

# KIC 008738244

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008738244-01	OBS	3157.01	1.366168	132.441450	62.1	5.481	8.2	7.8	7.76	8247	9.95	0.00
008738244-02	OBS	No	0.683704	131.704676	75.7	4.487	9.3	11.8	7.76	8247	7.03	0.00
008738244-03	OBS	No	14.981475	138.259319	338.4	4.561	9.6	9.3	7.76	8247	16.65	8041.21
008738244-04	OBS	No	38.345542	131.807886	492.1	3.285	9.7	9.5	7.76	8247	19.26	2296.72
008738244-05	OBS	No	27.982972	156.387666	1016.1	1.095	10.8	11.6	7.76	8247	25.31	3495.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008738244-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008738244-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED
008738244-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008738244-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
008738244-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

**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 008738244-01

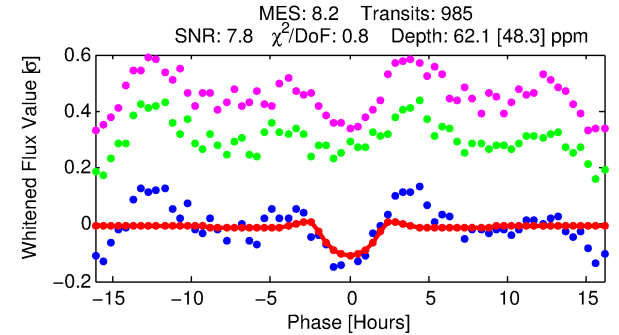
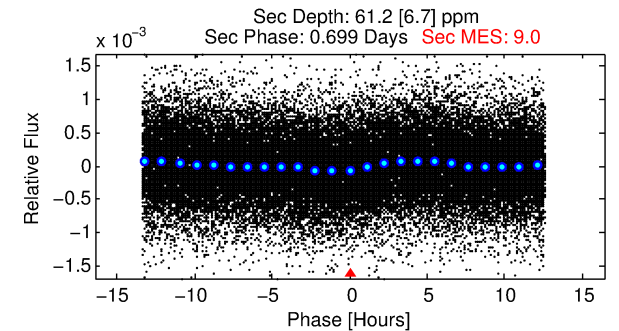
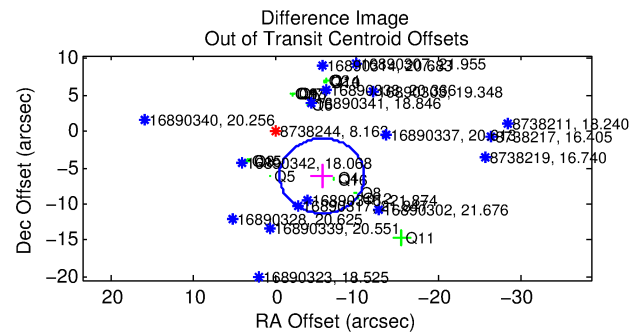
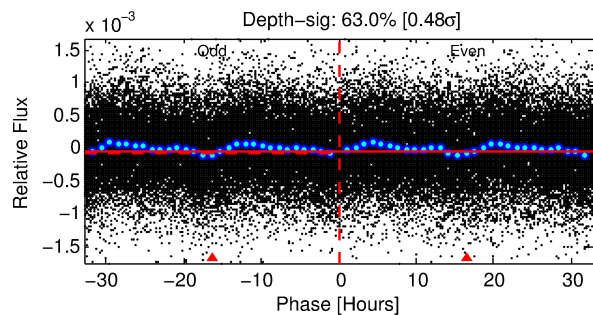
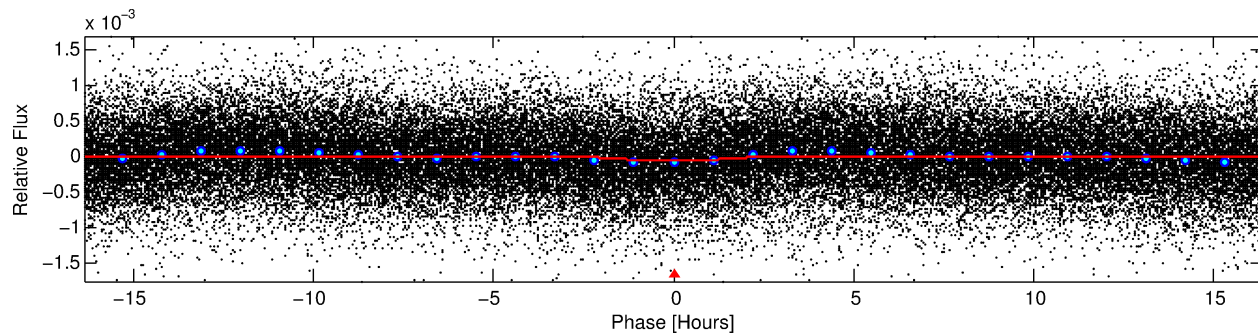
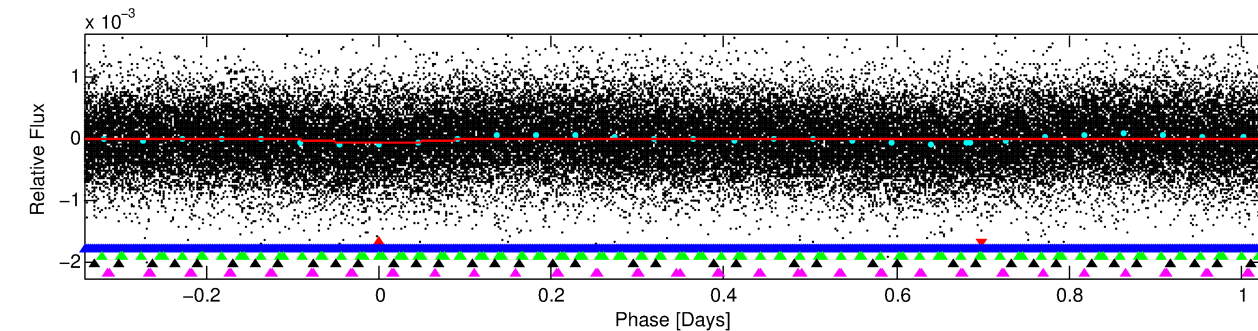
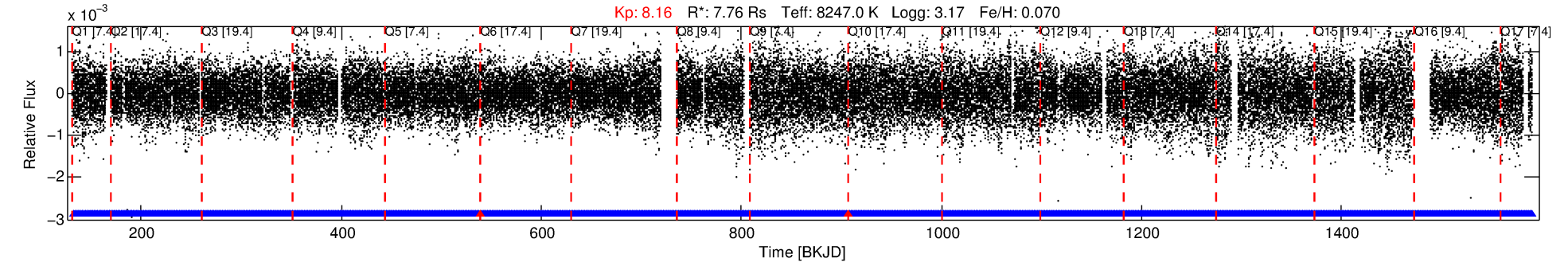
No Significant Match Found

# DV One-Page Summary

KIC: 8738244 Candidate: 1 of 5 Period: 1.366 d

KOI: K03157 Corr: No Ephemeris Match

Kp: 8.16 R\*: 7.76 Rs Teff: 8247.0 K Logg: 3.17 Fe/H: 0.070



## DV Fit Results:

Period = 1.36617 [0.00002] d  
Epoch = 132.4415 [0.0092] BKJD  
Rp/R\* = 0.0117 [0.0141]  
a/R\* = 1.06 [0.04]  
b = 1.00 [0.03]  
Seff = N/A  
Teq = N/A  
Rp = 9.95 [12.70] Re  
a = N/A  
Ag = N/A  
Teffp = N/A

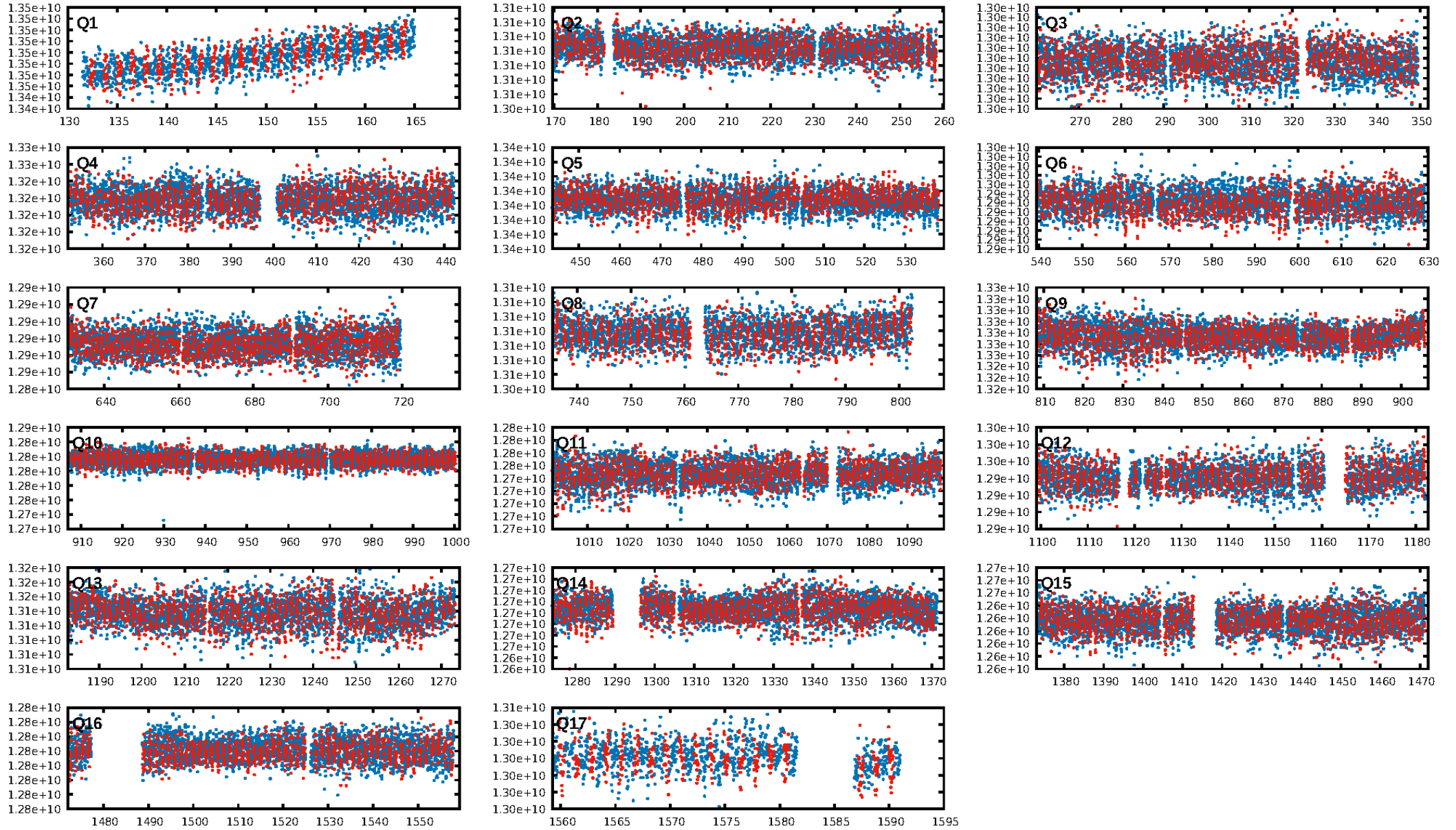
## DV Diagnostic Results:

ShortPeriod-sig: 97.9% [2.31σ]  
LongPeriod-sig: 100.0% [45.83σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.08e-23  
RollingBand-fgt: 1.00 [940/942]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 2.7%  
Centroid-so: 0.377 arcsec [0.25σ]  
OotOffset-rm: 8.388 arcsec [4.87σ]  
KicOffset-rm: 12.549 arcsec [5.79σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 04:00:24 Z

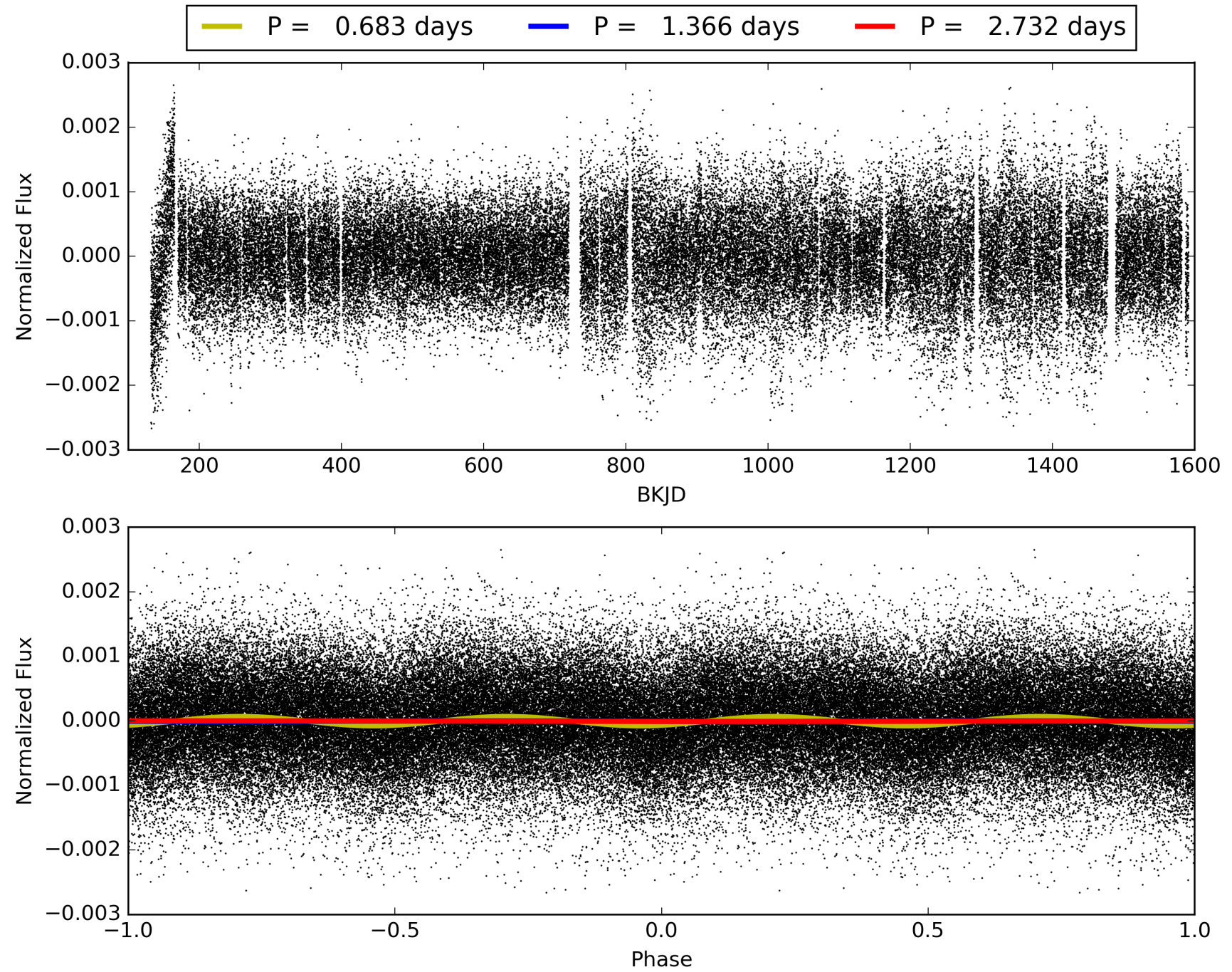
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008738244-01, PDC Light Curves





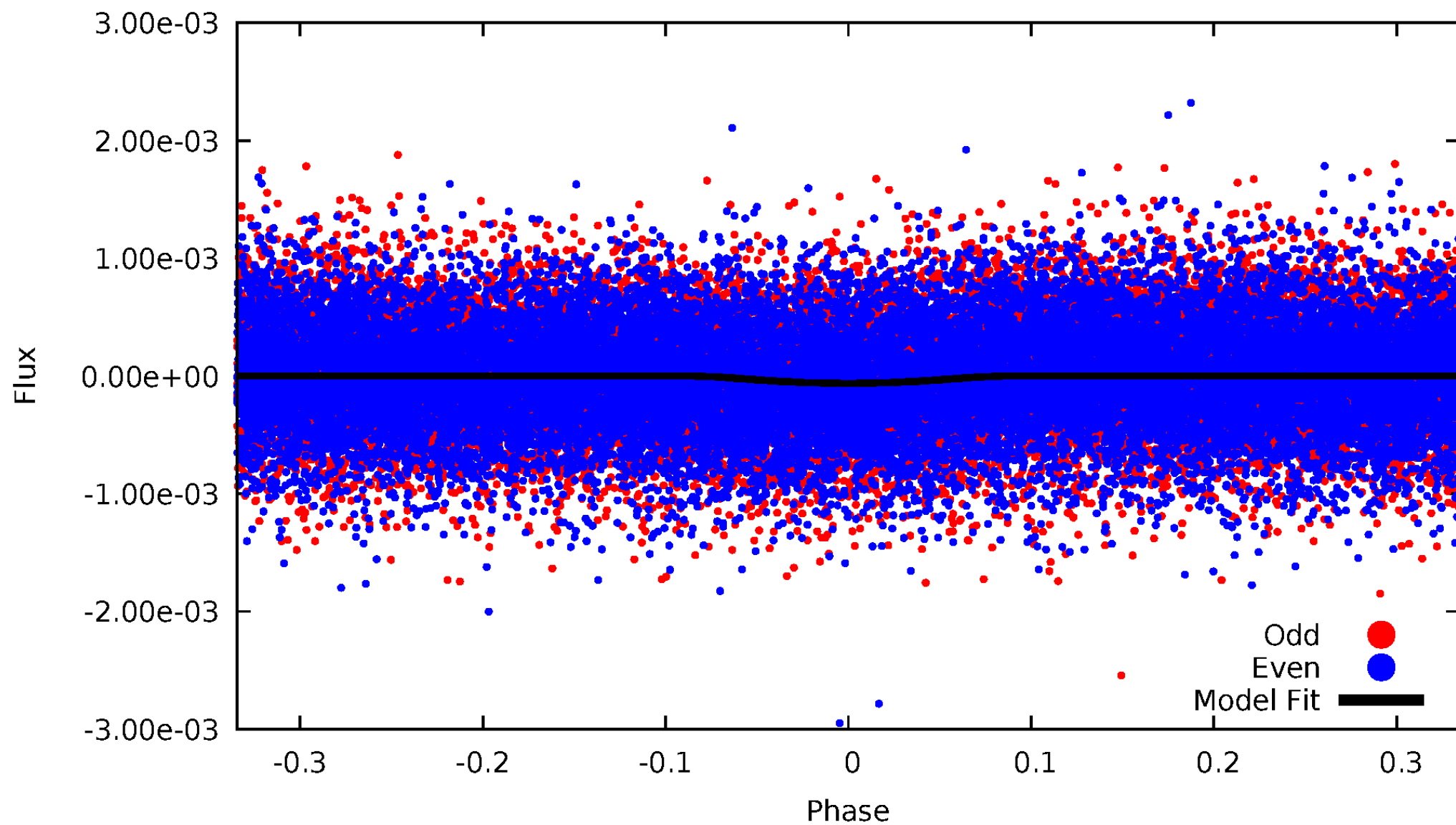
# TCE 008738244-01





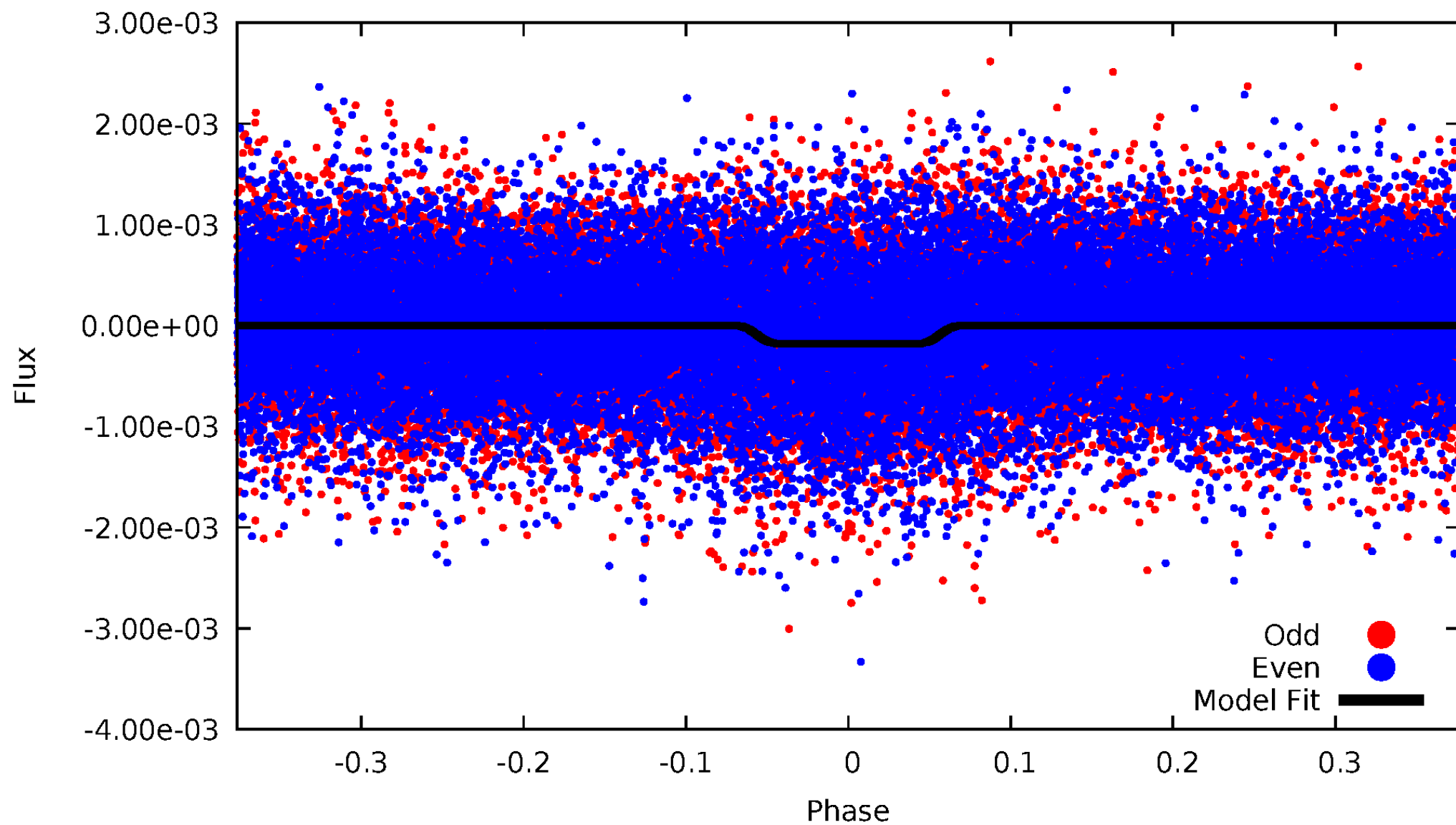
# DV Odd/Even

TCE 008738244-01

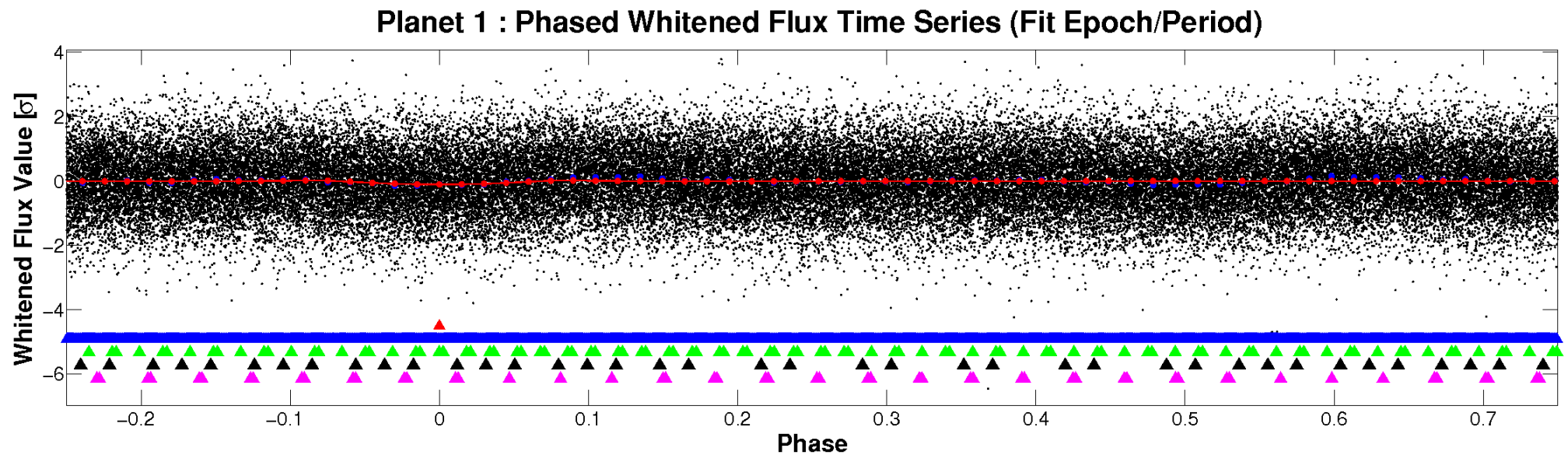
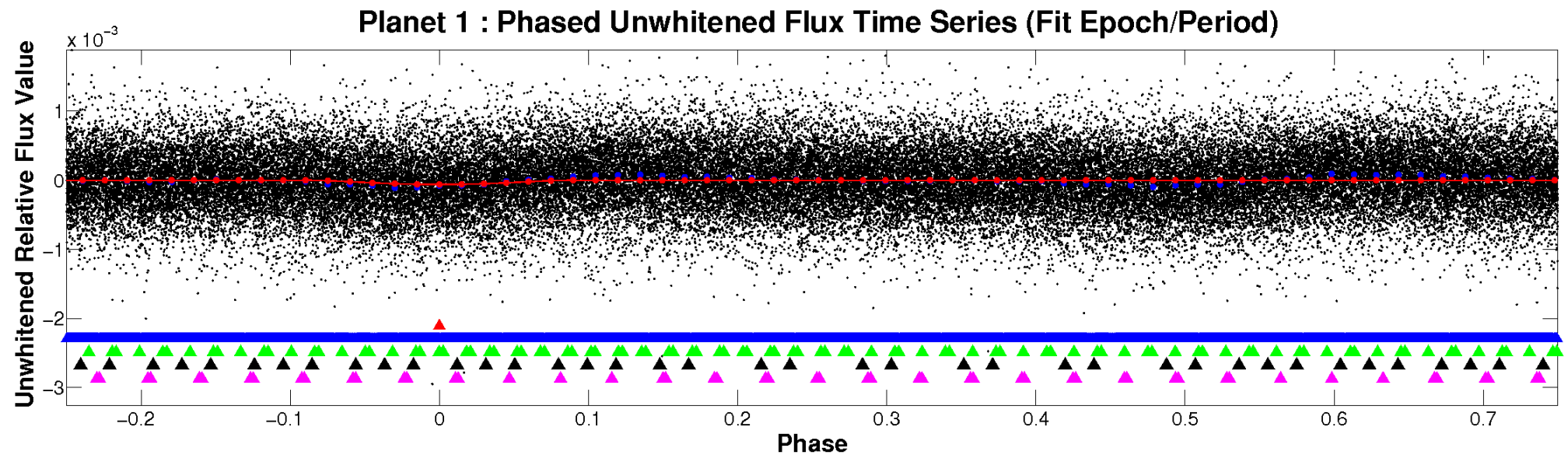


# ALT Odd/Even

TCE 008738244-01



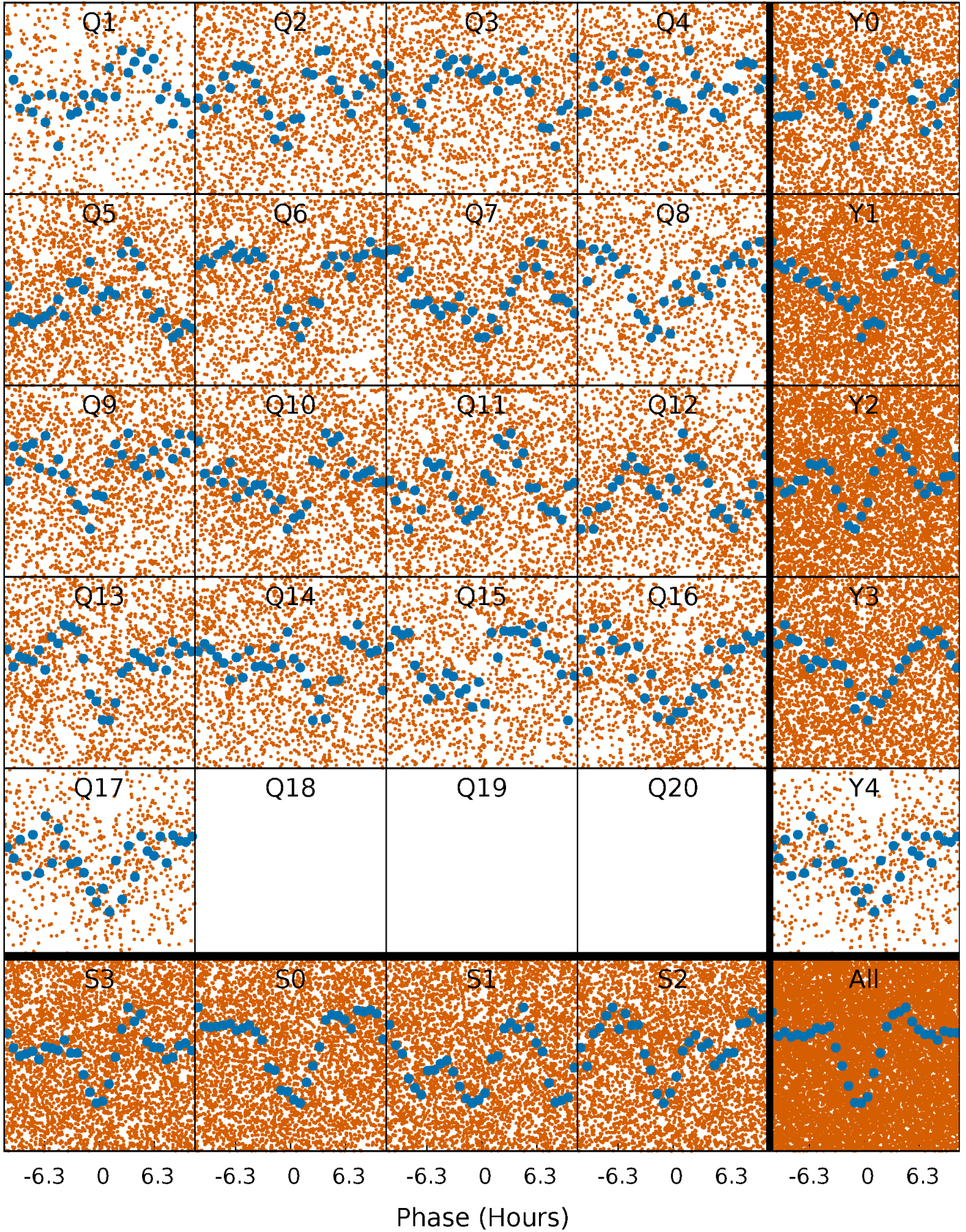
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

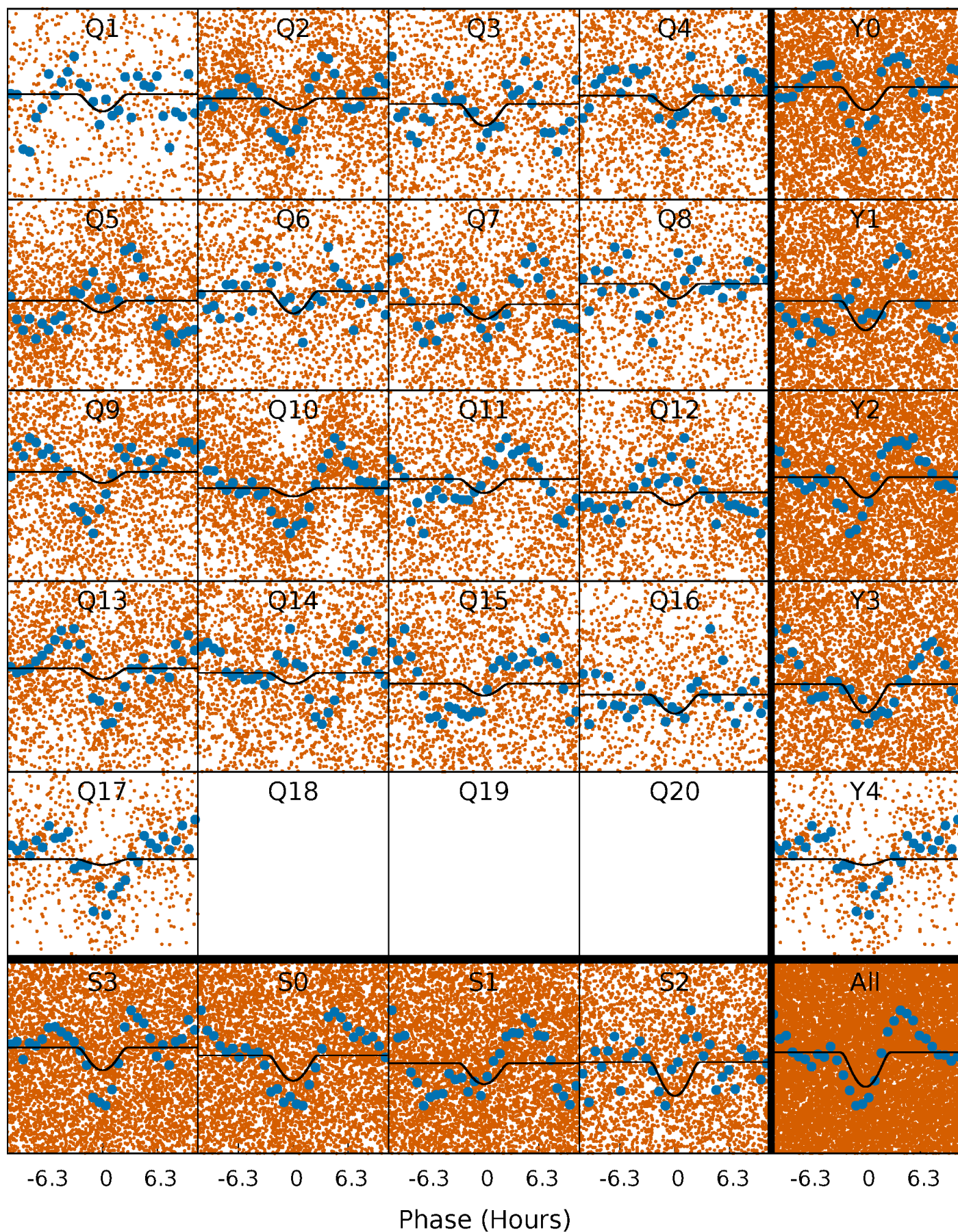
TCE 008738244-01 P= 1.366168 Days  $T_0=132.441450$  (BKJD)





# DV Quarter-Phased Transit Curves

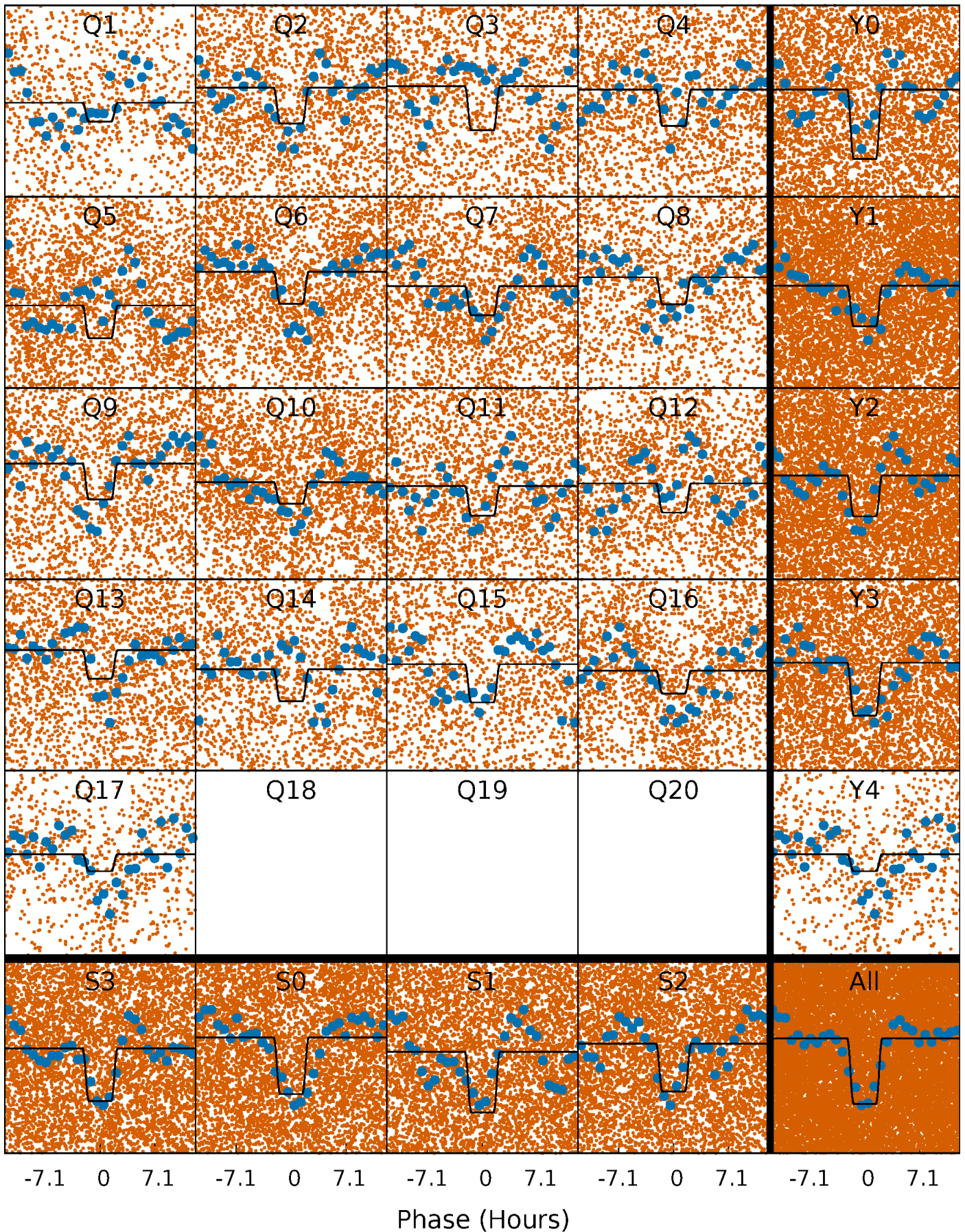
TCE 008738244-01 P= 1.366168 Days  $T_0=132.441450$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008738244-01 P= 1.366161 Days  $T_0=132.424560$  (BKJD)

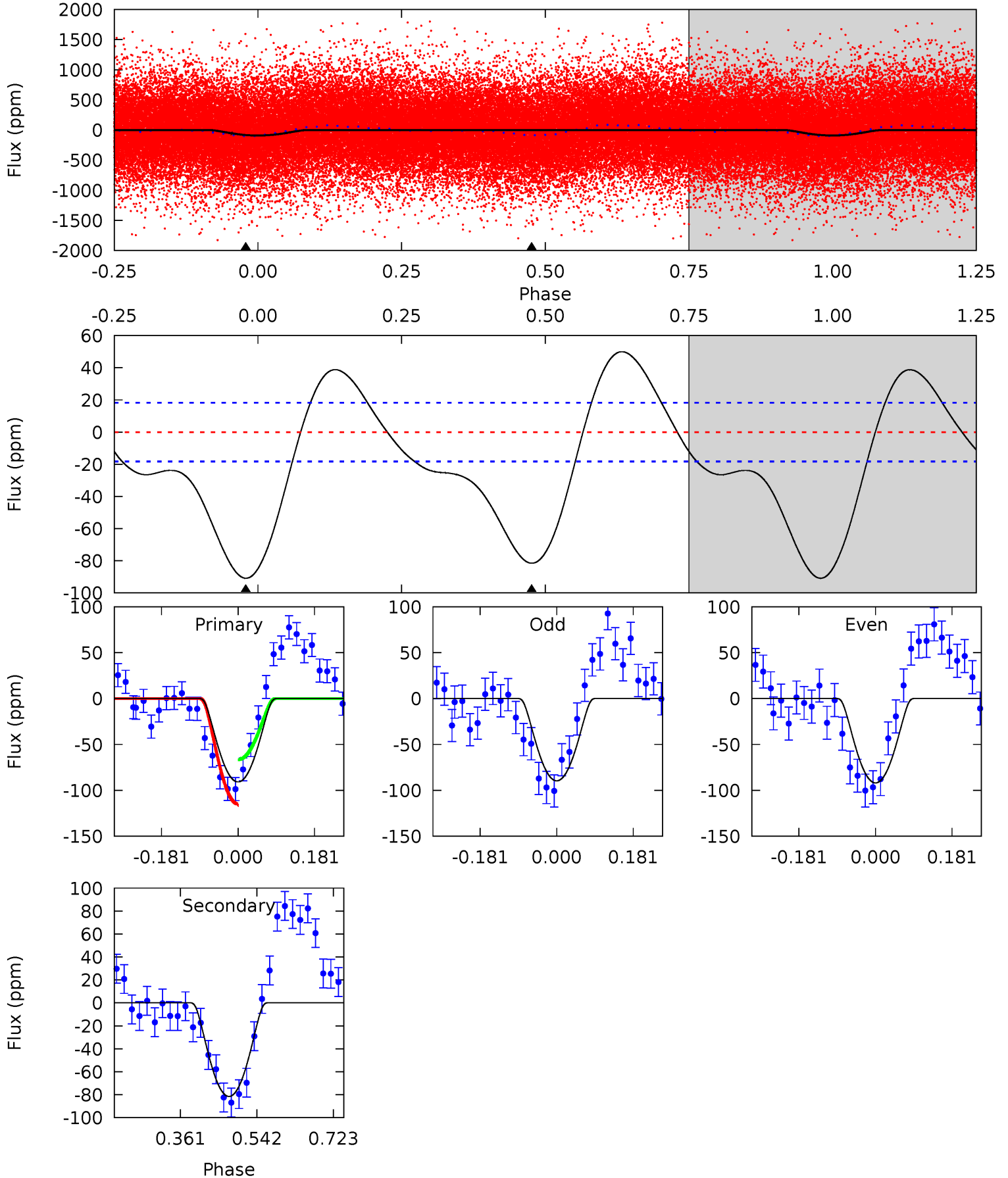




# DV Model-Shift Uniqueness Test

008738244-01, P = 1.366168 Days, E = 131.075282 Days

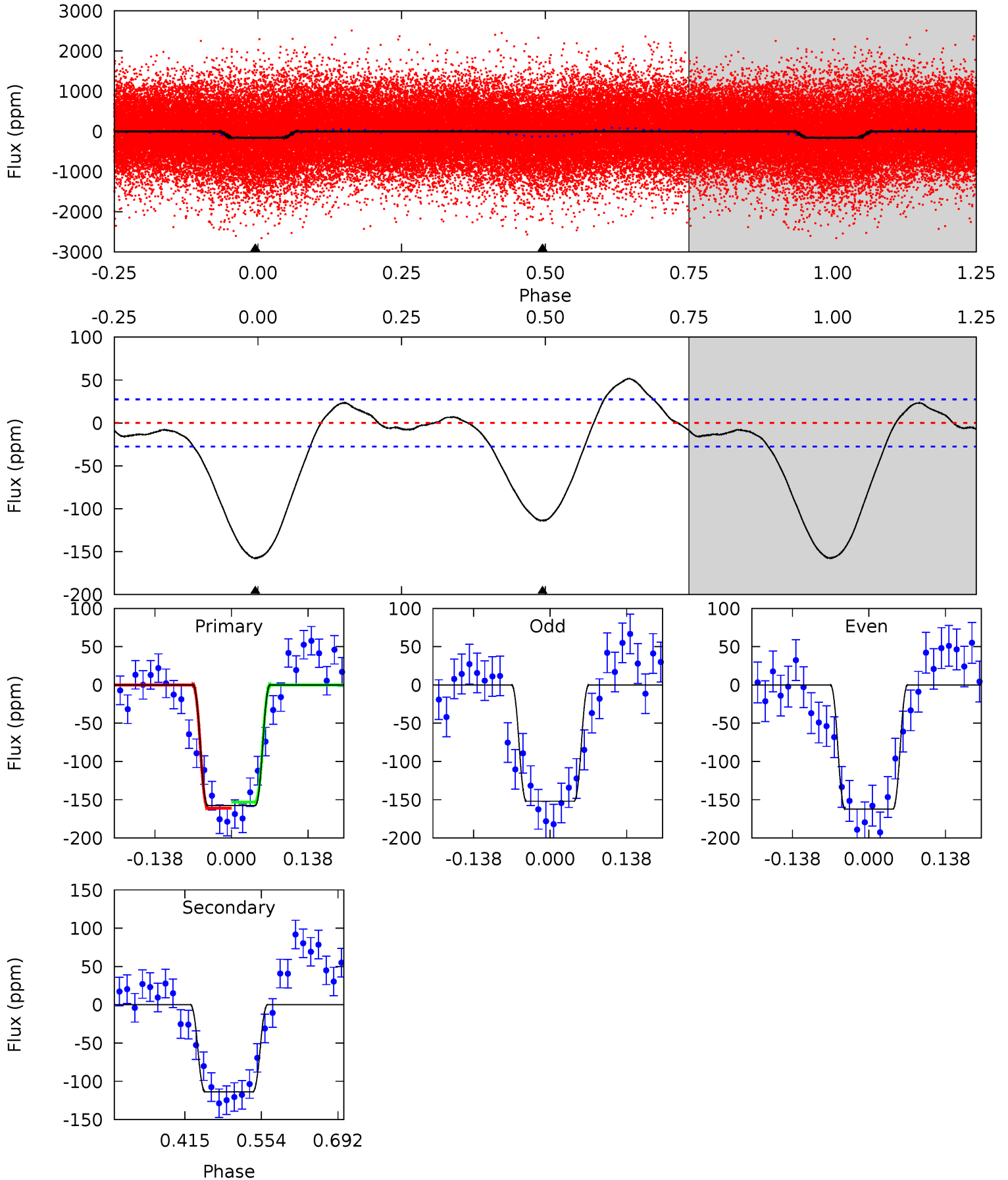
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.1	19.8	0	0	4.44	1.34	4.99	22.1	22.1	19.8	19.8	0.28	0.79	0.35	5.88



# Alt Model-Shift Uniqueness Test

008738244-01, P = 1.366161 Days, E = 131.058399 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
25.8	18.6	0	0	4.50	1.48	2.91	25.8	25.8	18.6	18.6	0.84	0.98	0.25	0.64



### Stellar Parameters For KIC 008738244

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8247^{+149}_{-166}$	$3.170^{+0.405}_{-0.045}$	$0.070^{+0.200}_{-0.250}$	$7.762^{+0.561}_{-3.368}$	$3.253^{+0.214}_{-0.642}$	$0.010^{+0.035}_{-0.002}$
	+2%/-2%	+13%/-1%	+286%/-357%	+7%/-43%	+7%/-20%	+352%/-22%
Source	SPE4	SPE4	SPE4	DSEP		

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

### Secondary Eclipse Parameters for KIC 008738244-01 / KOI 3157.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-82 \pm 4$	$11.50^{+10.23}_{-7.63}$	$7336^{+303}_{-736}$	$4620^{+7232}_{-9828}$	$0.434^{+3.397}_{-0.311}$
Alt.	$-114 \pm 6$	$12.43^{+11.54}_{-7.95}$	$7296^{+326}_{-773}$	$5139^{+6729}_{-10210}$	$0.514^{+3.342}_{-0.373}$

$T_{max}$  = 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

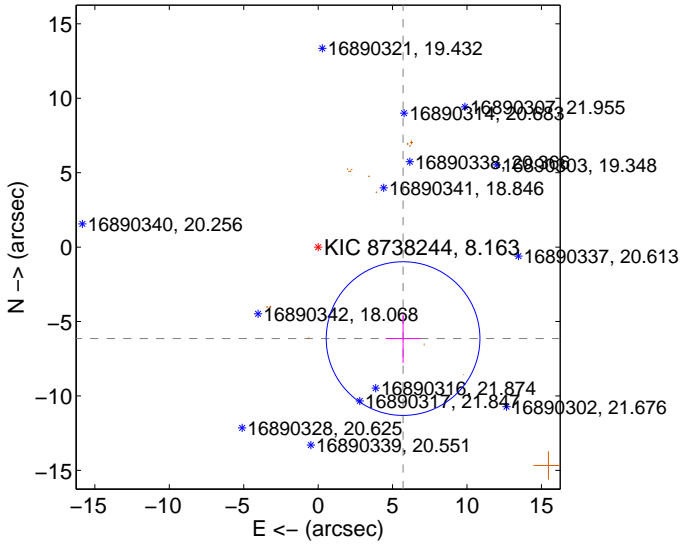
Supplemental centroid analysis for 008738244-01. **Kepler magnitude: 8.16.** Transit SNR 7.78

There are 0 quarters with good PRF difference image offsets

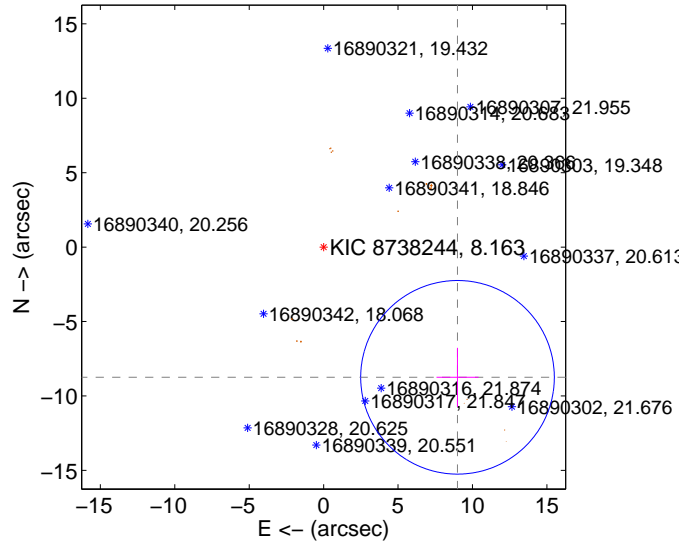
The OOT PRF centroid is offset from the target star catalog position by about 2.07 arcsec so the offset from difference PRF-fit to OOT PRF-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>8.388 \pm 1.721</math></b>	<b>4.87</b>	$-5.707 \pm 1.178$	$-6.147 \pm 1.634$
PRF-fit source offset from KIC position	<b><math>12.549 \pm 2.168</math></b>	<b>5.79</b>	$-8.996 \pm 1.410$	$-8.750 \pm 1.982$
photometric centroid source offset	$0.38 \pm 1.50$	0.25	$0.38 \pm 1.51$	$0.04 \pm 1.20$

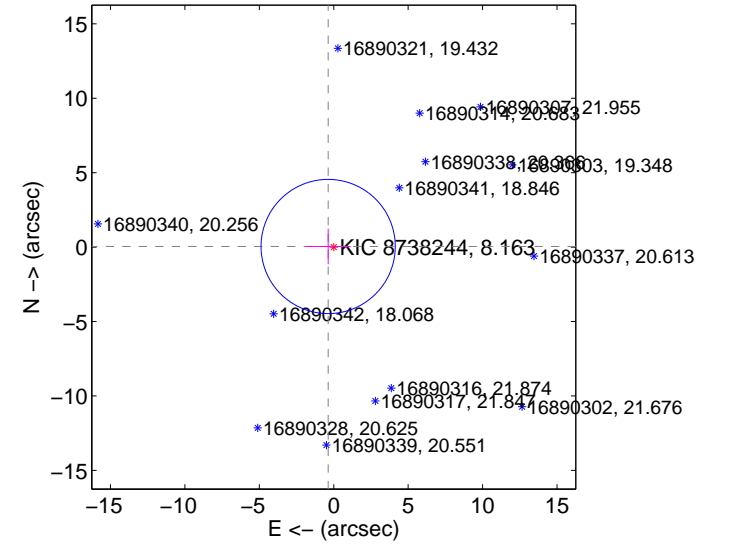
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

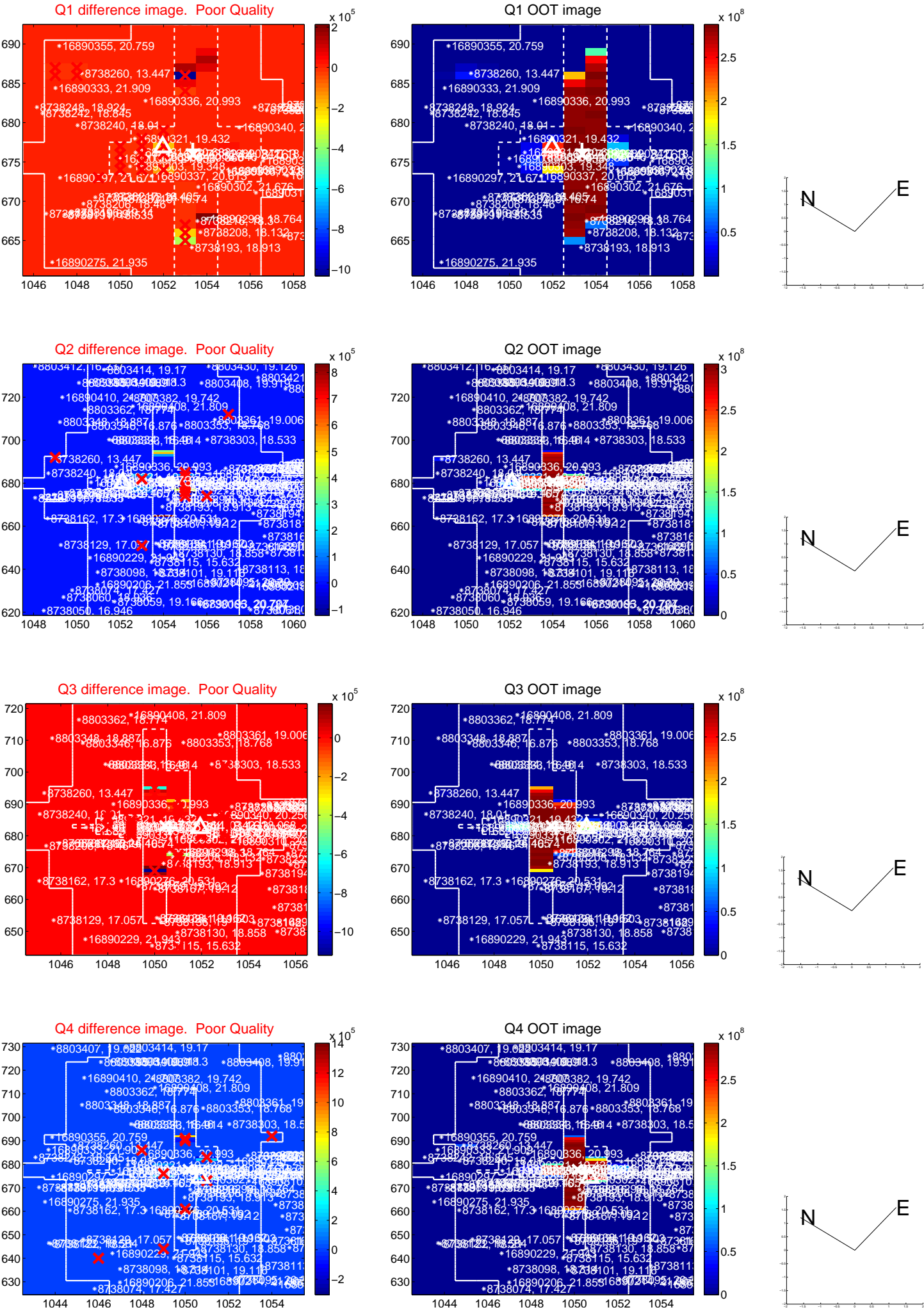


offset from photometric centroids

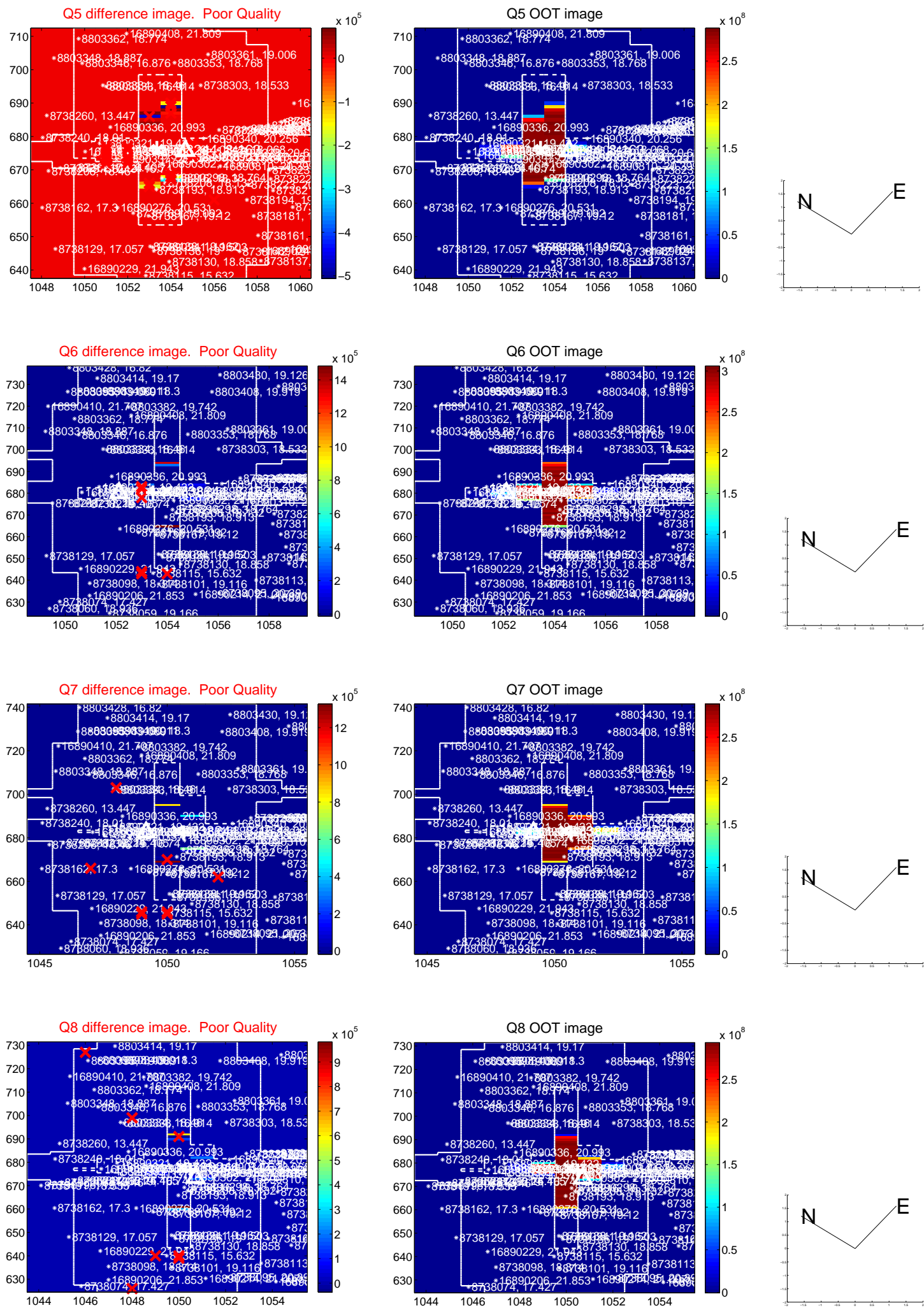


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

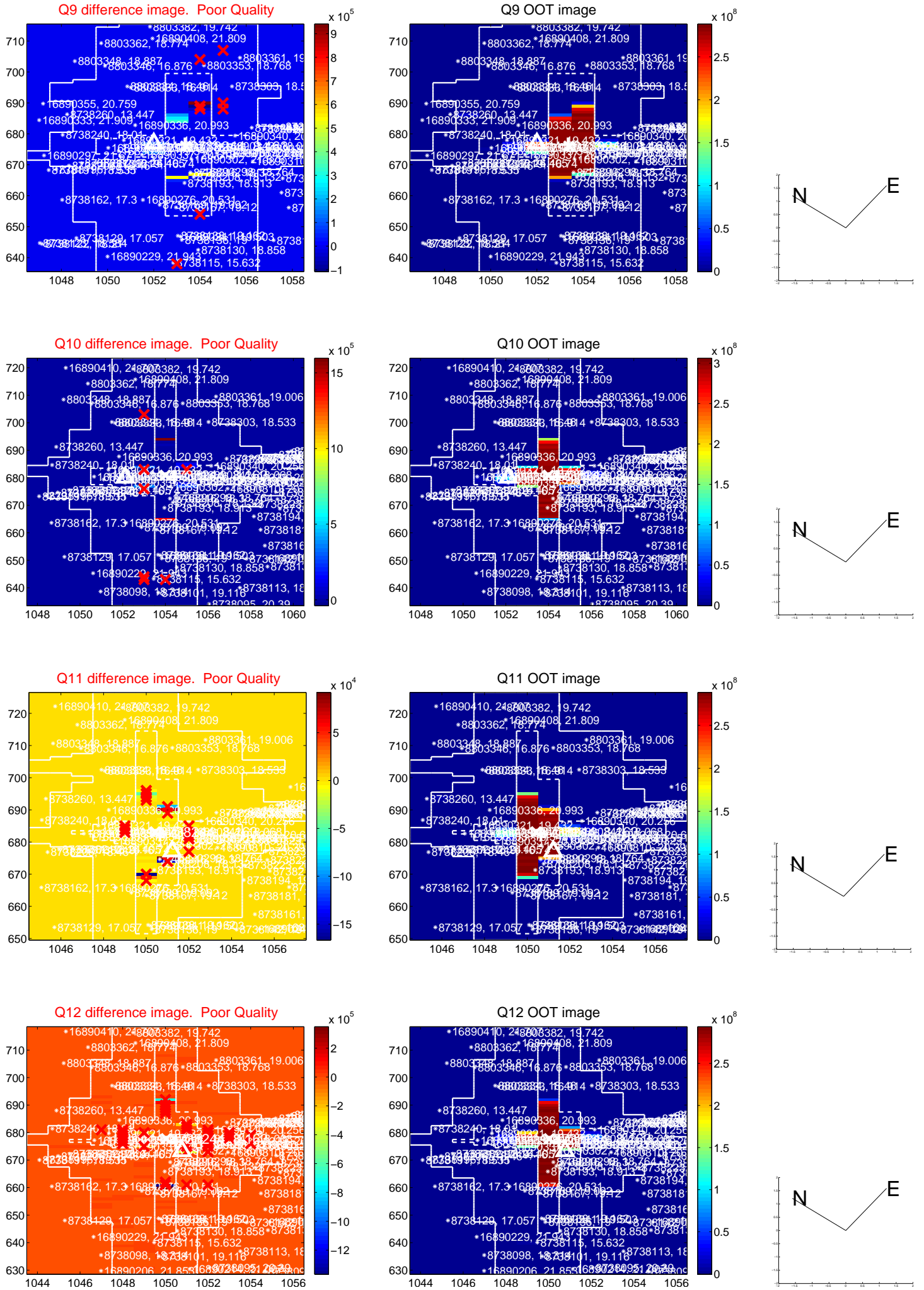


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

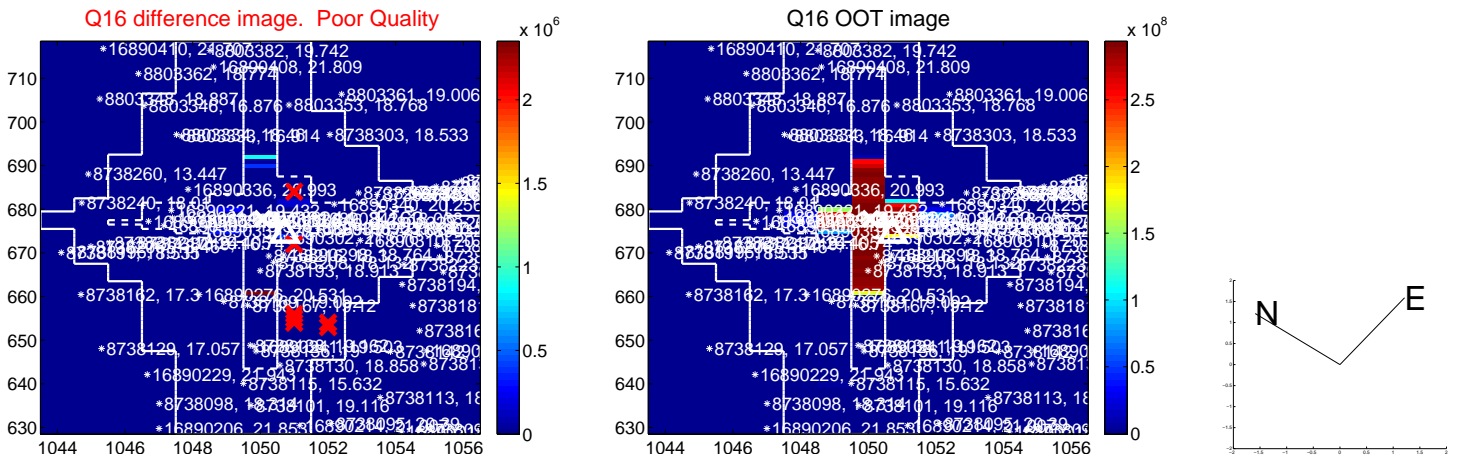
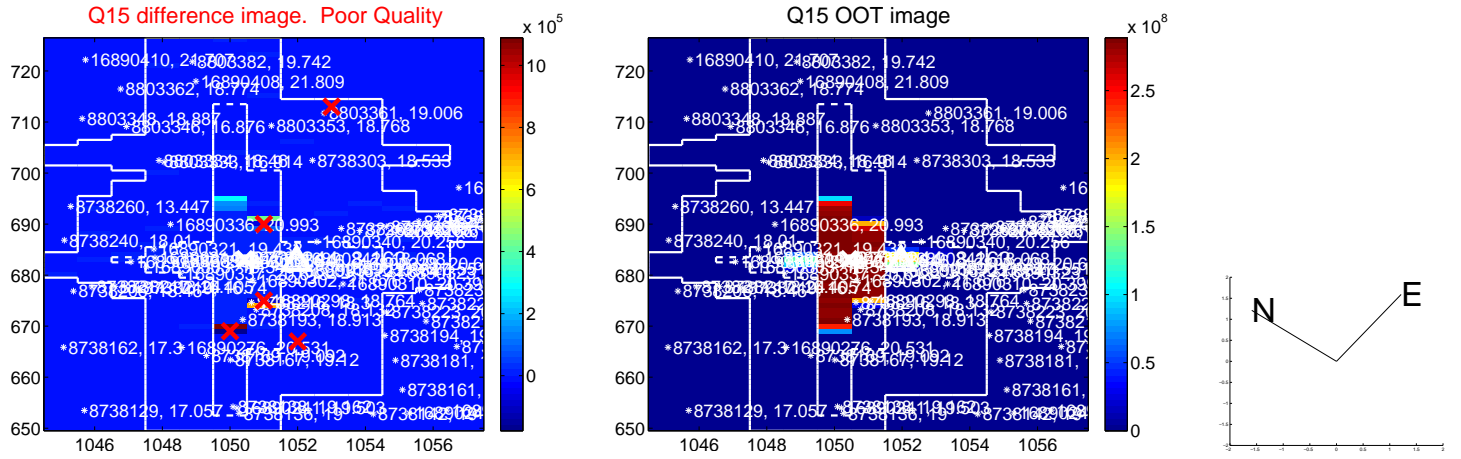
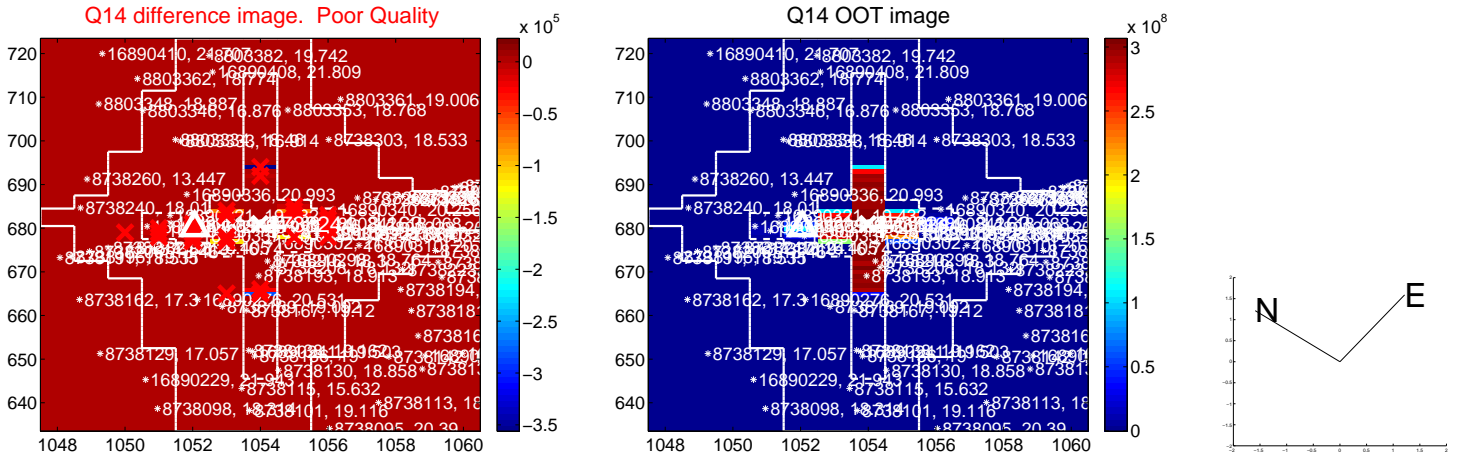
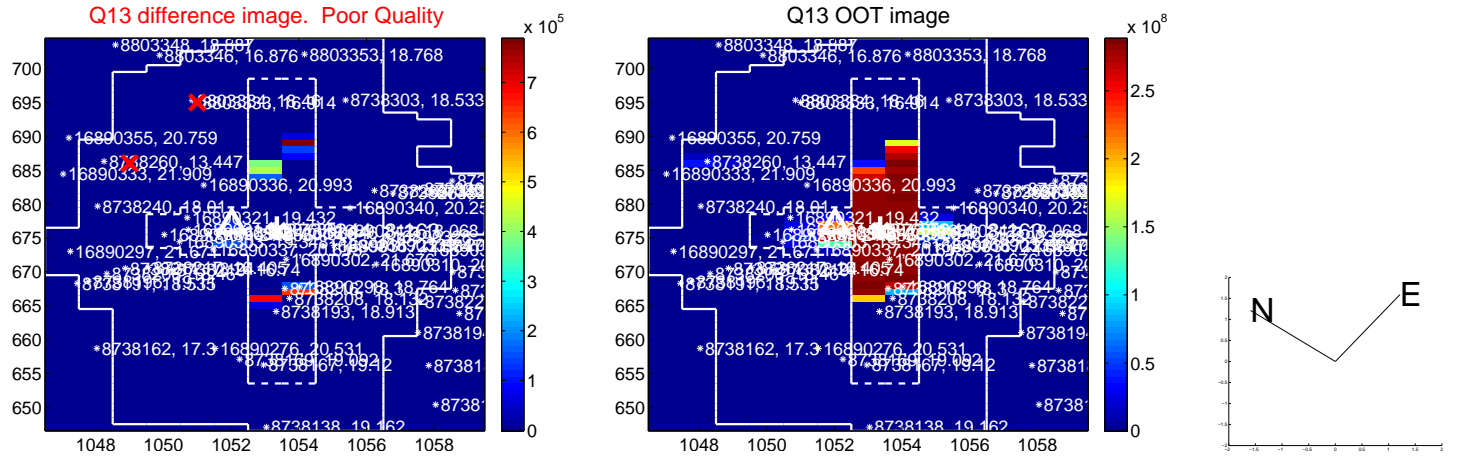




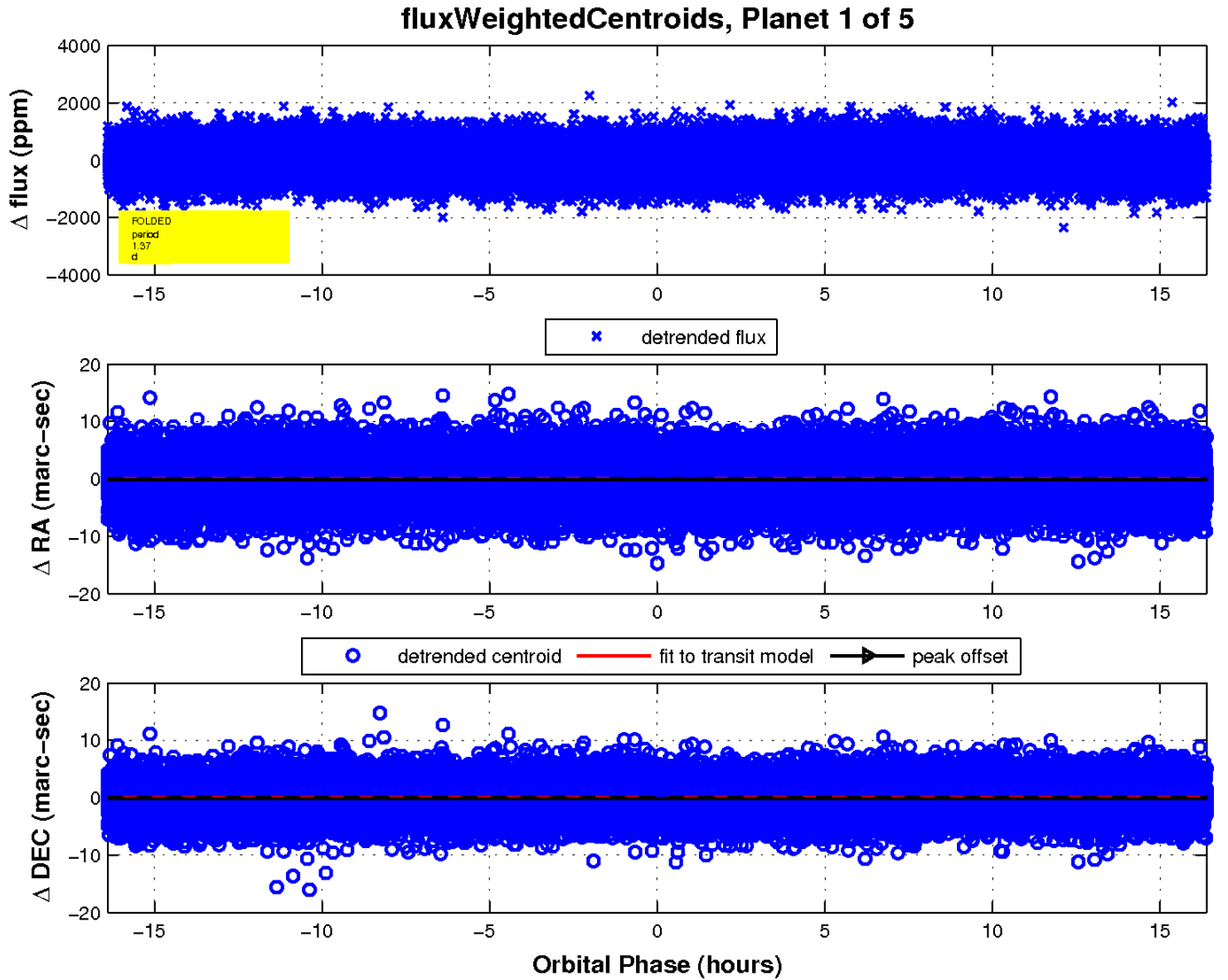
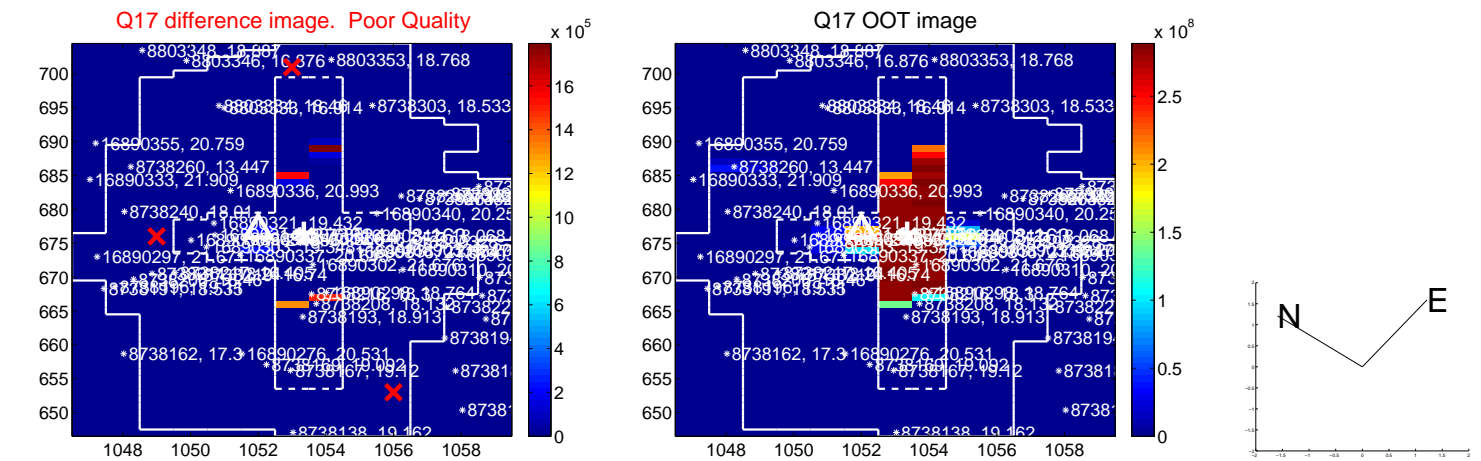
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# KIC 008738244

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008738244-01	OBS	3157.01	1.366168	132.441450	62.1	5.481	8.2	7.8	7.76	8247	9.95	0.00
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008738244-04	OBS	No	38.345542	131.807886	492.1	3.285	9.7	9.5	7.76	8247	19.26	2296.72
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008738244-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008738244-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED
008738244-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008738244-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
008738244-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

**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 008738244-02

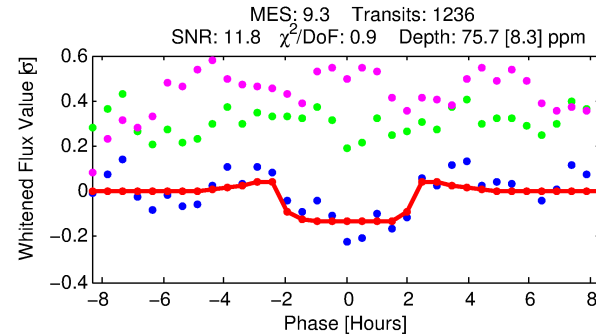
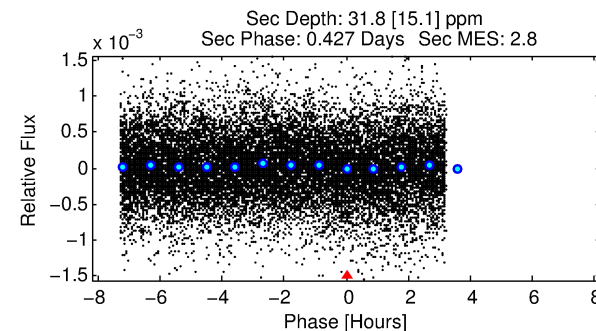
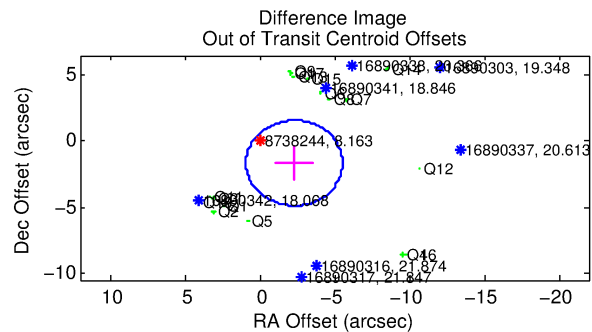
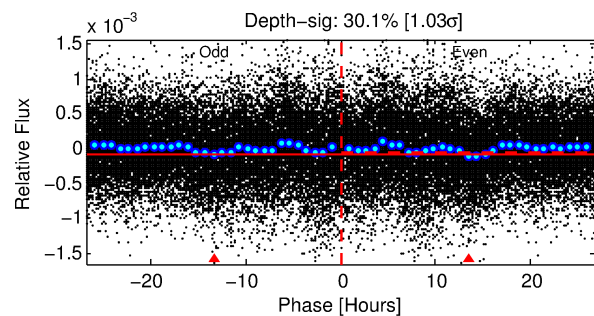
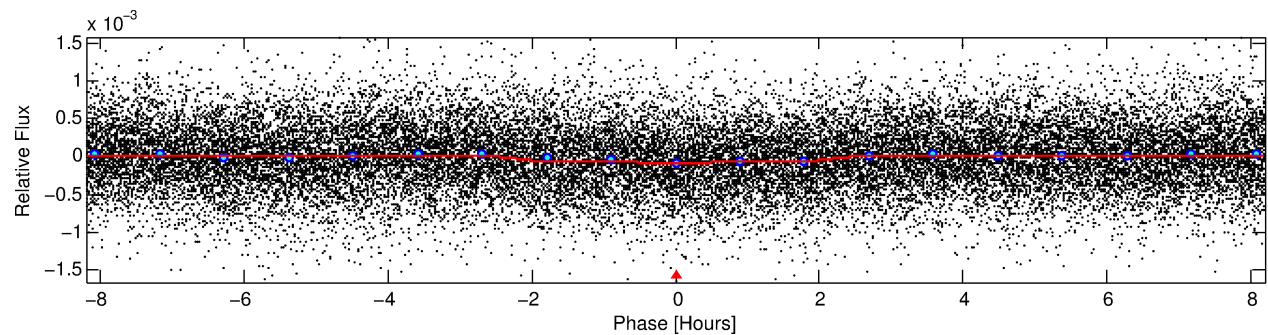
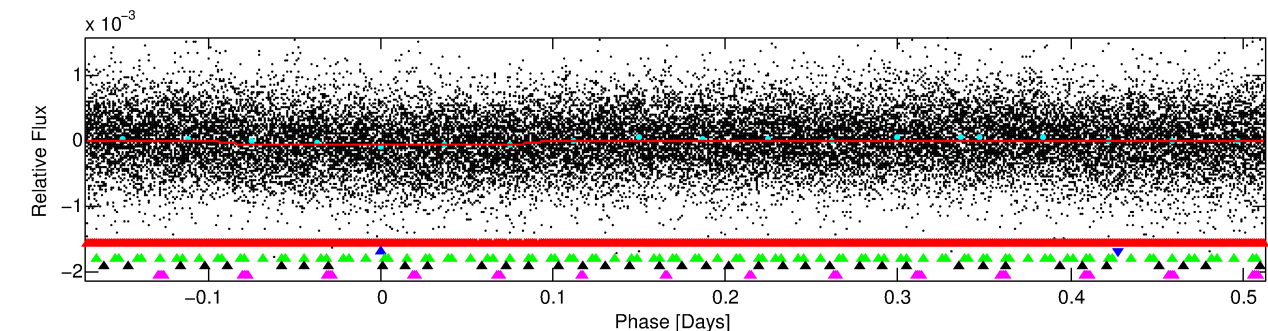
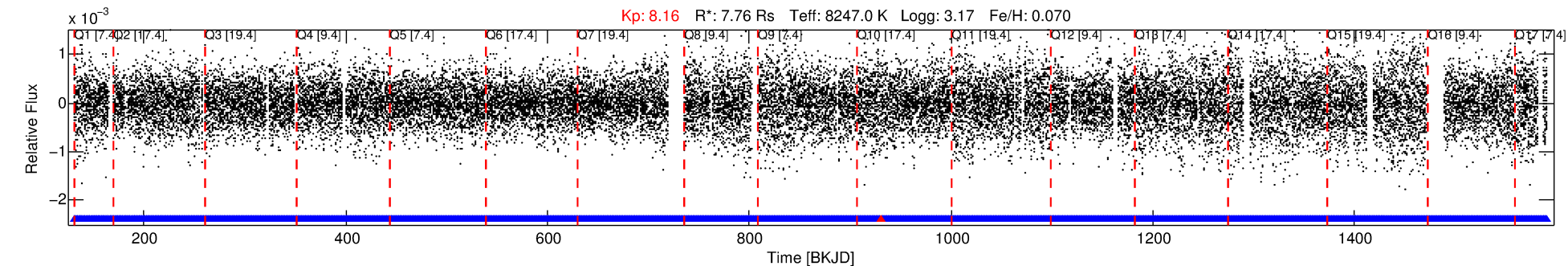
No Significant Match Found



# DV One-Page Summary

KIC: 8738244 Candidate: 2 of 5 Period: 0.684 d

KOI: K03157 Corr: No Ephemeris Match



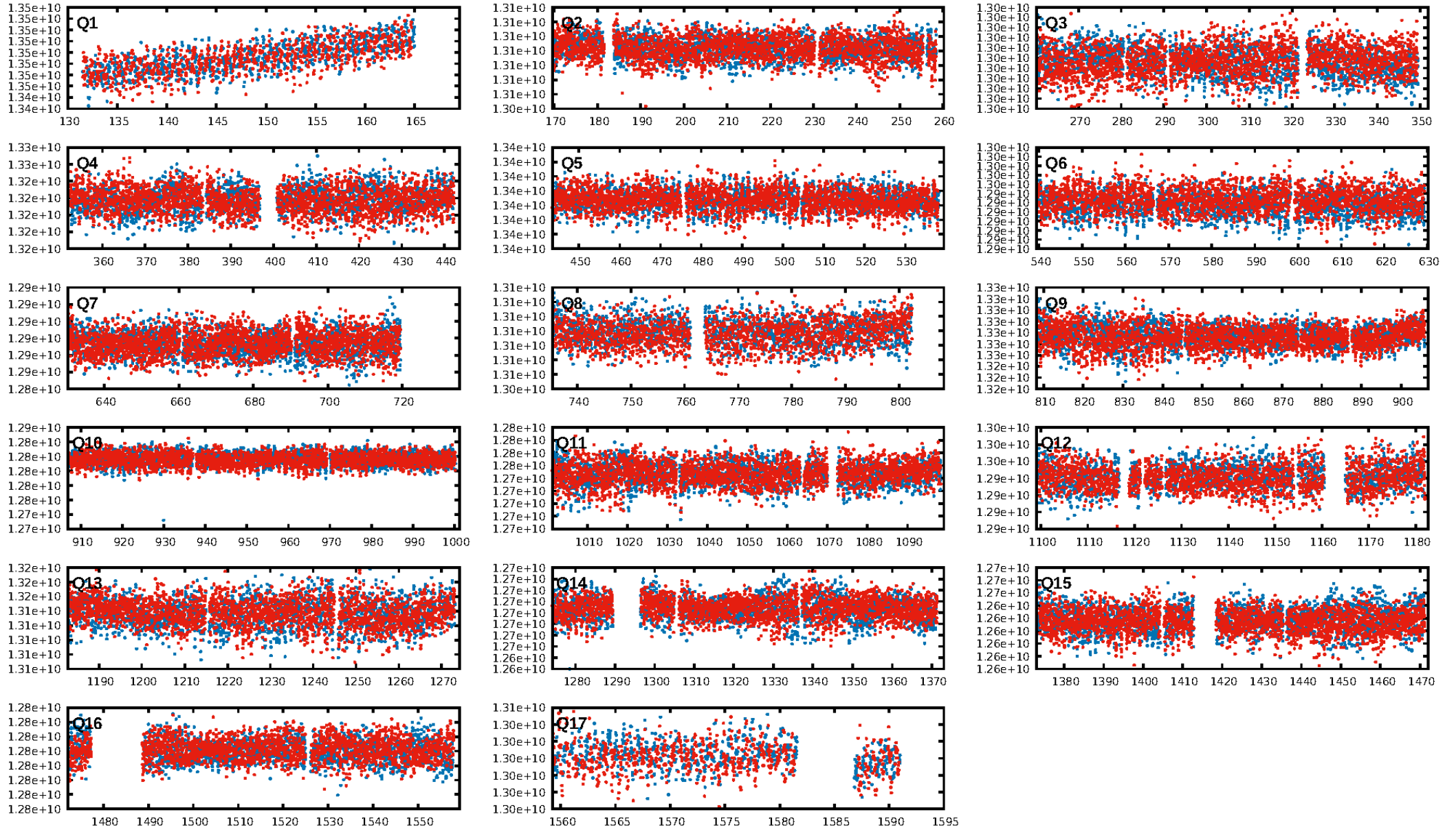
## DV Fit Results:

Period = 0.68370 [0.00001] d  
Epoch = 131.7047 [0.0030] BKJD  
Rp/R\* = 0.0083 [0.0054]  
a/R\* = 1.25 [1.69]  
b = 0.53 [5.11]  
Seff = N/A  
Teq = N/A  
Rp = 7.03 [5.53] Re  
a = N/A  
Ag = N/A  
Teffp = N/A

## DV Diagnostic Results:

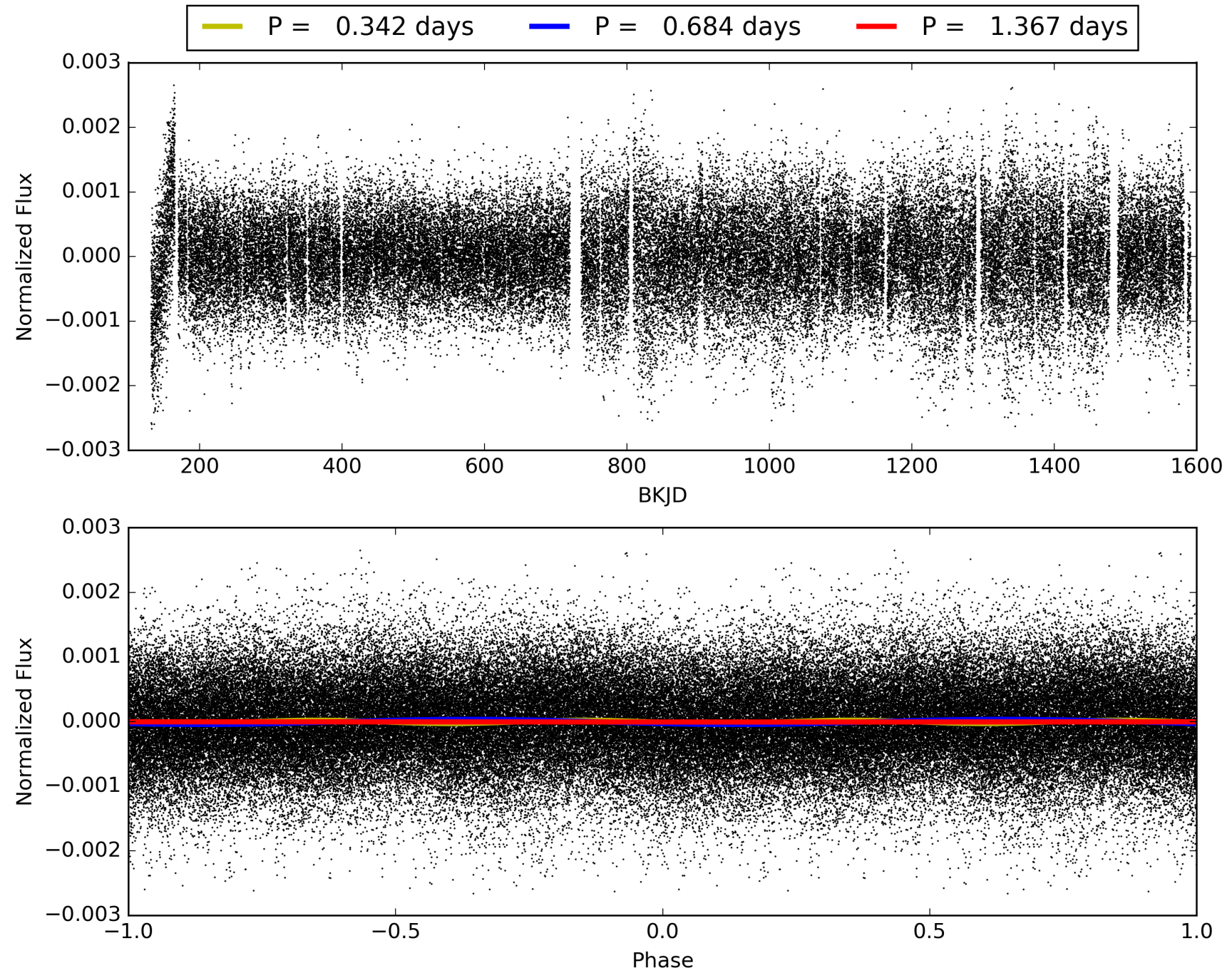
ShortPeriod-sig: N/A  
LongPeriod-sig: 97.9% [2.31 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.64e-19  
RollingBand-fgt: 1.00 [1190/1191]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 25.4%  
Centroid-so: 2.222 arcsec [3.20 $\sigma$ ]  
OotOffset-rm: 2.840 arcsec [2.64 $\sigma$ ]  
KicOffset-rm: 6.618 arcsec [4.19 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 0.65 [11/17]

# TCE 008738244-02, PDC Light Curves



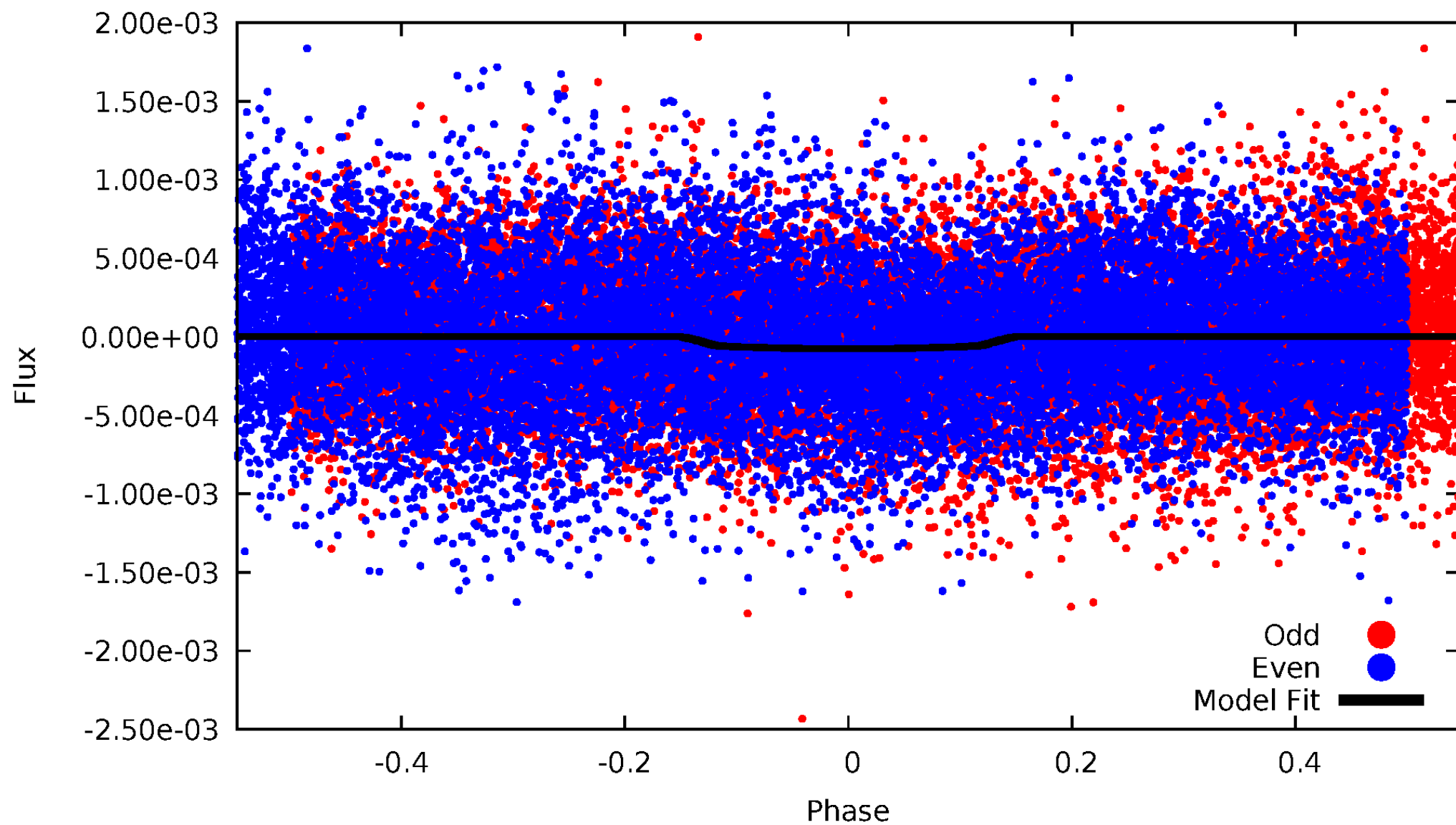


TCE 008738244-02



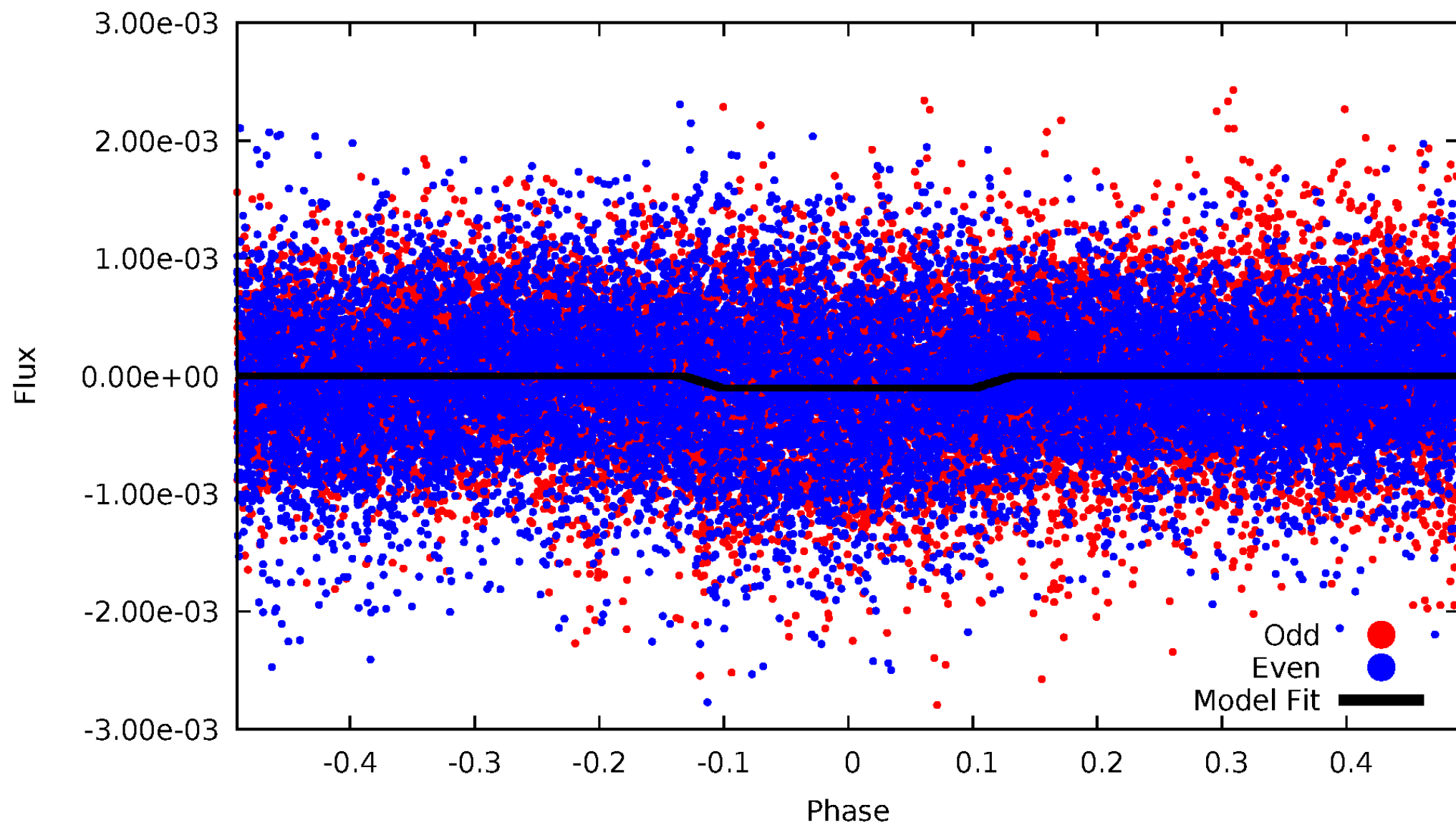
DV Odd/Even

TCE 008738244-02



# ALT Odd/Even

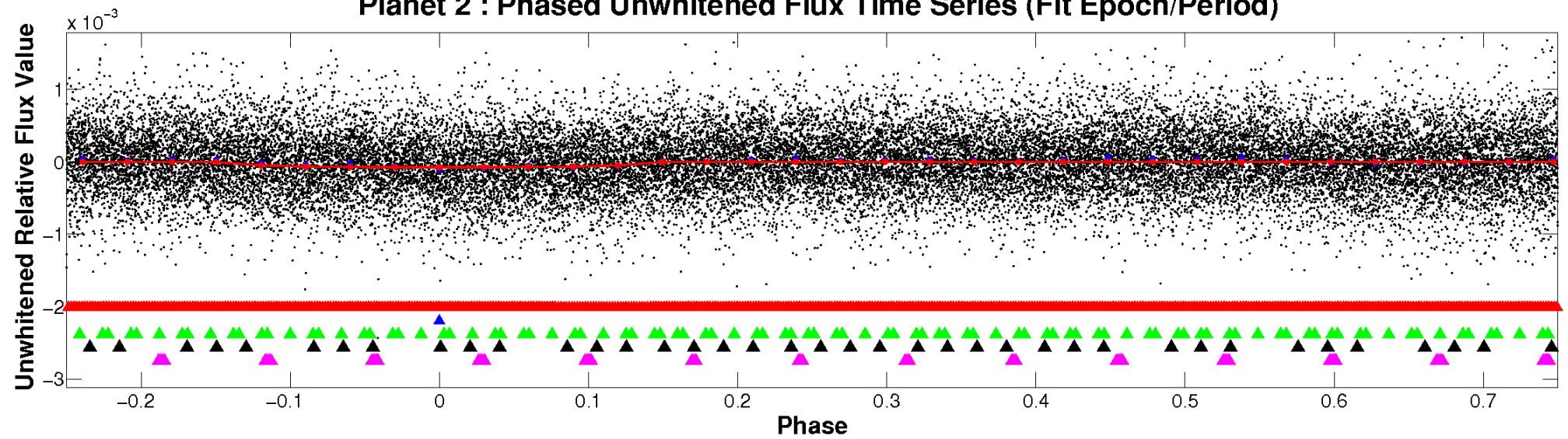
TCE 008738244-02



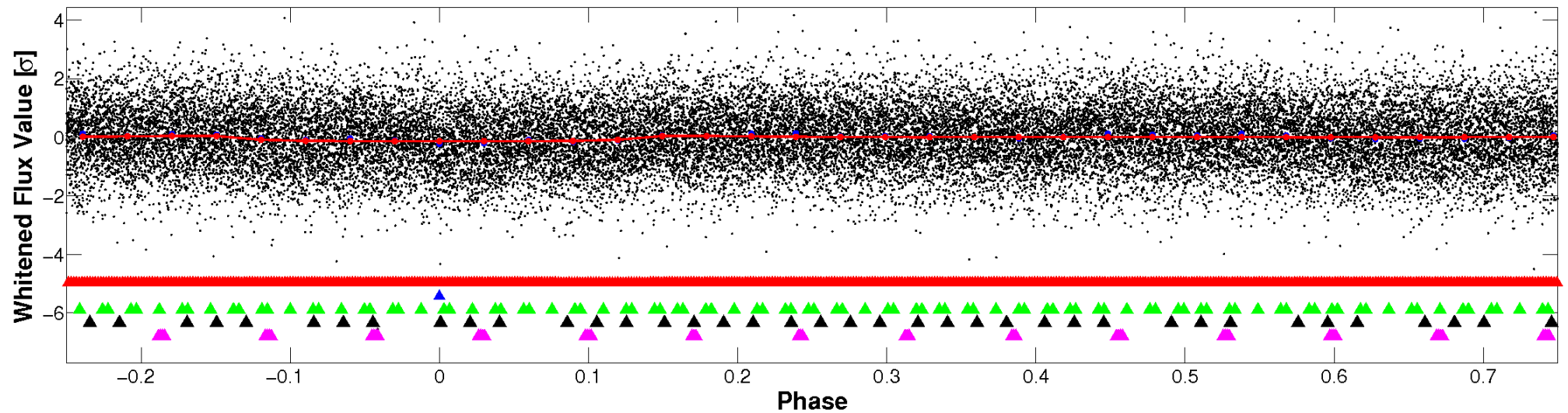


# Non-Whitened Vs. Whitened Light Curve

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

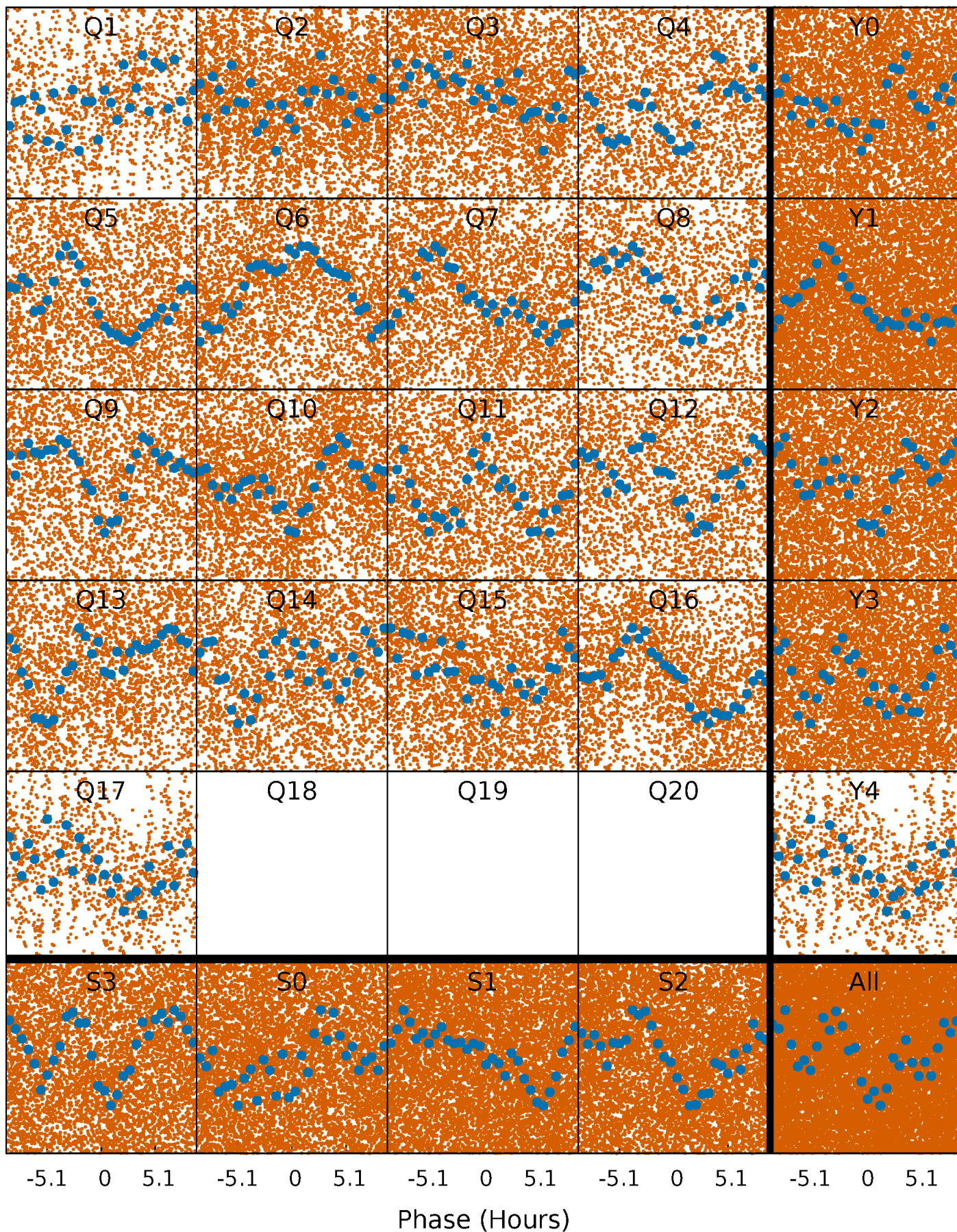


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

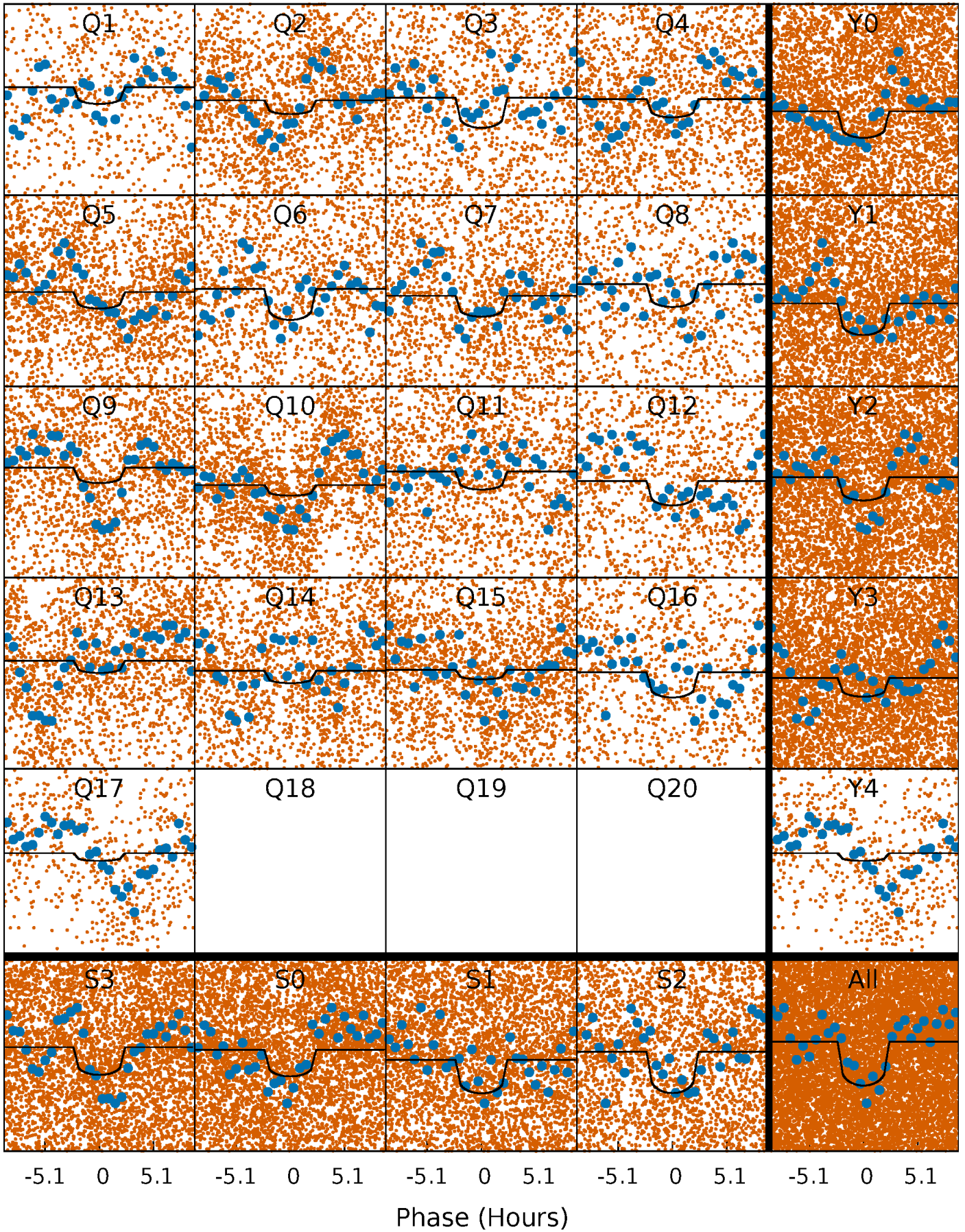
TCE 008738244-02   P= 0.683704 Days    $T_0=131.704676$  (BKJD)





# DV Quarter-Phased Transit Curves

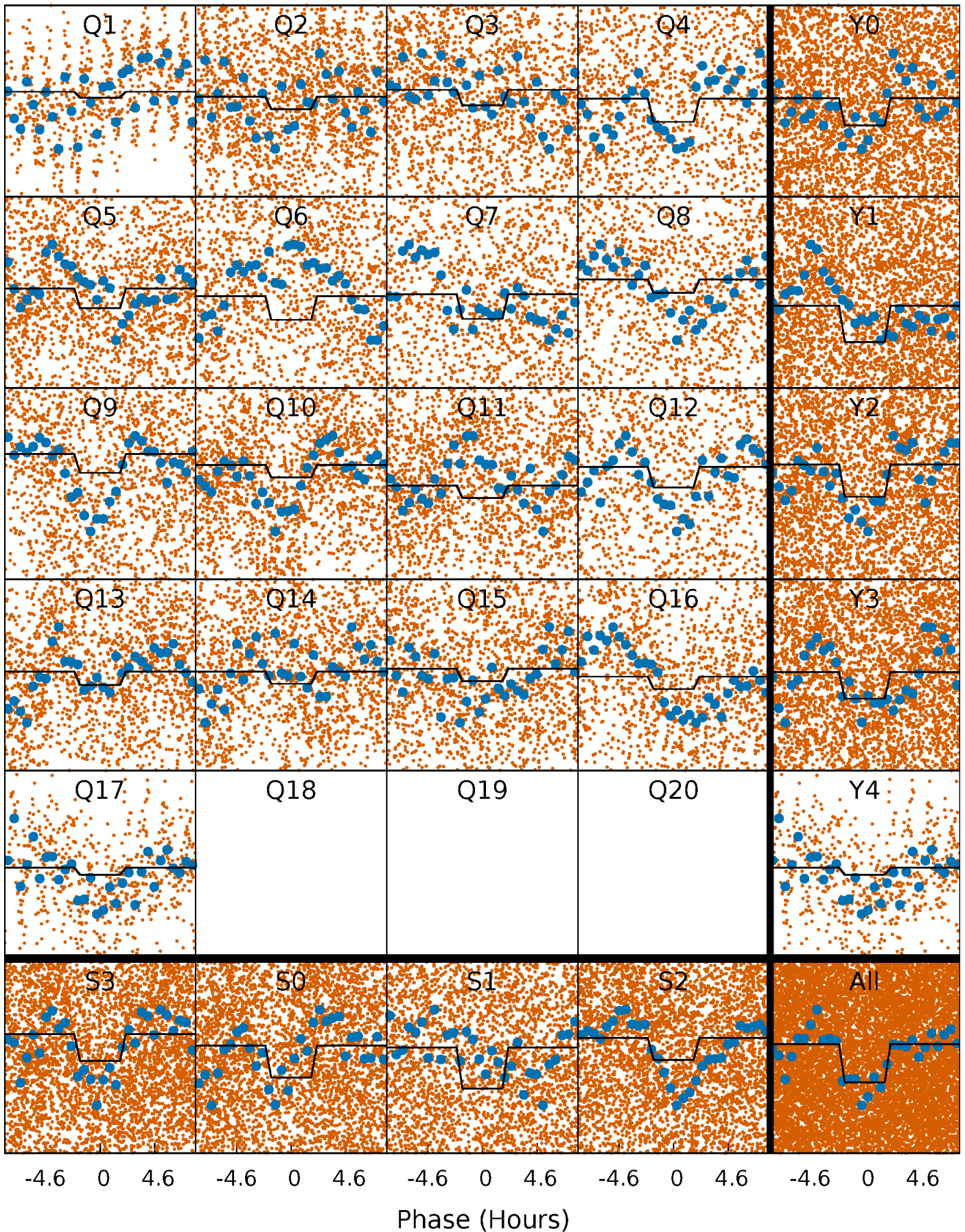
TCE 008738244-02   P= 0.683704 Days    $T_0=131.704676$  (BKJD)





### Alt. Detrend Quarter-Phased Transit Curves

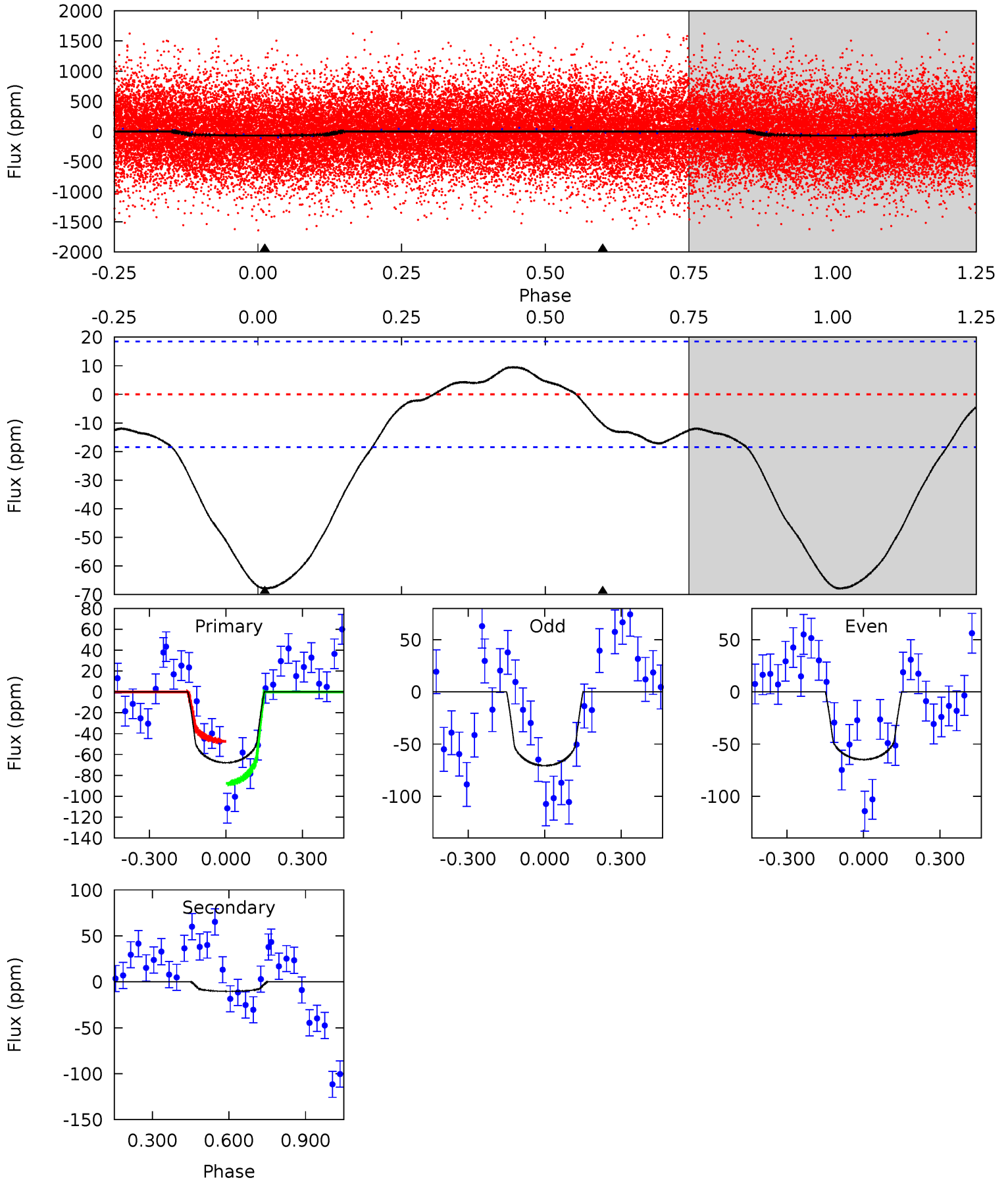
TCE 008738244-02    P= 0.683751 Days     $T_0=131.702175$  (BKJD)



# DV Model-Shift Uniqueness Test

008738244-02, P = 0.683704 Days, E = 131.020972 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
15.9	2.44	0	0	4.33	1.04	0.60	15.9	15.9	2.44	2.44	0.74	0.88	0.12	4.69

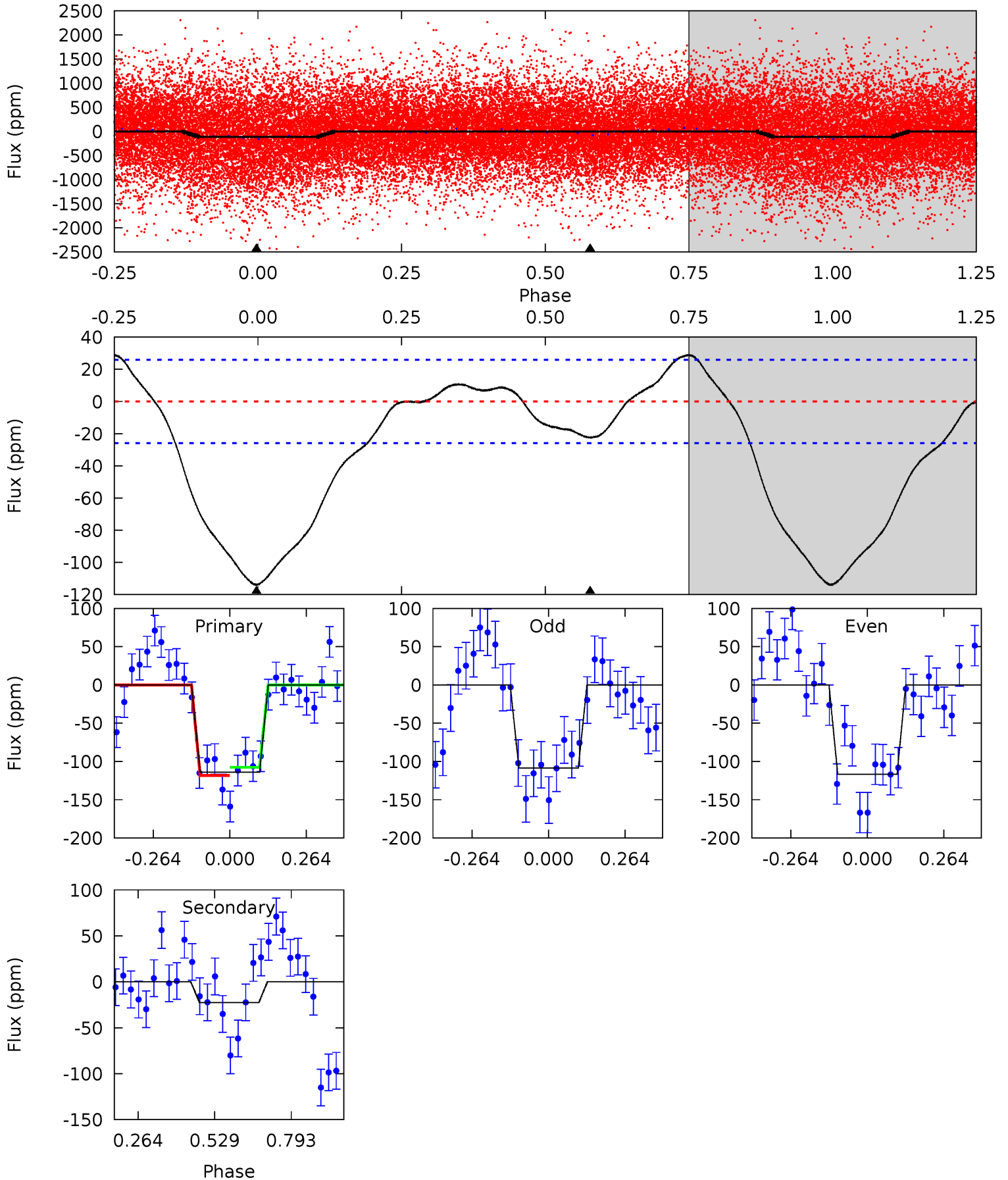




# Alt Model-Shift Uniqueness Test

008738244-02, P = 0.683751 Days, E = 131.018424 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
19.2	3.79	0	0	4.36	1.12	0.60	19.2	19.2	3.79	3.79	0.66	0.96	0.20	0.89



### Stellar Parameters For KIC 008738244

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8247^{+149}_{-166}$	$3.170^{+0.405}_{-0.045}$	$0.070^{+0.200}_{-0.250}$	$7.762^{+0.561}_{-3.368}$	$3.253^{+0.214}_{-0.642}$	$0.010^{+0.035}_{-0.002}$
	+2%/-2%	+13%/-1%	+286%/-357%	+7%/-43%	+7%/-20%	+352%/-22%
Source	SPE4	SPE4	SPE4	DSEP		

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

### Secondary Eclipse Parameters for KIC 008738244-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-10 \pm 4$	$6.40^{+4.49}_{-3.67}$	$9219^{+401}_{-995}$	$-6648^{+11797}_{-787}$	$0.066^{+0.317}_{-0.045}$
Alt.	$-22 \pm 6$	$7.34^{+5.21}_{-3.68}$	$9245^{+389}_{-1056}$	$-6243^{+12155}_{-1044}$	$0.109^{+0.364}_{-0.071}$

$T_{max}$  = 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

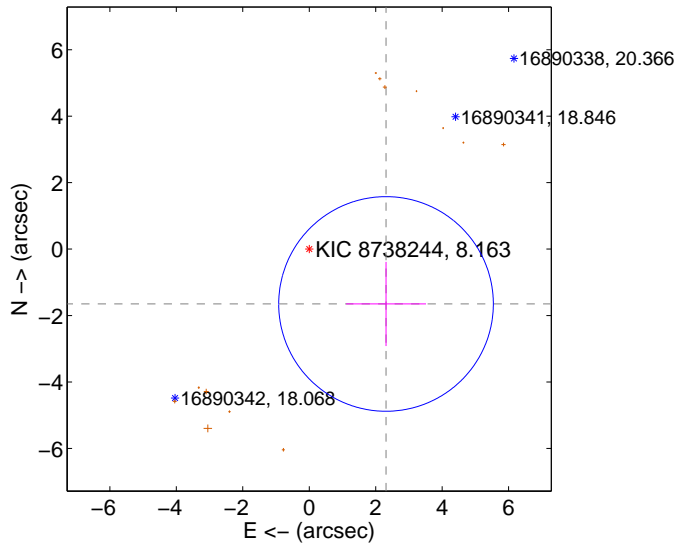
Supplemental centroid analysis for 008738244-02. **Kepler magnitude: 8.16.** Transit SNR 11.76

There are 0 quarters with good PRF difference image offsets

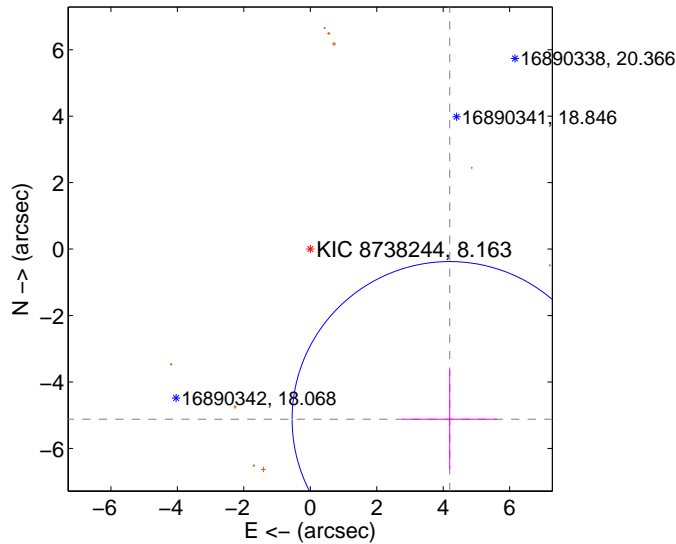
The OOT PRF centroid is offset from the target star catalog position by about 2.08 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.840 \pm 1.076$	2.64	$-2.311 \pm 1.202$	$-1.651 \pm 1.266$
PRF-fit source offset from KIC position	$6.618 \pm 1.581$	4.19	$-4.196 \pm 1.424$	$-5.118 \pm 1.495$
photometric centroid source offset	$2.22 \pm 0.69$	3.20	$-2.06 \pm 0.71$	$-0.84 \pm 0.57$

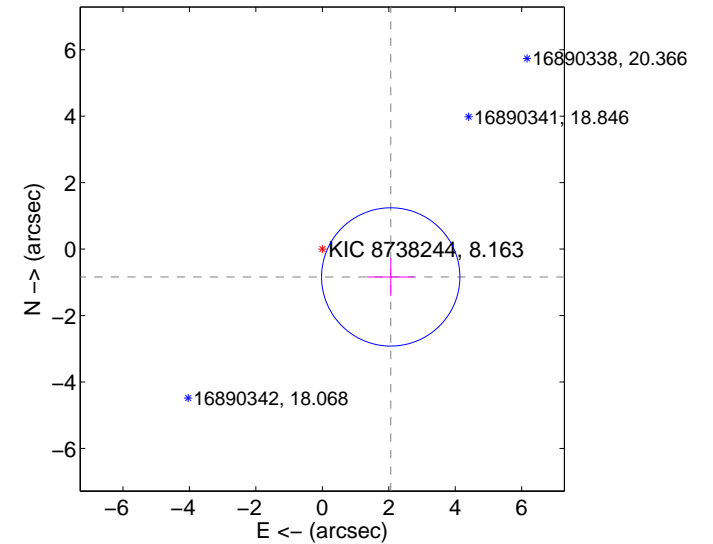
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



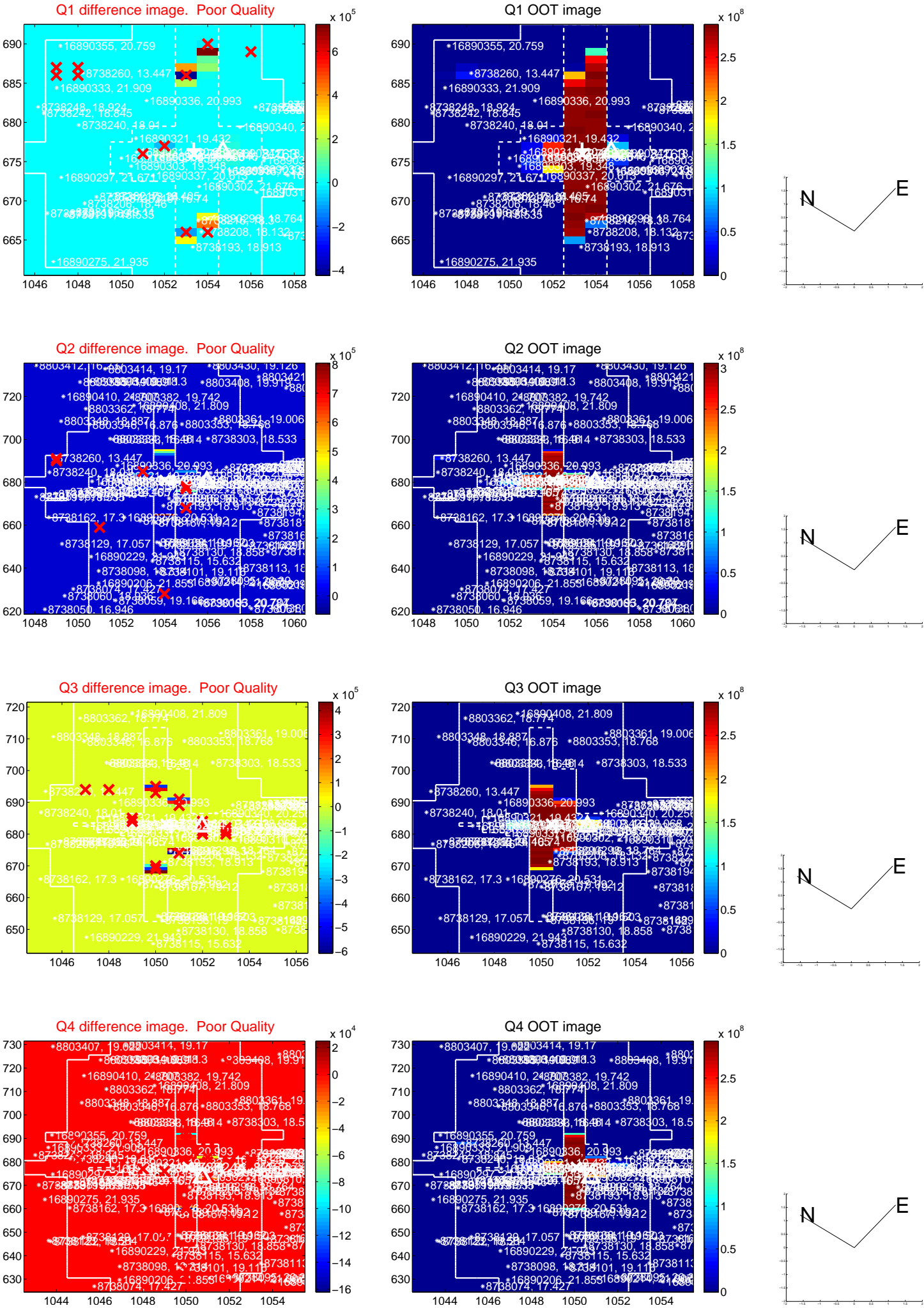
offset from photometric centroids



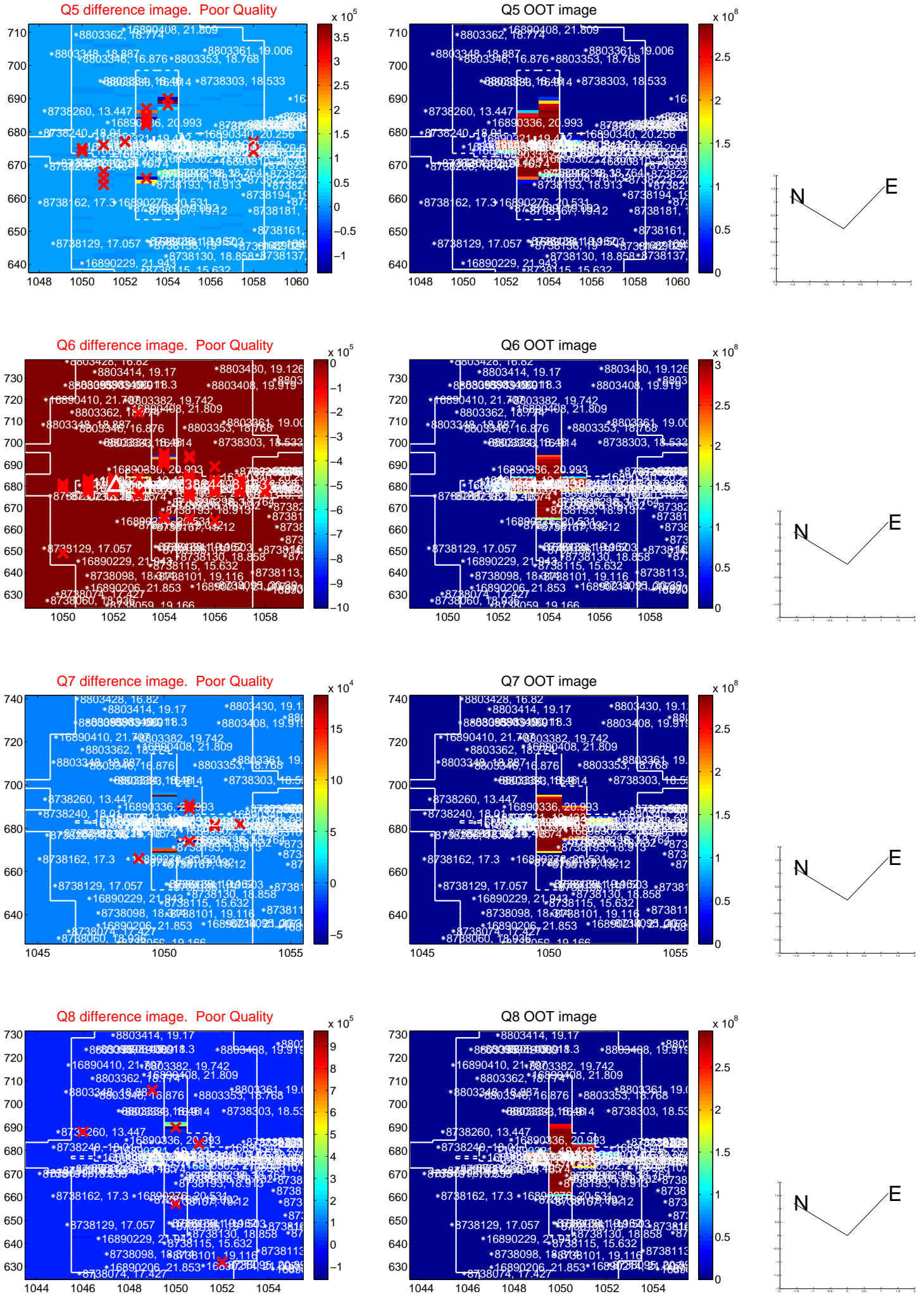
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



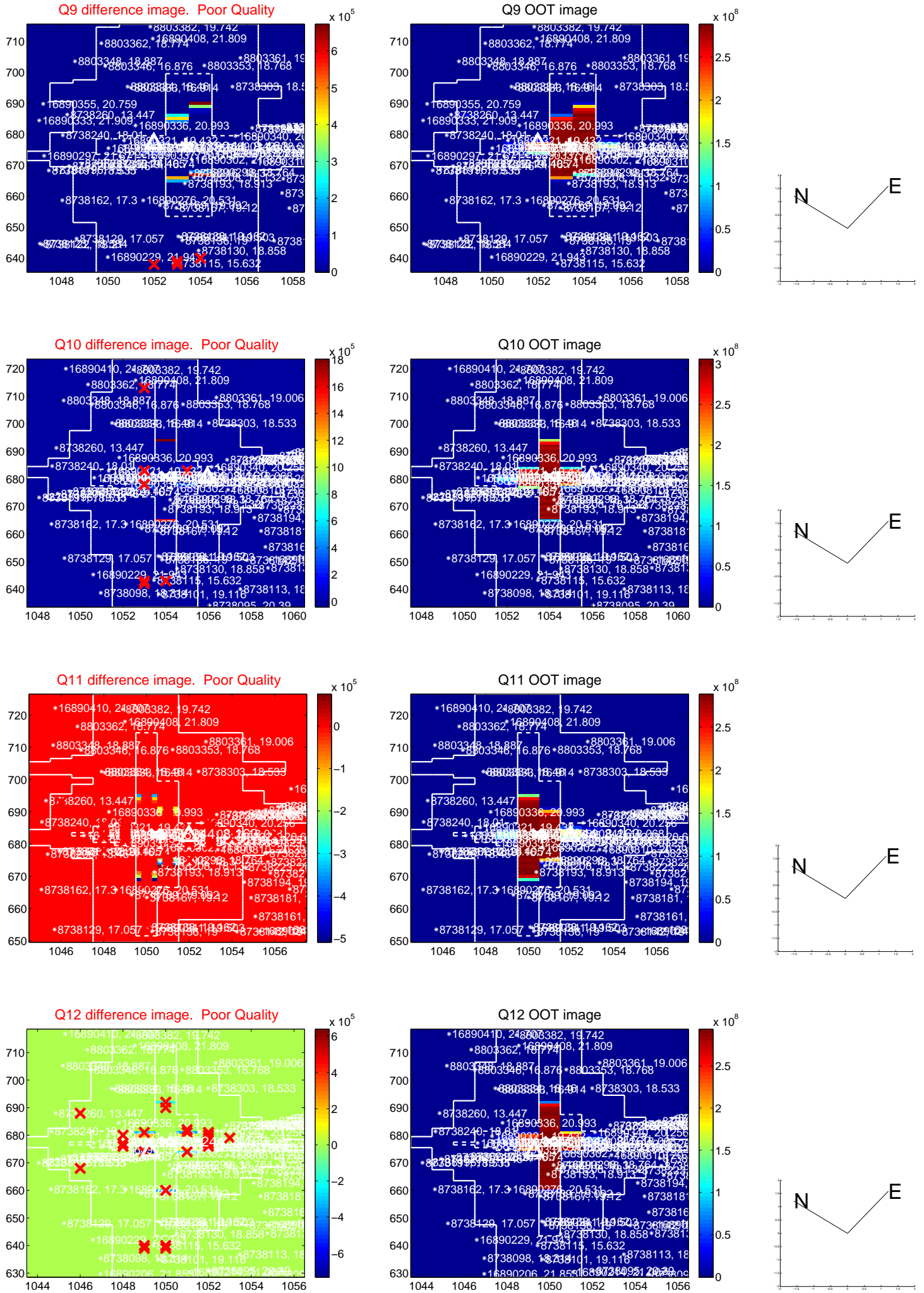
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

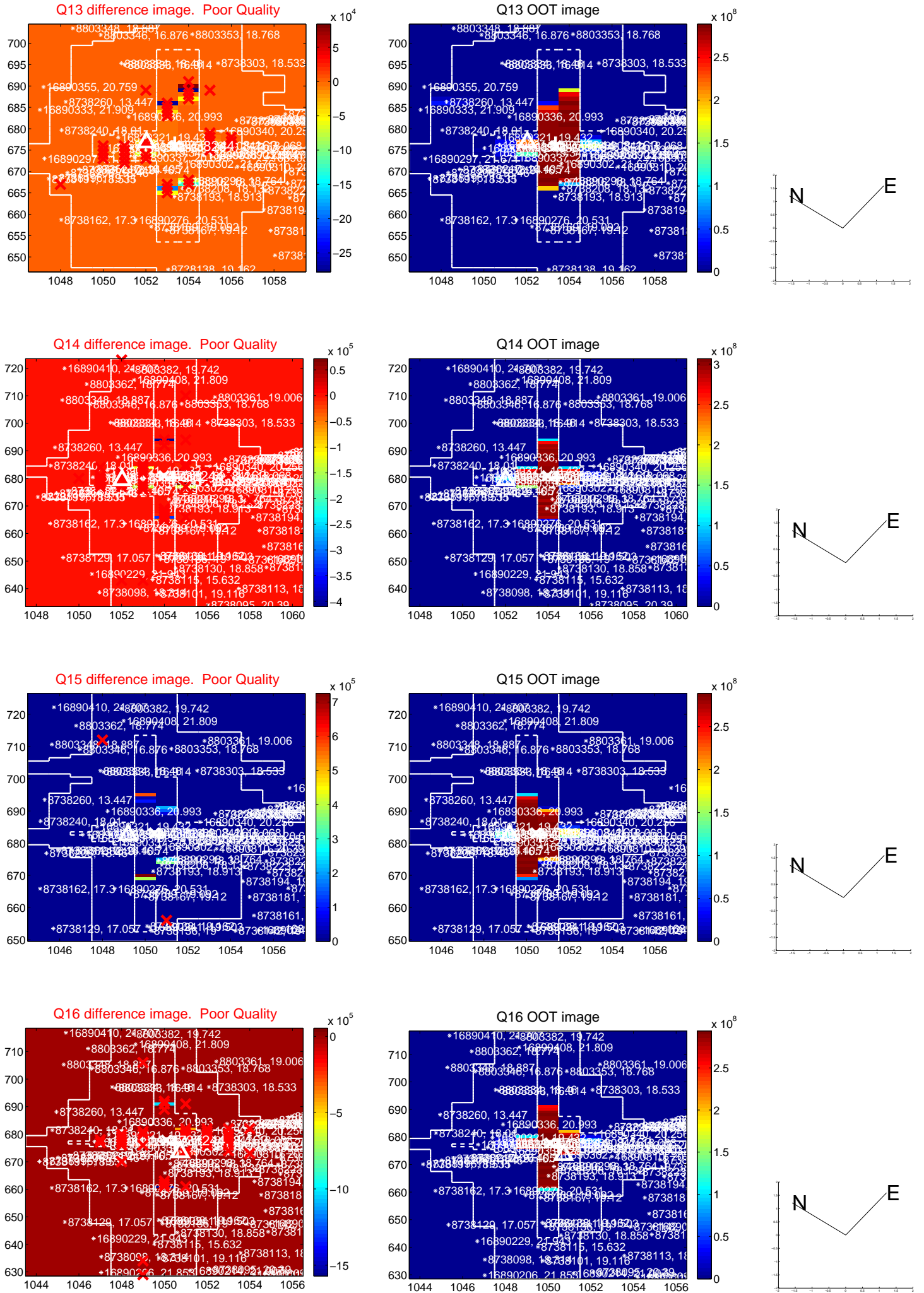


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



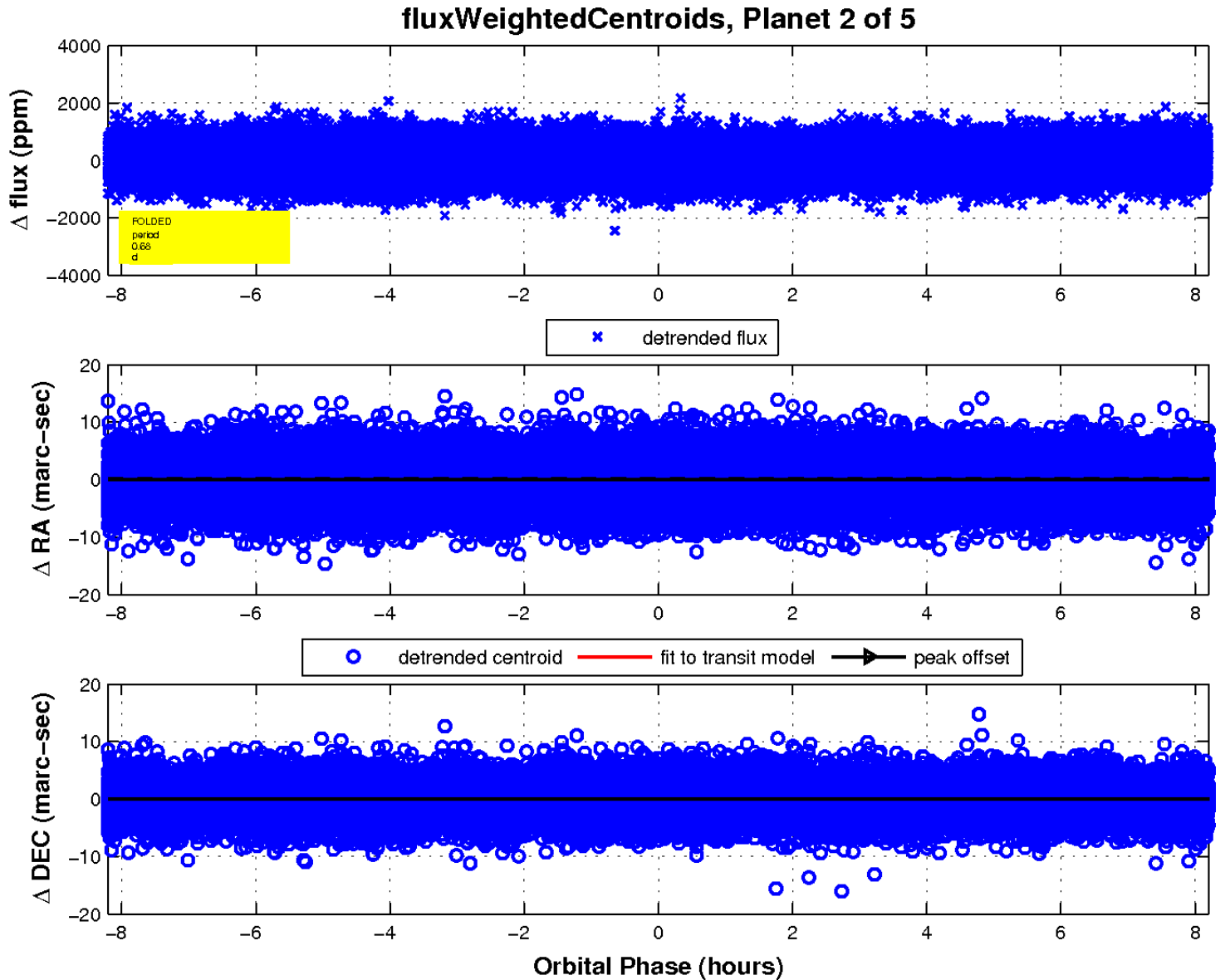
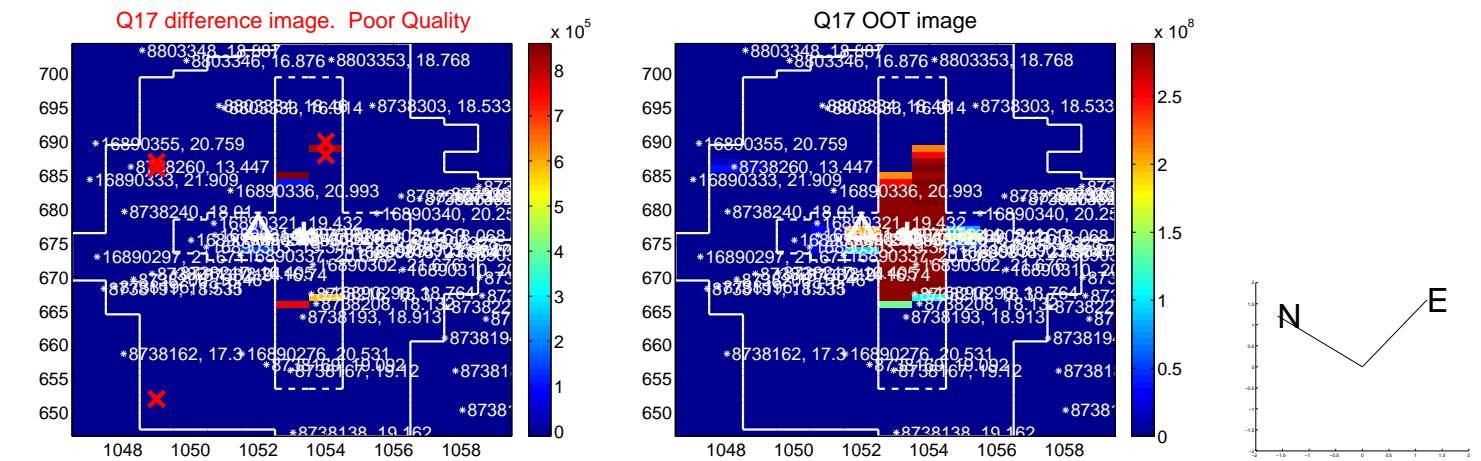


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image



# KIC 008738244

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008738244-01	OBS	3157.01	1.366168	132.441450	62.1	5.481	8.2	7.8	7.76	8247	9.95	0.00
008738244-02	OBS	No	0.683704	131.704676	75.7	4.487	9.3	11.8	7.76	8247	7.03	0.00
008738244-03	OBS	No	14.981475	138.259319	338.4	4.561	9.6	9.3	7.76	8247	16.65	8041.21
008738244-04	OBS	No	38.345542	131.807886	492.1	3.285	9.7	9.5	7.76	8247	19.26	2296.72
008738244-05	OBS	No	27.982972	156.387666	1016.1	1.095	10.8	11.6	7.76	8247	25.31	3495.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008738244-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008738244-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED
008738244-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008738244-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
008738244-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

**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.

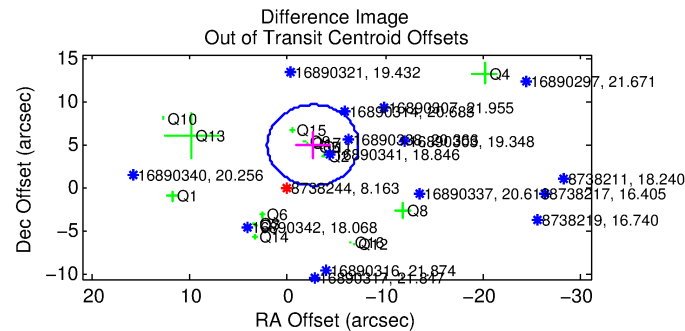
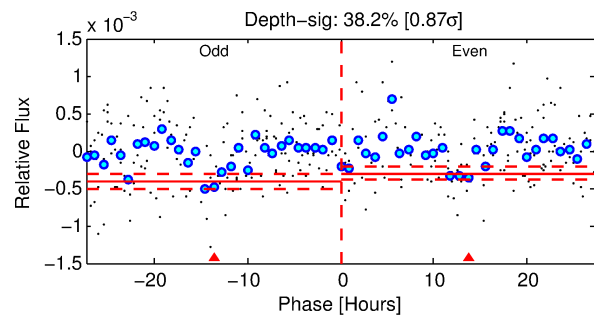
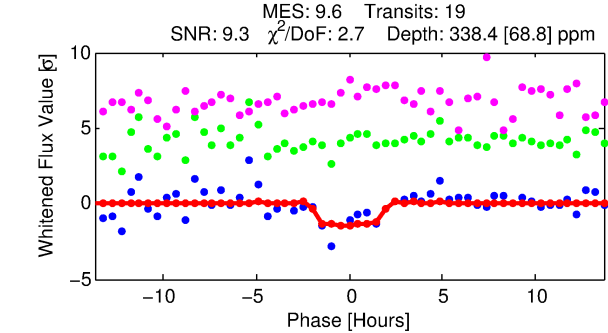
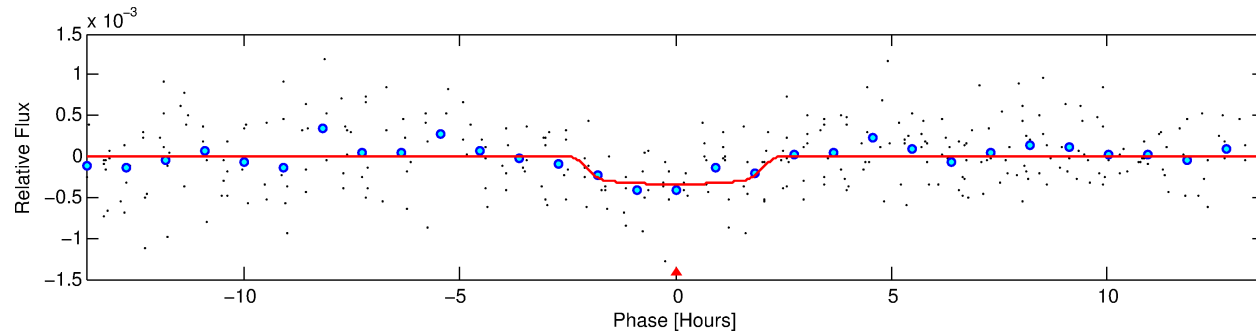
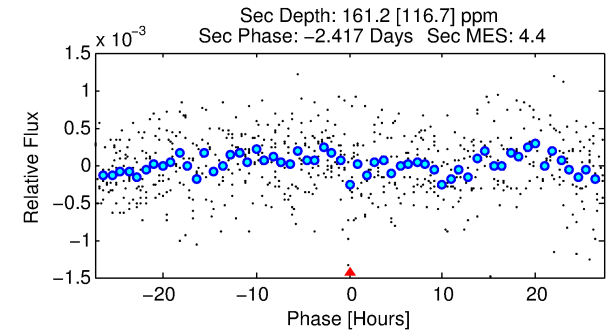
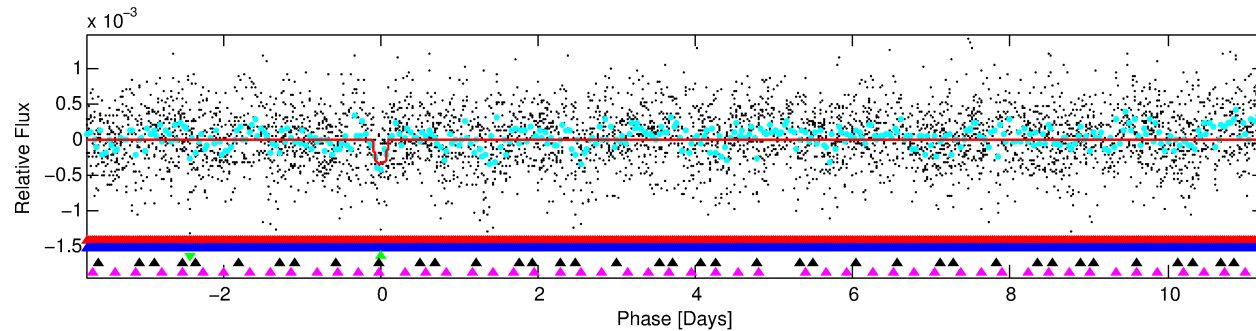
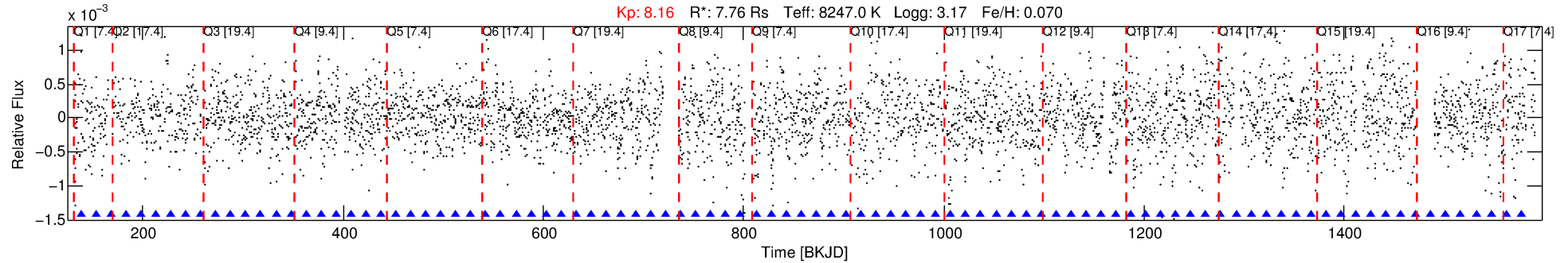
## Ephemeris Match Information For 008738244-03

No Significant Match Found

# DV One-Page Summary

KIC: 8738244 Candidate: 3 of 5 Period: 14.981 d

KOI: K03157 Corr: No Ephemeris Match



## DV Fit Results:

Period = 14.98147 [0.00044] d  
Epoch = 138.2593 [0.0199] BKJD  
Rp/R\* = 0.0197 [0.0110]  
a/R\* = 11.90 [39.84]  
b = 0.90 [0.70]  
Seff = 8041.21 [5551.75]  
Teff = 2415 [417] K  
Rp = 16.65 [11.79] Re  
a = 0.1762 [0.0748] AU  
Ag = 9.93 [14.89] [0.60σ]  
Teffp = 6628 [2212] K [1.87σ]

## DV Diagnostic Results:

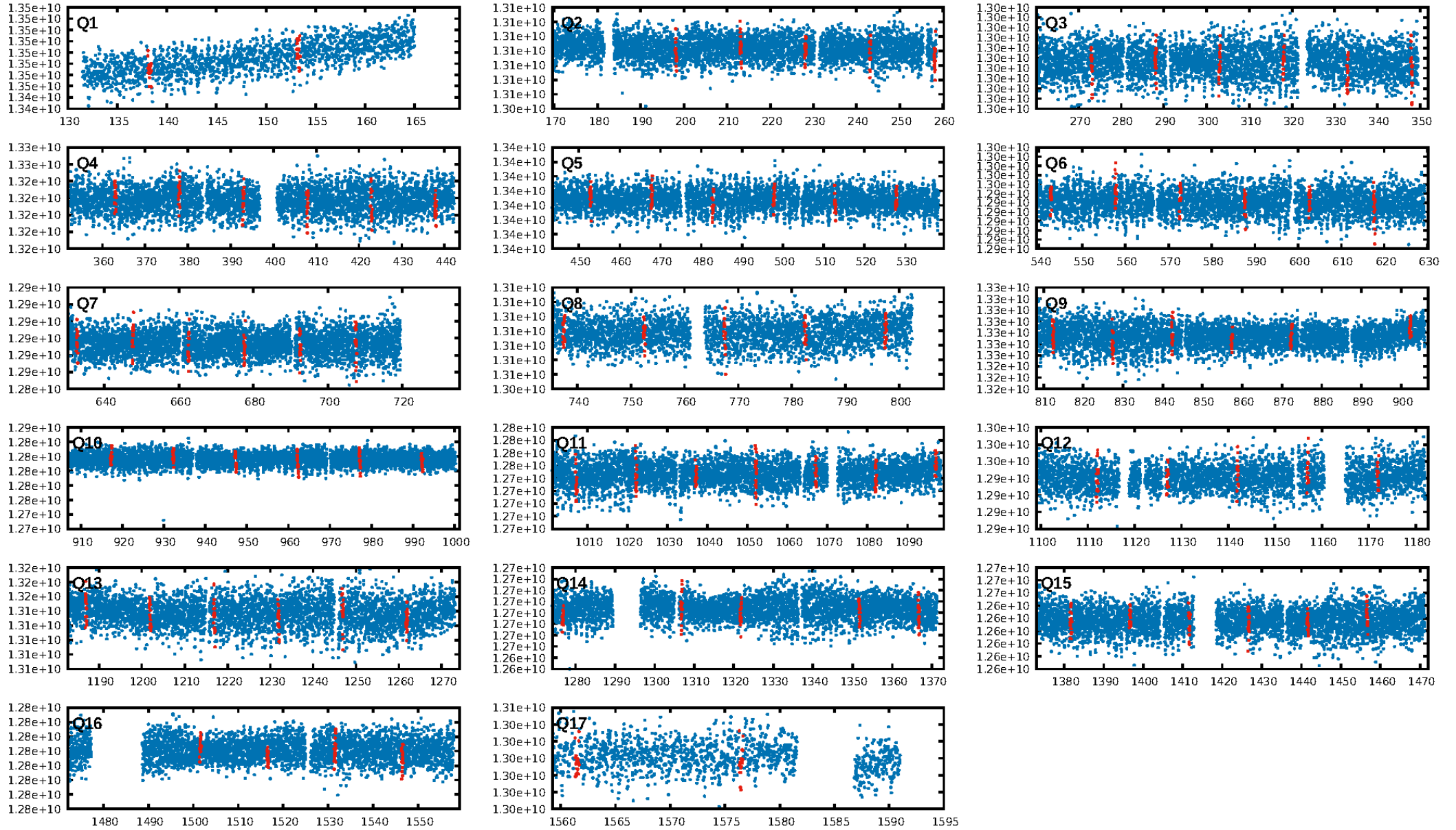
ShortPeriod-sig: 100.0% [45.83σ]  
LongPeriod-sig: 100.0% [66.53σ]  
ModelChiSquare2-sig: 0.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.48e-14  
RollingBand-fgt: 1.00 [19/19]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 0.2%  
Centroid-so: 0.679 arcsec [0.87σ]  
OotOffset-rm: 5.623 arcsec [3.61σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 4.950 arcsec [2.64σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 04:00:47 Z

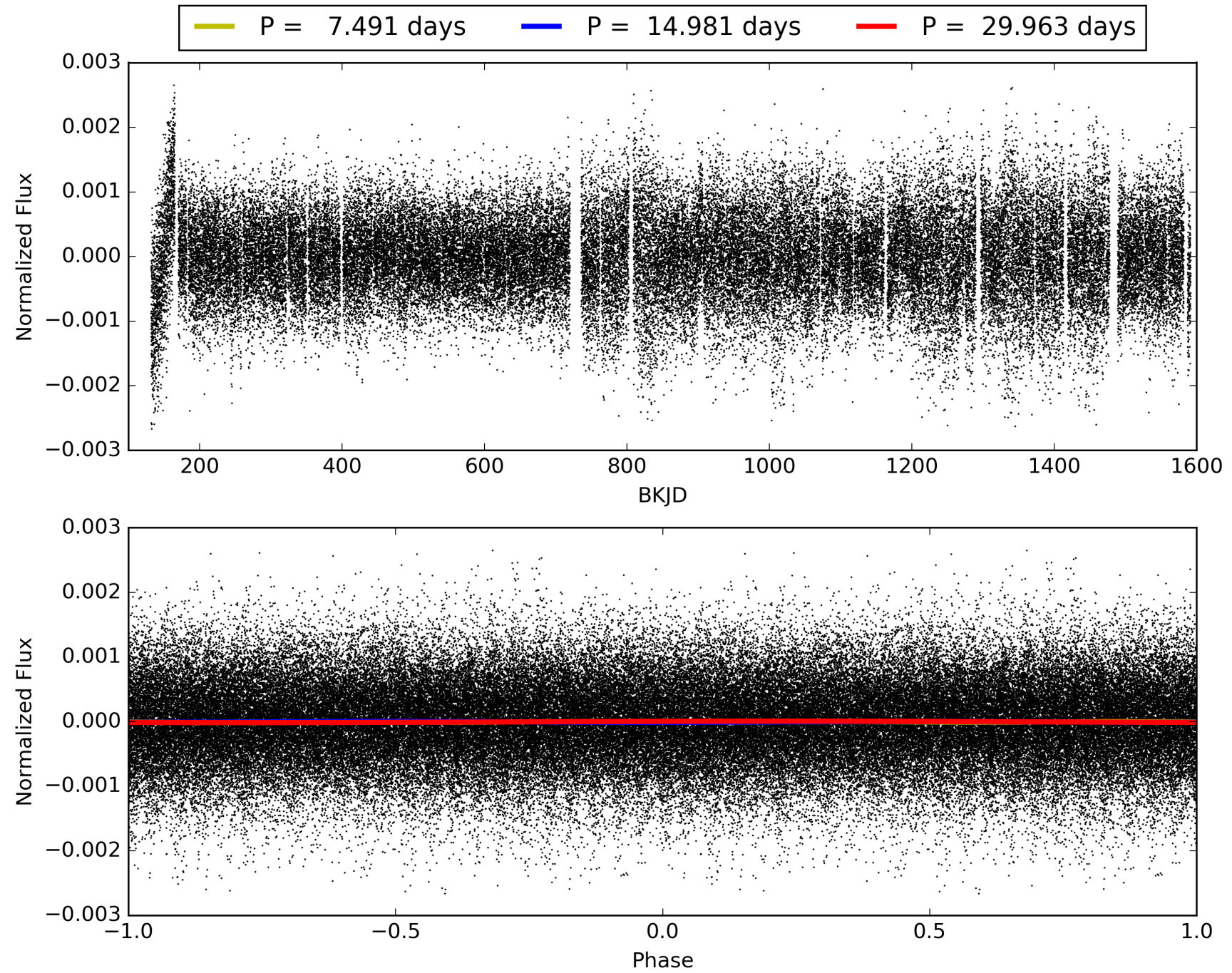
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008738244-03, PDC Light Curves

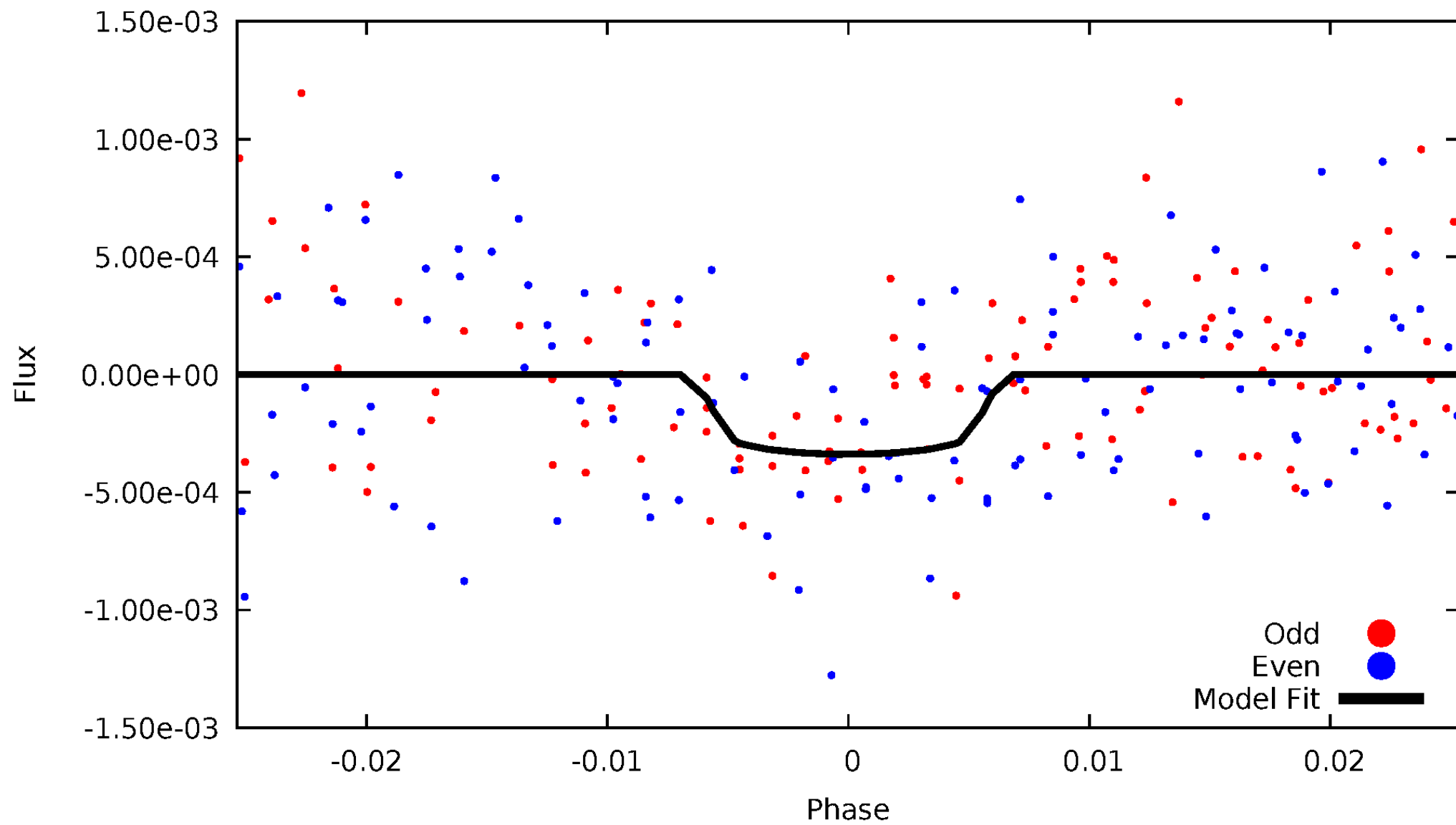


TCE 008738244-03



# DV Odd/Even

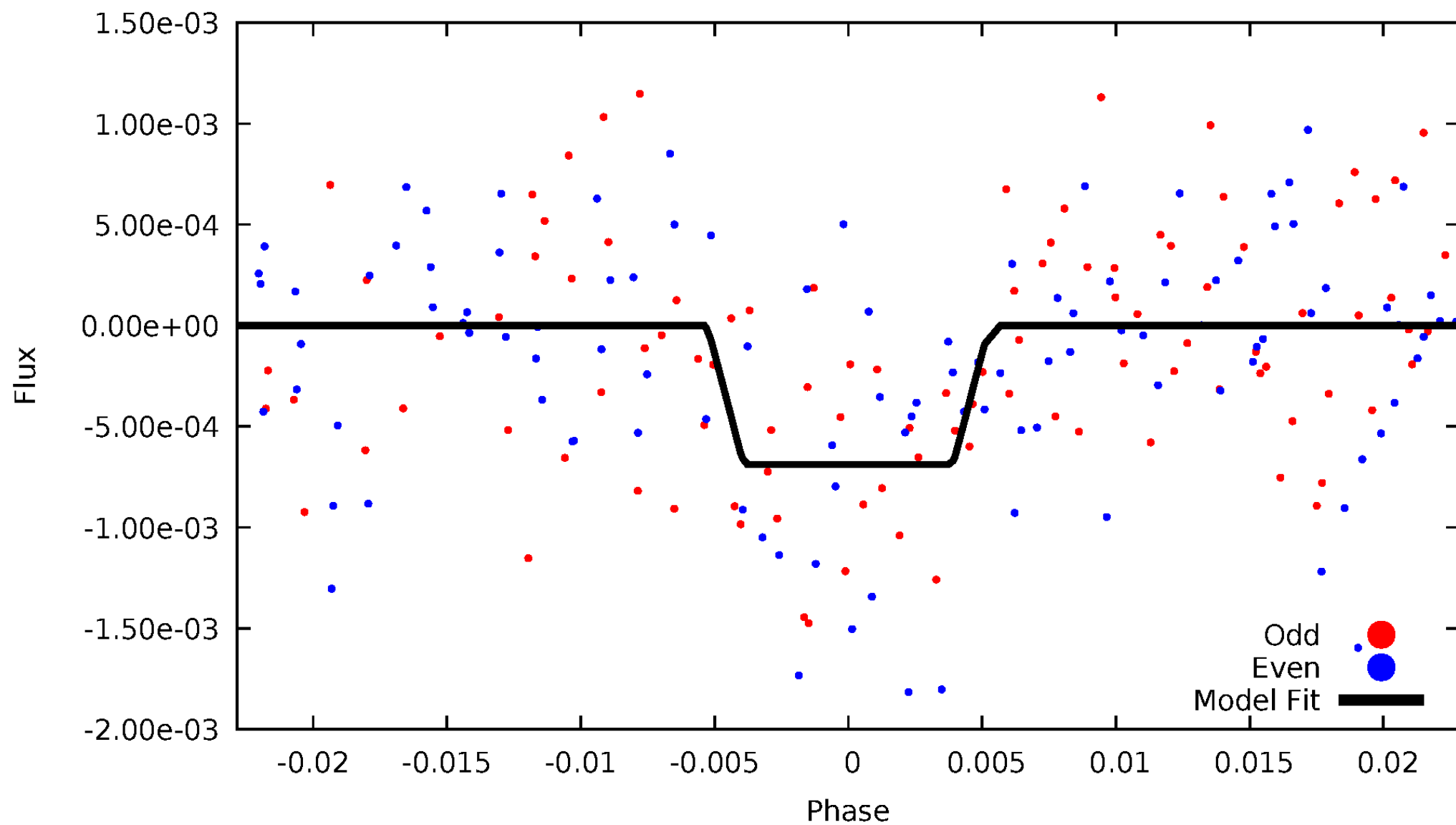
TCE 008738244-03





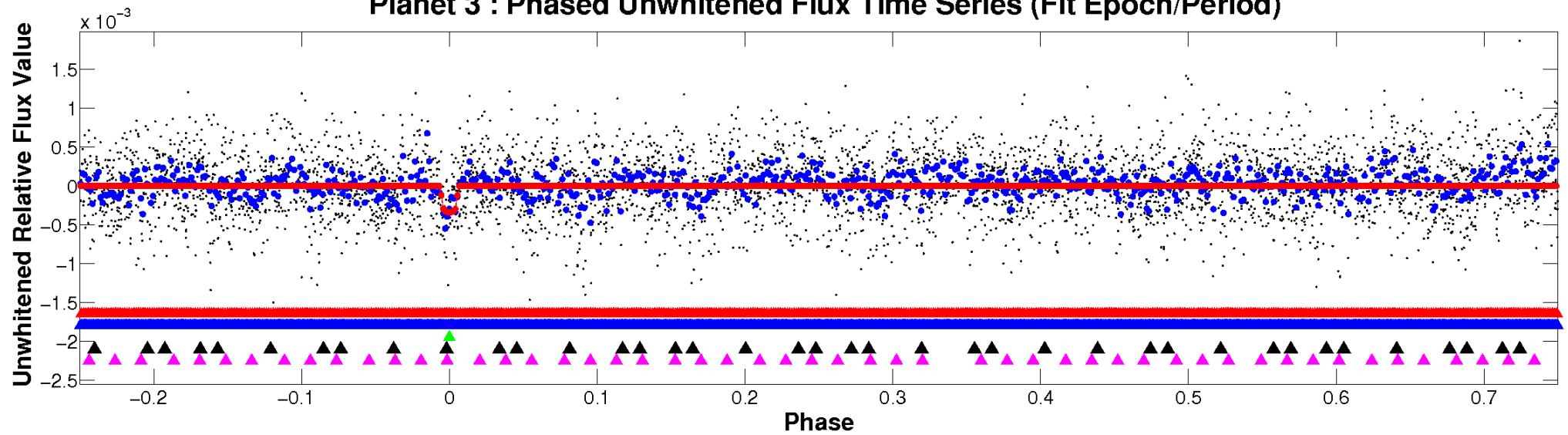
# ALT Odd/Even

TCE 008738244-03

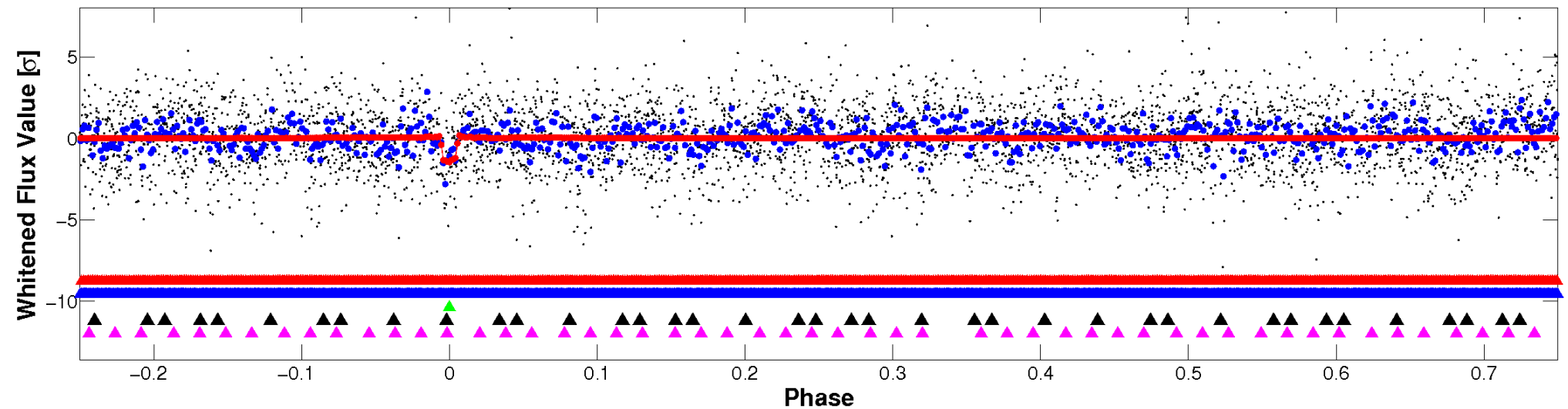


# Non-Whitened Vs. Whitened Light Curve

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

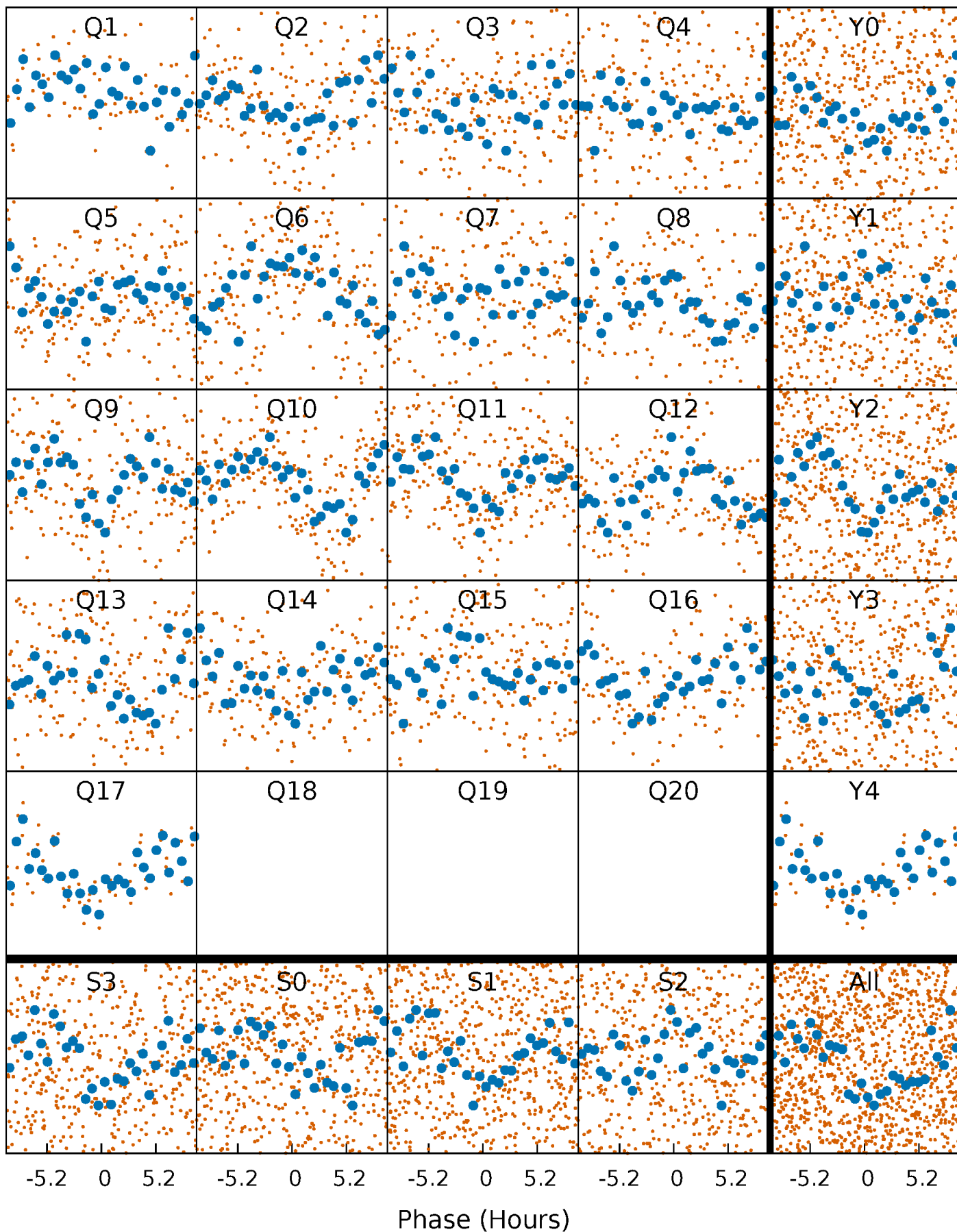


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

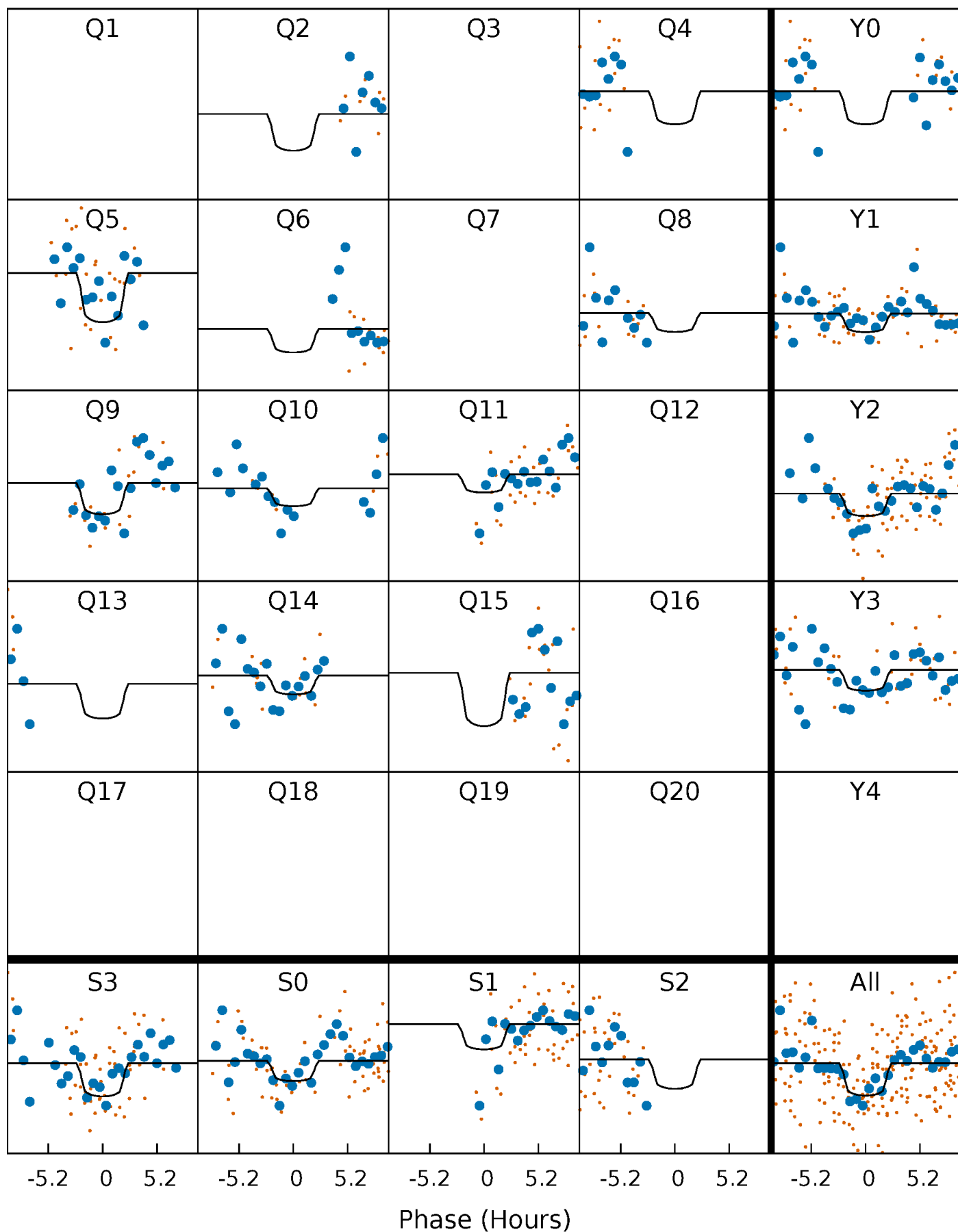
TCE 008738244-03   P= 14.981475 Days    $T_0=138.259319$  (BKJD)





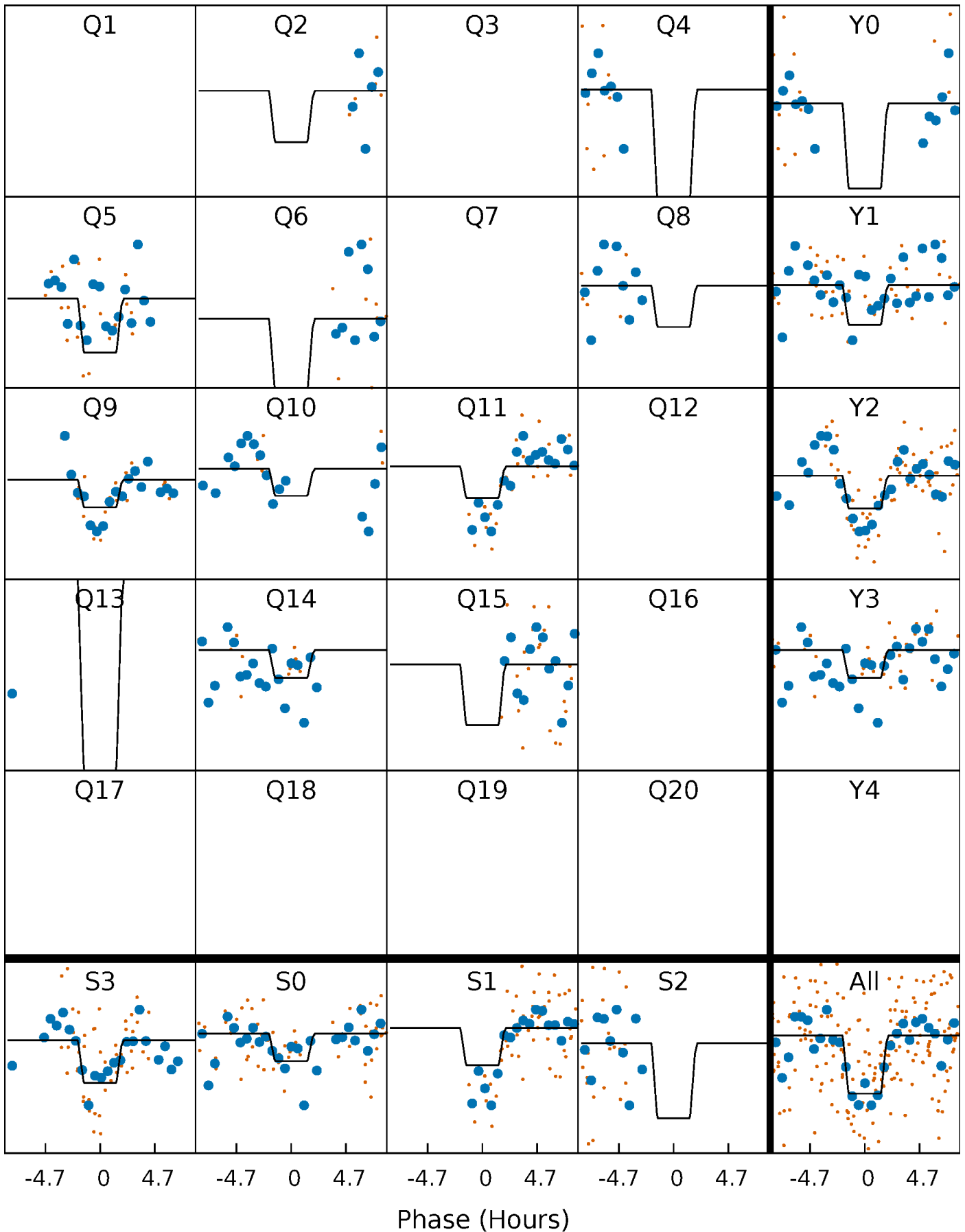
# DV Quarter-Phased Transit Curves

TCE 008738244-03 P= 14.981475 Days  $T_0=138.259319$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

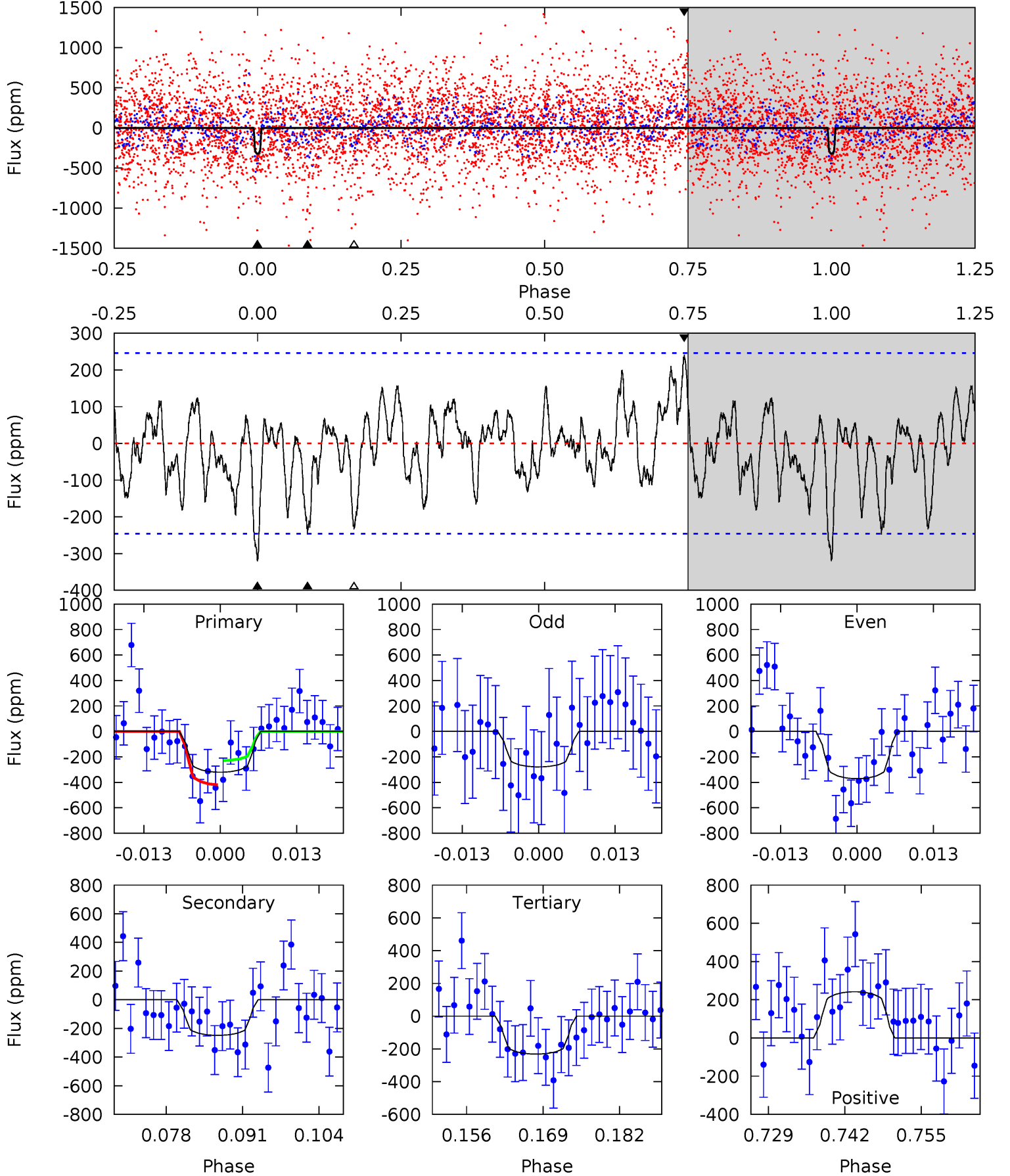
TCE 008738244-03 P= 14.982179 Days  $T_0=138.235680$  (BKJD)



# DV Model-Shift Uniqueness Test

008738244-03, P = 14.981475 Days, E = 123.277844 Days

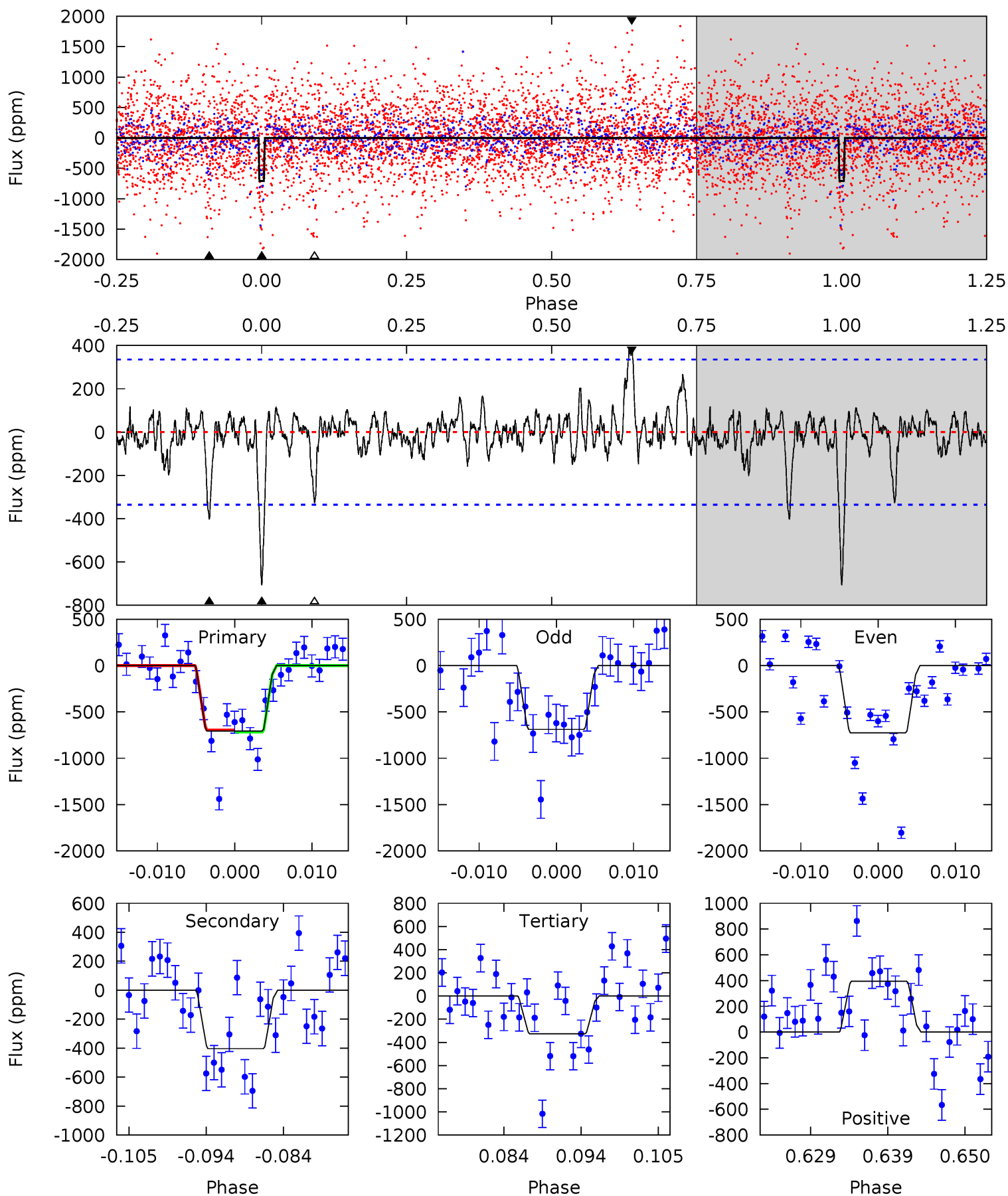
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.48	5.02	4.69	4.89	4.98	2.48	1.67	1.79	1.59	0.33	0.13	0.94	1.19	0.43	1.92



# Alt Model-Shift Uniqueness Test

008738244-03, P = 14.982179 Days, E = 123.253501 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
10.6	6.04	4.88	5.91	5.02	2.56	1.21	5.70	4.67	1.16	0.13	0.28	1.02	0.36	0.16





### Stellar Parameters For KIC 008738244

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8247^{+149}_{-166}$	$3.170^{+0.405}_{-0.045}$	$0.070^{+0.200}_{-0.250}$	$7.762^{+0.561}_{-3.368}$	$3.253^{+0.214}_{-0.642}$	$0.010^{+0.035}_{-0.002}$
	+2%/-2%	+13%/-1%	+286%/-357%	+7%/-43%	+7%/-20%	+352%/-22%
Source	SPE4	SPE4	SPE4	DSEP		

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

### Secondary Eclipse Parameters for KIC 008738244-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-248 \pm 49$	$15.57^{+9.06}_{-7.74}$	$3292^{+144}_{-353}$	$6961^{+4016}_{-1371}$	$17^{+52}_{-10}$
Alt.	$-403 \pm 67$	$19.50^{+9.98}_{-8.49}$	$3295^{+146}_{-361}$	$6989^{+2950}_{-1195}$	$18^{+38}_{-10}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

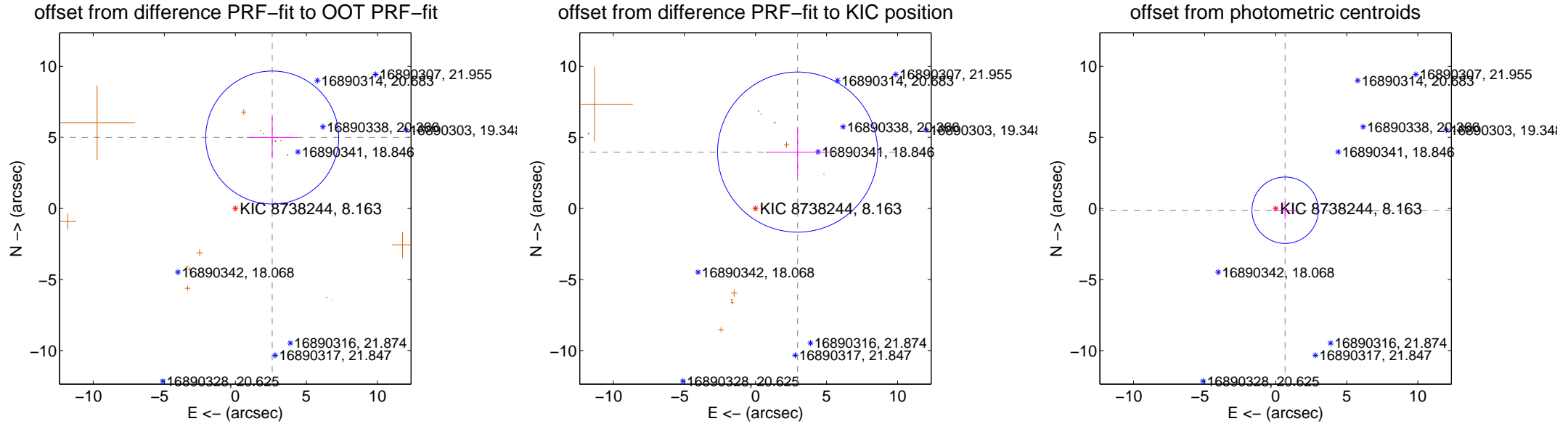
## DV Centroid Data

Supplemental centroid analysis for 008738244-03. **Kepler magnitude: 8.16.** Transit SNR 9.30

There are 0 quarters with good PRF difference image offsets

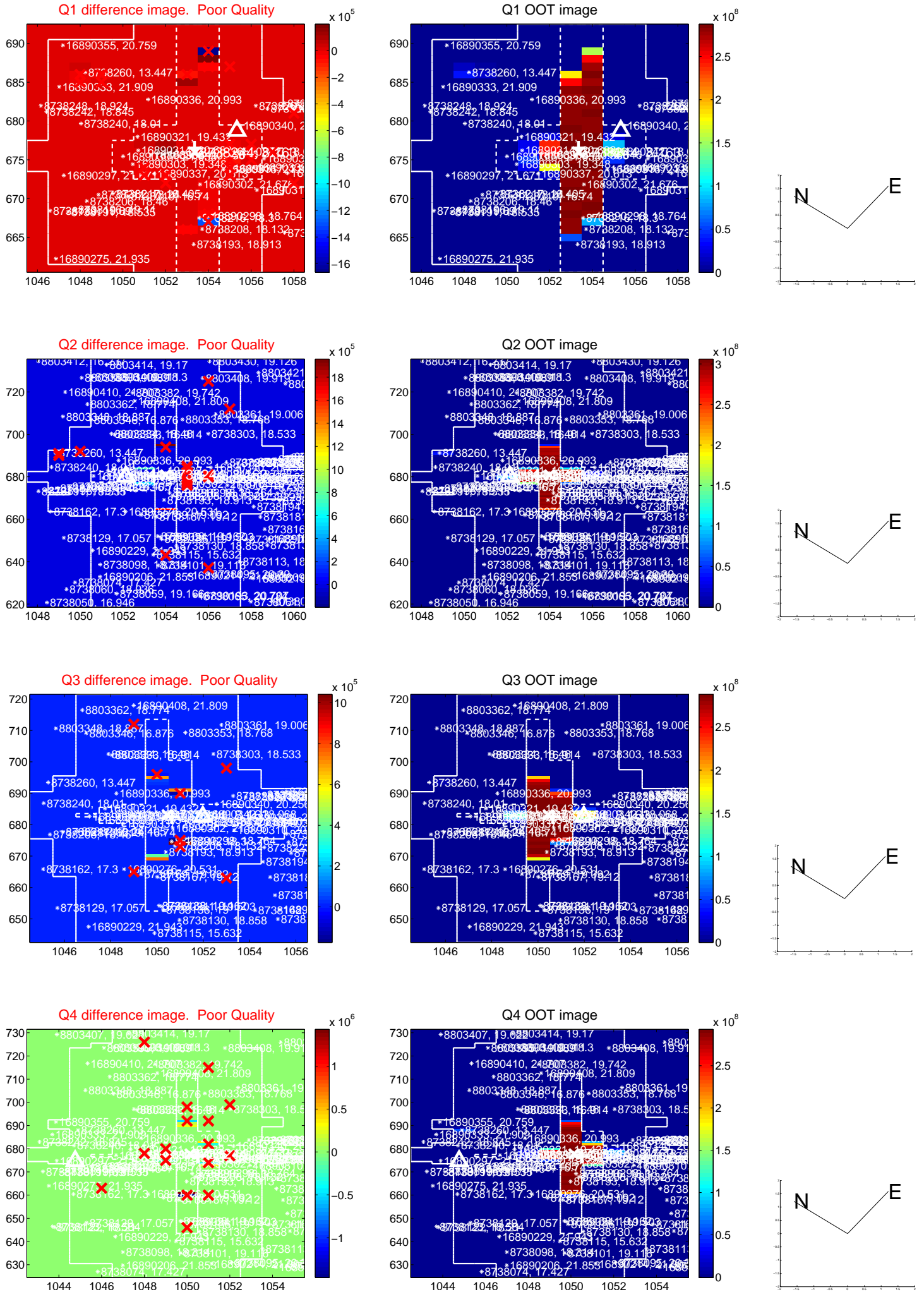
The OOT PRF centroid is offset from the target star catalog position by about 2.09 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>5.623 \pm 1.559</math></b>	<b>3.61</b>	$-2.592 \pm 1.786$	$4.990 \pm 1.469$
PRF-fit source offset from KIC position	$4.950 \pm 1.878$	2.64	$-2.965 \pm 2.240$	$3.964 \pm 1.654$
photometric centroid source offset	$0.68 \pm 0.78$	0.87	$-0.67 \pm 0.78$	$-0.13 \pm 0.63$

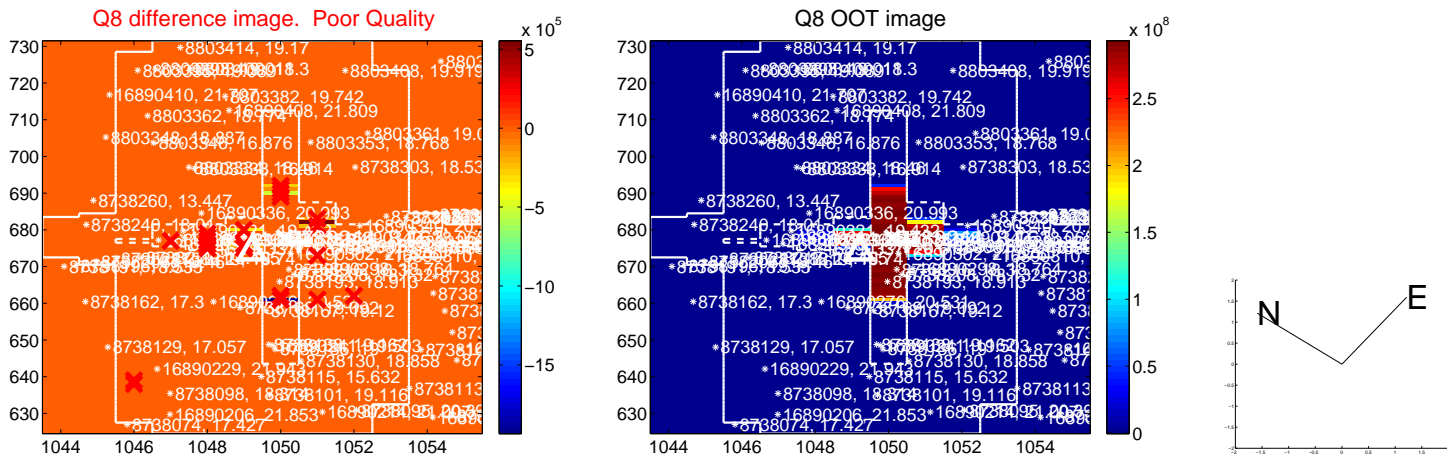
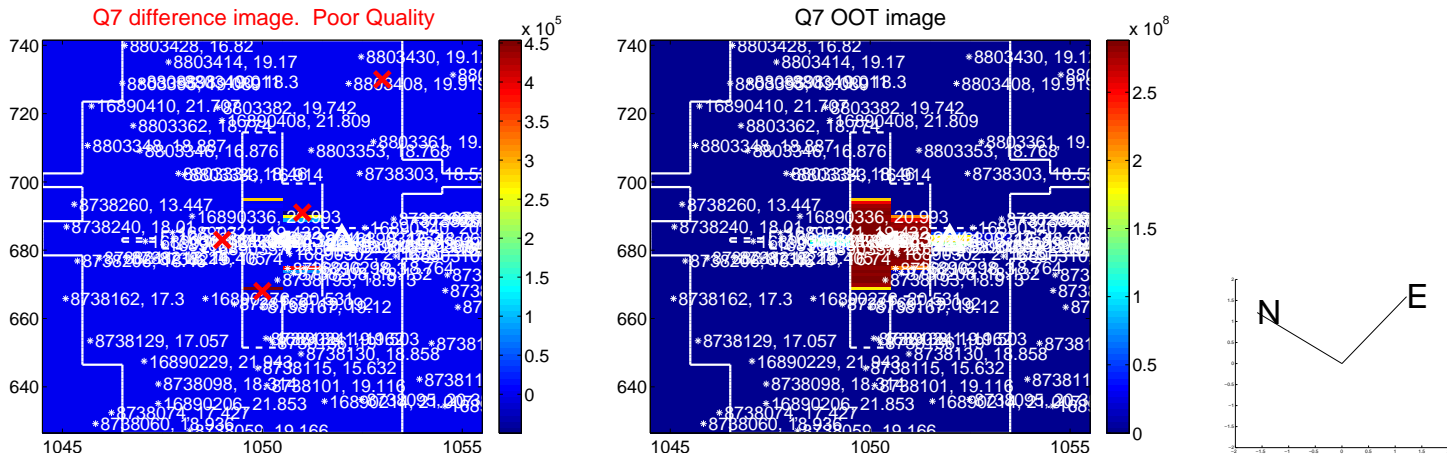
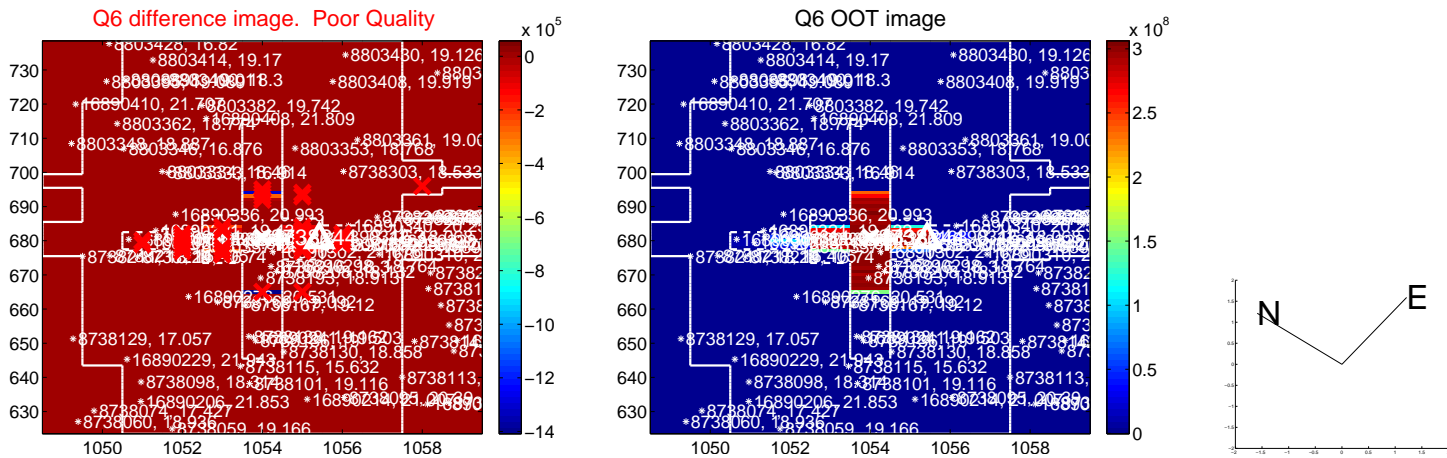
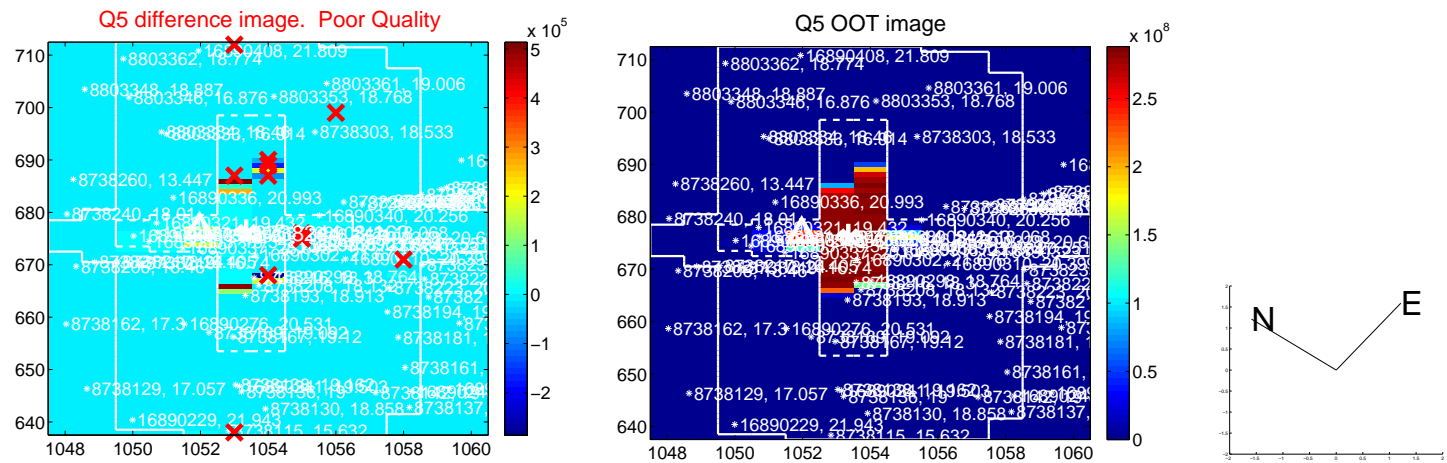


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

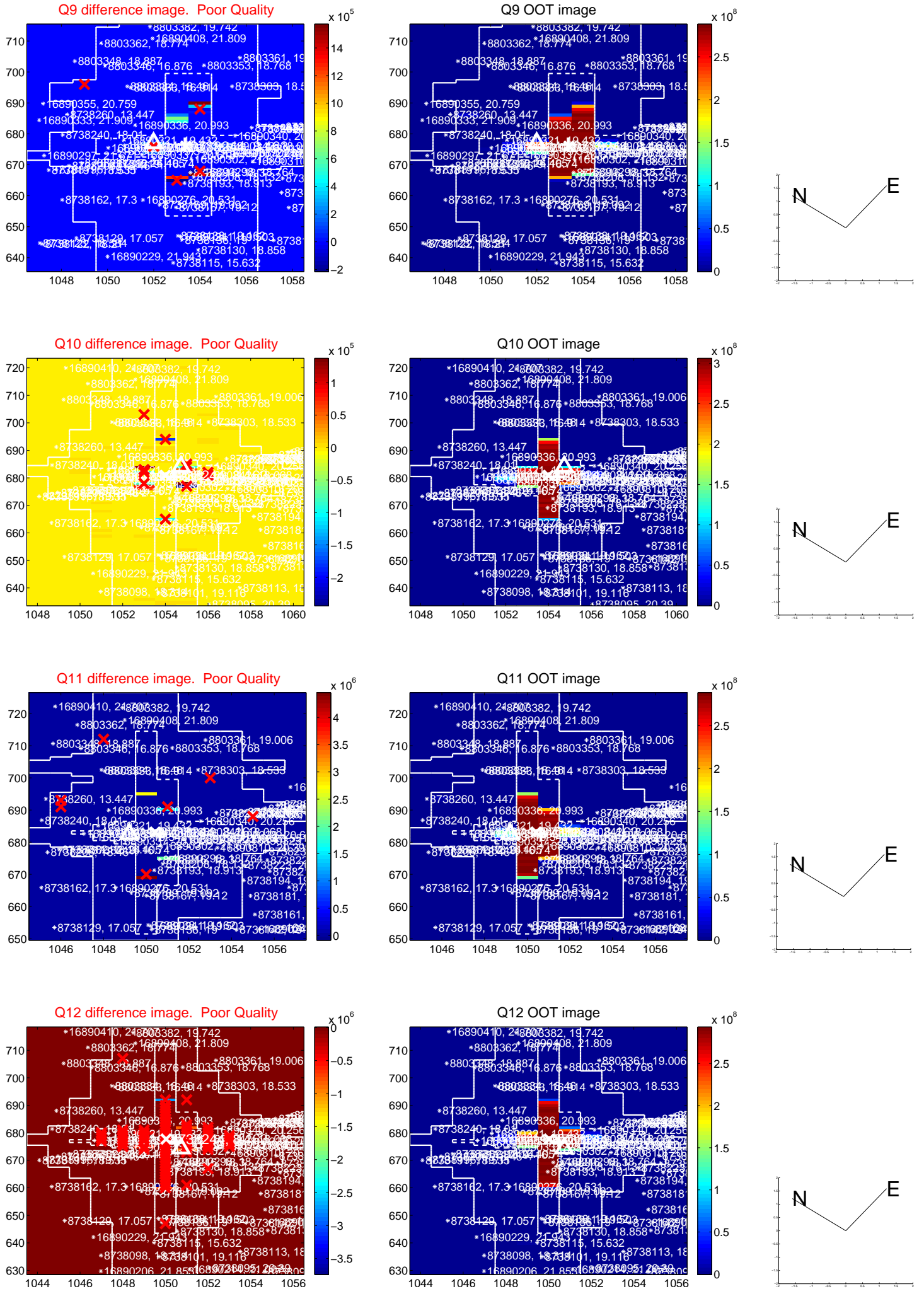


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

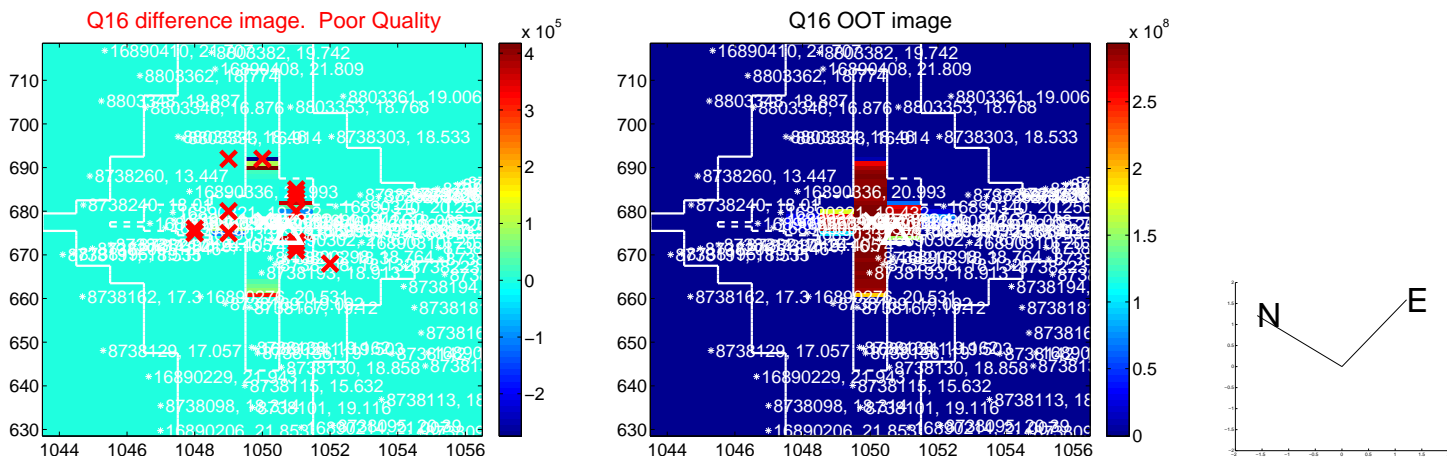
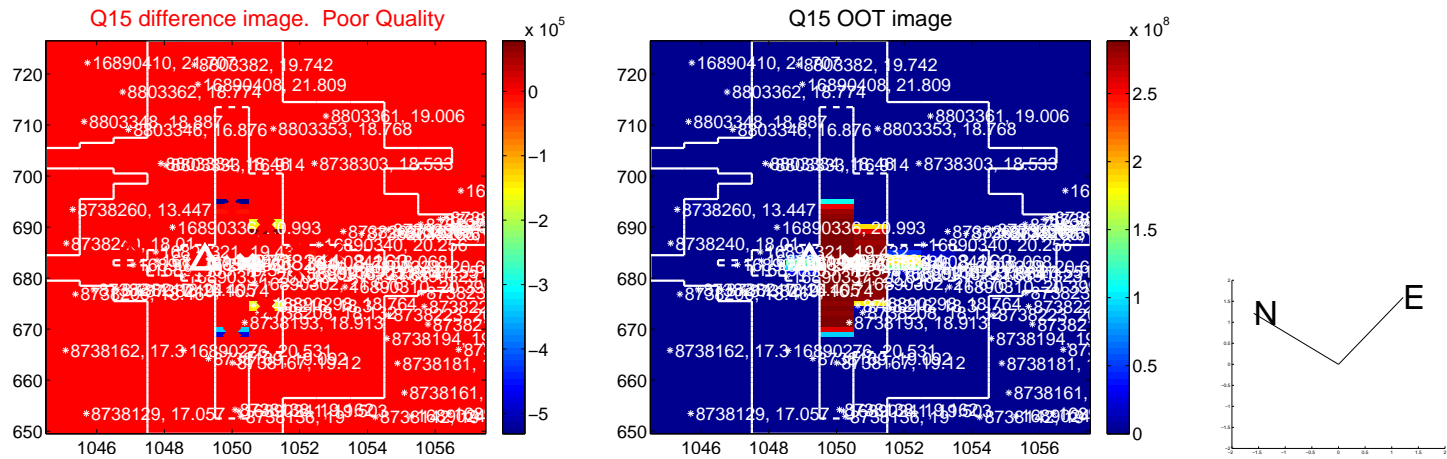
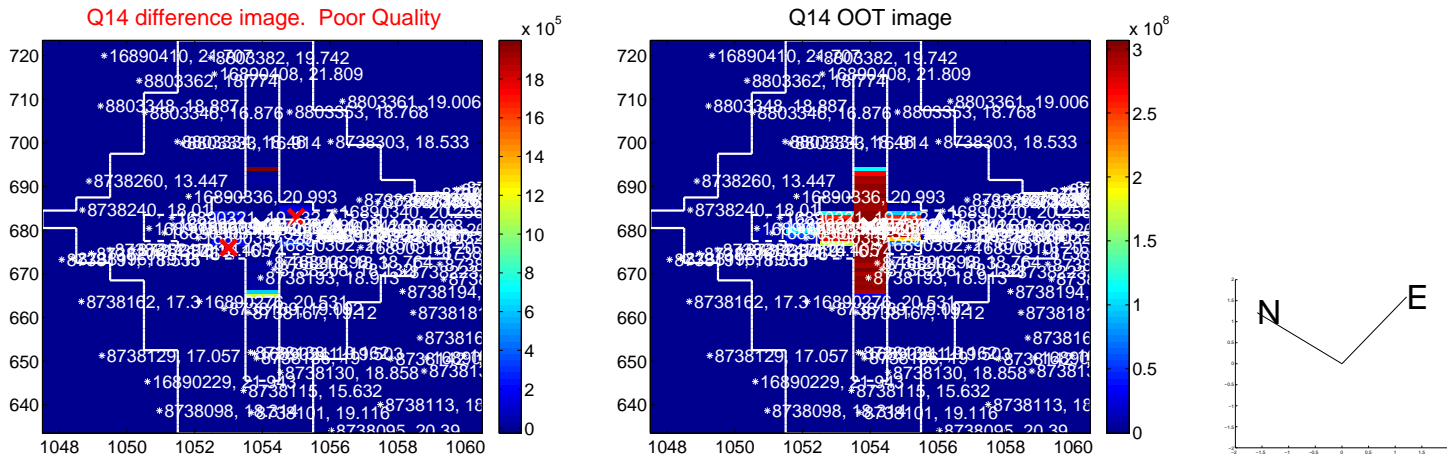
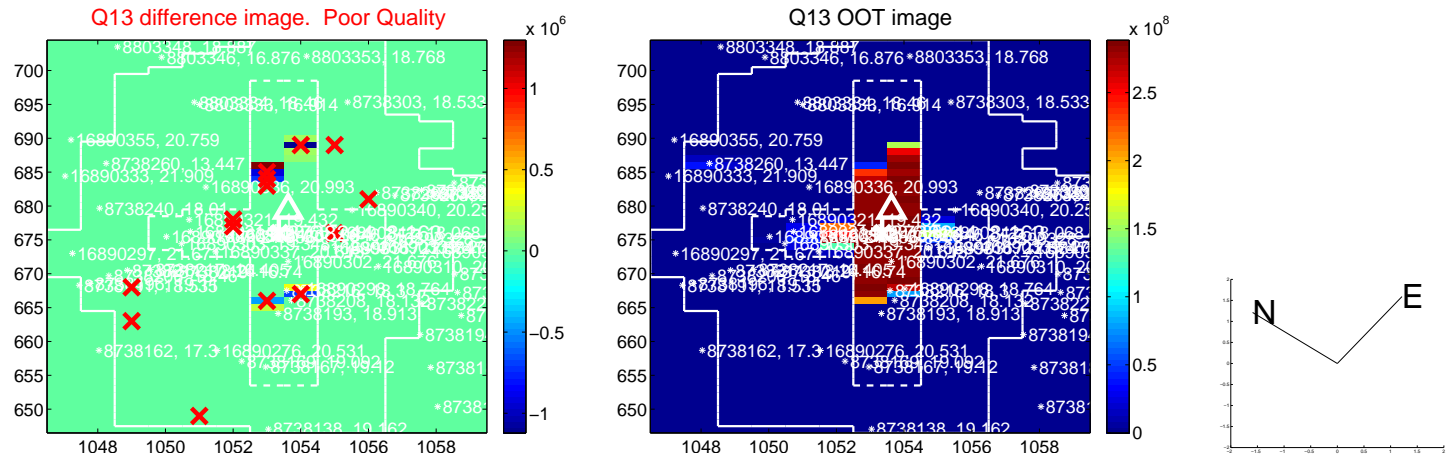




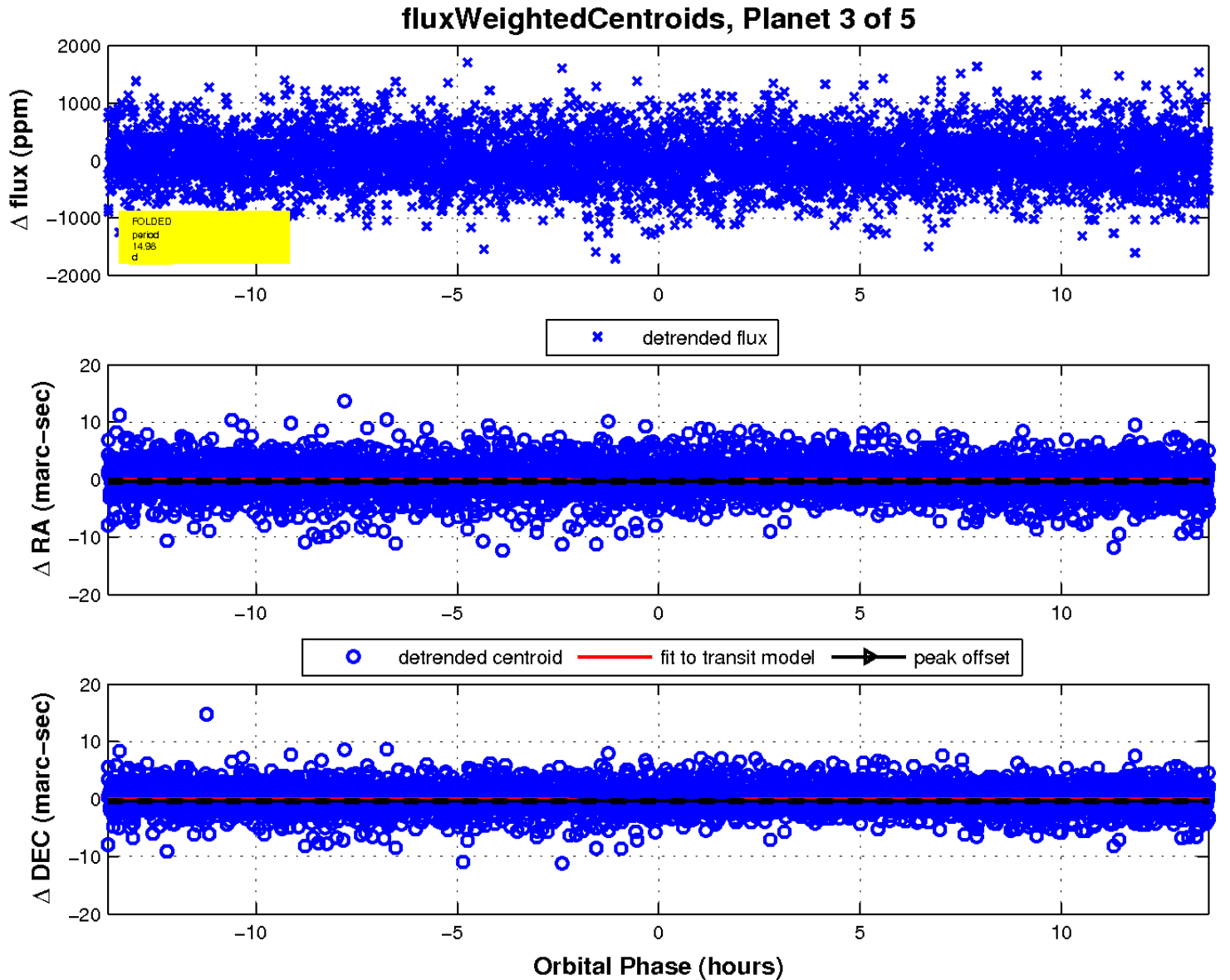
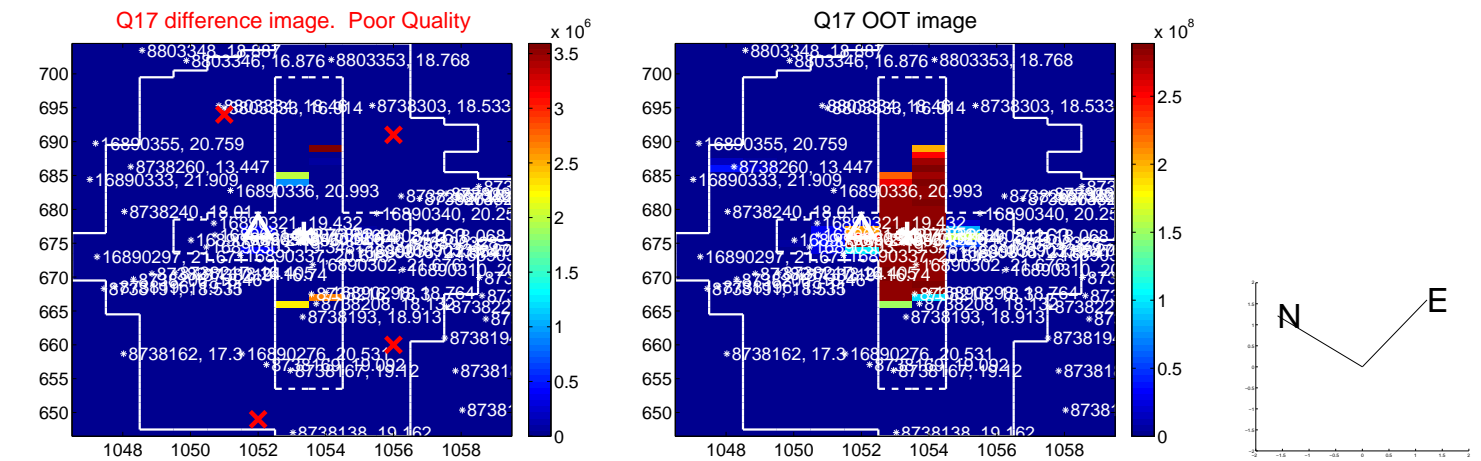
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

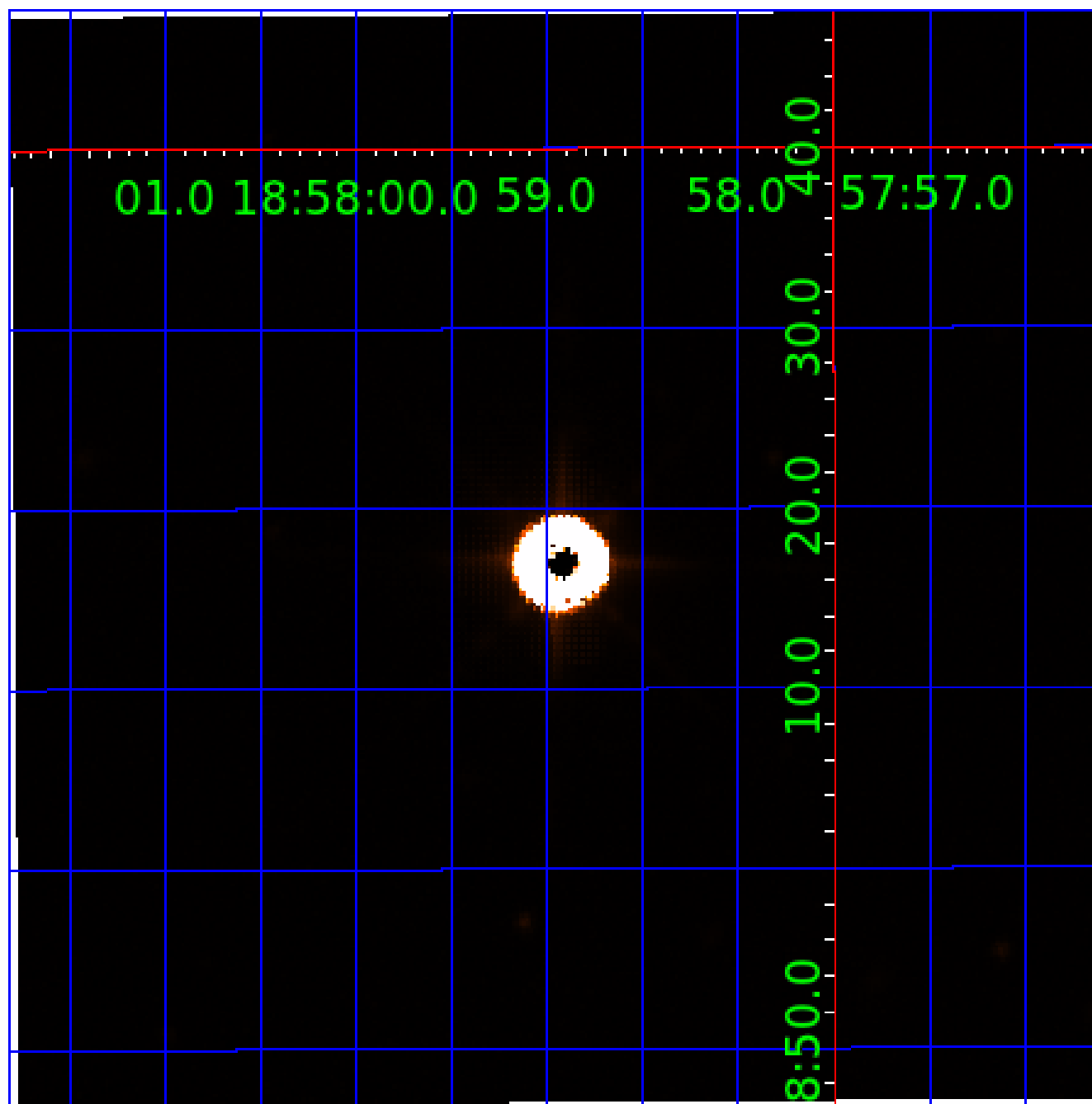


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008738244

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008738244-01	OBS	3157.01	1.366168	132.441450	62.1	5.481	8.2	7.8	7.76	8247	9.95	0.00
008738244-02	OBS	No	0.683704	131.704676	75.7	4.487	9.3	11.8	7.76	8247	7.03	0.00
008738244-03	OBS	No	14.981475	138.259319	338.4	4.561	9.6	9.3	7.76	8247	16.65	8041.21
008738244-04	OBS	No	38.345542	131.807886	492.1	3.285	9.7	9.5	7.76	8247	19.26	2296.72
008738244-05	OBS	No	27.982972	156.387666	1016.1	1.095	10.8	11.6	7.76	8247	25.31	3495.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008738244-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008738244-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED
008738244-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008738244-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
008738244-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

**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 008738244-04

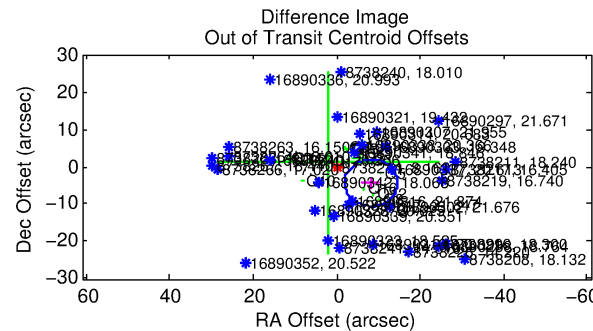
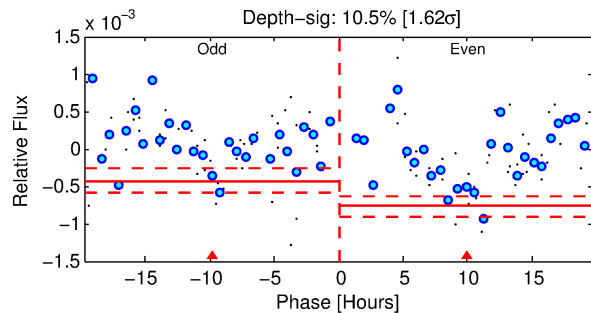
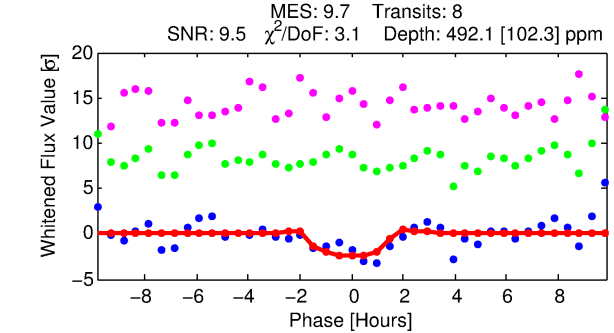
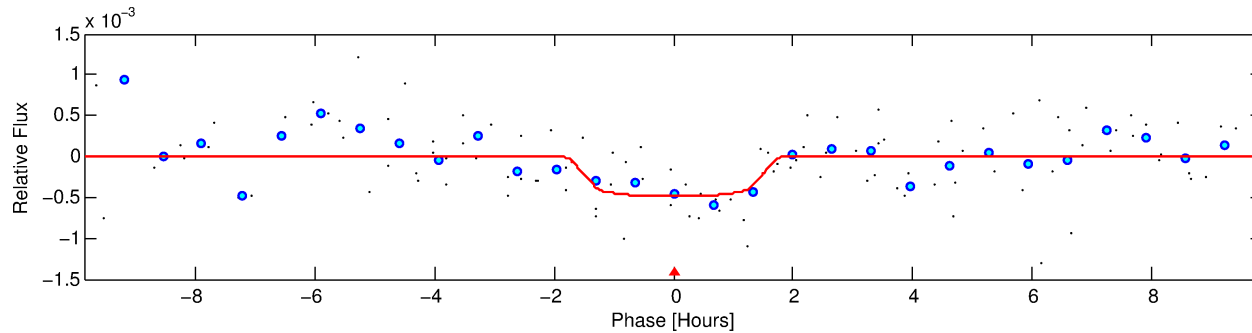
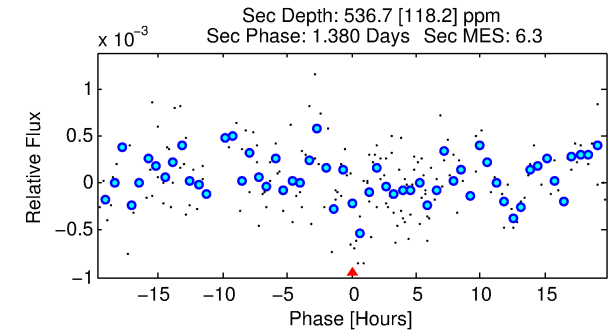
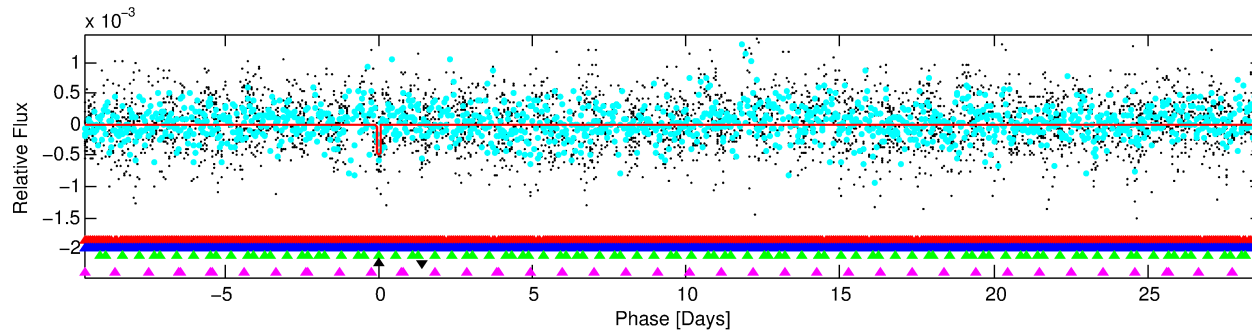
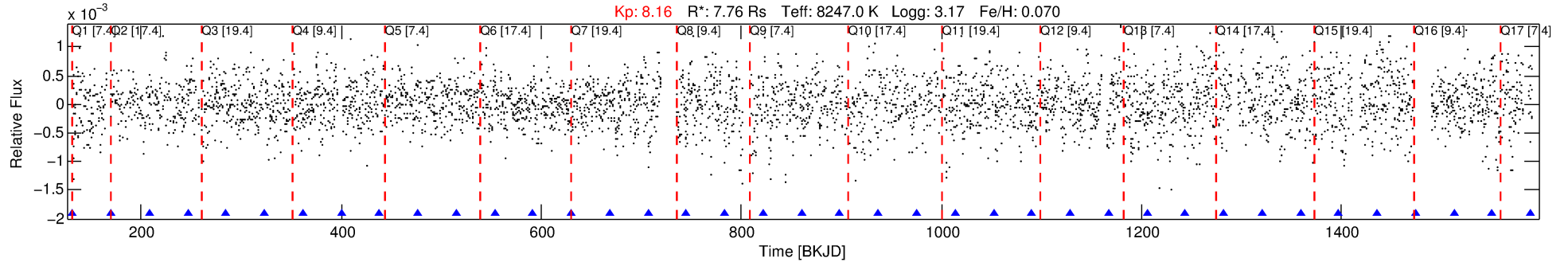
No Significant Match Found

# DV One-Page Summary

KIC: 8738244 Candidate: 4 of 5 Period: 38.346 d

KOI: K03157 Corr: No Ephemeris Match

Kp: 8.16 R\*: 7.76 Rs Teff: 8247.0 K Logg: 3.17 Fe/H: 0.070



## DV Fit Results:

Period = 38.34554 [0.00099] d  
Epoch = 131.8079 [0.0234] BKJD  
Rp/R\* = 0.0227 [0.0189]  
a/R\* = 53.12 [262.74]  
b = 0.83 [1.84]  
Seff = 2296.72 [1585.68]  
Teq = 1765 [305] K  
Rp = 19.26 [18.05] Re  
a = 0.3297 [0.1400] AU  
Ag = 86.52 [156.65] [0.55σ]  
Teffp = 8324 [3491] K [1.87σ]

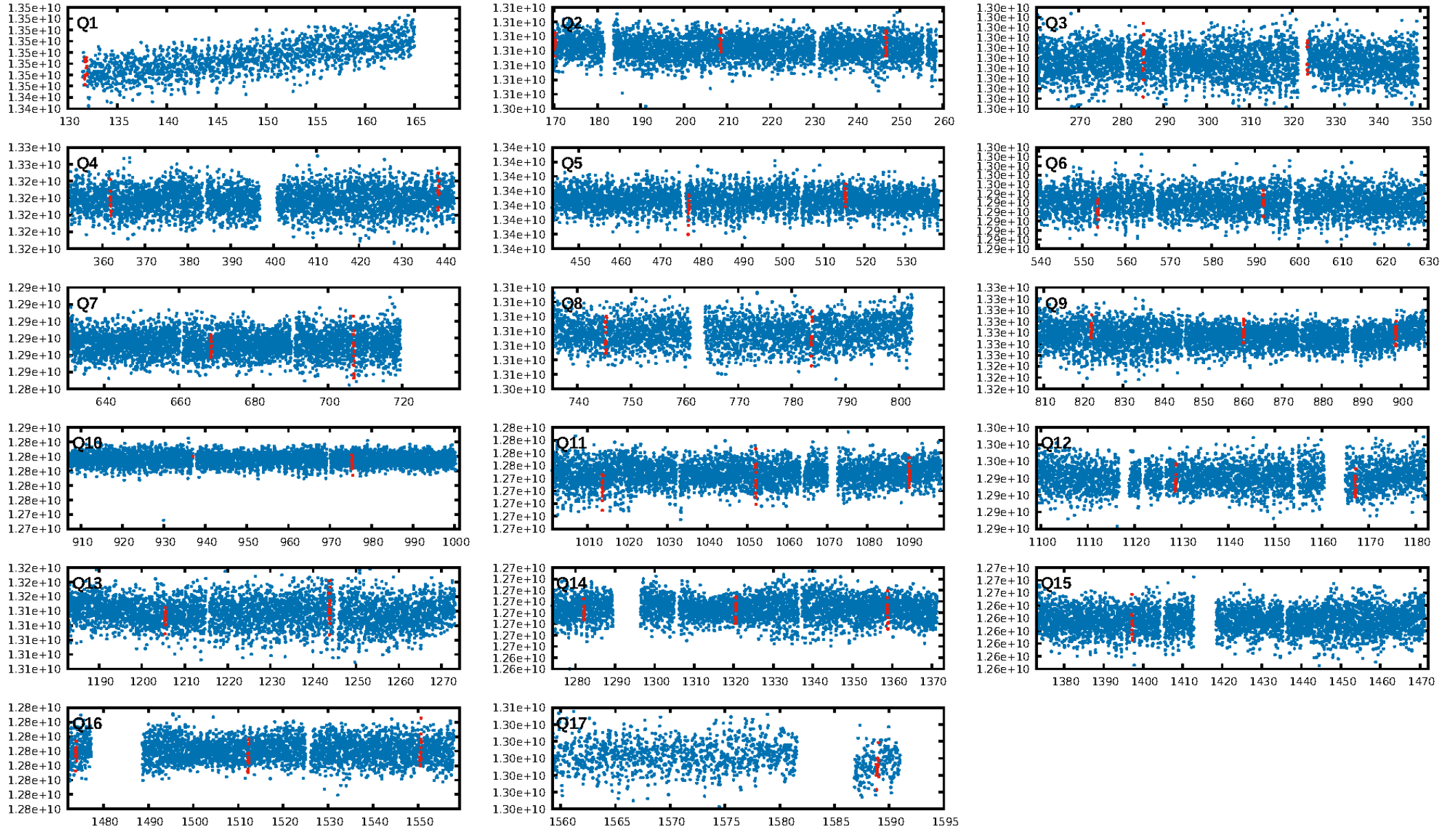
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [71.82σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 84.8%  
Bootstrap-pfa: 1.73e-13  
RollingBand-igt: 1.00 [8/8]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 33.5%  
Centroid-so: 2.685 arcsec [3.37σ]  
OotOffset-rm: 9.326 arcsec [4.41σ]  
KicOffset-rm: 10.279 arcsec [4.74σ]  
OotOffset-st: 4/3/4/5 [16]  
KicOffset-st: 4/3/4/5 [16]  
DiffImageQuality-fgm: 0.00 [0/16]  
DiffImageOverlap-fno: 0.00 [0/16]

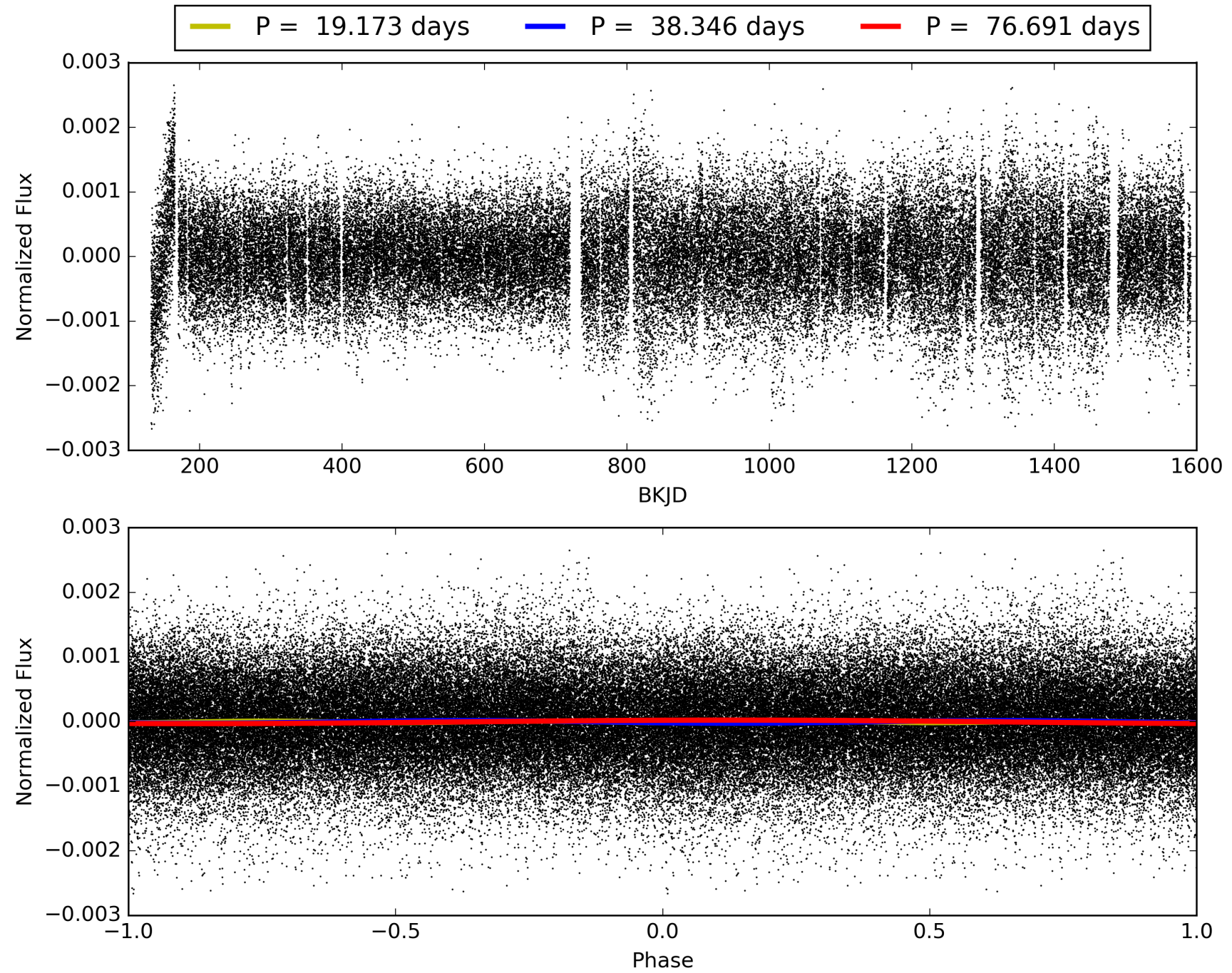
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 04:00:51 Z

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

# TCE 008738244-04, PDC Light Curves



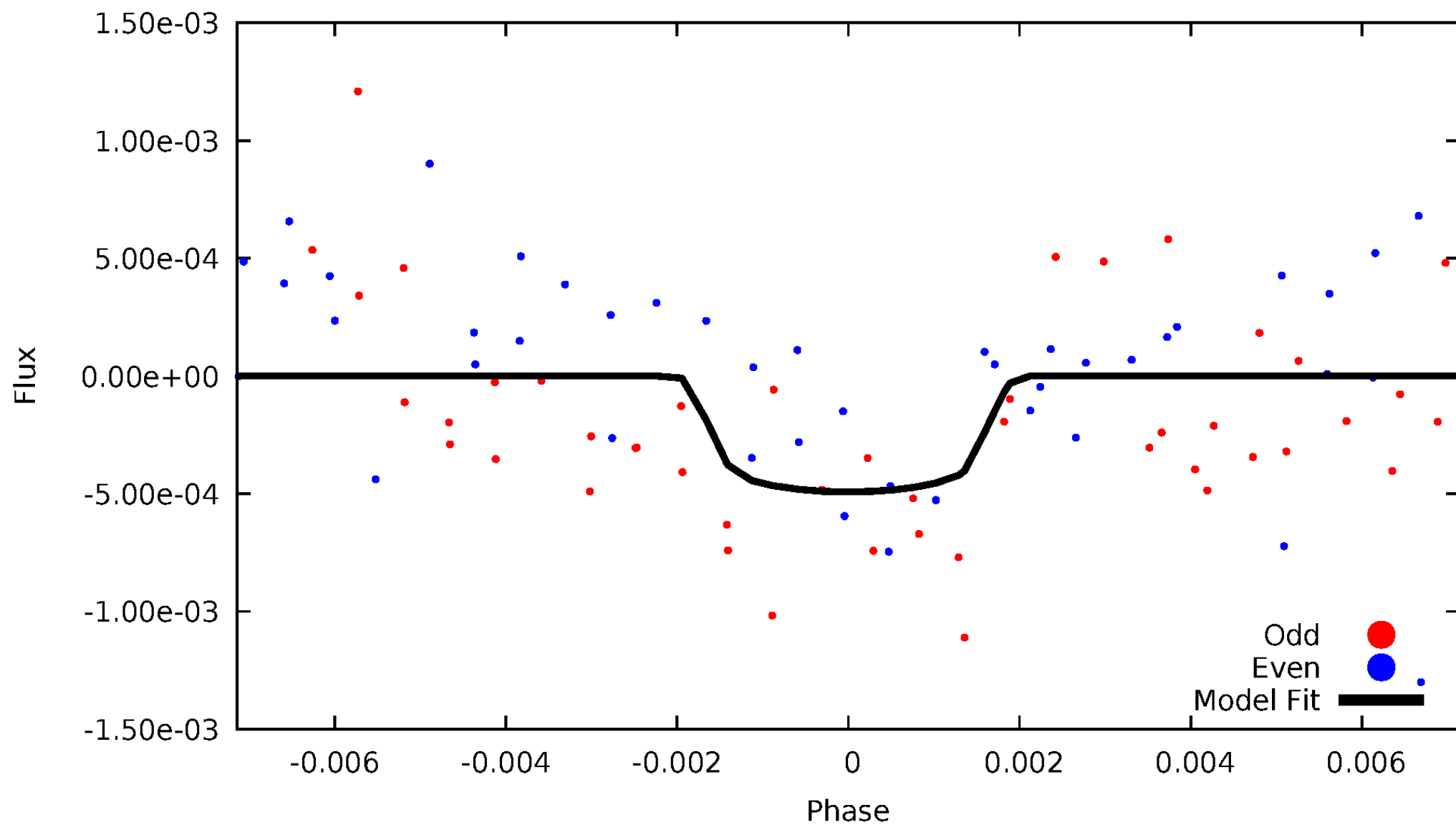
TCE 008738244-04





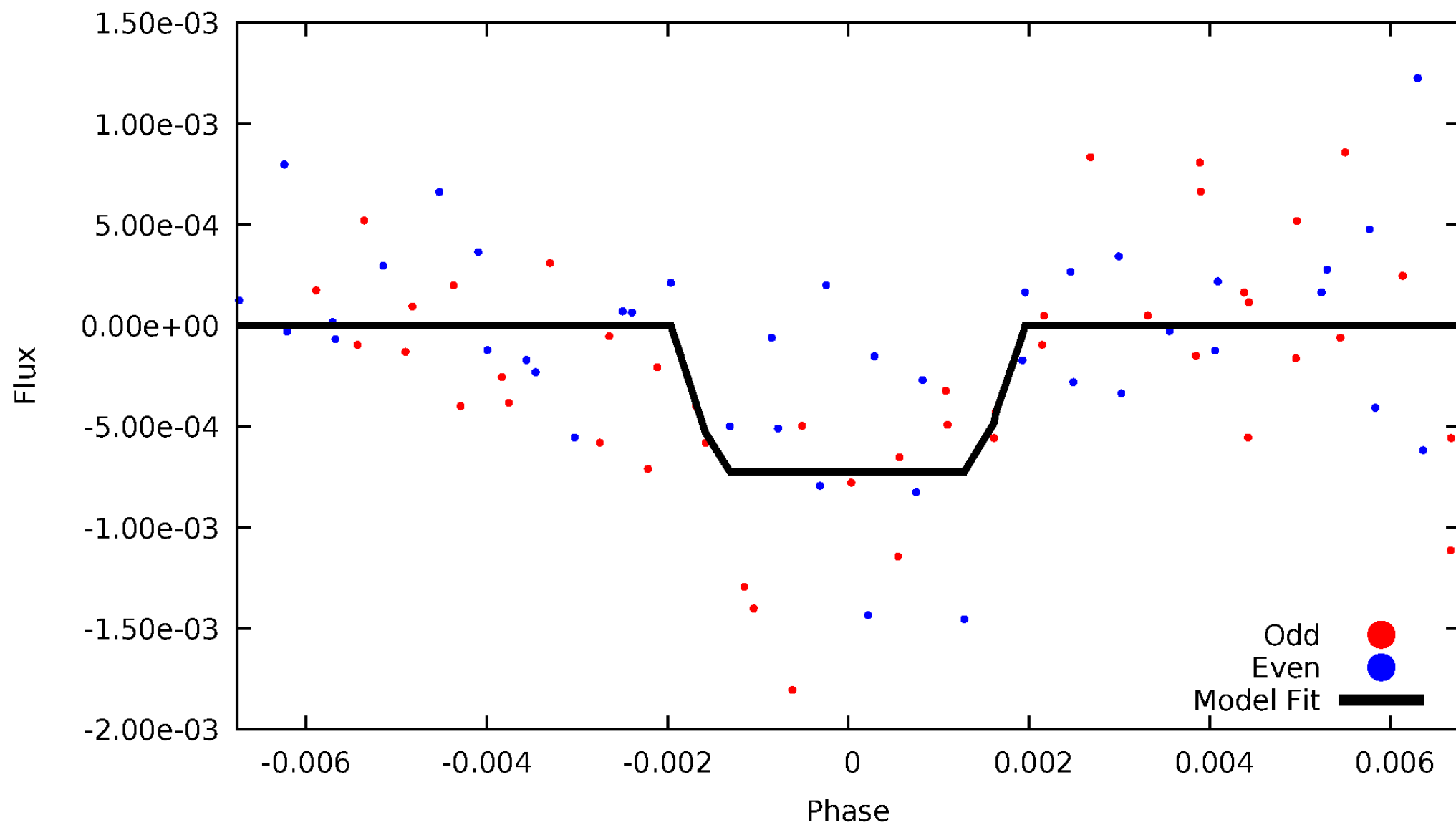
# DV Odd/Even

TCE 008738244-04



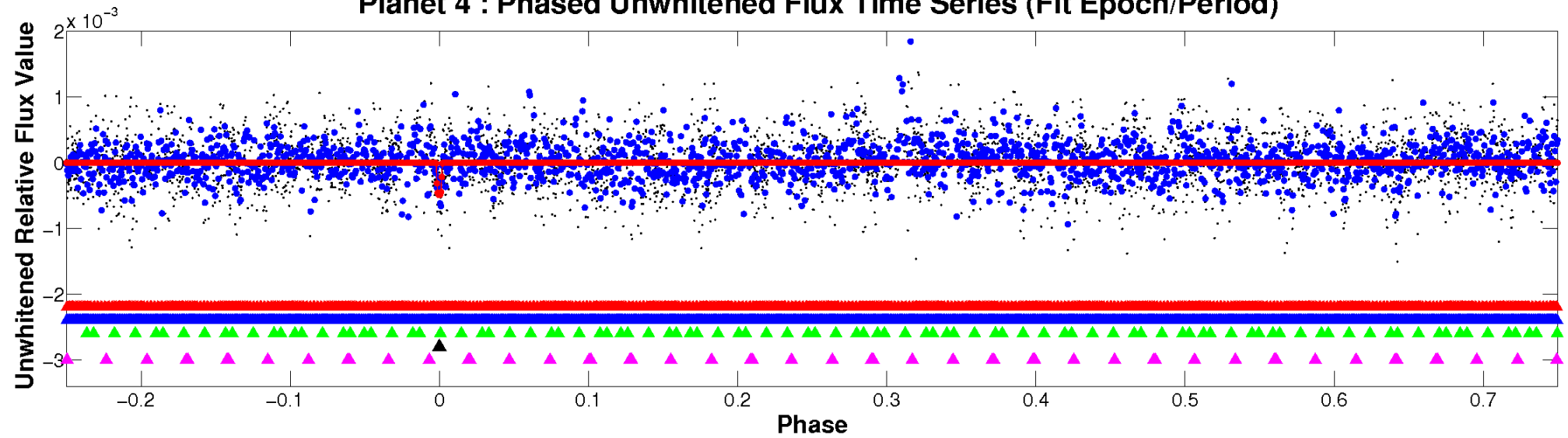
# ALT Odd/Even

TCE 008738244-04

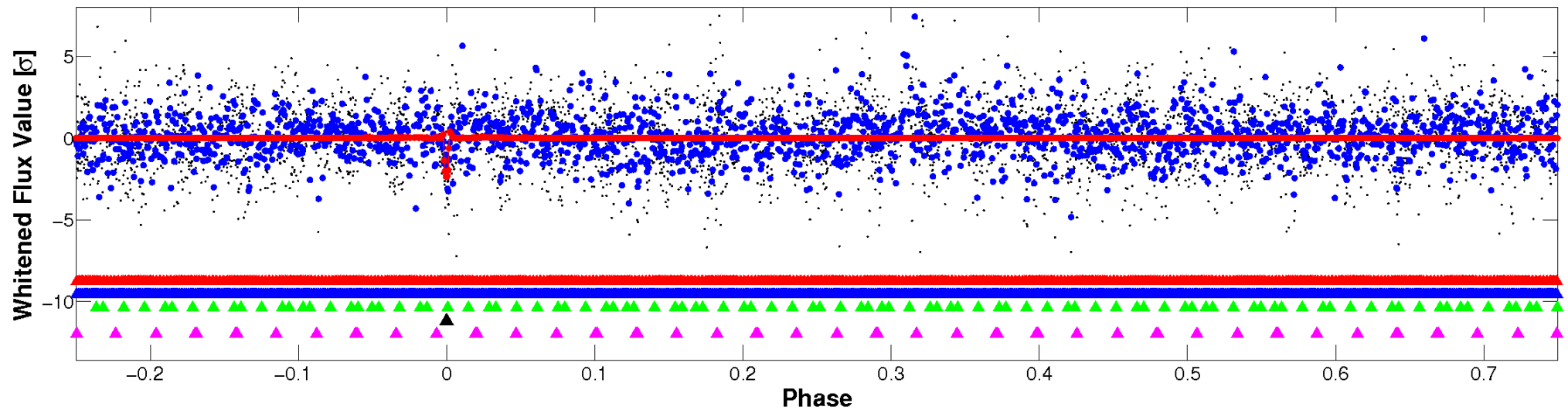


# Non-Whitened Vs. Whitened Light Curve

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

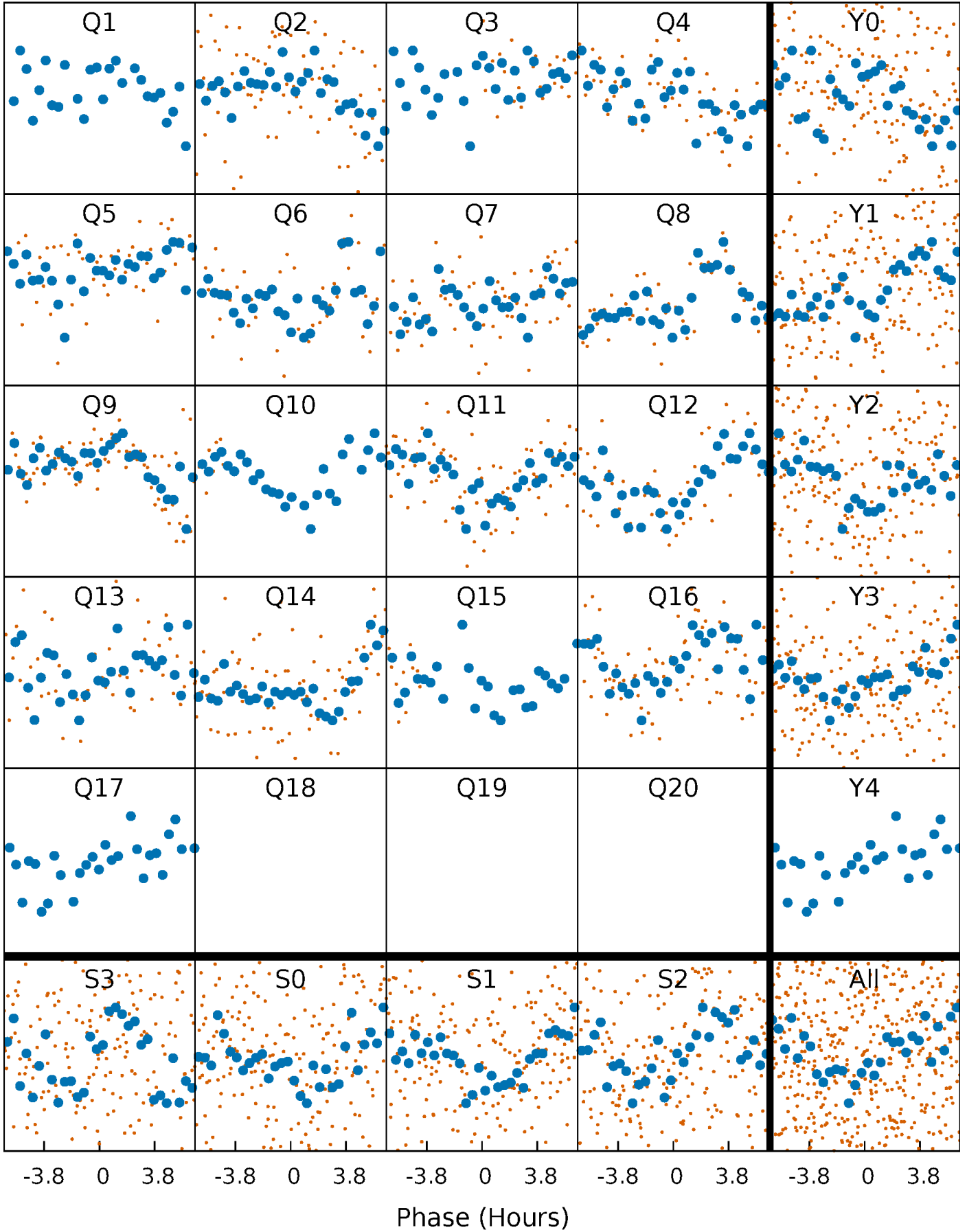


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

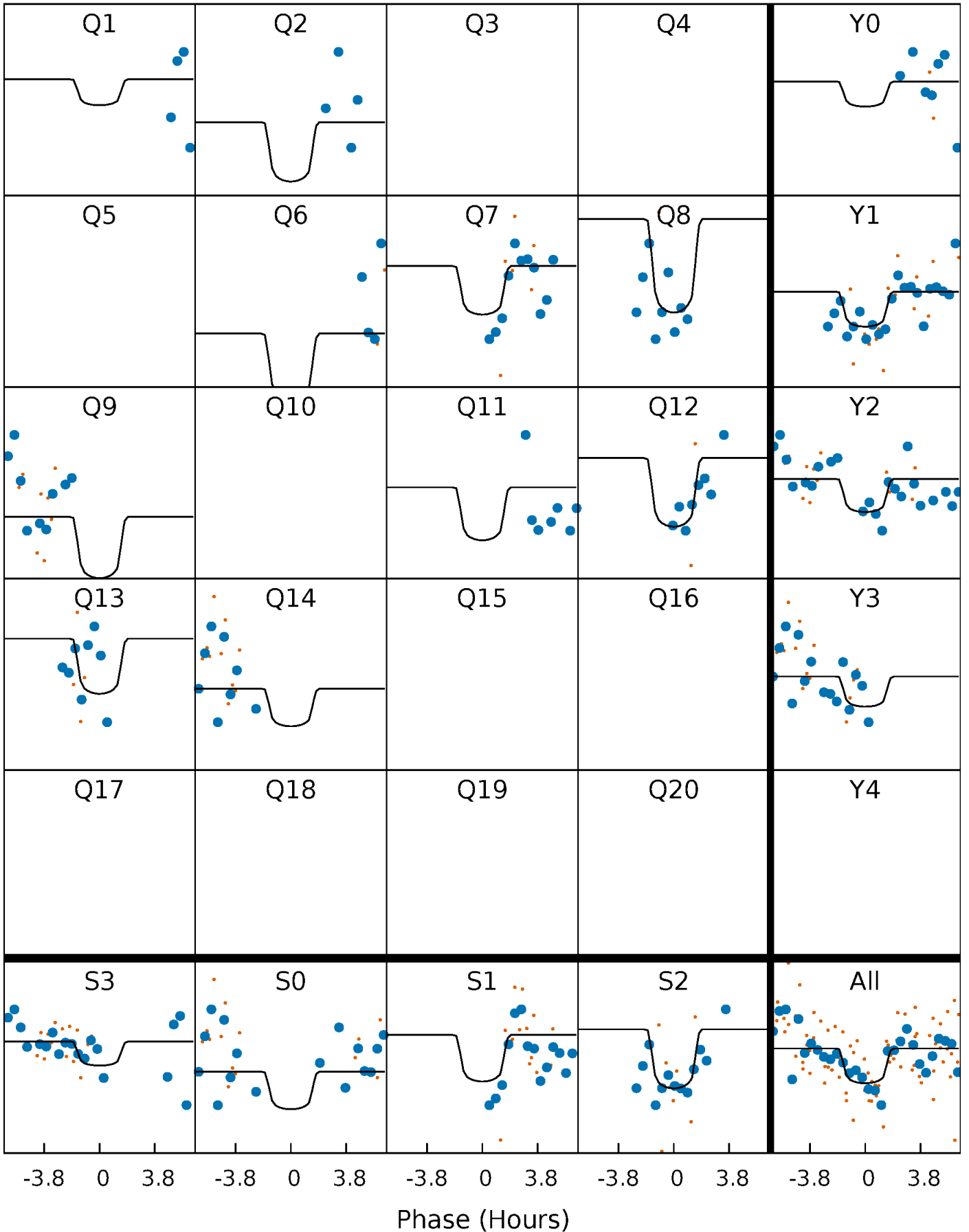
TCE 008738244-04   P= 38.345542 Days    $T_0=131.807886$  (BKJD)





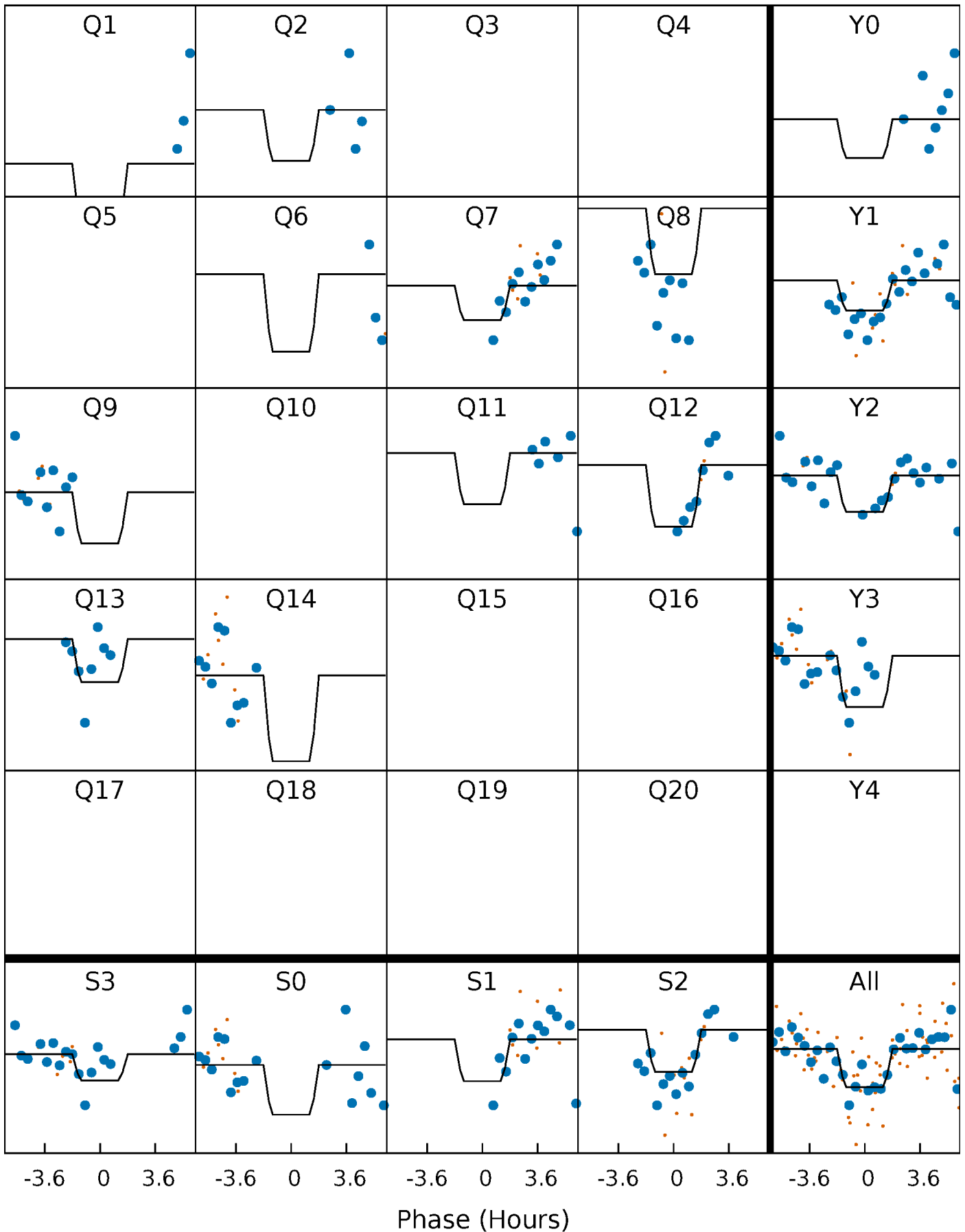
# DV Quarter-Phased Transit Curves

TCE 008738244-04   P= 38.345542 Days    $T_0=131.807886$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

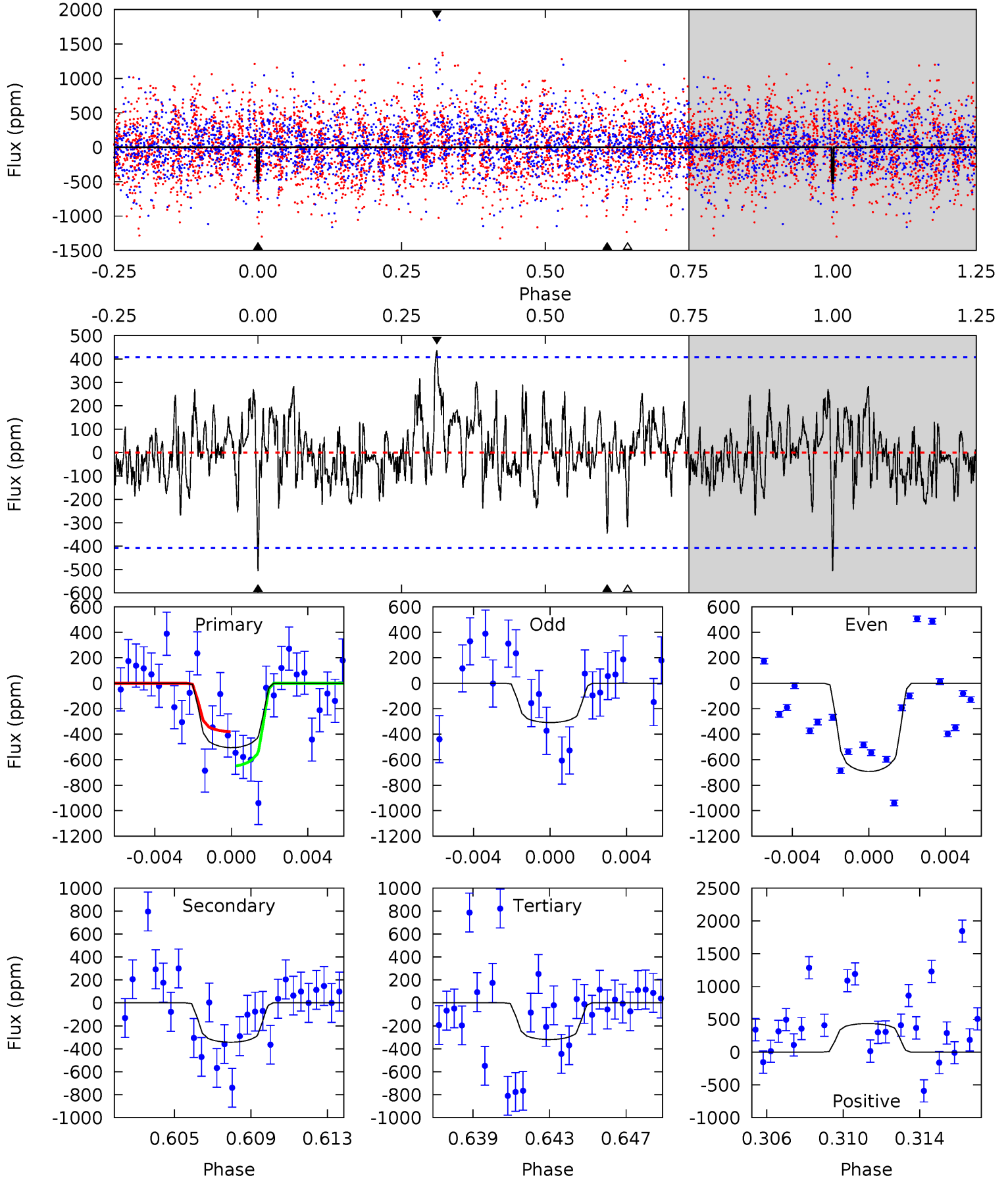
TCE 008738244-04   P= 38.345261 Days    $T_0=131.802298$  (BKJD)



# DV Model-Shift Uniqueness Test

008738244-04, P = 38.345542 Days, E = 131.807886 Days

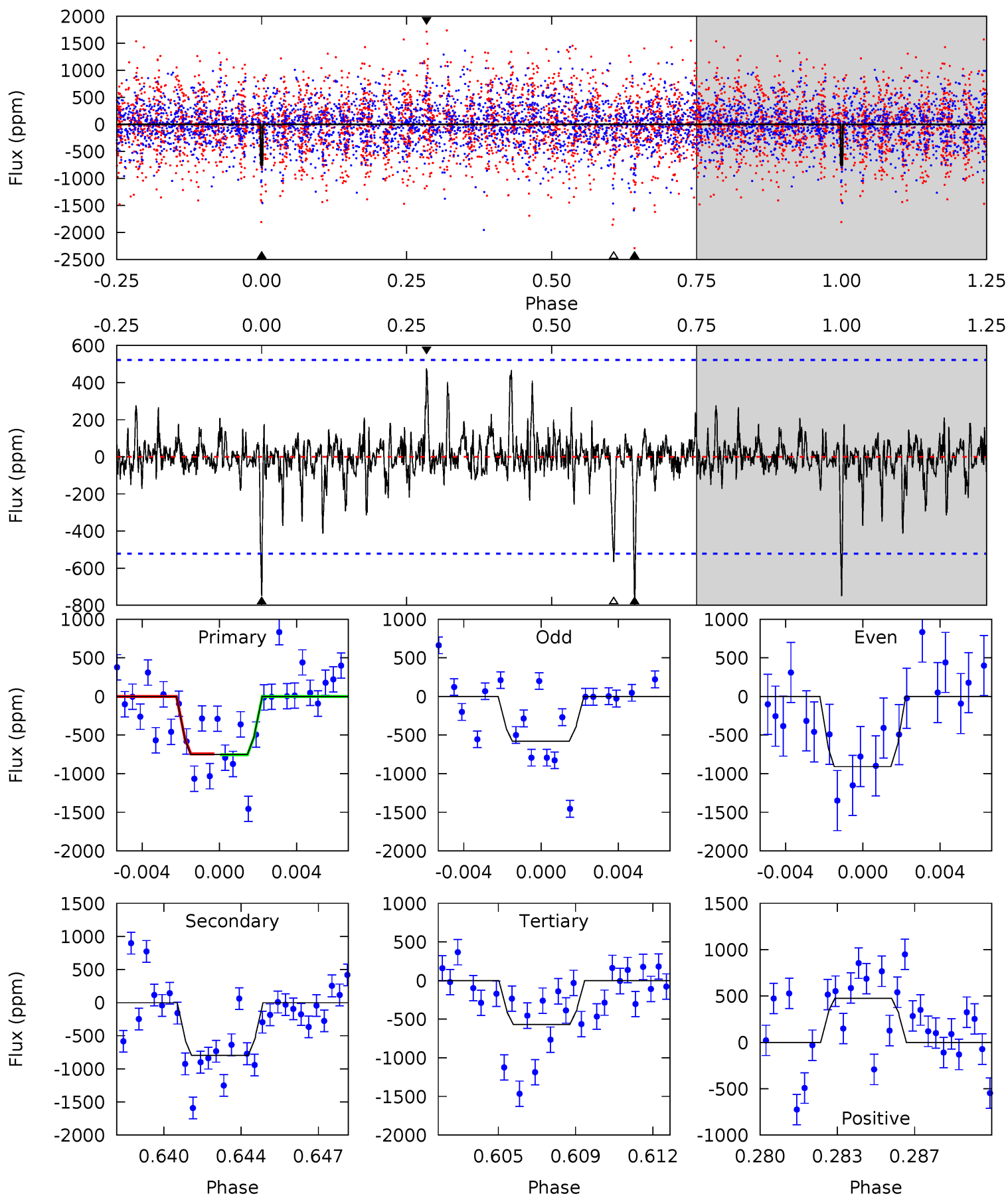
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.45	4.38	4.08	5.55	5.21	2.89	1.40	2.37	0.90	0.30	-1.17	2.50	1.19	0.46	1.72



# Alt Model-Shift Uniqueness Test

008738244-04, P = 38.345261 Days, E = 131.802298 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
7.50	7.98	5.66	4.76	5.22	2.92	1.07	1.83	2.74	2.31	3.21	1.68	0.99	0.37	0.06





### Stellar Parameters For KIC 008738244

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8247^{+149}_{-166}$	$3.170^{+0.405}_{-0.045}$	$0.070^{+0.200}_{-0.250}$	$7.762^{+0.561}_{-3.368}$	$3.253^{+0.214}_{-0.642}$	$0.010^{+0.035}_{-0.002}$
	+2%/-2%	+13%/-1%	+286%/-357%	+7%/-43%	+7%/-20%	+352%/-22%
Source	SPE4	SPE4	SPE4	DSEP		

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

### Secondary Eclipse Parameters for KIC 008738244-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-343 \pm 78$	$19.58^{+14.02}_{-11.56}$	$2414^{+102}_{-246}$	$6766^{+5368}_{-1545}$	$53^{+258}_{-36}$
Alt.	$-798 \pm 100$	$20.71^{+16.03}_{-11.65}$	$2405^{+104}_{-268}$	$8294^{+6981}_{-2149}$	$112^{+464}_{-76}$

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

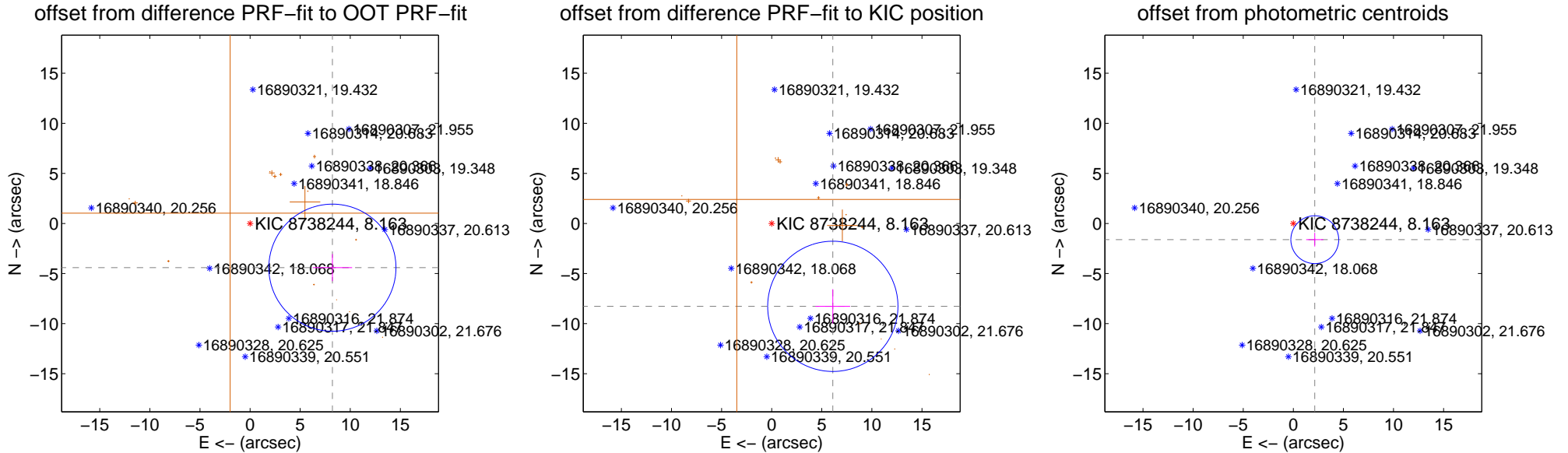
## DV Centroid Data

Supplemental centroid analysis for 008738244-04. **Kepler magnitude: 8.16.** Transit SNR 9.49

There are 0 quarters with good PRF difference image offsets

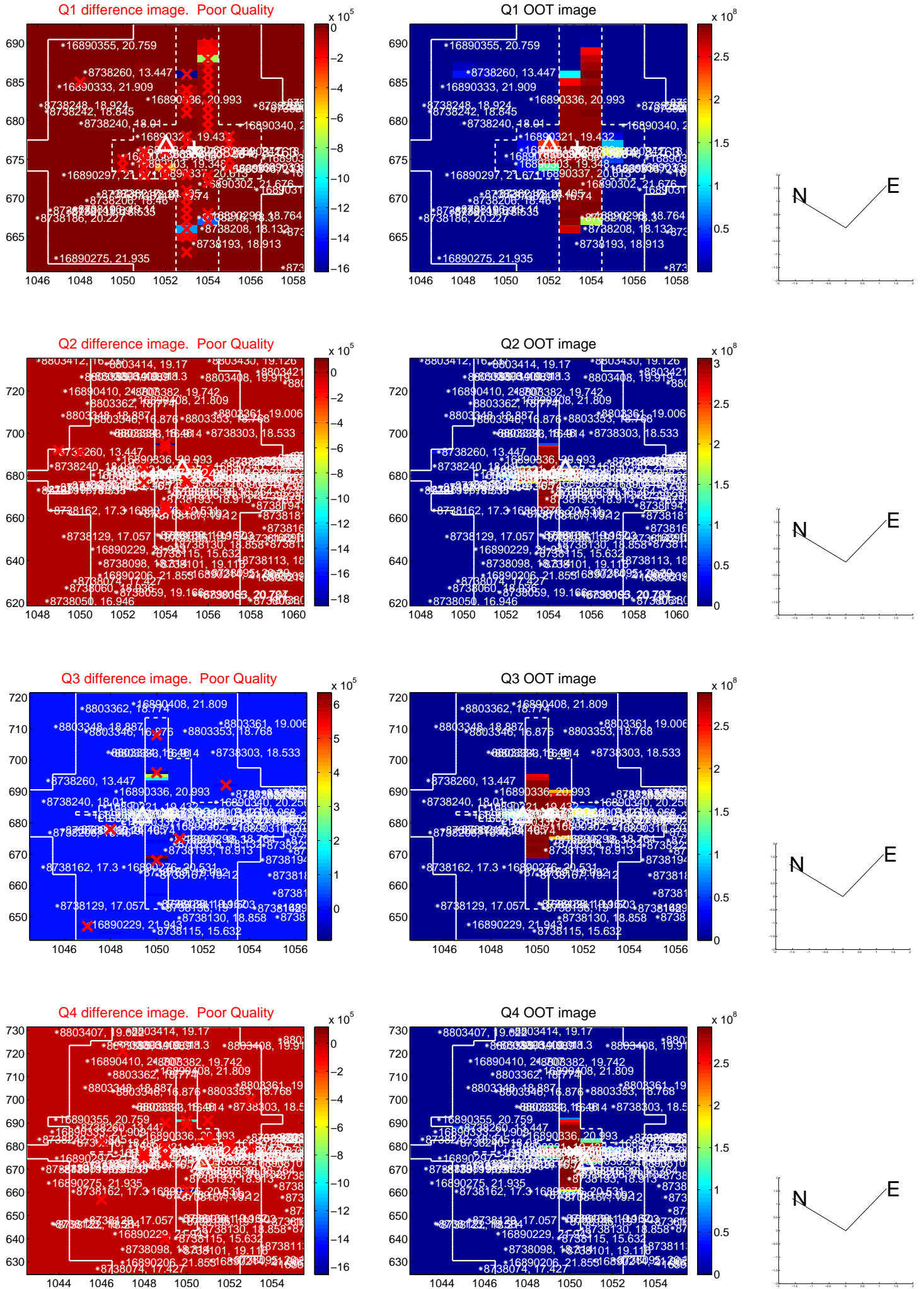
The OOT PRF centroid is offset from the target star catalog position by about 2.03 arcsec so the offset from difference PRF-fit to OOT-PRF-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>9.326 \pm 2.115</math></b>	<b>4.41</b>	$-8.216 \pm 1.965$	$-4.413 \pm 1.353$
PRF-fit source offset from KIC position	<b><math>10.279 \pm 2.167</math></b>	<b>4.74</b>	$-6.101 \pm 1.727$	$-8.273 \pm 1.710$
photometric centroid source offset	<b><math>2.69 \pm 0.80</math></b>	<b>3.37</b>	$-2.14 \pm 0.86$	$-1.62 \pm 0.68$

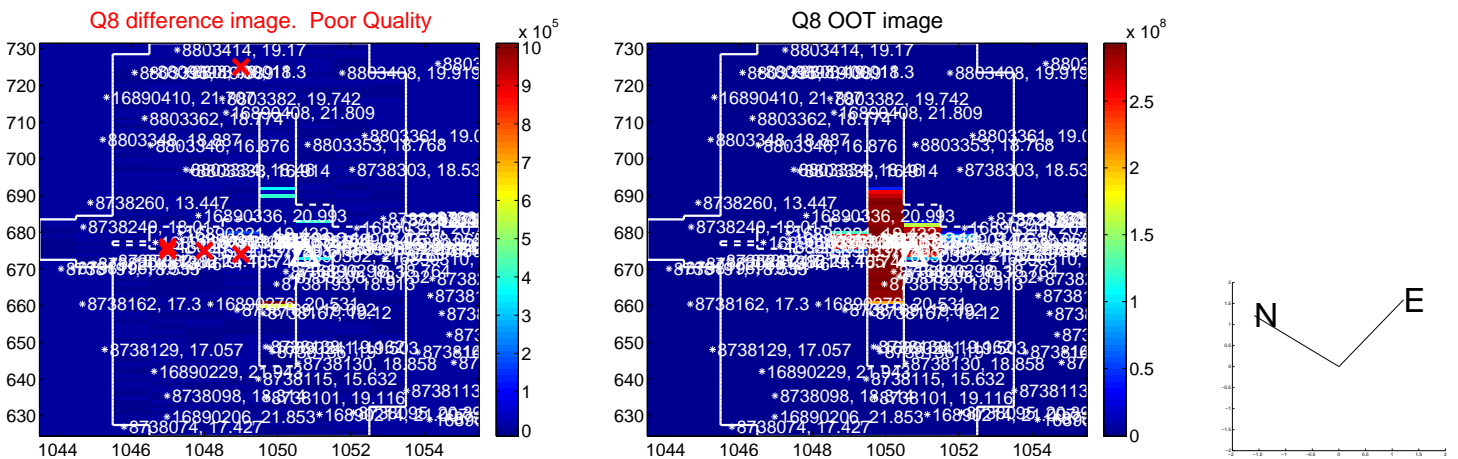
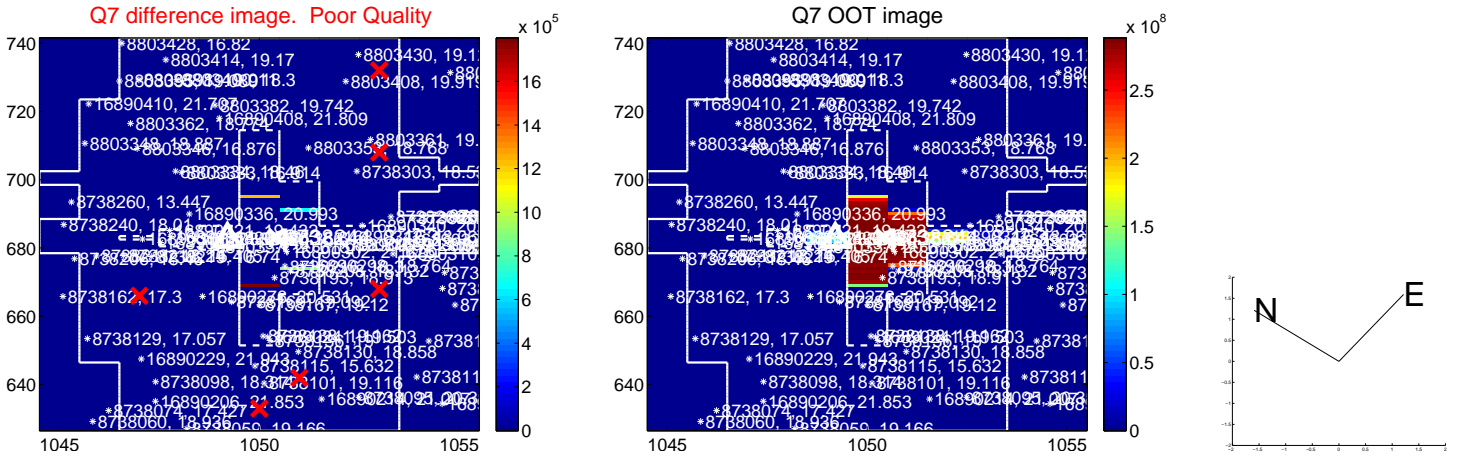
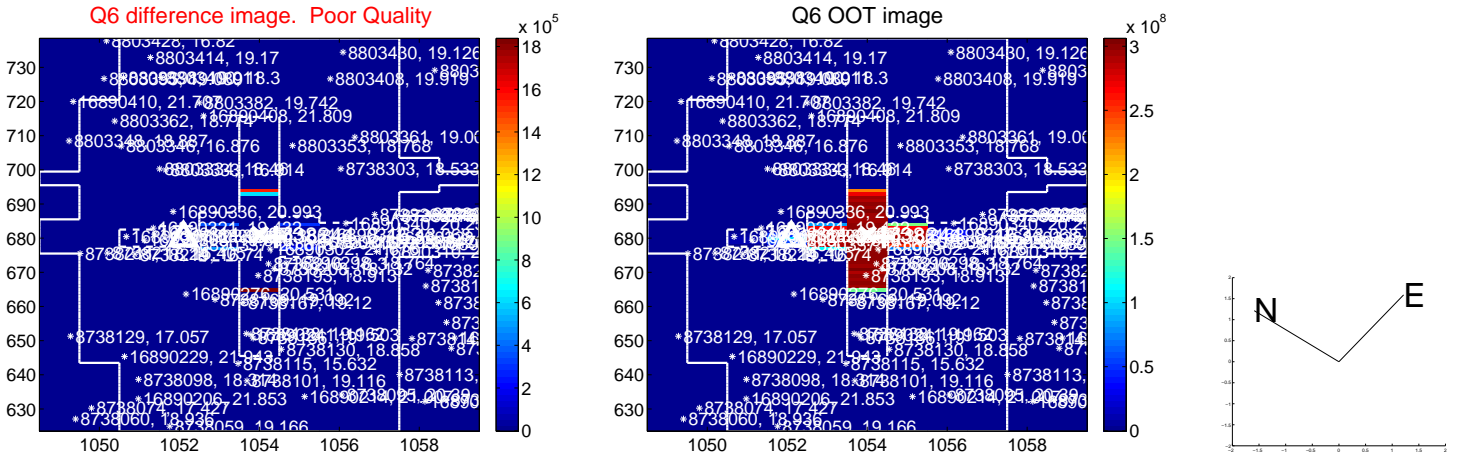
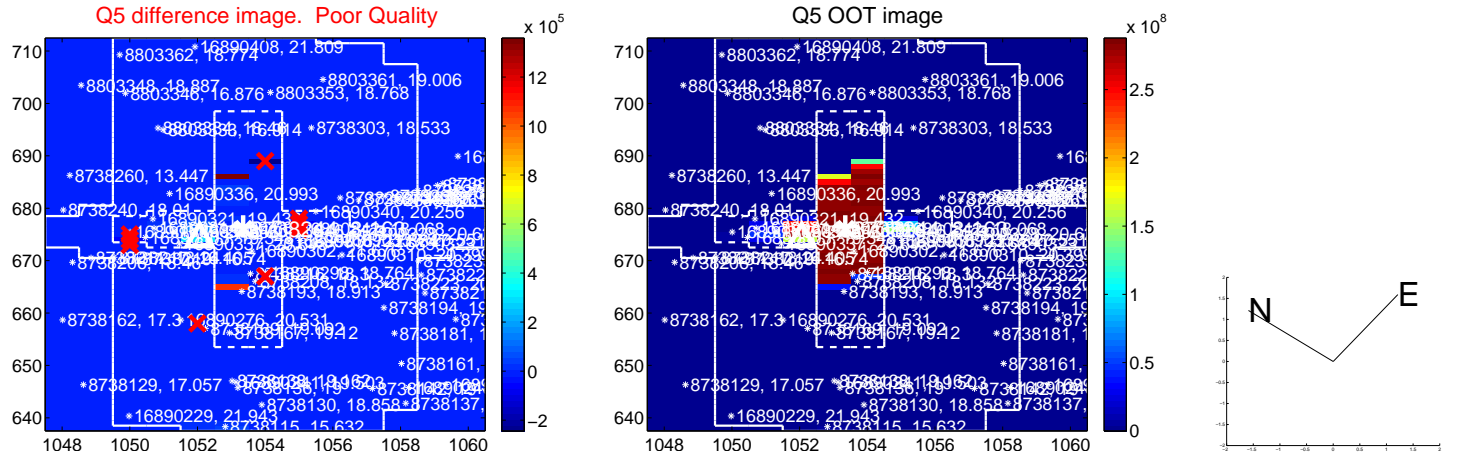


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



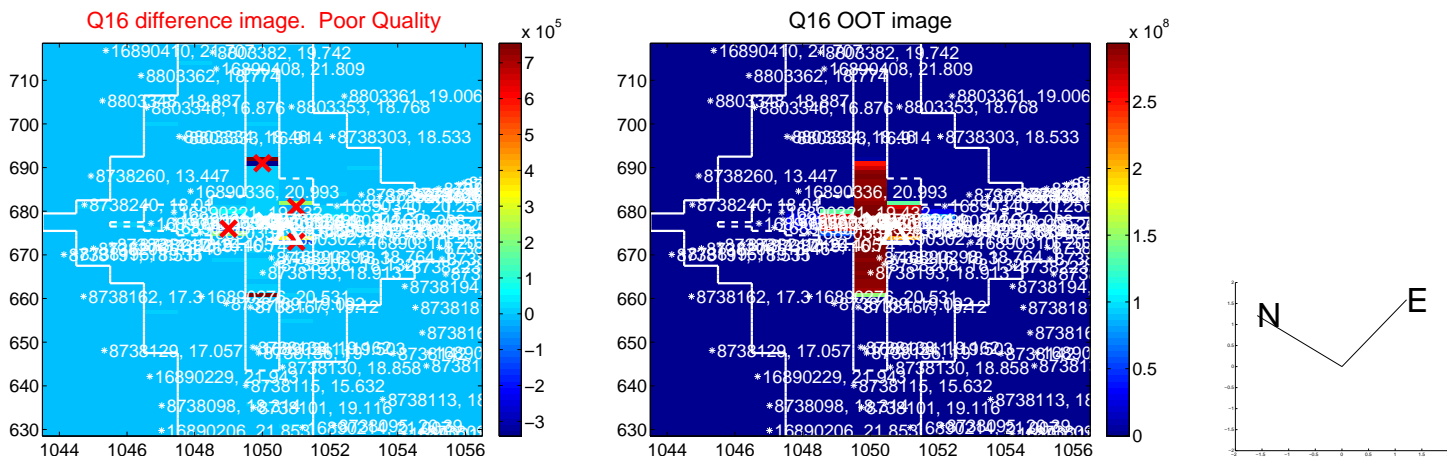
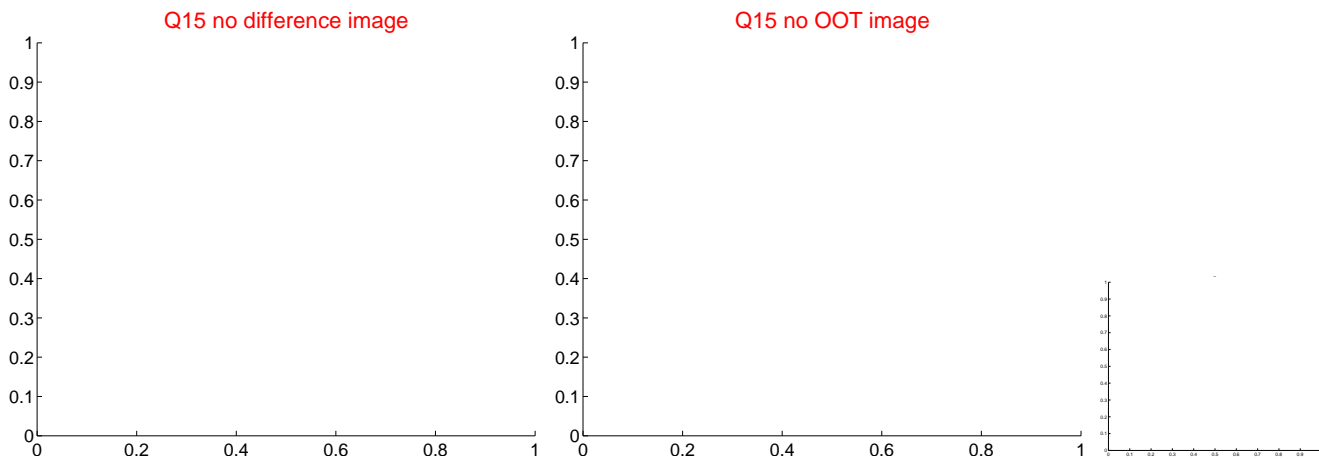
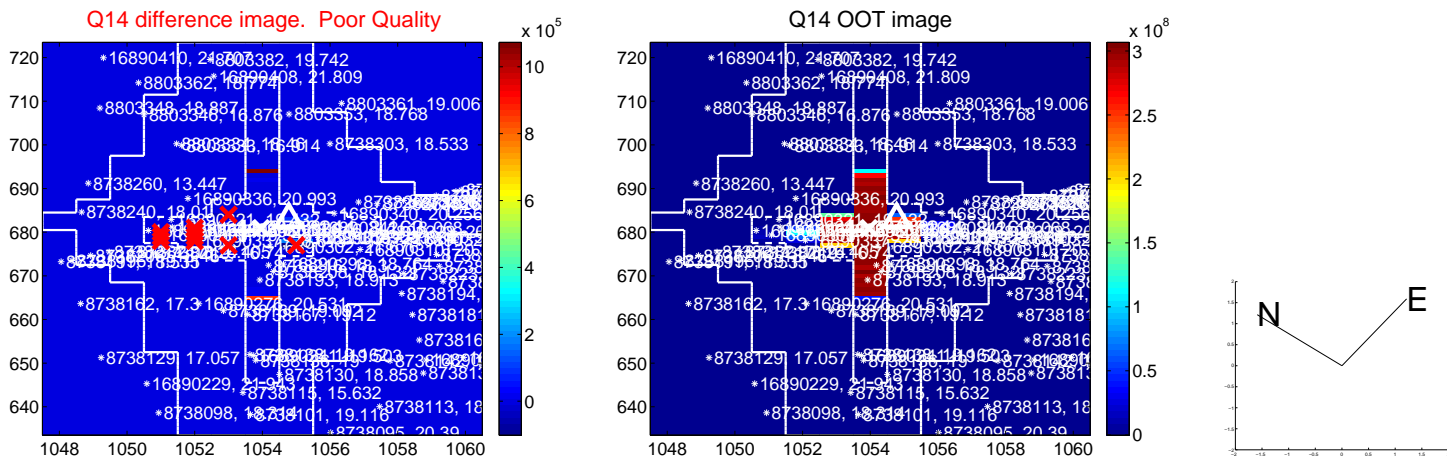
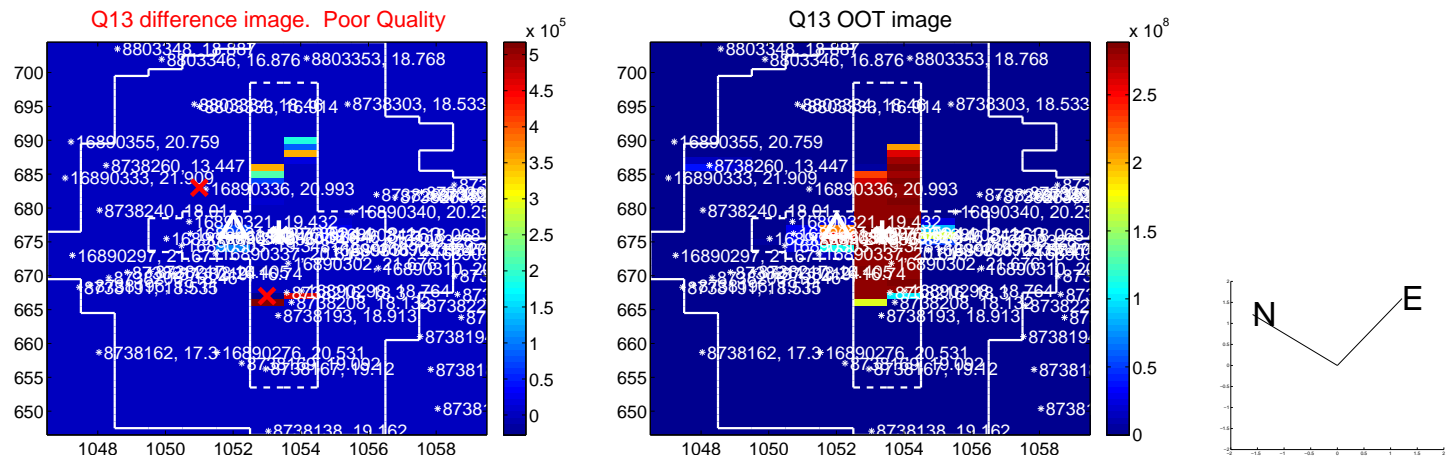
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



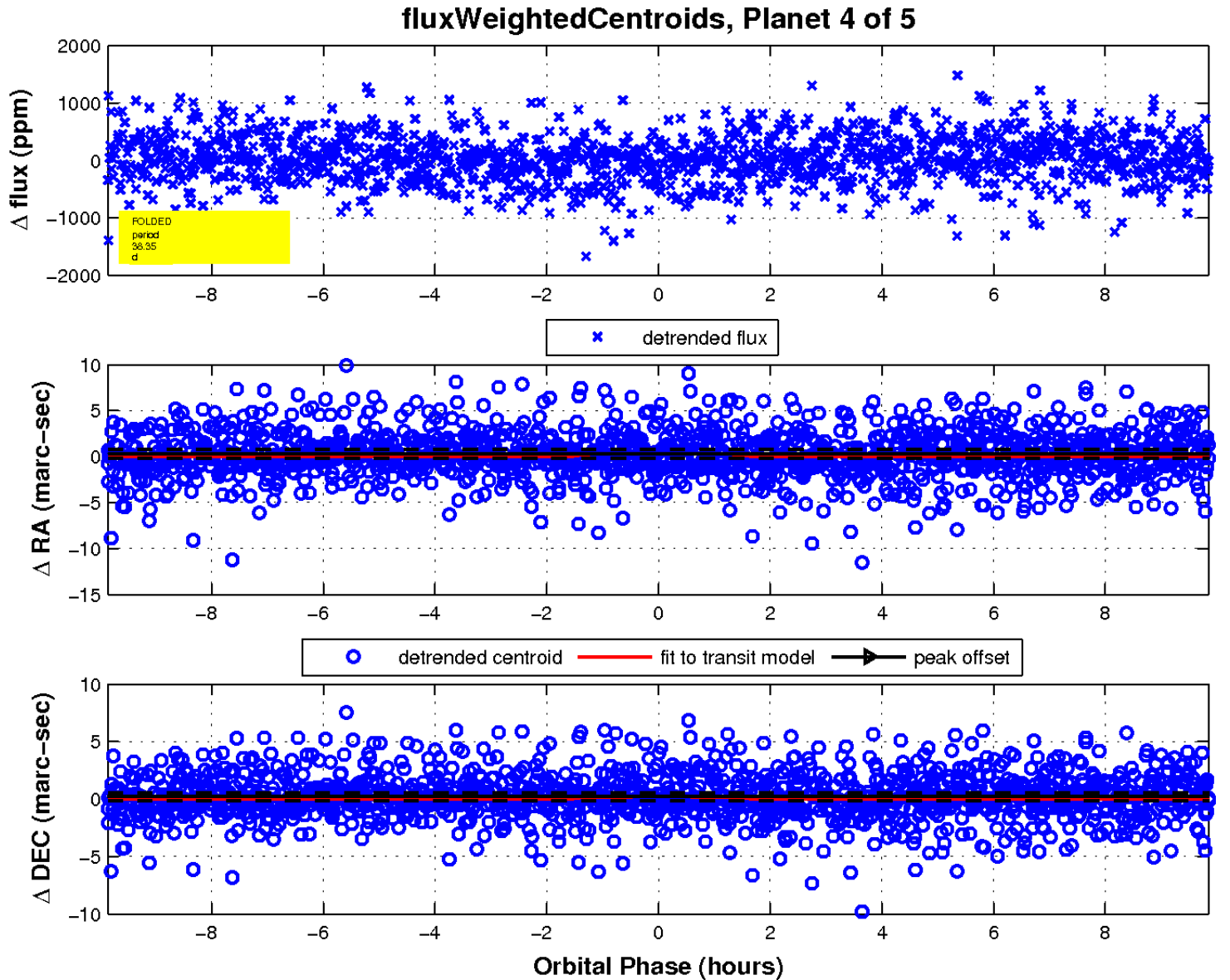
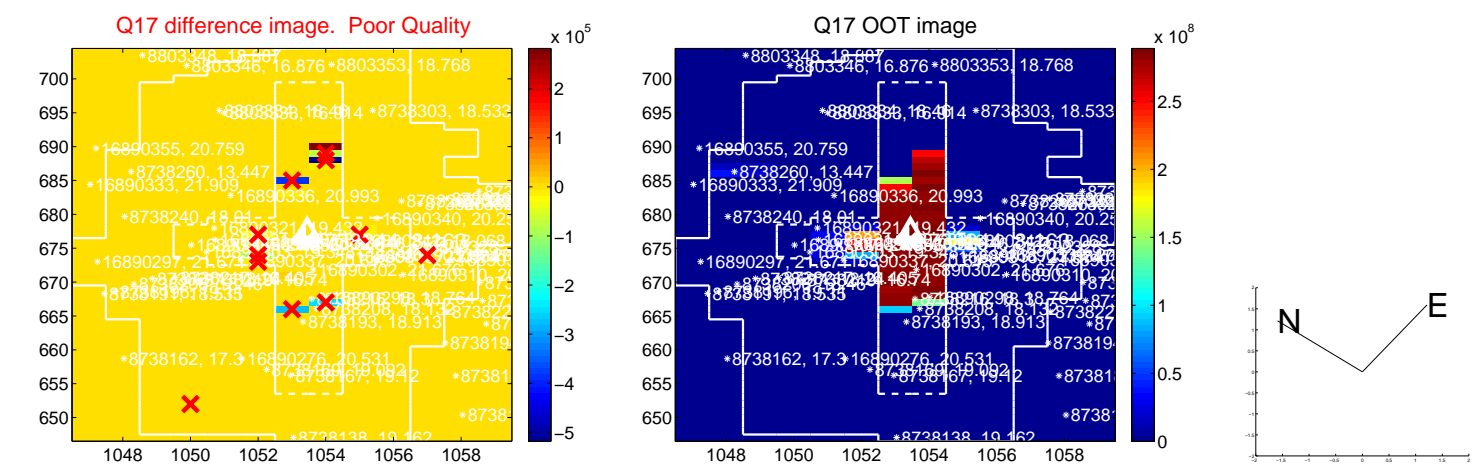




white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

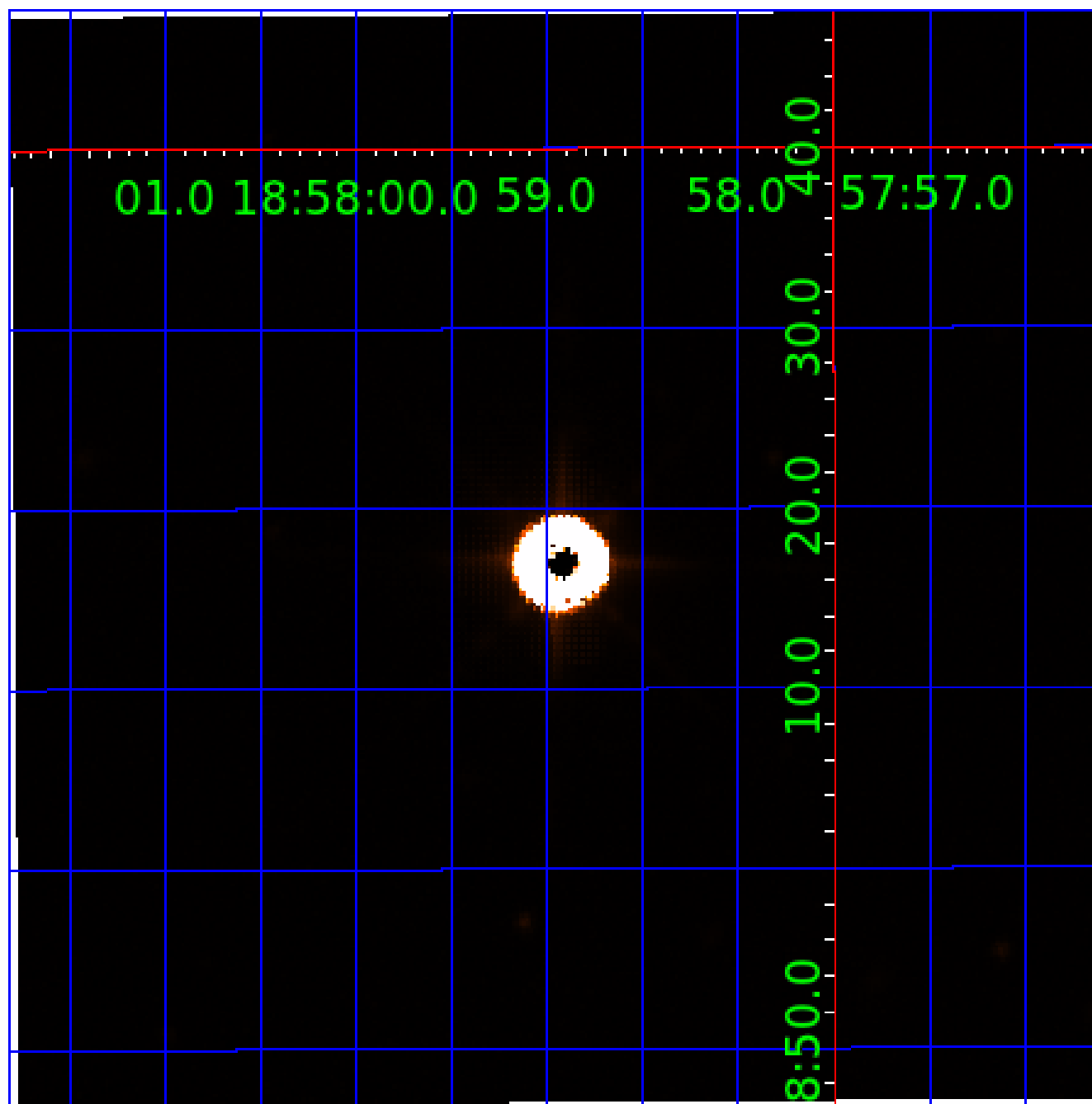


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008738244

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008738244-01	OBS	3157.01	1.366168	132.441450	62.1	5.481	8.2	7.8	7.76	8247	9.95	0.00
008738244-02	OBS	No	0.683704	131.704676	75.7	4.487	9.3	11.8	7.76	8247	7.03	0.00
008738244-03	OBS	No	14.981475	138.259319	338.4	4.561	9.6	9.3	7.76	8247	16.65	8041.21
008738244-04	OBS	No	38.345542	131.807886	492.1	3.285	9.7	9.5	7.76	8247	19.26	2296.72
008738244-05	OBS	No	27.982972	156.387666	1016.1	1.095	10.8	11.6	7.76	8247	25.31	3495.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008738244-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008738244-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED
008738244-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008738244-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
008738244-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_SATURATED

**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 008738244-05

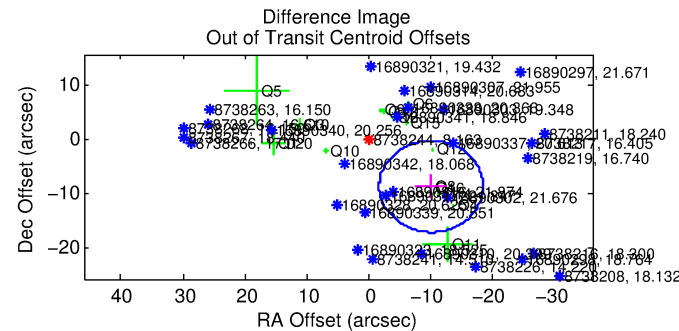
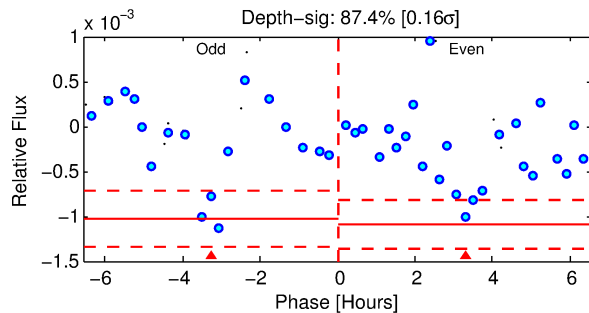
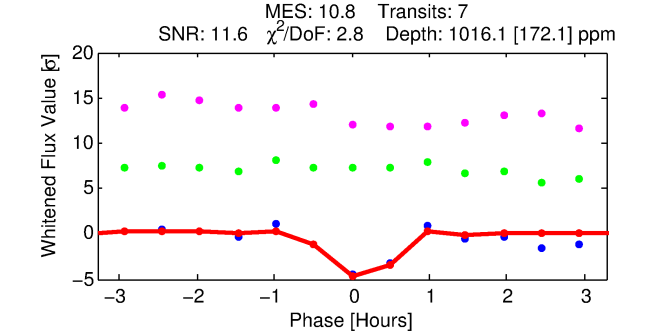
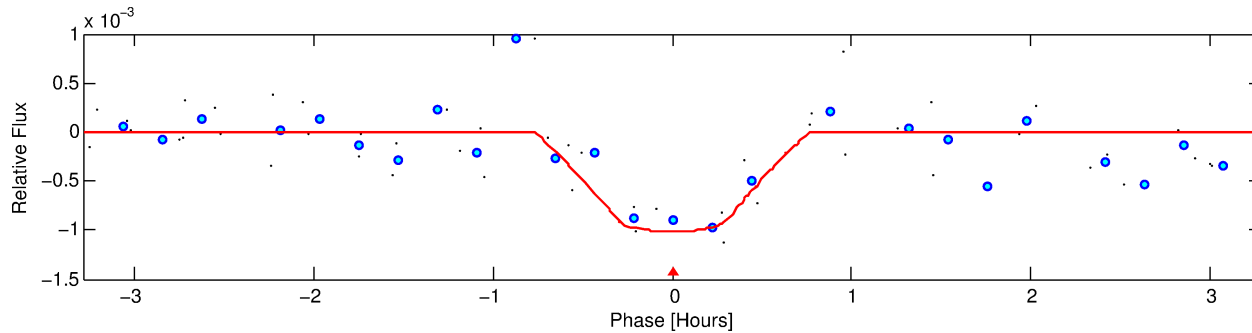
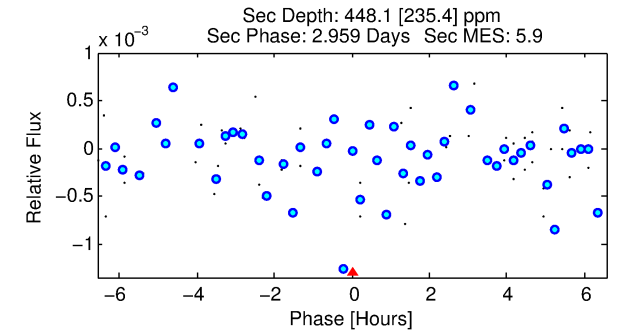
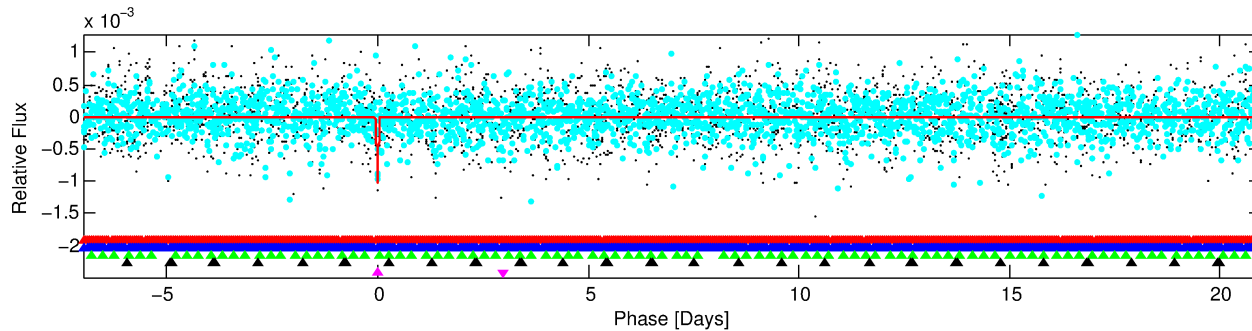
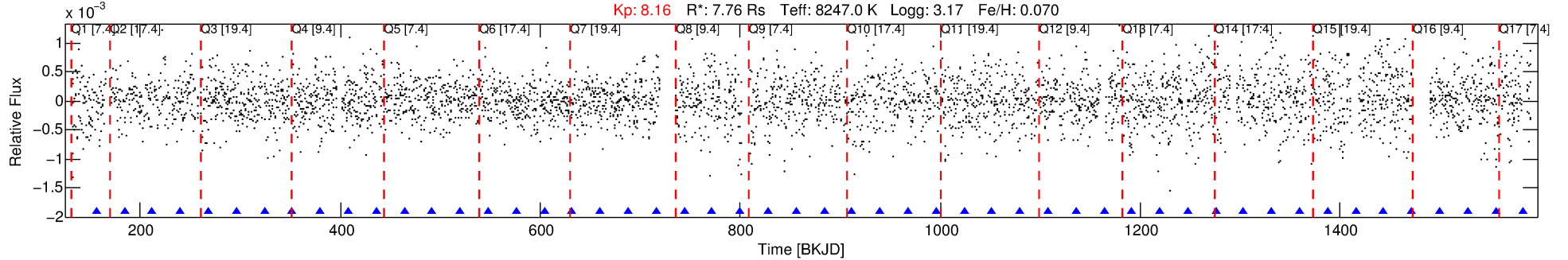
No Significant Match Found

# DV One-Page Summary

KIC: 8738244 Candidate: 5 of 5 Period: 27.983 d

KOI: K03157 Corr: No Ephemeris Match

Kp: 8.16 R\*: 7.76 Rs Teff: 8247.0 K Logg: 3.17 Fe/H: 0.070



## DV Fit Results:

Period = 27.98297 [0.00019] d  
Epoch = 156.3877 [0.0053] BKJD  
Rp/R\* = 0.0299 [0.0310]  
a/R\* = 194.79 [1131.39]  
b = 0.25 [21.55]  
Seff = 3495.71 [2413.48]  
Teq = 1961 [338] K  
Rp = 25.31 [28.48] Re  
a = 0.2673 [0.1135] AU  
Ag = 27.48 [61.80] [0.43σ]  
Teffp = 6941 [3719] K [1.33σ]

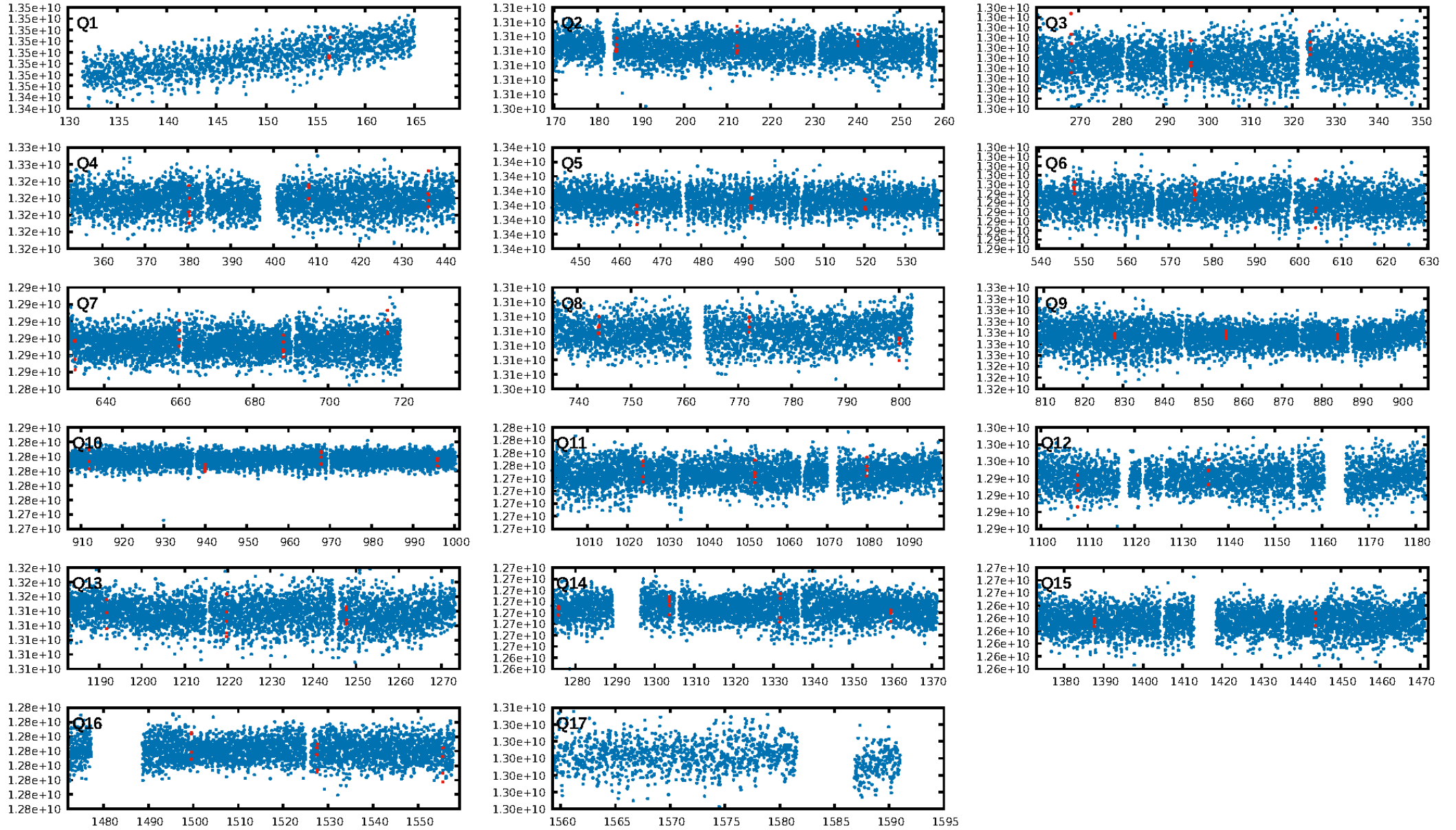
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [66.53σ]  
LongPeriod-sig: 100.0% [71.82σ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 74.6%  
Bootstrap-pfa: 1.13e-10  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 83.2%  
Centroid-so: 1.756 arcsec [3.90σ]  
OotOffset-rm: 13.166 arcsec [4.73σ]  
KicOffset-rm: 17.399 arcsec [5.43σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.00 [0/16]  
DiffImageOverlap-fno: 0.06 [1/16]

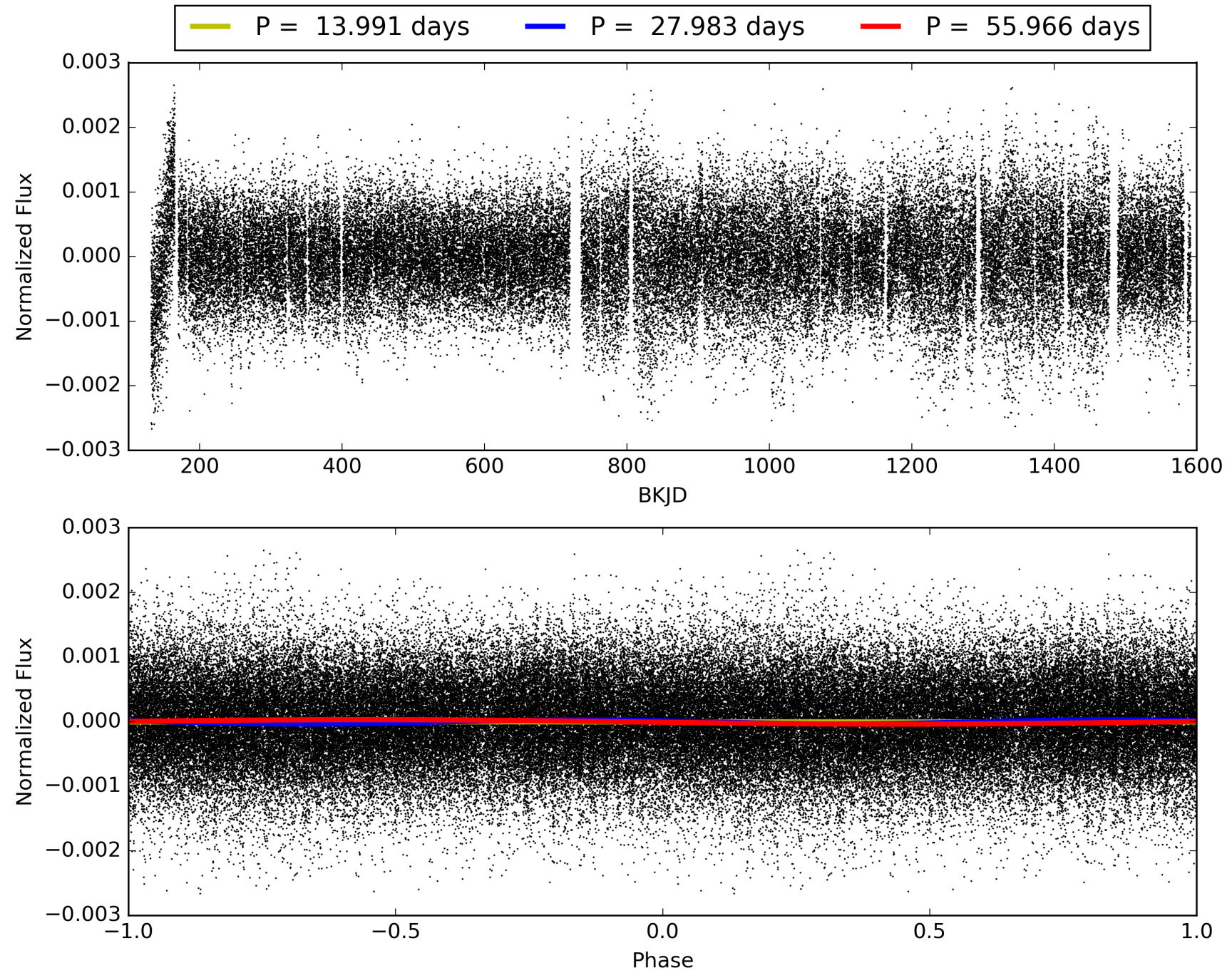
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 04:00:54 Z

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

# TCE 008738244-05, PDC Light Curves



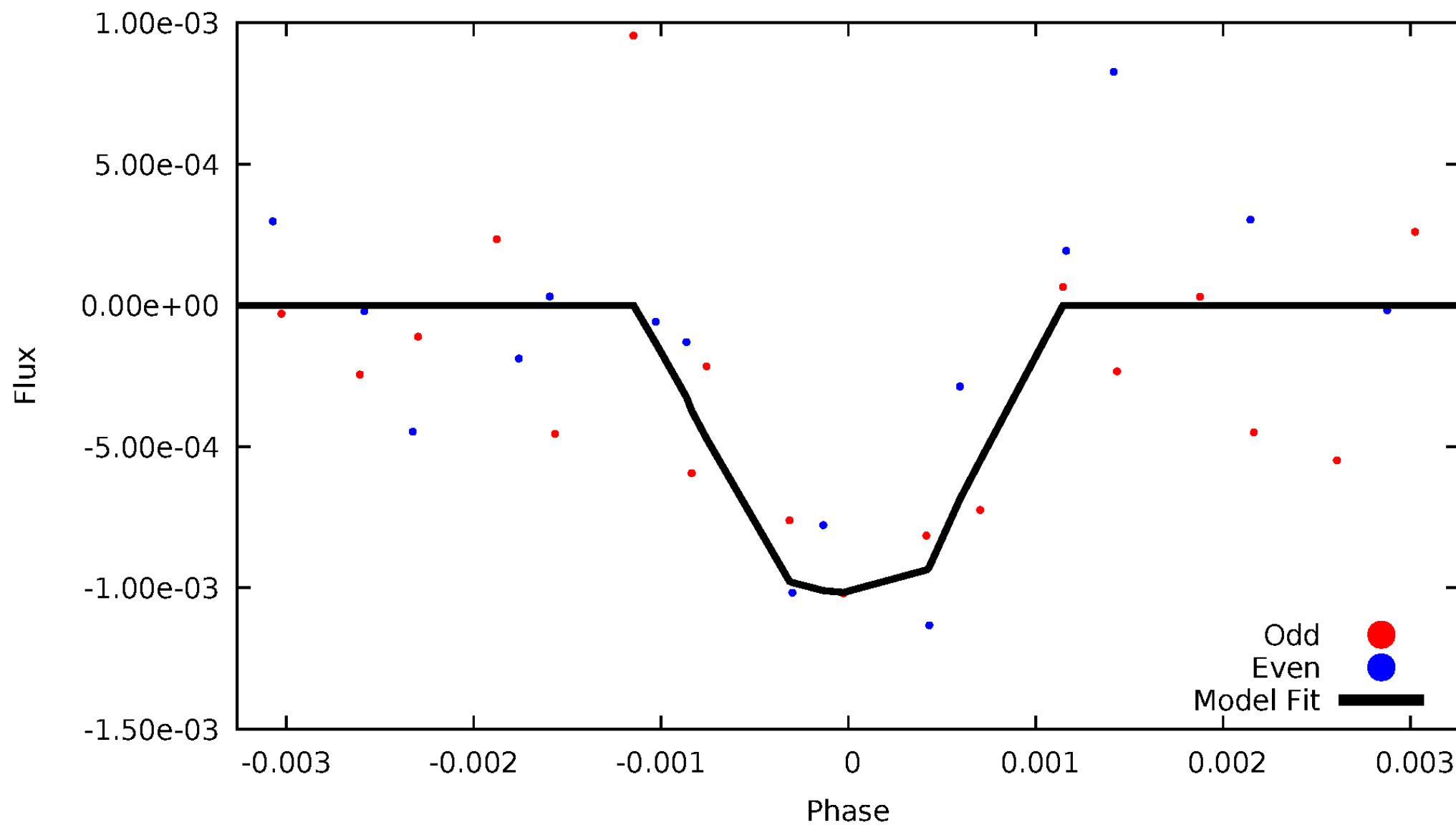
TCE 008738244-05





# DV Odd/Even

TCE 008738244-05



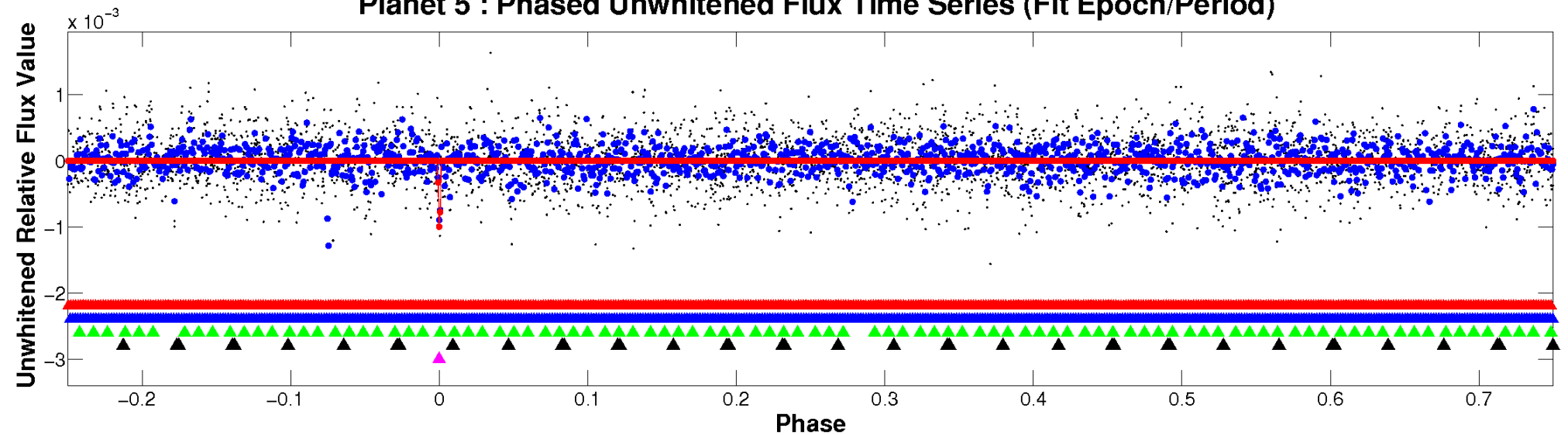


ALT Odd/Even

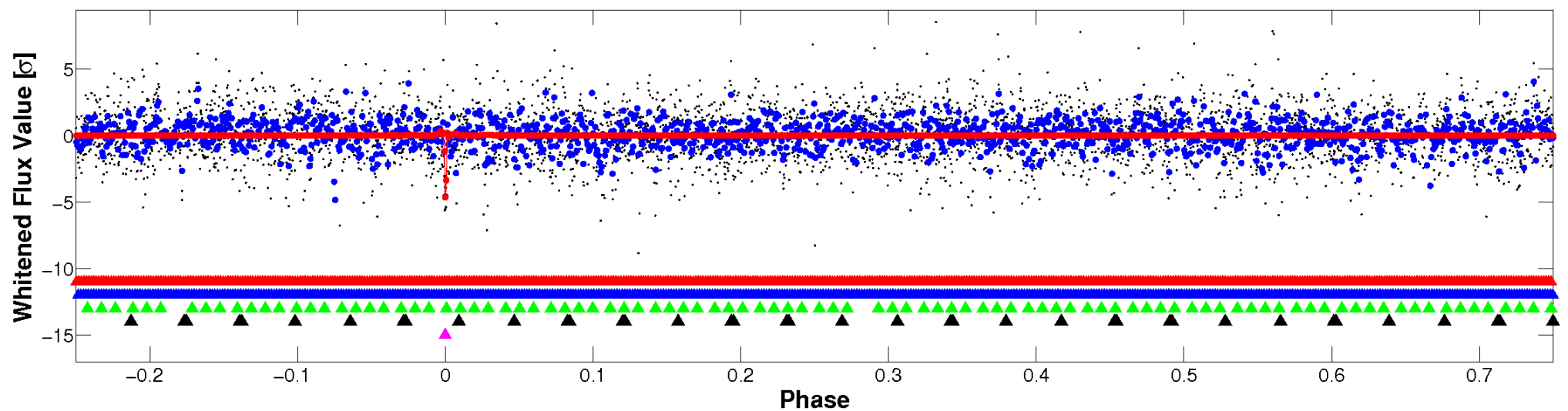
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



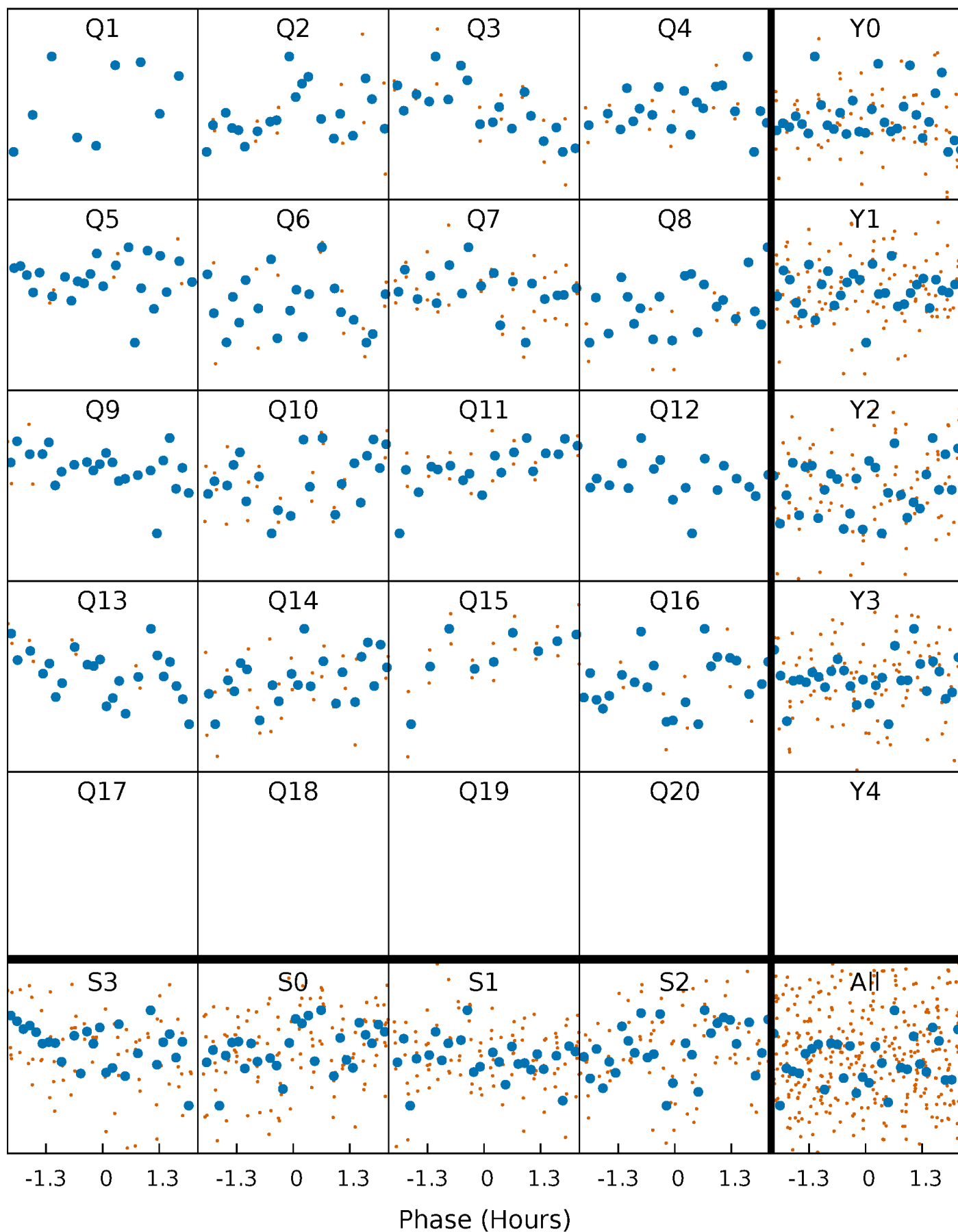
## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





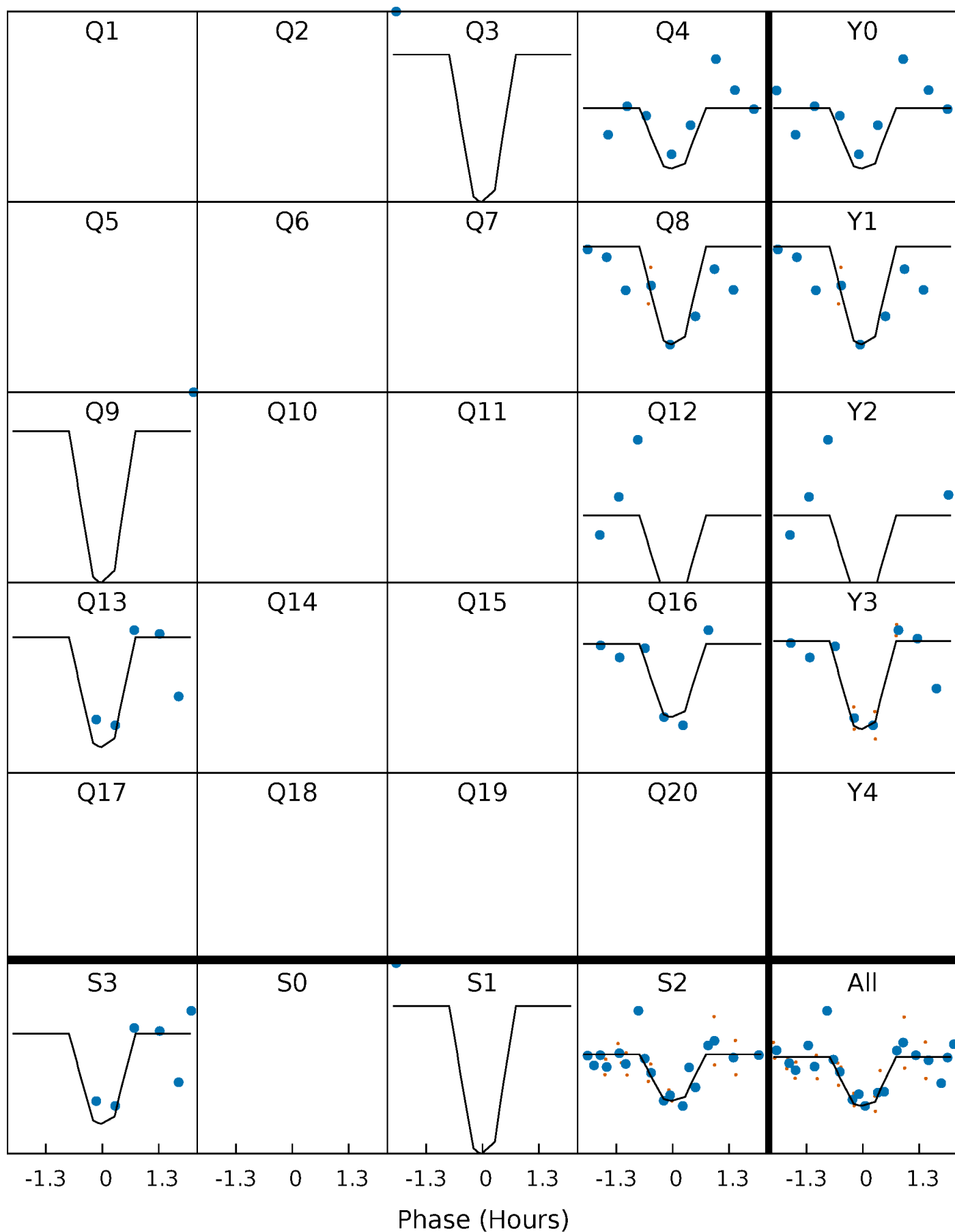
# PDC Quarter-Phased Transit Curves

TCE 008738244-05     $P = 27.982972$  Days     $T_0 = 156.387666$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 008738244-05   P= 27.982972 Days    $T_0=156.387666$  (BKJD)

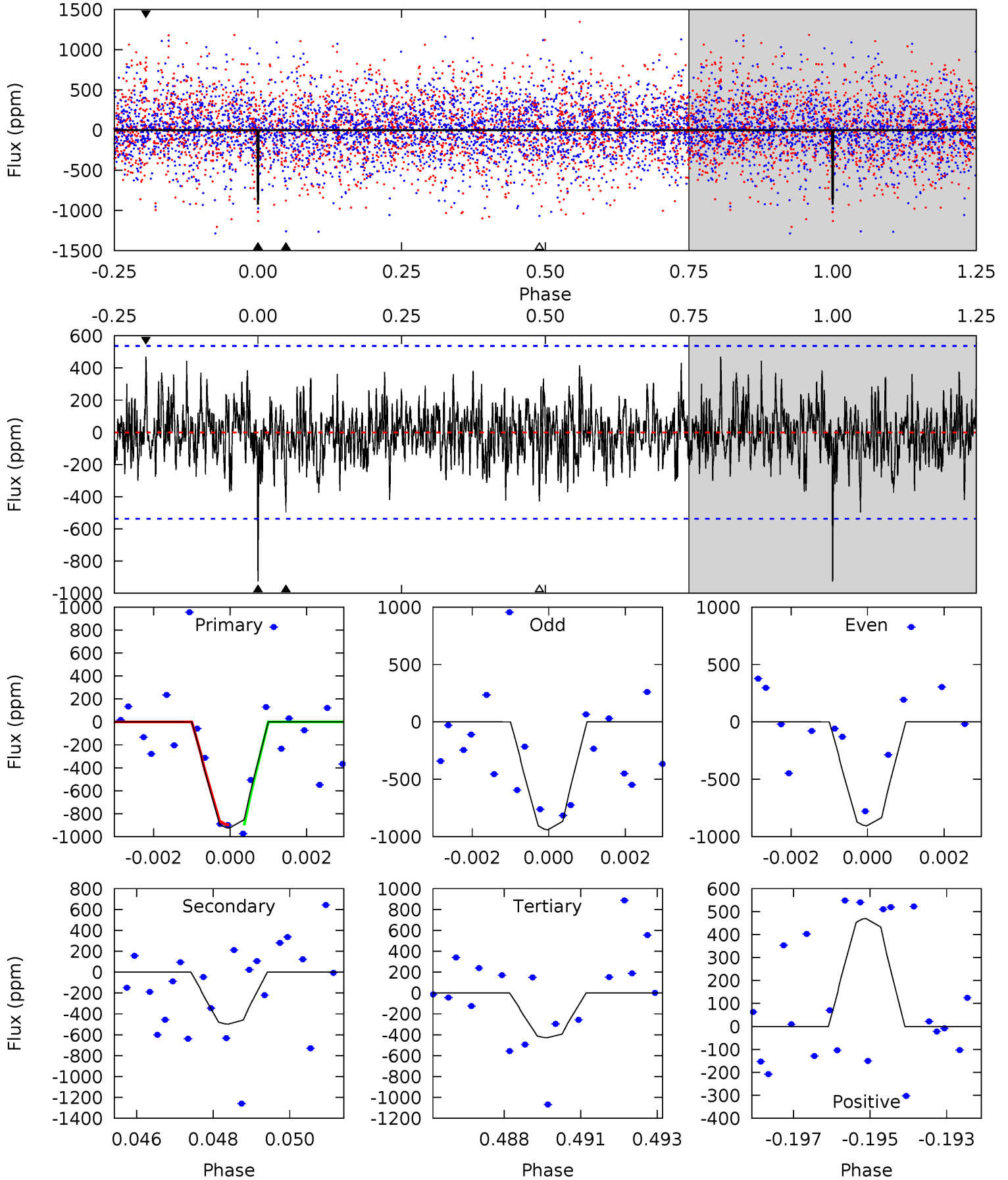


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

008738244-05, P = 27.982972 Days, E = 128.404694 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
9.15	4.92	4.23	4.64	5.30	3.05	1.34	4.91	4.50	0.69	0.27	0.17	0.99	0.34	0.01





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 008738244

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8247^{+149}_{-166}$	$3.170^{+0.405}_{-0.045}$	$0.070^{+0.200}_{-0.250}$	$7.762^{+0.561}_{-3.368}$	$3.253^{+0.214}_{-0.642}$	$0.010^{+0.035}_{-0.002}$
	+2%/-2%	+13%/-1%	+286%/-357%	+7%/-43%	+7%/-20%	+352%/-22%
Source	SPE4	SPE4	SPE4	DSEP		

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

### Secondary Eclipse Parameters for KIC 008738244-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-498 \pm 101$	$27.40^{+24.02}_{-17.53}$	$2680^{+109}_{-289}$	$6200^{+5303}_{-1459}$	$25^{+167}_{-18}$
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  $A_{obs} \gg 1.0$

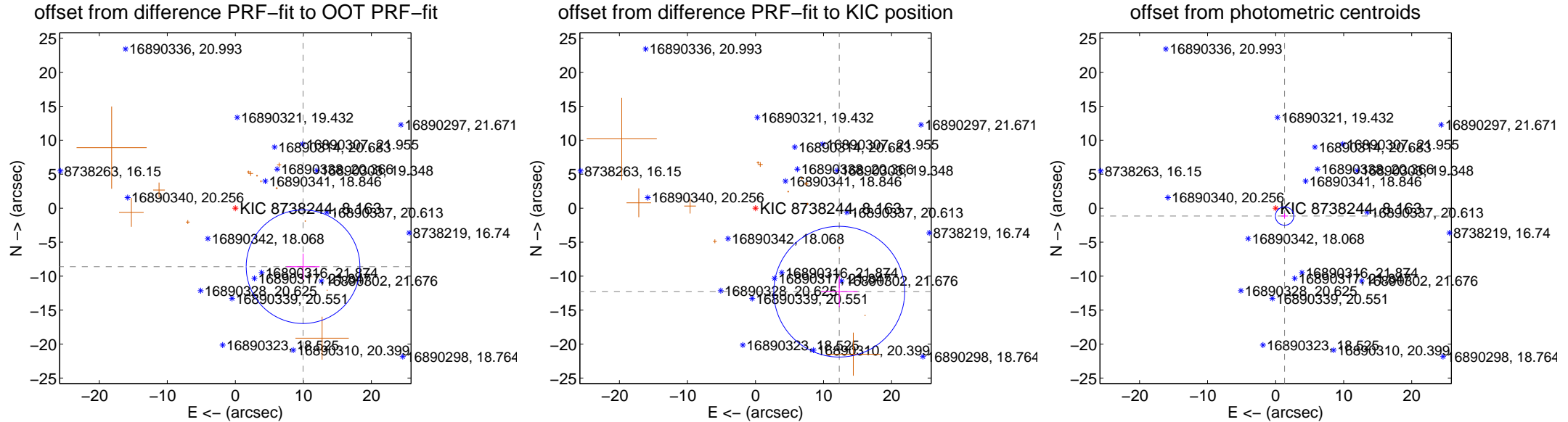
## DV Centroid Data

Supplemental centroid analysis for 008738244-05. **Kepler magnitude: 8.16.** Transit SNR 11.58

There are 0 quarters with good PRF difference image offsets

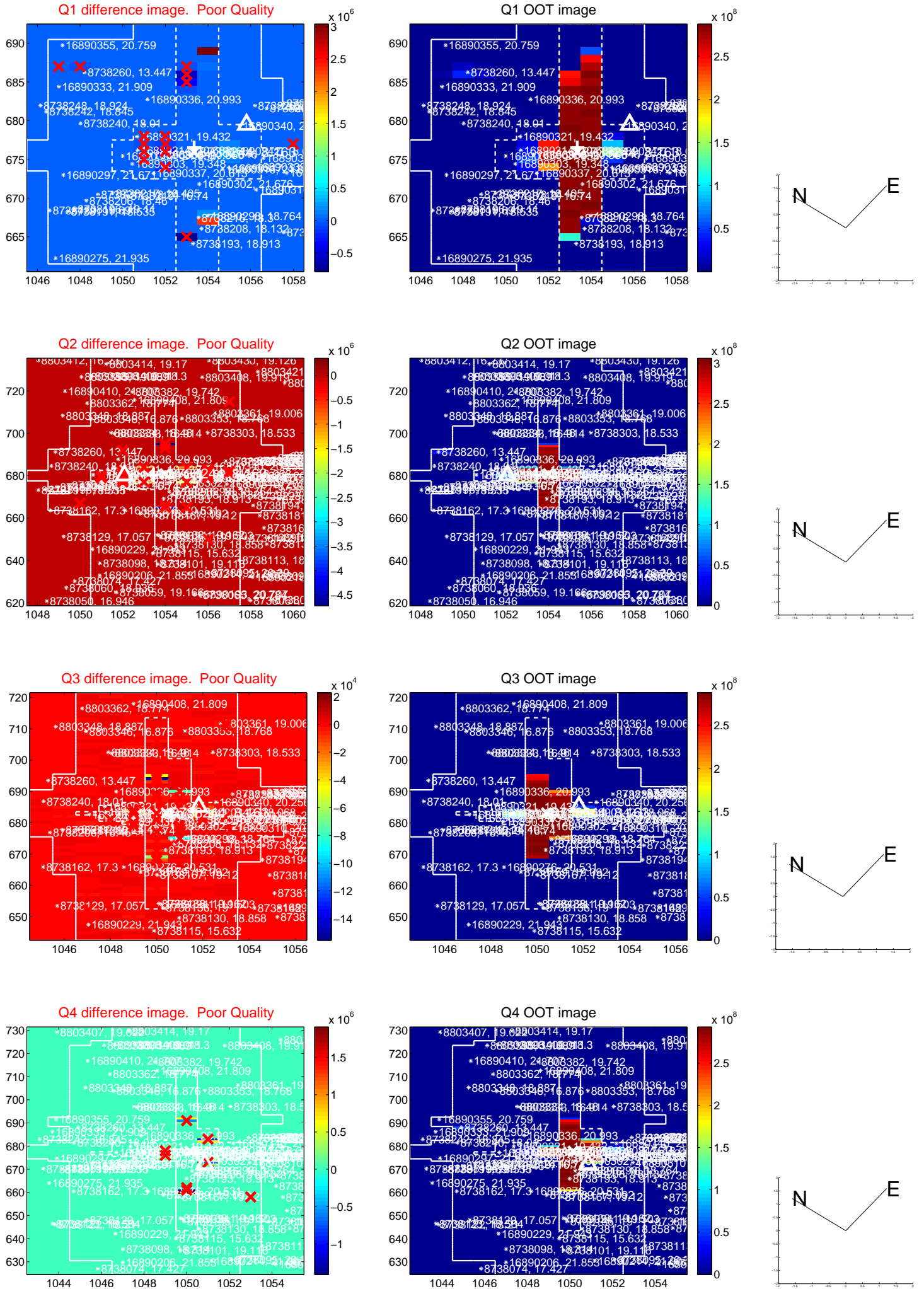
The OOT PRF centroid is offset from the target star catalog position by about 4.67 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>13.166 \pm 2.786</math></b>	<b>4.73</b>	$-9.955 \pm 2.439$	$-8.617 \pm 1.920$
PRF-fit source offset from KIC position	<b><math>17.399 \pm 3.207</math></b>	<b>5.43</b>	$-12.315 \pm 2.685$	$-12.291 \pm 2.300$
photometric centroid source offset	<b><math>1.76 \pm 0.45</math></b>	<b>3.90</b>	$-1.32 \pm 0.49$	$-1.16 \pm 0.39$



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.

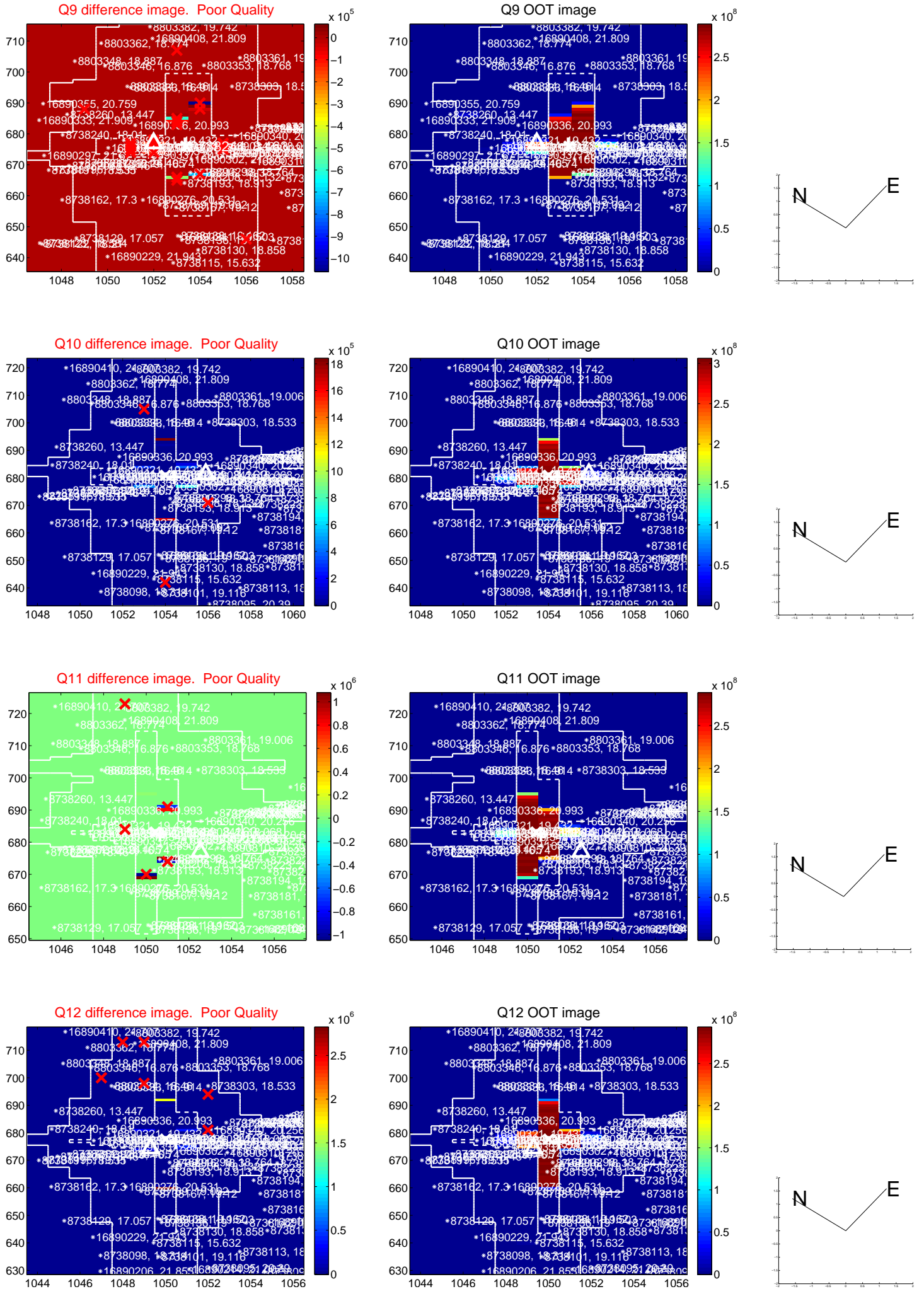
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





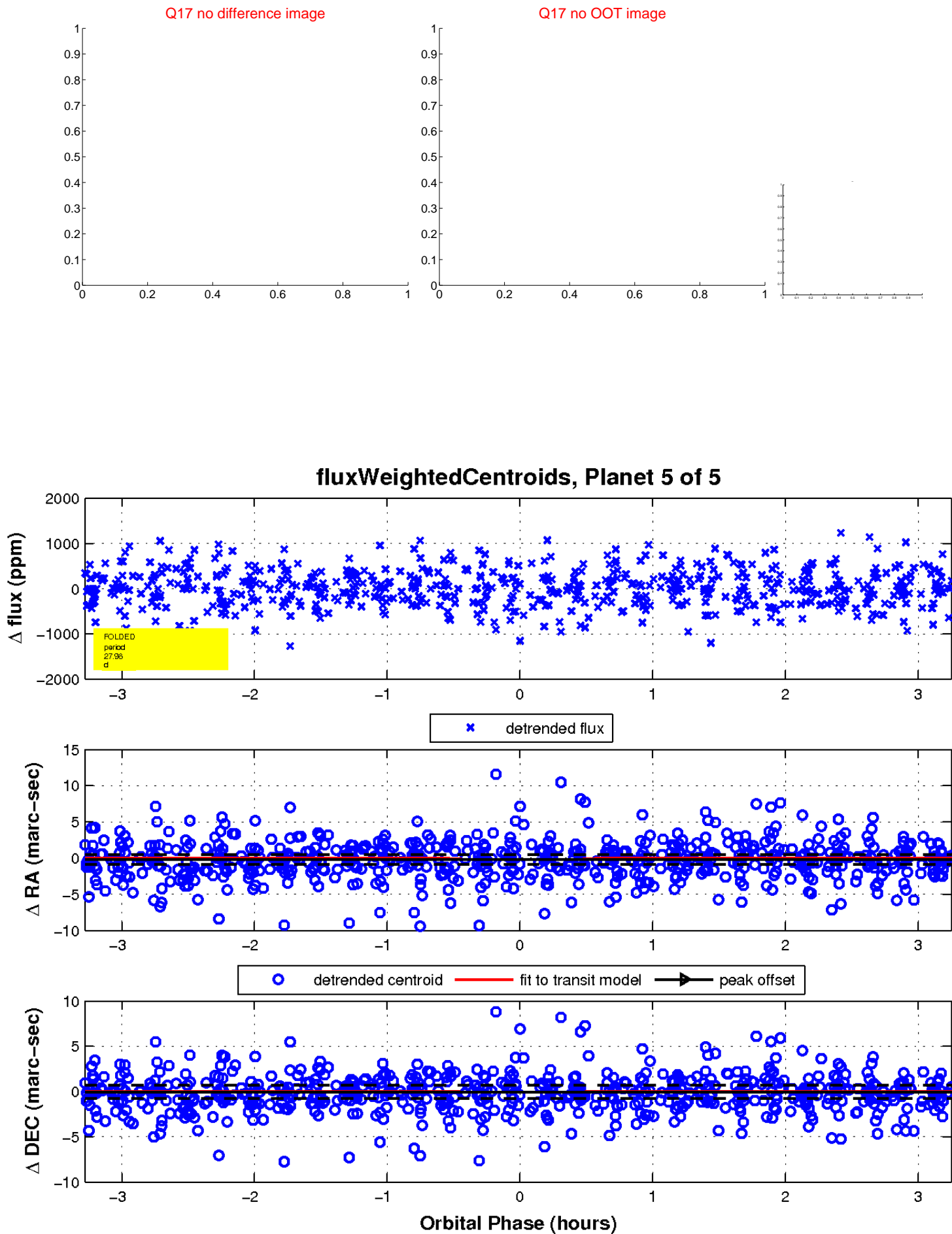


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

