

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})
009650048-01	OBS	No	79.521238	135.132830	1426.8	8.314	13.9	3.2	172.45	3420	596.87	0.00
009650048-02	OBS	No	48.590399	161.382228	1712.0	6.008	12.7	5.2	172.45	3420	897.18	0.00
009650048-03	OBS	No	24.115052	145.753117	2221.7	17.763	9.9	7.0	172.45	3420	1117.14	0.00
009650048-04	OBS	No	51.481188	142.840114	1946.8	2.720	15.5	5.7	172.45	3420	874.61	0.00
009650048-05	OBS	No	86.617464	188.411391	195.5	6.848	11.3	0.5	172.45	3420	298.28	0.00
009650048-06	OBS	No	76.441075	200.861693	3467.7	3.505	11.3	8.1	172.45	3420	1253.74	0.00
009650048-07	OBS	No	65.506849	136.684124	1497.1	17.131	10.7	4.4	172.45	3420	691.84	0.00
009650048-08	OBS	No	68.464196	145.864858	4876.3	6.518	12.2	11.8	172.45	3420	1272.13	0.00
009650048-09	OBS	No	27.127219	145.955115	1498.1	9.143	11.9	5.7	172.45	3420	1106.13	0.00
009650048-10	OBS	No	130.405347	136.770863	2040.2	5.061	11.5	6.2	172.45	3420	885.03	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650048-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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—CENT_FEW_DIFFS
009650048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES
009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
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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.

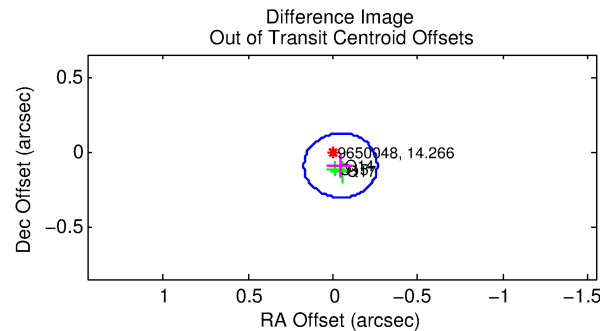
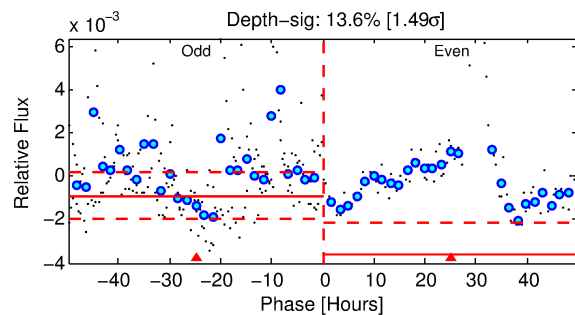
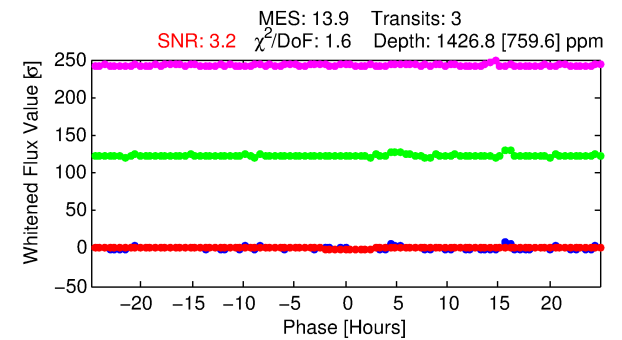
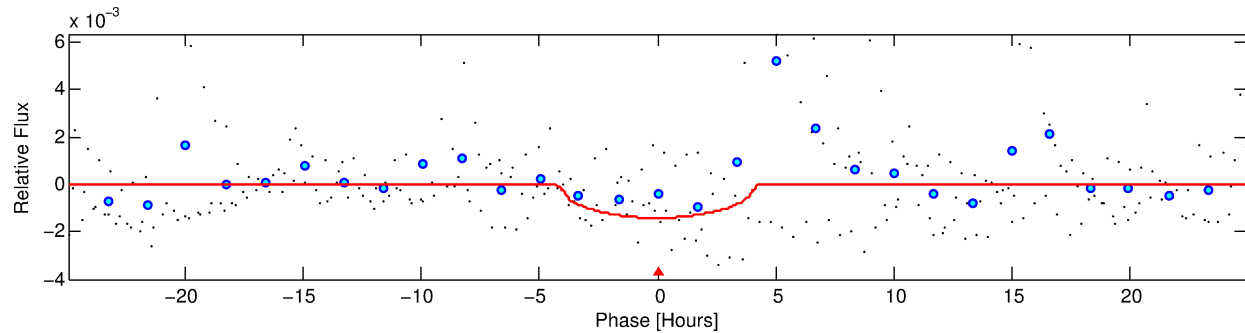
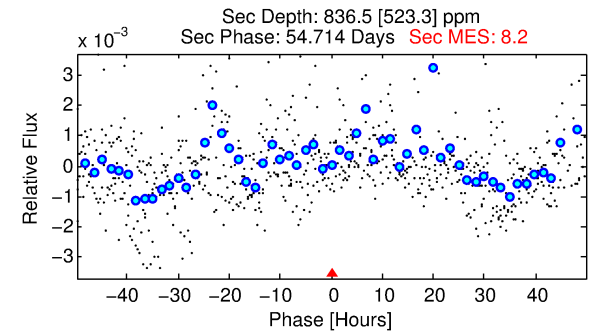
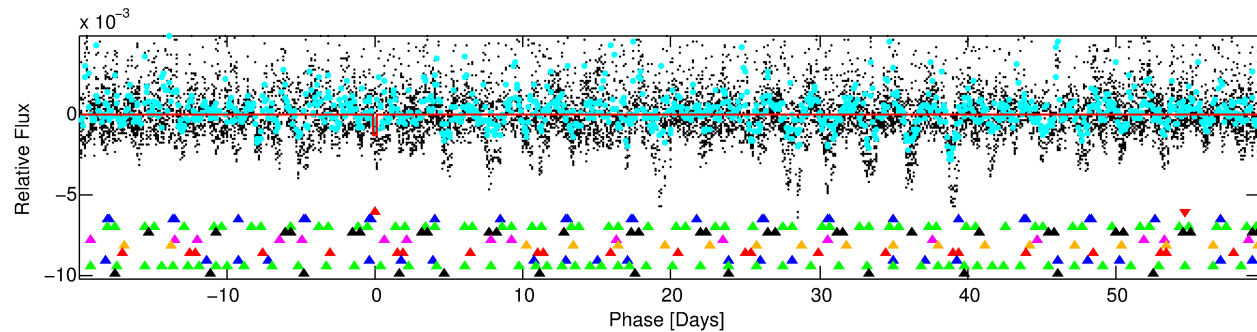
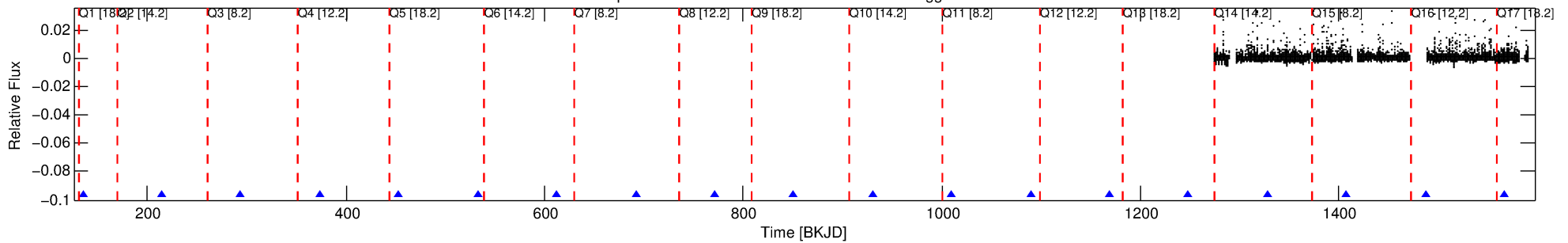
Ephemeris Match Information For 009650048-01

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 1 of 10 Period: 79.521 d

Kp: 14.27 R*: 172.45 Rs Teff: 3420.0 K Logg: 0.53 Fe/H: 0.560



DV Fit Results:

Period = 79.52124 [0.00711] d
Epoch = 135.1328 [0.1157] BKJD
Rp/R* = 0.0317 [0.0349]
a/R* = 75.36 [168.10]
b = 0.03 [72.73]
Seff = N/A
Teq = N/A
Rp = 596.86 [735.65] Re
a = N/A
Ag = N/A
Teffp = N/A

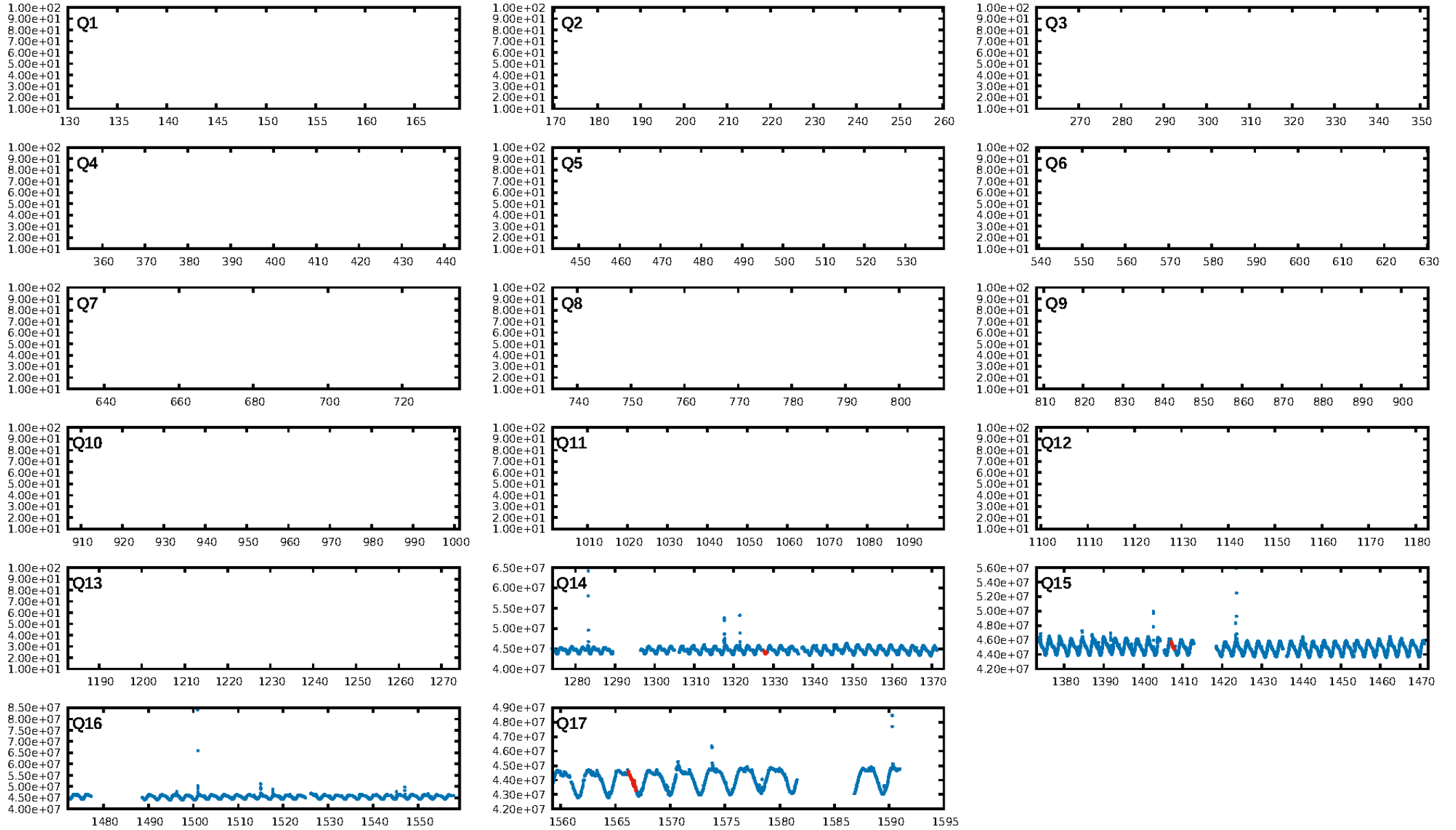
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.19σ]
LongPeriod-sig: 100.0% [15.81σ]
ModelChiSquare2-sig: 4.0%
ModelChiSquareGof-sig: 29.6%
Bootstrap-pfa: 3.21e-16
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.2989
Centroid-sig: 30.3%
Centroid-so: 0.435 arcsec [0.87σ]
OotOffset-rm: 0.102 arcsec [1.42σ]
KicOffset-rm: 0.133 arcsec [1.12σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.67 [2/3]

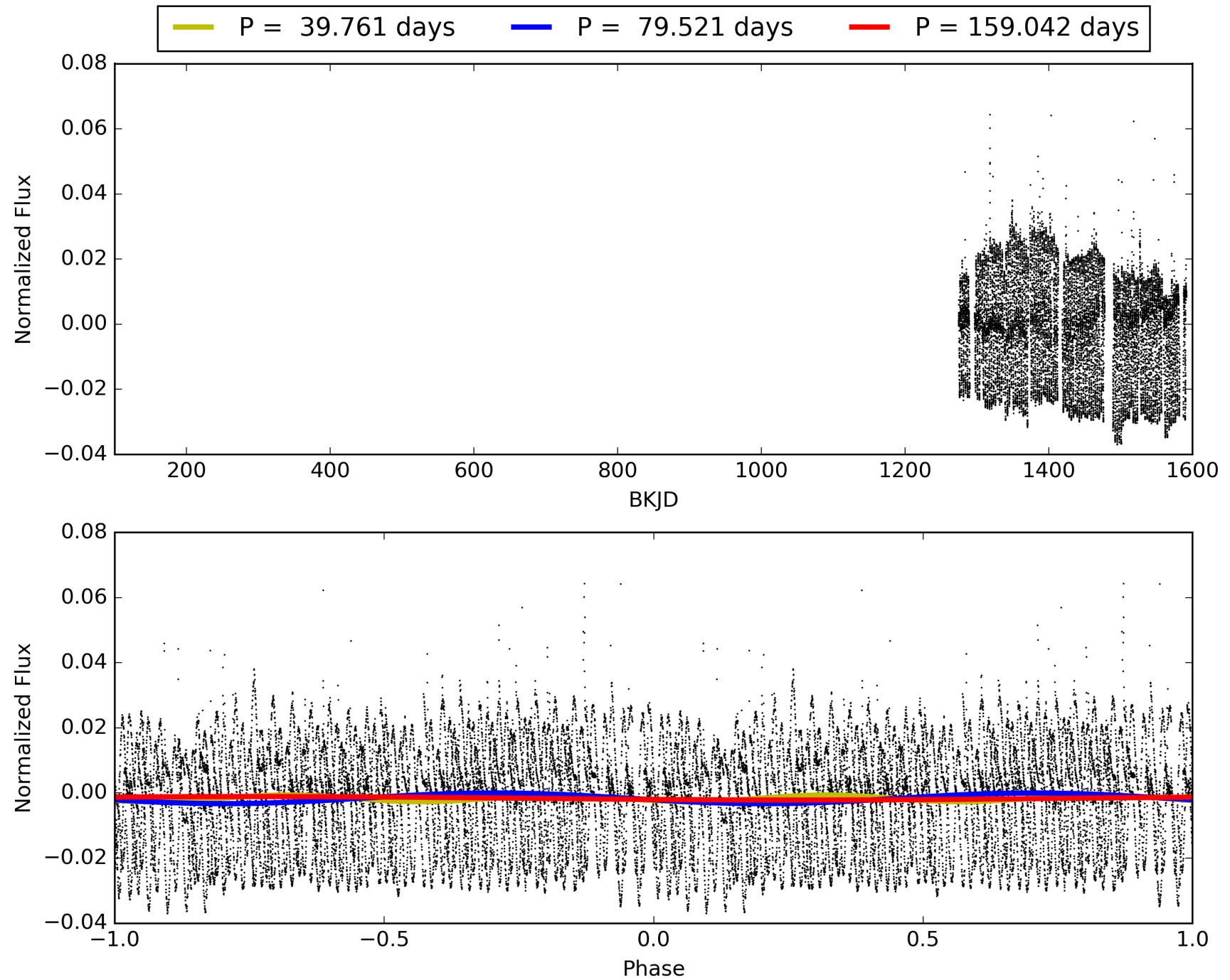
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:57:19 Z

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

TCE 009650048-01, PDC Light Curves

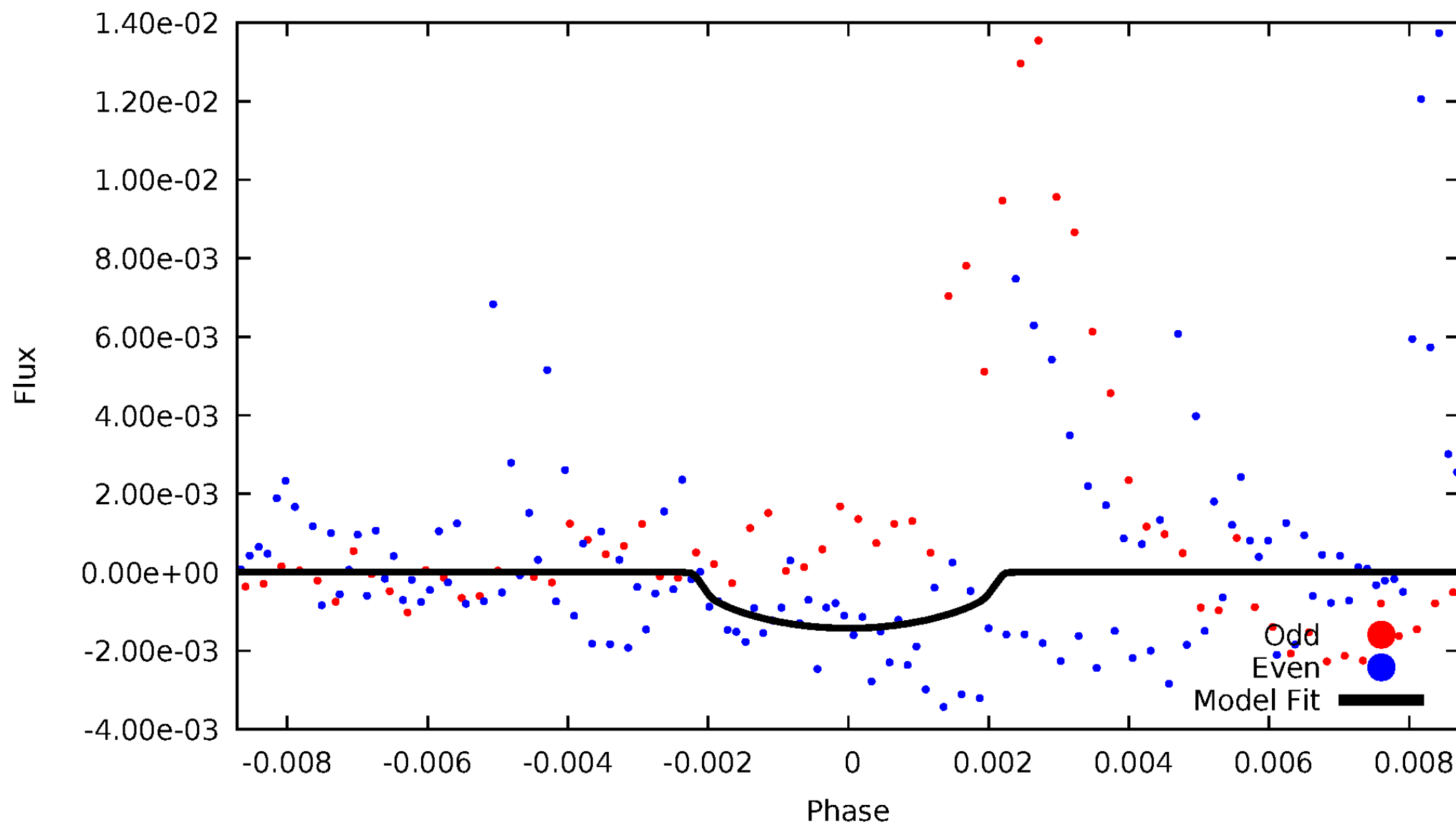


TCE 009650048-01



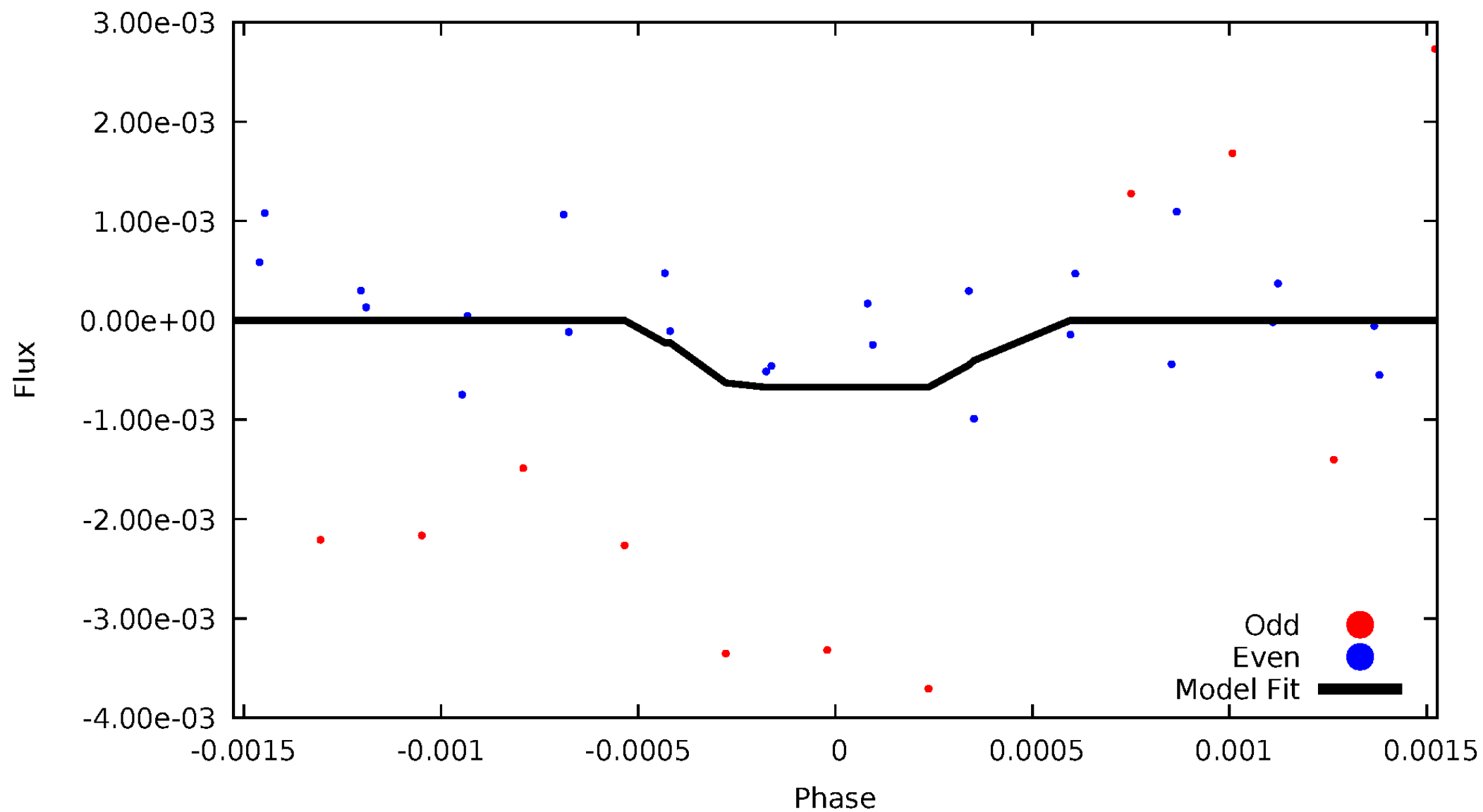
DV Odd/Even

TCE 009650048-01



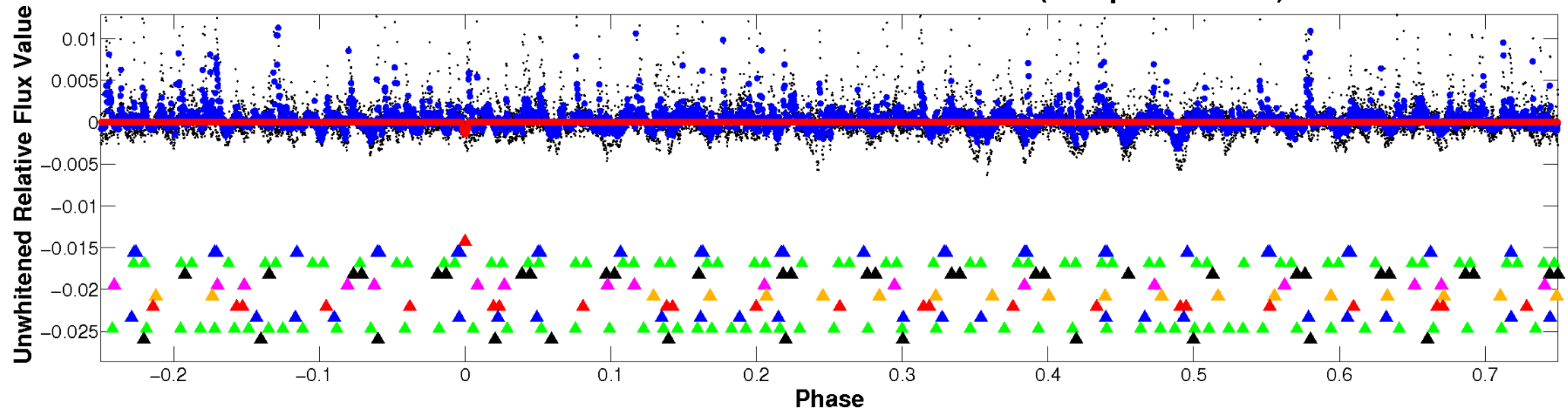
ALT Odd/Even

TCE 009650048-01

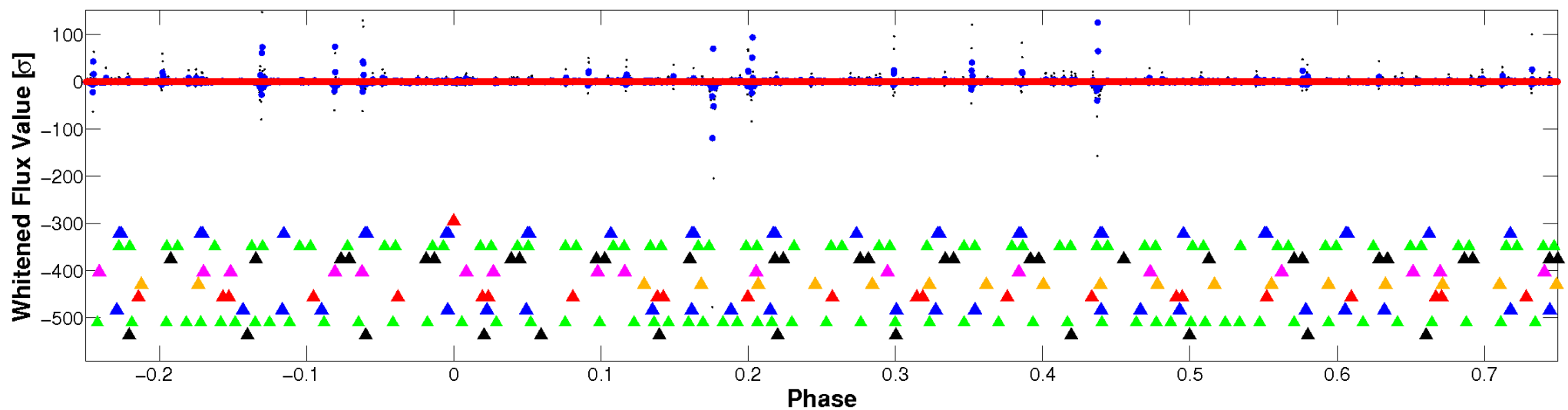


Non-Whitened Vs. Whitened Light Curve

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

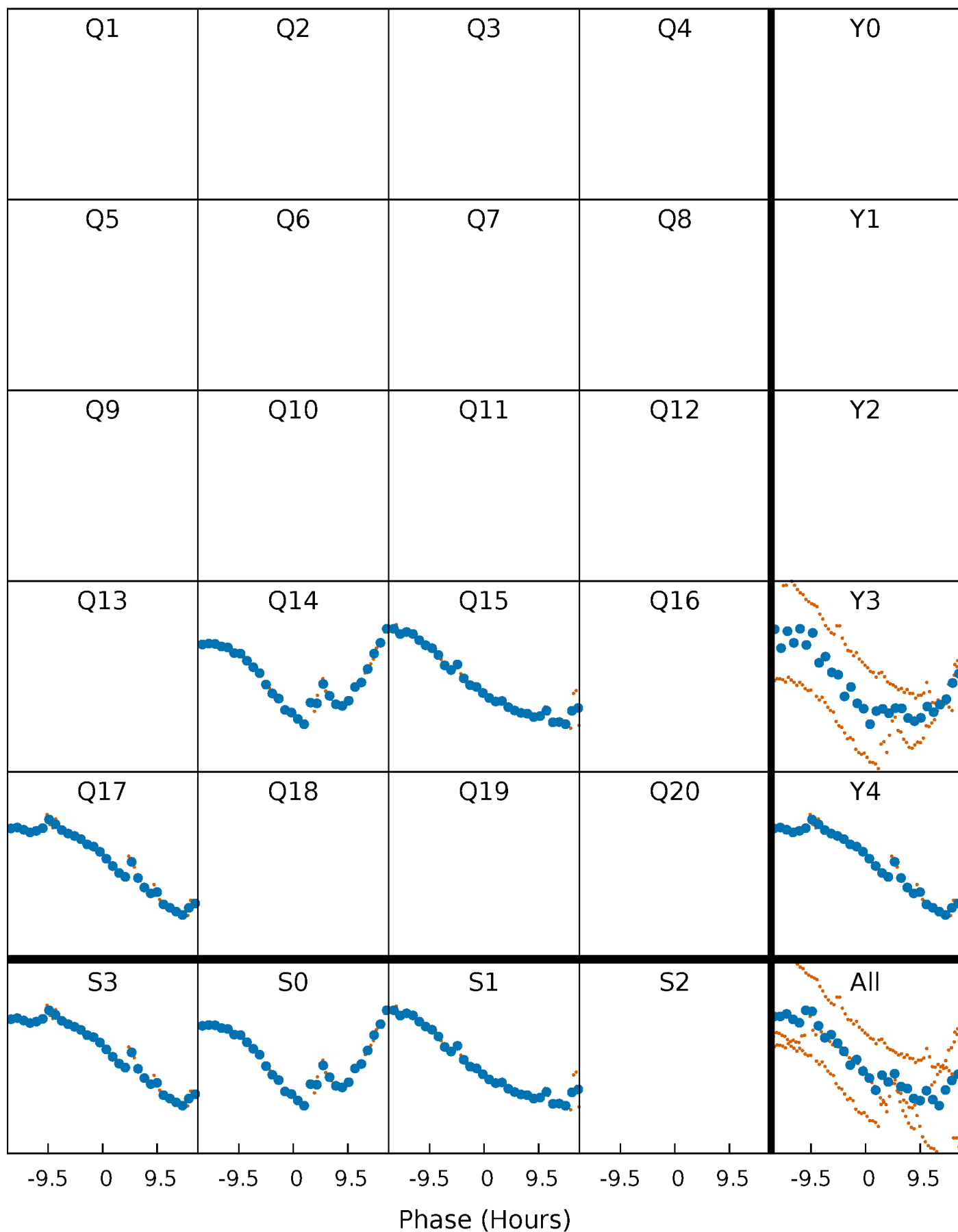


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



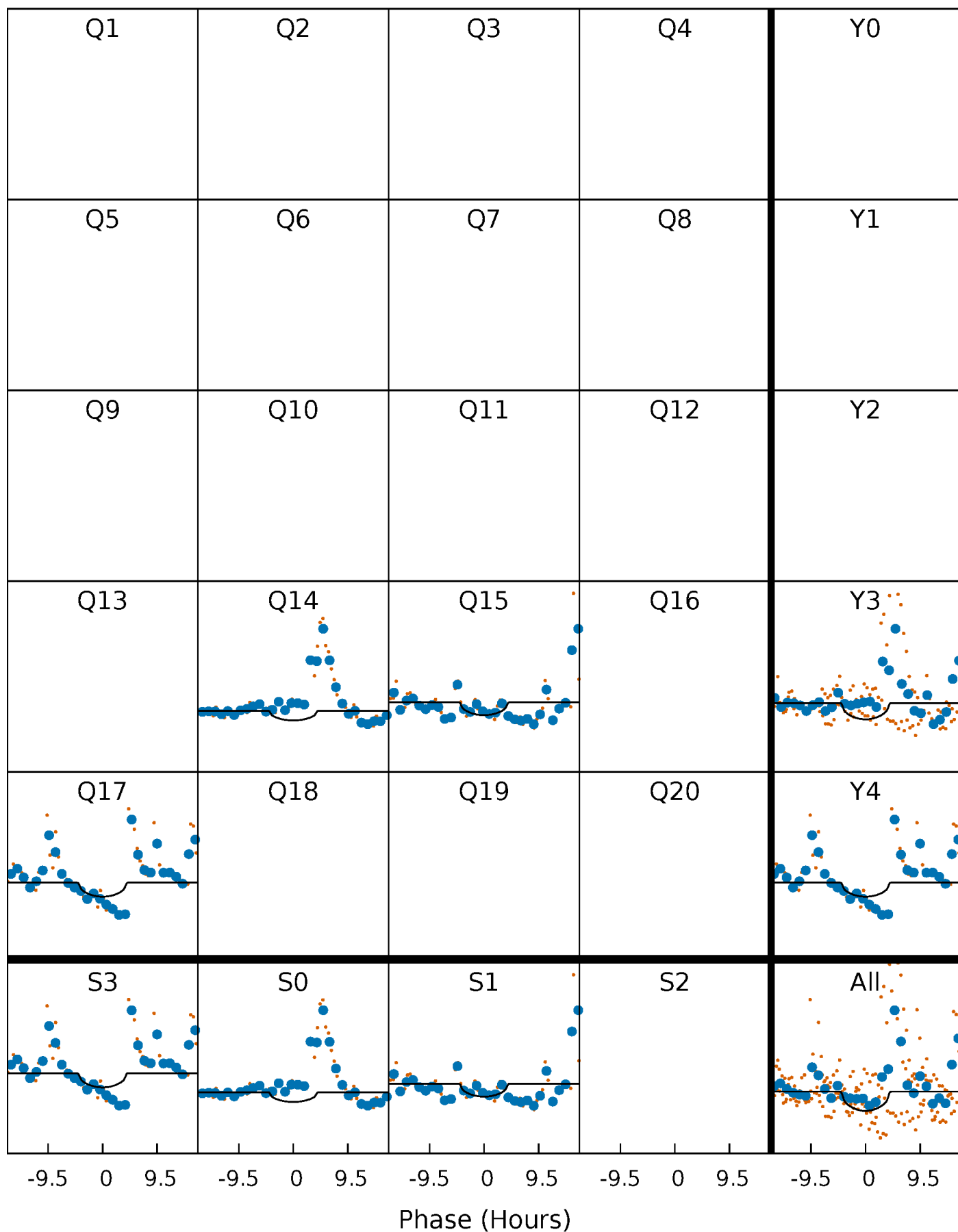
PDC Quarter-Phased Transit Curves

TCE 009650048-01 P= 79.521238 Days $T_0=135.132830$ (BKJD)



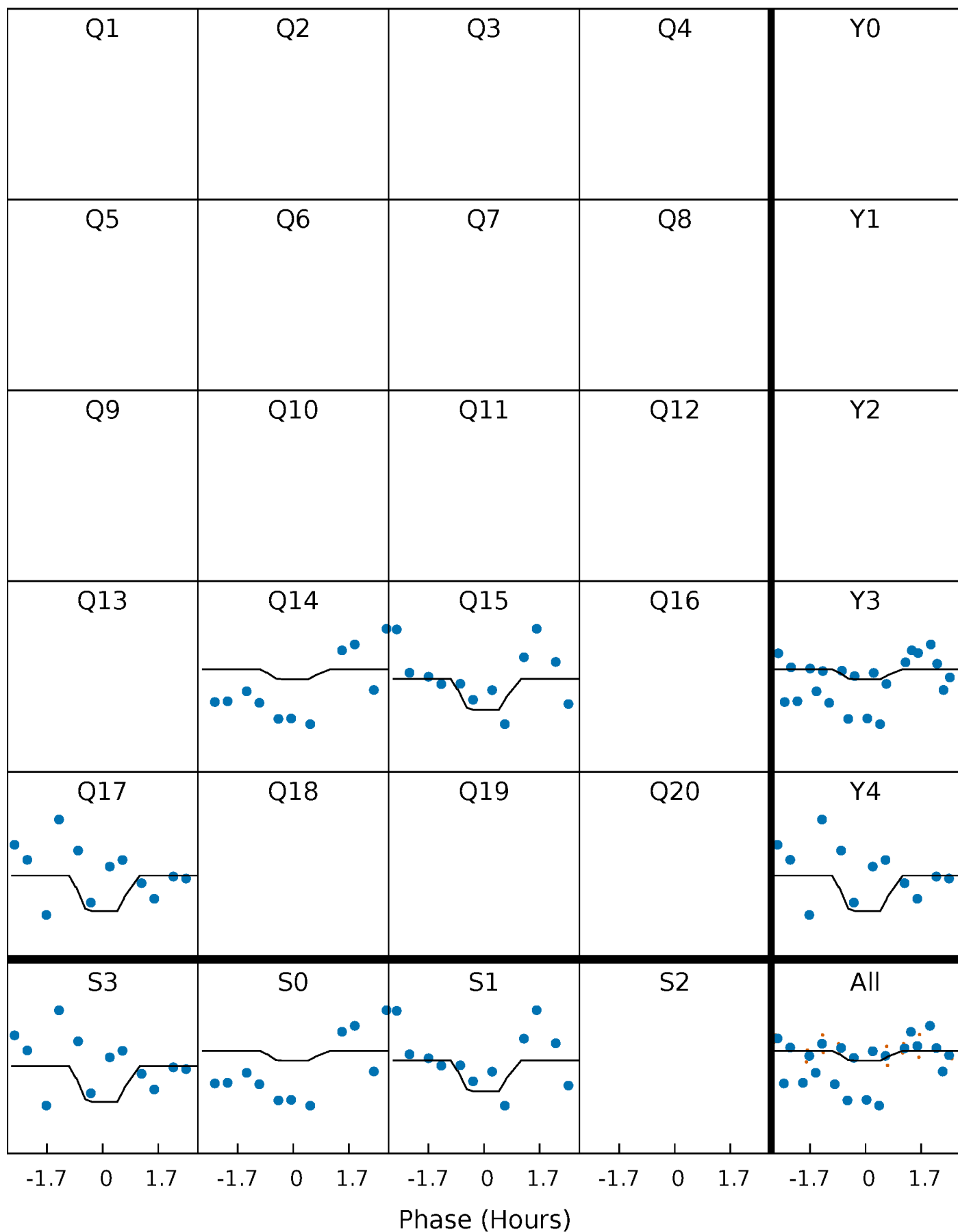
DV Quarter-Phased Transit Curves

TCE 009650048-01 P= 79.521238 Days $T_0=135.132830$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

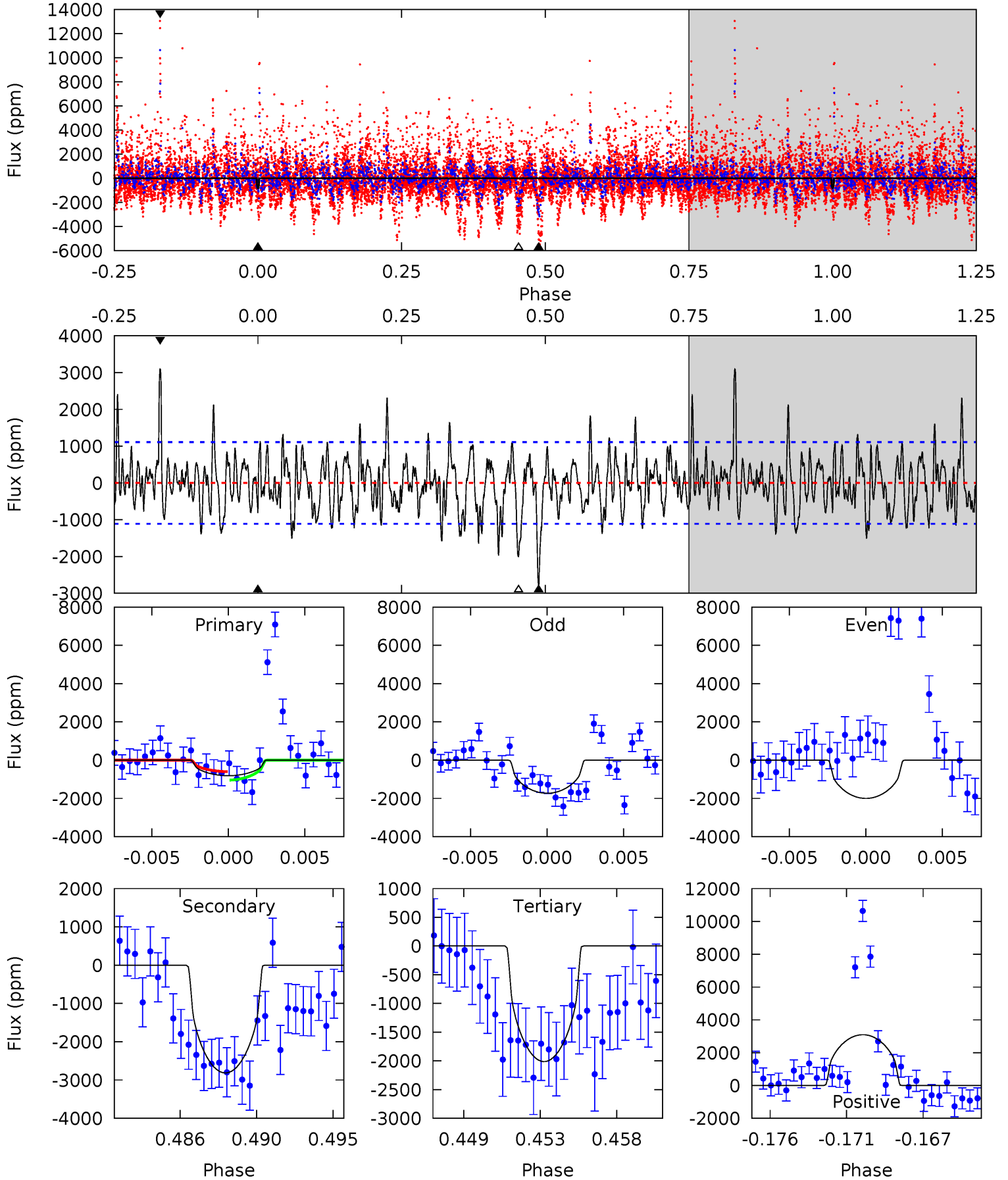
TCE 009650048-01 P= 79.516752 Days $T_0=135.253849$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-01, P = 79.521238 Days, E = 135.132830 Days

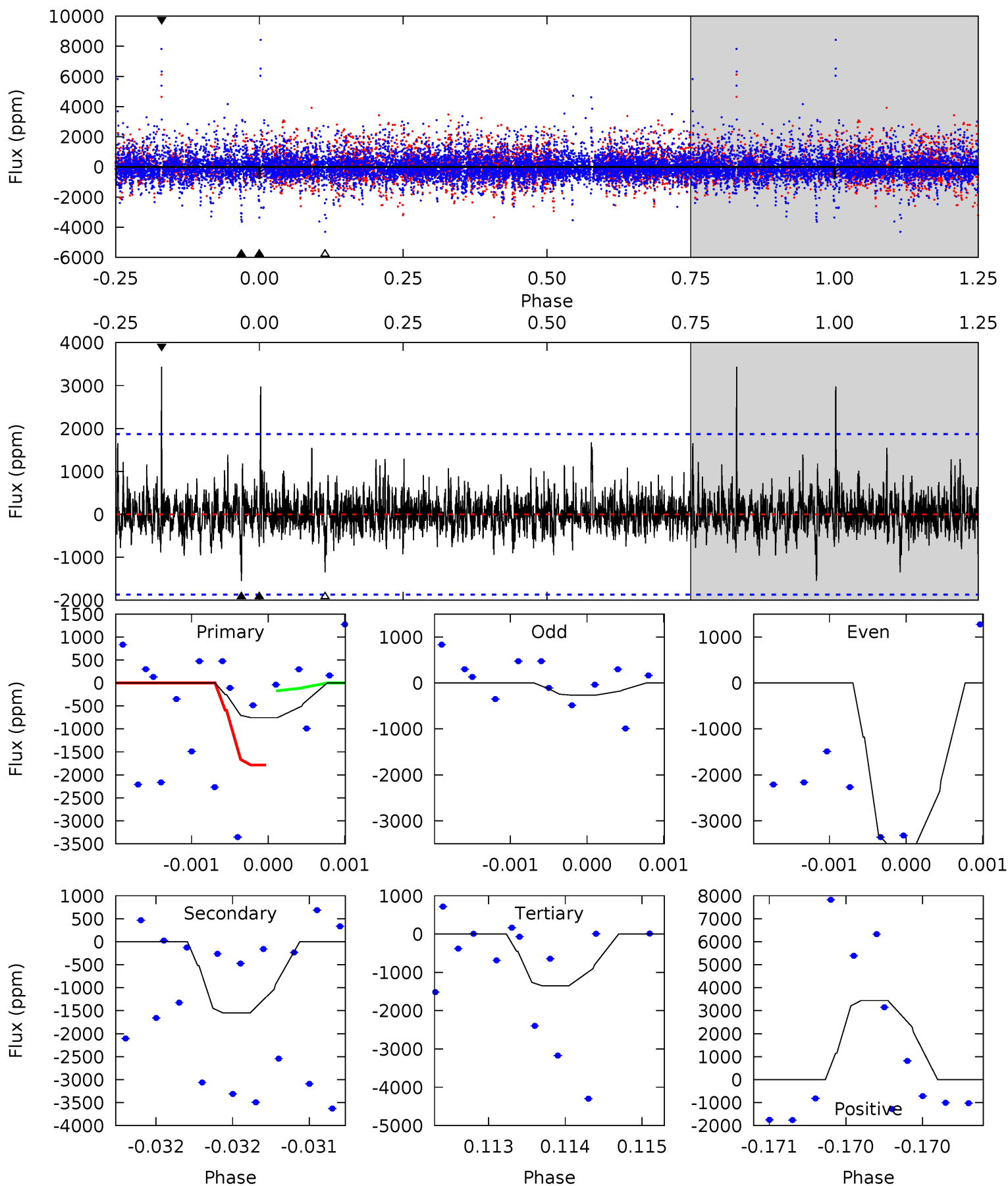
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.78	13.1	9.36	14.4	5.17	2.83	3.06	-5.58	-10.6	3.73	-1.31	0.36	0.45	0.52	1.03



Alt Model-Shift Uniqueness Test

009650048-01, P = 79.516752 Days, E = 135.253849 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.22	4.56	3.97	10.1	5.50	3.36	0.96	-1.75	-7.89	0.59	-5.55	3.48	2.52	0.69	2.57



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2814 ± 215	$657.82^{+636.28}_{-413.90}$	3752^{+240}_{-374}	3629^{+2108}_{-5881}	$1.026^{+6.609}_{-0.746}$
Alt.	-1551 ± 340	$663.78^{+607.71}_{-448.07}$	3744^{+272}_{-354}	3039^{+2089}_{-5922}	$0.547^{+4.414}_{-0.385}$

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 $A_{obs} \gg 1.0$

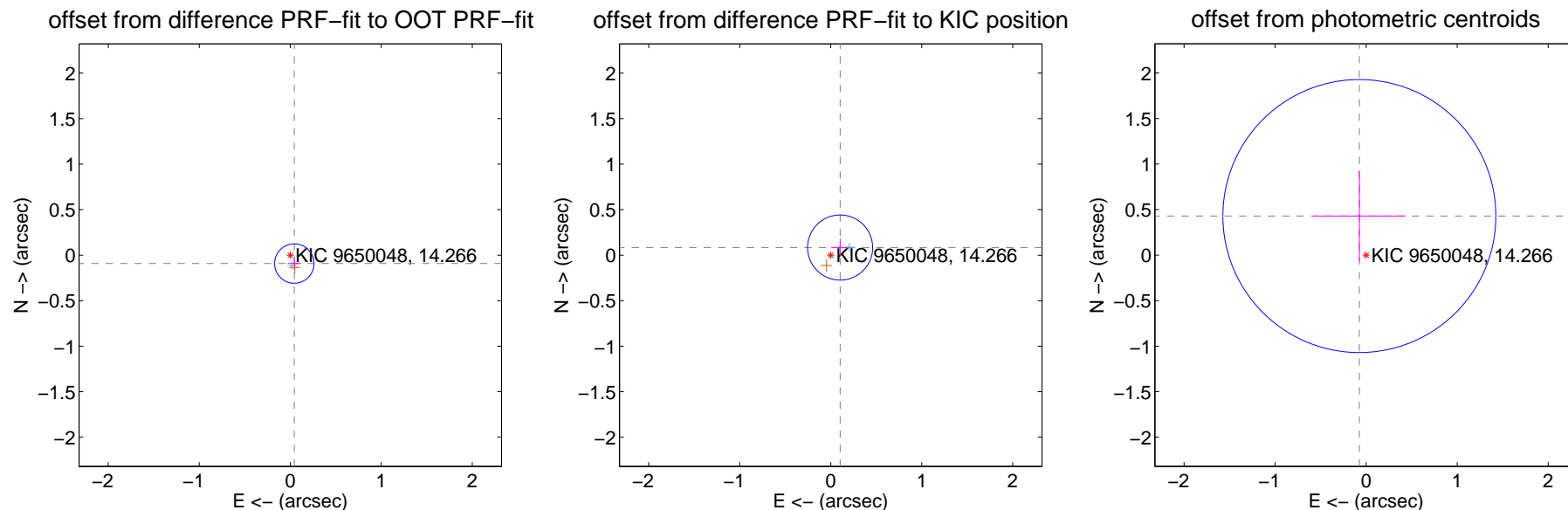
DV Centroid Data

Supplemental centroid analysis for 009650048-01. Kepler magnitude: 14.27. Transit SNR 3.19

There are 2 quarters with good PRF difference image offsets

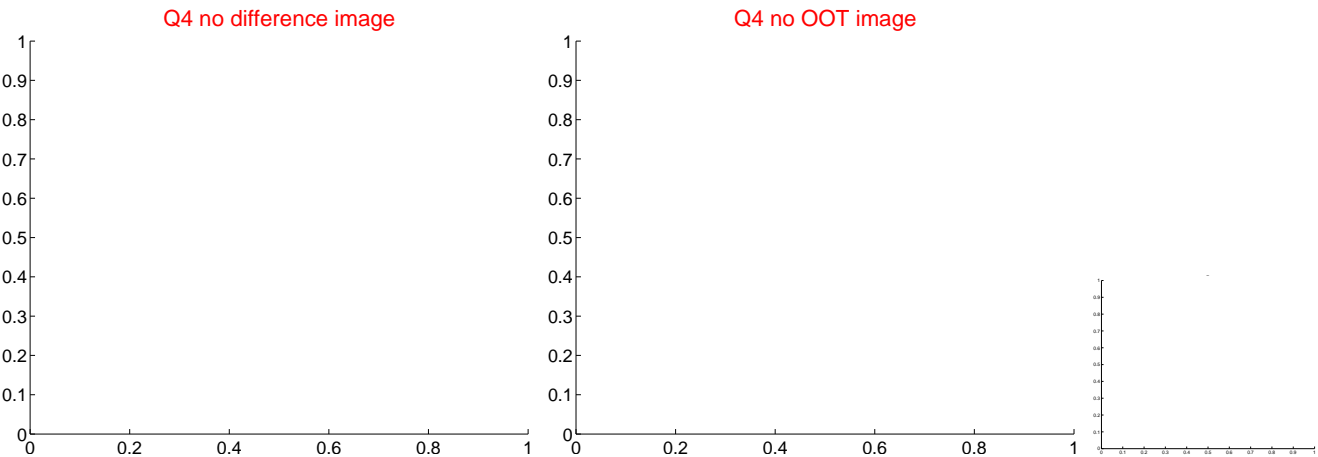
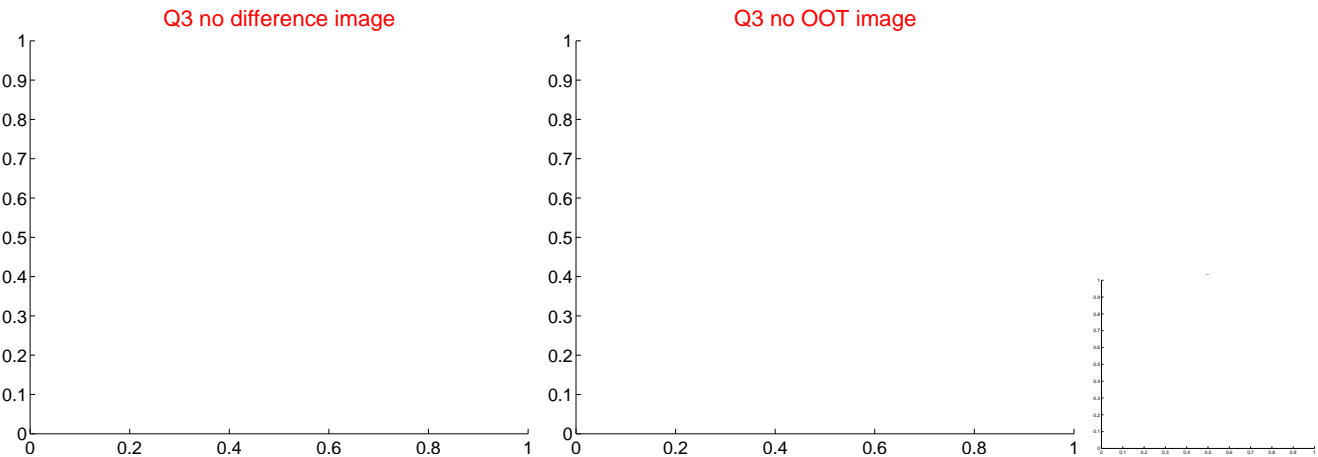
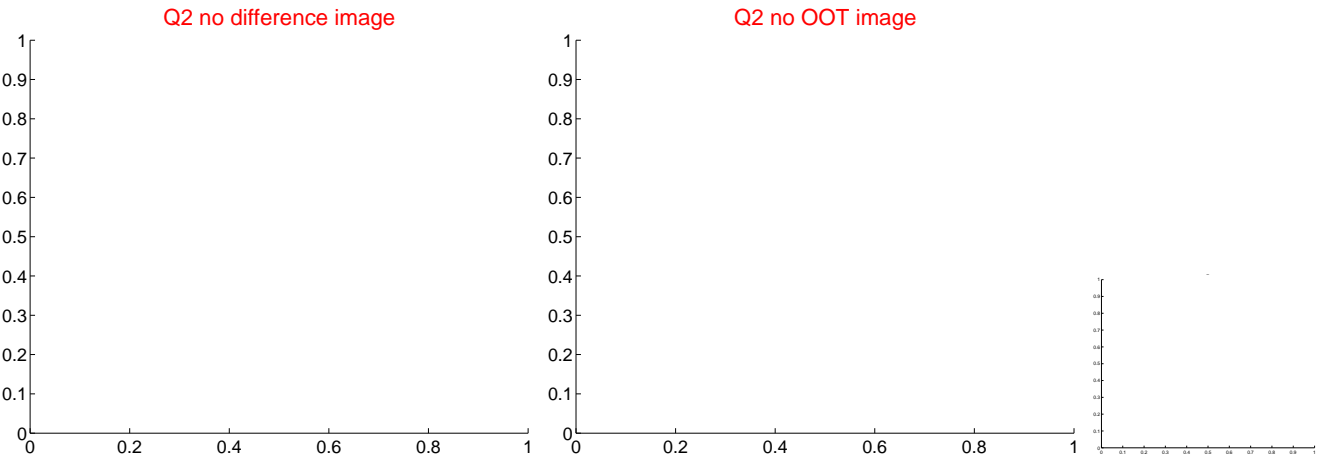
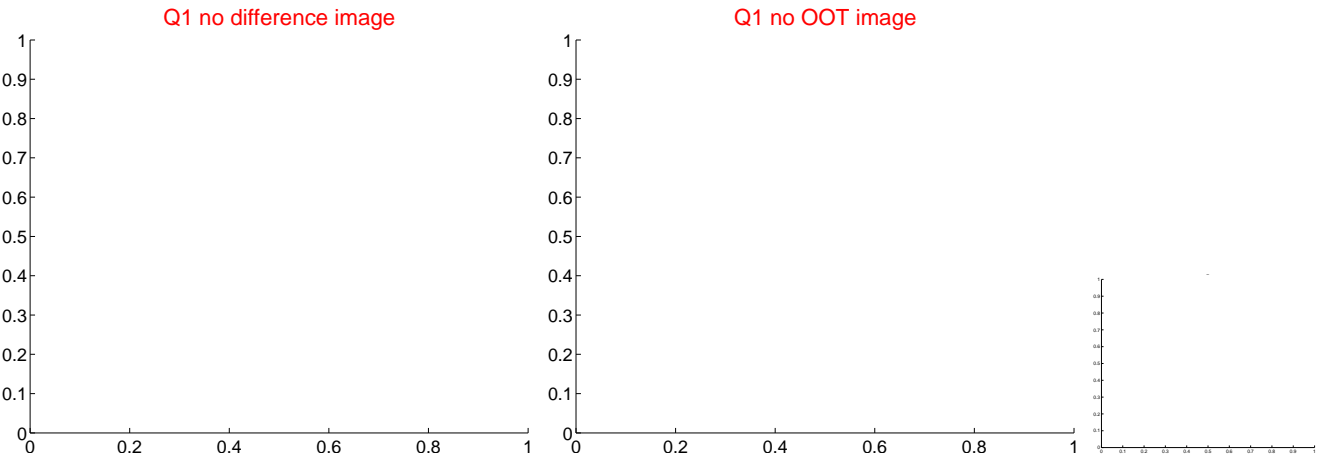
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.102 ± 0.072	1.42	-0.044 ± 0.072	-0.092 ± 0.072
PRF-fit source offset from KIC position	0.133 ± 0.119	1.12	-0.103 ± 0.097	0.084 ± 0.097
photometric centroid source offset	0.43 ± 0.50	0.87	0.07 ± 0.51	0.43 ± 0.50

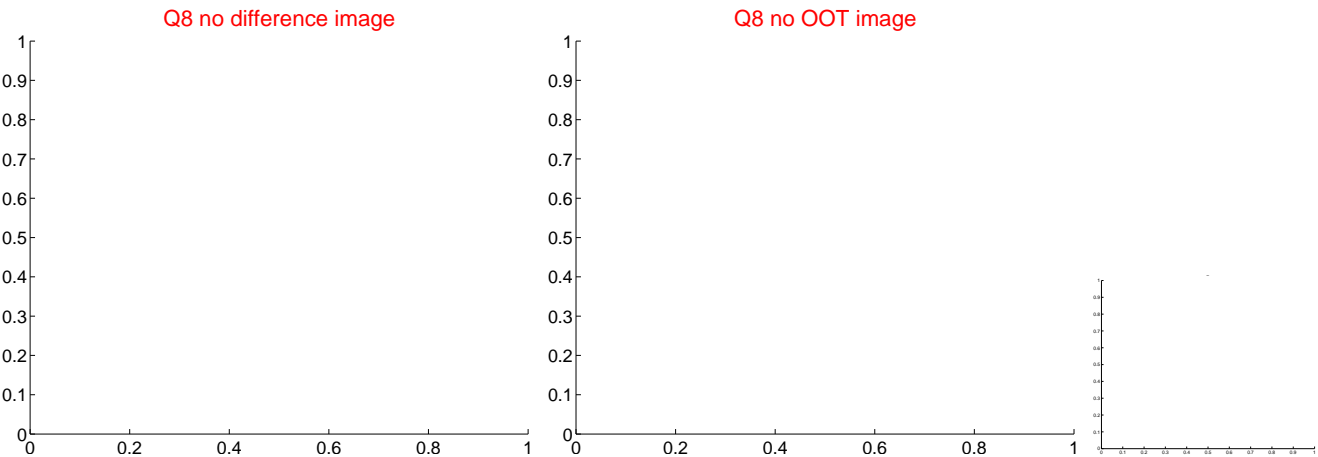
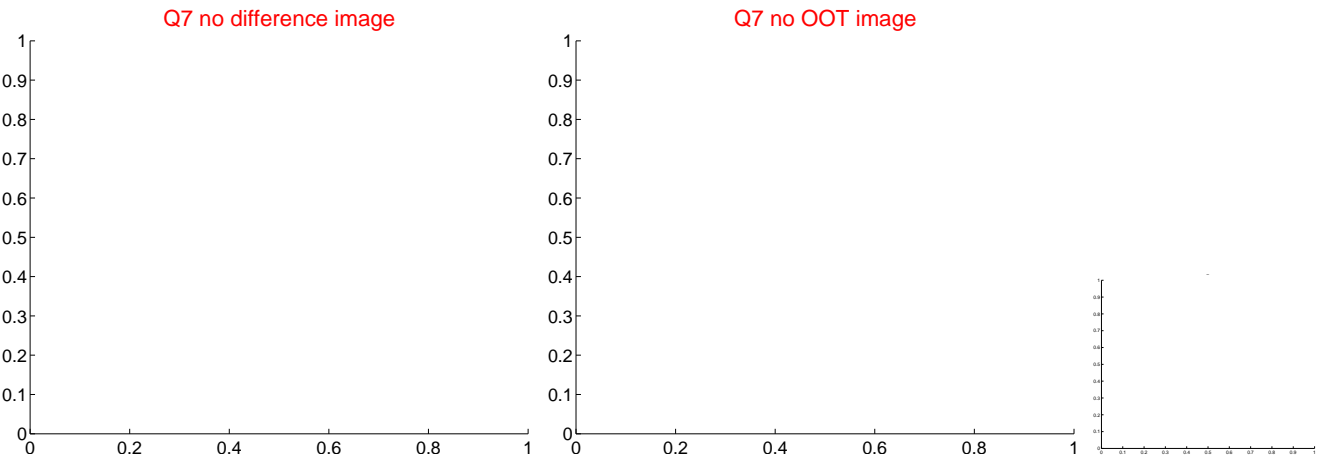
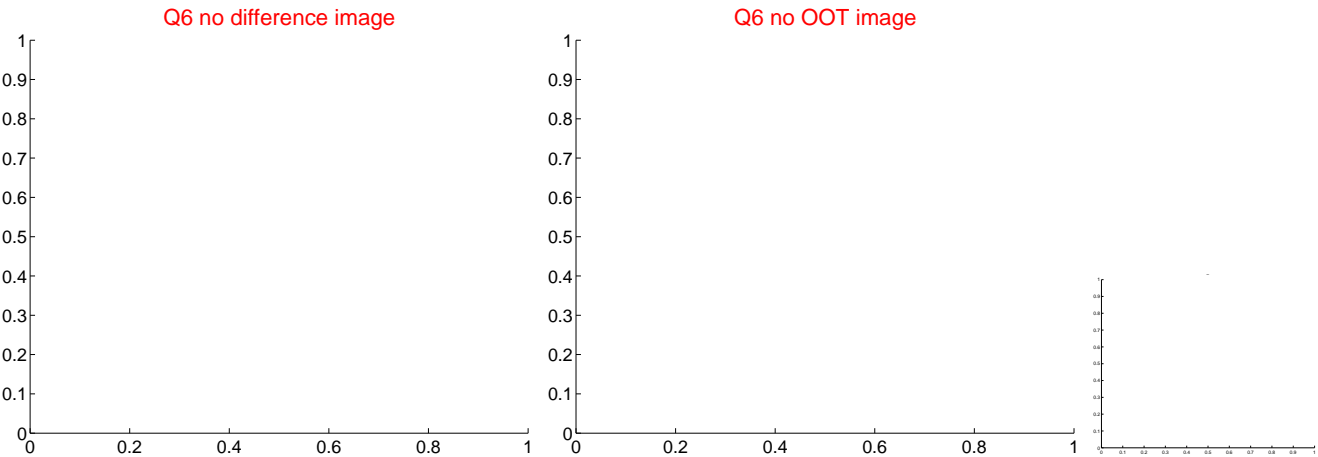
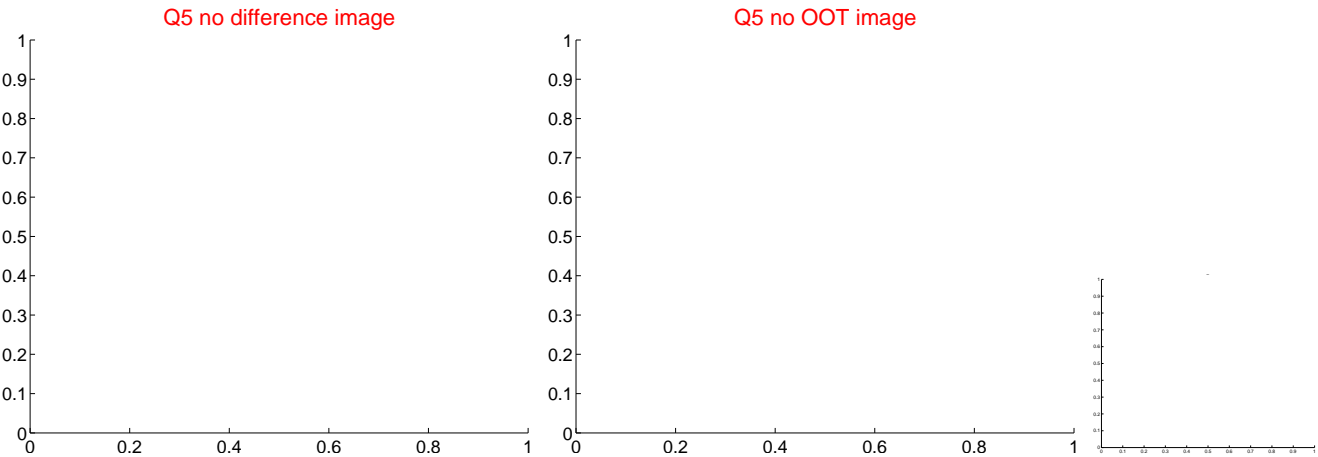


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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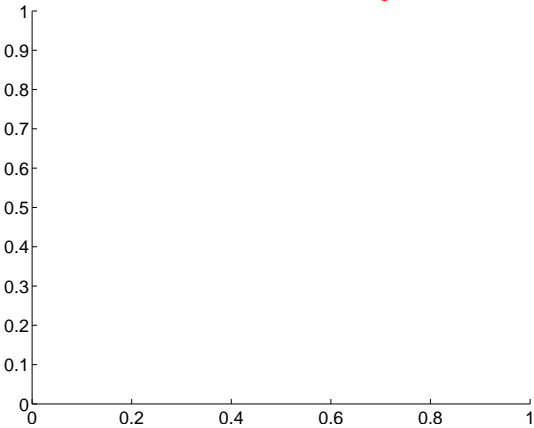


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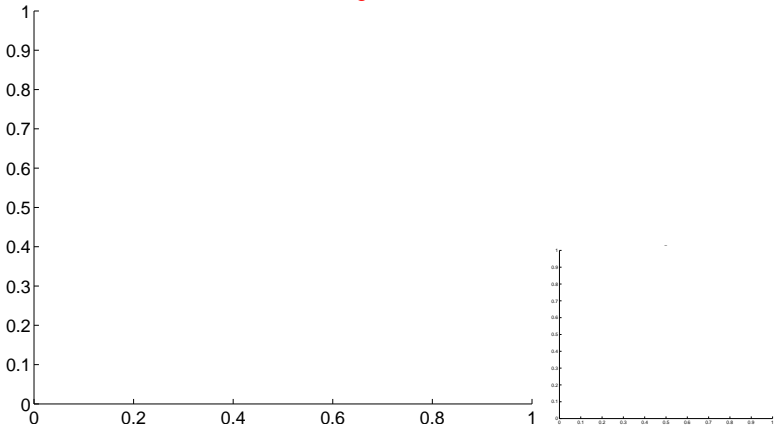


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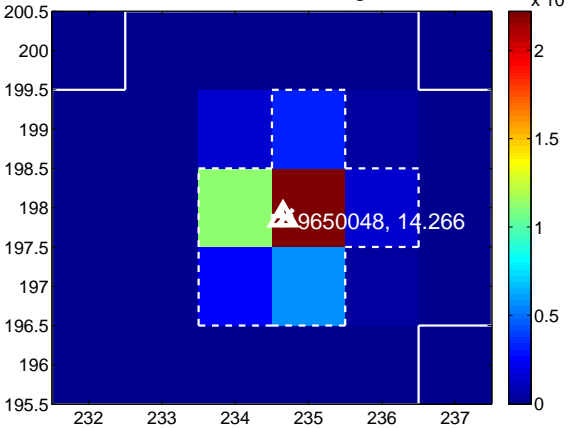
Q13 no difference image



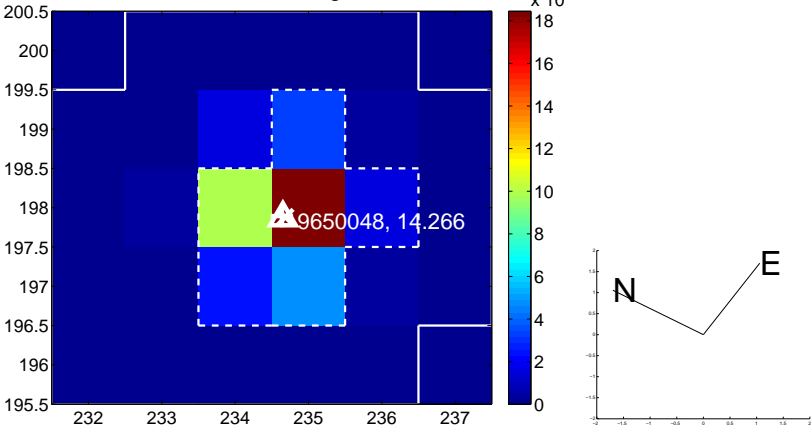
Q13 no OOT image



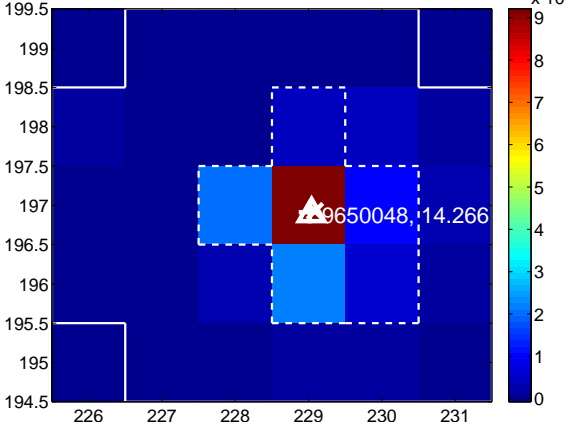
Q14 difference image



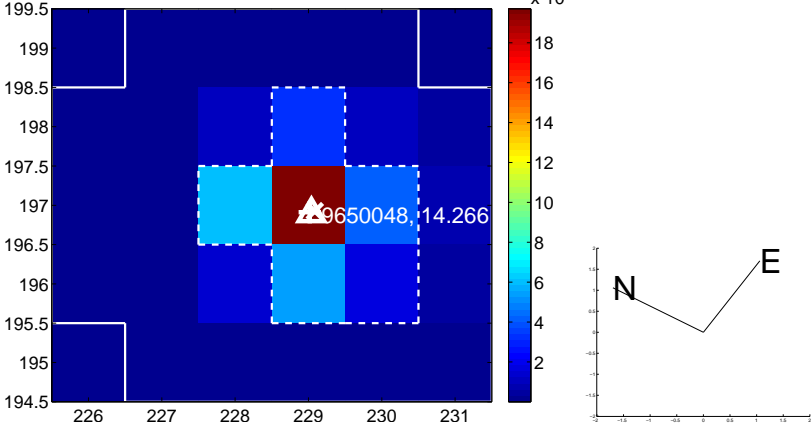
Q14 OOT image



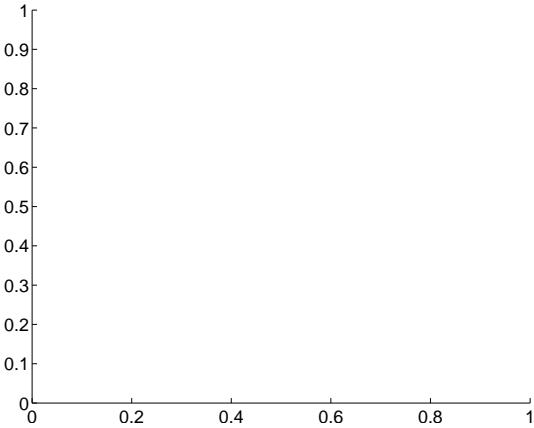
Q15 difference image



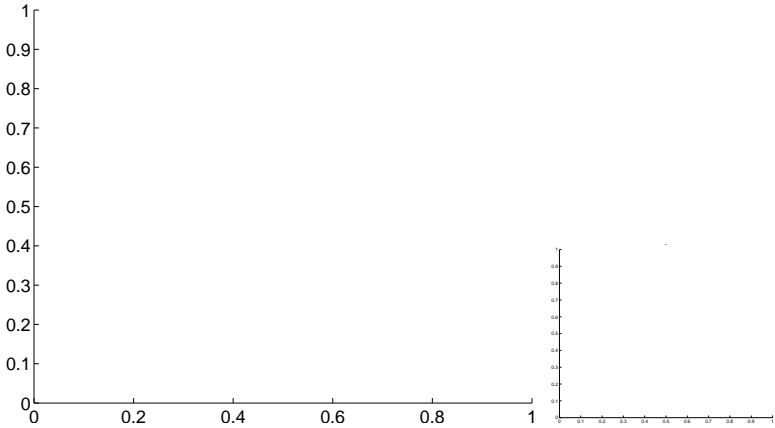
Q15 OOT image



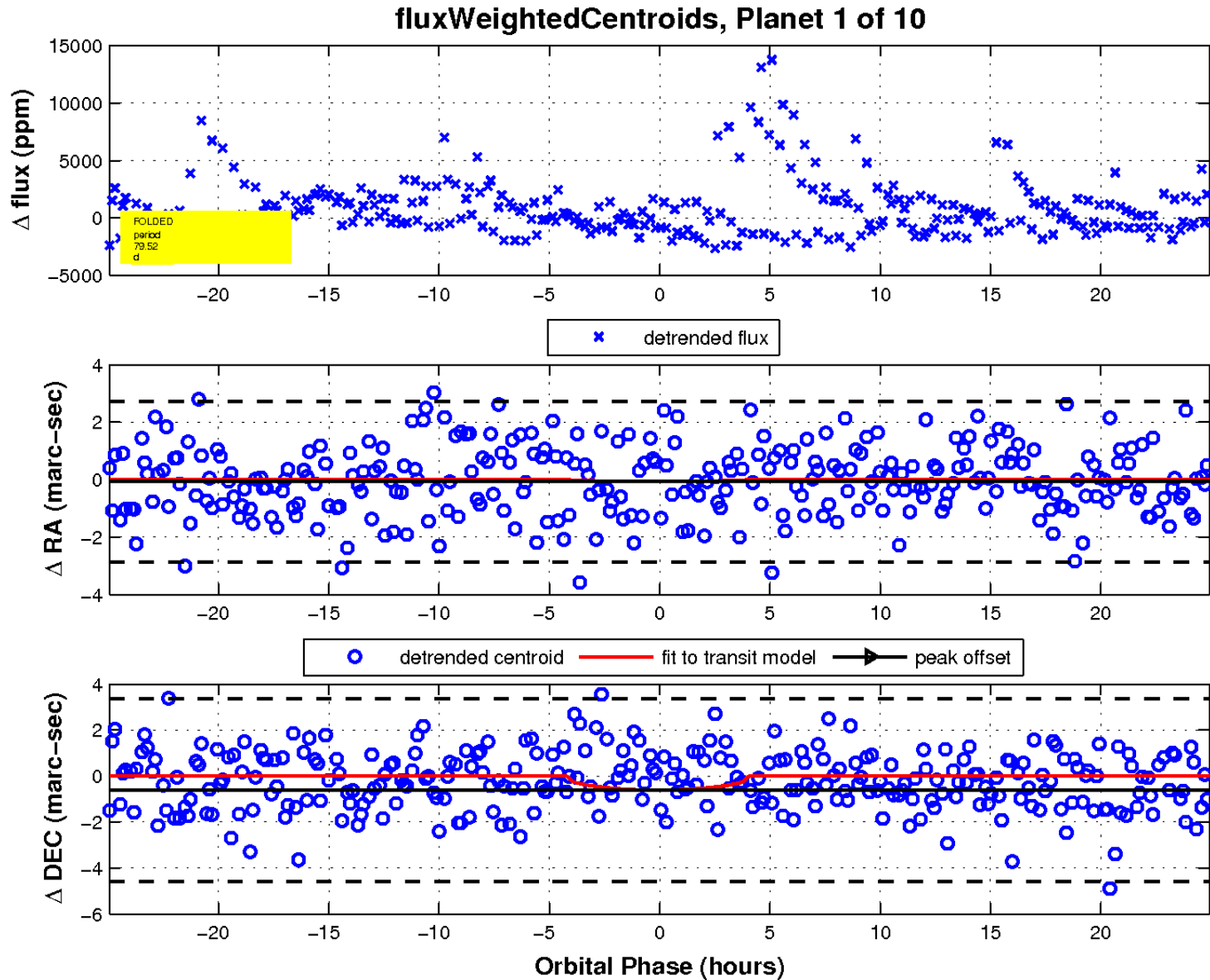
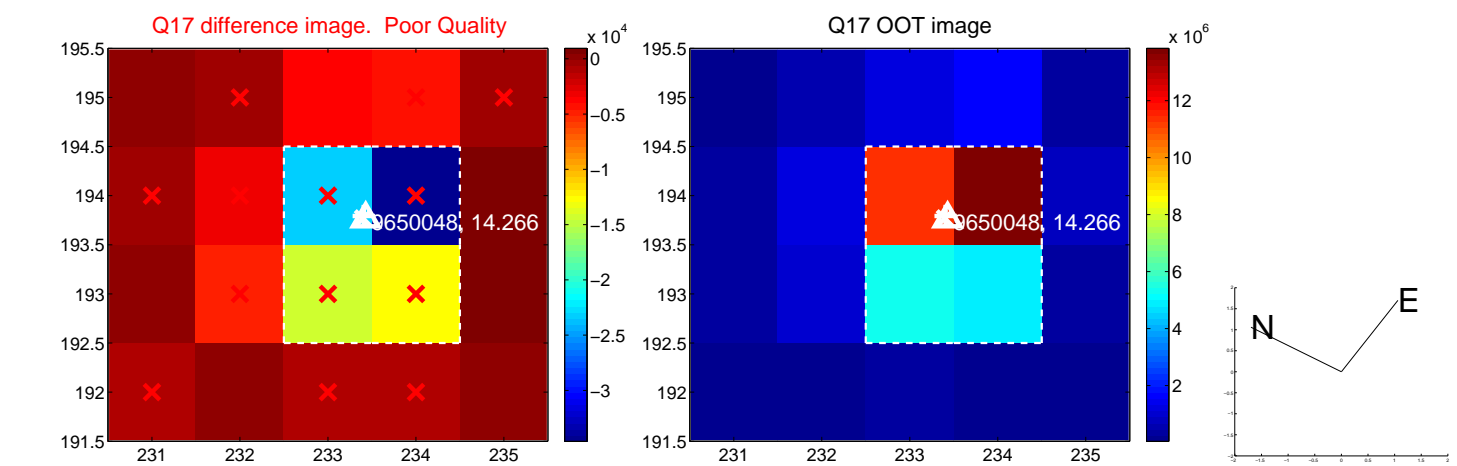
Q16 no difference image



Q16 no OOT image

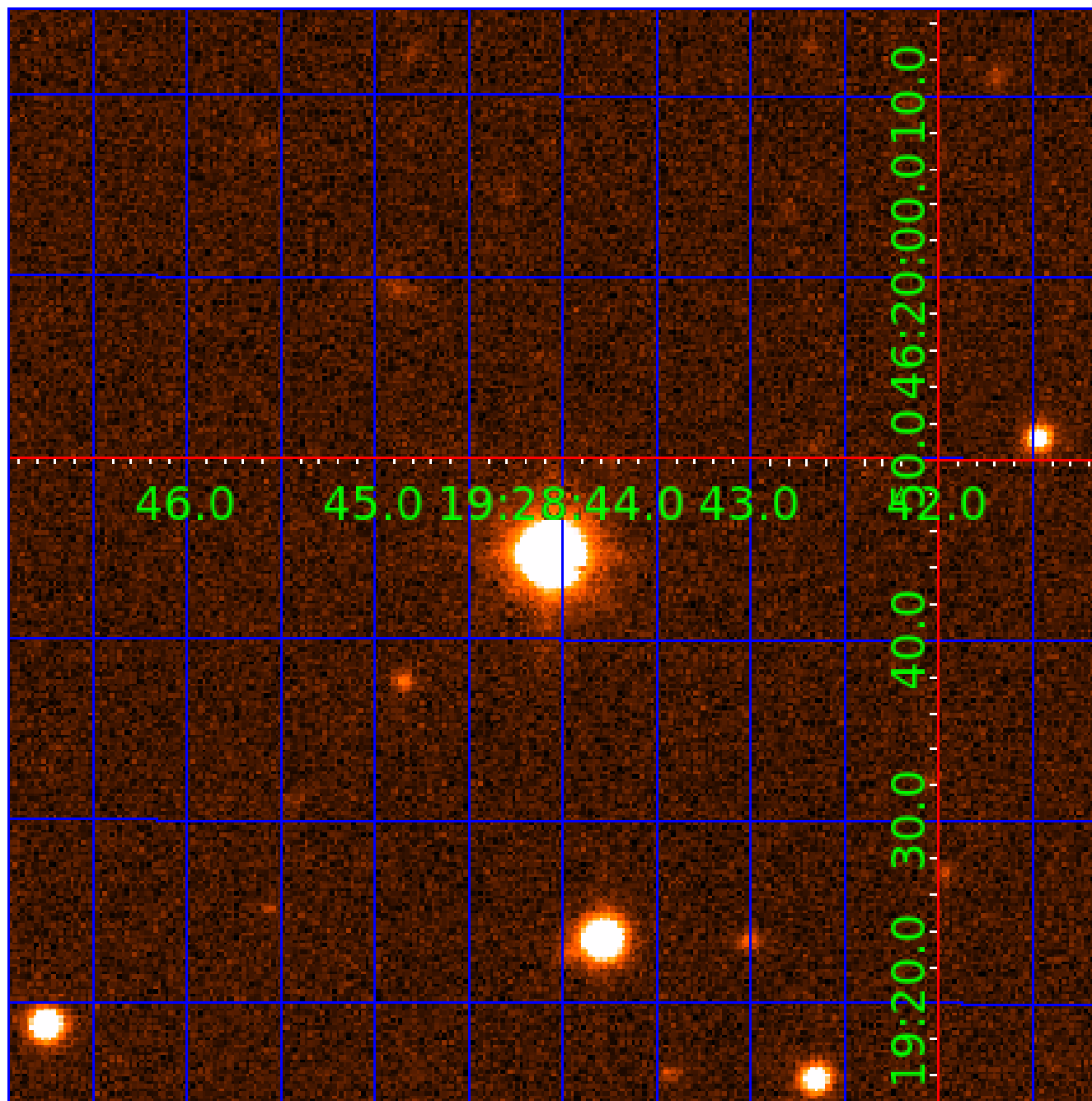


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UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

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Robovetter Results

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009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
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009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-10	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST

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

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

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

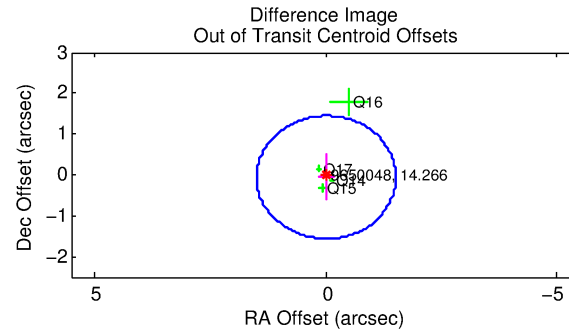
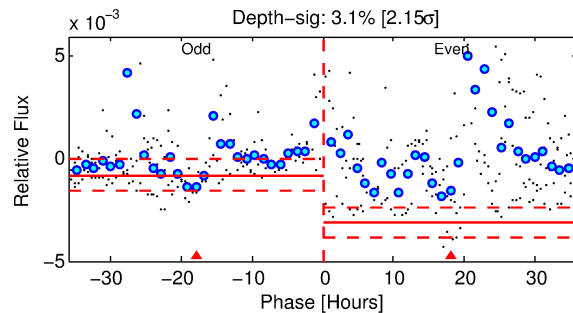
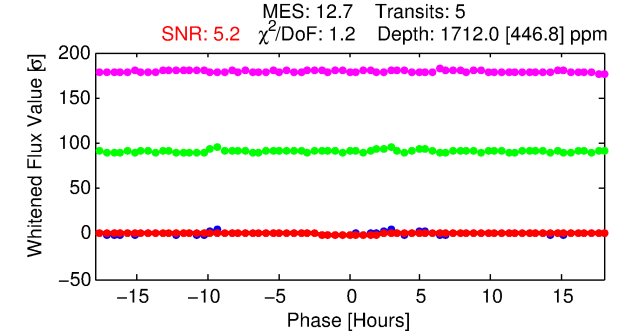
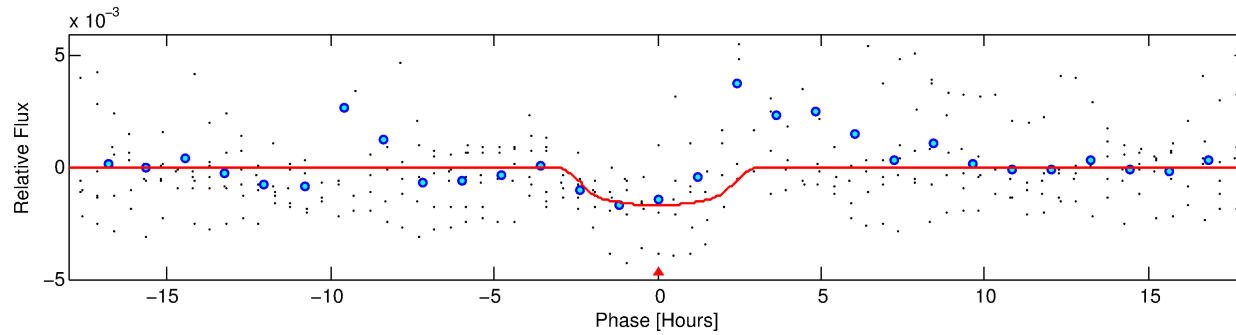
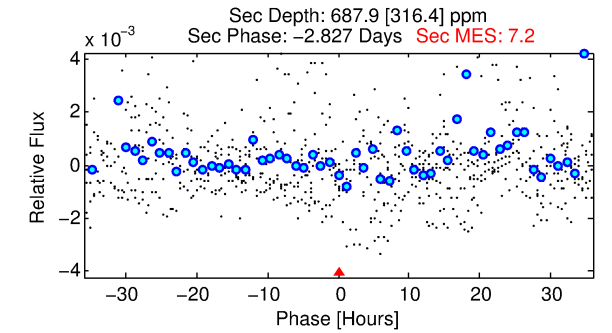
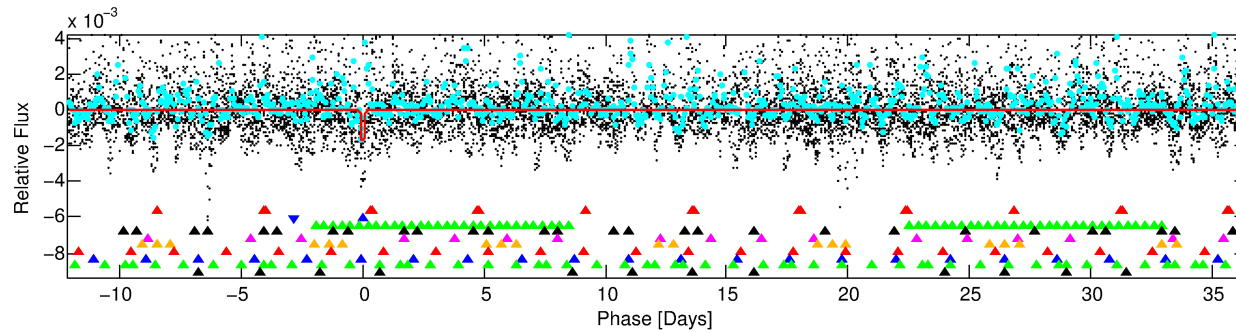
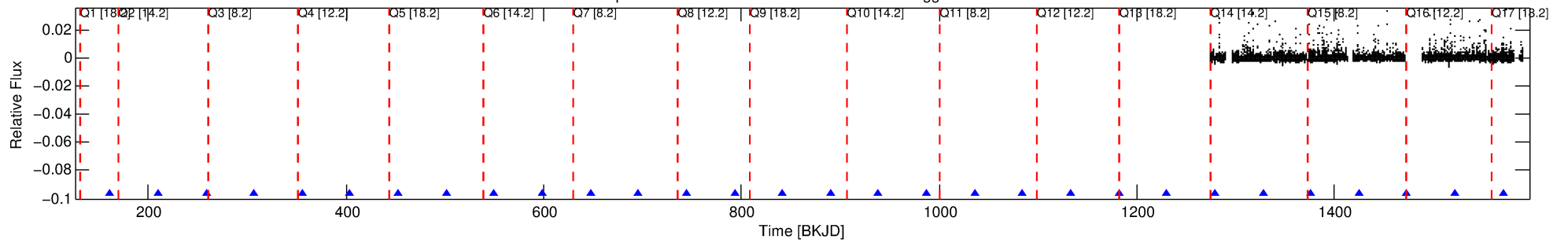
Ephemeris Match Information For 009650048-02

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 2 of 10 Period: 48.590 d

Kp: 14.27 R*: 172.45 Rs Teff: 3420.0 K Logg: 0.53 Fe/H: 0.560



DV Fit Results:

Period = 48.59040 [0.00493] d
Epoch = 161.3822 [0.1324] BKJD
Rp/R* = 0.0477 [0.0114]
a/R* = 34.56 [18.13]
b = 0.89 [0.13]
Seff = N/A
Teq = N/A
Rp = 897.18 [542.10] Re
a = N/A
Ag = N/A
Teffp = N/A

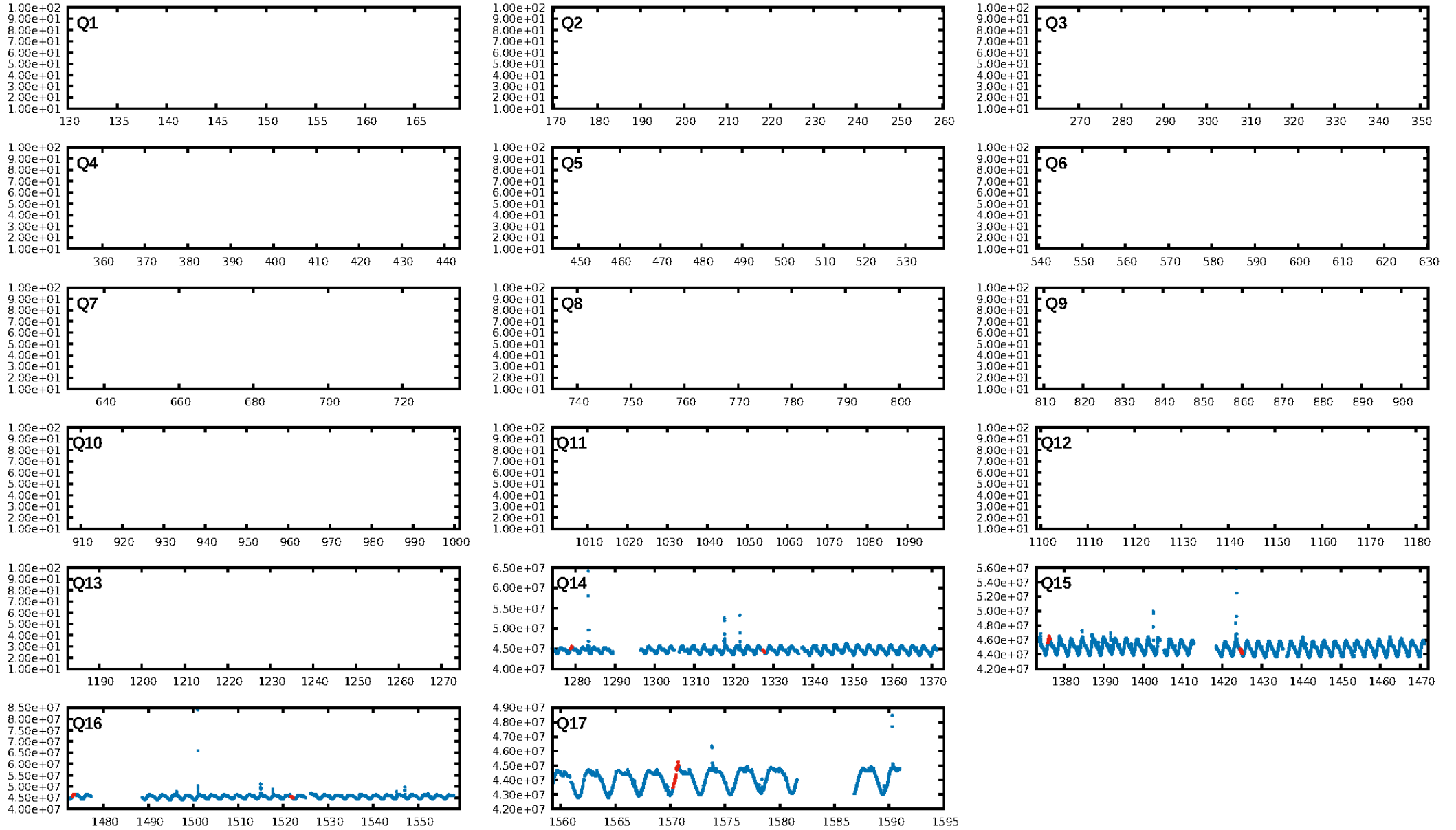
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [47.08σ]
LongPeriod-sig: 100.0% [10.52σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 99.0%
Bootstrap-pfa: 2.40e-13
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 7.309
Centroid-sig: 34.5%
Centroid-so: 0.309 arcsec [0.87σ]
OotOffset-rm: 0.062 arcsec [0.12σ]
KicOffset-rm: 0.087 arcsec [0.21σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 0.75 [3/4]

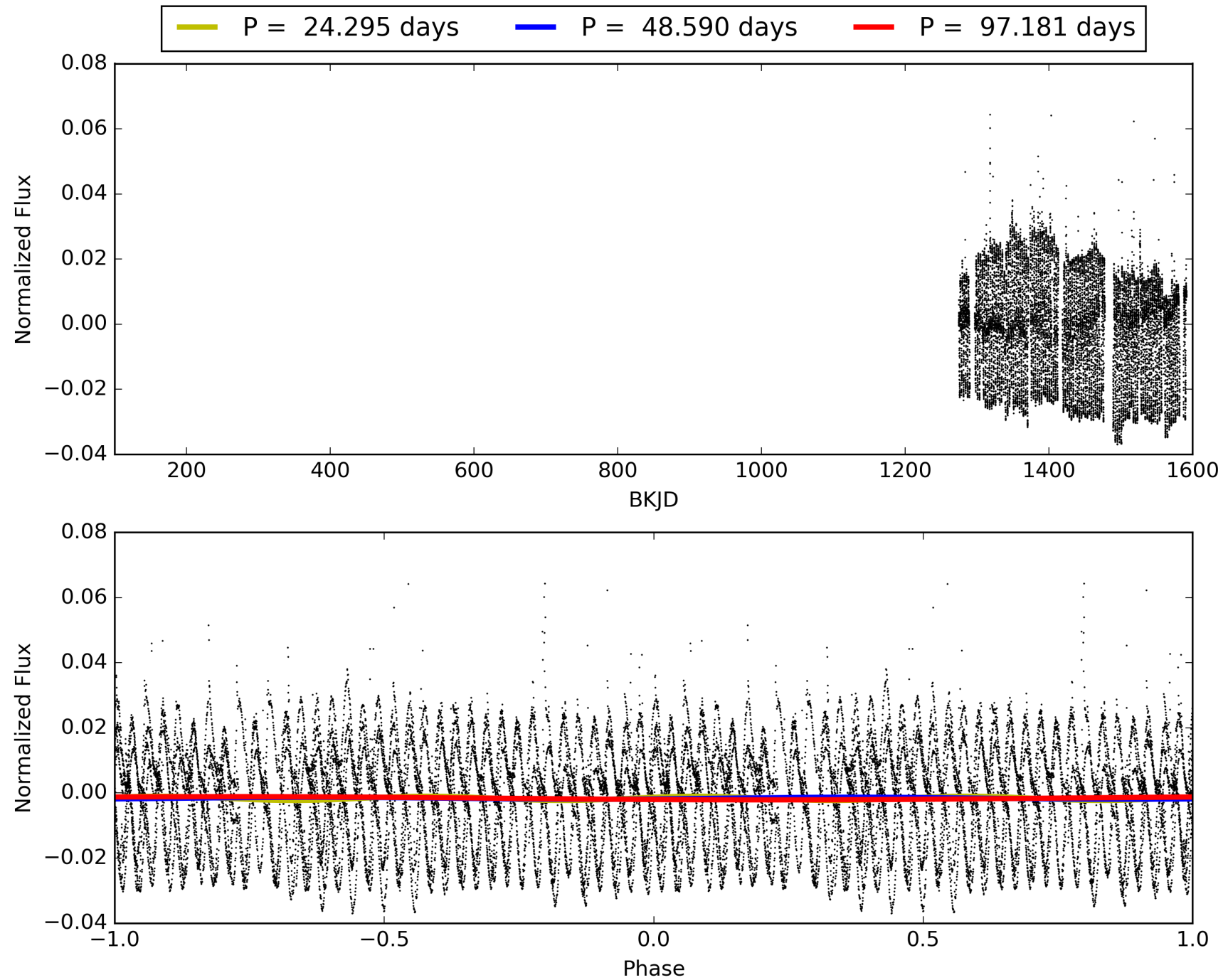
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:57:22 Z

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

TCE 009650048-02, PDC Light Curves

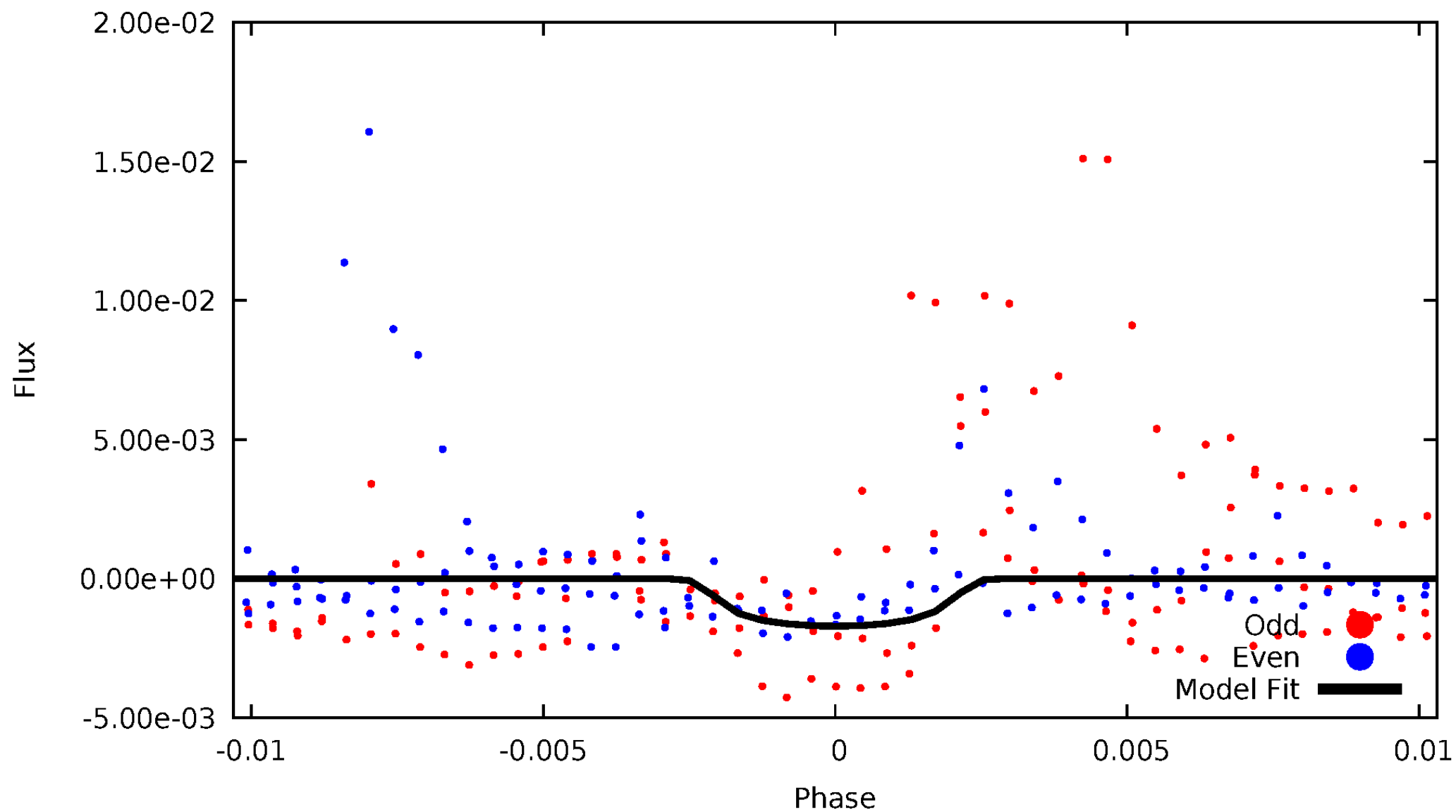


TCE 009650048-02



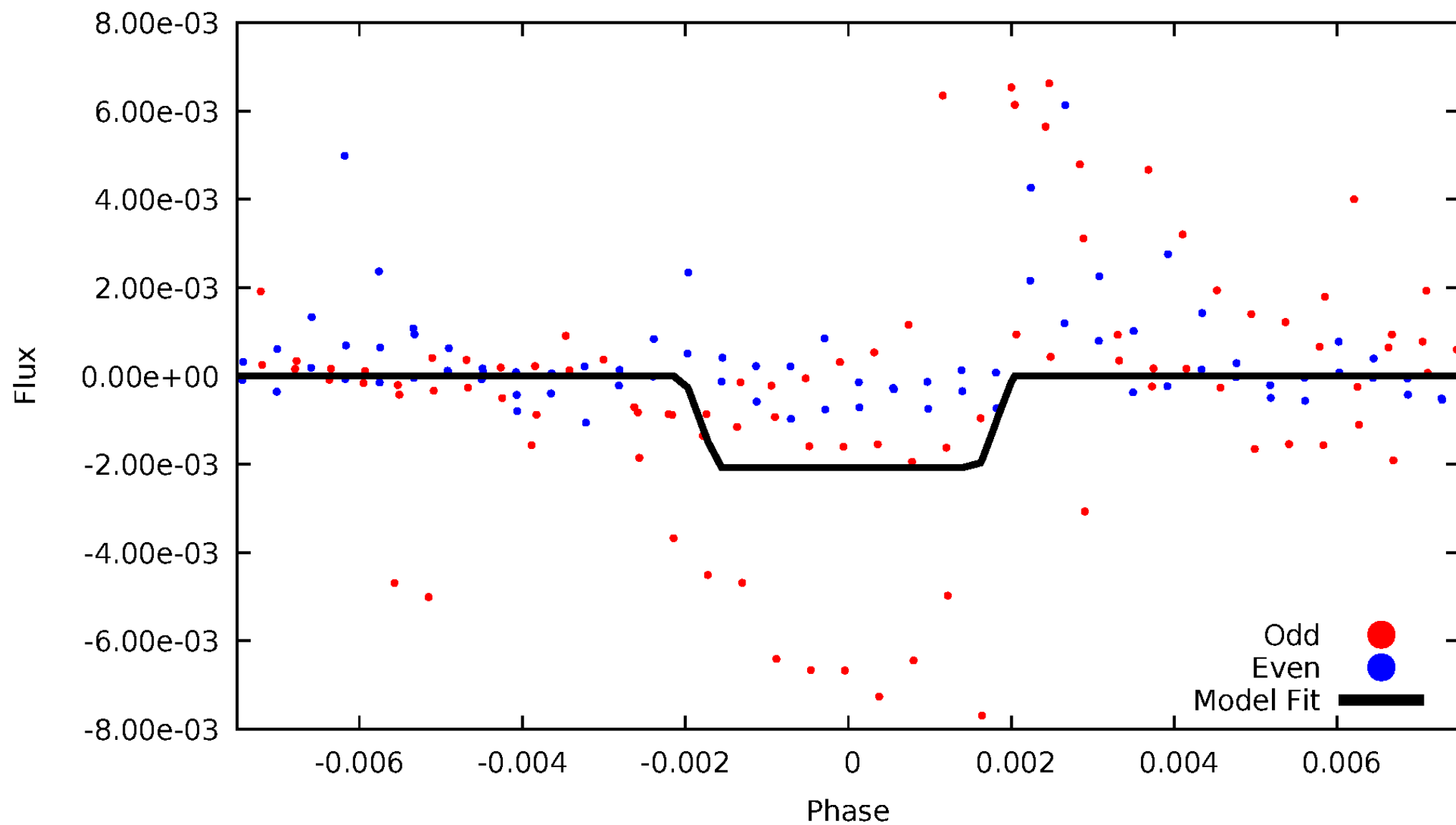
DV Odd/Even

TCE 009650048-02



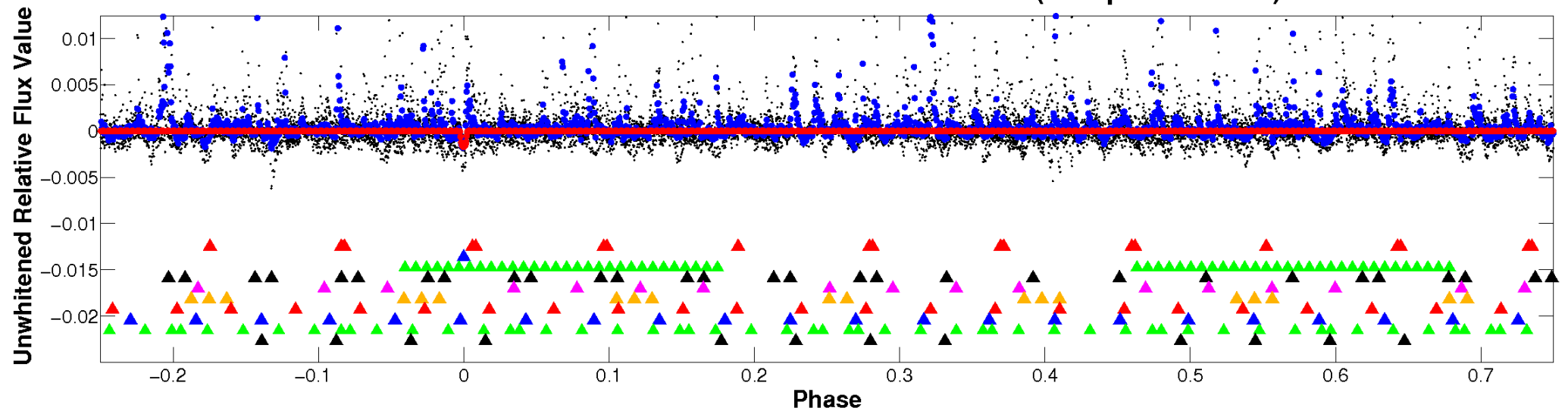
ALT Odd/Even

TCE 009650048-02

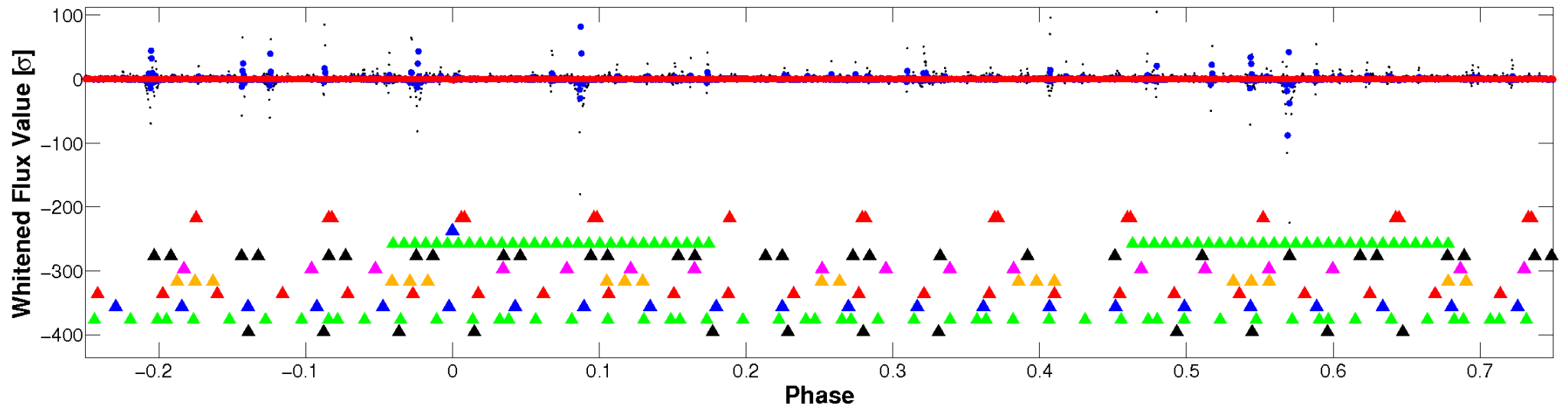


Non-Whitened Vs. Whitened Light Curve

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

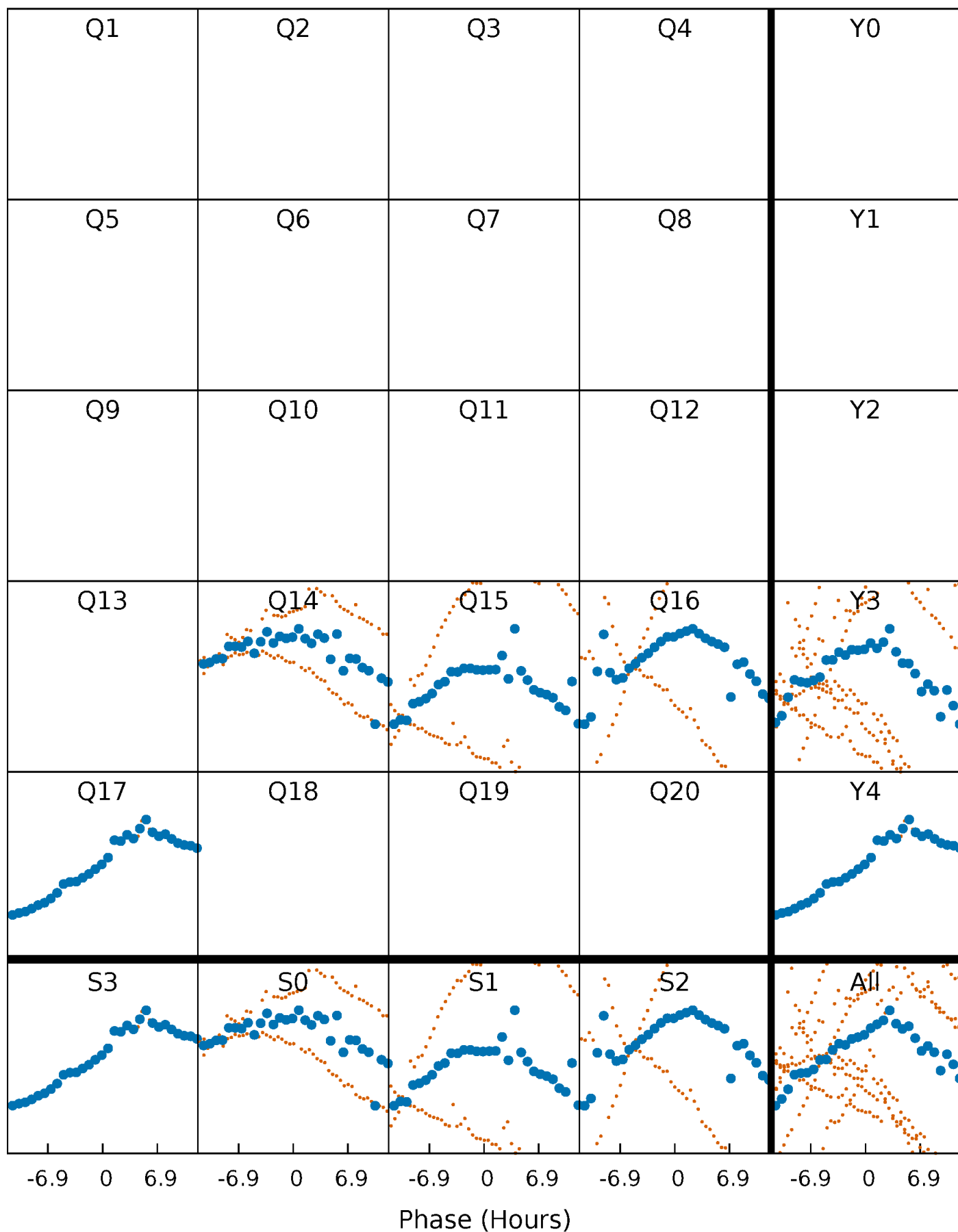


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



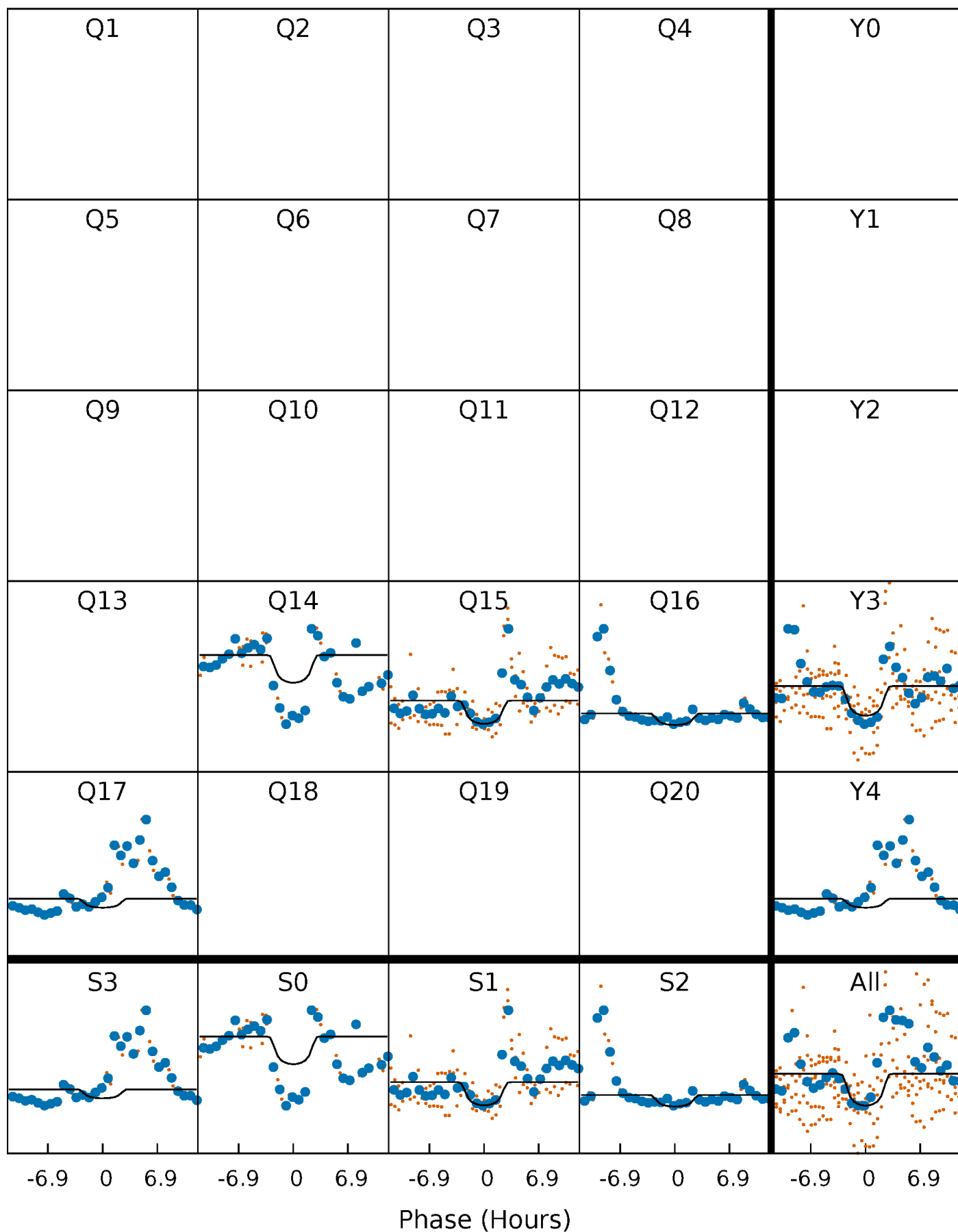
PDC Quarter-Phased Transit Curves

TCE 009650048-02 P= 48.590399 Days $T_0=161.382228$ (BKJD)



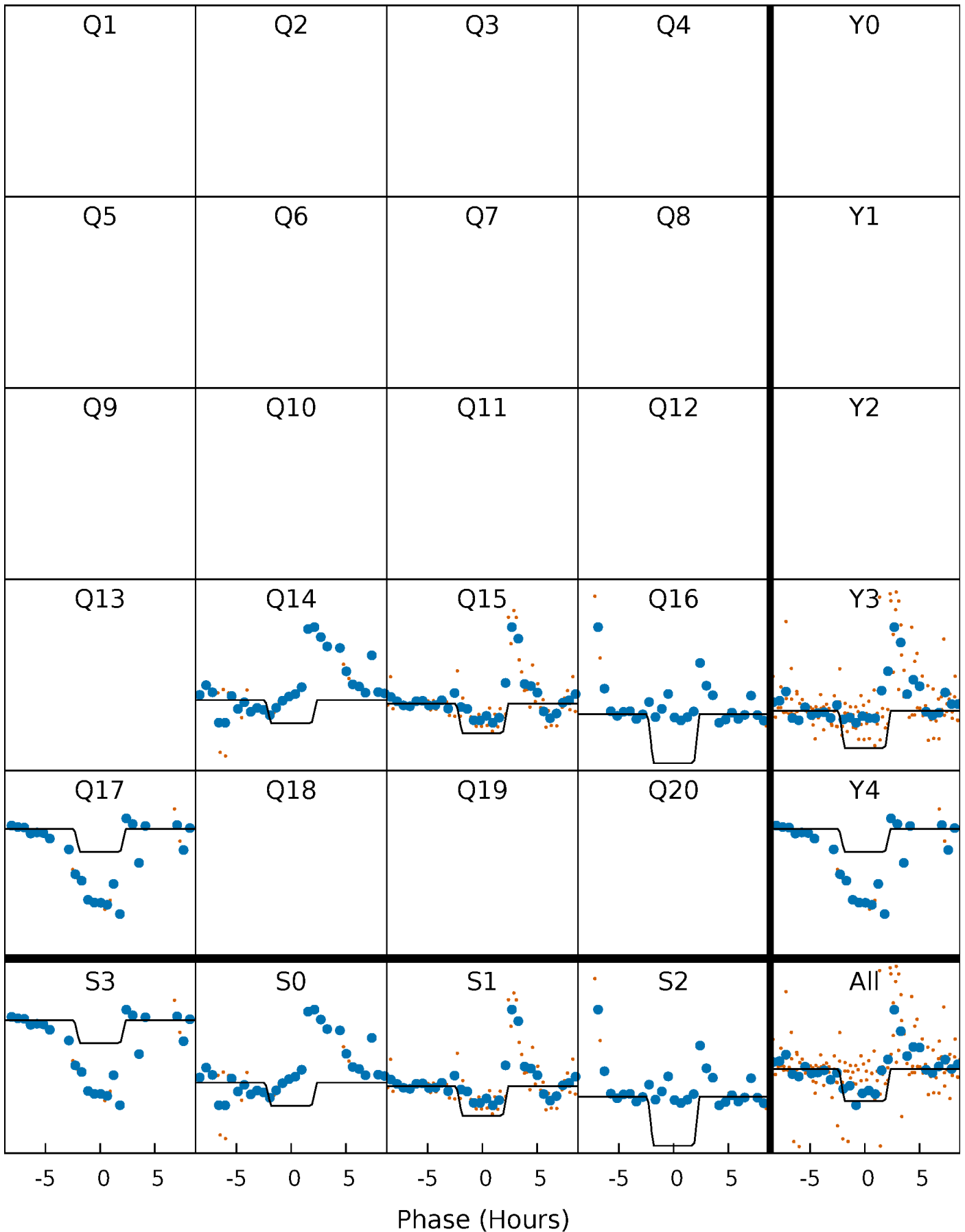
DV Quarter-Phased Transit Curves

TCE 009650048-02 P= 48.590399 Days $T_0=161.382228$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

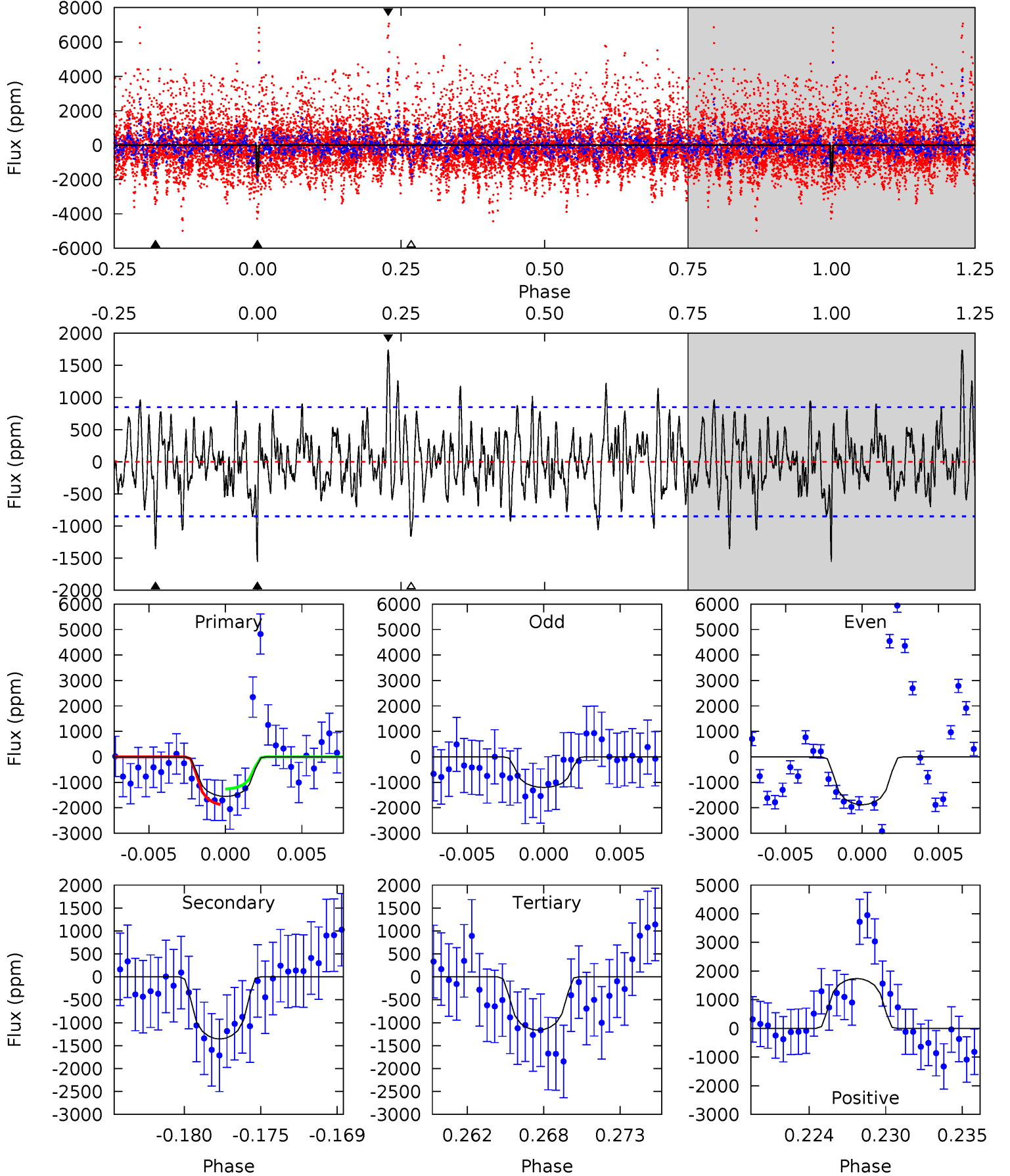
TCE 009650048-02 P= 48.579898 Days $T_0=161.649824$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-02, P = 48.590399 Days, E = 161.382228 Days

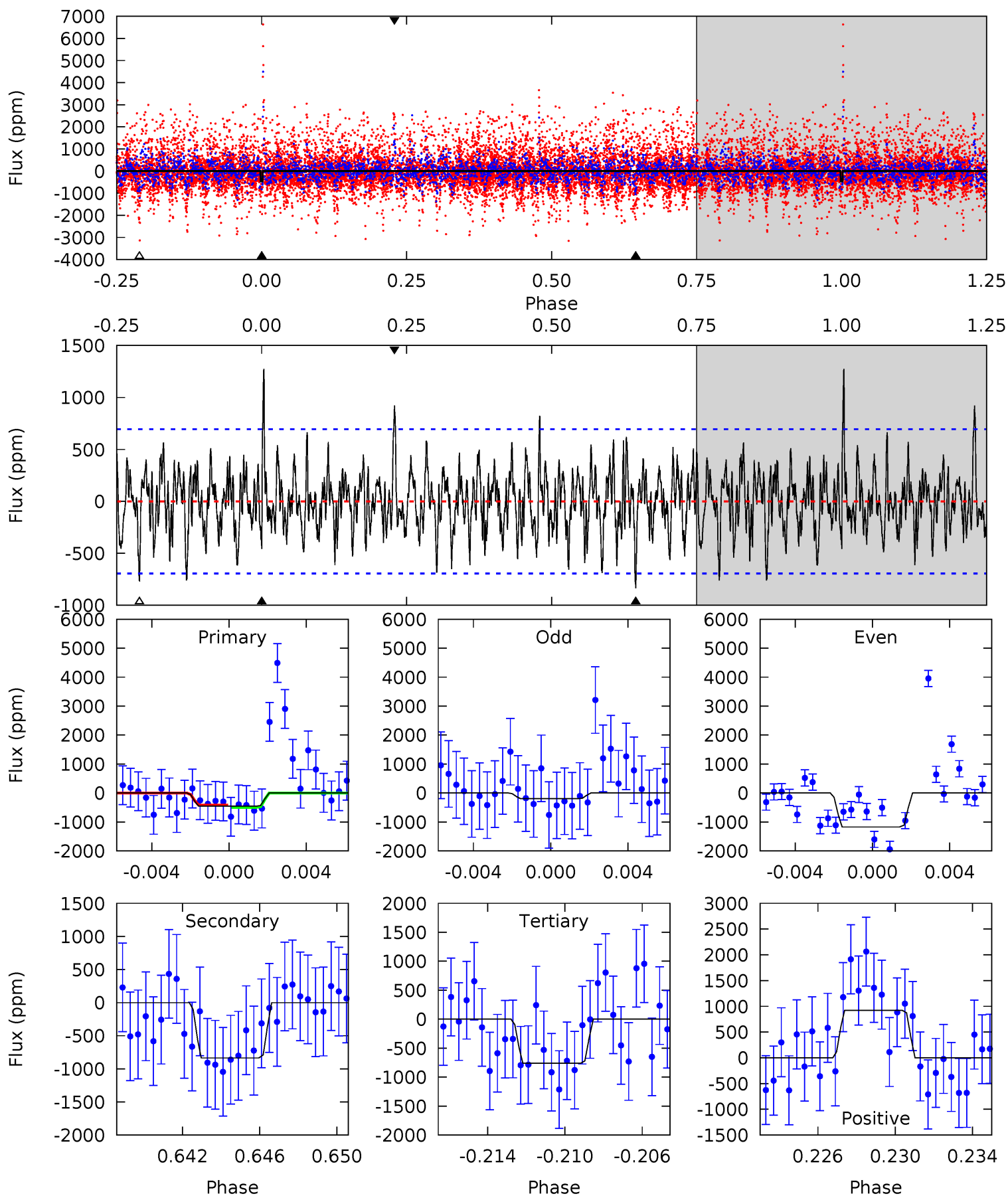
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.42	8.21	7.03	10.5	5.14	2.78	2.39	2.38	-1.13	1.18	-2.34	1.72	0.83	0.53	1.88



Alt Model-Shift Uniqueness Test

009650048-02, P = 48.579898 Days, E = 161.649824 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.43	6.26	5.71	6.92	5.20	2.88	1.87	-2.29	-3.49	0.55	-0.65	3.47	2.94	0.60	0



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1356 ± 165	$860.17^{+266.44}_{-257.71}$	4415^{+280}_{-387}	-3138^{+1005}_{-300}	$0.155^{+0.135}_{-0.064}$
Alt.	-835 ± 133	$846.53^{+272.56}_{-269.62}$	4423^{+295}_{-409}	-3301^{+452}_{-241}	$0.102^{+0.100}_{-0.046}$

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 $A_{obs} \gg 1.0$

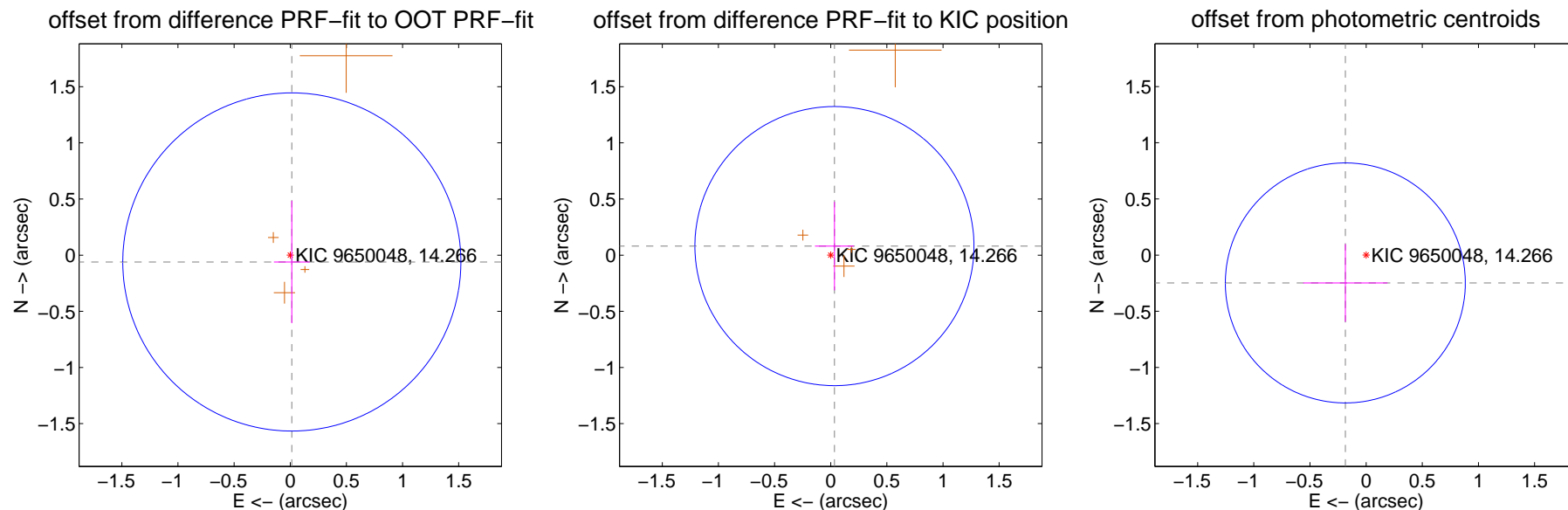
DV Centroid Data

Supplemental centroid analysis for 009650048-02. Kepler magnitude: 14.27. Transit SNR 5.21

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.062 ± 0.502	0.12	-0.014 ± 0.159	-0.061 ± 0.545
PRF-fit source offset from KIC position	0.087 ± 0.414	0.21	-0.033 ± 0.173	0.081 ± 0.394
photometric centroid source offset	0.31 ± 0.36	0.87	0.19 ± 0.37	-0.25 ± 0.35



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.



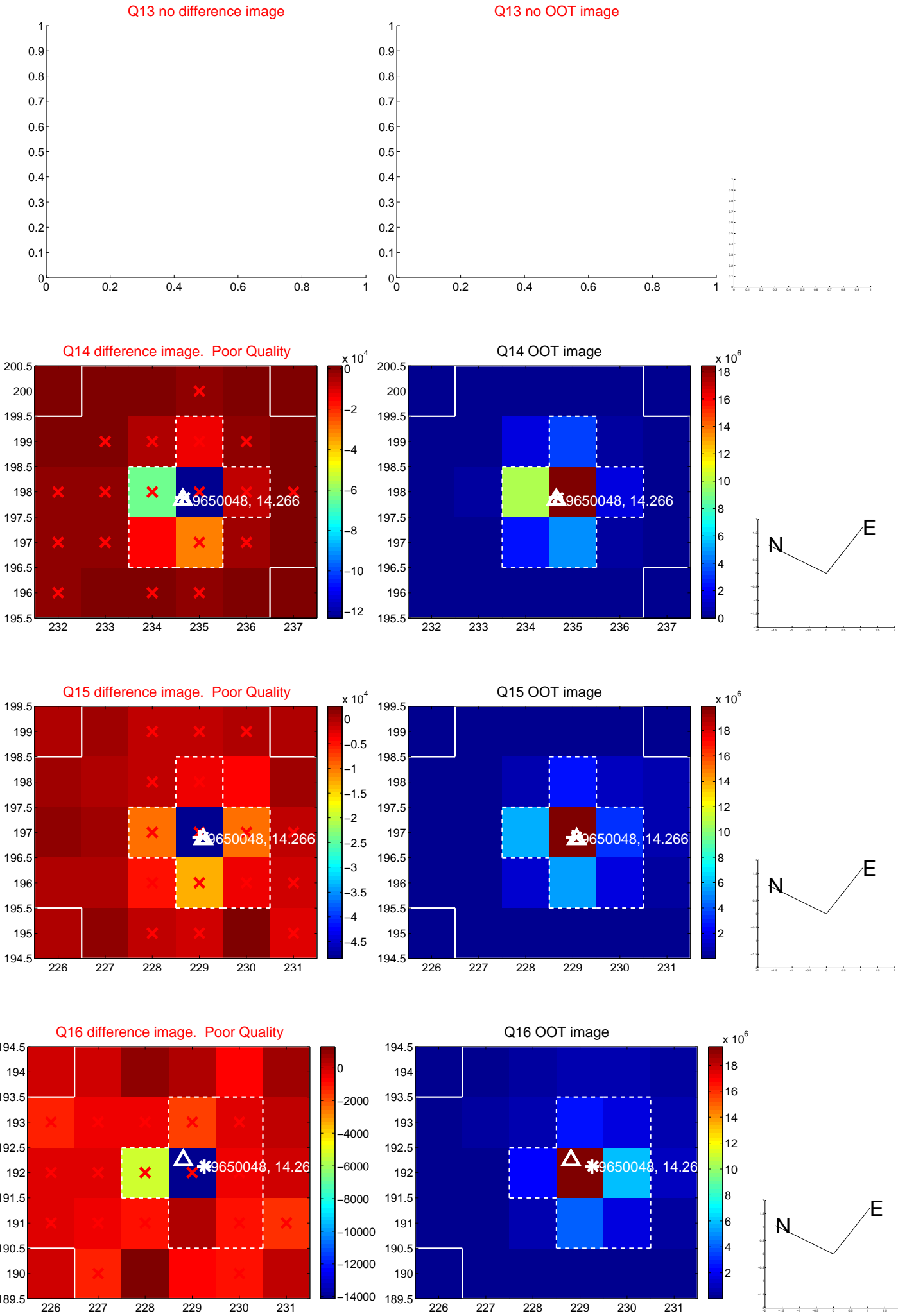
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



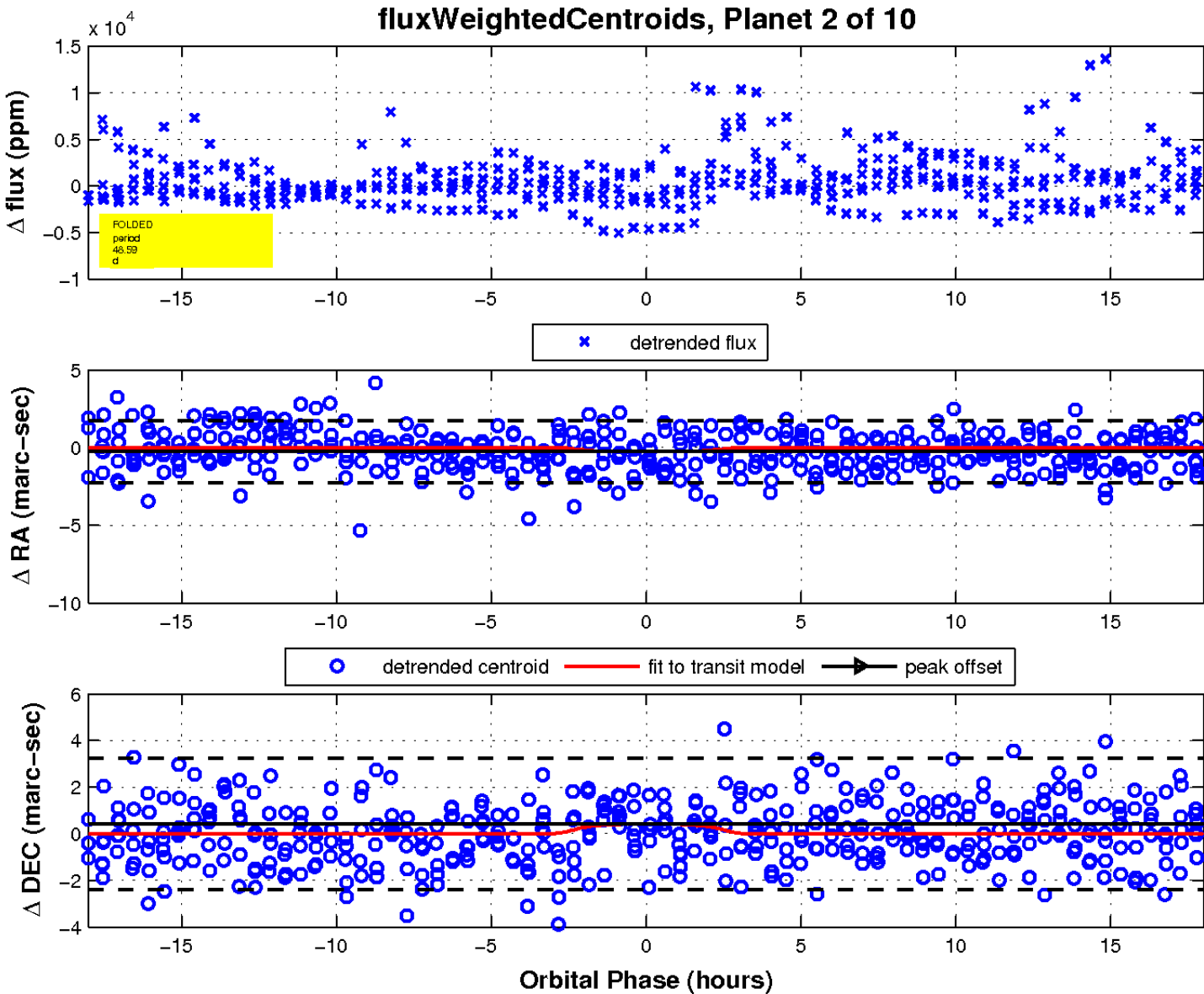
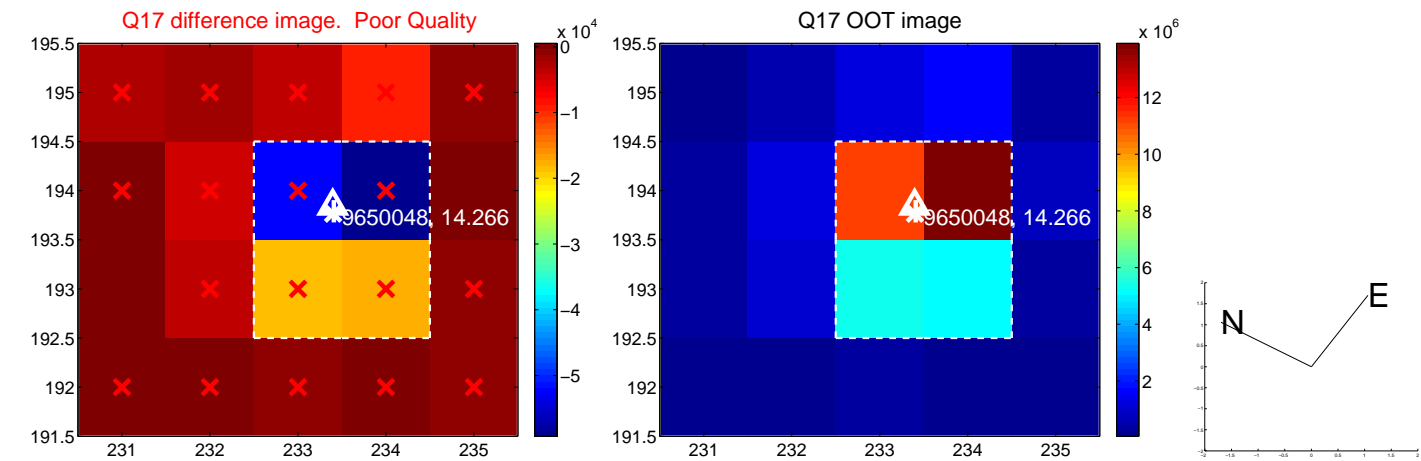
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

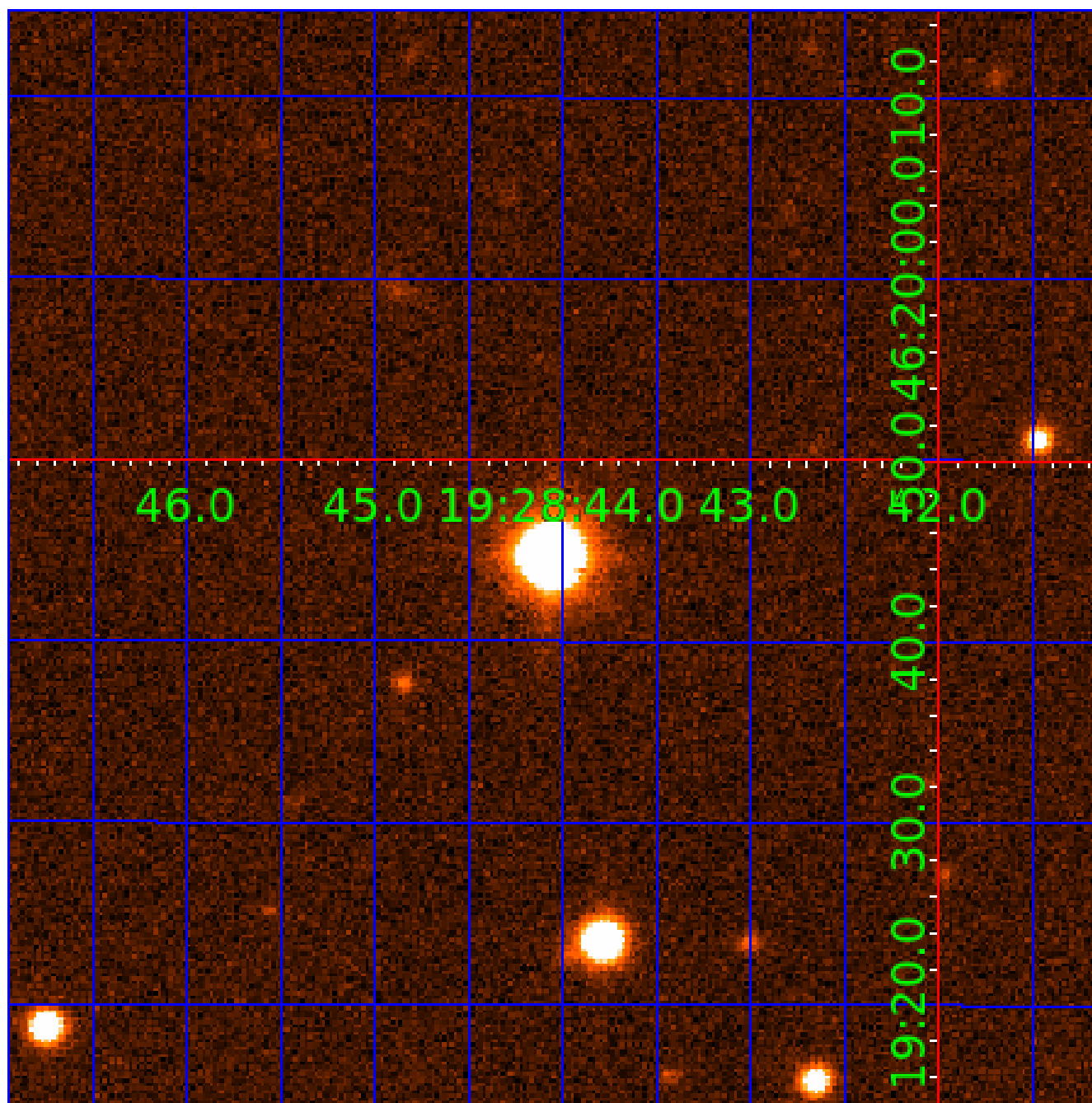


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009650048-01	OBS	No	79.521238	135.132830	1426.8	8.314	13.9	3.2	172.45	3420	596.87	0.00
009650048-02	OBS	No	48.590399	161.382228	1712.0	6.008	12.7	5.2	172.45	3420	897.18	0.00
009650048-03	OBS	No	24.115052	145.753117	2221.7	17.763	9.9	7.0	172.45	3420	1117.14	0.00
009650048-04	OBS	No	51.481188	142.840114	1946.8	2.720	15.5	5.7	172.45	3420	874.61	0.00
009650048-05	OBS	No	86.617464	188.411391	195.5	6.848	11.3	0.5	172.45	3420	298.28	0.00
009650048-06	OBS	No	76.441075	200.861693	3467.7	3.505	11.3	8.1	172.45	3420	1253.74	0.00
009650048-07	OBS	No	65.506849	136.684124	1497.1	17.131	10.7	4.4	172.45	3420	691.84	0.00
009650048-08	OBS	No	68.464196	145.864858	4876.3	6.518	12.2	11.8	172.45	3420	1272.13	0.00
009650048-09	OBS	No	27.127219	145.955115	1498.1	9.143	11.9	5.7	172.45	3420	1106.13	0.00
009650048-10	OBS	No	130.405347	136.770863	2040.2	5.061	11.5	6.2	172.45	3420	885.03	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650048-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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—CENT_FEW_DIFFS
009650048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES
009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-10	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST

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

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

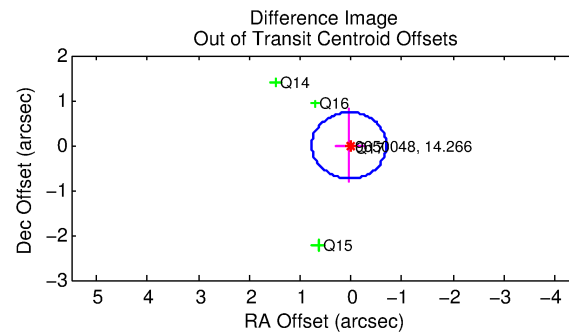
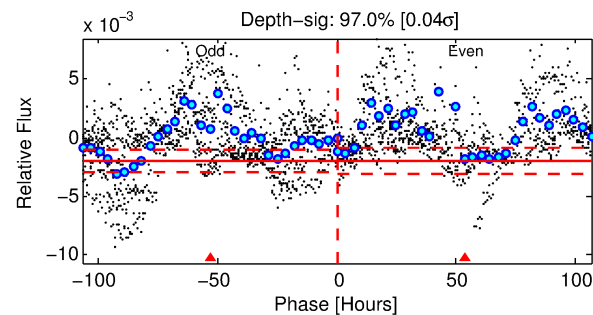
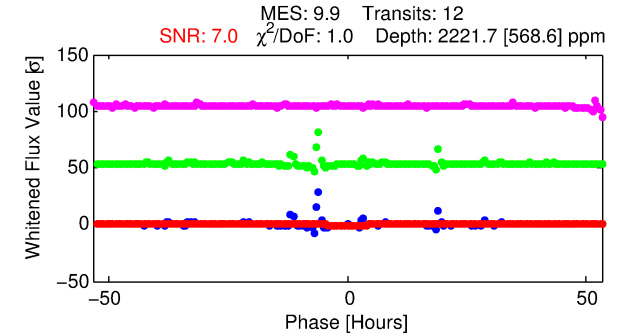
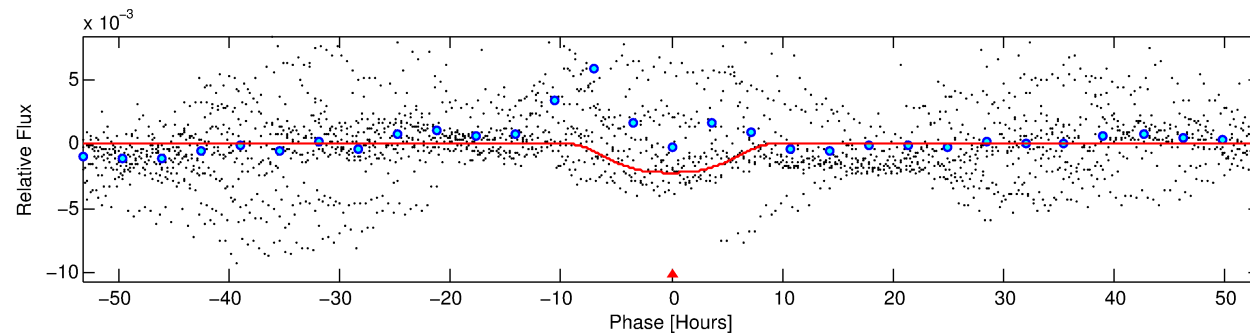
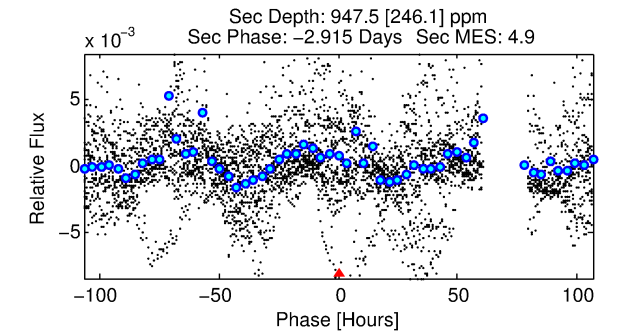
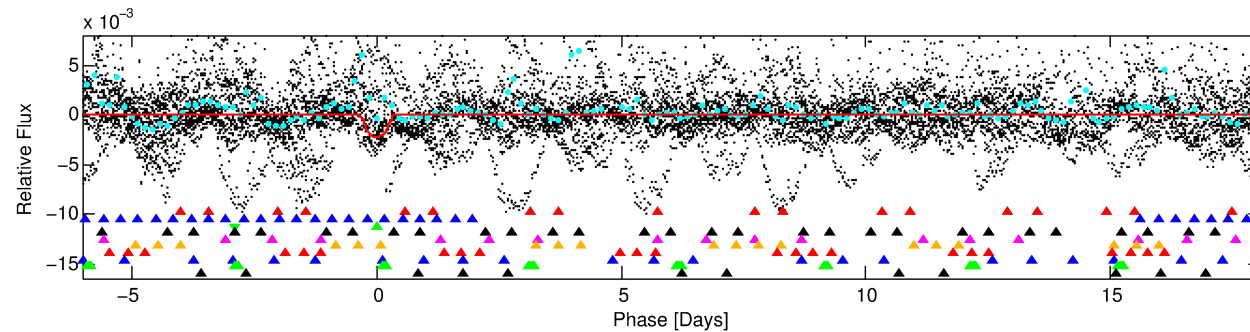
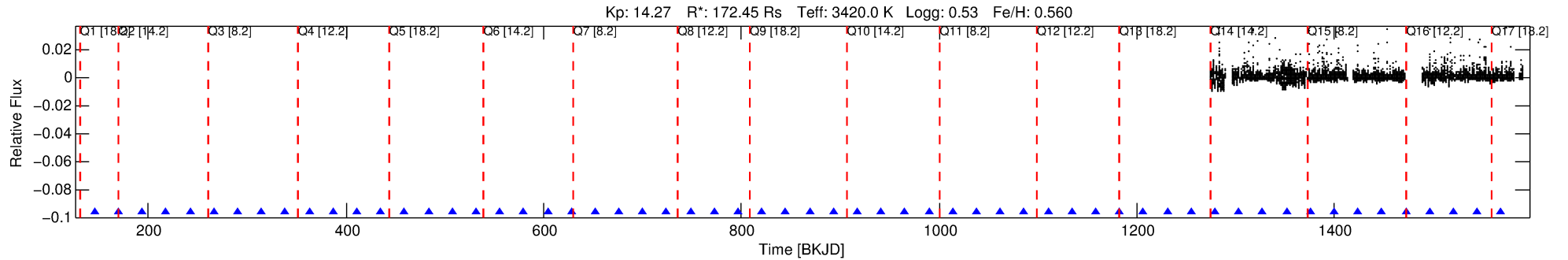
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009650048-03

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 3 of 10 Period: 24.115 d



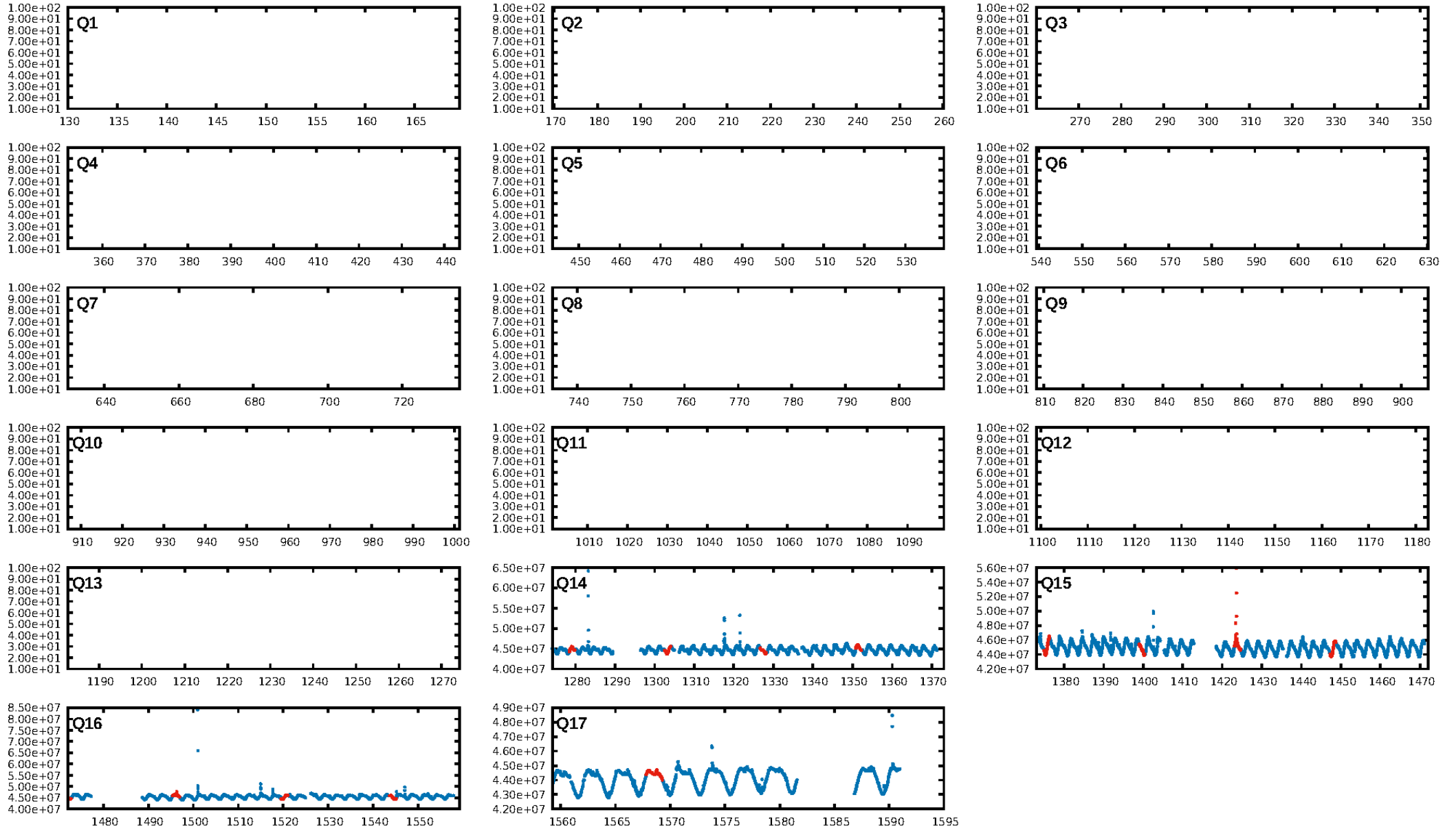
DV Fit Results:

Period = 24.11505 [0.00792] d
Epoch = 145.7531 [0.4261] BKJD
Rp/R* = 0.0594 [0.0100]
a/R* = 5.26 [0.84]
b = 0.94 [0.03]
Seff = N/A
Teq = N/A
Rp = 1117.14 [648.04] Re
a = N/A
Ag = N/A
Teffp = N/A

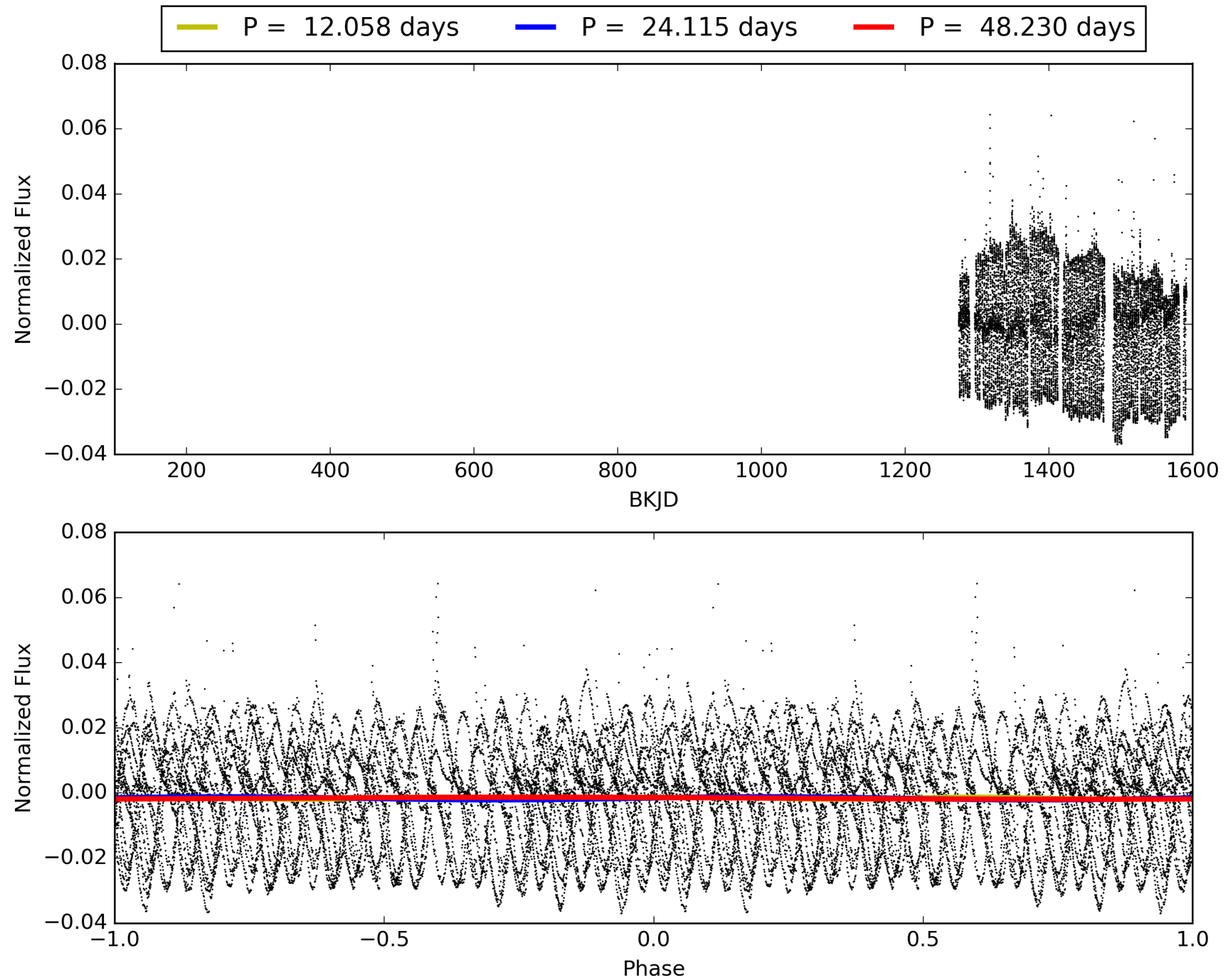
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [3.62σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.84e-11
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: 3.392
Centroid-sig: 87.0%
Centroid-so: 0.032 arcsec [0.20σ]
OotOffset-rm: 0.039 arcsec [0.16σ]
KicOffset-rm: 0.128 arcsec [0.34σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 0.75 [3/4]

TCE 009650048-03, PDC Light Curves

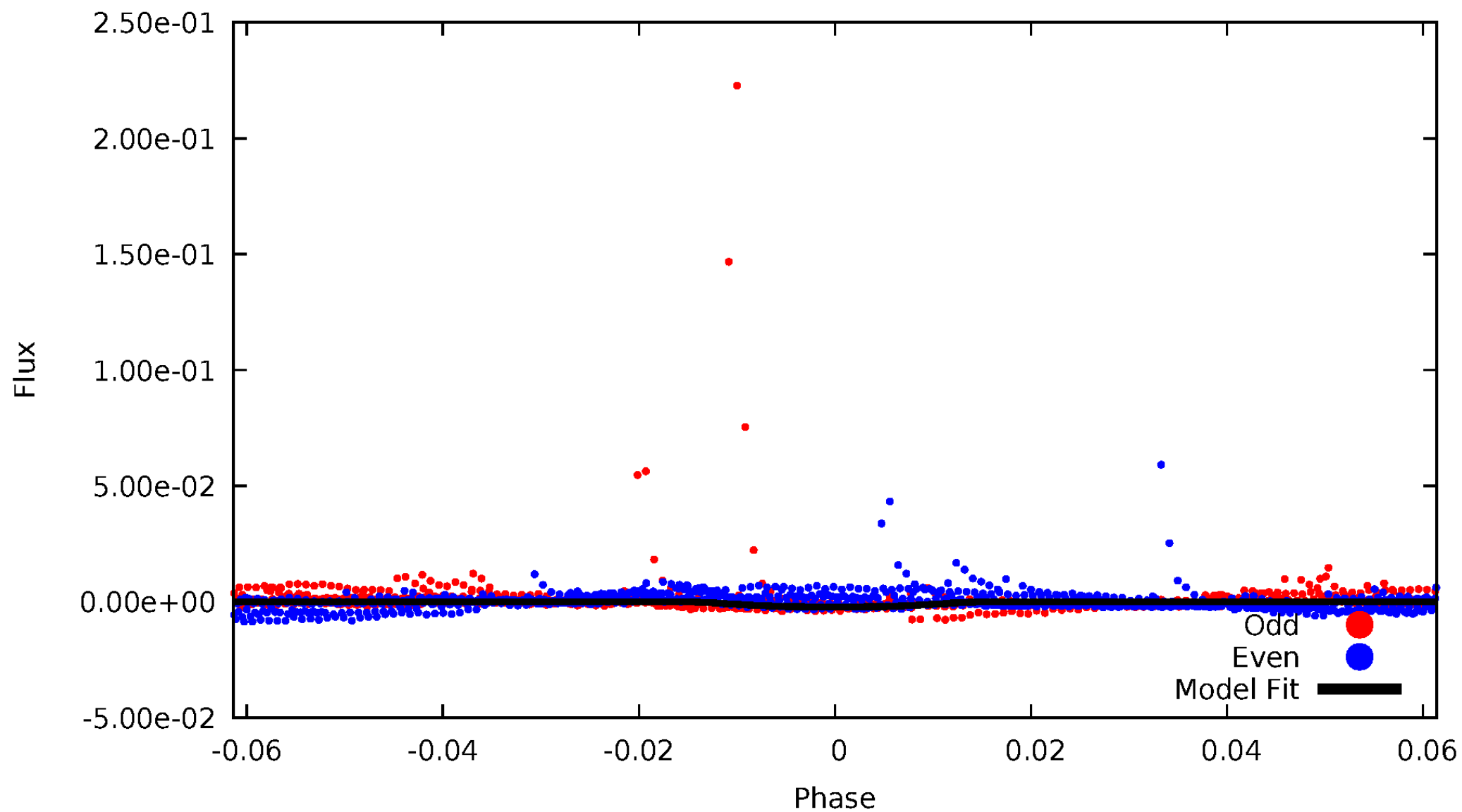


TCE 009650048-03



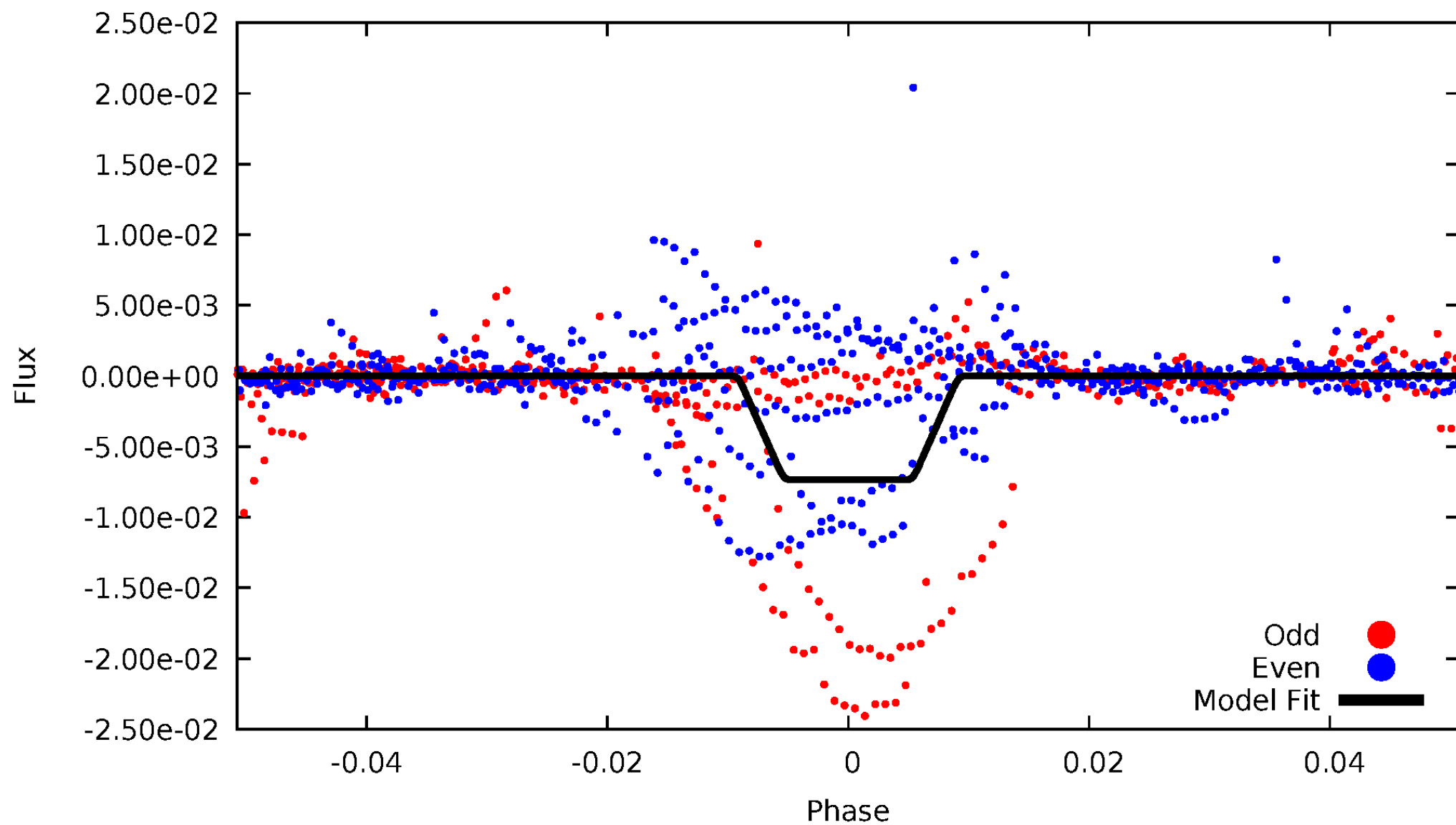
DV Odd/Even

TCE 009650048-03



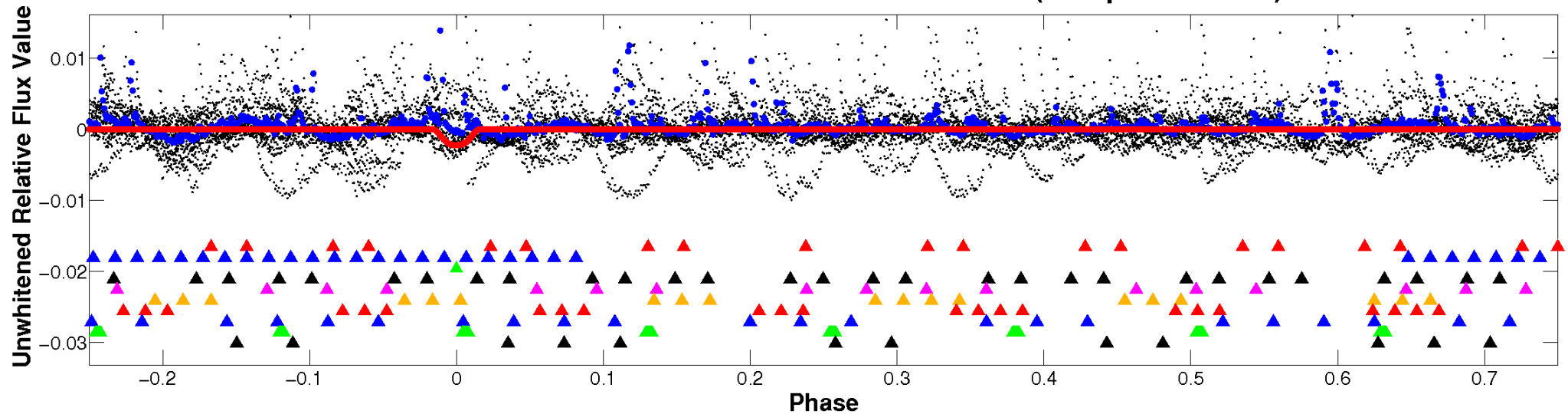
ALT Odd/Even

TCE 009650048-03

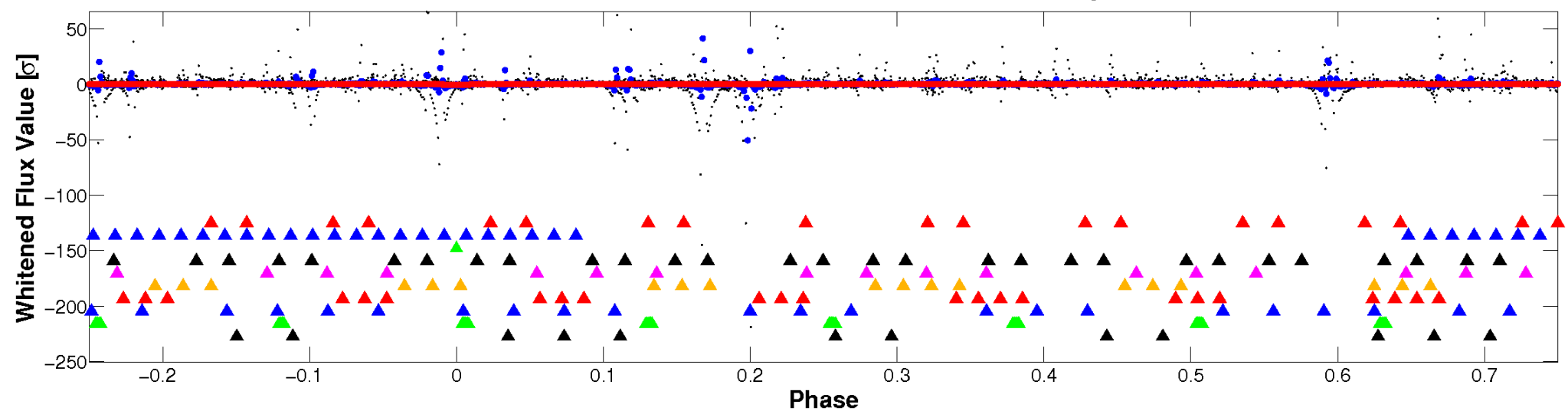


Non-Whitened Vs. Whitened Light Curve

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

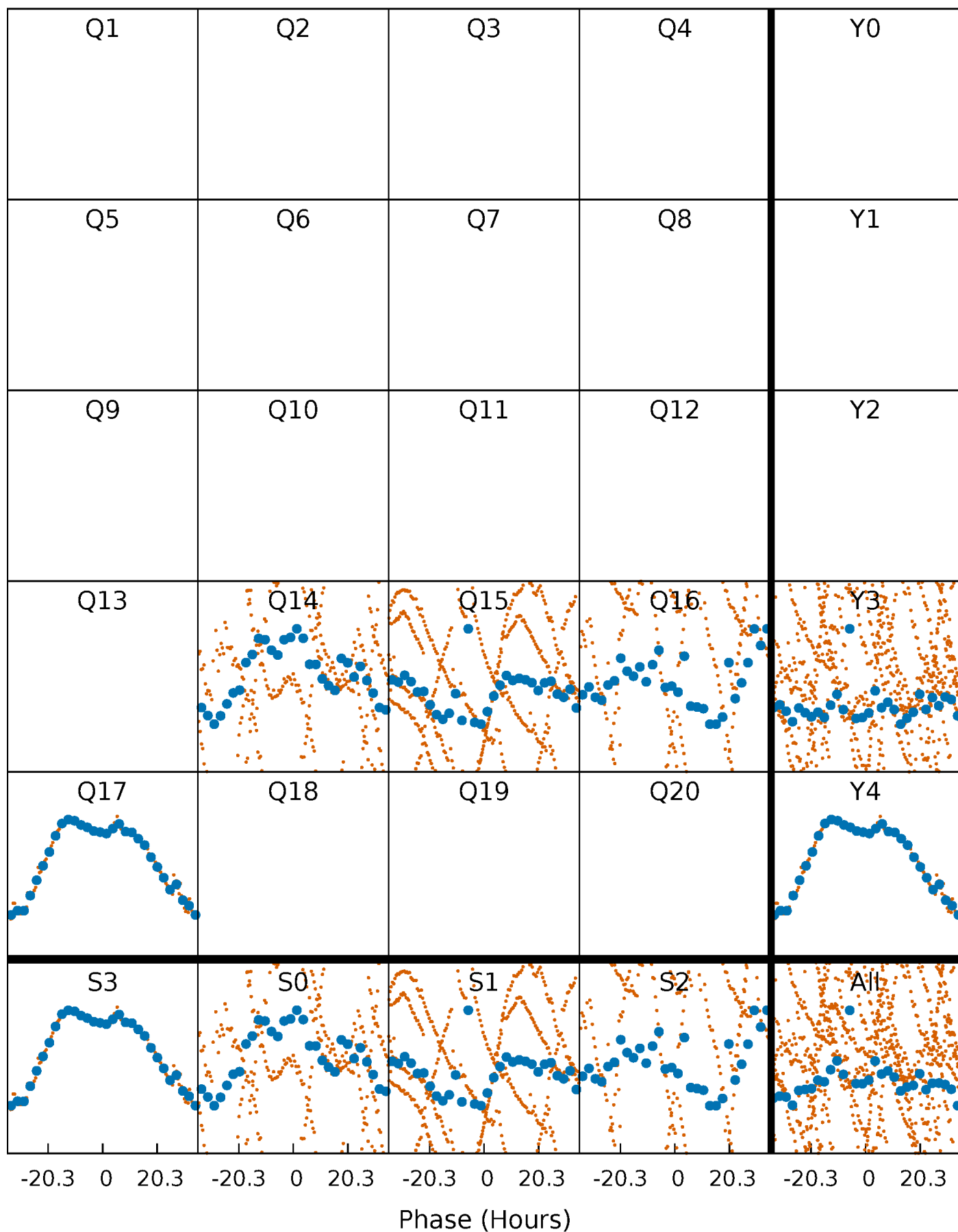


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



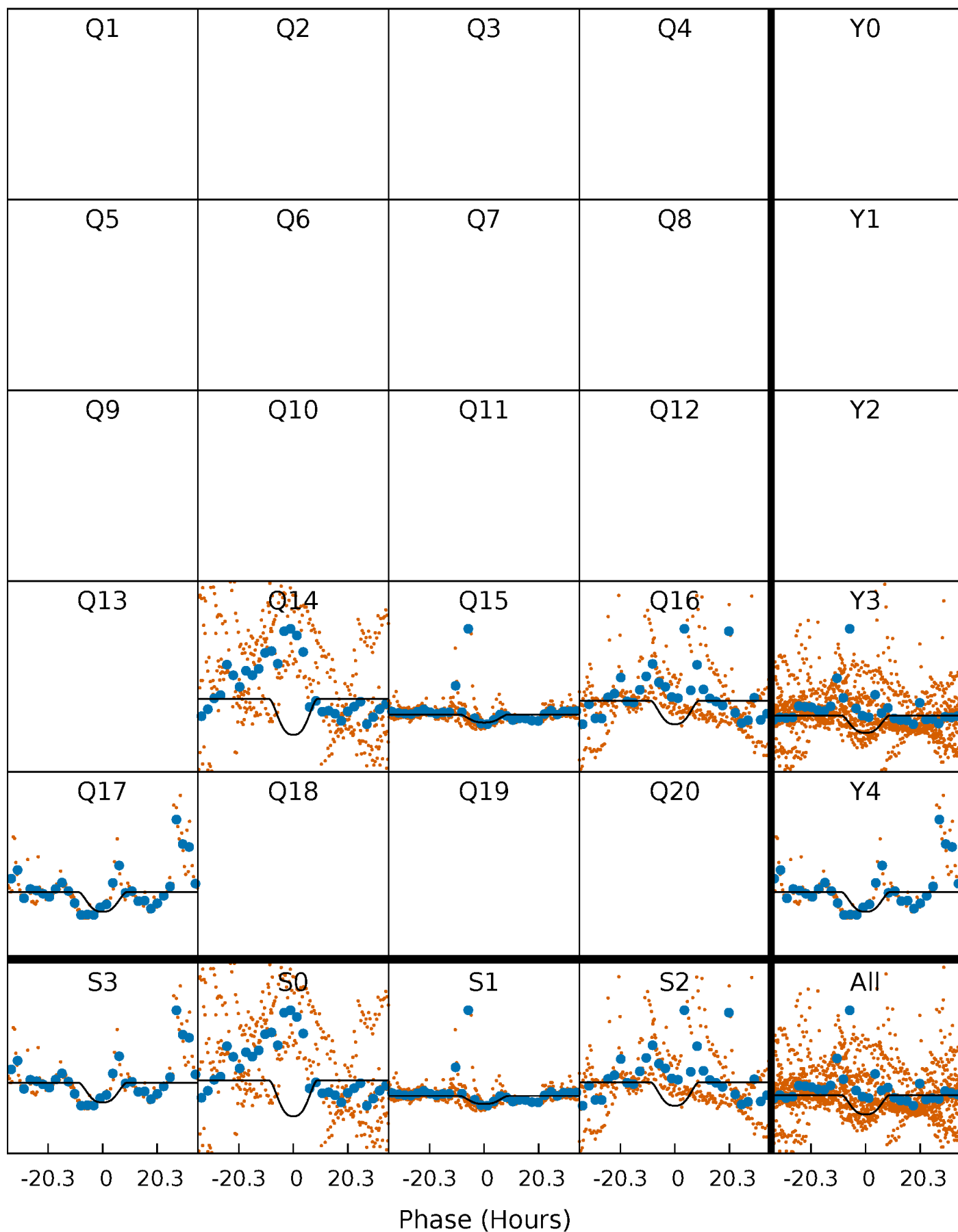
PDC Quarter-Phased Transit Curves

TCE 009650048-03 P= 24.115052 Days $T_0=145.753117$ (BKJD)



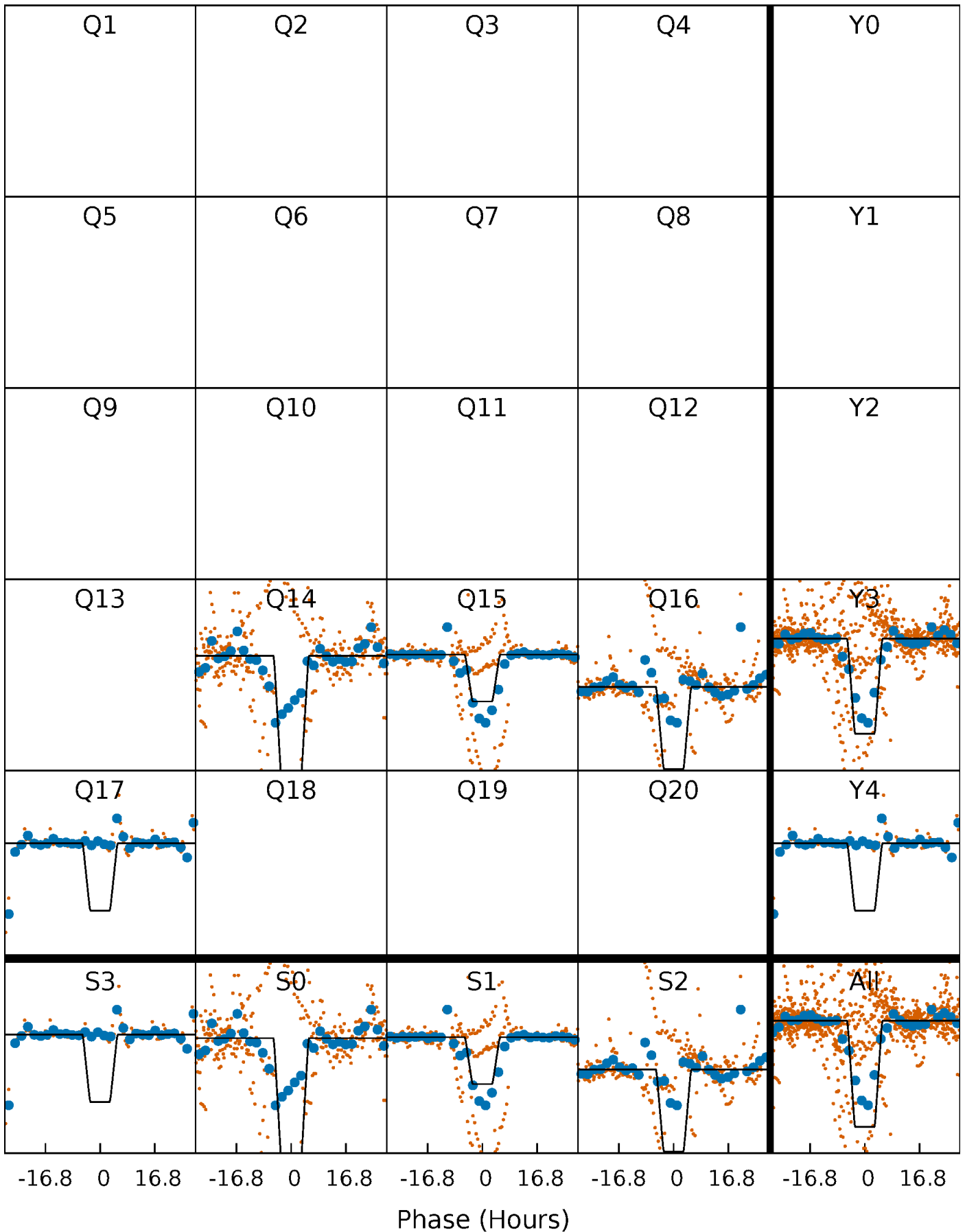
DV Quarter-Phased Transit Curves

TCE 009650048-03 P= 24.115052 Days $T_0=145.753117$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

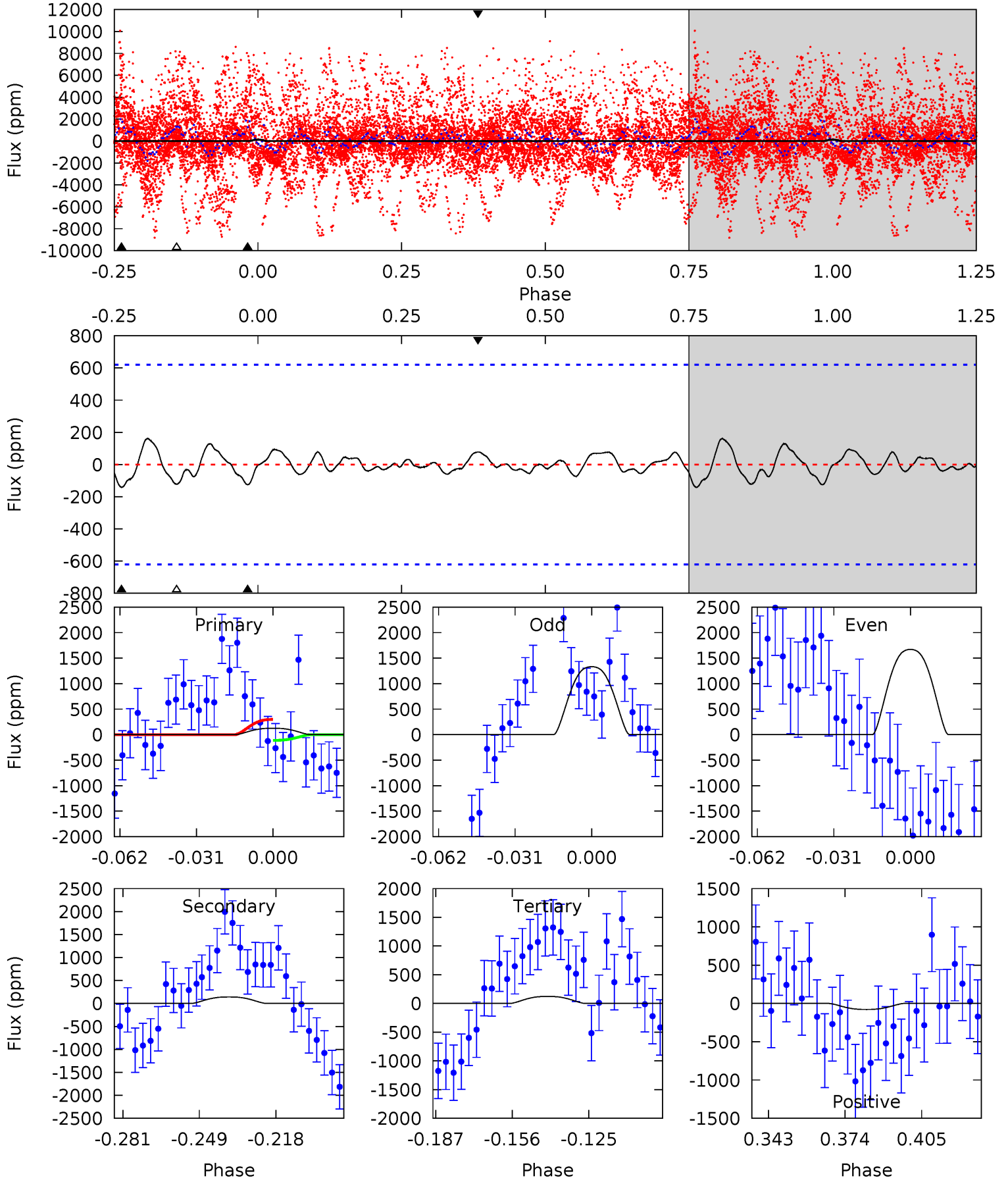
TCE 009650048-03 P= 24.116045 Days $T_0=145.681957$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-03, P = 24.115052 Days, E = 145.753117 Days

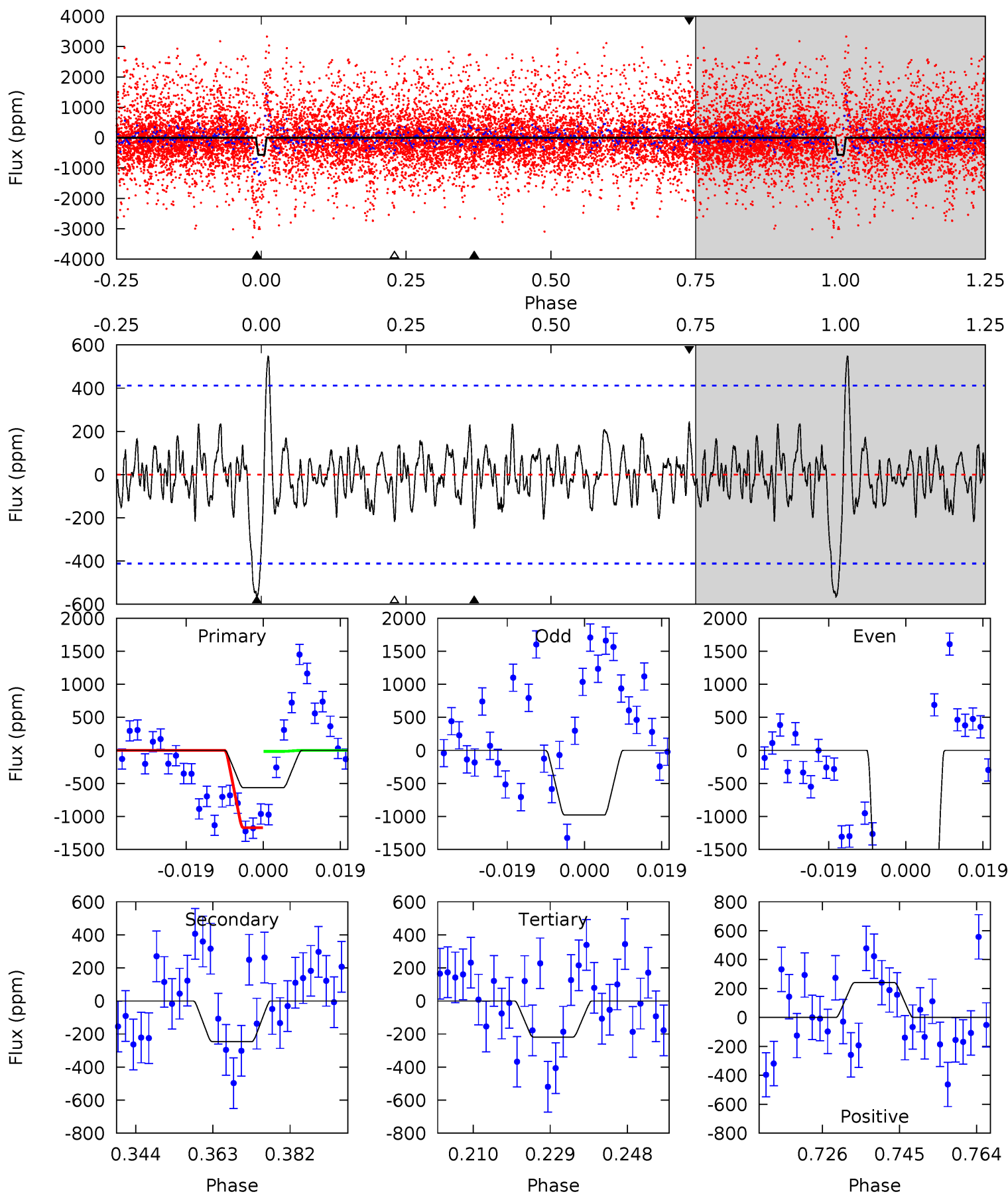
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.97	1.09	0.95	0.61	4.80	2.15	0.42	0.02	0.36	0.15	0.49	1.27	-0.22	0.53	0.74



Alt Model-Shift Uniqueness Test

009650048-03, P = 24.116045 Days, E = 145.681957 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.74	2.93	2.60	2.87	4.90	2.34	1.11	4.14	3.87	0.33	0.06	35.5	2.41	0.49	0



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-142 ± 129	$1098.87^{+286.29}_{-283.59}$	5589^{+357}_{-502}	-4135^{+282}_{-250}	$0.004^{+0.005}_{-0.003}$
Alt.	-246 ± 84	$1610.43^{+279.86}_{-362.56}$	5592^{+353}_{-481}	-4146^{+281}_{-248}	$0.003^{+0.002}_{-0.001}$

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

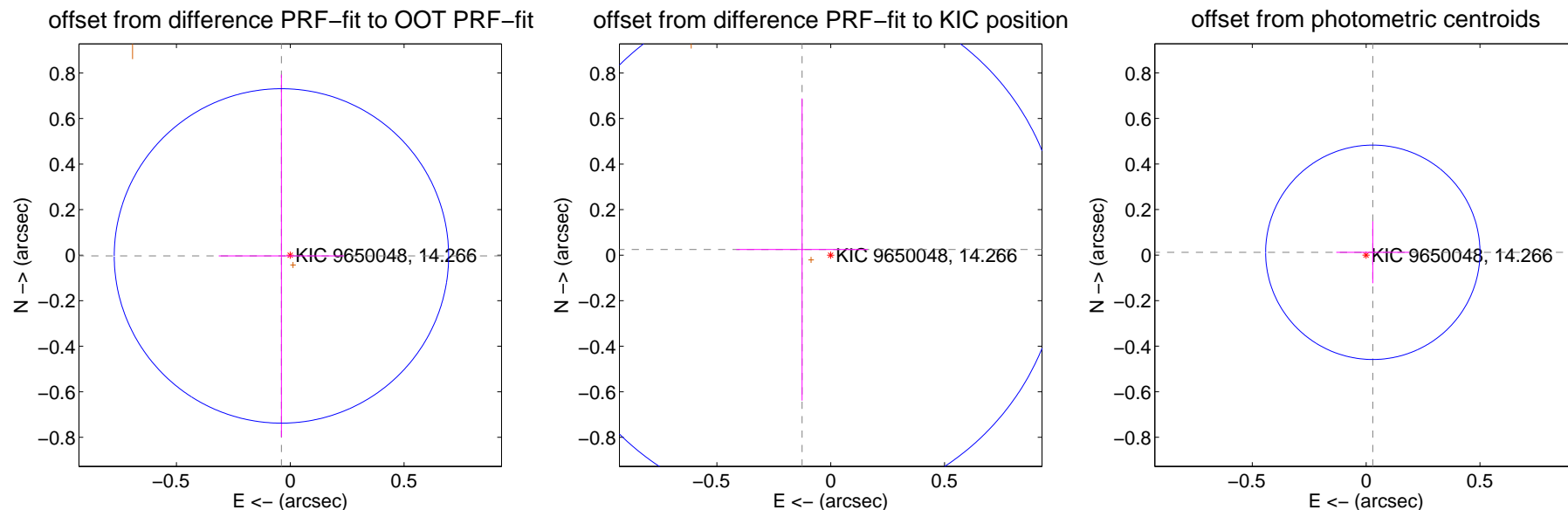
DV Centroid Data

Supplemental centroid analysis for 009650048-03. Kepler magnitude: 14.27. Transit SNR 7.01

There are 1 quarters with good PRF difference image offsets

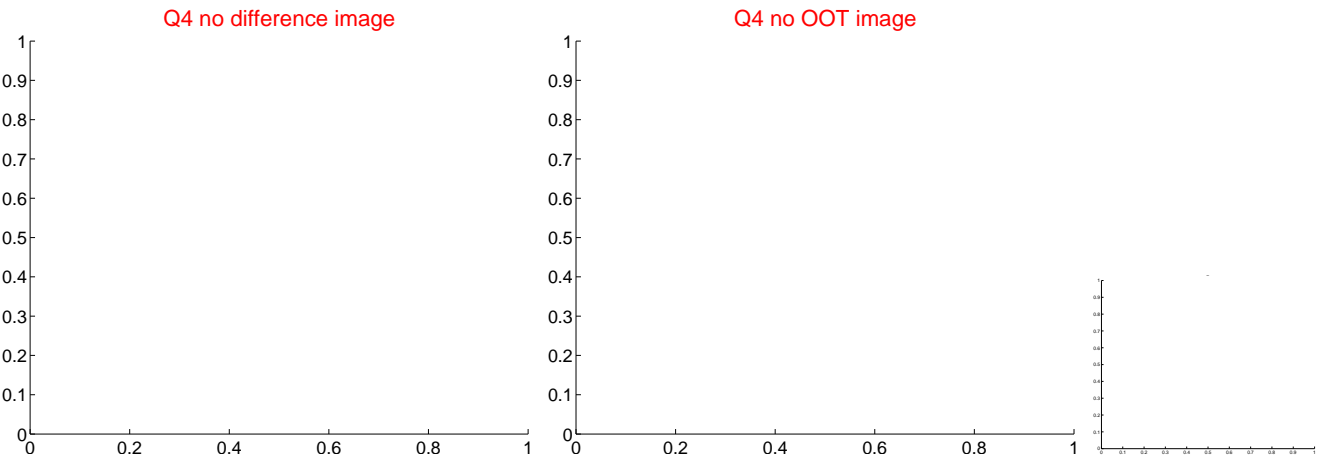
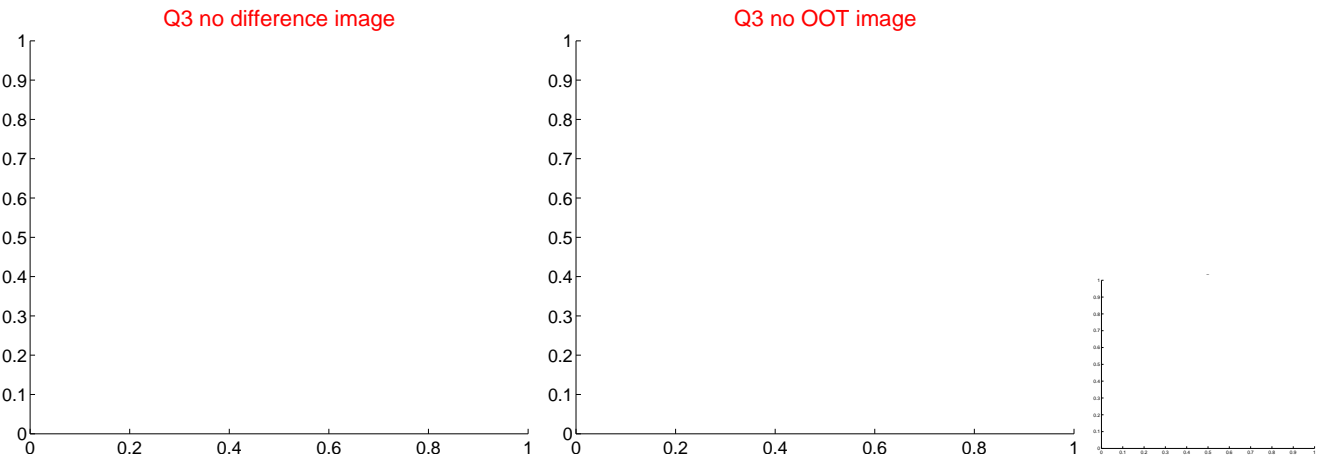
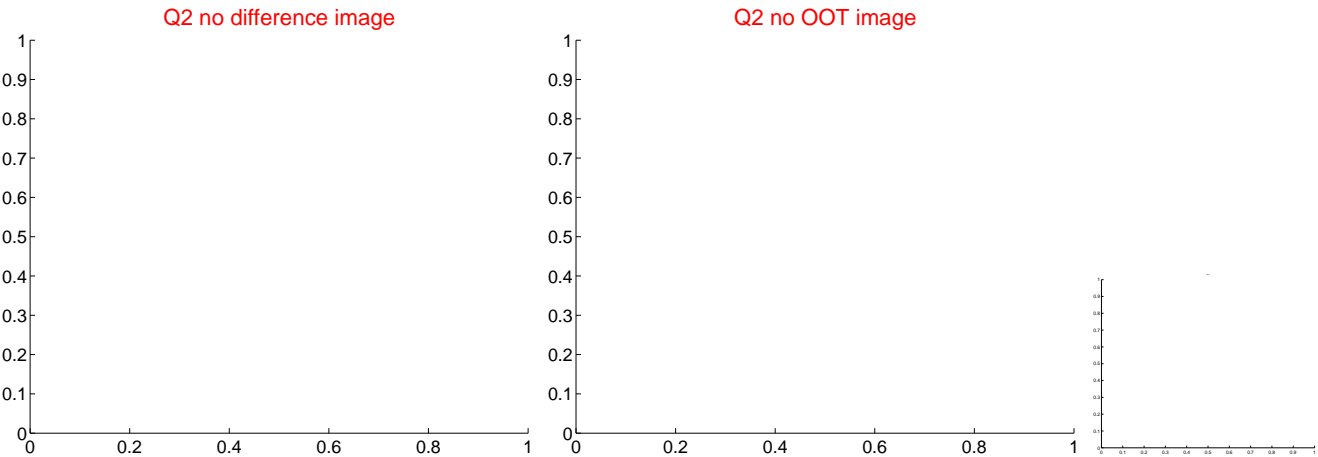
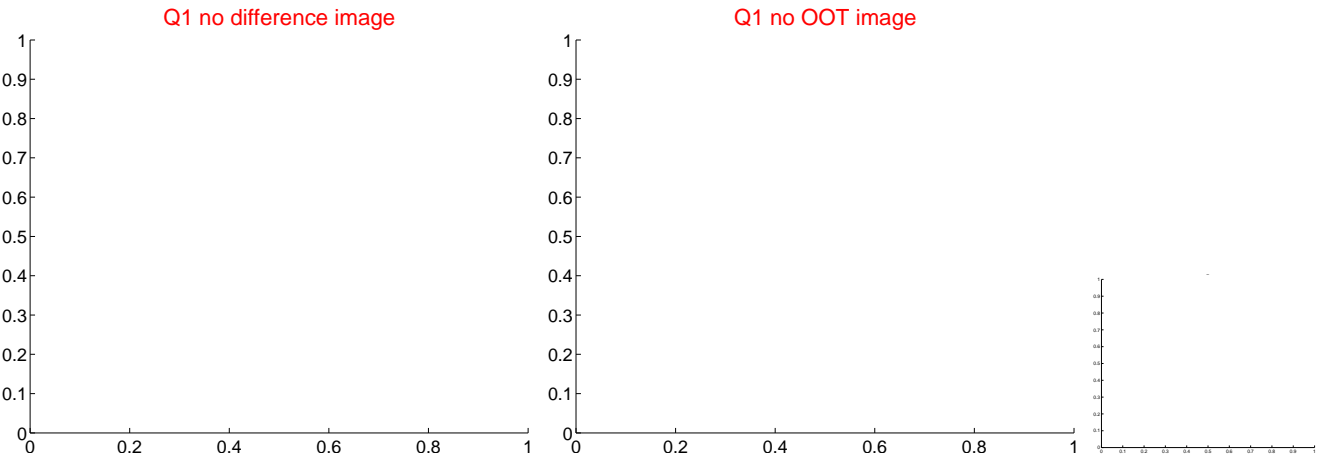
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.039 ± 0.245	0.16	0.039 ± 0.276	-0.003 ± 0.796
PRF-fit source offset from KIC position	0.128 ± 0.380	0.34	0.126 ± 0.289	0.025 ± 0.663
photometric centroid source offset	0.03 ± 0.16	0.20	-0.03 ± 0.16	0.01 ± 0.14



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.

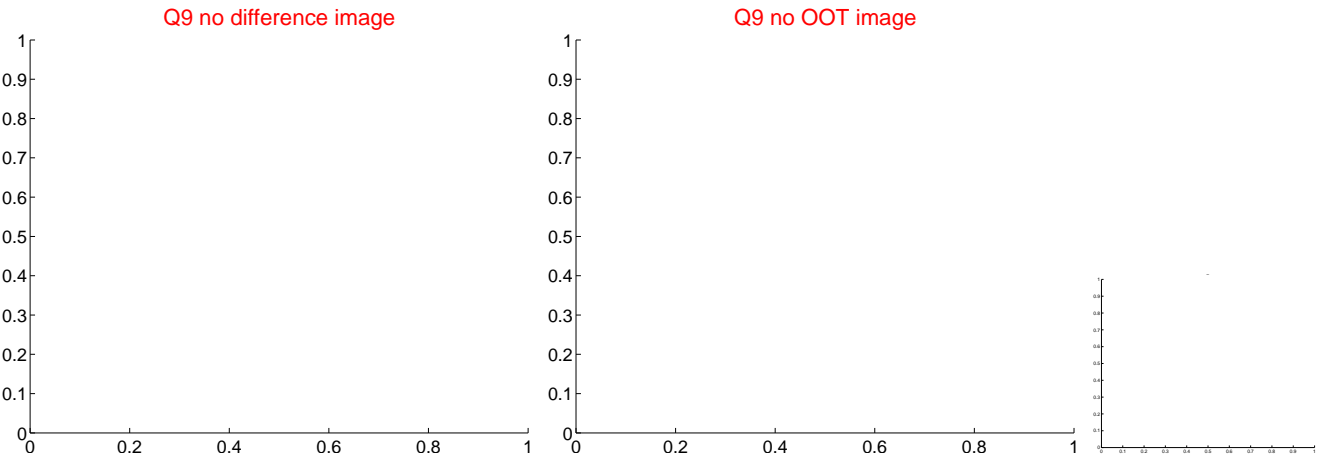
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



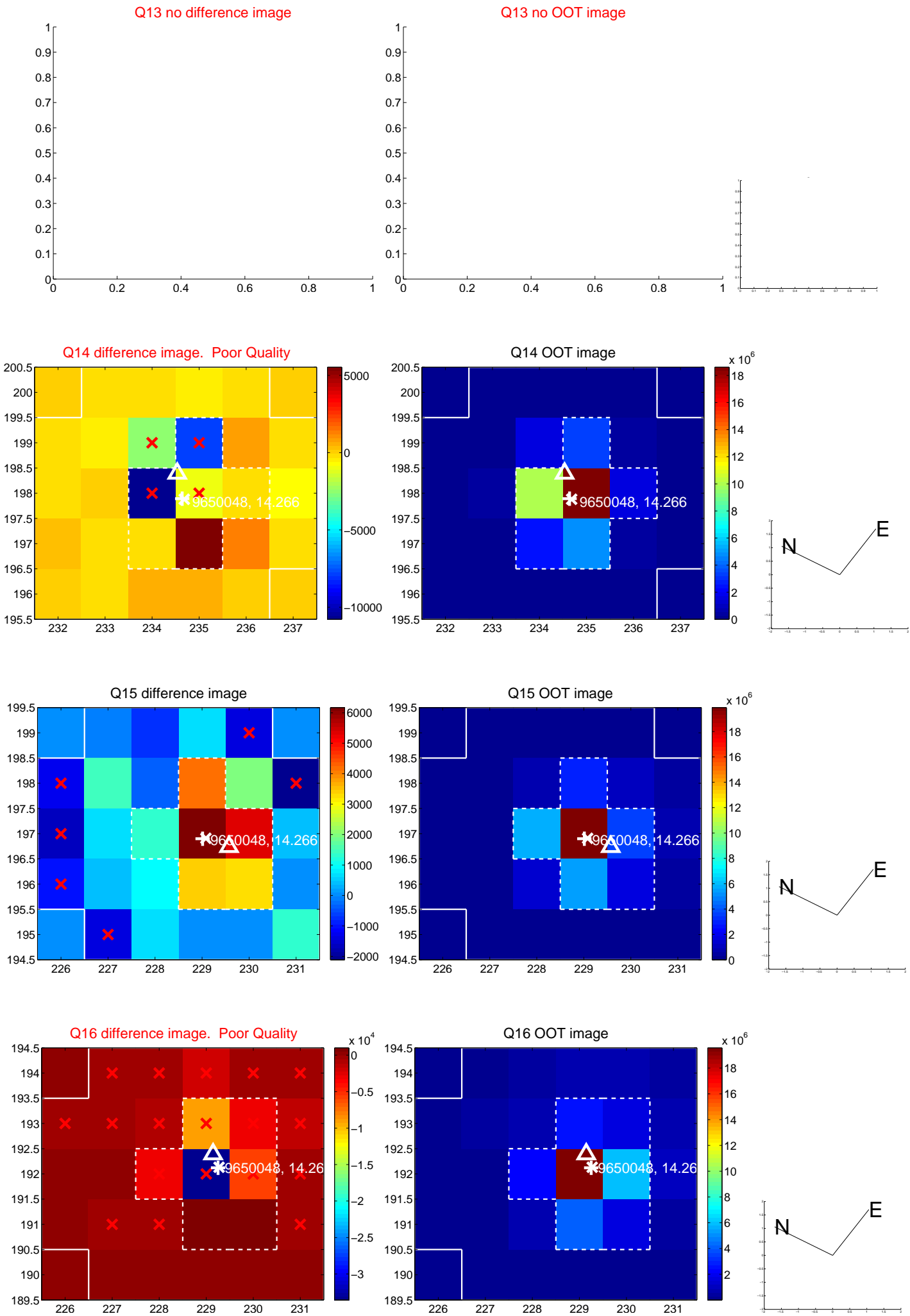
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



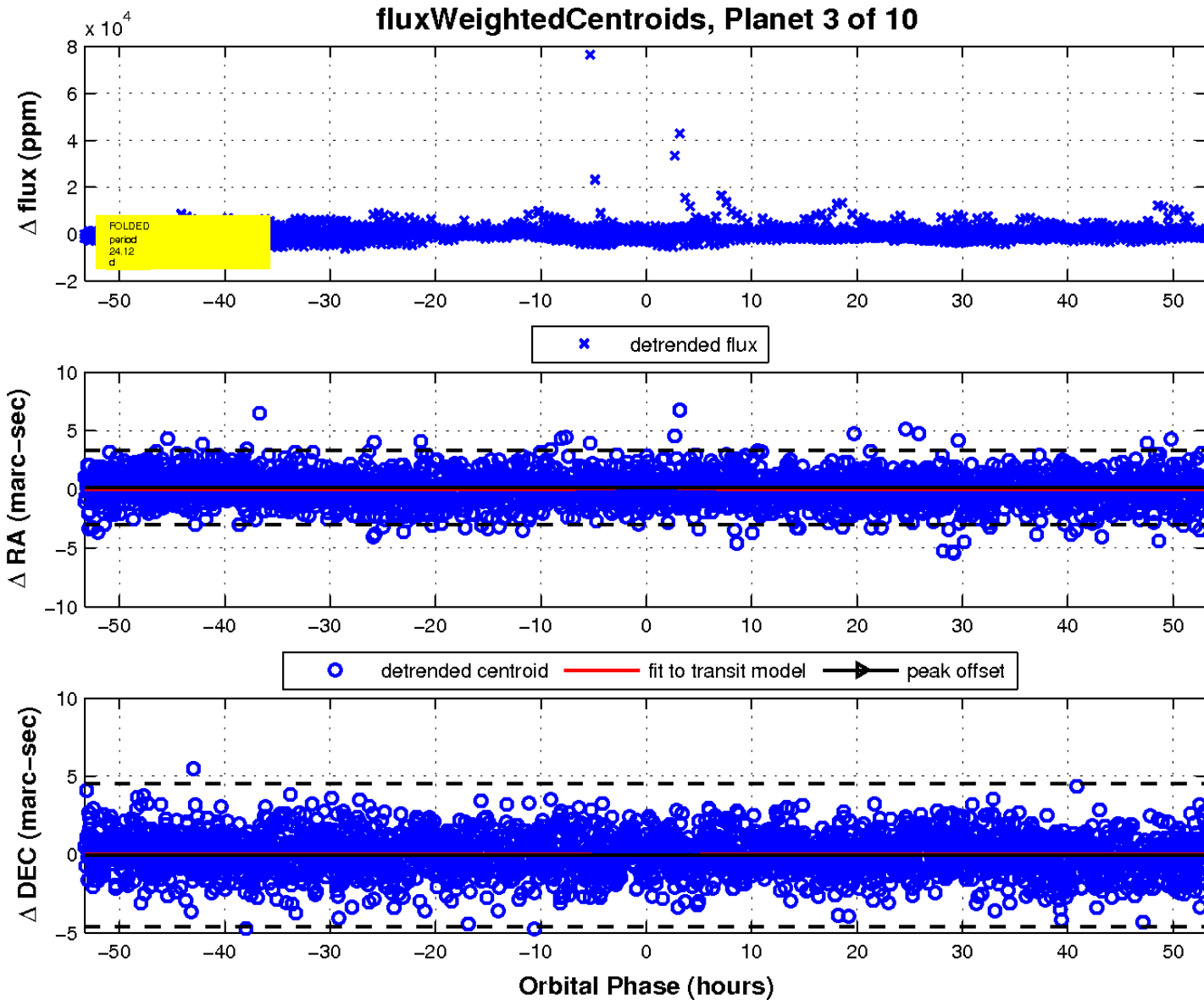
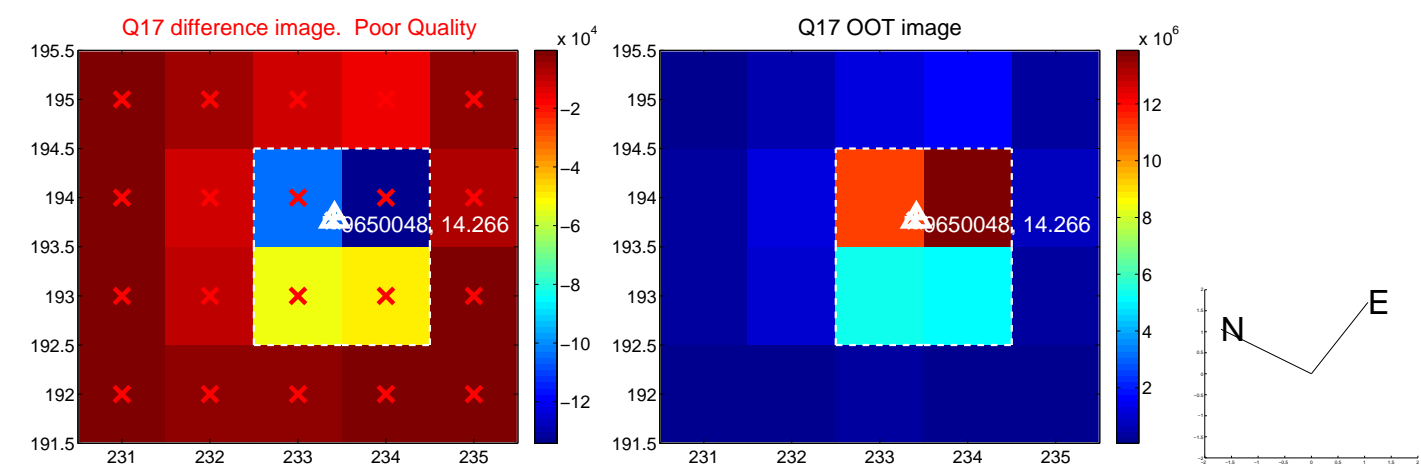
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

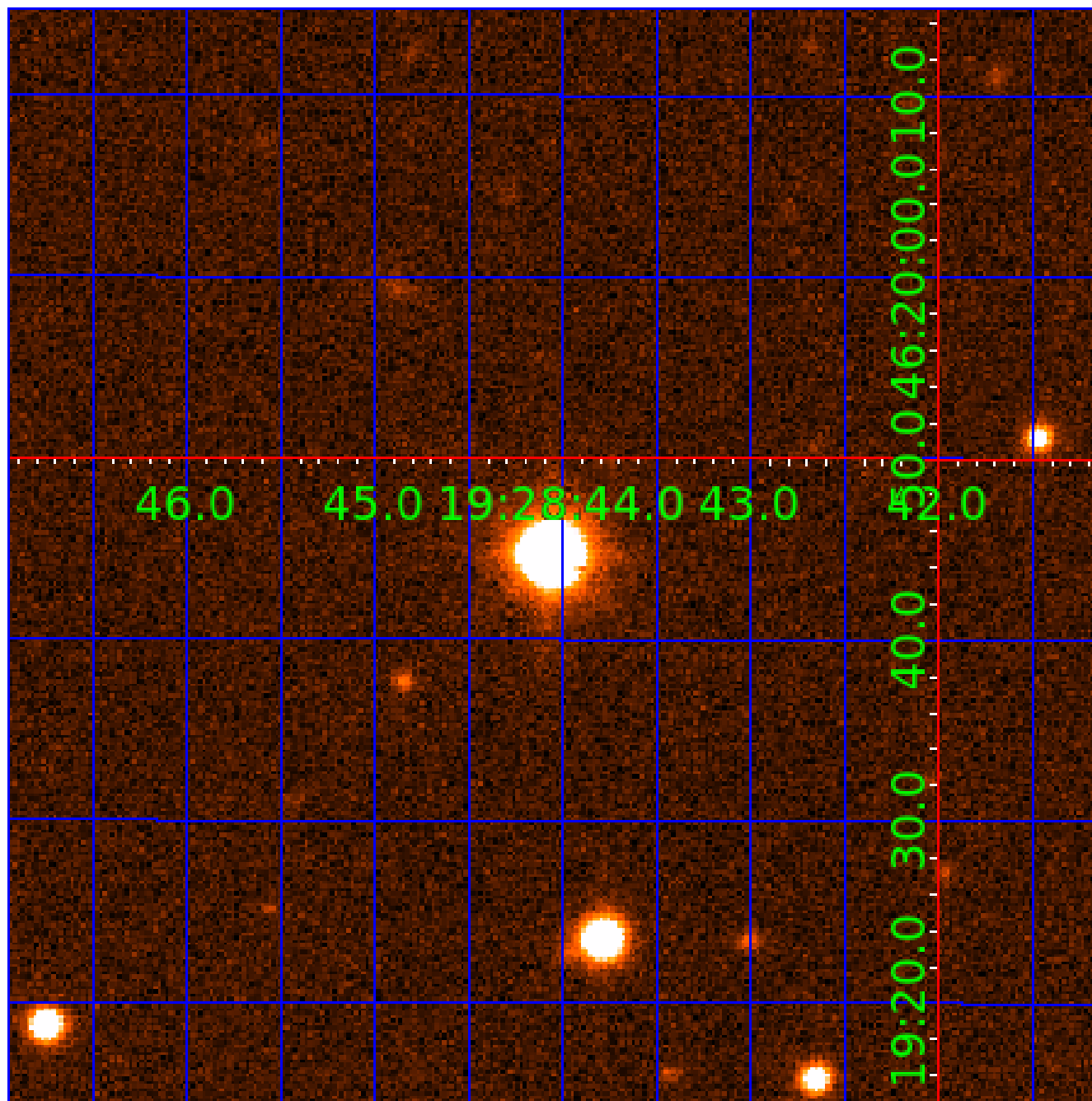


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009650048-01	OBS	No	79.521238	135.132830	1426.8	8.314	13.9	3.2	172.45	3420	596.87	0.00
009650048-02	OBS	No	48.590399	161.382228	1712.0	6.008	12.7	5.2	172.45	3420	897.18	0.00
009650048-03	OBS	No	24.115052	145.753117	2221.7	17.763	9.9	7.0	172.45	3420	1117.14	0.00
009650048-04	OBS	No	51.481188	142.840114	1946.8	2.720	15.5	5.7	172.45	3420	874.61	0.00
009650048-05	OBS	No	86.617464	188.411391	195.5	6.848	11.3	0.5	172.45	3420	298.28	0.00
009650048-06	OBS	No	76.441075	200.861693	3467.7	3.505	11.3	8.1	172.45	3420	1253.74	0.00
009650048-07	OBS	No	65.506849	136.684124	1497.1	17.131	10.7	4.4	172.45	3420	691.84	0.00
009650048-08	OBS	No	68.464196	145.864858	4876.3	6.518	12.2	11.8	172.45	3420	1272.13	0.00
009650048-09	OBS	No	27.127219	145.955115	1498.1	9.143	11.9	5.7	172.45	3420	1106.13	0.00
009650048-10	OBS	No	130.405347	136.770863	2040.2	5.061	11.5	6.2	172.45	3420	885.03	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650048-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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—CENT_FEW_DIFFS
009650048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES
009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-10	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST

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

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

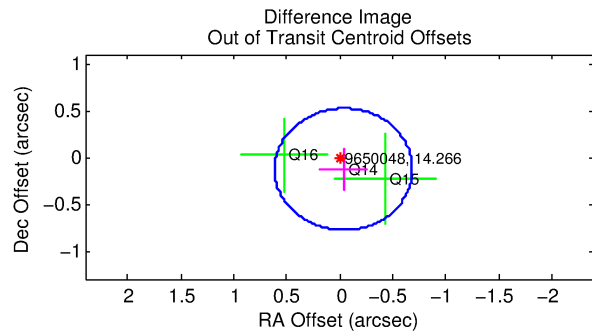
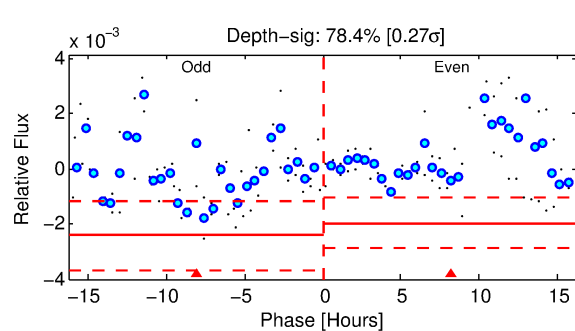
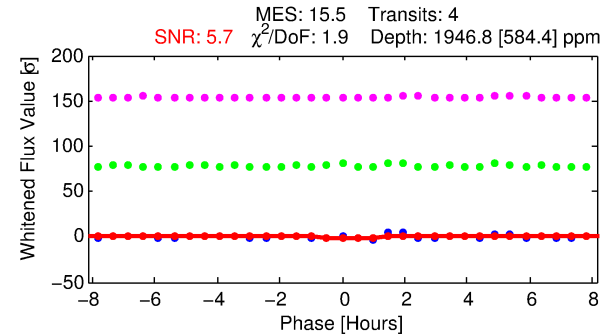
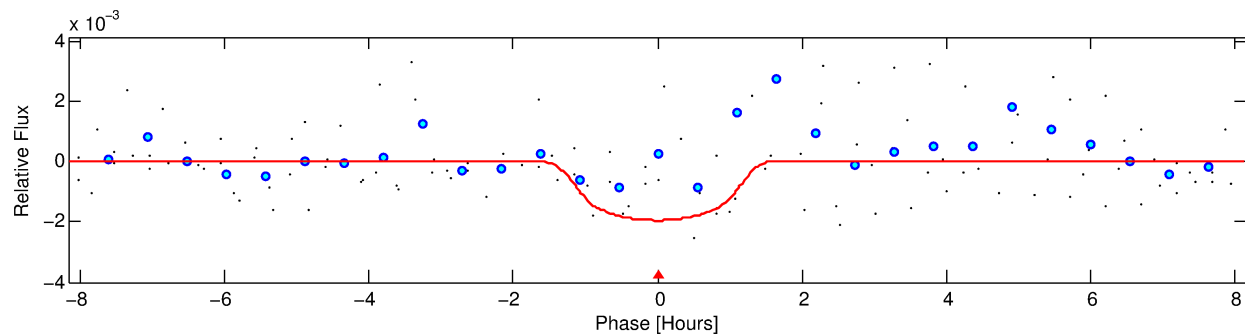
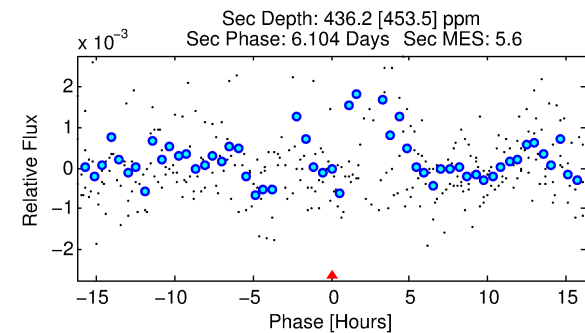
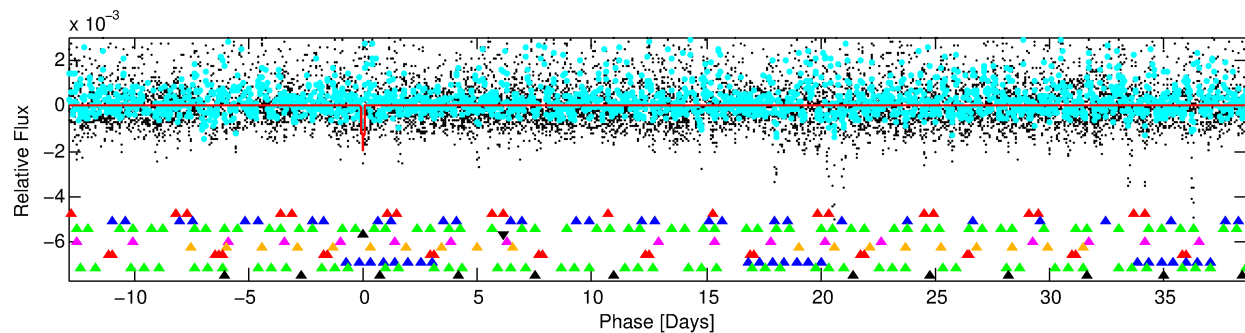
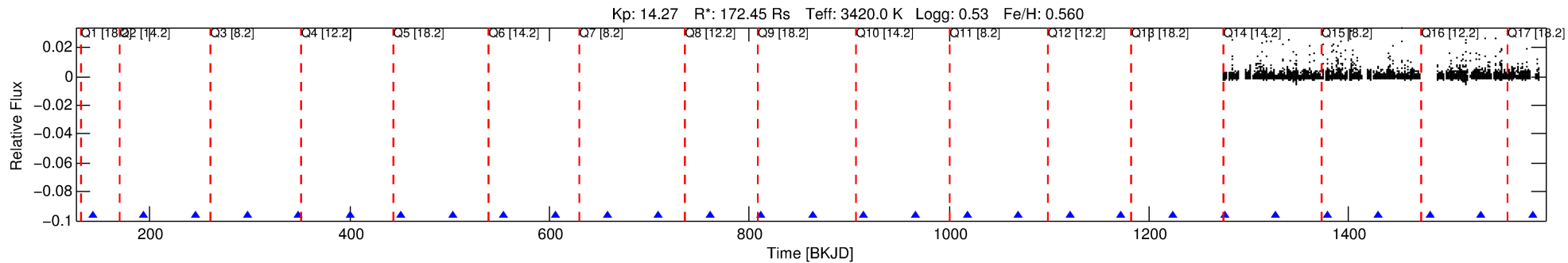
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009650048-04

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 4 of 10 Period: 51.481 d



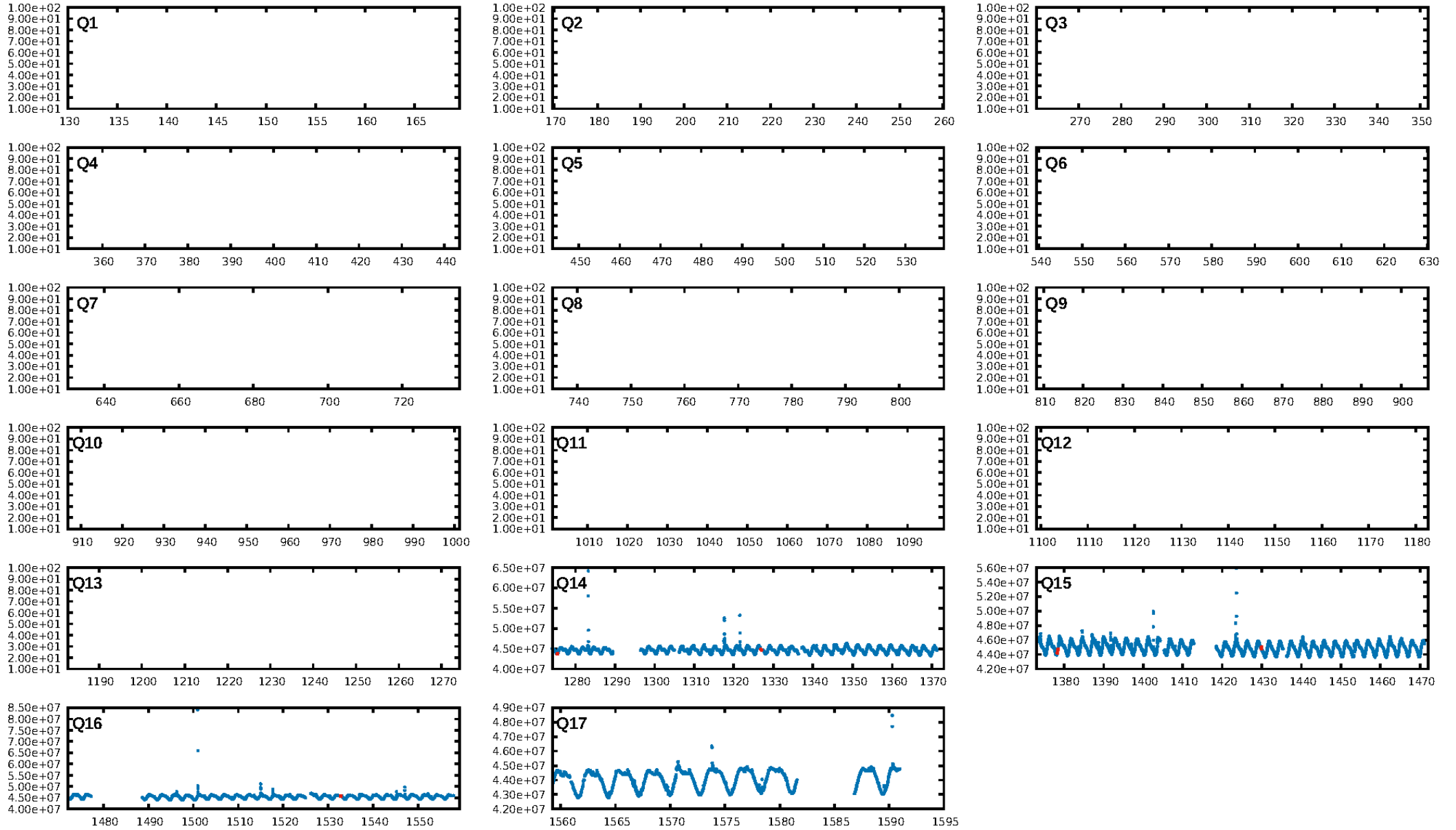
DV Fit Results:

Period = 51.48119 [0.00277] d
Epoch = 142.8401 [0.0710] BKJD
Rp/R* = 0.0465 [0.0648]
a/R* = 97.74 [355.10]
b = 0.80 [1.72]
Seff = N/A
Teq = N/A
Rp = 874.61 [1313.07] Re
a = N/A
Ag = N/A
Teffp = N/A

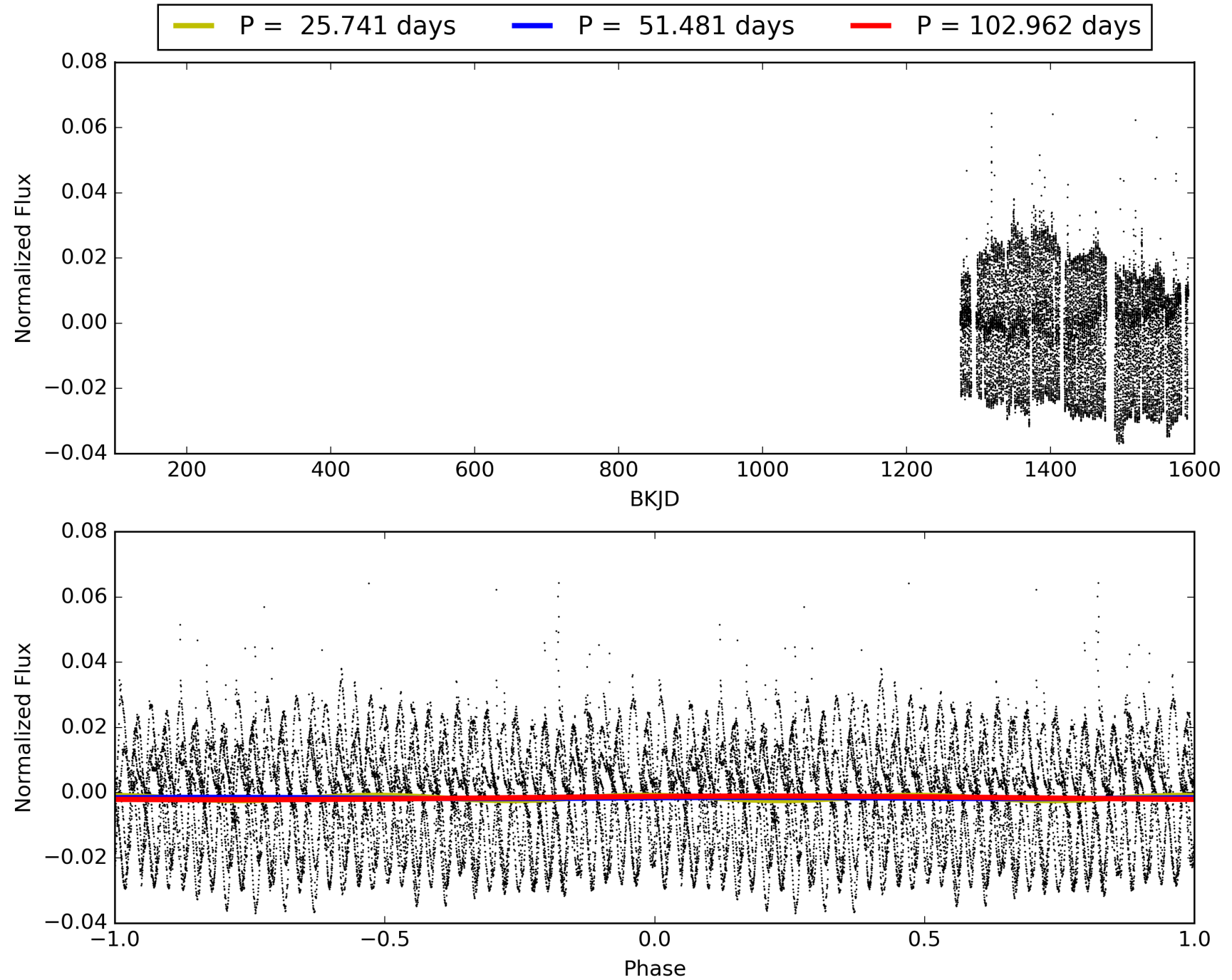
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.52σ]
LongPeriod-sig: 100.0% [19.41σ]
ModelChiSquare2-sig: 46.3%
ModelChiSquareGof-sig: 64.6%
Bootstrap-pfa: 2.49e-20
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 34.36
Centroid-sig: 52.5%
Centroid-so: 0.413 arcsec [0.85σ]
OotOffset-rm: 0.133 arcsec [0.61σ]
KicOffset-rm: 0.105 arcsec [0.48σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009650048-04, PDC Light Curves

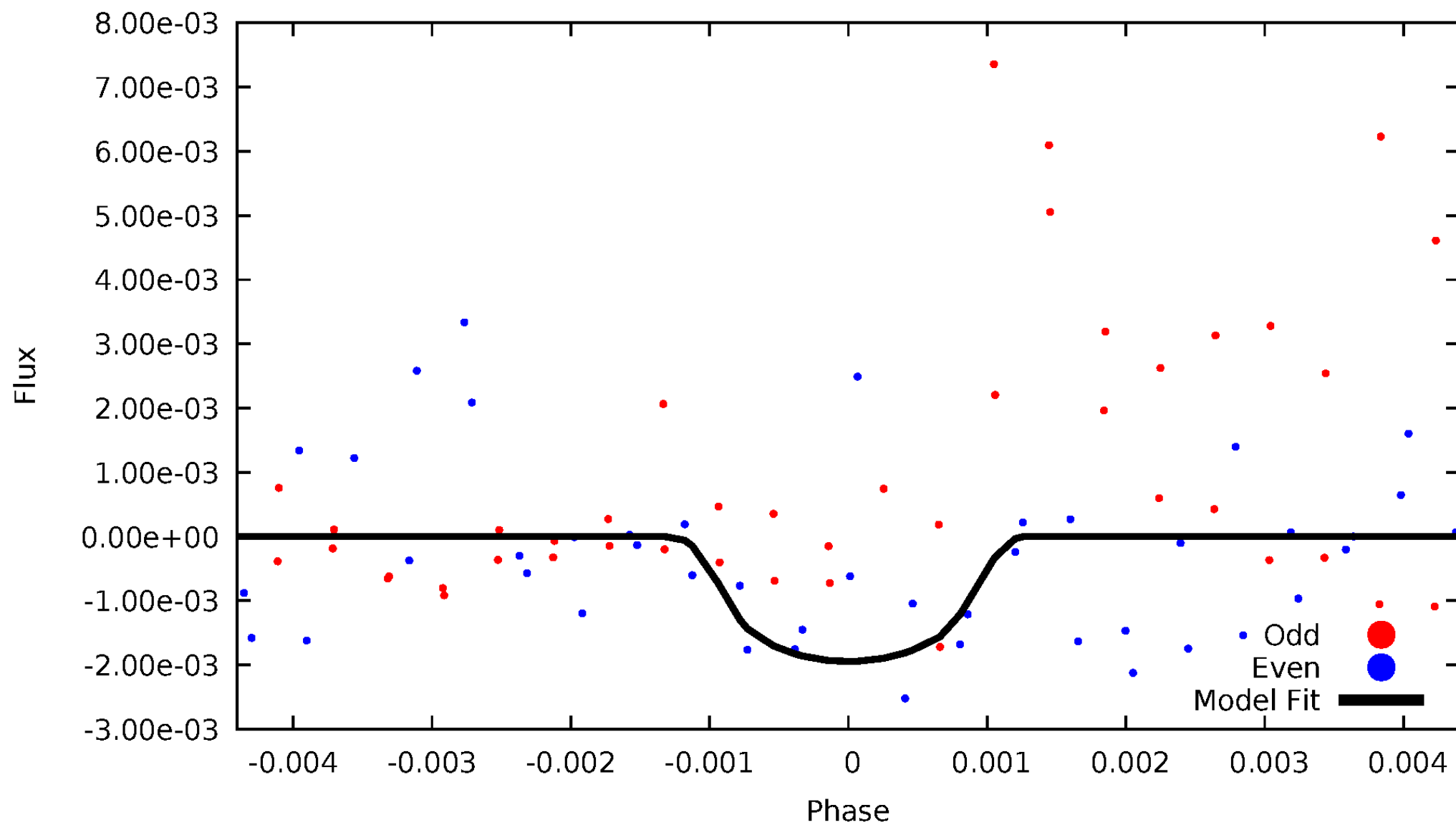


TCE 009650048-04



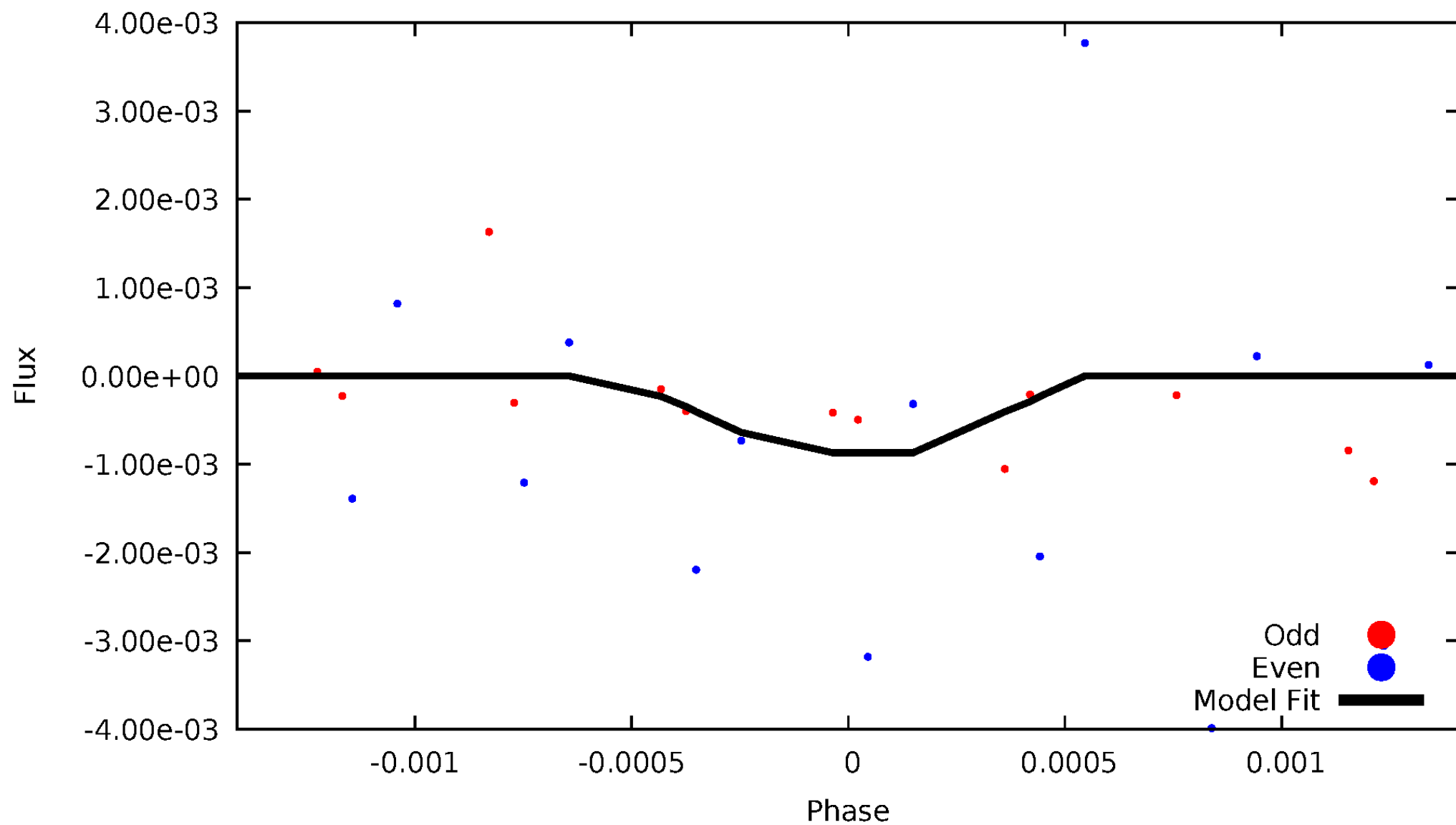
DV Odd/Even

TCE 009650048-04



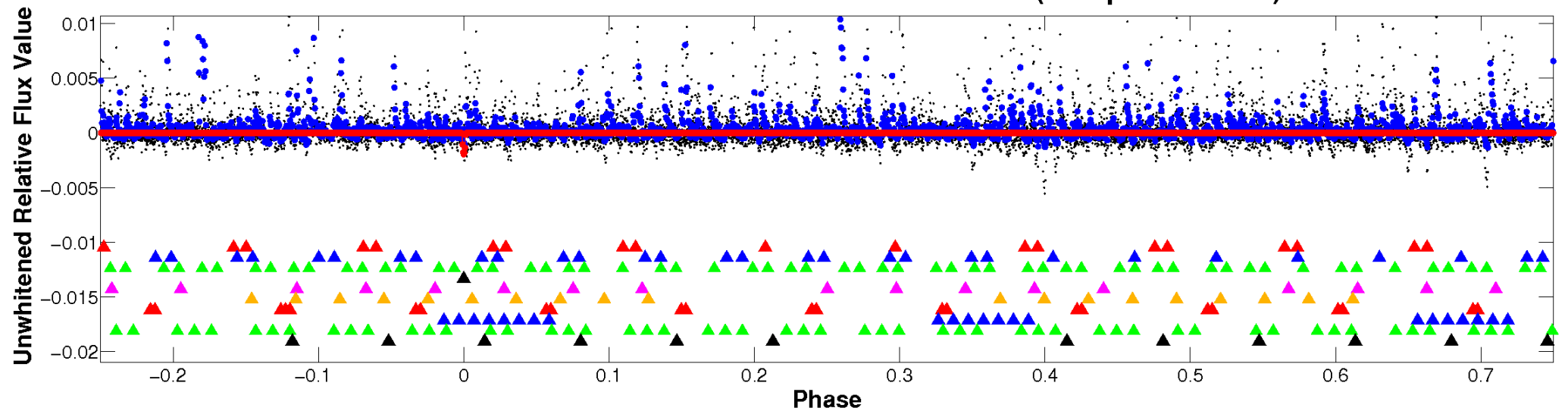
ALT Odd/Even

TCE 009650048-04

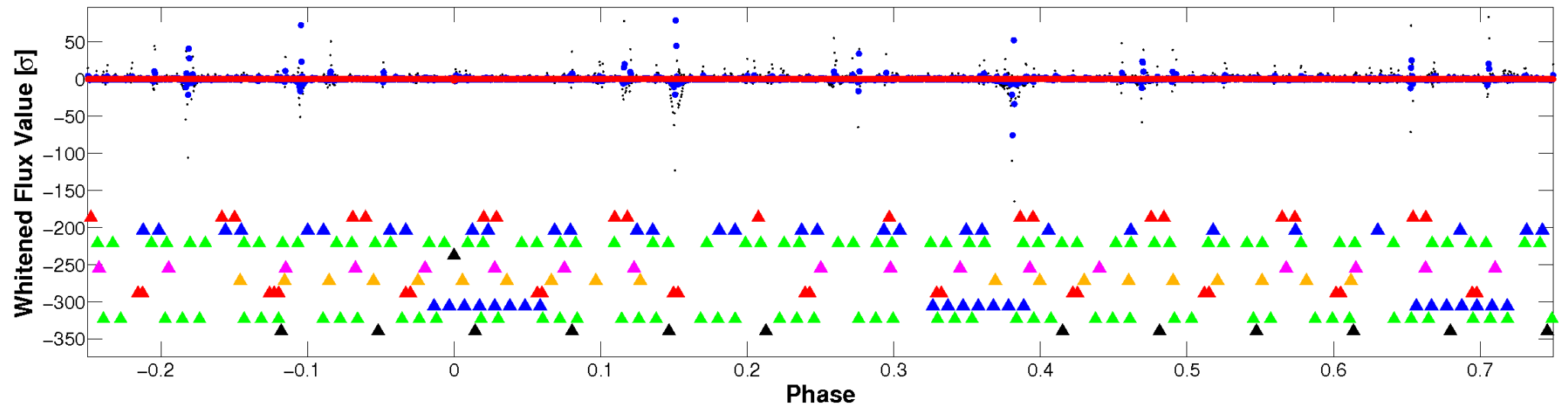


Non-Whitened Vs. Whitened Light Curve

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

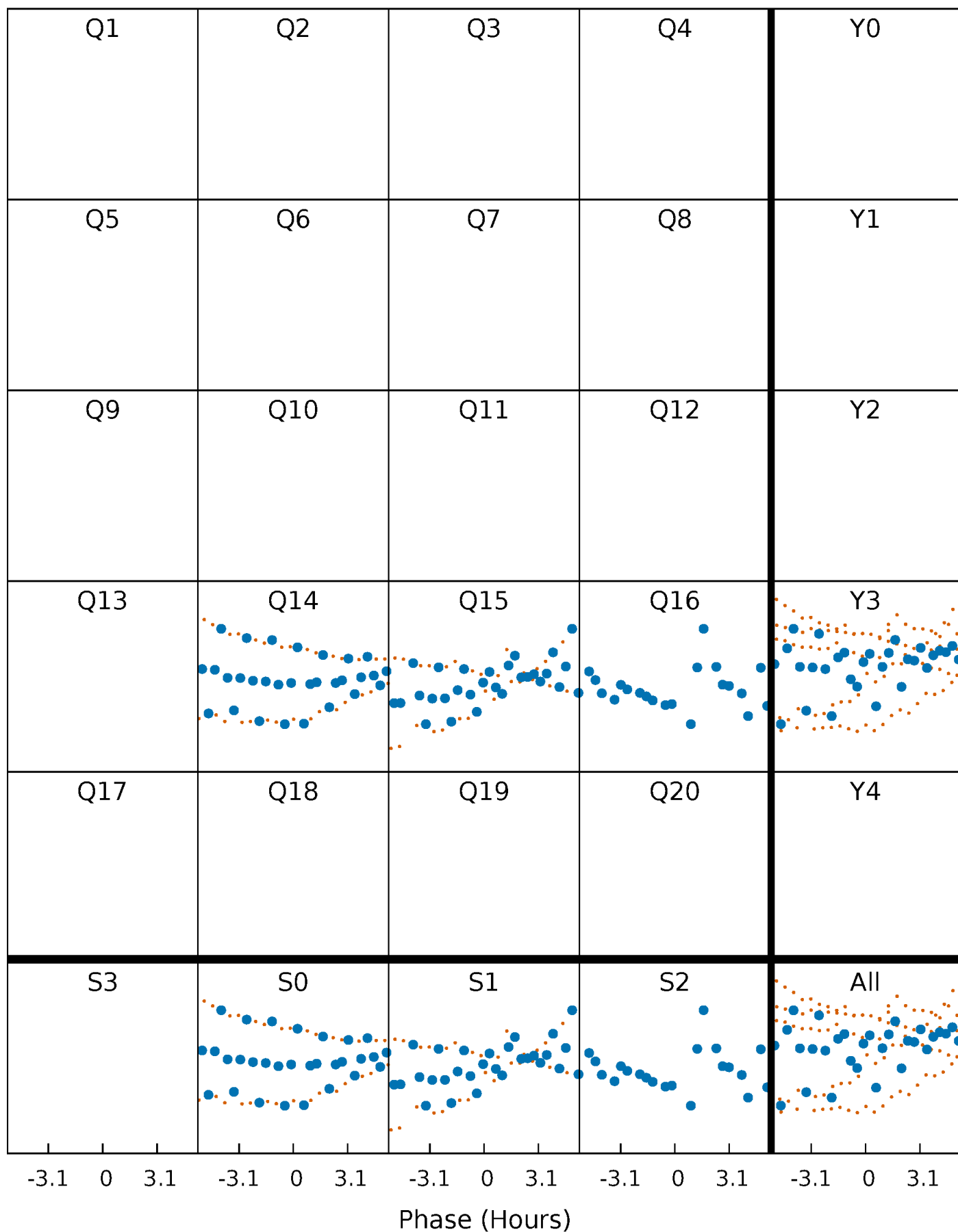


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



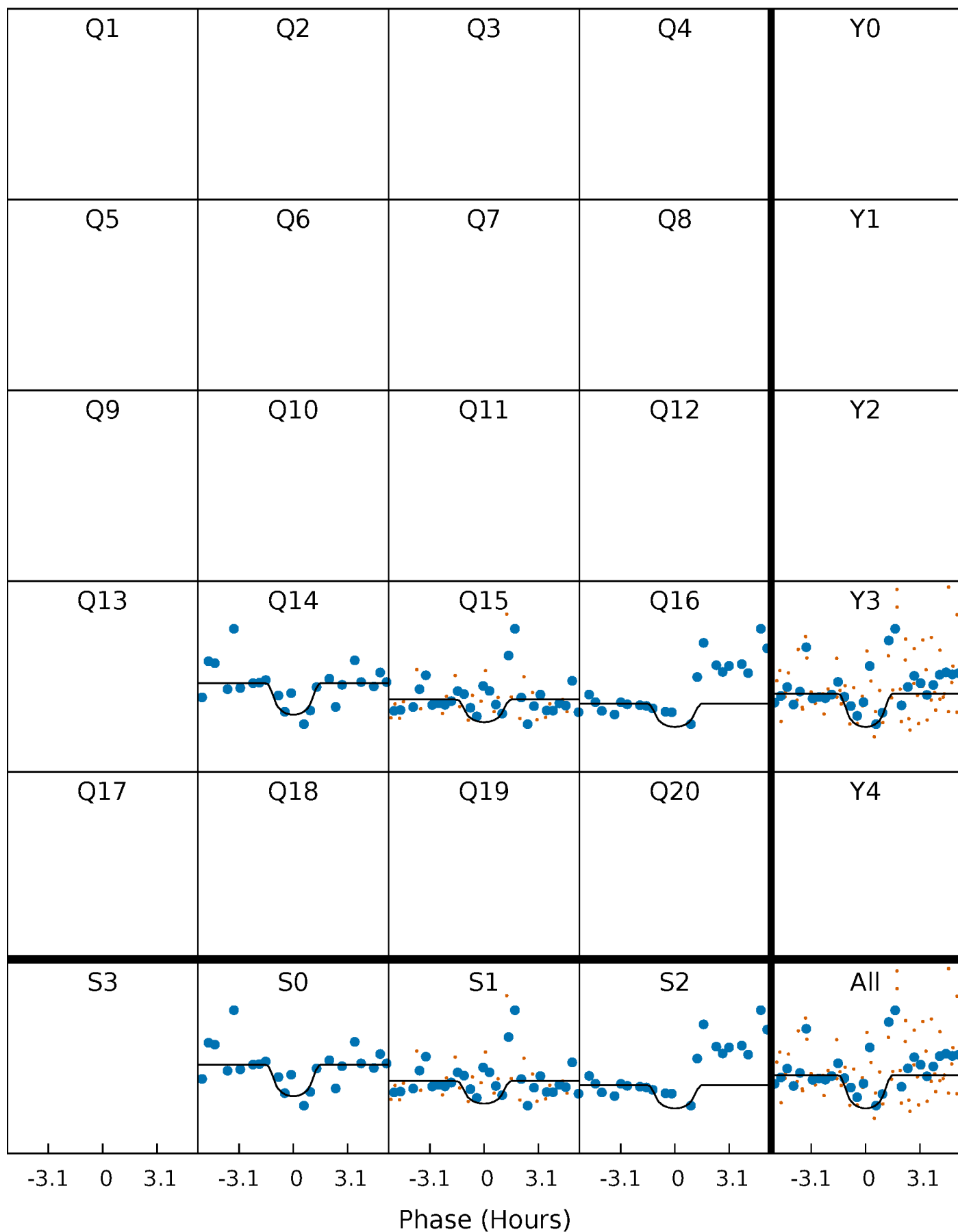
PDC Quarter-Phased Transit Curves

TCE 009650048-04 P= 51.481188 Days $T_0=142.840114$ (BKJD)



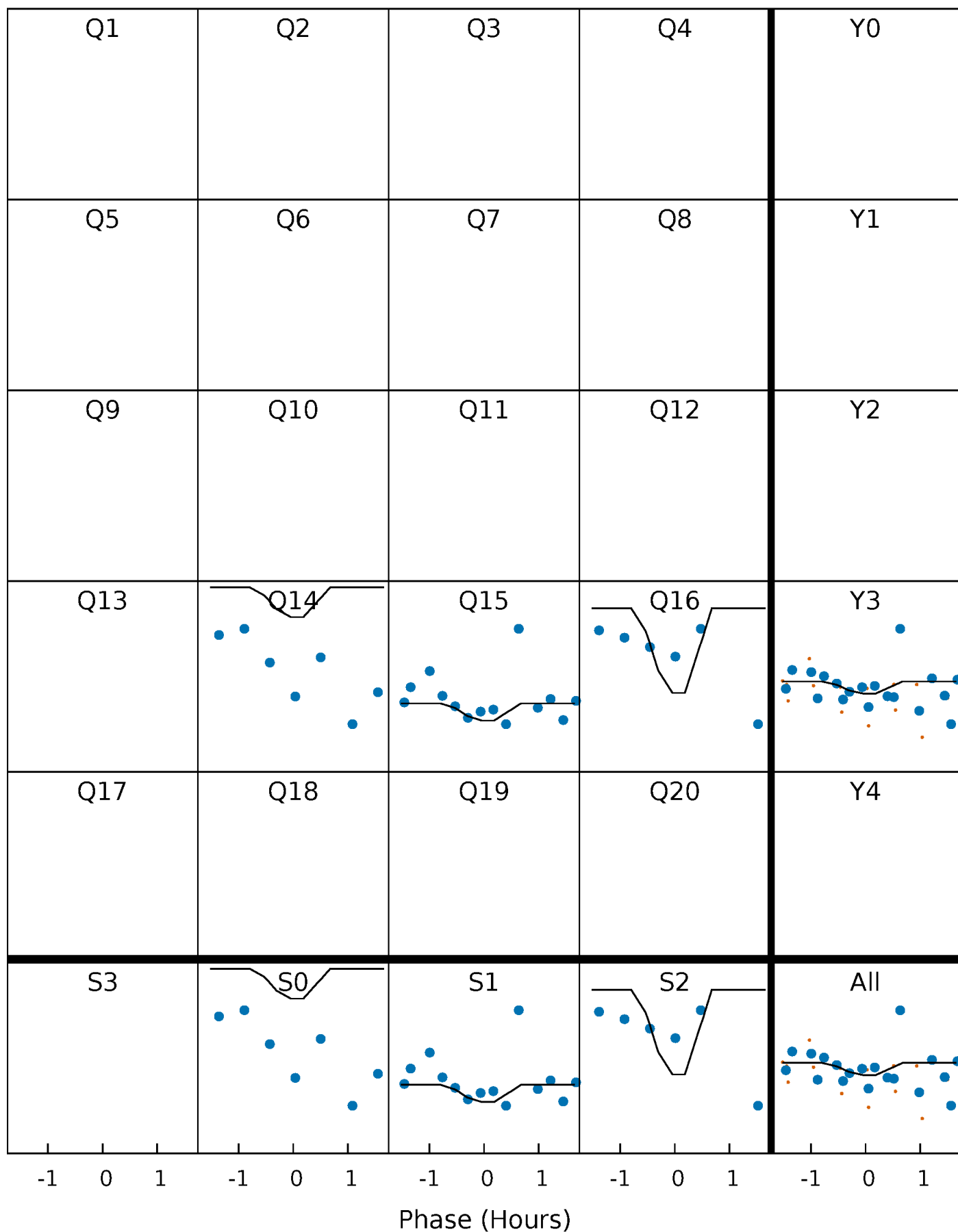
DV Quarter-Phased Transit Curves

TCE 009650048-04 P= 51.481188 Days $T_0=142.840114$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

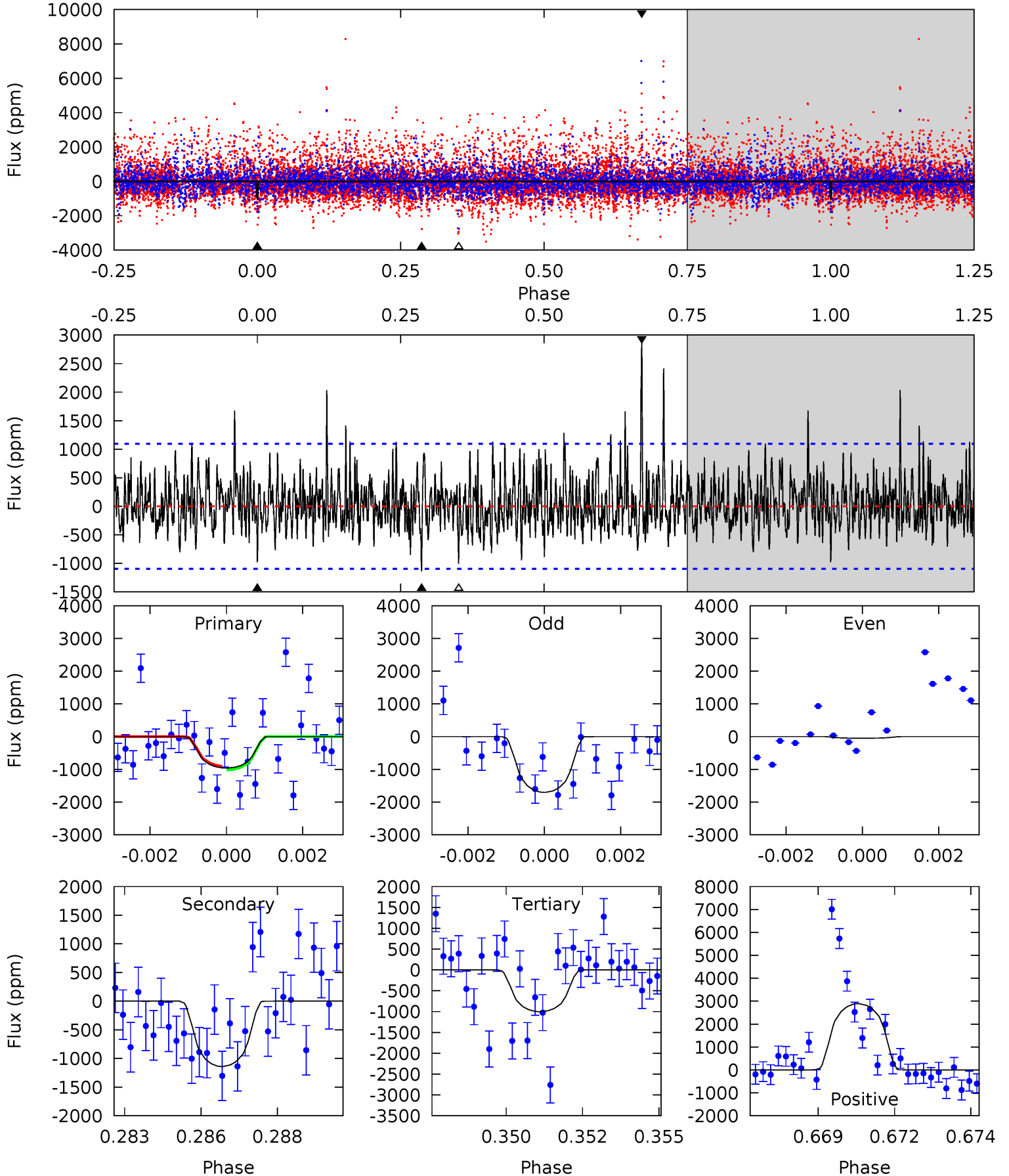
TCE 009650048-04 P= 51.479915 Days $T_0=142.846004$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-04, P = 51.481188 Days, E = 142.840114 Days

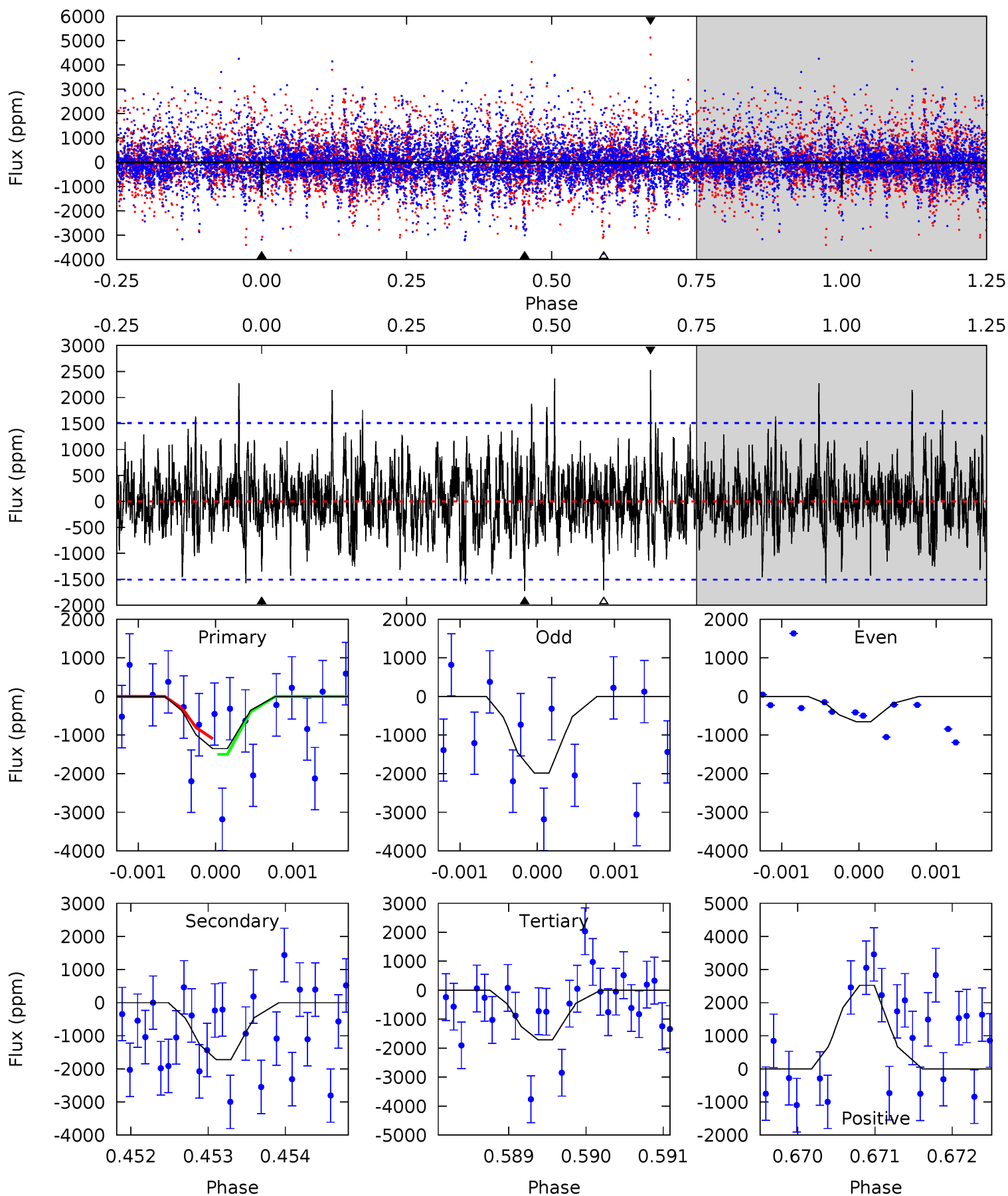
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.67	5.54	4.87	14.0	5.29	3.04	1.93	-0.20	-9.36	0.67	-8.49	3.26	0.84	0.72	0.28



Alt Model-Shift Uniqueness Test

009650048-04, P = 51.479915 Days, E = 142.846004 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.89	6.23	6.19	9.14	5.46	3.30	1.81	-1.30	-4.25	0.05	-2.90	2.23	2.12	0.59	0.74



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1143 ± 206	$1227.97^{+1050.81}_{-817.35}$	4341^{+304}_{-363}	-3276^{+6690}_{-273}	$0.069^{+0.513}_{-0.049}$
Alt.	-1722 ± 276	$1017.31^{+1070.55}_{-697.94}$	4350^{+252}_{-390}	-3059^{+7417}_{-425}	$0.151^{+1.310}_{-0.117}$

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 $A_{obs} \gg 1.0$

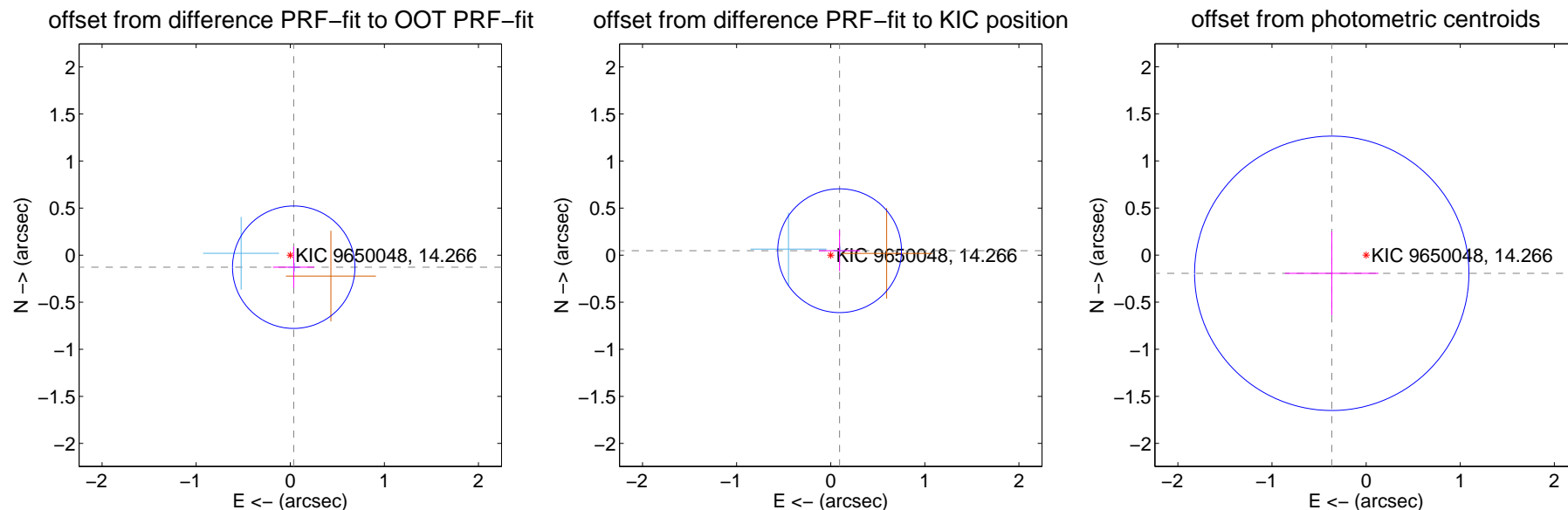
DV Centroid Data

Supplemental centroid analysis for 009650048-04. Kepler magnitude: 14.27. Transit SNR 5.73

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.133 ± 0.217	0.61	-0.037 ± 0.220	-0.128 ± 0.217
PRF-fit source offset from KIC position	0.105 ± 0.219	0.48	-0.094 ± 0.220	0.047 ± 0.217
photometric centroid source offset	0.41 ± 0.49	0.85	0.37 ± 0.50	-0.19 ± 0.44

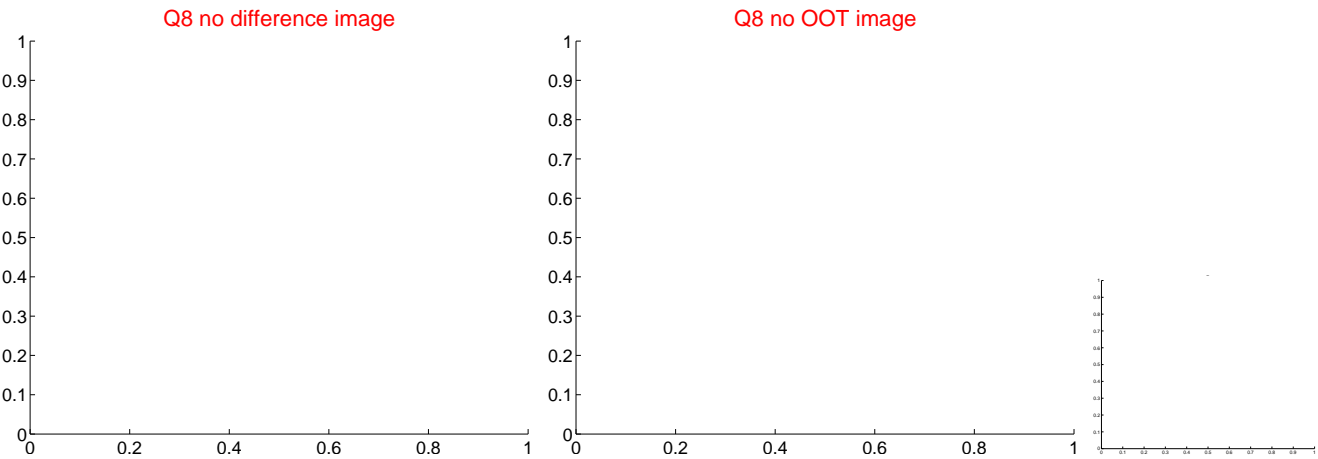
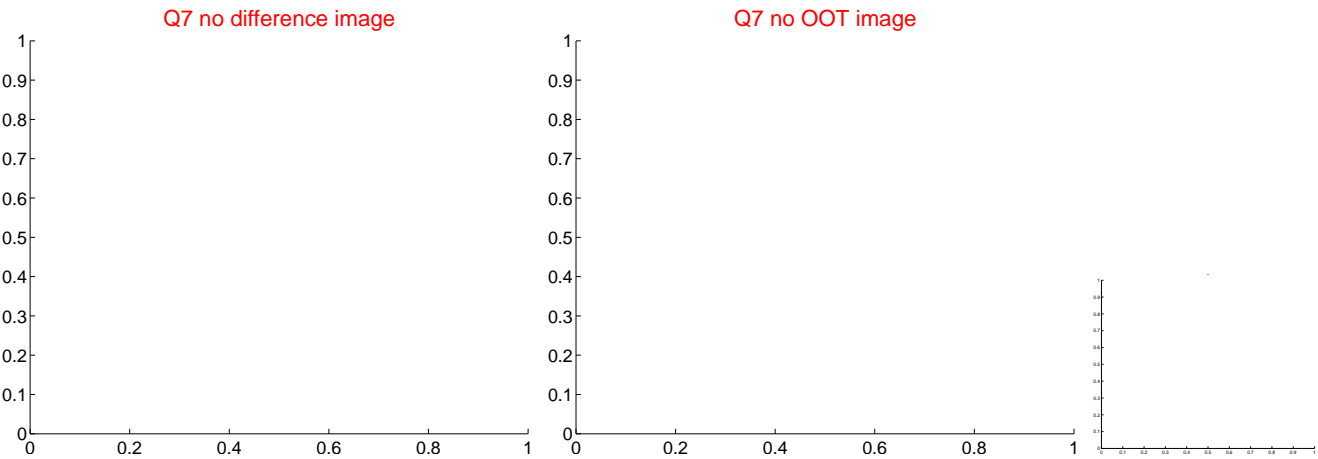
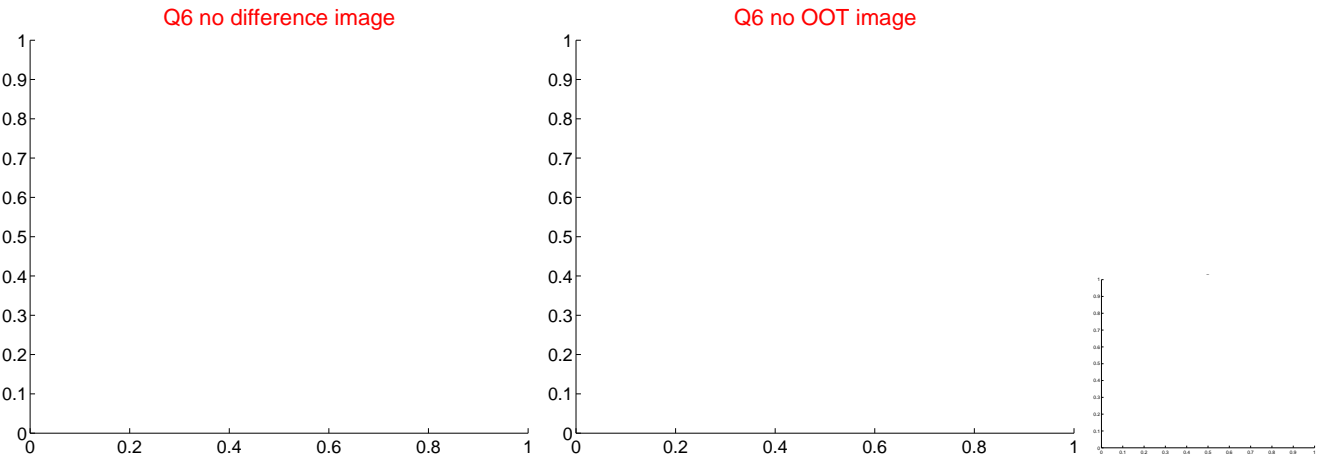
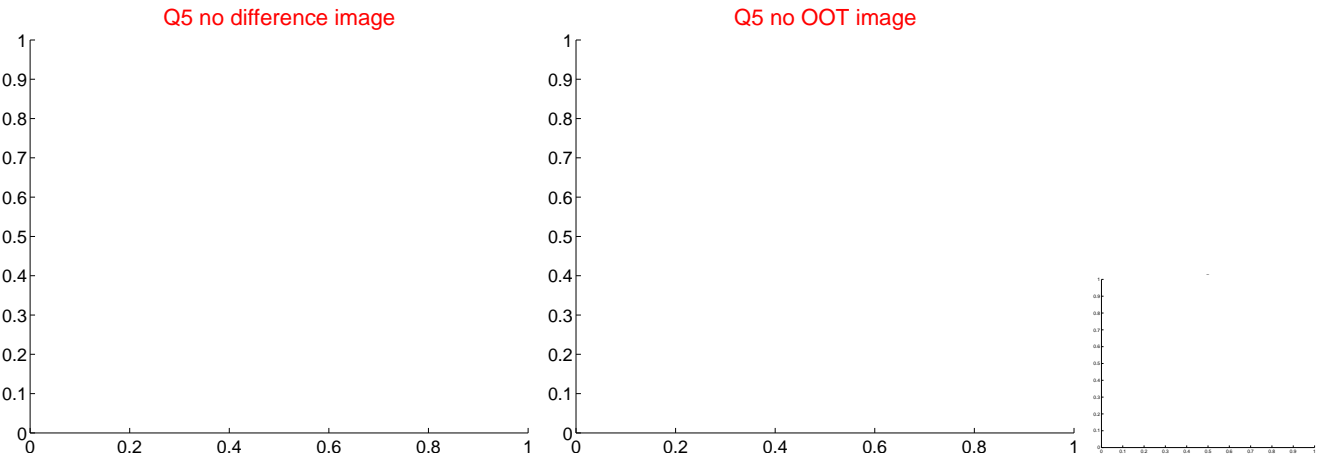


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



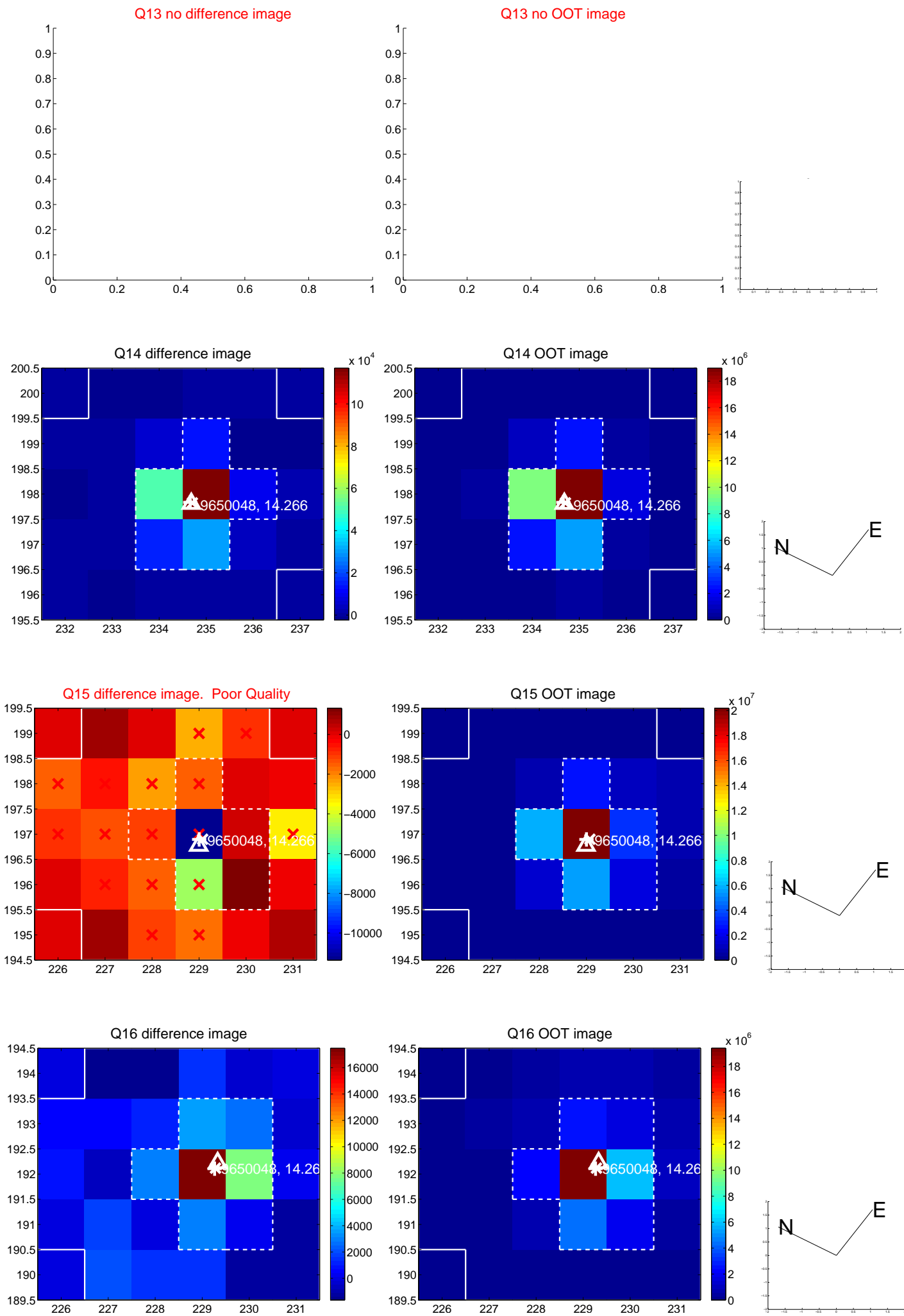
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



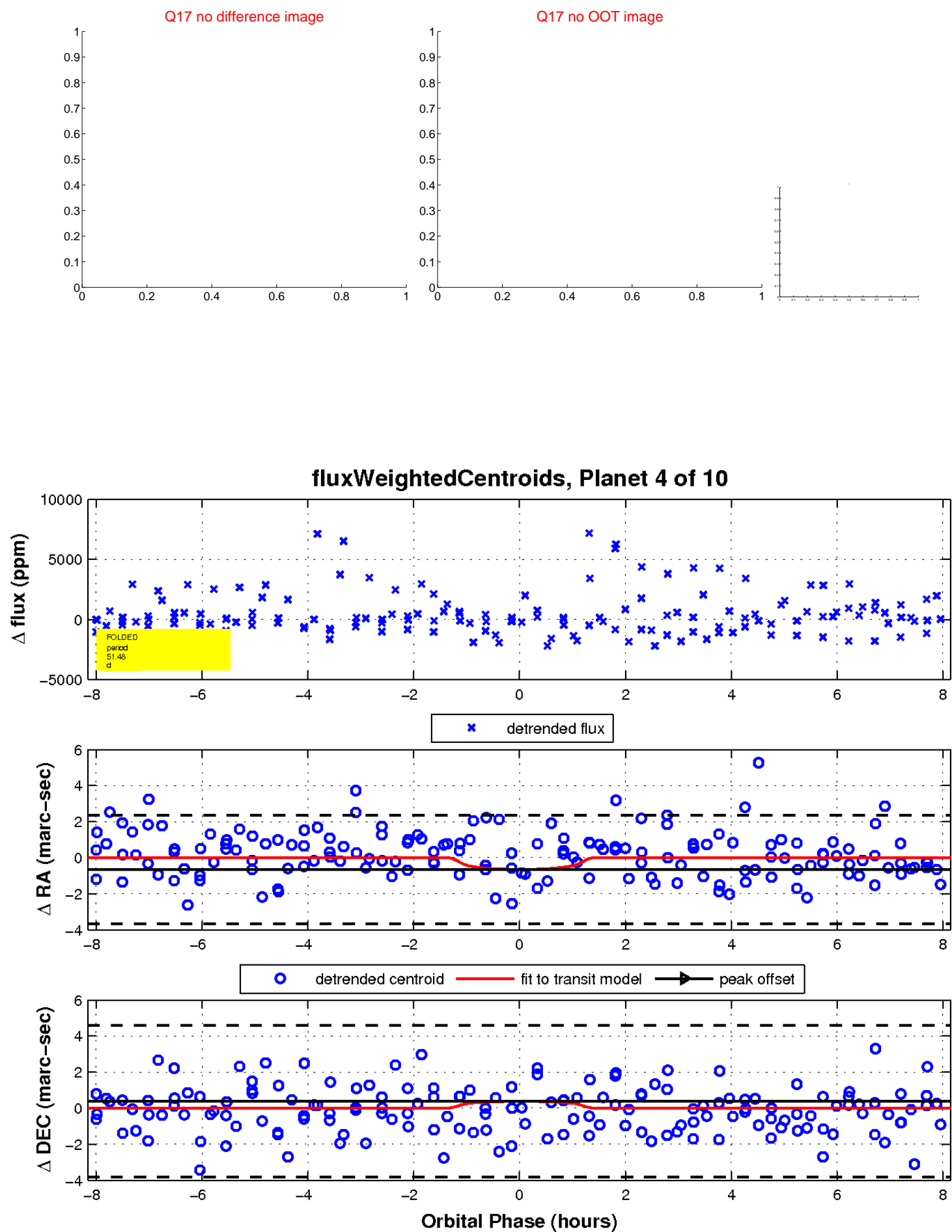
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

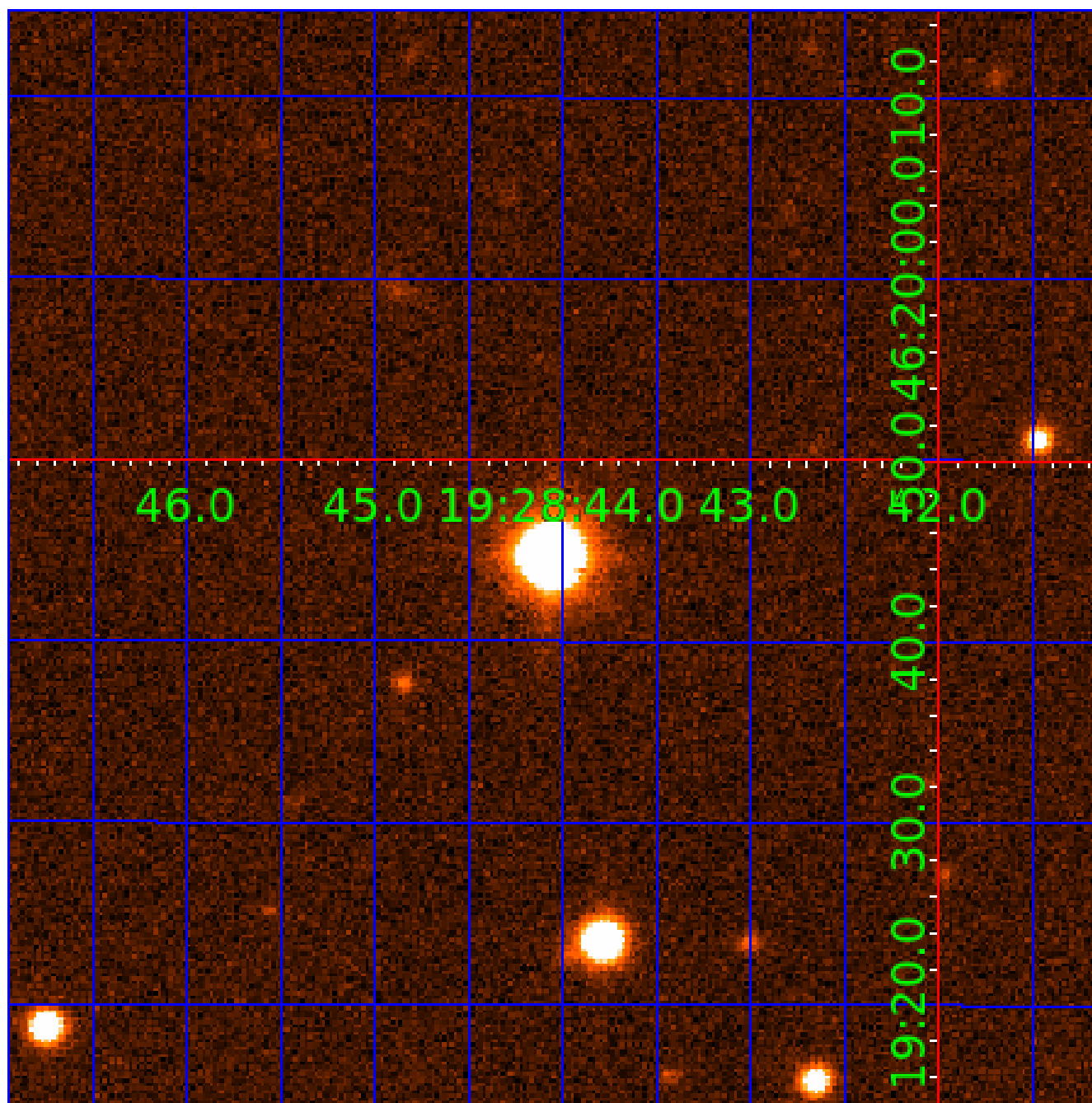


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009650048-01	OBS	No	79.521238	135.132830	1426.8	8.314	13.9	3.2	172.45	3420	596.87	0.00
009650048-02	OBS	No	48.590399	161.382228	1712.0	6.008	12.7	5.2	172.45	3420	897.18	0.00
009650048-03	OBS	No	24.115052	145.753117	2221.7	17.763	9.9	7.0	172.45	3420	1117.14	0.00
009650048-04	OBS	No	51.481188	142.840114	1946.8	2.720	15.5	5.7	172.45	3420	874.61	0.00
009650048-05	OBS	No	86.617464	188.411391	195.5	6.848	11.3	0.5	172.45	3420	298.28	0.00
009650048-06	OBS	No	76.441075	200.861693	3467.7	3.505	11.3	8.1	172.45	3420	1253.74	0.00
009650048-07	OBS	No	65.506849	136.684124	1497.1	17.131	10.7	4.4	172.45	3420	691.84	0.00
009650048-08	OBS	No	68.464196	145.864858	4876.3	6.518	12.2	11.8	172.45	3420	1272.13	0.00
009650048-09	OBS	No	27.127219	145.955115	1498.1	9.143	11.9	5.7	172.45	3420	1106.13	0.00
009650048-10	OBS	No	130.405347	136.770863	2040.2	5.061	11.5	6.2	172.45	3420	885.03	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650048-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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—CENT_FEW_DIFFS
009650048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES
009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-10	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST

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

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

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

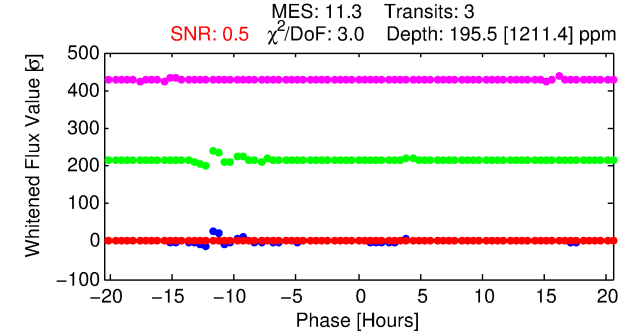
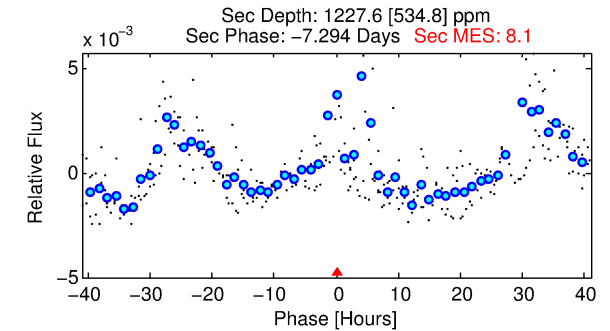
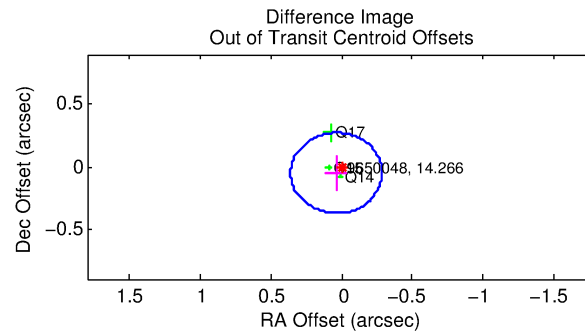
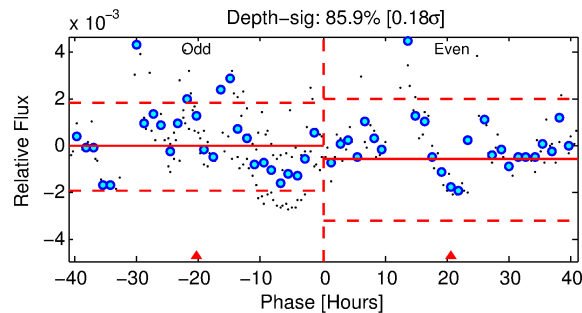
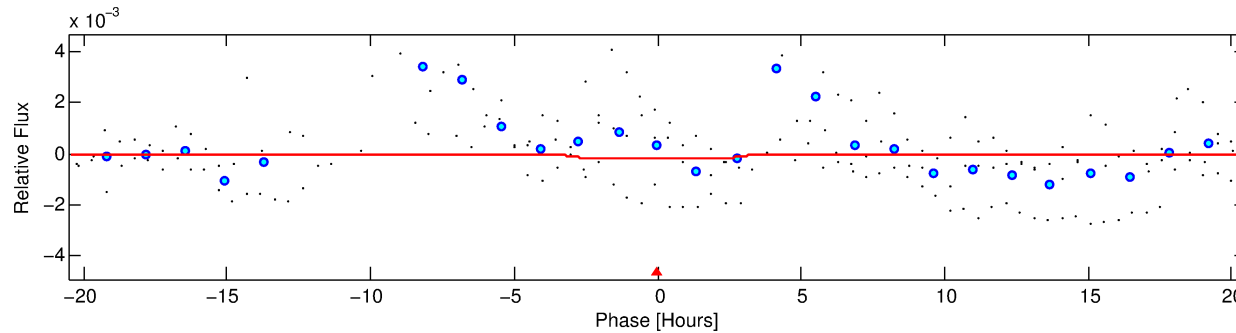
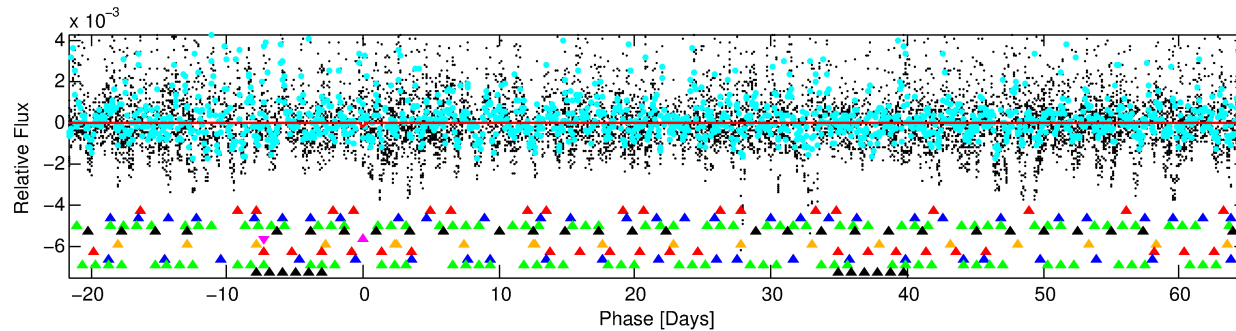
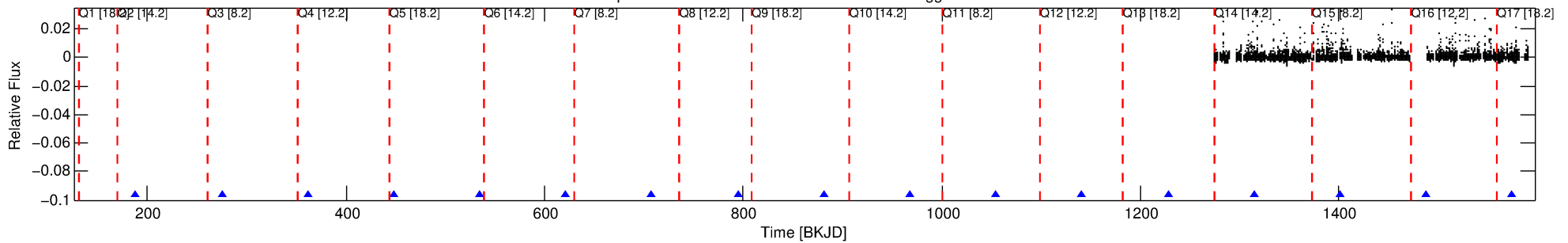
Ephemeris Match Information For 009650048-05

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 5 of 10 Period: 86.617 d

Kp: 14.27 R*: 172.45 Rs Teff: 3420.0 K Logg: 0.53 Fe/H: 0.560



DV Fit Results:

Period = 86.61746 [0.11677] d
Epoch = 188.4114 [1.7427] BKJD
Rp/R* = 0.0159 [0.2223]
a/R* = 49.90 [2133.89]
b = 0.87 [11.70]
Seff = N/A
Teq = N/A
Rp = 298.28 [4186.47] Re
a = N/A
Ag = N/A
Teffp = N/A

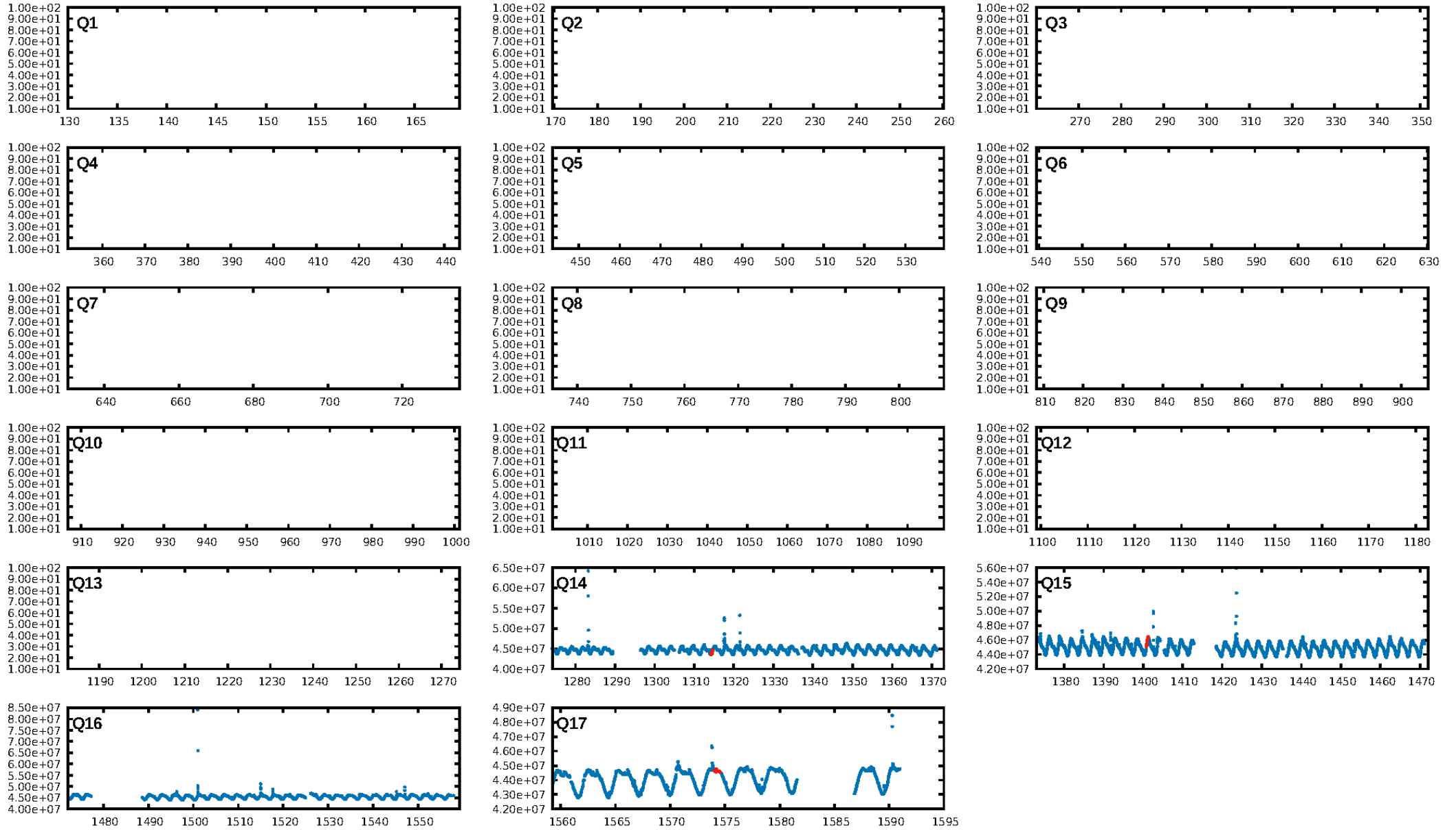
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.81σ]
LongPeriod-sig: 100.0% [123.42σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.2%
Bootstrap-pfa: 3.61e-12
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.542
Centroid-sig: 81.8%
Centroid-so: 1.225 arcsec [0.32σ]
OotOffset-rm: 0.063 arcsec [0.59σ]
KicOffset-rm: 0.144 arcsec [1.92σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

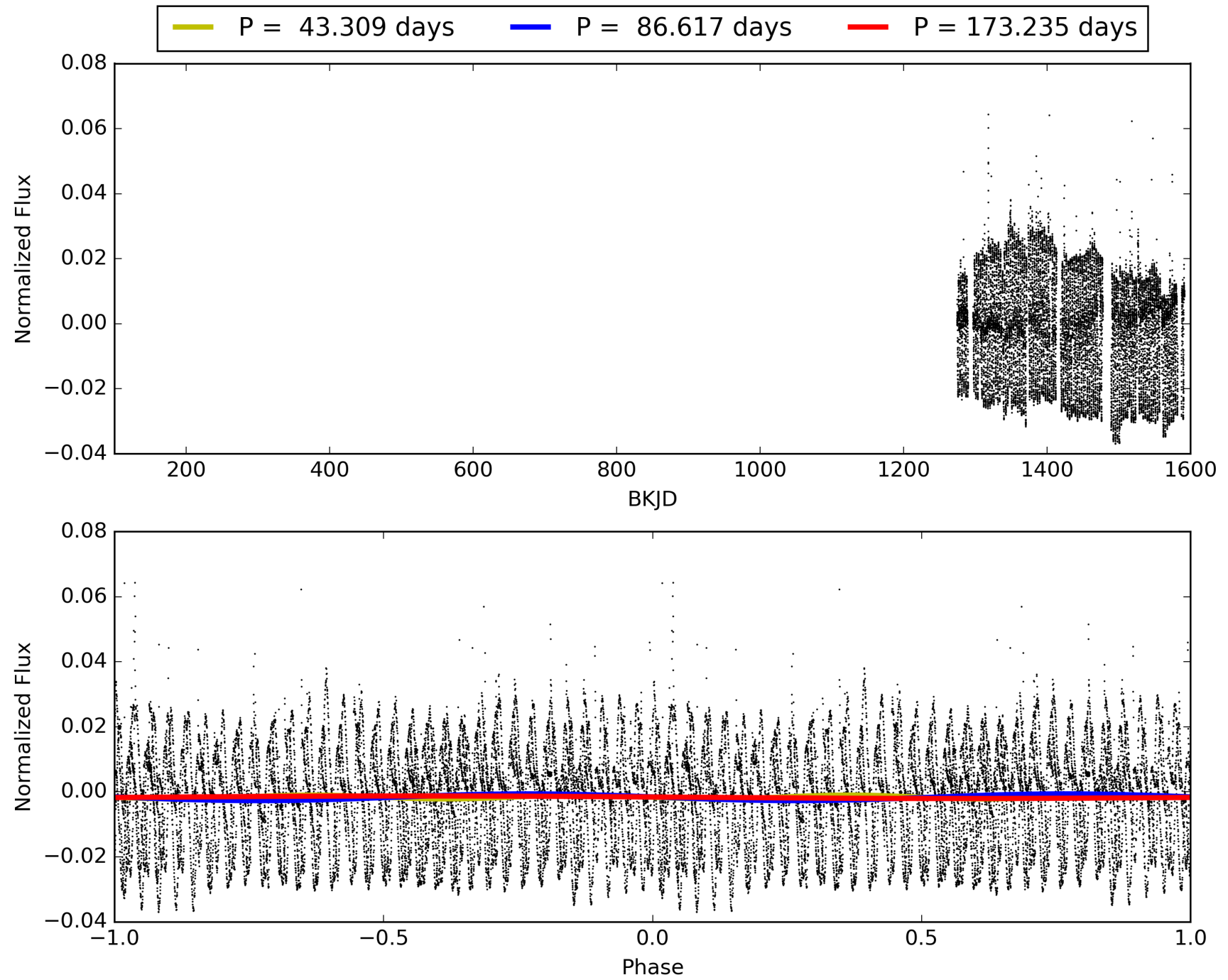
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:57:33 Z

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

TCE 009650048-05, PDC Light Curves

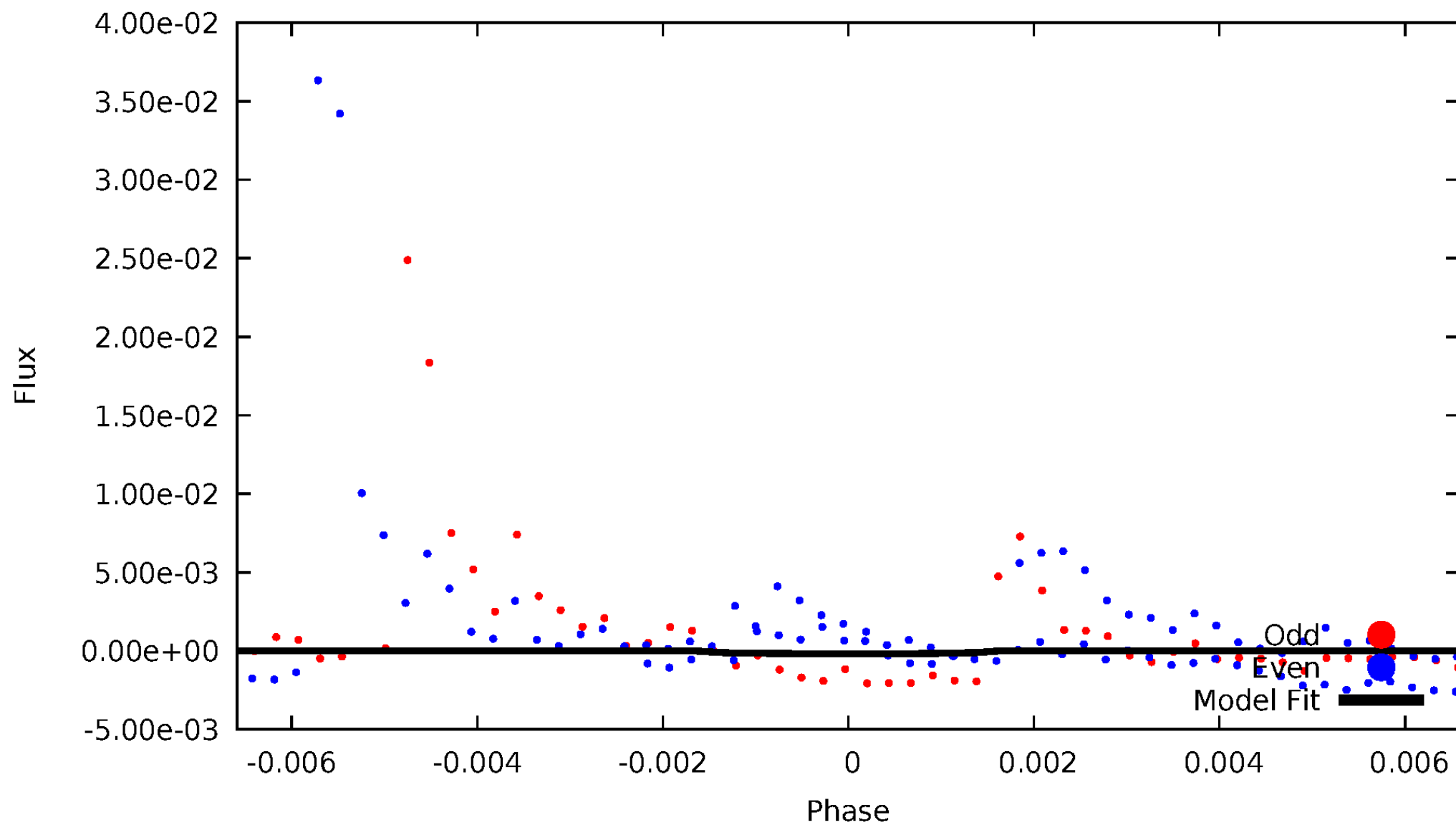


TCE 009650048-05



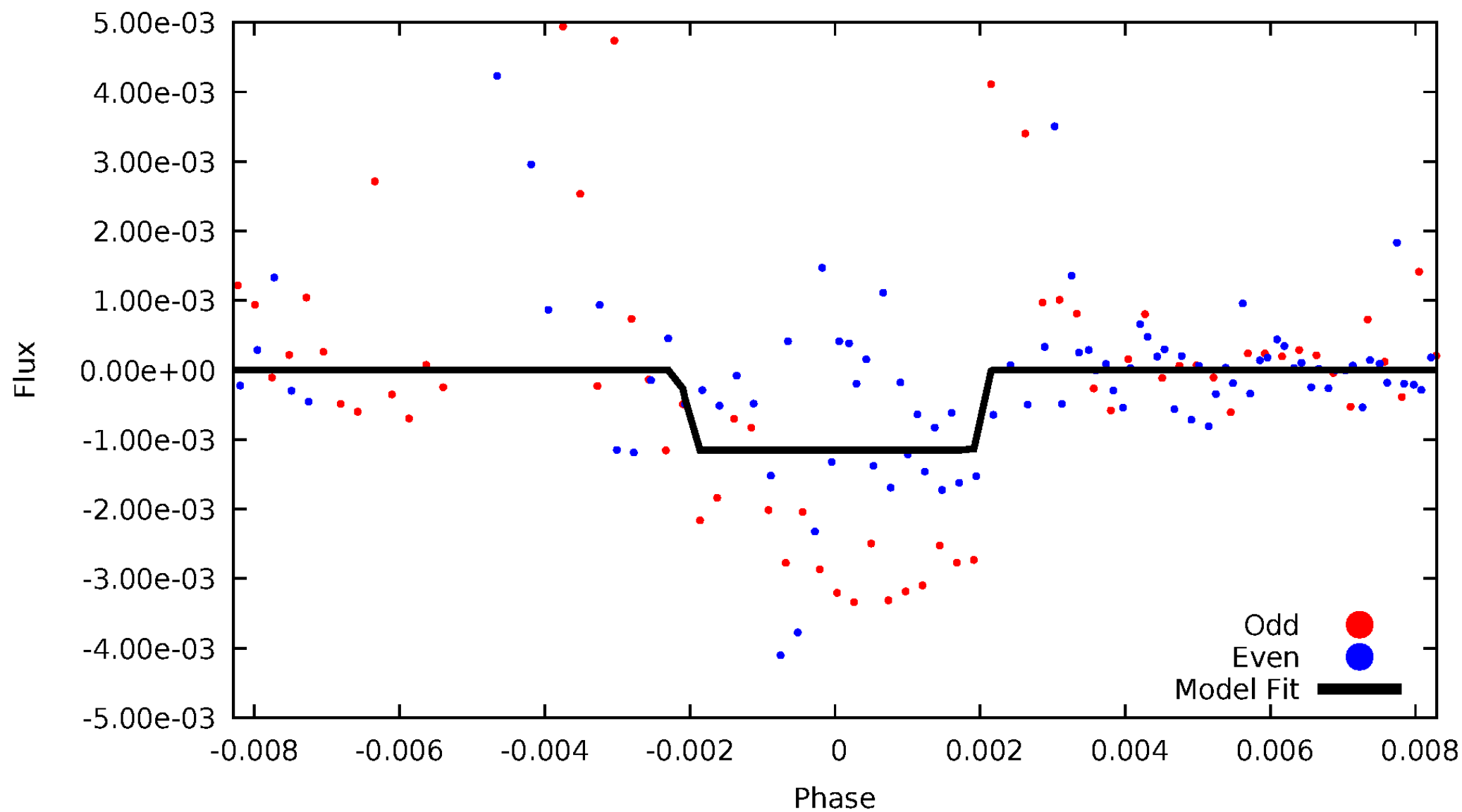
DV Odd/Even

TCE 009650048-05



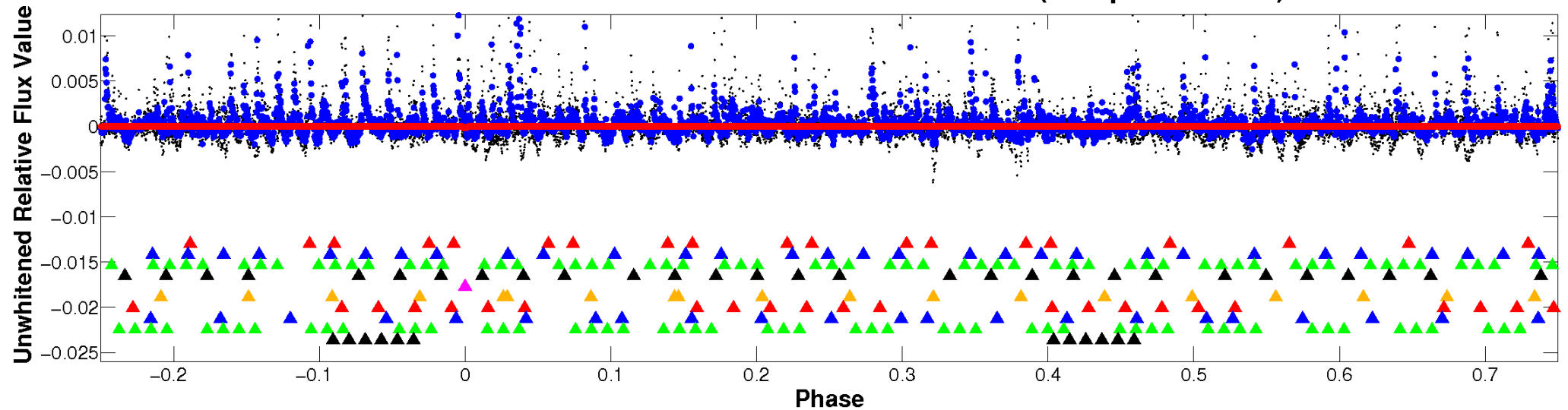
ALT Odd/Even

TCE 009650048-05

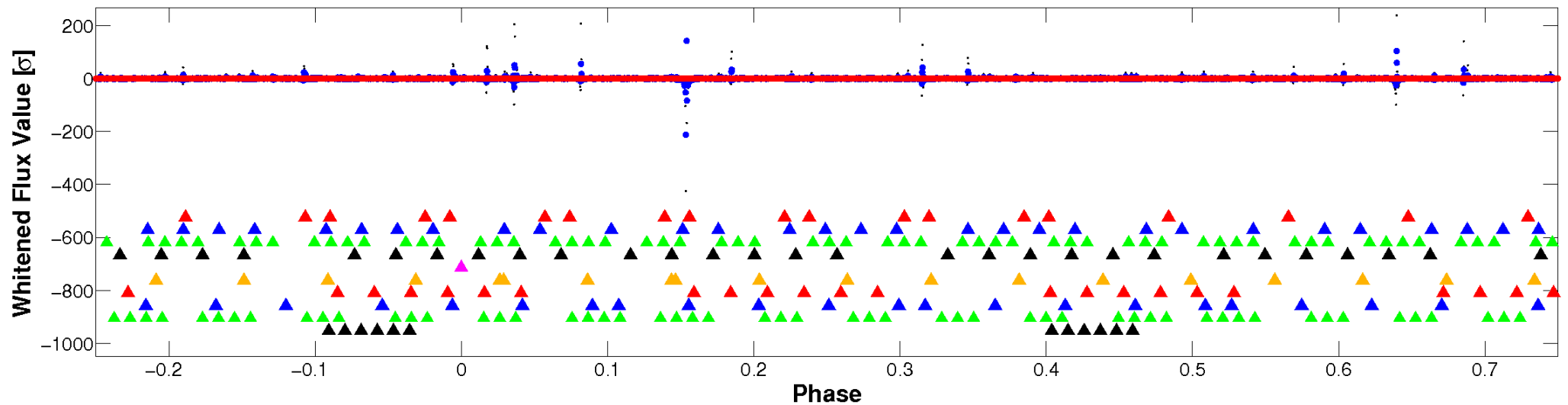


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

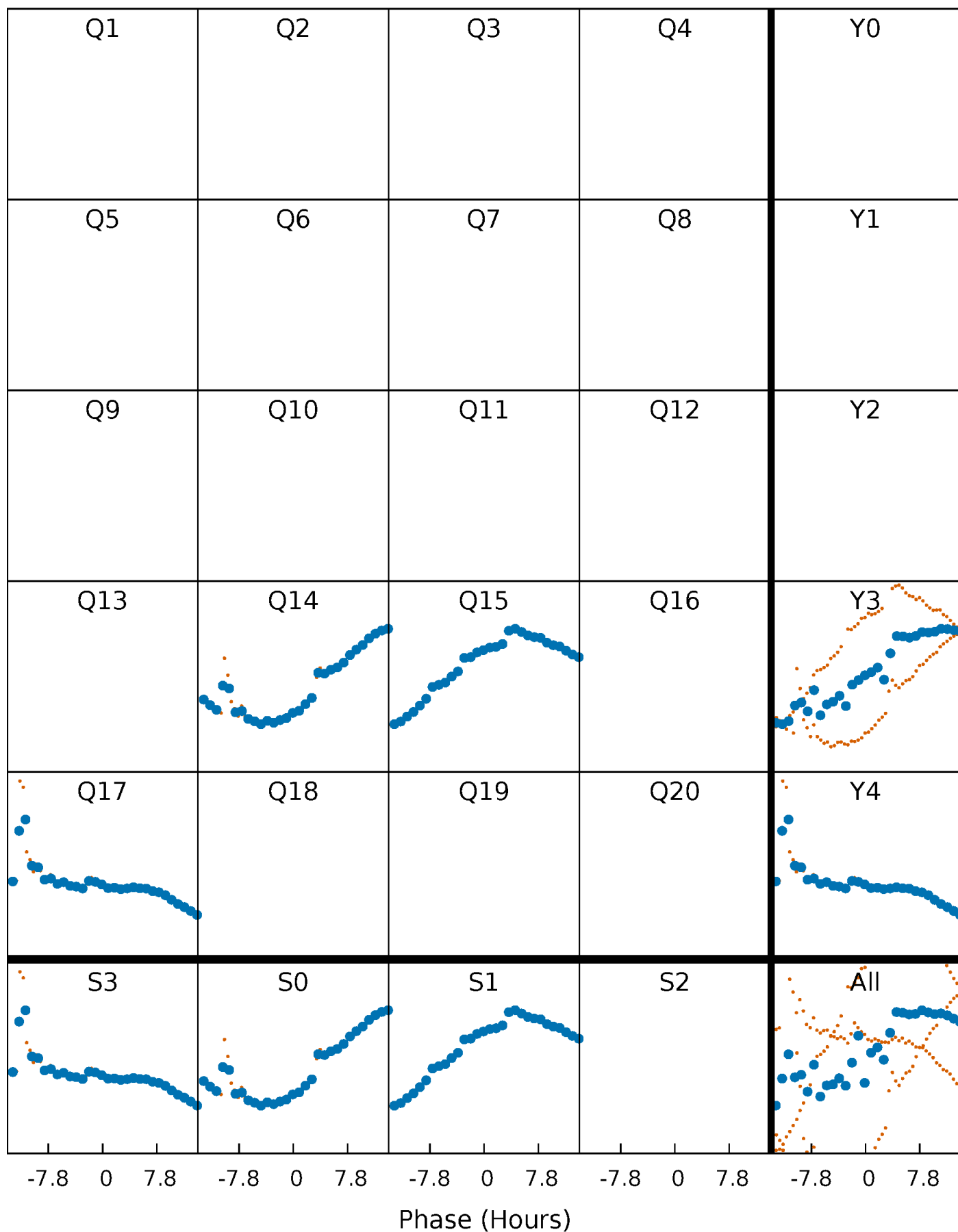


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



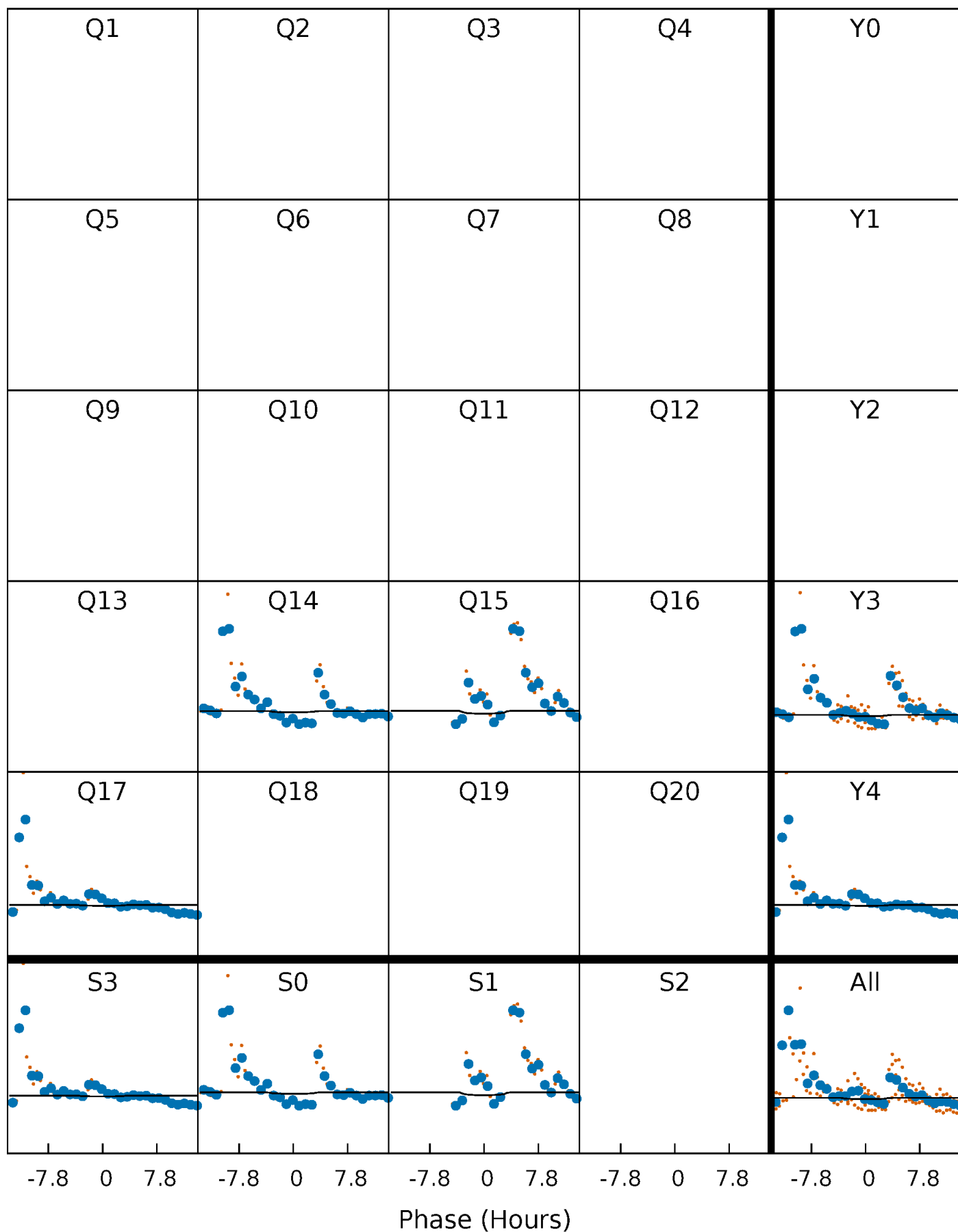
PDC Quarter-Phased Transit Curves

TCE 009650048-05 $P = 86.617464$ Days $T_0 = 188.411391$ (BKJD)



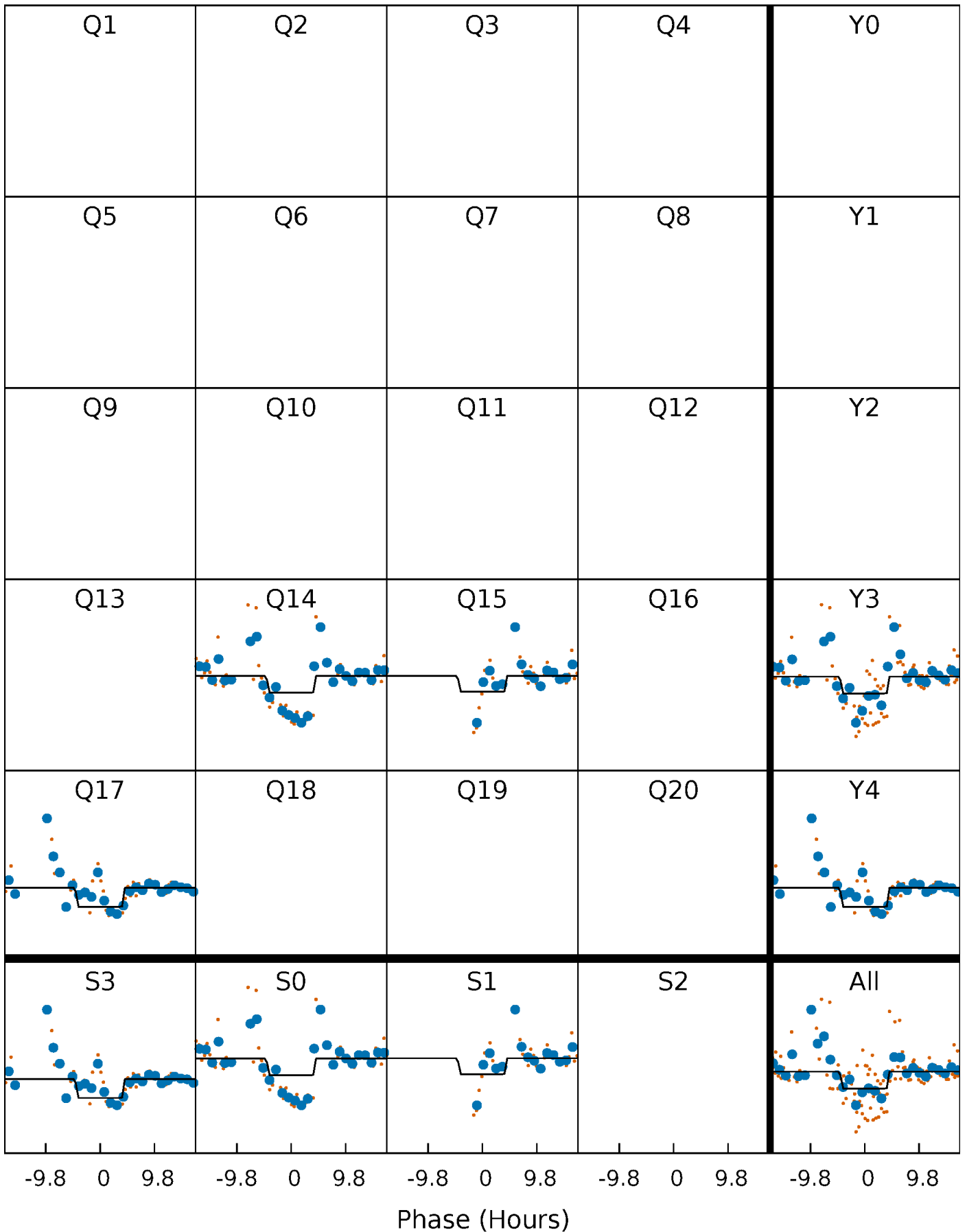
DV Quarter-Phased Transit Curves

TCE 009650048-05 P= 86.617464 Days $T_0=188.411391$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

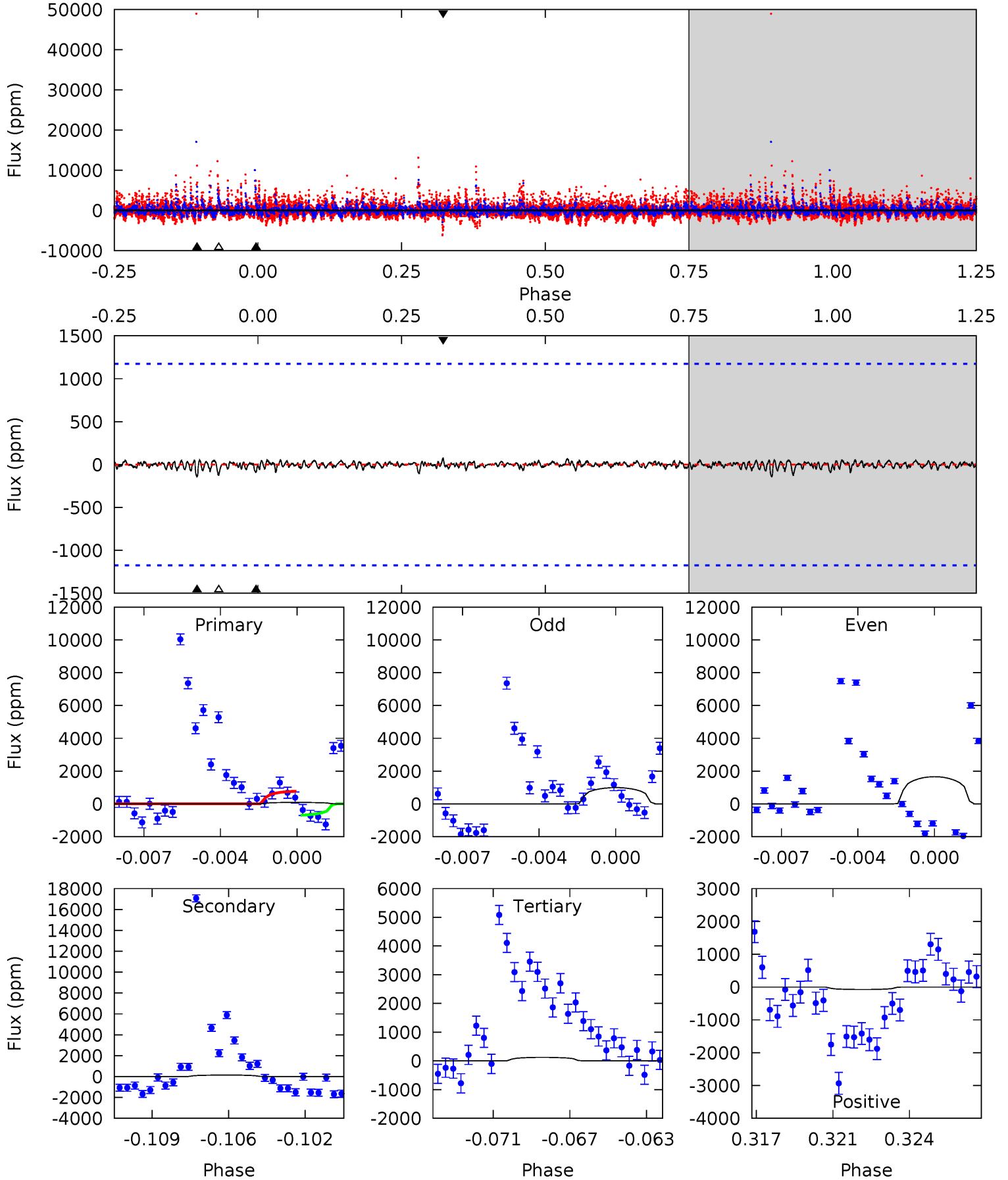
TCE 009650048-05 P= 86.622745 Days $T_0=188.296533$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-05, P = 86.617464 Days, E = 188.411391 Days

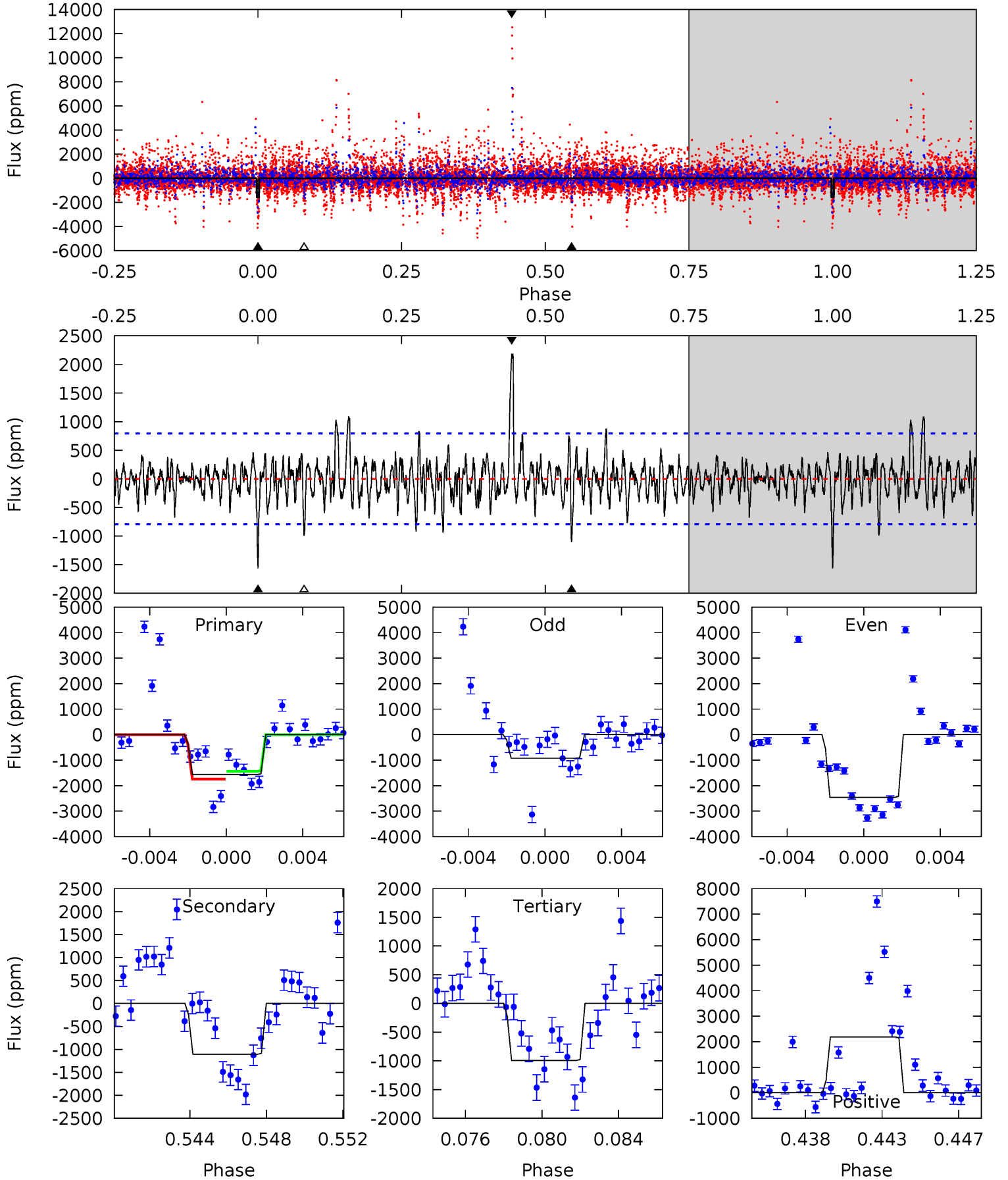
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.40	0.62	0.55	0.33	5.22	2.92	0.11	-0.15	0.06	0.07	0.29	0.41	0.15	0.35	0.18



Alt Model-Shift Uniqueness Test

009650048-05, P = 86.622745 Days, E = 188.296533 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	7.23	6.49	14.3	5.19	2.86	1.95	3.74	-4.08	0.74	-7.08	4.38	1.29	0.58	1.01



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-139 ± 225	$2910.45^{+3206.39}_{-2063.93}$	3629^{+219}_{-324}	-3107^{+215}_{-166}	$0.002^{+0.026}_{-0.003}$
Alt.	-1106 ± 153	$2847.87^{+3247.58}_{-2014.73}$	3643^{+216}_{-364}	-3037^{+722}_{-195}	$0.023^{+0.236}_{-0.018}$

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 $A_{obs} \gg 1.0$

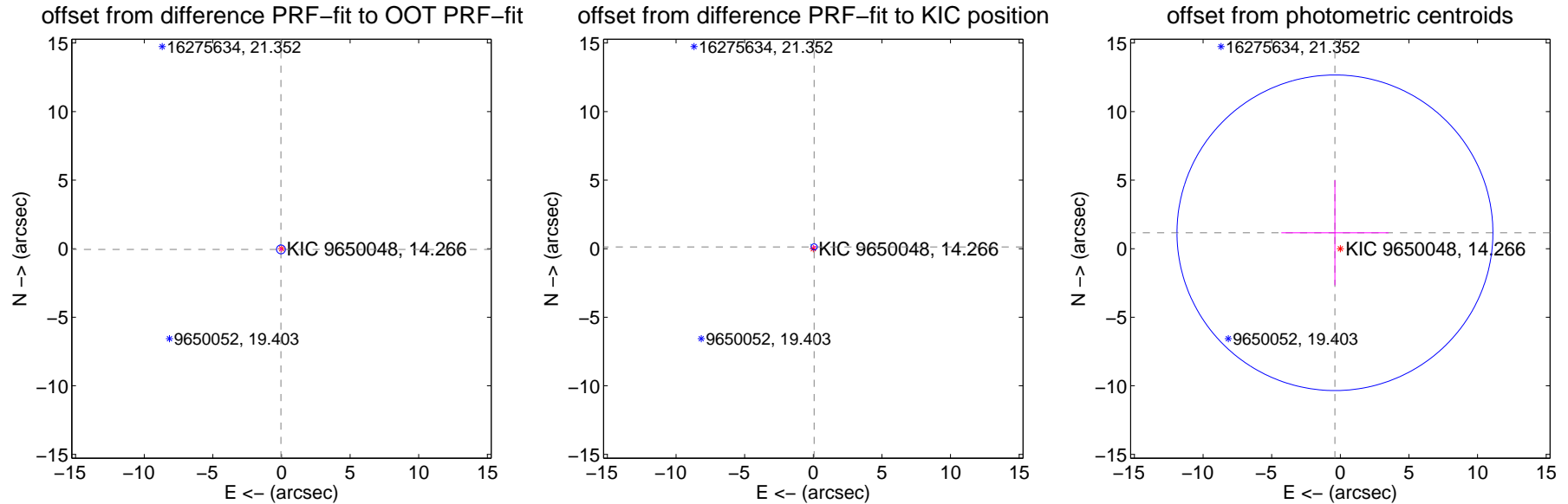
DV Centroid Data

Supplemental centroid analysis for 009650048-05. Kepler magnitude: 14.27. Transit SNR 0.53

There are 2 quarters with good PRF difference image offsets

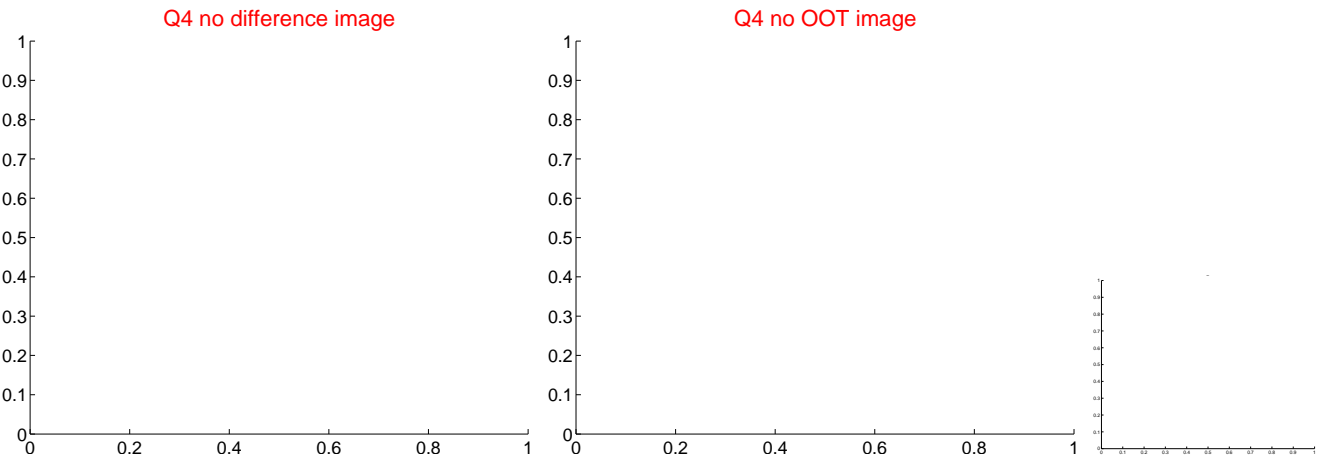
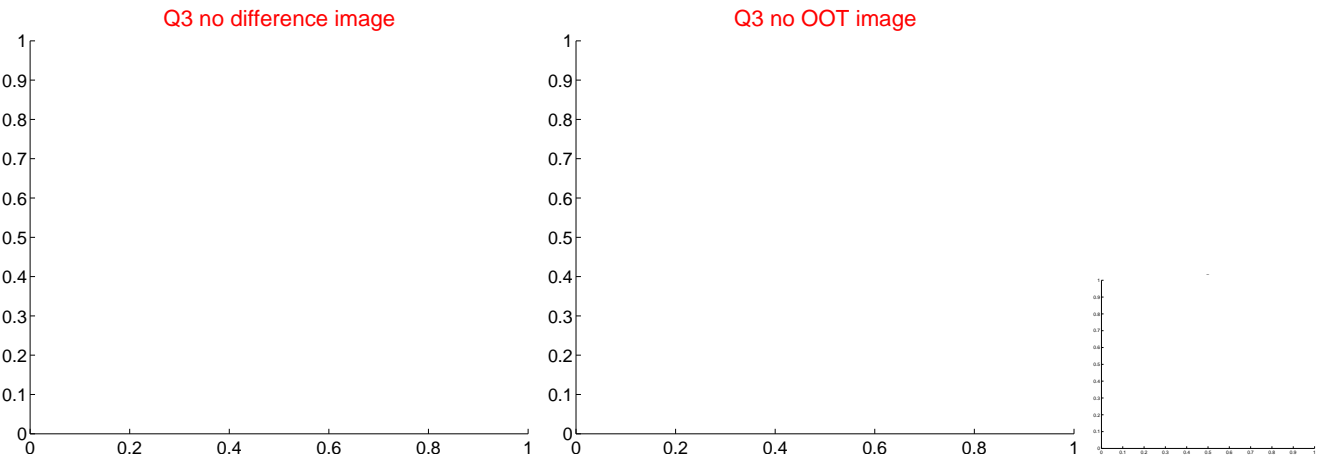
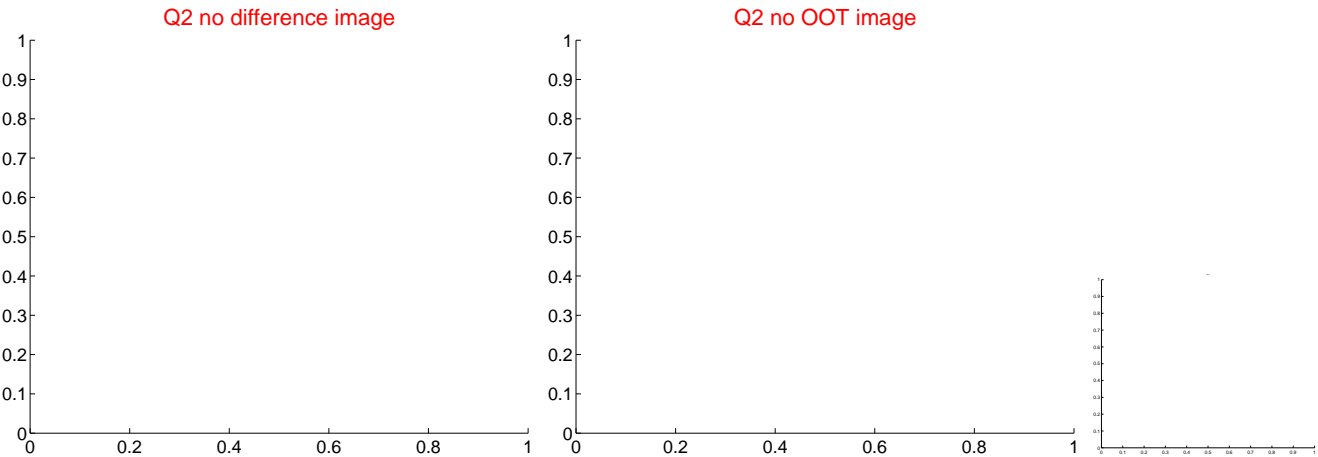
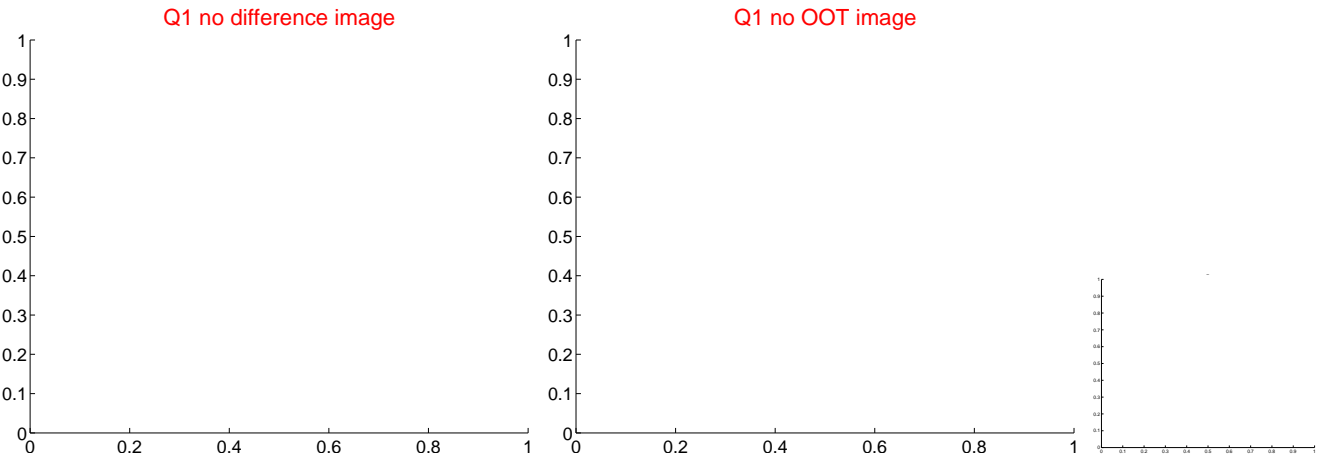
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.063 ± 0.108	0.59	0.037 ± 0.070	-0.051 ± 0.131
PRF-fit source offset from KIC position	0.144 ± 0.075	1.92	-0.063 ± 0.076	0.129 ± 0.075
photometric centroid source offset	1.23 ± 3.84	0.32	0.39 ± 3.91	1.16 ± 3.83

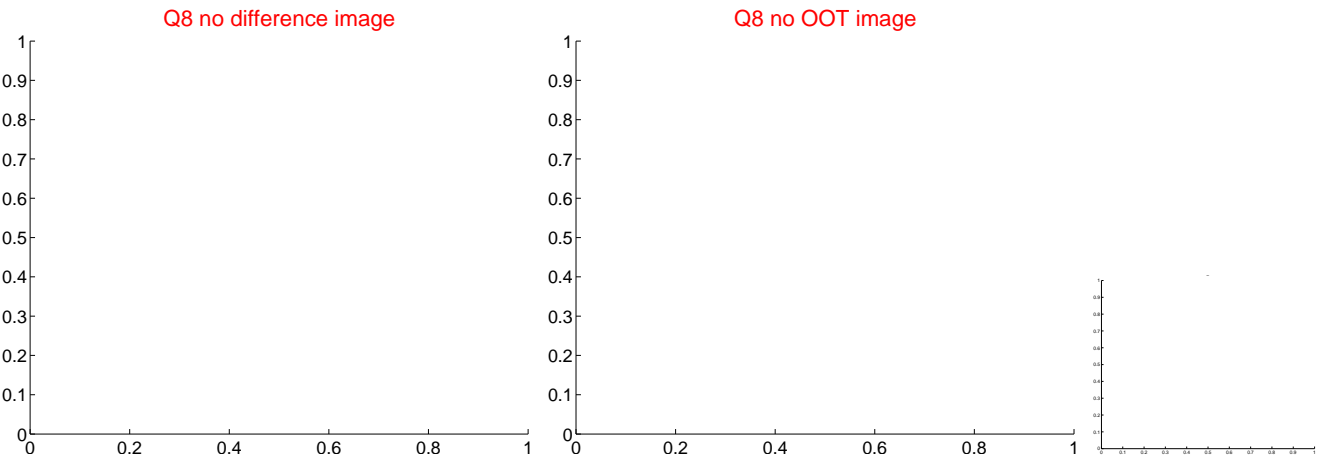
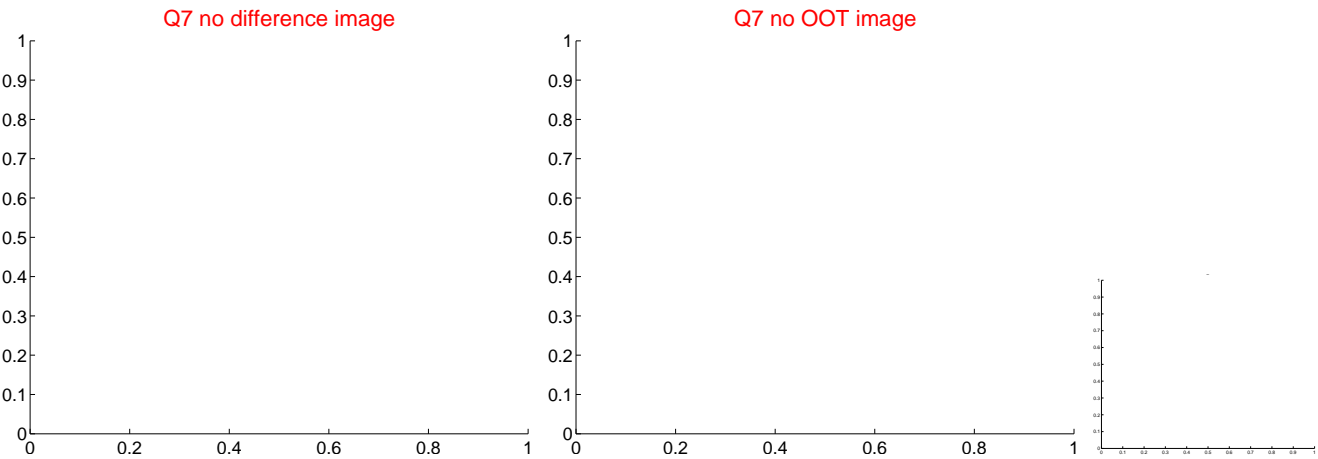
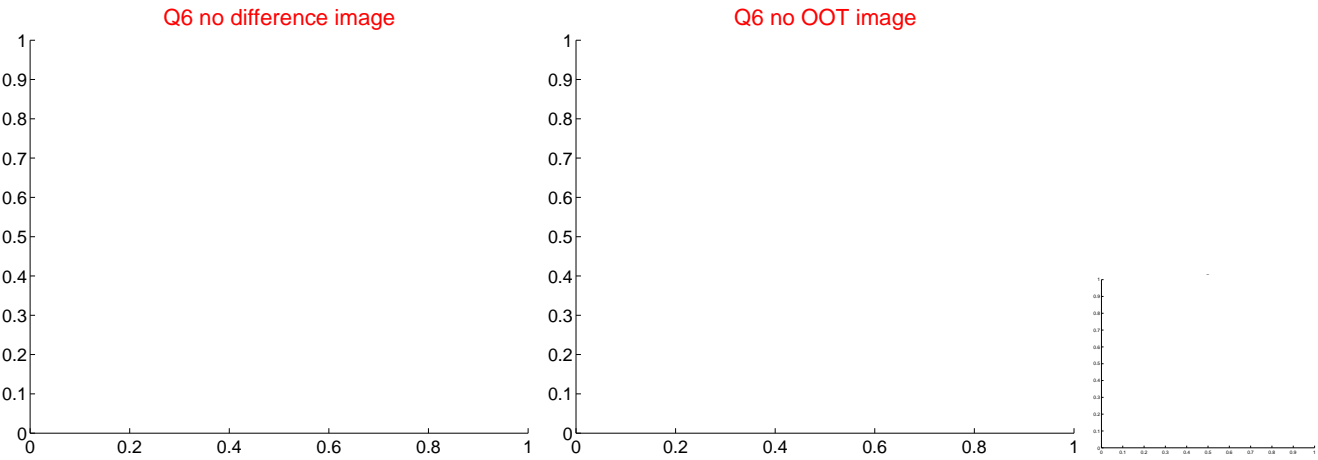
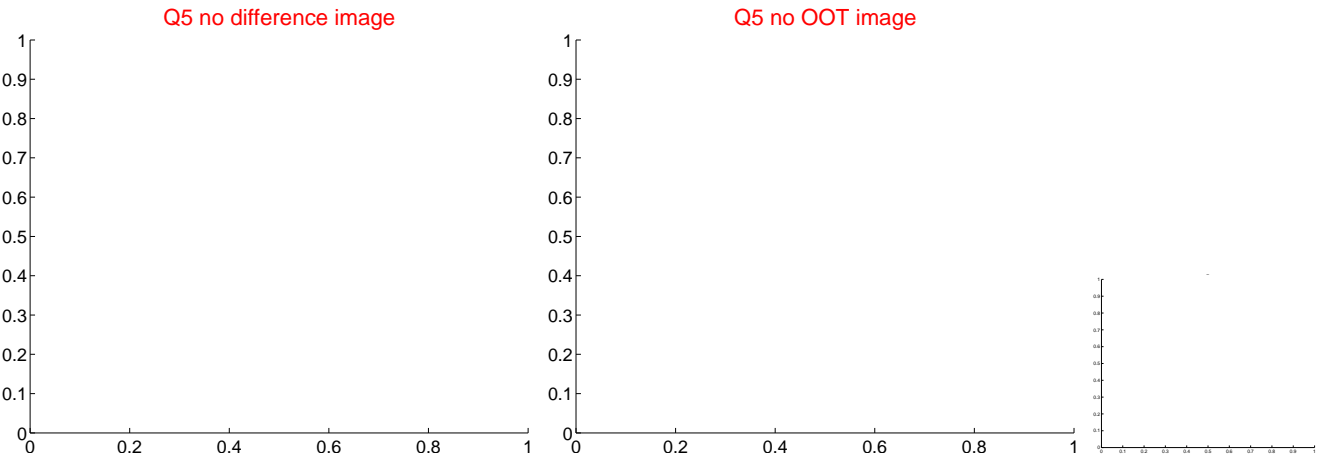


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

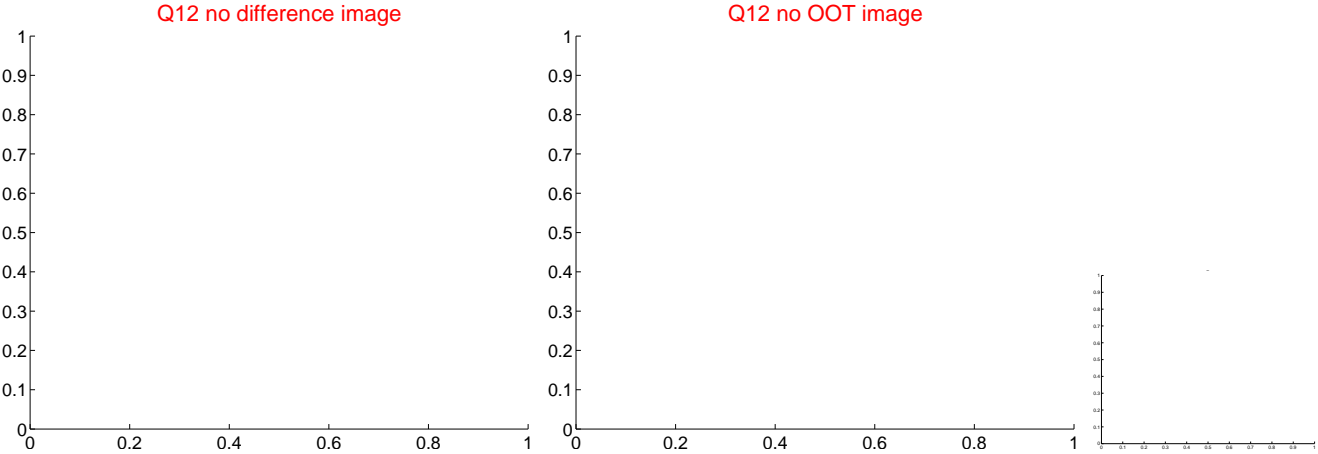
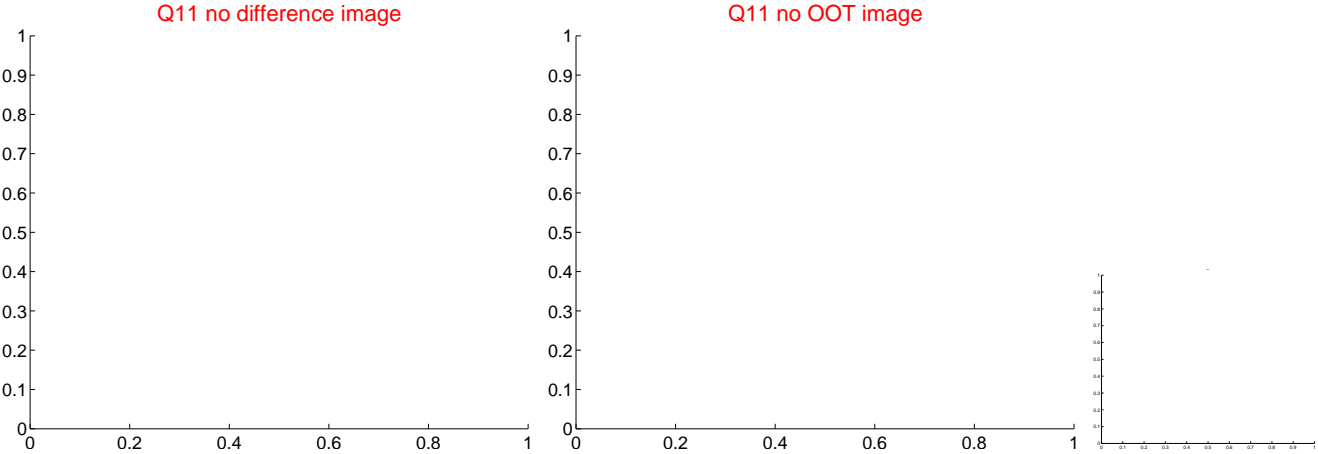
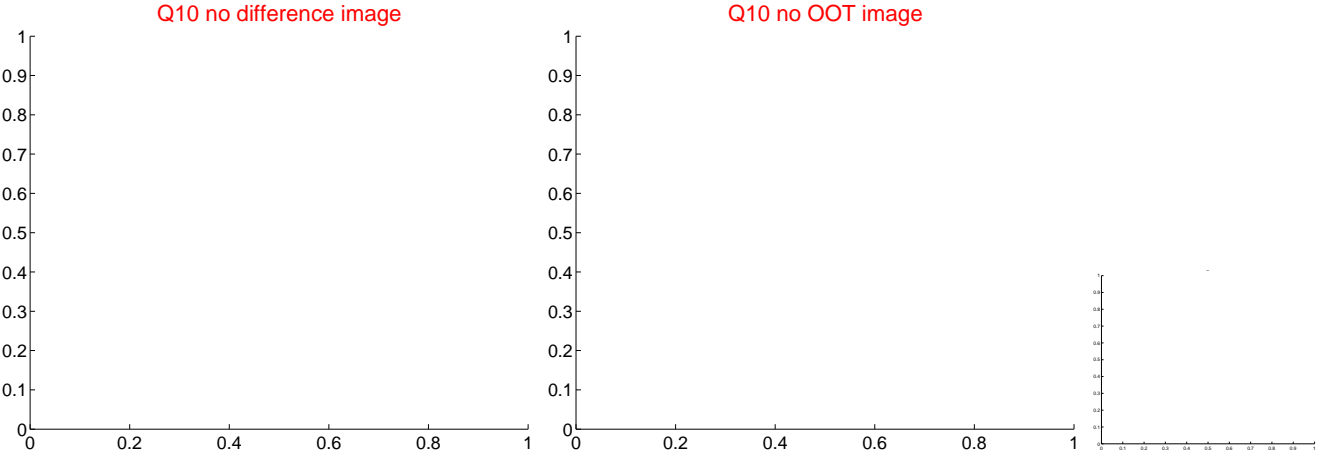
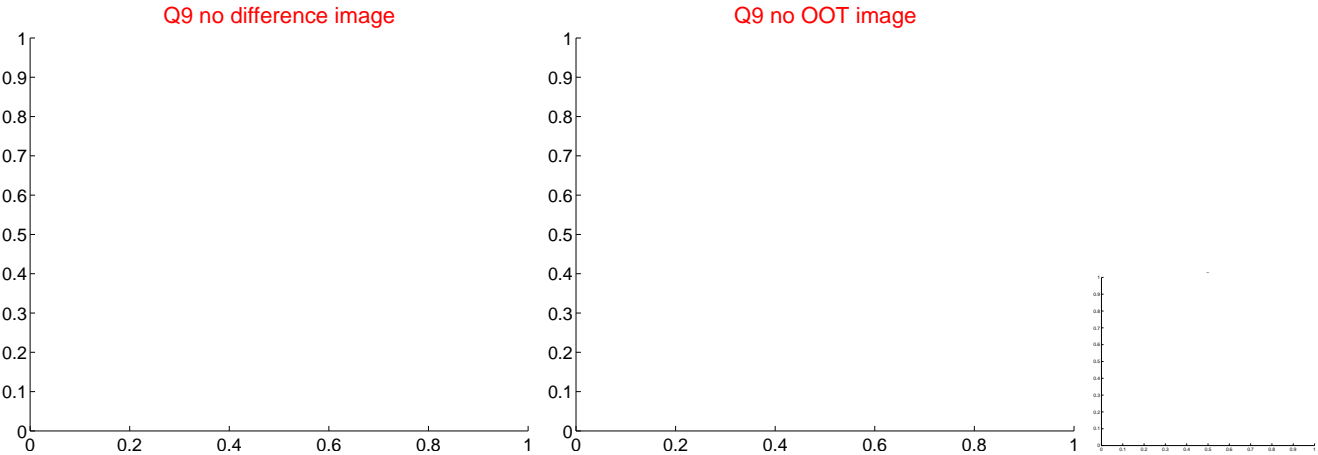
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

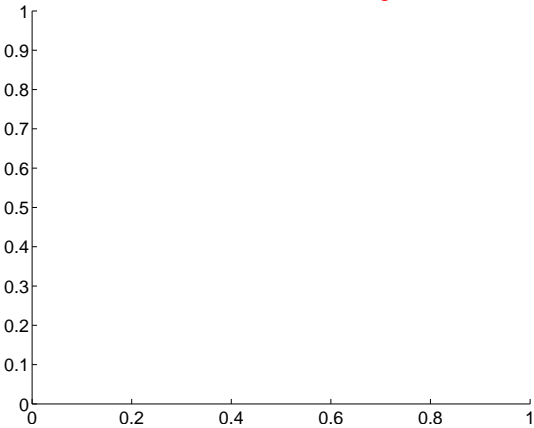


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

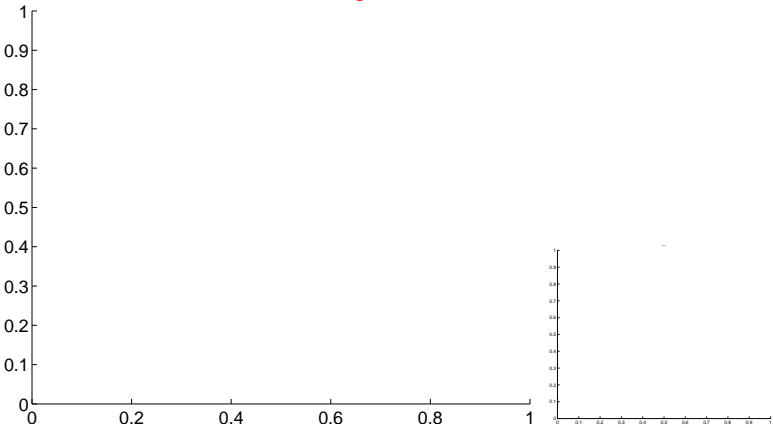


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

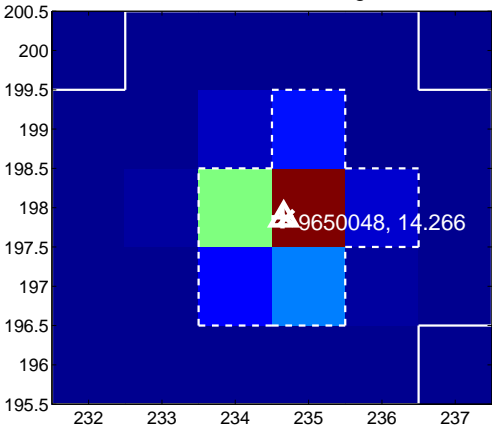
Q13 no difference image



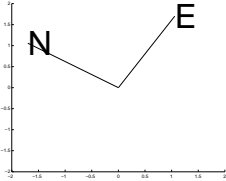
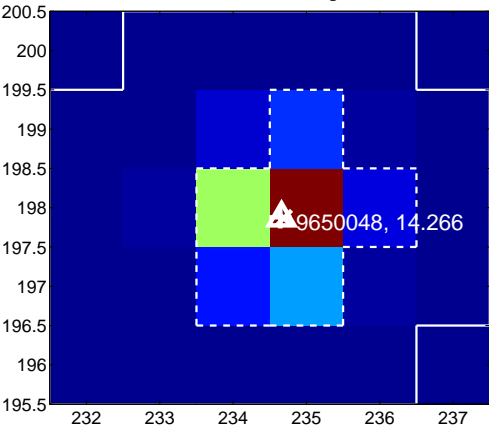
Q13 no OOT image



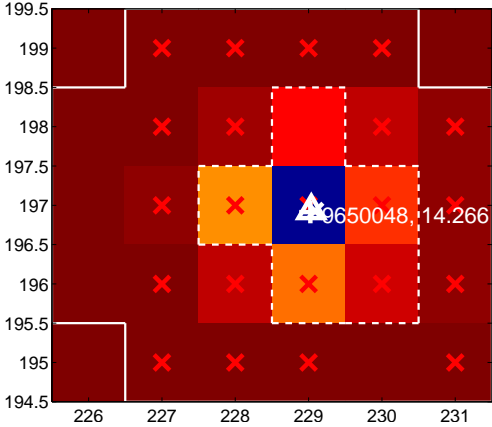
Q14 difference image



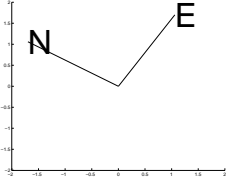
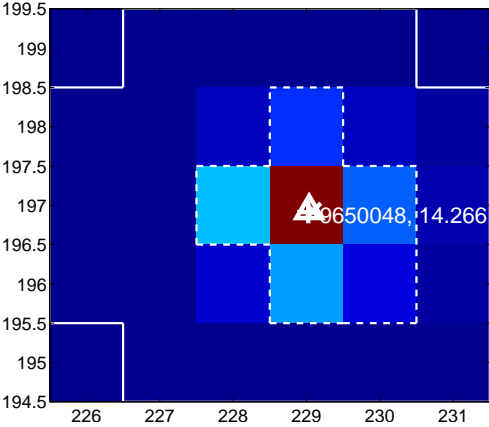
Q14 OOT image



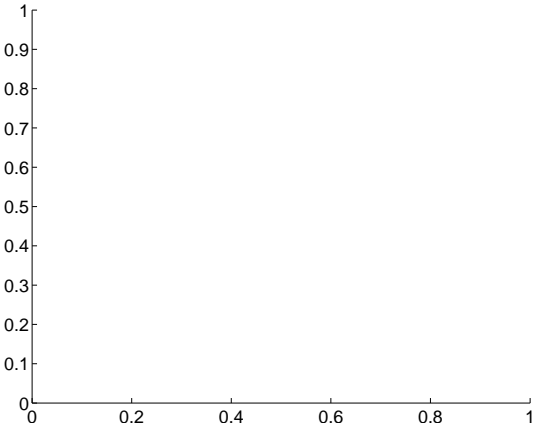
Q15 difference image. Poor Quality



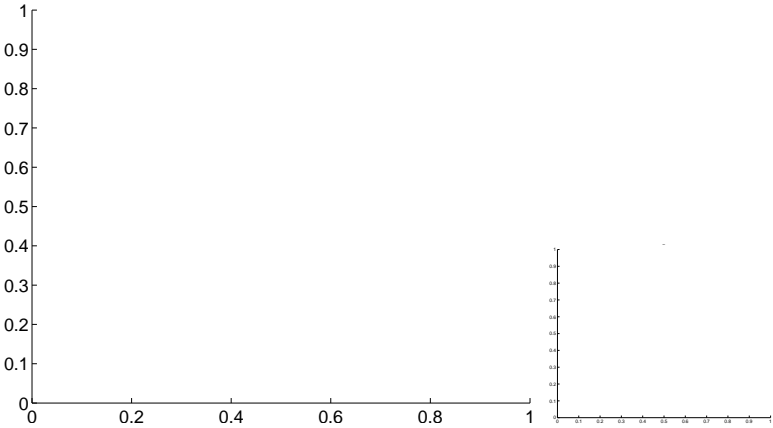
Q15 OOT image



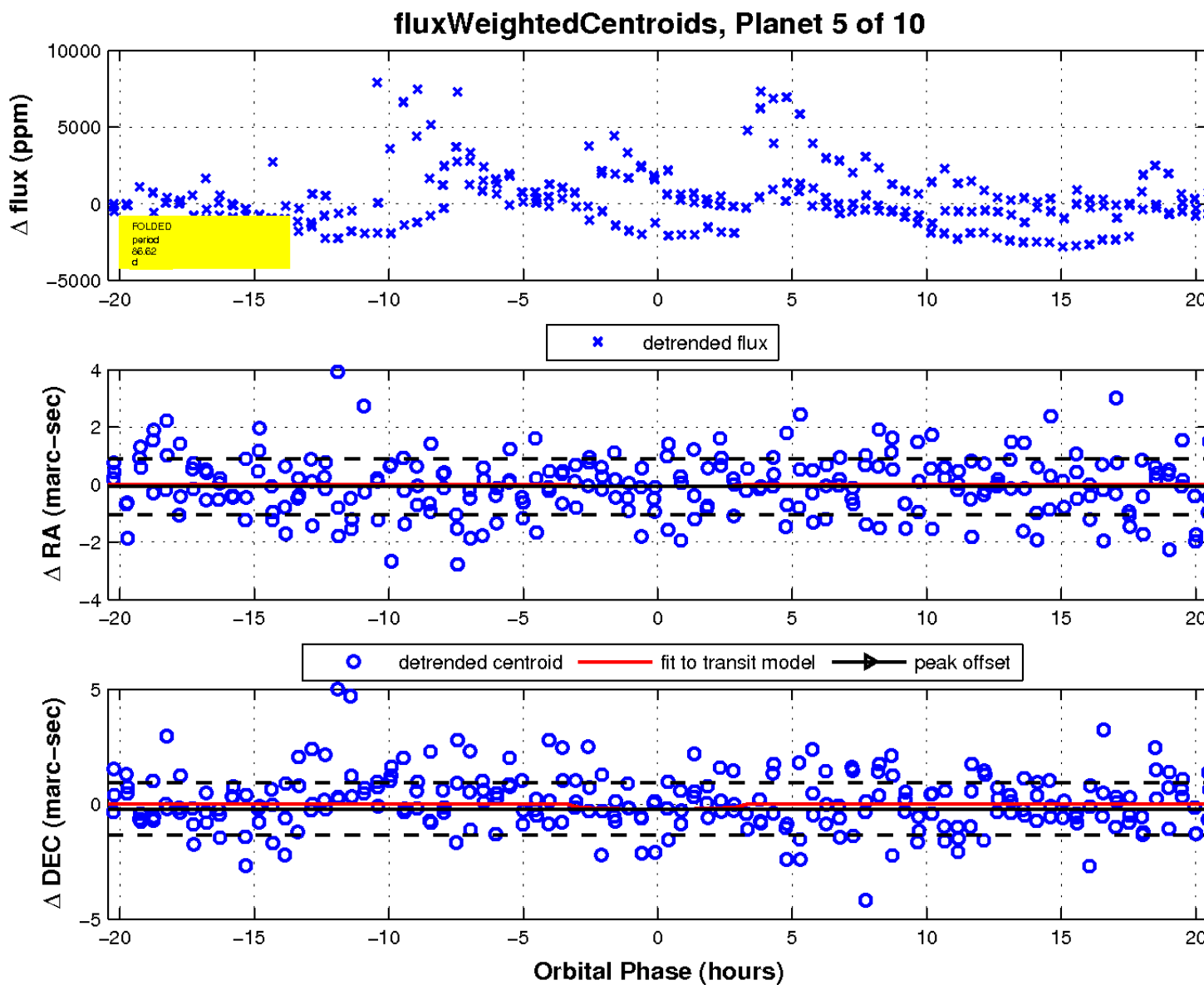
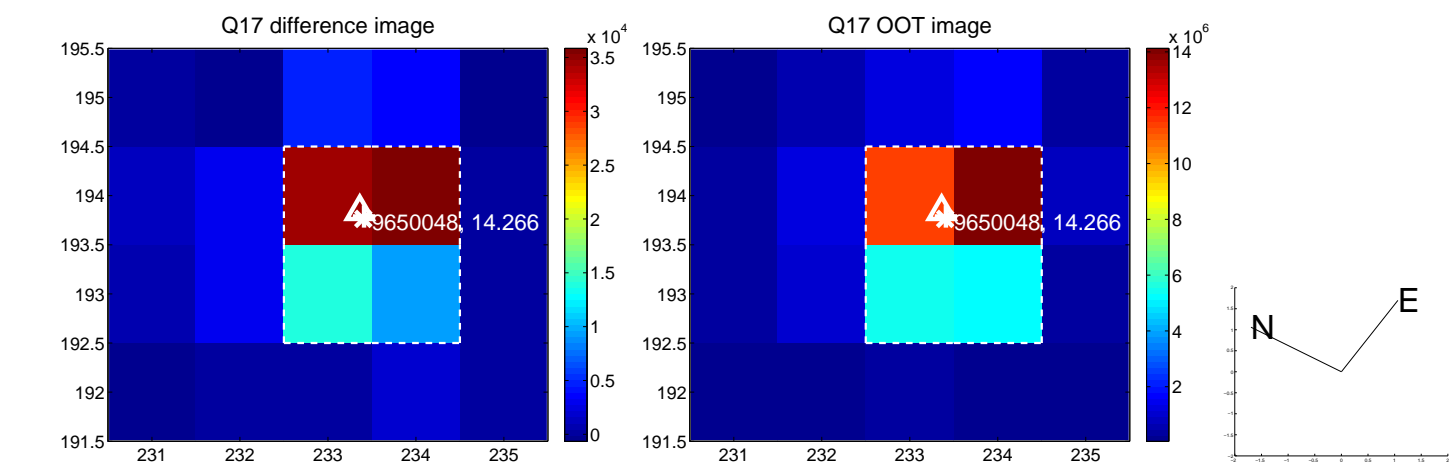
Q16 no difference image



Q16 no OOT image

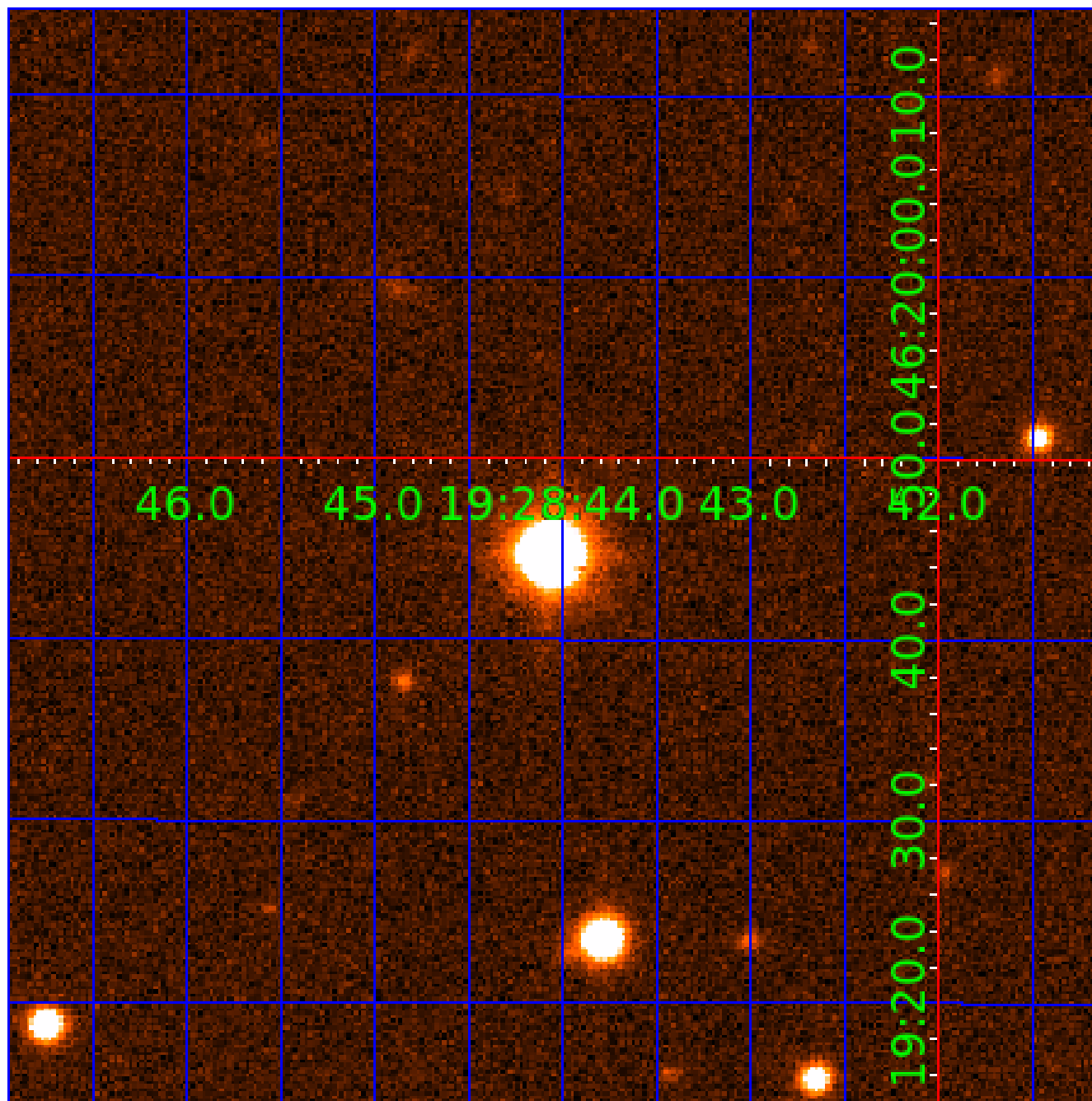


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009650048-01	OBS	No	79.521238	135.132830	1426.8	8.314	13.9	3.2	172.45	3420	596.87	0.00
009650048-02	OBS	No	48.590399	161.382228	1712.0	6.008	12.7	5.2	172.45	3420	897.18	0.00
009650048-03	OBS	No	24.115052	145.753117	2221.7	17.763	9.9	7.0	172.45	3420	1117.14	0.00
009650048-04	OBS	No	51.481188	142.840114	1946.8	2.720	15.5	5.7	172.45	3420	874.61	0.00
009650048-05	OBS	No	86.617464	188.411391	195.5	6.848	11.3	0.5	172.45	3420	298.28	0.00
009650048-06	OBS	No	76.441075	200.861693	3467.7	3.505	11.3	8.1	172.45	3420	1253.74	0.00
009650048-07	OBS	No	65.506849	136.684124	1497.1	17.131	10.7	4.4	172.45	3420	691.84	0.00
009650048-08	OBS	No	68.464196	145.864858	4876.3	6.518	12.2	11.8	172.45	3420	1272.13	0.00
009650048-09	OBS	No	27.127219	145.955115	1498.1	9.143	11.9	5.7	172.45	3420	1106.13	0.00
009650048-10	OBS	No	130.405347	136.770863	2040.2	5.061	11.5	6.2	172.45	3420	885.03	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650048-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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—CENT_FEW_DIFFS
009650048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES
009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-10	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST

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

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

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

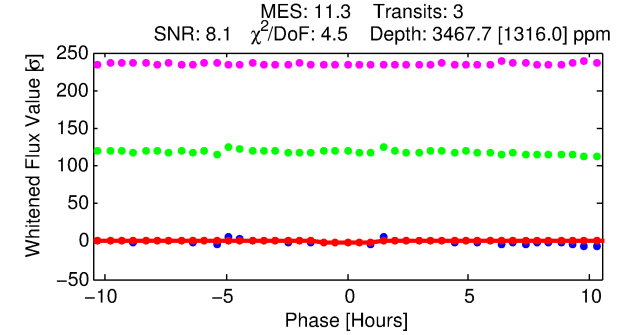
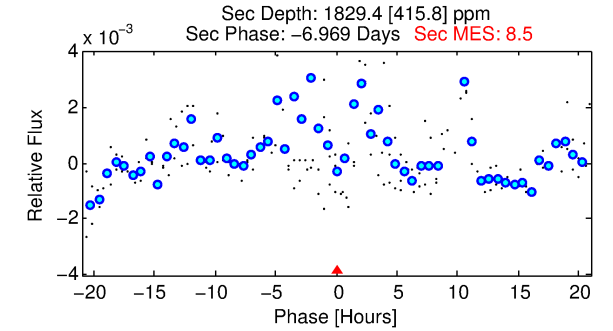
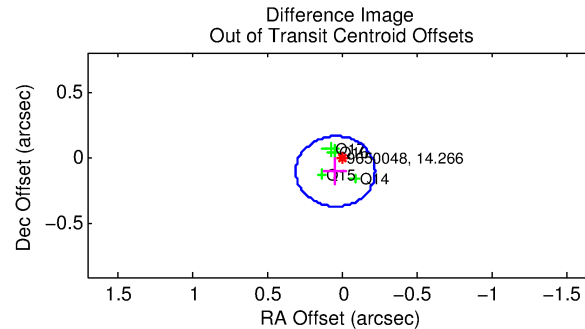
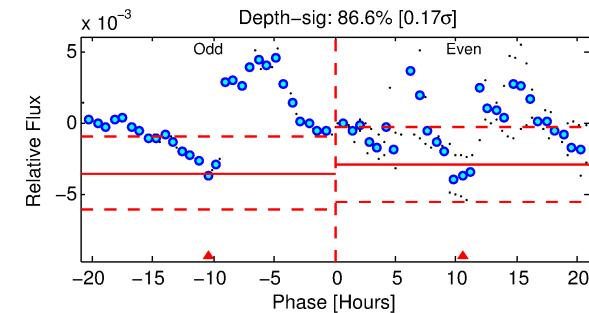
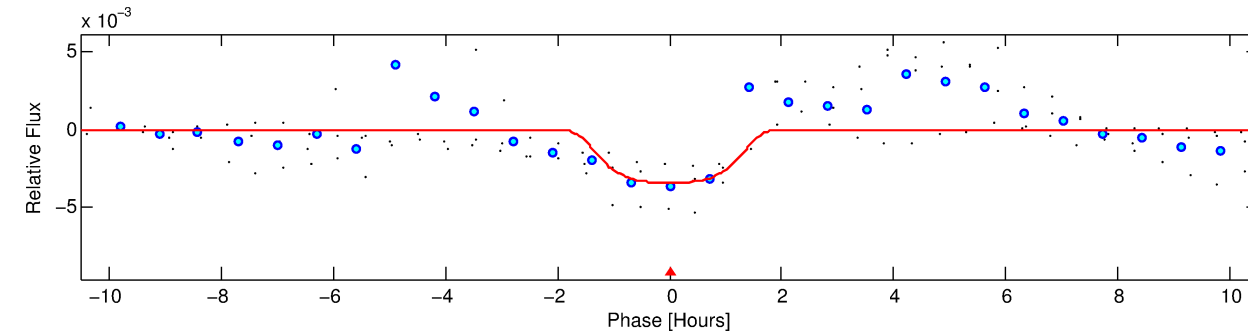
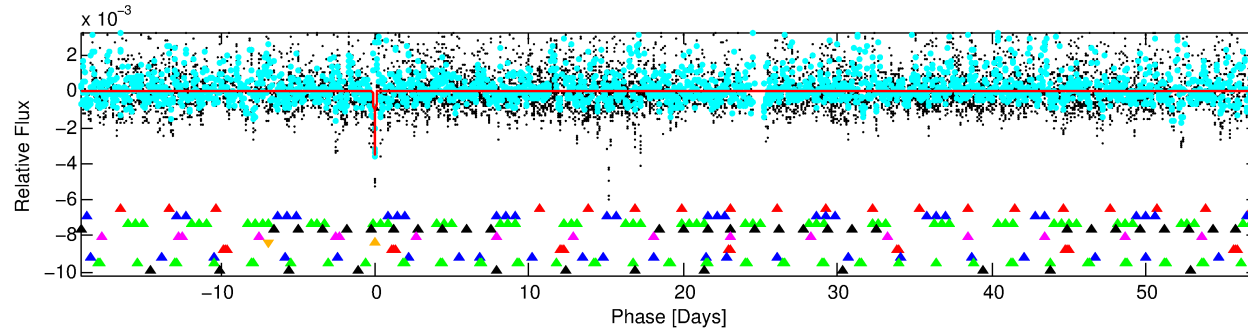
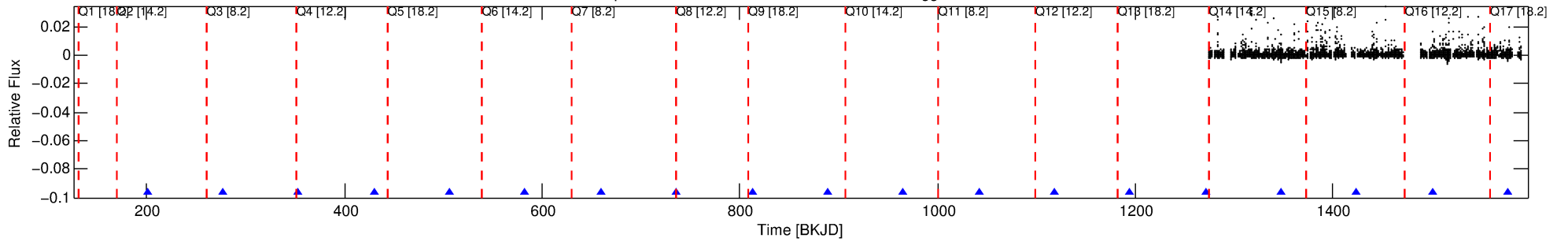
Ephemeris Match Information For 009650048-06

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 6 of 10 Period: 76.441 d

Kp: 14.27 R*: 172.45 Rs Teff: 3420.0 K Logg: 0.53 Fe/H: 0.560



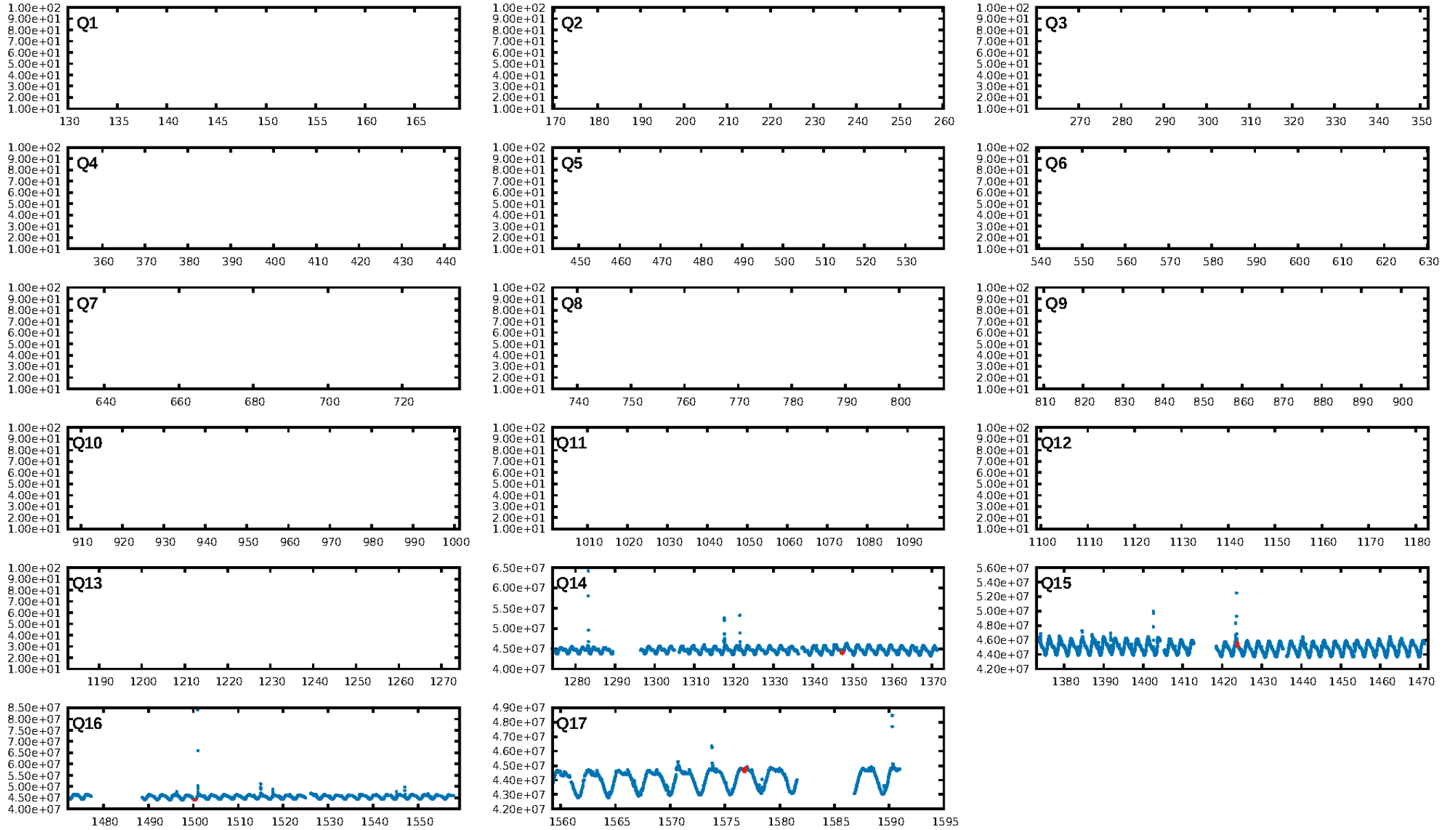
DV Fit Results:

Period = 76.44107 [0.00682] d
Epoch = 200.8617 [0.1200] BKJD
Rp/R* = 0.0666 [0.0273]
a/R* = 102.96 [95.32]
b = 0.87 [0.29]
Seff = N/A
Teq = N/A
Rp = 1253.74 [865.40] Re
a = N/A
Ag = N/A
Teffp = N/A

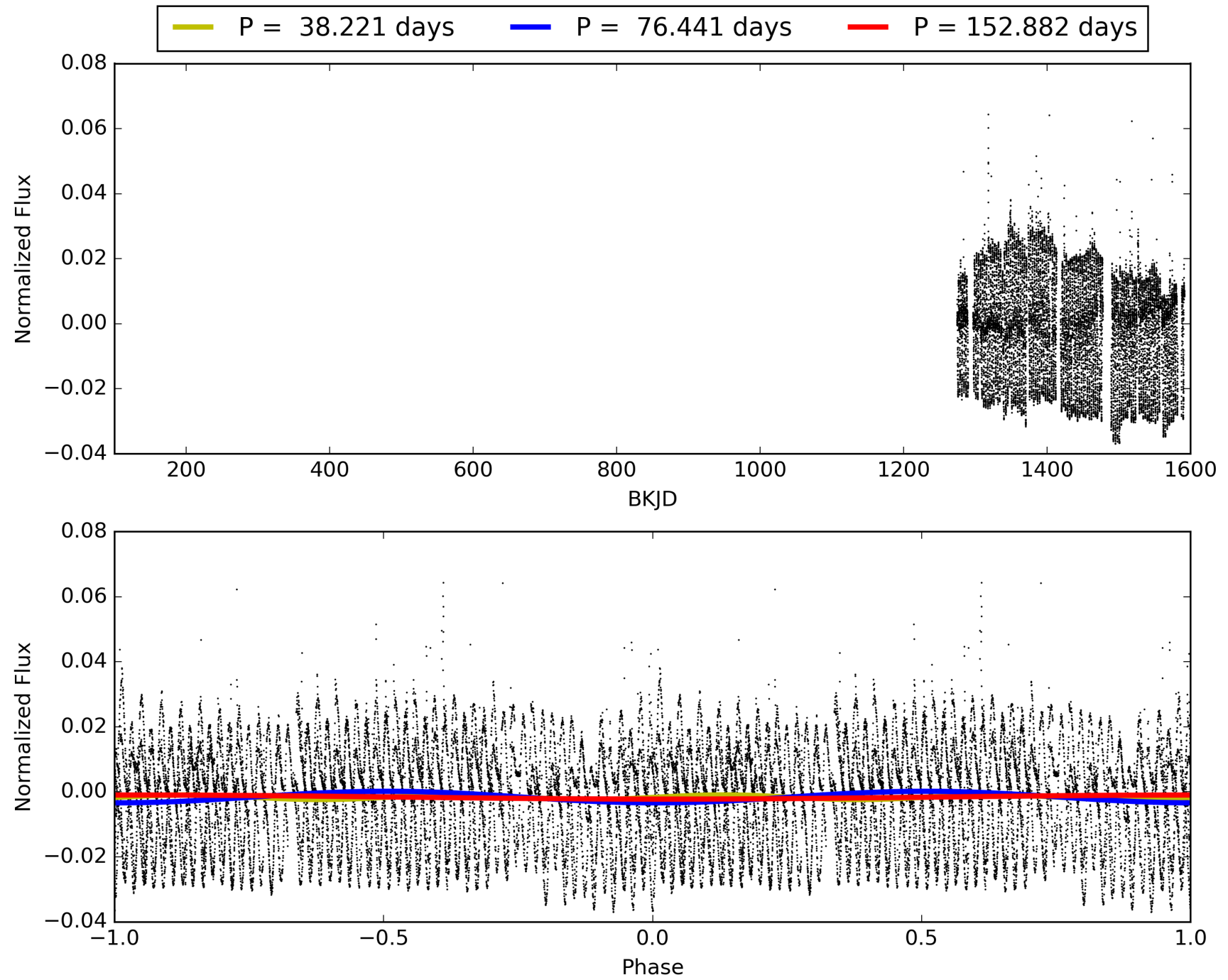
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [25.87σ]
LongPeriod-sig: 100.0% [8.19σ]
ModelChiSquare2-sig: 34.1%
ModelChiSquareGof-sig: 14.0%
Bootstrap-pfa: 1.20e-12
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.917
Centroid-sig: 51.3%
Centroid-so: 0.225 arcsec [0.81σ]
OotOffset-rm: 0.109 arcsec [1.23σ]
KicOffset-rm: 0.085 arcsec [1.12σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 0.75 [3/4]

TCE 009650048-06, PDC Light Curves

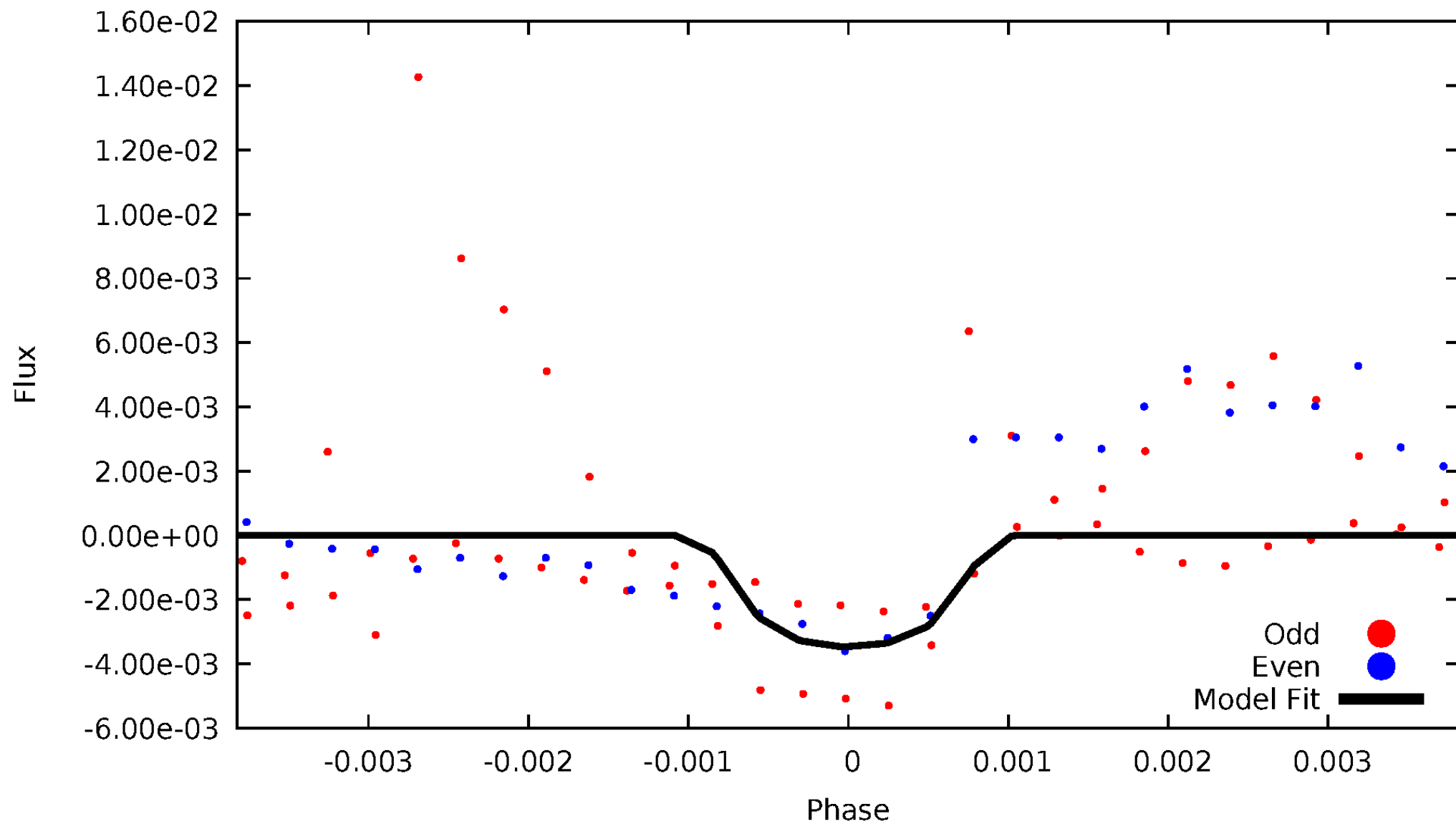


TCE 009650048-06



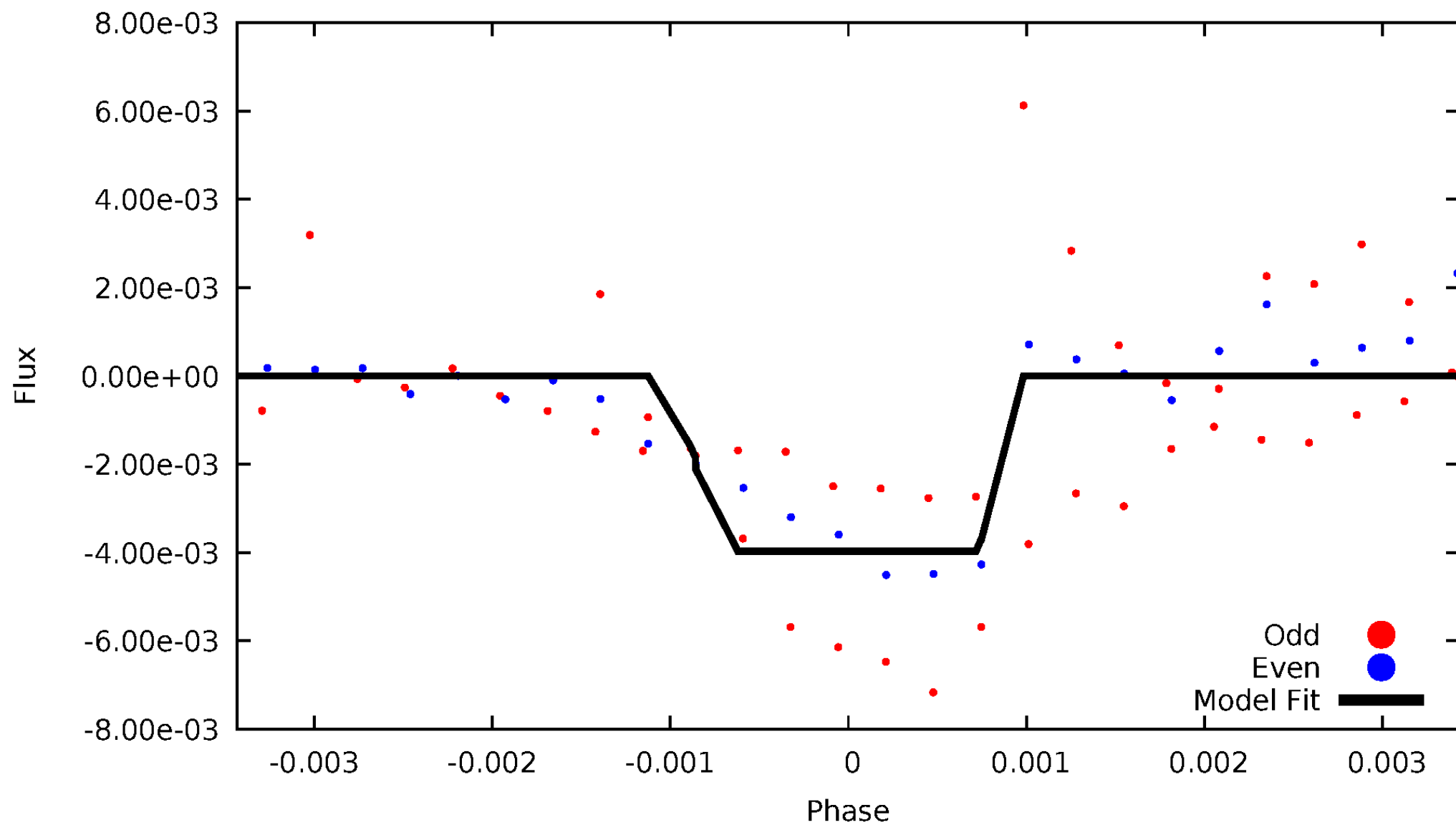
DV Odd/Even

TCE 009650048-06



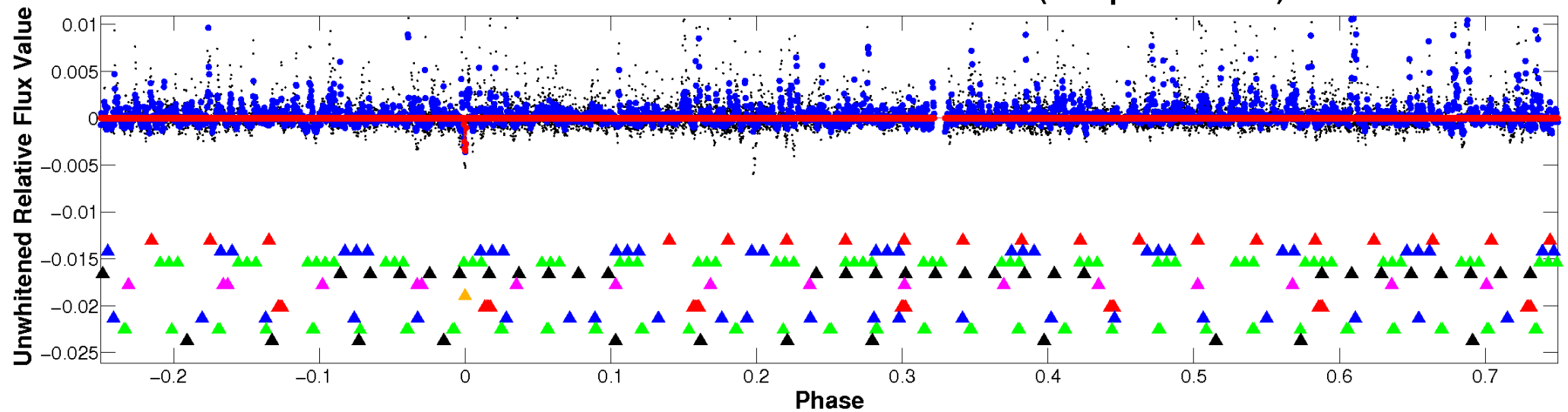
ALT Odd/Even

TCE 009650048-06

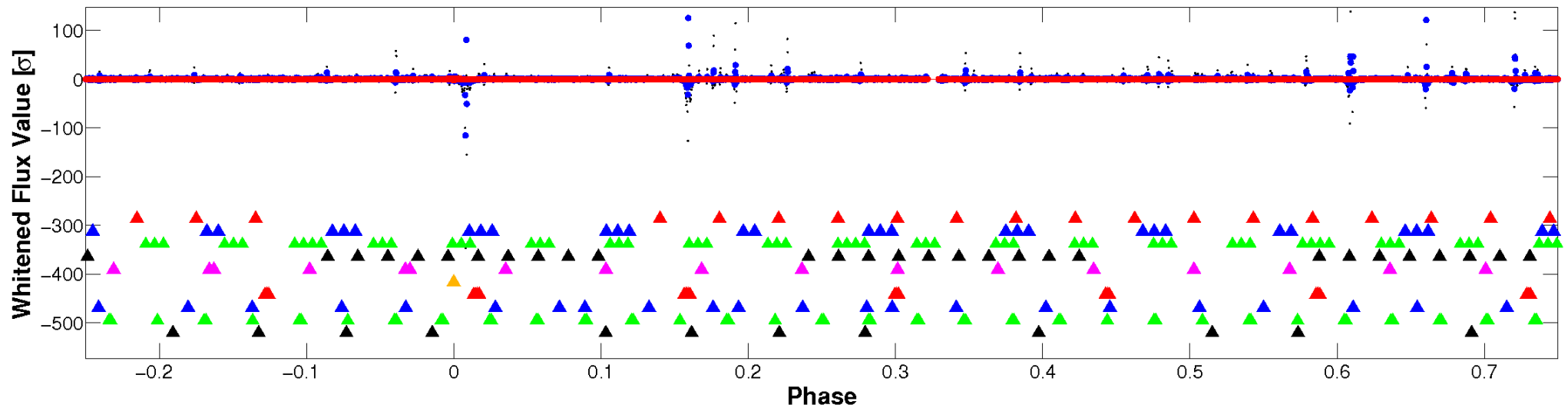


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

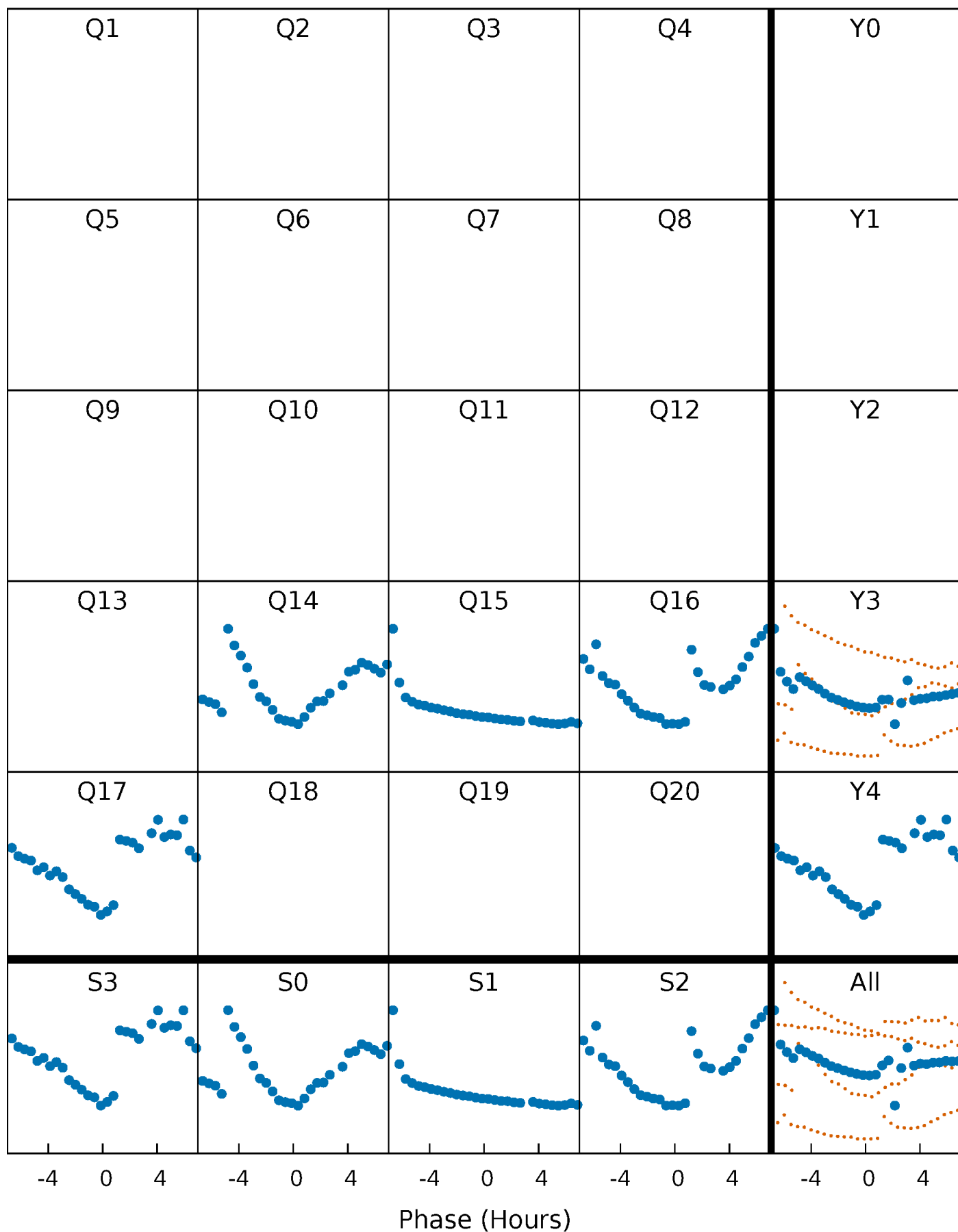


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



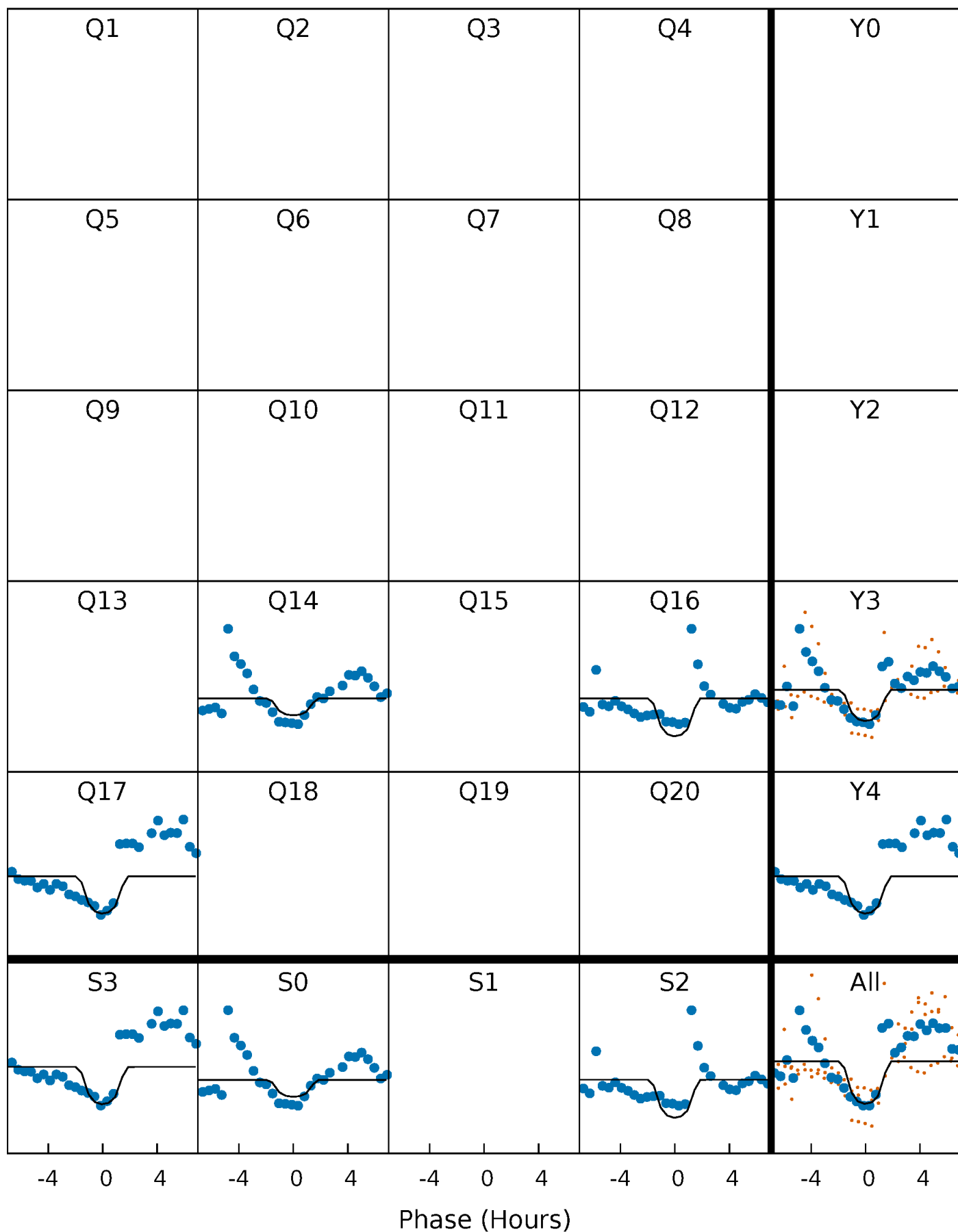
PDC Quarter-Phased Transit Curves

TCE 009650048-06 P= 76.441075 Days $T_0=200.861694$ (BKJD)



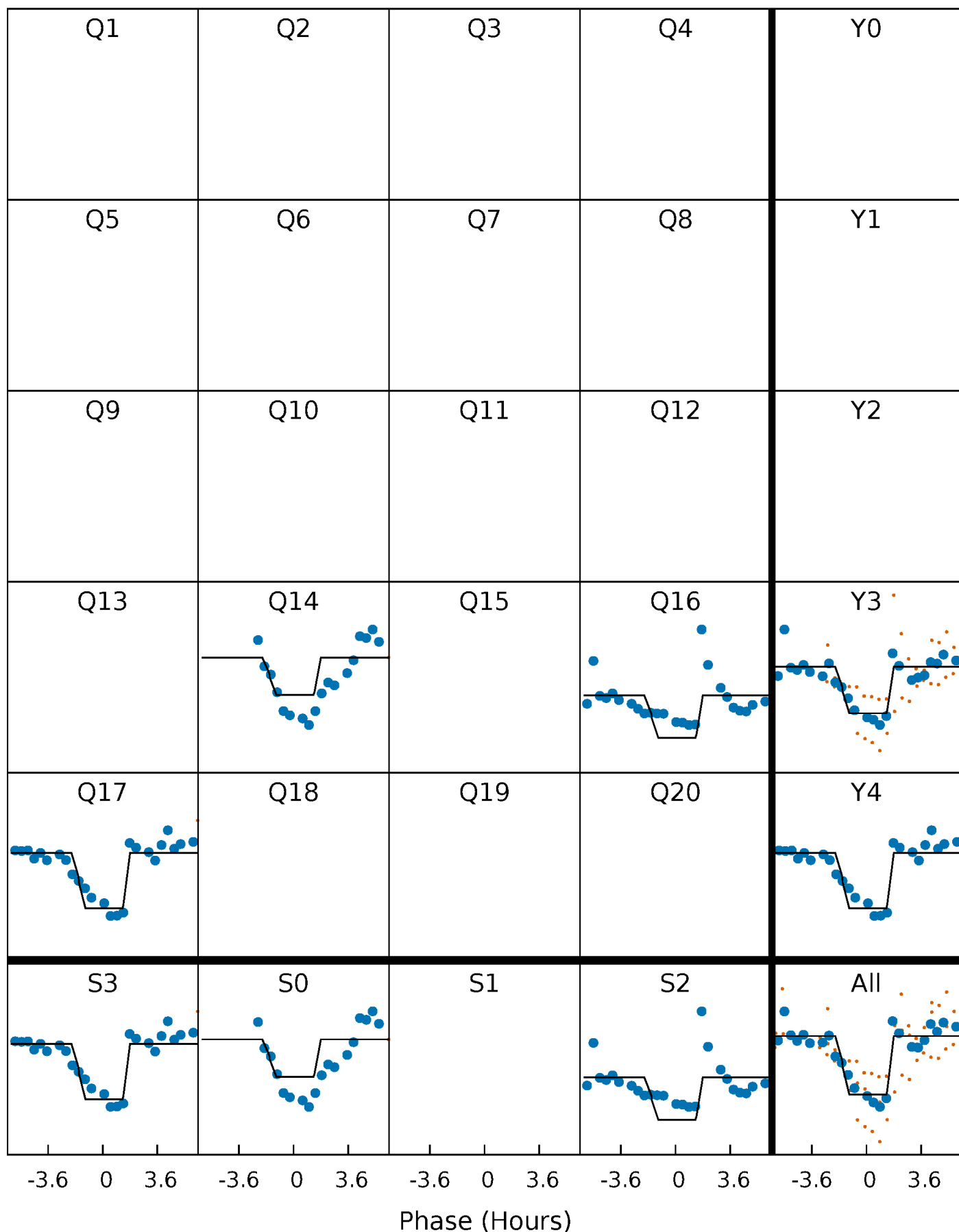
DV Quarter-Phased Transit Curves

TCE 009650048-06 P= 76.441075 Days $T_0=200.861694$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

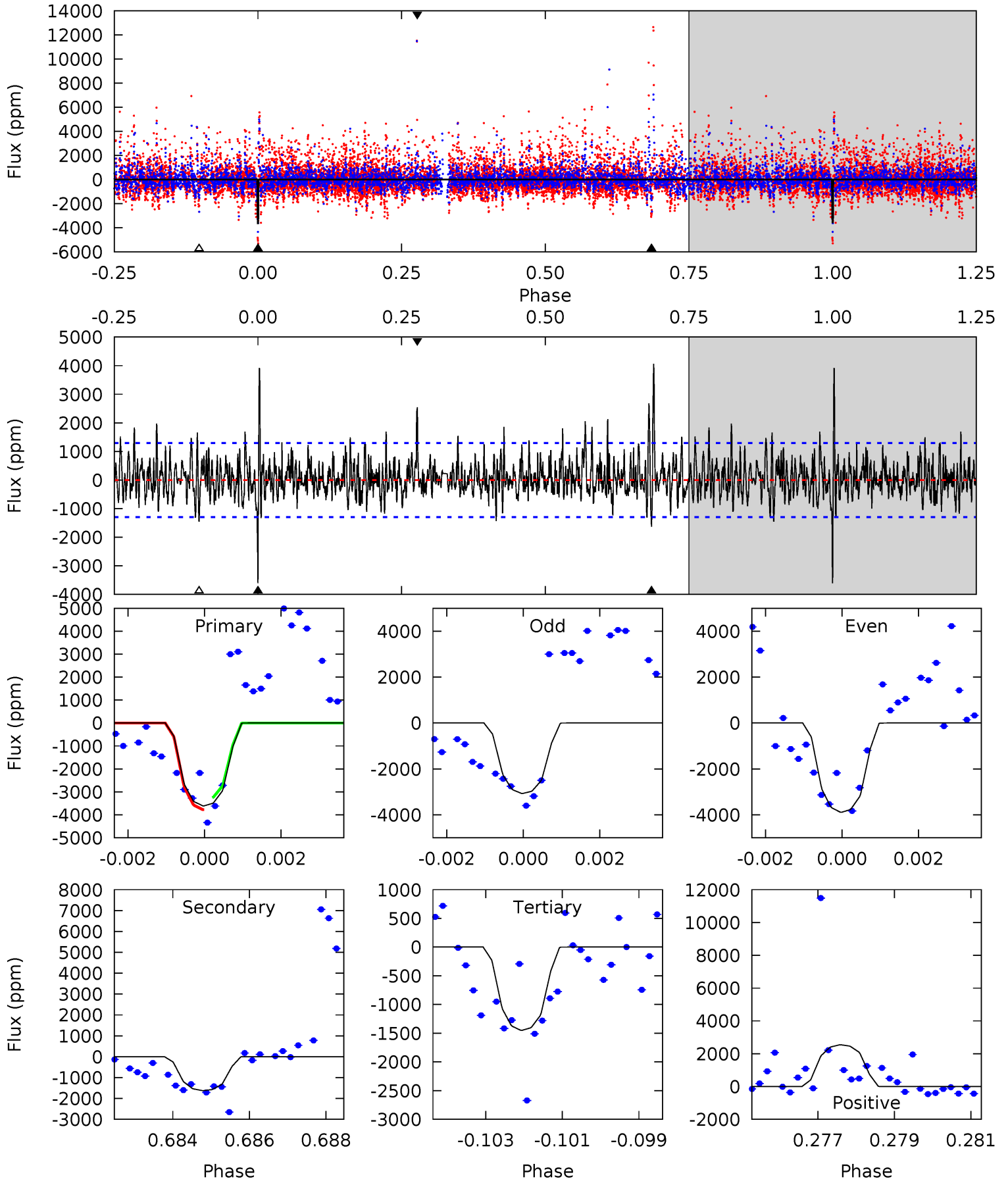
TCE 009650048-06 P= 76.440876 Days $T_0=200.847442$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-06, P = 76.441075 Days, E = 200.861694 Days

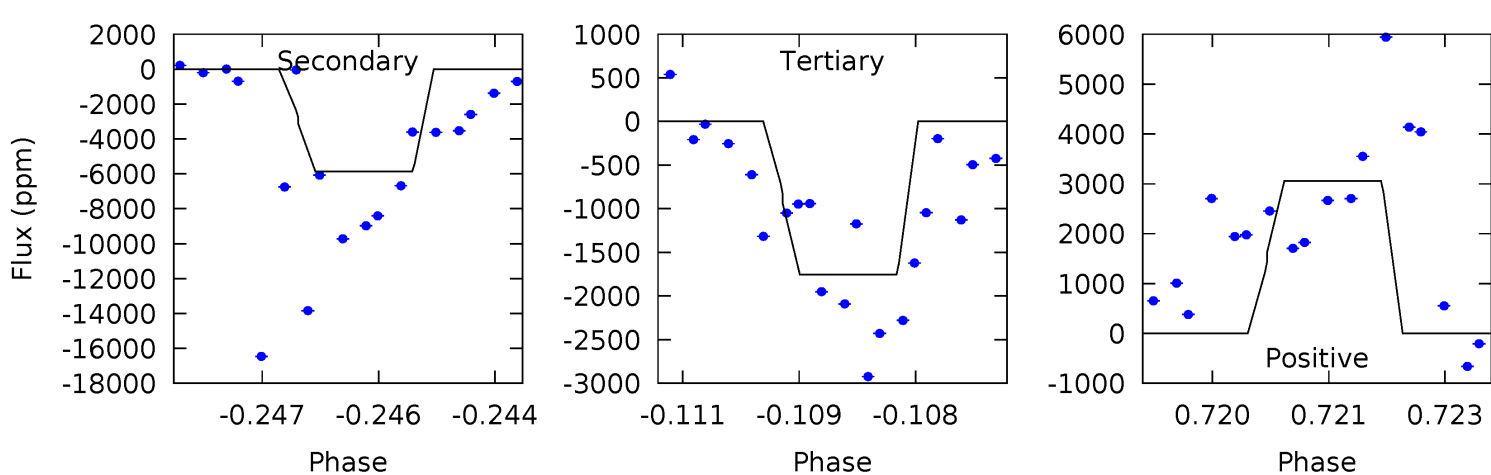
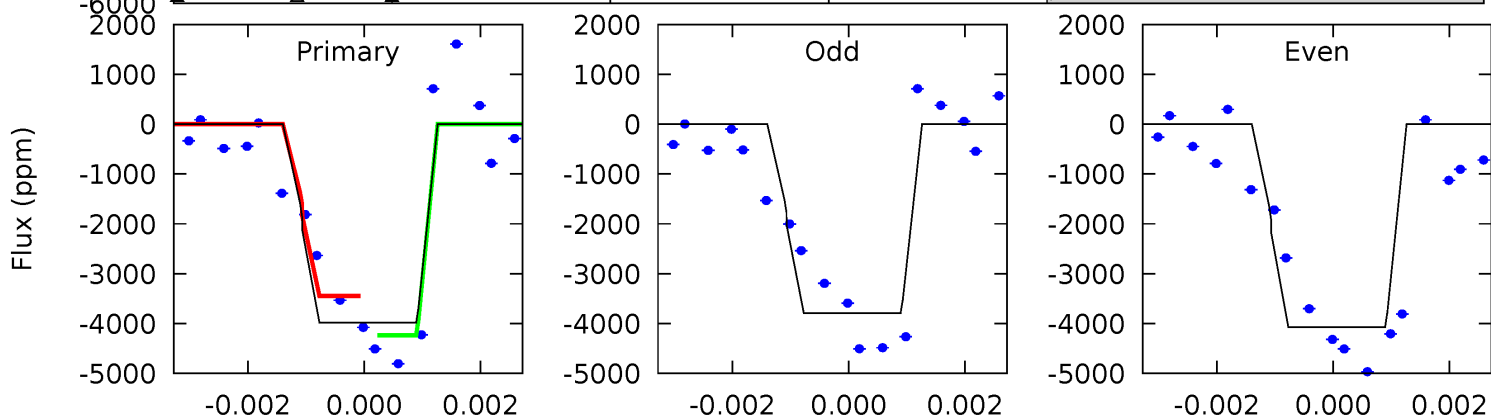
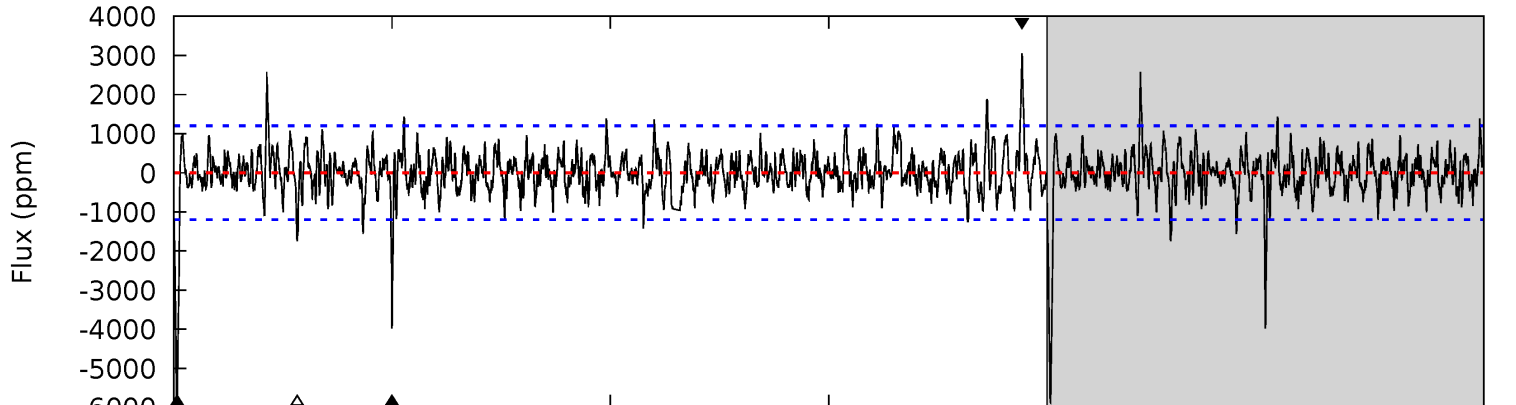
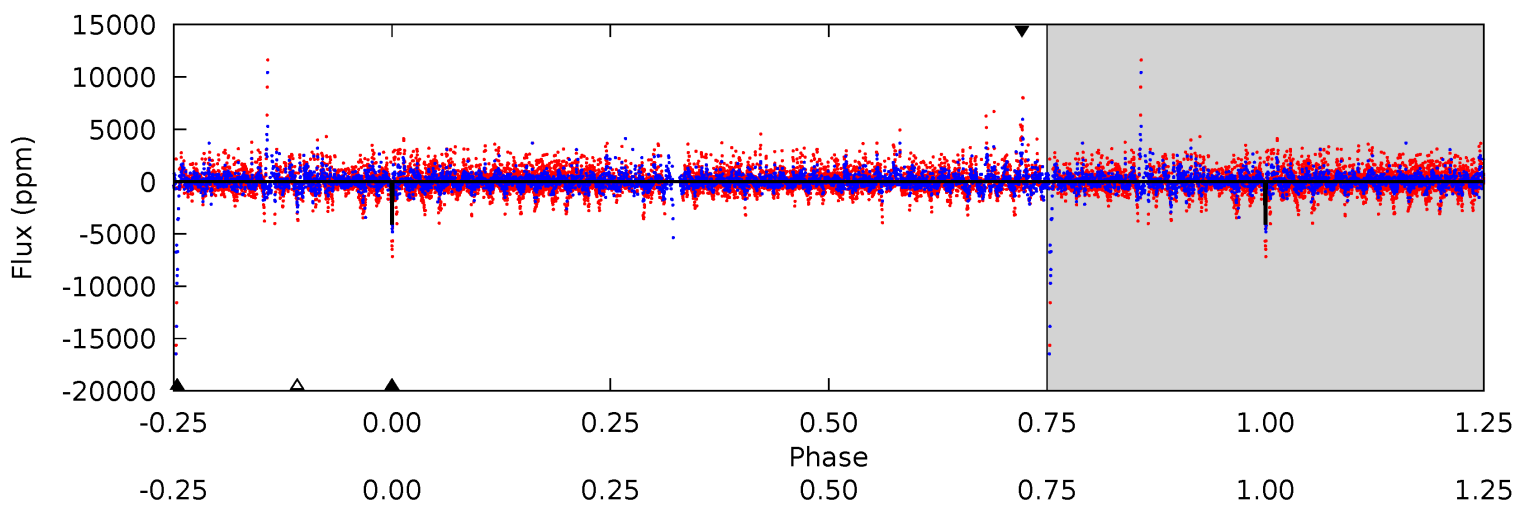
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.8	6.68	5.96	10.5	5.32	3.07	2.20	8.87	4.38	0.71	-3.78	0.86	1.11	0.53	1.08



Alt Model-Shift Uniqueness Test

009650048-06, P = 76.440876 Days, E = 200.847442 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	26.3	7.84	13.7	5.37	3.15	1.98	9.97	4.15	18.4	12.6	0.50	1.05	0.34	1.73



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1625 ± 243	$1268.59^{+590.14}_{-588.01}$	3804^{+254}_{-349}	-2840^{+5788}_{-331}	$0.160^{+0.345}_{-0.087}$
Alt.	-5872 ± 223	$1112.75^{+563.14}_{-497.22}$	3785^{+236}_{-339}	3346^{+966}_{-944}	$0.741^{+1.544}_{-0.405}$

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 $A_{obs} \gg 1.0$

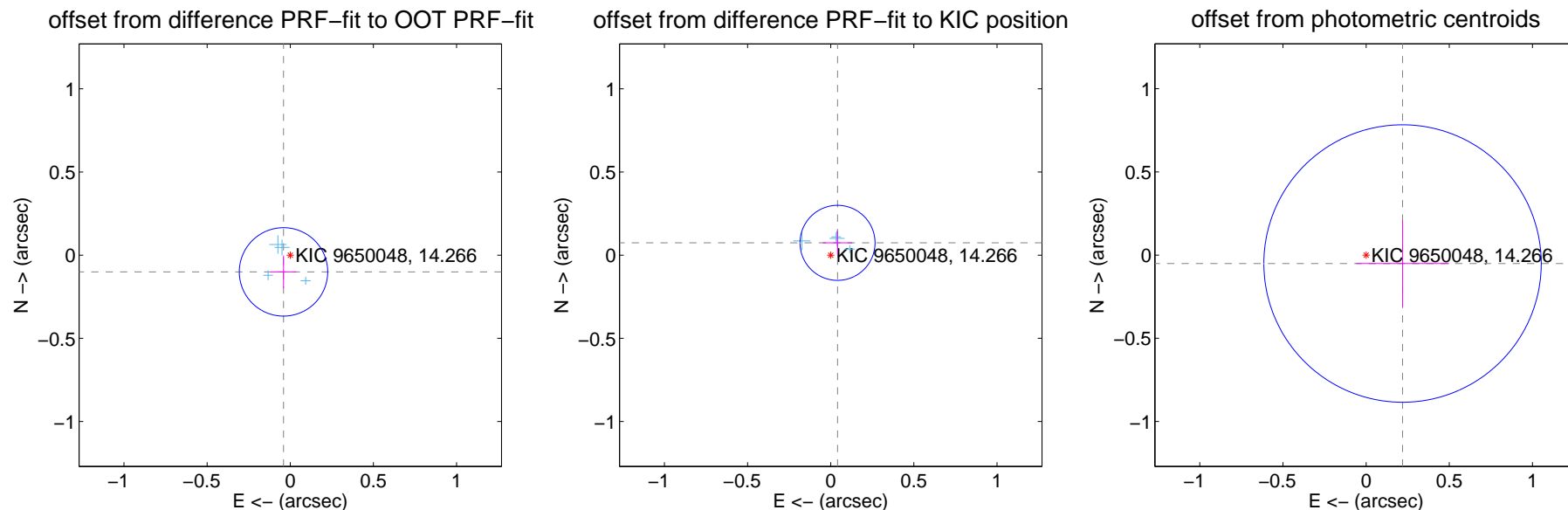
DV Centroid Data

Supplemental centroid analysis for 009650048-06. Kepler magnitude: 14.27. Transit SNR 8.11

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.109 ± 0.089	1.23	0.041 ± 0.078	-0.101 ± 0.098
PRF-fit source offset from KIC position	0.085 ± 0.075	1.12	-0.041 ± 0.089	0.074 ± 0.071
photometric centroid source offset	0.22 ± 0.28	0.81	-0.22 ± 0.28	-0.05 ± 0.26



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.



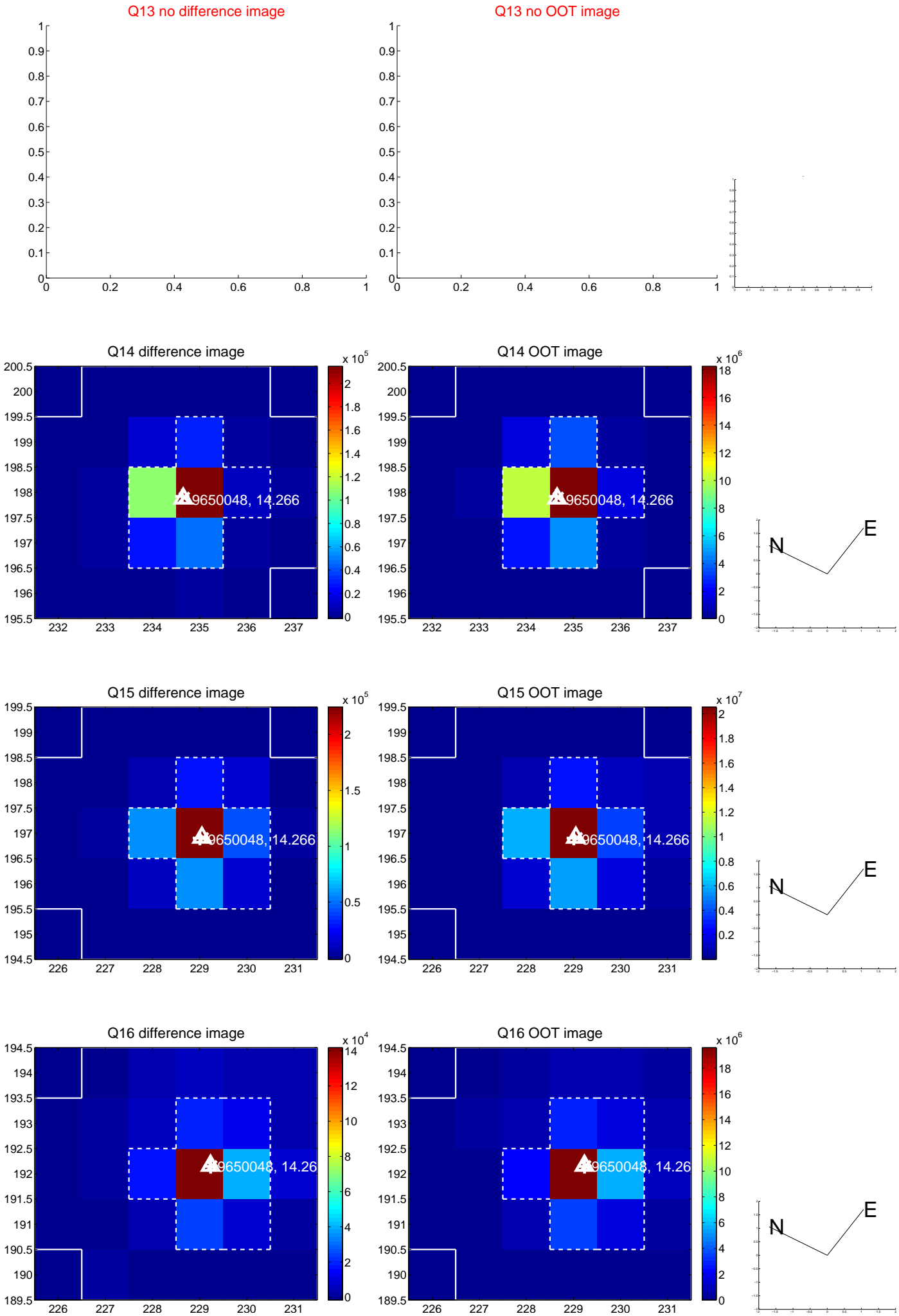
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



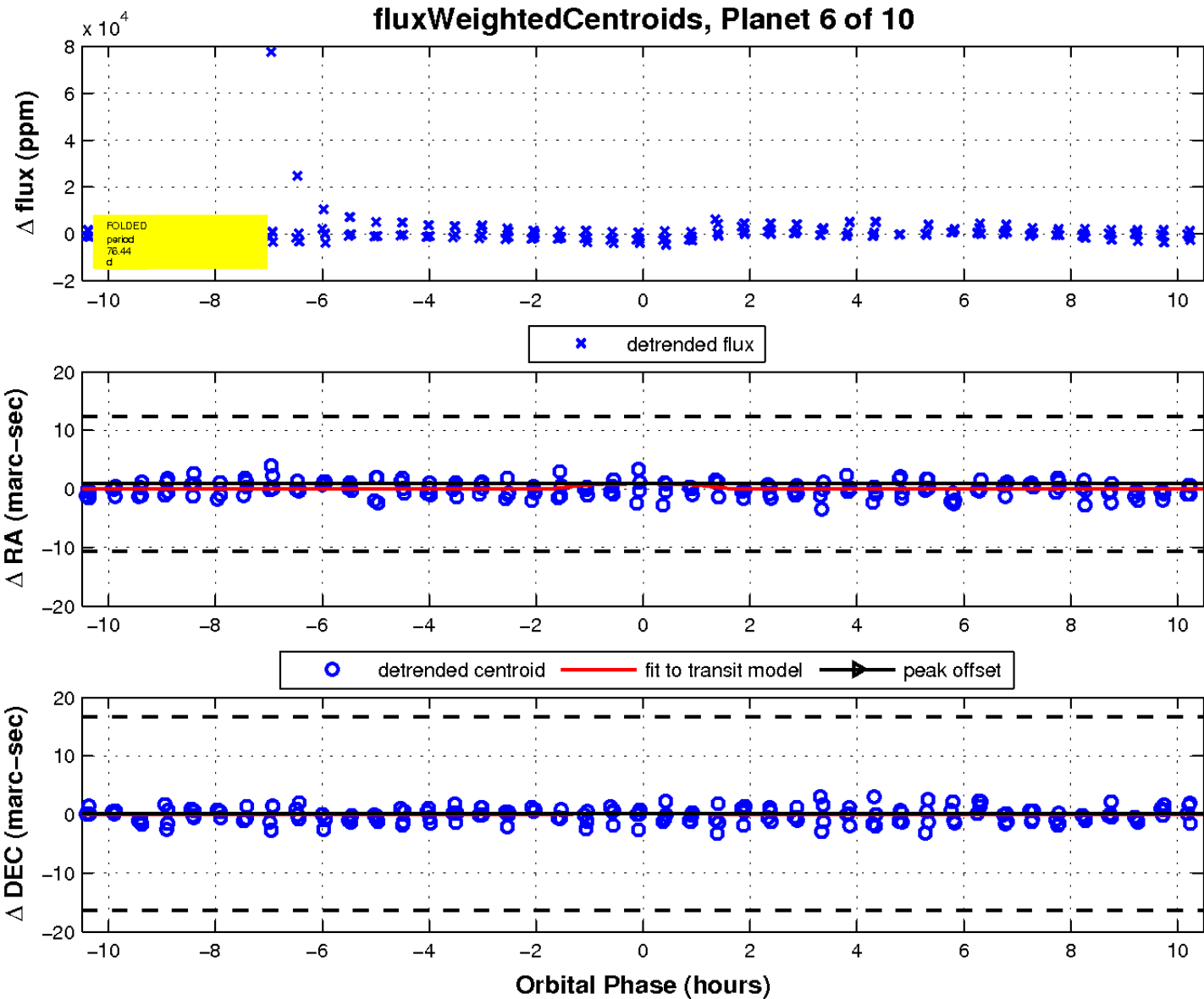
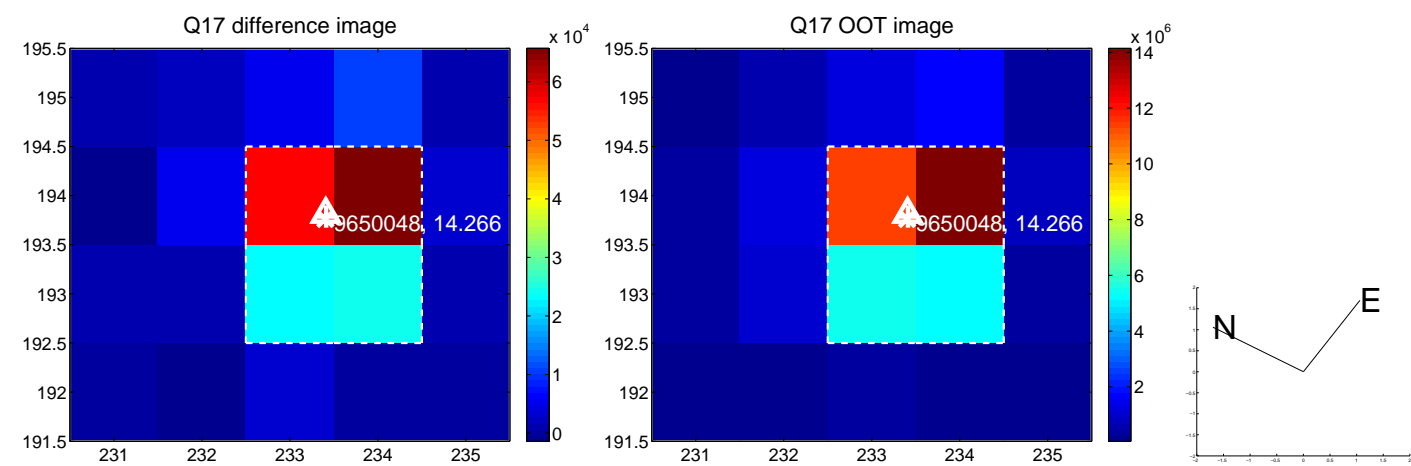
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

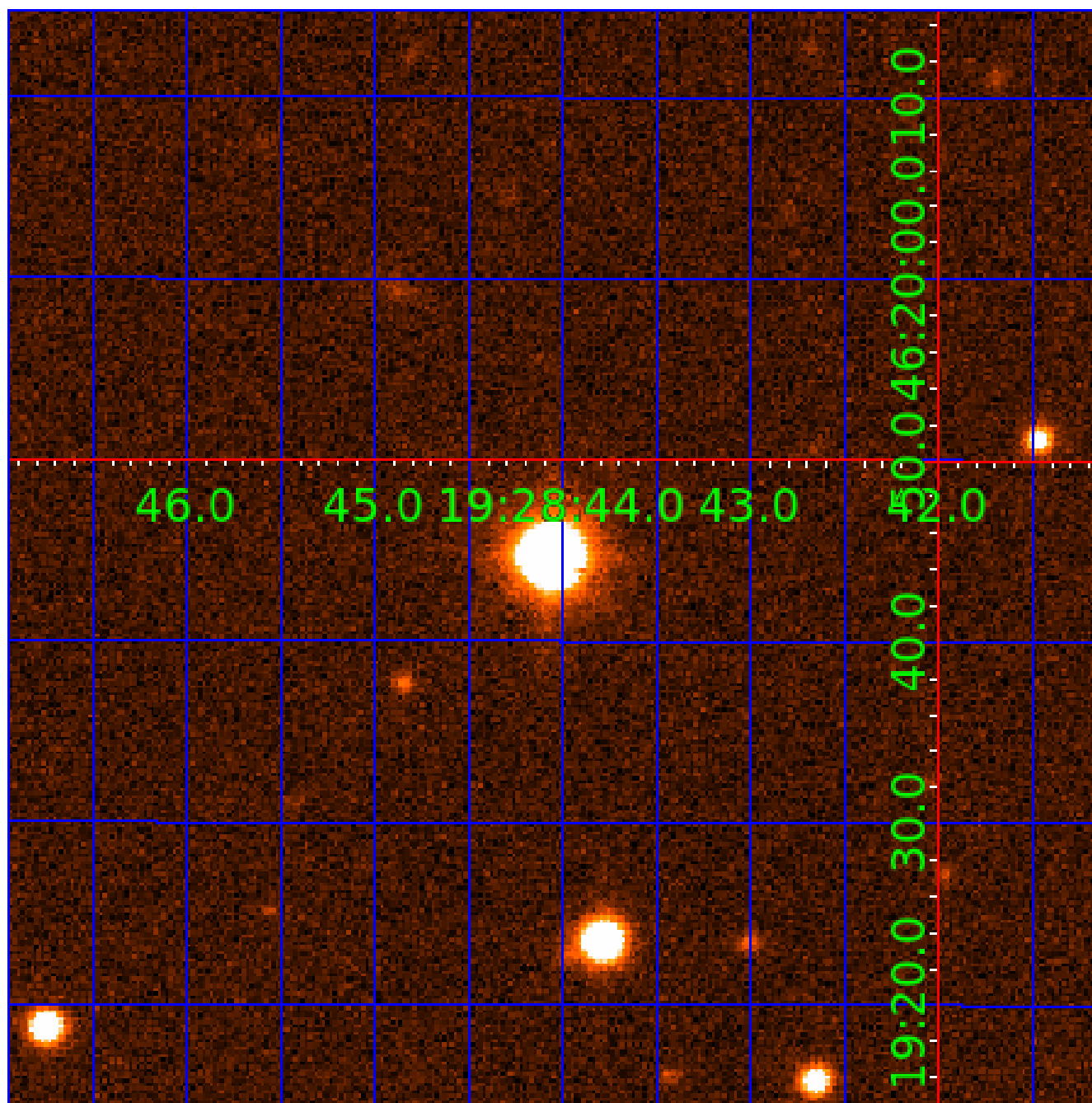


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009650048-01	OBS	No	79.521238	135.132830	1426.8	8.314	13.9	3.2	172.45	3420	596.87	0.00
009650048-02	OBS	No	48.590399	161.382228	1712.0	6.008	12.7	5.2	172.45	3420	897.18	0.00
009650048-03	OBS	No	24.115052	145.753117	2221.7	17.763	9.9	7.0	172.45	3420	1117.14	0.00
009650048-04	OBS	No	51.481188	142.840114	1946.8	2.720	15.5	5.7	172.45	3420	874.61	0.00
009650048-05	OBS	No	86.617464	188.411391	195.5	6.848	11.3	0.5	172.45	3420	298.28	0.00
009650048-06	OBS	No	76.441075	200.861693	3467.7	3.505	11.3	8.1	172.45	3420	1253.74	0.00
009650048-07	OBS	No	65.506849	136.684124	1497.1	17.131	10.7	4.4	172.45	3420	691.84	0.00
009650048-08	OBS	No	68.464196	145.864858	4876.3	6.518	12.2	11.8	172.45	3420	1272.13	0.00
009650048-09	OBS	No	27.127219	145.955115	1498.1	9.143	11.9	5.7	172.45	3420	1106.13	0.00
009650048-10	OBS	No	130.405347	136.770863	2040.2	5.061	11.5	6.2	172.45	3420	885.03	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650048-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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—CENT_FEW_DIFFS
009650048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES
009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-10	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST

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

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

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

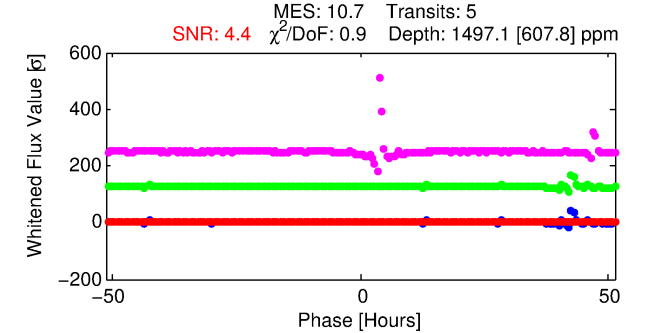
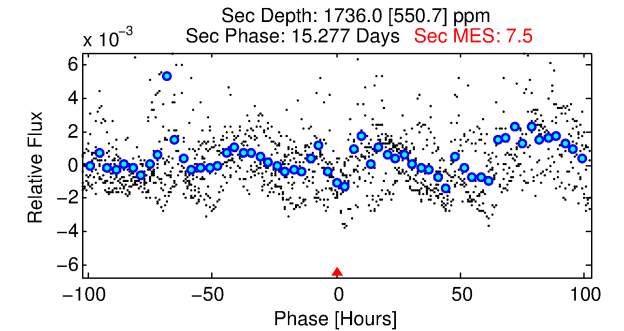
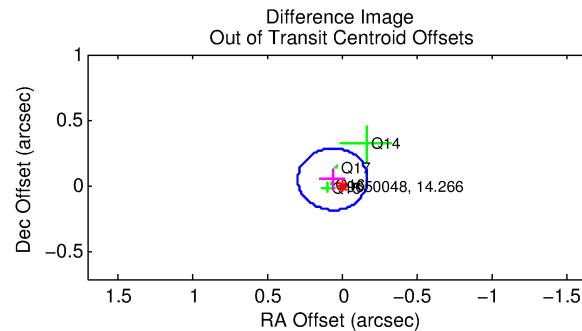
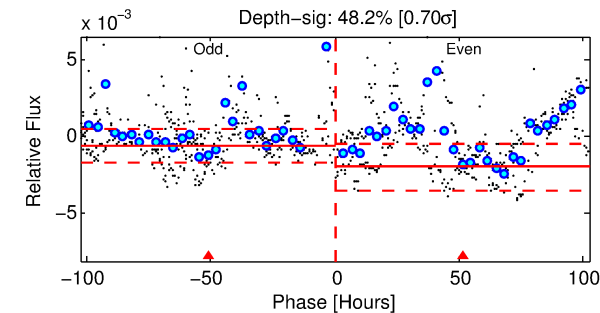
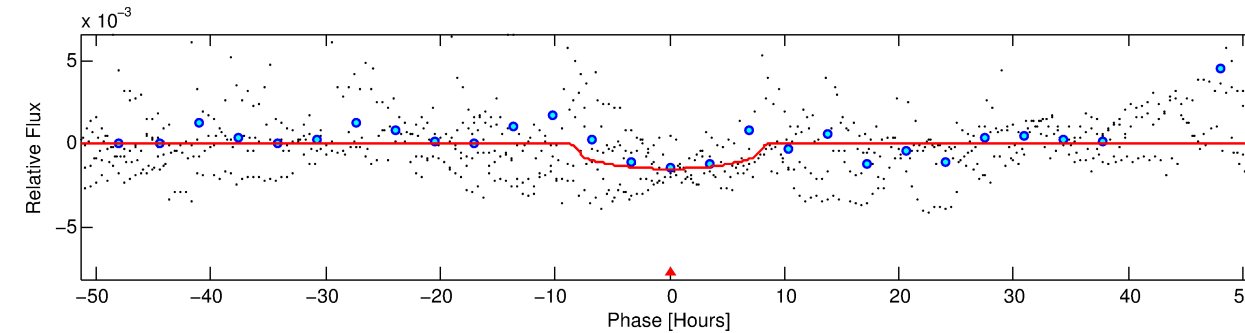
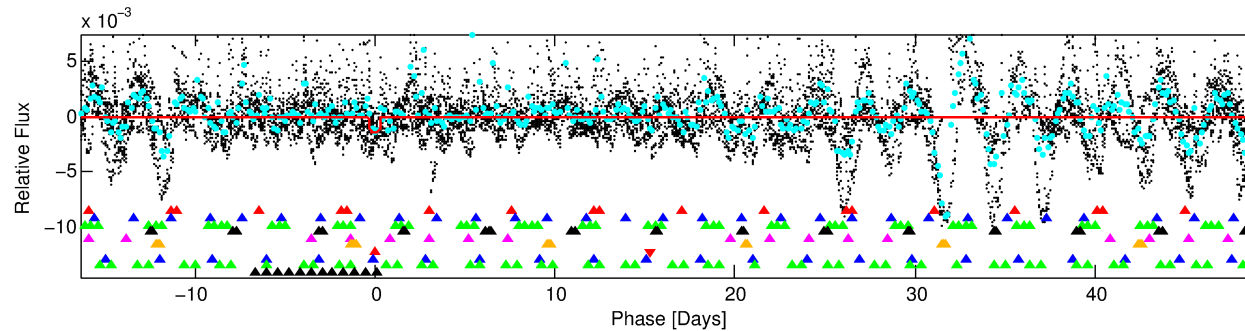
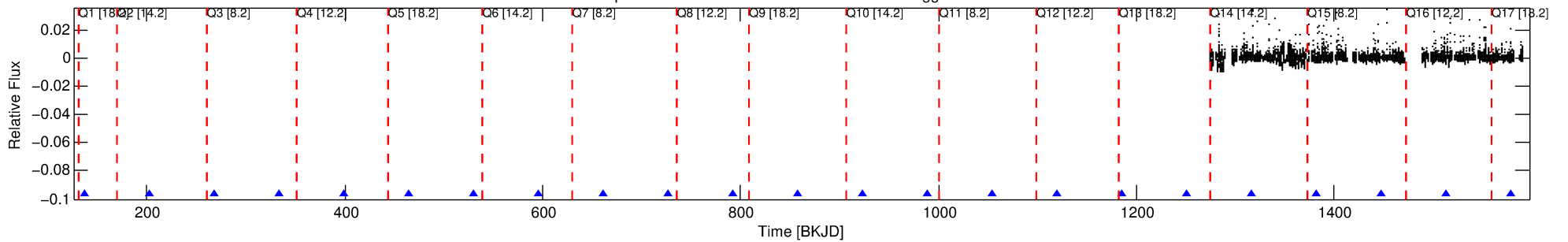
Ephemeris Match Information For 009650048-07

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 7 of 10 Period: 65.507 d

Kp: 14.27 R*: 172.45 Rs Teff: 3420.0 K Logg: 0.53 Fe/H: 0.560



DV Fit Results:

Period = 65.50685 [0.01301] d
Epoch = 136.6841 [0.2664] BKJD
Rp/R* = 0.0368 [0.0171]
a/R* = 23.88 [25.39]
b = 0.64 [1.00]
Seff = N/A
Teq = N/A
Rp = 691.84 [500.99] Re
a = N/A
Ag = N/A
Teffp = N/A

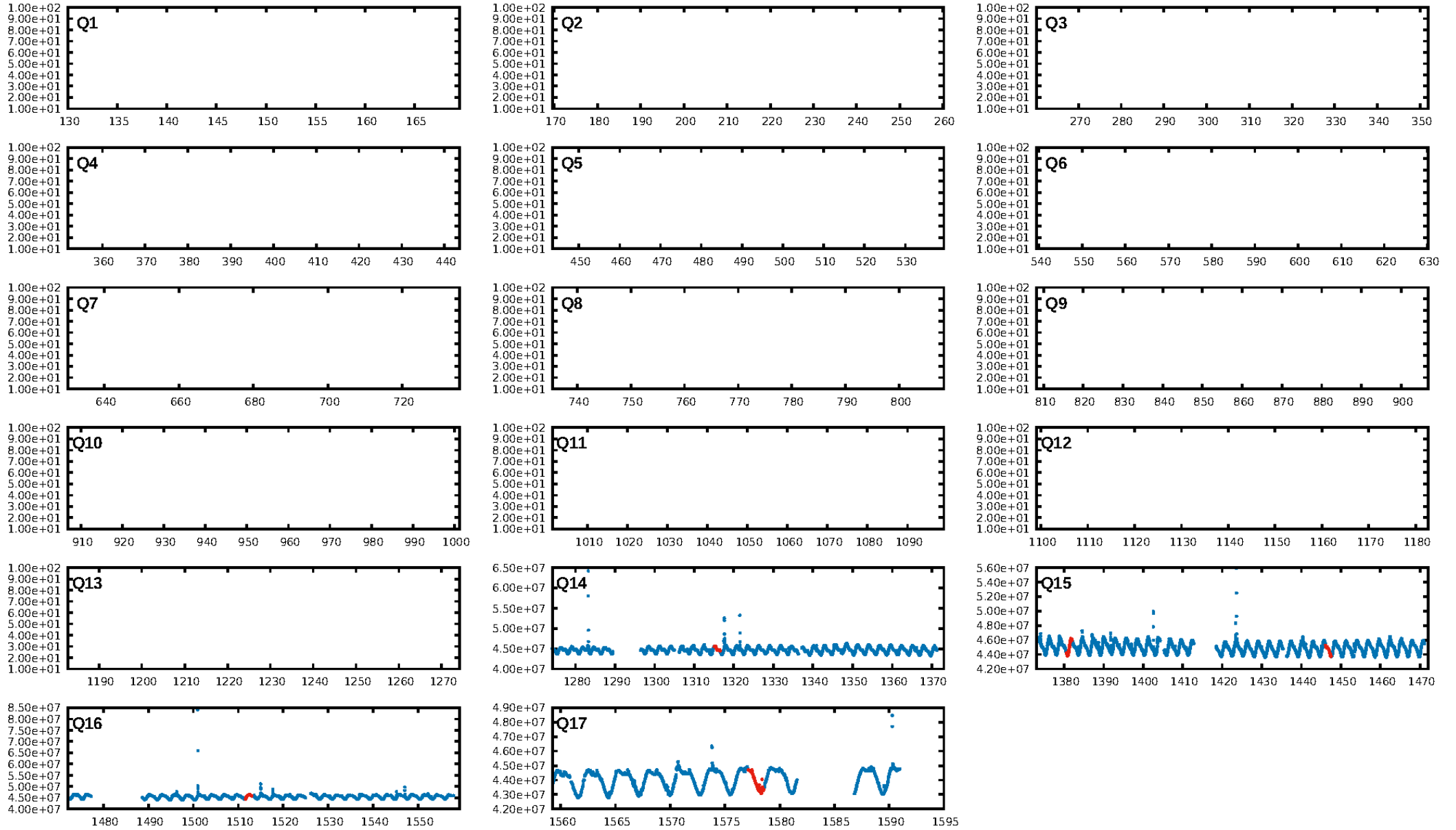
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.41σ]
LongPeriod-sig: 100.0% [3.87σ]
ModelChiSquare2-sig: 4.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.40e-12
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.4463
Centroid-sig: 79.7%
Centroid-so: 0.140 arcsec [0.47σ]
OotOffset-rm: 0.081 arcsec [1.04σ]
KicOffset-rm: 0.107 arcsec [0.96σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.75 [3/4]

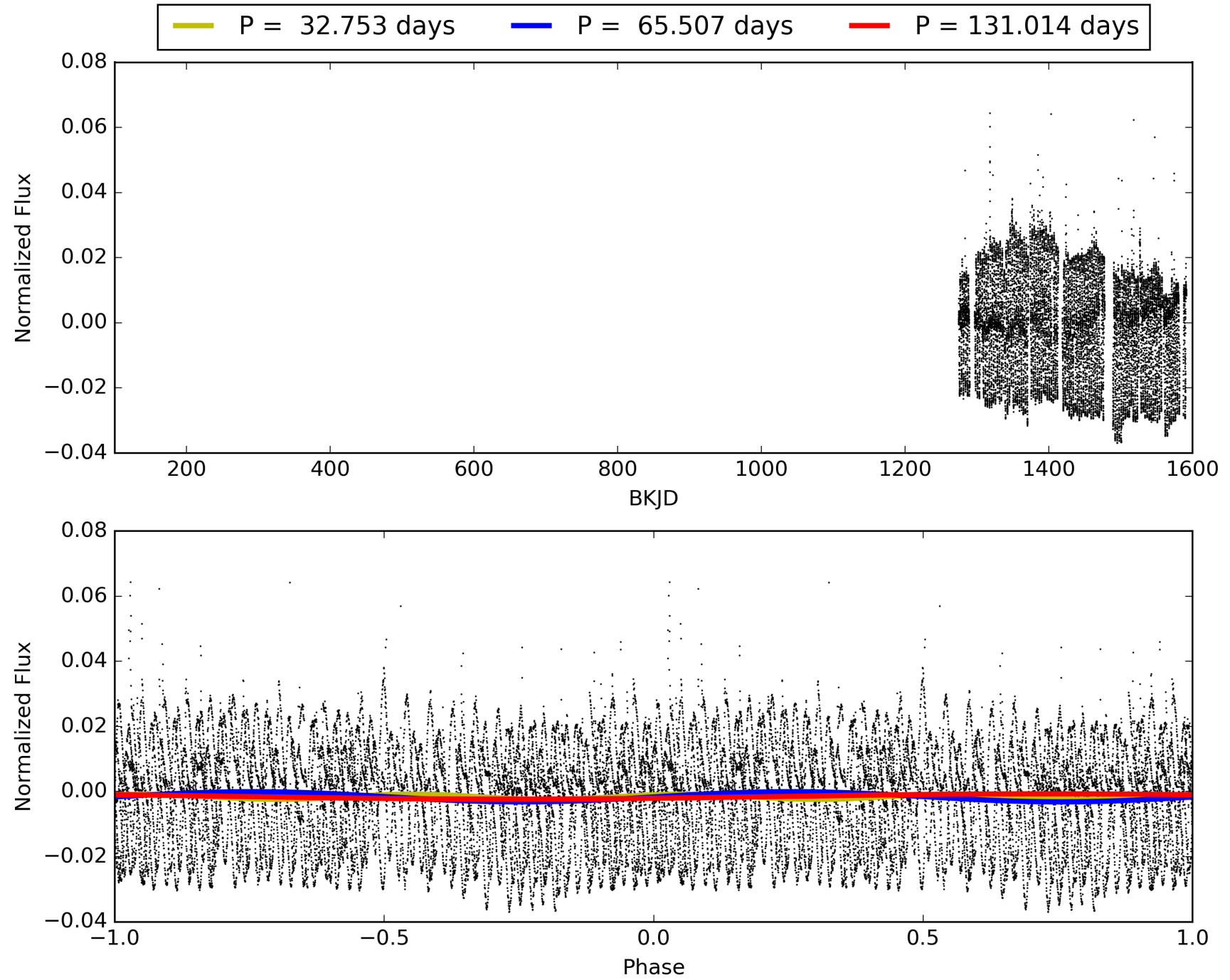
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:57:40 Z

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

TCE 009650048-07, PDC Light Curves

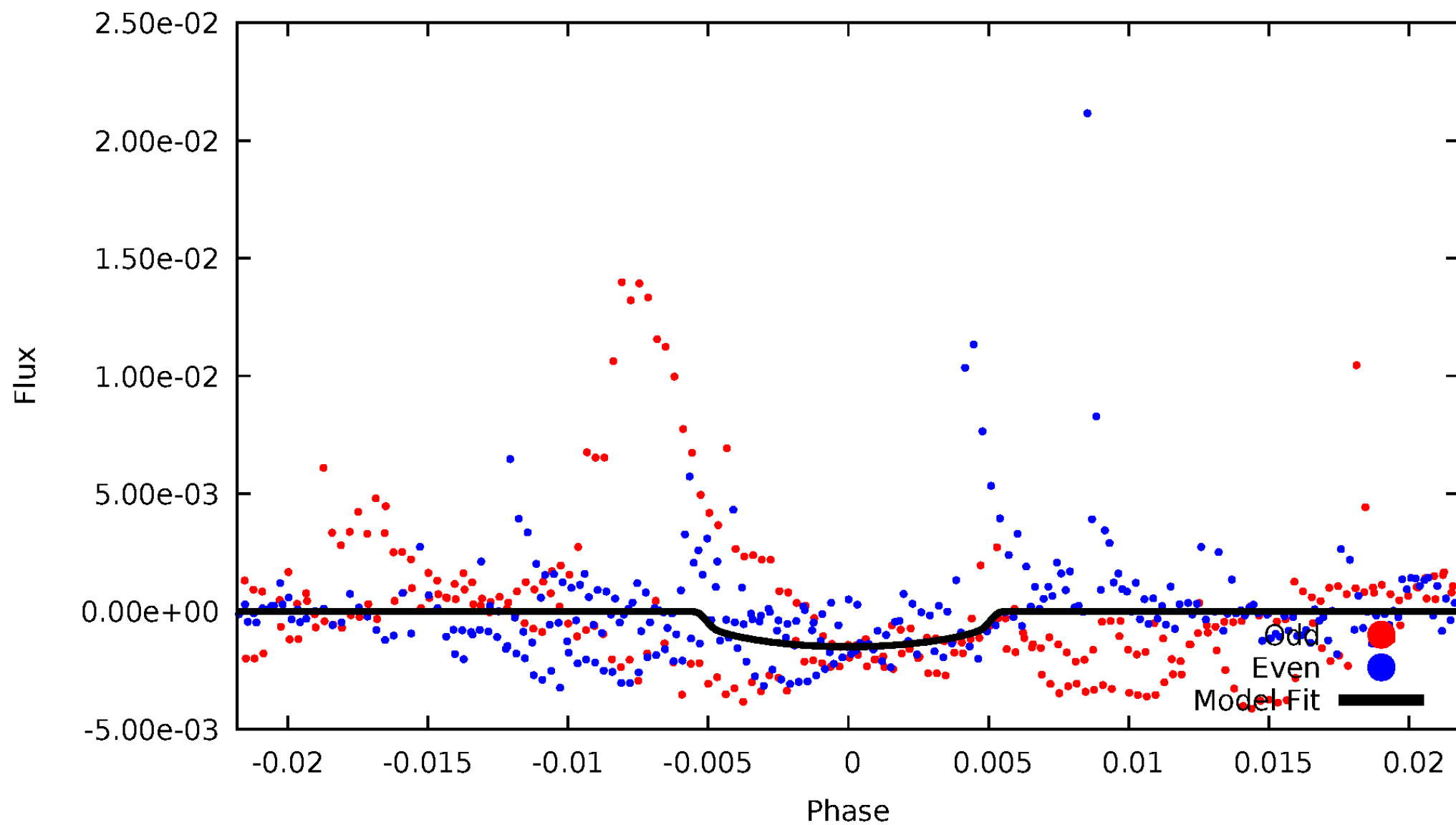


TCE 009650048-07



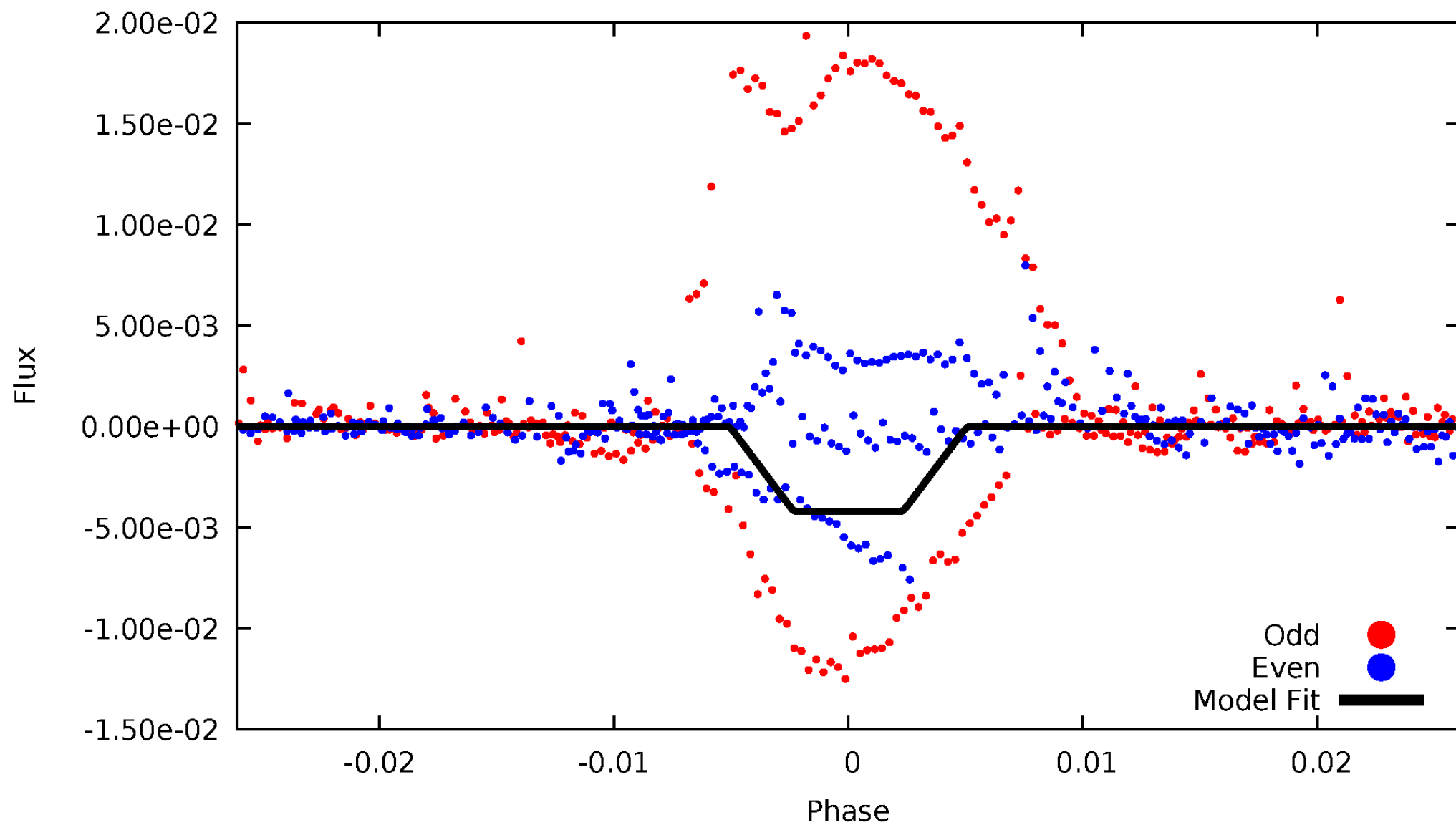
DV Odd/Even

TCE 009650048-07



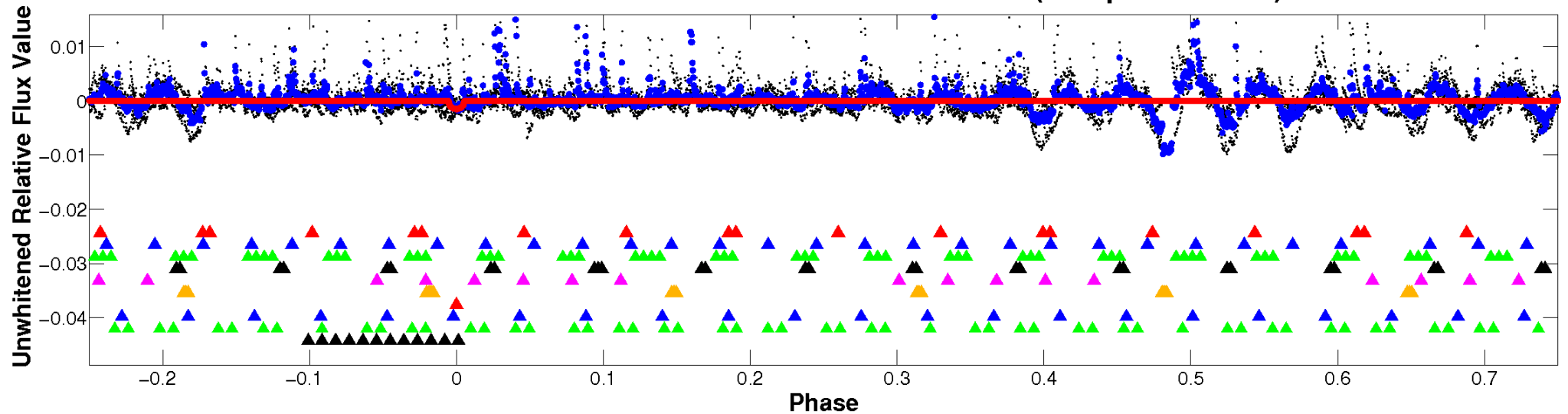
ALT Odd/Even

TCE 009650048-07

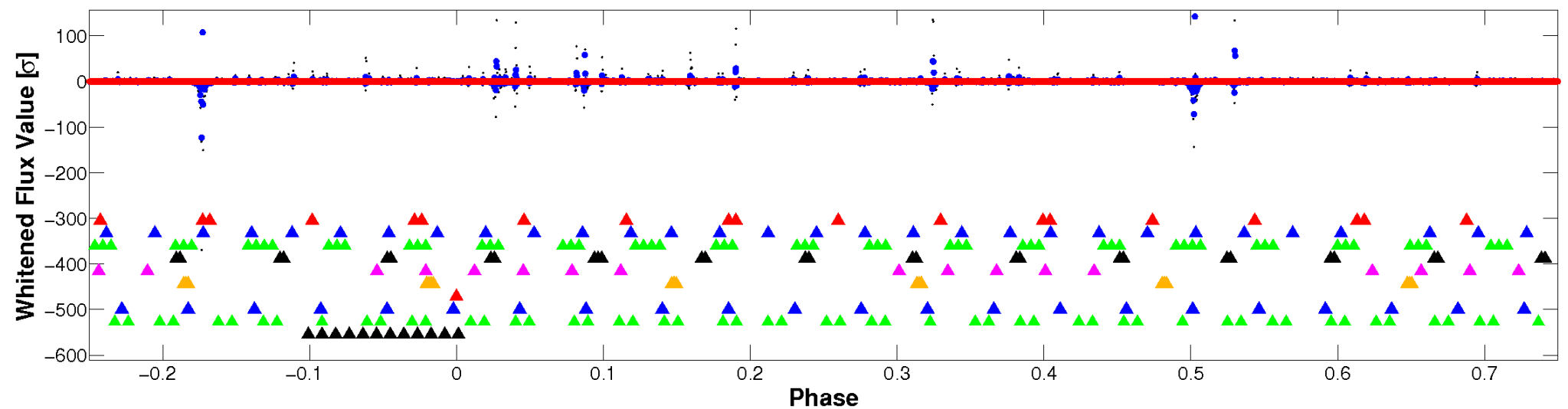


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

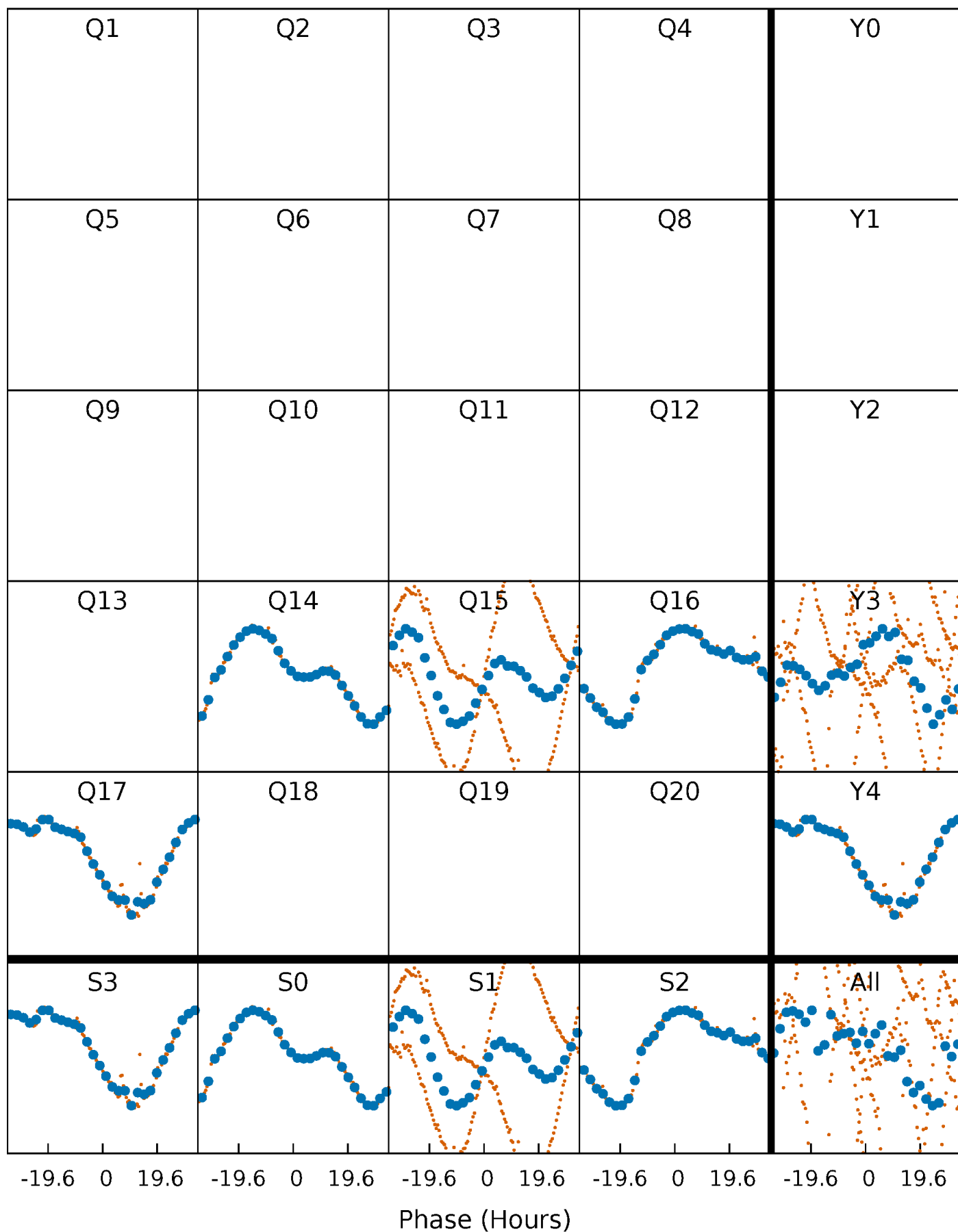


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



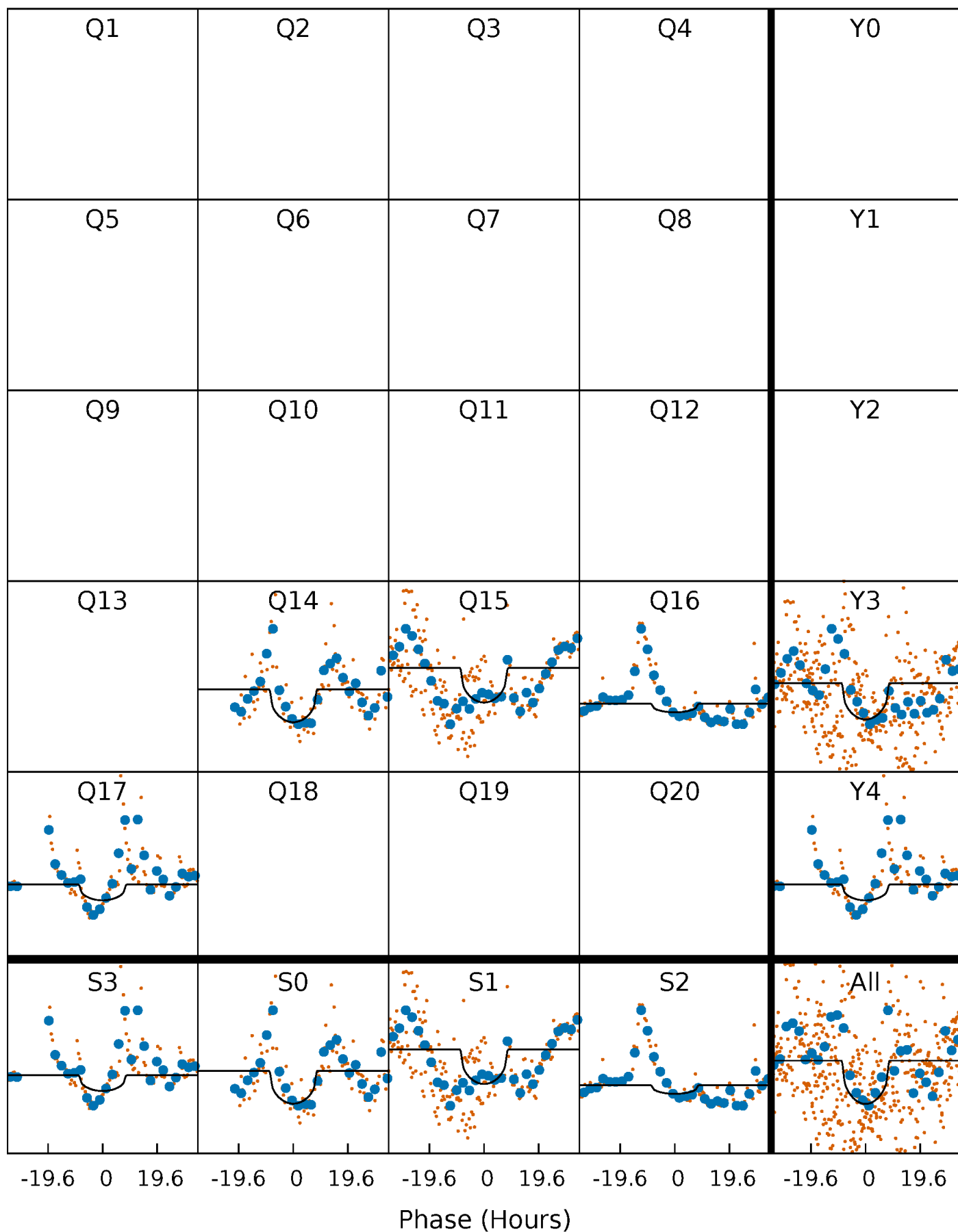
PDC Quarter-Phased Transit Curves

TCE 009650048-07 P= 65.506849 Days $T_0=136.684124$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 009650048-07 P= 65.506849 Days $T_0=136.684124$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

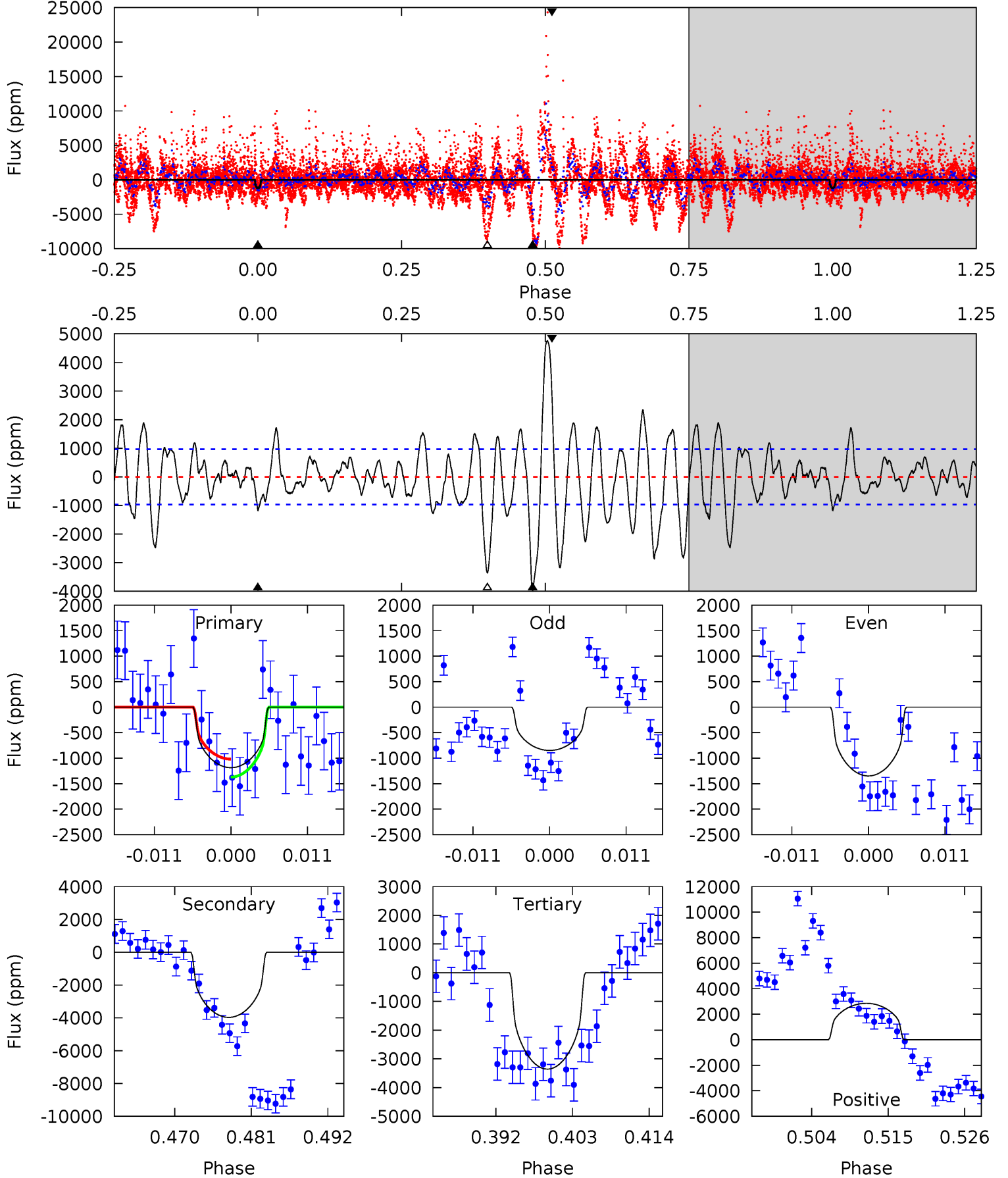
TCE 009650048-07 $P = 65.491306$ Days $T_0 = 136.844339$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-07, P = 65.506849 Days, E = 136.684124 Days

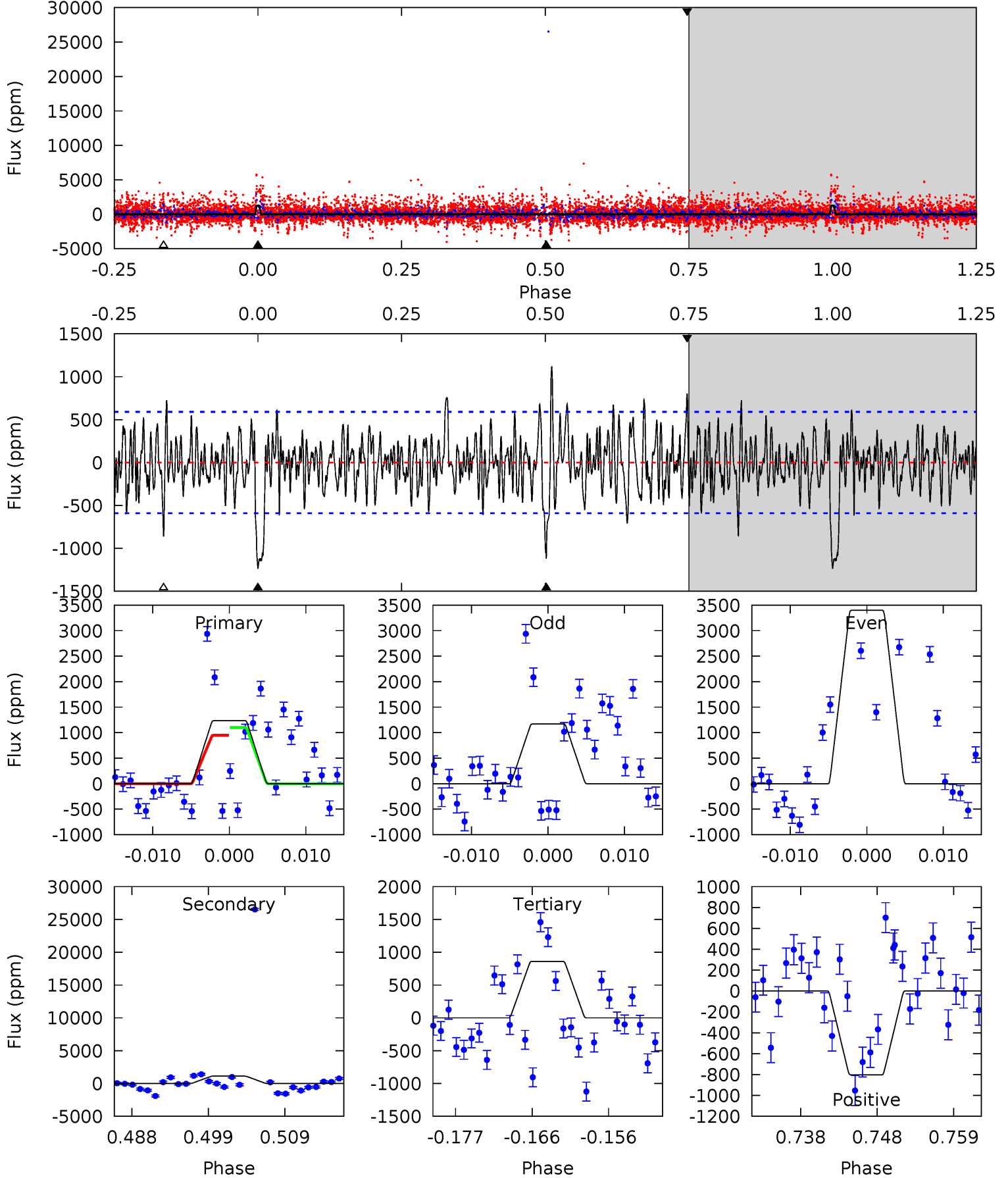
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.14	20.5	17.4	14.8	5.00	2.54	5.79	-11.2	-8.63	3.17	5.77	0.77	1.23	0.55	0.93



Alt Model-Shift Uniqueness Test

009650048-07, P = 65.491306 Days, E = 136.844339 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	9.51	7.31	6.83	5.02	2.56	2.13	3.19	3.67	2.20	2.68	11.7	12.6	0.48	0.66



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3970 ± 193	$667.06^{+387.30}_{-318.74}$	4007^{+248}_{-346}	3826^{+1335}_{-801}	$1.097^{+2.909}_{-0.641}$
Alt.	-1119 ± 118	$1167.26^{+409.14}_{-360.73}$	3986^{+261}_{-328}	-3099^{+381}_{-206}	$0.101^{+0.100}_{-0.045}$

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

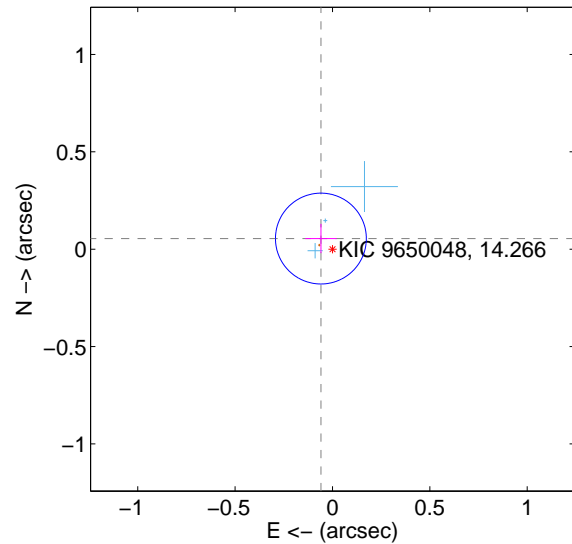
Supplemental centroid analysis for 009650048-07. Kepler magnitude: 14.27. Transit SNR 4.38

There are 3 quarters with good PRF difference image offsets

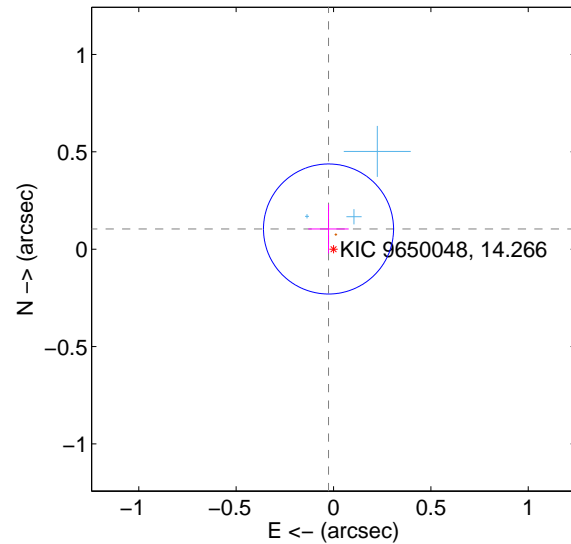
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.081 ± 0.078	1.04	0.059 ± 0.080	0.054 ± 0.075
PRF-fit source offset from KIC position	0.107 ± 0.111	0.96	0.026 ± 0.104	0.104 ± 0.126
photometric centroid source offset	0.14 ± 0.30	0.47	0.11 ± 0.31	0.09 ± 0.28

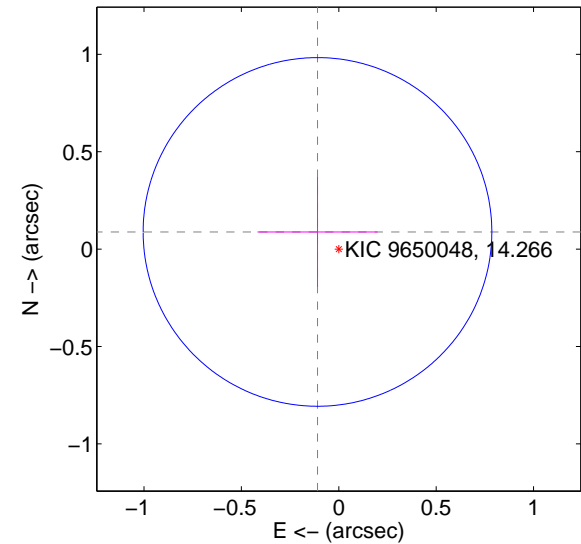
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

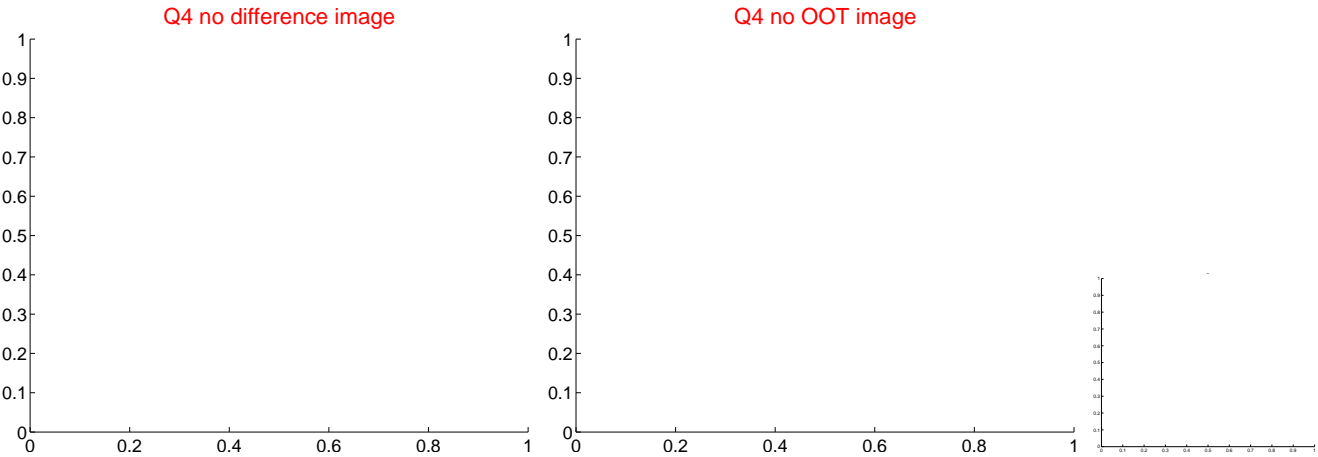
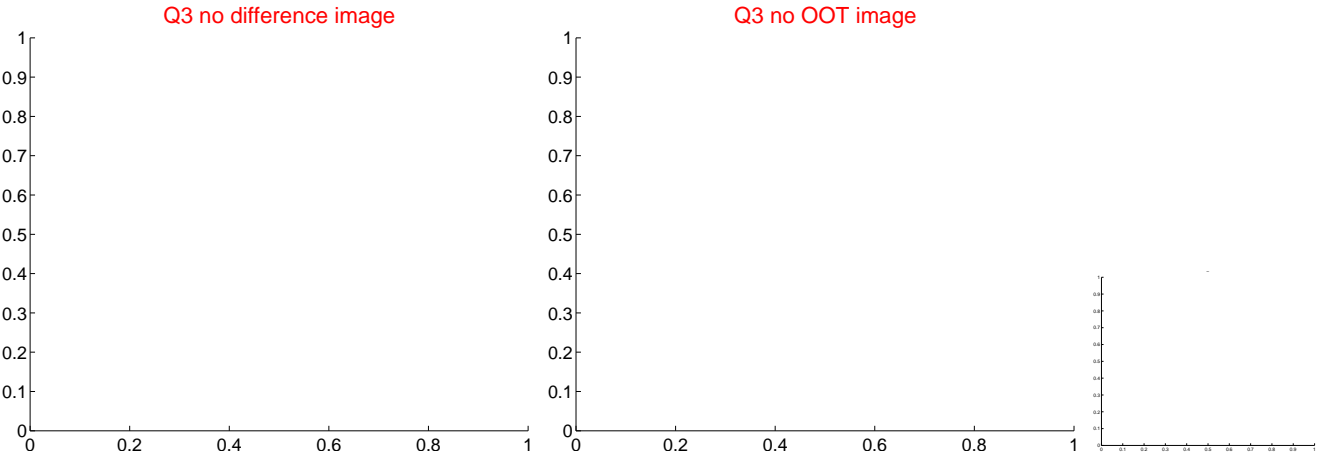
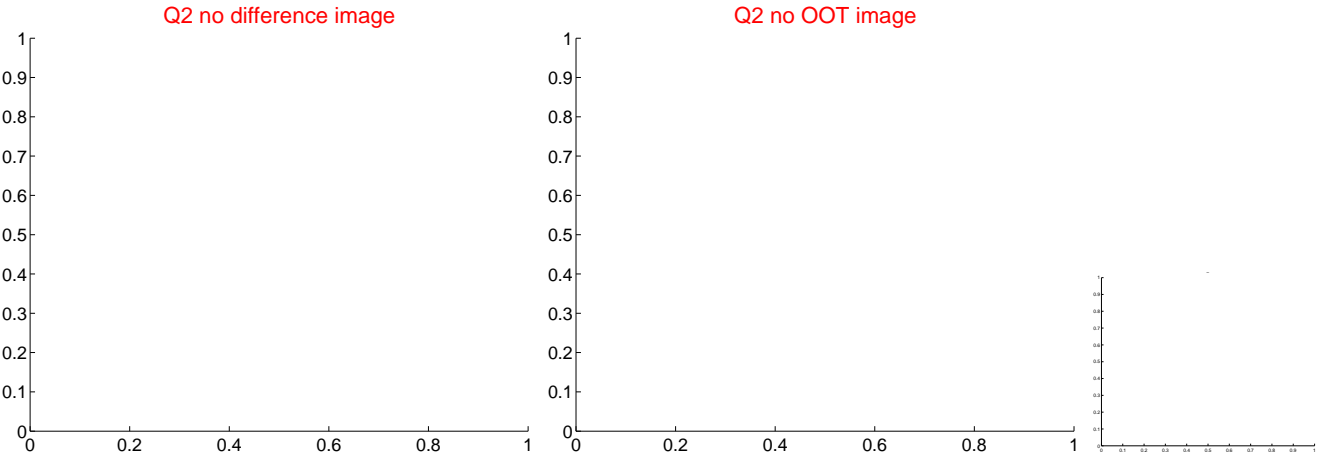
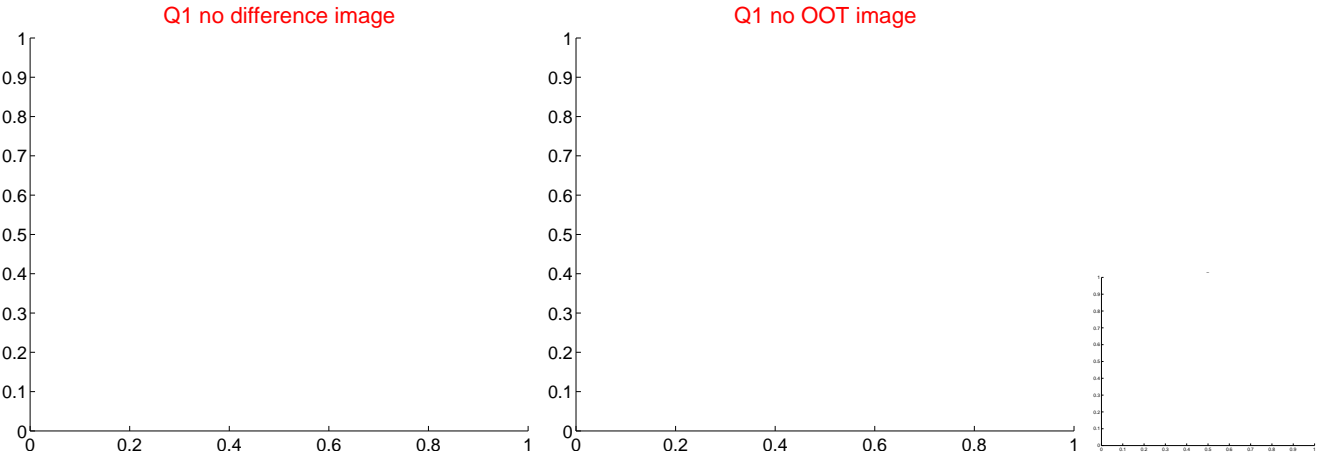


offset from photometric centroids



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.

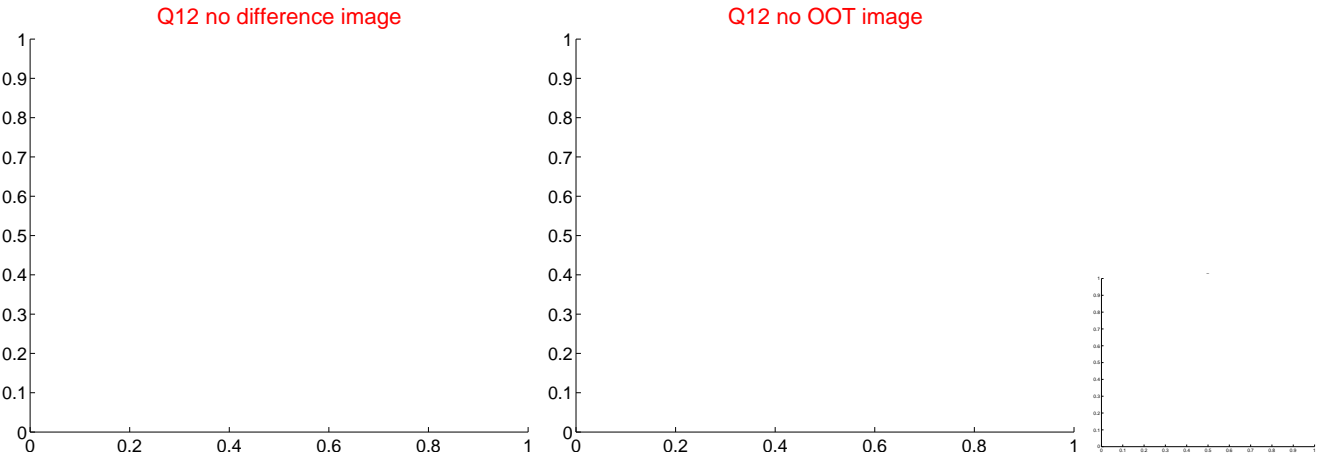
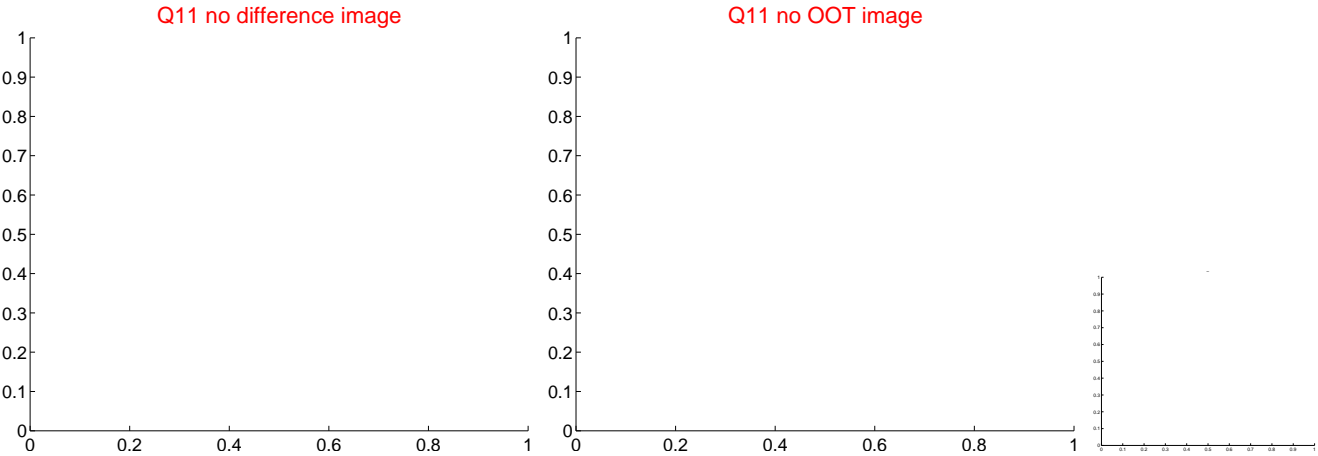
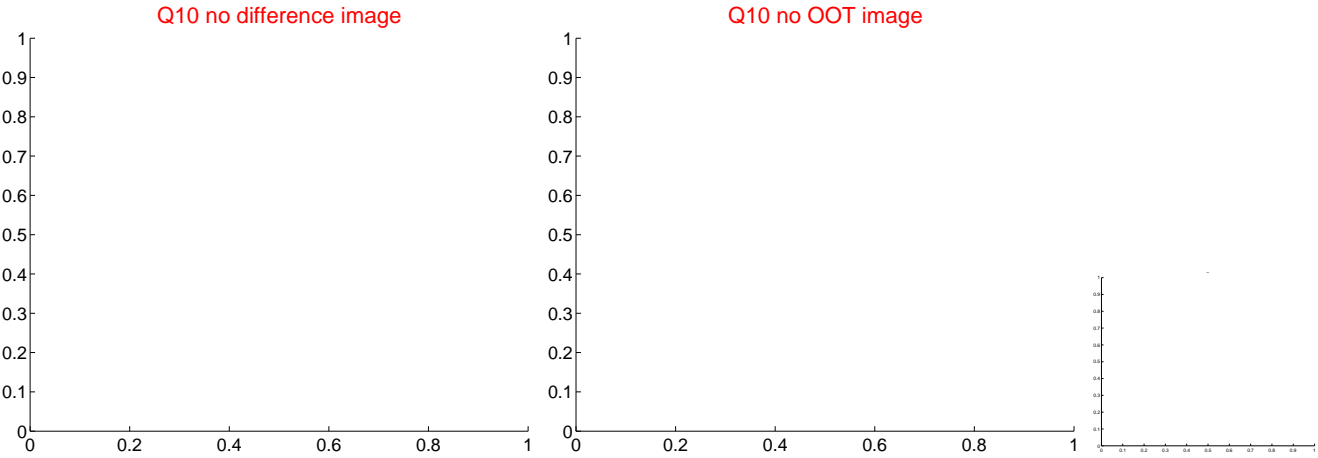
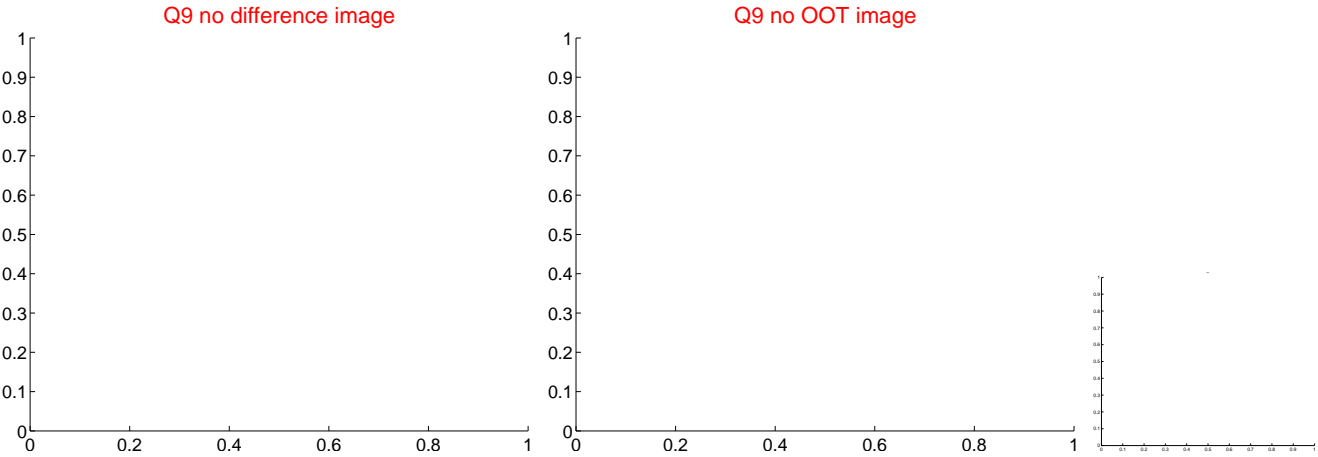
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



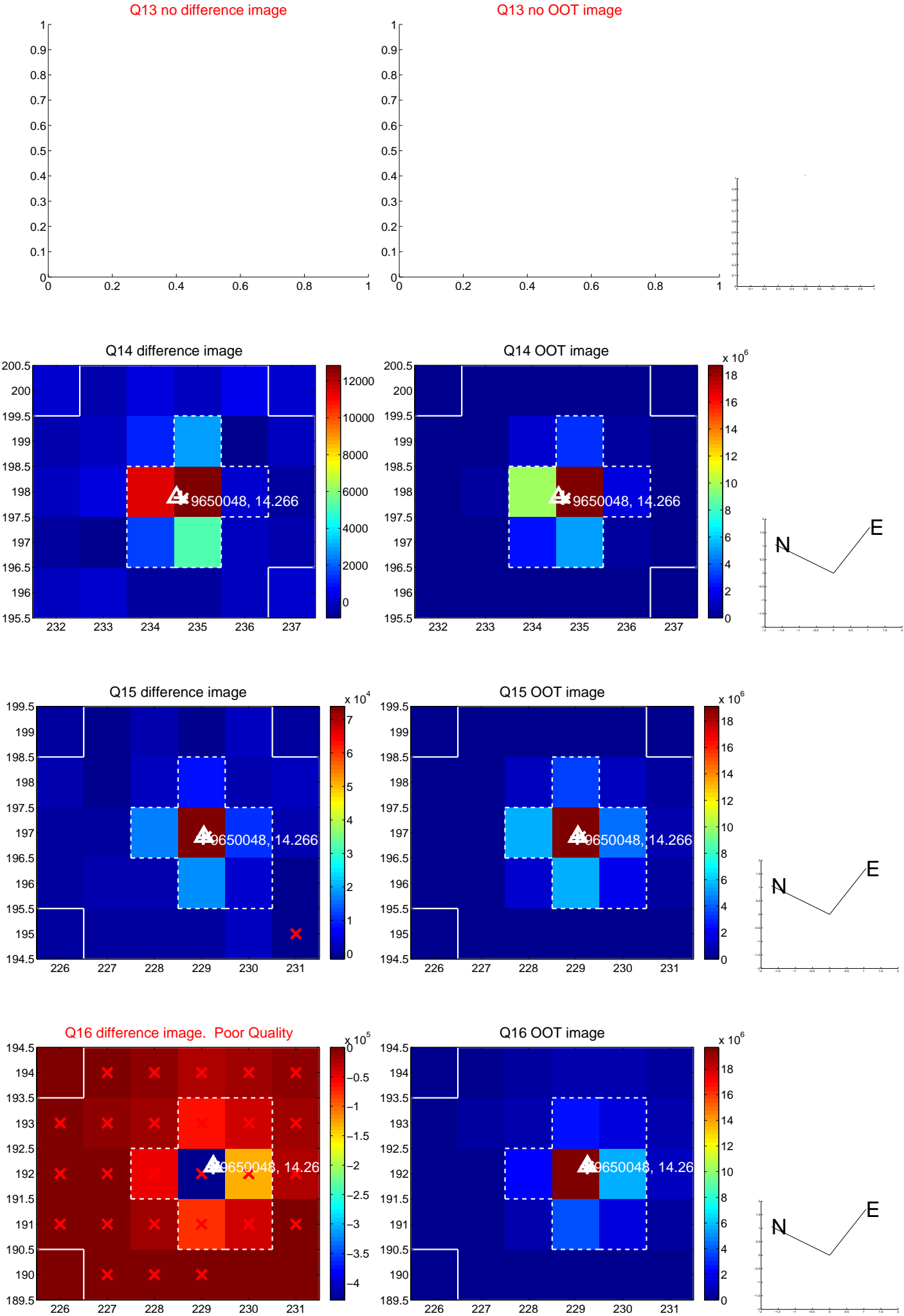
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



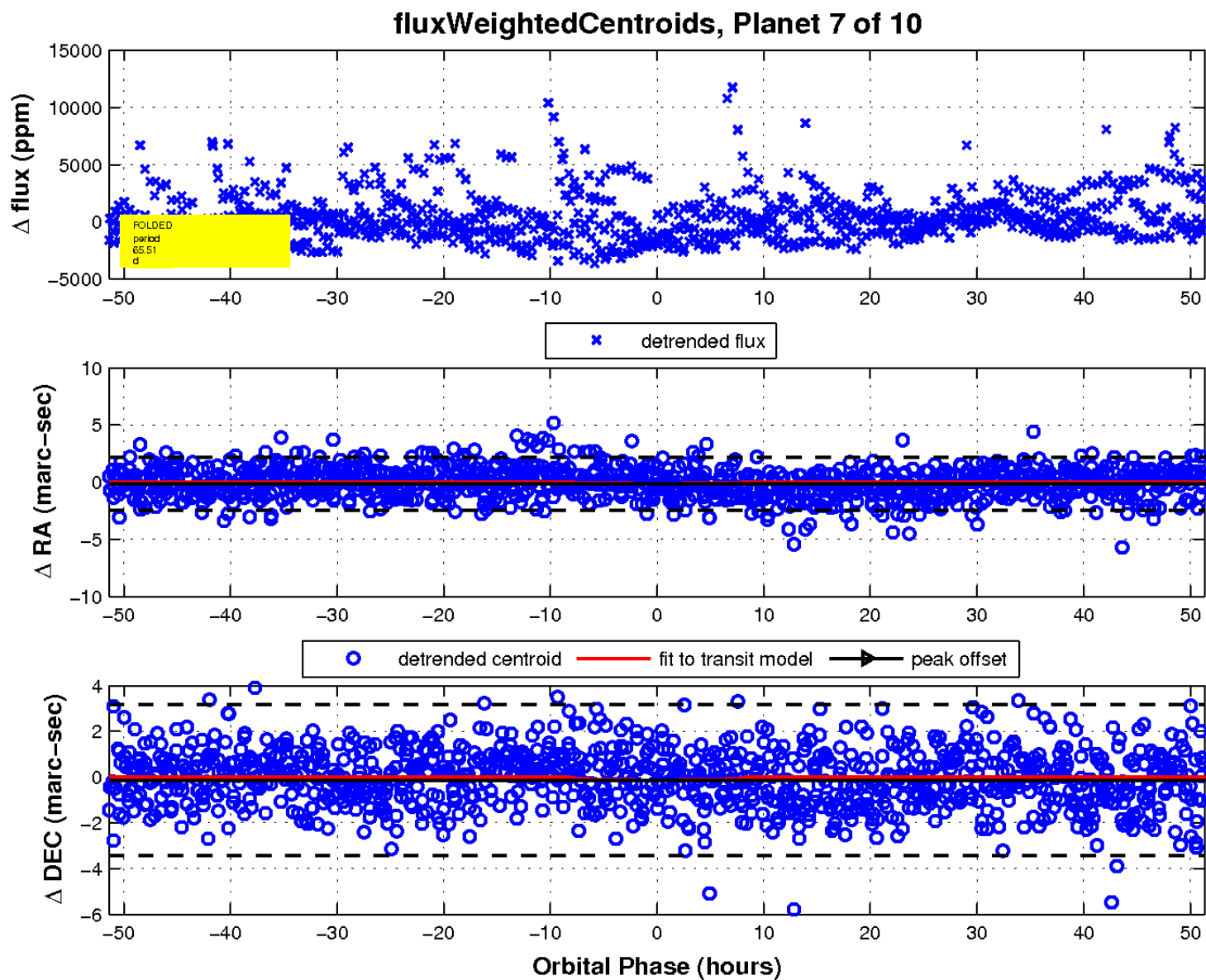
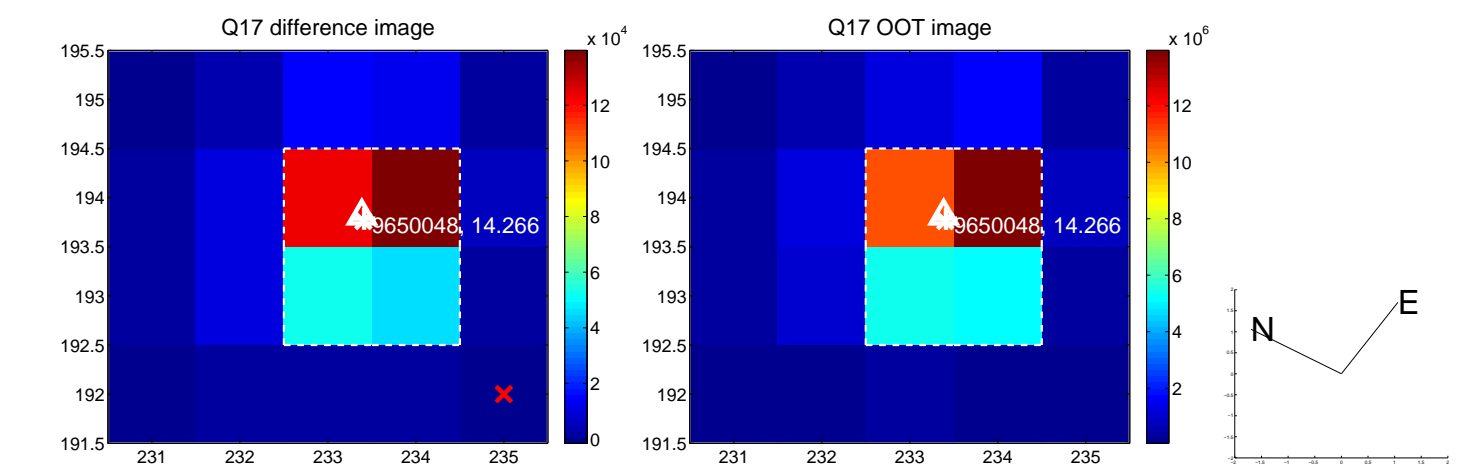
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

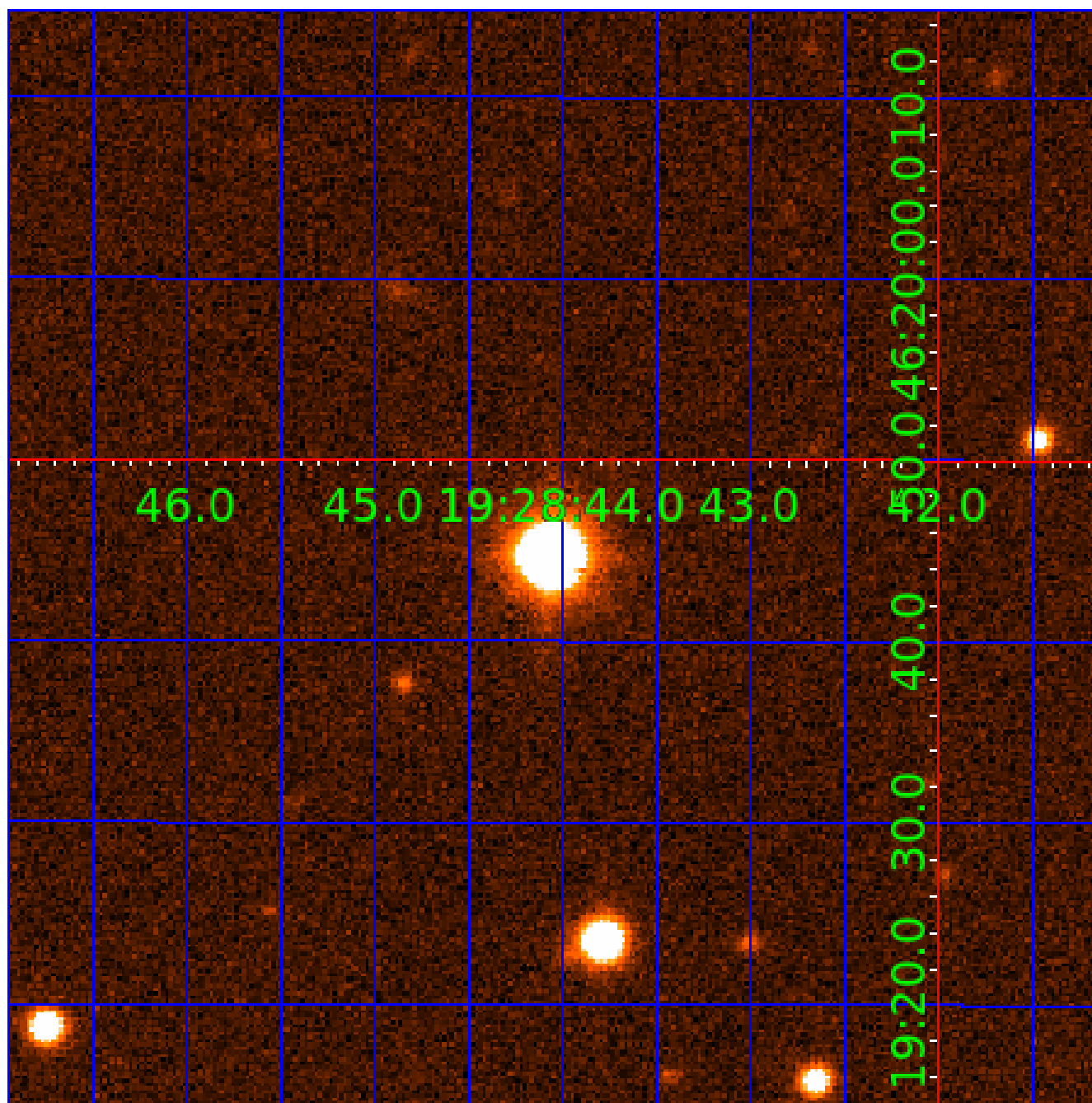


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009650048-01	OBS	No	79.521238	135.132830	1426.8	8.314	13.9	3.2	172.45	3420	596.87	0.00
009650048-02	OBS	No	48.590399	161.382228	1712.0	6.008	12.7	5.2	172.45	3420	897.18	0.00
009650048-03	OBS	No	24.115052	145.753117	2221.7	17.763	9.9	7.0	172.45	3420	1117.14	0.00
009650048-04	OBS	No	51.481188	142.840114	1946.8	2.720	15.5	5.7	172.45	3420	874.61	0.00
009650048-05	OBS	No	86.617464	188.411391	195.5	6.848	11.3	0.5	172.45	3420	298.28	0.00
009650048-06	OBS	No	76.441075	200.861693	3467.7	3.505	11.3	8.1	172.45	3420	1253.74	0.00
009650048-07	OBS	No	65.506849	136.684124	1497.1	17.131	10.7	4.4	172.45	3420	691.84	0.00
009650048-08	OBS	No	68.464196	145.864858	4876.3	6.518	12.2	11.8	172.45	3420	1272.13	0.00
009650048-09	OBS	No	27.127219	145.955115	1498.1	9.143	11.9	5.7	172.45	3420	1106.13	0.00
009650048-10	OBS	No	130.405347	136.770863	2040.2	5.061	11.5	6.2	172.45	3420	885.03	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650048-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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—CENT_FEW_DIFFS
009650048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES
009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-10	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST

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

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

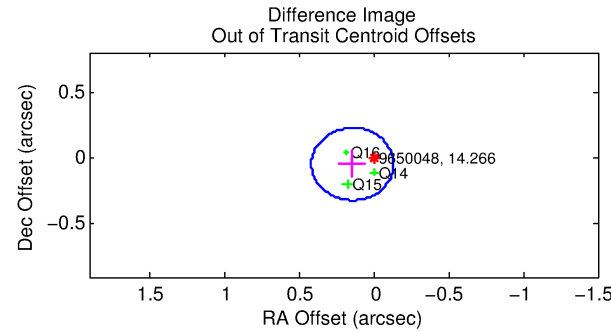
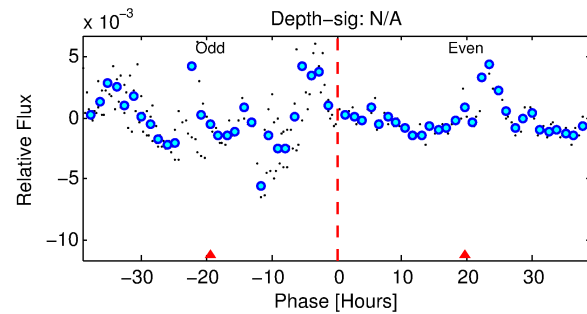
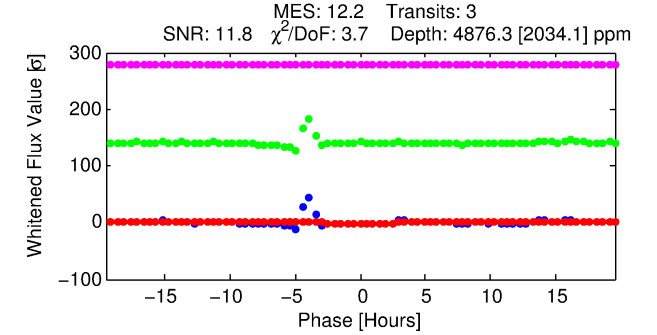
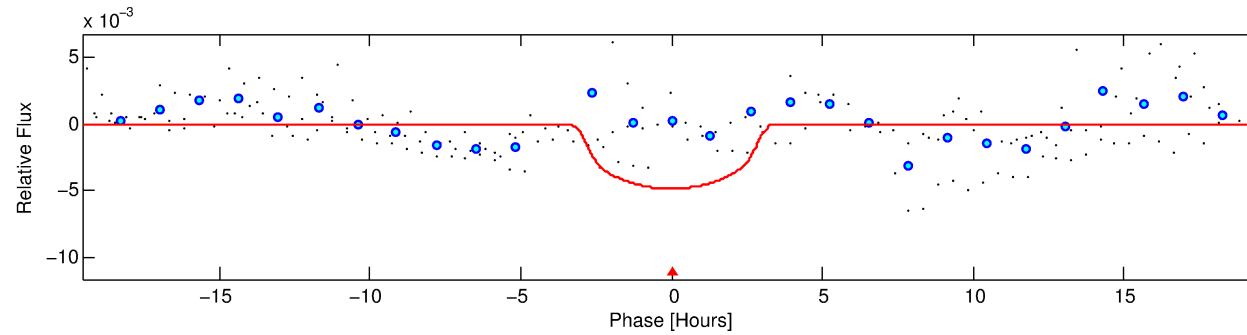
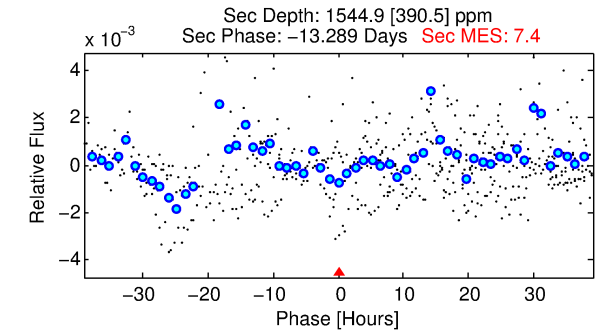
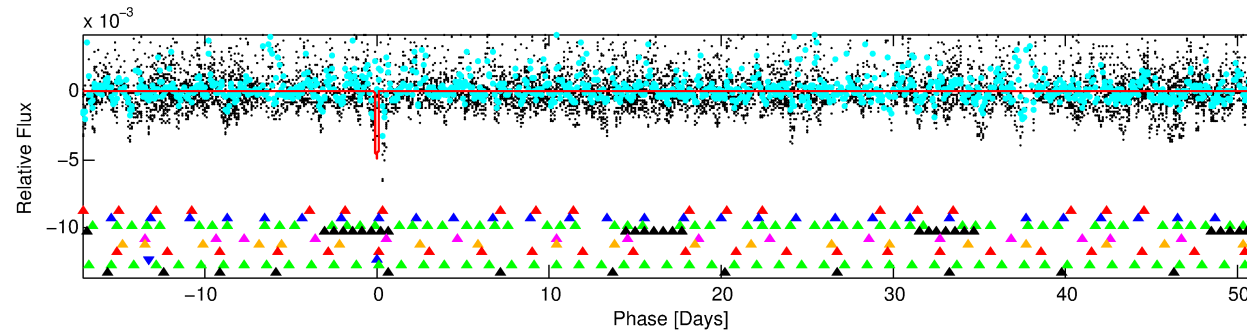
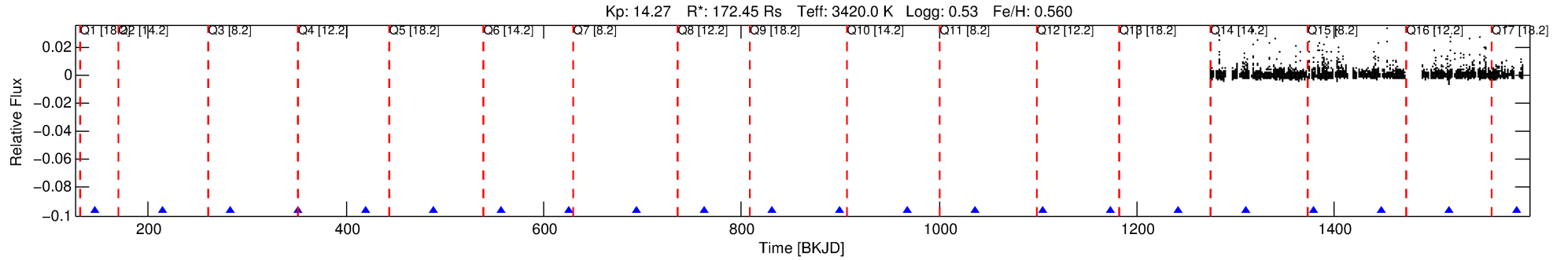
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009650048-08

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 8 of 10 Period: 68.464 d



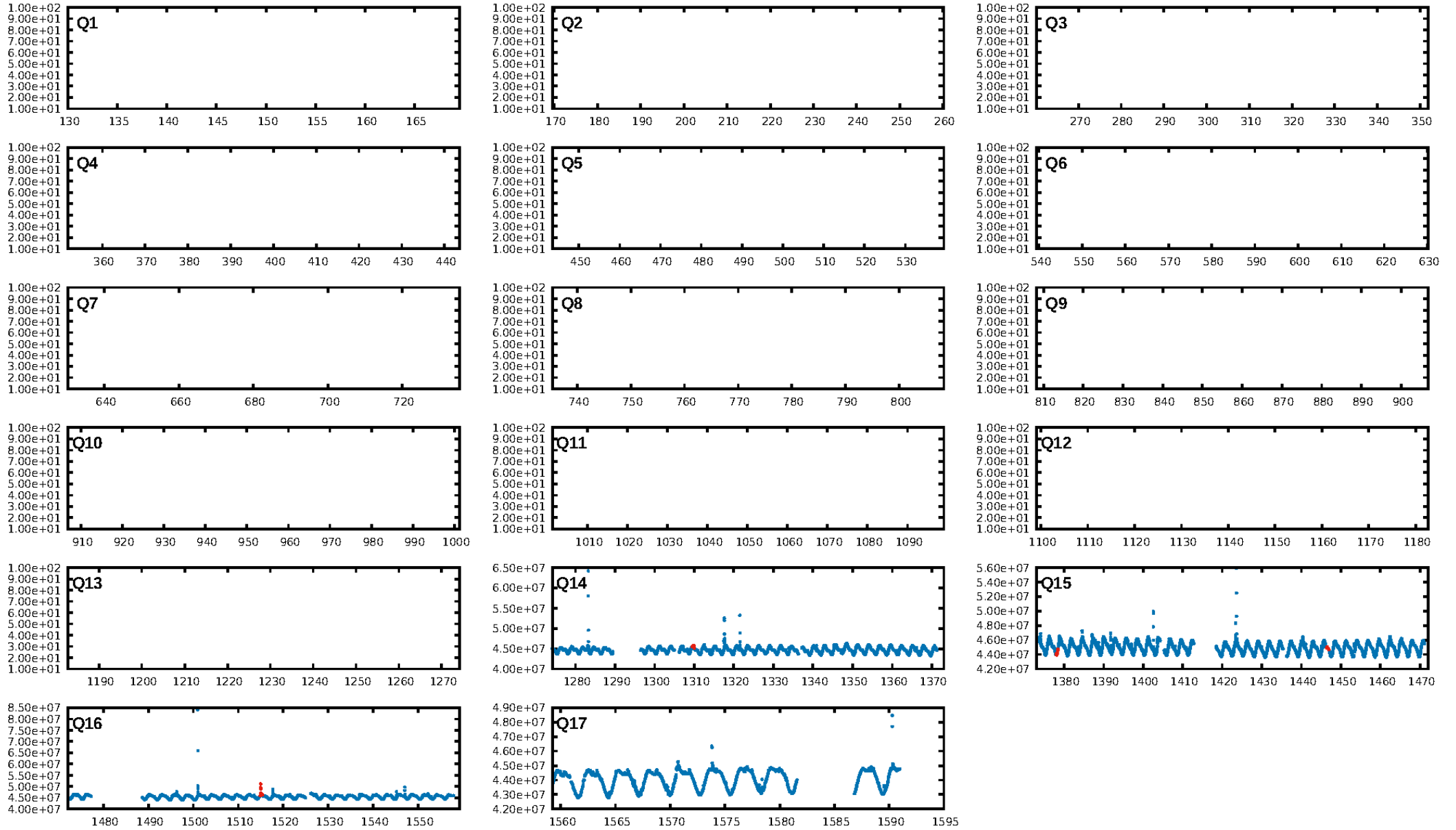
DV Fit Results:

Period = 68.46420 [0.01027] d
Epoch = 145.8649 [0.1933] BKJD
Rp/R* = 0.0676 [0.0786]
a/R* = 66.48 [174.07]
b = 0.67 [2.25]
Seff = N/A
Teq = N/A
Rp = 1272.13 [1639.52] Re
a = N/A
Ag = N/A
Teffp = N/A

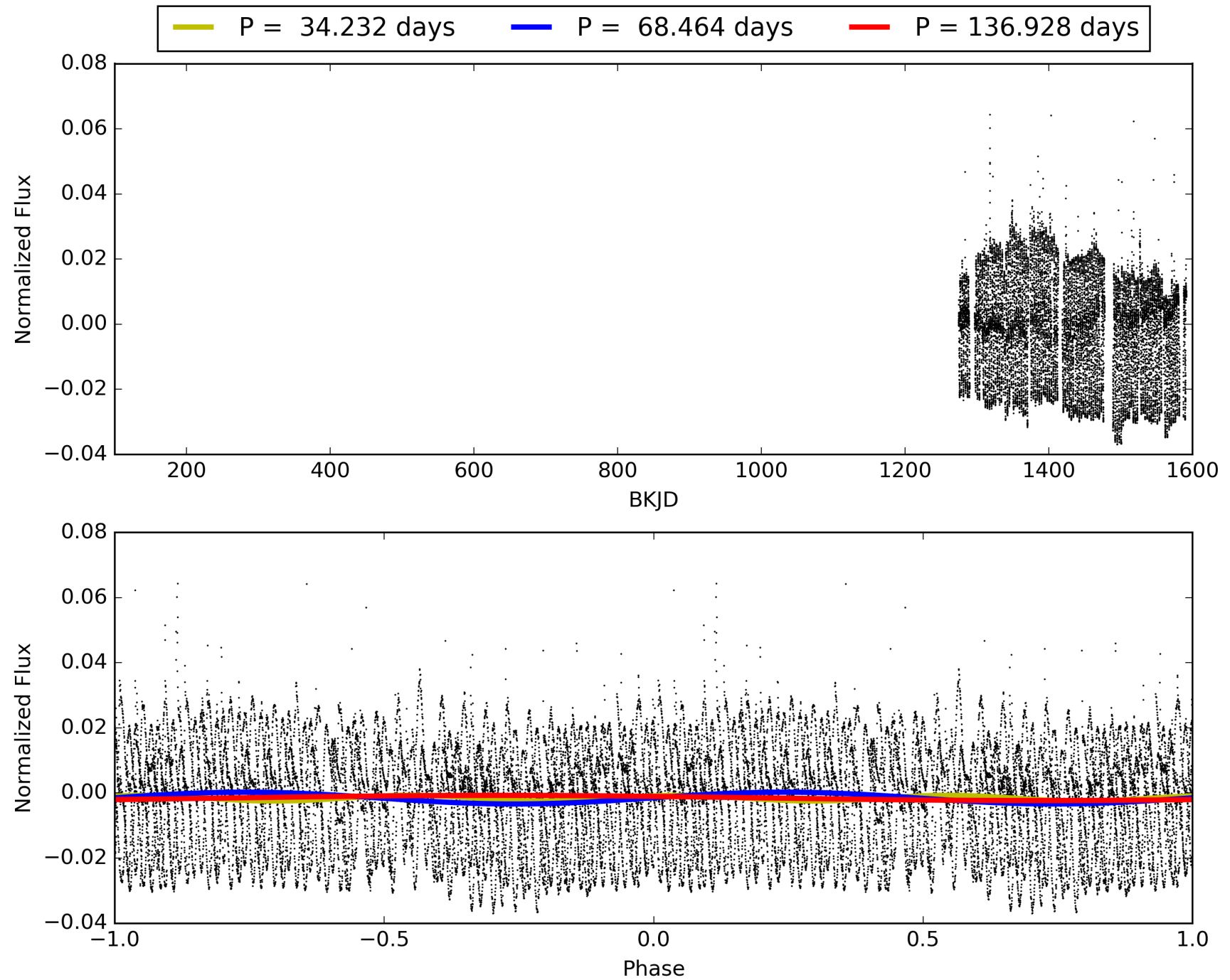
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.87 σ]
LongPeriod-sig: 100.0% [25.87 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 4.45e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3016
Centroid-sig: 59.3%
Centroid-so: 0.078 arcsec [0.54 σ]
OotOffset-rm: 0.148 arcsec [1.62 σ]
KicOffset-rm: 0.088 arcsec [1.16 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.67 [2/3]

TCE 009650048-08, PDC Light Curves

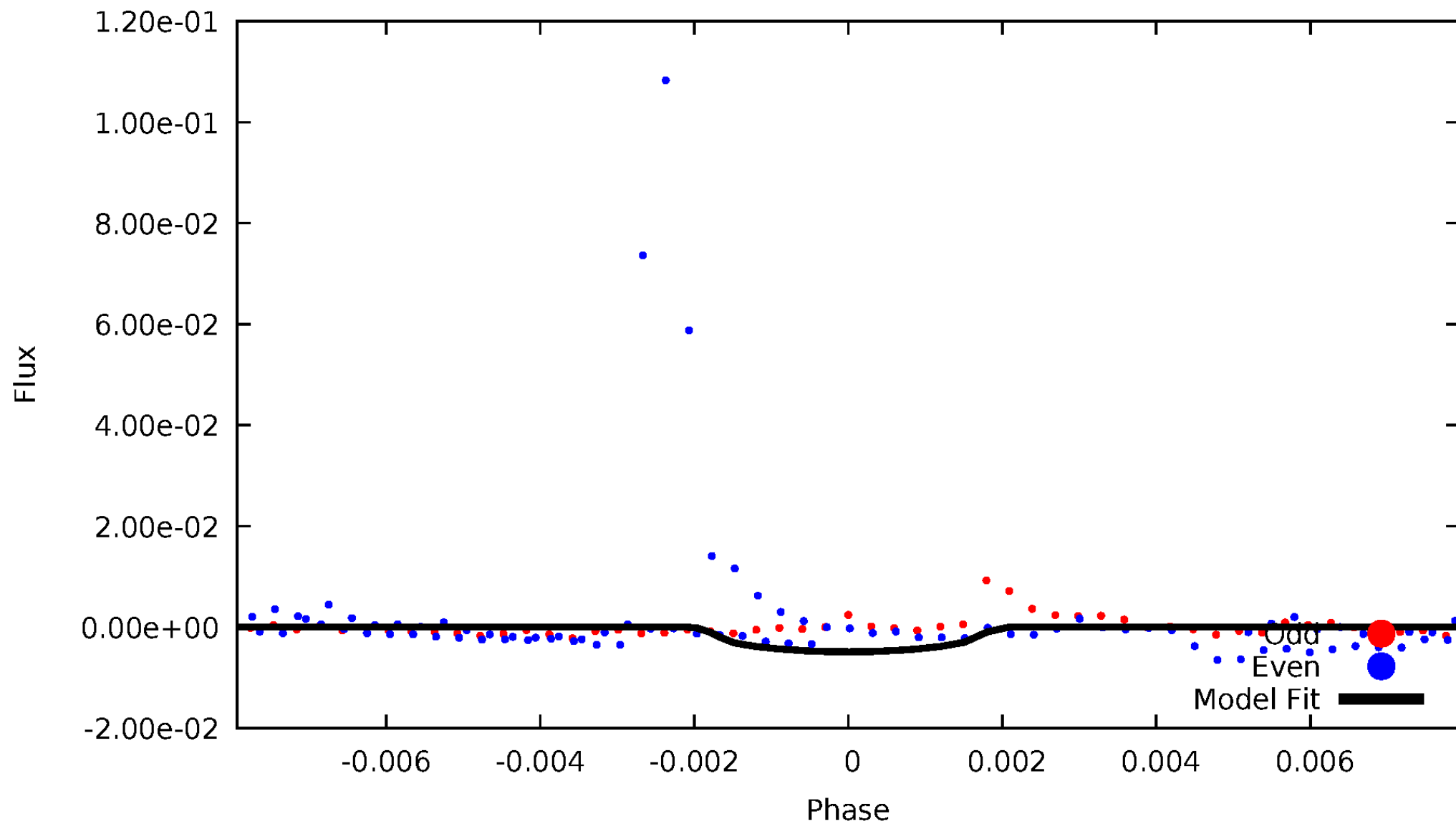


TCE 009650048-08



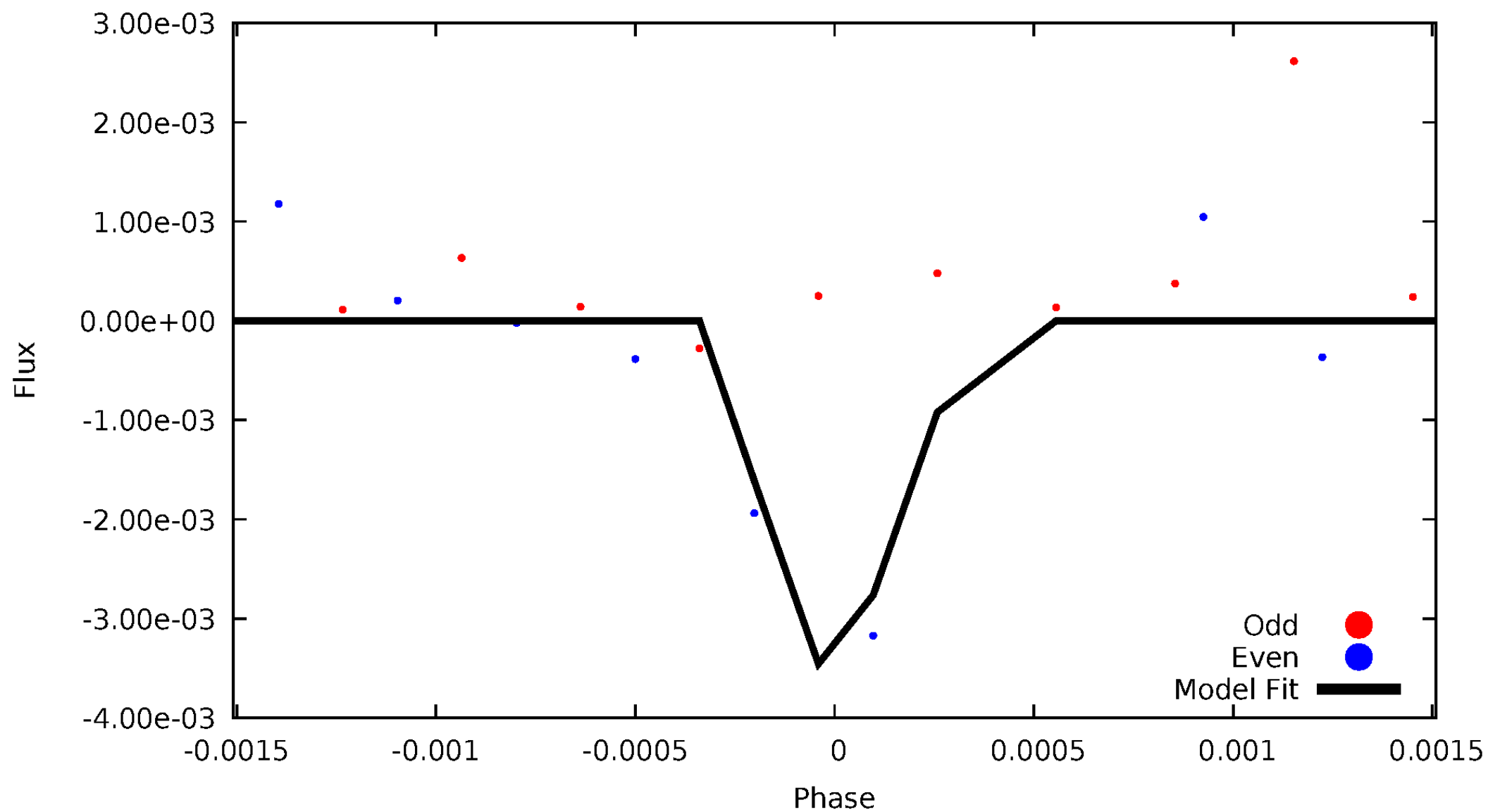
DV Odd/Even

TCE 009650048-08



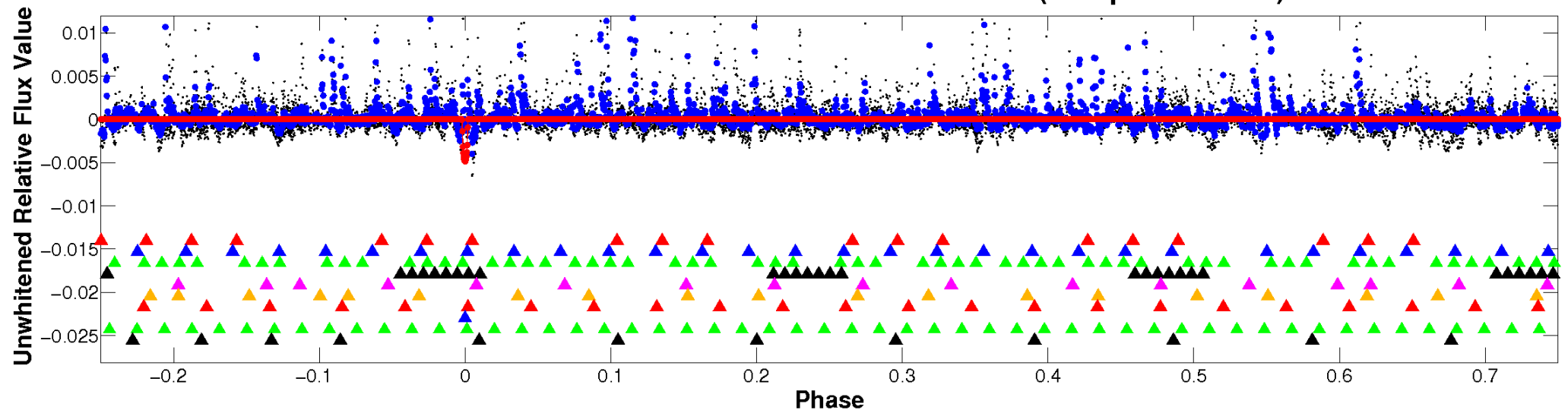
ALT Odd/Even

TCE 009650048-08

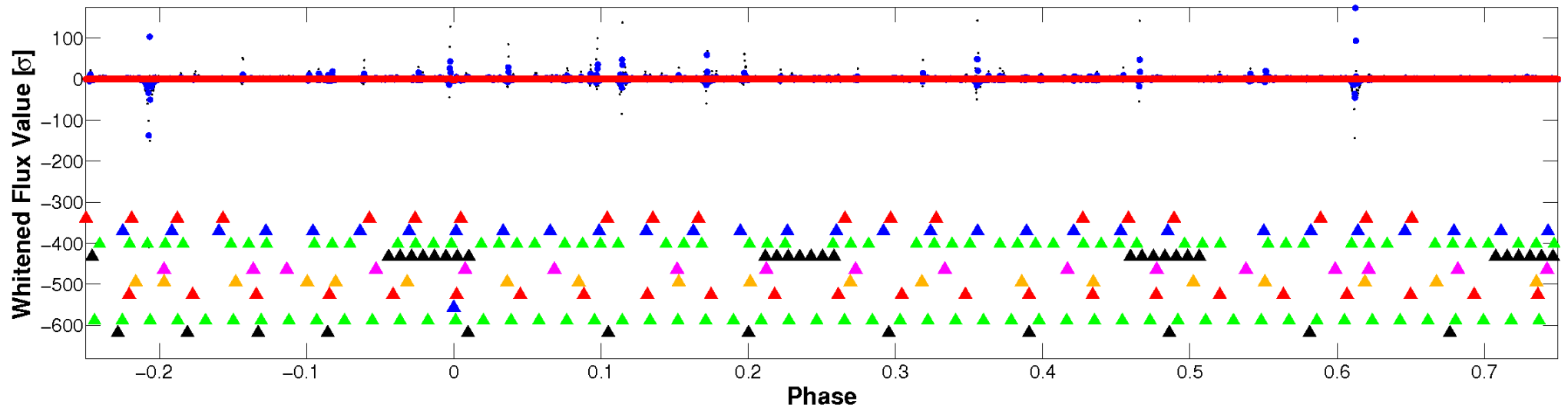


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



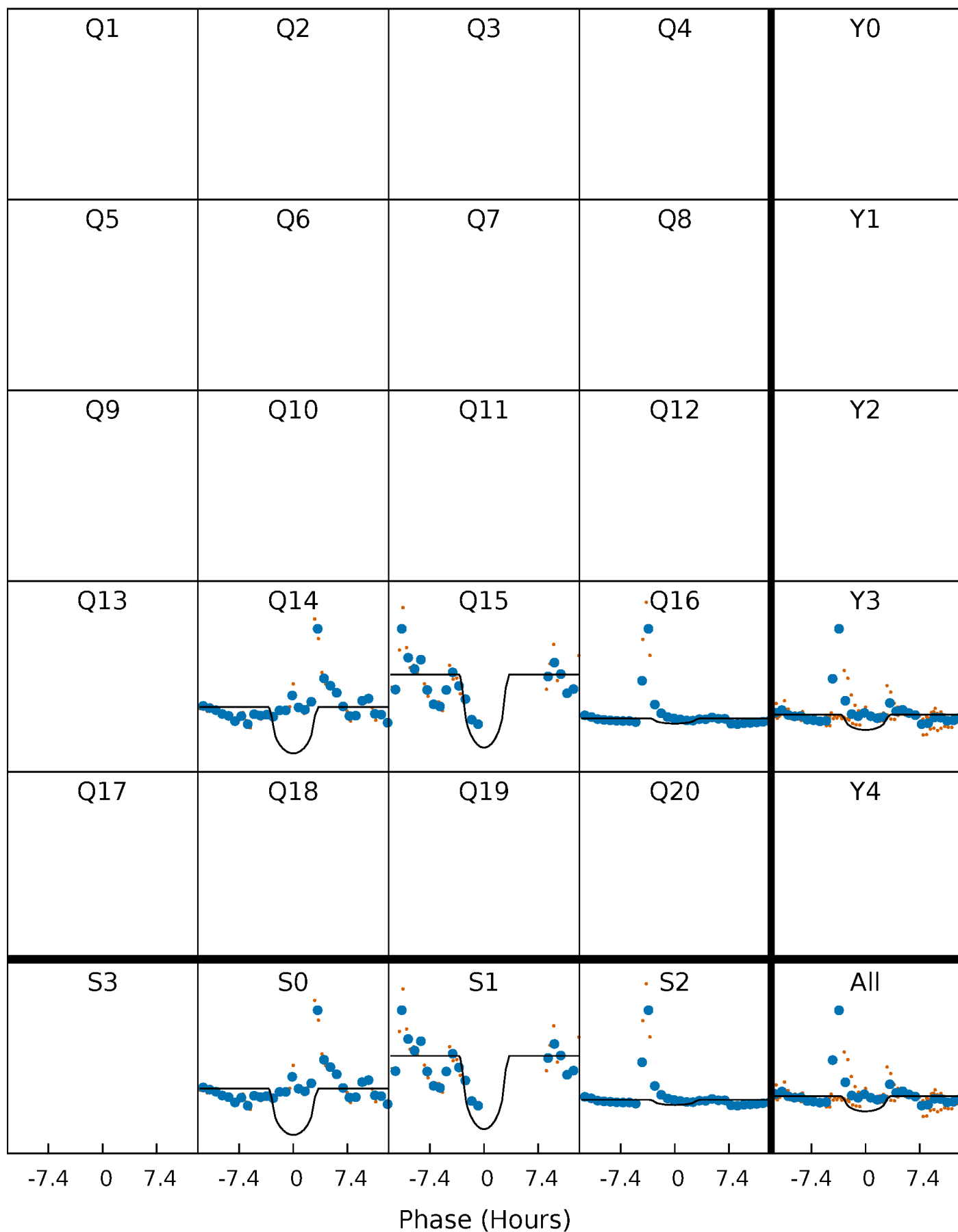
PDC Quarter-Phased Transit Curves

TCE 009650048-08 P= 68.464196 Days $T_0=145.864858$ (BKJD)



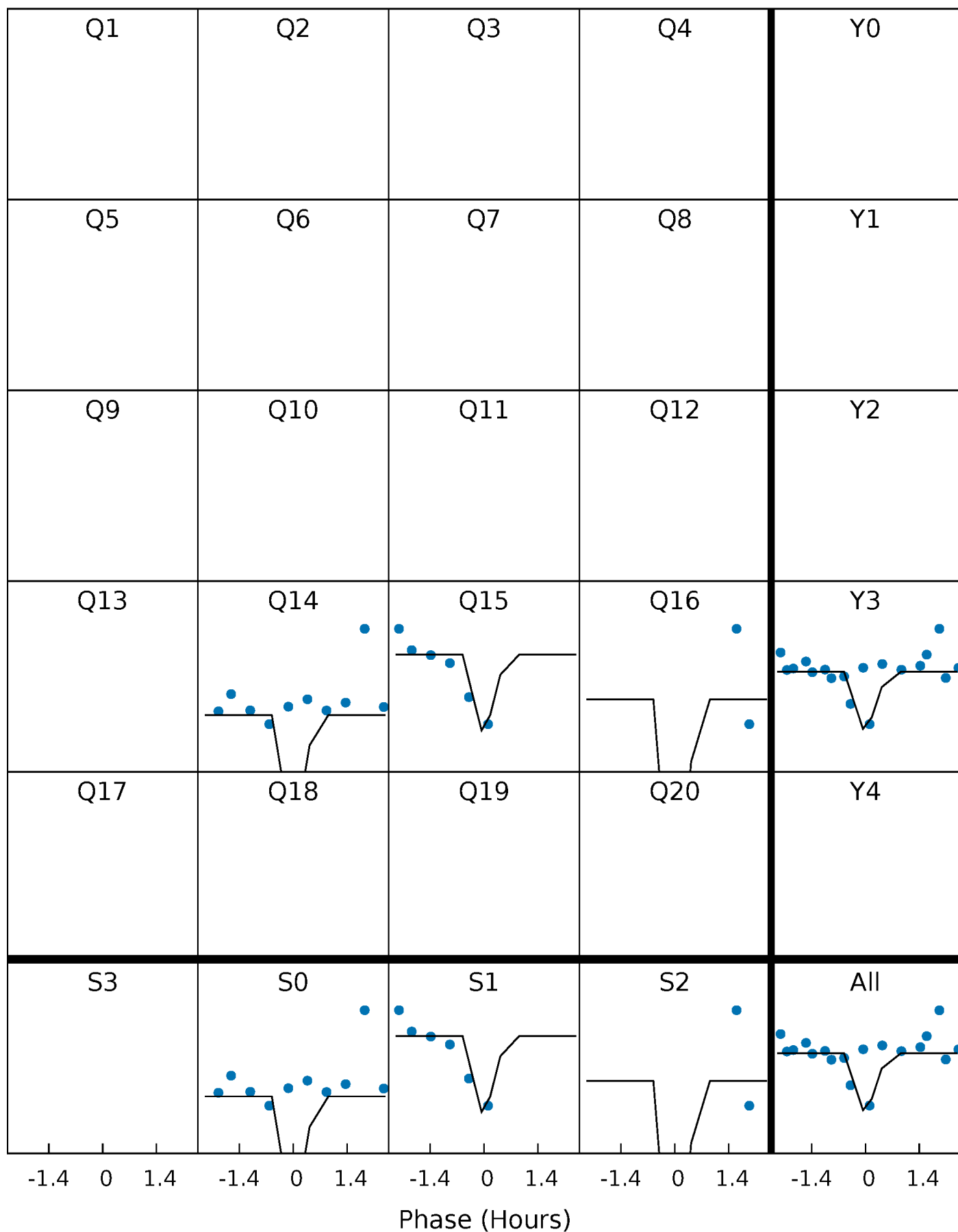
DV Quarter-Phased Transit Curves

TCE 009650048-08 P= 68.464196 Days $T_0=145.864858$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

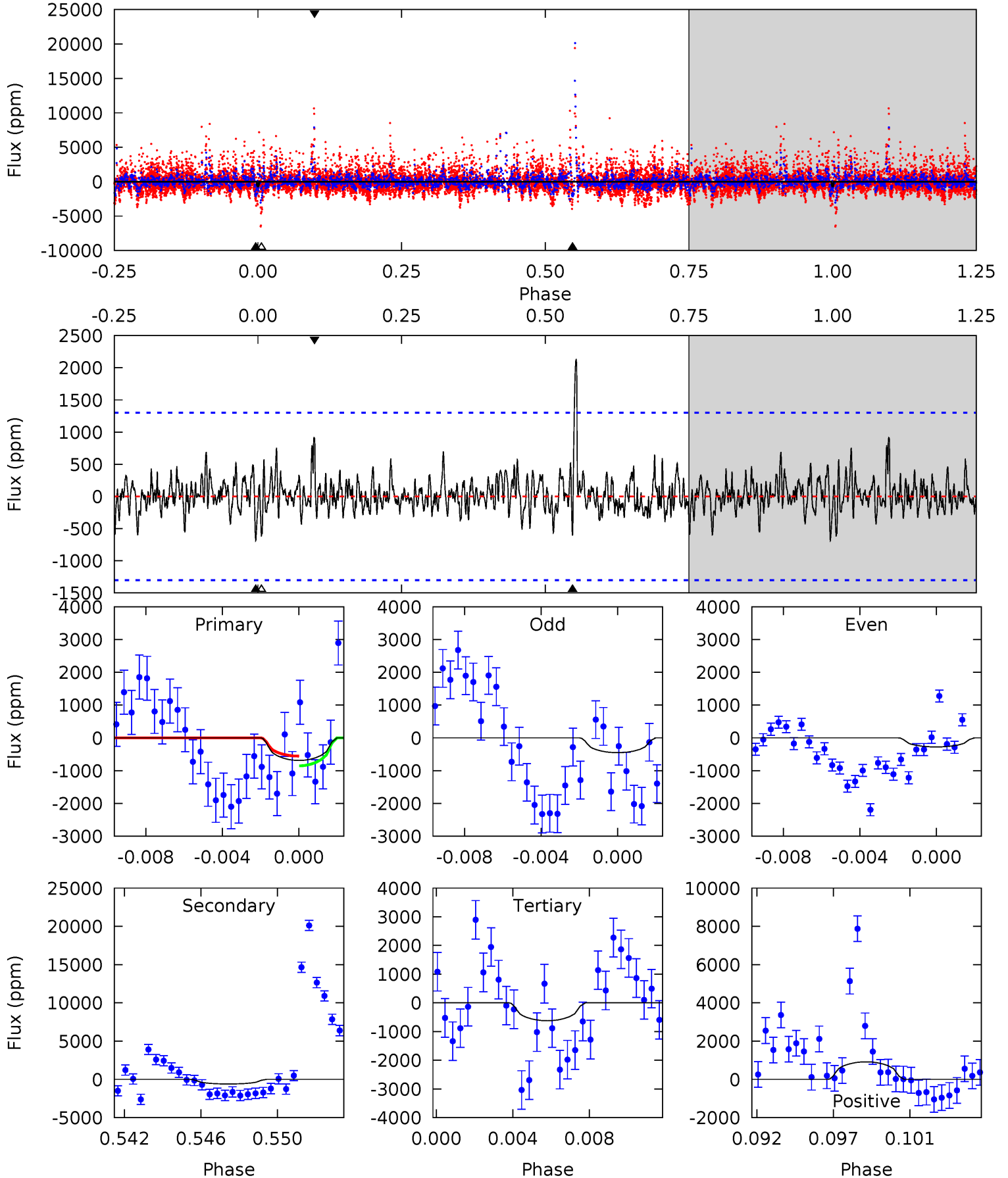
TCE 009650048-08 P= 68.483477 Days $T_0=145.458065$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-08, P = 68.464196 Days, E = 145.864858 Days

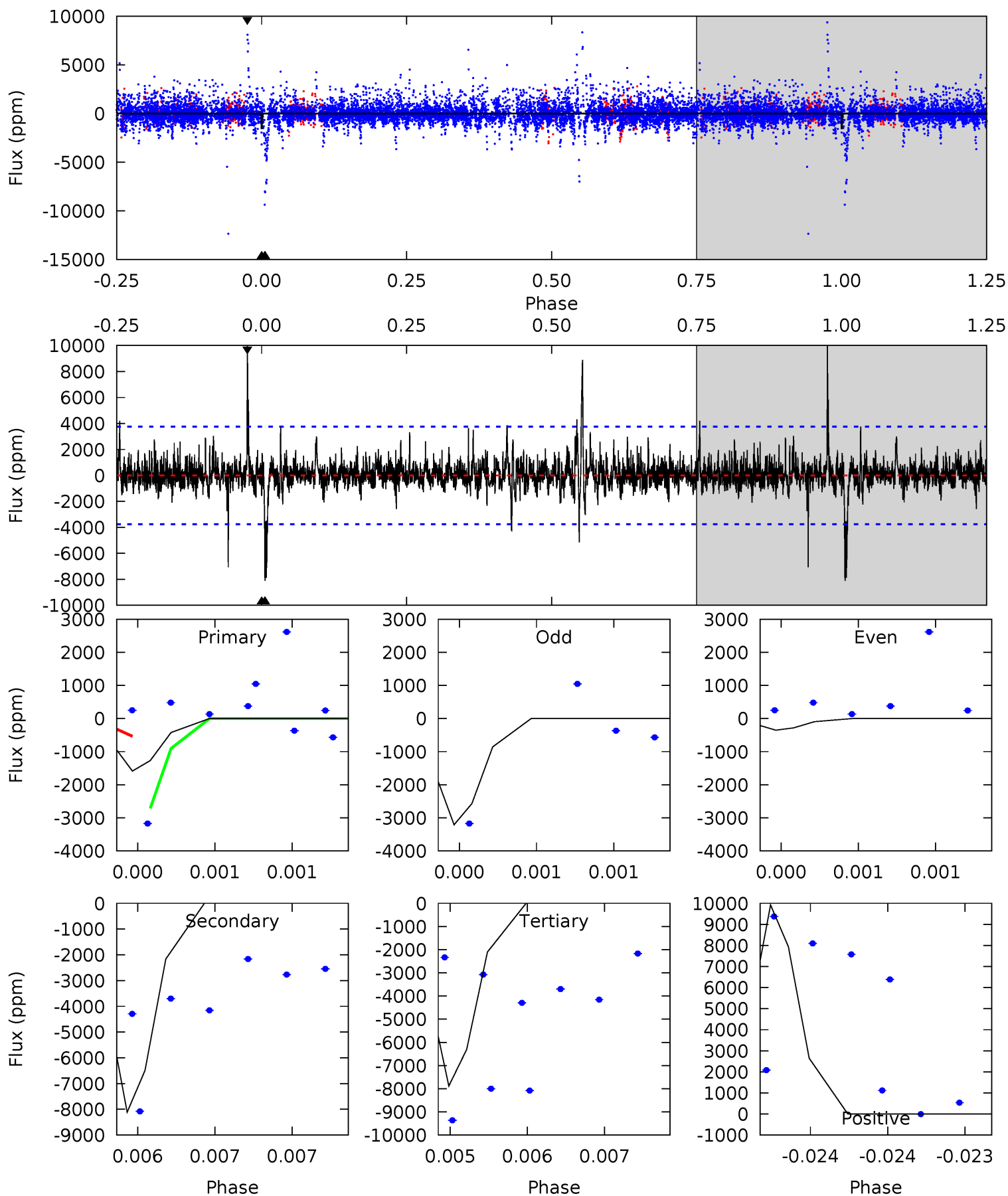
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.75	2.42	2.49	3.66	5.19	2.86	0.87	0.27	-0.91	-0.06	-1.24	0.27	-1.82	0.76	0.61



Alt Model-Shift Uniqueness Test

009650048-08, P = 68.483477 Days, E = 145.458065 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.34	12.0	11.6	14.6	5.54	3.43	1.24	-9.28	-12.3	0.34	-2.67	1.61	1.00	0.55	0.00



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-608 ± 251	$1530.51^{+1385.06}_{-975.89}$	3941^{+250}_{-386}	-3174^{+573}_{-222}	$0.030^{+0.201}_{-0.022}$
Alt.	-8111 ± 678	$1491.06^{+1255.32}_{-984.53}$	3947^{+242}_{-352}	2996^{+2069}_{-5981}	$0.467^{+3.493}_{-0.328}$

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 $A_{obs} \gg 1.0$

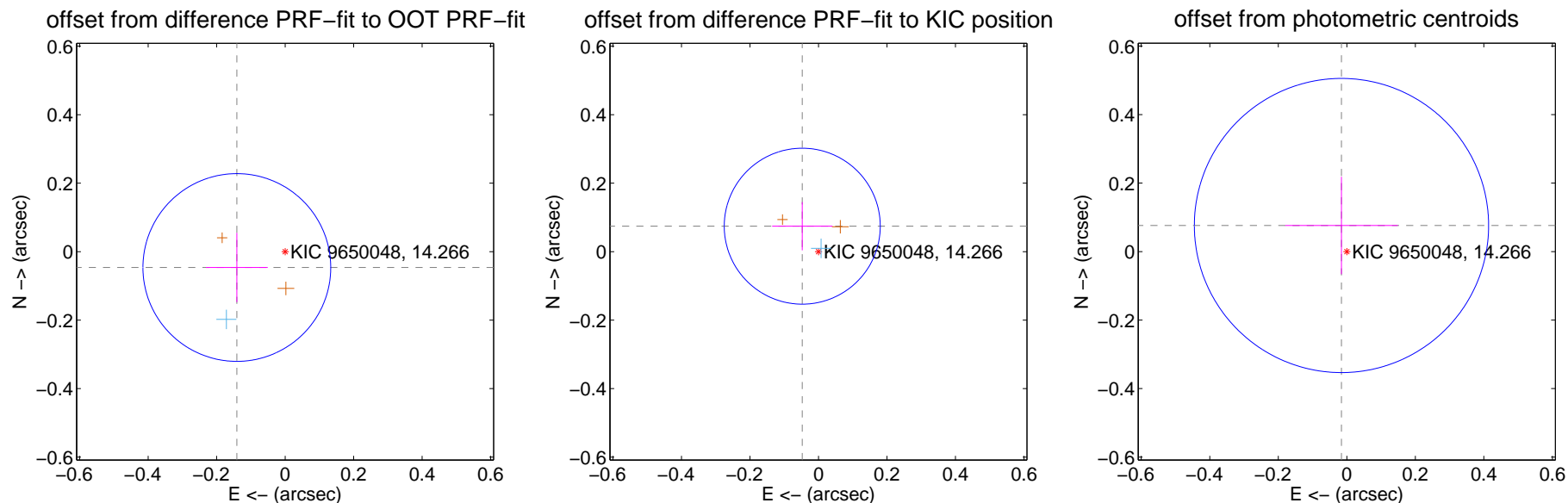
DV Centroid Data

Supplemental centroid analysis for 009650048-08. Kepler magnitude: 14.27. Transit SNR 11.84

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.148 ± 0.091	1.62	0.141 ± 0.090	-0.046 ± 0.101
PRF-fit source offset from KIC position	0.088 ± 0.076	1.16	0.047 ± 0.088	0.074 ± 0.070
photometric centroid source offset	0.08 ± 0.14	0.54	0.02 ± 0.16	0.08 ± 0.14



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.



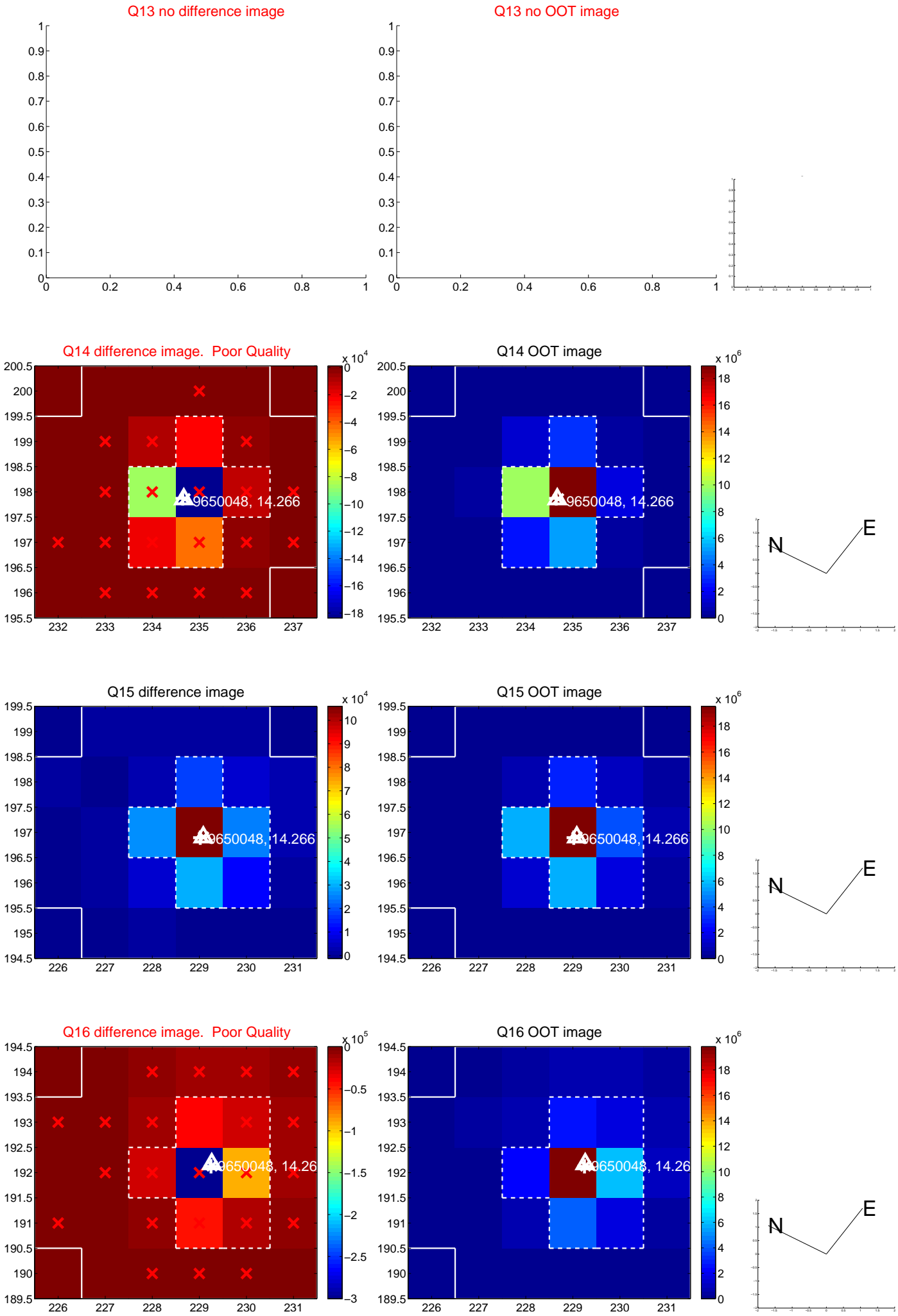
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



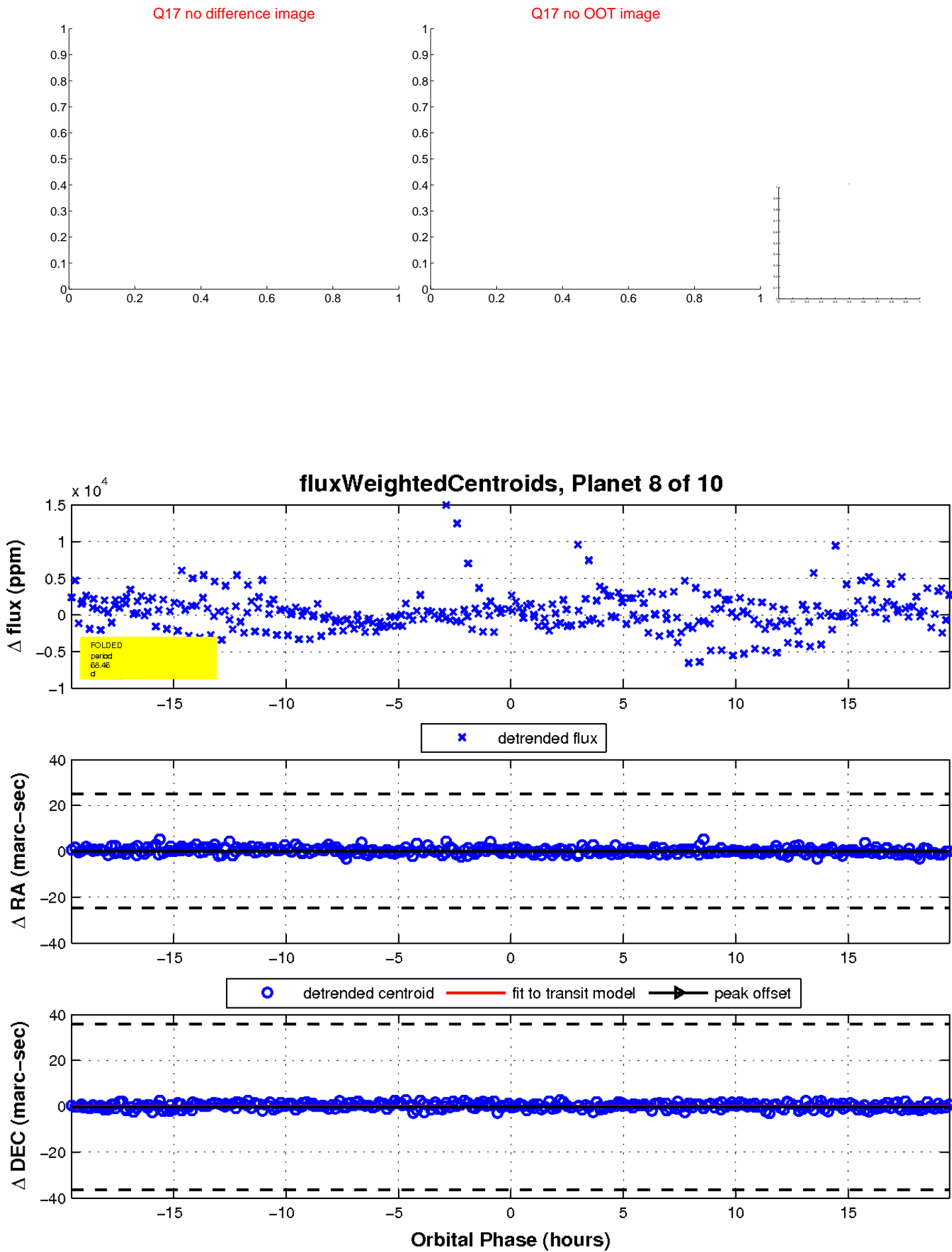
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

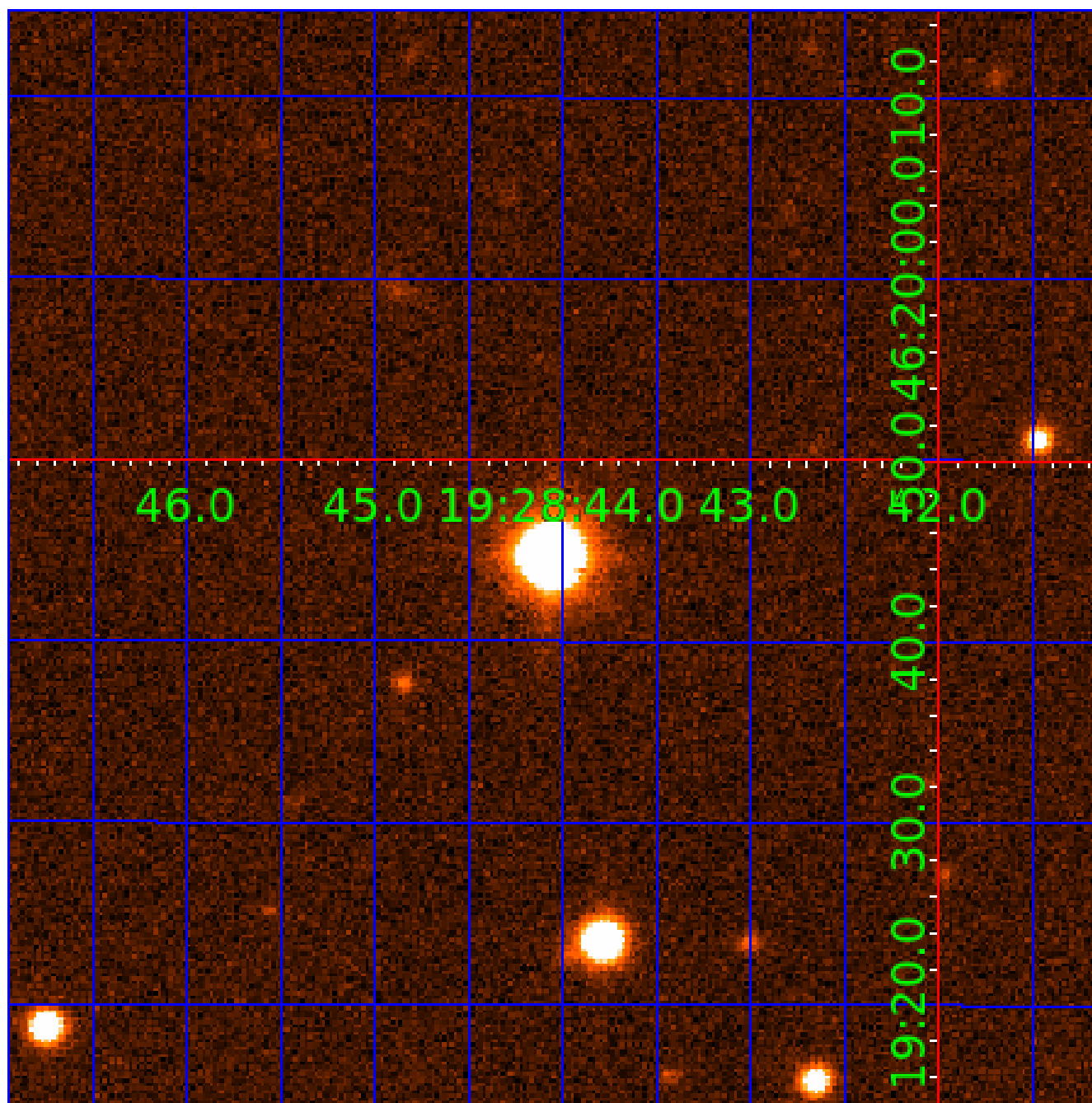


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009650048-01	OBS	No	79.521238	135.132830	1426.8	8.314	13.9	3.2	172.45	3420	596.87	0.00
009650048-02	OBS	No	48.590399	161.382228	1712.0	6.008	12.7	5.2	172.45	3420	897.18	0.00
009650048-03	OBS	No	24.115052	145.753117	2221.7	17.763	9.9	7.0	172.45	3420	1117.14	0.00
009650048-04	OBS	No	51.481188	142.840114	1946.8	2.720	15.5	5.7	172.45	3420	874.61	0.00
009650048-05	OBS	No	86.617464	188.411391	195.5	6.848	11.3	0.5	172.45	3420	298.28	0.00
009650048-06	OBS	No	76.441075	200.861693	3467.7	3.505	11.3	8.1	172.45	3420	1253.74	0.00
009650048-07	OBS	No	65.506849	136.684124	1497.1	17.131	10.7	4.4	172.45	3420	691.84	0.00
009650048-08	OBS	No	68.464196	145.864858	4876.3	6.518	12.2	11.8	172.45	3420	1272.13	0.00
009650048-09	OBS	No	27.127219	145.955115	1498.1	9.143	11.9	5.7	172.45	3420	1106.13	0.00
009650048-10	OBS	No	130.405347	136.770863	2040.2	5.061	11.5	6.2	172.45	3420	885.03	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650048-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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—CENT_FEW_DIFFS
009650048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES
009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-10	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST

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

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

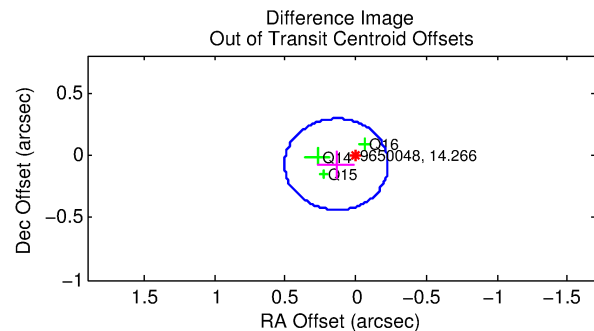
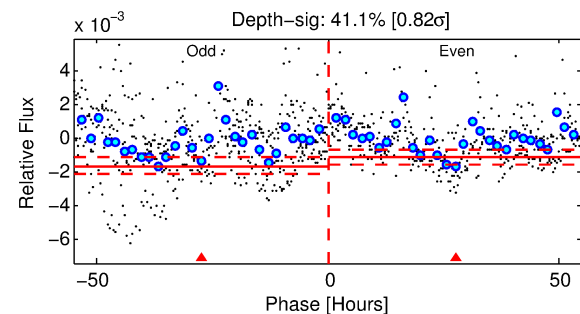
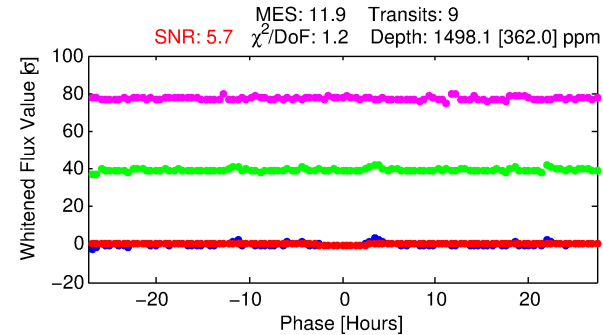
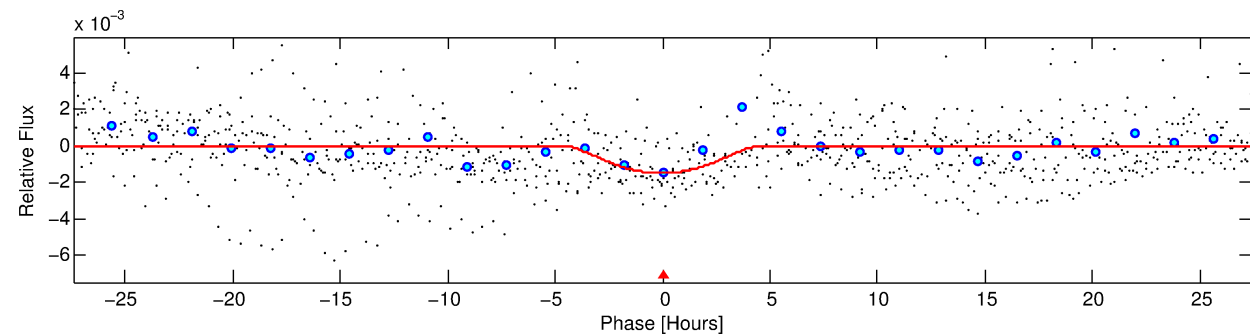
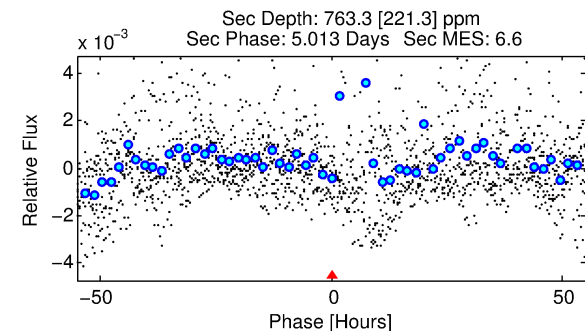
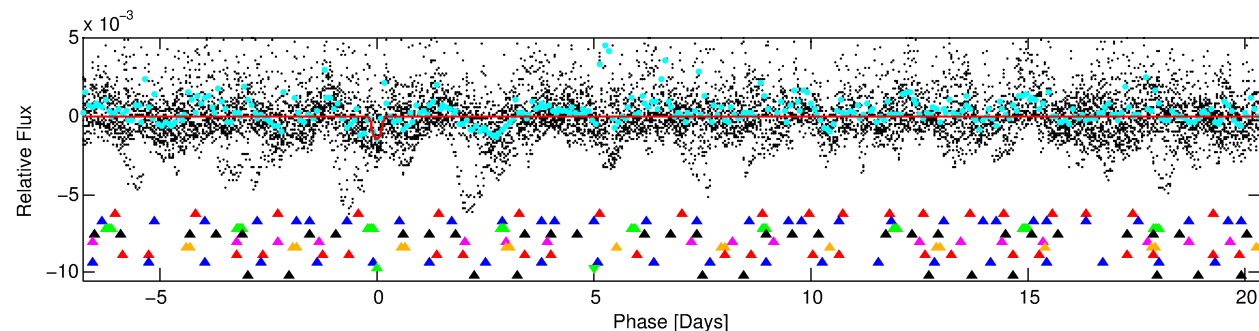
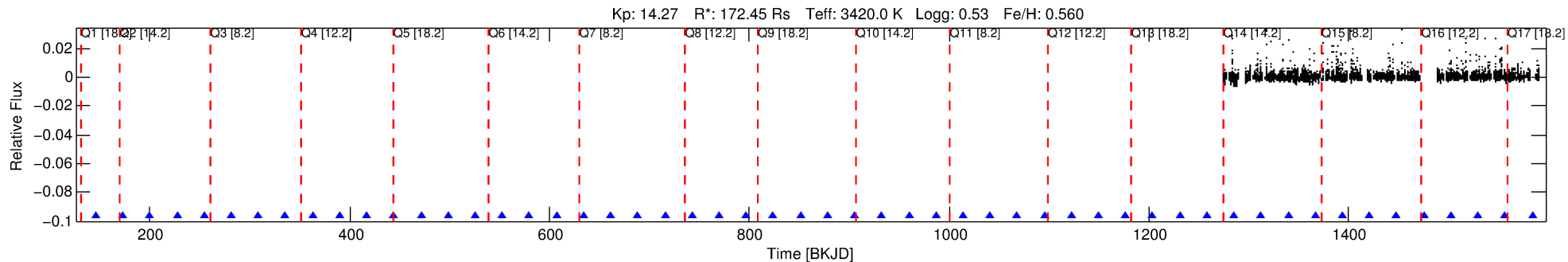
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009650048-09

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 9 of 10 Period: 27.127 d



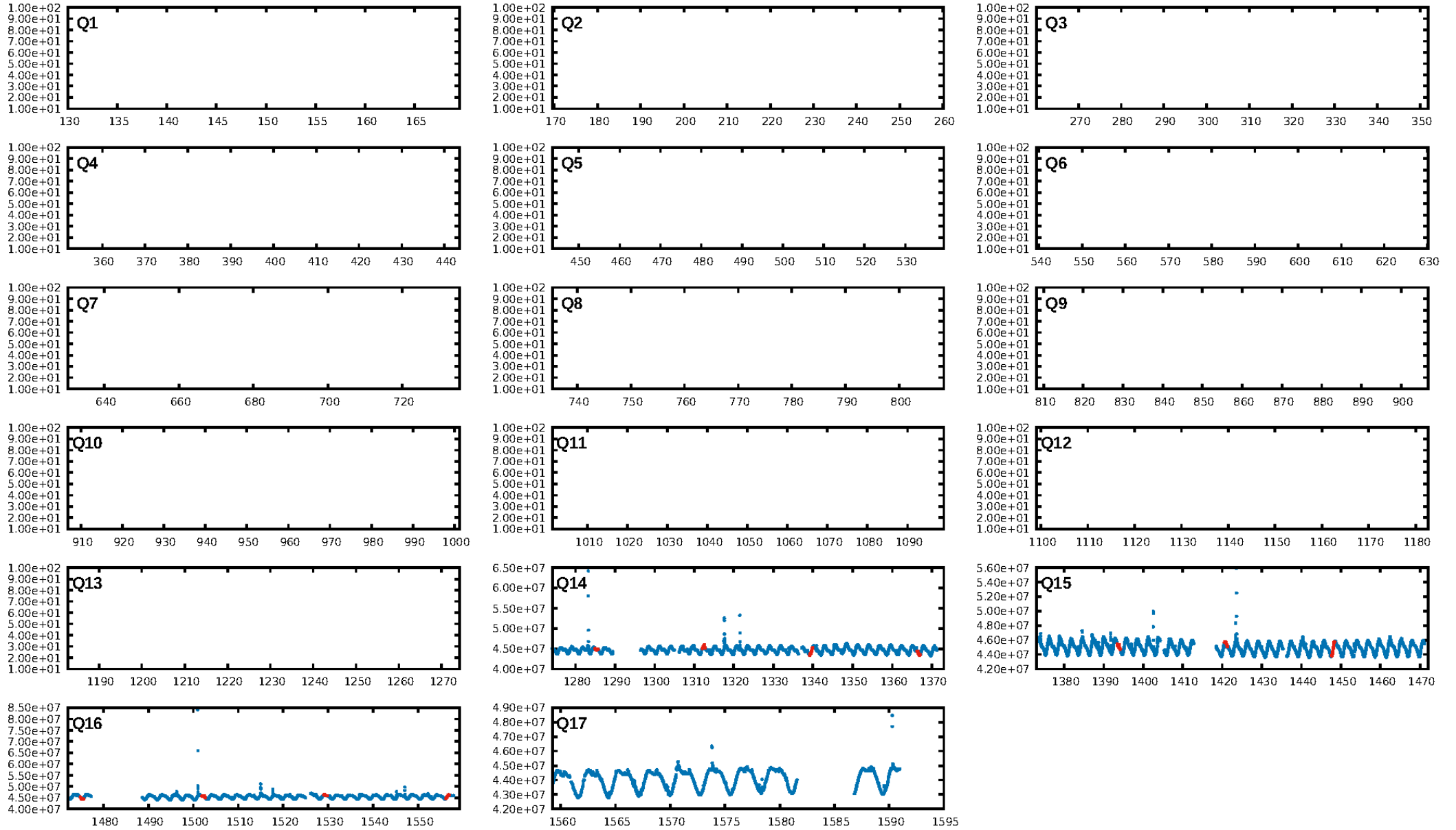
DV Fit Results:

Period = 27.12722 [0.00451] d
Epoch = 145.9551 [0.2110] BKJD
Rp/R* = 0.0588 [0.0756]
a/R* = 9.63 [4.28]
b = 0.97 [0.14]
Seff = N/A
Teq = N/A
Rp = 1106.13 [1550.04] Re
a = N/A
Ag = N/A
Teffp = N/A

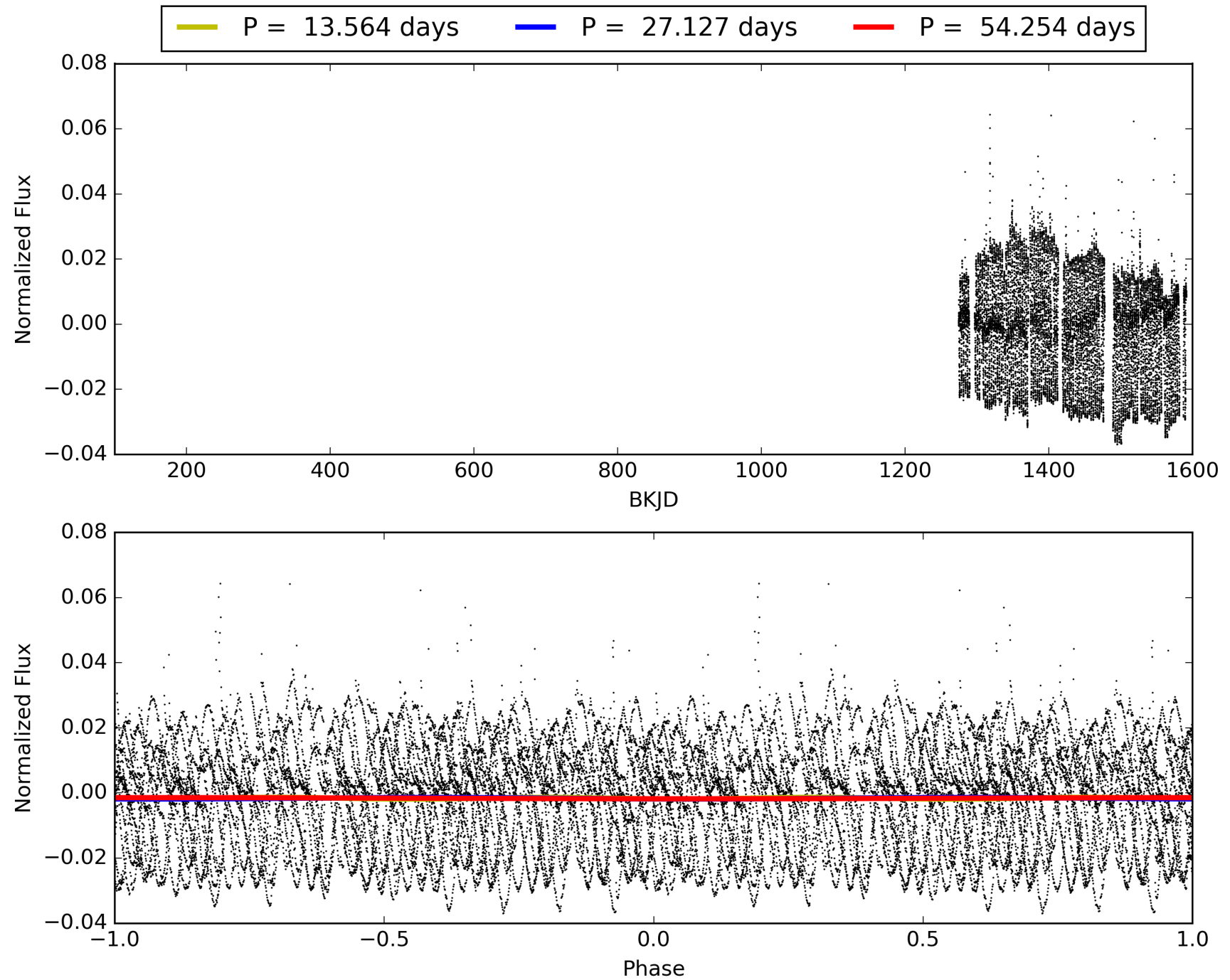
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.62σ]
LongPeriod-sig: 100.0% [47.08σ]
ModelChiSquare2-sig: 4.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.75e-13
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 0.9272
Centroid-sig: 66.9%
Centroid-so: 0.249 arcsec [0.75σ]
OotOffset-rm: 0.155 arcsec [1.27σ]
KicOffset-rm: 0.102 arcsec [1.40σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009650048-09, PDC Light Curves

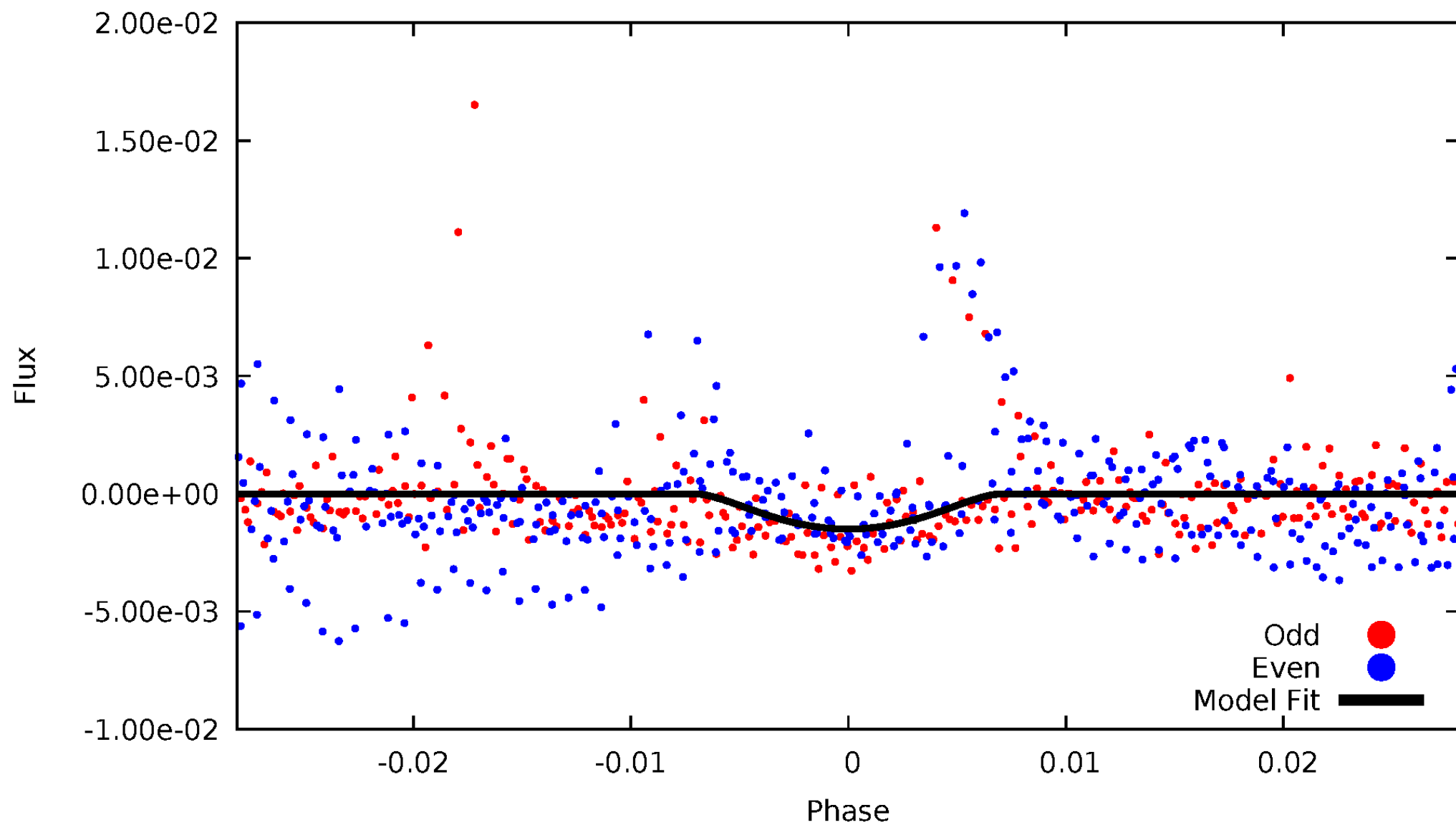


TCE 009650048-09



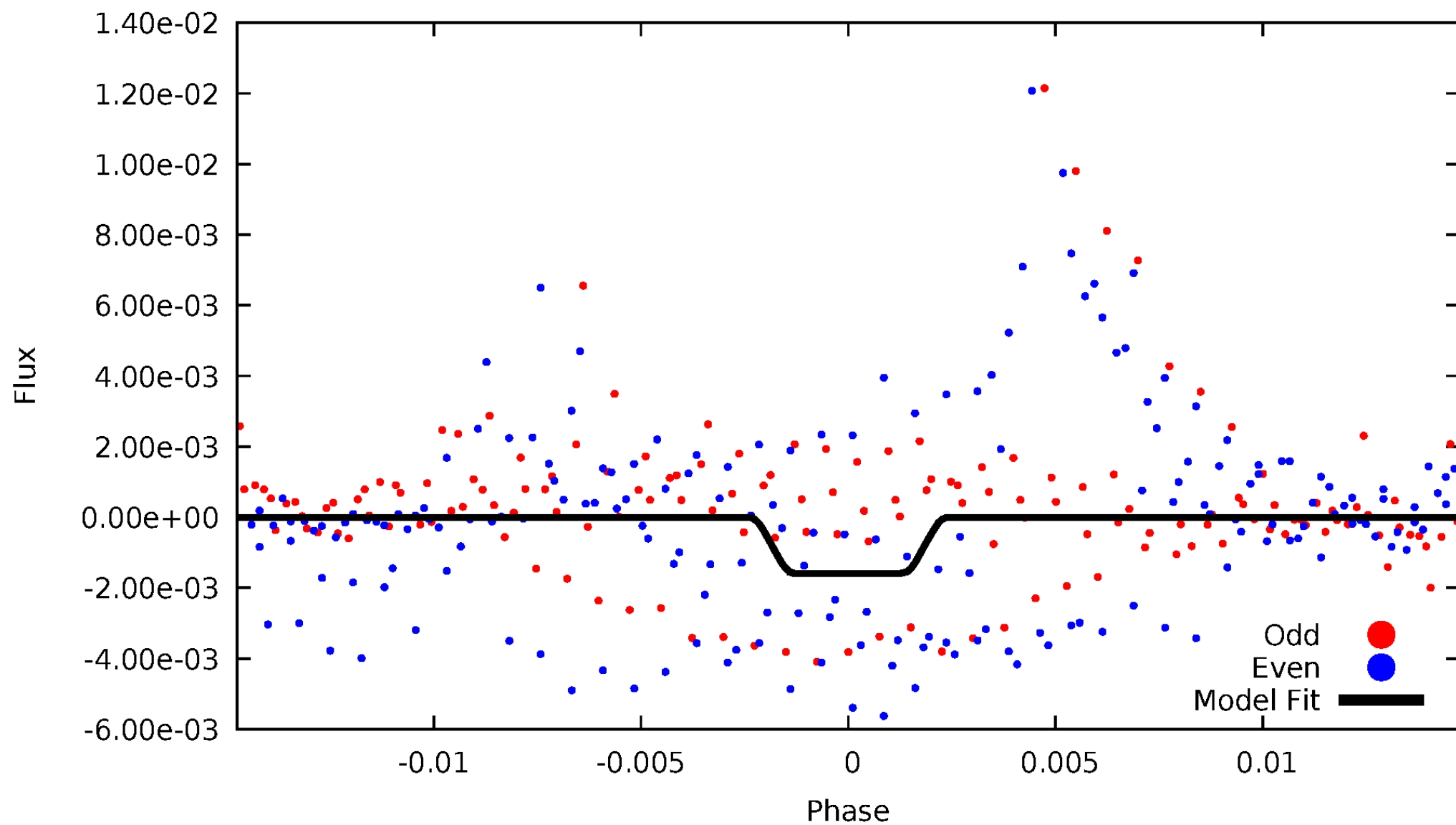
DV Odd/Even

TCE 009650048-09



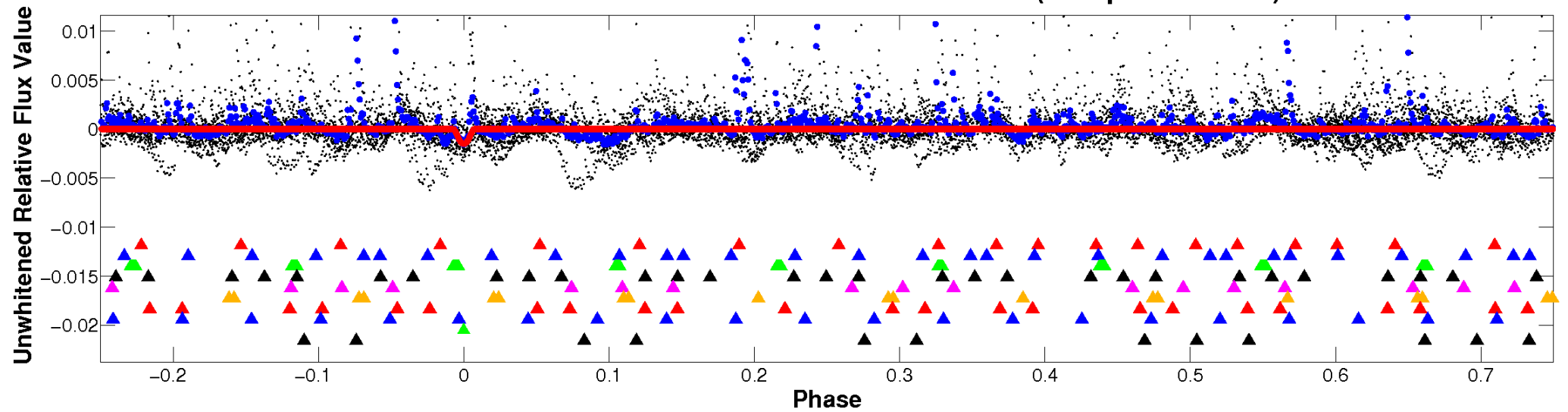
ALT Odd/Even

TCE 009650048-09

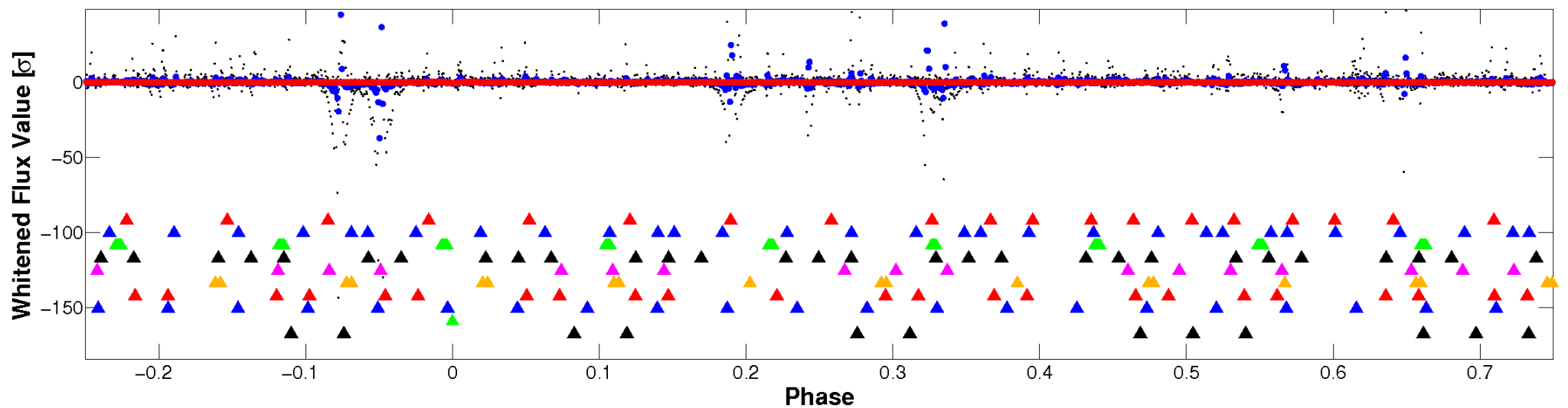


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

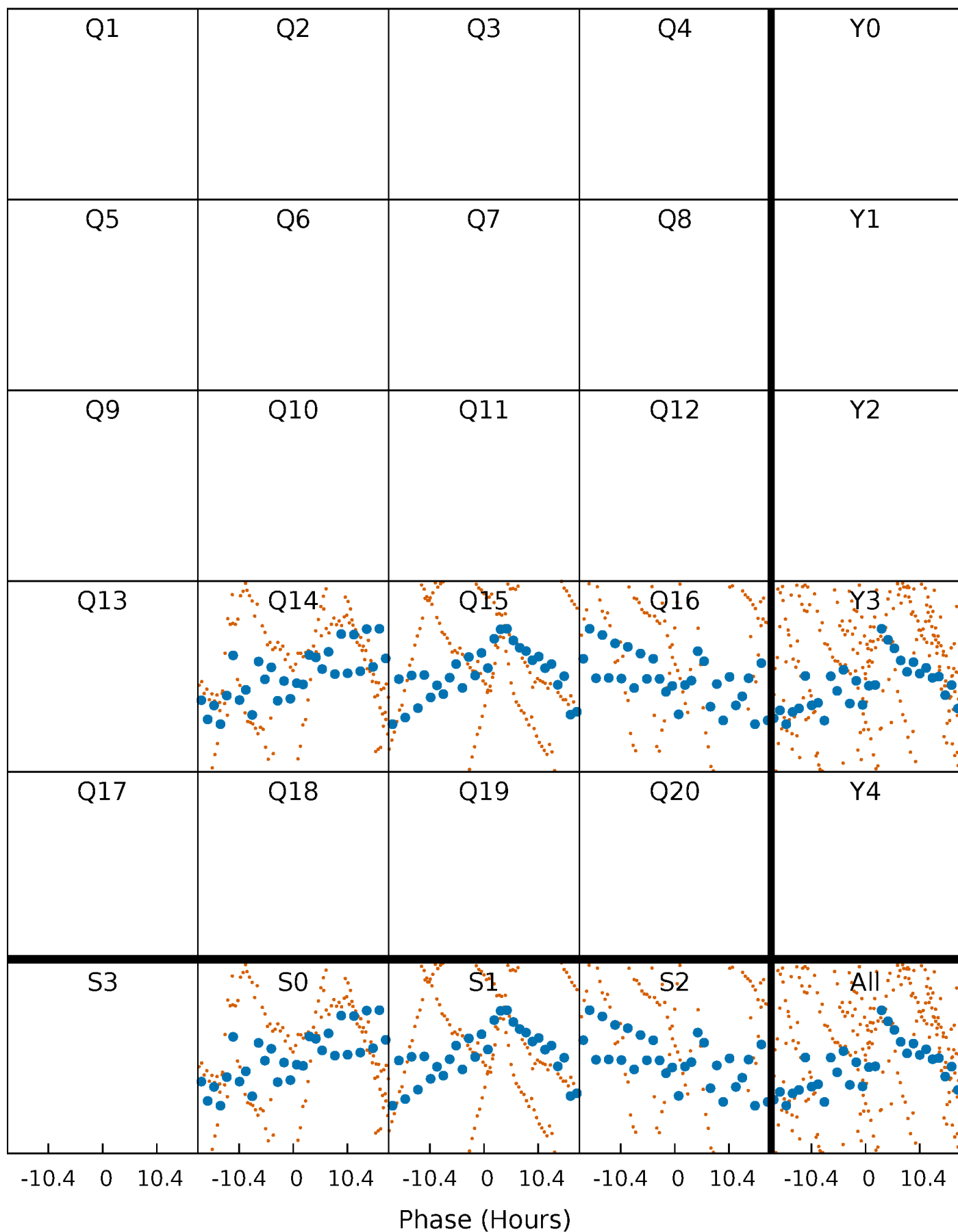


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 009650048-09 P= 27.127219 Days $T_0=145.955115$ (BKJD)



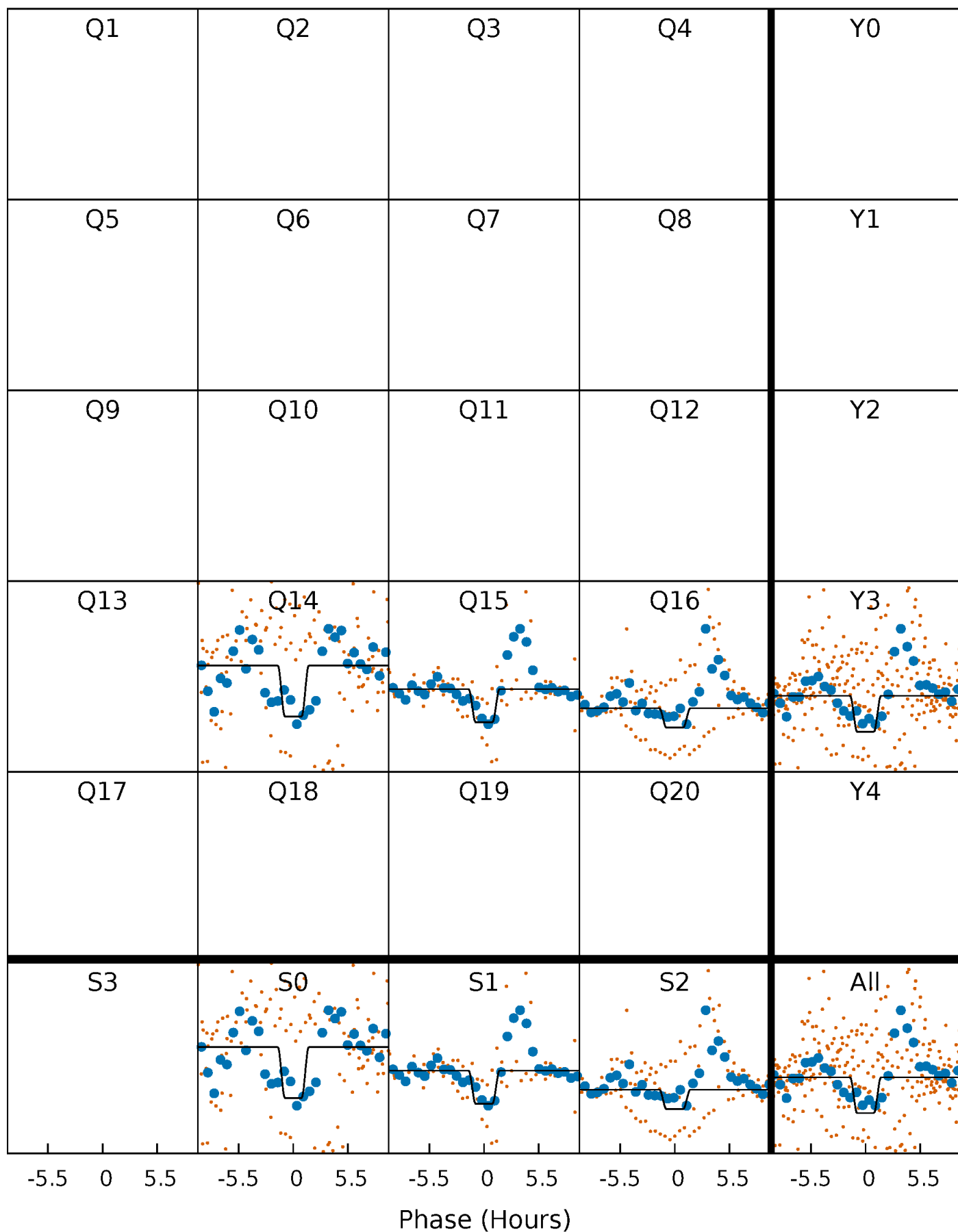
DV Quarter-Phased Transit Curves

TCE 009650048-09 P= 27.127219 Days $T_0=145.955115$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

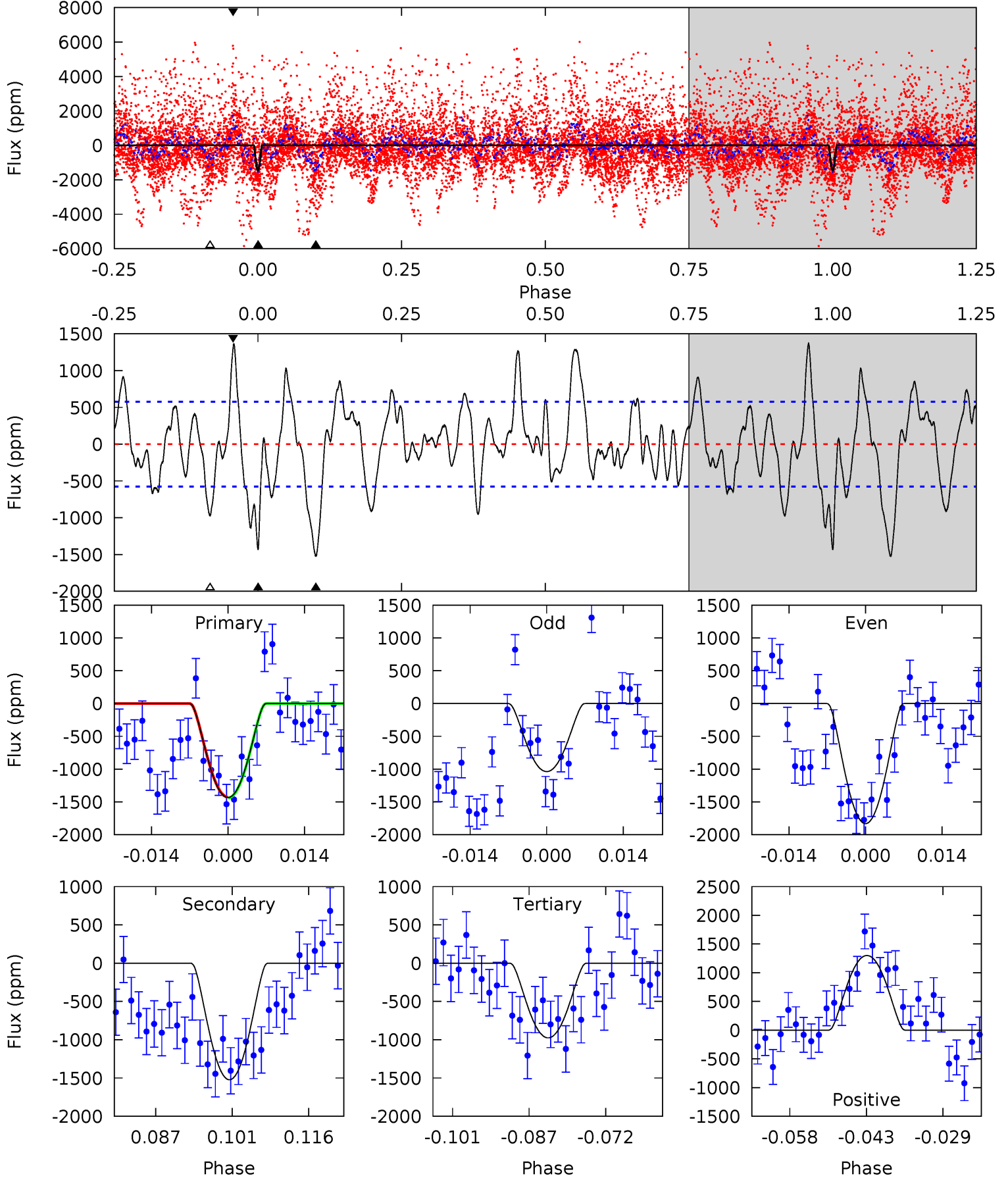
TCE 009650048-09 $P = 27.133434$ Days $T_0 = 145.669048$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-09, P = 27.127219 Days, E = 145.955115 Days

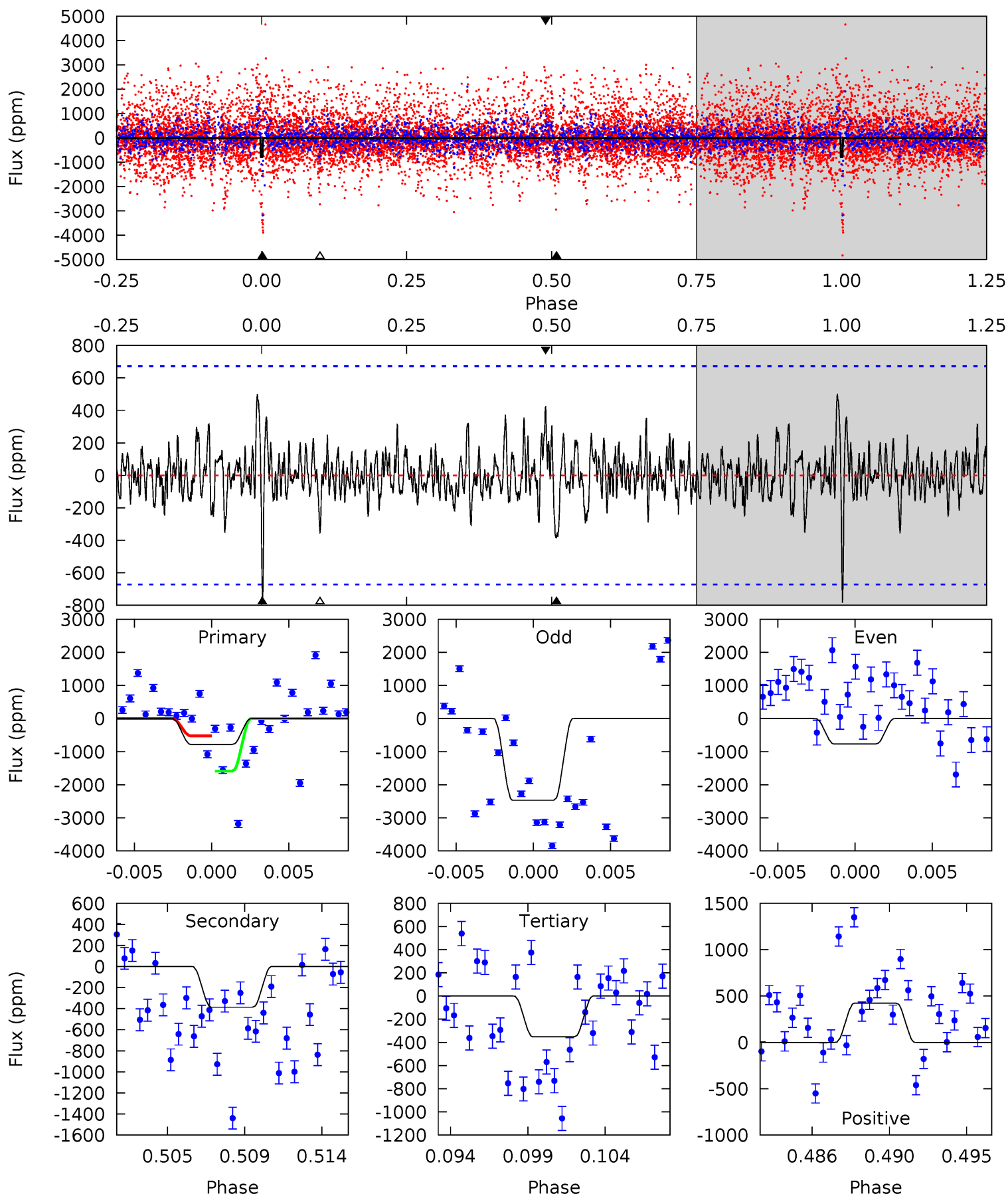
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	13.1	8.38	11.2	4.95	2.45	3.87	3.93	1.14	4.70	1.91	3.28	0.78	0.47	0.06



Alt Model-Shift Uniqueness Test

009650048-09, P = 27.133434 Days, E = 145.669048 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.03	2.97	2.71	3.26	5.17	2.83	0.92	3.32	2.77	0.26	-0.29	6.59	1.83	0.39	4.16



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1523 ± 116	$1444.39^{+1231.77}_{-942.42}$	5376^{+338}_{-481}	-3877^{+783}_{-298}	$0.028^{+0.181}_{-0.020}$
Alt.	-386 ± 130	$1231.64^{+1191.61}_{-789.95}$	5360^{+360}_{-476}	-3944^{+419}_{-262}	$0.009^{+0.073}_{-0.007}$

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

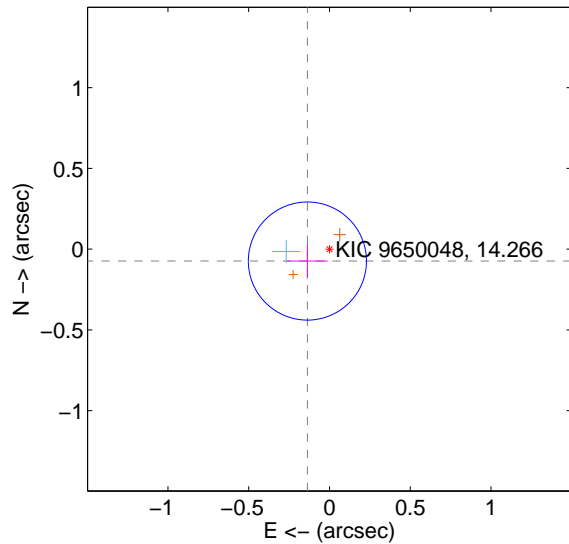
Supplemental centroid analysis for 009650048-09. Kepler magnitude: 14.27. Transit SNR 5.73

There are 1 quarters with good PRF difference image offsets

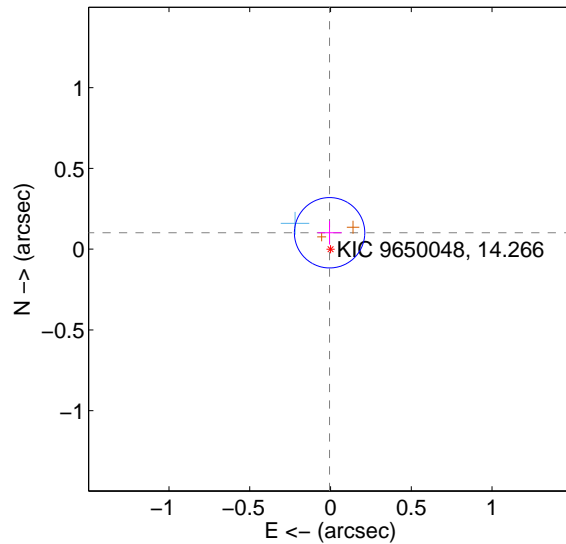
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.155 ± 0.122	1.27	0.137 ± 0.126	-0.073 ± 0.108
PRF-fit source offset from KIC position	0.102 ± 0.073	1.40	0.006 ± 0.075	0.102 ± 0.073
photometric centroid source offset	0.25 ± 0.33	0.75	0.24 ± 0.34	-0.06 ± 0.28

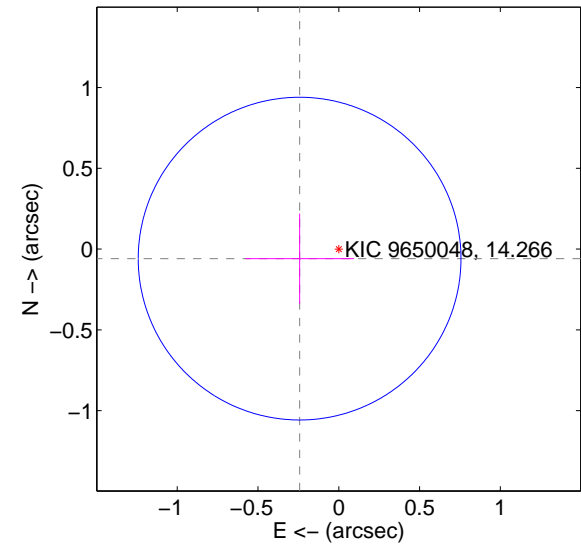
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

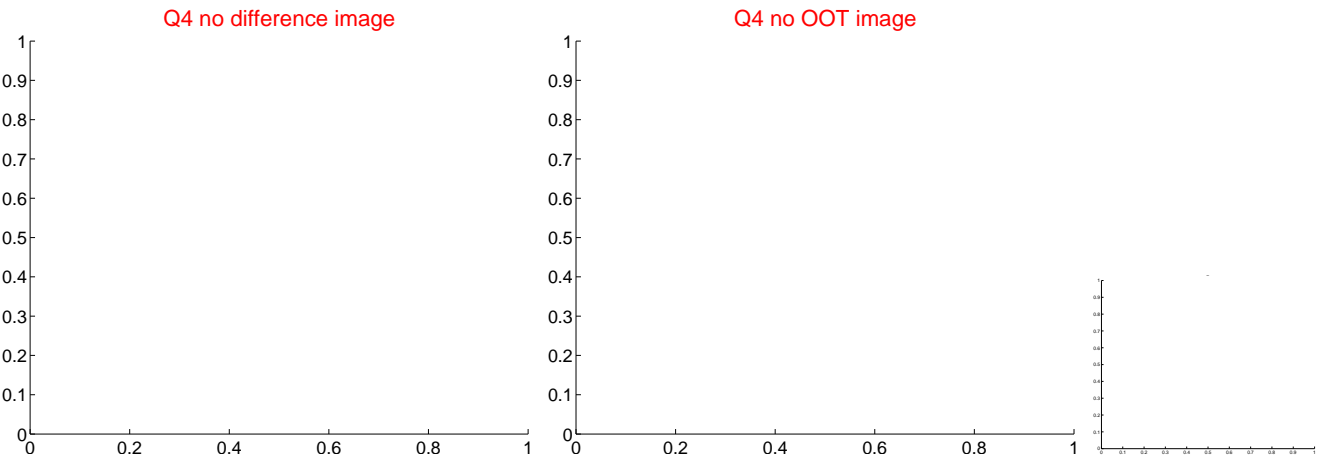
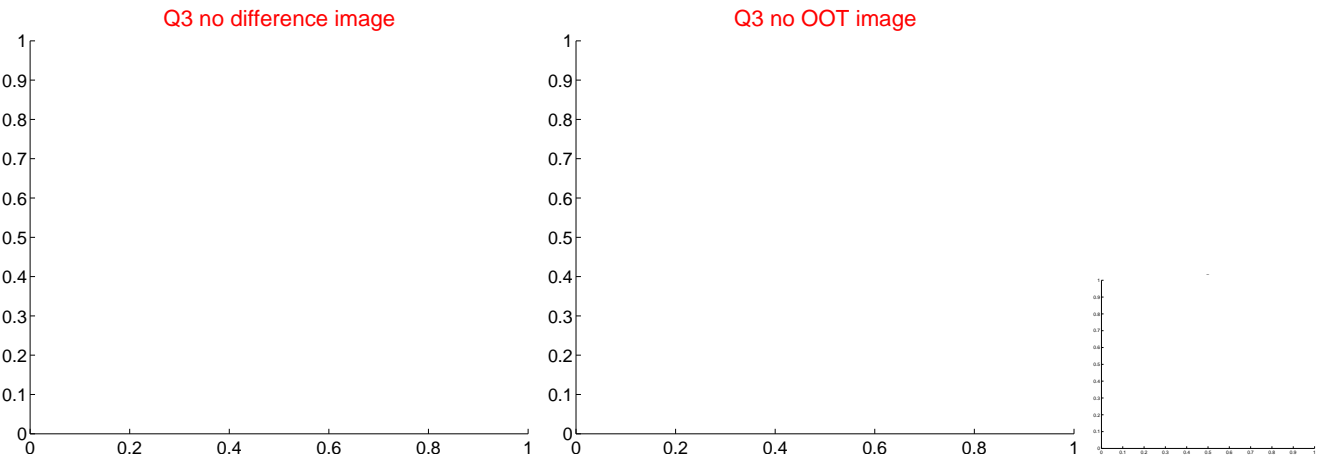
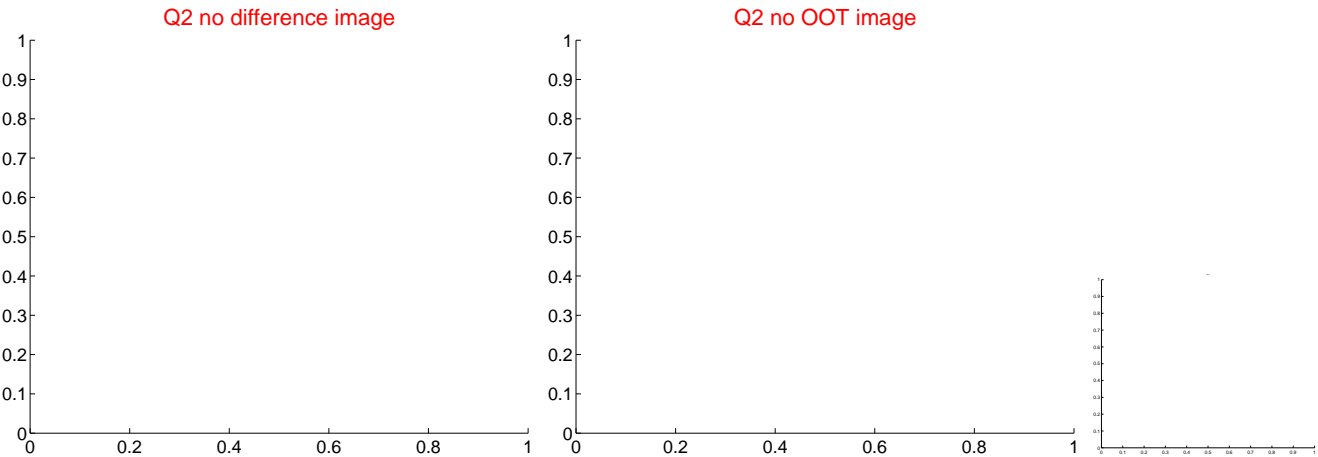
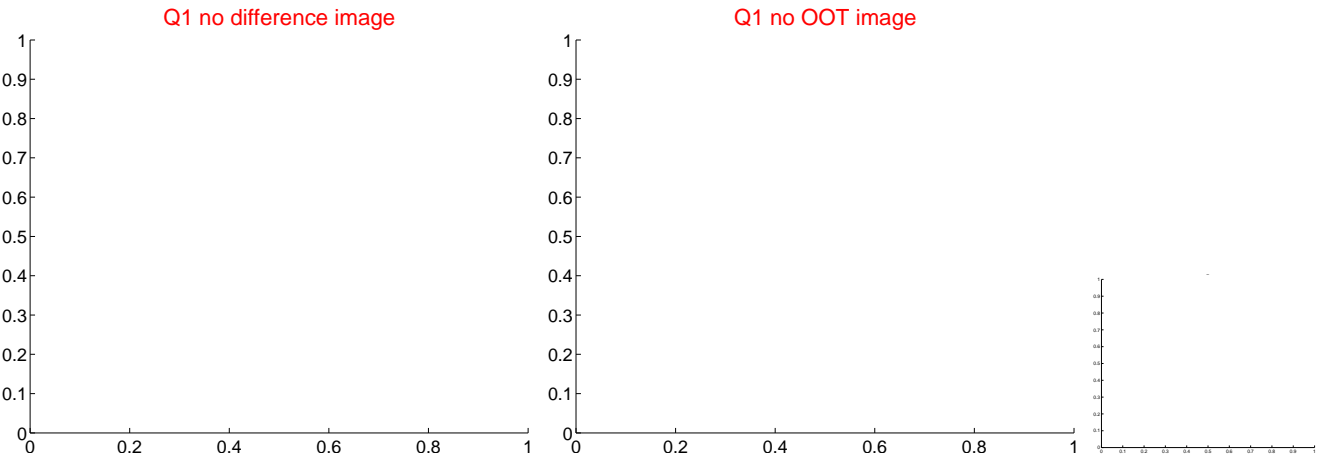


offset from photometric centroids

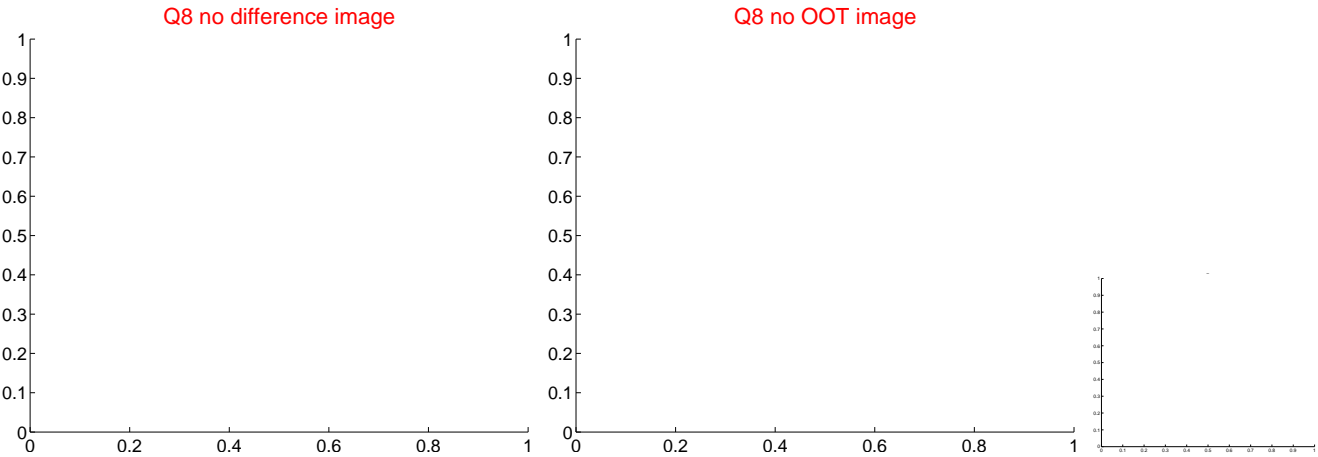
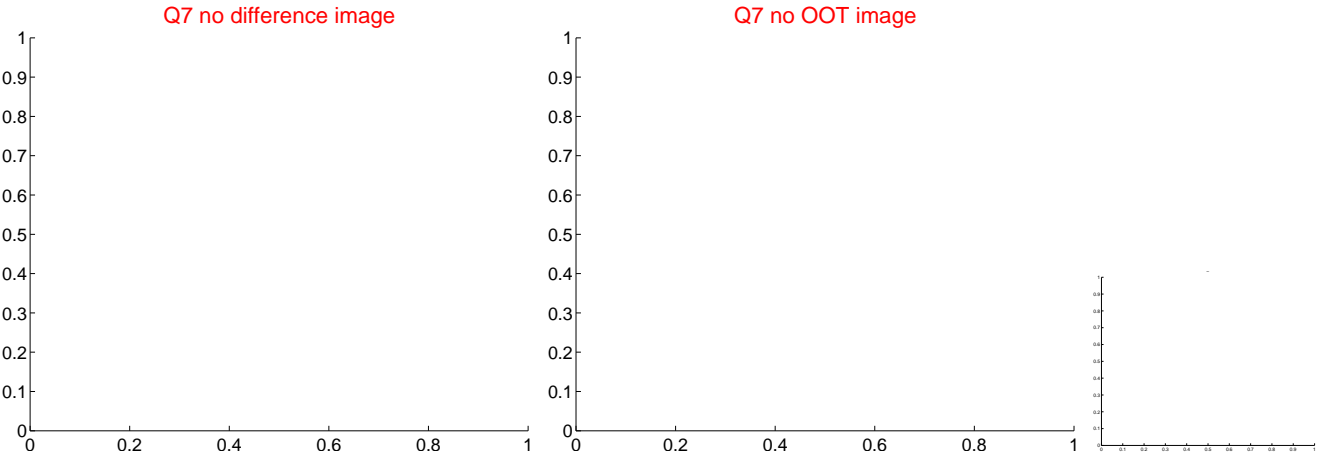
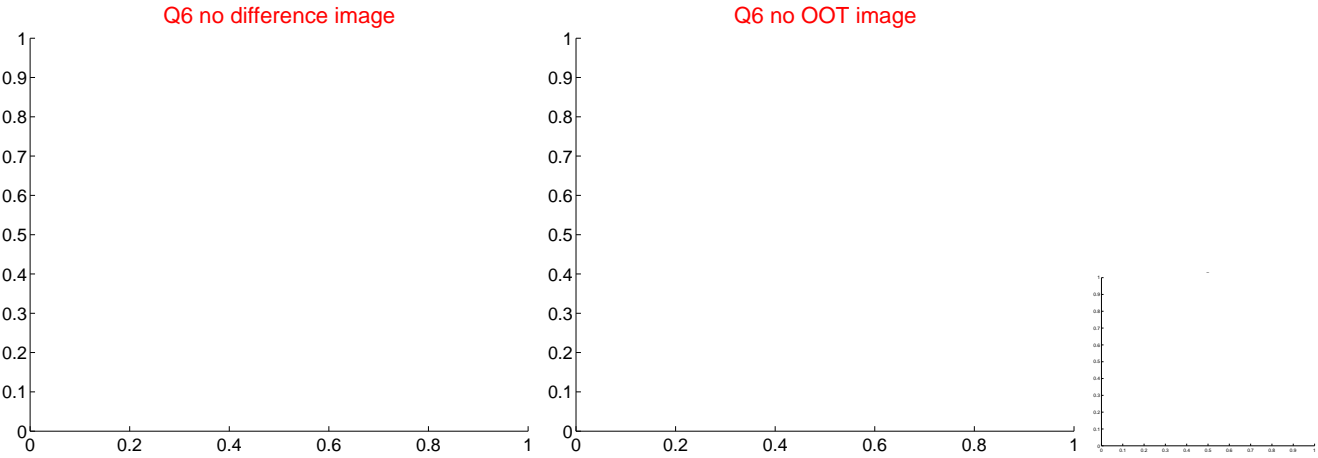
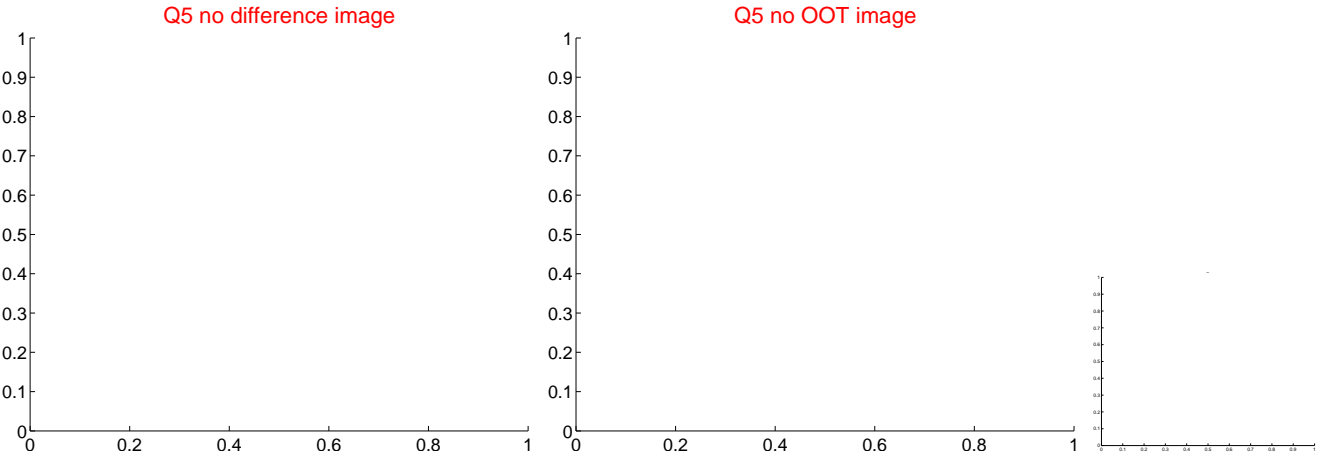


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

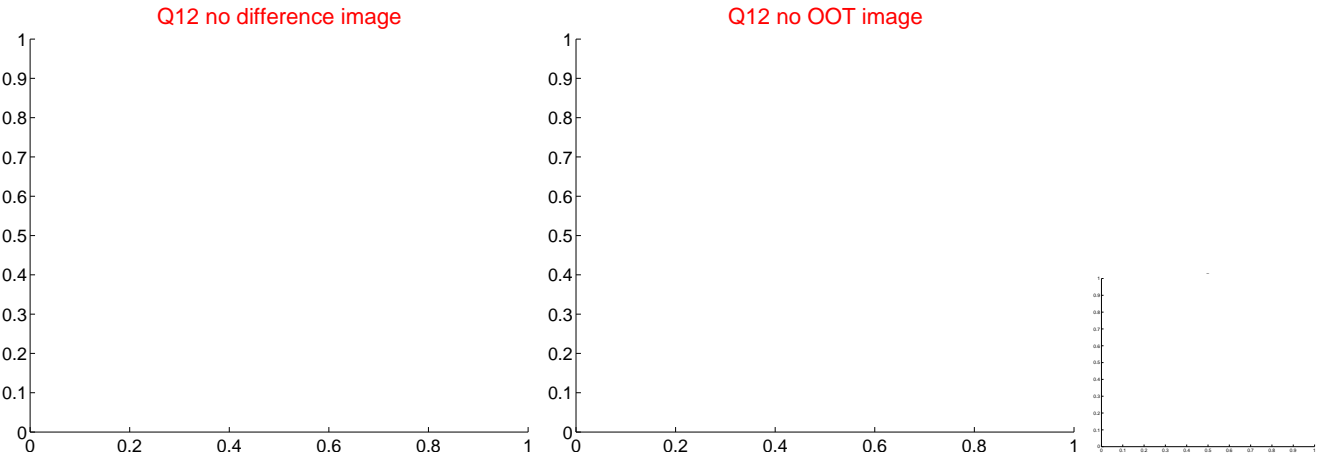
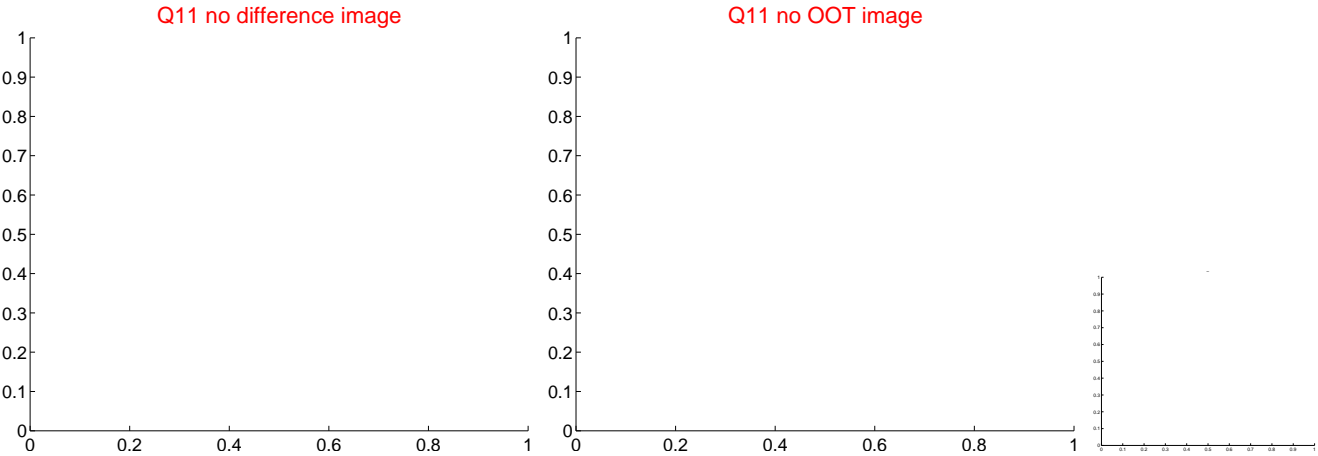
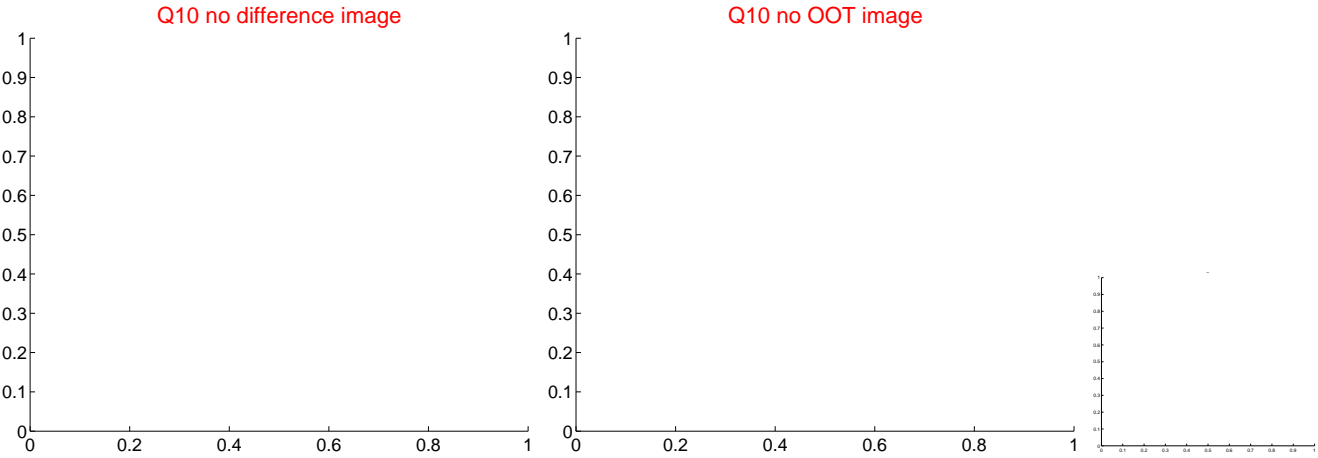
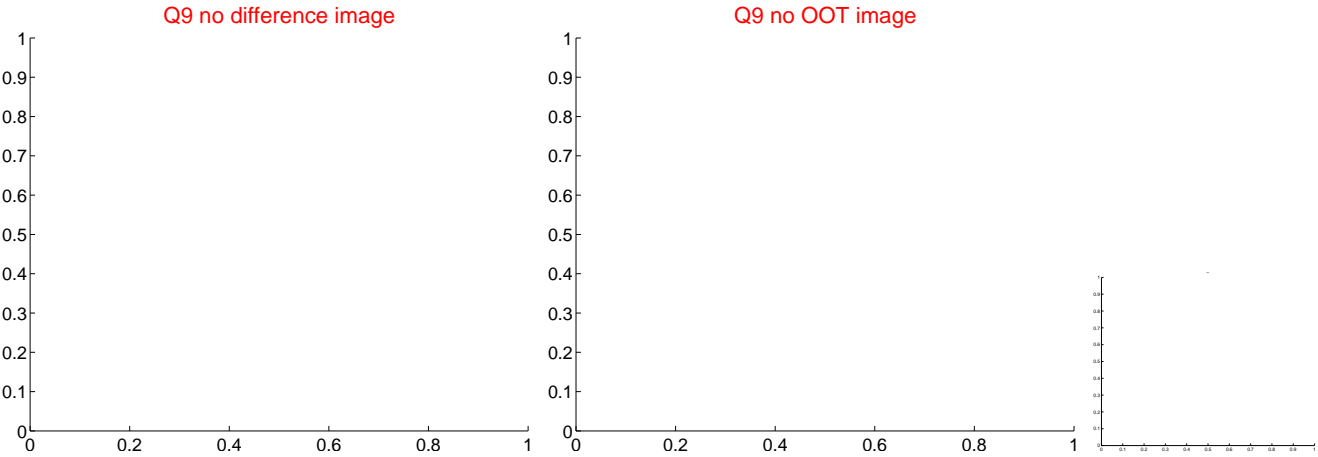
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



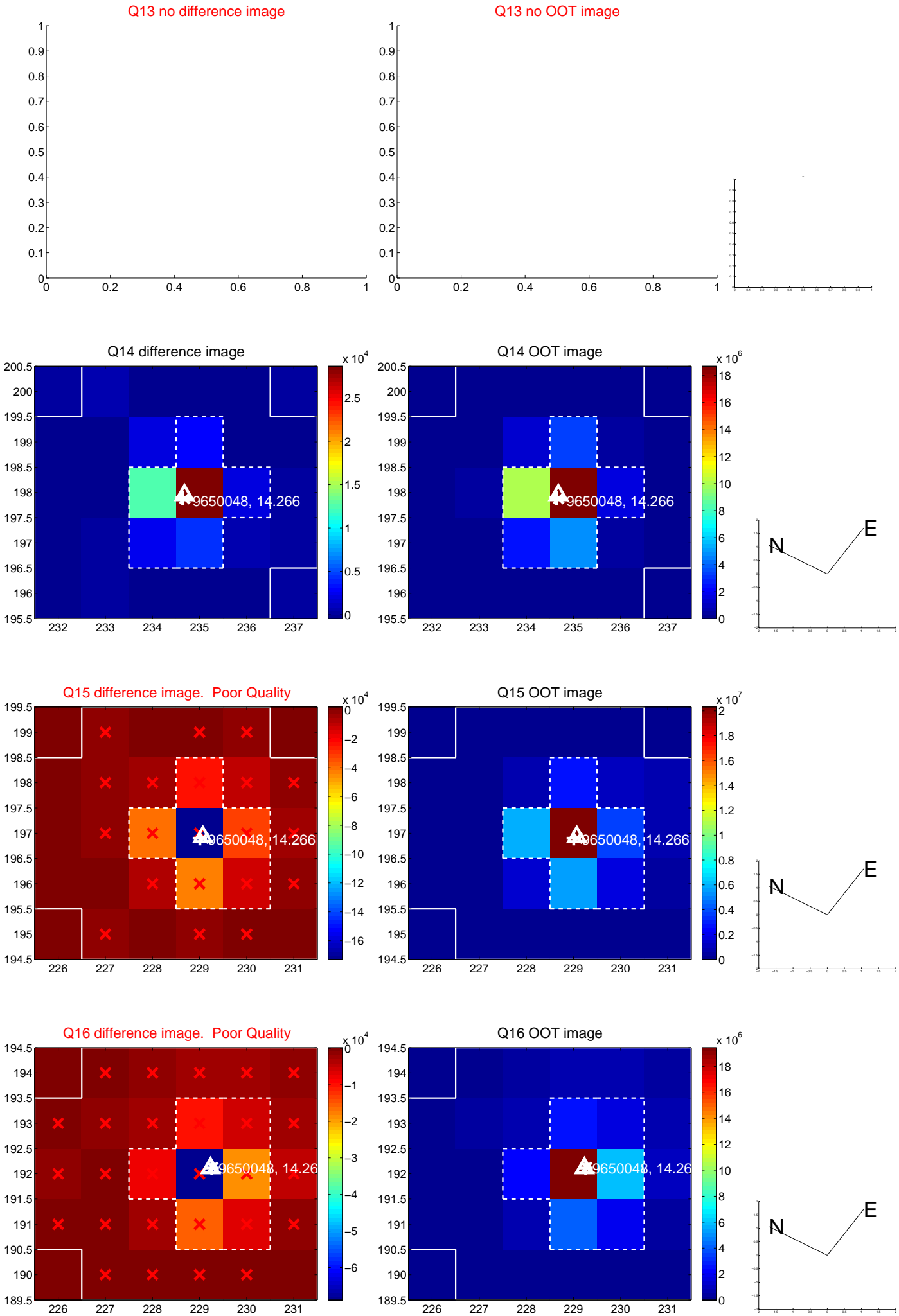
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



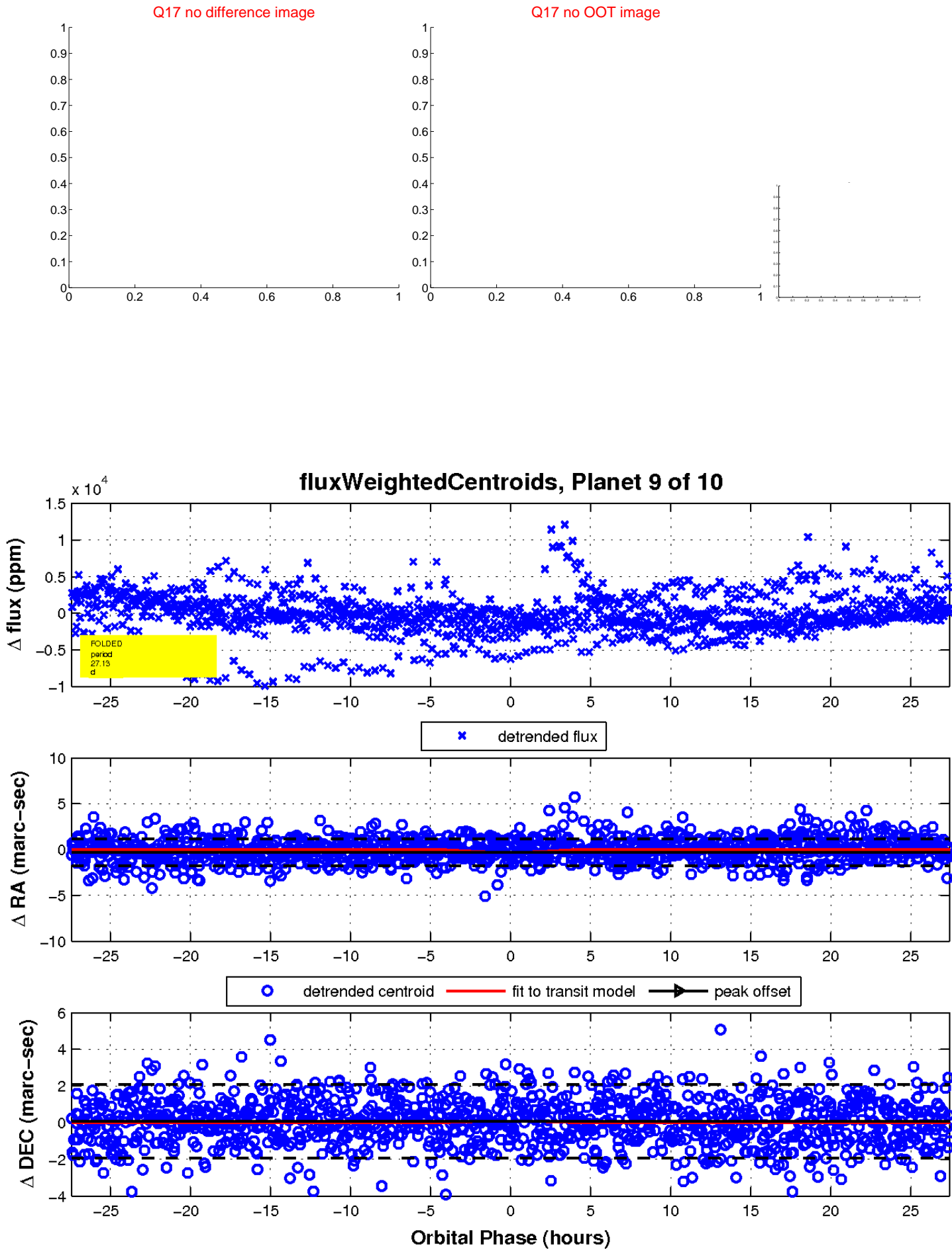
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

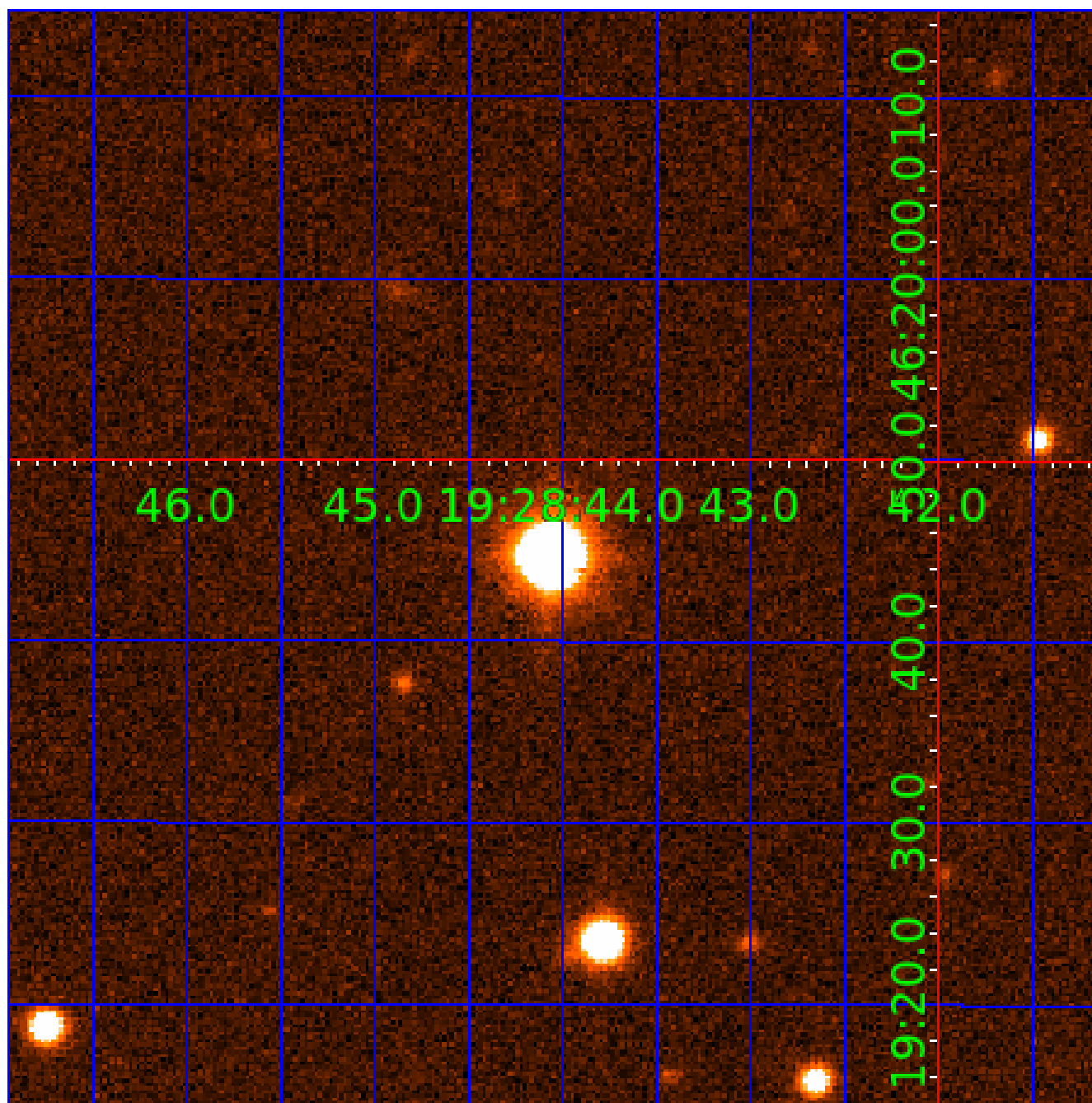


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009650048-01	OBS	No	79.521238	135.132830	1426.8	8.314	13.9	3.2	172.45	3420	596.87	0.00
009650048-02	OBS	No	48.590399	161.382228	1712.0	6.008	12.7	5.2	172.45	3420	897.18	0.00
009650048-03	OBS	No	24.115052	145.753117	2221.7	17.763	9.9	7.0	172.45	3420	1117.14	0.00
009650048-04	OBS	No	51.481188	142.840114	1946.8	2.720	15.5	5.7	172.45	3420	874.61	0.00
009650048-05	OBS	No	86.617464	188.411391	195.5	6.848	11.3	0.5	172.45	3420	298.28	0.00
009650048-06	OBS	No	76.441075	200.861693	3467.7	3.505	11.3	8.1	172.45	3420	1253.74	0.00
009650048-07	OBS	No	65.506849	136.684124	1497.1	17.131	10.7	4.4	172.45	3420	691.84	0.00
009650048-08	OBS	No	68.464196	145.864858	4876.3	6.518	12.2	11.8	172.45	3420	1272.13	0.00
009650048-09	OBS	No	27.127219	145.955115	1498.1	9.143	11.9	5.7	172.45	3420	1106.13	0.00
009650048-10	OBS	No	130.405347	136.770863	2040.2	5.061	11.5	6.2	172.45	3420	885.03	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650048-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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—CENT_FEW_DIFFS
009650048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES
009650048-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
009650048-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009650048-09	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009650048-10	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST

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

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

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

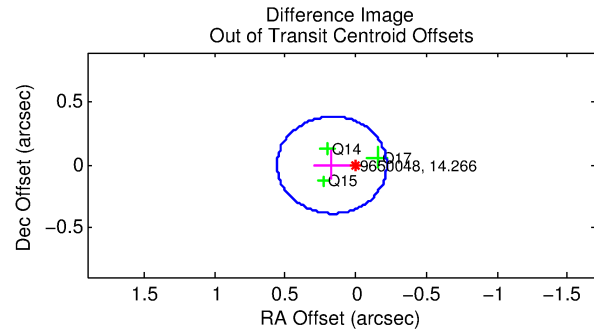
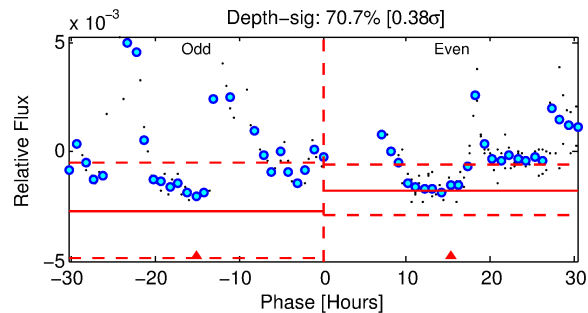
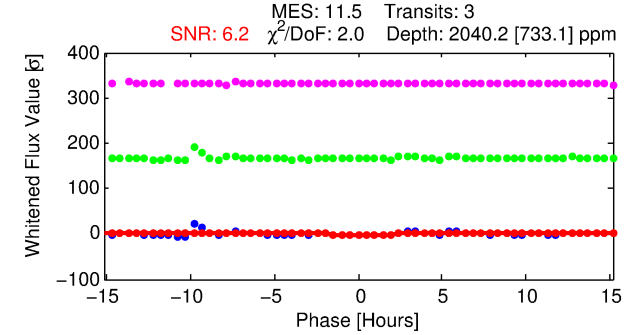
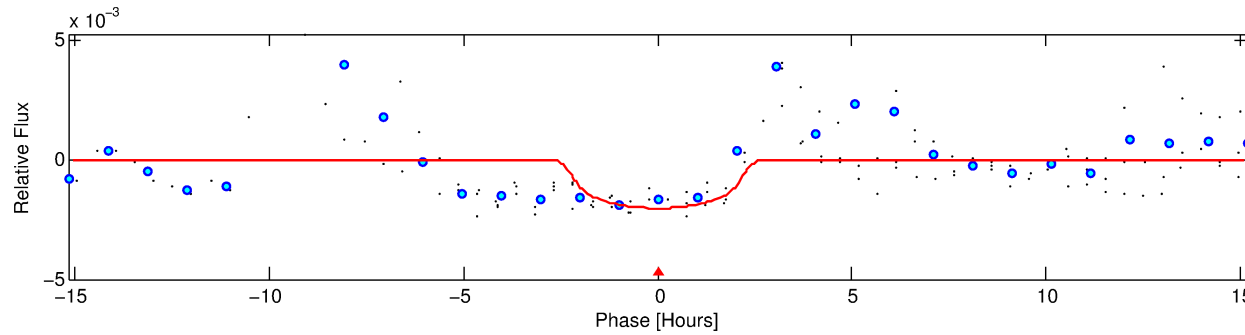
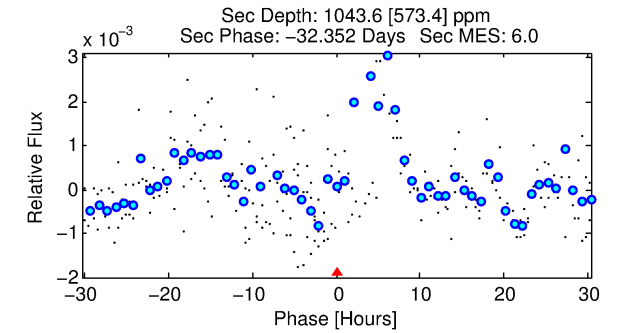
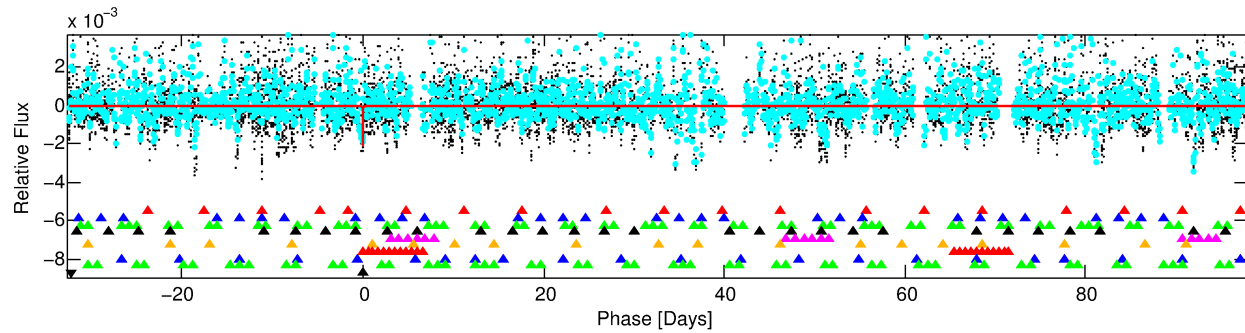
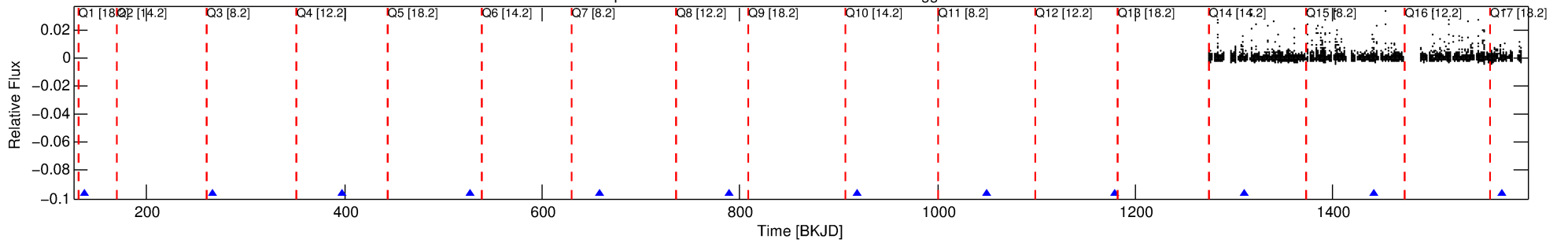
Ephemeris Match Information For 009650048-10

No Significant Match Found

DV One-Page Summary

KIC: 9650048 Candidate: 10 of 10 Period: 130.405 d

Kp: 14.27 R*: 172.45 Rs Teff: 3420.0 K Logg: 0.53 Fe/H: 0.560



DV Fit Results:

Period = 130.40535 [0.01000] d
Epoch = 136.7709 [0.1045] BKJD
Rp/R* = 0.0470 [0.0676]
a/R* = 135.95 [507.95]
b = 0.79 [1.86]
Seff = N/A
Teq = N/A
Rp = 885.03 [1363.70] Re
a = N/A
Ag = N/A
Teffp = N/A

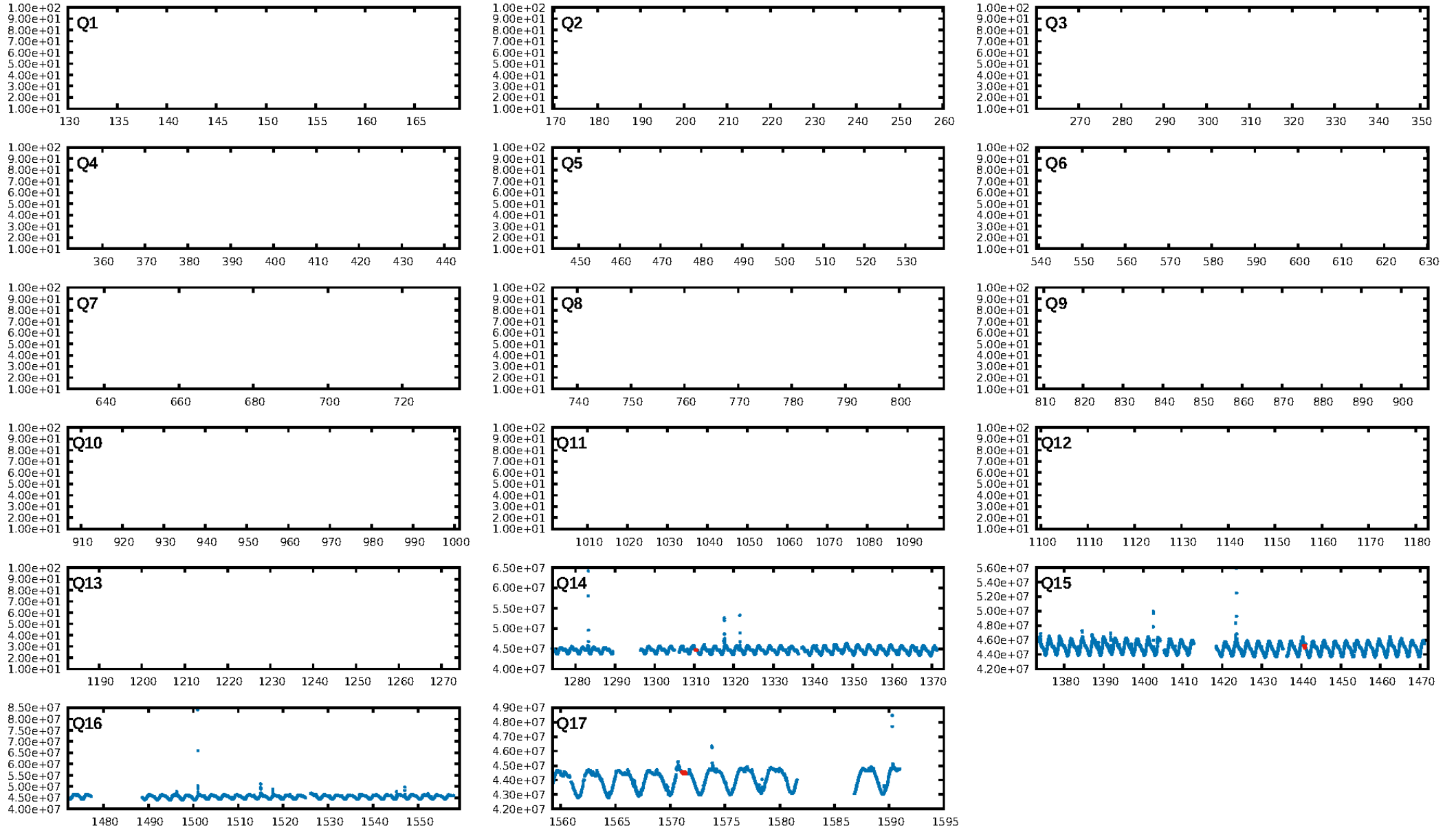
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [123.42]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 4.9%
ModelChiSquareGof-sig: 95.0%
Bootstrap-pfa: 2.59e-11
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -0.1967
Centroid-sig: 23.6%
Centroid-so: 0.403 arcsec [0.92]
OotOffset-rm: 0.168 arcsec [1.30]
KicOffset-rm: 0.199 arcsec [1.93]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

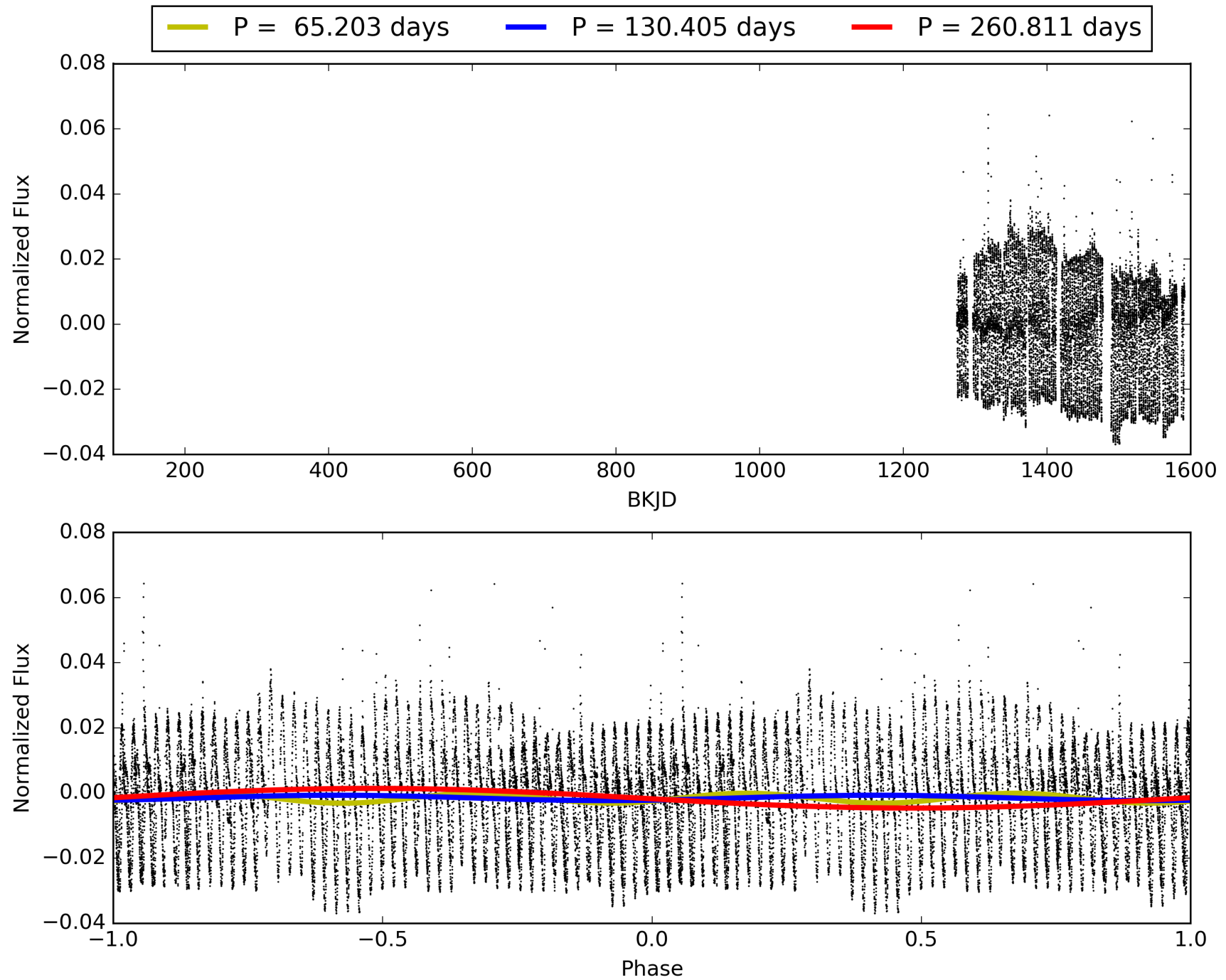
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:57:50 Z

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

TCE 009650048-10, PDC Light Curves

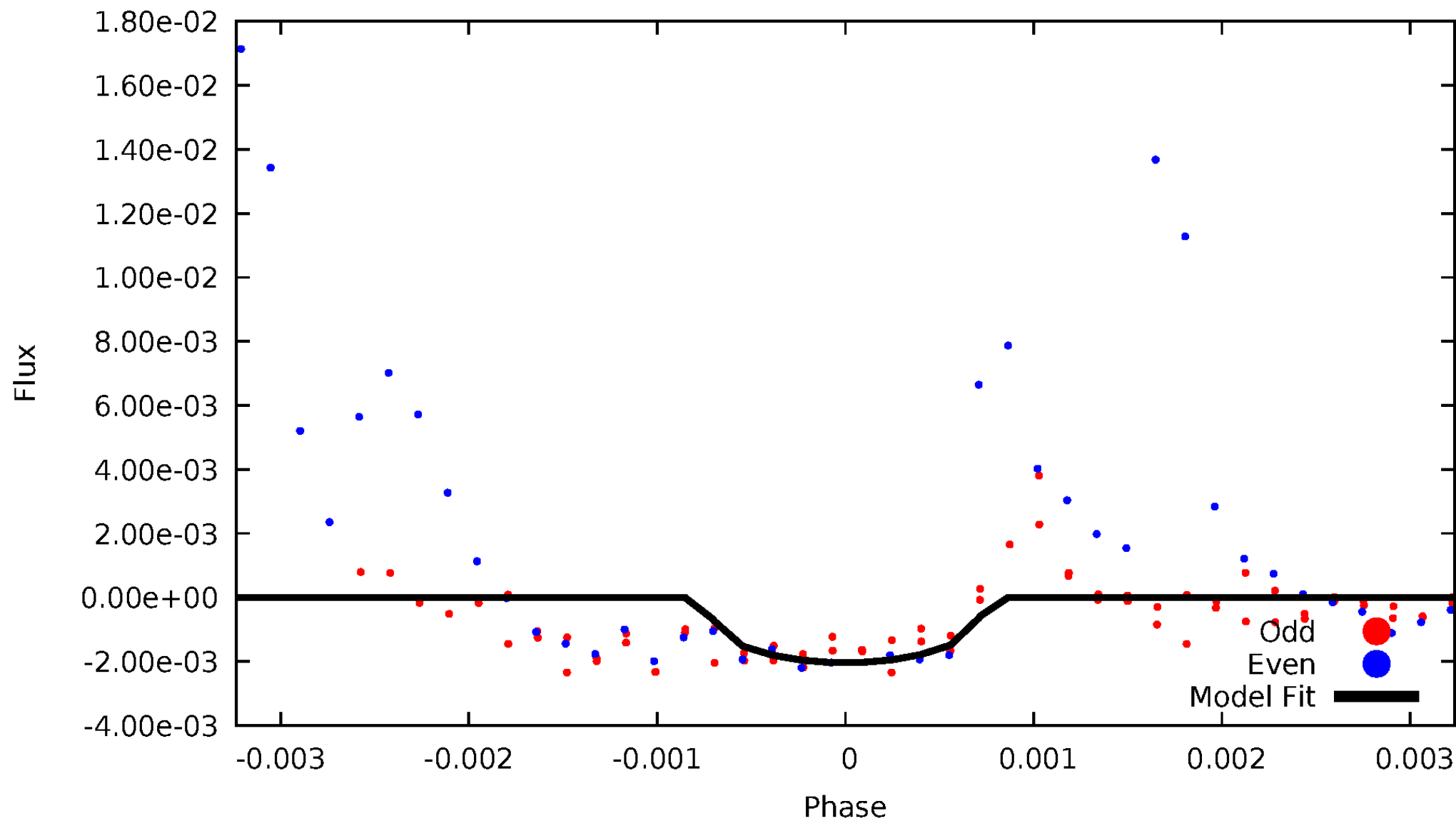


TCE 009650048-10



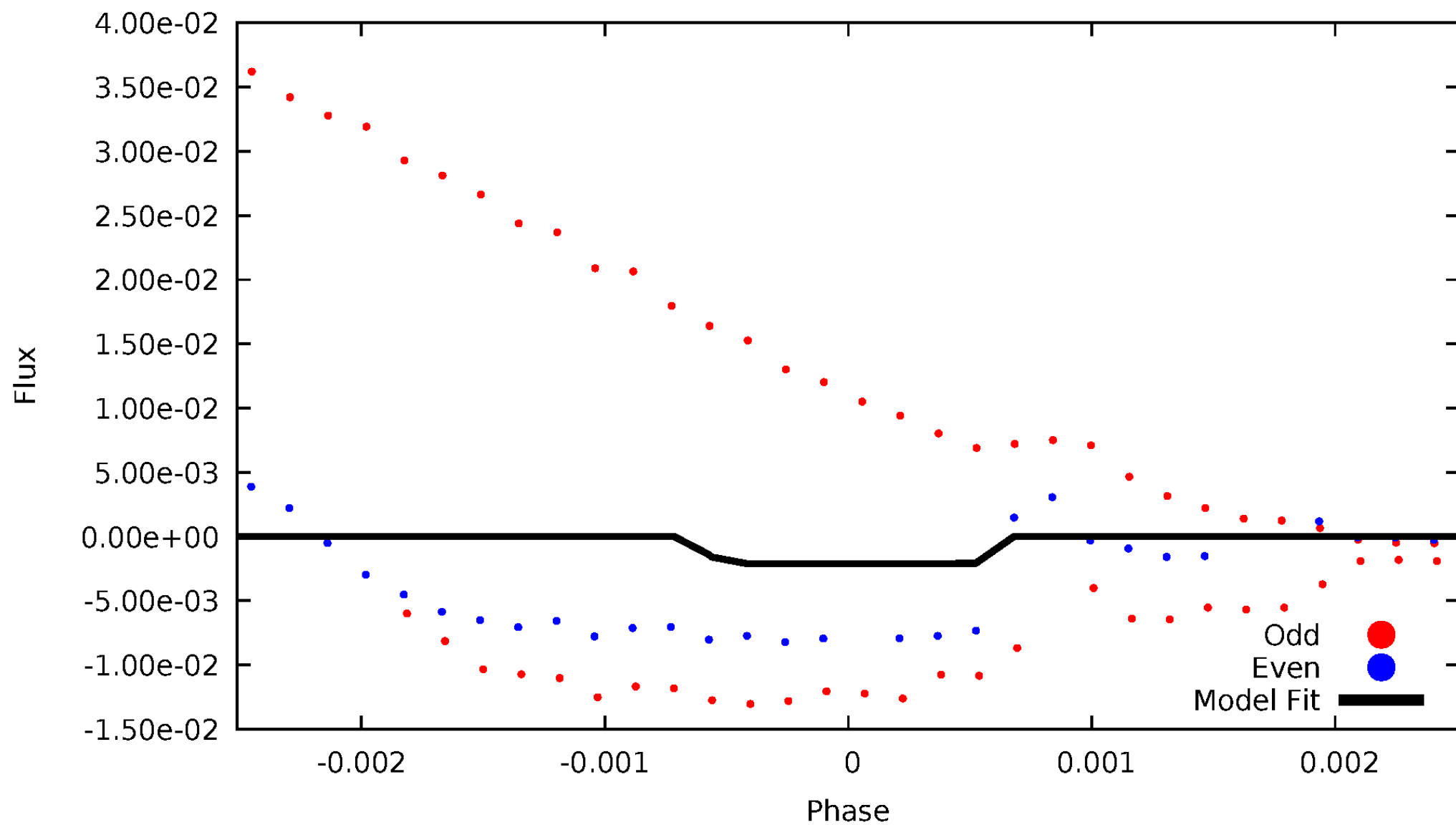
DV Odd/Even

TCE 009650048-10



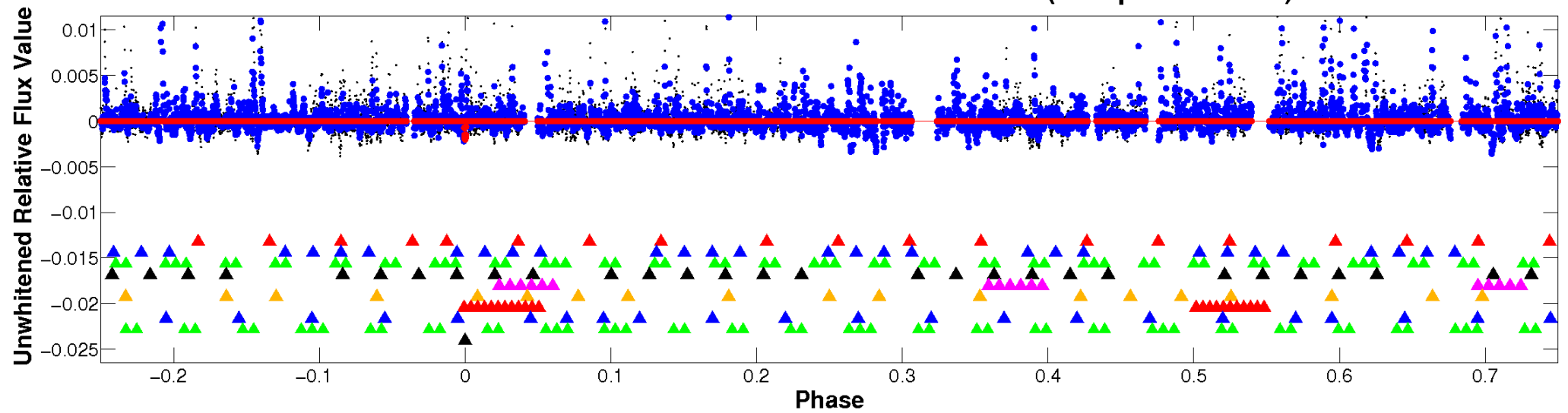
ALT Odd/Even

TCE 009650048-10

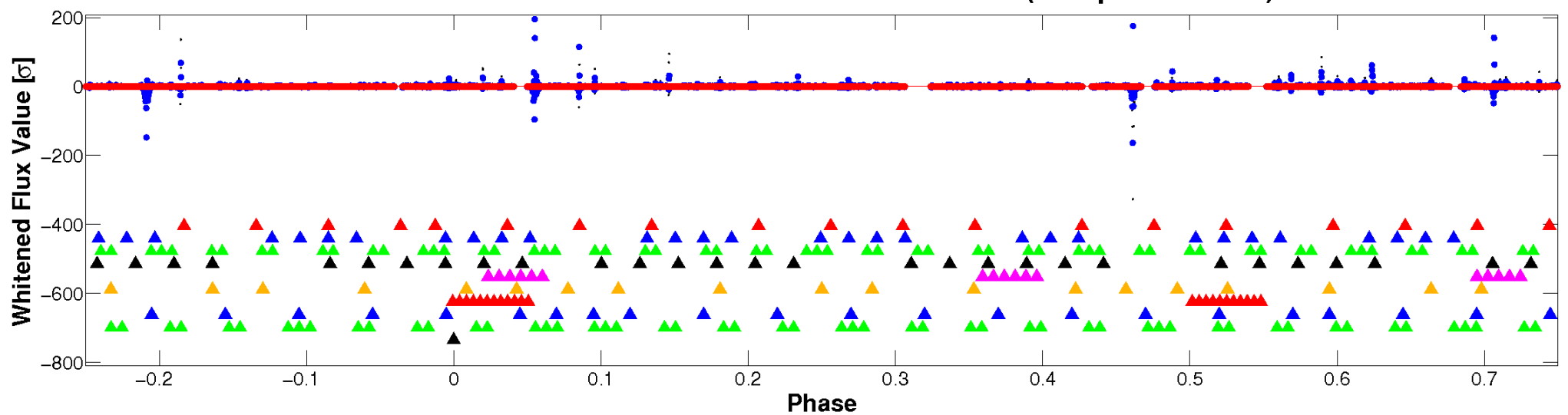


Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

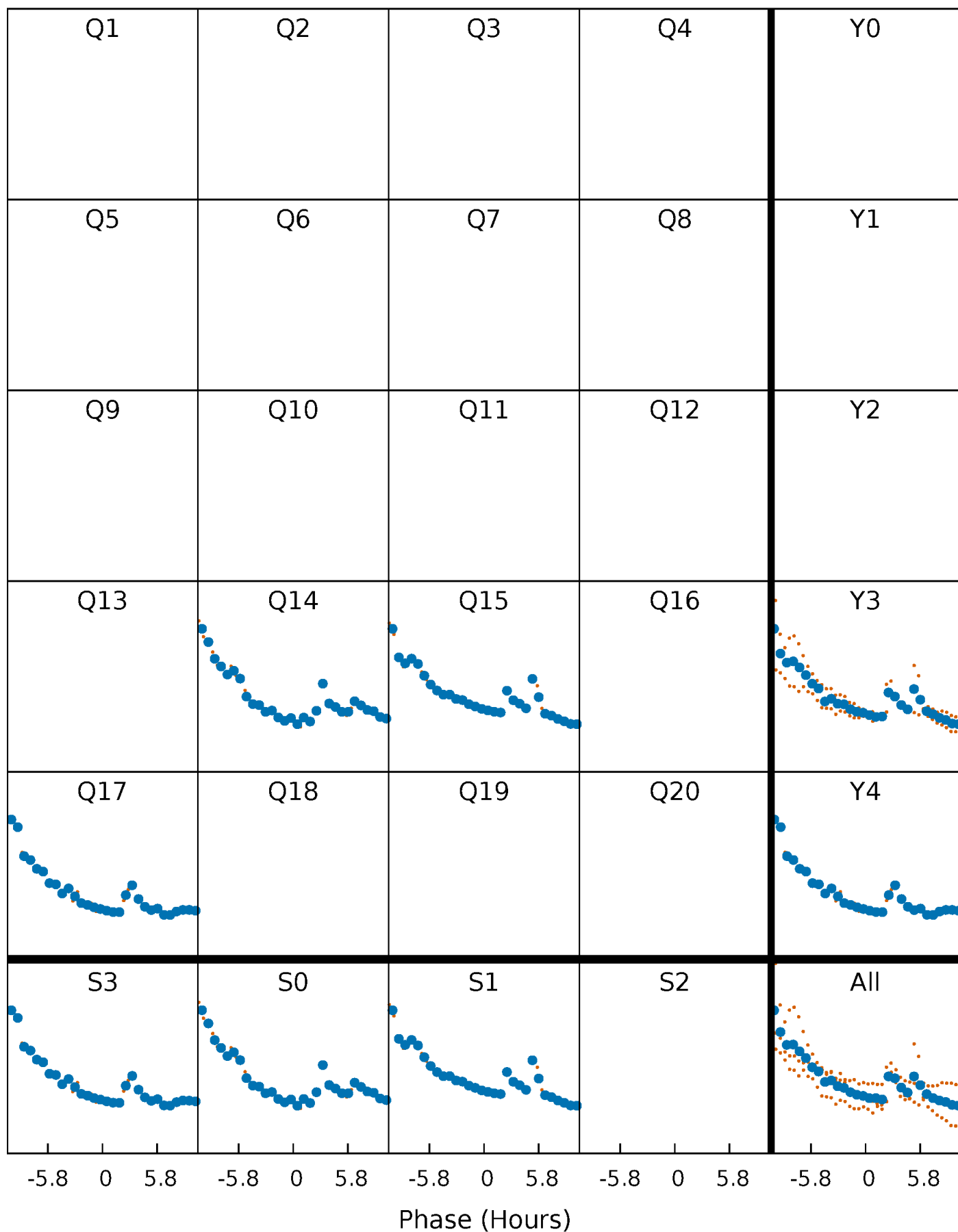


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



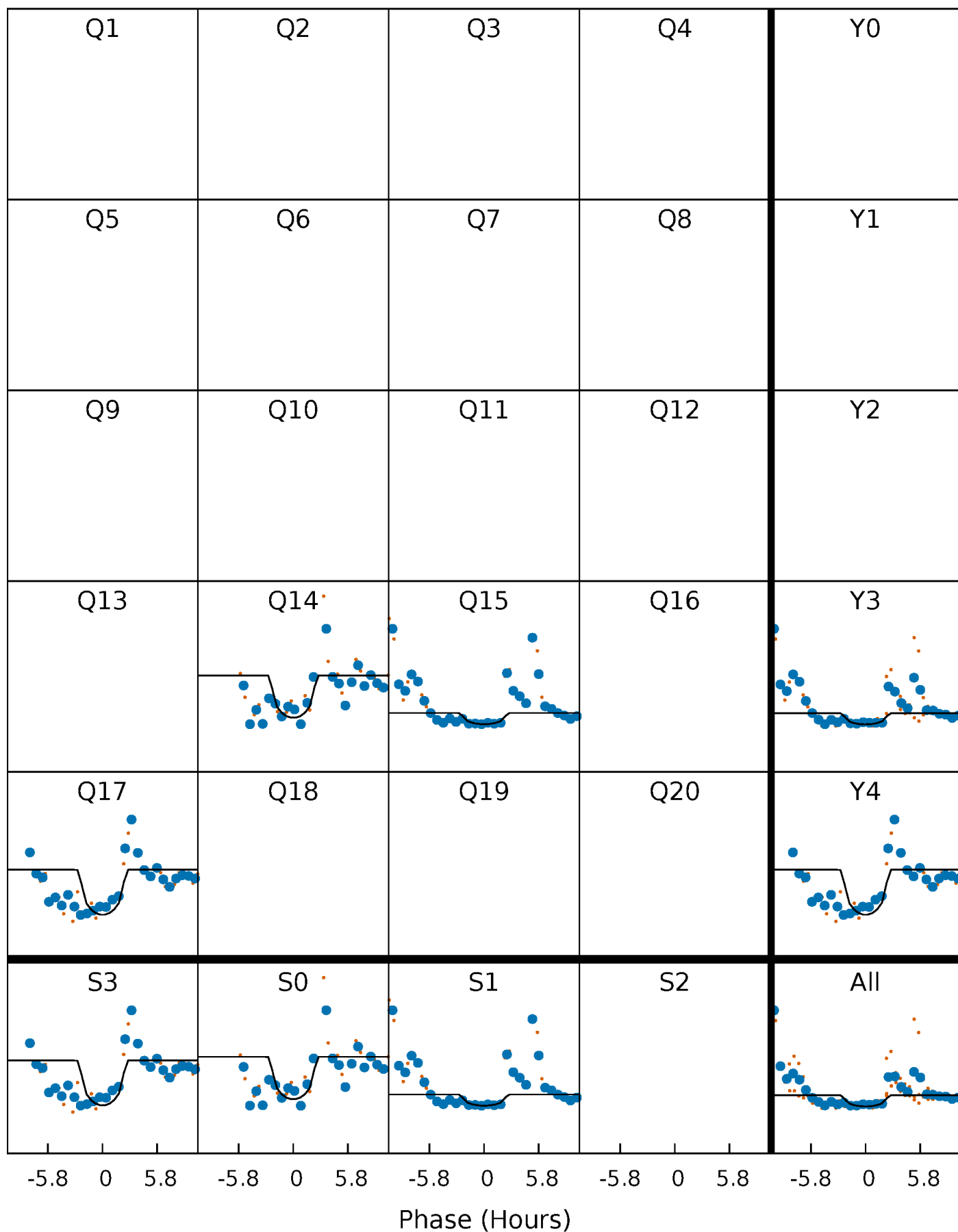
PDC Quarter-Phased Transit Curves

TCE 009650048-10 P=130.405347 Days $T_0=136.770863$ (BKJD)



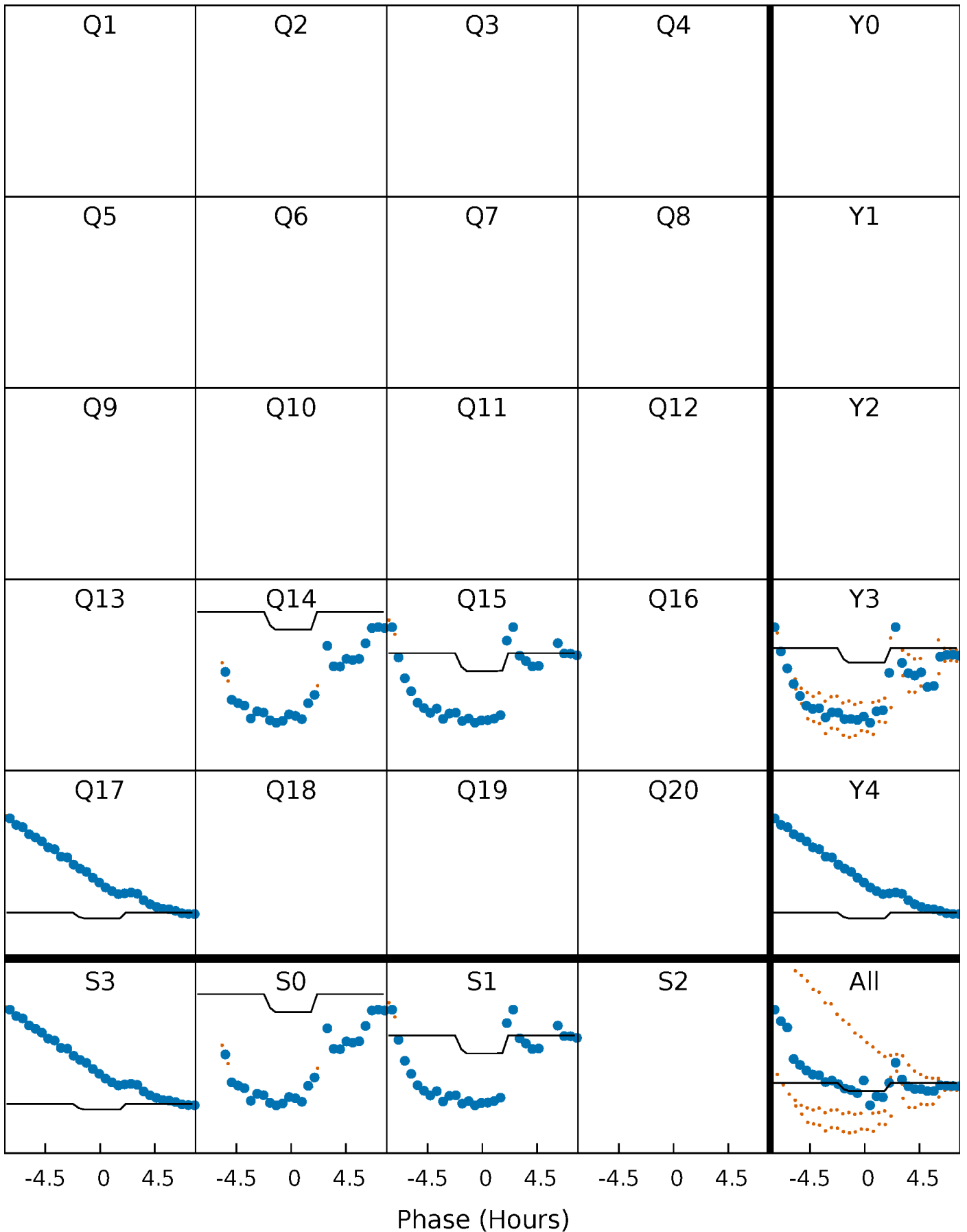
DV Quarter-Phased Transit Curves

TCE 009650048-10 P=130.405347 Days $T_0=136.770863$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

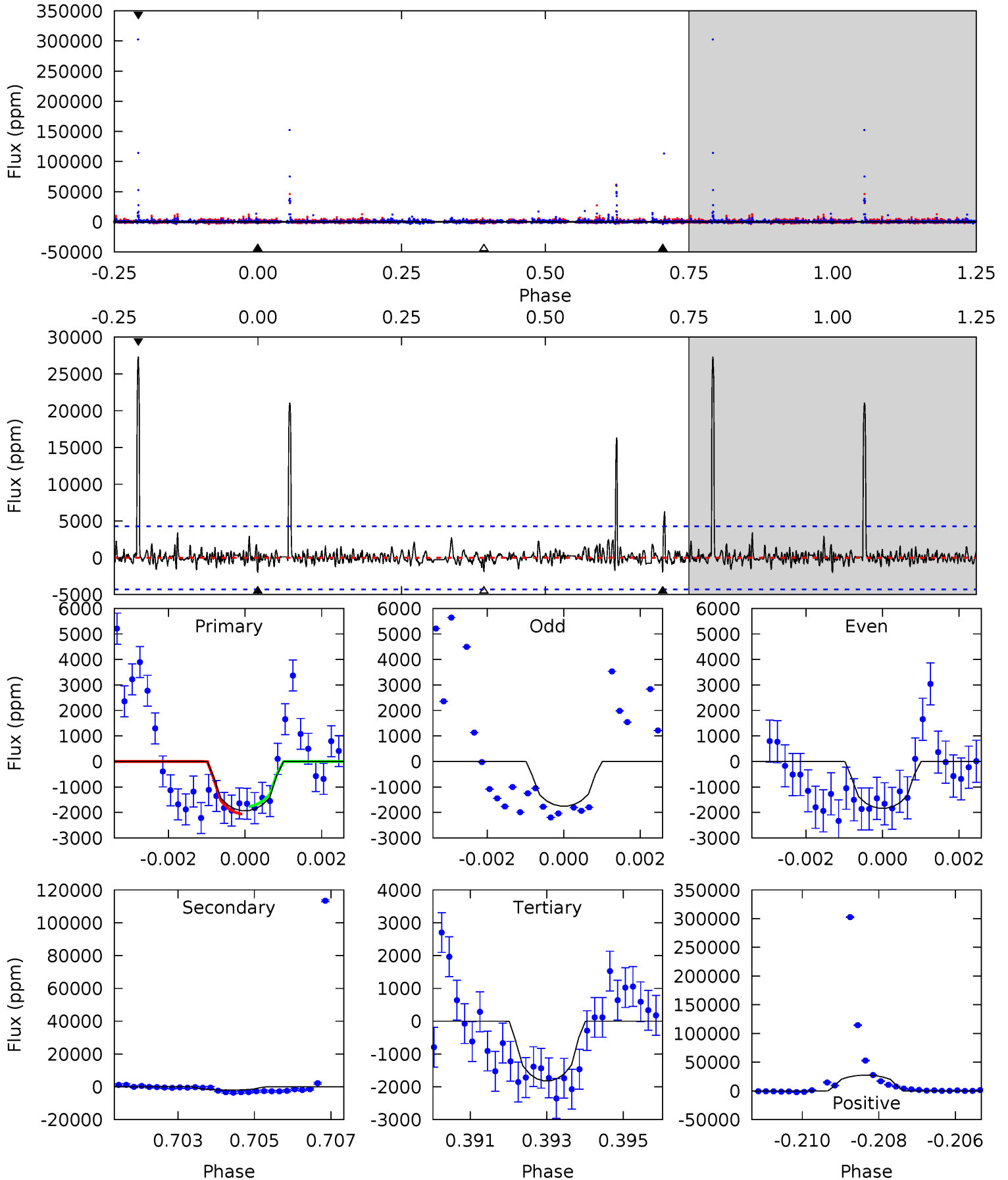
TCE 009650048-10 P=130.406119 Days $T_0=136.766615$ (BKJD)



DV Model-Shift Uniqueness Test

009650048-10, P = 130.405347 Days, E = 136.770863 Days

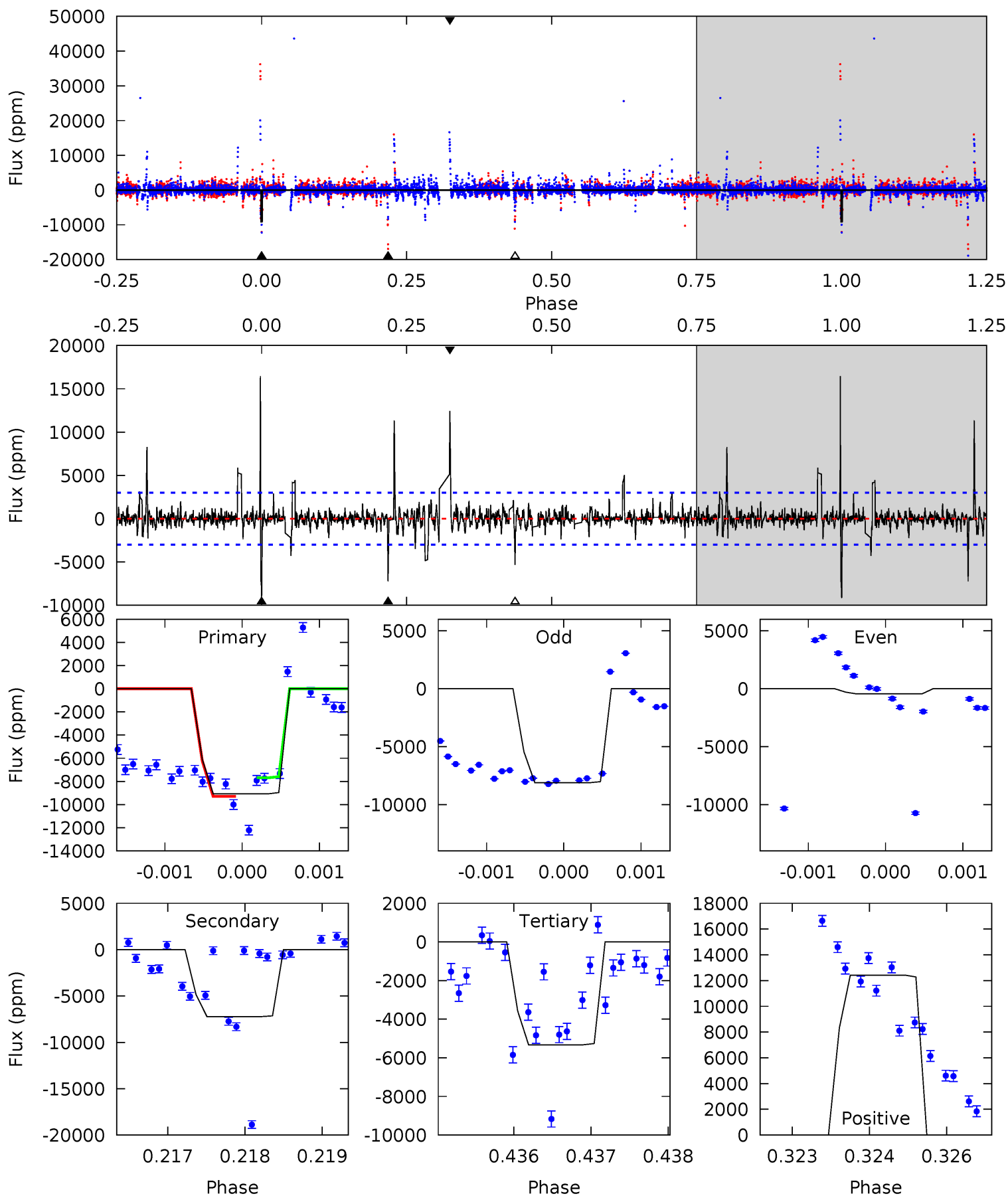
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.41	2.46	2.27	34.1	5.35	3.13	2.18	0.14	-31.7	0.19	-31.7	0.03	0.99	0.93	0.20



Alt Model-Shift Uniqueness Test

009650048-10, P = 130.406119 Days, E = 136.766615 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	13.0	9.61	22.4	5.43	3.26	1.70	6.76	-6.05	3.43	-9.38	7.97	0.37	0.64	1.36



Stellar Parameters For KIC 009650048

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3420^{+116}_{-104}	$0.529^{+0.282}_{-0.188}$	$0.560^{+0.050}_{-0.300}$	$172.447^{+23.924}_{-95.696}$	$3.668^{+0.073}_{-2.490}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+53%/-36%	+9%/-54%	+14%/-55%	+2%/-68%	+315%/-38%
Source	KIC0	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 009650048-10 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1971±801	$1197.83^{+1074.11}_{-824.44}$	3198^{+203}_{-292}	2471^{+1890}_{-5254}	$0.398^{+3.601}_{-0.300}$
Alt.	-7225±554	$1234.87^{+1122.25}_{-824.68}$	3185^{+199}_{-299}	3554^{+2018}_{-969}	$1.494^{+11.248}_{-1.084}$

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

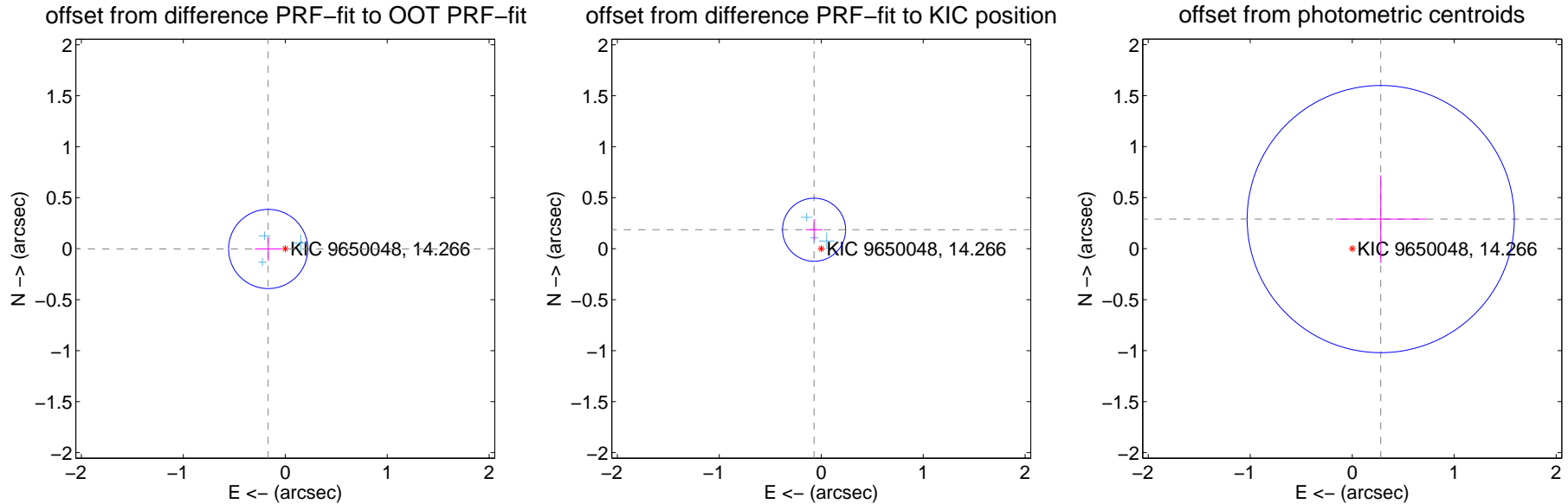
DV Centroid Data

Supplemental centroid analysis for 009650048-10. Kepler magnitude: 14.27. Transit SNR 6.22

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.168 ± 0.129	1.30	0.168 ± 0.129	-0.003 ± 0.116
PRF-fit source offset from KIC position	0.199 ± 0.103	1.93	0.070 ± 0.082	0.186 ± 0.106
photometric centroid source offset	0.40 ± 0.44	0.92	-0.28 ± 0.44	0.29 ± 0.43

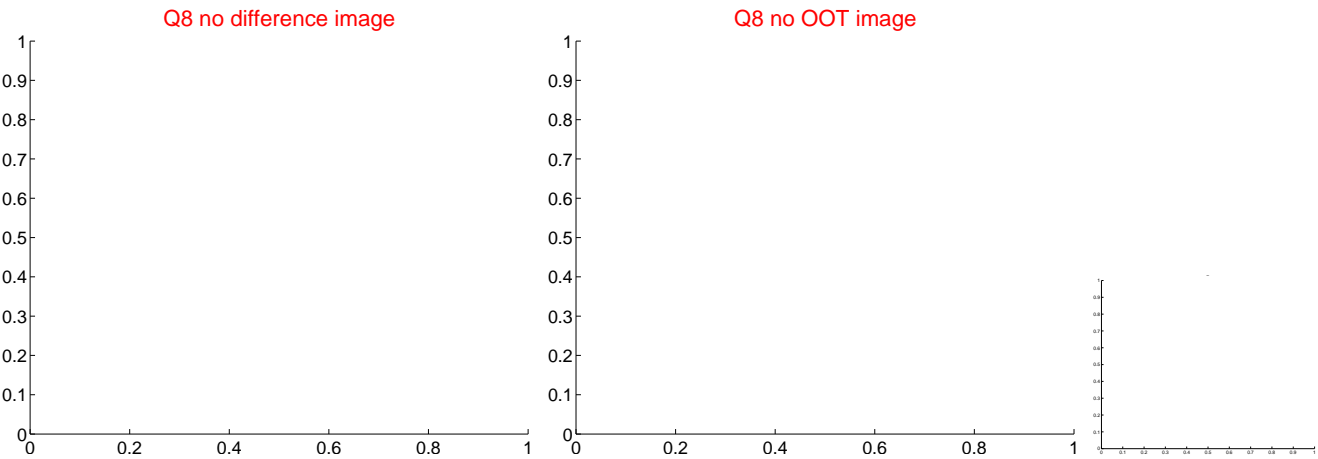
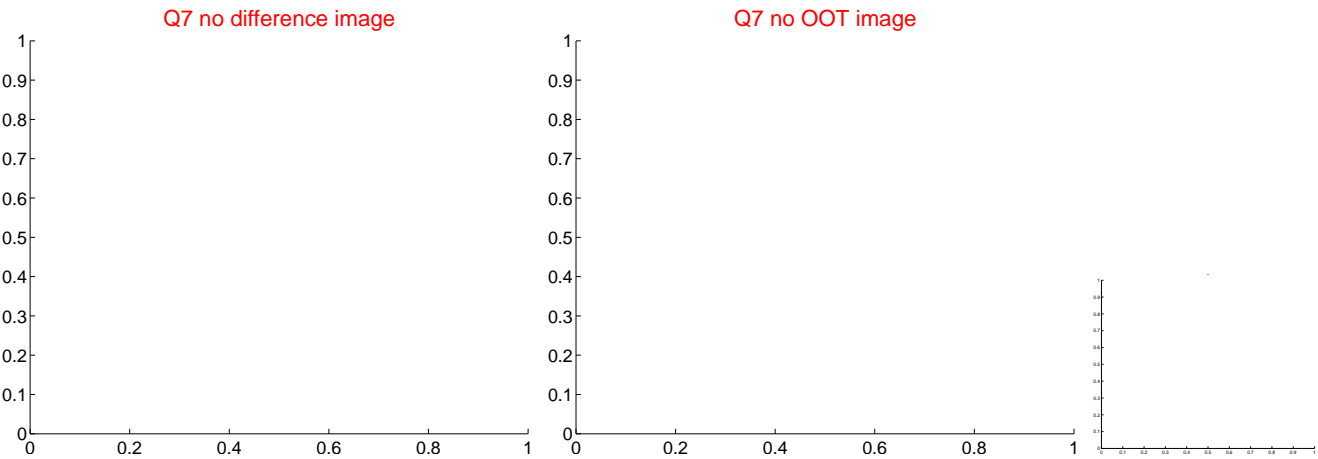
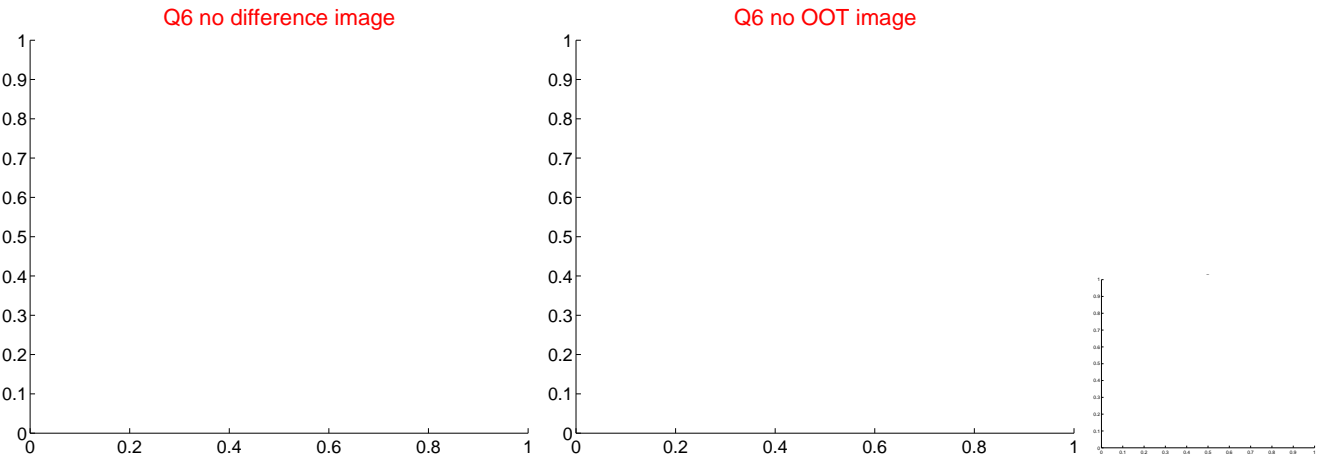
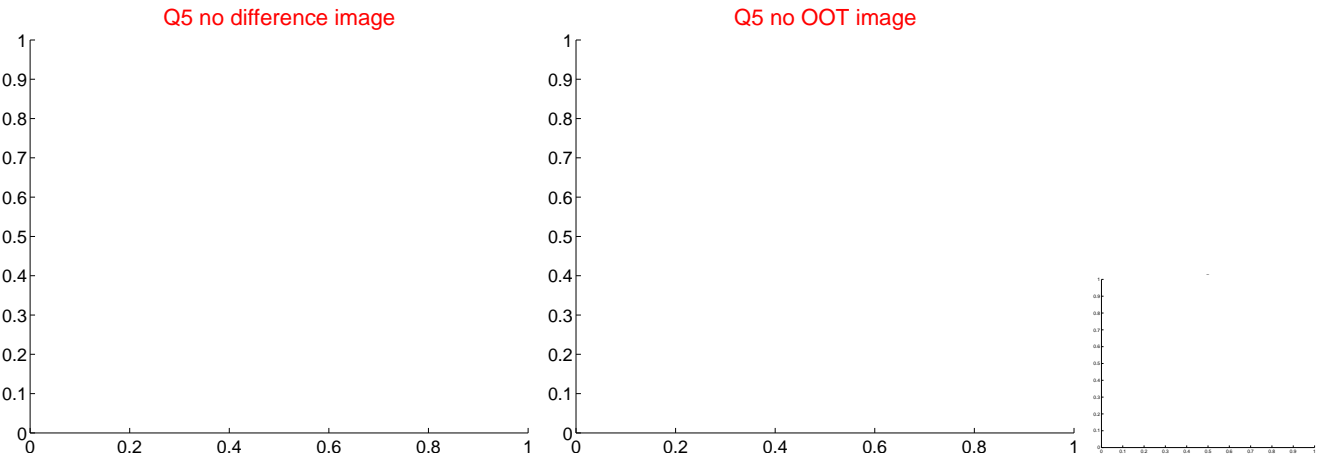


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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



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

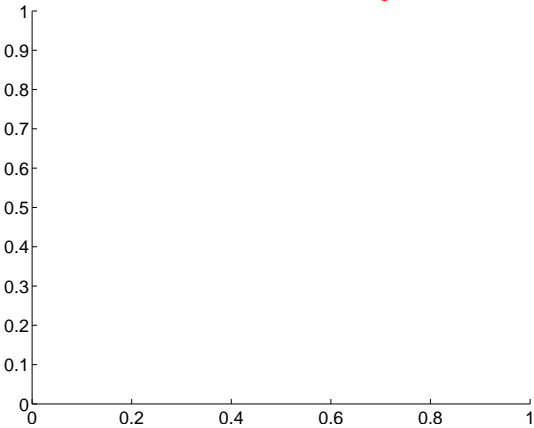


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

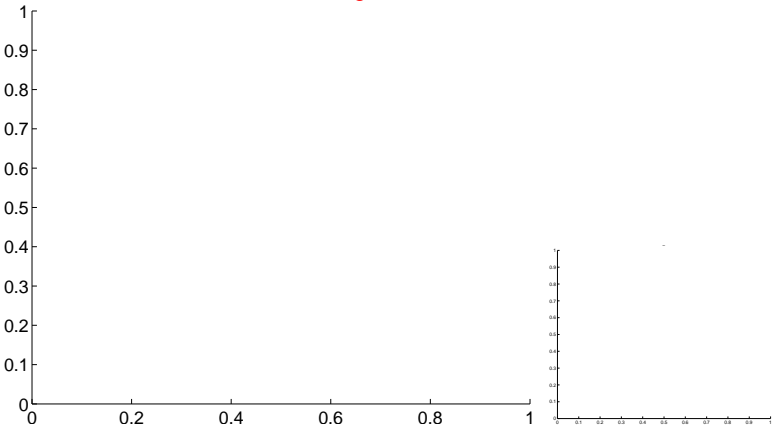


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

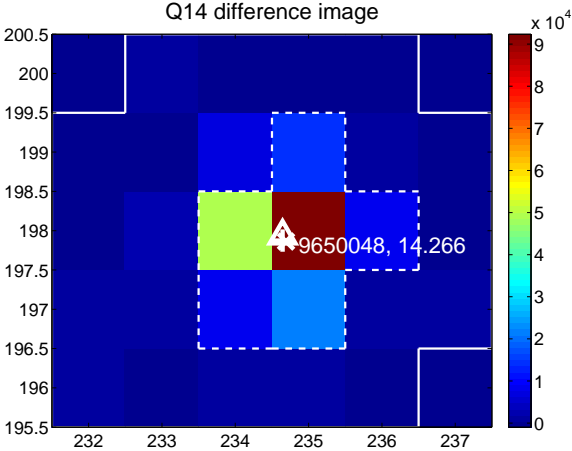
Q13 no difference image



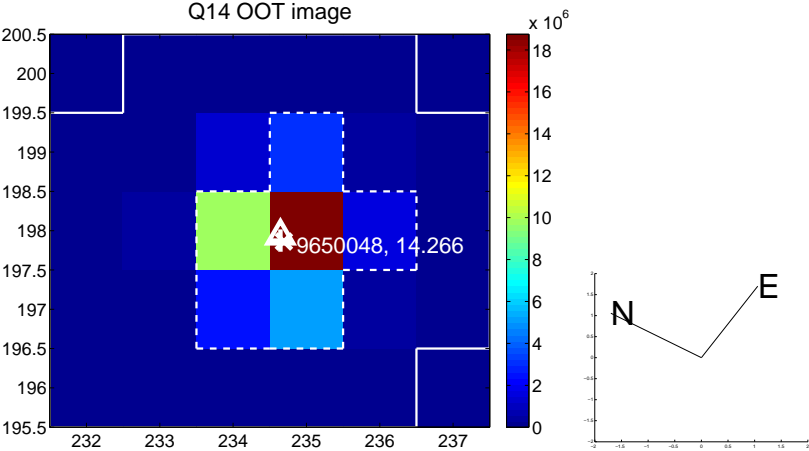
Q13 no OOT image



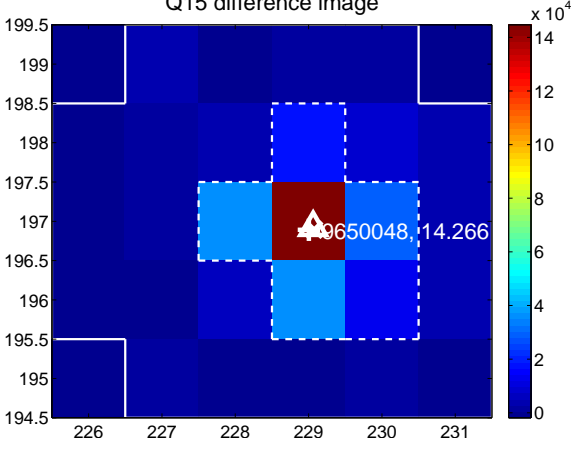
Q14 difference image



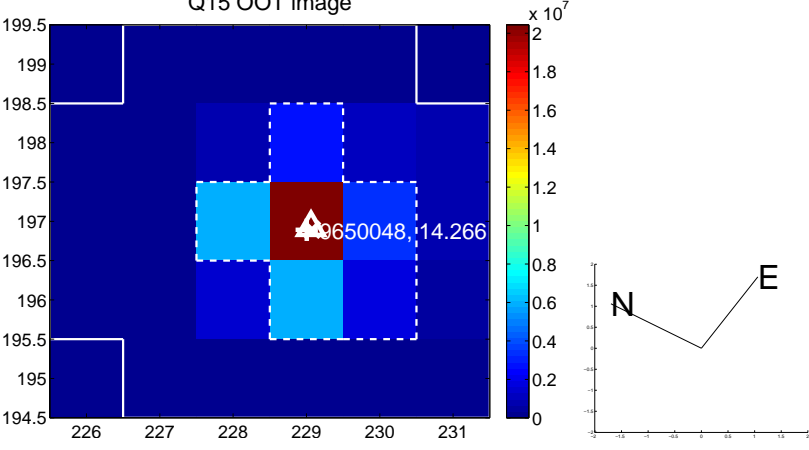
Q14 OOT image



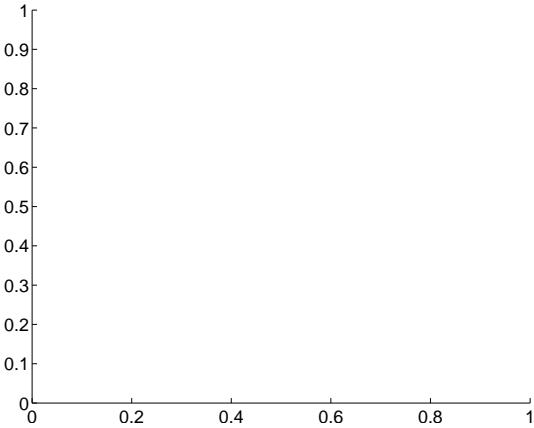
Q15 difference image



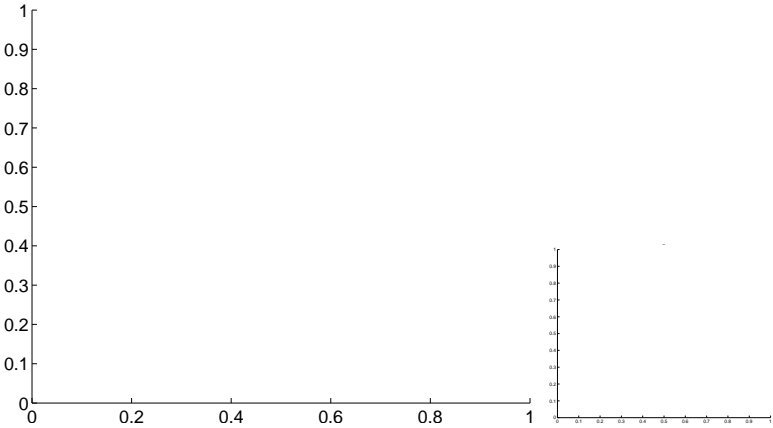
Q15 OOT image



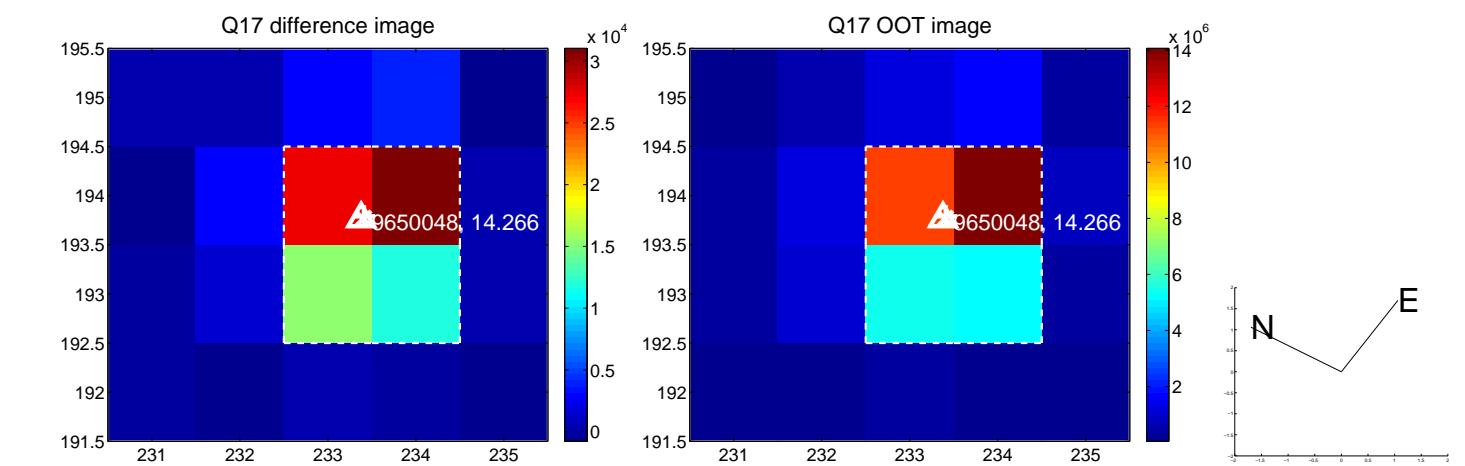
Q16 no difference image



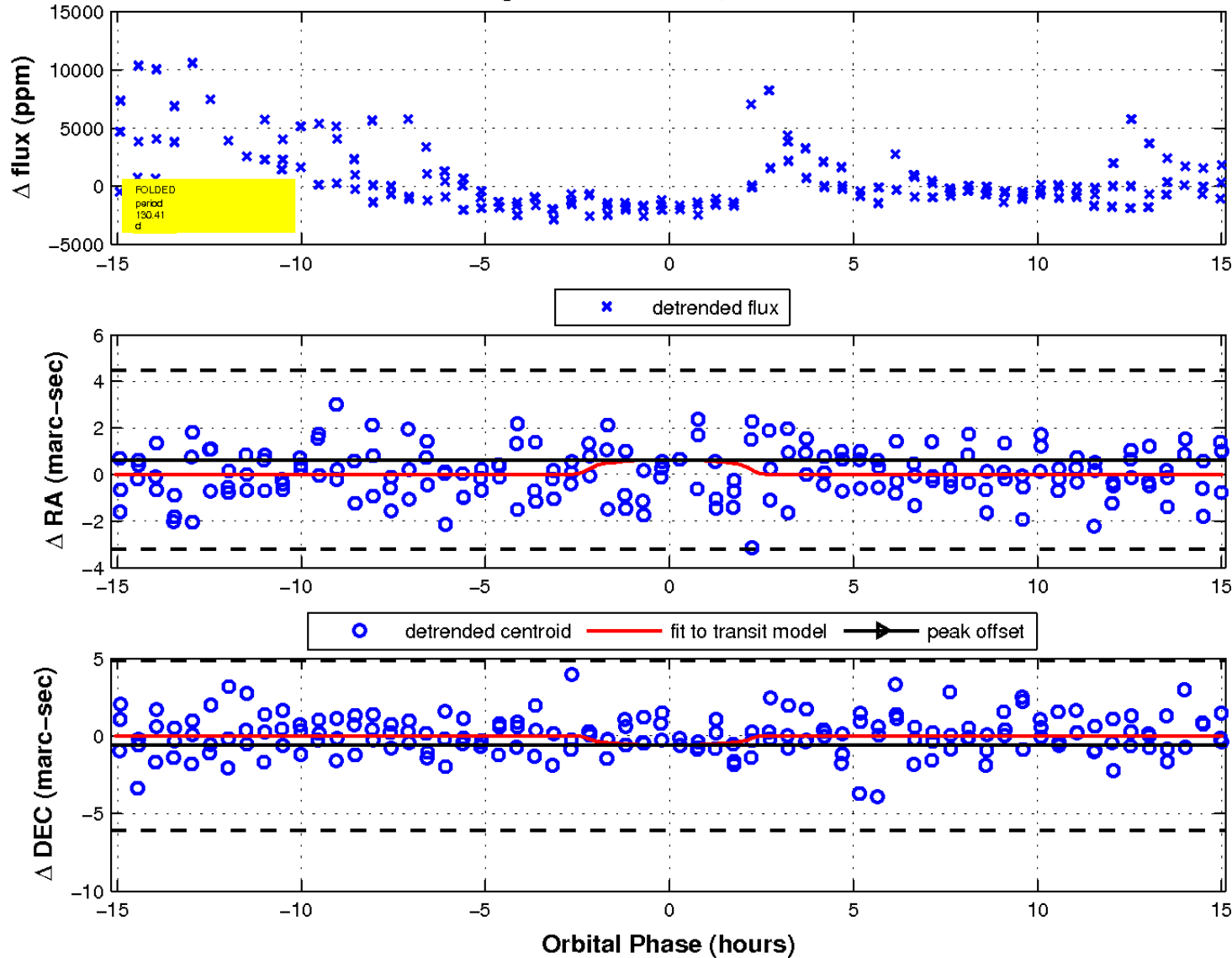
Q16 no OOT image



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



fluxWeightedCentroids, Planet 10 of 10



UKIRT Image

Declination

