

KIC 002442866

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})
002442866-02	OBS	No	453.358806	168.411406	2406.6	5.988	13.7	9.6	0.66	4538	3.15	0.17
002442866-03	OBS	No	451.670926	247.869102	1550.4	4.054	14.1	6.7	0.66	4538	2.85	0.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002442866-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS—HALO_GHOST
002442866-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS

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

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

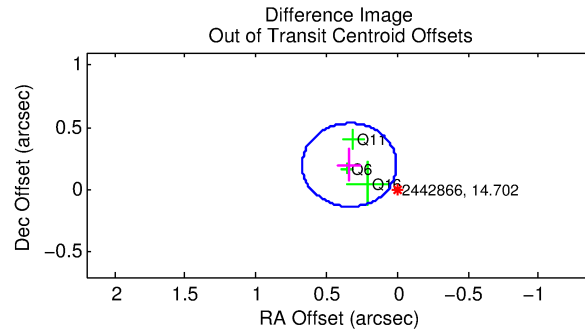
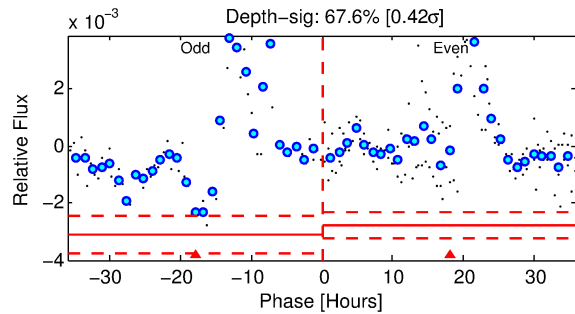
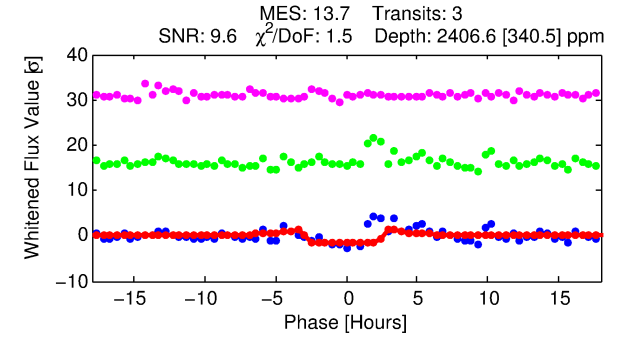
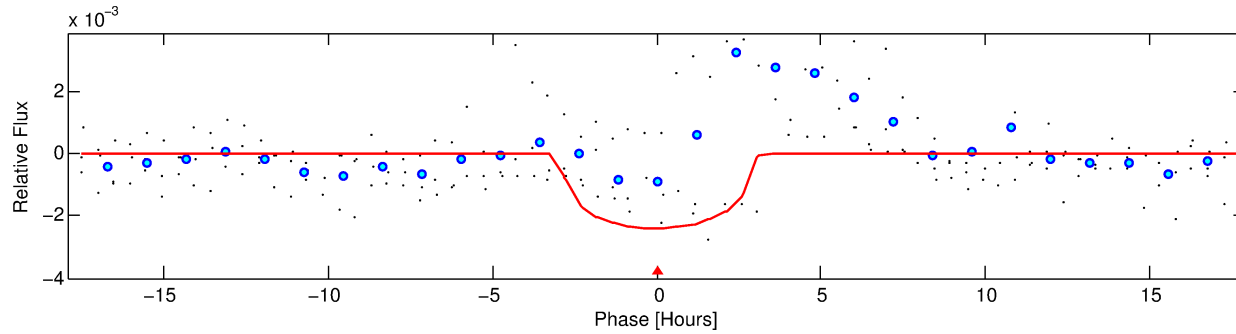
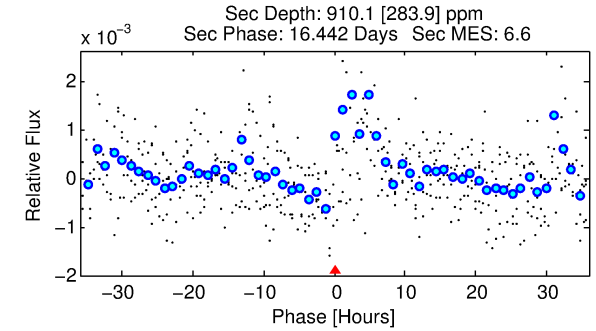
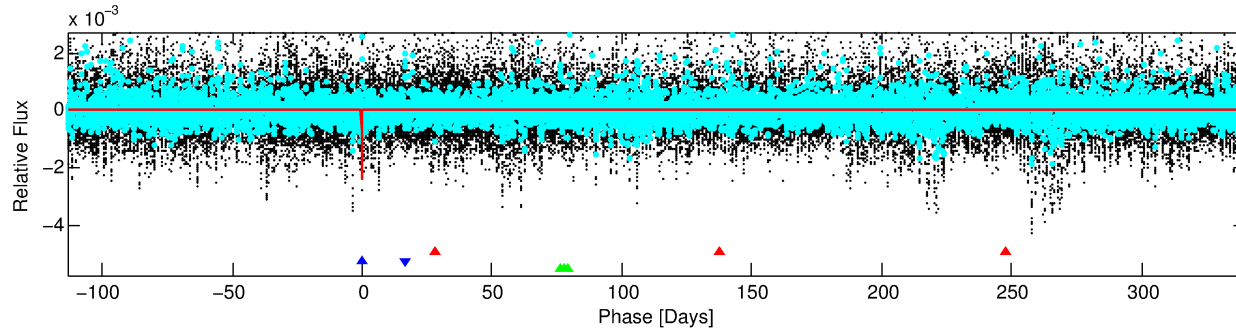
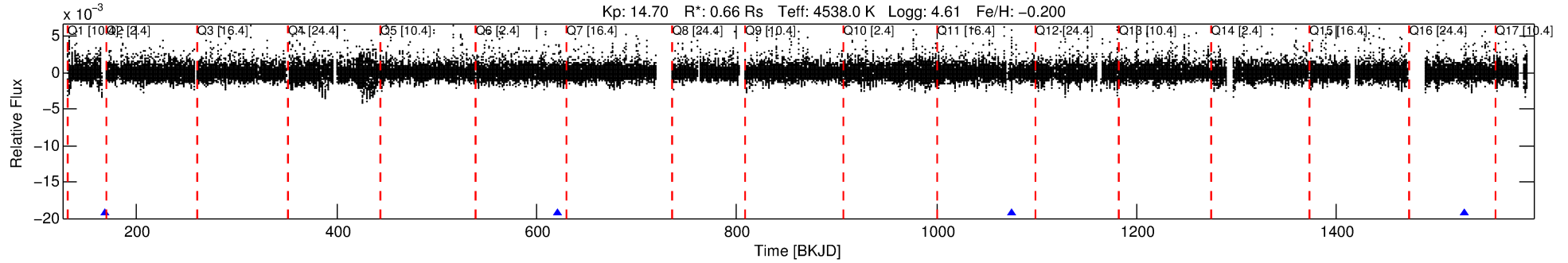
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002442866-02

No Significant Match Found

DV One-Page Summary

KIC: 2442866 Candidate: 2 of 3 Period: 453.359 d



DV Fit Results:

Period = 453.35881 [0.00537] d
Epoch = 168.4114 [0.0122] BKJD
Rp/R* = 0.0435 [0.0426]
a/R* = 583.72 [1685.10]
b = 0.27 [10.32]
Seff = 0.17 [0.03]
Teq = 163 [7] K
Rp = 3.15 [3.09] Re
a = 1.0000 [0.0707] AU
Ag = 50517.17 [100210.27] [0.50 σ]
Teffp = 3778 [1876] K [1.93 σ]

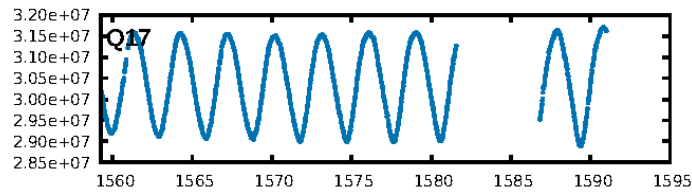
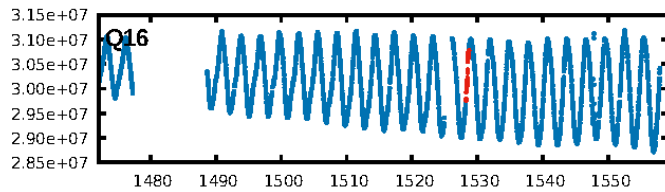
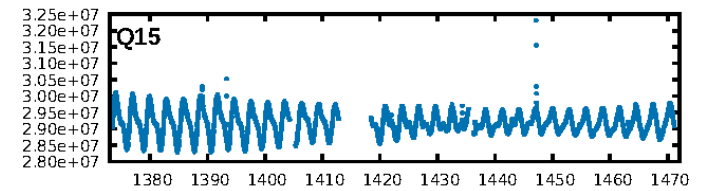
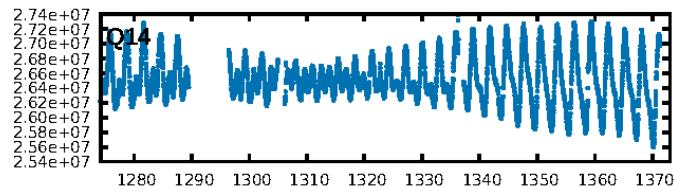
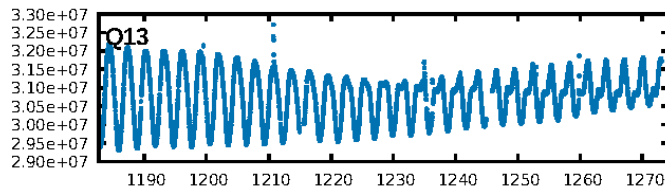
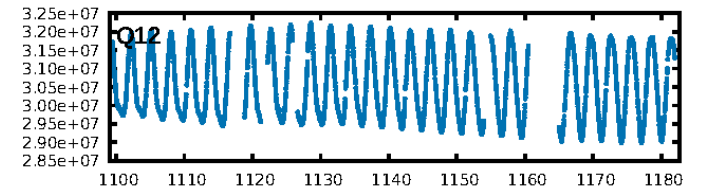
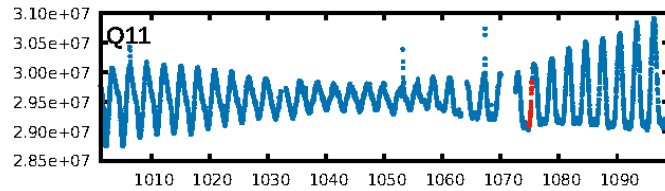
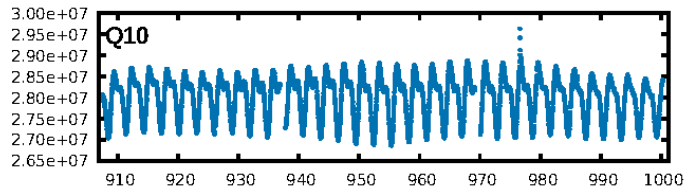
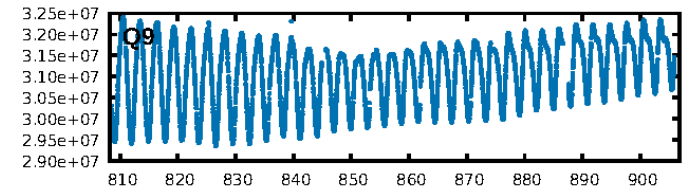
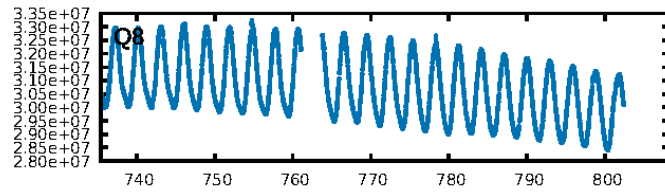
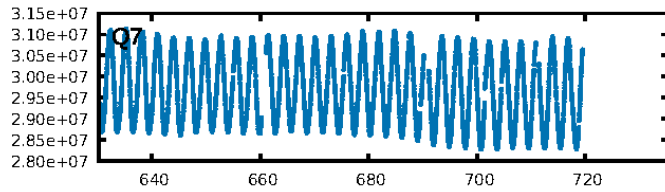
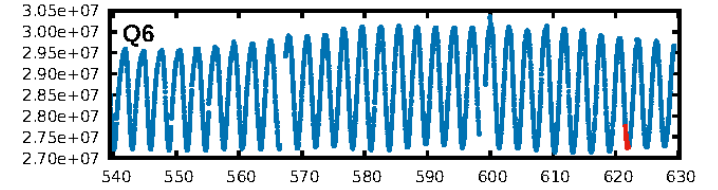
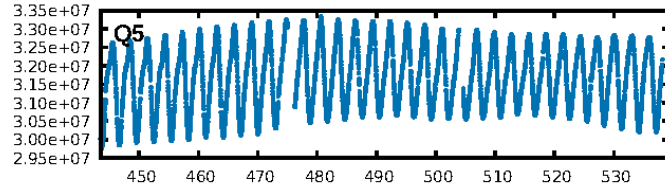
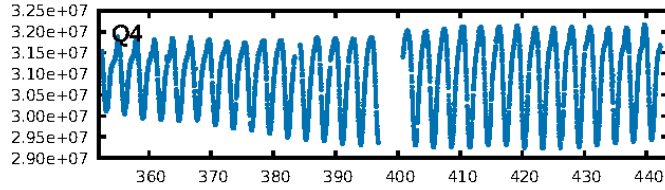
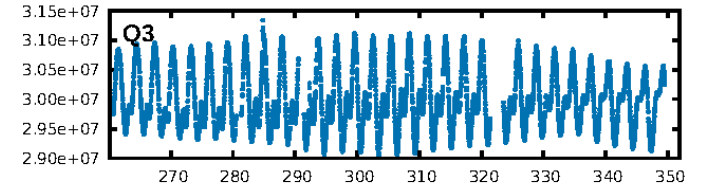
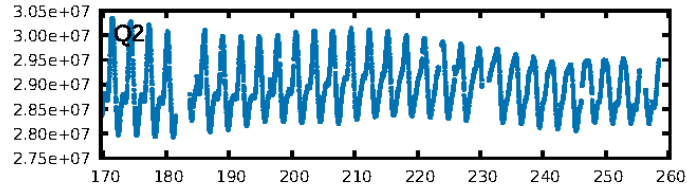
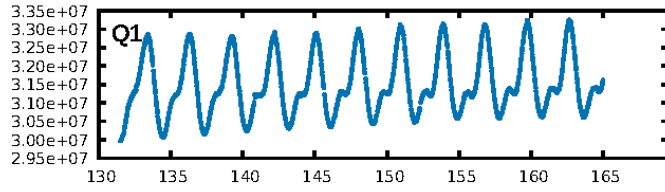
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.60 σ]
LongPeriod-sig: 100.0% [351.72 σ]
ModelChiSquare2-sig: 17.7%
ModelChiSquareGof-sig: 77.5%
Bootstrap-pfa: 3.60e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.1018
Centroid-sig: 11.8%
Centroid-so: 0.868 arcsec [0.73 σ]
OotOffset-rm: 0.392 arcsec [3.52 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.264 arcsec [2.88 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

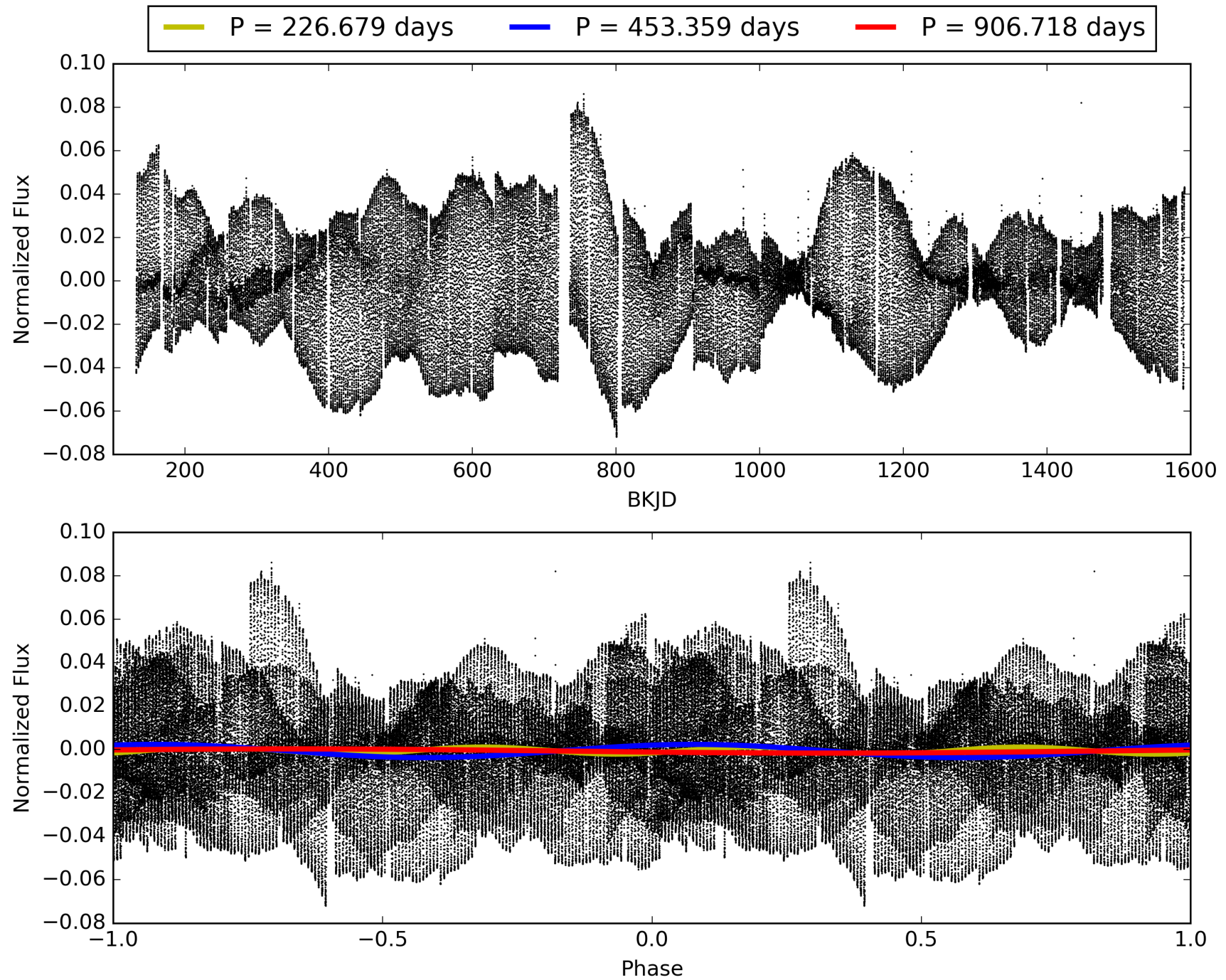
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:06:49 Z

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

TCE 002442866-02, PDC Light Curves

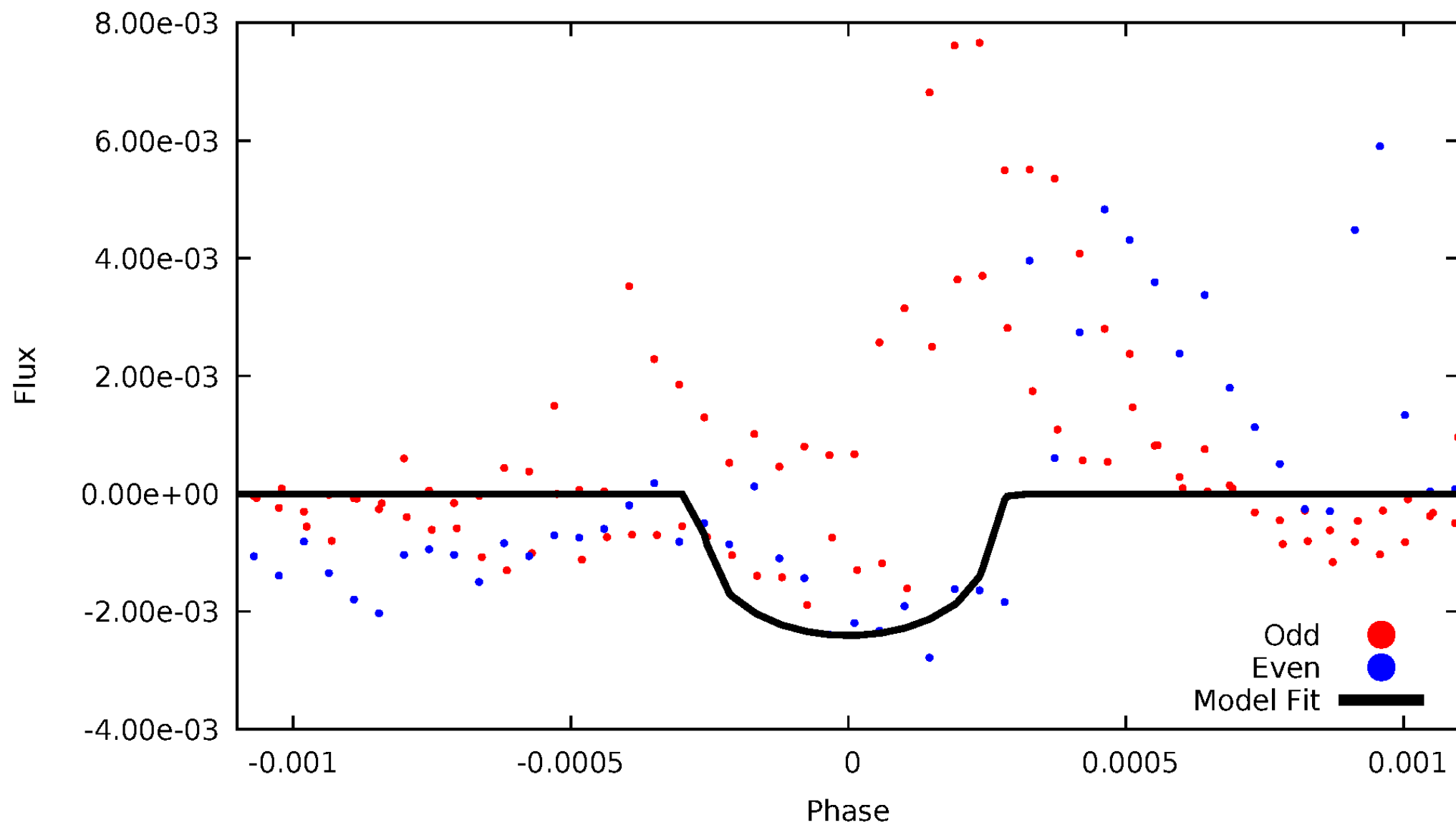


TCE 002442866-02



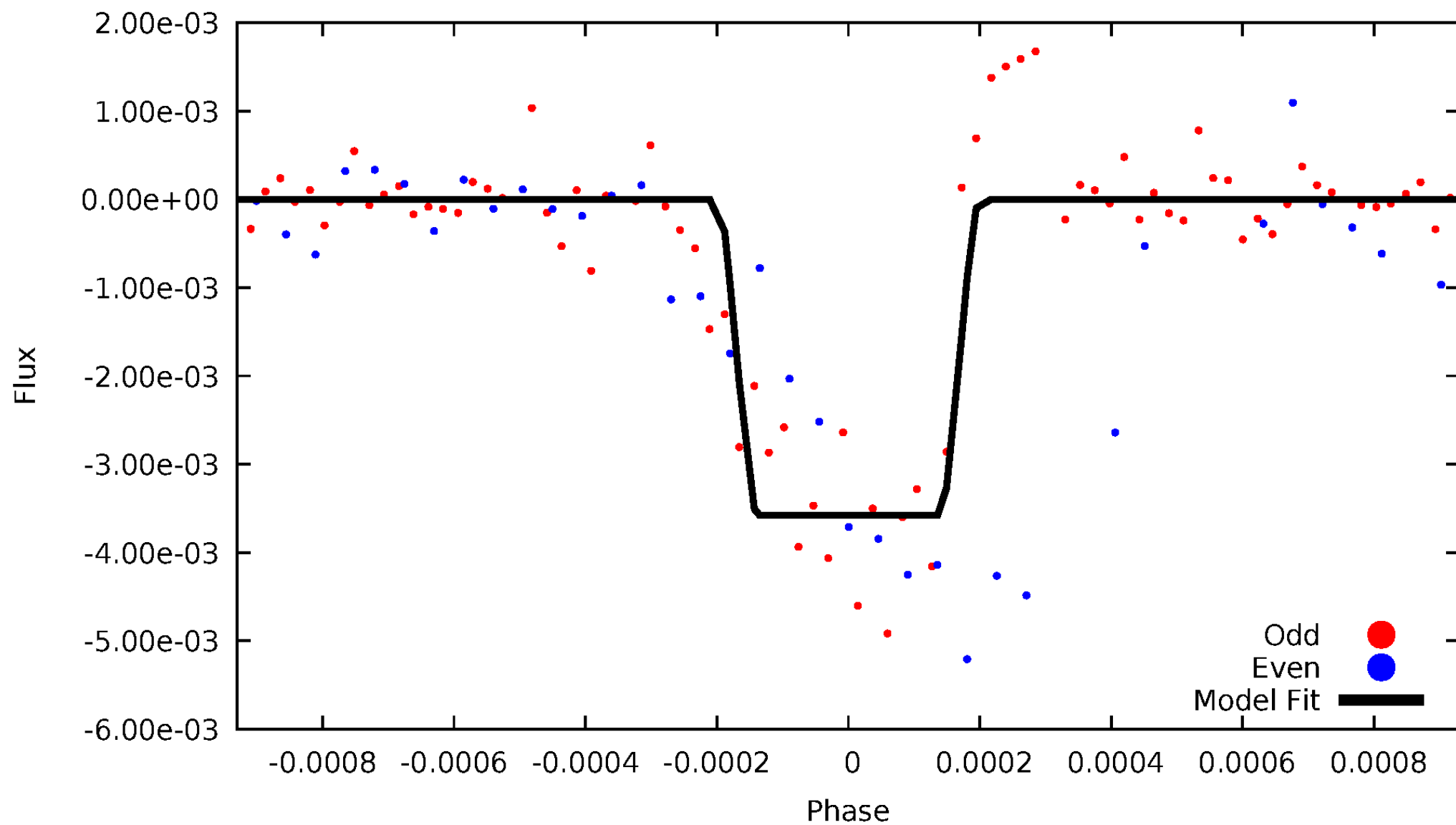
DV Odd/Even

TCE 002442866-02



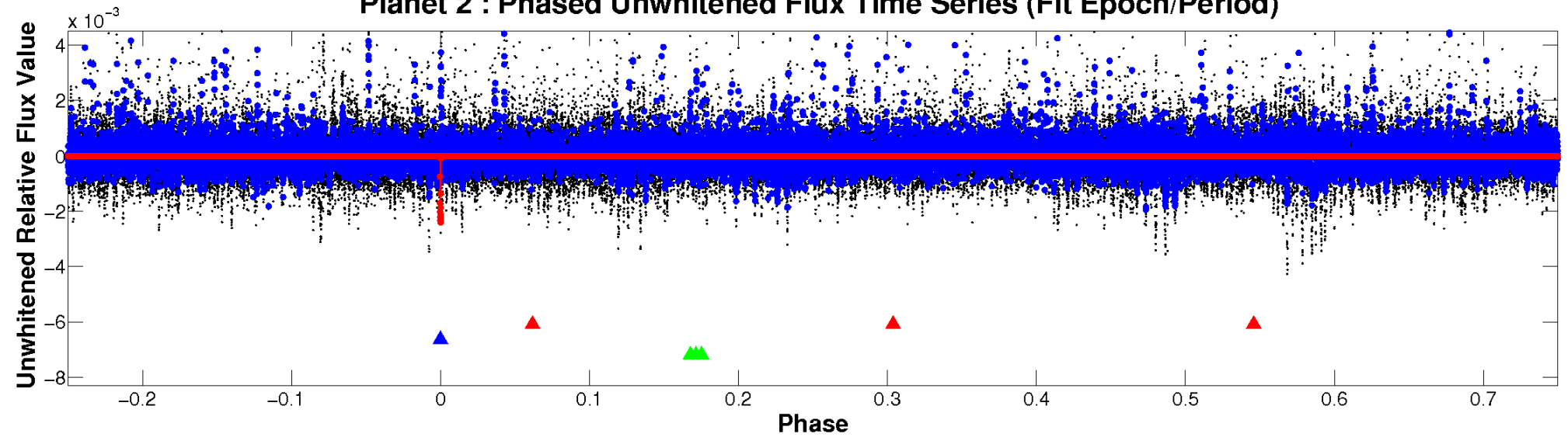
ALT Odd/Even

TCE 002442866-02

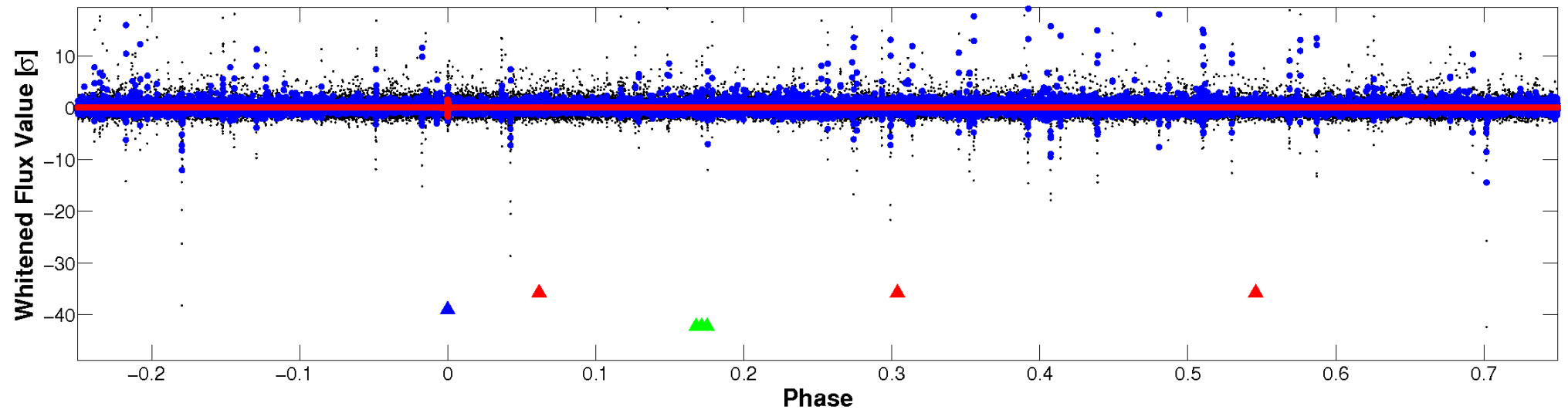


Non-Whitened Vs. Whitened Light Curve

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

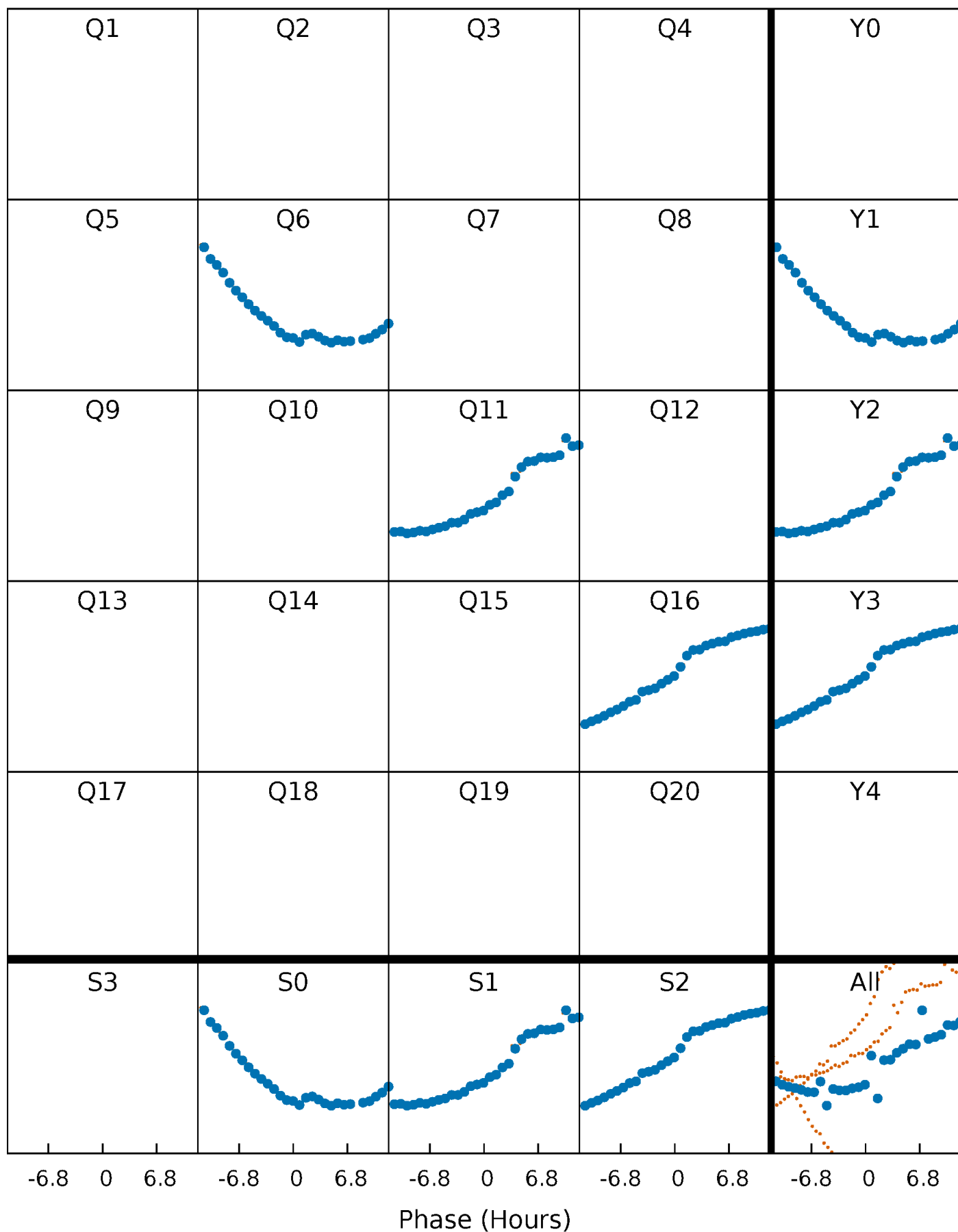


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



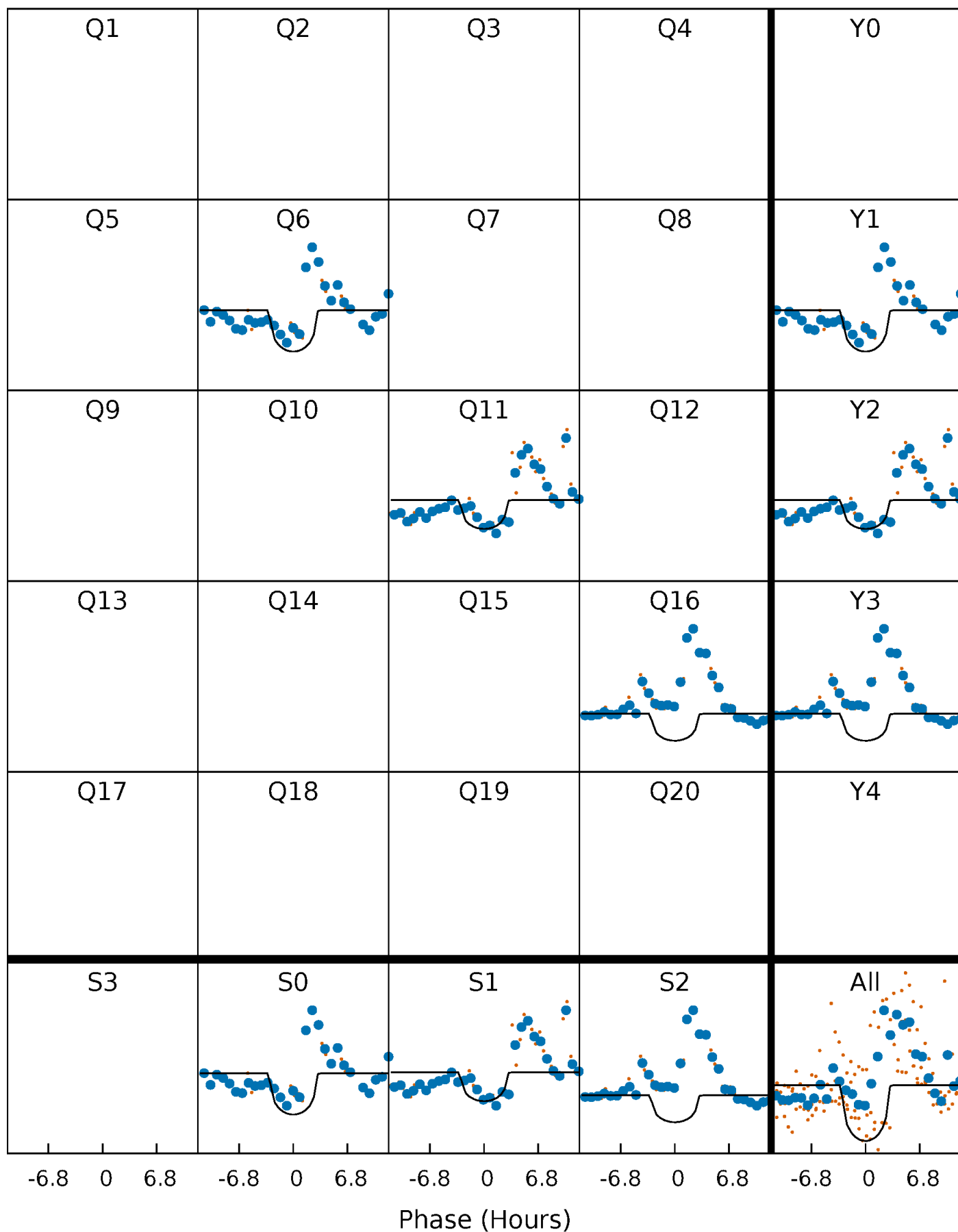
PDC Quarter-Phased Transit Curves

TCE 002442866-02 P=453.358806 Days $T_0=168.411406$ (BKJD)



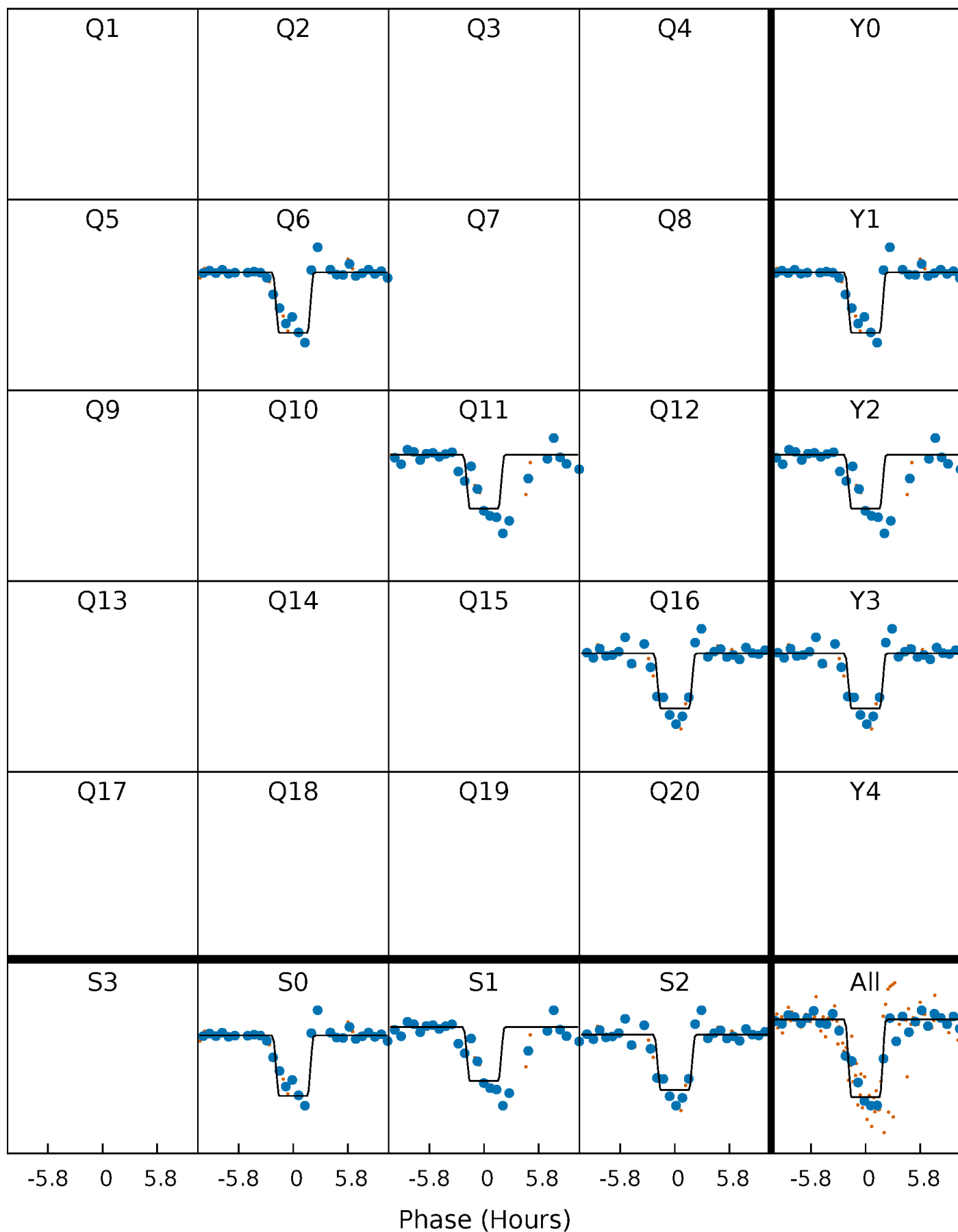
DV Quarter-Phased Transit Curves

TCE 002442866-02 $P=453.358806$ Days $T_0=168.411406$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

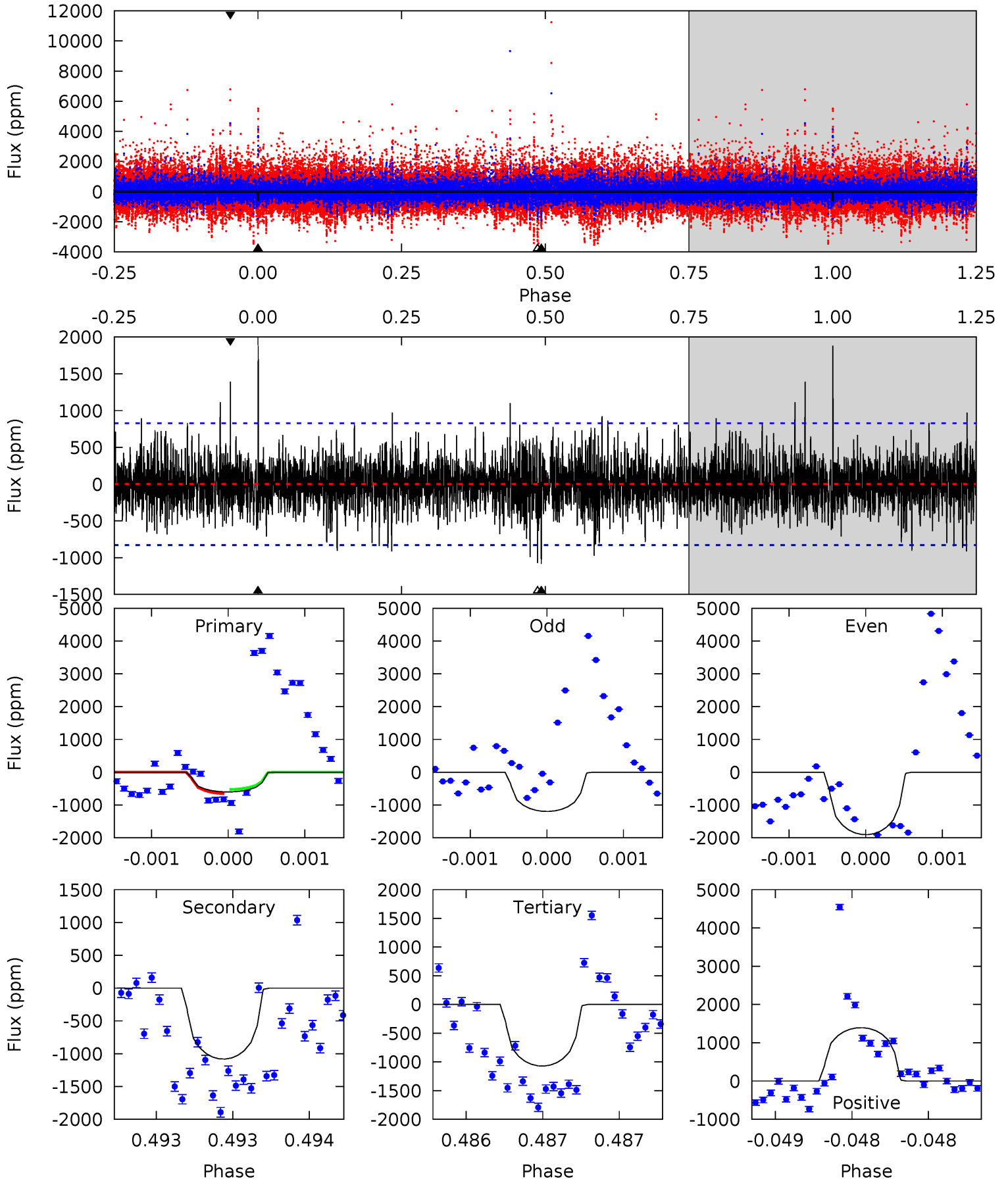
TCE 002442866-02 $P=453.352584$ Days $T_0=168.408074$ (BKJD)



DV Model-Shift Uniqueness Test

002442866-02, P = 453.358806 Days, E = 168.411406 Days

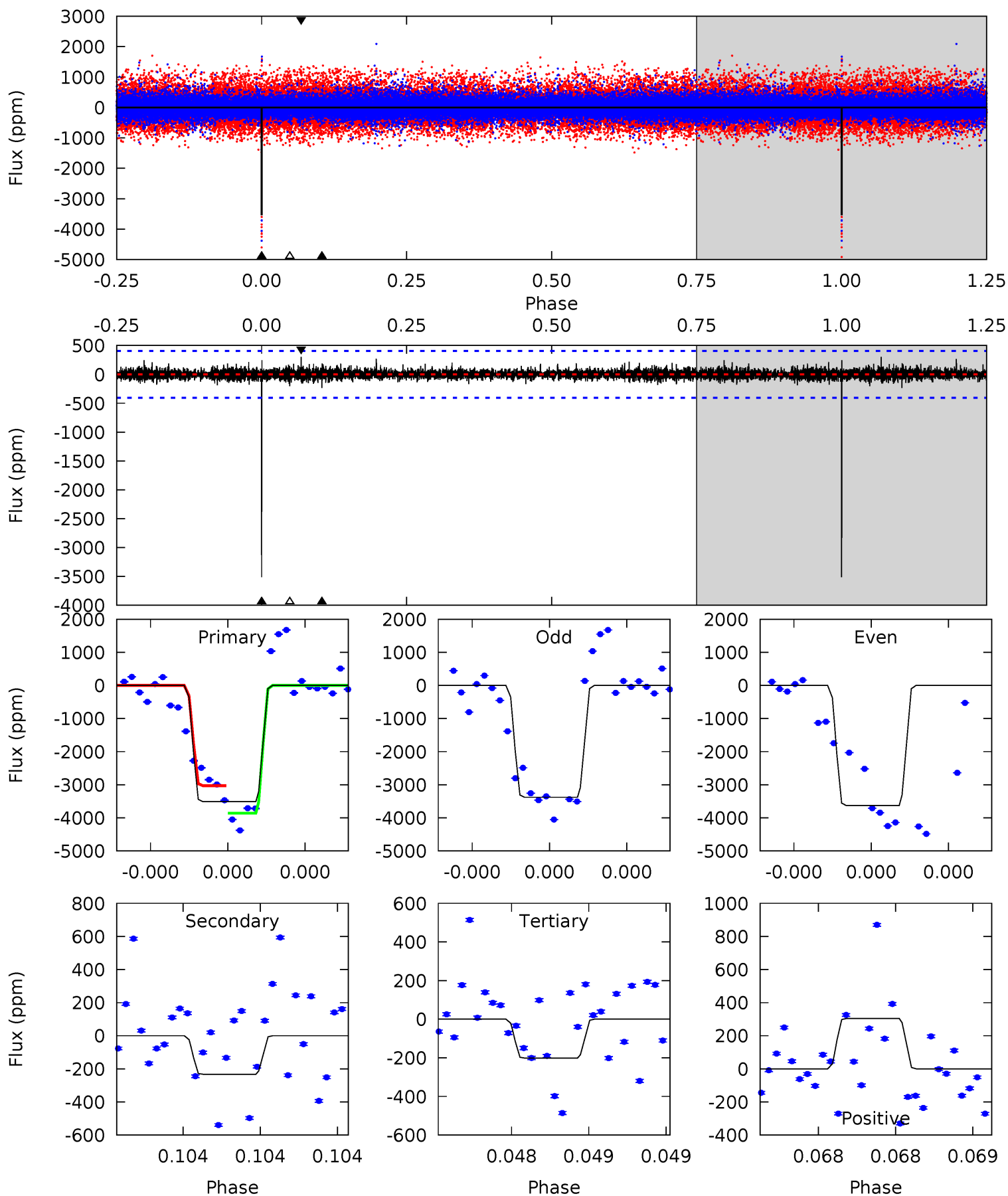
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.04	7.25	7.18	9.34	5.56	3.46	1.72	-3.14	-5.30	0.07	-2.09	2.25	-0.73	0.64	0.43



Alt Model-Shift Uniqueness Test

002442866-02, P = 453.352584 Days, E = 168.408074 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.7	3.22	2.79	4.21	5.62	3.56	0.61	45.9	44.4	0.43	-0.99	1.61	1.05	0.08	5.89



Stellar Parameters For KIC 002442866

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4538^{+150}_{-150}	$4.607^{+0.052}_{-0.024}$	$-0.200^{+0.300}_{-0.300}$	$0.663^{+0.052}_{-0.058}$	$0.650^{+0.077}_{-0.051}$	$3.136^{+0.736}_{-0.382}$
	+3%/-3%	+1%/-1%	+150%/-150%	+8%/-9%	+12%/-8%	+23%/-12%
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 002442866-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1082 ± 149	$3.68^{+2.89}_{-2.33}$	226^{+8}_{-9}	3895^{+1916}_{-700}	$44125^{+292400}_{-29799}$
Alt.	-233 ± 72	$4.64^{+3.06}_{-2.50}$	226^{+8}_{-8}	2838^{+798}_{-346}	5938^{+24340}_{-3735}

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

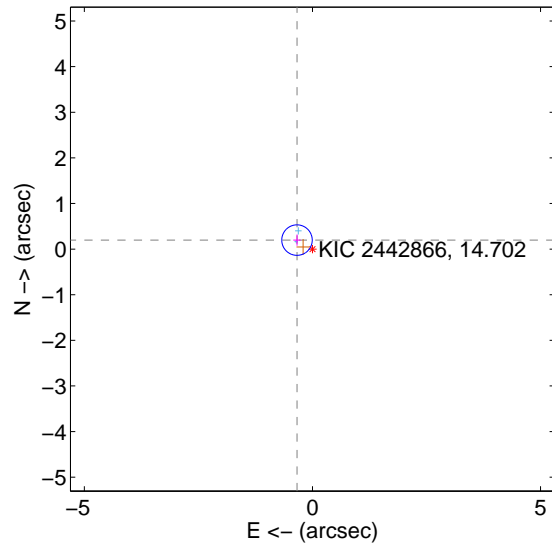
Supplemental centroid analysis for 002442866-02. Kepler magnitude: 14.70. Transit SNR 9.58

There are 2 quarters with good PRF difference image offsets

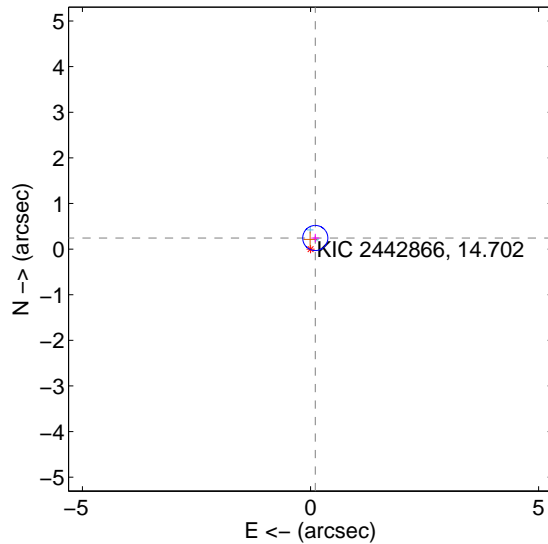
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.392 \pm 0.111	3.52	0.339 \pm 0.082	0.197 \pm 0.123
PRF-fit source offset from KIC position	0.264 \pm 0.092	2.88	-0.104 \pm 0.087	0.243 \pm 0.093
photometric centroid source offset	0.87 \pm 1.18	0.73	0.56 \pm 1.49	-0.66 \pm 0.90

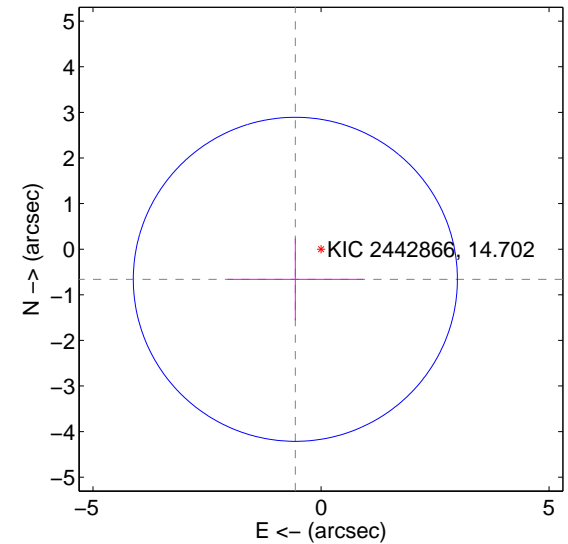
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

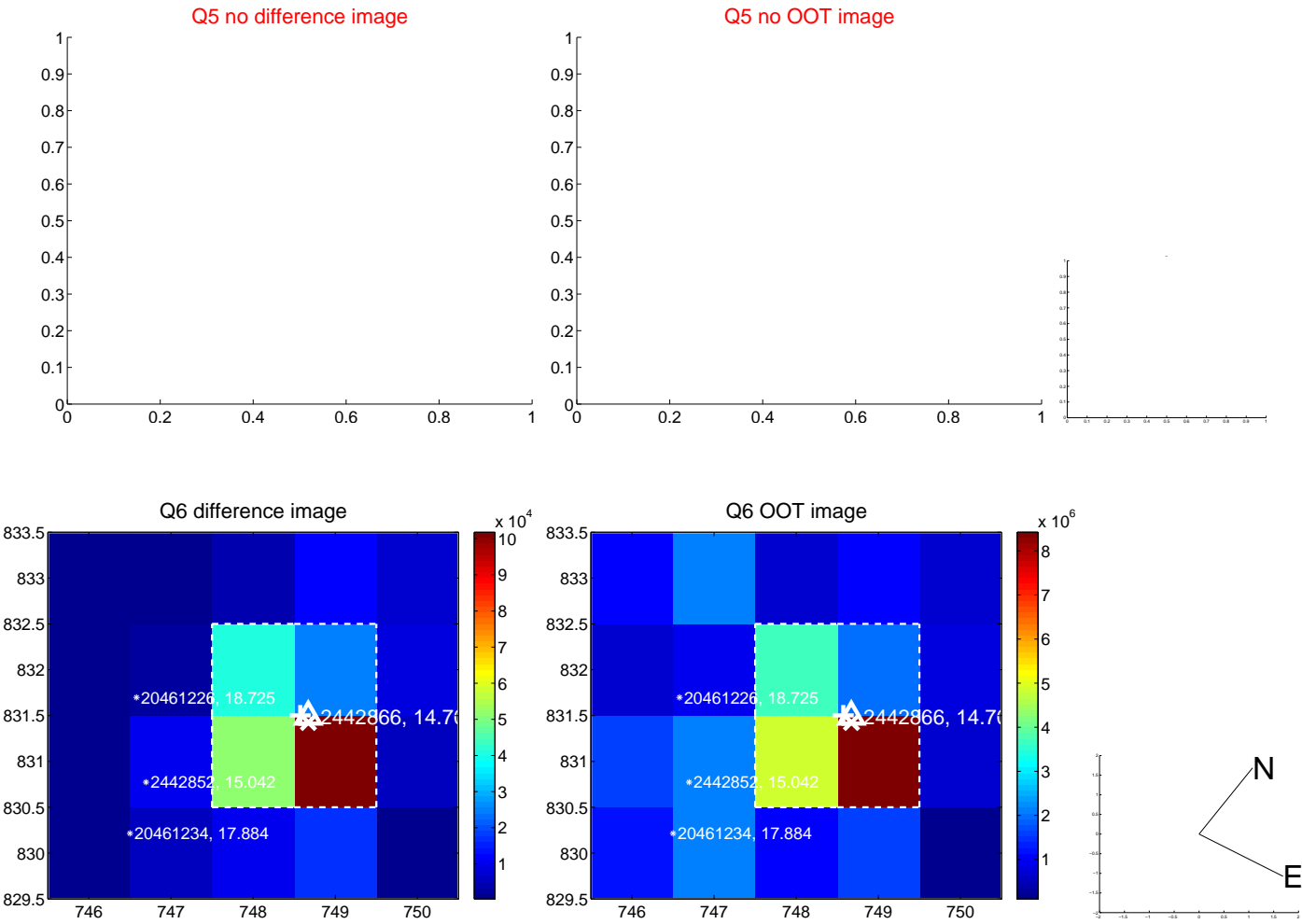


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

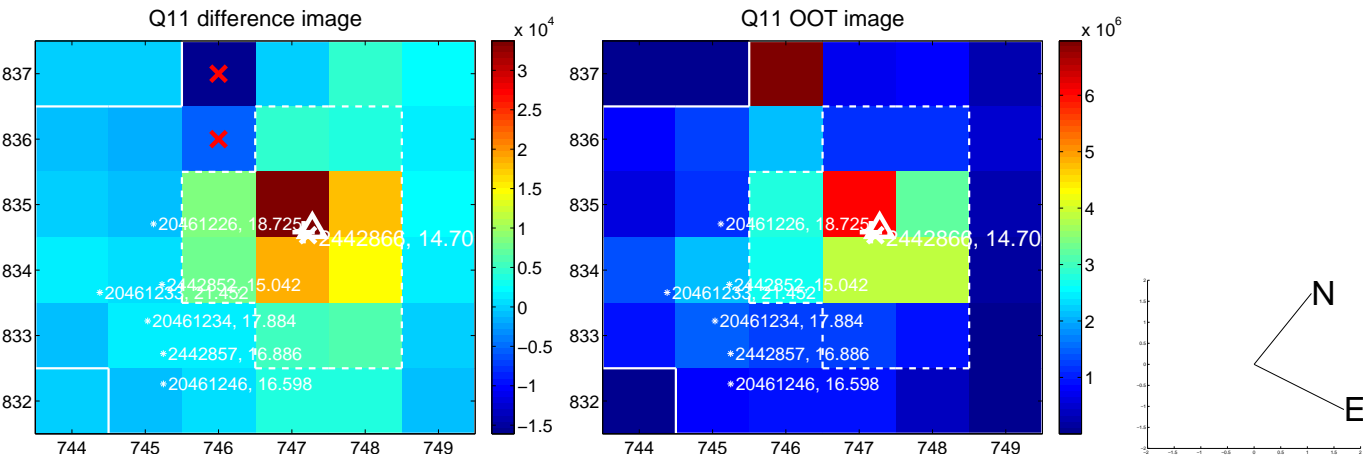
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



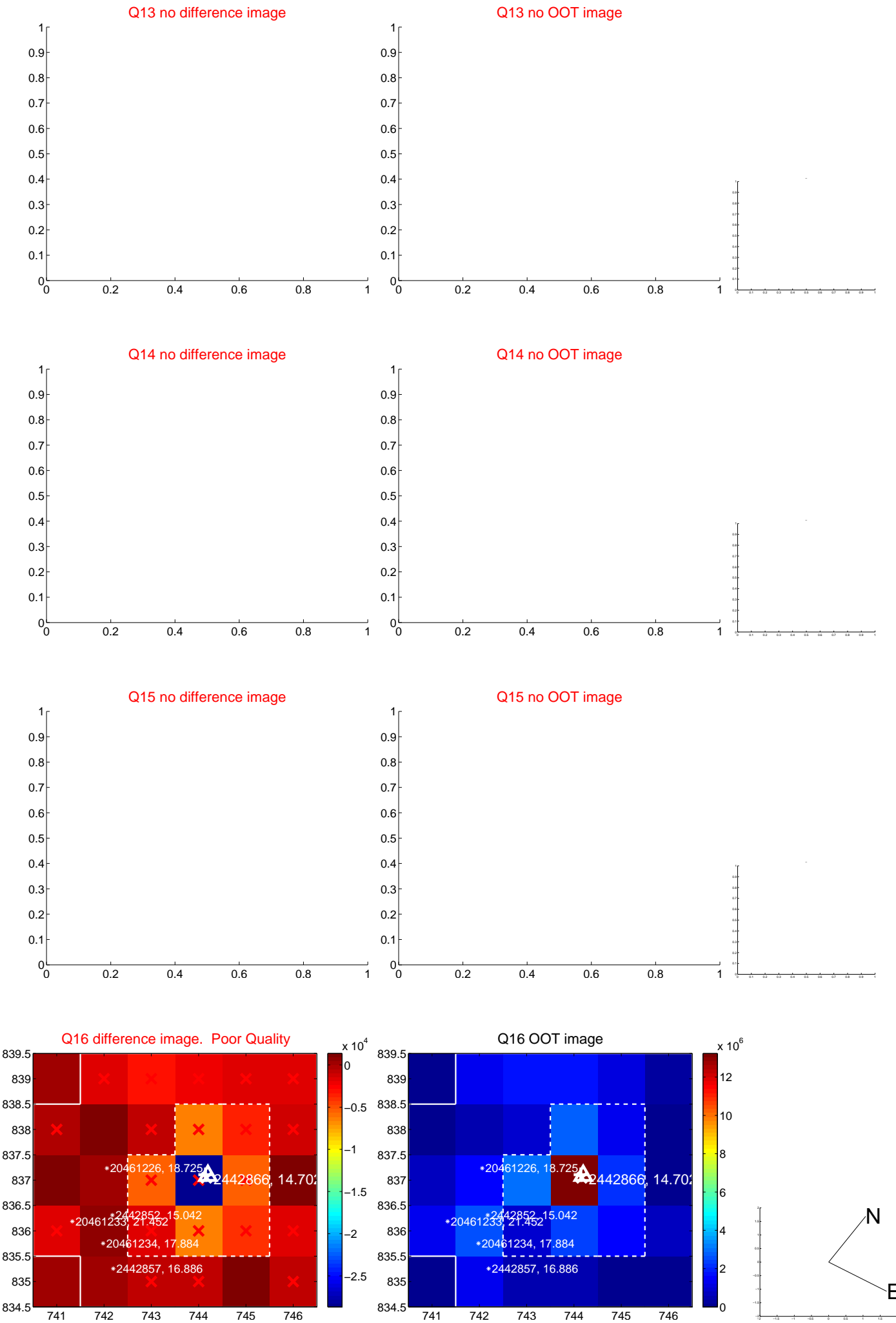
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



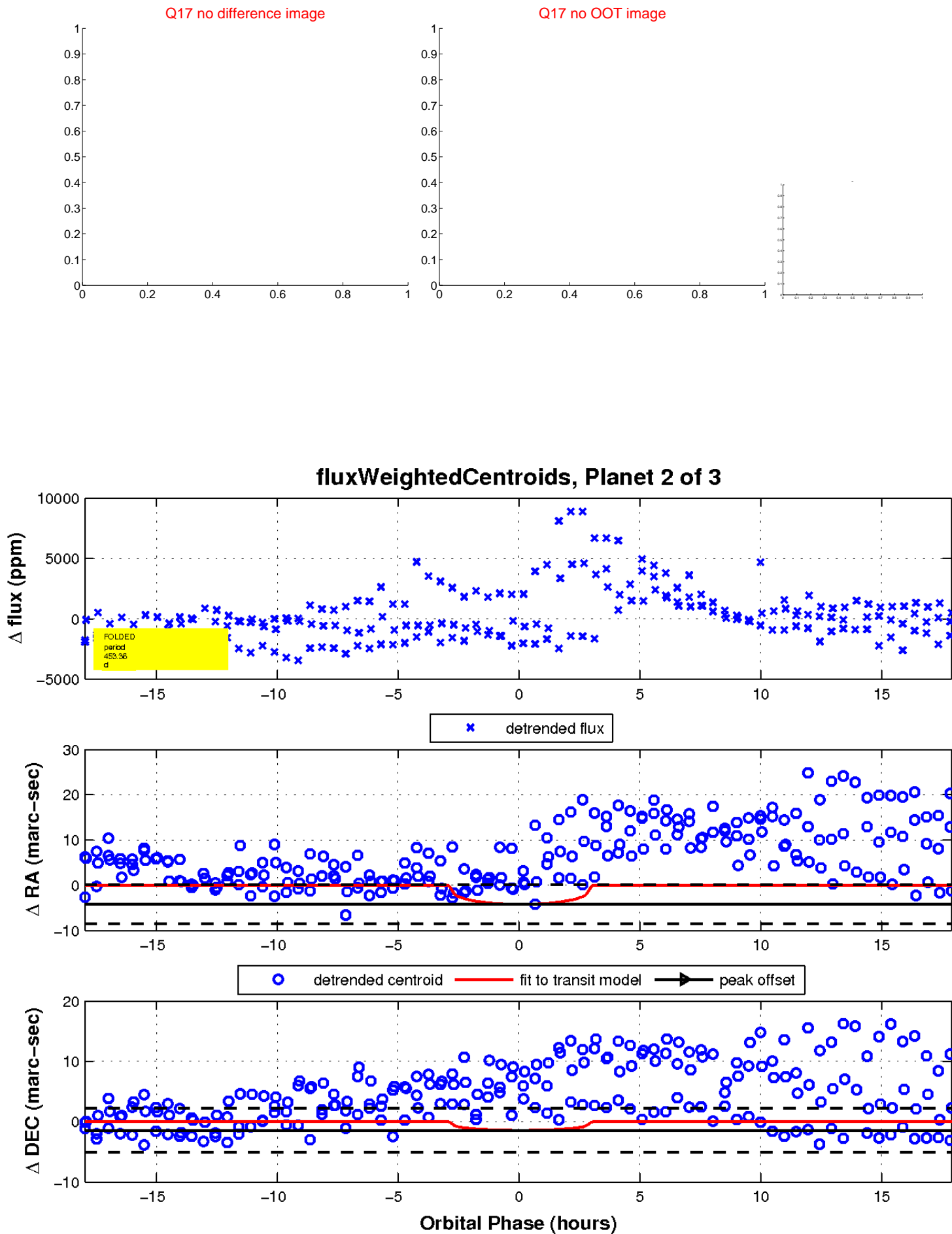
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



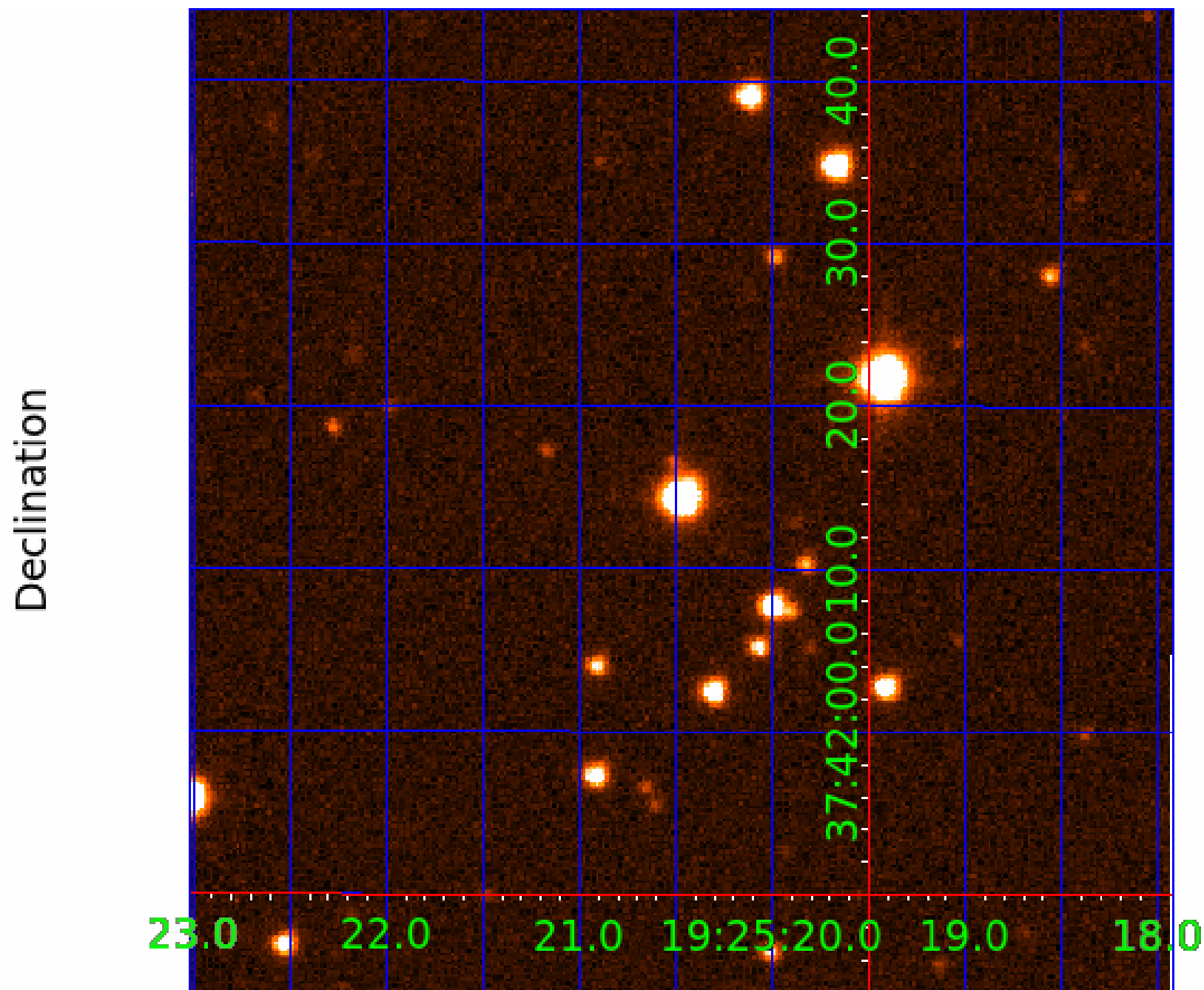
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image



KIC 002442866

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})
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Robovetter Results

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002442866-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS

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

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

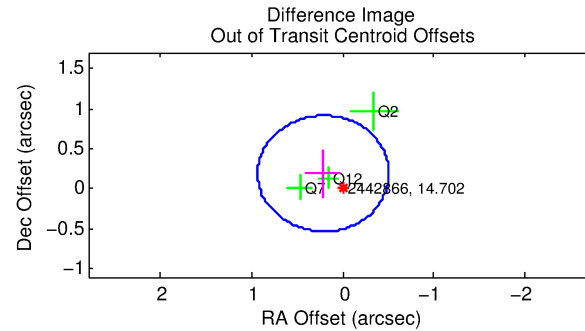
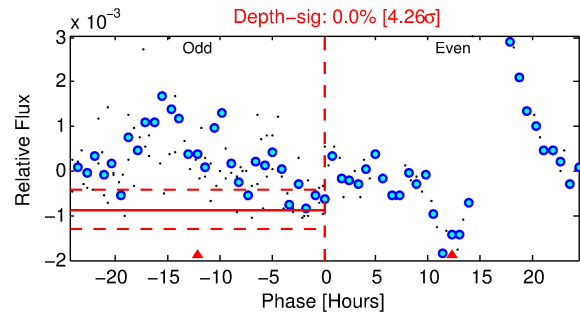
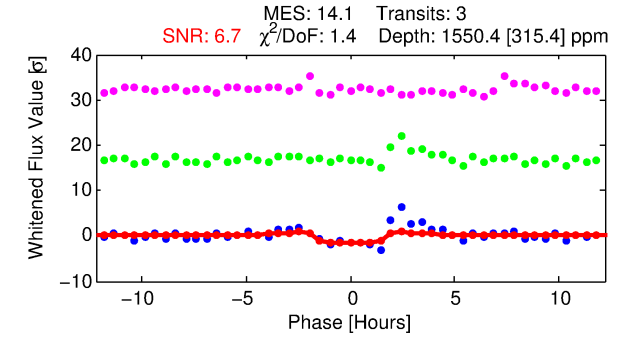
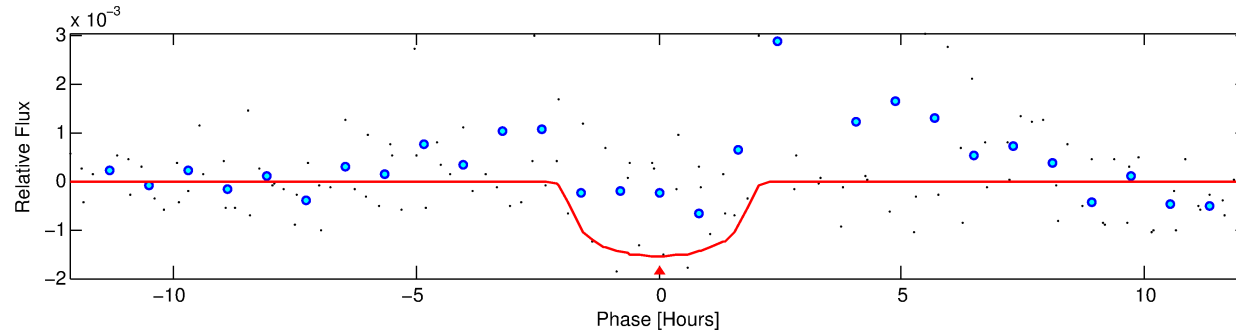
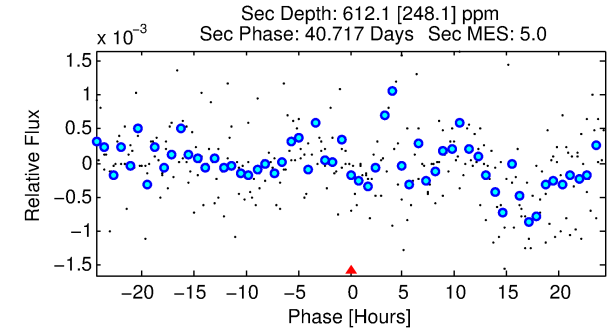
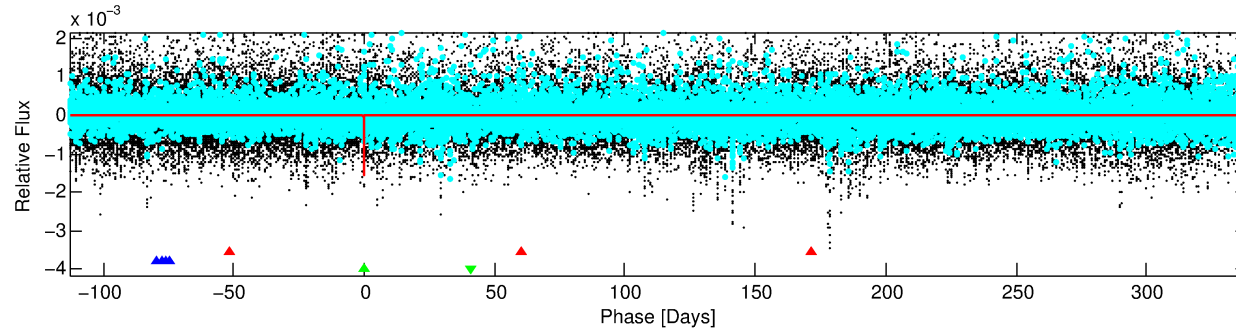
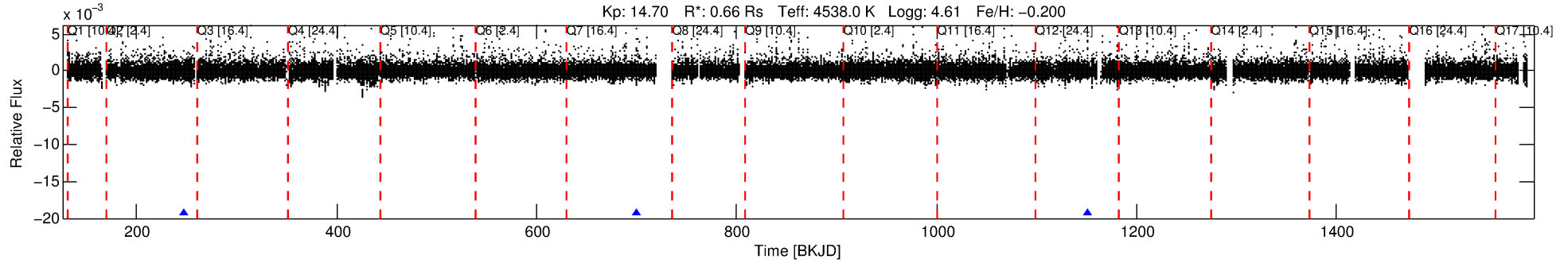
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002442866-03

No Significant Match Found

DV One-Page Summary

KIC: 2442866 Candidate: 3 of 3 Period: 451.671 d



DV Fit Results:

Period = 451.67093 [0.00929] d
Epoch = 247.8691 [0.0134] BKJD
Rp/R* = 0.0394 [0.0319]
a/R* = 615.37 [1533.92]
b = 0.75 [1.53]
Seff = 0.17 [0.03]
Teq = 163 [7] K
Rp = 2.85 [2.32] Re
a = 0.9975 [0.0705] AU
Ag = 41231.19 [69026.99] [0.60 σ]
Teffp = 3596 [1507] K [2.28 σ]

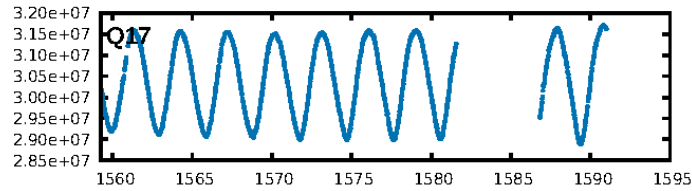
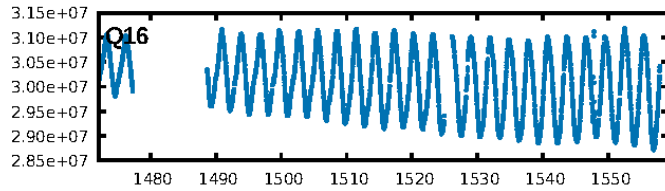
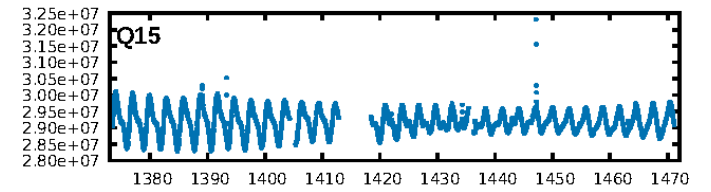
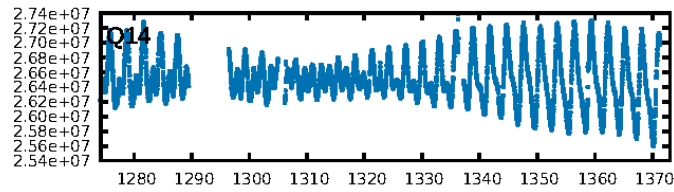
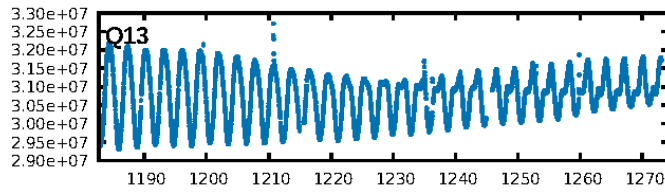
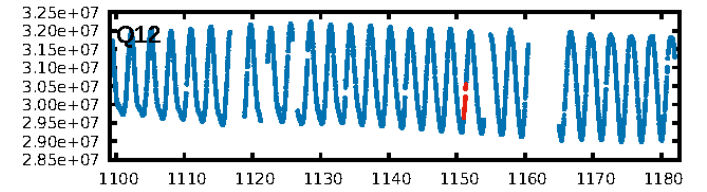
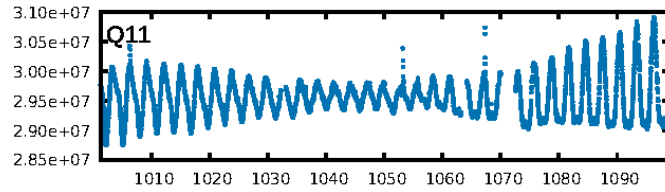
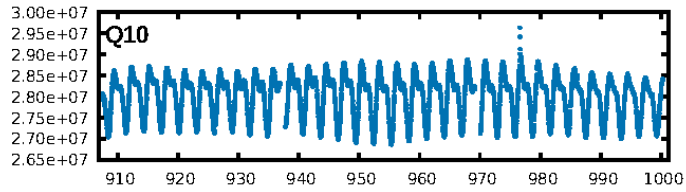
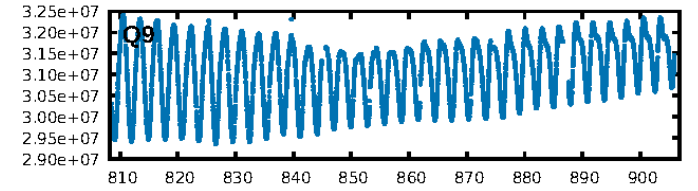
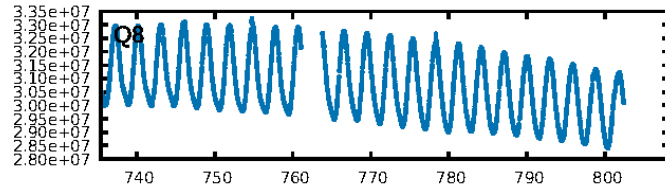
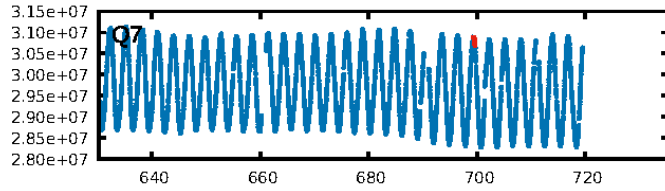
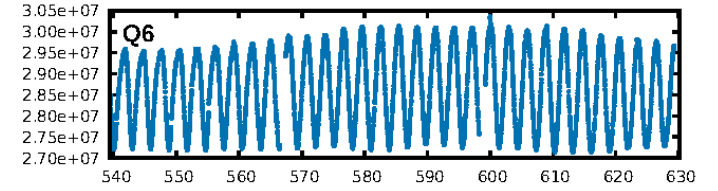
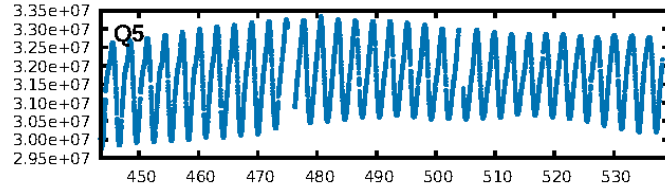
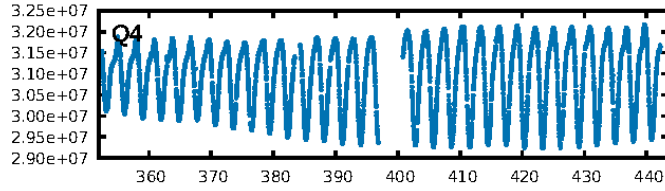
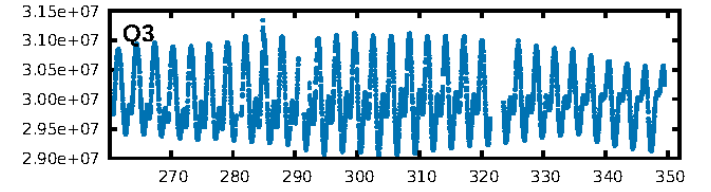
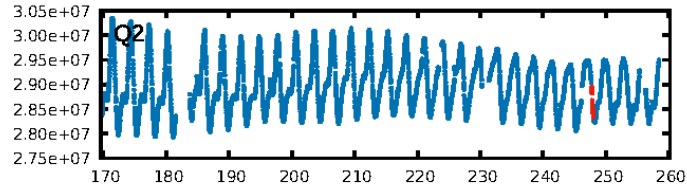
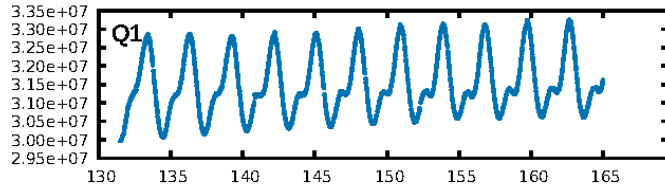
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [5.60 σ]
ModelChiSquare2-sig: 0.1%
a/R* = 615.37 [1533.92]
Bootstrap-pfa: 7.67e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.5559
Centroid-sig: 40.8%
Centroid-so: 1.088 arcsec [0.60 σ]
OotOffset-rm: 0.285 arcsec [1.18 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.333 arcsec [1.22 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

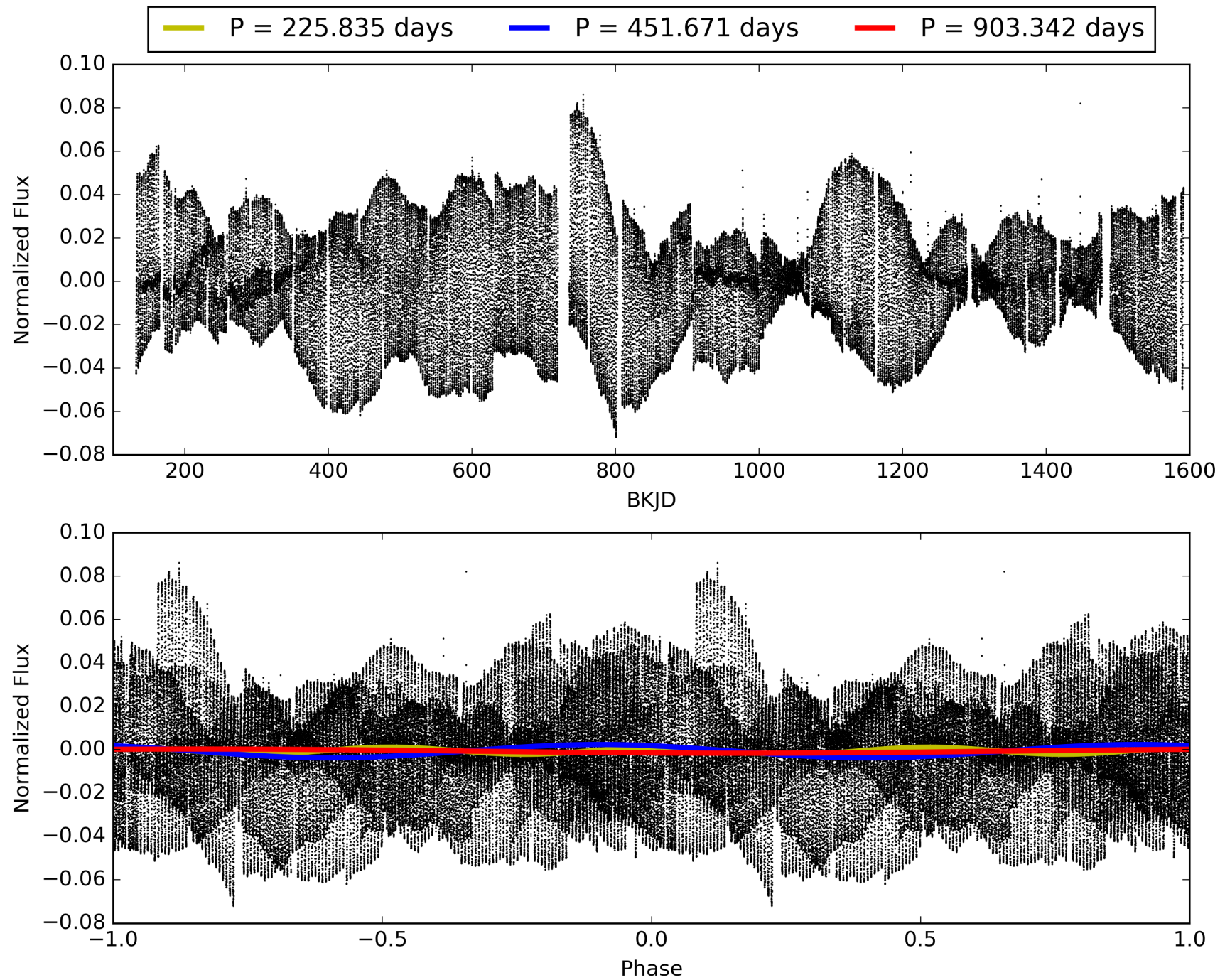
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:07:06 Z

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

TCE 002442866-03, PDC Light Curves

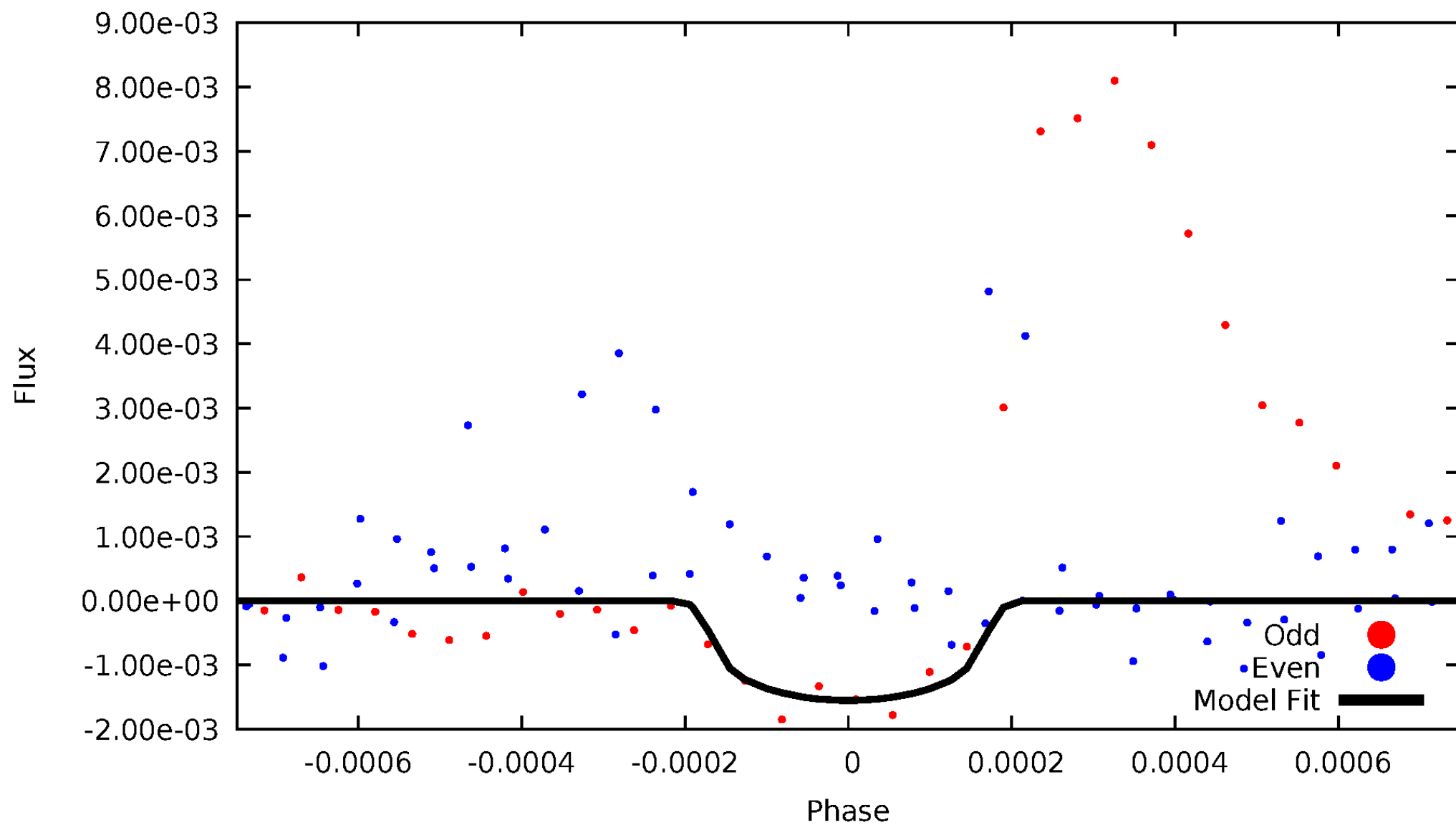


TCE 002442866-03



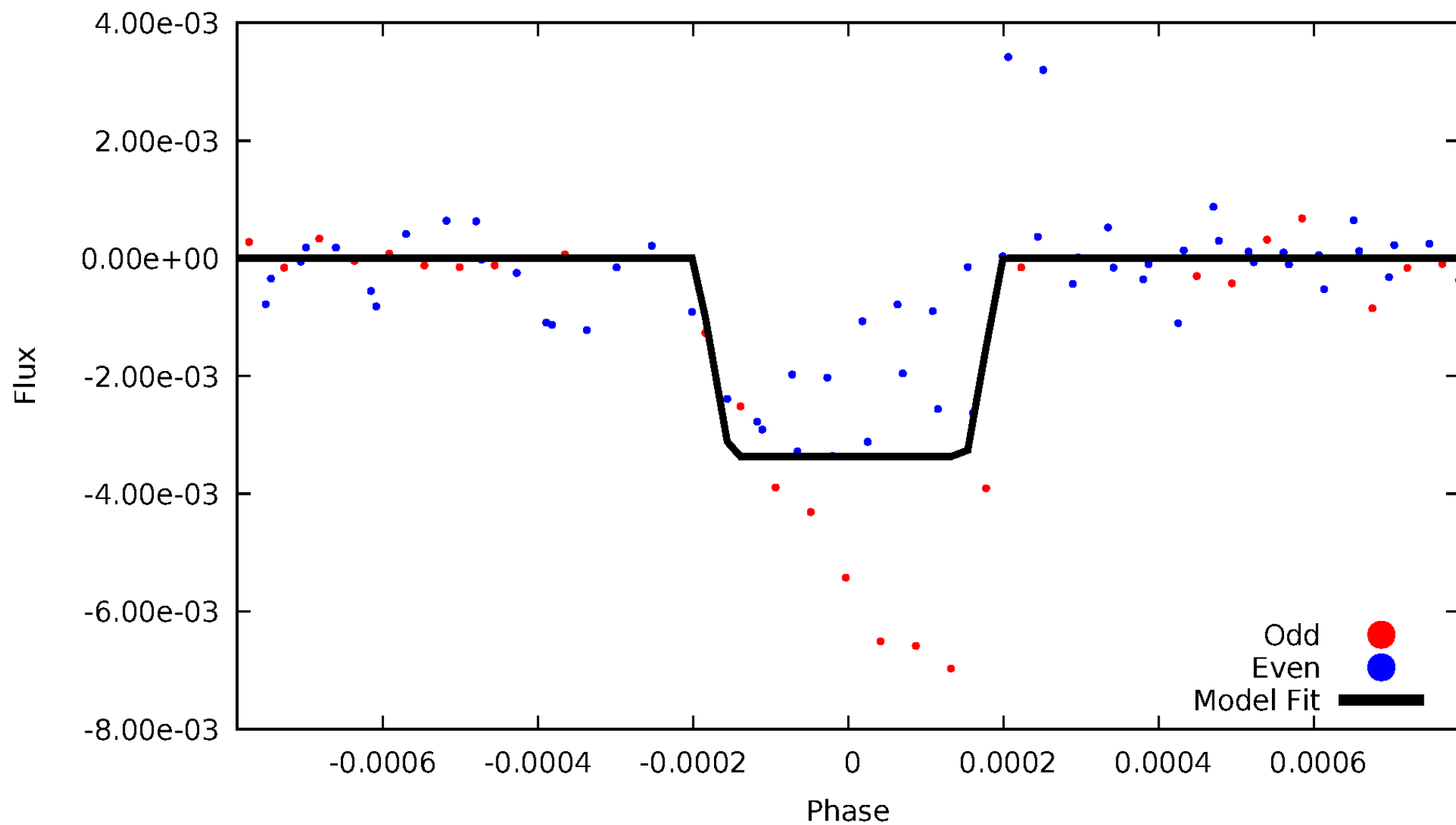
DV Odd/Even

TCE 002442866-03



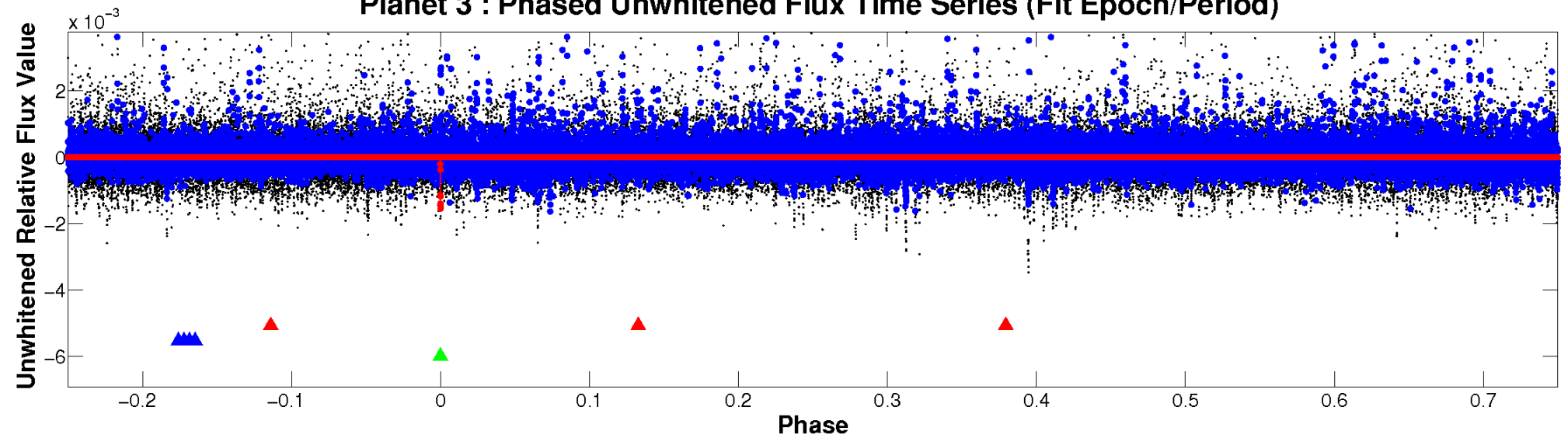
ALT Odd/Even

TCE 002442866-03

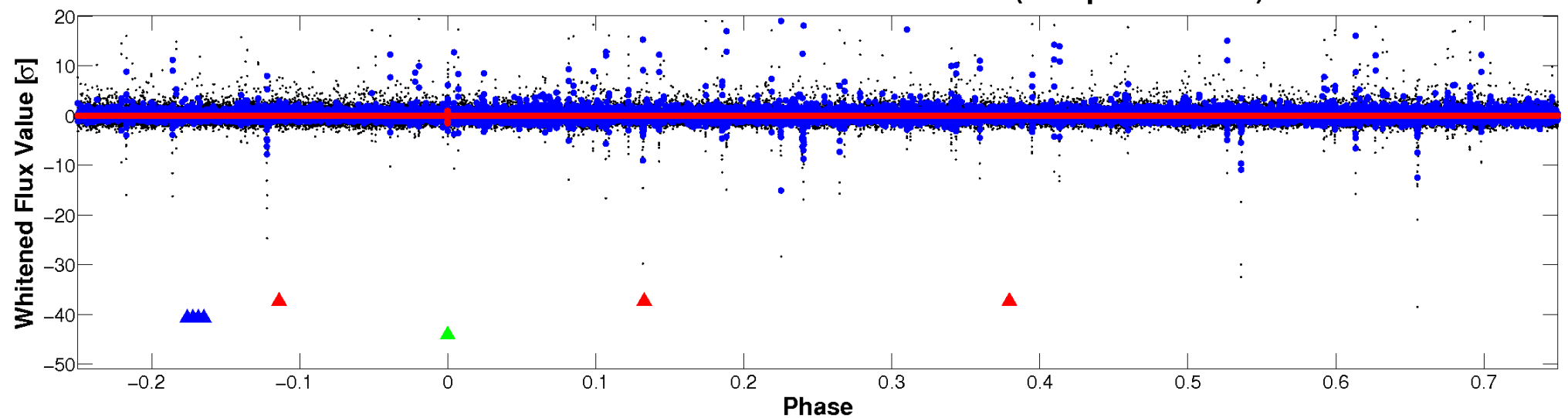


Non-Whitened Vs. Whitened Light Curve

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

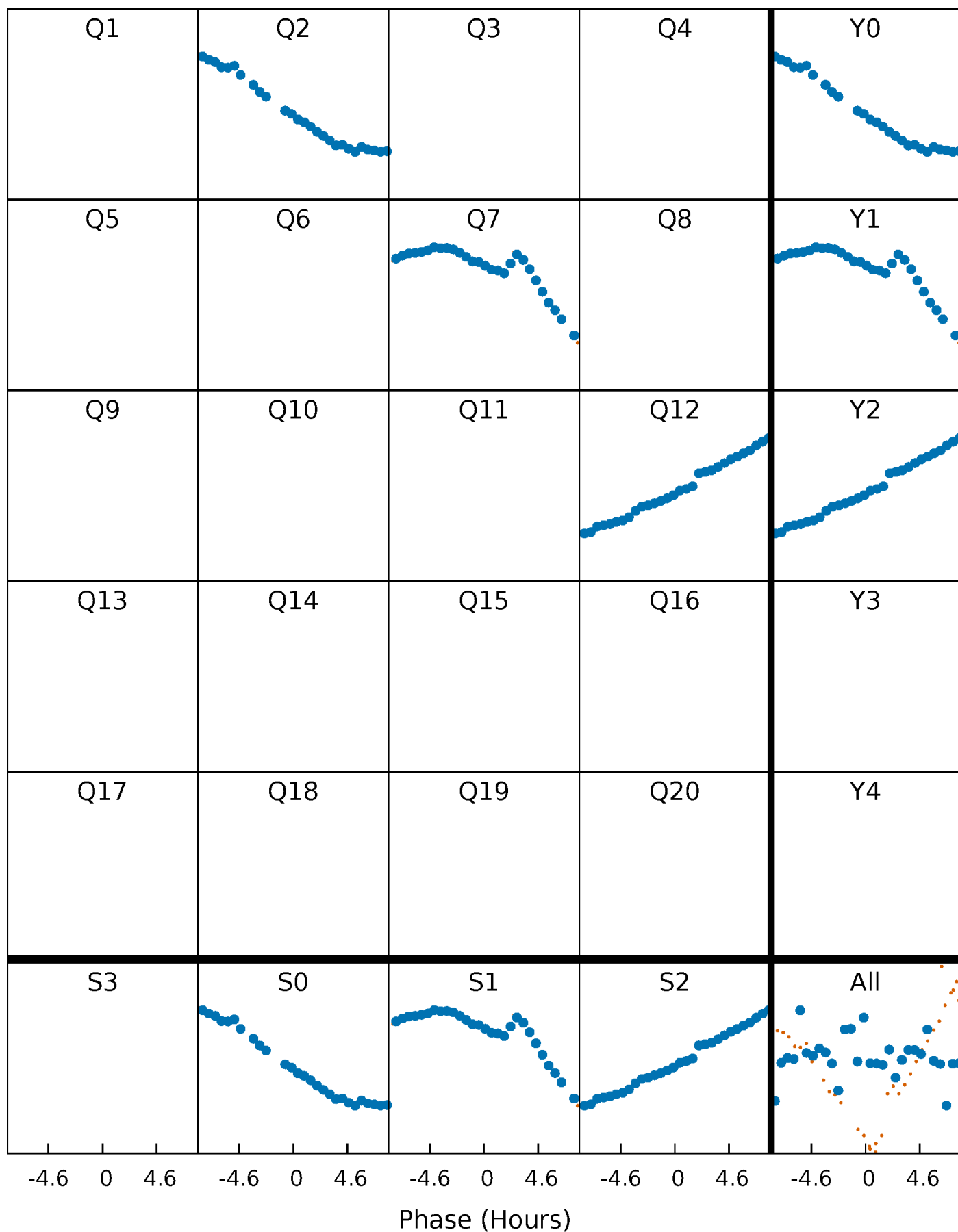


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



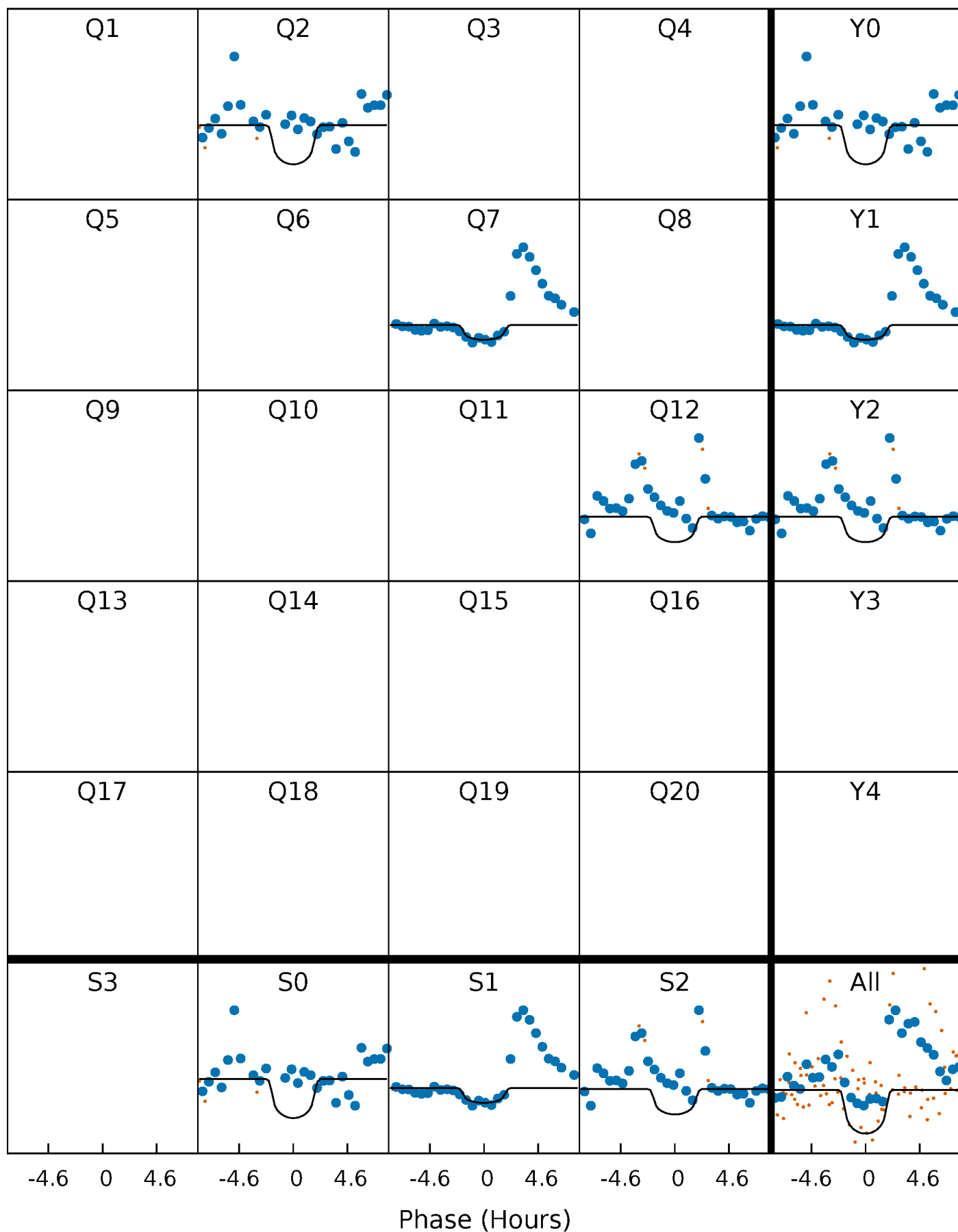
PDC Quarter-Phased Transit Curves

TCE 002442866-03 P=451.670926 Days $T_0=247.869101$ (BKJD)



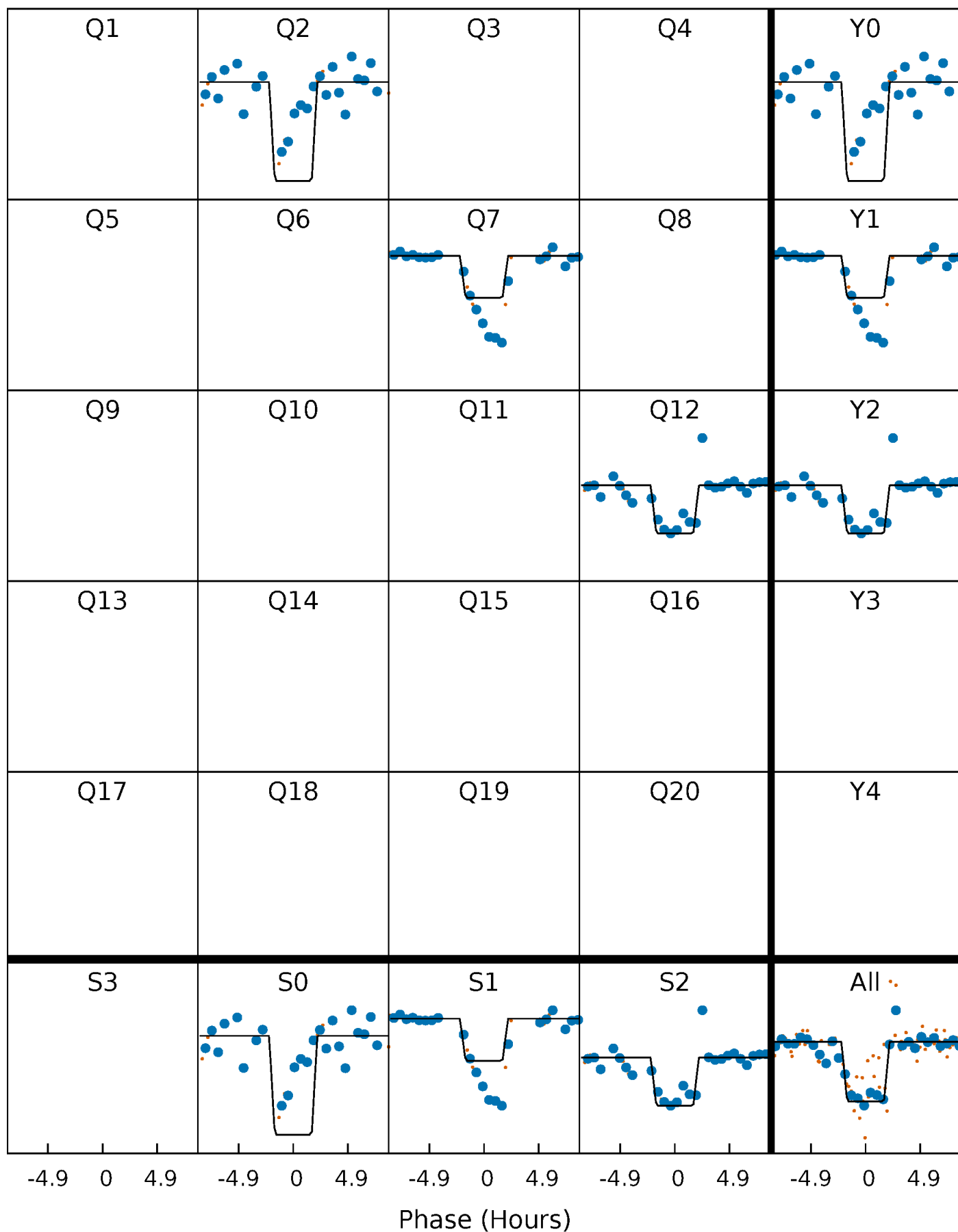
DV Quarter-Phased Transit Curves

TCE 002442866-03 $P=451.670926$ Days $T_0=247.869101$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

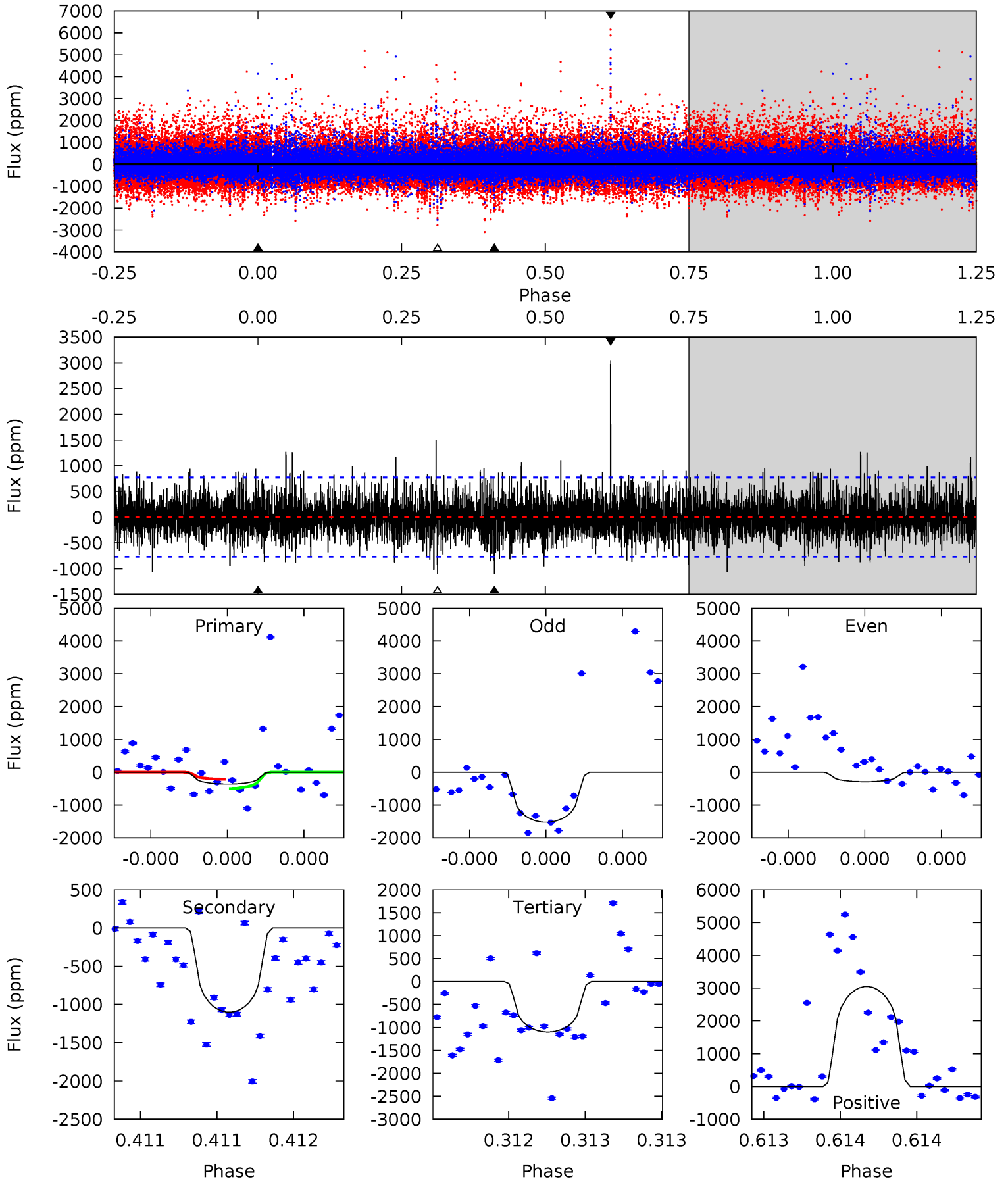
TCE 002442866-03 $P=451.649788$ Days $T_0=247.895869$ (BKJD)



DV Model-Shift Uniqueness Test

002442866-03, P = 451.670926 Days, E = 247.869101 Days

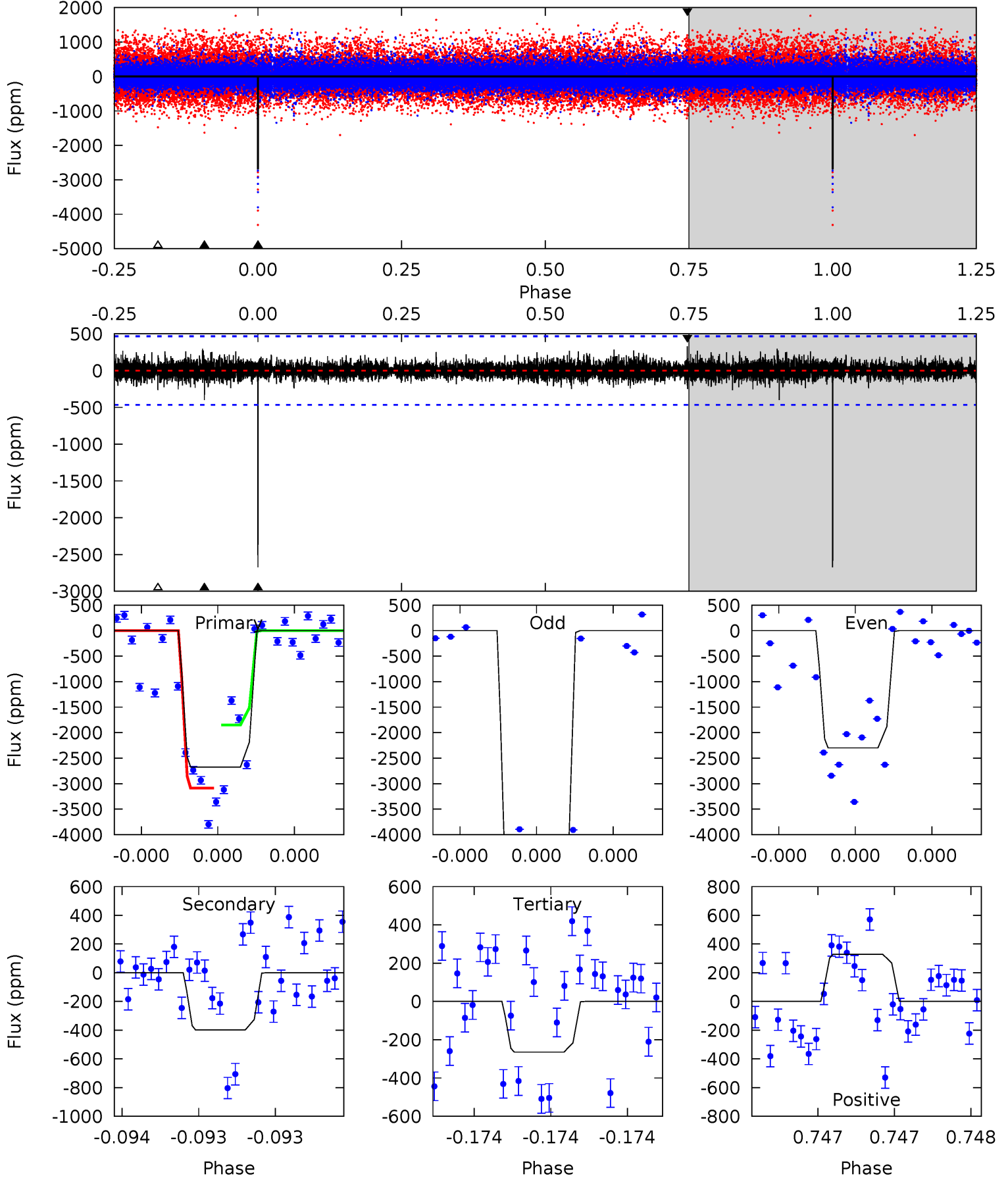
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.64	8.02	8.00	22.2	5.62	3.55	2.06	-5.36	-19.6	0.02	-14.2	3.85	-2.03	0.73	1.03



Alt Model-Shift Uniqueness Test

002442866-03, P = 451.649788 Days, E = 247.895869 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.2	4.79	3.18	3.94	5.62	3.55	0.71	29.0	28.2	1.61	0.85	22.8	1.11	0.11	0



Stellar Parameters For KIC 002442866

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4538^{+150}_{-150}	$4.607^{+0.052}_{-0.024}$	$-0.200^{+0.300}_{-0.300}$	$0.663^{+0.052}_{-0.058}$	$0.650^{+0.077}_{-0.051}$	$3.136^{+0.736}_{-0.382}$
	+3%/-3%	+1%/-1%	+150%/-150%	+8%/-9%	+12%/-8%	+23%/-12%
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 002442866-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1100 ± 137	$3.14^{+2.20}_{-1.79}$	226^{+9}_{-8}	4064^{+1720}_{-629}	$60738^{+268459}_{-39415}$
Alt.	-398 ± 83	$4.34^{+2.23}_{-2.18}$	227^{+8}_{-9}	3144^{+757}_{-374}	11982^{+34588}_{-6988}

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 $A_{obs} \gg 1.0$

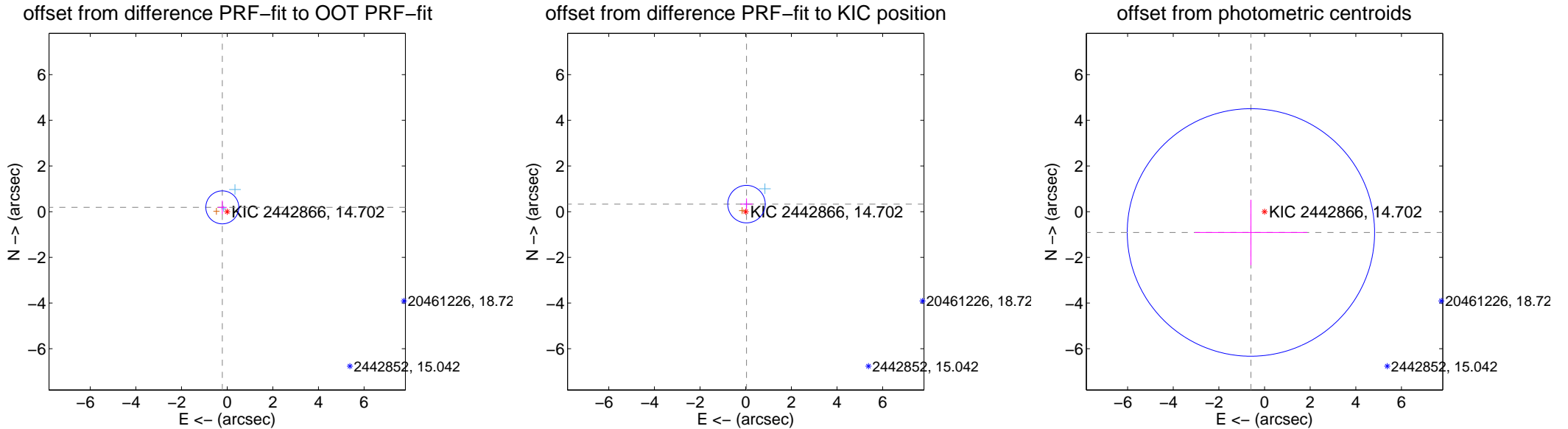
DV Centroid Data

Supplemental centroid analysis for 002442866-03. Kepler magnitude: 14.70. Transit SNR 6.65

There are 2 quarters with good PRF difference image offsets

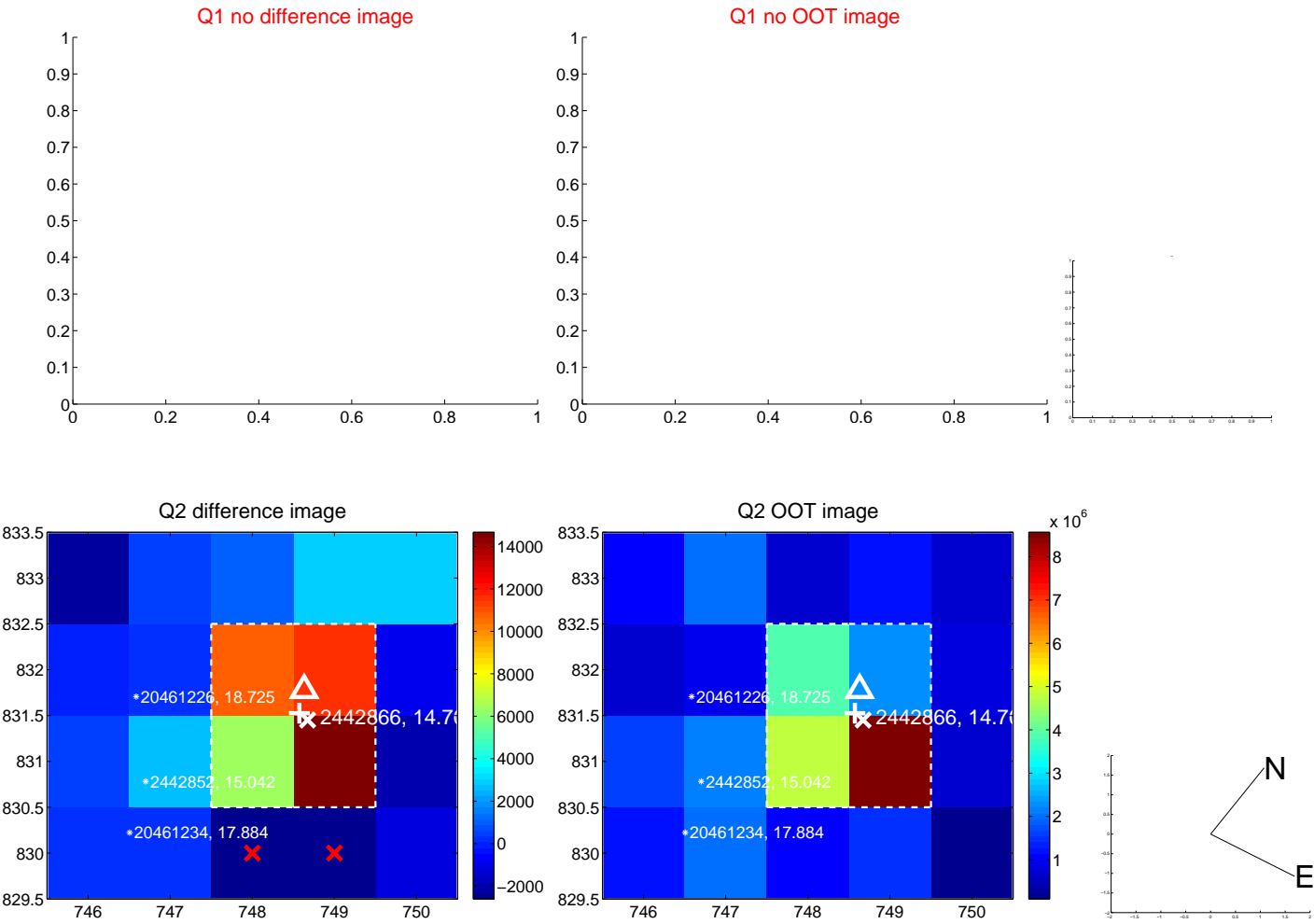
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.285 ± 0.241	1.18	0.213 ± 0.192	0.189 ± 0.291
PRF-fit source offset from KIC position	0.333 ± 0.274	1.22	-0.034 ± 0.272	0.331 ± 0.249
photometric centroid source offset	1.09 ± 1.81	0.60	0.60 ± 2.47	-0.91 ± 1.43



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- σ uncertainty. Blue circle: three- σ . 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.

Q5 no difference image



Q5 no OOT image



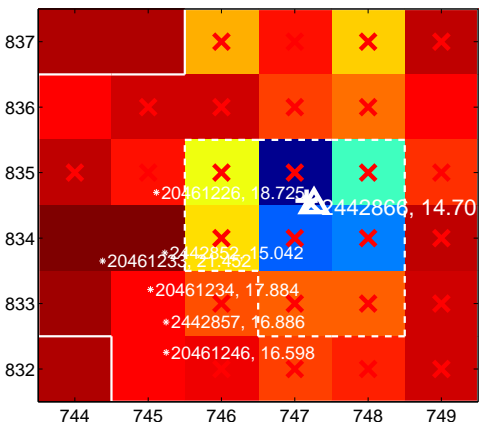
Q6 no difference image



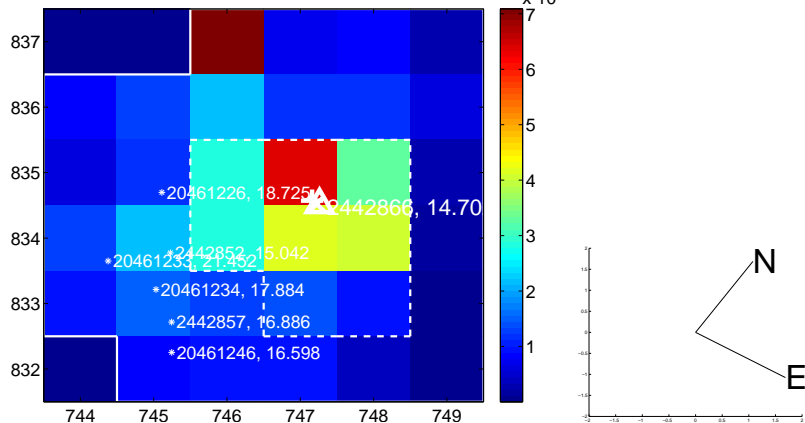
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



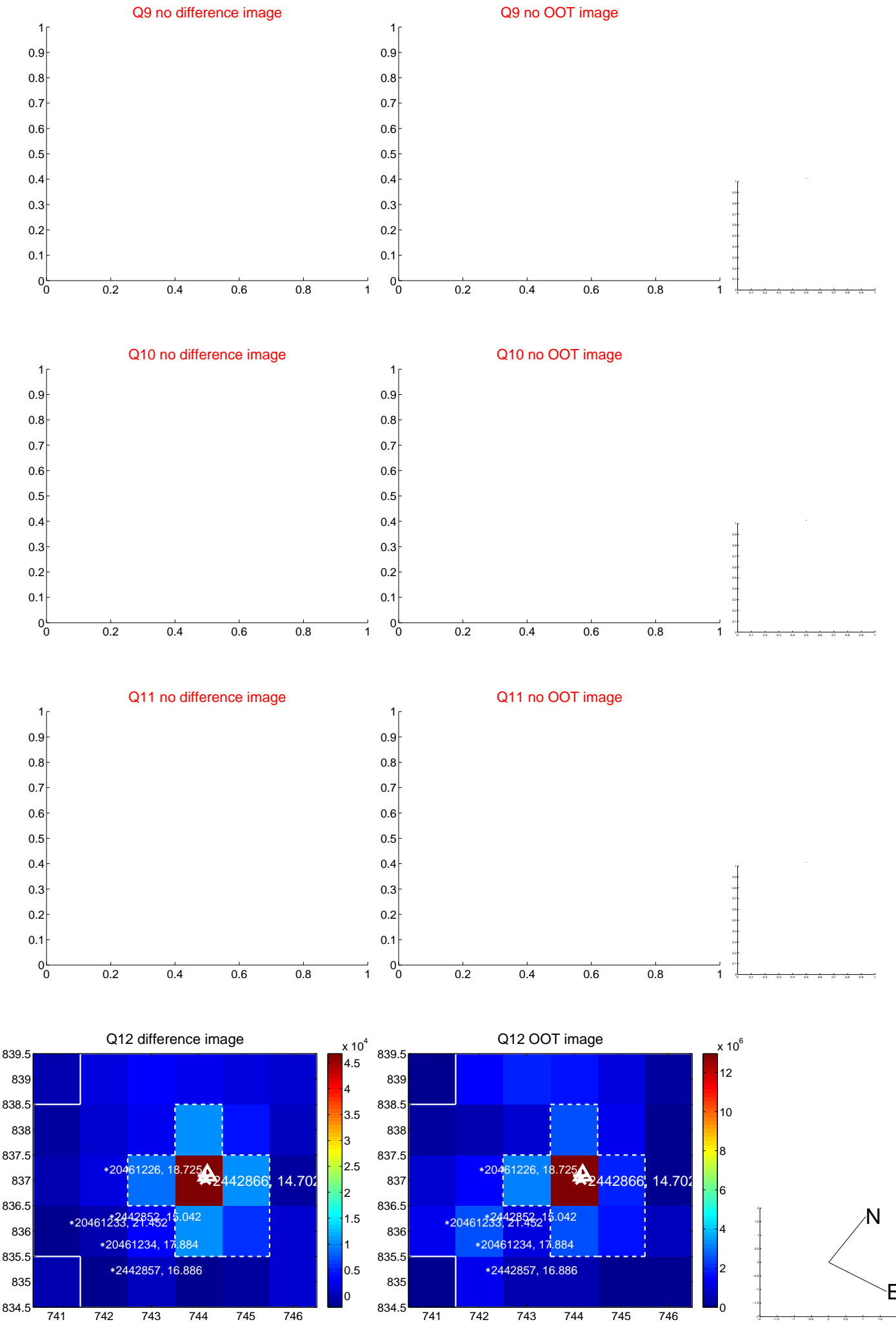
Q8 no difference image



Q8 no OOT image



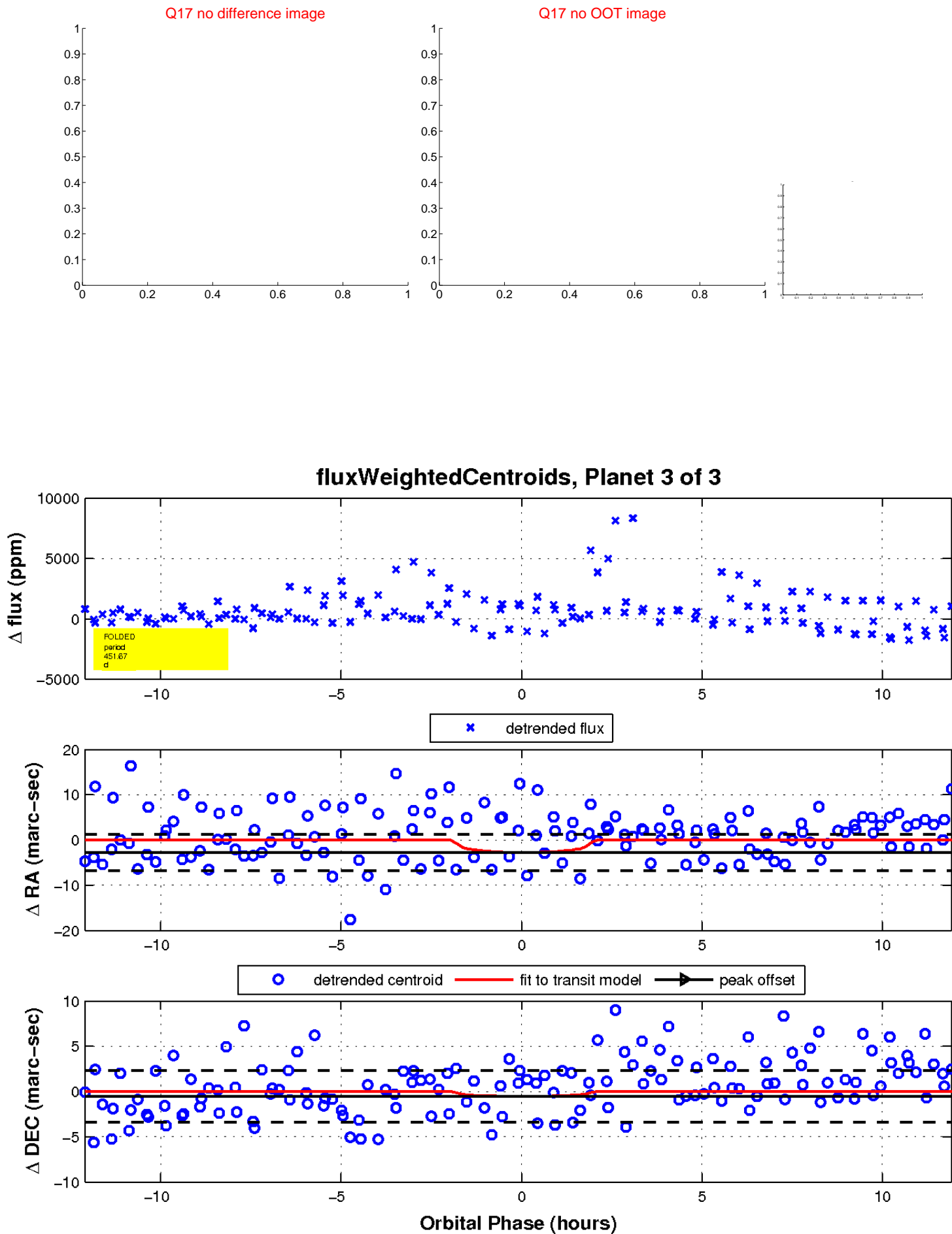
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

