

KIC 007778767

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})
007778767-01	OBS	2523.01	13.031365	144.113341	557.7	4.553	16.7	17.8	1.07	5514	2.92	85.11
007778767-02	OBS	2523.02	2.610888	133.262847	193.6	2.200	9.3	9.6	1.07	5514	1.79	725.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007778767-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007778767-02	OBS	PC	0.76	0	0	0	0	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.

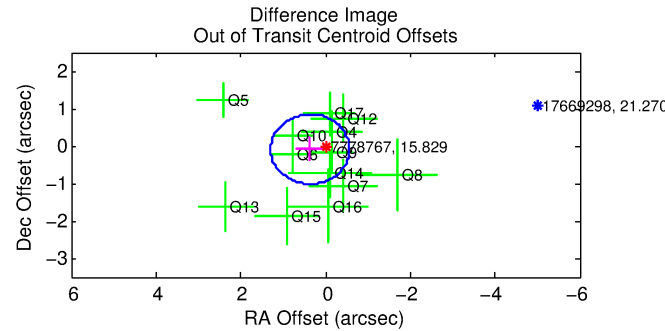
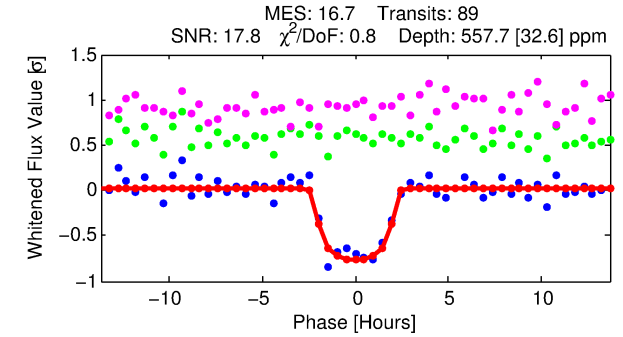
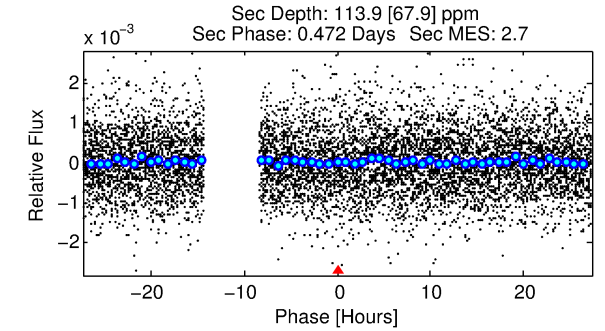
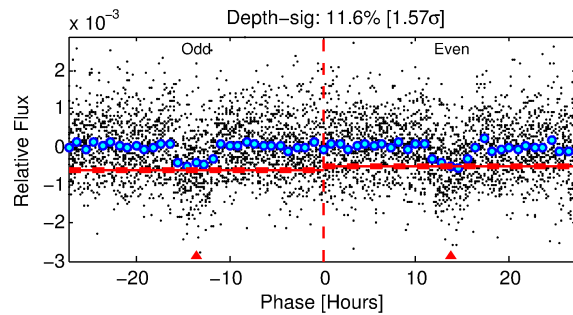
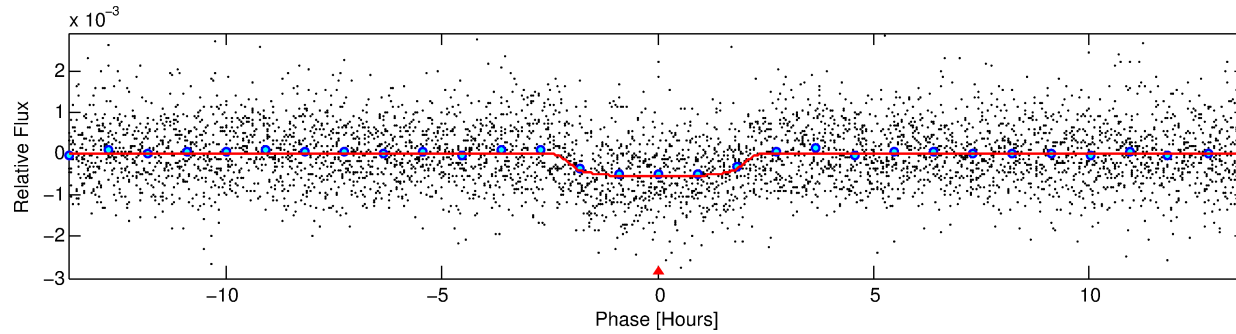
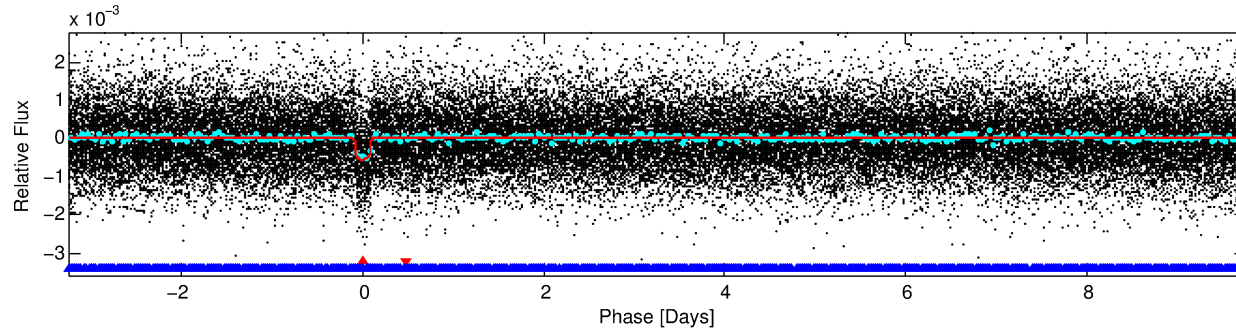
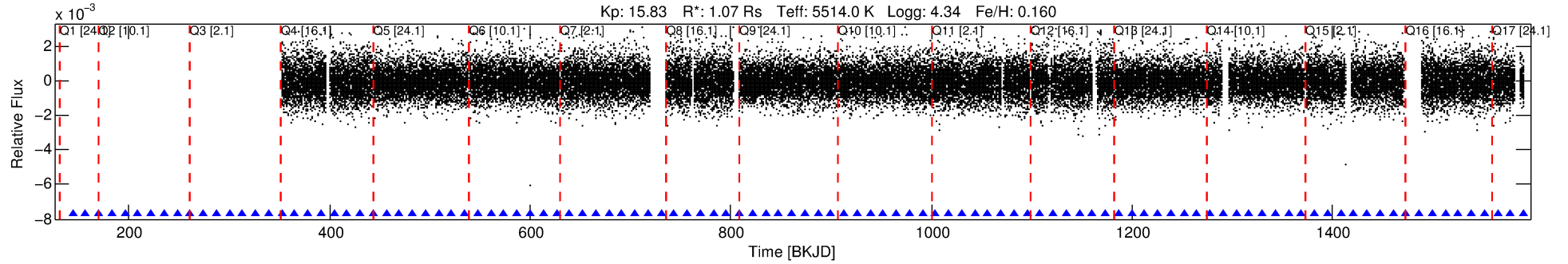
Ephemeris Match Information For 007778767-01

No Significant Match Found

DV One-Page Summary

KIC: 7778767 Candidate: 1 of 2 Period: 13.031 d

KOI: K02523.01 Corr: 0.966



DV Fit Results:

Period = 13.03136 [0.00010] d
Epoch = 144.1133 [0.0069] BKJD
Rp/R* = 0.0250 [0.0058]
a/R* = 12.30 [11.73]
b = 0.86 [0.30]
Seff = 85.11 [19.82]
Teq = 774 [45] K
Rp = 2.92 [0.81] Re
a = 0.1057 [0.0151] AU
Ag = 81.79 [64.45] [1.25 σ]
Teffp = 3601 [681] K [4.14 σ]

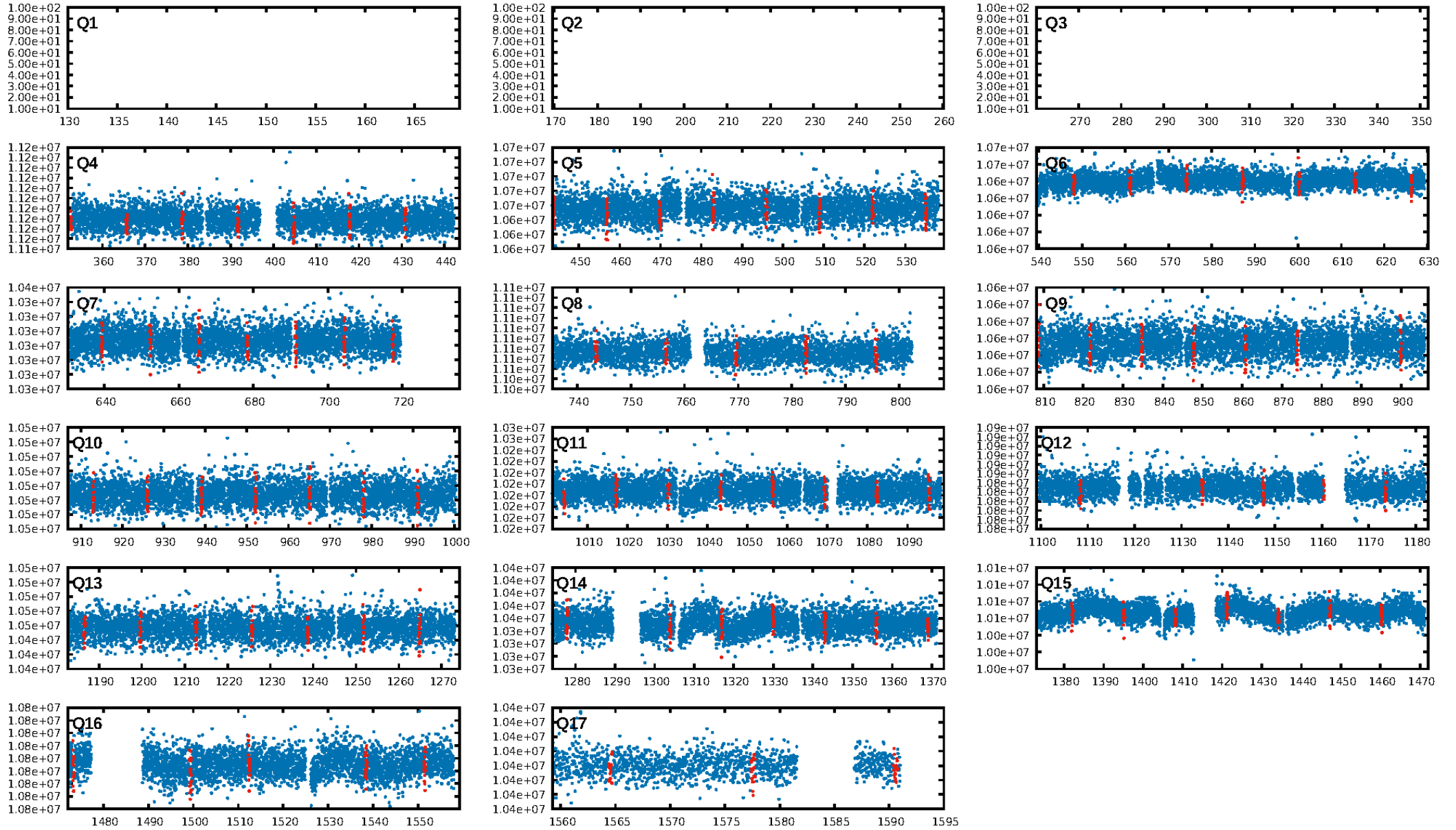
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [49.46 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.32e-59
RollingBand-fgt: 1.00 [86/86]
GhostDiagnostic-chr: 10.05
Centroid-sig: 5.2%
Centroid-so: 0.352 arcsec [0.47 σ]
OotOffset-rm: 0.377 arcsec [1.22 σ]
KicOffset-rm: 0.513 arcsec [1.58 σ]
OotOffset-st: 3/2/4/4 [13]
KicOffset-st: 3/2/4/4 [13]
DiffImageQuality-fgm: 0.69 [9/13]
DiffImageOverlap-fno: 0.79 [11/14]

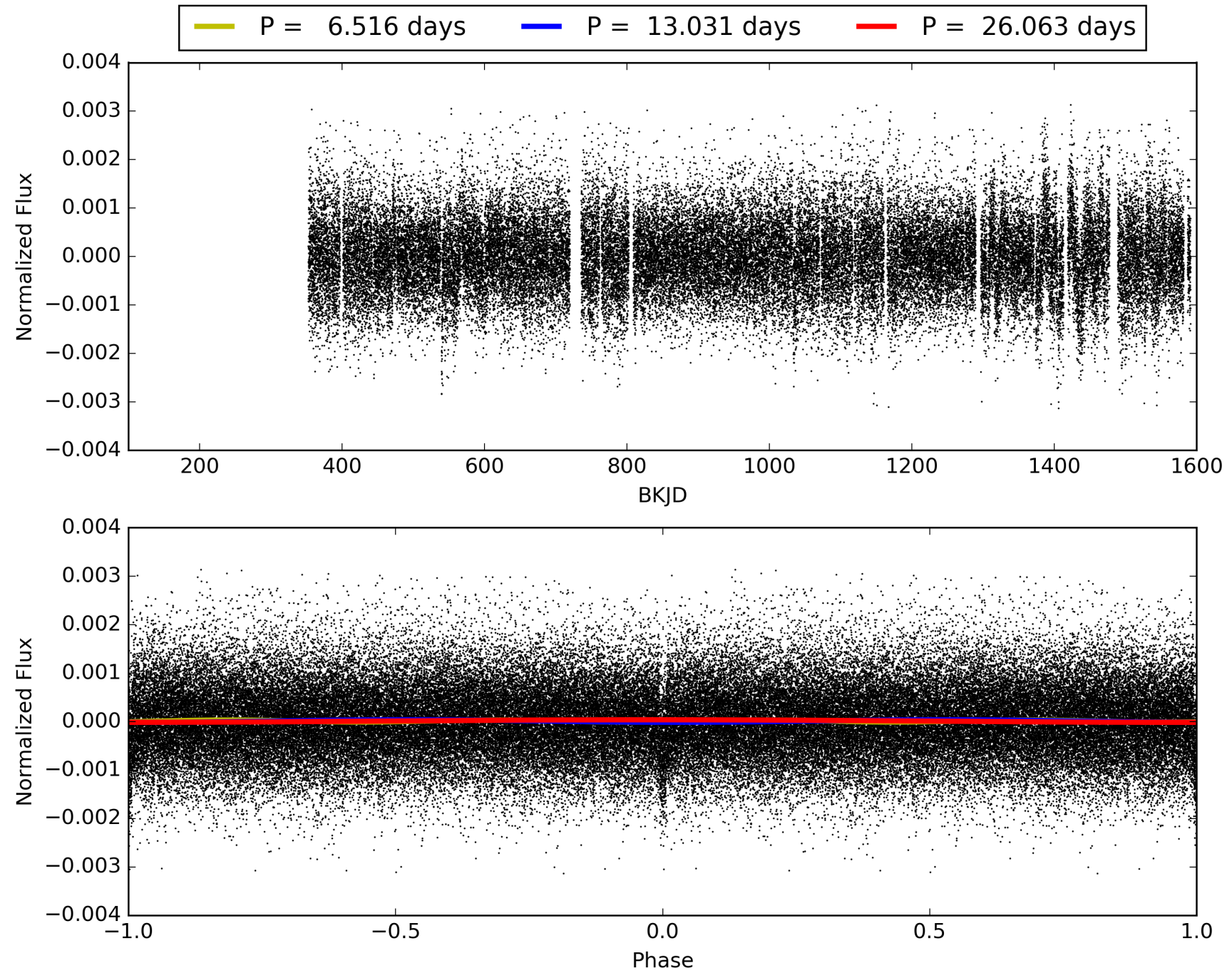
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:10:40 Z

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

TCE 007778767-01, PDC Light Curves

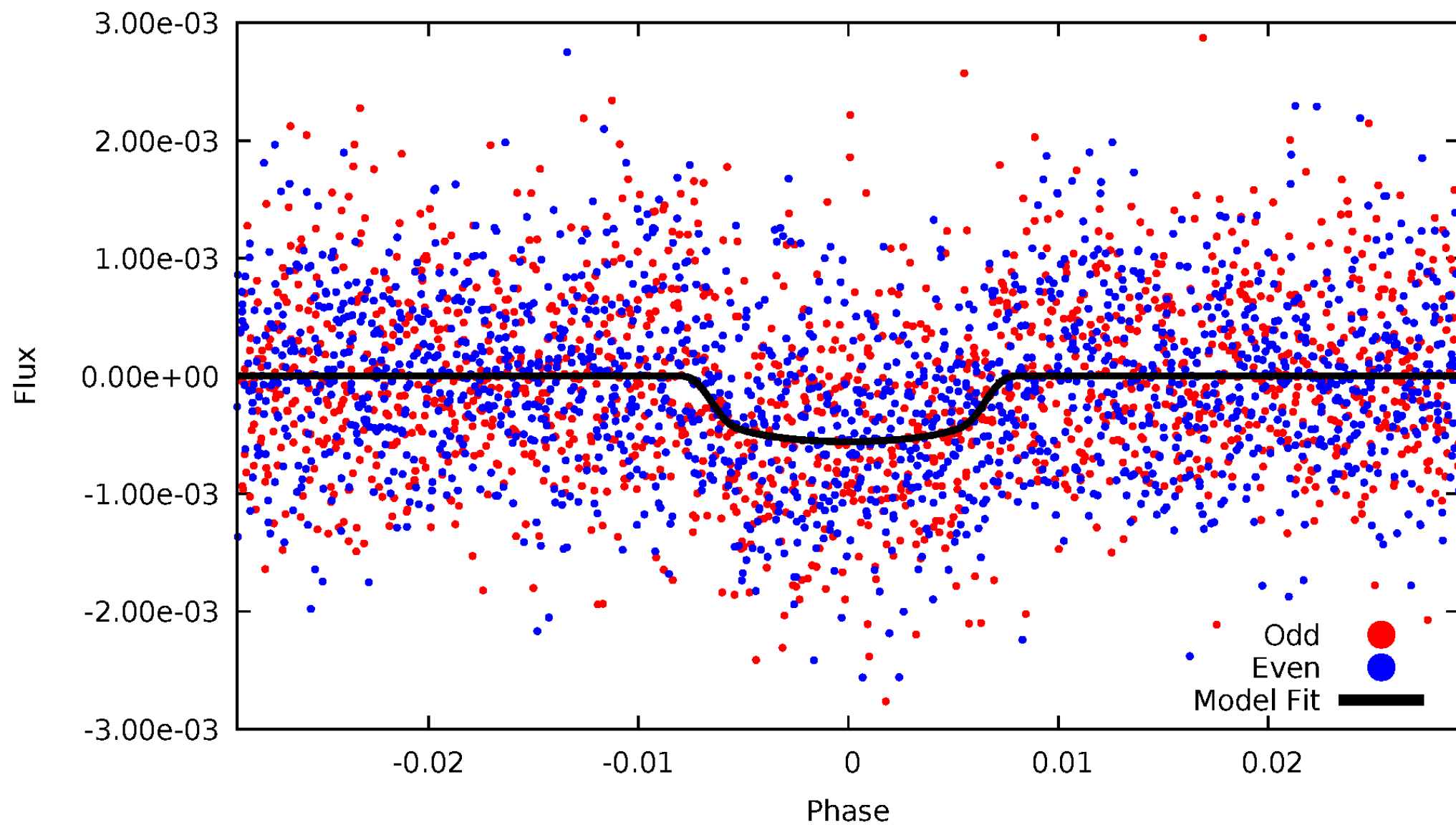


TCE 007778767-01



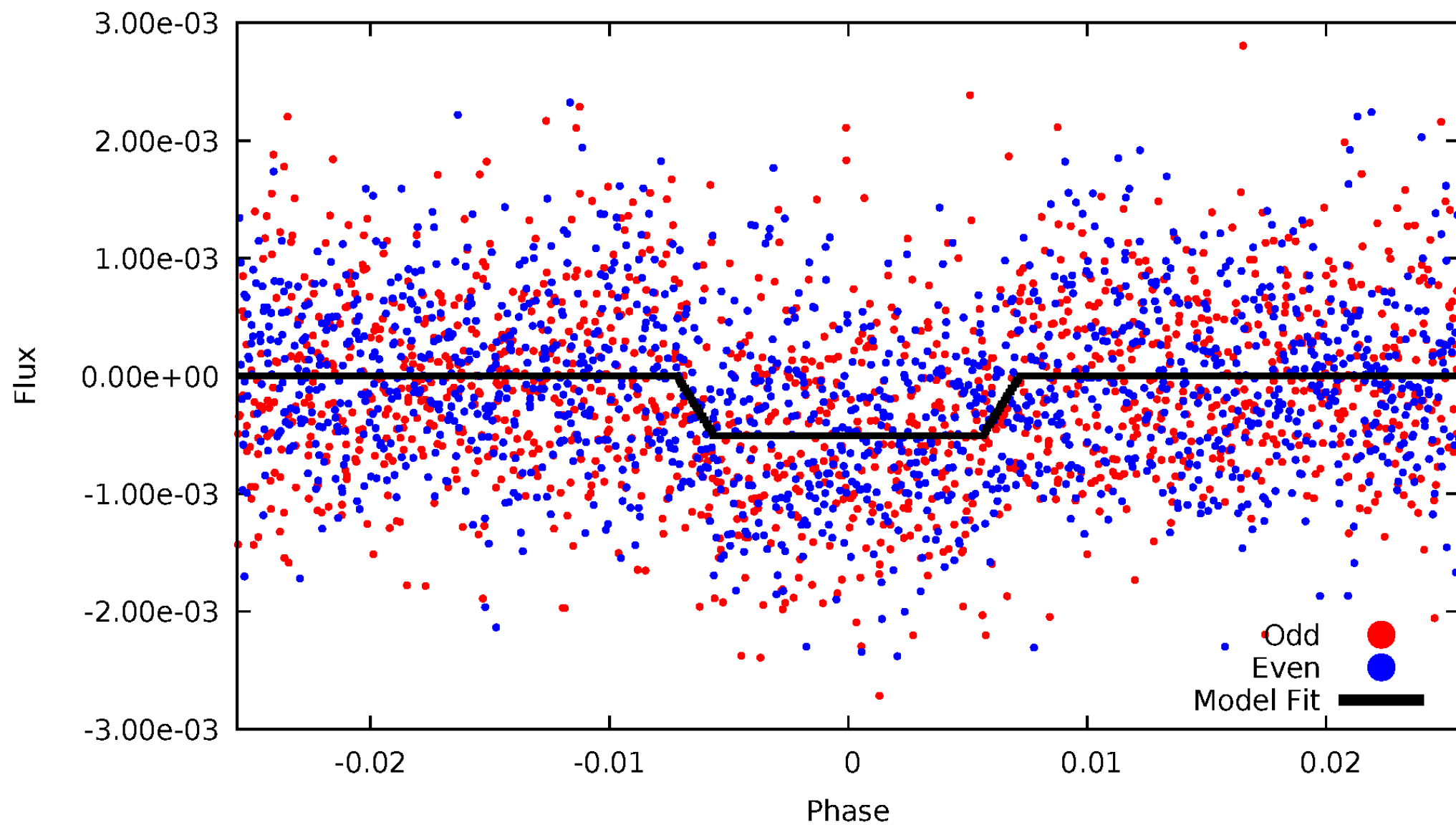
DV Odd/Even

TCE 007778767-01

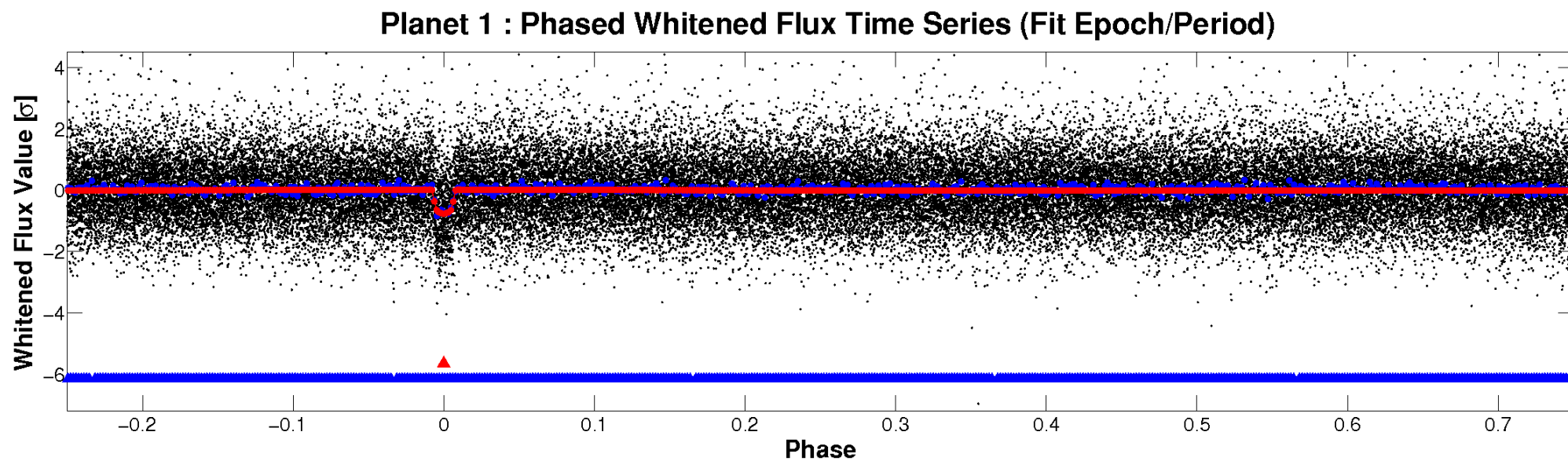
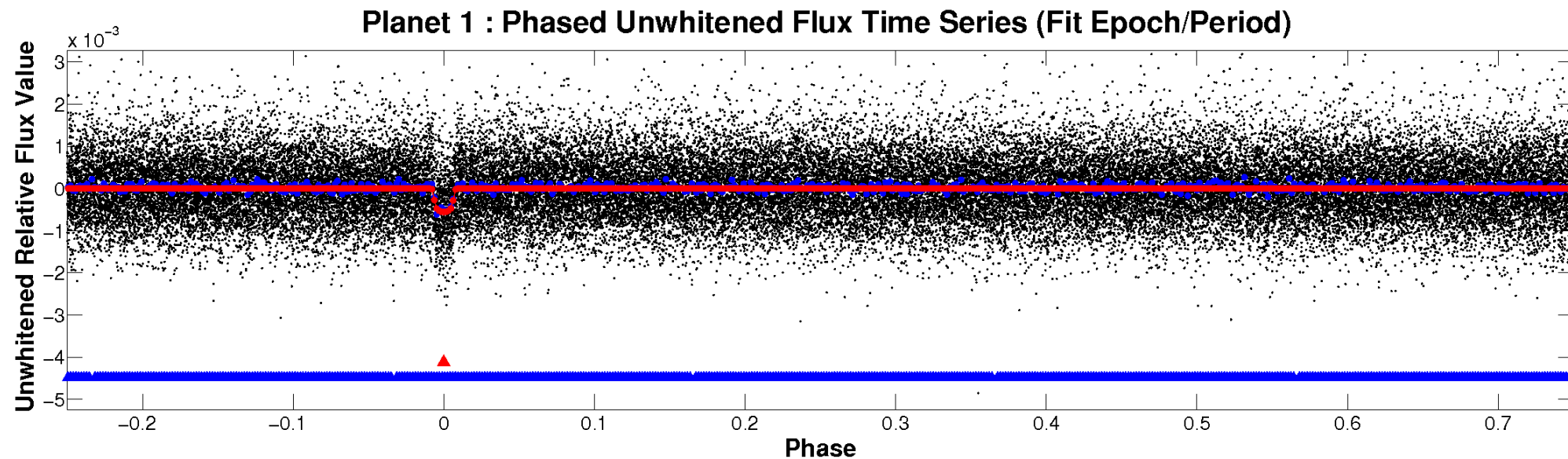


ALT Odd/Even

TCE 007778767-01

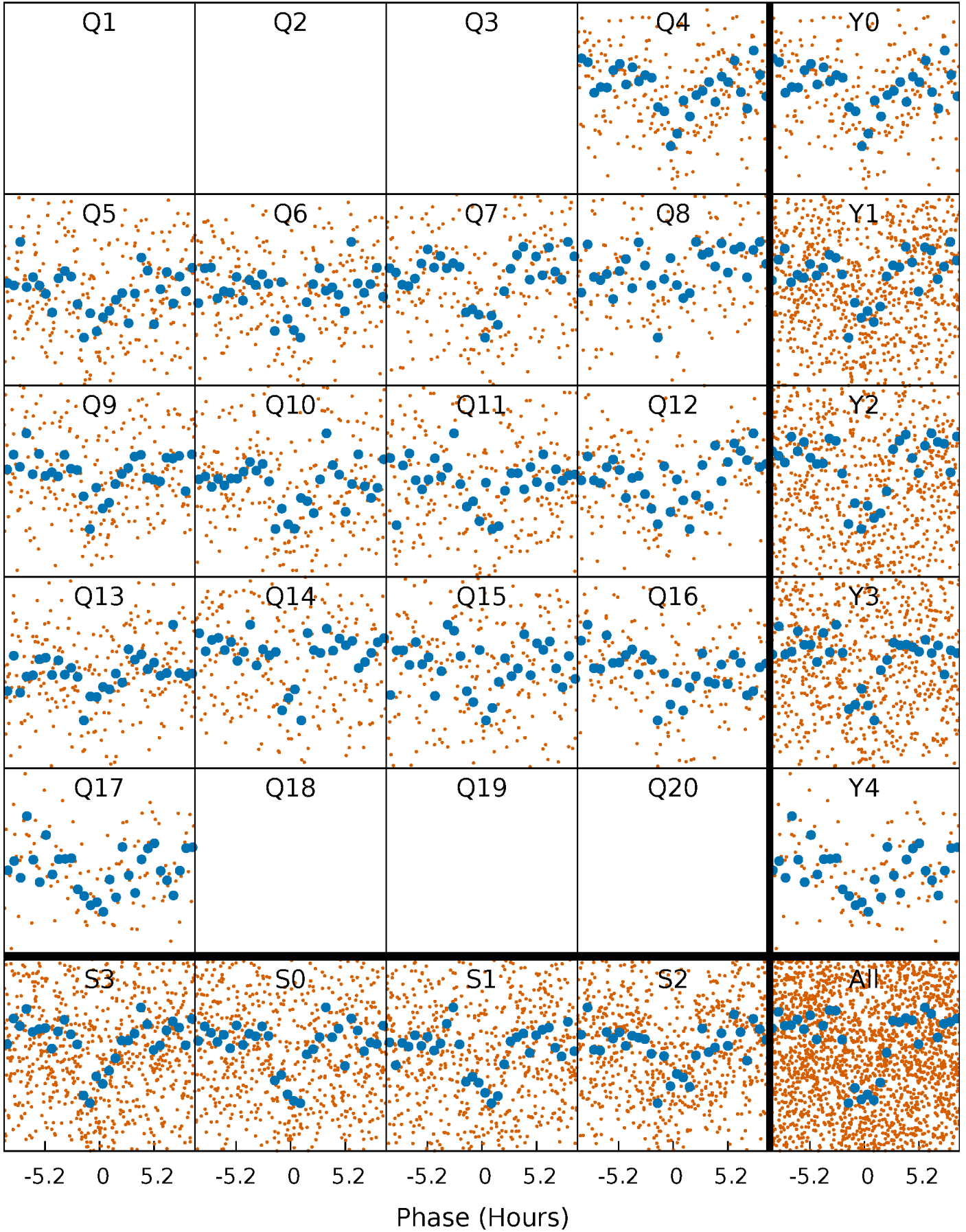


Non-Whitened Vs. Whitened Light Curve



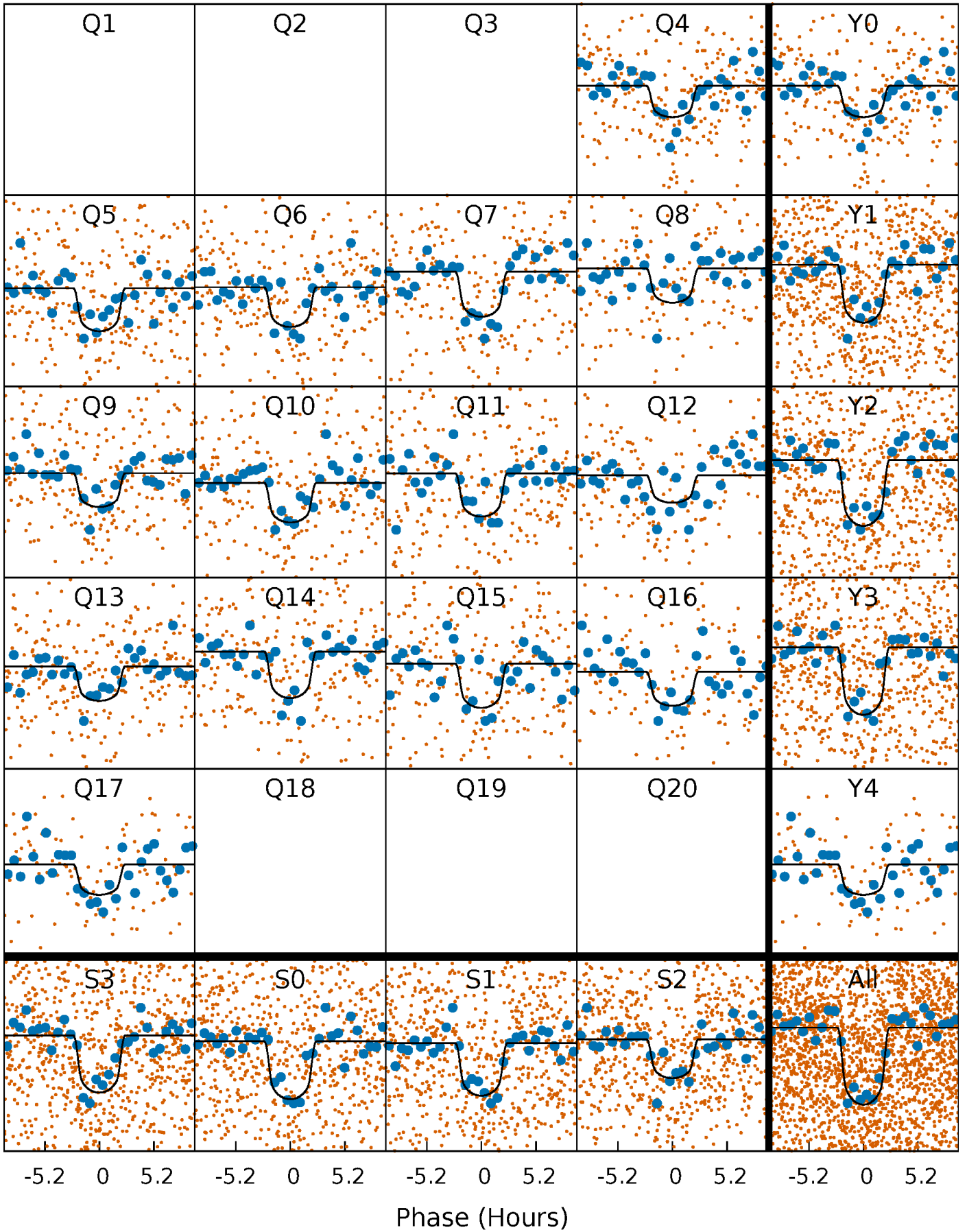
PDC Quarter-Phased Transit Curves

TCE 007778767-01 P= 13.031365 Days $T_0=144.113341$ (BKJD)



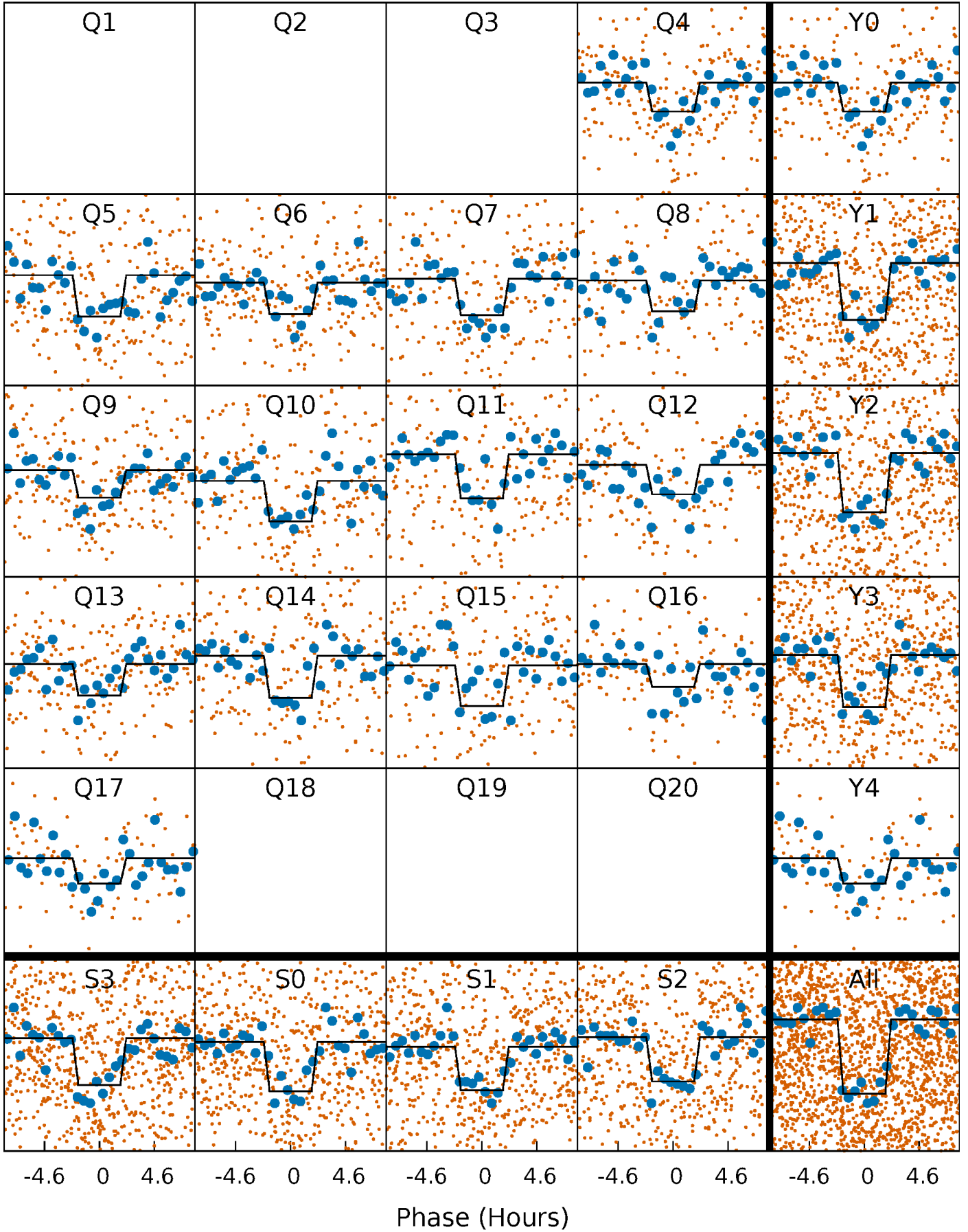
DV Quarter-Phased Transit Curves

TCE 007778767-01 P= 13.031365 Days $T_0=144.113341$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

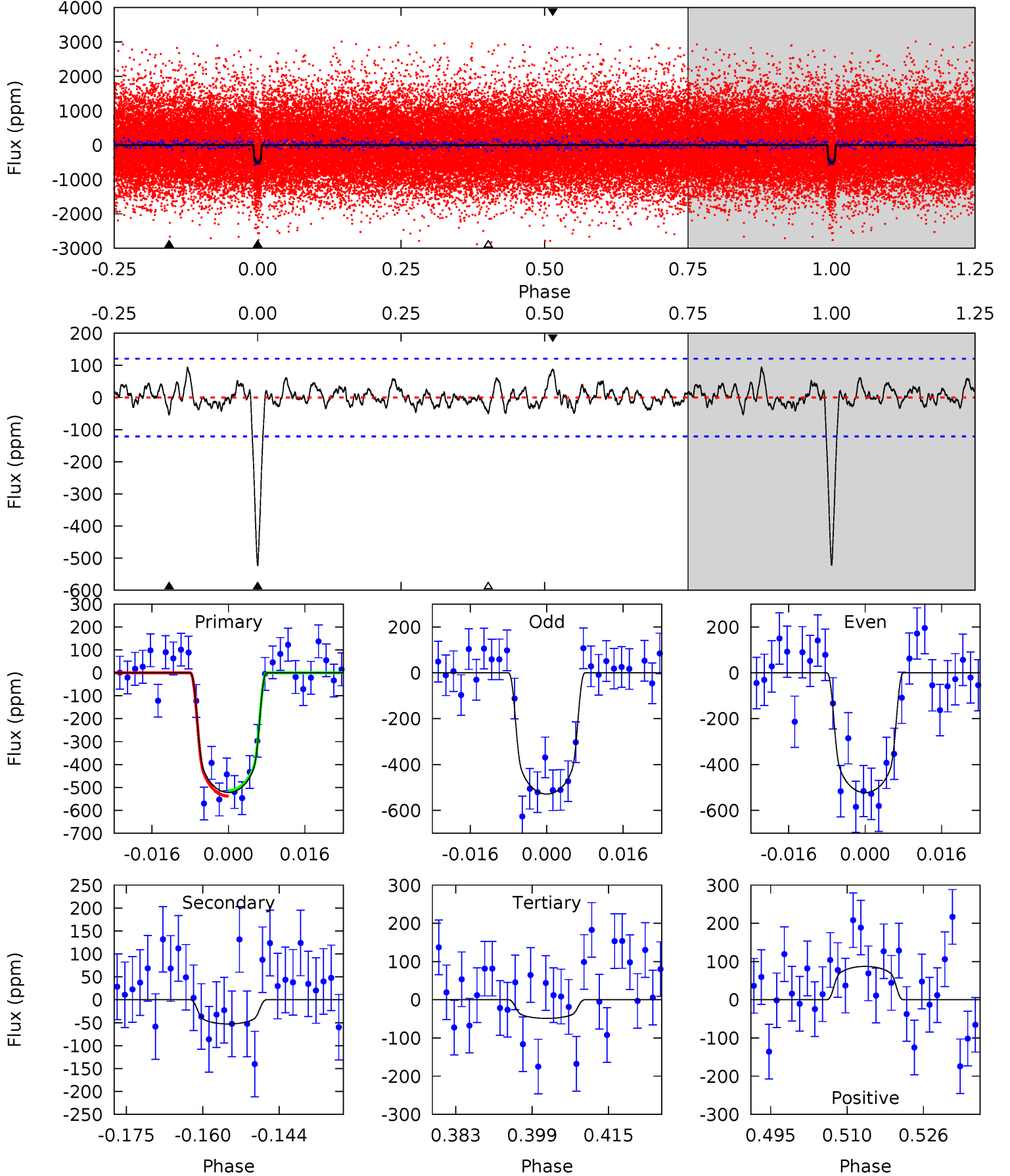
TCE 007778767-01 P= 13.031449 Days $T_0=144.111642$ (BKJD)



DV Model-Shift Uniqueness Test

007778767-01, P = 13.031365 Days, E = 144.113341 Days

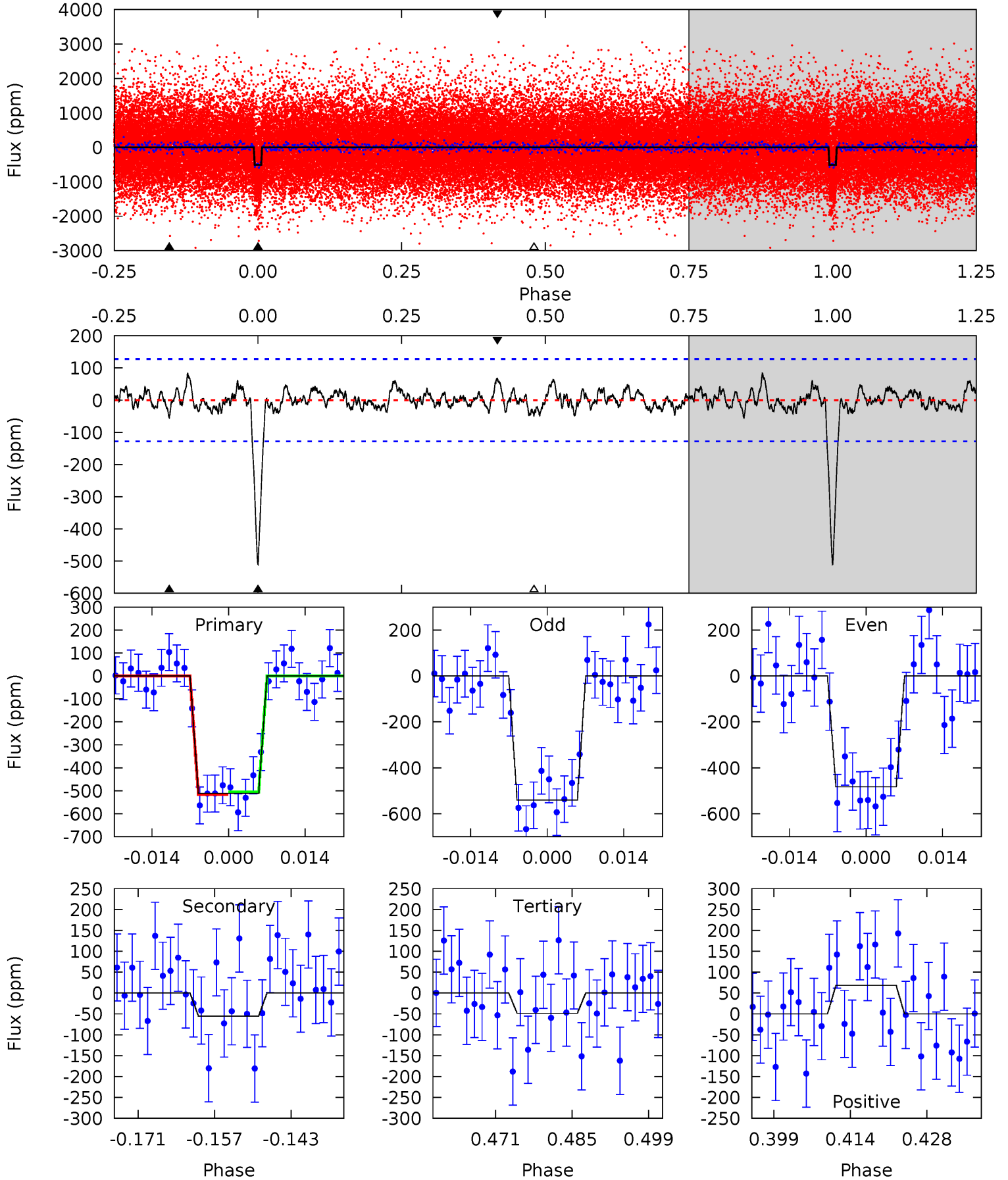
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.3	2.15	1.99	3.57	4.94	2.41	0.99	19.3	17.7	0.16	-1.41	0.13	0.98	0.15	0.49



Alt Model-Shift Uniqueness Test

007778767-01, P = 13.031449 Days, E = 144.111642 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	2.15	1.89	2.65	4.96	2.45	0.90	18.0	17.2	0.26	-0.50	1.11	1.01	0.14	0.22



Stellar Parameters For KIC 007778767

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5514^{+74}_{-74}	$4.345^{+0.132}_{-0.108}$	$0.160^{+0.150}_{-0.150}$	$1.071^{+0.163}_{-0.148}$	$0.926^{+0.062}_{-0.043}$	$1.063^{+0.600}_{-0.327}$
	+1%/-1%	+3%/-2%	+94%/-94%	+15%/-14%	+7%/-5%	+56%/-31%
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 007778767-01 / KOI 2523.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-53 ± 24	$2.92^{+0.74}_{-0.66}$	1081^{+50}_{-48}	3431^{+415}_{-342}	36^{+40}_{-18}
Alt.	-55 ± 26	$2.63^{+0.71}_{-0.69}$	1081^{+43}_{-48}	3571^{+483}_{-419}	48^{+52}_{-27}

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

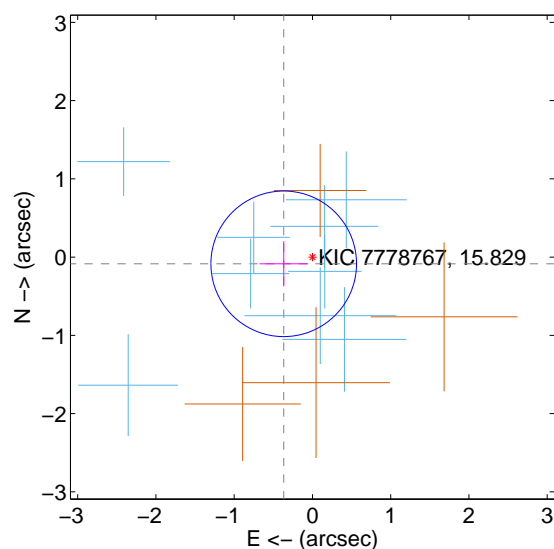
Supplemental centroid analysis for 007778767-01. Kepler magnitude: 15.83. Transit SNR 17.76

There are 9 quarters with good PRF difference image offsets

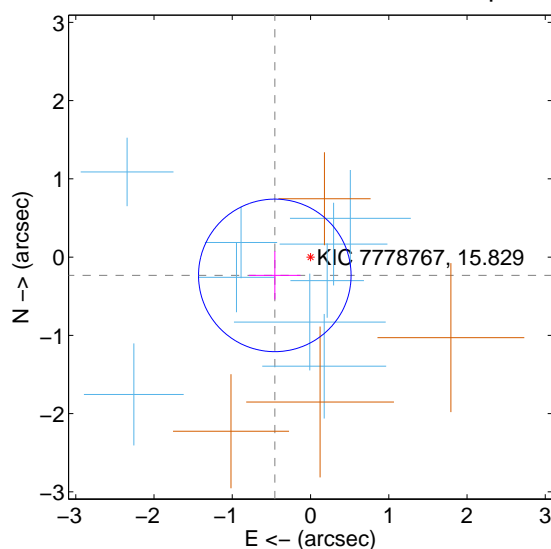
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.377 ± 0.310	1.22	0.367 ± 0.311	-0.086 ± 0.290
PRF-fit source offset from KIC position	0.513 ± 0.325	1.58	0.457 ± 0.329	-0.234 ± 0.309
photometric centroid source offset	0.35 ± 0.74	0.47	0.30 ± 0.73	0.18 ± 0.78

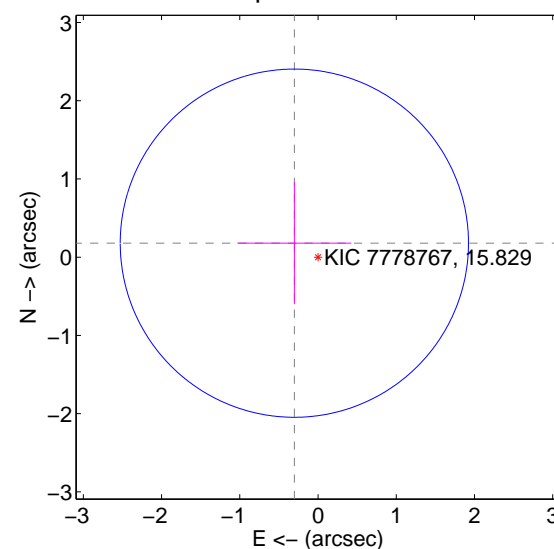
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

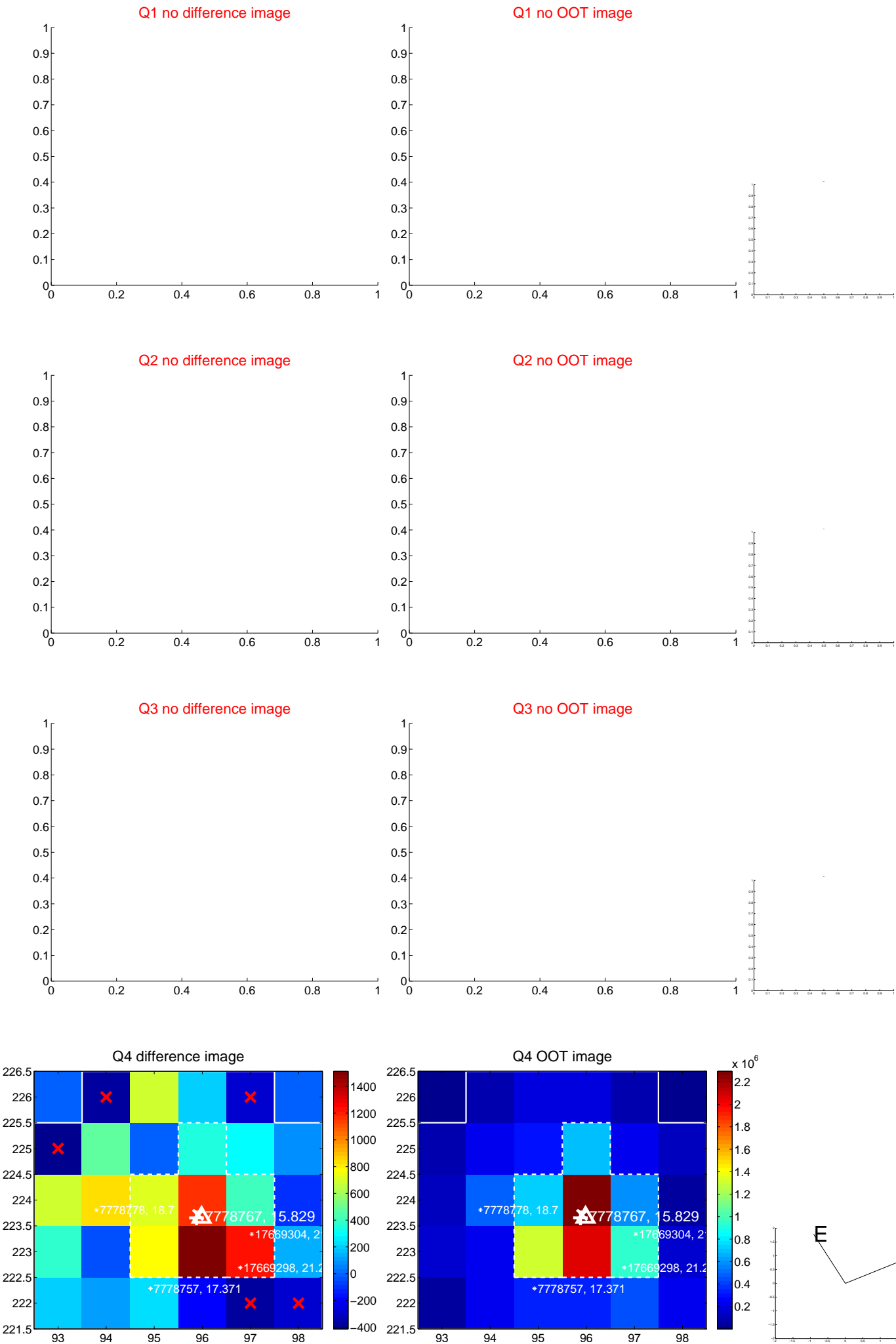


offset from photometric centroids

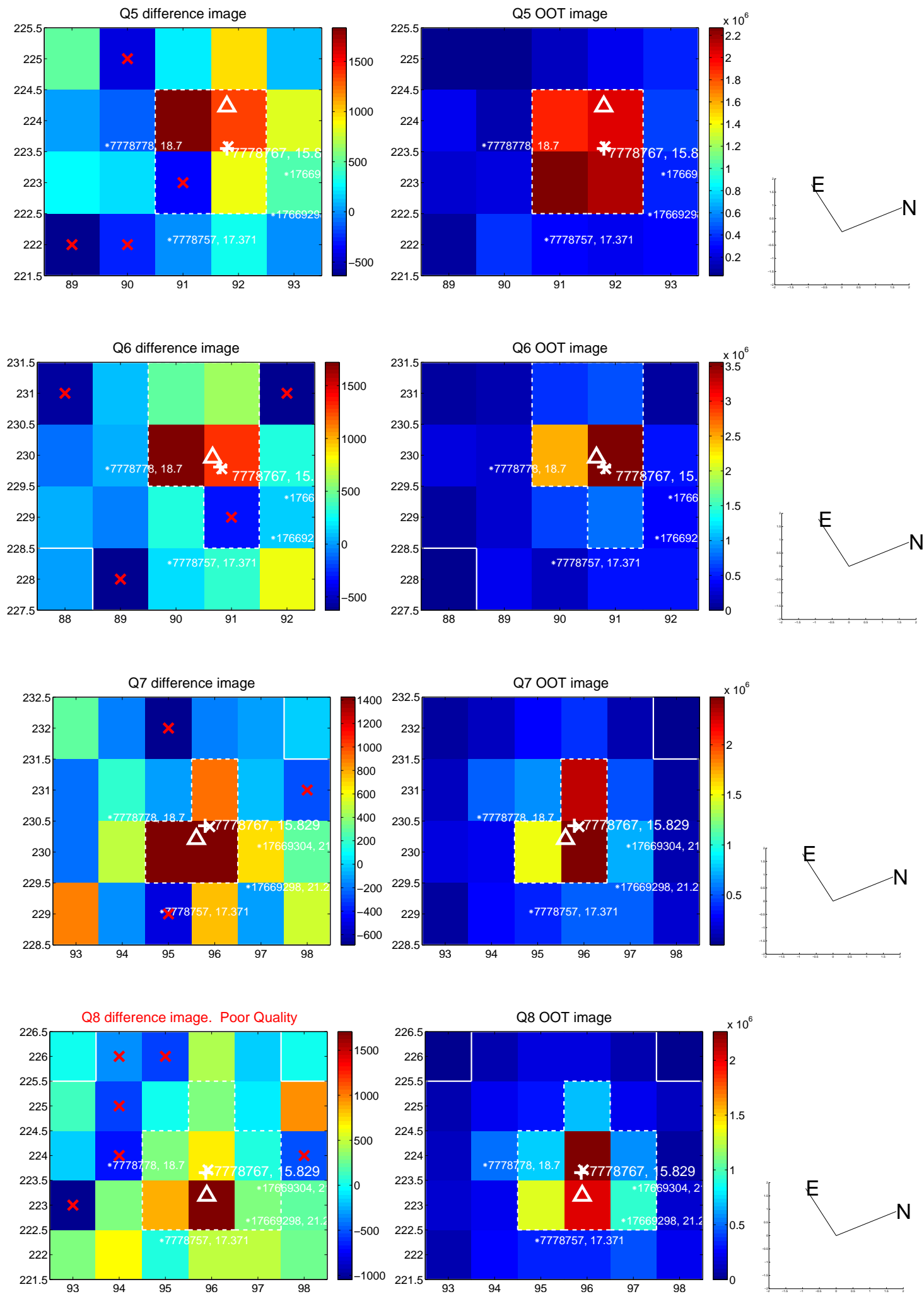


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

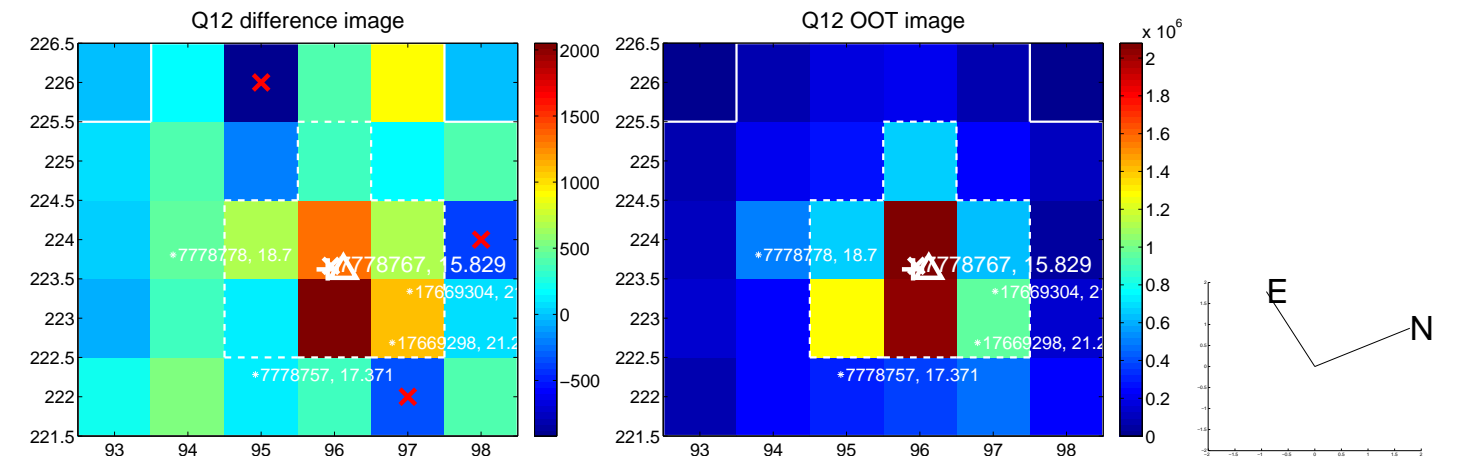
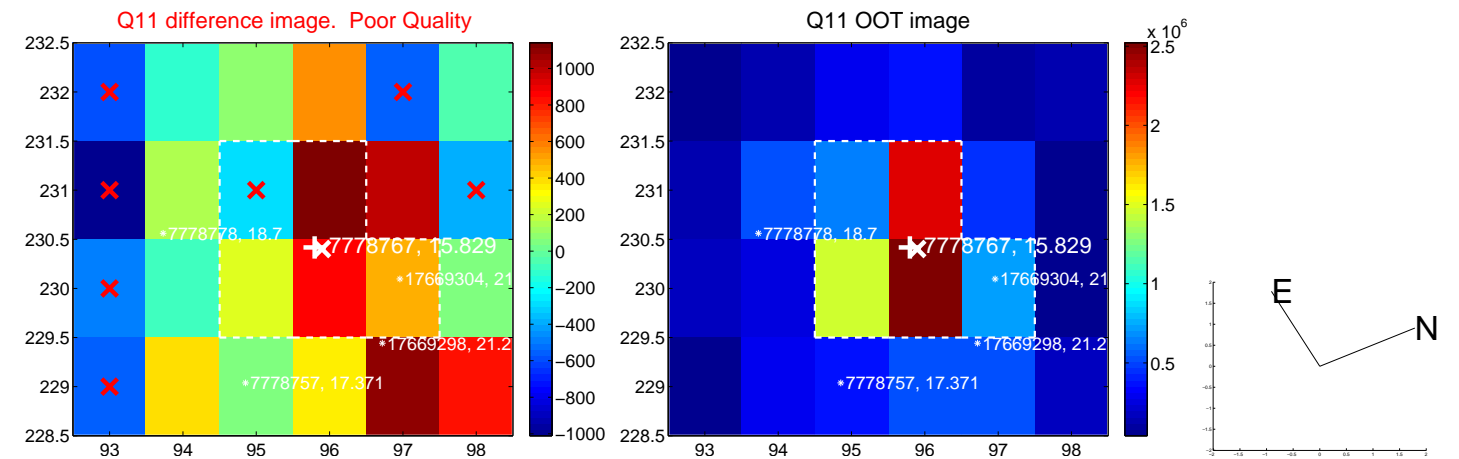
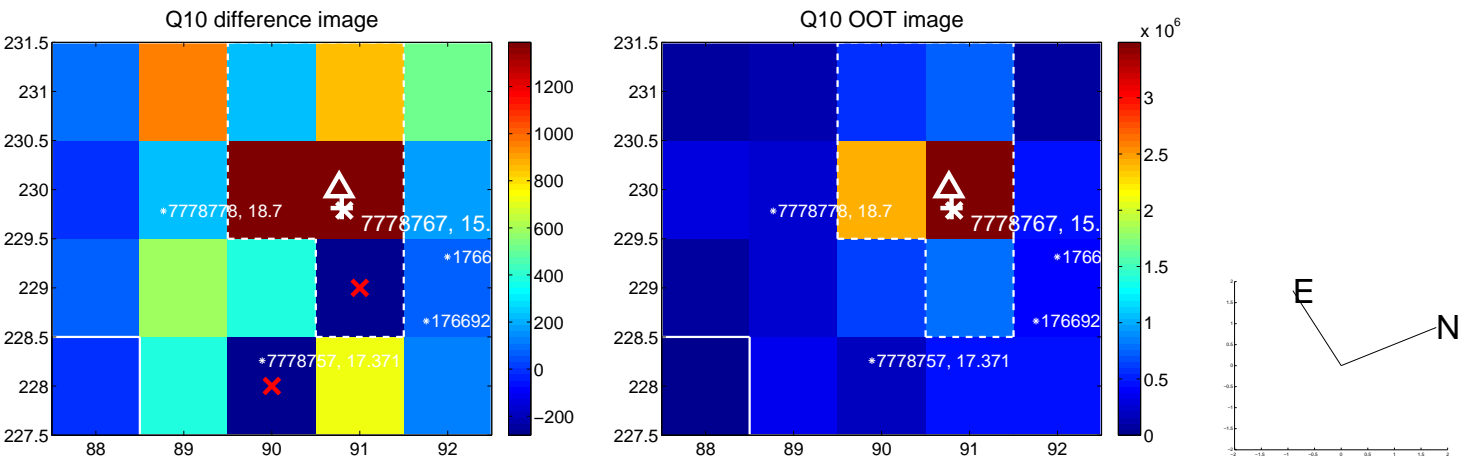
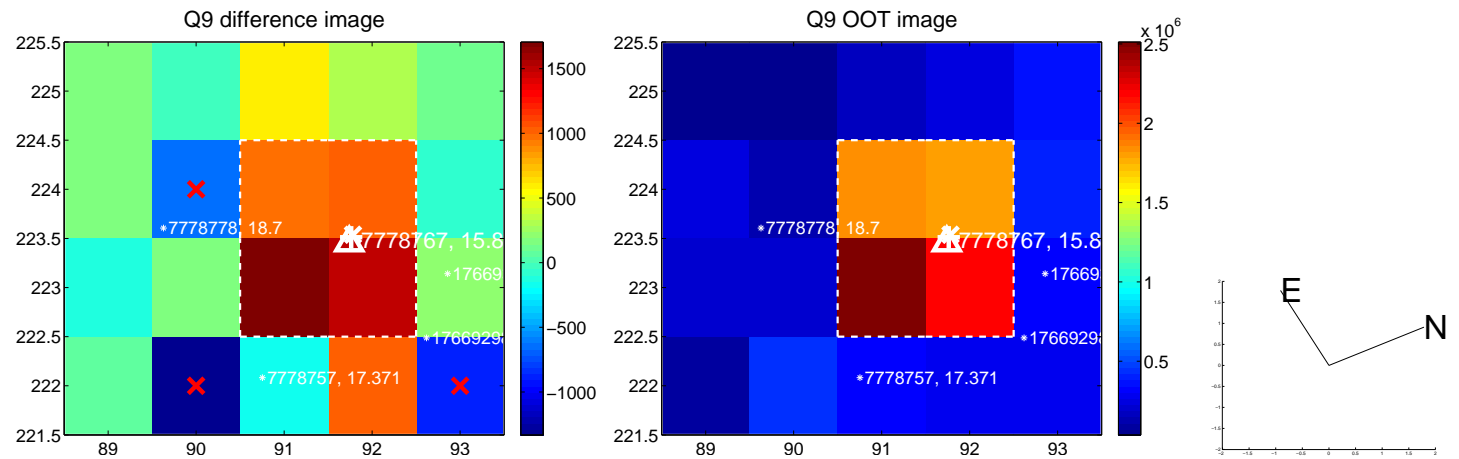
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



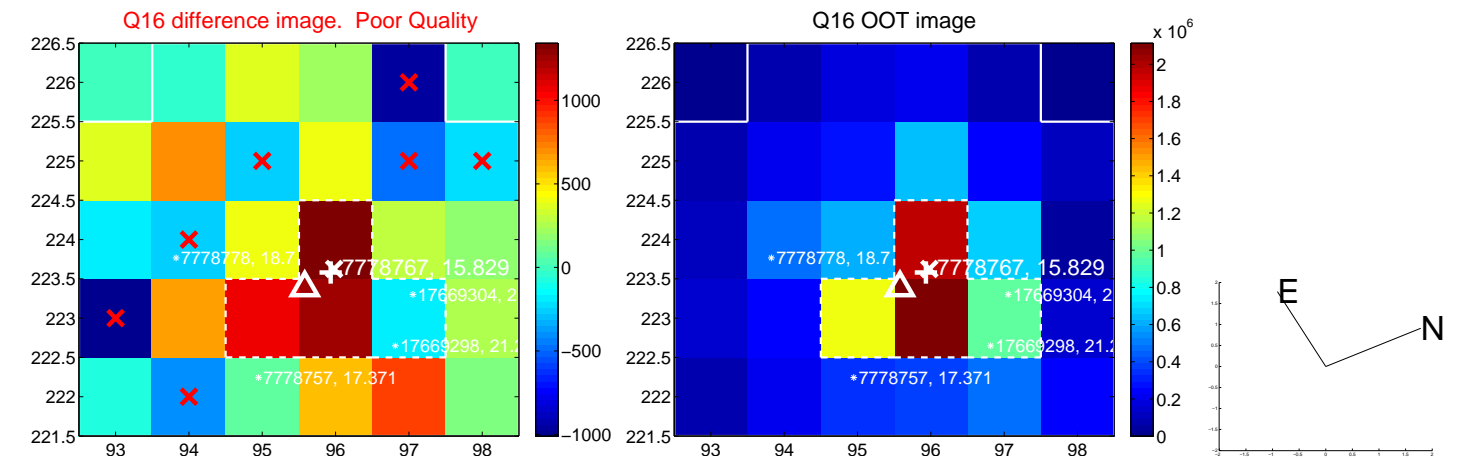
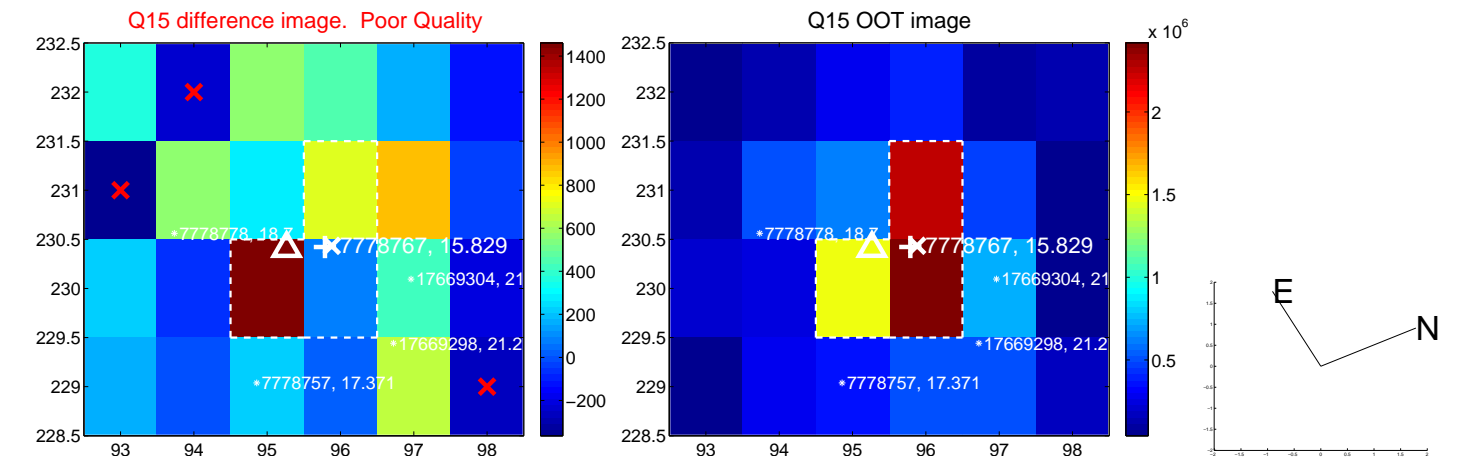
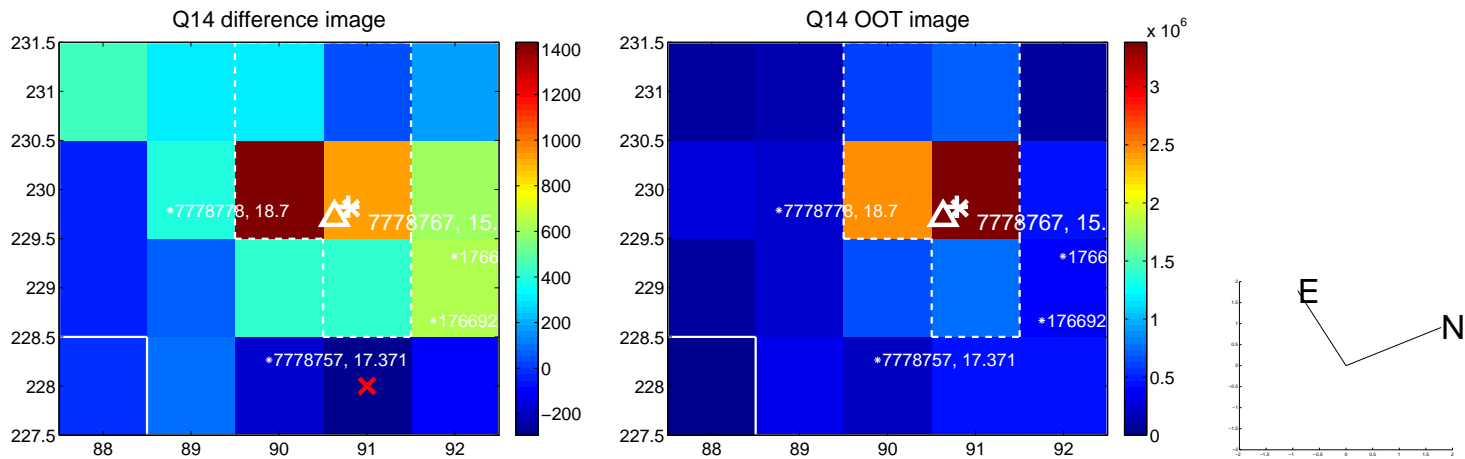
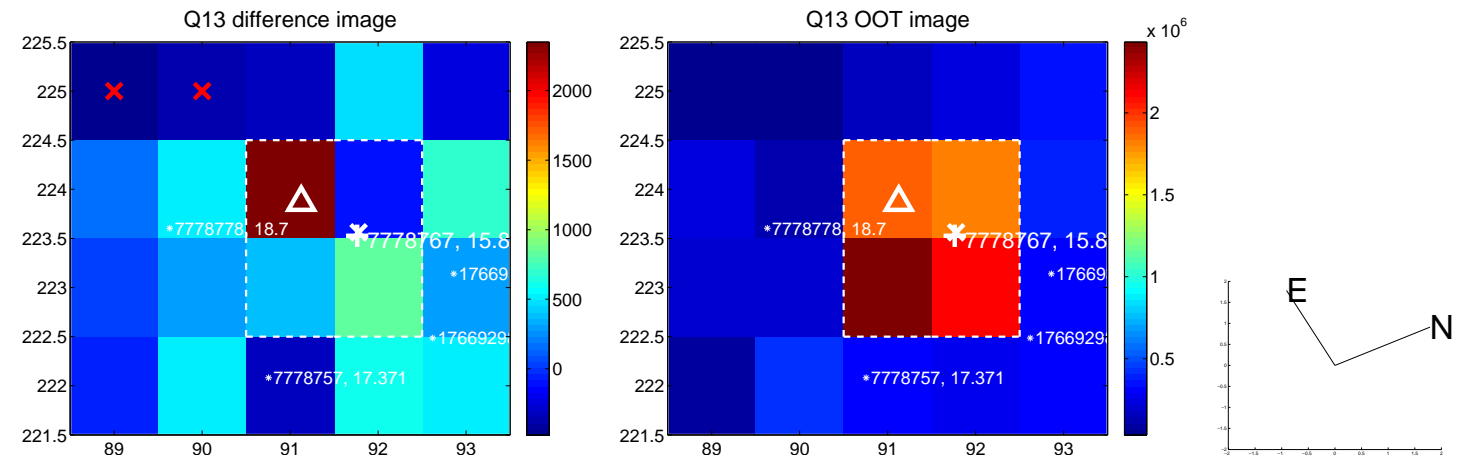
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



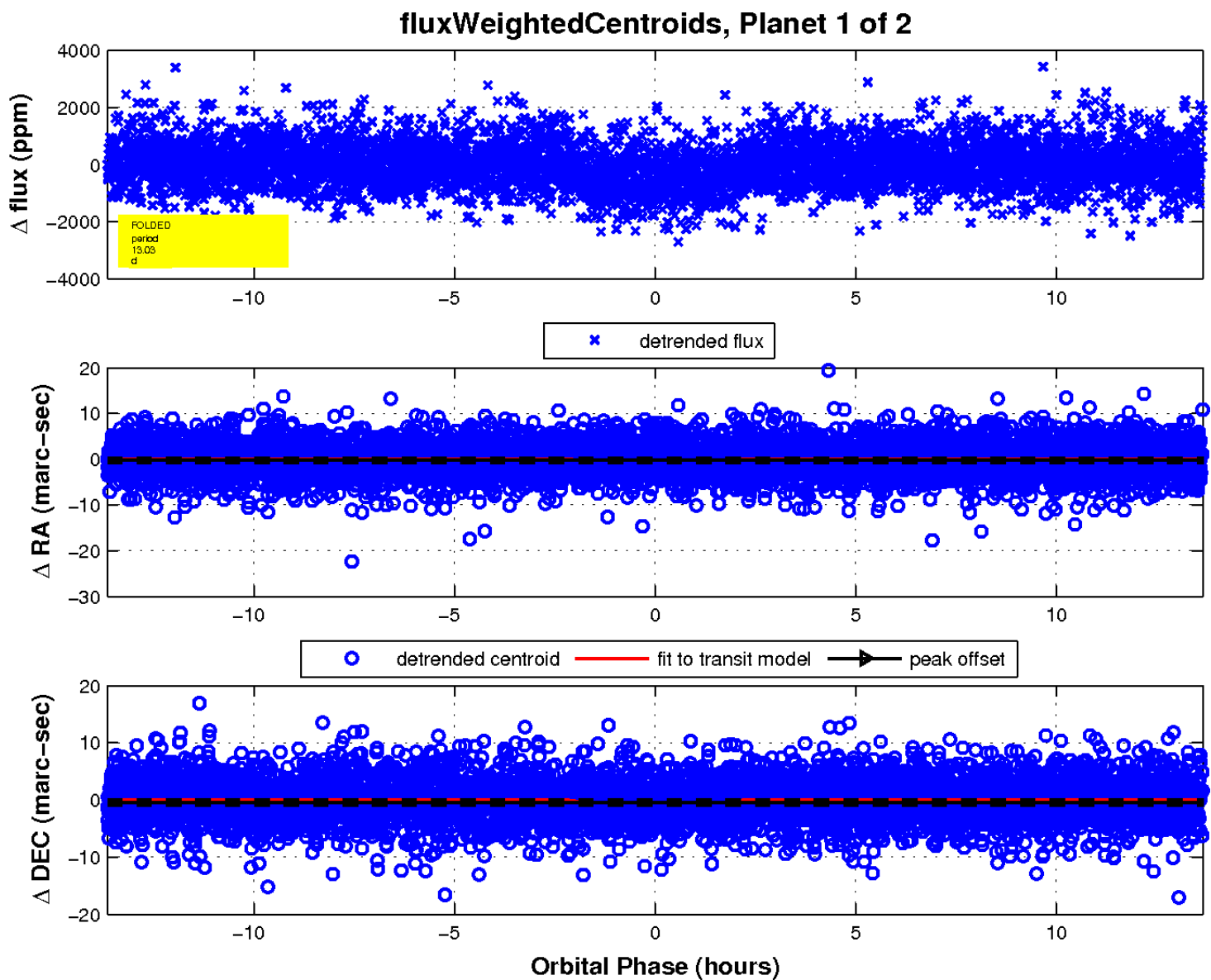
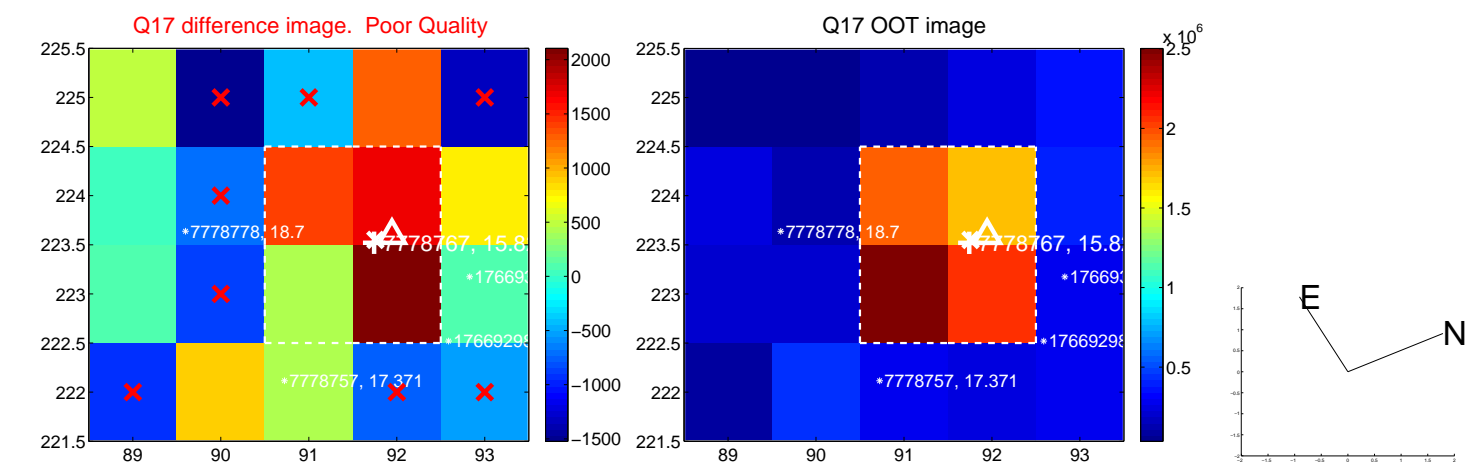
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

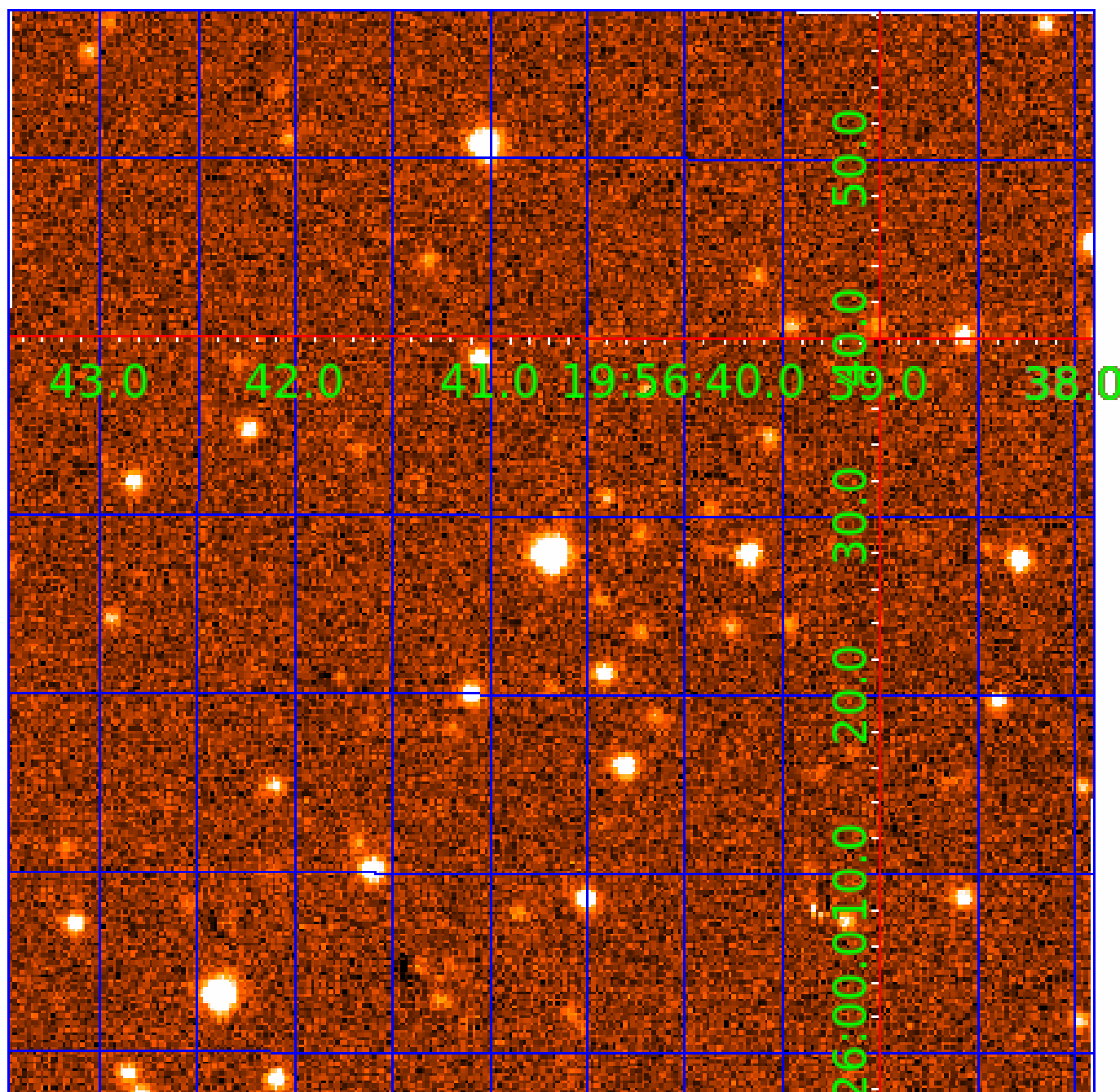


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007778767

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})
007778767-01	OBS	2523.01	13.031365	144.113341	557.7	4.553	16.7	17.8	1.07	5514	2.92	85.11
007778767-02	OBS	2523.02	2.610888	133.262847	193.6	2.200	9.3	9.6	1.07	5514	1.79	725.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007778767-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007778767-02	OBS	PC	0.76	0	0	0	0	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.

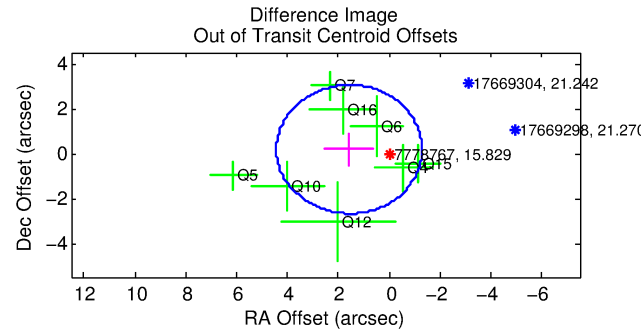
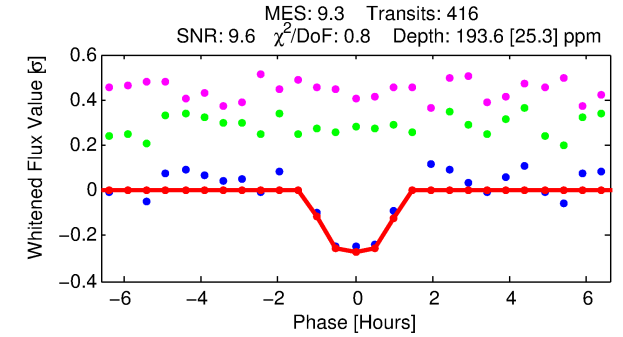
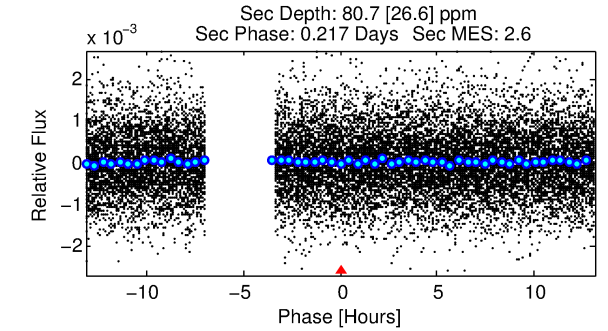
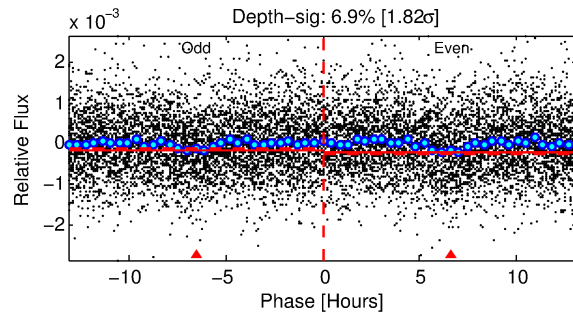
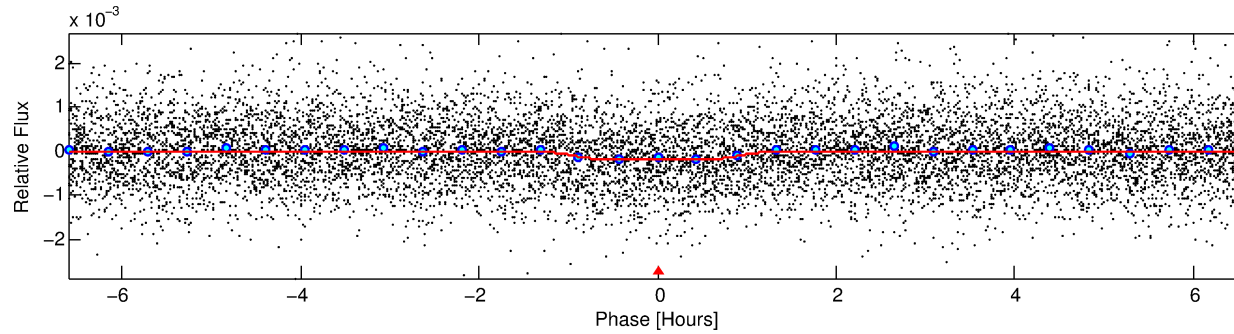
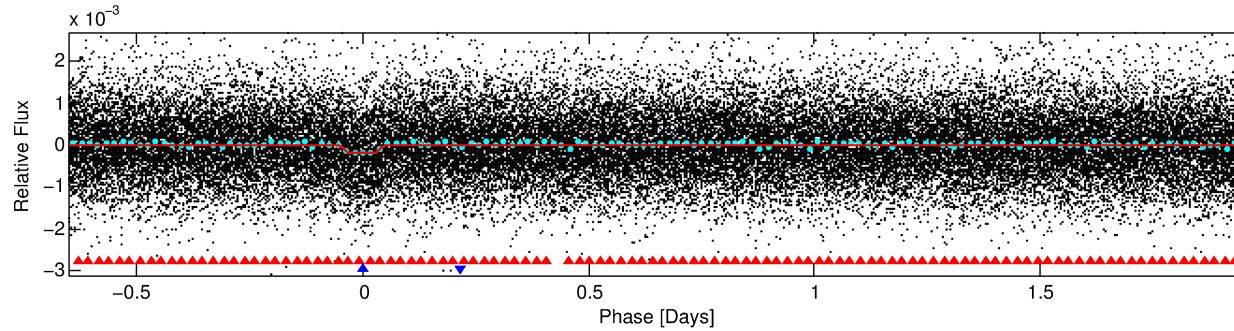
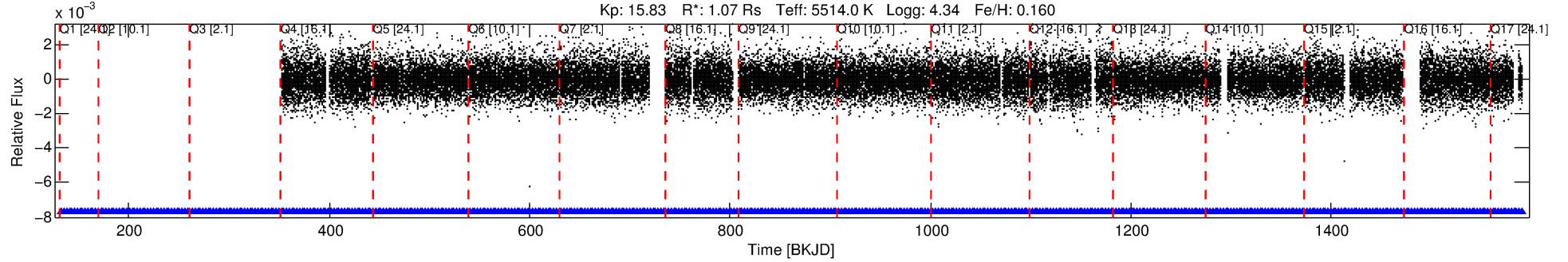
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007778767-02

No Significant Match Found

DV One-Page Summary

KIC: 7778767 Candidate: 2 of 2 Period: 2.611 d
KOI: K02523.02 Corr: 0.921



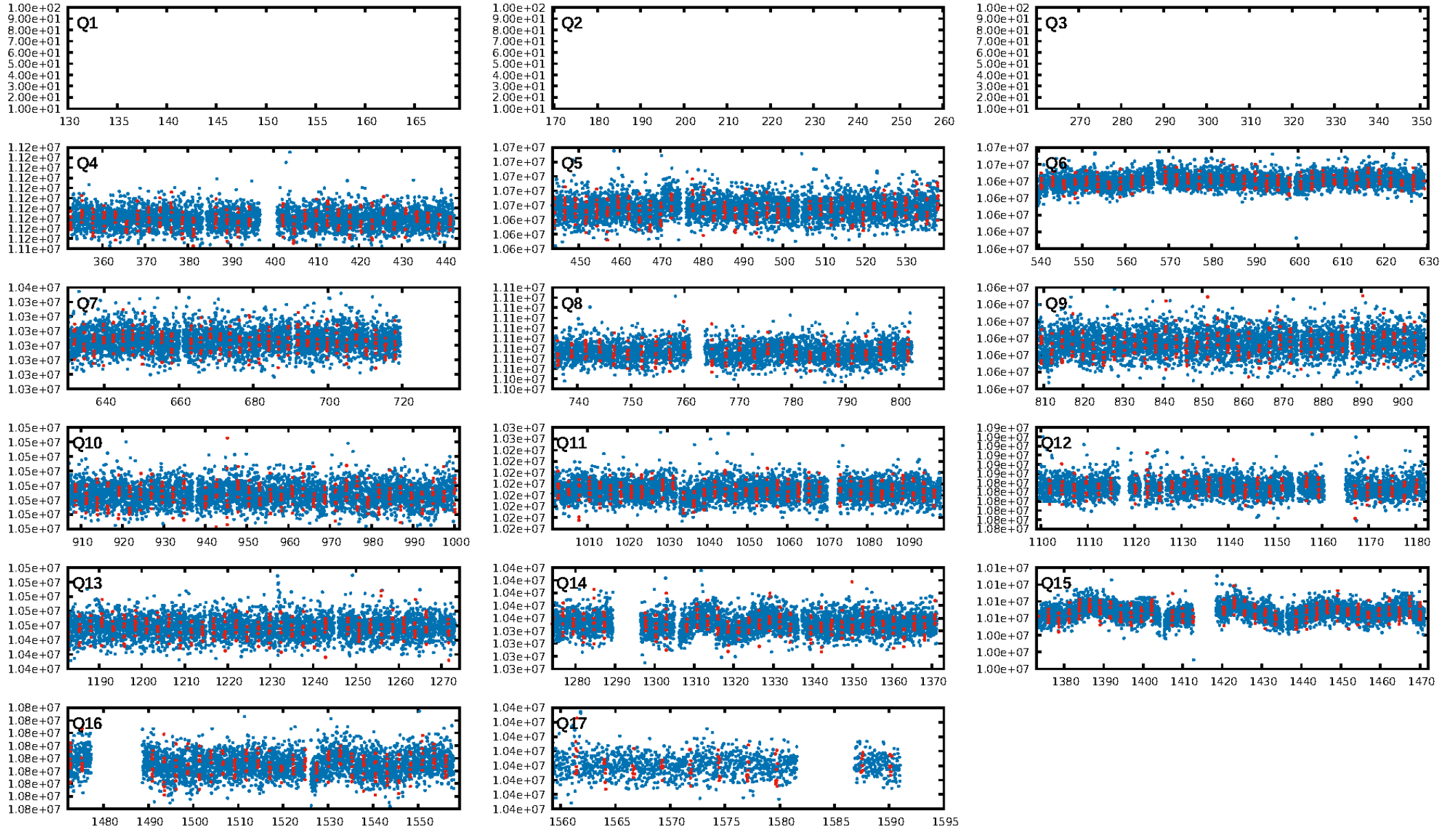
DV Fit Results:

Period = 2.61089 [0.00002] d
Epoch = 133.2628 [0.0040] BKJD
Rp/R* = 0.0154 [0.0131]
a/R* = 4.34 [15.58]
b = 0.90 [0.81]
Seff = 725.94 [169.06]
Teq = 1324 [77] K
Rp = 1.79 [1.56] Re
a = 0.0362 [0.0052] AU
Ag = 18.03 [31.67] [0.54 σ]
Teff = 4217 [1837] K [1.57 σ]

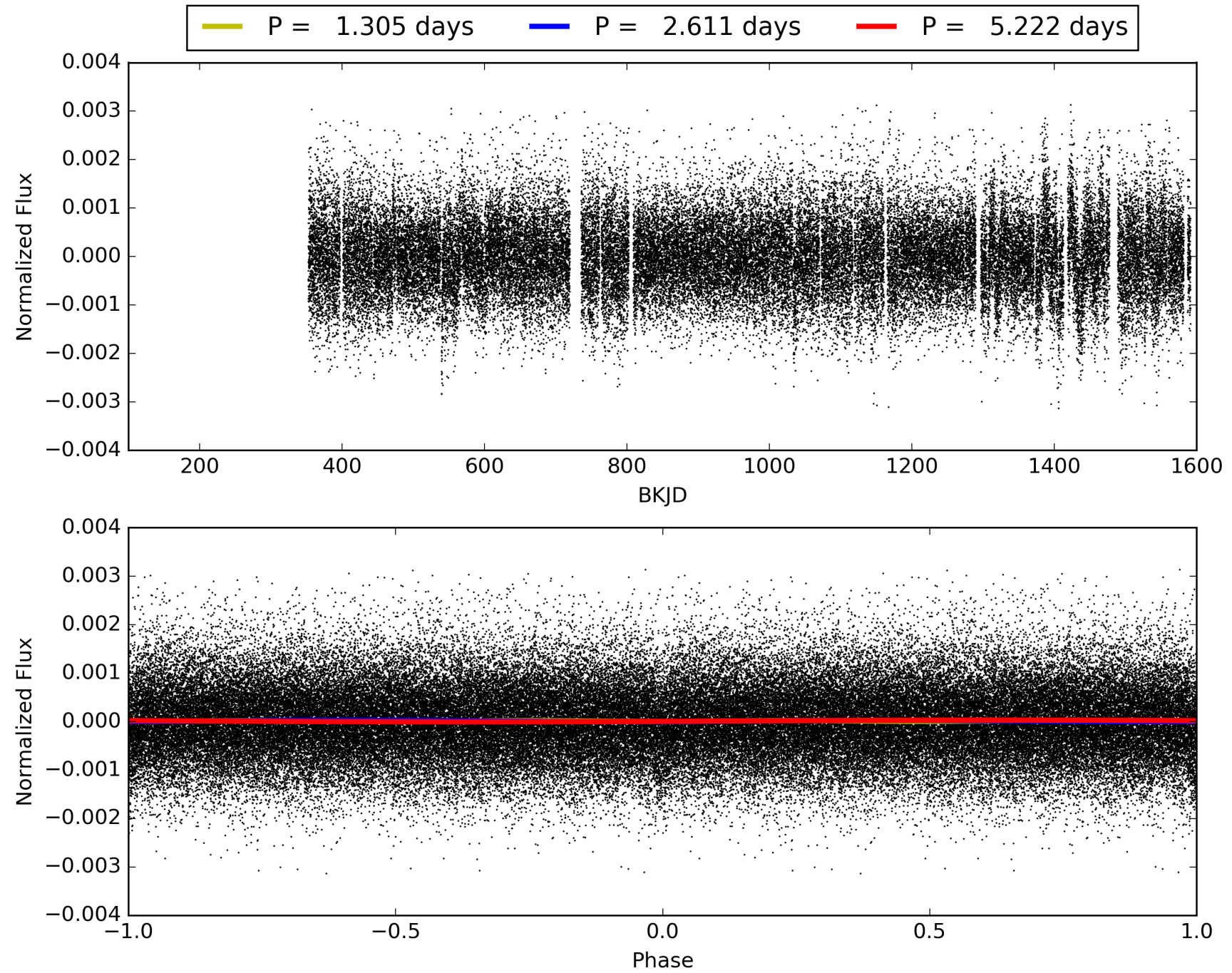
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [49.46 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.61e-20
RollingBand-fgt: 1.00 [406/406]
GhostDiagnostic-chr: 3.142
Centroid-sig: 4.0%
Centroid-so: 1.628 arcsec [1.16 σ]
OotOffset-rm: 1.578 arcsec [1.66 σ]
KicOffset-rm: 1.697 arcsec [1.75 σ]
OotOffset-st: 2/2/3/1 [8]
KicOffset-st: 2/2/3/1 [8]
DiffImageQuality-fgm: 0.12 [1/8]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 007778767-02, PDC Light Curves

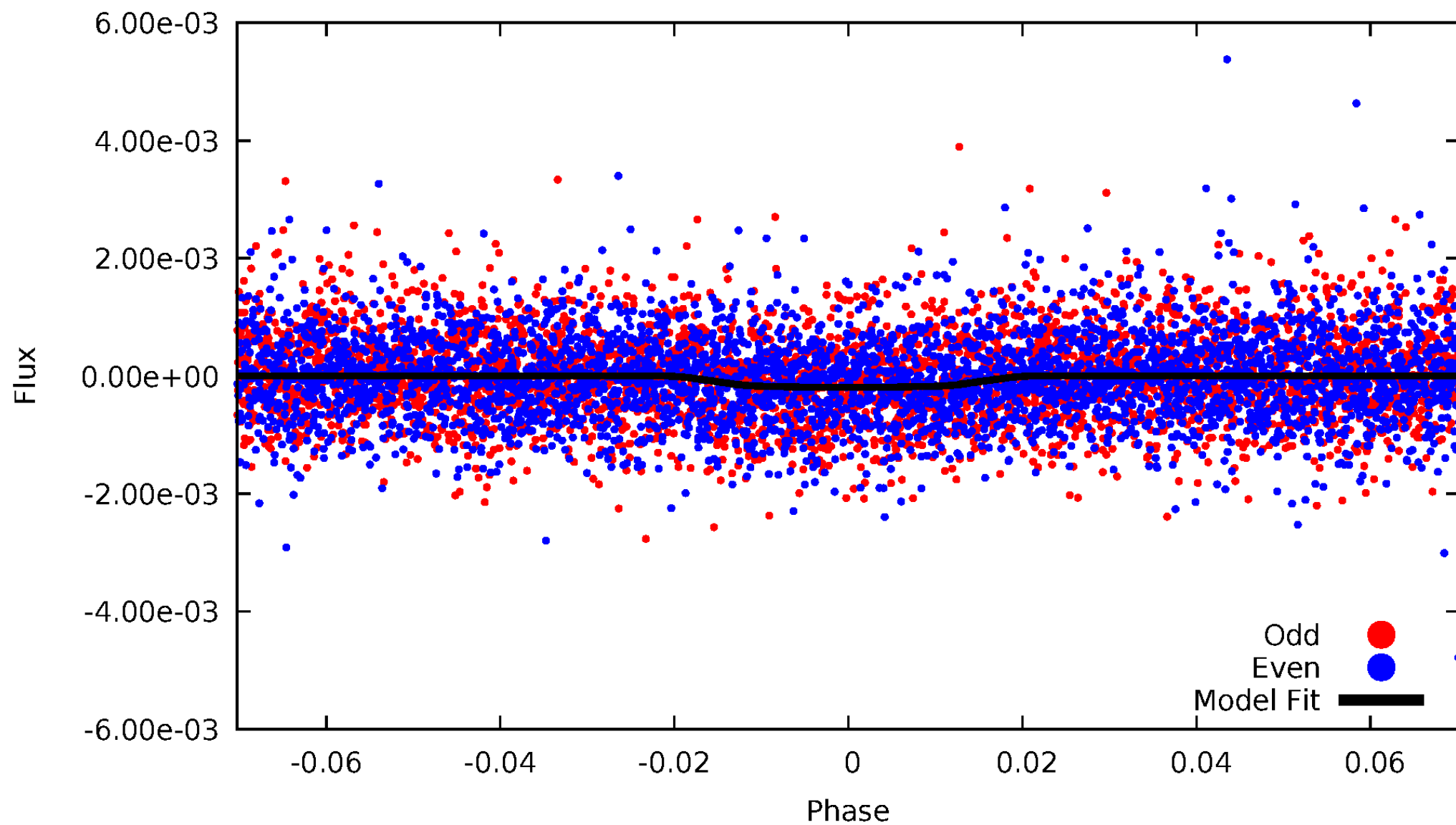


TCE 007778767-02



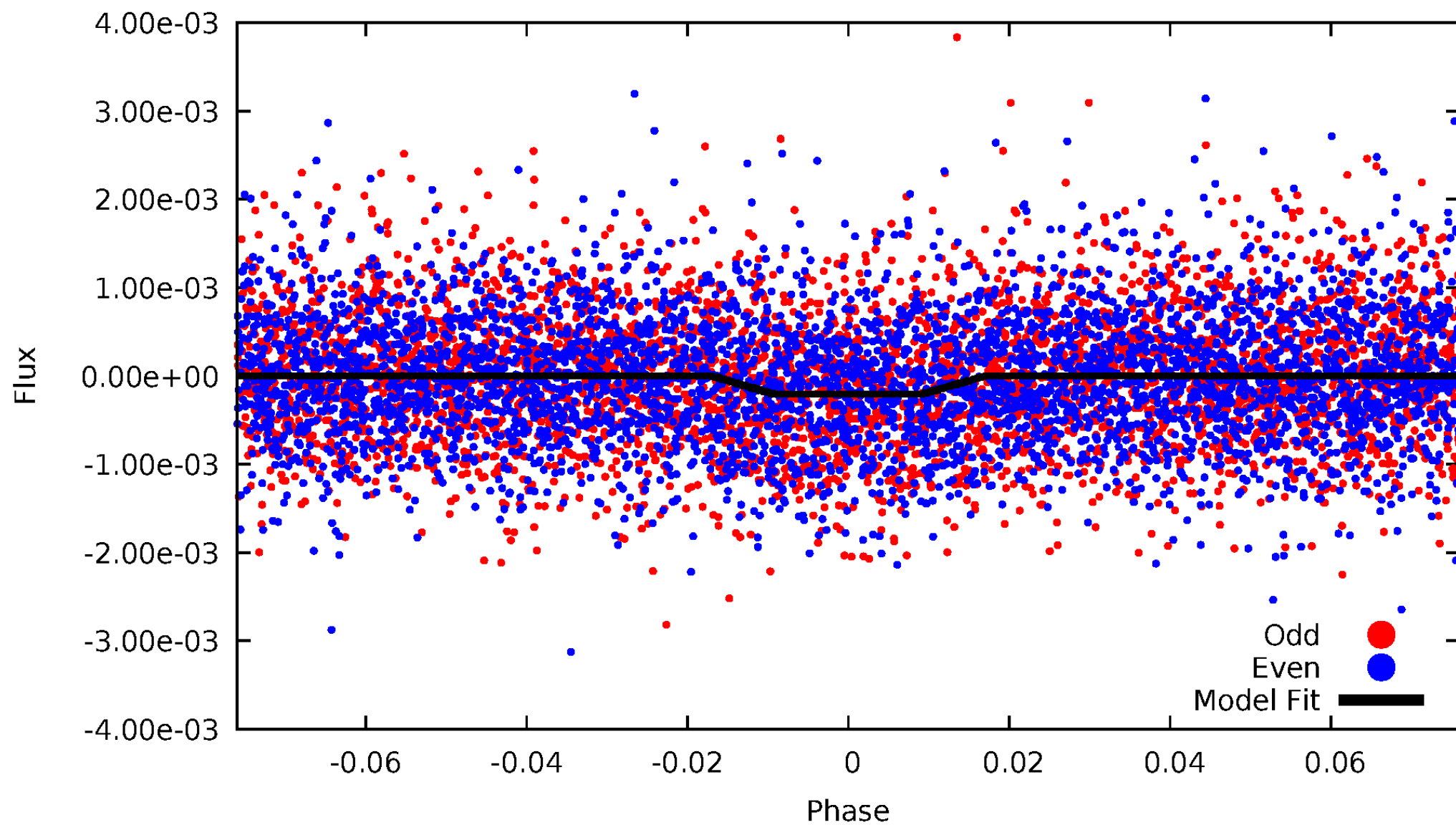
DV Odd/Even

TCE 007778767-02



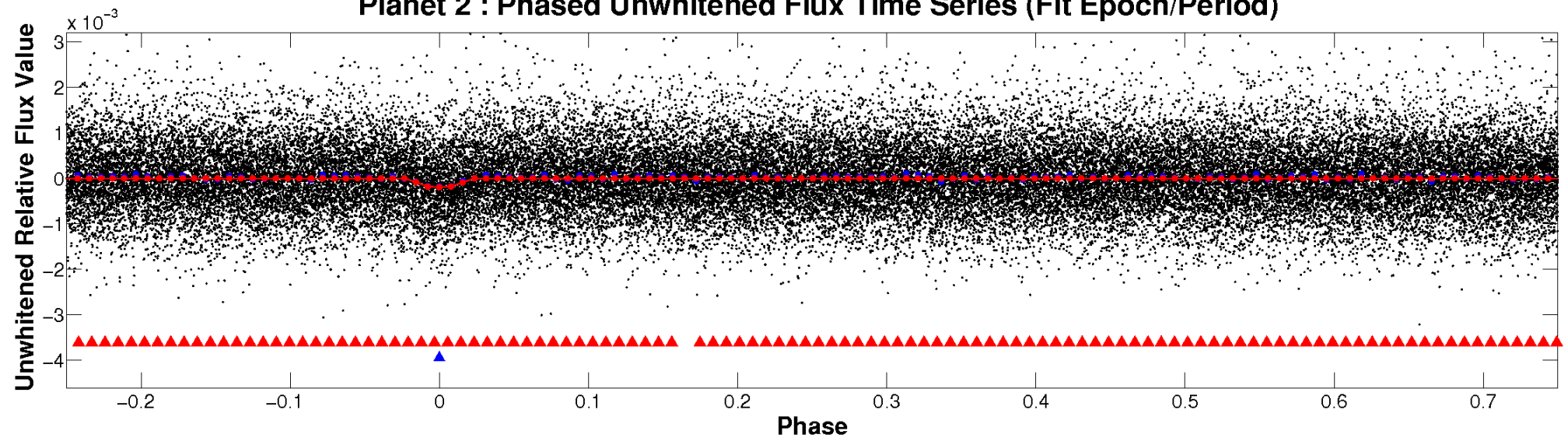
ALT Odd/Even

TCE 007778767-02

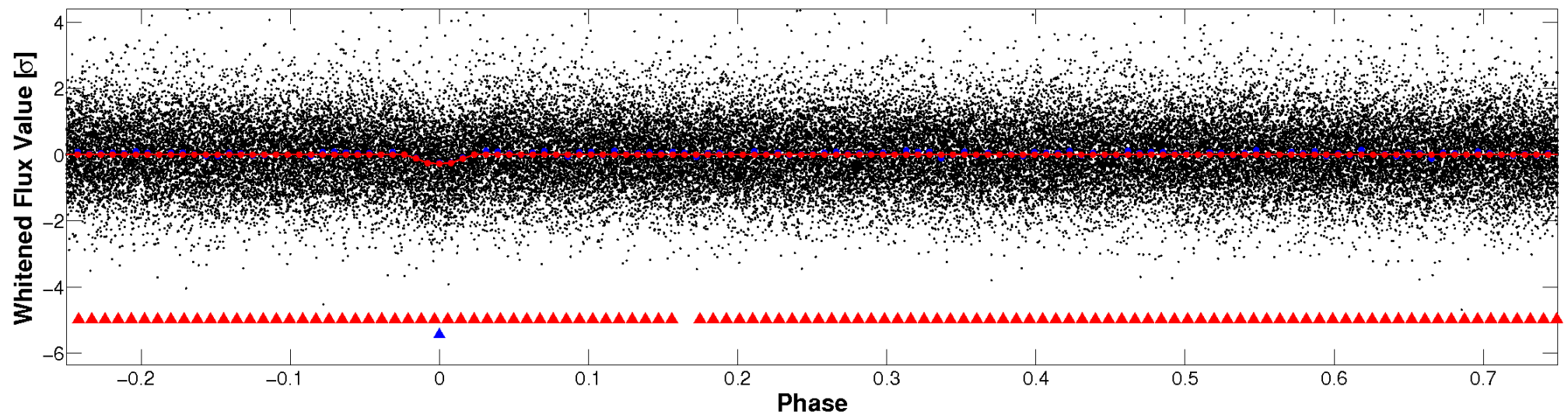


Non-Whitened Vs. Whitened Light Curve

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

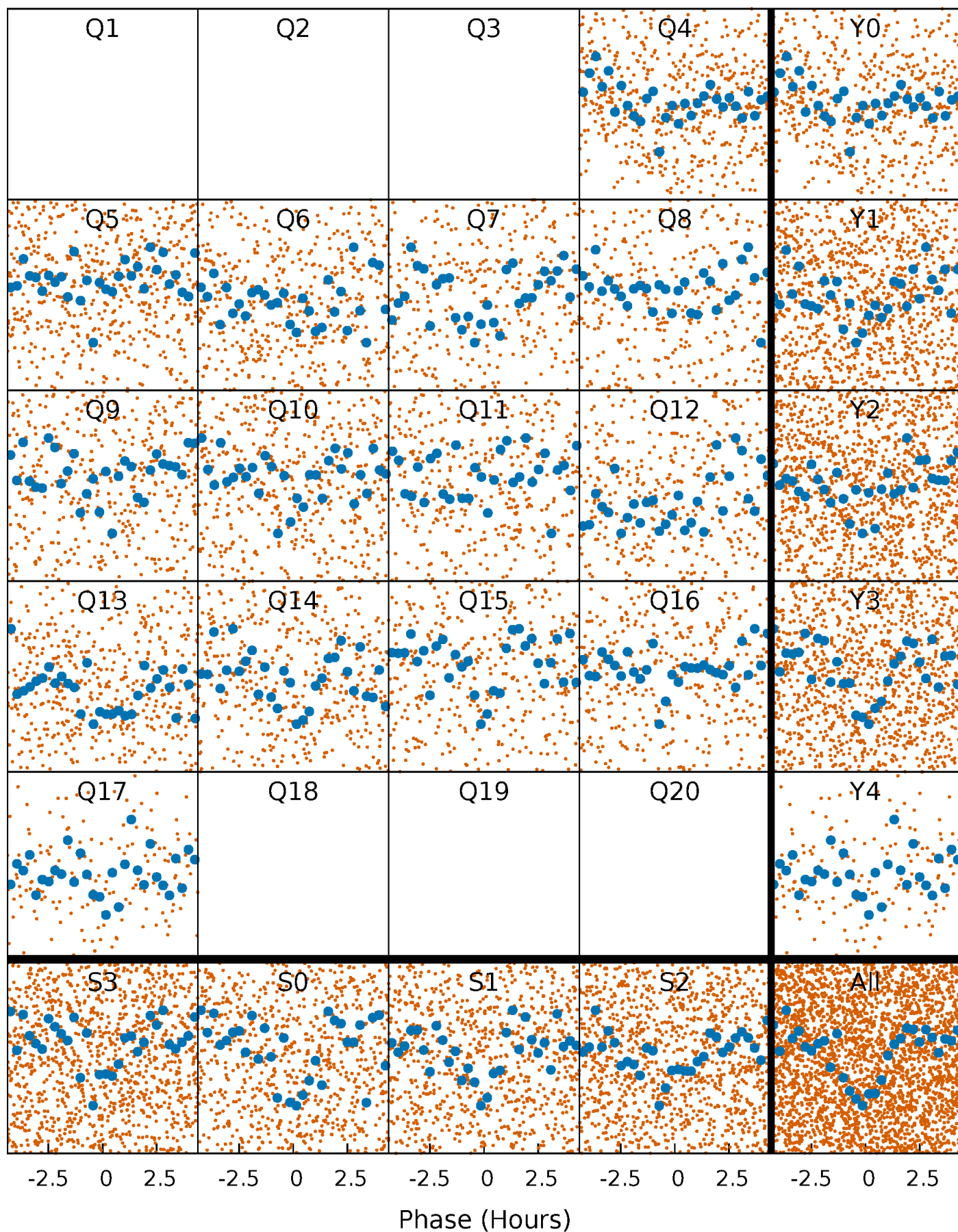


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



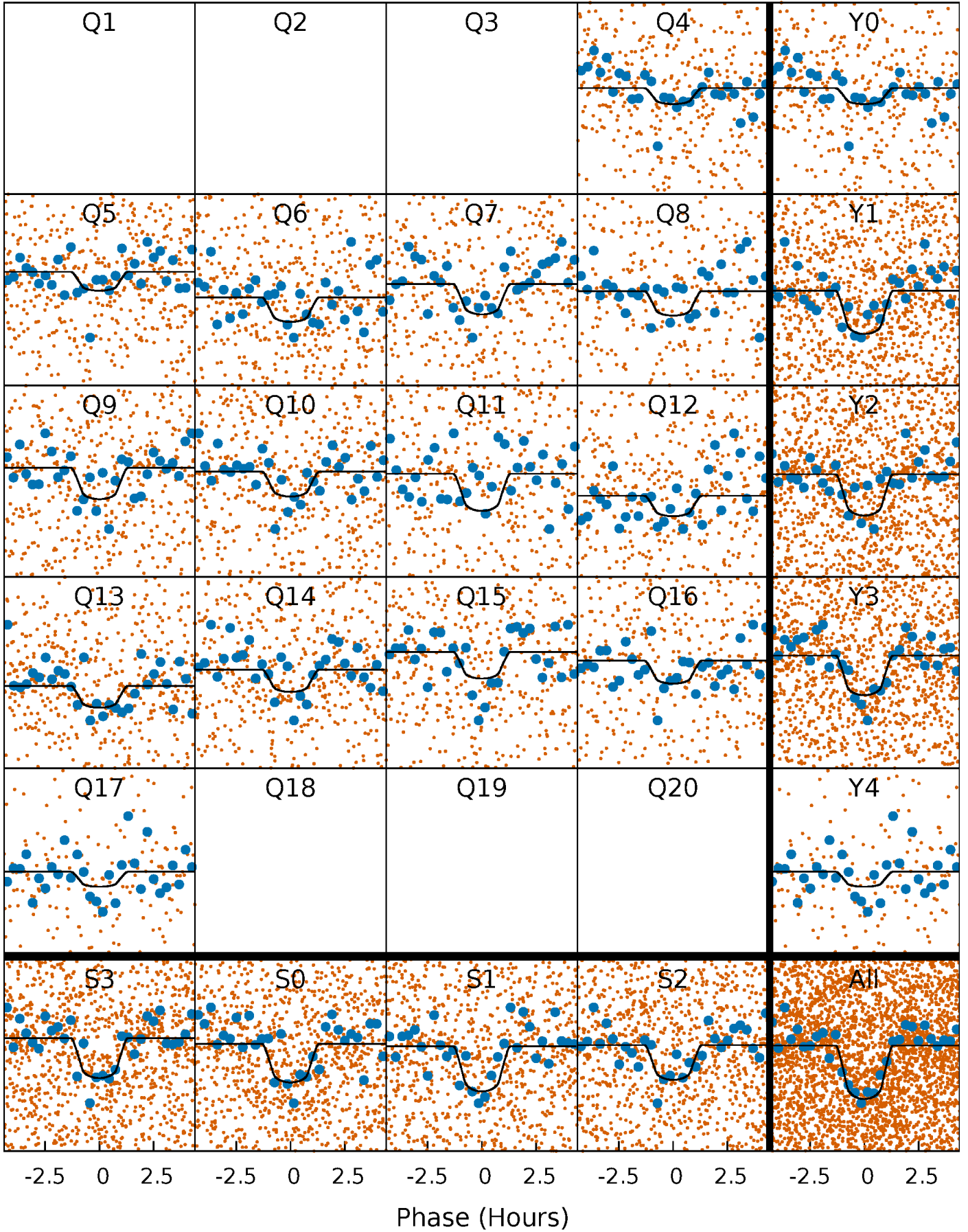
PDC Quarter-Phased Transit Curves

TCE 007778767-02 P= 2.610888 Days $T_0=133.262847$ (BKJD)



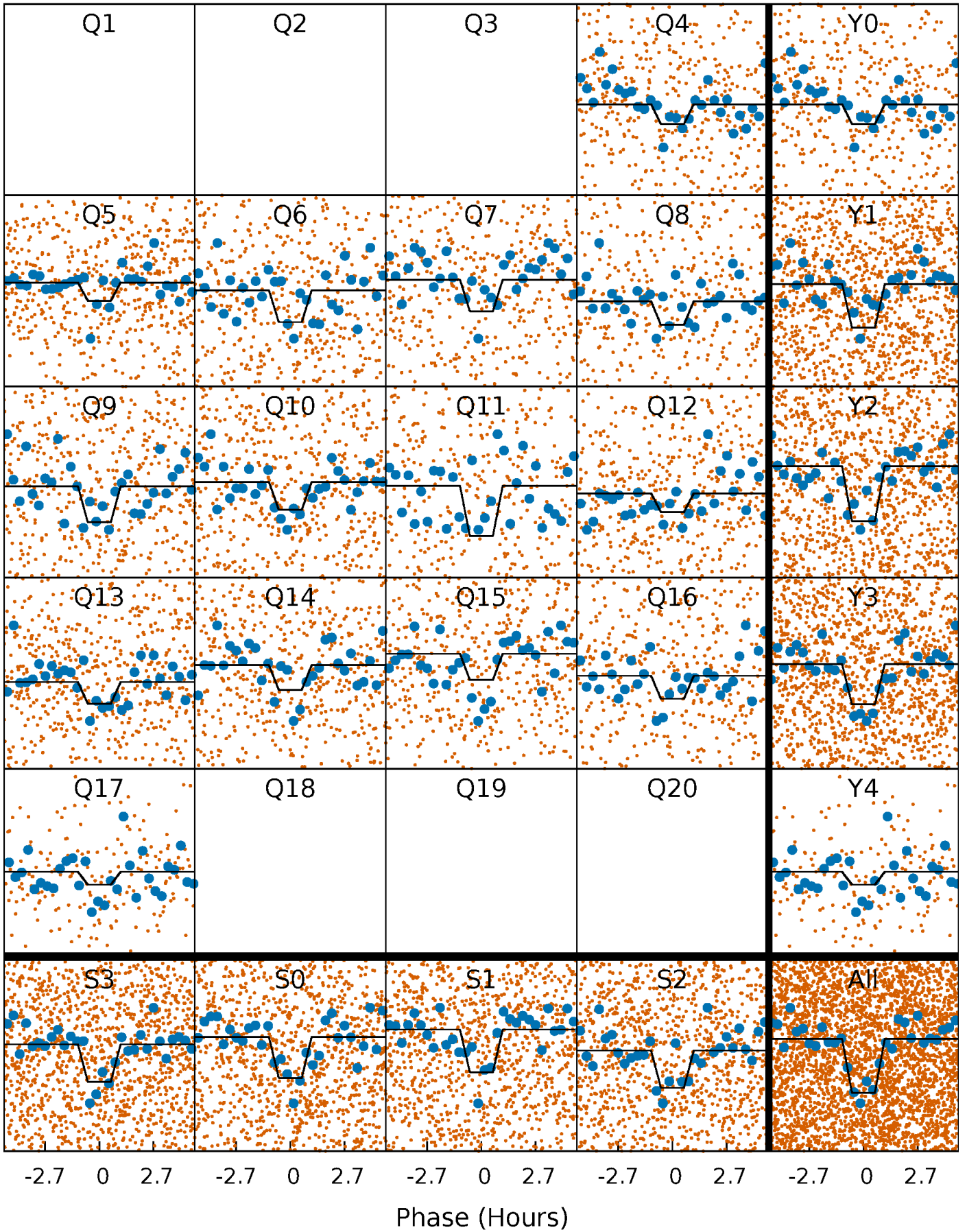
DV Quarter-Phased Transit Curves

TCE 007778767-02 $P = 2.610888$ Days $T_0 = 133.262847$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

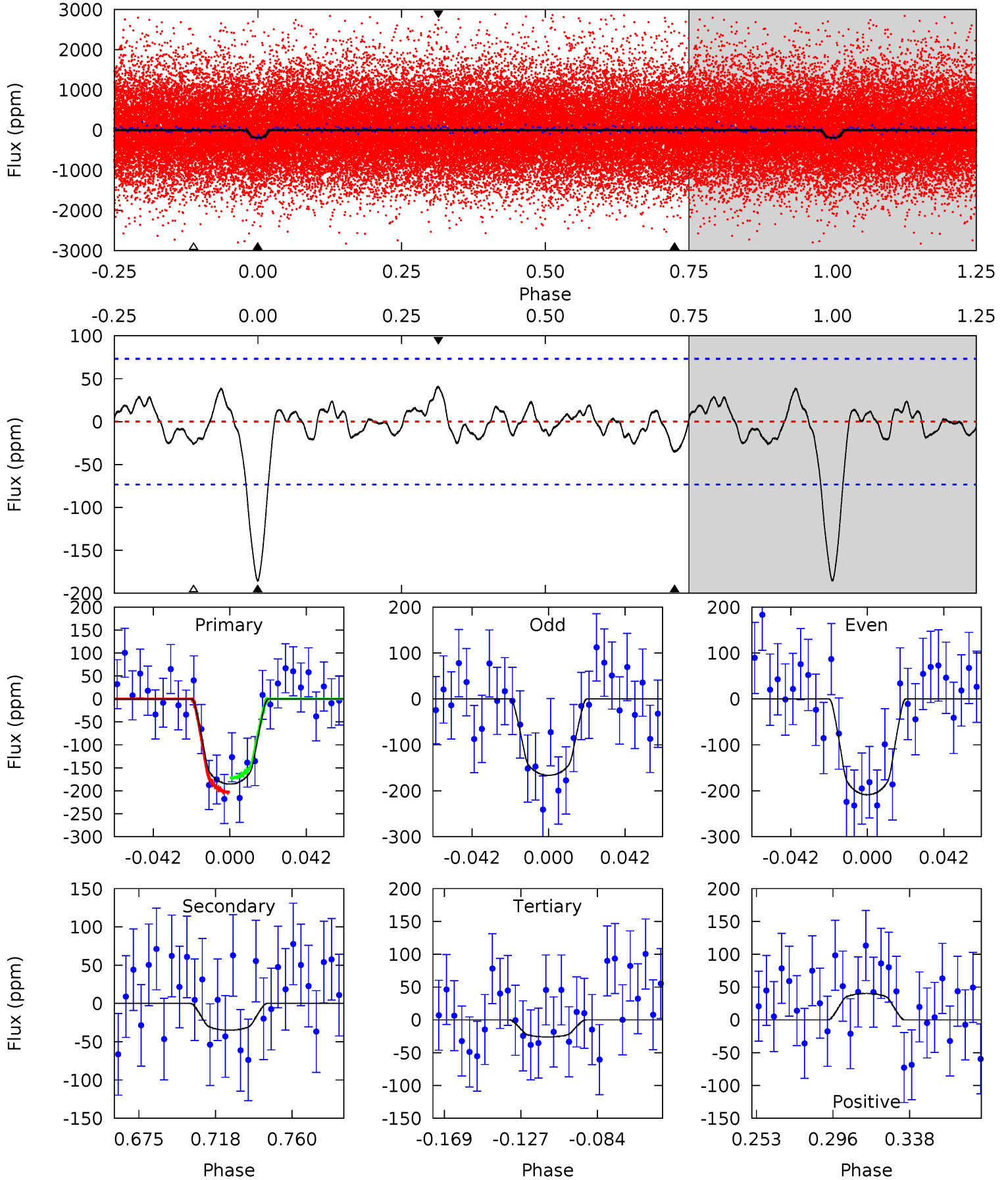
TCE 007778767-02 P= 2.610904 Days $T_0=133.255829$ (BKJD)



DV Model-Shift Uniqueness Test

007778767-02, P = 2.610888 Days, E = 133.262847 Days

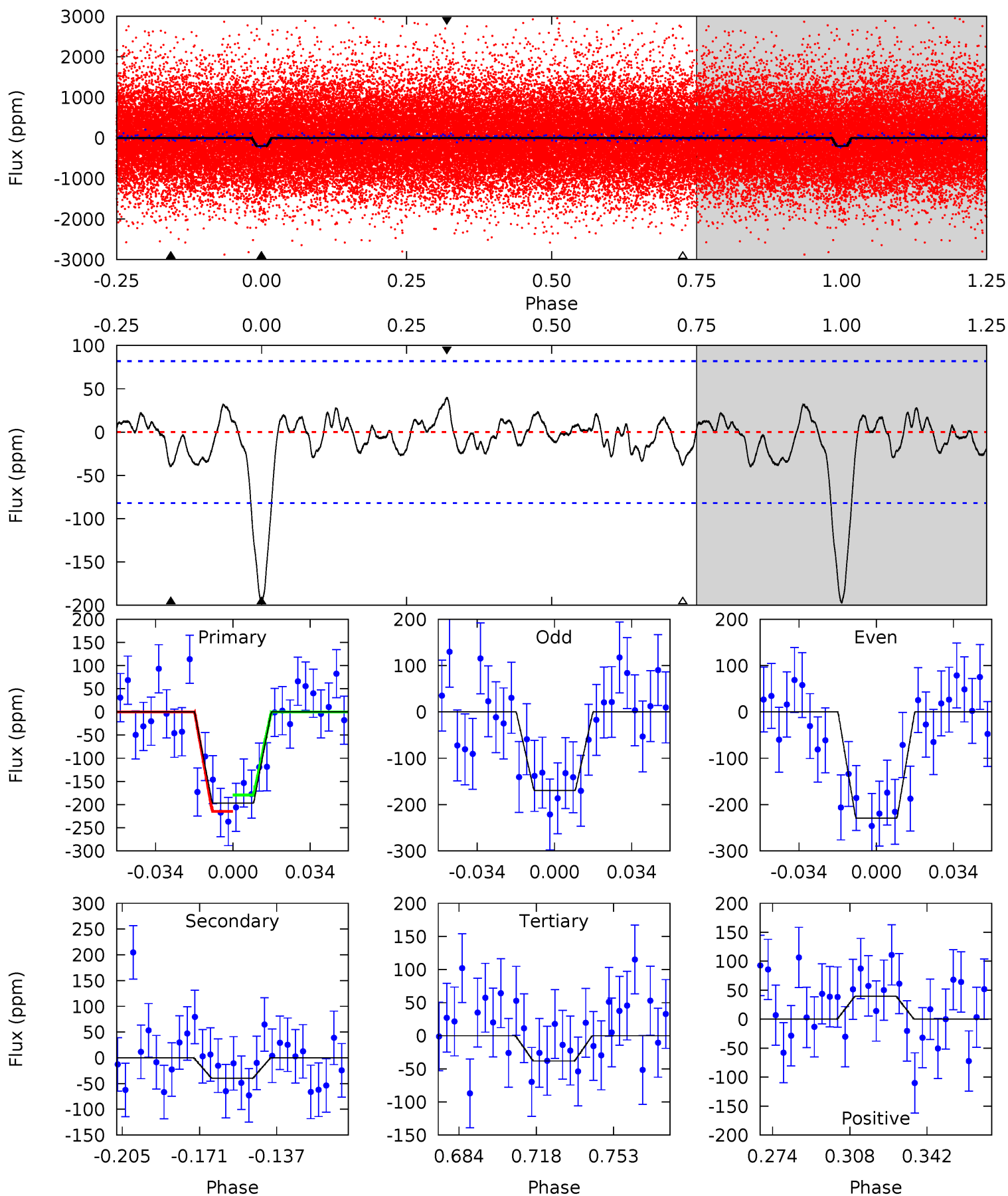
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	2.27	1.69	2.61	4.74	2.03	0.96	10.3	9.39	0.57	-0.35	1.38	0.84	0.18	1.01



Alt Model-Shift Uniqueness Test

007778767-02, P = 2.610904 Days, E = 133.255829 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	2.31	2.23	2.31	4.78	2.12	0.95	9.28	9.20	0.09	0.01	1.74	0.99	0.17	1.03



Stellar Parameters For KIC 007778767

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5514^{+74}_{-74}	$4.345^{+0.132}_{-0.108}$	$0.160^{+0.150}_{-0.150}$	$1.071^{+0.163}_{-0.148}$	$0.926^{+0.062}_{-0.043}$	$1.063^{+0.600}_{-0.327}$
	+1%/-1%	+3%/-2%	+94%/-94%	+15%/-14%	+7%/-5%	+56%/-31%
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 007778767-02 / KOI 2523.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-35 ± 15	$2.02^{+1.34}_{-1.23}$	1855^{+76}_{-82}	3567^{+1678}_{-640}	$5.832^{+33.430}_{-4.168}$
Alt.	-40 ± 17	$1.84^{+1.54}_{-1.04}$	1847^{+75}_{-82}	3764^{+1550}_{-762}	$7.750^{+36.435}_{-5.668}$

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

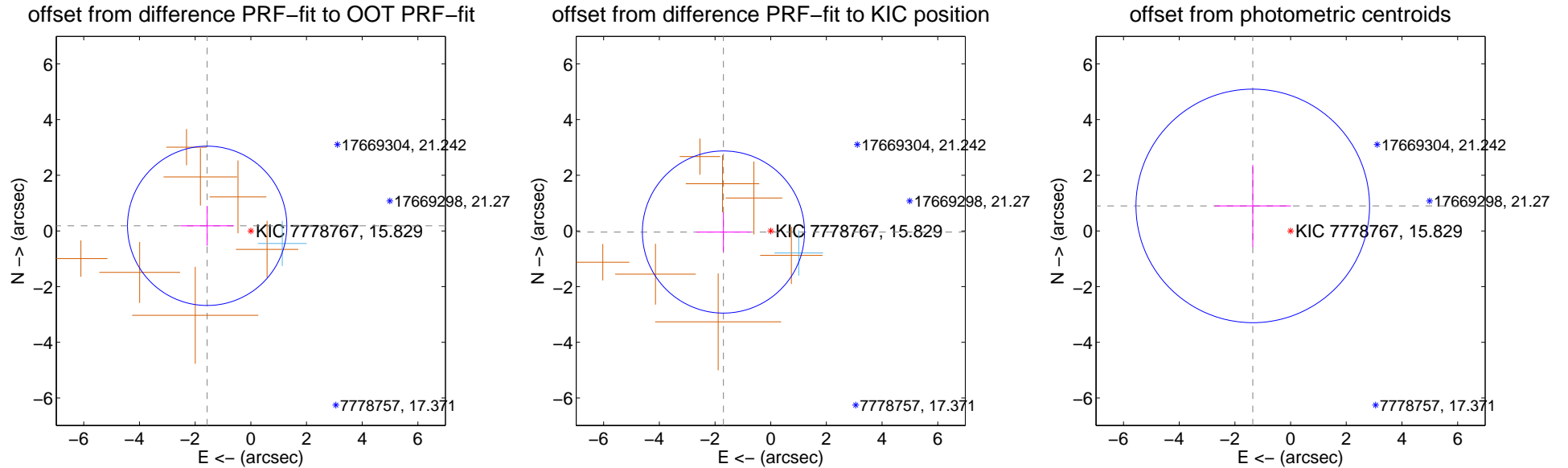
DV Centroid Data

Supplemental centroid analysis for 007778767-02. Kepler magnitude: 15.83. Transit SNR 9.58

There are 1 quarters with good PRF difference image offsets

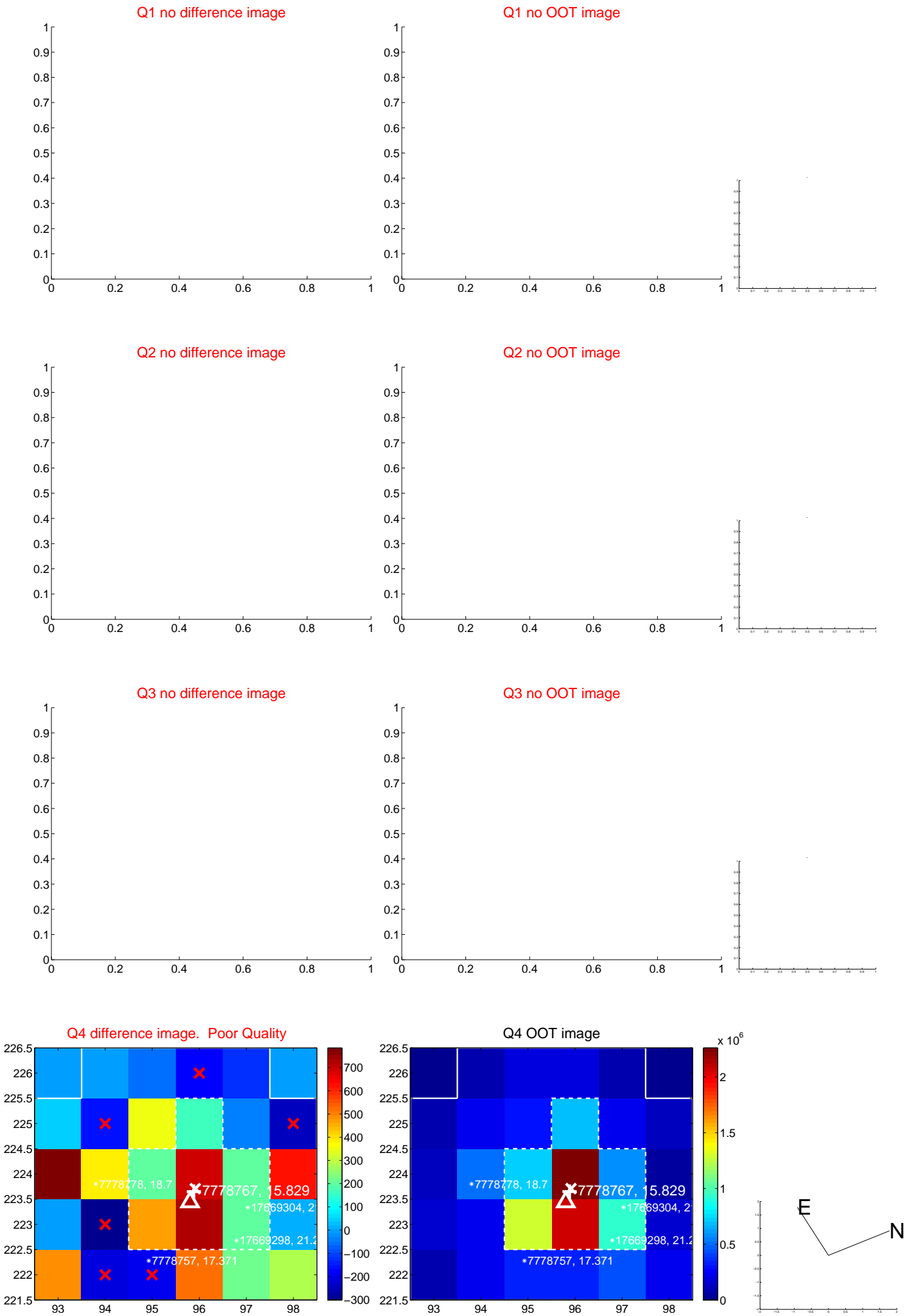
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.578 ± 0.954	1.66	1.568 ± 0.956	0.183 ± 0.715
PRF-fit source offset from KIC position	1.697 ± 0.970	1.75	1.697 ± 0.971	-0.040 ± 0.701
photometric centroid source offset	1.63 ± 1.40	1.16	1.36 ± 1.36	0.90 ± 1.47

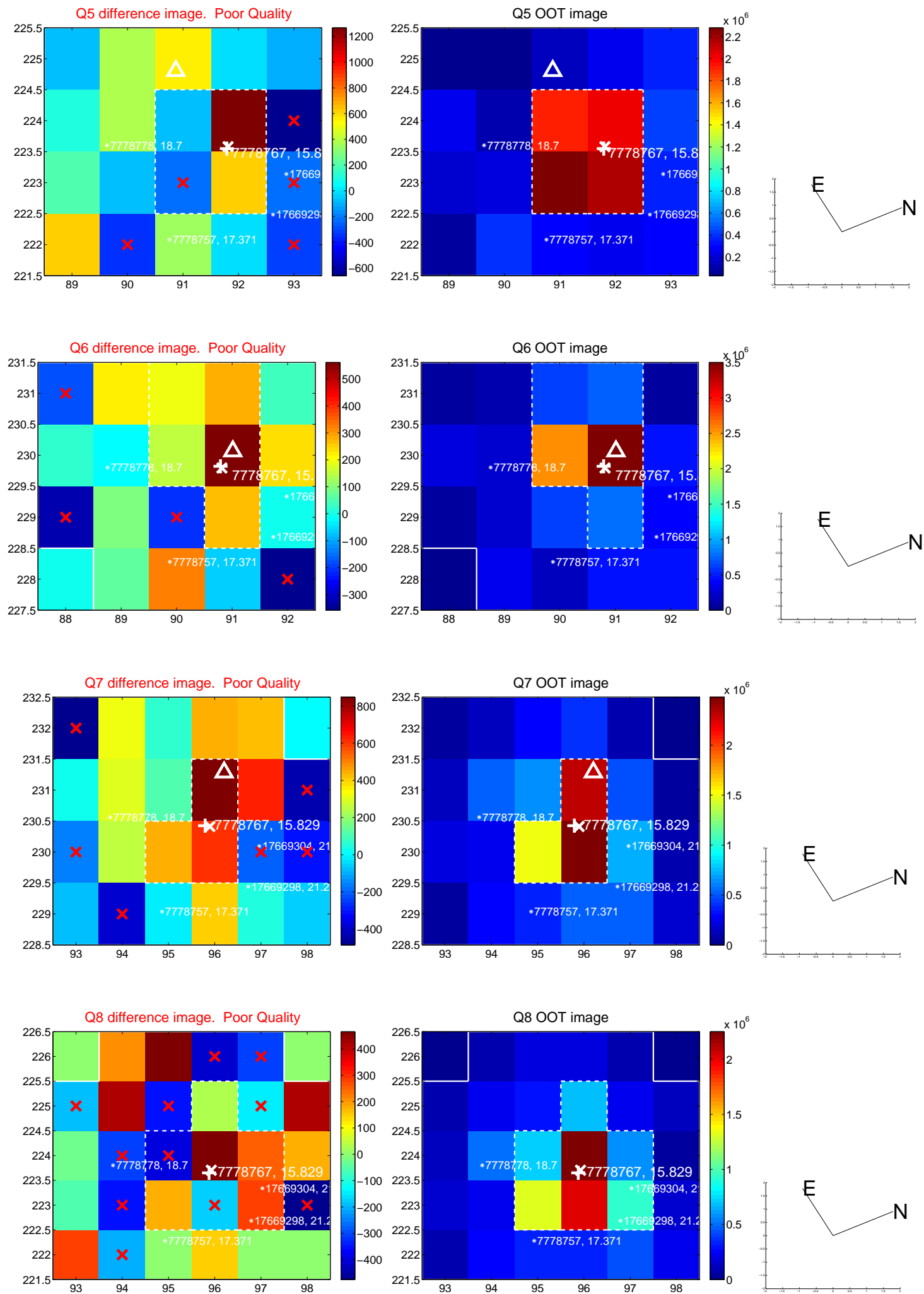


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

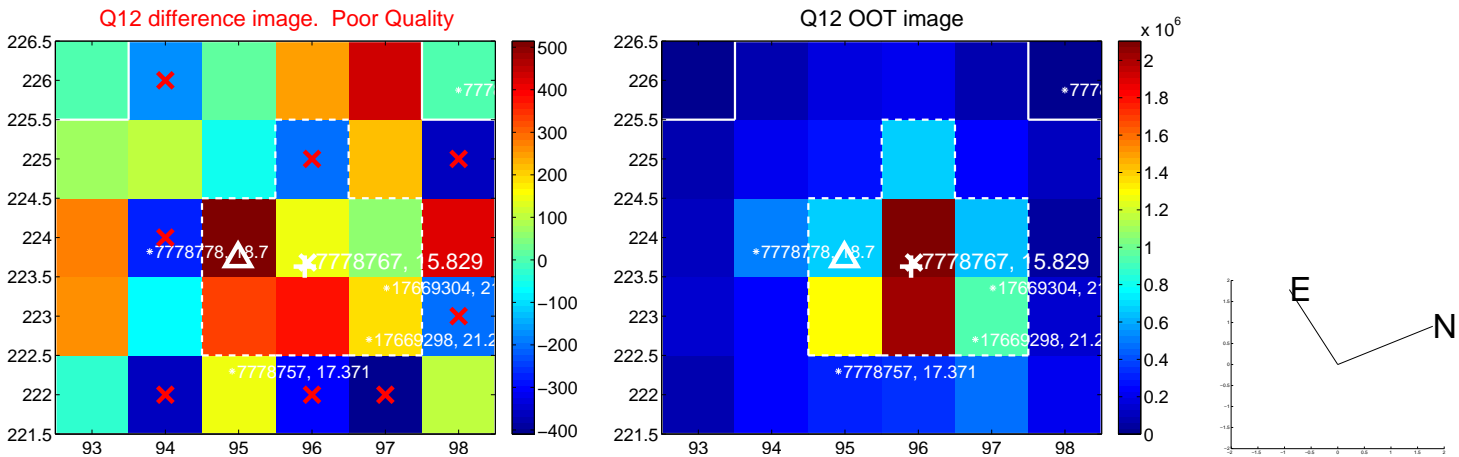
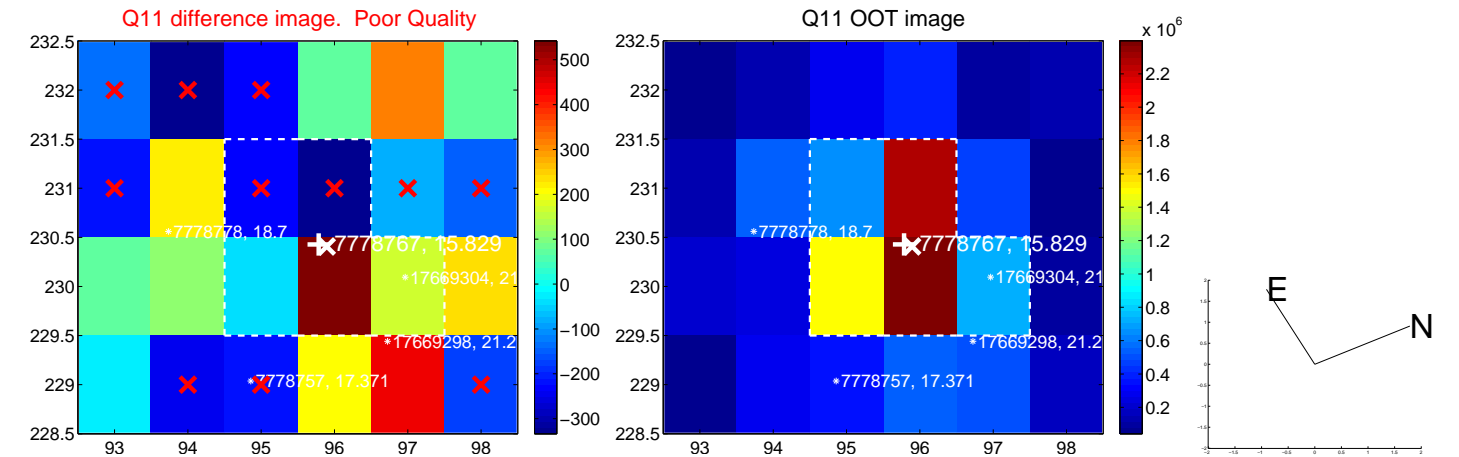
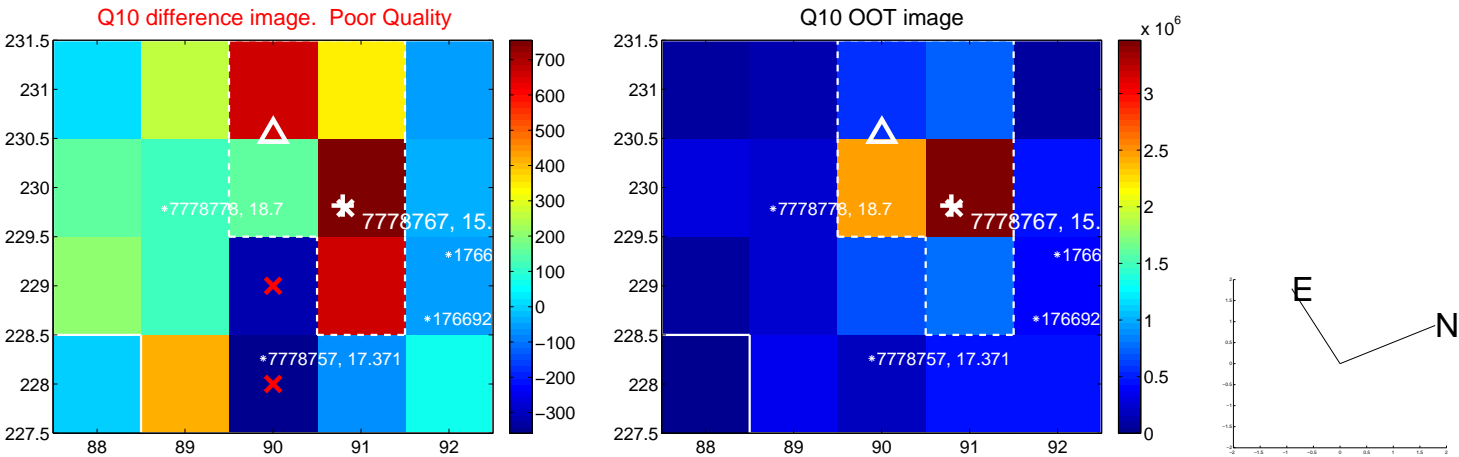
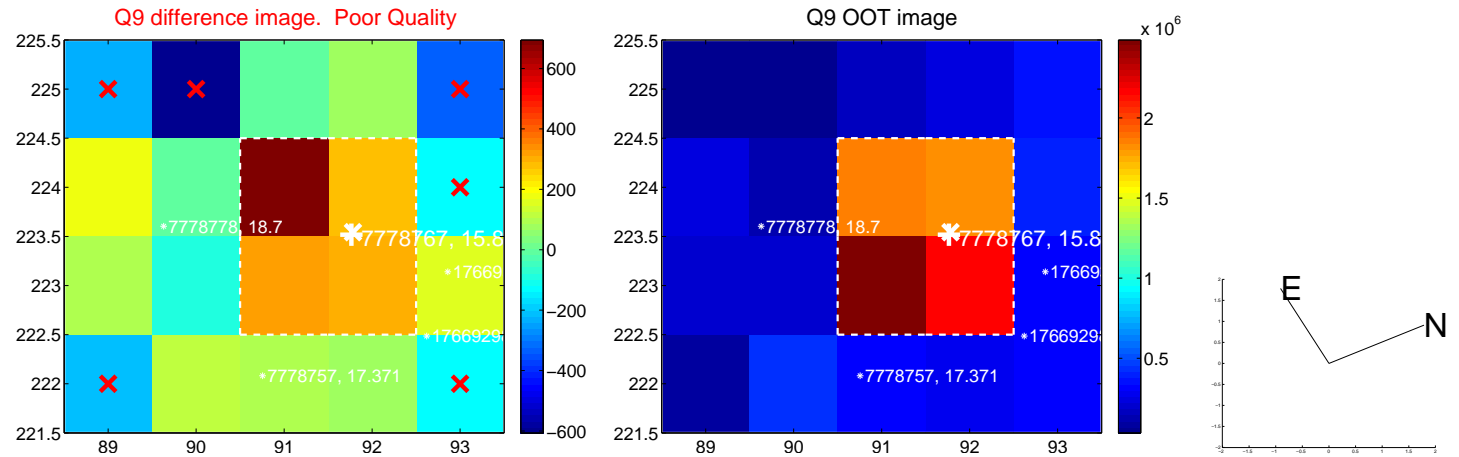
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



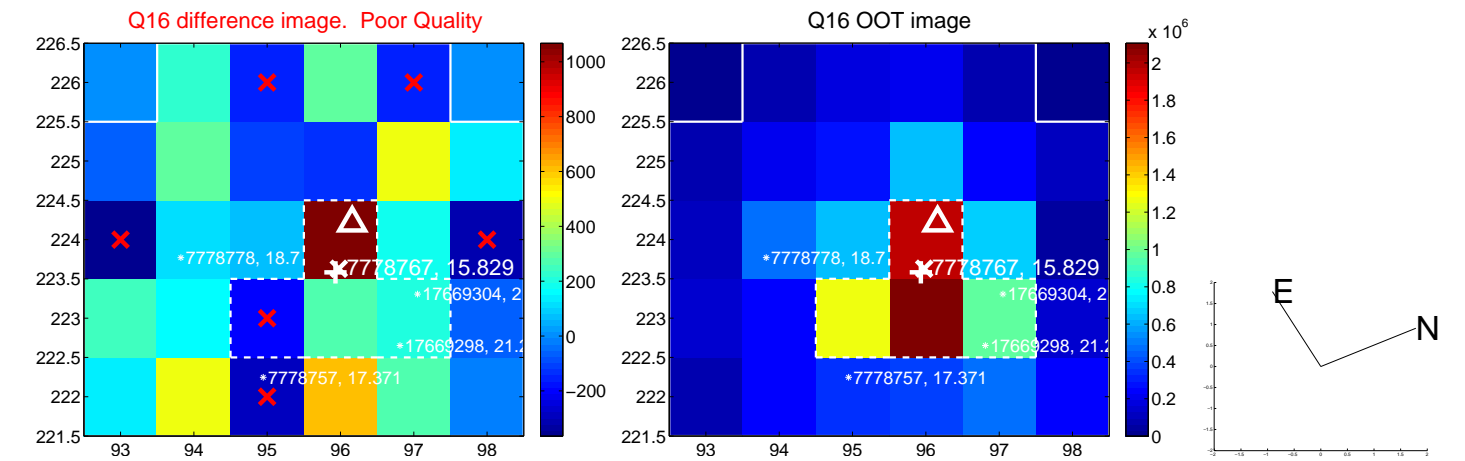
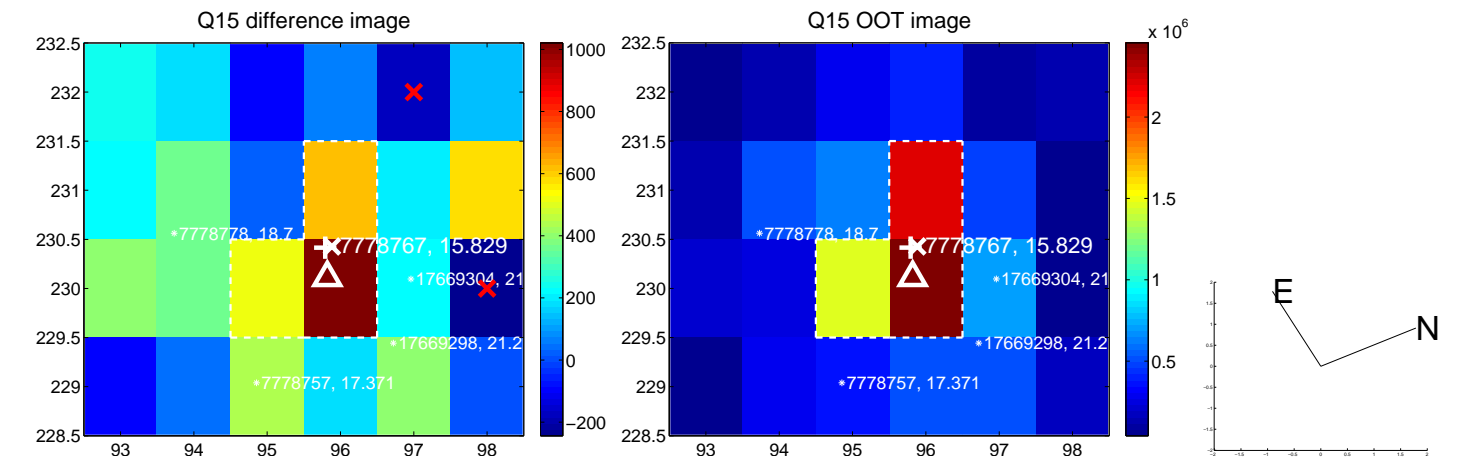
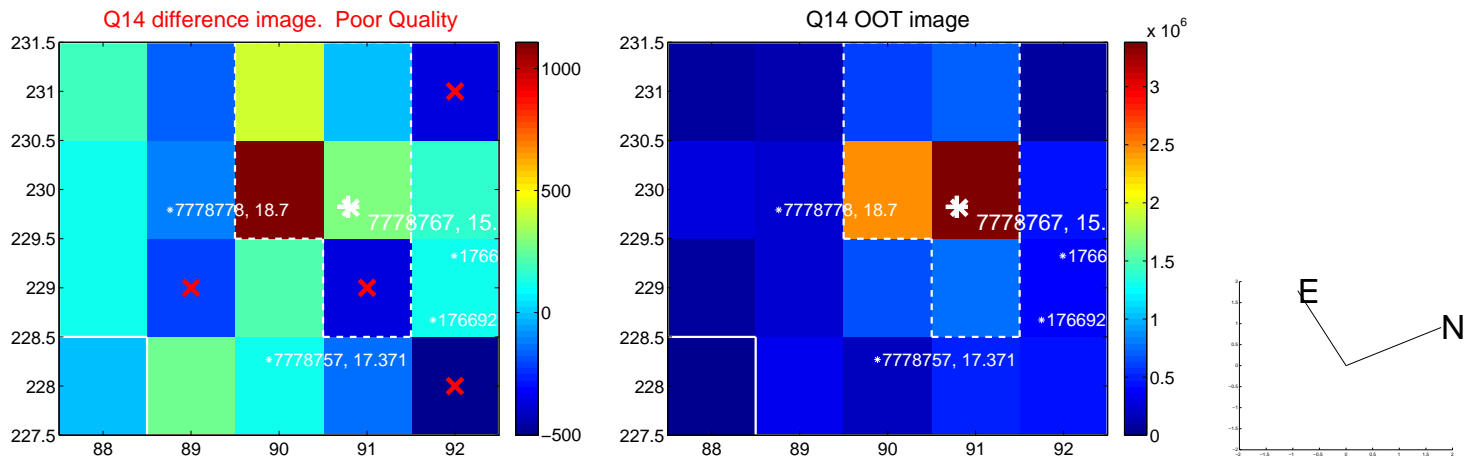
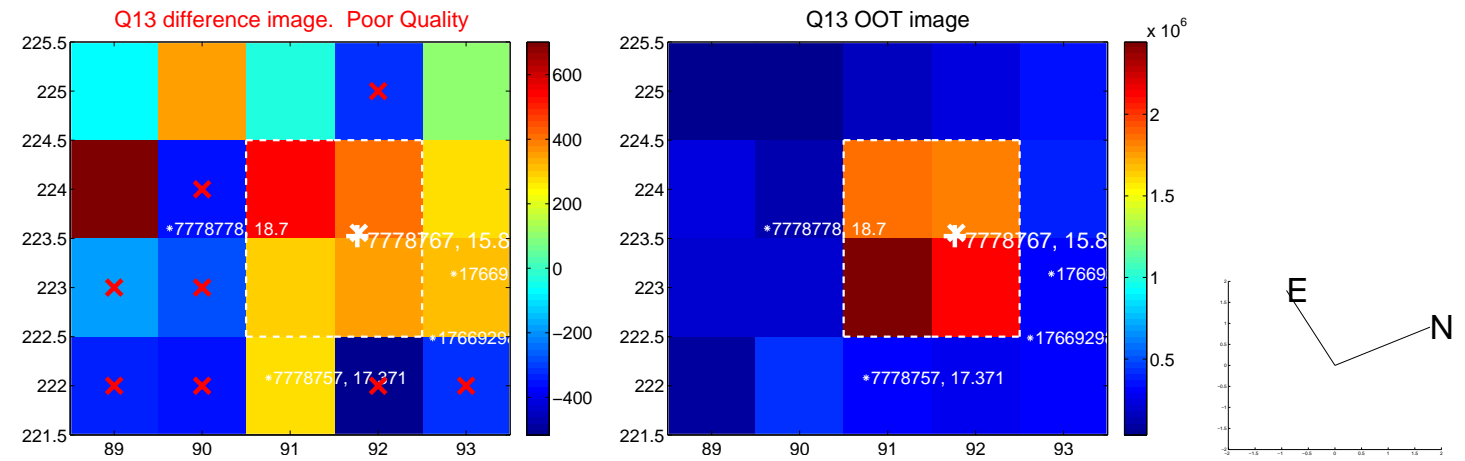
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



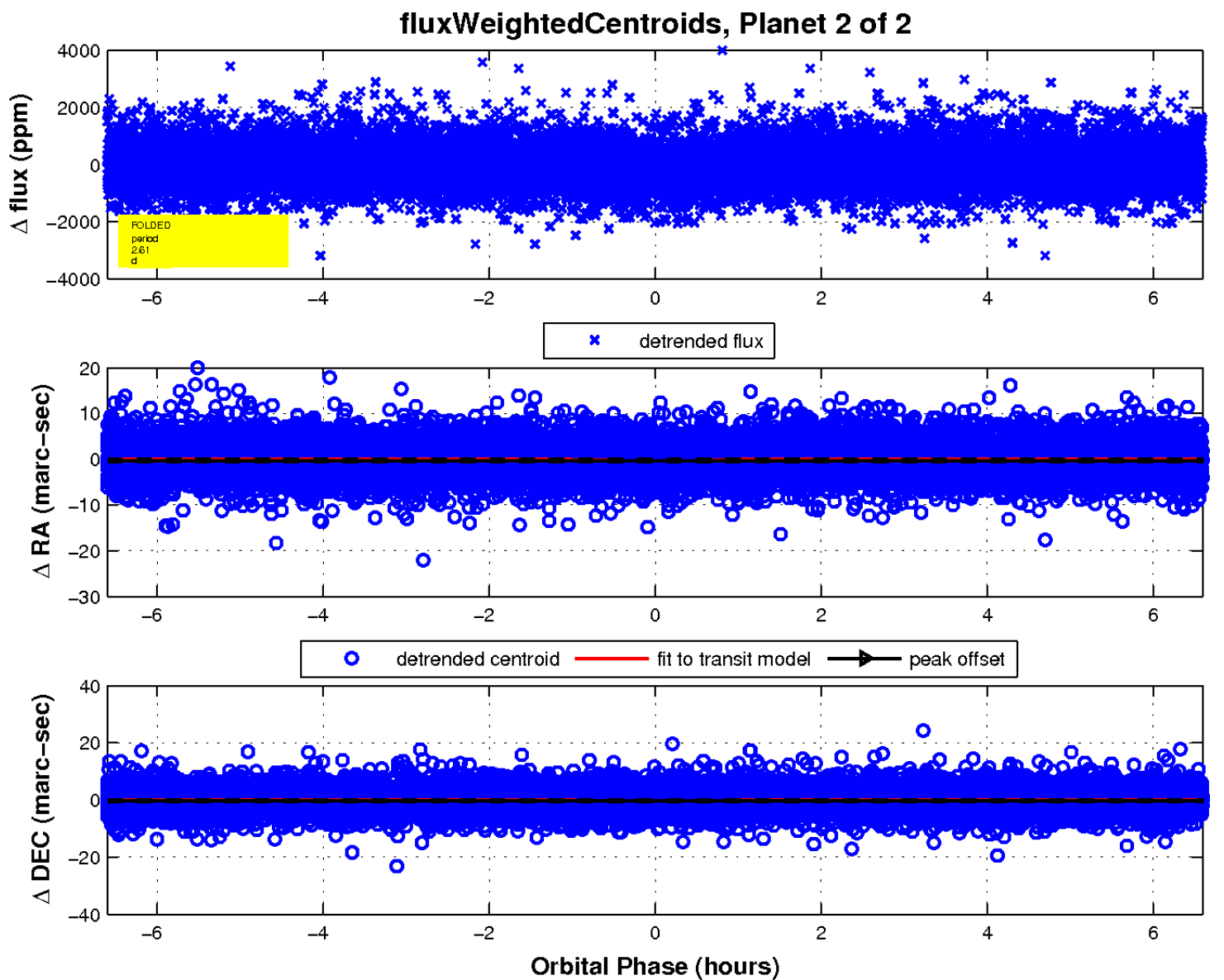
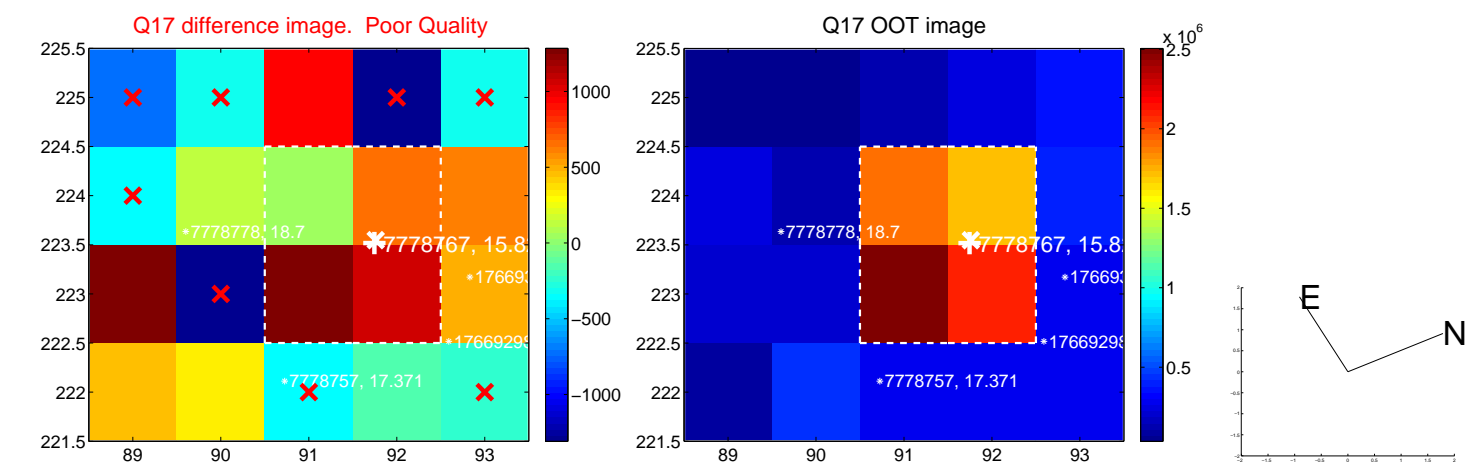
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

