

KIC 002847816

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})
002847816-01	OBS	No	1.156085	132.334508	12.6	4.472	8.3	9.0	1.53	6388	0.63	7375.19
002847816-02	OBS	No	237.400231	309.287376	167.1	11.555	14.7	6.2	1.53	6388	2.18	6.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002847816-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_CROWDED
002847816-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

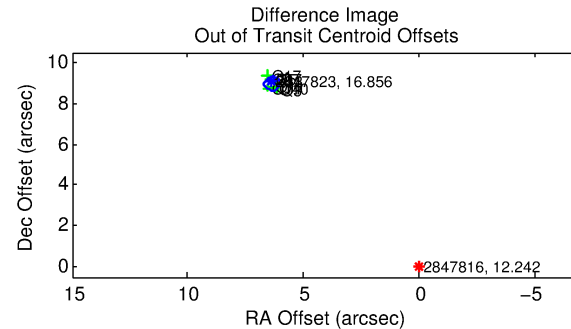
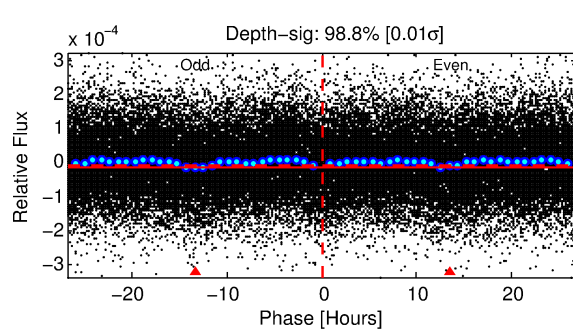
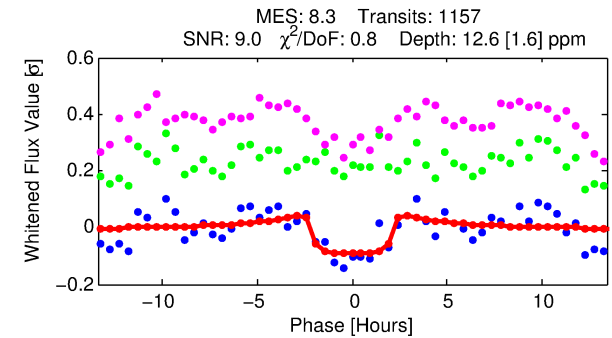
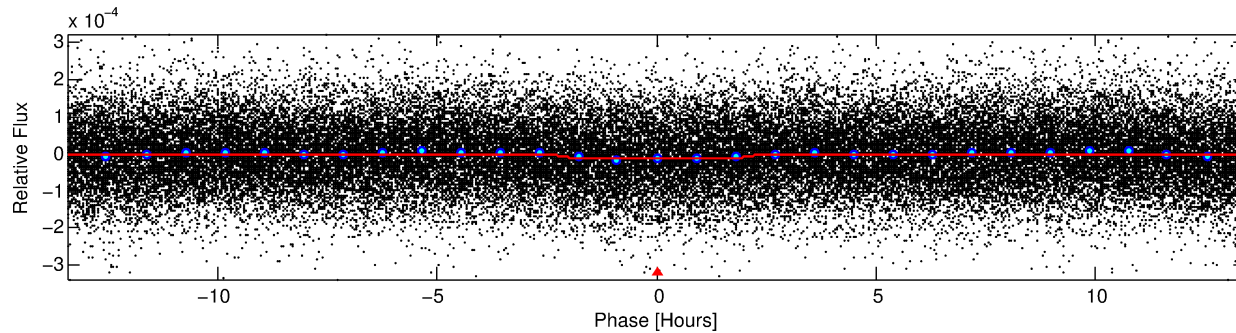
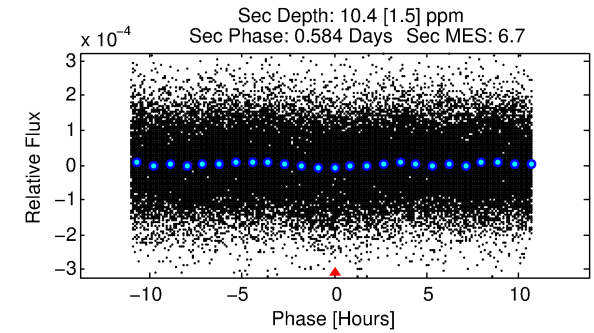
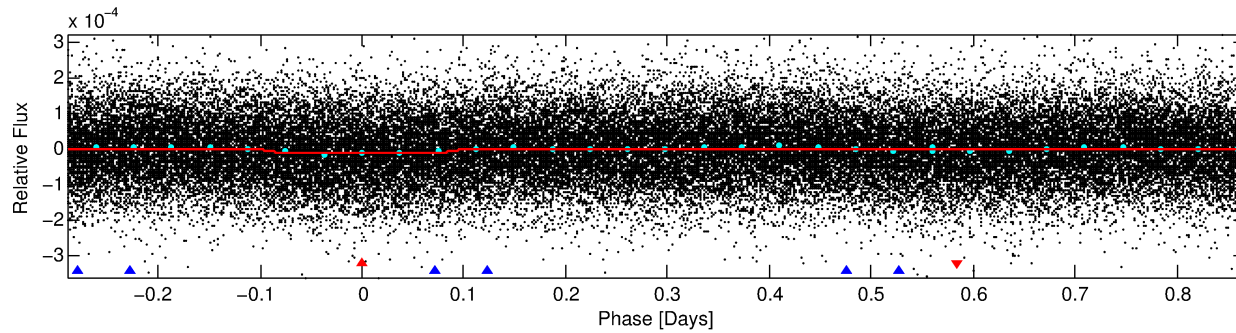
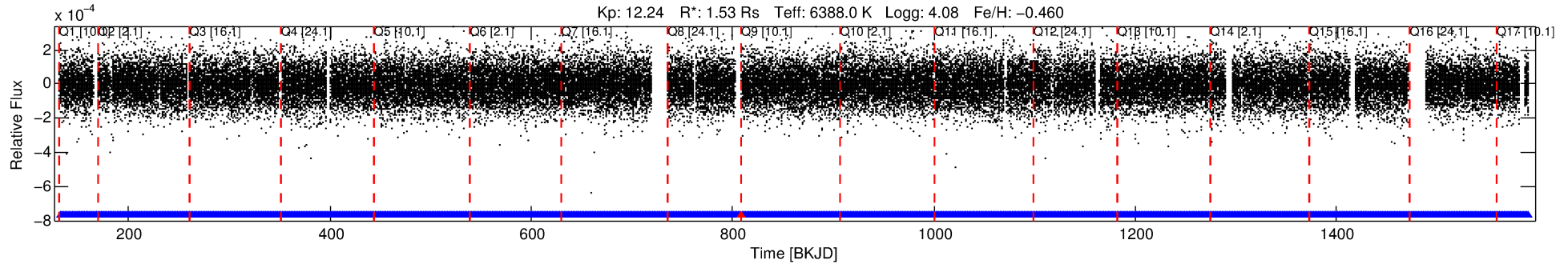
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002847816-01

No Significant Match Found

DV One-Page Summary

KIC: 2847816 Candidate: 1 of 2 Period: 1.156 d



DV Fit Results:

Period = 1.15609 [0.00001] d
Epoch = 132.3345 [0.0039] BKJD
Rp/R* = 0.0037 [0.0008]
a/R* = 1.33 [0.69]
b = 0.88 [0.31]
Seff = 7375.19 [3961.87]
Teq = 2363 [317] K
Rp = 0.63 [0.25] Re
a = 0.0218 [0.0070] AU
Ag = 7.00 [4.83] [1.24σ]
Teffp = 5943 [710] K [4.60σ]

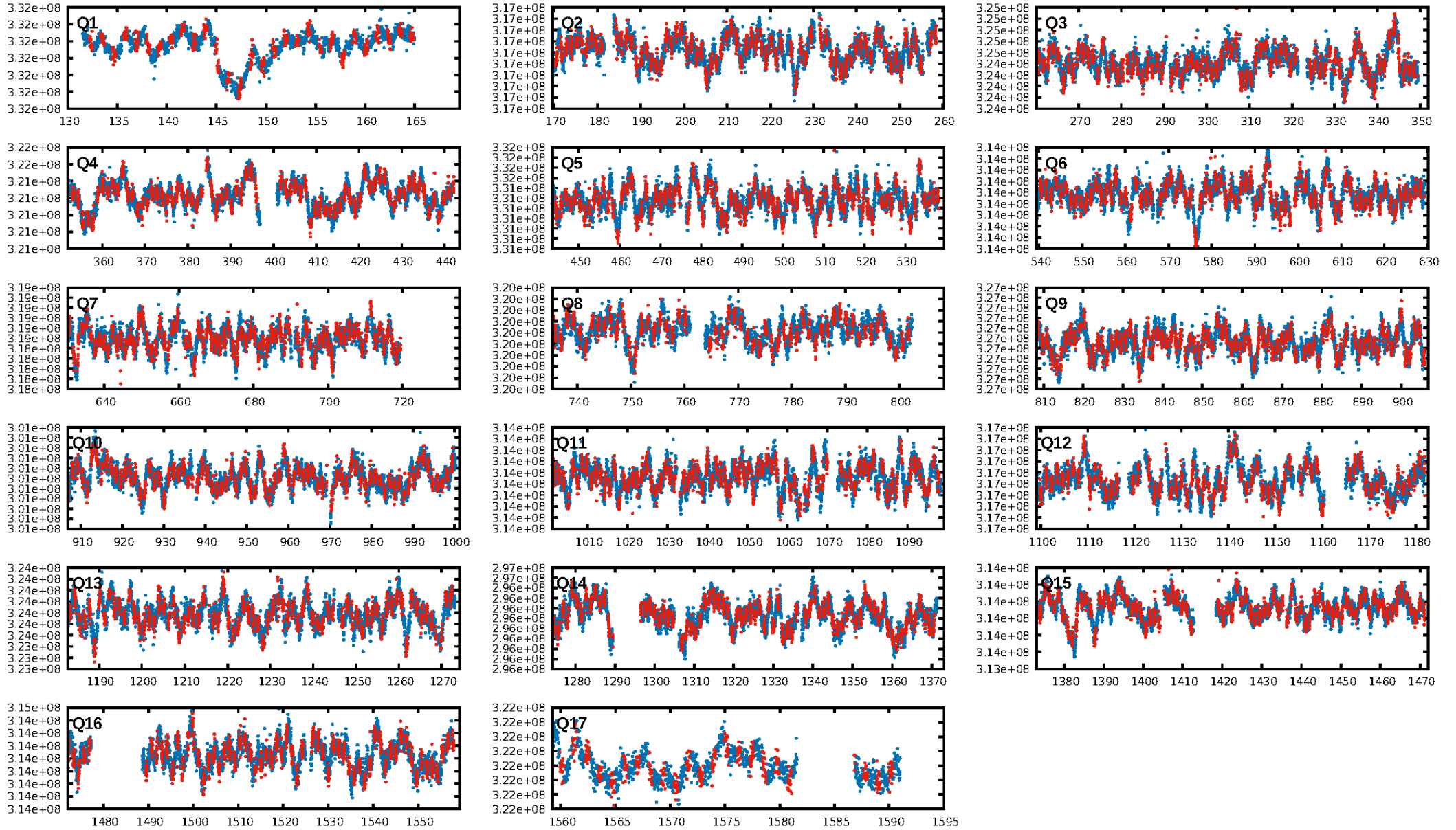
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [457.60σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.20e-14
RollingBand-fgt: 1.00 [1105/1106]
GhostDiagnostic-chr: -1.581
Centroid-sig: 1.4%
Centroid-so: 1.704 arcsec [1.51σ]
OotOffset-rm: 11.001 arcsec [99.22σ]
KicOffset-rm: 10.978 arcsec [115.60σ]
OotOffset-st: 2/3/0/4 [9]
KicOffset-st: 2/3/0/4 [9]
DiffImageQuality-fgm: 0.89 [8/9]
DiffImageOverlap-fno: 1.00 [17/17]

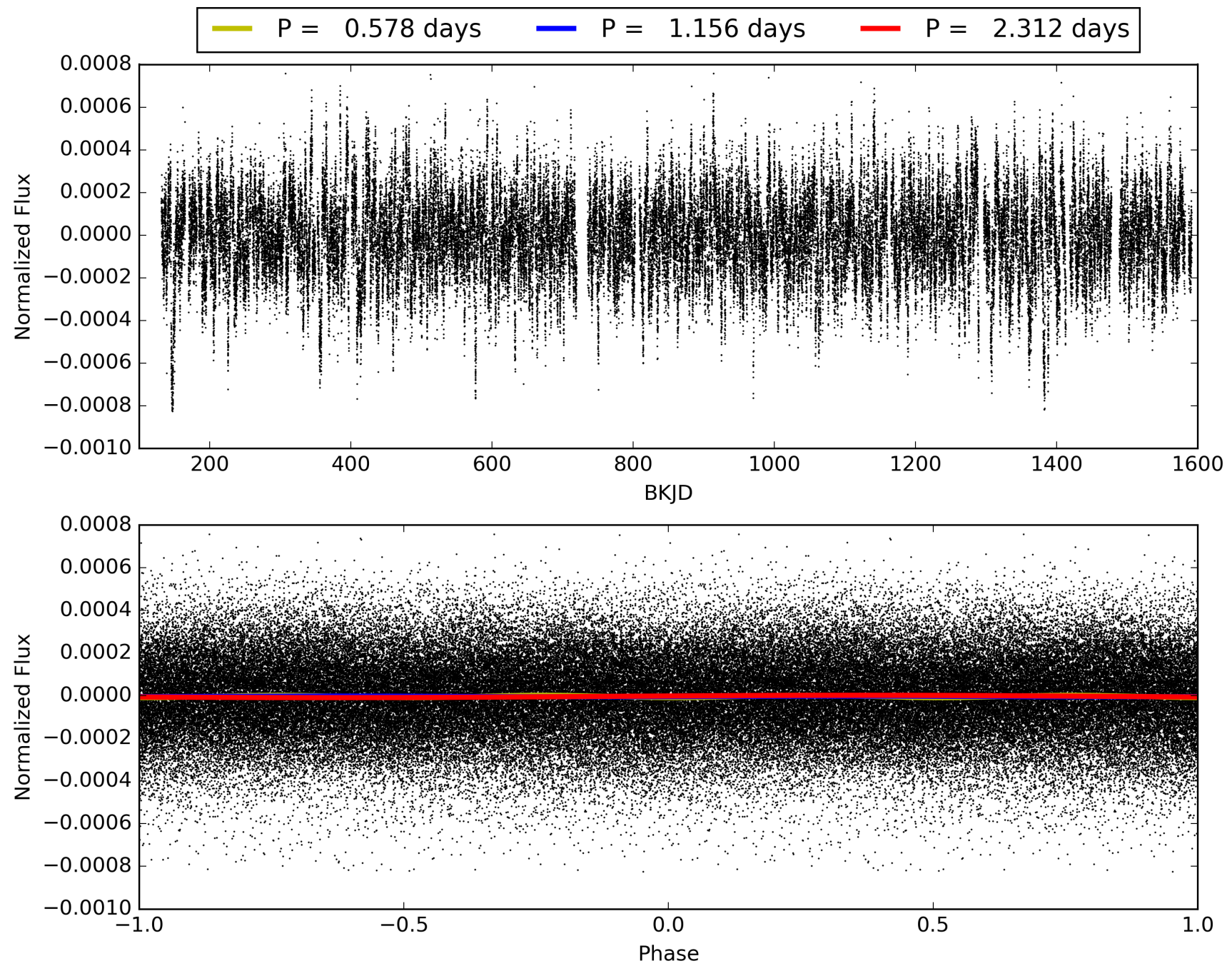
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:55:34 Z

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

TCE 002847816-01, PDC Light Curves

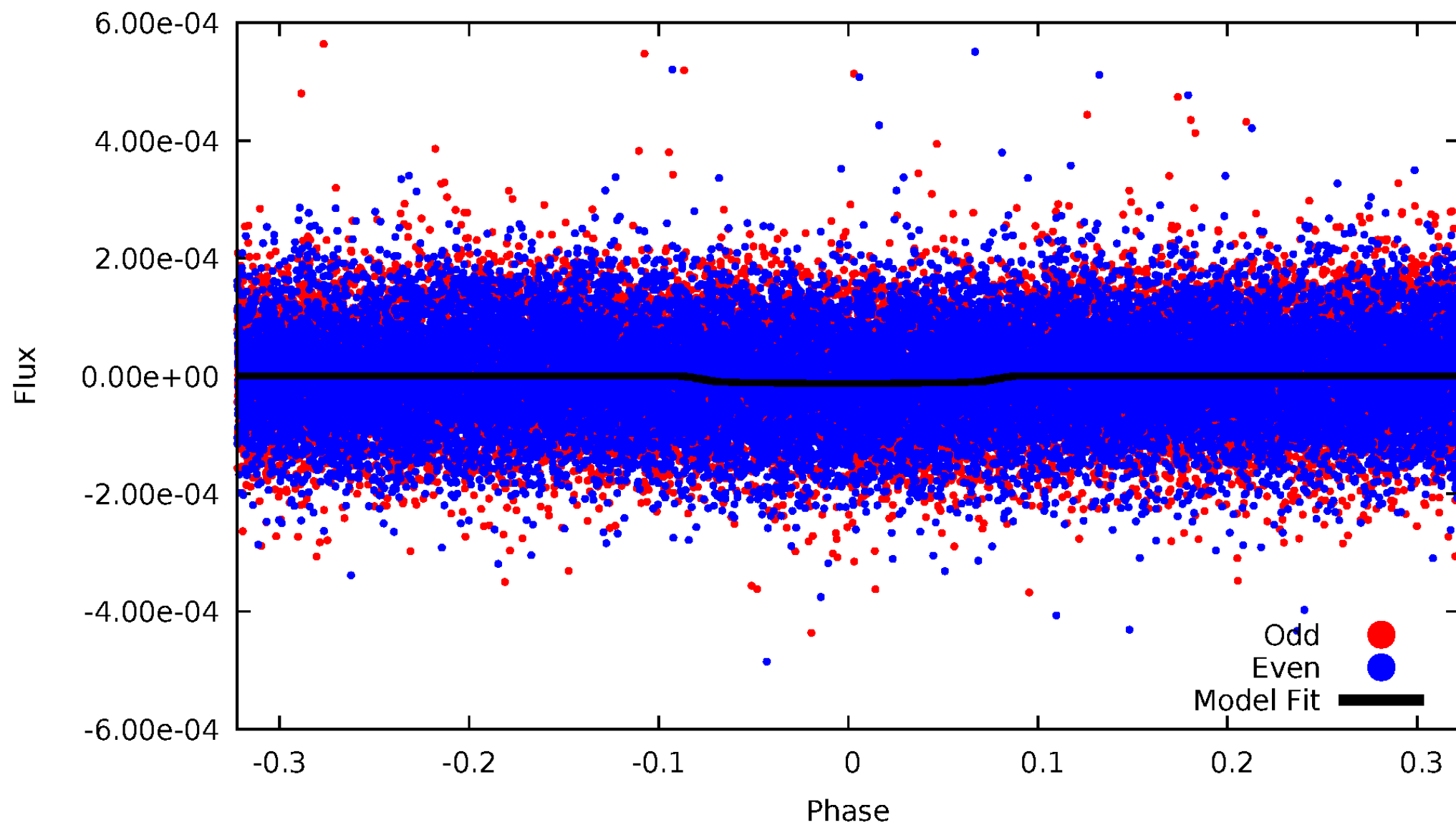


TCE 002847816-01



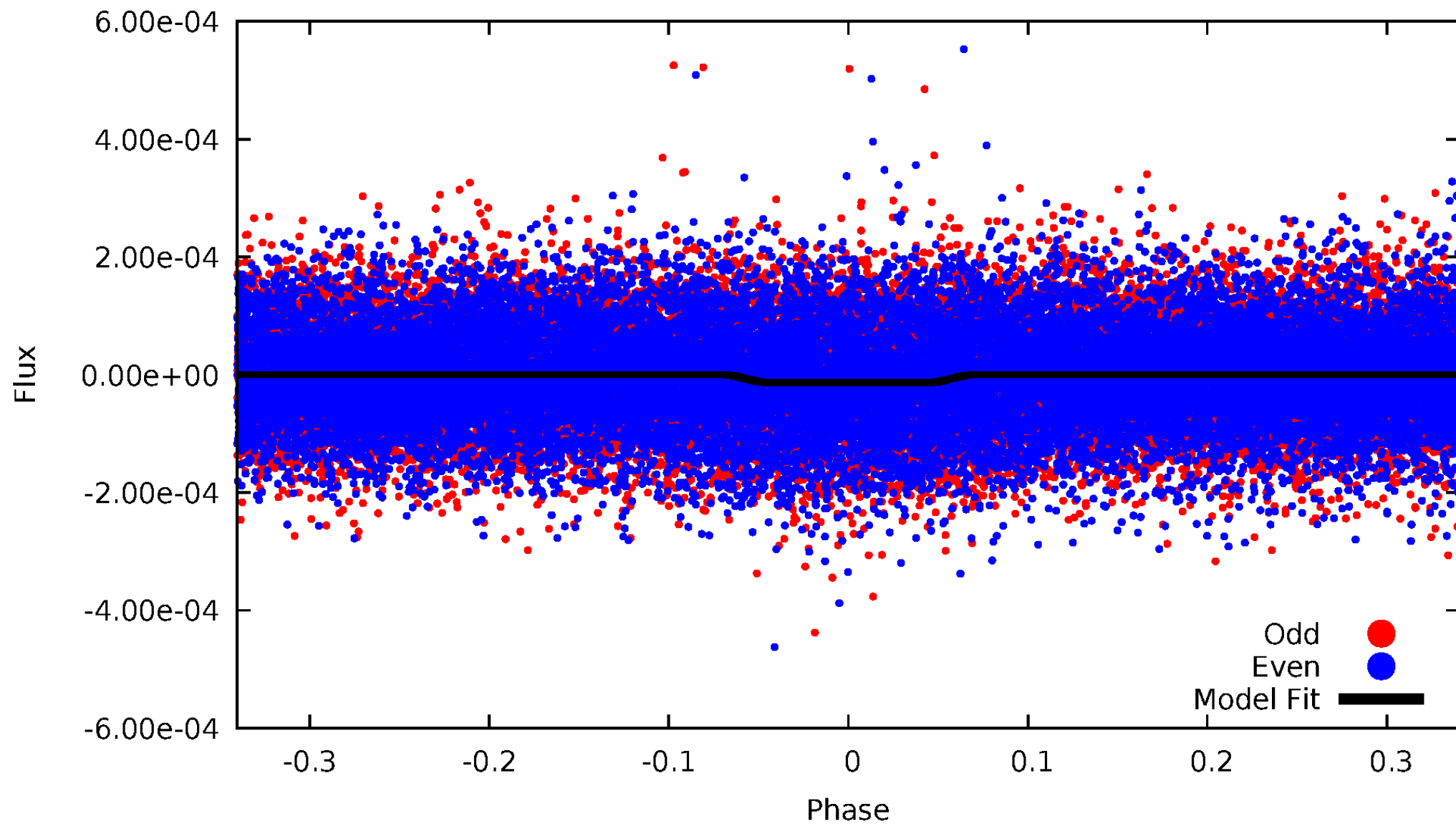
DV Odd/Even

TCE 002847816-01



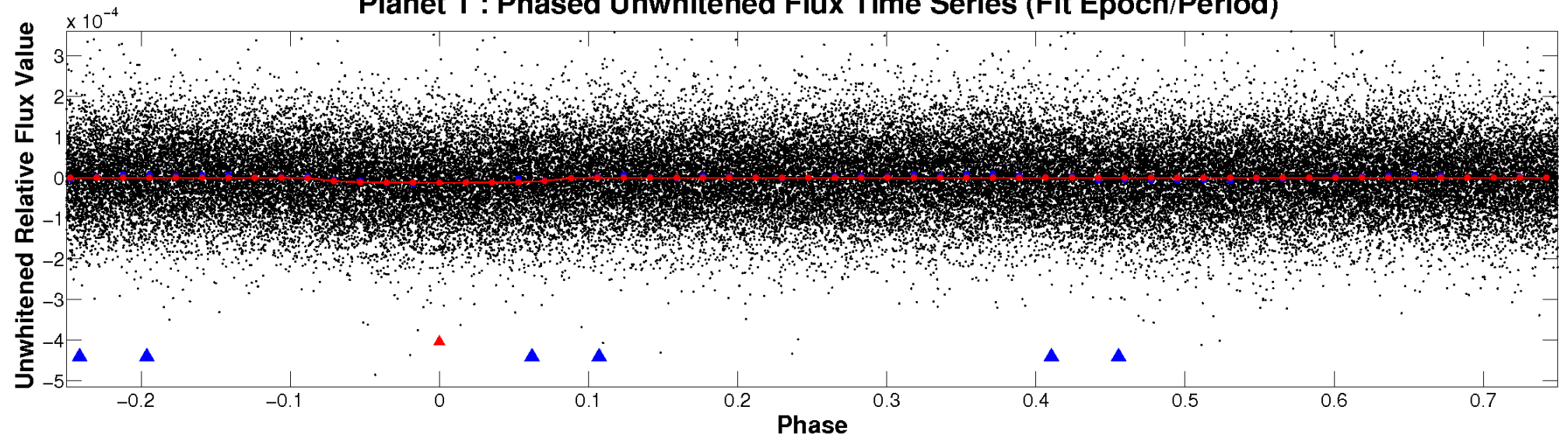
ALT Odd/Even

TCE 002847816-01

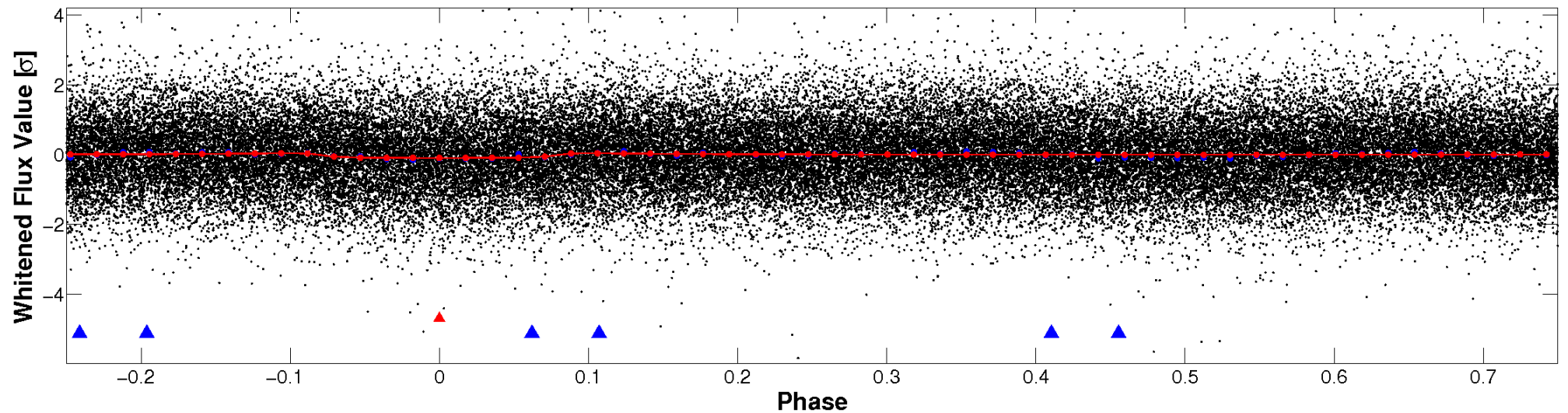


Non-Whitened Vs. Whitened Light Curve

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

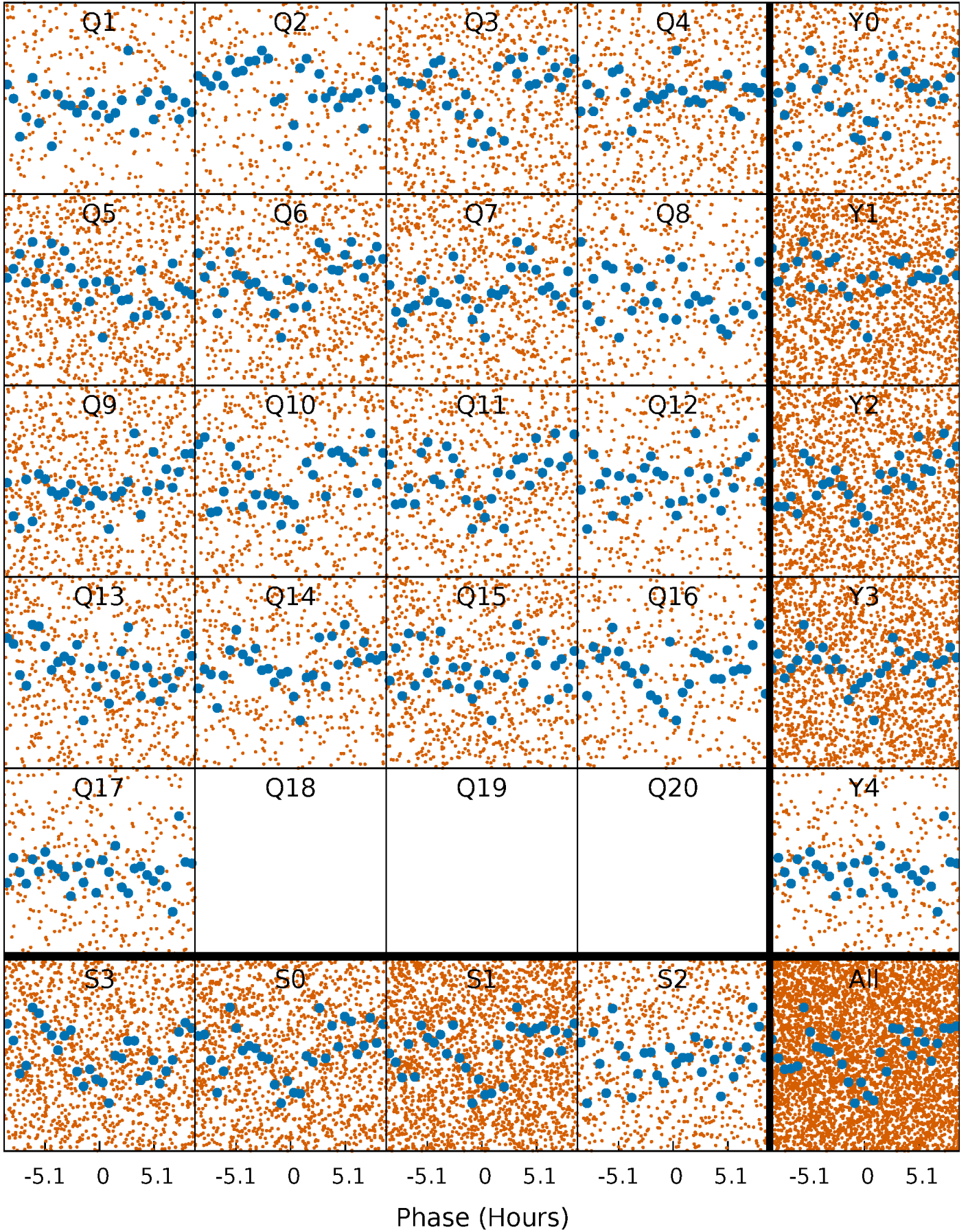


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



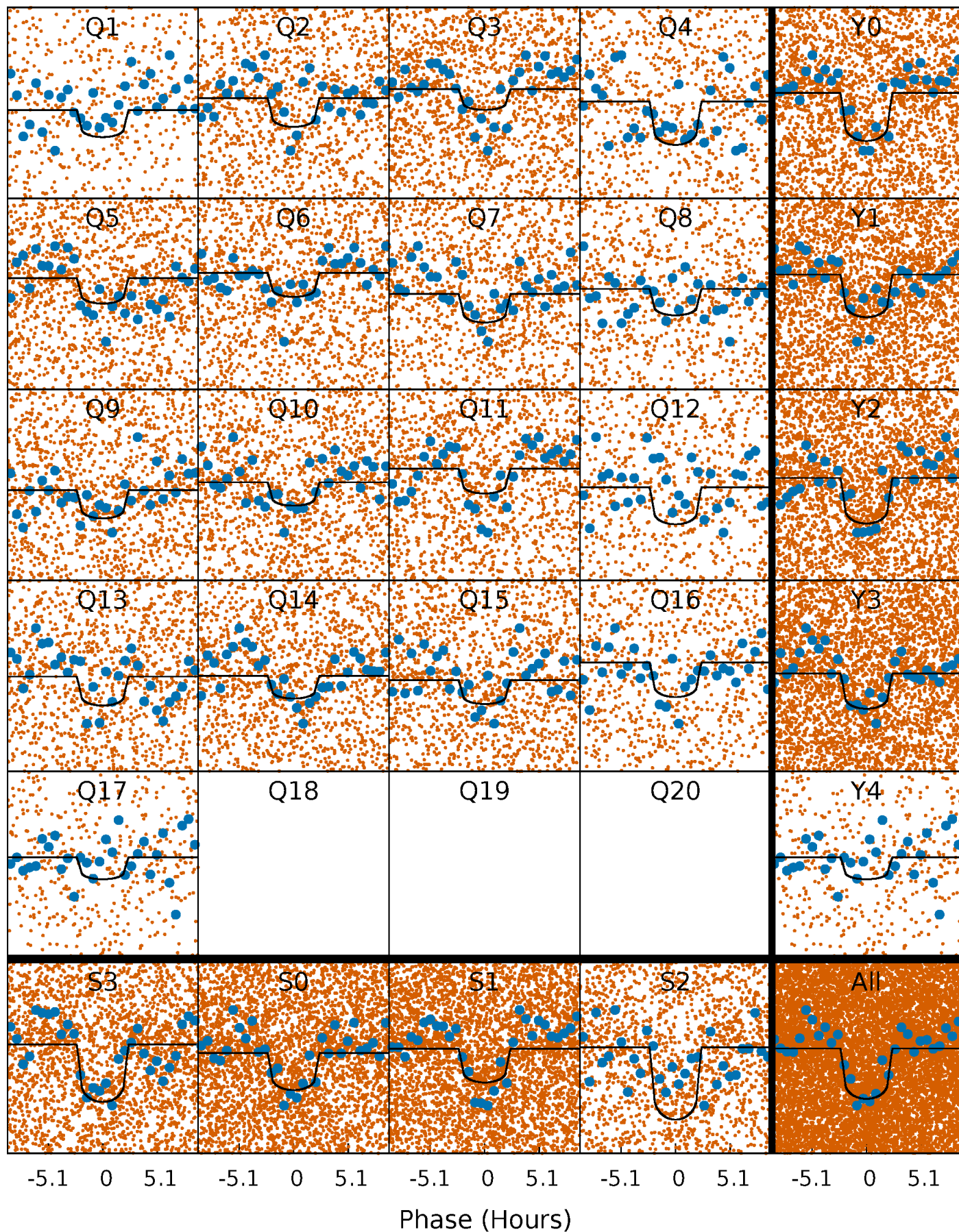
PDC Quarter-Phased Transit Curves

TCE 002847816-01 P= 1.156085 Days $T_0=132.334508$ (BKJD)



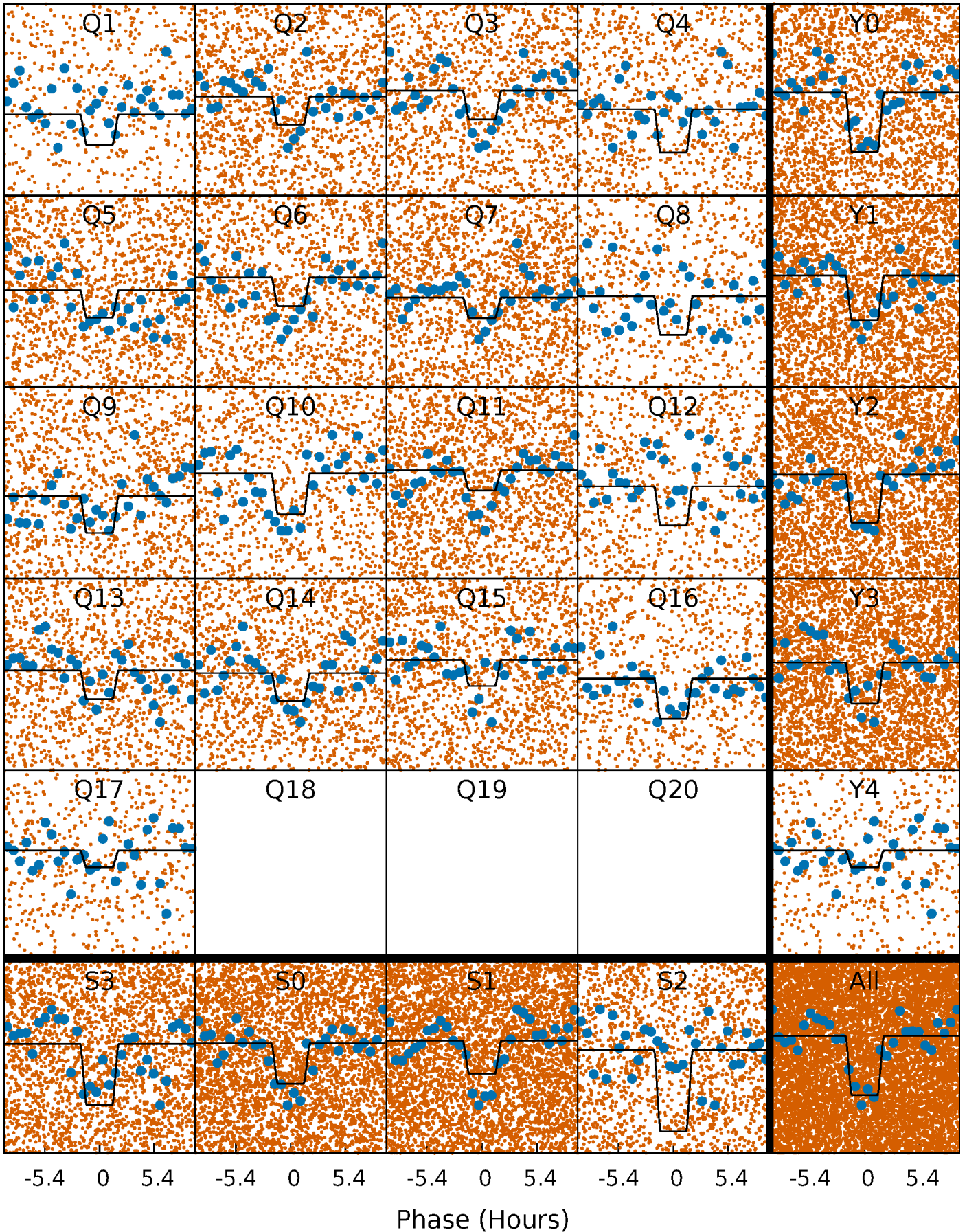
DV Quarter-Phased Transit Curves

TCE 002847816-01 P= 1.156085 Days $T_0=132.334508$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

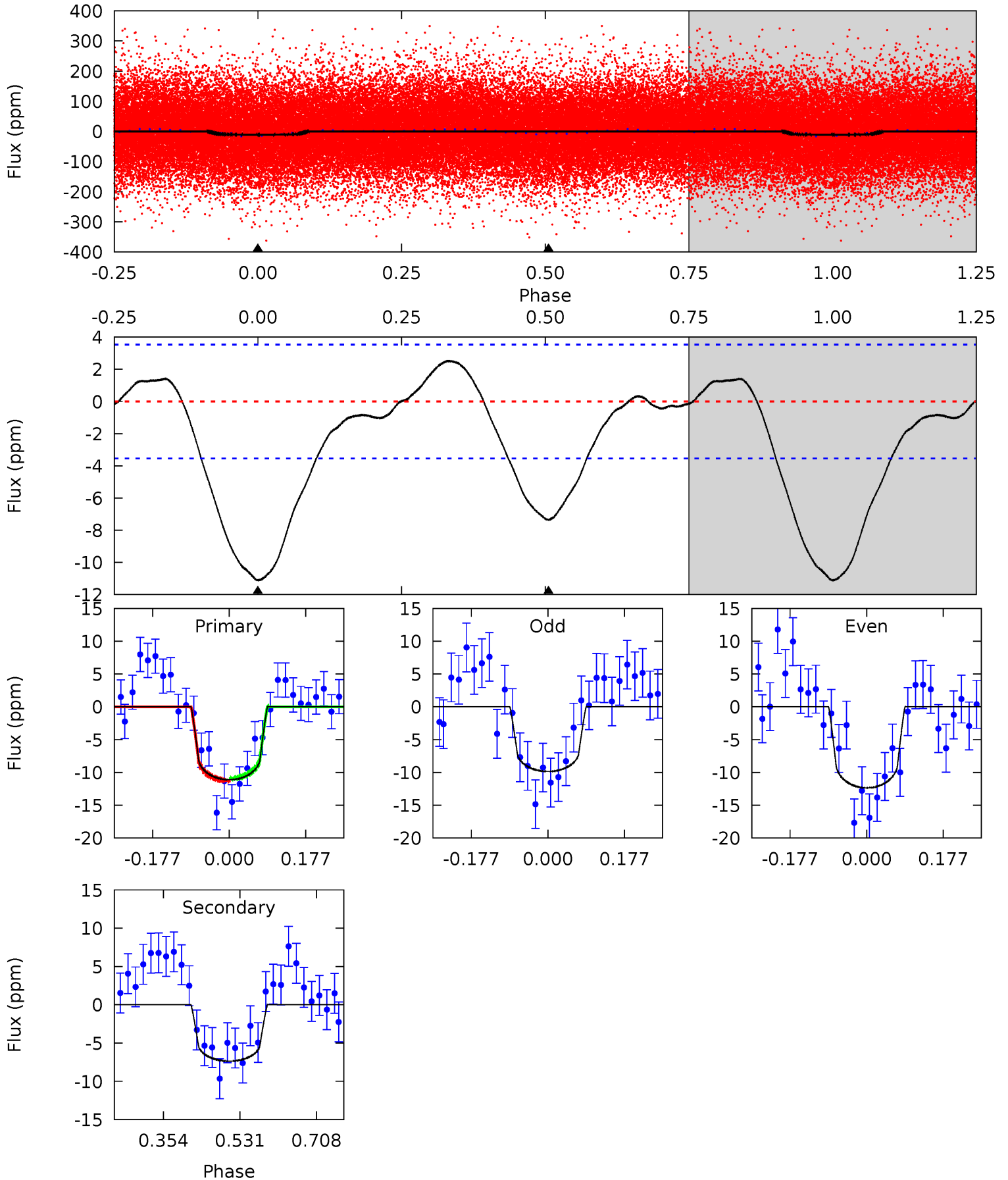
TCE 002847816-01 P= 1.156101 Days $T_0=132.320438$ (BKJD)



DV Model-Shift Uniqueness Test

002847816-01, P = 1.156085 Days, E = 131.178423 Days

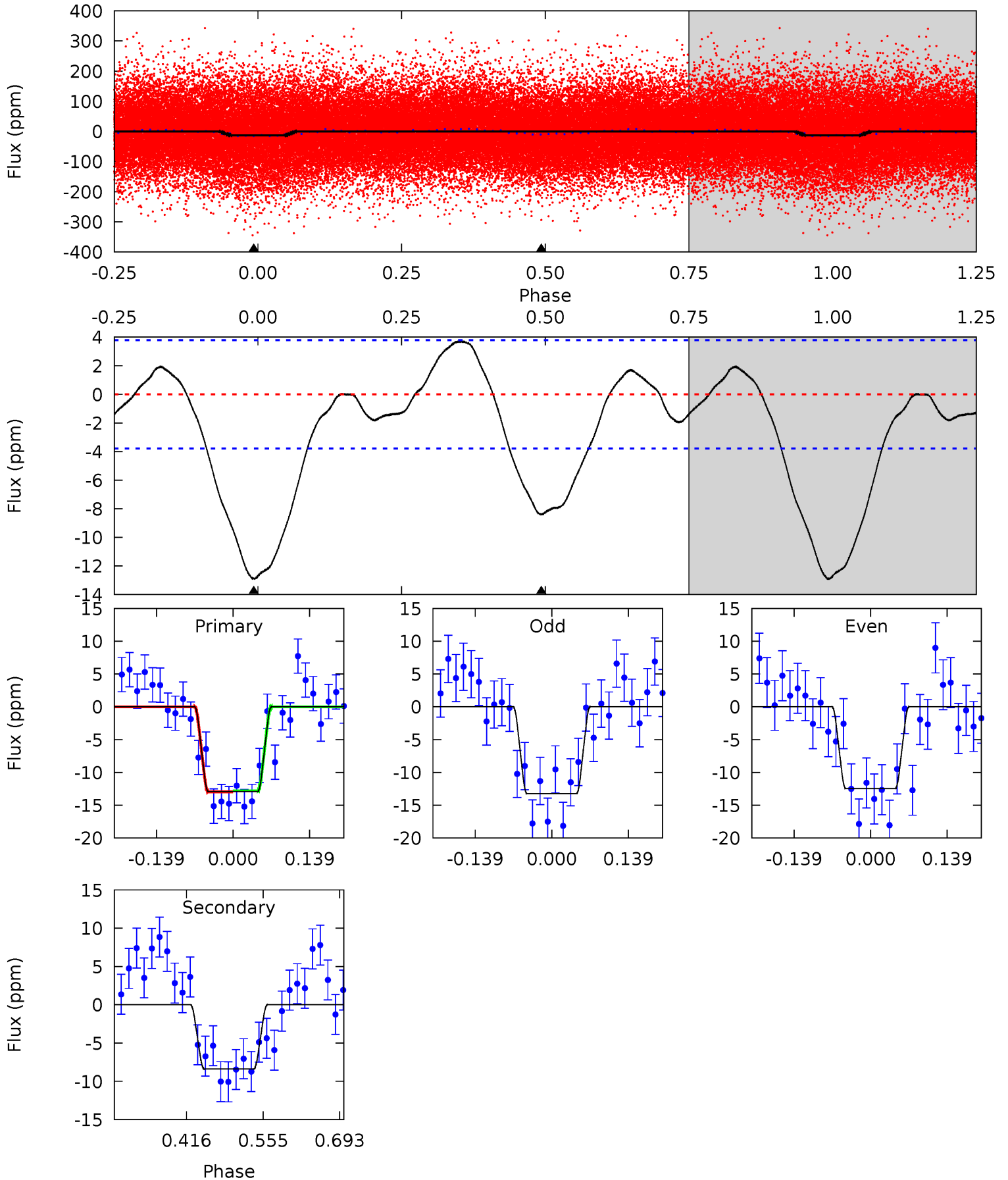
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	9.26	0	0	4.44	1.35	1.22	14.0	14.0	9.26	9.26	1.57	0.96	0.18	0.21



Alt Model-Shift Uniqueness Test

002847816-01, P = 1.156101 Days, E = 131.164337 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	9.97	0	0	4.50	1.48	1.81	15.3	15.3	9.97	9.97	0.46	1.01	0.22	0.09



Stellar Parameters For KIC 002847816

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6388^{+181}_{-227}	$4.082^{+0.306}_{-0.165}$	$-0.460^{+0.300}_{-0.300}$	$1.535^{+0.411}_{-0.503}$	$1.037^{+0.162}_{-0.133}$	$0.404^{+0.837}_{-0.185}$
	+3%/-4%	+7%/-4%	+65%/-65%	+27%/-33%	+16%/-13%	+207%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002847816-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-7 ± 1	$0.60^{+0.18}_{-0.15}$	3261^{+248}_{-321}	5392^{+667}_{-505}	$5.316^{+4.377}_{-2.109}$
Alt.	-8 ± 1	$0.58^{+0.19}_{-0.15}$	3244^{+292}_{-282}	5595^{+843}_{-543}	$6.422^{+5.020}_{-2.759}$

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 $A_{obs} \gg 1.0$

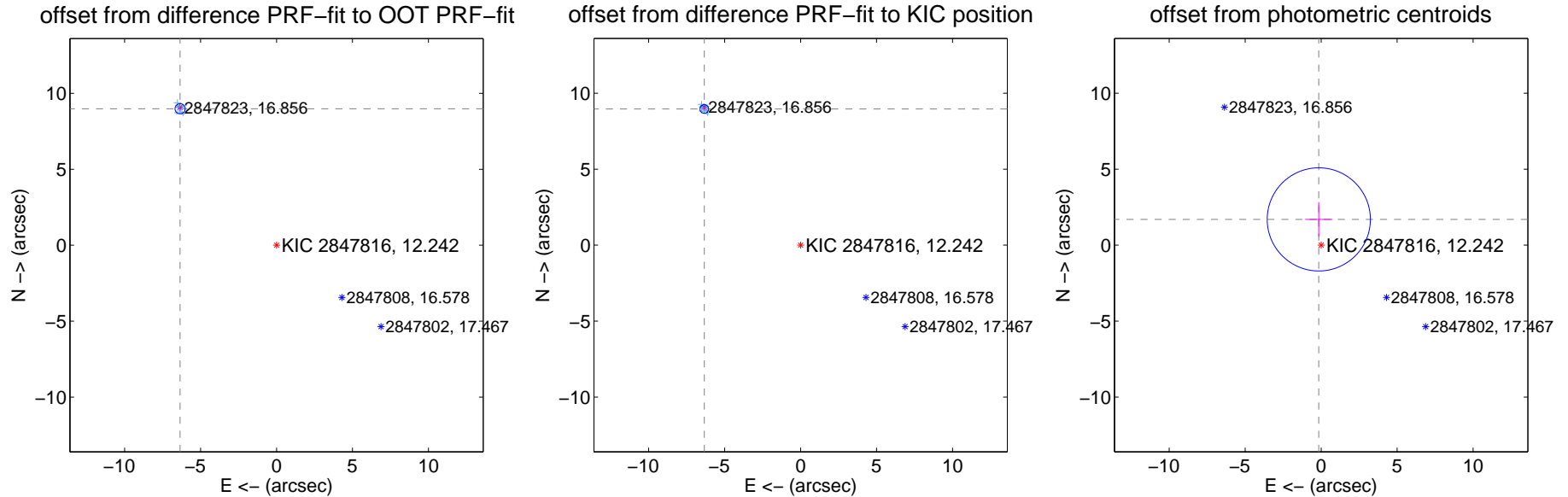
DV Centroid Data

Supplemental centroid analysis for 002847816-01. Kepler magnitude: 12.24. Transit SNR 9.04

There are 8 quarters with good PRF difference image offsets

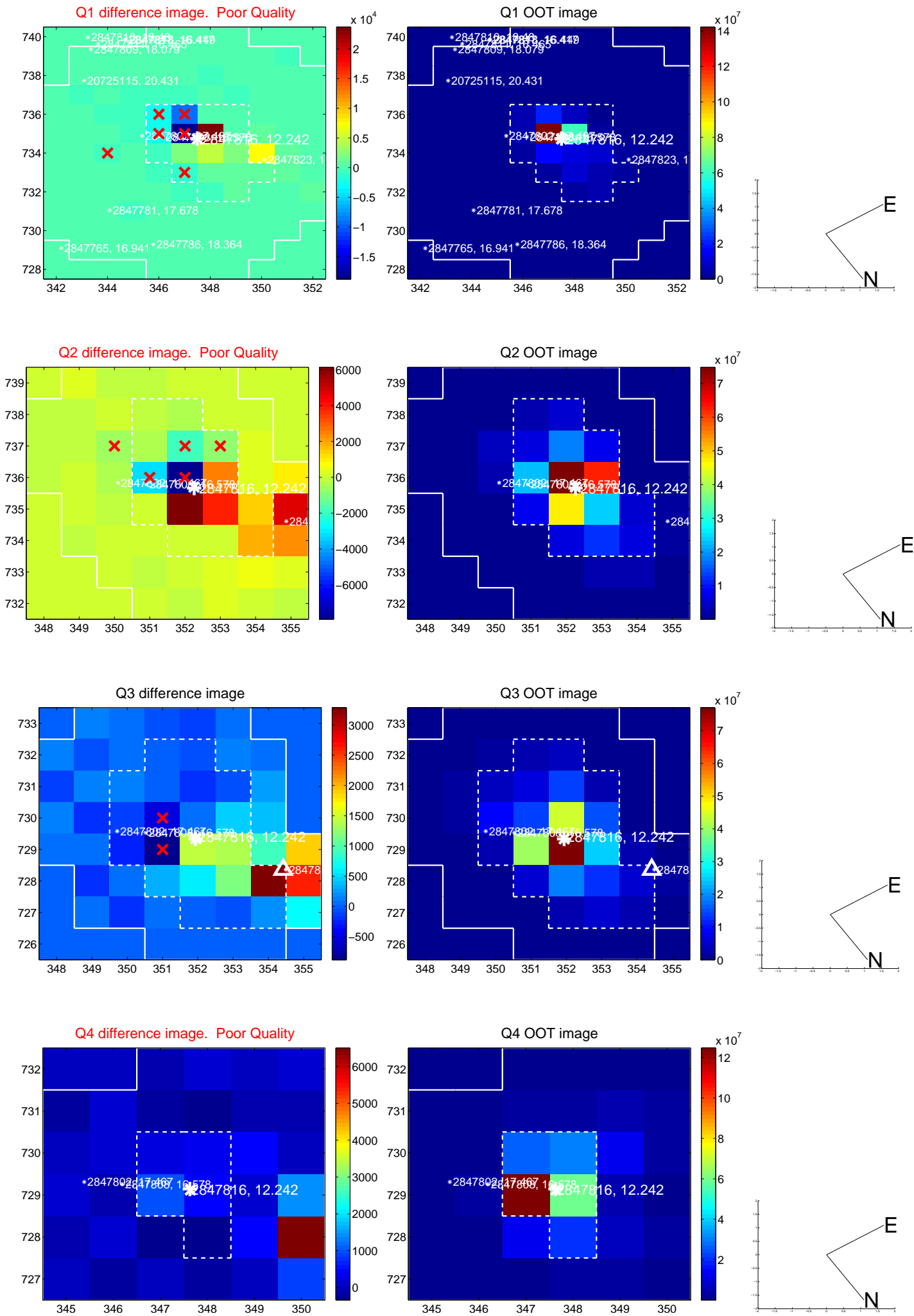
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	11.001 \pm 0.111	99.22	6.349 \pm 0.081	8.984 \pm 0.112
PRF-fit source offset from KIC position	10.978 \pm 0.095	115.60	6.339 \pm 0.085	8.963 \pm 0.091
photometric centroid source offset	1.70 \pm 1.13	1.51	0.15 \pm 0.90	1.70 \pm 1.13

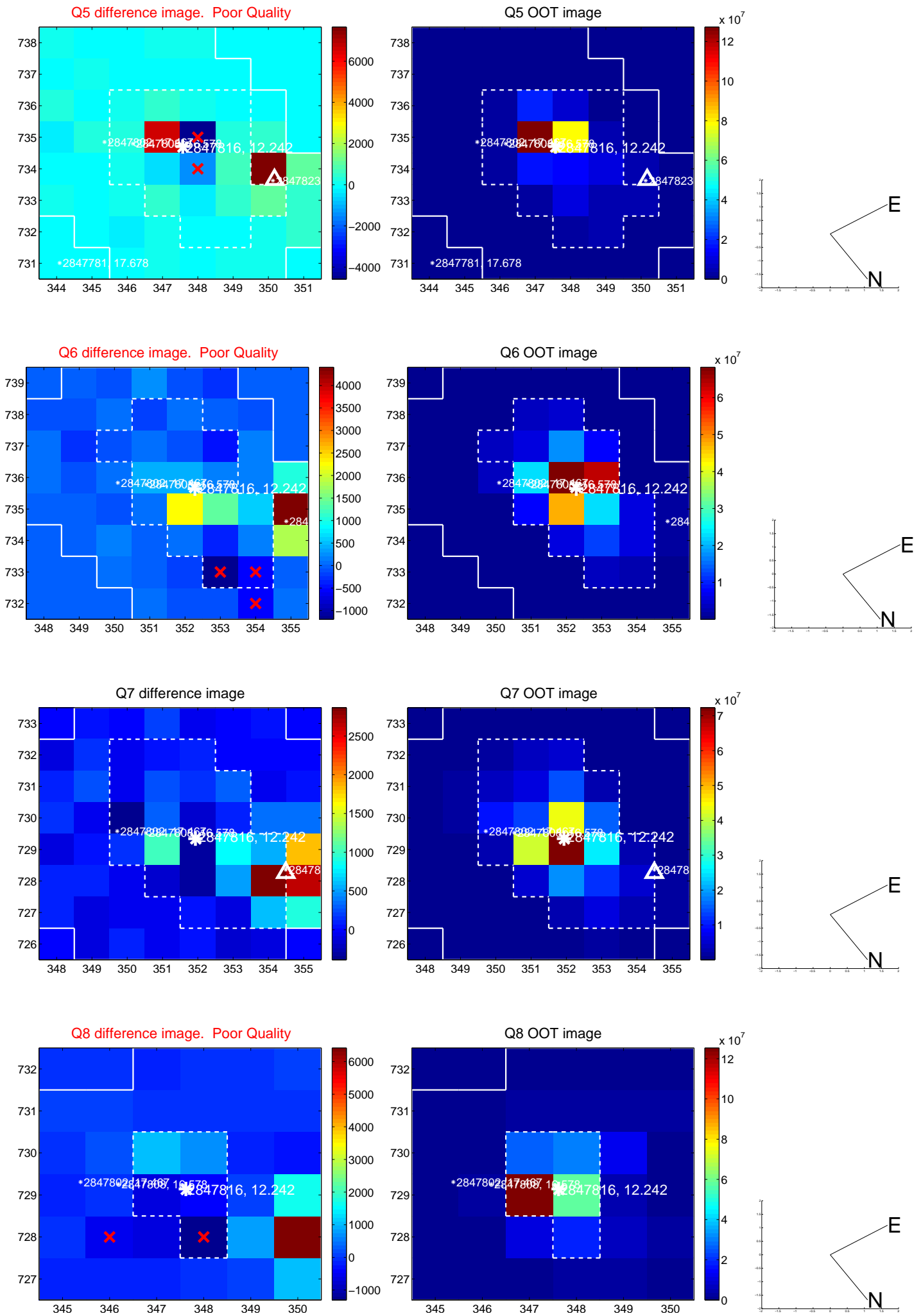


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

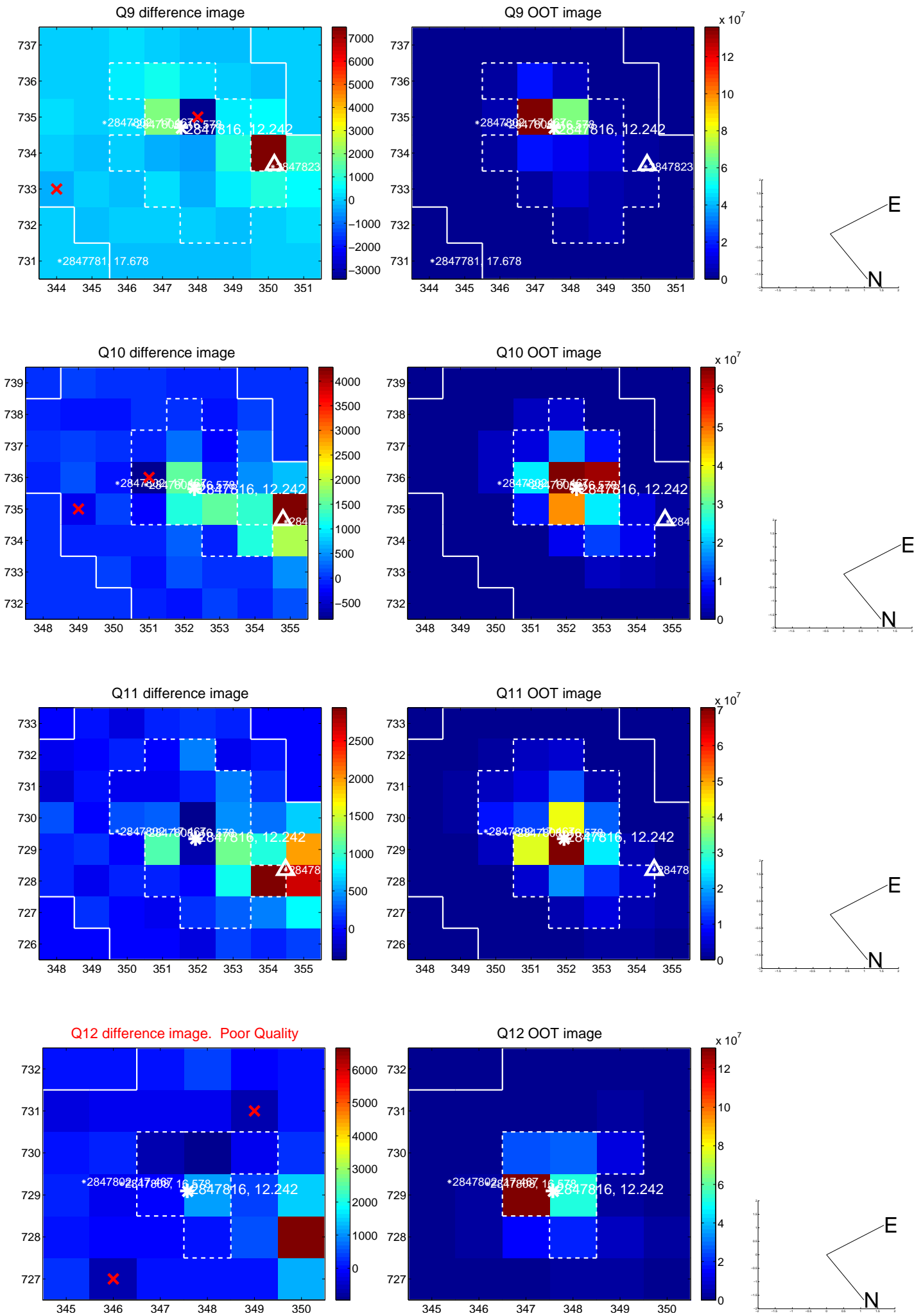
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



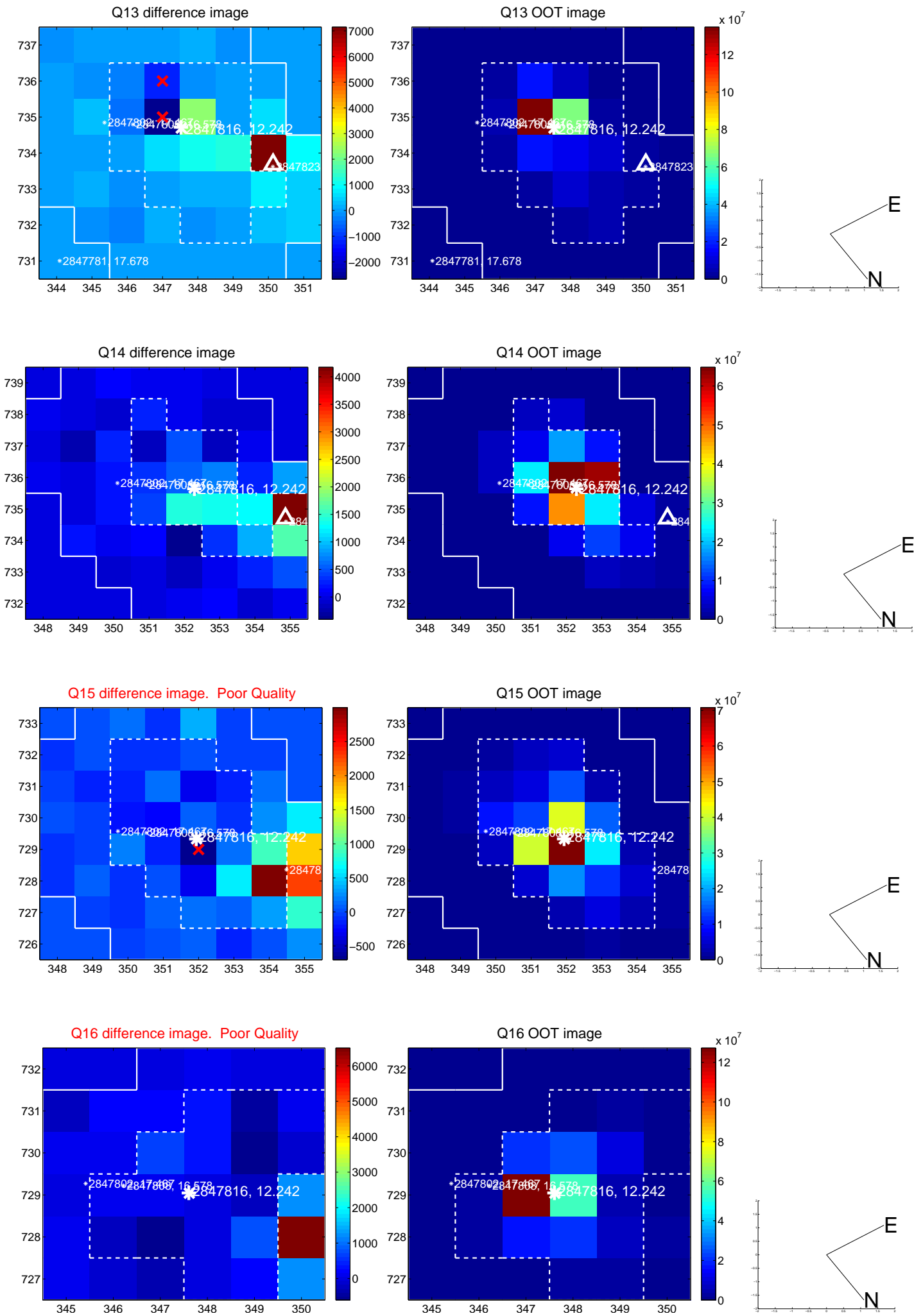
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



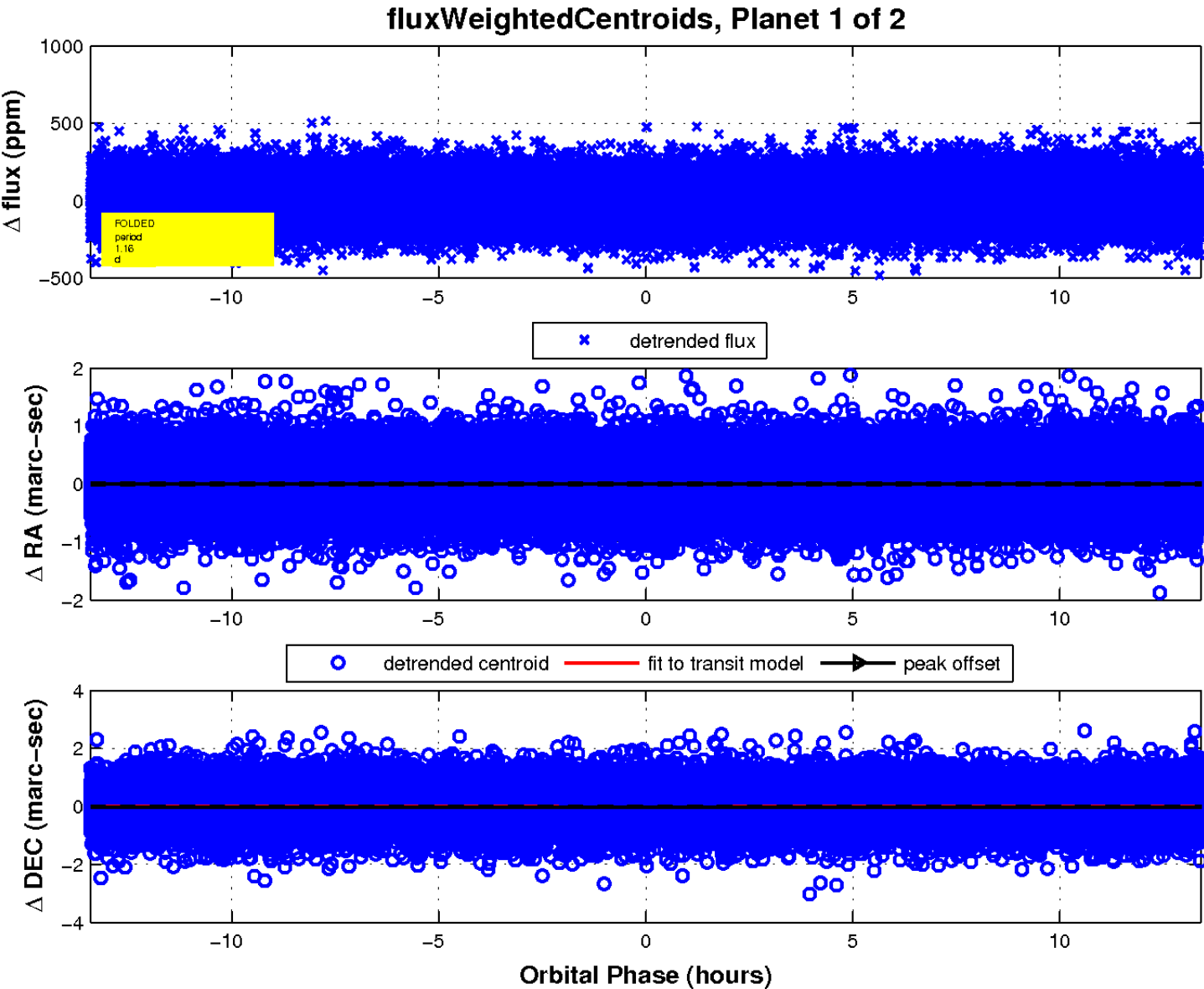
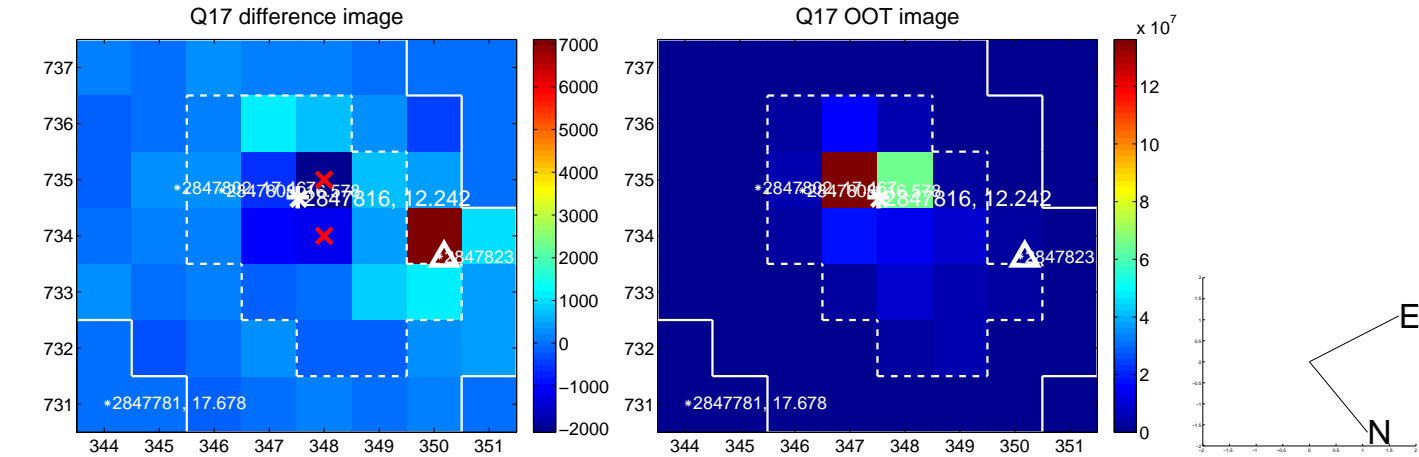
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

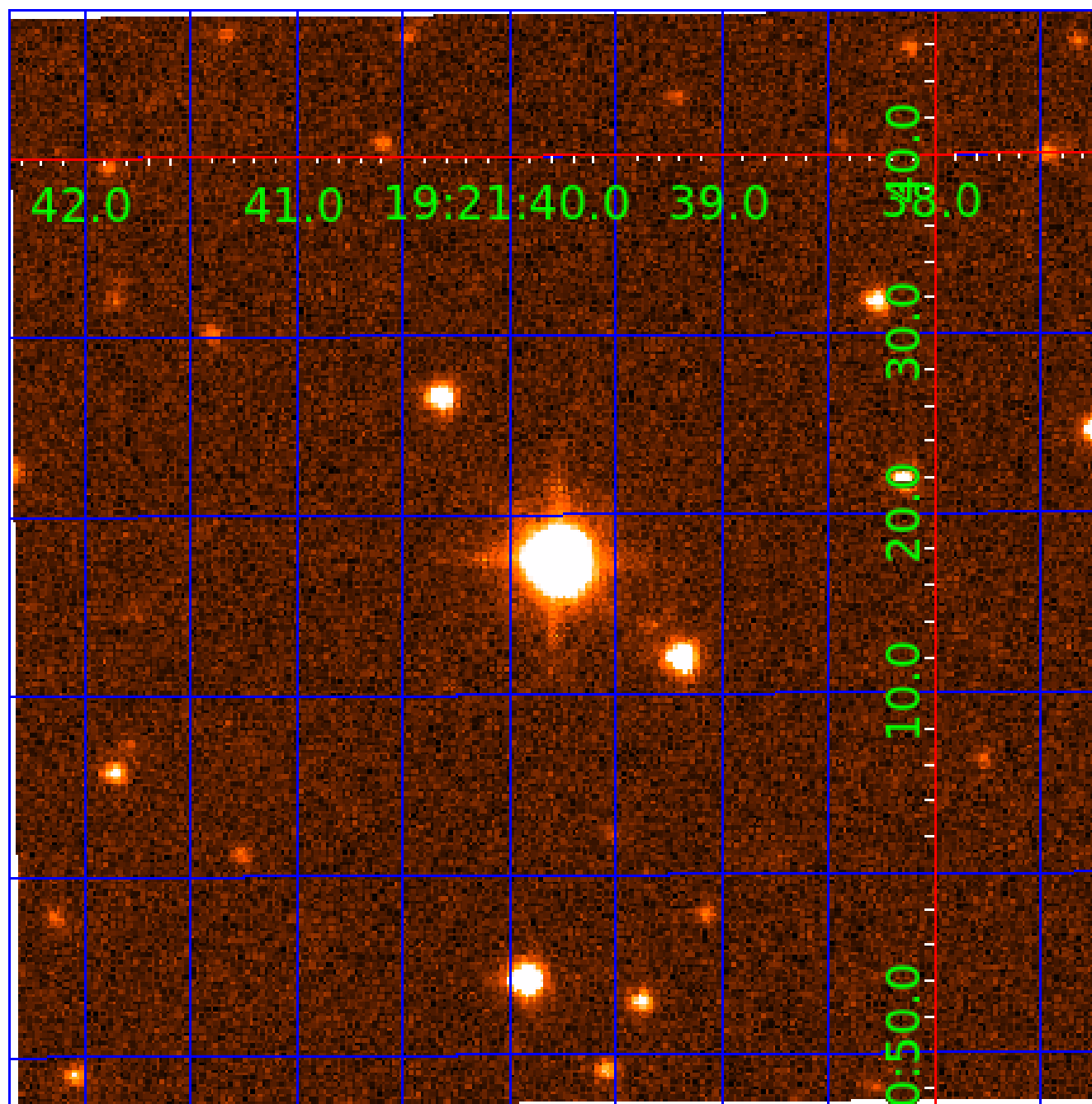


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002847816

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})
002847816-01	OBS	No	1.156085	132.334508	12.6	4.472	8.3	9.0	1.53	6388	0.63	7375.19
002847816-02	OBS	No	237.400231	309.287376	167.1	11.555	14.7	6.2	1.53	6388	2.18	6.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002847816-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_CROWDED
002847816-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

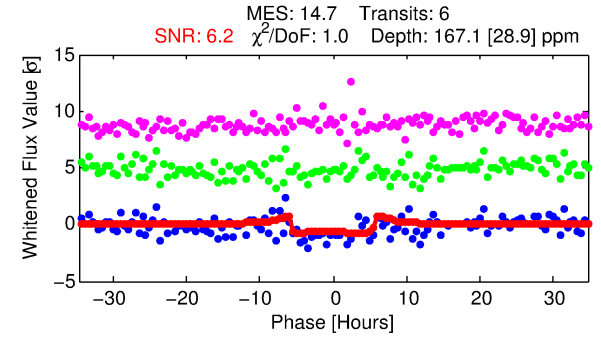
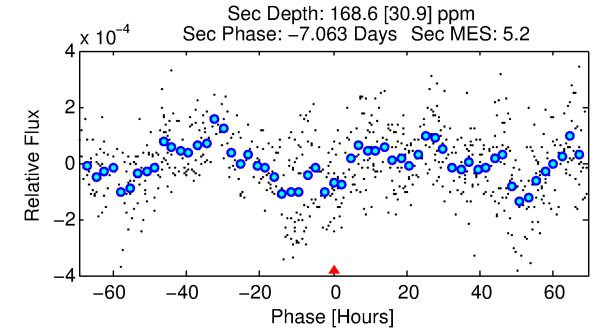
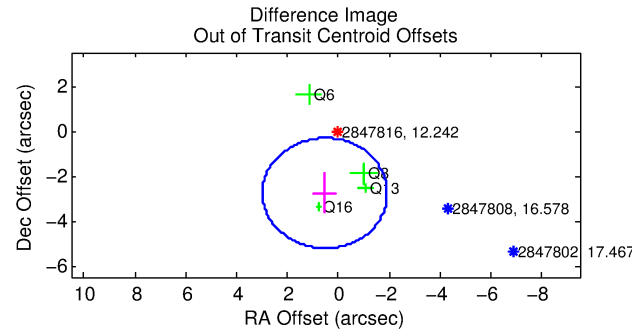
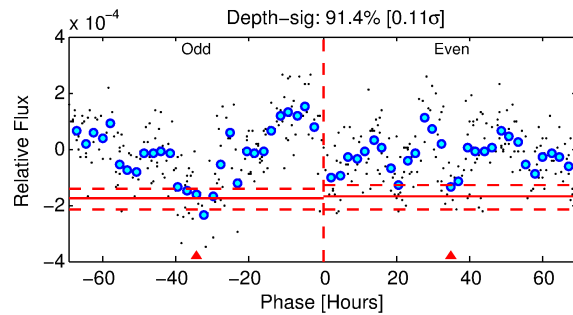
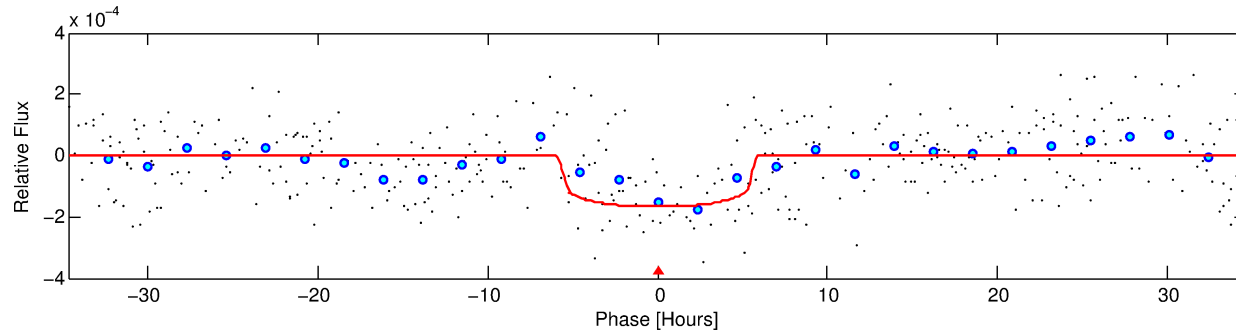
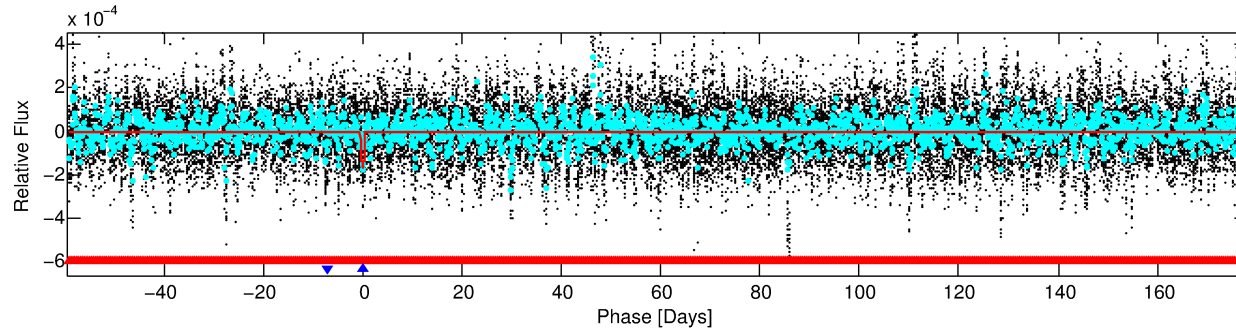
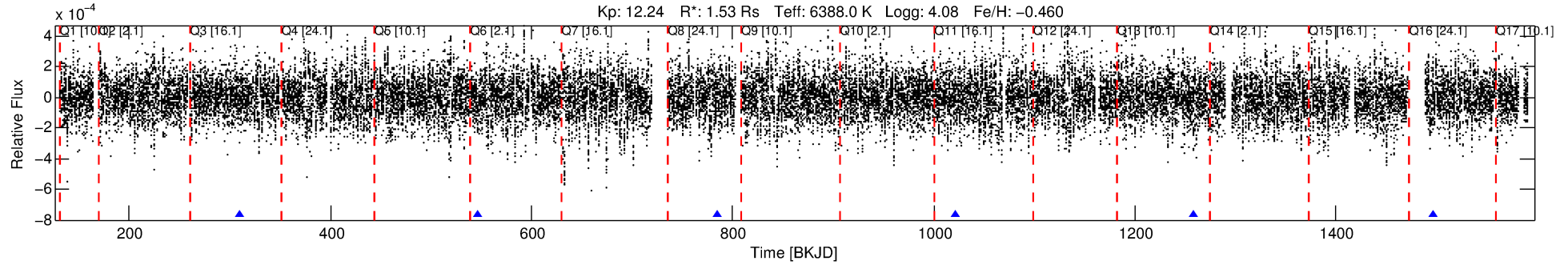
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002847816-02

No Significant Match Found

DV One-Page Summary

KIC: 2847816 Candidate: 2 of 2 Period: 237.400 d



DV Fit Results:

Period = 237.40023 [0.00485] d
Epoch = 309.2874 [0.0165] BKJD
Rp/R* = 0.0130 [0.0031]
a/R* = 99.81 [115.47]
b = 0.79 [0.56]
Seff = 6.09 [3.27]
Teq = 401 [54] K
Rp = 2.18 [0.89] Re
a = 0.7599 [0.2437] AU
Ag = 11245.69 [8191.57] [1.37 σ]
Teffp = 6377 [847] K [7.04 σ]

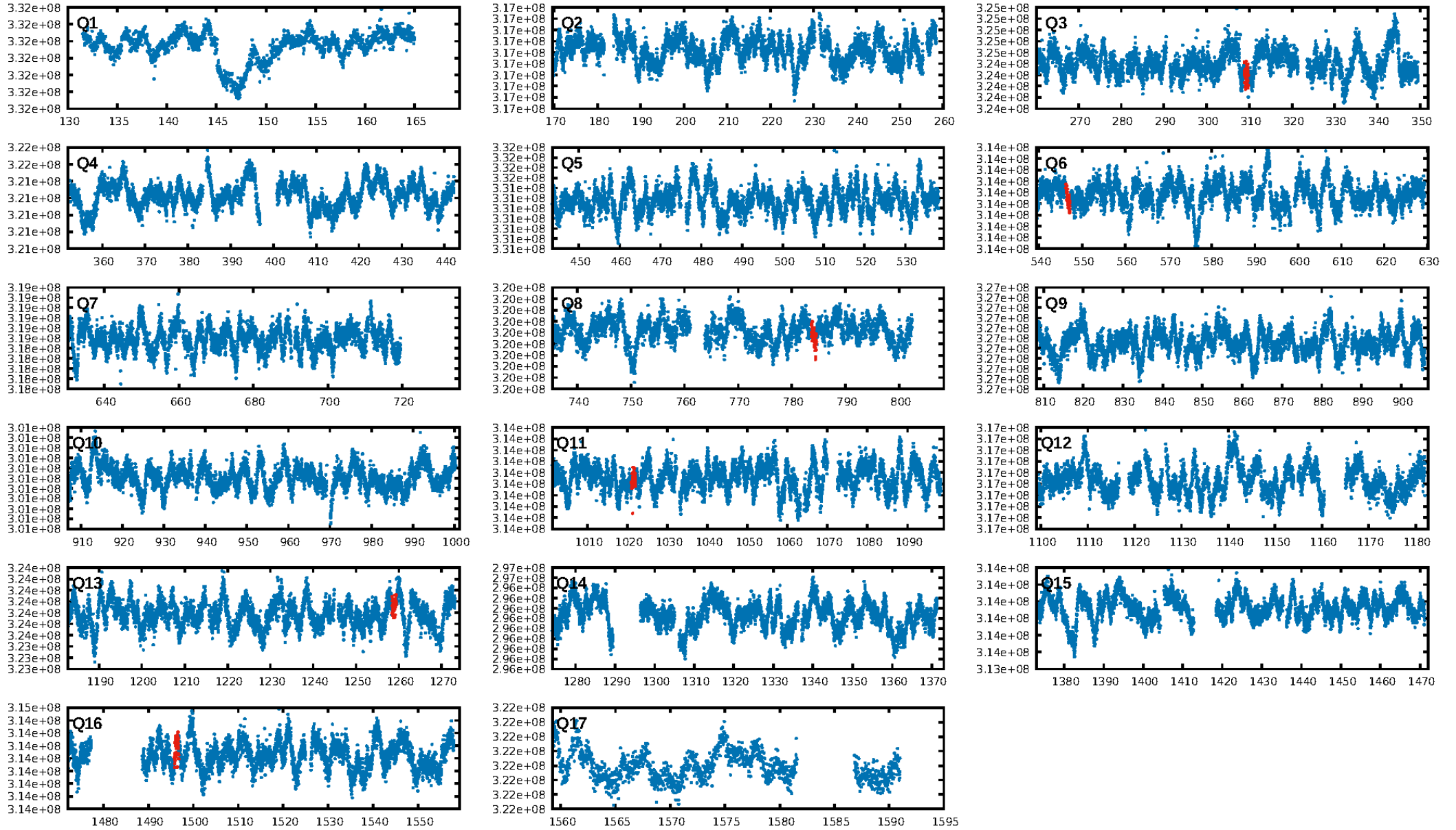
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [457.60 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.53e-24
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -2.925
Centroid-sig: 9.9%
Centroid-so: 1.063 arcsec [1.43 σ]
OotOffset-rm: 2.821 arcsec [3.45 σ]
KicOffset-rm: 2.902 arcsec [3.08 σ]
OotOffset-st: 1/0/2/1 [4]
KicOffset-st: 1/0/2/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/5]

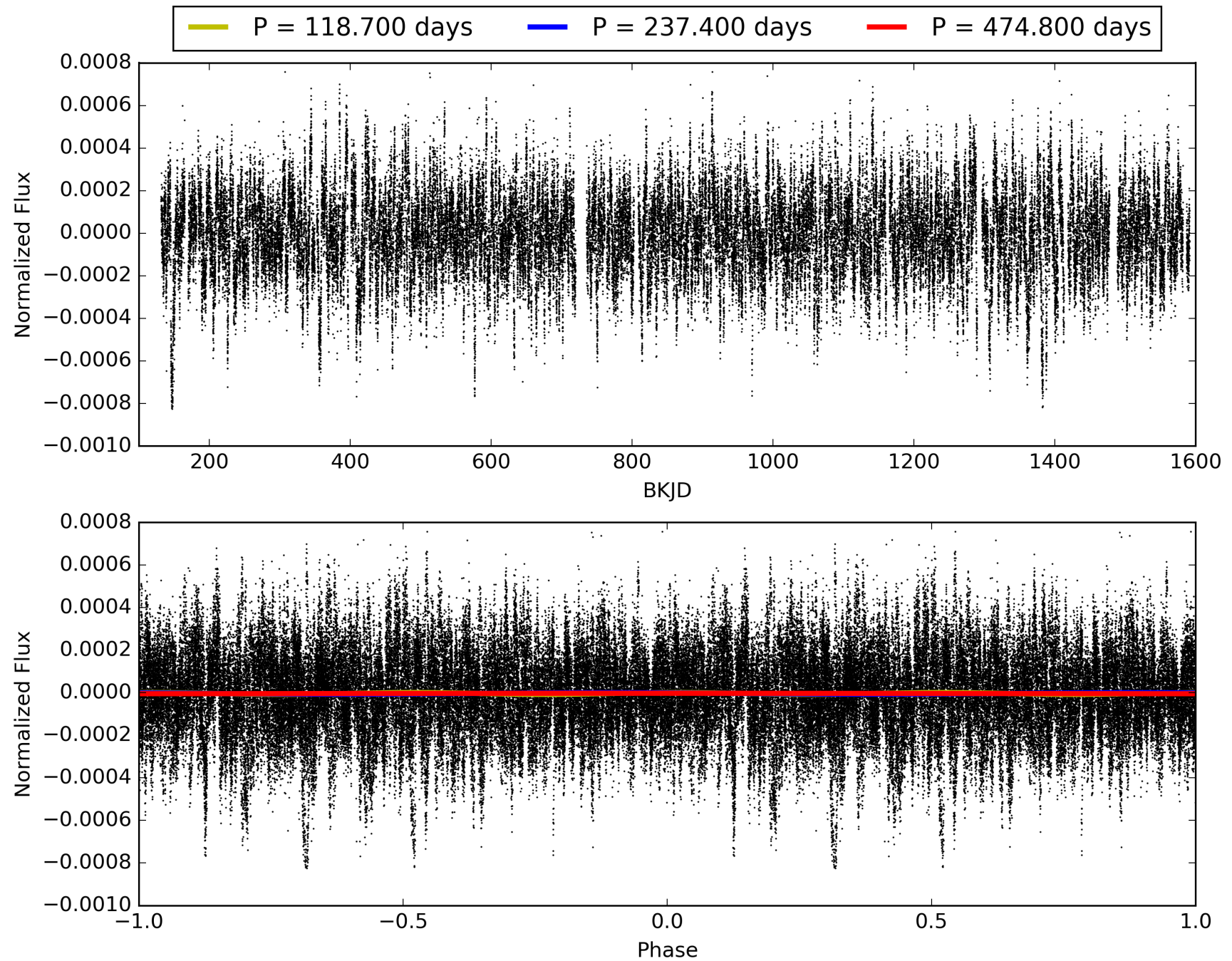
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:55:45 Z

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

TCE 002847816-02, PDC Light Curves

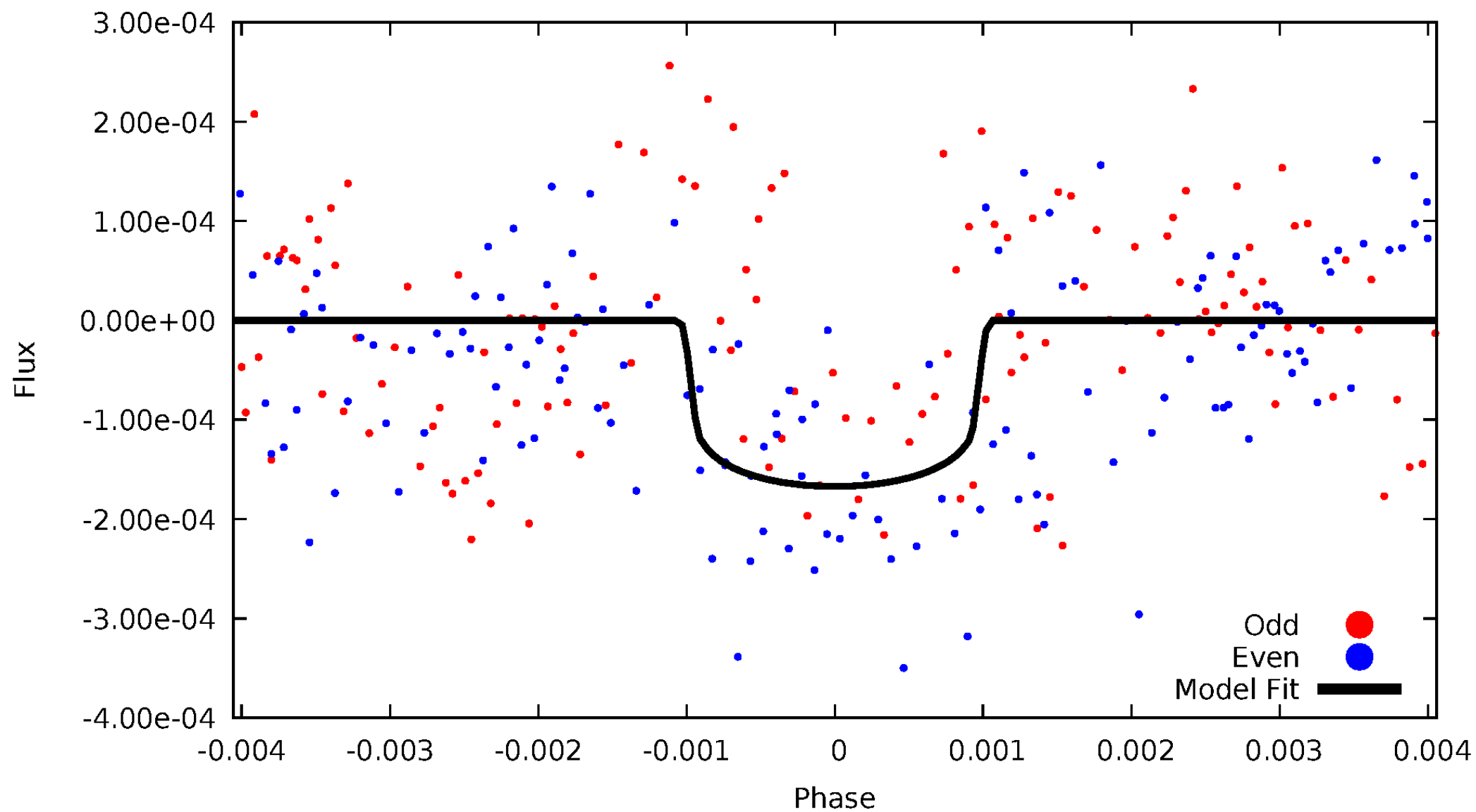


TCE 002847816-02



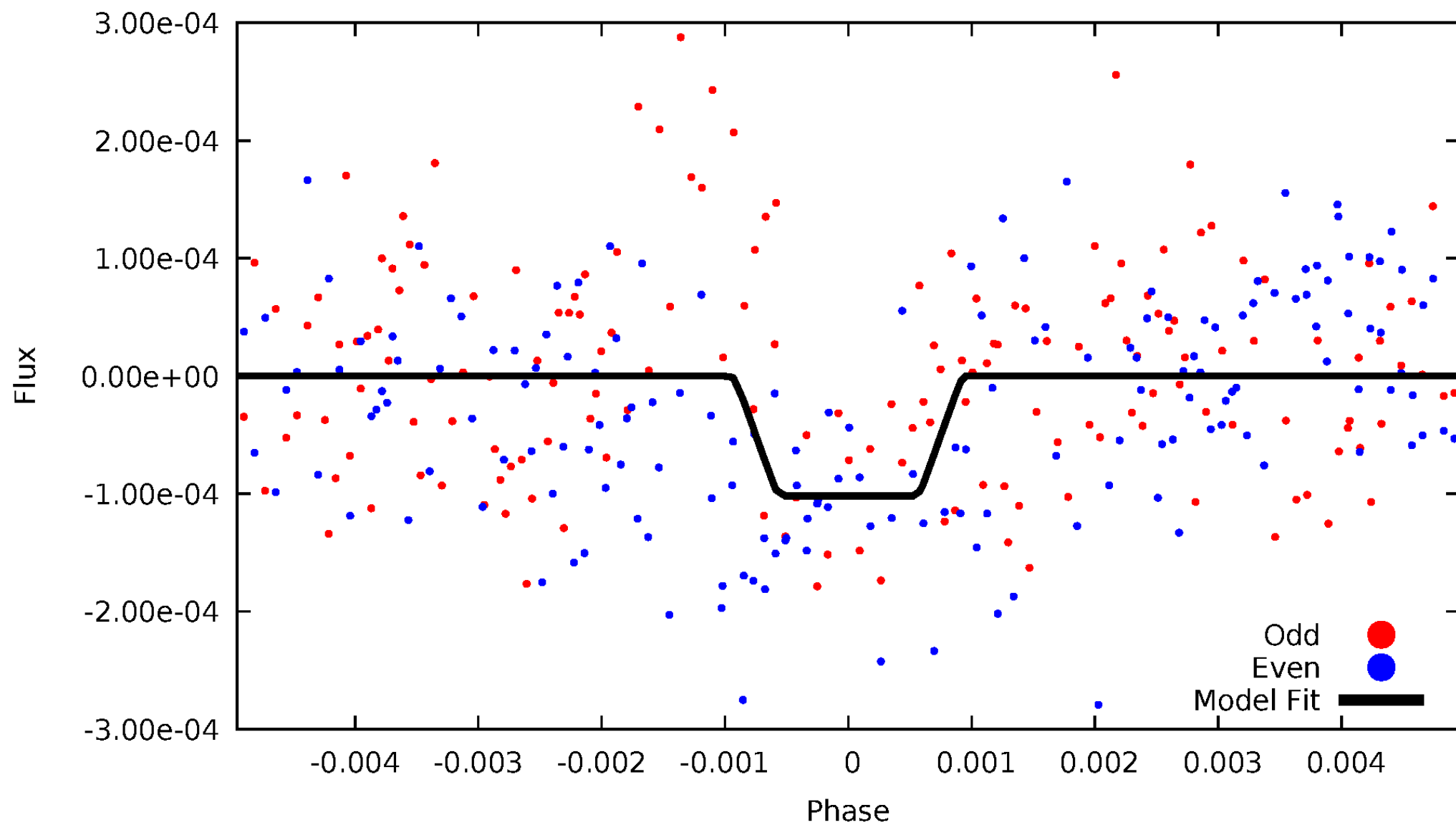
DV Odd/Even

TCE 002847816-02



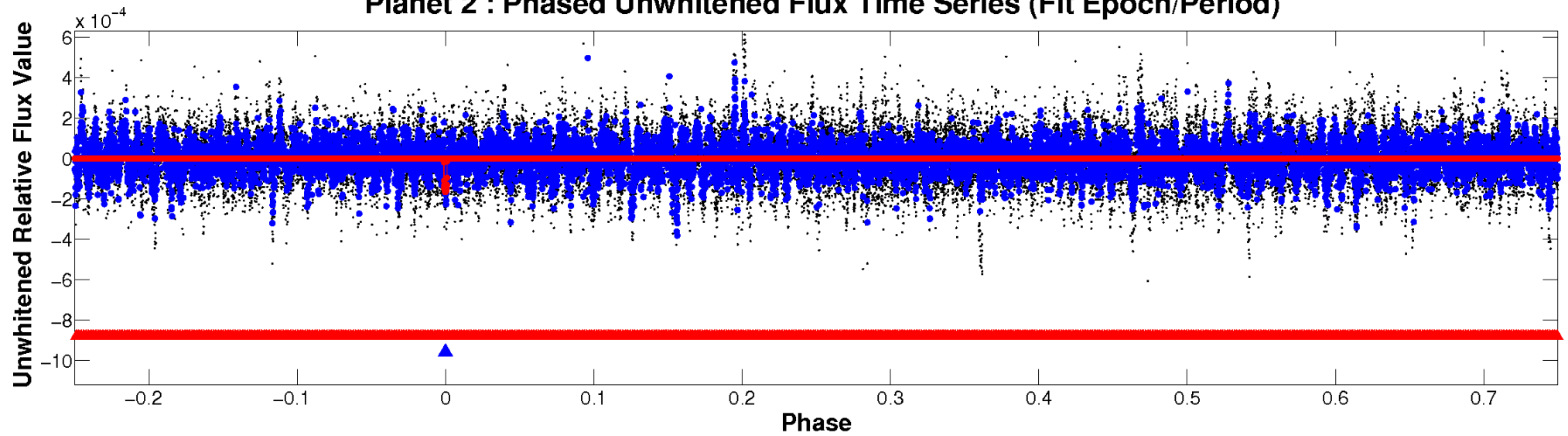
ALT Odd/Even

TCE 002847816-02

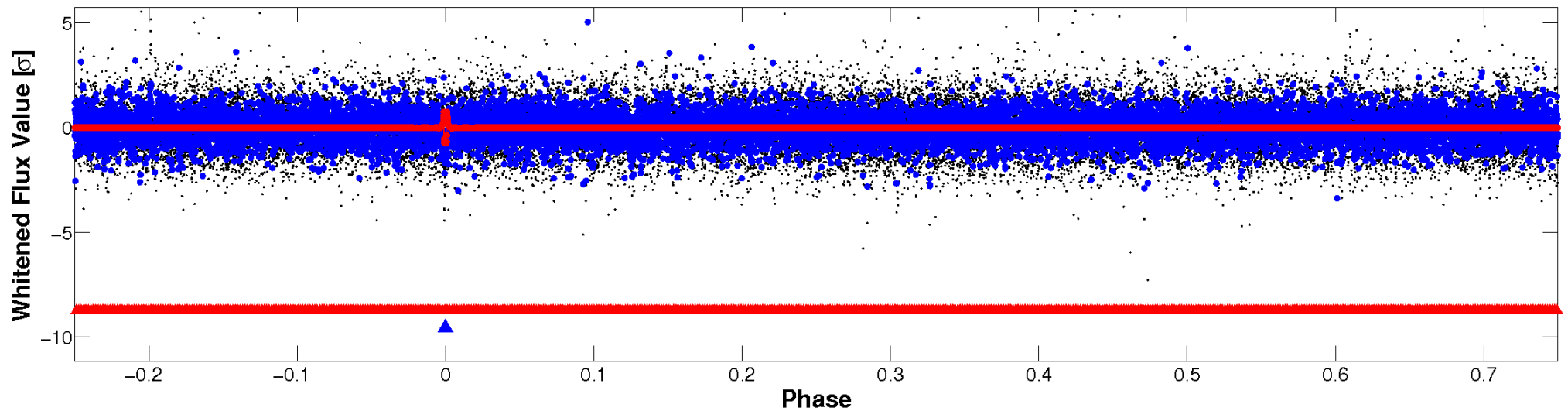


Non-Whitened Vs. Whitened Light Curve

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

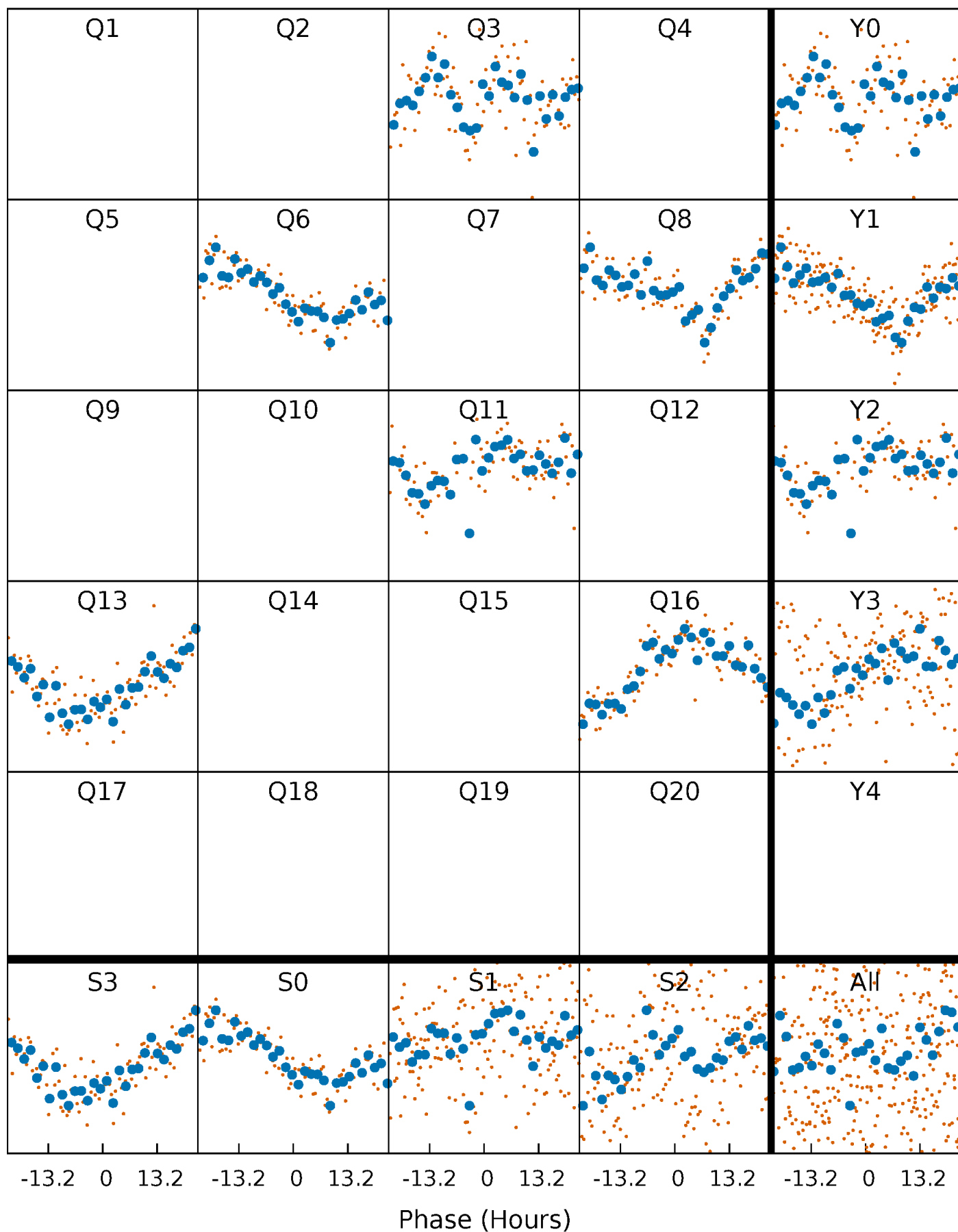


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



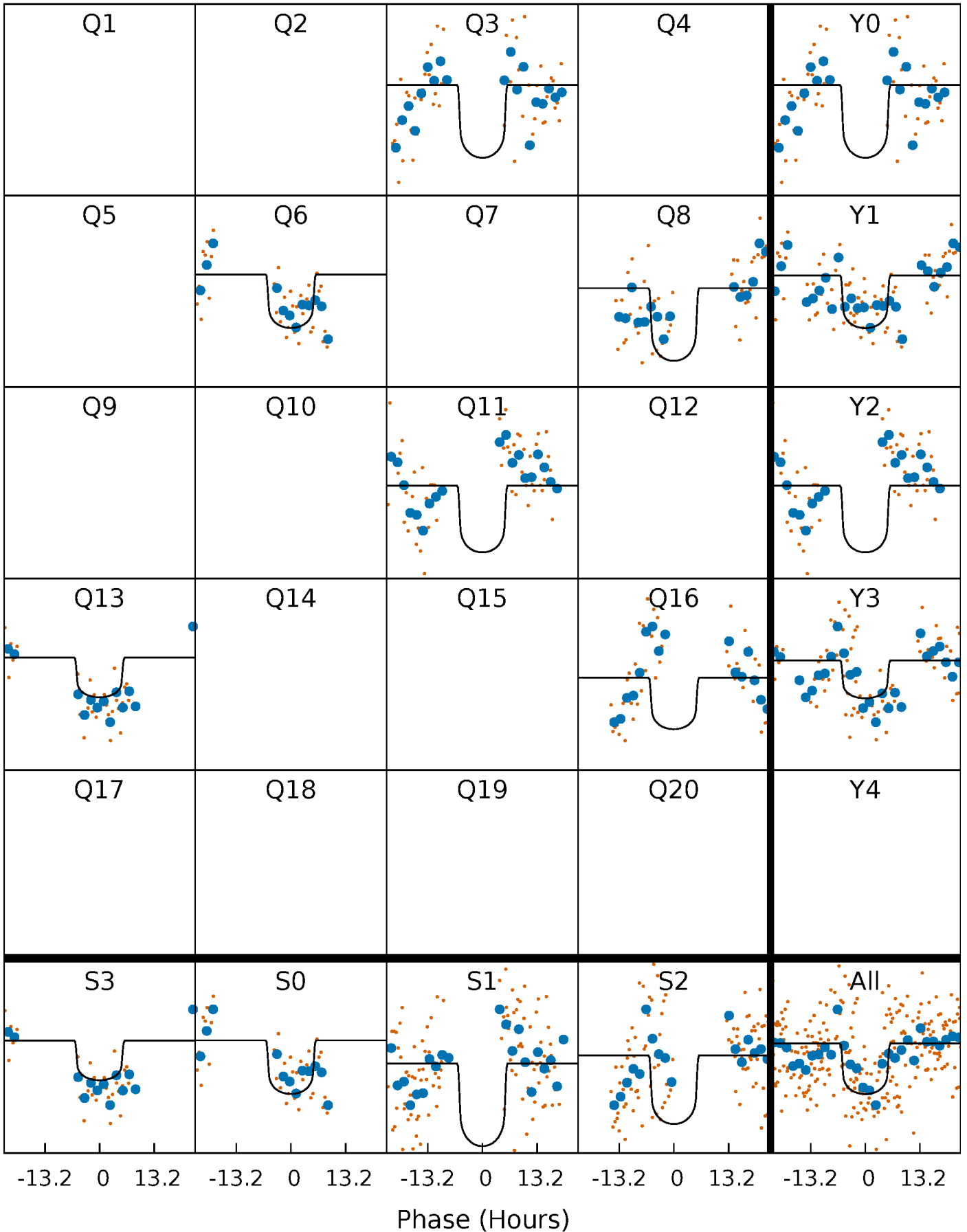
PDC Quarter-Phased Transit Curves

TCE 002847816-02 $P=237.400231$ Days $T_0=309.287376$ (BKJD)



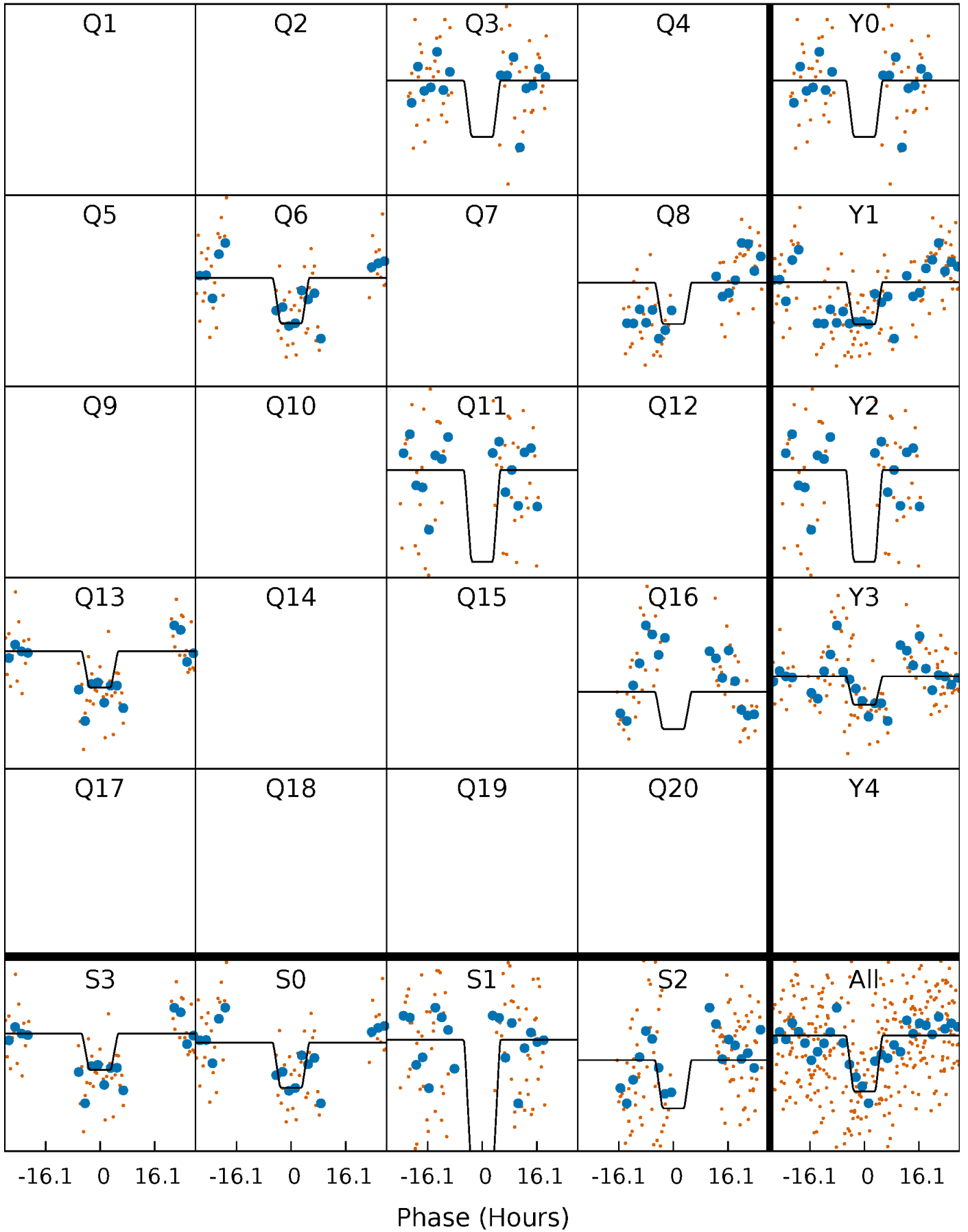
DV Quarter-Phased Transit Curves

TCE 002847816-02 P=237.400231 Days $T_0=309.287376$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

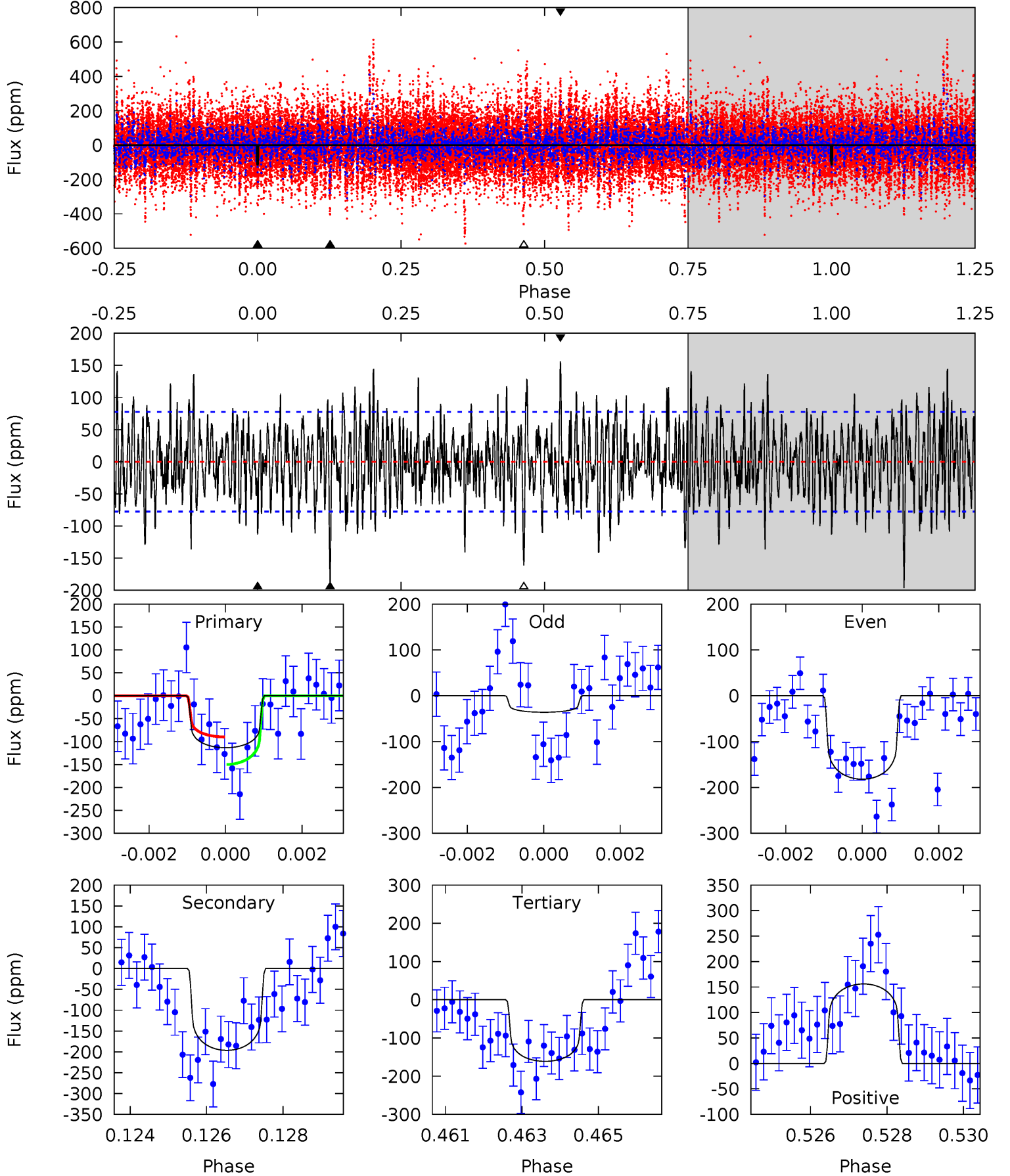
TCE 002847816-02 P=237.410722 Days $T_0=309.292702$ (BKJD)



DV Model-Shift Uniqueness Test

002847816-02, $P = 237.400231$ Days, $E = 71.887145$ Days

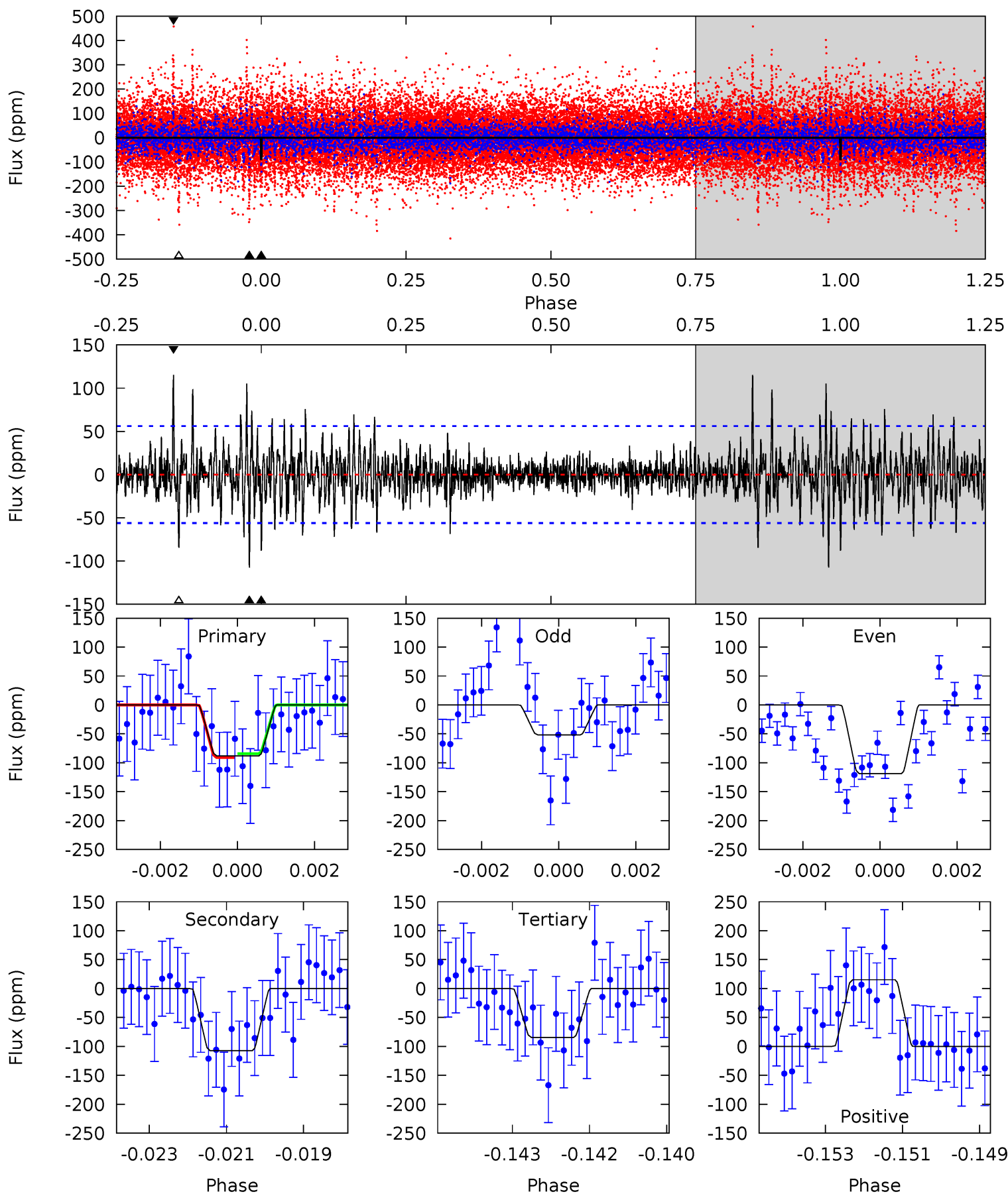
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.77	13.5	11.0	10.7	5.32	3.08	3.23	-3.28	-2.93	2.41	2.76	5.03	0.42	0.44	2.04



Alt Model-Shift Uniqueness Test

002847816-02, $P = 237.410722$ Days, $E = 71.881980$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.37	10.2	8.04	11.0	5.34	3.11	1.83	0.33	-2.61	2.18	-0.75	3.20	0.24	0.52	0.32



Stellar Parameters For KIC 002847816

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6388^{+181}_{-227}	$4.082^{+0.306}_{-0.165}$	$-0.460^{+0.300}_{-0.300}$	$1.535^{+0.411}_{-0.503}$	$1.037^{+0.162}_{-0.133}$	$0.404^{+0.837}_{-0.185}$
	+3%/-4%	+7%/-4%	+65%/-65%	+27%/-33%	+16%/-13%	+207%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002847816-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-196 ± 15	$2.08^{+0.68}_{-0.56}$	552^{+45}_{-51}	6630^{+1246}_{-733}	14438^{+13358}_{-6076}
Alt.	-107 ± 11	$1.62^{+0.61}_{-0.54}$	549^{+46}_{-53}	6455^{+1329}_{-849}	13011^{+16250}_{-6024}

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

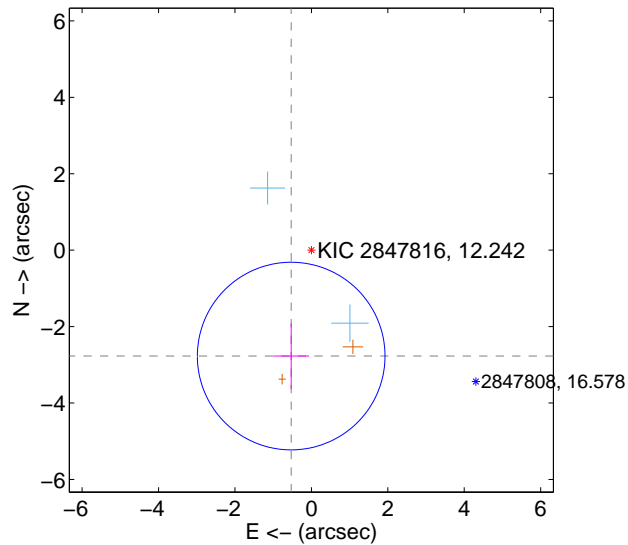
Supplemental centroid analysis for 002847816-02. Kepler magnitude: 12.24. Transit SNR 6.21

There are 2 quarters with good PRF difference image offsets

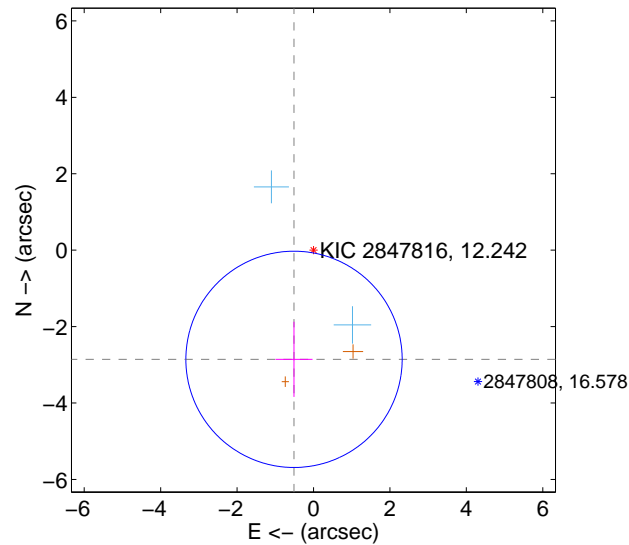
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.821 ± 0.818	3.45	0.529 ± 0.466	-2.771 ± 0.860
PRF-fit source offset from KIC position	2.902 ± 0.943	3.08	0.510 ± 0.483	-2.857 ± 0.984
photometric centroid source offset	1.06 ± 0.74	1.43	1.06 ± 0.74	0.09 ± 0.89

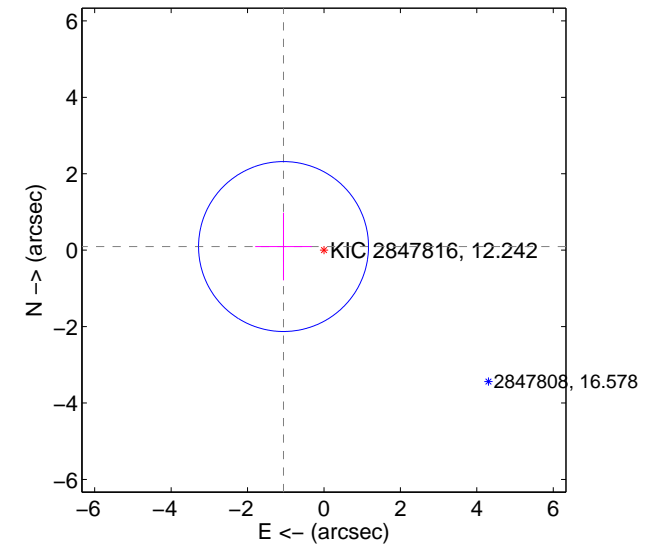
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

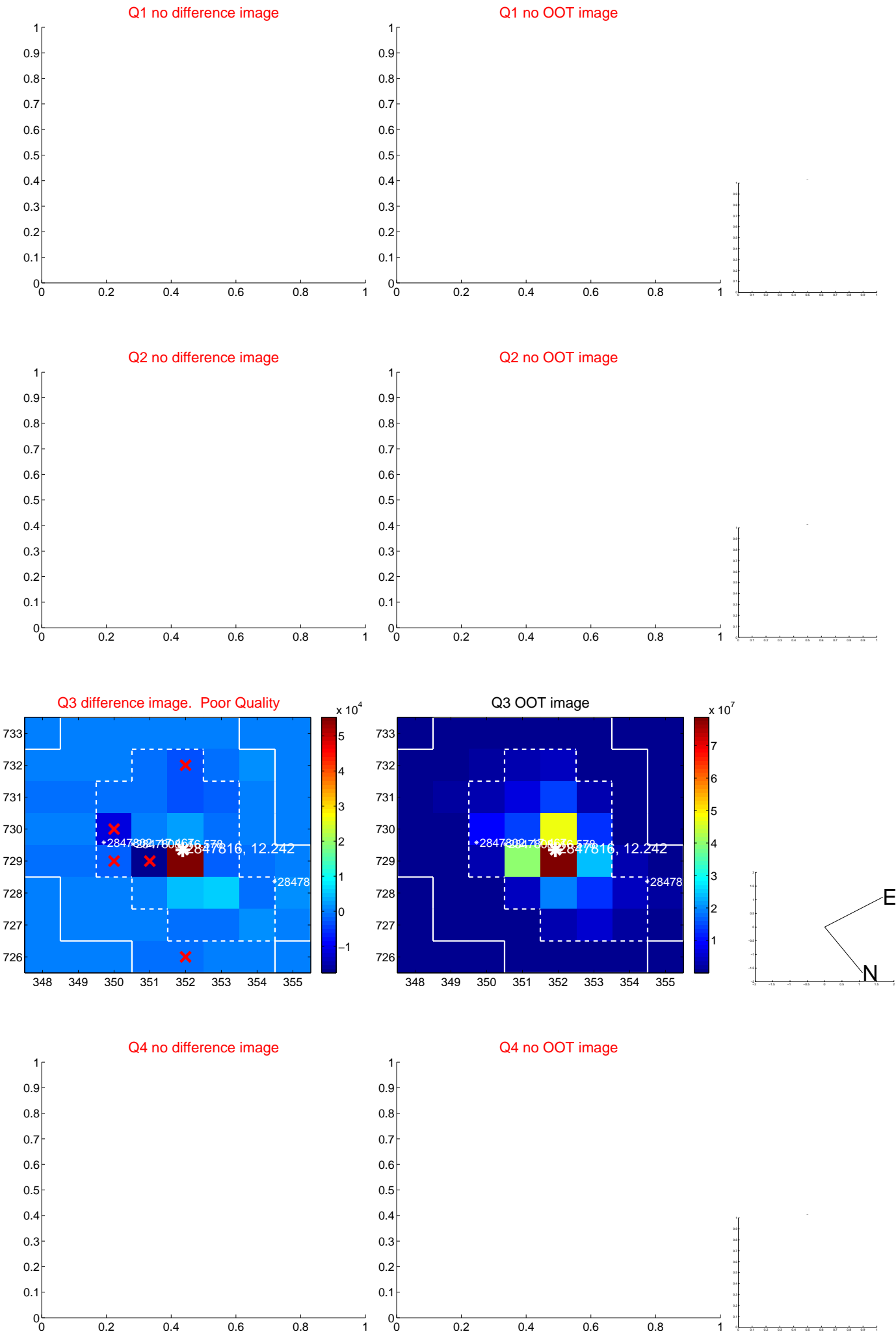


offset from photometric centroids



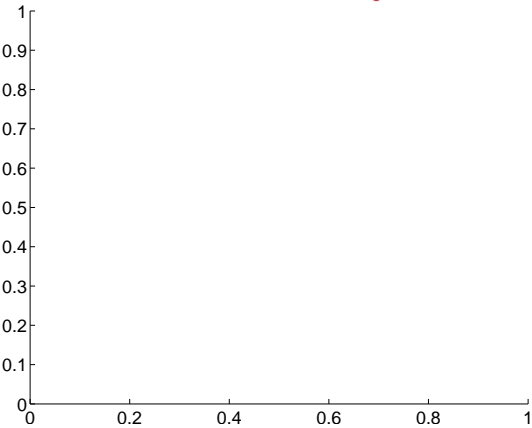
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

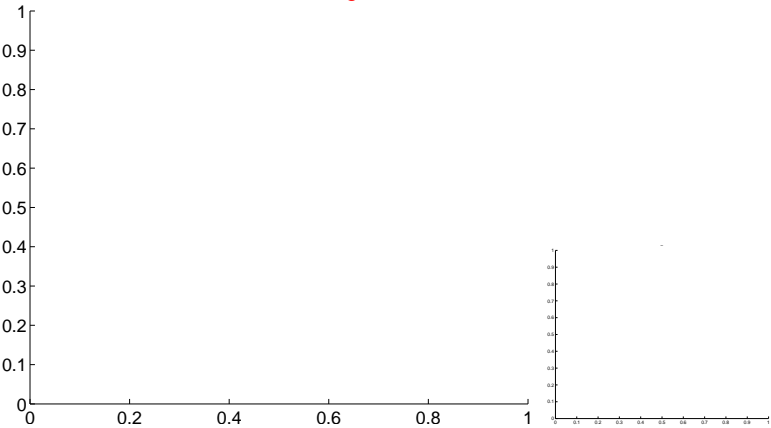


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

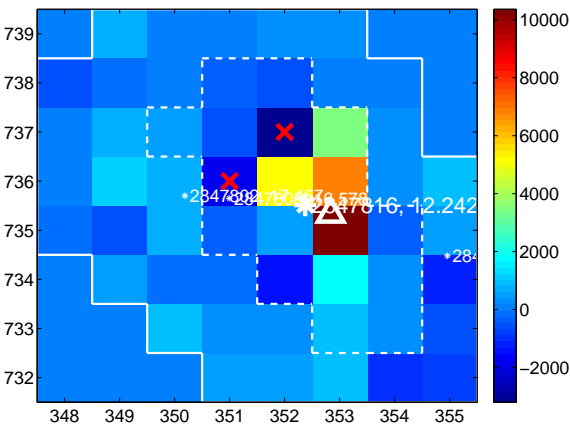
Q5 no difference image



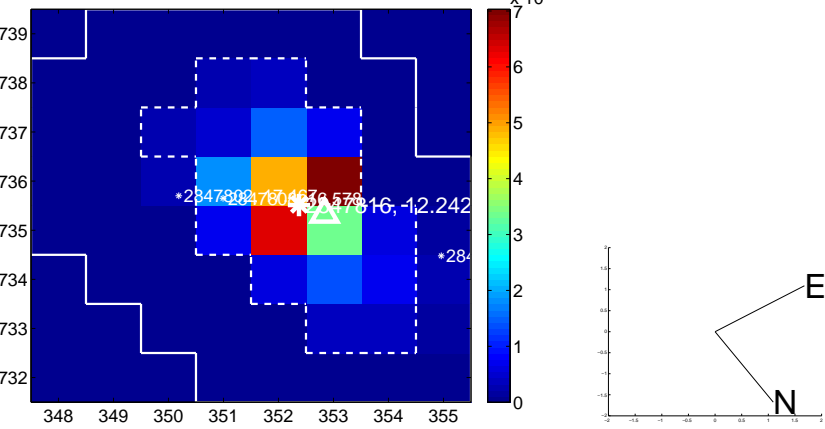
Q5 no OOT image



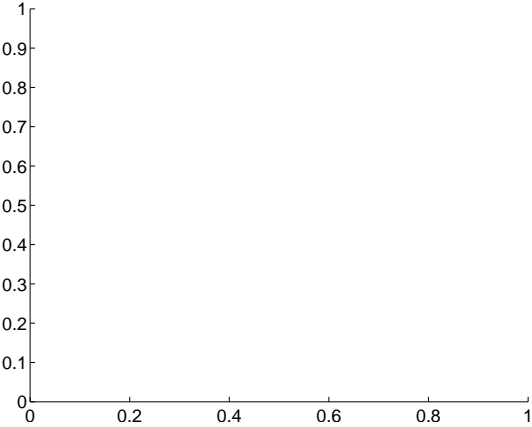
Q6 difference image



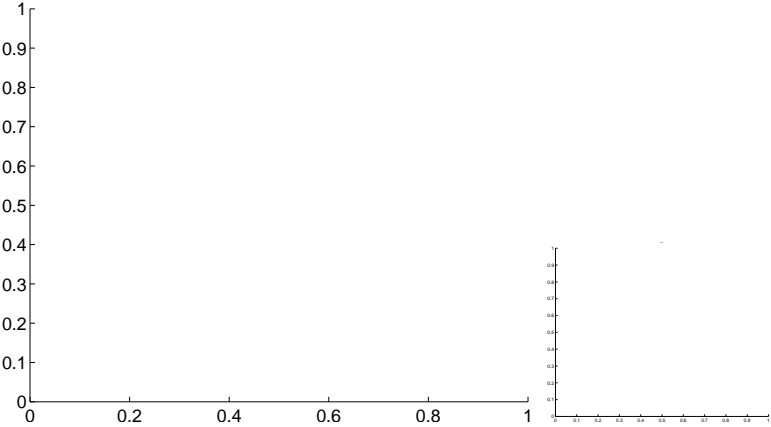
Q6 OOT image



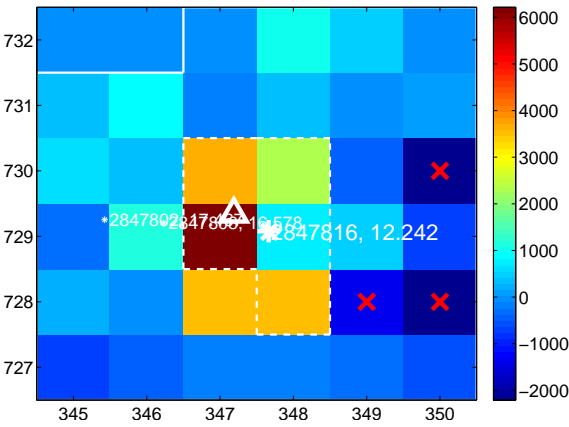
Q7 no difference image



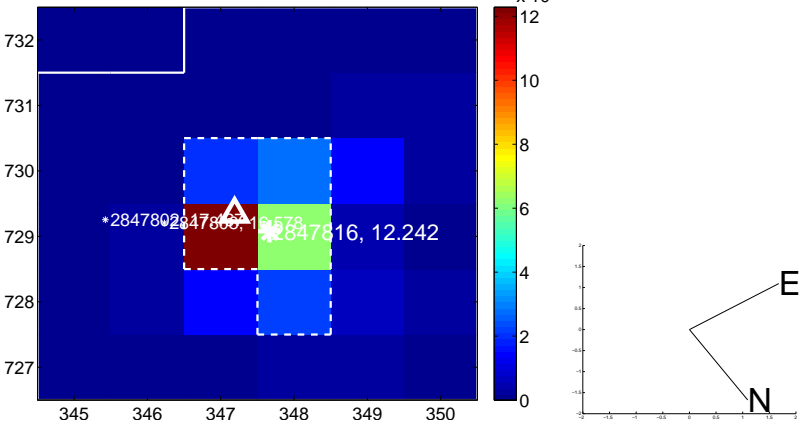
Q7 no OOT image



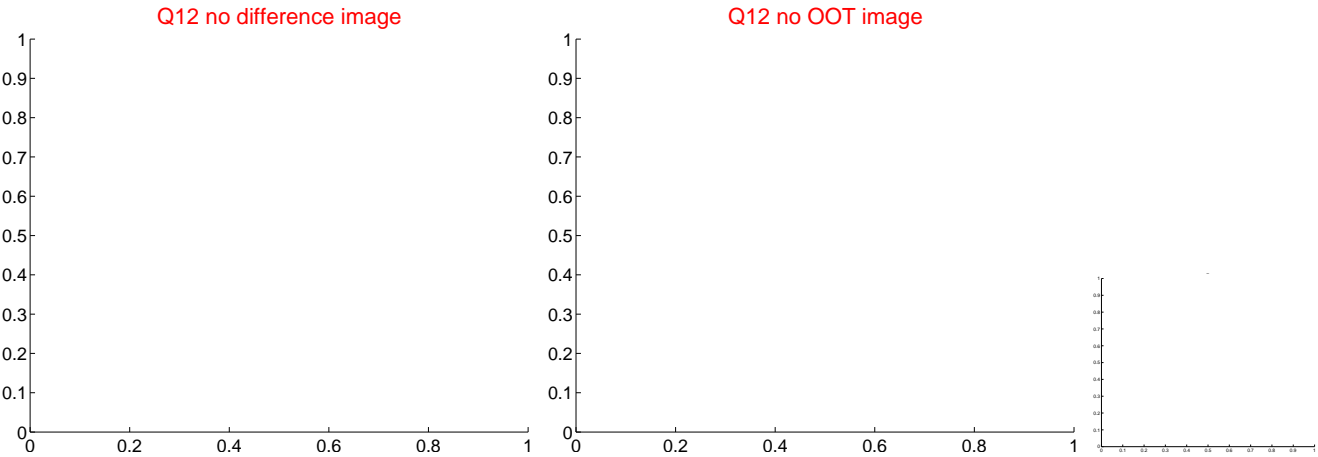
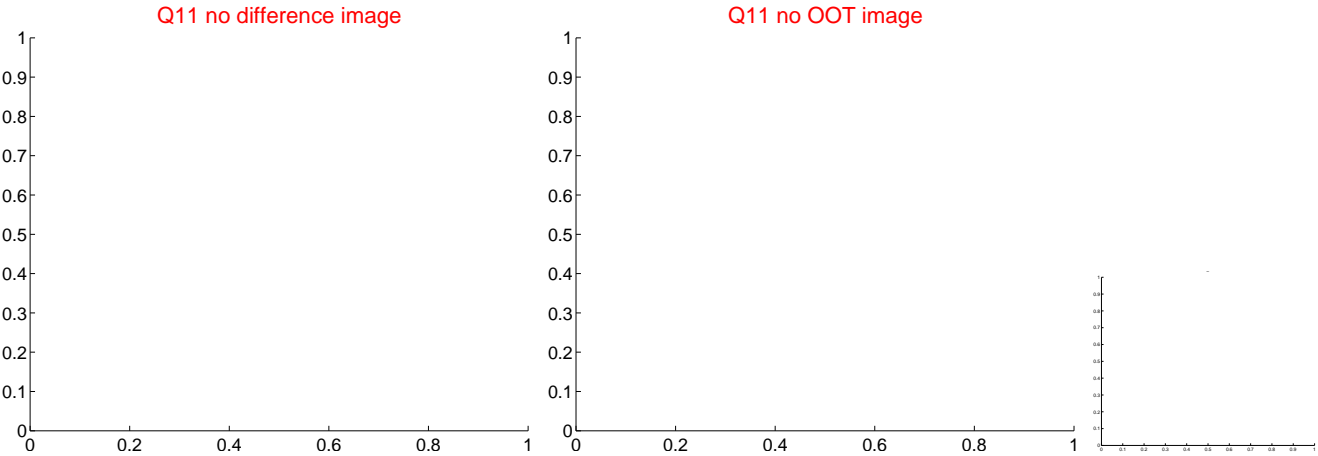
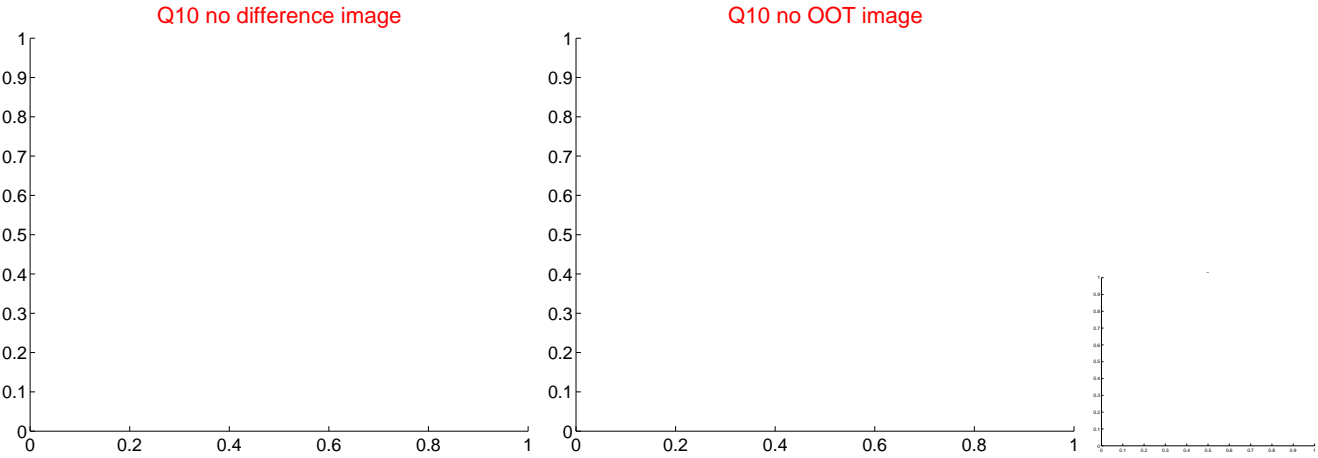
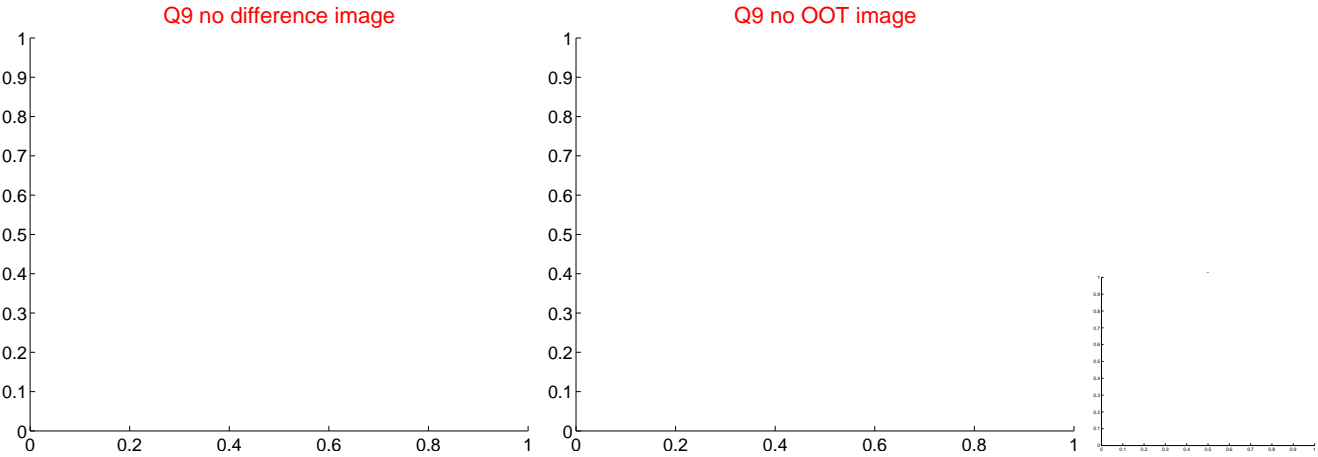
Q8 difference image



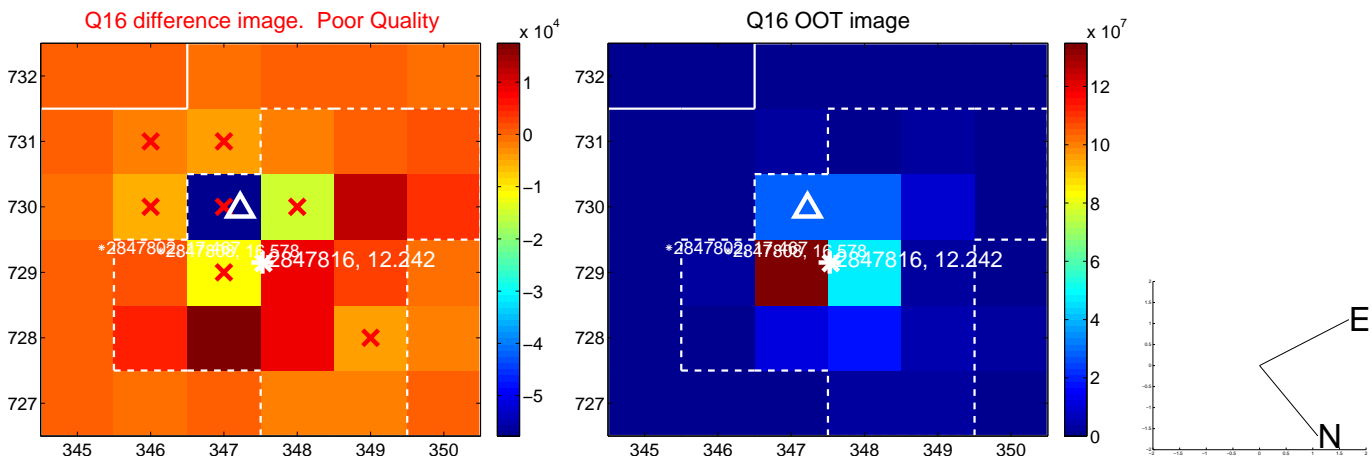
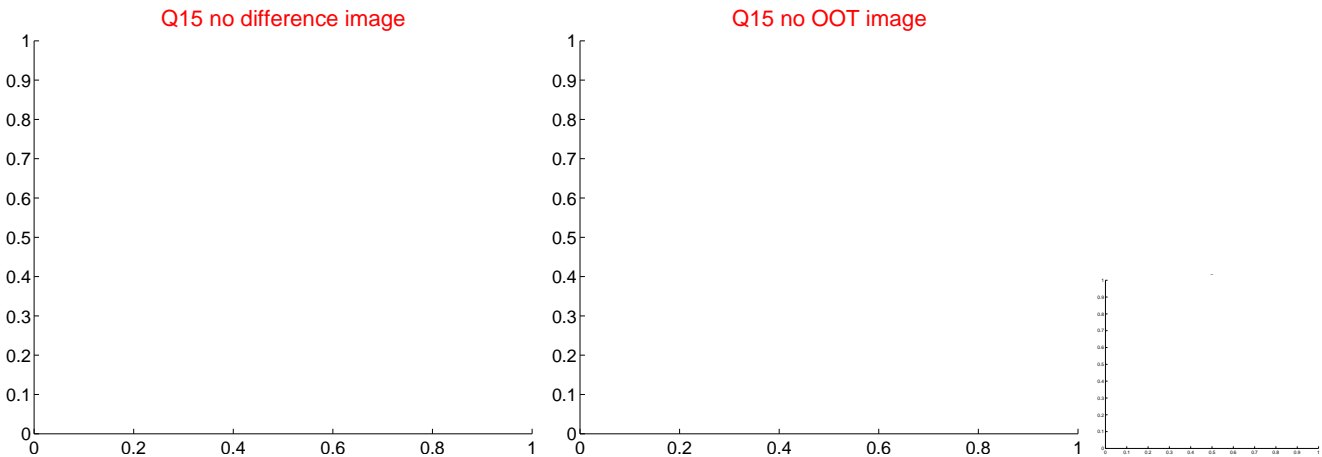
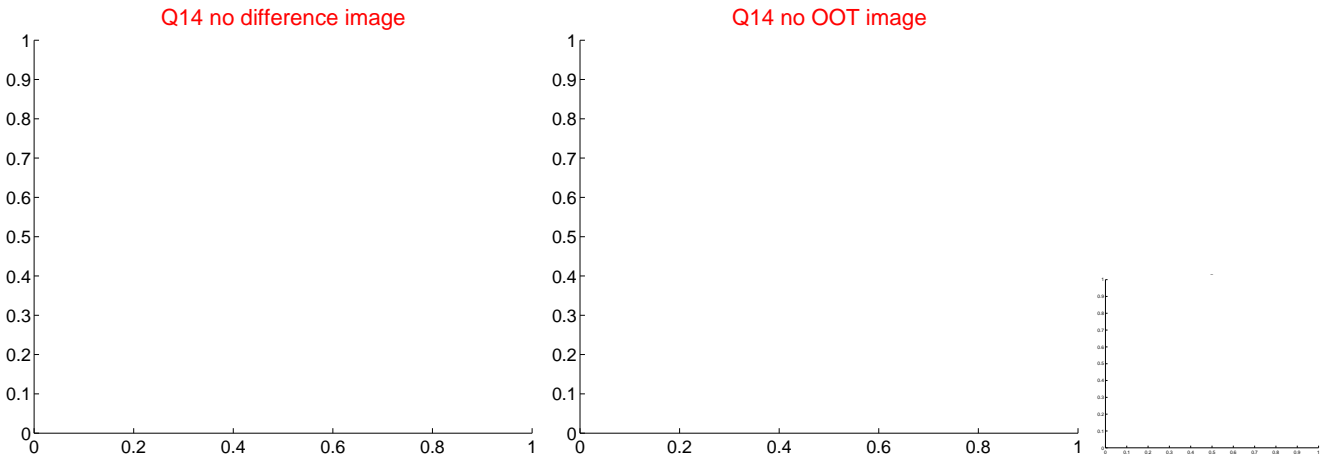
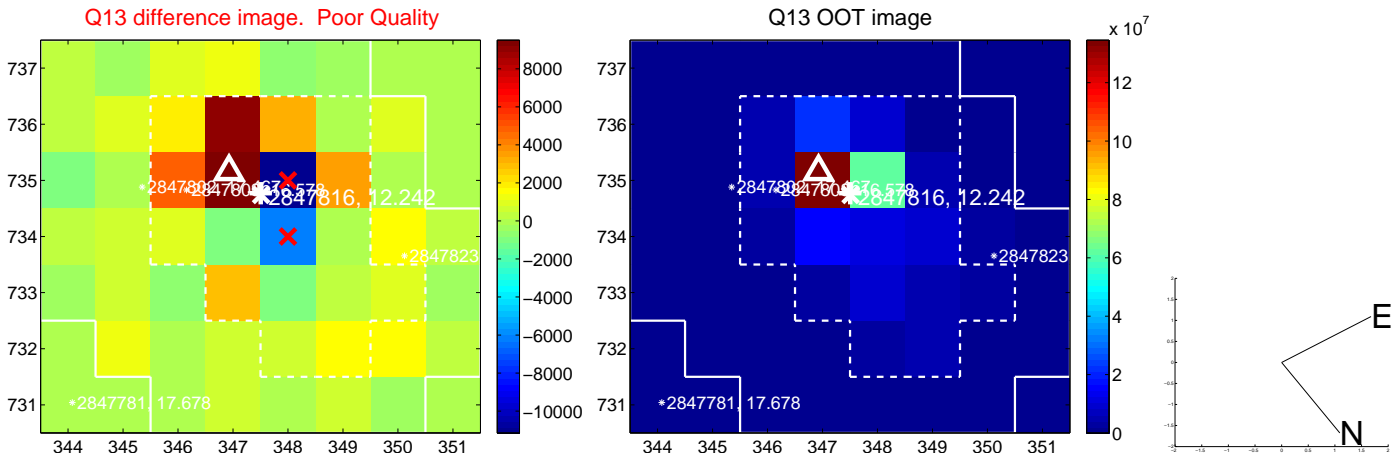
Q8 OOT image



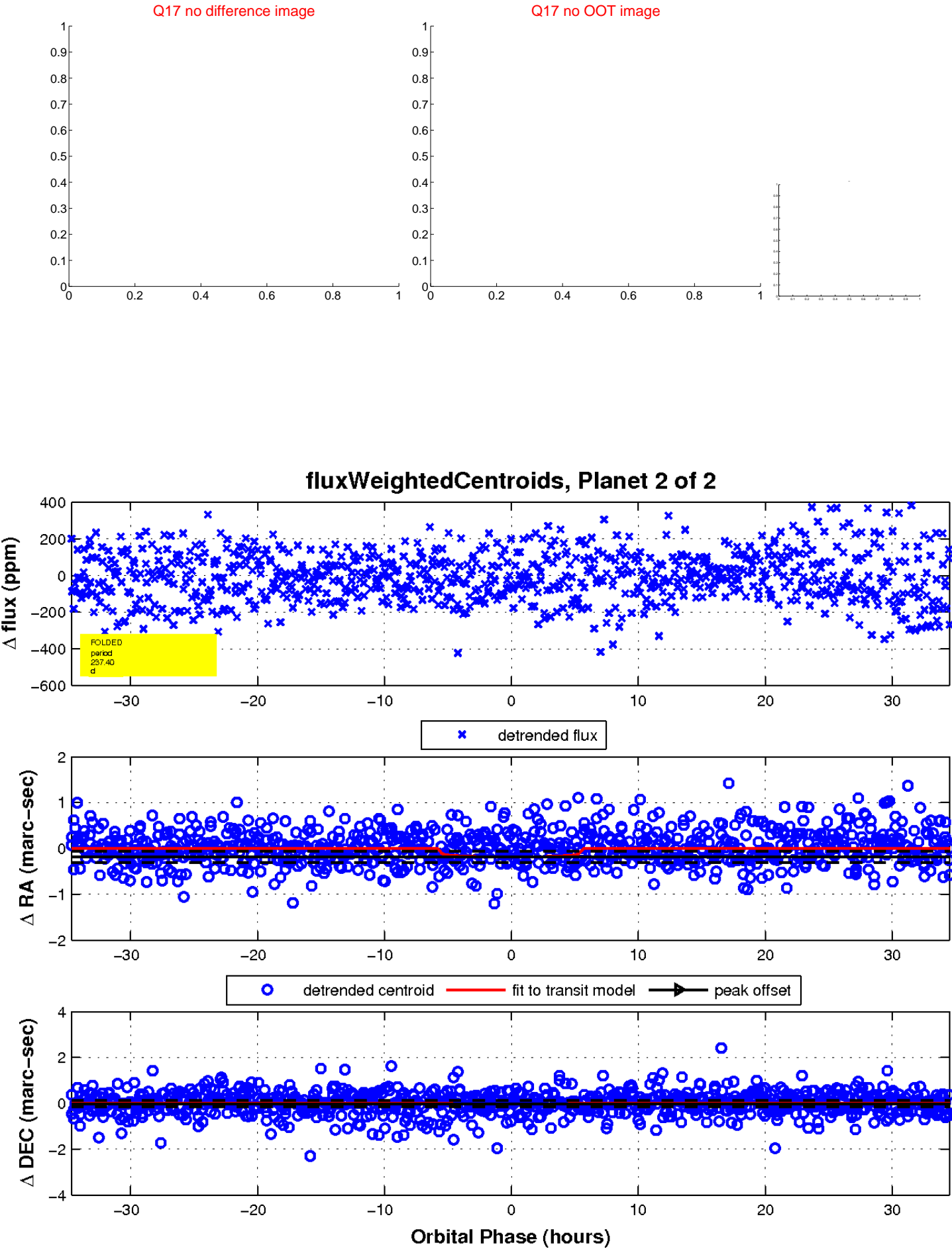
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

