

KIC 008686150

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})
008686150-01	OBS	0919.01	51.425977	173.535881	66267.7	16.921	1840.3	1615.9	1.15	6257	29.66	21.44
008686150-02	OBS	No	51.425786	156.187350	2528.4	7.048	51.9	53.1	1.15	6257	6.39	21.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008686150-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
008686150-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

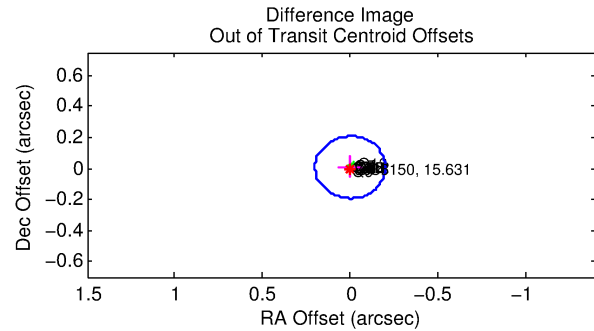
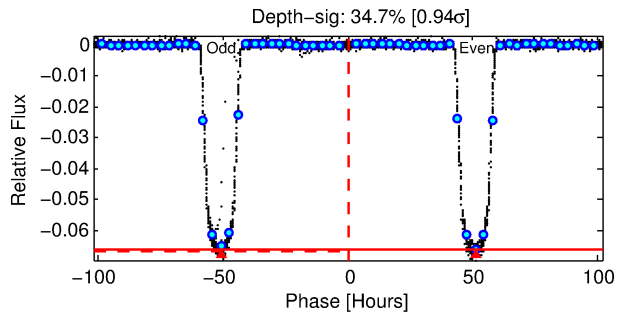
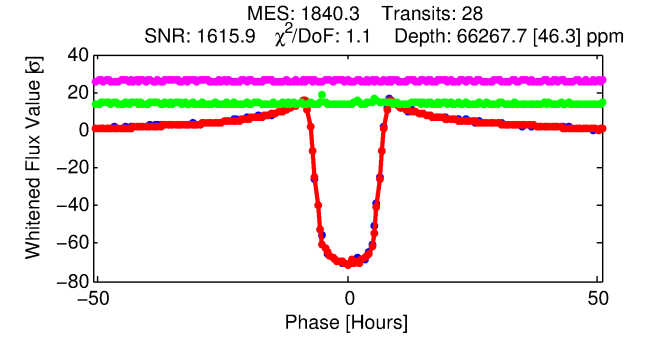
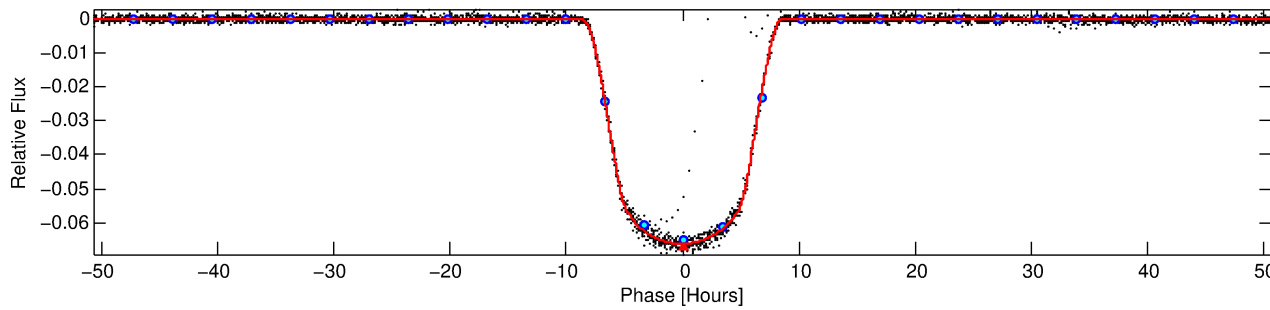
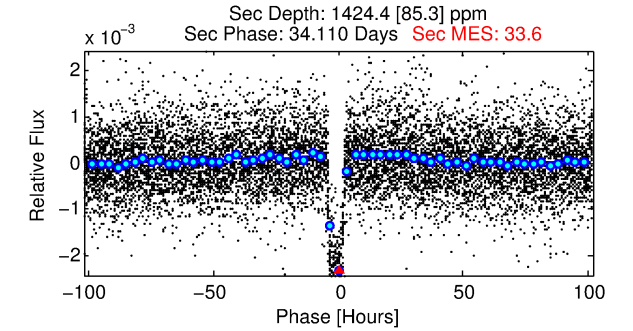
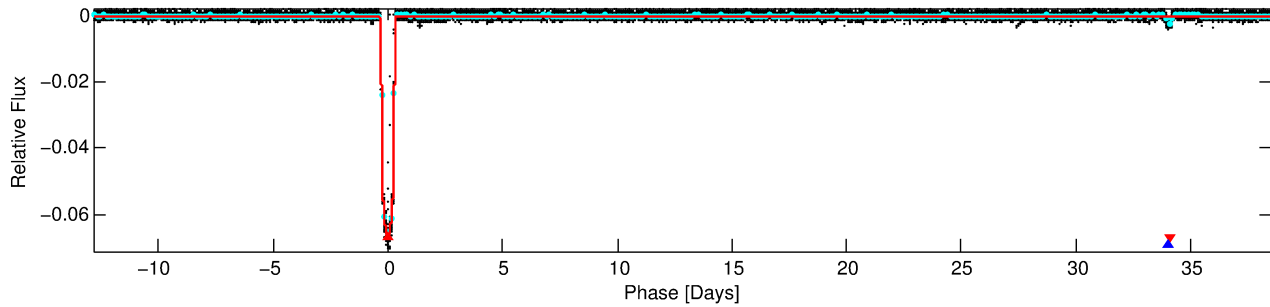
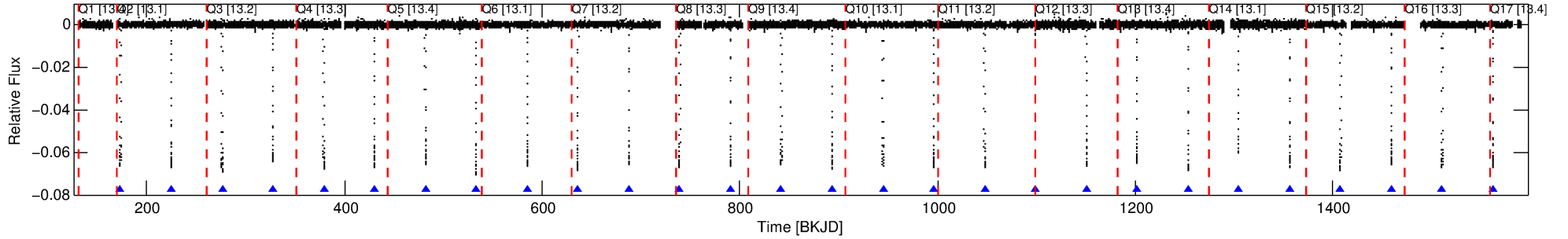
Ephemeris Match Information For 008686150-01

No Significant Match Found

DV One-Page Summary

KIC: 8686150 Candidate: 1 of 2 Period: 51.426 d
KOI: K00919.01 Corr: 0.855

Kp: 15.63 R*: 1.15 Rs Teff: 6257.0 K Logg: 4.41 Fe/H: 0.210



DV Fit Results:

Period = 51.42598 [0.00001] d
Epoch = 173.5359 [0.0002] BKJD
Rp/R* = 0.2370 [0.0001]
a/R* = 28.37 [0.05]
b = 0.20 [0.01]
Seff = 21.44 [9.01]
Teq = 549 [58] K
Rp = 29.66 [9.26] Re
a = 0.2903 [0.0772] AU
Ag = 75.06 [29.72] [2.49σ]
Teffp = 2497 [102] K [16.57σ]

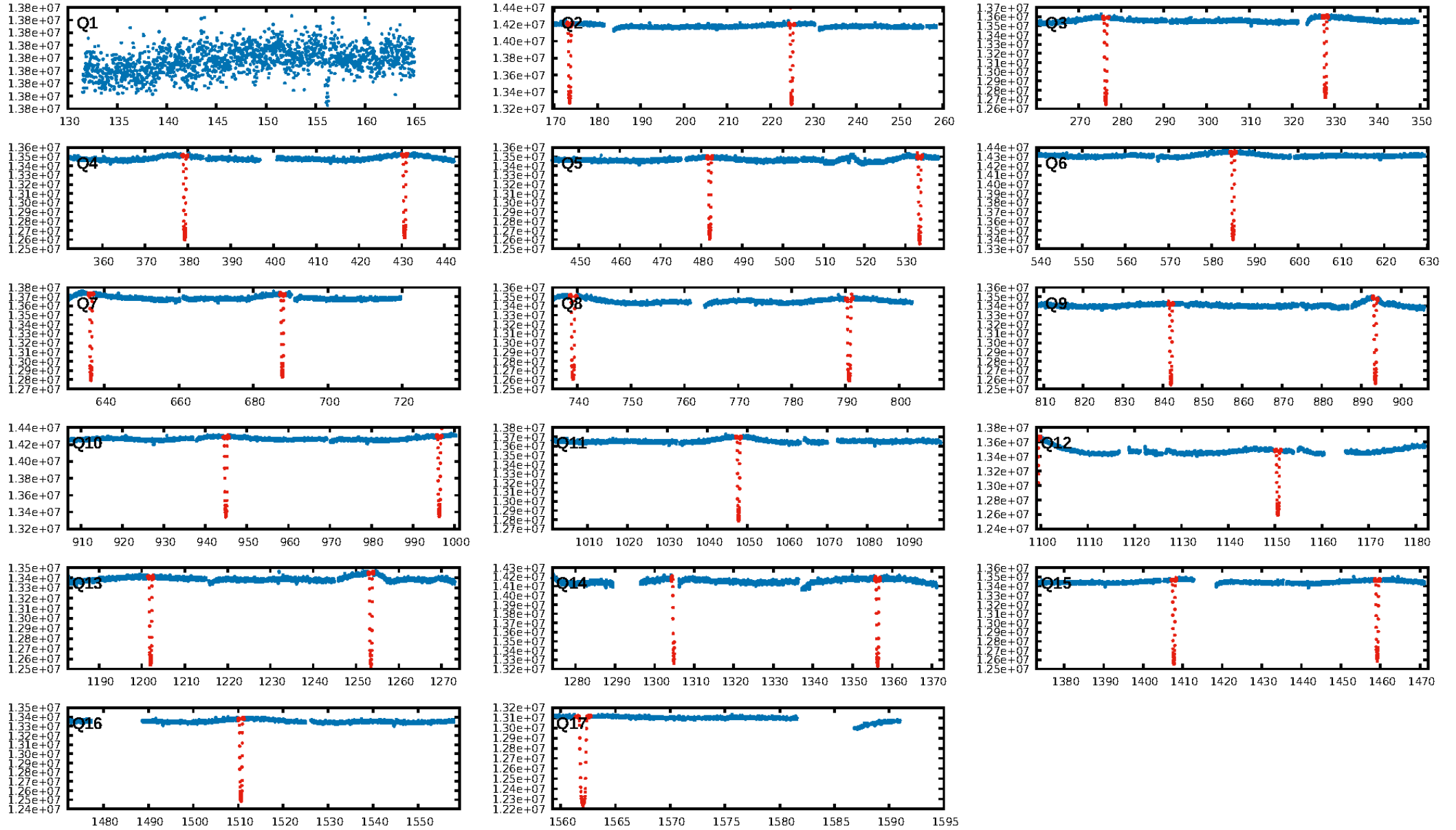
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [27/27]
GhostDiagnostic-chr: 3.675
Centroid-sig: 9.5%
Centroid-so: 0.137 arcsec [23.13σ]
OotOffset-rm: 0.008 arcsec [0.12σ]
KicOffset-rm: 0.074 arcsec [1.10σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

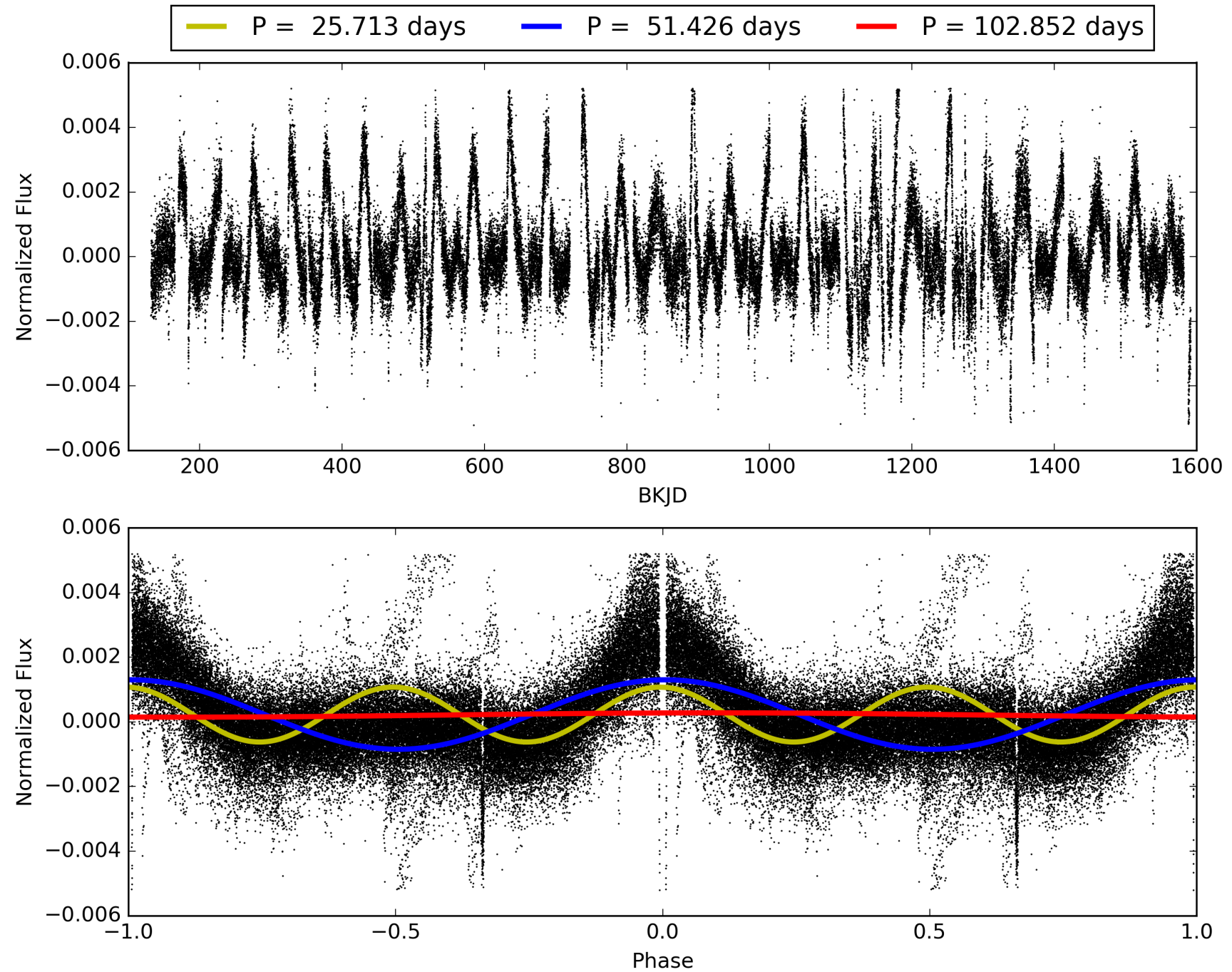
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:39:43 Z

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

TCE 008686150-01, PDC Light Curves

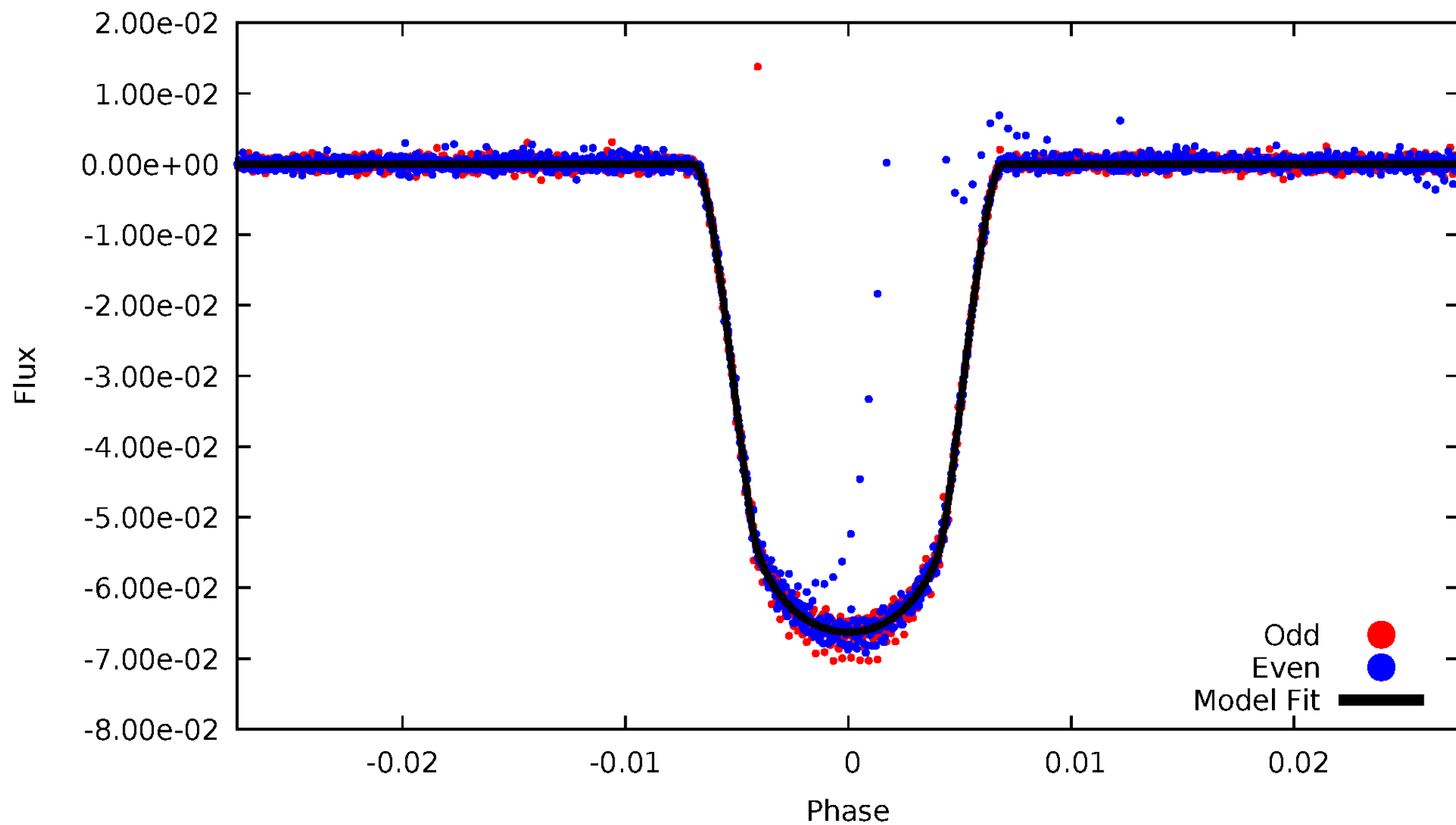


TCE 008686150-01



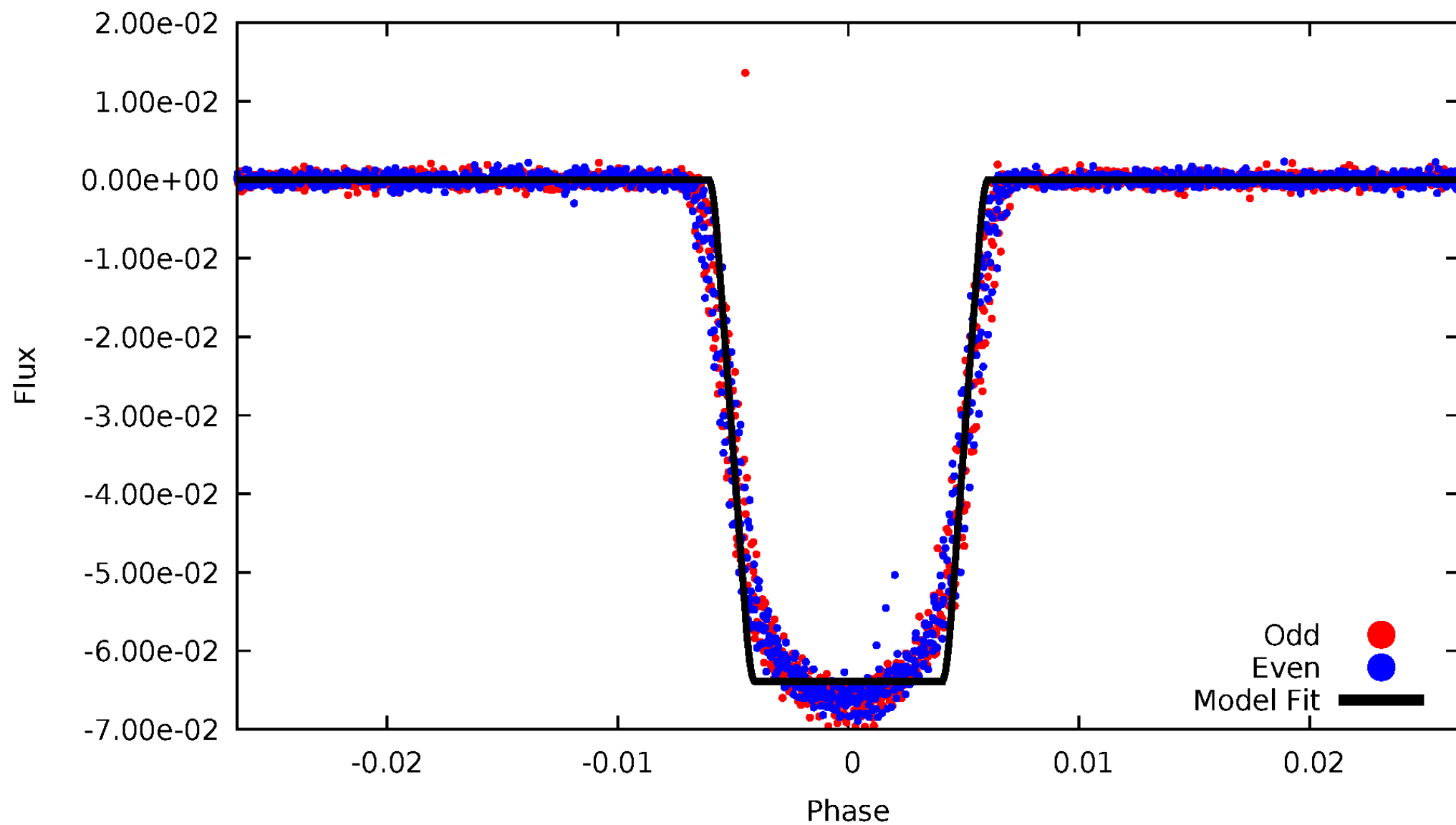
DV Odd/Even

TCE 008686150-01



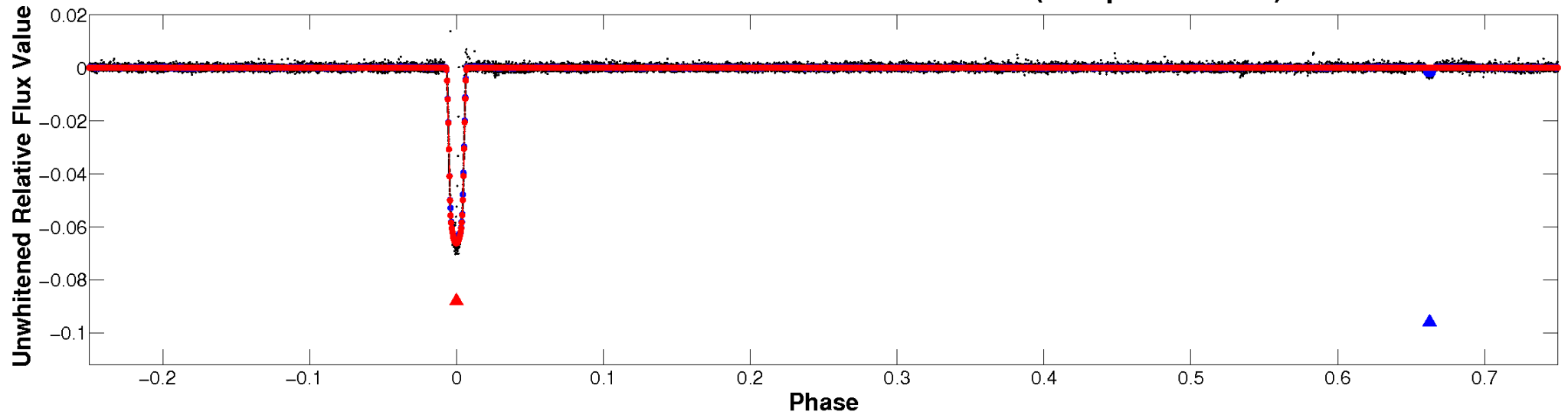
ALT Odd/Even

TCE 008686150-01

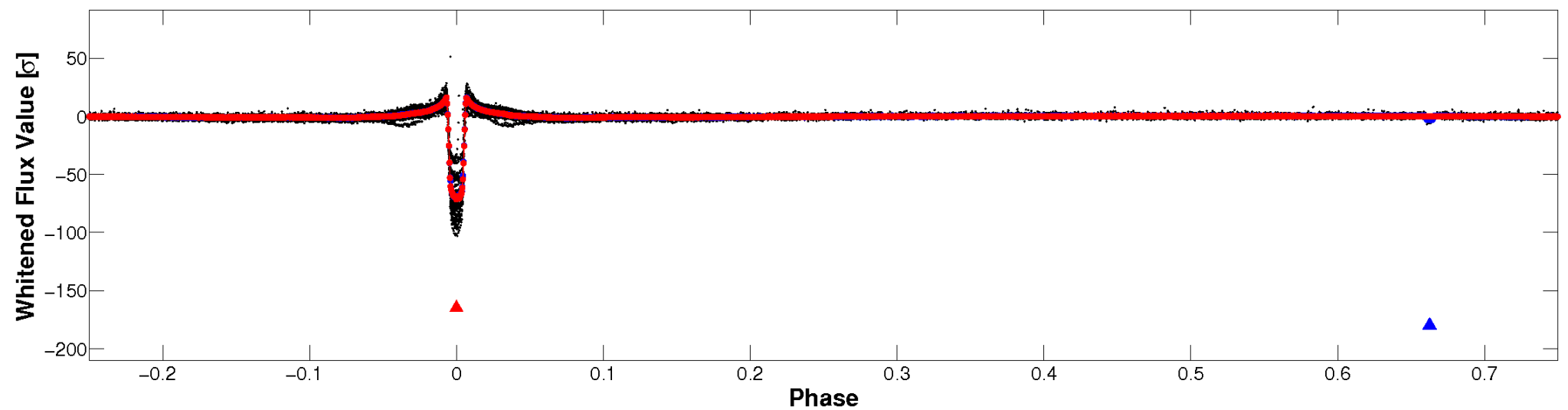


Non-Whitened Vs. Whitened Light Curve

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

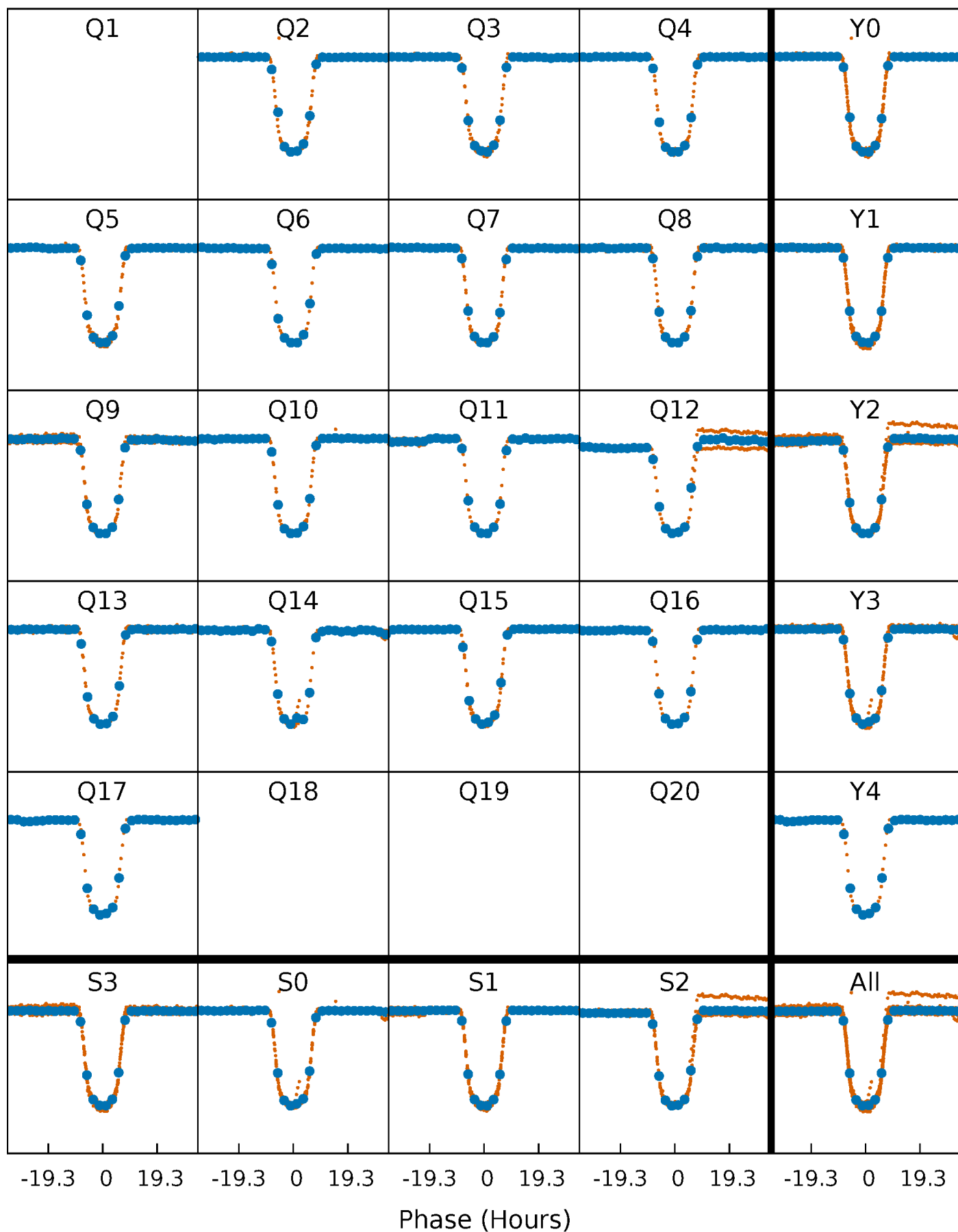


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



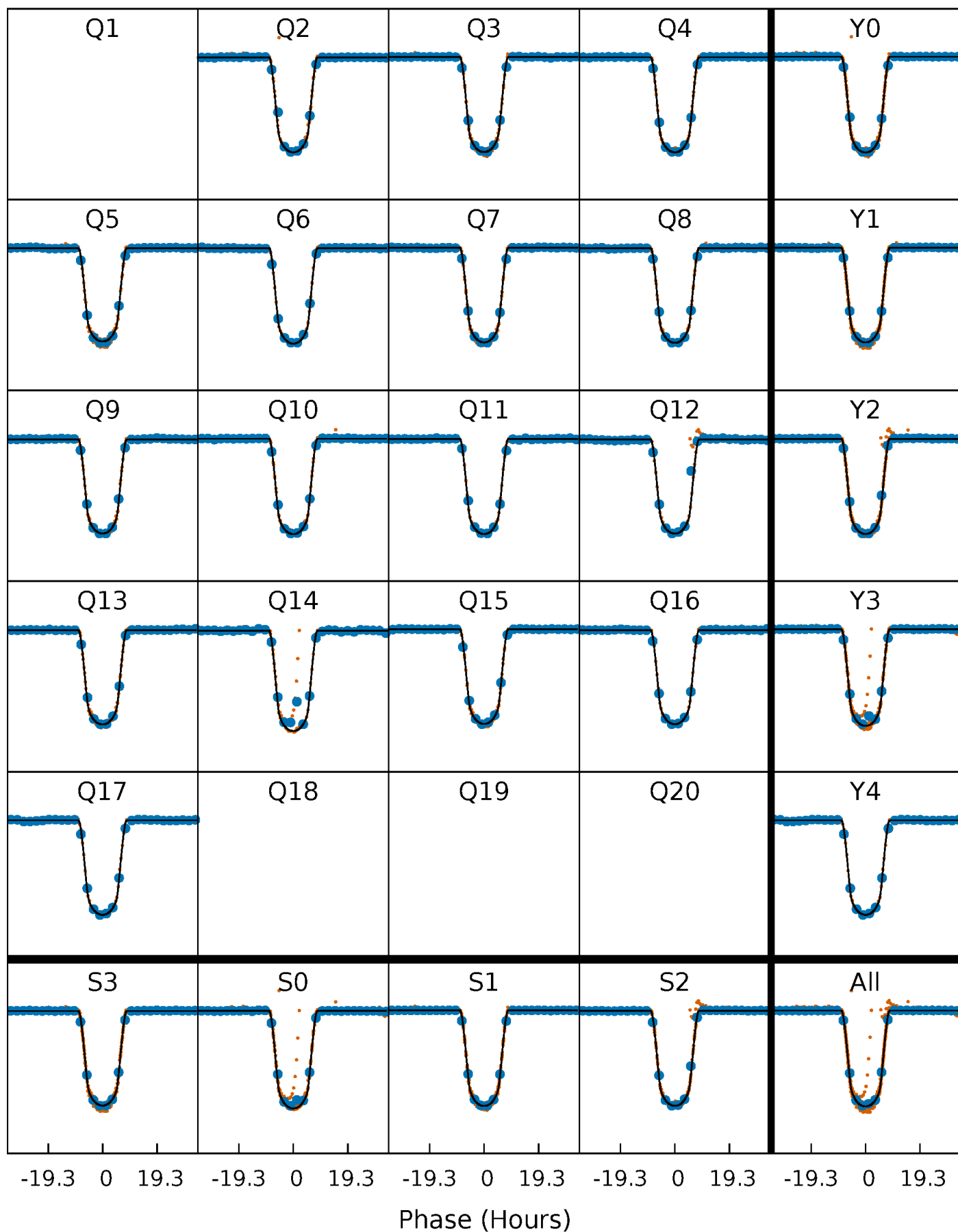
PDC Quarter-Phased Transit Curves

TCE 008686150-01 P= 51.425977 Days $T_0=173.535881$ (BKJD)



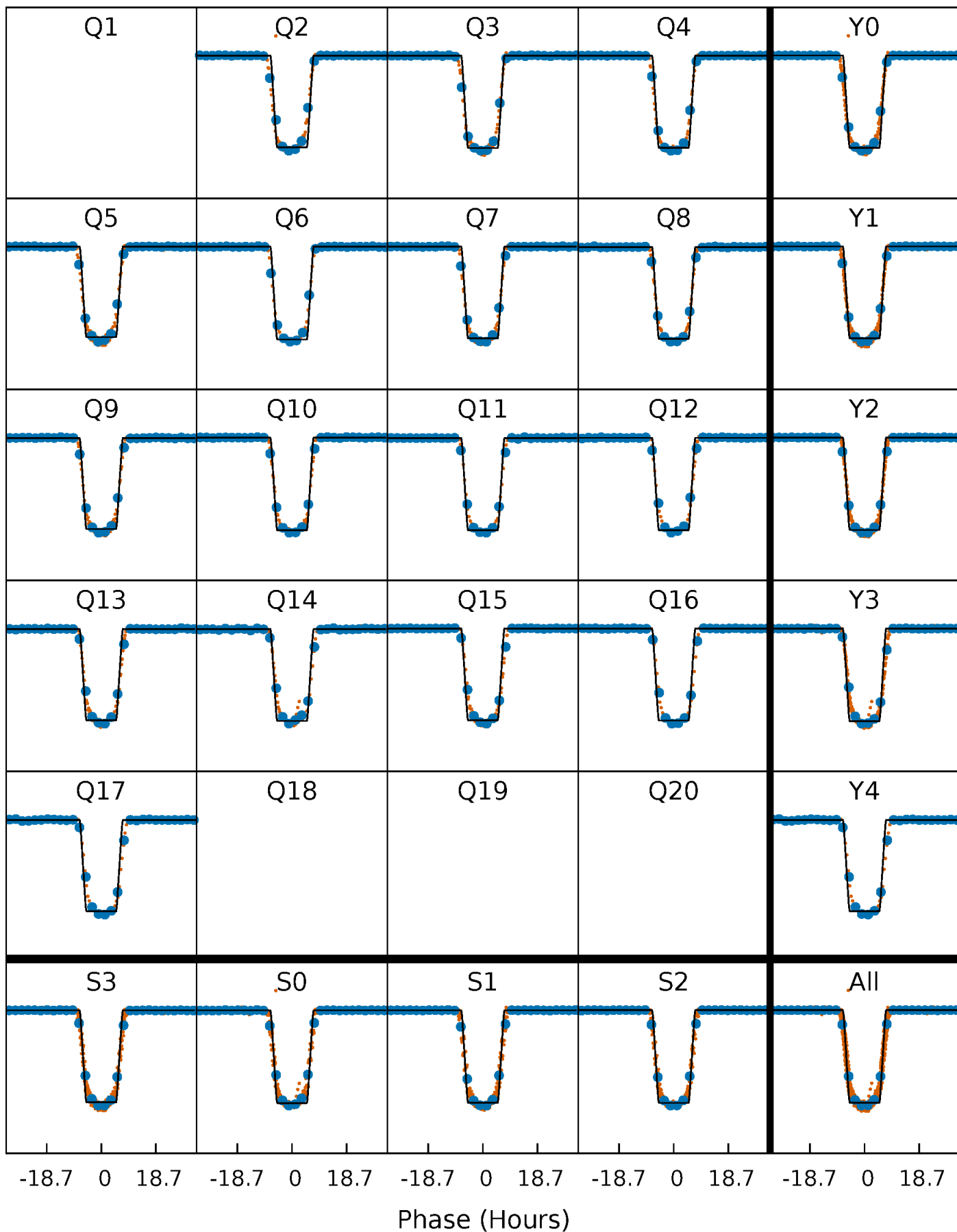
DV Quarter-Phased Transit Curves

TCE 008686150-01 P= 51.425977 Days $T_0=173.535881$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

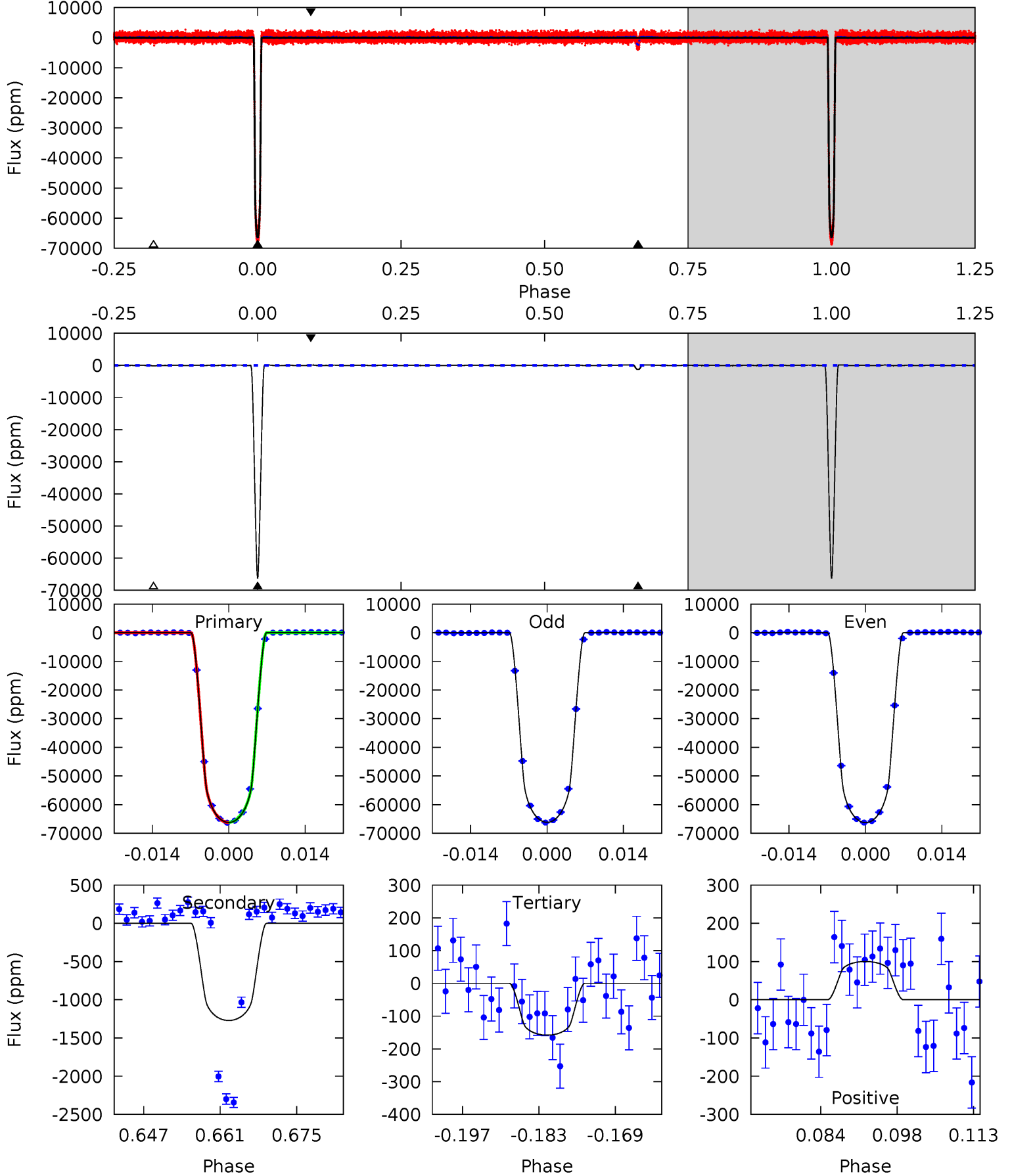
TCE 008686150-01 P= 51.424227 Days $T_0=173.558375$ (BKJD)



DV Model-Shift Uniqueness Test

008686150-01, P = 51.425977 Days, E = 122.109904 Days

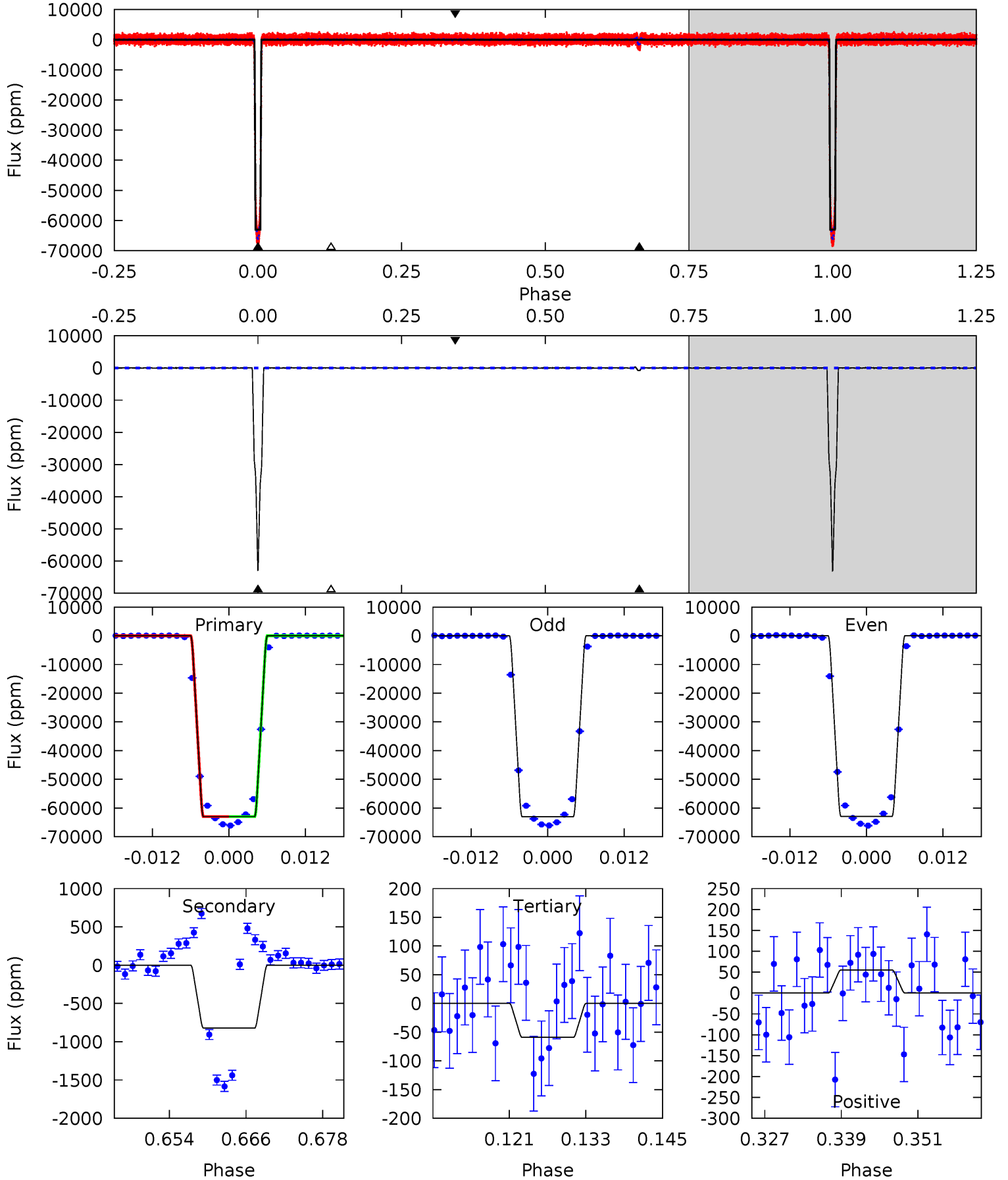
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3227	61.9	7.70	4.88	4.96	2.46	2.27	3219	3222	54.2	57.1	2.78	0.96	0.00	2.71



Alt Model-Shift Uniqueness Test

008686150-01, P = 51.424227 Days, E = 122.134148 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2527	32.9	2.37	2.21	4.99	2.51	0.76	2524	2524	30.6	30.7	2.63	1.00	0.00	0.09



Stellar Parameters For KIC 008686150

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6257^{+173}_{-239}	$4.410^{+0.054}_{-0.216}$	$0.210^{+0.200}_{-0.350}$	$1.147^{+0.358}_{-0.128}$	$1.233^{+0.153}_{-0.187}$	$1.152^{+0.338}_{-0.625}$
	+3%/-4%	+1%/-5%	+95%/-167%	+31%/-11%	+12%/-15%	+29%/-54%
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 008686150-01 / KOI 0919.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1271 ± 21	$30.72^{+5.54}_{-2.79}$	785^{+60}_{-42}	3067^{+49}_{-64}	61^{+11}_{-16}
Alt.	-821 ± 25	$32.17^{+5.39}_{-2.34}$	781^{+57}_{-38}	2833^{+44}_{-58}	35^{+5}_{-8}

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

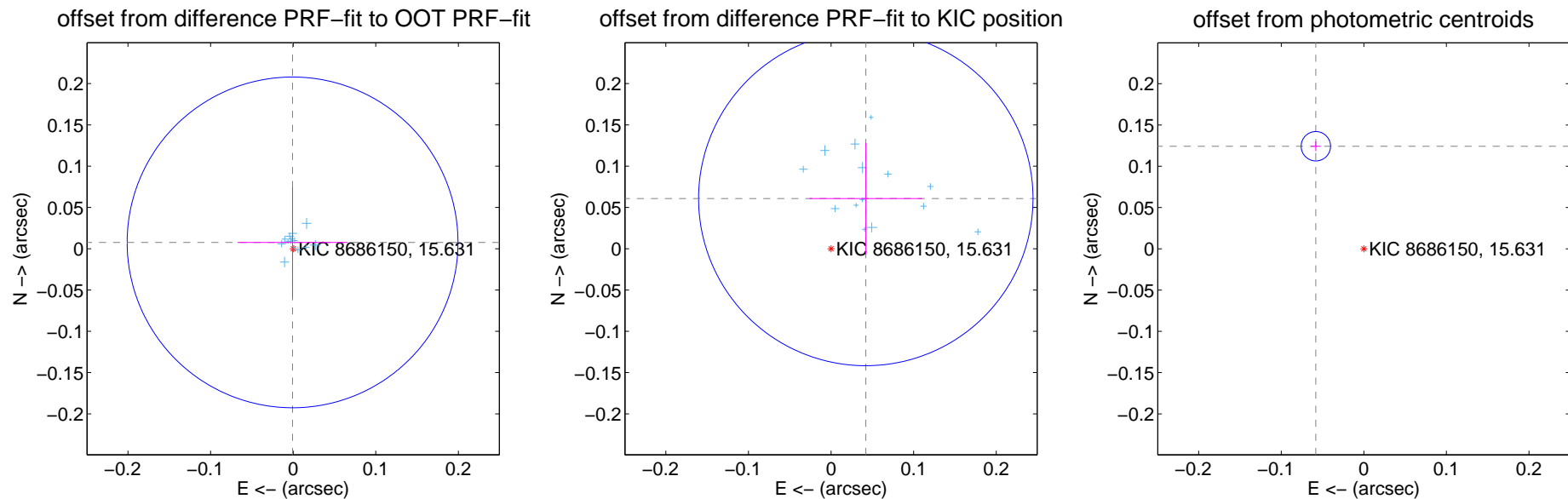
DV Centroid Data

Supplemental centroid analysis for 008686150-01. Kepler magnitude: 15.63. Transit SNR 1615.93

There are 14 quarters with good PRF difference image offsets

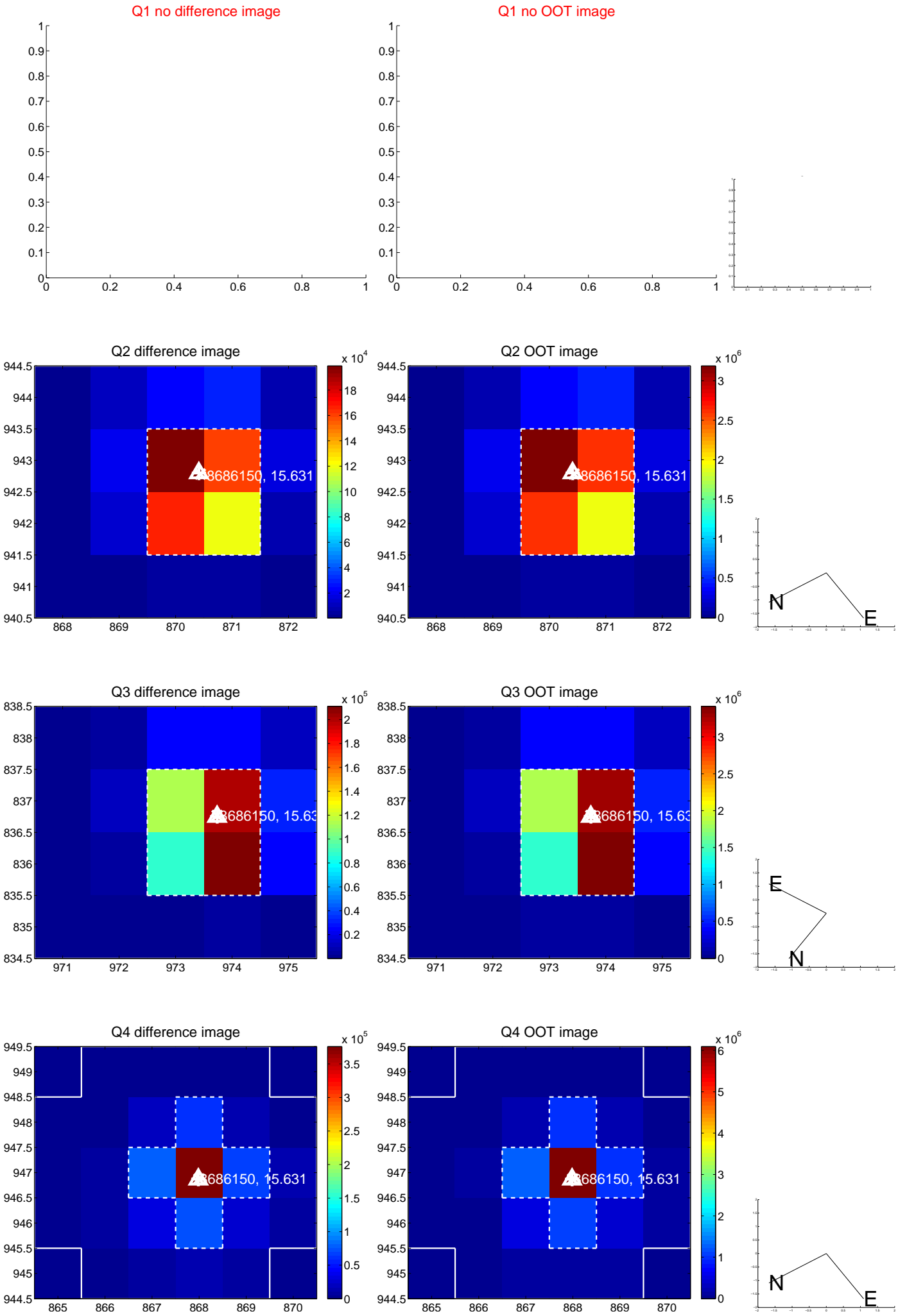
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.008 ± 0.067	0.12	0.001 ± 0.067	0.008 ± 0.067
PRF-fit source offset from KIC position	0.074 ± 0.067	1.10	-0.042 ± 0.068	0.061 ± 0.068
photometric centroid source offset	0.14 ± 0.01	23.13	0.06 ± 0.01	0.12 ± 0.01

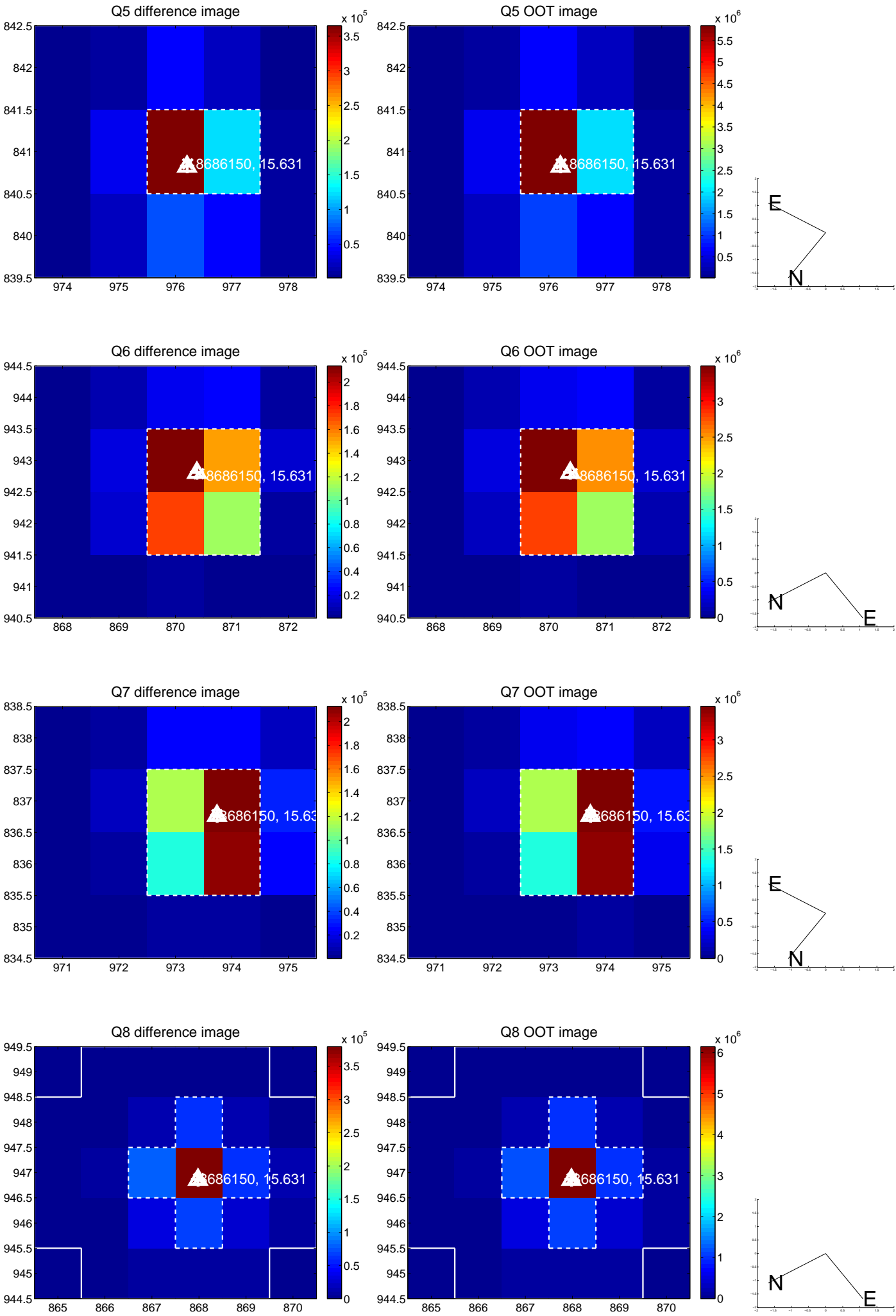


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

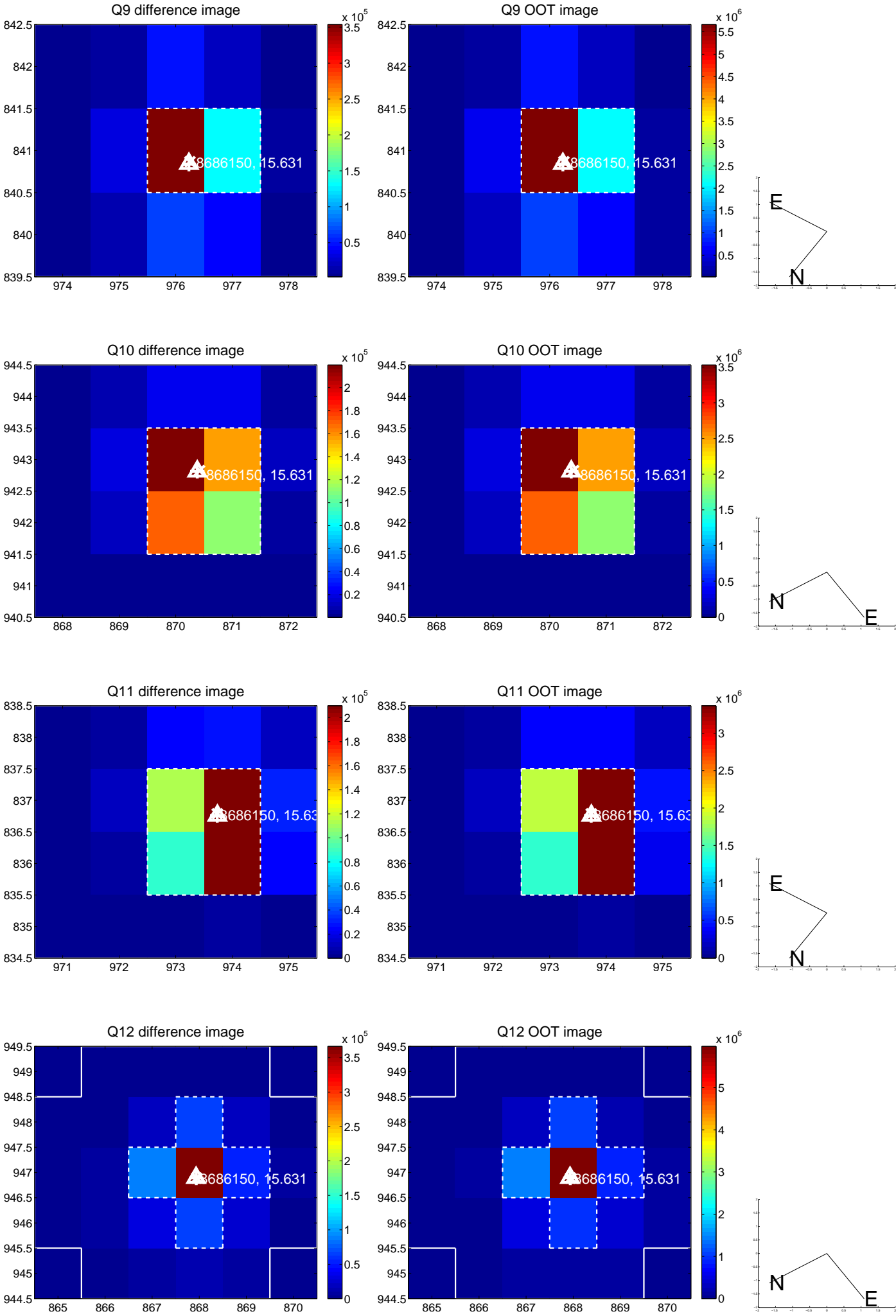
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



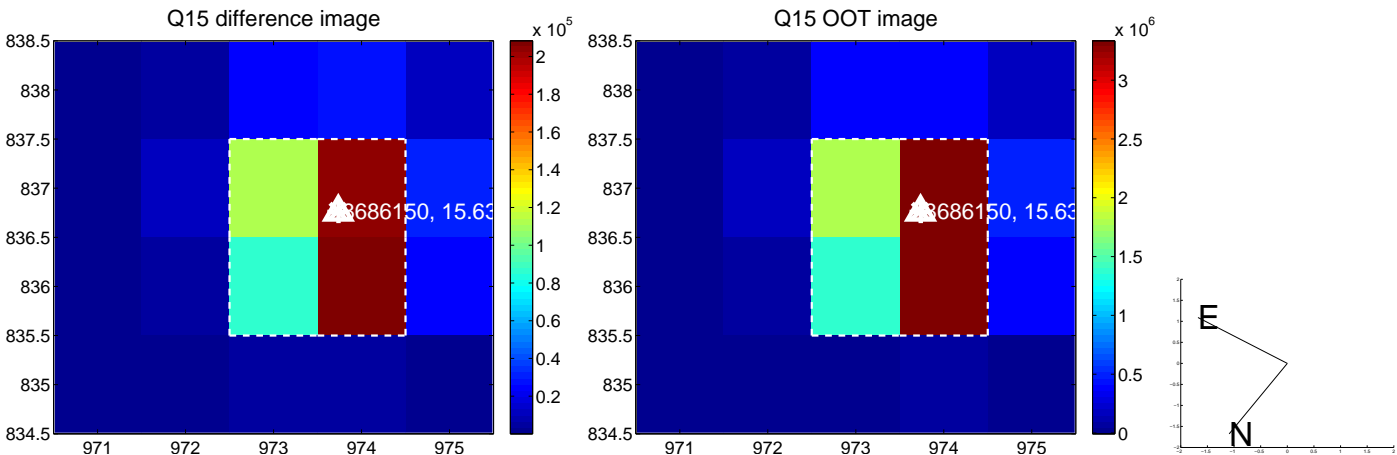
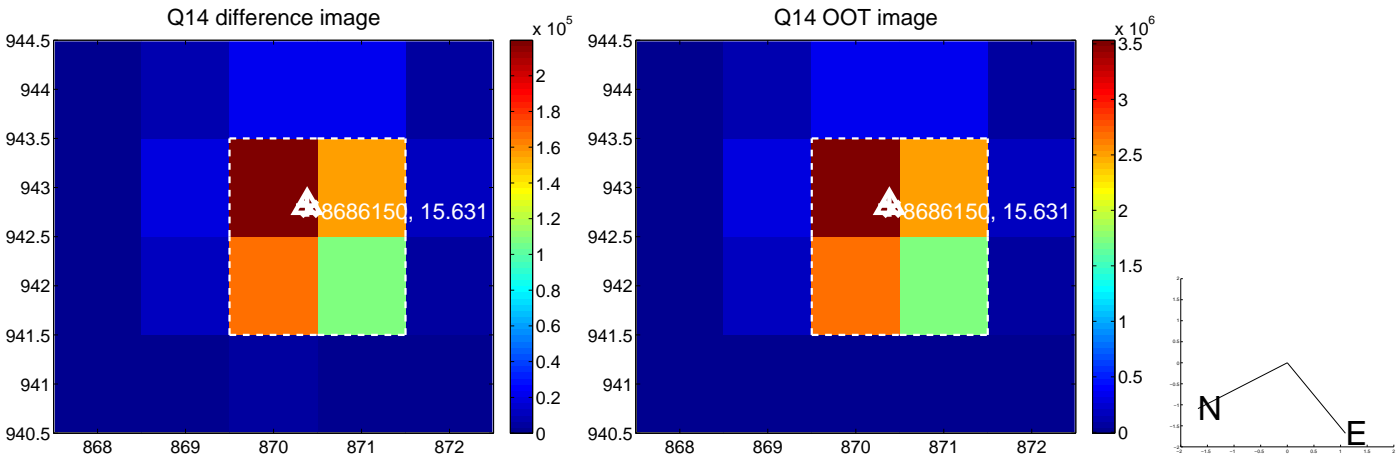
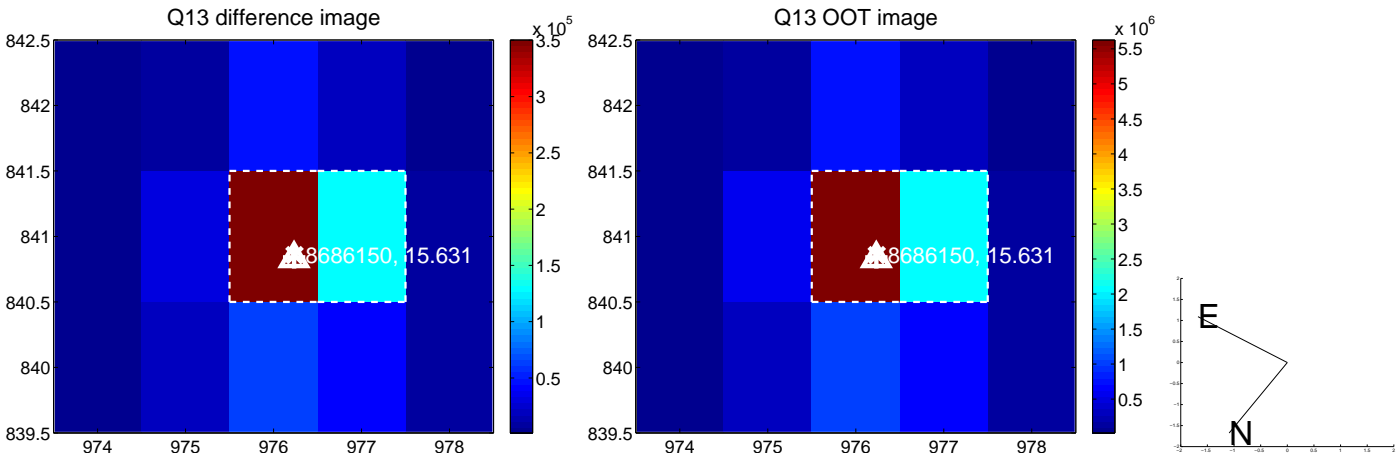
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



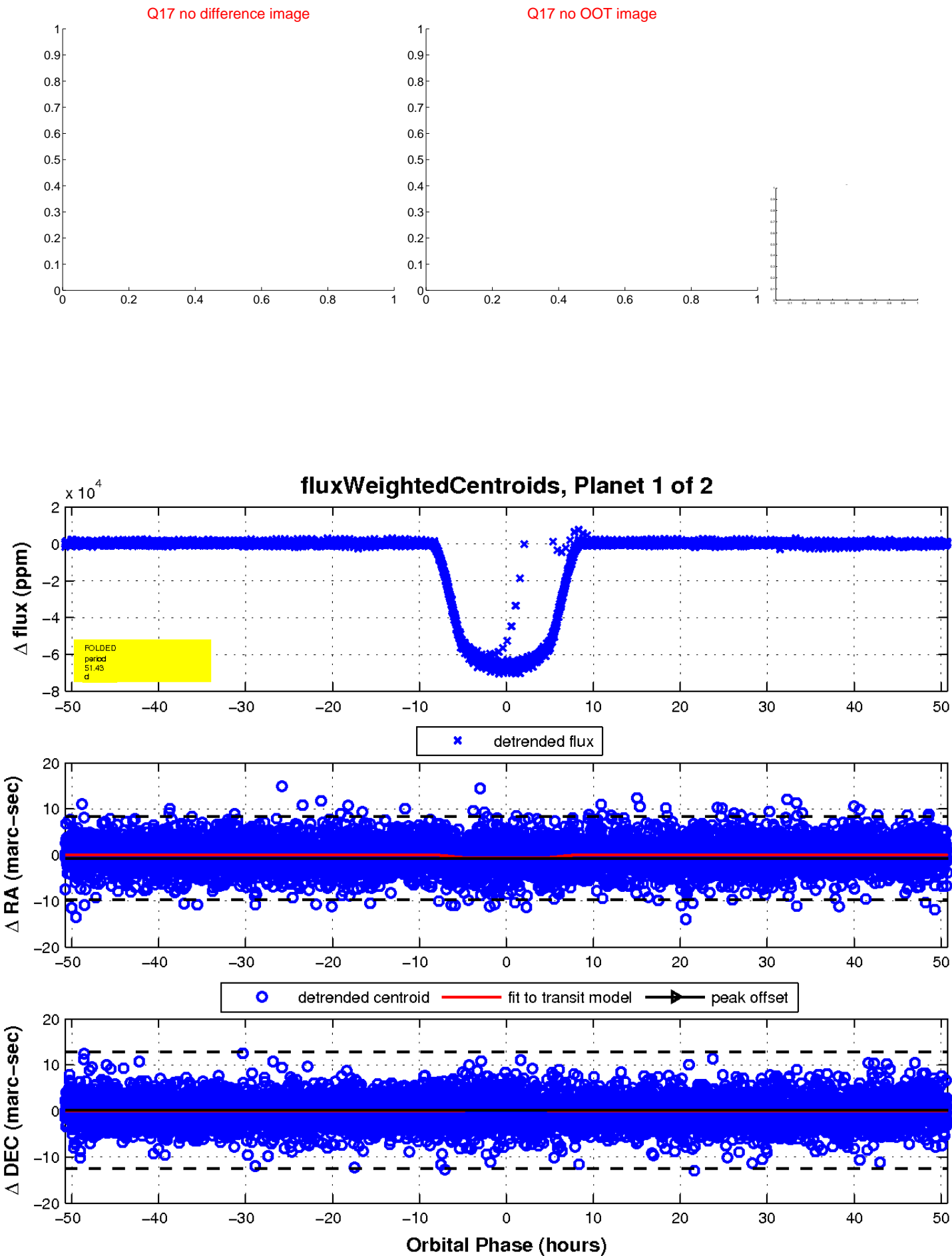
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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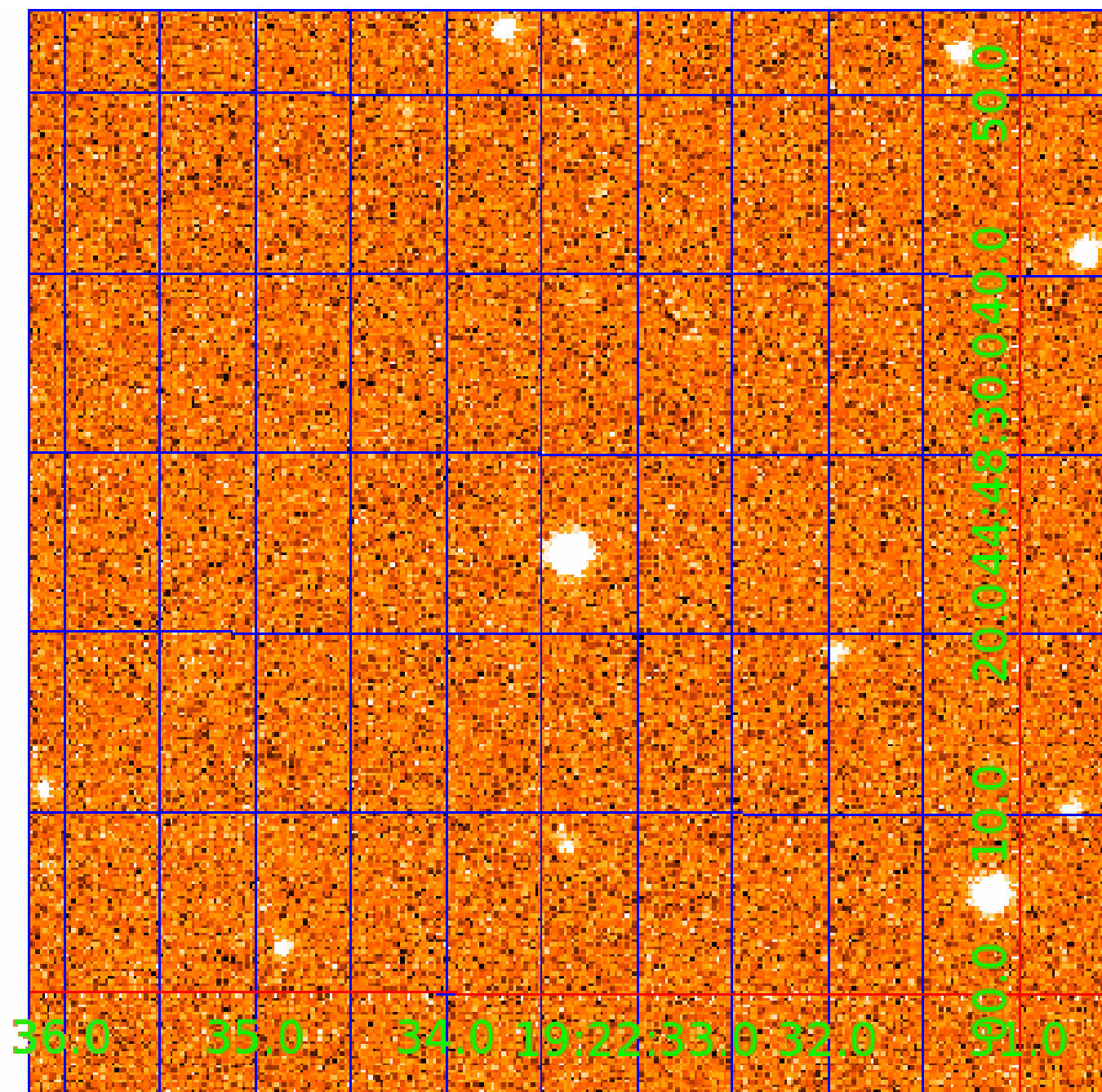


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008686150

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})
008686150-01	OBS	0919.01	51.425977	173.535881	66267.7	16.921	1840.3	1615.9	1.15	6257	29.66	21.44
008686150-02	OBS	No	51.425786	156.187350	2528.4	7.048	51.9	53.1	1.15	6257	6.39	21.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008686150-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
008686150-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

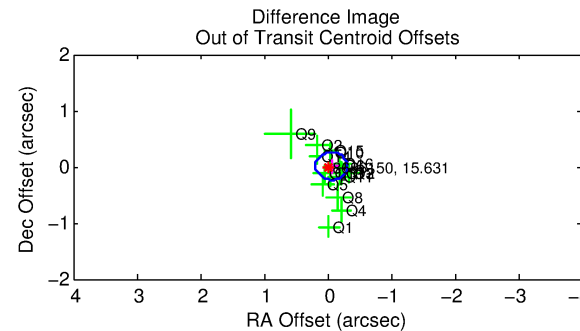
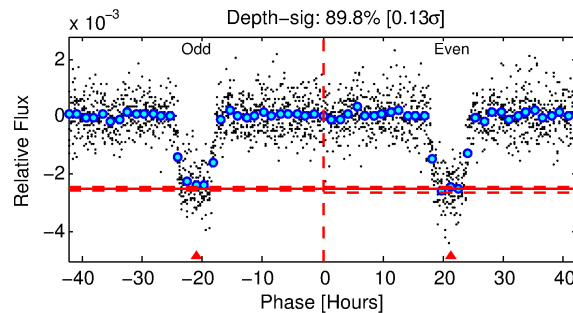
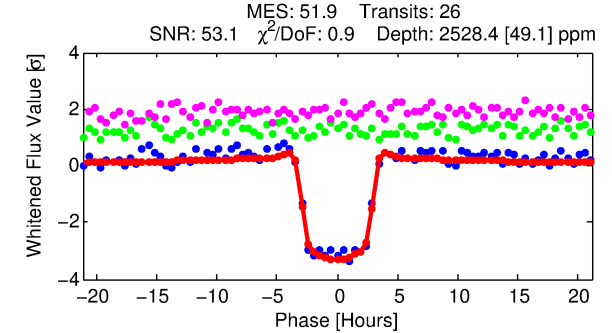
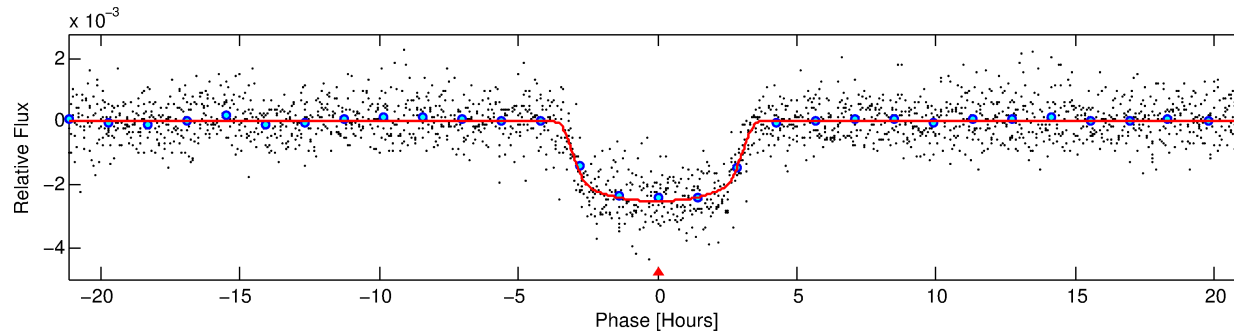
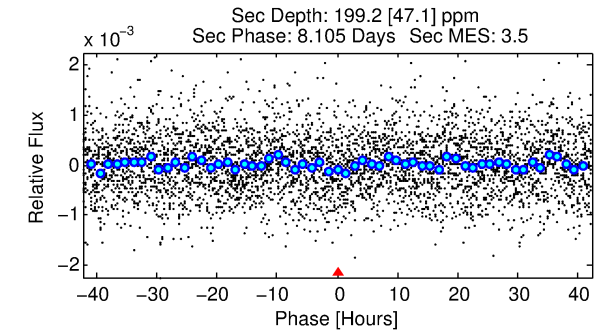
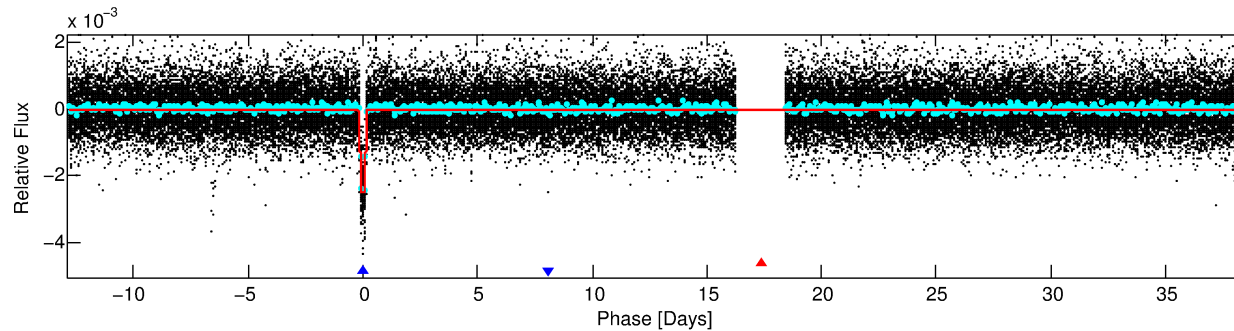
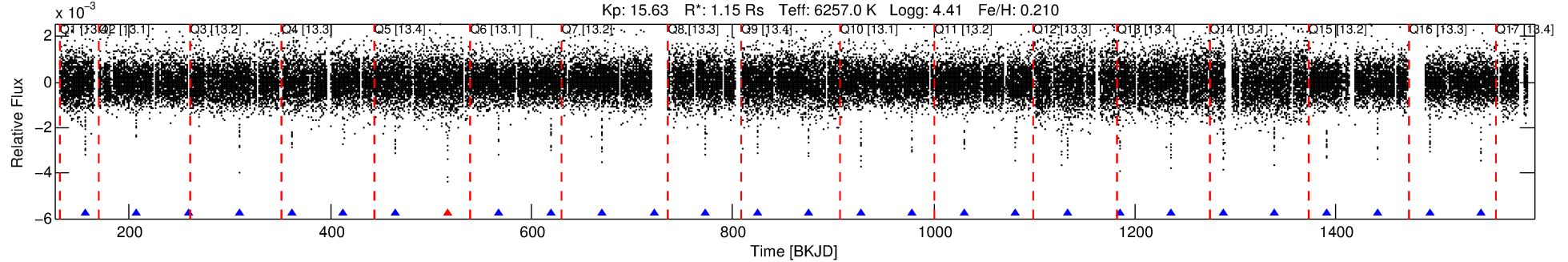
Ephemeris Match Information For 008686150-02

No Significant Match Found

DV One-Page Summary

KIC: 8686150 Candidate: 2 of 2 Period: 51.426 d
KOI: K00919 Corr: No Ephemeris Match

Kp: 15.63 R*: 1.15 Rs Teff: 6257.0 K Logg: 4.41 Fe/H: 0.210



DV Fit Results:

Period = 51.42579 [0.00015] d
Epoch = 156.1873 [0.0024] BKJD
Rp/R* = 0.0510 [0.0012]
a/R* = 38.03 [3.68]
b = 0.80 [0.04]
Seff = 21.44 [9.01]
Teq = 549 [58] K
Rp = 6.39 [2.00] Re
a = 0.2903 [0.0772] AU
Ag = 226.42 [104.09] [2.17σ]
Teffp = 3291 [235] K [11.34σ]

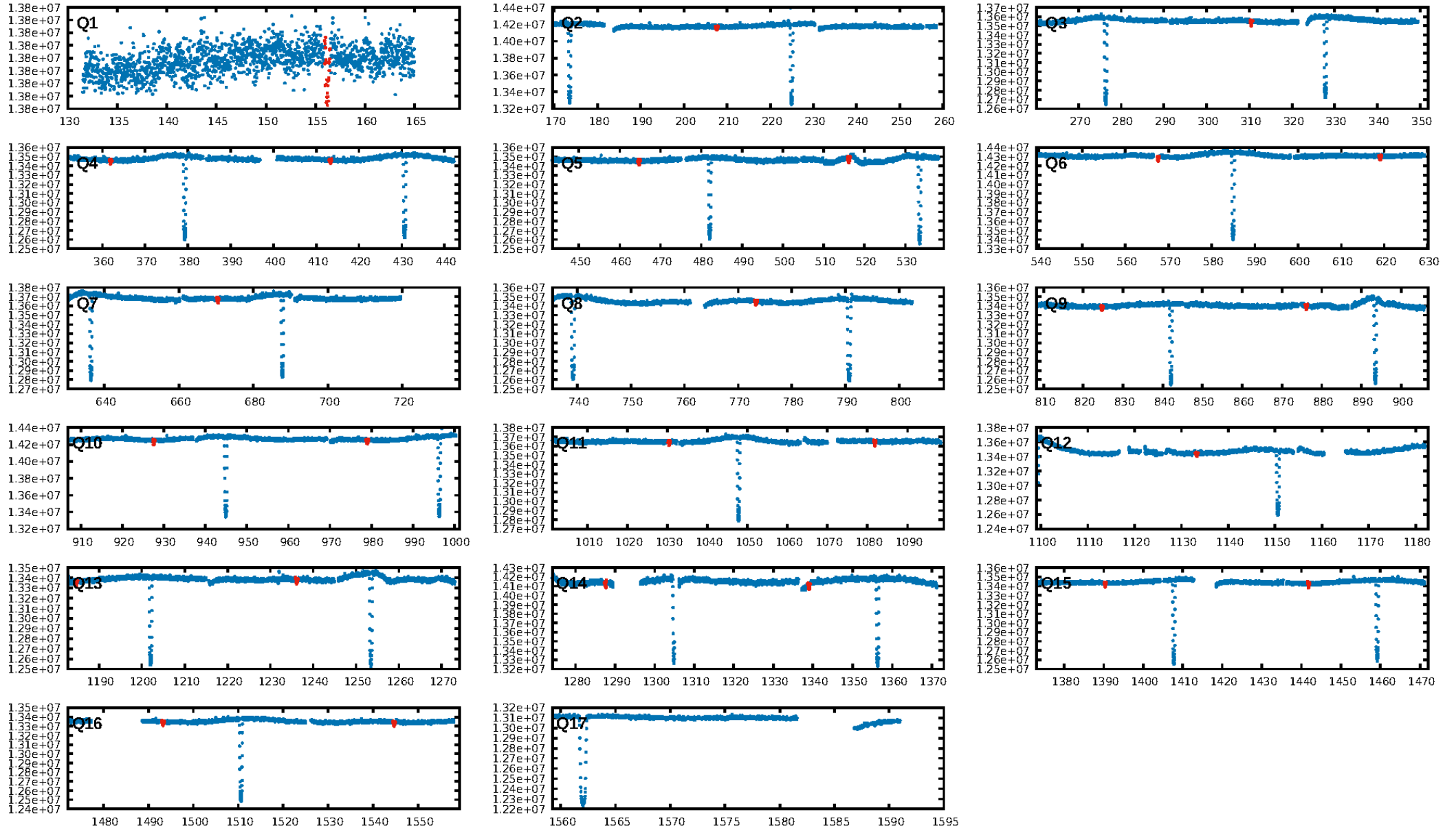
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 96.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.96 [24/25]
GhostDiagnostic-chr: 3.908
Centroid-sig: 2.2%
Centroid-so: 0.460 arcsec [2.01σ]
OotOffset-rm: 0.063 arcsec [0.76σ]
KicOffset-rm: 0.136 arcsec [1.51σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [16/16]

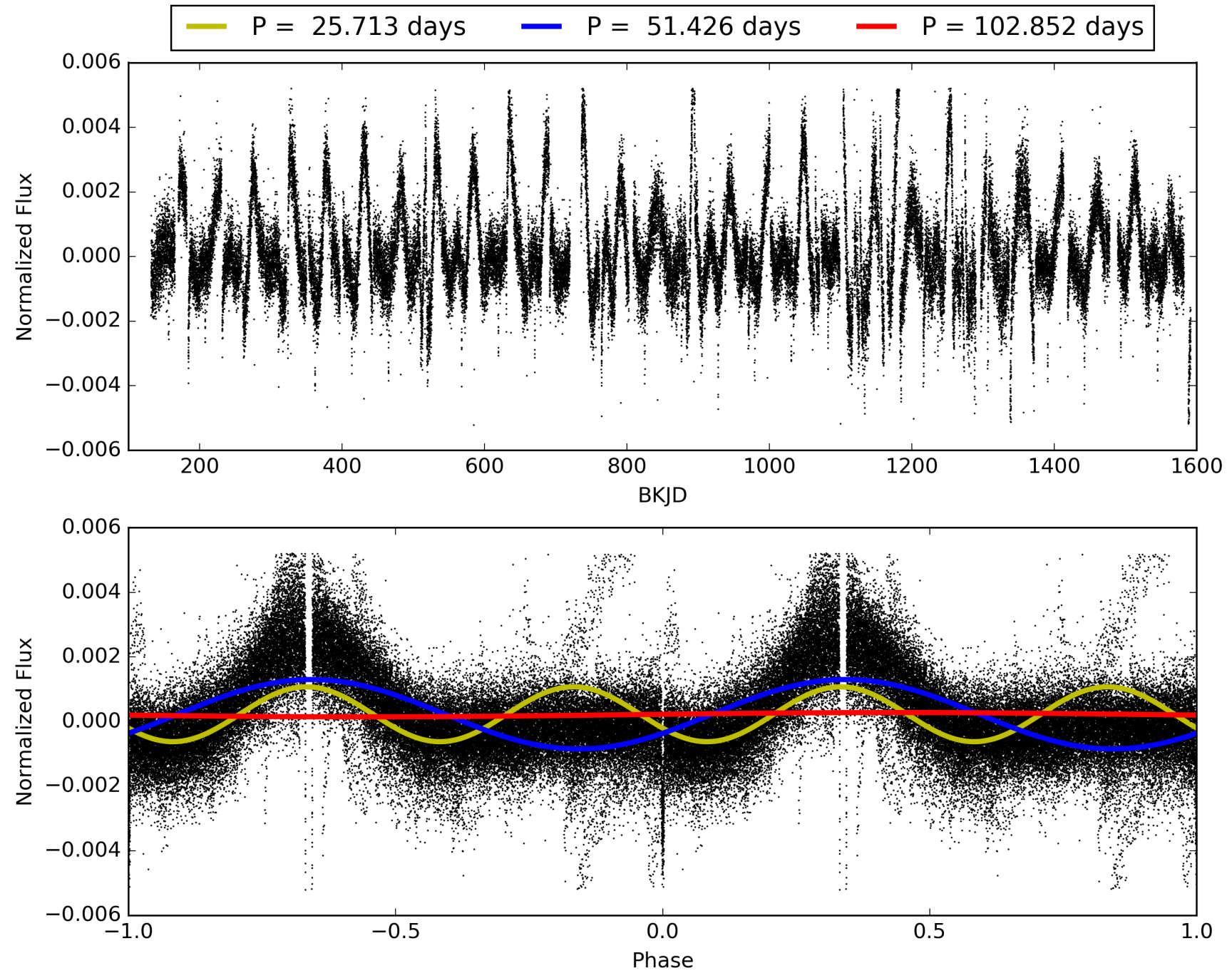
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:39:49 Z

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

TCE 008686150-02, PDC Light Curves

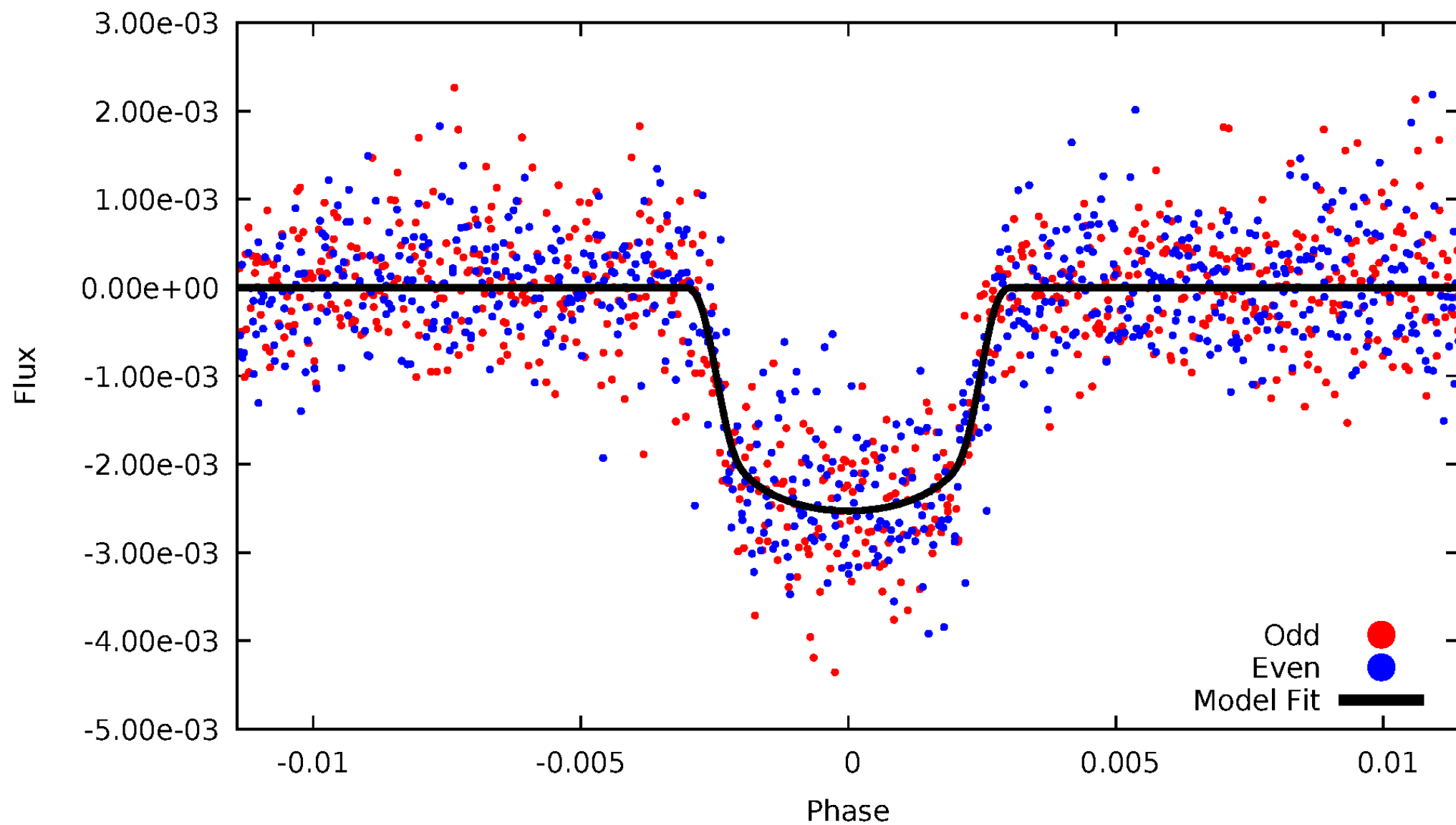


TCE 008686150-02



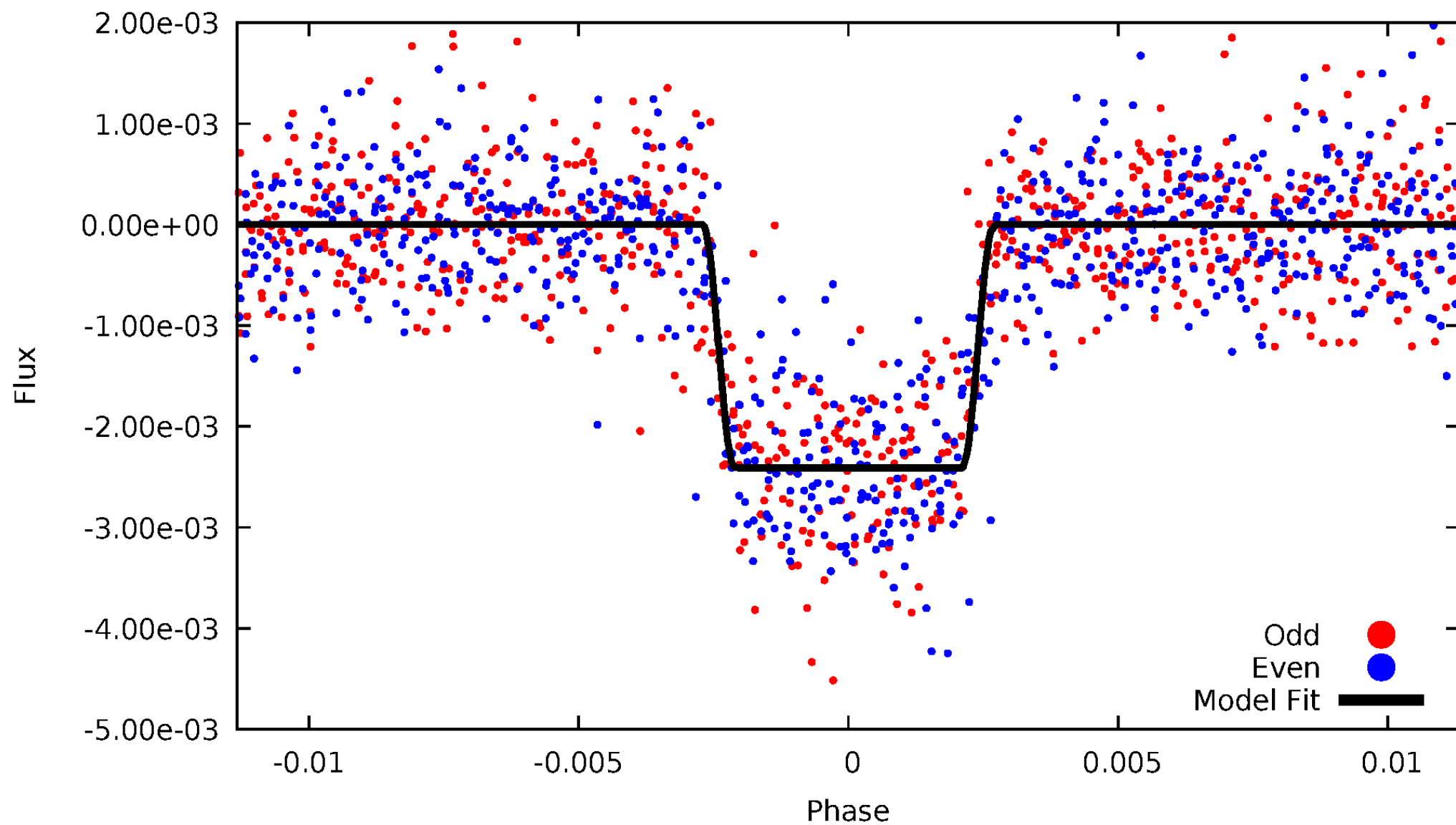
DV Odd/Even

TCE 008686150-02



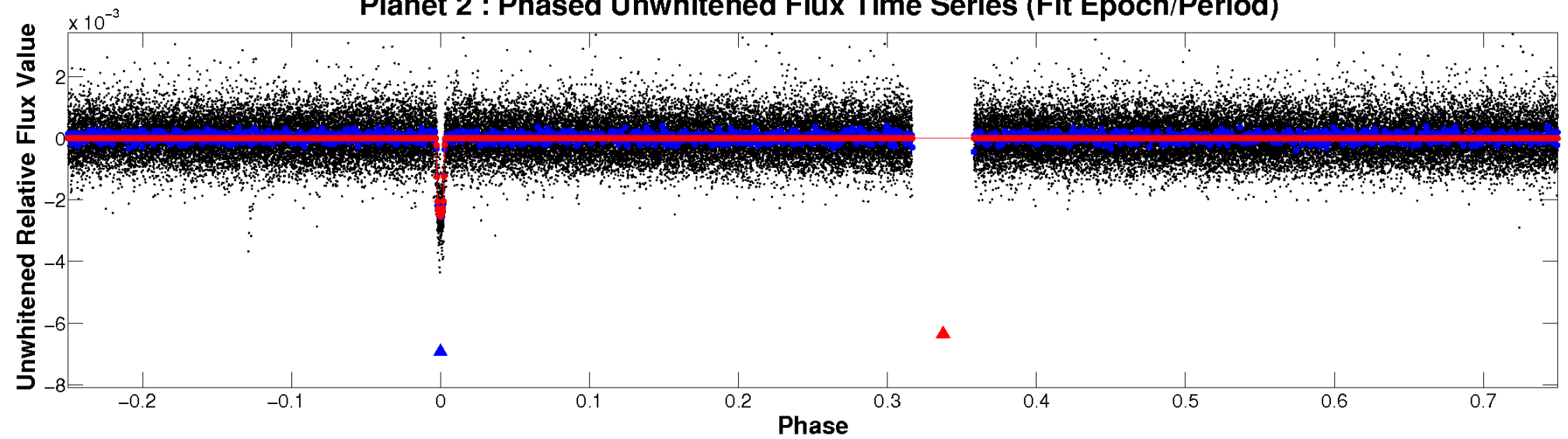
ALT Odd/Even

TCE 008686150-02

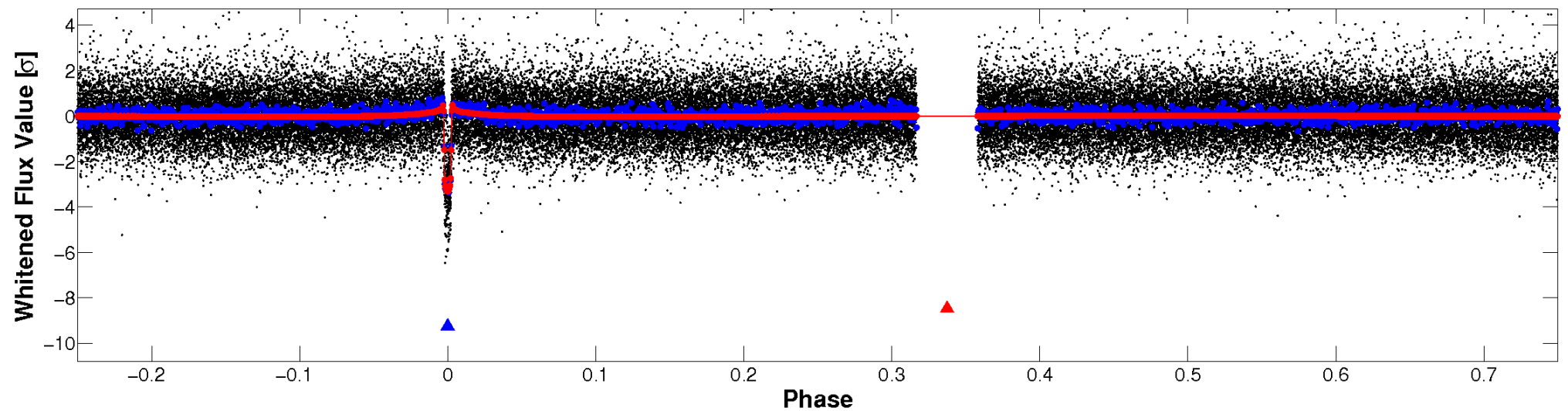


Non-Whitened Vs. Whitened Light Curve

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

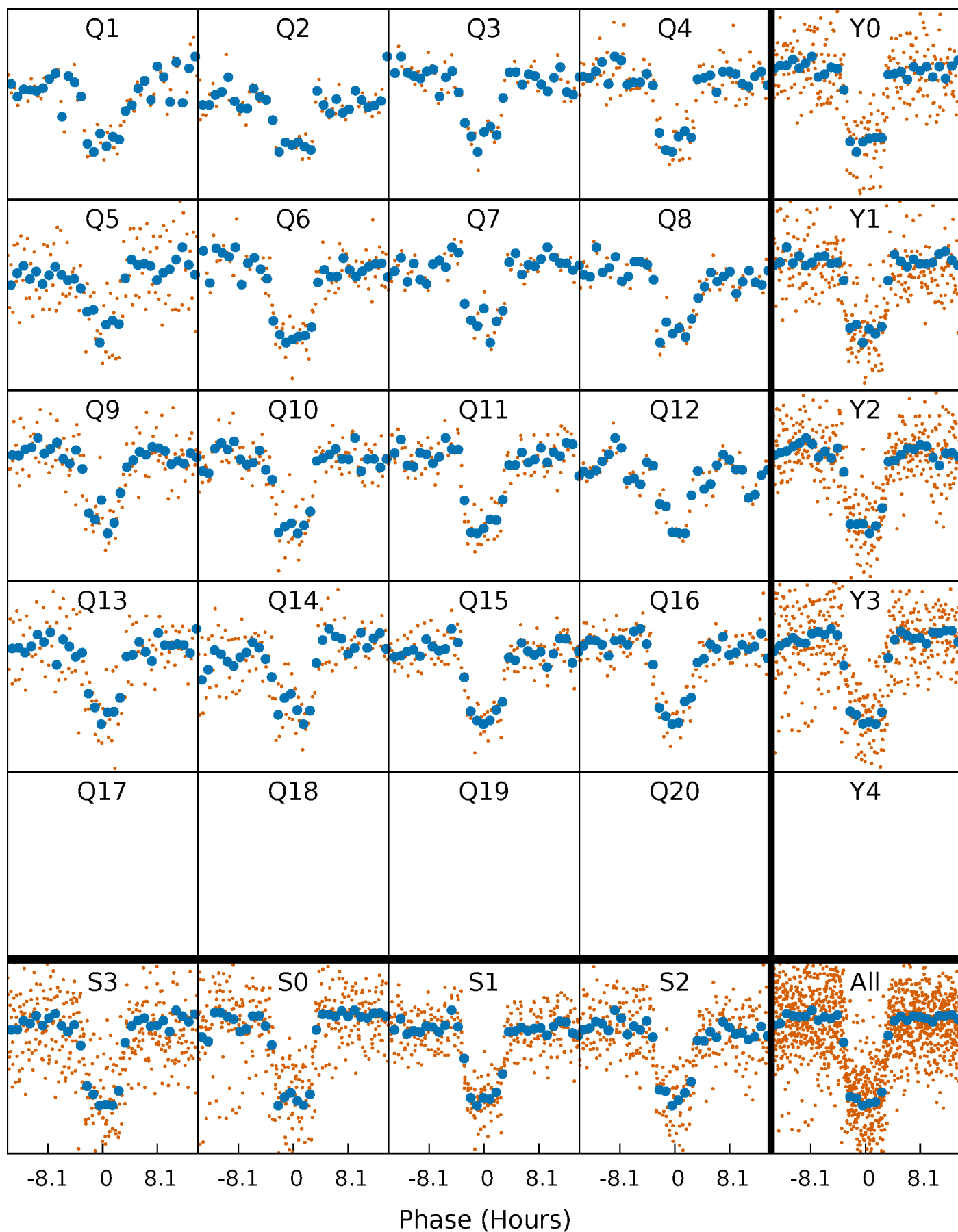


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



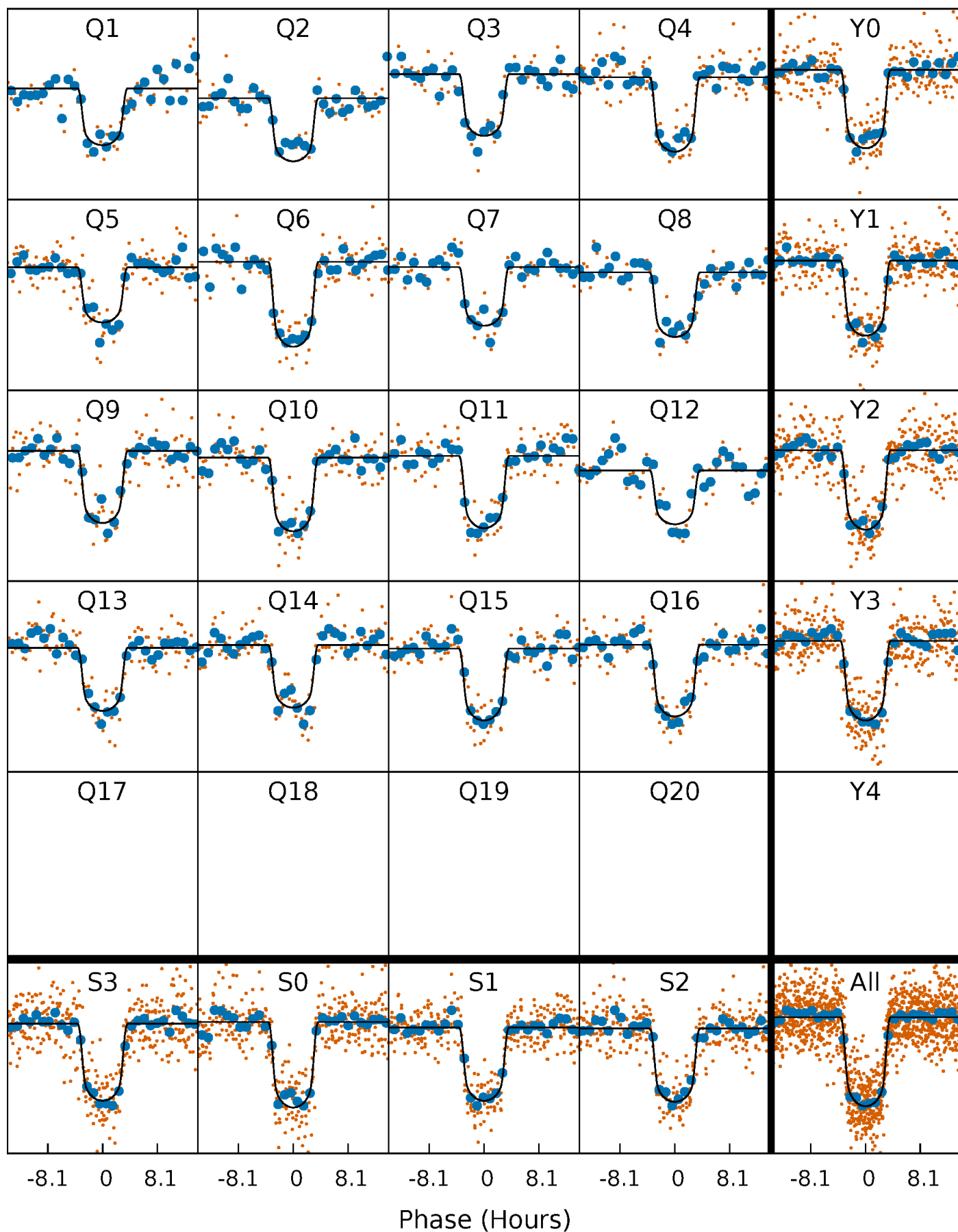
PDC Quarter-Phased Transit Curves

TCE 008686150-02 $P = 51.425786$ Days $T_0 = 156.187350$ (BKJD)



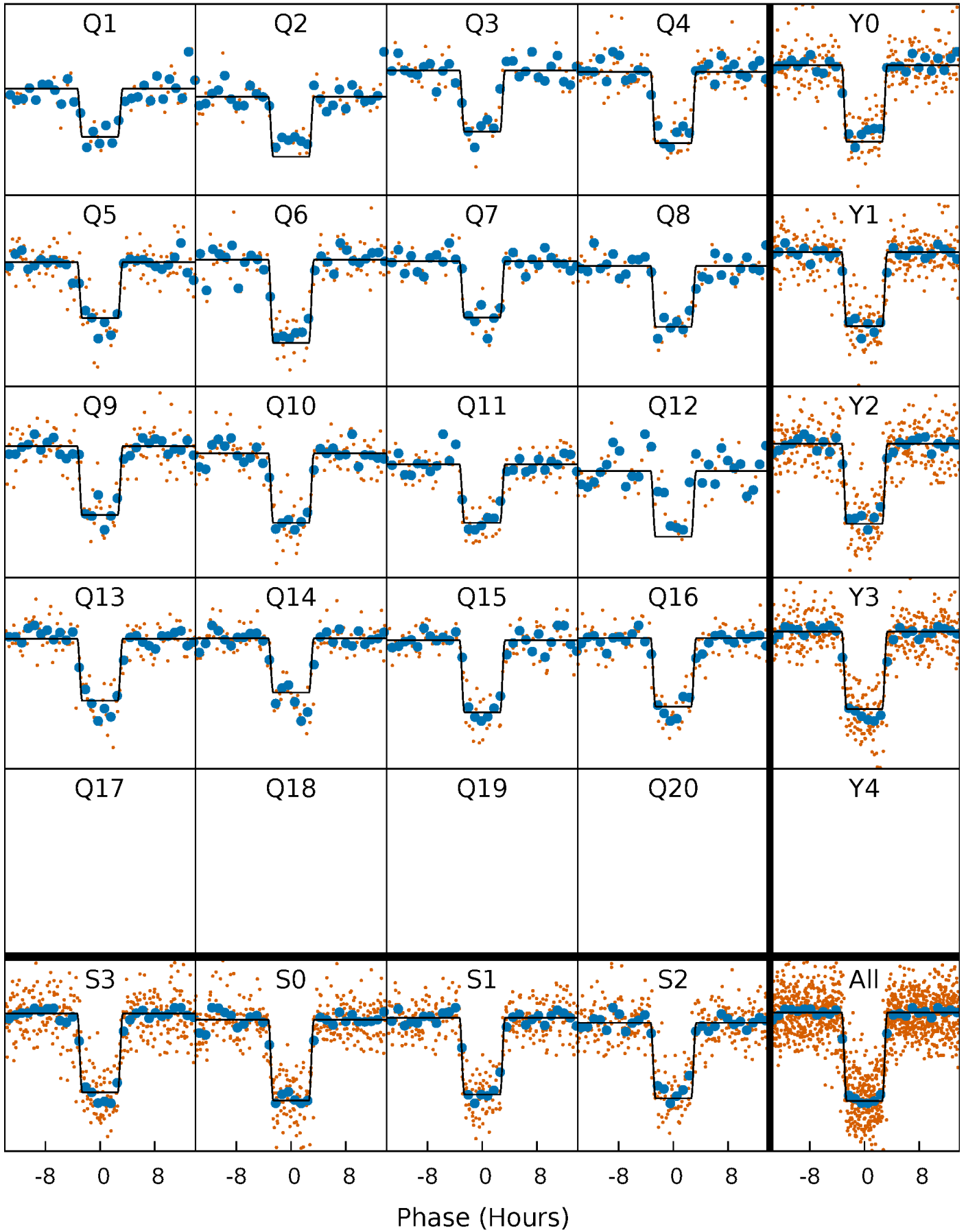
DV Quarter-Phased Transit Curves

TCE 008686150-02 P= 51.425786 Days $T_0=156.187350$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

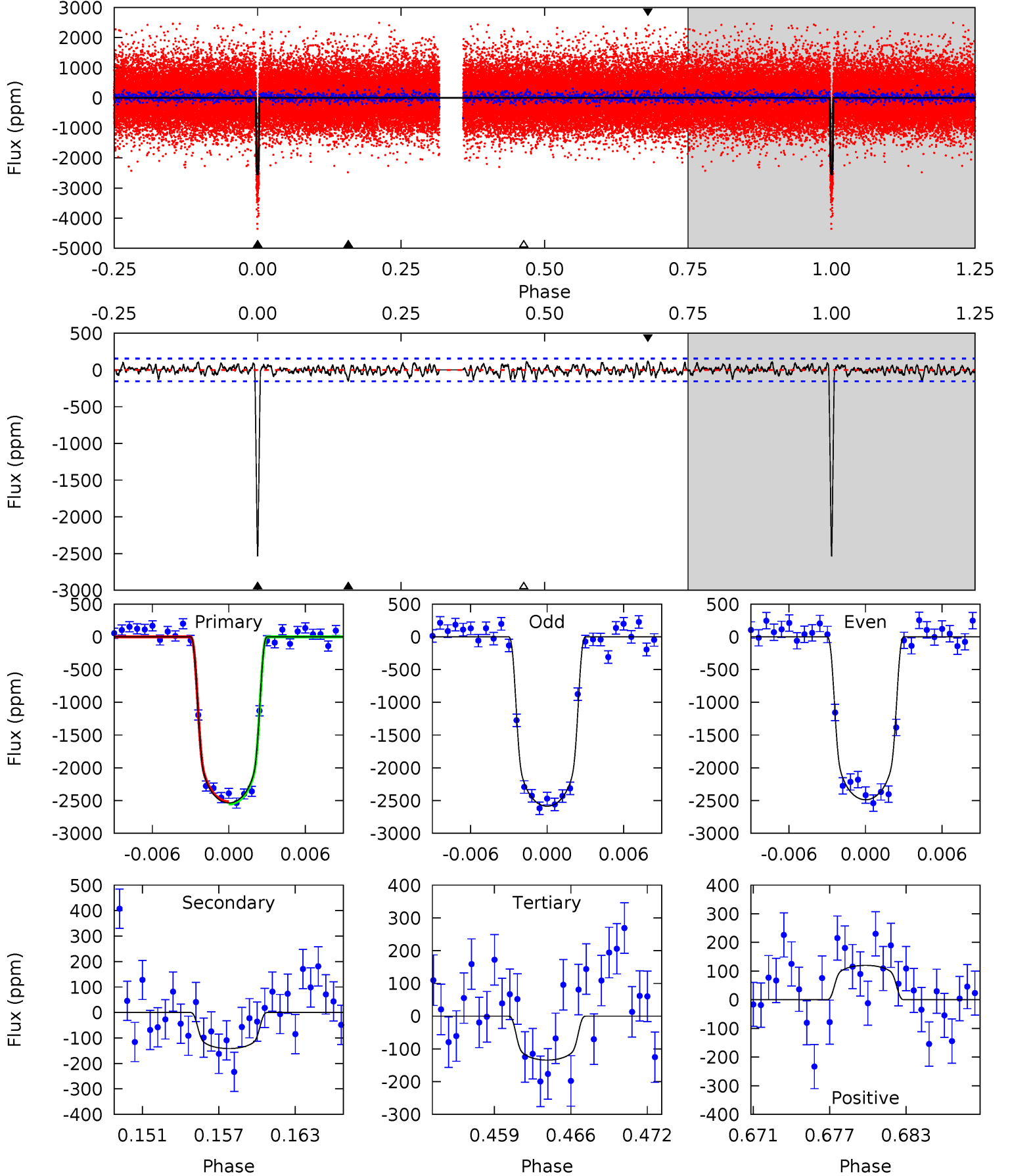
TCE 008686150-02 P= 51.425498 Days $T_0=156.190930$ (BKJD)



DV Model-Shift Uniqueness Test

008686150-02, $P = 51.425786$ Days, $E = 104.761564$ Days

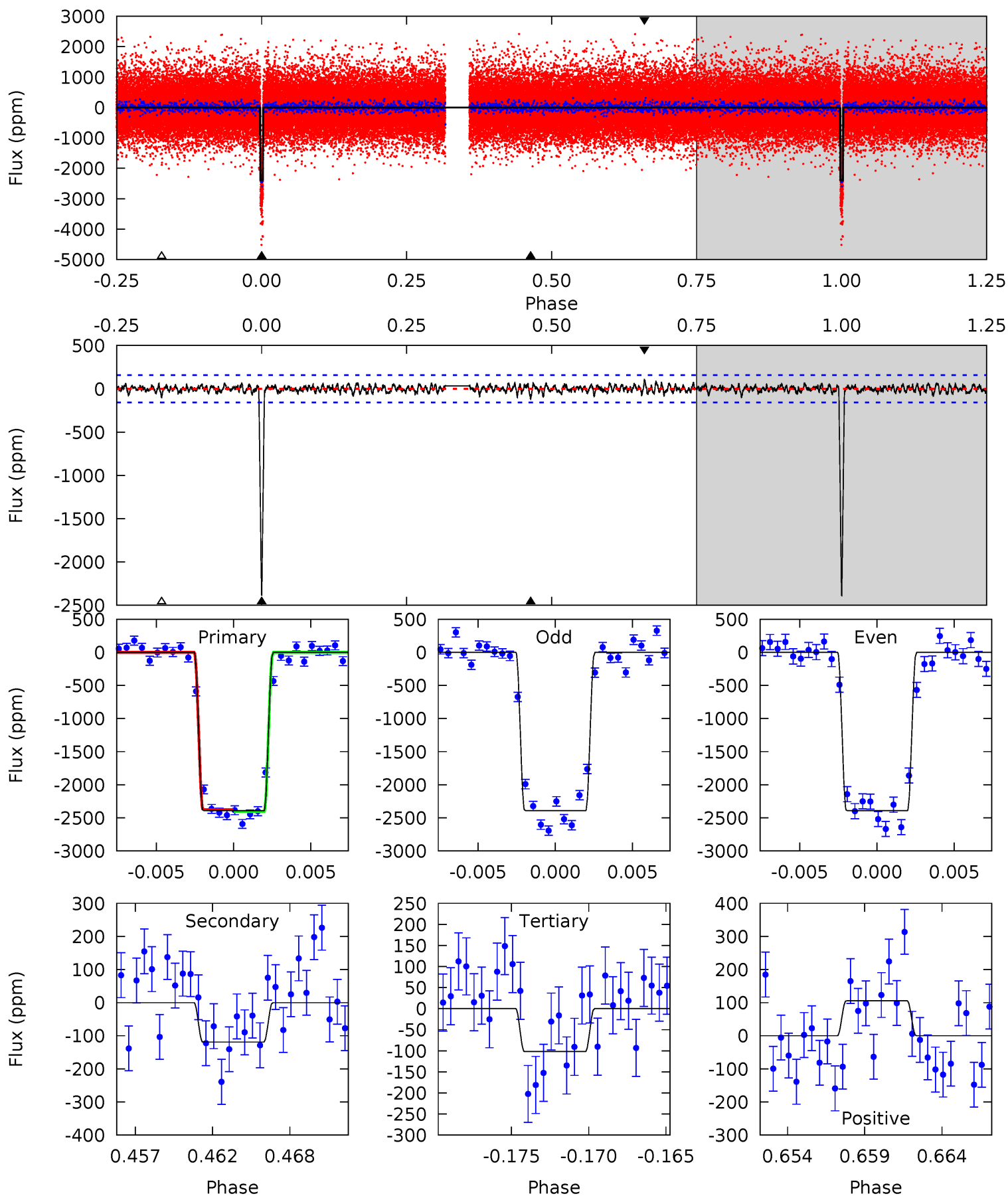
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
84.1	4.69	4.45	3.98	5.12	2.75	1.46	79.6	80.1	0.24	0.71	1.63	0.98	0.05	0.59



Alt Model-Shift Uniqueness Test

008686150-02, P = 51.425498 Days, E = 104.765432 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
78.3	3.90	3.34	3.45	5.15	2.79	0.98	75.0	74.8	0.56	0.45	0.01	1.00	0.04	0.47



Stellar Parameters For KIC 008686150

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6257^{+173}_{-239}	$4.410^{+0.054}_{-0.216}$	$0.210^{+0.200}_{-0.350}$	$1.147^{+0.358}_{-0.128}$	$1.233^{+0.153}_{-0.187}$	$1.152^{+0.338}_{-0.625}$
	+3%/-4%	+1%/-5%	+95%/-167%	+31%/-11%	+12%/-15%	+29%/-54%
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 008686150-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-142 ± 30	$6.50^{+1.13}_{-0.52}$	781^{+58}_{-41}	3486^{+136}_{-145}	145^{+42}_{-42}
Alt.	-119 ± 31	$6.30^{+1.06}_{-0.52}$	783^{+56}_{-41}	3430^{+154}_{-158}	127^{+49}_{-41}

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 $A_{obs} \gg 1.0$

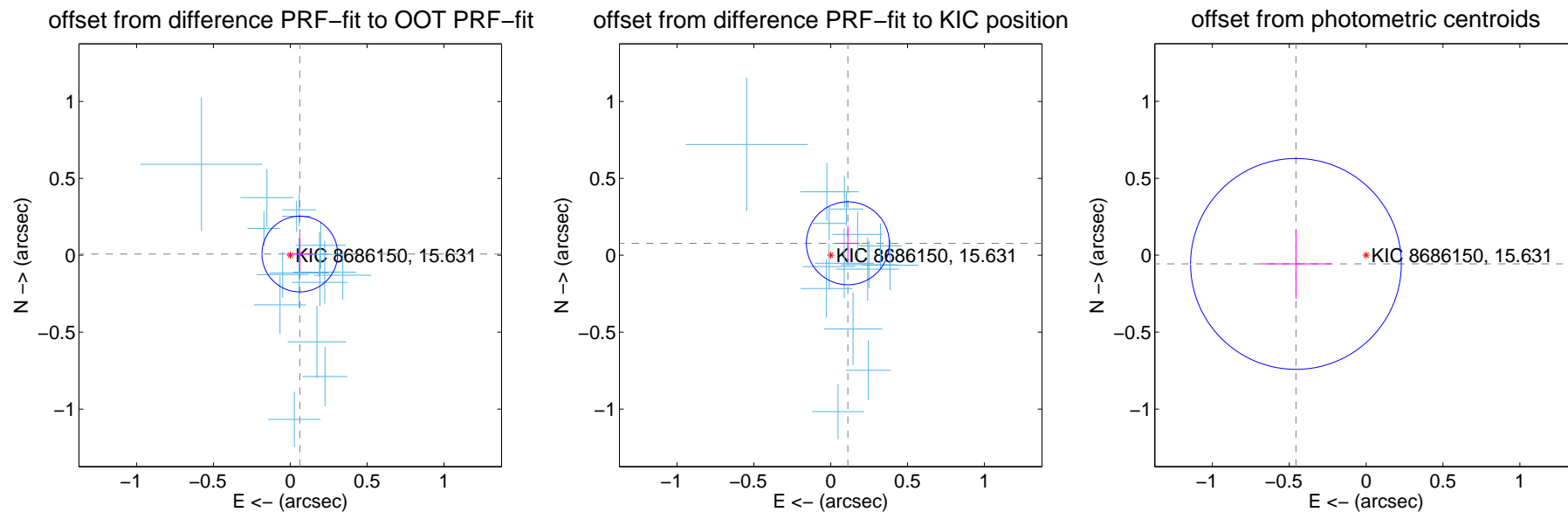
DV Centroid Data

Supplemental centroid analysis for 008686150-02. Kepler magnitude: 15.63. Transit SNR 53.08

There are 16 quarters with good PRF difference image offsets

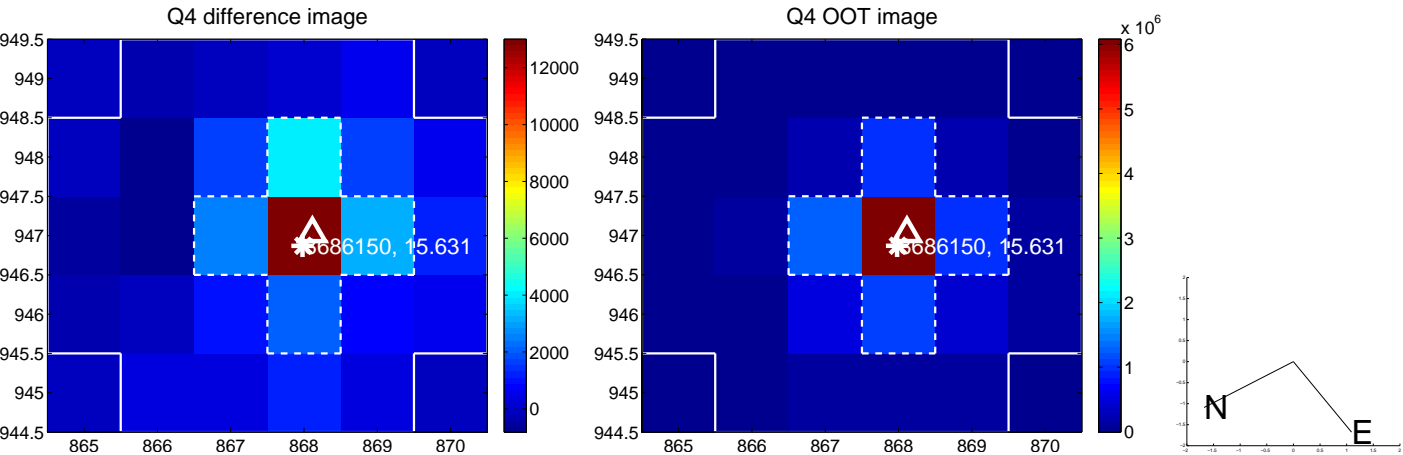
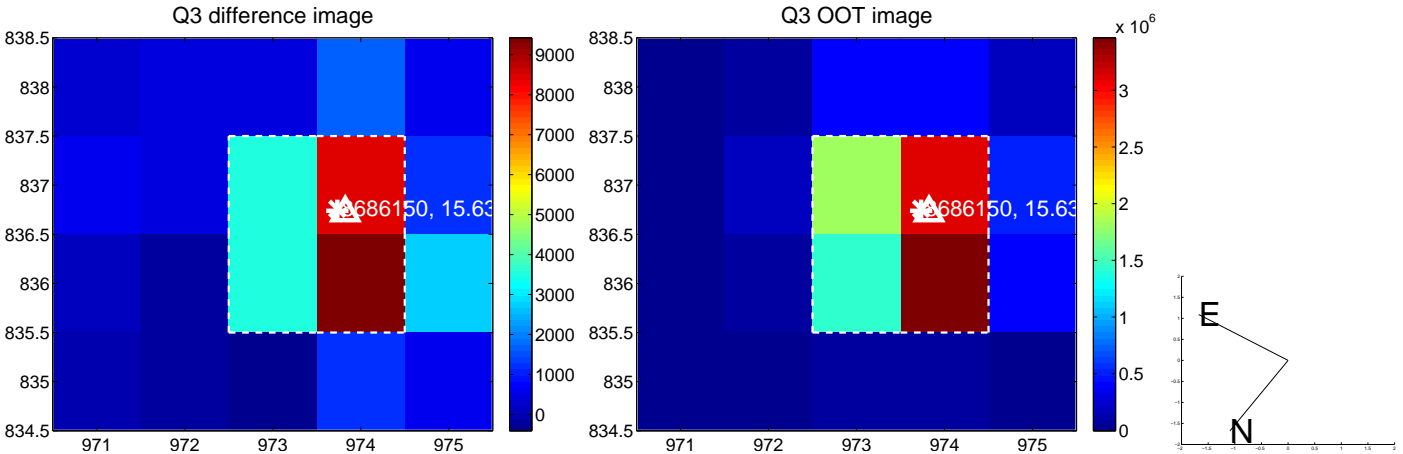
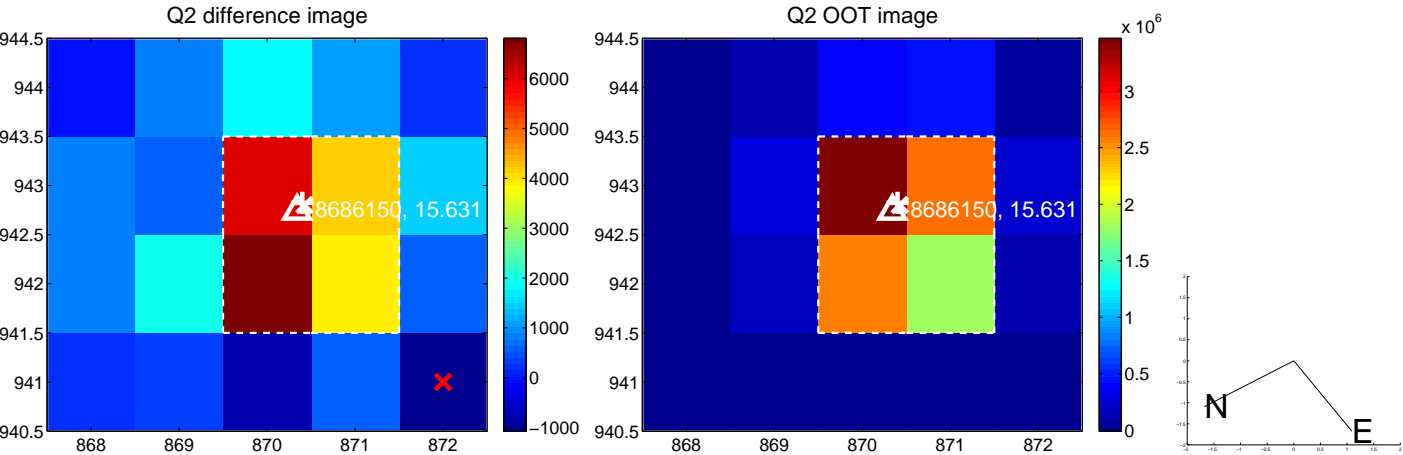
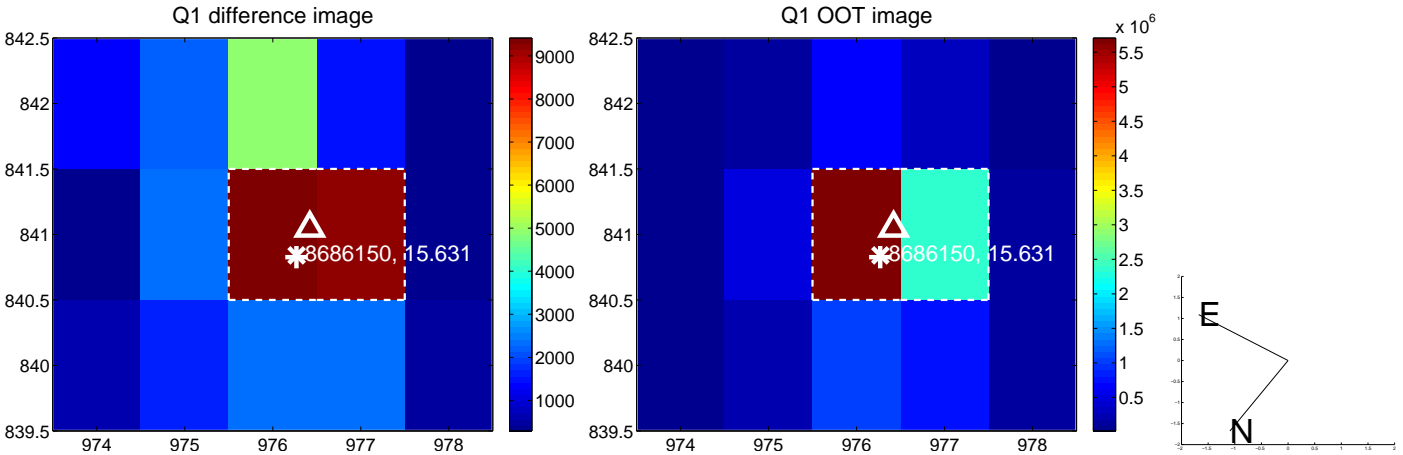
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.063 ± 0.082	0.76	-0.062 ± 0.085	0.008 ± 0.116
PRF-fit source offset from KIC position	0.136 ± 0.090	1.51	-0.112 ± 0.076	0.078 ± 0.113
photometric centroid source offset	0.46 ± 0.23	2.01	0.46 ± 0.23	-0.06 ± 0.23

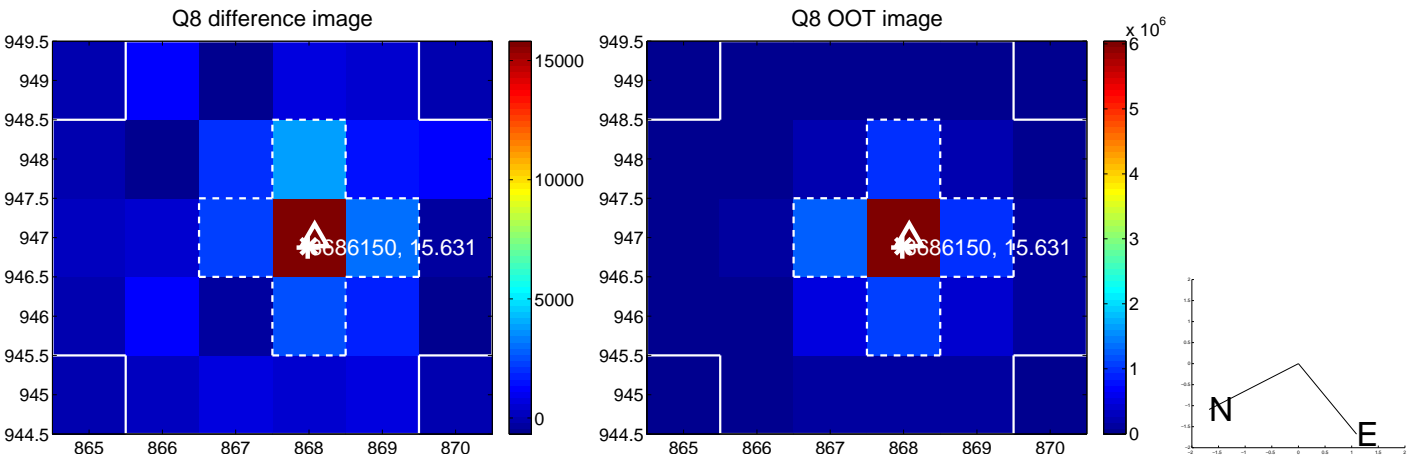
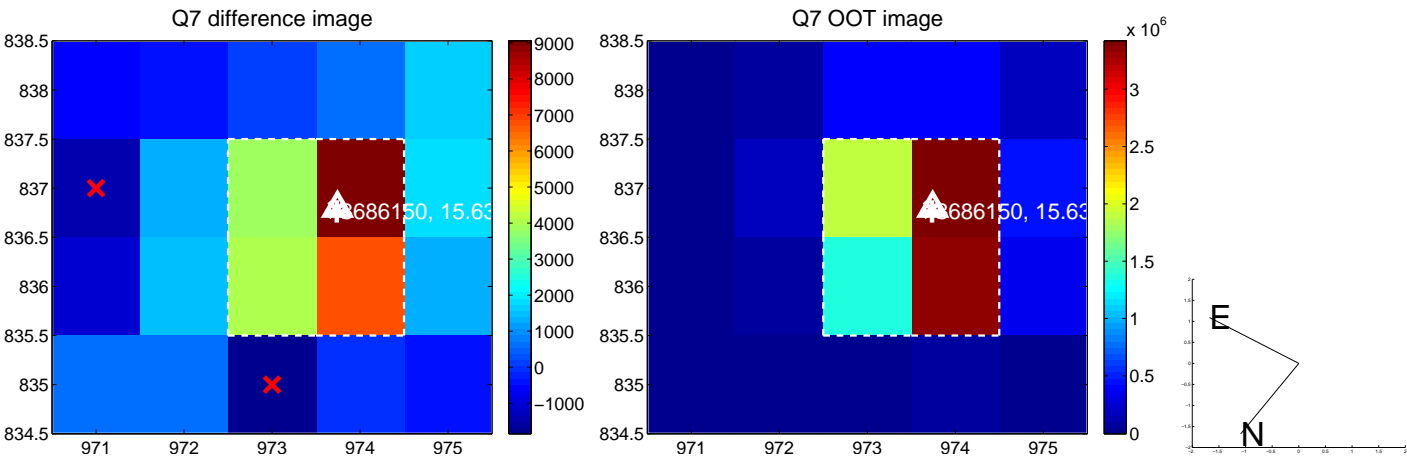
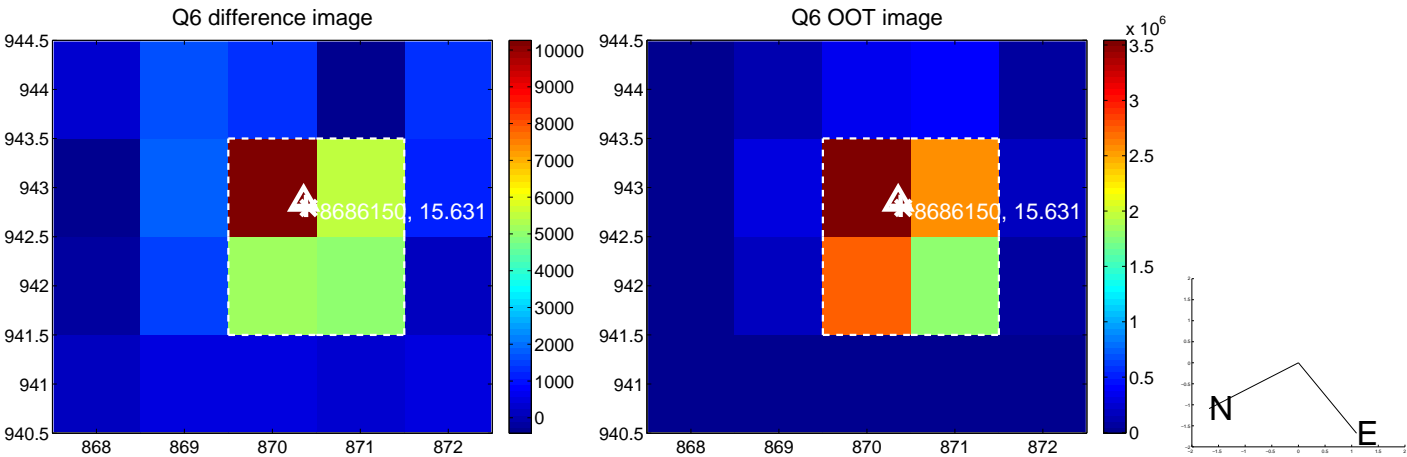
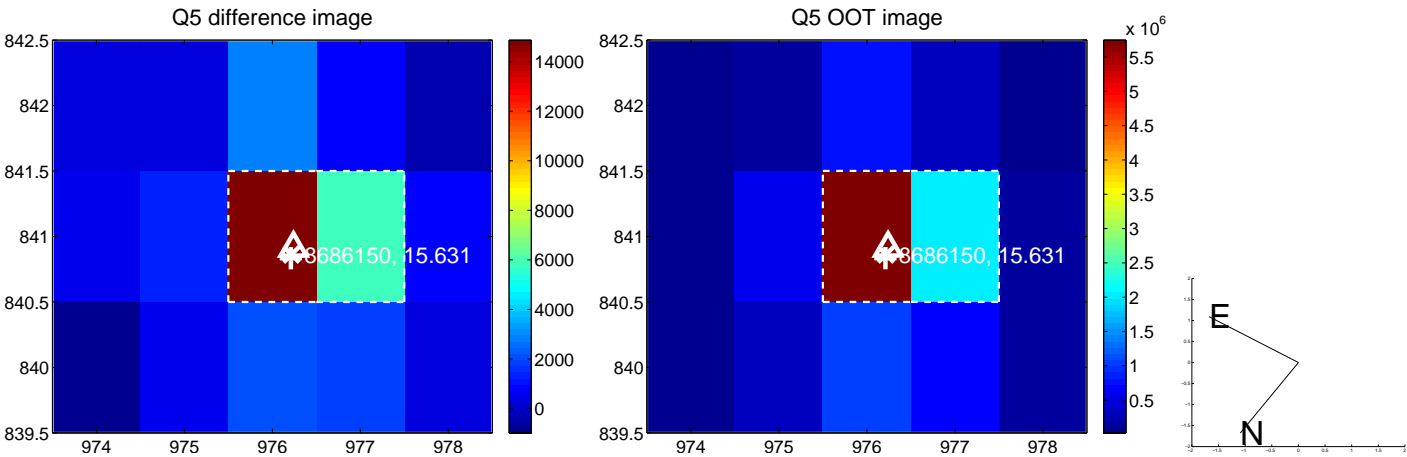


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

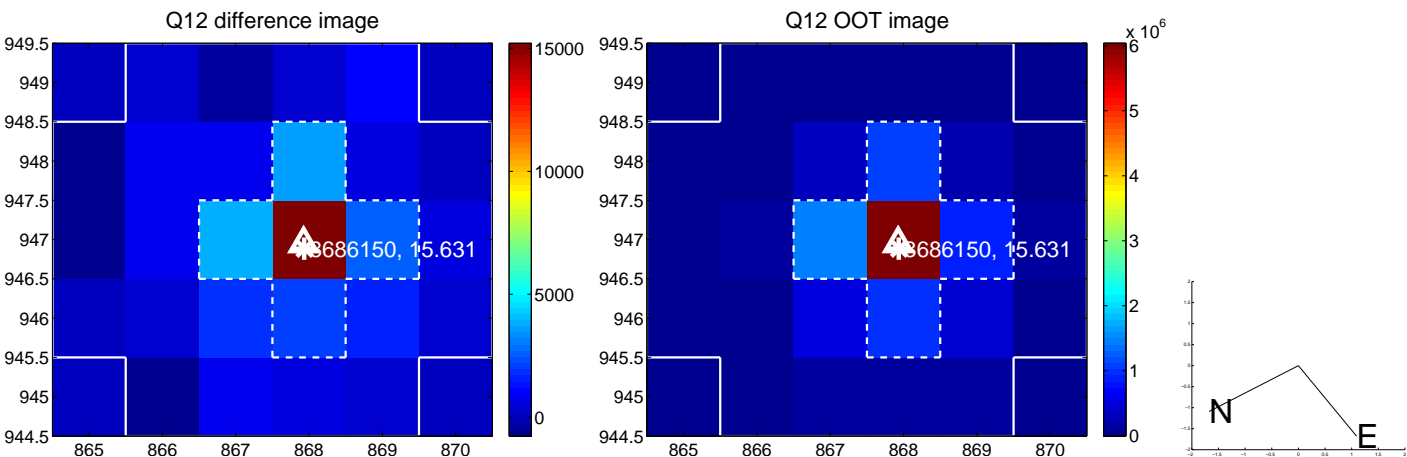
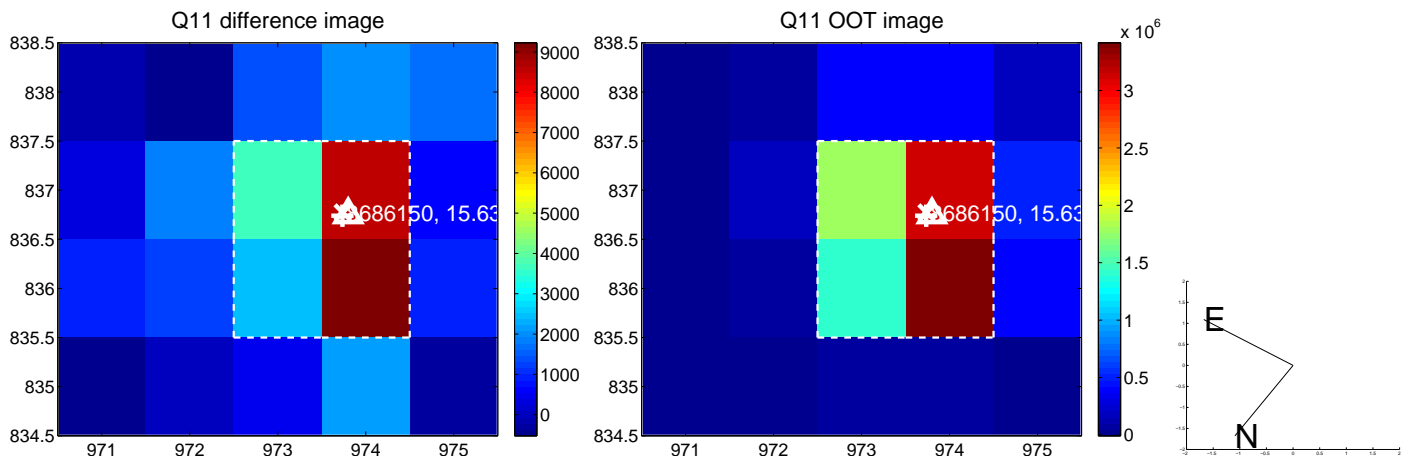
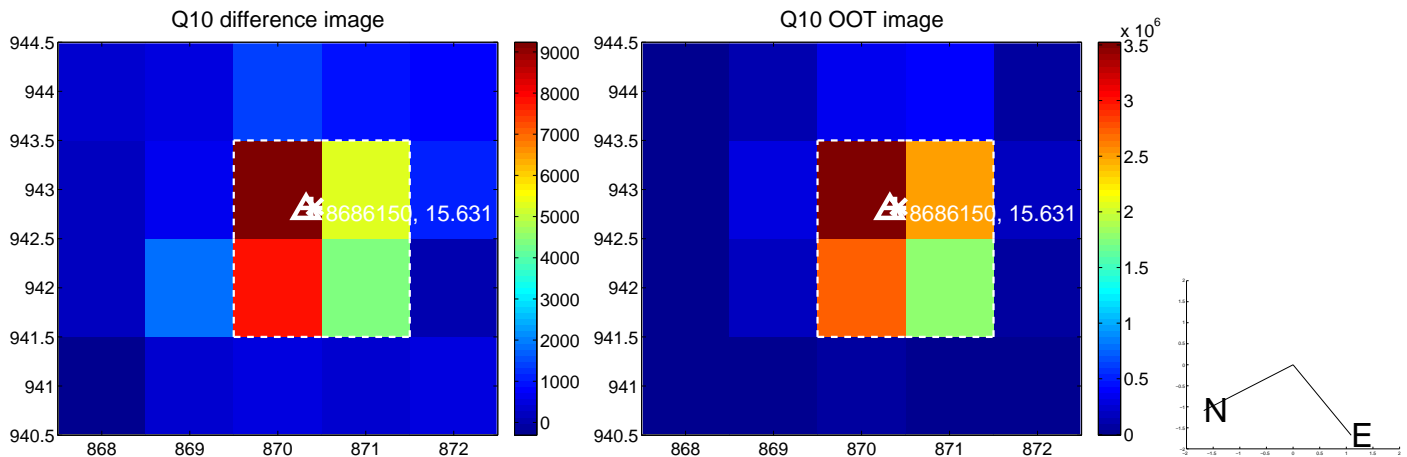
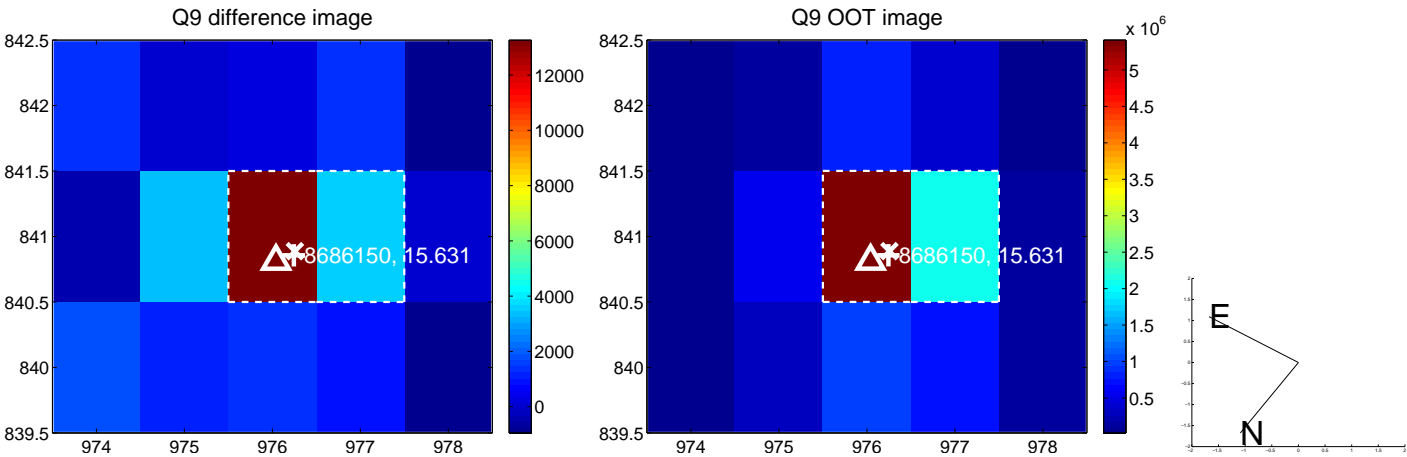
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



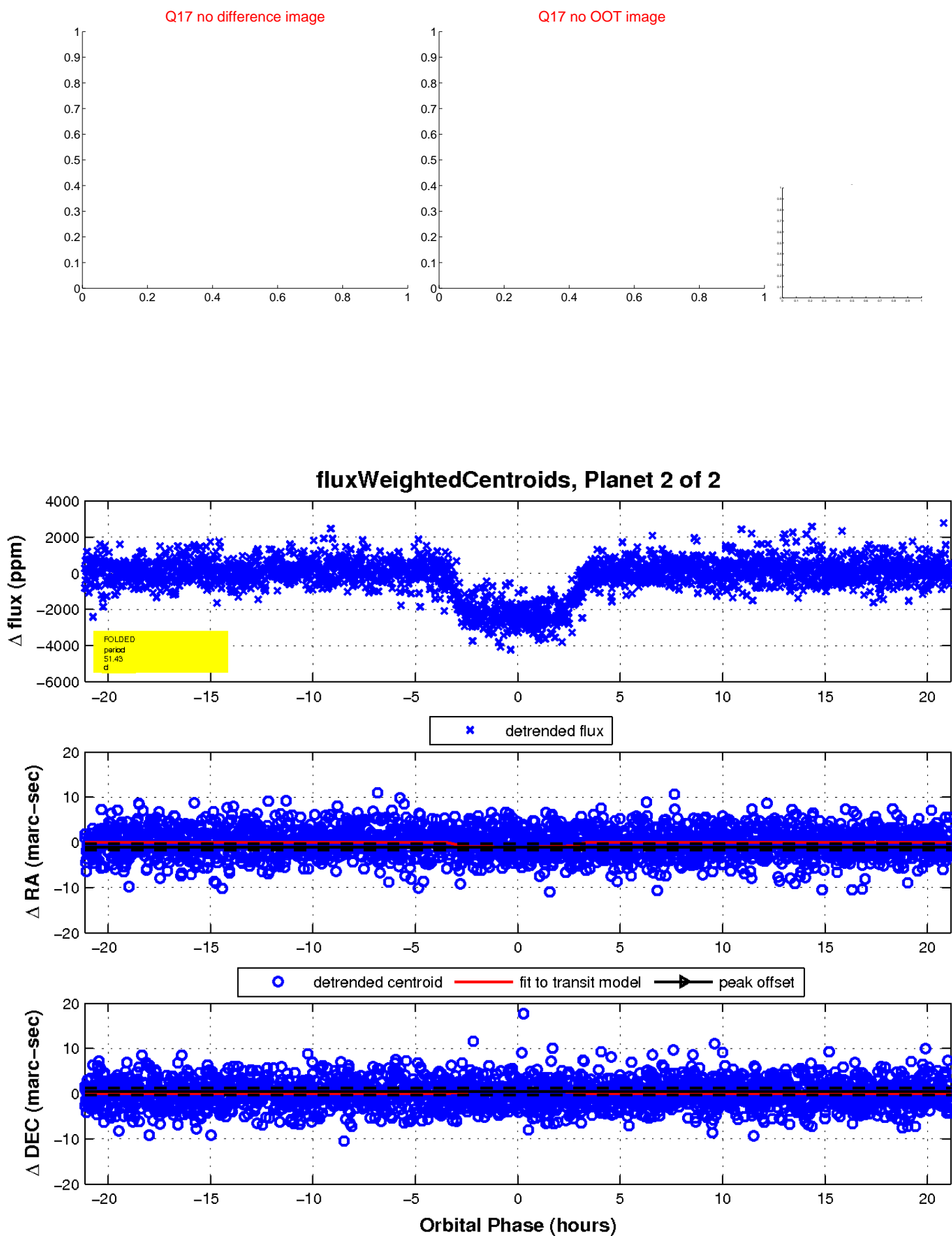
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

