

KIC 009838608

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})
009838608-01	OBS	4677.01	1.332579	132.038361	88.8	4.994	9.3	11.7	0.92	6063	1.73	1822.28
009838608-02	OBS	No	204.996285	225.021776	1016.5	15.000	14.4	-1.0	0.92	6063	2.93	2.21
009838608-03	OBS	No	313.770495	168.977155	552.0	9.726	8.1	4.7	0.92	6063	2.30	1.25
009838608-04	OBS	No	209.624396	253.808095	376.0	0.643	7.8	1.9	0.92	6063	2.15	2.15

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009838608-01	OBS	FP	0.00	0	0	1	1	CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
009838608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009838608-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
009838608-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—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.

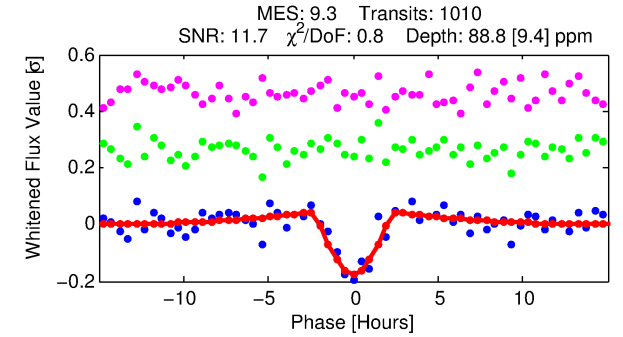
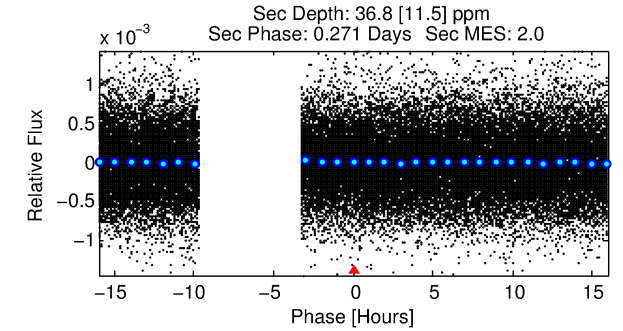
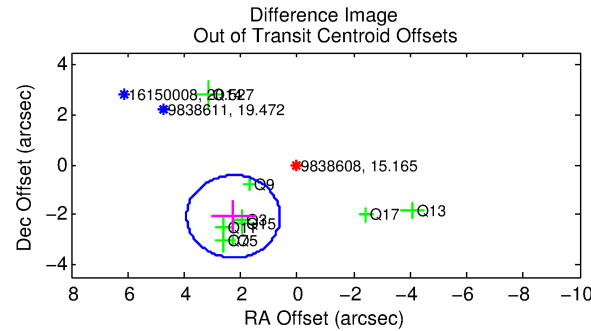
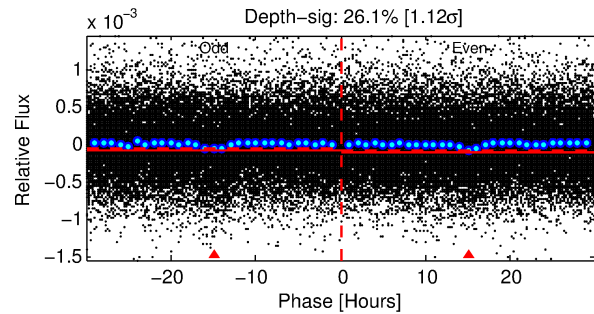
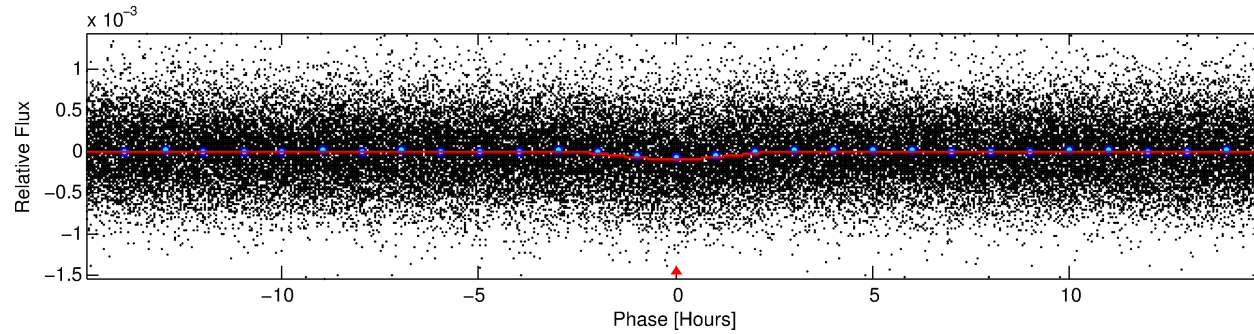
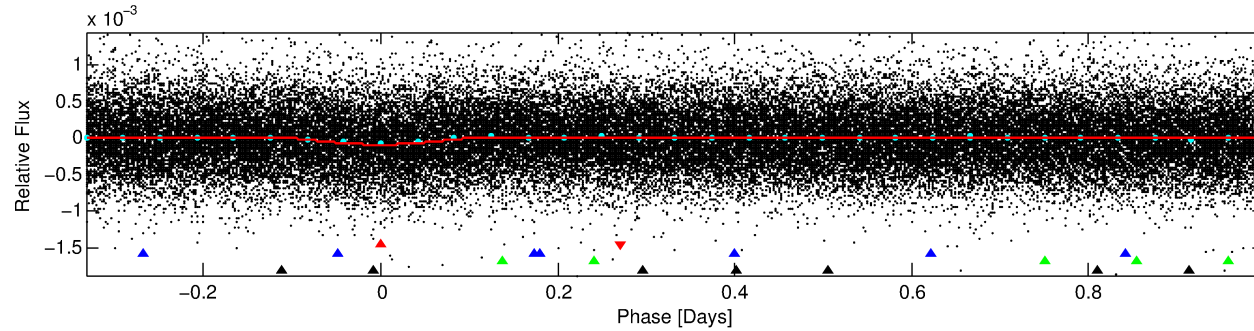
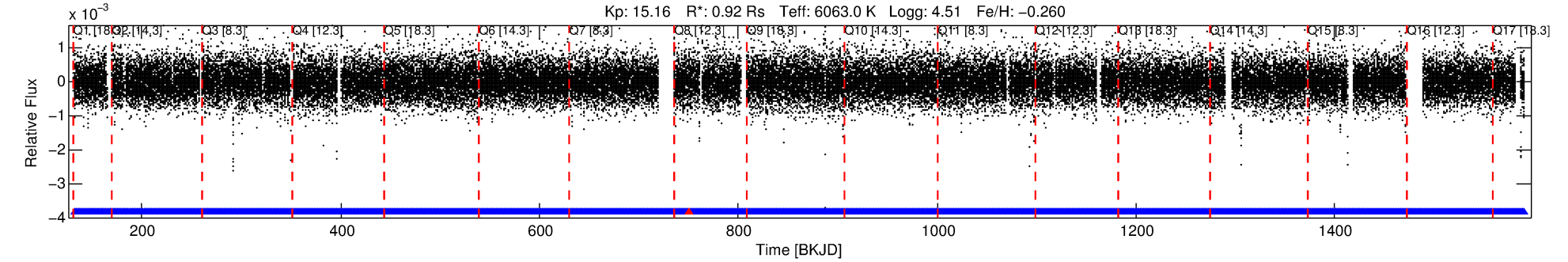
Ephemeris Match Information For 009838608-01

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist (μ)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
009838608-01	9838608	BR-Cyg-pri	9899416	1:1	982.9	247	2	10.03	15.17	7515.40	Col-Anomaly	0	0.95	0.75

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9838608 Candidate: 1 of 4 Period: 1.333 d
KOI: K04677.01 Corr: 0.761



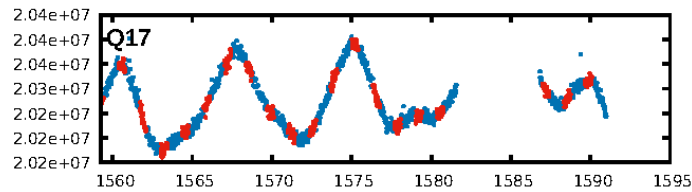
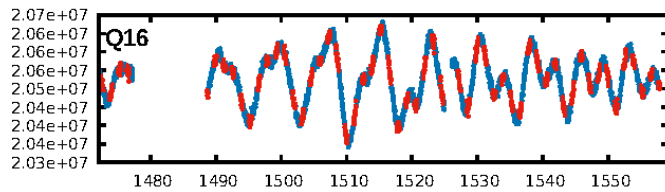
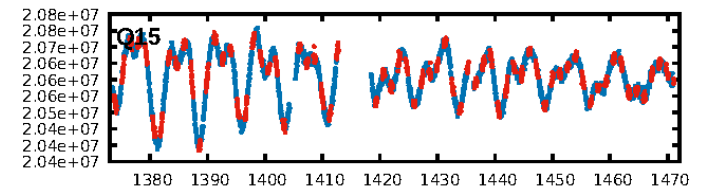
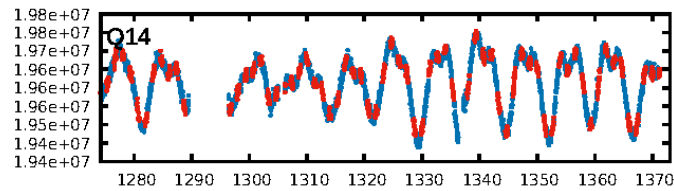
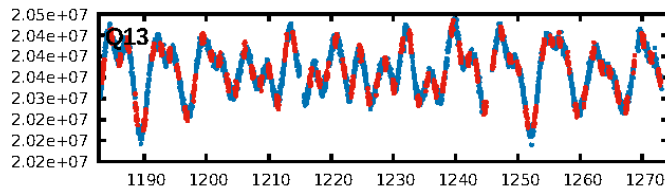
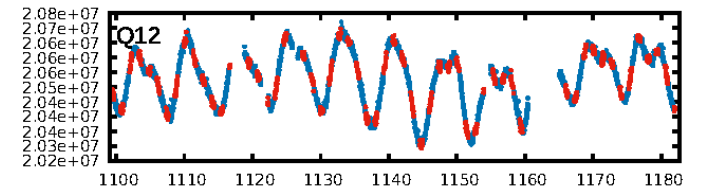
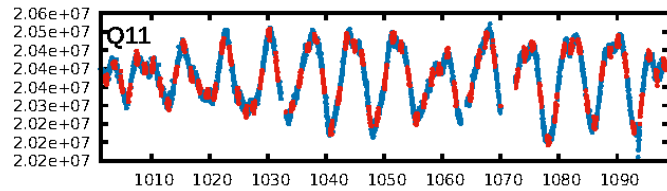
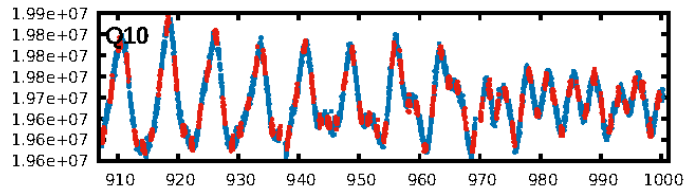
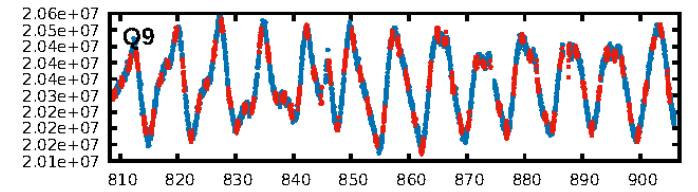
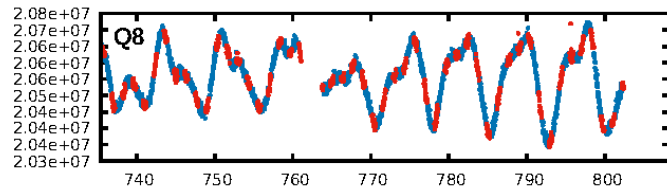
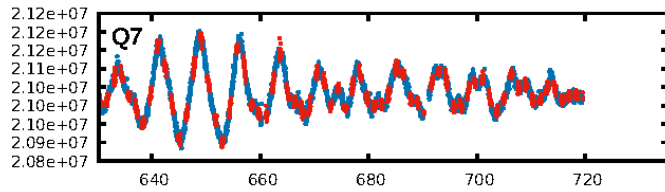
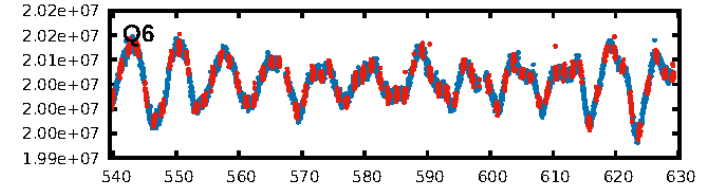
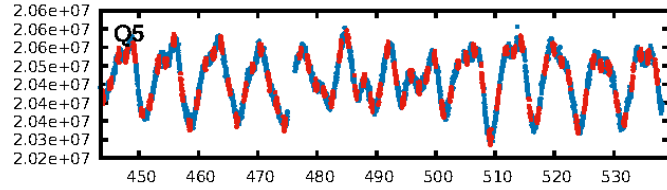
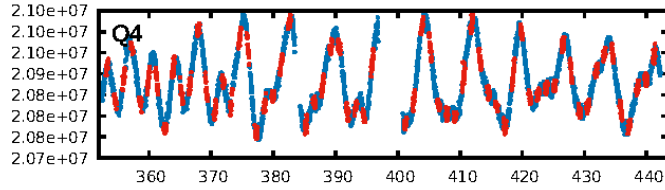
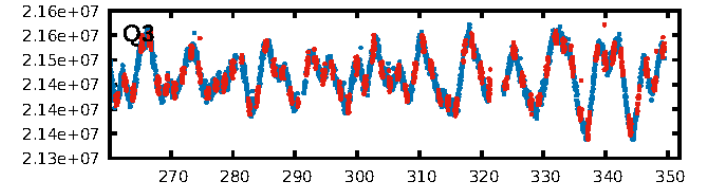
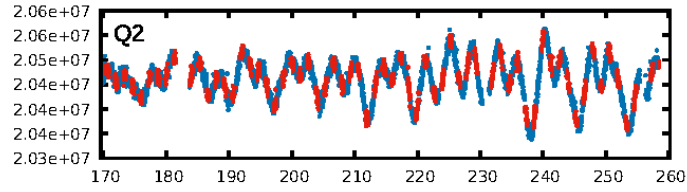
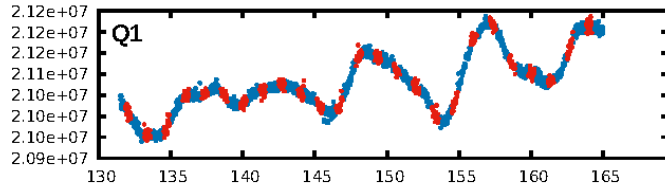
DV Fit Results:

Period = 1.33258 [0.00001] d
Epoch = 132.0384 [0.0054] BKJD
Rp/R* = 0.0173 [0.0364]
a/R* = 1.08 [0.04]
b = 1.00 [0.06]
Seff = 1822.28 [709.68]
Teq = 1666 [162] K
Rp = 1.73 [3.68] Re
a = 0.0237 [0.0060] AU
Ag = 3.80 [16.13] [0.17 σ]
Teffp = 3596 [3806] K [0.51 σ]

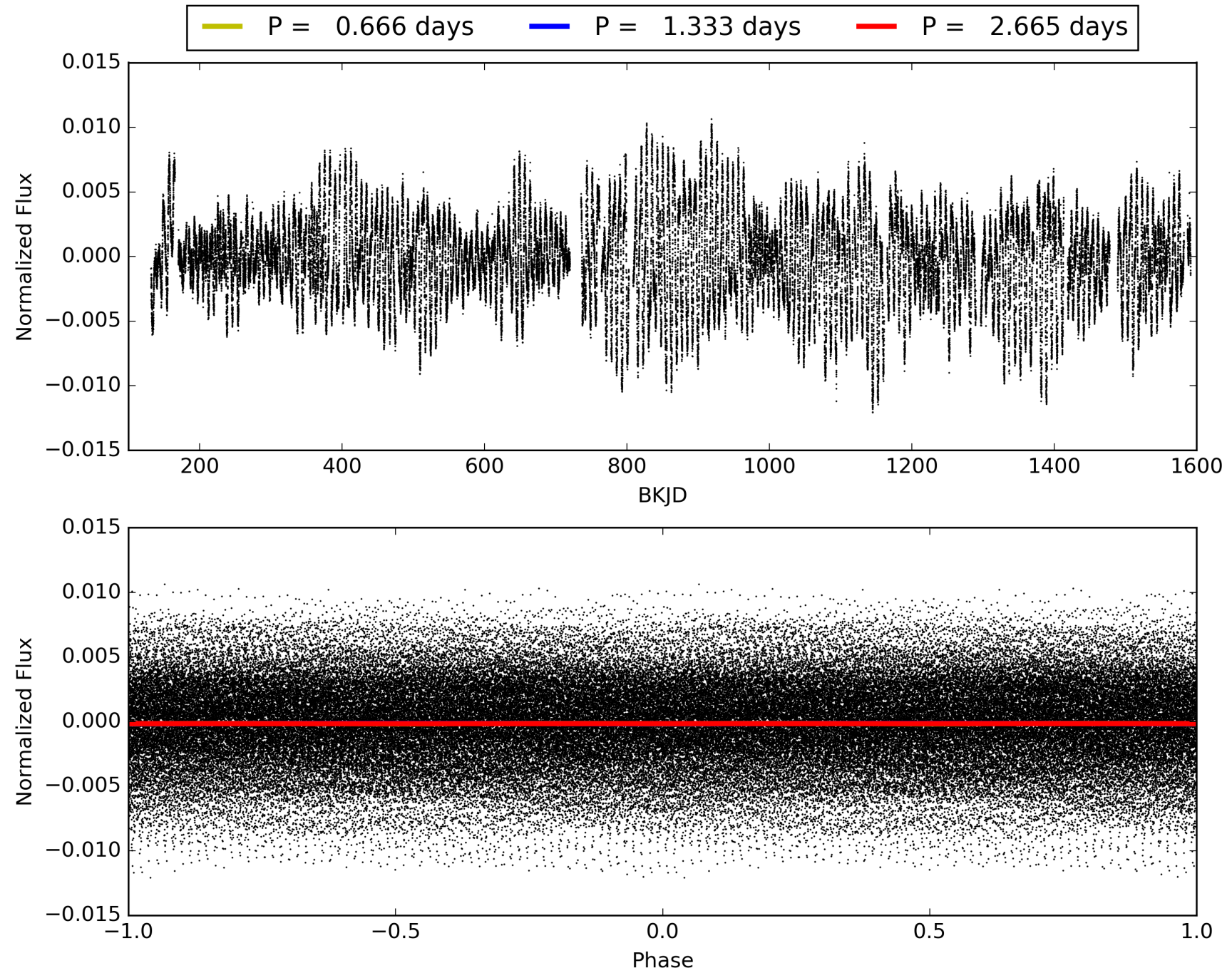
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [309.18 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.22e-18
RollingBand-fgt: 1.00 [964/965]
GhostDiagnostic-chr: 0.1309
Centroid-sig: 0.0%
Centroid-so: 4.397 arcsec [4.62 σ]
OotOffset-rm: 3.068 arcsec [5.57 σ]
KicOffset-rm: 2.994 arcsec [4.60 σ]
OotOffset-st: 1/4/0/4 [9]
KicOffset-st: 1/4/0/4 [9]
DiffImageQuality-fgm: 0.00 [0/9]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009838608-01, PDC Light Curves

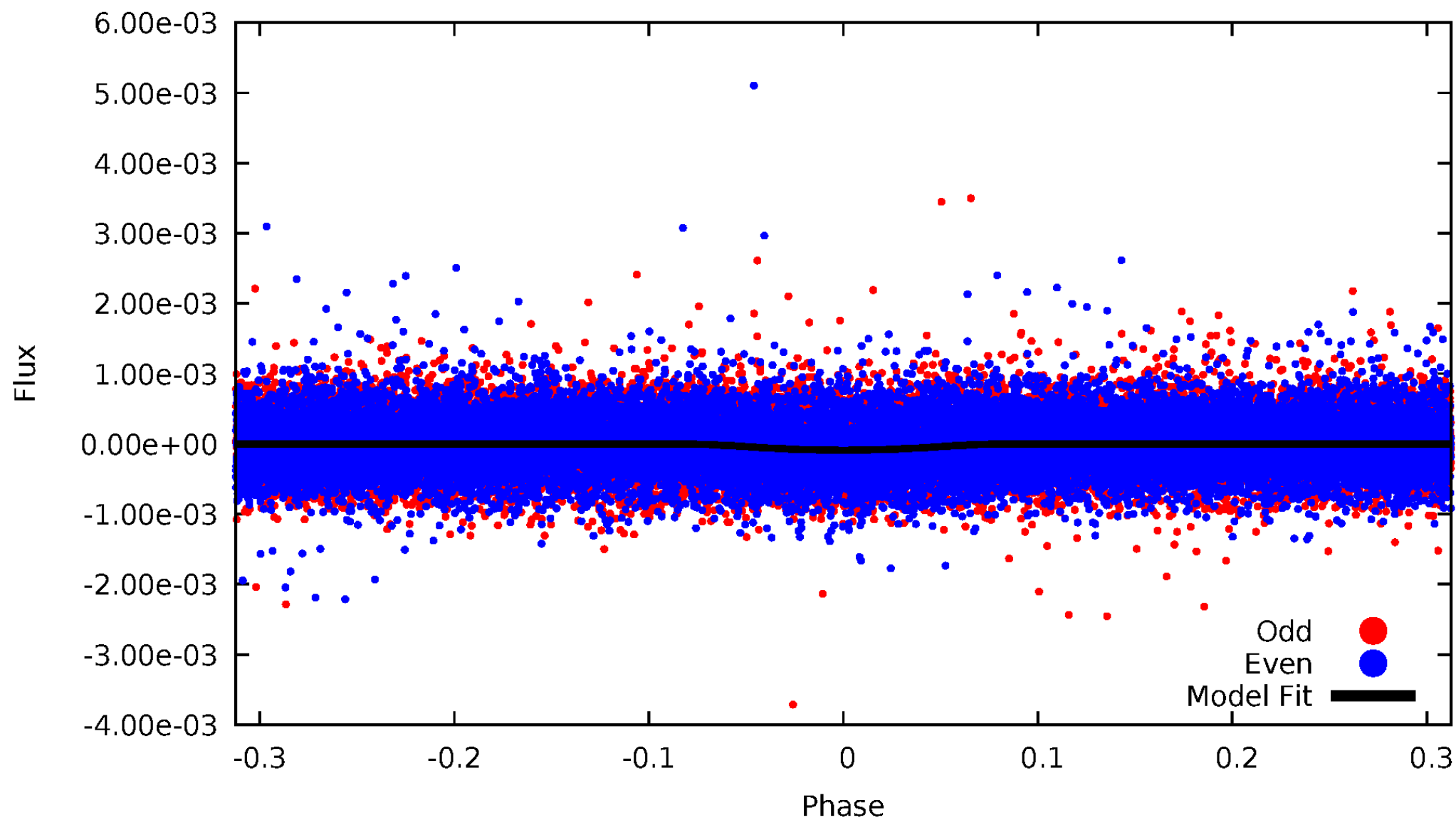


TCE 009838608-01



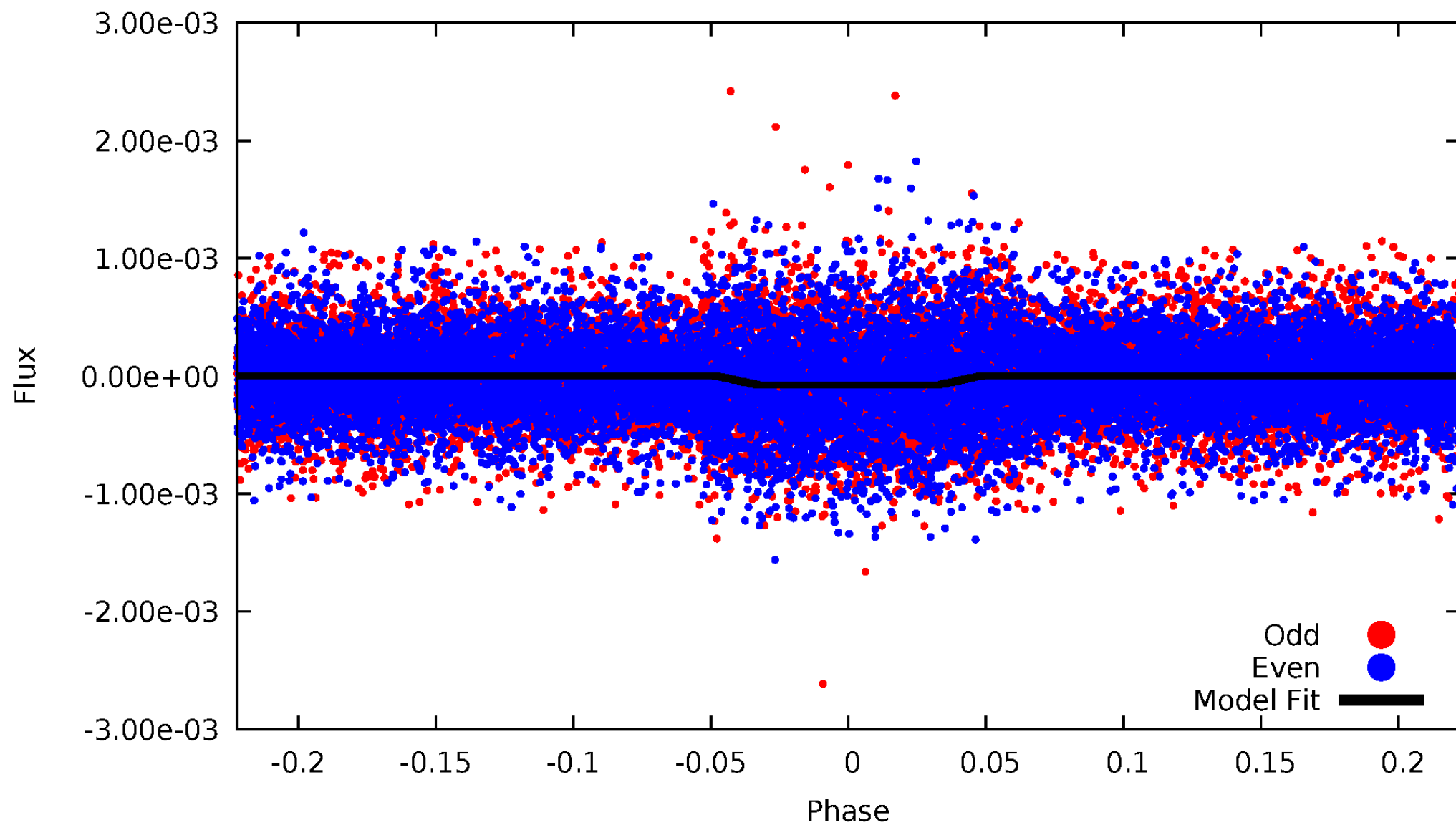
DV Odd/Even

TCE 009838608-01



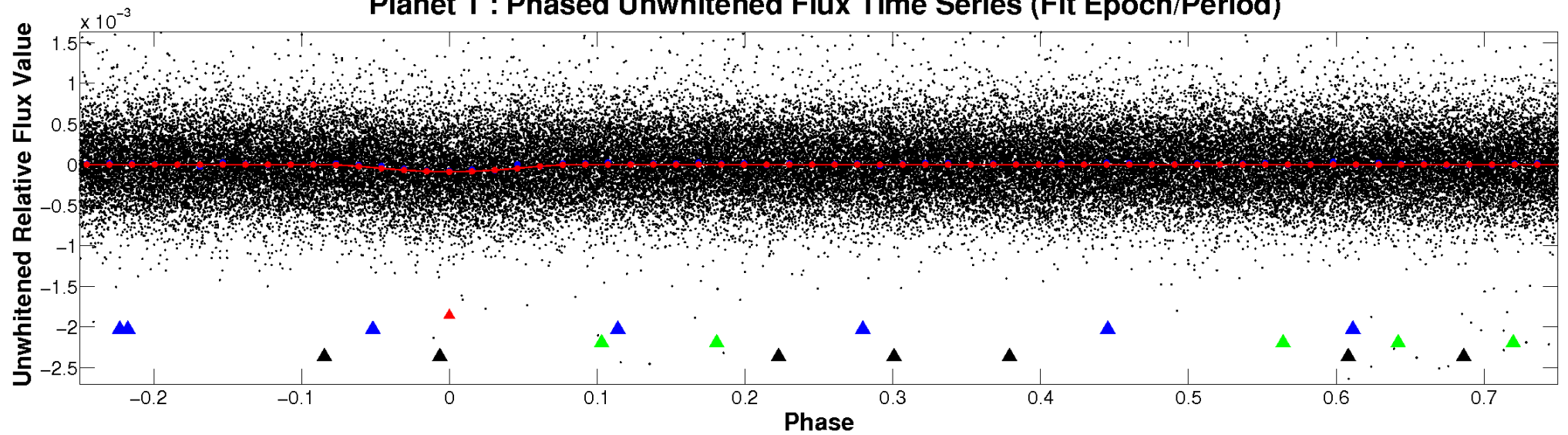
ALT Odd/Even

TCE 009838608-01

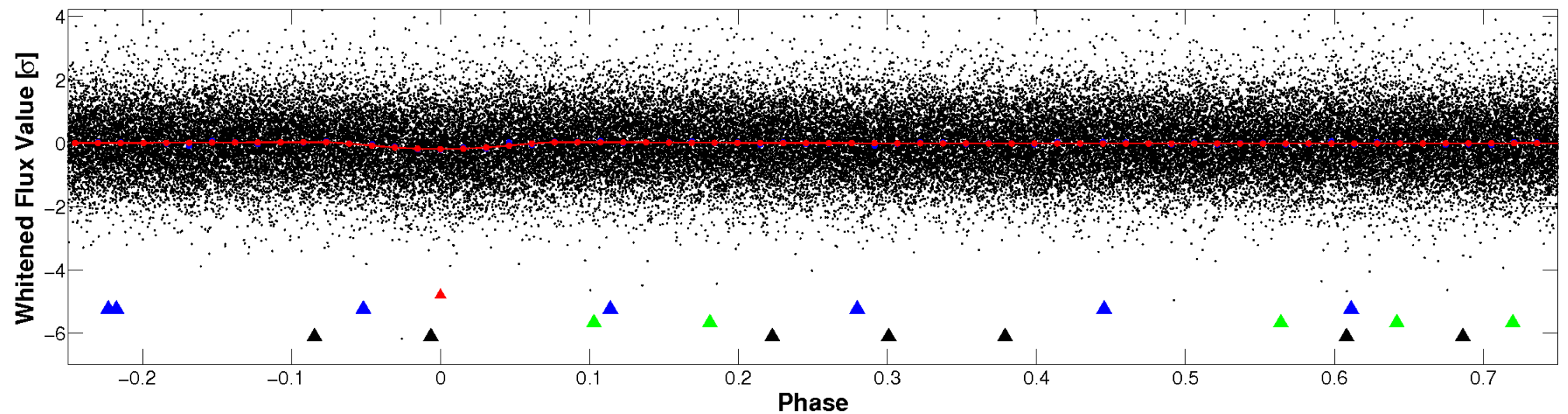


Non-Whitened Vs. Whitened Light Curve

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

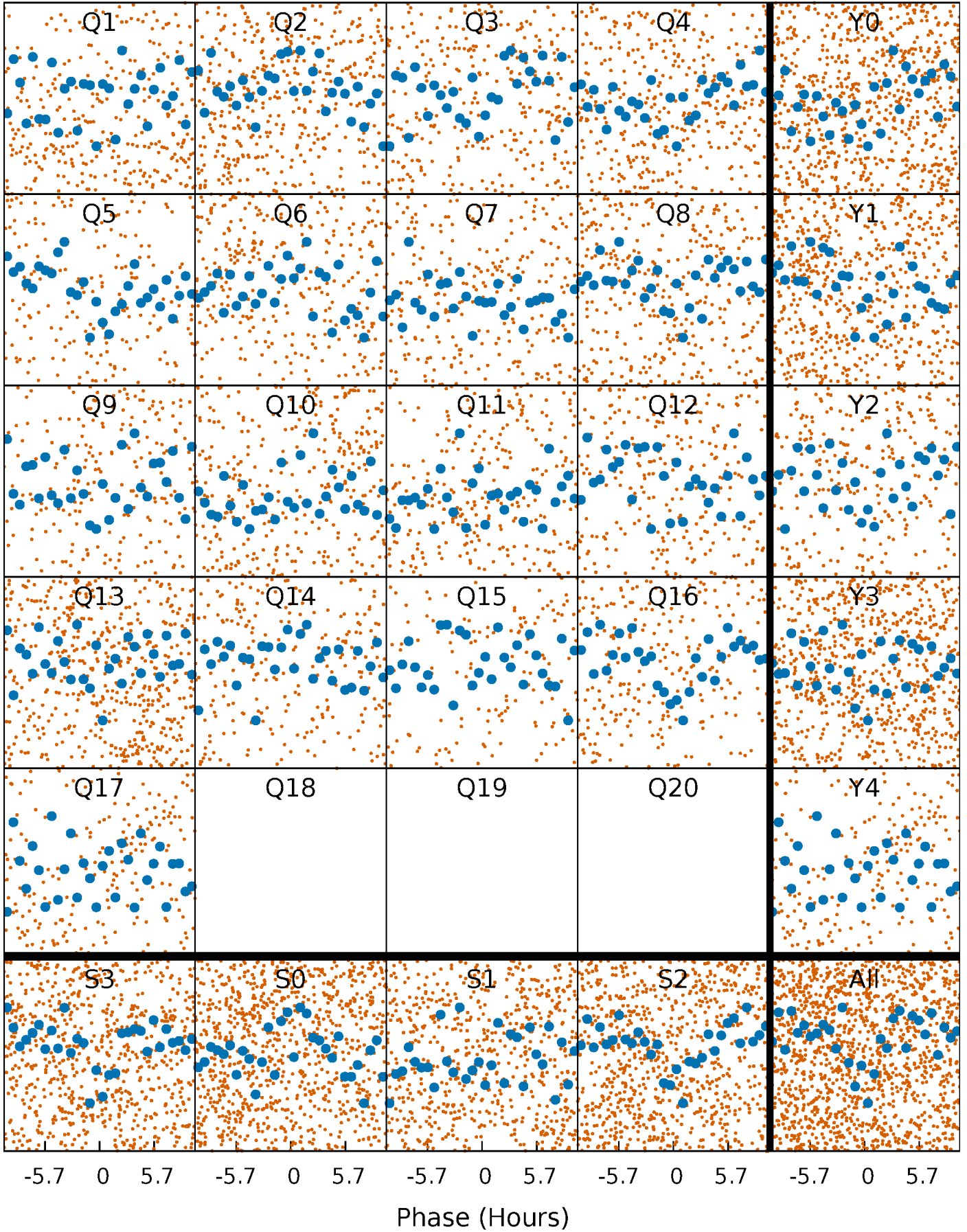


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



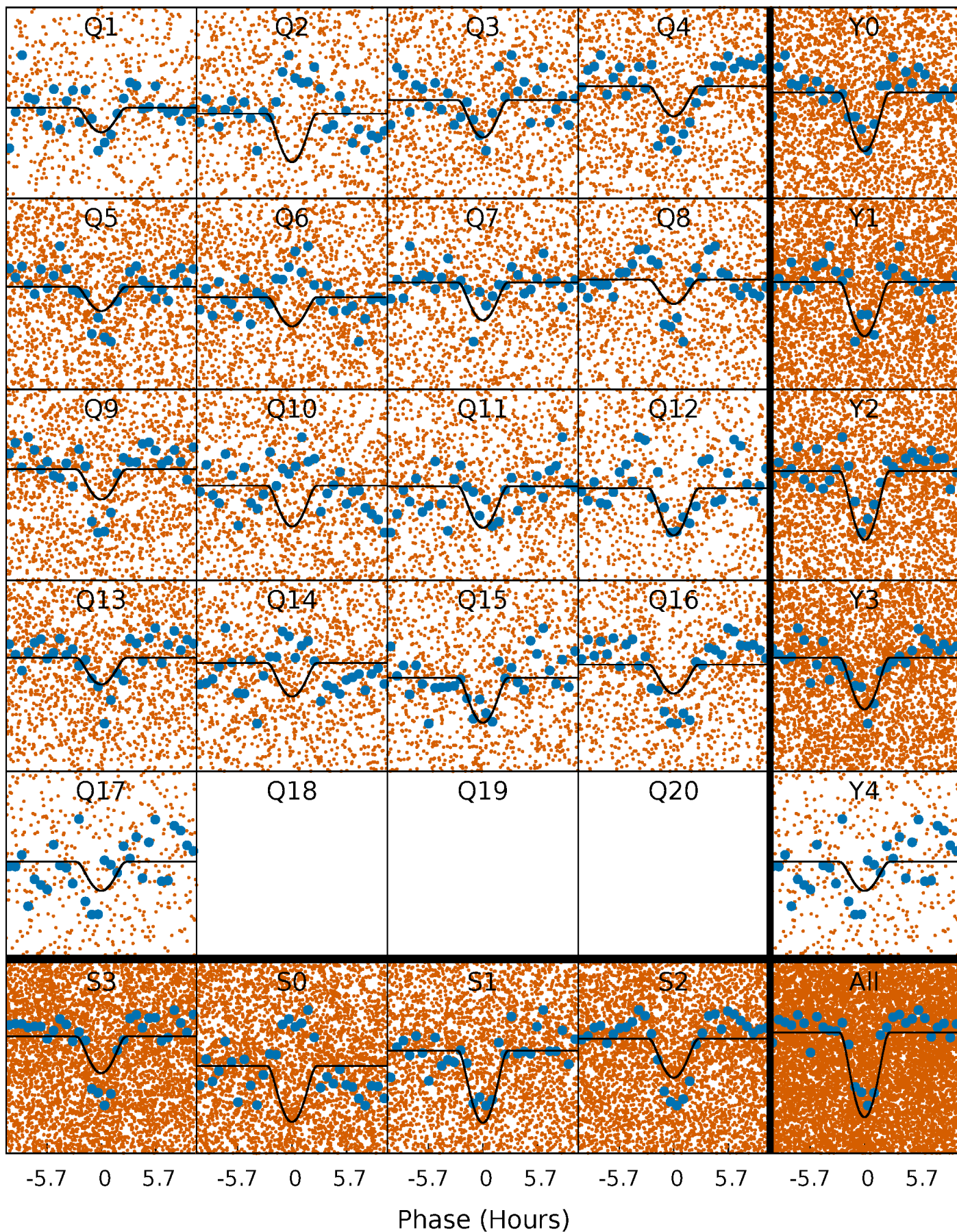
PDC Quarter-Phased Transit Curves

TCE 009838608-01 P= 1.332579 Days $T_0=132.038361$ (BKJD)



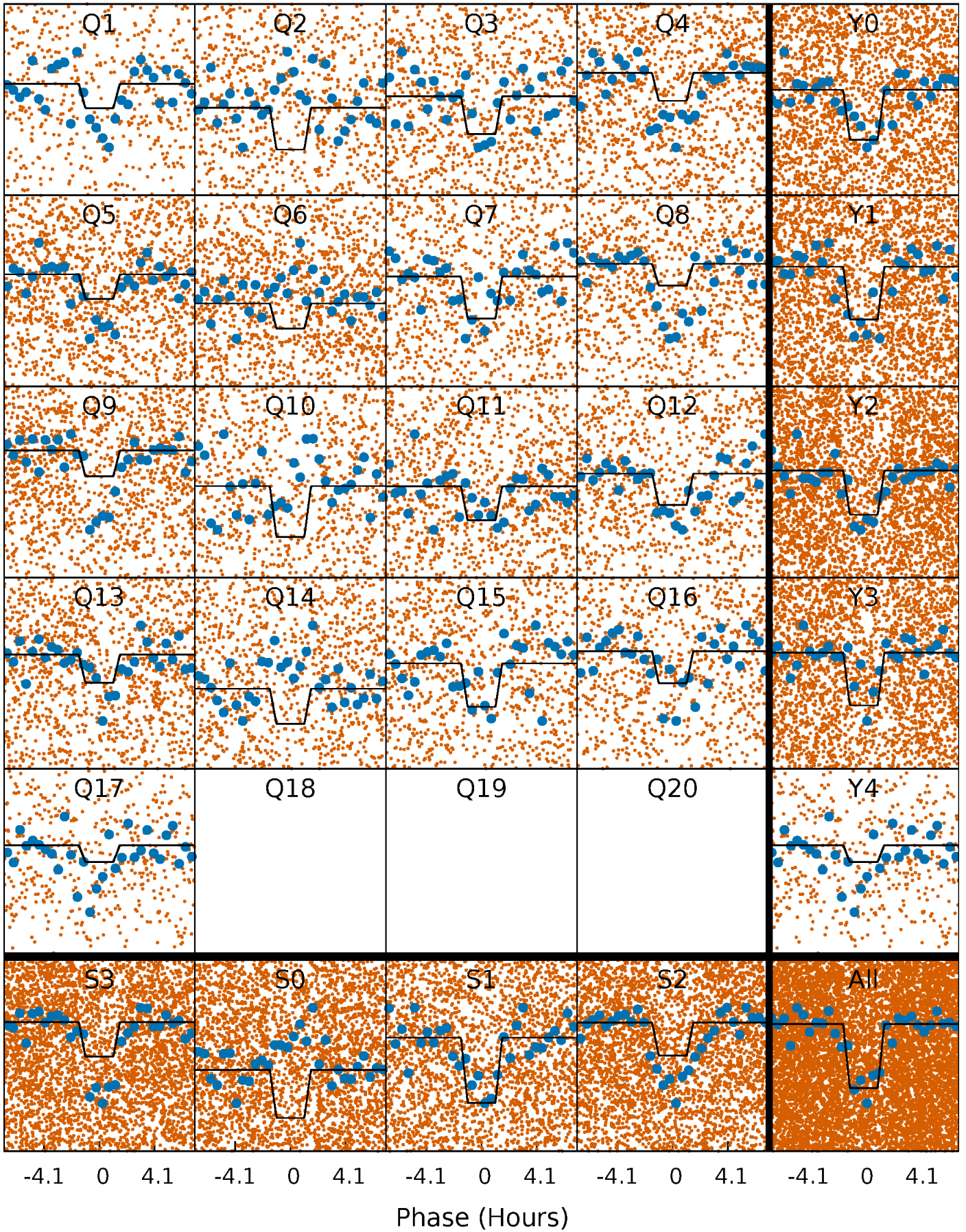
DV Quarter-Phased Transit Curves

TCE 009838608-01 P= 1.332579 Days $T_0=132.038361$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

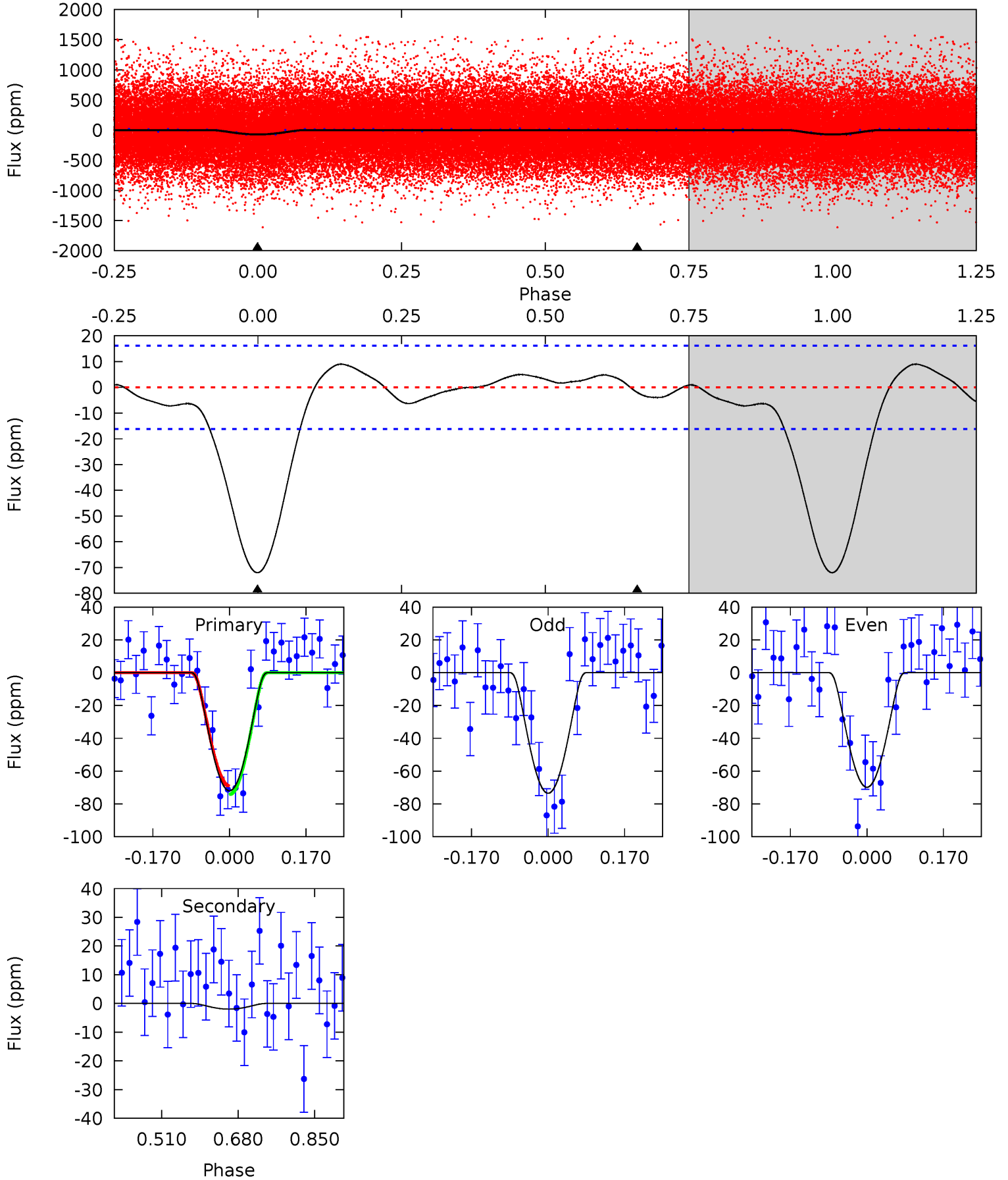
TCE 009838608-01 P= 1.332580 Days $T_0=132.035633$ (BKJD)



DV Model-Shift Uniqueness Test

009838608-01, P = 1.332579 Days, E = 130.705782 Days

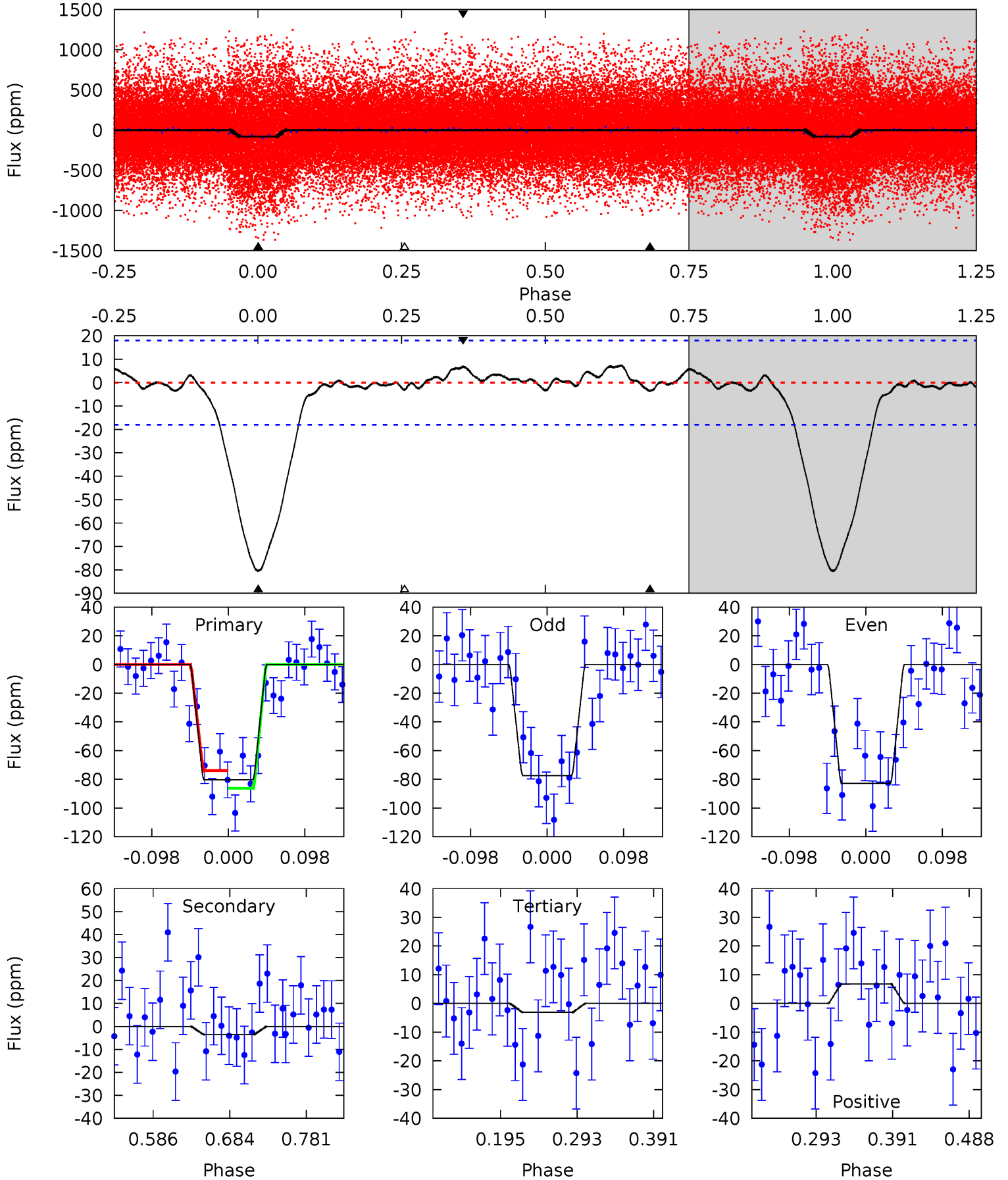
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	0.54	0	0	4.45	1.37	1.02	19.8	19.8	0.54	0.54	0.51	0.61	0.11	0.71



Alt Model-Shift Uniqueness Test

009838608-01, P = 1.332580 Days, E = 130.703053 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	0.90	0.79	1.73	4.57	1.66	0.59	19.7	18.7	0.11	-0.83	0.68	1.09	0.08	1.57



Stellar Parameters For KIC 009838608

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6063^{+163}_{-199}	$4.510^{+0.050}_{-0.200}$	$-0.260^{+0.300}_{-0.300}$	$0.918^{+0.276}_{-0.092}$	$0.994^{+0.120}_{-0.132}$	$1.810^{+0.476}_{-0.959}$
	+3%/-3%	+1%/-4%	+115%/-115%	+30%/-10%	+12%/-13%	+26%/-53%
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 009838608-01 / KOI 4677.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2 ± 4	$3.32^{+3.05}_{-2.18}$	2375^{+180}_{-120}	-2659^{+5033}_{-193}	$0.034^{+0.359}_{-0.075}$
Alt.	-4 ± 4	$2.90^{+3.17}_{-1.93}$	2373^{+145}_{-106}	-2594^{+5665}_{-194}	$0.081^{+0.973}_{-0.091}$

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

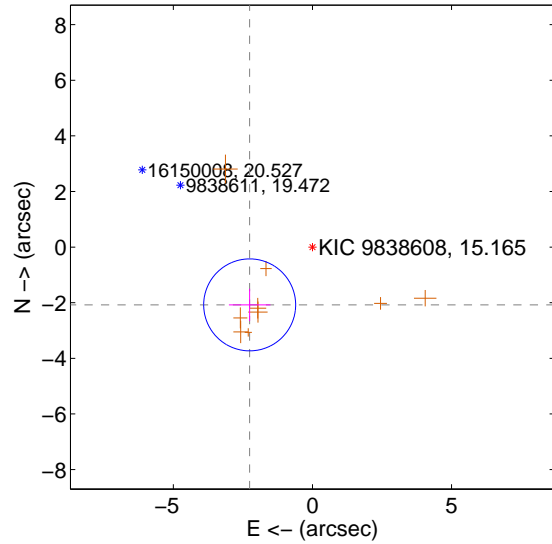
Supplemental centroid analysis for 009838608-01. Kepler magnitude: 15.16. Transit SNR 11.72

There are 0 quarters with good PRF difference image offsets

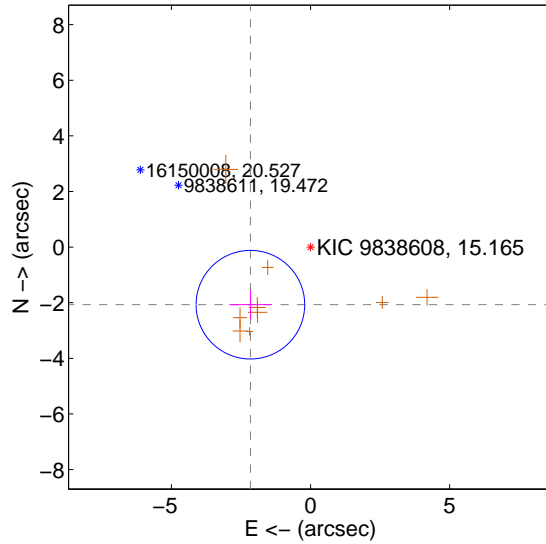
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.068 ± 0.551	5.57	2.257 ± 0.747	-2.078 ± 0.579
PRF-fit source offset from KIC position	2.994 ± 0.651	4.60	2.162 ± 0.759	-2.071 ± 0.524
photometric centroid source offset	4.40 ± 0.95	4.62	-1.21 ± 0.96	-4.23 ± 0.95

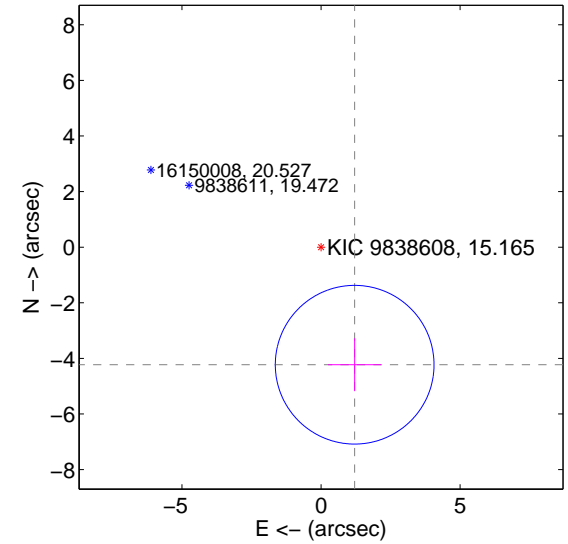
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

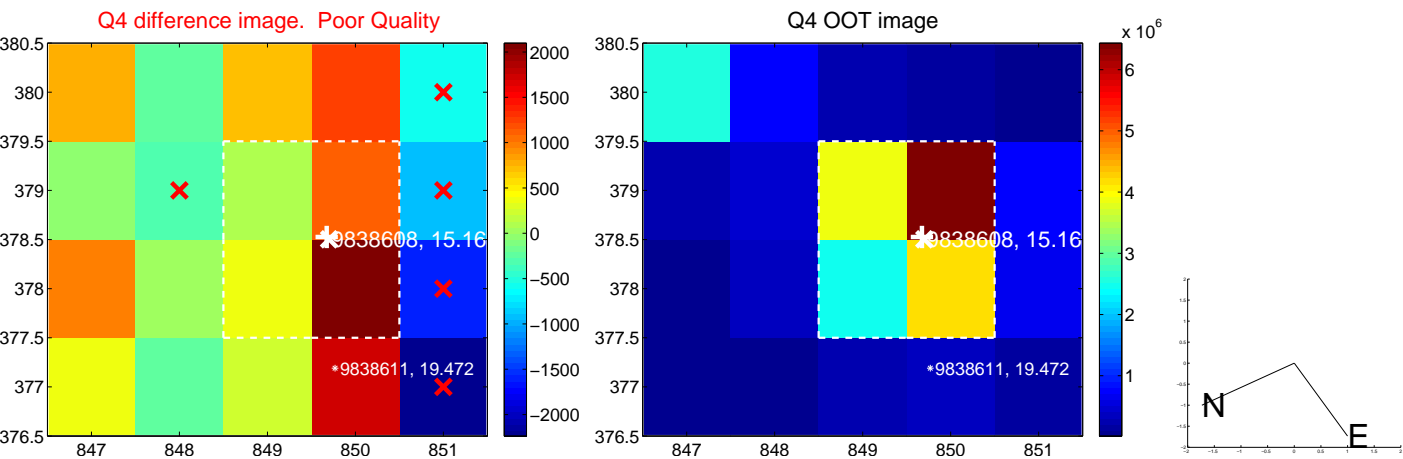
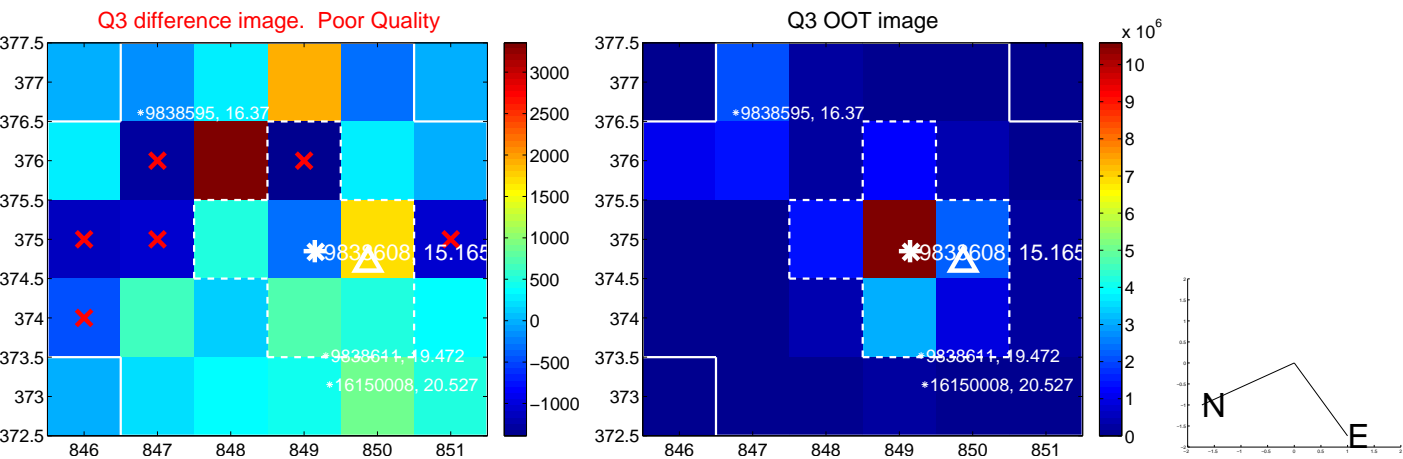
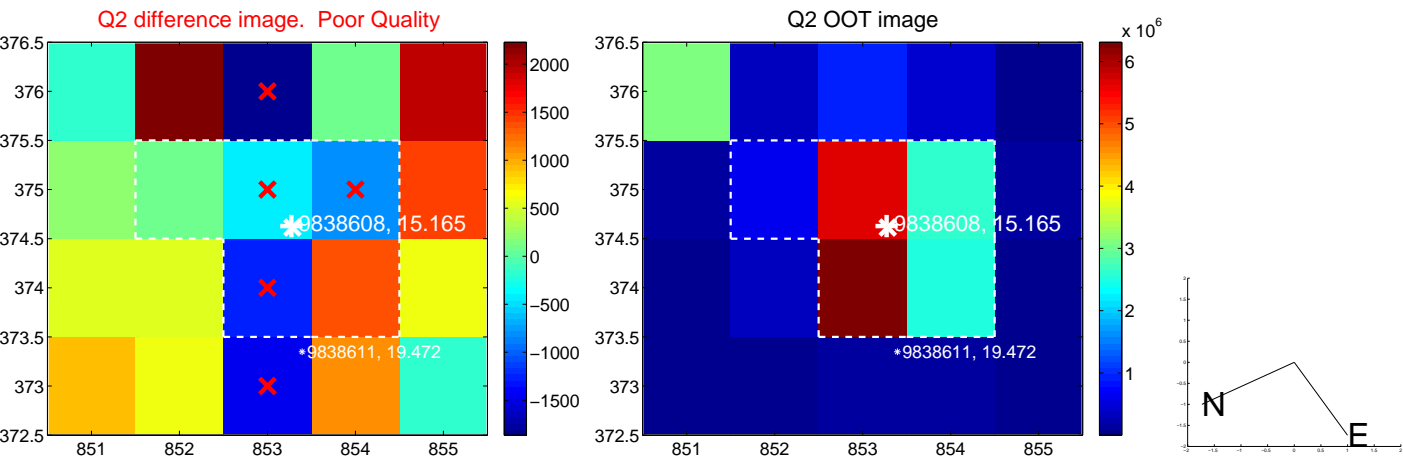
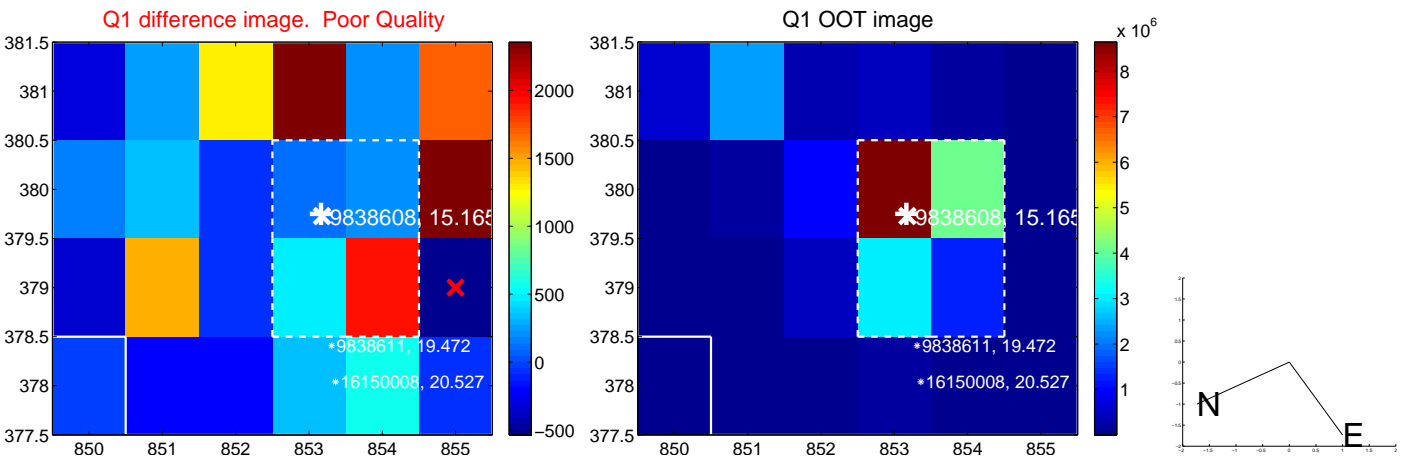


offset from photometric centroids

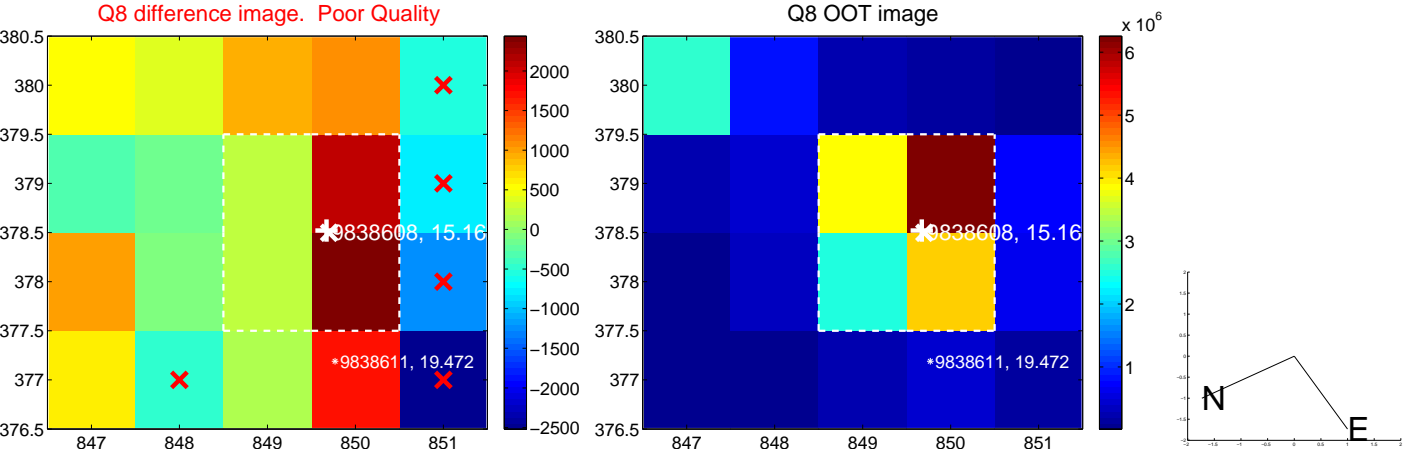
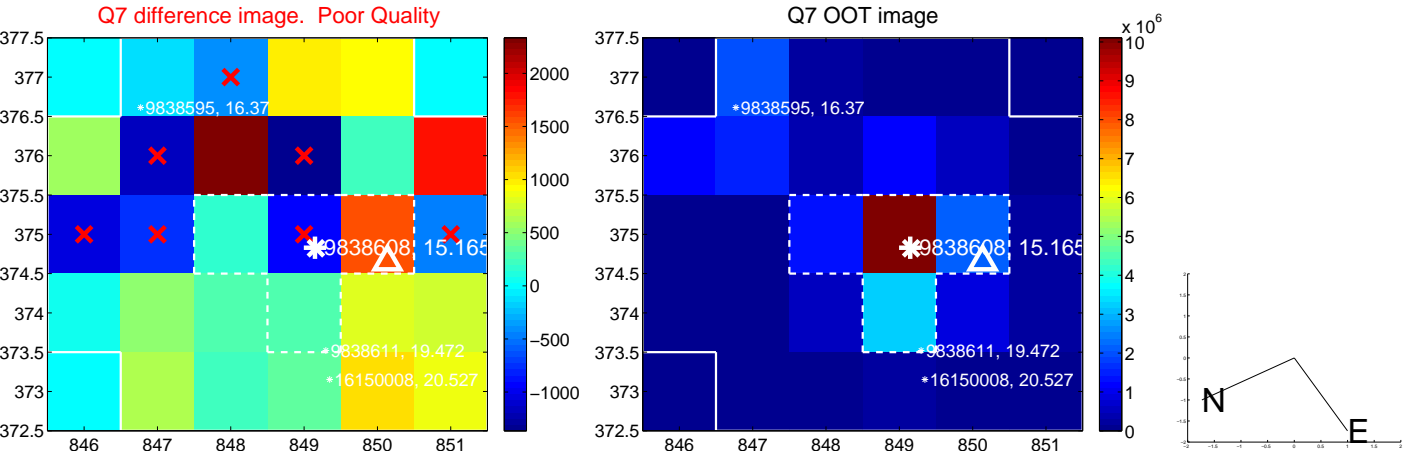
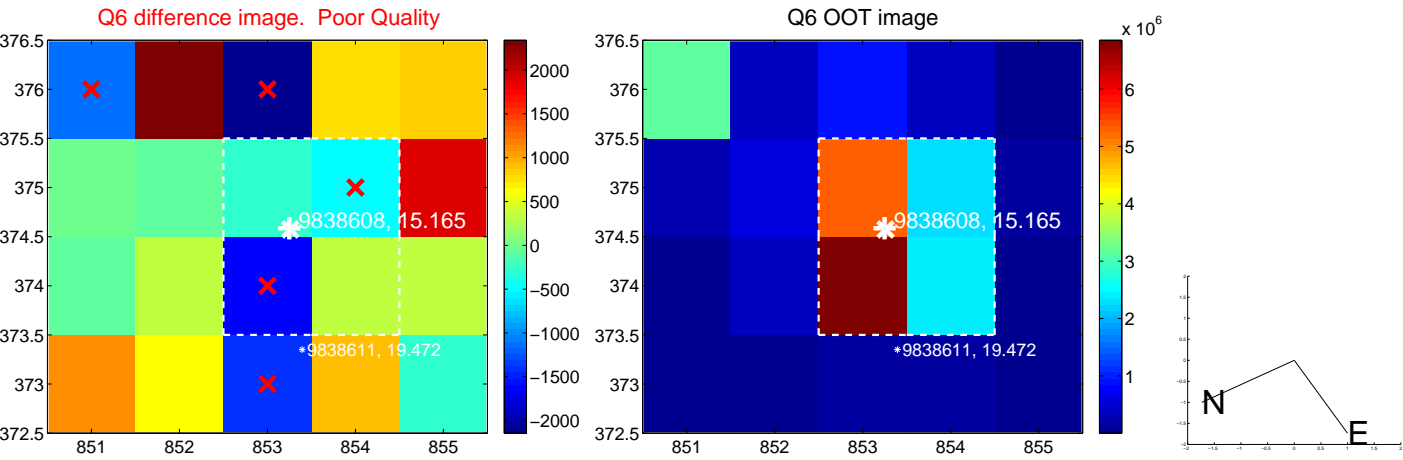
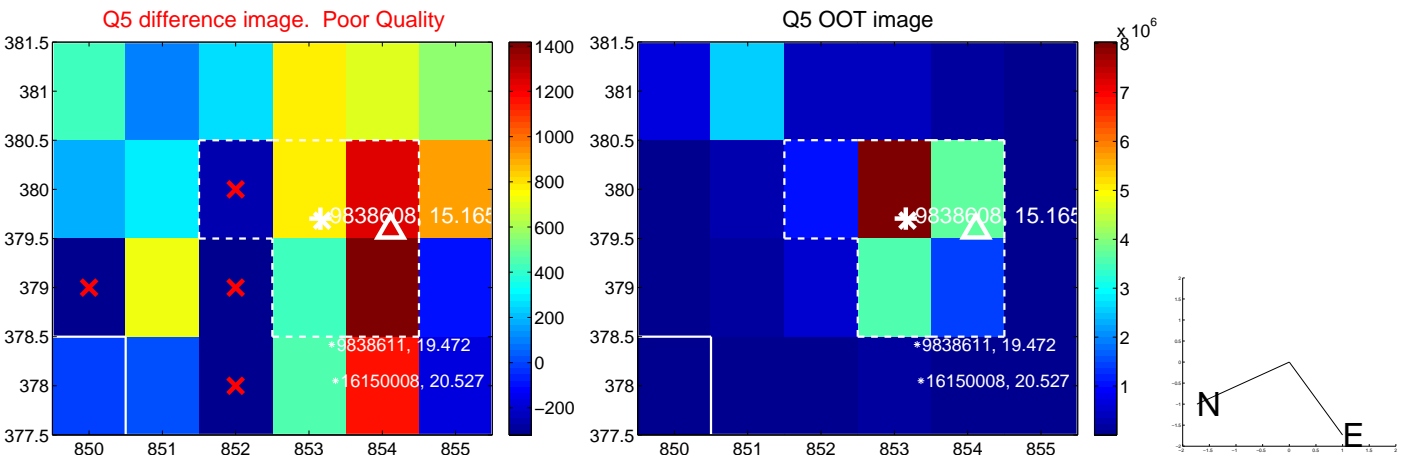


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

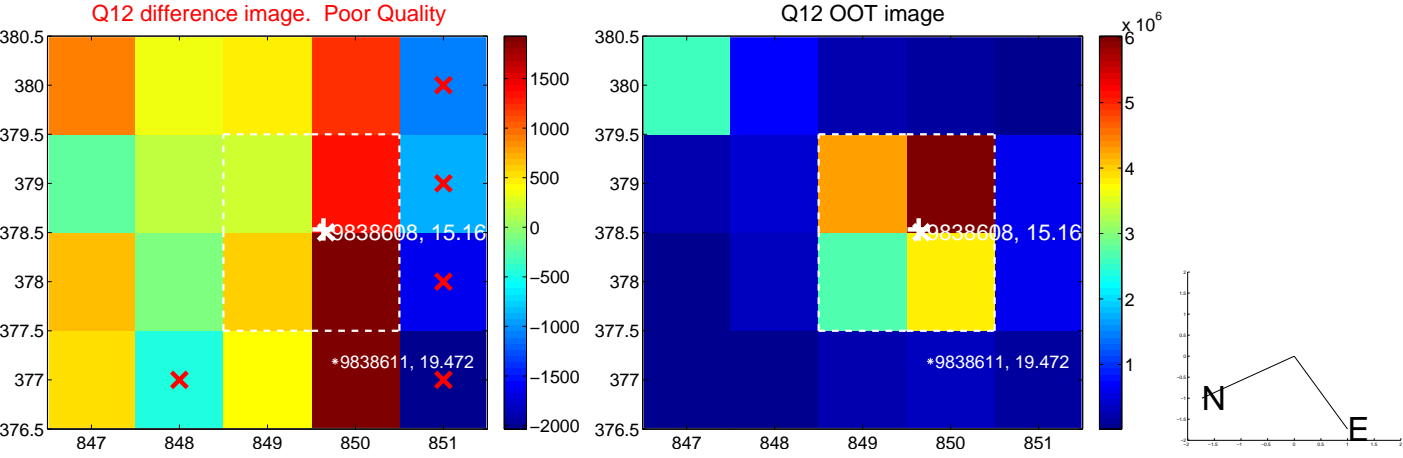
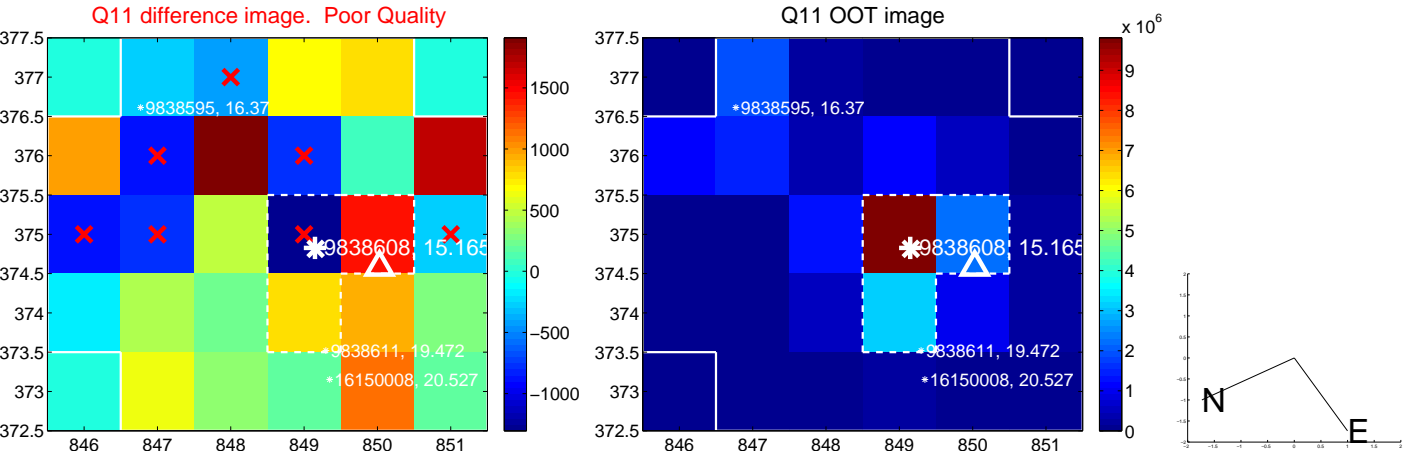
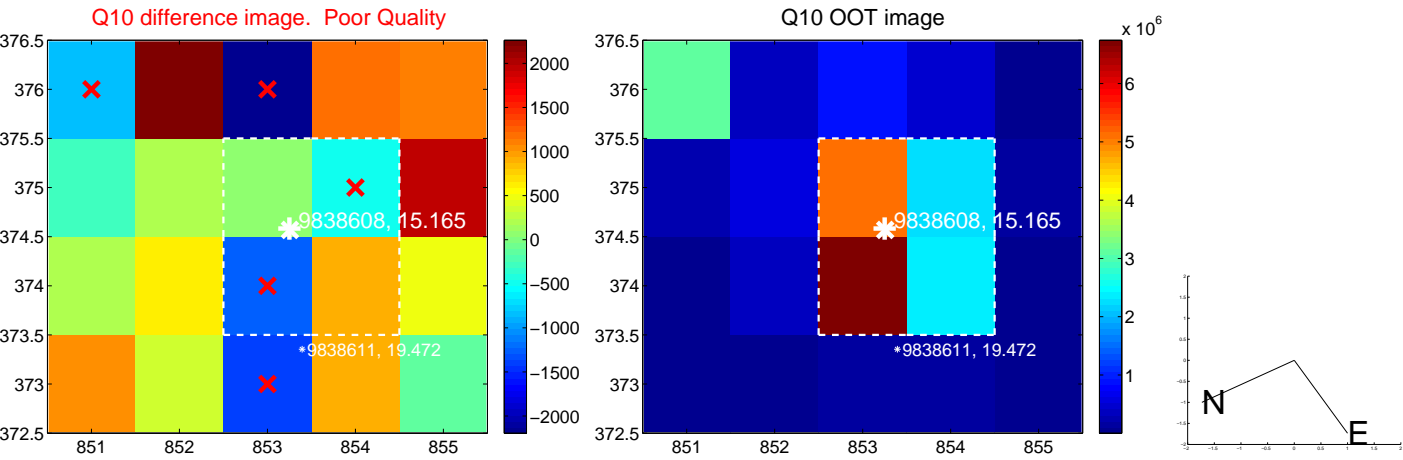
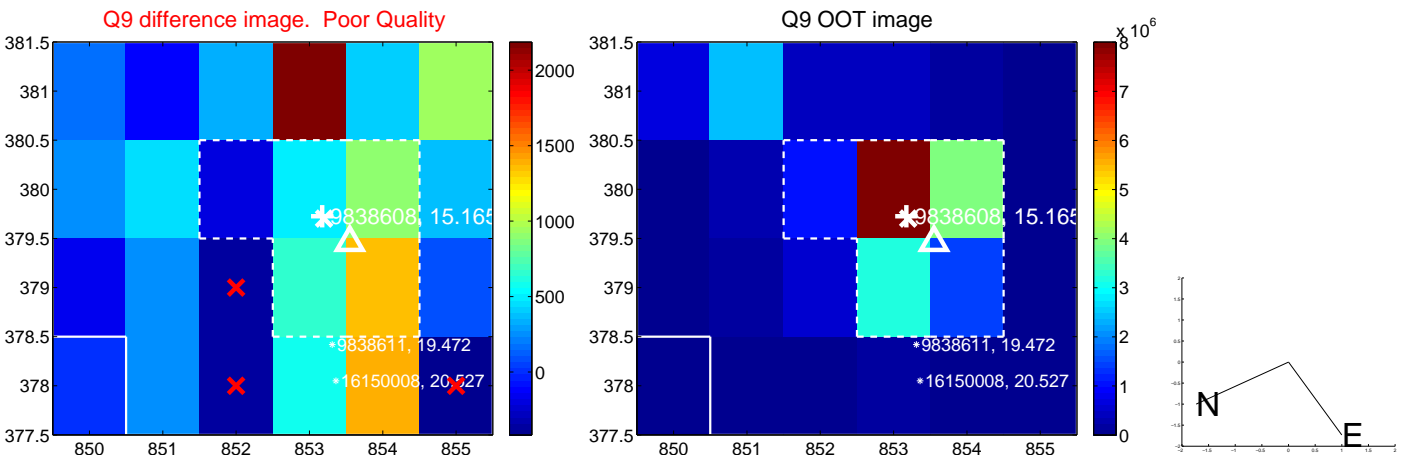
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



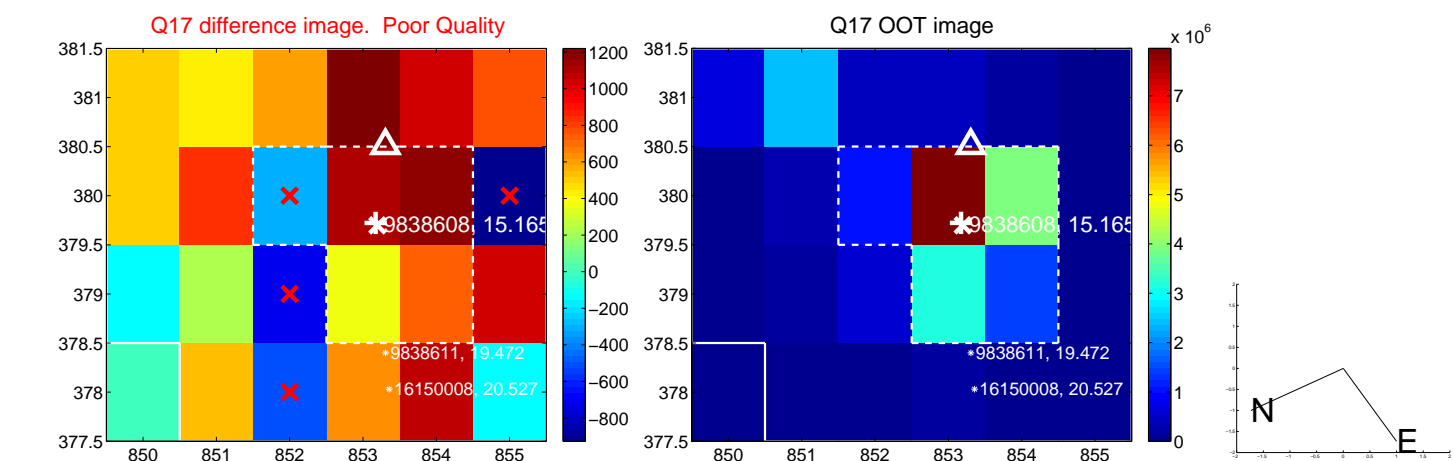
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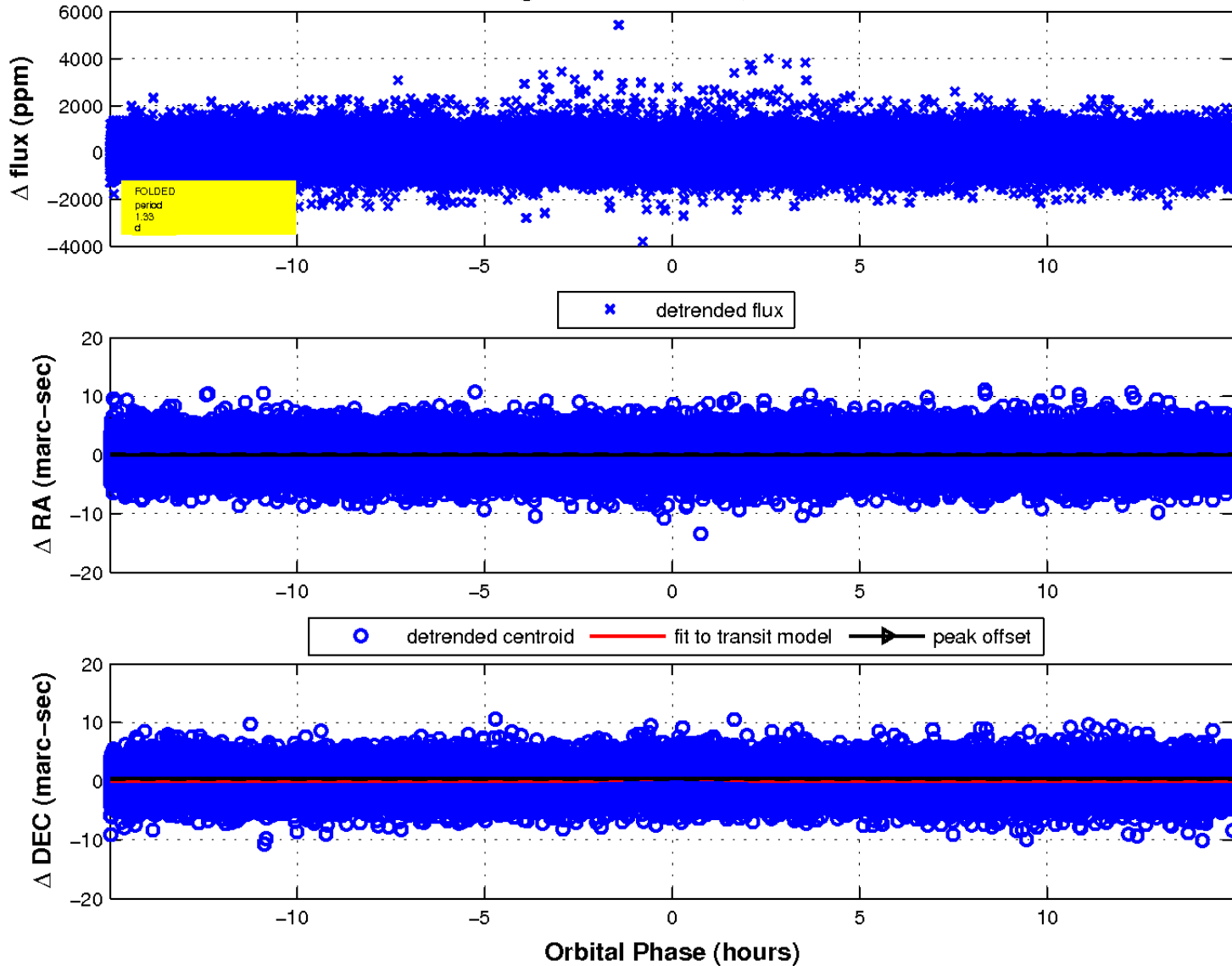
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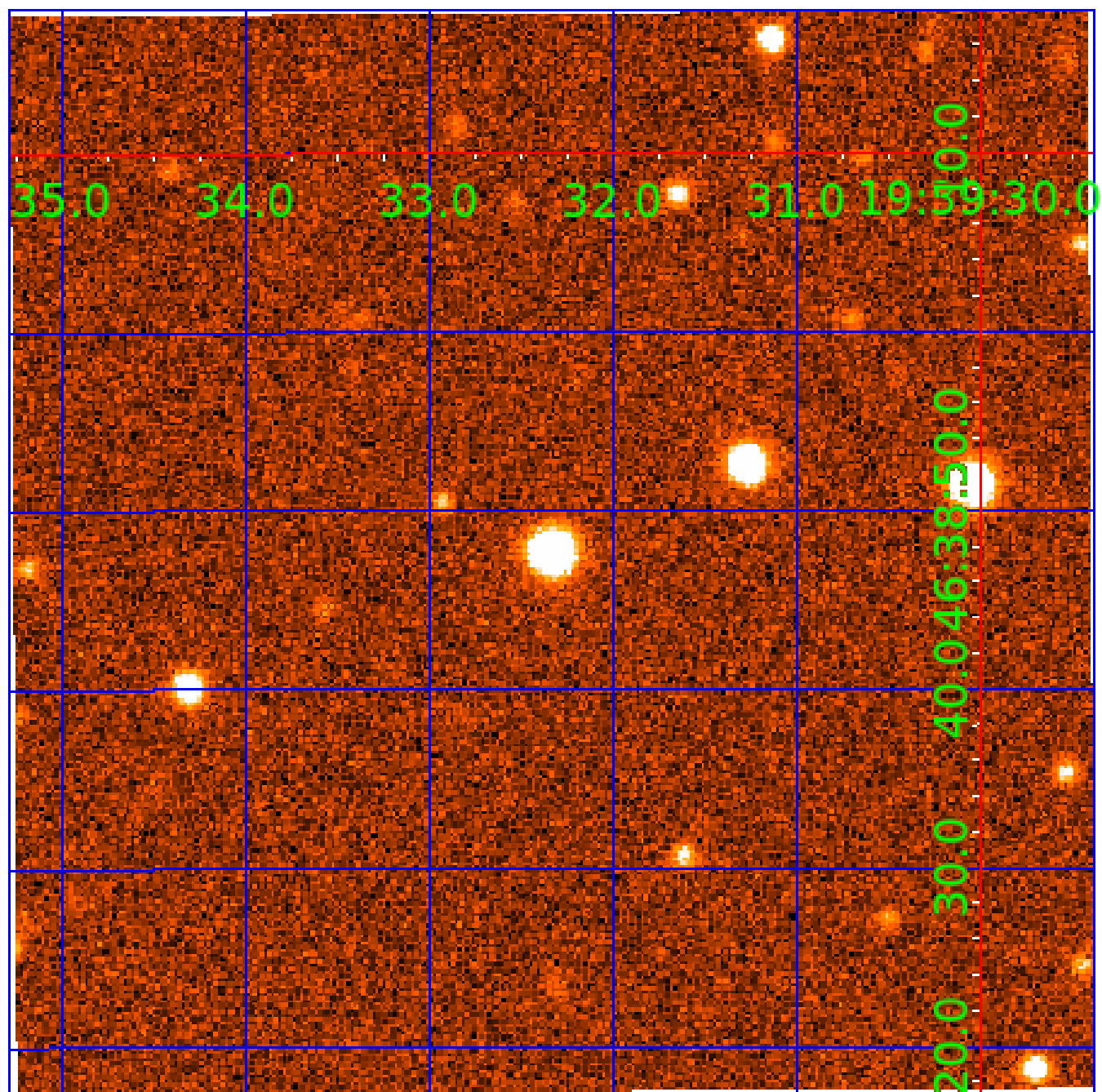


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 009838608

Q1-17 DR25 TCE Parameters

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

Ephemeris Match Information For 009838608-02

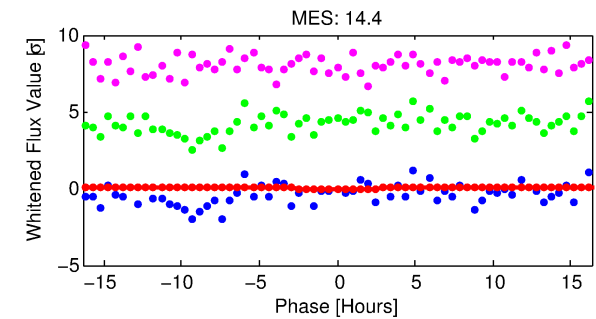
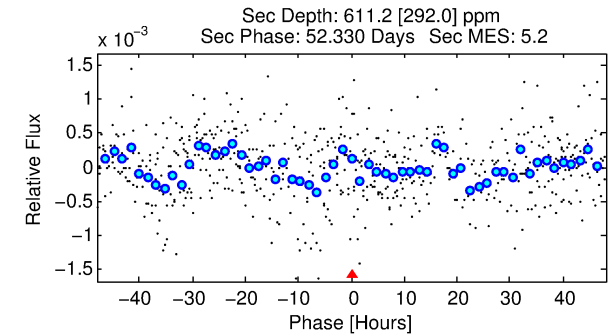
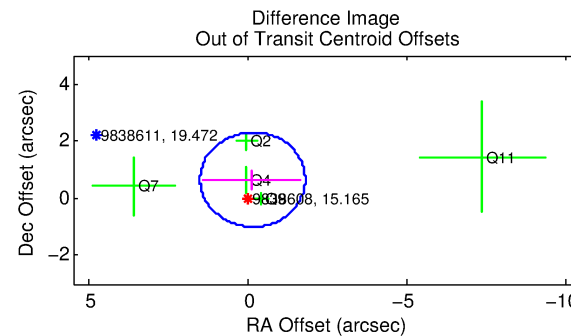
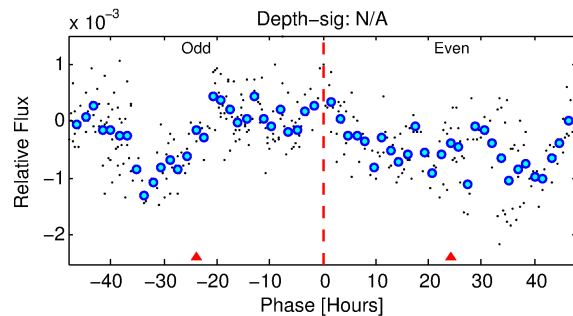
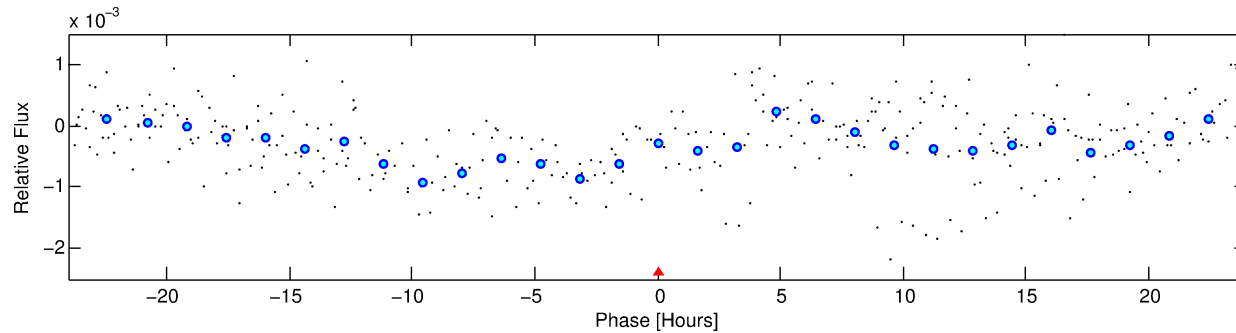
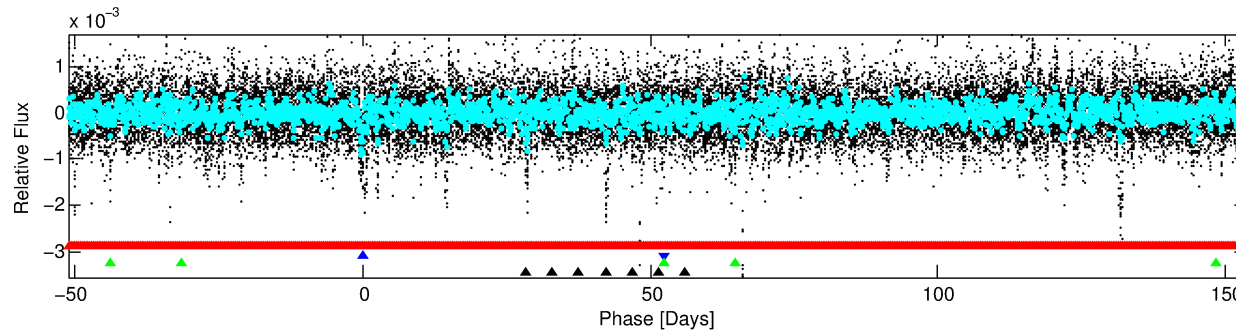
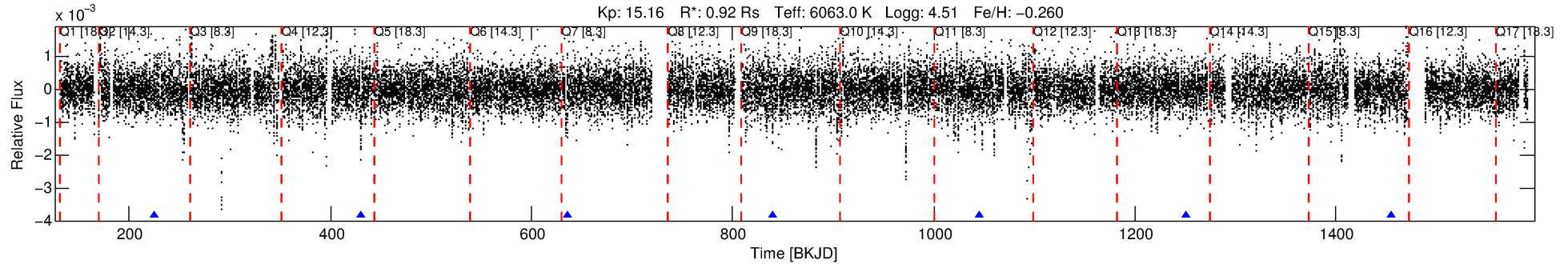
No Significant Match Found

DV One-Page Summary

KIC: 9838608 Candidate: 2 of 4 Period: 204.996 d

KOI: K04677 Corr: No Ephemeris Match

Kp: 15.16 R*: 0.92 Rs Teff: 6063.0 K Logg: 4.51 Fe/H: -0.260



TPS TCE Results:

Period = 204.99629 d
Epoch = 225.0218 BKJD

DV fit results are unavailable

DV Diagnostic Results:

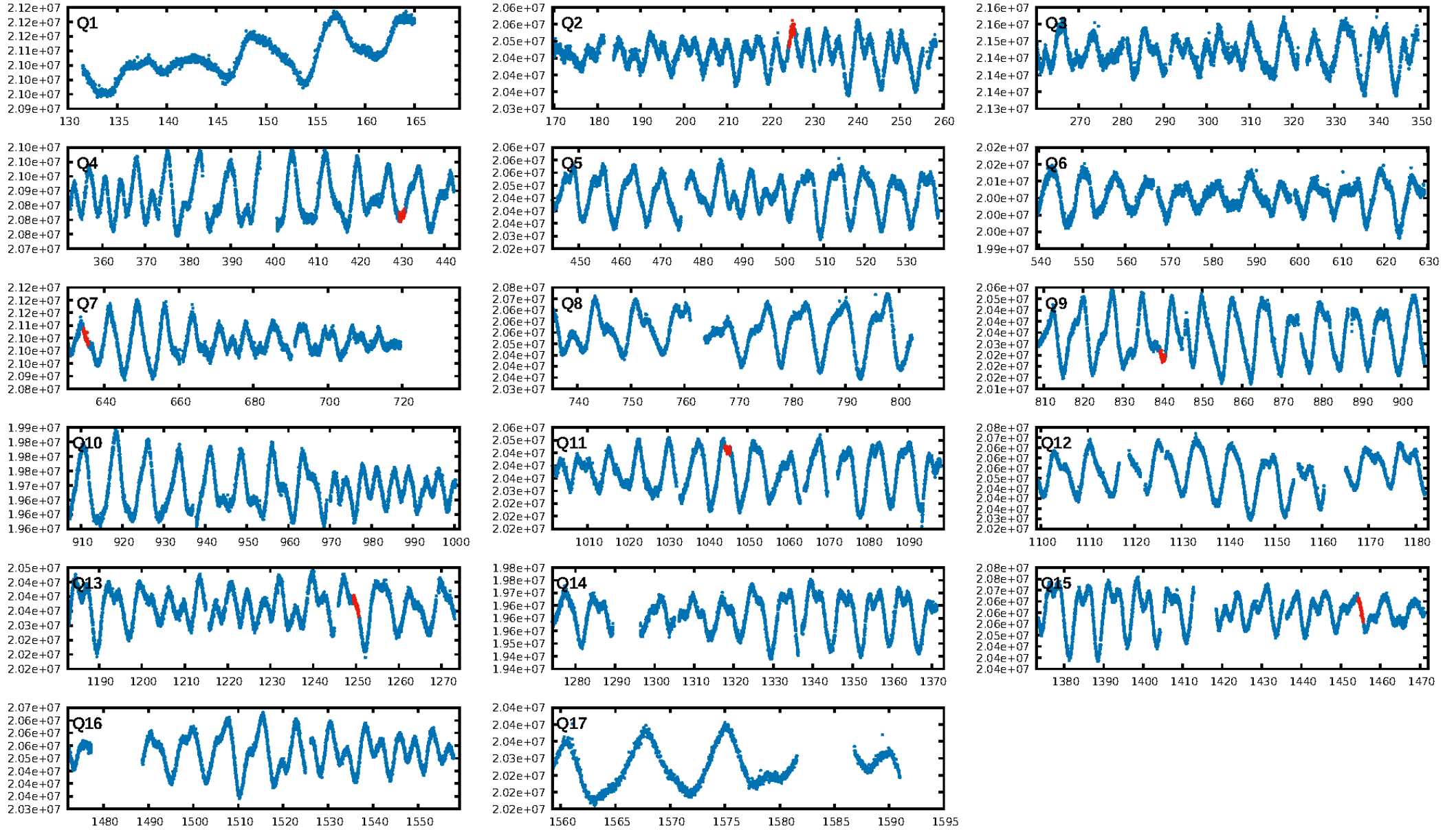
ShortPeriod-sig: 100.0% [309.18σ]
LongPeriod-sig: 100.0% [7.40σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.74e-18
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 3.351

Centroid-sig: 37.9%
Centroid-so: 1.111 arcsec [2.14σ]
OotOffset-rm: 0.669 arcsec [1.21σ]
KicOffset-rm: 0.735 arcsec [1.36σ]
OotOffset-st: 1/2/1/1 [5]
KicOffset-st: 1/2/1/1 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.00 [0/7]

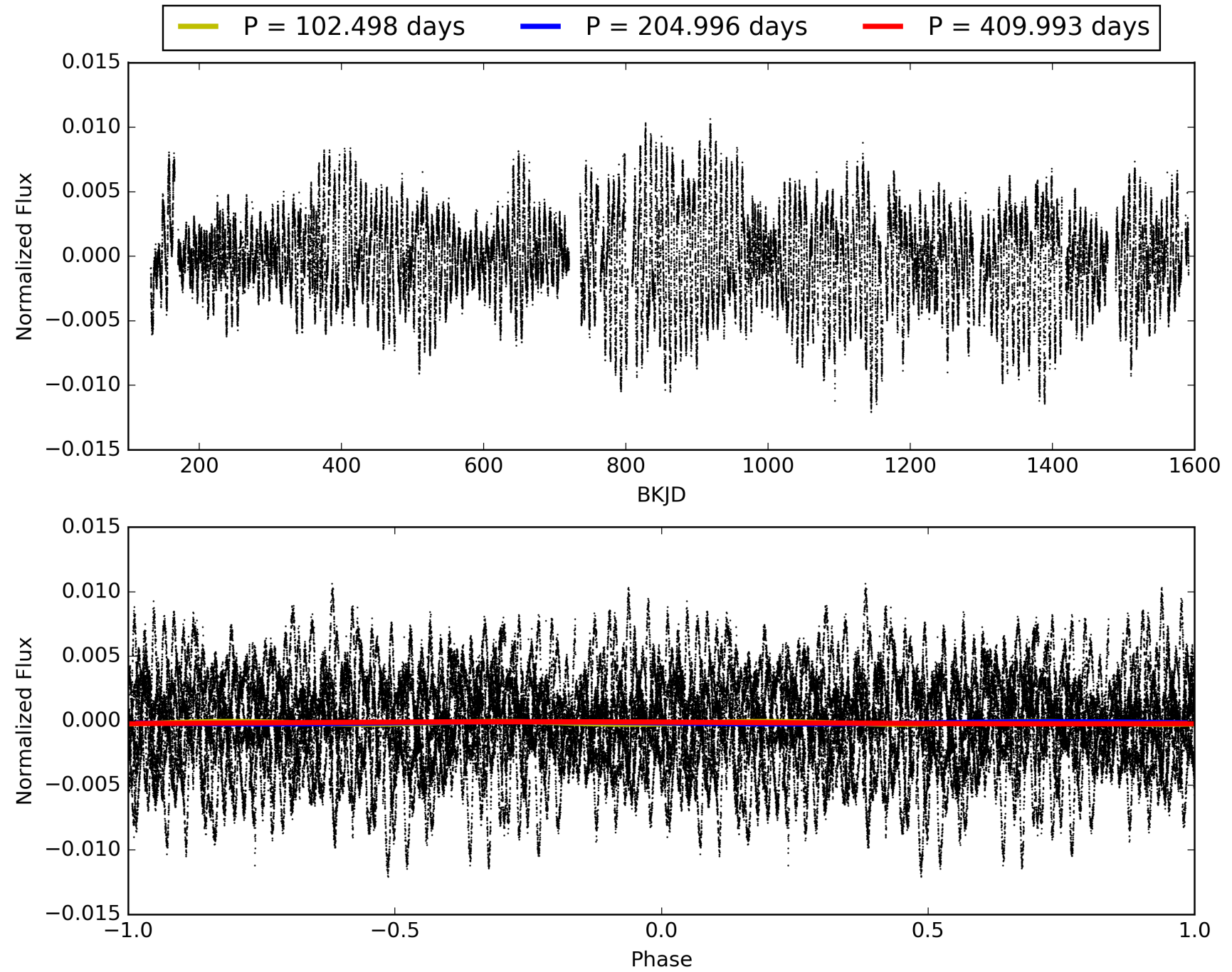
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:54:34 Z

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

TCE 009838608-02, PDC Light Curves

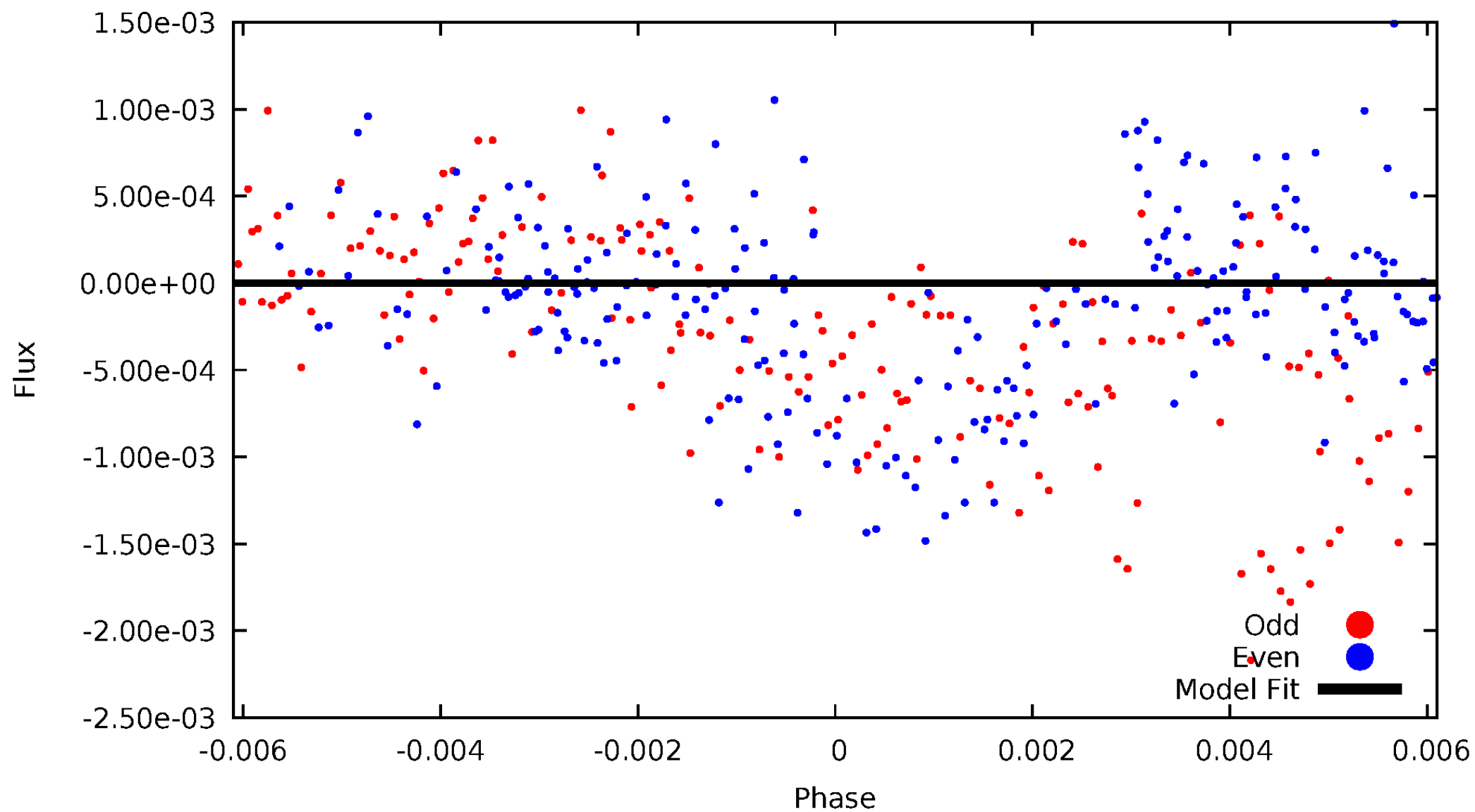


TCE 009838608-02



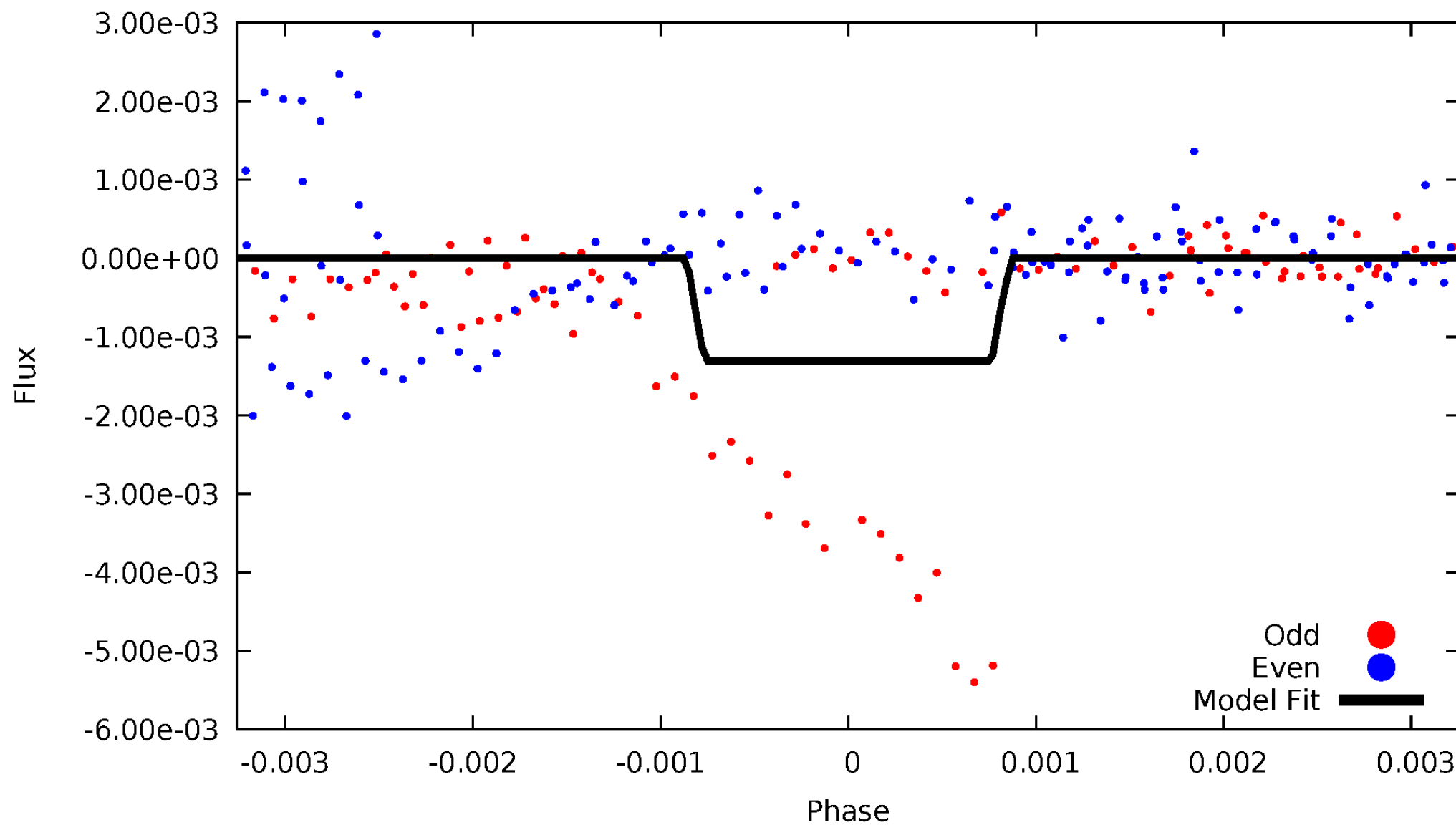
DV Odd/Even

TCE 009838608-02



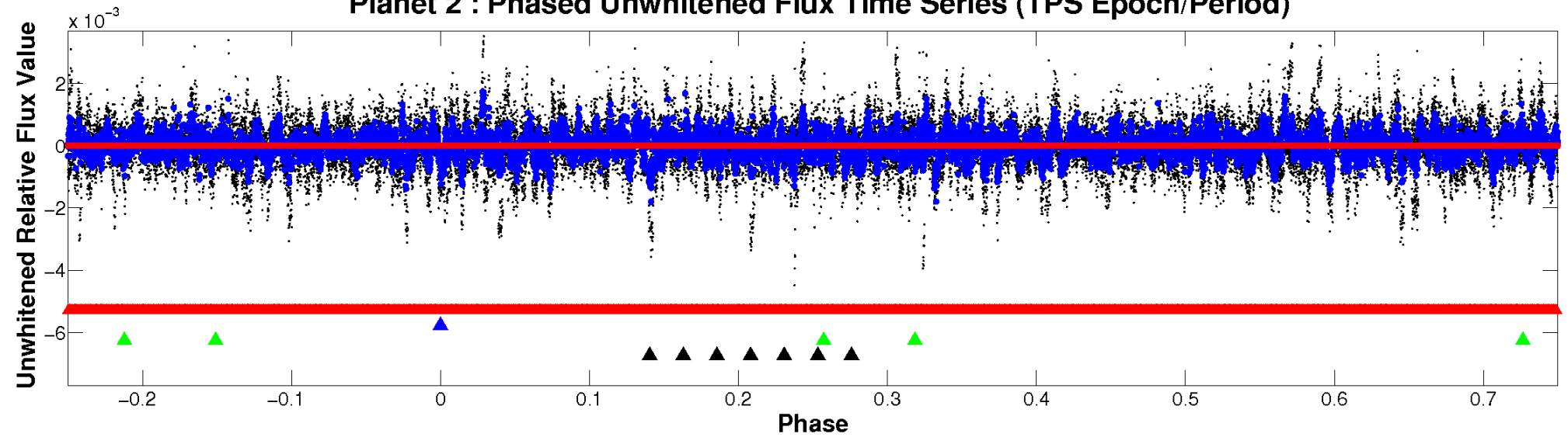
ALT Odd/Even

TCE 009838608-02



Non-Whitened Vs. Whitened Light Curve

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

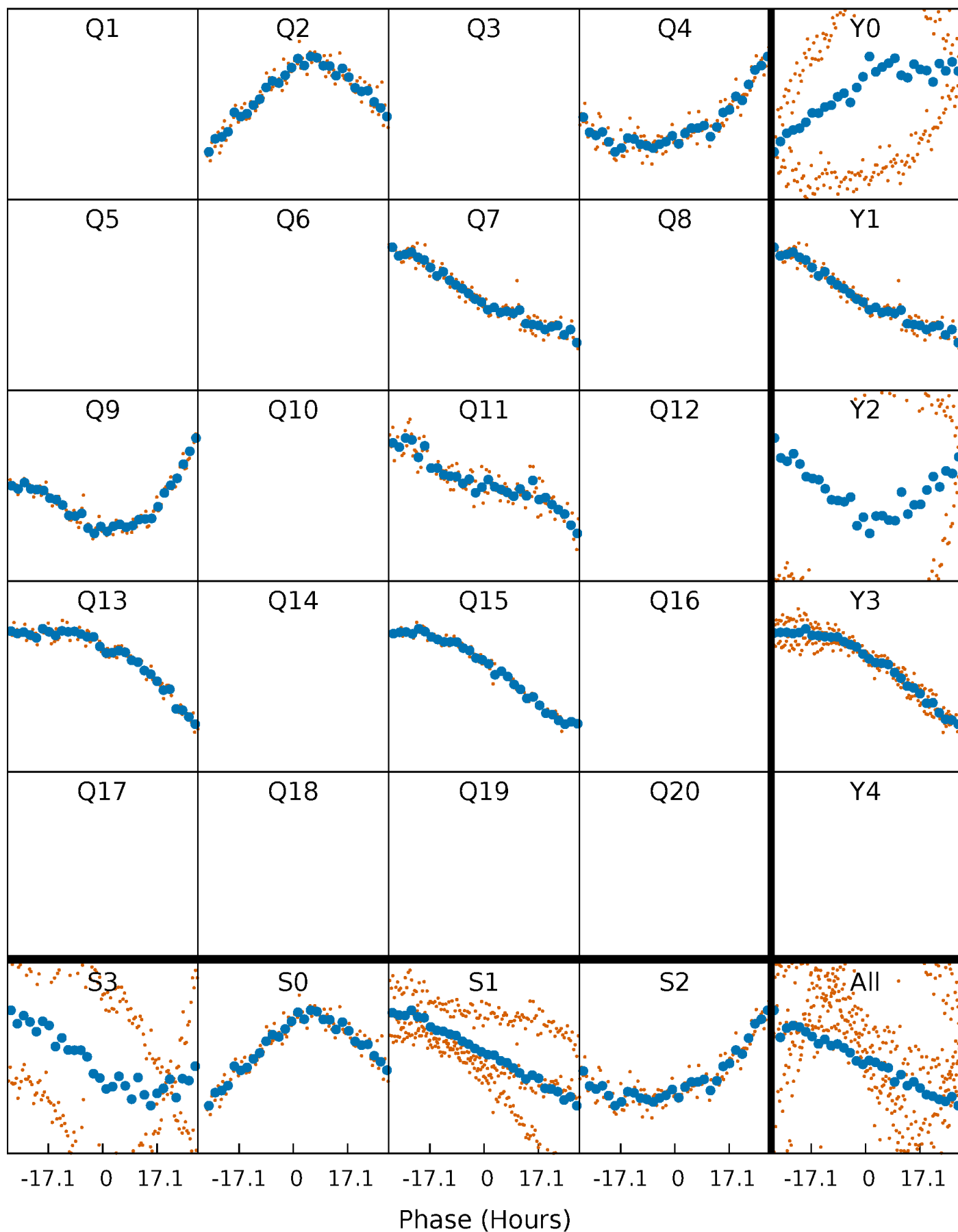


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



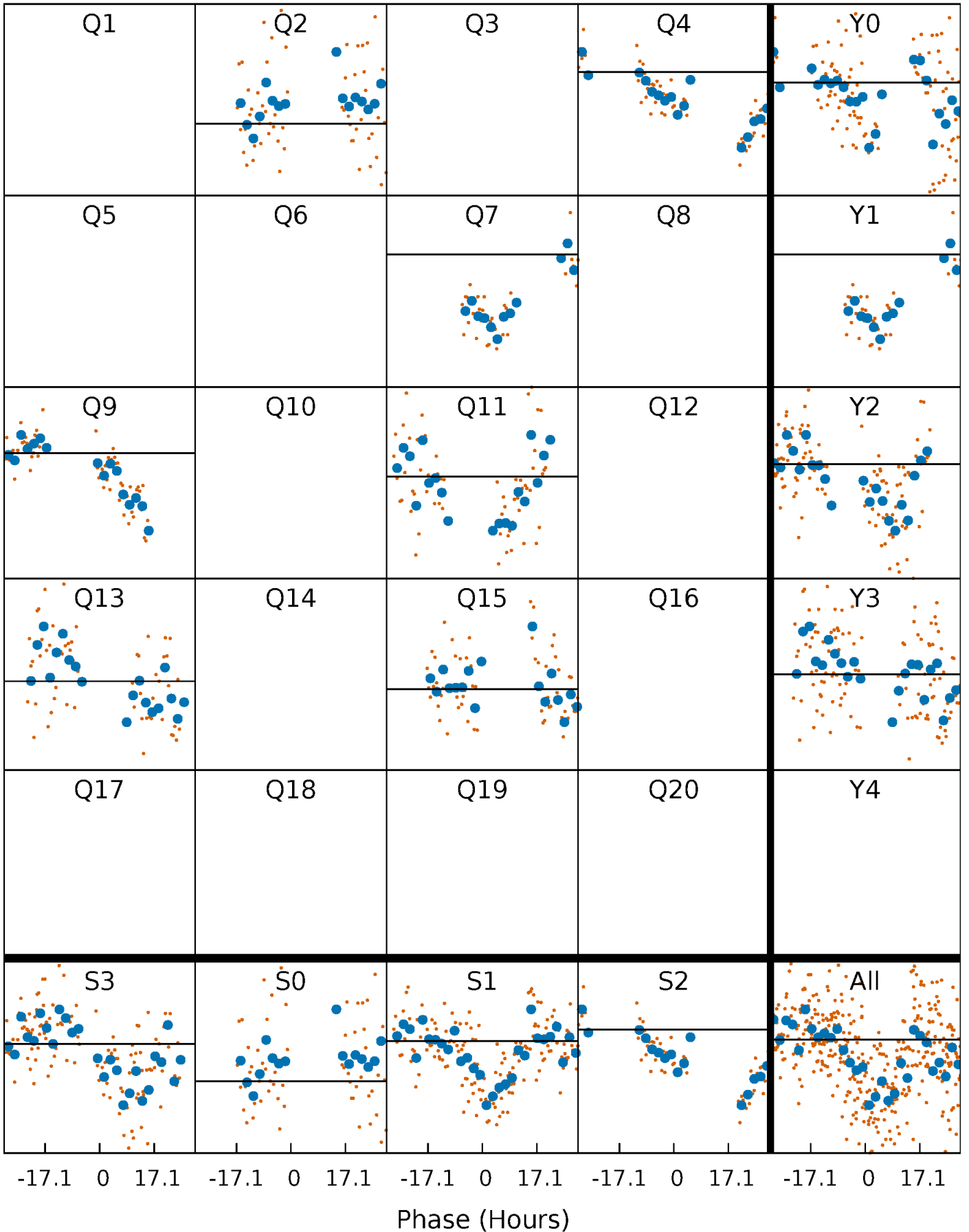
PDC Quarter-Phased Transit Curves

TCE 009838608-02 P=204.996285 Days $T_0=225.021776$ (BKJD)



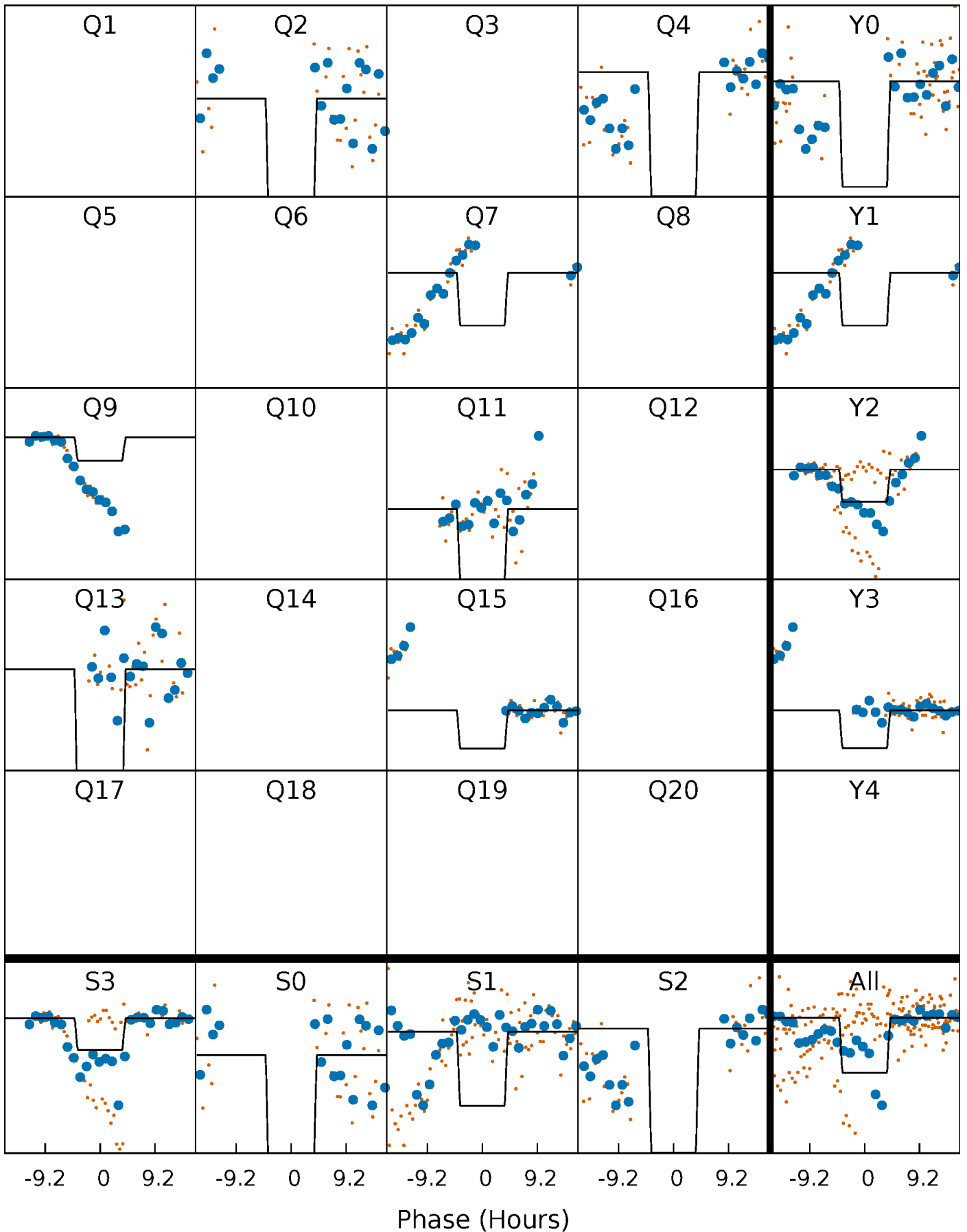
DV Quarter-Phased Transit Curves

TCE 009838608-02 $P=204.996285$ Days $T_0=225.021776$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

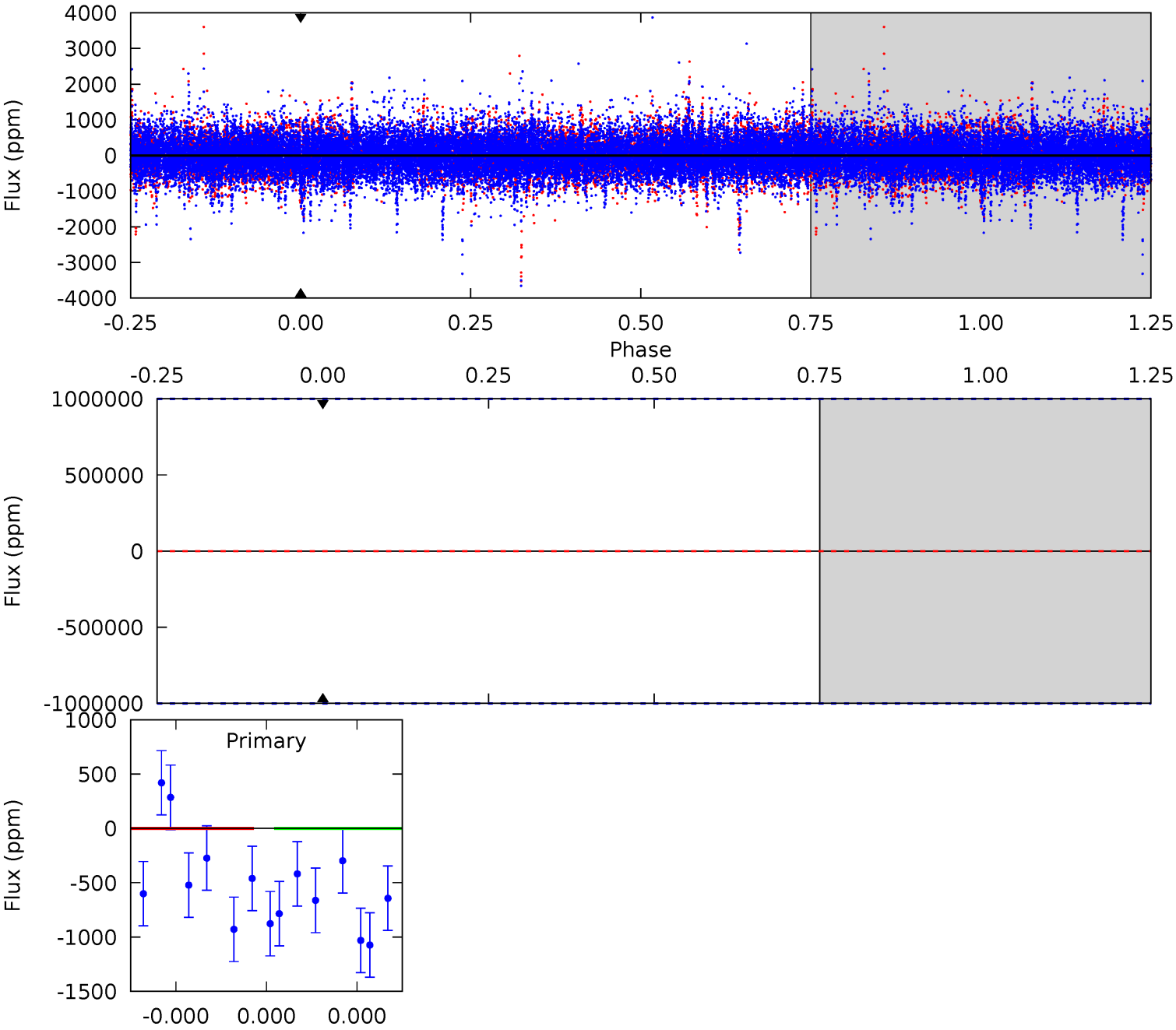
TCE 009838608-02 P=204.996285 Days $T_0=225.491561$ (BKJD)



DV Model-Shift Uniqueness Test

009838608-02, P = 204.996285 Days, E = 20.025491 Days

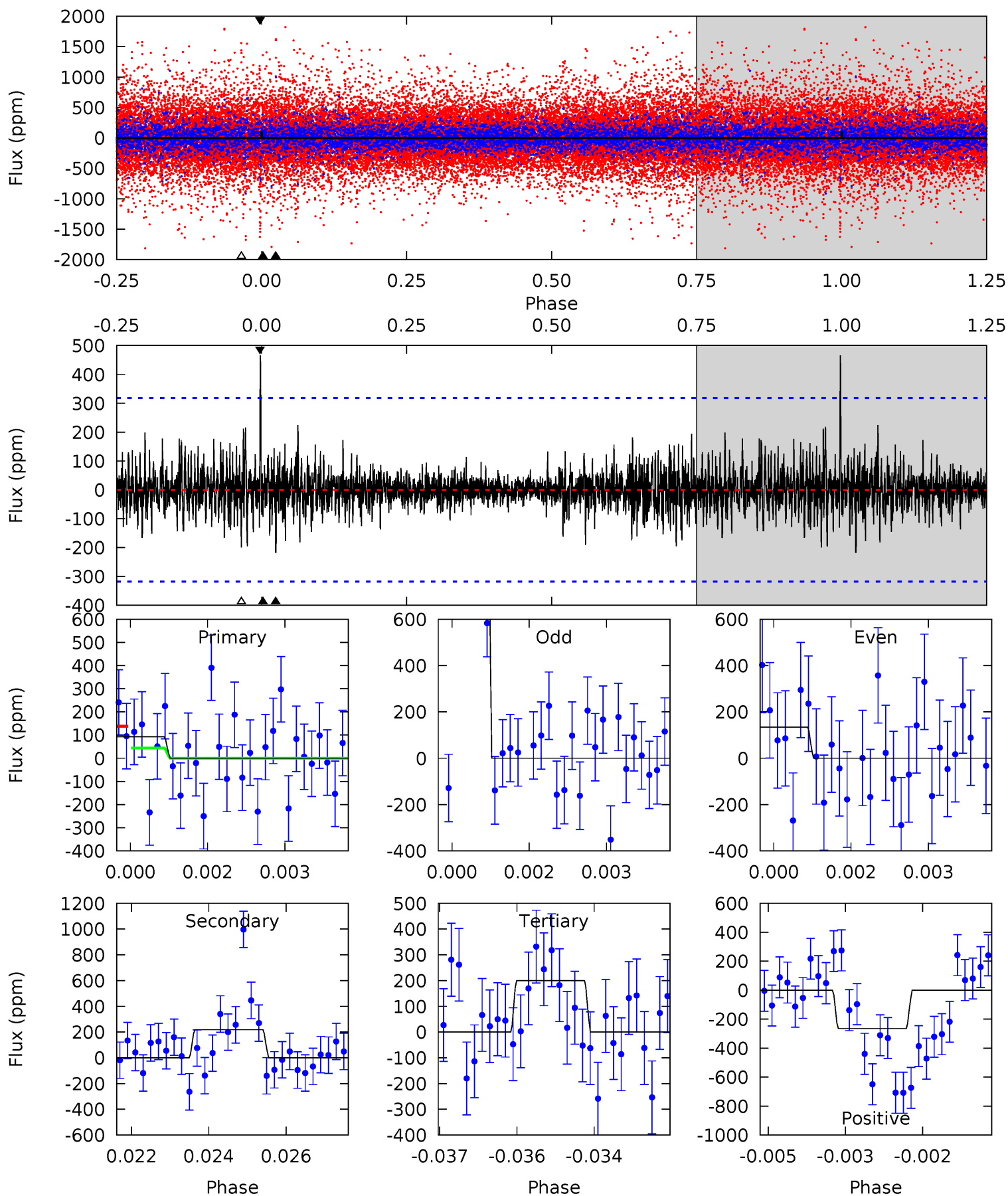
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009838608-02, $P = 204.996285$ Days, $E = 20.495276$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.57	3.68	3.36	4.46	5.36	3.14	0.88	-1.79	-2.89	0.32	-0.77	17.9	42.1	0.68	0.80



Stellar Parameters For KIC 009838608

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6063^{+163}_{-199}	$4.510^{+0.050}_{-0.200}$	$-0.260^{+0.300}_{-0.300}$	$0.918^{+0.276}_{-0.092}$	$0.994^{+0.120}_{-0.132}$	$1.810^{+0.476}_{-0.959}$
	+3%/-3%	+1%/-4%	+115%/-115%	+30%/-10%	+12%/-13%	+26%/-53%
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 009838608-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$8.61^{+8.54}_{-6.01}$	443^{+30}_{-22}	-4297^{+22959}_{-17887}	$-4748.948^{+505649.683}_{-748903.980}$
Alt.	-219 ± 59	$8.58^{+7.97}_{-6.01}$	443^{+33}_{-20}	3158^{+1655}_{-516}	718^{+7513}_{-534}

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

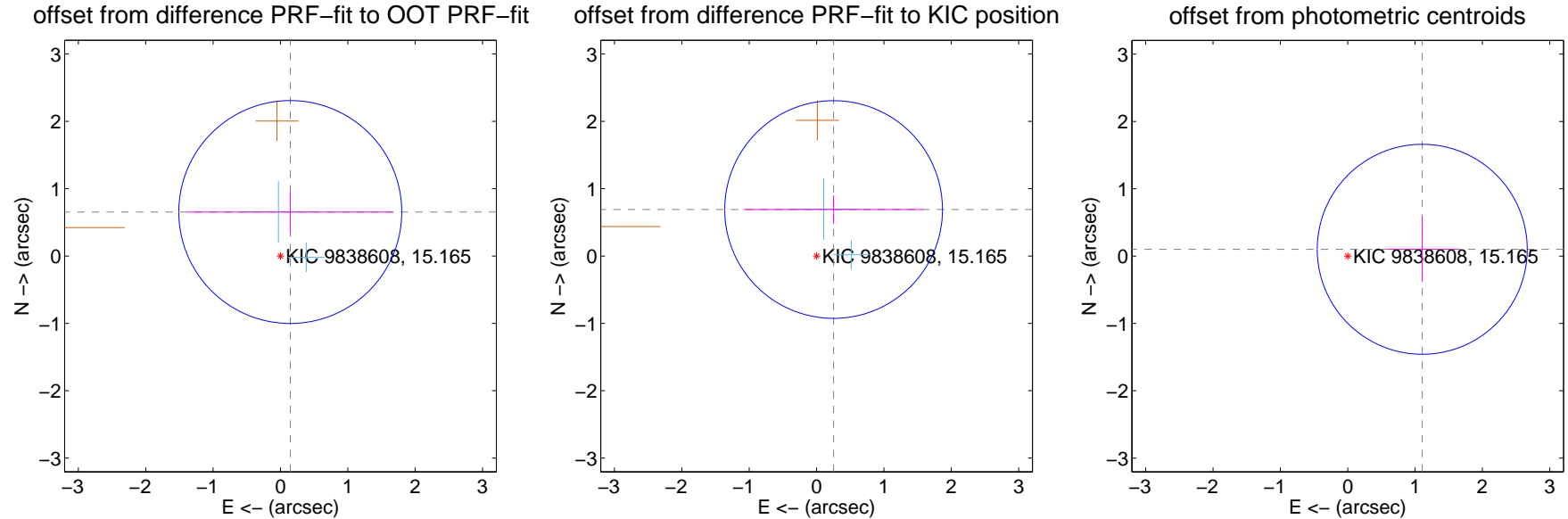
DV Centroid Data

Supplemental centroid analysis for 009838608-02. Kepler magnitude: 15.16. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.669 ± 0.552	1.21	-0.146 ± 1.529	0.653 ± 0.314
PRF-fit source offset from KIC position	0.735 ± 0.539	1.36	-0.253 ± 1.334	0.690 ± 0.212
photometric centroid source offset	1.11 ± 0.52	2.14	-1.11 ± 0.52	0.10 ± 0.48



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.

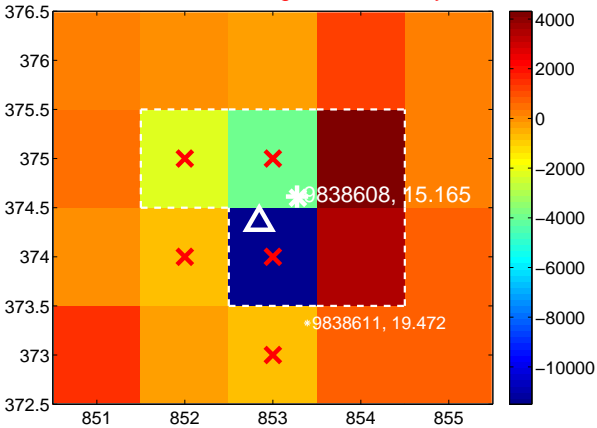
Q1 no difference image



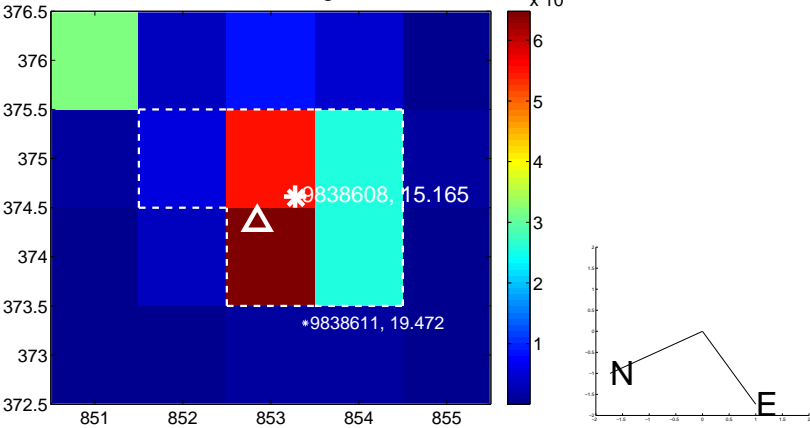
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



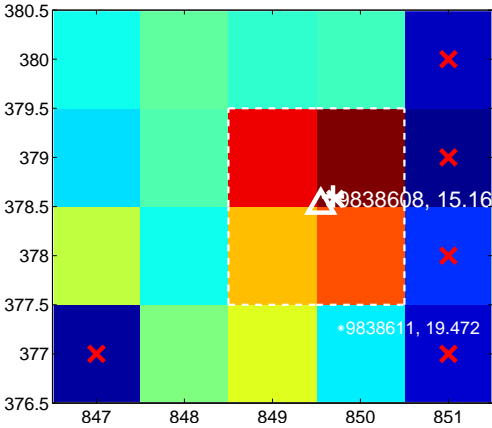
Q3 no difference image



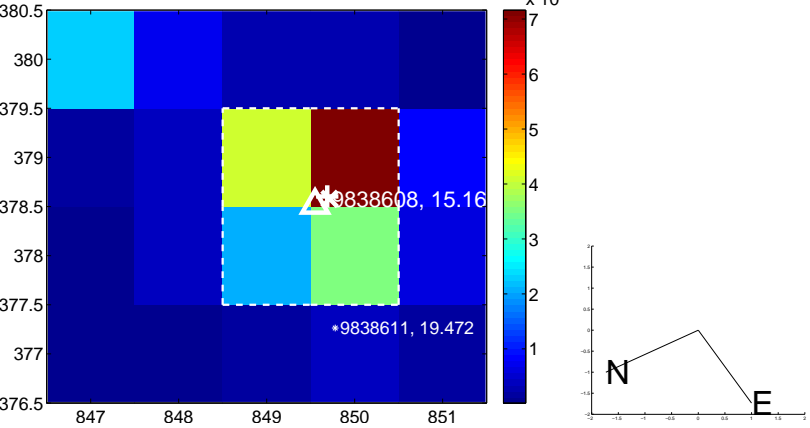
Q3 no OOT image



Q4 difference image



Q4 OOT image



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

Q5 no difference image



Q5 no OOT image



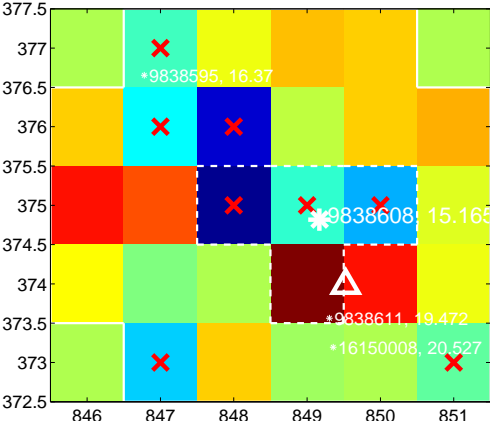
Q6 no difference image



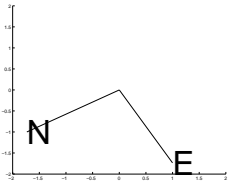
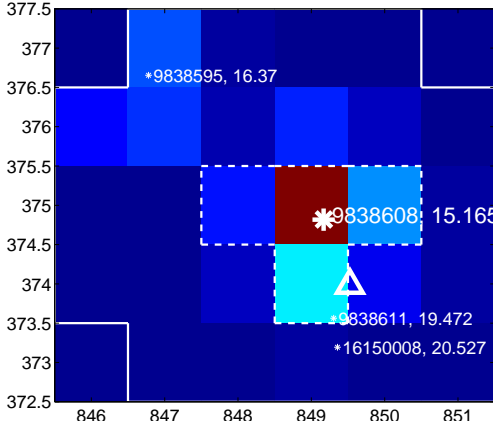
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



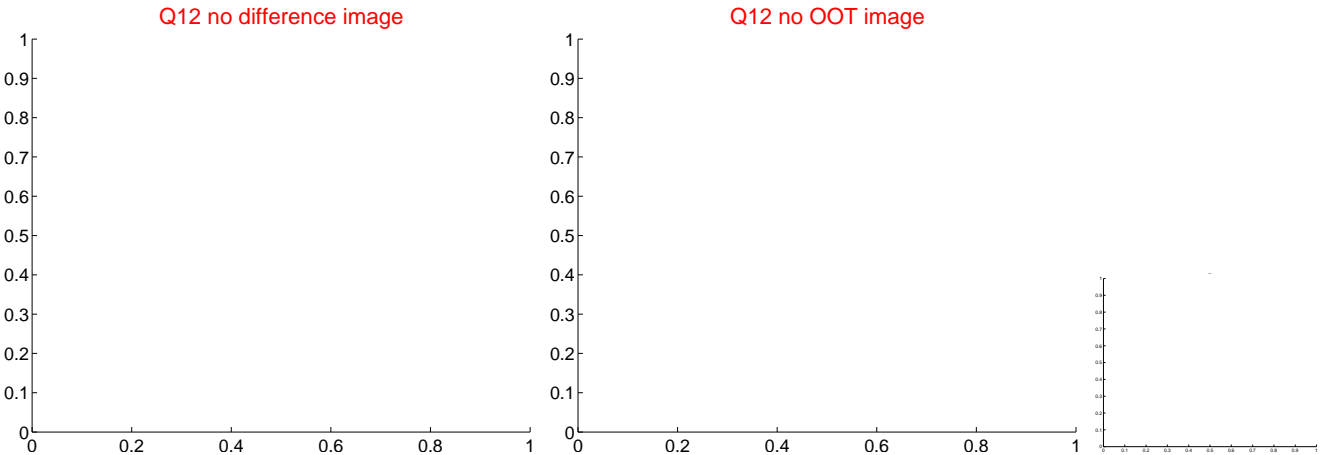
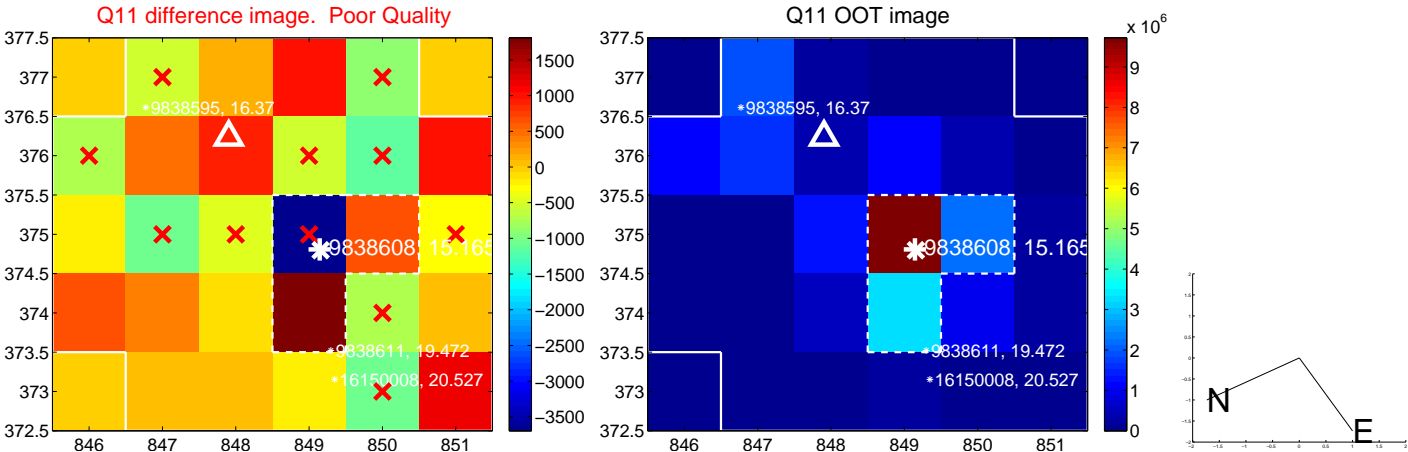
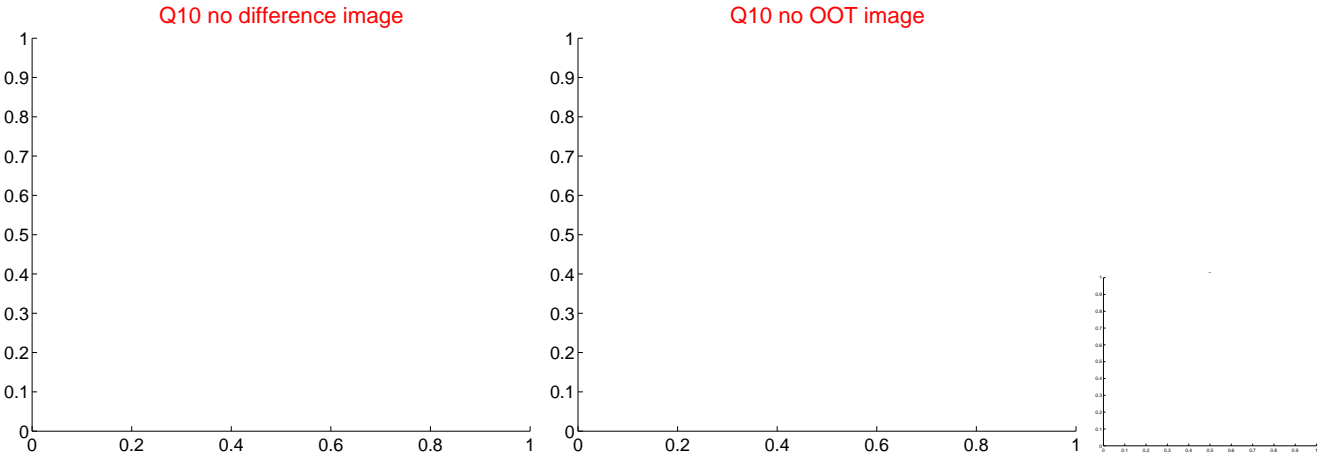
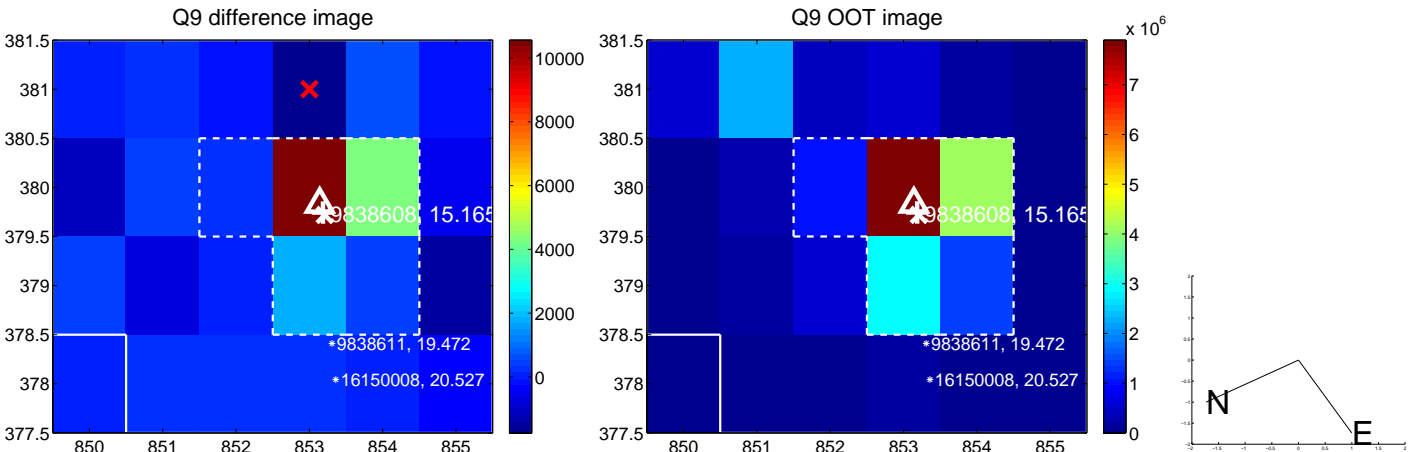
Q8 no difference image



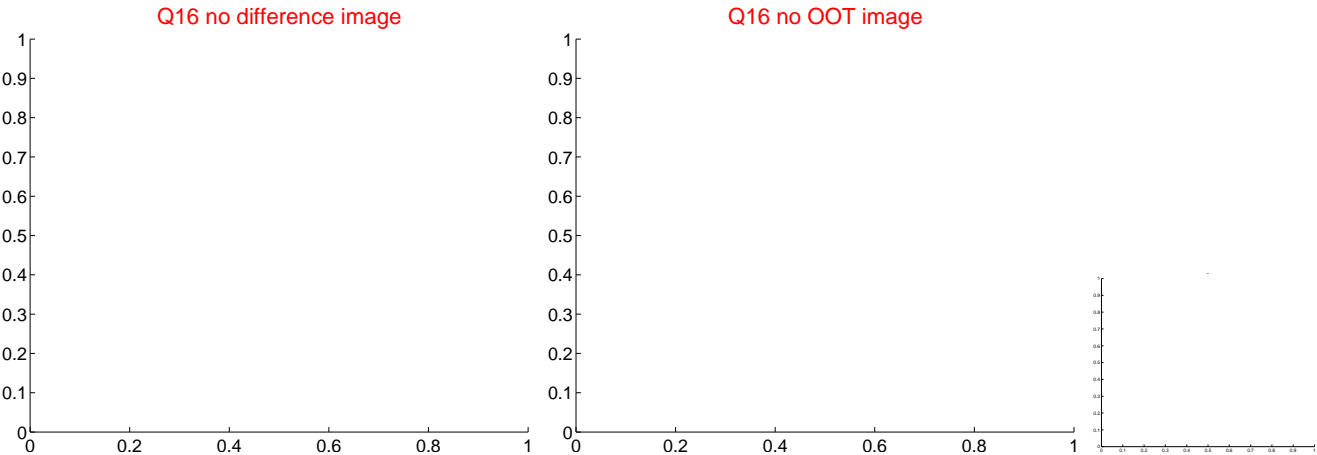
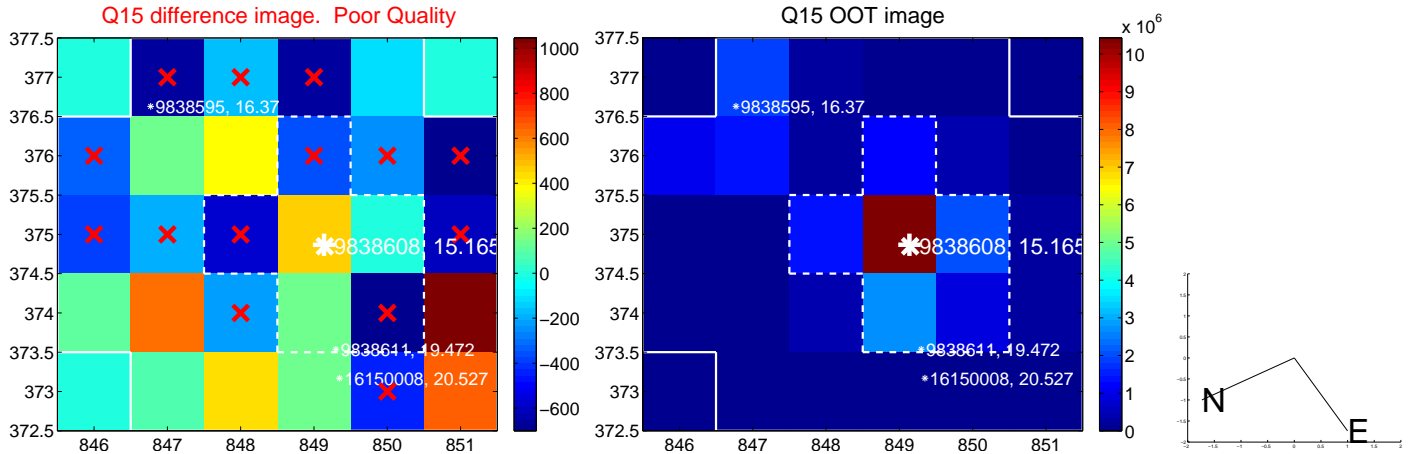
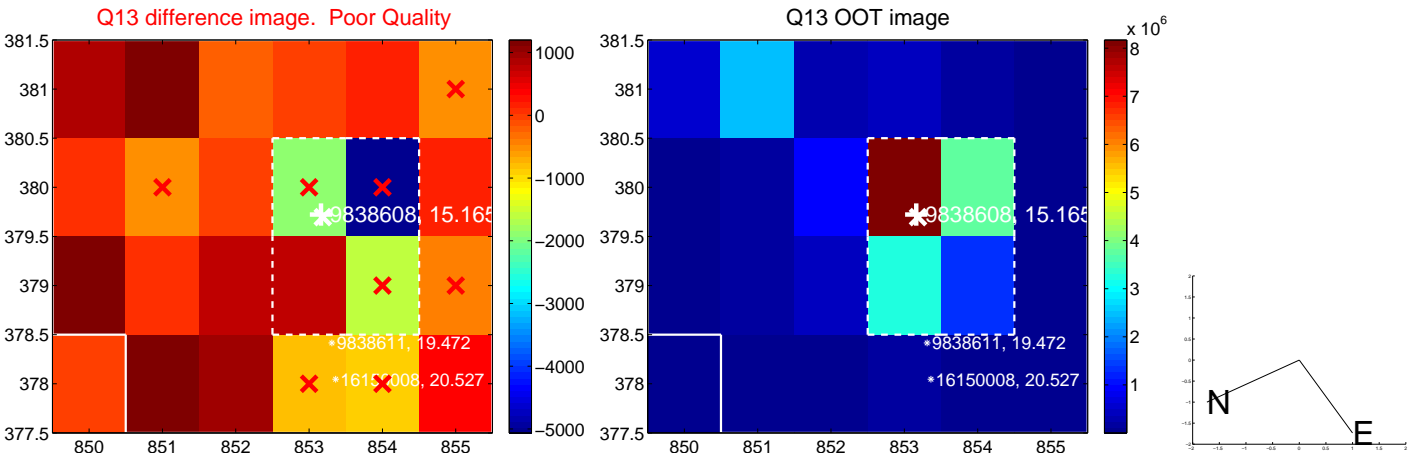
Q8 no OOT image



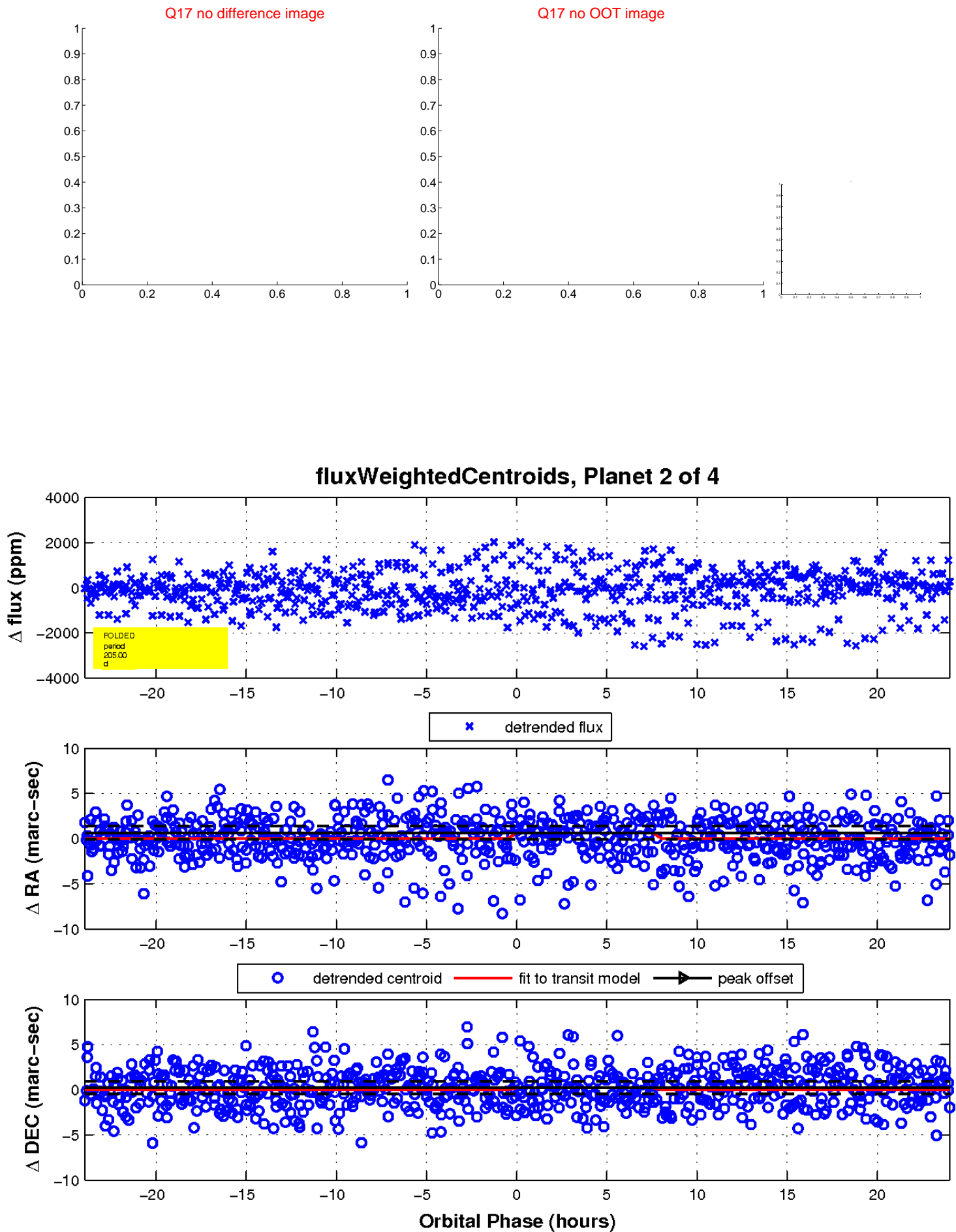
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

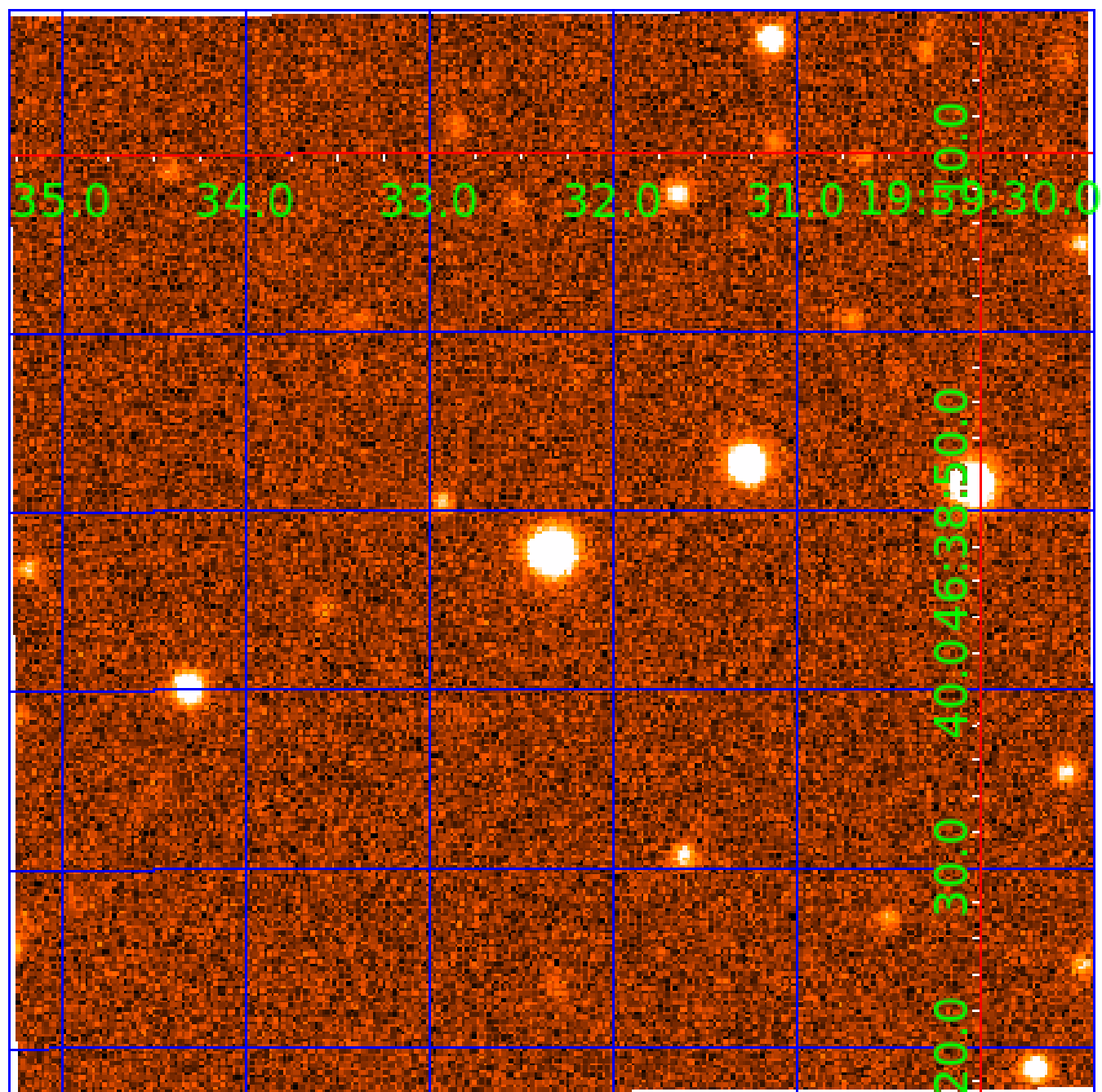


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009838608

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})
009838608-01	OBS	4677.01	1.332579	132.038361	88.8	4.994	9.3	11.7	0.92	6063	1.73	1822.28
009838608-02	OBS	No	204.996285	225.021776	1016.5	15.000	14.4	-1.0	0.92	6063	2.93	2.21
009838608-03	OBS	No	313.770495	168.977155	552.0	9.726	8.1	4.7	0.92	6063	2.30	1.25
009838608-04	OBS	No	209.624396	253.808095	376.0	0.643	7.8	1.9	0.92	6063	2.15	2.15

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009838608-01	OBS	FP	0.00	0	0	1	1	CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
009838608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009838608-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
009838608-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—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 009838608-03

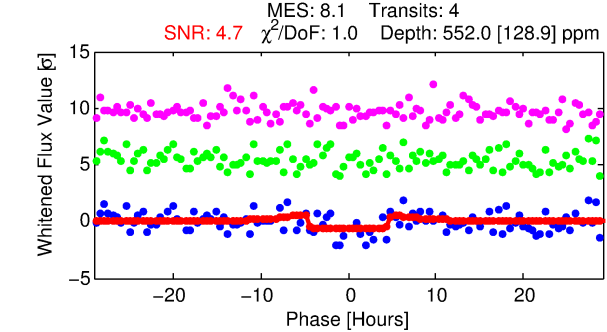
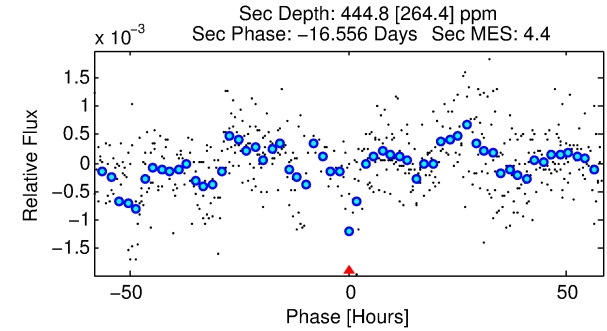
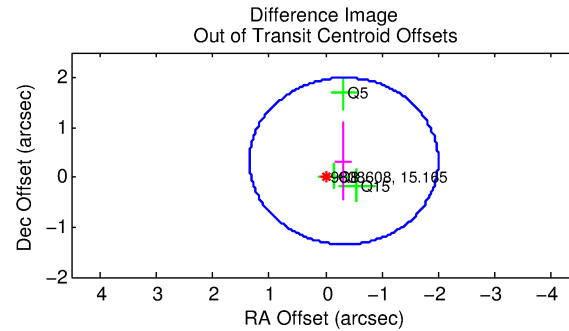
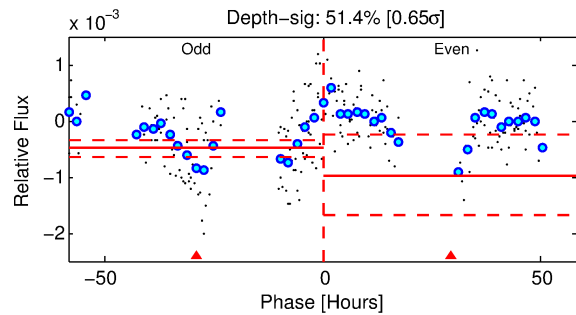
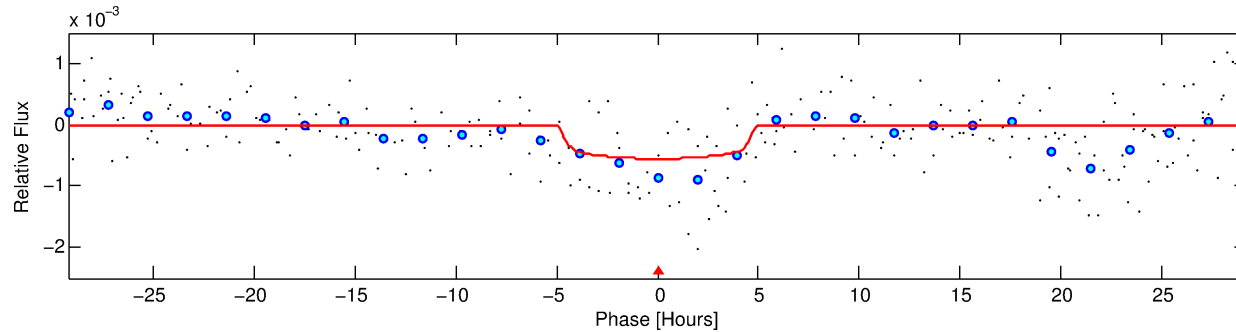
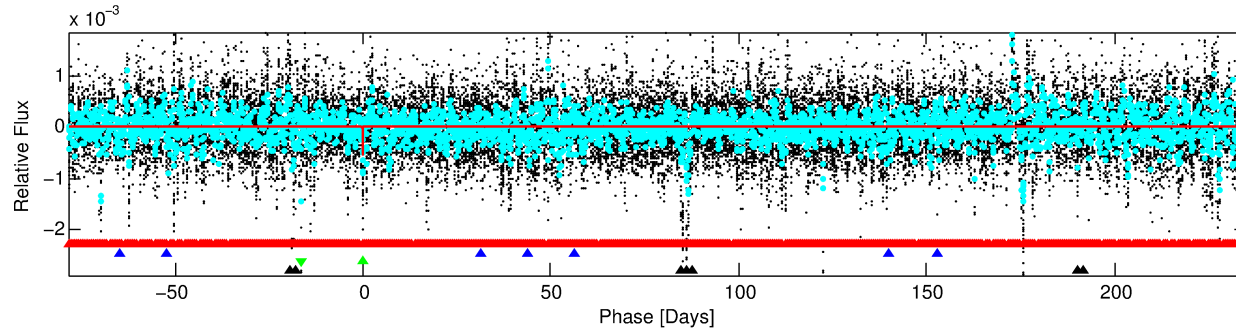
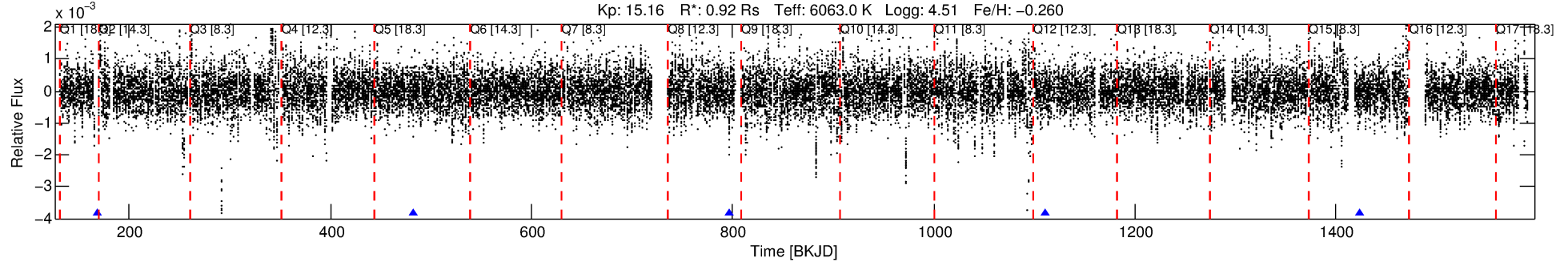
No Significant Match Found

DV One-Page Summary

KIC: 9838608 Candidate: 3 of 4 Period: 313.770 d

KOI: K04677 Corr: No Ephemeris Match

Kp: 15.16 R*: 0.92 Rs Teff: 6063.0 K Logg: 4.51 Fe/H: -0.260



DV Fit Results:

Period = 313.77050 [0.00995] d
Epoch = 168.9772 [0.0330] BKJD
Rp/R* = 0.0230 [0.0093]
a/R* = 184.23 [339.41]
b = 0.70 [1.35]
Seff = 1.25 [0.49]
Teq = 270 [26] K
Rp = 2.30 [1.16] Re
a = 0.9023 [0.2278] AU
Ag = 37527.34 [39991.14] [0.94σ]
Teff = 5806 [1465] K [3.78σ]

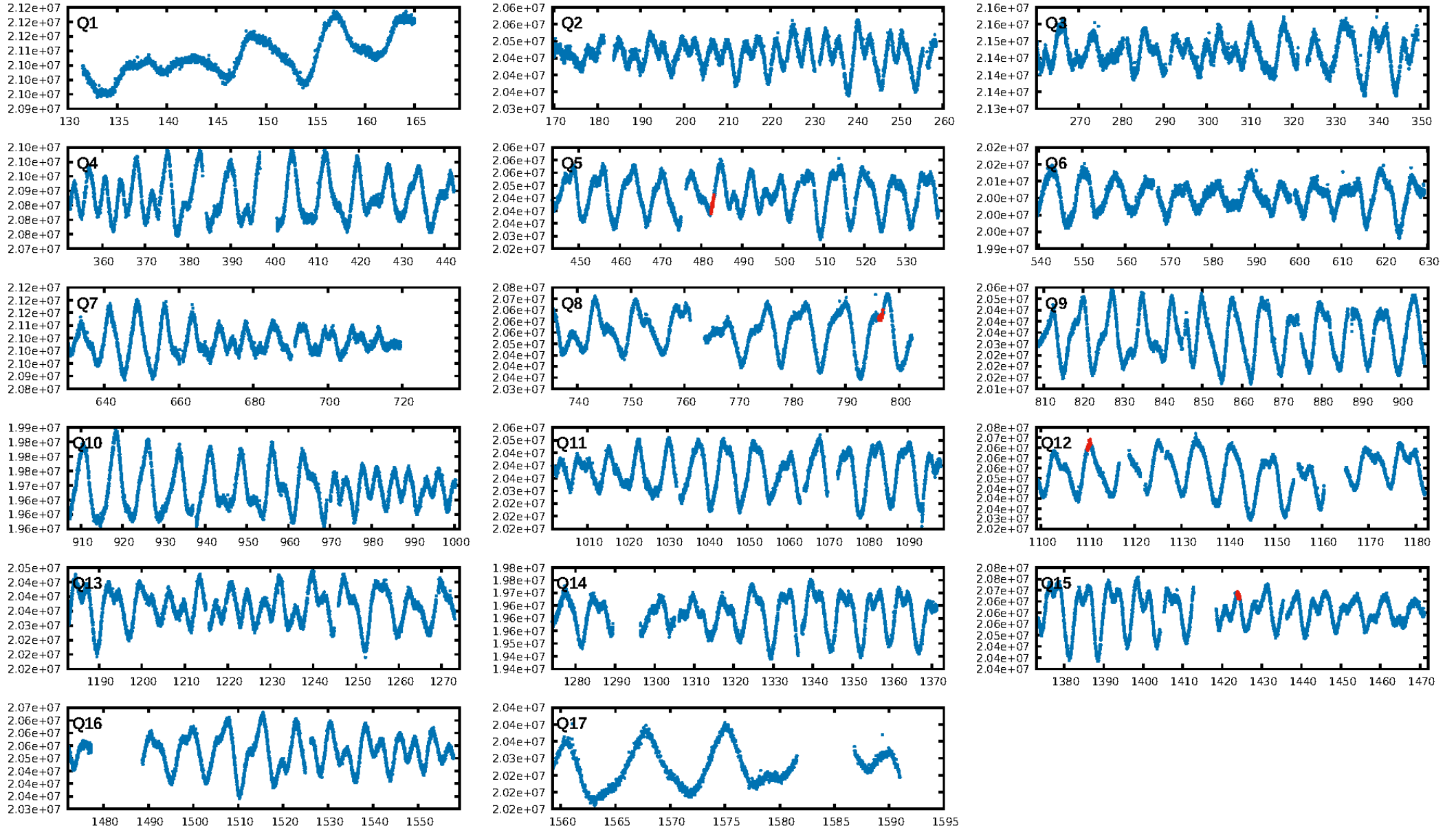
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [256.43σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 2.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.28e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.2223
Centroid-sig: 70.2%
Centroid-so: 0.320 arcsec [0.20σ]
OotOffset-rm: 0.457 arcsec [0.82σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-rm: 0.574 arcsec [1.17σ]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

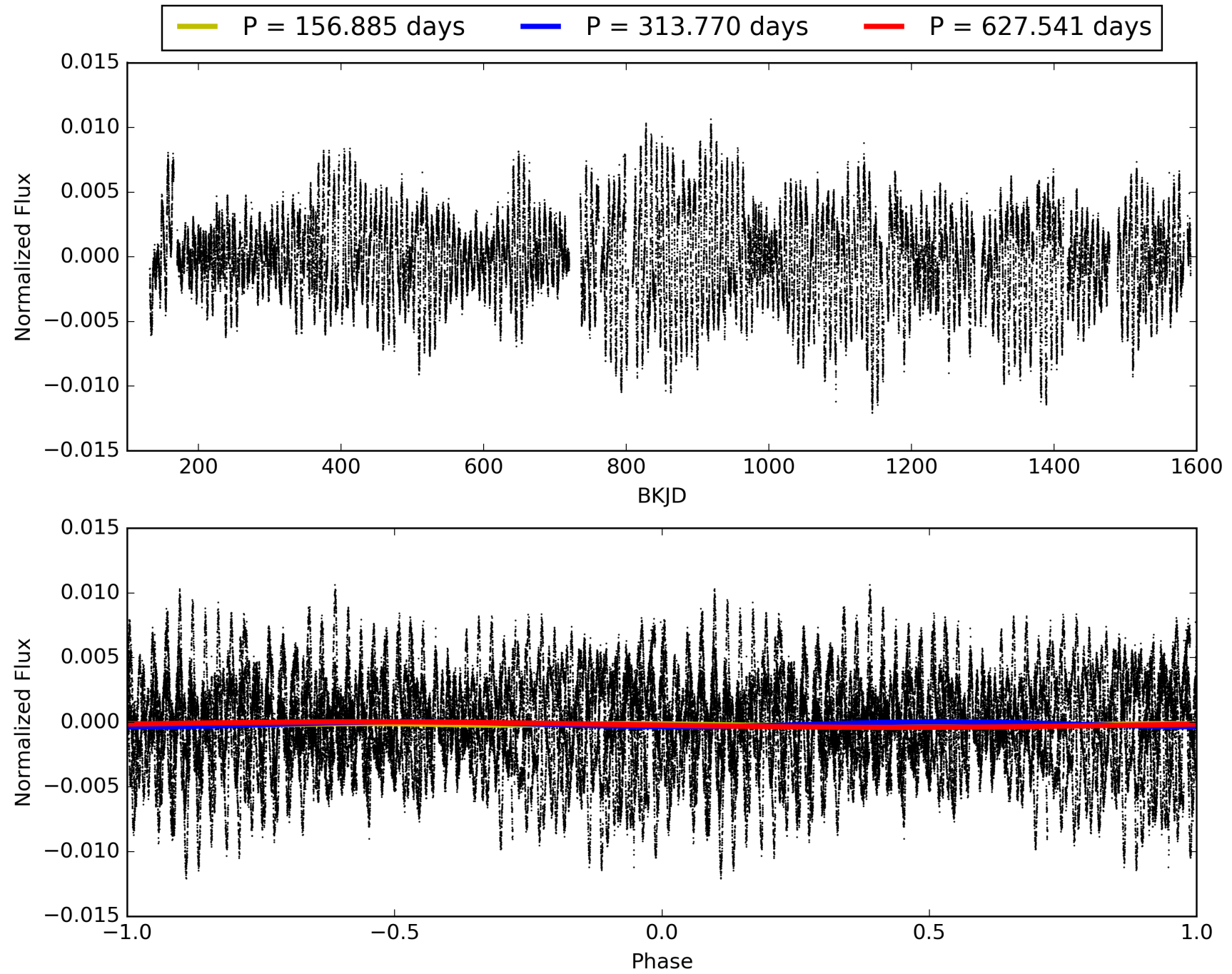
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:54:41 Z

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

TCE 009838608-03, PDC Light Curves

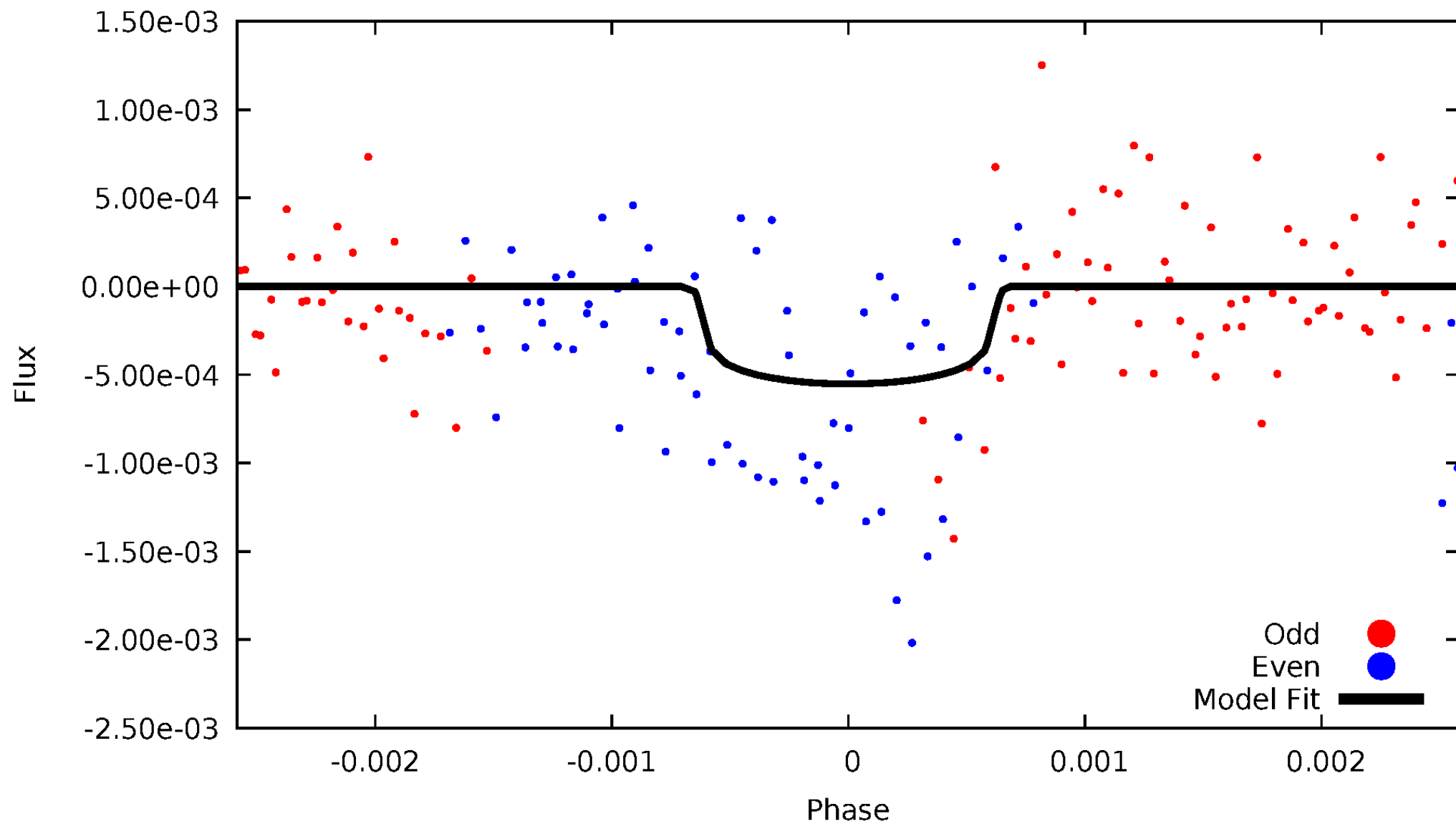


TCE 009838608-03



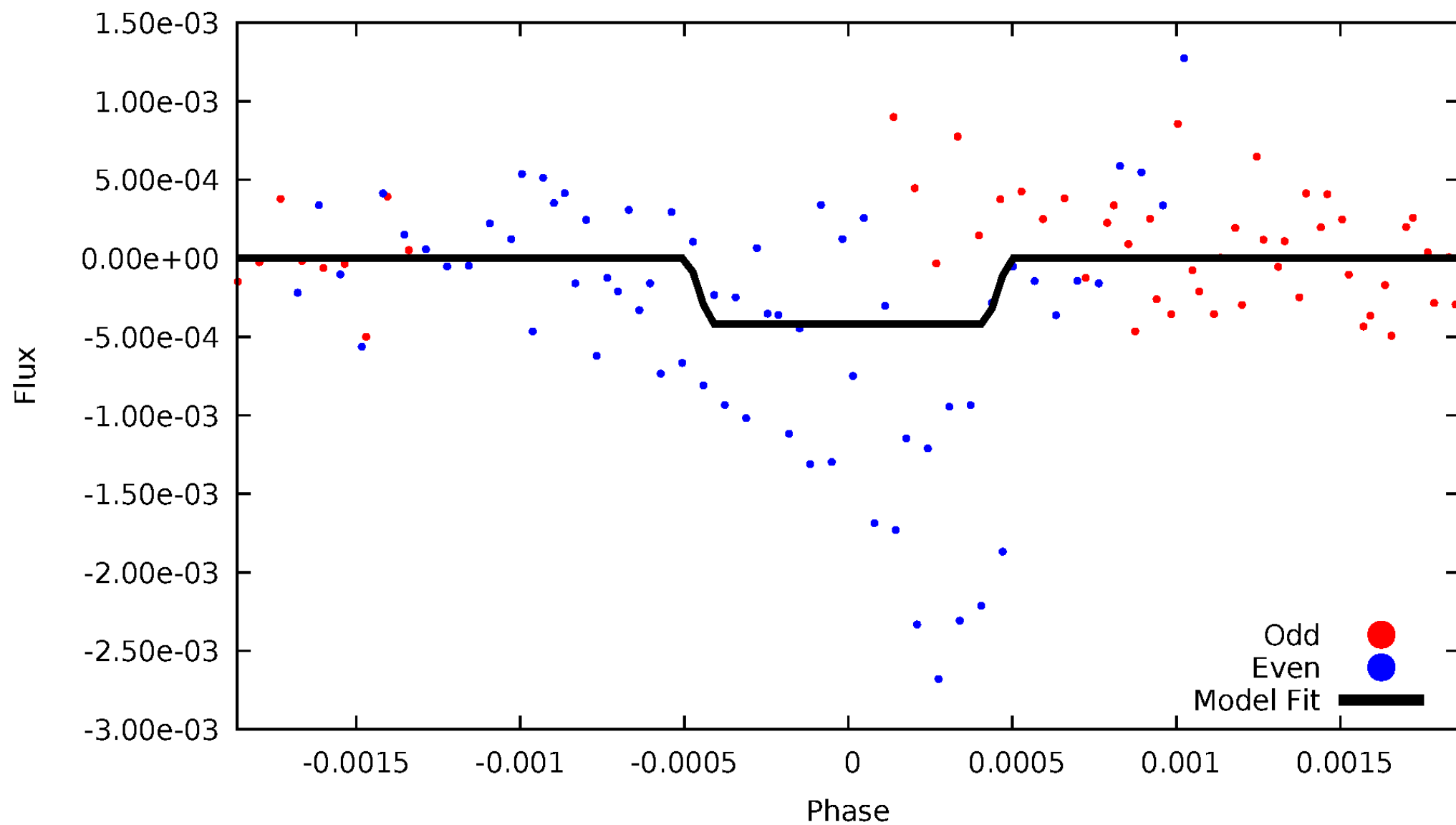
DV Odd/Even

TCE 009838608-03



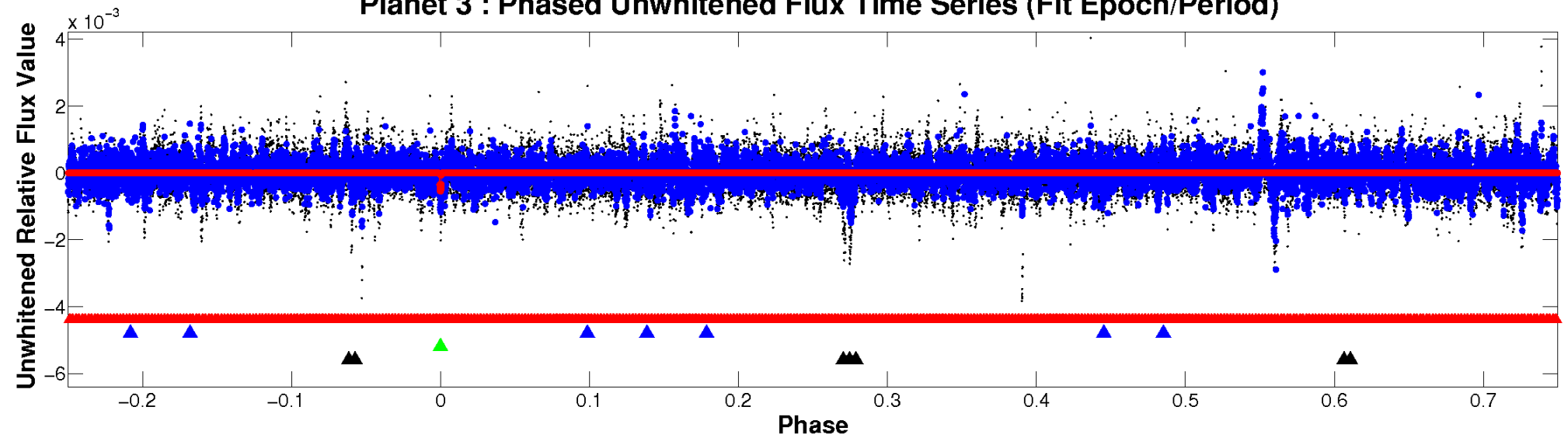
ALT Odd/Even

TCE 009838608-03

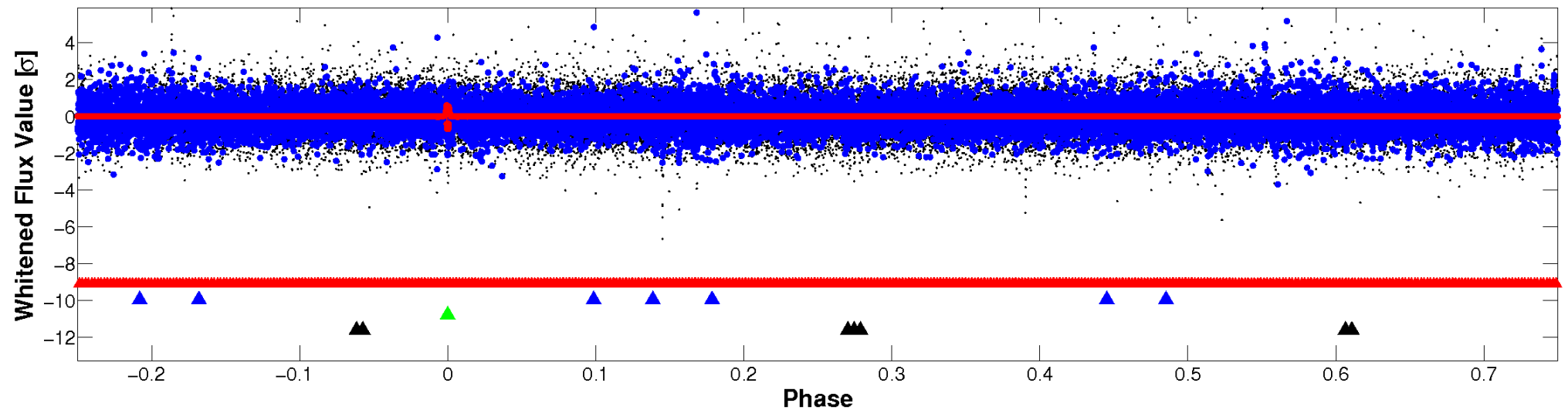


Non-Whitened Vs. Whitened Light Curve

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

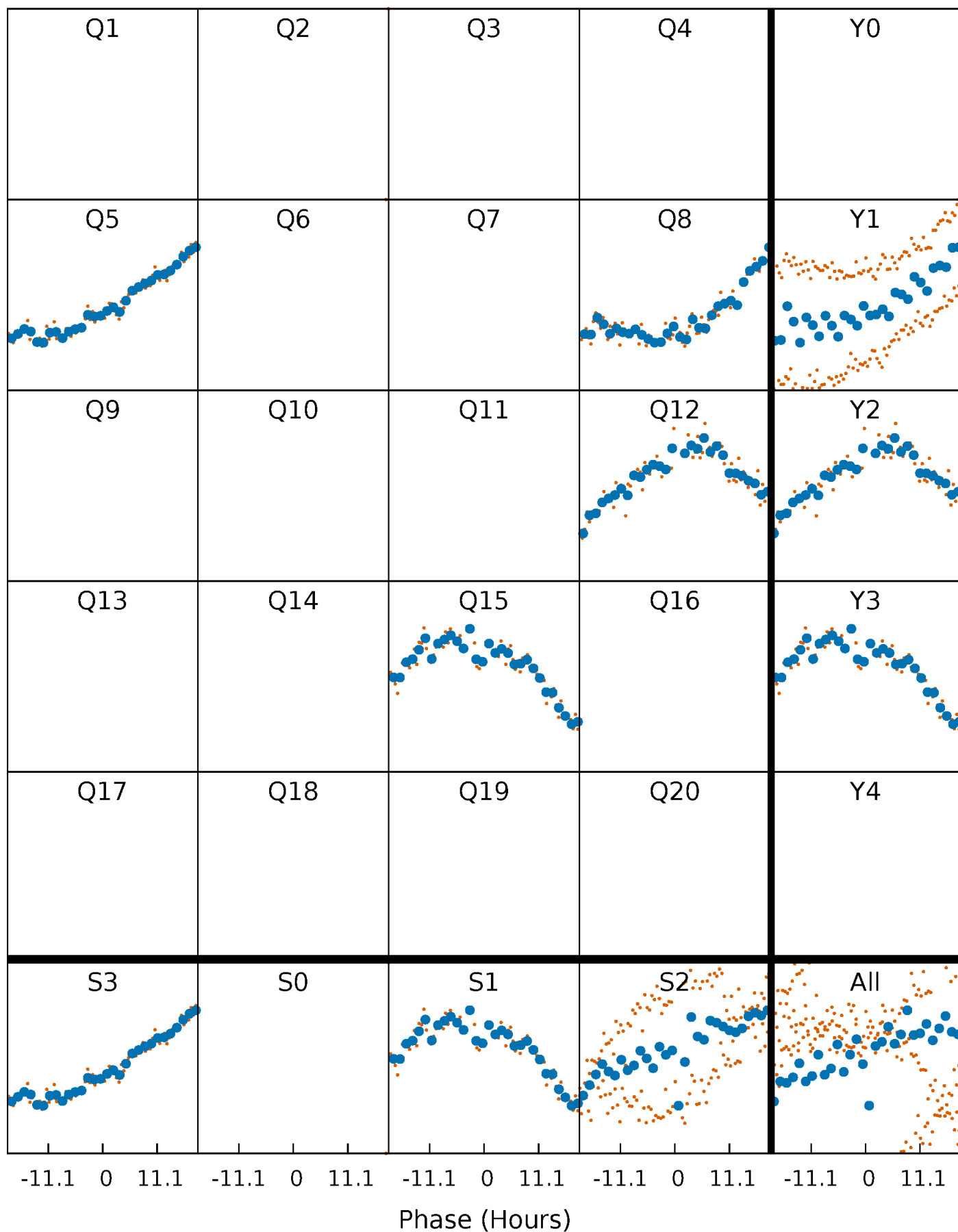


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



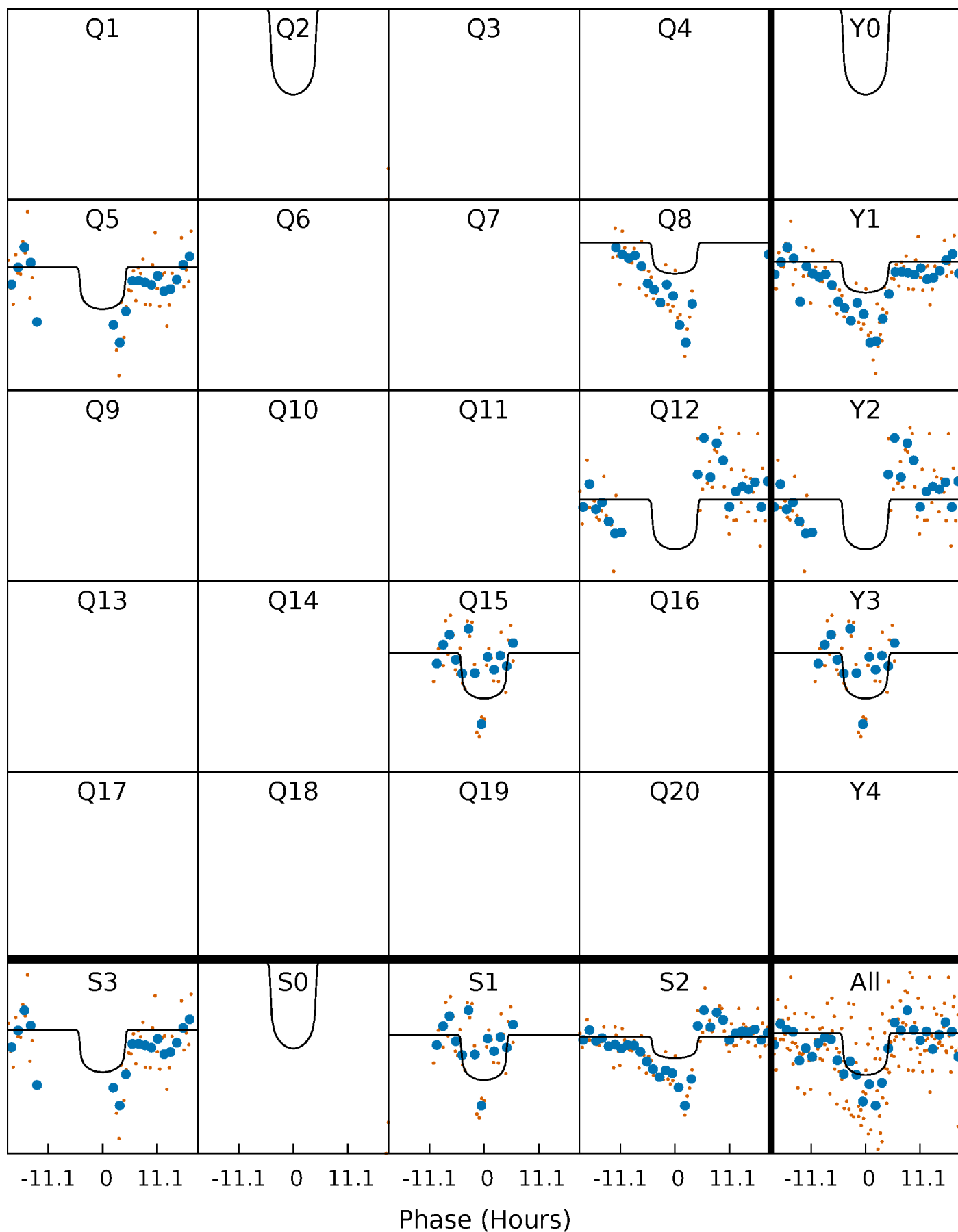
PDC Quarter-Phased Transit Curves

TCE 009838608-03 $P=313.770495$ Days $T_0=168.977155$ (BKJD)



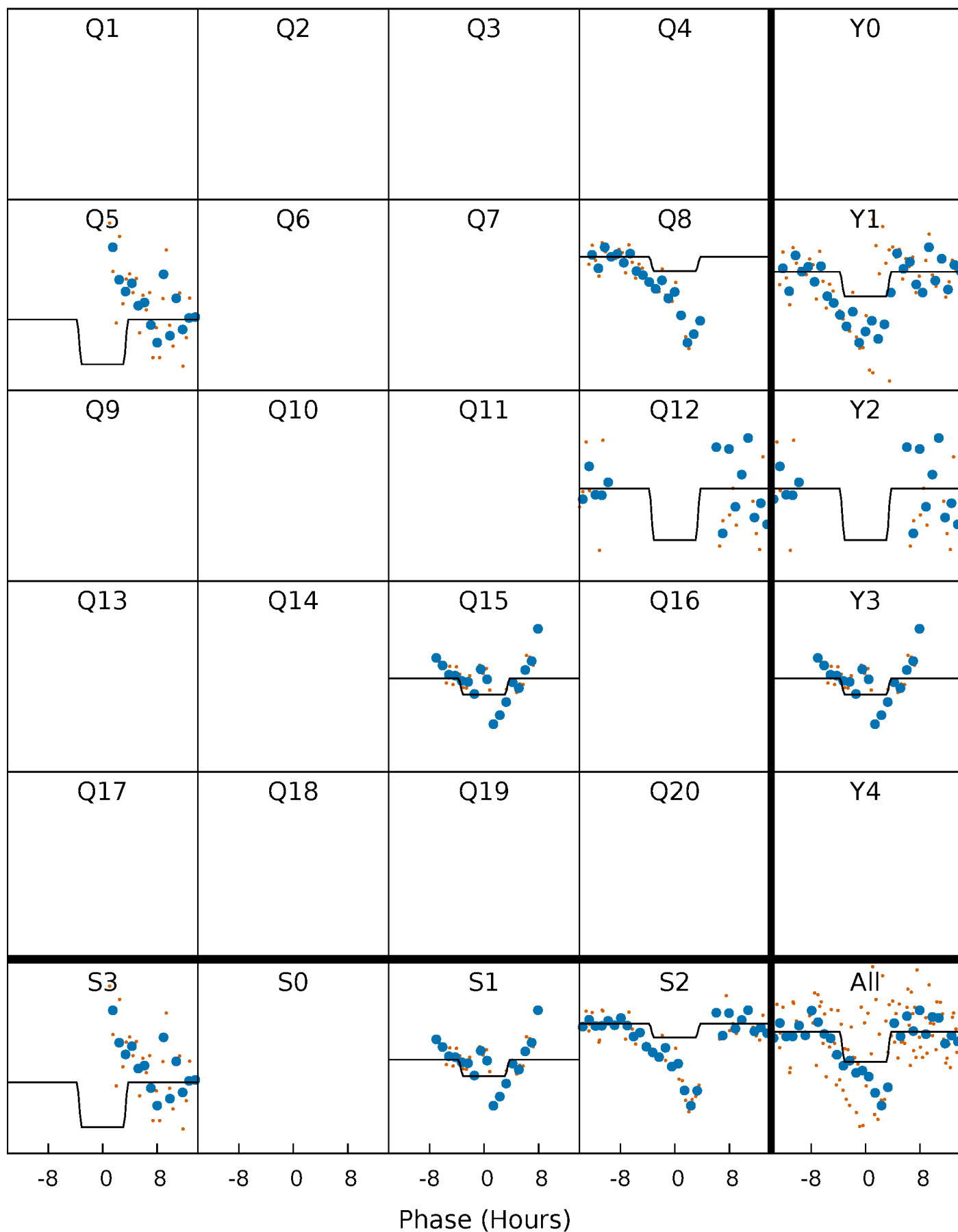
DV Quarter-Phased Transit Curves

TCE 009838608-03 P=313.770495 Days $T_0=168.977155$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

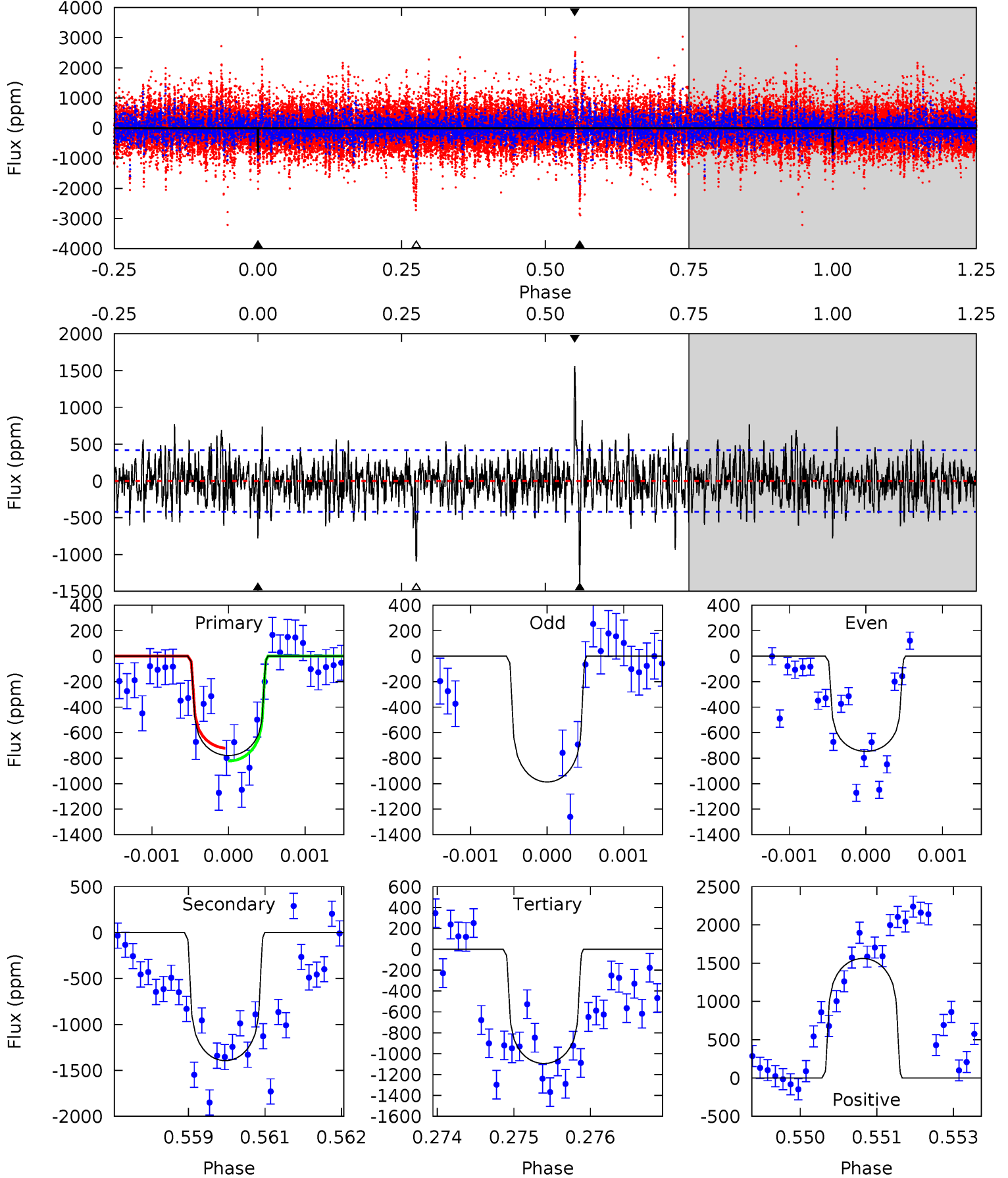
TCE 009838608-03 $P=313.713175$ Days $T_0=169.090135$ (BKJD)



DV Model-Shift Uniqueness Test

009838608-03, P = 313.770495 Days, E = 168.977155 Days

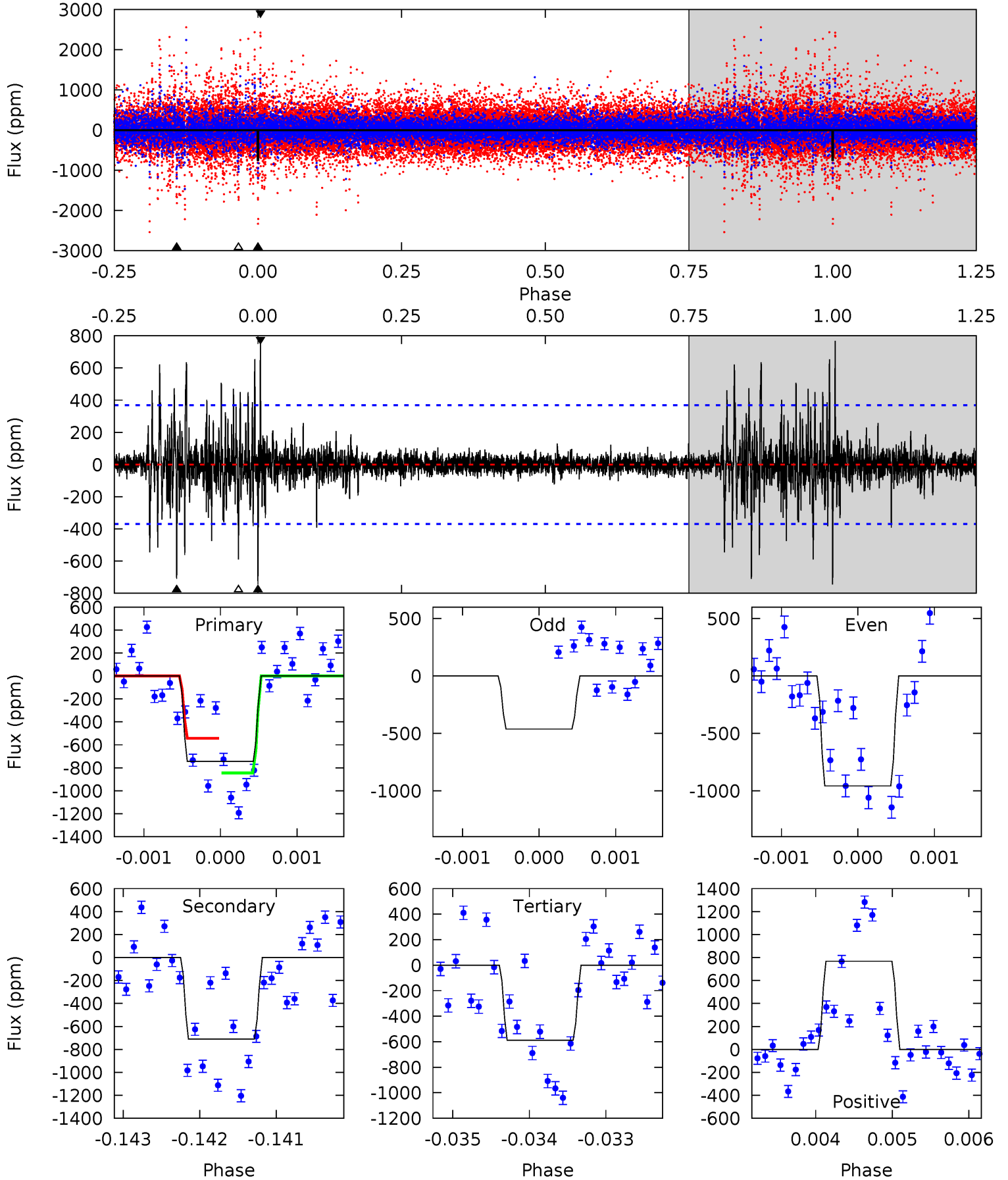
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	18.0	14.1	20.2	5.40	3.21	2.94	-4.07	-10.1	3.88	-2.16	1.13	0.79	0.53	0.63



Alt Model-Shift Uniqueness Test

009838608-03, P = 313.713175 Days, E = 169.090135 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	10.5	8.71	11.4	5.46	3.31	1.24	2.31	-0.34	1.79	-0.86	3.17	1.26	0.51	2.18



Stellar Parameters For KIC 009838608

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6063^{+163}_{-199}	$4.510^{+0.050}_{-0.200}$	$-0.260^{+0.300}_{-0.300}$	$0.918^{+0.276}_{-0.092}$	$0.994^{+0.120}_{-0.132}$	$1.810^{+0.476}_{-0.959}$
	+3%/-3%	+1%/-4%	+115%/-115%	+30%/-10%	+12%/-13%	+26%/-53%
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 009838608-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1395 ± 77	$2.39^{+1.04}_{-0.97}$	385^{+25}_{-20}	7991^{+3285}_{-1487}	$108409^{+194173}_{-57319}$
Alt.	-710 ± 68	$2.19^{+0.95}_{-0.97}$	386^{+25}_{-20}	6943^{+3268}_{-1210}	$66703^{+152627}_{-35462}$

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

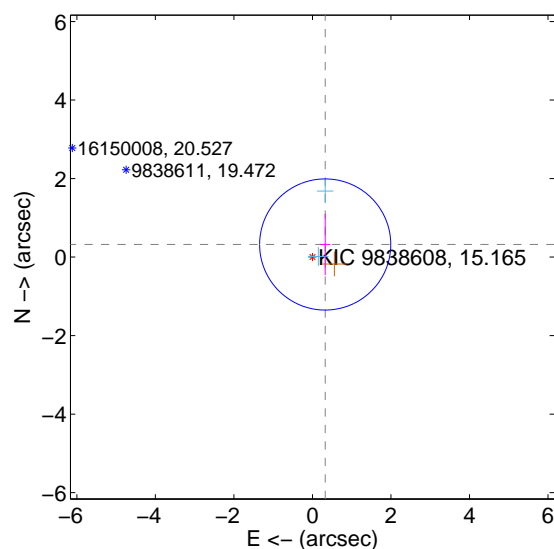
Supplemental centroid analysis for 009838608-03. Kepler magnitude: 15.16. Transit SNR 4.67

There are 2 quarters with good PRF difference image offsets

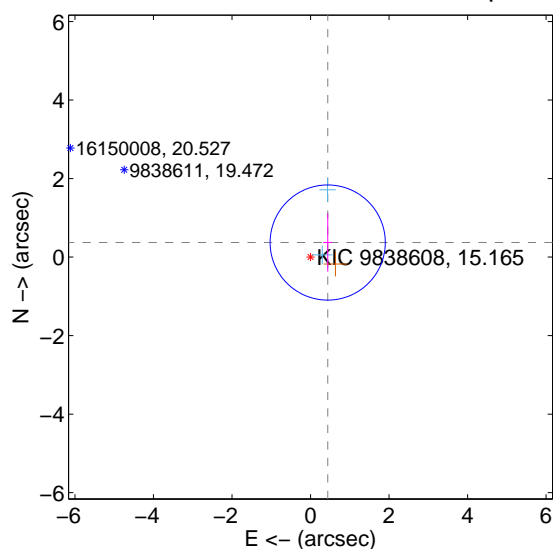
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.457 ± 0.557	0.82	-0.325 ± 0.131	0.321 ± 0.781
PRF-fit source offset from KIC position	0.574 ± 0.489	1.17	-0.438 ± 0.115	0.371 ± 0.744
photometric centroid source offset	0.32 ± 1.61	0.20	0.13 ± 1.84	-0.29 ± 1.56

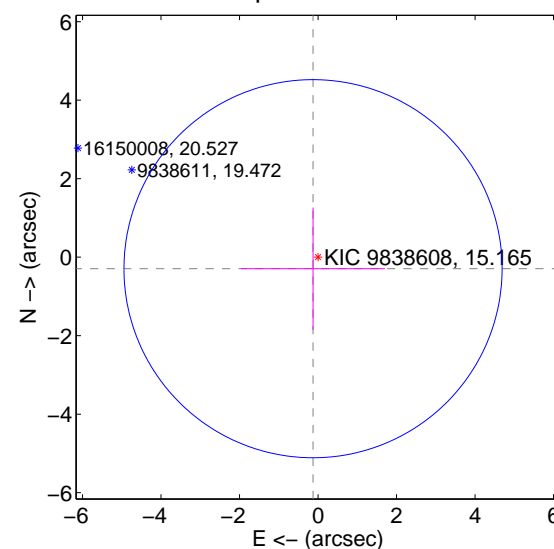
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

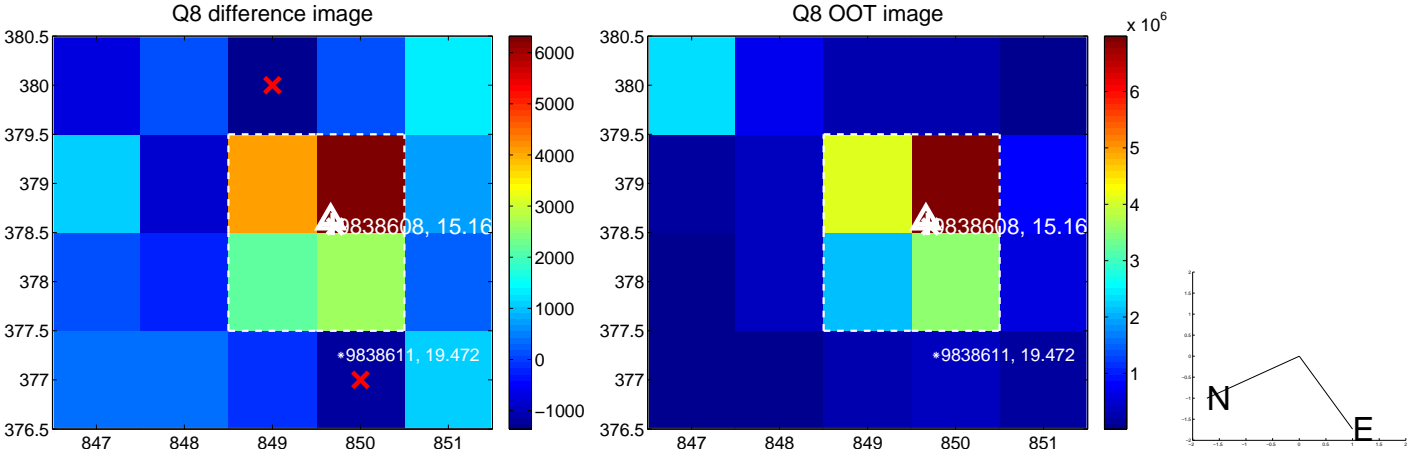
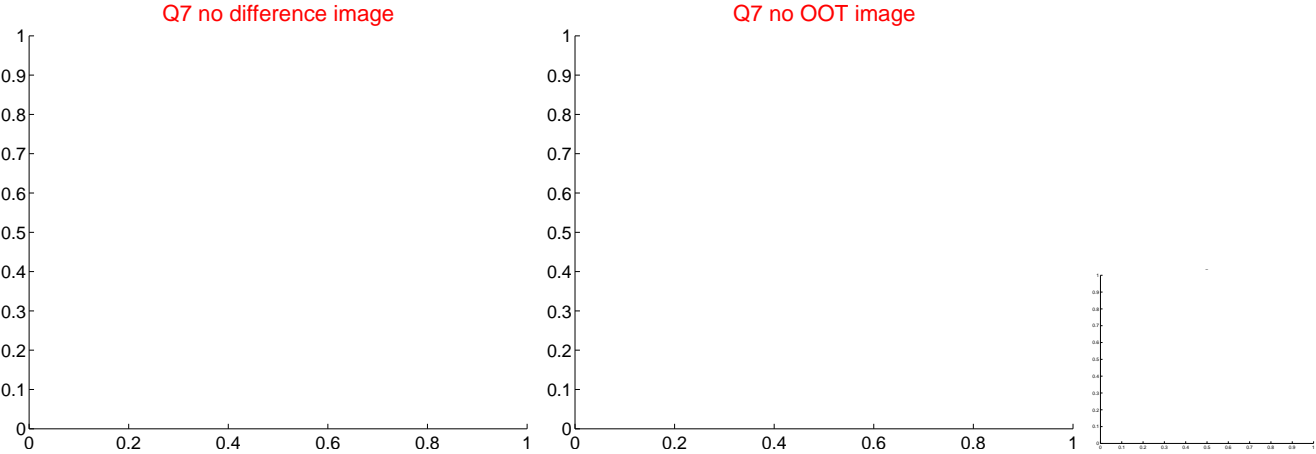
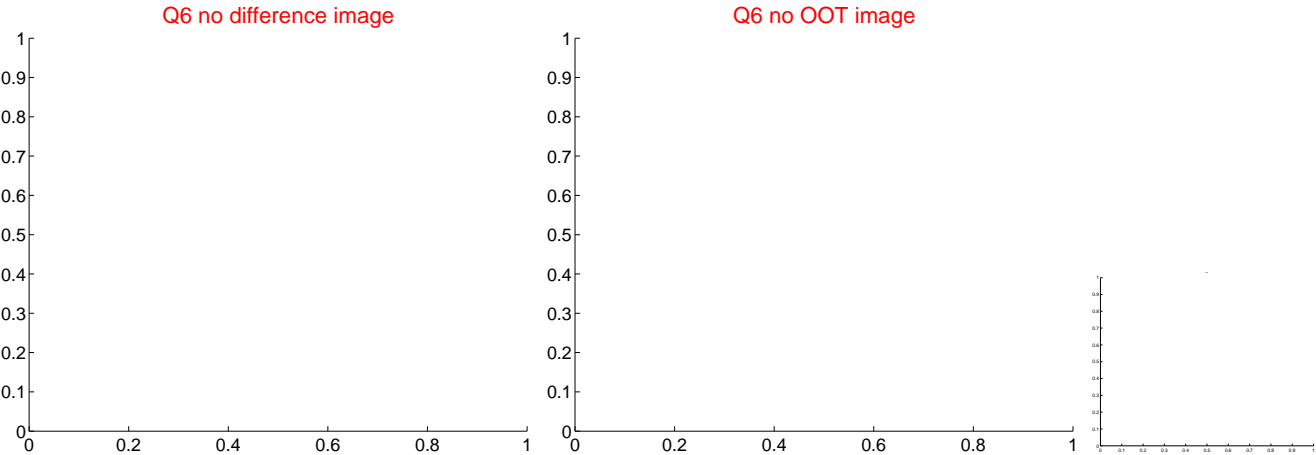
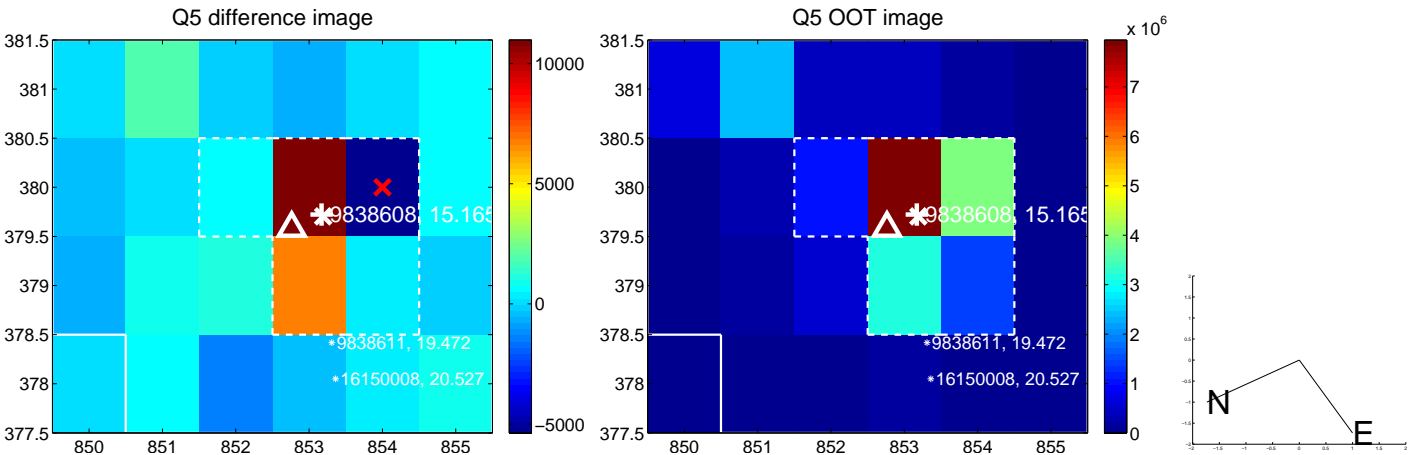


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

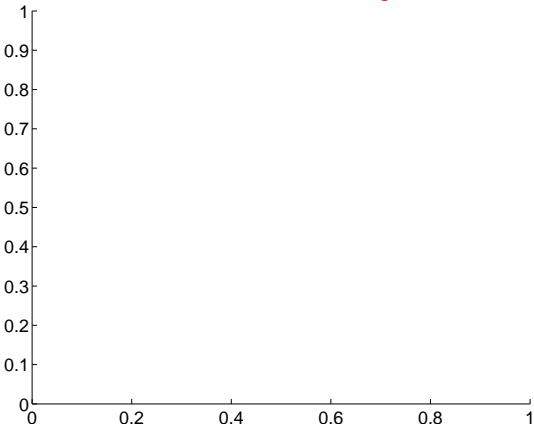


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Q13 no difference image



Q13 no OOT image



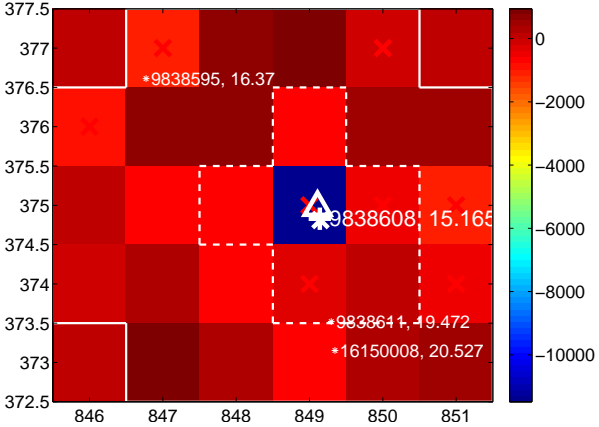
Q14 no difference image



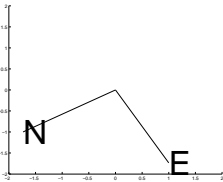
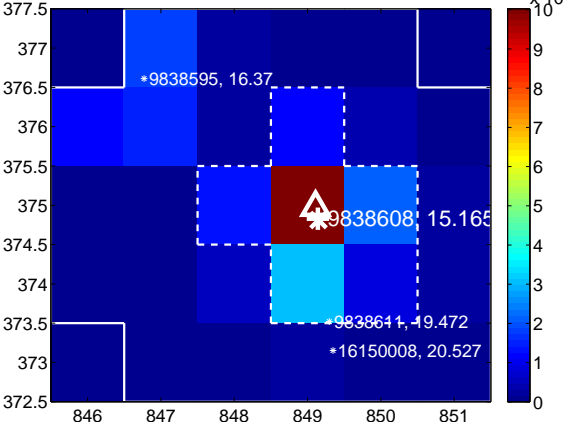
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



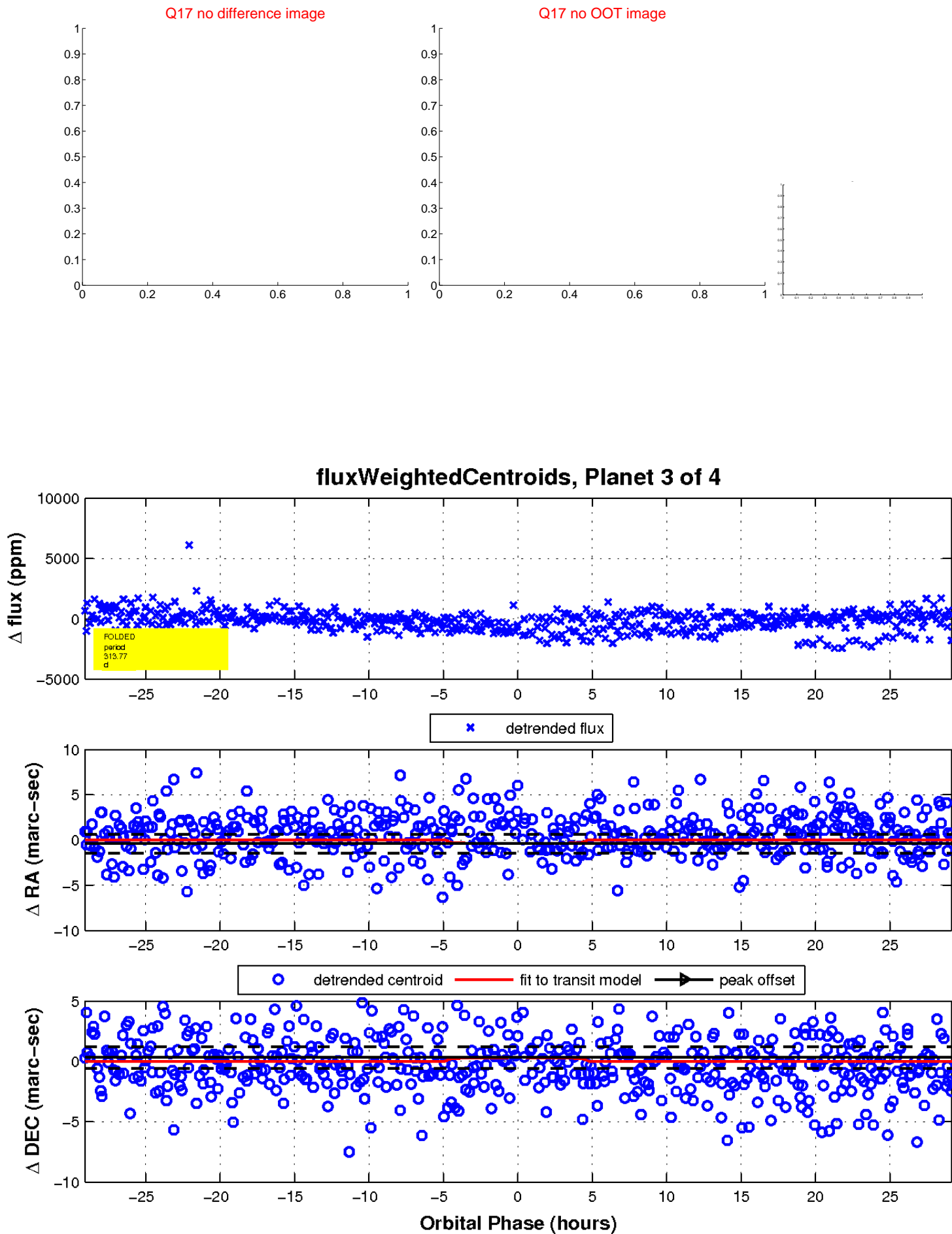
Q16 no difference image



Q16 no OOT image

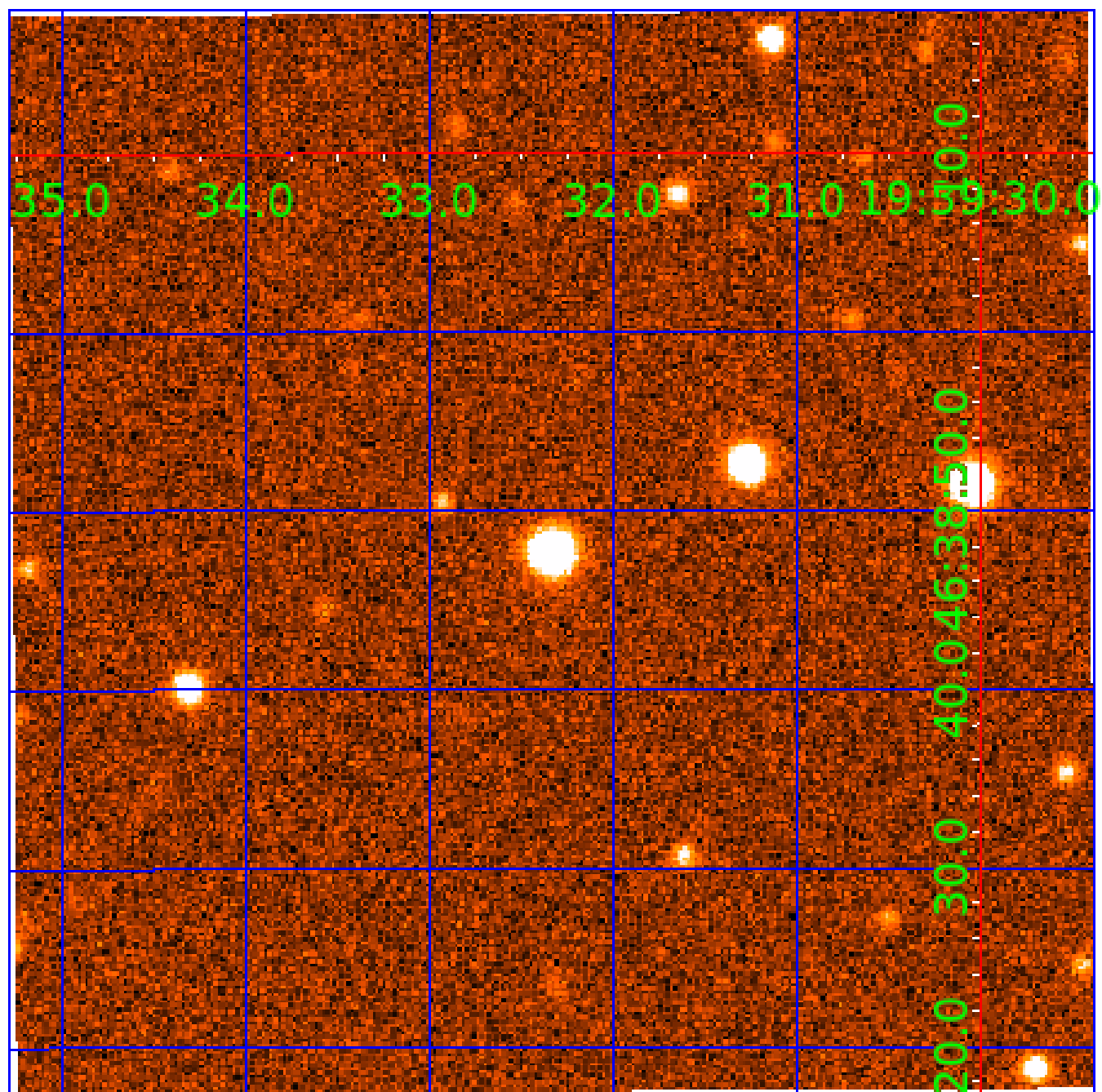


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009838608

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})
009838608-01	OBS	4677.01	1.332579	132.038361	88.8	4.994	9.3	11.7	0.92	6063	1.73	1822.28
009838608-02	OBS	No	204.996285	225.021776	1016.5	15.000	14.4	-1.0	0.92	6063	2.93	2.21
009838608-03	OBS	No	313.770495	168.977155	552.0	9.726	8.1	4.7	0.92	6063	2.30	1.25
009838608-04	OBS	No	209.624396	253.808095	376.0	0.643	7.8	1.9	0.92	6063	2.15	2.15

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009838608-01	OBS	FP	0.00	0	0	1	1	CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
009838608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009838608-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
009838608-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—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.

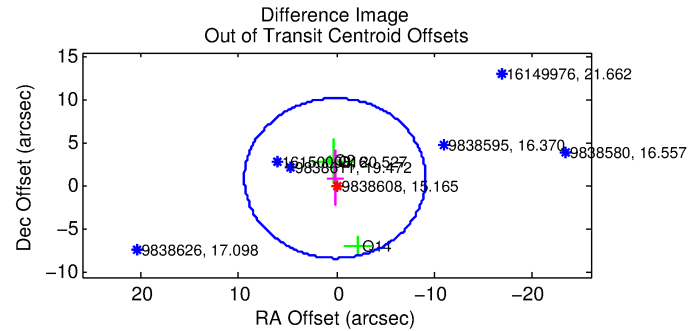
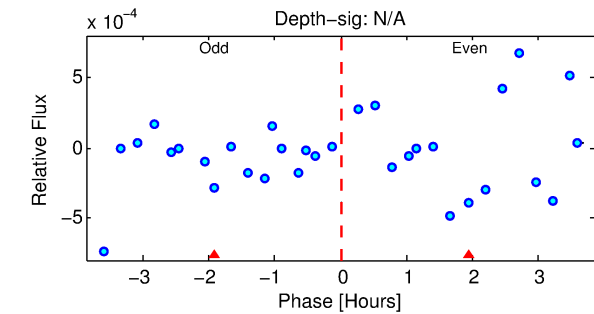
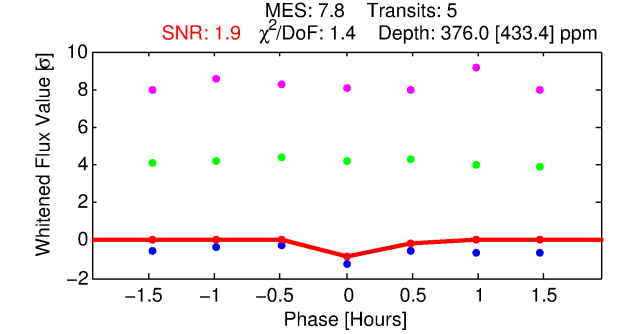
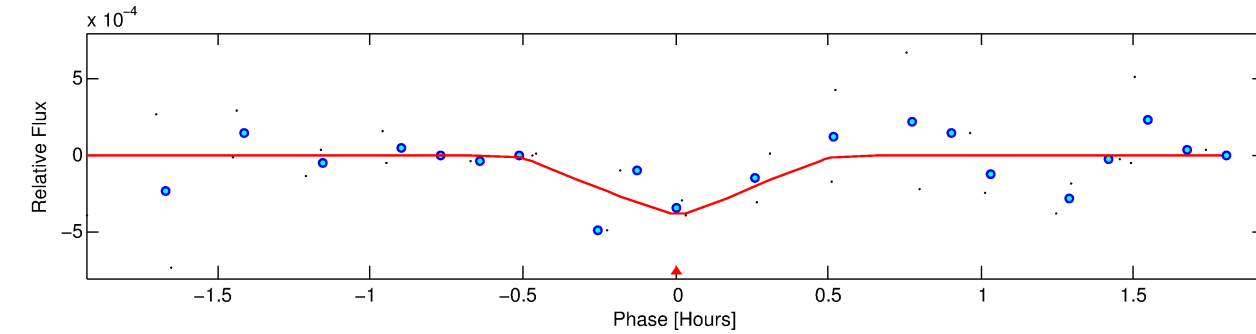
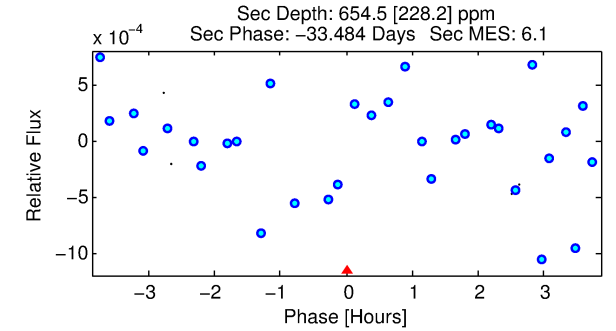
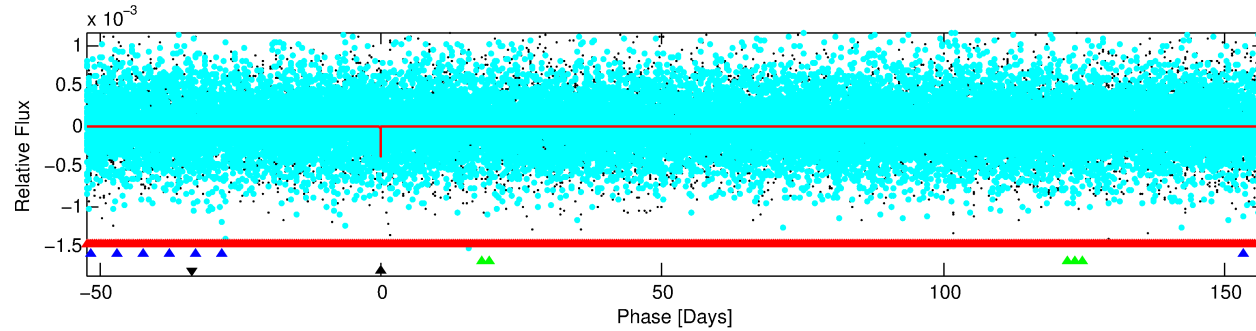
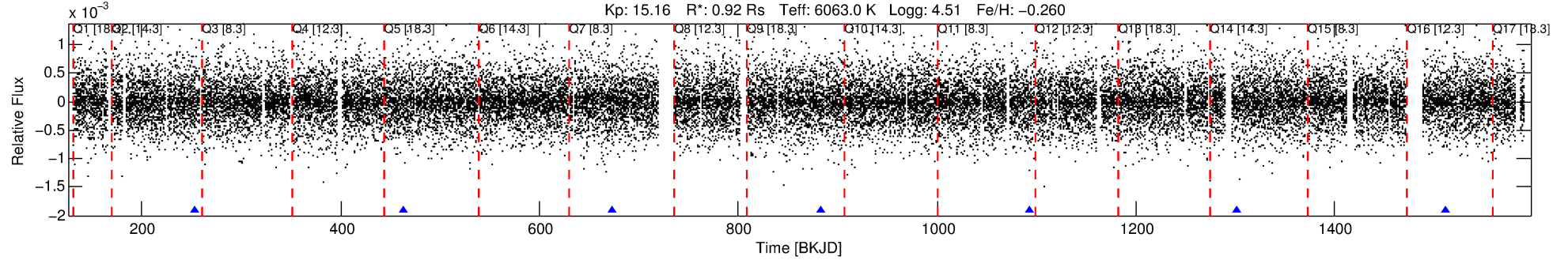
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009838608-04

No Significant Match Found

DV One-Page Summary

KIC: 9838608 Candidate: 4 of 4 Period: 209.624 d
KOI: K04677 Corr: No Ephemeris Match



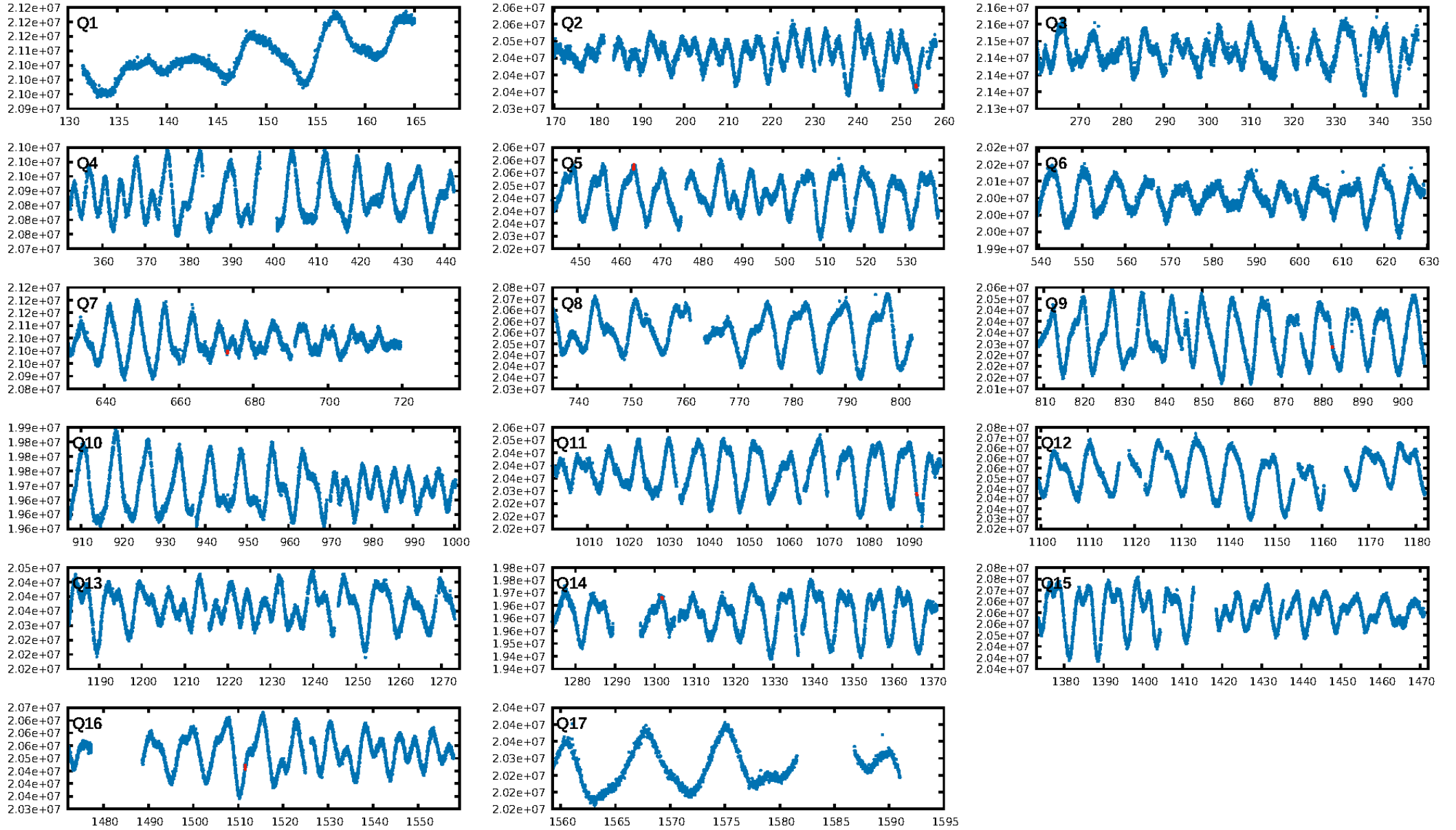
DV Fit Results:

Period = 209.62440 [0.00575] d
Epoch = 253.8081 [0.0186] BKJD
Rp/R* = 0.0214 [0.1179]
a/R* = 1218.44 [35430.93]
b = 0.90 [6.47]
Seff = 2.15 [0.84]
Teff = 309 [30] K
Rp = 2.15 [11.83] Re
a = 0.6895 [0.1741] AU
Ag = 37186.11 [409805.25] [0.09] σ
Teffp = 6626 [18247] K [0.35] σ

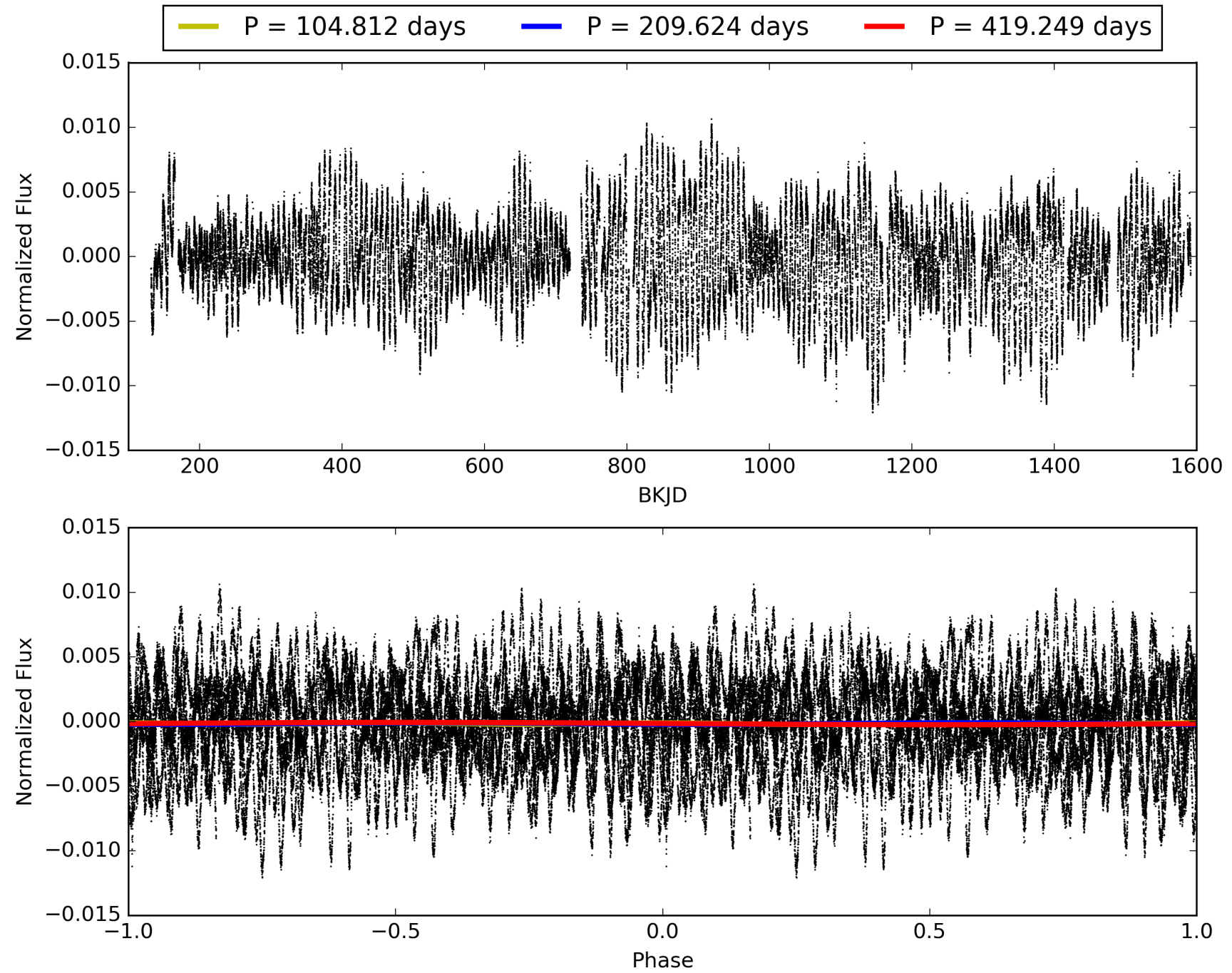
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.40 σ]
LongPeriod-sig: 100.0% [256.43 σ]
ModelChiSquare2-sig: 28.0%
ModelChiSquareGof-sig: 64.6%
Bootstrap-pfa: 2.10e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.285
Centroid-sig: 43.3%
Centroid-so: 3.781 arcsec [0.65 σ]
OotOffset-rm: 0.928 arcsec [0.30 σ]
KicOffset-rm: 0.938 arcsec [0.29 σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.50 [2/4]

TCE 009838608-04, PDC Light Curves

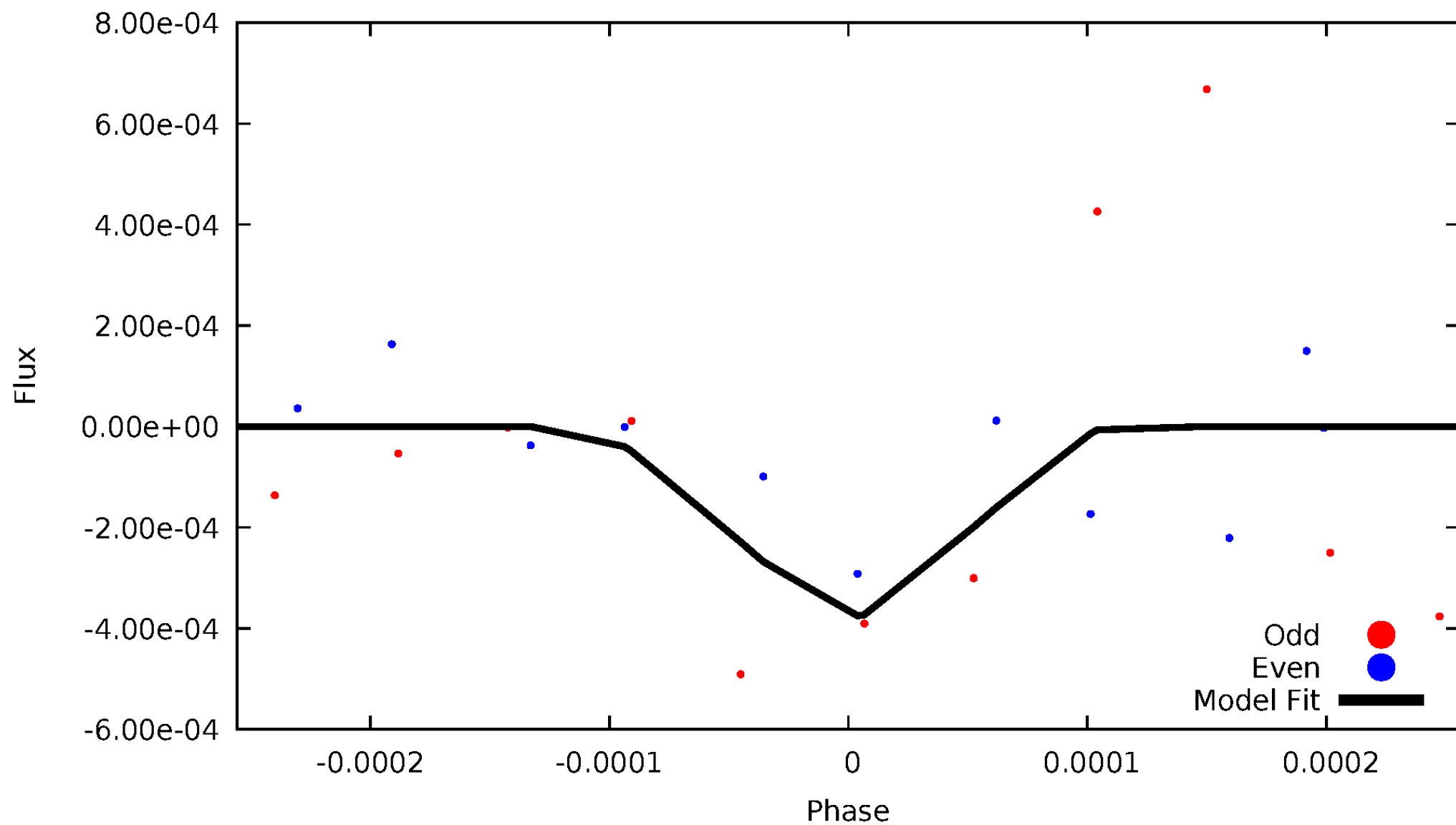


TCE 009838608-04



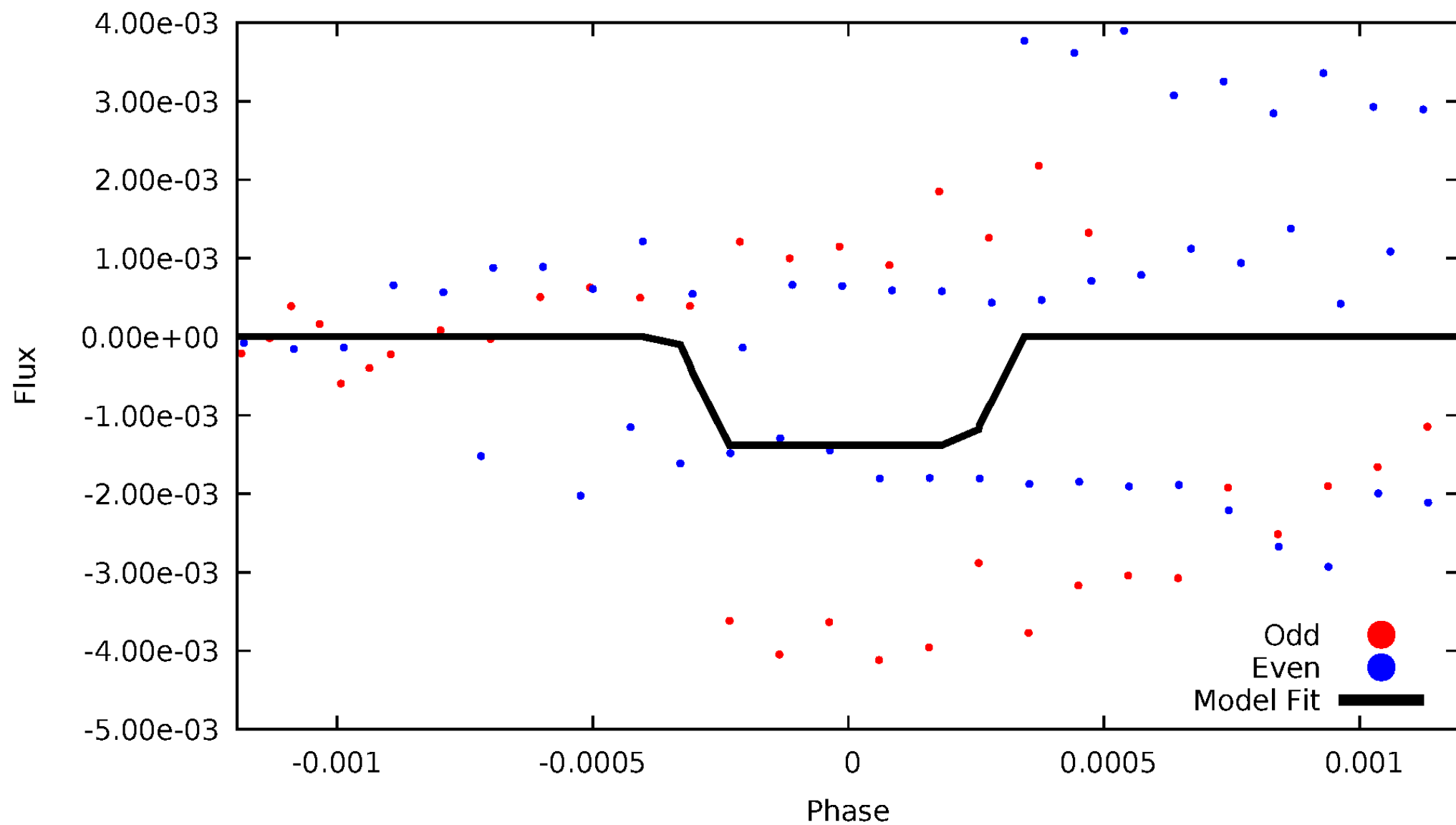
DV Odd/Even

TCE 009838608-04



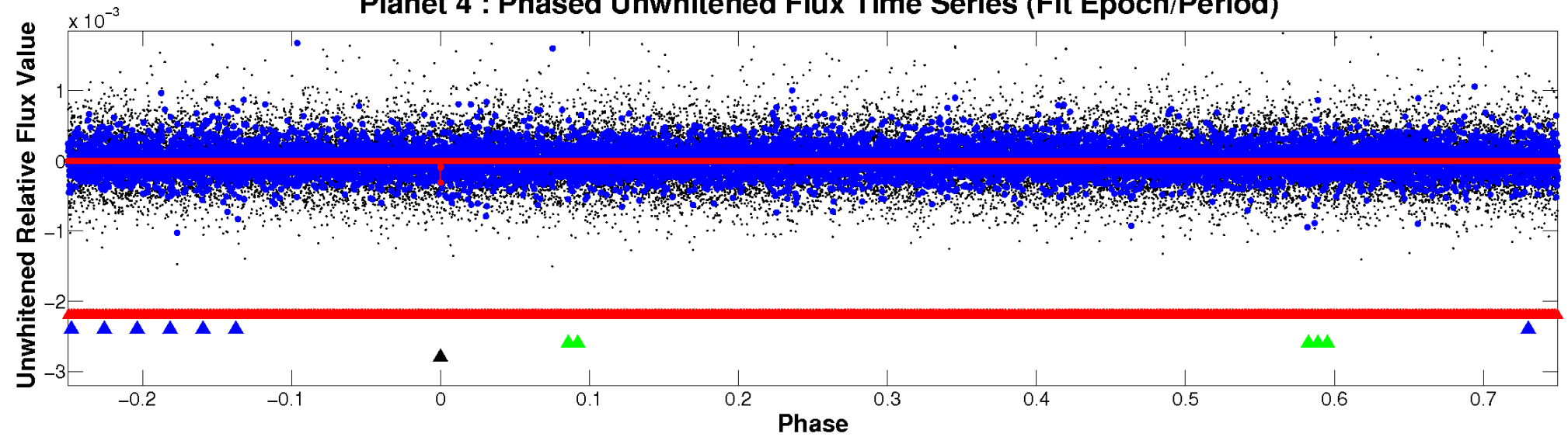
ALT Odd/Even

TCE 009838608-04

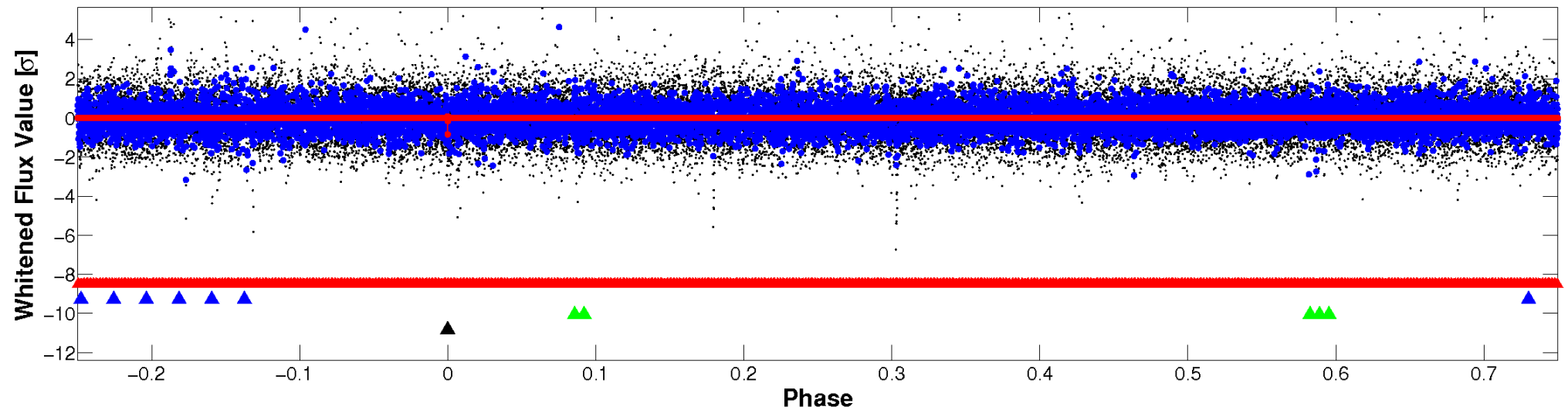


Non-Whitened Vs. Whitened Light Curve

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

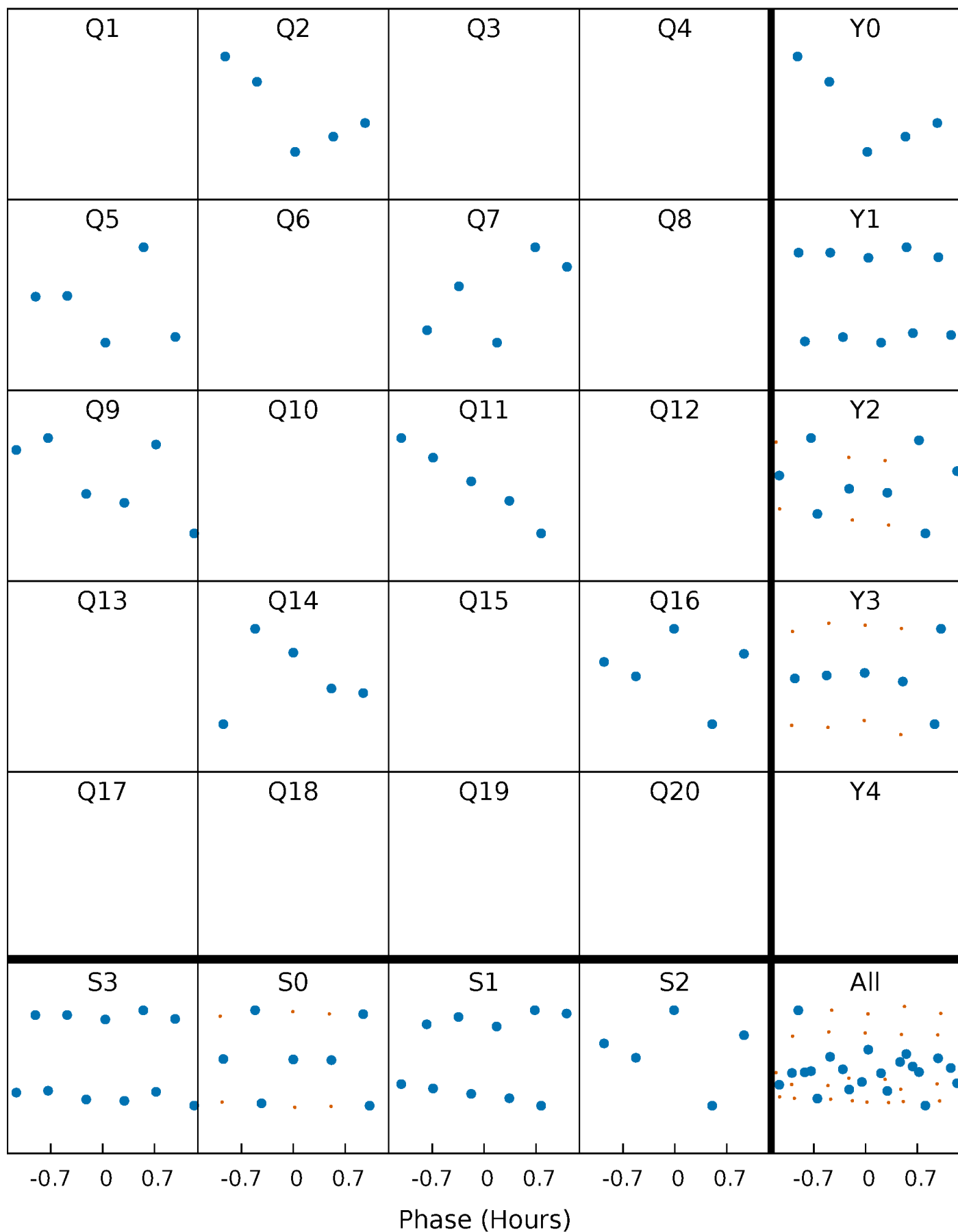


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



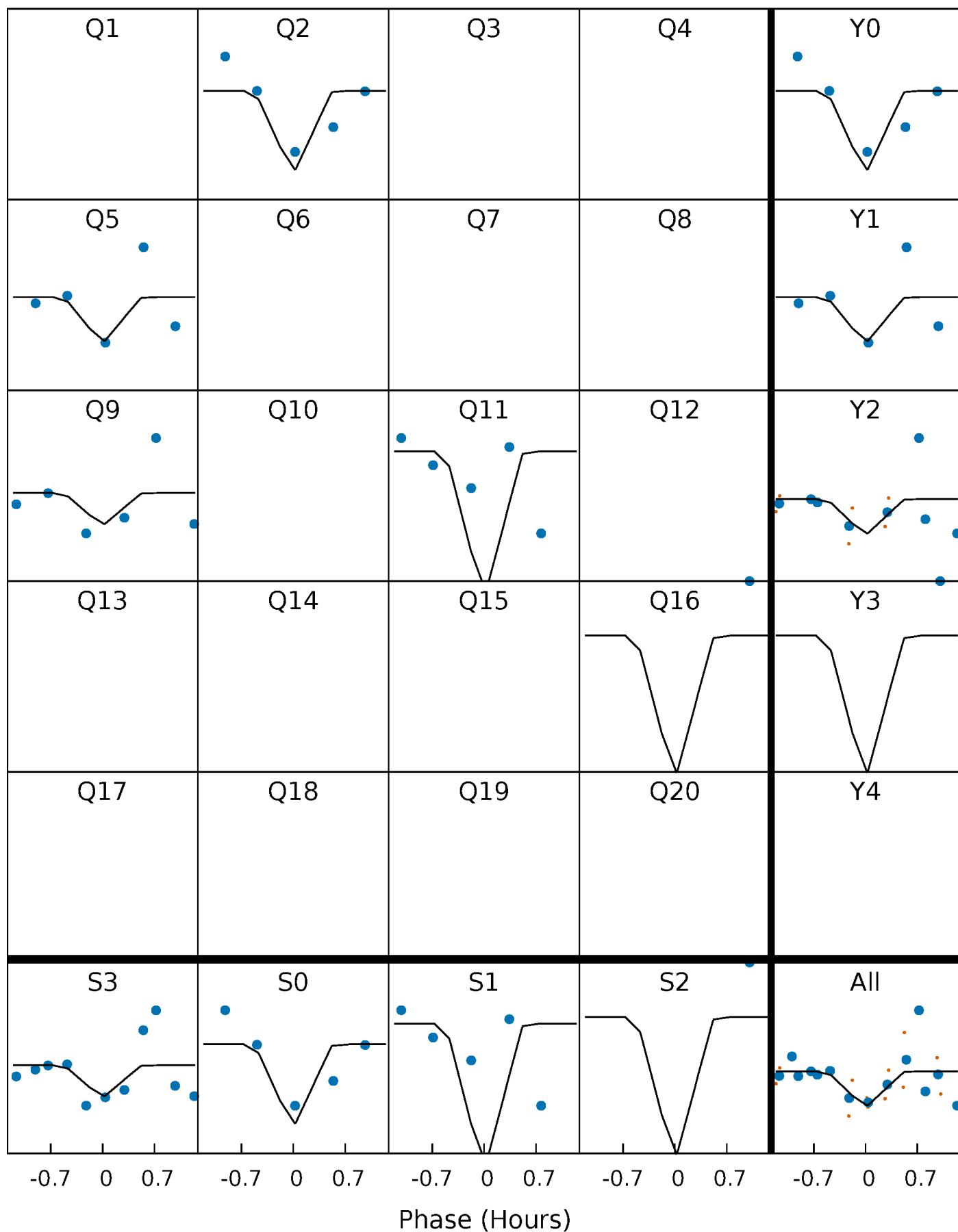
PDC Quarter-Phased Transit Curves

TCE 009838608-04 P=209.624396 Days $T_0=253.808095$ (BKJD)



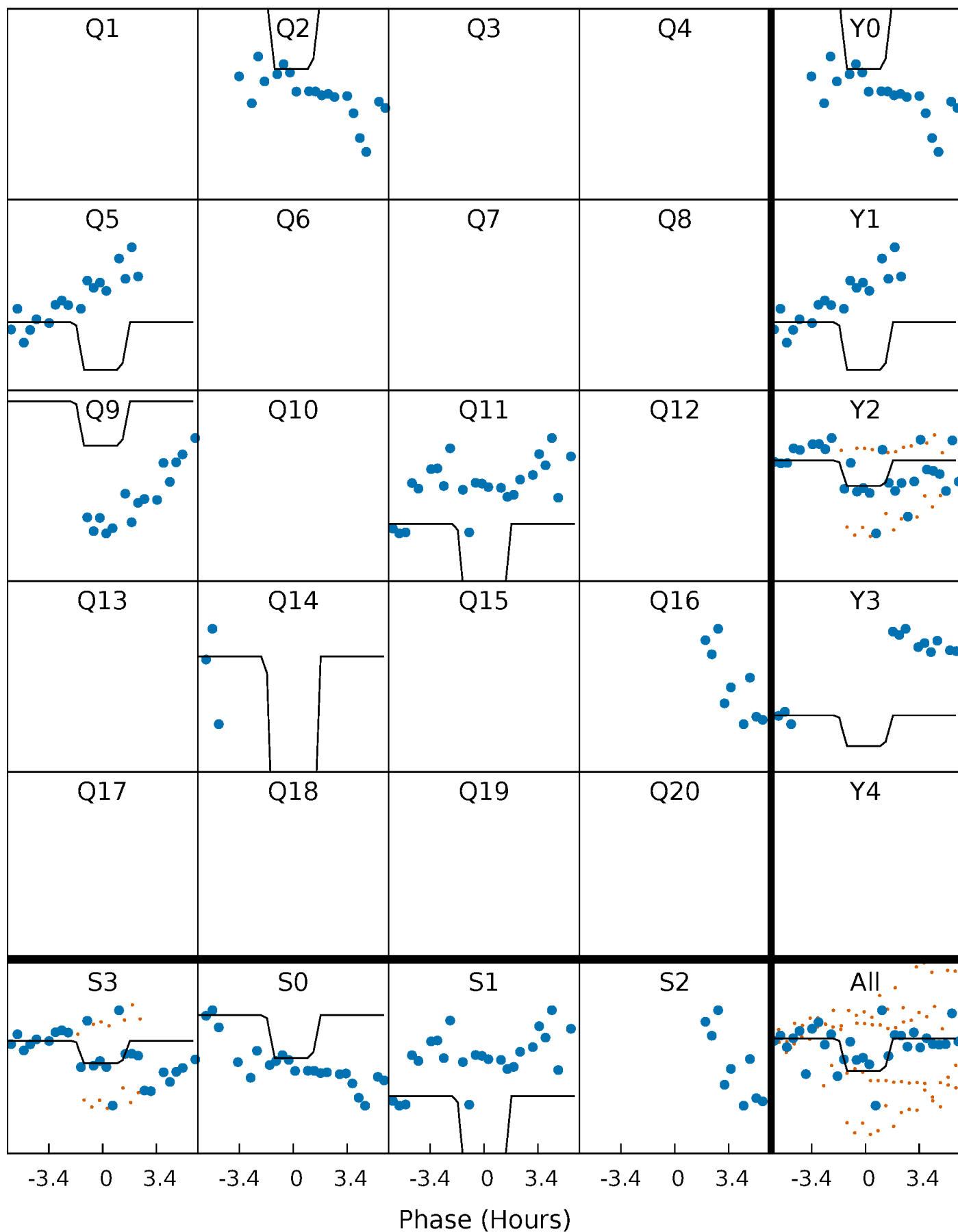
DV Quarter-Phased Transit Curves

TCE 009838608-04 P=209.624396 Days $T_0=253.808095$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

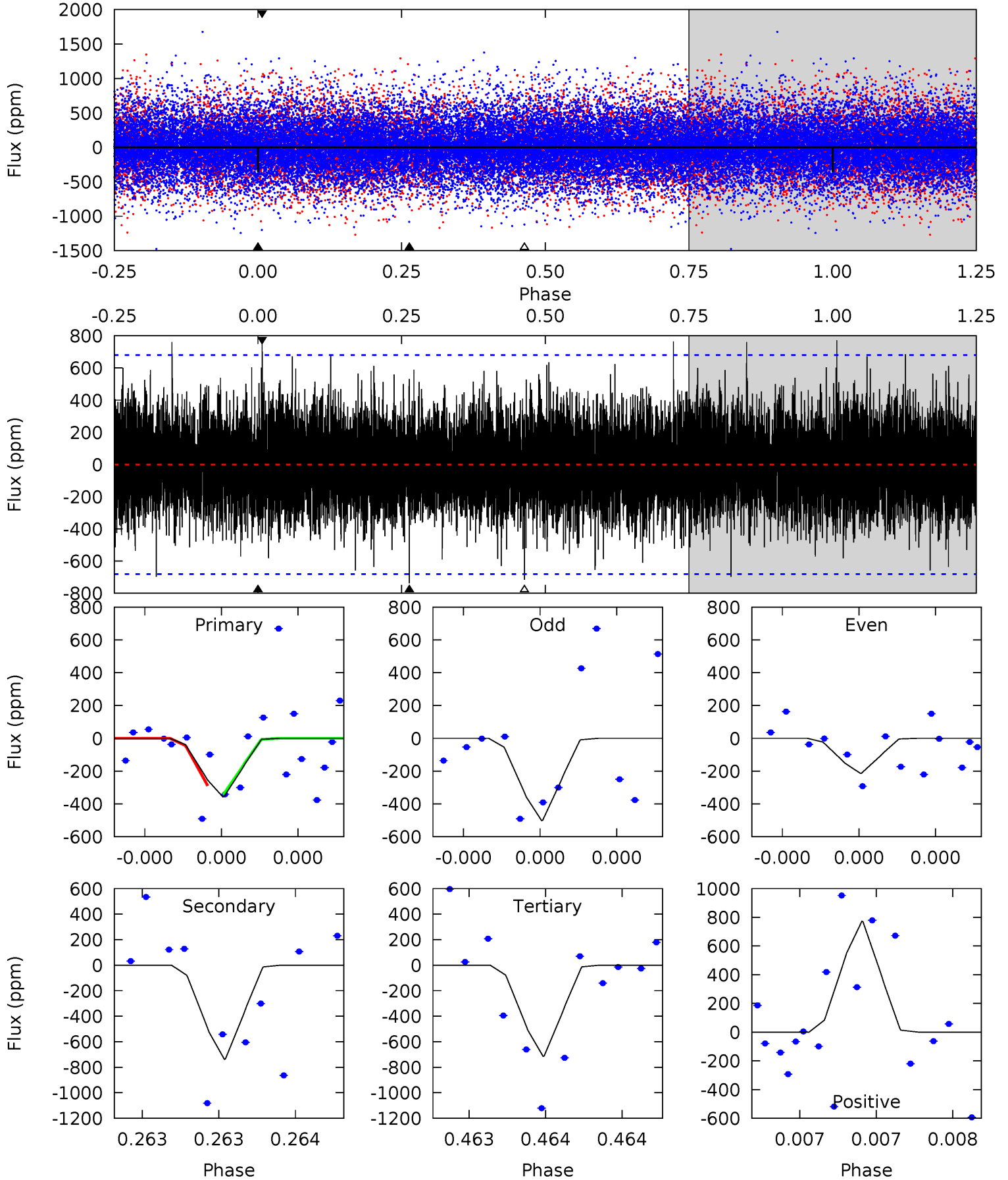
TCE 009838608-04 P=209.621081 Days $T_0=253.796013$ (BKJD)



DV Model-Shift Uniqueness Test

009838608-04, P = 209.624396 Days, E = 44.183699 Days

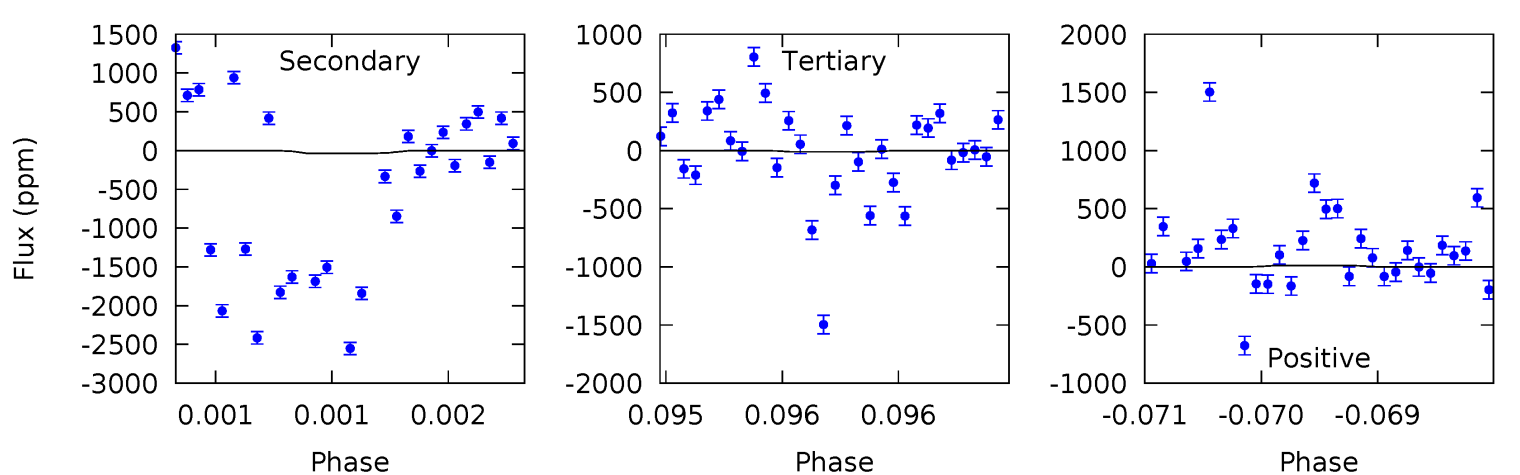
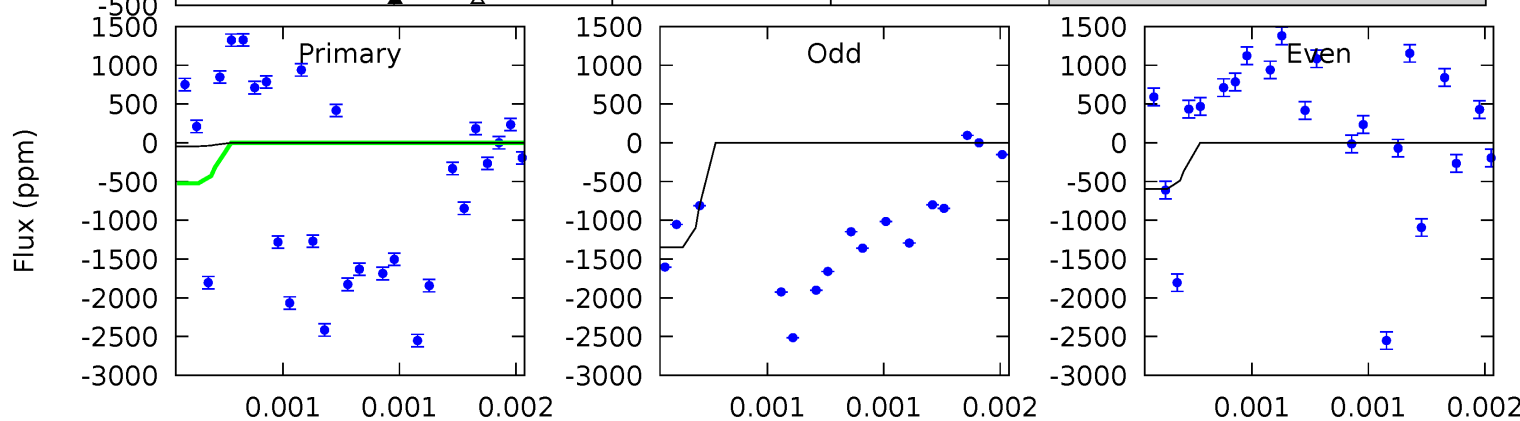
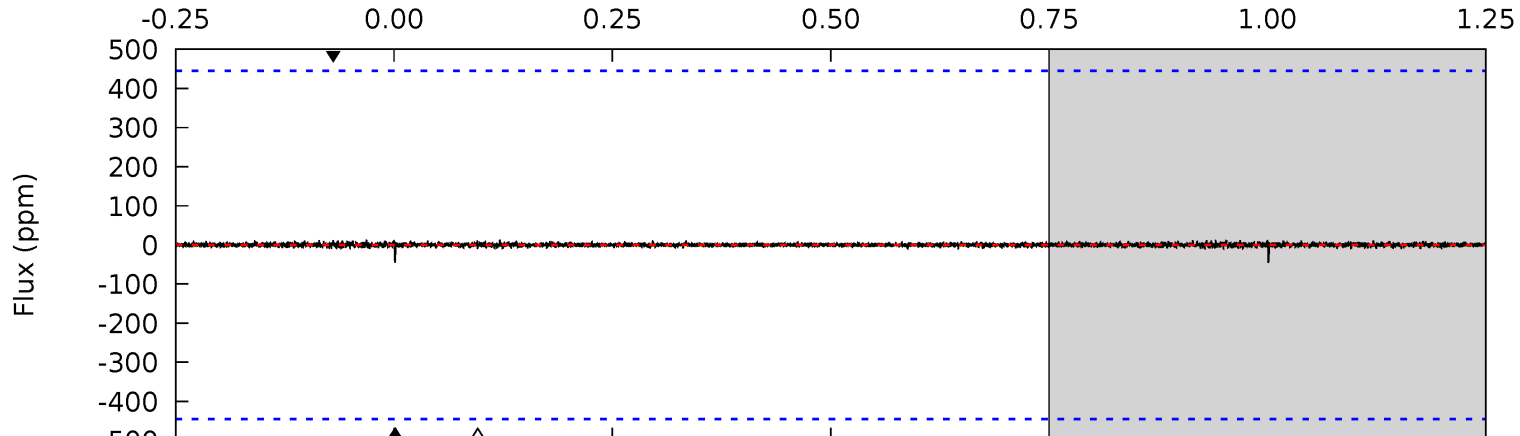
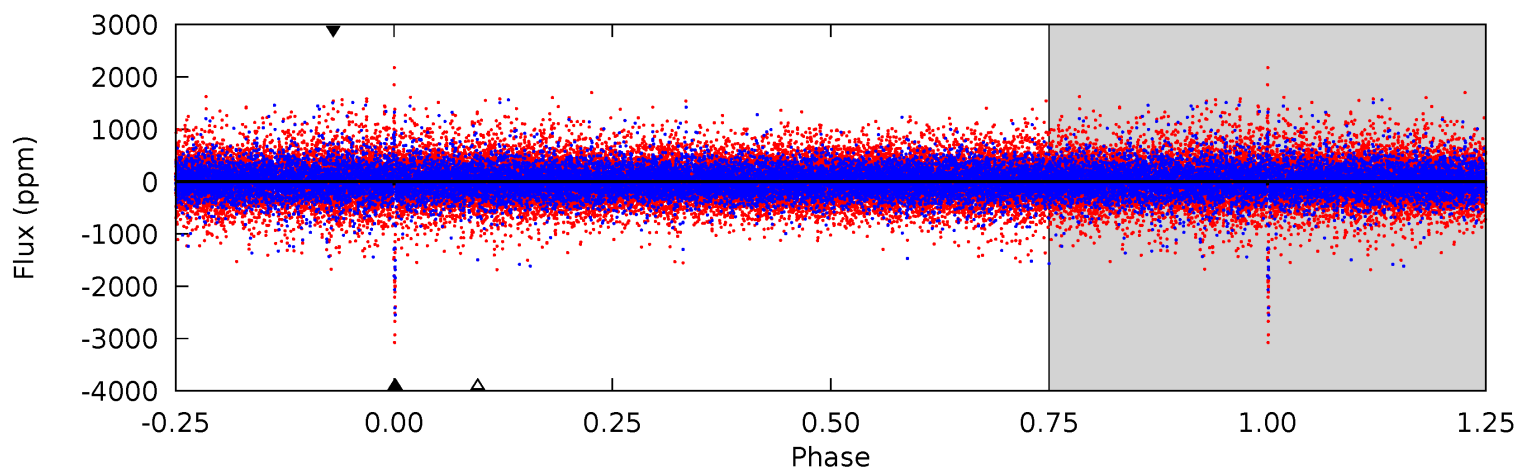
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.01	6.21	6.02	6.51	5.73	3.72	1.44	-3.01	-3.50	0.19	-0.30	1.22	1.09	0.51	0.20



Alt Model-Shift Uniqueness Test

009838608-04, P = 209.621081 Days, E = 44.174932 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.56	0.42	0.13	0.15	5.52	3.40	0.03	0.43	0.41	0.29	0.28	5.21	1.60	0.21	2.33



Stellar Parameters For KIC 009838608

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6063^{+163}_{-199}	$4.510^{+0.050}_{-0.200}$	$-0.260^{+0.300}_{-0.300}$	$0.918^{+0.276}_{-0.092}$	$0.994^{+0.120}_{-0.132}$	$1.810^{+0.476}_{-0.959}$
	+3%/-3%	+1%/-4%	+115%/-115%	+30%/-10%	+12%/-13%	+26%/-53%
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 009838608-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-738 ± 119	$9.17^{+10.16}_{-6.55}$	440^{+29}_{-20}	3783^{+2331}_{-780}	2268^{+24868}_{-1764}
Alt.	-34 ± 81	$10.37^{+9.66}_{-7.53}$	439^{+31}_{-19}	2216^{+989}_{-4703}	45^{+766}_{-172}

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

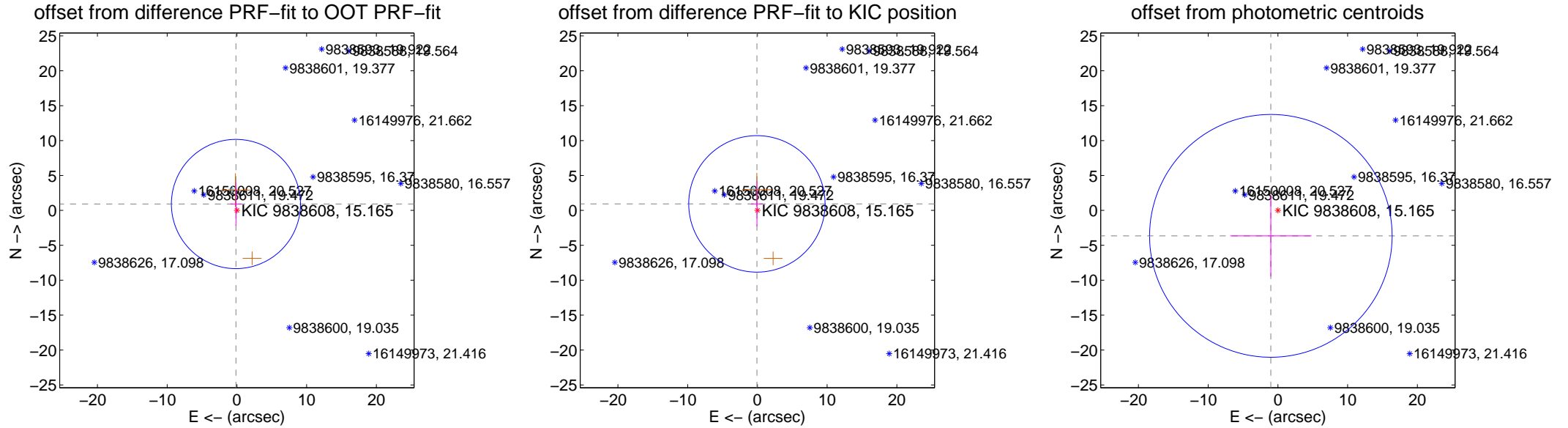
DV Centroid Data

Supplemental centroid analysis for 009838608-04. Kepler magnitude: 15.16. Transit SNR 1.87

There are 1 quarters with good PRF difference image offsets

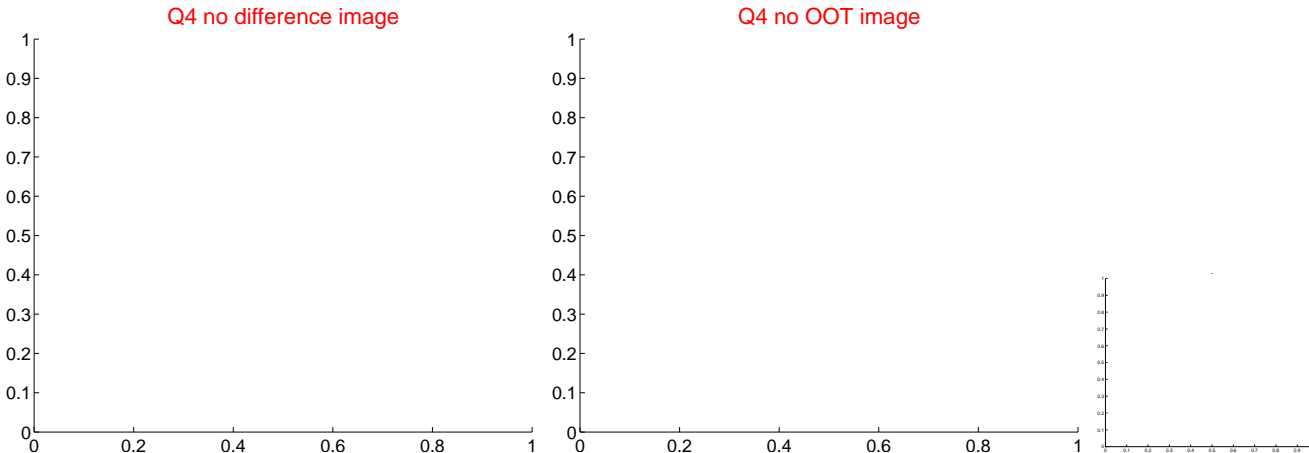
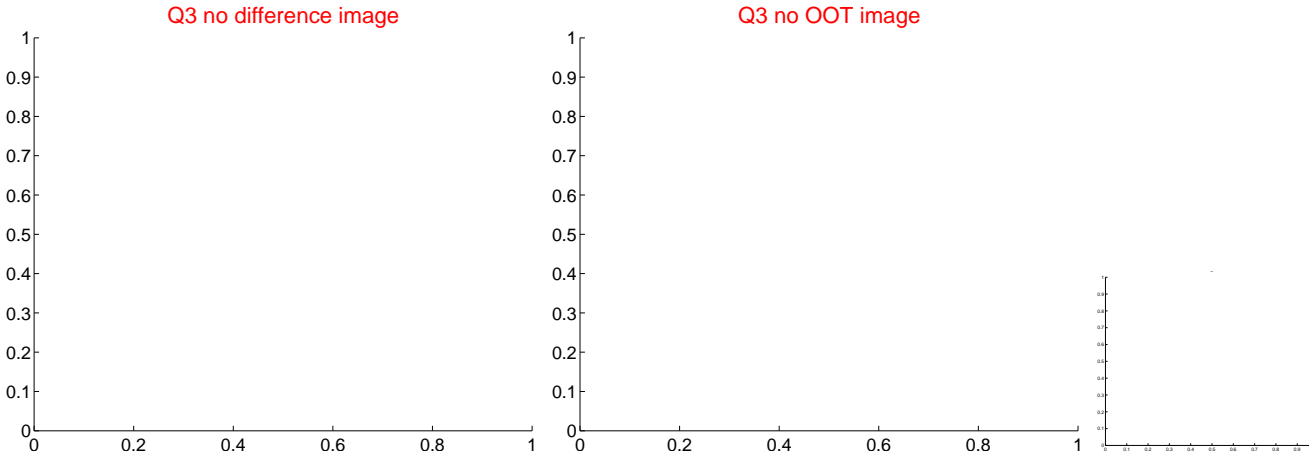
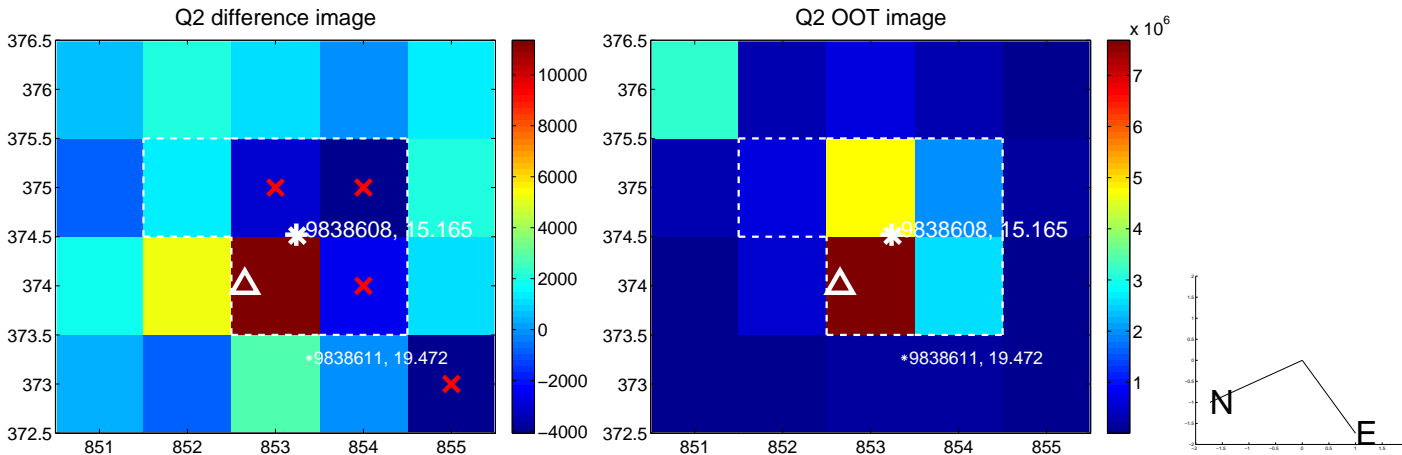
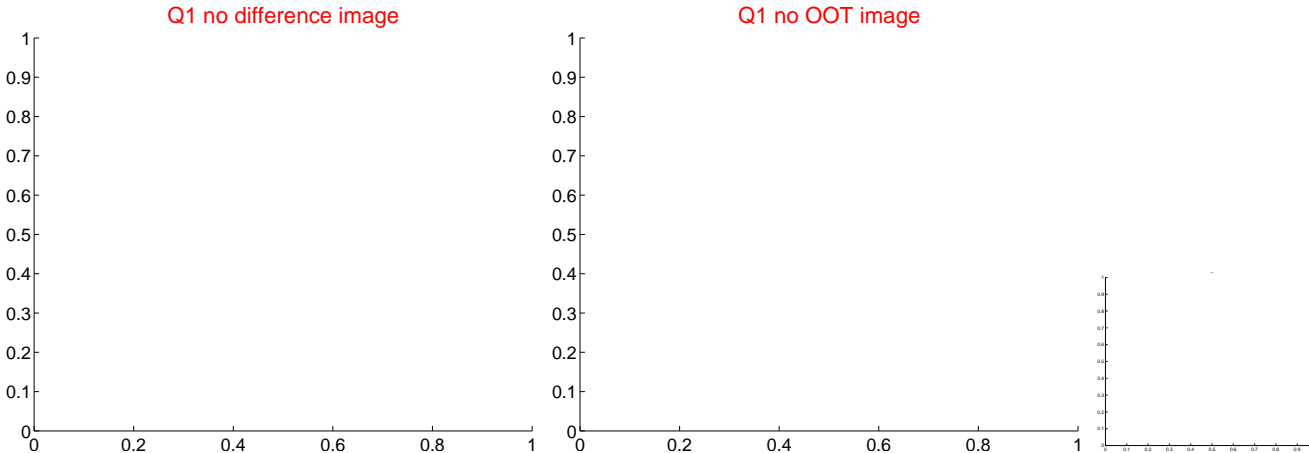
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.928 ± 3.085	0.30	0.139 ± 0.790	0.918 ± 3.118
PRF-fit source offset from KIC position	0.938 ± 3.258	0.29	0.071 ± 0.848	0.935 ± 3.204
photometric centroid source offset	3.78 ± 5.80	0.65	1.01 ± 5.83	-3.64 ± 5.79

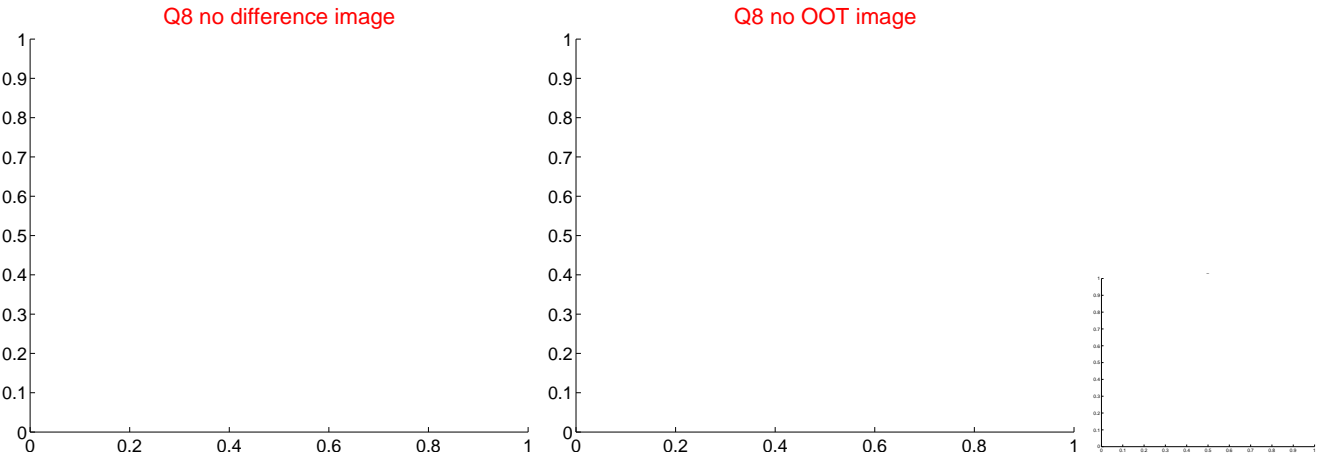
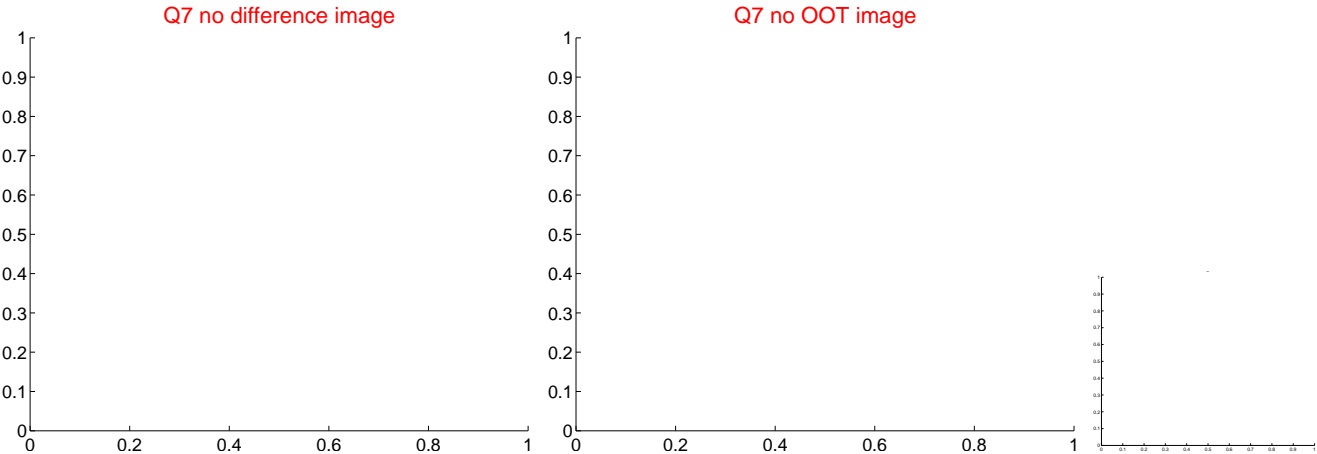
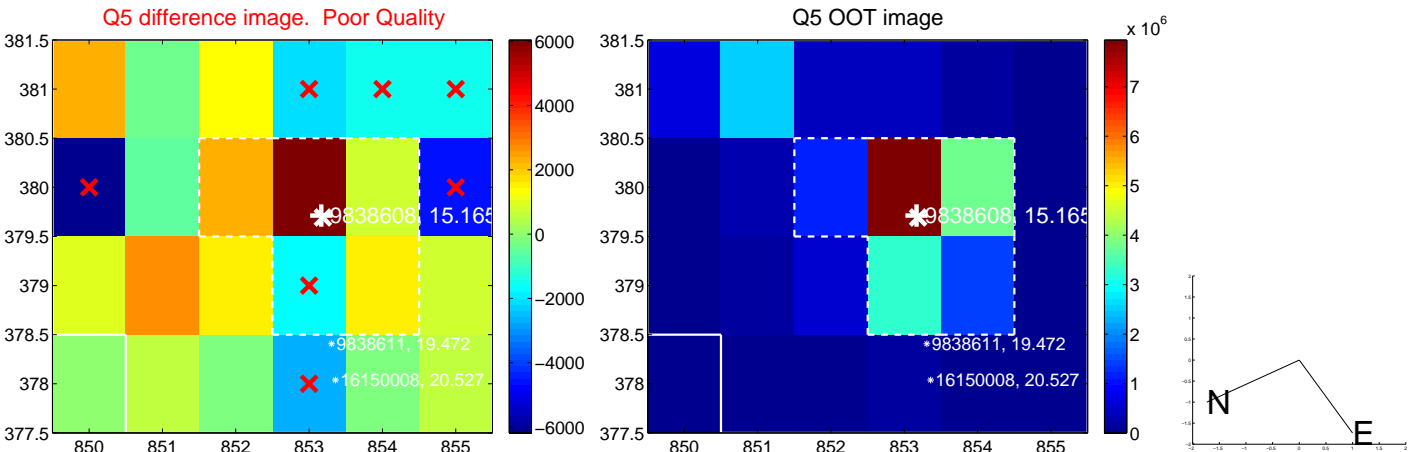


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

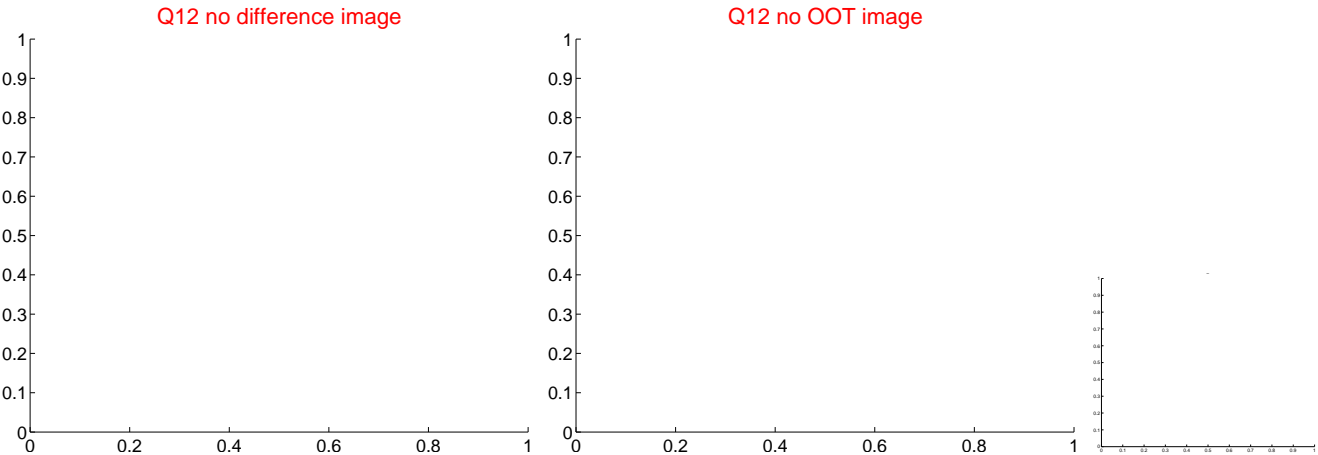
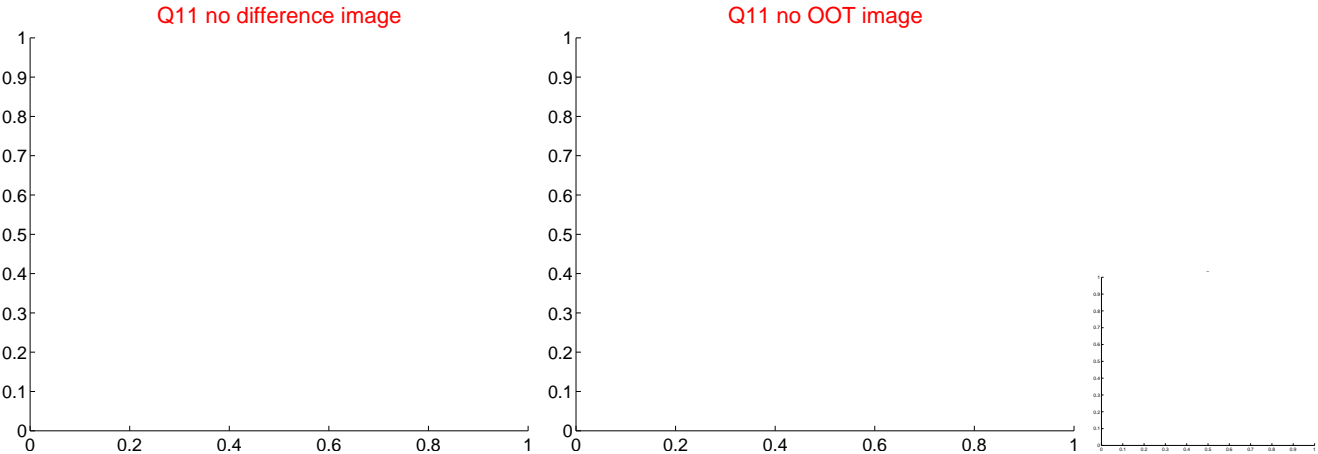
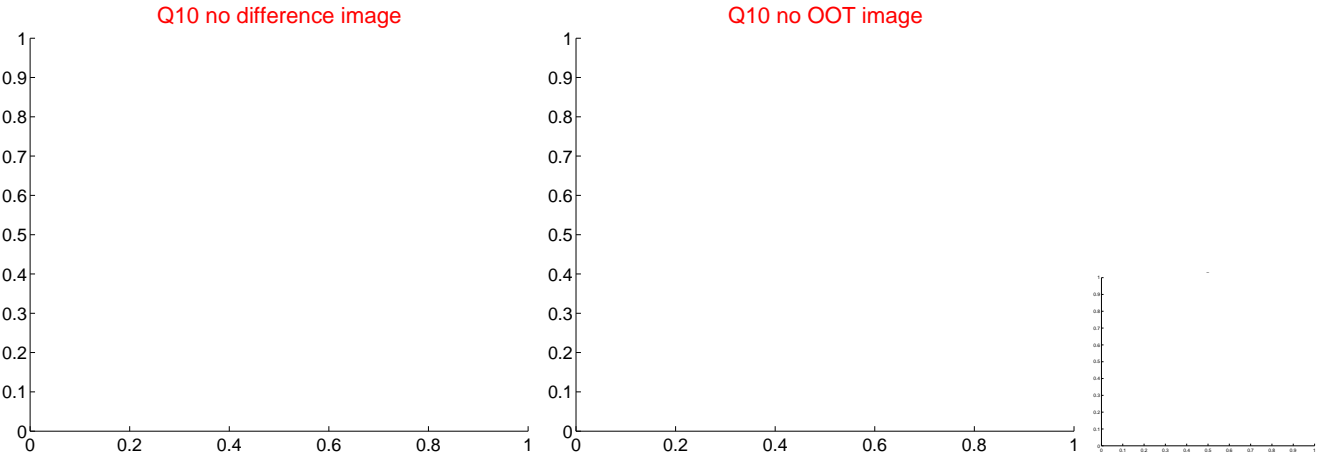
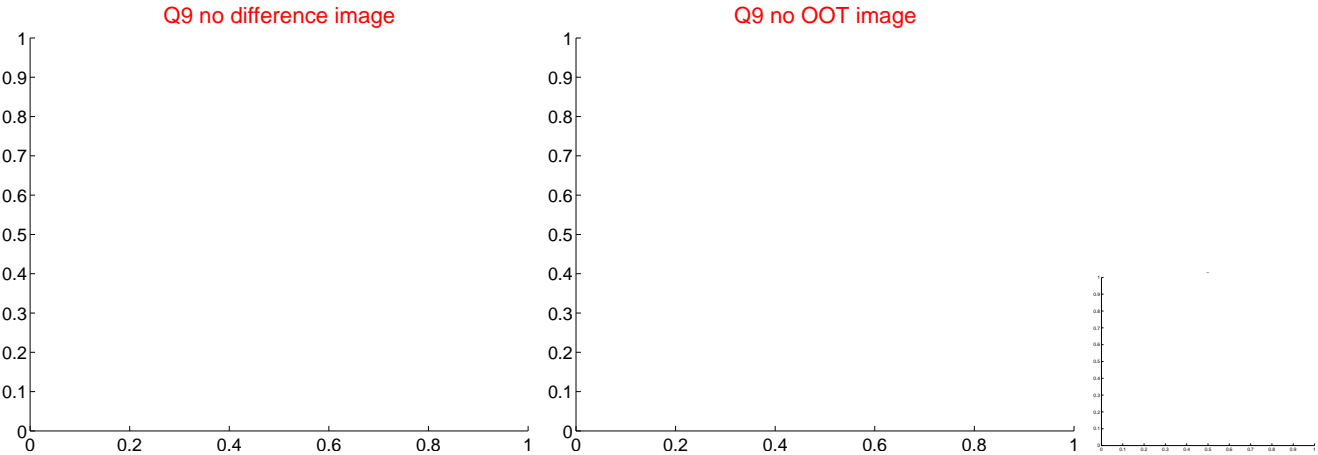
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



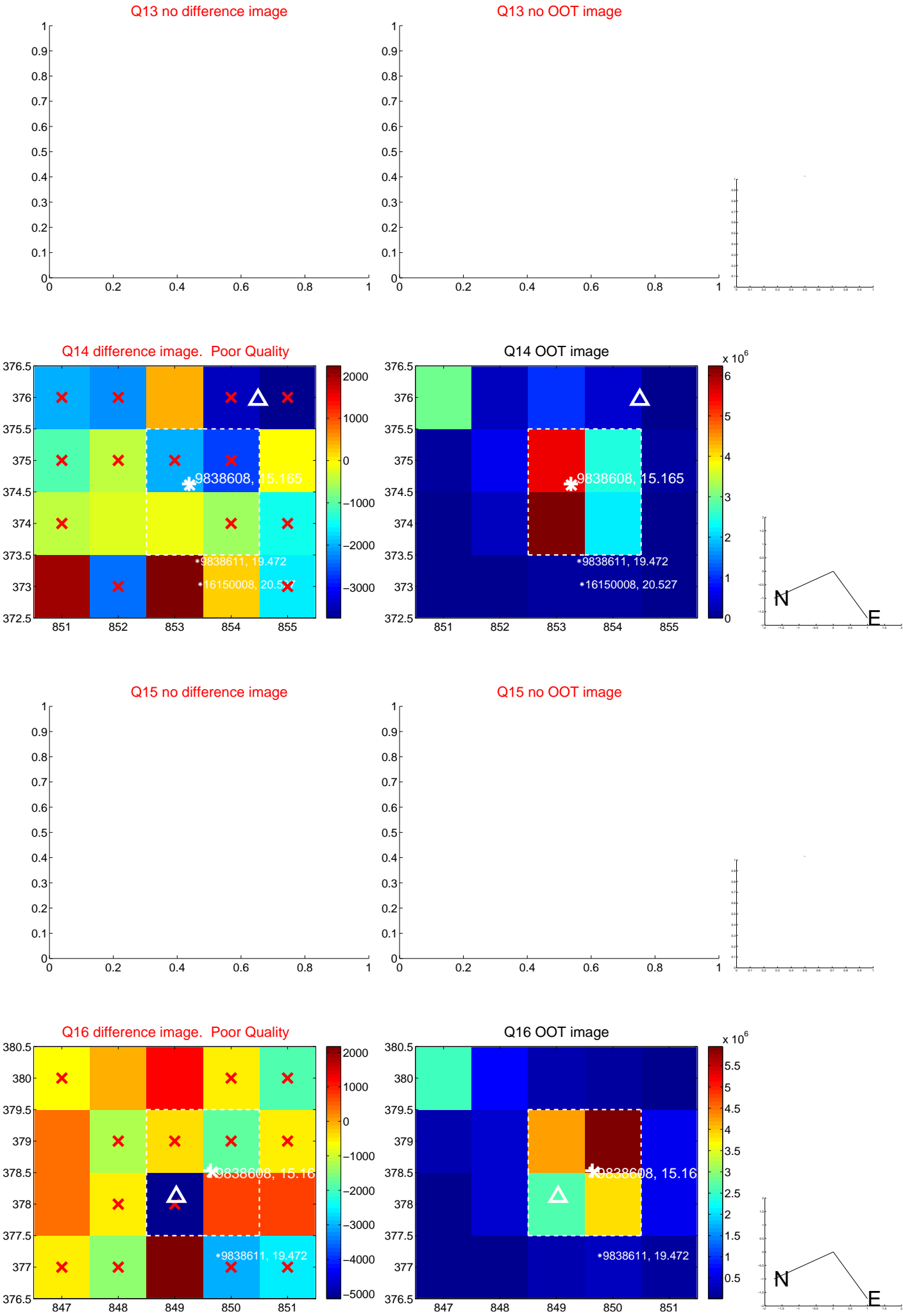
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



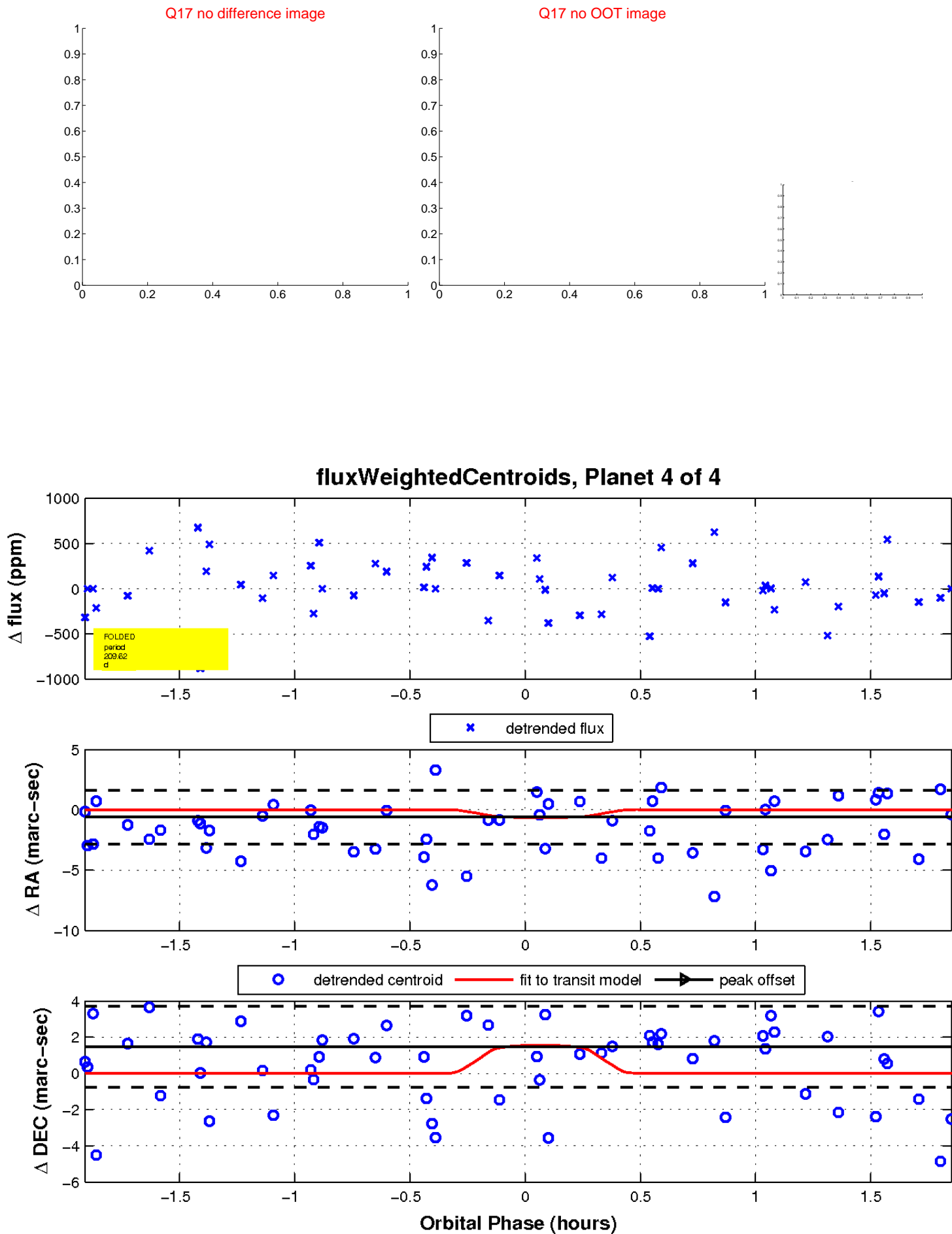
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

