

# KIC 008244757

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008244757-01	OBS	No	0.680205	132.130772	99.7	2.532	17.8	13.2	2.08	7524	2.40	36948.80
008244757-02	OBS	No	2.160432	133.368976	183.9	3.894	9.7	10.2	2.08	7524	2.86	7914.06
008244757-03	OBS	No	1.192007	132.131480	118.8	4.962	8.6	7.6	2.08	7524	2.86	17488.31
008244757-04	OBS	No	1.270682	132.097680	198.3	3.510	9.9	9.1	2.08	7524	3.38	16059.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008244757-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008244757-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008244757-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008244757-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST

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

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

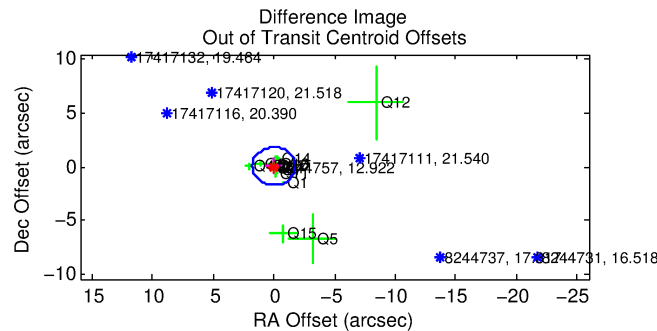
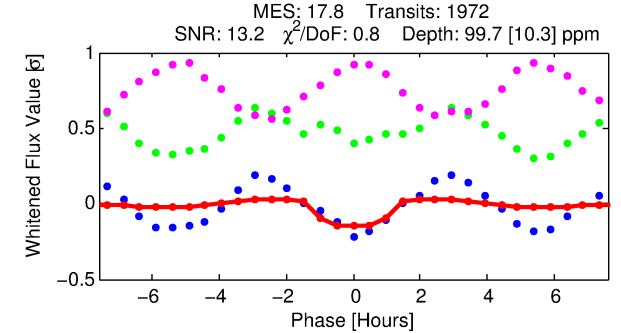
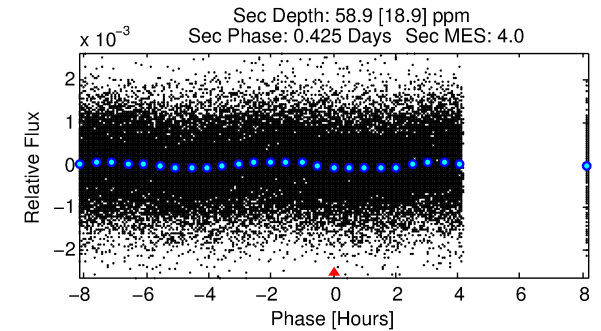
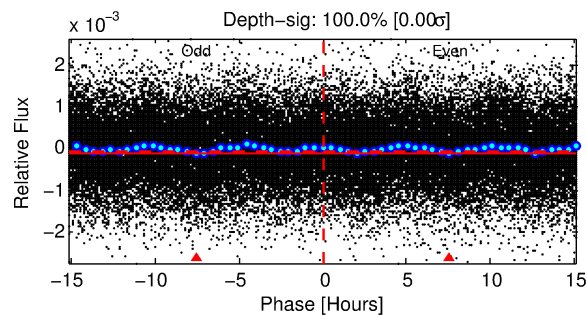
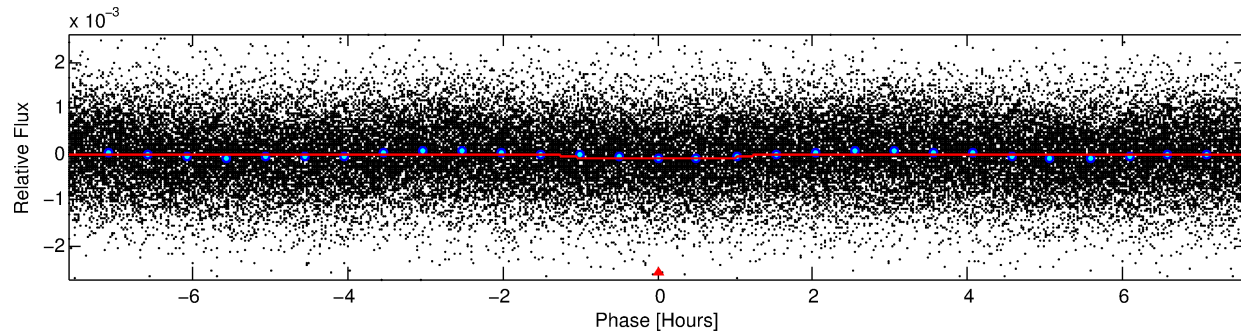
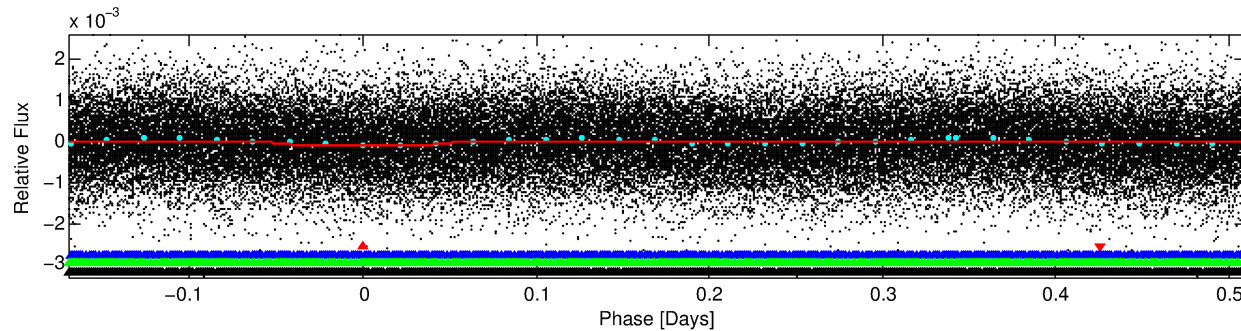
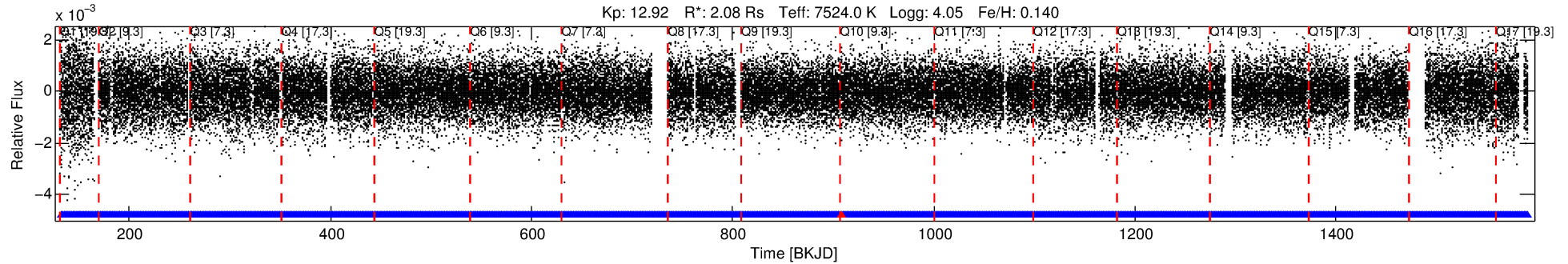
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008244757-01

No Significant Match Found

# DV One-Page Summary

KIC: 8244757 Candidate: 1 of 4 Period: 0.680 d



## DV Fit Results:

Period = 0.68020 [0.00001] d  
Epoch = 132.1308 [0.0022] BKJD  
Rp/R\* = 0.0106 [0.0042]  
a/R\* = 1.33 [1.53]  
b = 0.90 [0.56]  
Seff = 36948.80 [12814.03]  
Teq = 3535 [307] K  
Rp = 2.40 [1.15] Re  
a = 0.0183 [0.0039] AU  
Ag = 1.89 [1.71] [0.52σ]  
Teffp = 6405 [1407] K [1.99σ]

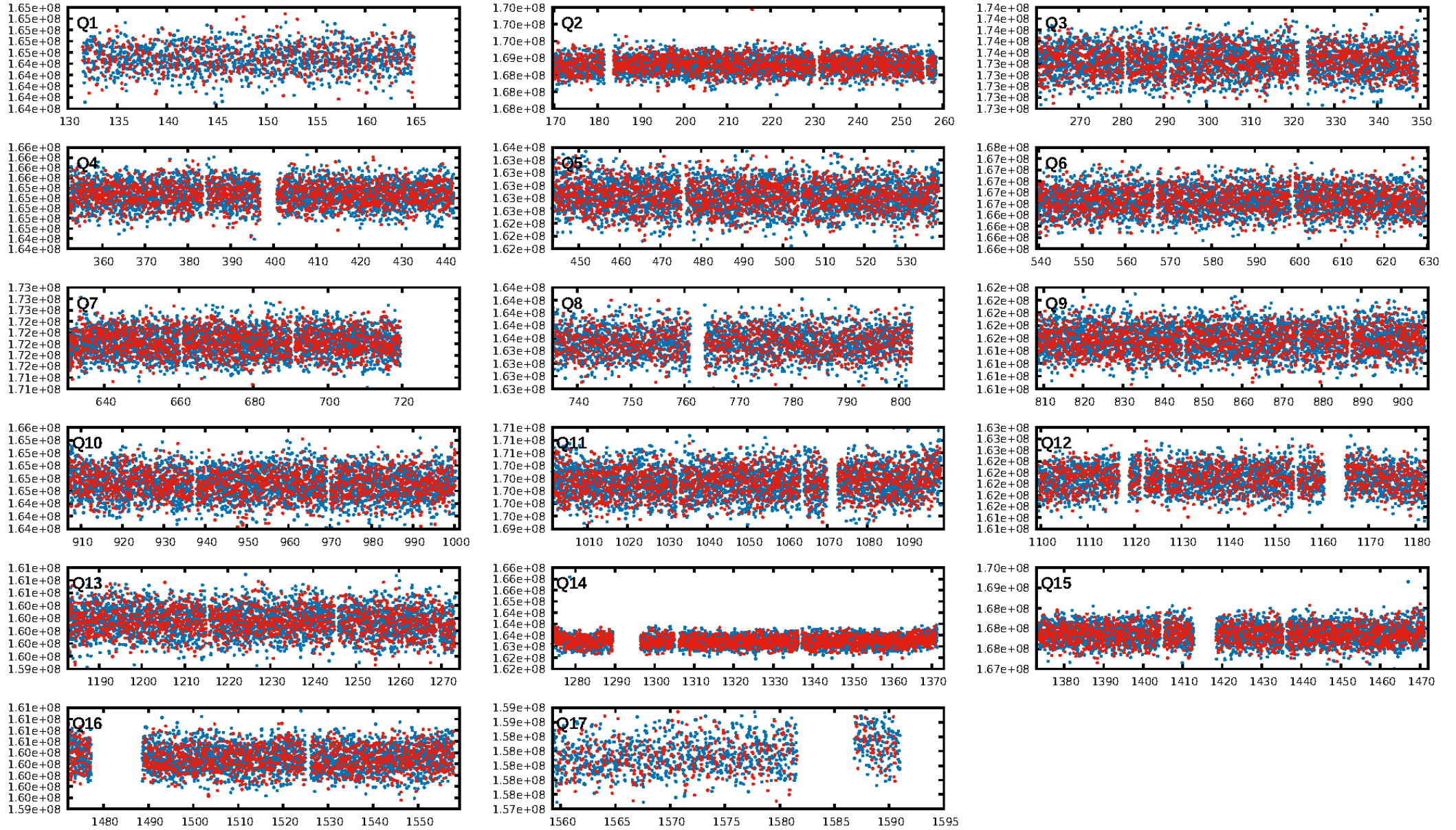
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 97.3% [2.20σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1882/1883]  
GhostDiagnostic-chr: 2.418  
Centroid-sig: 60.6%  
Centroid-so: 0.082 arcsec [0.61σ]  
OotOffset-rm: 0.051 arcsec [0.09σ]  
OotOffset-st: 3/3/4/5 [15]  
KicOffset-rm: 0.197 arcsec [0.29σ]  
KicOffset-st: 3/3/4/5 [15]  
DiffImageQuality-fgm: 0.20 [3/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:14:39 Z

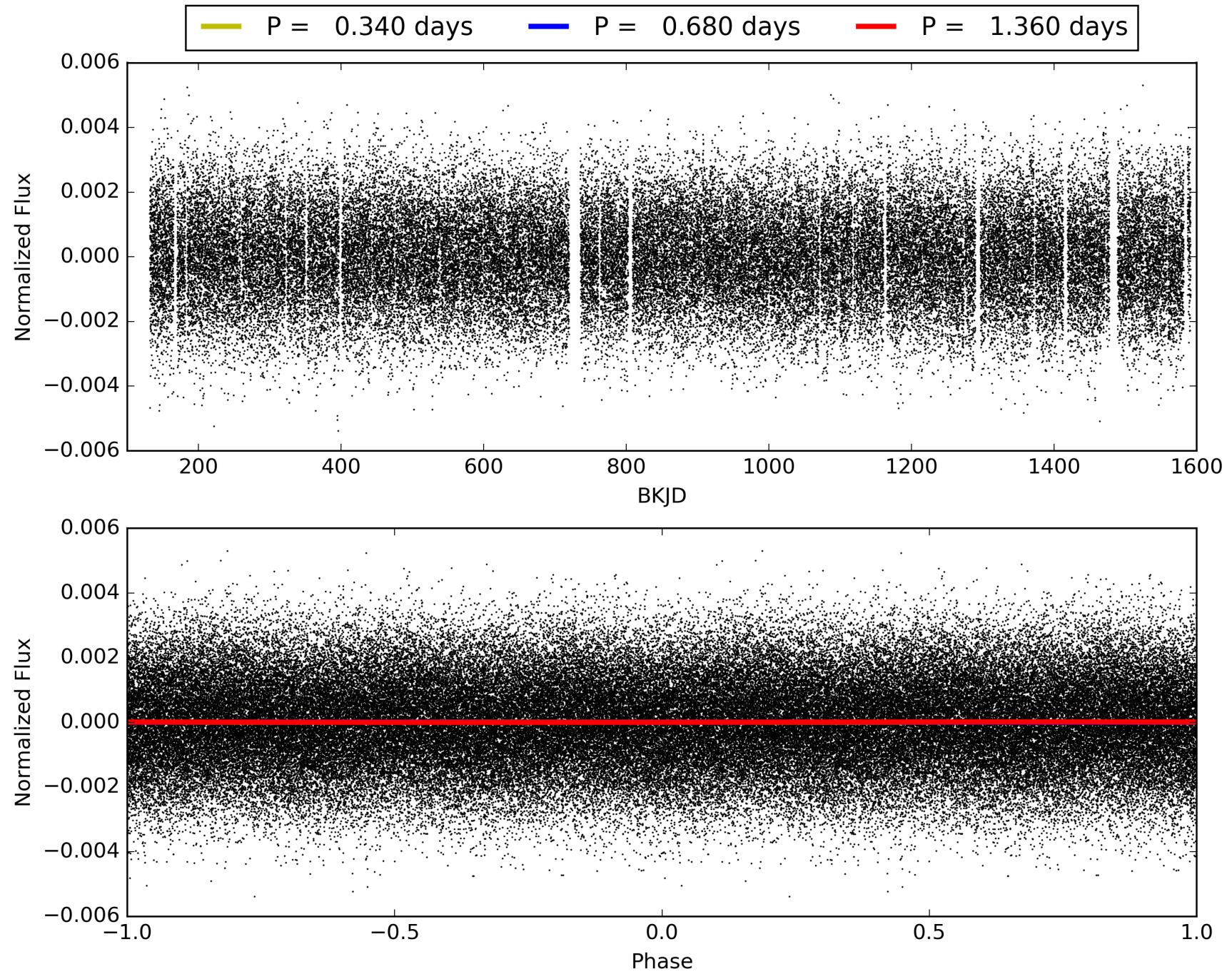
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008244757-01, PDC Light Curves





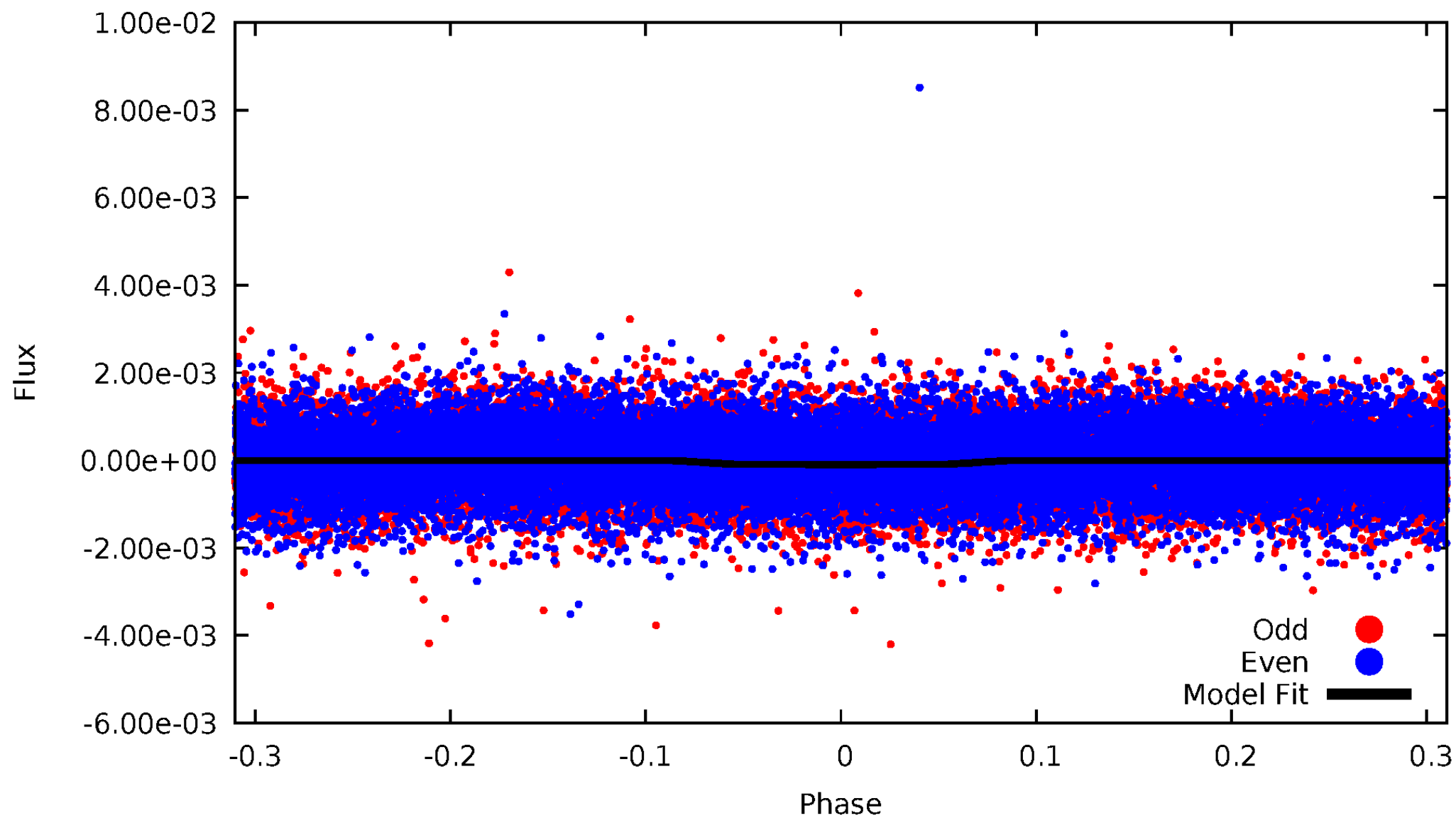
TCE 008244757-01





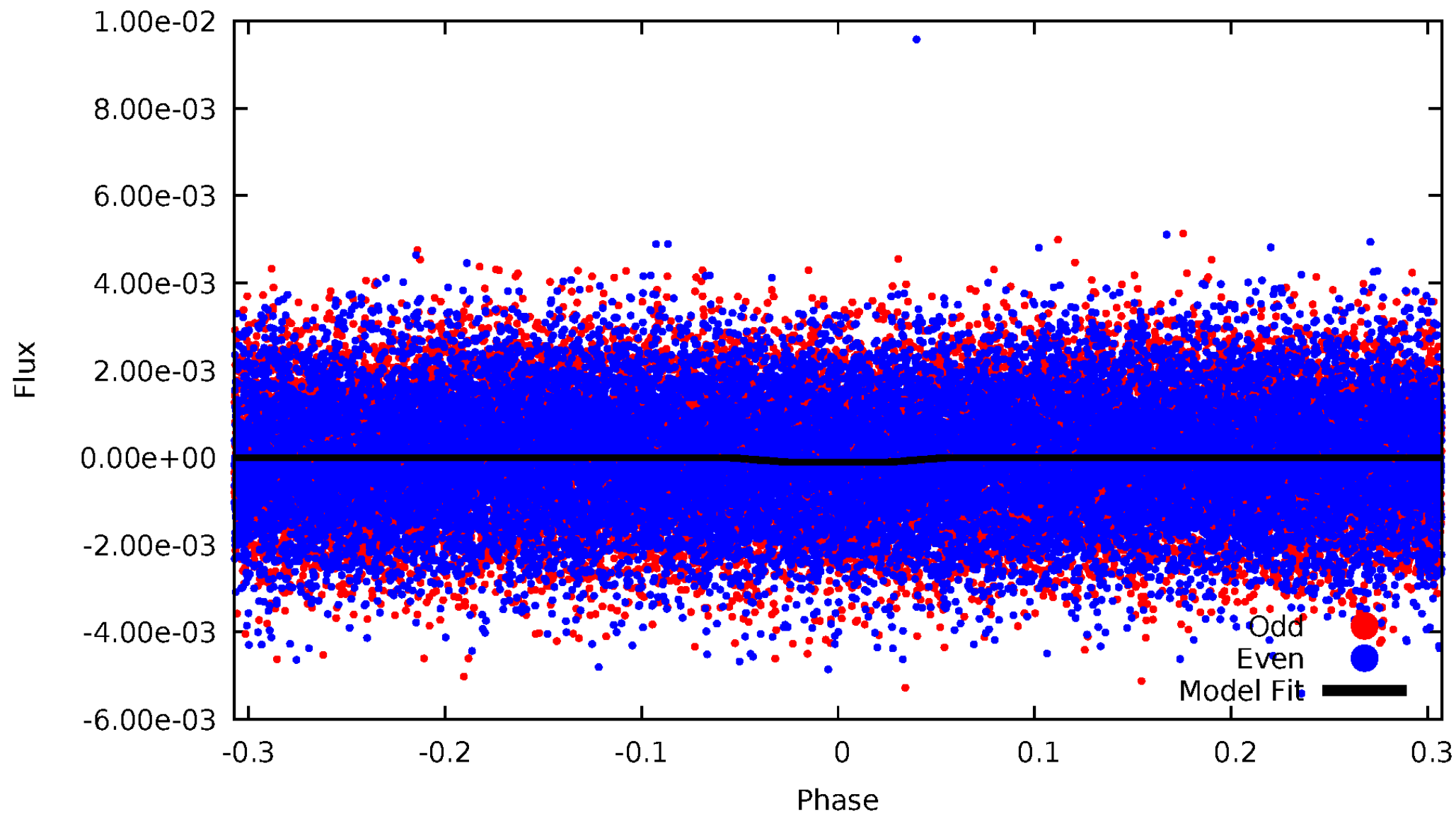
# DV Odd/Even

TCE 008244757-01

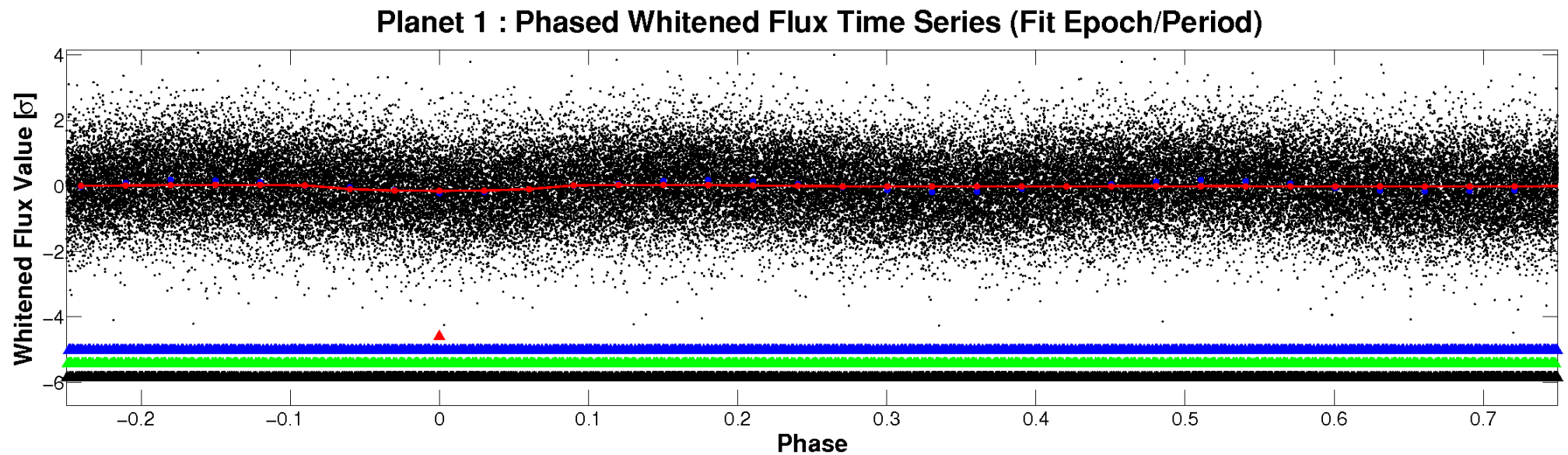
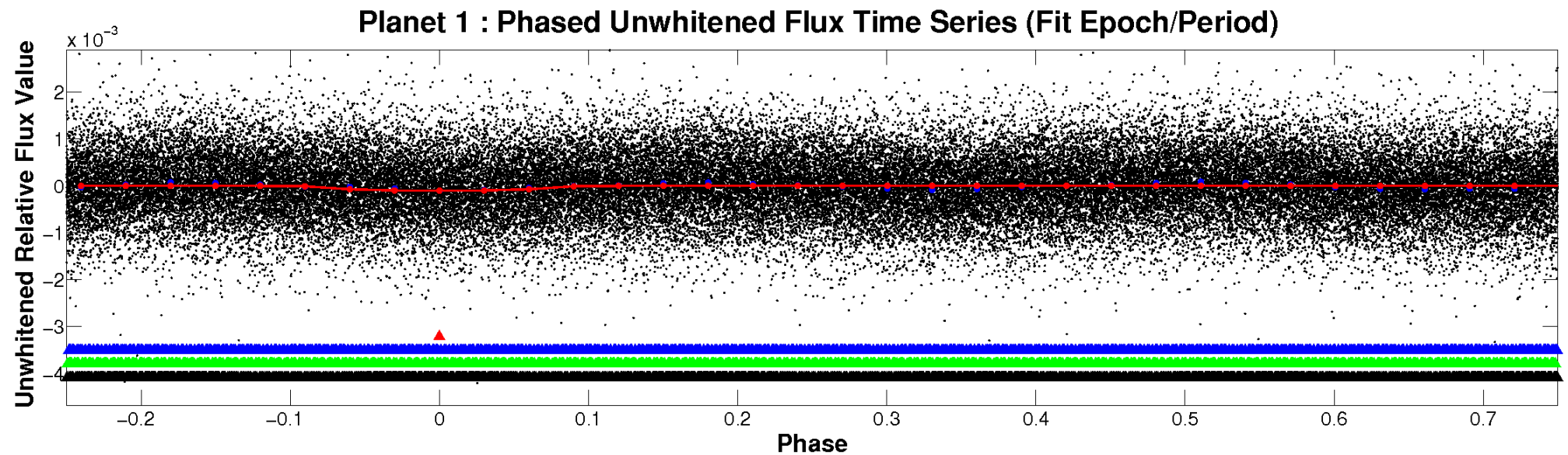


# ALT Odd/Even

TCE 008244757-01



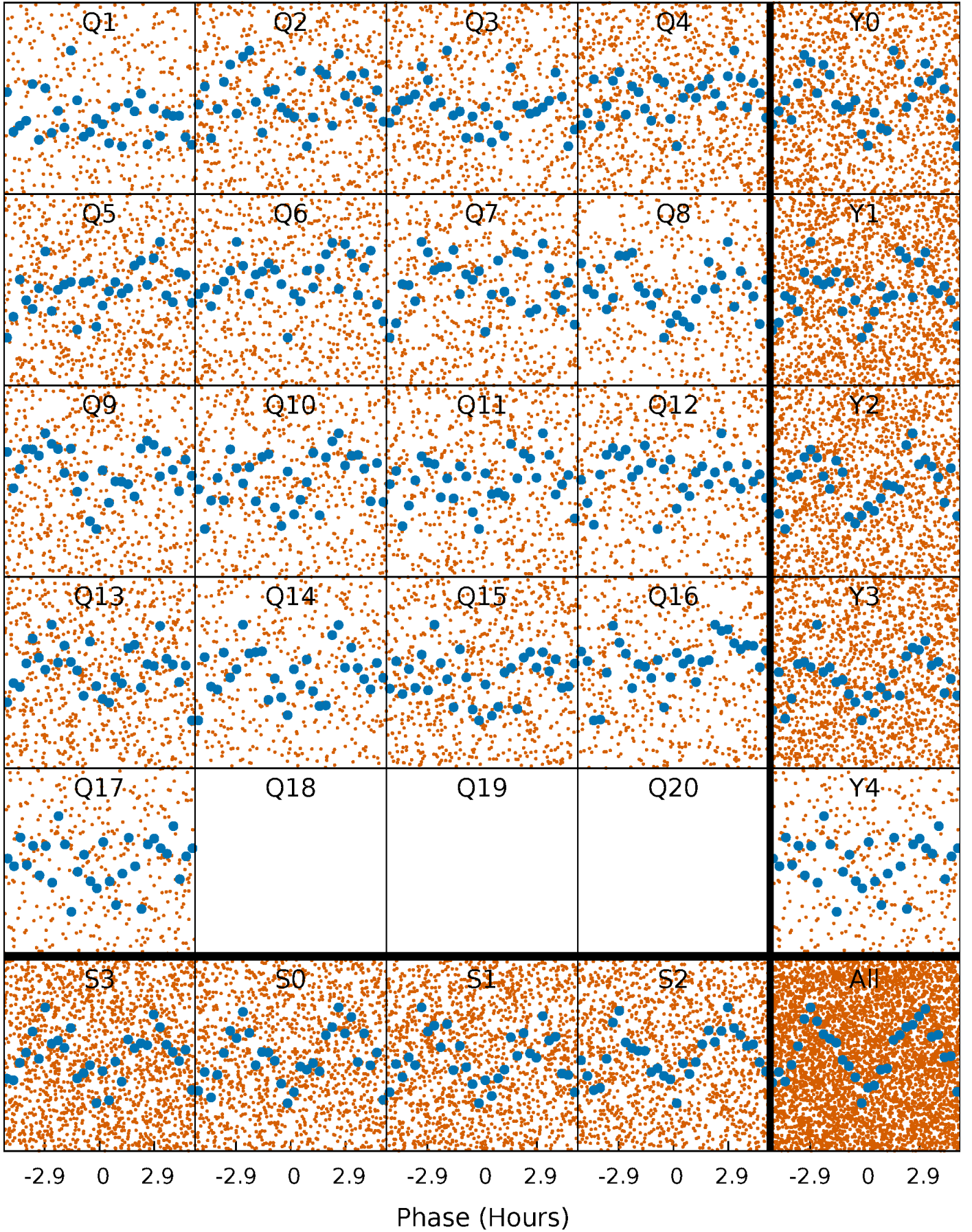
# Non-Whitened Vs. Whitened Light Curve





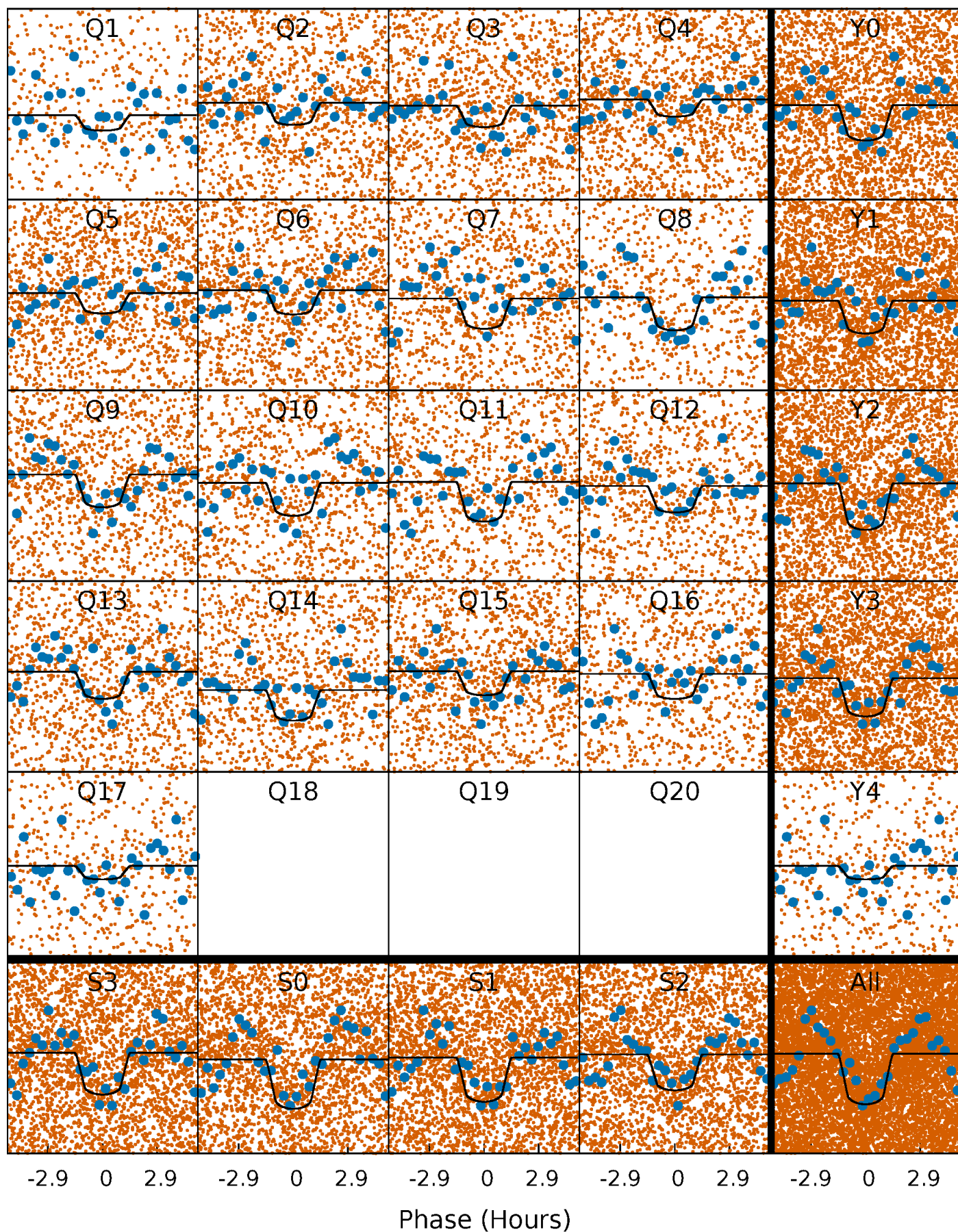
# PDC Quarter-Phased Transit Curves

TCE 008244757-01 P= 0.680205 Days  $T_0=132.130772$  (BKJD)



# DV Quarter-Phased Transit Curves

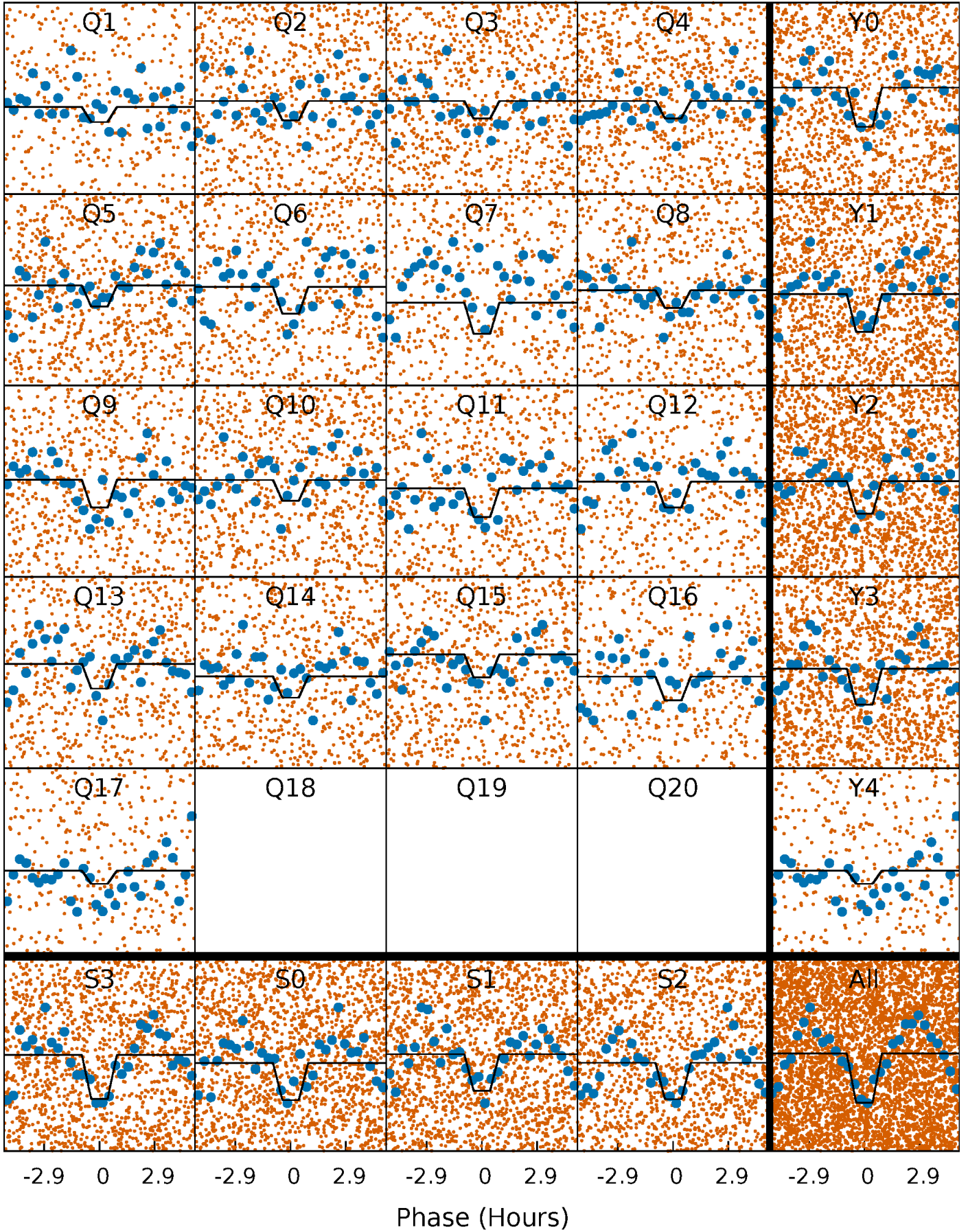
TCE 008244757-01 P= 0.680205 Days  $T_0=132.130772$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008244757-01 P= 0.680209 Days  $T_0=132.130530$  (BKJD)

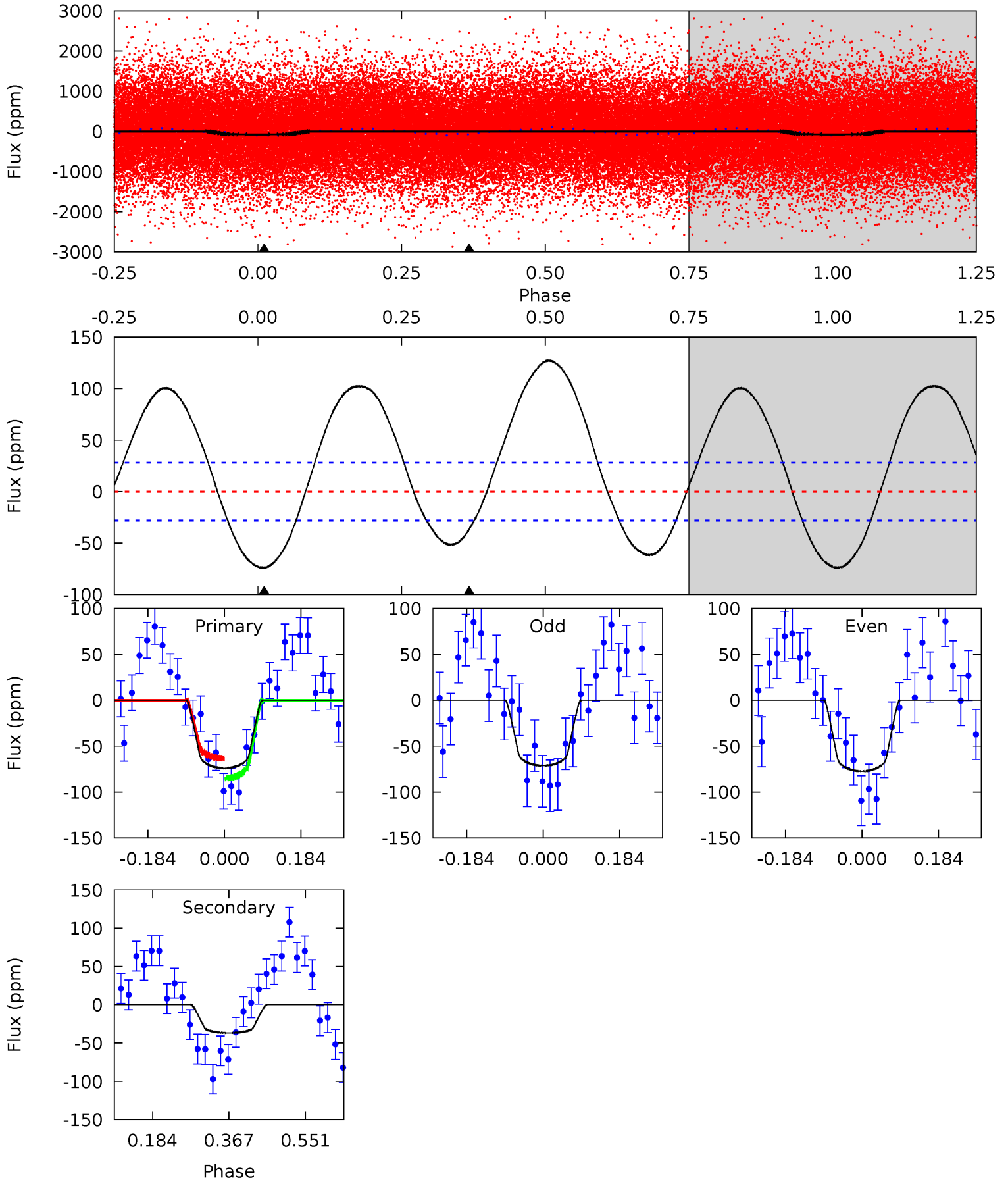




# DV Model-Shift Uniqueness Test

008244757-01, P = 0.680205 Days, E = 131.450567 Days

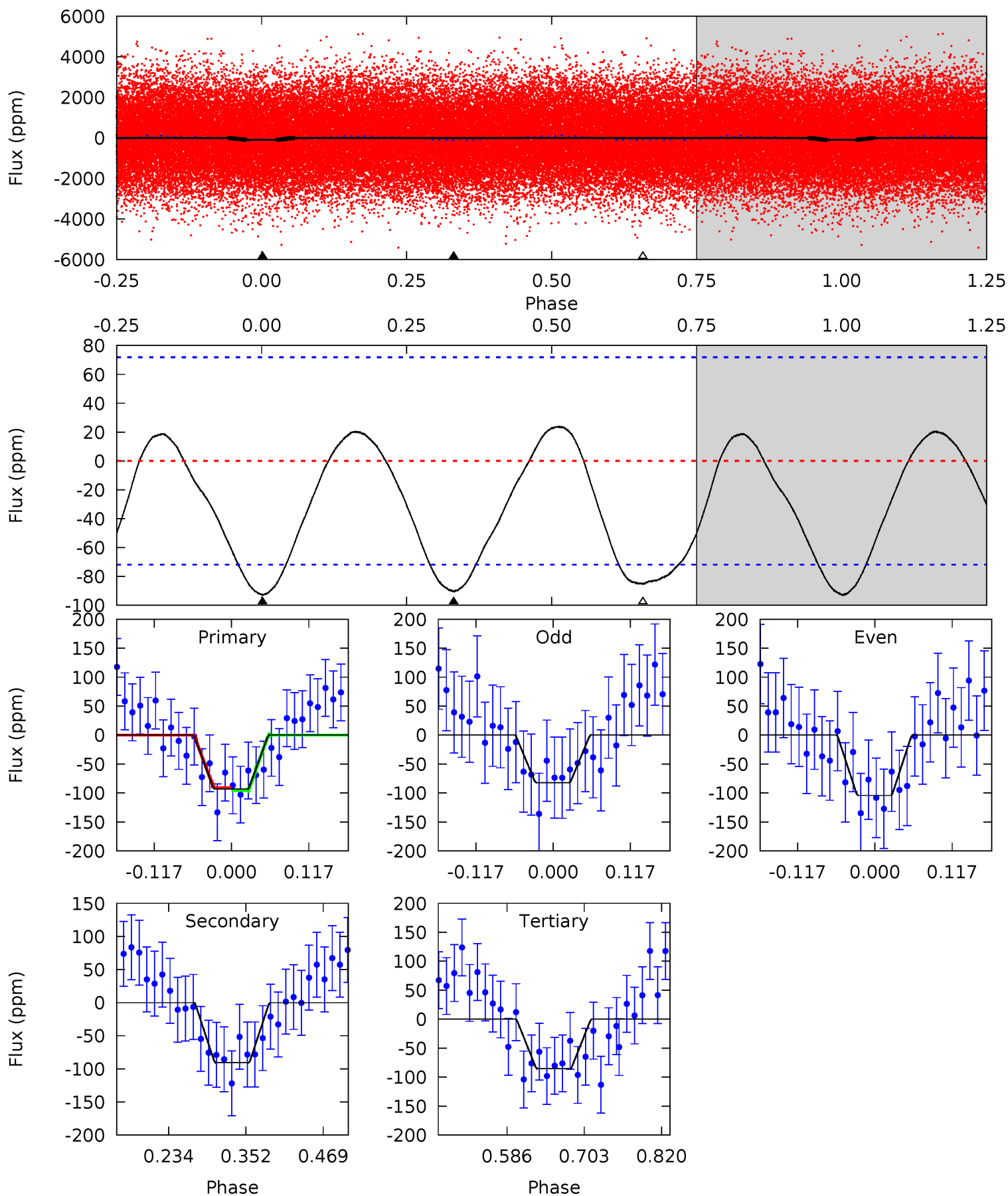
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	5.79	0	0	4.44	1.33	8.31	11.7	11.7	5.79	5.79	0.47	1.04	0.63	1.72



# Alt Model-Shift Uniqueness Test

008244757-01, P = 0.680209 Days, E = 131.450321 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
5.88	5.71	5.40	0	4.53	1.57	2.48	0.49	5.88	0.32	5.71	0.69	1.09	0.20	0.16



### Stellar Parameters For KIC 008244757

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7524^{+210}_{-341}$	$4.051^{+0.155}_{-0.155}$	$0.140^{+0.200}_{-0.400}$	$2.078^{+0.547}_{-0.448}$	$1.772^{+0.171}_{-0.293}$	$0.278^{+0.225}_{-0.123}$
	+3%/-5%	+4%/-4%	+143%/-286%	+26%/-22%	+10%/-17%	+81%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008244757-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-37 \pm 6$	$2.37^{+1.00}_{-0.94}$	$4922^{+357}_{-348}$	$5248^{+1752}_{-1092}$	$1.177^{+2.042}_{-0.600}$
Alt.	$-91 \pm 16$	$2.35^{+1.04}_{-1.00}$	$4895^{+368}_{-335}$	$6853^{+2971}_{-1306}$	$2.974^{+6.234}_{-1.561}$

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



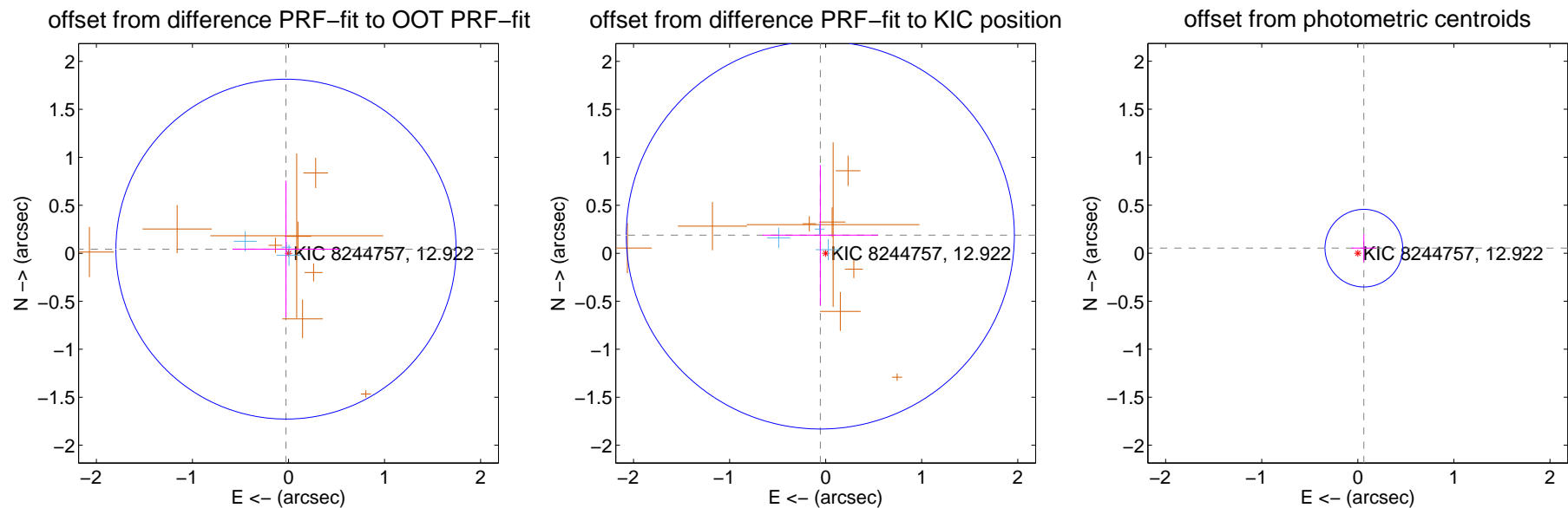
## DV Centroid Data

Supplemental centroid analysis for 008244757-01. Kepler magnitude: 12.92. Transit SNR 13.21

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

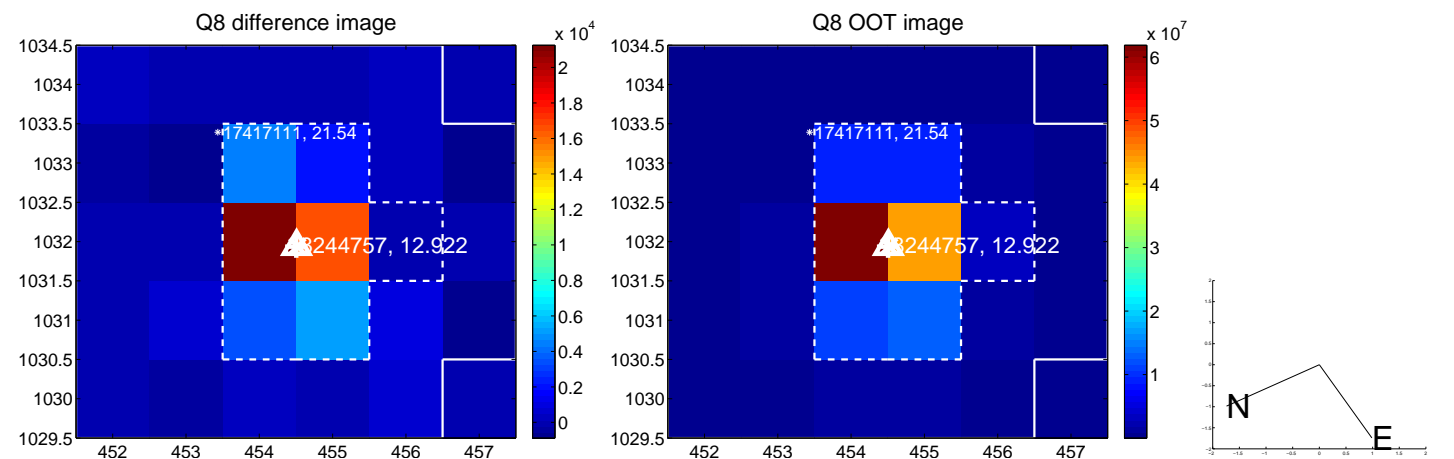
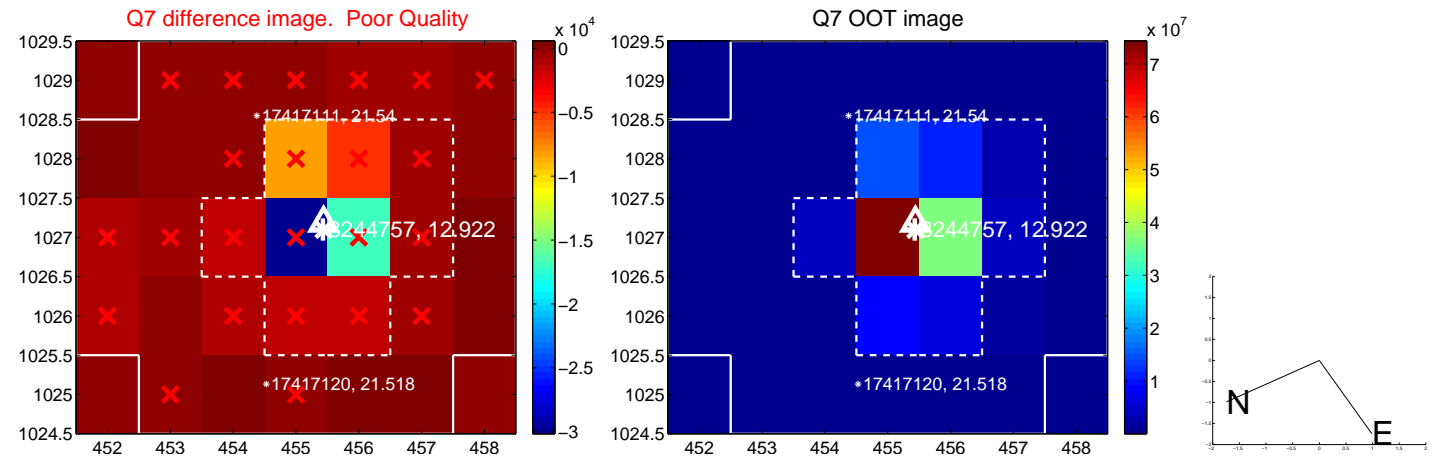
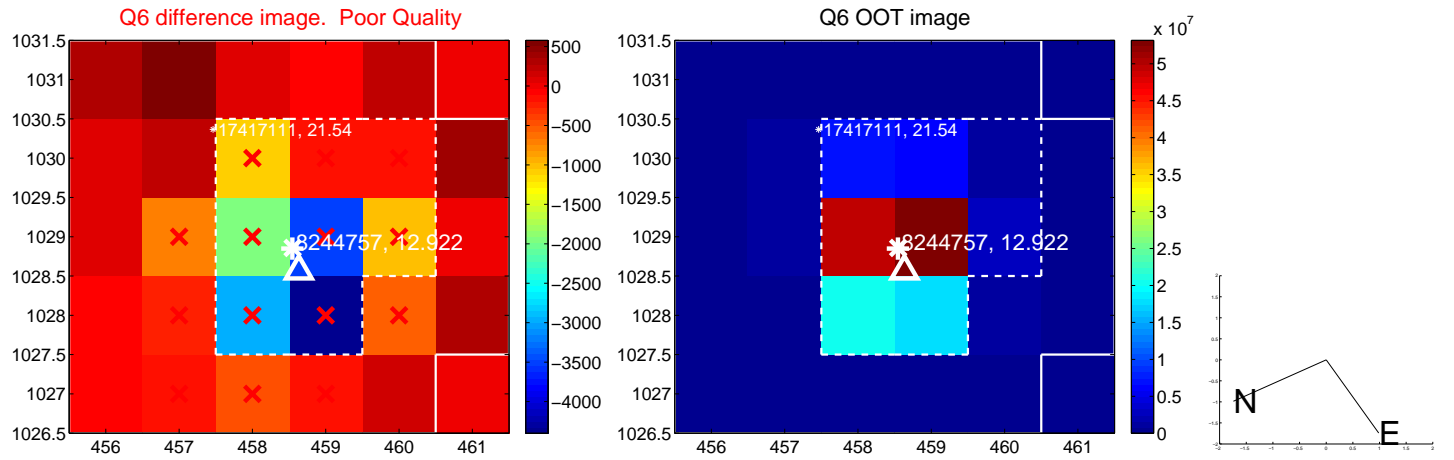
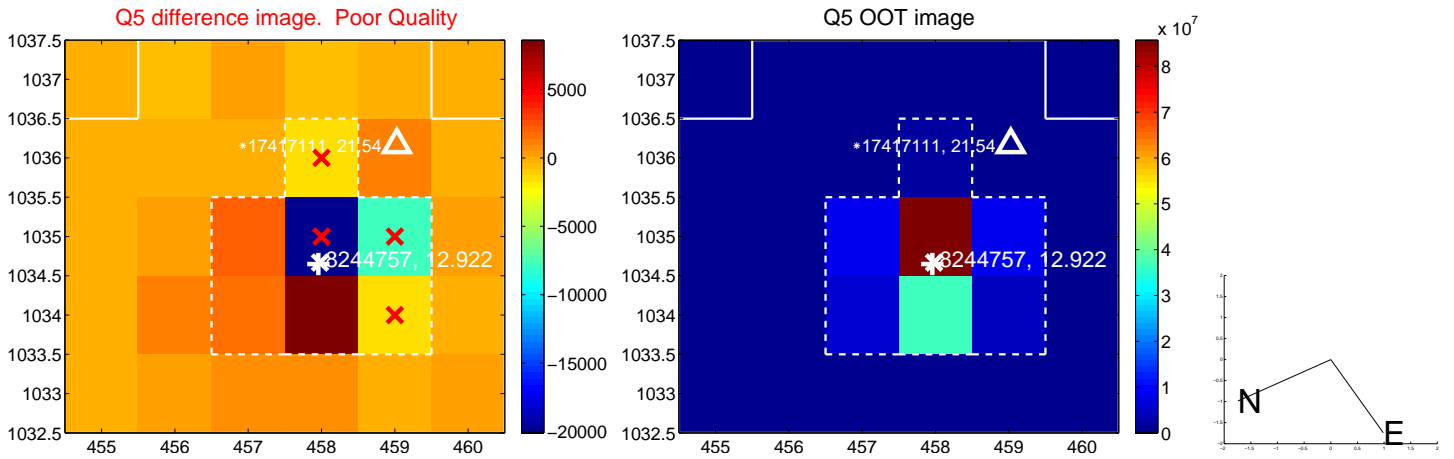
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.051 \pm 0.590$	0.09	$0.026 \pm 0.556$	$0.043 \pm 0.712$
PRF-fit source offset from KIC position	$0.197 \pm 0.673$	0.29	$0.055 \pm 0.600$	$0.189 \pm 0.732$
photometric centroid source offset	$0.08 \pm 0.13$	0.61	$-0.06 \pm 0.13$	$0.05 \pm 0.15$



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.

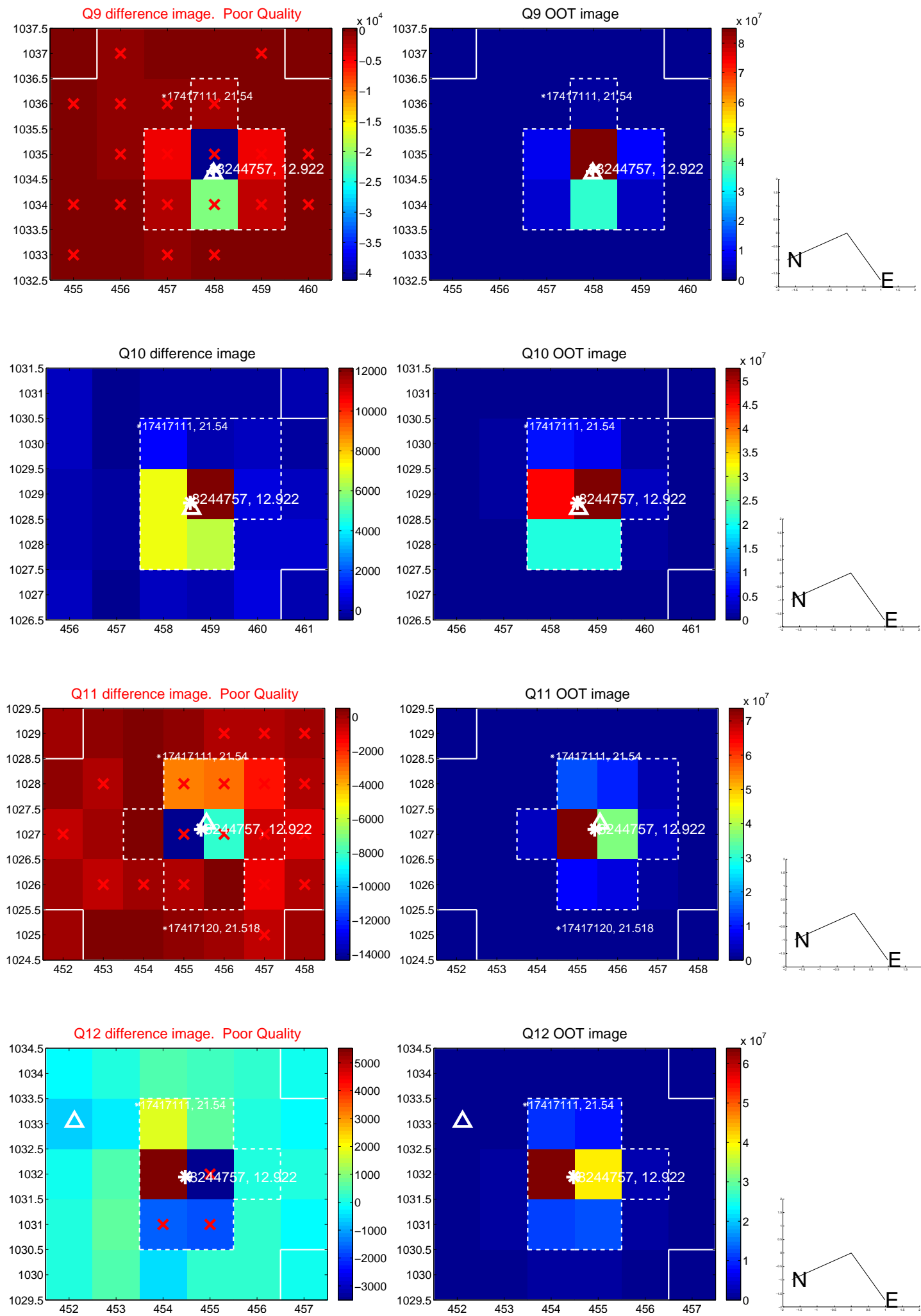


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

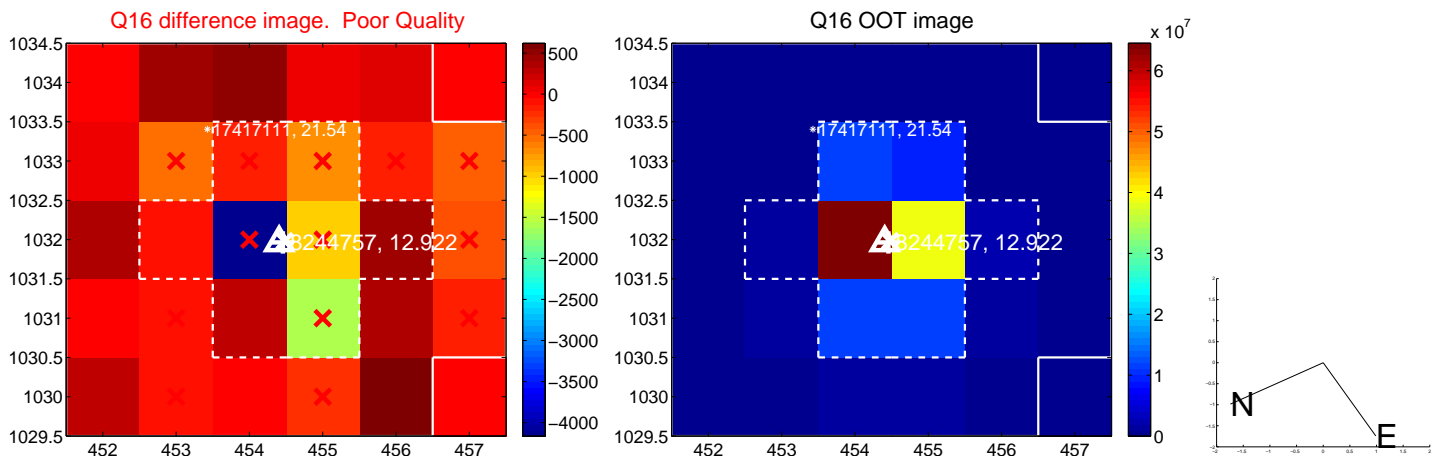
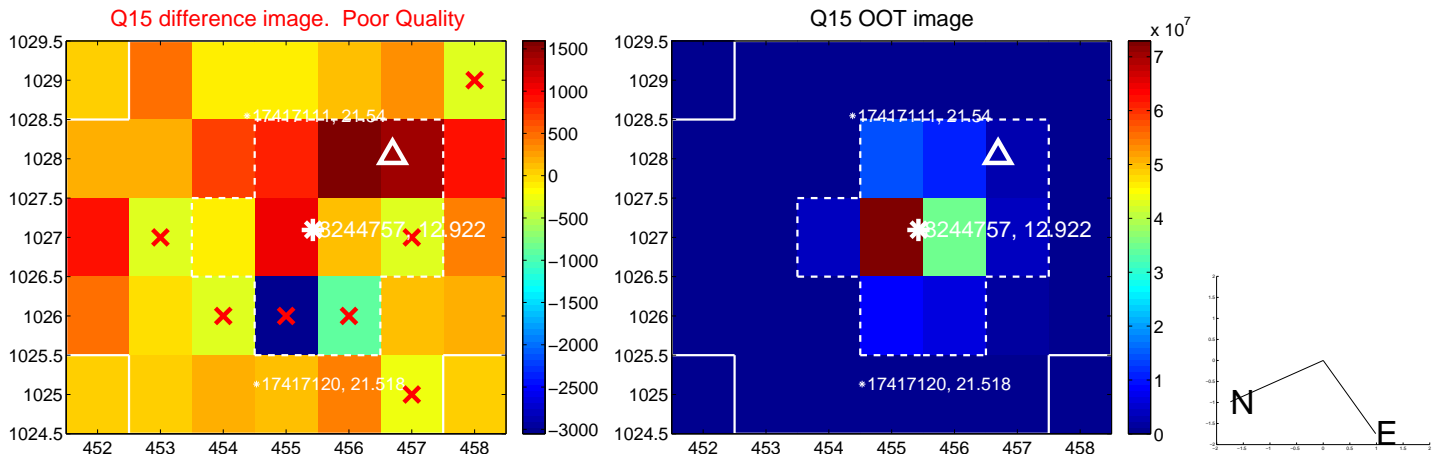
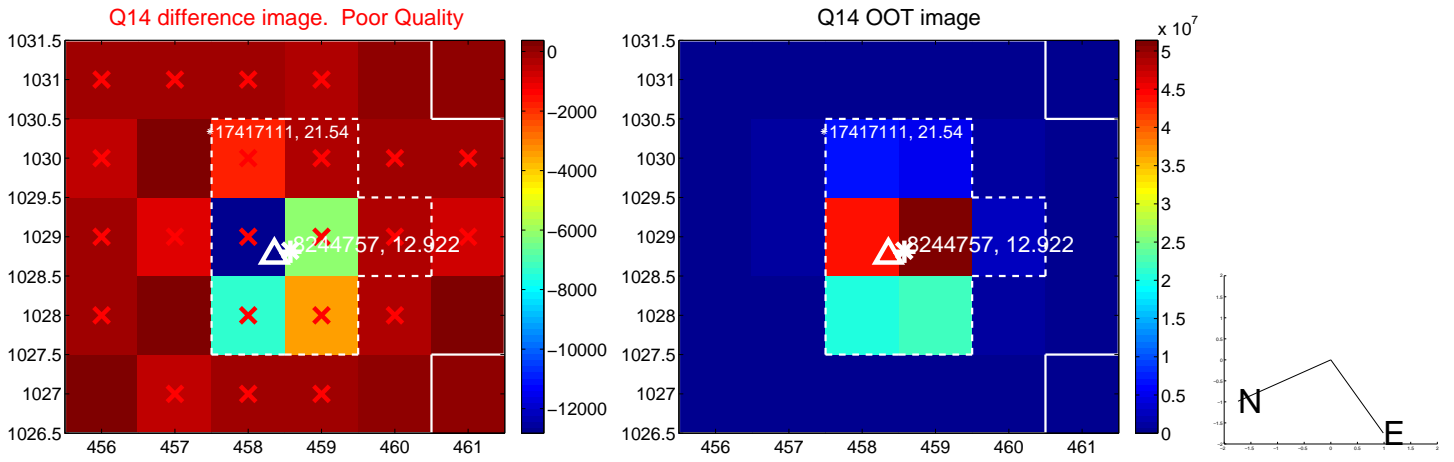
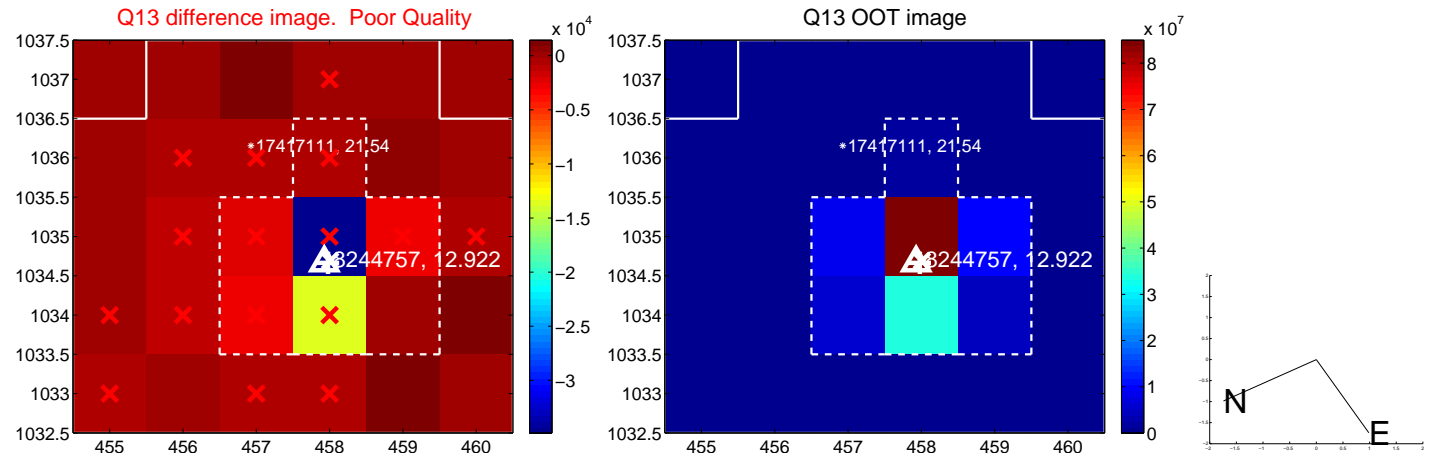




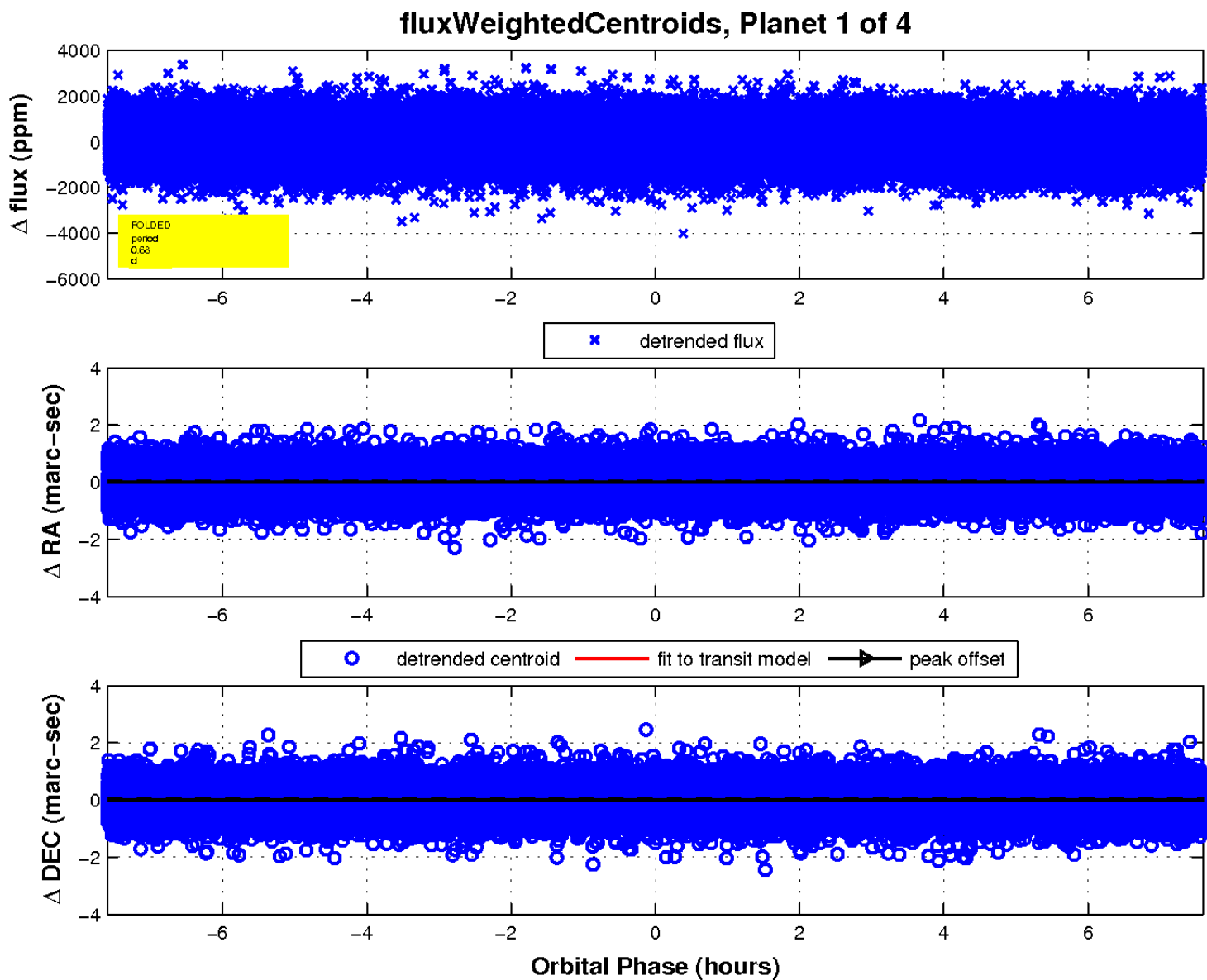
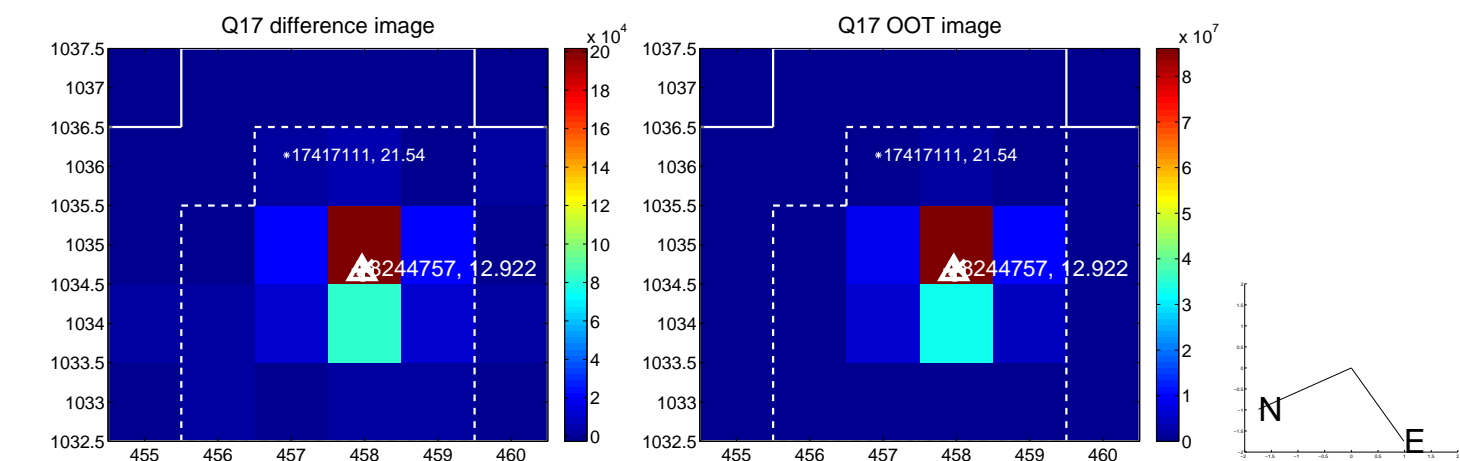
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



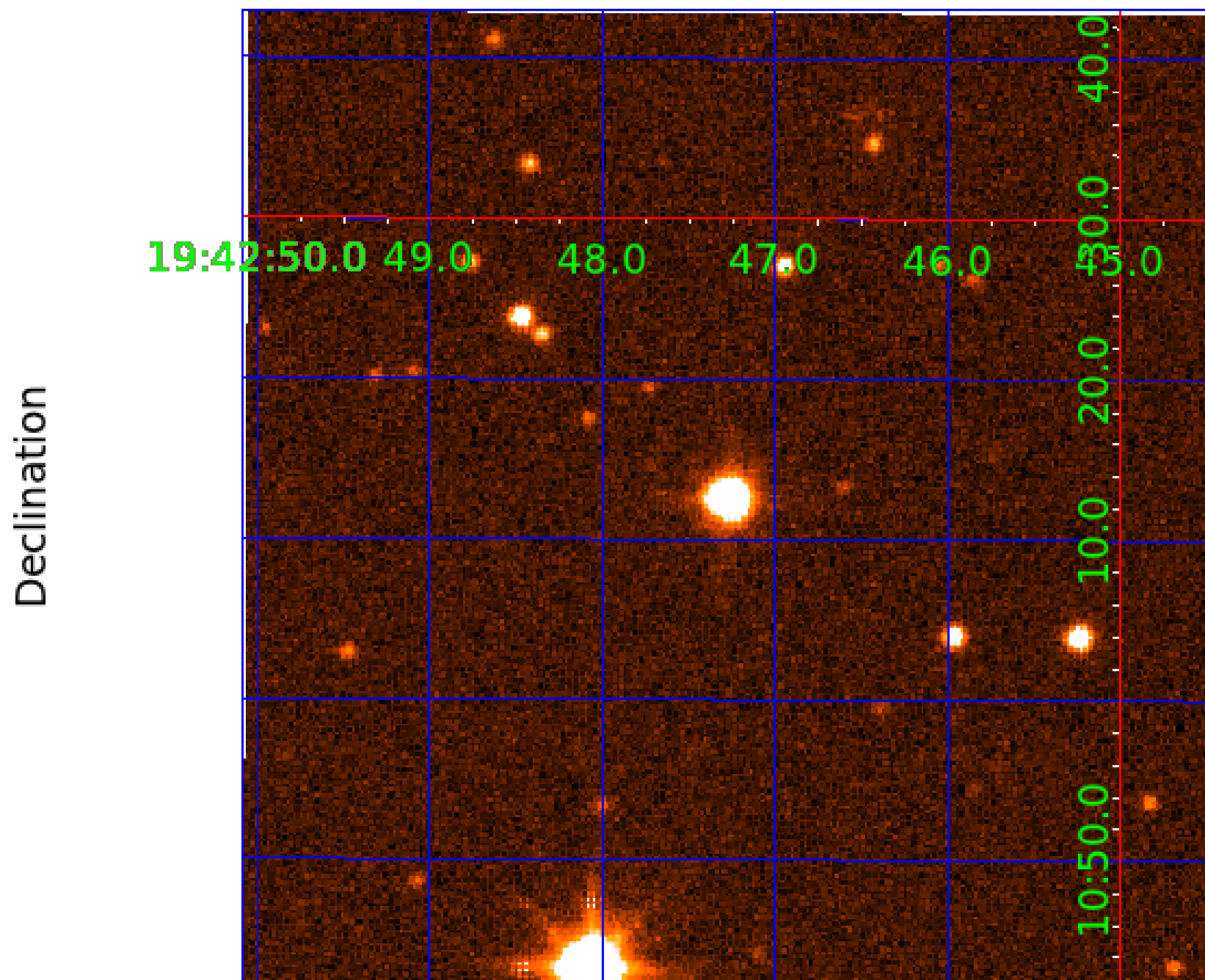
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 008244757

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008244757-01	OBS	No	0.680205	132.130772	99.7	2.532	17.8	13.2	2.08	7524	2.40	36948.80
008244757-02	OBS	No	2.160432	133.368976	183.9	3.894	9.7	10.2	2.08	7524	2.86	7914.06
008244757-03	OBS	No	1.192007	132.131480	118.8	4.962	8.6	7.6	2.08	7524	2.86	17488.31
008244757-04	OBS	No	1.270682	132.097680	198.3	3.510	9.9	9.1	2.08	7524	3.38	16059.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008244757-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008244757-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008244757-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008244757-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST

**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.

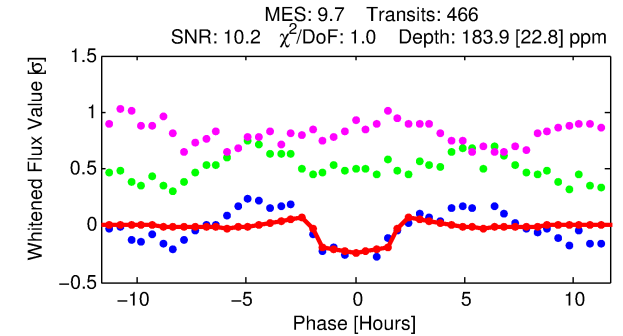
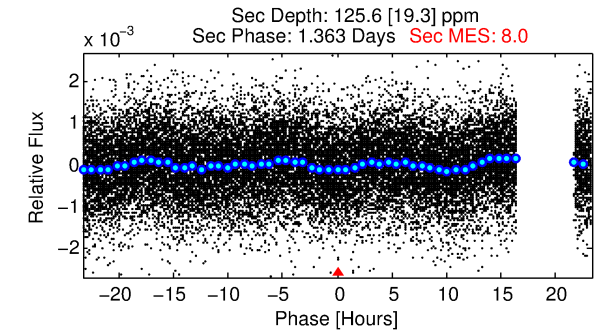
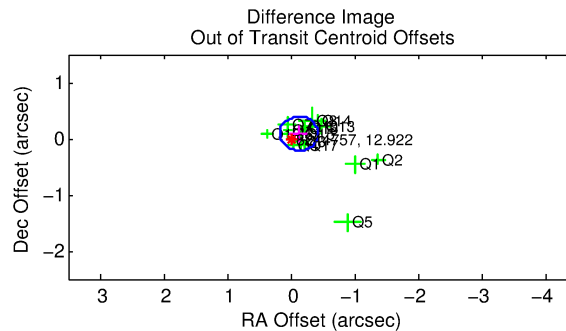
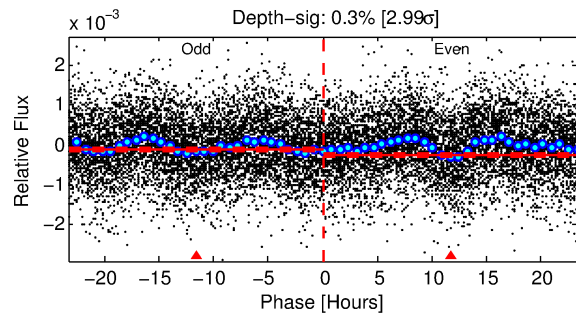
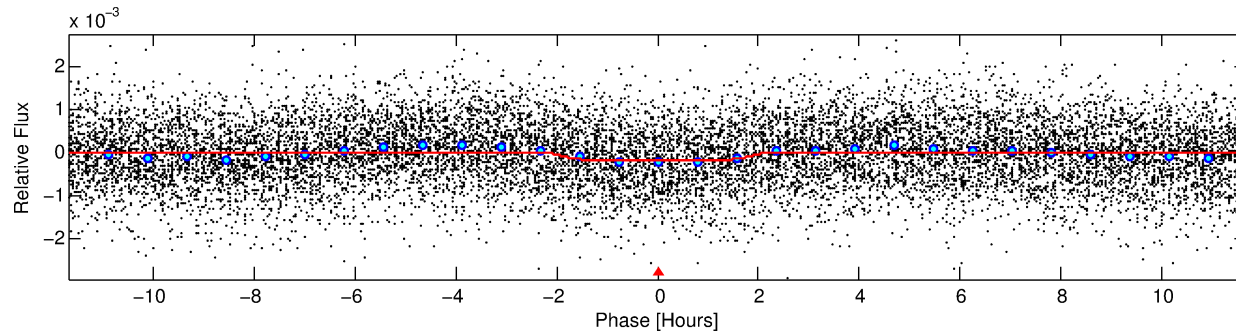
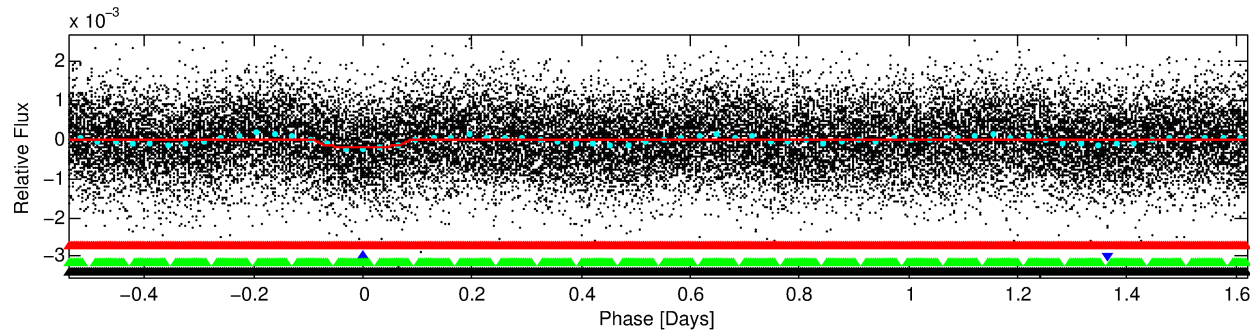
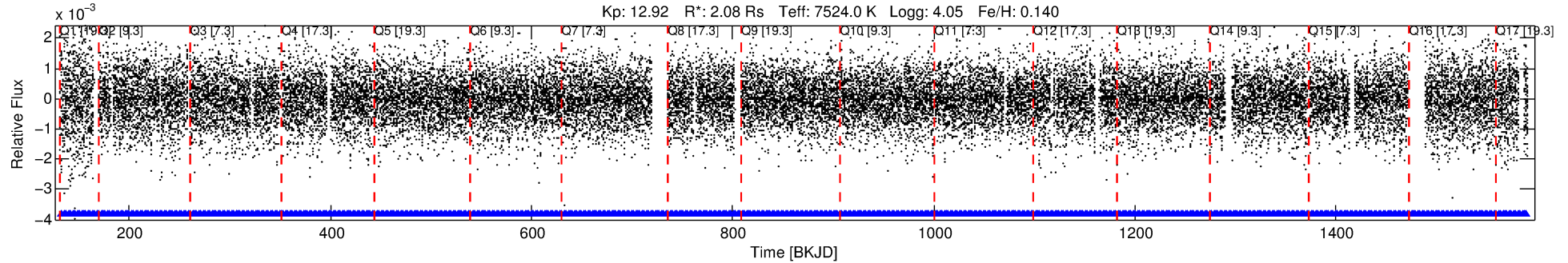
Ephemeris Match Information For 008244757-02

No Significant Match Found



# DV One-Page Summary

KIC: 8244757 Candidate: 2 of 4 Period: 2.160 d



## DV Fit Results:

Period = 2.16043 [0.00002] d  
Epoch = 133.3690 [0.0043] BKJD  
Rp/R\* = 0.0126 [0.0110]  
a/R\* = 4.31 [21.49]  
b = 0.10 [52.45]  
Seff = 7914.06 [2744.64]  
Teq = 2405 [209] K  
Rp = 2.86 [2.61] Re  
a = 0.0396 [0.0084] AU  
Ag = 13.19 [23.45] [0.52 $\sigma$ ]  
Teffp = 7087 [3122] K [1.50 $\sigma$ ]

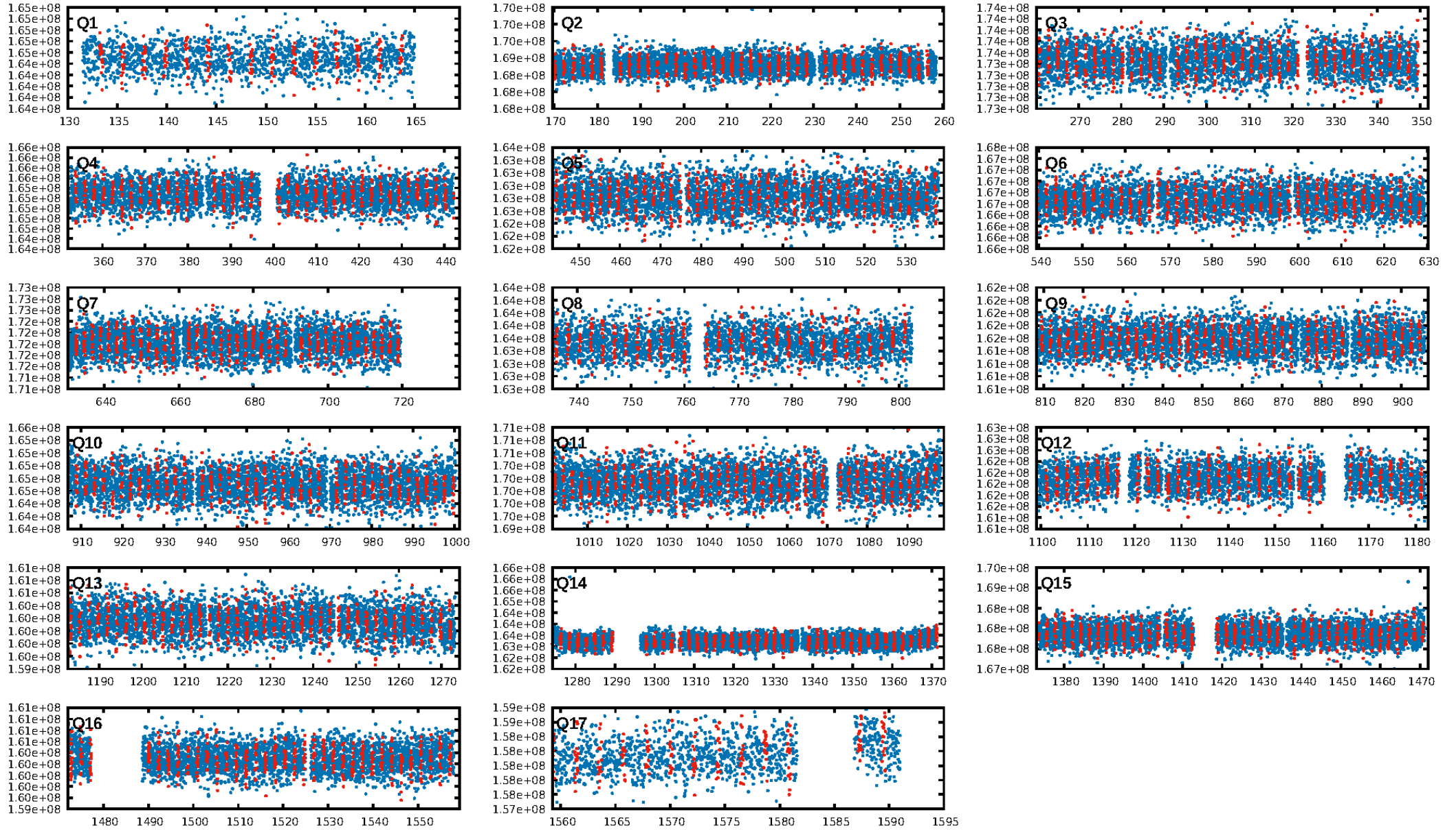
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.07 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgm: 1.00 [444/444]  
**GhostDiagnostic-chr: 0.9878**  
**Centroid-sig: 0.0%**  
Centroid-so: 0.105 arcsec [0.95 $\sigma$ ]  
OotOffset-rm: 0.156 arcsec [1.54 $\sigma$ ]  
KicOffset-rm: 0.168 arcsec [1.79 $\sigma$ ]  
OotOffset-st: 4/4/4 [16]  
KicOffset-st: 4/4/4 [16]  
DiffImageQuality-fgm: 0.88 [14/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:14:50 Z

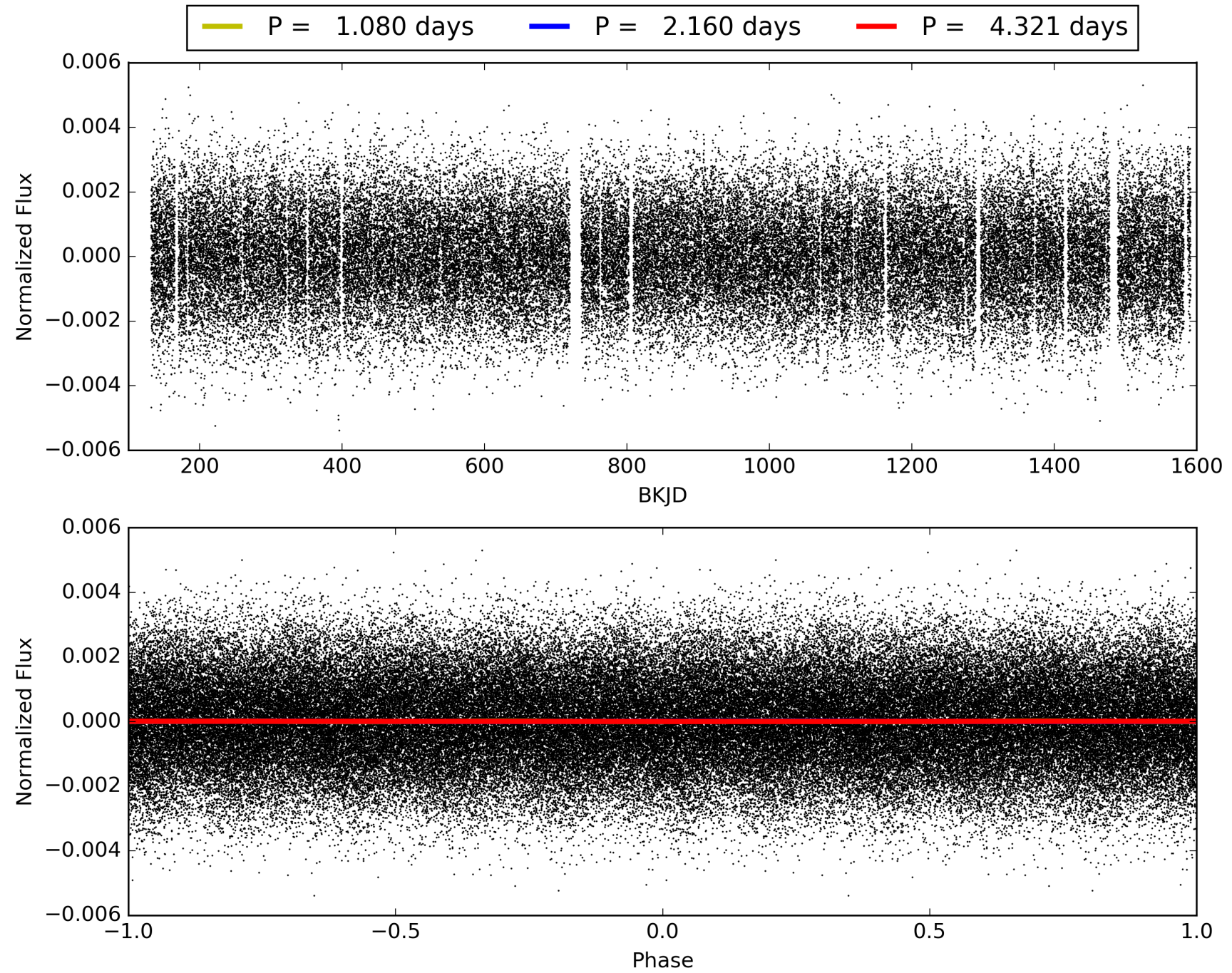
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008244757-02, PDC Light Curves



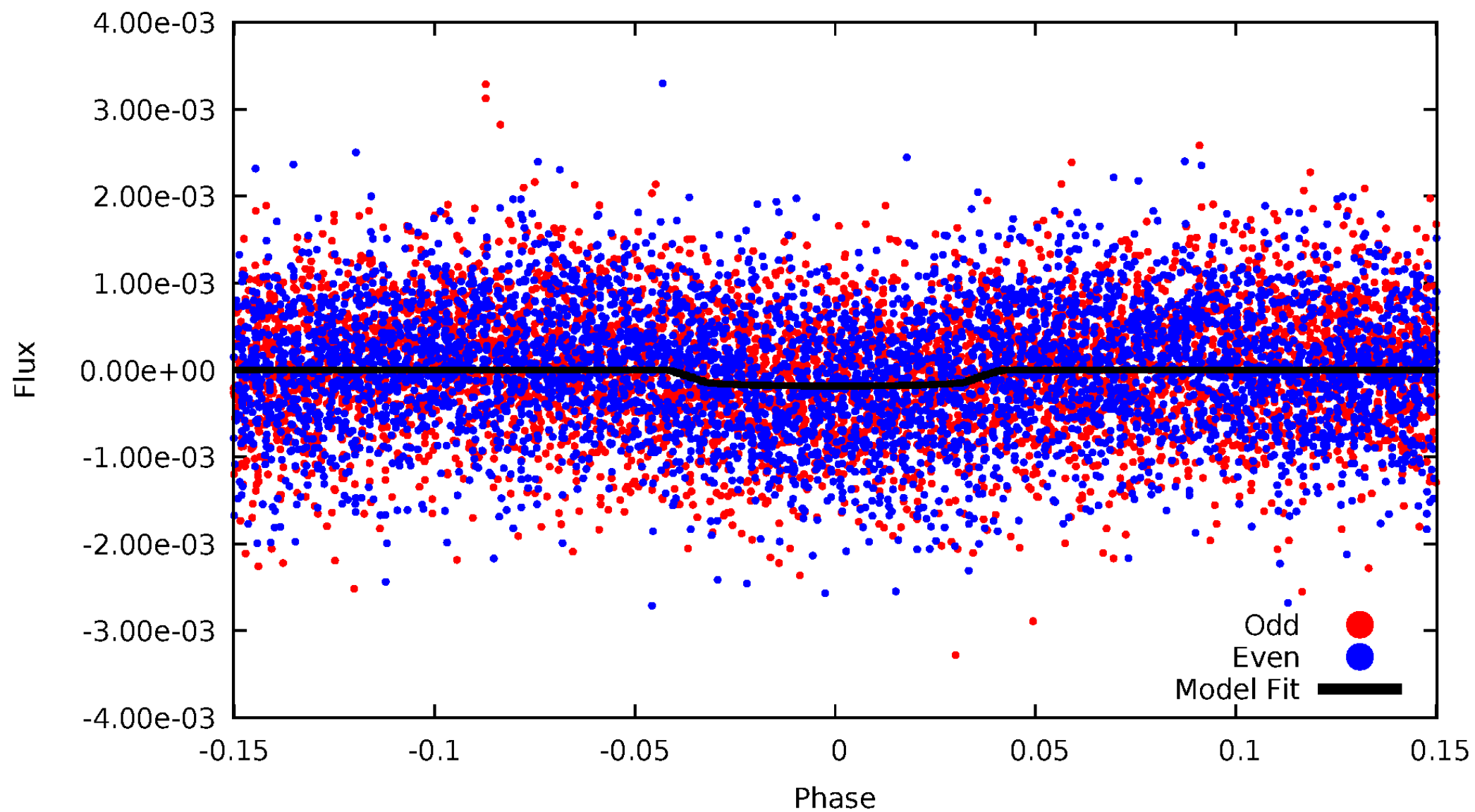


TCE 008244757-02



DV Odd/Even

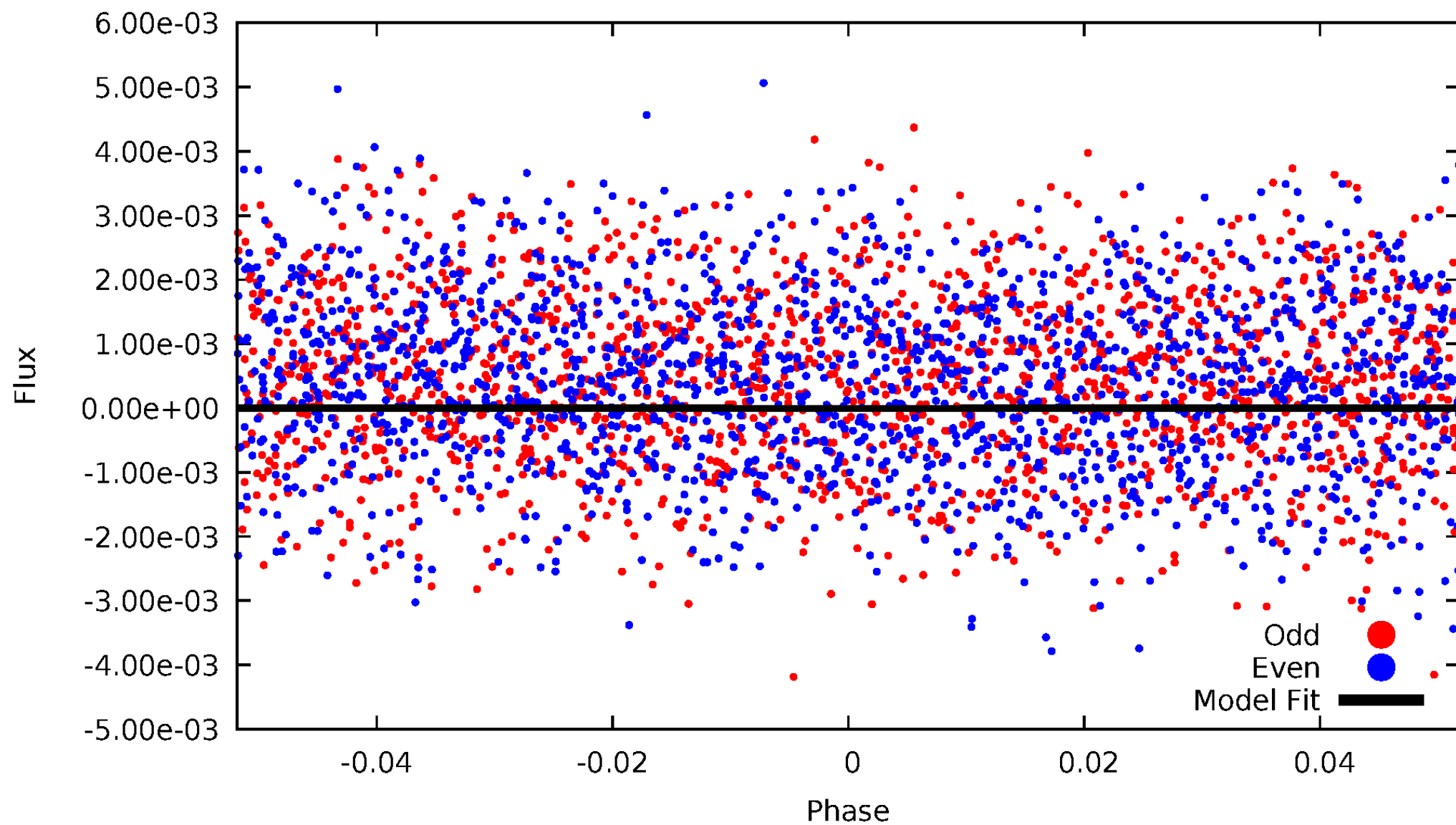
TCE 008244757-02





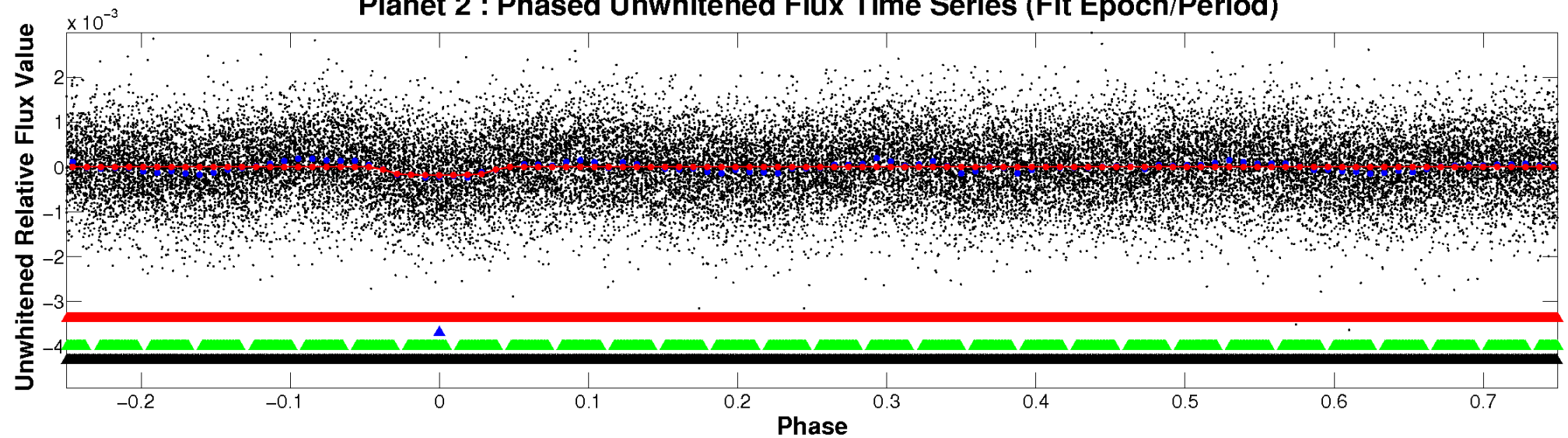
# ALT Odd/Even

TCE 008244757-02

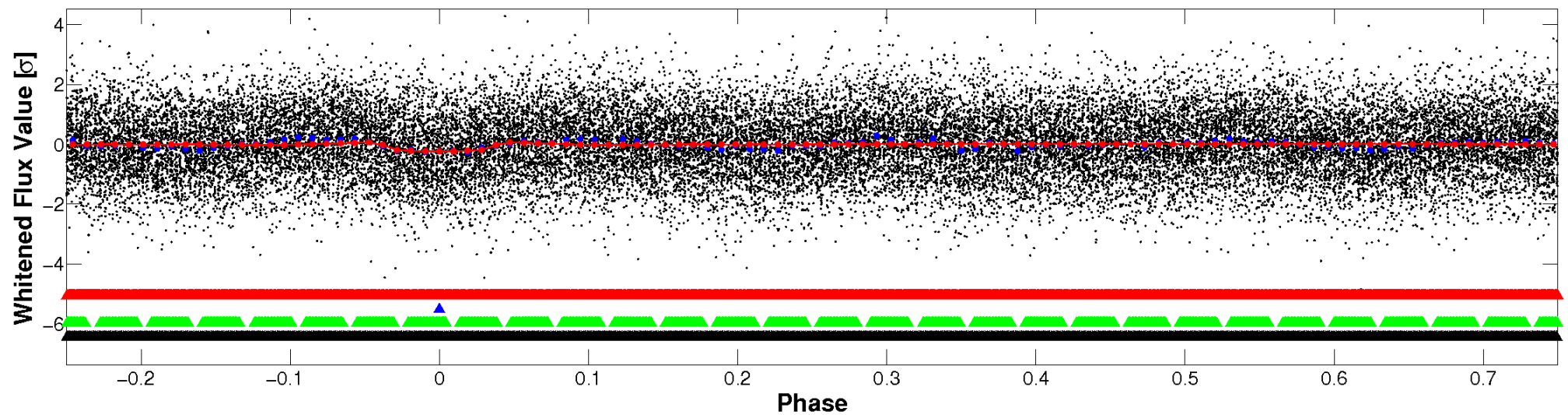


# Non-Whitened Vs. Whitened Light Curve

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

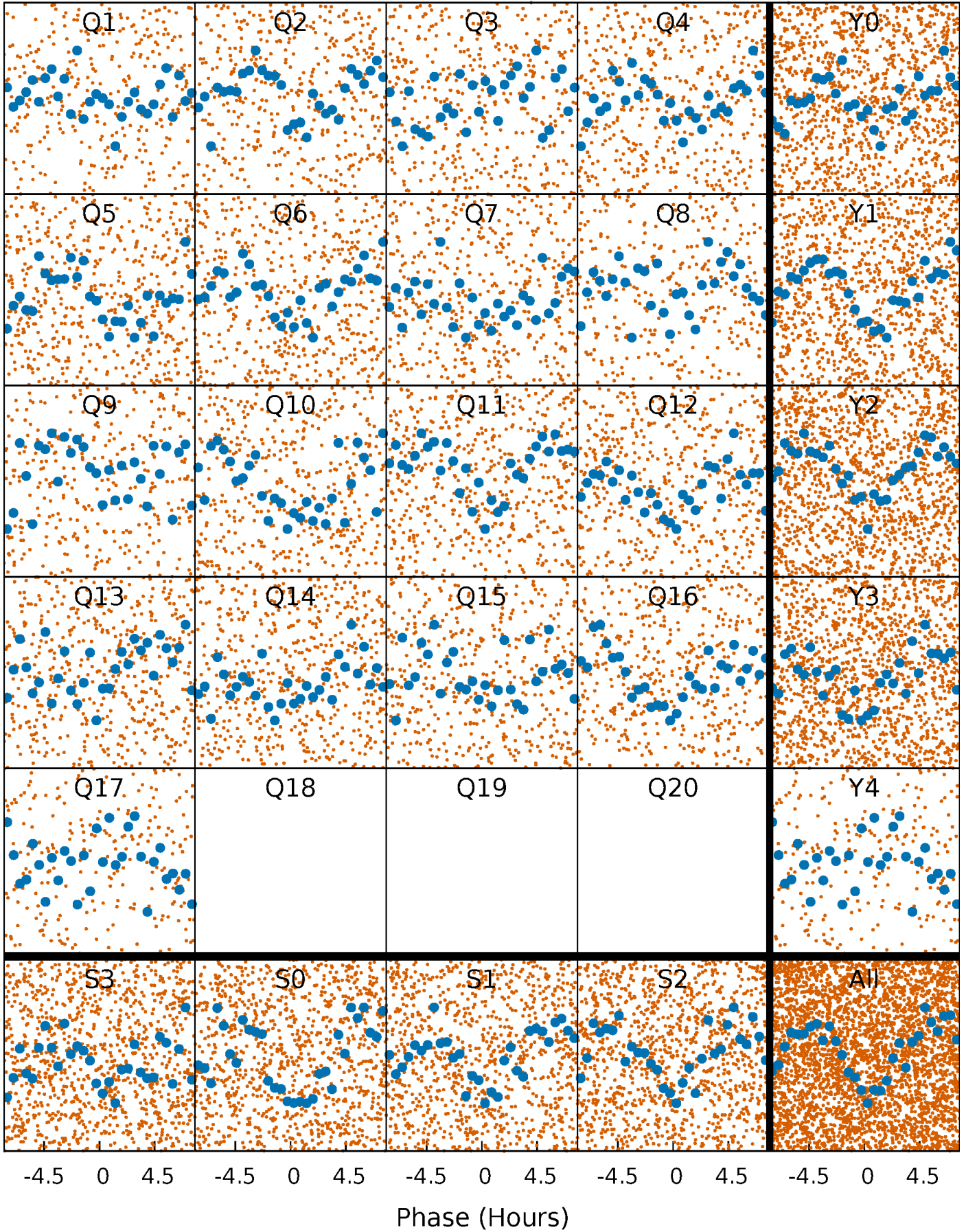


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

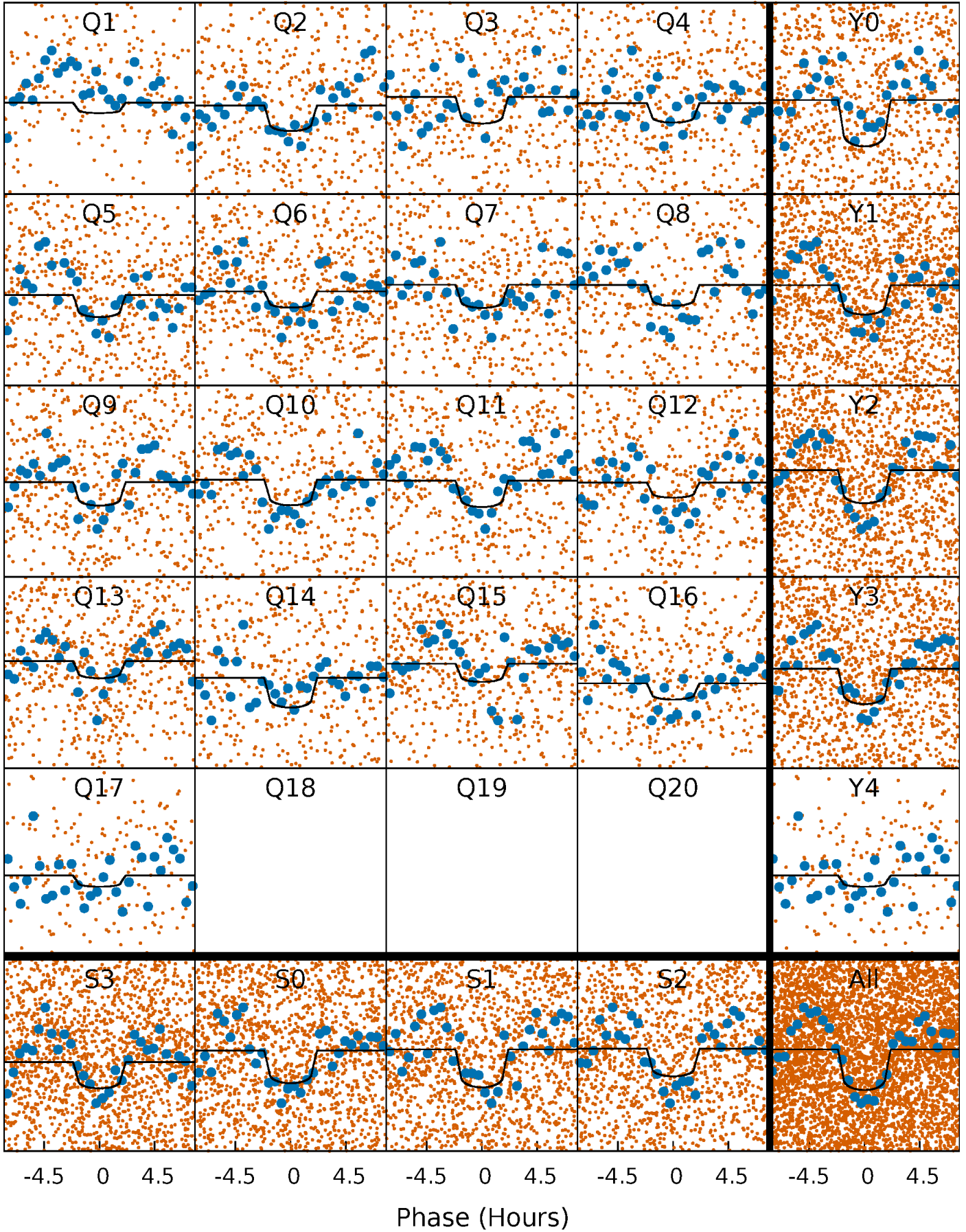
TCE 008244757-02   P= 2.160432 Days    $T_0=133.368976$  (BKJD)





# DV Quarter-Phased Transit Curves

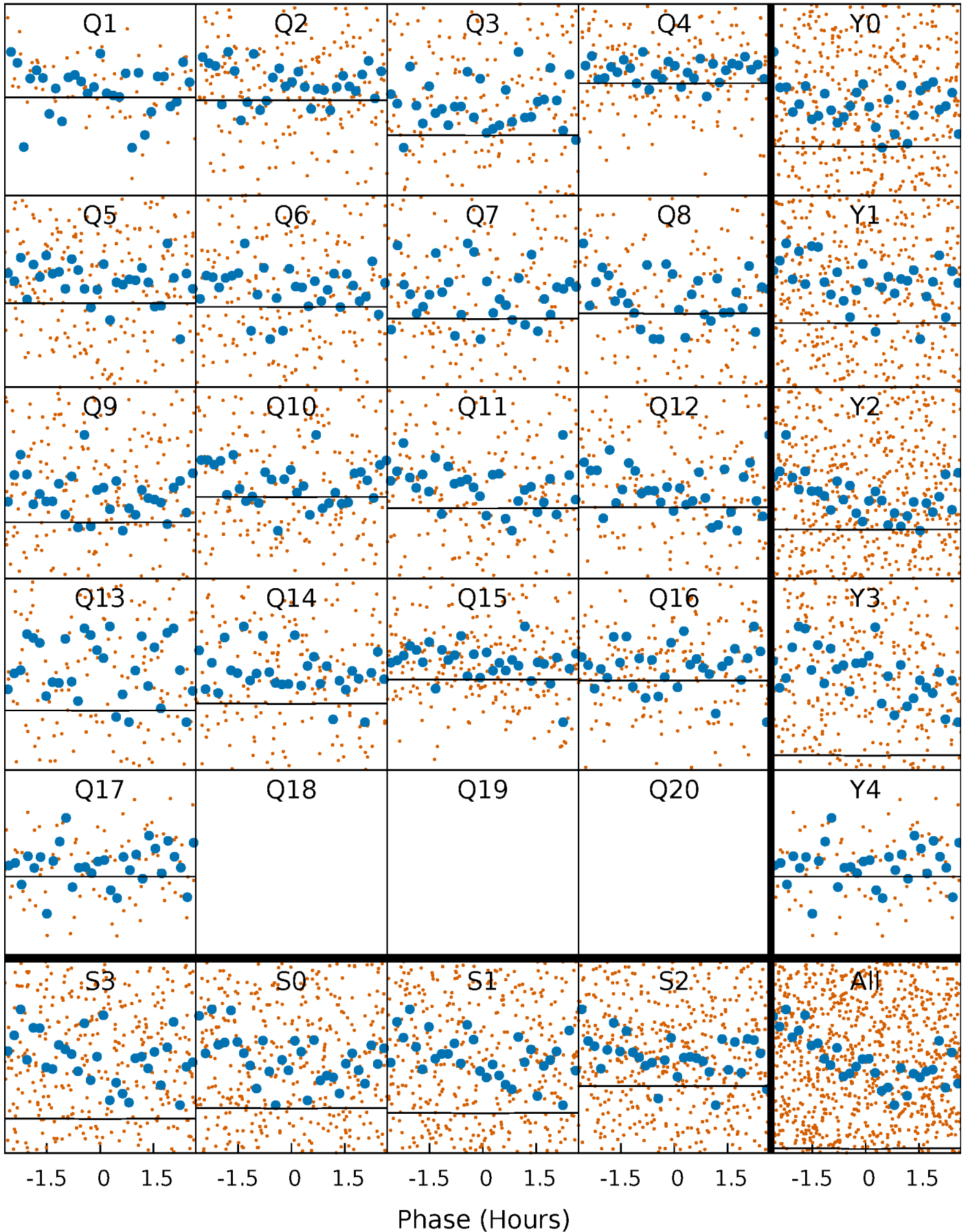
TCE 008244757-02     $P = 2.160432$  Days     $T_0 = 133.368976$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

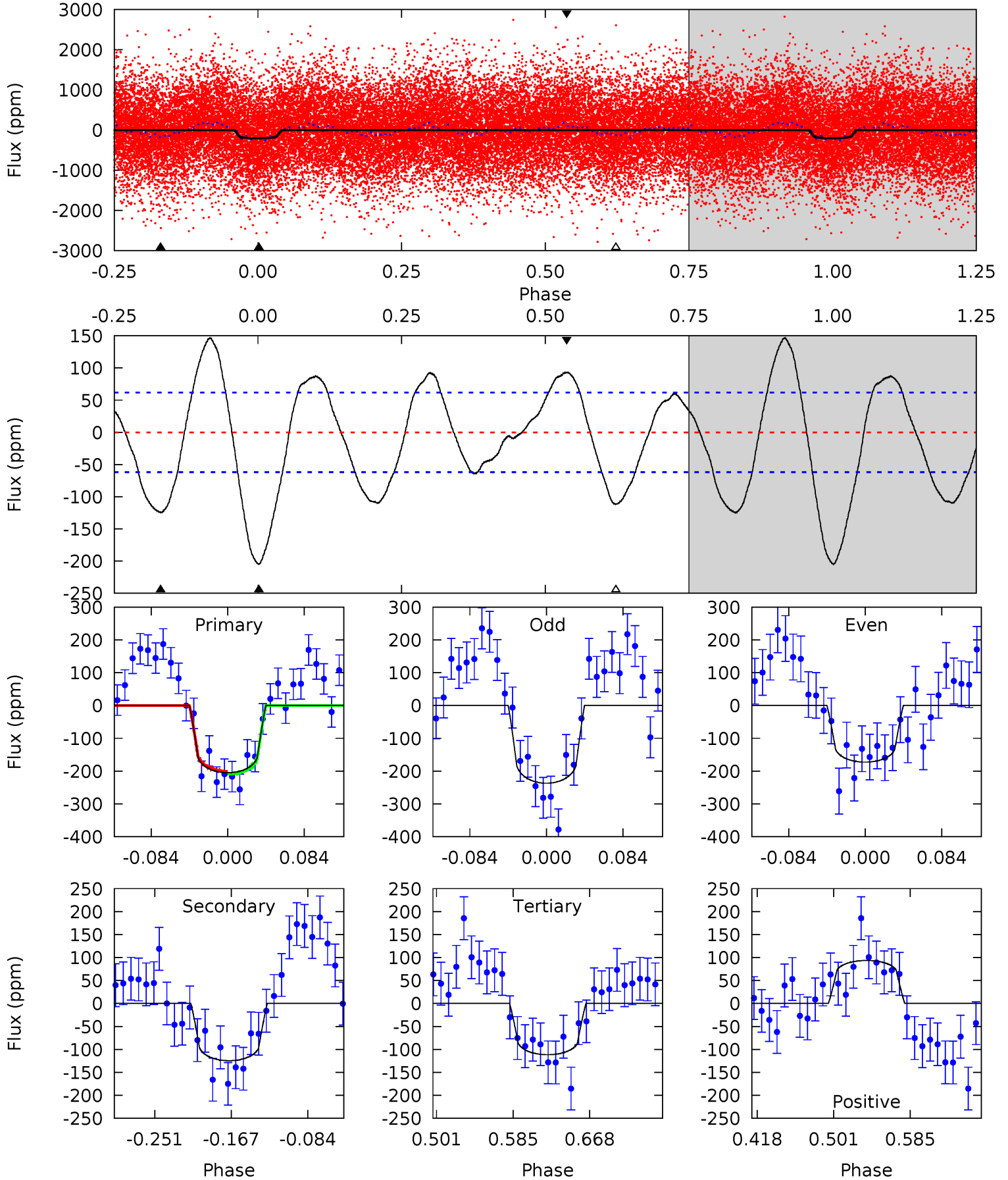
TCE 008244757-02   P= 2.160372 Days    $T_0=133.364954$  (BKJD)



# DV Model-Shift Uniqueness Test

008244757-02, P = 2.160432 Days, E = 131.208544 Days

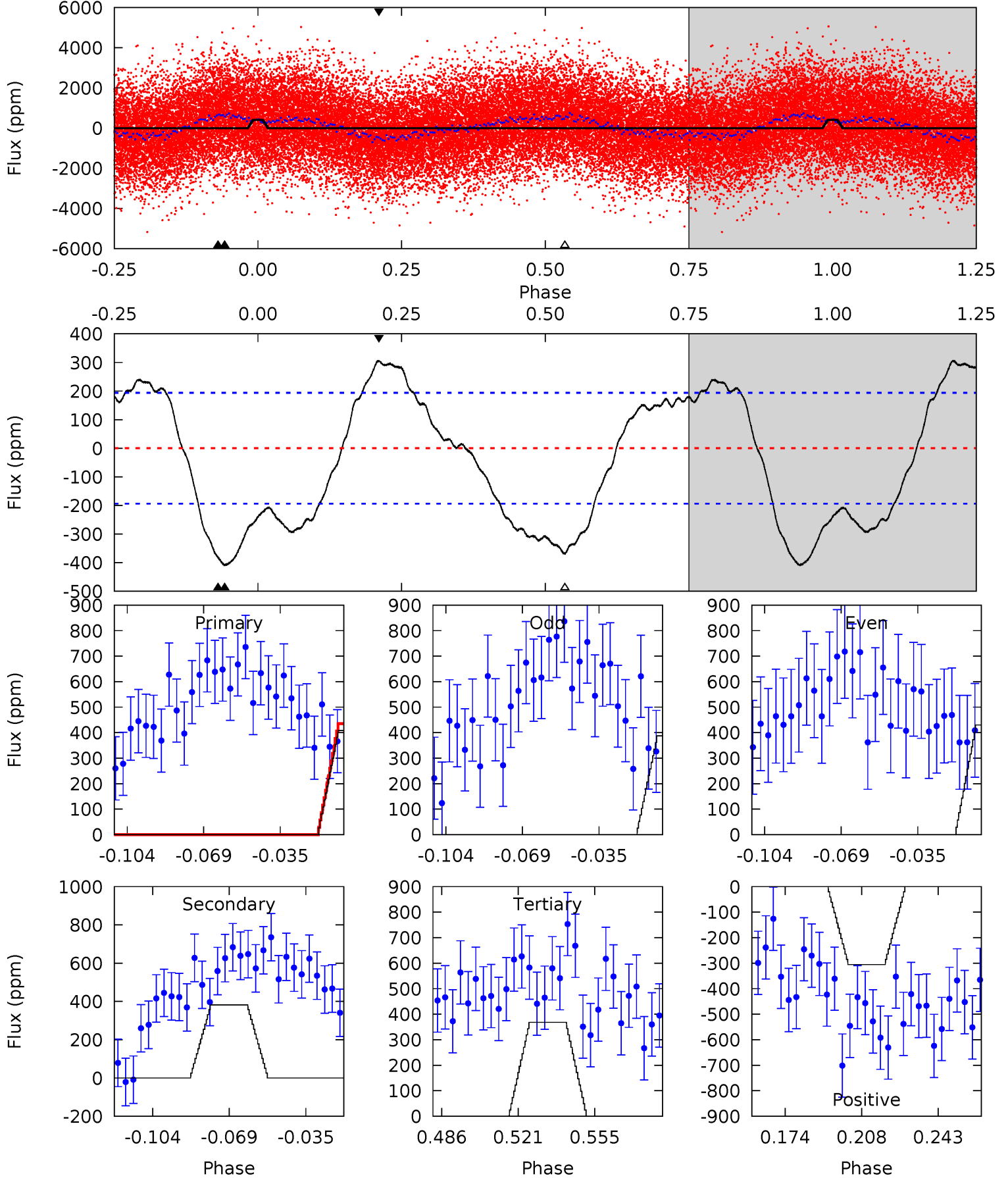
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	9.27	8.30	6.96	4.60	1.73	4.69	6.95	8.29	0.97	2.31	2.39	1.11	0.42	0.31



# Alt Model-Shift Uniqueness Test

008244757-02, P = 2.160372 Days, E = 131.204582 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
10.1	9.45	9.10	7.55	4.78	2.11	5.11	1.00	2.55	0.34	1.90	0.53	0.90	0.43	0.67



### Stellar Parameters For KIC 008244757

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7524^{+210}_{-341}$	$4.051^{+0.155}_{-0.155}$	$0.140^{+0.200}_{-0.400}$	$2.078^{+0.547}_{-0.448}$	$1.772^{+0.171}_{-0.293}$	$0.278^{+0.225}_{-0.123}$
	+3%/-5%	+4%/-4%	+143%/-286%	+26%/-22%	+10%/-17%	+81%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008244757-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-125 \pm 13$	$3.17^{+2.18}_{-1.91}$	$3343^{+257}_{-196}$	$6528^{+5524}_{-1472}$	$10^{+56}_{-7}$
Alt.	$-382 \pm 40$	$1.87^{+2.01}_{-1.28}$	$3352^{+234}_{-232}$	$13693^{+43511}_{-5640}$	$92^{+820}_{-70}$

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



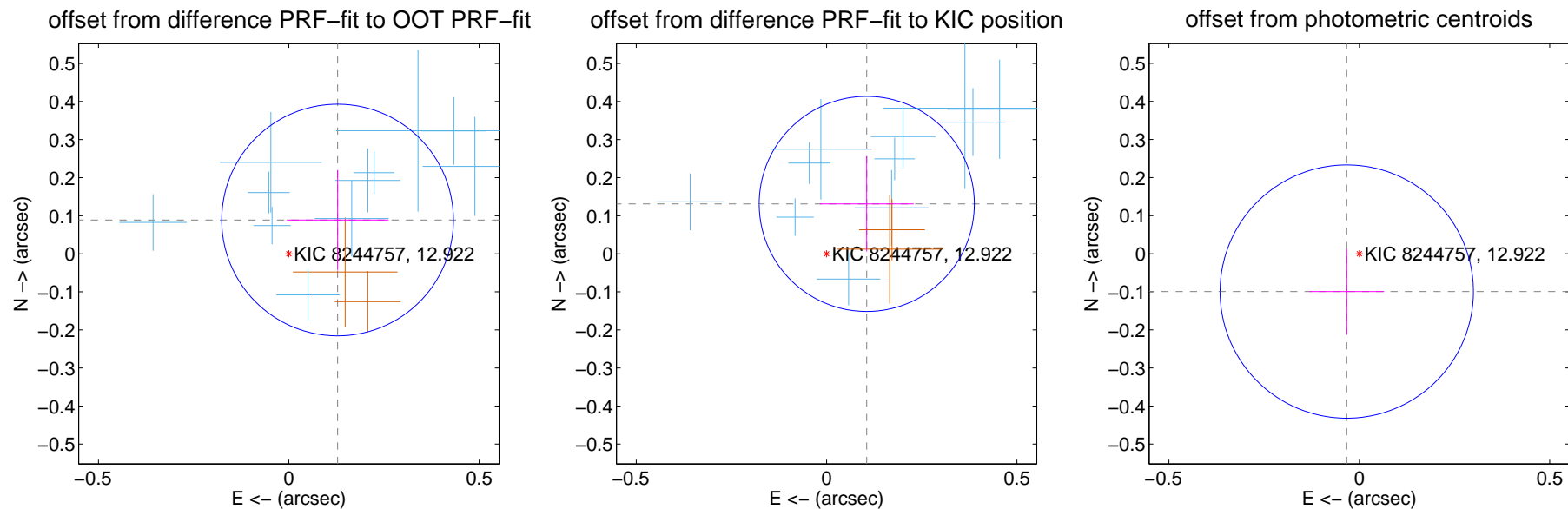
## DV Centroid Data

Supplemental centroid analysis for 008244757-02. Kepler magnitude: 12.92. Transit SNR 10.25

There are 14 quarters with good PRF difference image offsets

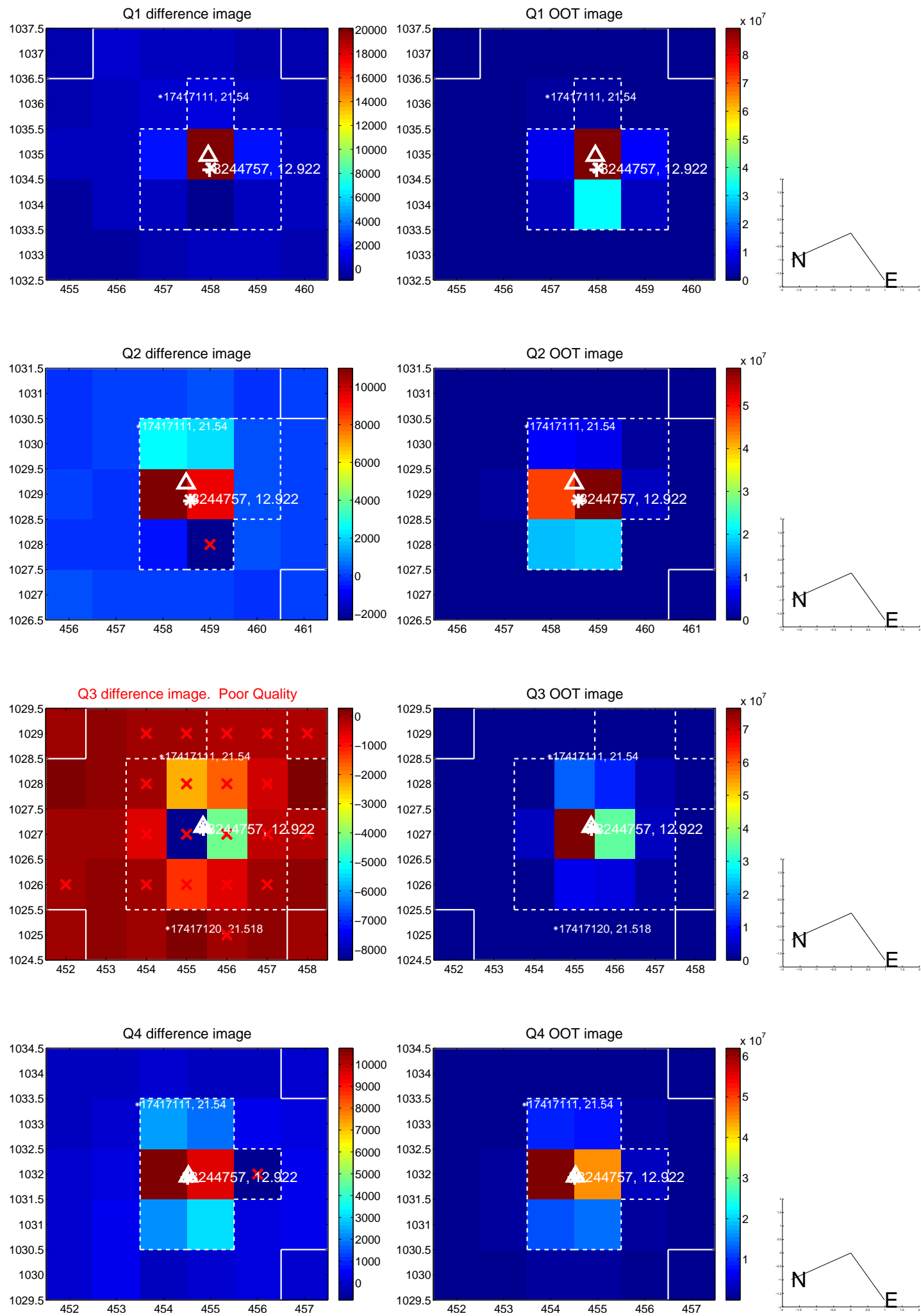
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.156 \pm 0.101$	1.54	$-0.128 \pm 0.133$	$0.089 \pm 0.131$
PRF-fit source offset from KIC position	$0.168 \pm 0.094$	1.79	$-0.106 \pm 0.123$	$0.131 \pm 0.125$
photometric centroid source offset	$0.10 \pm 0.11$	0.95	$0.03 \pm 0.10$	$-0.10 \pm 0.11$

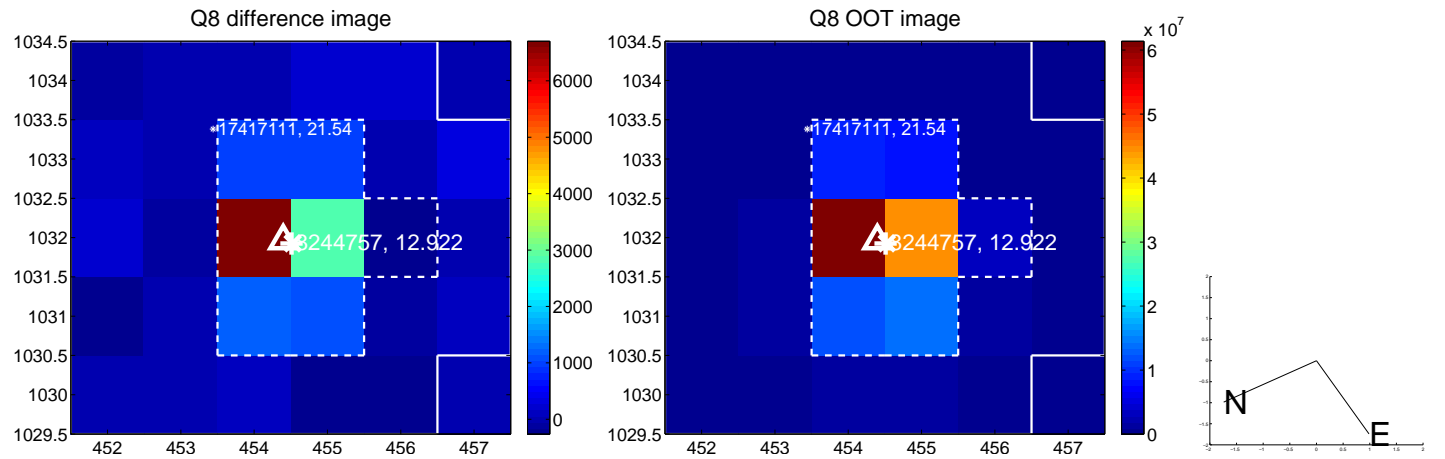
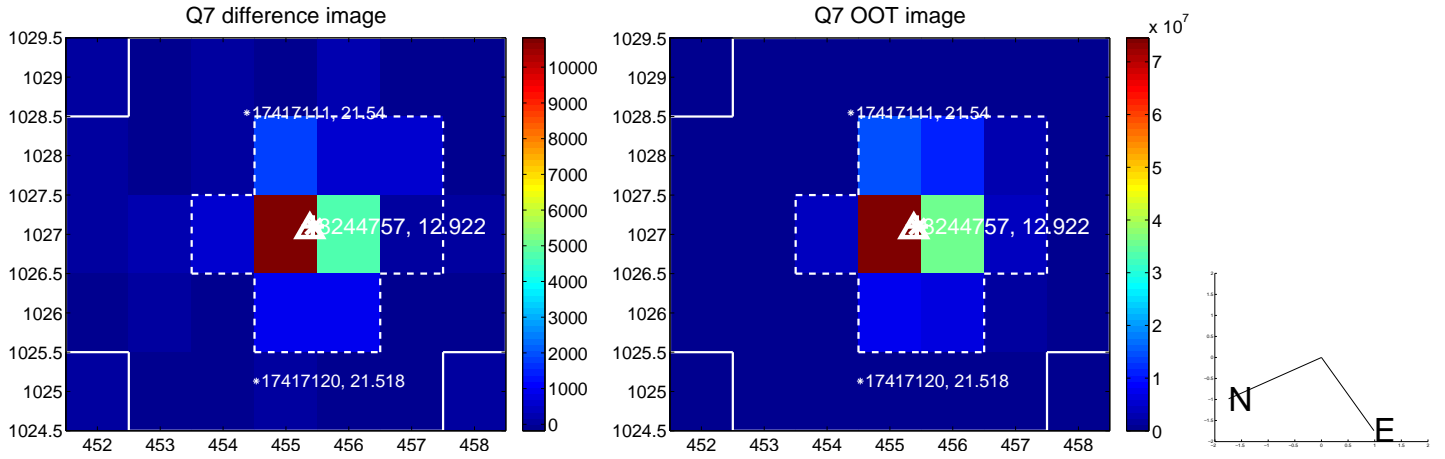
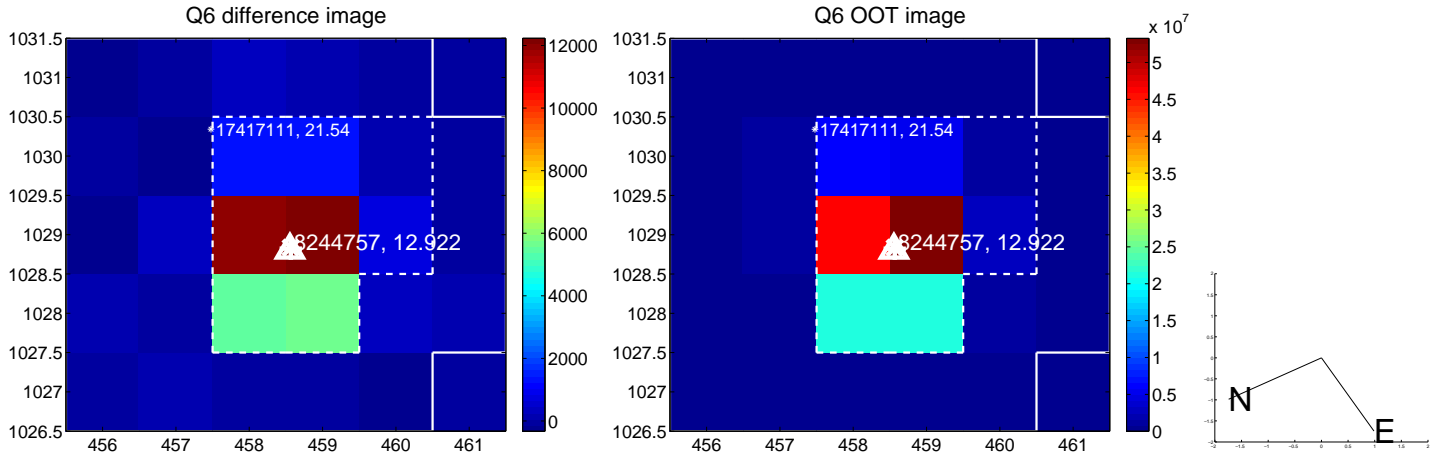
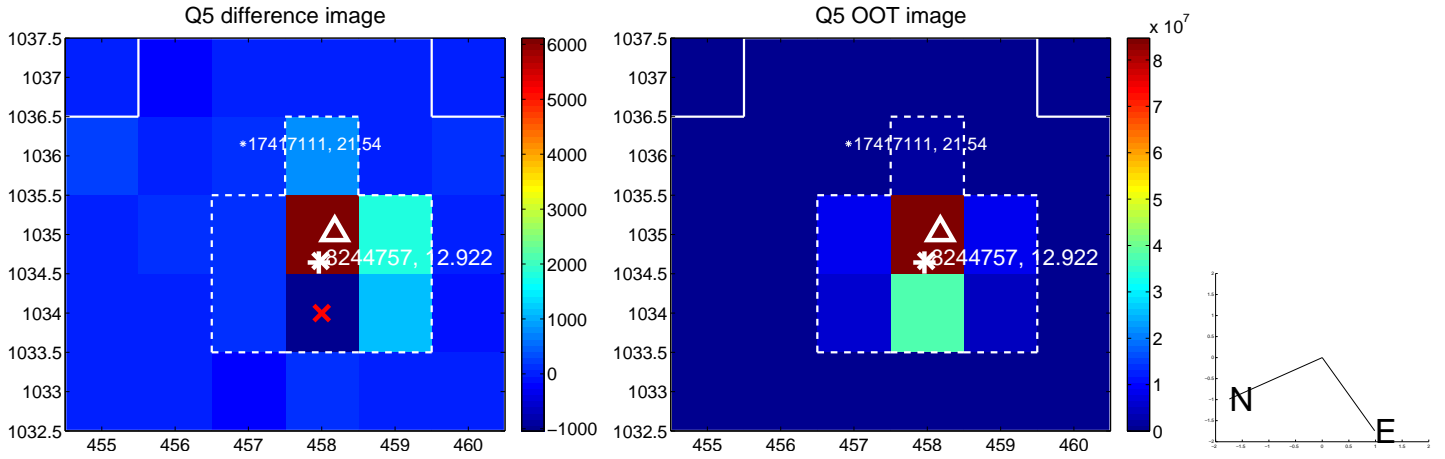


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

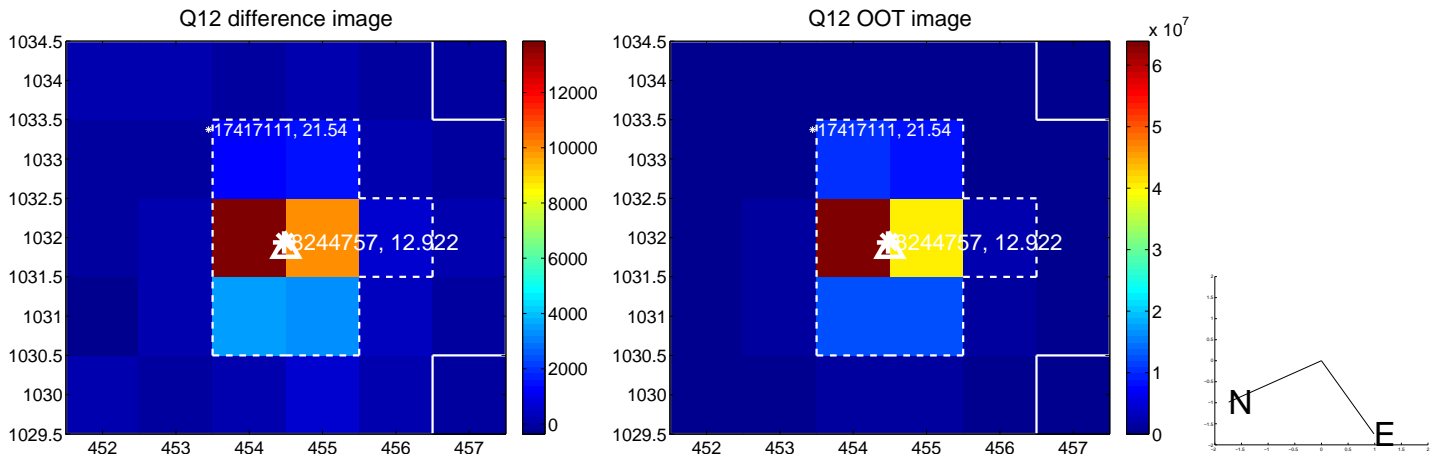
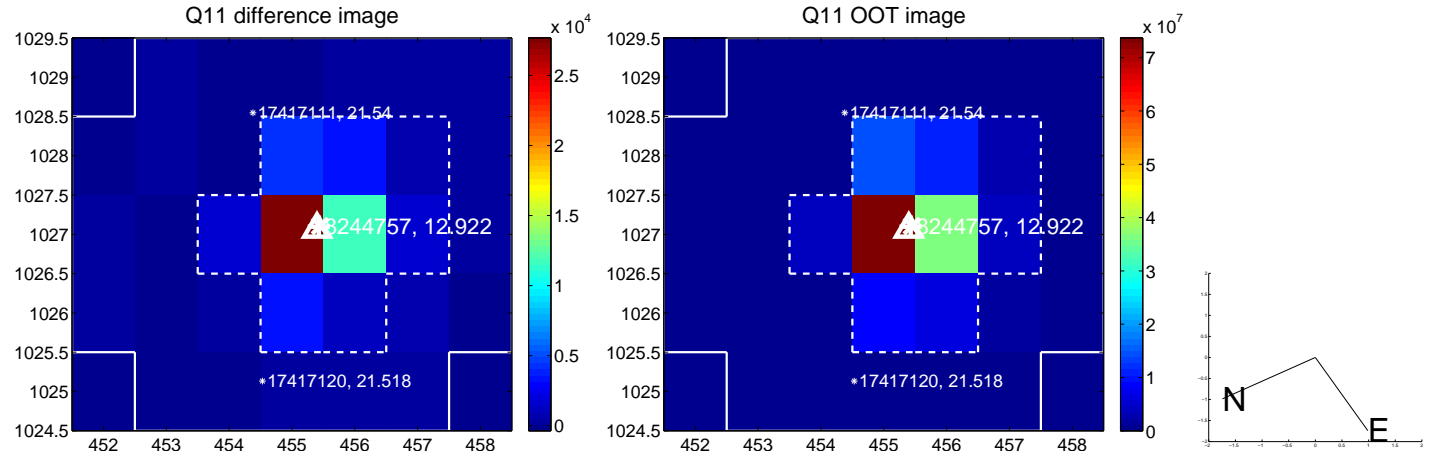
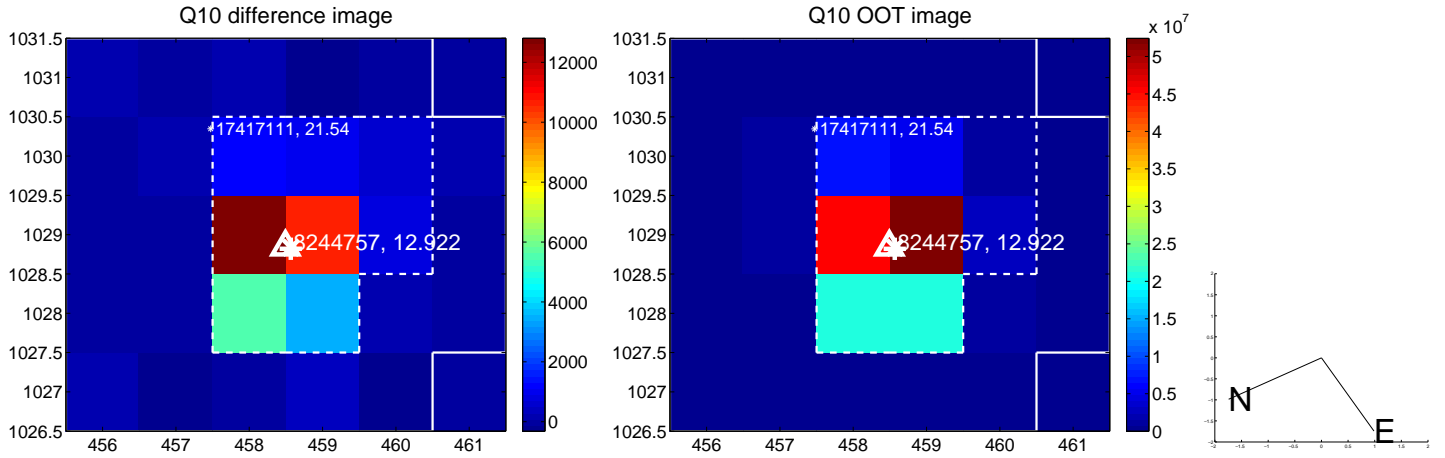
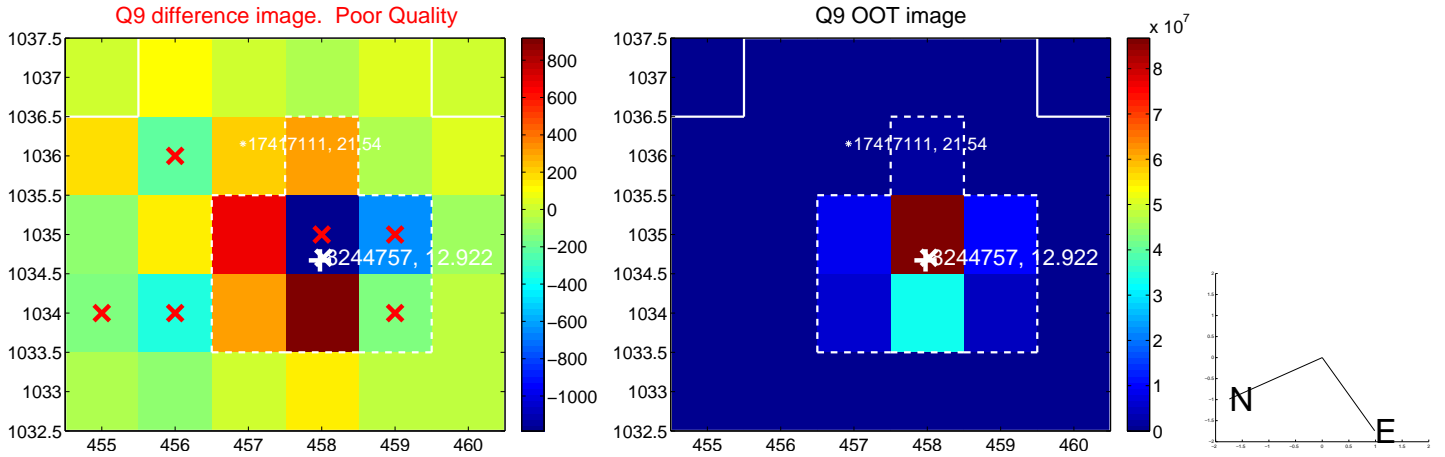
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



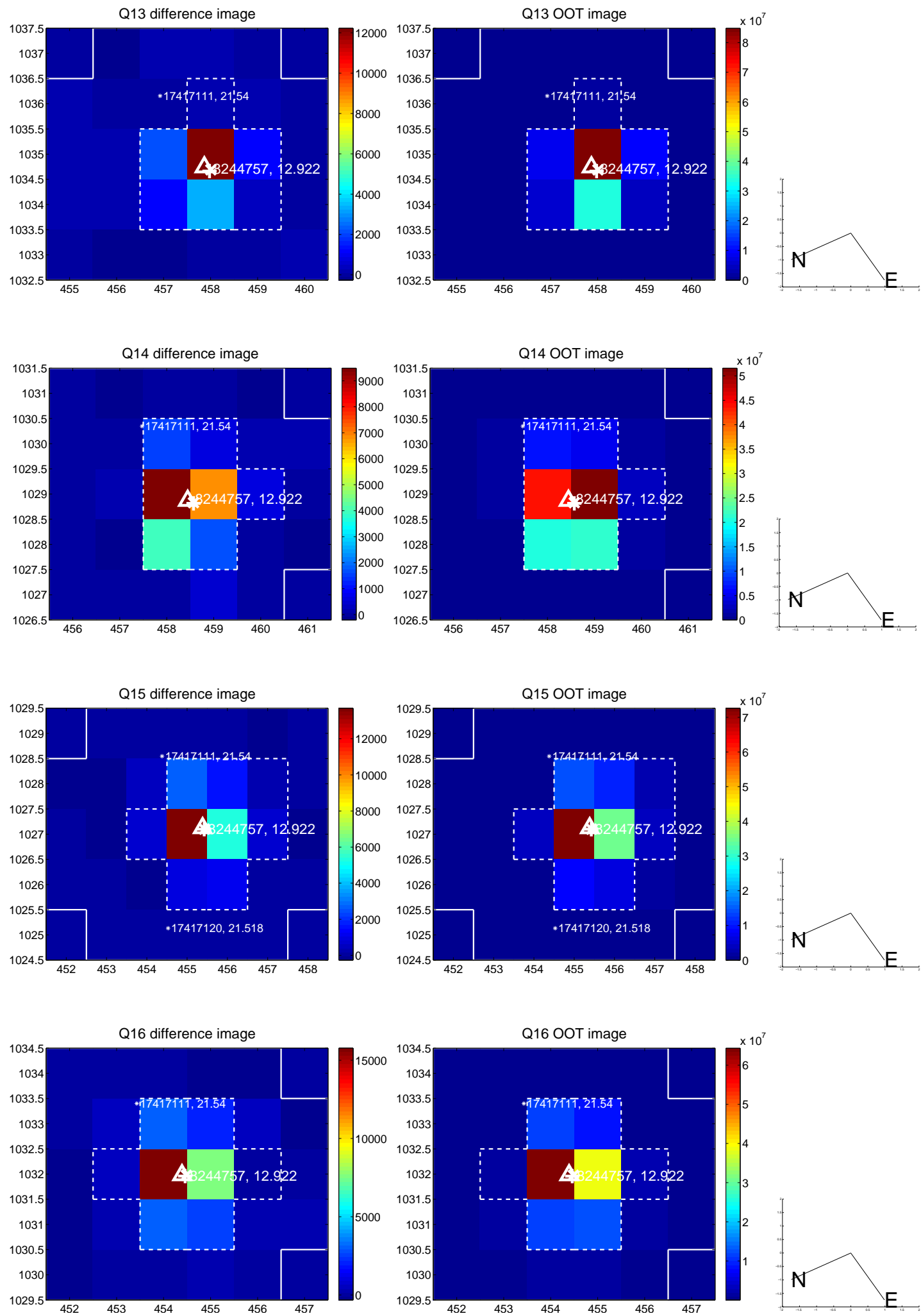
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

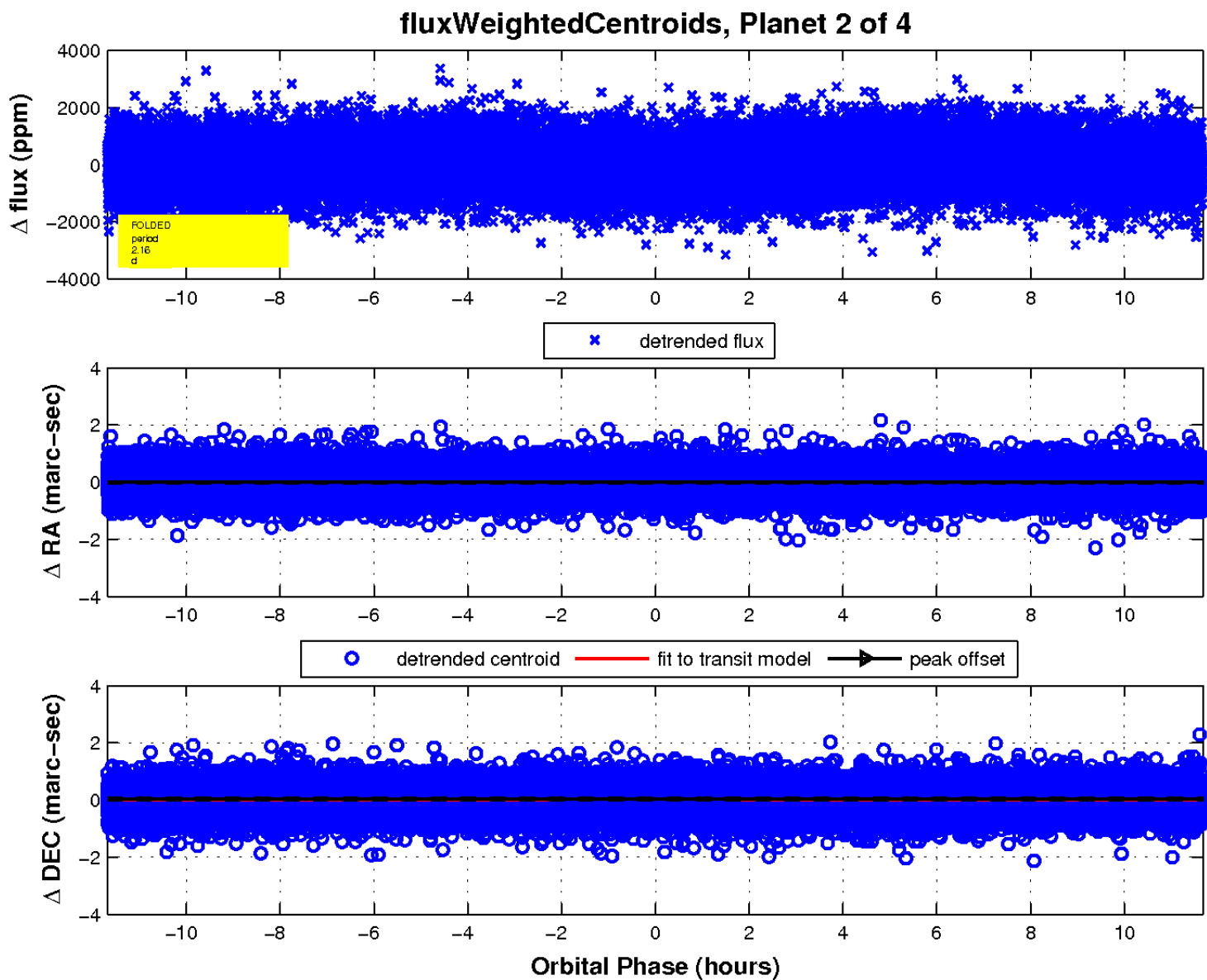
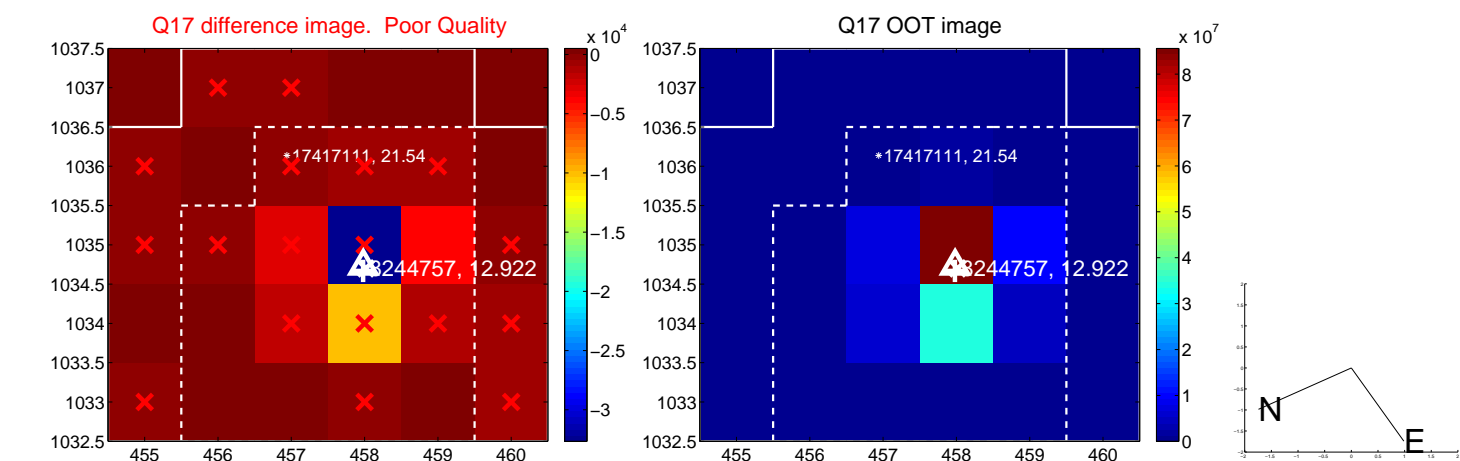


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

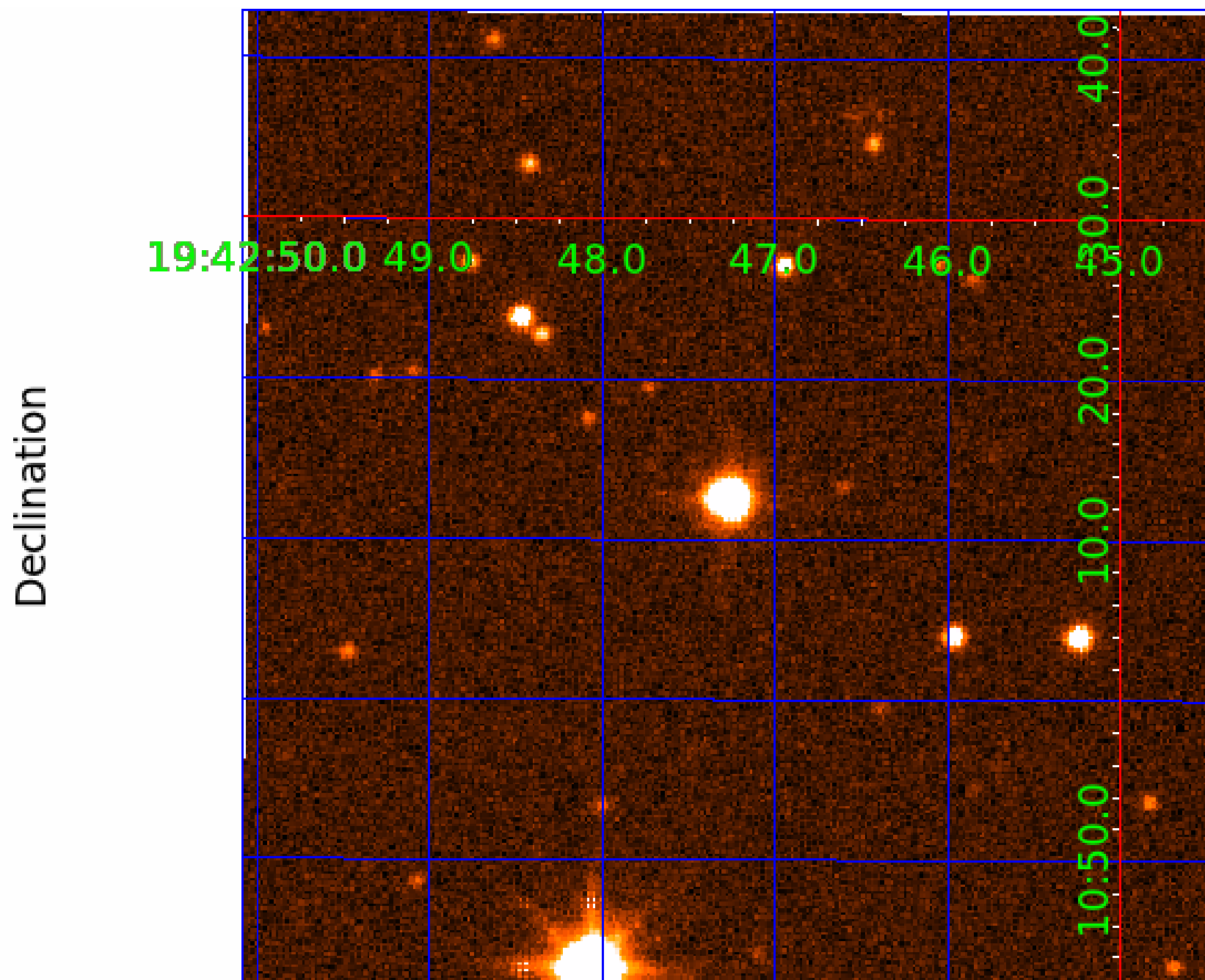




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 008244757

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008244757-01	OBS	No	0.680205	132.130772	99.7	2.532	17.8	13.2	2.08	7524	2.40	36948.80
008244757-02	OBS	No	2.160432	133.368976	183.9	3.894	9.7	10.2	2.08	7524	2.86	7914.06
008244757-03	OBS	No	1.192007	132.131480	118.8	4.962	8.6	7.6	2.08	7524	2.86	17488.31
008244757-04	OBS	No	1.270682	132.097680	198.3	3.510	9.9	9.1	2.08	7524	3.38	16059.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008244757-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008244757-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008244757-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008244757-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST

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

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

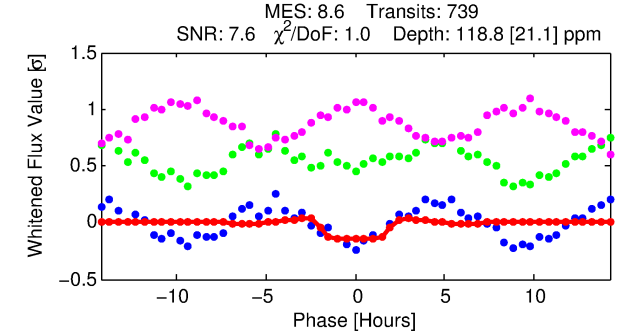
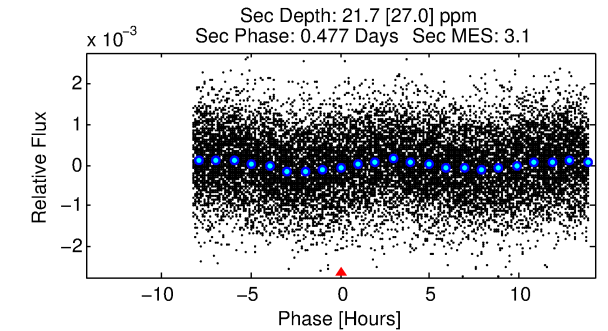
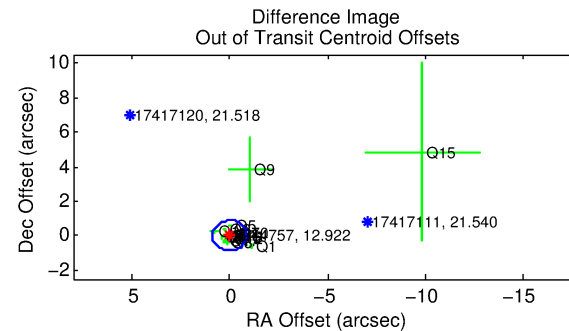
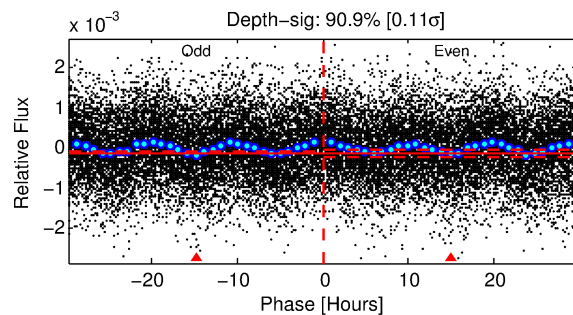
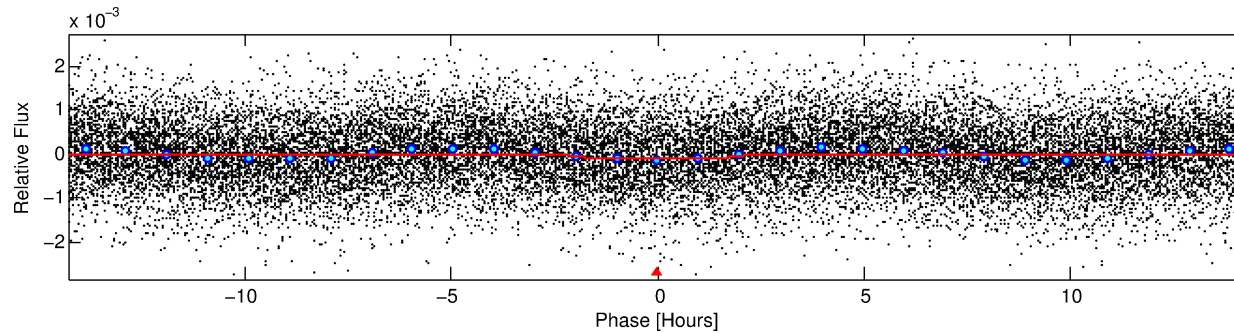
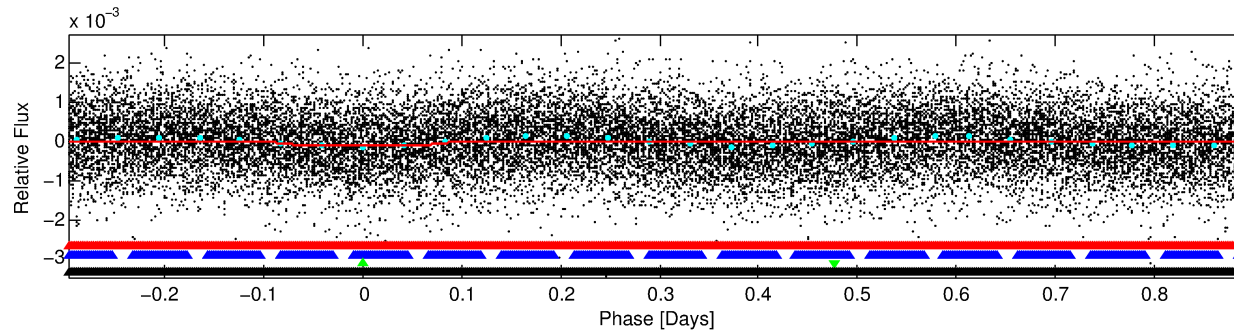
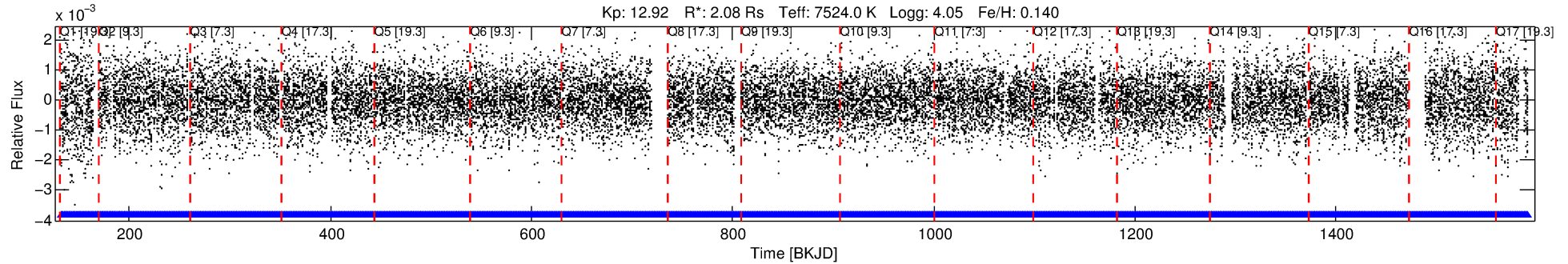
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008244757-03

No Significant Match Found

# DV One-Page Summary

KIC: 8244757 Candidate: 3 of 4 Period: 1.192 d



## DV Fit Results:

Period = 1.19201 [0.00002] d  
Epoch = 132.1315 [0.0075] BKJD  
Rp/R\* = 0.0126 [0.0014]  
a/R\* = 1.11 [0.09]  
b = 0.97 [0.02]  
Seff = 17488.31 [6065.04]  
Teq = 2932 [254] K  
Rp = 2.86 [0.82] Re  
a = 0.0266 [0.0056] AU  
Ag = 1.03 [1.34] [0.03σ]  
Teffp = 4572 [1460] K [1.11σ]

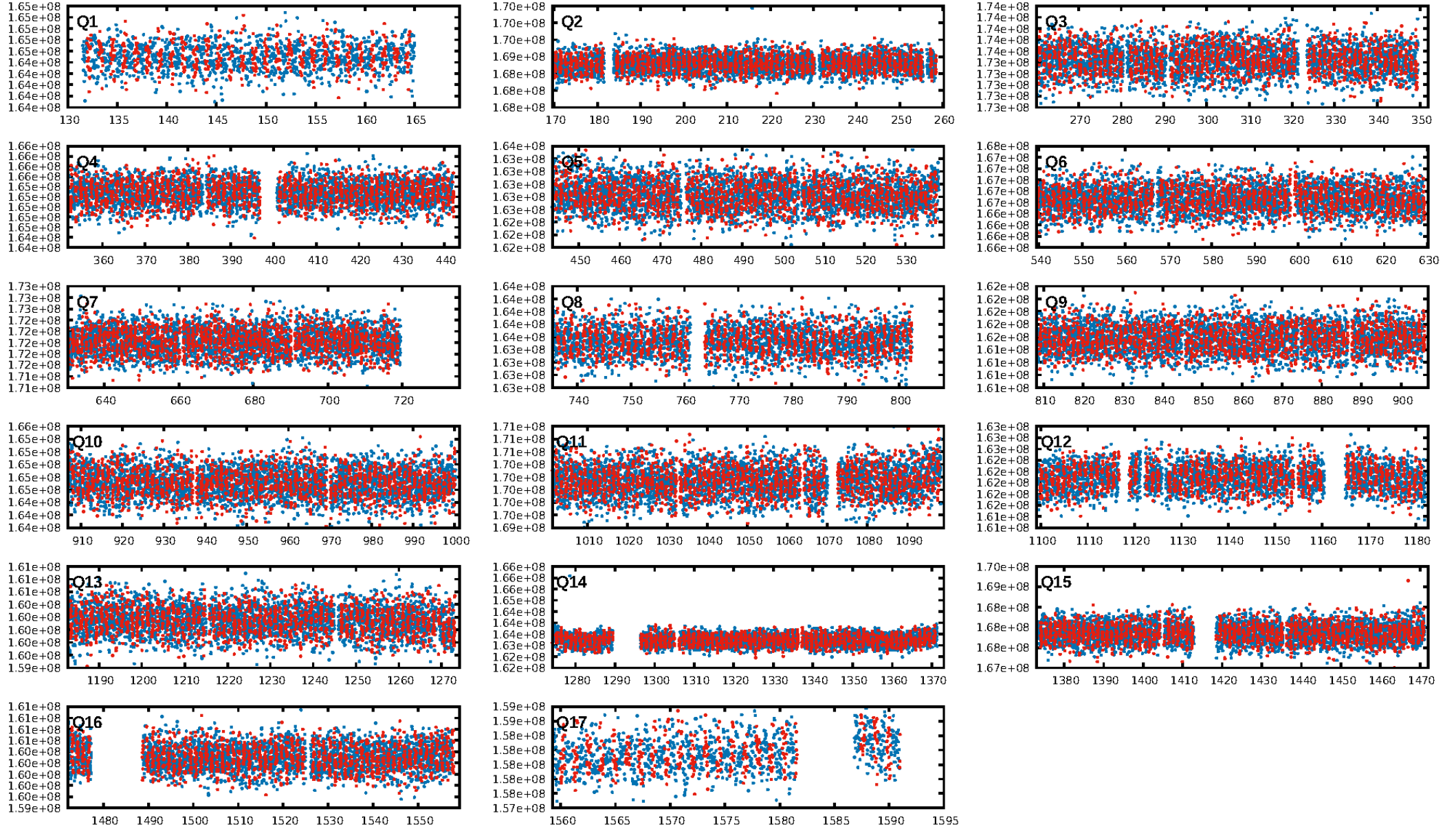
## DV Diagnostic Results:

ShortPeriod-sig: 97.3% [2.20σ]  
LongPeriod-sig: 24.4% [0.31σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [709/709]  
GhostDiagnostic-chr: 1.397  
Centroid-sig: 0.5%  
Centroid-so: 0.350 arcsec [2.90σ]  
OotOffset-rm: 0.023 arcsec [0.08σ]  
OotOffset-st: 4/3/4/5 [16]  
KicOffset-rm: 0.073 arcsec [0.22σ]  
KicOffset-st: 4/3/4/5 [16]  
DiffImageQuality-fgm: 0.81 [13/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:14:59 Z

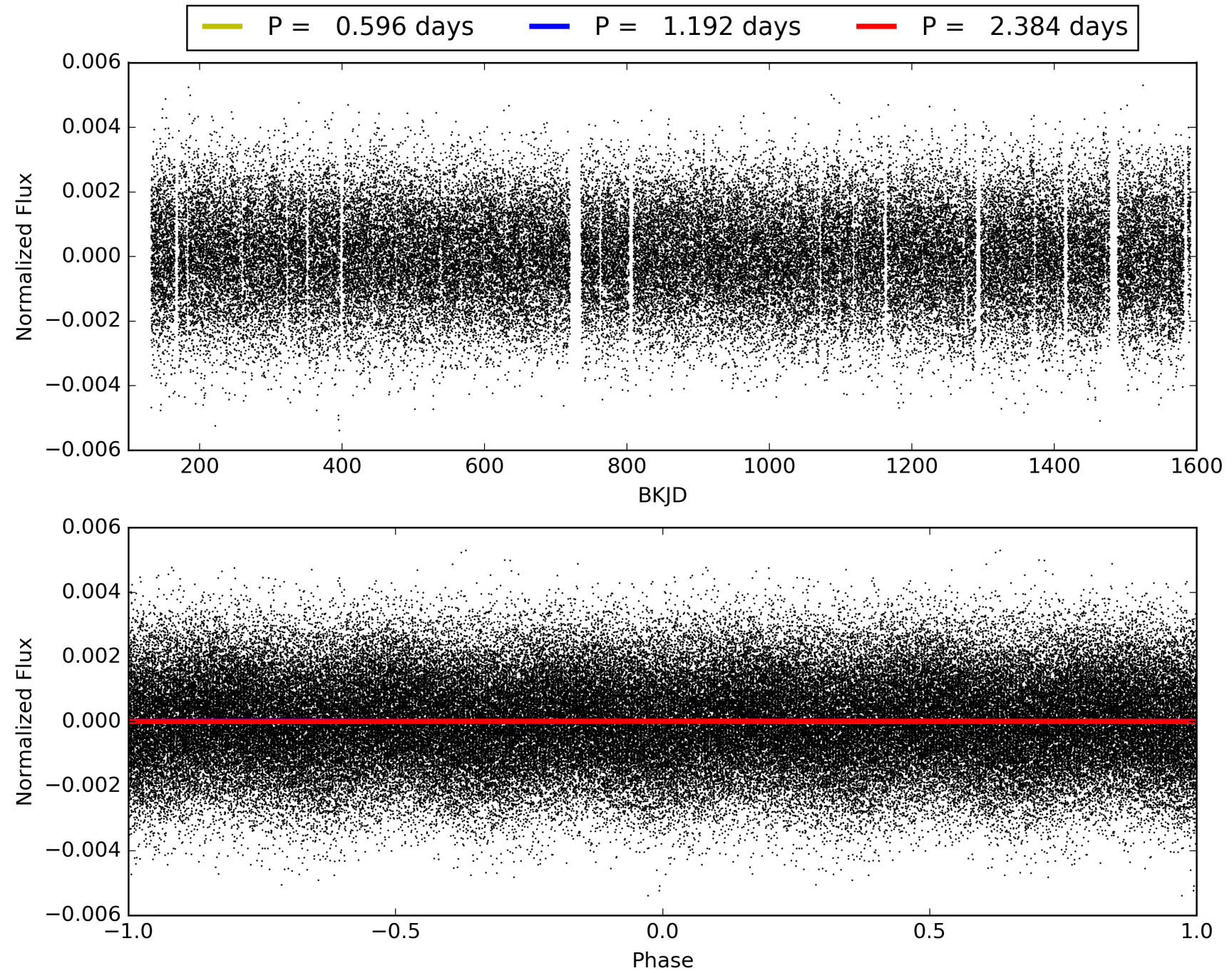
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008244757-03, PDC Light Curves



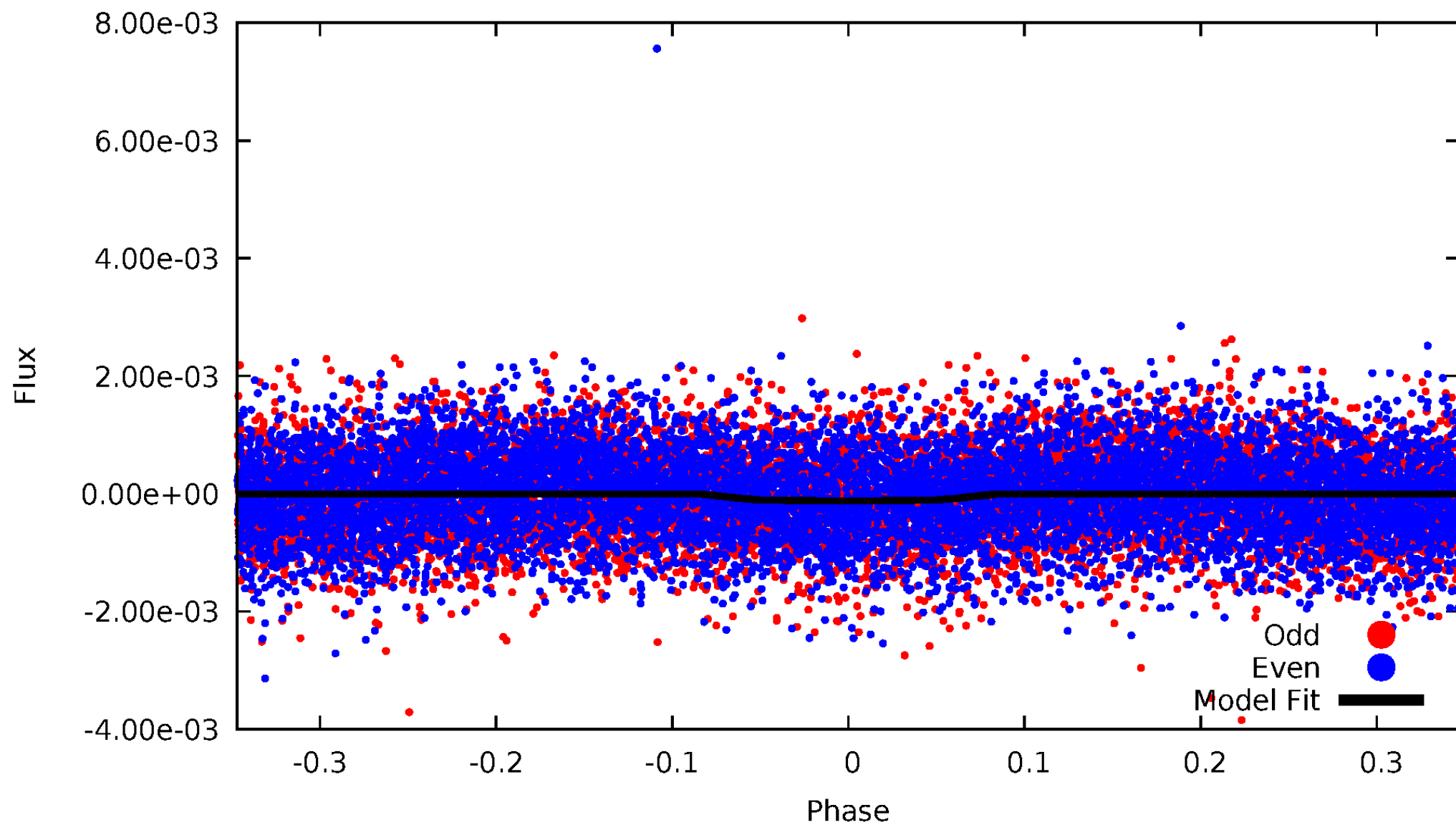


TCE 008244757-03



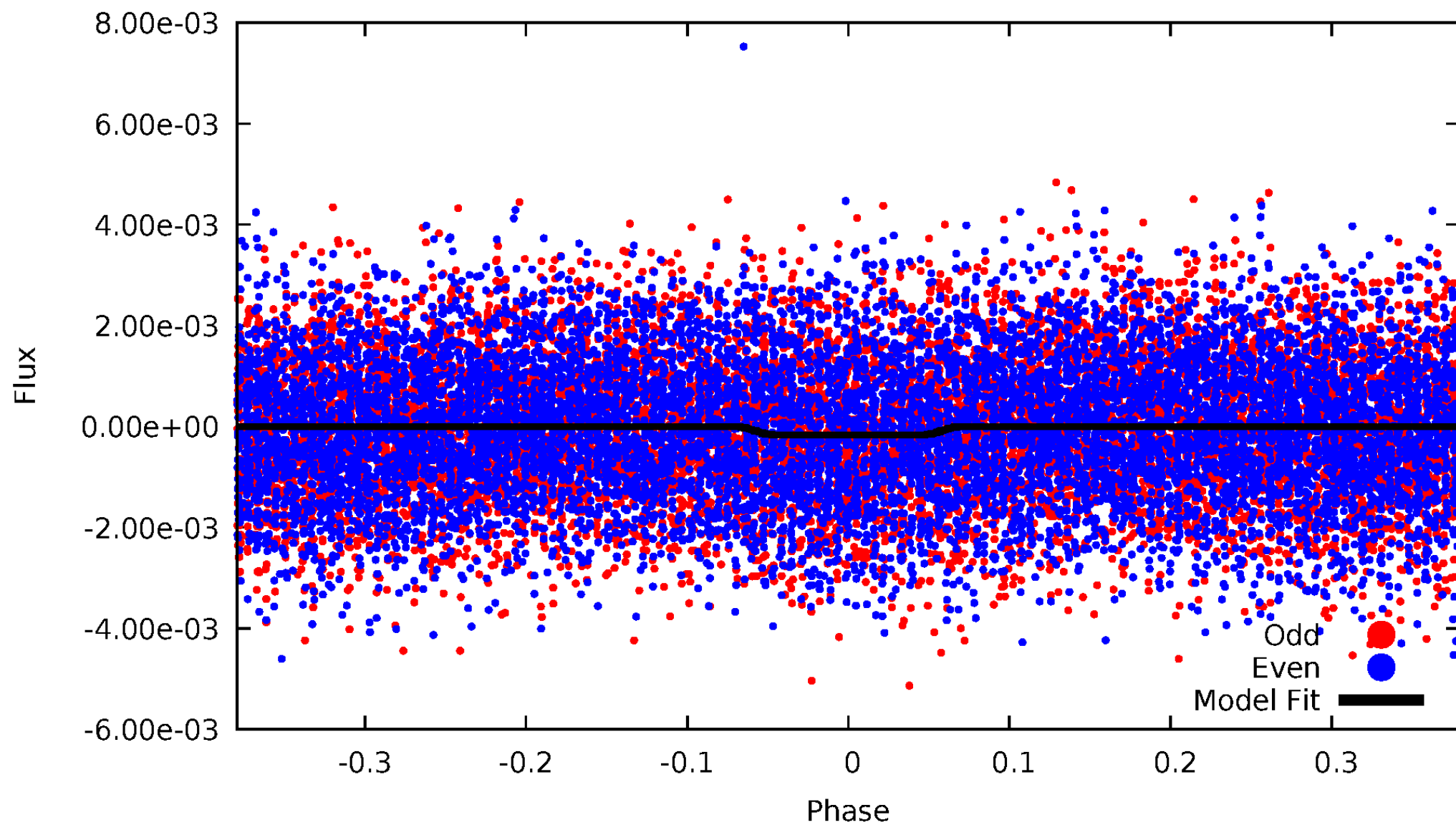
# DV Odd/Even

TCE 008244757-03



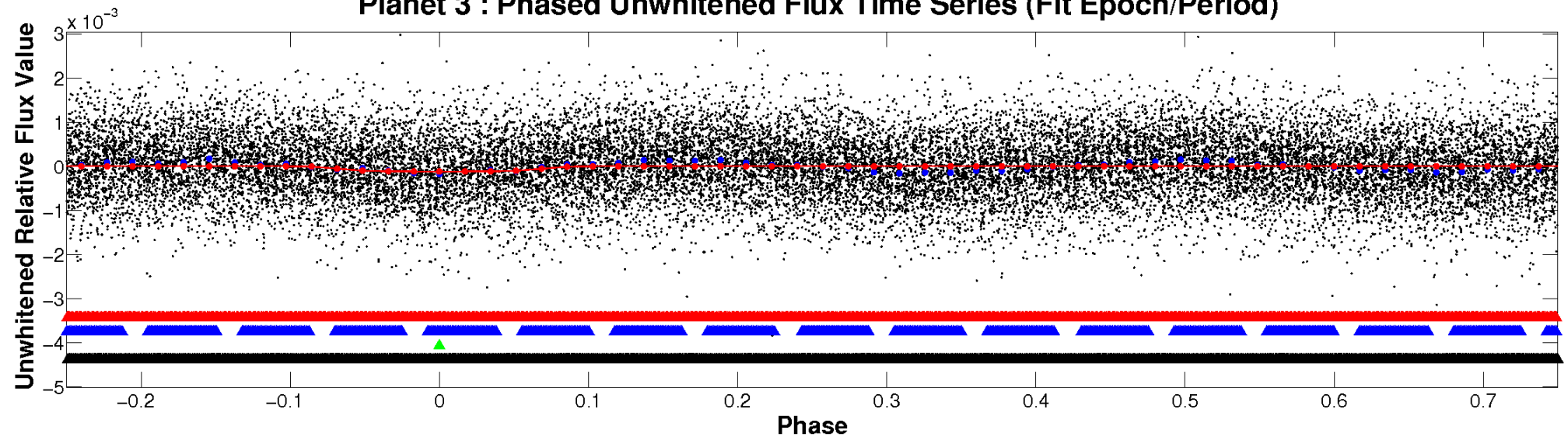
# ALT Odd/Even

TCE 008244757-03

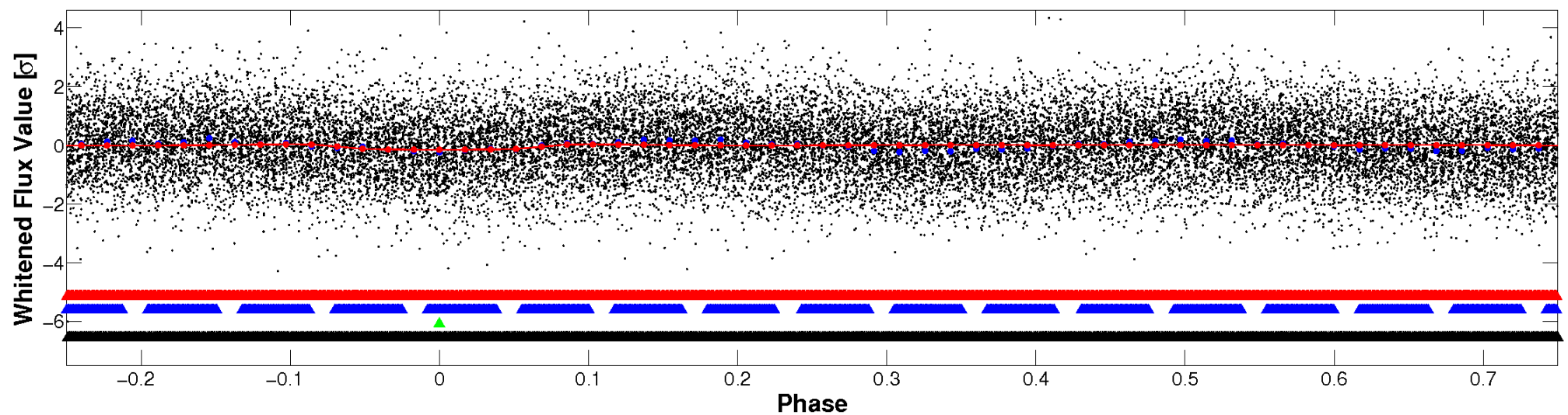


# Non-Whitened Vs. Whitened Light Curve

## Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



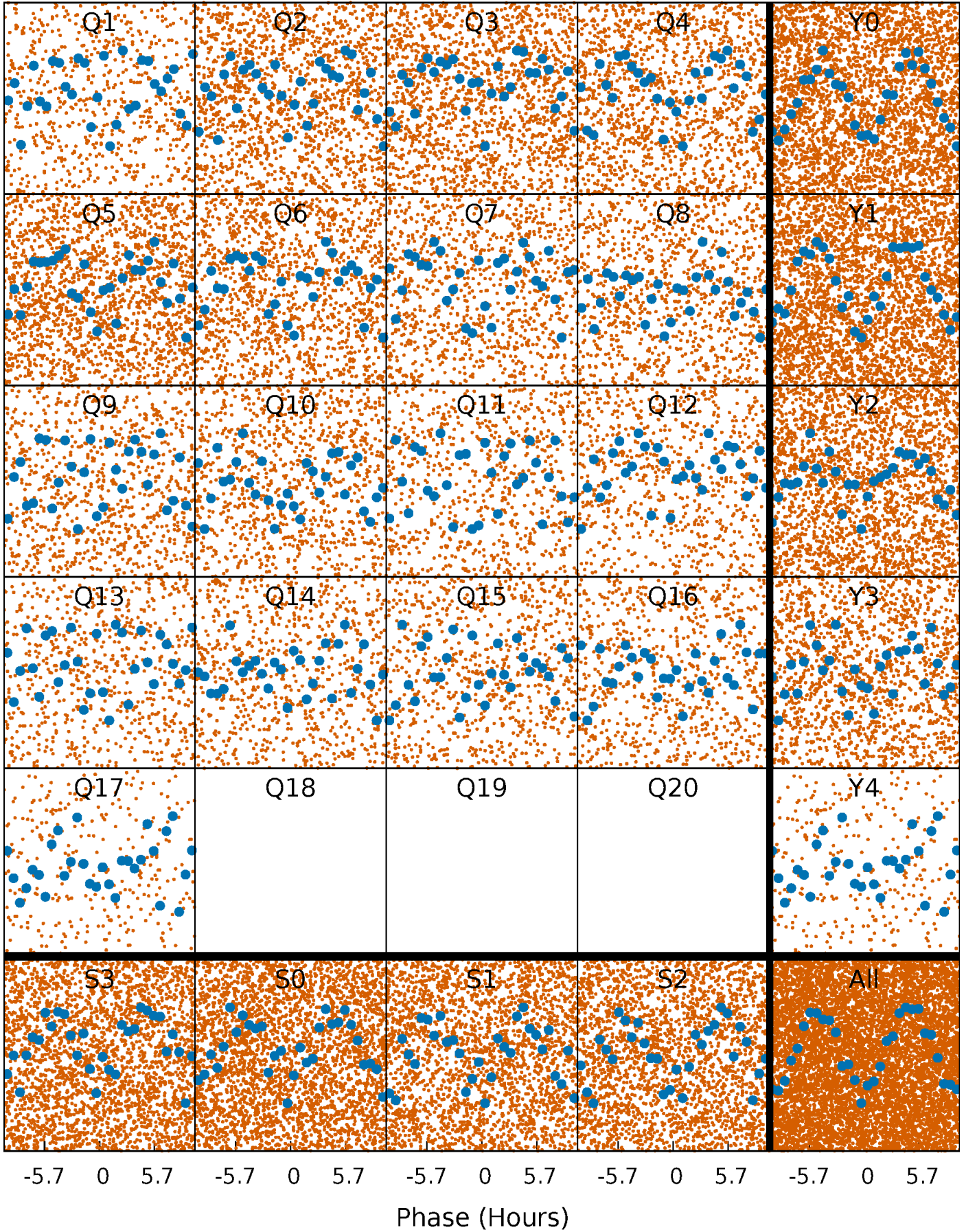
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

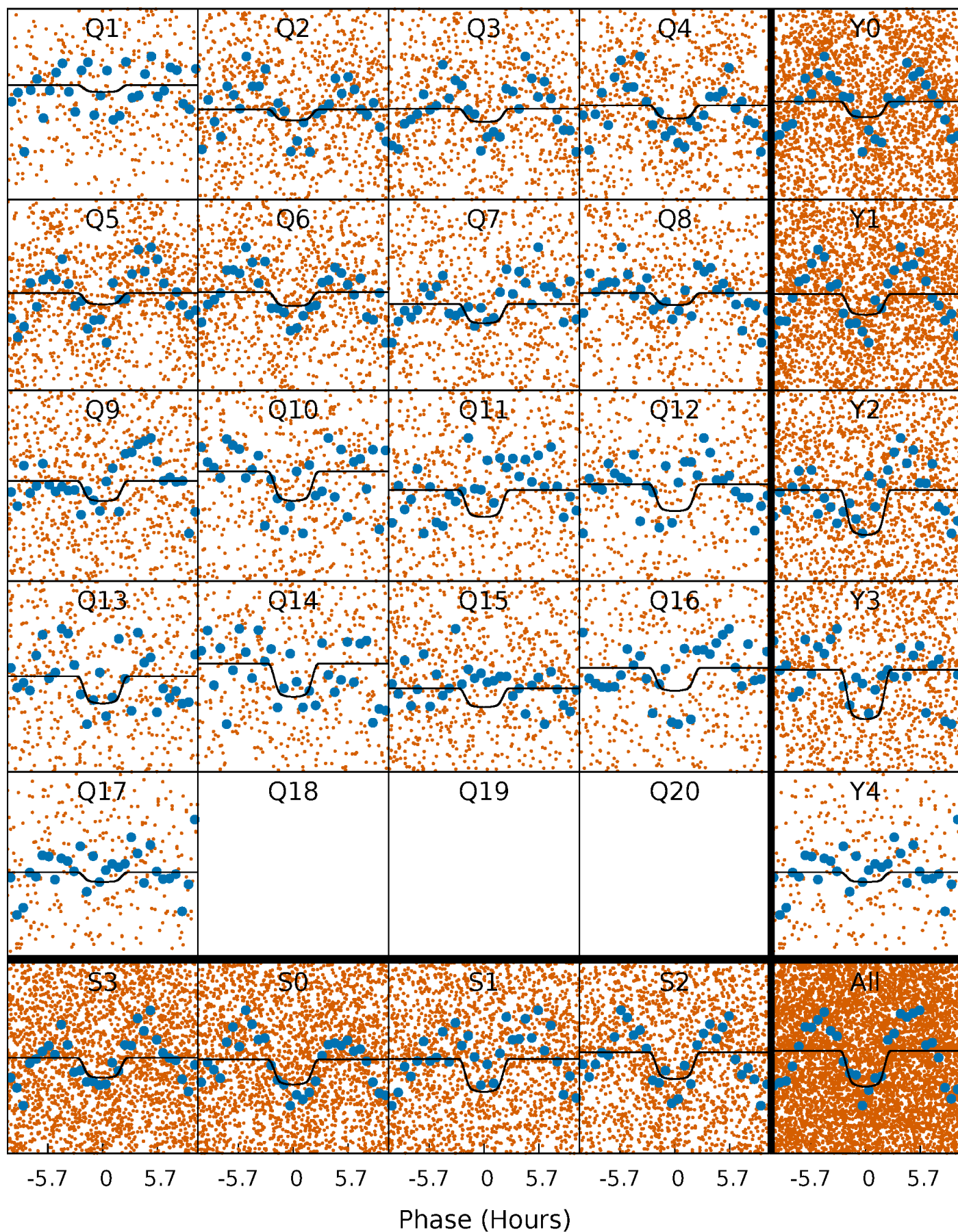
TCE 008244757-03 P= 1.192007 Days  $T_0=132.131480$  (BKJD)





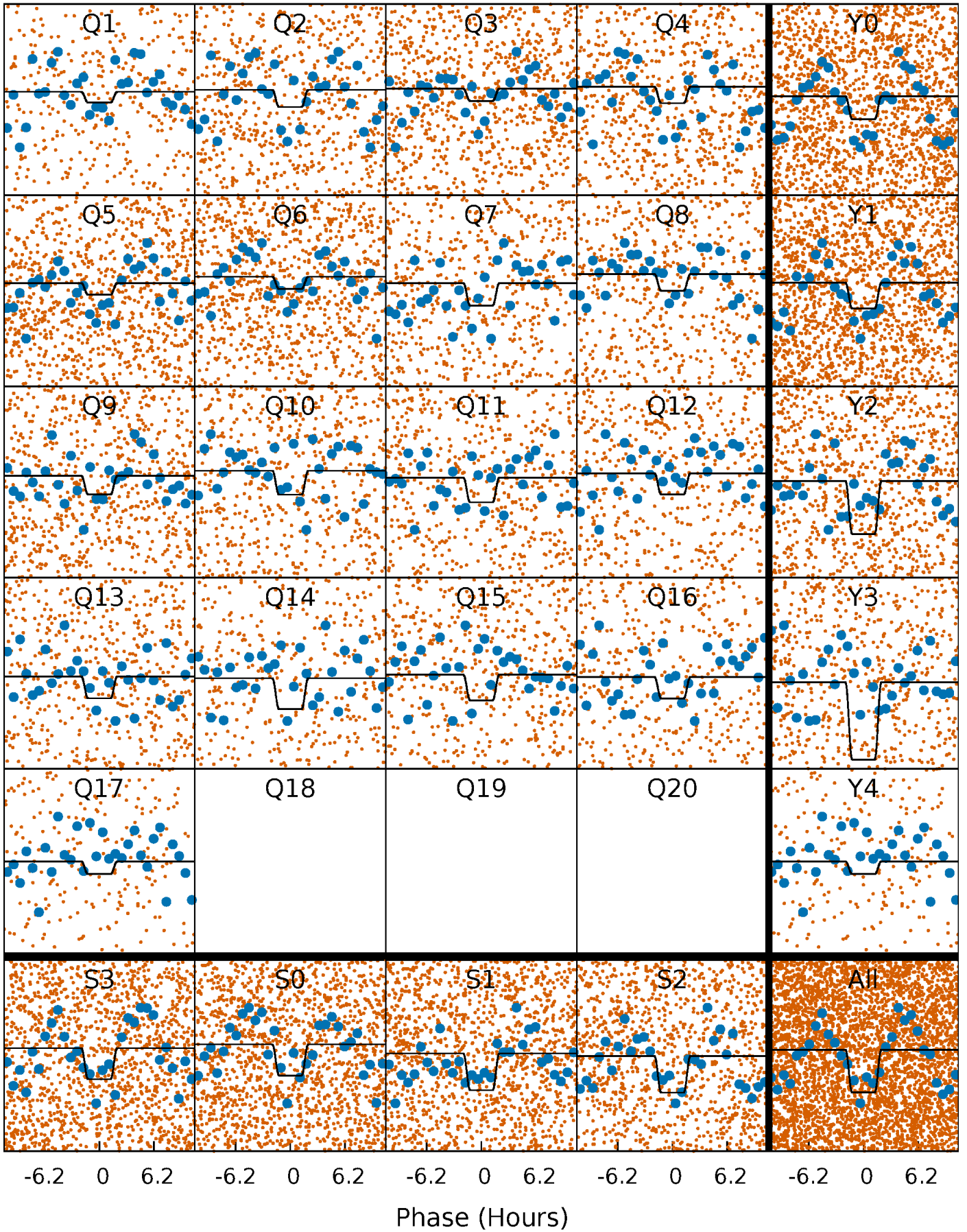
# DV Quarter-Phased Transit Curves

TCE 008244757-03 P= 1.192007 Days  $T_0=132.131480$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

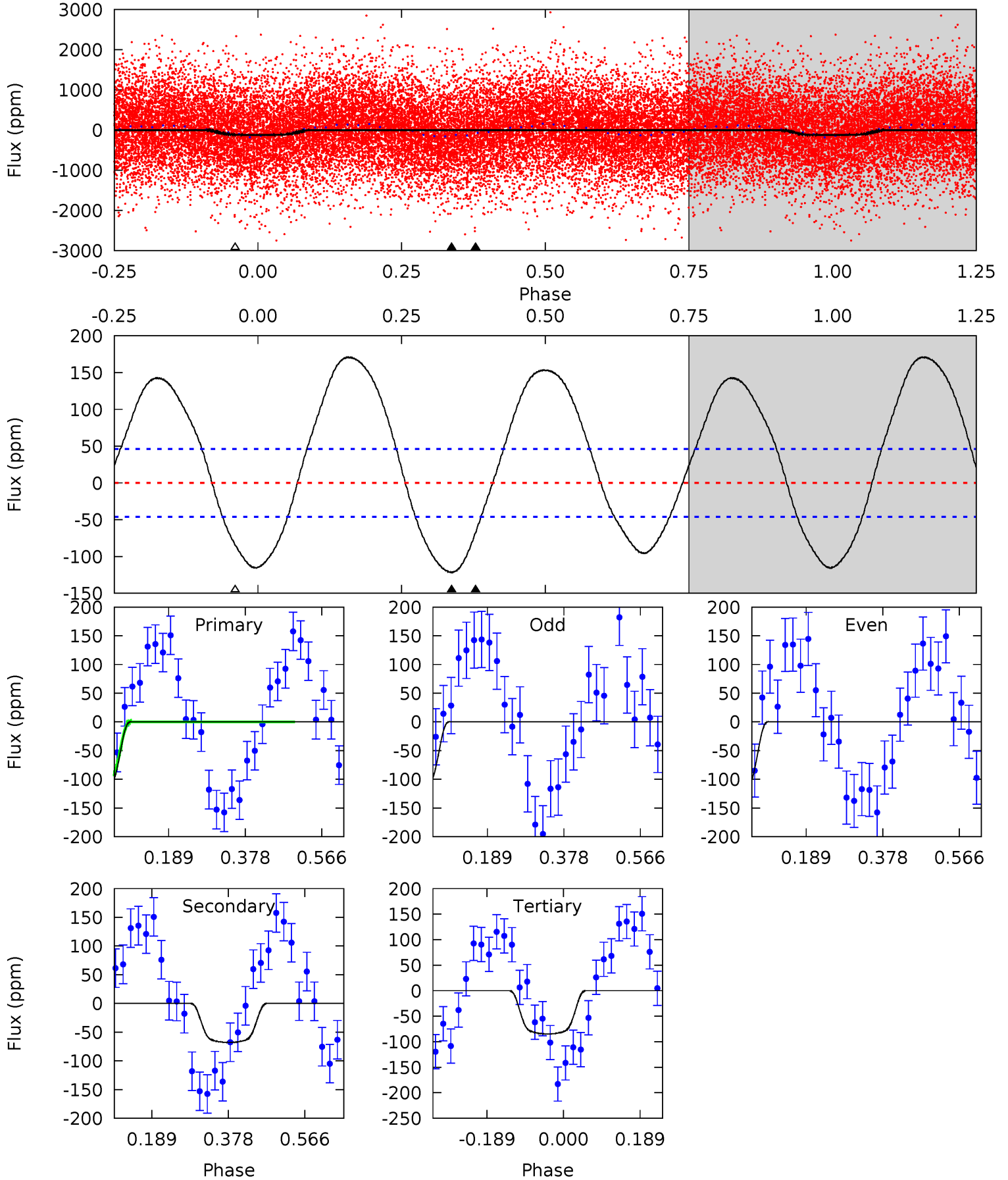
TCE 008244757-03 P= 1.191939 Days  $T_0=132.155978$  (BKJD)



# DV Model-Shift Uniqueness Test

008244757-03, P = 1.192007 Days, E = 130.939473 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
11.7	6.52	8.14	0	4.43	1.31	8.31	3.53	11.7	-1.62	6.52	0.24	0.80	0.58	0.85

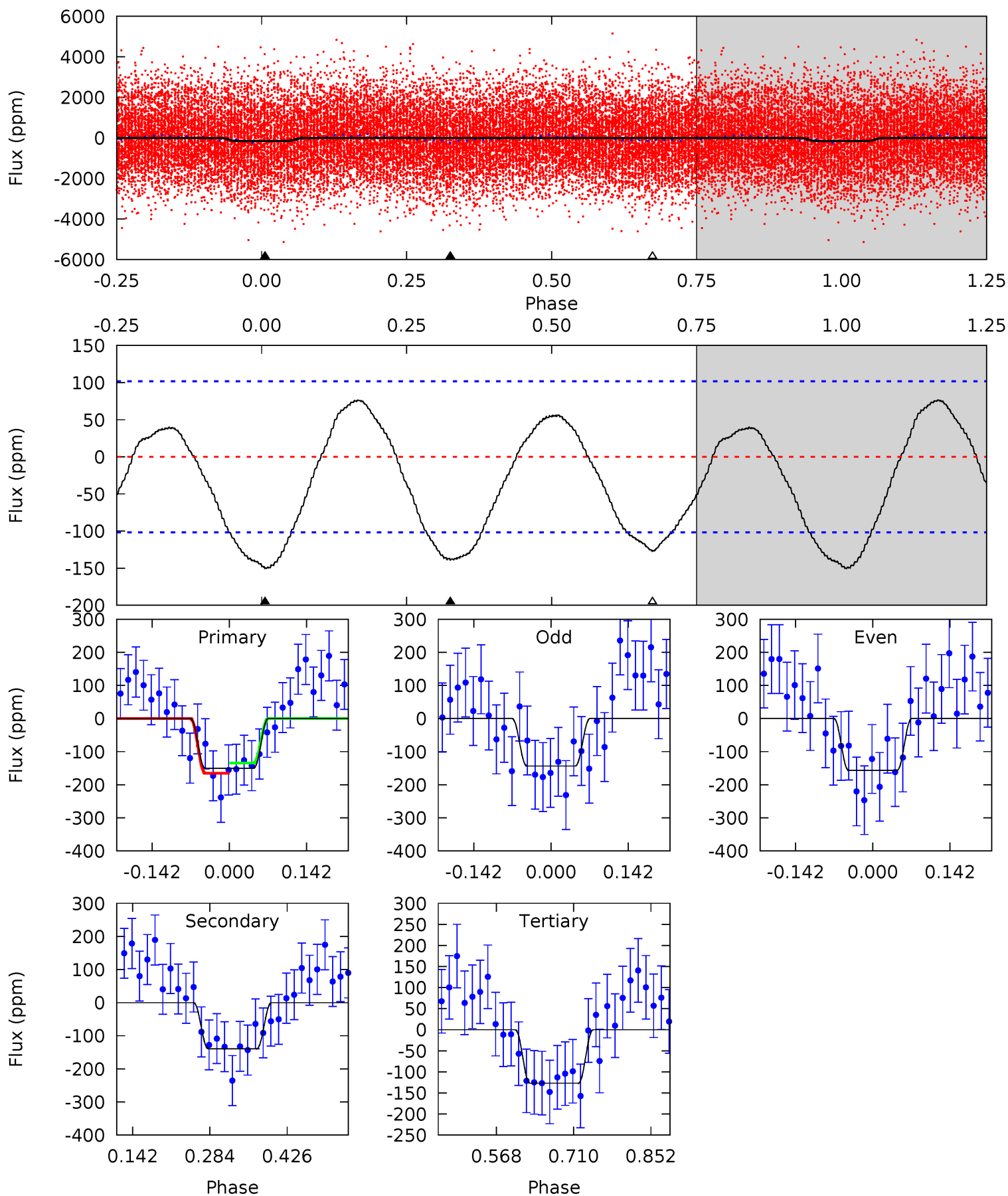




# Alt Model-Shift Uniqueness Test

008244757-03, P = 1.191939 Days, E = 130.964039 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
6.64	6.15	5.61	0	4.49	1.47	2.92	1.03	6.64	0.54	6.15	0.29	0.73	0.34	0.67



### Stellar Parameters For KIC 008244757

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7524^{+210}_{-341}$	$4.051^{+0.155}_{-0.155}$	$0.140^{+0.200}_{-0.400}$	$2.078^{+0.547}_{-0.448}$	$1.772^{+0.171}_{-0.293}$	$0.278^{+0.225}_{-0.123}$
	+3%/-5%	+4%/-4%	+143%/-286%	+26%/-22%	+10%/-17%	+81%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008244757-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-68 \pm 10$	$2.83^{+0.53}_{-0.42}$	$4074^{+295}_{-258}$	$5795^{+472}_{-439}$	$3.210^{+1.334}_{-0.986}$
Alt.	$-139 \pm 23$	$2.94^{+0.54}_{-0.44}$	$4096^{+269}_{-292}$	$6966^{+606}_{-608}$	$6.111^{+2.668}_{-1.939}$

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



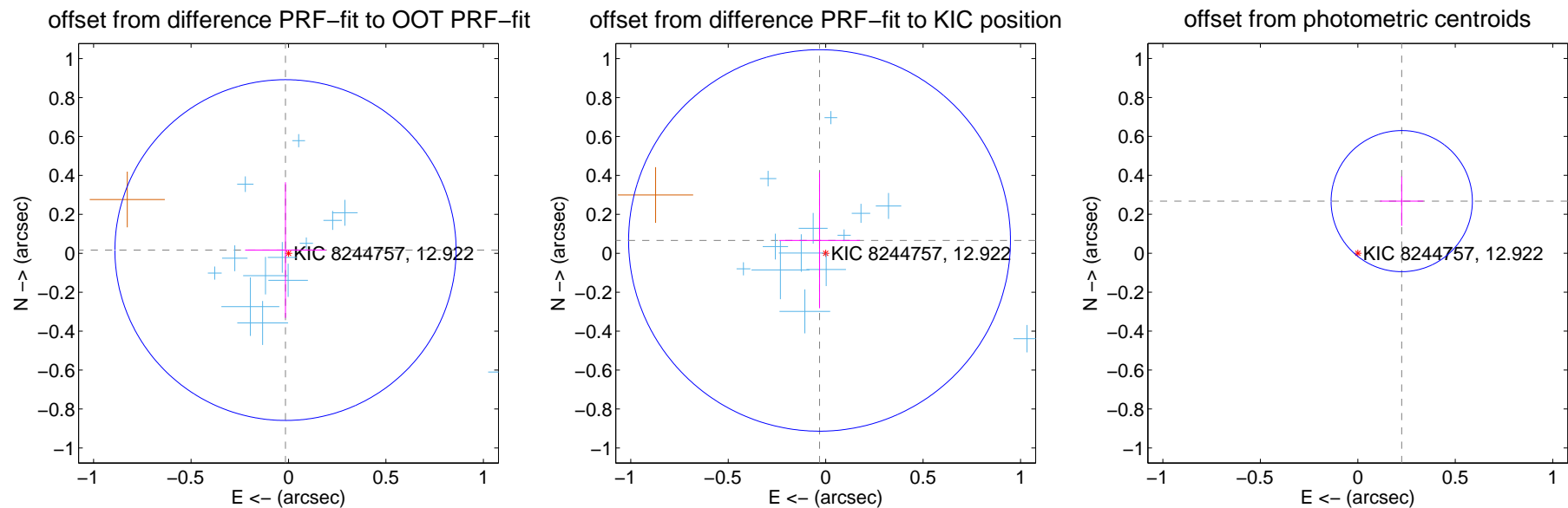
## DV Centroid Data

Supplemental centroid analysis for 008244757-03. Kepler magnitude: 12.92. Transit SNR 7.65

There are 13 quarters with good PRF difference image offsets

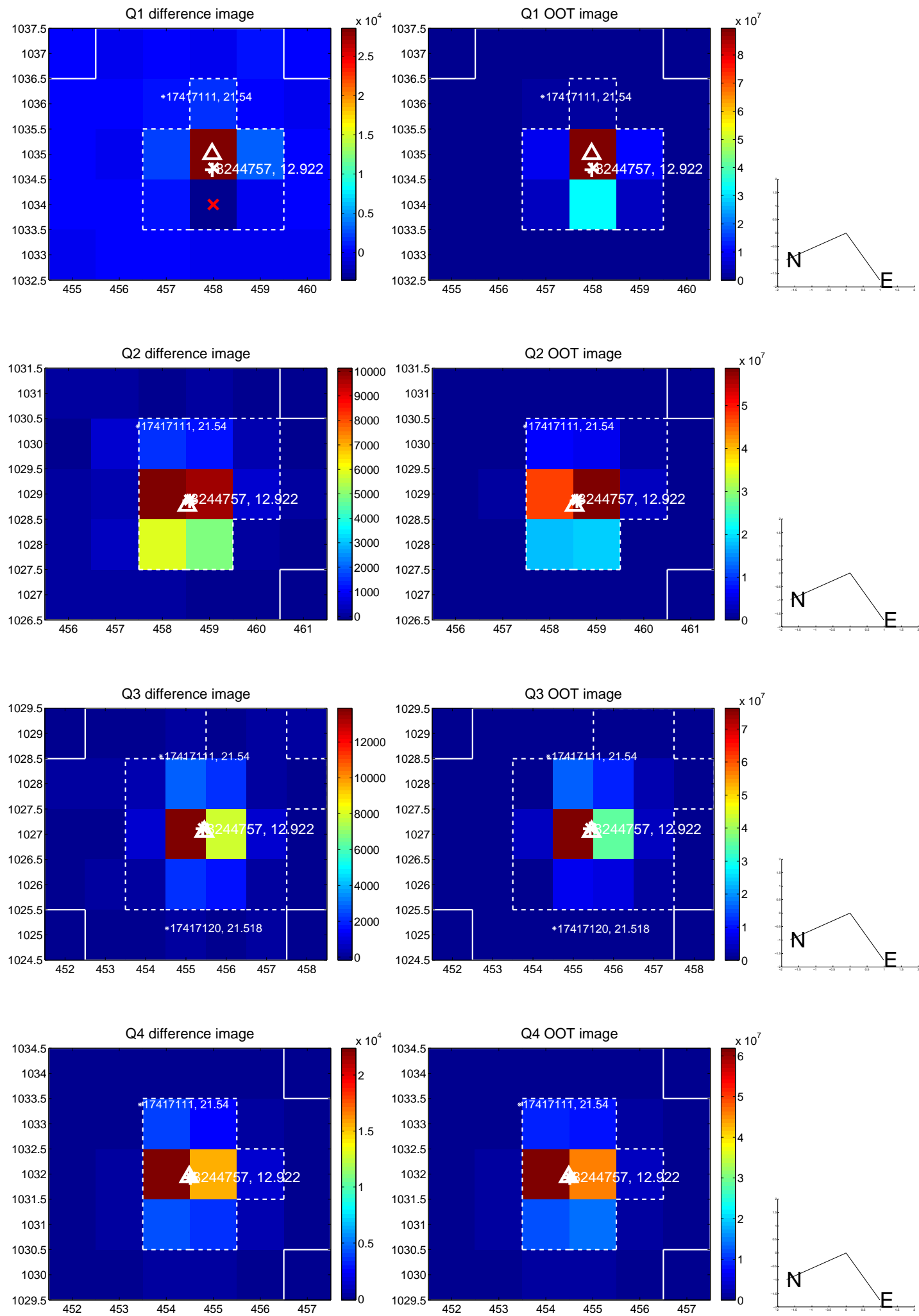
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.023 \pm 0.292$	0.08	$0.015 \pm 0.207$	$0.017 \pm 0.348$
PRF-fit source offset from KIC position	$0.073 \pm 0.327$	0.22	$0.031 \pm 0.207$	$0.066 \pm 0.348$
photometric centroid source offset	$0.35 \pm 0.12$	2.90	$-0.23 \pm 0.11$	$0.27 \pm 0.13$

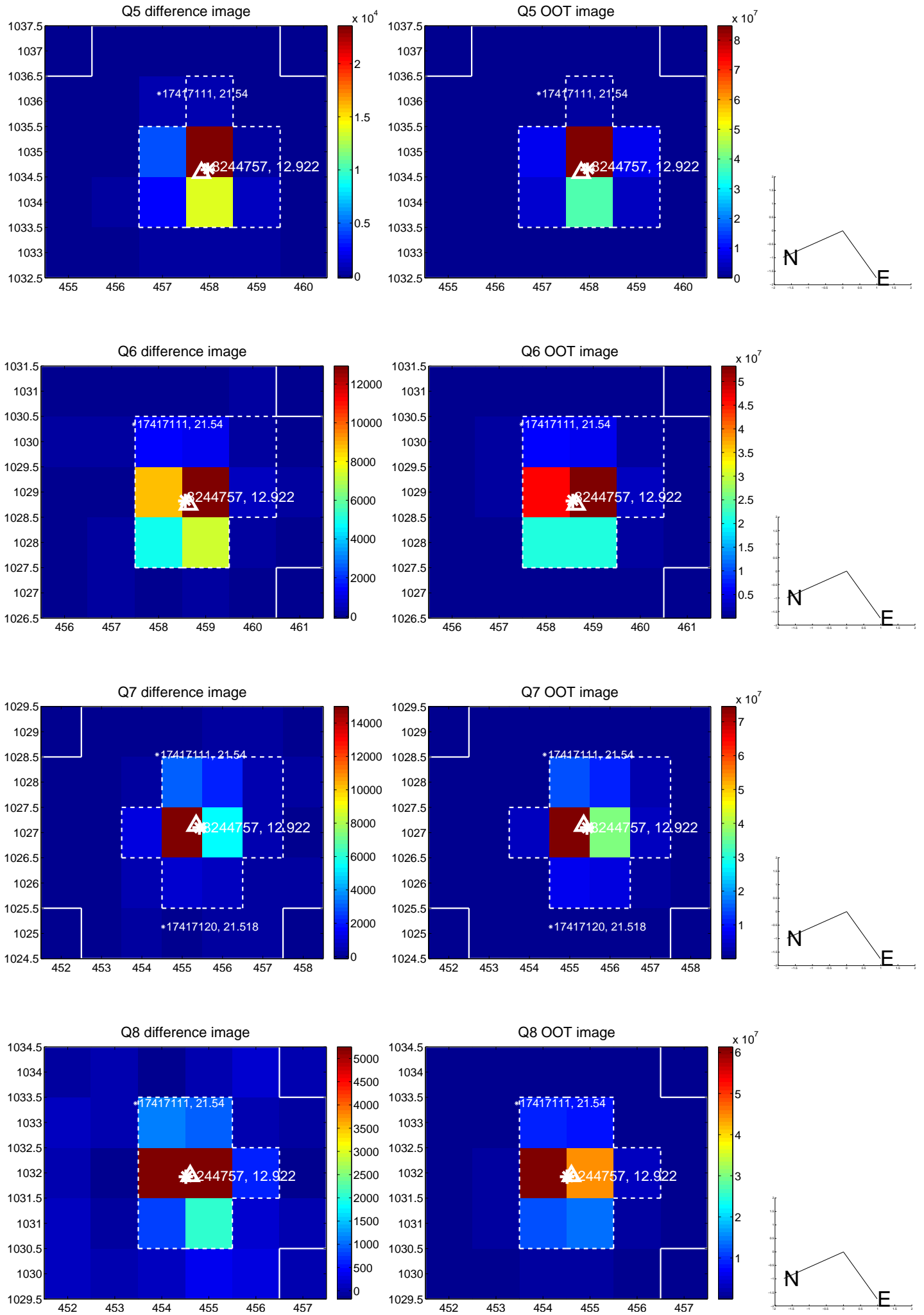


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

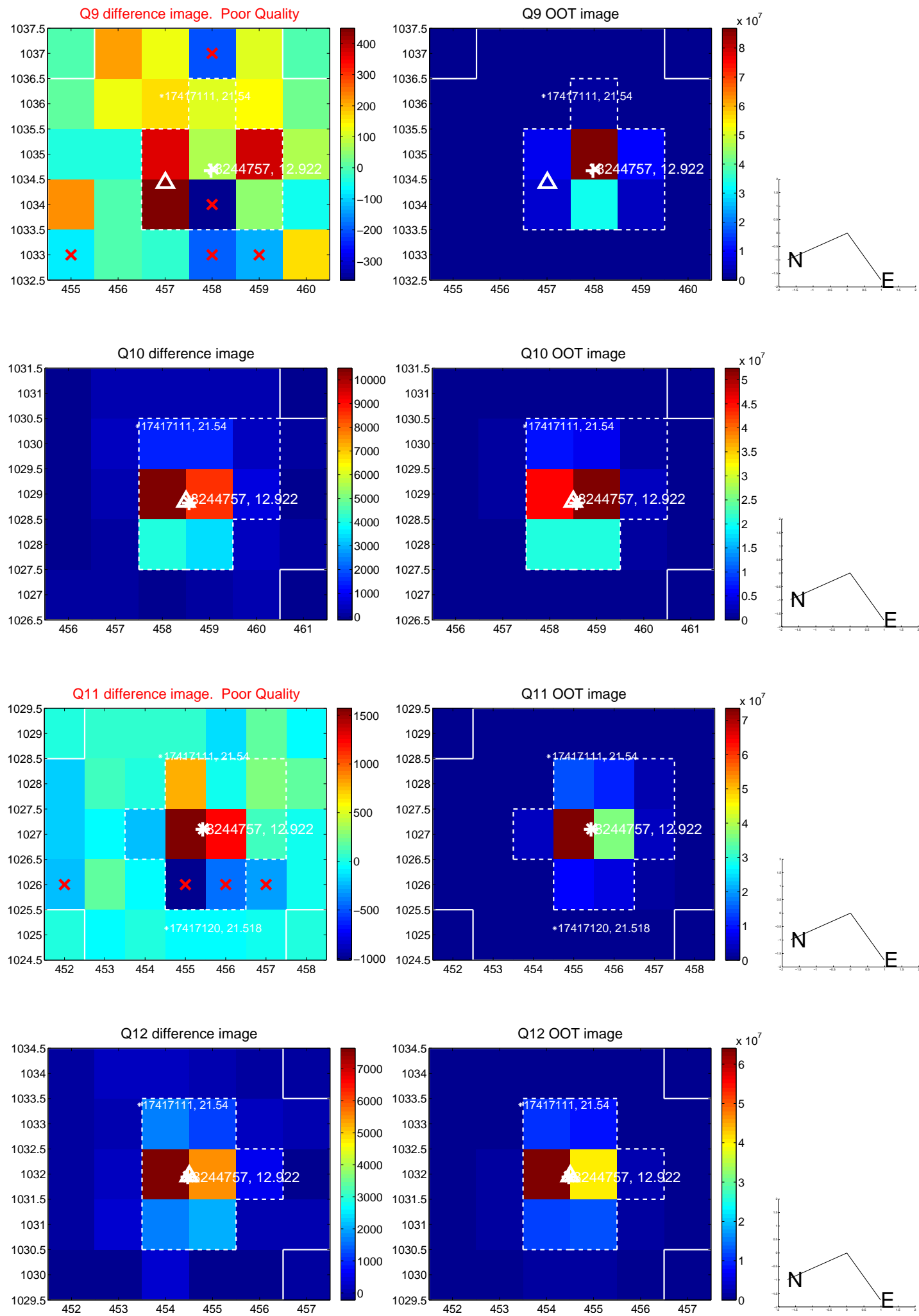
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



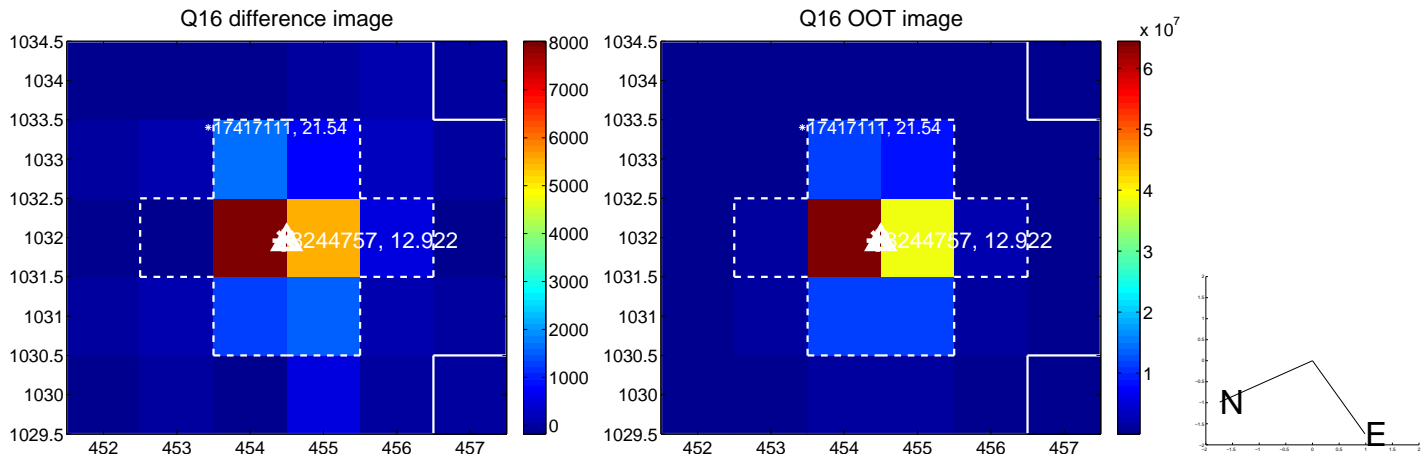
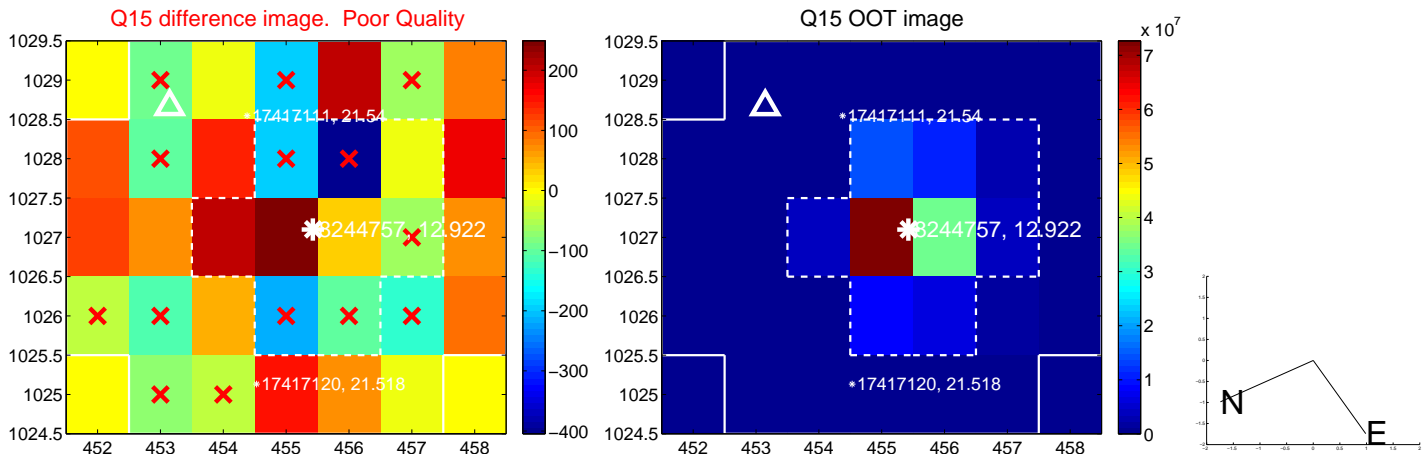
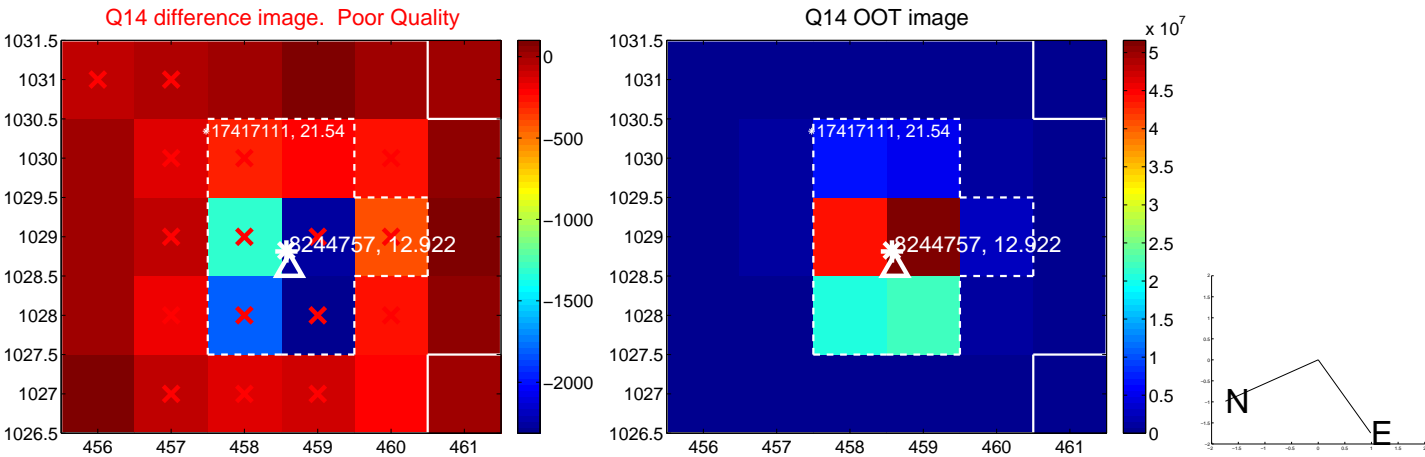
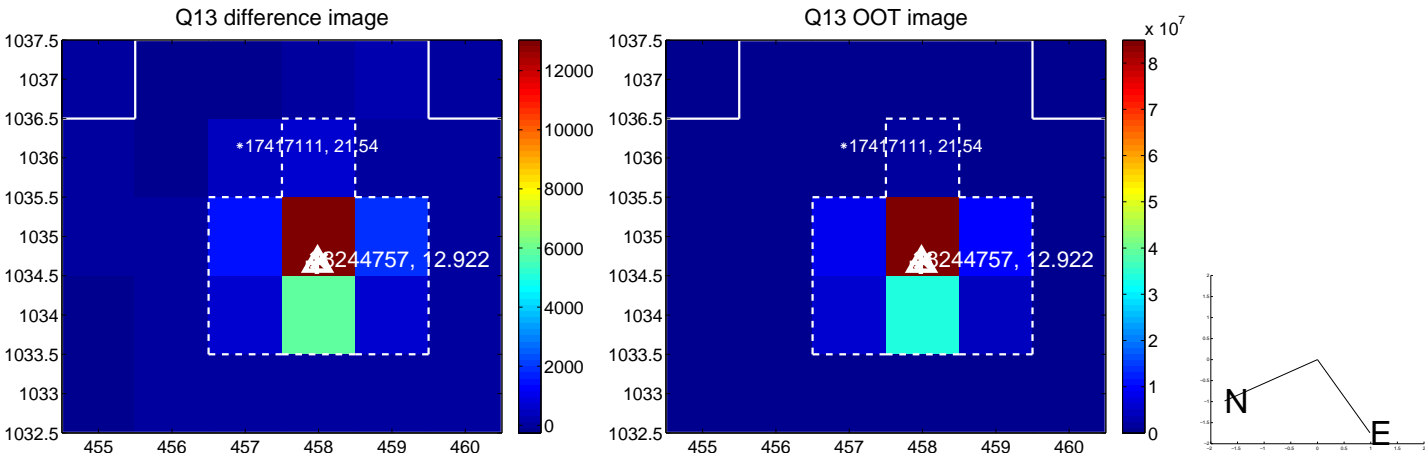
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

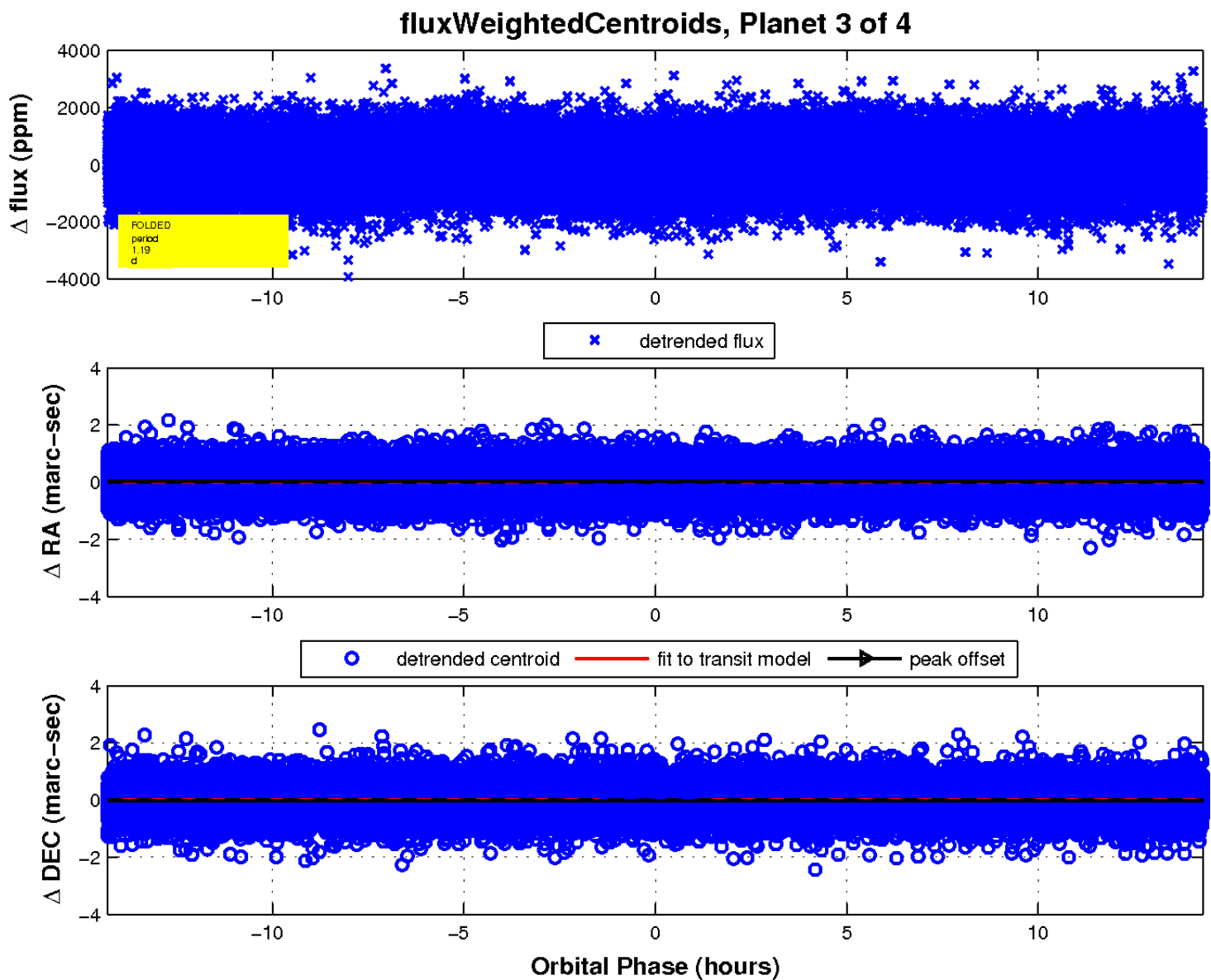
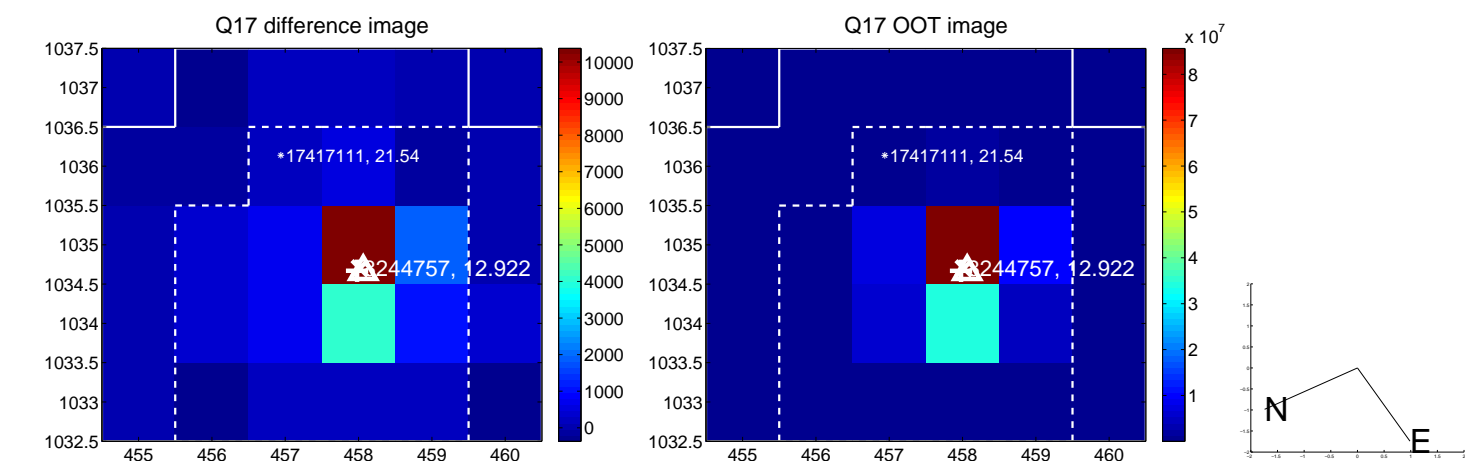


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

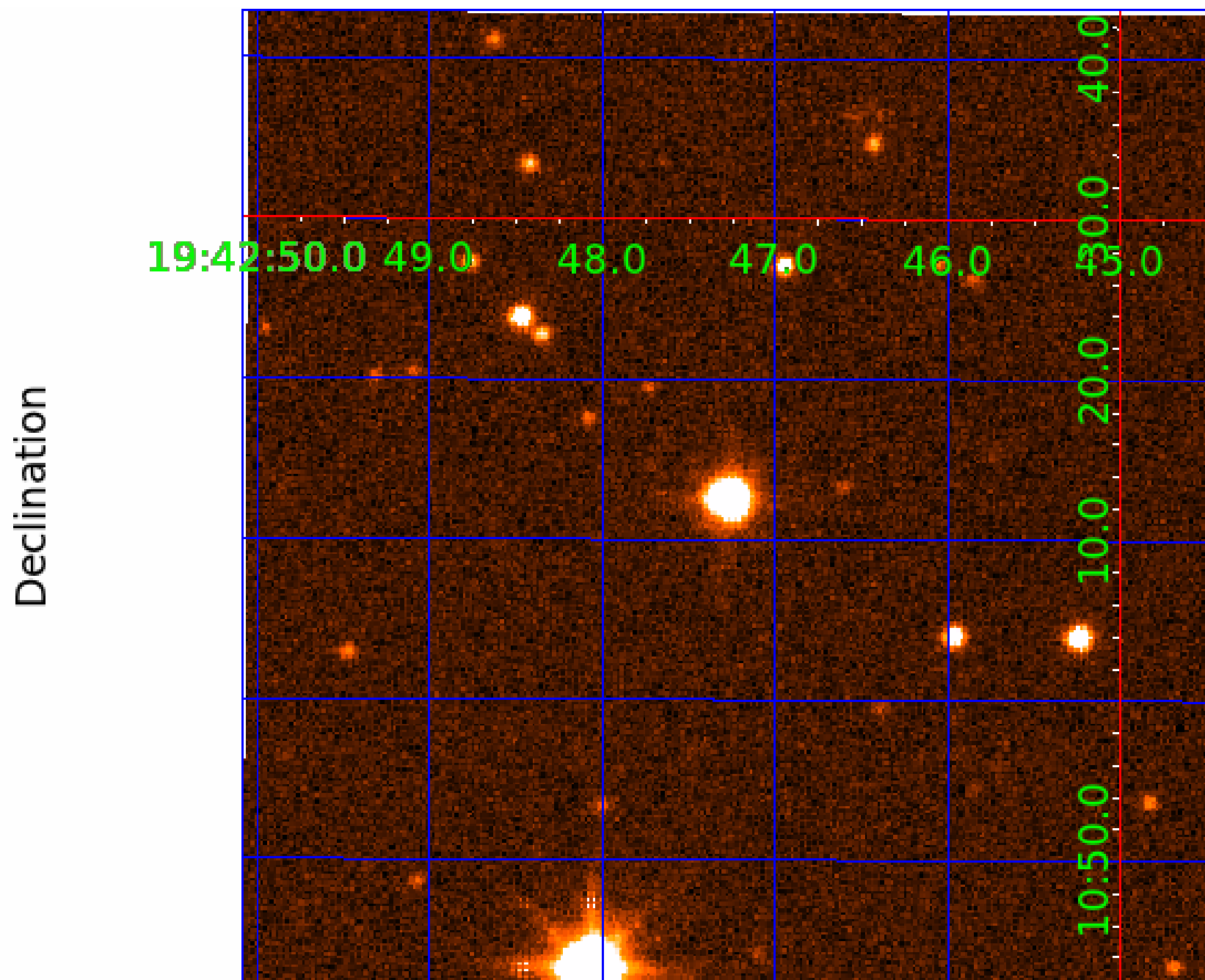




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 008244757

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008244757-01	OBS	No	0.680205	132.130772	99.7	2.532	17.8	13.2	2.08	7524	2.40	36948.80
008244757-02	OBS	No	2.160432	133.368976	183.9	3.894	9.7	10.2	2.08	7524	2.86	7914.06
008244757-03	OBS	No	1.192007	132.131480	118.8	4.962	8.6	7.6	2.08	7524	2.86	17488.31
008244757-04	OBS	No	1.270682	132.097680	198.3	3.510	9.9	9.1	2.08	7524	3.38	16059.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008244757-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008244757-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008244757-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008244757-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST

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

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

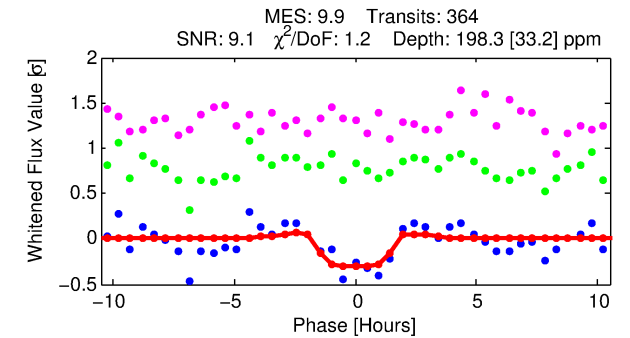
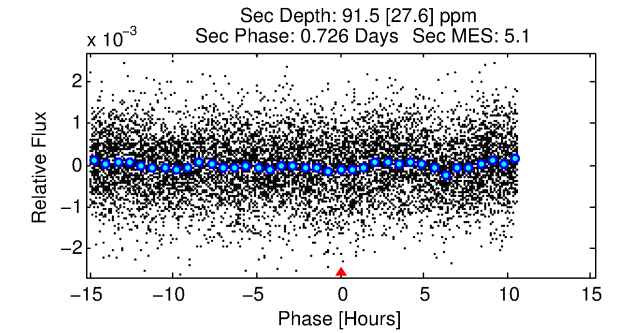
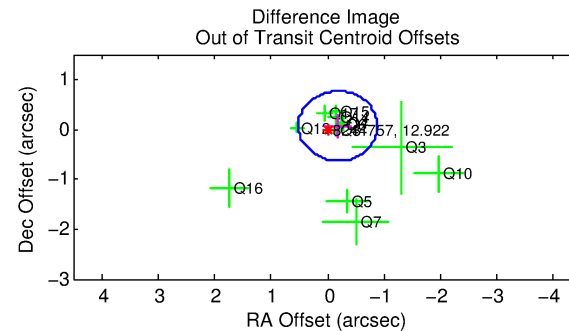
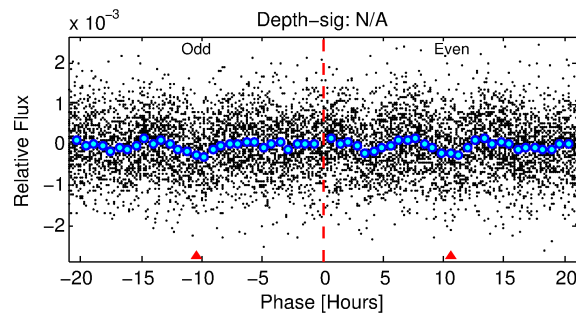
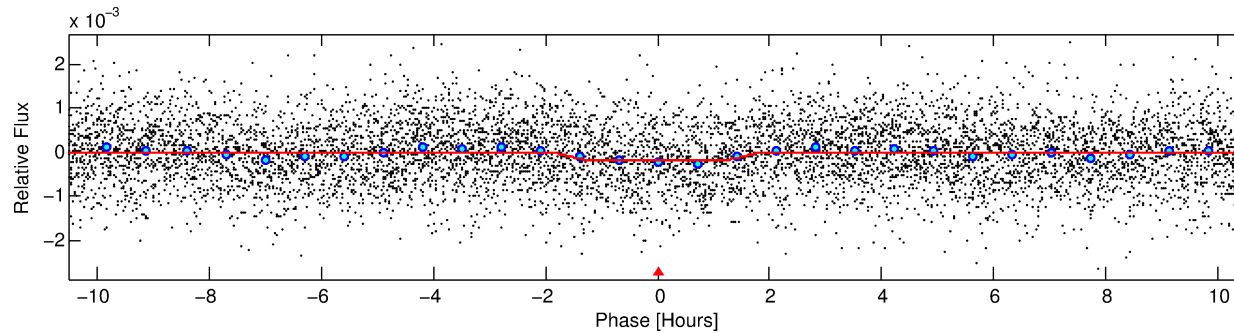
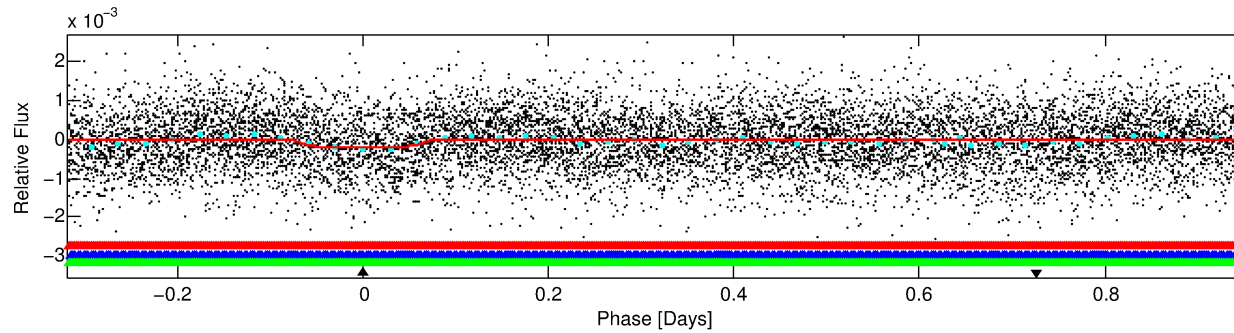
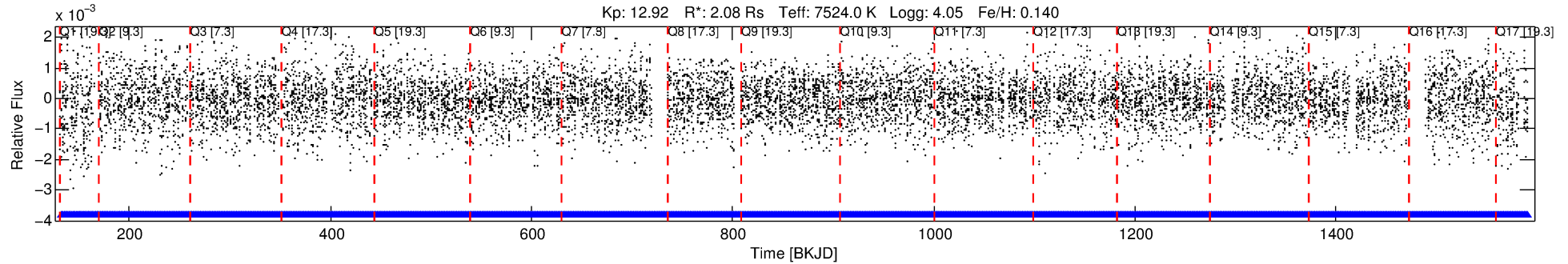
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008244757-04

No Significant Match Found

# DV One-Page Summary

KIC: 8244757 Candidate: 4 of 4 Period: 1.271 d



## DV Fit Results:

Period = 1.27068 [0.00002] d  
Epoch = 132.0977 [0.0049] BKJD  
Rp/R\* = 0.0149 [0.0055]  
a/R\* = 1.60 [2.27]  
b = 0.90 [0.50]  
Seff = 16059.69 [5569.58]  
Teq = 2871 [249] K  
Rp = 3.38 [1.53] Re  
a = 0.0278 [0.0059] AU  
Ag = 3.39 [2.88] [0.83σ]  
Teffp = 6023 [1228] K [2.52σ]

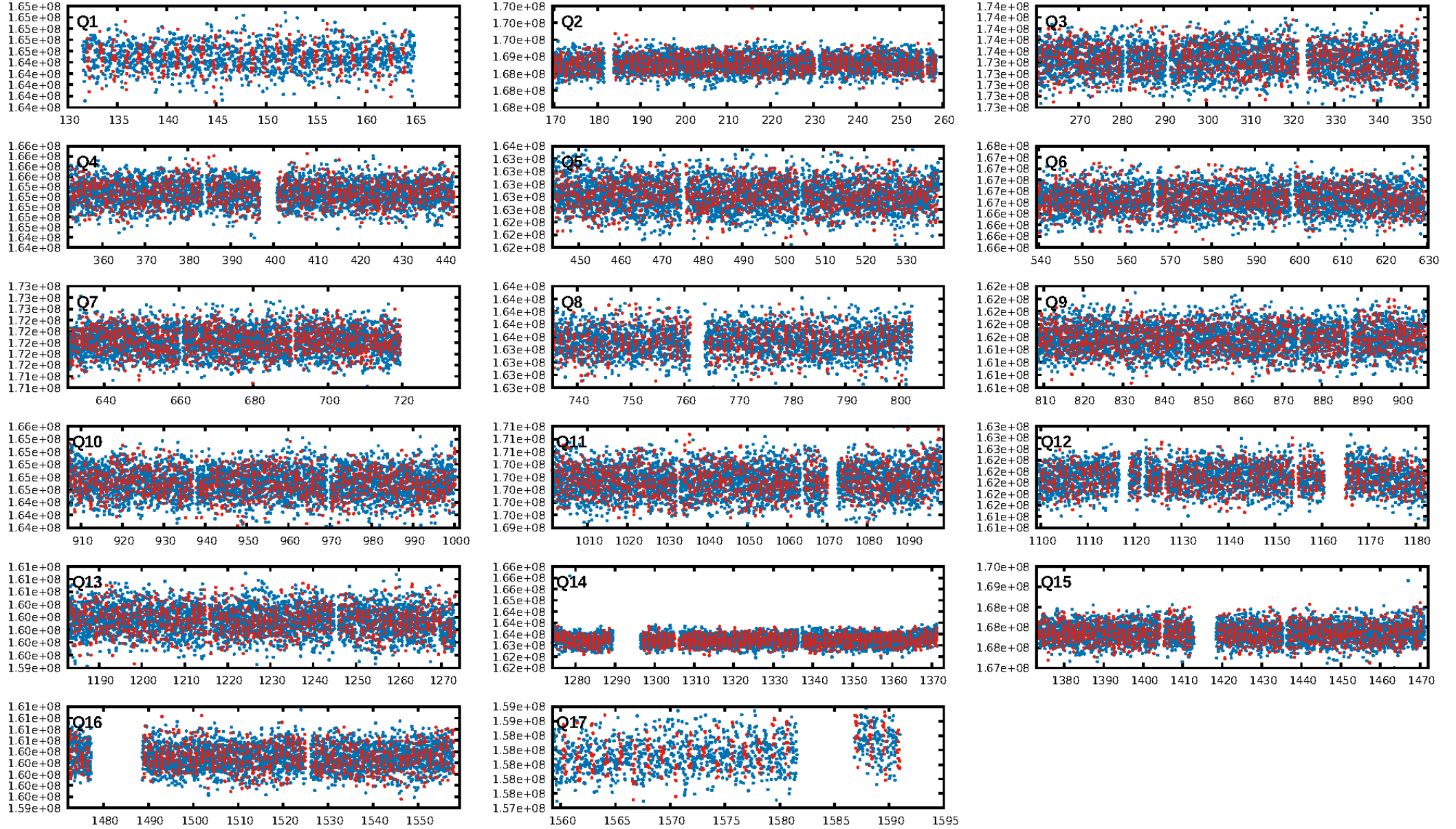
## DV Diagnostic Results:

ShortPeriod-sig: 24.4% [0.31σ]  
LongPeriod-sig: 100.0% [4.07σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [345/345]  
GhostDiagnostic-chr: -0.2272  
Centroid-sig: 2.2%  
Centroid-so: 0.037 arcsec [0.50σ]  
OotOffset-rm: 0.192 arcsec [0.83σ]  
KicOffset-rm: 0.202 arcsec [0.87σ]  
OotOffset-st: 3/3/4/2 [12]  
KicOffset-st: 3/3/4/2 [12]  
DiffImageQuality-fgm: 0.58 [7/12]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:15:07 Z

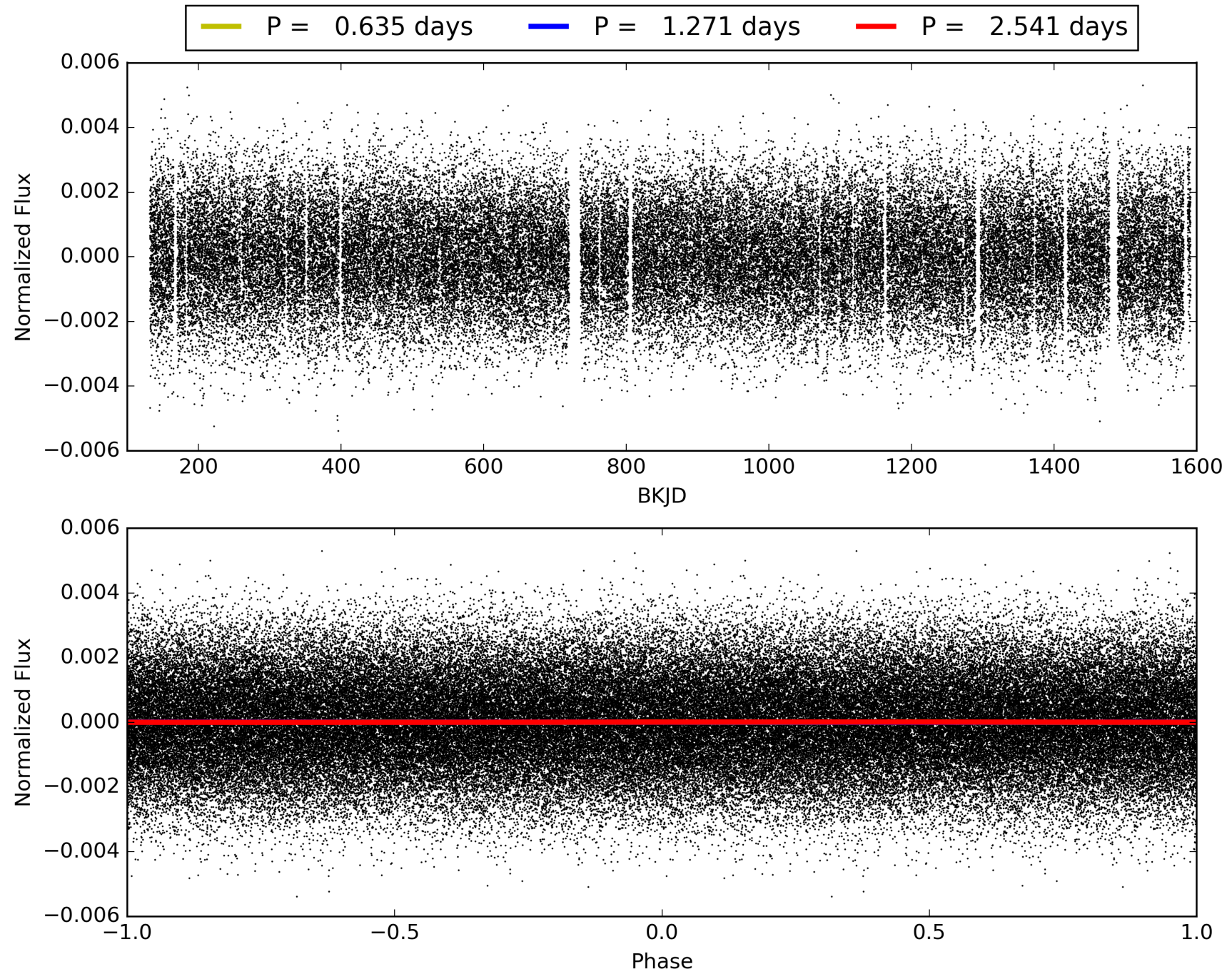
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008244757-04, PDC Light Curves



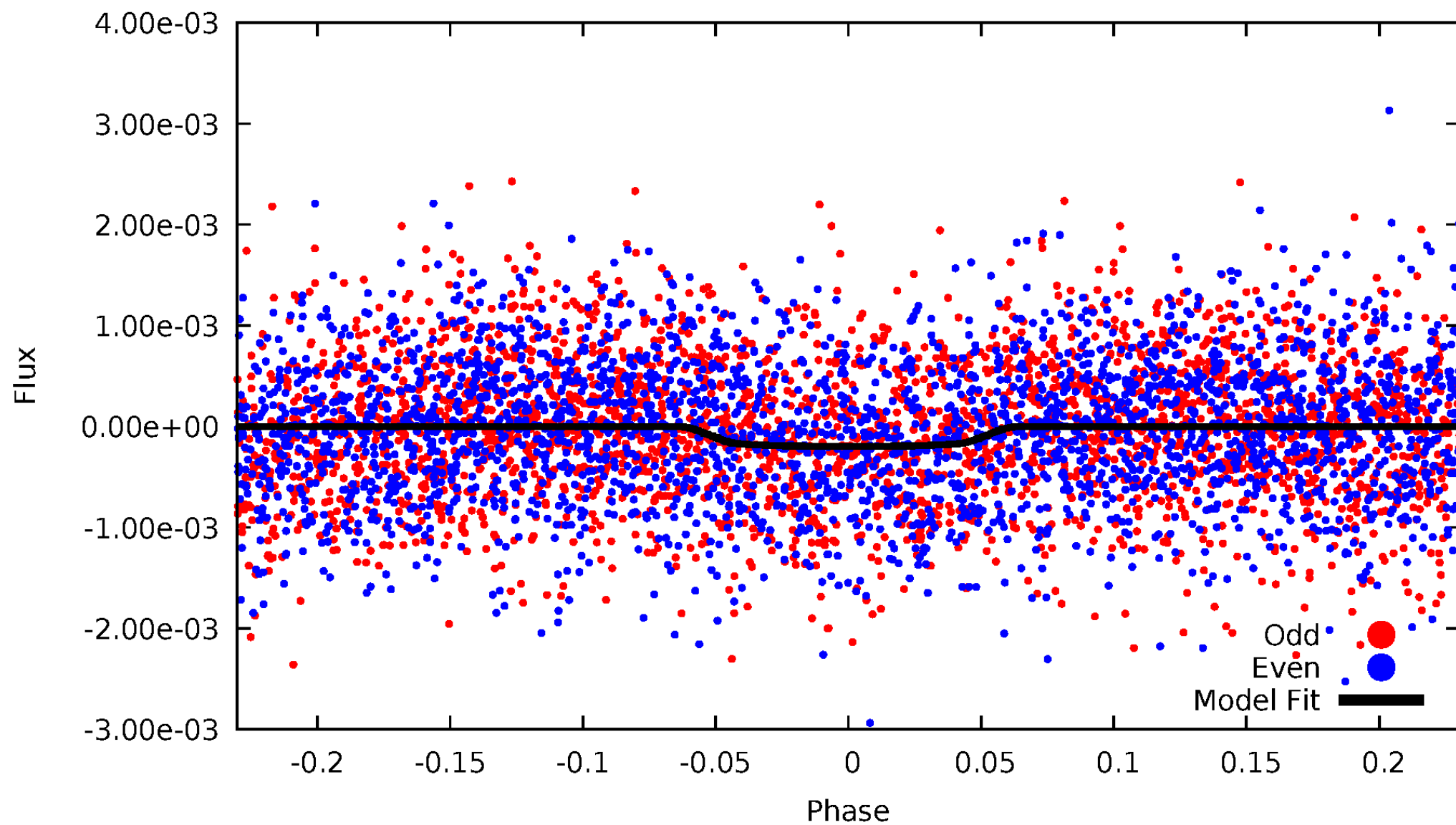


TCE 008244757-04



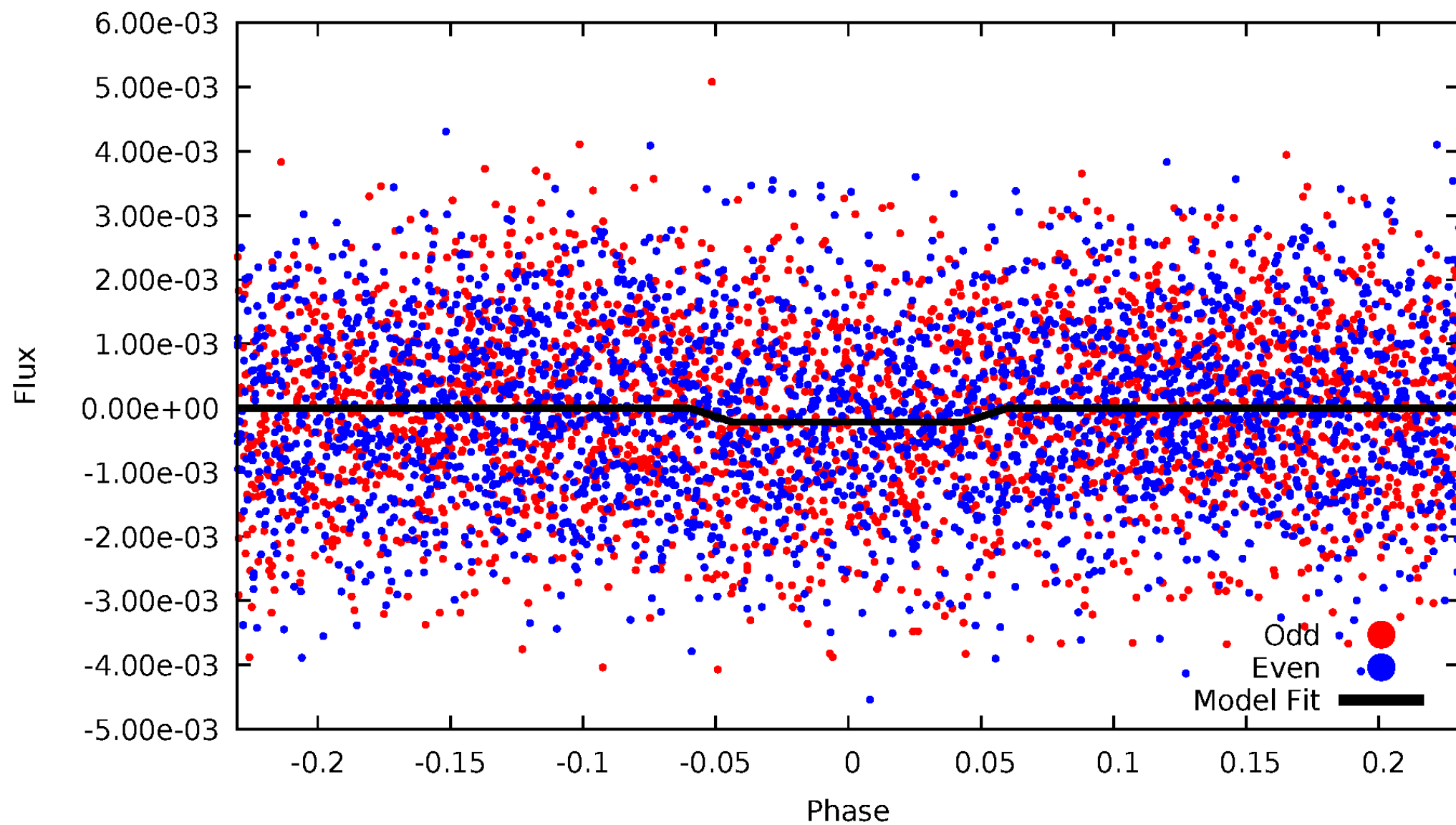
# DV Odd/Even

TCE 008244757-04



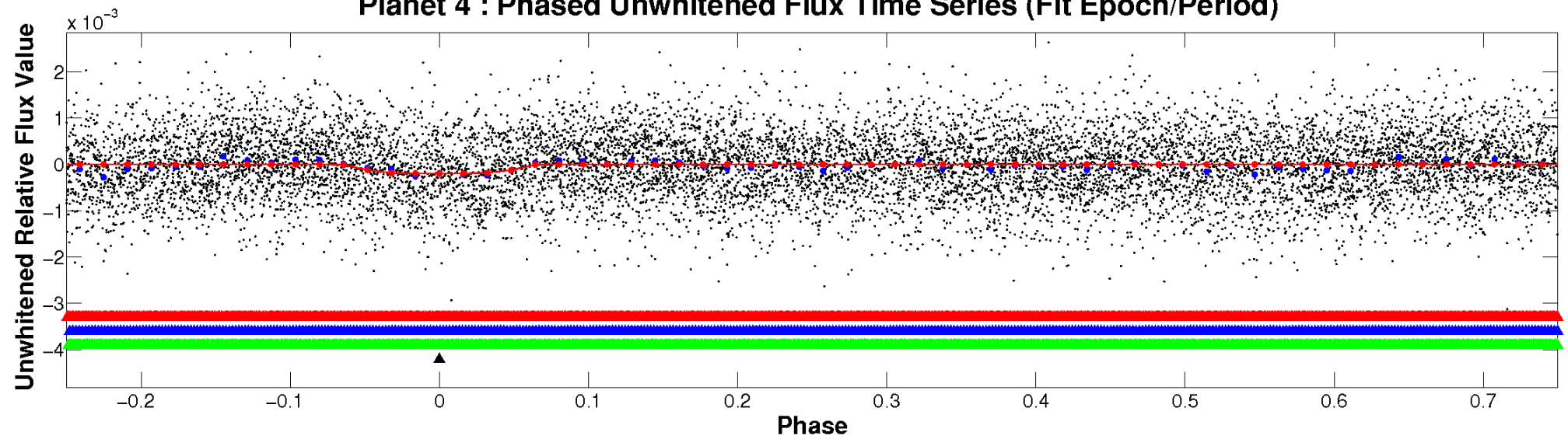
# ALT Odd/Even

TCE 008244757-04

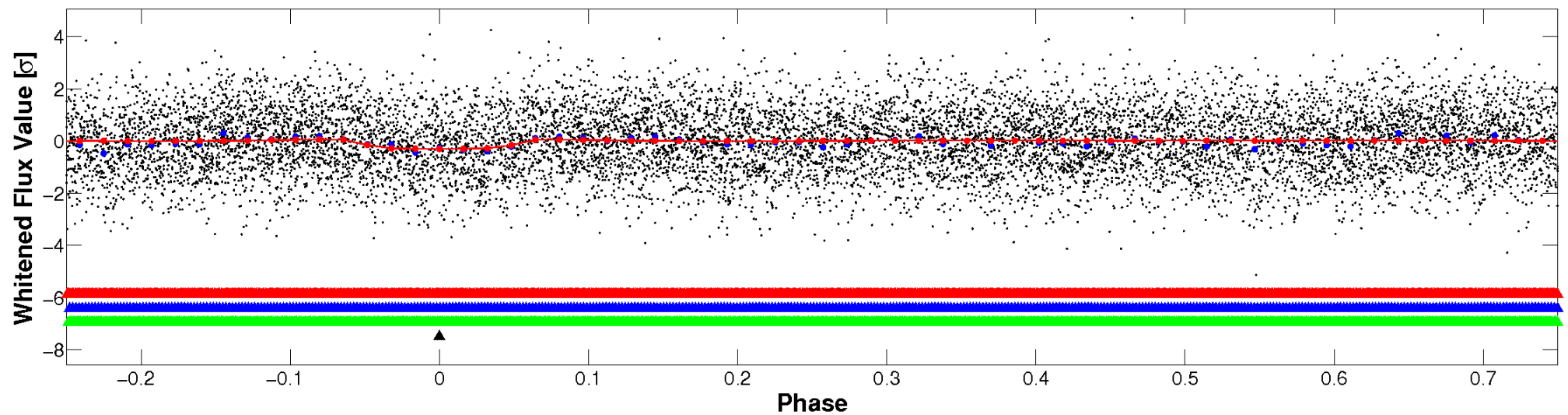


# Non-Whitened Vs. Whitened Light Curve

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



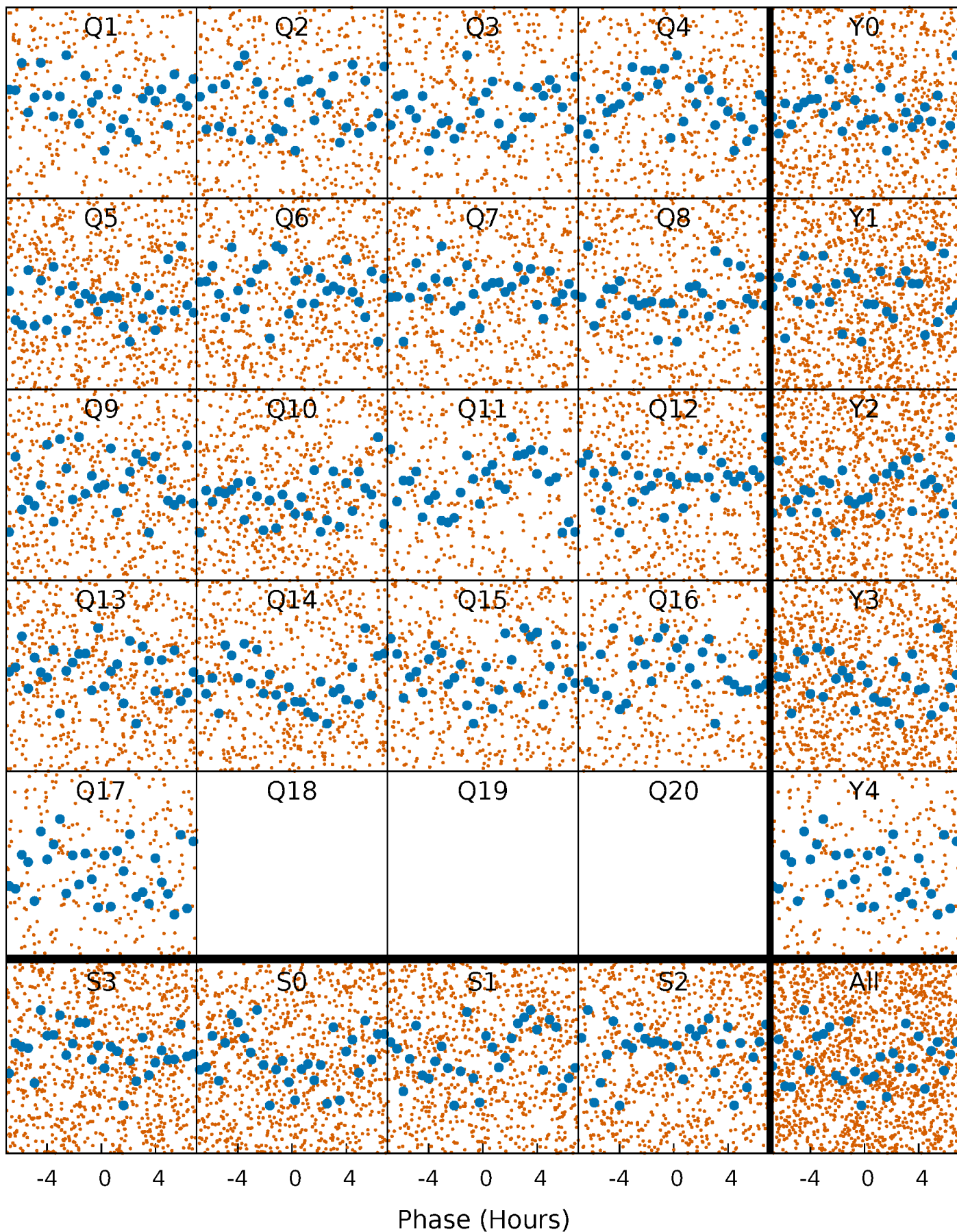
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

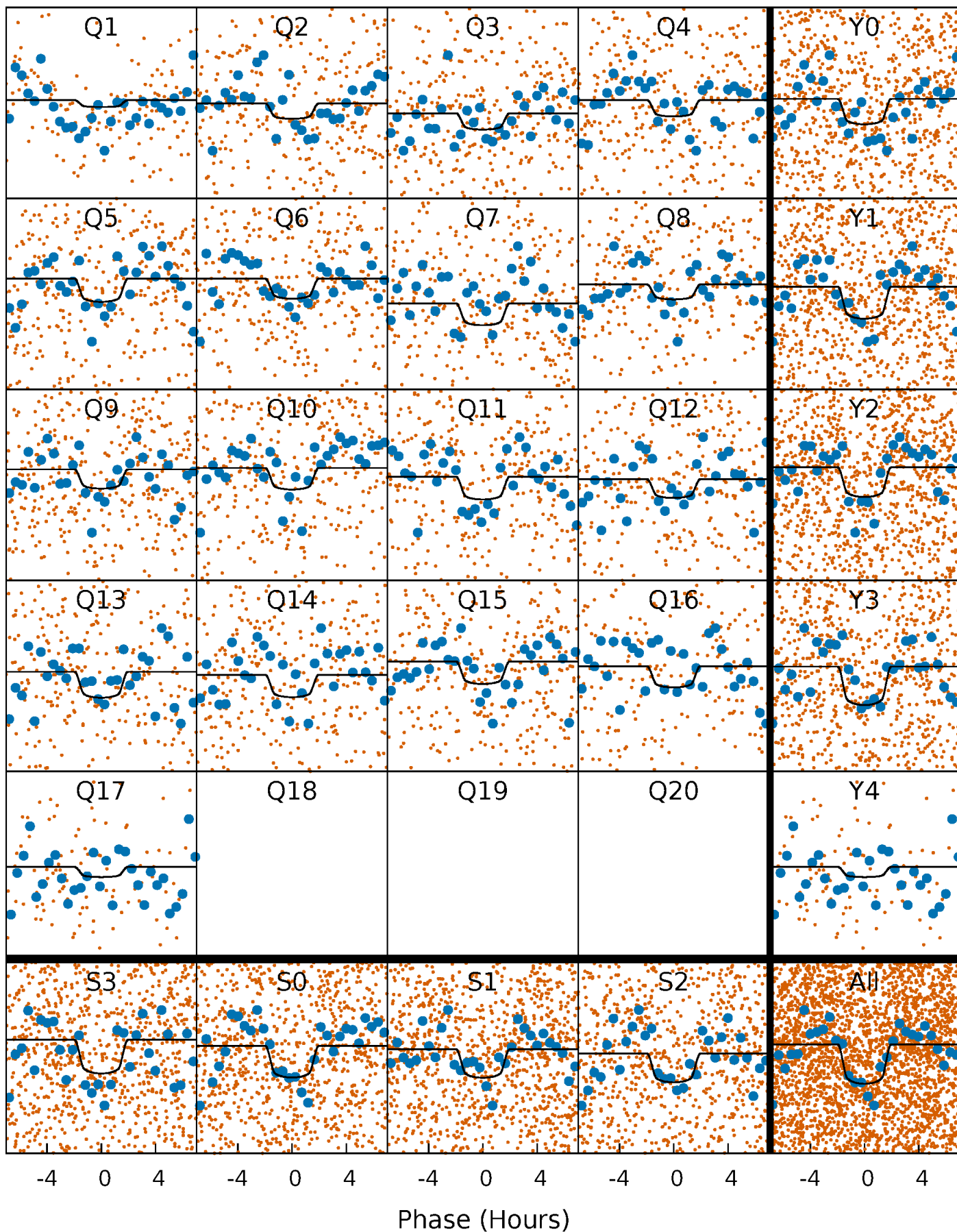
TCE 008244757-04   P= 1.270682 Days    $T_0=132.097680$  (BKJD)





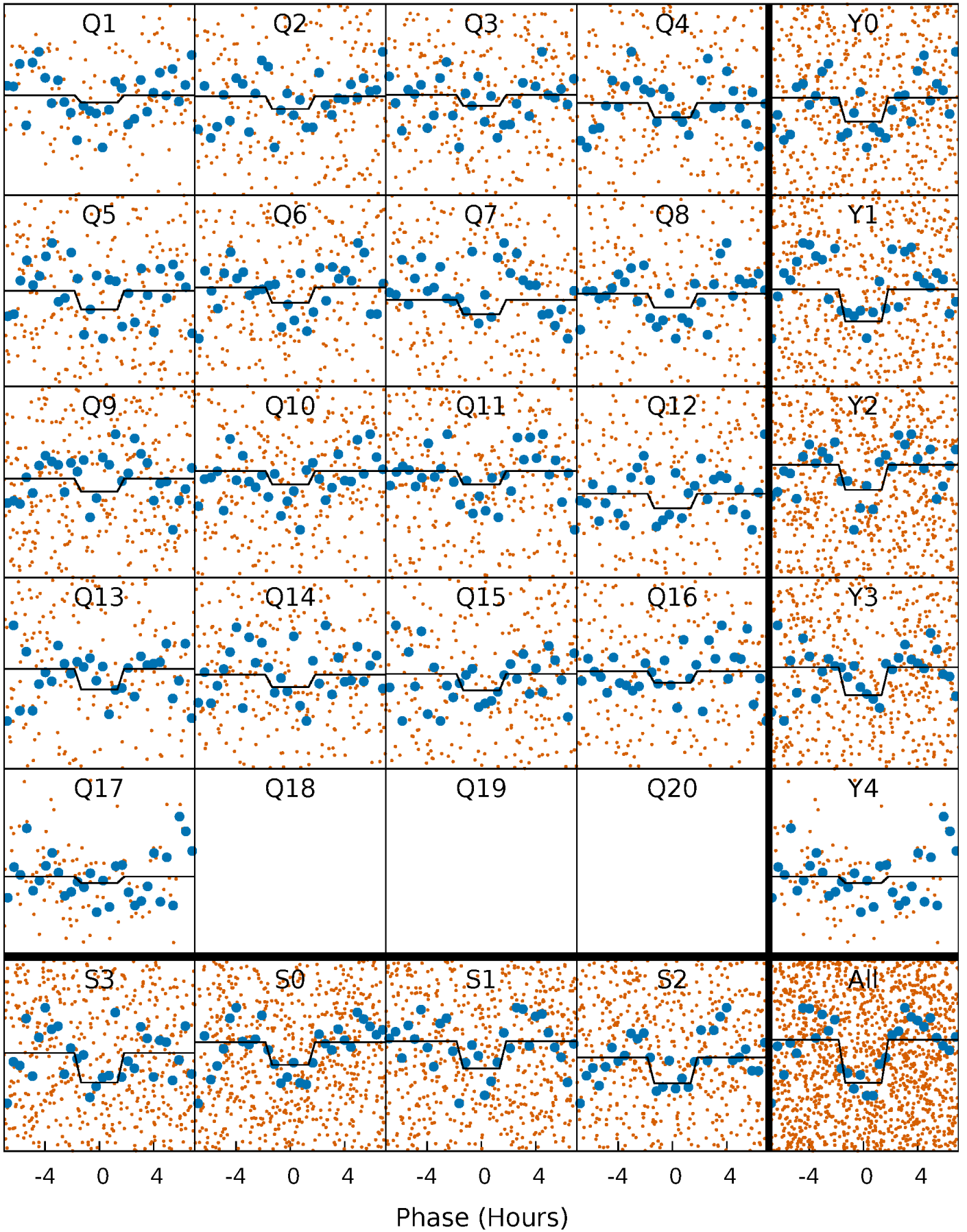
# DV Quarter-Phased Transit Curves

TCE 008244757-04 P= 1.270682 Days  $T_0=132.097680$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

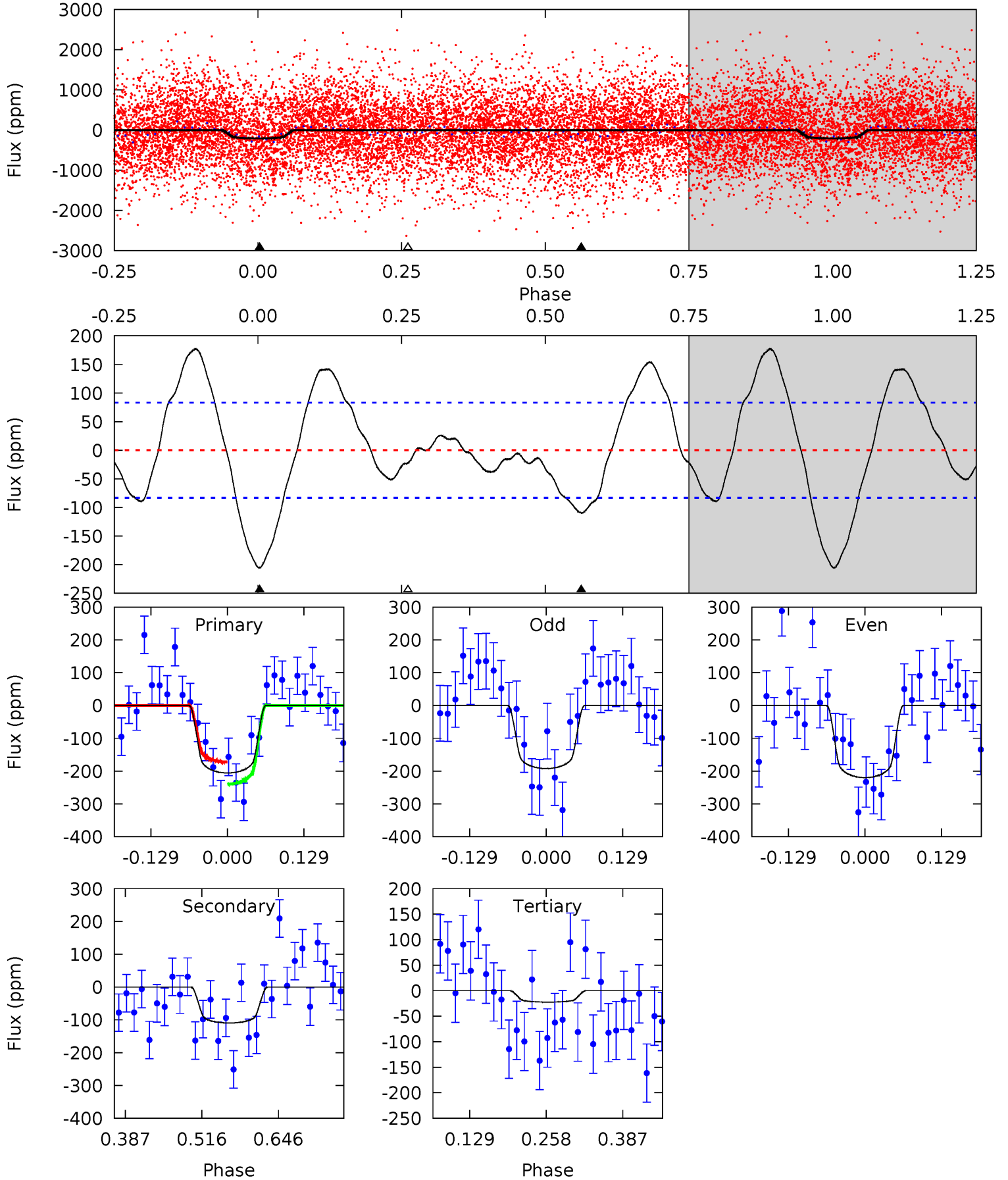
TCE 008244757-04    P= 1.270686 Days     $T_0=132.097711$  (BKJD)



# DV Model-Shift Uniqueness Test

008244757-04, P = 1.270682 Days, E = 130.826998 Days

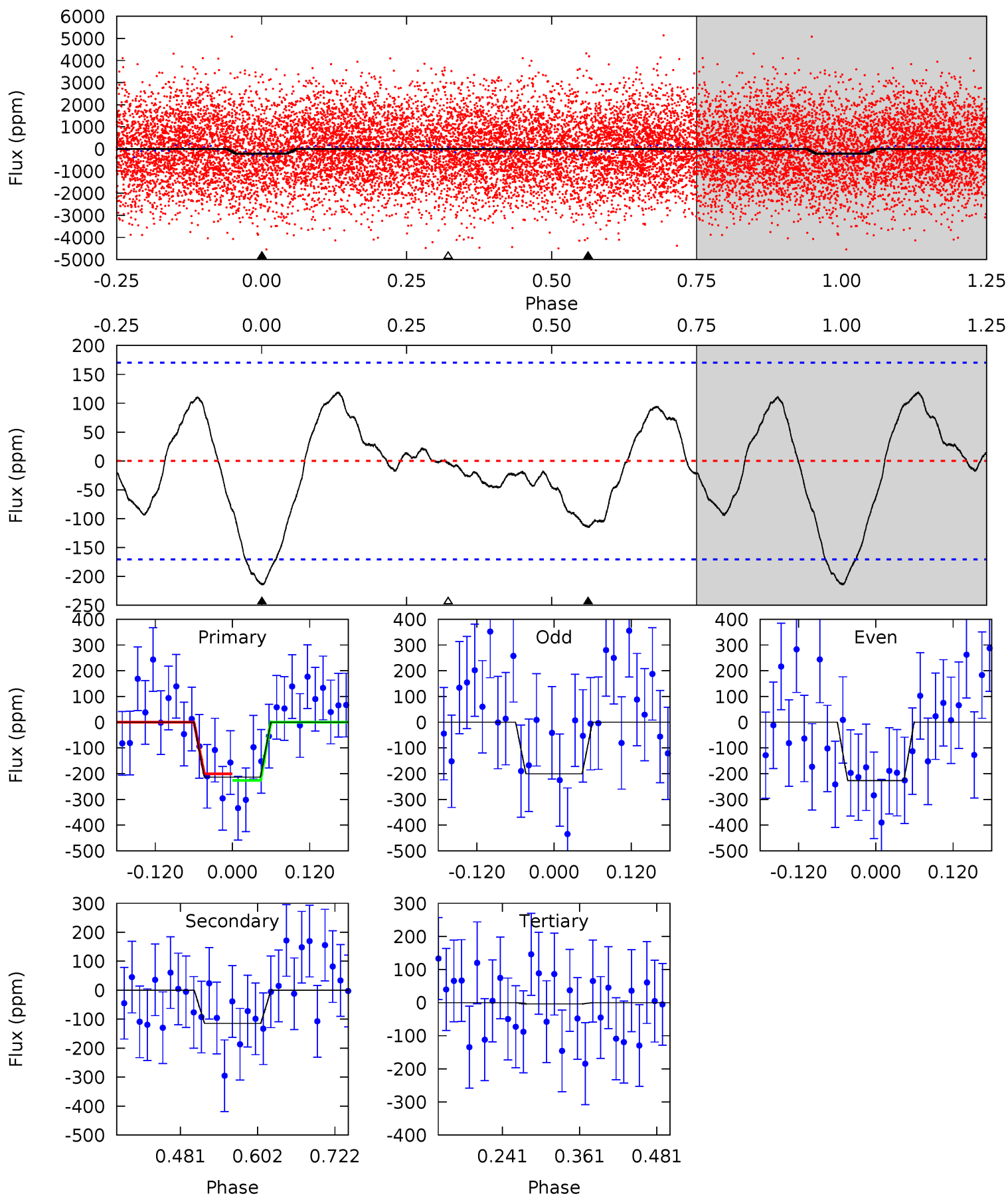
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	5.95	1.21	0	4.51	1.52	3.18	9.96	11.2	4.74	5.95	0.76	0.80	0.46	1.85



# Alt Model-Shift Uniqueness Test

008244757-04, P = 1.270686 Days, E = 130.827025 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
5.67	3.04	0.10	0	4.53	1.55	1.36	5.57	5.67	2.94	3.04	0.35	0.69	0.36	0.33



### Stellar Parameters For KIC 008244757

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7524^{+210}_{-341}$	$4.051^{+0.155}_{-0.155}$	$0.140^{+0.200}_{-0.400}$	$2.078^{+0.547}_{-0.448}$	$1.772^{+0.171}_{-0.293}$	$0.278^{+0.225}_{-0.123}$
	+3%/-5%	+4%/-4%	+143%/-286%	+26%/-22%	+10%/-17%	+81%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008244757-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-110 \pm 18$	$3.34^{+1.35}_{-1.27}$	$3993^{+280}_{-284}$	$5961^{+1902}_{-867}$	$3.990^{+6.411}_{-1.953}$
Alt.	$-115 \pm 38$	$3.23^{+1.49}_{-1.17}$	$3982^{+290}_{-261}$	$6117^{+2076}_{-1062}$	$4.332^{+7.146}_{-2.324}$

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



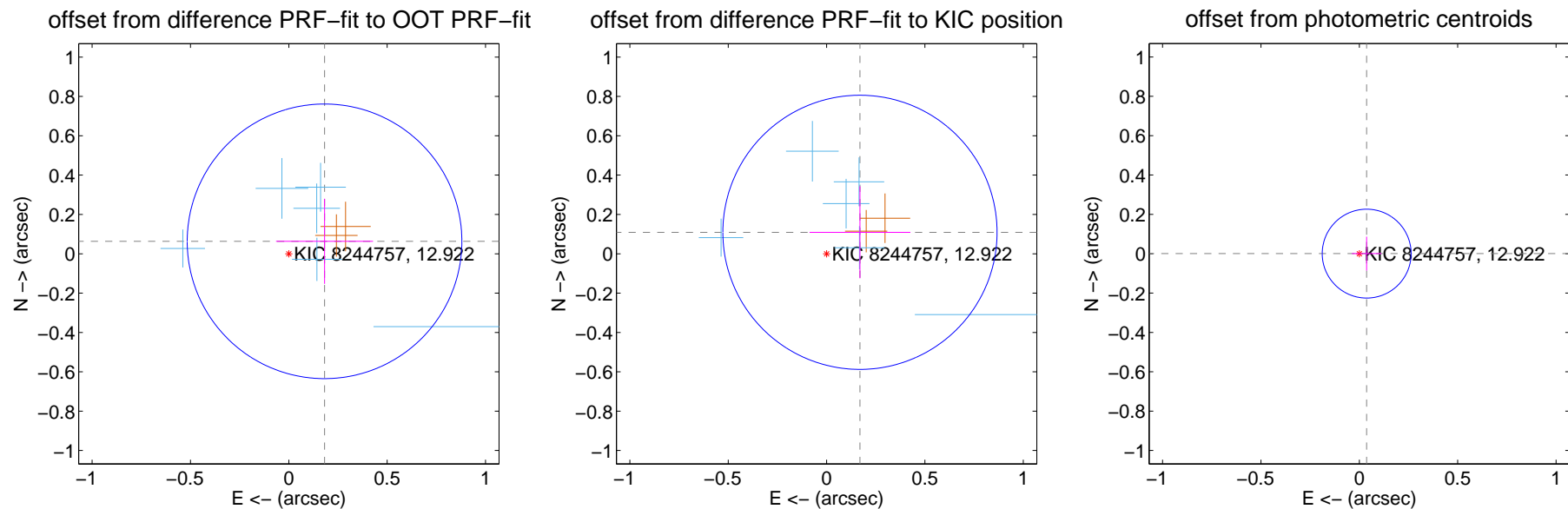
## DV Centroid Data

Supplemental centroid analysis for 008244757-04. Kepler magnitude: 12.92. Transit SNR 9.07

There are 7 quarters with good PRF difference image offsets

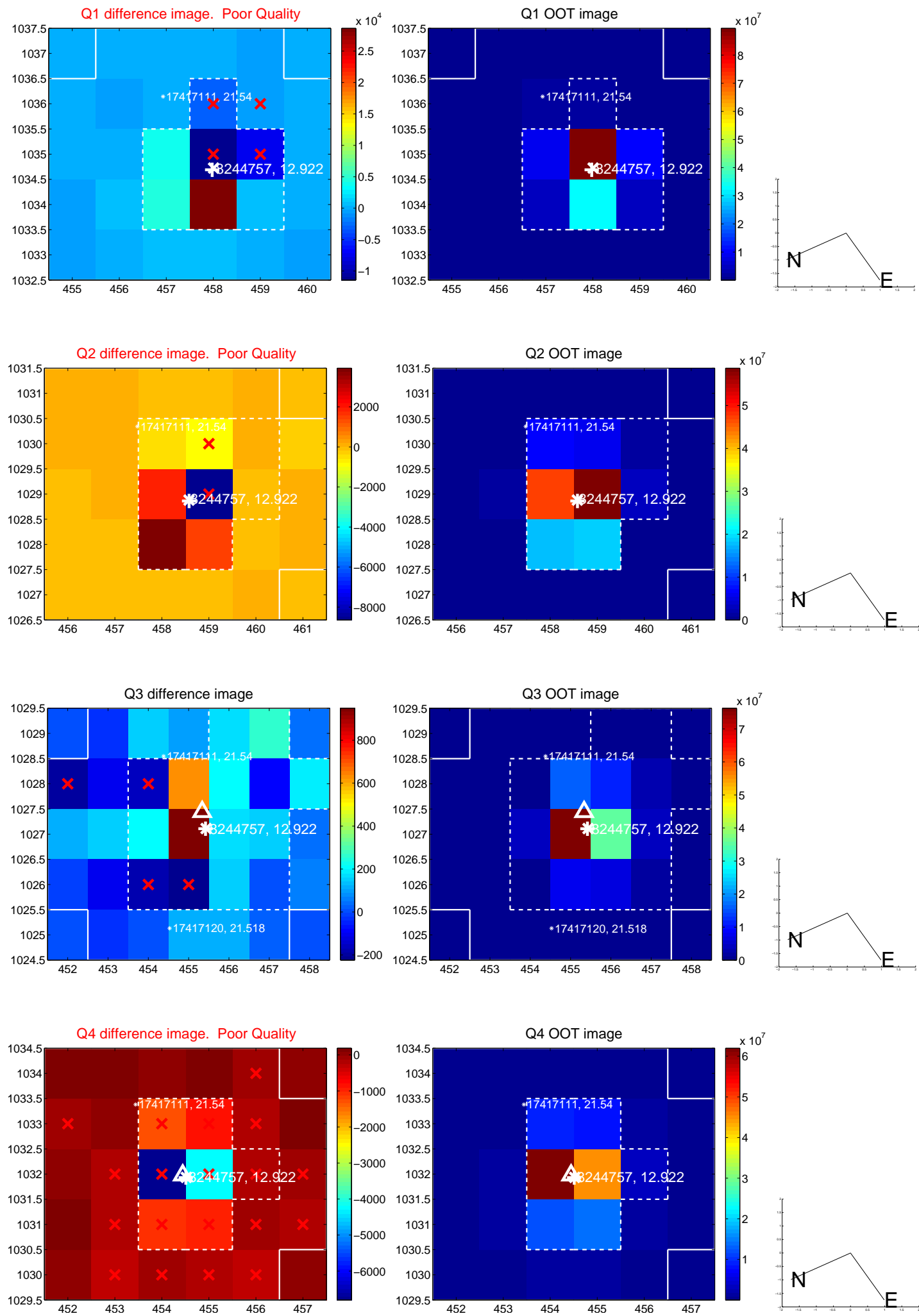
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.192 \pm 0.233$	0.83	$-0.182 \pm 0.247$	$0.063 \pm 0.216$
PRF-fit source offset from KIC position	$0.202 \pm 0.232$	0.87	$-0.170 \pm 0.256$	$0.109 \pm 0.234$
photometric centroid source offset	$0.04 \pm 0.08$	0.50	$-0.04 \pm 0.08$	$0.00 \pm 0.09$

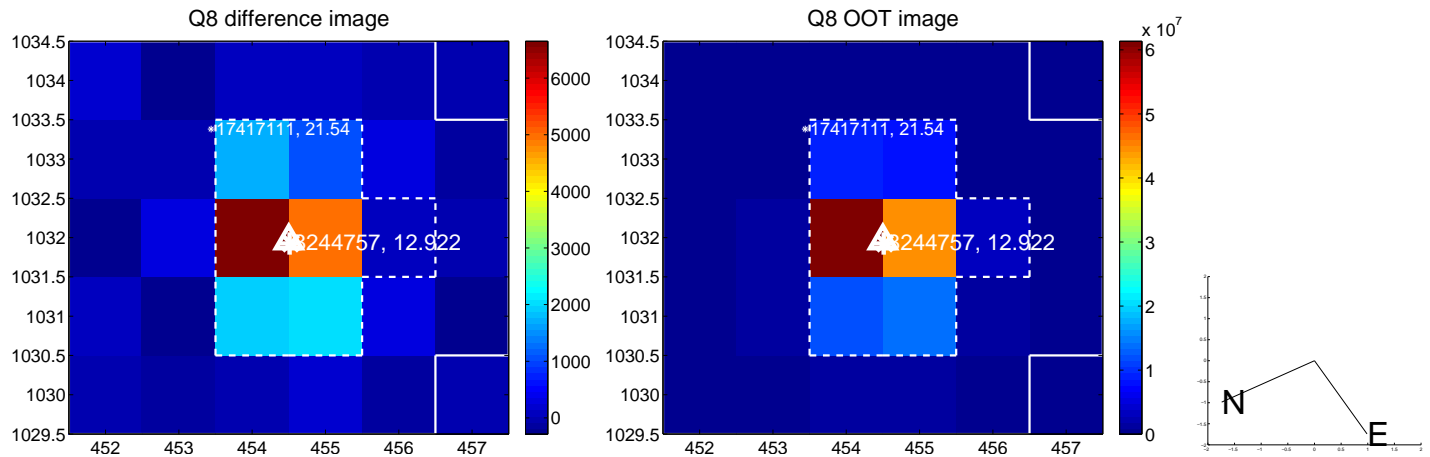
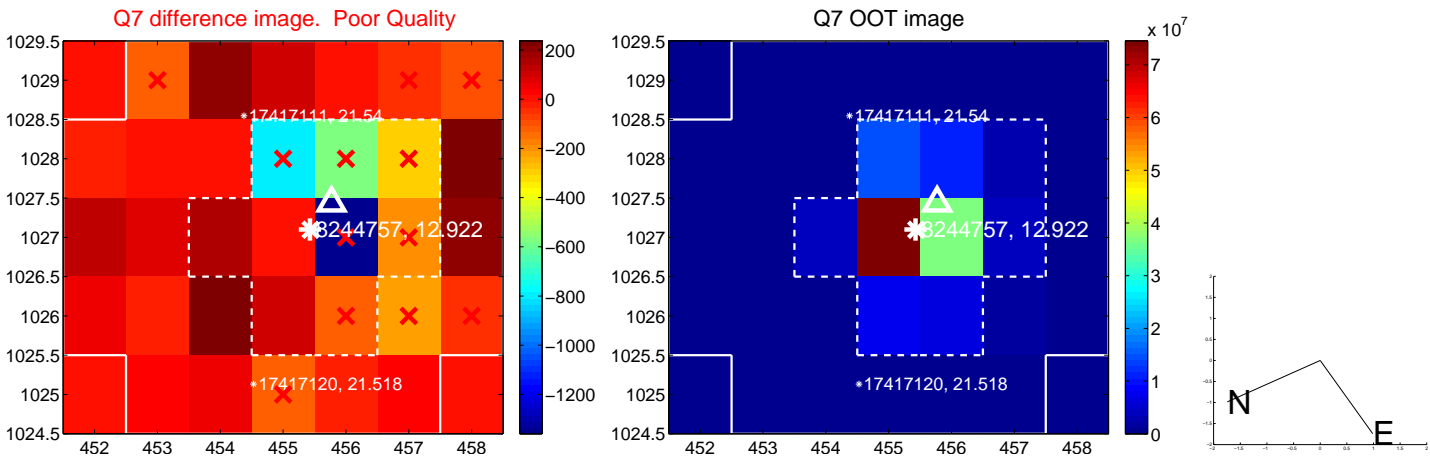
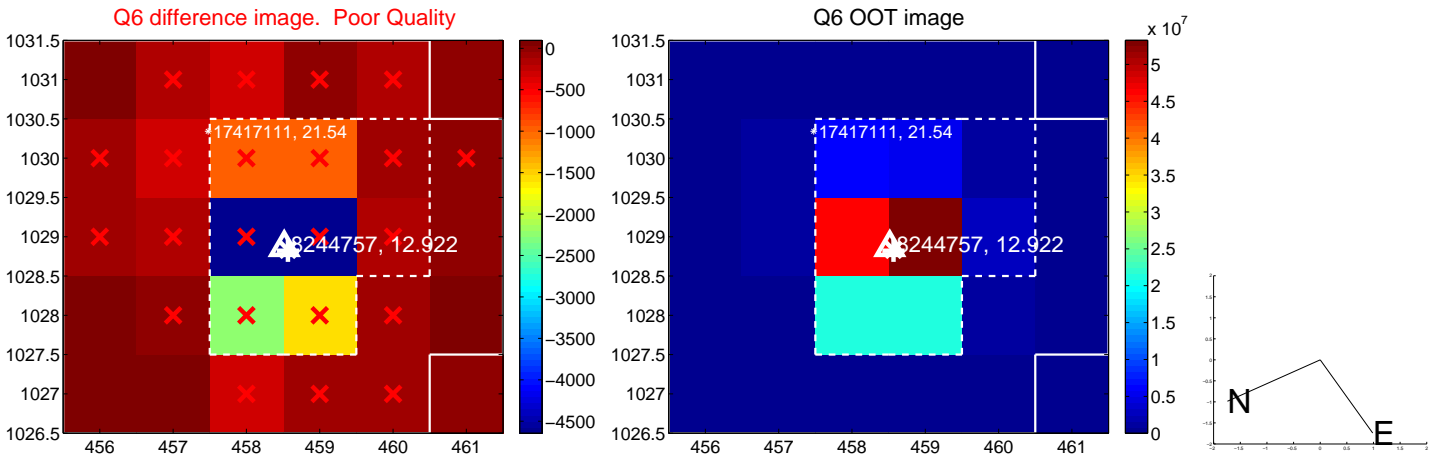
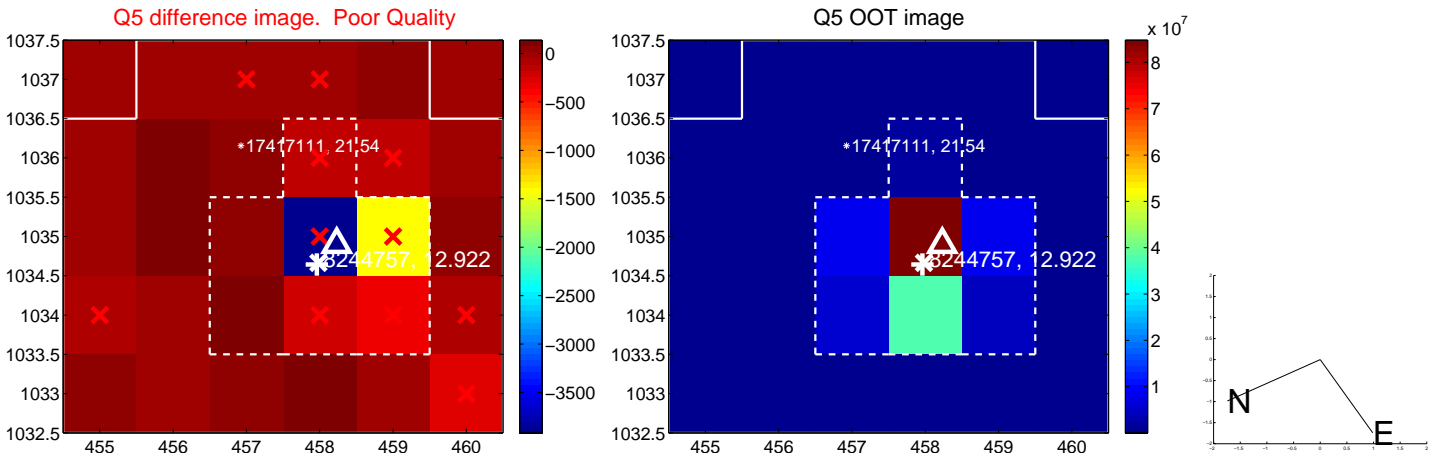


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

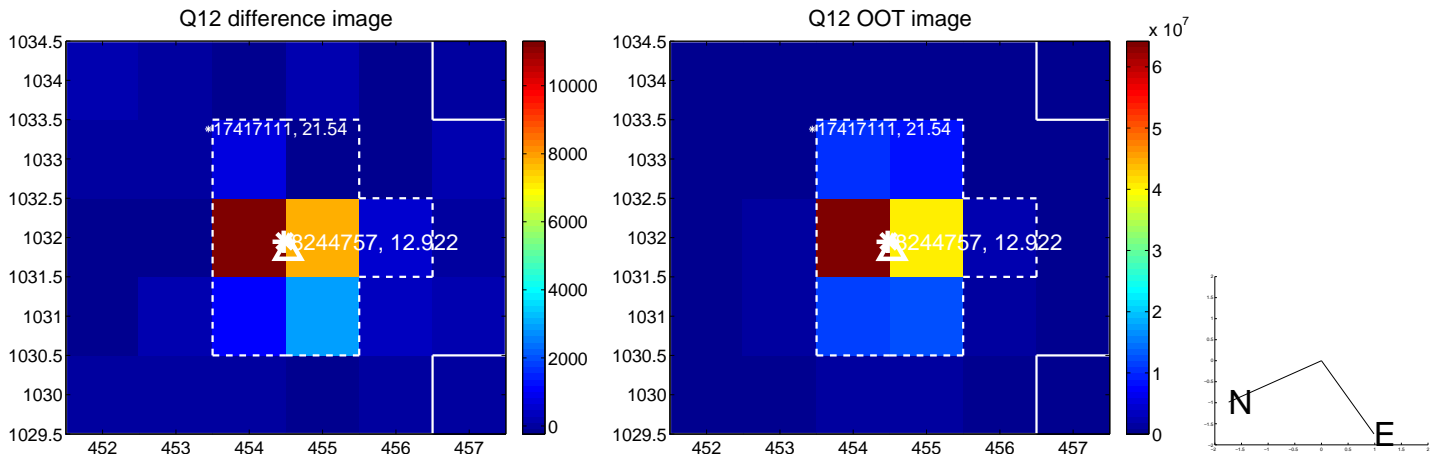
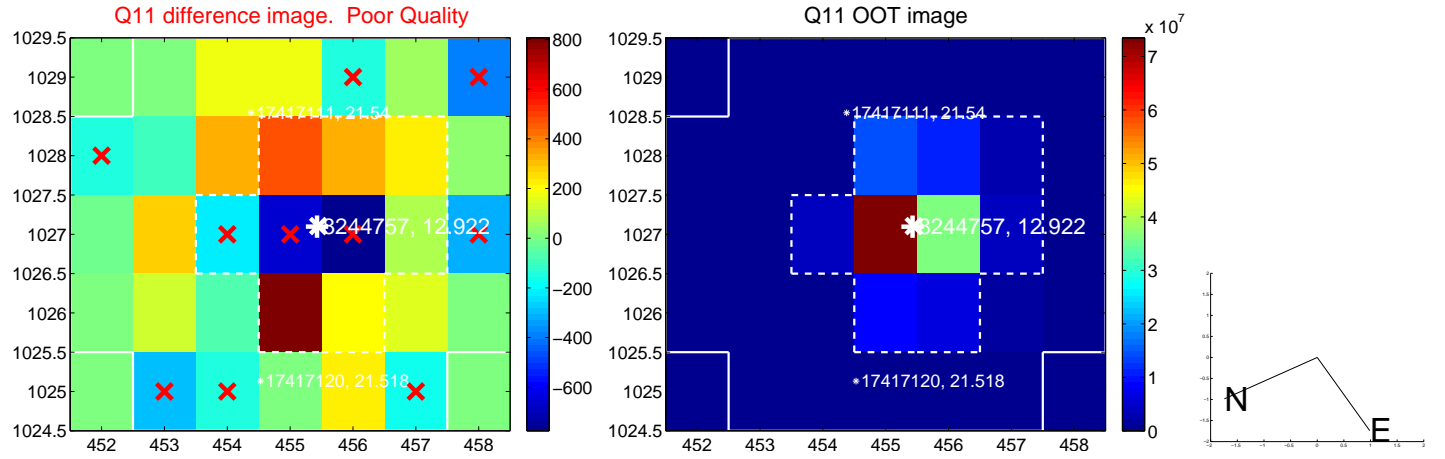
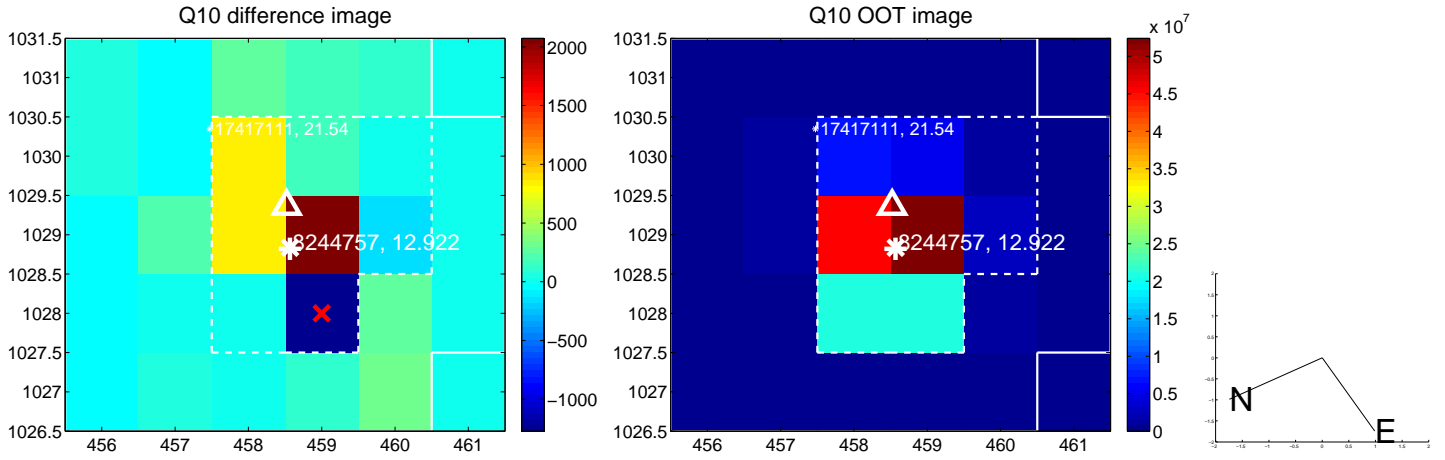
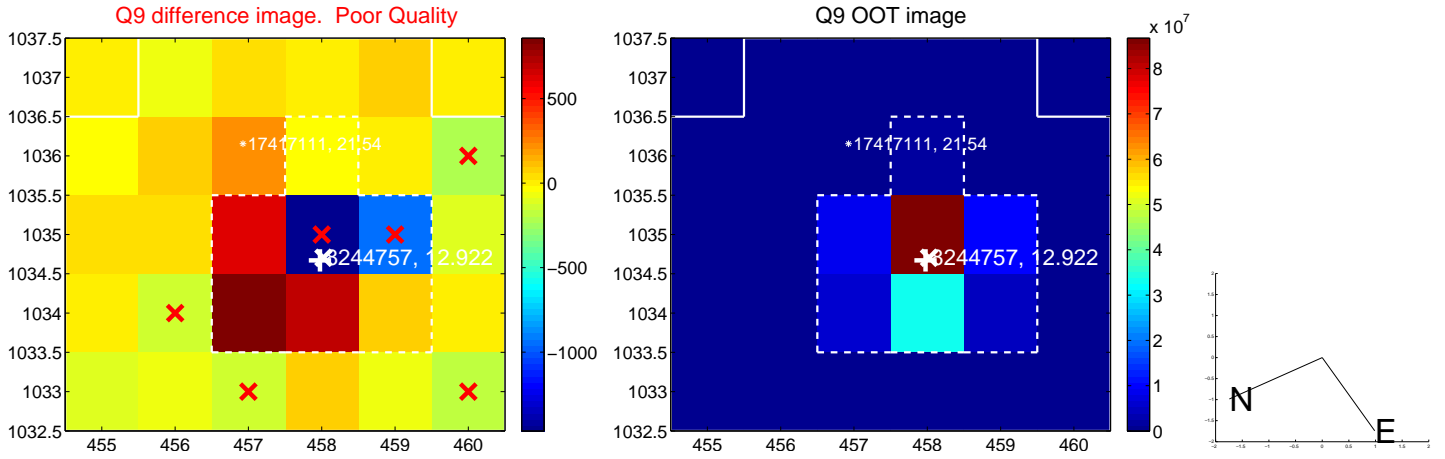
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



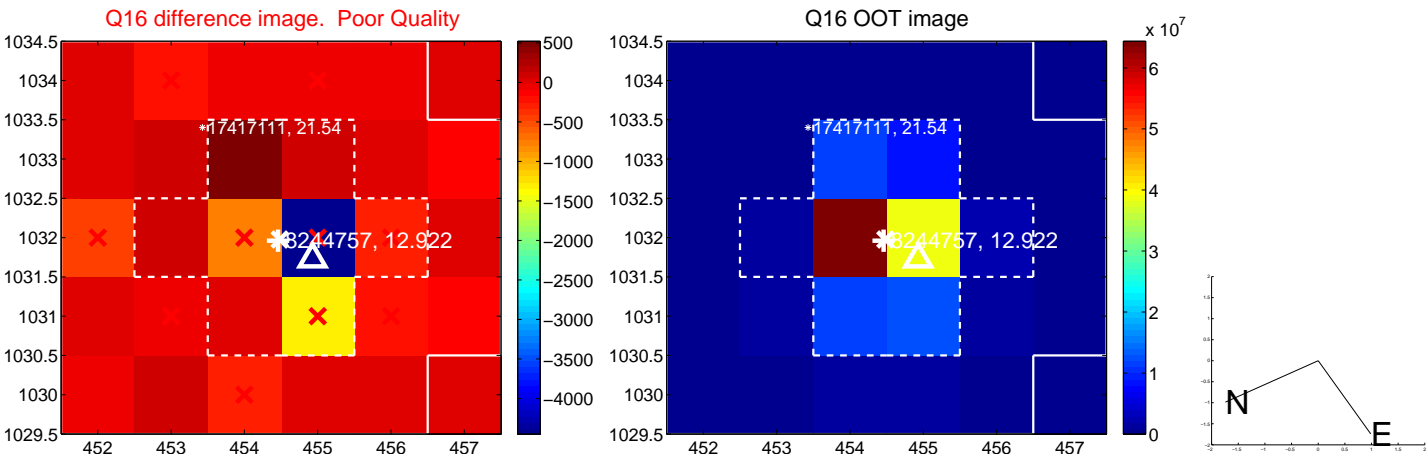
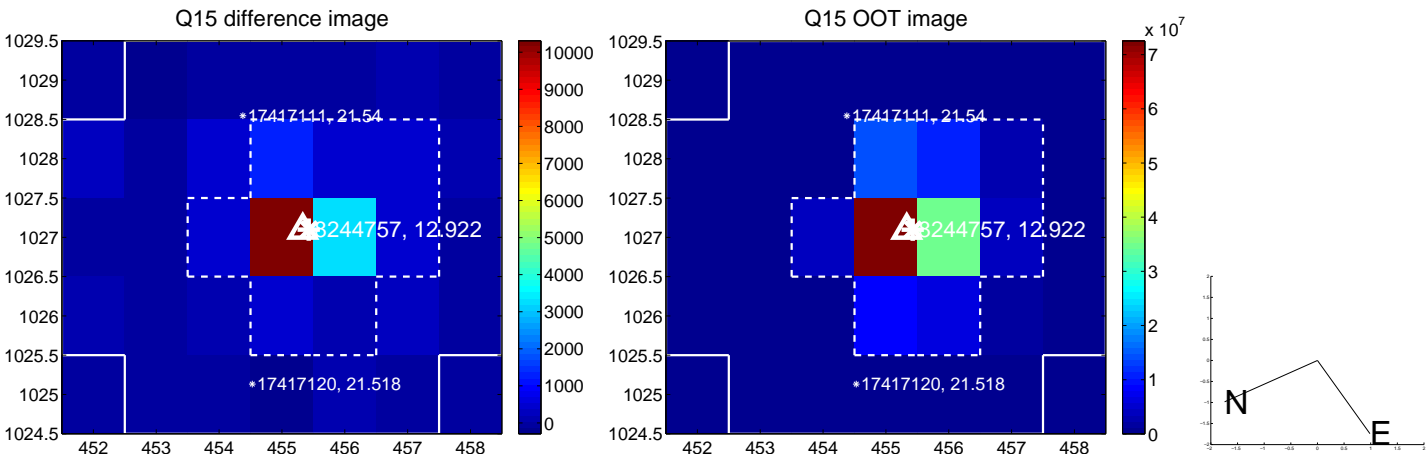
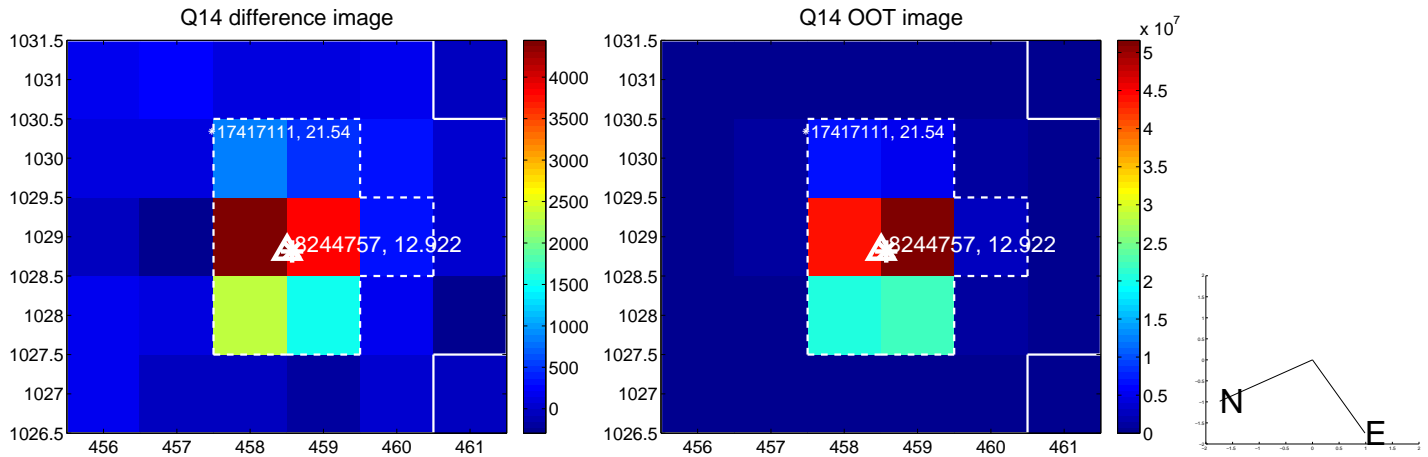
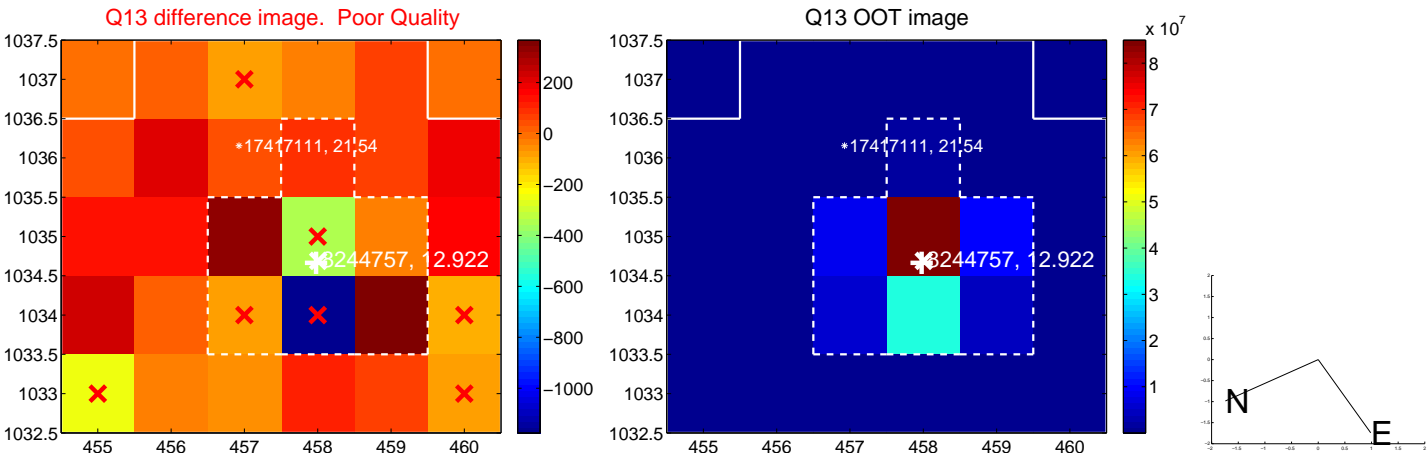
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

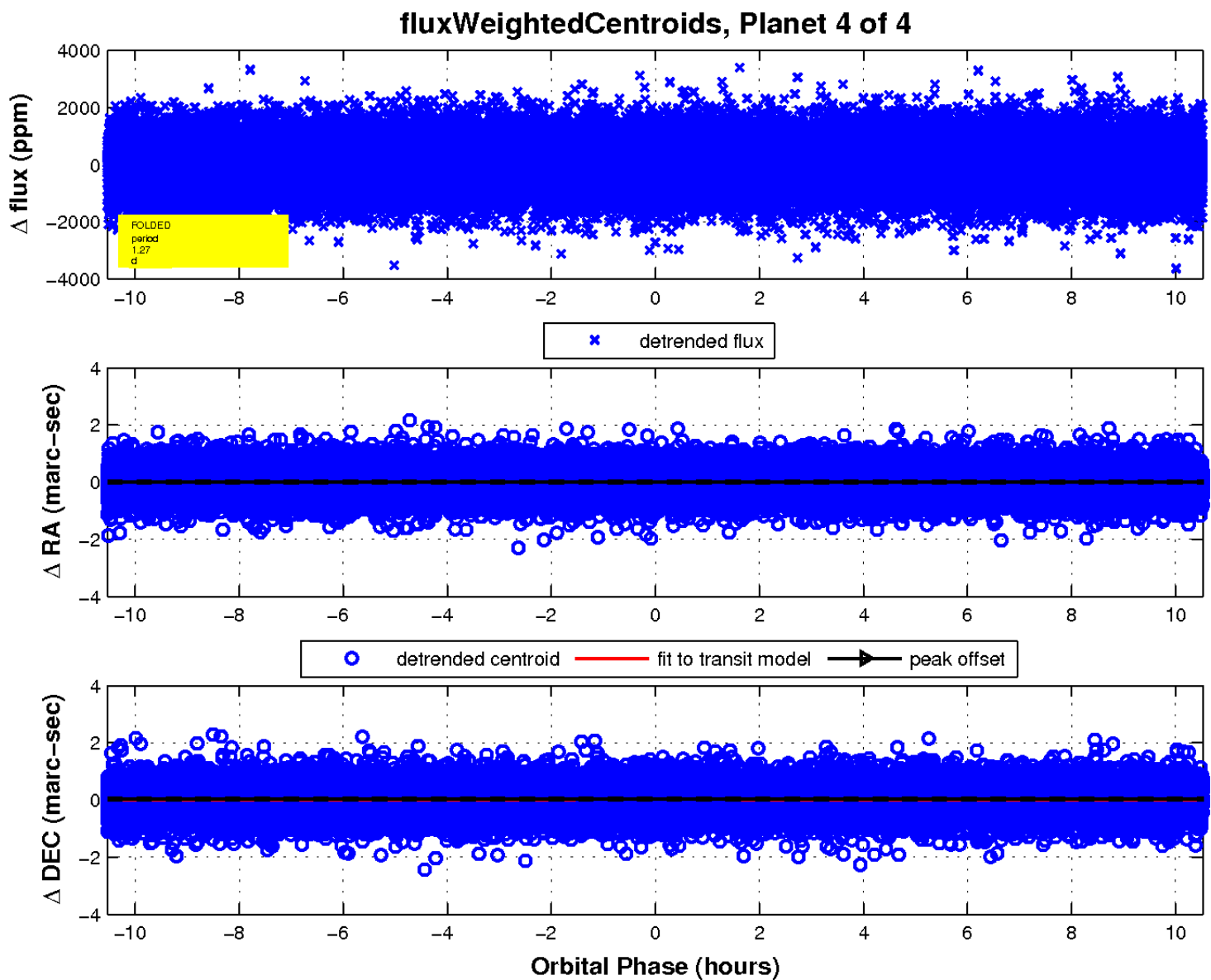
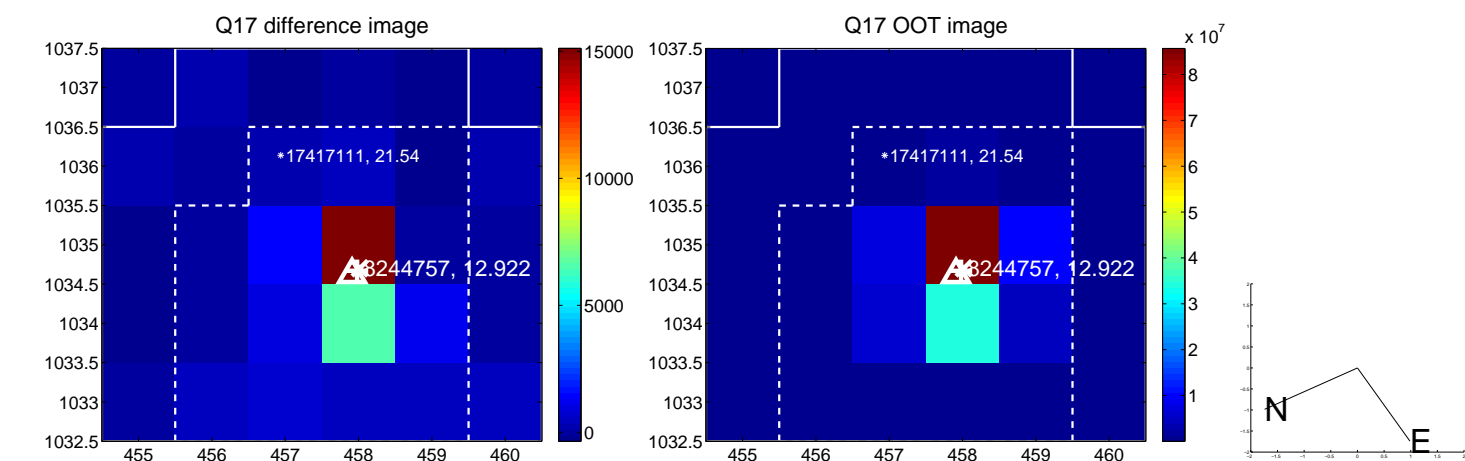


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

