

KIC 009880841

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})
009880841-01	OBS	No	1.301873	131.955906	44.4	4.021	8.5	9.8	0.94	5615	0.73	1411.62
009880841-02	OBS	No	164.187922	282.239901	164.9	2.216	8.6	2.2	0.94	5615	1.45	2.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009880841-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009880841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

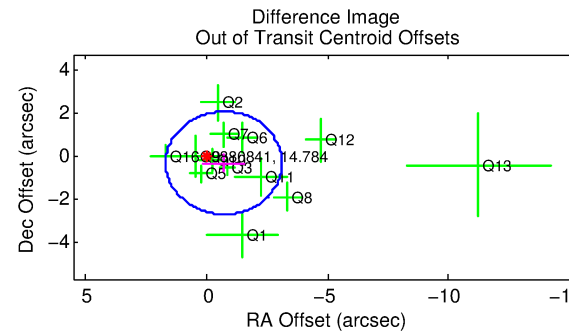
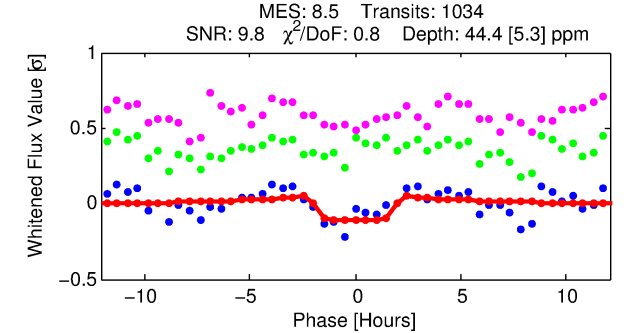
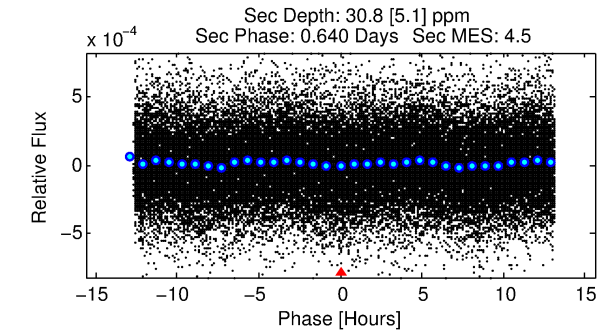
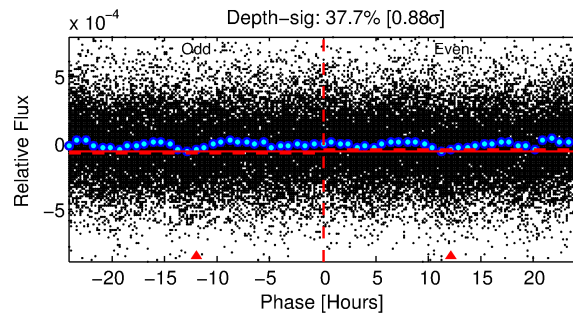
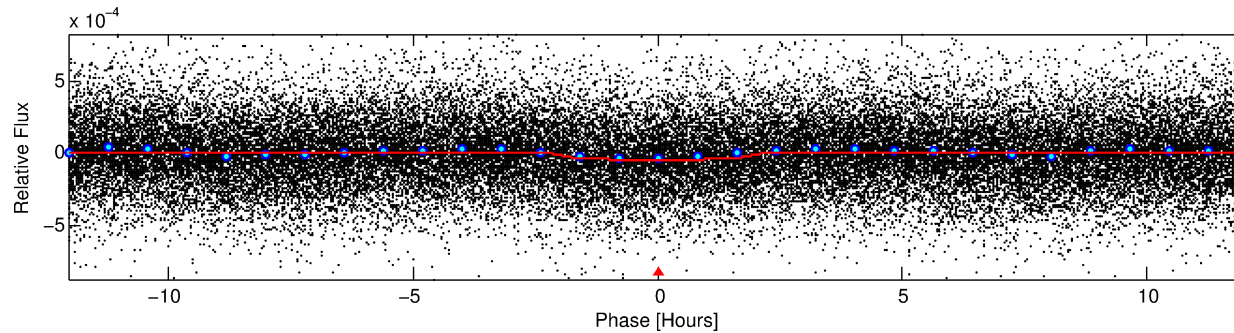
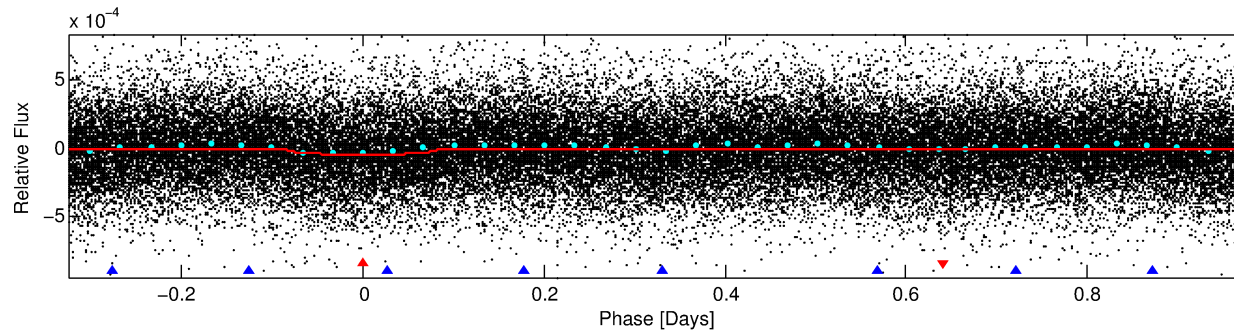
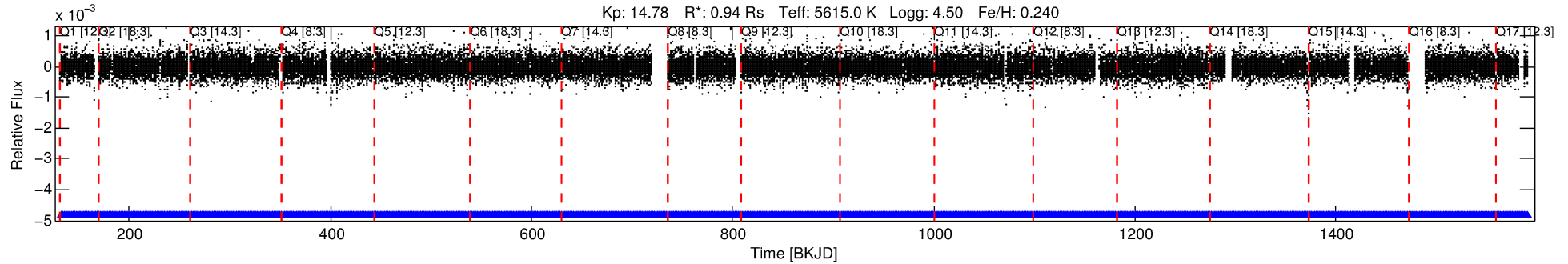
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009880841-01

No Significant Match Found

DV One-Page Summary

KIC: 9880841 Candidate: 1 of 2 Period: 1.302 d



DV Fit Results:

Period = 1.30187 [0.00001] d
Epoch = 131.9559 [0.0033] BKJD
Rp/R* = 0.0072 [0.0029]
a/R* = 1.52 [1.53]
b = 0.88 [0.46]
Seff = 1411.62 [530.90]
Teq = 1563 [147] K
Rp = 0.73 [0.35] Re
a = 0.0235 [0.0056] AU
Ag = 17.42 [15.51] [1.06 σ]
Teffp = 4937 [1013] K [3.30 σ]

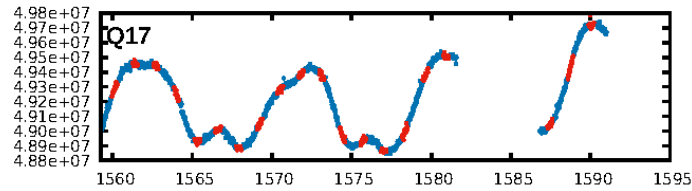
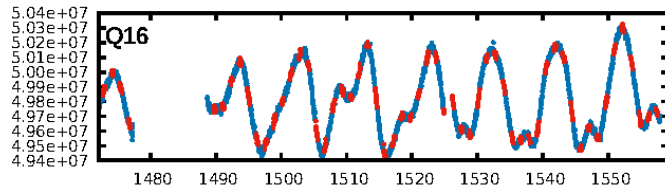
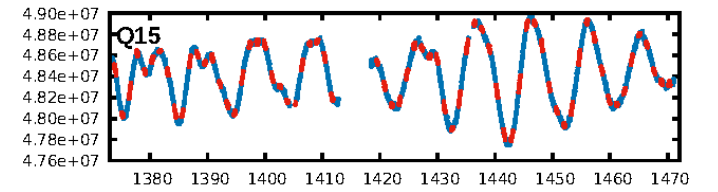
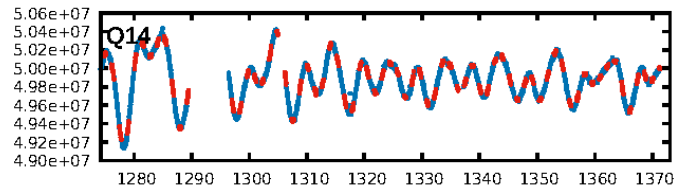
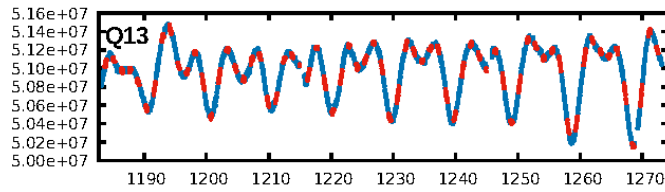
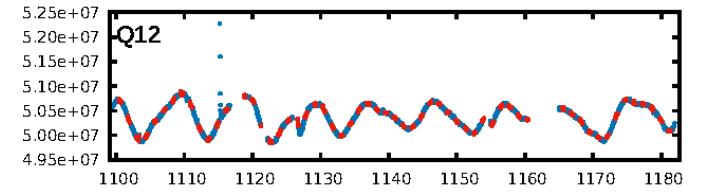
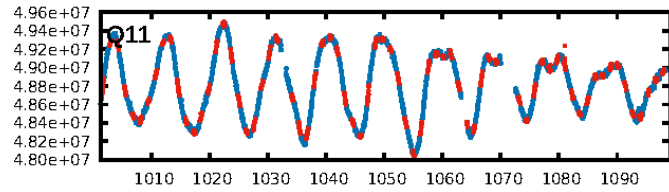
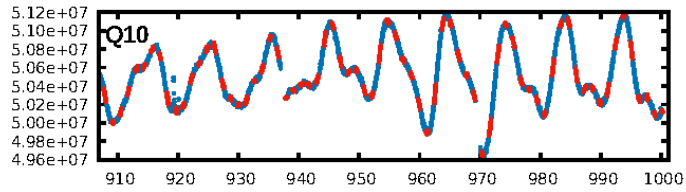
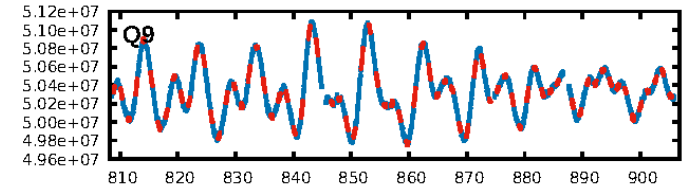
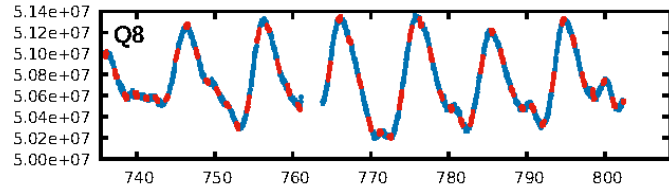
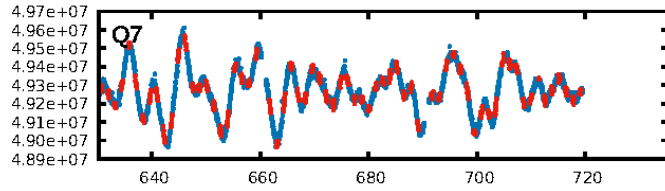
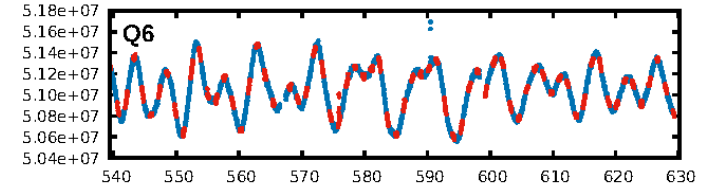
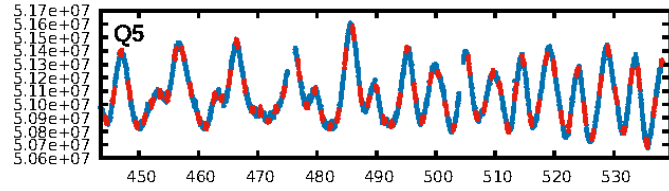
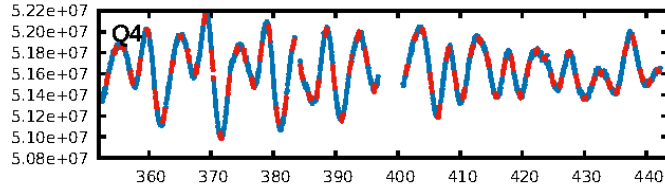
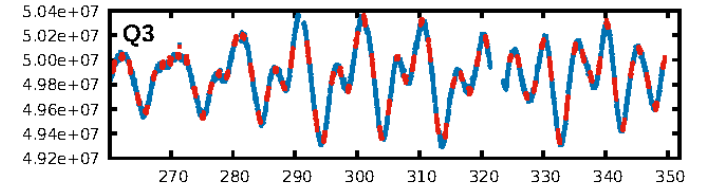
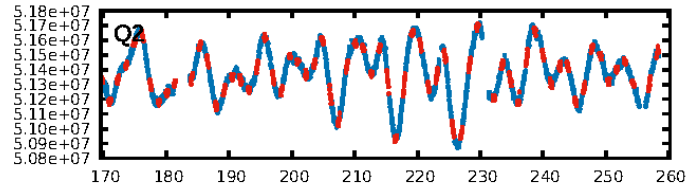
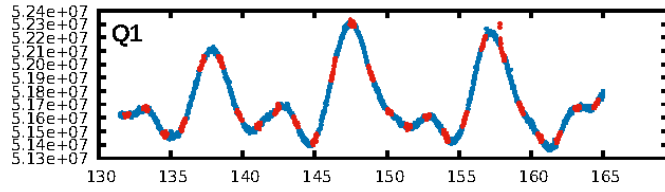
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [851.55 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.77e-14
RollingBand-fgt: 1.00 [988/988]
GhostDiagnostic-chr: 0.634
Centroid-sig: 2.3%
Centroid-so: 1.490 arcsec [1.97 σ]
OotOffset-rm: 0.790 arcsec [0.99 σ]
KicOffset-rm: 0.676 arcsec [0.78 σ]
OotOffset-st: 3/3/3/4 [13]
KicOffset-st: 3/3/3/4 [13]
DiffImageQuality-fgm: 0.62 [8/13]
DiffImageOverlap-fno: 1.00 [17/17]

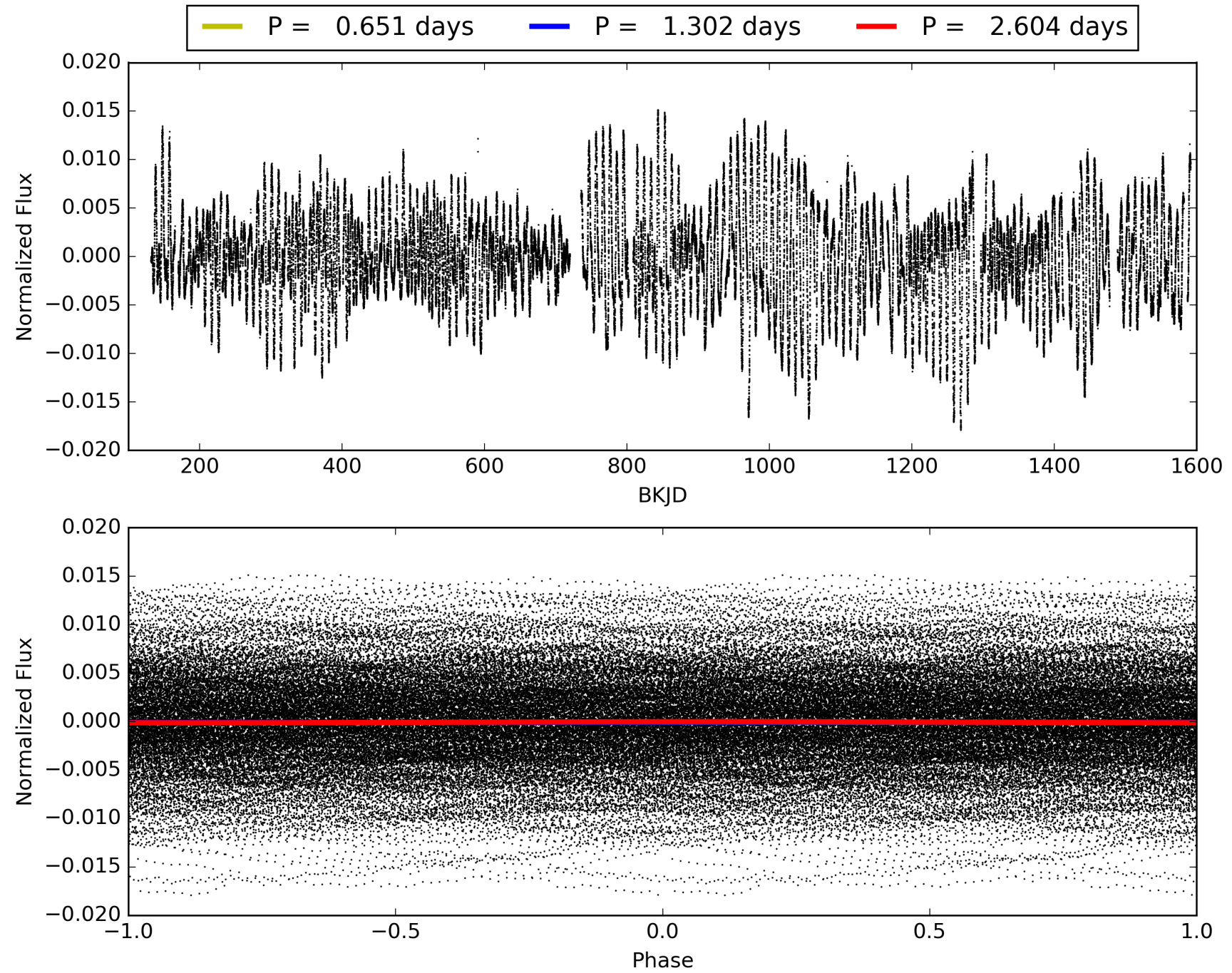
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:08:52 Z

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

TCE 009880841-01, PDC Light Curves

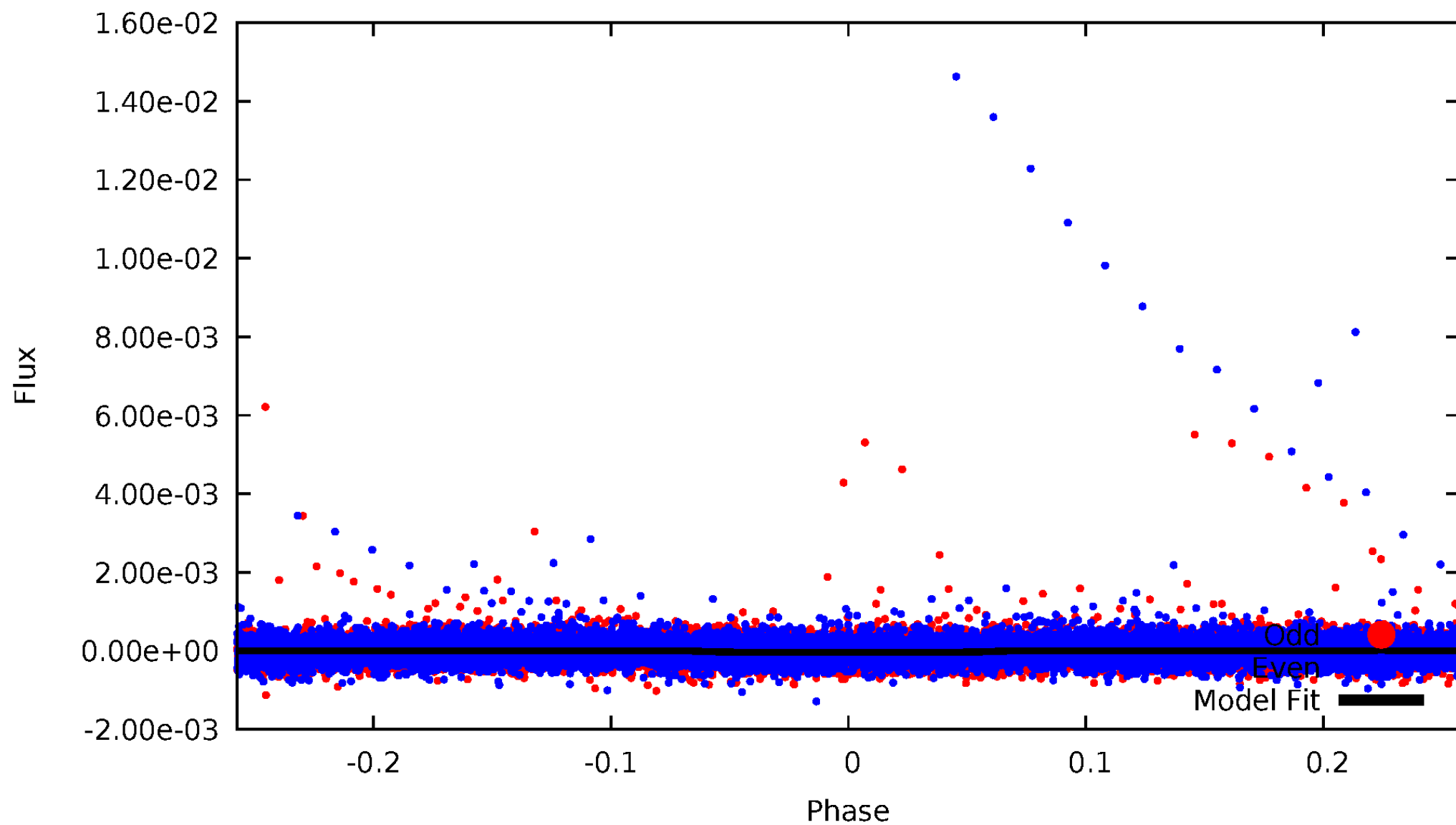


TCE 009880841-01



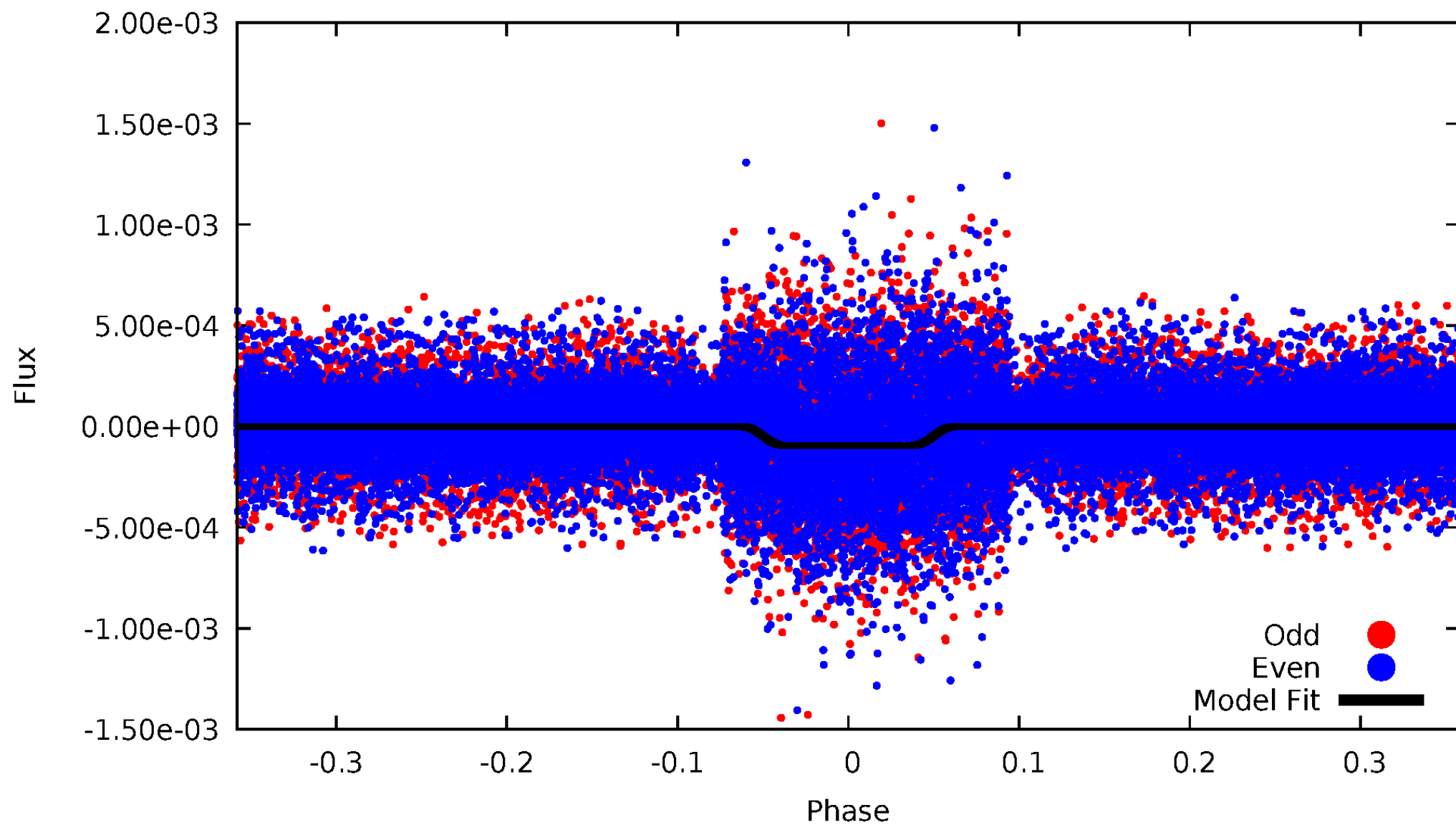
DV Odd/Even

TCE 009880841-01

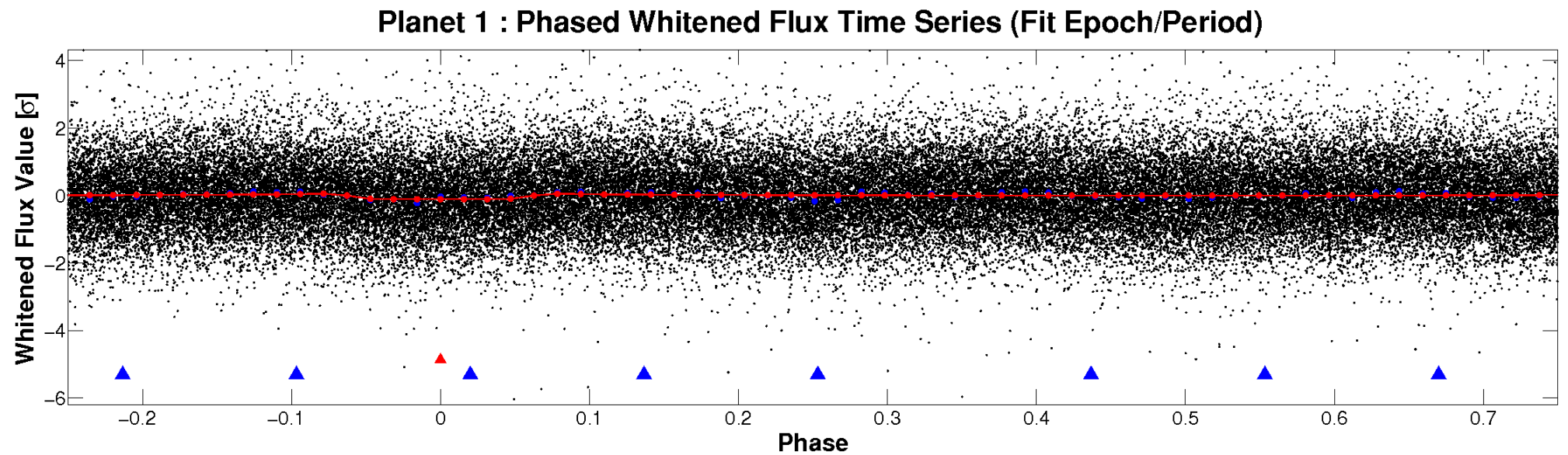
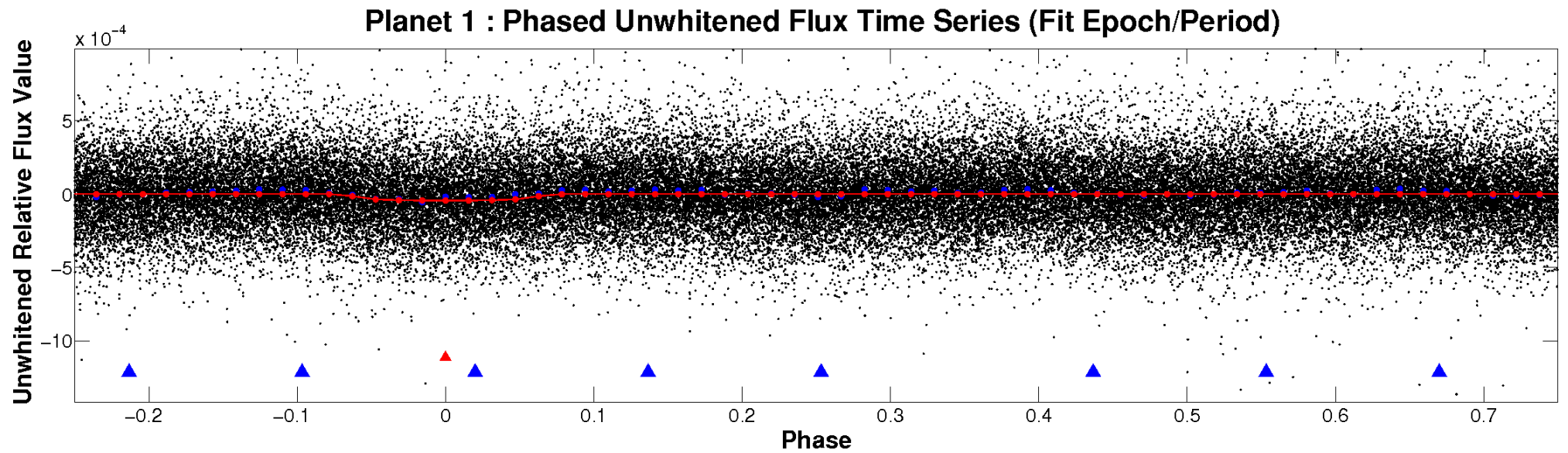


ALT Odd/Even

TCE 009880841-01

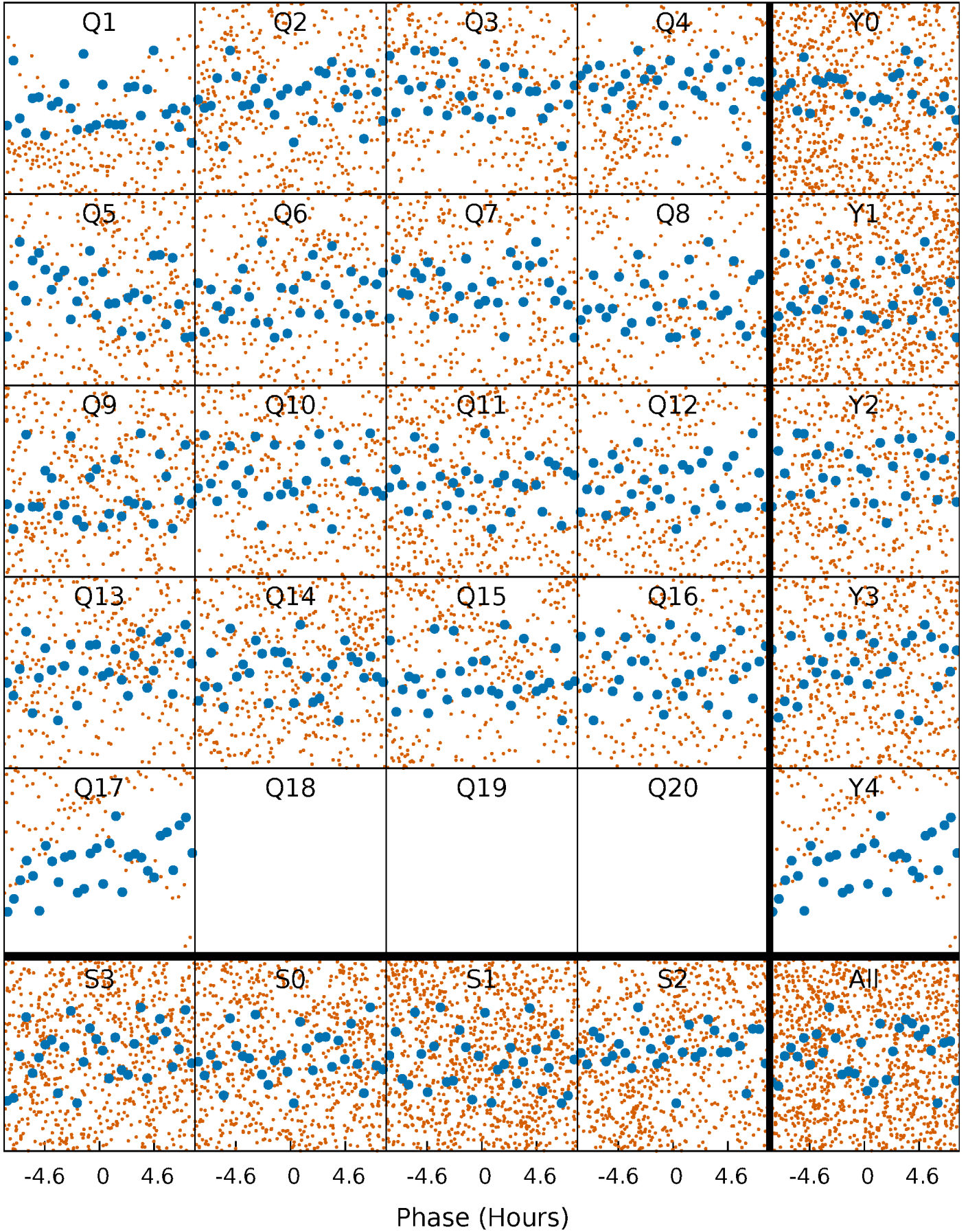


Non-Whitened Vs. Whitened Light Curve



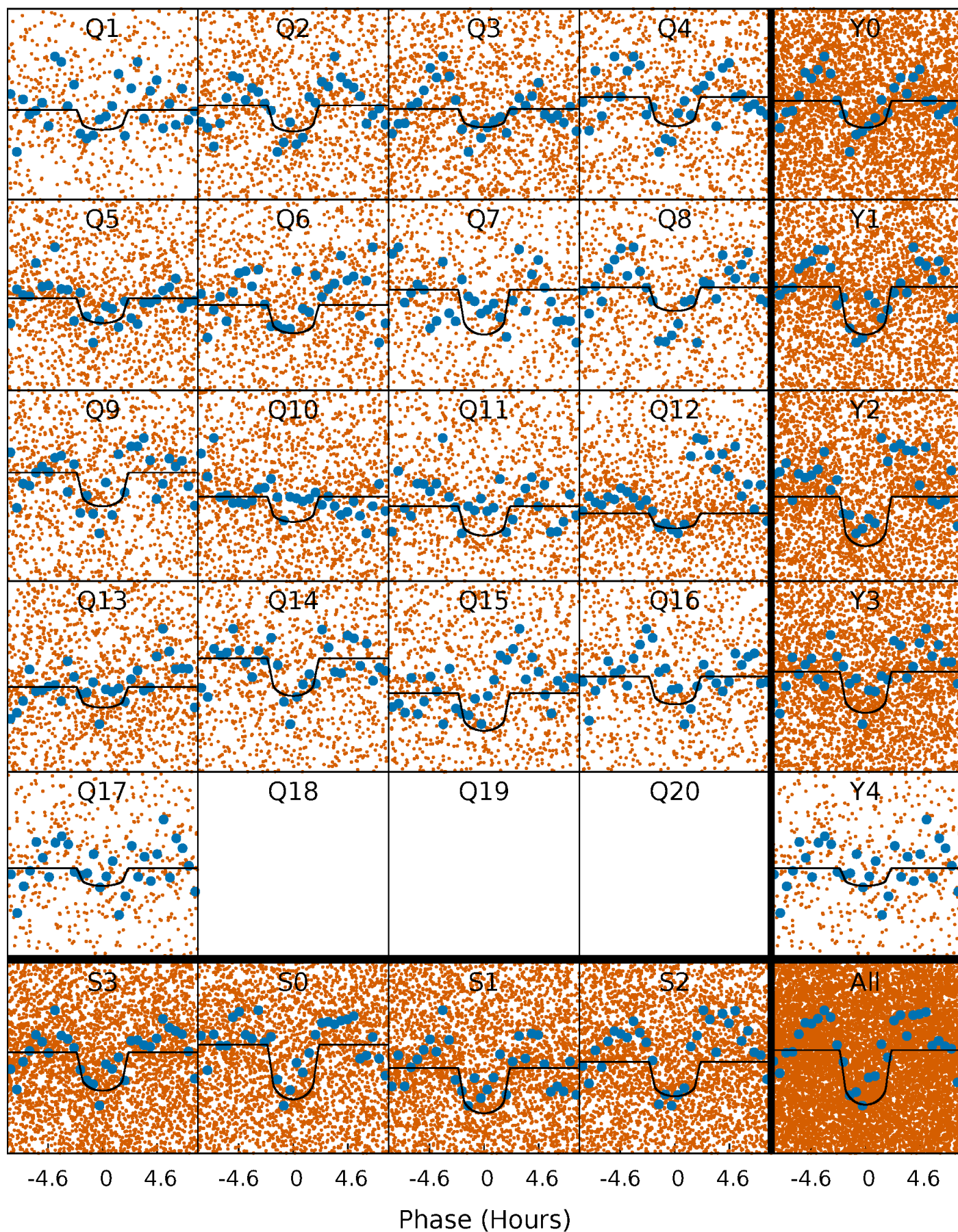
PDC Quarter-Phased Transit Curves

TCE 009880841-01 P= 1.301873 Days $T_0=131.955906$ (BKJD)



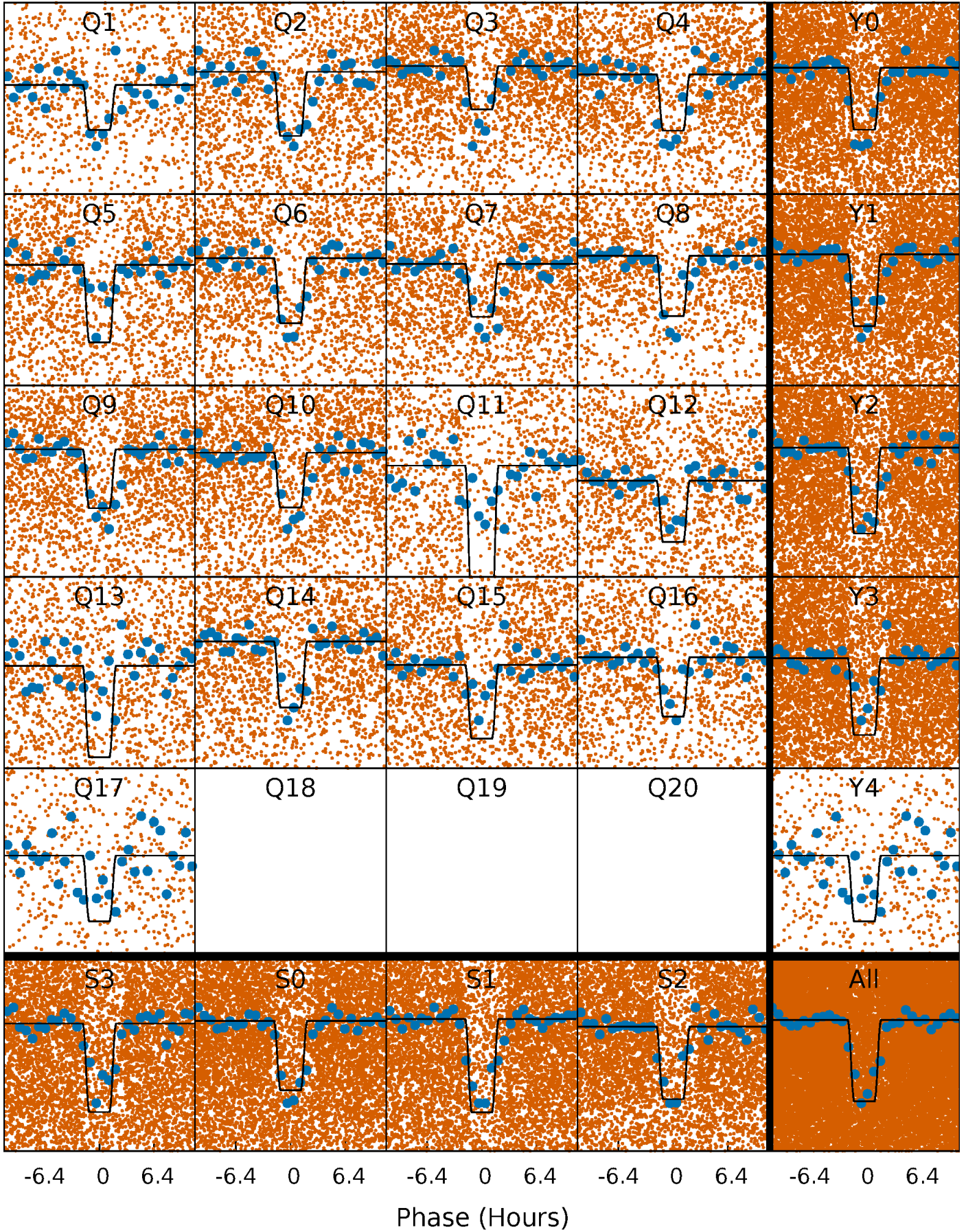
DV Quarter-Phased Transit Curves

TCE 009880841-01 P= 1.301873 Days $T_0=131.955906$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

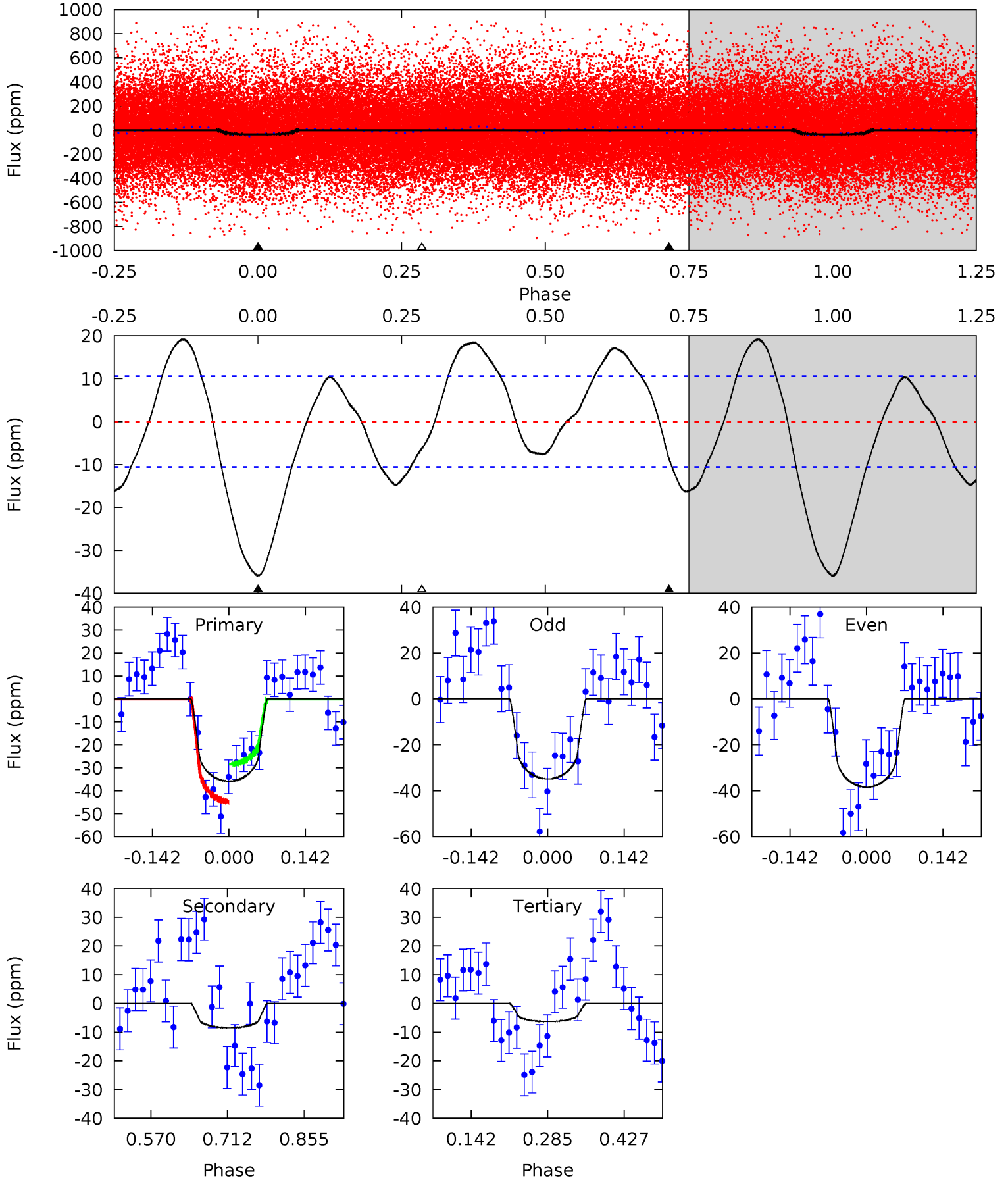
TCE 009880841-01 P= 1.301902 Days $T_0=131.927966$ (BKJD)



DV Model-Shift Uniqueness Test

009880841-01, P = 1.301873 Days, E = 130.654033 Days

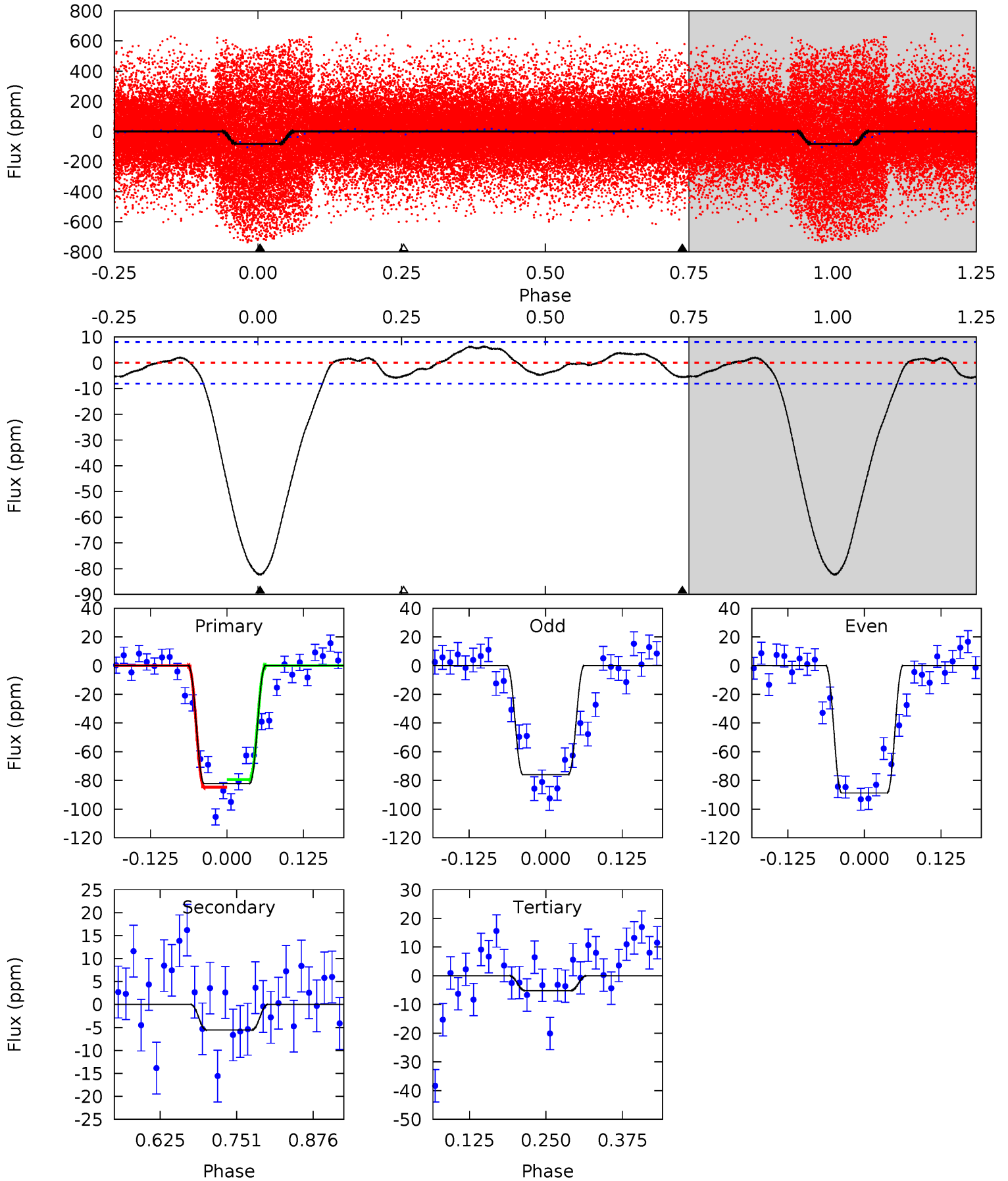
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	3.62	2.68	0	4.49	1.47	4.11	12.6	15.2	0.94	3.62	0.76	0.25	0.35	3.47



Alt Model-Shift Uniqueness Test

009880841-01, P = 1.301902 Days, E = 130.626064 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.8	3.08	2.88	0	4.52	1.53	1.86	43.0	45.8	0.20	3.08	3.58	0.99	0.07	1.47



Stellar Parameters For KIC 009880841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5615^{+133}_{-150}	$4.505^{+0.036}_{-0.204}$	$0.240^{+0.200}_{-0.300}$	$0.936^{+0.251}_{-0.084}$	$1.022^{+0.085}_{-0.113}$	$1.754^{+0.341}_{-0.897}$
	+2%/-3%	+1%/-5%	+83%/-125%	+27%/-9%	+8%/-11%	+19%/-51%
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 009880841-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-9 ± 2	$0.79^{+0.31}_{-0.30}$	2235^{+150}_{-95}	3797^{+844}_{-472}	$3.857^{+7.170}_{-2.038}$
Alt.	-6 ± 2	$1.05^{+0.34}_{-0.30}$	2227^{+130}_{-86}	3175^{+431}_{-410}	$1.475^{+1.472}_{-0.767}$

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 $A_{\text{obs}} \gg 1.0$

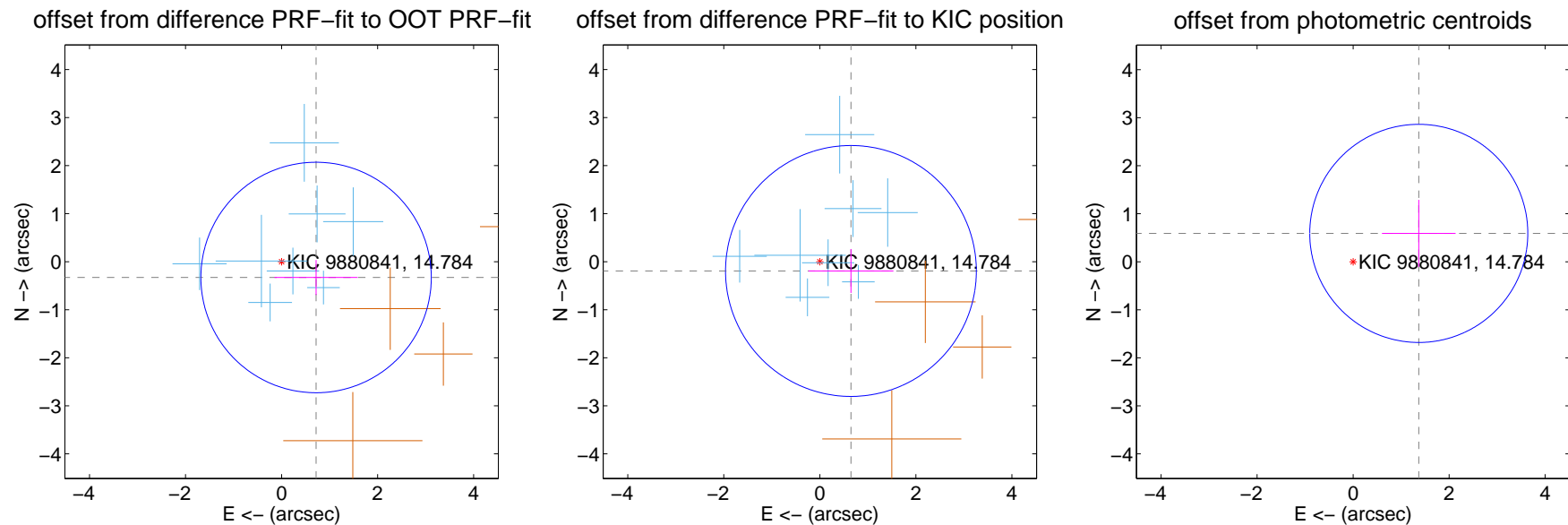
DV Centroid Data

Supplemental centroid analysis for 009880841-01. Kepler magnitude: 14.78. Transit SNR 9.81

There are 8 quarters with good PRF difference image offsets

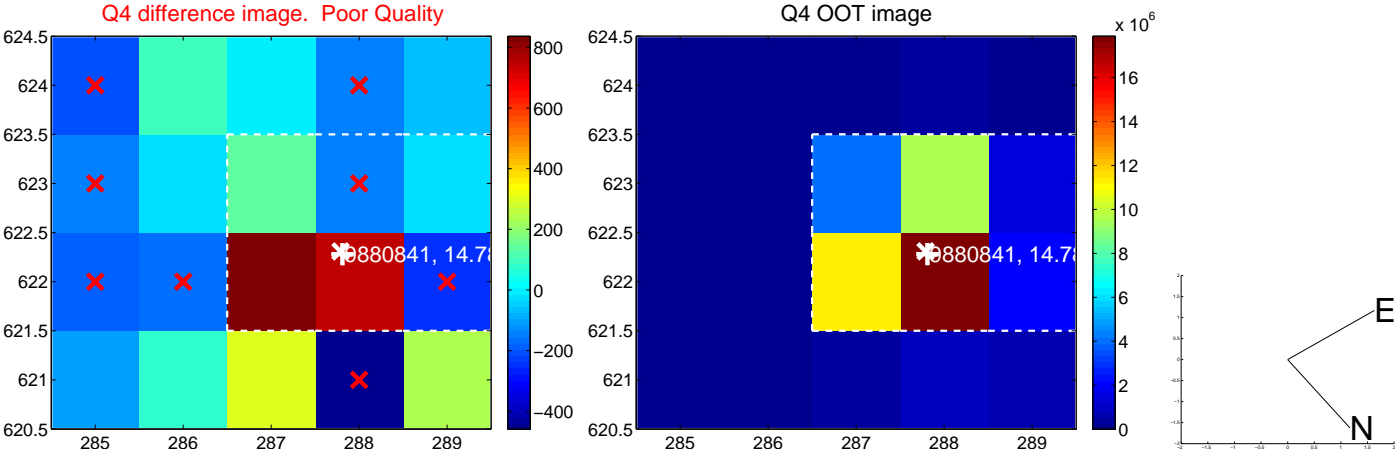
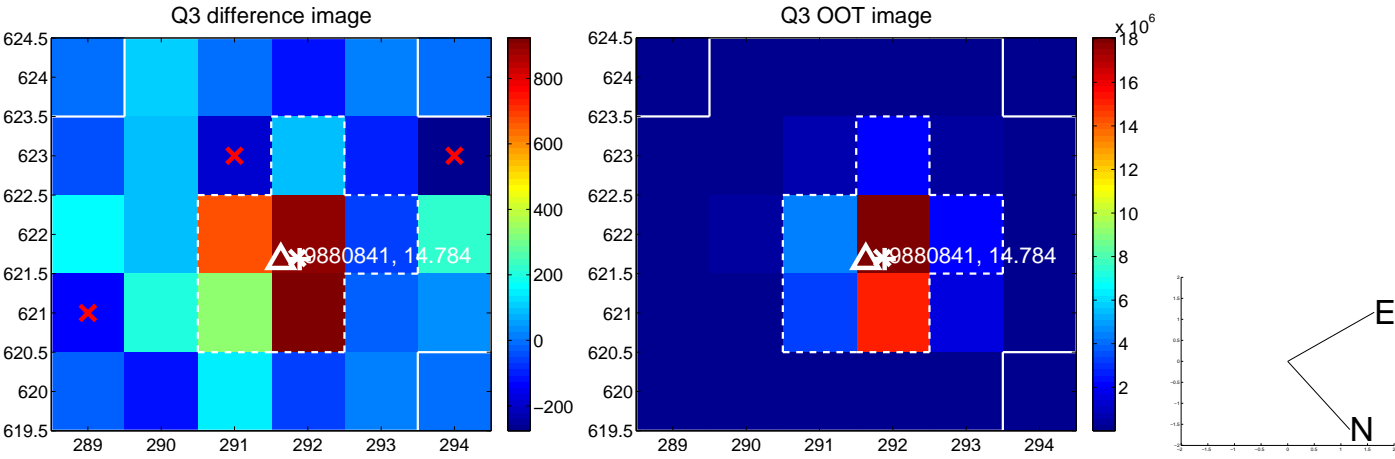
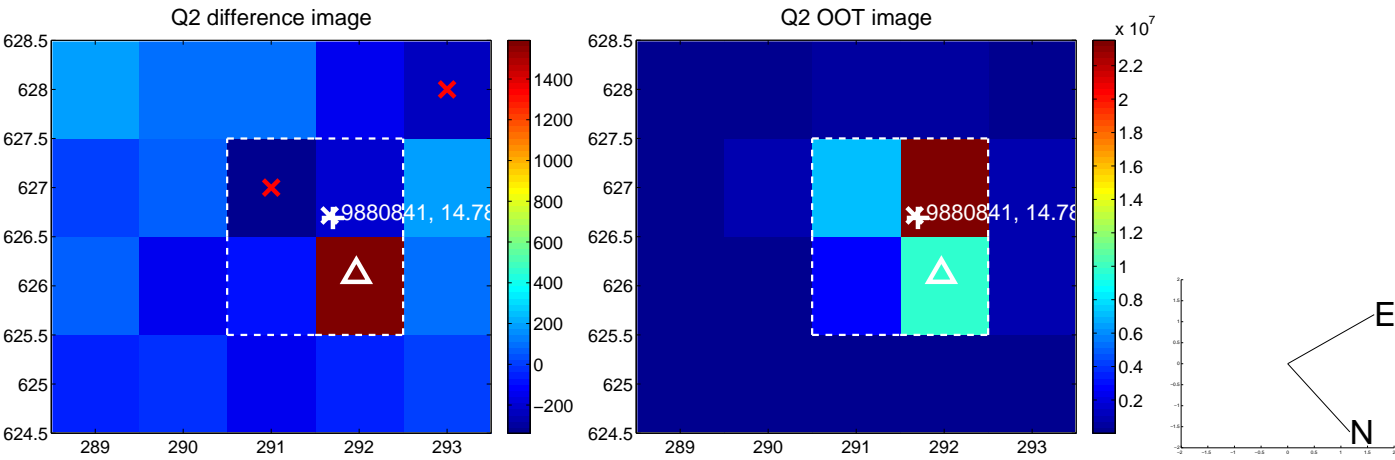
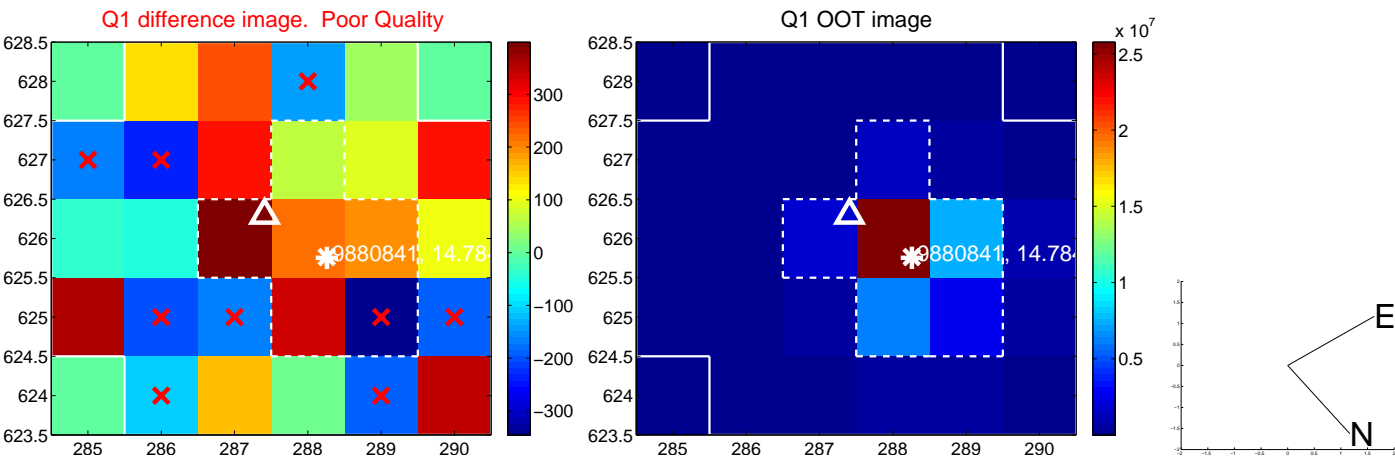
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.790 ± 0.800	0.99	-0.719 ± 0.866	-0.329 ± 0.364
PRF-fit source offset from KIC position	0.676 ± 0.871	0.78	-0.648 ± 0.884	-0.193 ± 0.458
photometric centroid source offset	1.49 ± 0.76	1.97	-1.37 ± 0.77	0.59 ± 0.70

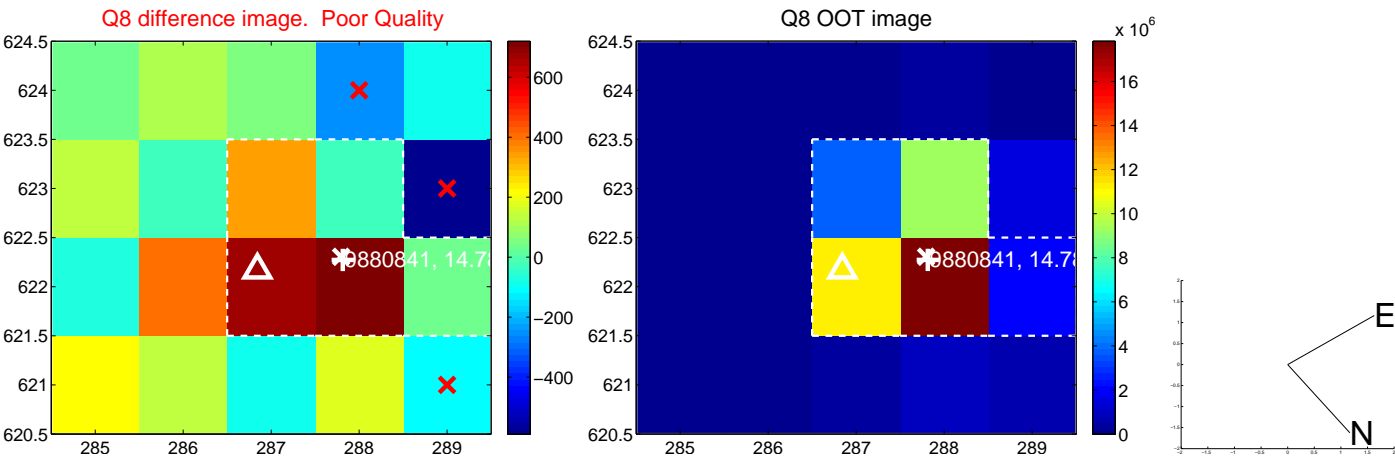
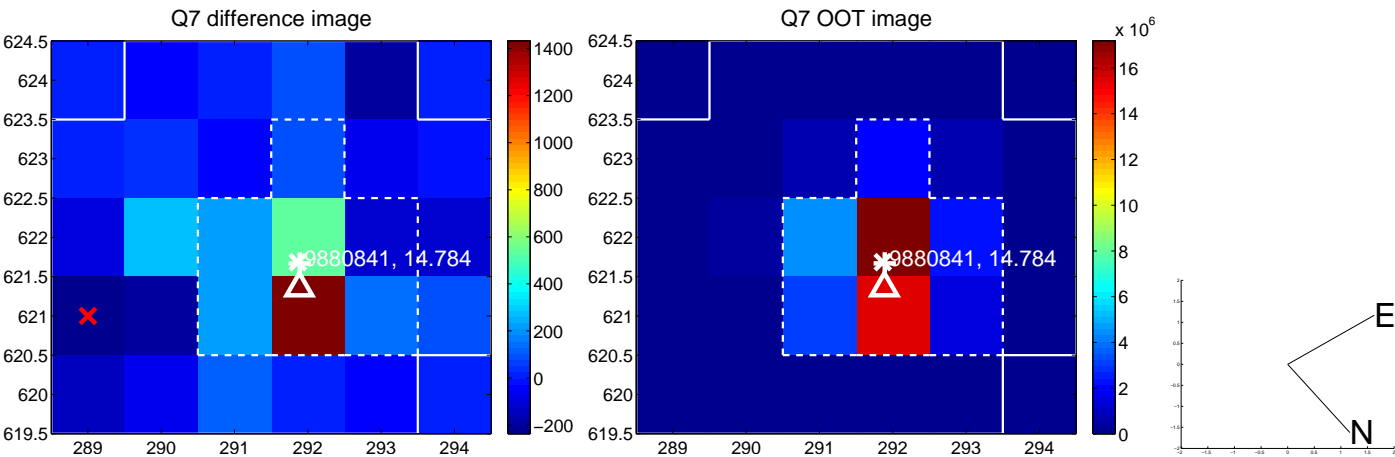
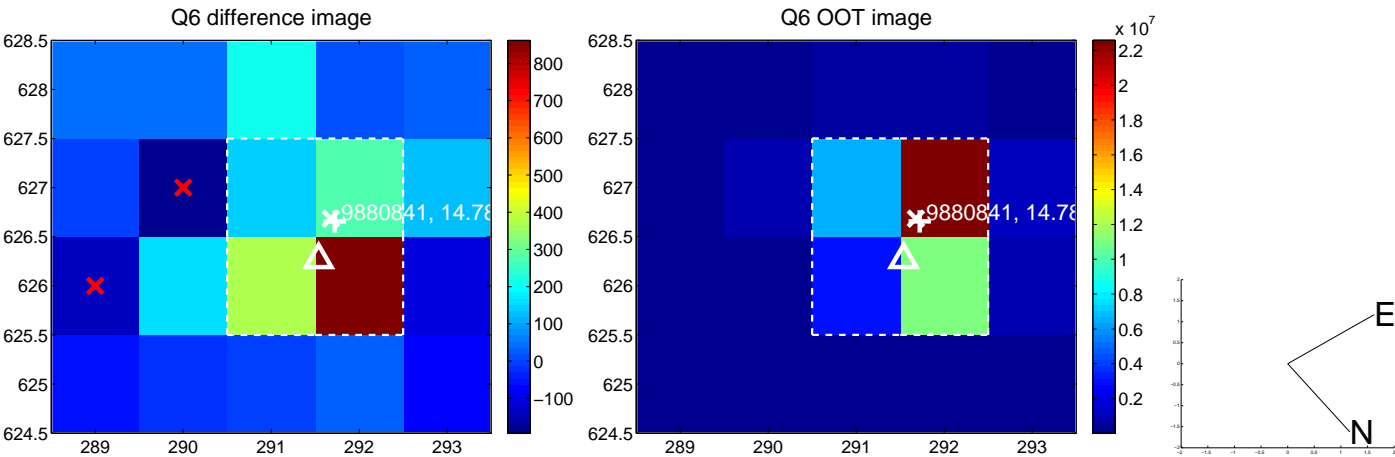
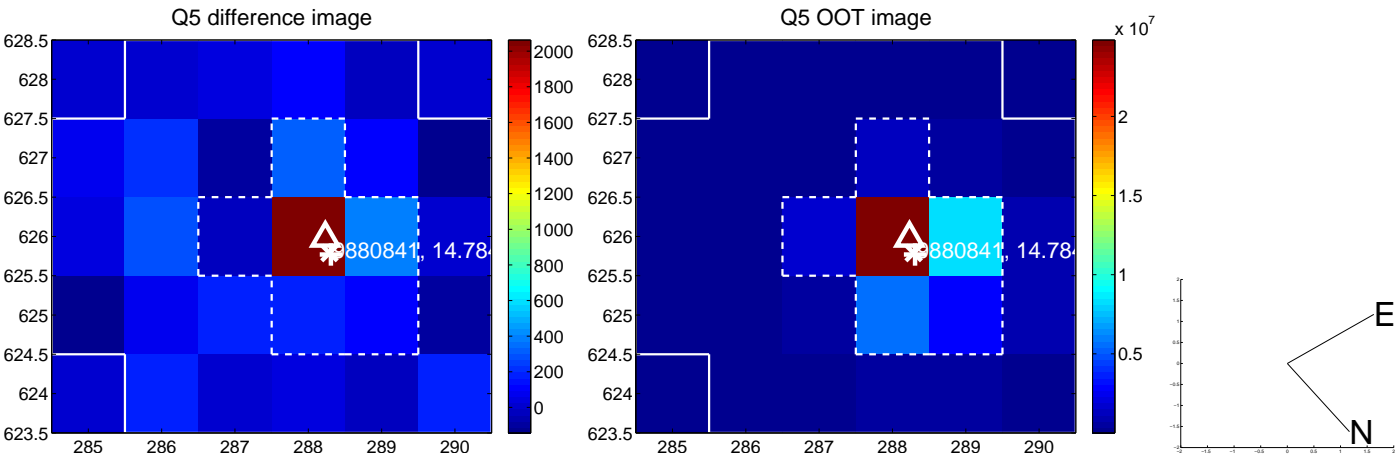


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

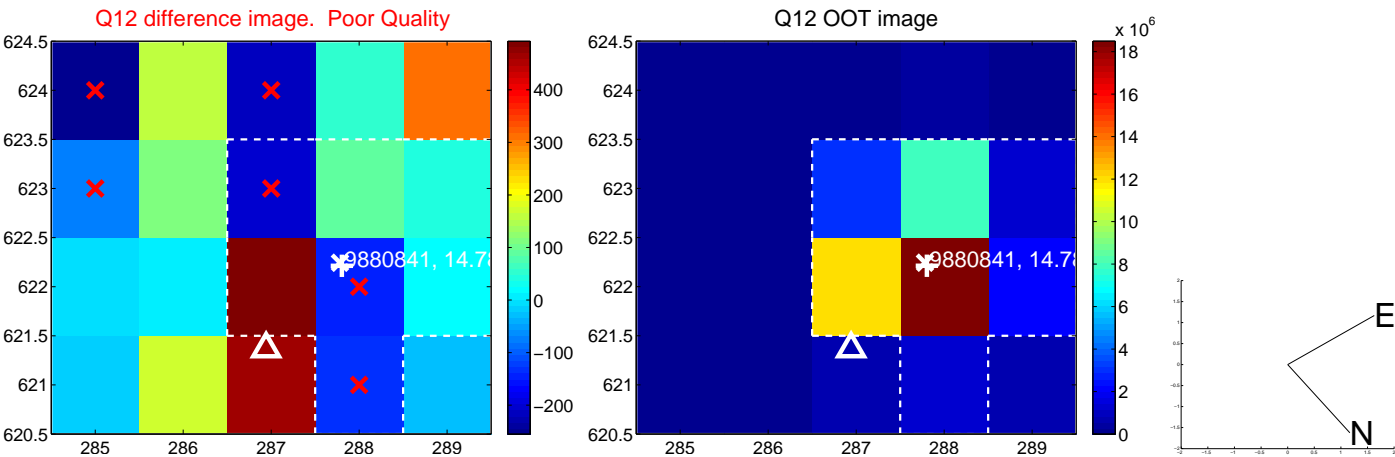
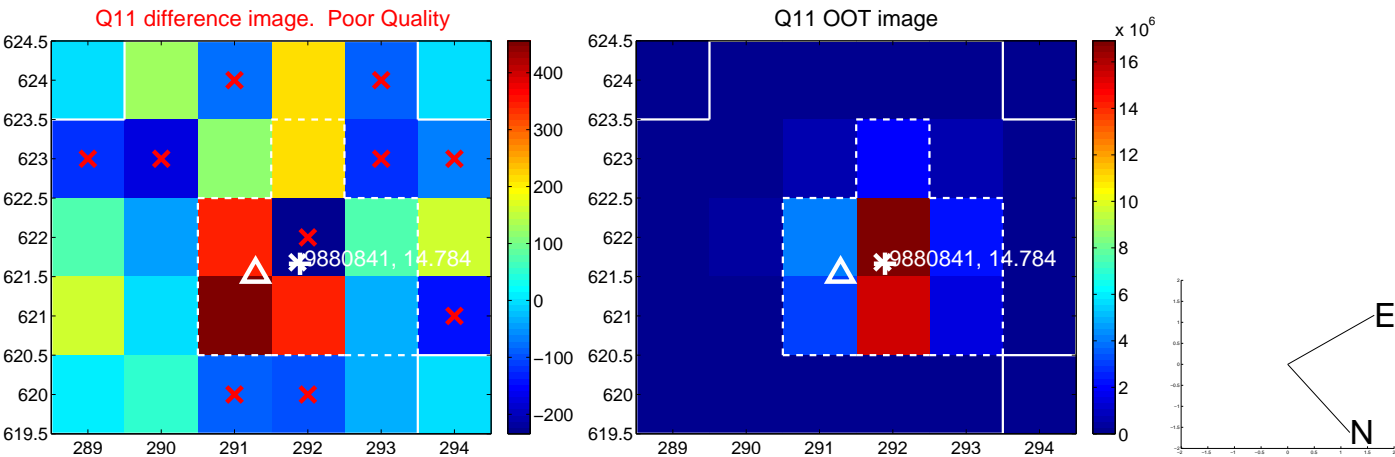
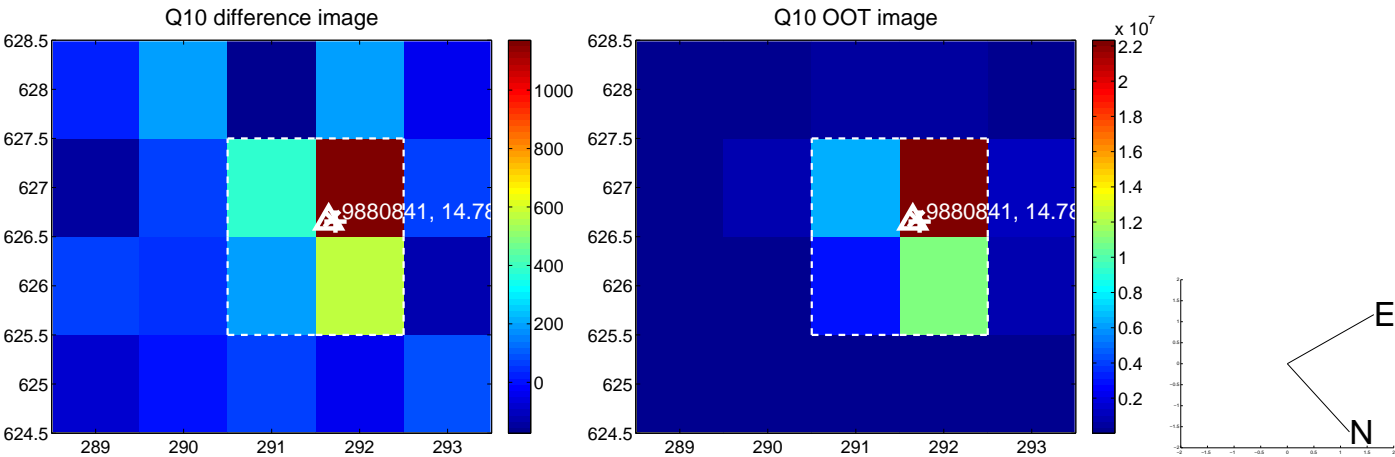
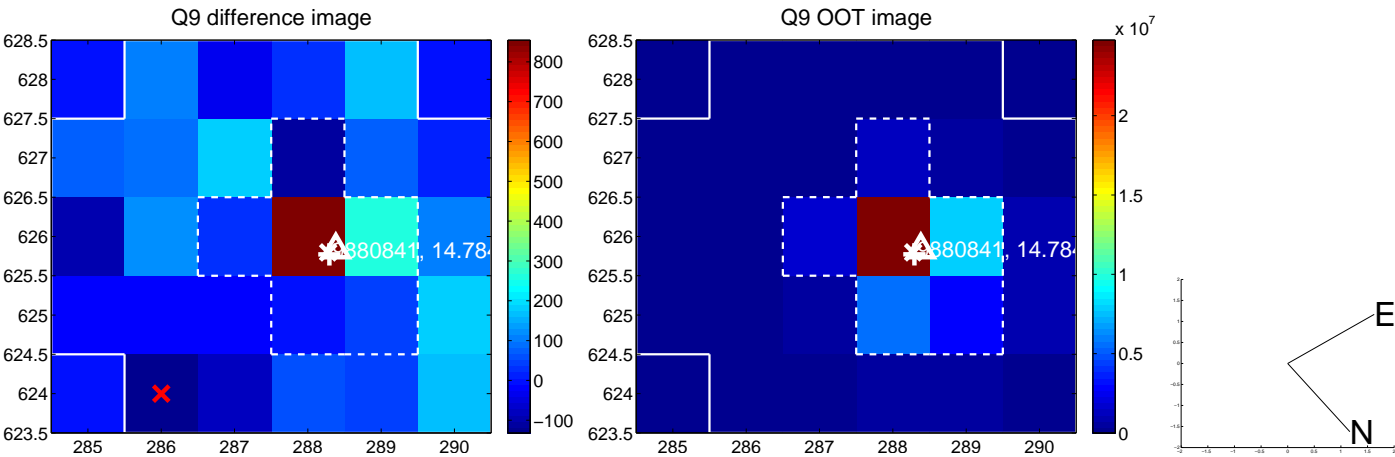
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



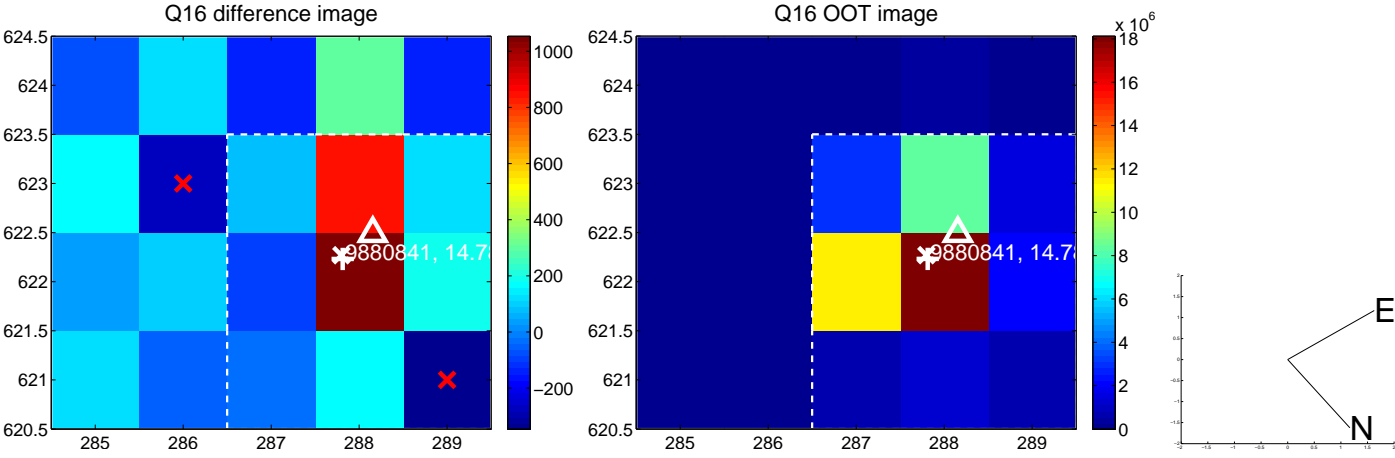
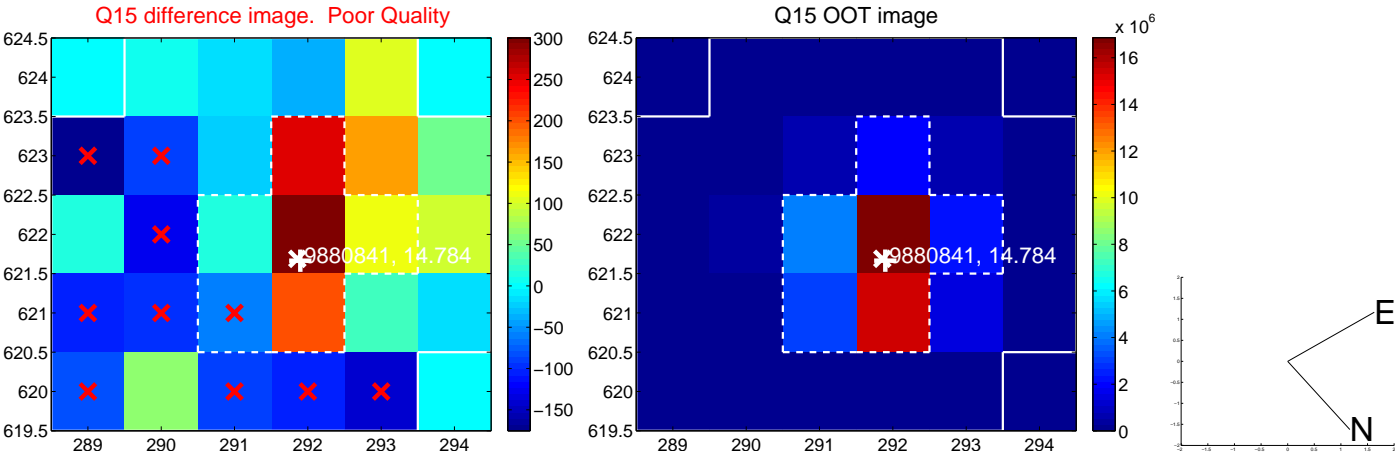
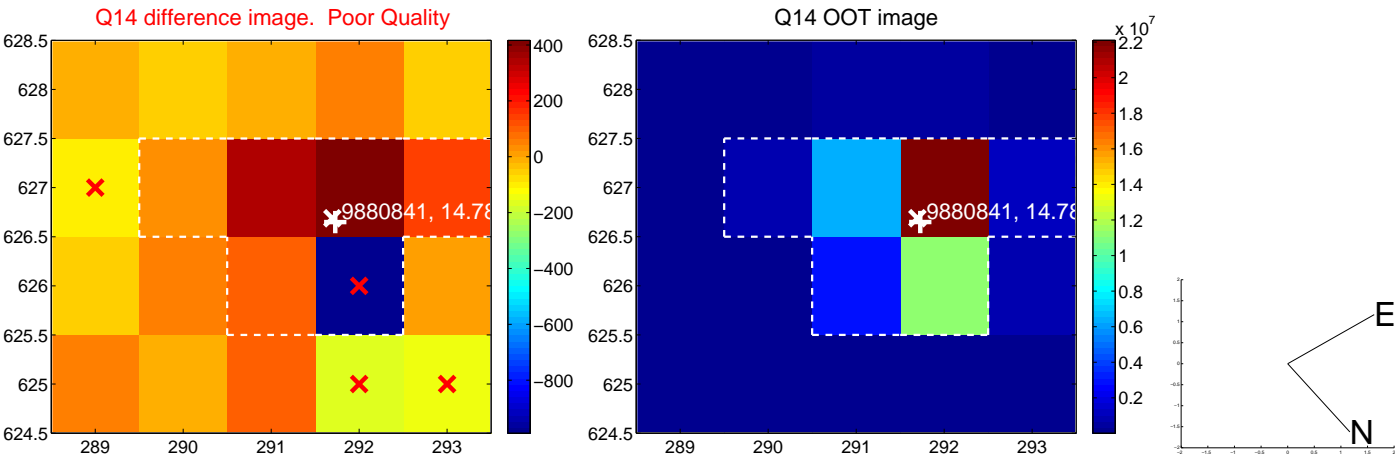
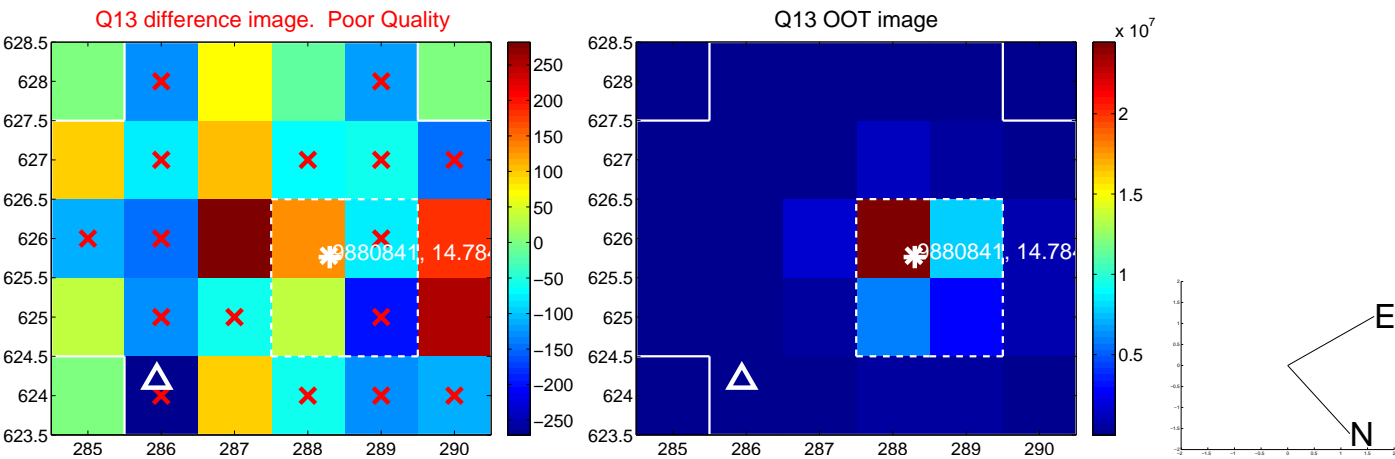
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



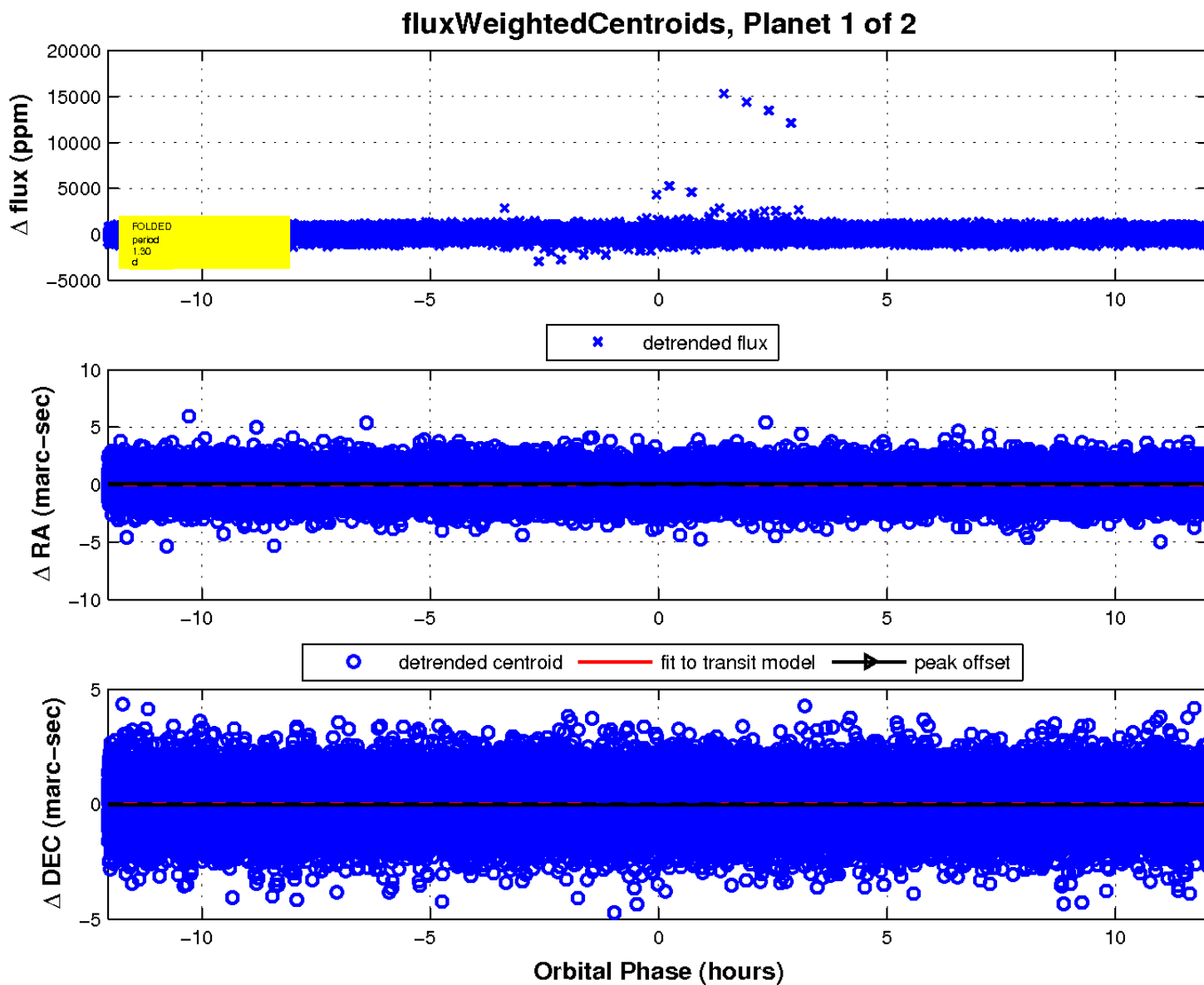
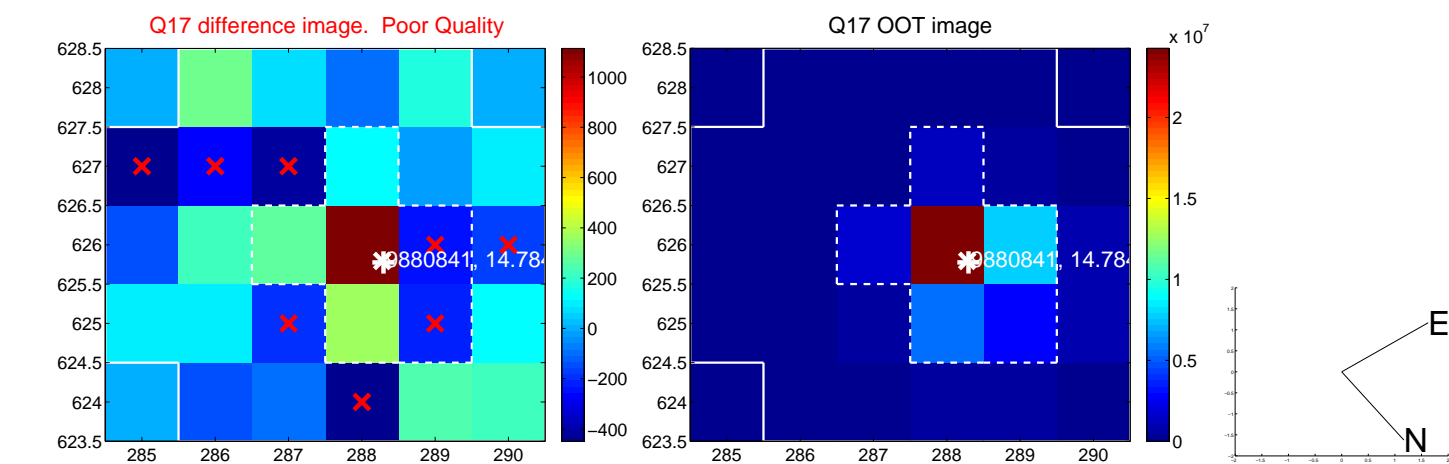
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

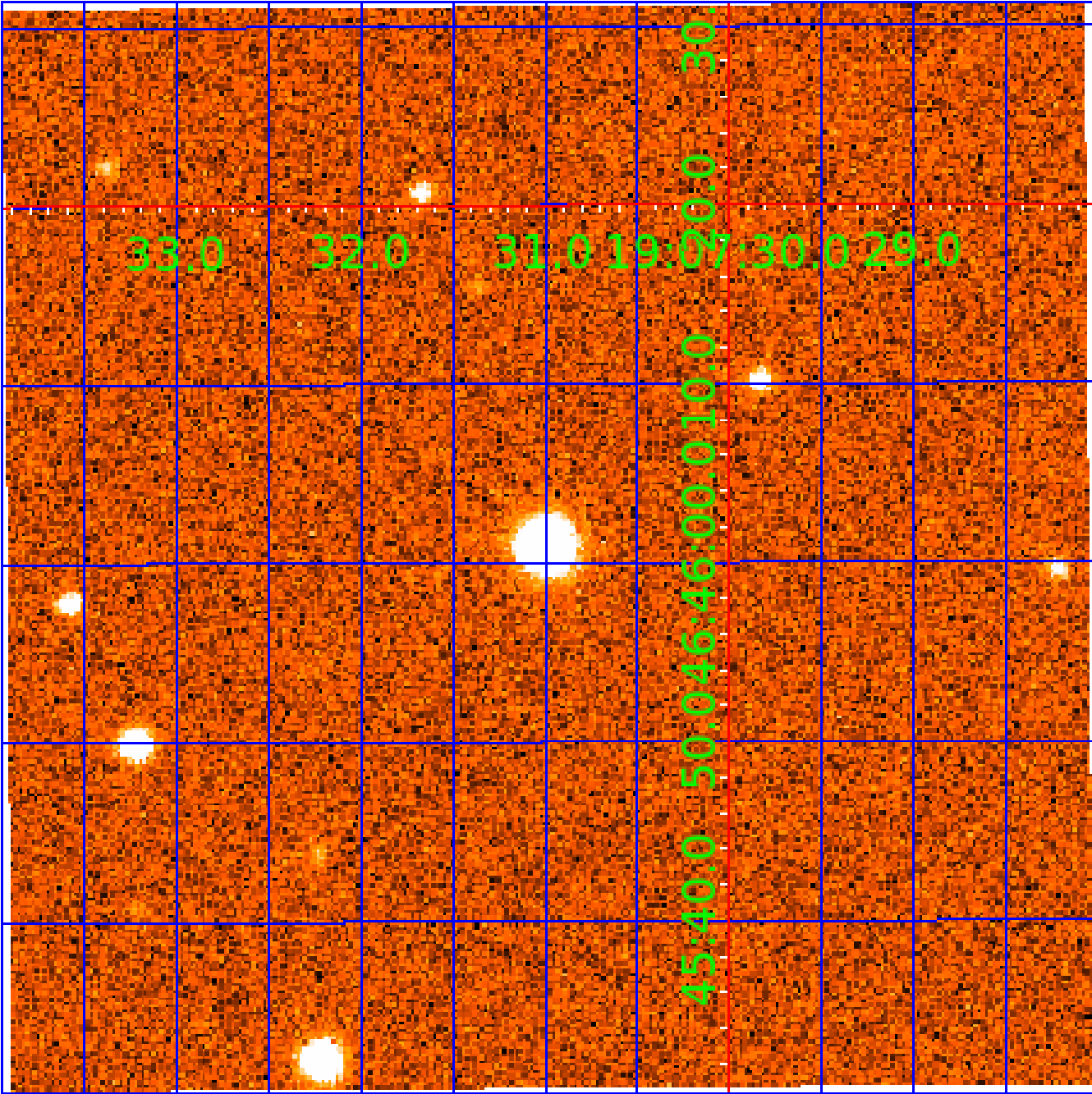


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009880841

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})
009880841-01	OBS	No	1.301873	131.955906	44.4	4.021	8.5	9.8	0.94	5615	0.73	1411.62
009880841-02	OBS	No	164.187922	282.239901	164.9	2.216	8.6	2.2	0.94	5615	1.45	2.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009880841-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009880841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

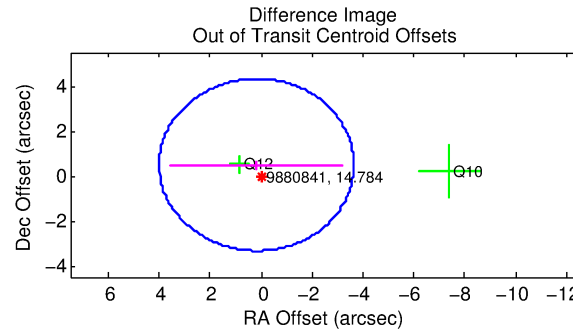
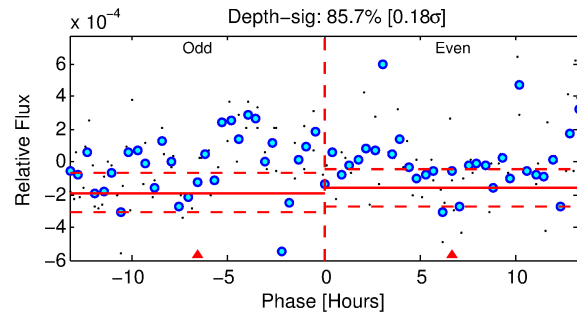
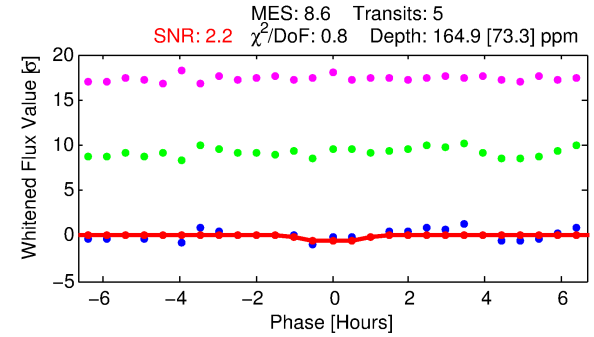
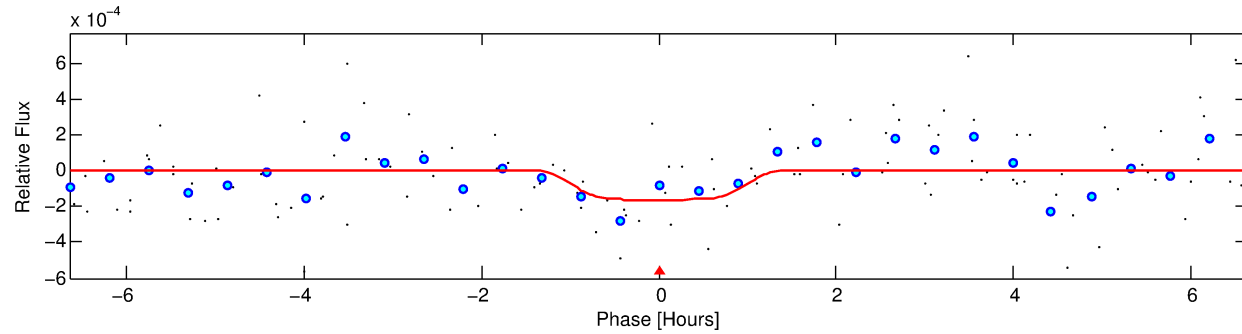
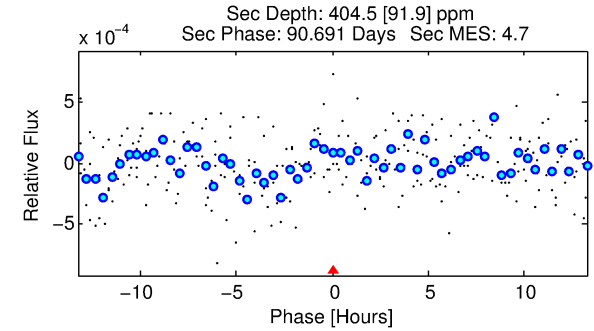
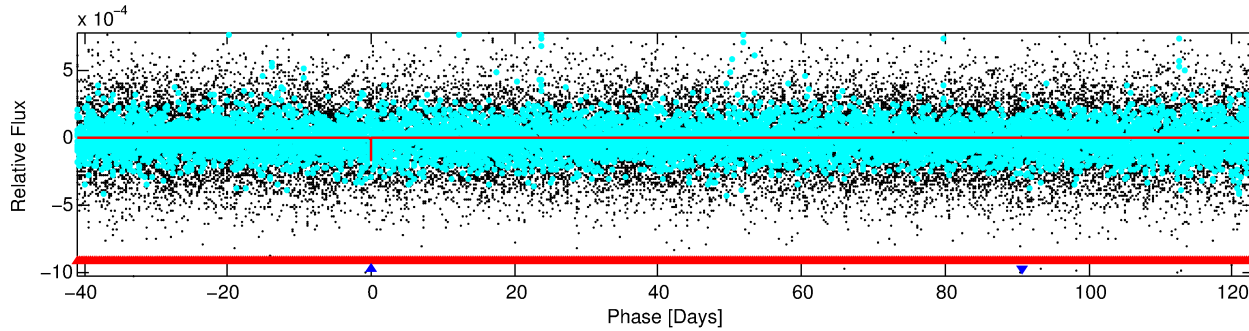
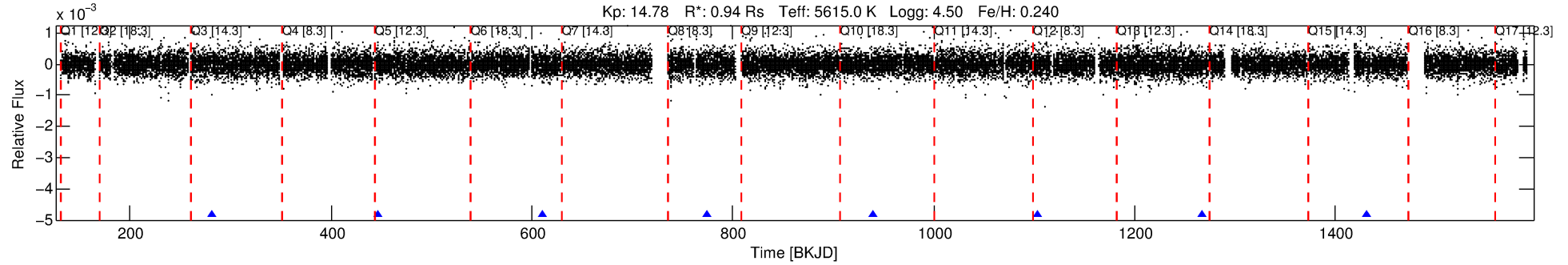
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009880841-02

No Significant Match Found

DV One-Page Summary

KIC: 9880841 Candidate: 2 of 2 Period: 164.188 d



DV Fit Results:

Period = 164.18792 [0.00433] d
Epoch = 282.2399 [0.0166] BKJD
Rp/R* = 0.0141 [0.0613]
a/R* = 263.57 [5177.08]
b = 0.90 [4.19]
Seff = 2.23 [0.84]
Teff = 312 [29] K
Rp = 1.44 [6.27] Re
a = 0.5913 [0.1405] AU
Ag = 37275.05 [323365.62] [0.12 σ]
Teffp = 6696 [14510] K [0.44 σ]

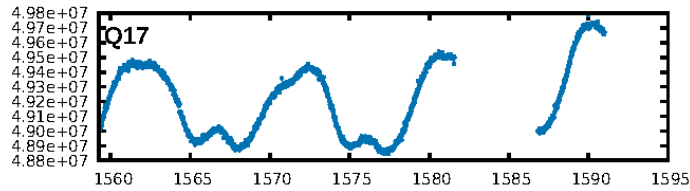
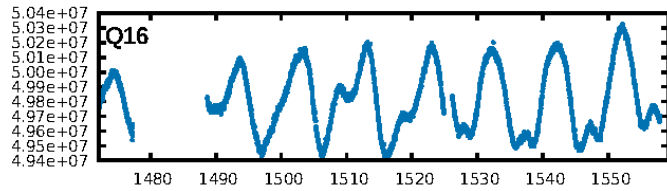
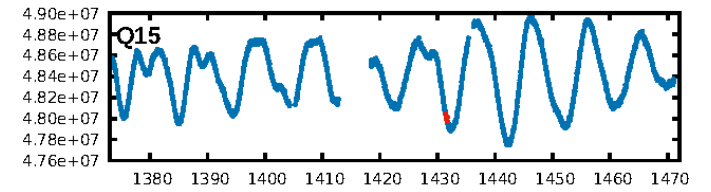
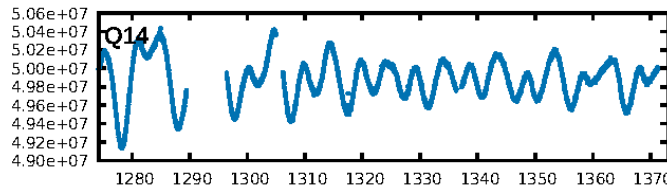
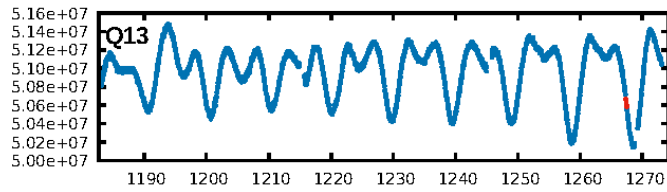
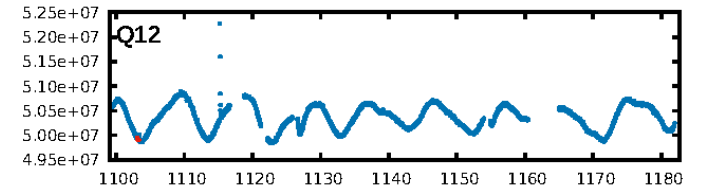
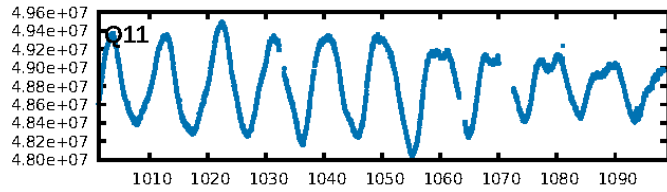
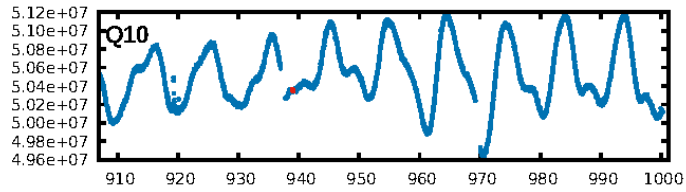
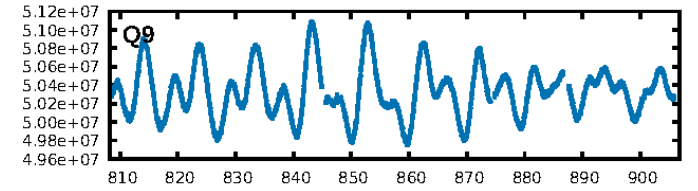
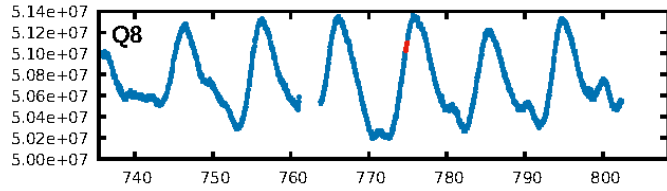
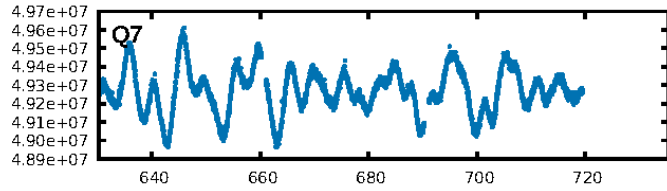
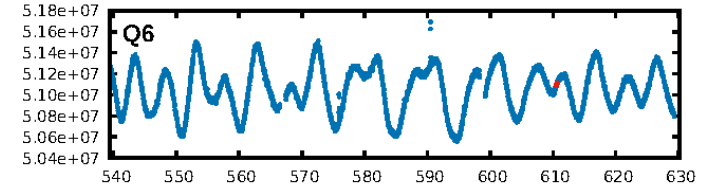
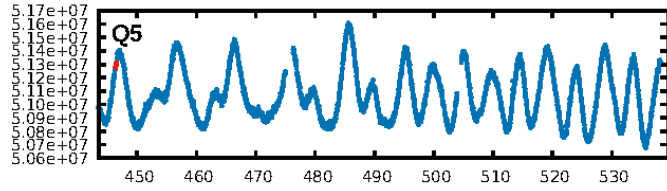
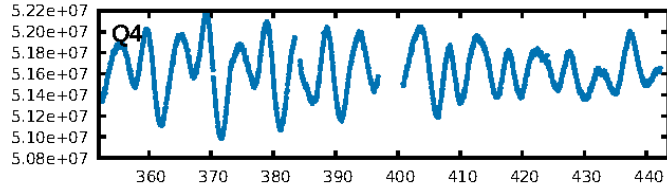
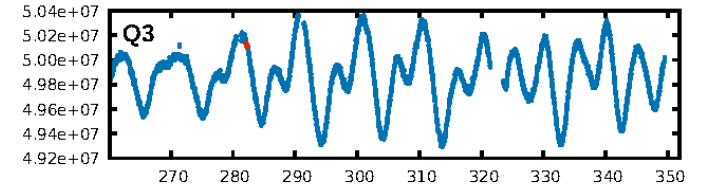
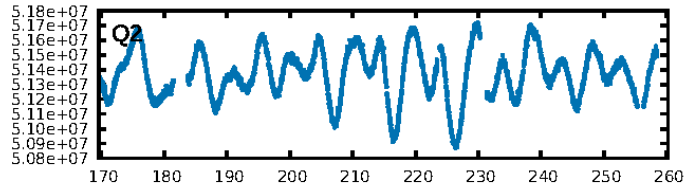
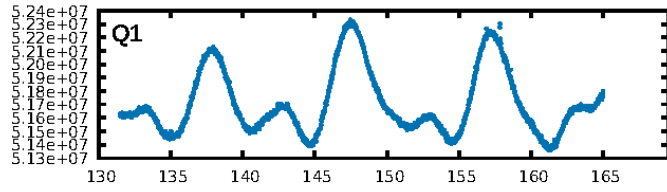
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [851.55 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 60.4%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 6.13e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -1.096
Centroid-sig: 6.7%
Centroid-so: 3.856 arcsec [1.36 σ]
OotOffset-rm: 0.523 arcsec [0.41 σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-rm: 0.660 arcsec [0.49 σ]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.43 [3/7]

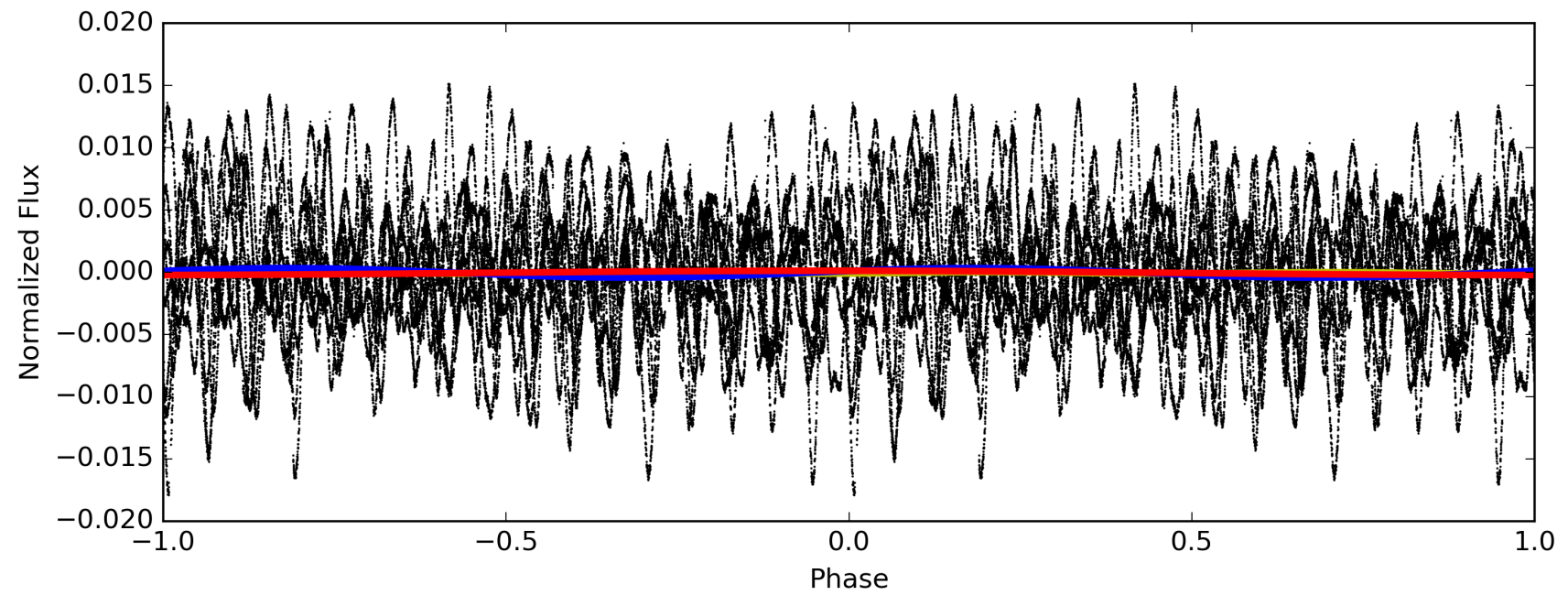
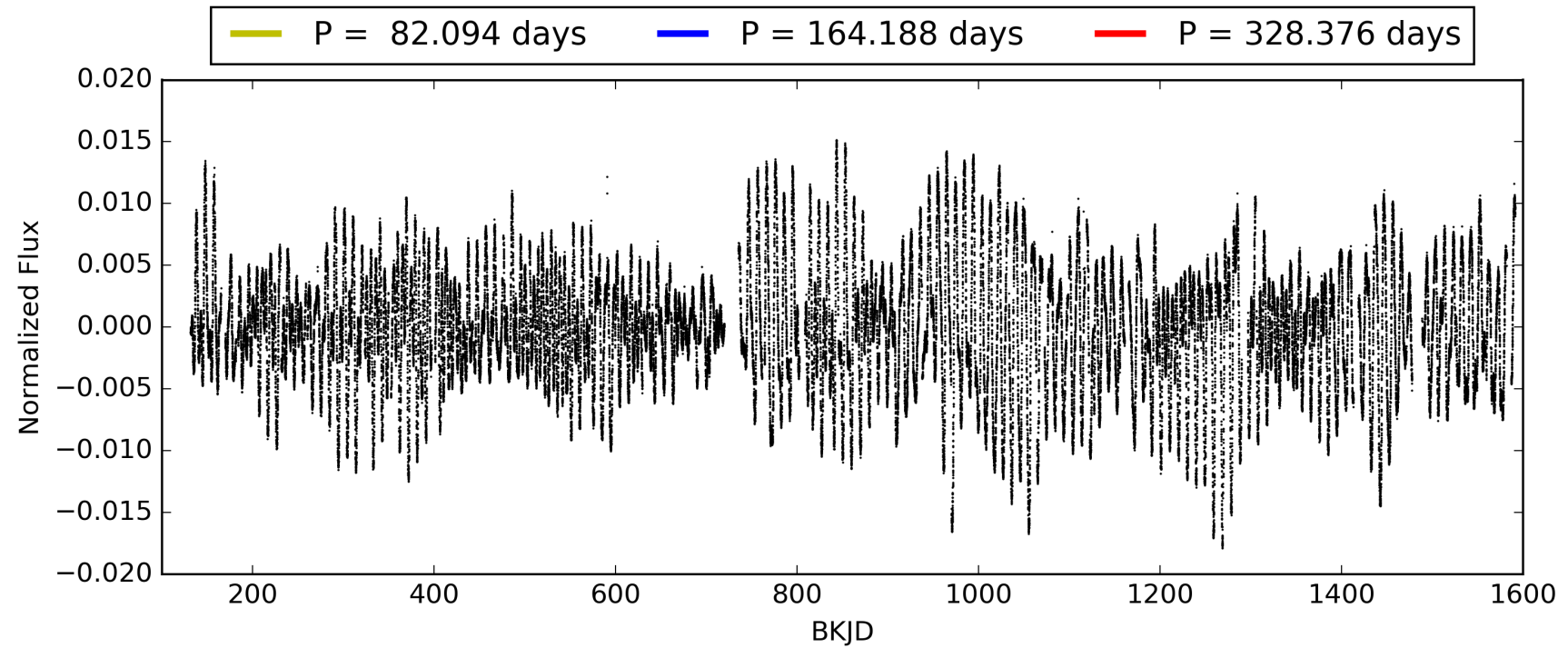
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:09:06 Z

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

TCE 009880841-02, PDC Light Curves

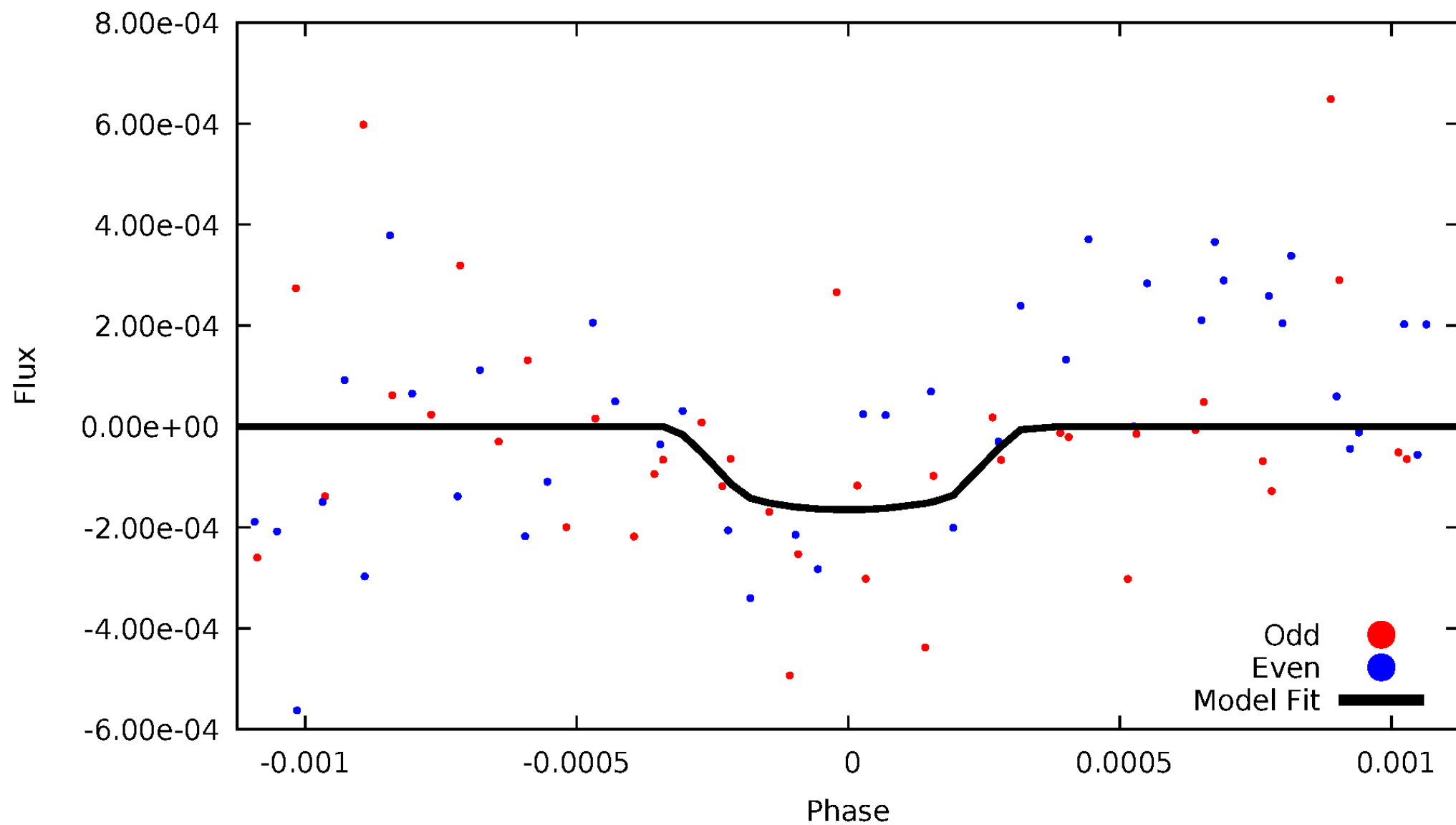


TCE 009880841-02



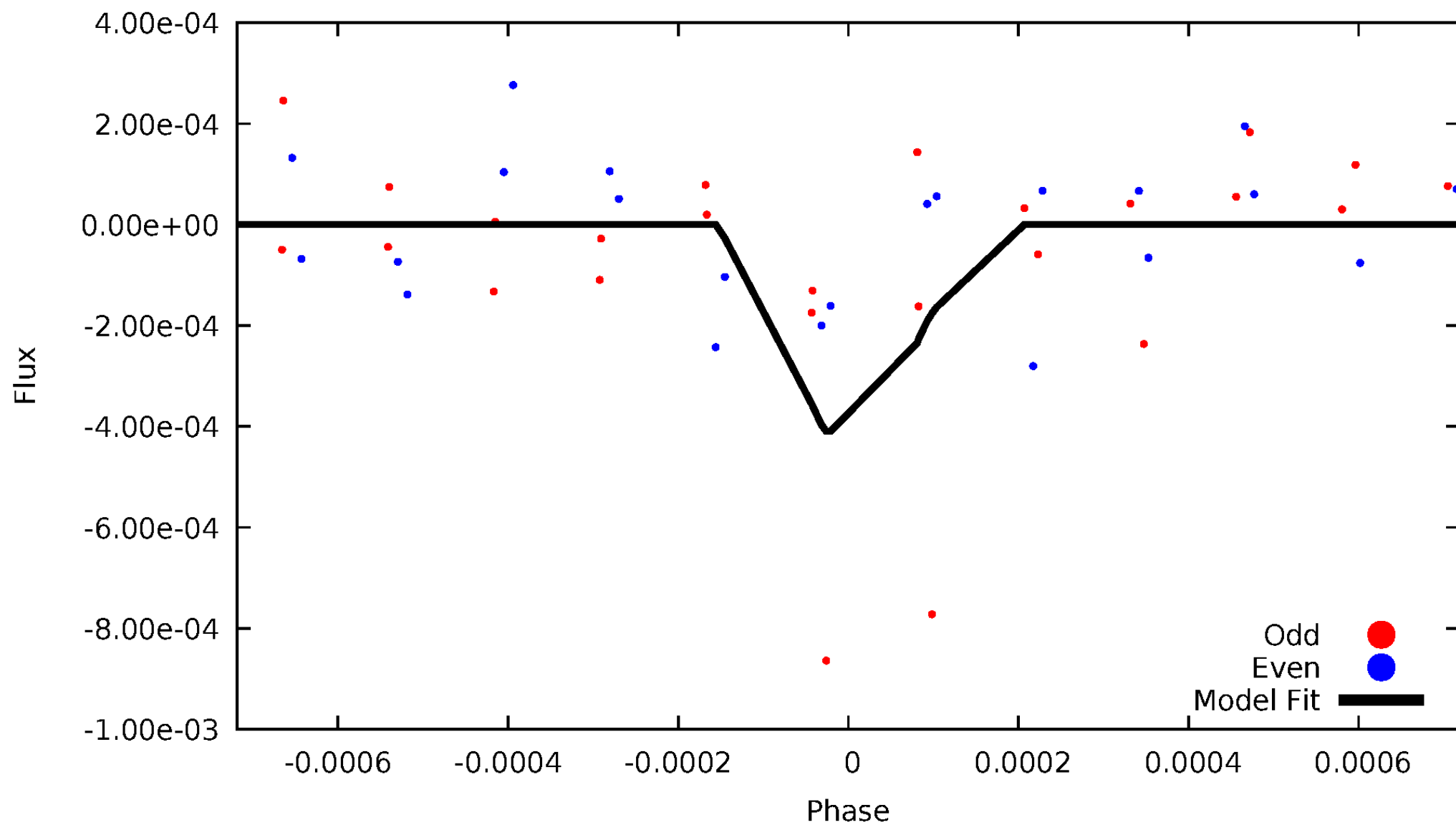
DV Odd/Even

TCE 009880841-02



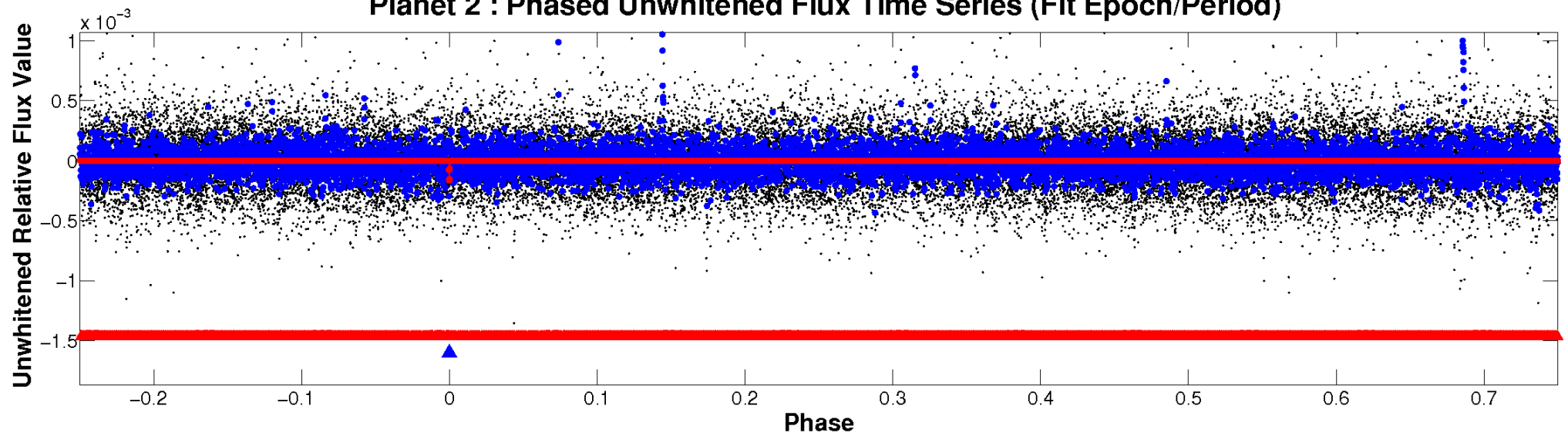
ALT Odd/Even

TCE 009880841-02

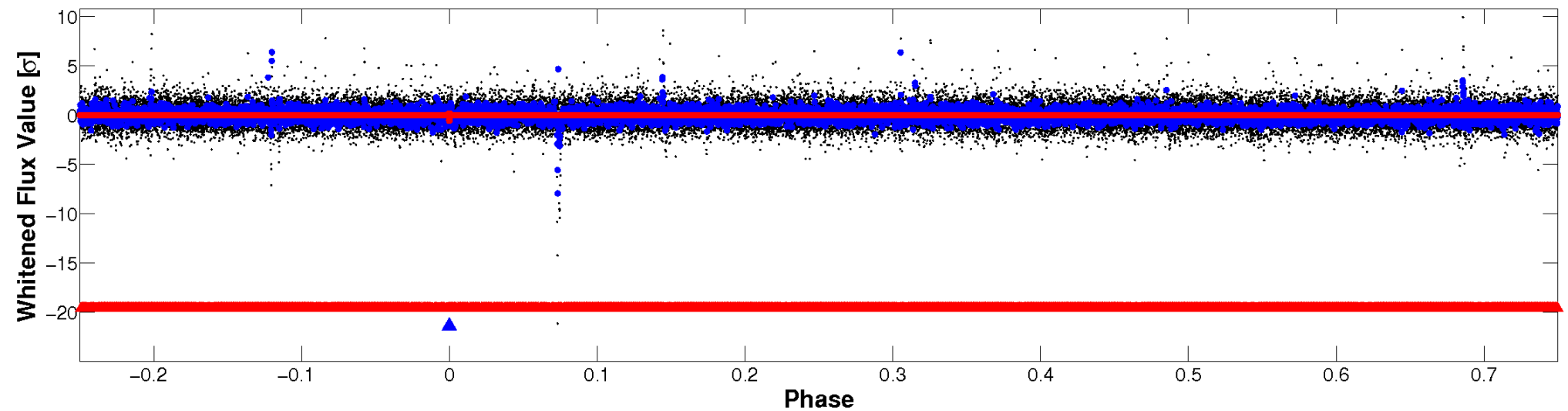


Non-Whitened Vs. Whitened Light Curve

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

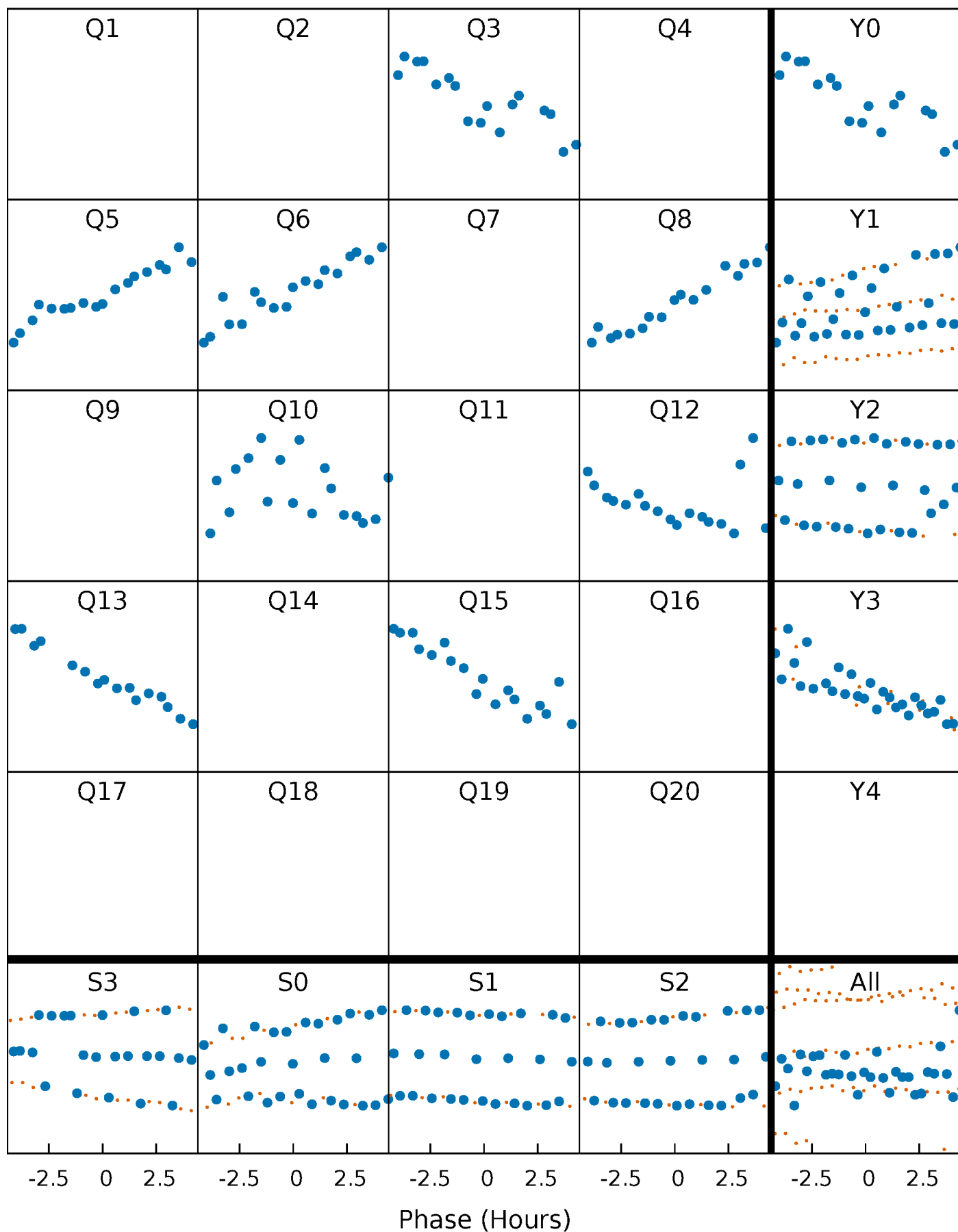


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



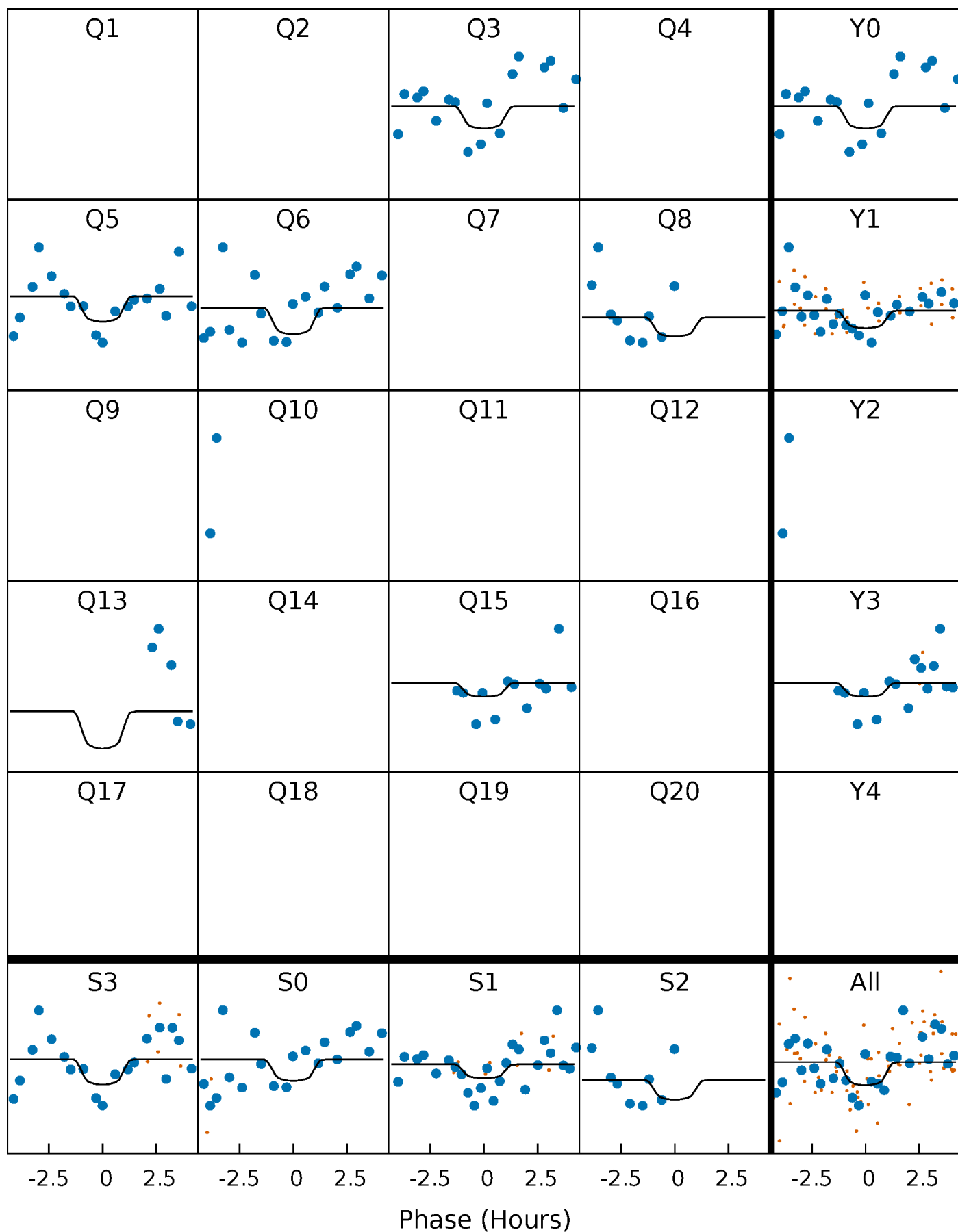
PDC Quarter-Phased Transit Curves

TCE 009880841-02 P=164.187922 Days $T_0=282.239901$ (BKJD)



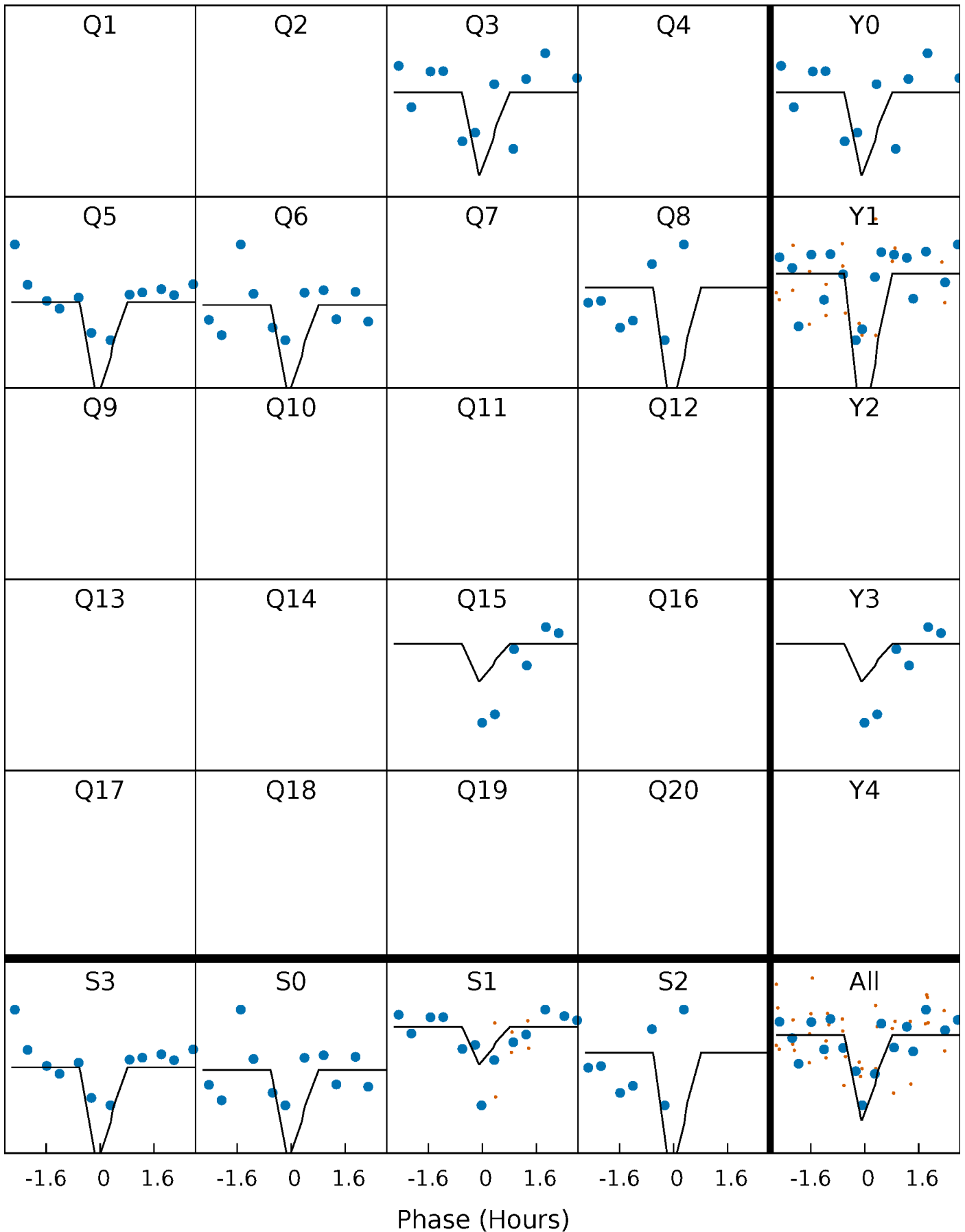
DV Quarter-Phased Transit Curves

TCE 009880841-02 P=164.187922 Days $T_0=282.239901$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

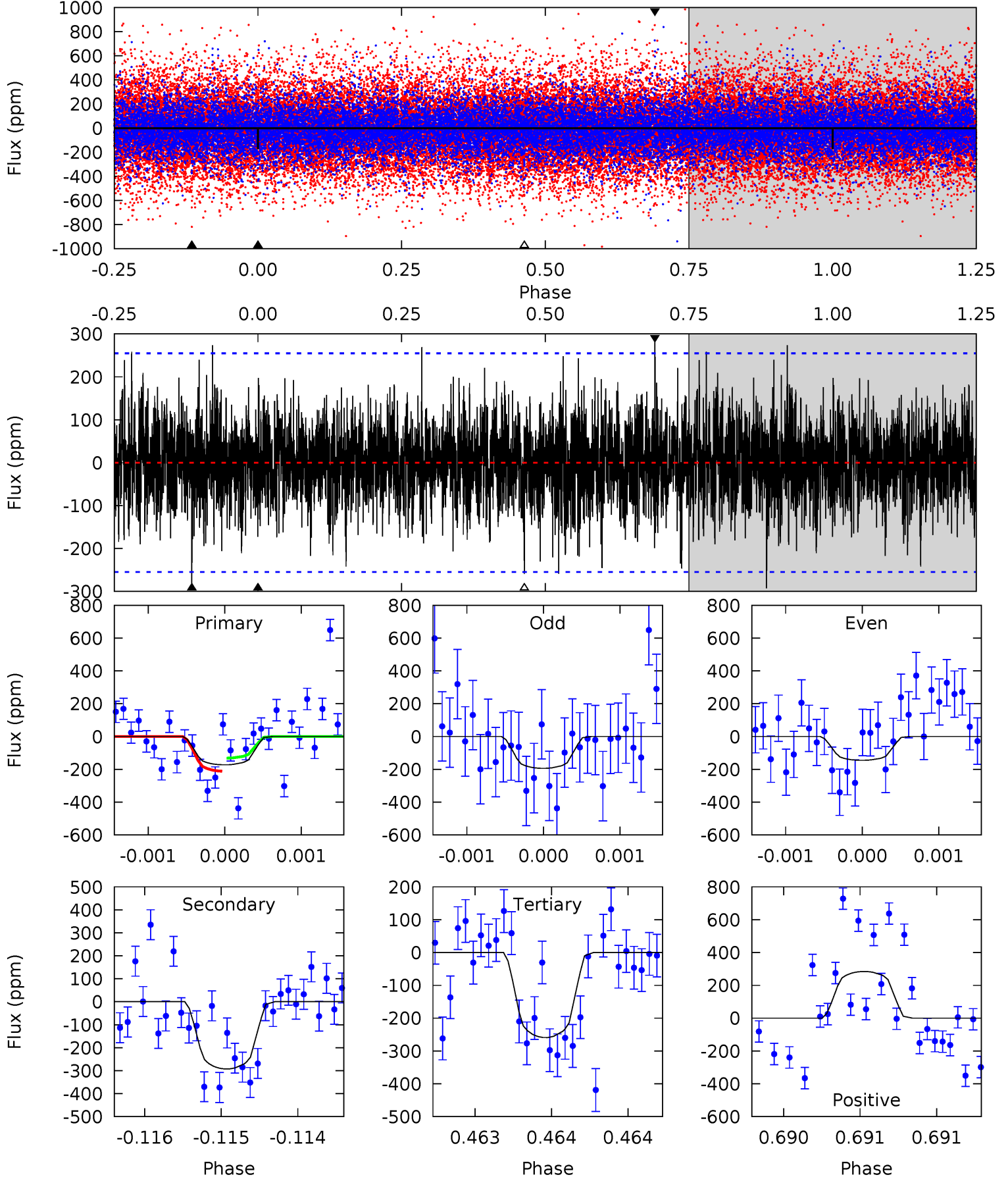
TCE 009880841-02 P=164.183655 Days $T_0=282.235911$ (BKJD)



DV Model-Shift Uniqueness Test

009880841-02, P = 164.187922 Days, E = 118.051979 Days

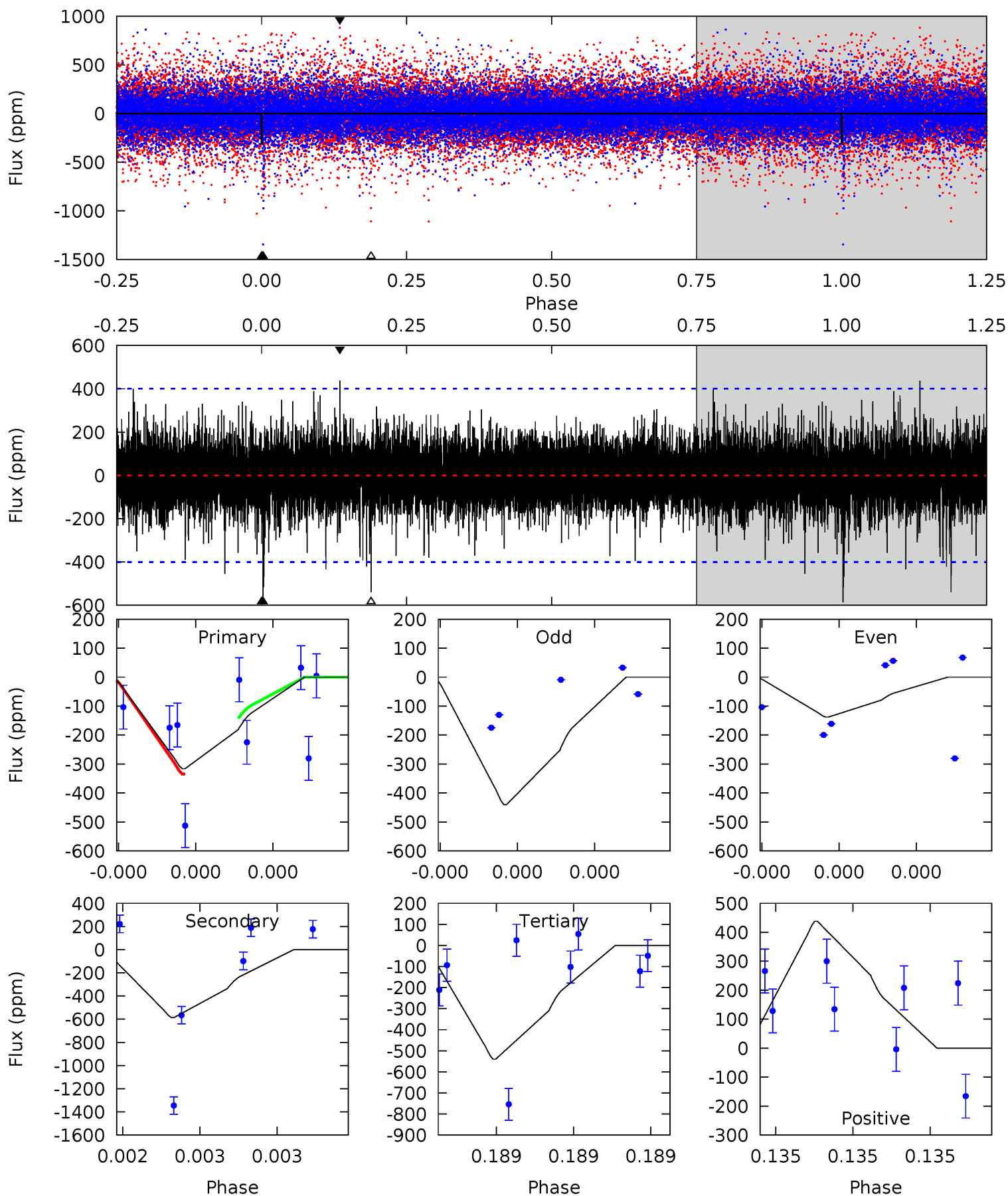
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.75	6.35	5.63	6.18	5.54	3.42	1.53	-1.88	-2.43	0.73	0.18	0.51	0.74	0.49	0.87



Alt Model-Shift Uniqueness Test

009880841-02, P = 164.183655 Days, E = 118.052256 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.56	8.45	7.78	6.32	5.78	3.80	1.28	-3.22	-1.75	0.67	2.13	2.01	2.04	0.43	1.40



Stellar Parameters For KIC 009880841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5615^{+133}_{-150}	$4.505^{+0.036}_{-0.204}$	$0.240^{+0.200}_{-0.300}$	$0.936^{+0.251}_{-0.084}$	$1.022^{+0.085}_{-0.113}$	$1.754^{+0.341}_{-0.897}$
	+2%/-3%	+1%/-5%	+83%/-125%	+27%/-9%	+8%/-11%	+19%/-51%
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 009880841-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-293 ± 46	$5.44^{+5.18}_{-3.62}$	445^{+30}_{-18}	3672^{+1979}_{-663}	1843^{+14606}_{-1366}
Alt.	-586 ± 69	$5.11^{+5.20}_{-3.42}$	445^{+32}_{-18}	4279^{+2769}_{-952}	4409^{+35705}_{-3425}

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 $A_{obs} \gg 1.0$

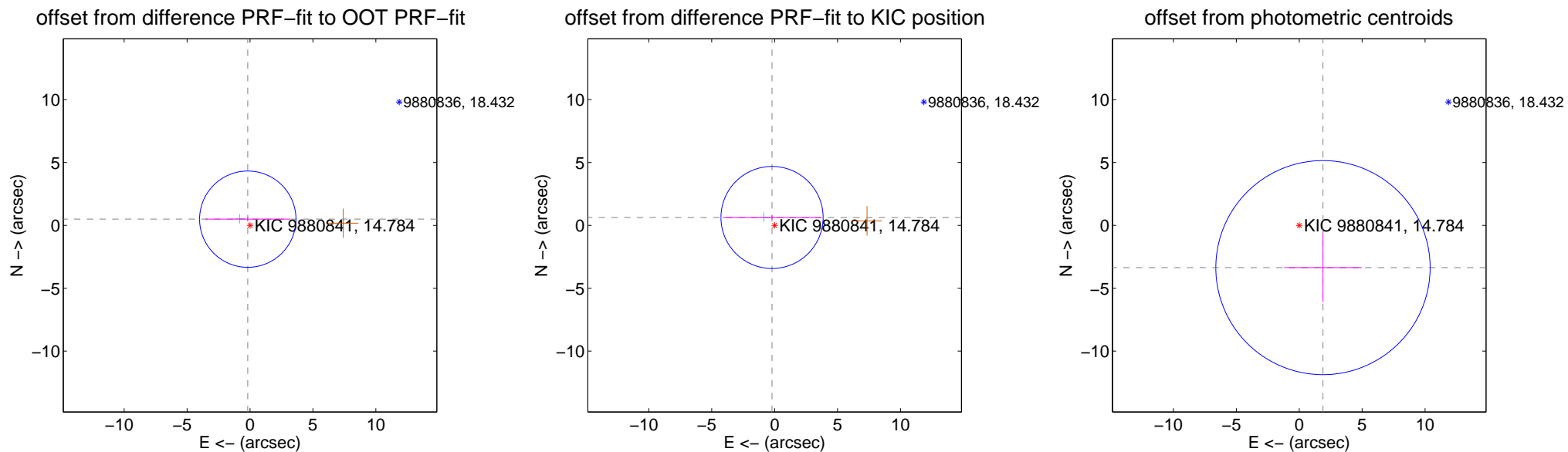
DV Centroid Data

Supplemental centroid analysis for 009880841-02. Kepler magnitude: 14.78. Transit SNR 2.23

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.523 ± 1.277	0.41	0.177 ± 3.365	0.492 ± 0.159
PRF-fit source offset from KIC position	0.660 ± 1.353	0.49	0.204 ± 3.925	0.628 ± 0.159
photometric centroid source offset	3.86 ± 2.84	1.36	-1.89 ± 3.08	-3.36 ± 2.76



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.

Q1 no difference image



Q1 no OOT image



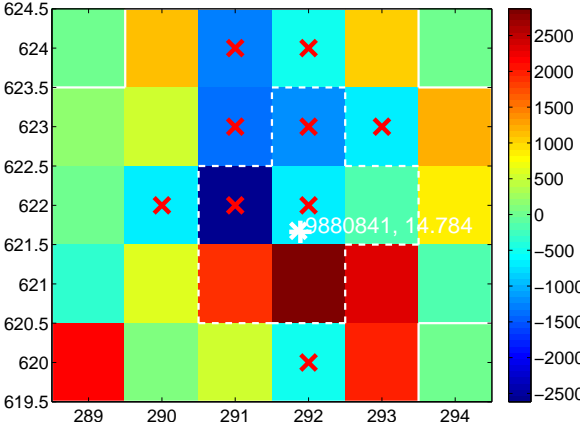
Q2 no difference image



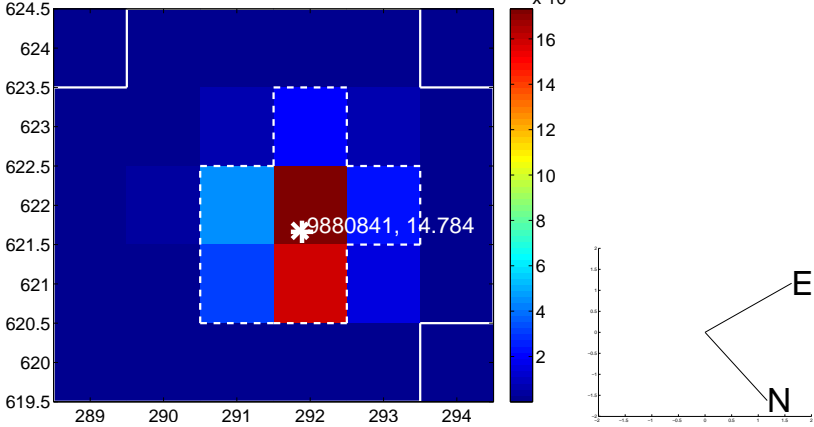
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



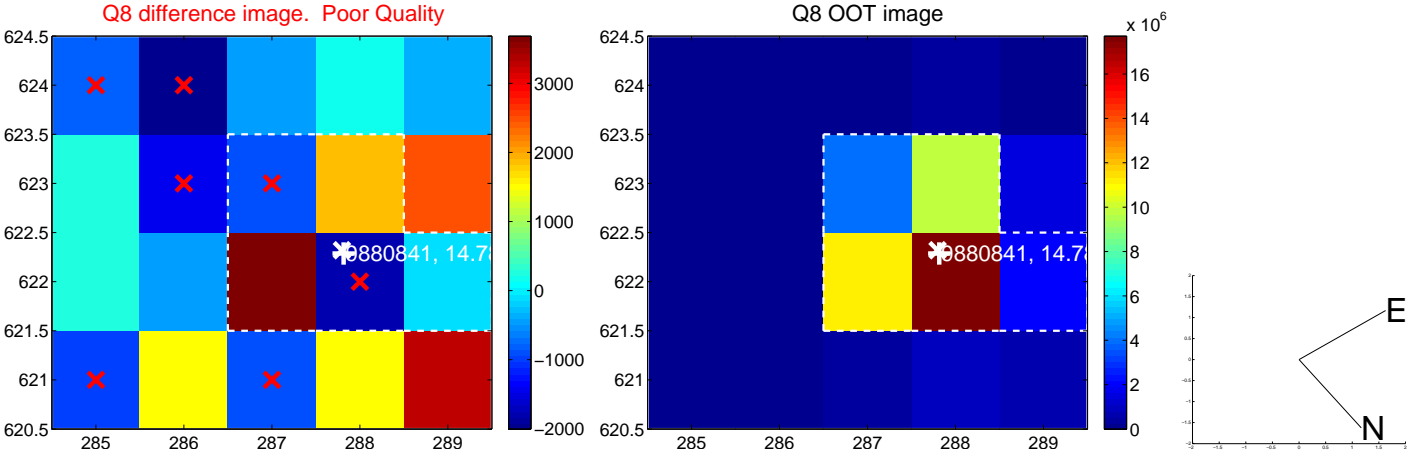
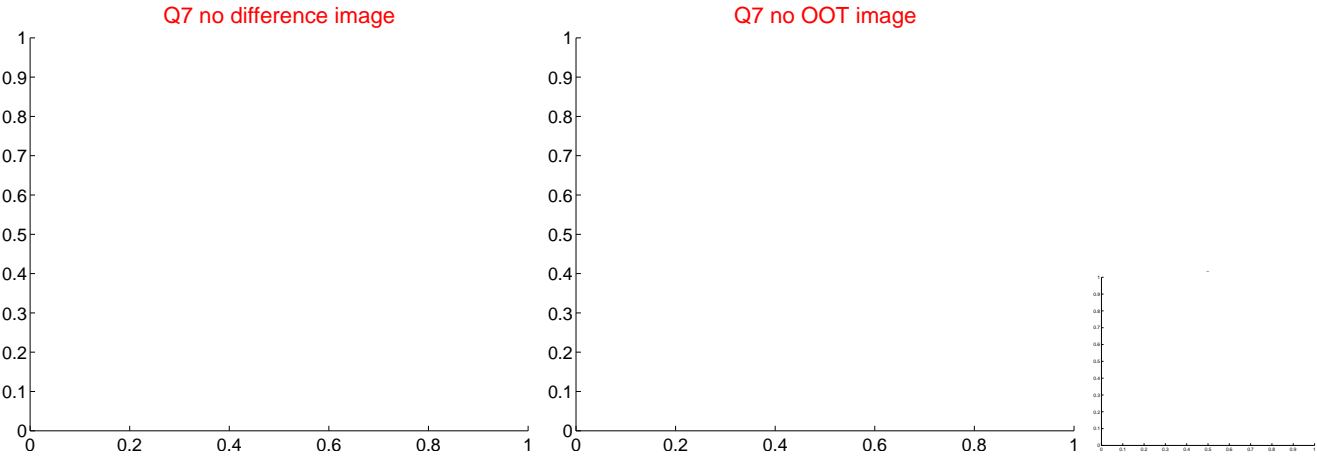
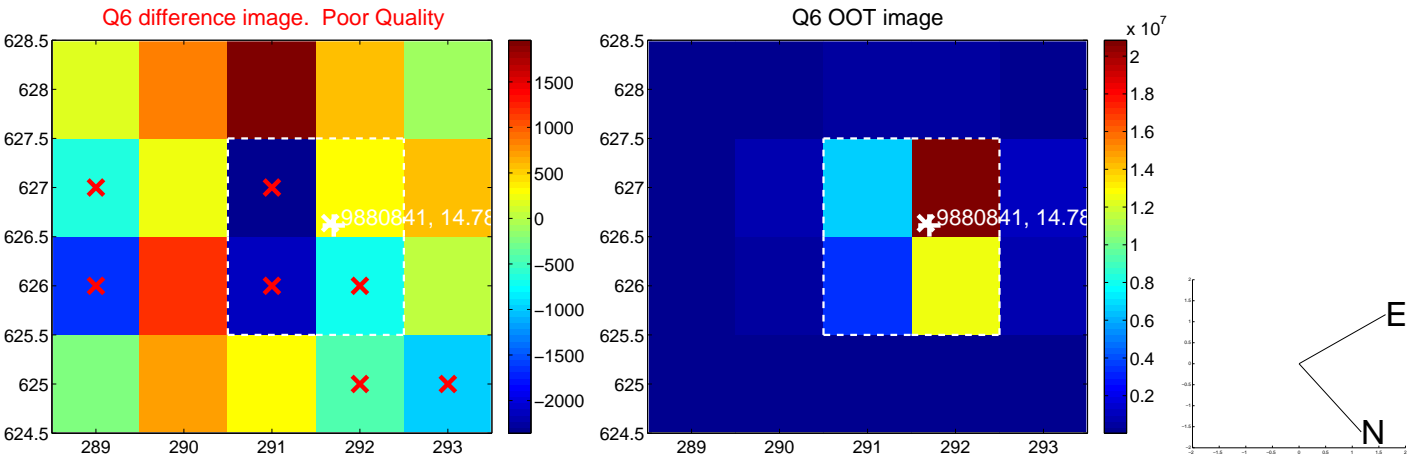
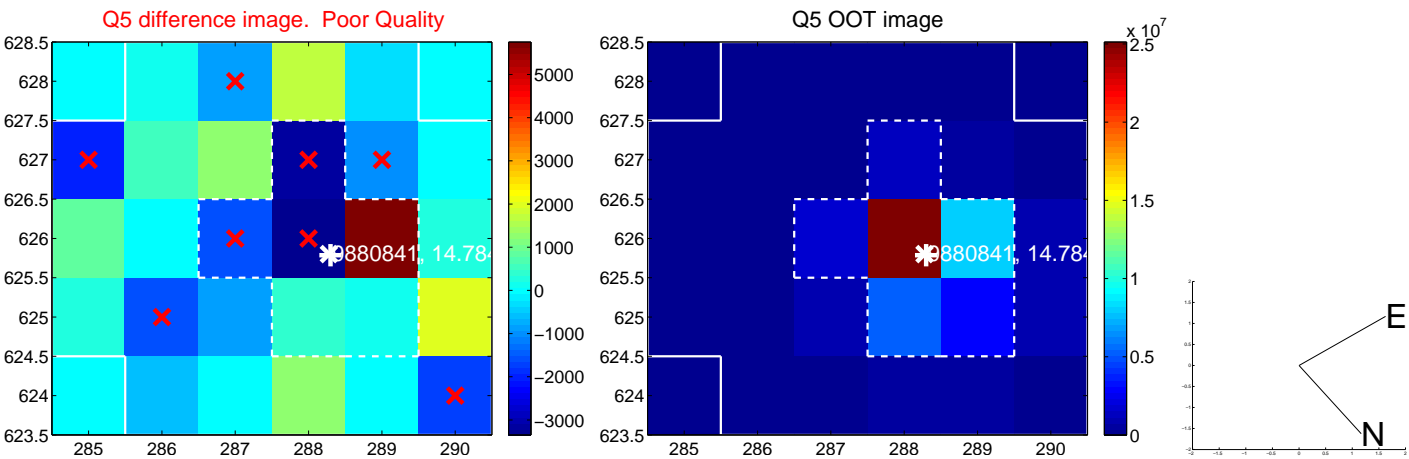
Q4 no difference image



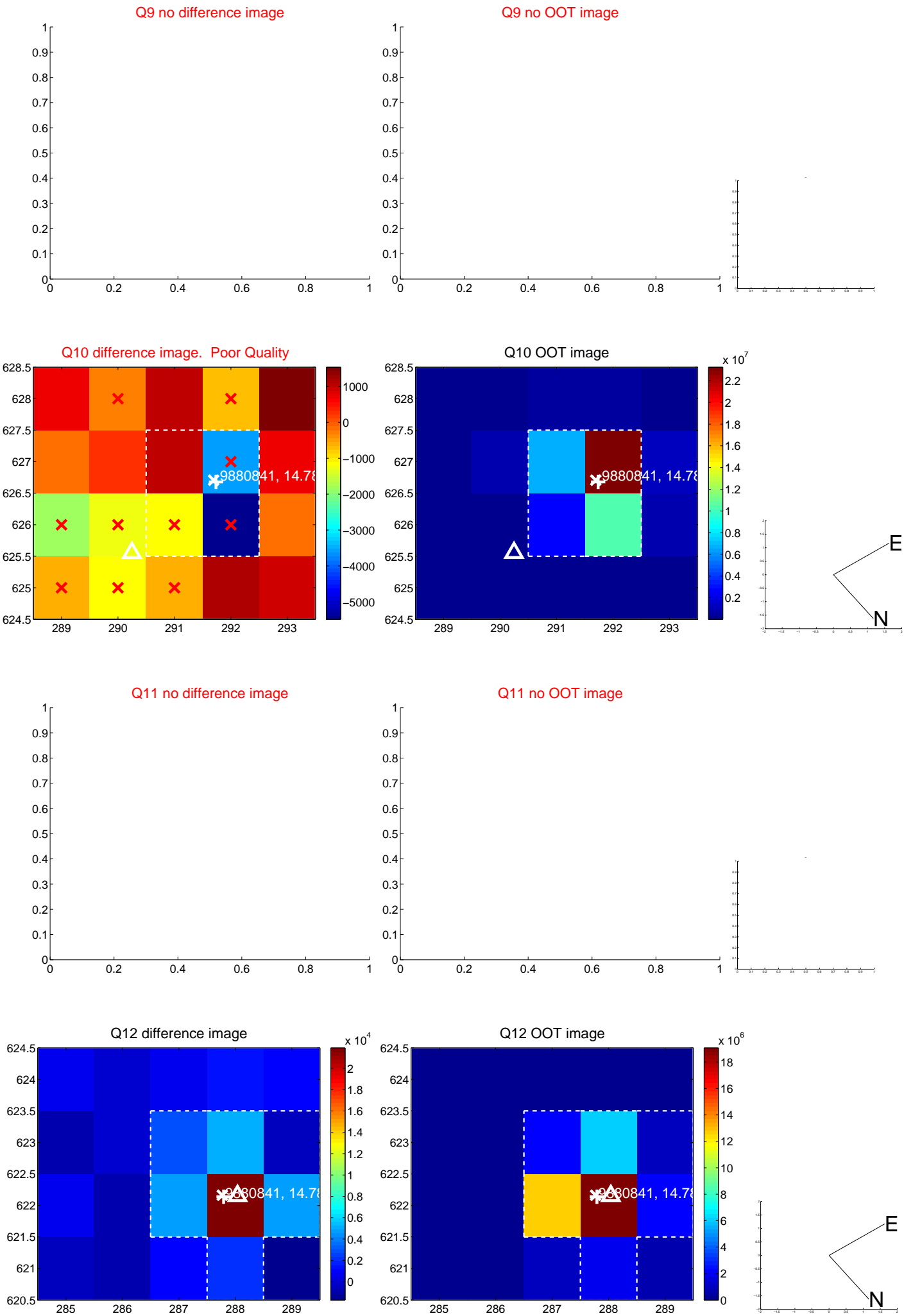
Q4 no OOT image



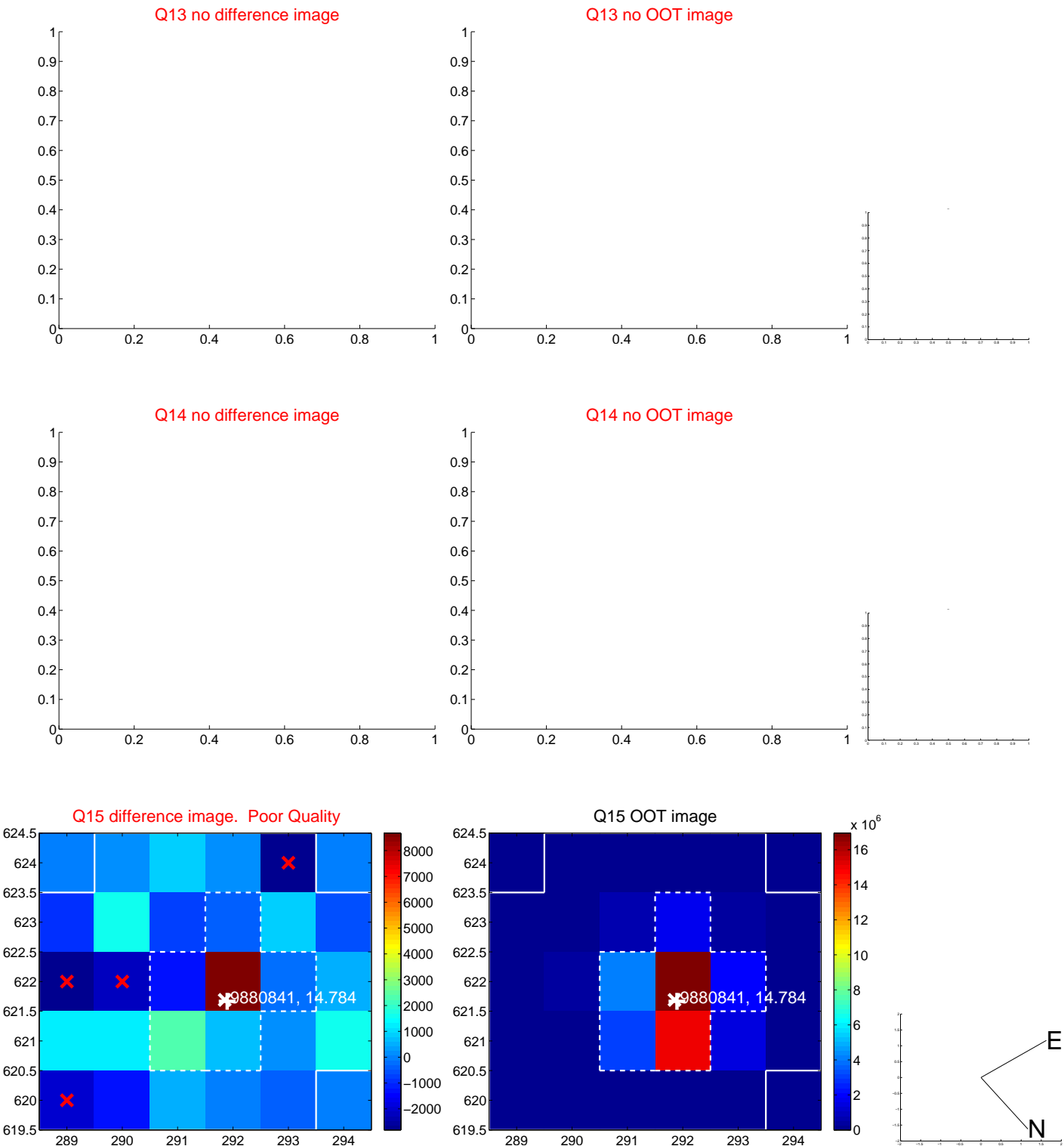
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



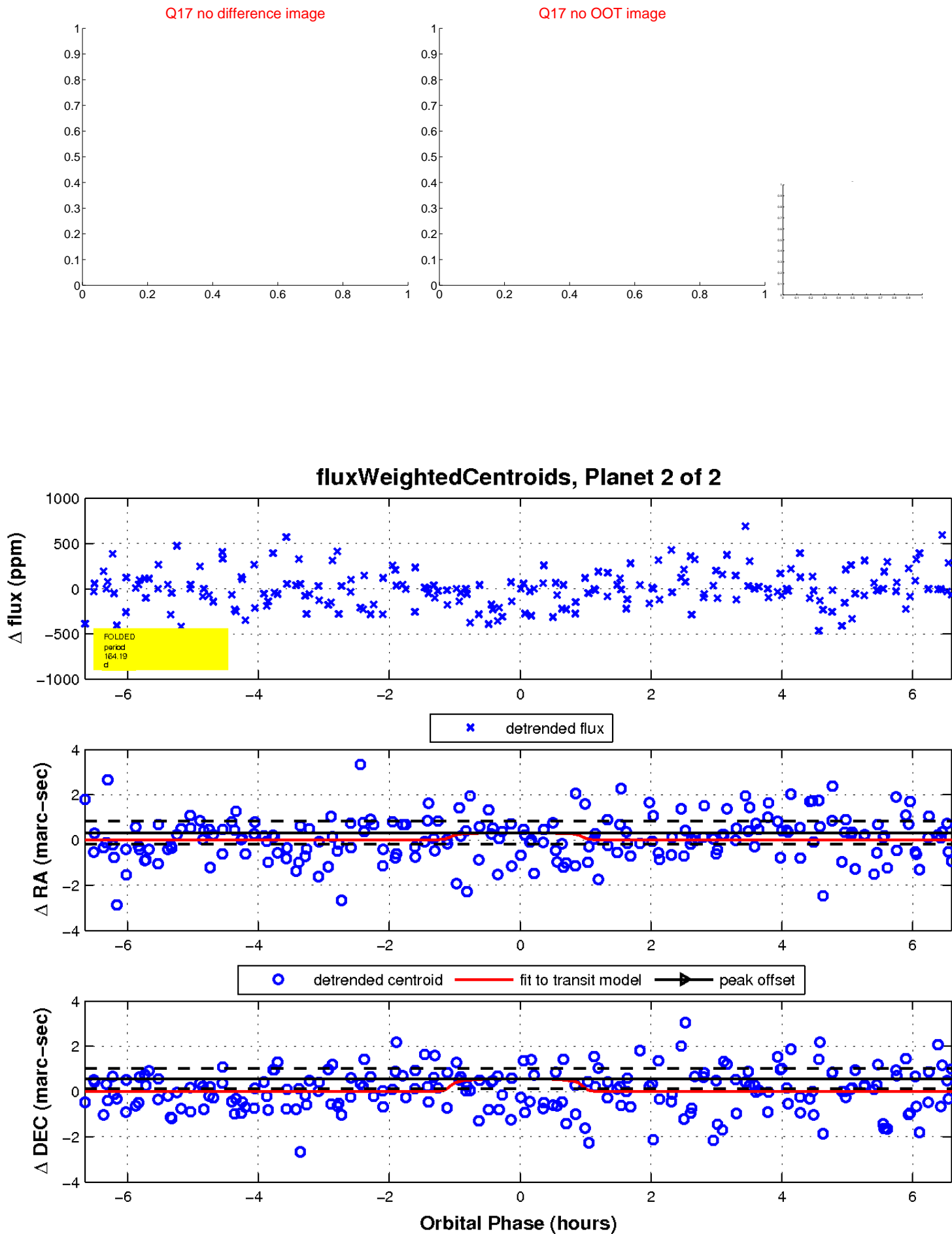
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: 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

Declination

