

# KIC 008296467

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008296467-01	OBS	7012.01	10.303416	137.164279	533259.1	3.500	14178.6	-1.0	0.90	5497	49.10	90.83
008296467-02	OBS	No	10.303333	133.307869	321000.1	2.500	8543.2	-1.0	0.90	5497	49.10	90.83
008296467-03	OBS	No	5.151496	131.797064	32958.3	15.000	1099.1	-1.0	0.90	5497	16.14	228.90
008296467-04	OBS	No	4.121238	134.424654	791.1	21.126	372.5	24.2	0.90	5497	3.63	308.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008296467-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
008296467-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008296467-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS
008296467-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—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.

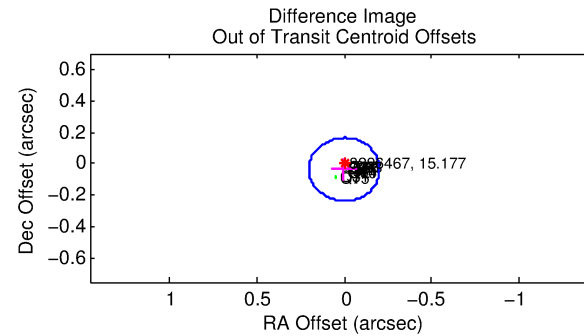
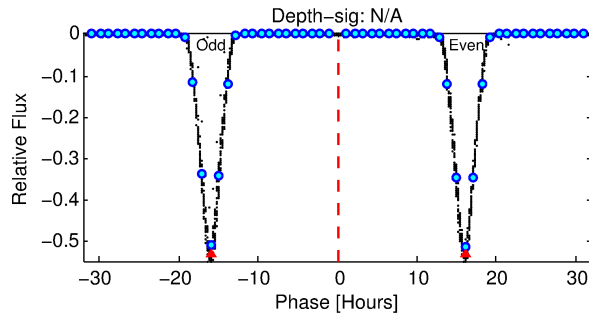
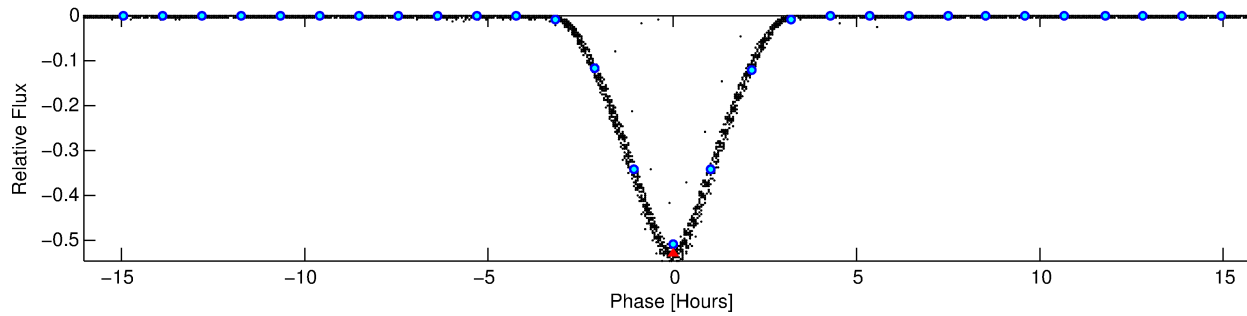
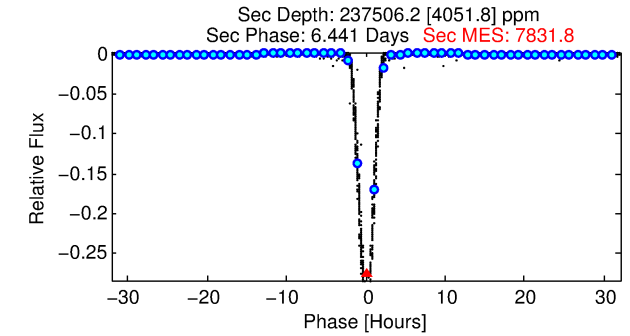
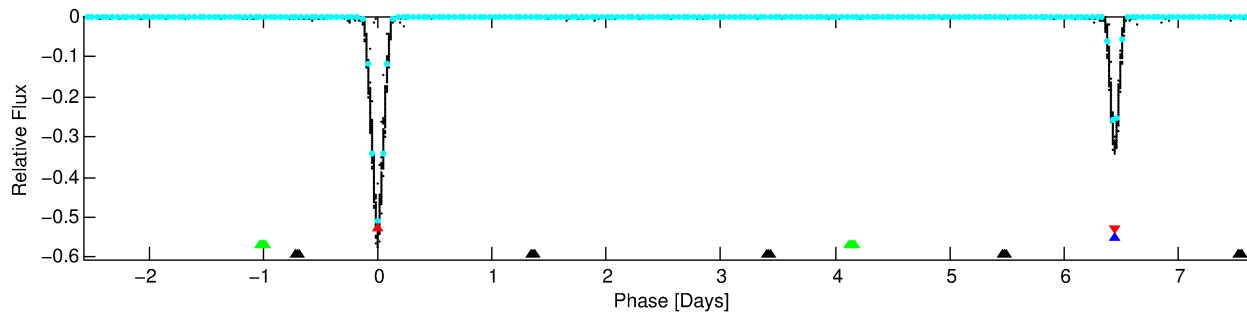
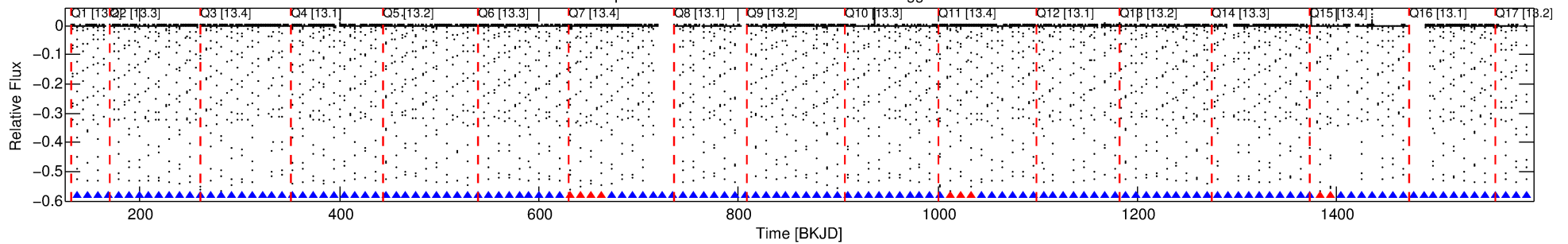
Ephemeris Match Information For 008296467-01

No Significant Match Found

# DV One-Page Summary

KIC: 8296467 Candidate: 1 of 4 Period: 10.303 d  
KOI: K07012.01 Corr: 0.763

Kp: 15.18 R\*: 0.90 Rs Teff: 5497.0 K Logg: 4.42 Fe/H: -0.280



## TPS TCE Results:

Period = 10.30342 d  
Epoch = 137.1643 BKJD

DV fit results are unavailable

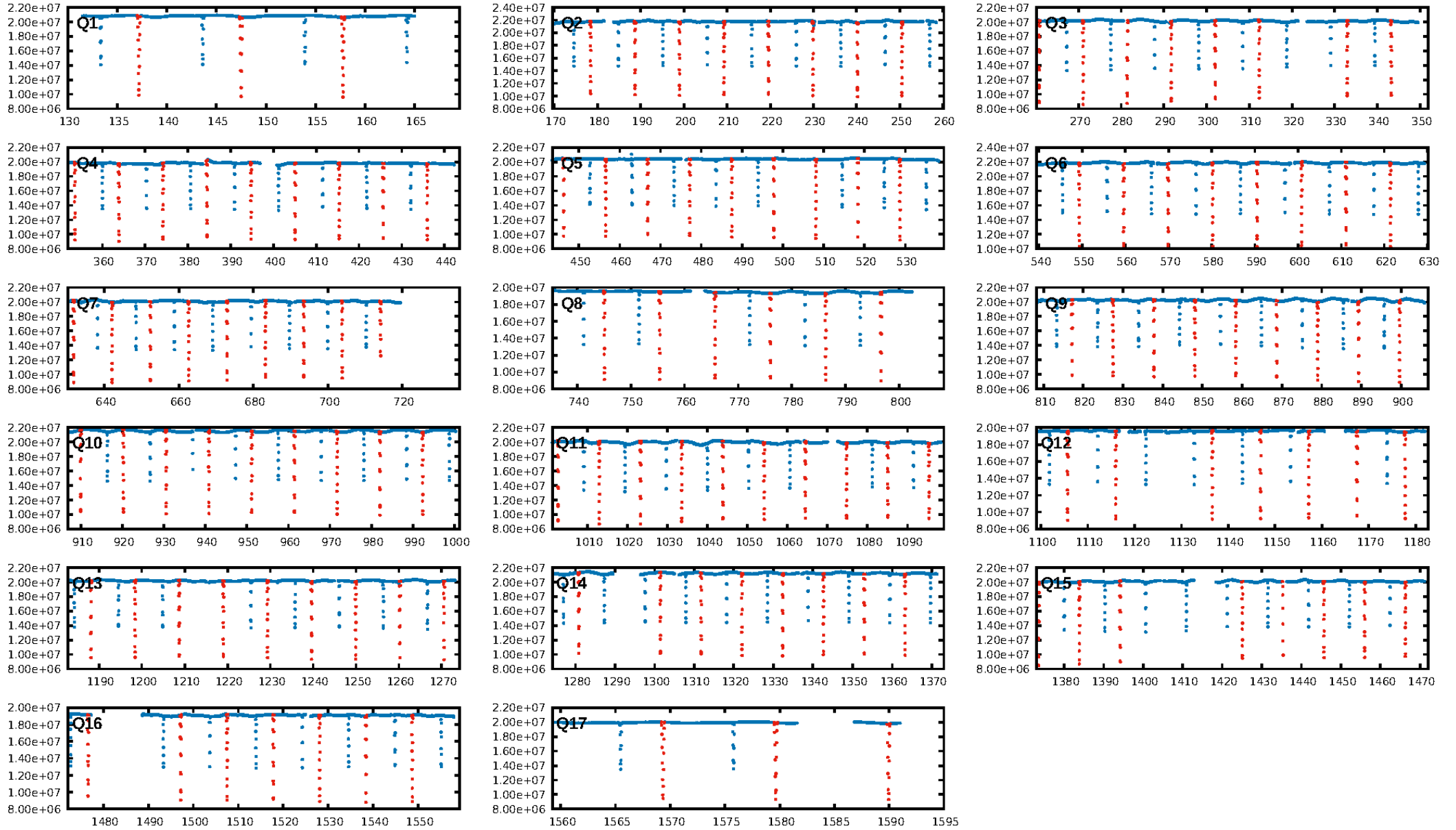
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.93 [114/123]  
GhostDiagnostic-chr: 1.624  
Centroid-sig: N/A  
Centroid-so: 0.072 arcsec [111.99 $\sigma$ ]  
OotOffset-rm: 0.036 arcsec [0.53 $\sigma$ ]  
KicOffset-rm: 0.147 arcsec [2.16 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

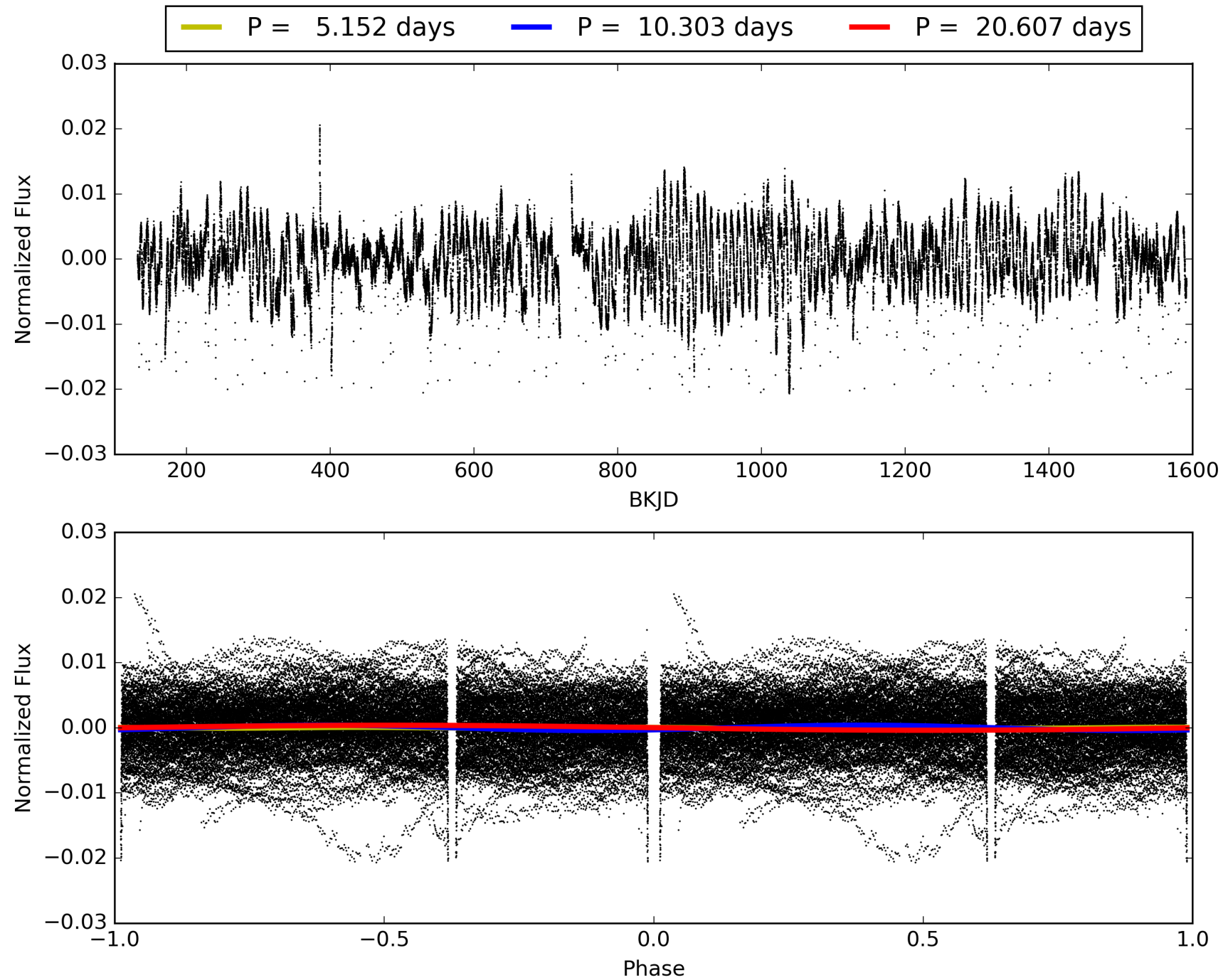
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:01:40 Z

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

# TCE 008296467-01, PDC Light Curves



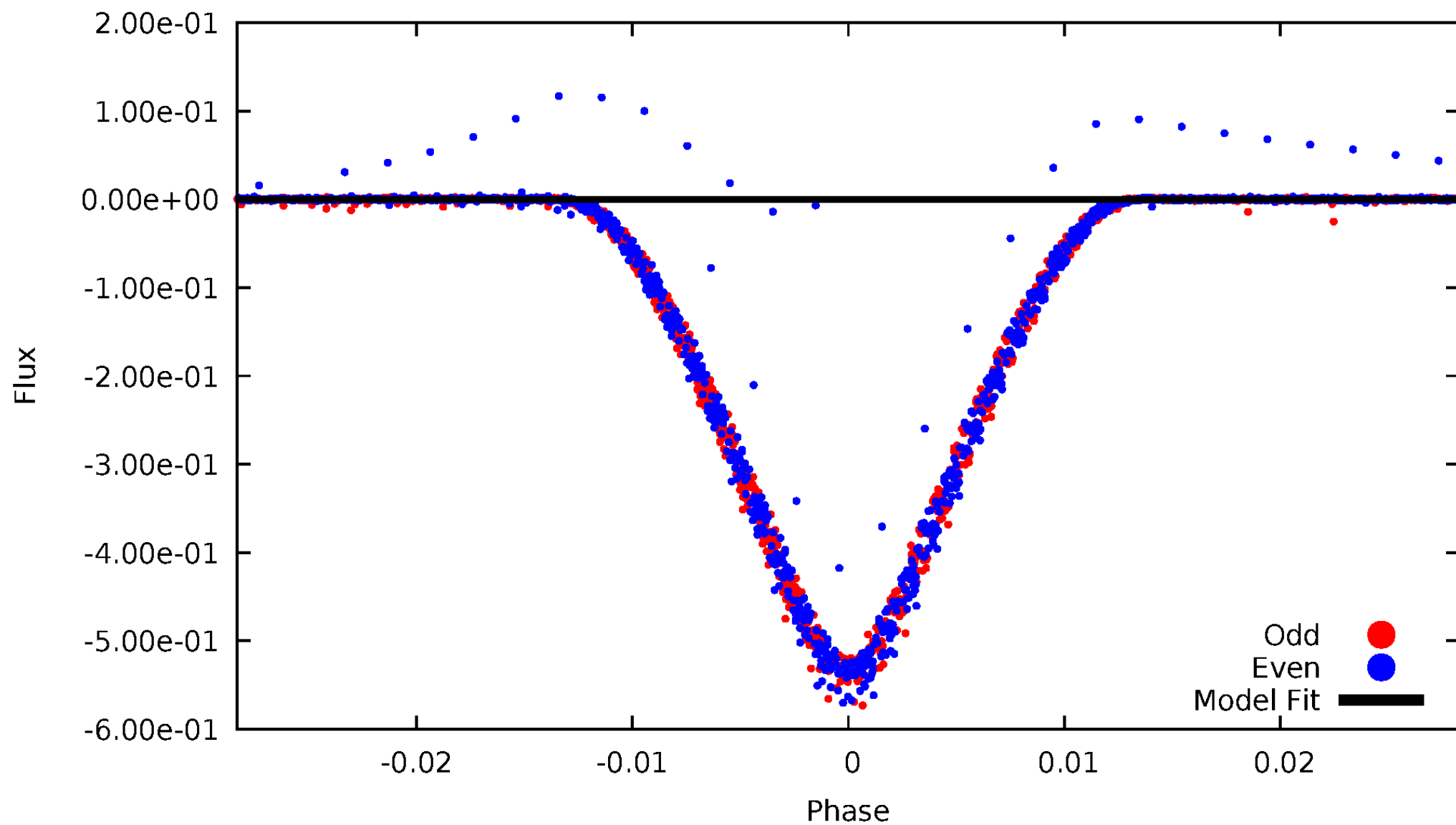
TCE 008296467-01





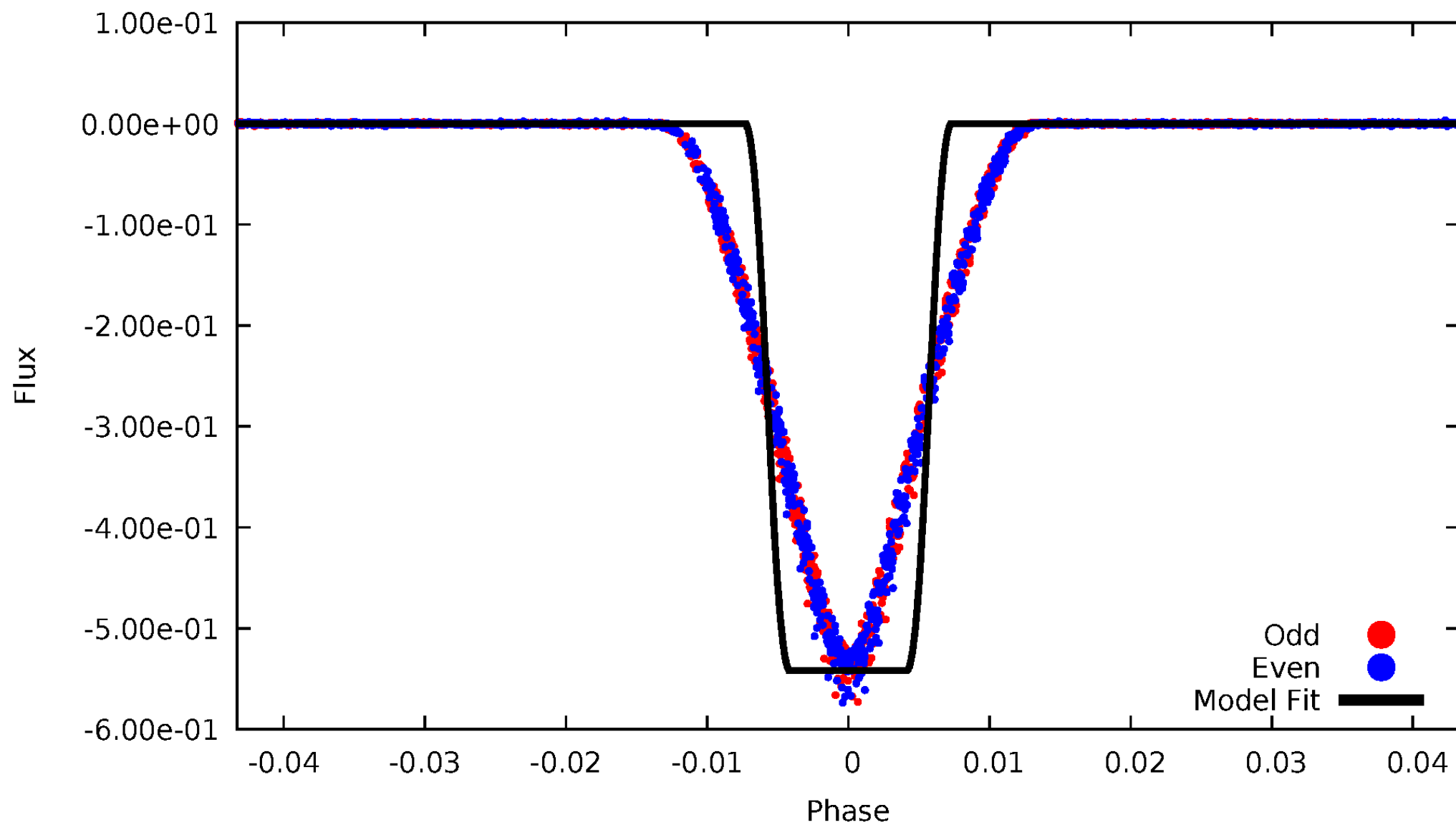
# DV Odd/Even

TCE 008296467-01



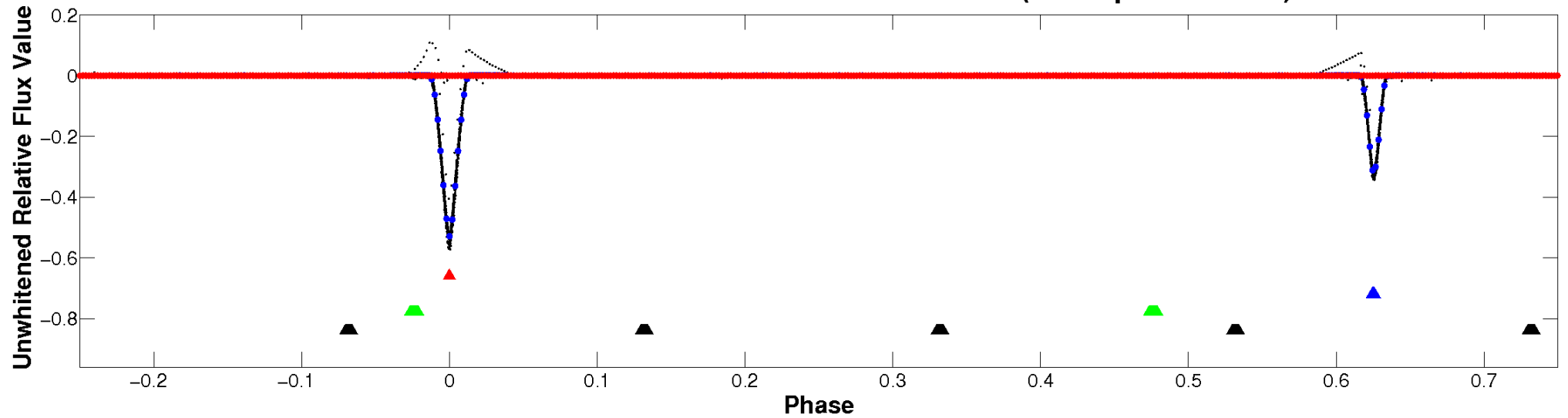
# ALT Odd/Even

TCE 008296467-01



# Non-Whitened Vs. Whitened Light Curve

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

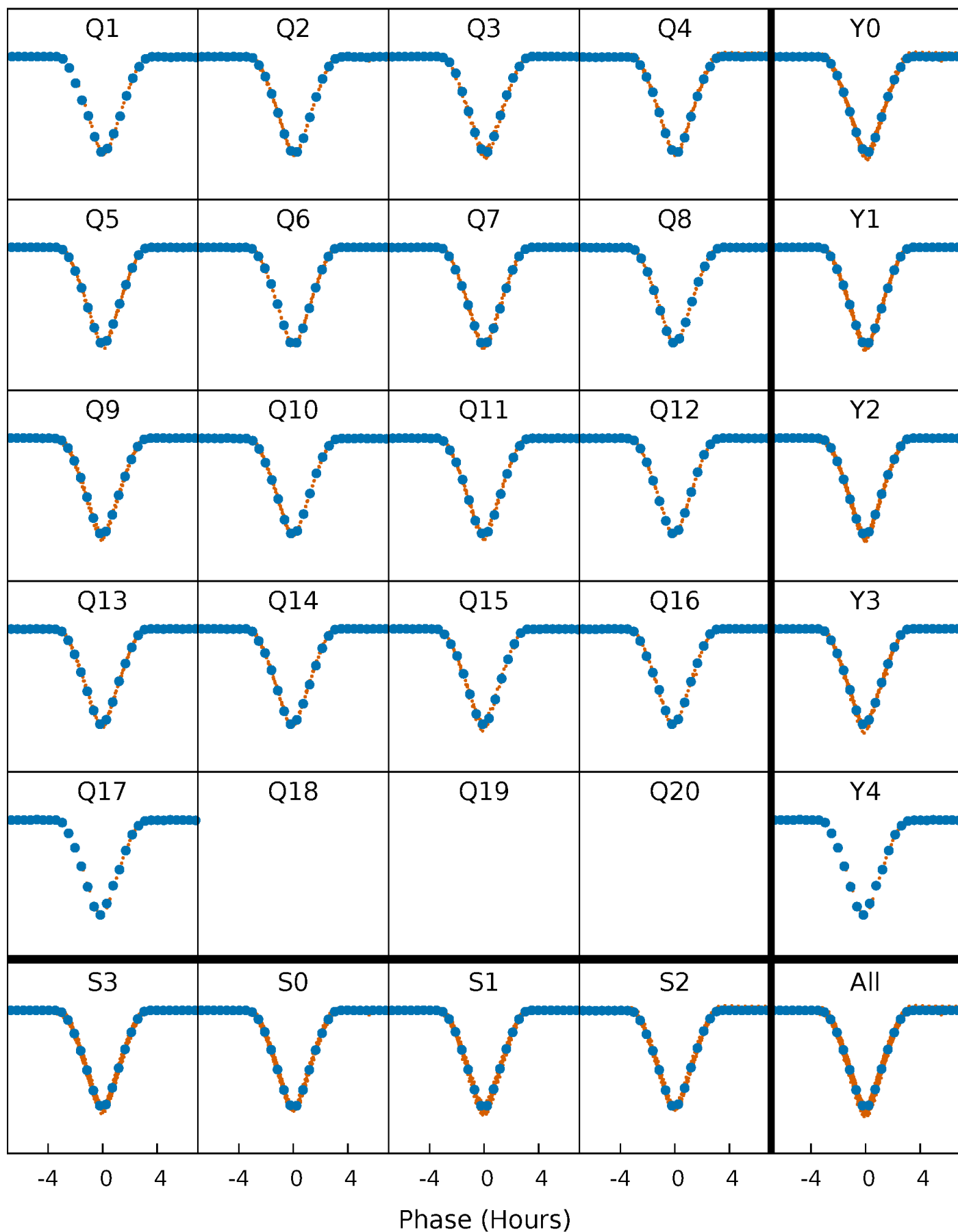


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



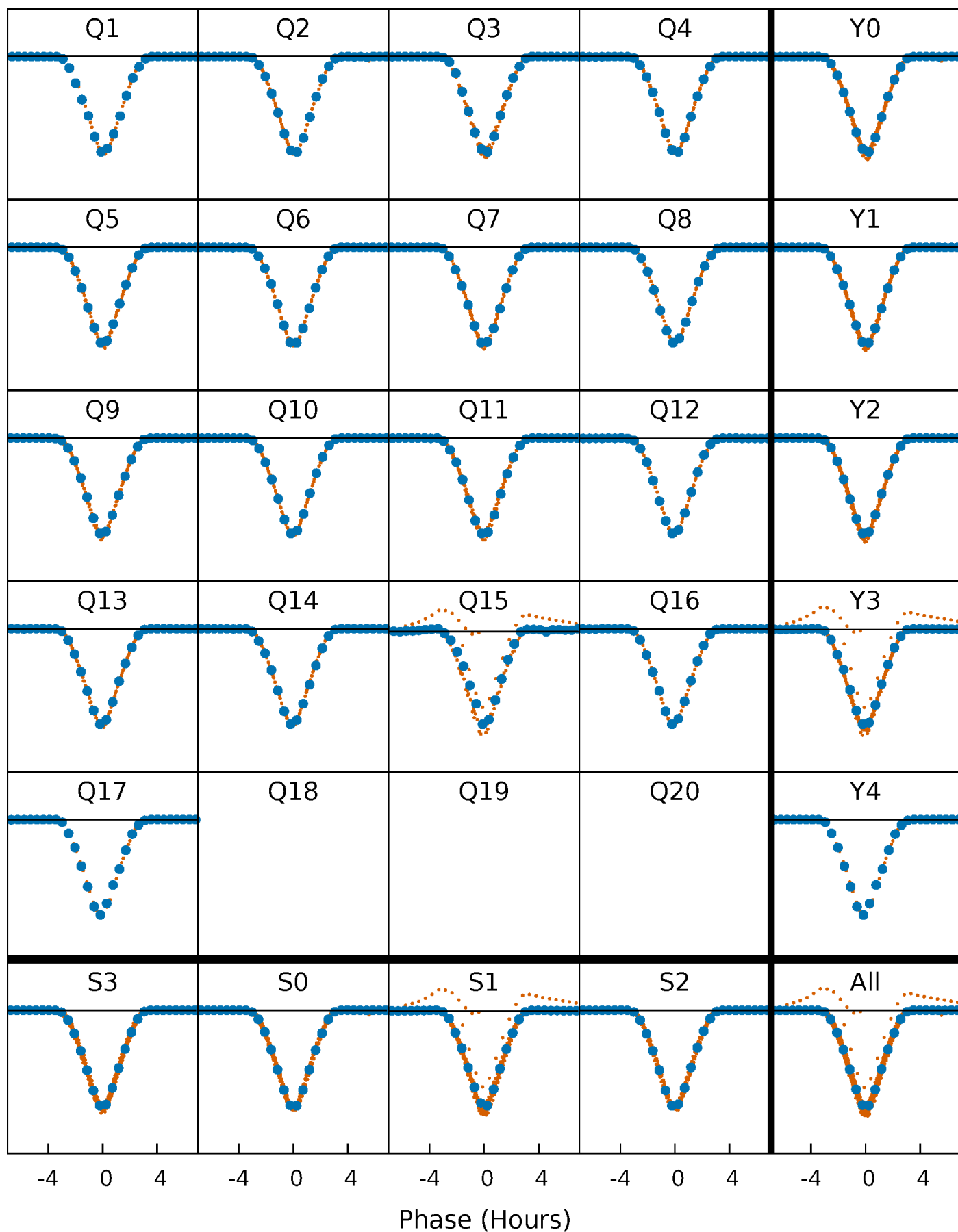
# PDC Quarter-Phased Transit Curves

TCE 008296467-01 P= 10.303416 Days  $T_0=137.164279$  (BKJD)



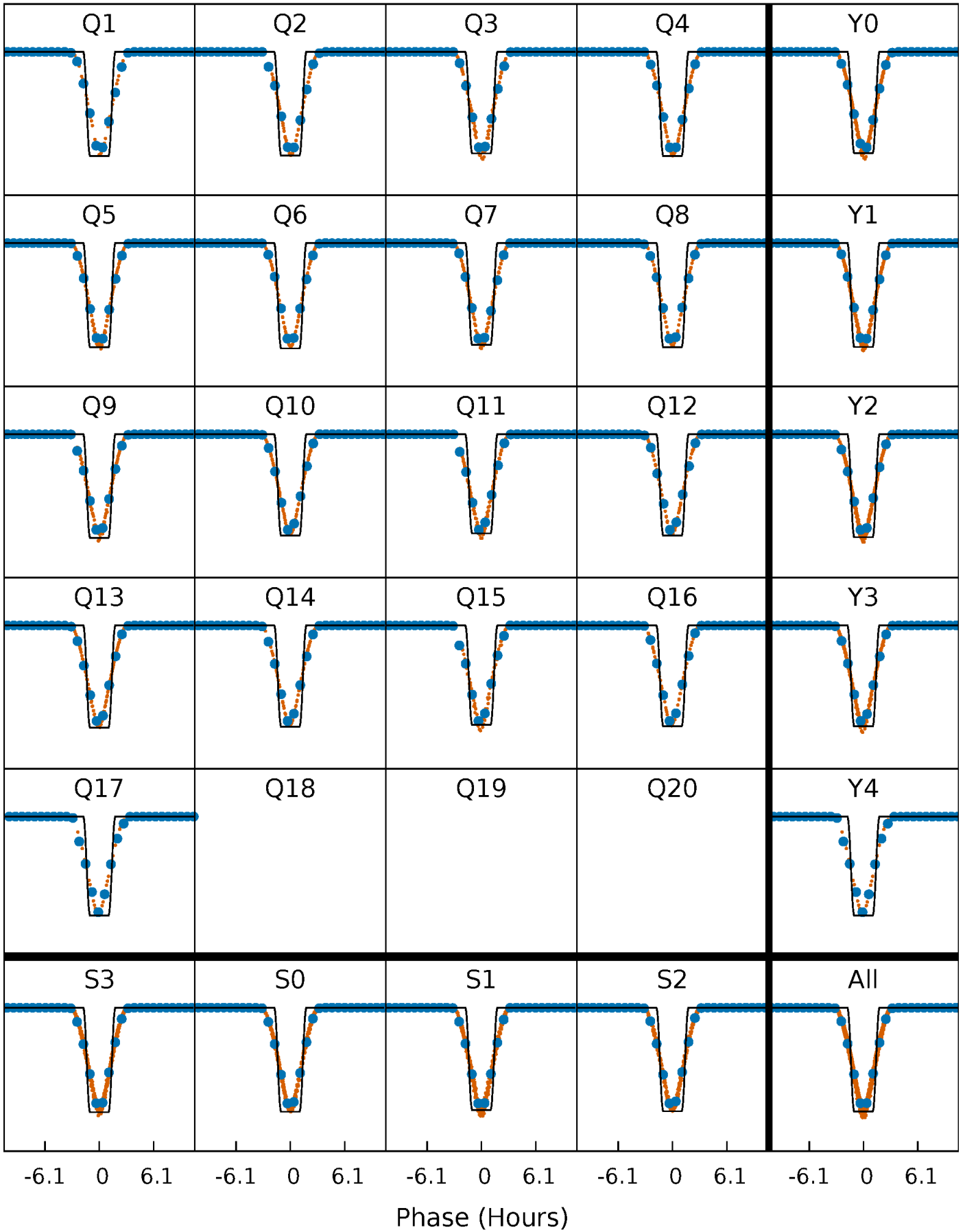
# DV Quarter-Phased Transit Curves

TCE 008296467-01 P= 10.303416 Days  $T_0=137.164279$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

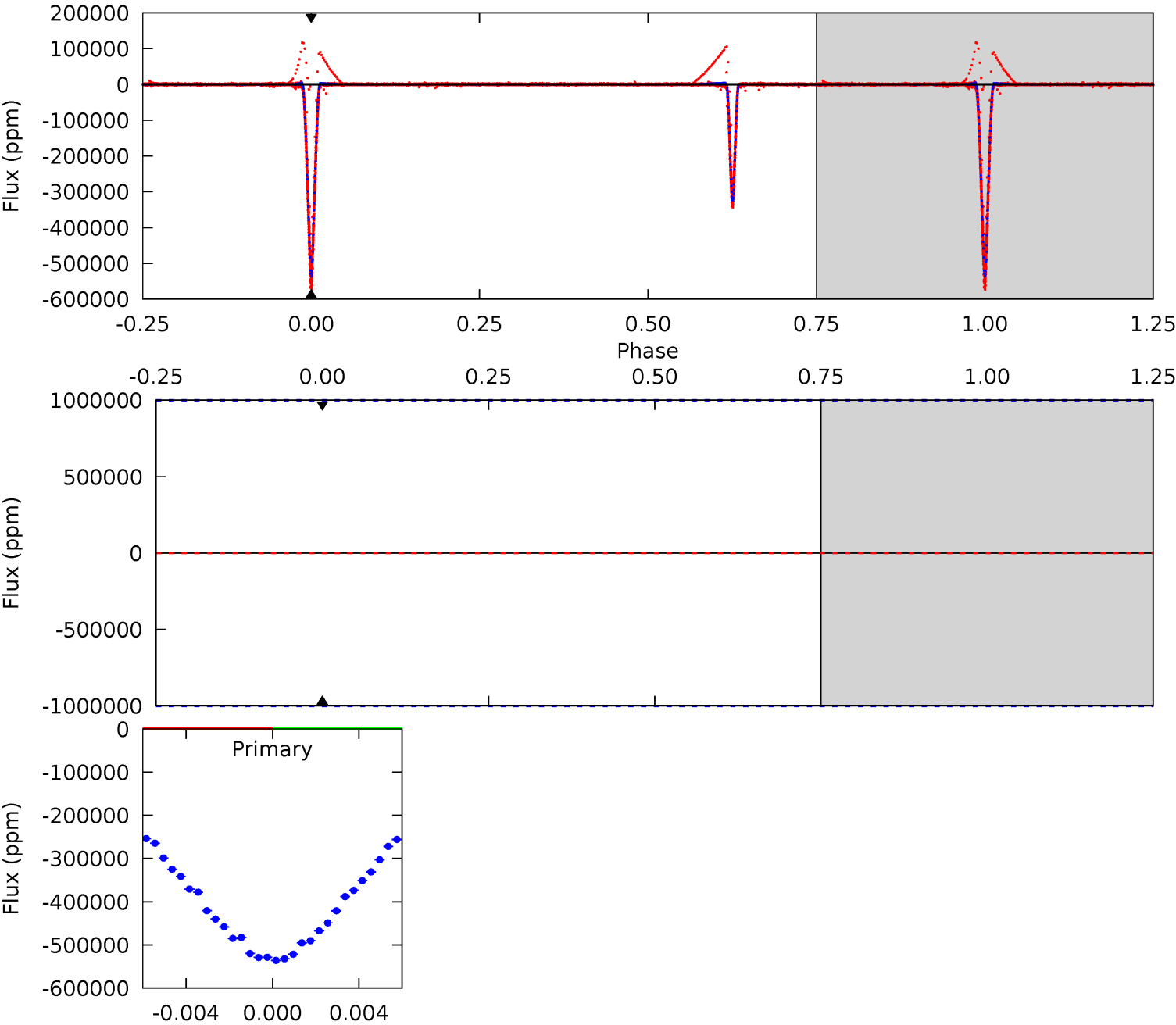
TCE 008296467-01 P= 10.303416 Days  $T_0=137.164155$  (BKJD)



DV Model-Shift Uniqueness Test

008296467-01, P = 10.303416 Days, E = 126.860863 Days

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

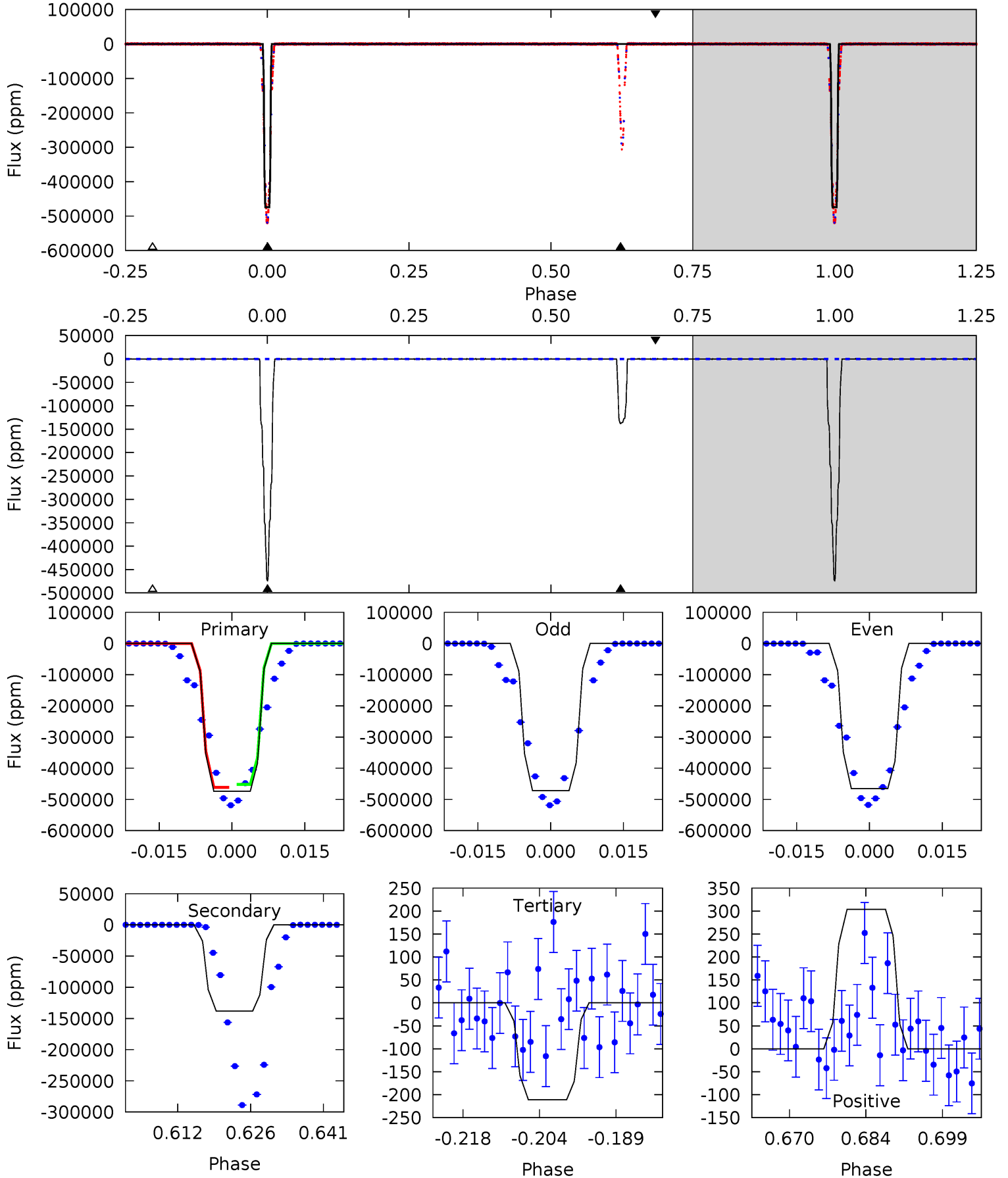




# Alt Model-Shift Uniqueness Test

008296467-01, P = 10.303416 Days, E = 126.860739 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
7829	2282	3.48	5.02	4.95	2.44	1.22	7825	7824	2278	2277	60.4	1.01	0.00	0



### Stellar Parameters For KIC 008296467

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5497^{+166}_{-149}$	$4.423^{+0.149}_{-0.182}$	$-0.280^{+0.300}_{-0.300}$	$0.900^{+0.211}_{-0.141}$	$0.782^{+0.120}_{-0.055}$	$1.514^{+0.980}_{-0.693}$
	+3%/-3%	+3%/-4%	+107%/-107%	+23%/-16%	+15%/-7%	+65%/-46%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008296467-01 / KOI 7012.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$49.32^{+12.62}_{-10.55}$	$1103^{+79}_{-68}$	$2965^{+1720}_{-7388}$	$12^{+178}_{-158}$
Alt.	$-138166 \pm 61$	$73.95^{+14.48}_{-12.48}$	$1104^{+81}_{-58}$	$4288^{+255}_{-244}$	$120^{+54}_{-35}$

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

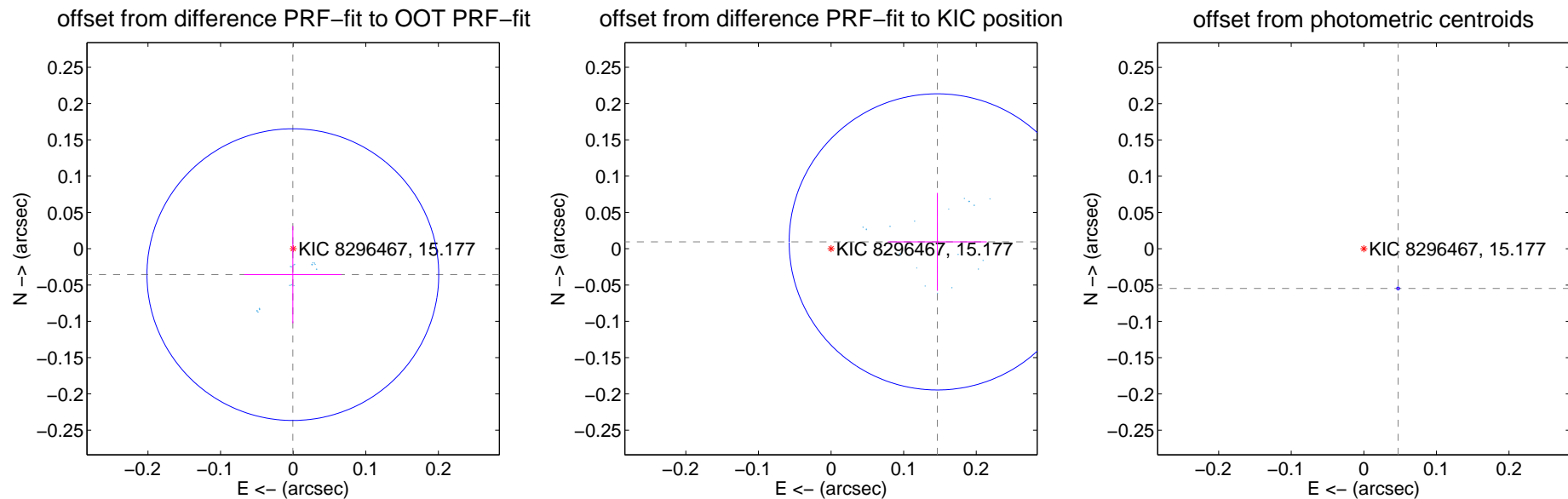
## DV Centroid Data

Supplemental centroid analysis for 008296467-01. Kepler magnitude: 15.18. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

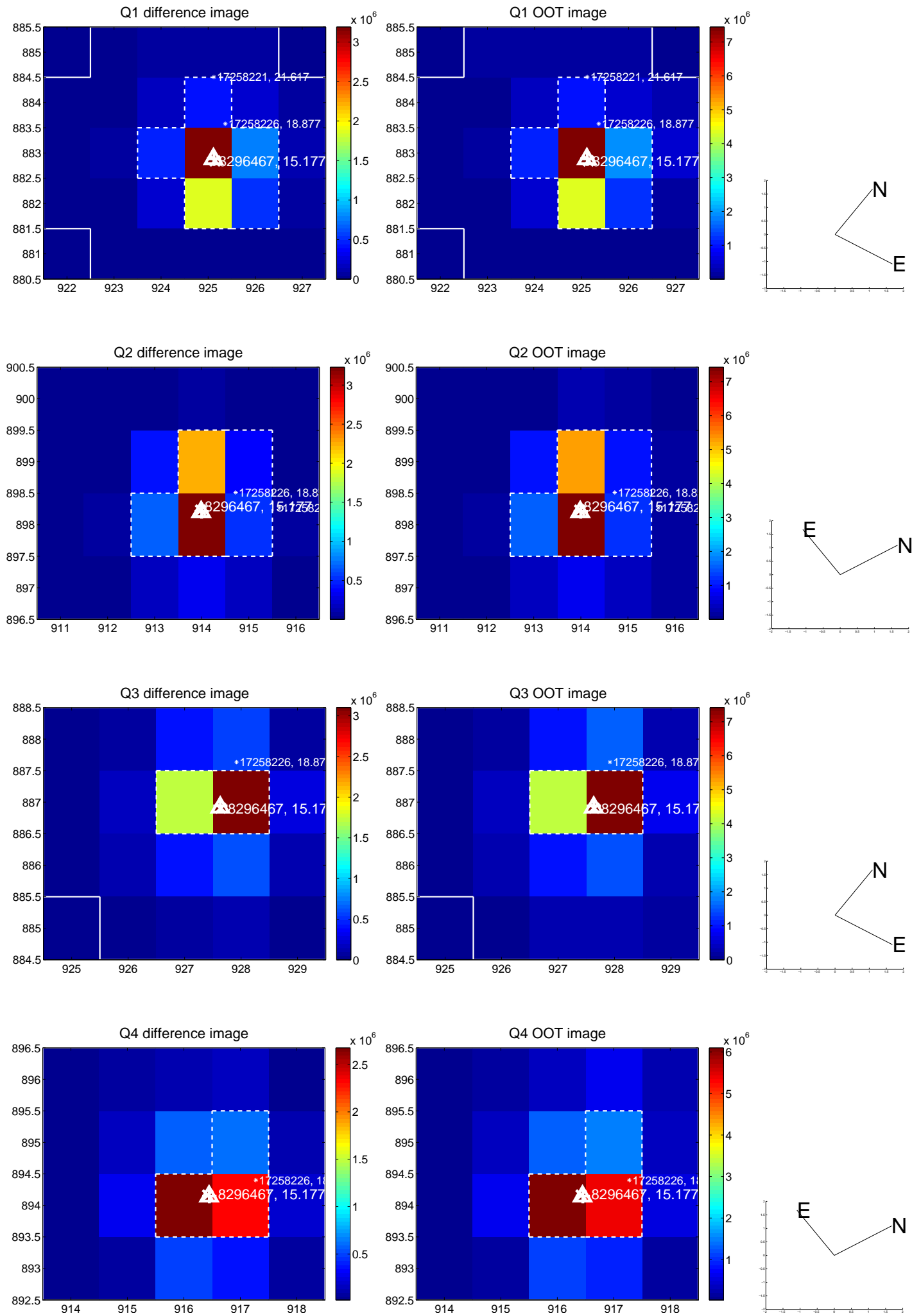
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.036 \pm 0.067$	0.53	$0.000 \pm 0.067$	$-0.036 \pm 0.067$
PRF-fit source offset from KIC position	$0.147 \pm 0.068$	2.16	$-0.146 \pm 0.068$	$0.009 \pm 0.067$
photometric centroid source offset	$0.07 \pm 0.00$	111.99	$-0.05 \pm 0.00$	$-0.05 \pm 0.00$

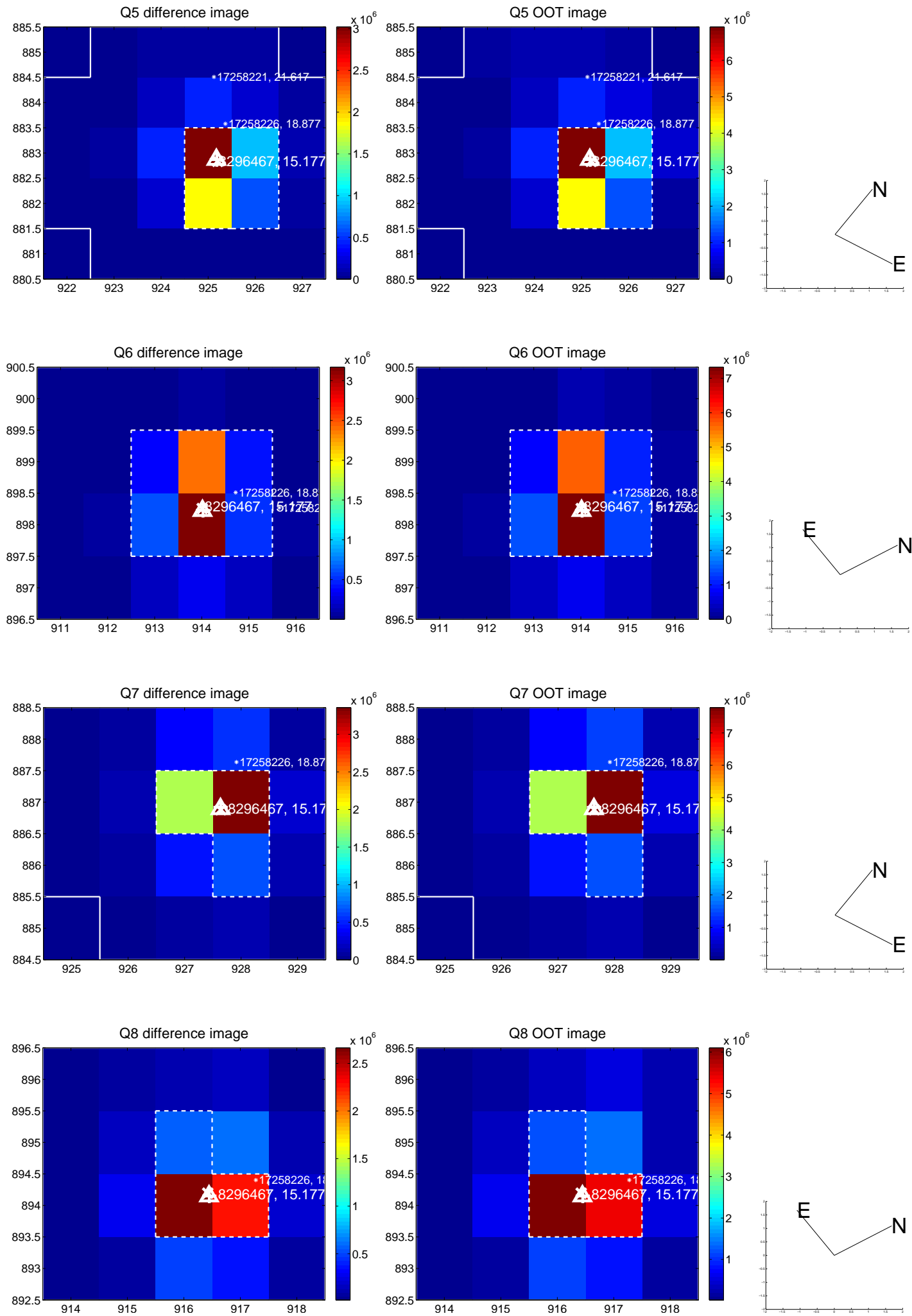


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

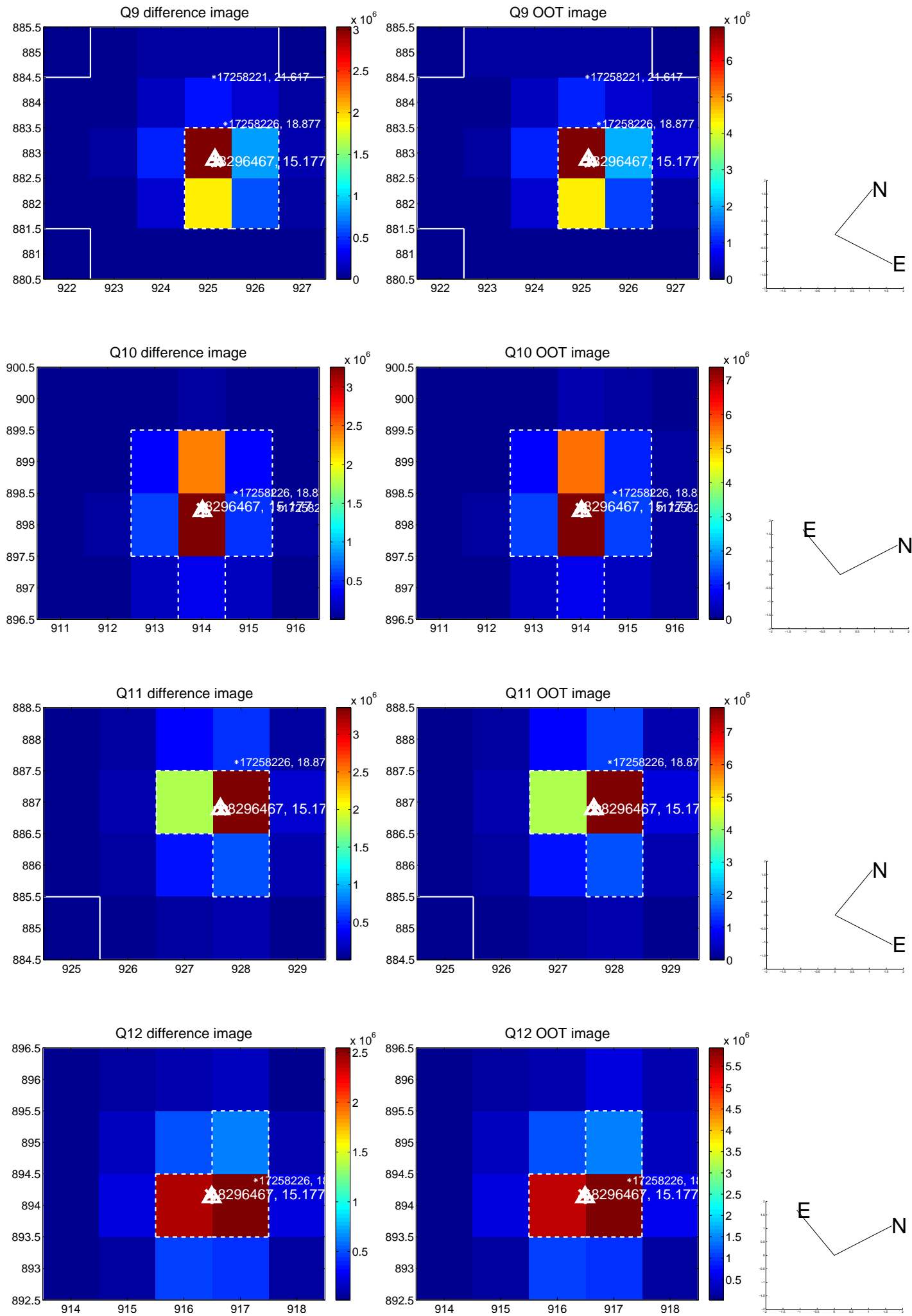
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



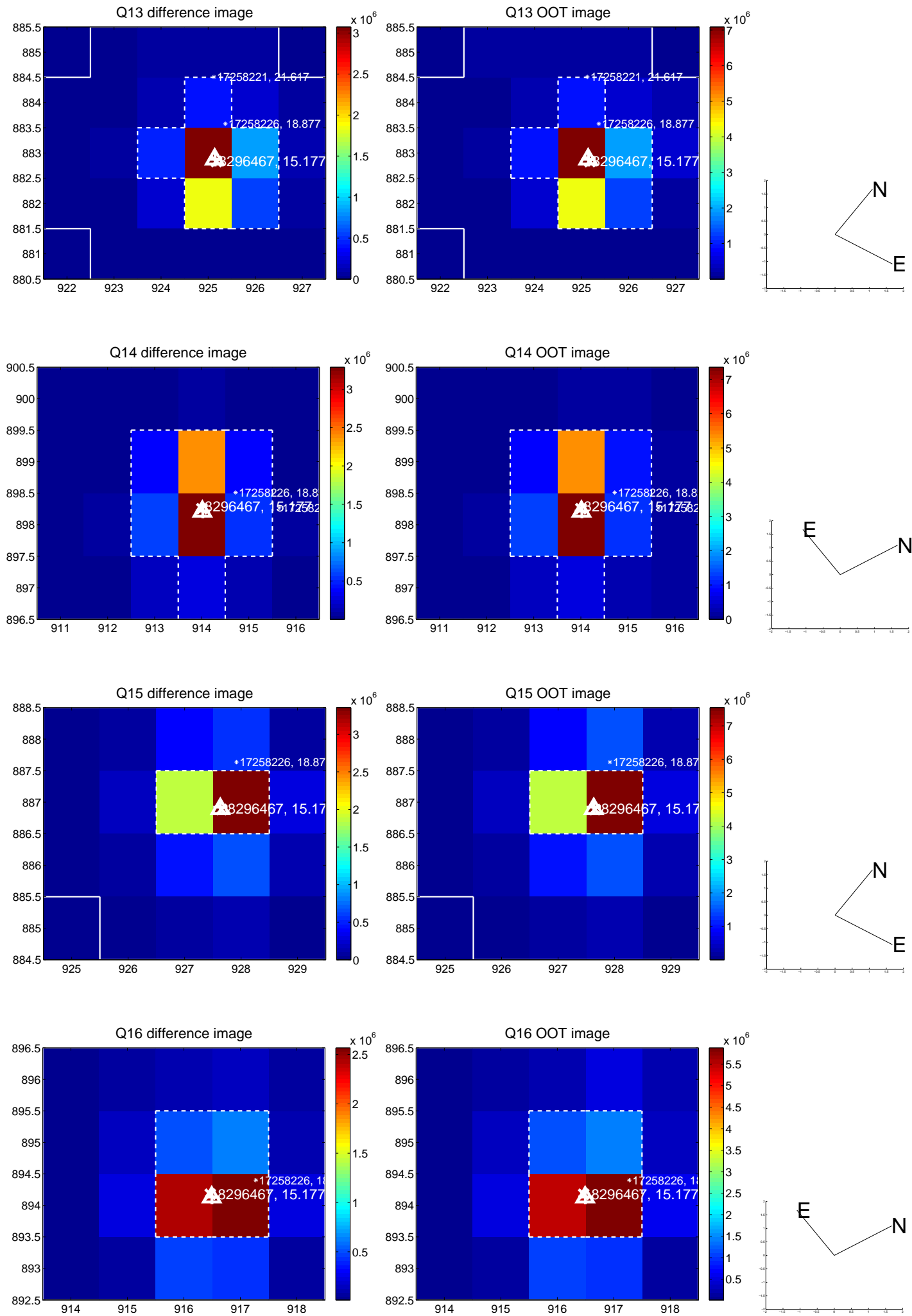
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

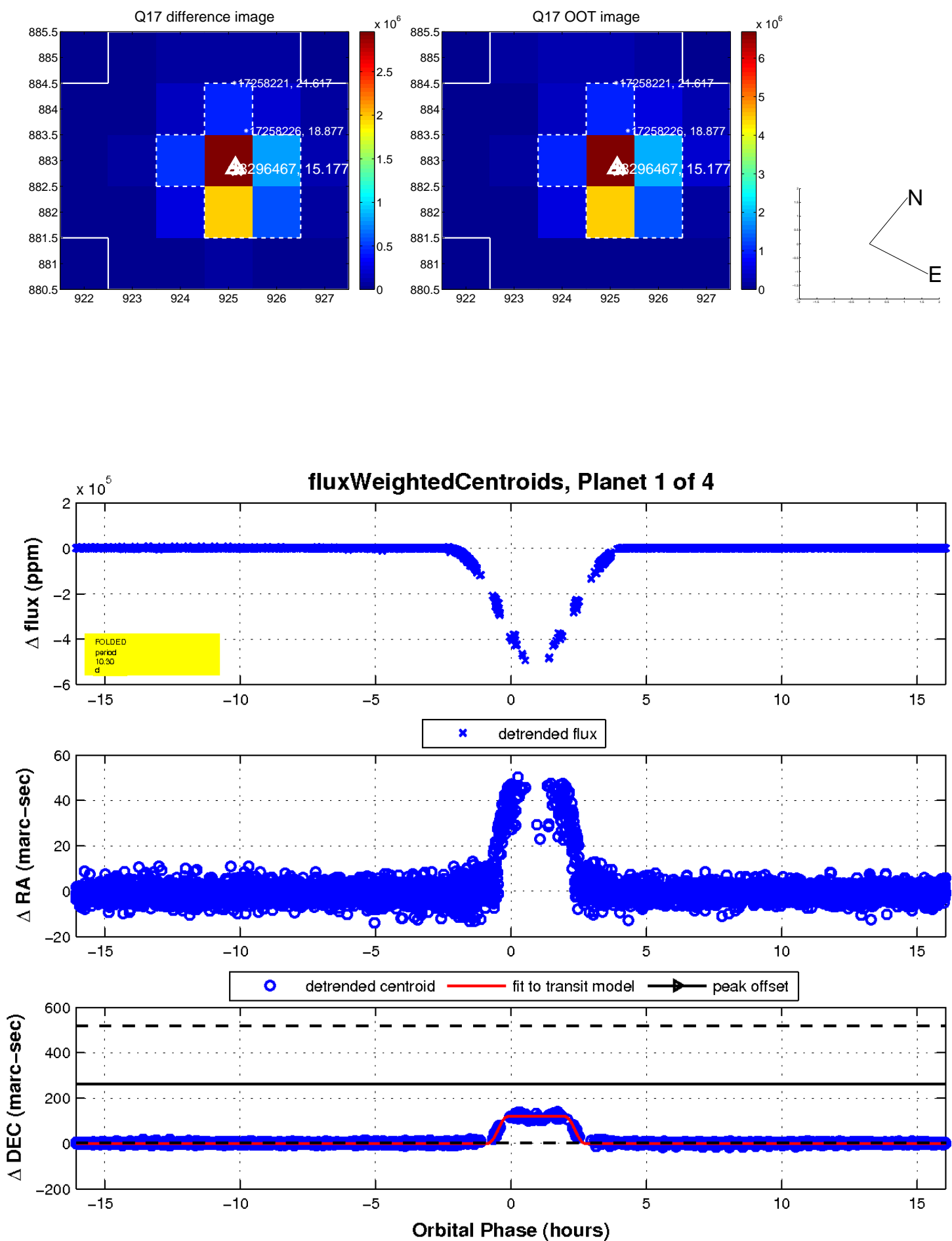


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

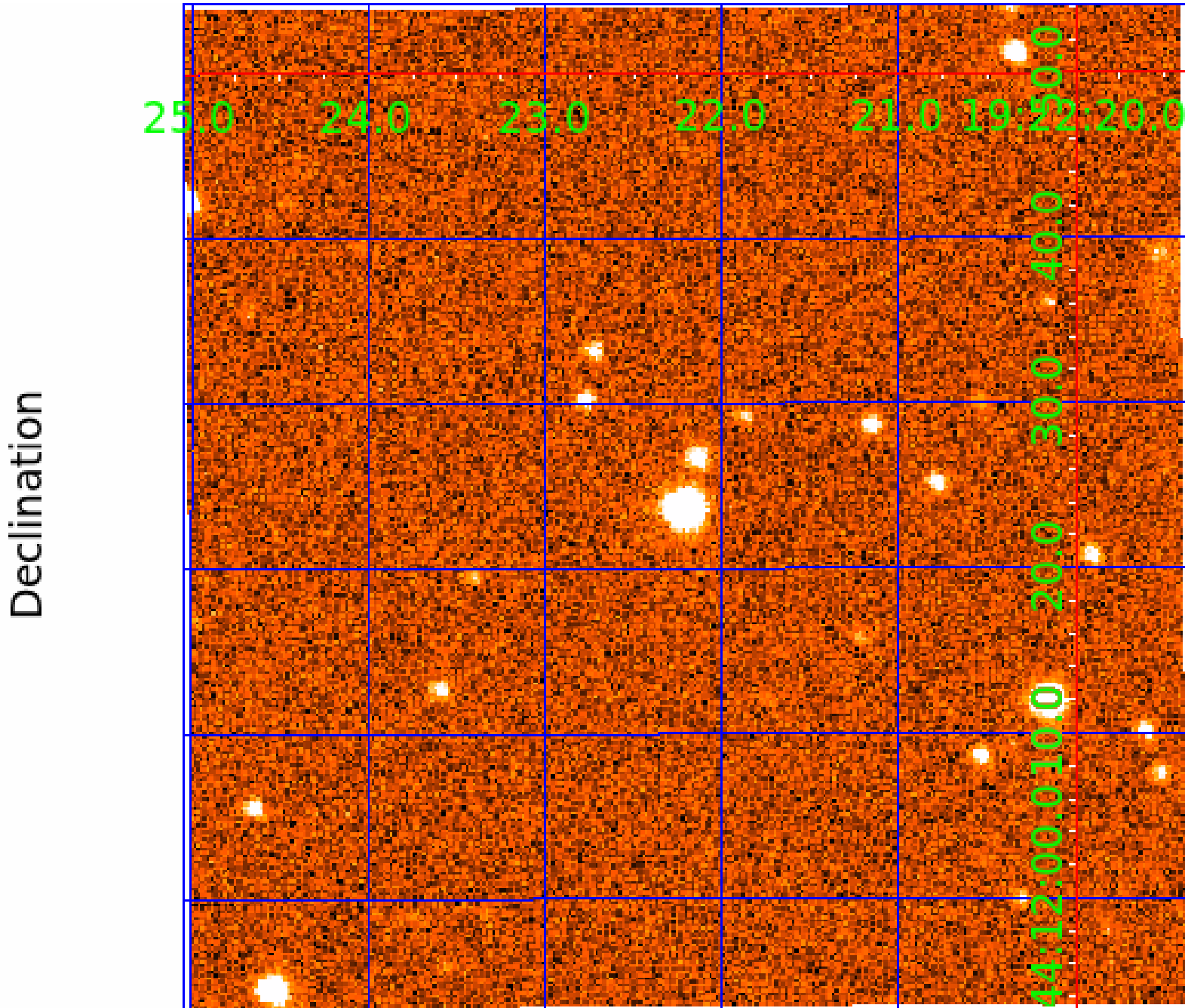




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 008296467

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008296467-01	OBS	7012.01	10.303416	137.164279	533259.1	3.500	14178.6	-1.0	0.90	5497	49.10	90.83
008296467-02	OBS	No	10.303333	133.307869	321000.1	2.500	8543.2	-1.0	0.90	5497	49.10	90.83
008296467-03	OBS	No	5.151496	131.797064	32958.3	15.000	1099.1	-1.0	0.90	5497	16.14	228.90
008296467-04	OBS	No	4.121238	134.424654	791.1	21.126	372.5	24.2	0.90	5497	3.63	308.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008296467-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
008296467-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008296467-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS
008296467-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—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.

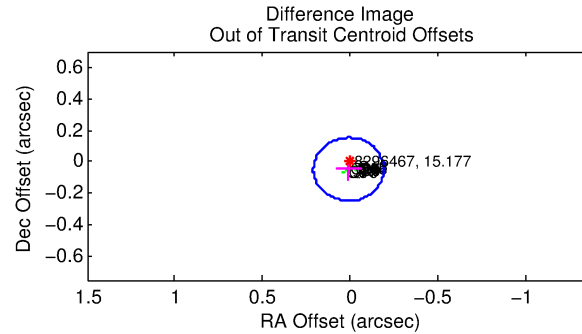
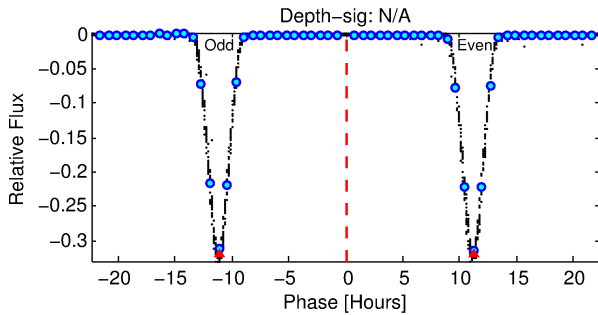
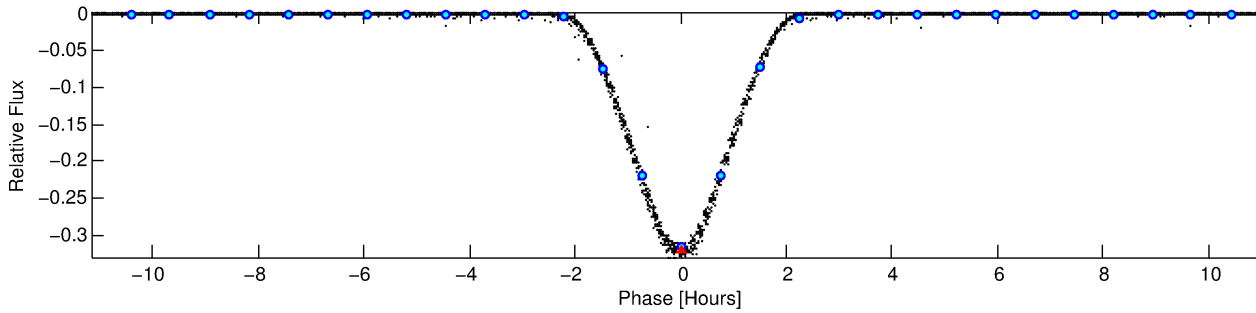
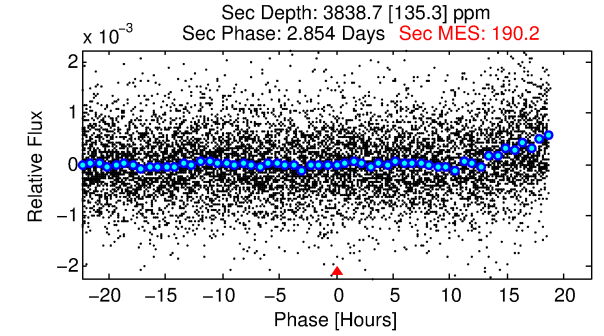
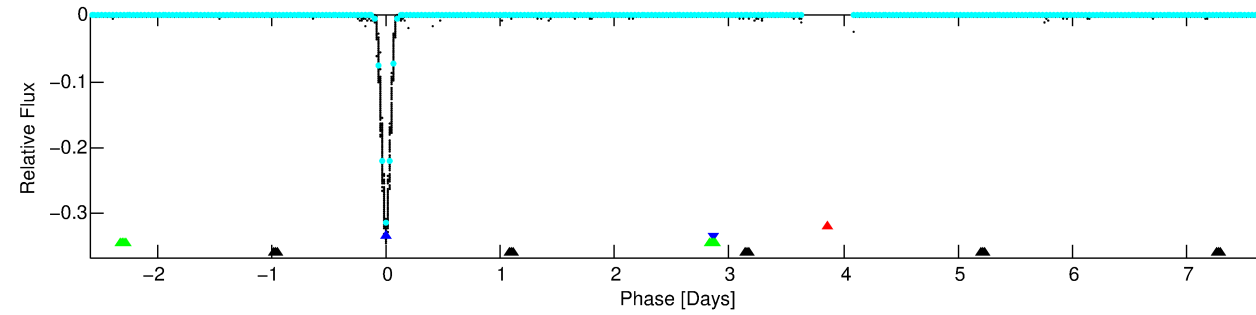
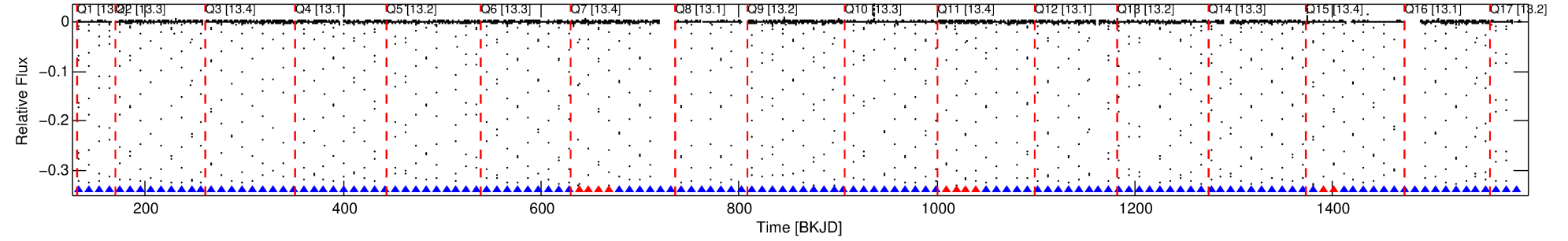
Ephemeris Match Information For 008296467-02

No Significant Match Found

# DV One-Page Summary

KIC: 8296467 Candidate: 2 of 4 Period: 10.303 d  
KOI: K07012 Corr: No Ephemeris Match

Kp: 15.18 R\*: 0.90 Rs Teff: 5497.0 K Logg: 4.42 Fe/H: -0.280



## TPS TCE Results:

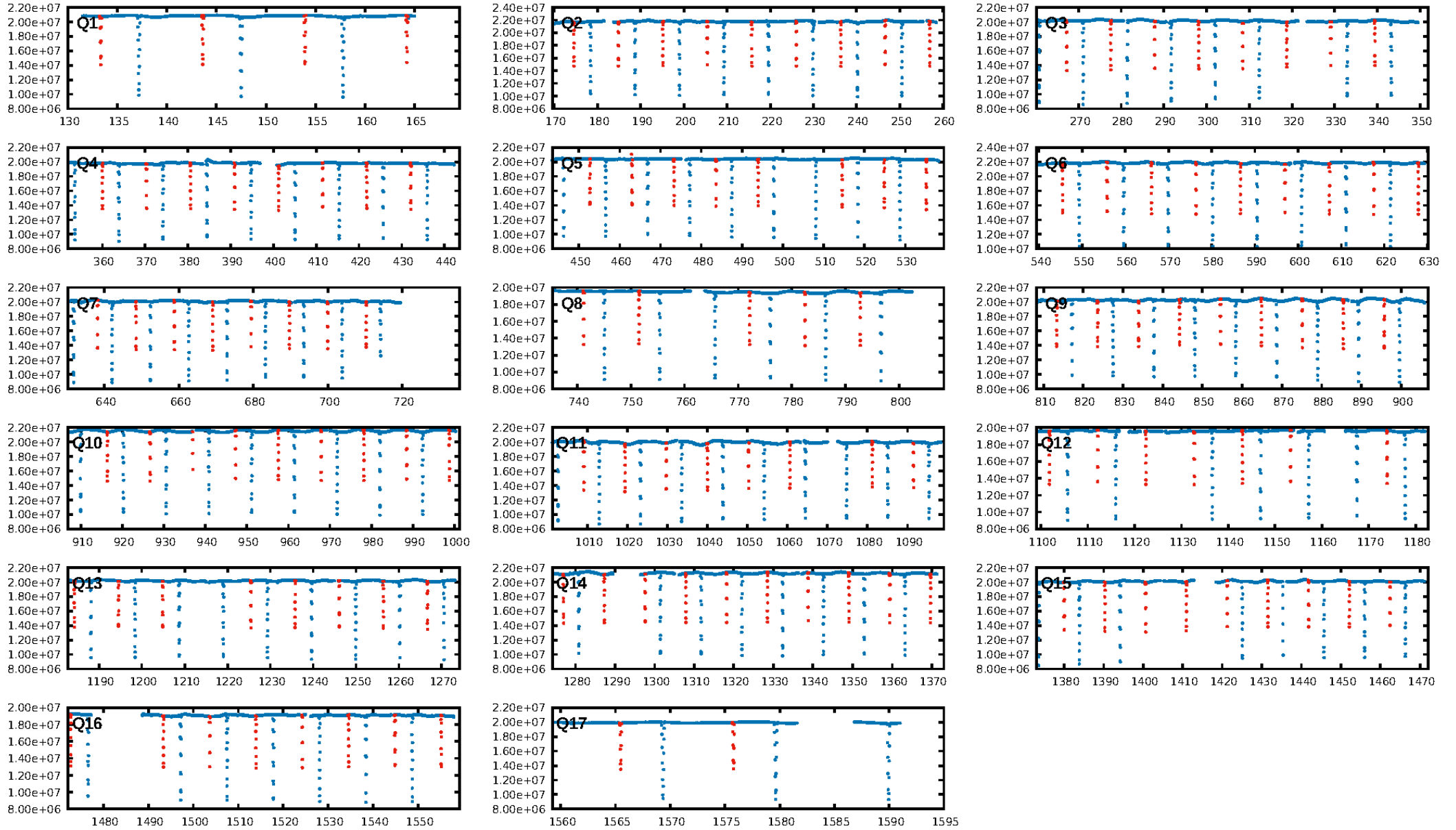
Period = 10.30333 d  
Epoch = 133.3079 BKJD

DV fit results are unavailable

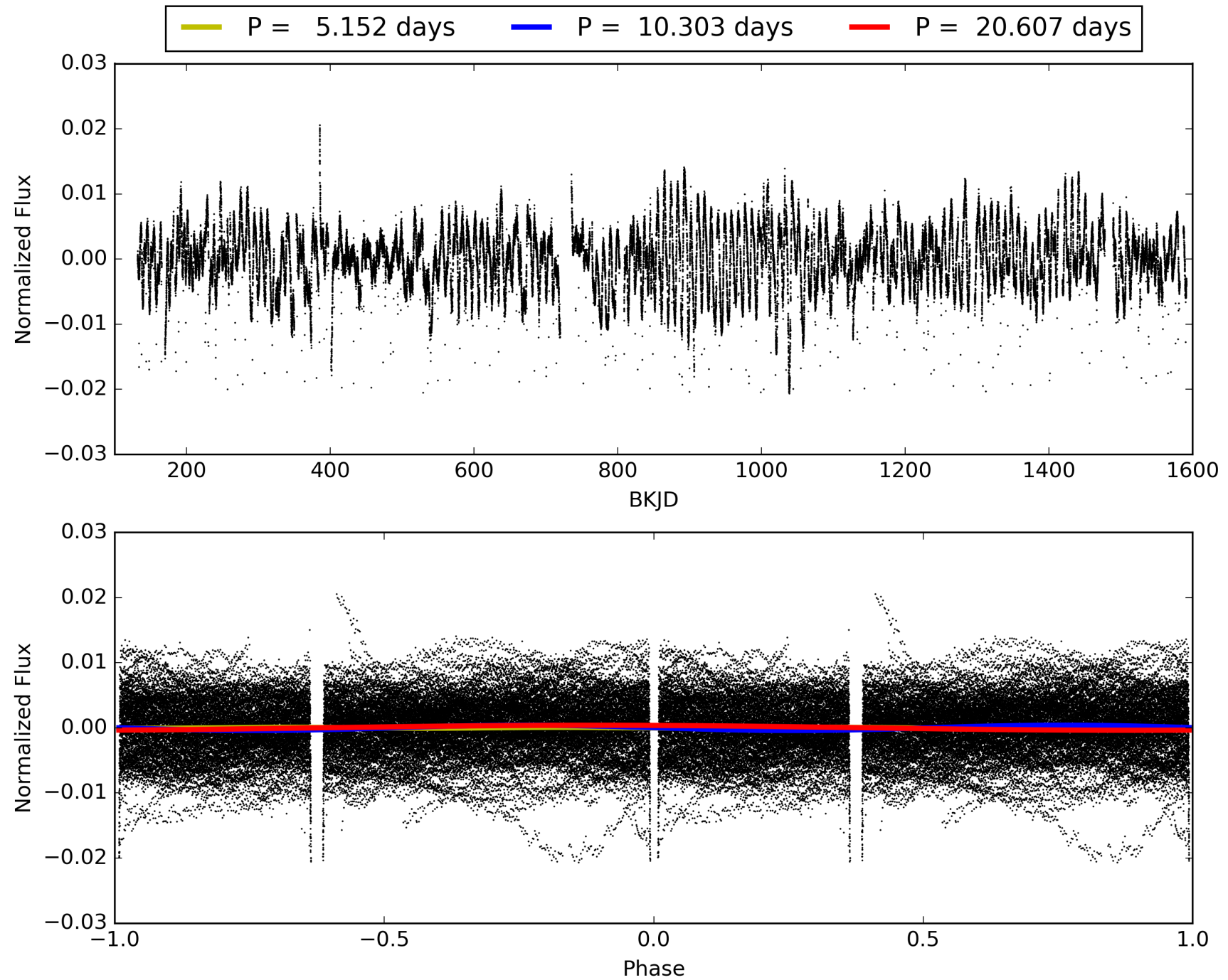
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.13 $\sigma$ ]  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.92 [112/122]  
GhostDiagnostic-chr: 1.56  
Centroid-sig: N/A  
Centroid-so: 0.038 arcsec [38.05 $\sigma$ ]  
OotOffset-rm: 0.048 arcsec [0.72 $\sigma$ ]  
KicOffset-rm: 0.135 arcsec [1.99 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 008296467-02, PDC Light Curves

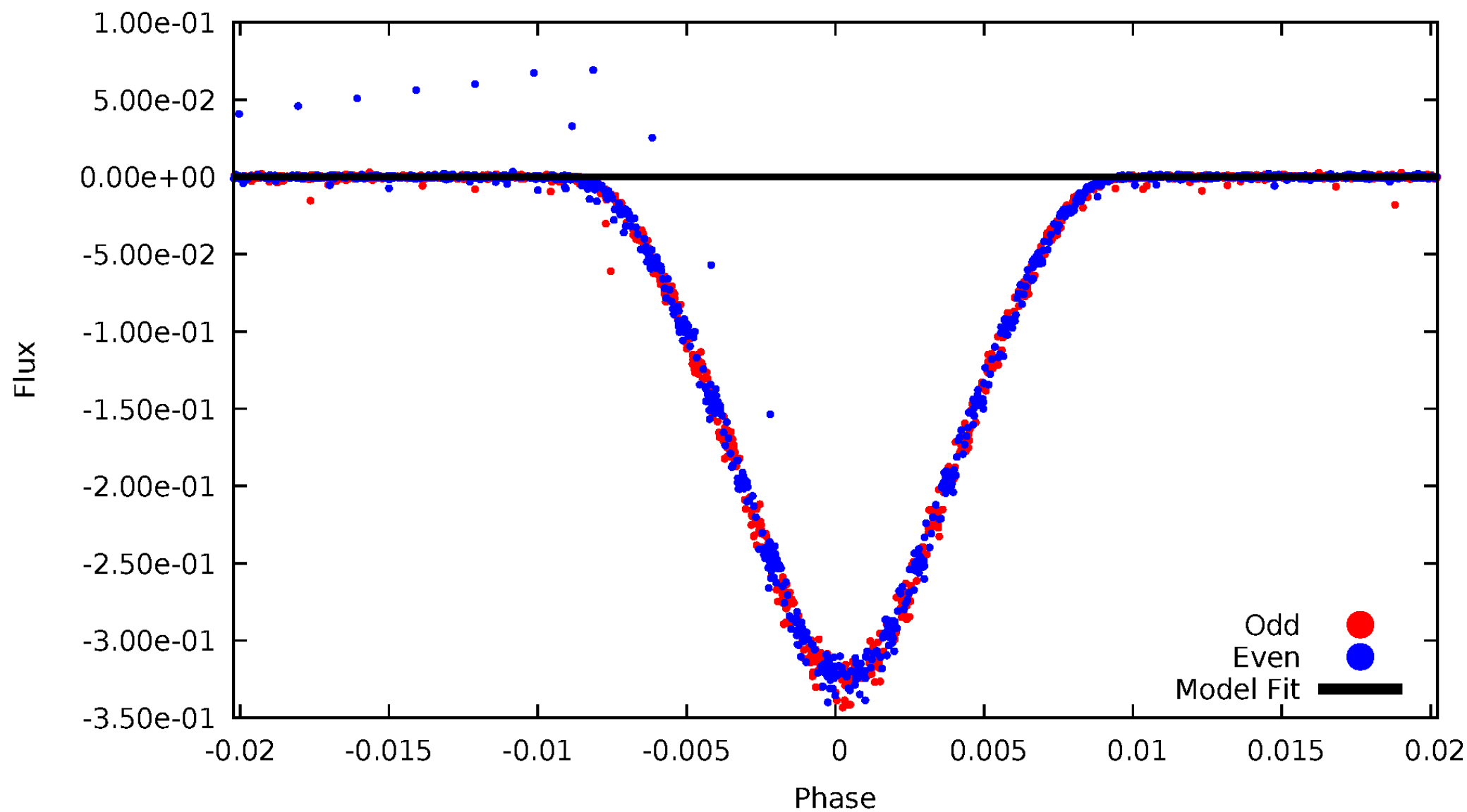


TCE 008296467-02



# DV Odd/Even

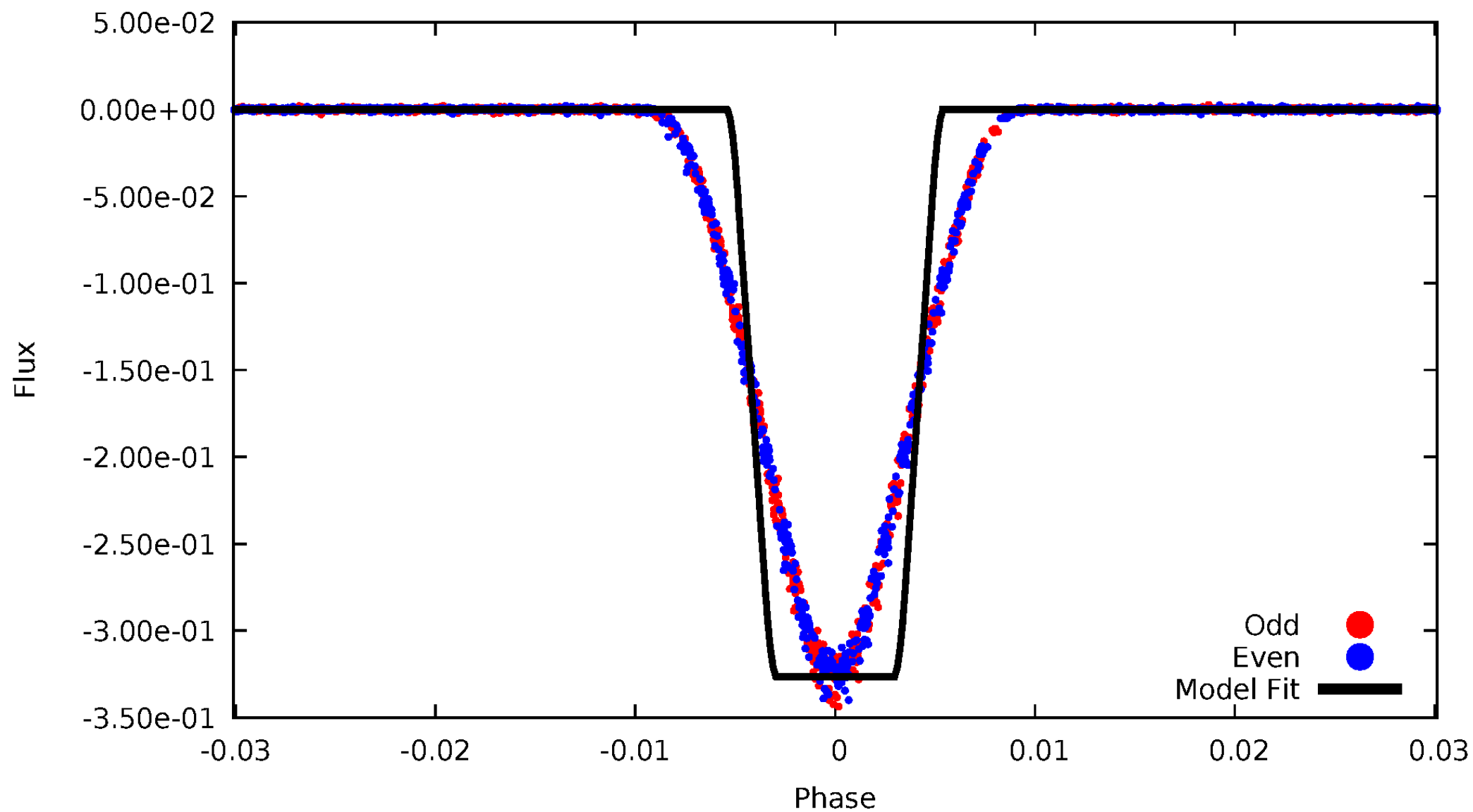
TCE 008296467-02





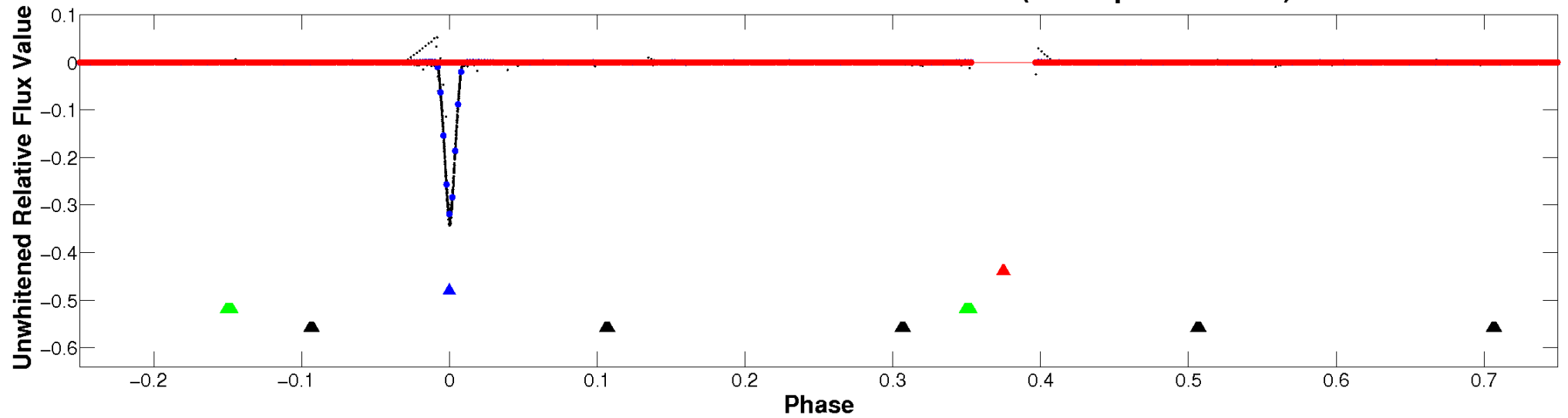
# ALT Odd/Even

TCE 008296467-02

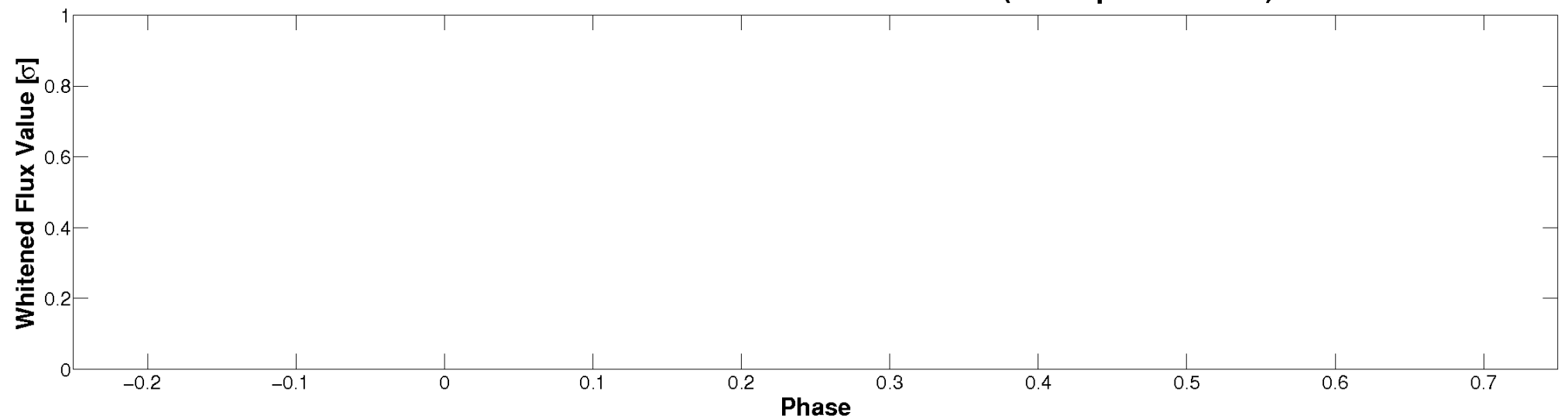


# Non-Whitened Vs. Whitened Light Curve

**Planet 2 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

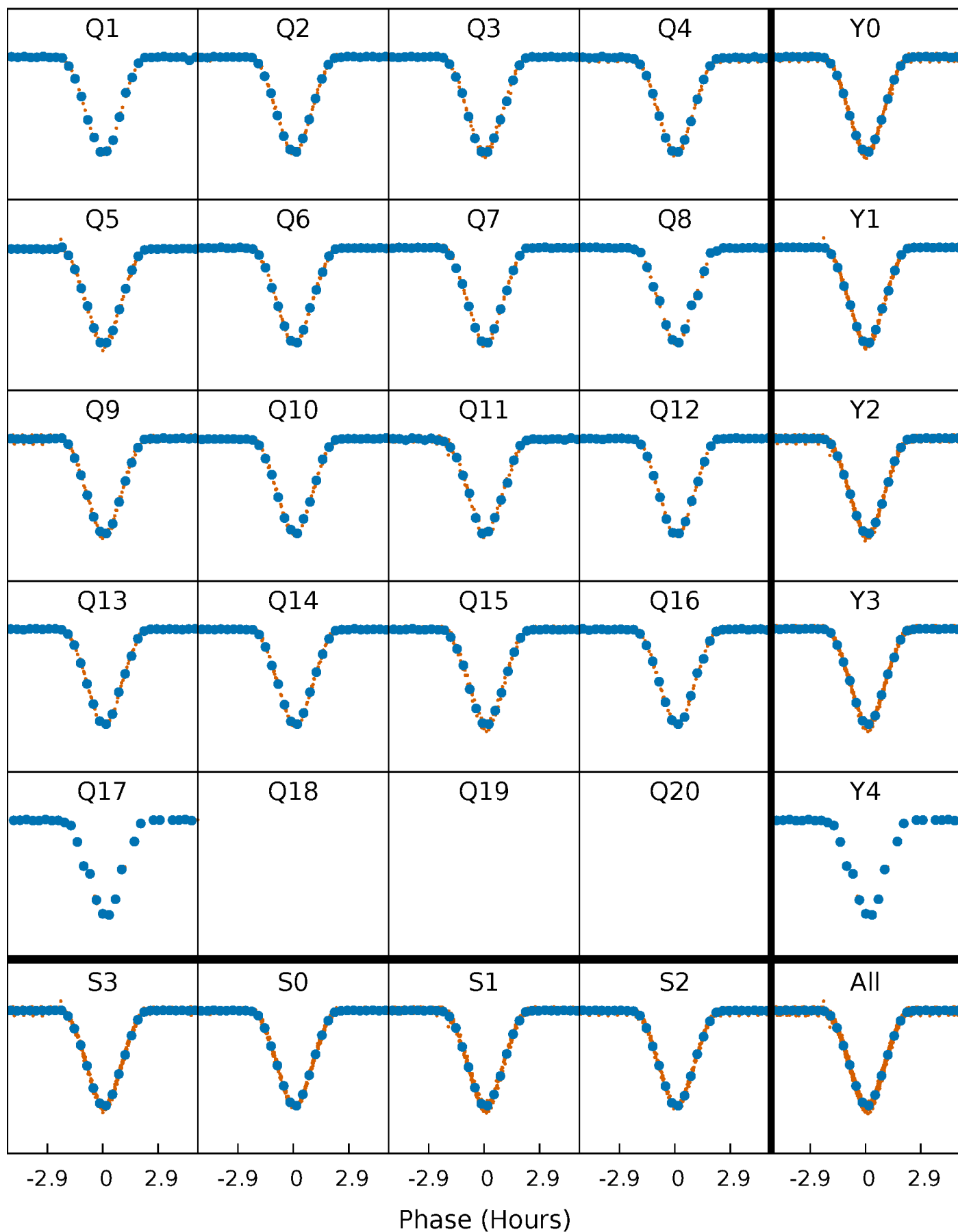


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



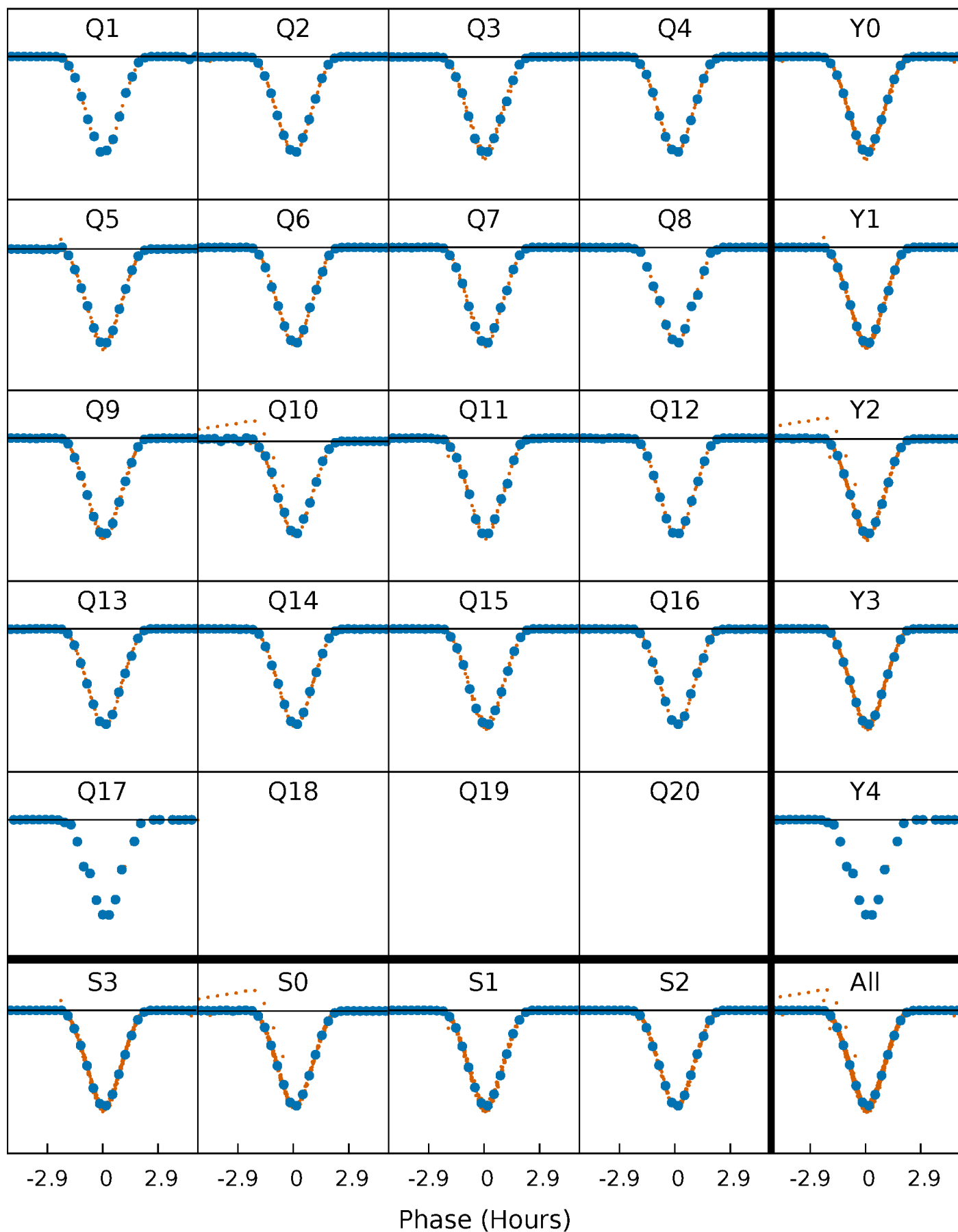
# PDC Quarter-Phased Transit Curves

TCE 008296467-02 P= 10.303333 Days  $T_0=133.307869$  (BKJD)



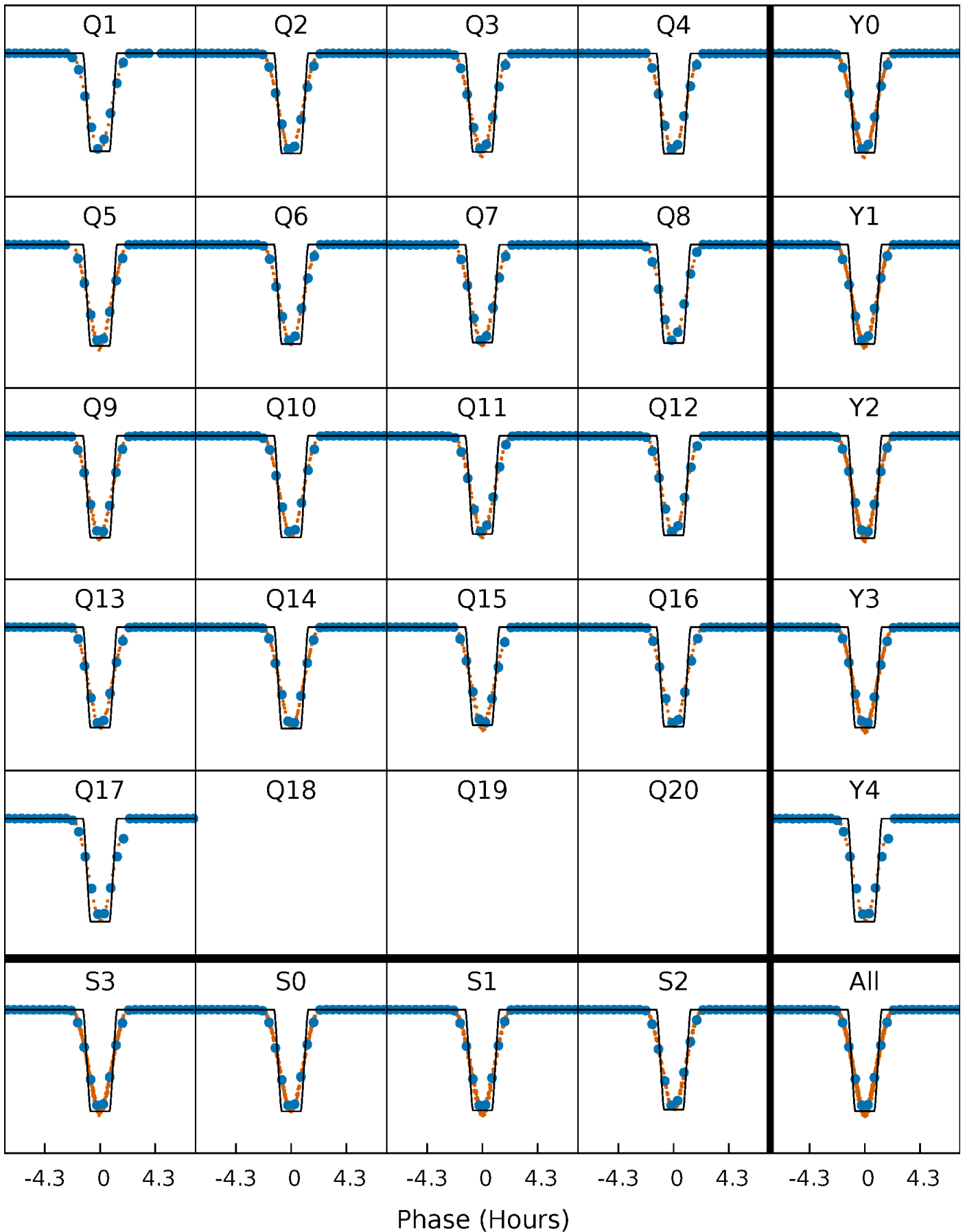
# DV Quarter-Phased Transit Curves

TCE 008296467-02 P= 10.303333 Days  $T_0=133.307869$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

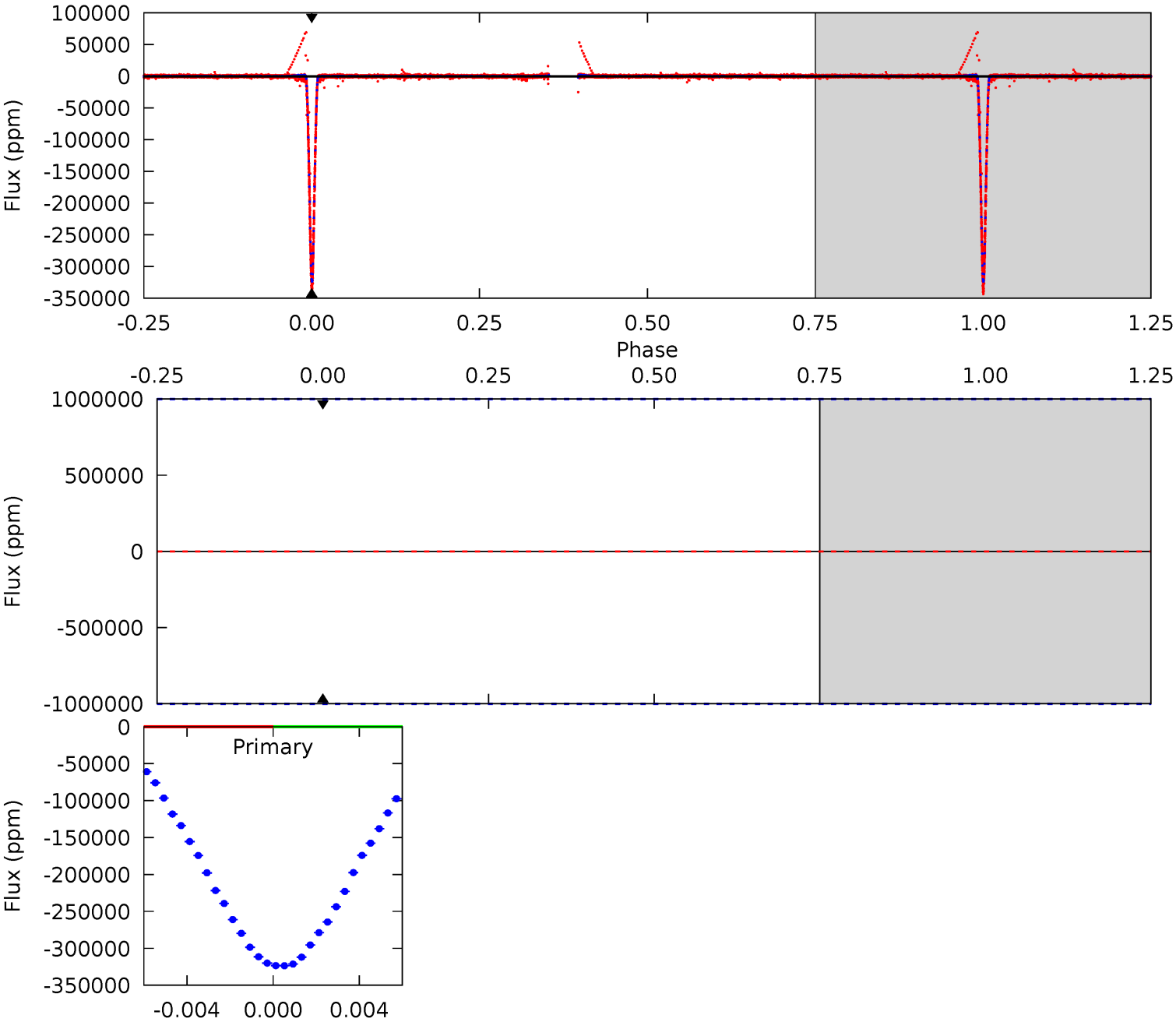
TCE 008296467-02     $P = 10.303333$  Days     $T_0 = 133.311296$  (BKJD)



# DV Model-Shift Uniqueness Test

008296467-02, P = 10.303333 Days, E = 123.004536 Days

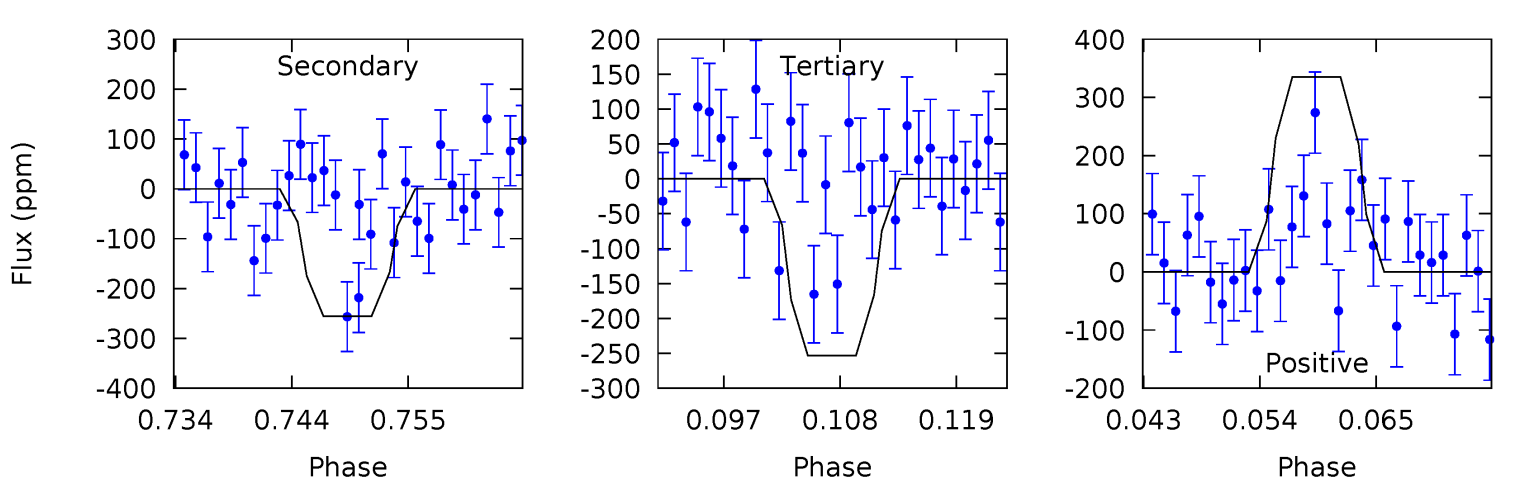
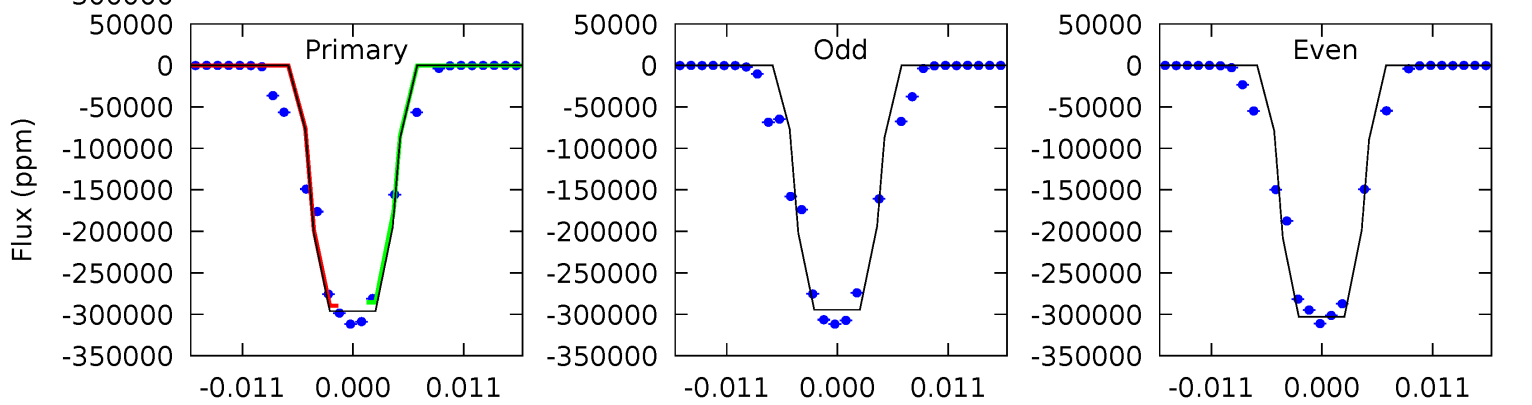
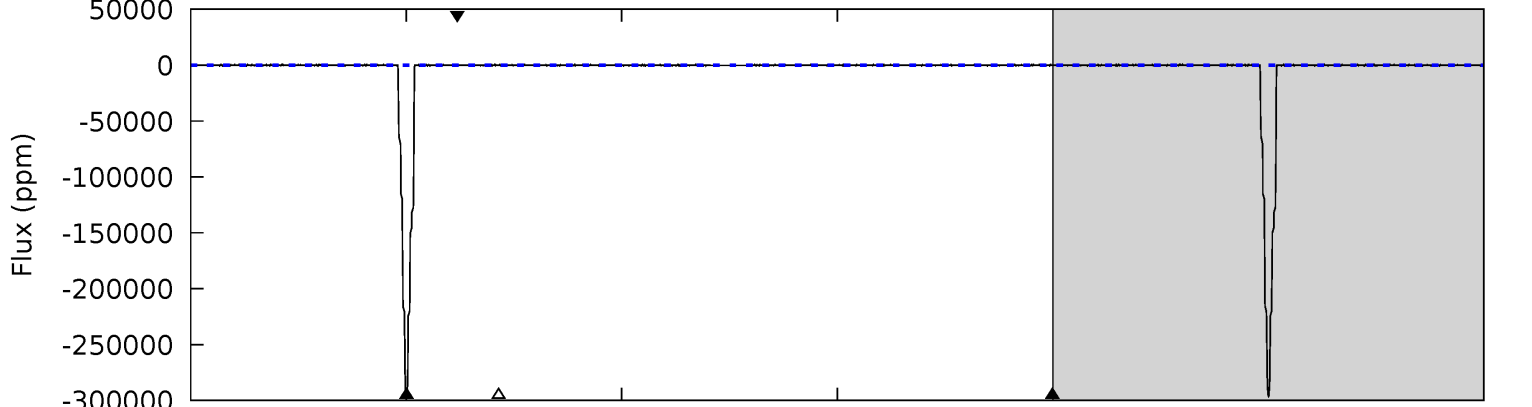
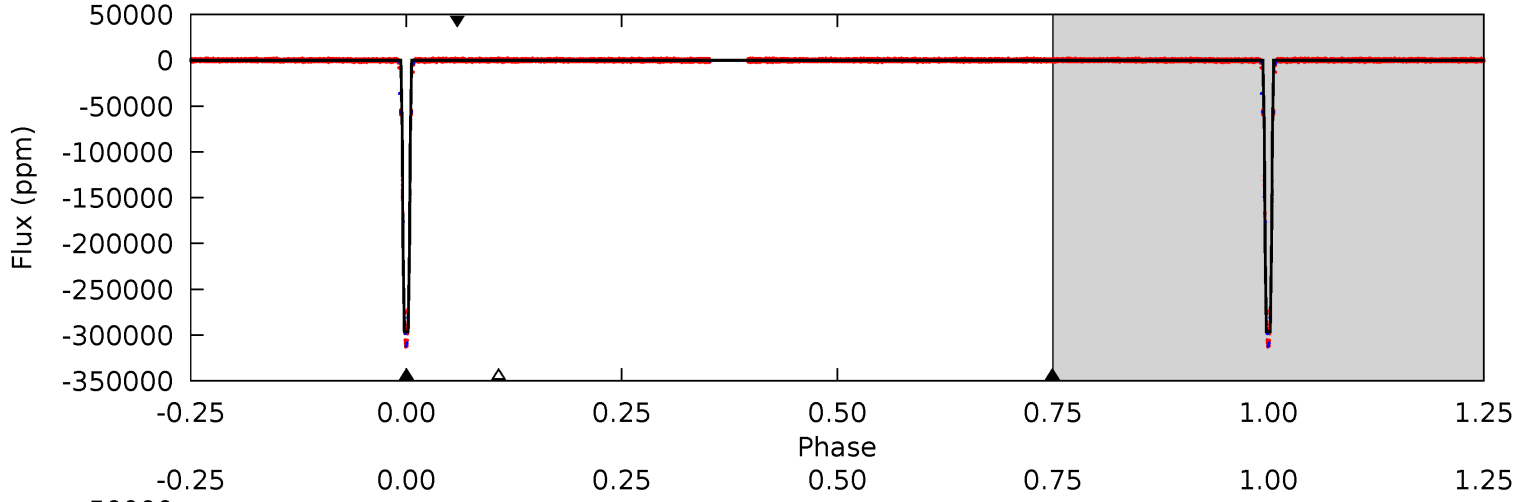
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008296467-02, P = 10.303333 Days, E = 123.007963 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
4794	4.13	4.10	5.43	5.01	2.55	1.21	4790	4789	0.03	-1.29	72.1	1.00	0.00	0



### Stellar Parameters For KIC 008296467

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5497^{+166}_{-149}$	$4.423^{+0.149}_{-0.182}$	$-0.280^{+0.300}_{-0.300}$	$0.900^{+0.211}_{-0.141}$	$0.782^{+0.120}_{-0.055}$	$1.514^{+0.980}_{-0.693}$
	+3%/-3%	+3%/-4%	+107%/-107%	+23%/-16%	+15%/-7%	+65%/-46%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008296467-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$49.50^{+13.62}_{-10.97}$	$1107^{+72}_{-64}$	$2698^{+1975}_{-7147}$	$6.385^{+189.637}_{-160.196}$
Alt.	$-255 \pm 62$	$57.04^{+12.93}_{-11.40}$	$1103^{+71}_{-62}$	$1511^{+335}_{-3273}$	$0.320^{+0.196}_{-0.128}$

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



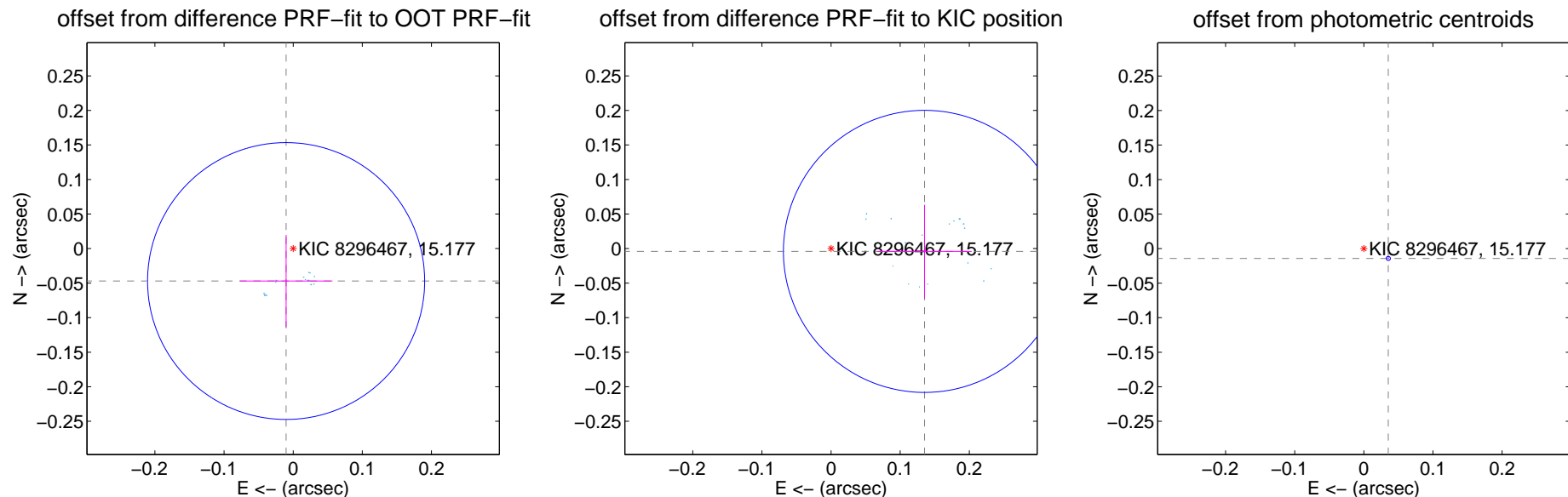
## DV Centroid Data

Supplemental centroid analysis for 008296467-02. Kepler magnitude: 15.18. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

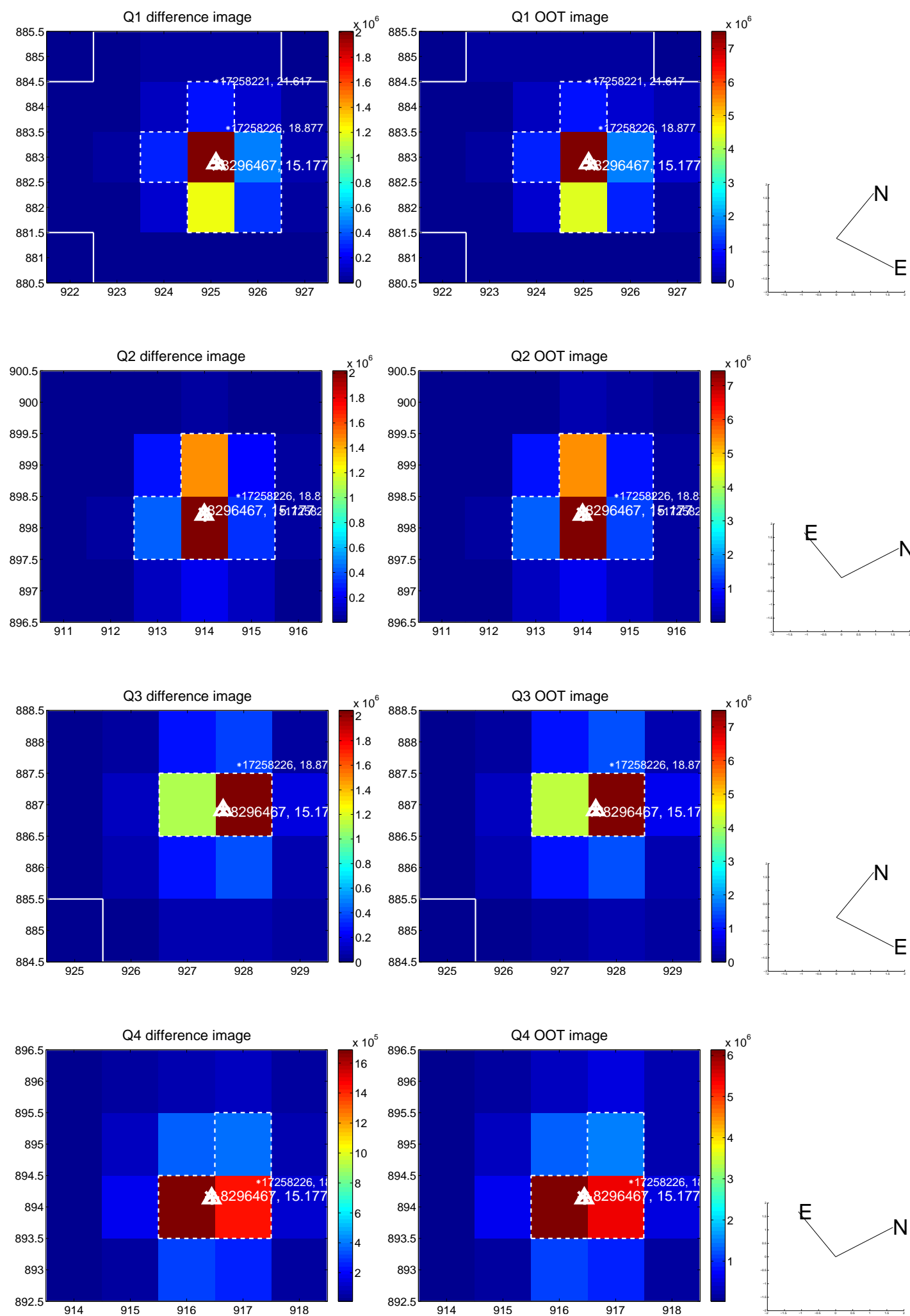
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.048 \pm 0.067$	0.72	$0.010 \pm 0.067$	$-0.047 \pm 0.067$
PRF-fit source offset from KIC position	$0.135 \pm 0.068$	1.99	$-0.135 \pm 0.068$	$-0.004 \pm 0.067$
photometric centroid source offset	$0.04 \pm 0.00$	38.05	$-0.04 \pm 0.00$	$-0.01 \pm 0.00$

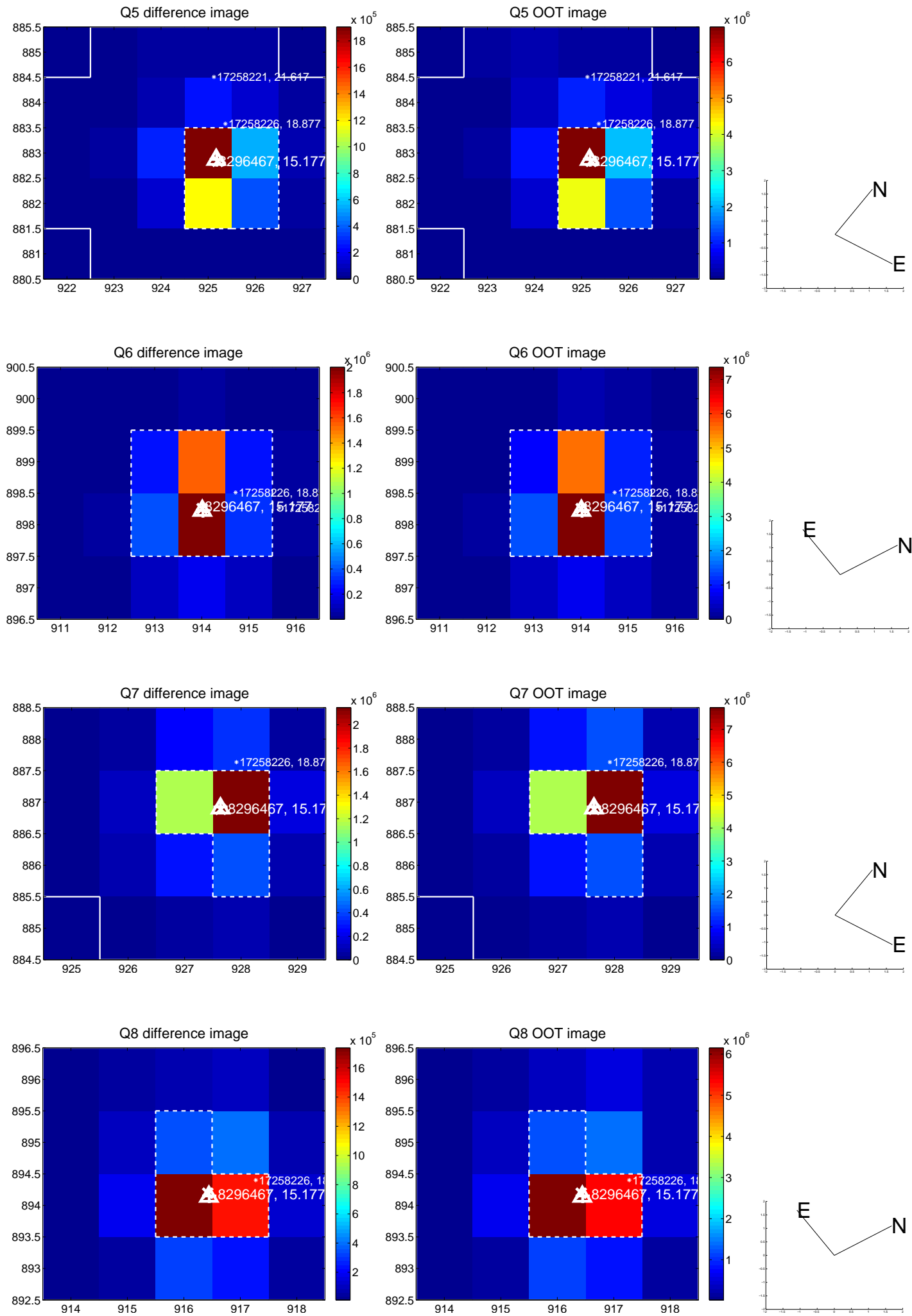


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

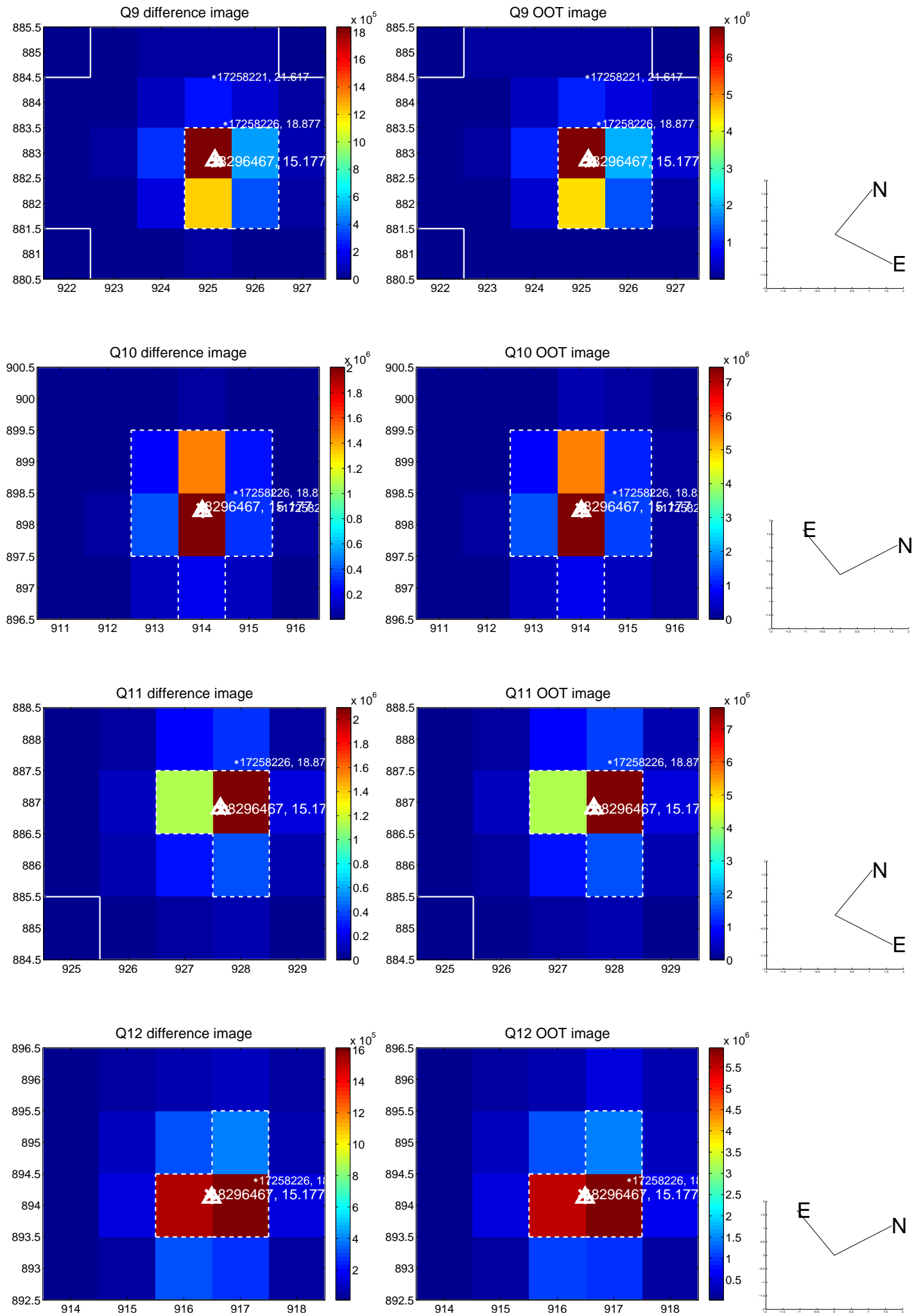
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



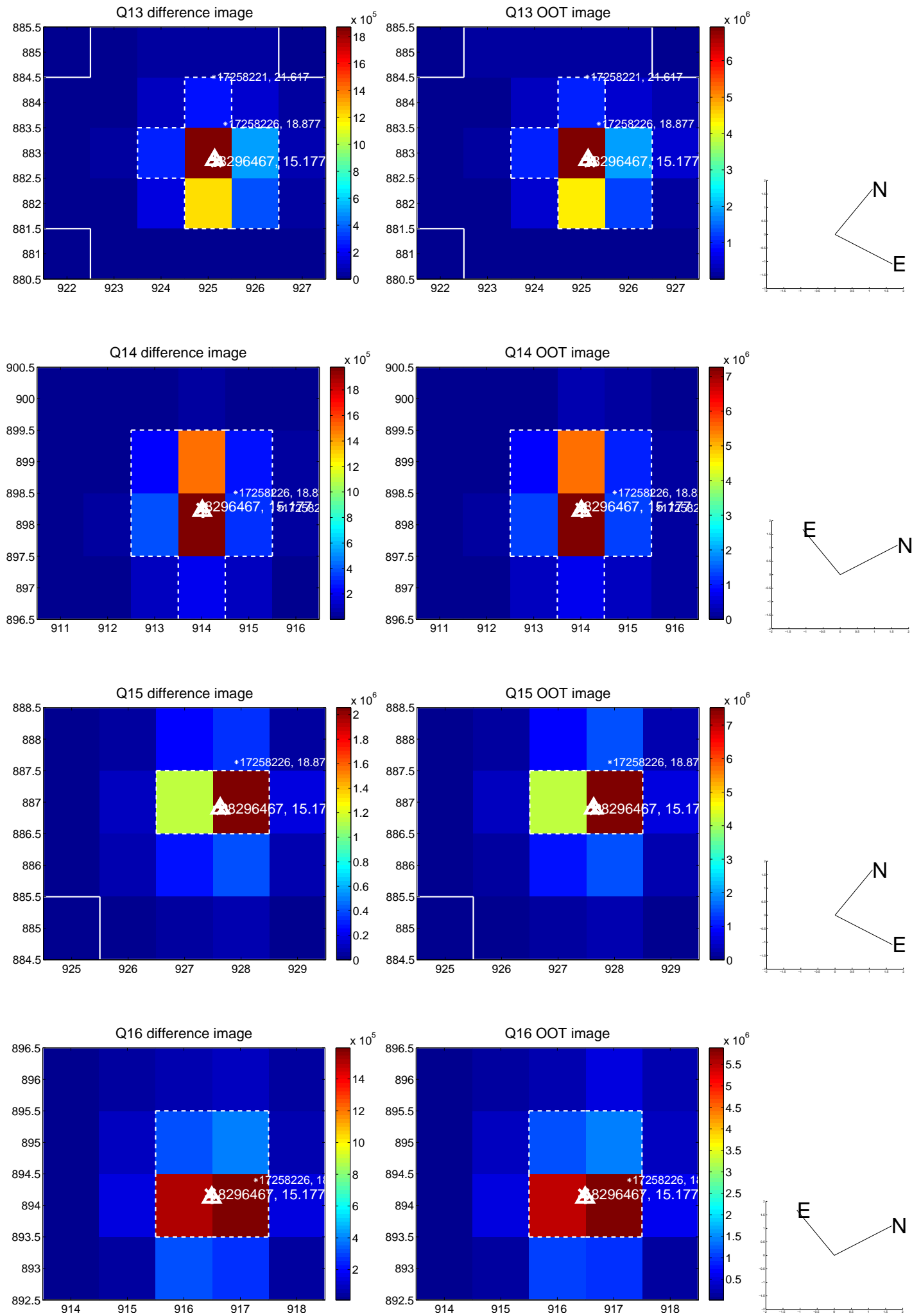
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



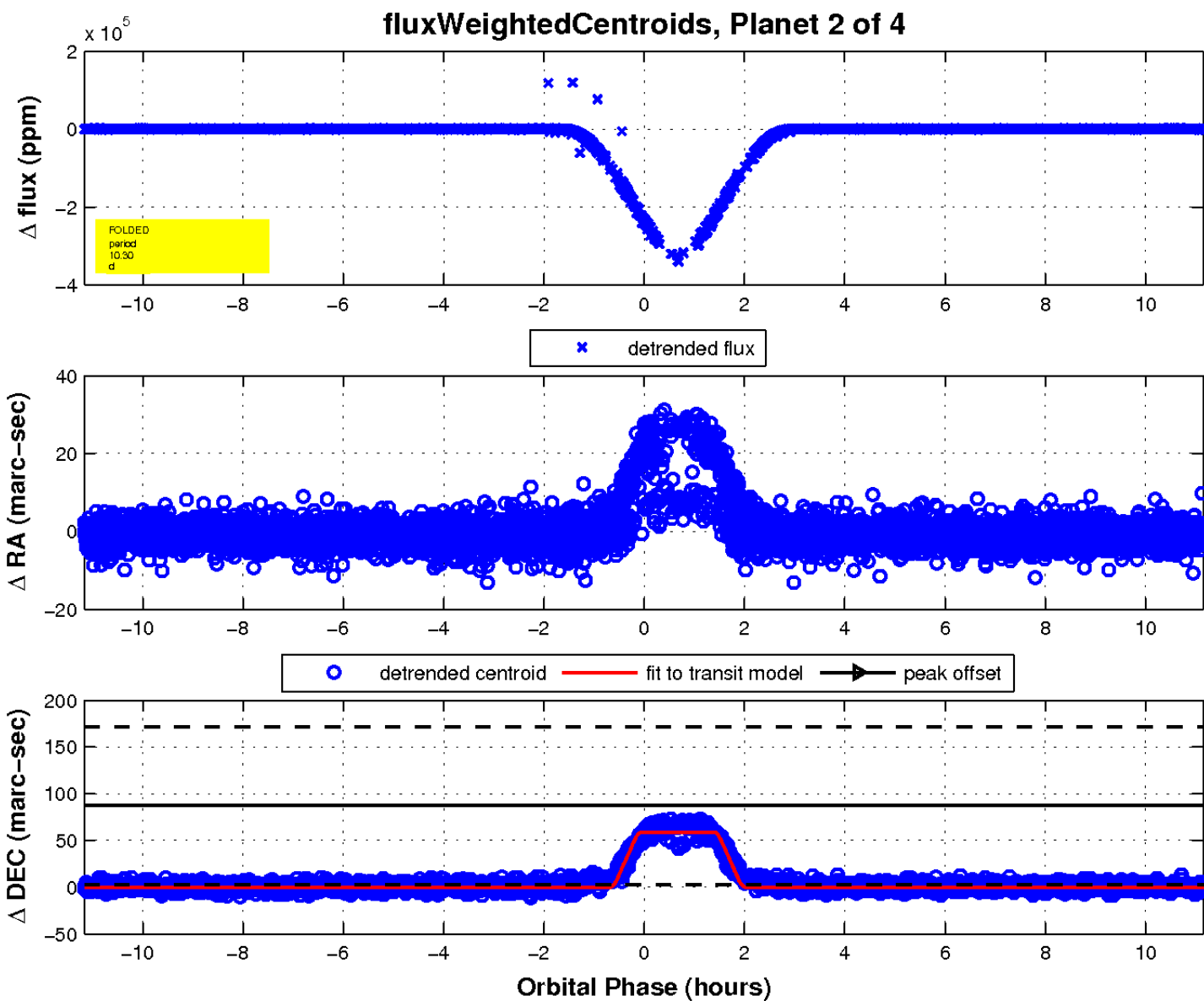
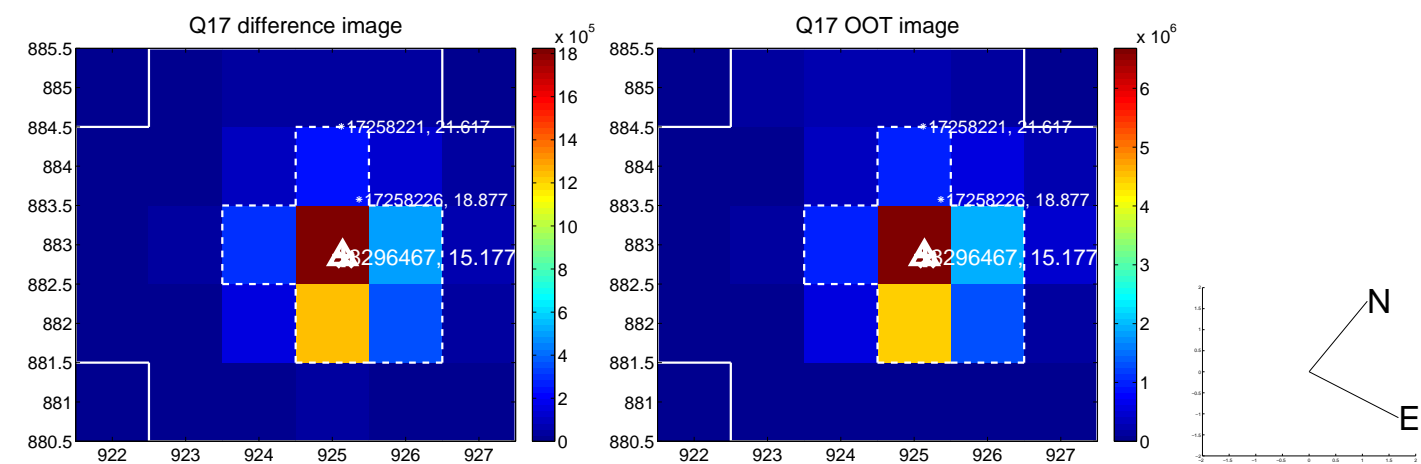
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



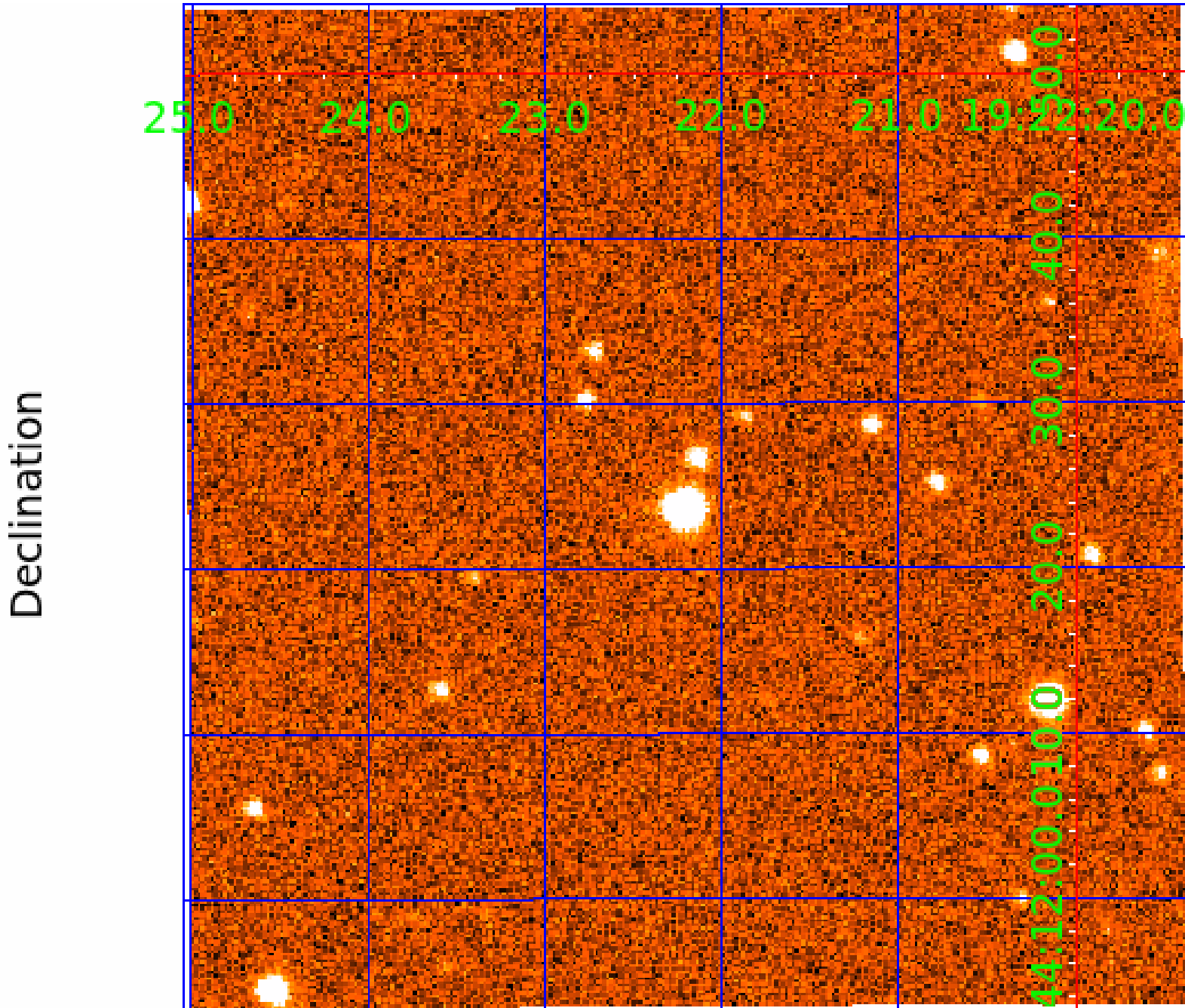
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 008296467

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008296467-01	OBS	7012.01	10.303416	137.164279	533259.1	3.500	14178.6	-1.0	0.90	5497	49.10	90.83
008296467-02	OBS	No	10.303333	133.307869	321000.1	2.500	8543.2	-1.0	0.90	5497	49.10	90.83
008296467-03	OBS	No	5.151496	131.797064	32958.3	15.000	1099.1	-1.0	0.90	5497	16.14	228.90
008296467-04	OBS	No	4.121238	134.424654	791.1	21.126	372.5	24.2	0.90	5497	3.63	308.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008296467-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
008296467-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008296467-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS
008296467-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—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 008296467-03

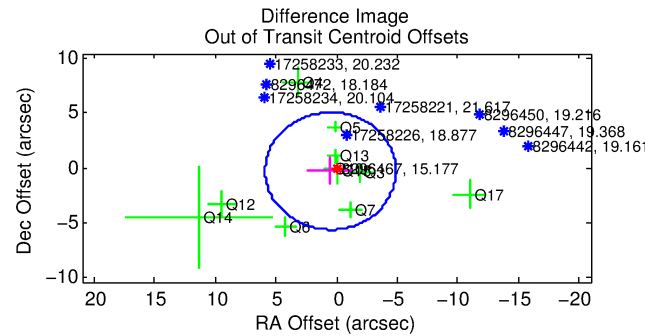
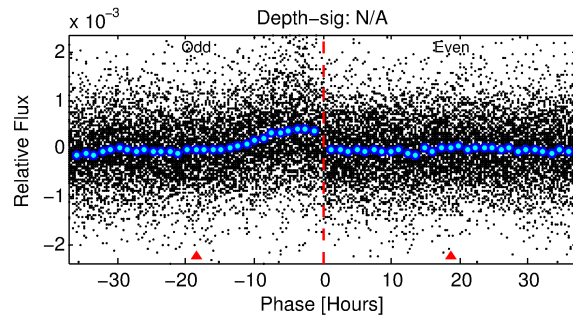
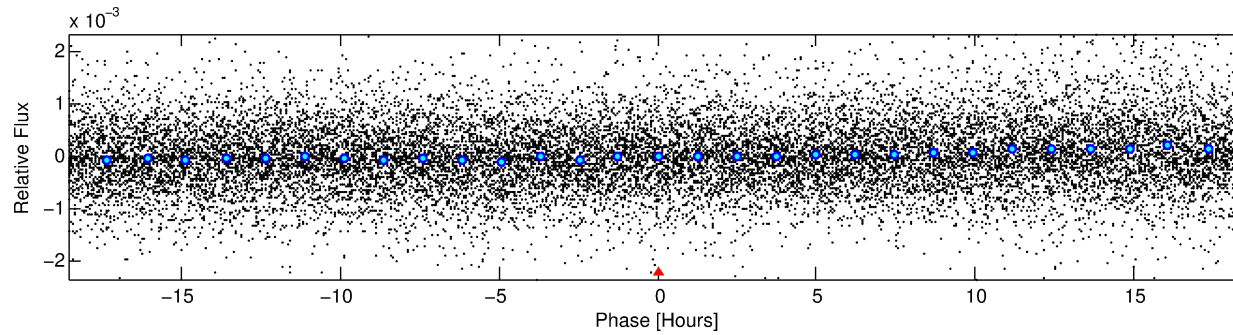
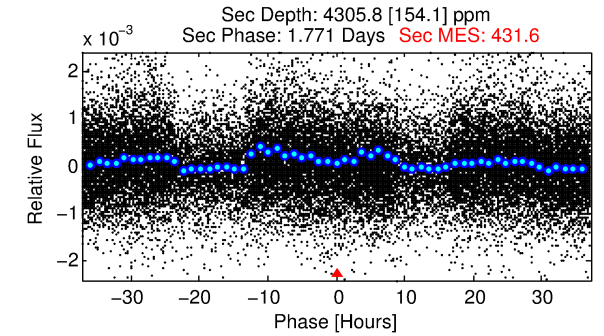
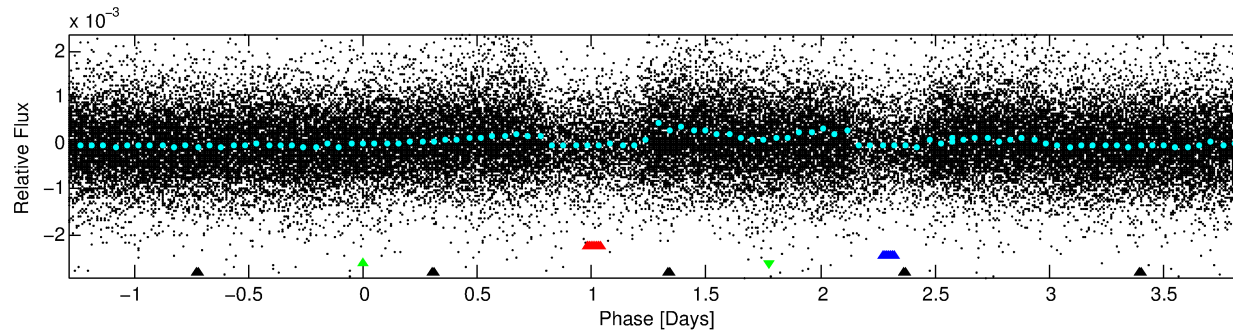
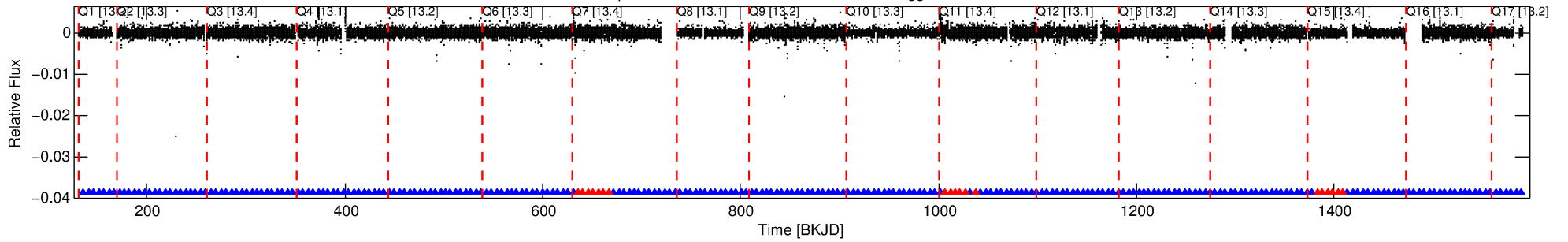
No Significant Match Found



# DV One-Page Summary

KIC: 8296467 Candidate: 3 of 4 Period: 5.151 d  
KOI: K07012 Corr: No Ephemeris Match

Kp: 15.18 R\*: 0.90 Rs Teff: 5497.0 K Logg: 4.42 Fe/H: -0.280



## TPS TCE Results:

Period = 5.1510 d  
Epoch = 131.7971 BKJD

DV fit results are unavailable

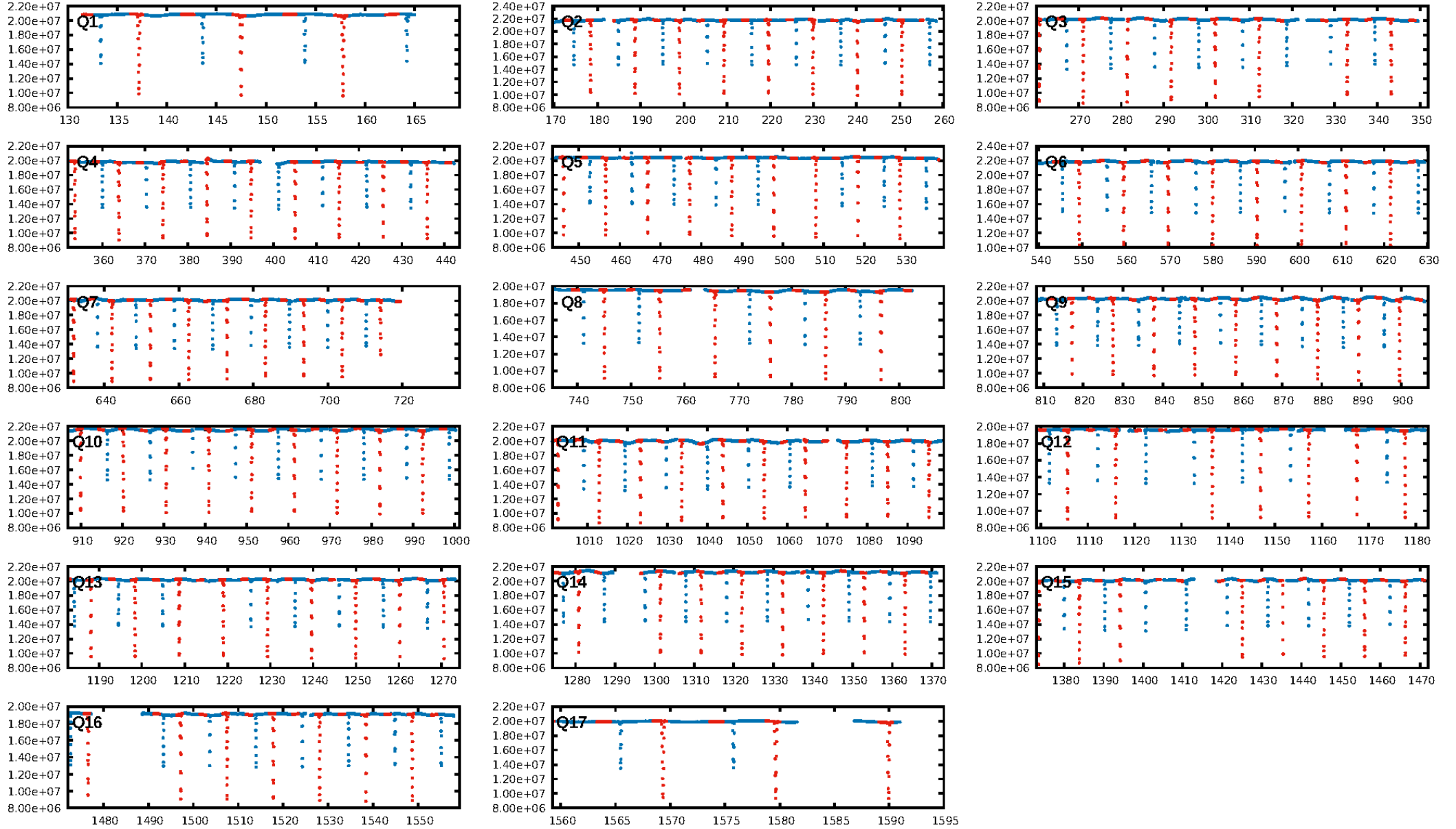
## DV Diagnostic Results:

ShortPeriod-sig: 66.0% [0.95σ]  
LongPeriod-sig: 100.0% [8.13σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.92 [230/249]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.580 arcsec [0.32σ]  
KicOffset-rm: 0.422 arcsec [0.27σ]  
OotOffset-st: 3/3/2/3 [11]  
KicOffset-st: 3/3/2/3 [11]  
DiffImageQuality-fgm: 0.00 [0/11]  
DiffImageOverlap-fno: 1.00 [17/17]

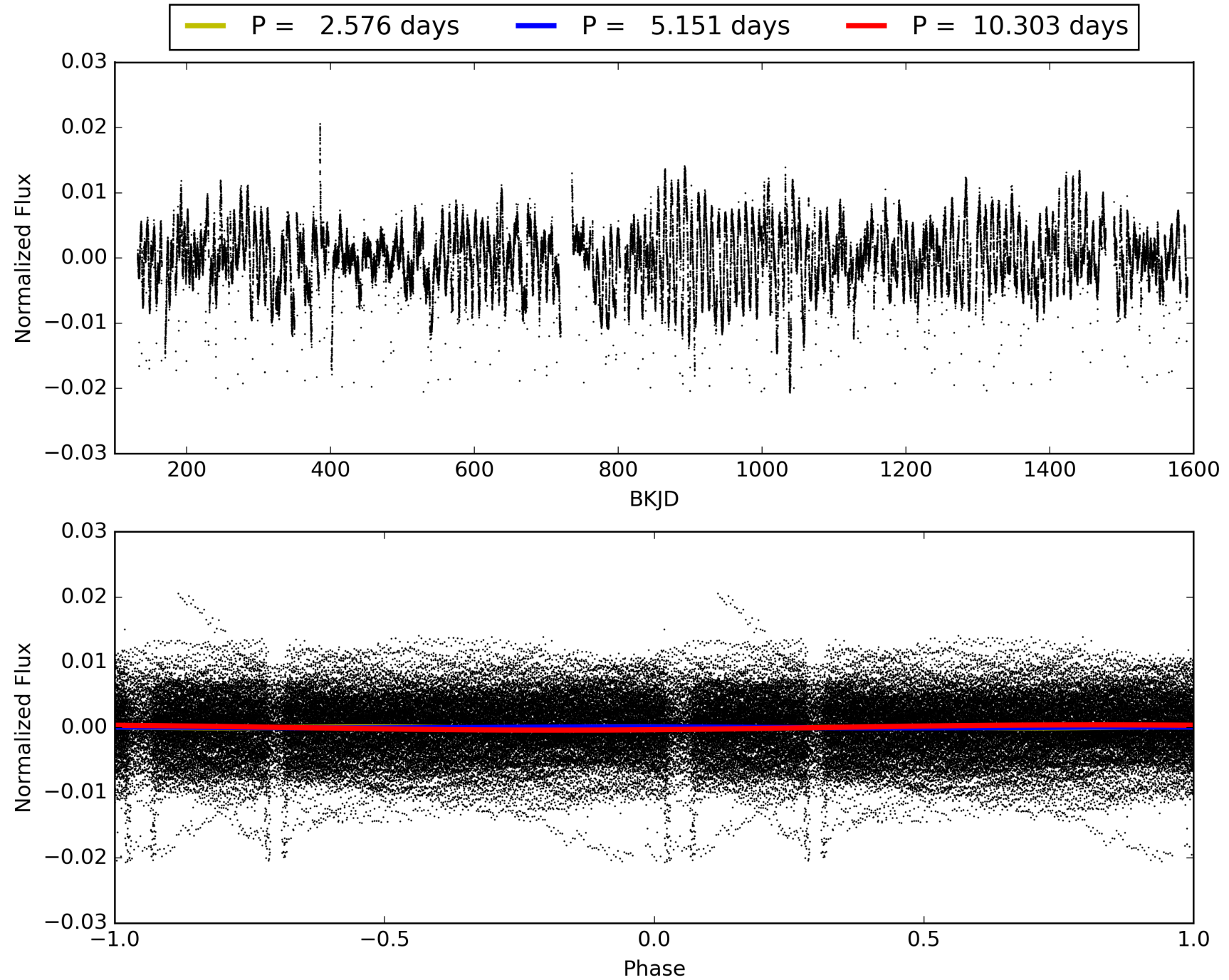
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:01:48 Z

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

# TCE 008296467-03, PDC Light Curves

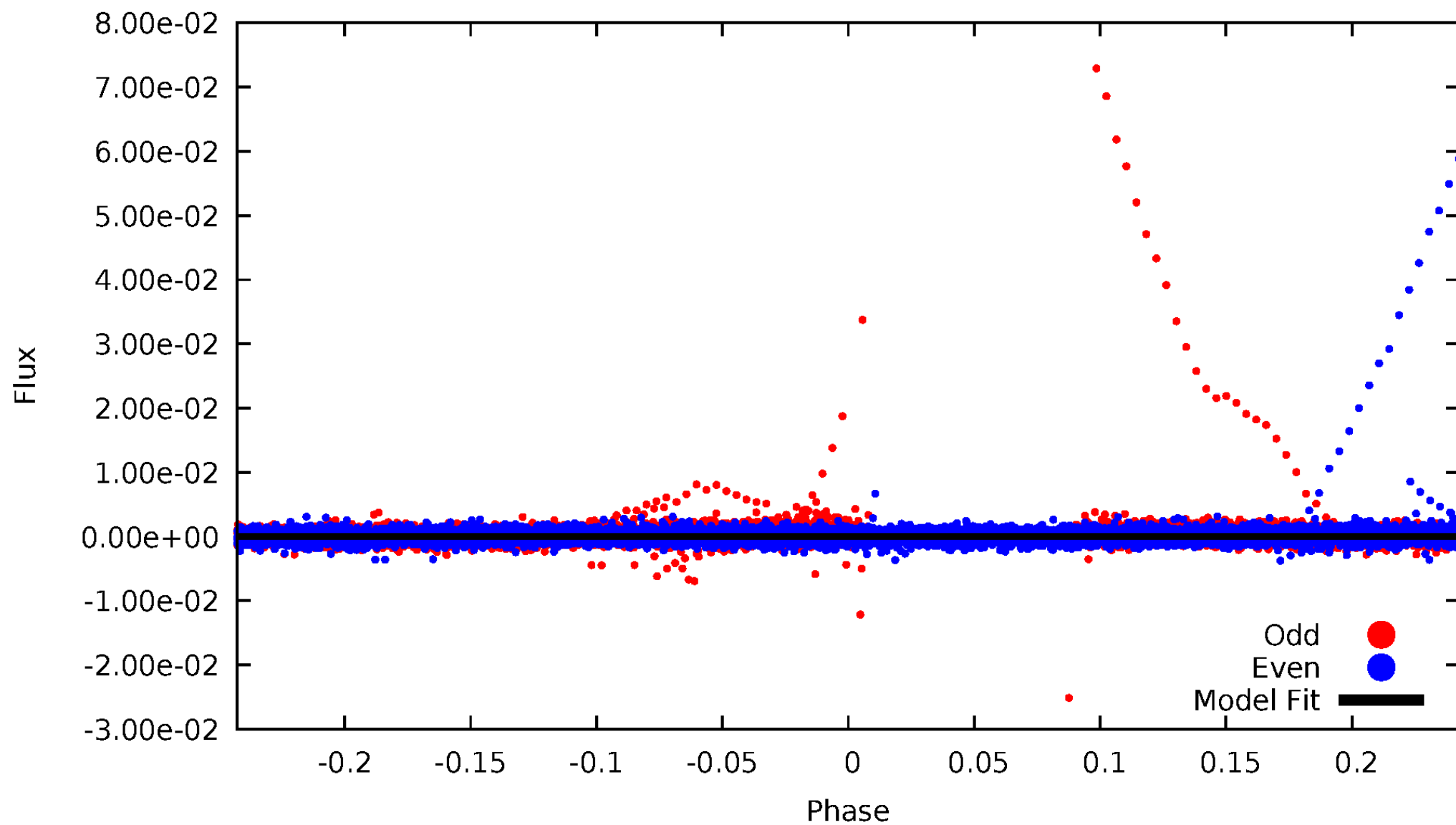


TCE 008296467-03



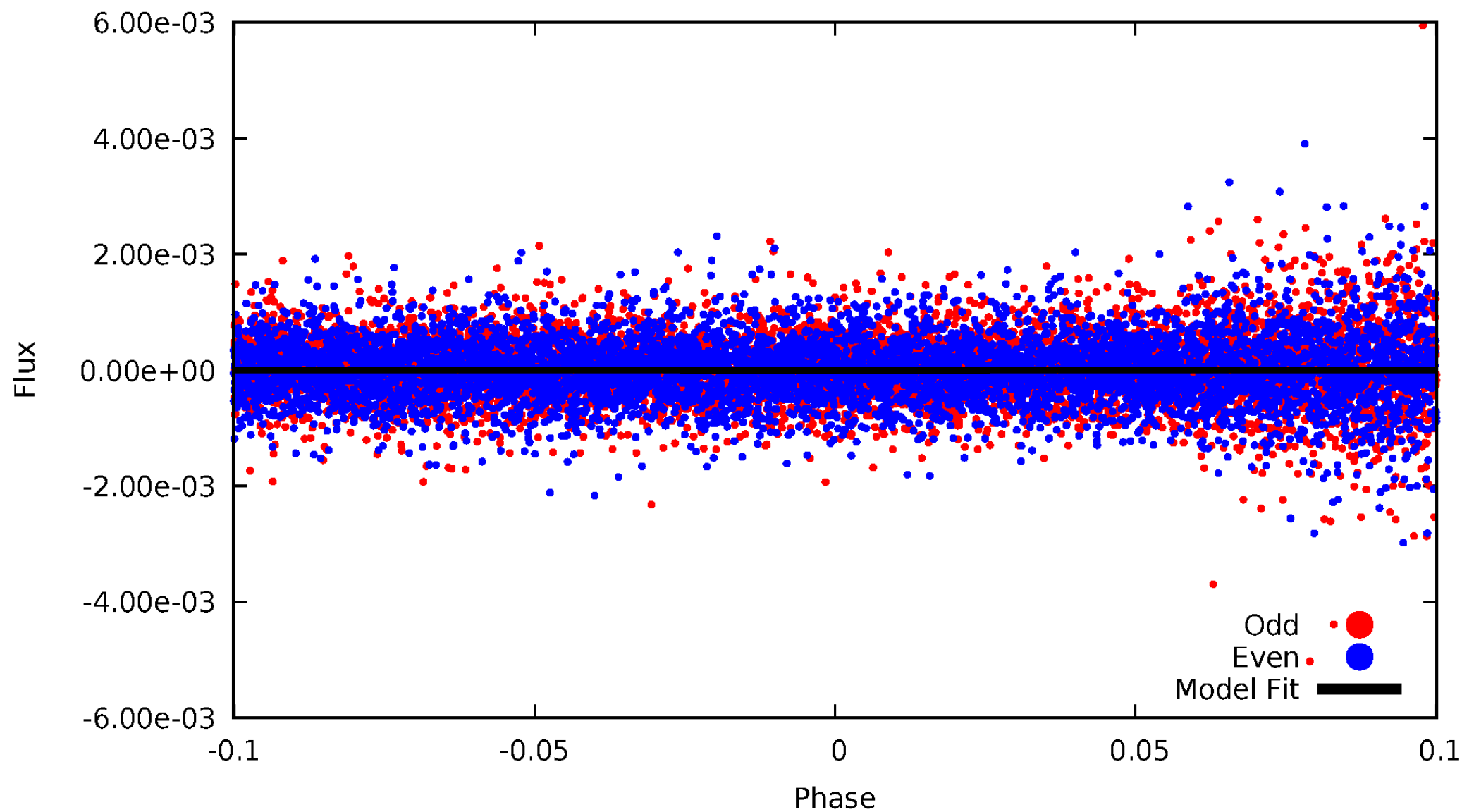
# DV Odd/Even

TCE 008296467-03

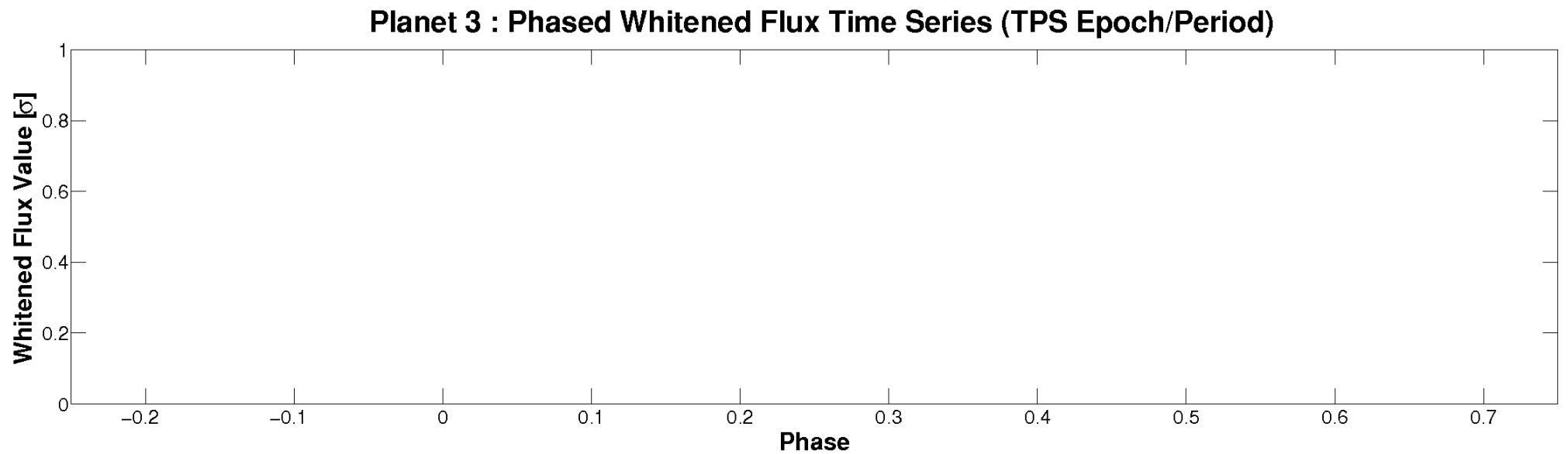
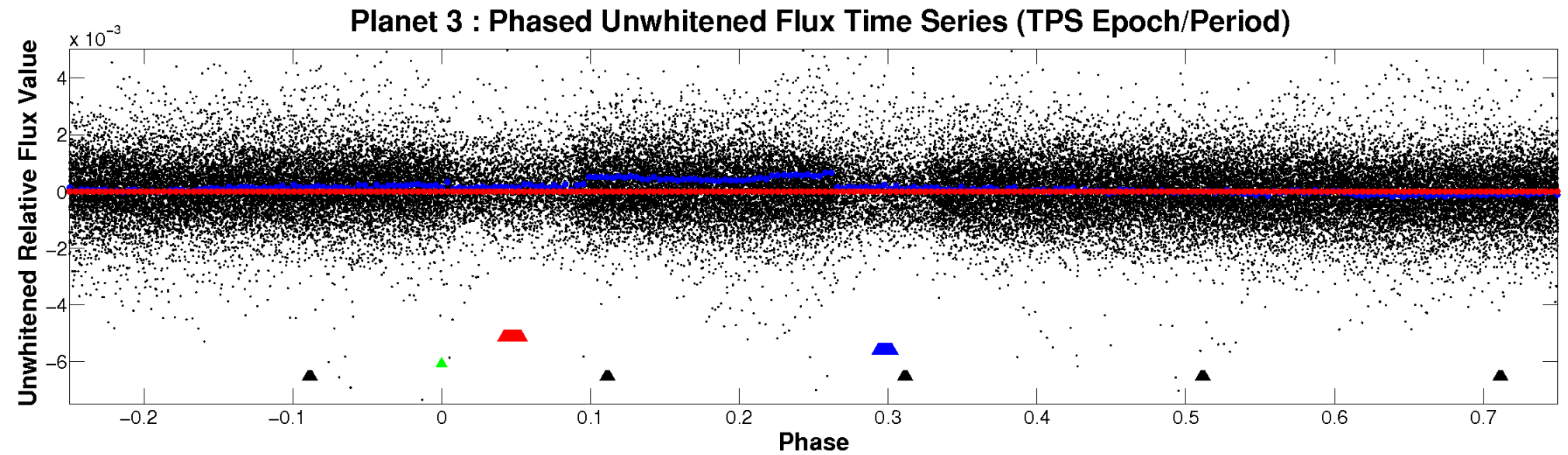


# ALT Odd/Even

TCE 008296467-03

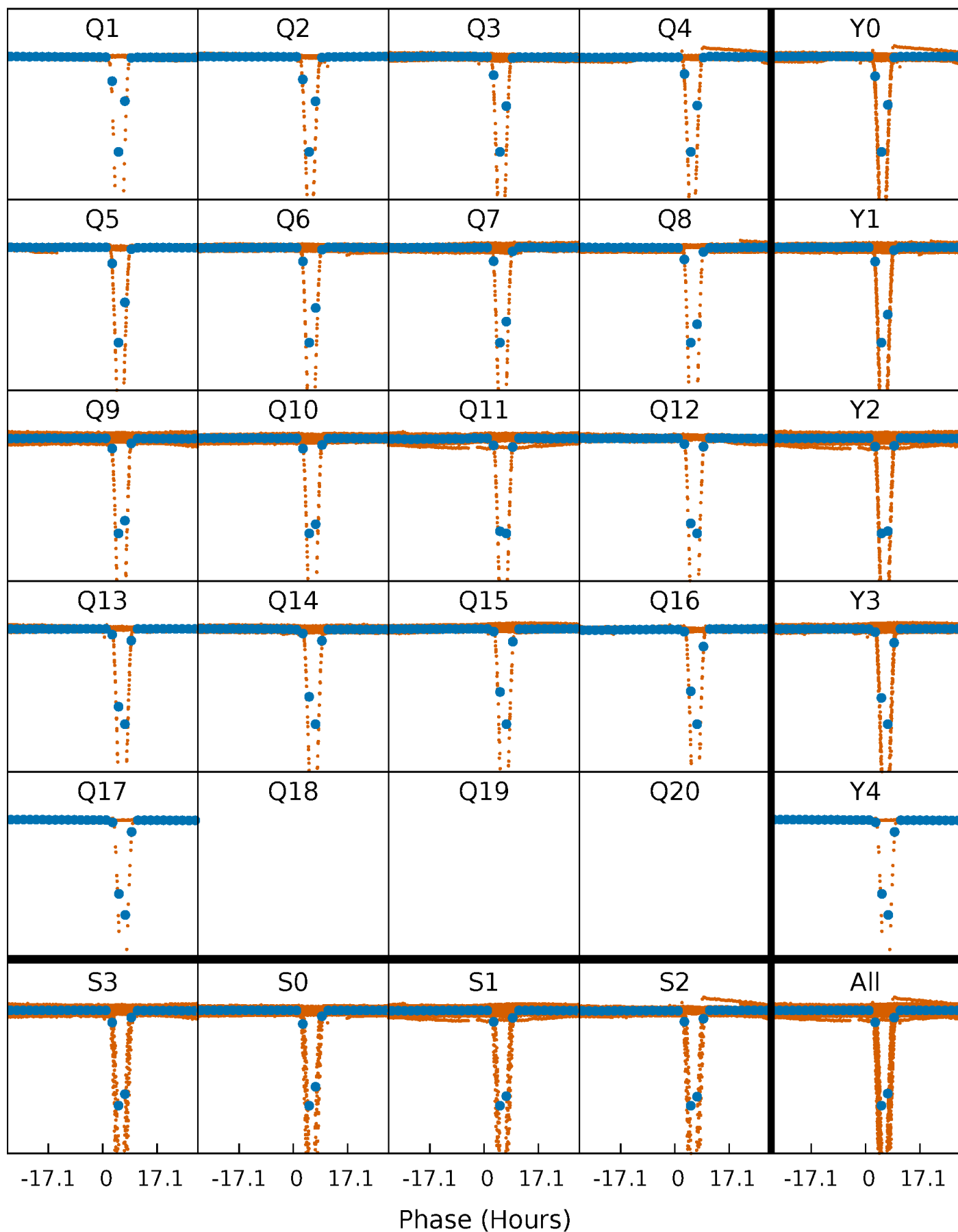


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

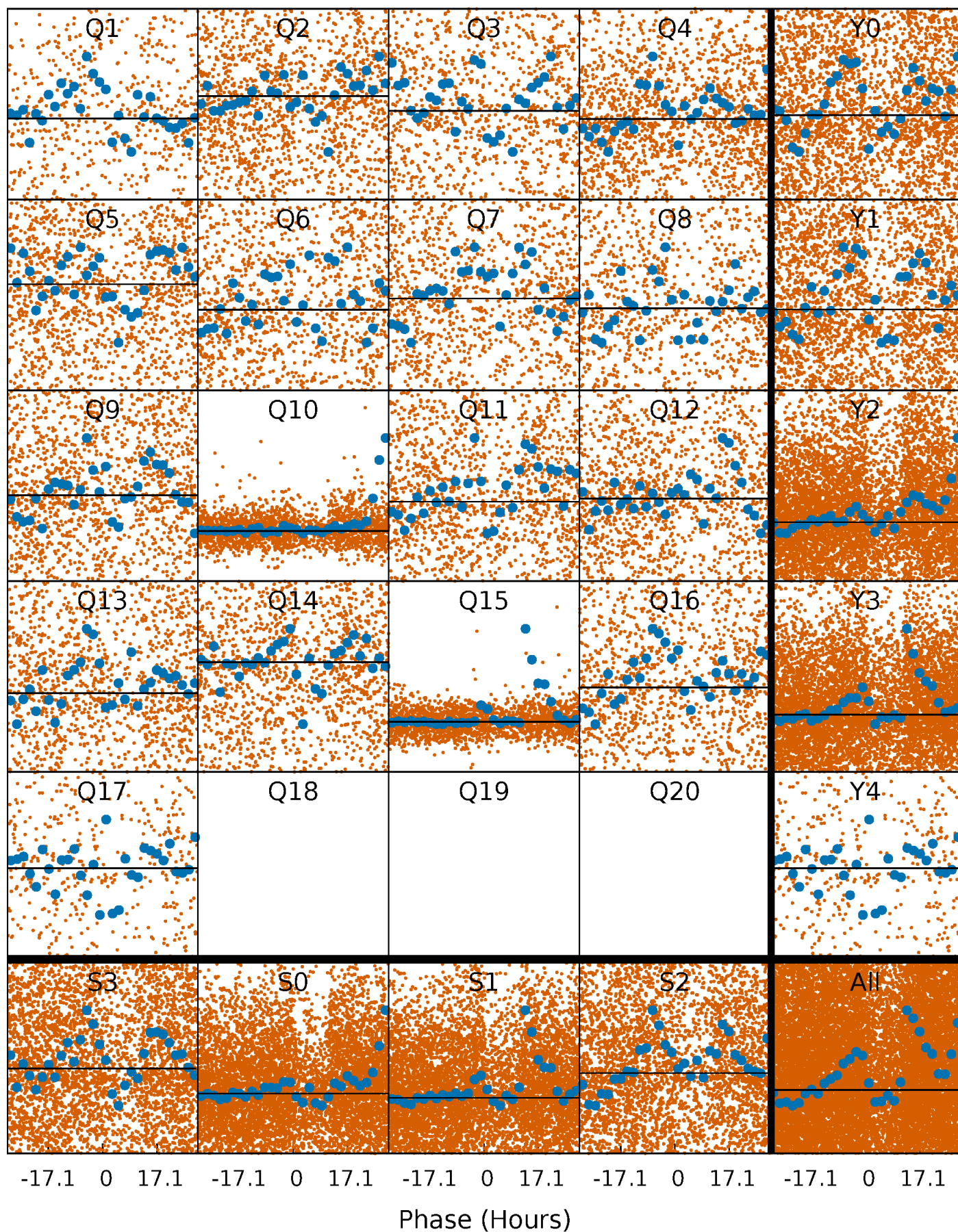
TCE 008296467-03   P= 5.151496 Days    $T_0=131.797064$  (BKJD)





# DV Quarter-Phased Transit Curves

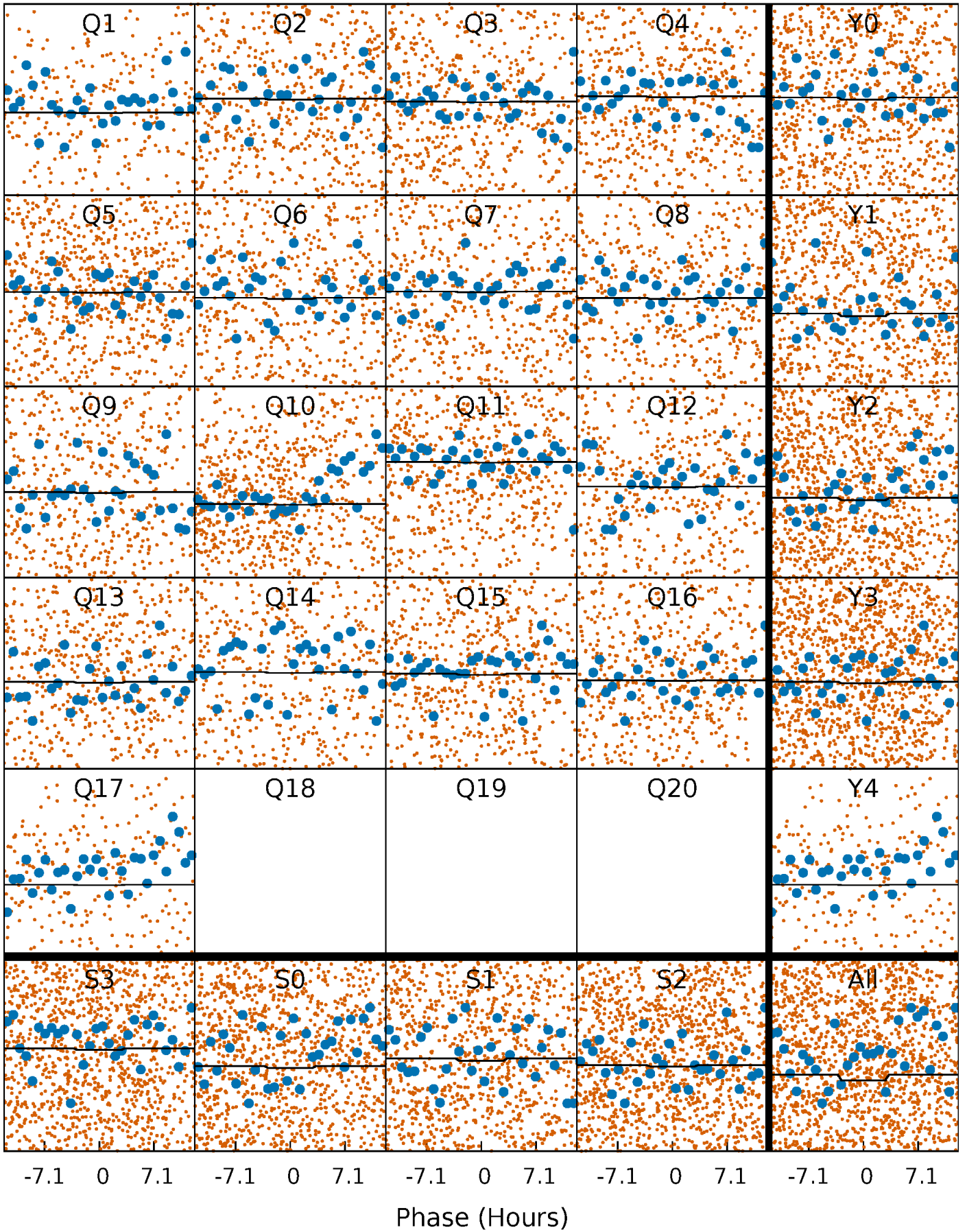
TCE 008296467-03   P= 5.151496 Days    $T_0=131.797064$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

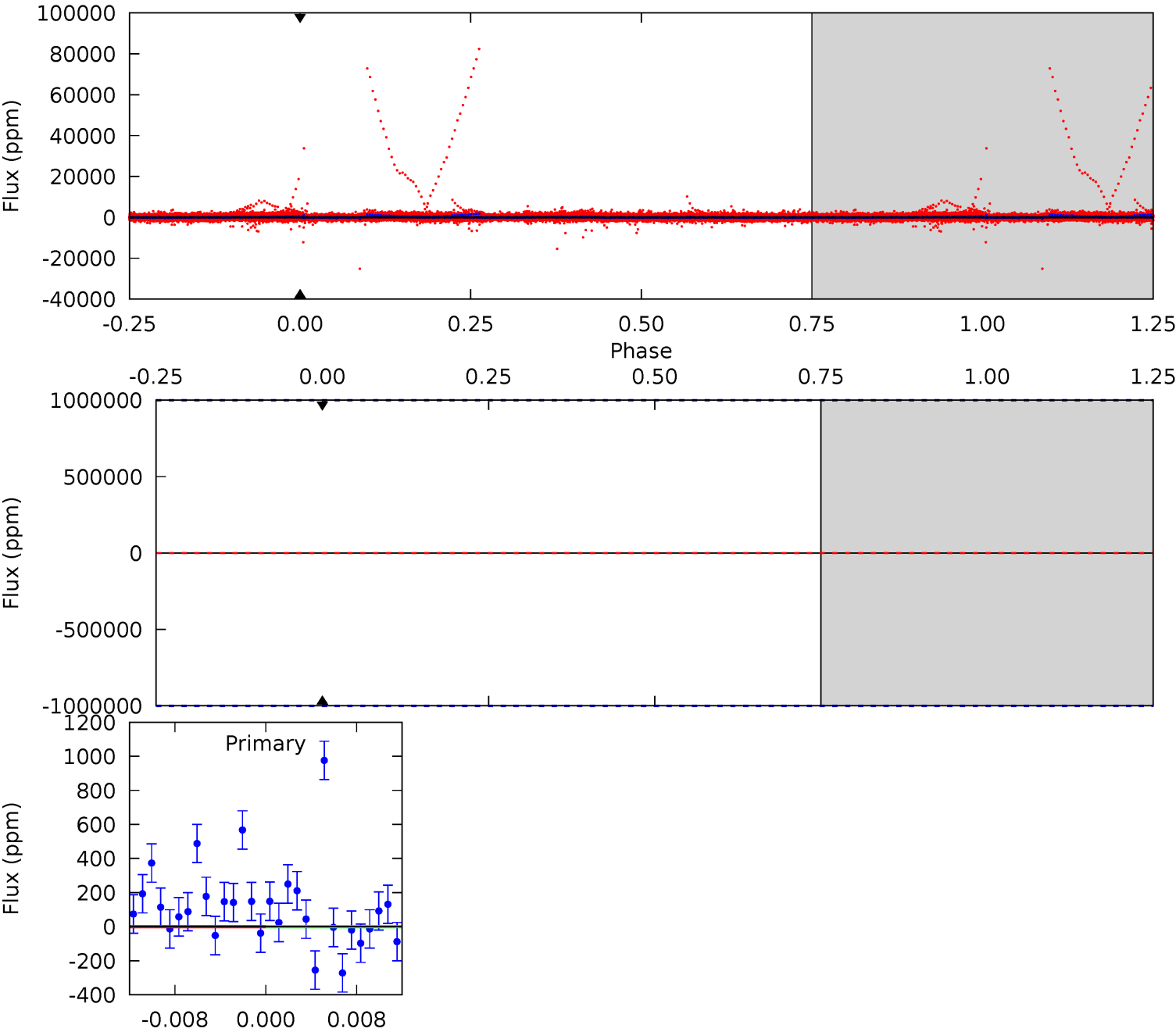
TCE 008296467-03 P= 5.151496 Days  $T_0=136.186722$  (BKJD)



DV Model-Shift Uniqueness Test

008296467-03, P = 5.151496 Days, E = 126.645568 Days

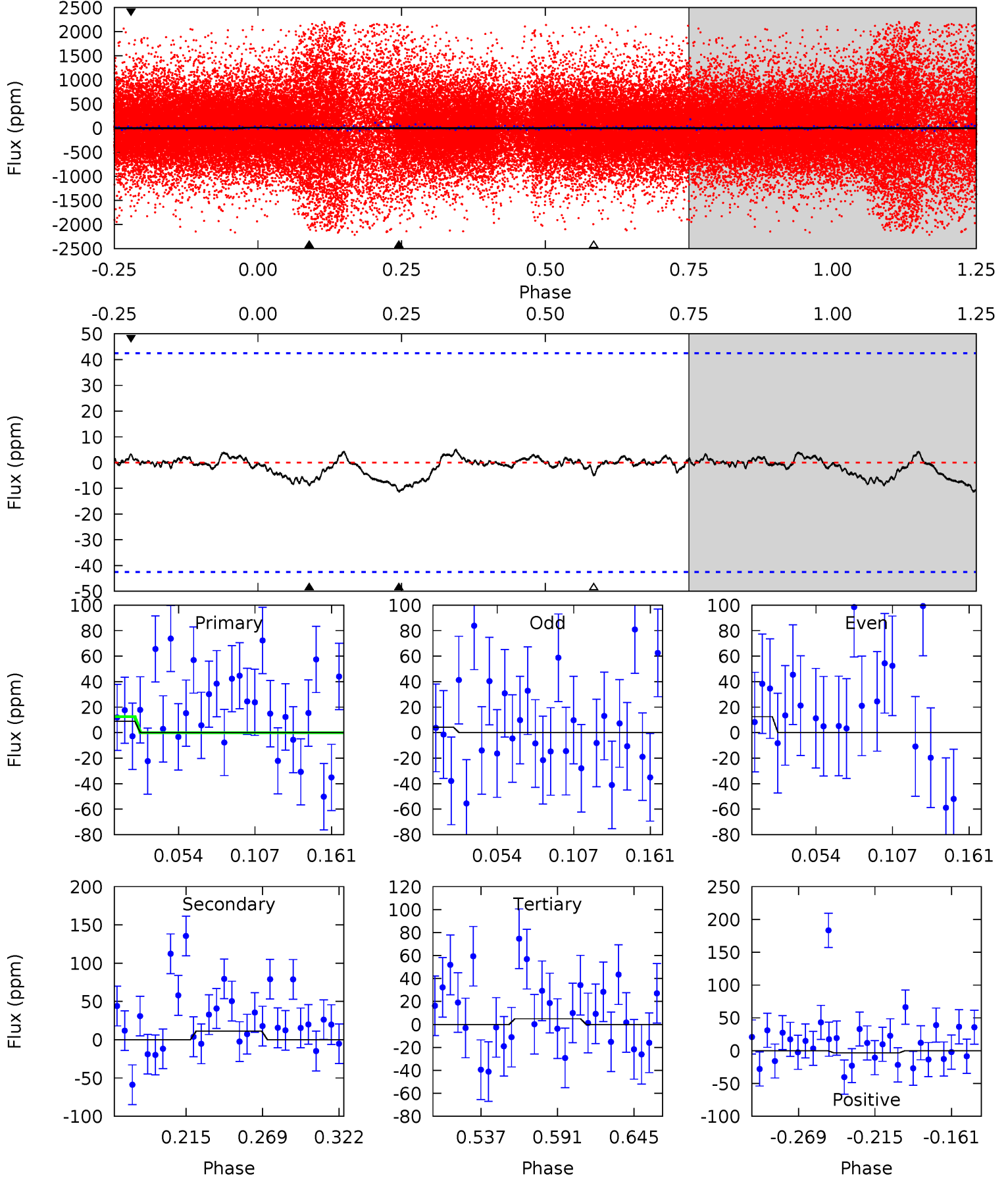
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008296467-03, P = 5.151496 Days, E = 131.035226 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.99	1.25	0.55	0.36	4.69	1.93	0.20	0.44	0.62	0.70	0.89	0.45	0.54	0.31	0.49



### Stellar Parameters For KIC 008296467

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5497^{+166}_{-149}$	$4.423^{+0.149}_{-0.182}$	$-0.280^{+0.300}_{-0.300}$	$0.900^{+0.211}_{-0.141}$	$0.782^{+0.120}_{-0.055}$	$1.514^{+0.980}_{-0.693}$
	+3%/-3%	+3%/-4%	+107%/-107%	+23%/-16%	+15%/-7%	+65%/-46%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008296467-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$16.51^{+10.19}_{-8.87}$	$1388^{+105}_{-79}$	$-3316^{+12259}_{-4619}$	$-9.750^{+957.633}_{-649.335}$
Alt.	$-11 \pm 9$	$6.71^{+8.33}_{-4.68}$	$1396^{+90}_{-77}$	$1466^{+1379}_{-3579}$	$0.307^{+3.686}_{-0.290}$

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

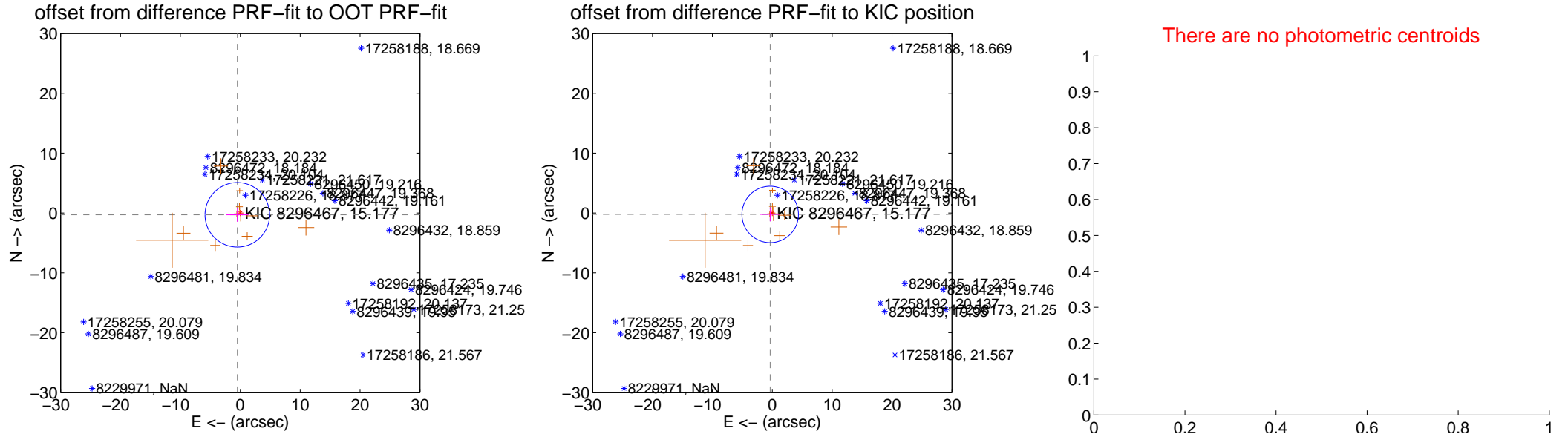
## DV Centroid Data

Supplemental centroid analysis for 008296467-03. Kepler magnitude: 15.18. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

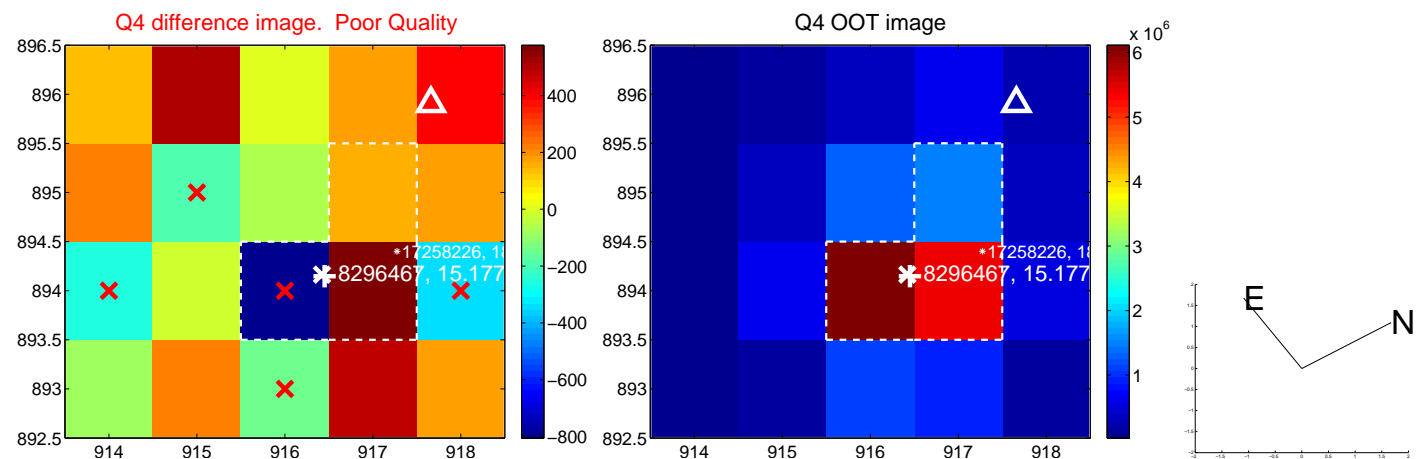
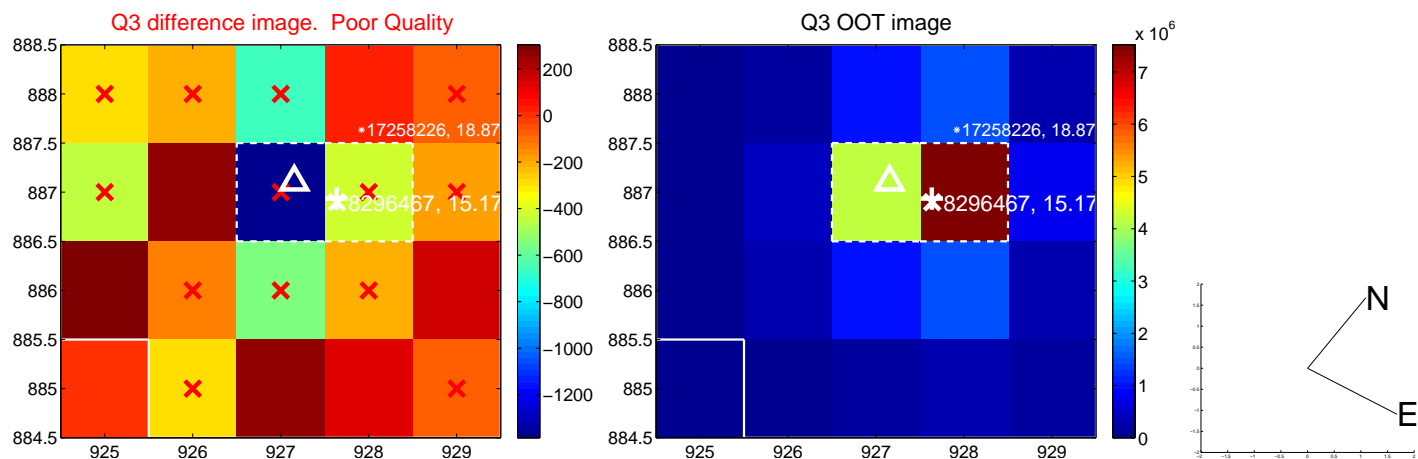
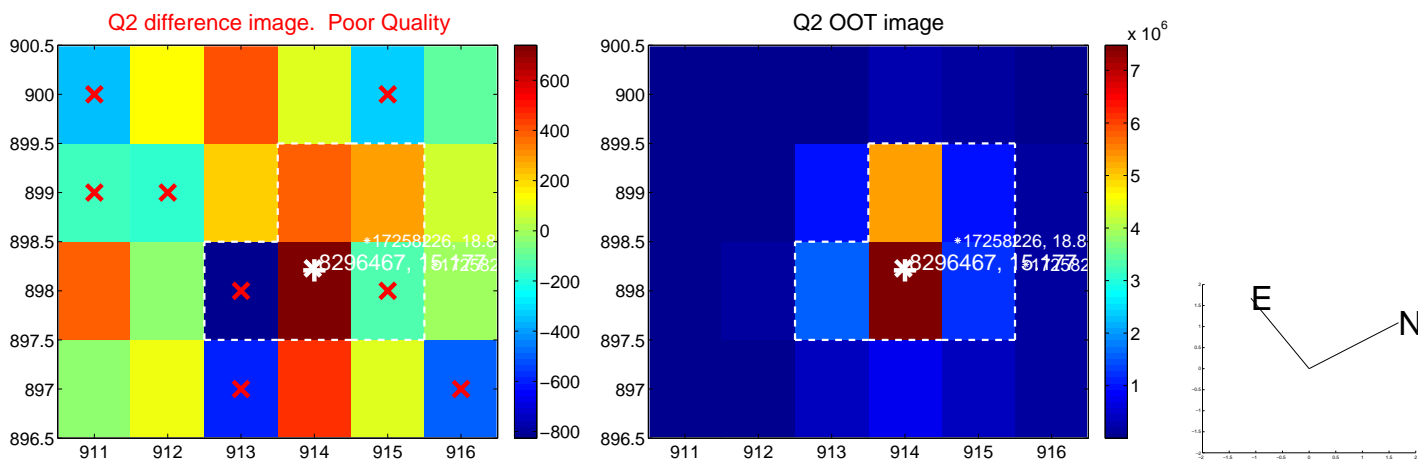
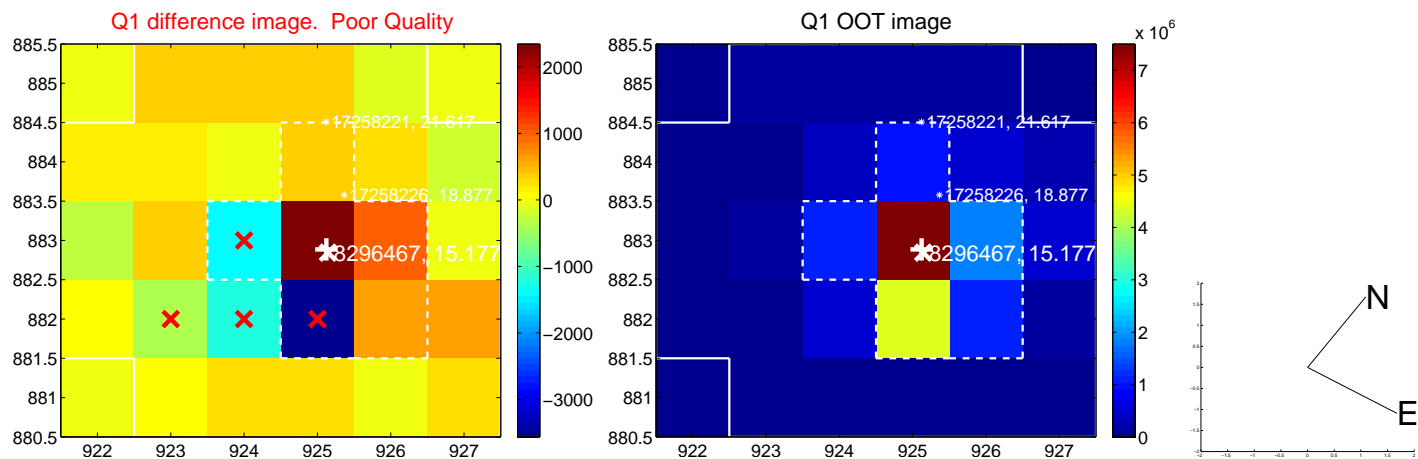
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.580 \pm 1.797$	0.32	$0.496 \pm 1.851$	$-0.302 \pm 1.164$
PRF-fit source offset from KIC position	$0.422 \pm 1.573$	0.27	$0.348 \pm 1.680$	$-0.238 \pm 1.153$
photometric centroid source offset	—	—	—	—

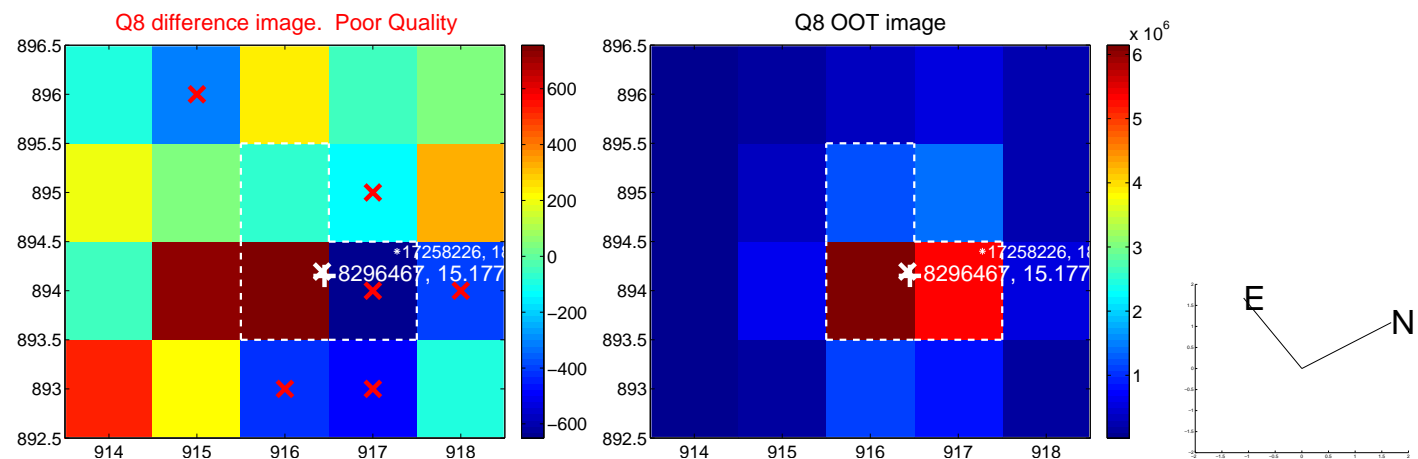
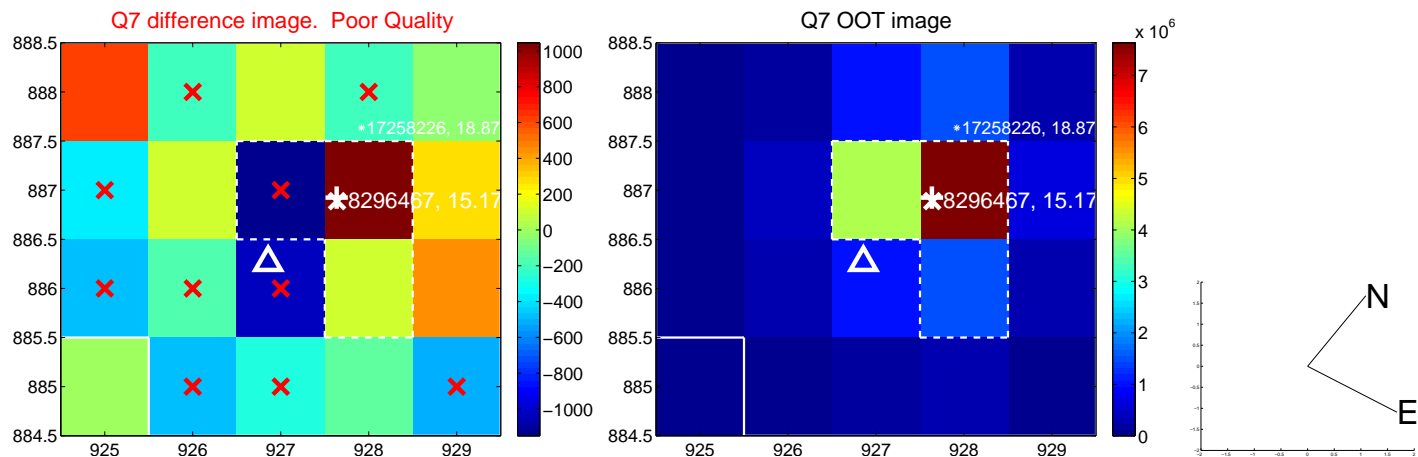
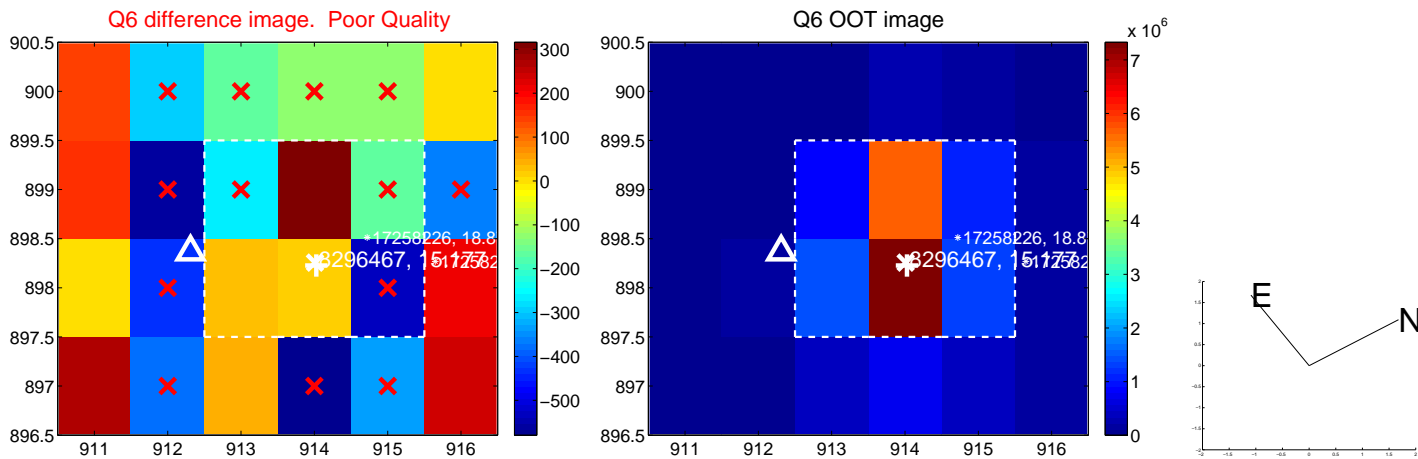
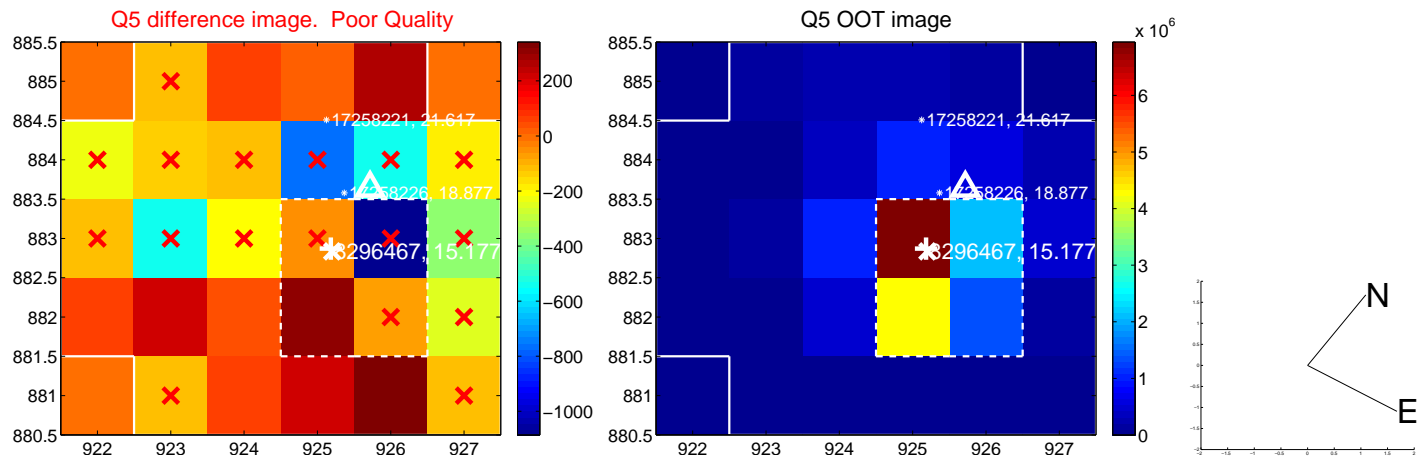


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

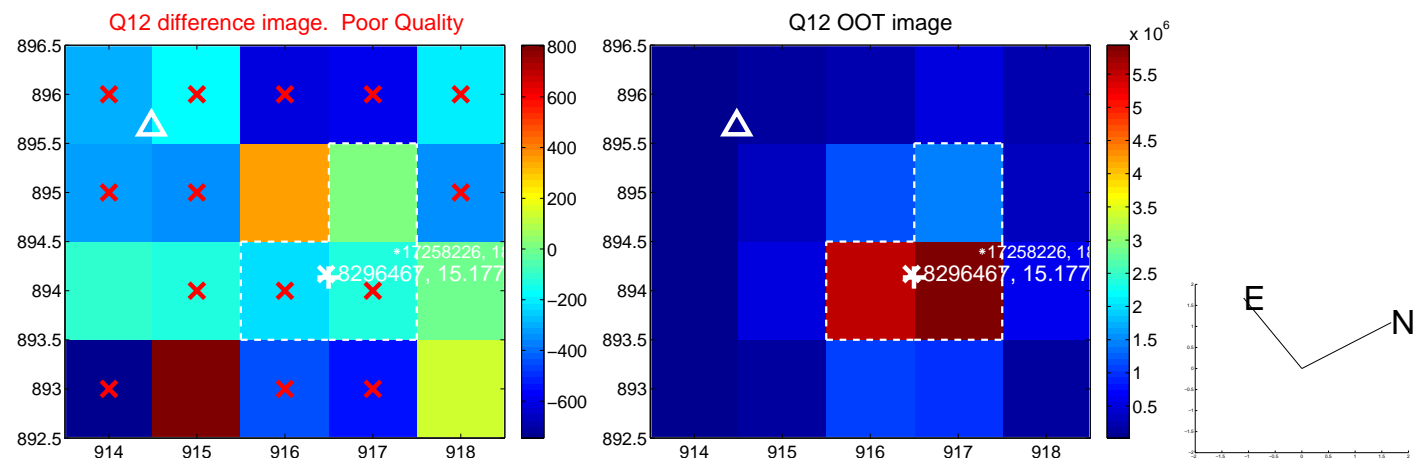
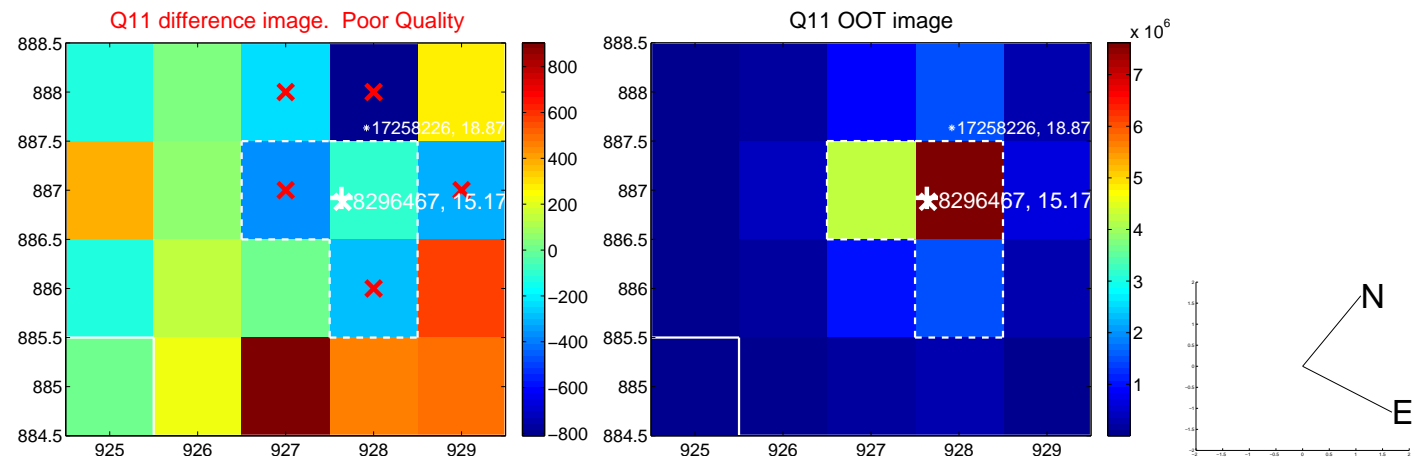
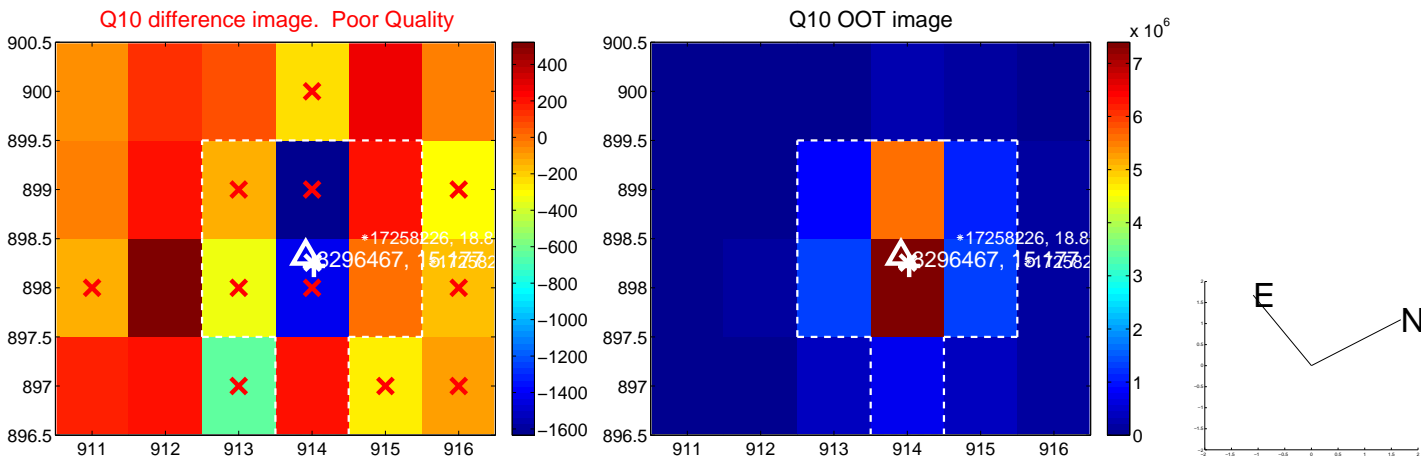
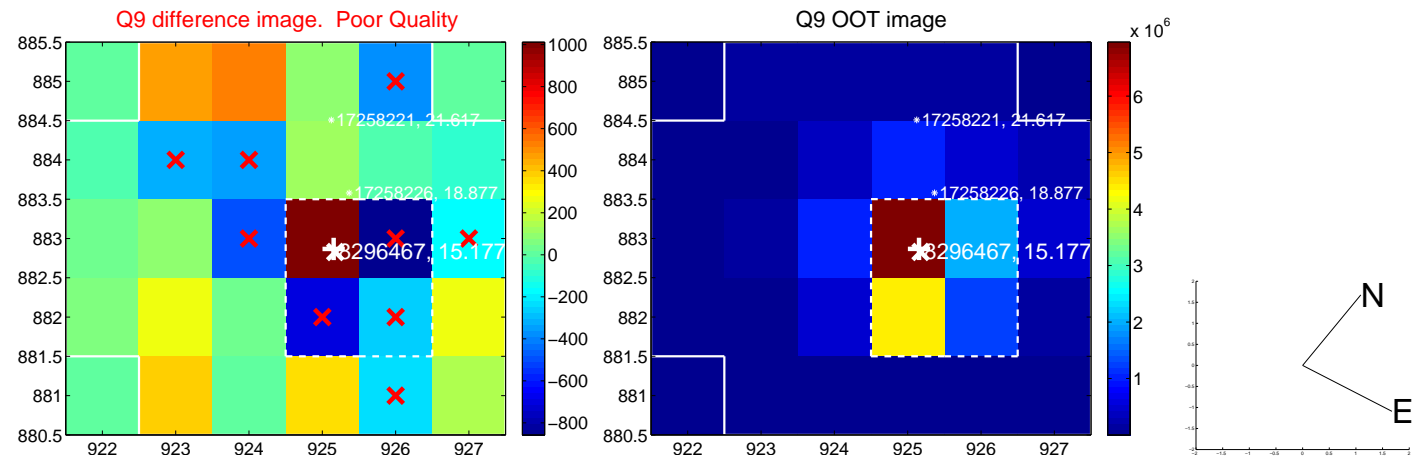
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

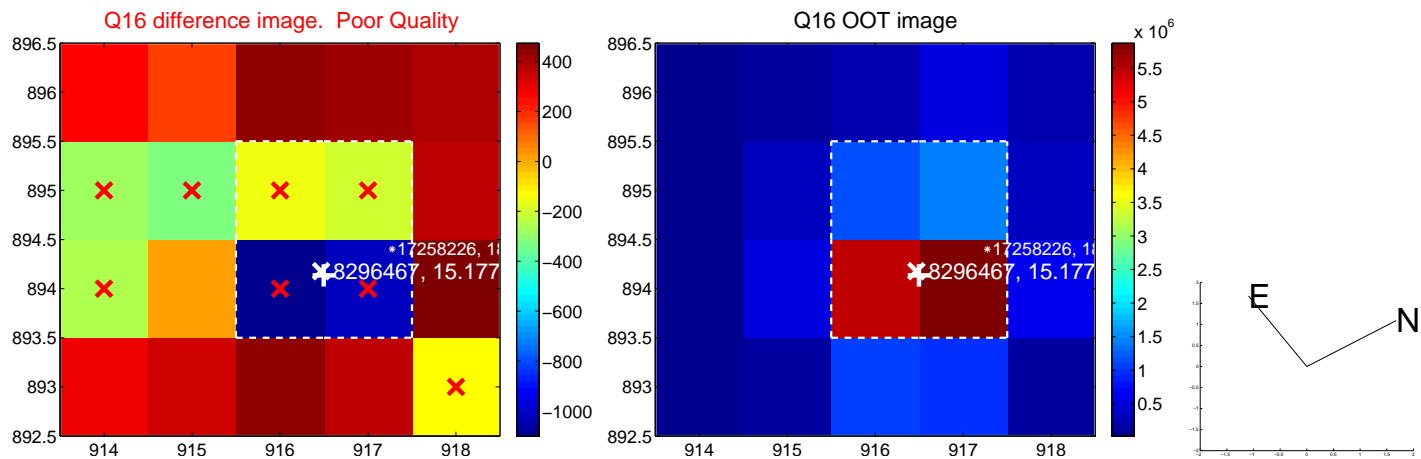
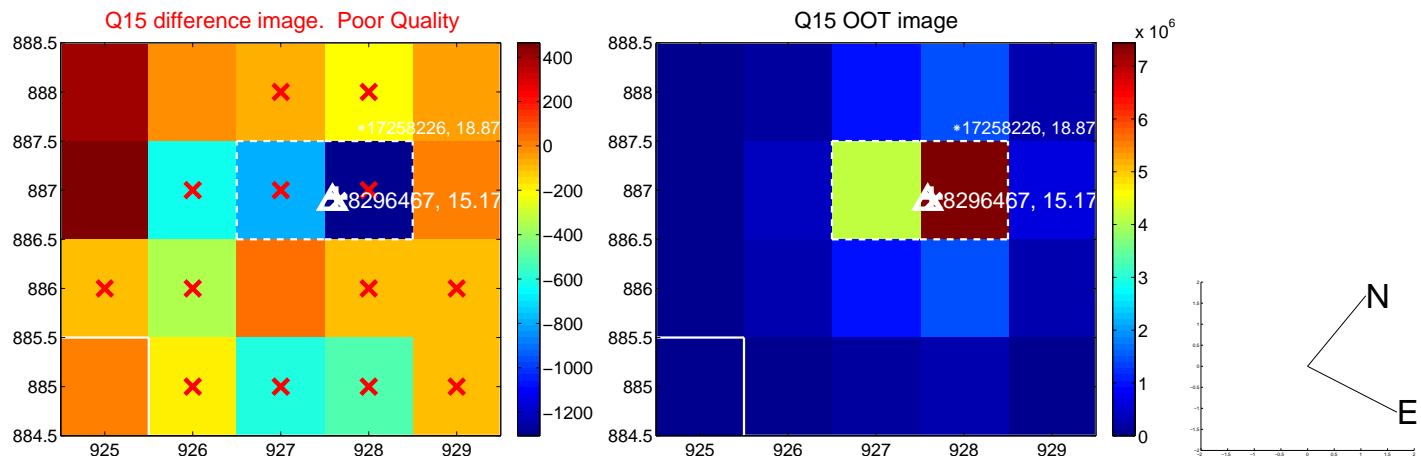
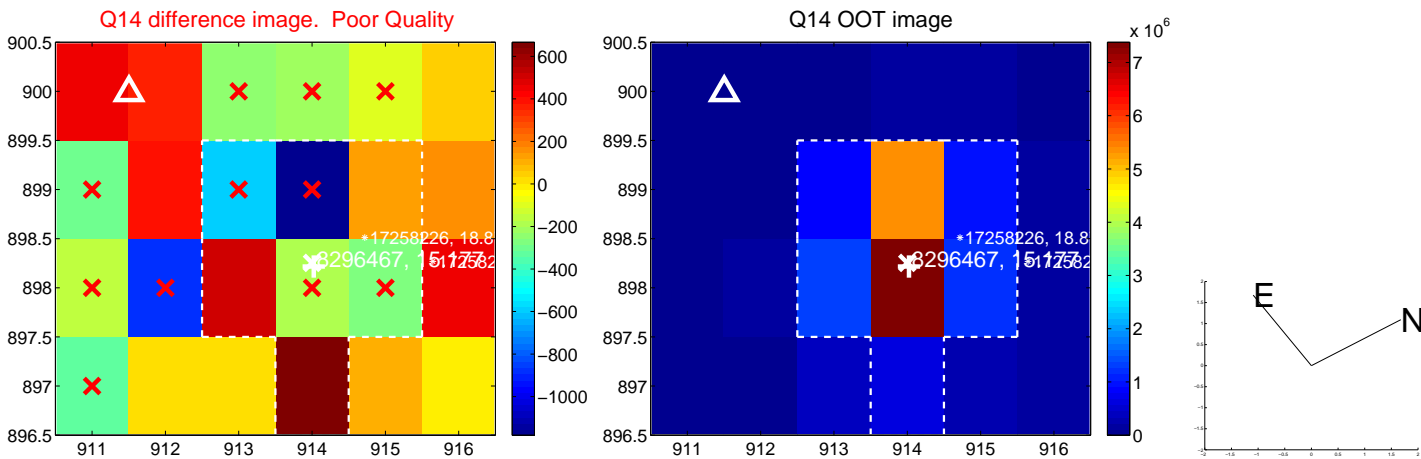
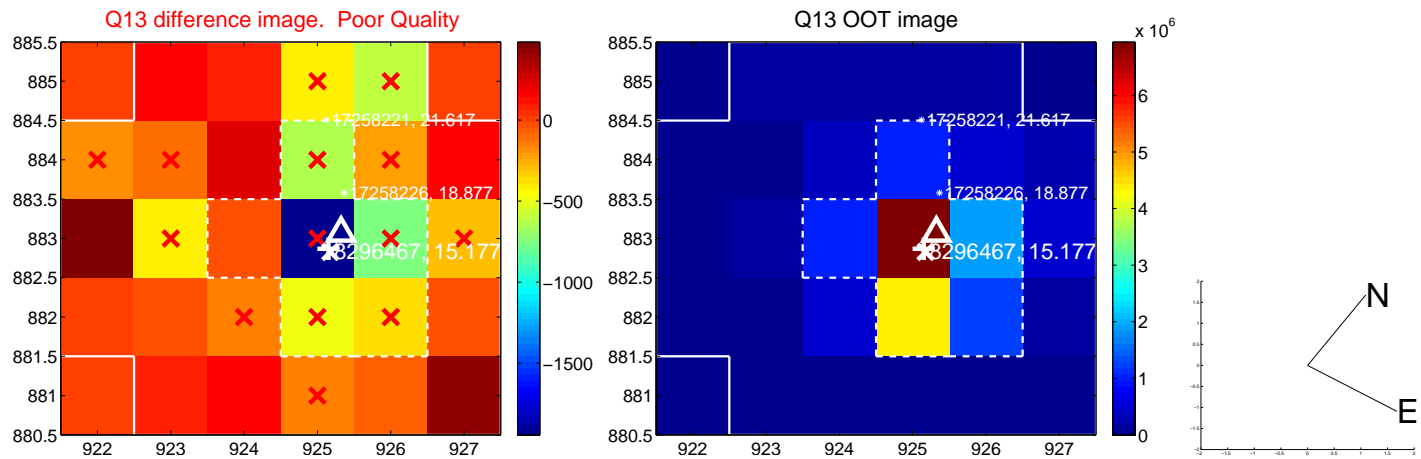


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

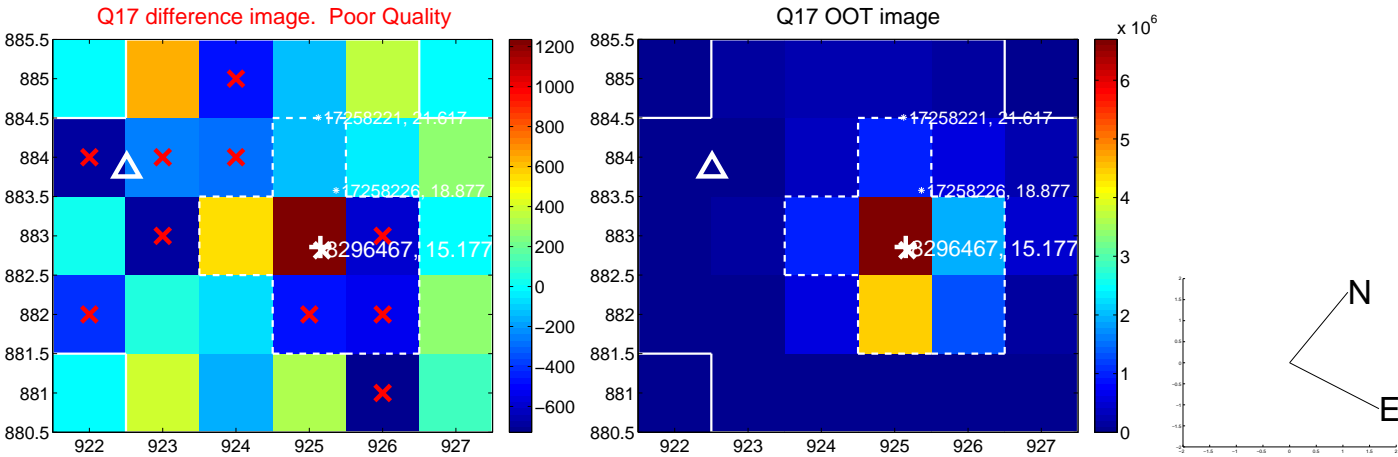




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



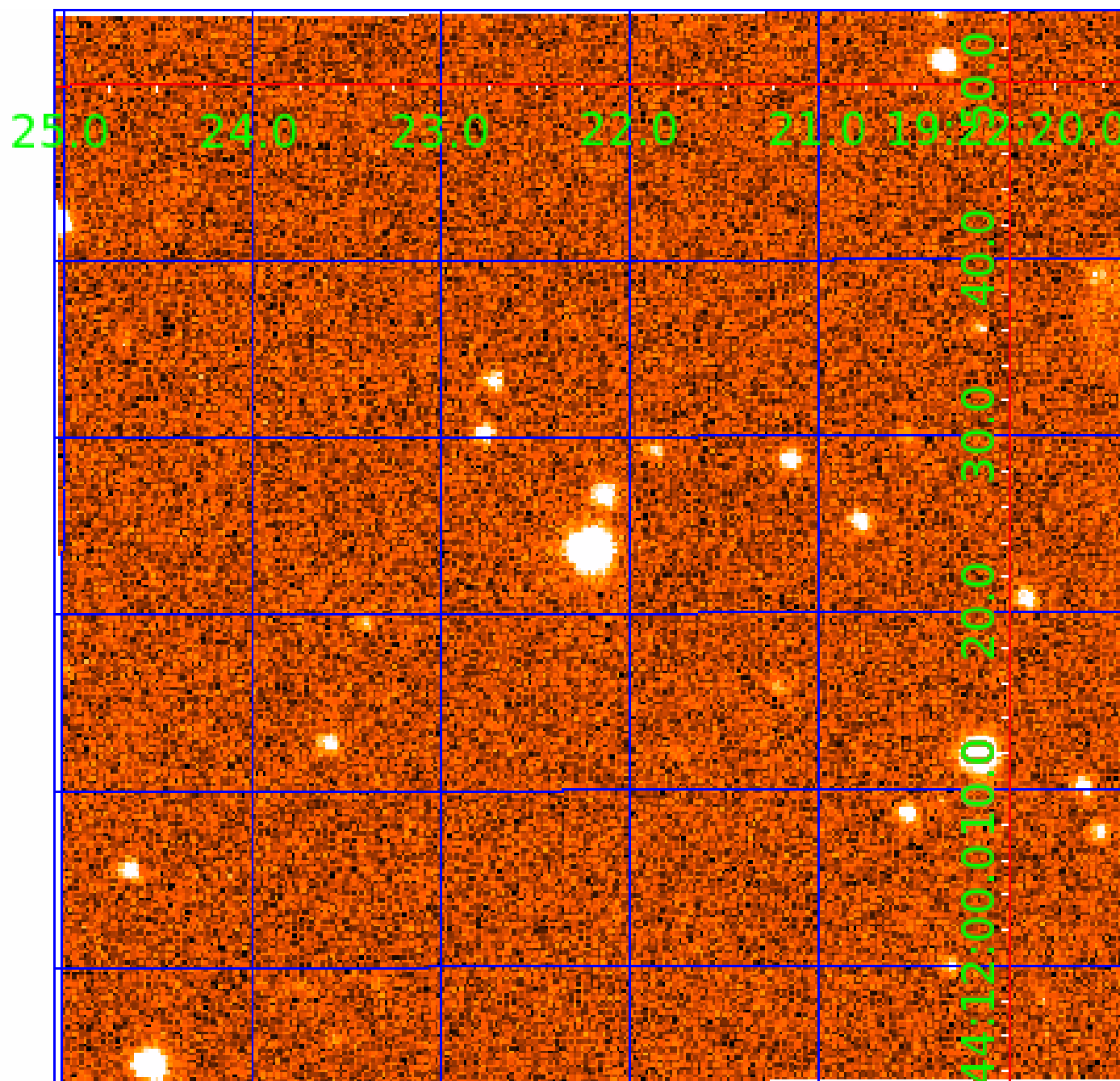
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



# KIC 008296467

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008296467-01	OBS	7012.01	10.303416	137.164279	533259.1	3.500	14178.6	-1.0	0.90	5497	49.10	90.83
008296467-02	OBS	No	10.303333	133.307869	321000.1	2.500	8543.2	-1.0	0.90	5497	49.10	90.83
008296467-03	OBS	No	5.151496	131.797064	32958.3	15.000	1099.1	-1.0	0.90	5497	16.14	228.90
008296467-04	OBS	No	4.121238	134.424654	791.1	21.126	372.5	24.2	0.90	5497	3.63	308.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008296467-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
008296467-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008296467-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS
008296467-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

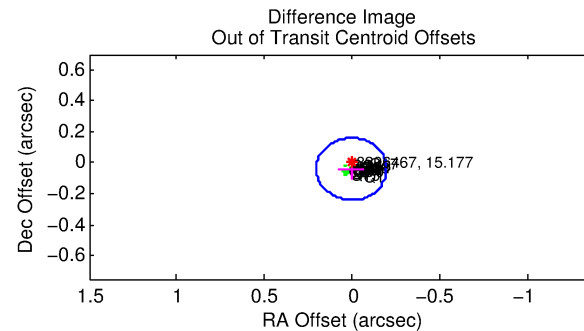
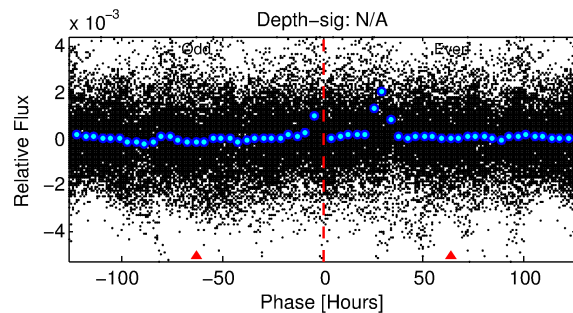
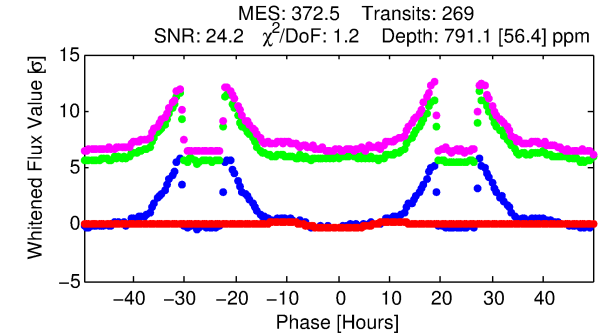
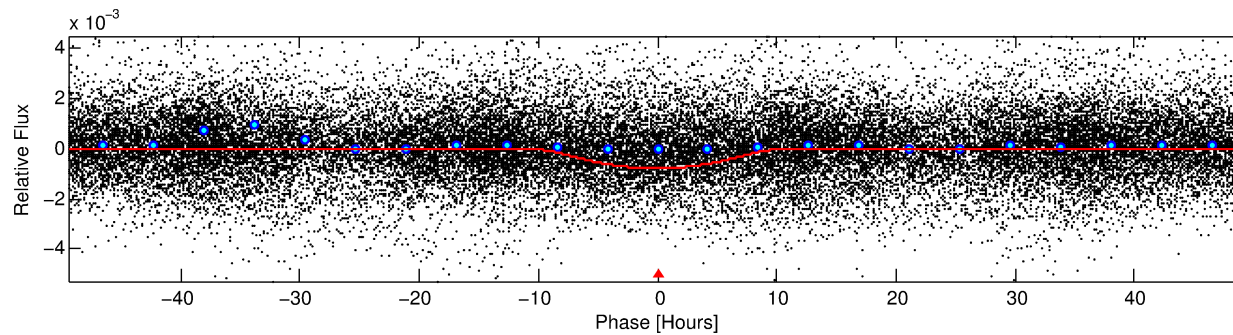
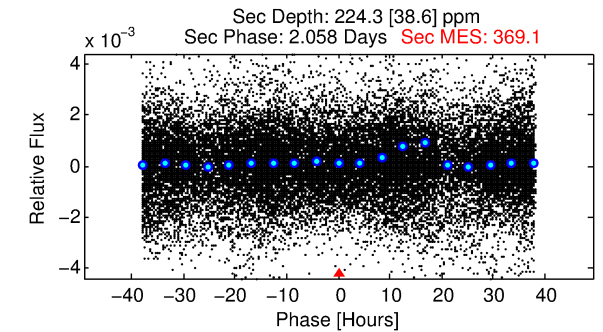
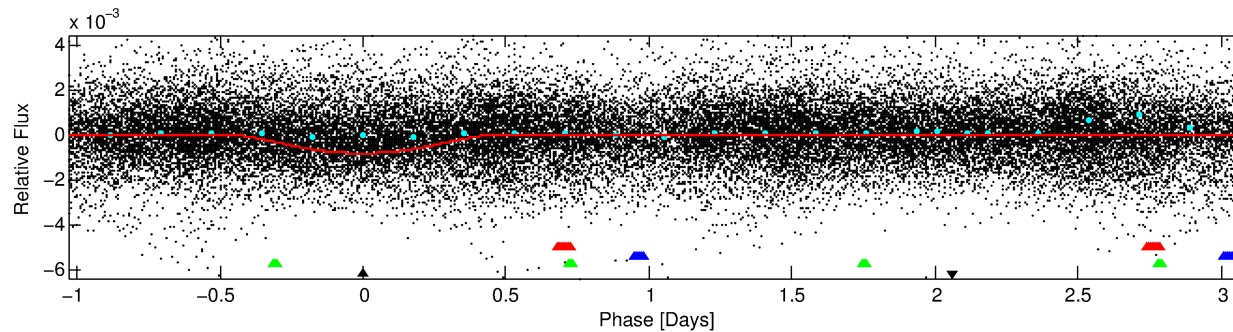
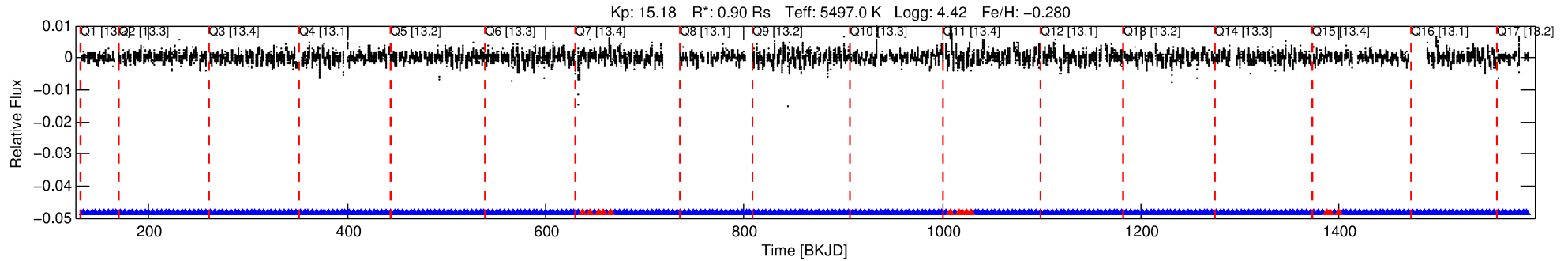
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008296467-04

No Significant Match Found

# DV One-Page Summary

KIC: 8296467 Candidate: 4 of 4 Period: 4.121 d  
KOI: K07012 Corr: No Ephemeris Match



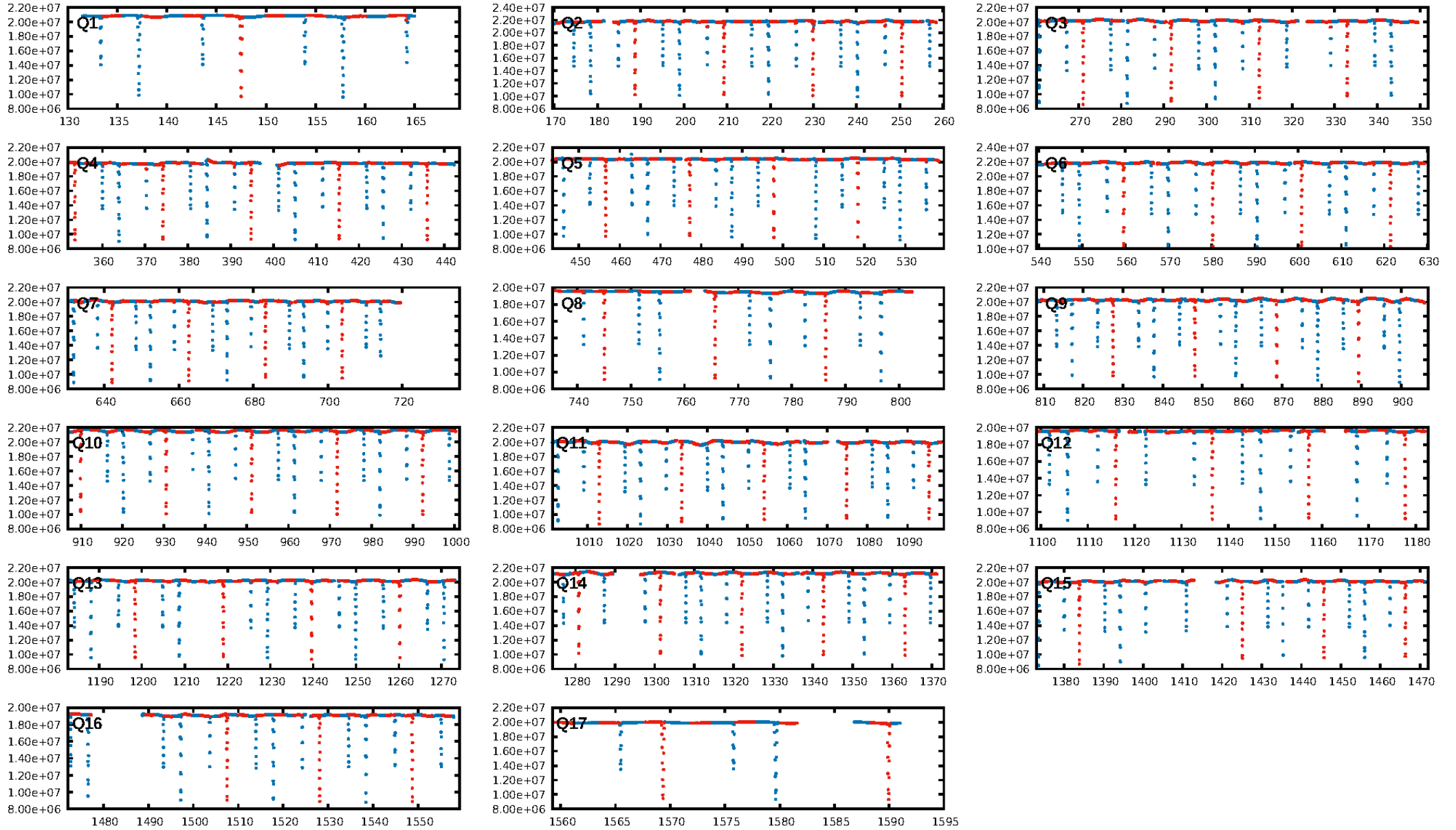
## DV Fit Results:

Period = 4.12124 [0.00007] d  
Epoch = 134.4247 [0.0146] BKJD  
Rp/R\* = 0.0369 [0.0049]  
a/R\* = 1.13 [0.01]  
b = 0.97 [0.01]  
Seff = 308.22 [105.46]  
Teq = 1068 [91] K  
Rp = 3.63 [0.98] Re  
a = 0.0464 [0.0097] AU  
Ag = 20.18 [9.08] [2.11σ]  
Teffp = 3501 [296] K [7.84σ]

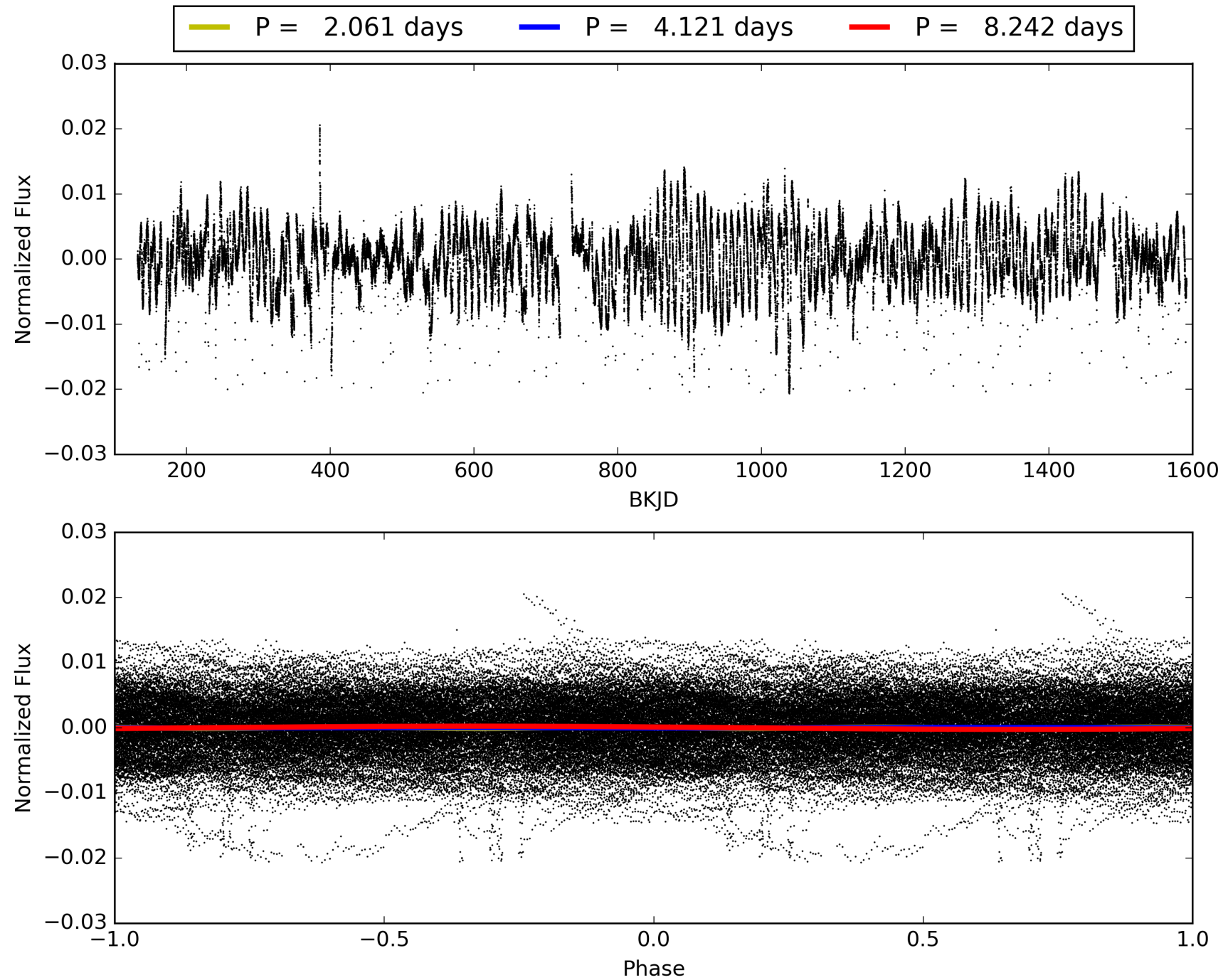
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 66.0% [0.95σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.95 [244/257]  
GhostDiagnostic-chr: 0.07263  
Centroid-sig: N/A  
Centroid-so: 0.026 arcsec [0.22σ]  
OotOffset-rm: 0.041 arcsec [0.61σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.142 arcsec [2.08σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 008296467-04, PDC Light Curves

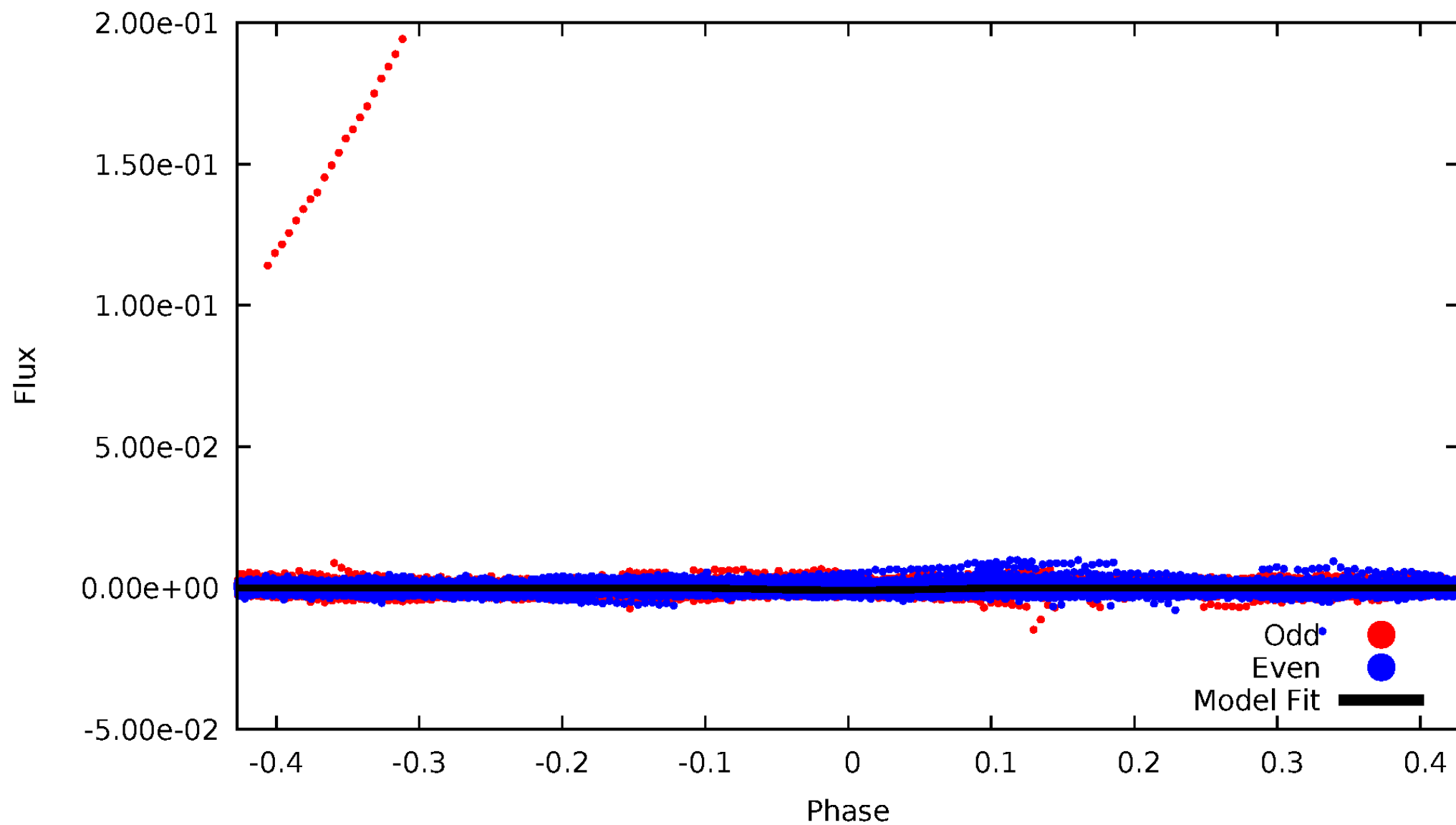


TCE 008296467-04



# DV Odd/Even

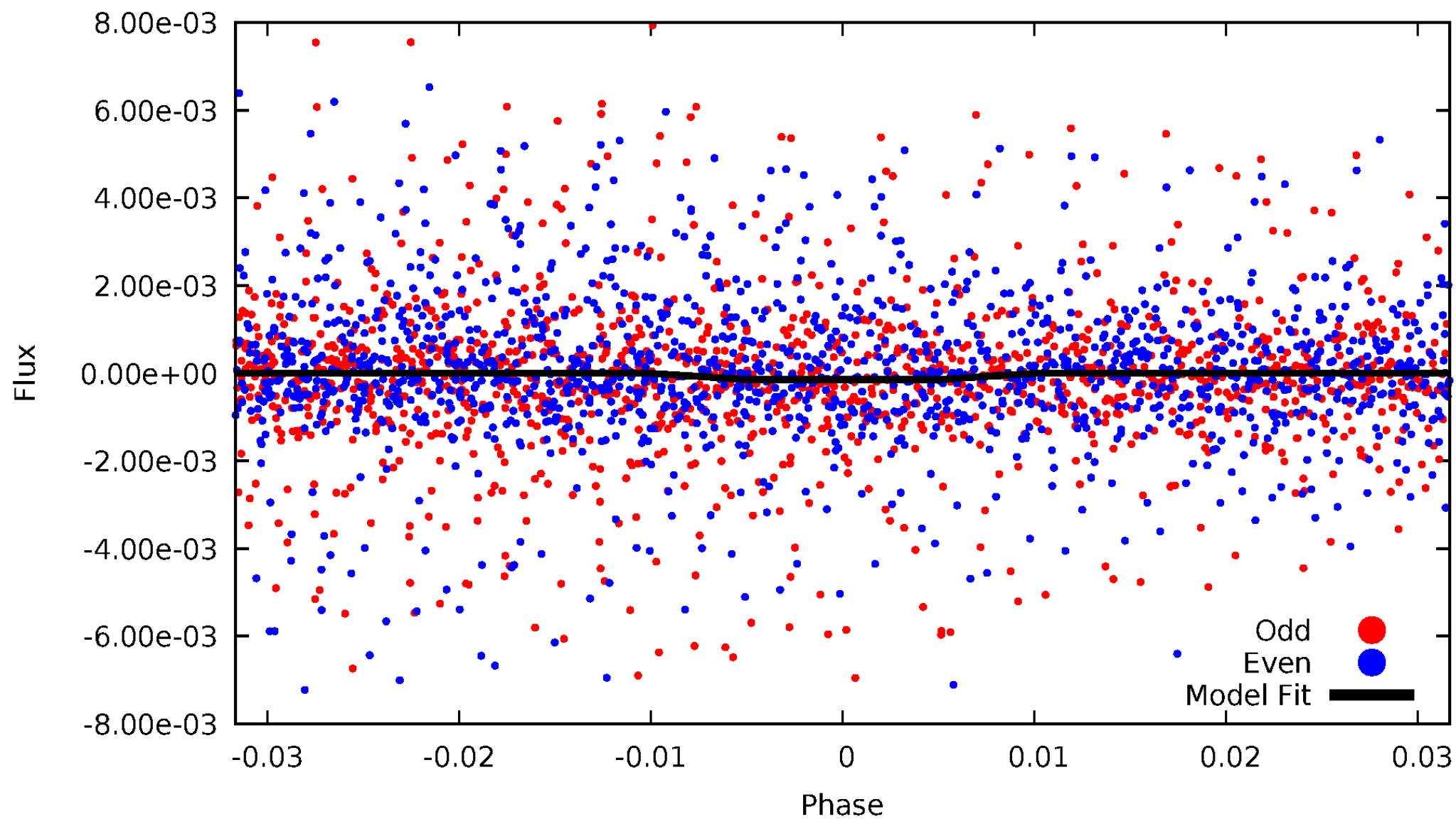
TCE 008296467-04





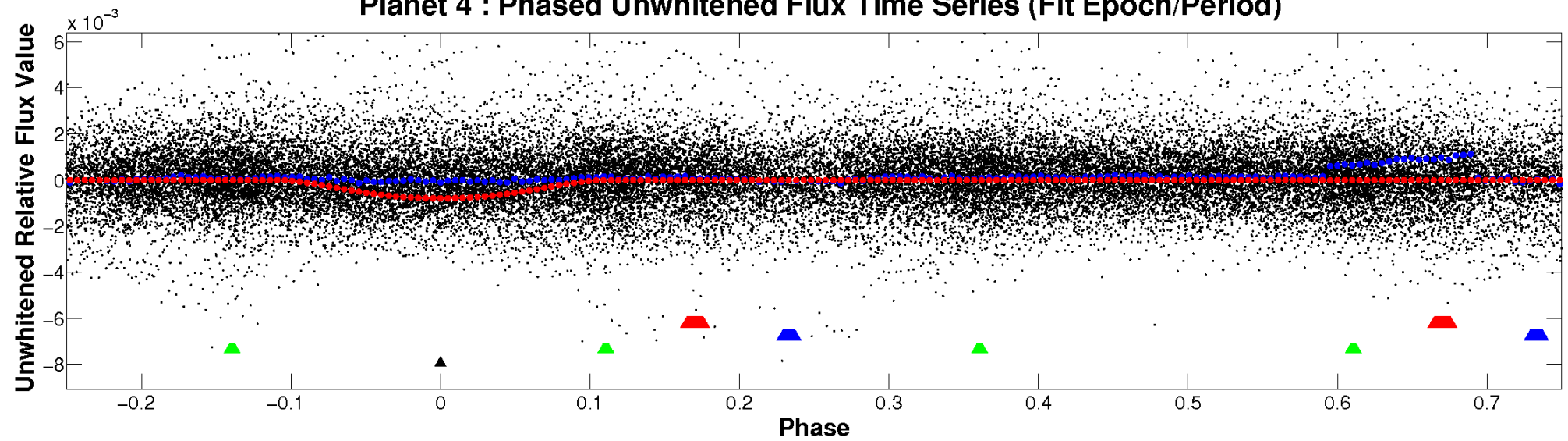
# ALT Odd/Even

TCE 008296467-04

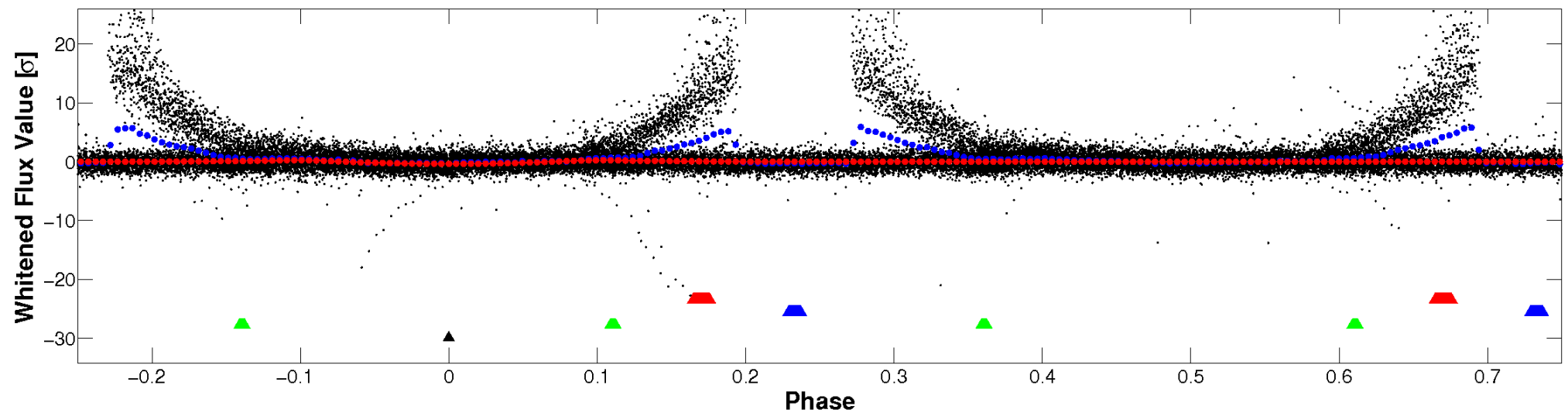


# Non-Whitened Vs. Whitened Light Curve

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

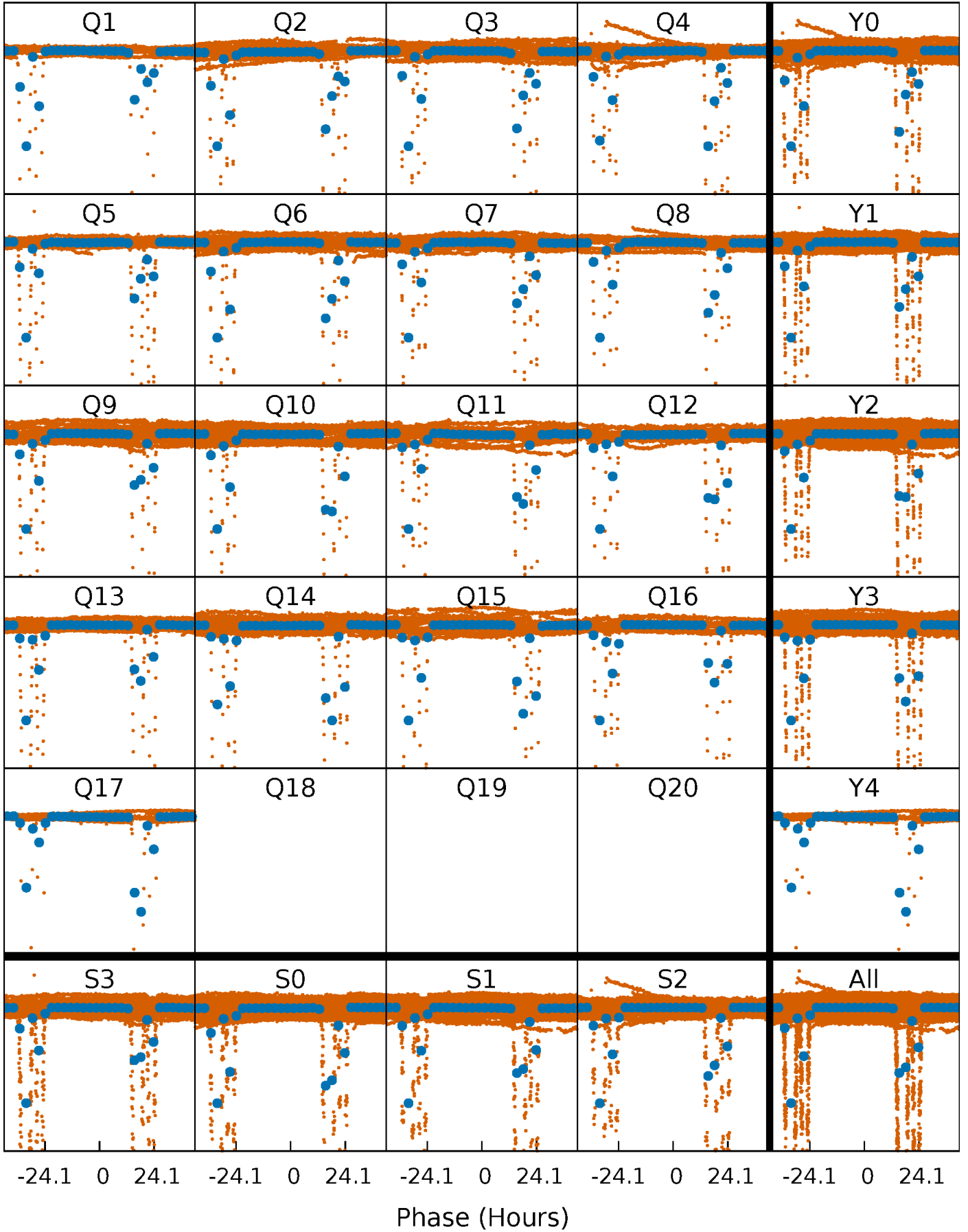


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



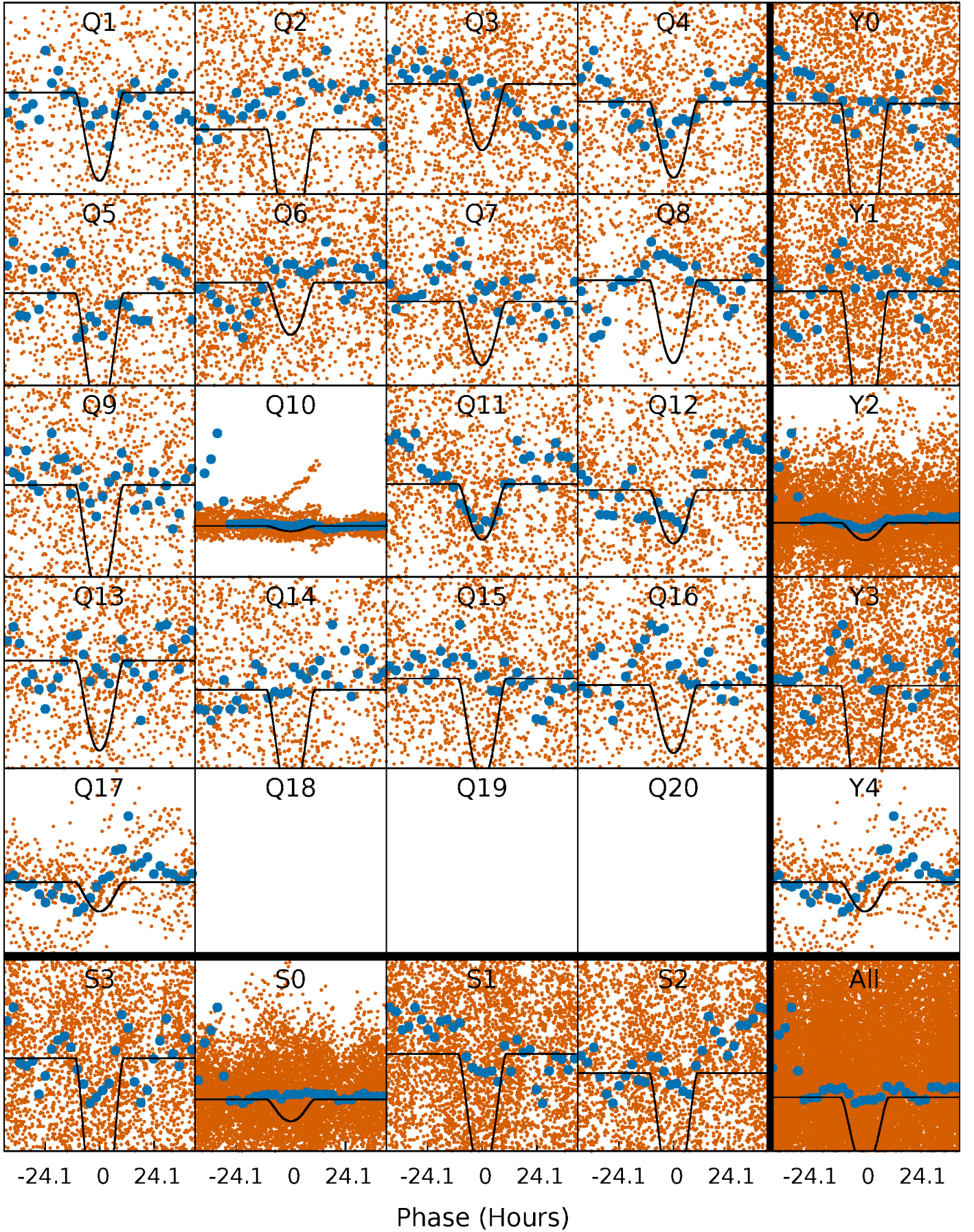
# PDC Quarter-Phased Transit Curves

TCE 008296467-04   P= 4.121238 Days    $T_0=134.424654$  (BKJD)



# DV Quarter-Phased Transit Curves

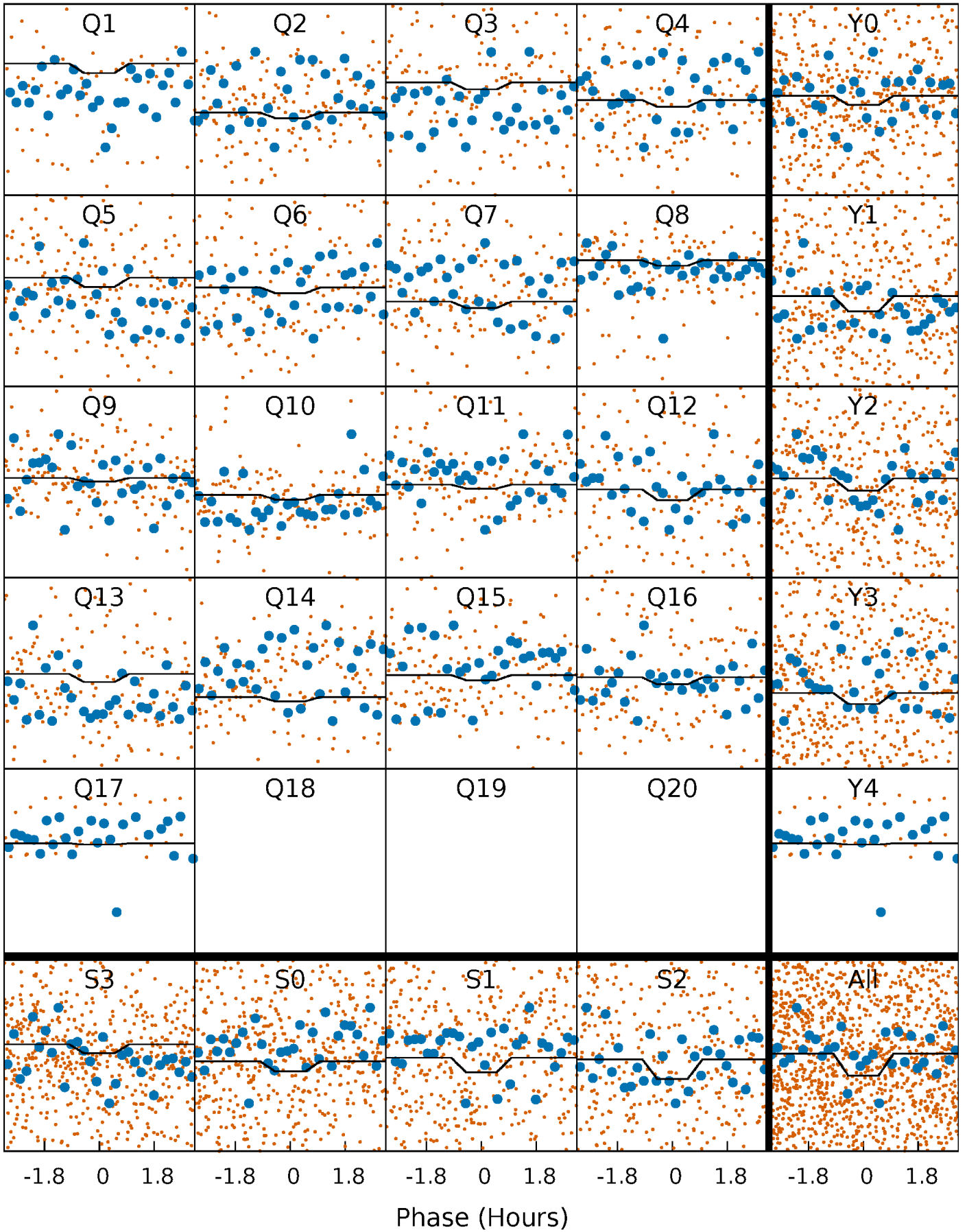
TCE 008296467-04     $P = 4.121238$  Days     $T_0 = 134.424654$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

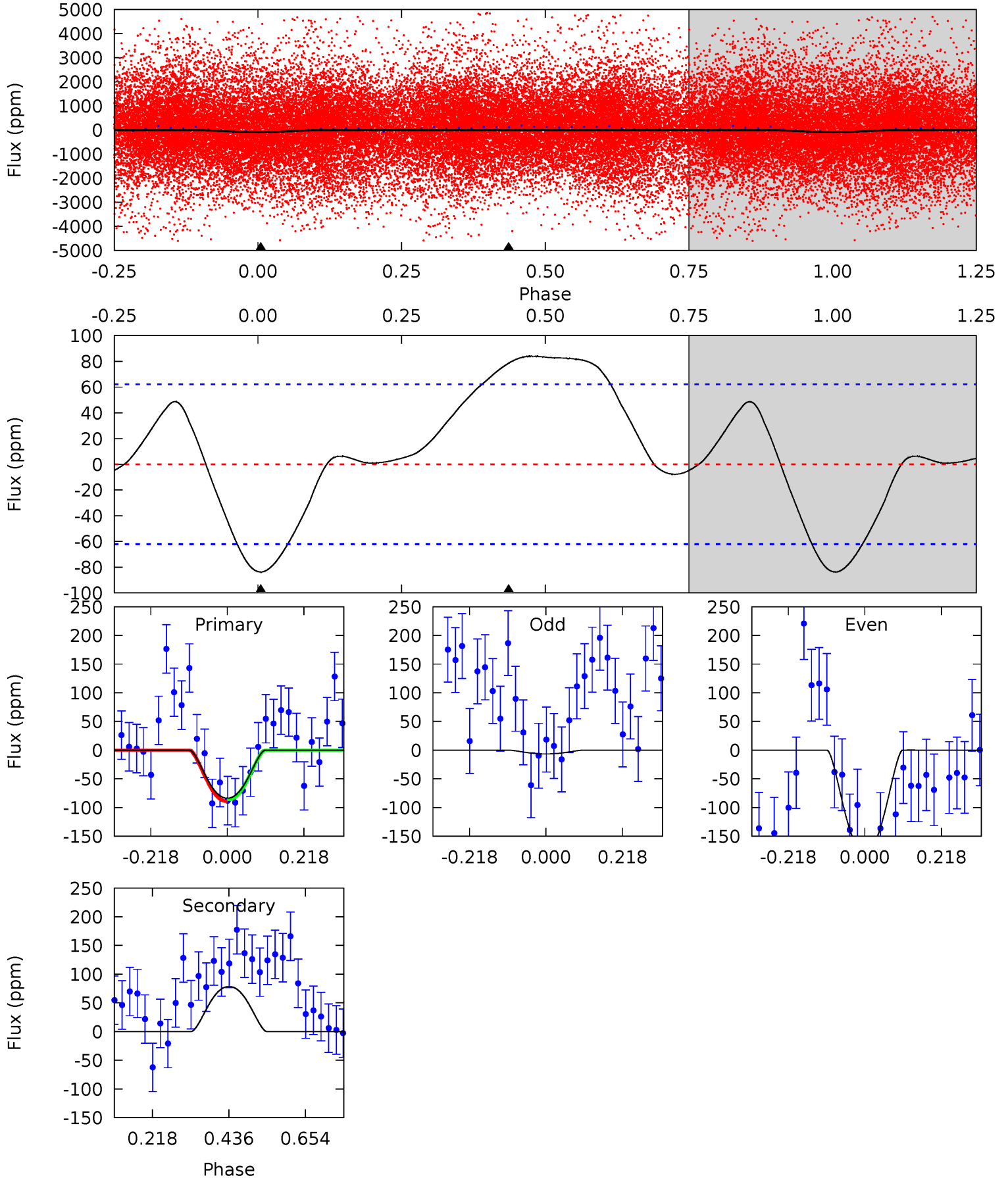
TCE 008296467-04 P= 4.121385 Days  $T_0=134.939908$  (BKJD)



# DV Model-Shift Uniqueness Test

008296467-04, P = 4.121238 Days, E = 130.303416 Days

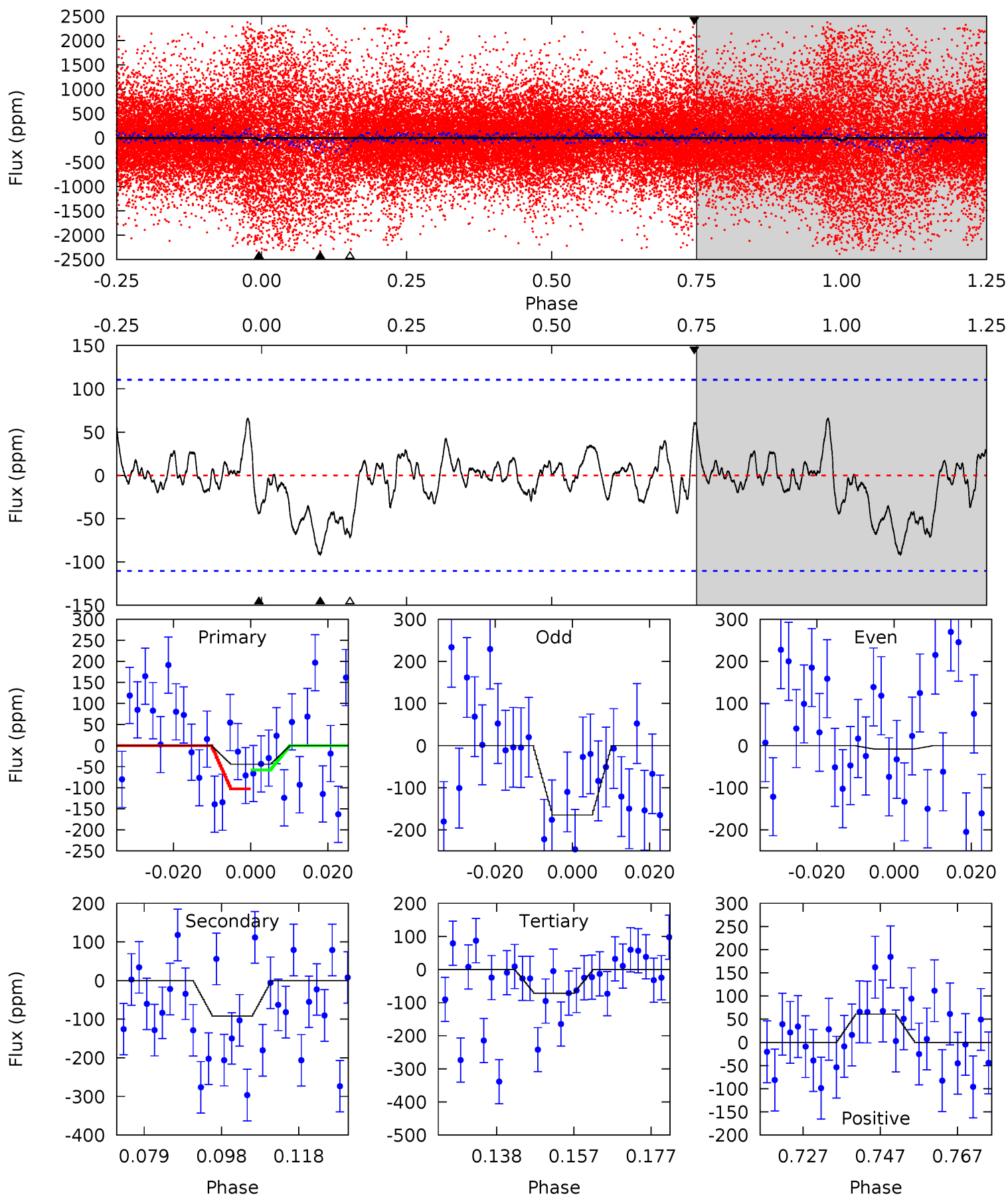
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.94	-5.56	0	0	4.40	1.23	0.69	5.94	5.94	-5.56	-5.56	6.38	-3.67	0.50	0.11



# Alt Model-Shift Uniqueness Test

008296467-04, P = 4.121385 Days, E = 130.818523 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.96	4.08	3.17	2.70	4.90	2.33	0.99	-1.21	-0.74	0.90	1.38	3.44	0.62	0.42	1.00



### Stellar Parameters For KIC 008296467

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5497^{+166}_{-149}$	$4.423^{+0.149}_{-0.182}$	$-0.280^{+0.300}_{-0.300}$	$0.900^{+0.211}_{-0.141}$	$0.782^{+0.120}_{-0.055}$	$1.514^{+0.980}_{-0.693}$
	+3%/-3%	+3%/-4%	+107%/-107%	+23%/-16%	+15%/-7%	+65%/-46%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008296467-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$79 \pm 14$	$3.65^{+0.73}_{-0.64}$	$1504^{+97}_{-91}$	$-3287^{+153}_{-186}$	$-6.989^{+2.297}_{-3.593}$
Alt.	$-92 \pm 23$	$1.19^{+0.48}_{-0.52}$	$1499^{+105}_{-86}$	$5006^{+1419}_{-722}$	$76^{+175}_{-41}$

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



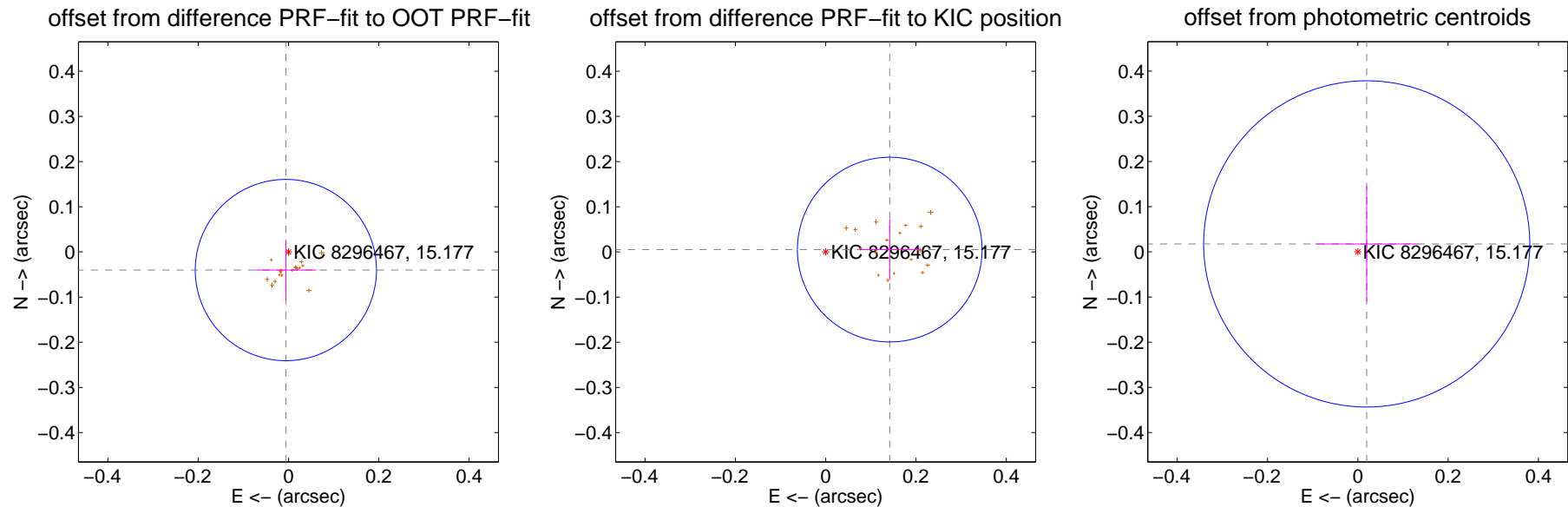
## DV Centroid Data

Supplemental centroid analysis for 008296467-04. Kepler magnitude: 15.18. Transit SNR 24.17

There are 0 quarters with good PRF difference image offsets

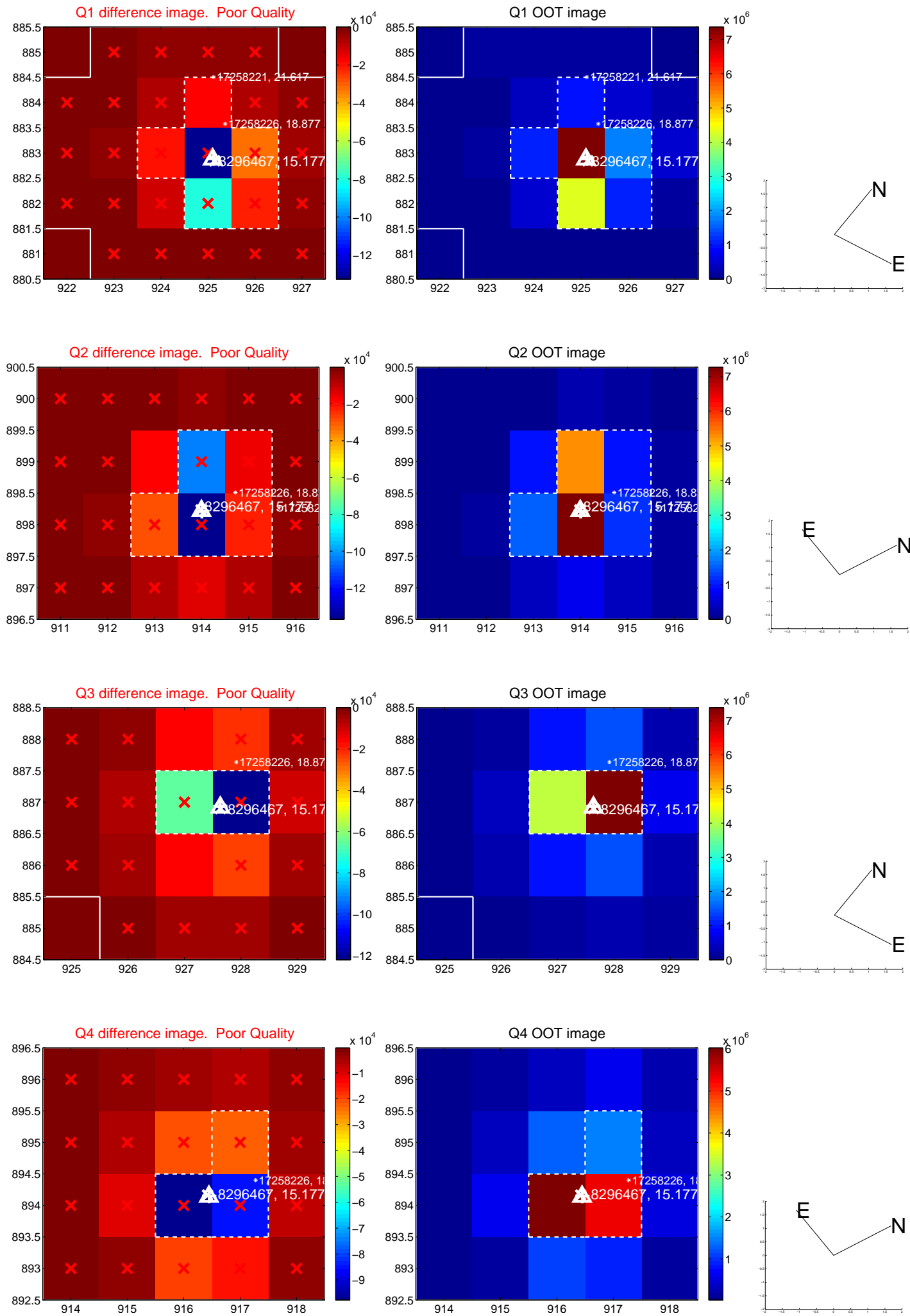
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.041 \pm 0.067$	0.61	$0.006 \pm 0.067$	$-0.040 \pm 0.067$
PRF-fit source offset from KIC position	$0.142 \pm 0.068$	2.08	$-0.142 \pm 0.068$	$0.005 \pm 0.068$
photometric centroid source offset	$0.03 \pm 0.12$	0.22	$-0.02 \pm 0.11$	$0.02 \pm 0.13$

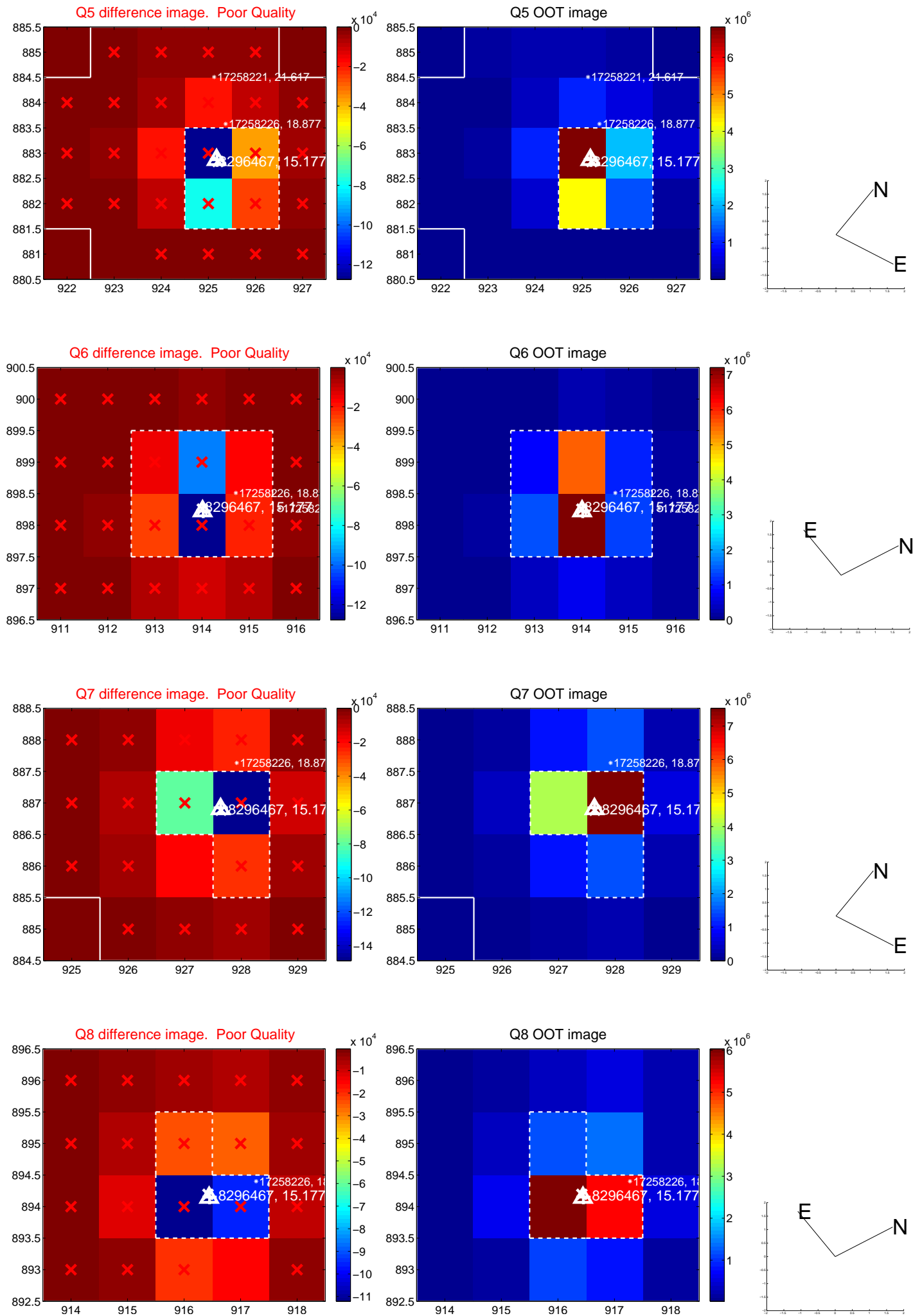


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

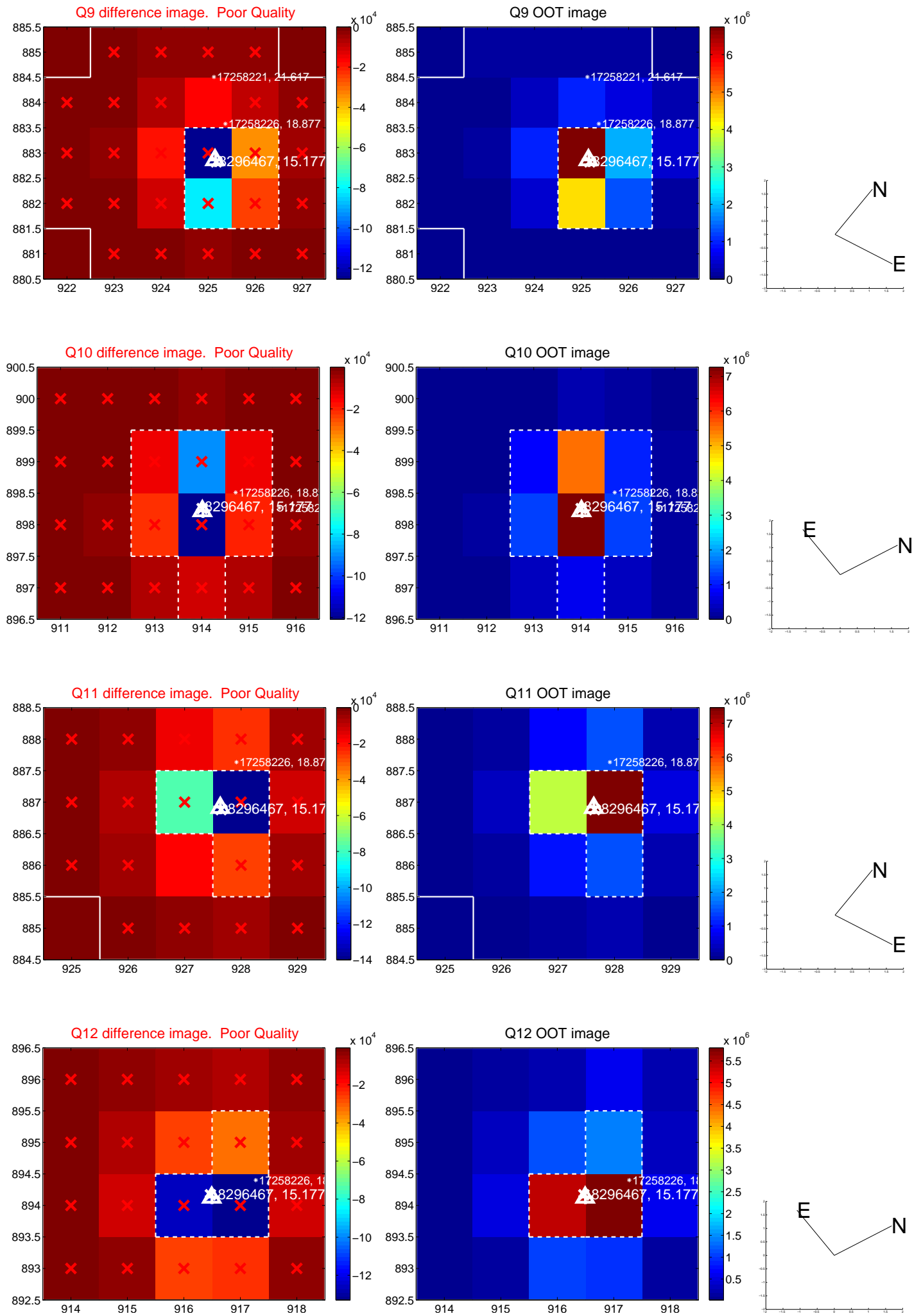
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



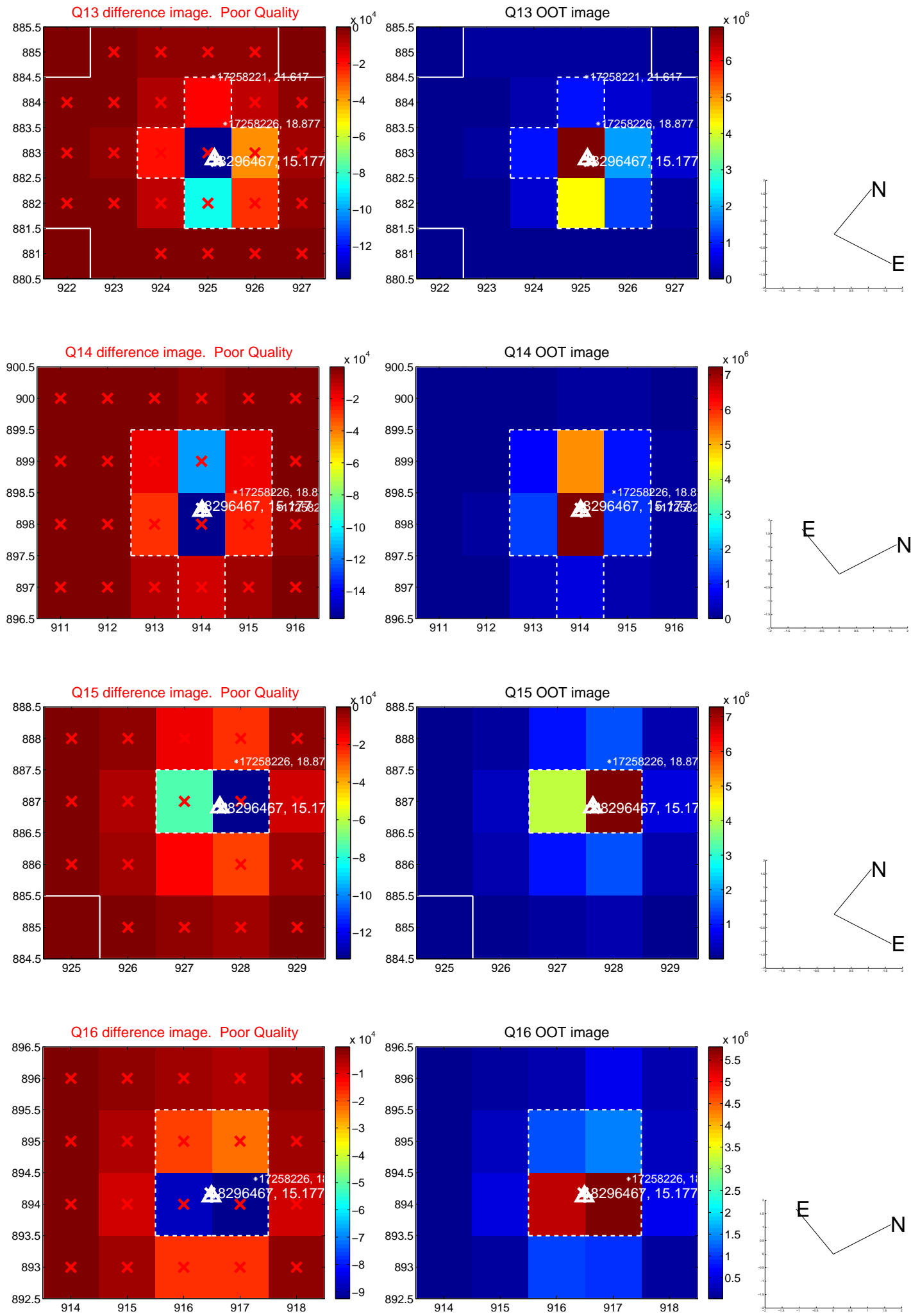
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



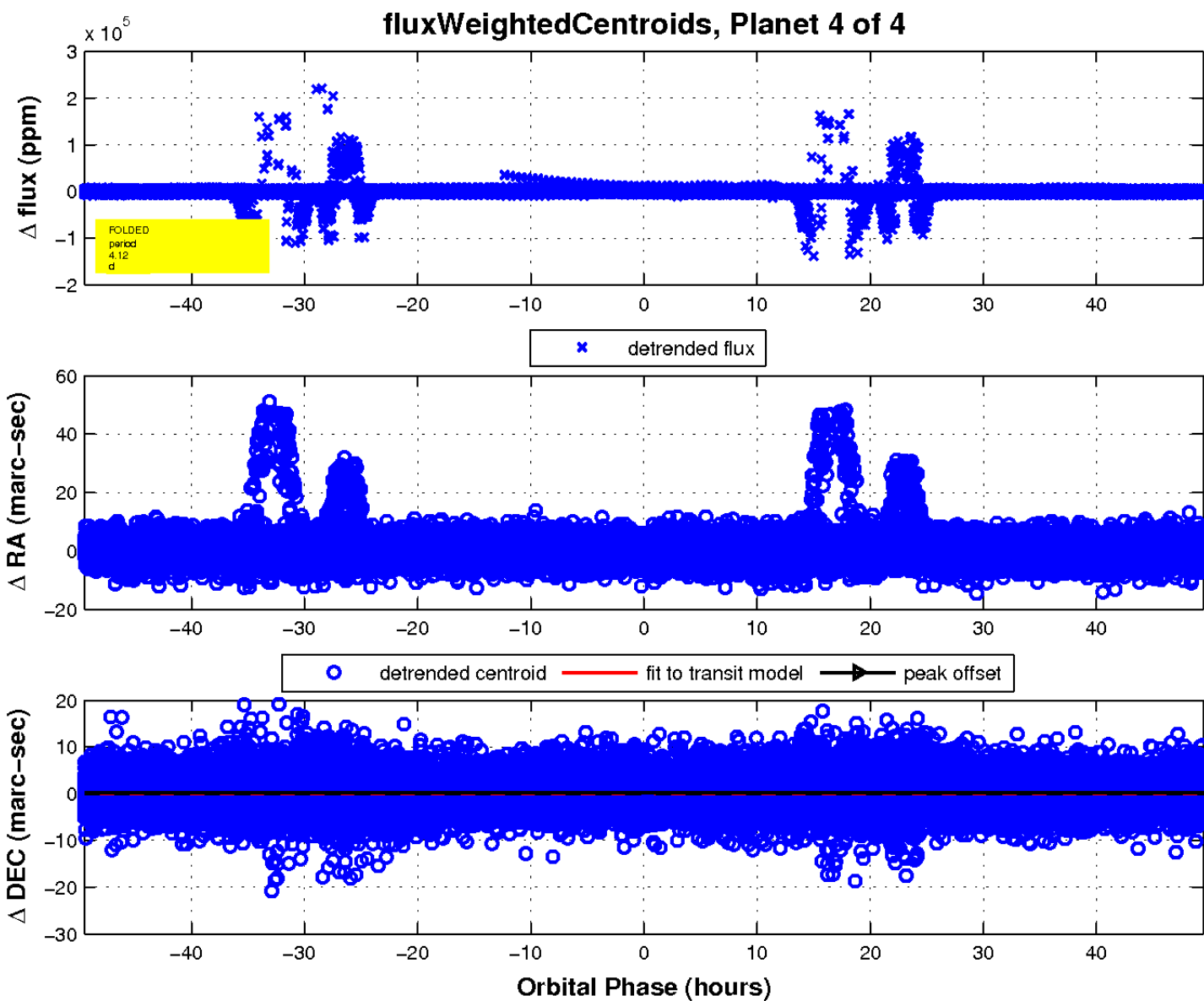
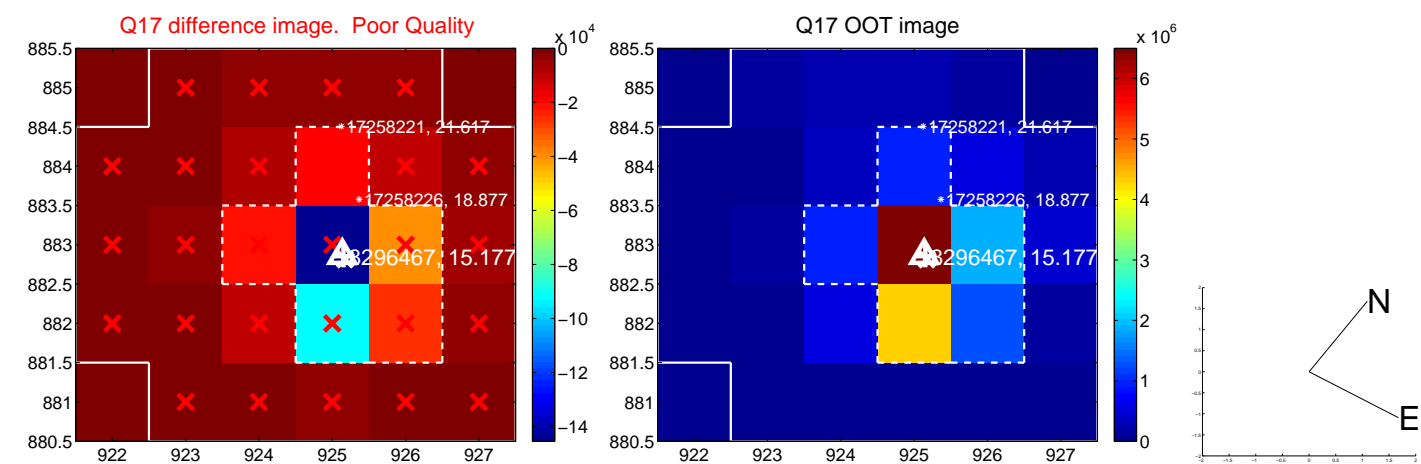
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

