

KIC 004936524

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})
004936524-01	OBS	No	1.674850	132.350043	49.4	11.312	17.2	22.3	3.01	7677	2.14	21948.44
004936524-02	OBS	No	63.028245	135.188155	274.7	2.452	7.9	7.5	3.01	7677	5.16	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004936524-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
004936524-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

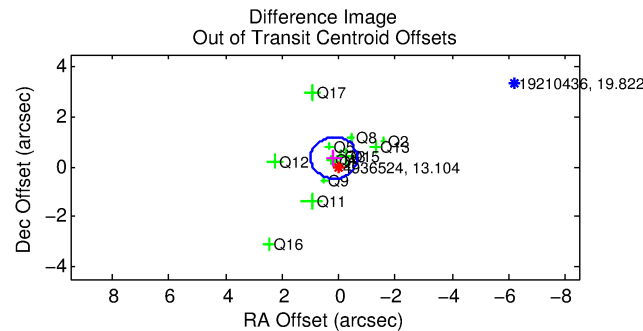
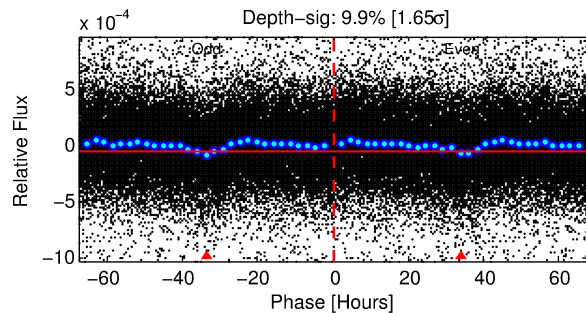
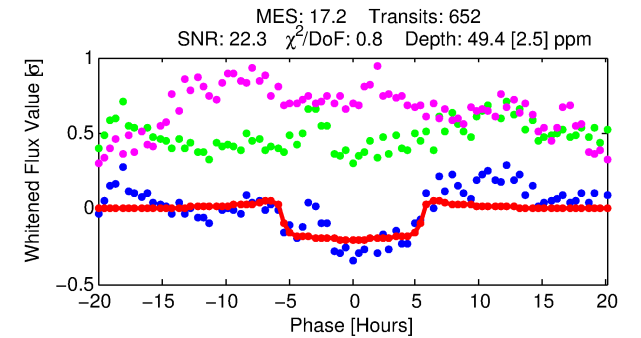
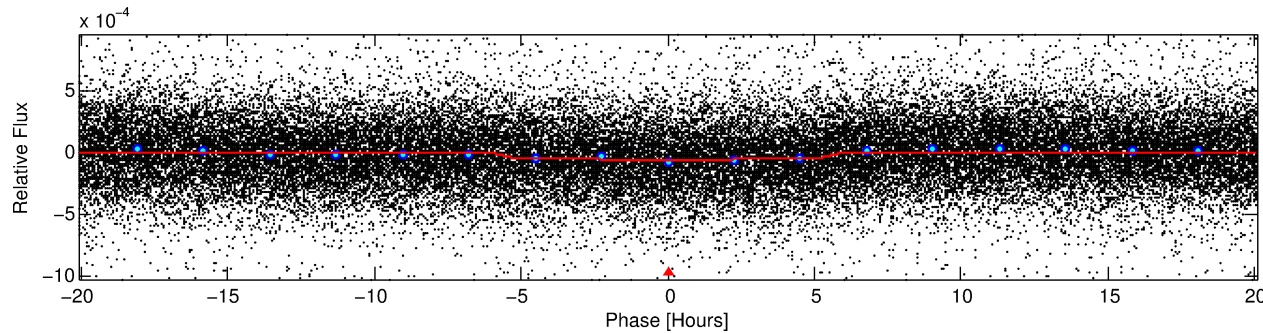
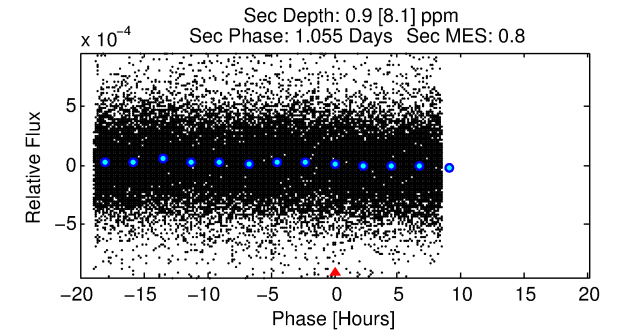
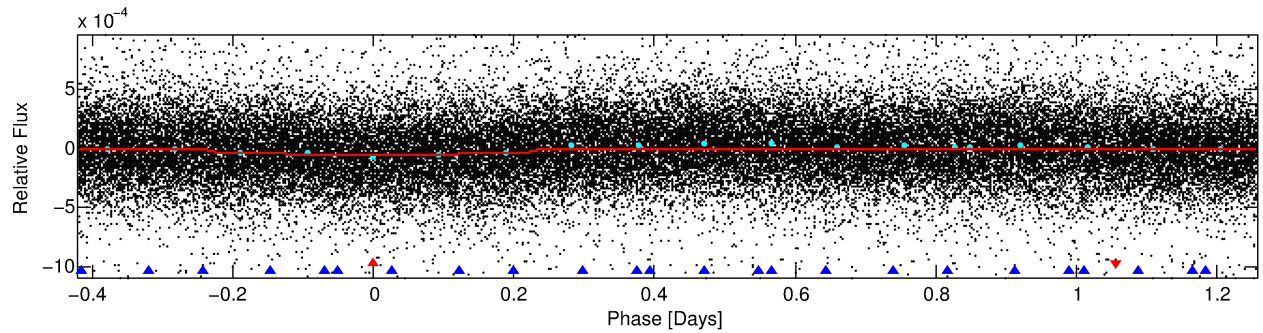
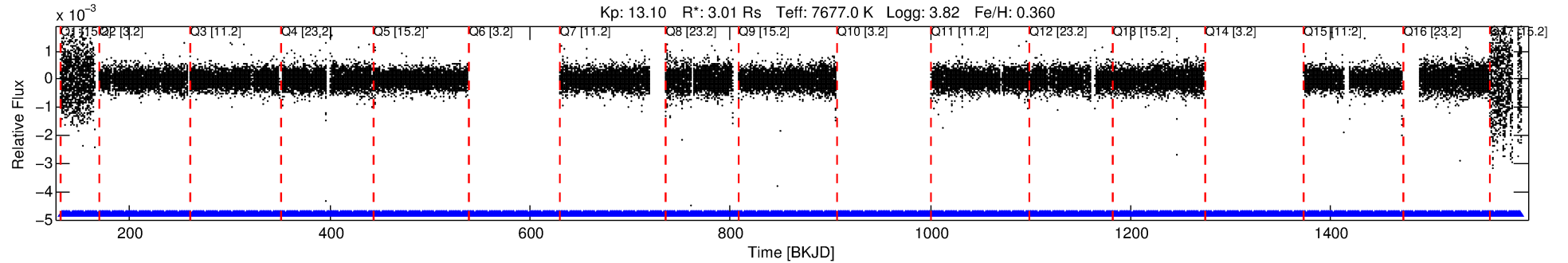
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004936524-01

No Significant Match Found

DV One-Page Summary

KIC: 4936524 Candidate: 1 of 2 Period: 1.675 d



DV Fit Results:

Period = 1.67485 [0.00001] d
Epoch = 132.3500 [0.0043] BKJD
Rp/R* = 0.0065 [0.0037]
a/R* = 1.30 [1.75]
b = 0.01 [274.21]
Seff = 21948.44 [11915.20]
Teq = 3104 [421] K
Rp = 2.14 [1.45] Re
a = 0.0358 [0.0119] AU
Ag = 0.14 [1.26] [-0.69σ]
Teffp = 2923 [6662] K [-0.03σ]

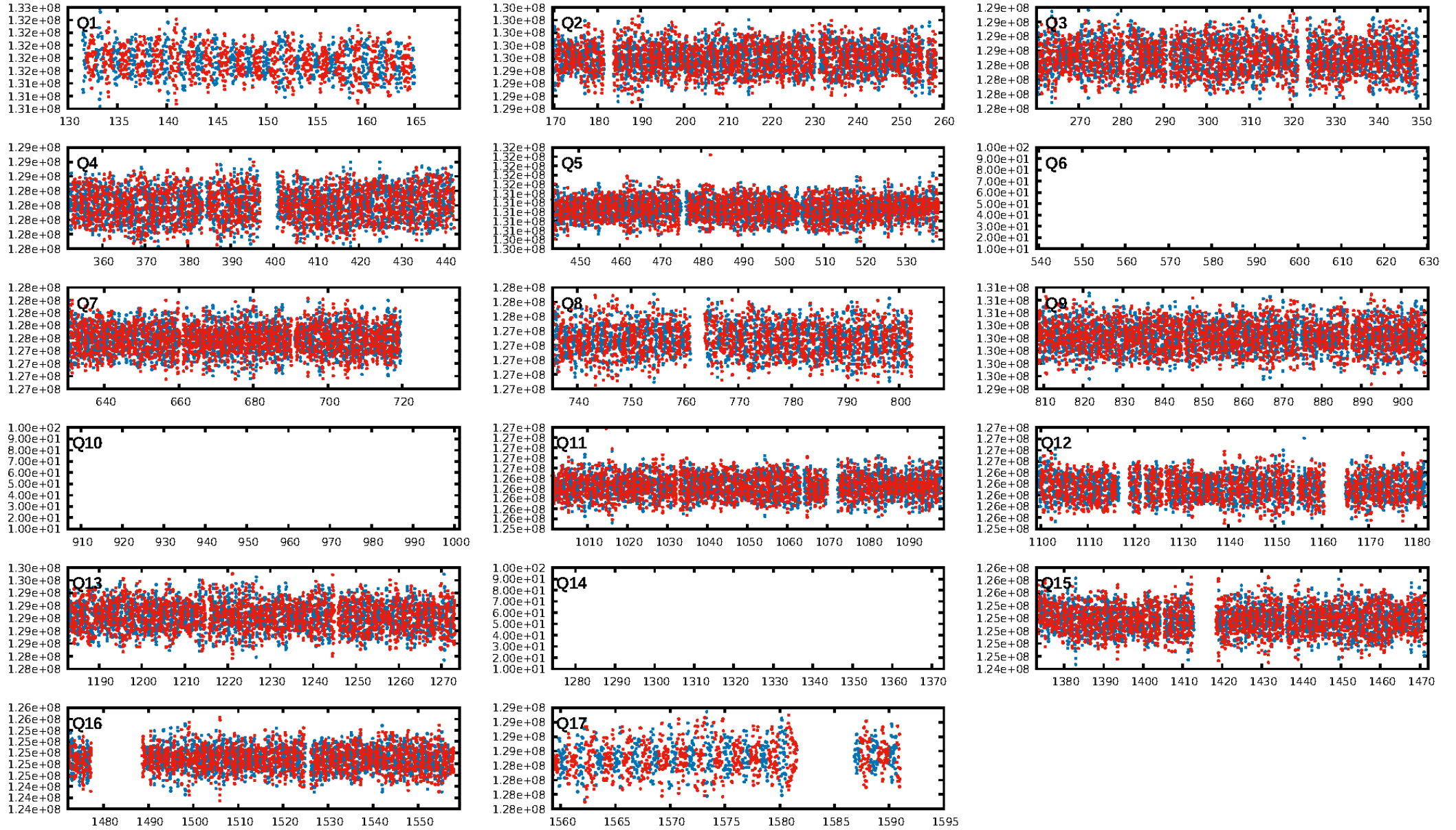
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [127.21σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.44e-51
RollingBand-fgt: 1.00 [615/615]
GhostDiagnostic-chr: 4.191
Centroid-sig: 18.1%
Centroid-so: 0.252 arcsec [0.77σ]
OotOffset-rm: 0.391 arcsec [1.42σ]
KicOffset-rm: 0.446 arcsec [1.37σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 0.85 [11/13]
DiffImageOverlap-fno: 1.00 [14/14]

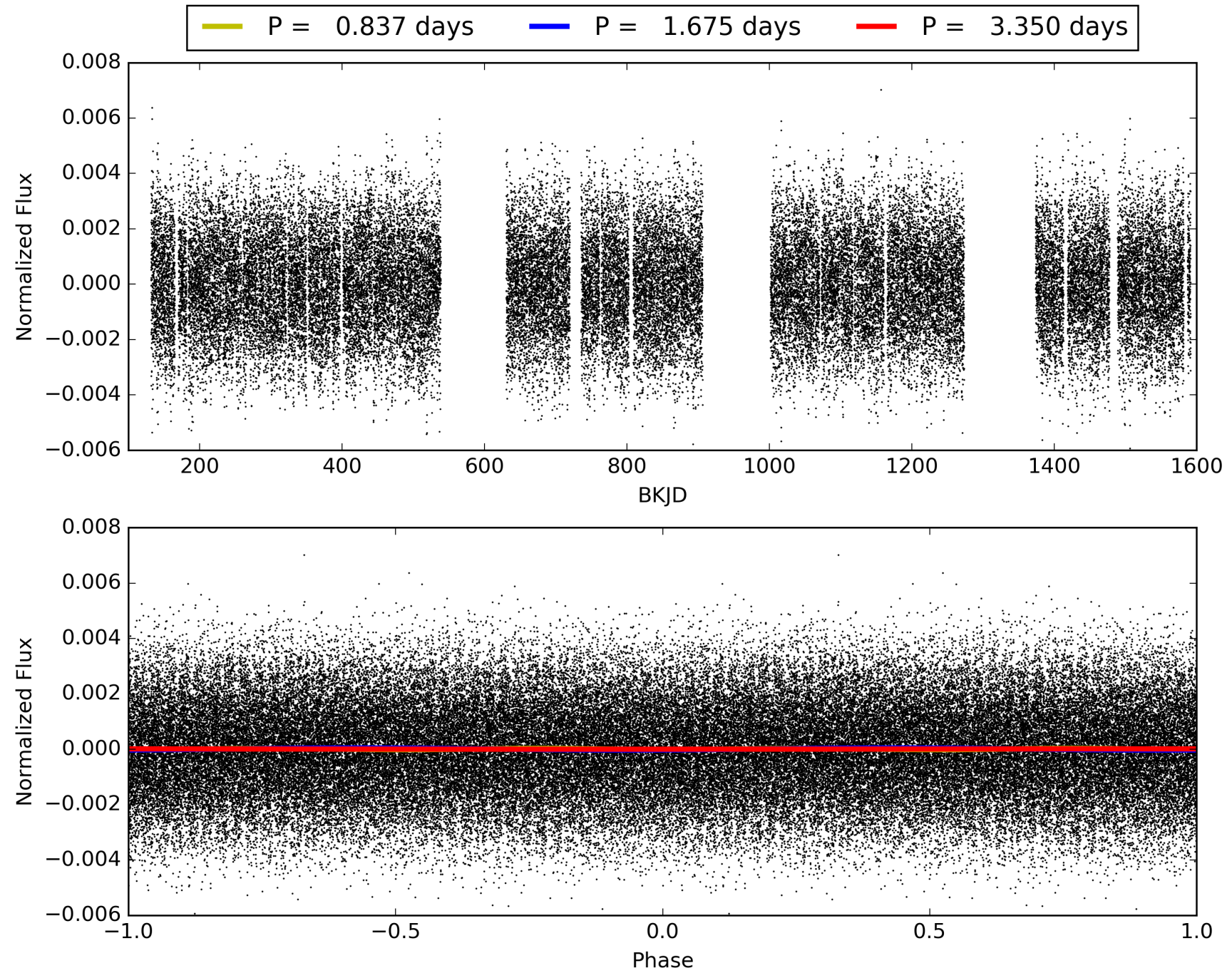
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:33:48 Z

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

TCE 004936524-01, PDC Light Curves

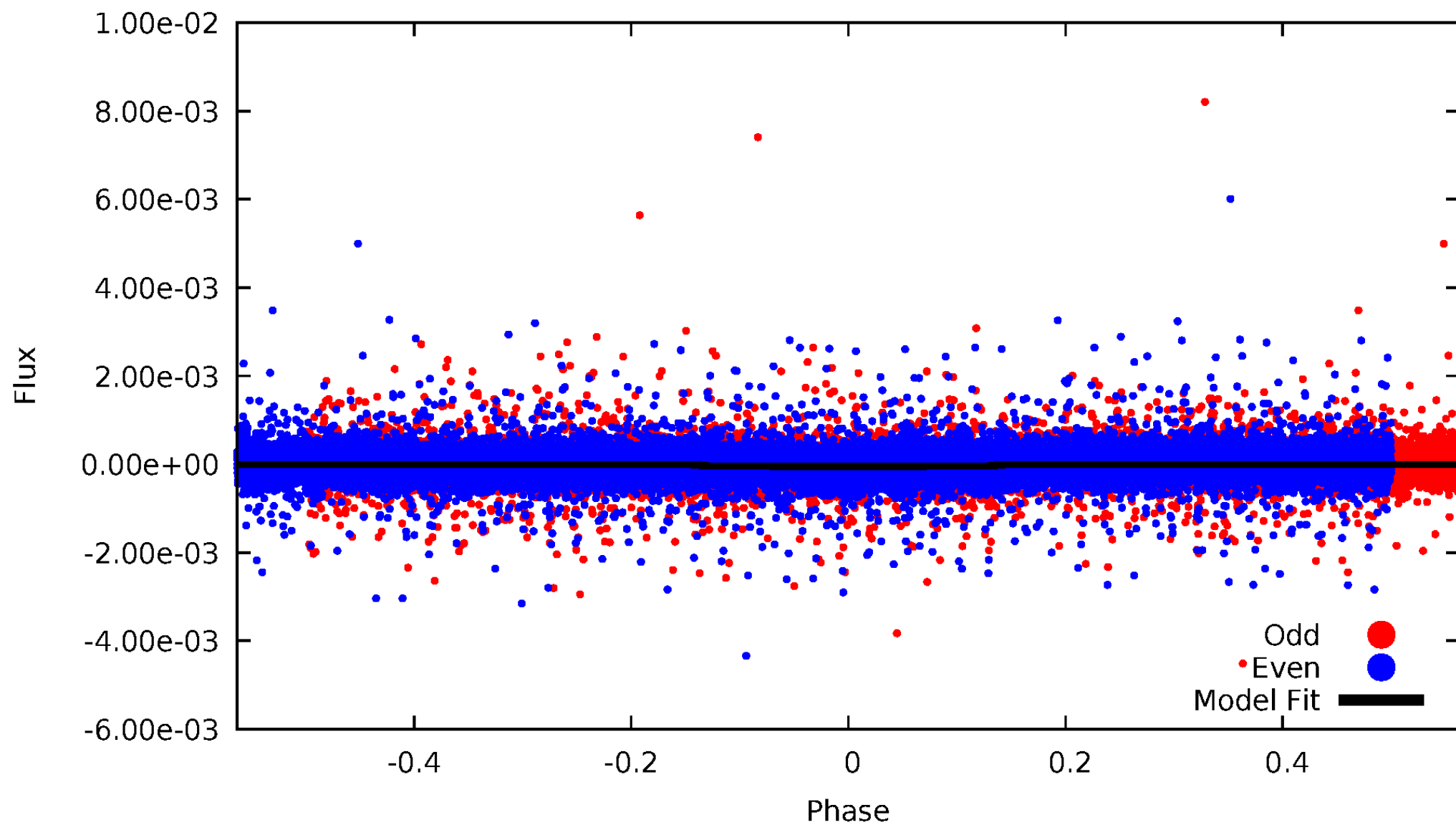


TCE 004936524-01



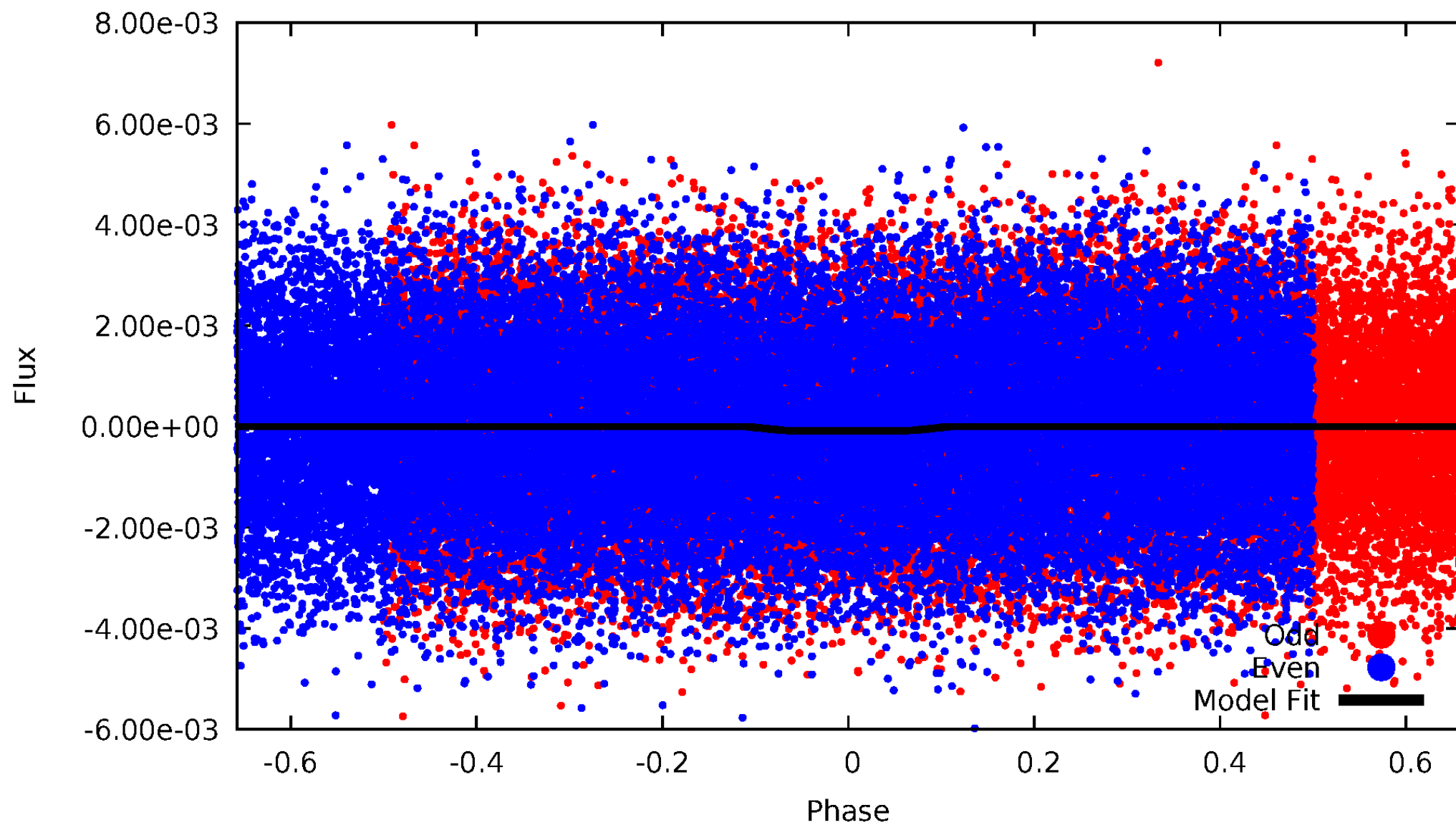
DV Odd/Even

TCE 004936524-01



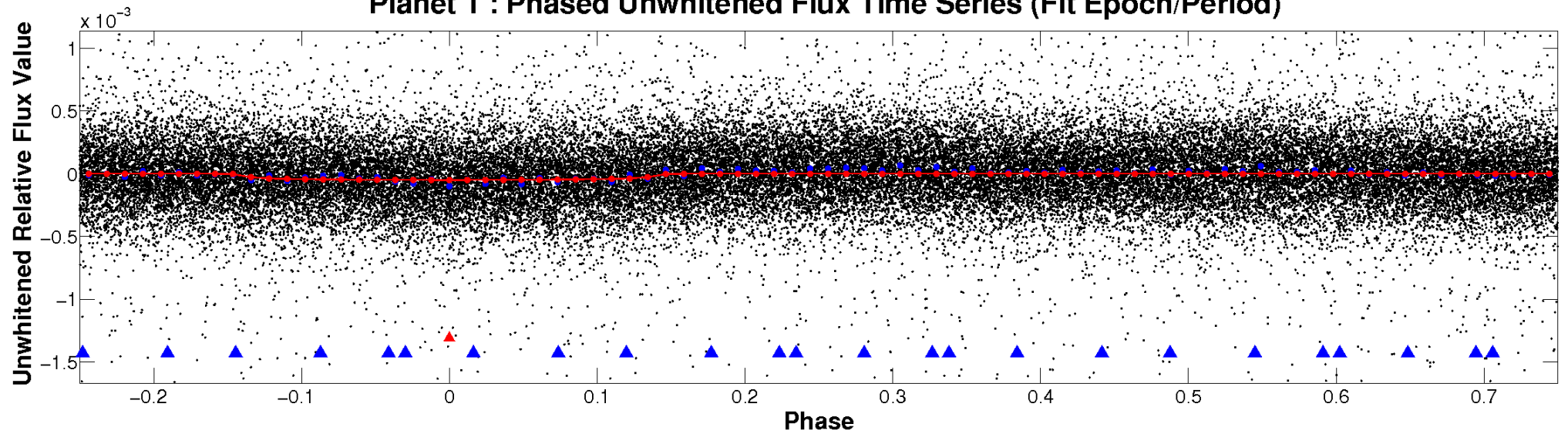
ALT Odd/Even

TCE 004936524-01

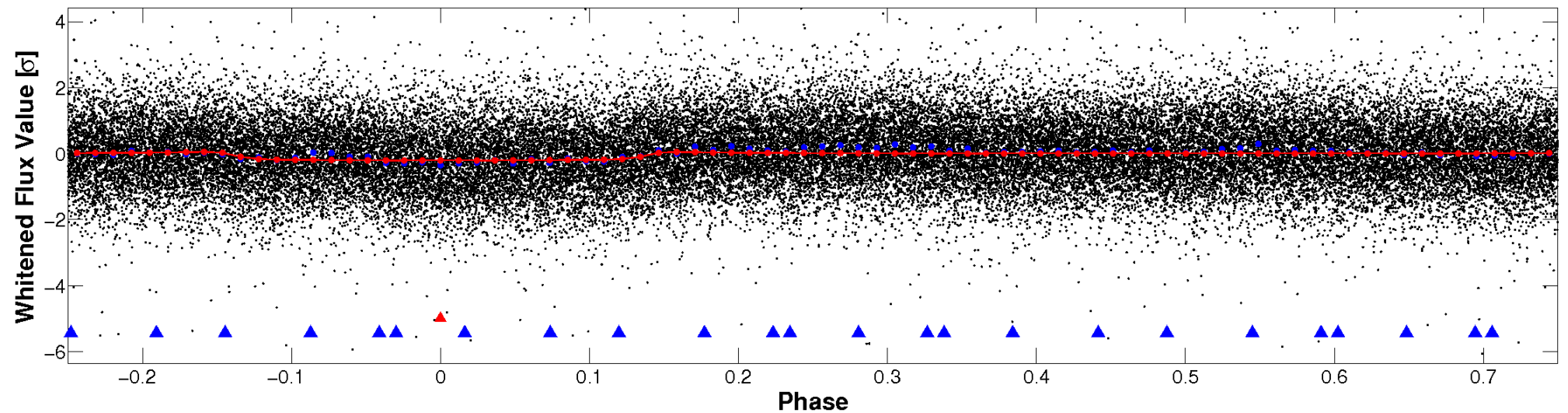


Non-Whitened Vs. Whitened Light Curve

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

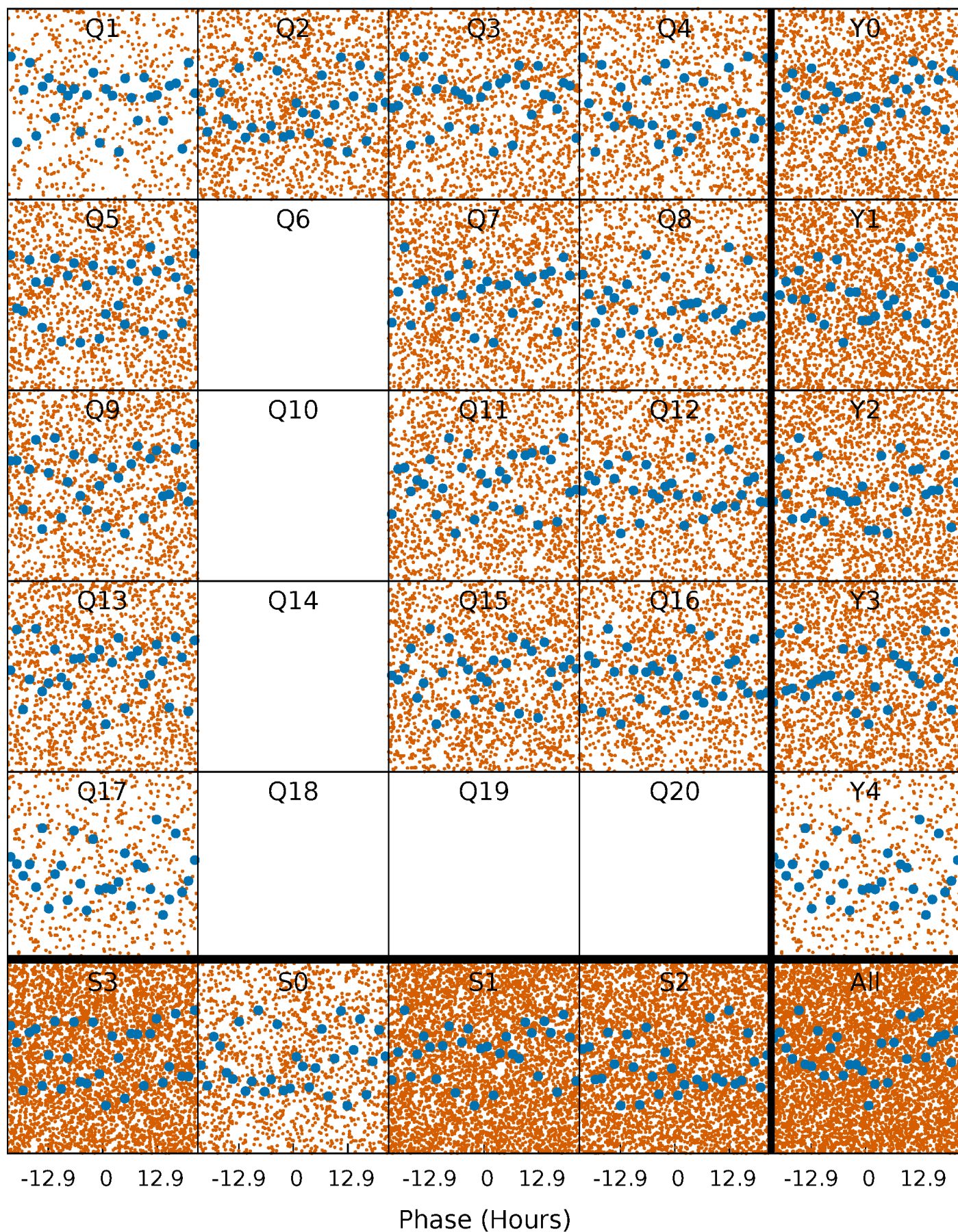


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



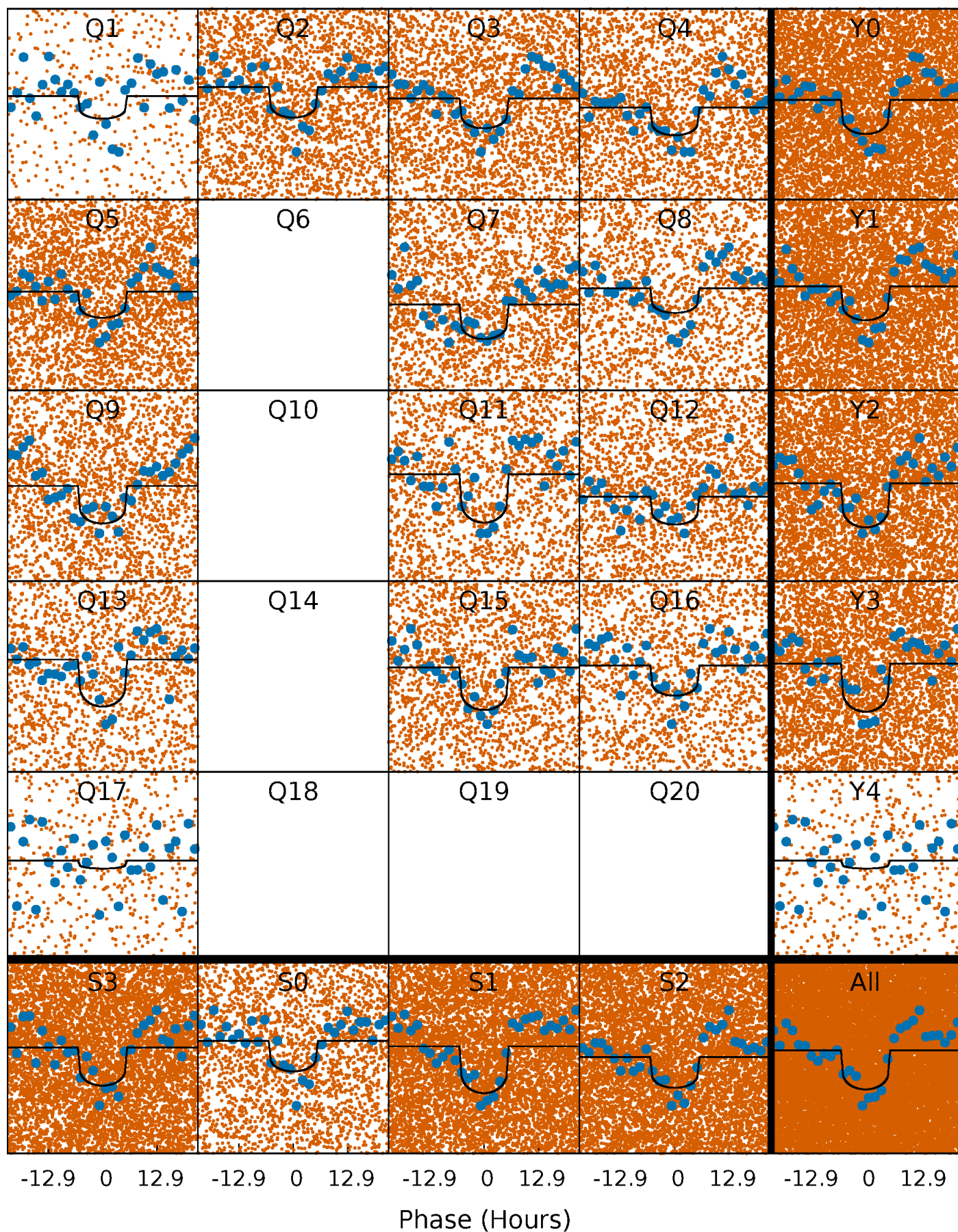
PDC Quarter-Phased Transit Curves

TCE 004936524-01 P= 1.674850 Days $T_0=132.350043$ (BKJD)



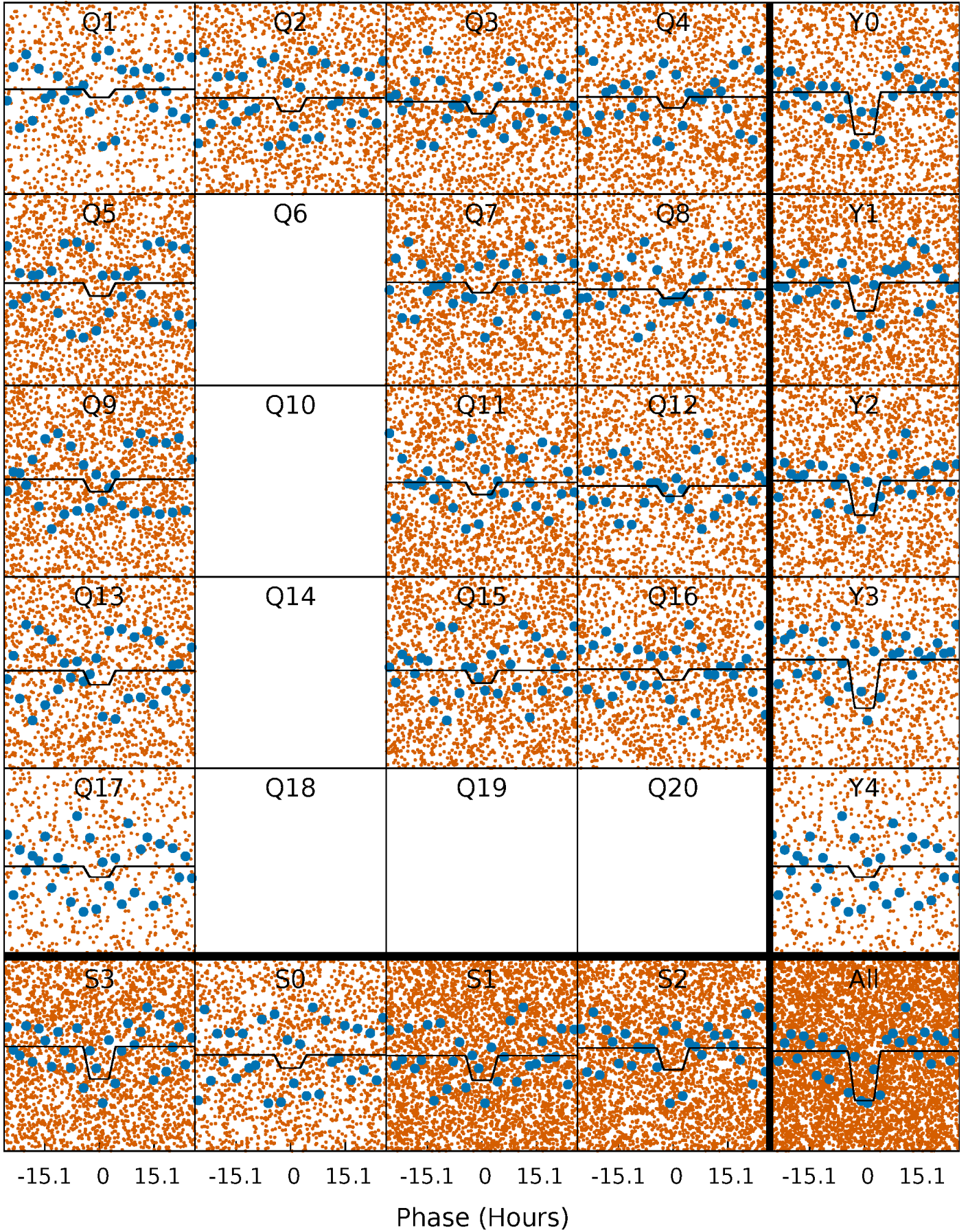
DV Quarter-Phased Transit Curves

TCE 004936524-01 P= 1.674850 Days $T_0=132.350043$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

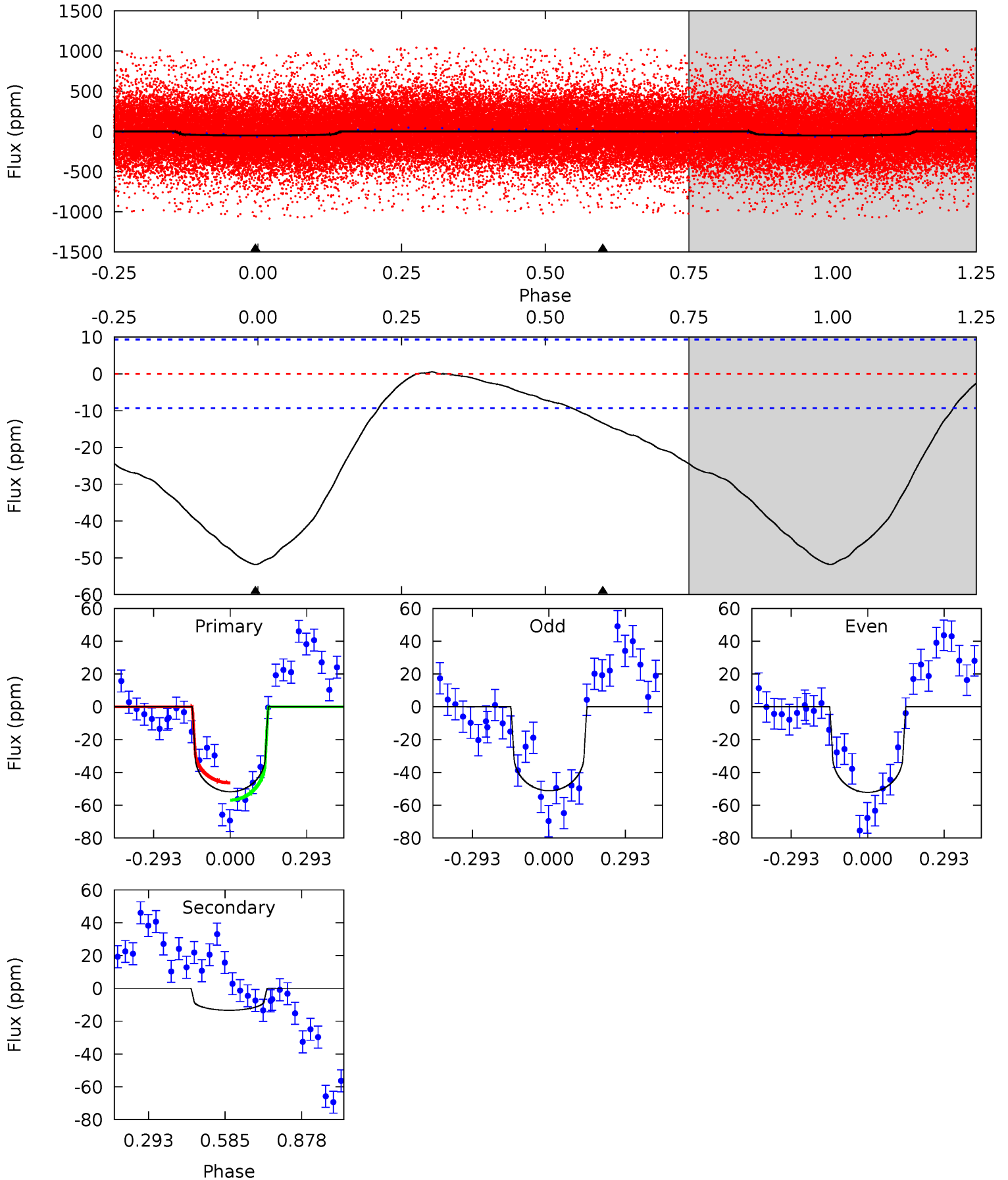
TCE 004936524-01 P= 1.674792 Days $T_0=132.377069$ (BKJD)



DV Model-Shift Uniqueness Test

004936524-01, P = 1.674850 Days, E = 130.675193 Days

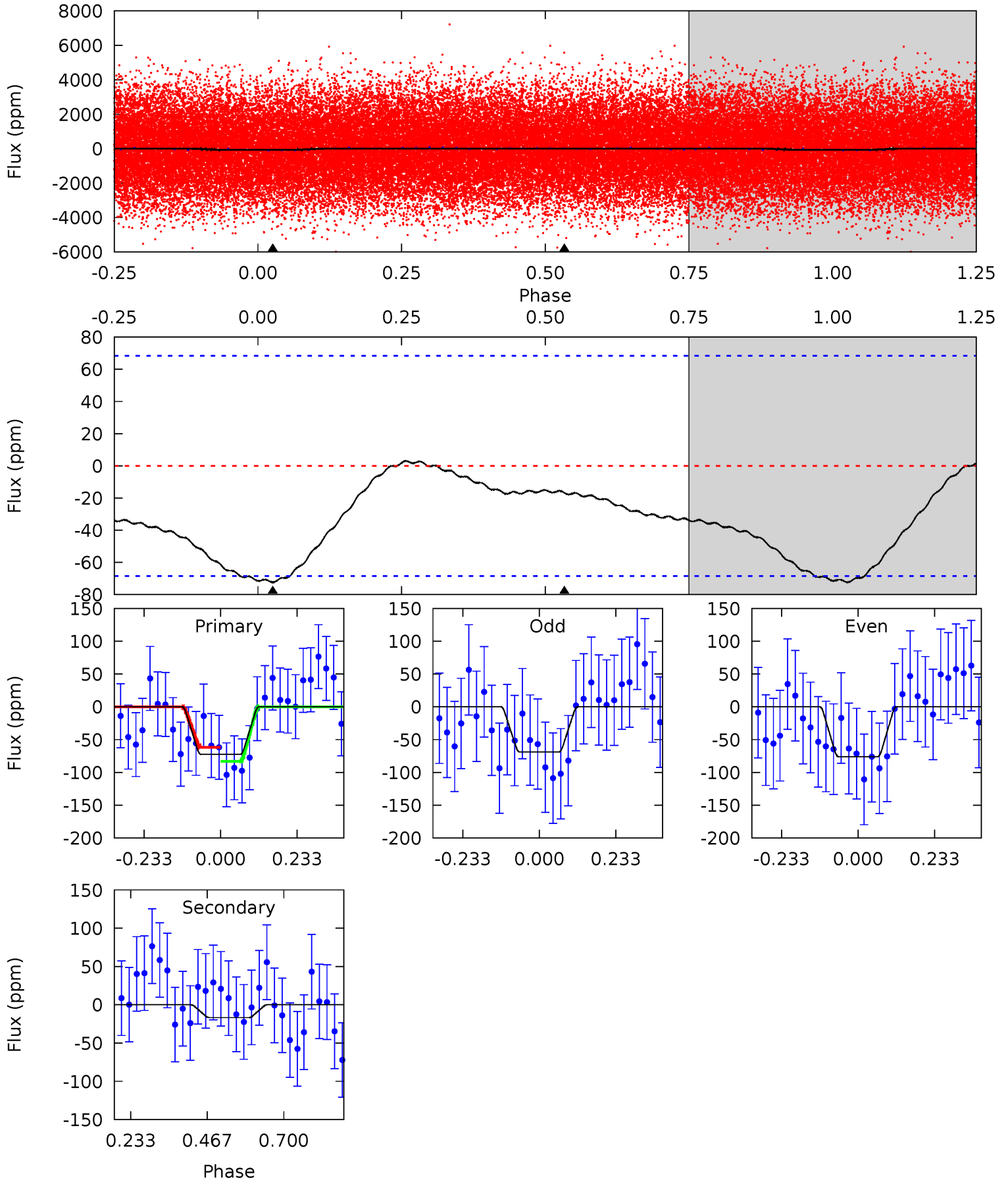
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.1	6.21	0	0	4.33	1.05	0.38	24.1	24.1	6.21	6.21	0.24	1.04	0.01	2.48



Alt Model-Shift Uniqueness Test

004936524-01, P = 1.674792 Days, E = 130.702277 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.64	1.07	0	0	4.38	1.19	1.16	4.64	4.64	1.07	1.07	0.23	0.98	0.04	0.69



Stellar Parameters For KIC 004936524

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7677^{+217}_{-341}	$3.821^{+0.294}_{-0.147}$	$0.360^{+0.050}_{-0.450}$	$3.010^{+0.734}_{-1.101}$	$2.186^{+0.285}_{-0.529}$	$0.113^{+0.243}_{-0.049}$
	+3%/-4%	+8%/-4%	+14%/-125%	+24%/-37%	+13%/-24%	+216%/-43%
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 004936524-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-13±2	$2.07^{+1.24}_{-1.10}$	4275^{+335}_{-412}	5401^{+3089}_{-1168}	$2.215^{+8.039}_{-1.386}$
Alt.	-17±16	$2.91^{+1.37}_{-1.22}$	4247^{+325}_{-381}	4719^{+1703}_{-8351}	$1.248^{+3.259}_{-1.168}$

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 $A_{obs} \gg 1.0$

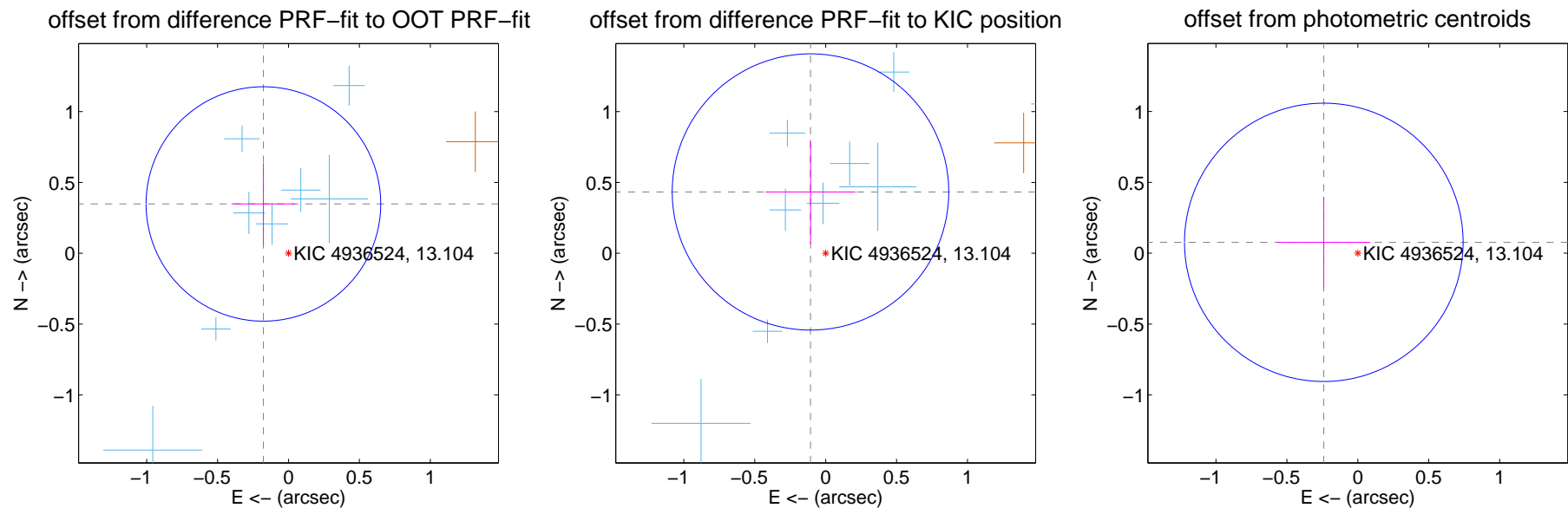
DV Centroid Data

Supplemental centroid analysis for 004936524-01. Kepler magnitude: 13.10. Transit SNR 22.28

There are 11 quarters with good PRF difference image offsets

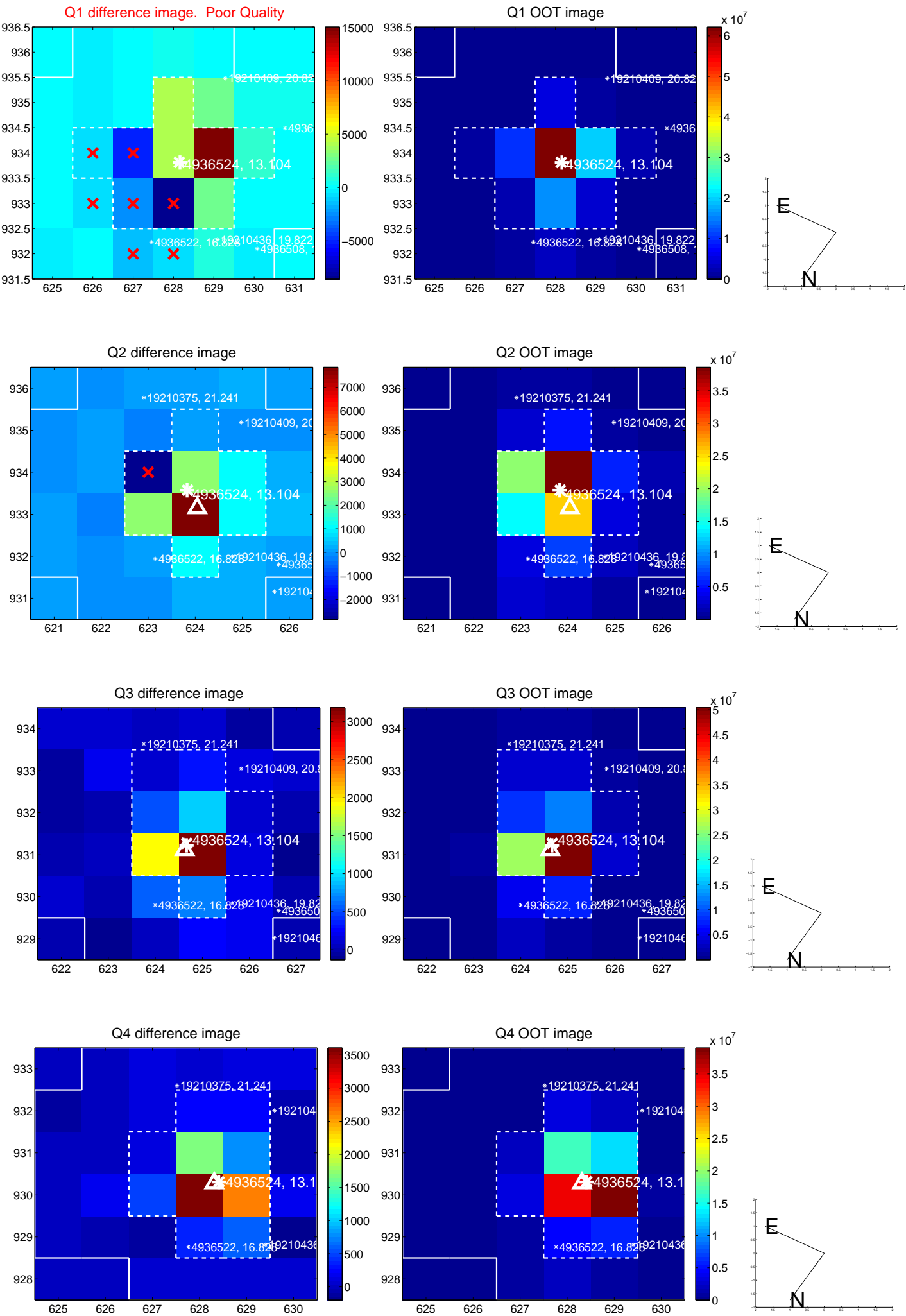
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.391 ± 0.276	1.42	0.177 ± 0.225	0.348 ± 0.287
PRF-fit source offset from KIC position	0.446 ± 0.325	1.37	0.107 ± 0.317	0.433 ± 0.366
photometric centroid source offset	0.25 ± 0.33	0.77	0.24 ± 0.33	0.08 ± 0.32

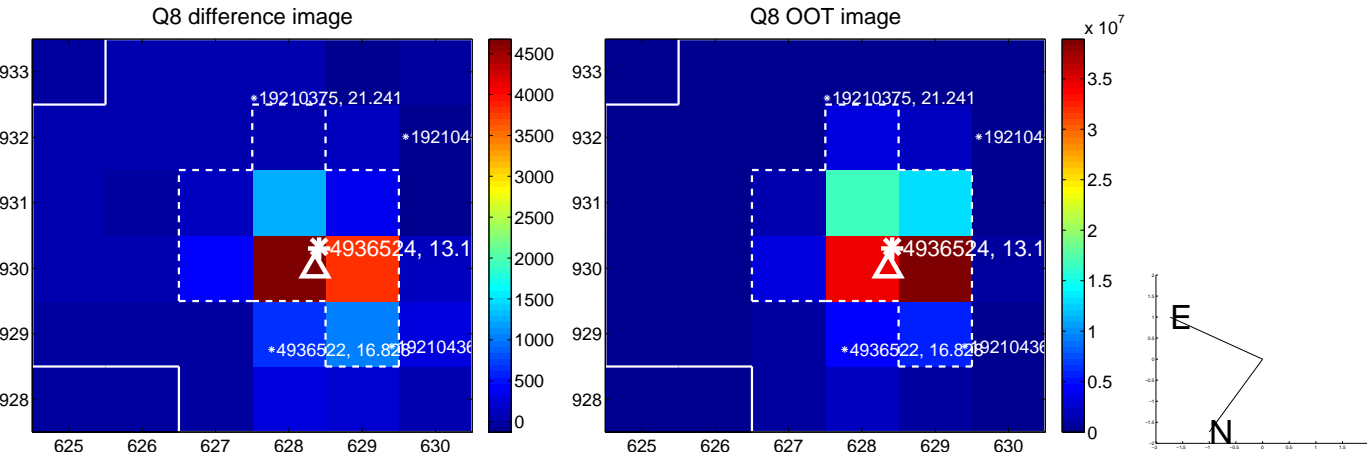
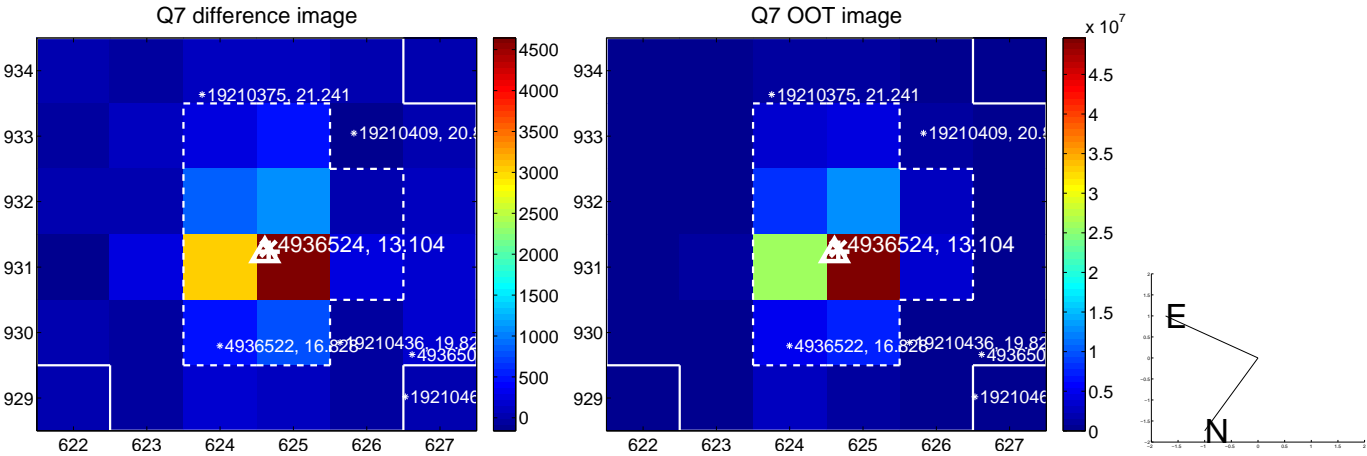
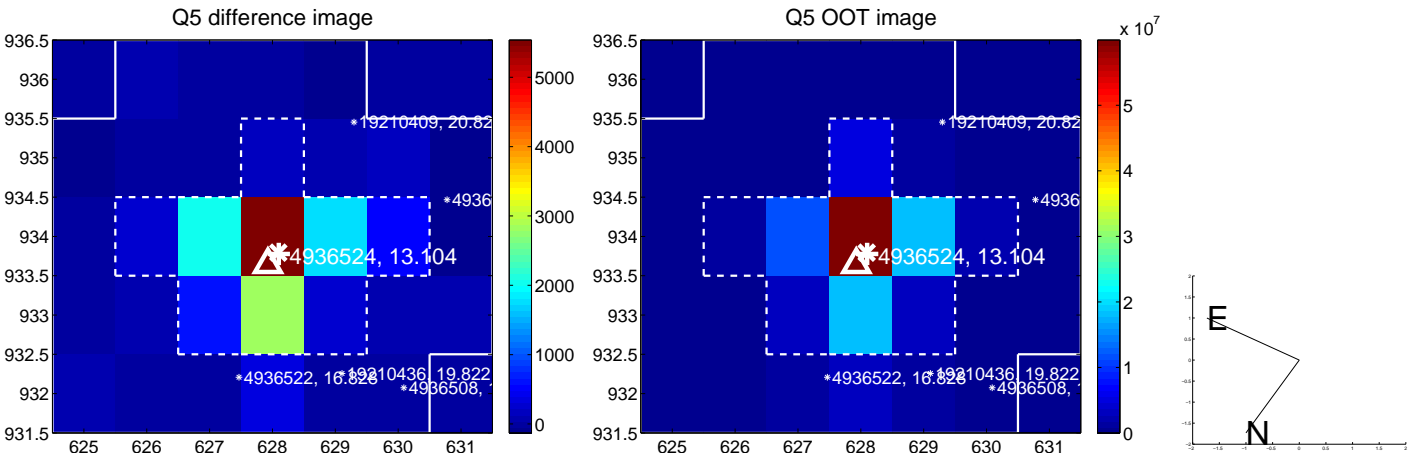


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

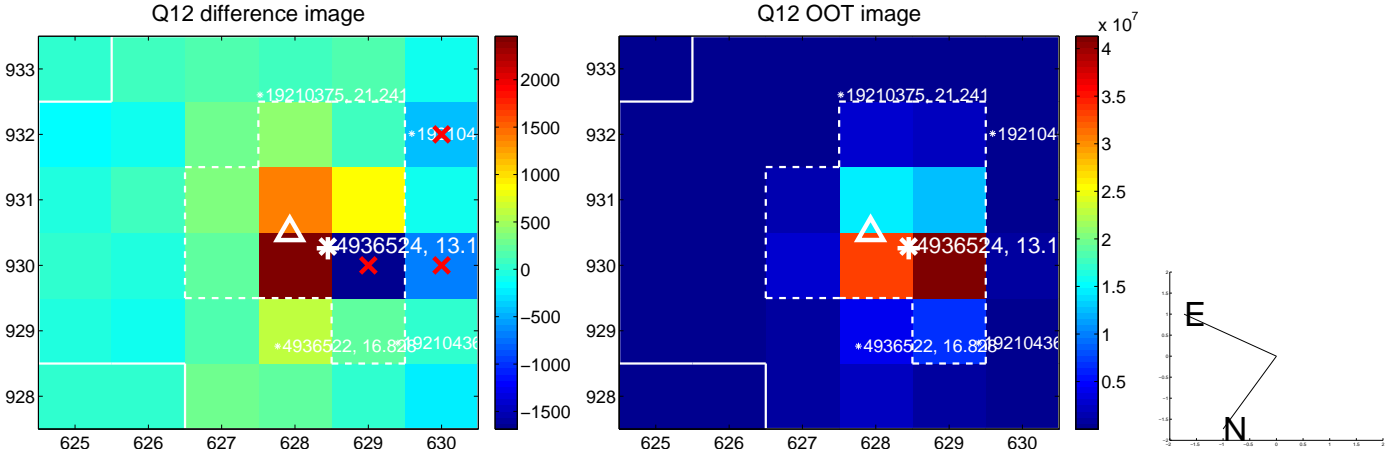
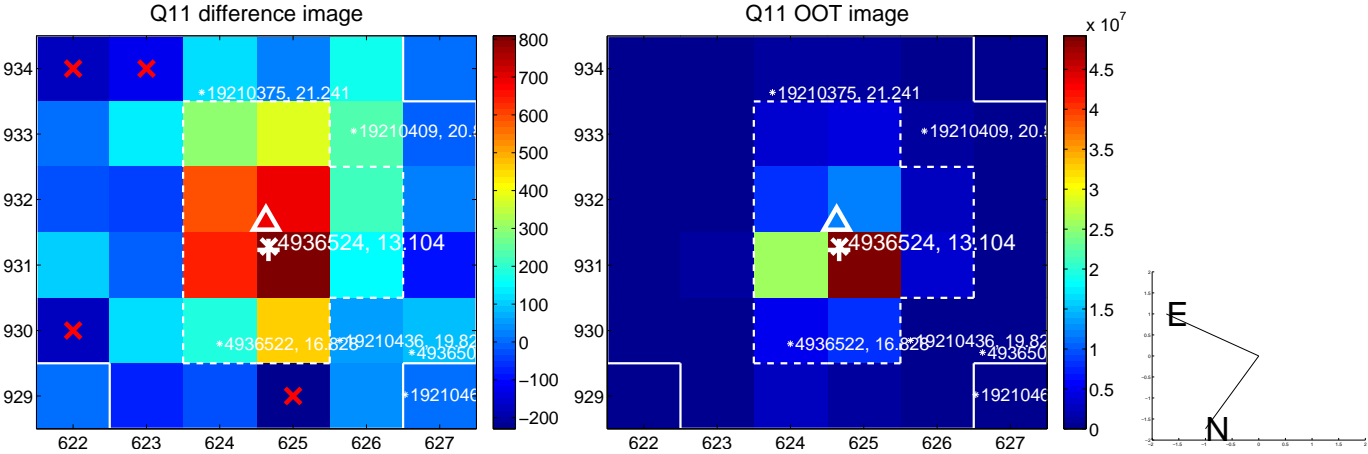
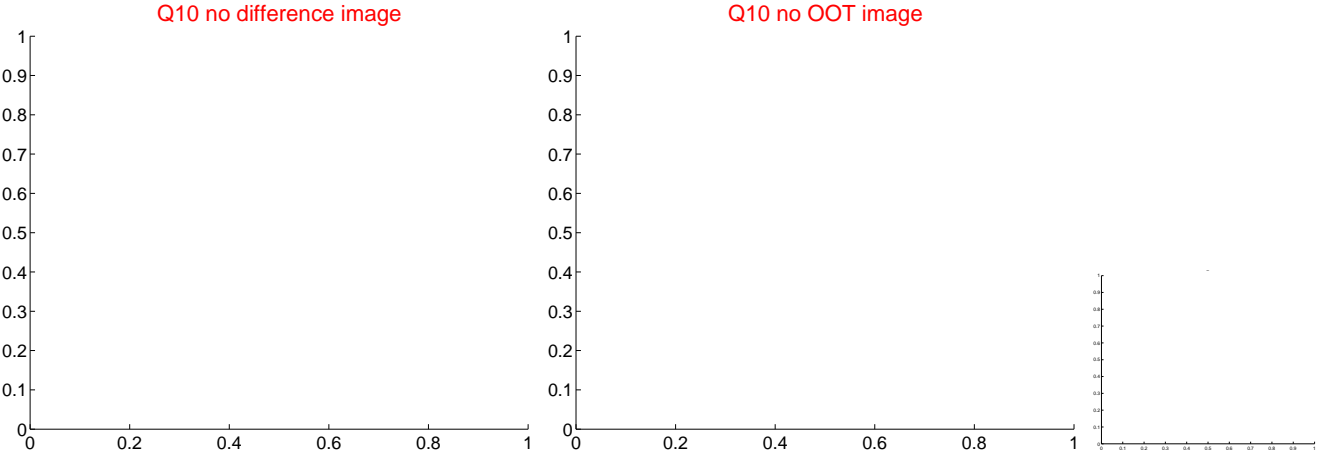
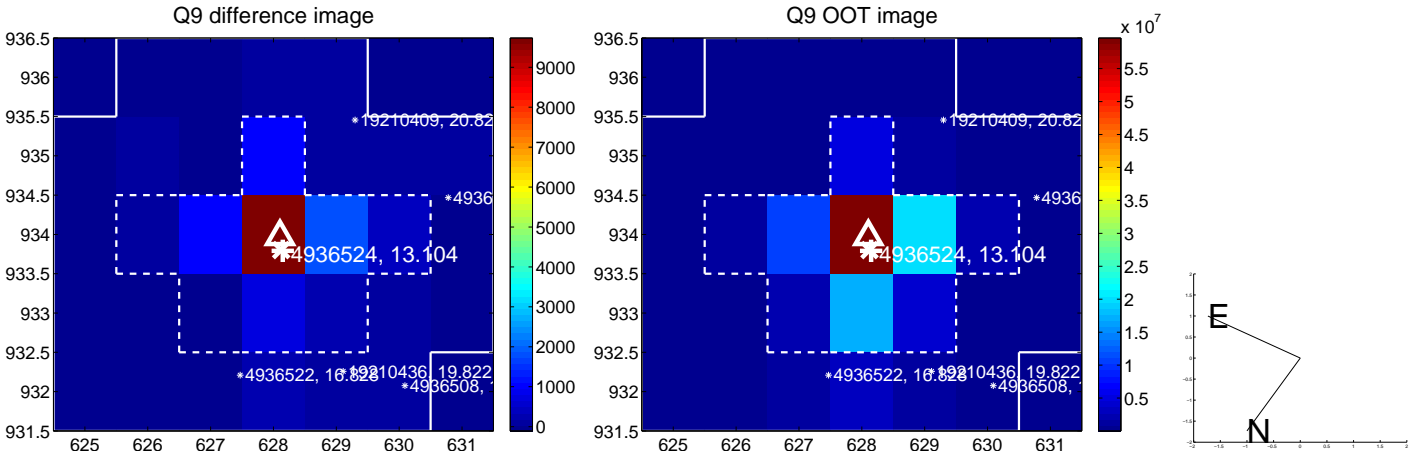
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



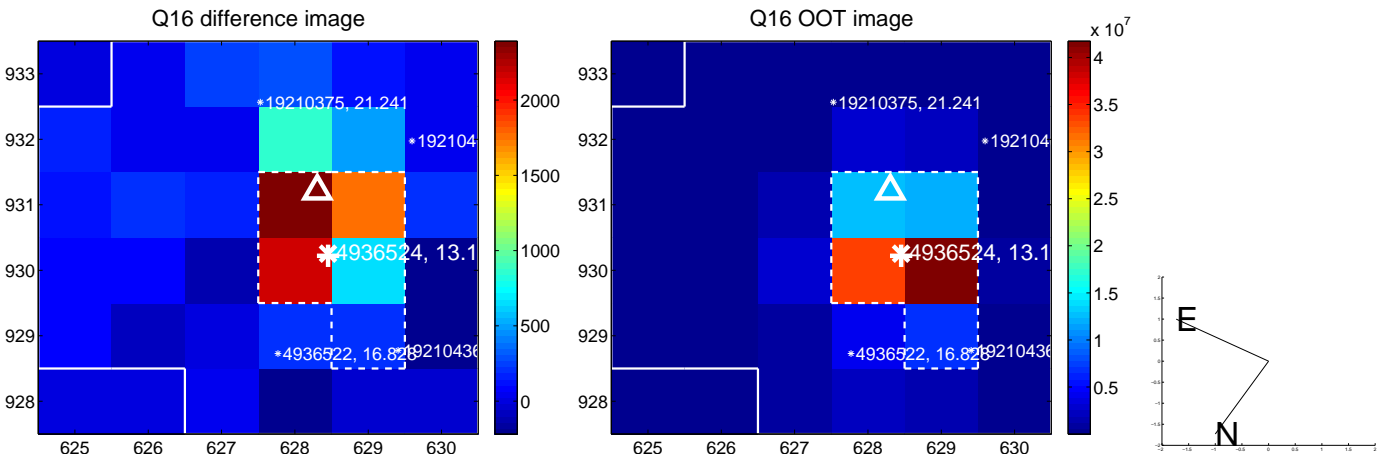
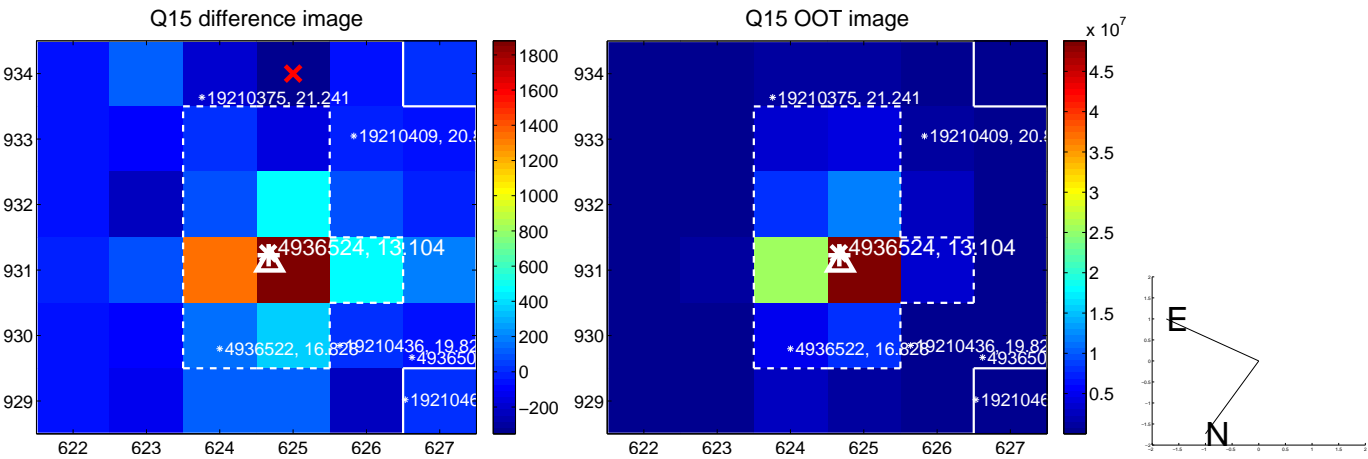
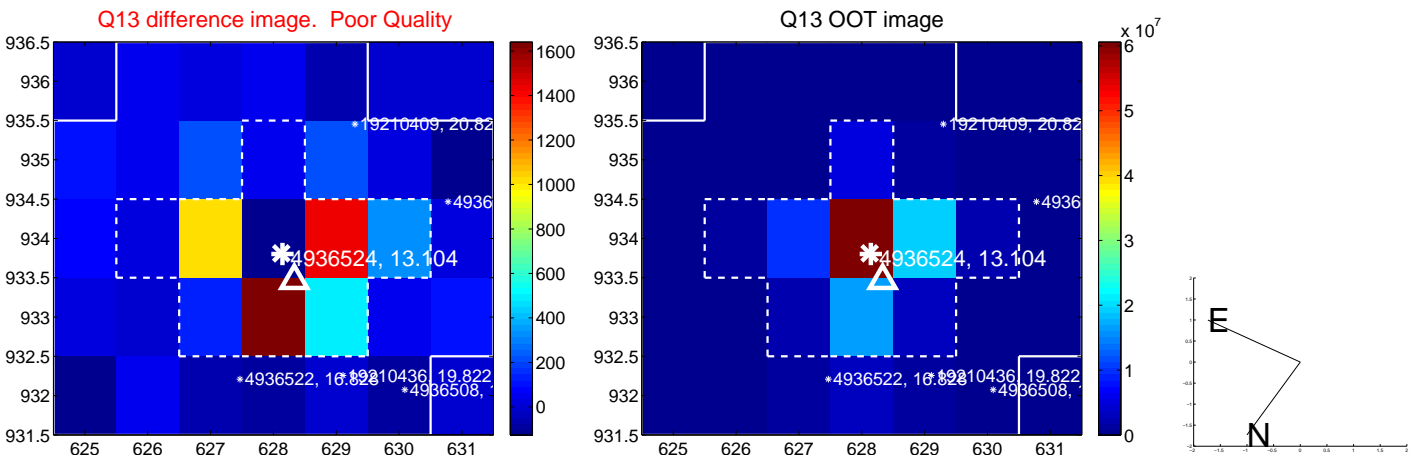
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



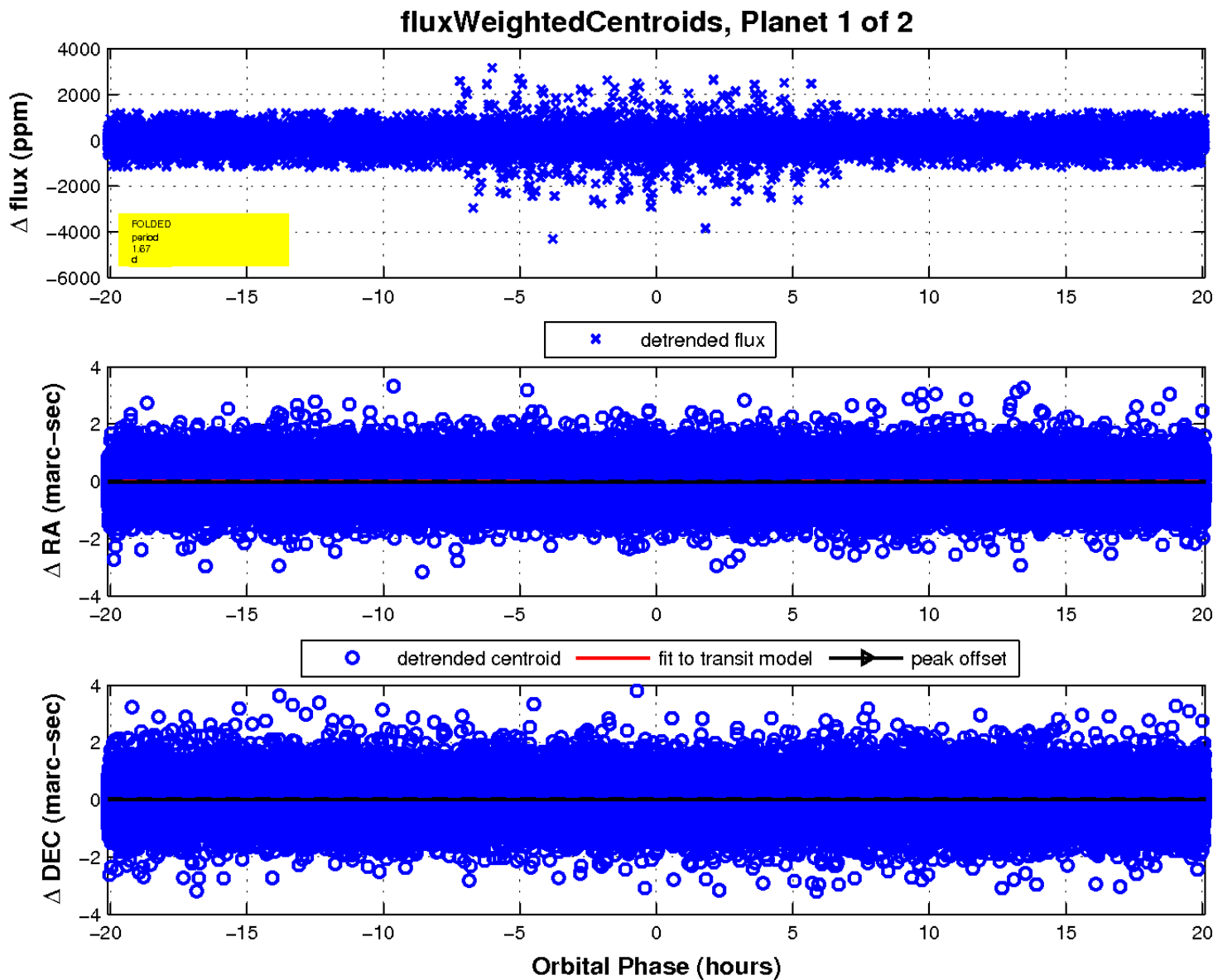
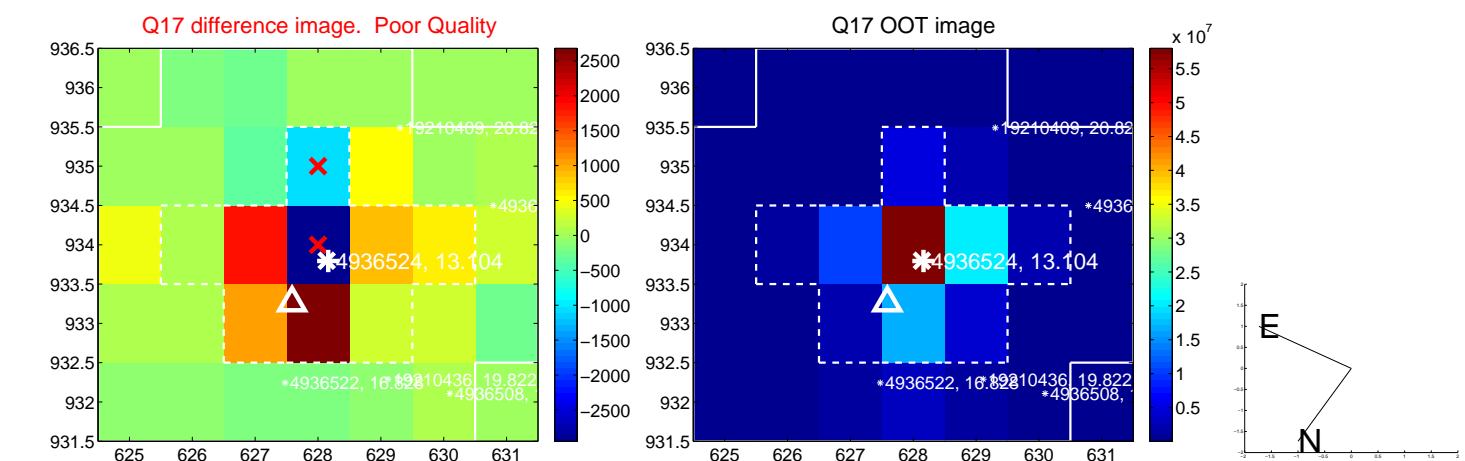
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

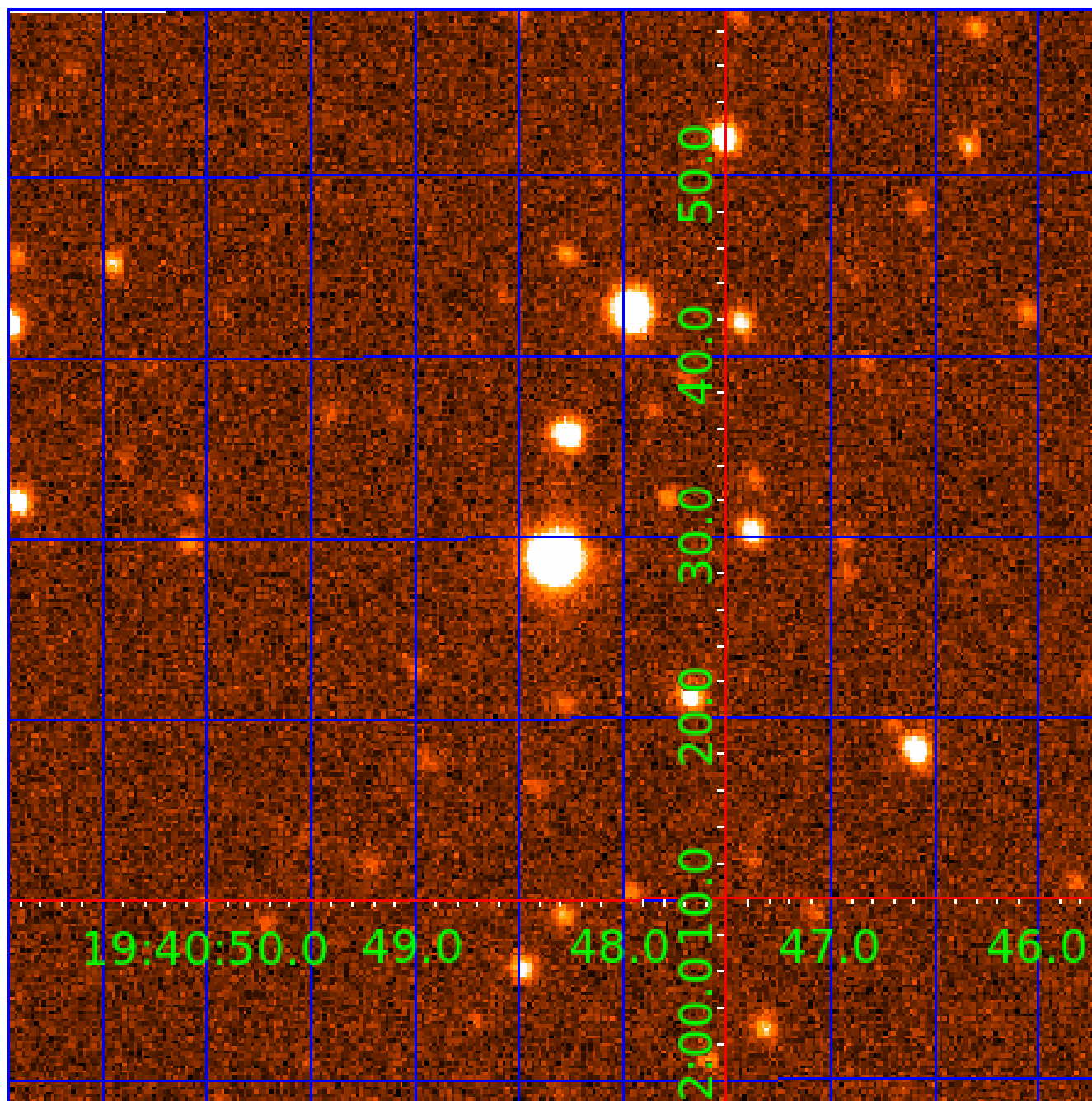


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004936524

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})
004936524-01	OBS	No	1.674850	132.350043	49.4	11.312	17.2	22.3	3.01	7677	2.14	21948.44
004936524-02	OBS	No	63.028245	135.188155	274.7	2.452	7.9	7.5	3.01	7677	5.16	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004936524-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
004936524-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

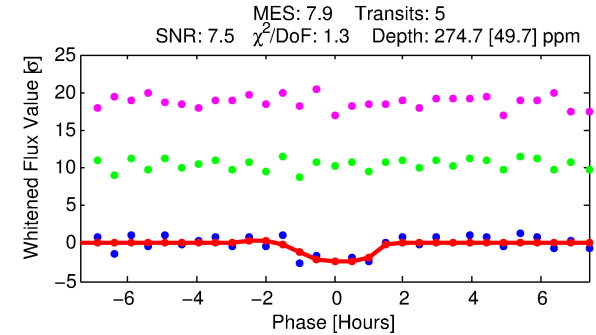
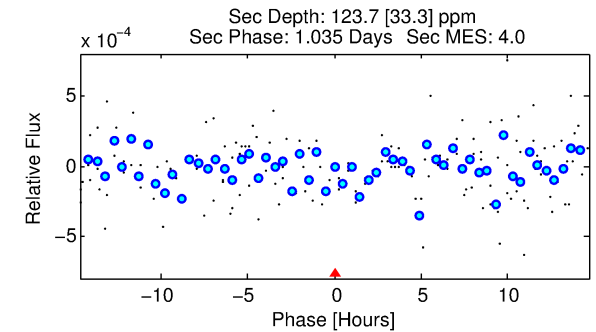
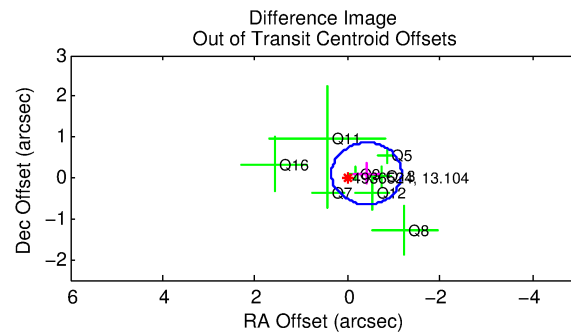
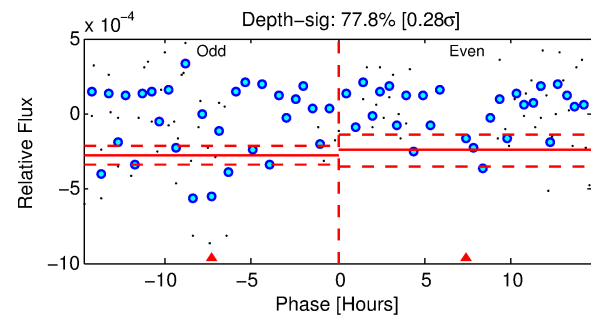
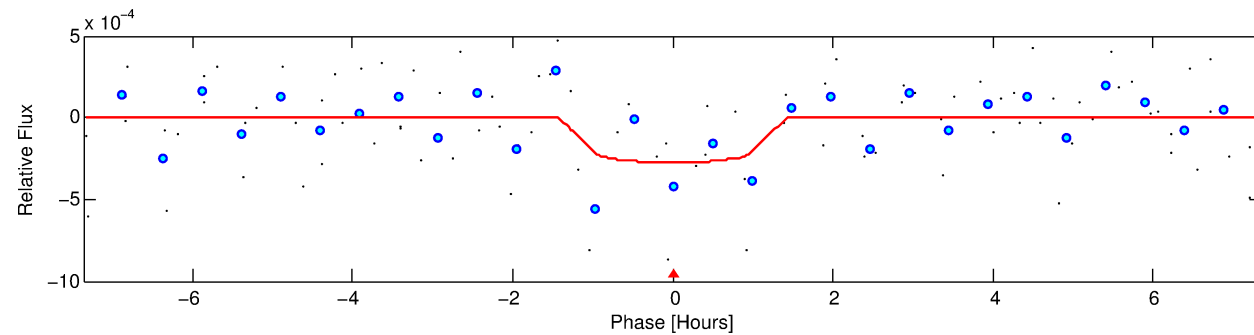
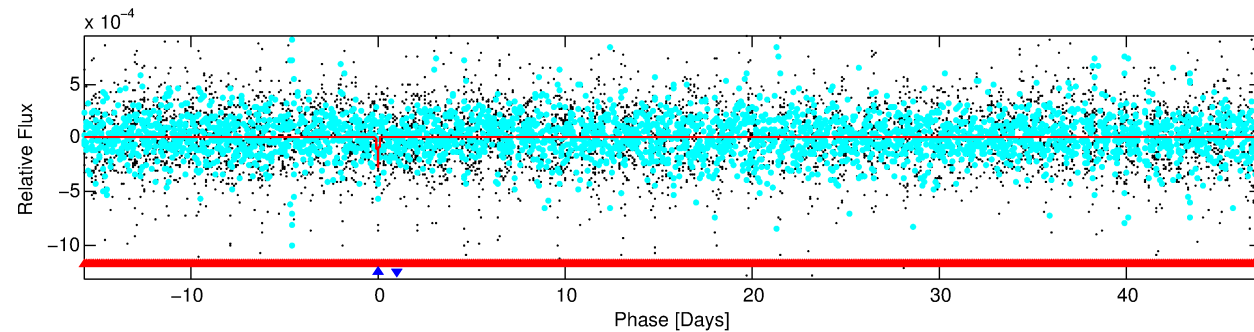
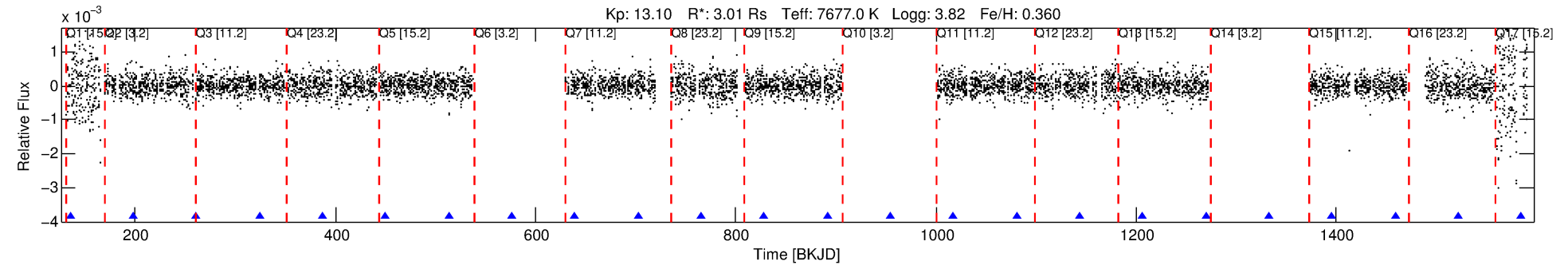
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004936524-02

No Significant Match Found

DV One-Page Summary

KIC: 4936524 Candidate: 2 of 2 Period: 63.028 d



DV Fit Results:

Period = 63.02824 [0.00151] d
Epoch = 135.1882 [0.0187] BKJD
Rp/R* = 0.0157 [0.0531]
a/R* = 176.42 [3388.07]
b = 0.47 [32.00]
Seff = 174.04 [94.48]
Teq = 926 [126] K
Rp = 5.16 [17.55] Re
a = 0.4025 [0.1337] AU
Ag = 413.82 [2808.28] [0.15 σ]
Teffp = 6459 [10930] K [0.51 σ]

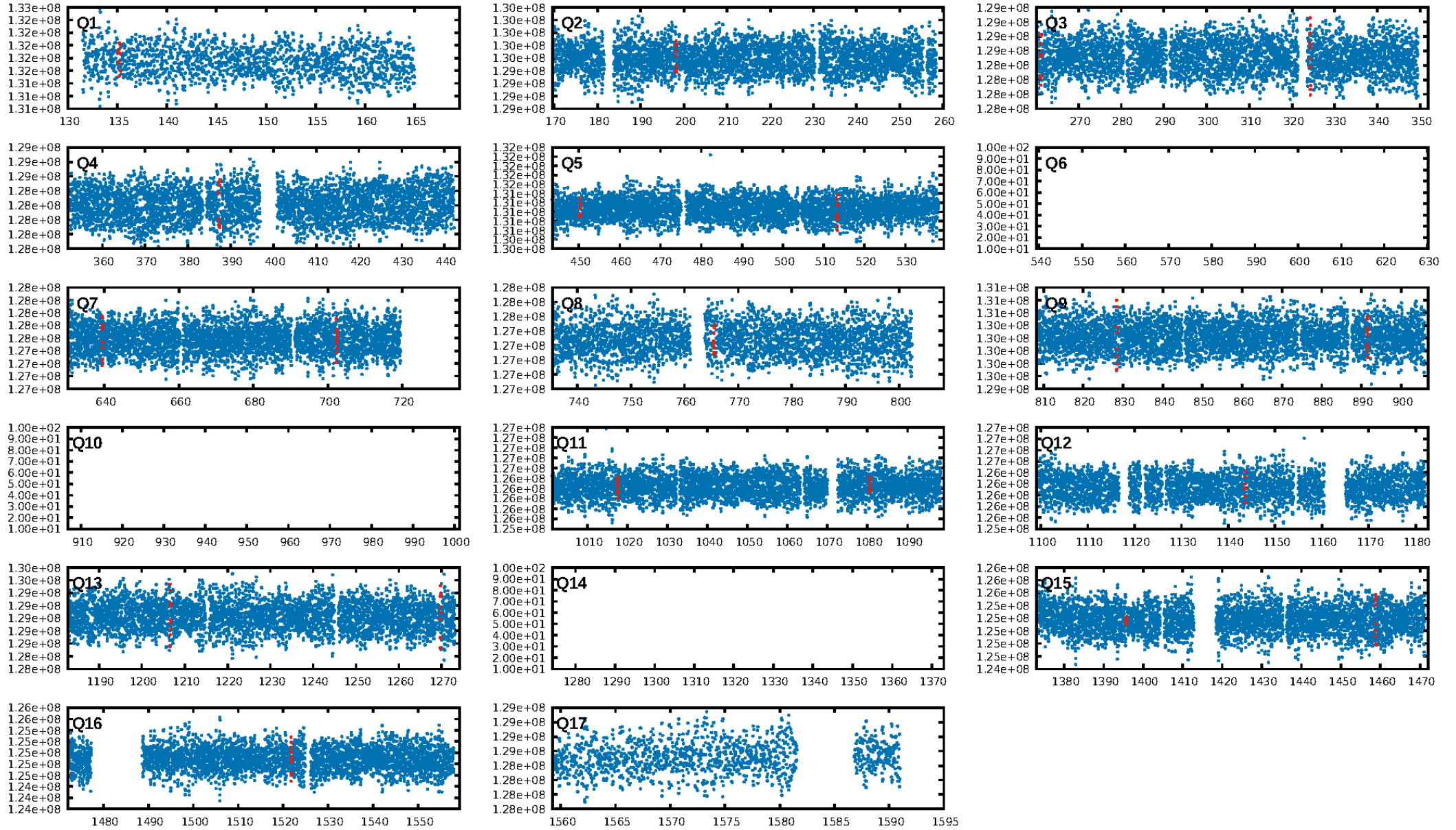
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [127.21 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 13.8%
ModelChiSquareGof-sig: 99.2%
Bootstrap-pfa: 1.62e-10
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -15.83
Centroid-sig: 72.1%
Centroid-so: 0.336 arcsec [0.52 σ]
OotOffset-rm: 0.419 arcsec [1.66 σ]
OotOffset-st: 0/2/3/3 [8]
KicOffset-rm: 0.514 arcsec [1.60 σ]
KicOffset-st: 0/2/3/3 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.67 [8/12]

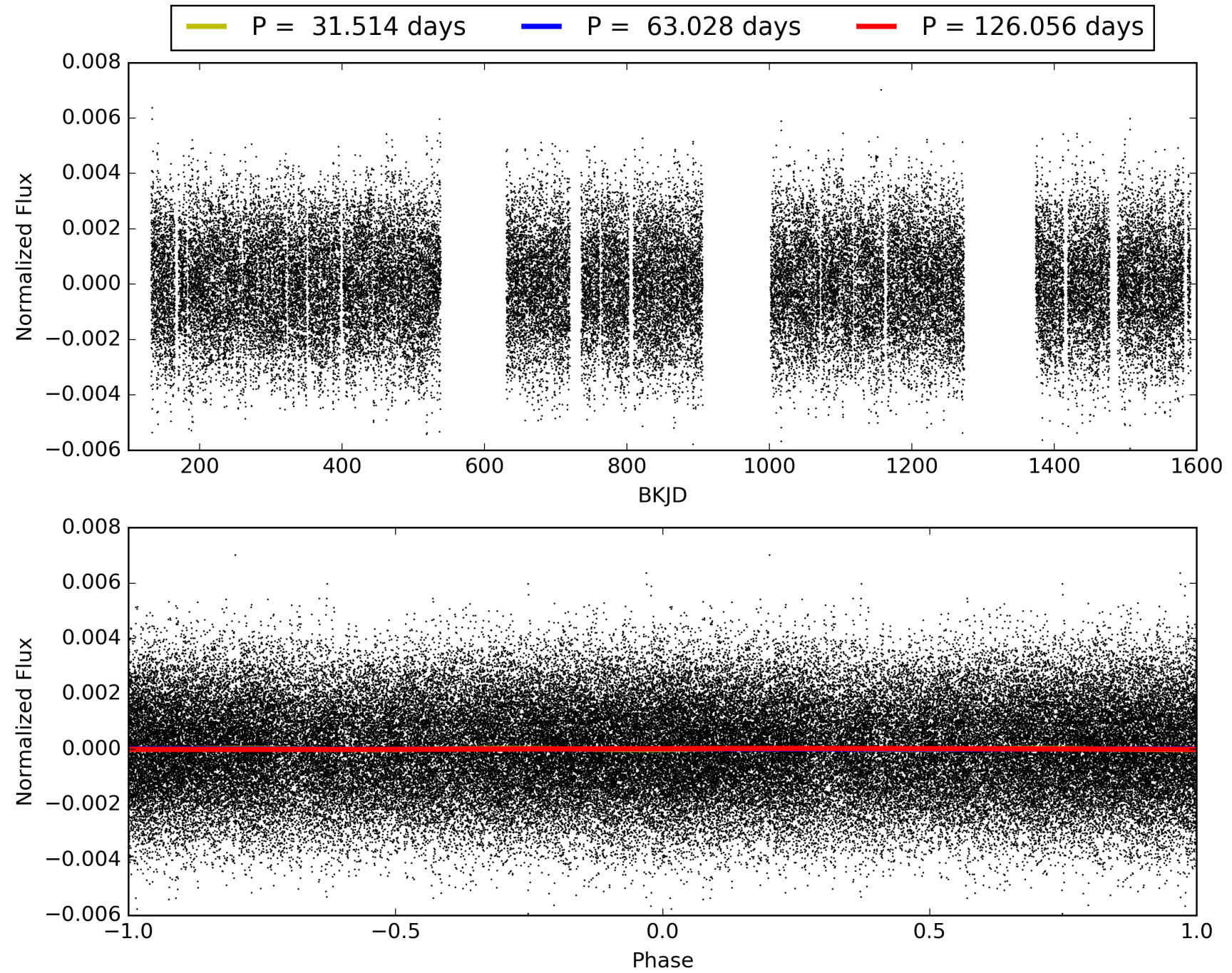
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:33:57 Z

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

TCE 004936524-02, PDC Light Curves

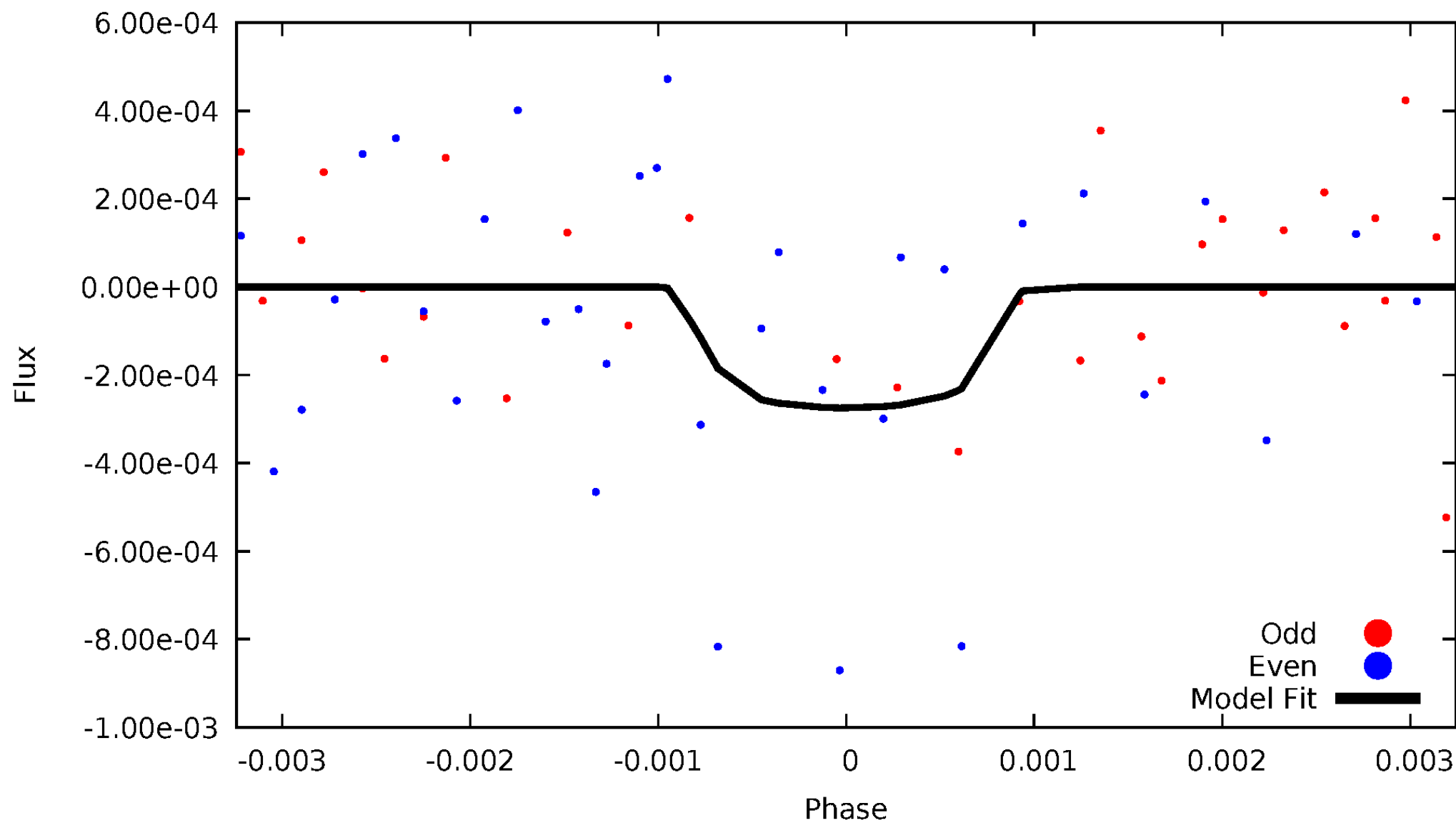


TCE 004936524-02



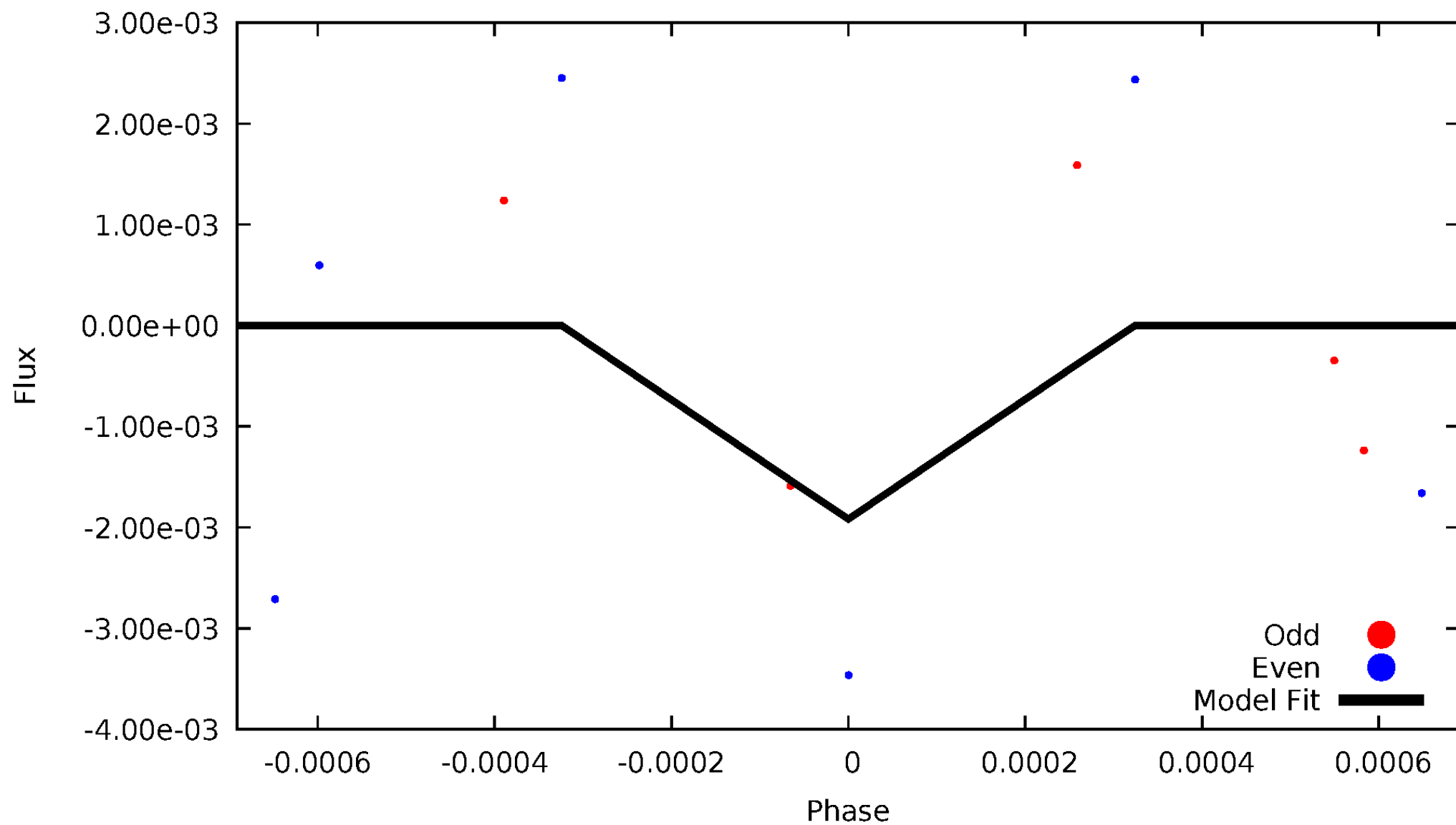
DV Odd/Even

TCE 004936524-02



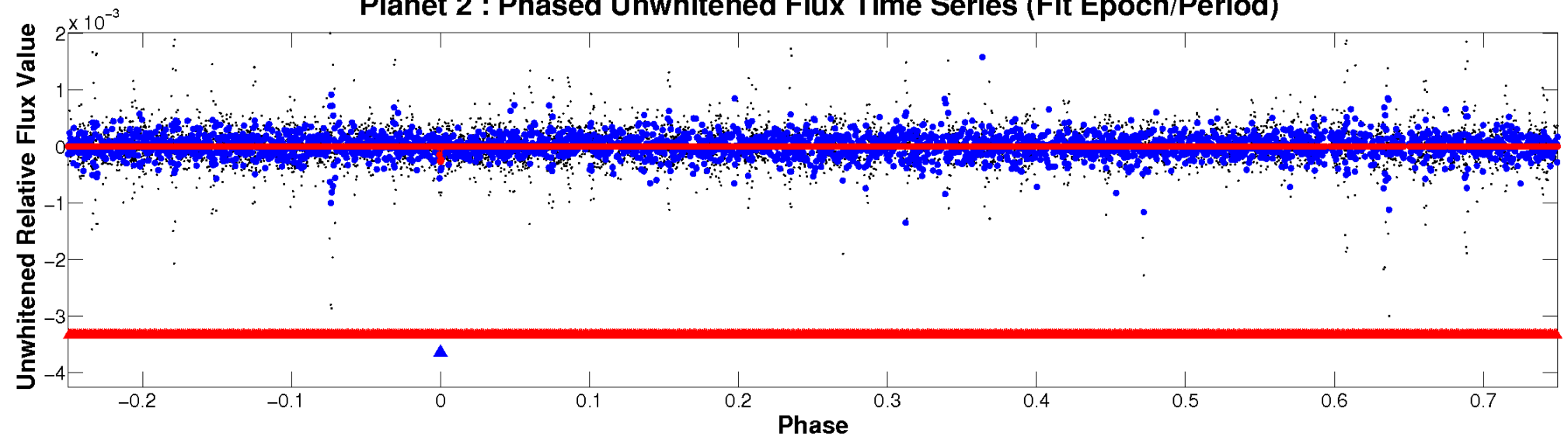
ALT Odd/Even

TCE 004936524-02

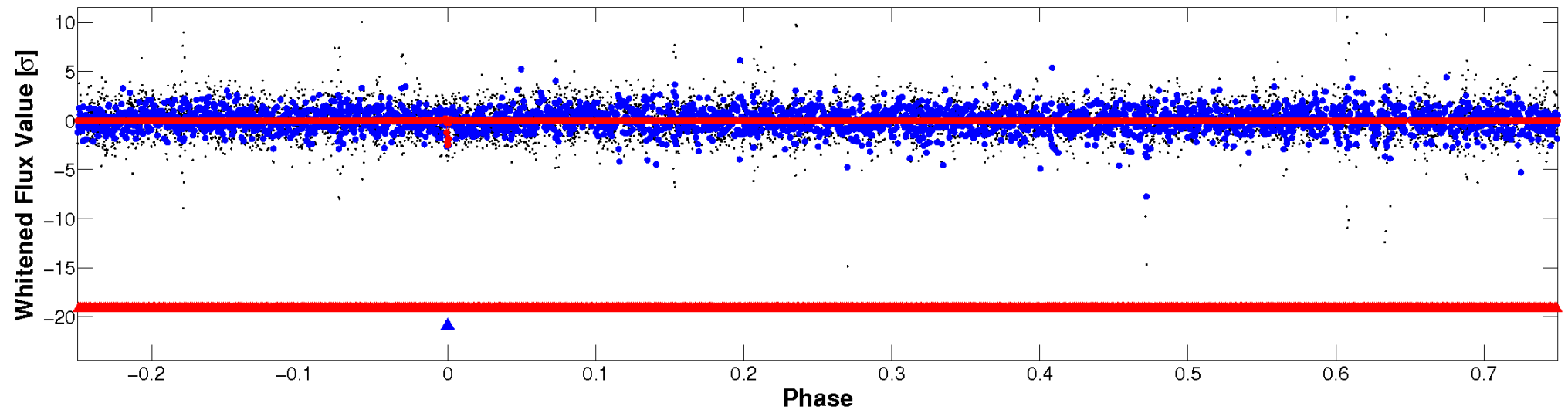


Non-Whitened Vs. Whitened Light Curve

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

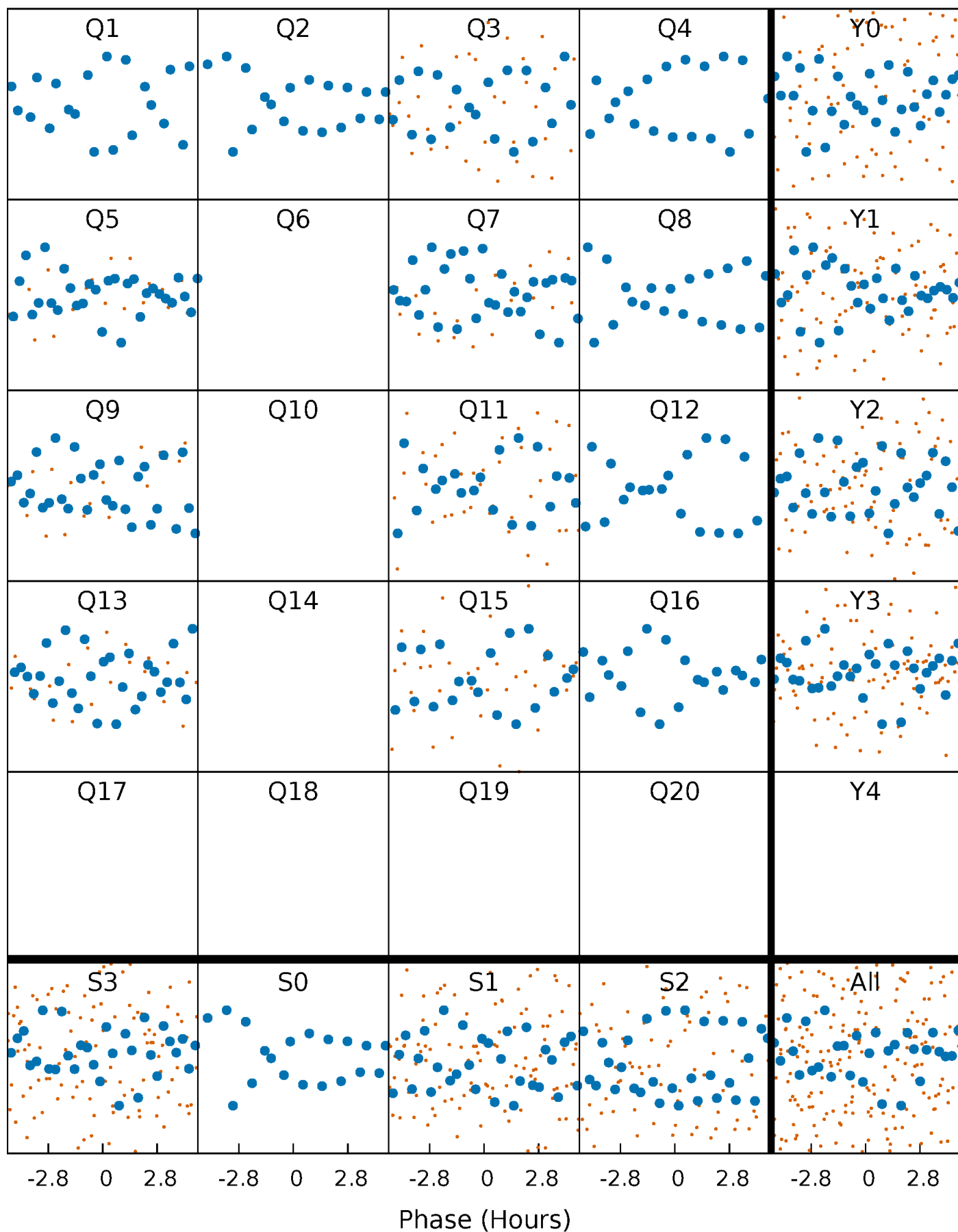


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



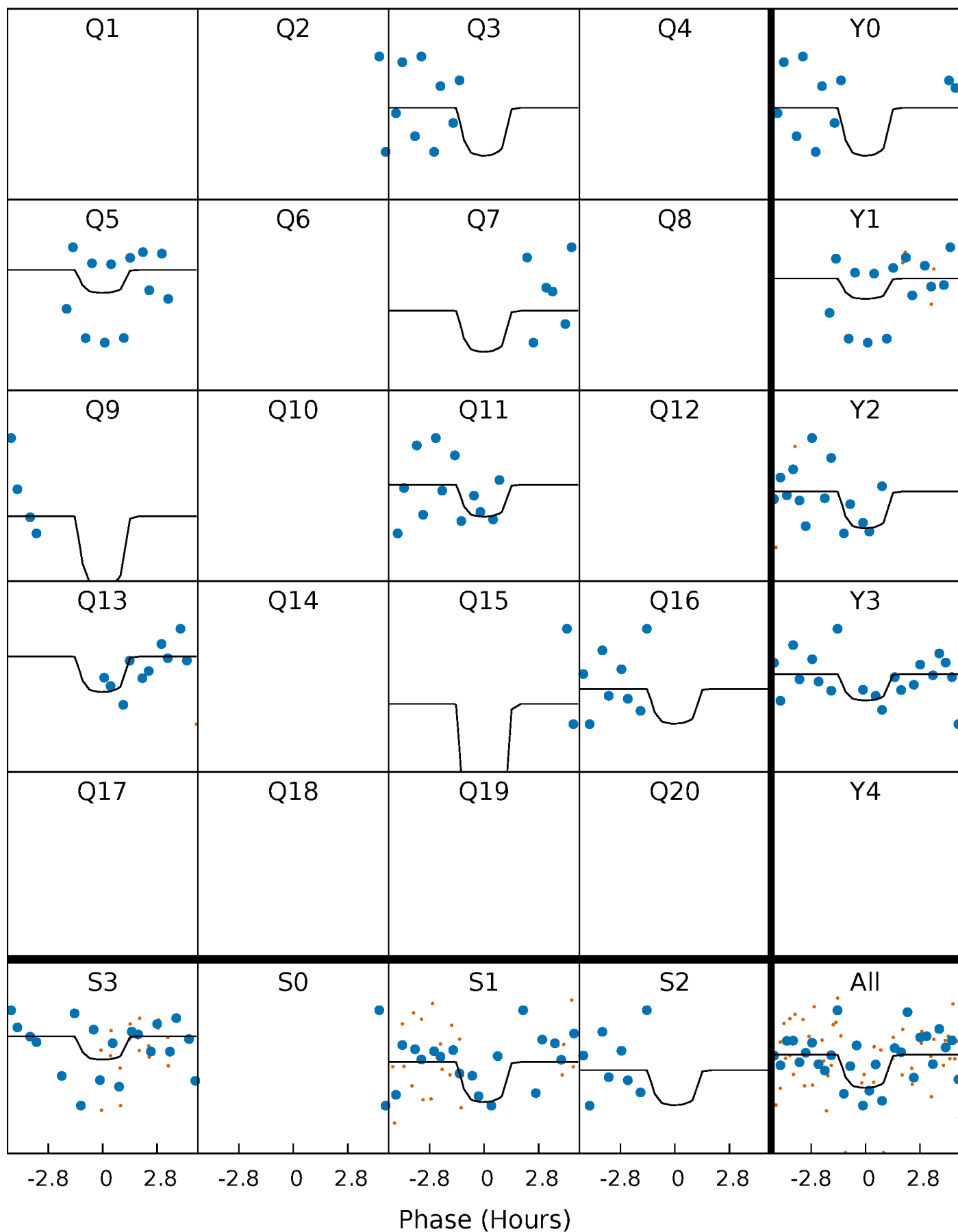
PDC Quarter-Phased Transit Curves

TCE 004936524-02 P= 63.028245 Days $T_0=135.188155$ (BKJD)



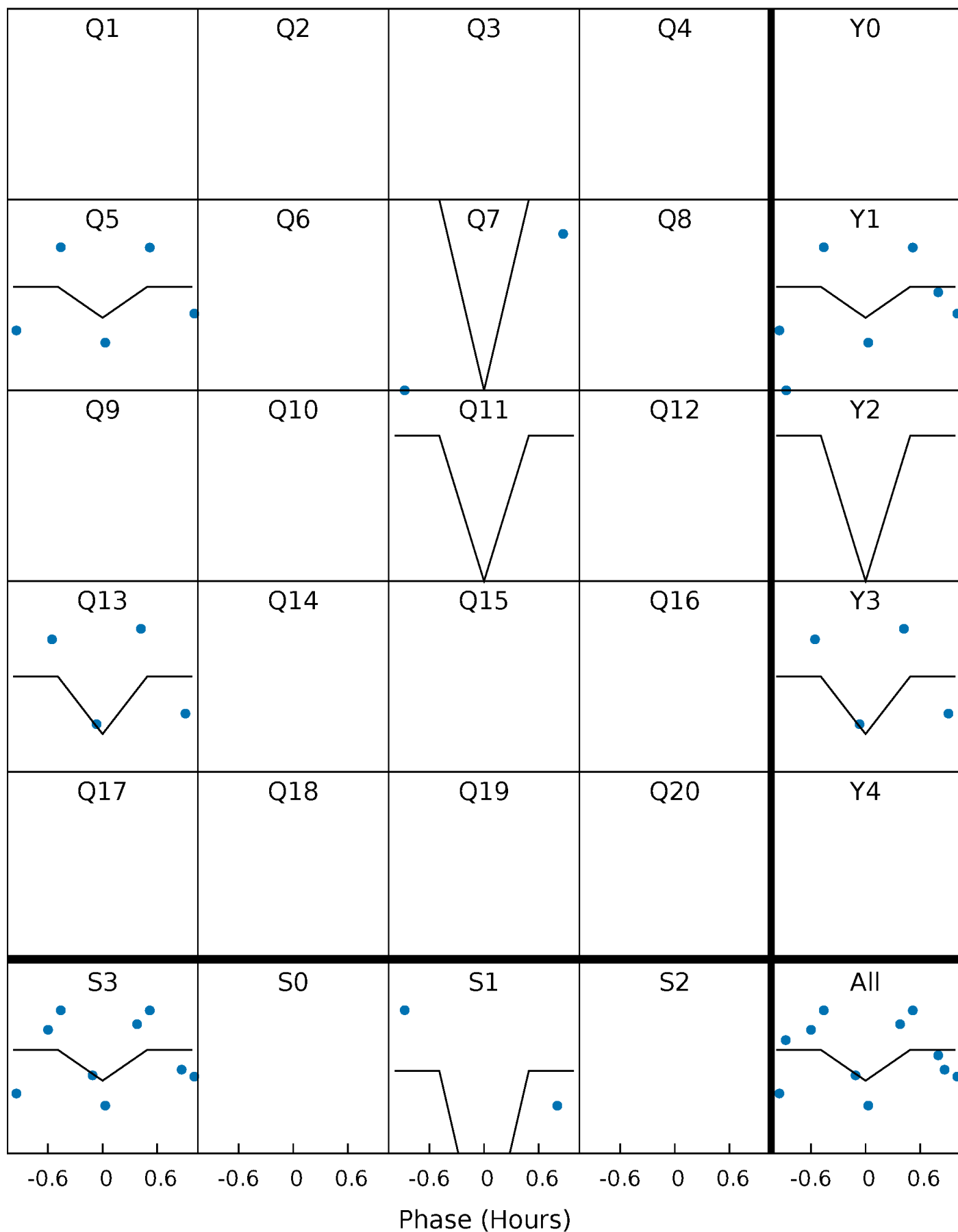
DV Quarter-Phased Transit Curves

TCE 004936524-02 P= 63.028245 Days $T_0=135.188155$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

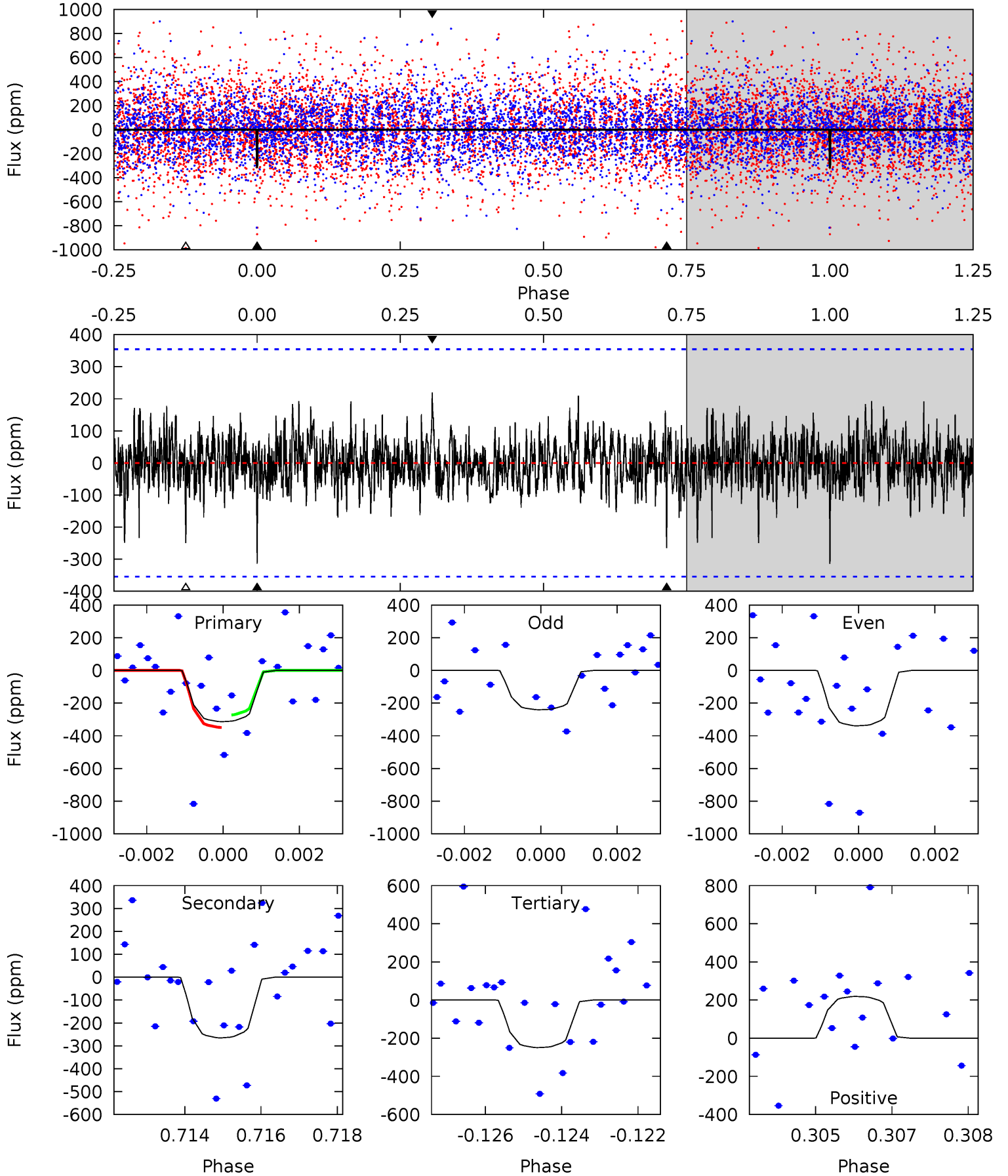
TCE 004936524-02 P= 63.032237 Days $T_0=135.202886$ (BKJD)



DV Model-Shift Uniqueness Test

004936524-02, P = 63.028245 Days, E = 72.159910 Days

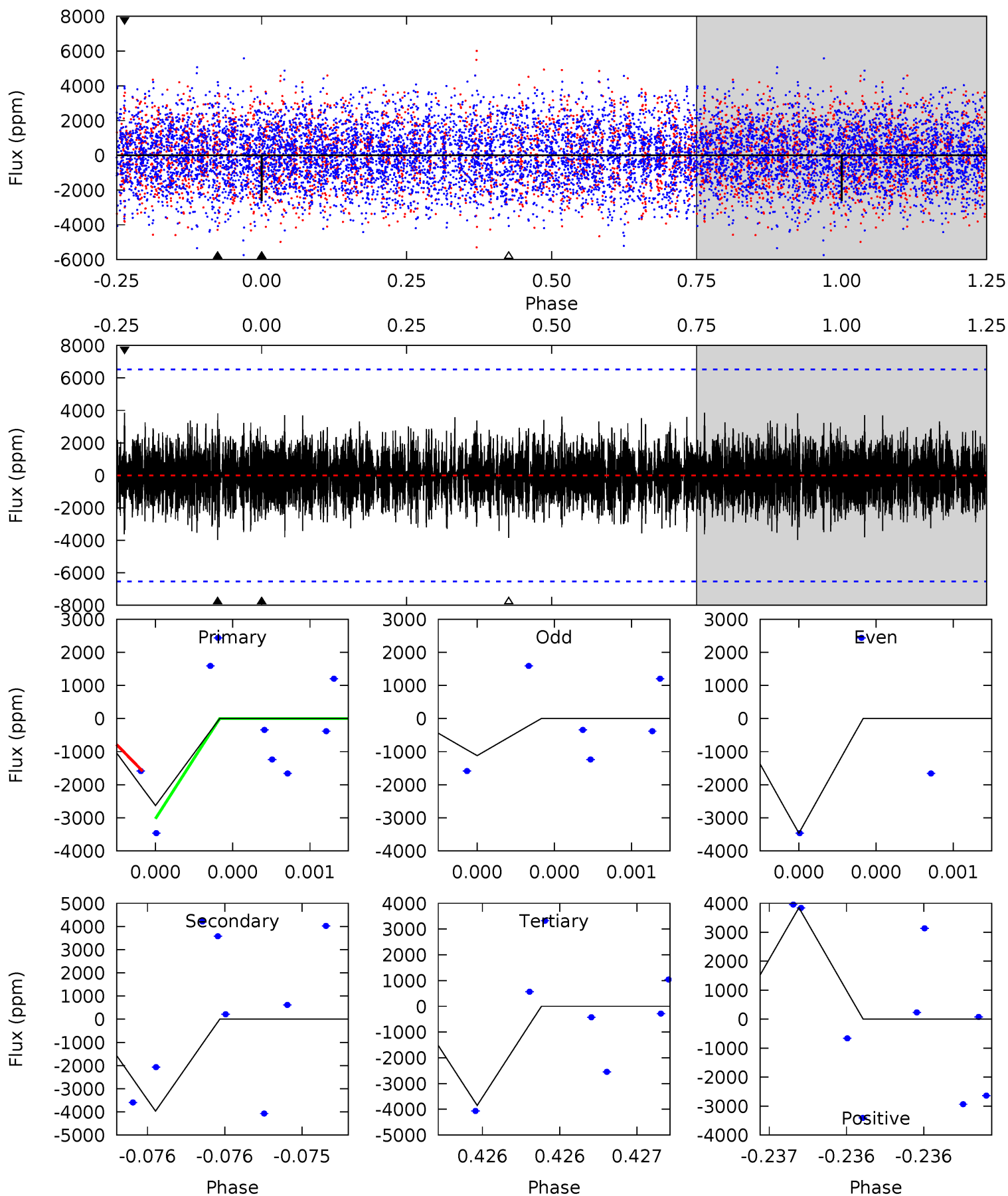
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.73	4.00	3.76	3.31	5.35	3.13	0.90	0.97	1.43	0.24	0.70	0.71	1.18	0.41	0.58



Alt Model-Shift Uniqueness Test

004936524-02, P = 63.032237 Days, E = 72.170649 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.26	3.41	3.31	3.31	5.62	3.55	1.00	-1.05	-1.05	0.10	0.10	1.06	1.00	0.49	0.00



Stellar Parameters For KIC 004936524

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7677^{+217}_{-341}	$3.821^{+0.294}_{-0.147}$	$0.360^{+0.050}_{-0.450}$	$3.010^{+0.734}_{-1.101}$	$2.186^{+0.285}_{-0.529}$	$0.113^{+0.243}_{-0.049}$
	+3%/-4%	+8%/-4%	+14%/-125%	+24%/-37%	+13%/-24%	+216%/-43%
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 004936524-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-265 ± 66	$13.55^{+14.44}_{-9.35}$	1277^{+92}_{-119}	4737^{+3559}_{-1074}	130^{+1109}_{-101}
Alt.	-3967 ± 1163	$18.08^{+14.43}_{-11.83}$	1282^{+87}_{-140}	7931^{+9675}_{-2280}	1032^{+6848}_{-731}

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

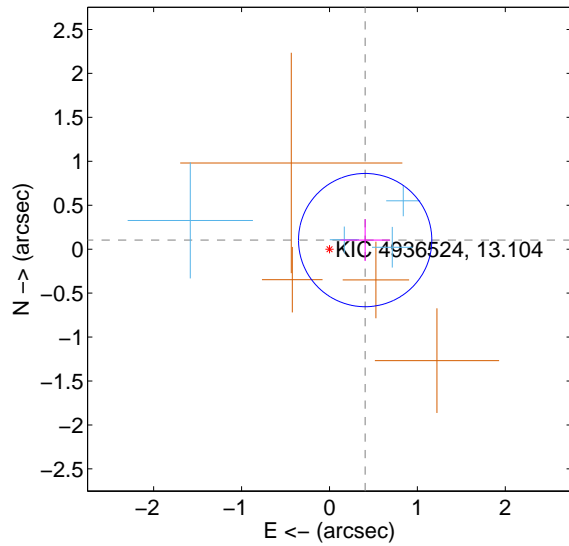
Supplemental centroid analysis for 004936524-02. Kepler magnitude: 13.10. Transit SNR 7.51

There are 4 quarters with good PRF difference image offsets

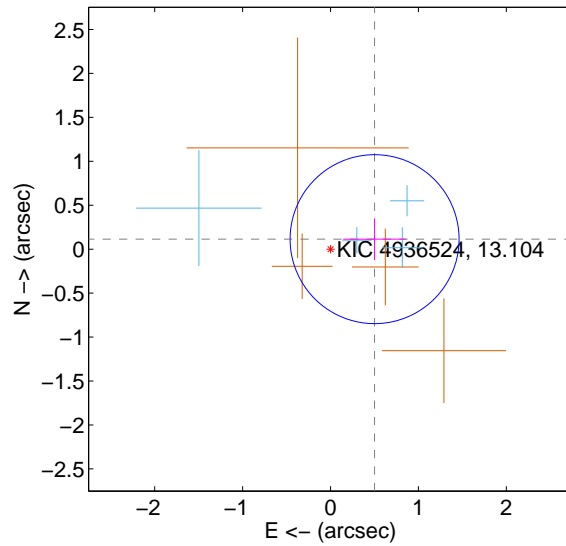
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.419 ± 0.253	1.66	-0.406 ± 0.280	0.103 ± 0.239
PRF-fit source offset from KIC position	0.514 ± 0.320	1.60	-0.501 ± 0.357	0.114 ± 0.237
photometric centroid source offset	0.34 ± 0.65	0.52	0.19 ± 0.67	0.28 ± 0.64

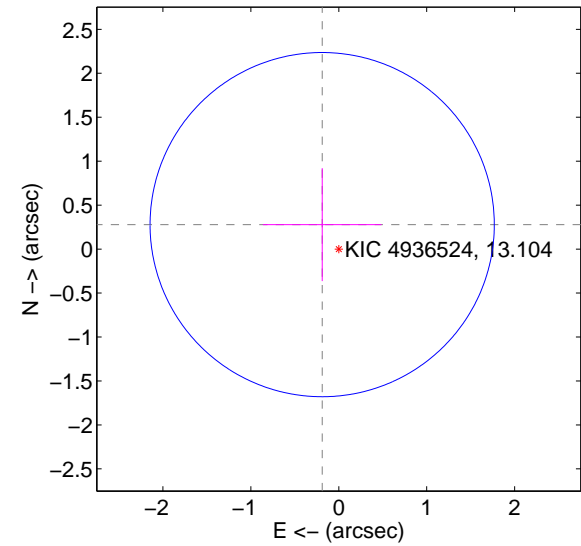
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

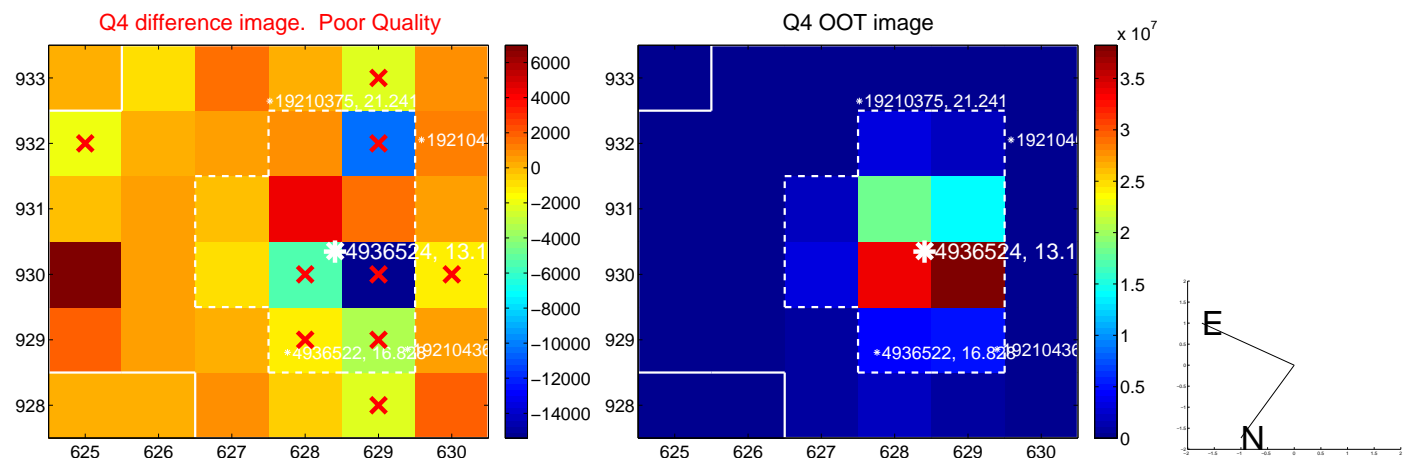
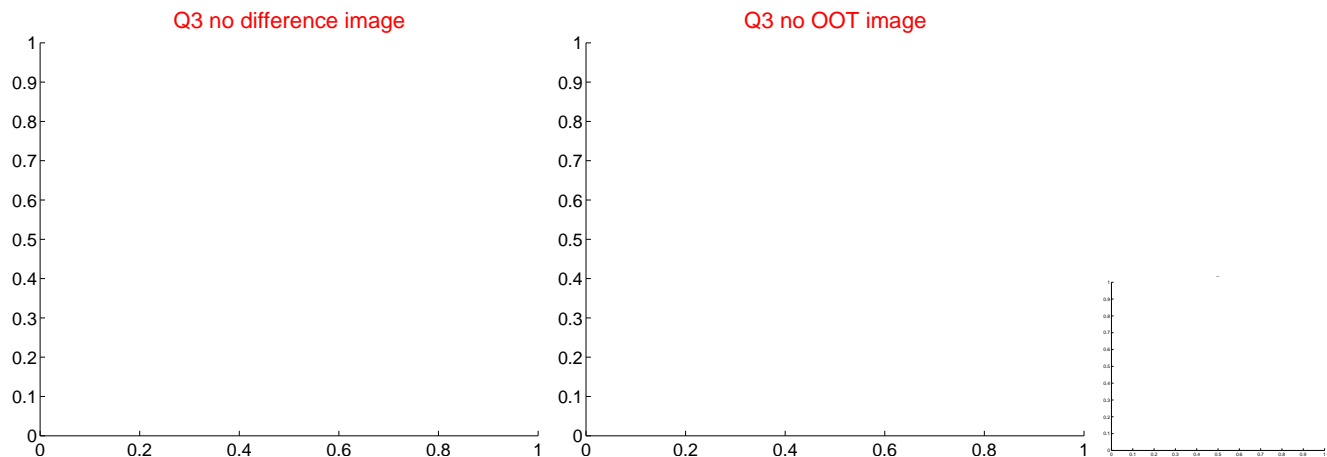
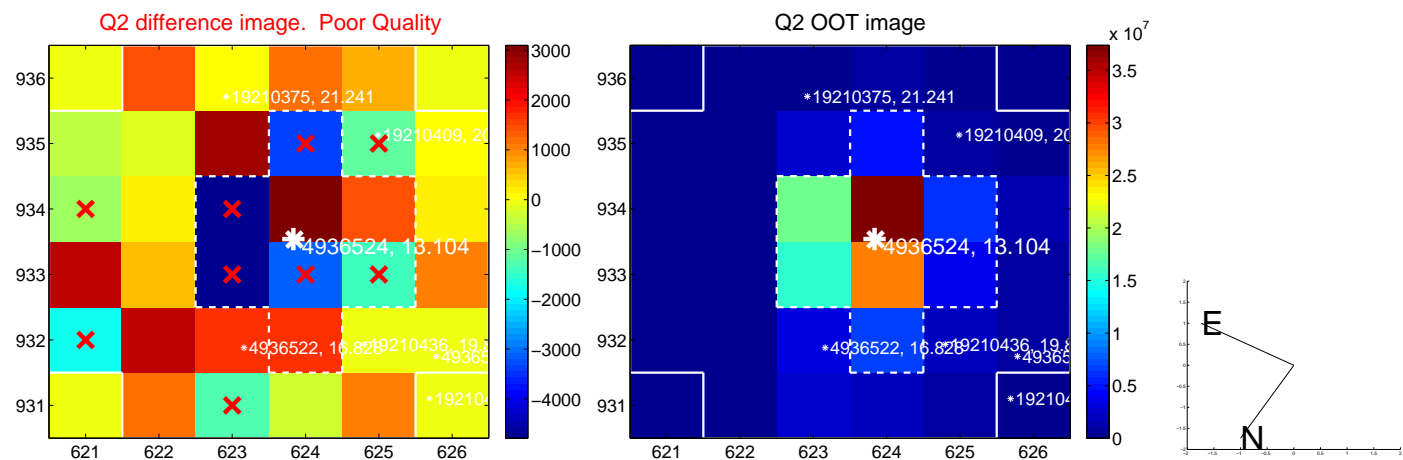
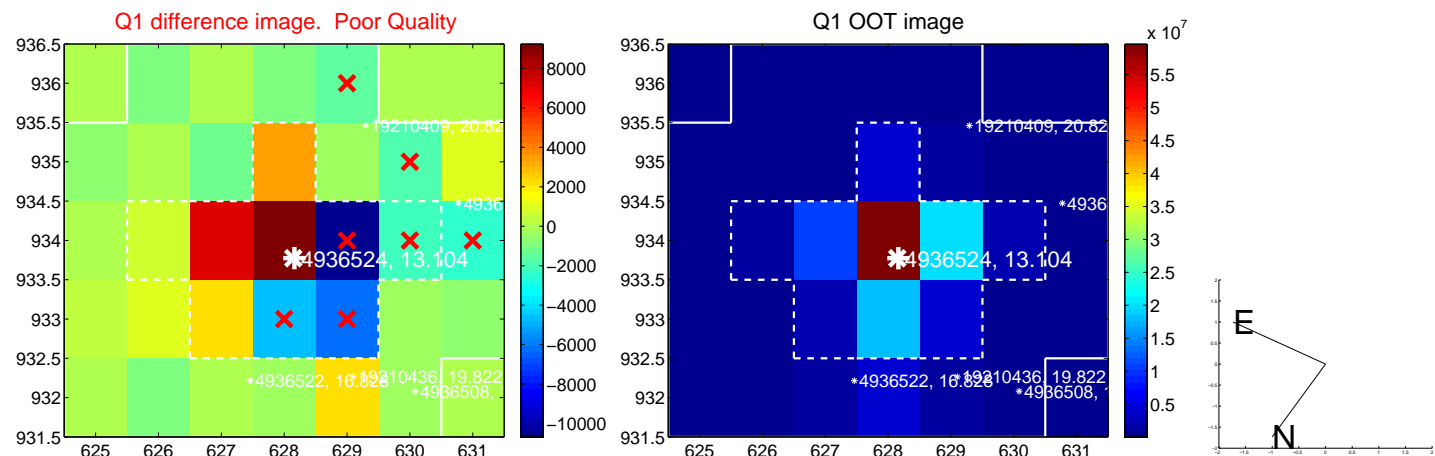


offset from photometric centroids

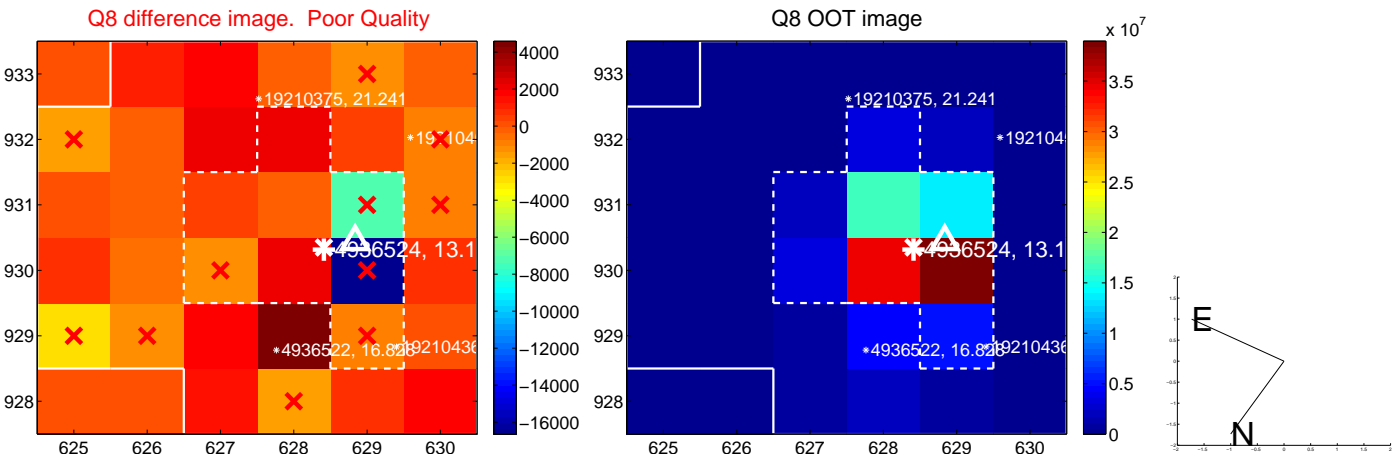
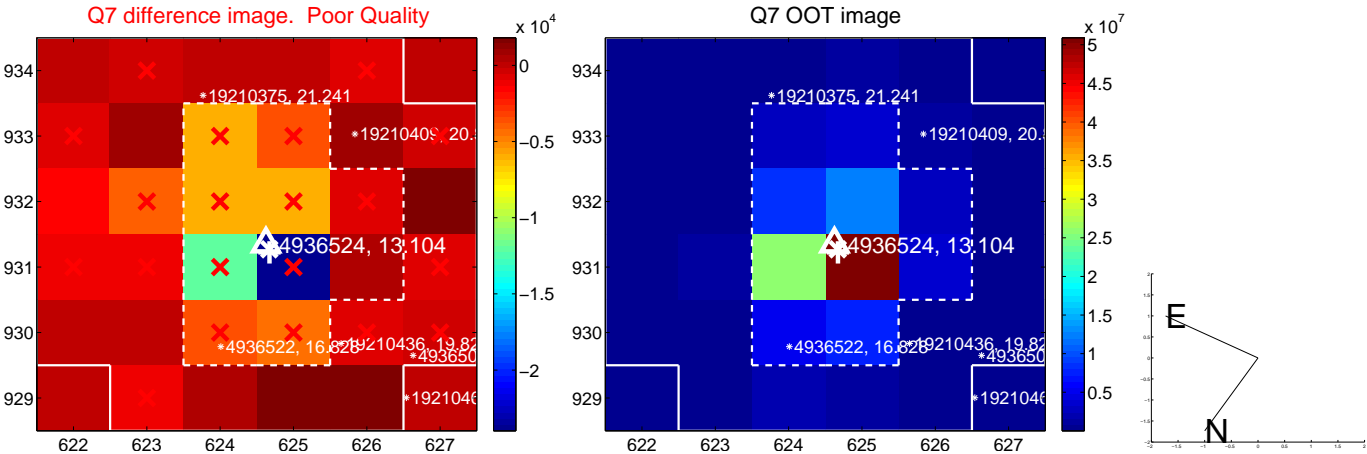
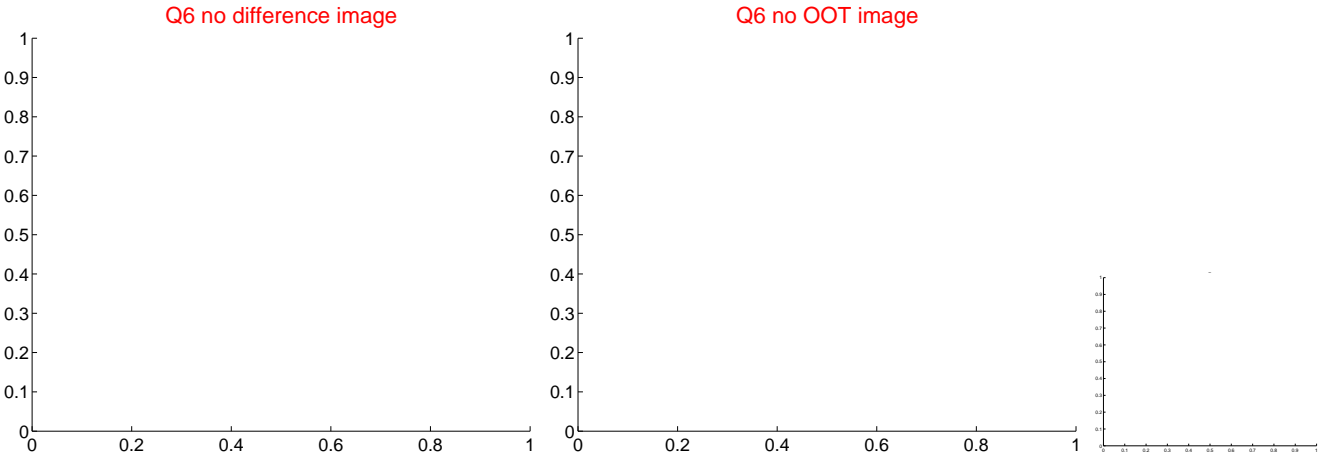
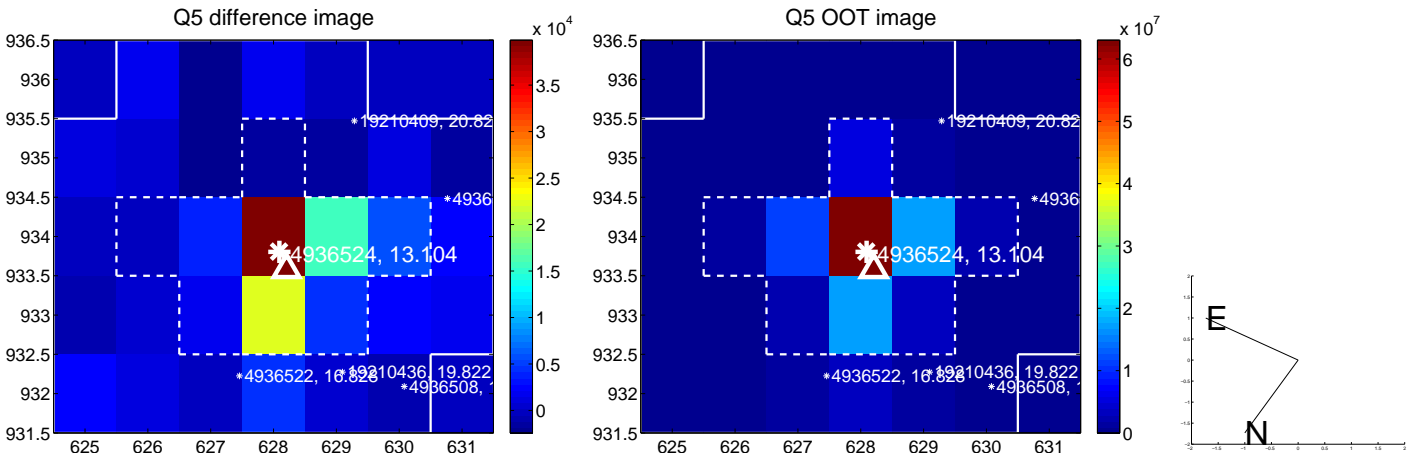


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

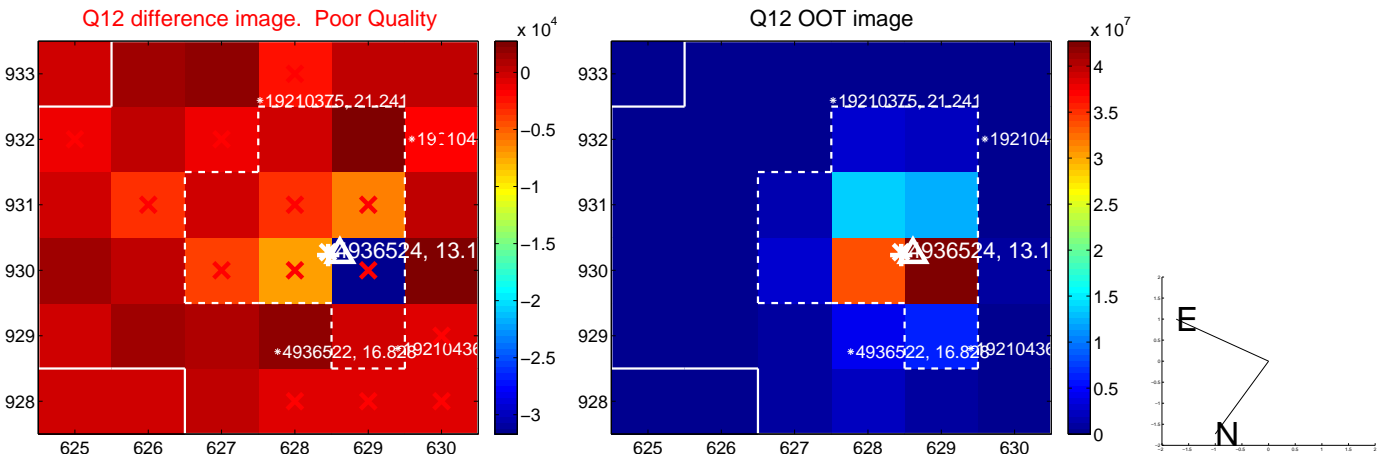
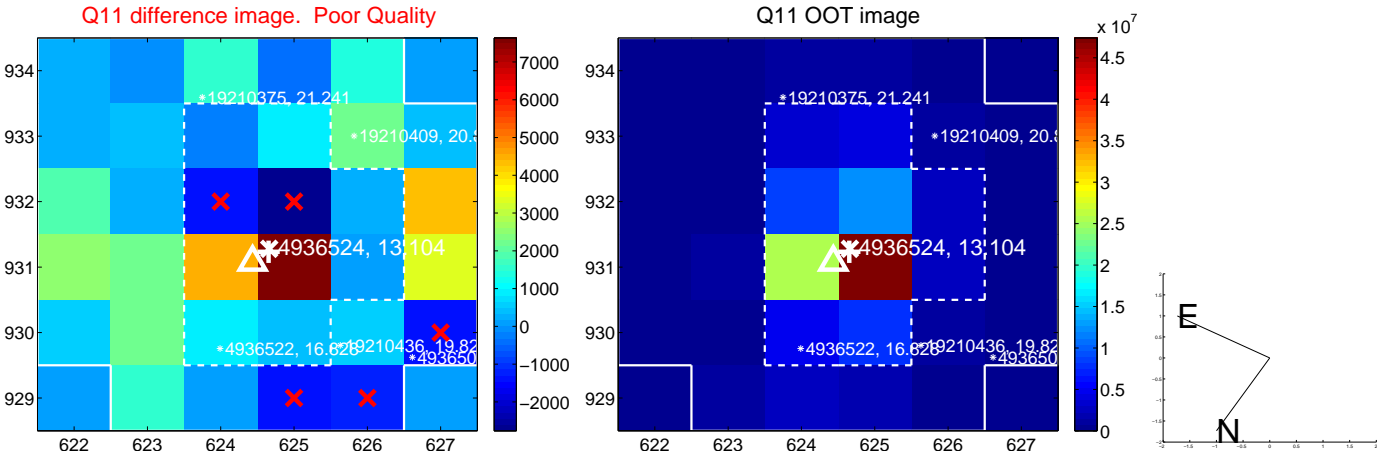
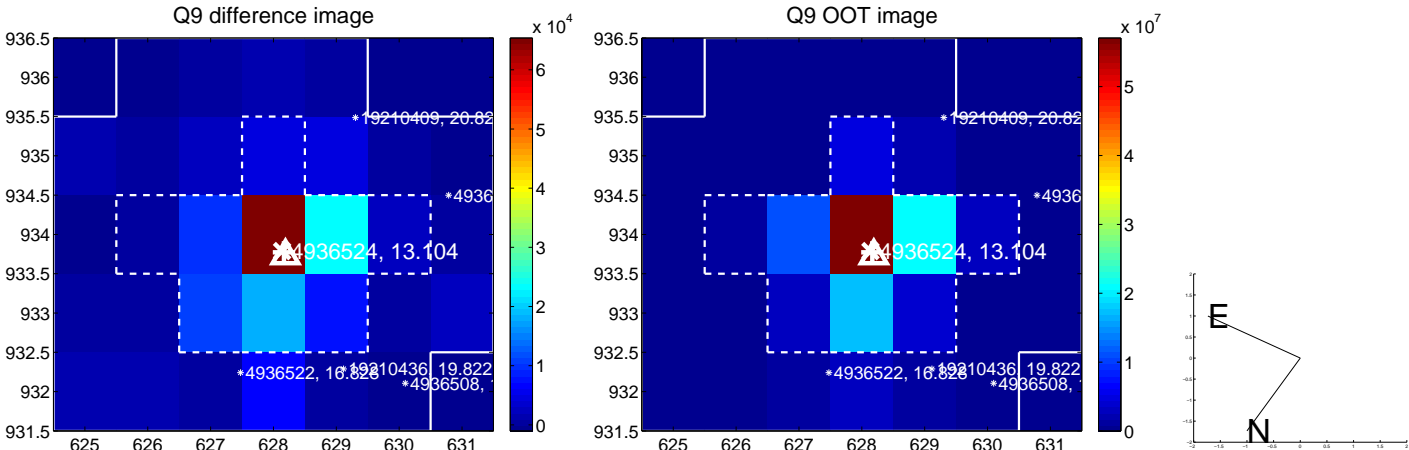
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



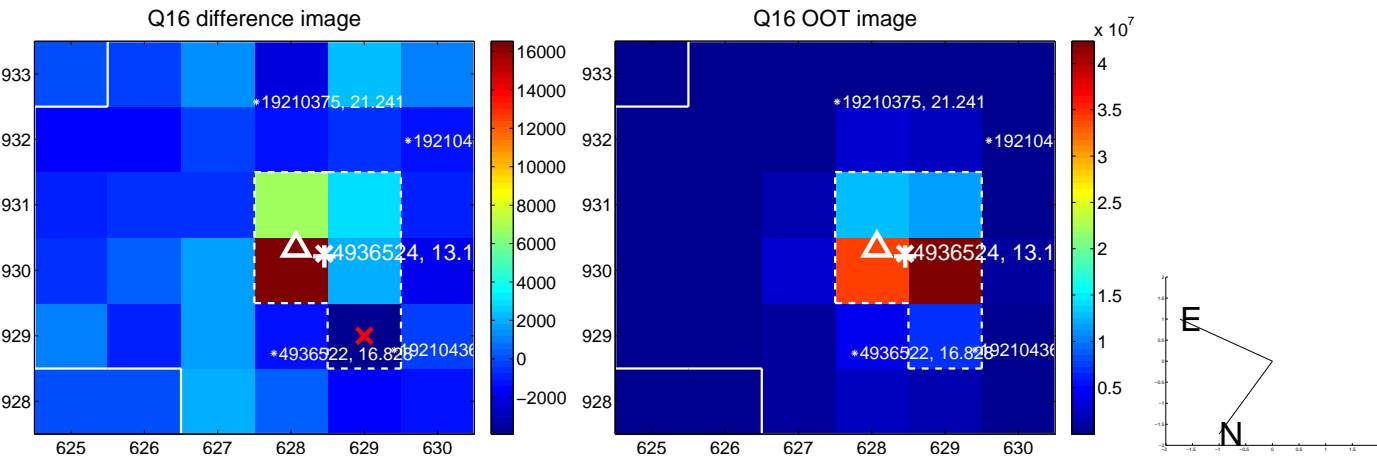
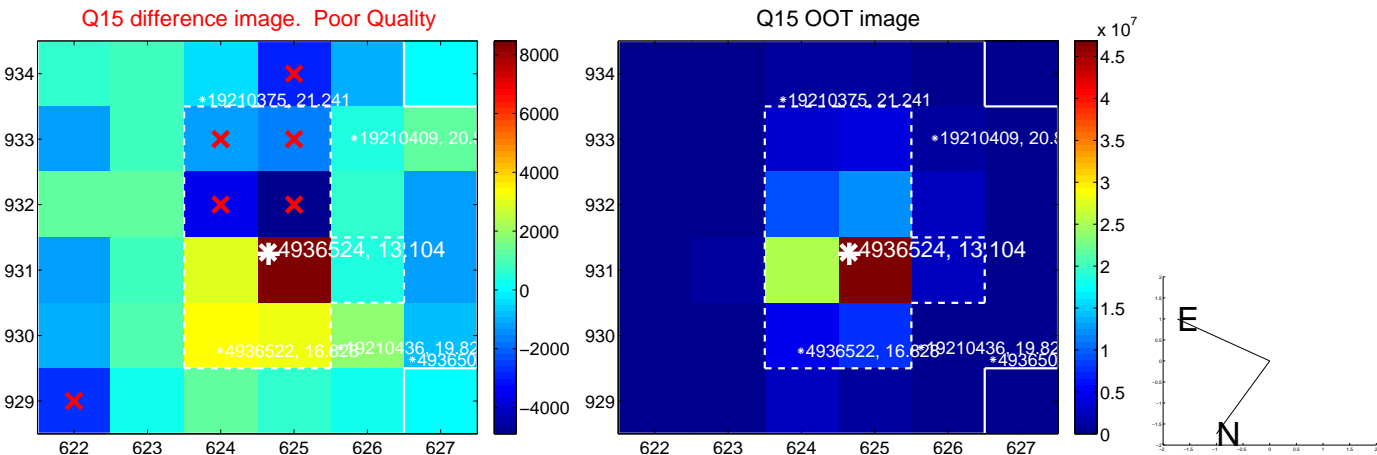
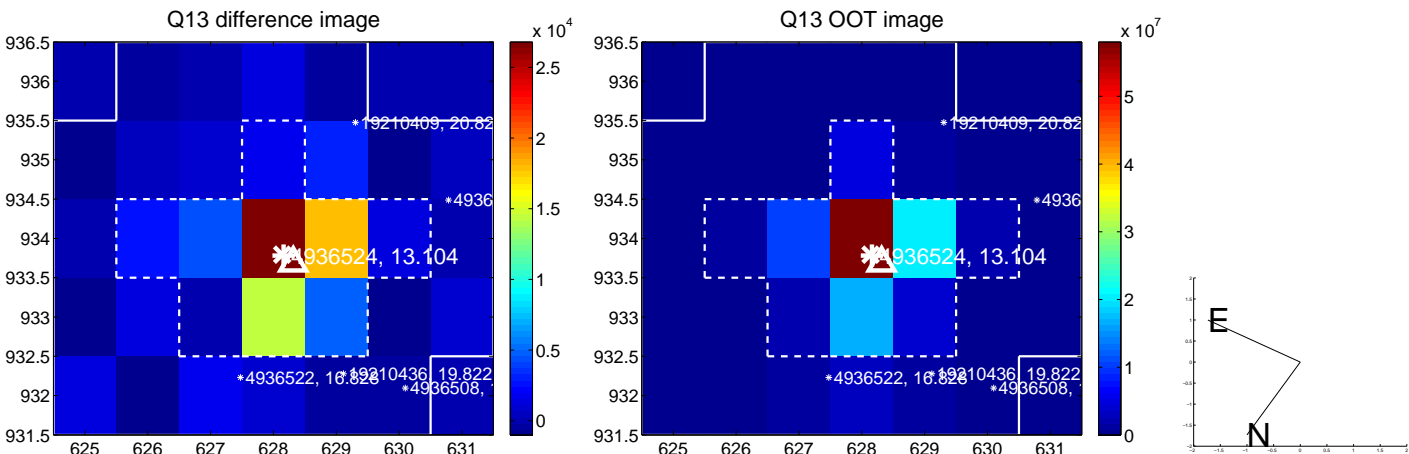
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



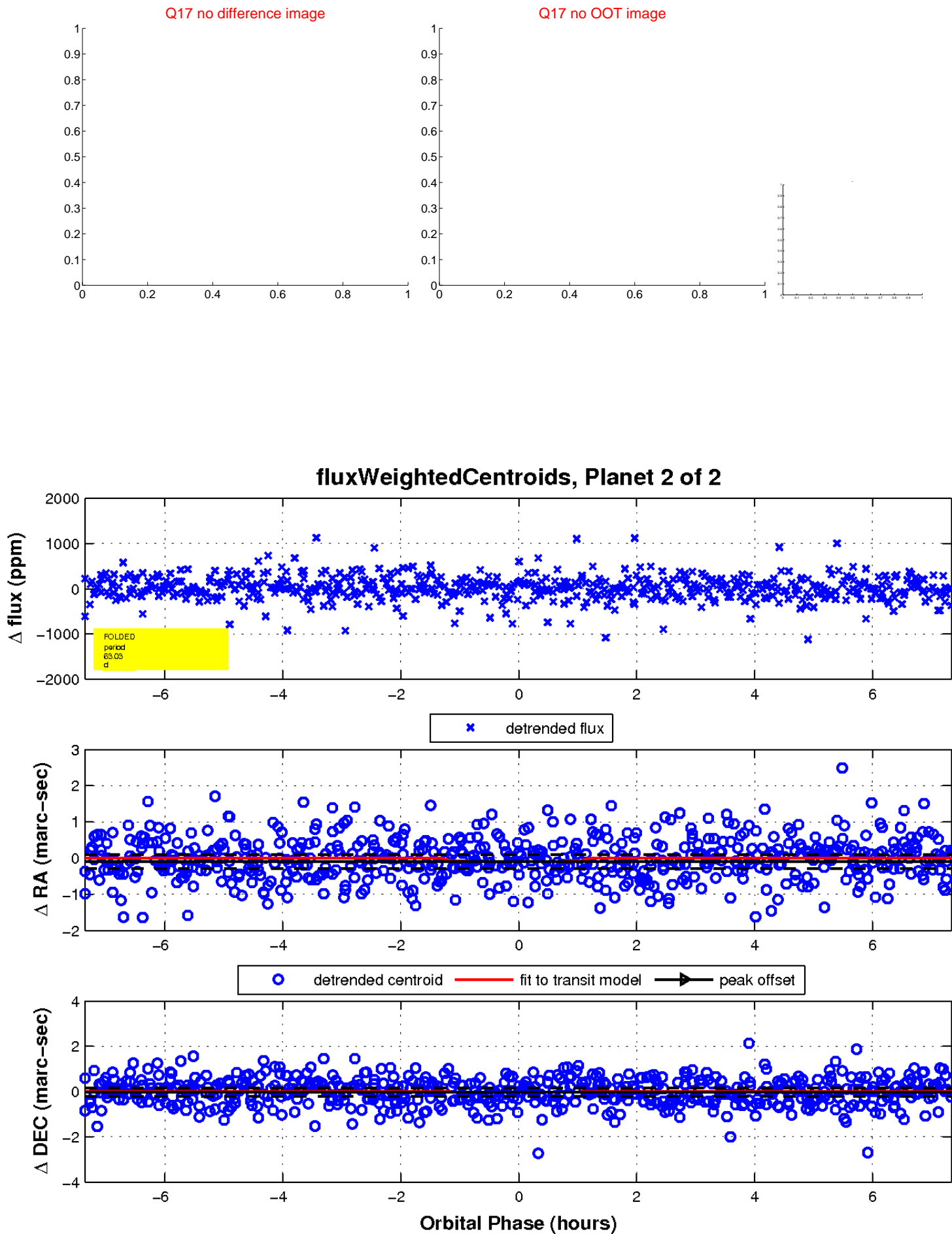
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

