

KIC 009474756

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})
009474756-01	OBS	3495.01	17.606323	147.190291	124.9	6.027	9.2	8.4	1.16	5808	1.49	76.12
009474756-02	OBS	3495.02	6.684847	132.364725	93.8	3.722	8.0	8.2	1.16	5808	1.34	276.87

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009474756-01	OBS	PC	0.92	0	0	0	0	NO_COMMENT
009474756-02	OBS	PC	0.91	0	0	0	0	NO_COMMENT

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.

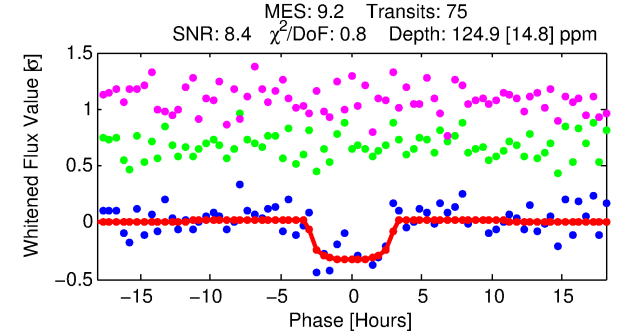
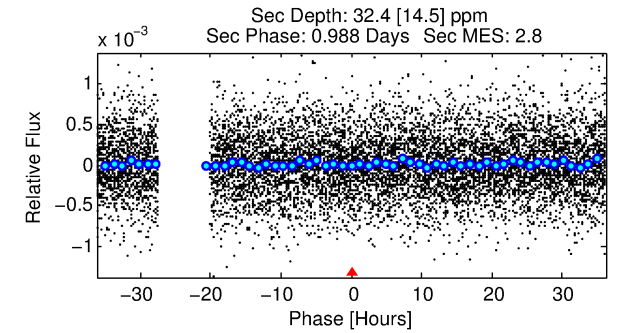
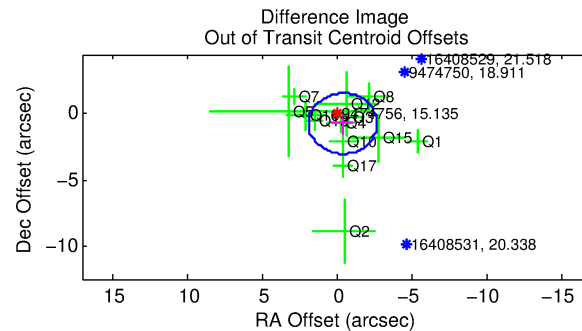
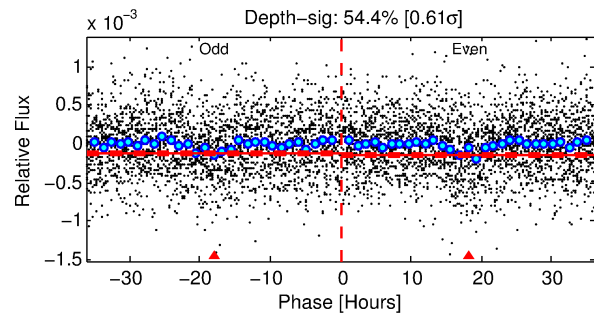
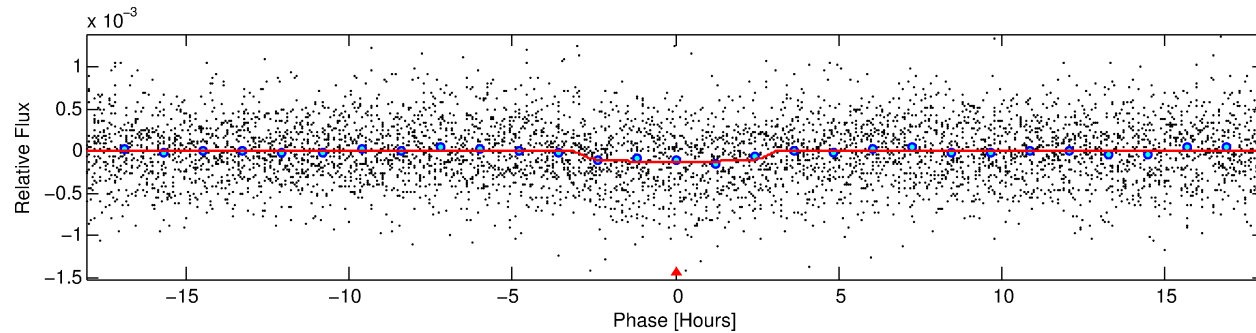
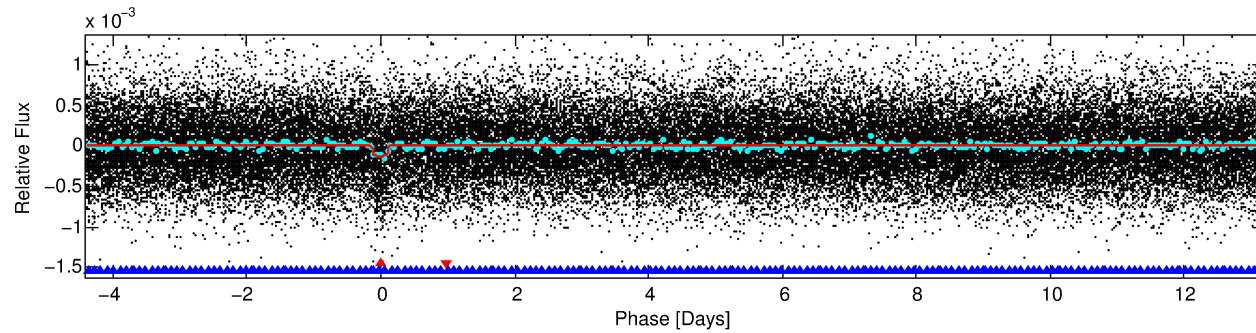
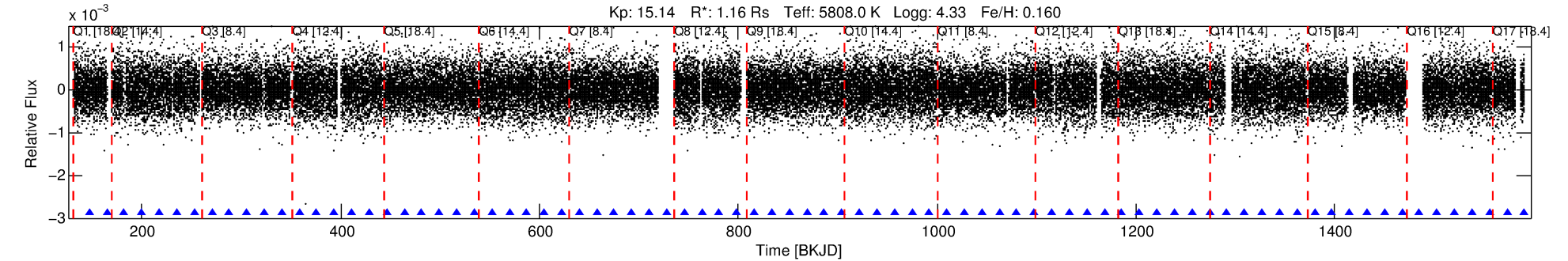
Ephemeris Match Information For 009474756-01

No Significant Match Found

DV One-Page Summary

KIC: 9474756 Candidate: 1 of 2 Period: 17.606 d

KOI: K03495.01 Corr: 0.979



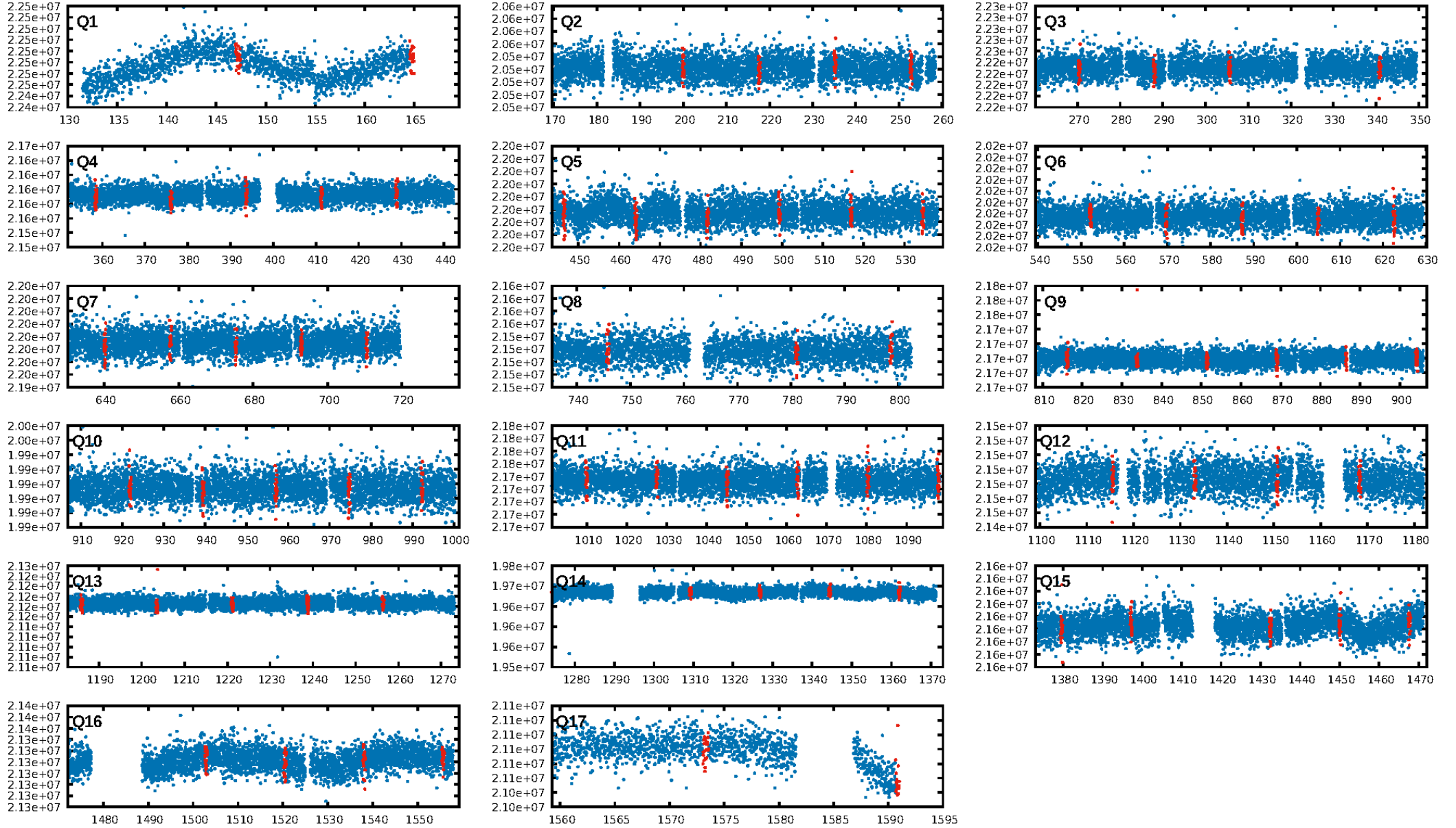
DV Fit Results:

Period = 17.60632 [0.00030] d
Epoch = 147.1903 [0.0138] BKJD
Rp/R* = 0.0118 [0.0073]
a/R* = 11.80 [33.84]
b = 0.86 [0.86]
Seff = 76.12 [15.73]
Teq = 753 [39] K
Rp = 1.49 [0.96] Re
a = 0.1341 [0.0182] AU
Ag = 143.63 [191.95] [0.74 σ]
Teffp = 4031 [1333] K [2.46 σ]

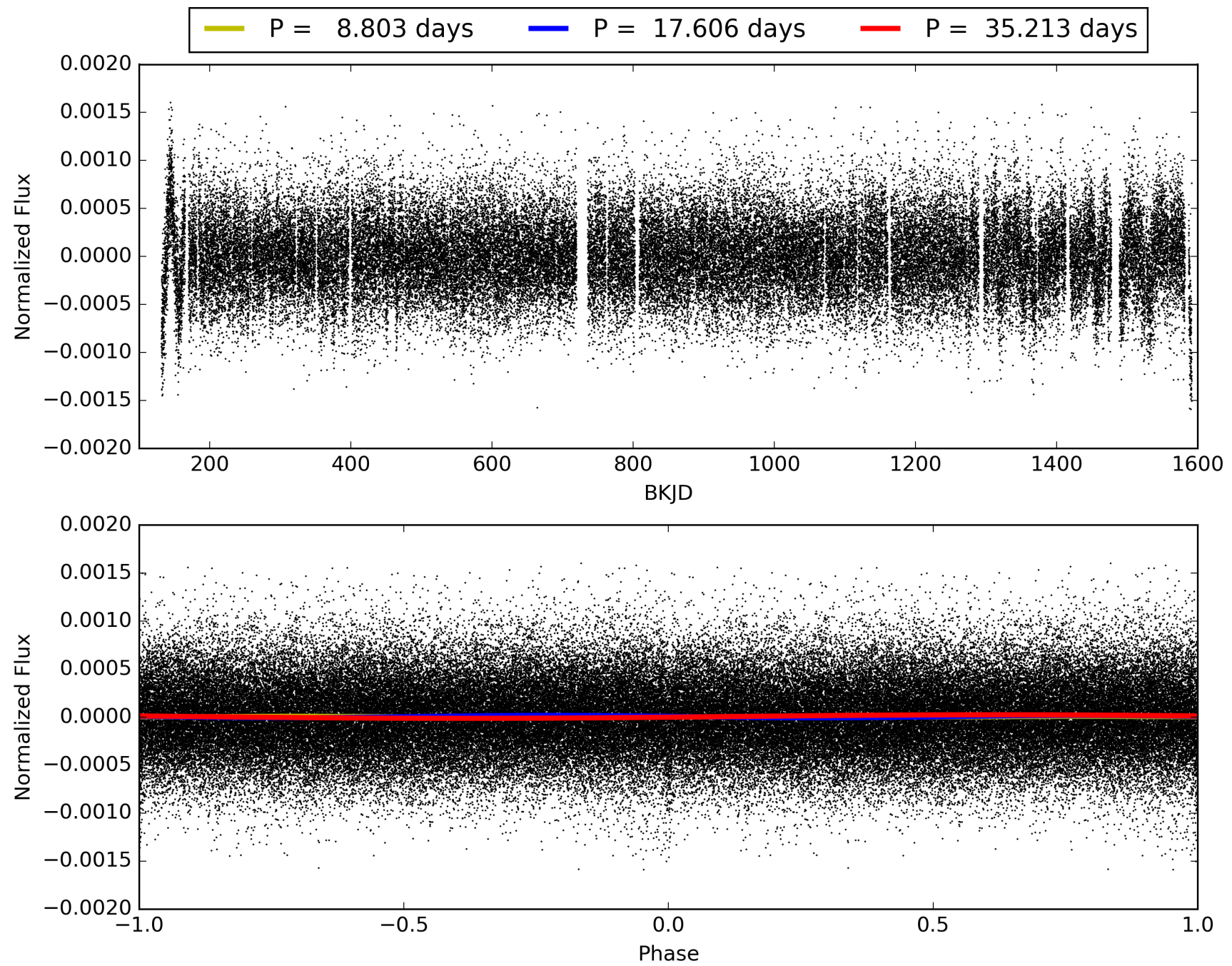
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [37.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 87.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.61e-20
RollingBand-fgt: 1.00 [71/71]
GhostDiagnostic-chr: 4.13
Centroid-sig: 47.8%
Centroid-so: 1.346 arcsec [0.81 σ]
OotOffset-rm: 0.853 arcsec [1.12 σ]
KicOffset-rm: 0.699 arcsec [0.86 σ]
OotOffset-st: 2/3/4/4 [13]
KicOffset-st: 2/3/4/4 [13]
DiffImageQuality-fgm: 0.46 [6/13]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009474756-01, PDC Light Curves

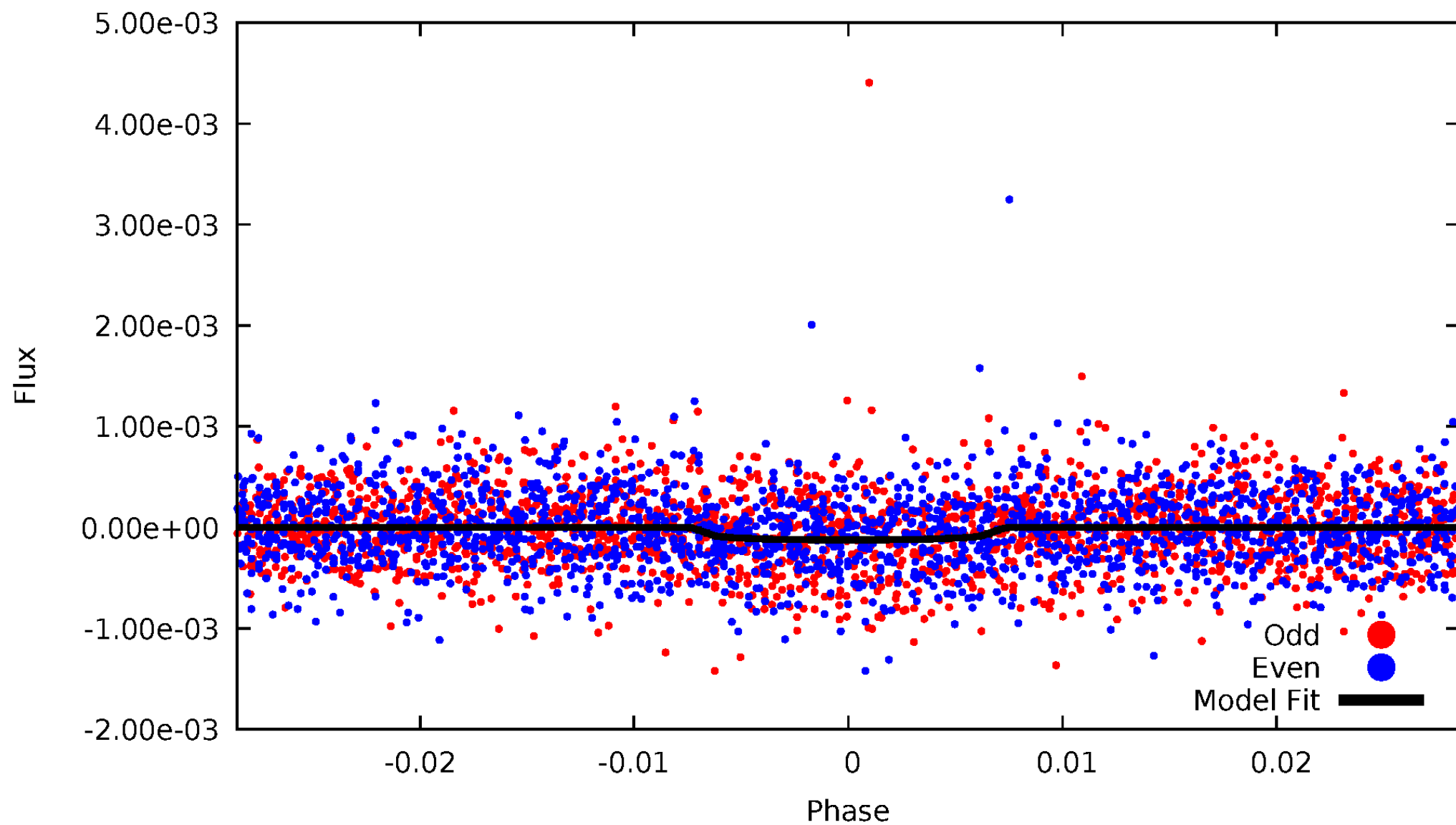


TCE 009474756-01



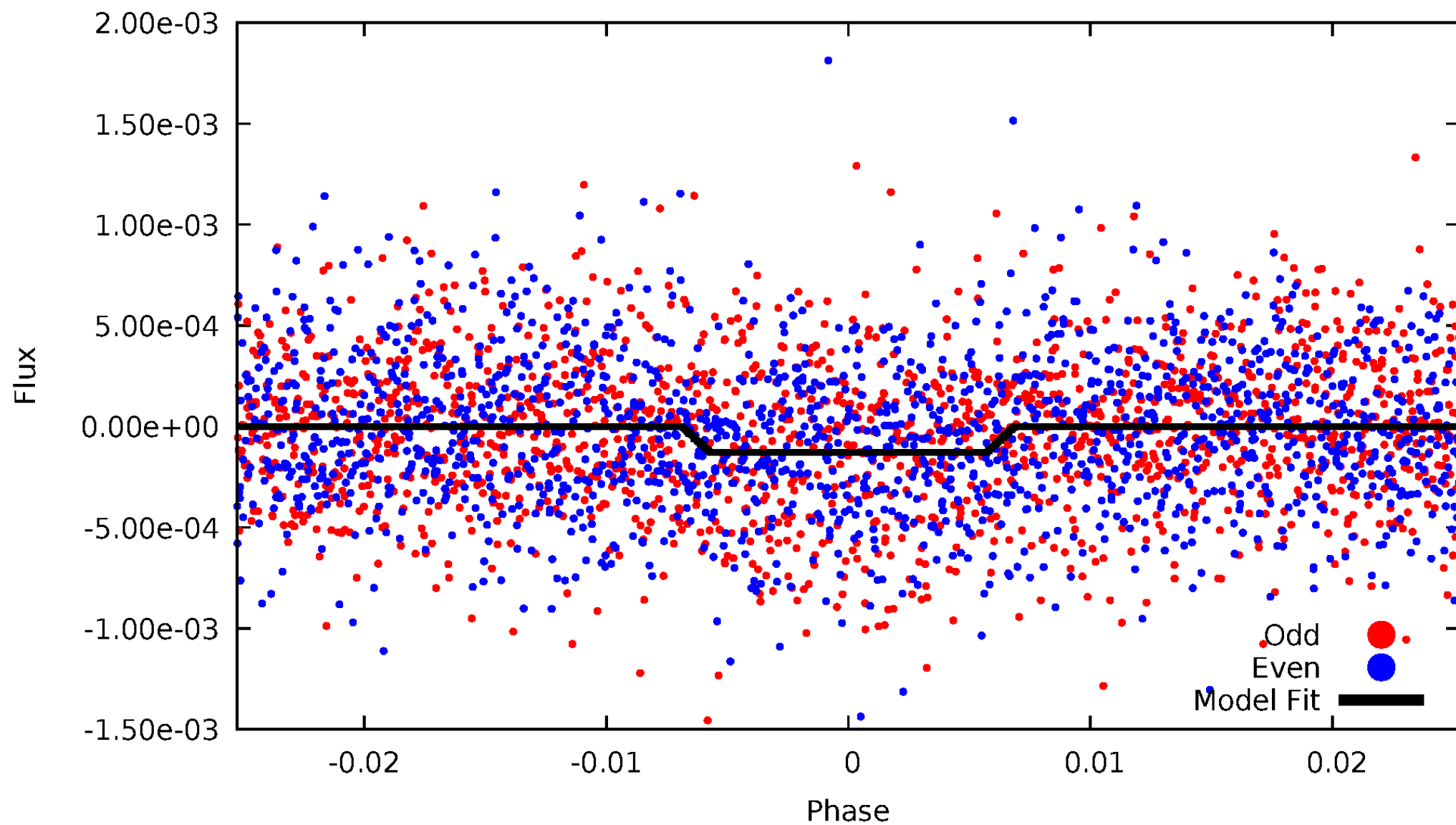
DV Odd/Even

TCE 009474756-01



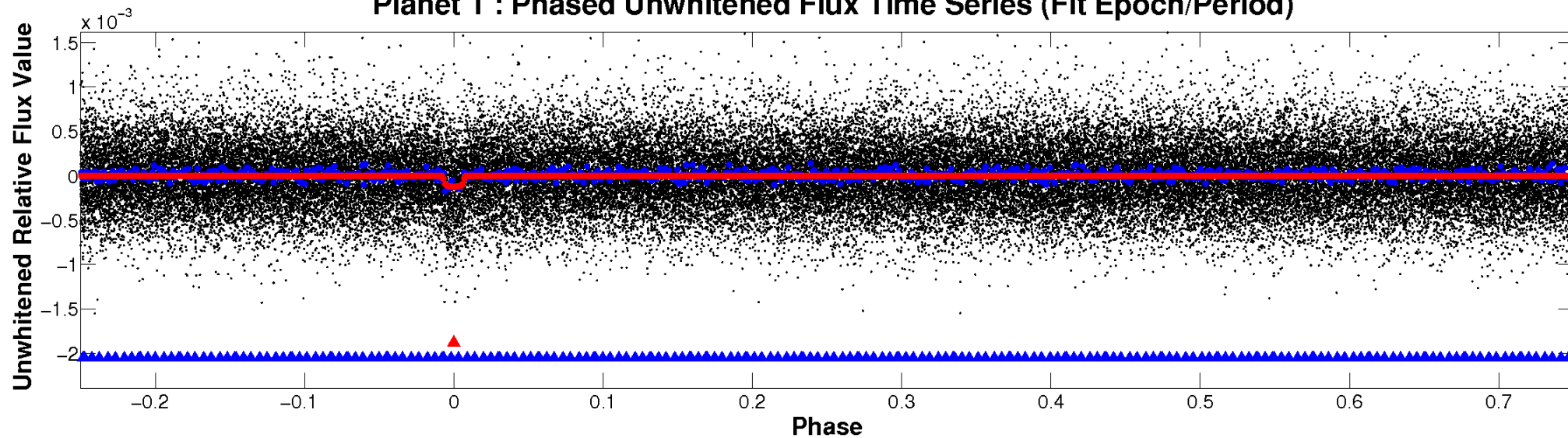
ALT Odd/Even

TCE 009474756-01

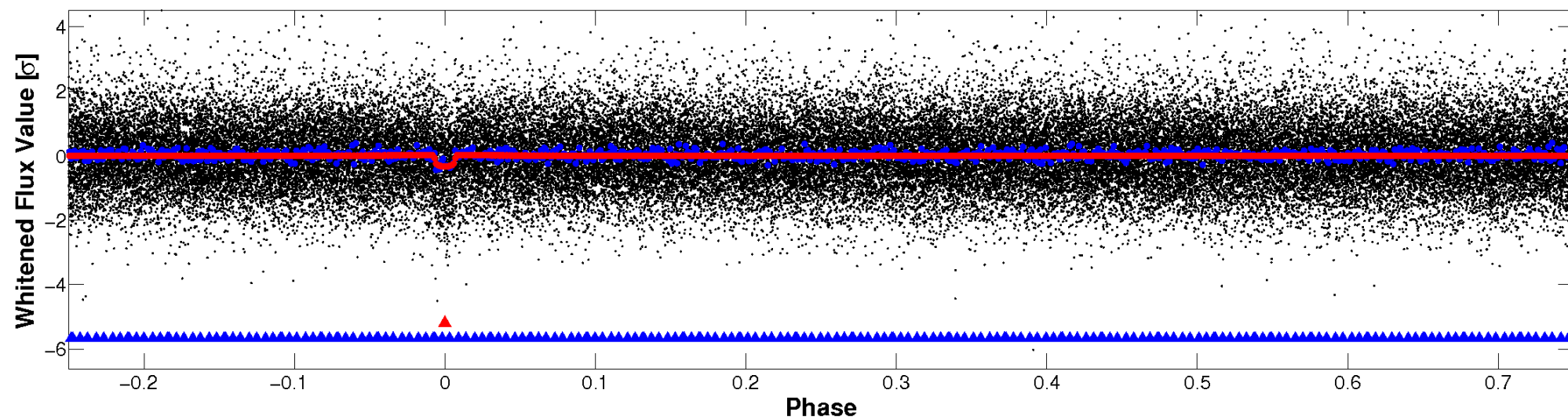


Non-Whitened Vs. Whitened Light Curve

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

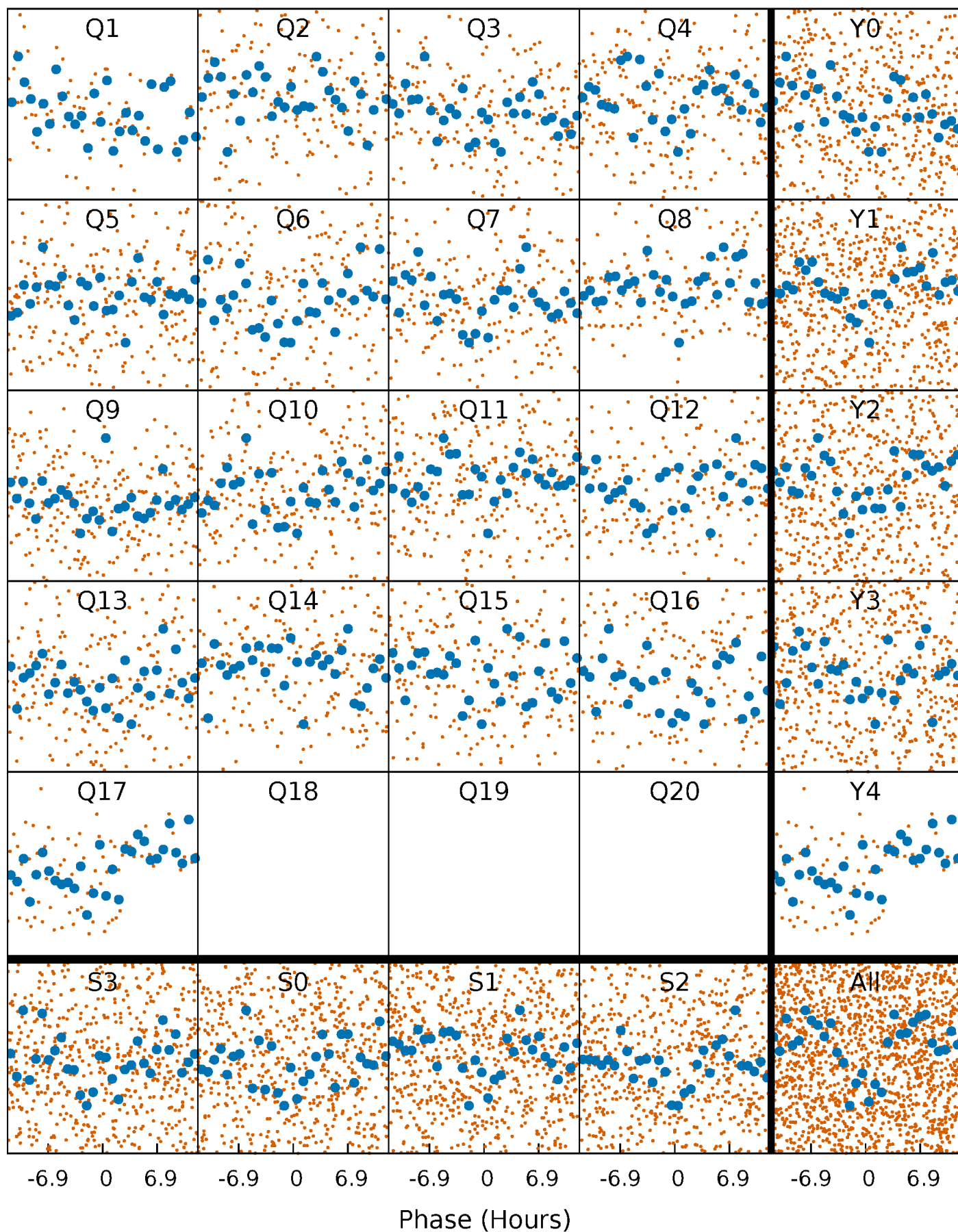


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



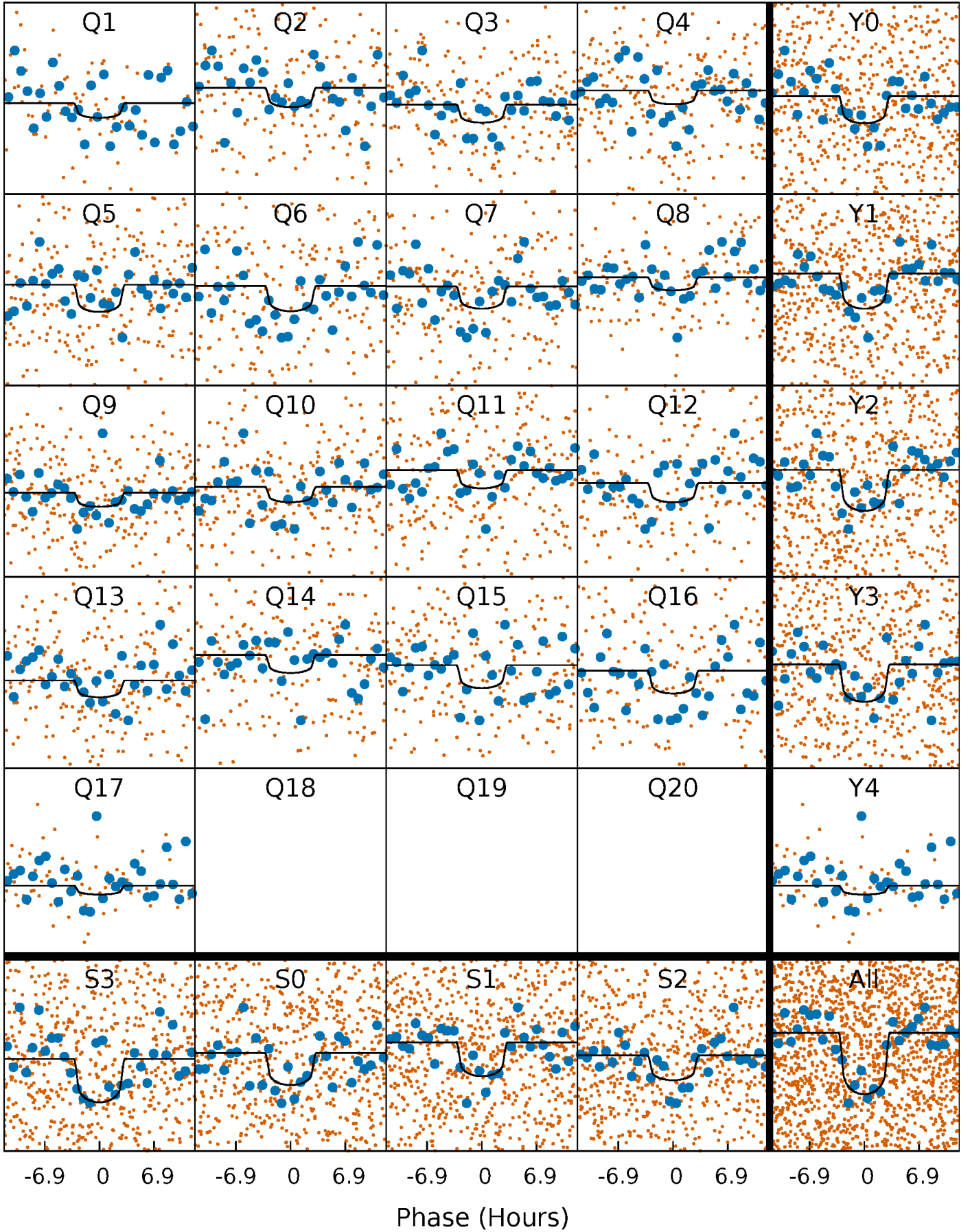
PDC Quarter-Phased Transit Curves

TCE 009474756-01 P= 17.606323 Days $T_0=147.190292$ (BKJD)



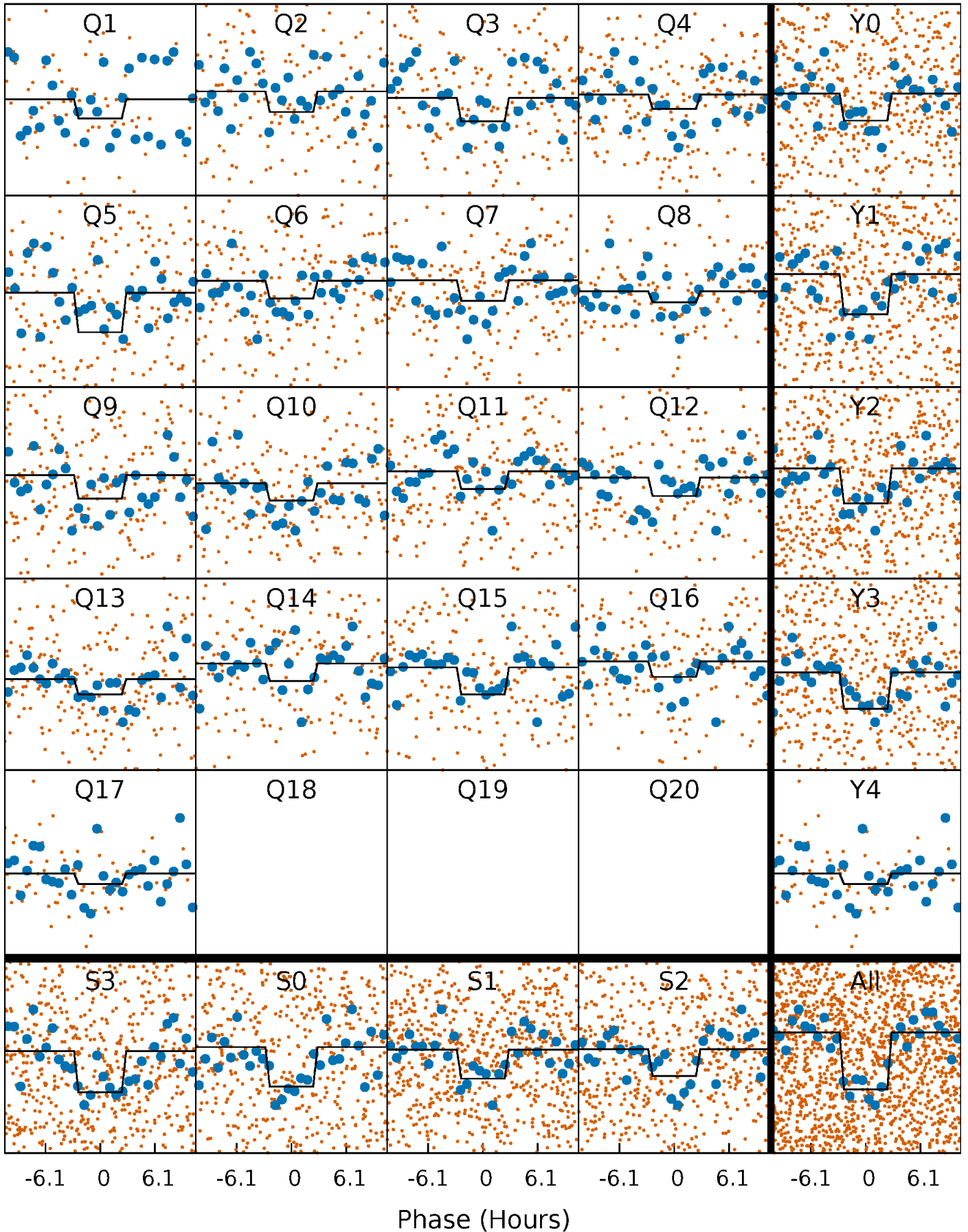
DV Quarter-Phased Transit Curves

TCE 009474756-01 P= 17.606323 Days $T_0=147.190292$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

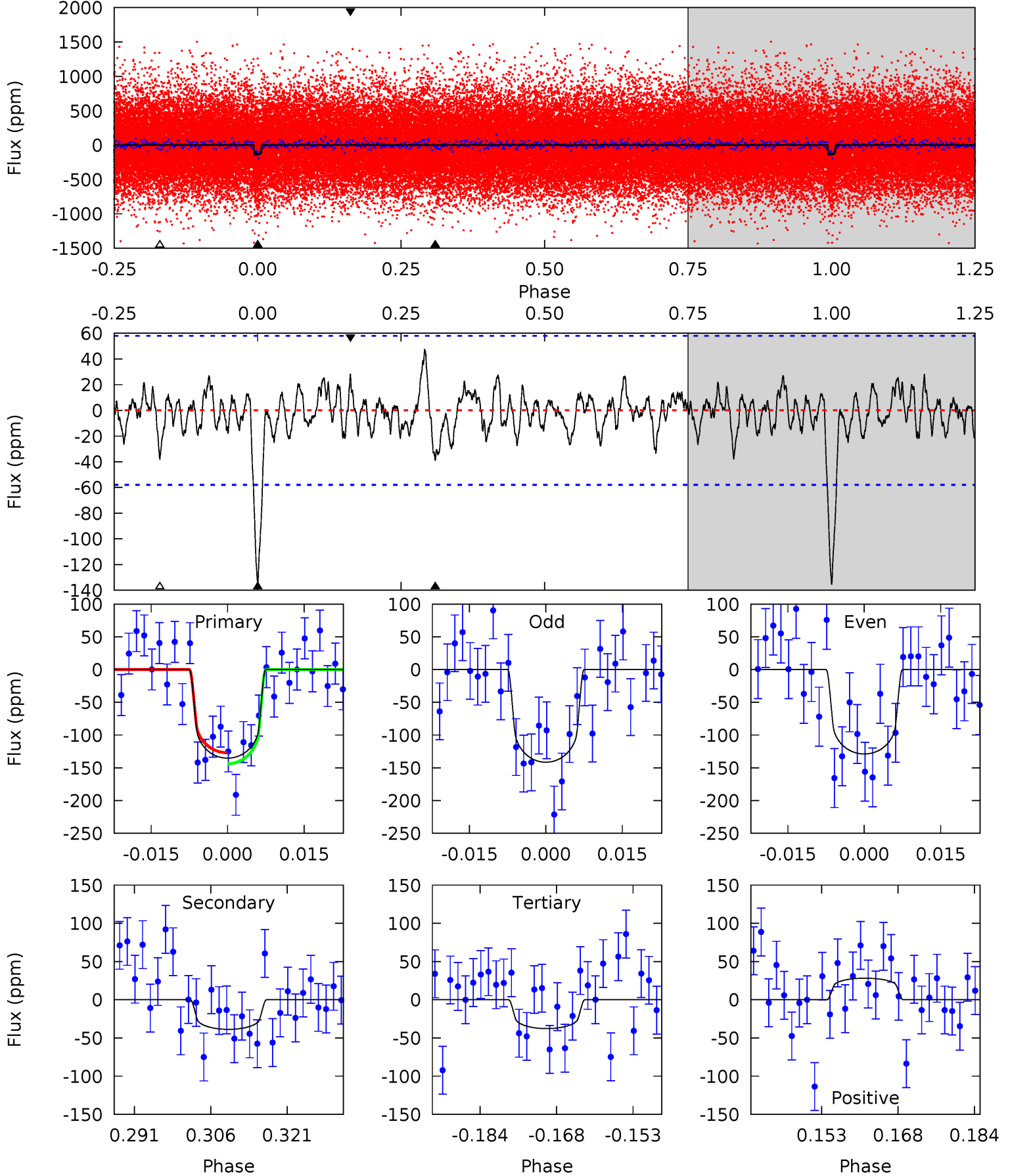
TCE 009474756-01 P= 17.606020 Days $T_0=147.199519$ (BKJD)



DV Model-Shift Uniqueness Test

009474756-01, P = 17.606323 Days, E = 129.583969 Days

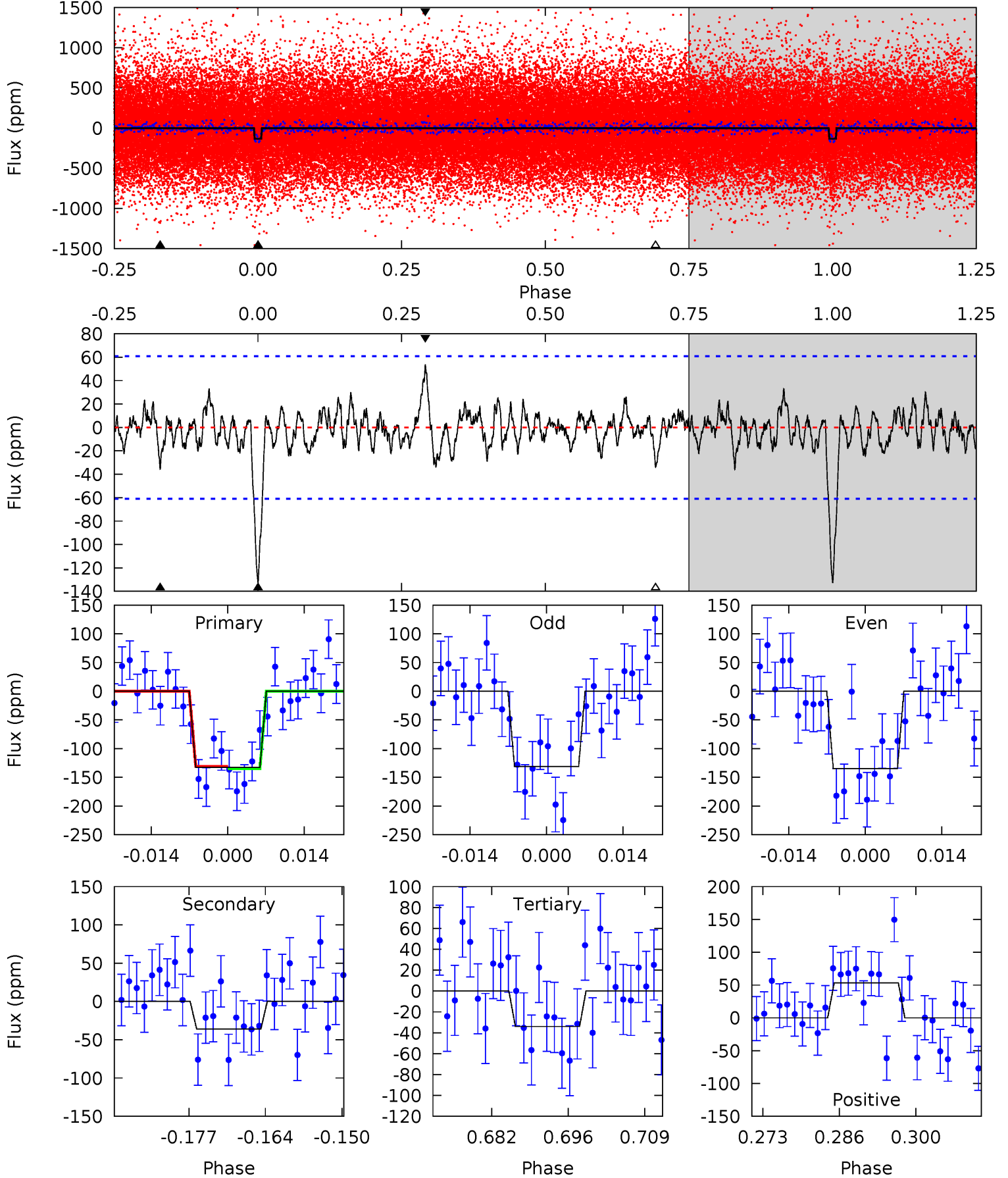
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	3.30	3.22	2.41	4.94	2.43	1.07	8.32	9.12	0.09	0.90	0.54	0.85	0.26	0.72



Alt Model-Shift Uniqueness Test

009474756-01, P = 17.606020 Days, E = 129.593499 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	2.93	2.77	4.35	4.97	2.47	1.01	8.06	6.48	0.16	-1.42	0.15	0.86	0.29	0.15



Stellar Parameters For KIC 009474756

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5808^{+78}_{-78}	$4.326^{+0.110}_{-0.110}$	$0.160^{+0.150}_{-0.150}$	$1.159^{+0.185}_{-0.151}$	$1.038^{+0.073}_{-0.066}$	$0.938^{+0.456}_{-0.305}$
	+1%/-1%	+3%/-3%	+94%/-94%	+16%/-13%	+7%/-6%	+49%/-33%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009474756-01 / KOI 3495.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-39 ± 12	$1.52^{+0.90}_{-0.73}$	1051^{+43}_{-41}	4330^{+1456}_{-666}	152^{+465}_{-94}
Alt.	-36 ± 12	$1.49^{+0.82}_{-0.84}$	1051^{+45}_{-40}	4358^{+1766}_{-765}	154^{+681}_{-100}

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 $A_{obs} \gg 1.0$

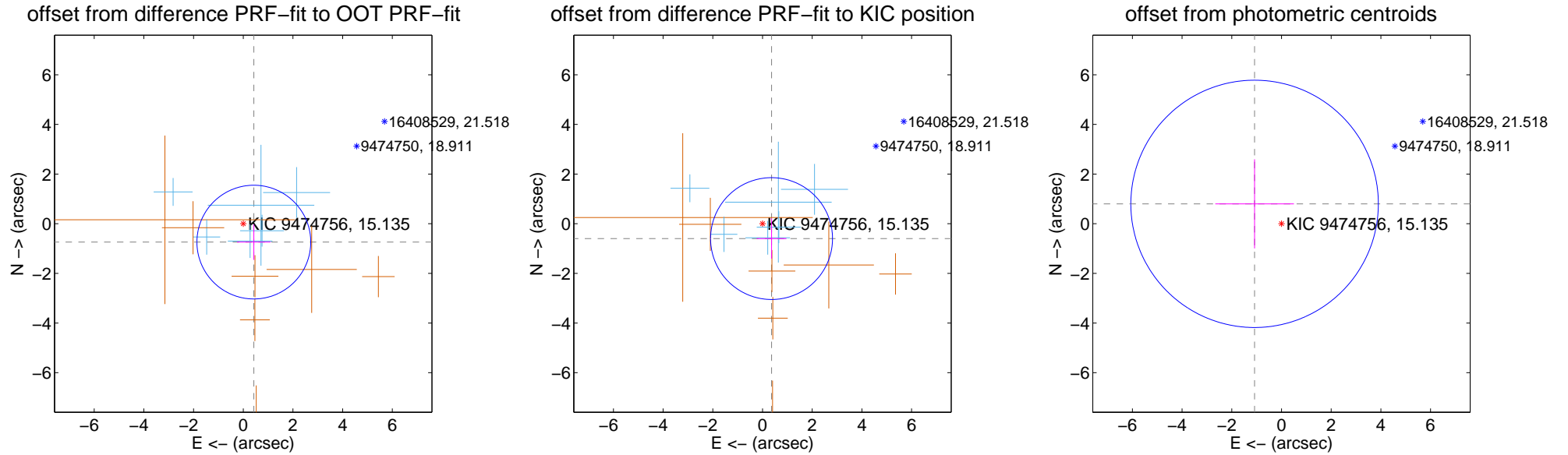
DV Centroid Data

Supplemental centroid analysis for 009474756-01. Kepler magnitude: 15.13. Transit SNR 8.37

There are 6 quarters with good PRF difference image offsets

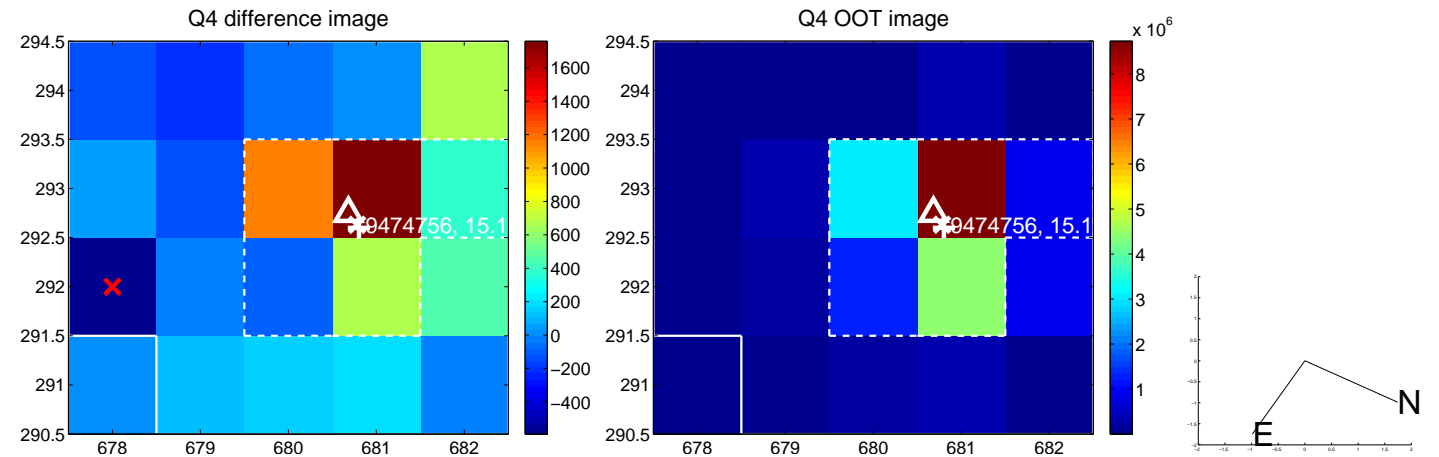
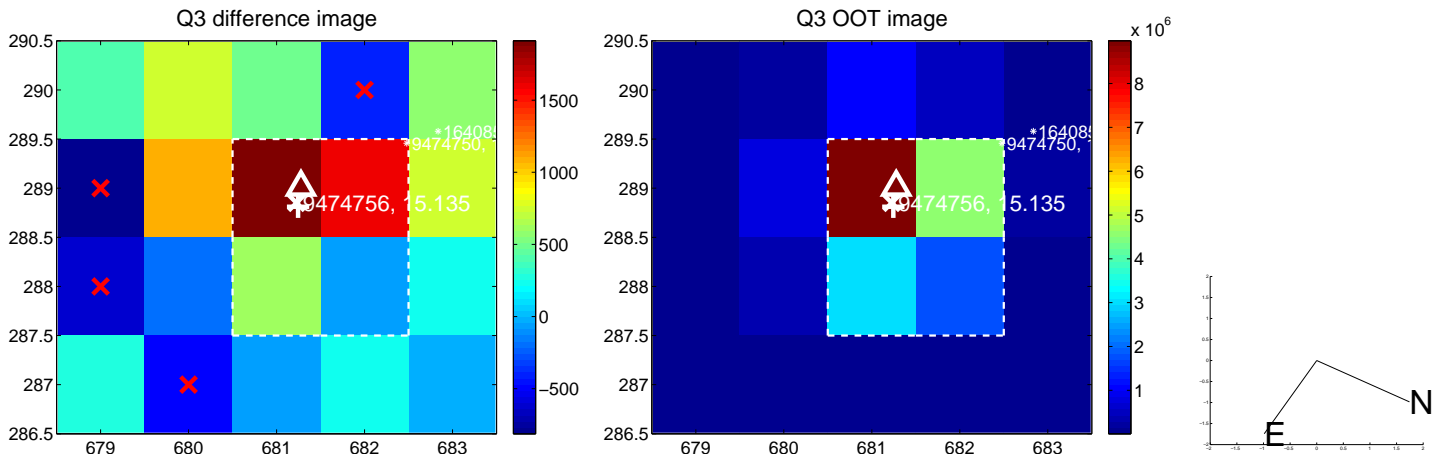
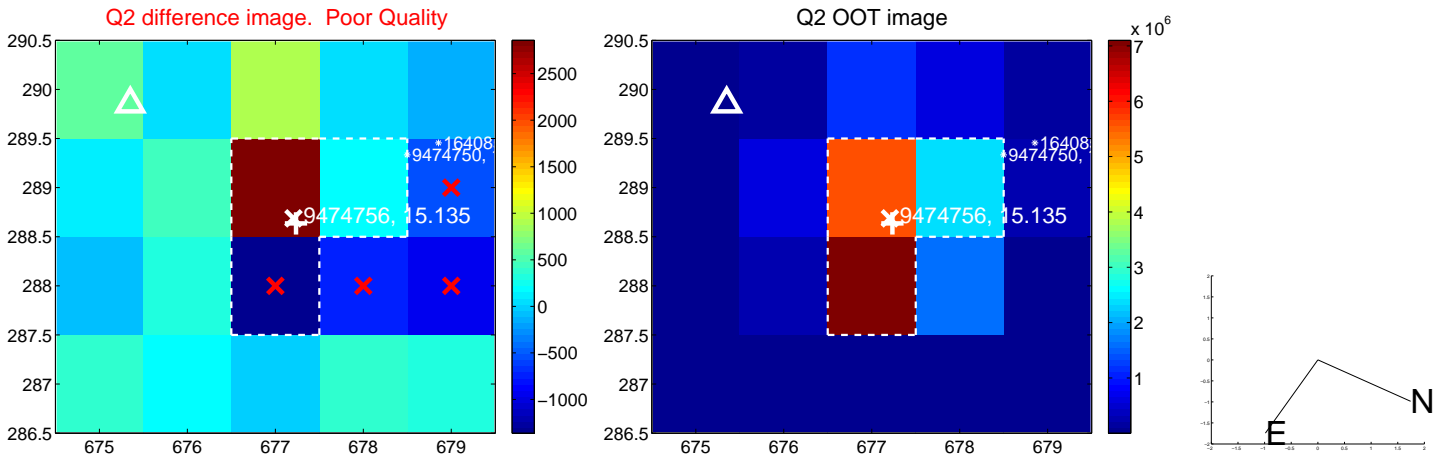
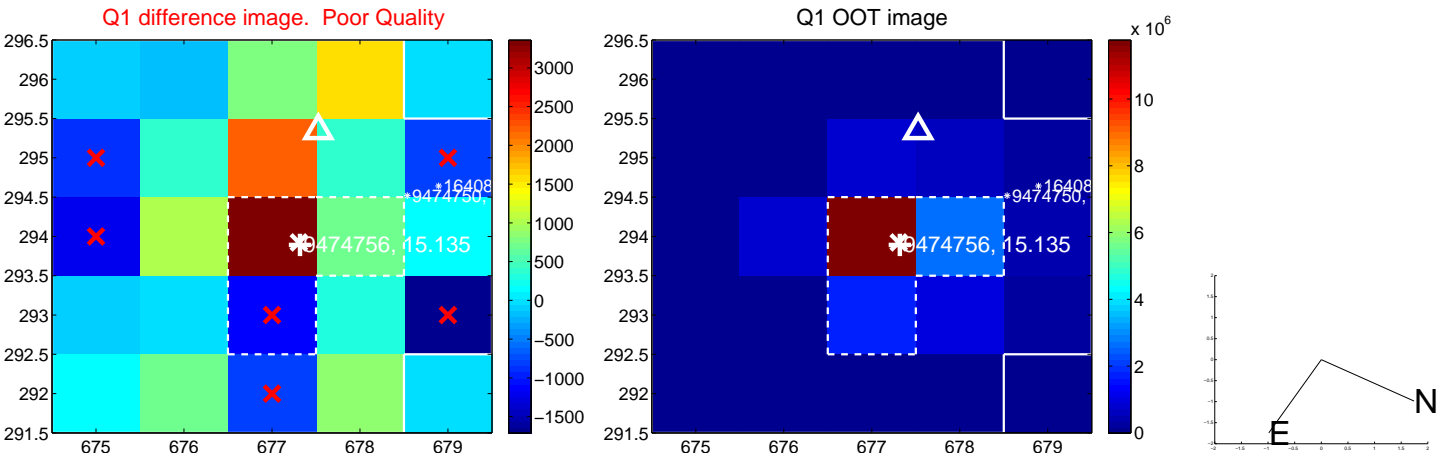
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.853 ± 0.763	1.12	-0.425 ± 0.676	-0.739 ± 0.718
PRF-fit source offset from KIC position	0.699 ± 0.818	0.86	-0.363 ± 0.599	-0.598 ± 0.810
photometric centroid source offset	1.35 ± 1.66	0.81	1.08 ± 1.58	0.80 ± 1.79

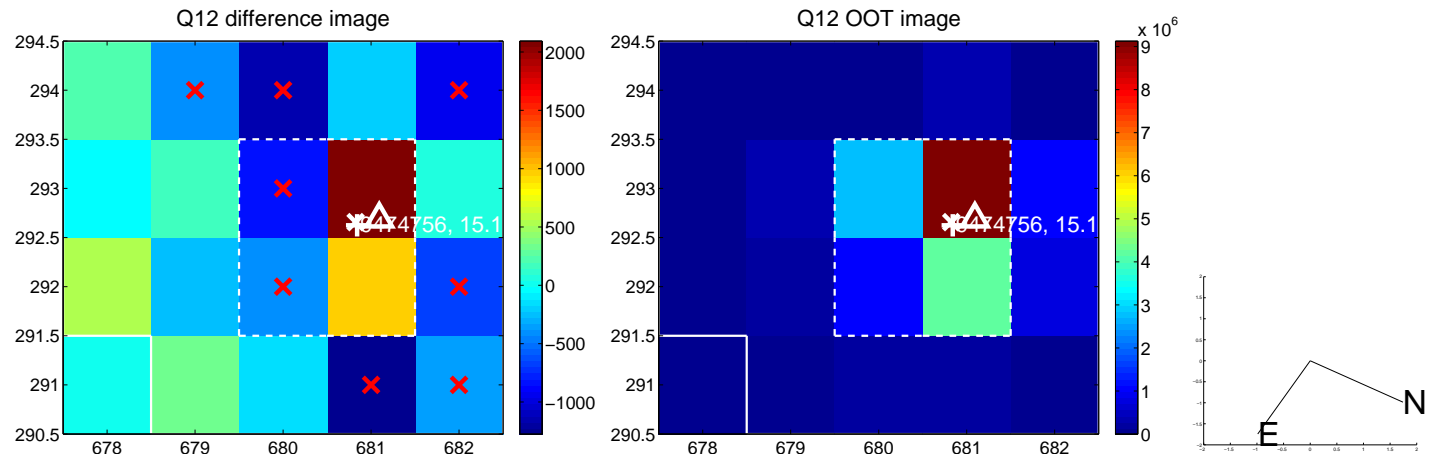
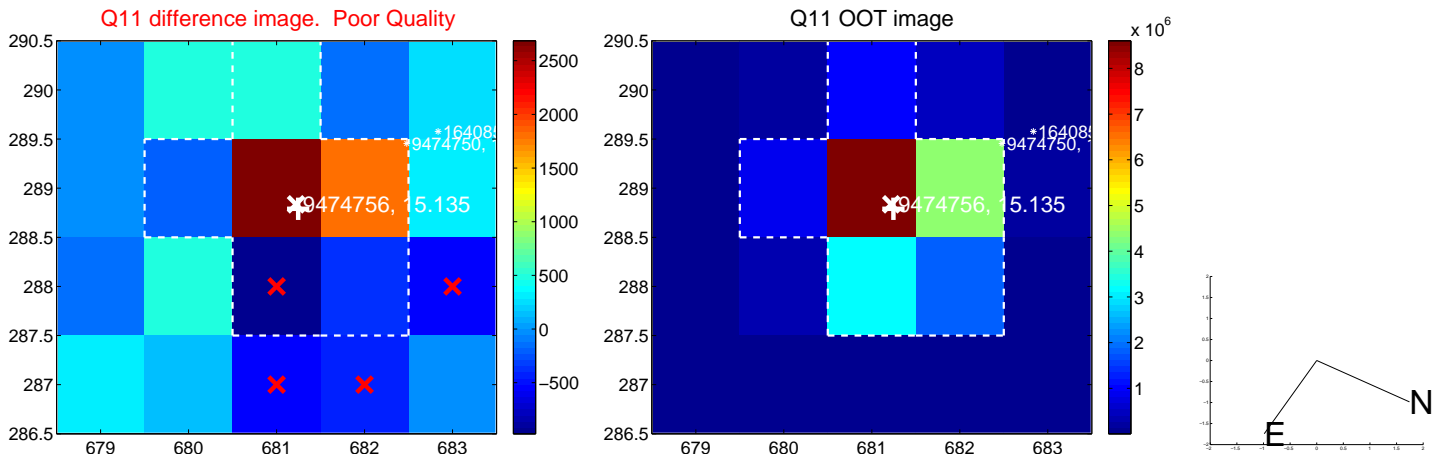
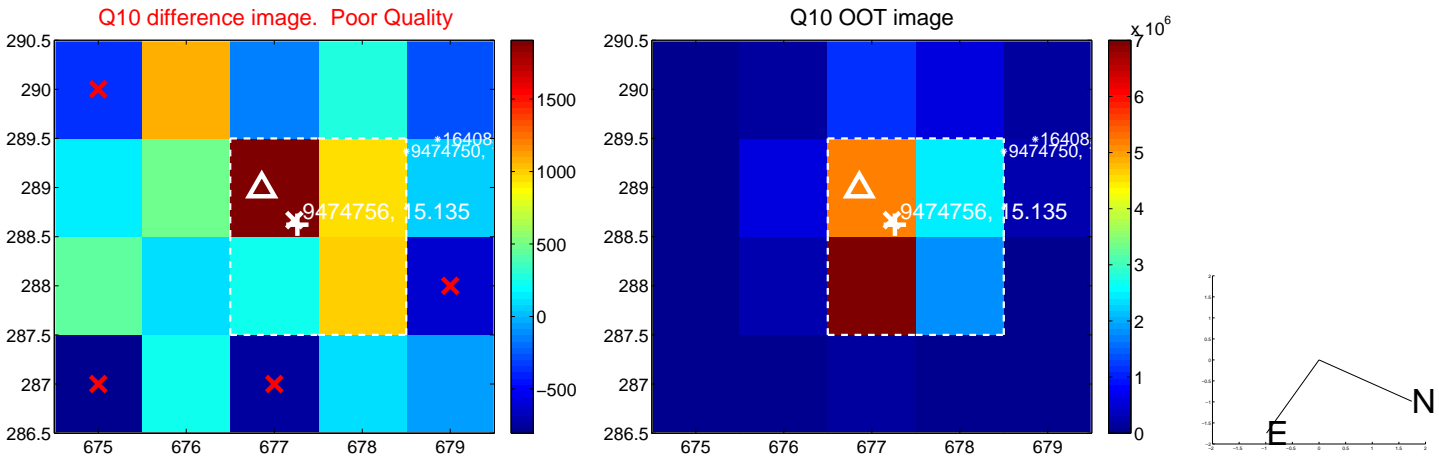
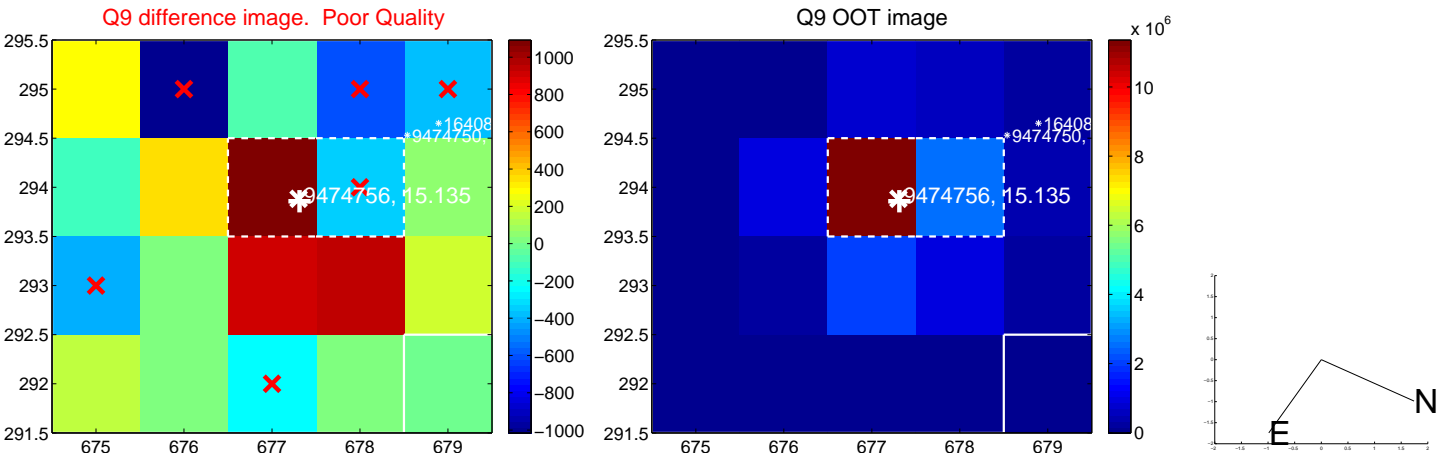


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

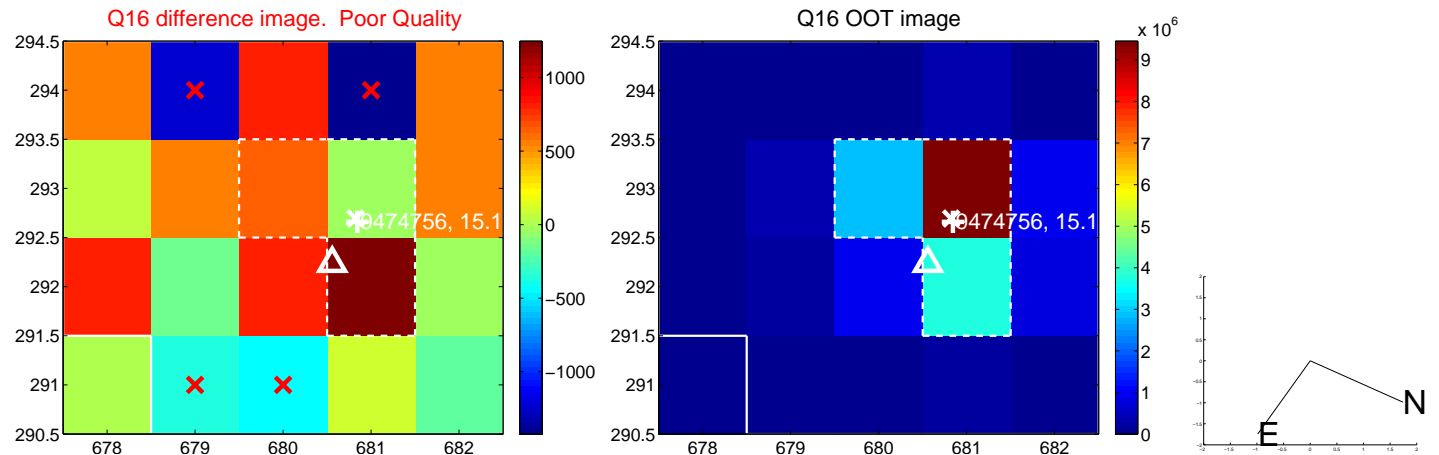
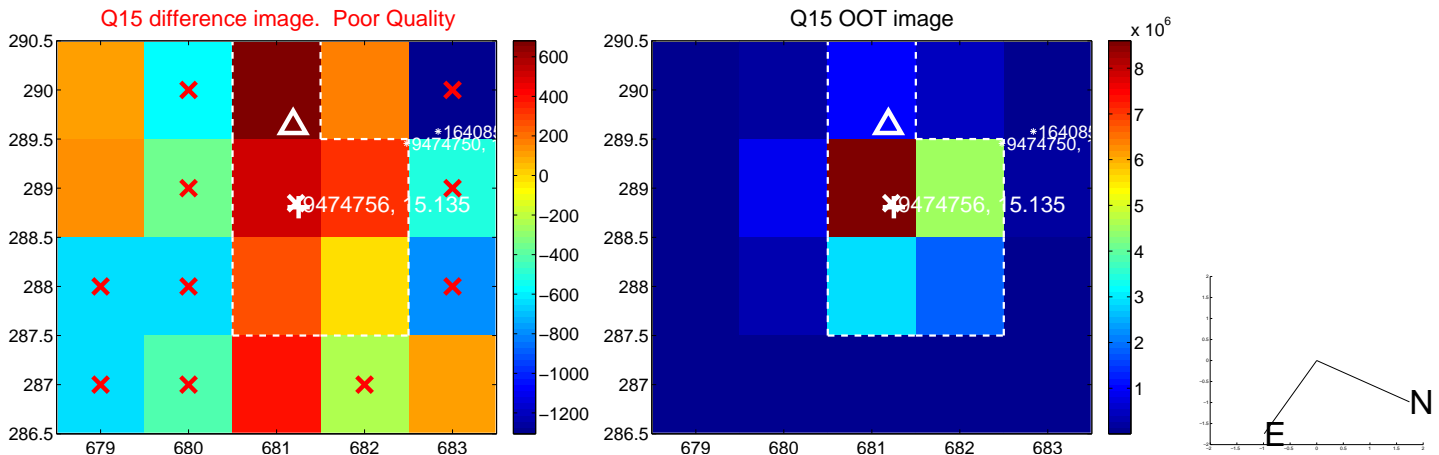
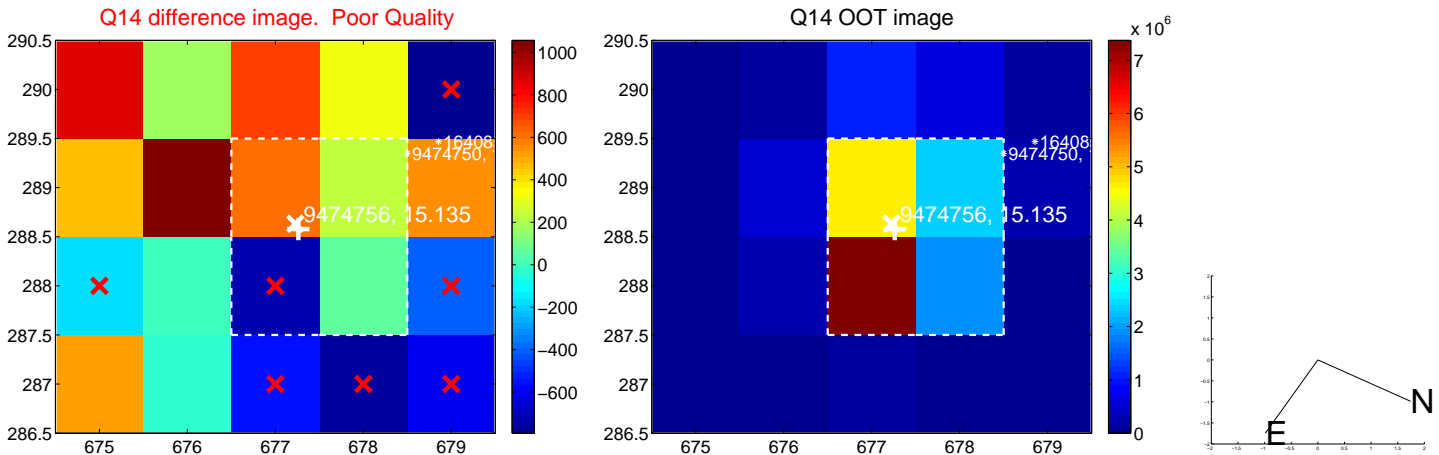
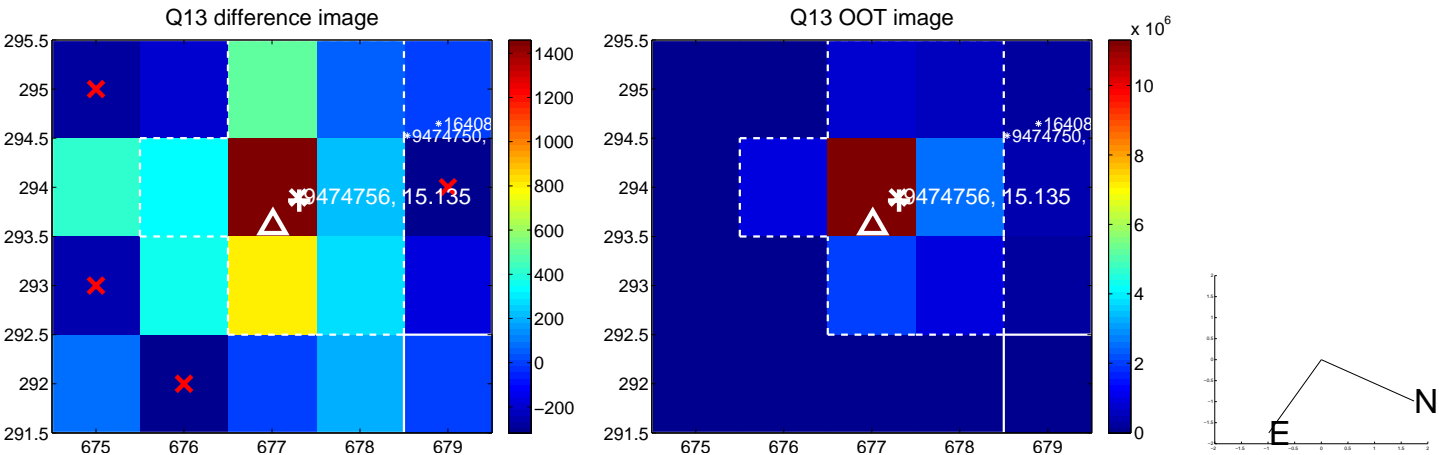
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



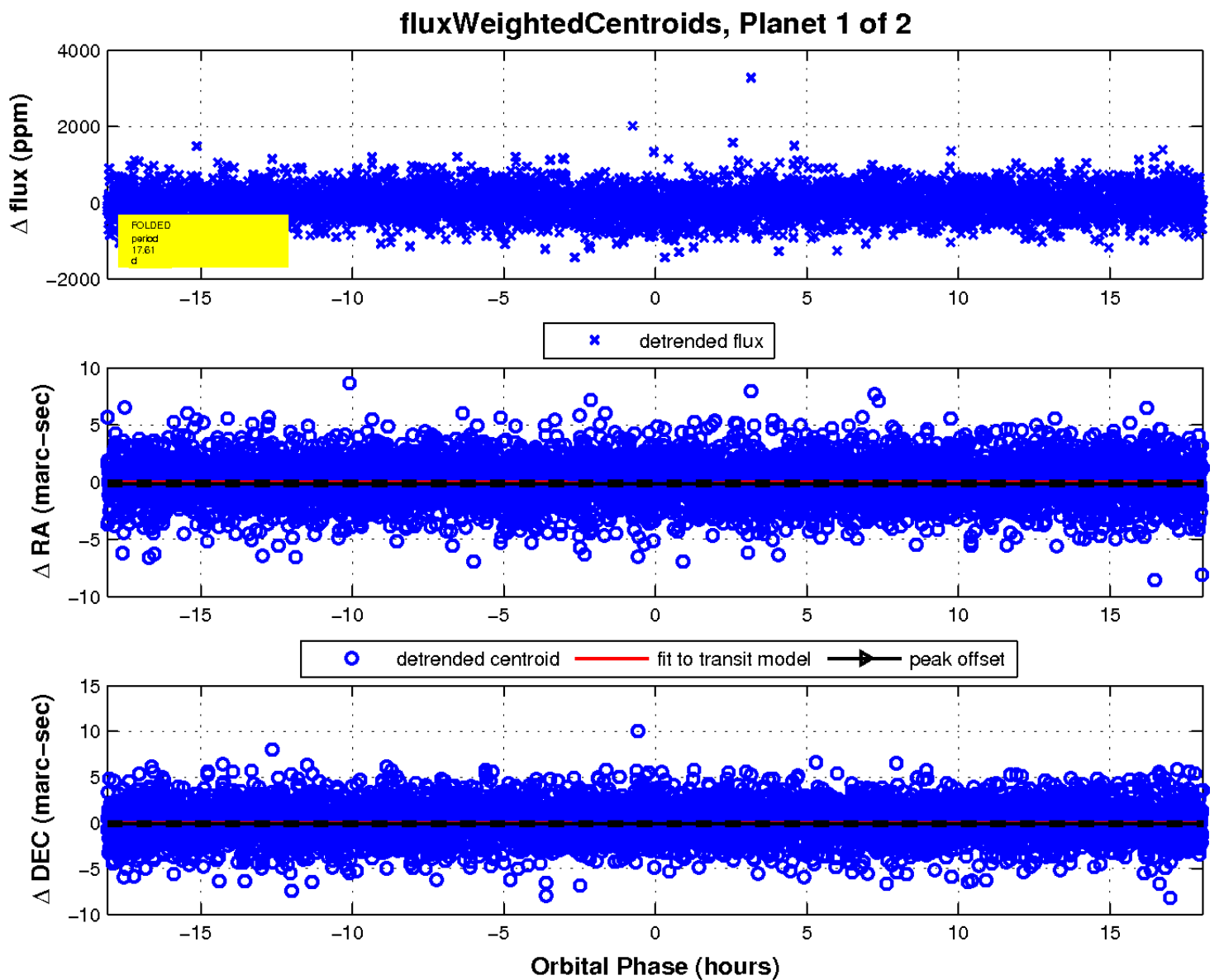
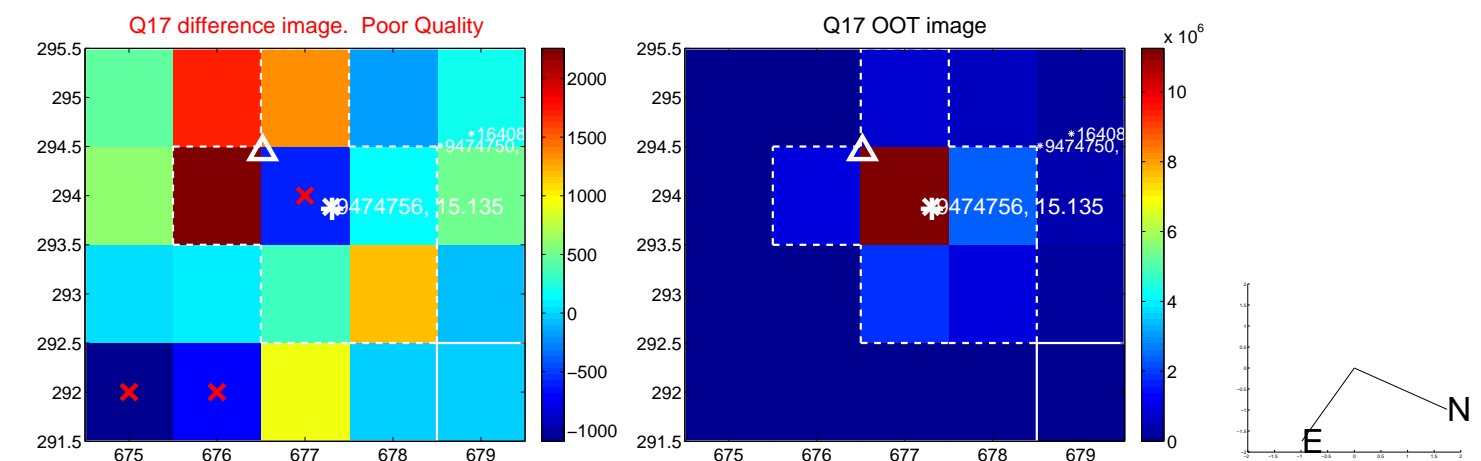
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

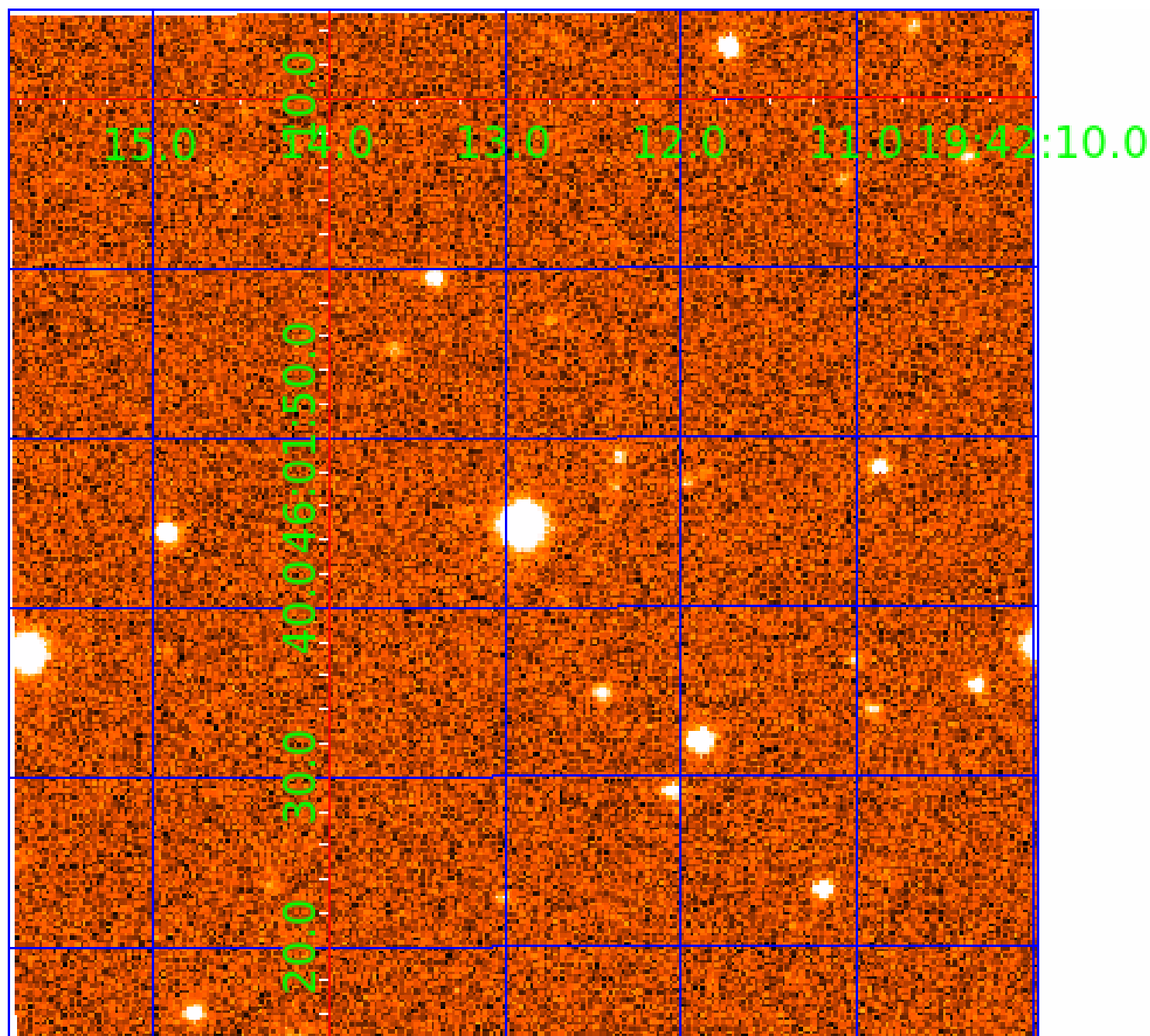


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009474756

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})
009474756-01	OBS	3495.01	17.606323	147.190291	124.9	6.027	9.2	8.4	1.16	5808	1.49	76.12
009474756-02	OBS	3495.02	6.684847	132.364725	93.8	3.722	8.0	8.2	1.16	5808	1.34	276.87

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009474756-01	OBS	PC	0.92	0	0	0	0	NO_COMMENT
009474756-02	OBS	PC	0.91	0	0	0	0	NO_COMMENT

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

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

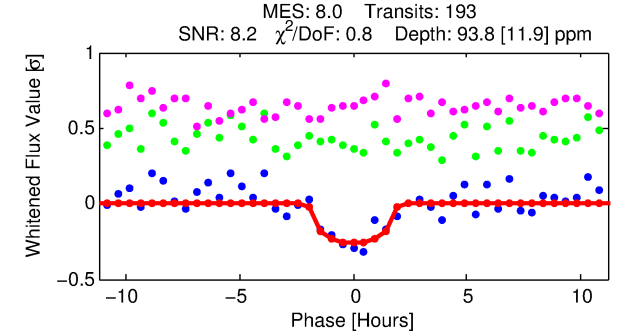
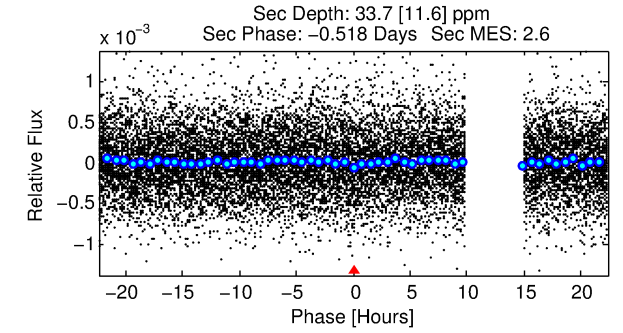
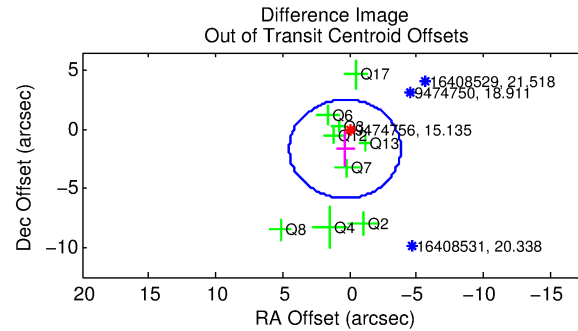
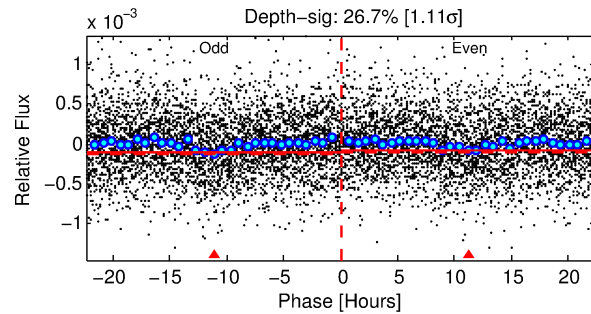
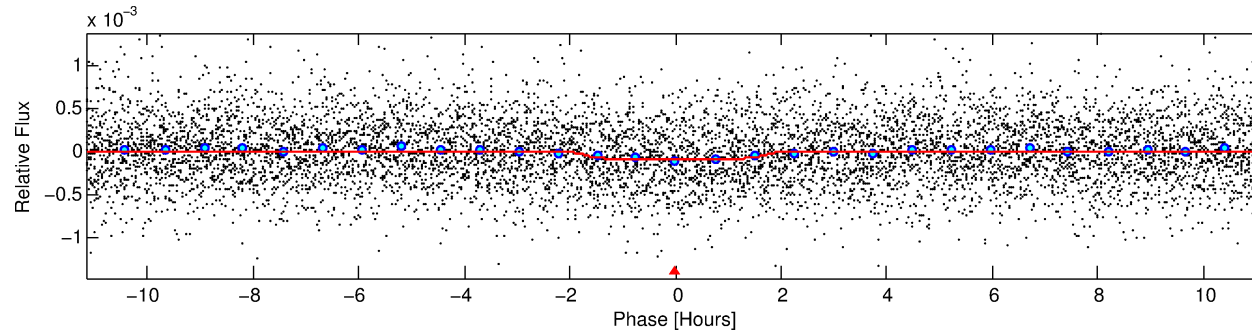
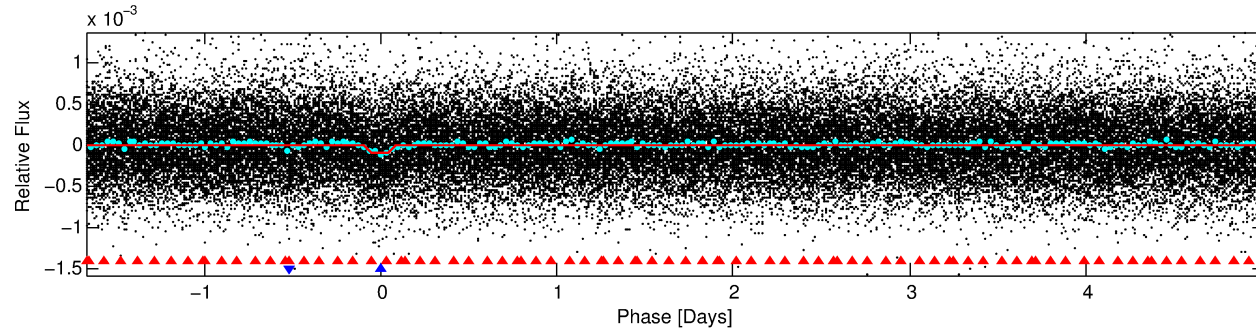
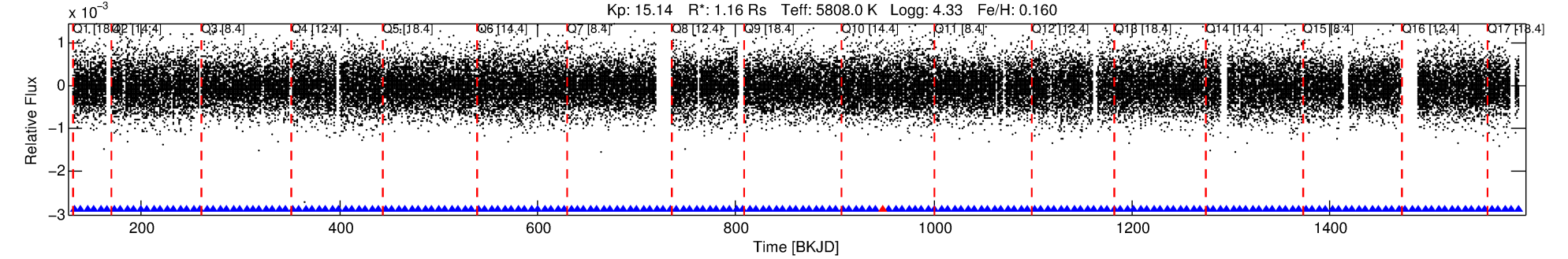
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009474756-02

No Significant Match Found

DV One-Page Summary

KIC: 9474756 Candidate: 2 of 2 Period: 6.685 d
KOI: K03495.02 Corr: 0.863



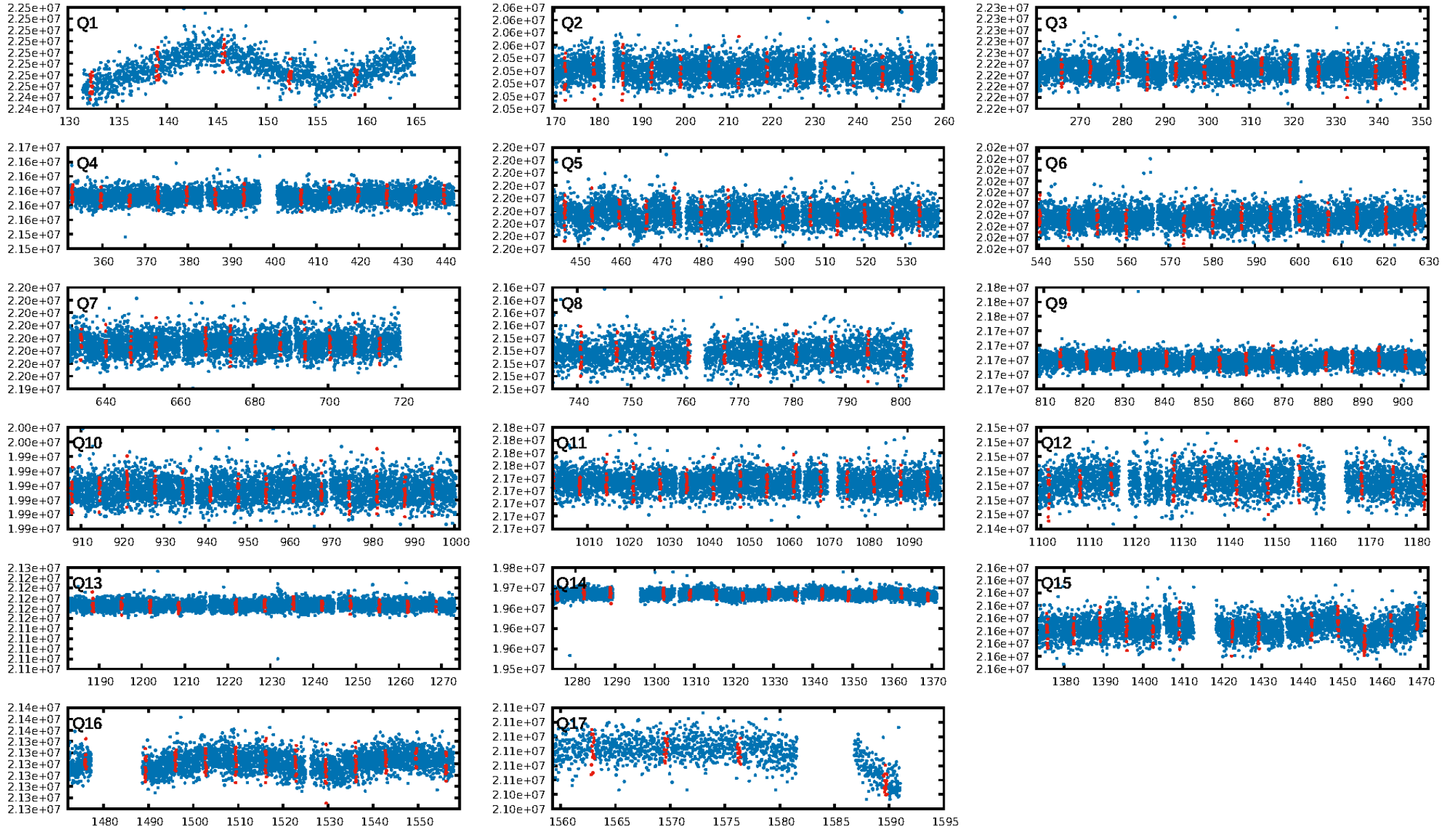
DV Fit Results:

Period = 6.68485 [0.00008] d
Epoch = 132.3647 [0.0087] BKJD
Rp/R* = 0.0106 [0.0076]
a/R* = 6.26 [21.27]
b = 0.90 [0.71]
Seff = 276.86 [57.23]
Teq = 1040 [54] K
Rp = 1.34 [0.99] Re
a = 0.0703 [0.0096] AU
Ag = 51.01 [76.27] [0.66 σ]
Teffp = 4298 [1593] K [2.04 σ]

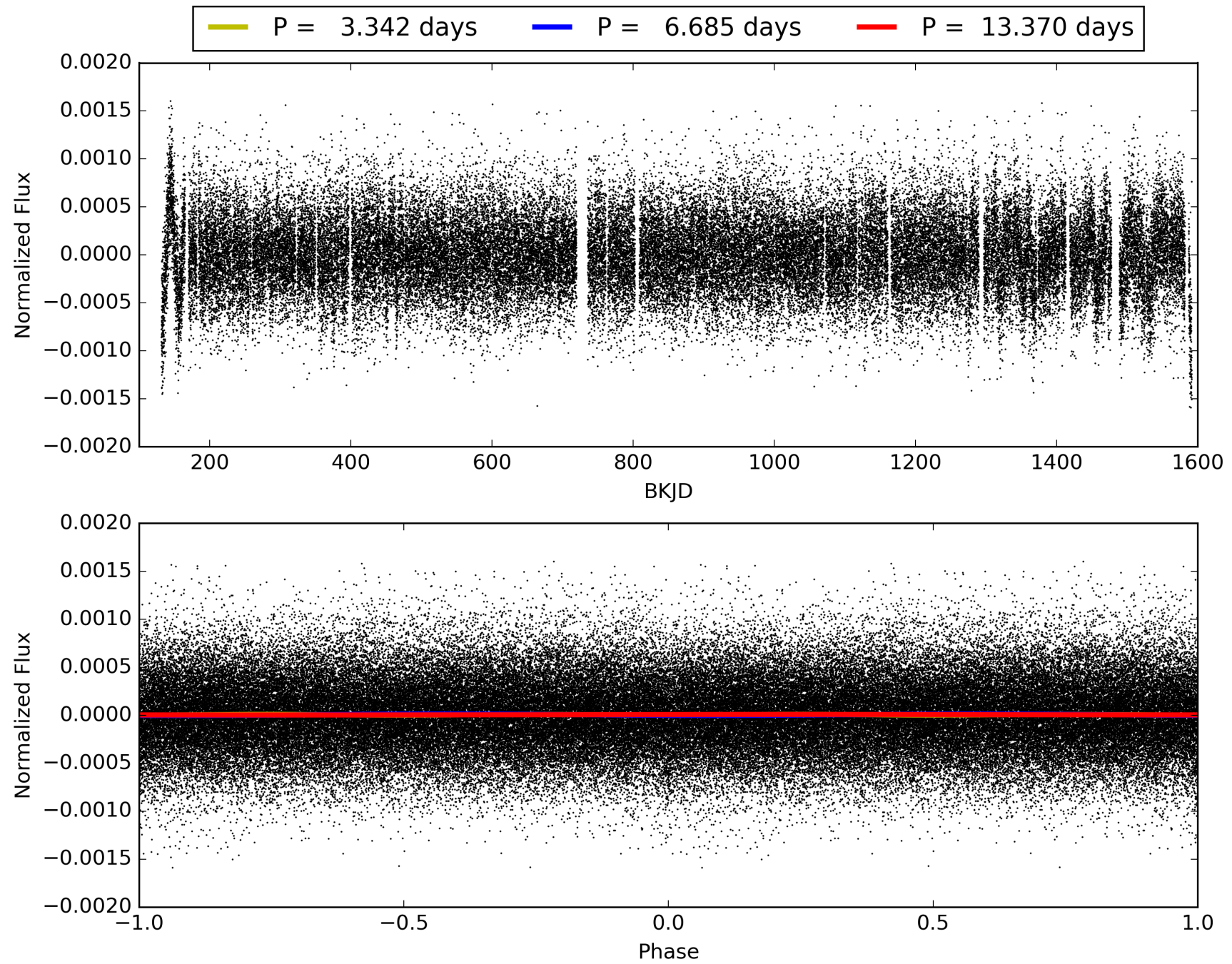
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [37.00 σ]
ModelChiSquare2-sig: 99.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.02e-15
RollingBand-fgt: 0.99 [183/184]
GhostDiagnostic-chr: 6.271
Centroid-sig: 0.0%
Centroid-so: 4.335 arcsec [2.33 σ]
OotOffset-rm: 1.707 arcsec [1.23 σ]
KicOffset-rm: 1.599 arcsec [1.04 σ]
OotOffset-st: 2/2/3/2 [9]
KicOffset-st: 2/2/3/2 [9]
DiffImageQuality-fgm: 0.44 [4/9]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009474756-02, PDC Light Curves

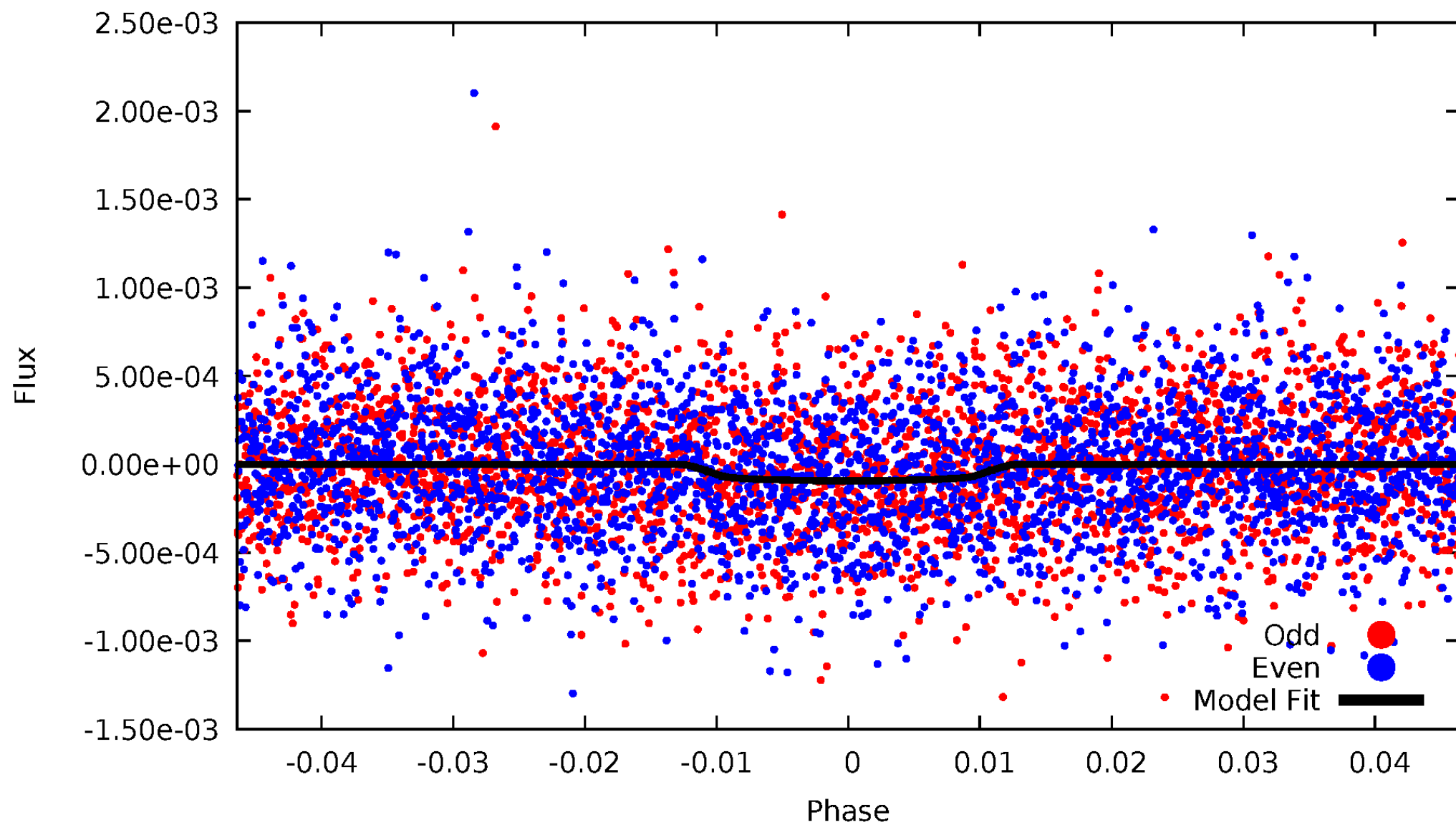


TCE 009474756-02



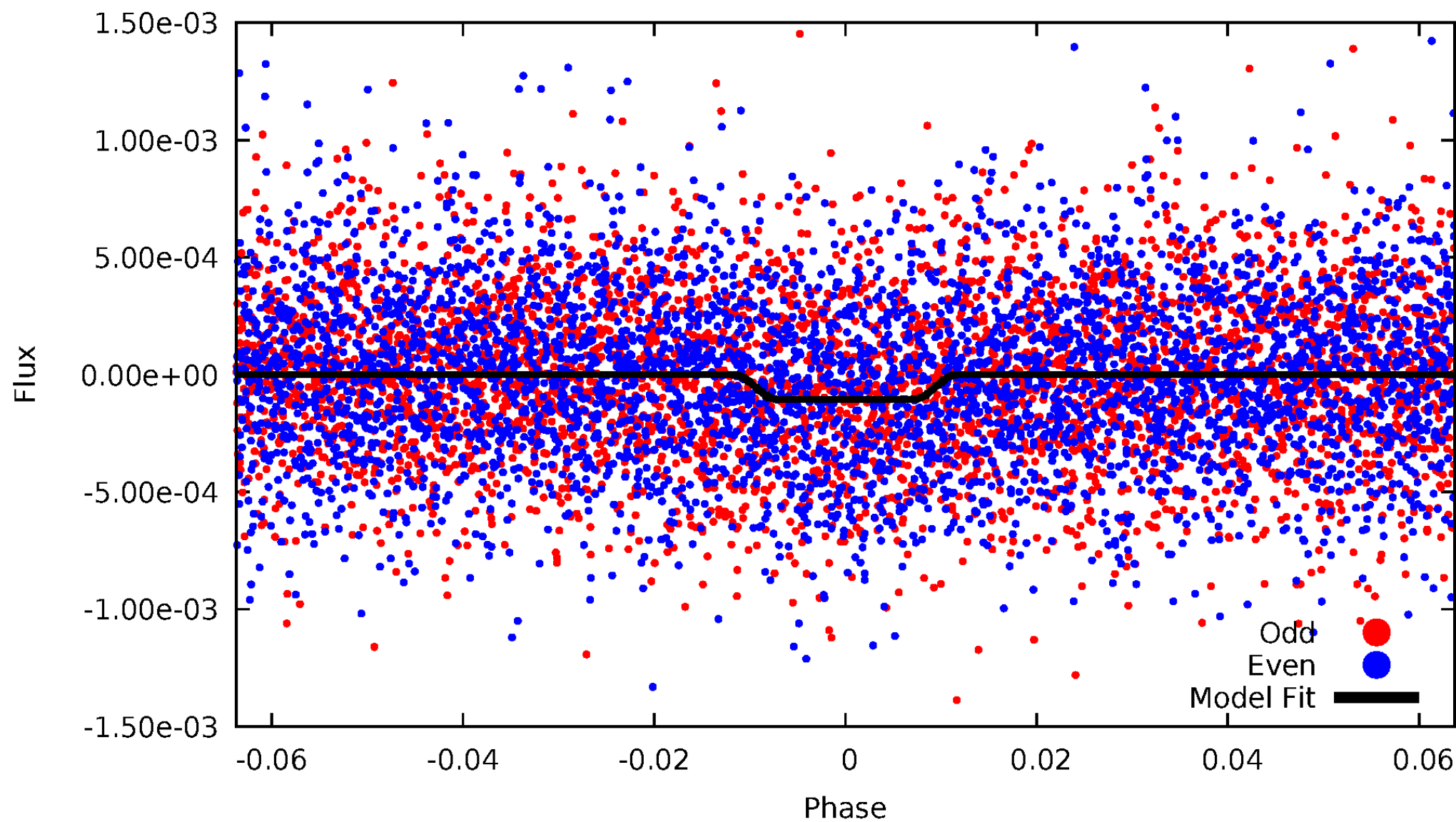
DV Odd/Even

TCE 009474756-02



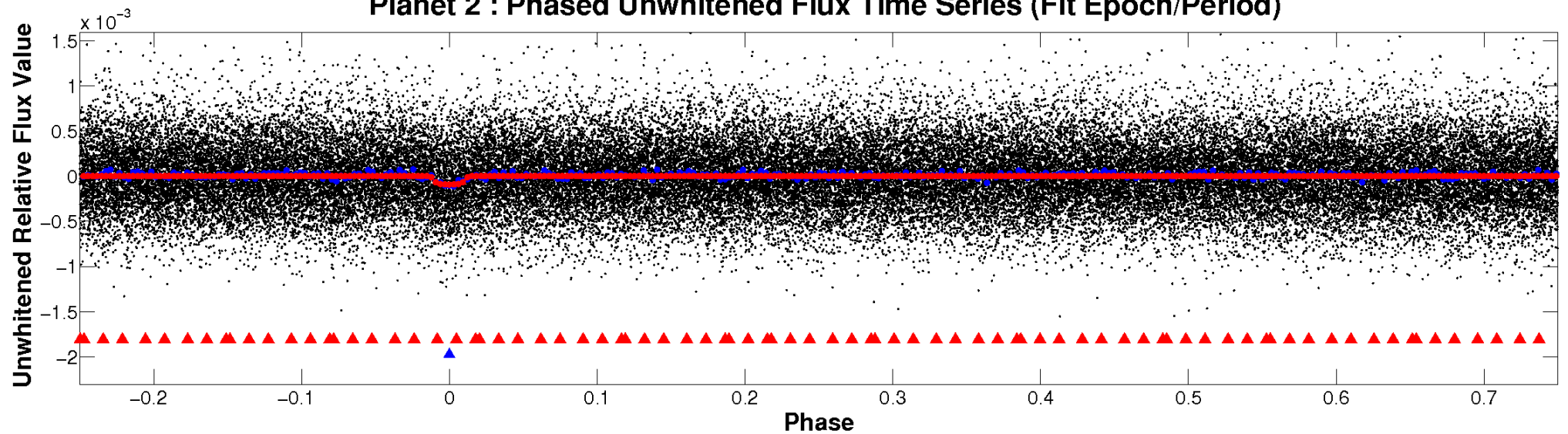
ALT Odd/Even

TCE 009474756-02

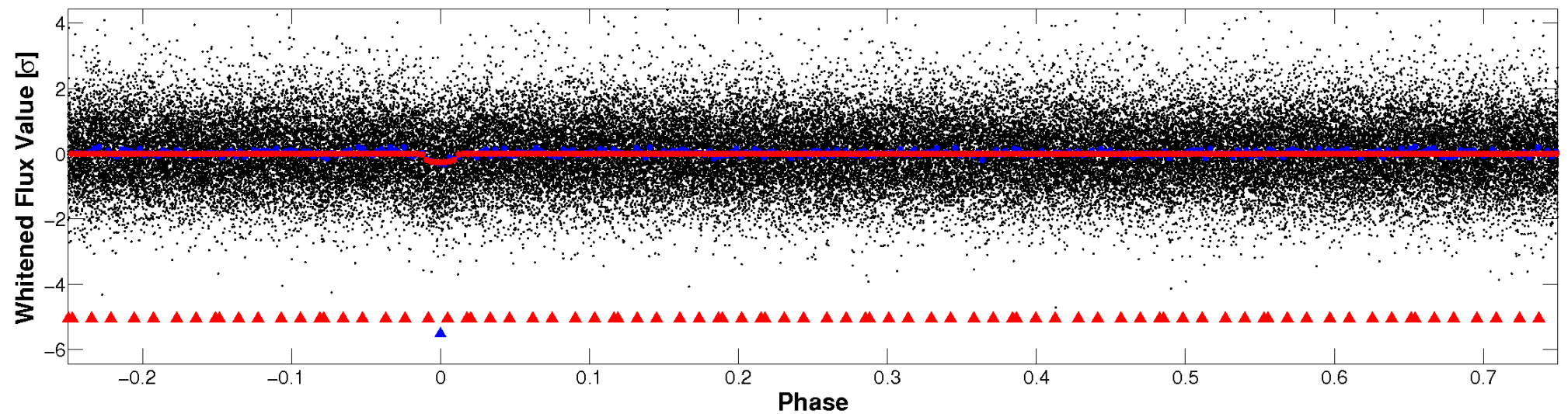


Non-Whitened Vs. Whitened Light Curve

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

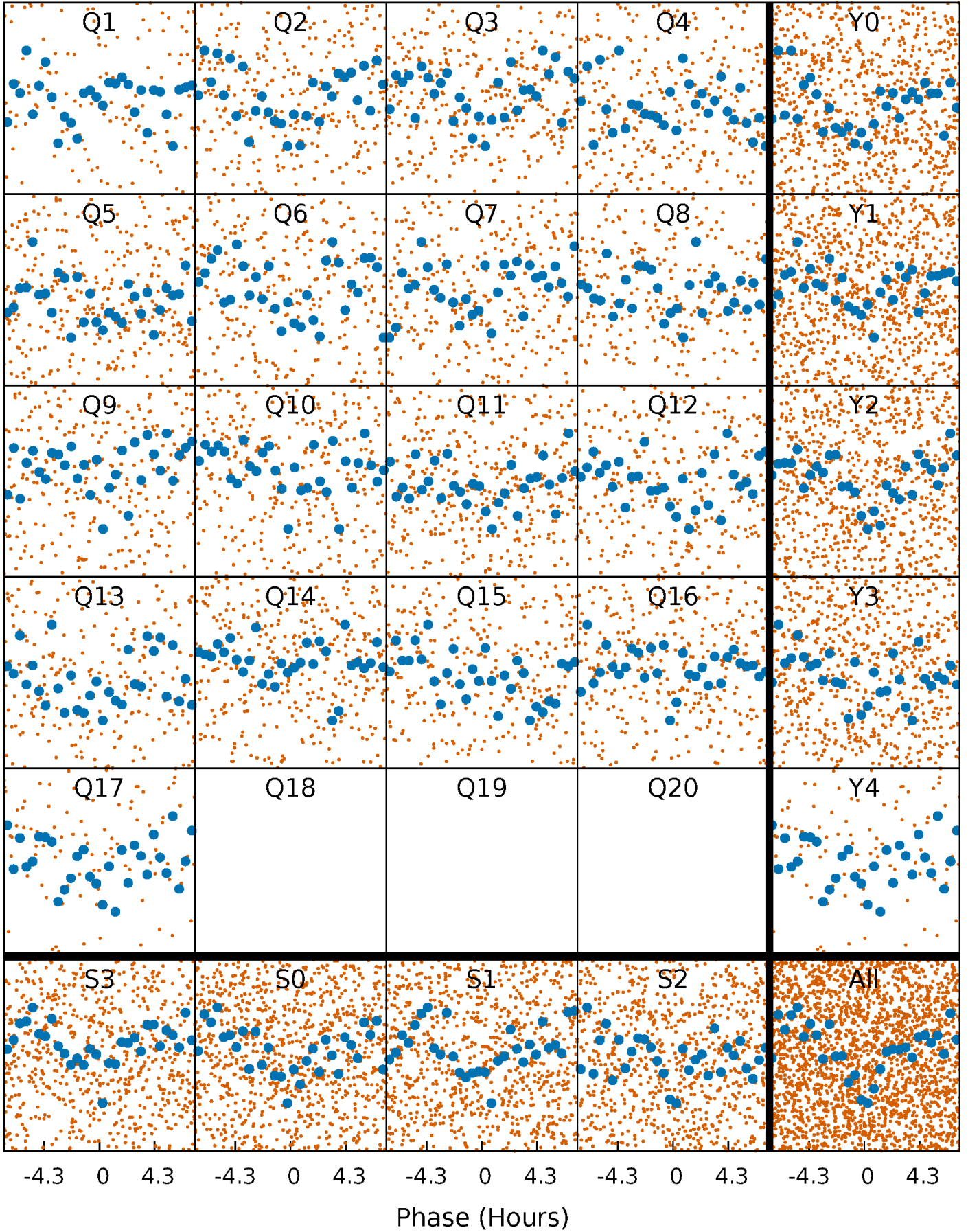


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



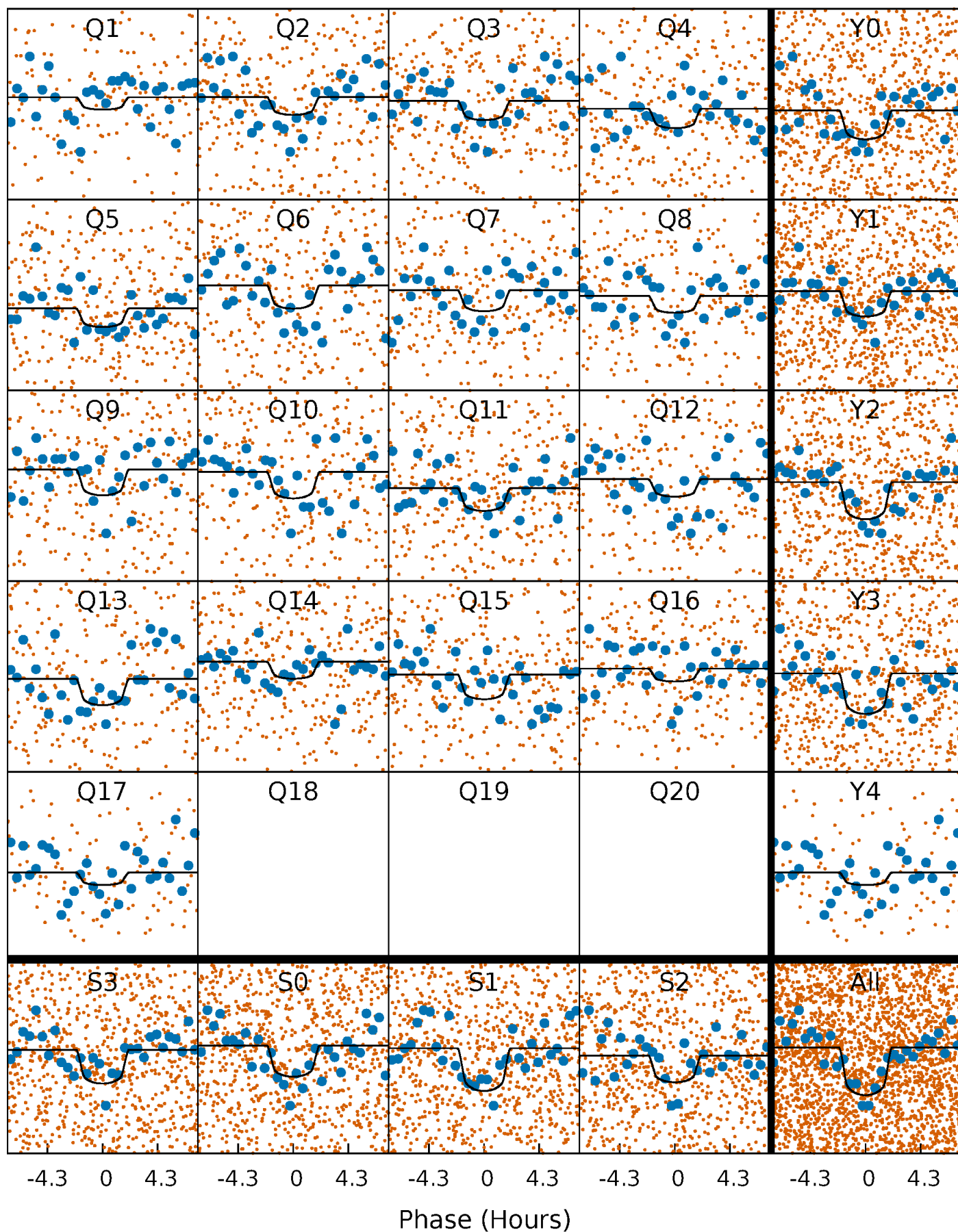
PDC Quarter-Phased Transit Curves

TCE 009474756-02 P= 6.684847 Days $T_0=132.364725$ (BKJD)



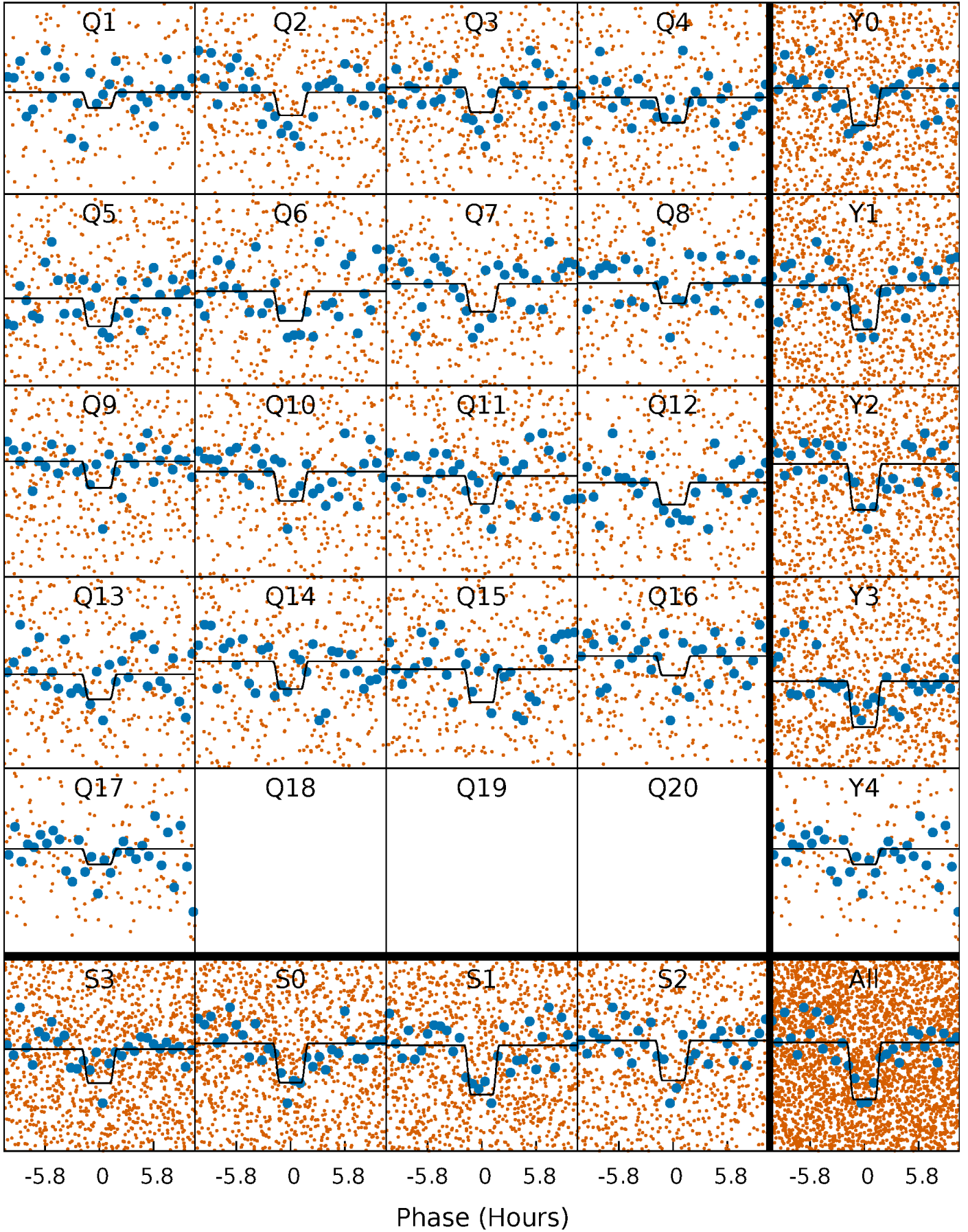
DV Quarter-Phased Transit Curves

TCE 009474756-02 P= 6.684847 Days $T_0=132.364725$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

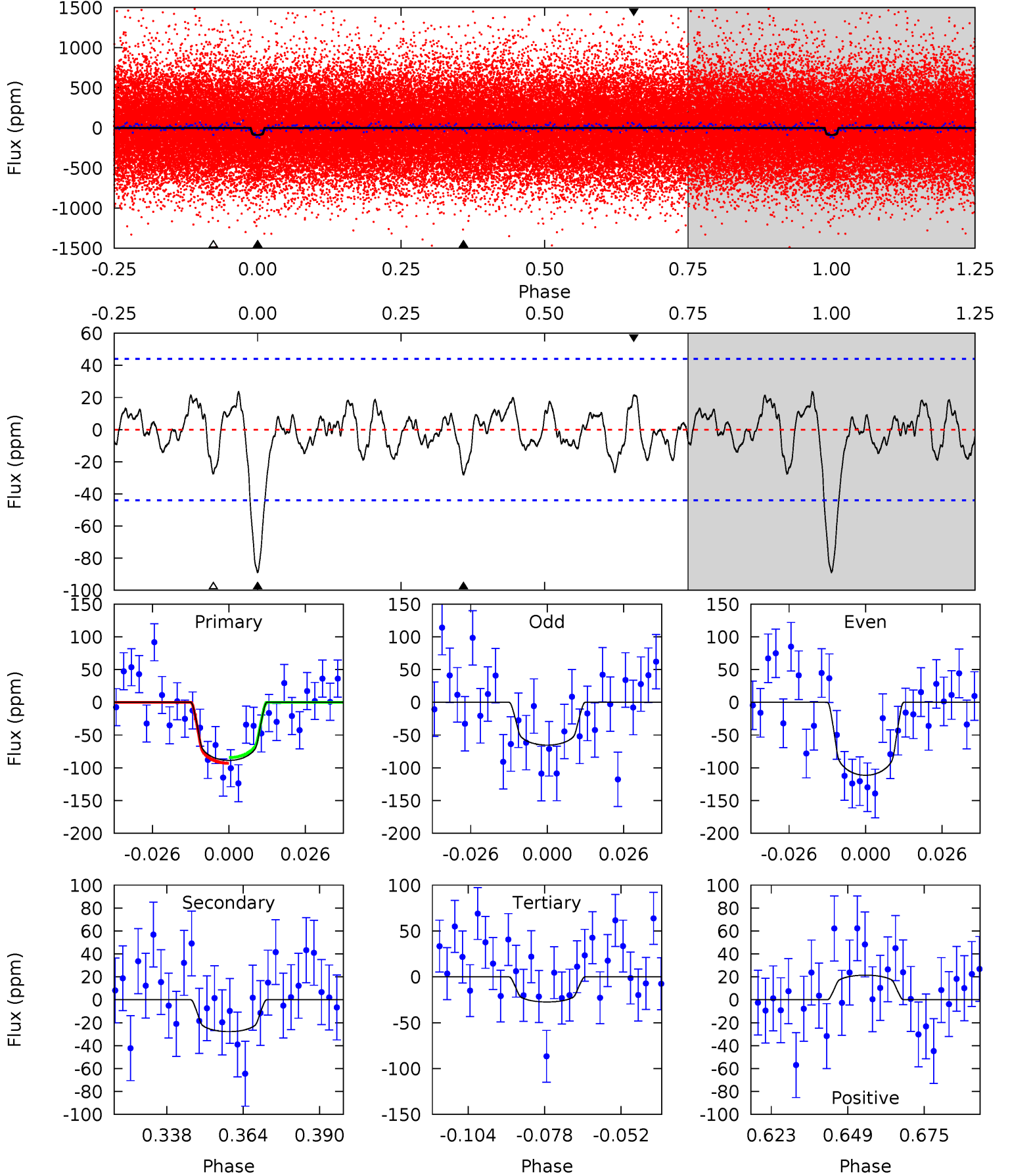
TCE 009474756-02 P= 6.684876 Days $T_0=132.359306$ (BKJD)



DV Model-Shift Uniqueness Test

009474756-02, P = 6.684847 Days, E = 125.679878 Days

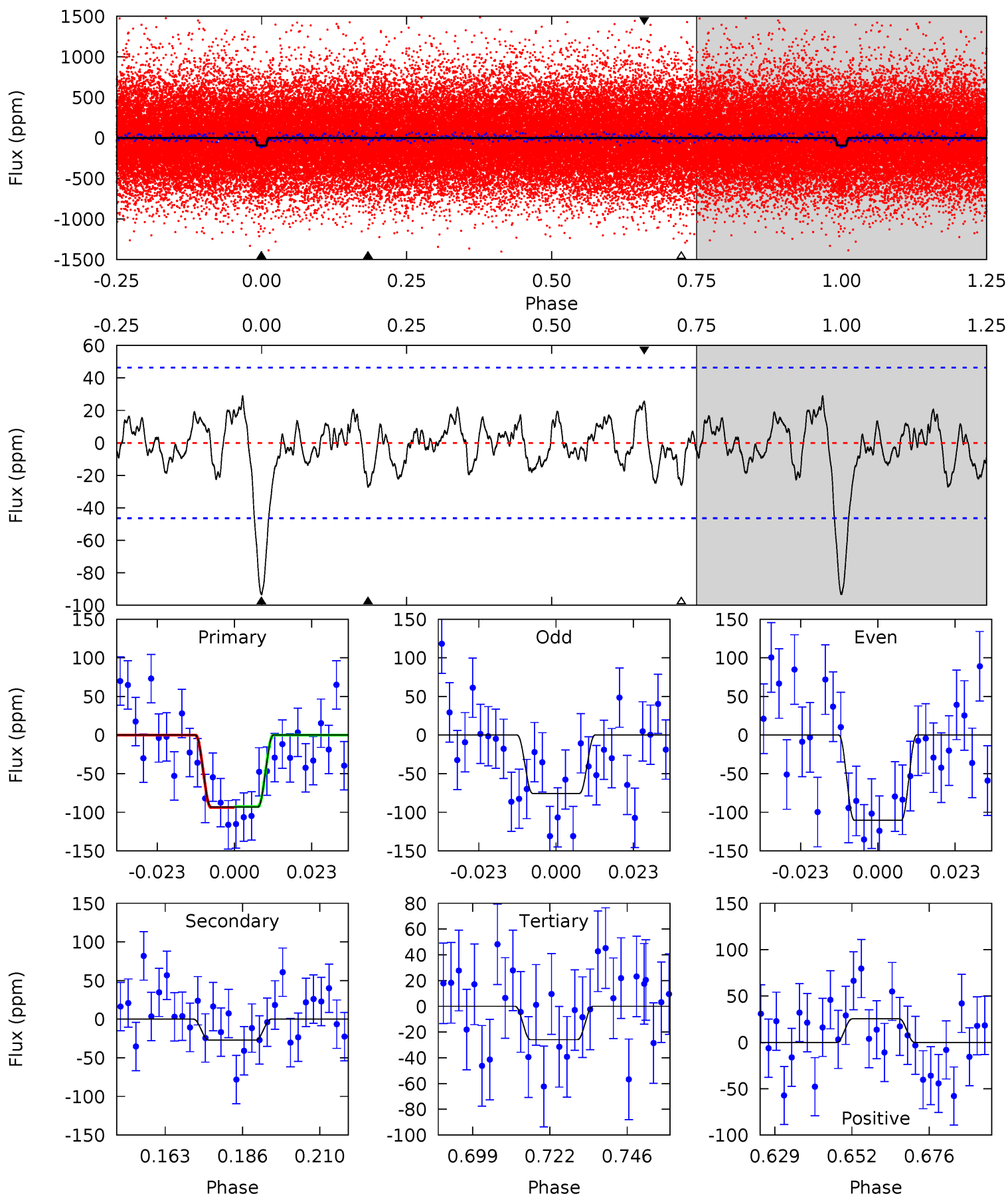
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.76	3.06	3.02	2.36	4.84	2.23	1.13	6.74	7.40	0.04	0.70	2.54	0.91	0.21	0.48



Alt Model-Shift Uniqueness Test

009474756-02, P = 6.684876 Days, E = 125.674430 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.77	2.84	2.71	2.66	4.86	2.27	1.15	7.06	7.11	0.13	0.18	1.83	0.97	0.24	0.06



Stellar Parameters For KIC 009474756

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5808^{+78}_{-78}	$4.326^{+0.110}_{-0.110}$	$0.160^{+0.150}_{-0.150}$	$1.159^{+0.185}_{-0.151}$	$1.038^{+0.073}_{-0.066}$	$0.938^{+0.456}_{-0.305}$
	+1%/-1%	+3%/-3%	+94%/-94%	+16%/-13%	+7%/-6%	+49%/-33%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009474756-02 / KOI 3495.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-28 ± 9	$1.48^{+0.85}_{-0.86}$	1455^{+61}_{-57}	4152^{+1834}_{-670}	35^{+175}_{-23}
Alt.	-27 ± 10	$1.41^{+0.92}_{-0.81}$	1455^{+60}_{-57}	4204^{+1755}_{-720}	36^{+160}_{-24}

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 $A_{obs} \gg 1.0$

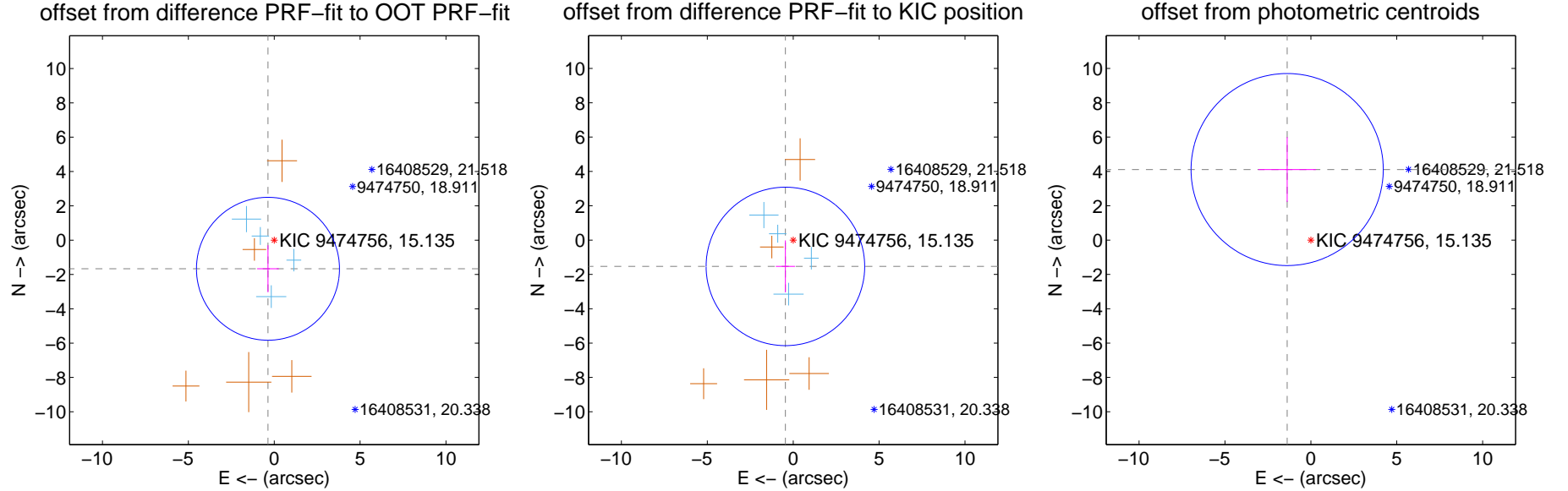
DV Centroid Data

Supplemental centroid analysis for 009474756-02. Kepler magnitude: 15.13. Transit SNR 8.16

There are 4 quarters with good PRF difference image offsets

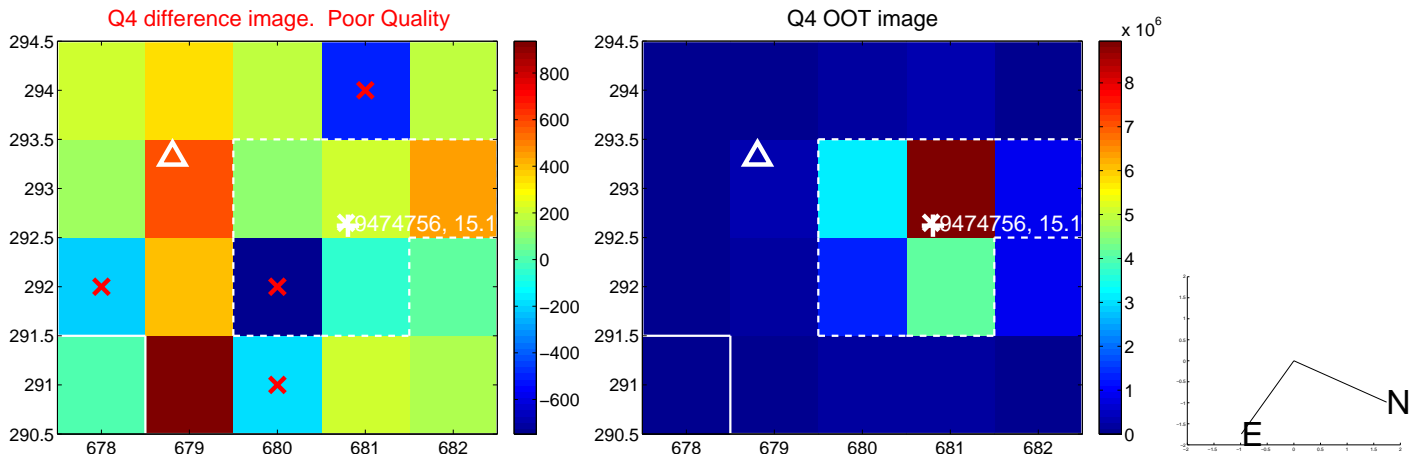
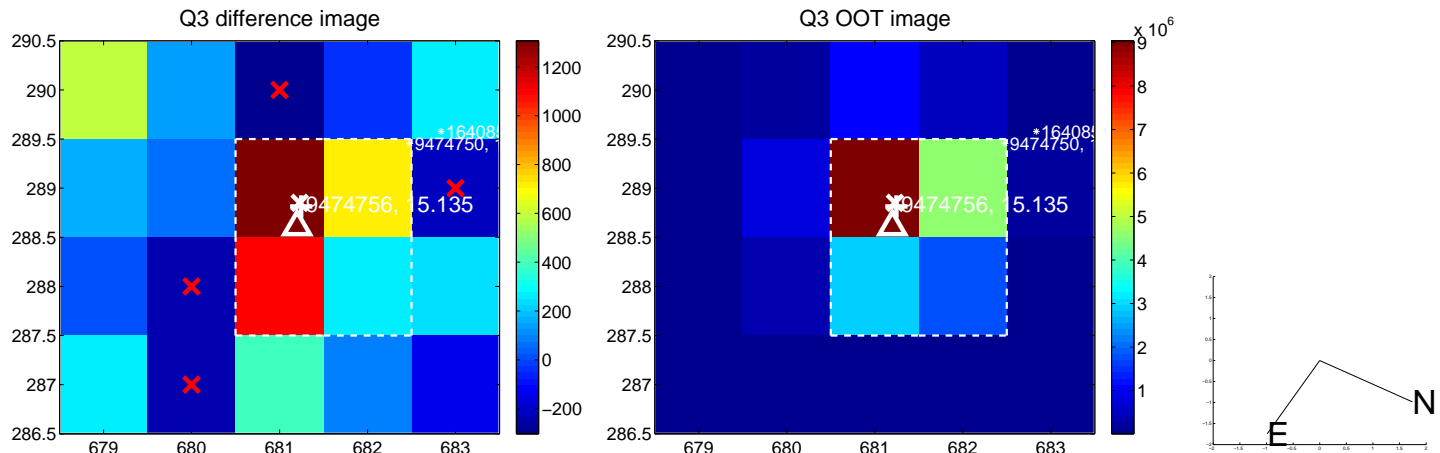
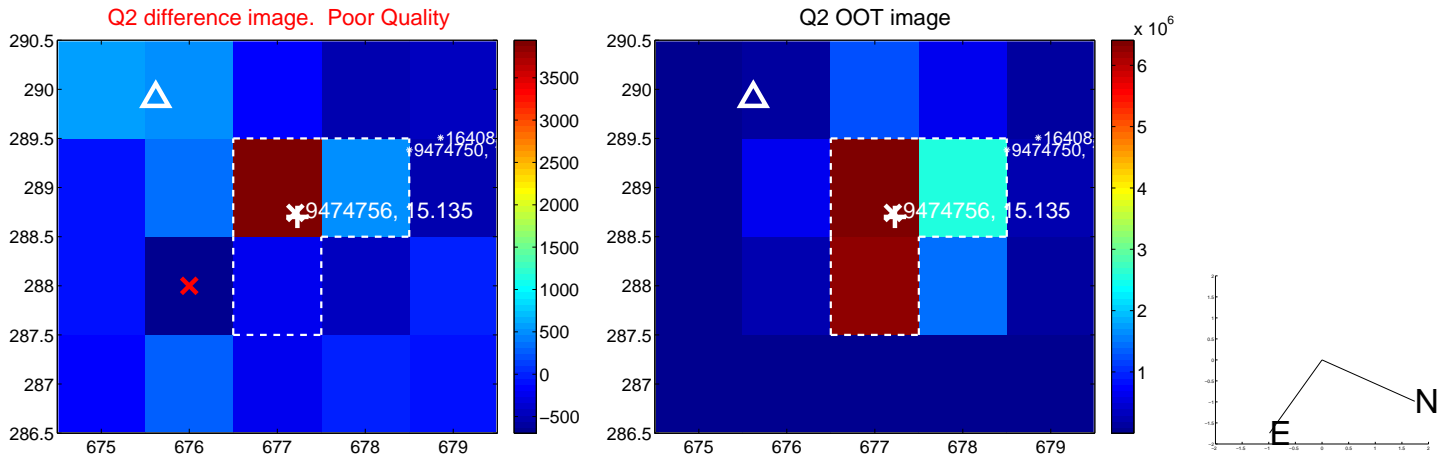
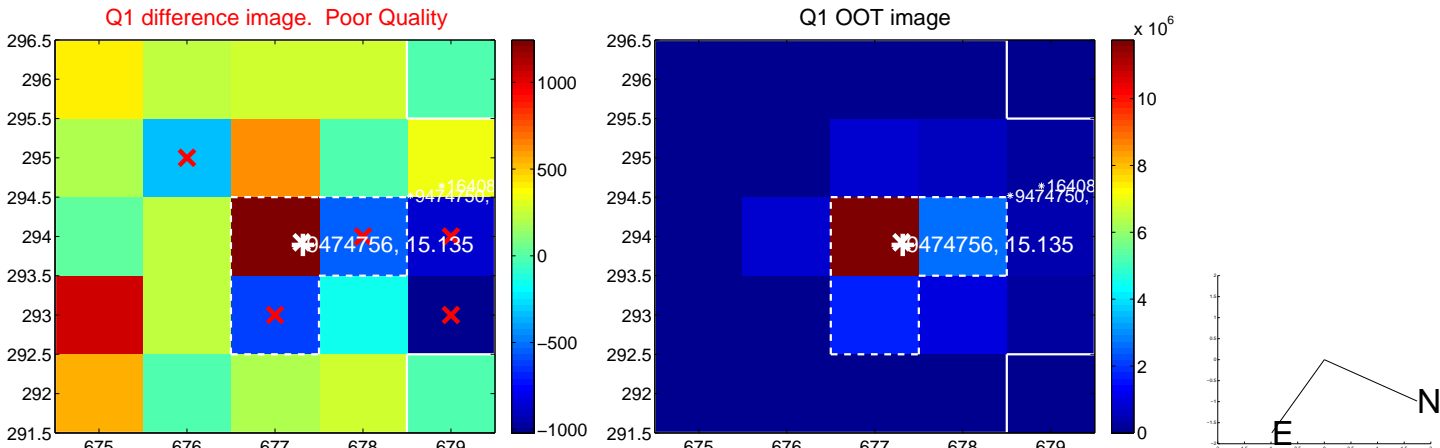
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.707 ± 1.388	1.23	0.364 ± 0.631	-1.668 ± 1.370
PRF-fit source offset from KIC position	1.599 ± 1.538	1.04	0.454 ± 0.560	-1.533 ± 1.516
photometric centroid source offset	4.33 ± 1.86	2.33	1.38 ± 1.67	4.11 ± 1.88

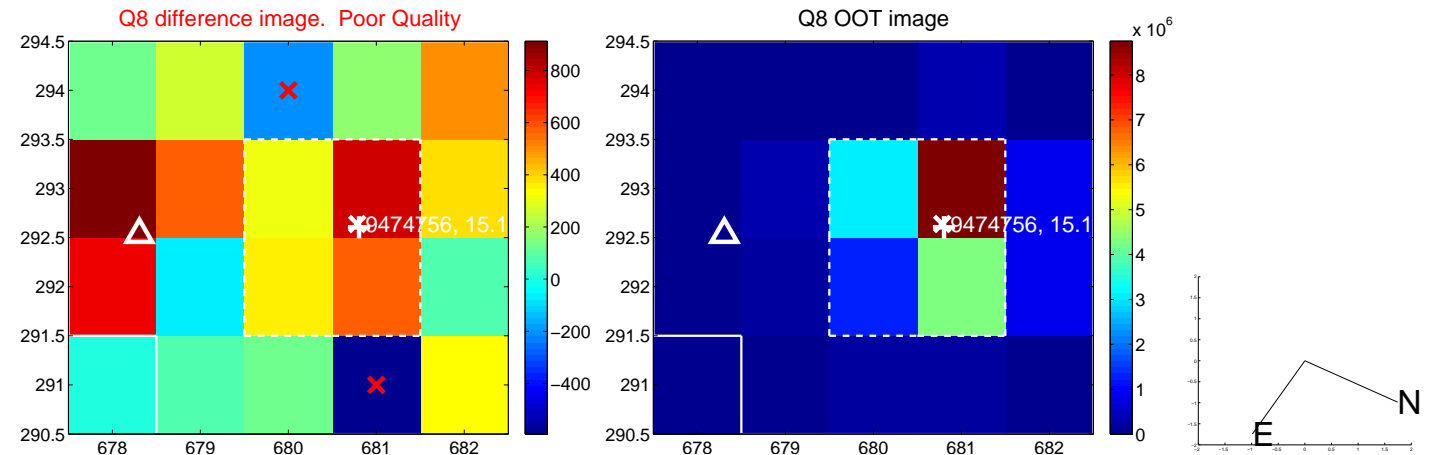
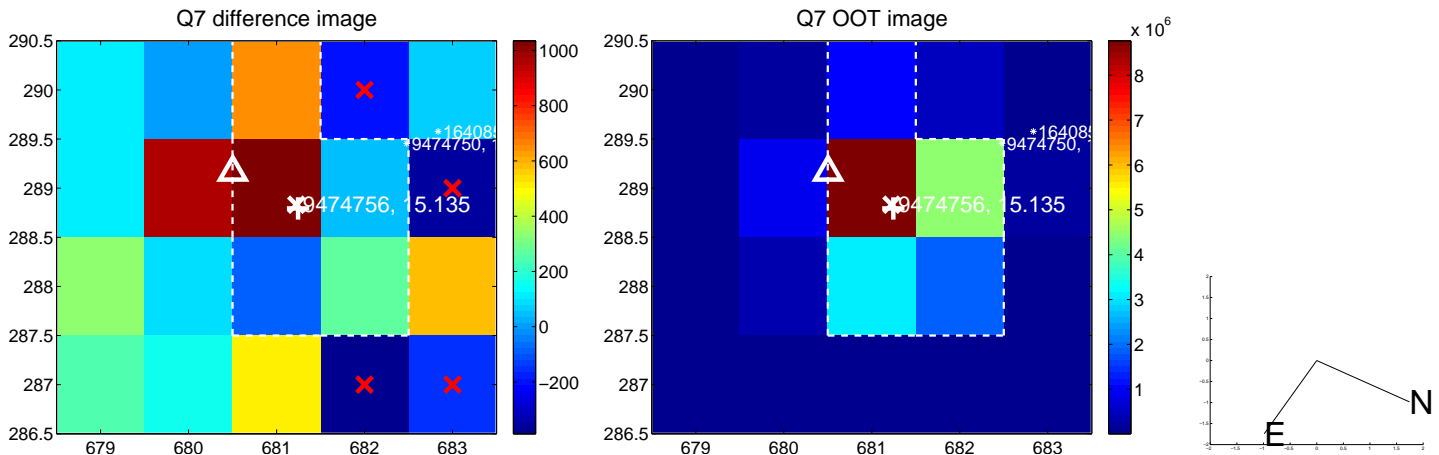
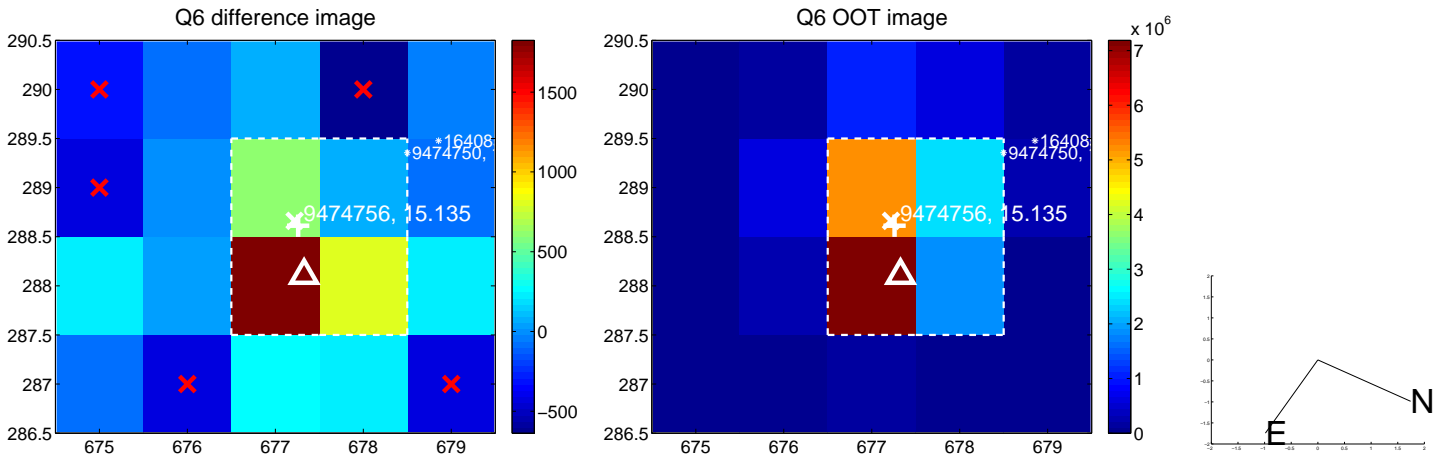
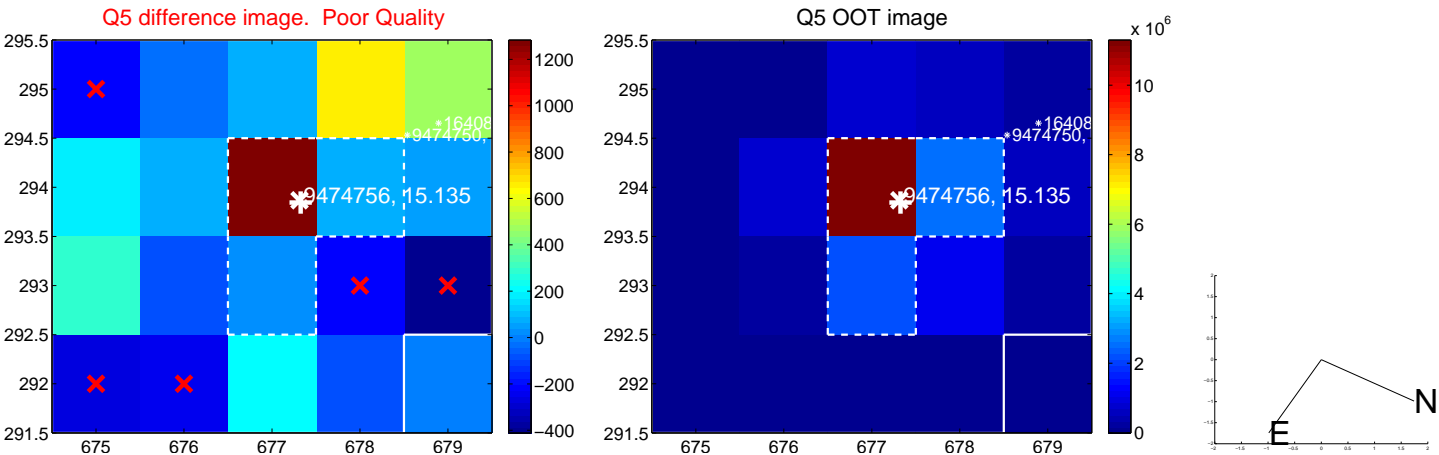


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

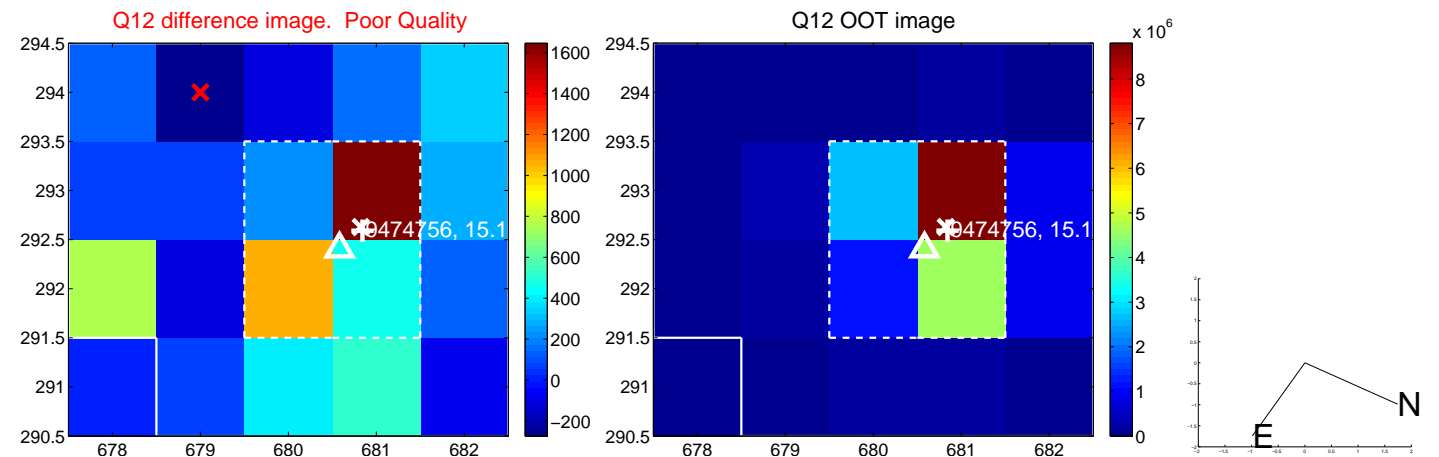
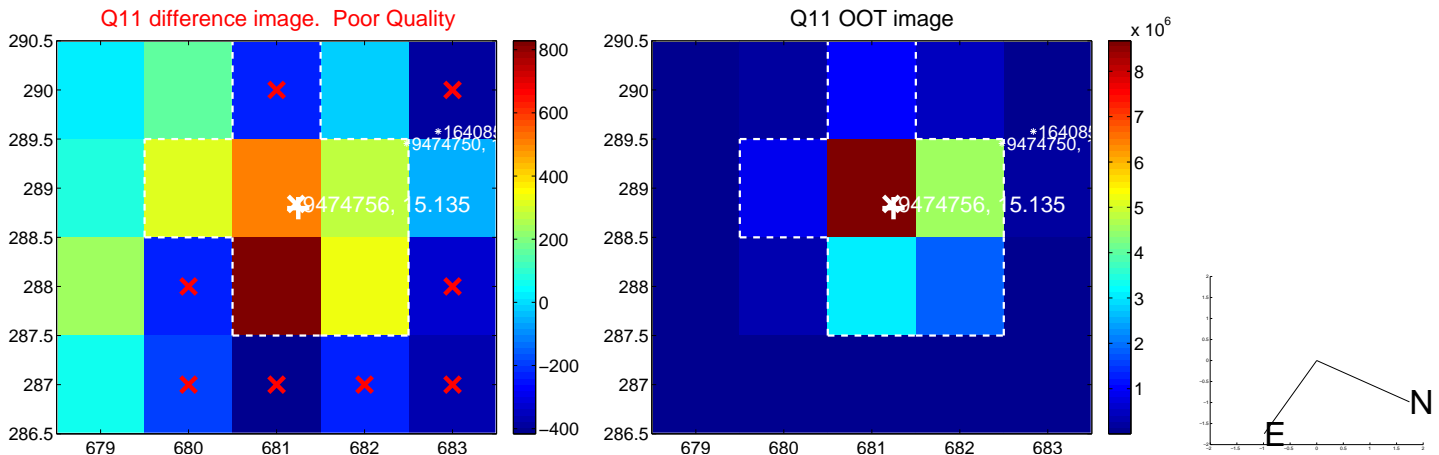
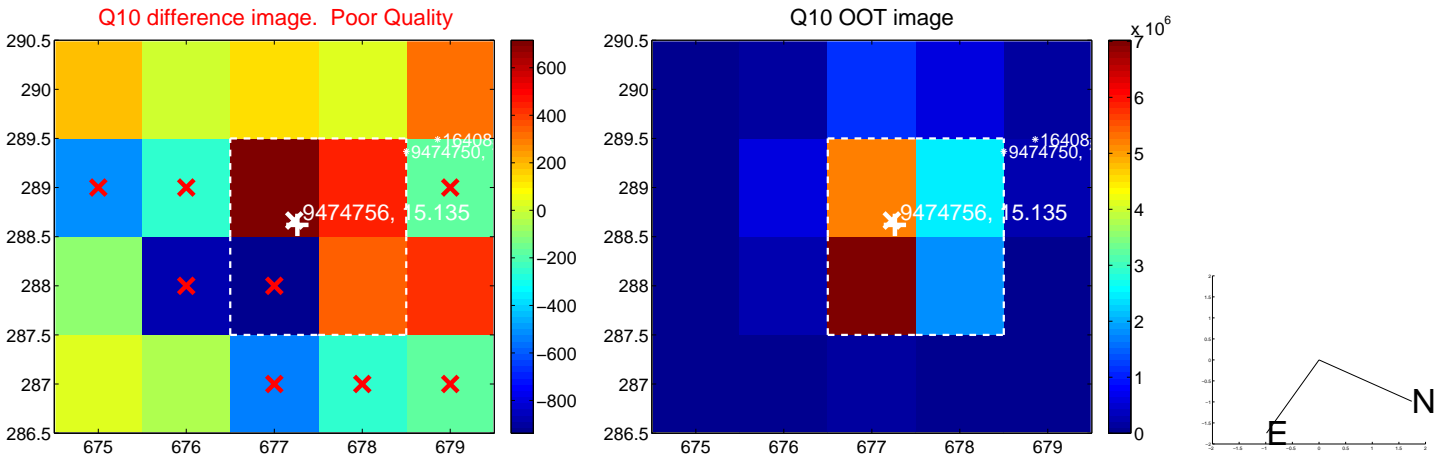
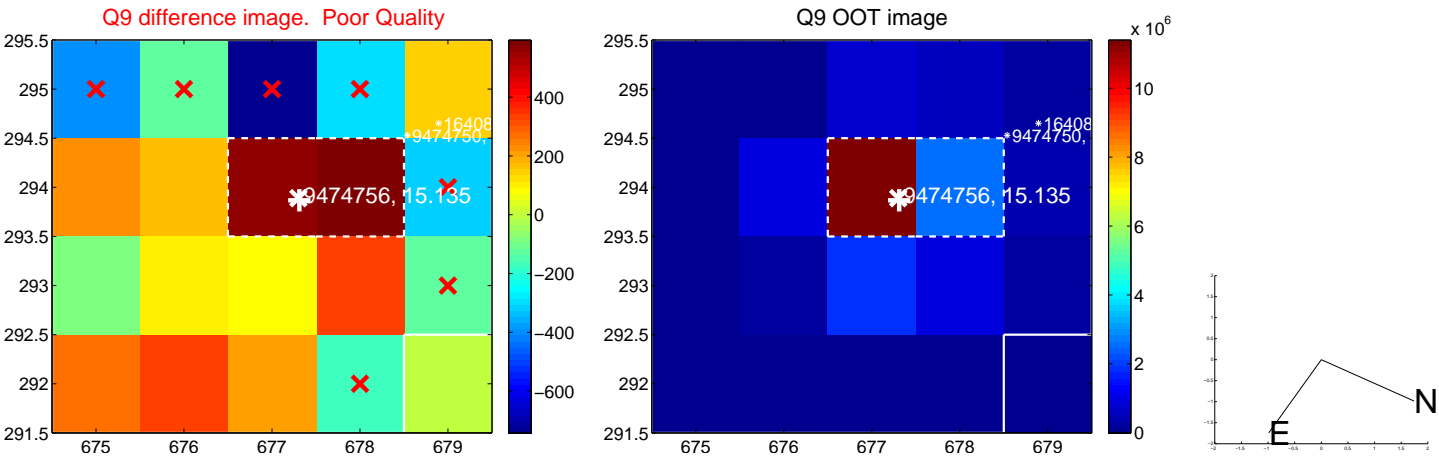
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



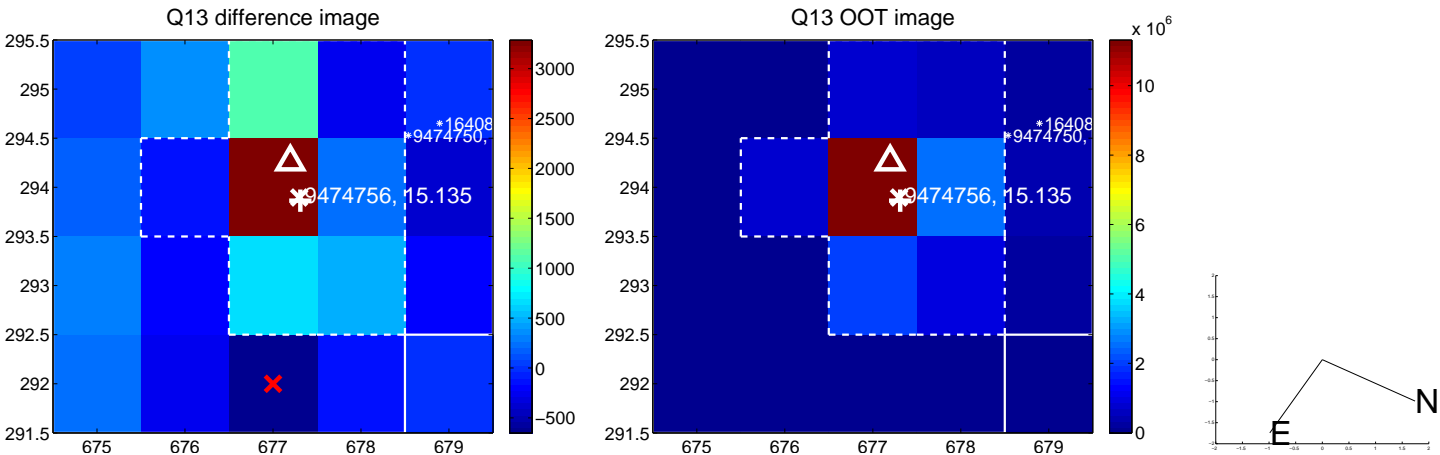
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



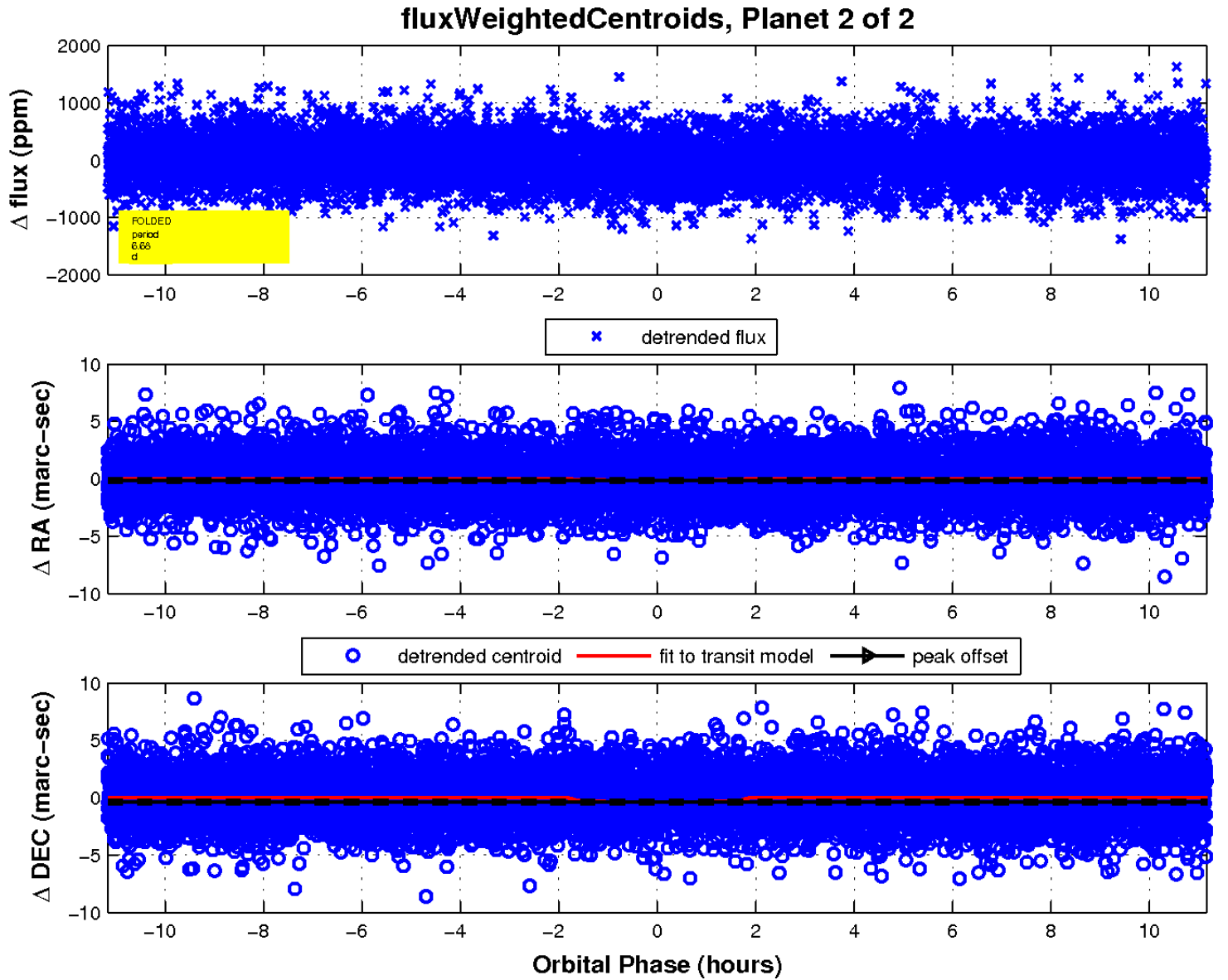
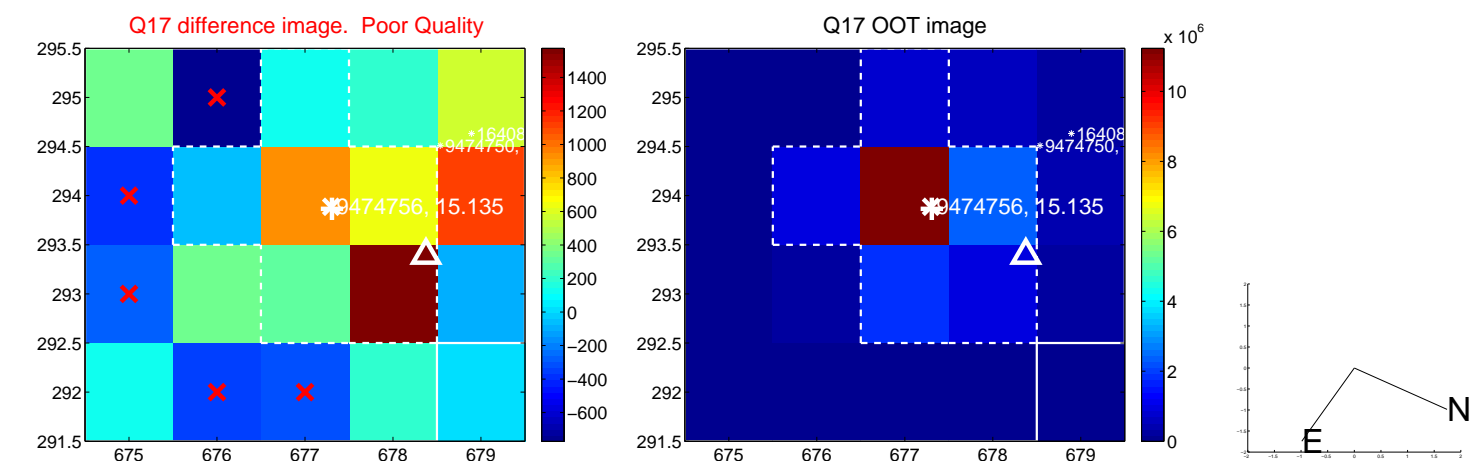
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

