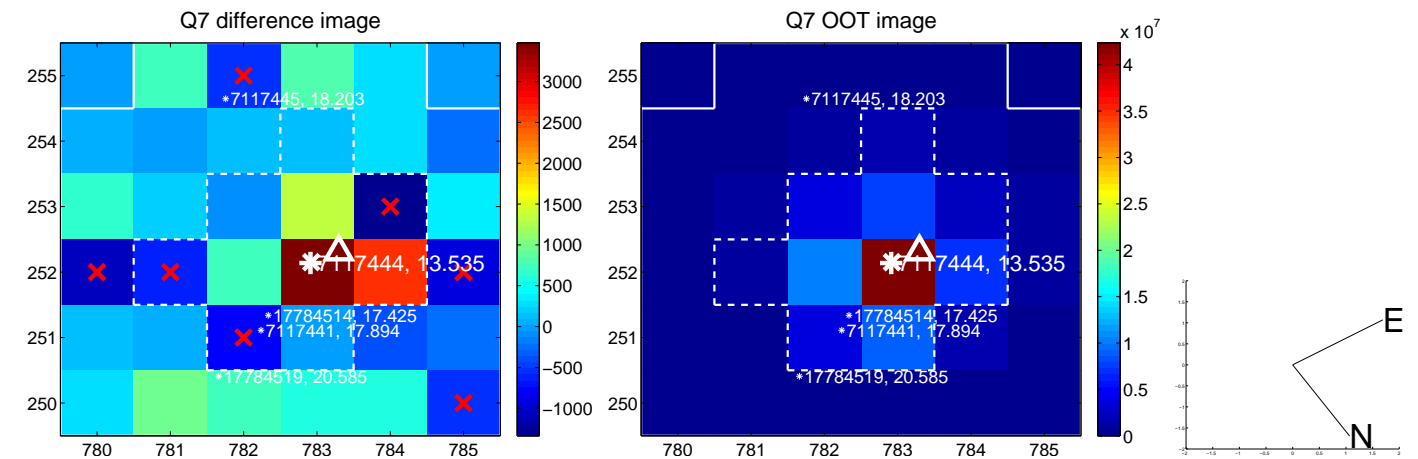
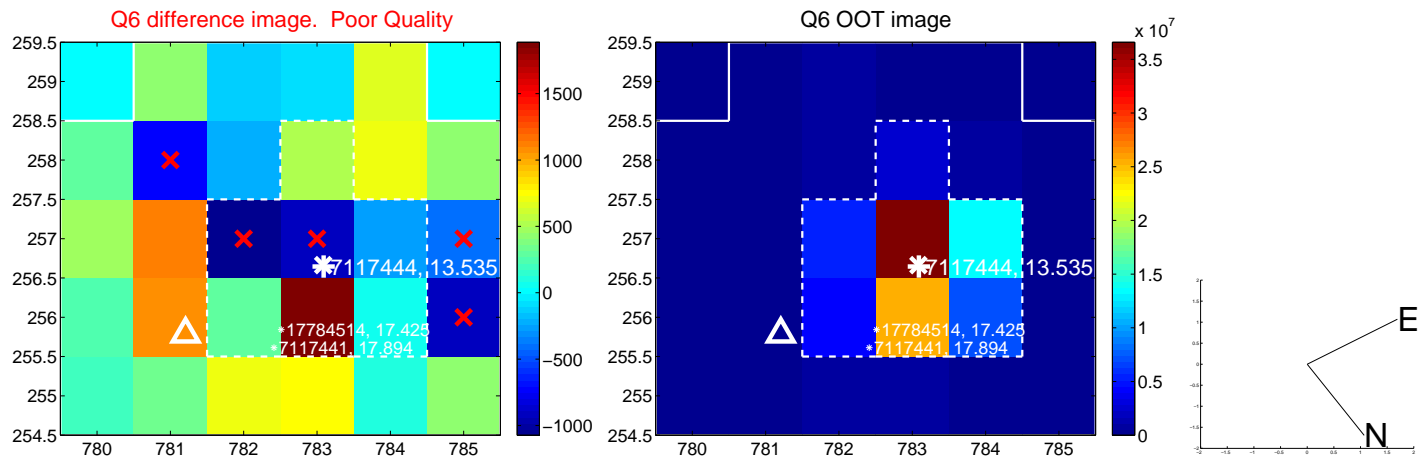
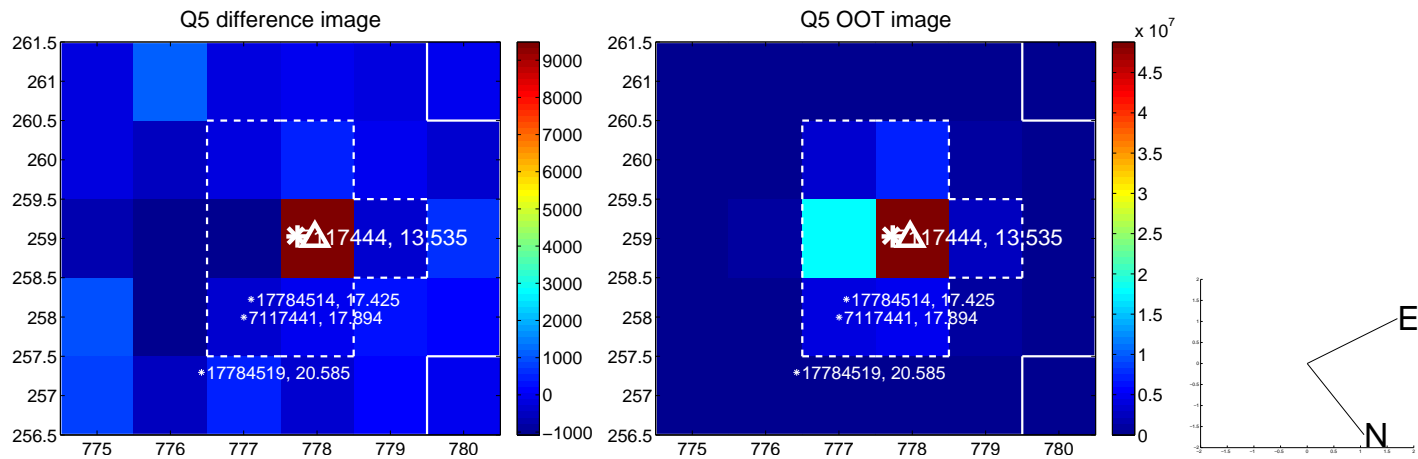


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

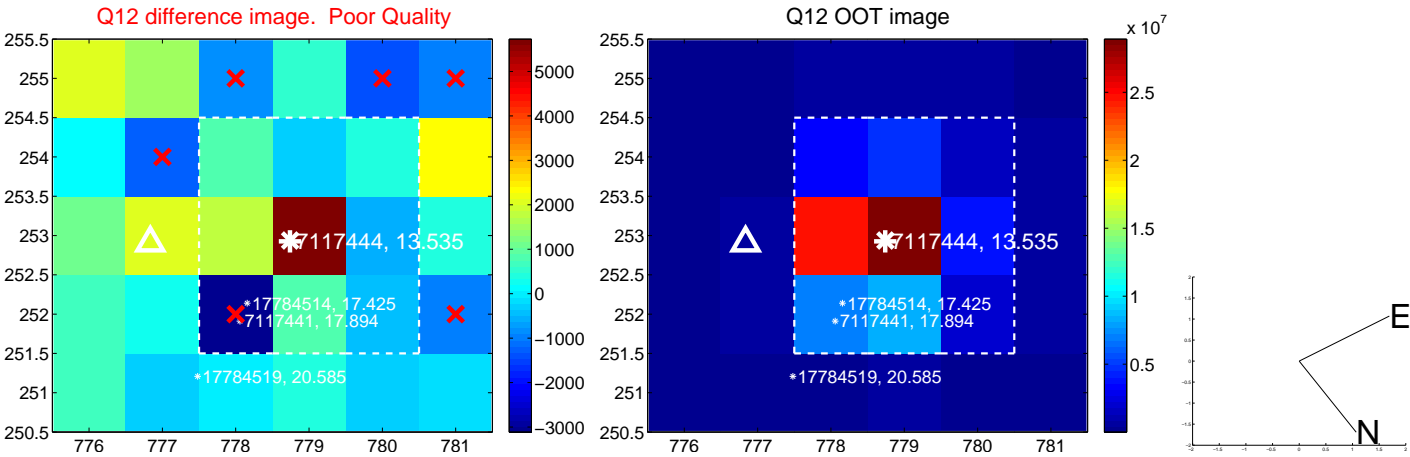
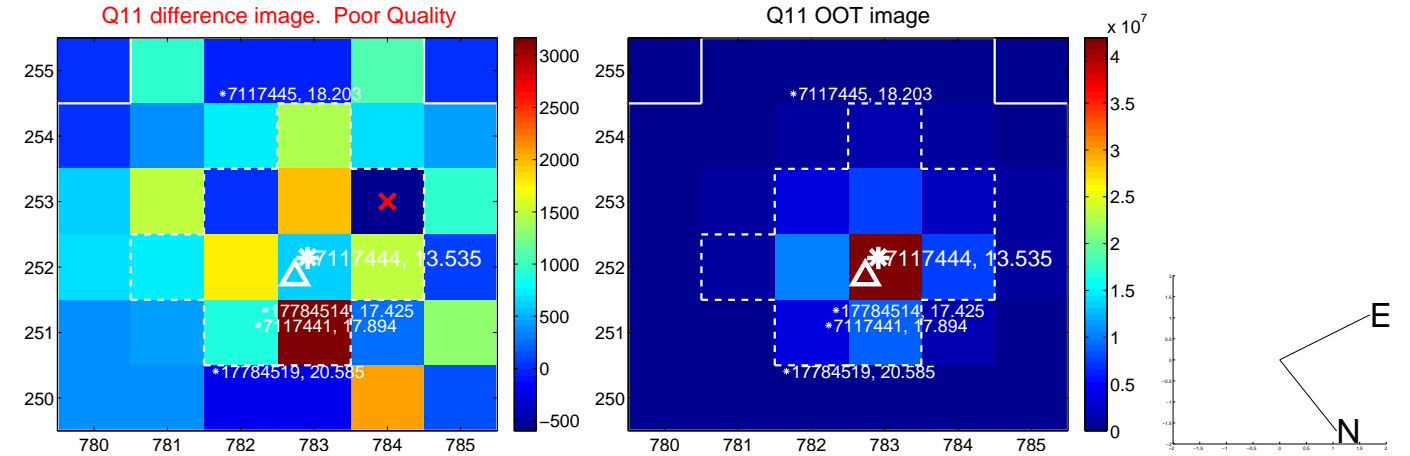
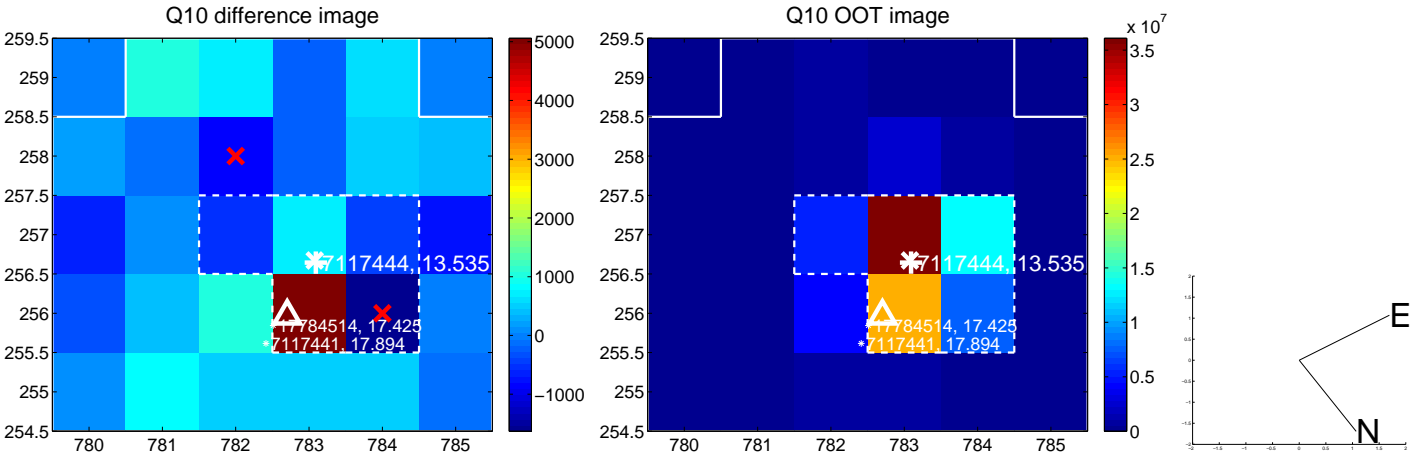
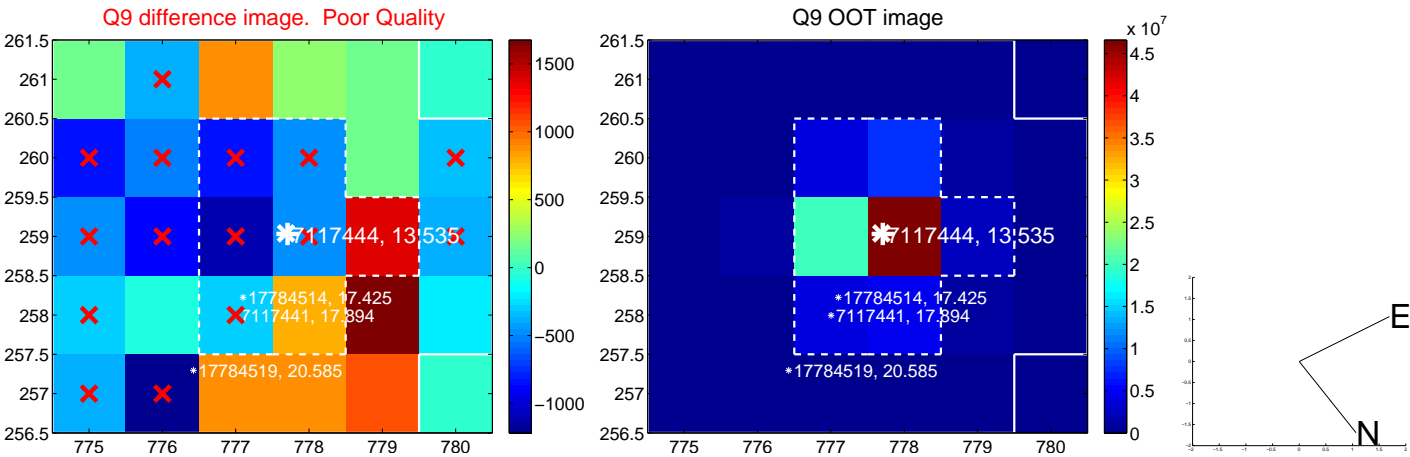
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



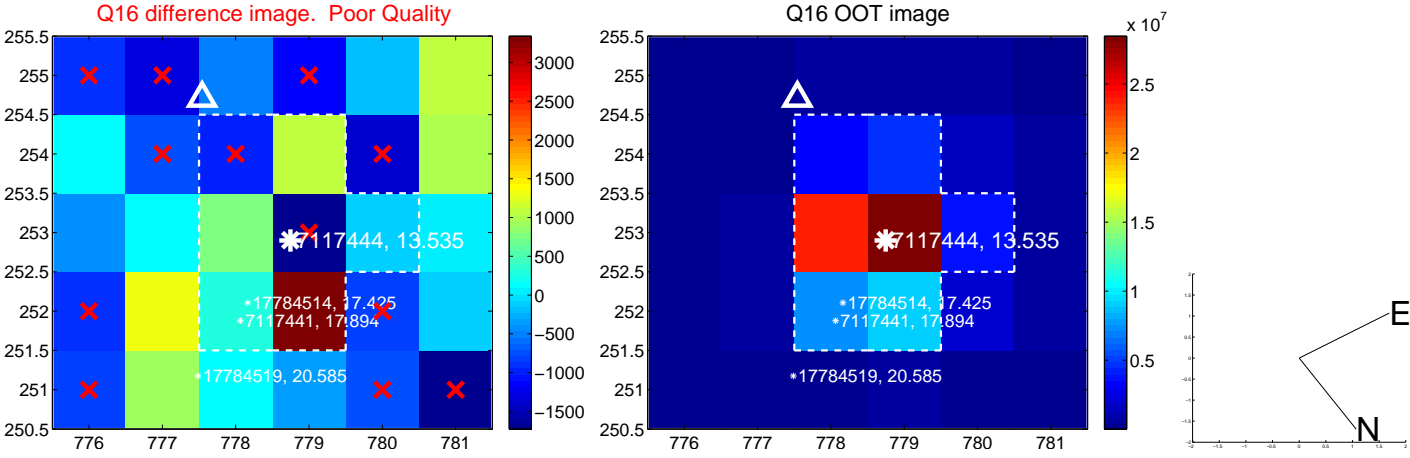
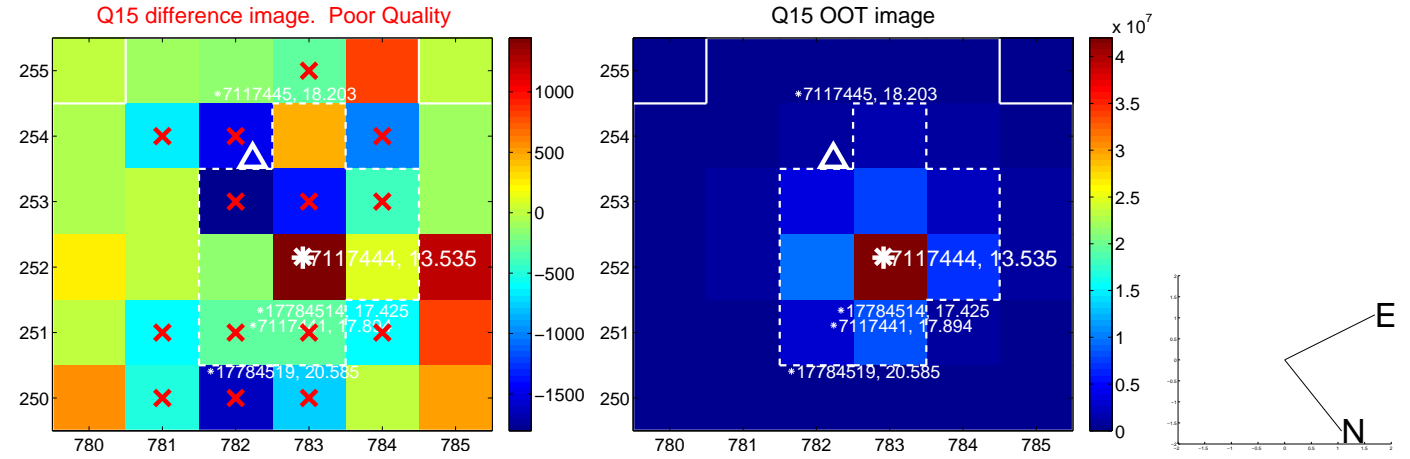
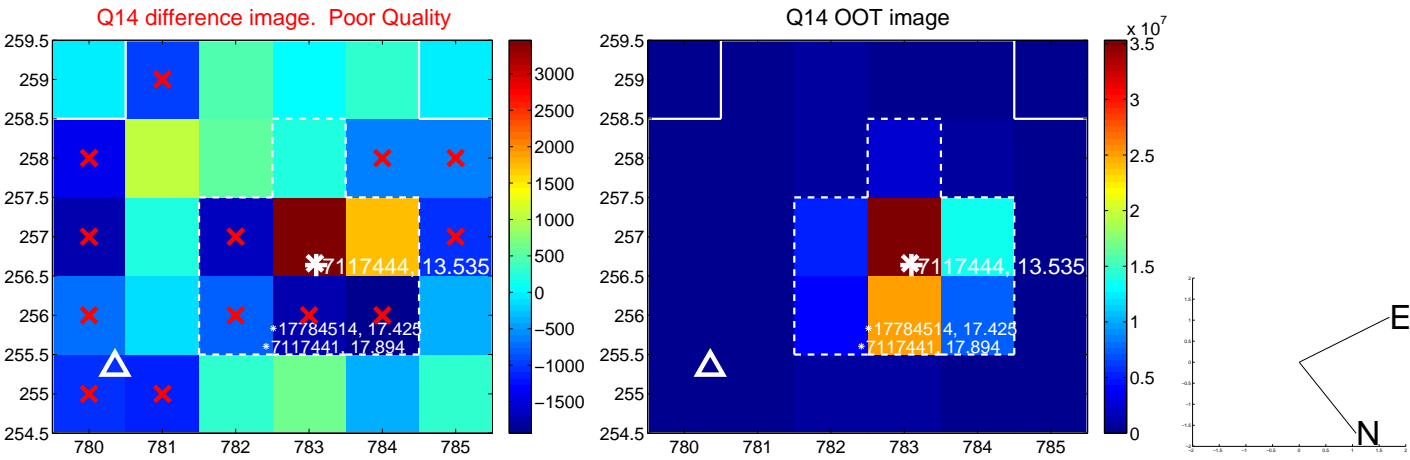
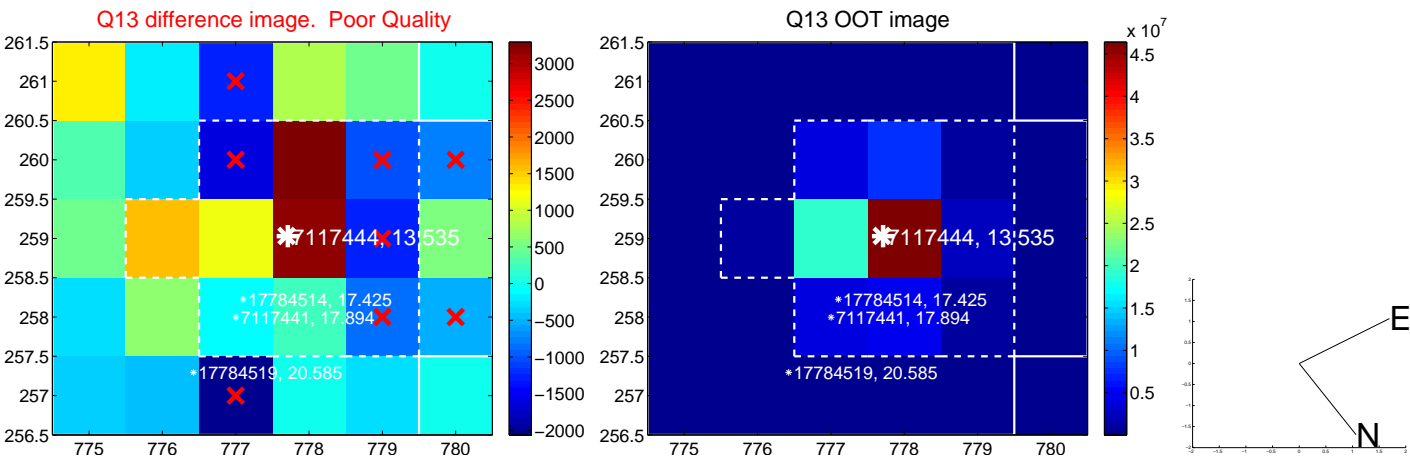
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



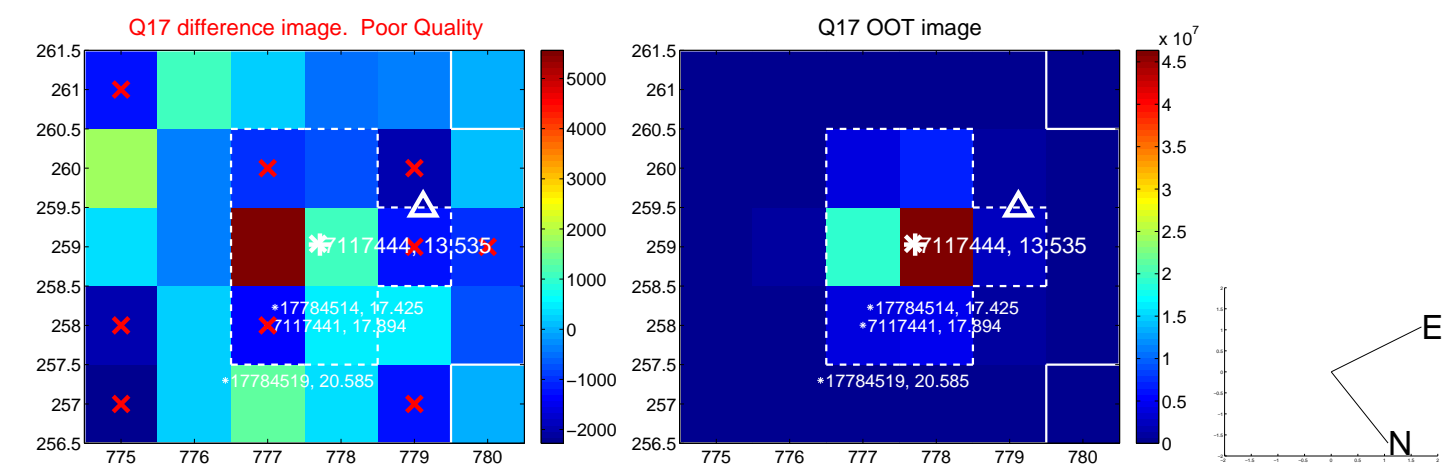
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



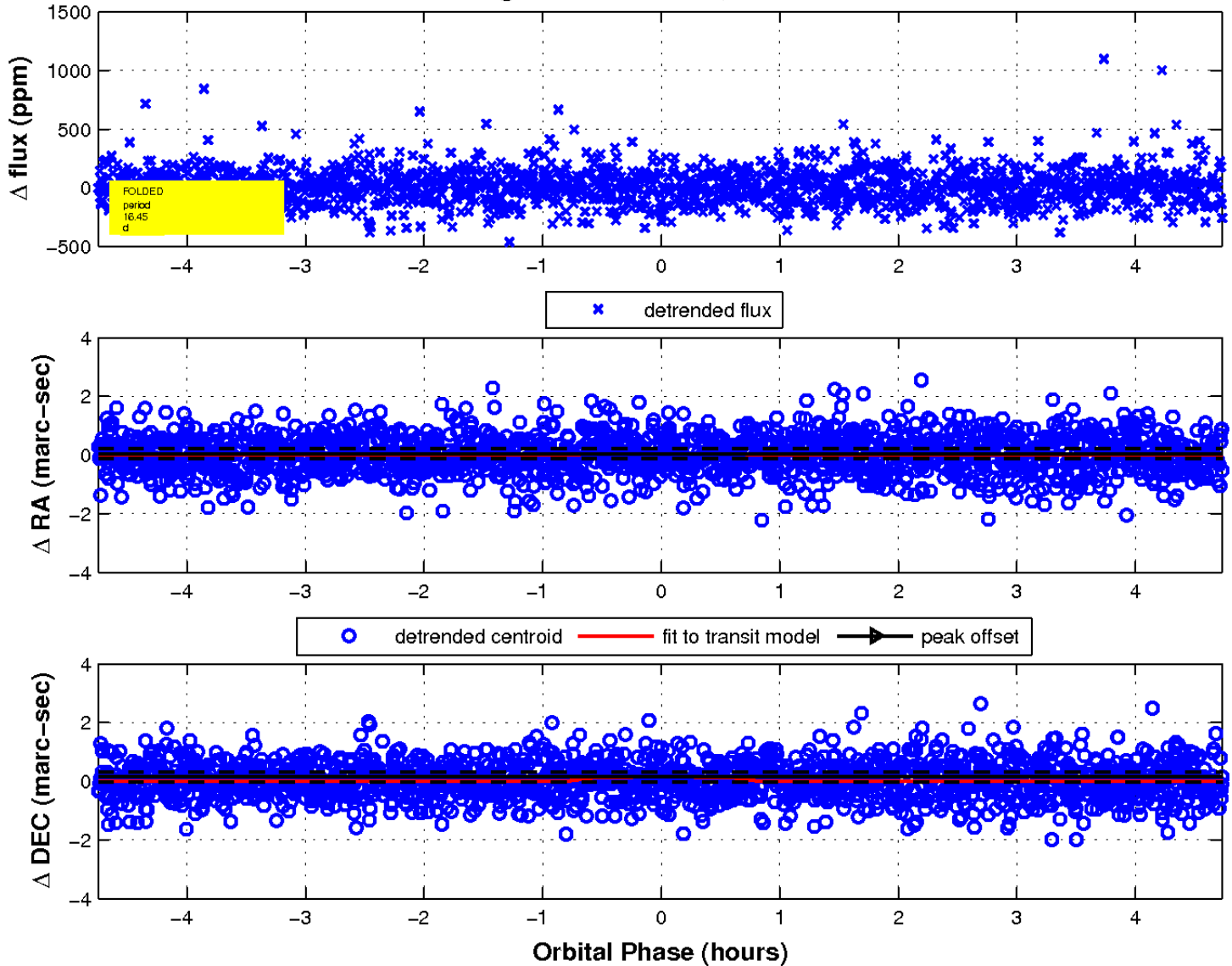
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



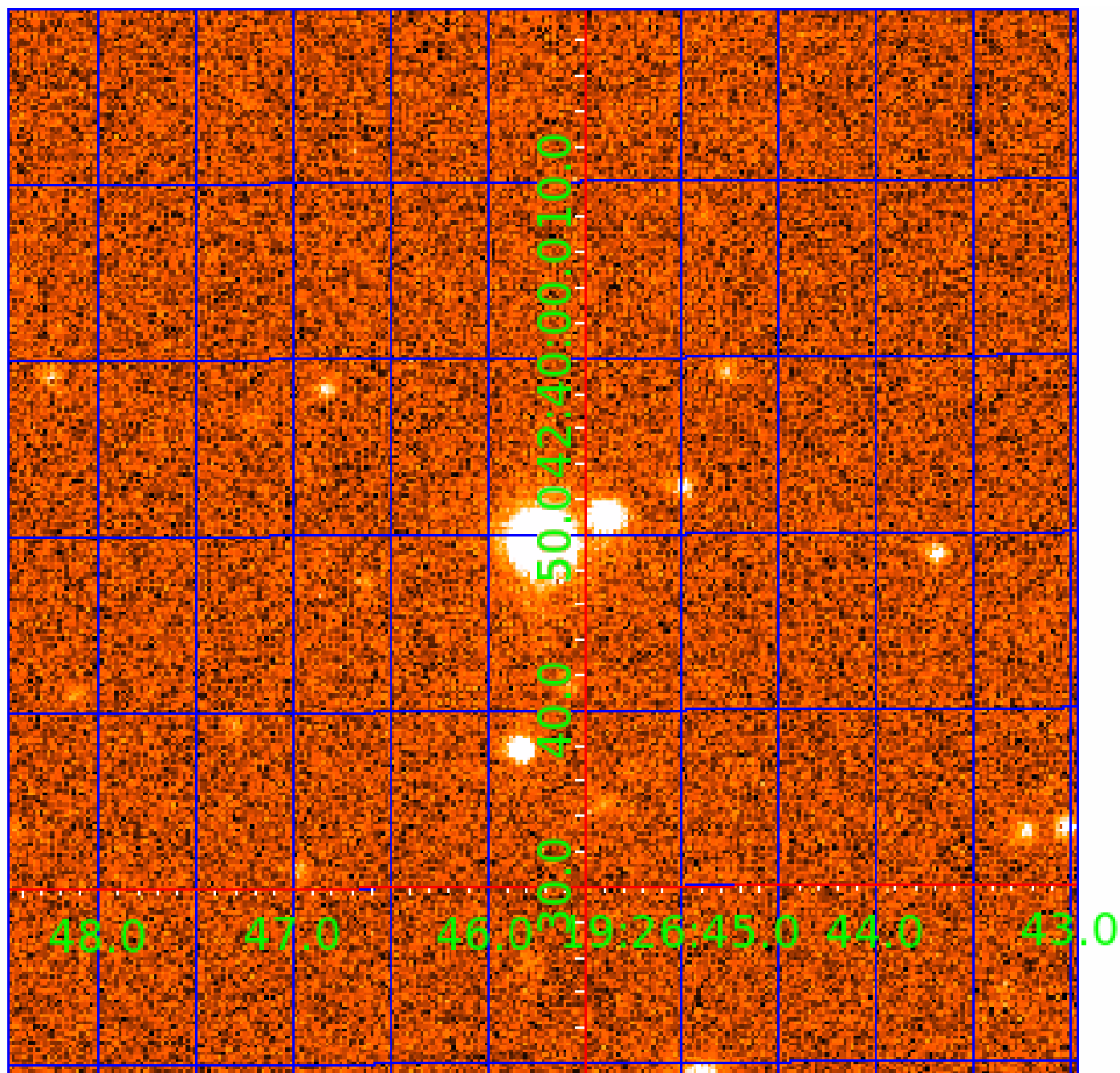
### fluxWeightedCentroids, Planet 9 of 10





# UKIRT Image

Declination



# KIC 007117444

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007117444-01	OBS	No	0.566779	131.850424	9.7	4.016	7.9	7.1	0.89	6089	0.28	5526.64
007117444-02	OBS	No	28.683667	158.533256	409.8	2.113	15.3	9.9	0.89	6089	1.81	29.52
007117444-04	OBS	No	24.620543	151.203318	365.0	1.357	12.4	8.0	0.89	6089	1.91	36.19
007117444-06	OBS	No	31.725644	159.932876	542.1	2.500	10.8	-1.0	0.89	6089	2.08	25.81
007117444-07	OBS	No	37.863077	148.204384	590.4	2.174	12.0	12.3	0.89	6089	3.74	20.39
007117444-08	OBS	No	25.017406	142.026280	590.0	0.948	11.5	11.2	0.89	6089	2.65	35.43
007117444-09	OBS	No	16.445934	141.504848	375.6	1.583	9.7	8.9	0.89	6089	2.05	61.98
007117444-10	OBS	No	8.496060	134.146611	514.7	2.000	8.8	-1.0	0.89	6089	2.02	149.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007117444-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
007117444-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
007117444-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
007117444-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
007117444-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
007117444-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—CENT_FEW_DIFFS
007117444-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS
007117444-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

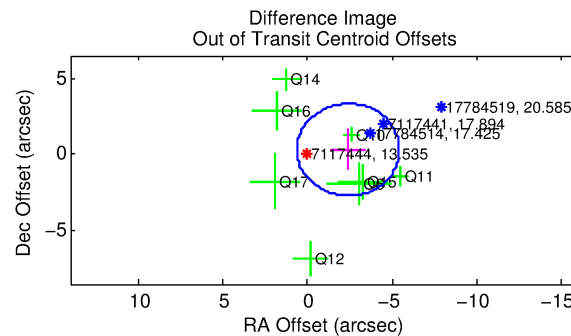
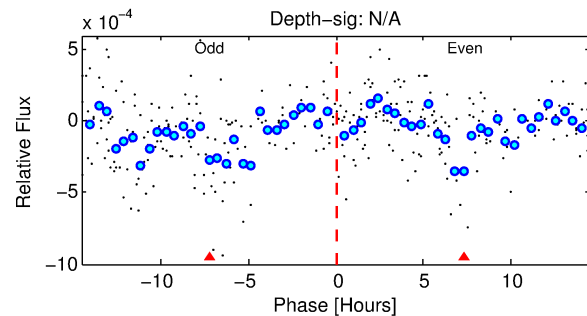
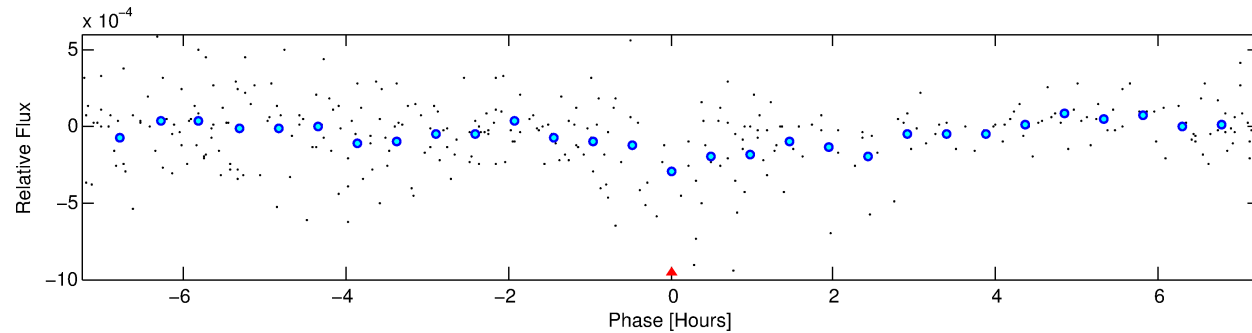
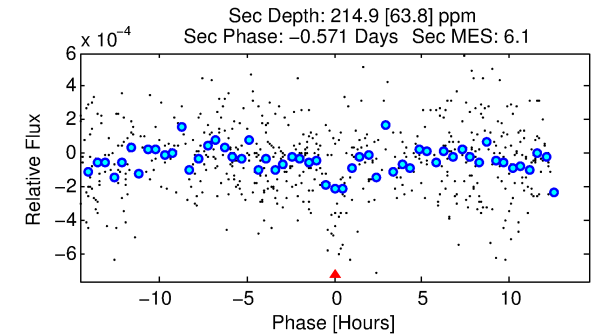
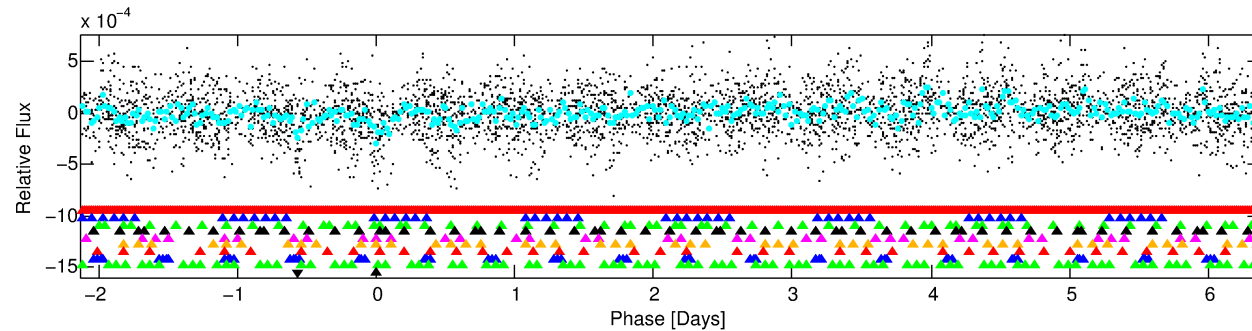
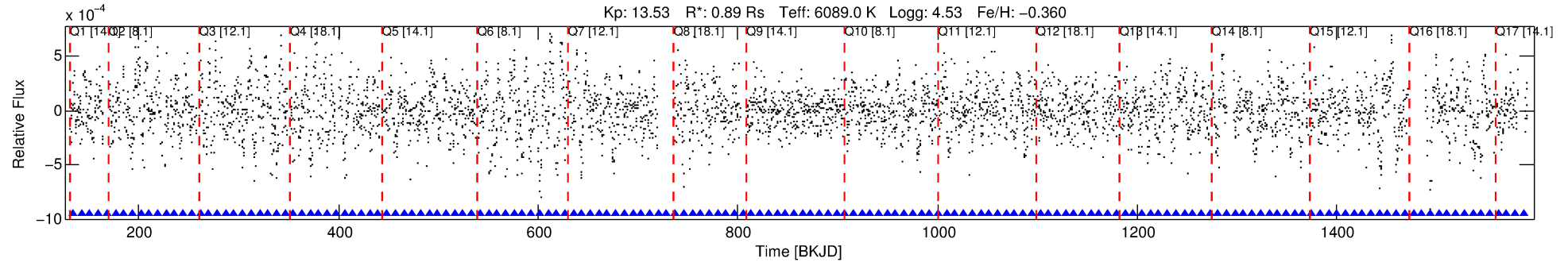
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007117444-10

No Significant Match Found

# DV One-Page Summary

KIC: 7117444 Candidate: 10 of 10 Period: 8.496 d



## TPS TCE Results:

Period = 8.49606 d  
Epoch = 134.1466 BKJD

DV fit results are unavailable

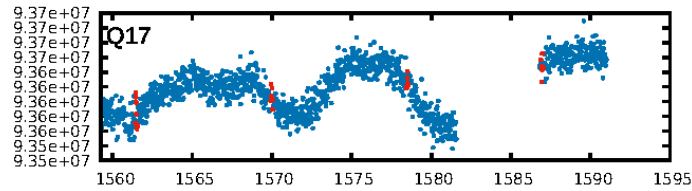
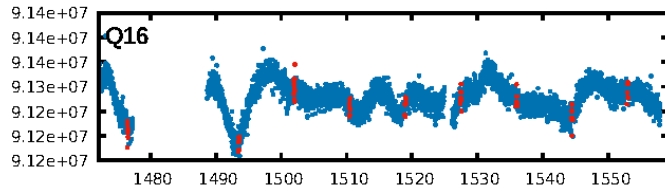
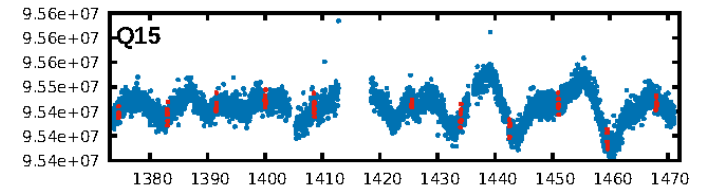
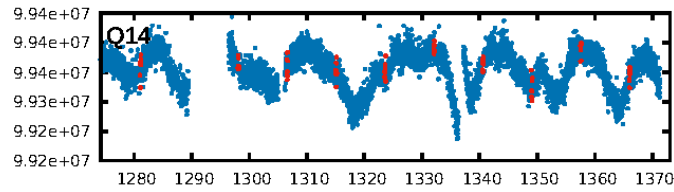
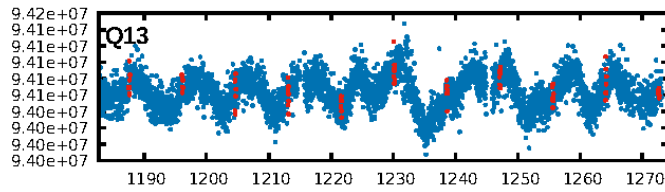
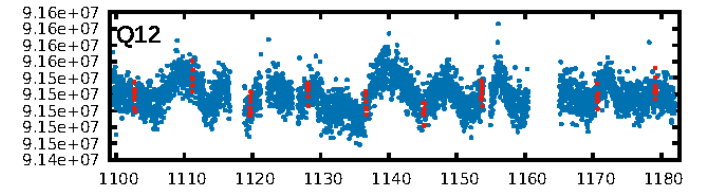
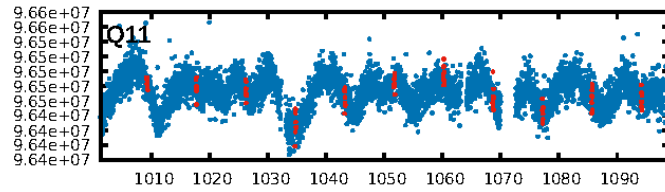
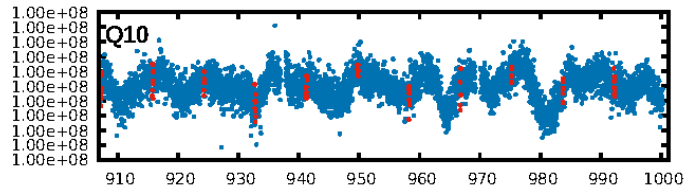
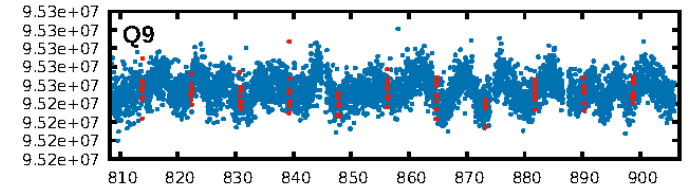
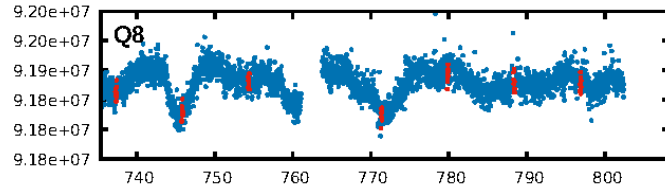
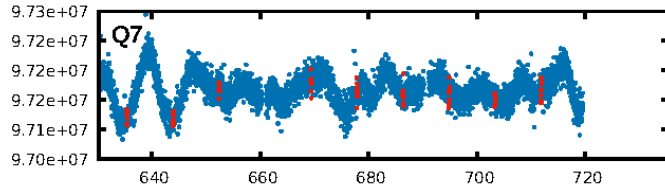
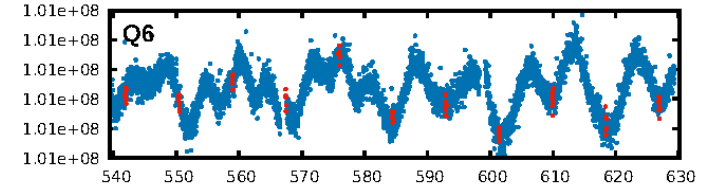
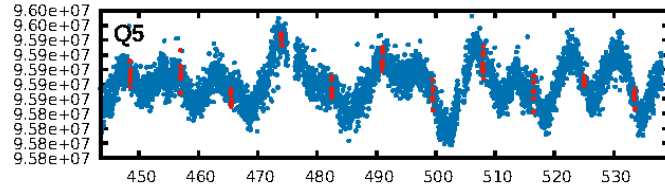
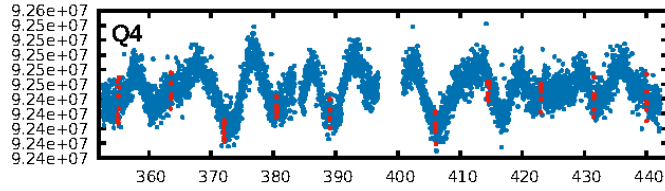
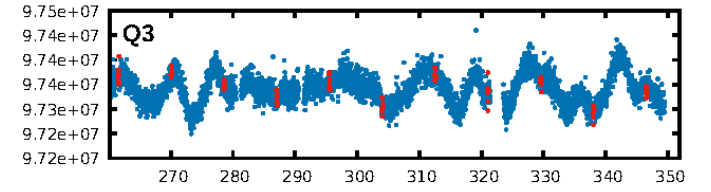
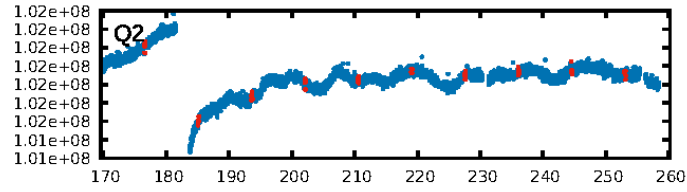
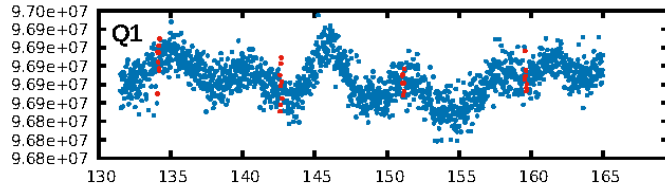
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.41 $\sigma$ ]  
LongPeriod-sig: 100.0% [74.79 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [39/39]  
GhostDiagnostic-chr: -1.205  
Centroid-sig: 78.0%  
Centroid-so: 0.131 arcsec [0.55 $\sigma$ ]  
OotOffset-rm: 2.405 arcsec [2.39 $\sigma$ ]  
KicOffset-rm: 2.414 arcsec [2.38 $\sigma$ ]  
OotOffset-st: 3/2/2/1 [8]  
KicOffset-st: 3/2/2/1 [8]  
DiffImageQuality-fgm: 0.12 [1/8]  
DiffImageOverlap-fno: 0.00 [0/17]

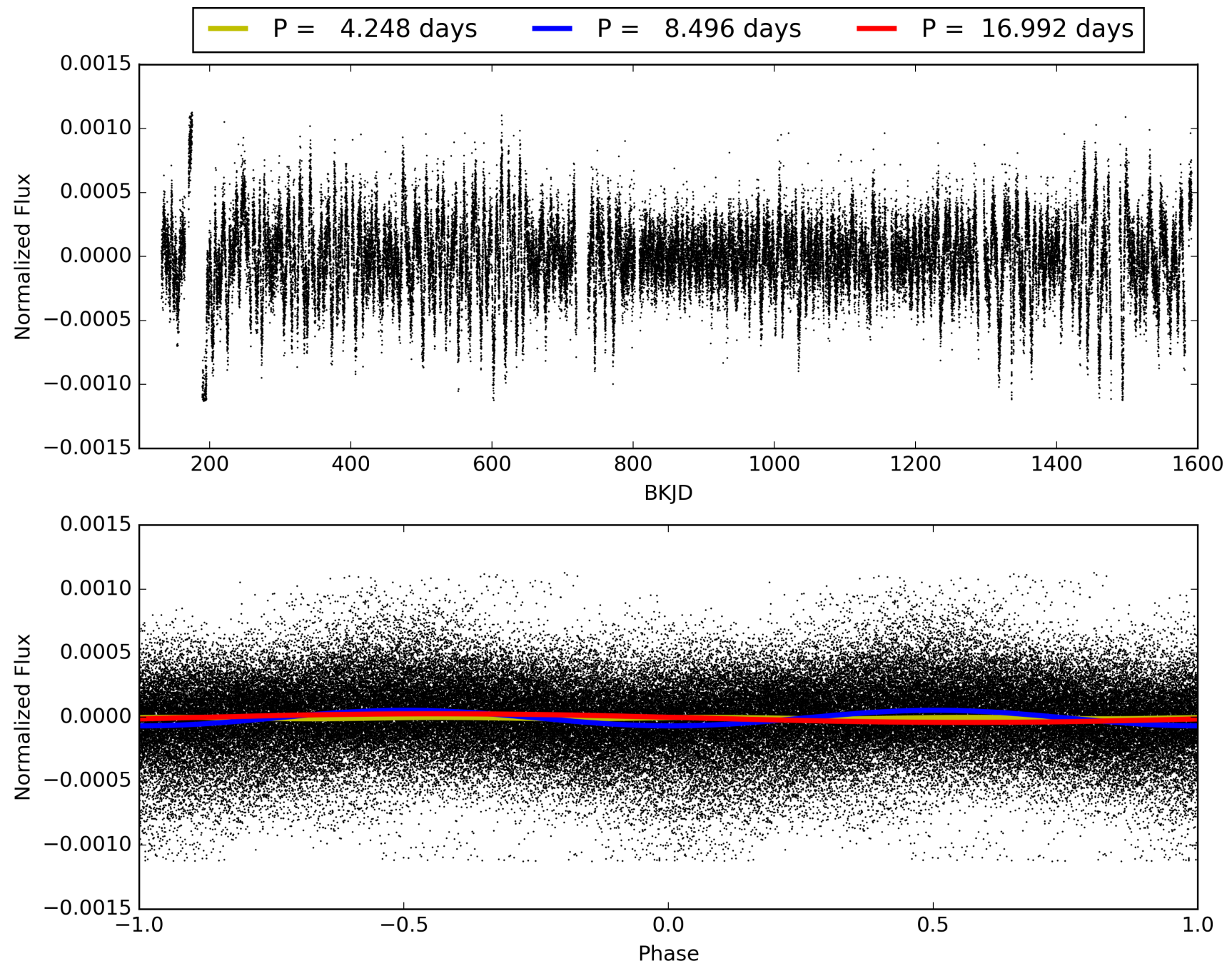
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:37:15 Z

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

# TCE 007117444-10, PDC Light Curves

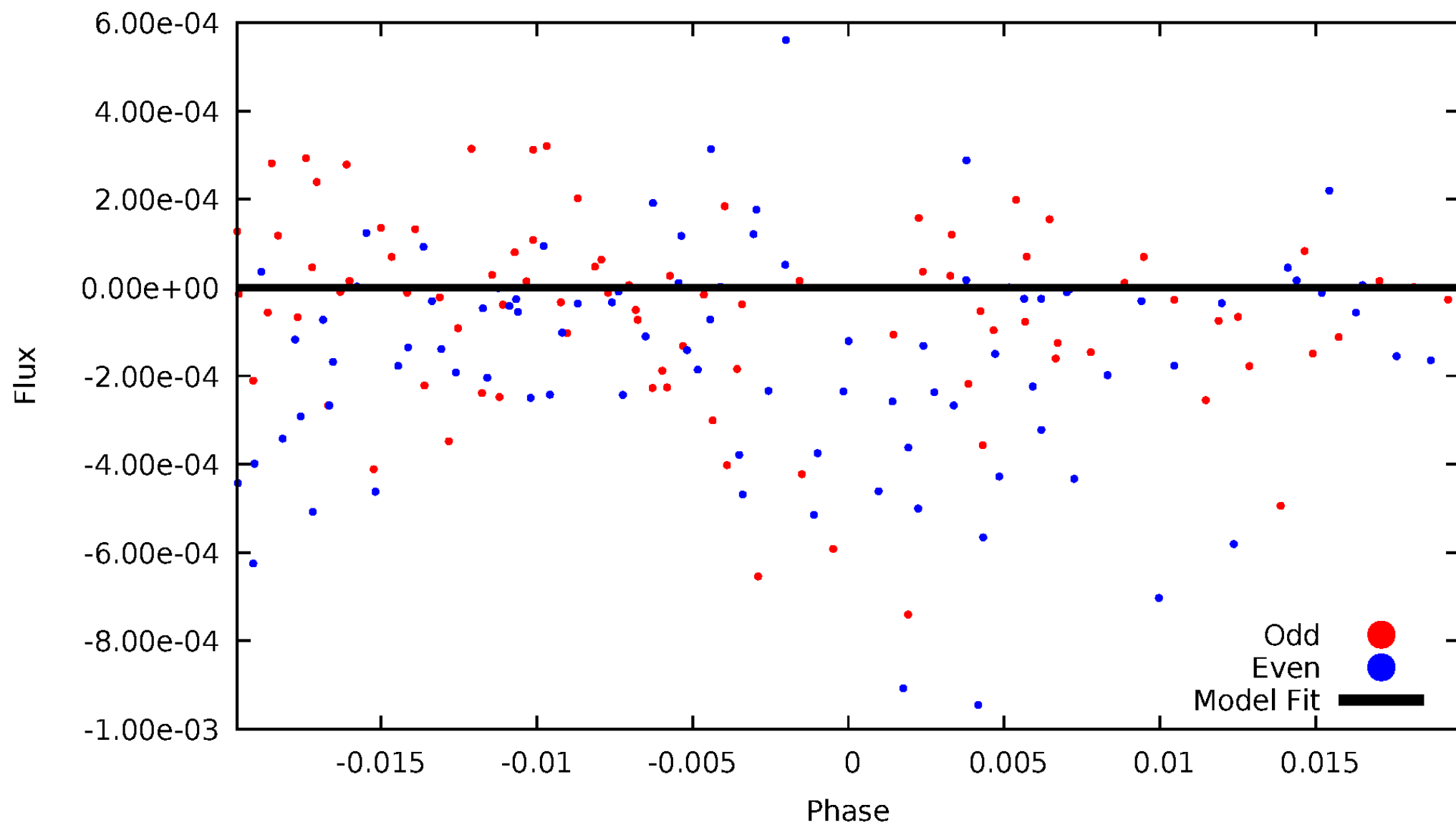


# TCE 007117444-10



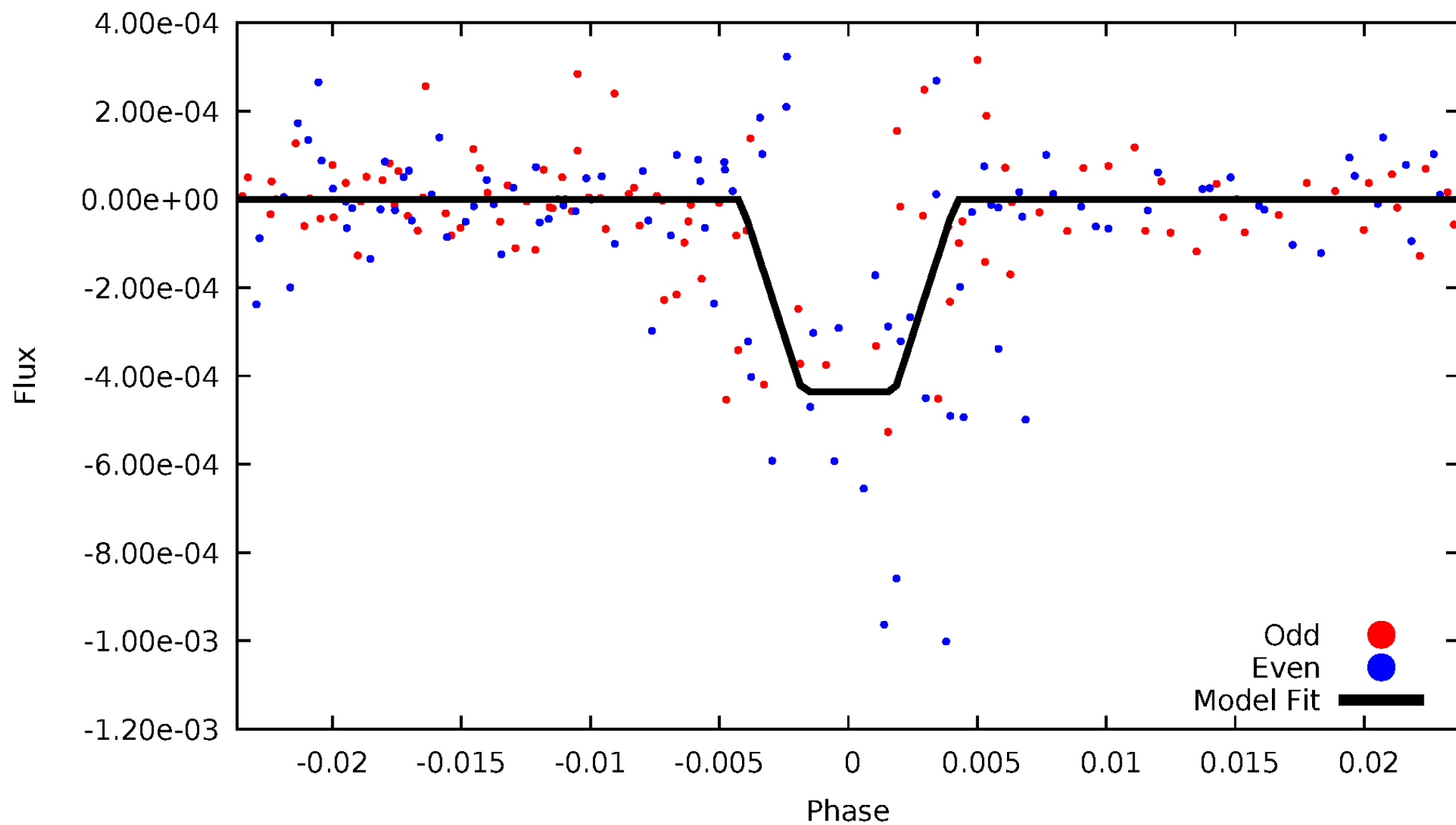
# DV Odd/Even

TCE 007117444-10



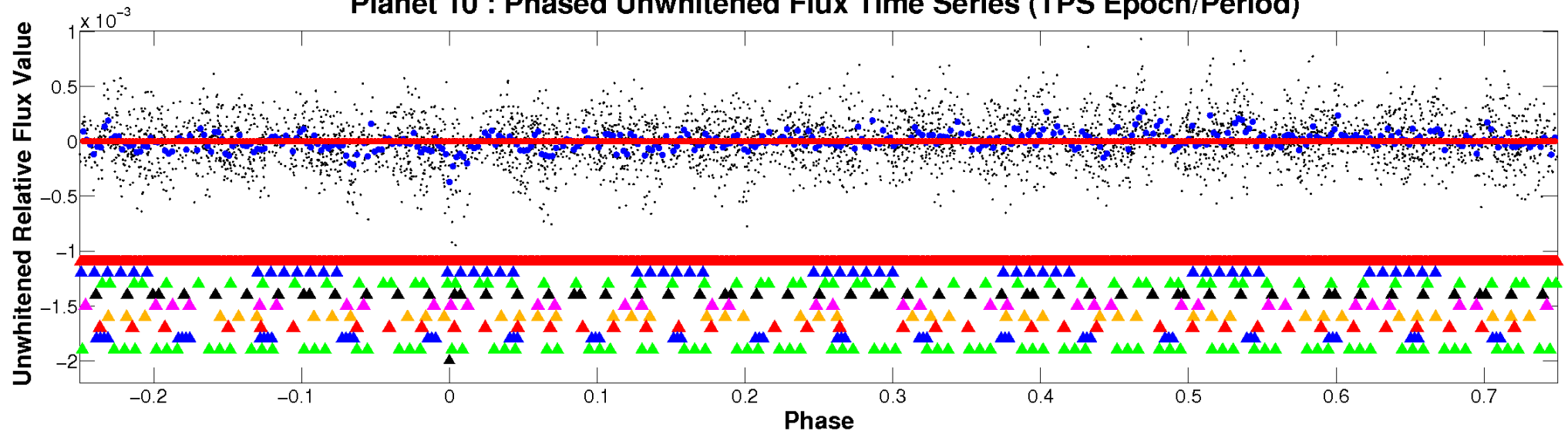
# ALT Odd/Even

TCE 007117444-10

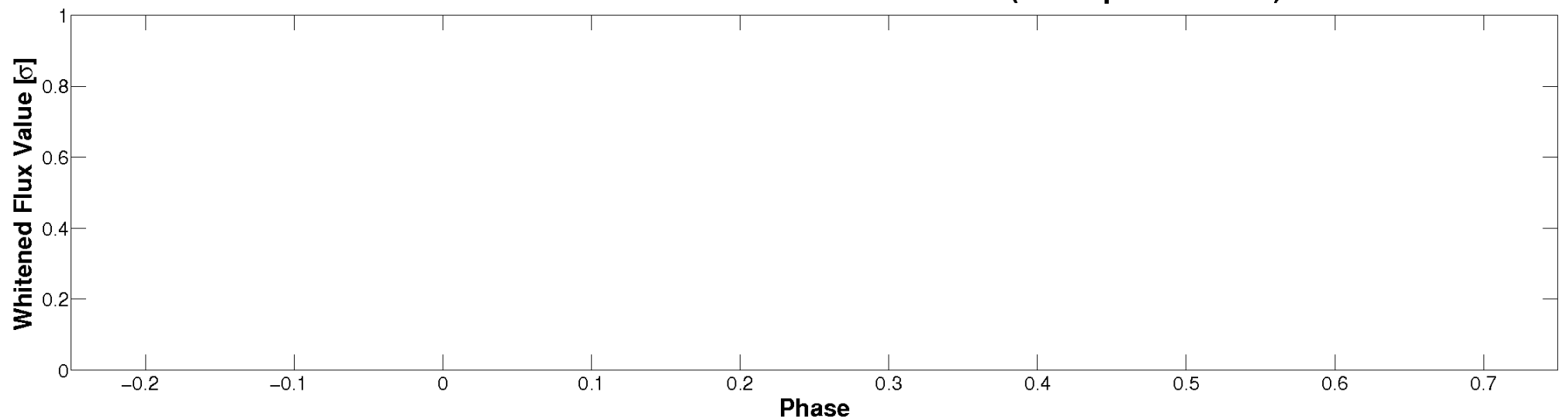


# Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)



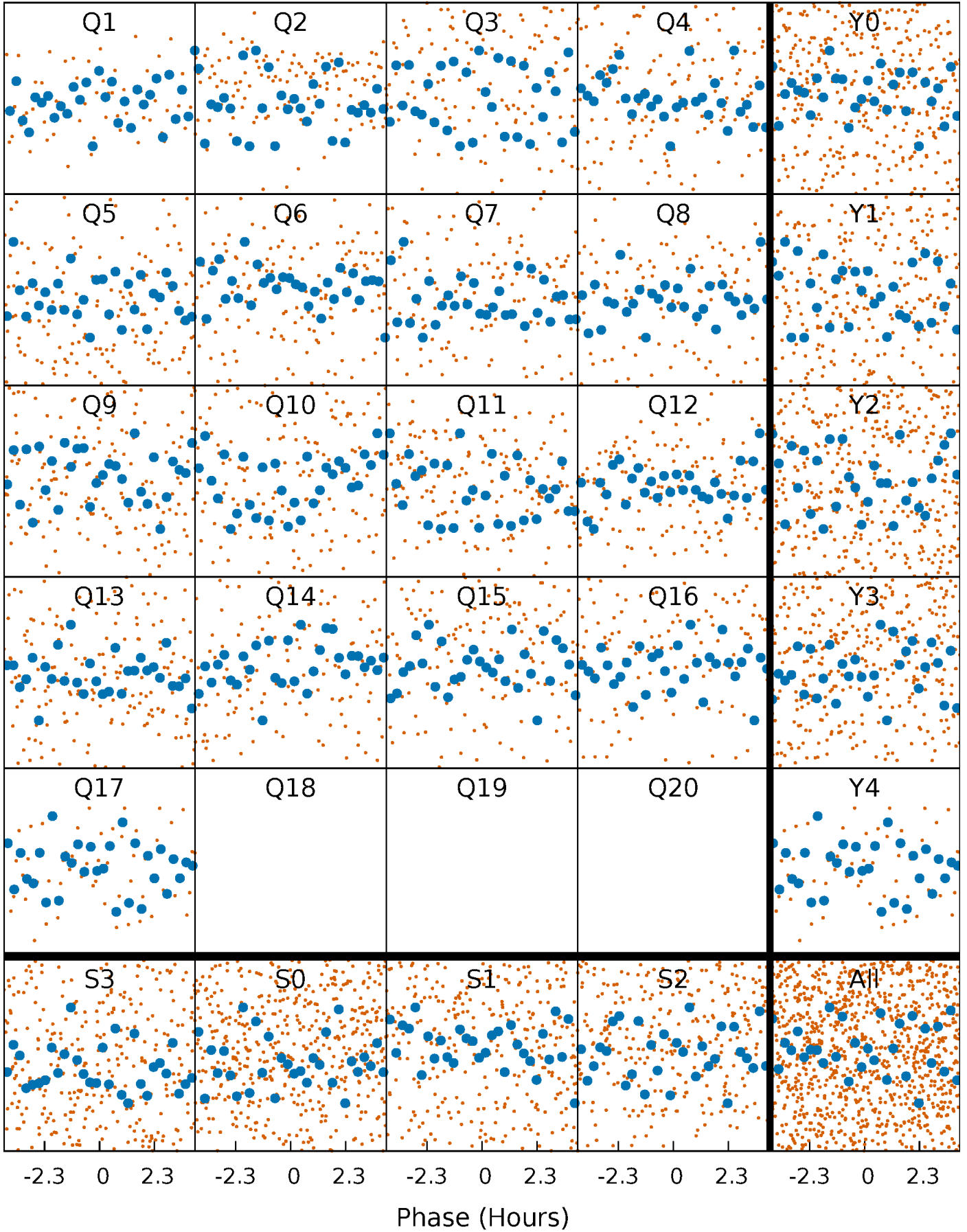
Planet 10 : Phased Whitened Flux Time Series (TPS Epoch/Period)





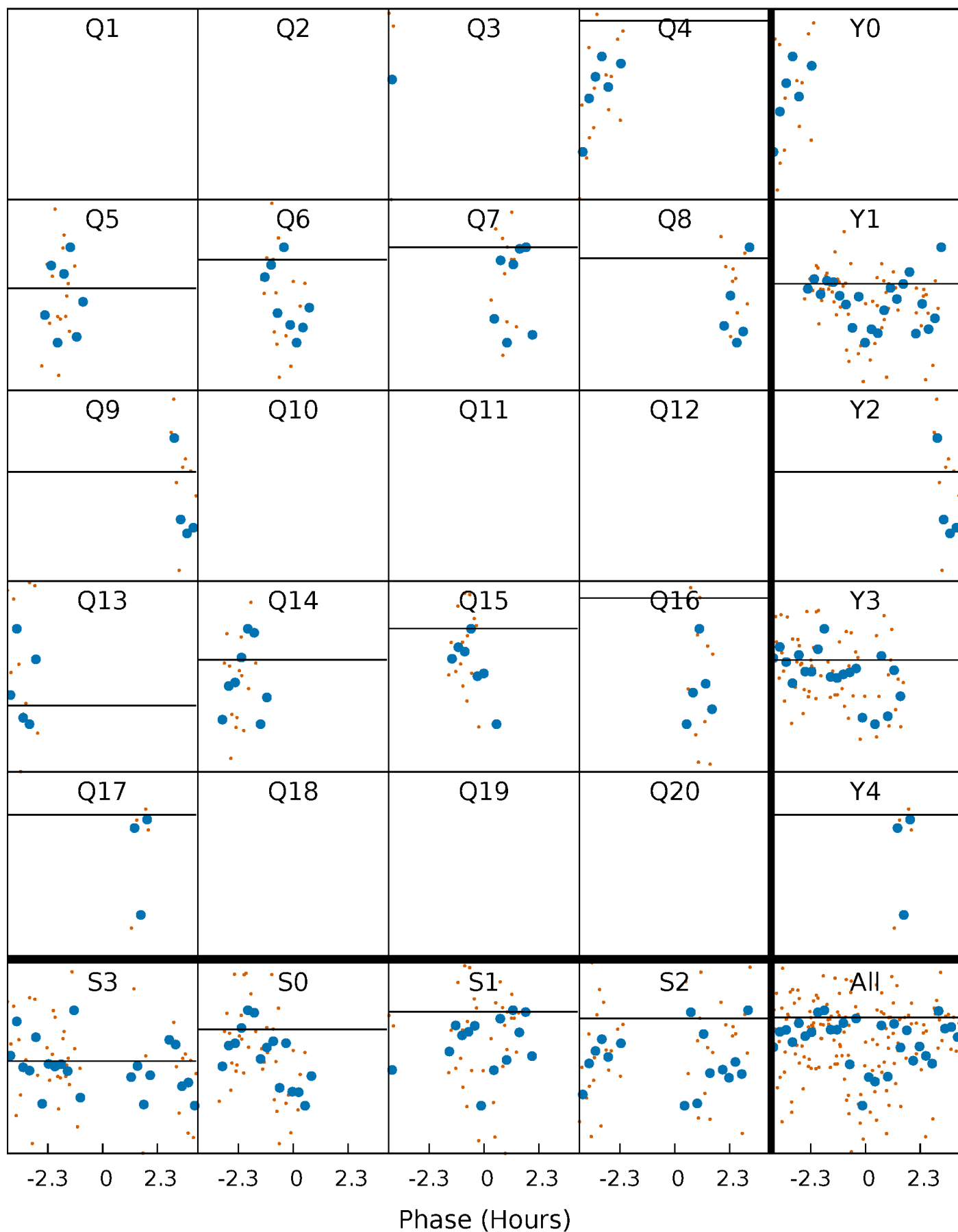
# PDC Quarter-Phased Transit Curves

TCE 007117444-10 P= 8.496060 Days  $T_0=134.146611$  (BKJD)



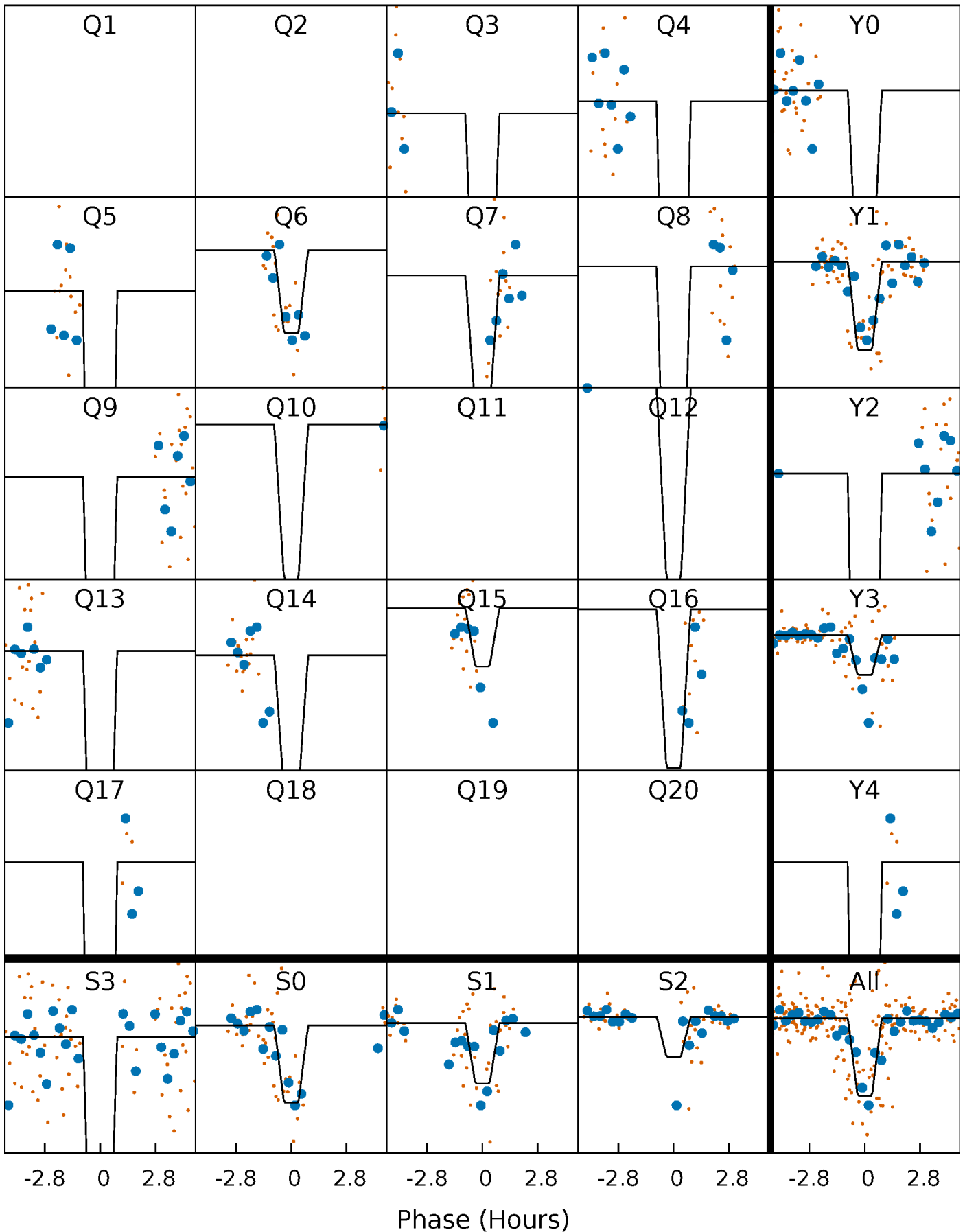
# DV Quarter-Phased Transit Curves

TCE 007117444-10 P= 8.496060 Days  $T_0=134.146611$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

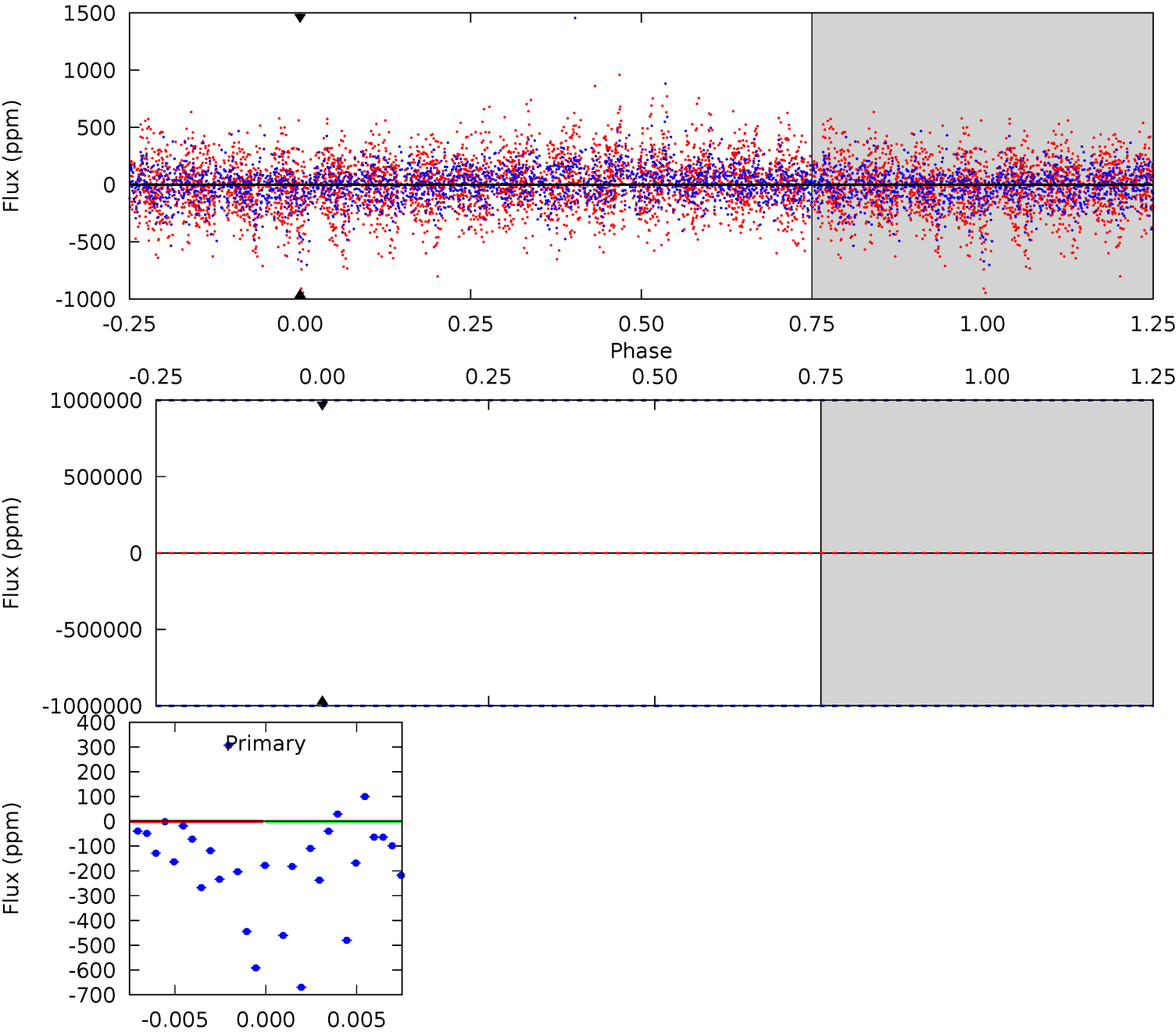
TCE 007117444-10 P= 8.496060 Days  $T_0=134.149830$  (BKJD)



# DV Model-Shift Uniqueness Test

007117444-10, P = 8.496060 Days, E = 125.650551 Days

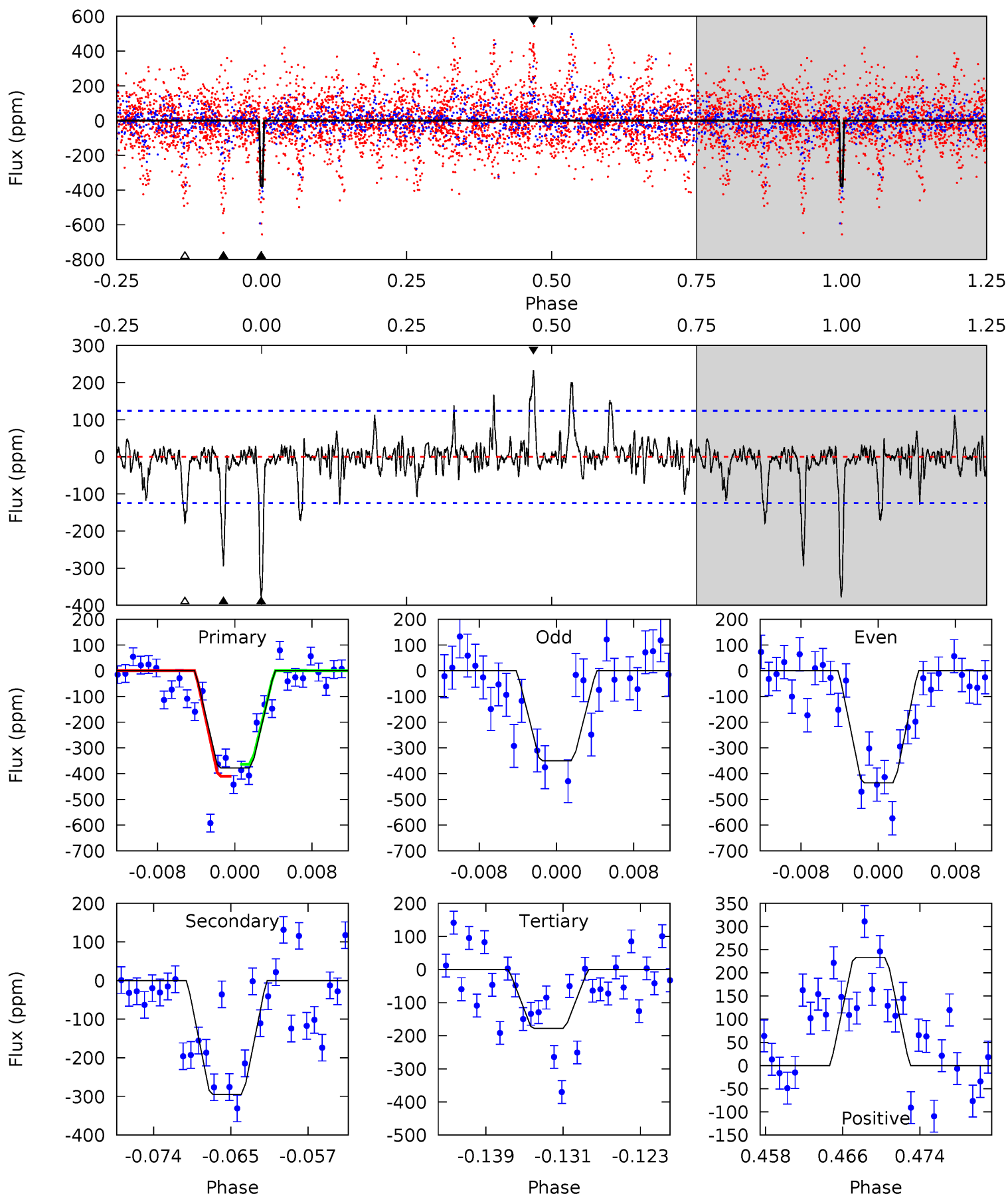
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007117444-10, P = 8.496060 Days, E = 125.653770 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
15.4	12.0	7.24	9.50	5.06	2.64	1.79	8.15	5.89	4.75	2.49	1.69	1.11	0.38	0.93



### Stellar Parameters For KIC 007117444

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6089^{+164}_{-183}$	$4.527^{+0.048}_{-0.204}$	$-0.360^{+0.300}_{-0.300}$	$0.889^{+0.262}_{-0.082}$	$0.971^{+0.118}_{-0.118}$	$1.944^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-5%	+83%/-83%	+29%/-9%	+12%/-12%	+20%/-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 007117444-10 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$7.77^{+7.99}_{-5.30}$	$1278^{+82}_{-60}$	$5956^{+20656}_{-25027}$	$333^{+14826}_{-7807}$
Alt.	$-295 \pm 25$	$8.00^{+8.14}_{-5.32}$	$1273^{+93}_{-54}$	$3408^{+1586}_{-654}$	$17^{+126}_{-13}$

$T_{\text{max}}$  = 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

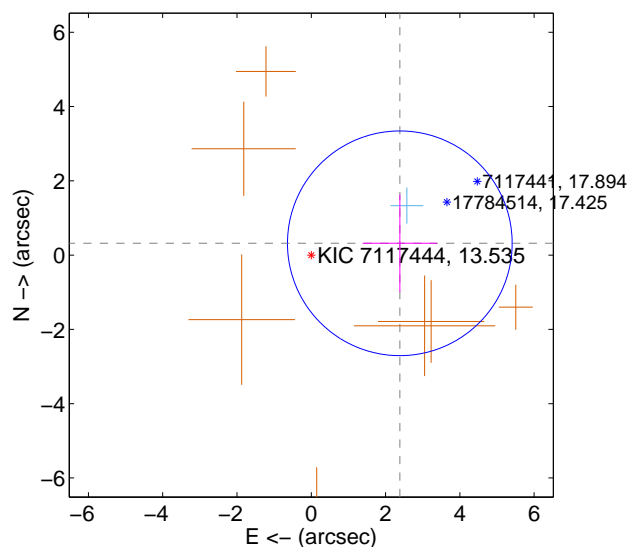
Supplemental centroid analysis for 007117444-10. Kepler magnitude: 13.54. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

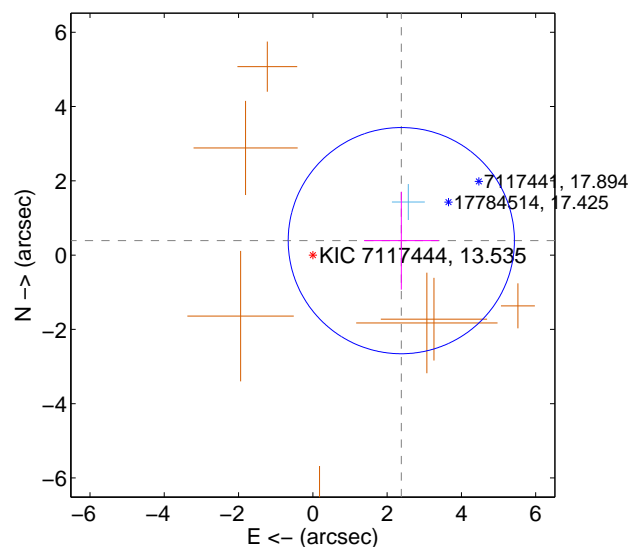
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.405 \pm 1.008$	2.39	$-2.384 \pm 1.002$	$0.318 \pm 1.306$
PRF-fit source offset from KIC position	$2.414 \pm 1.015$	2.38	$-2.382 \pm 1.006$	$0.389 \pm 1.318$
photometric centroid source offset	$0.13 \pm 0.24$	0.55	$-0.12 \pm 0.24$	$0.06 \pm 0.22$

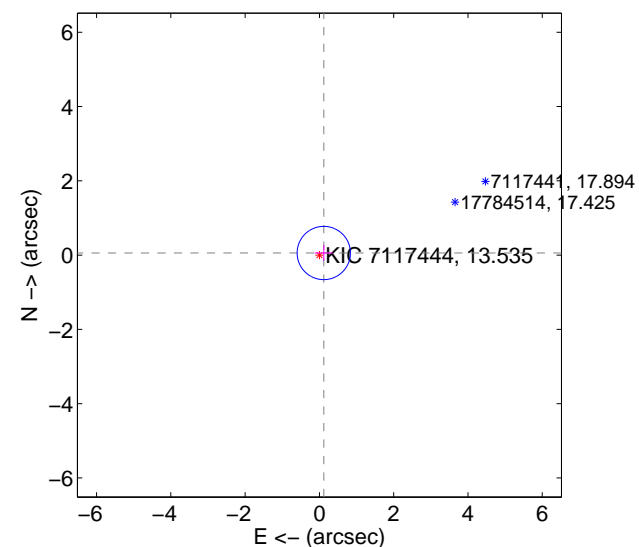
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

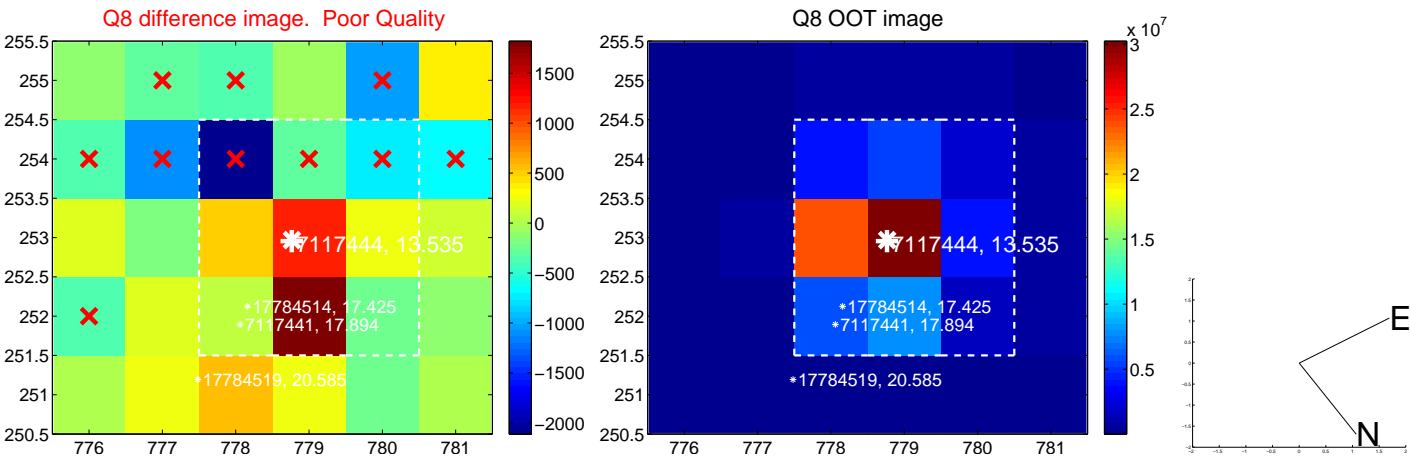
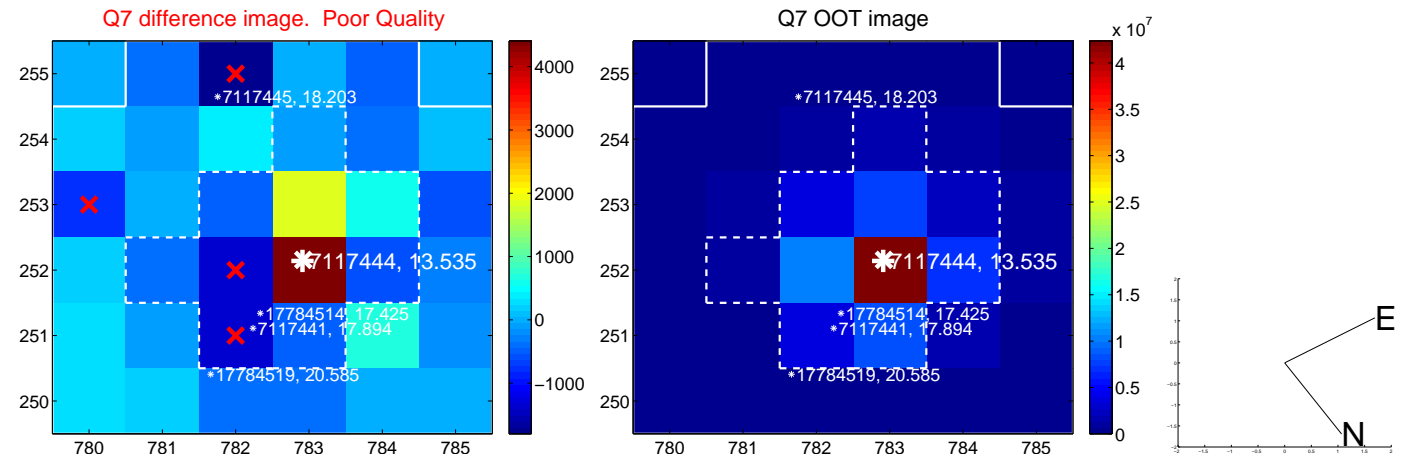
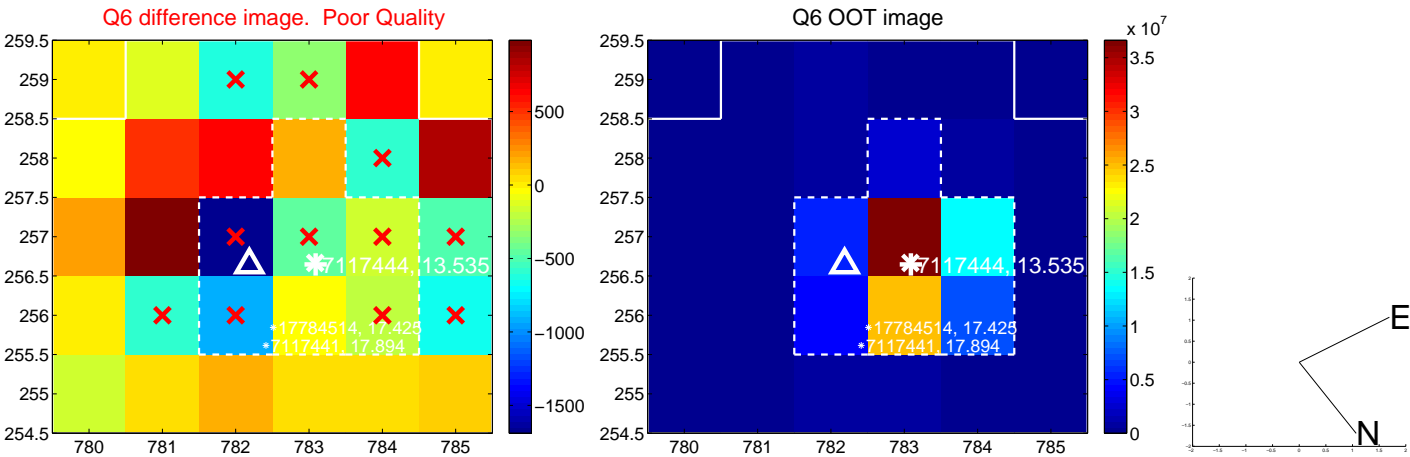
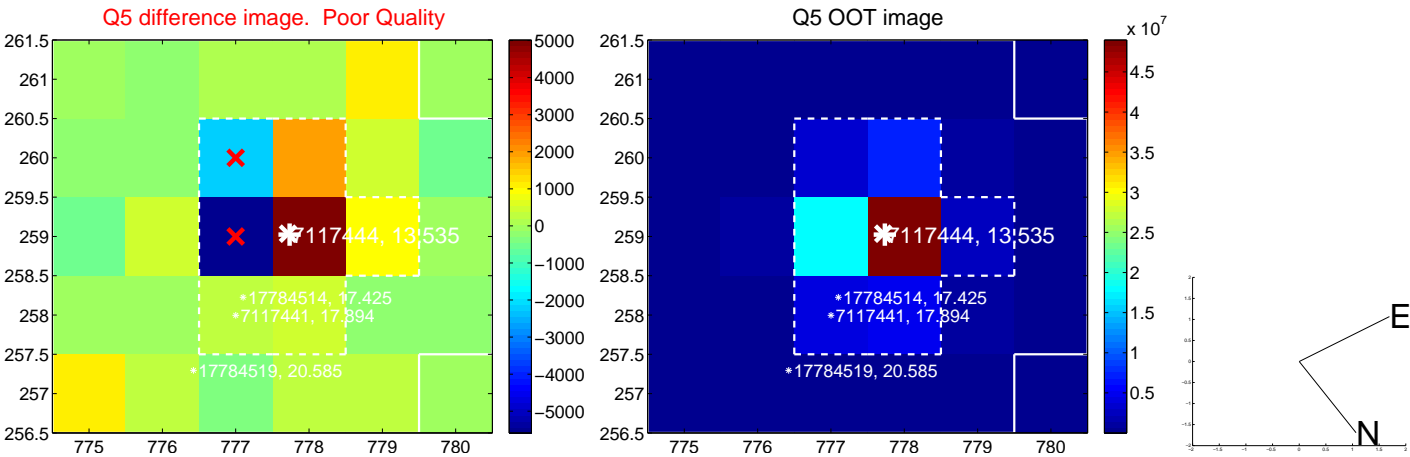


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

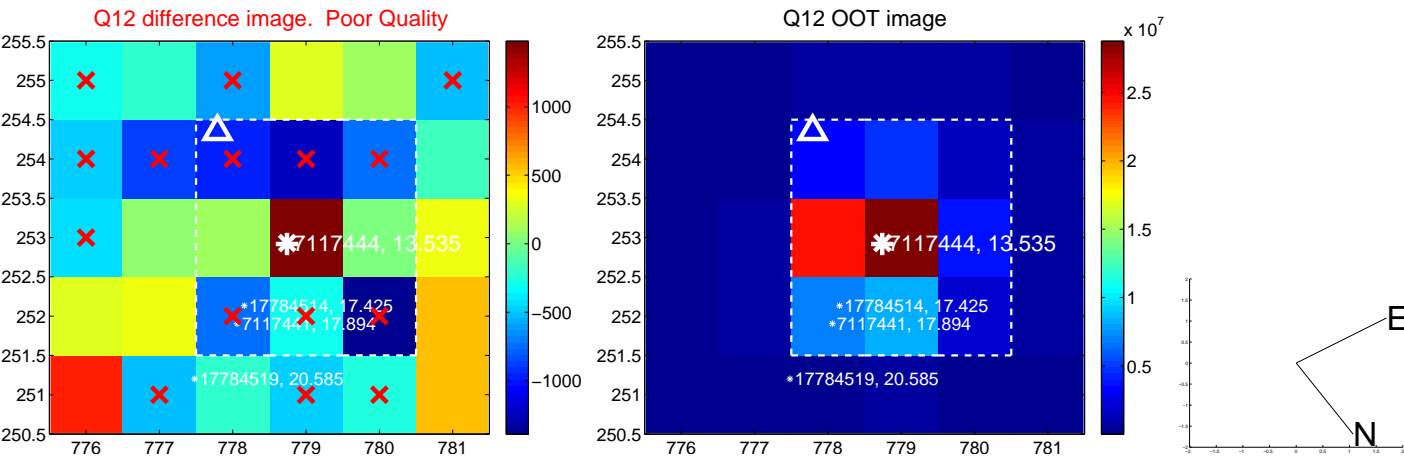
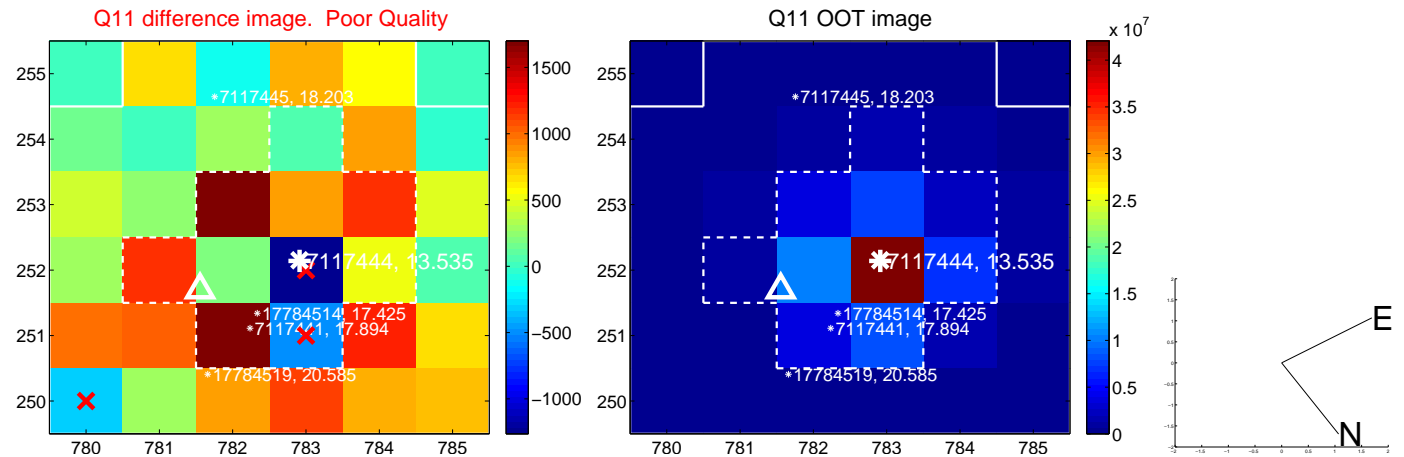
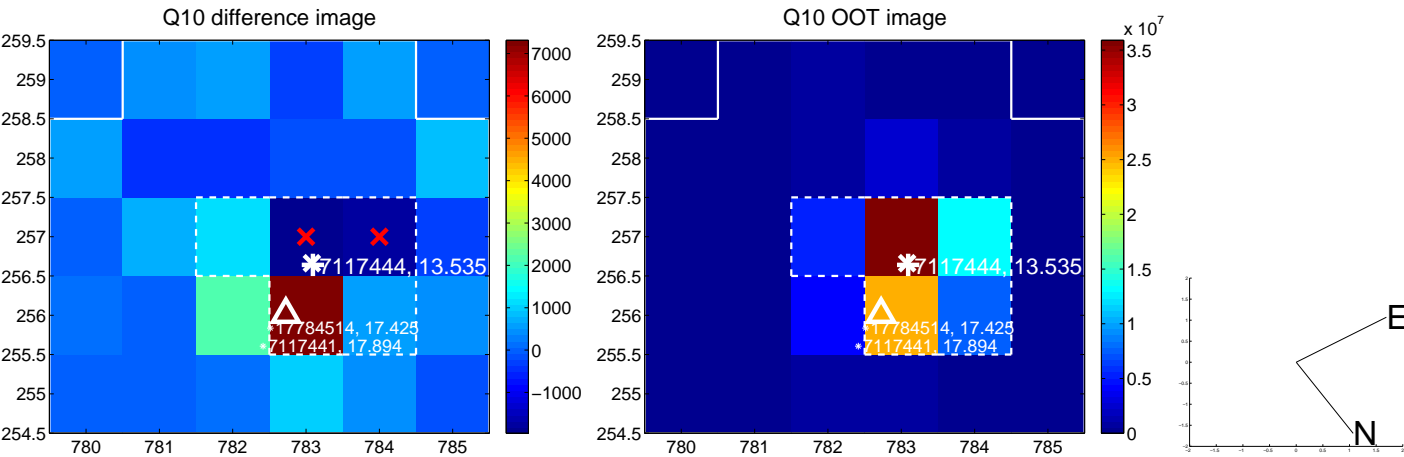
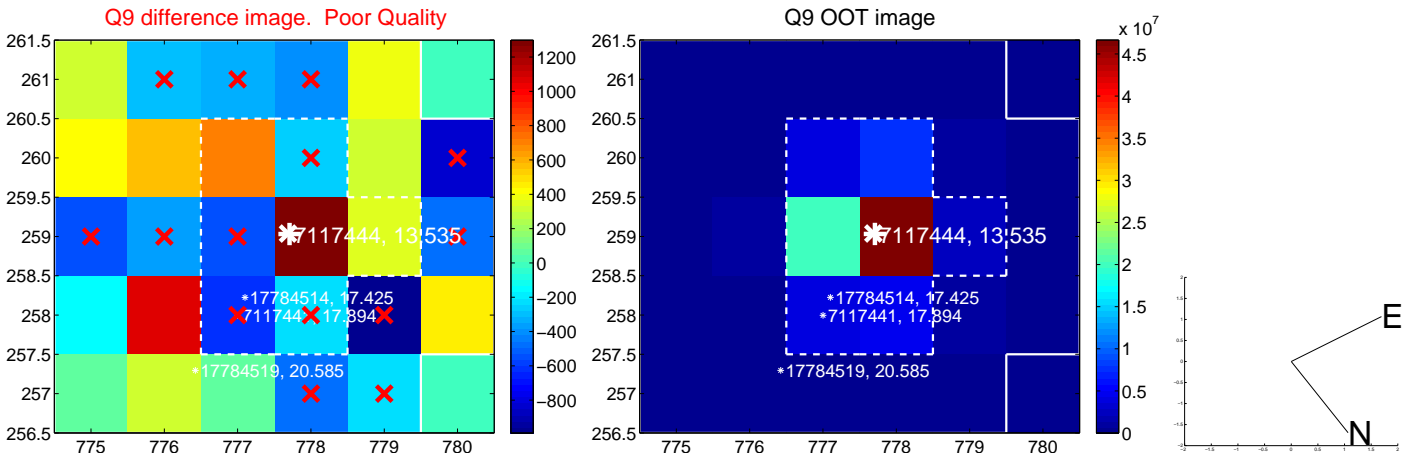




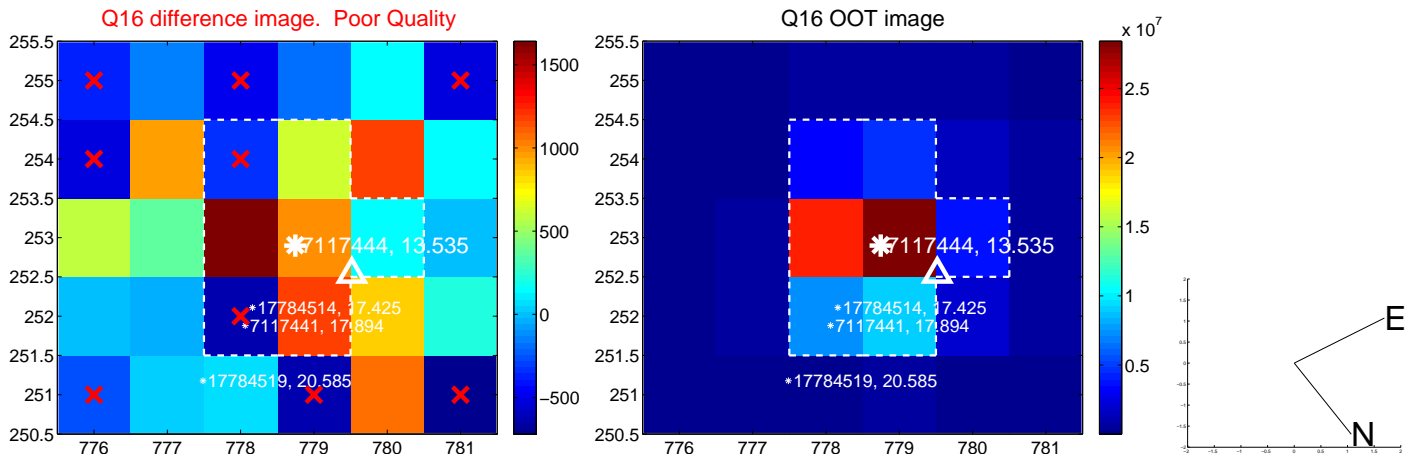
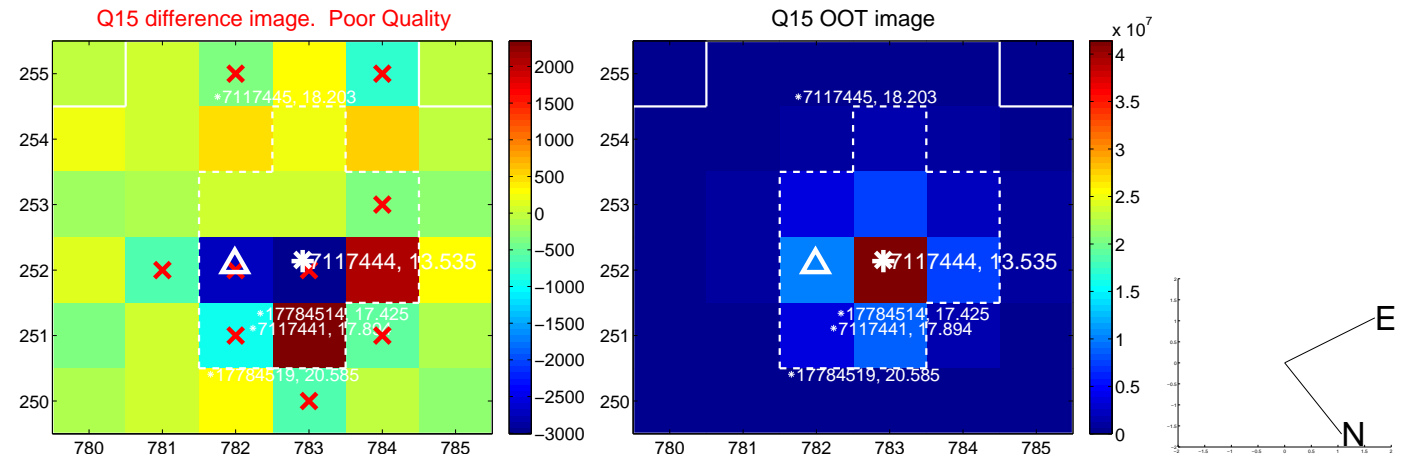
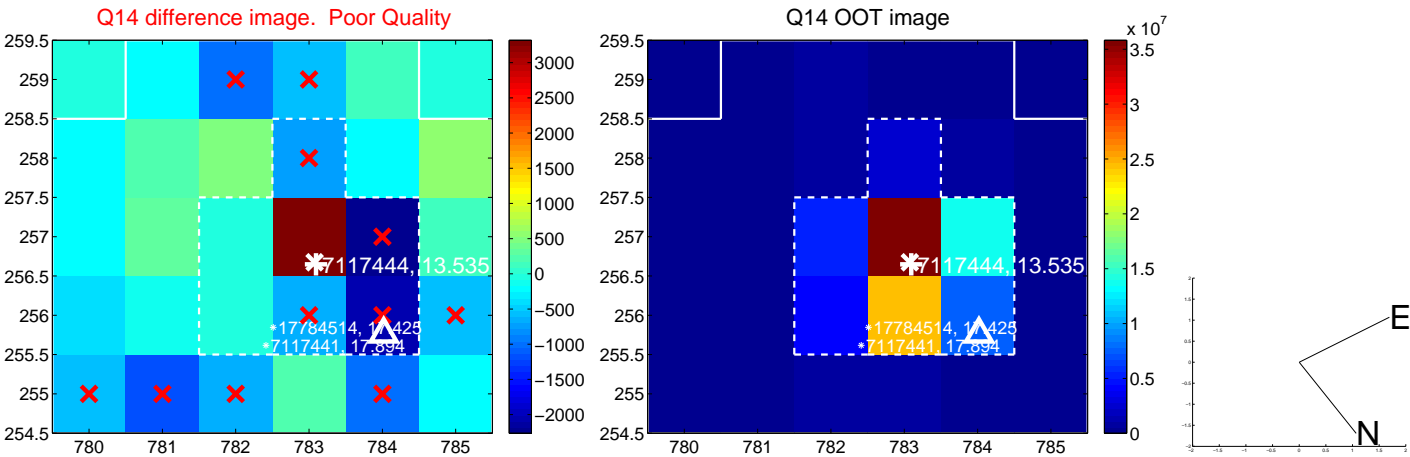
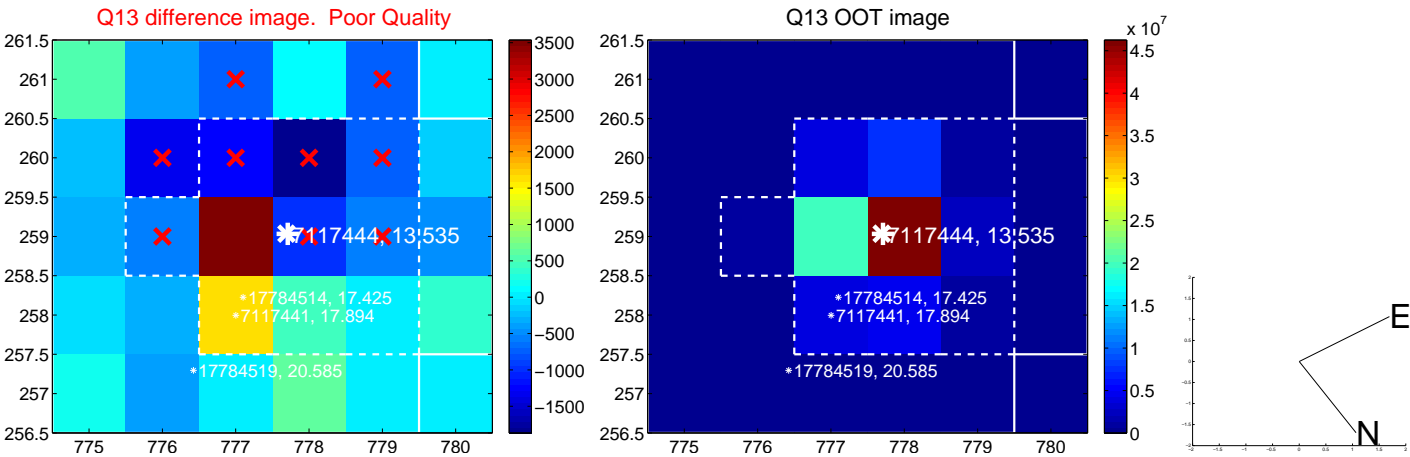
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



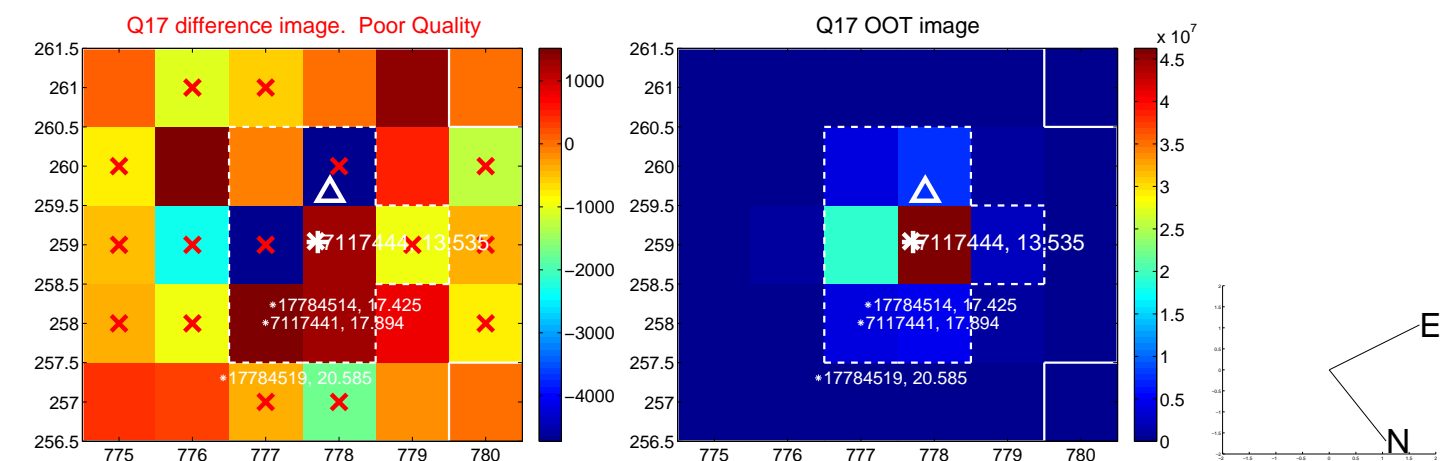
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



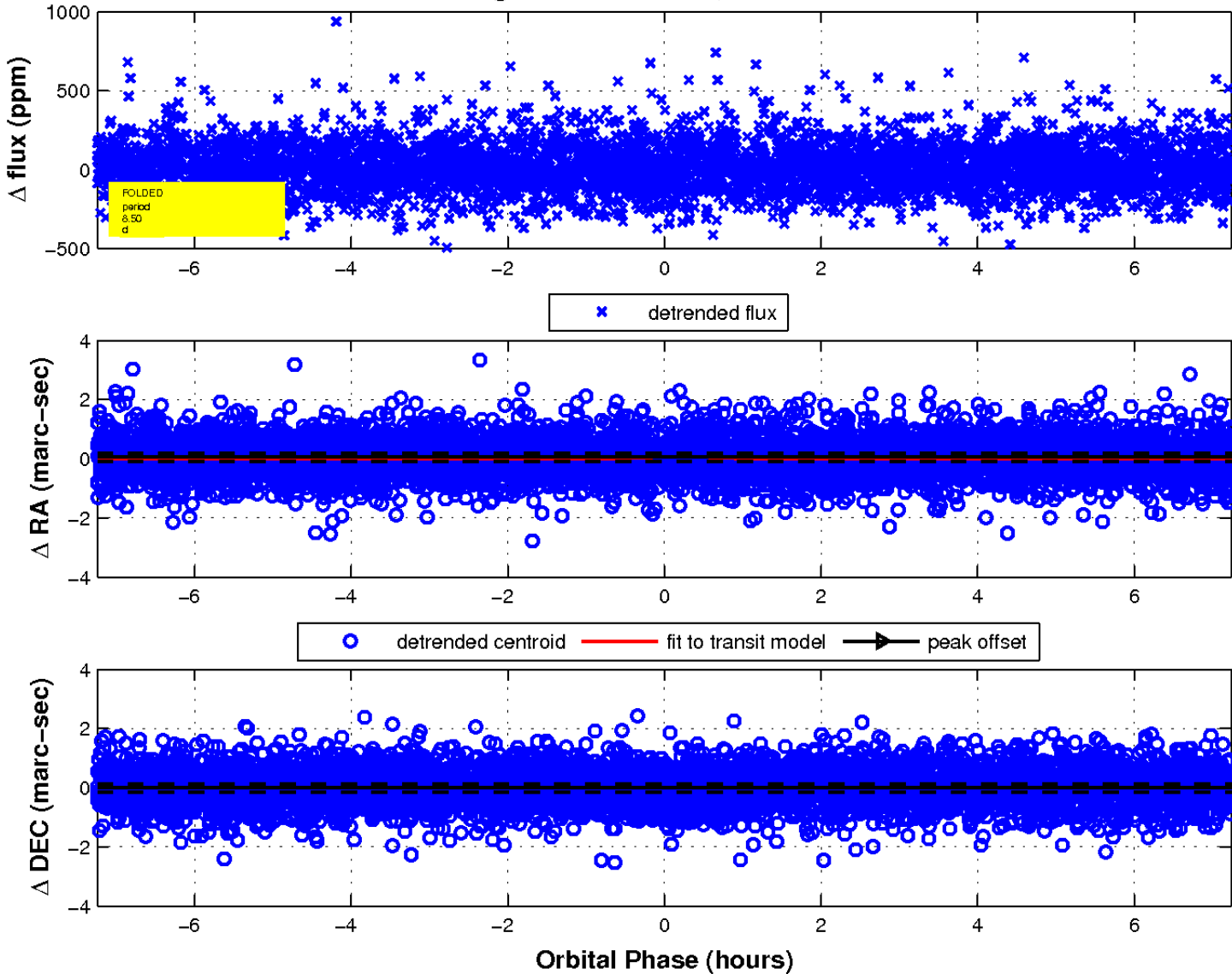
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 10 of 10



# UKIRT Image

Declination

