

KIC 008351778

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})
008351778-01	OBS	No	1.030447	132.558646	34.2	6.603	11.4	6.3	1.96	7435	1.16	19425.75
008351778-03	OBS	No	0.515238	131.614138	191.2	1.633	12.0	24.1	1.96	7435	2.75	48948.00
008351778-04	OBS	No	25.024272	135.221275	688.9	3.987	9.2	8.4	1.96	7435	9.76	276.23
008351778-05	OBS	No	1.656636	132.481588	180.9	5.000	10.1	-1.0	1.96	7435	2.65	10314.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008351778-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008351778-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
008351778-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—HALO_GHOST
008351778-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

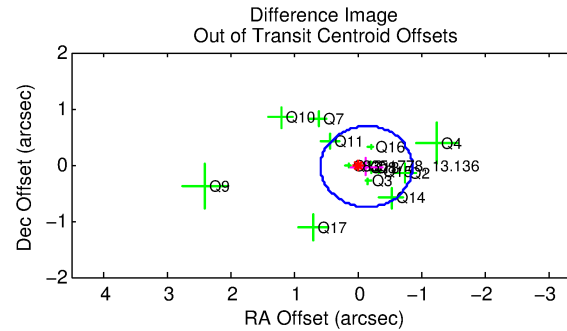
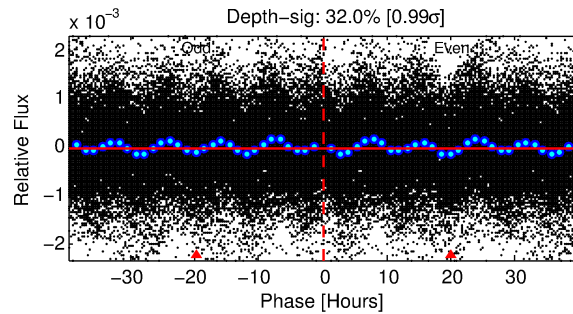
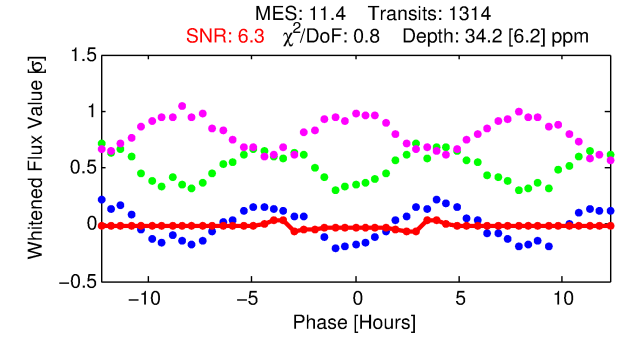
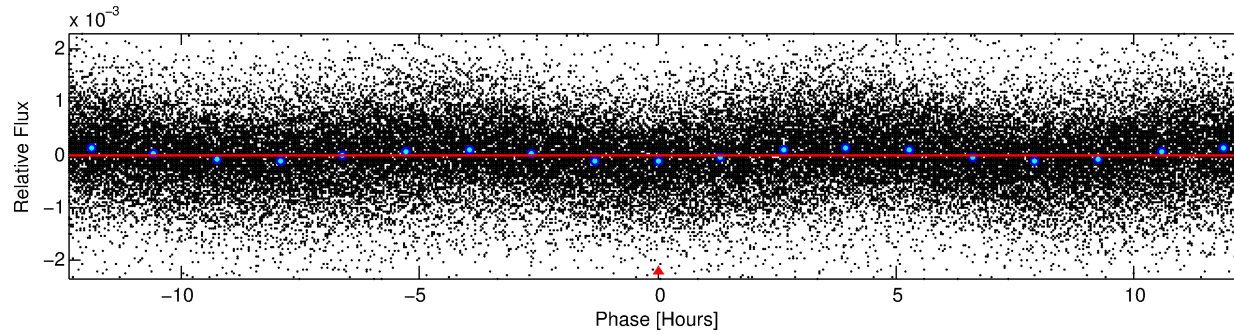
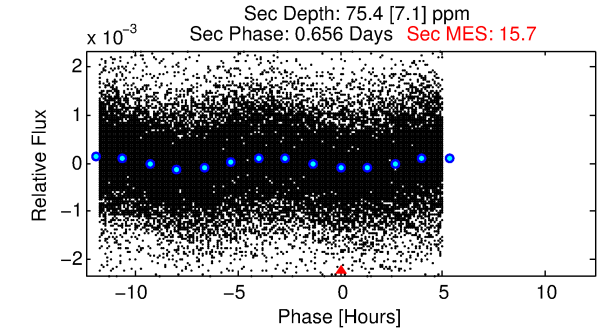
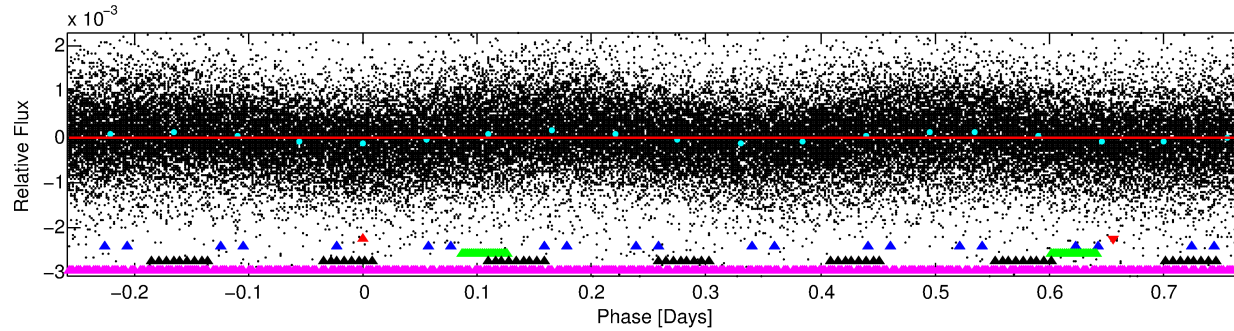
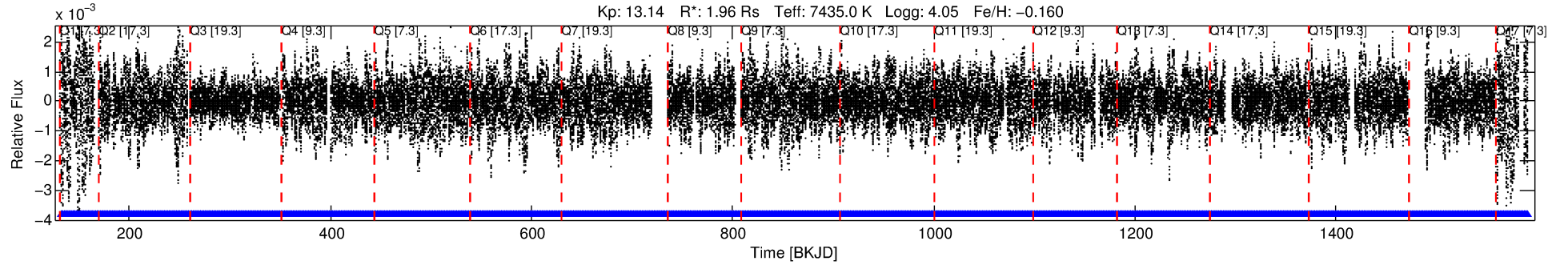
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008351778-01

No Significant Match Found

DV One-Page Summary

KIC: 8351778 Candidate: 1 of 5 Period: 1.030 d



DV Fit Results:

Period = 1.03045 [0.00002] d
Epoch = 132.5586 [0.0027] BKJD
Rp/R* = 0.0054 [0.0026]
a/R* = 1.33 [1.55]
b = 0.27 [9.49]
Seff = 19425.75 [7617.04]
Teq = 3010 [295] K
Rp = 1.16 [0.65] Re
a = 0.0232 [0.0057] AU
Ag = 16.65 [17.25] [0.91σ]
Teffp = 9402 [2323] K [2.73σ]

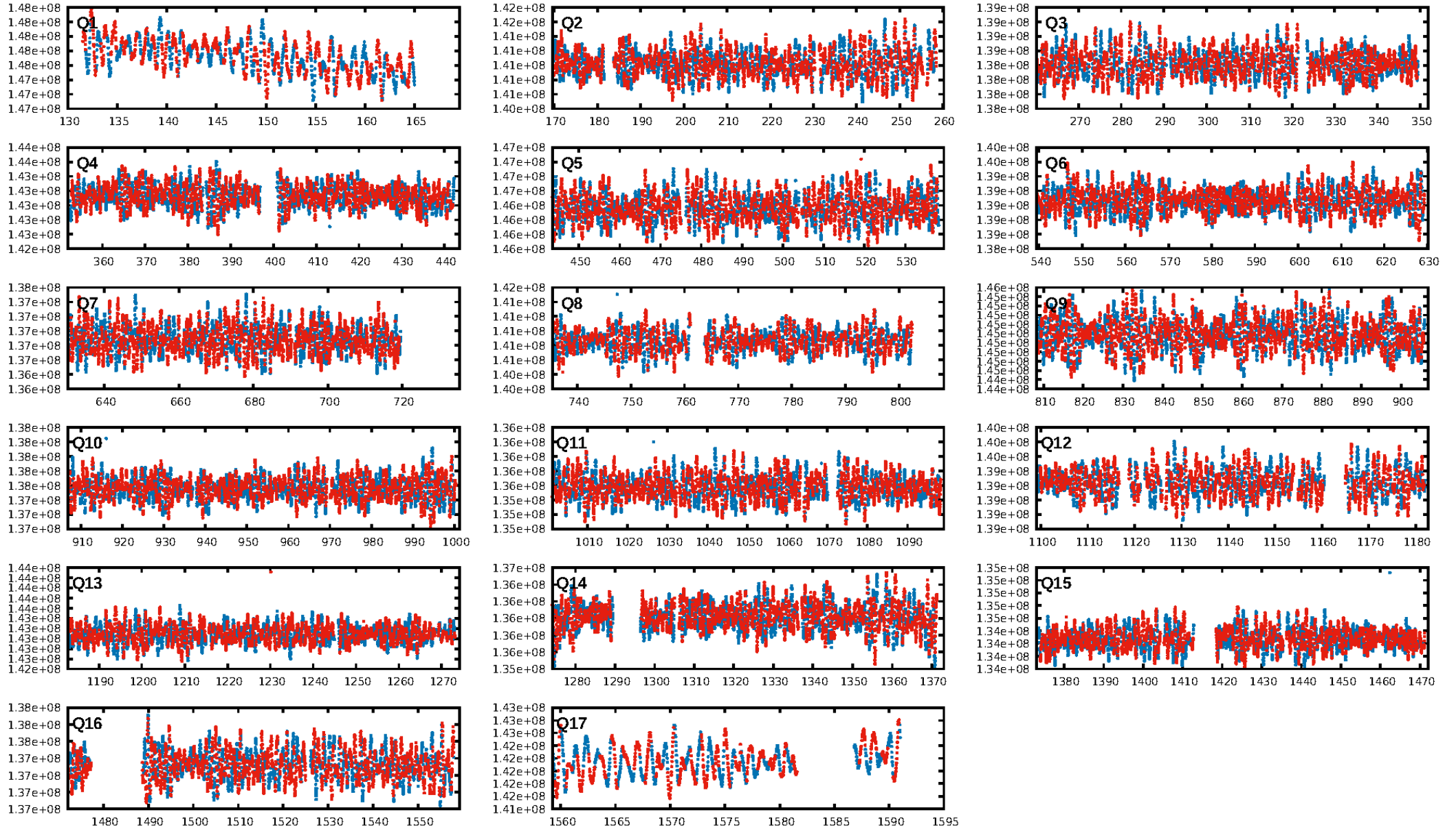
DV Diagnostic Results:

ShortPeriod-sig: 93.1% [1.82σ]
LongPeriod-sig: 93.0% [1.81σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1255/1255]
GhostDiagnostic-chr: 117.6
Centroid-sig: 0.7%
Centroid-so: 0.695 arcsec [2.04σ]
OotOffset-rm: 0.145 arcsec [0.60σ]
KicOffset-rm: 0.175 arcsec [1.11σ]
OotOffset-st: 3/4/4/3 [14]
KicOffset-st: 3/4/4/3 [14]
DiffImageQuality-fgm: 0.71 [10/14]
DiffImageOverlap-fno: 0.00 [0/17]

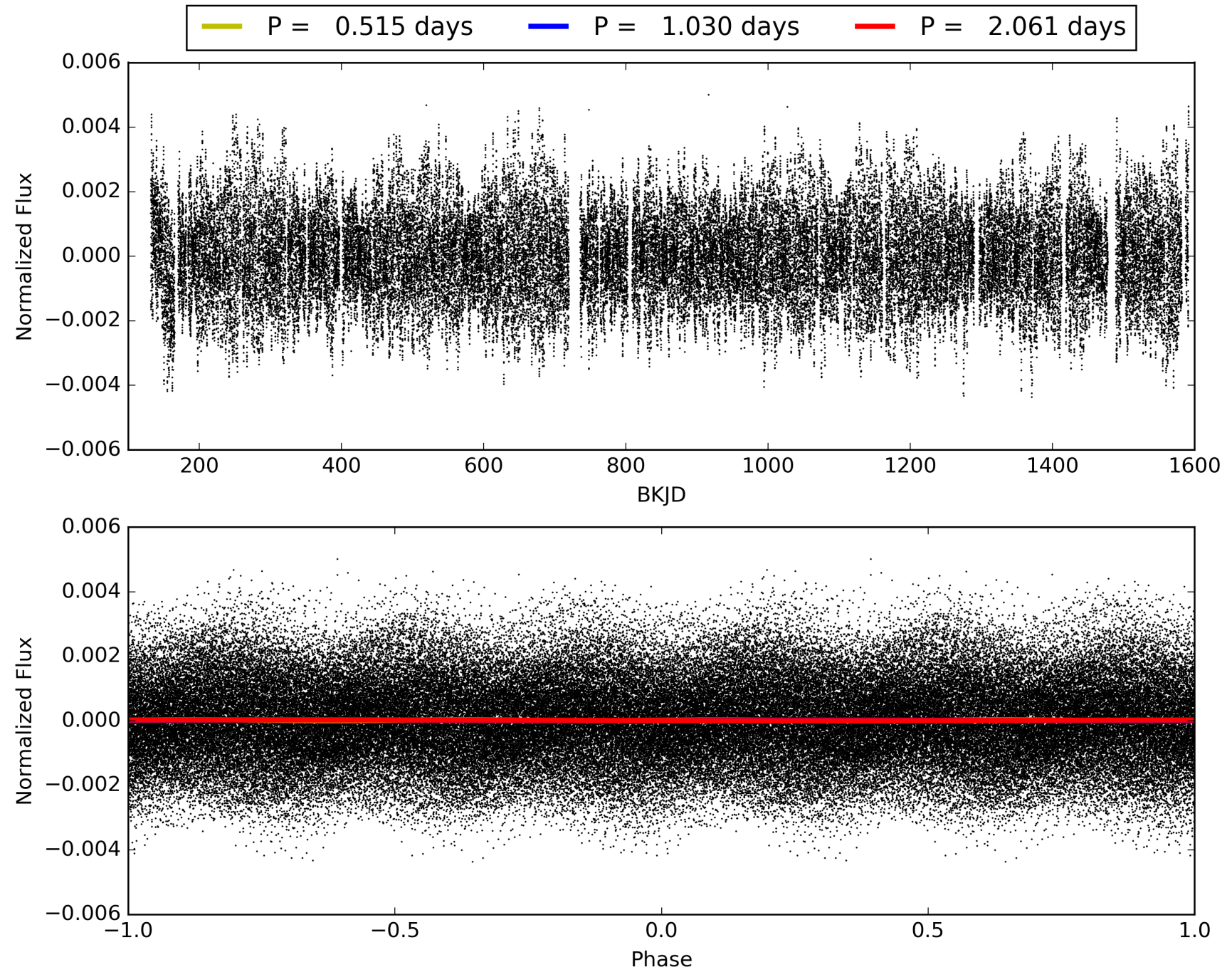
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:47:54 Z

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

TCE 008351778-01, PDC Light Curves

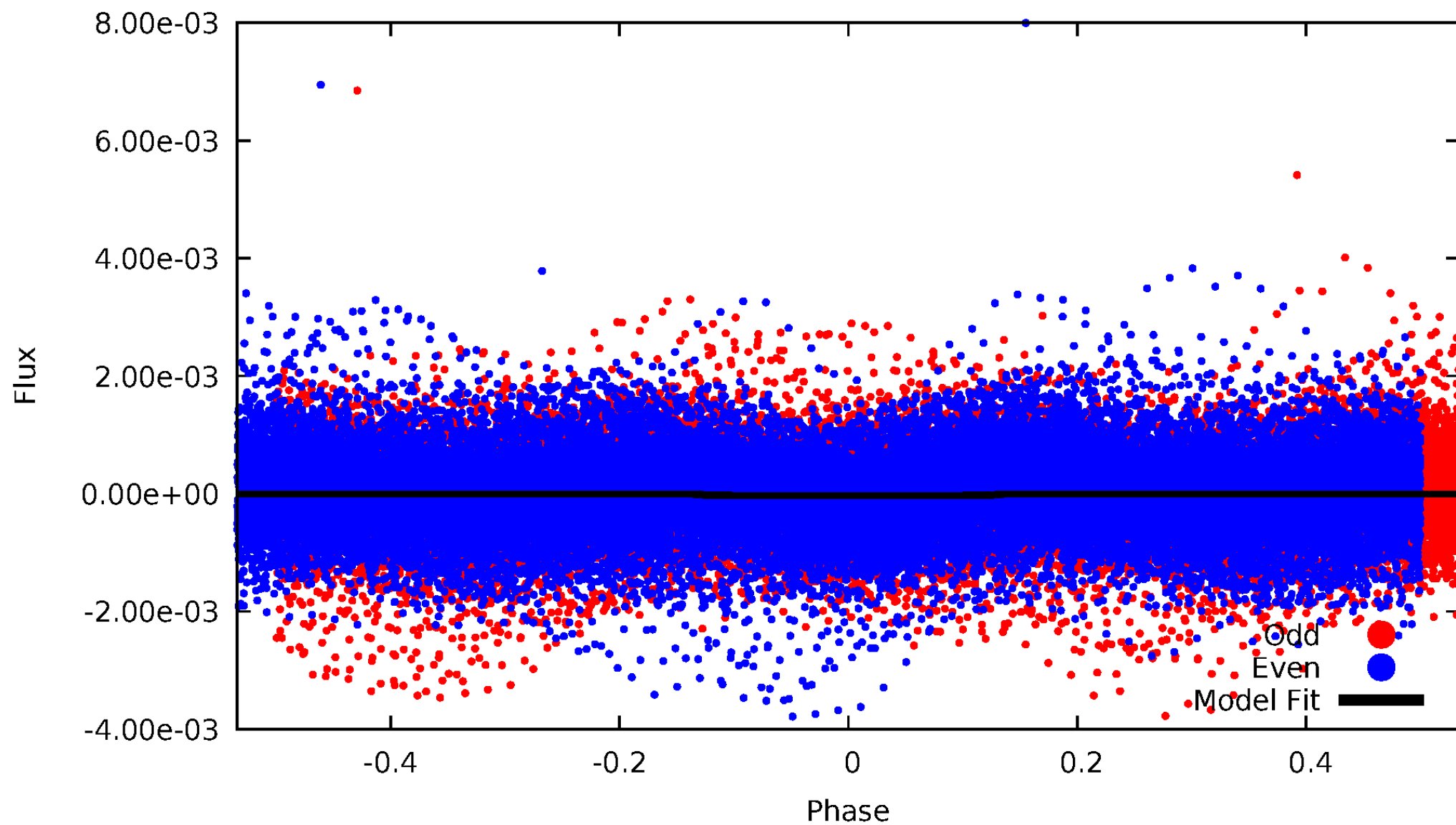


TCE 008351778-01



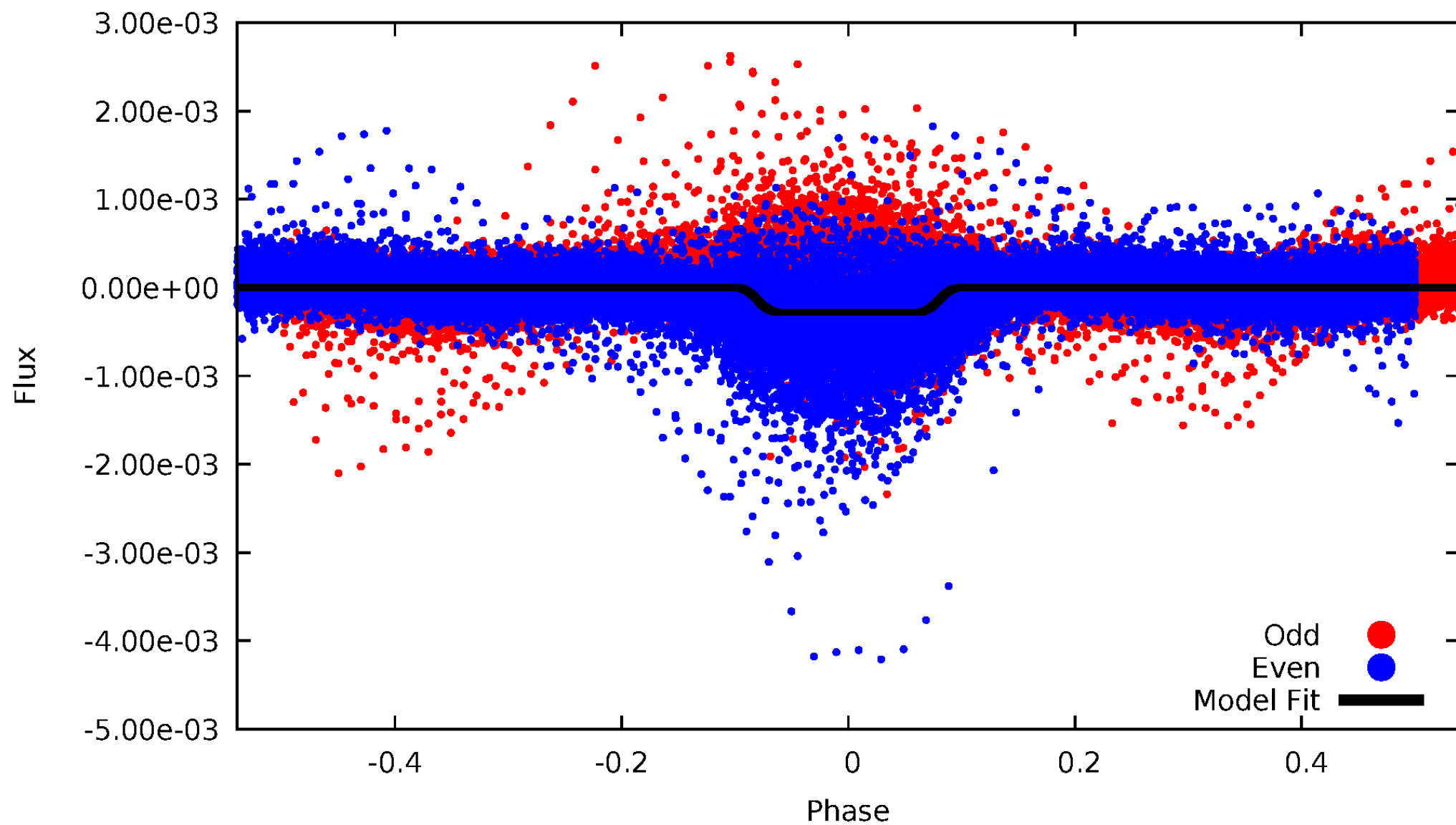
DV Odd/Even

TCE 008351778-01

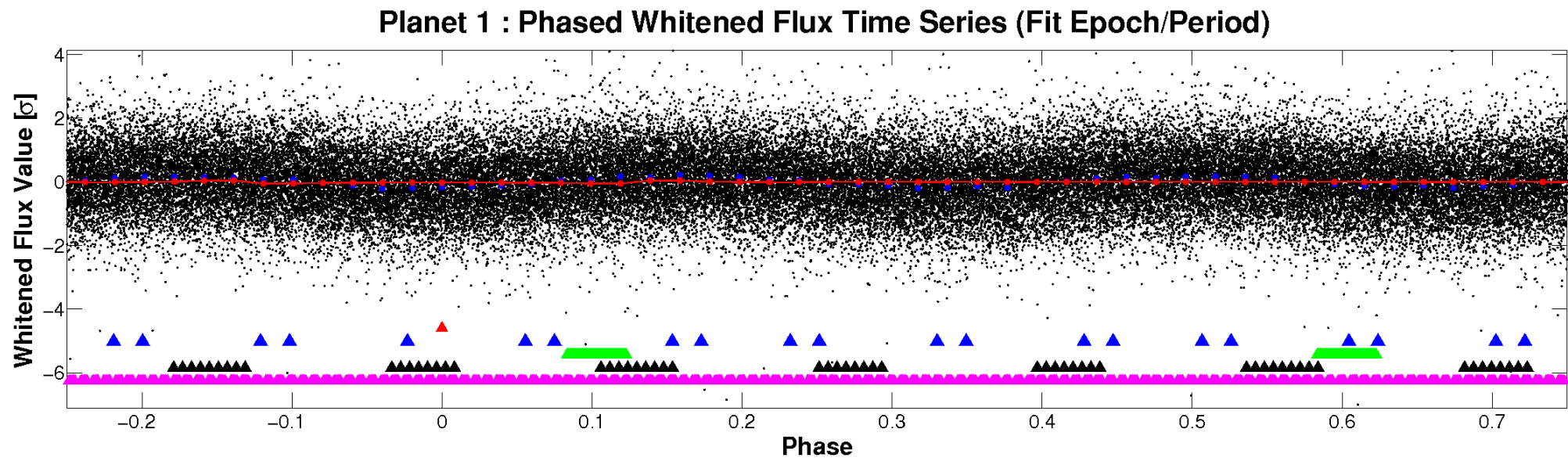
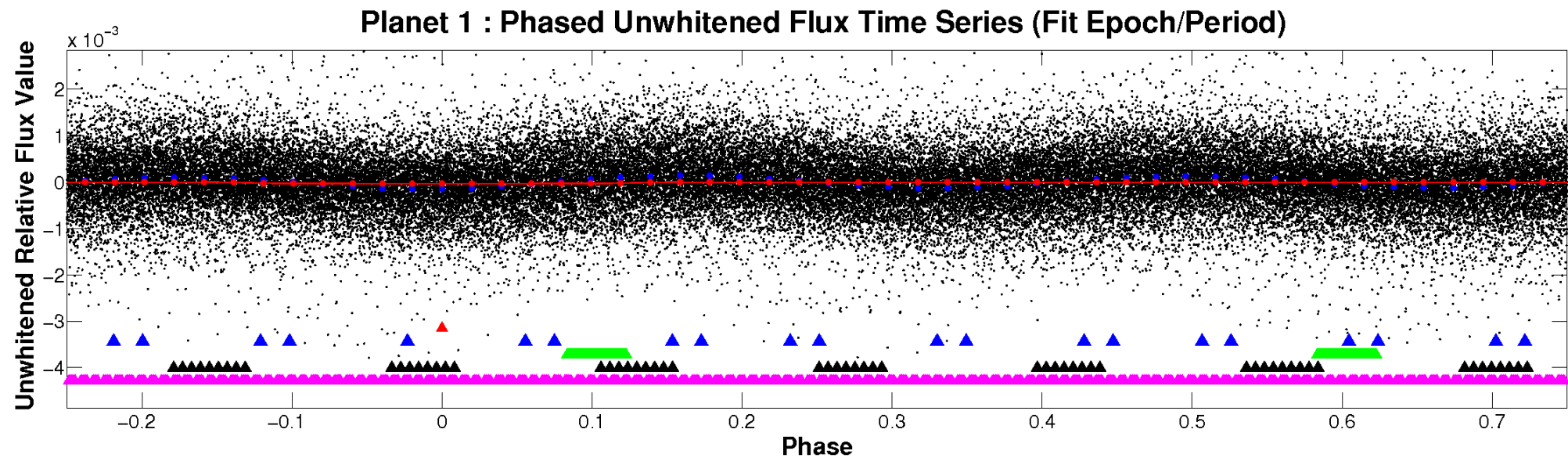


ALT Odd/Even

TCE 008351778-01

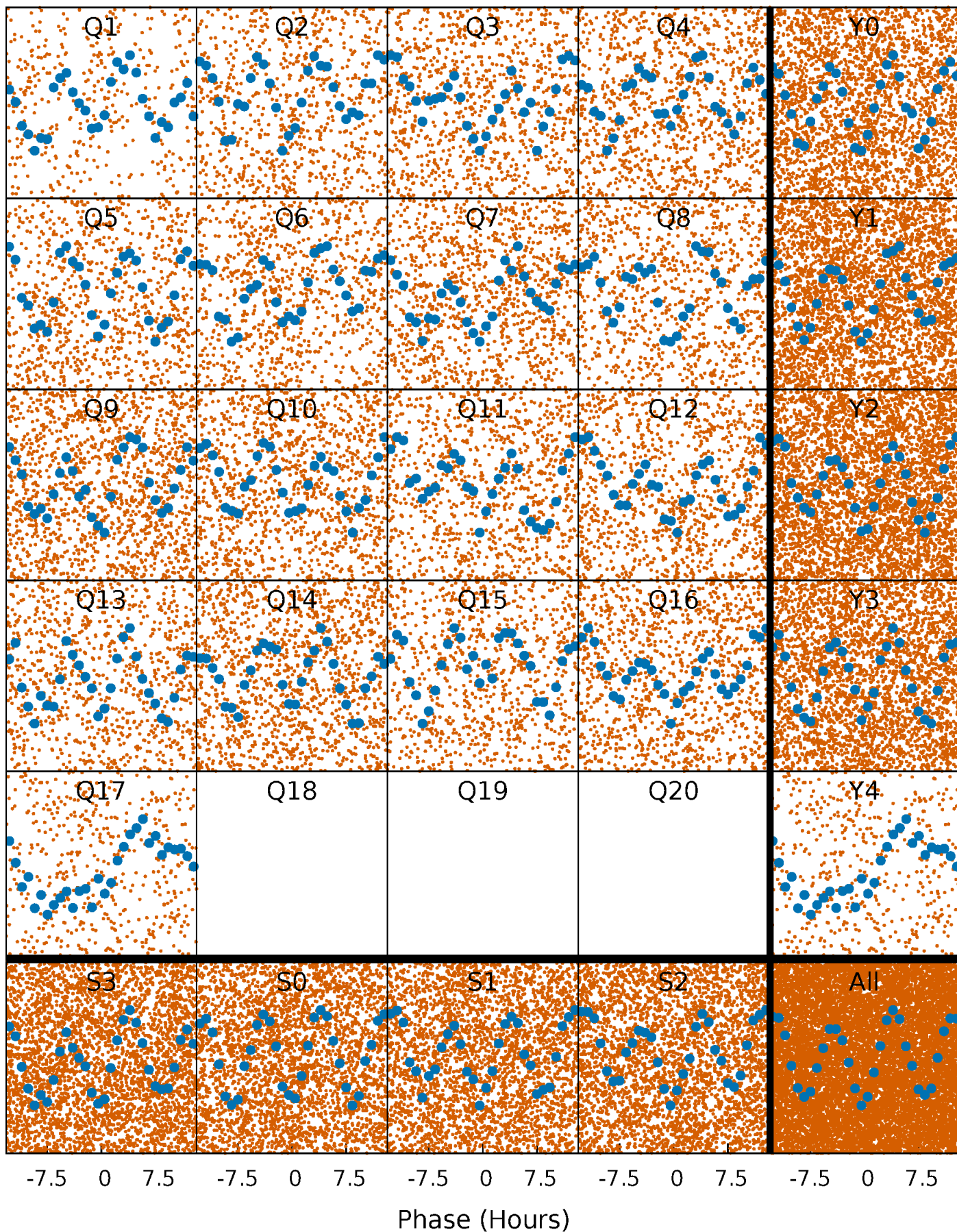


Non-Whitened Vs. Whitened Light Curve



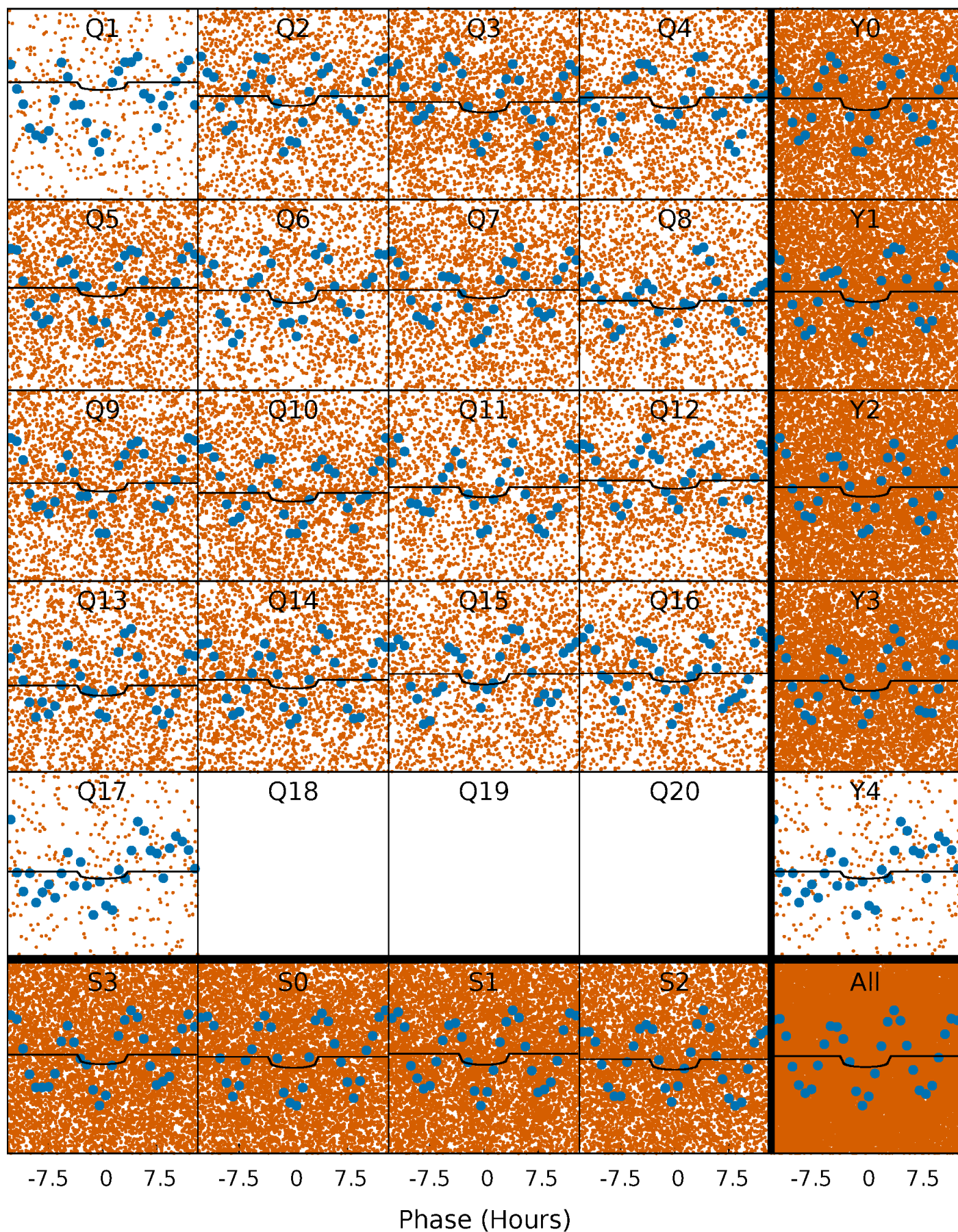
PDC Quarter-Phased Transit Curves

TCE 008351778-01 P= 1.030447 Days $T_0=132.558646$ (BKJD)



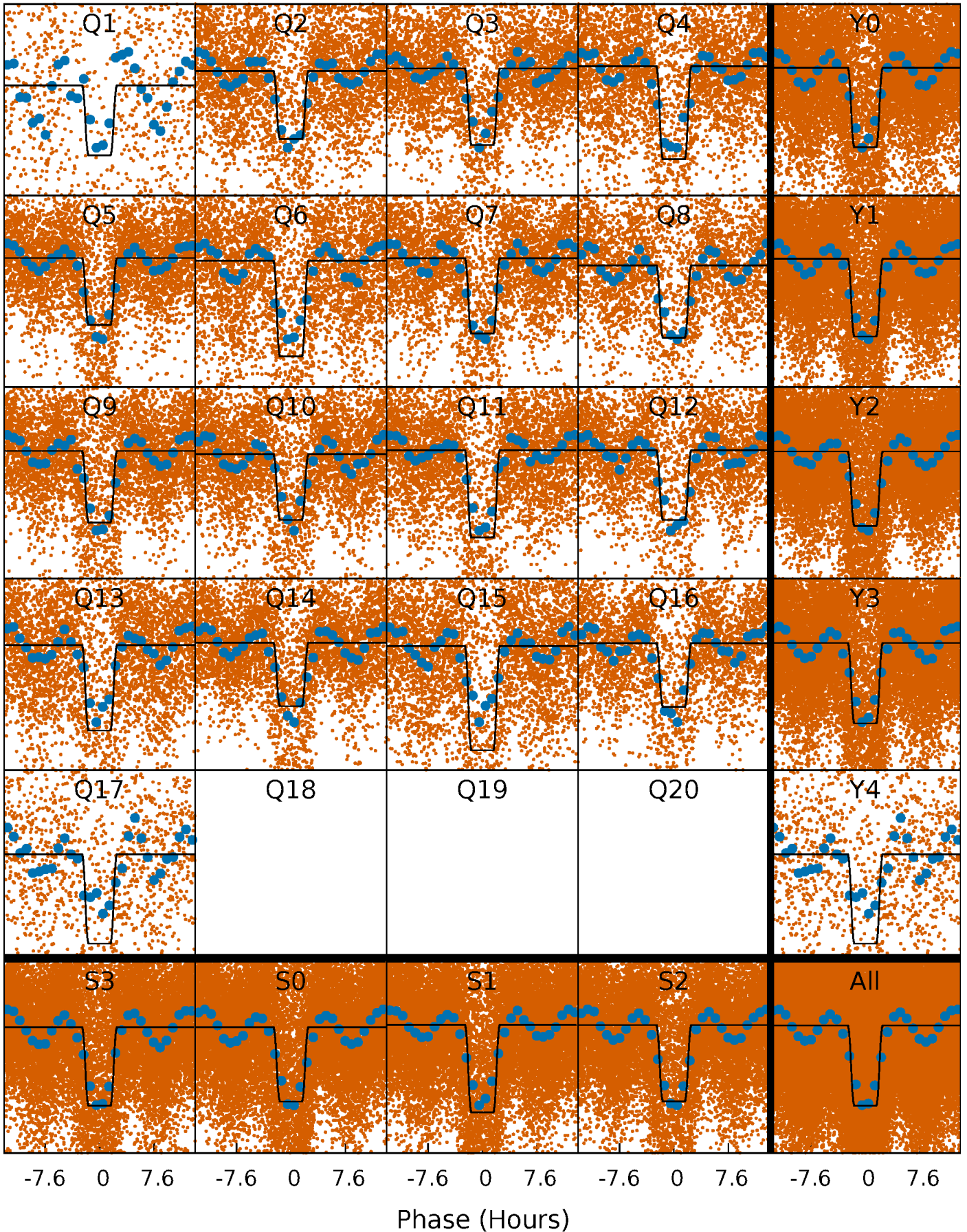
DV Quarter-Phased Transit Curves

TCE 008351778-01 P= 1.030447 Days $T_0=132.558646$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

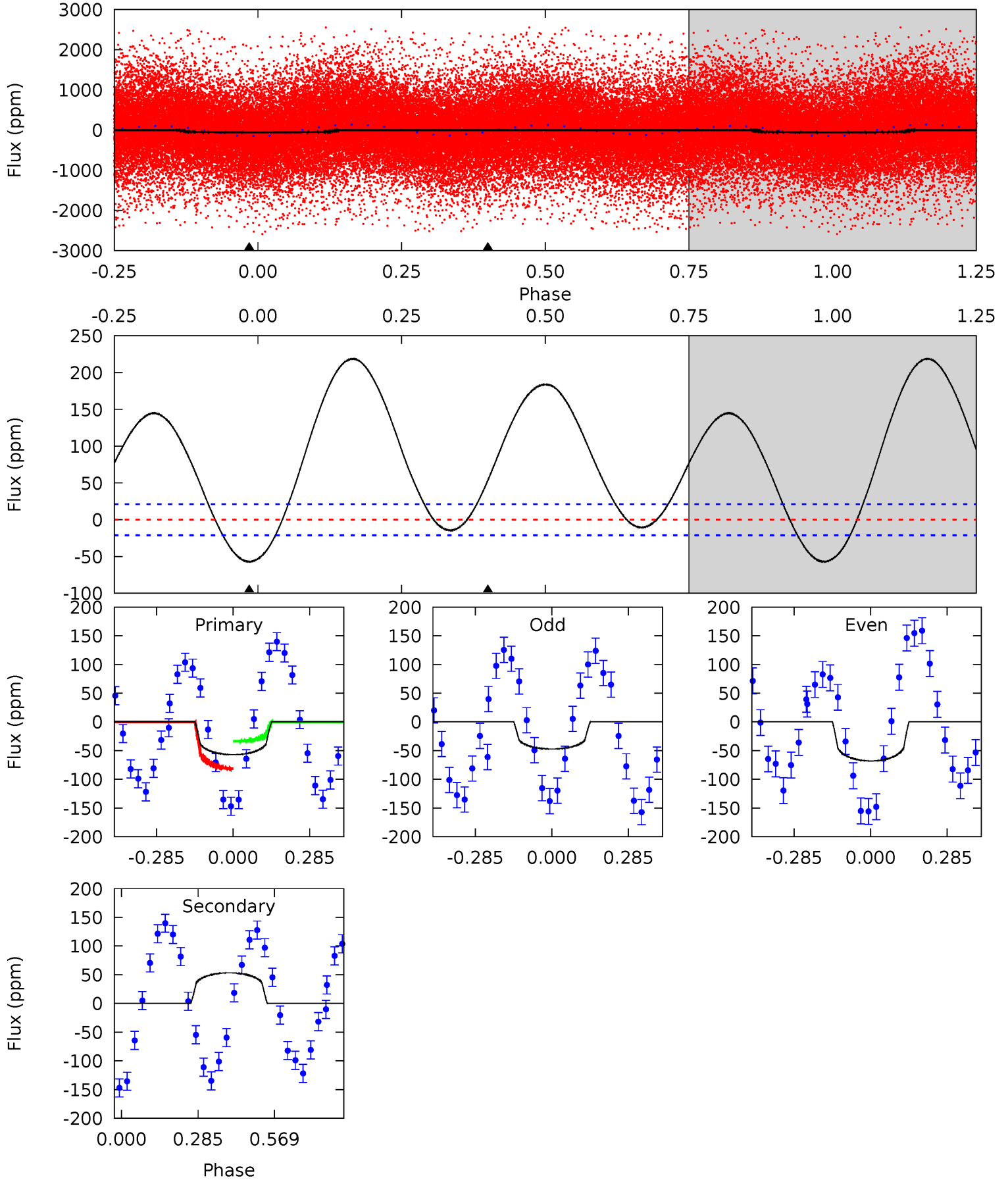
TCE 008351778-01 P= 1.030465 Days $T_0=132.539661$ (BKJD)



DV Model-Shift Uniqueness Test

008351778-01, P = 1.030447 Days, E = 130.497752 Days

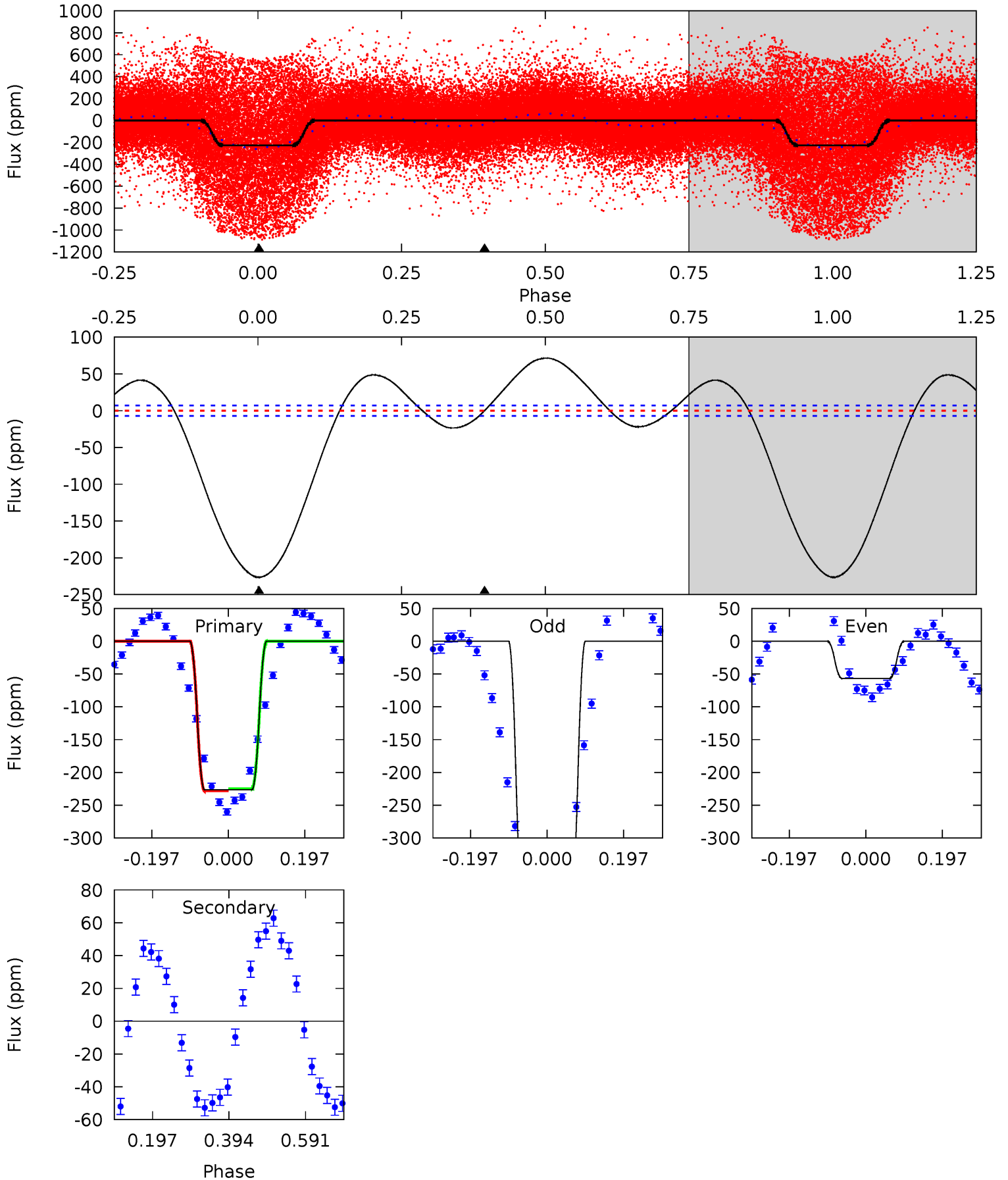
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	-10.9	0	0	4.34	1.07	4.75	11.7	11.7	-10.9	-10.9	2.21	2.86	0.79	5.12



Alt Model-Shift Uniqueness Test

008351778-01, P = 1.030465 Days, E = 131.509196 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
139.8	0	0	0	4.42	1.29	13.3	139.8	139.8	0	0	76.4	1.04	0.24	0



Stellar Parameters For KIC 008351778

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7435^{+235}_{-314}	$4.052^{+0.193}_{-0.158}$	$-0.160^{+0.250}_{-0.350}$	$1.957^{+0.568}_{-0.465}$	$1.573^{+0.212}_{-0.259}$	$0.295^{+0.311}_{-0.130}$
	+3%/-4%	+5%/-4%	+156%/-219%	+29%/-24%	+13%/-16%	+105%/-44%
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 008351778-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	53 ± 5	$1.12^{+0.56}_{-0.55}$	4188^{+351}_{-333}	-9163^{+2014}_{-6026}	$-12.503^{+6.898}_{-31.400}$
Alt.	0 ± 2	$3.48^{+0.82}_{-0.67}$	4159^{+330}_{-310}	-3763^{+220}_{-212}	$0.002^{+0.037}_{-0.040}$

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

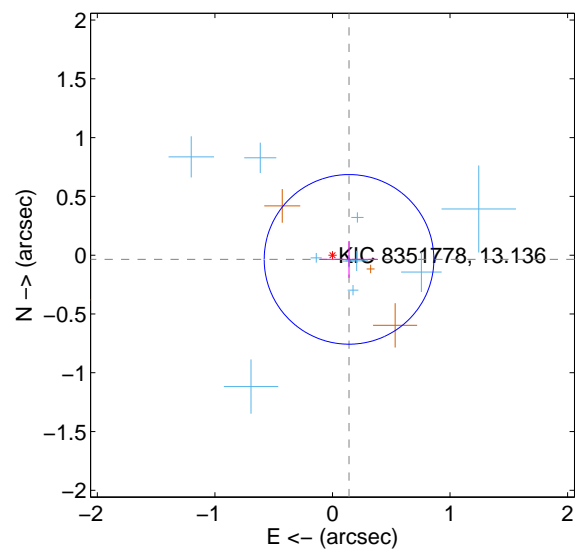
Supplemental centroid analysis for 008351778-01. Kepler magnitude: 13.14. Transit SNR 6.26

There are 10 quarters with good PRF difference image offsets

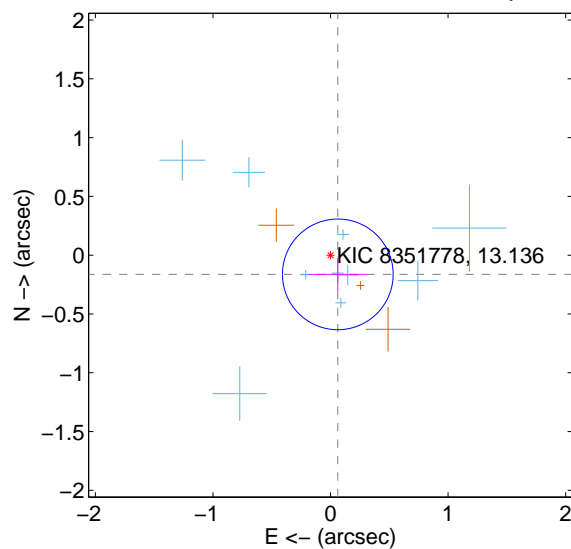
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.145 ± 0.240	0.60	-0.141 ± 0.246	-0.036 ± 0.157
PRF-fit source offset from KIC position	0.175 ± 0.157	1.11	-0.062 ± 0.246	-0.163 ± 0.141
photometric centroid source offset	0.70 ± 0.34	2.04	0.27 ± 0.33	-0.64 ± 0.34

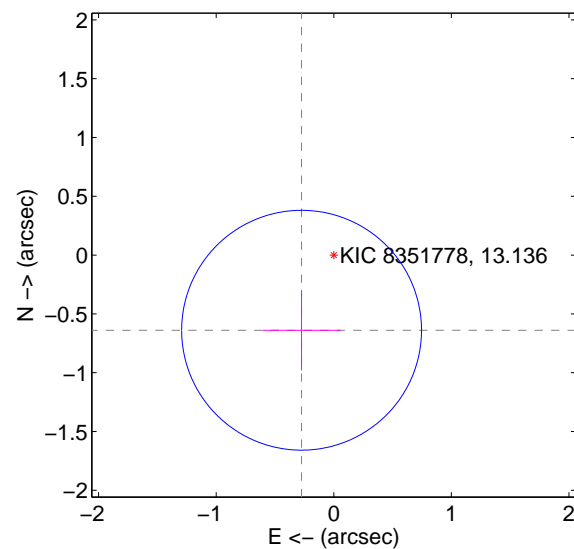
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

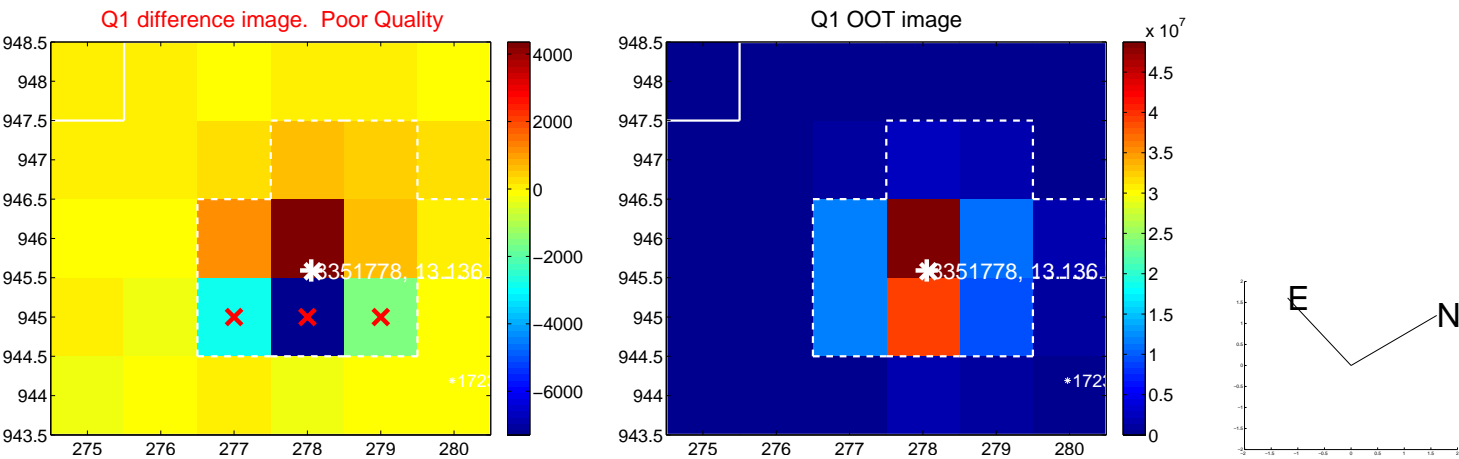


offset from photometric centroids

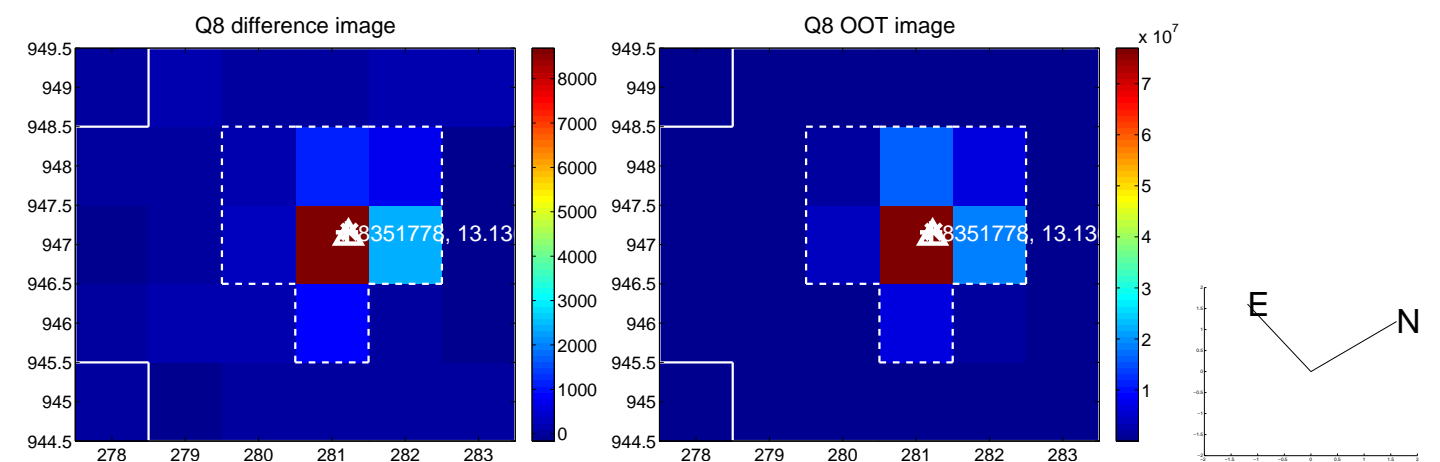
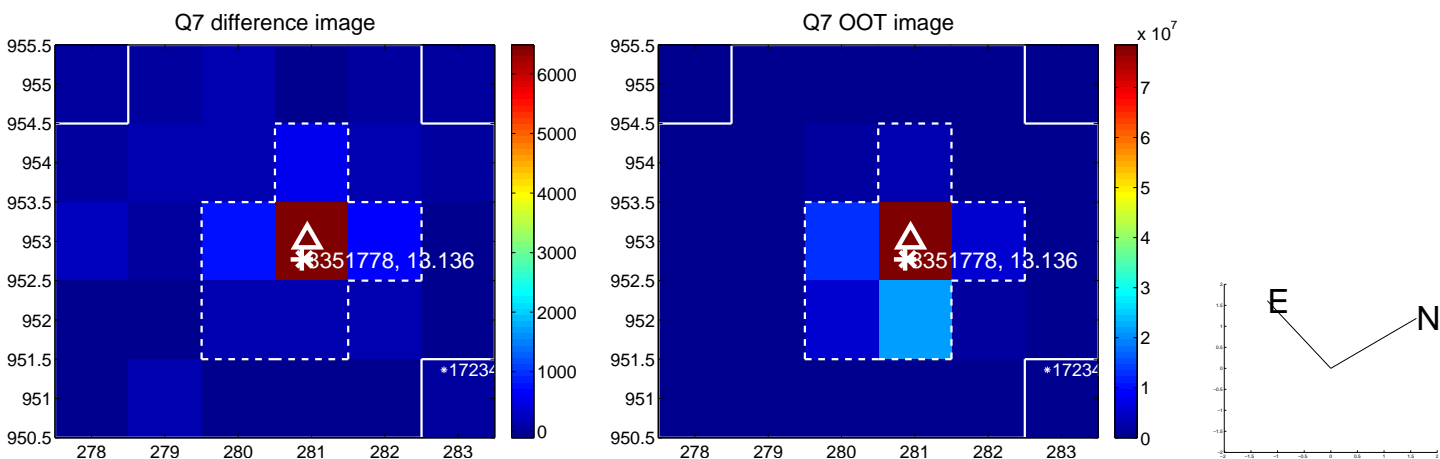
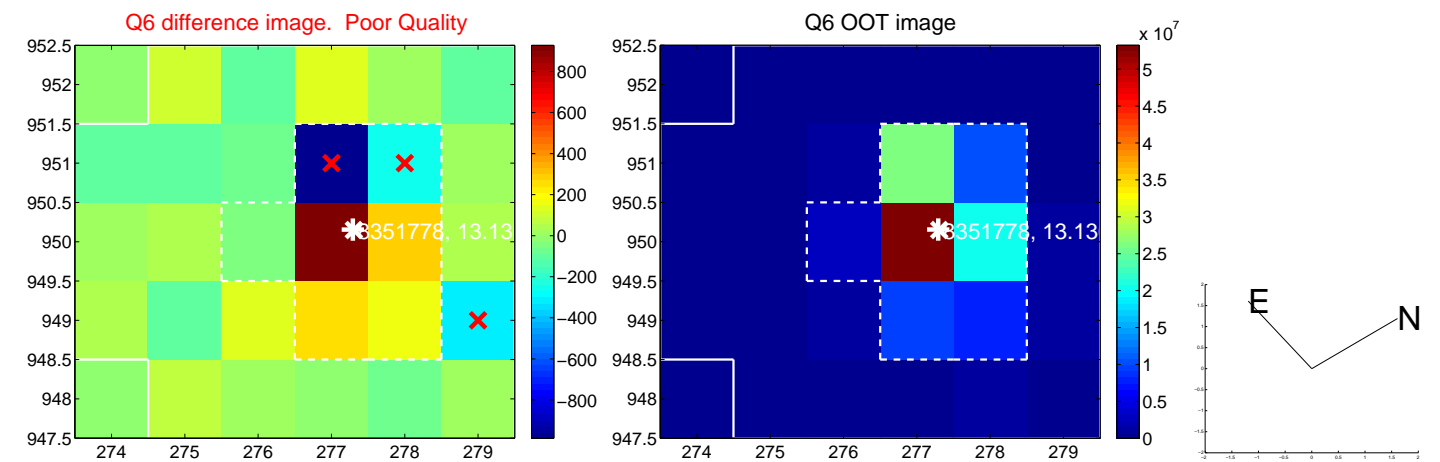
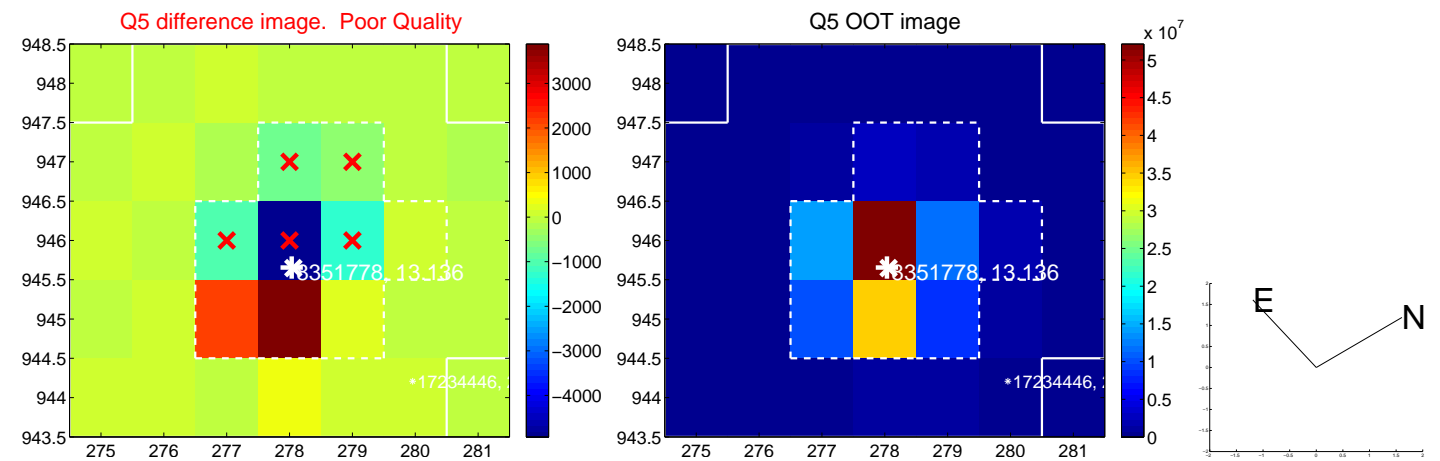


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

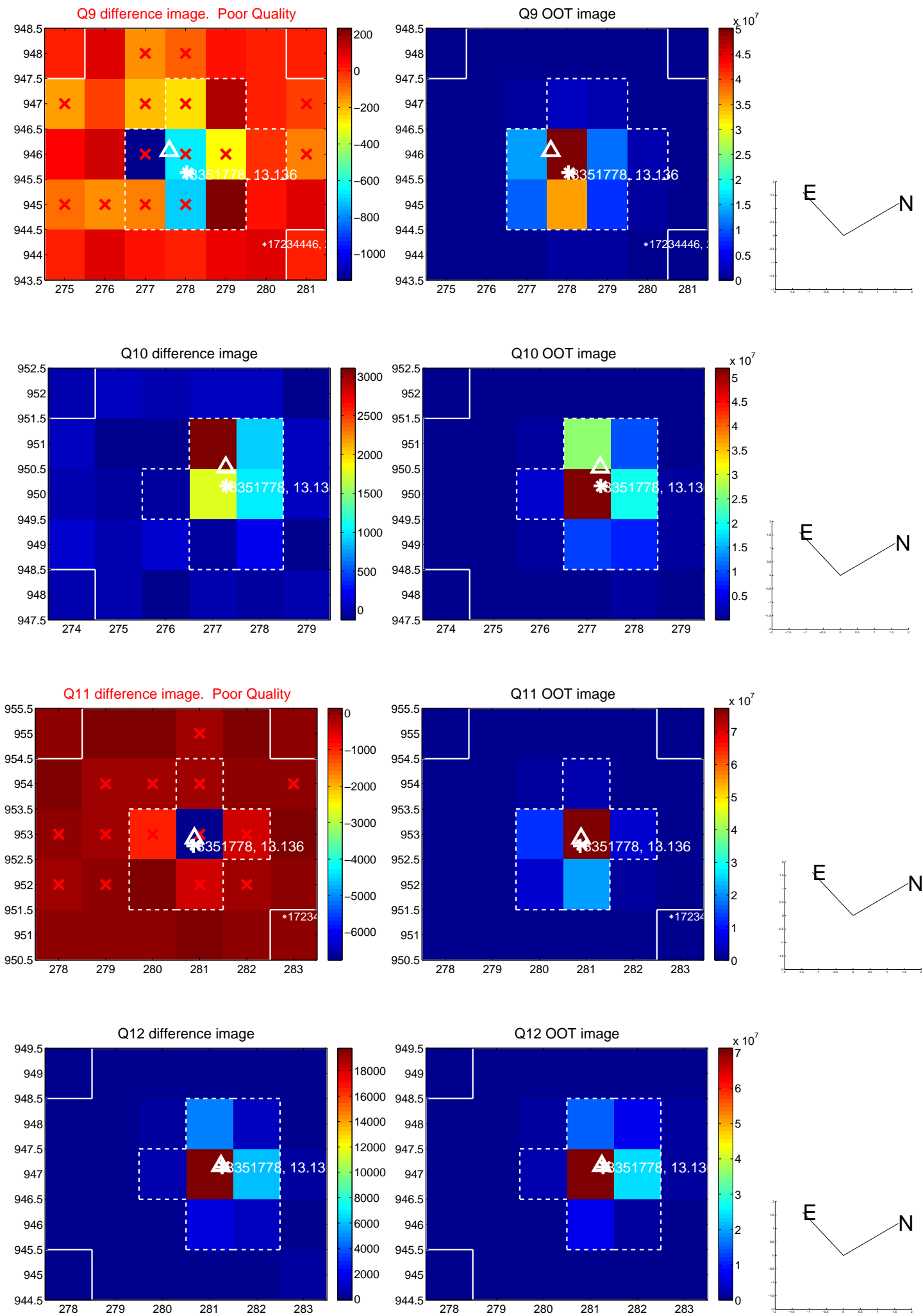
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



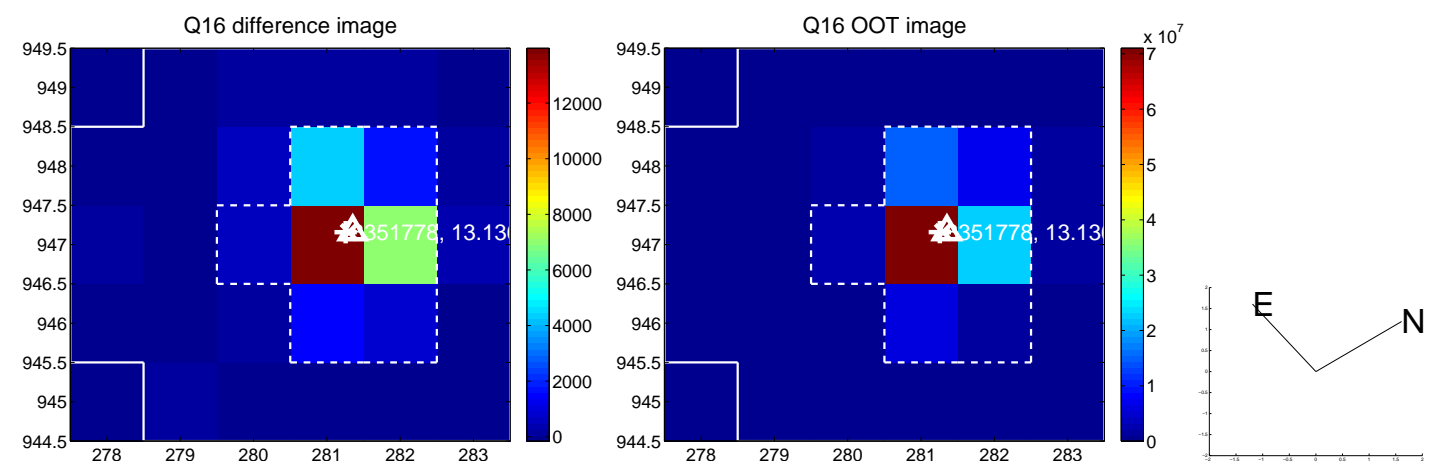
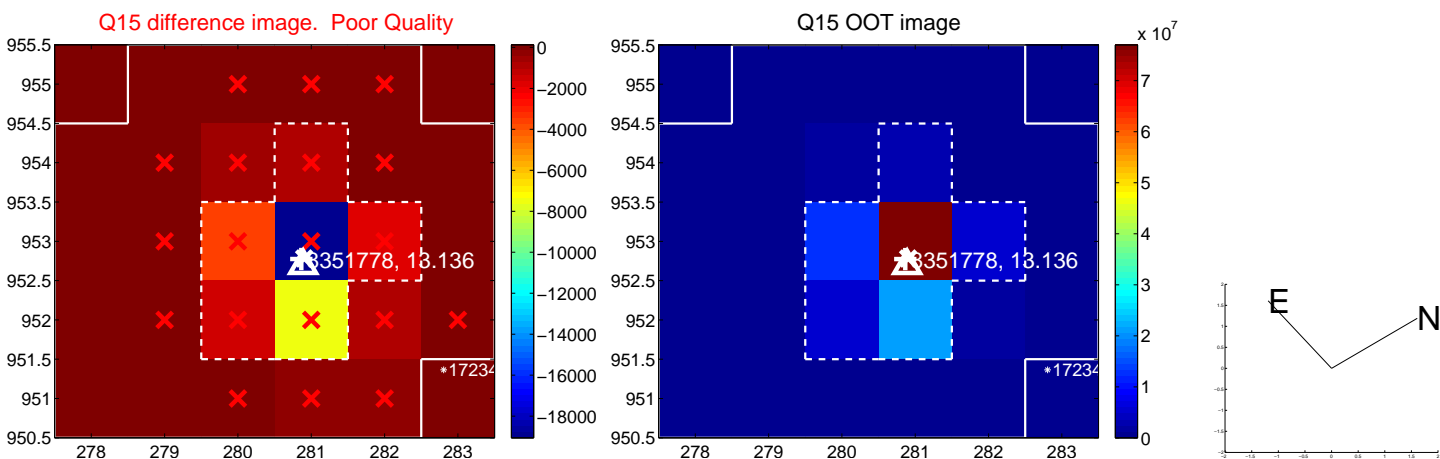
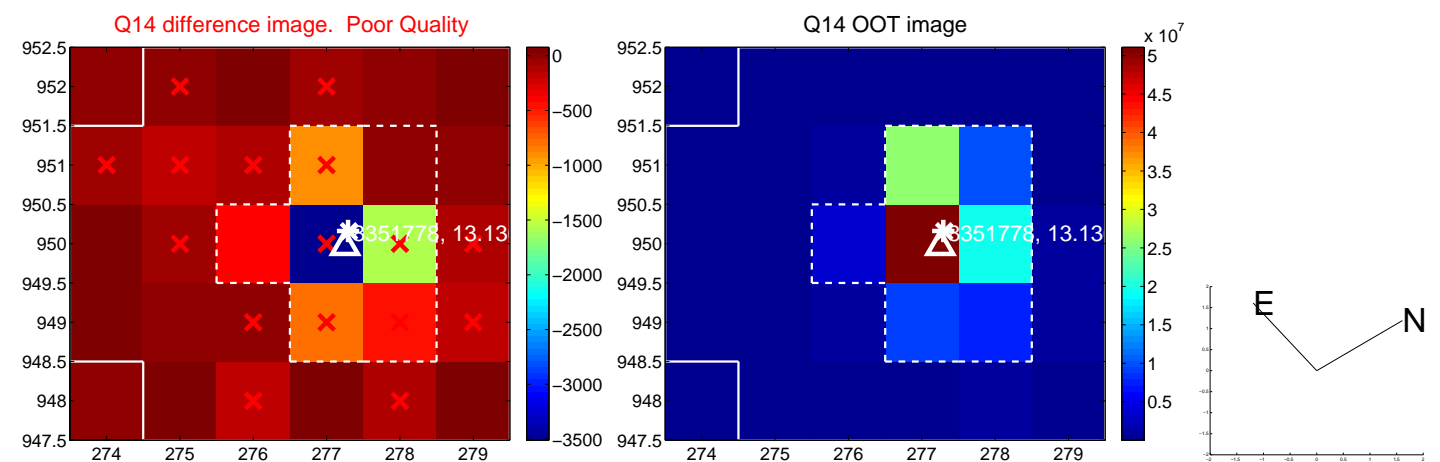
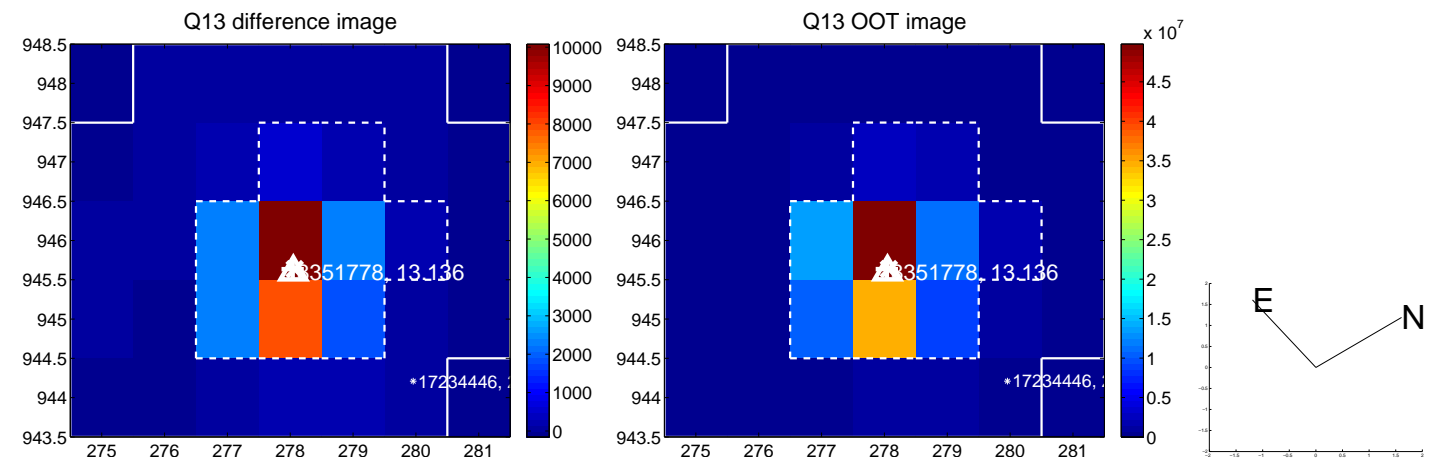
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



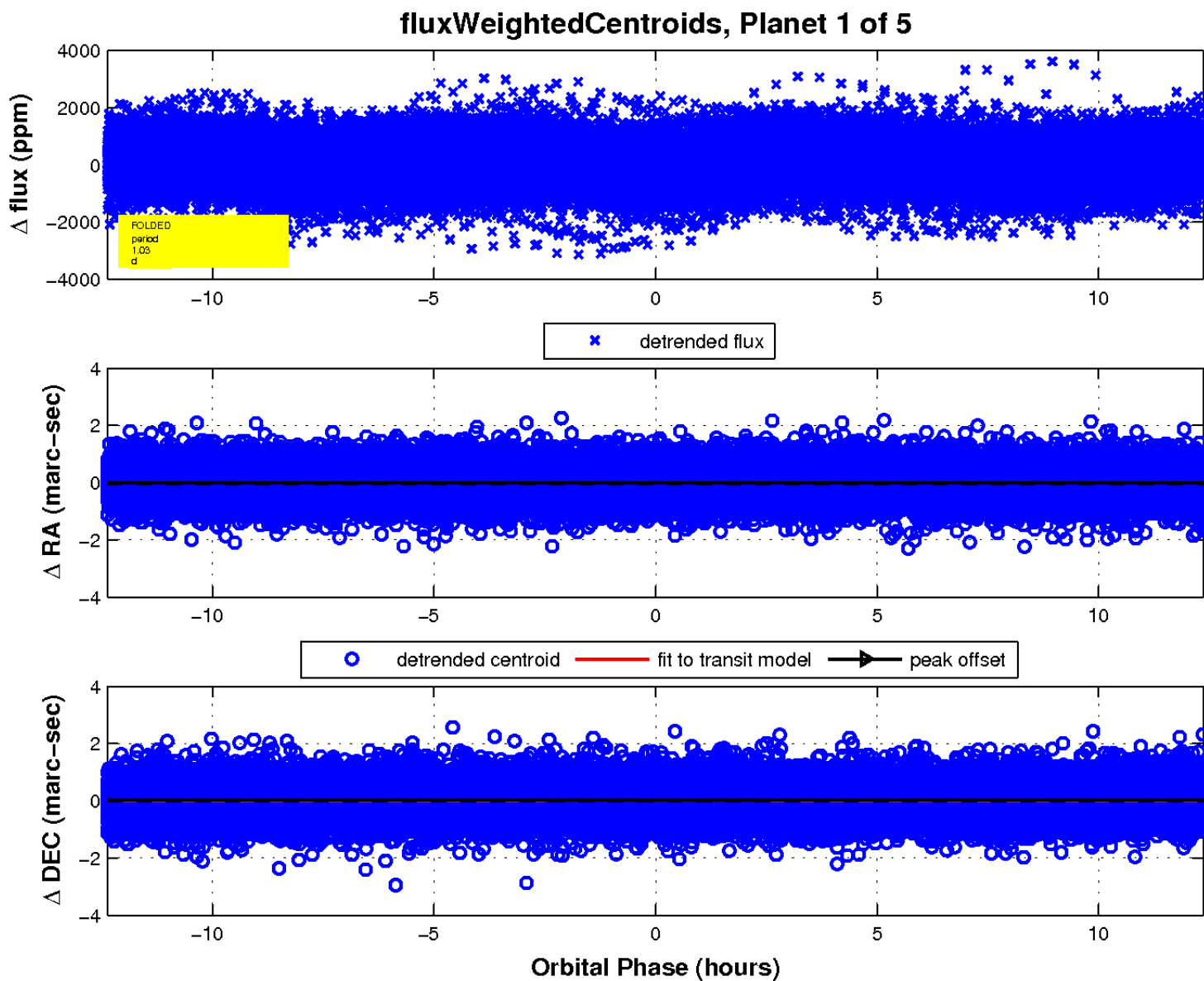
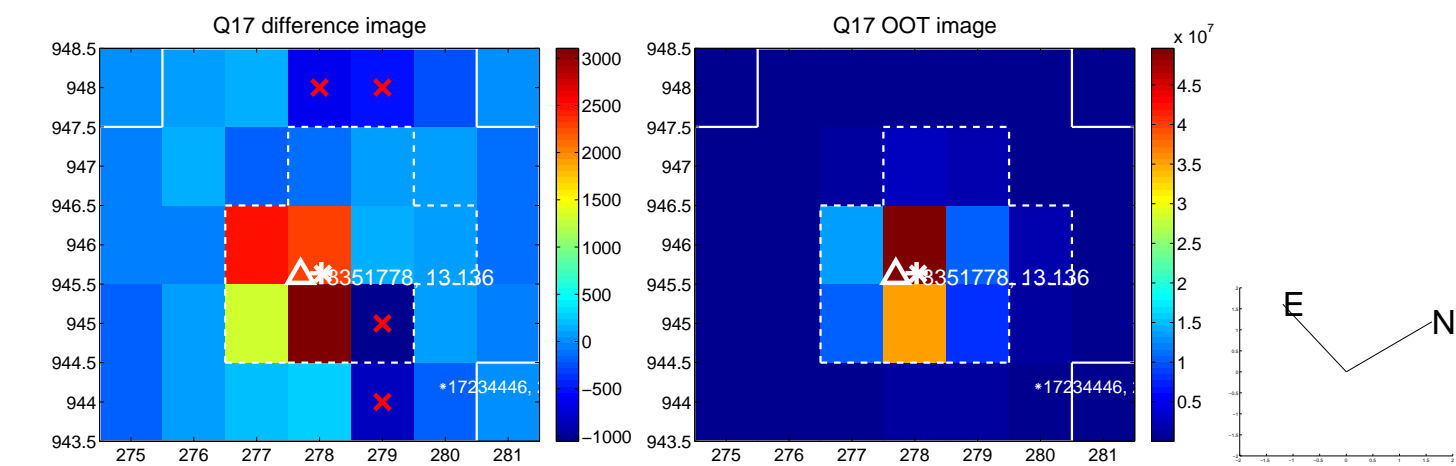
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

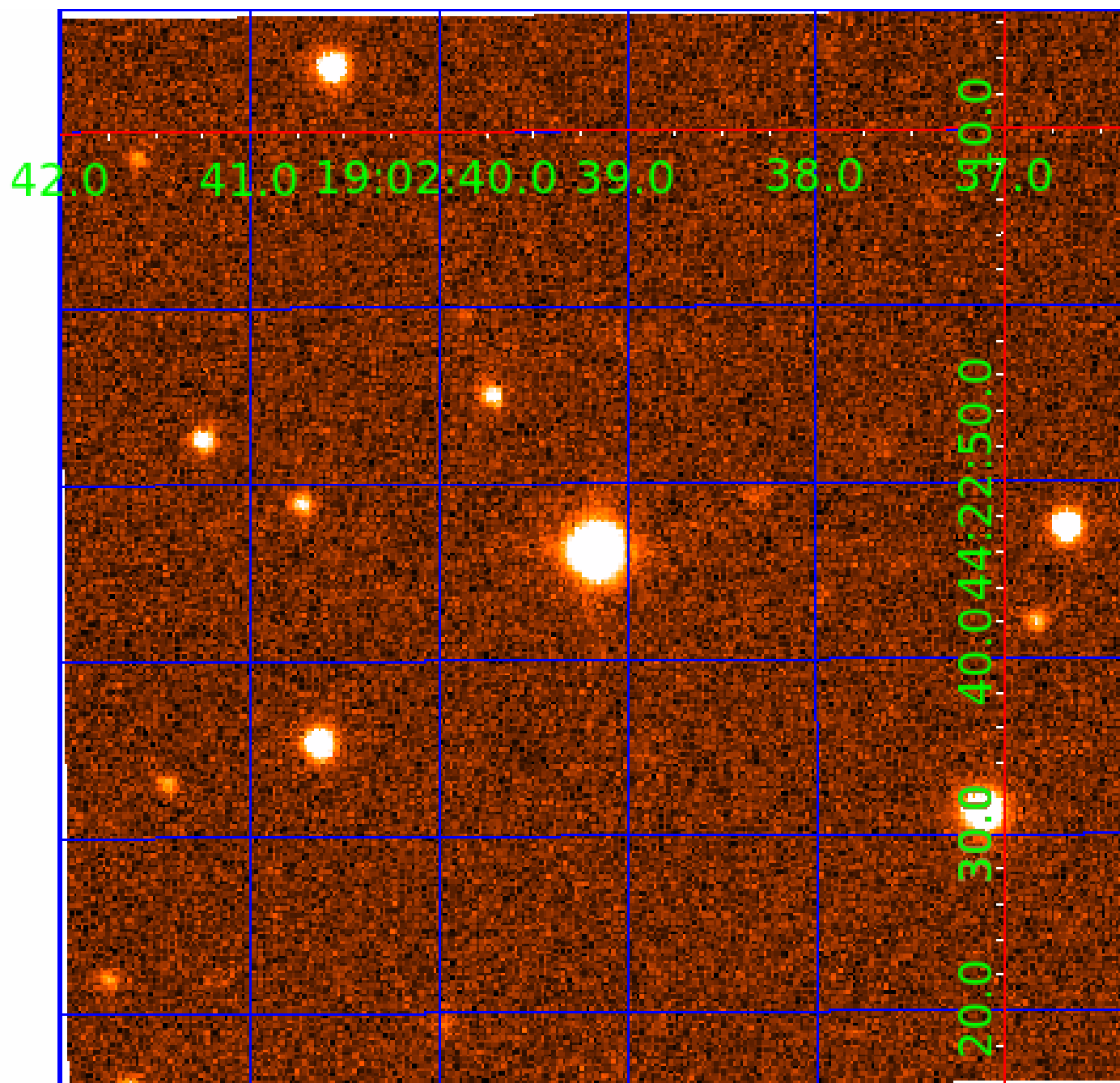


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008351778

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})
008351778-01	OBS	No	1.030447	132.558646	34.2	6.603	11.4	6.3	1.96	7435	1.16	19425.75
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Robovetter Results

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008351778-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
008351778-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—HALO_GHOST
008351778-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

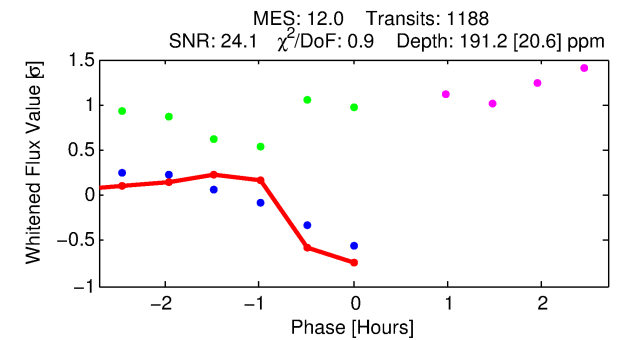
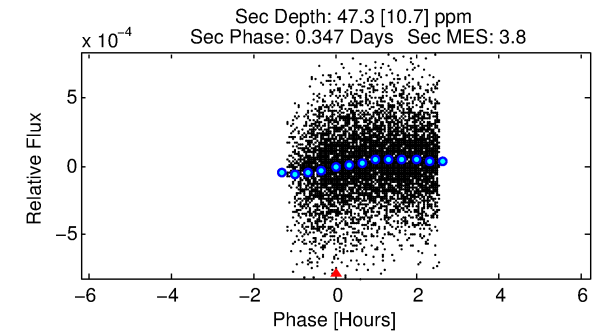
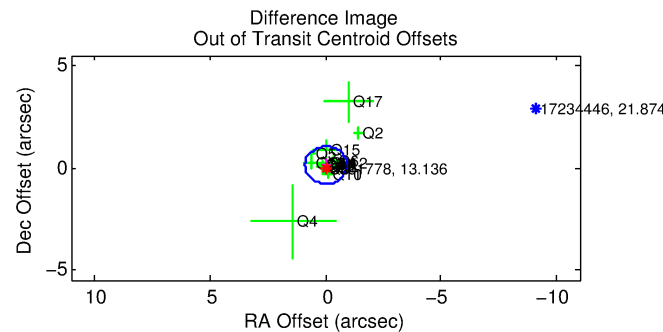
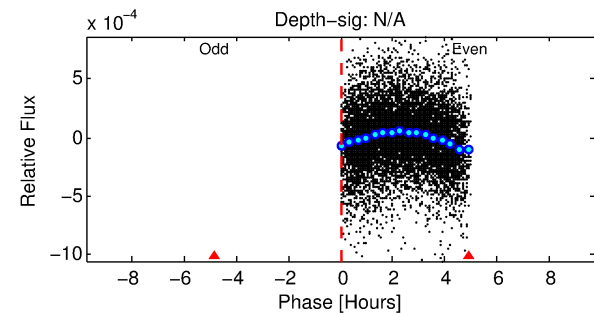
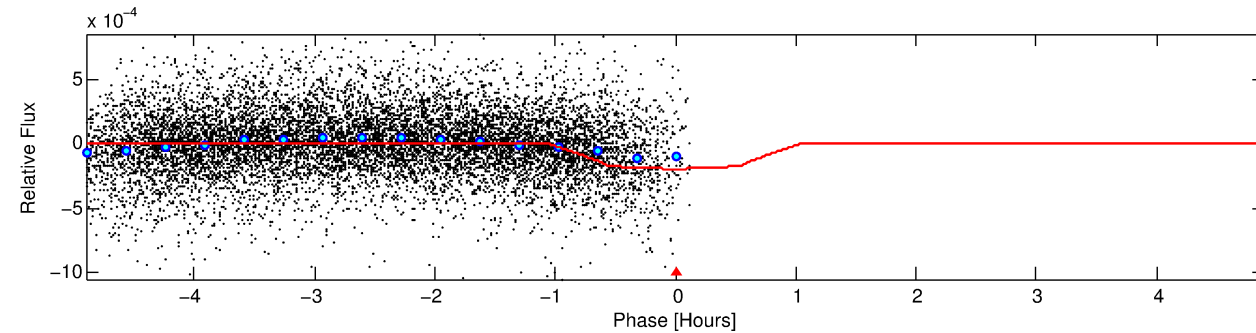
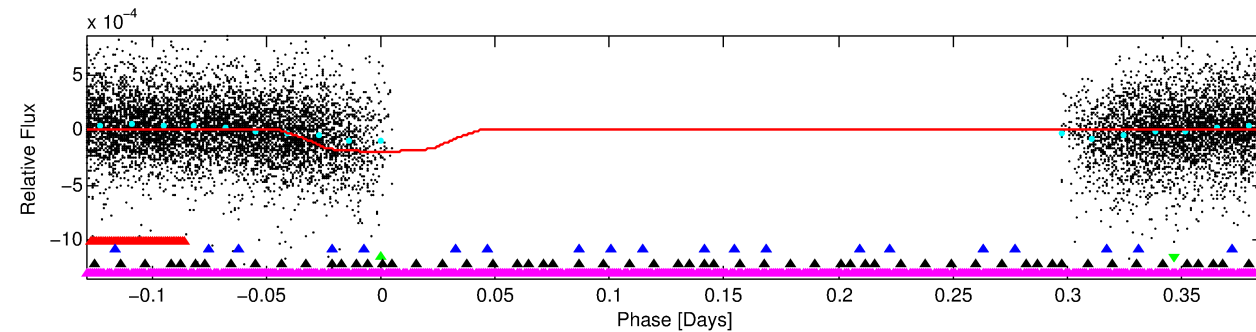
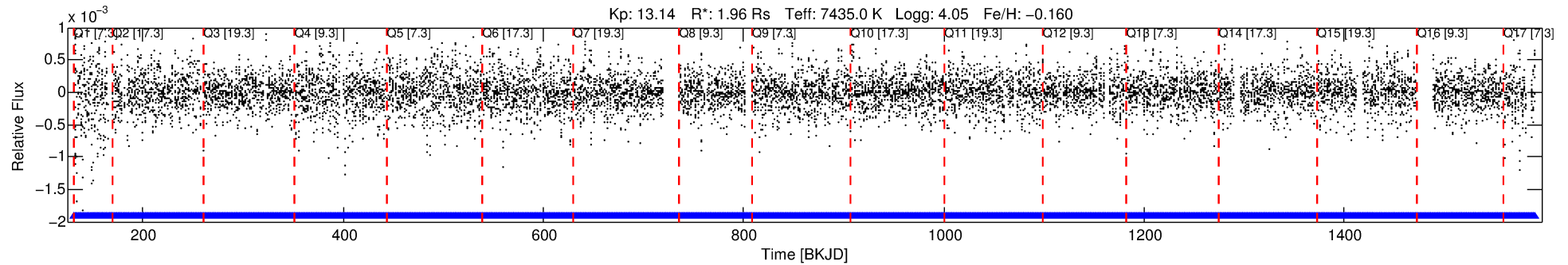
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008351778-03

No Significant Match Found

DV One-Page Summary

KIC: 8351778 Candidate: 3 of 5 Period: 0.515 d



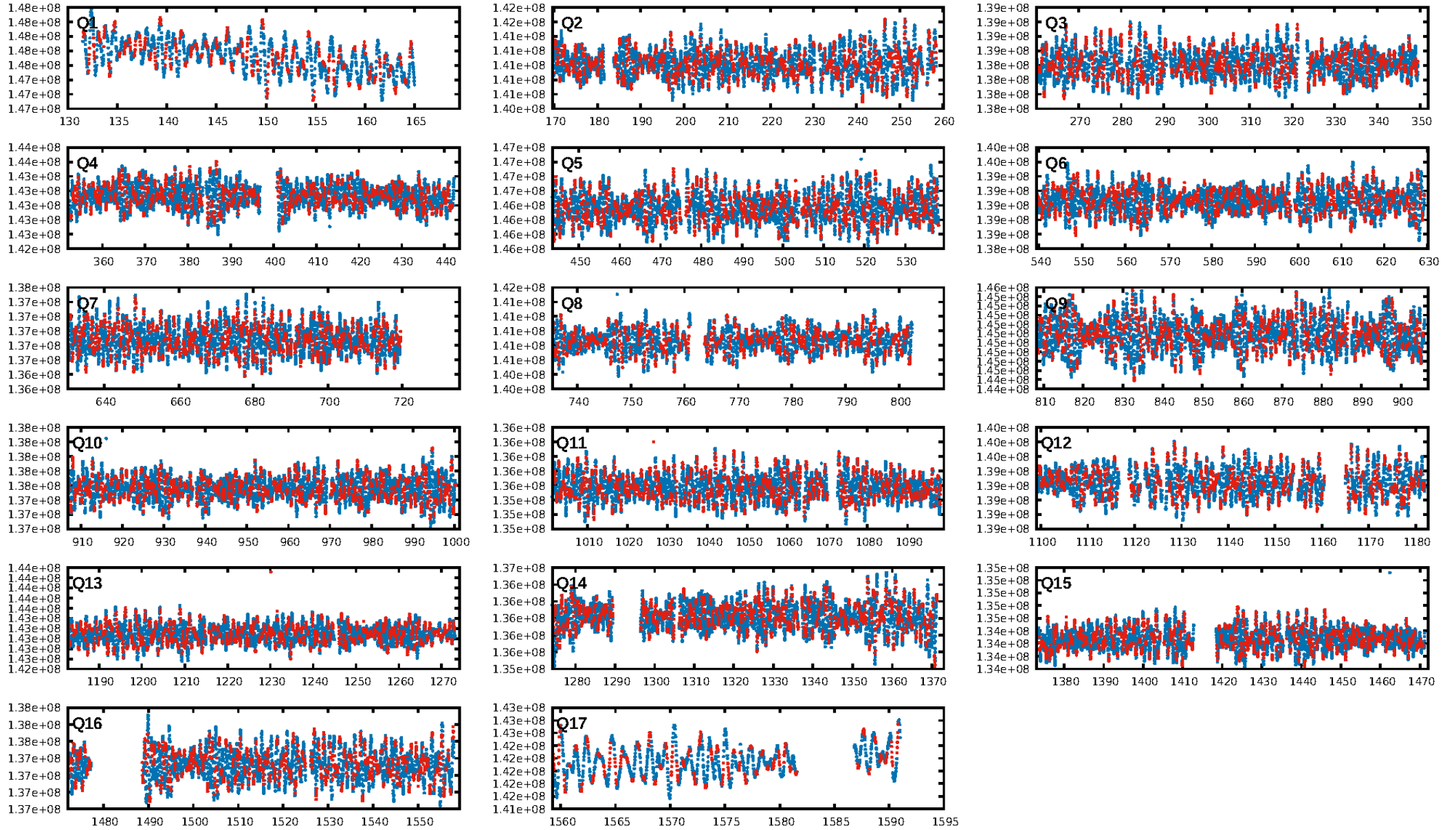
DV Fit Results:

Period = 0.51524 [0.00001] d
Epoch = 131.6141 [0.0011] BKJD
Rp/R* = 0.0129 [0.0032]
a/R* = 2.42 [2.62]
b = 0.30 [3.94]
Seff = 48948.00 [19193.04]
Teff = 3793 [372] K
Rp = 2.75 [1.05] Re
a = 0.0146 [0.0036] AU
Ag = 0.74 [0.48] [-0.56σ]
Teffp = 5431 [771] K [1.91σ]

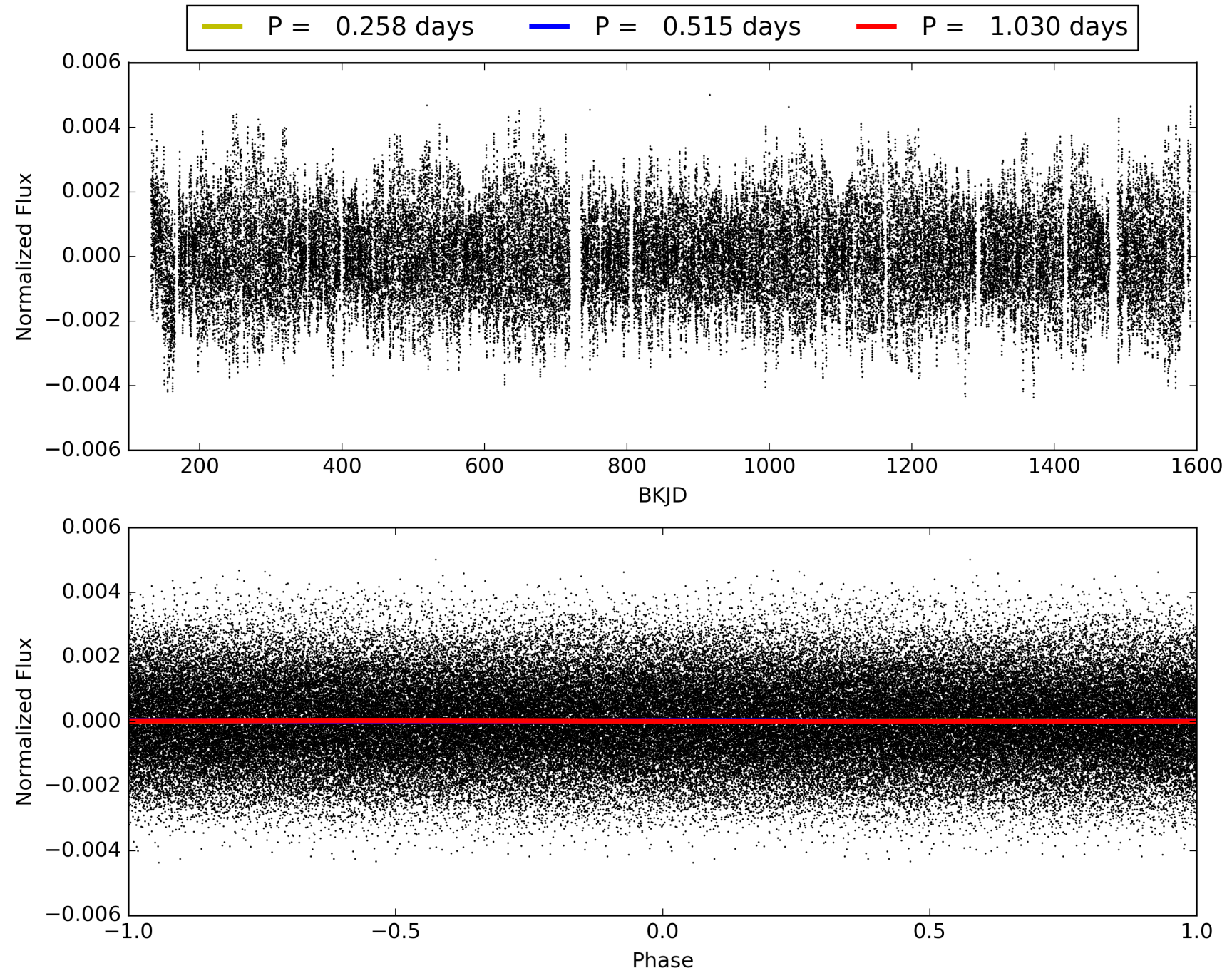
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 93.1% [1.82σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1145/1145]
GhostDiagnostic-chr: -10.86
Centroid-sig: 43.2%
Centroid-so: 0.050 arcsec [0.62σ]
OotOffset-rm: 0.121 arcsec [0.40σ]
KicOffset-rm: 0.076 arcsec [0.44σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.82 [14/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008351778-03, PDC Light Curves

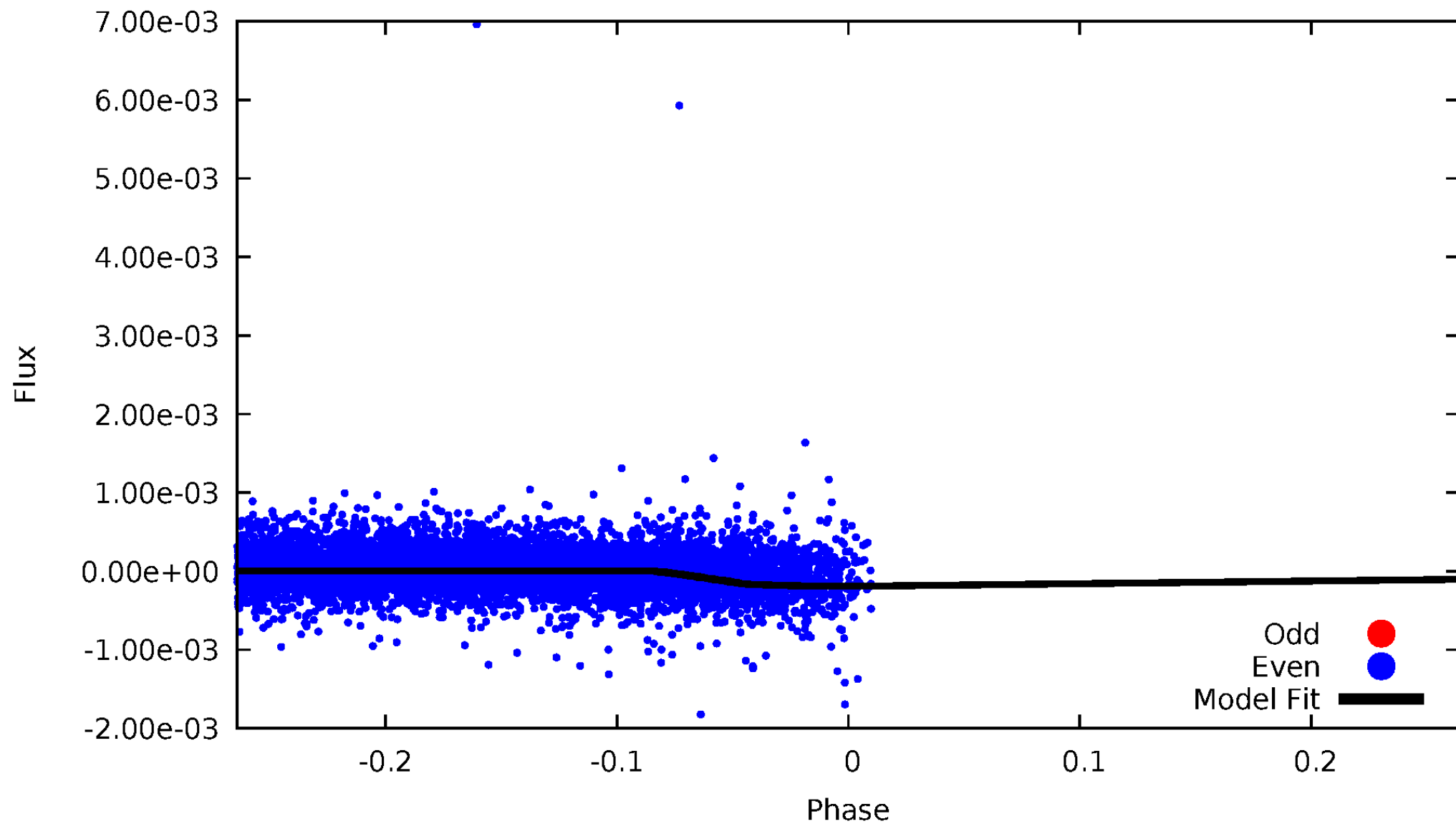


TCE 008351778-03



DV Odd/Even

TCE 008351778-03

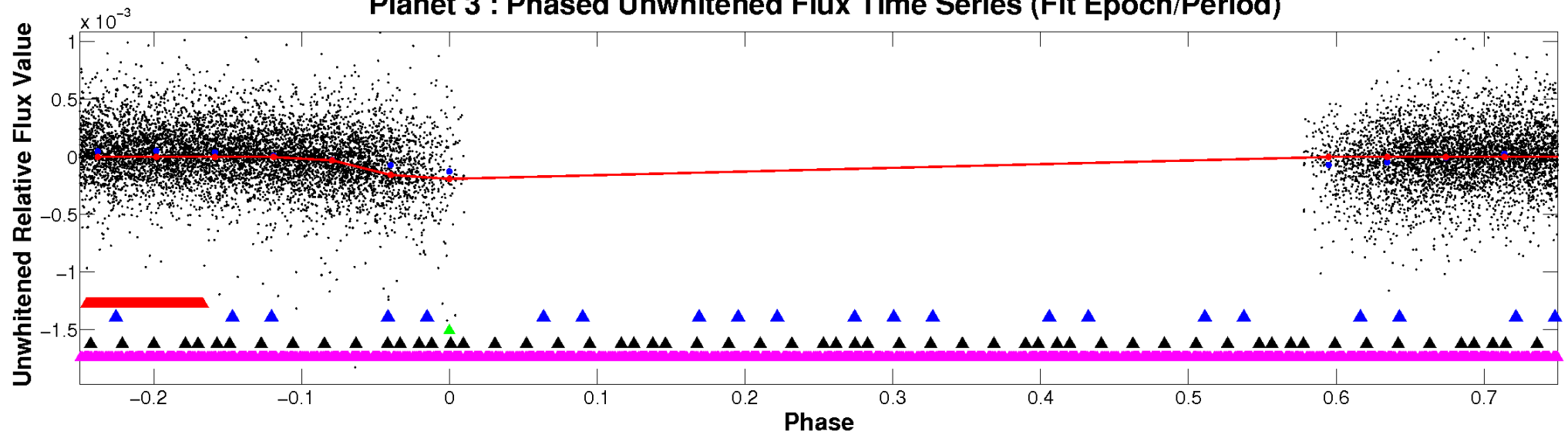


ALT Odd/Even

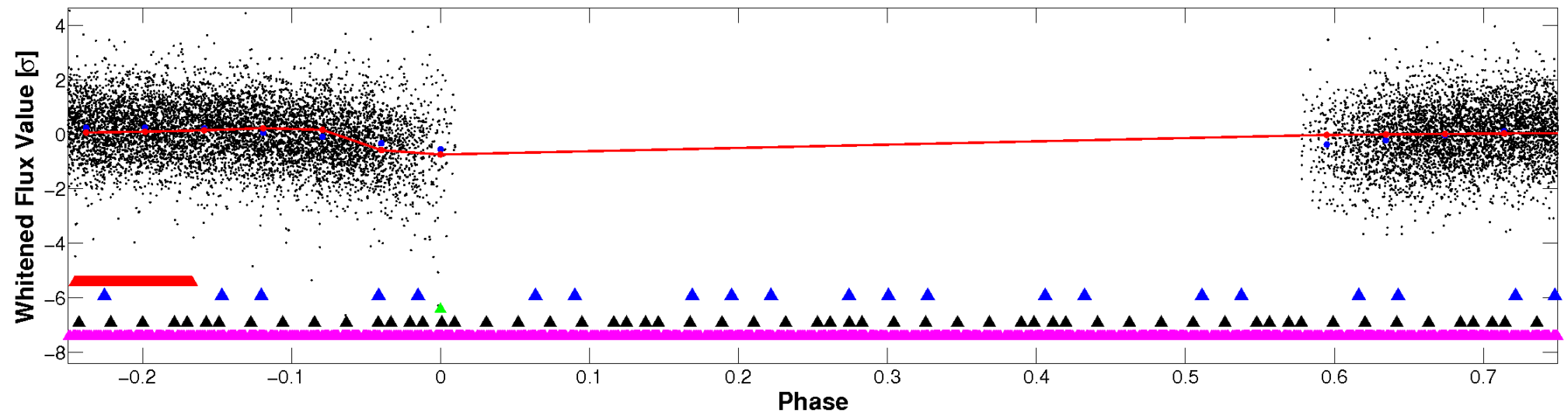
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

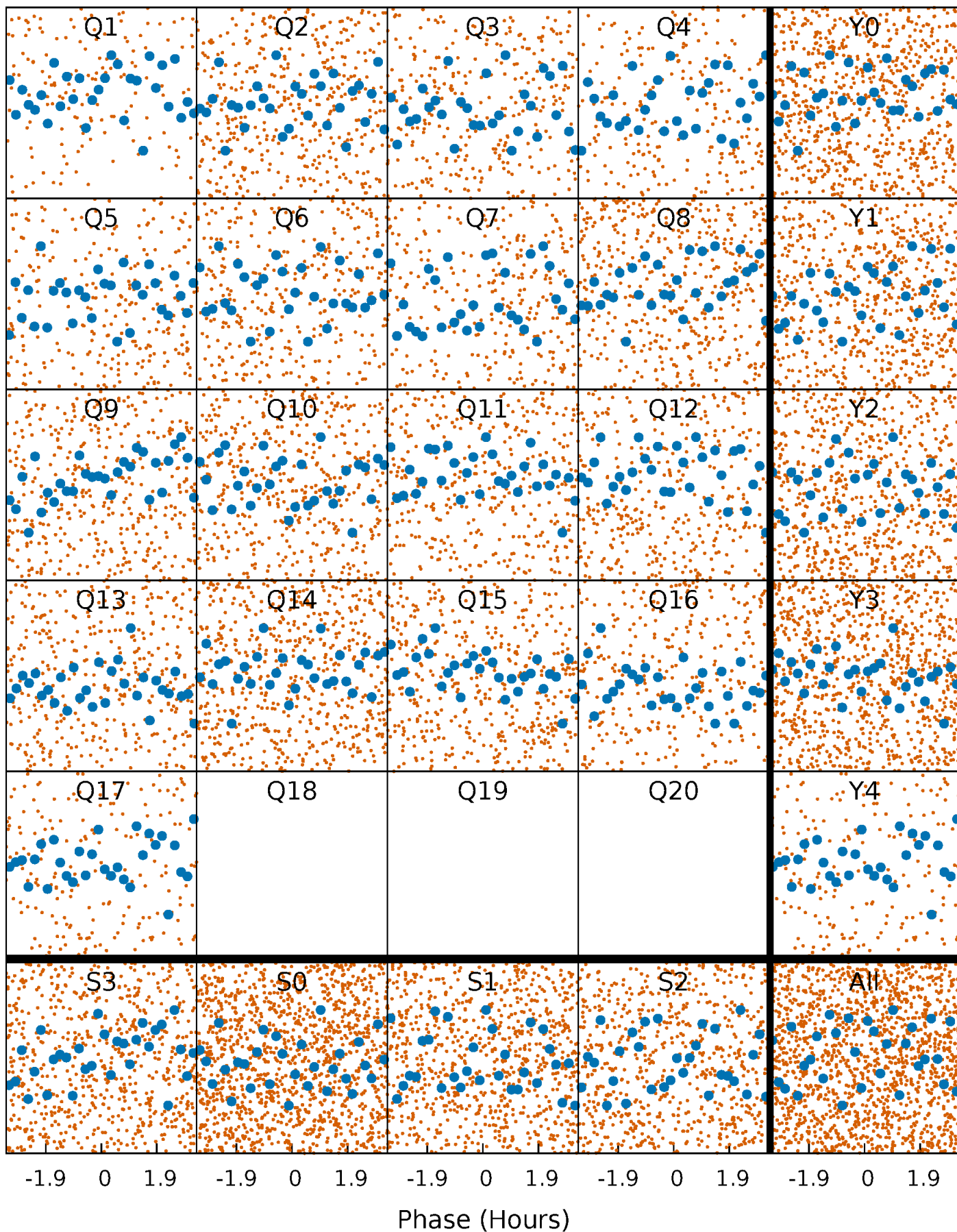


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



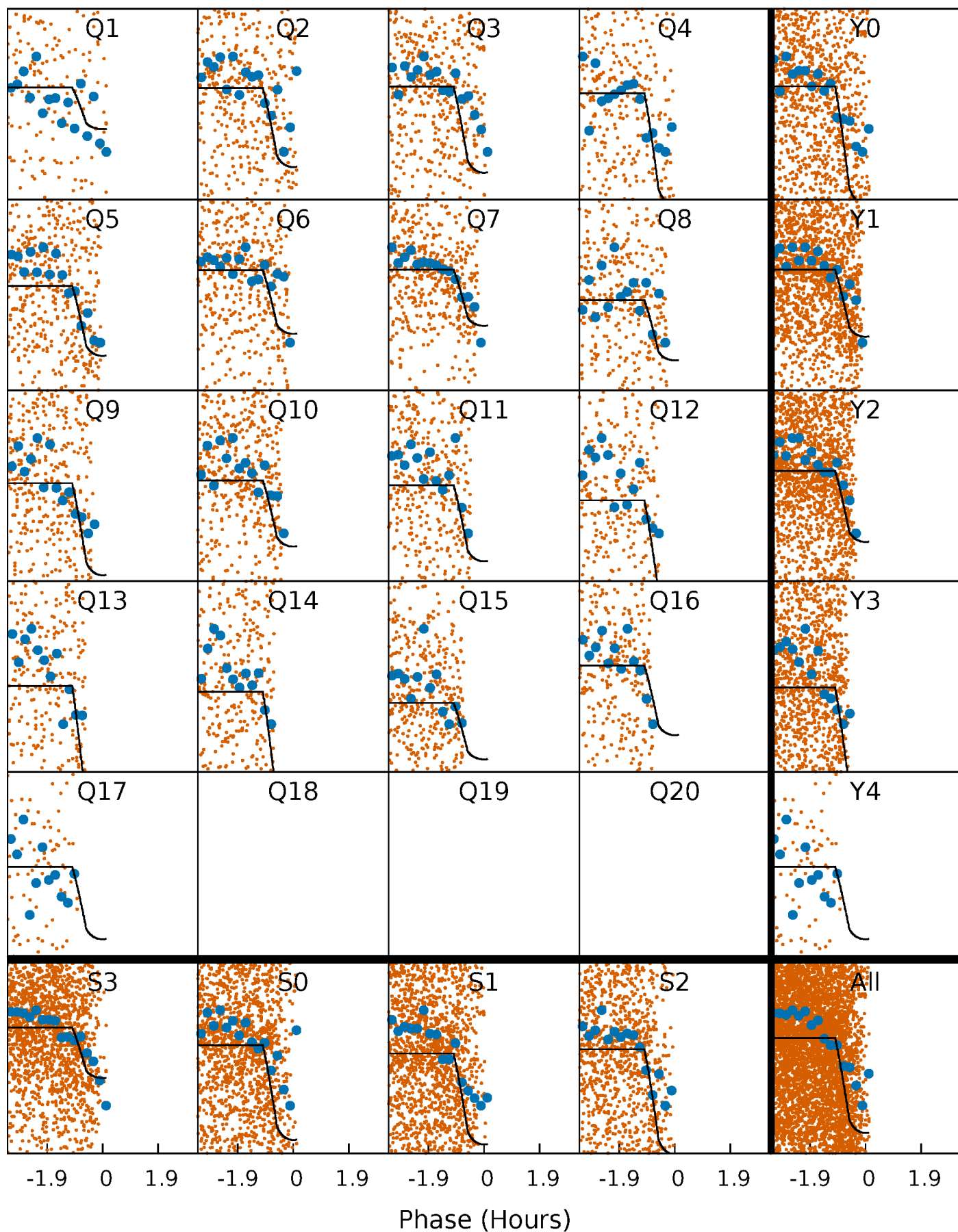
PDC Quarter-Phased Transit Curves

TCE 008351778-03 P= 0.515238 Days $T_0=131.614138$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 008351778-03 P= 0.515238 Days $T_0=131.614138$ (BKJD)

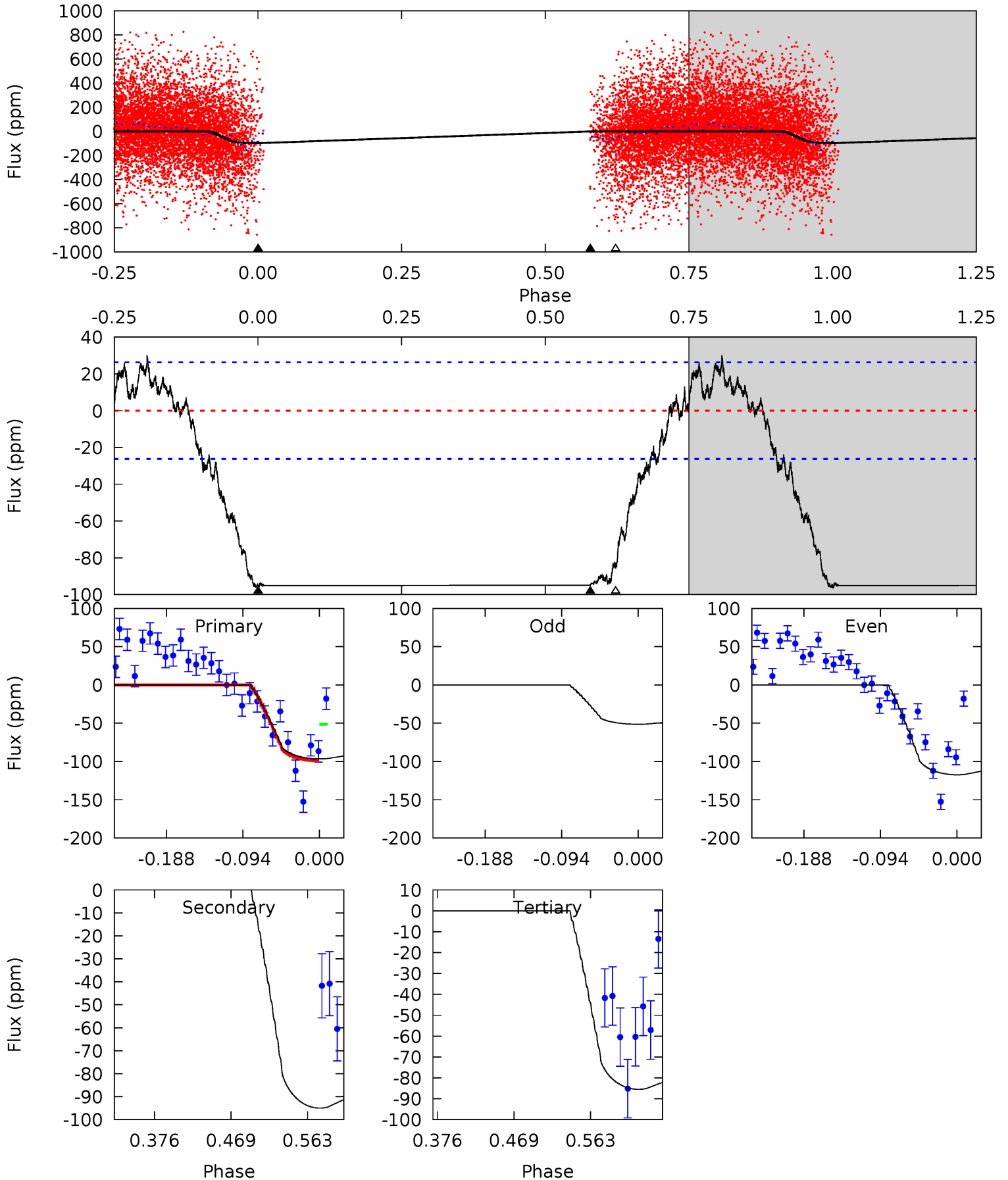


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

008351778-03, P = 0.515238 Days, E = 131.614138 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	16.5	14.9	0	4.58	1.68	5.65	1.94	16.8	1.65	16.5	1.58	0.87	0.24	1.14



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 008351778

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7435^{+235}_{-314}	$4.052^{+0.193}_{-0.158}$	$-0.160^{+0.250}_{-0.350}$	$1.957^{+0.568}_{-0.465}$	$1.573^{+0.212}_{-0.259}$	$0.295^{+0.311}_{-0.130}$
	+3%/-4%	+5%/-4%	+156%/-219%	+29%/-24%	+13%/-16%	+105%/-44%
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 008351778-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-95 ± 6	$2.71^{+0.81}_{-0.77}$	5242^{+428}_{-386}	5955^{+1284}_{-718}	$1.532^{+1.432}_{-0.642}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

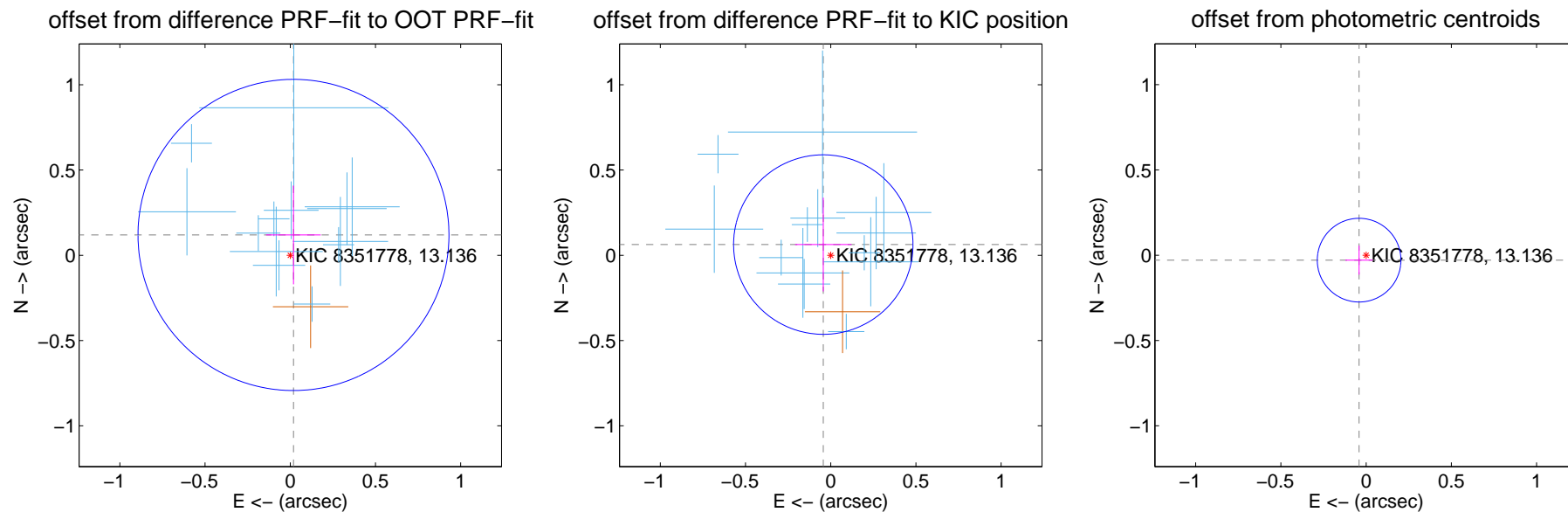
DV Centroid Data

Supplemental centroid analysis for 008351778-03. Kepler magnitude: 13.14. Transit SNR 24.06

There are 14 quarters with good PRF difference image offsets

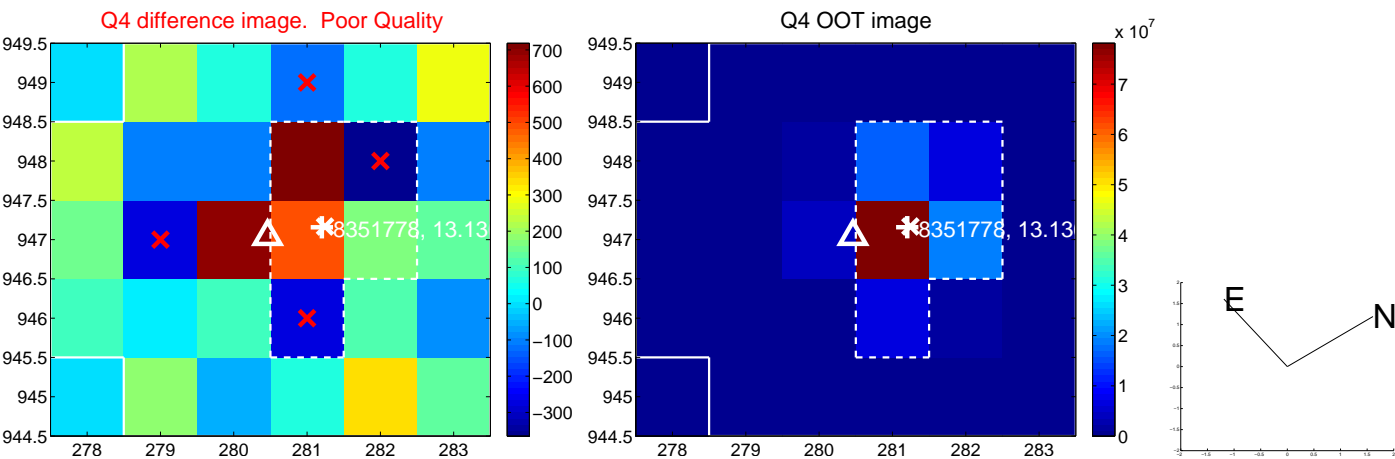
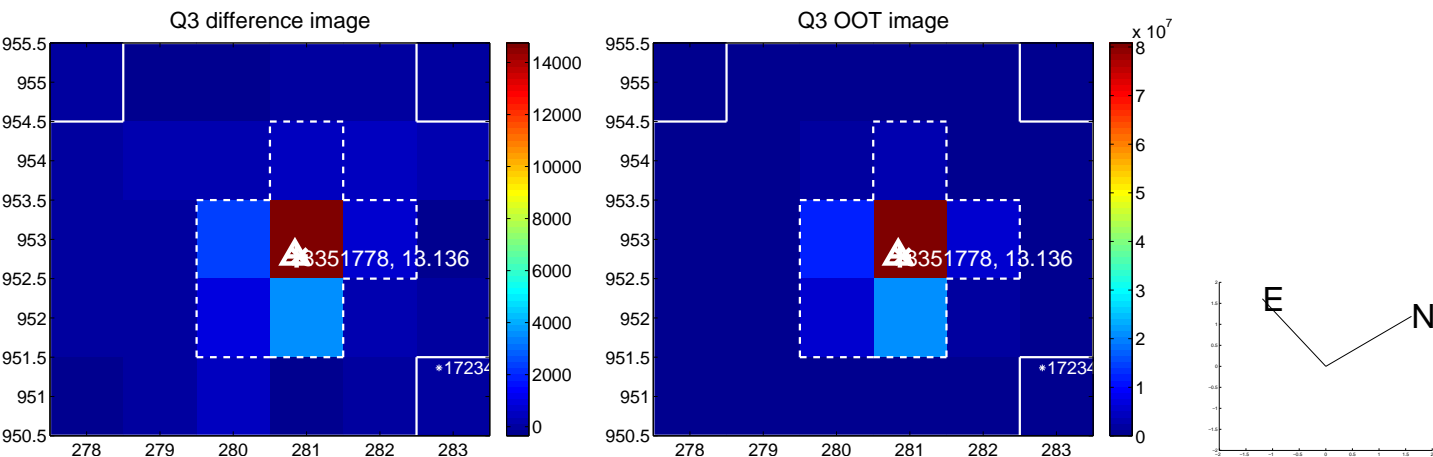
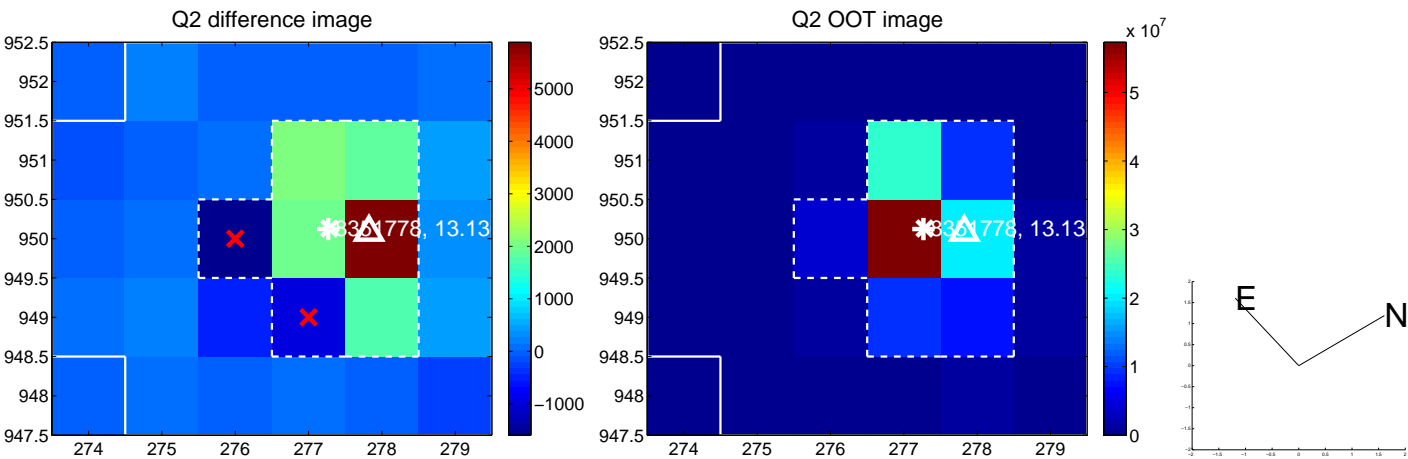
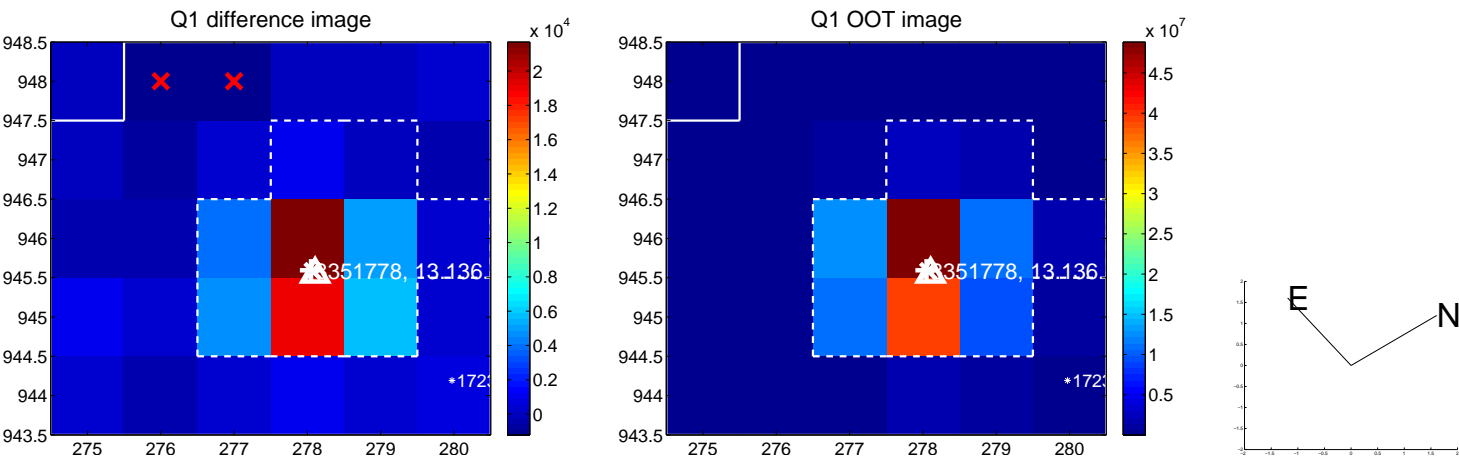
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.121 ± 0.304	0.40	-0.019 ± 0.161	0.119 ± 0.290
PRF-fit source offset from KIC position	0.076 ± 0.175	0.44	0.044 ± 0.166	0.063 ± 0.275
photometric centroid source offset	0.05 ± 0.08	0.62	0.04 ± 0.08	-0.03 ± 0.08

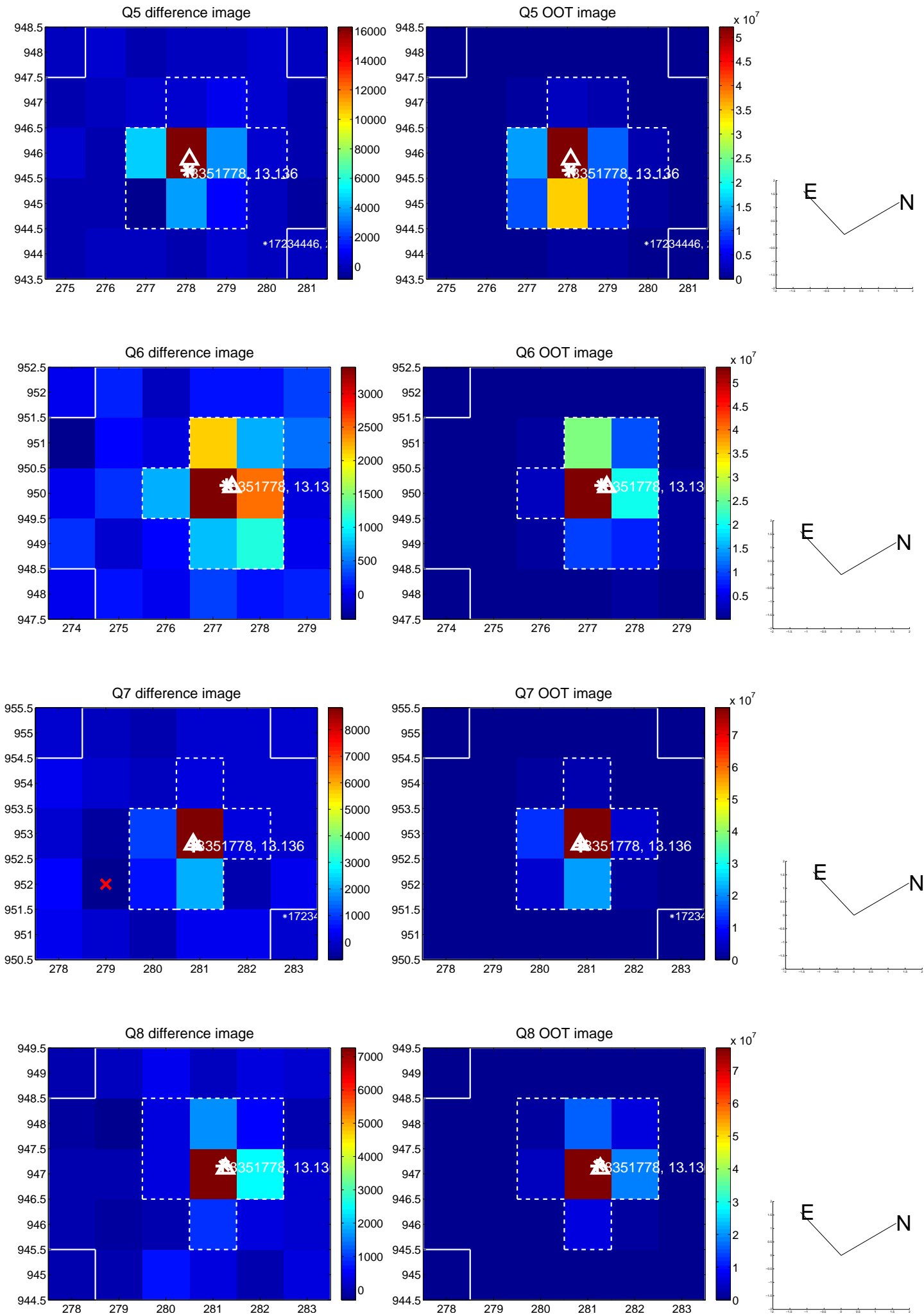


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

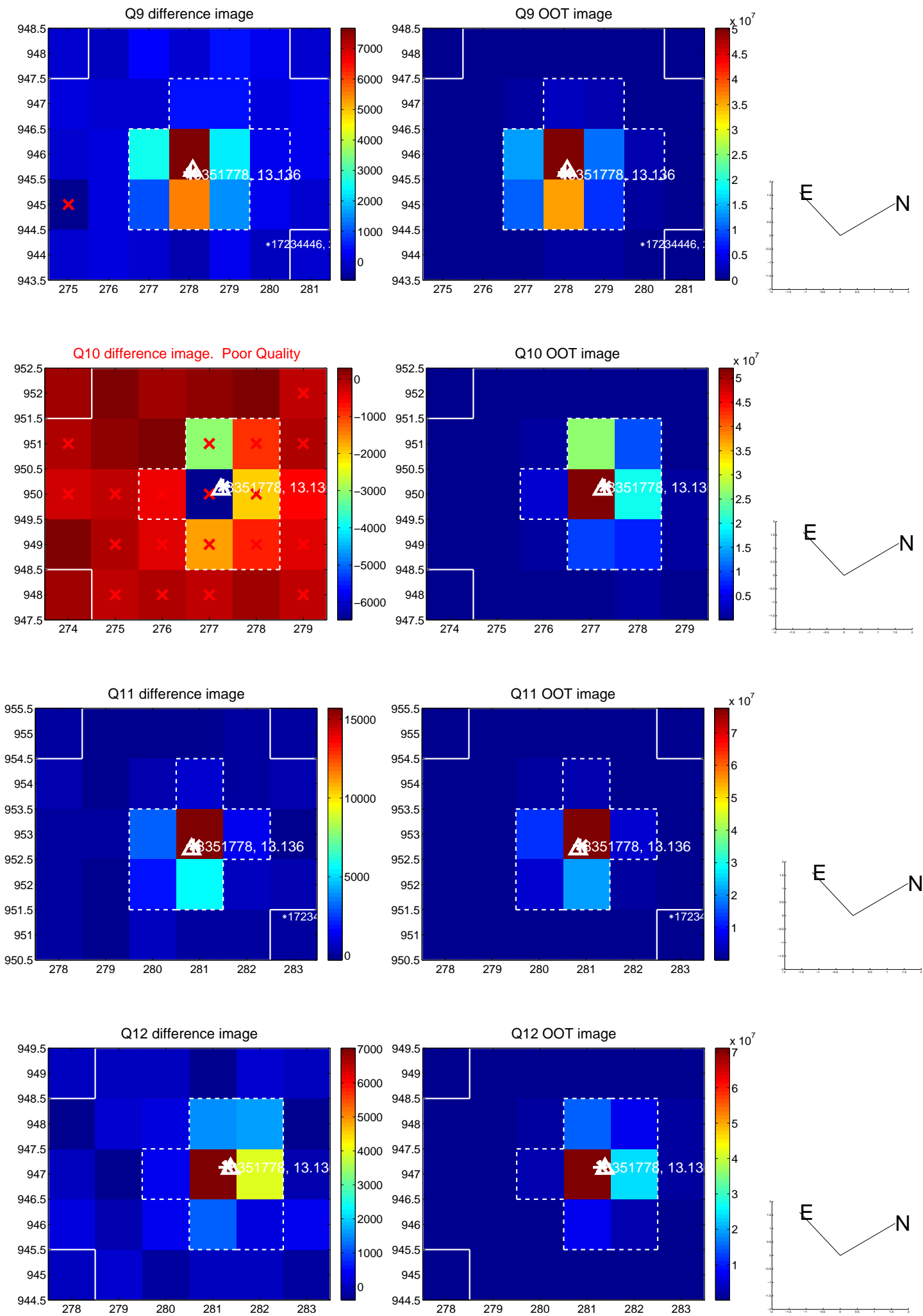
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



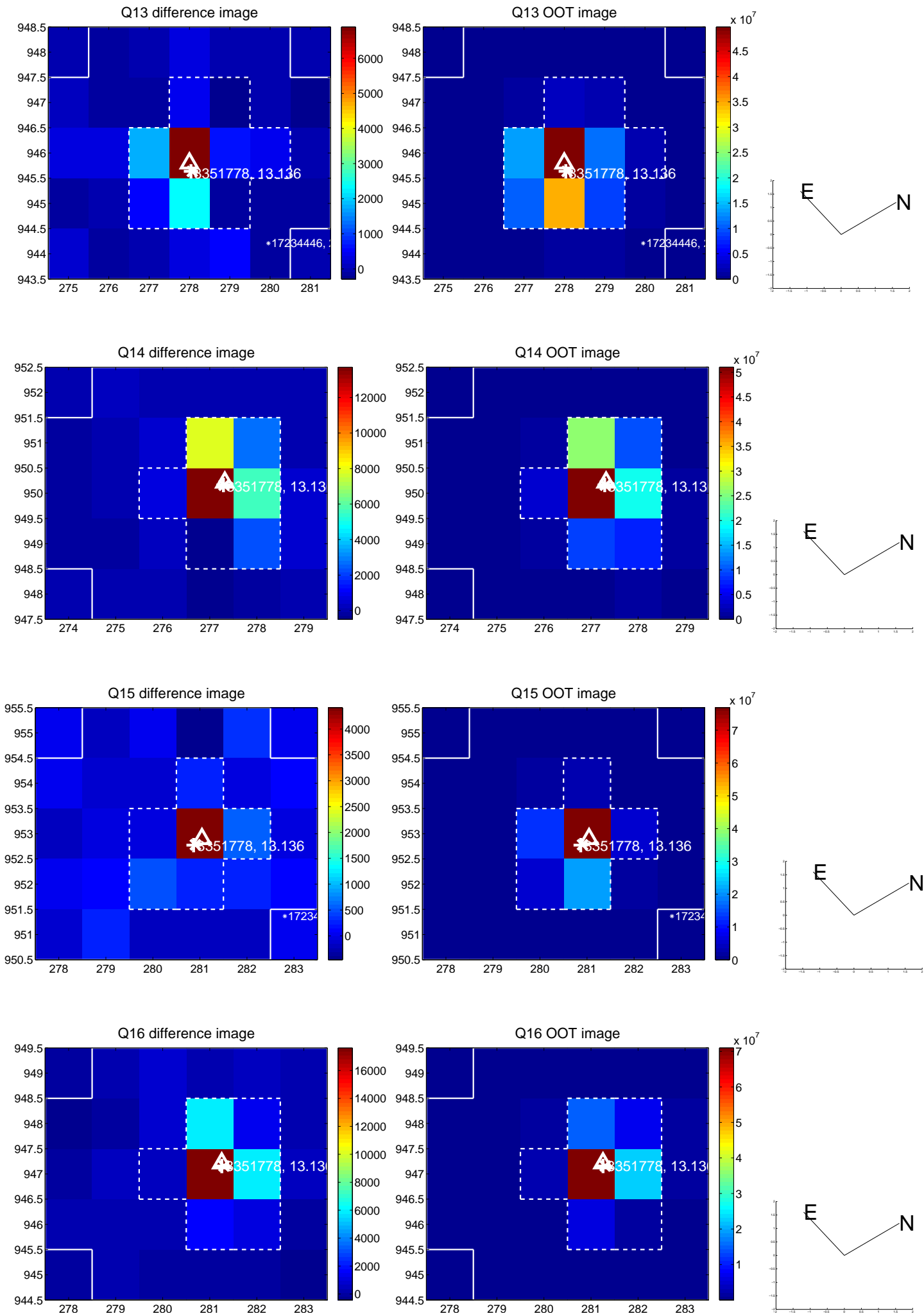
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



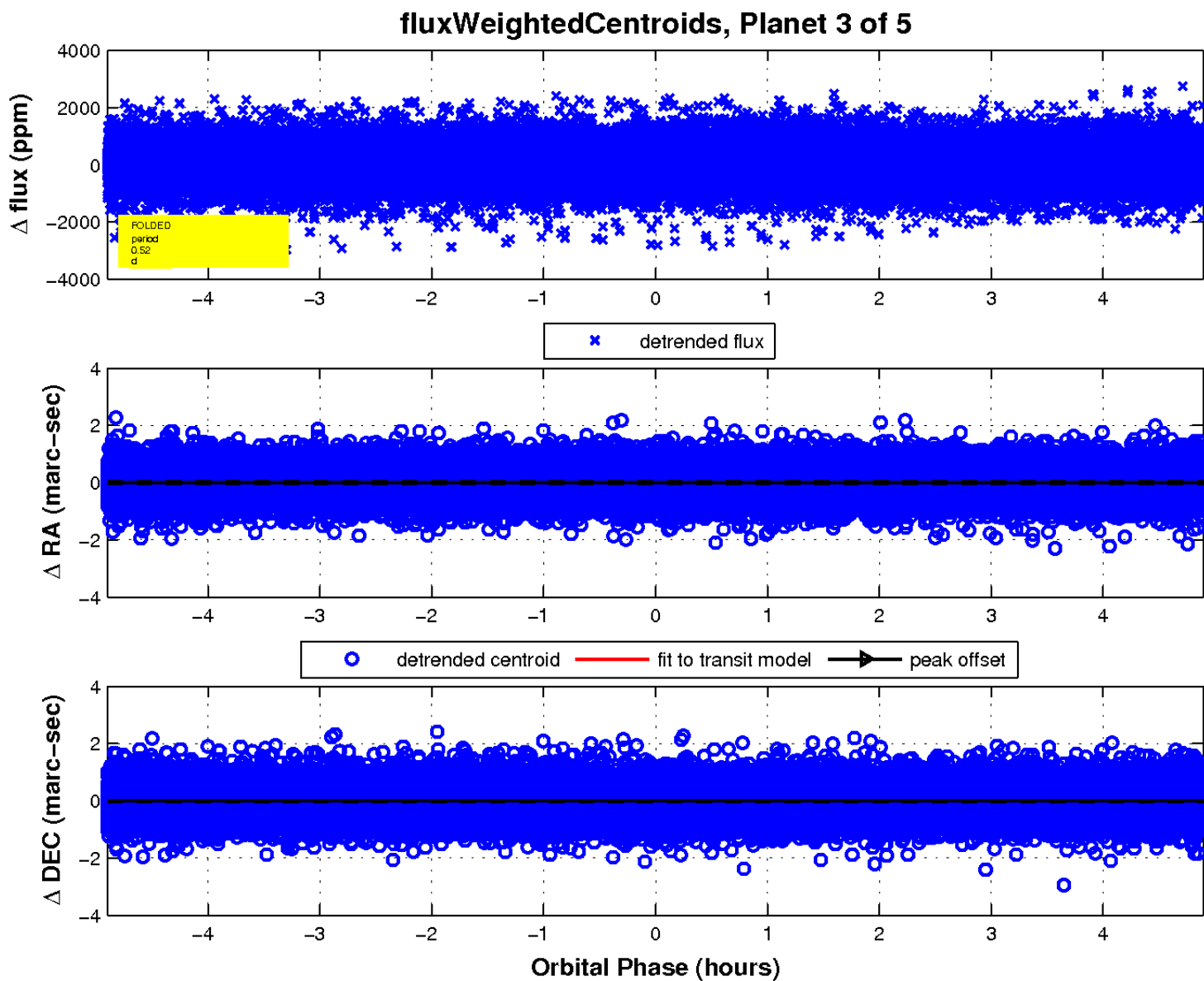
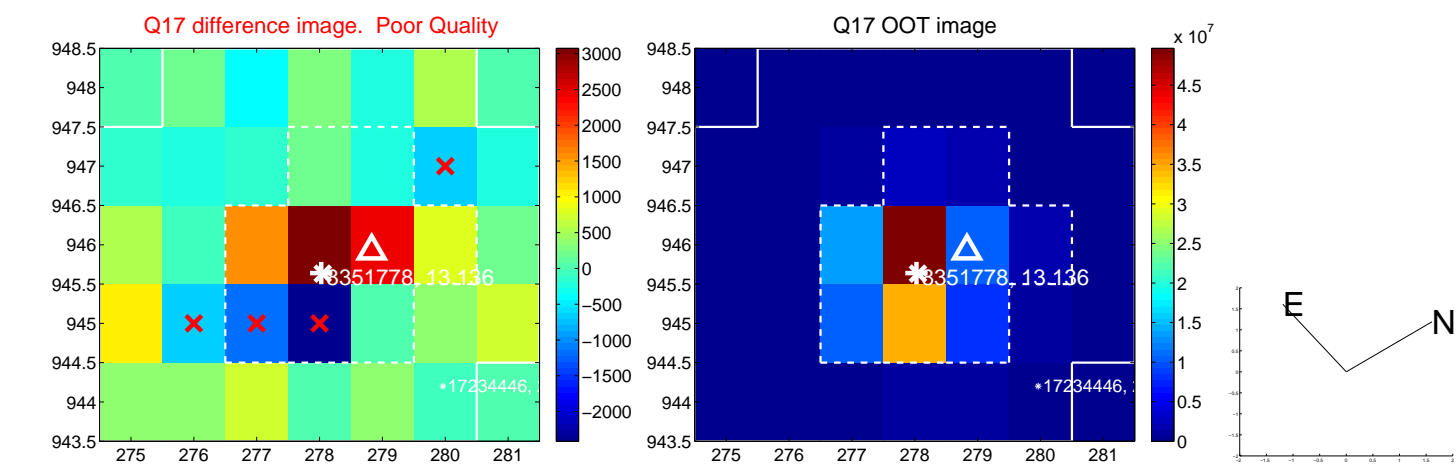
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

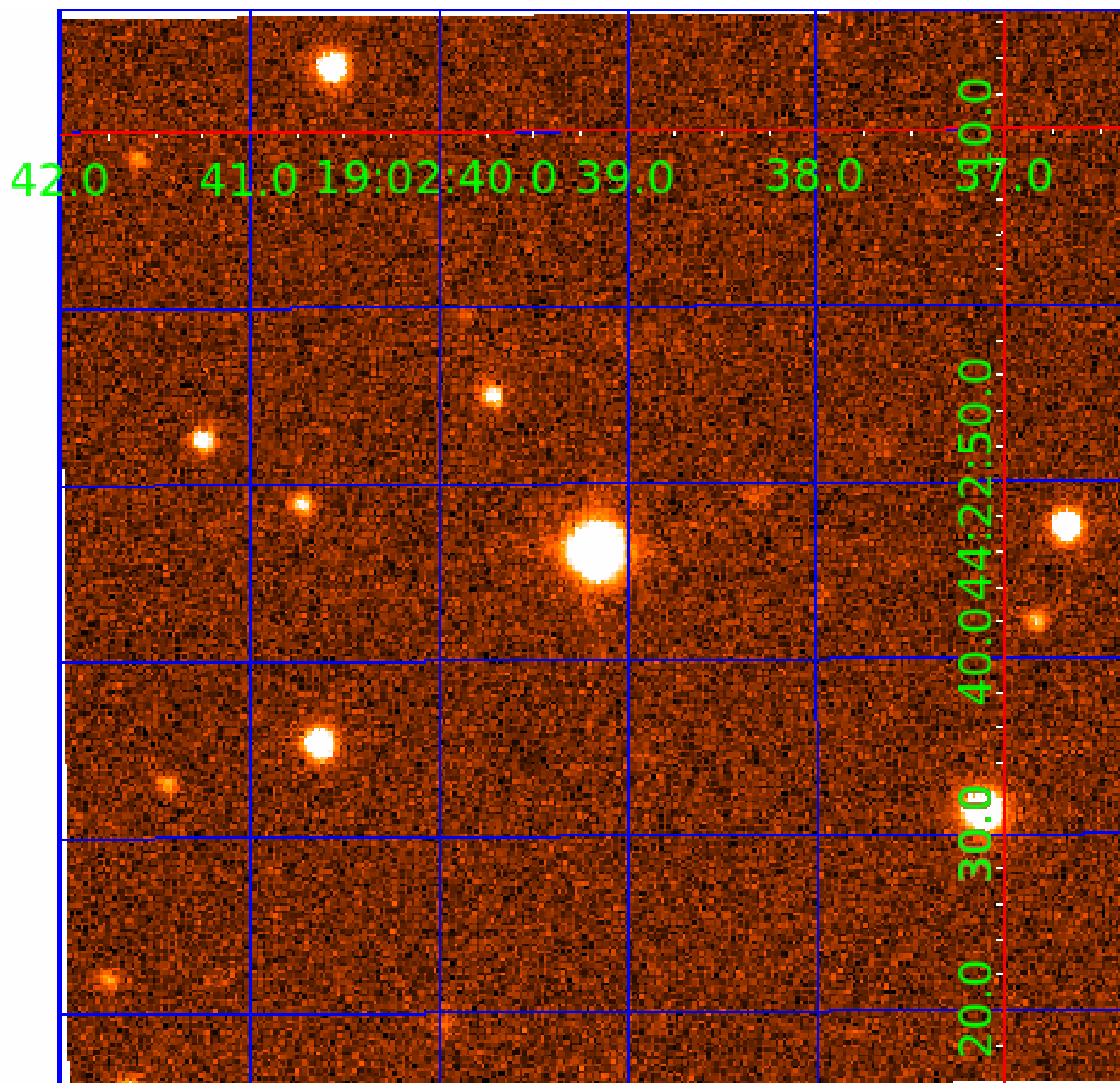


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008351778

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})
008351778-01	OBS	No	1.030447	132.558646	34.2	6.603	11.4	6.3	1.96	7435	1.16	19425.75
008351778-03	OBS	No	0.515238	131.614138	191.2	1.633	12.0	24.1	1.96	7435	2.75	48948.00
008351778-04	OBS	No	25.024272	135.221275	688.9	3.987	9.2	8.4	1.96	7435	9.76	276.23
008351778-05	OBS	No	1.656636	132.481588	180.9	5.000	10.1	-1.0	1.96	7435	2.65	10314.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008351778-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008351778-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
008351778-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—HALO_GHOST
008351778-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

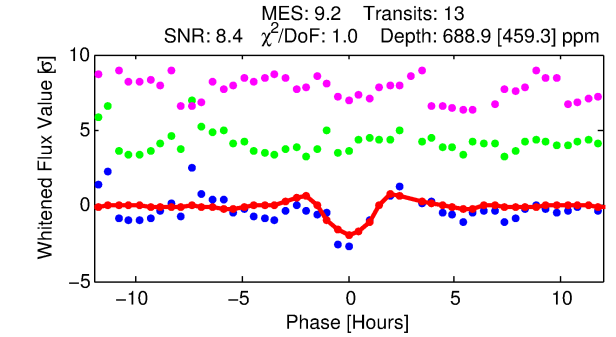
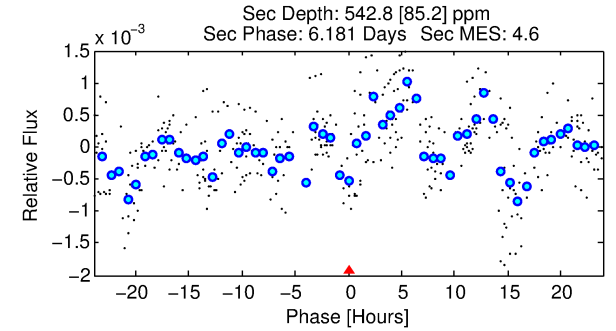
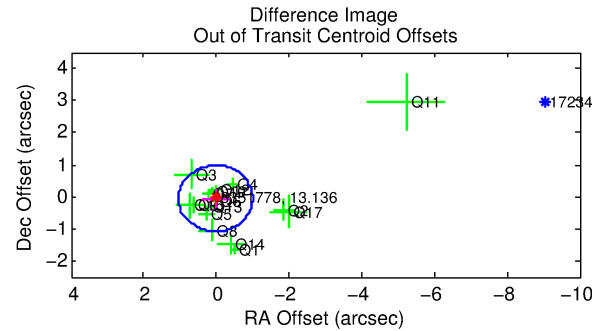
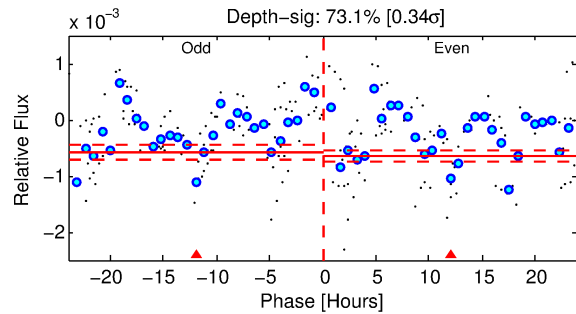
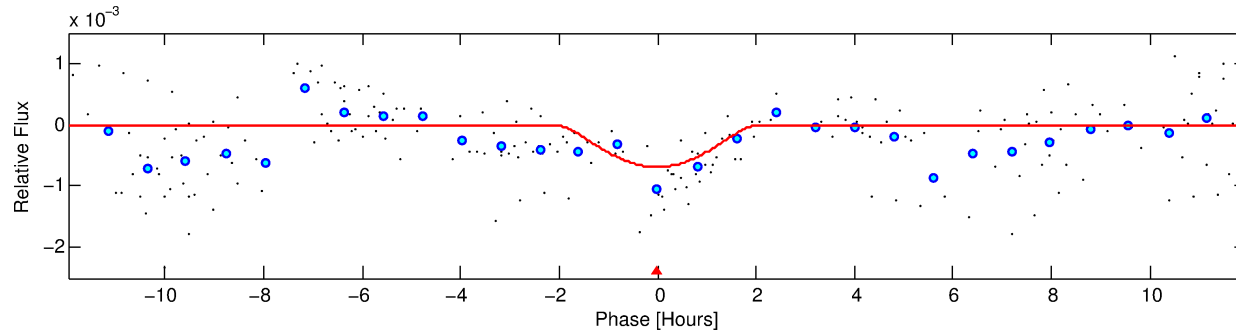
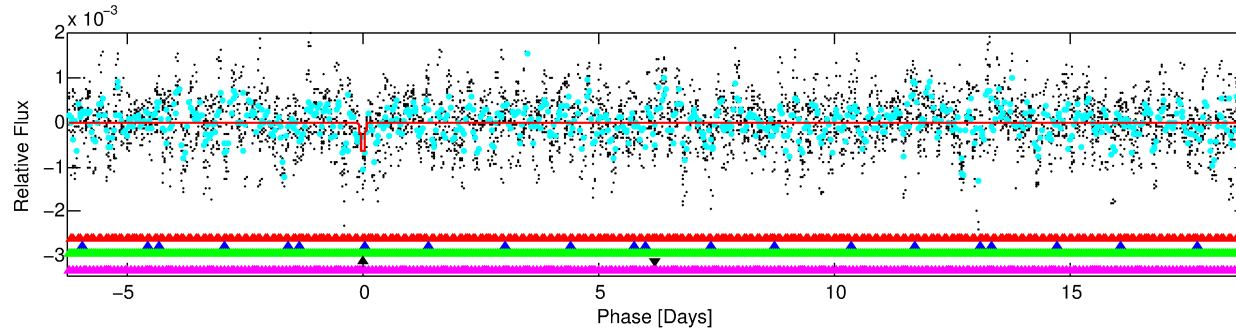
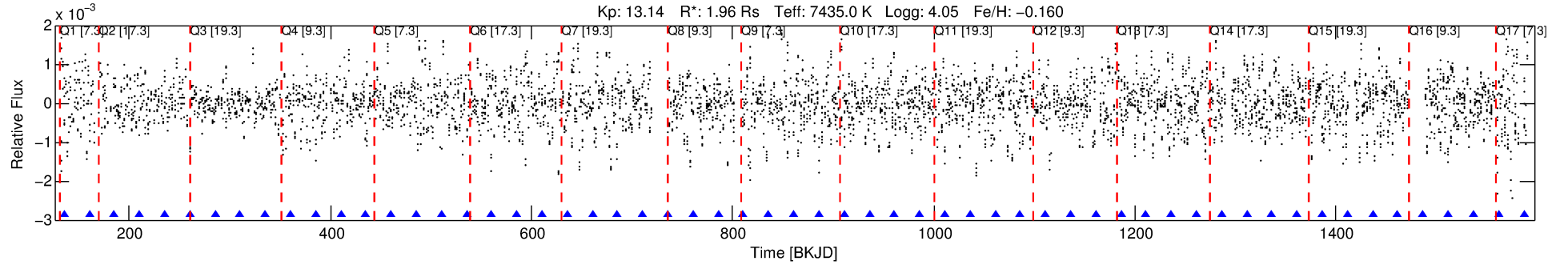
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008351778-04

No Significant Match Found

DV One-Page Summary

KIC: 8351778 Candidate: 4 of 5 Period: 25.024 d



DV Fit Results:

Period = 25.02427 [0.00034] d
Epoch = 135.2213 [0.0137] BKJD
Rp/R* = 0.0457 [0.1414]
a/R* = 14.70 [11.51]
b = 1.00 [0.18]
Seff = 276.23 [108.31]
Teq = 1040 [102] K
Rp = 9.76 [30.34] Re
a = 0.1948 [0.0475] AU
Ag = 118.92 [737.20] [0.16 σ]
Teffp = 5308 [8215] K [0.52 σ]

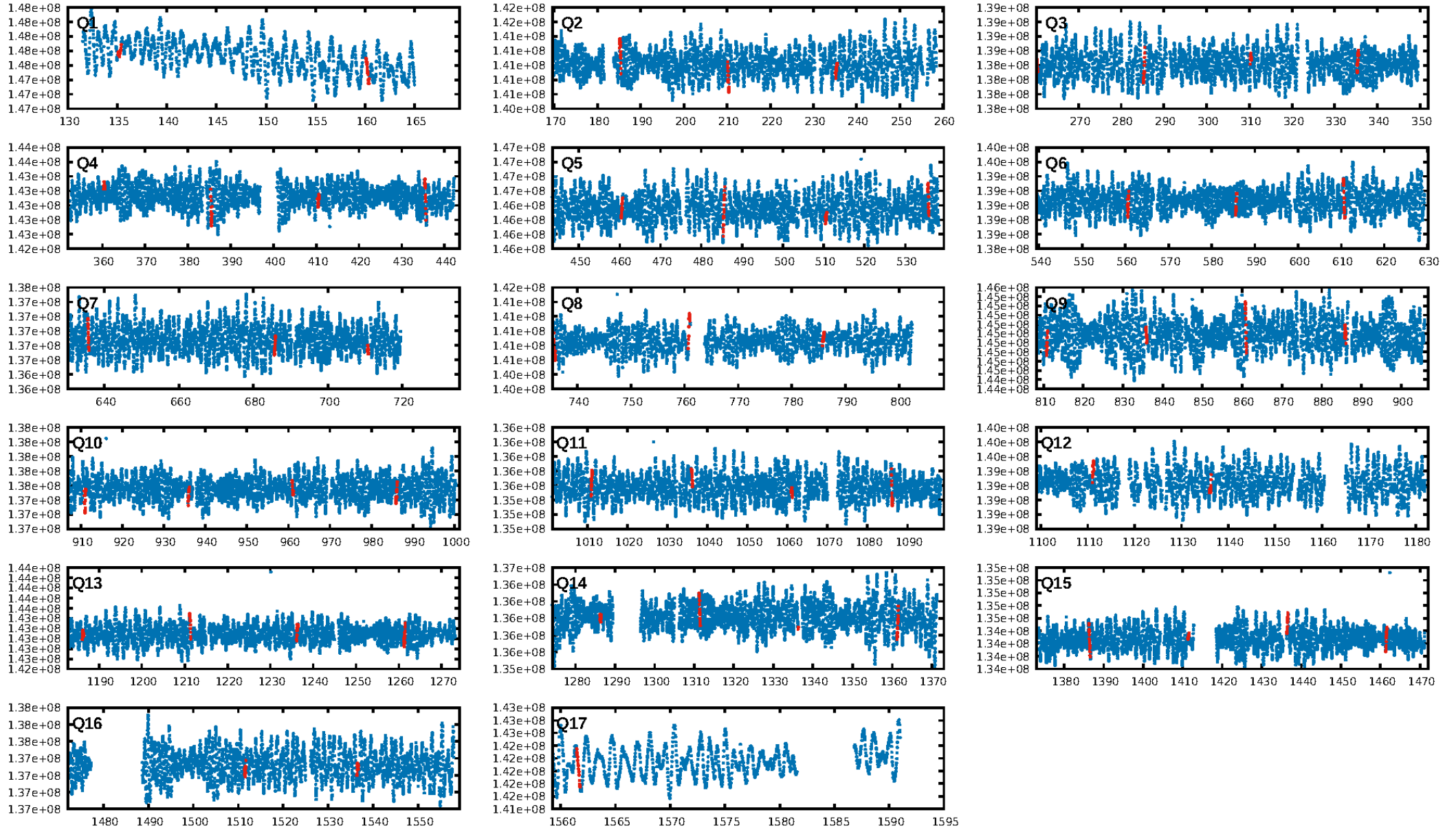
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [87.69 σ]
LongPeriod-sig: 100.0% [113.81 σ]
ModelChiSquare2-sig: 15.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [13/13]
GhostDiagnostic-chr: -0.0343
Centroid-sig: 0.0%
Centroid-so: 0.448 arcsec [3.43 σ]
OotOffset-rm: 0.060 arcsec [0.17 σ]
KicOffset-rm: 0.155 arcsec [0.43 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.38 [6/16]
DiffImageOverlap-fno: 0.00 [0/17]

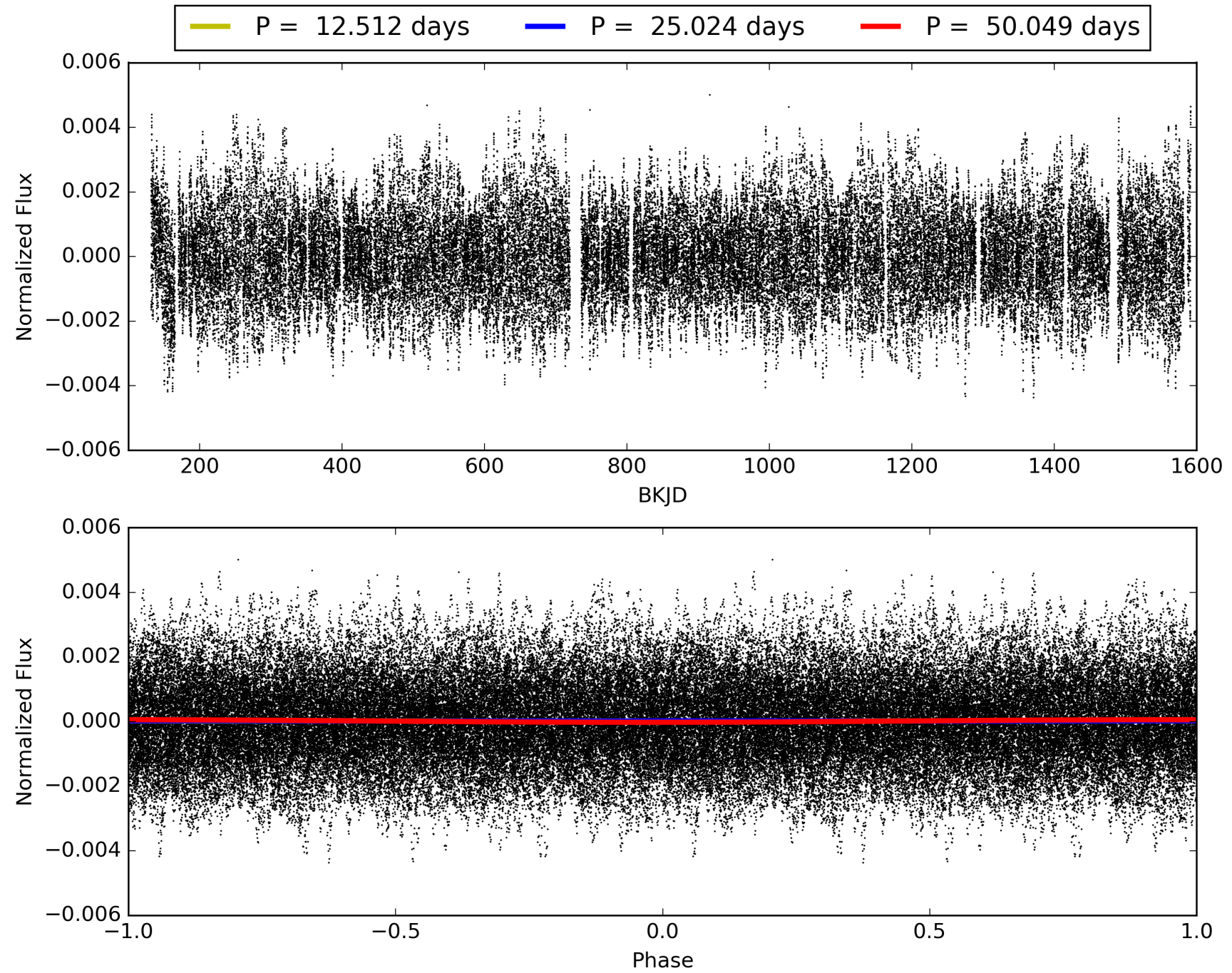
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:48:14 Z

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

TCE 008351778-04, PDC Light Curves

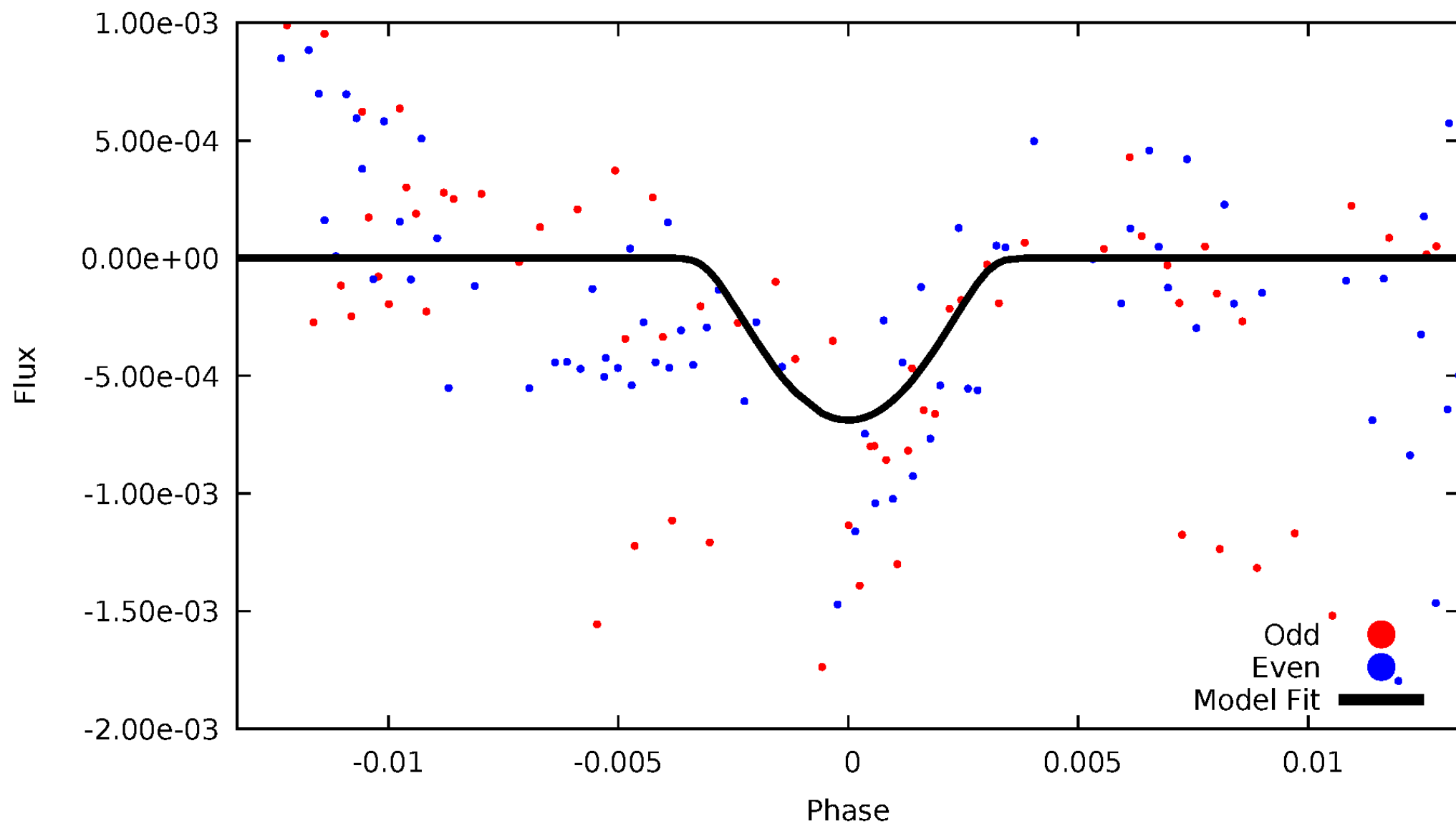


TCE 008351778-04



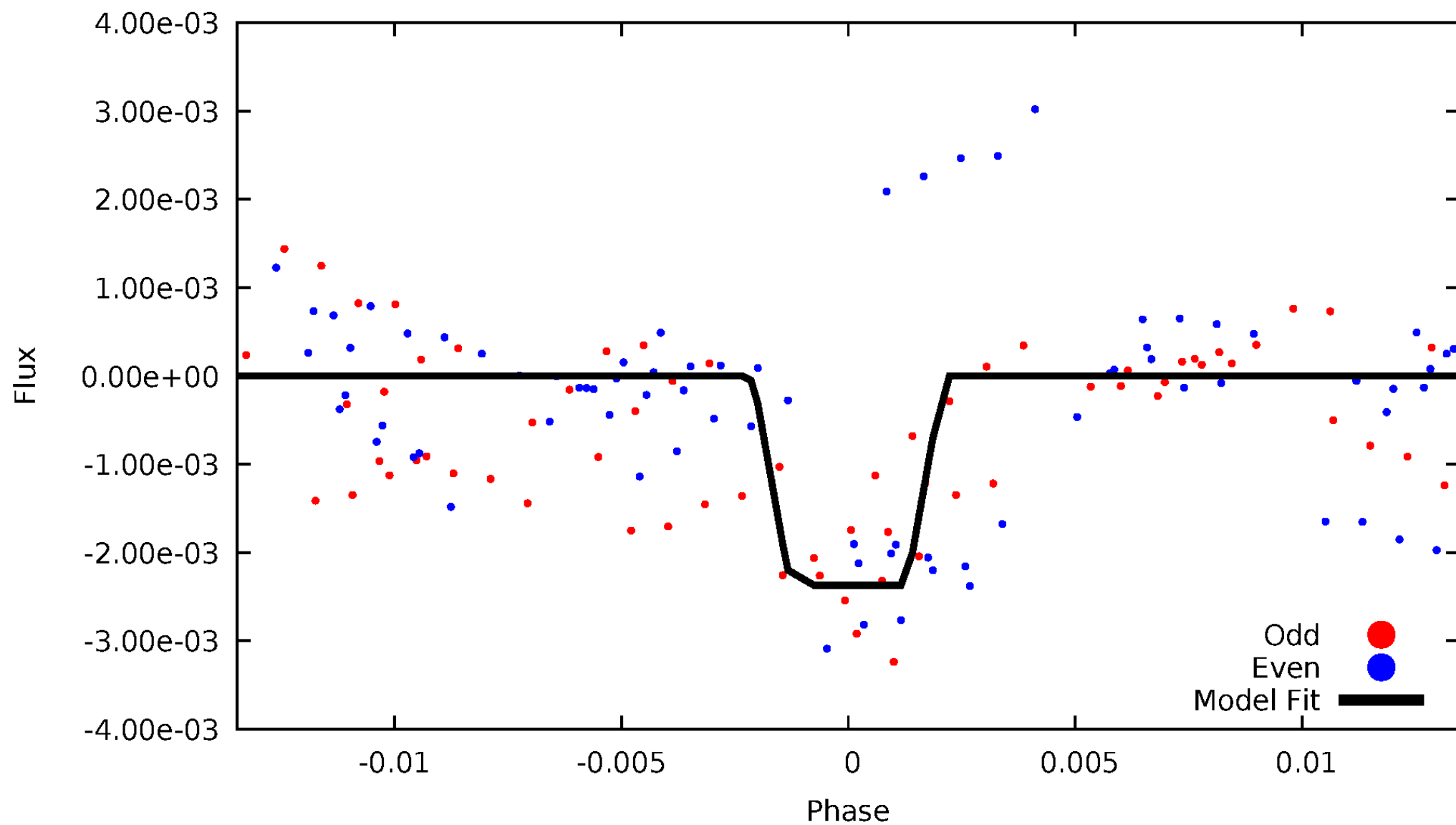
DV Odd/Even

TCE 008351778-04



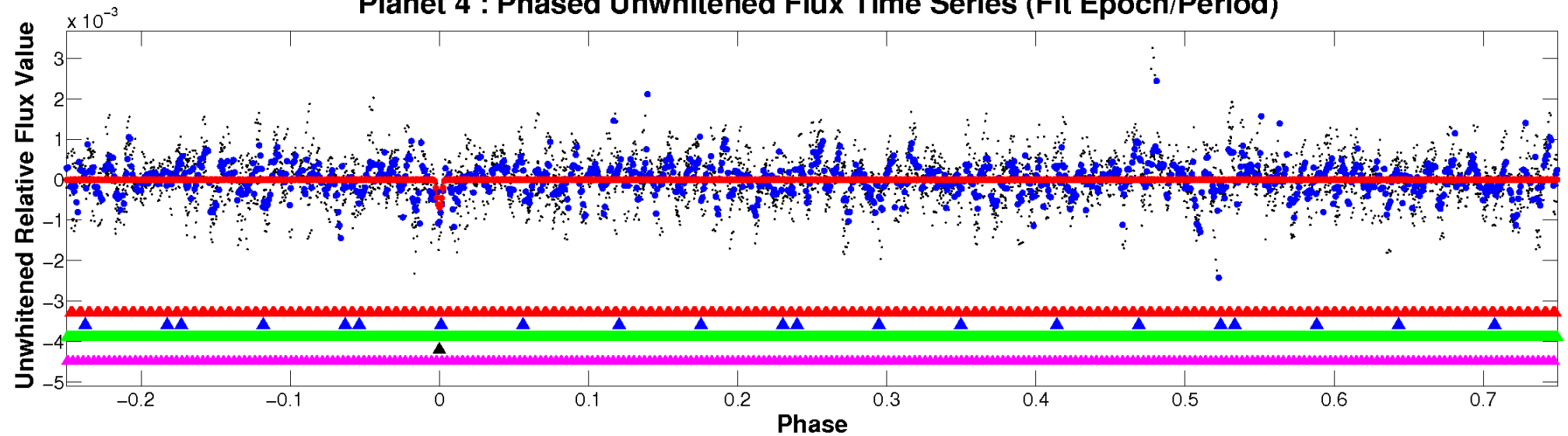
ALT Odd/Even

TCE 008351778-04

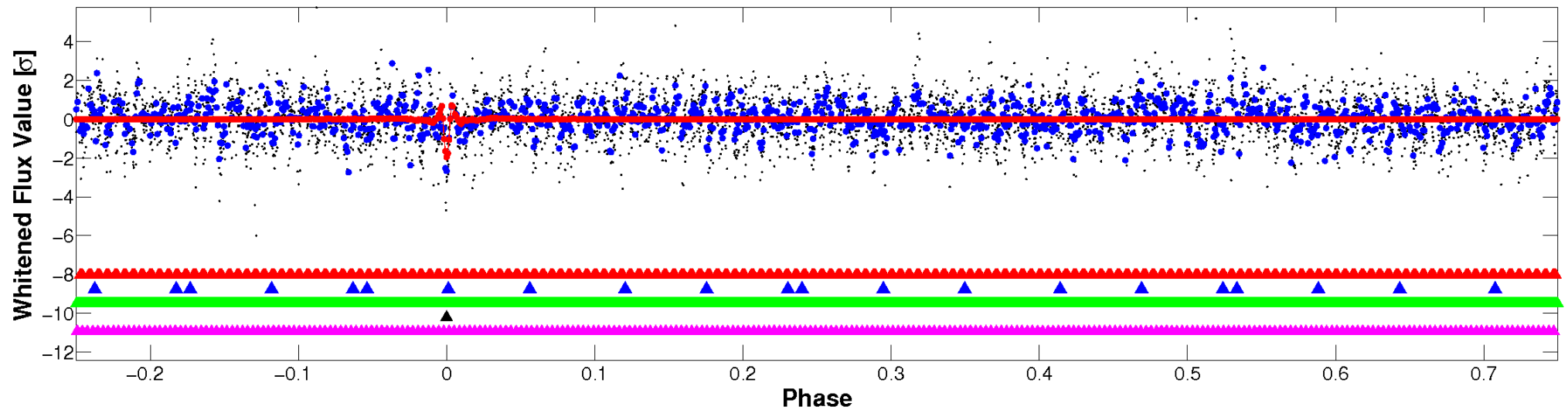


Non-Whitened Vs. Whitened Light Curve

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

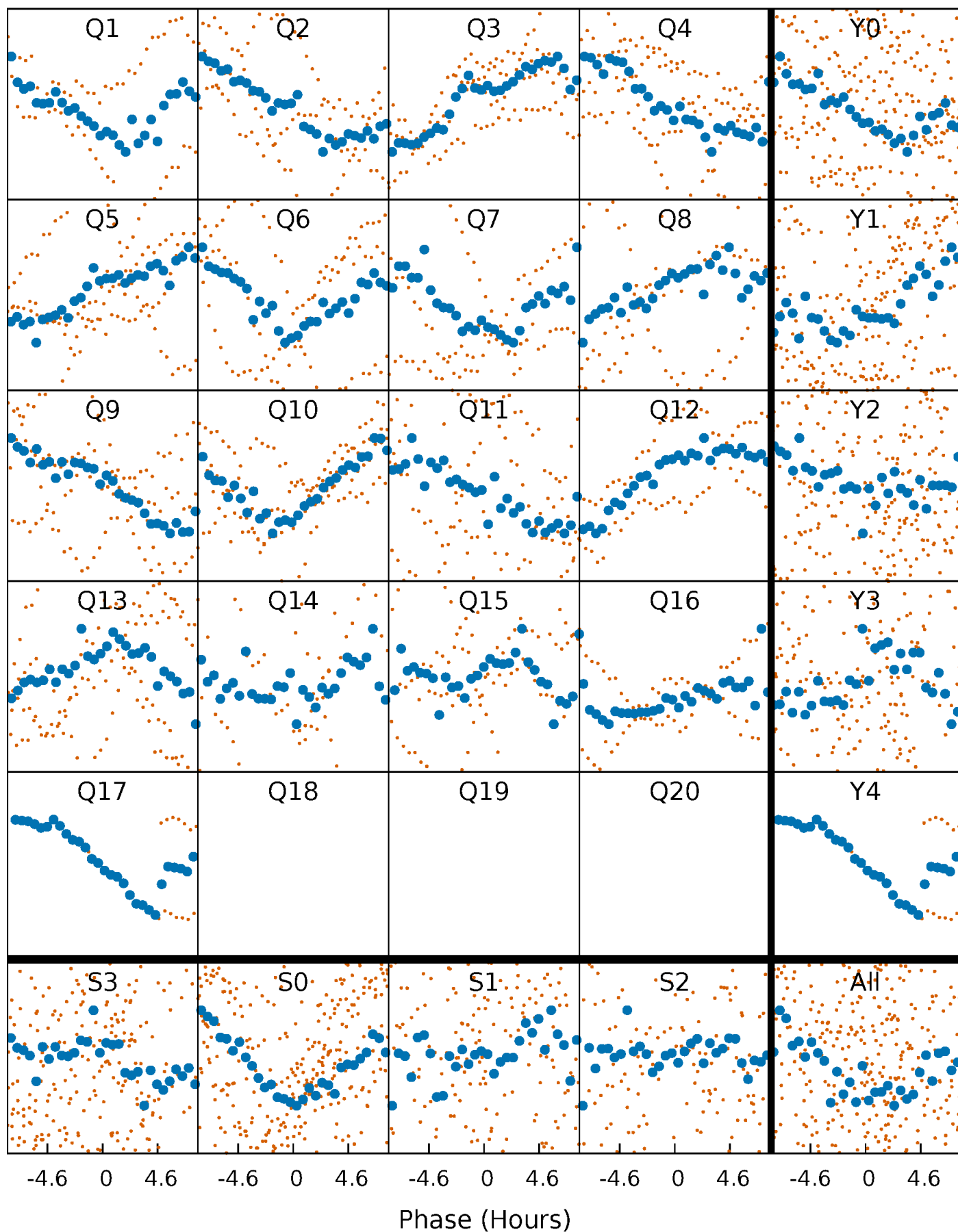


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



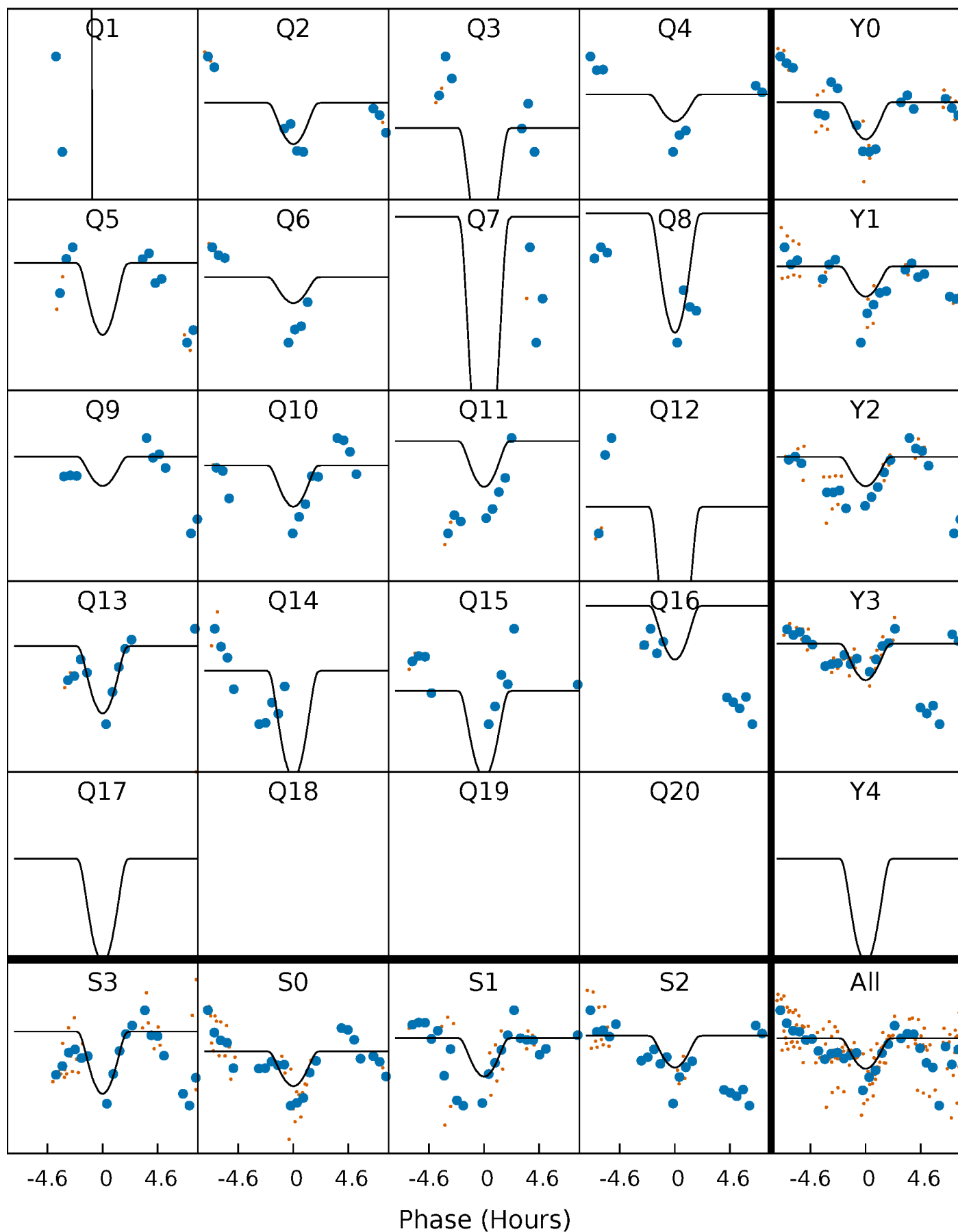
PDC Quarter-Phased Transit Curves

TCE 008351778-04 P= 25.024272 Days $T_0=135.221275$ (BKJD)



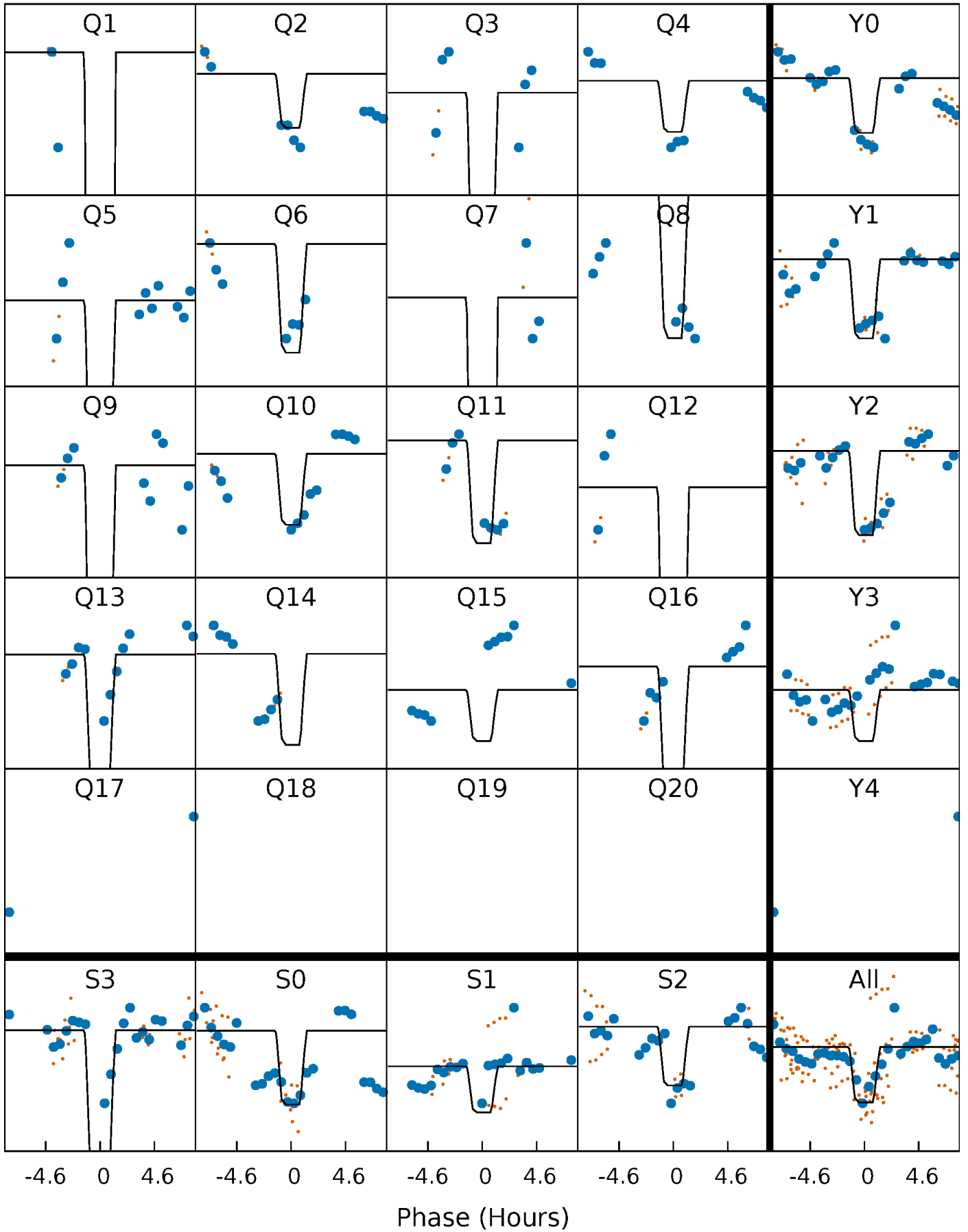
DV Quarter-Phased Transit Curves

TCE 008351778-04 P= 25.024272 Days $T_0=135.221275$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

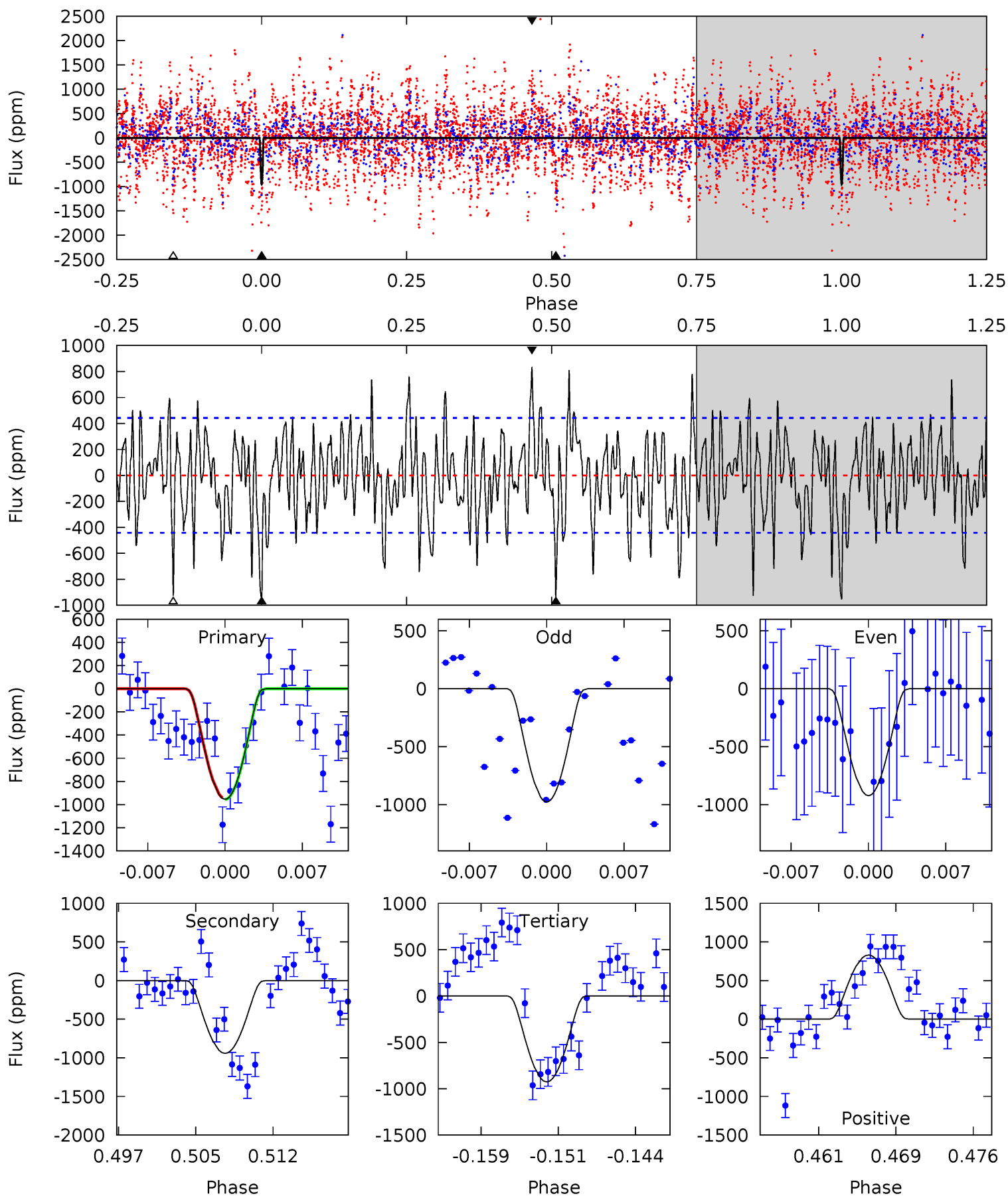
TCE 008351778-04 P= 25.024081 Days $T_0=135.229193$ (BKJD)



DV Model-Shift Uniqueness Test

008351778-04, P = 25.024272 Days, E = 110.197003 Days

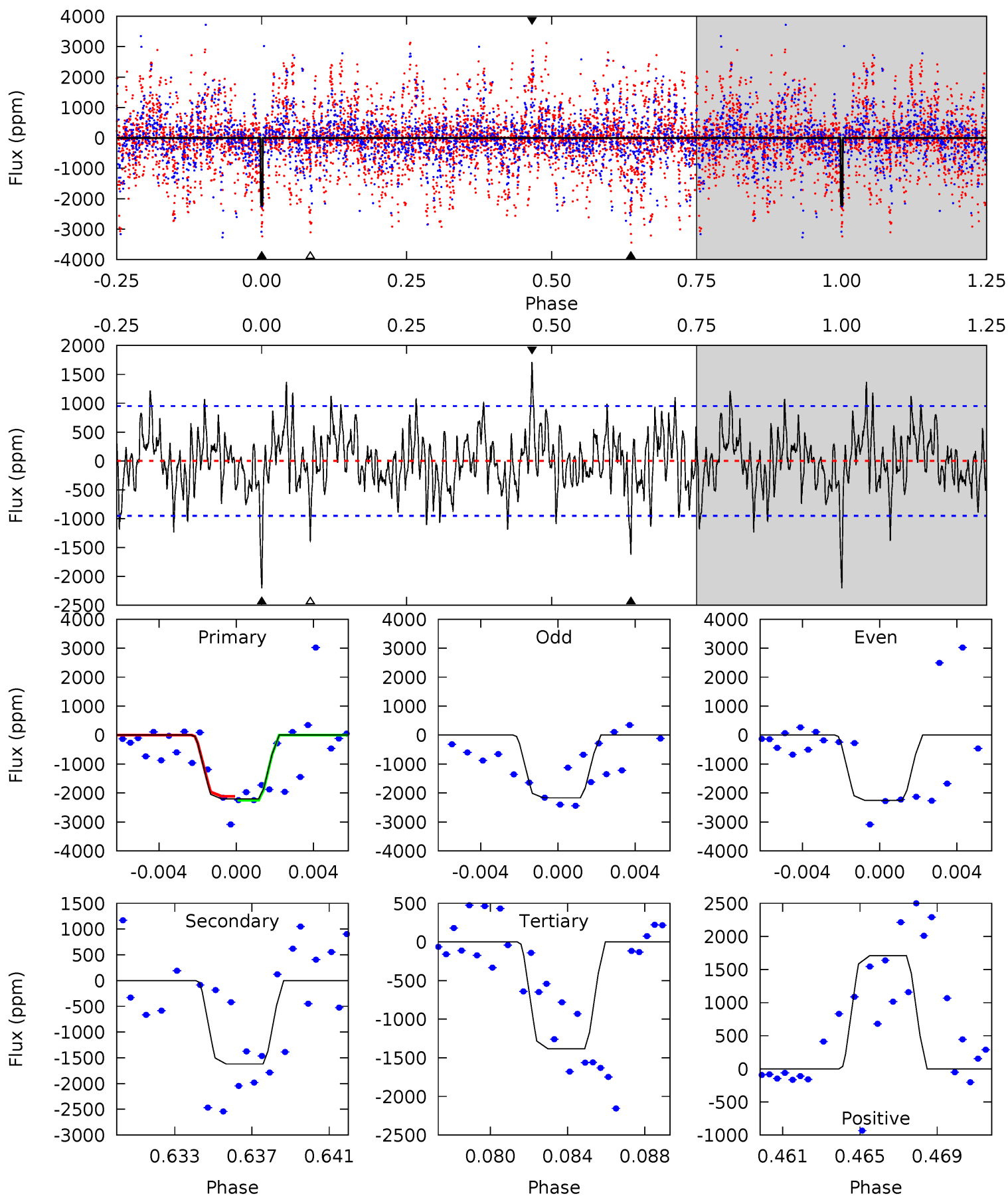
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	10.8	10.7	9.56	5.09	2.69	3.37	0.32	1.43	0.18	1.29	0.31	1.09	0.47	0.07



Alt Model-Shift Uniqueness Test

008351778-04, P = 25.024081 Days, E = 110.205112 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	8.87	7.56	9.34	5.20	2.88	2.46	4.50	2.72	1.30	-0.47	0.24	0.67	0.44	0.34



Stellar Parameters For KIC 008351778

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7435^{+235}_{-314}	$4.052^{+0.193}_{-0.158}$	$-0.160^{+0.250}_{-0.350}$	$1.957^{+0.568}_{-0.465}$	$1.573^{+0.212}_{-0.259}$	$0.295^{+0.311}_{-0.130}$
	+3%/-4%	+5%/-4%	+156%/-219%	+29%/-24%	+13%/-16%	+105%/-44%
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 008351778-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-941 ± 87	$22.59^{+24.46}_{-15.07}$	1437^{+110}_{-105}	4130^{+2594}_{-865}	38^{+301}_{-29}
Alt.	-1620 ± 183	$23.77^{+24.27}_{-15.38}$	1431^{+110}_{-101}	4542^{+2930}_{-1029}	60^{+449}_{-46}

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

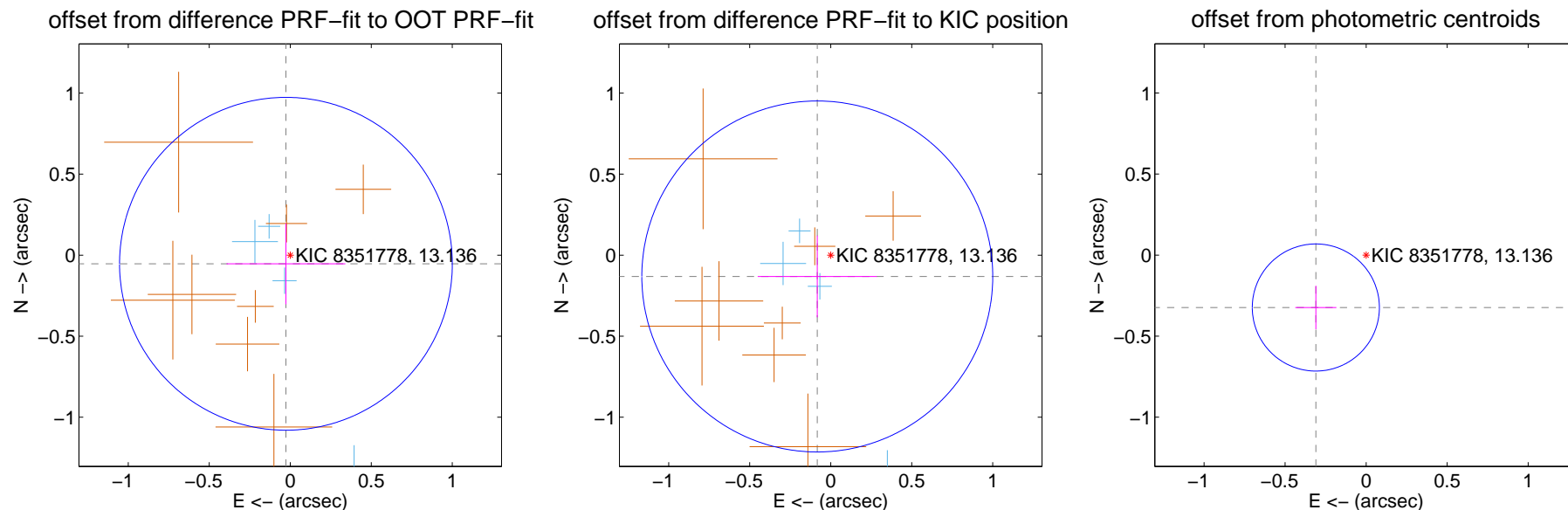
DV Centroid Data

Supplemental centroid analysis for 008351778-04. Kepler magnitude: 13.14. Transit SNR 8.42

There are 6 quarters with good PRF difference image offsets

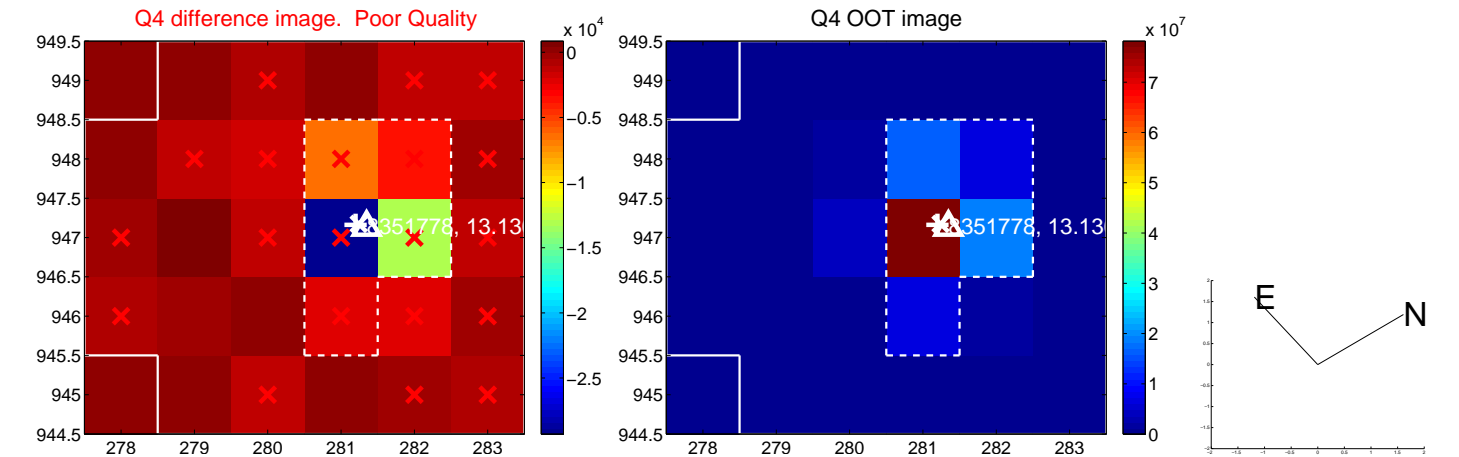
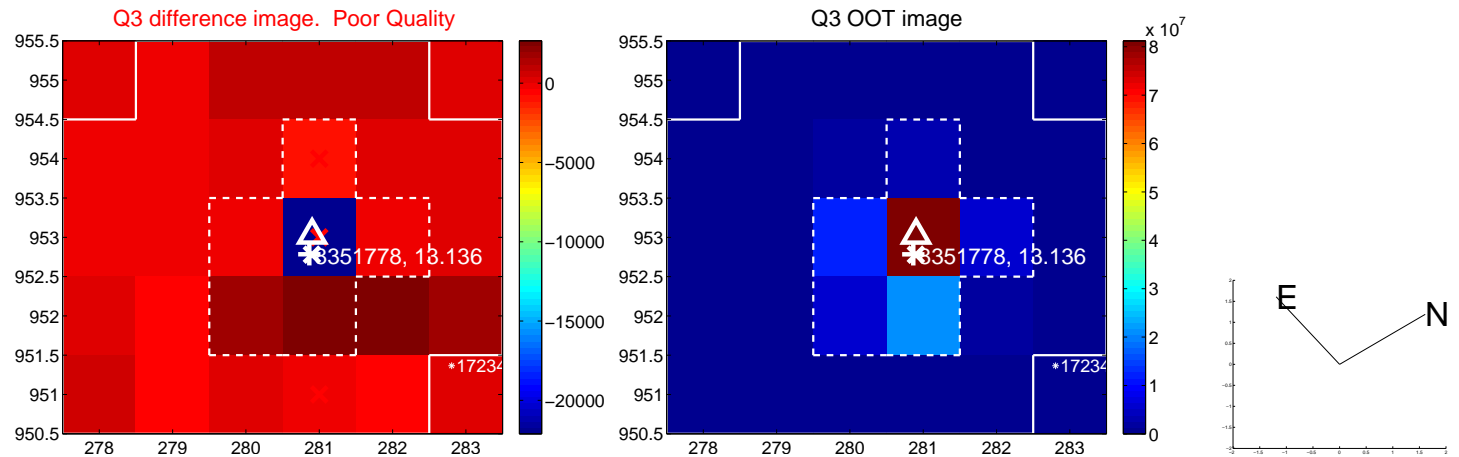
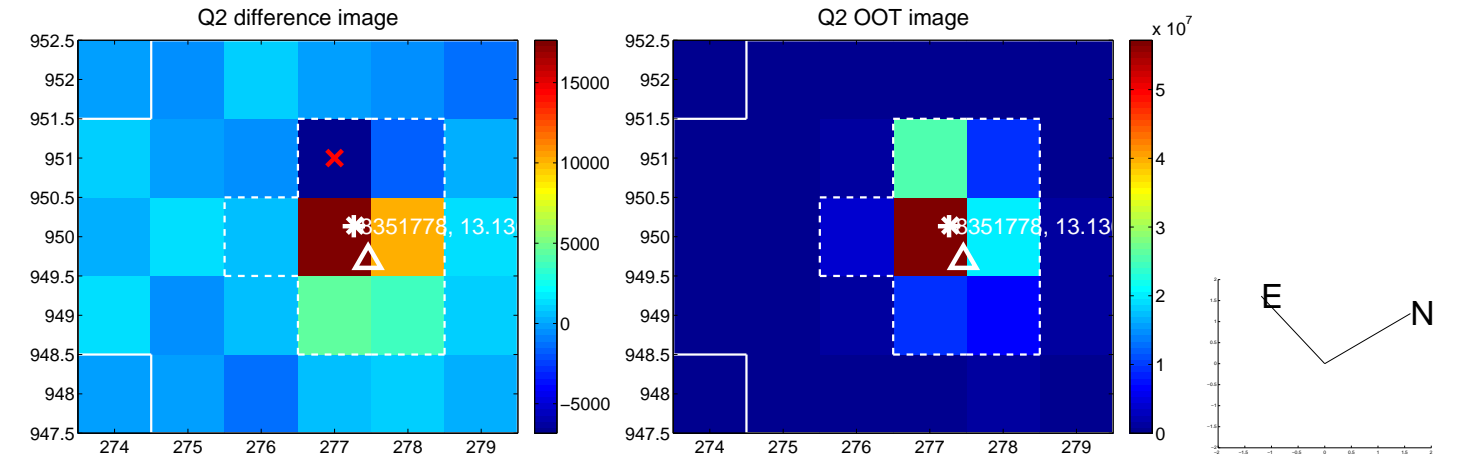
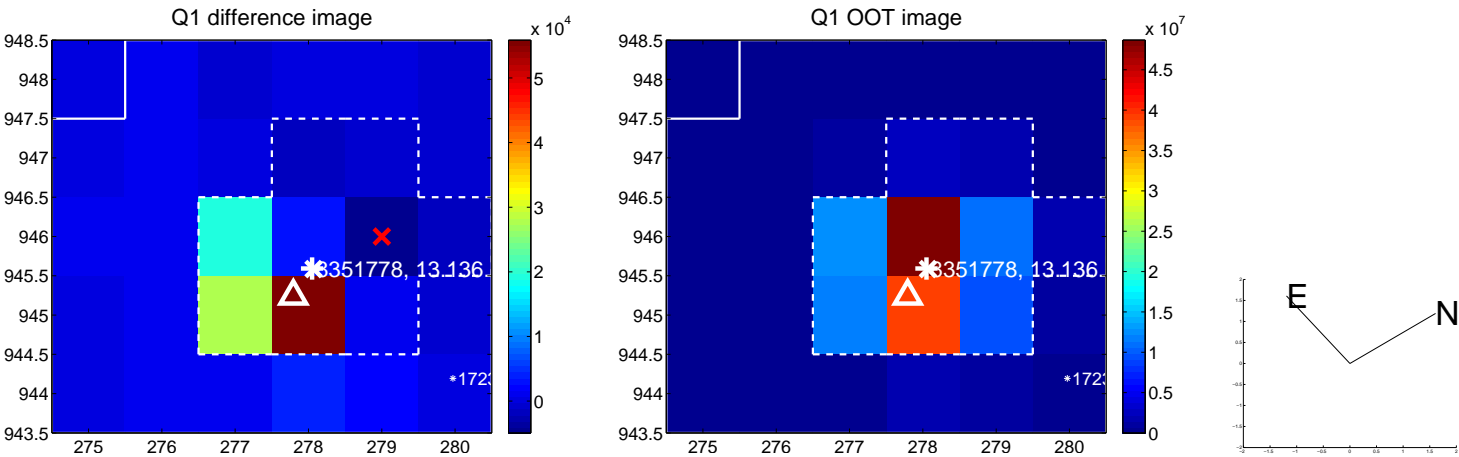
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.060 ± 0.342	0.17	0.027 ± 0.367	-0.053 ± 0.250
PRF-fit source offset from KIC position	0.155 ± 0.361	0.43	0.083 ± 0.368	-0.131 ± 0.252
photometric centroid source offset	0.45 ± 0.13	3.43	0.31 ± 0.13	-0.32 ± 0.13

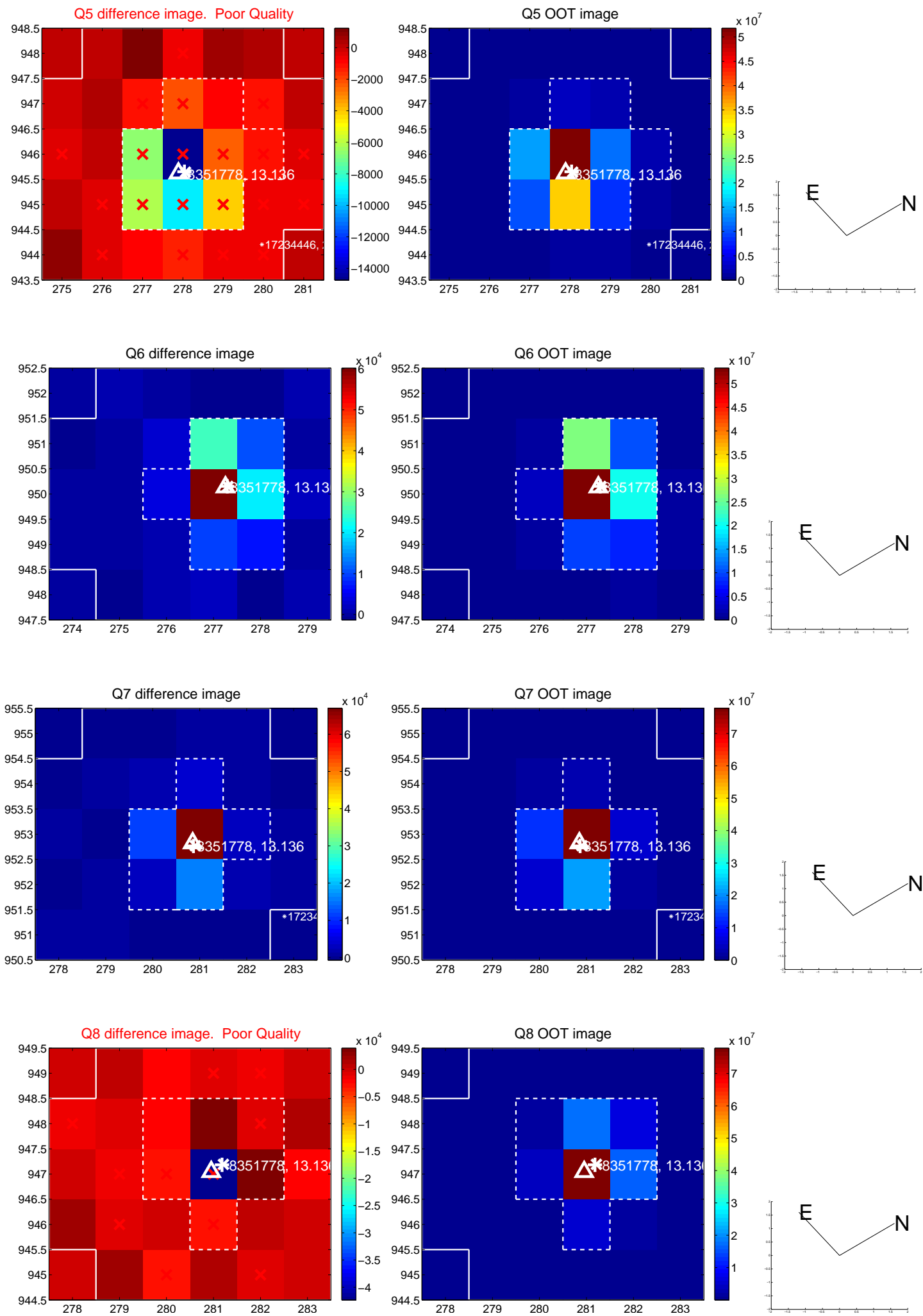


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

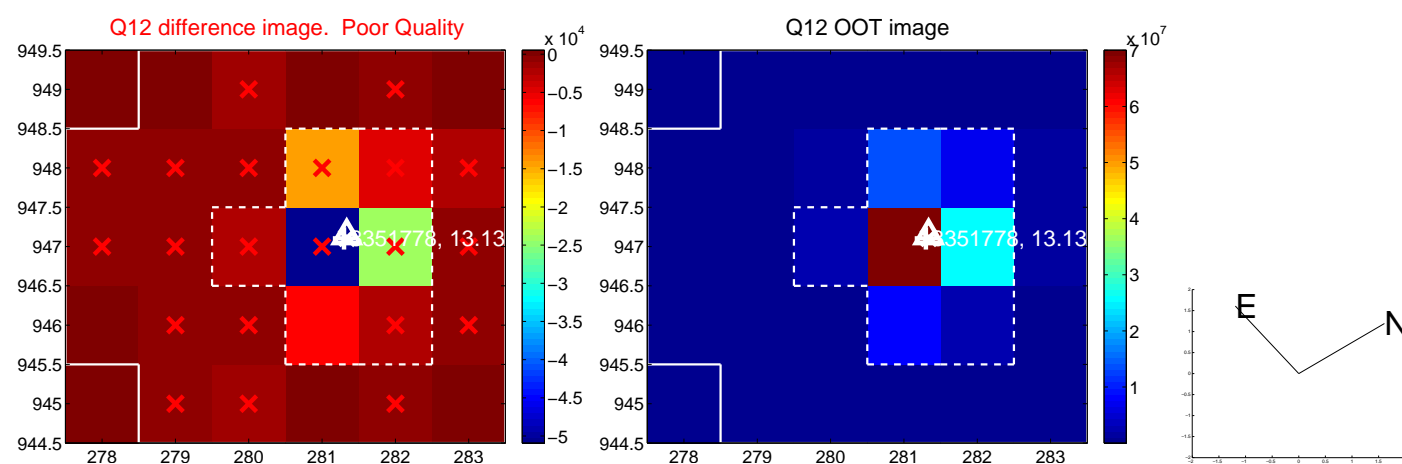
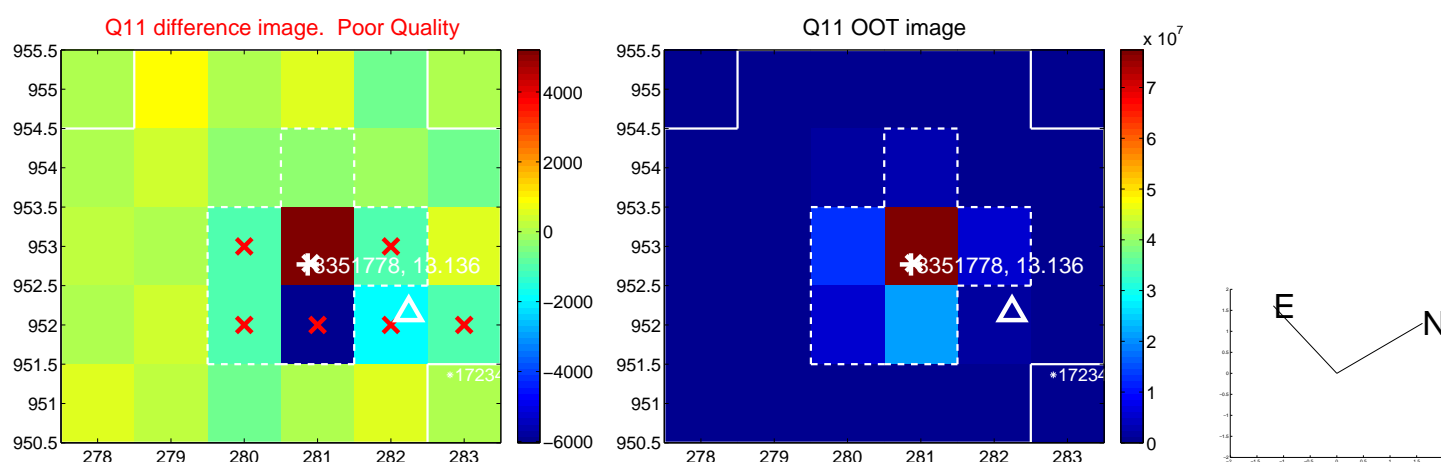
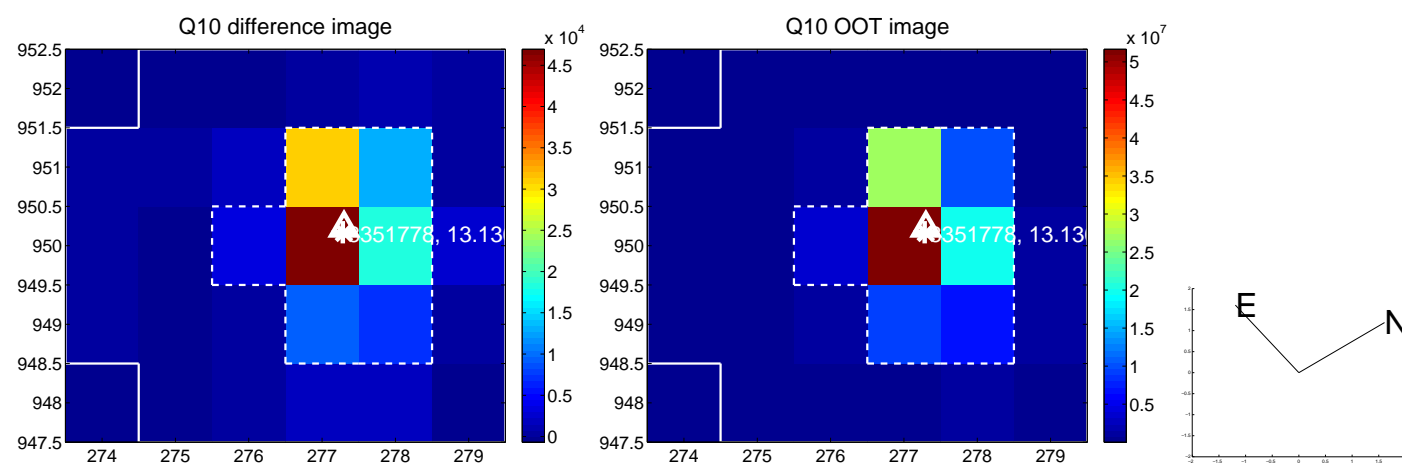
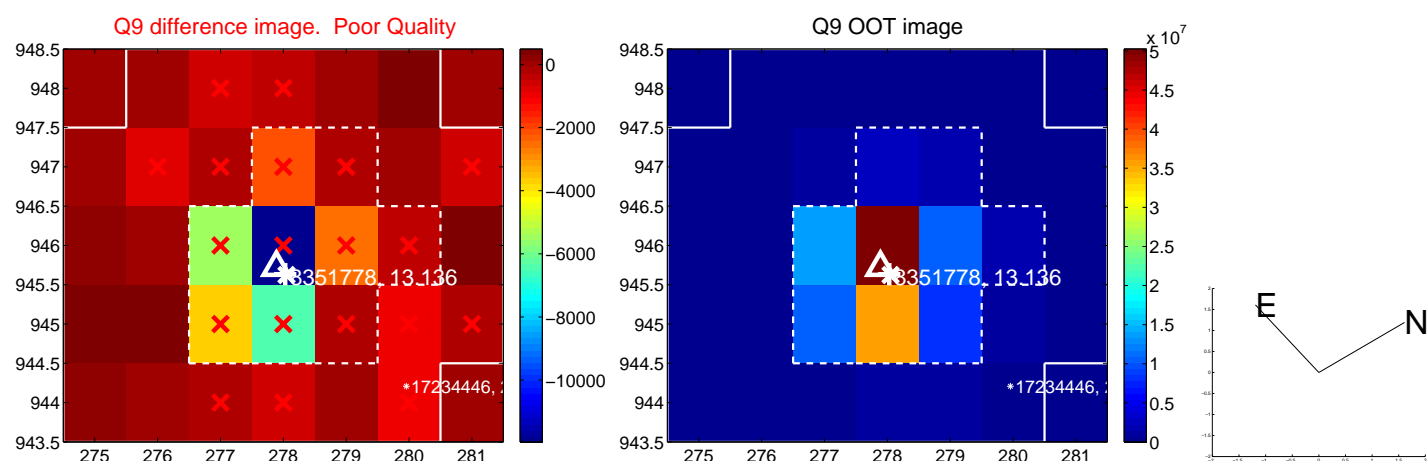
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



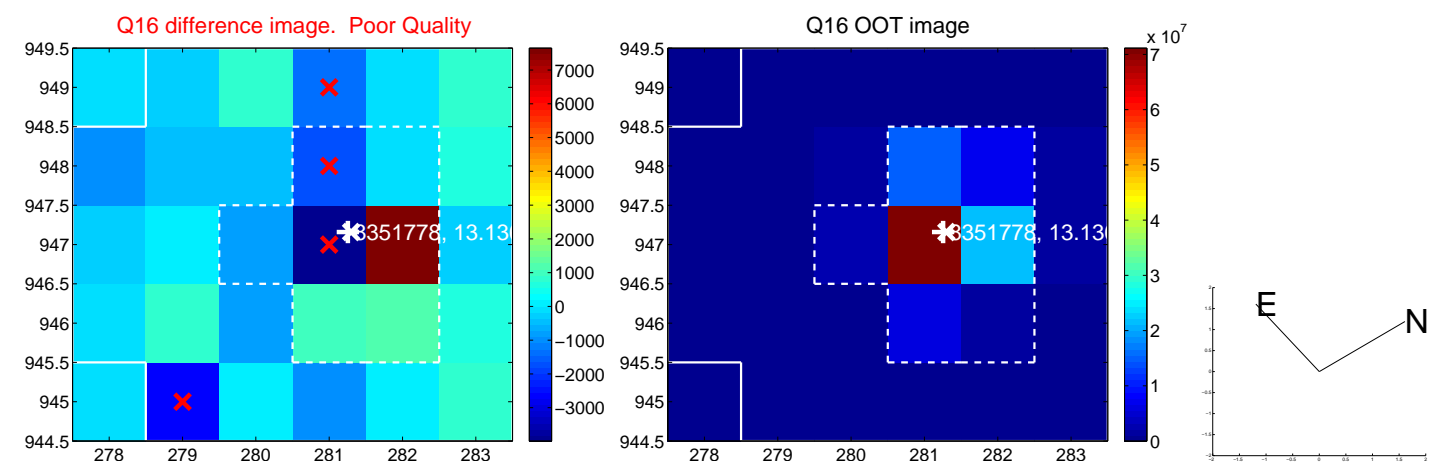
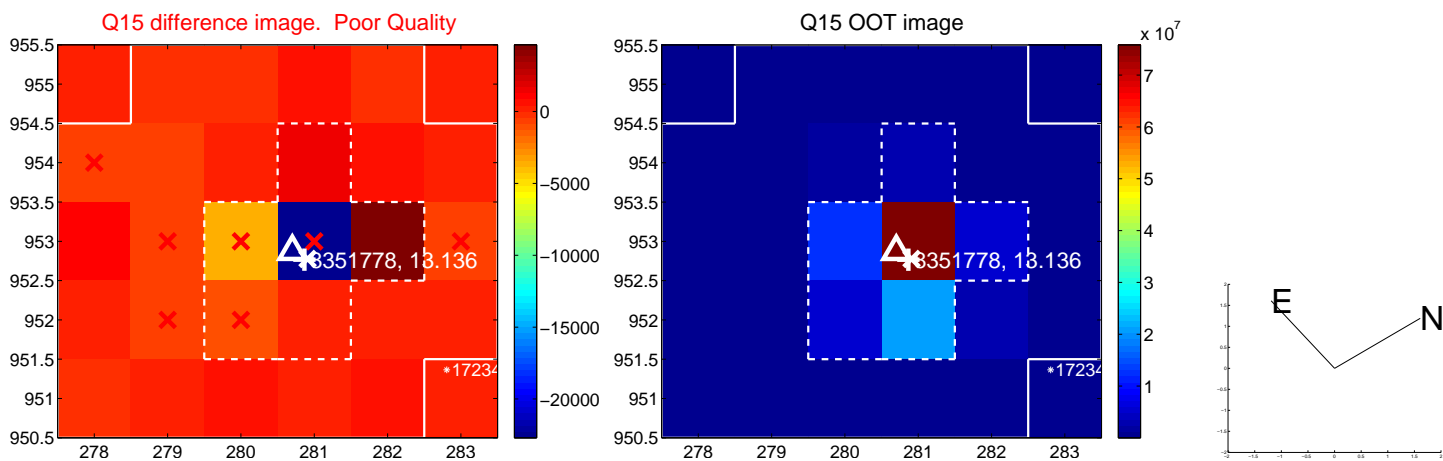
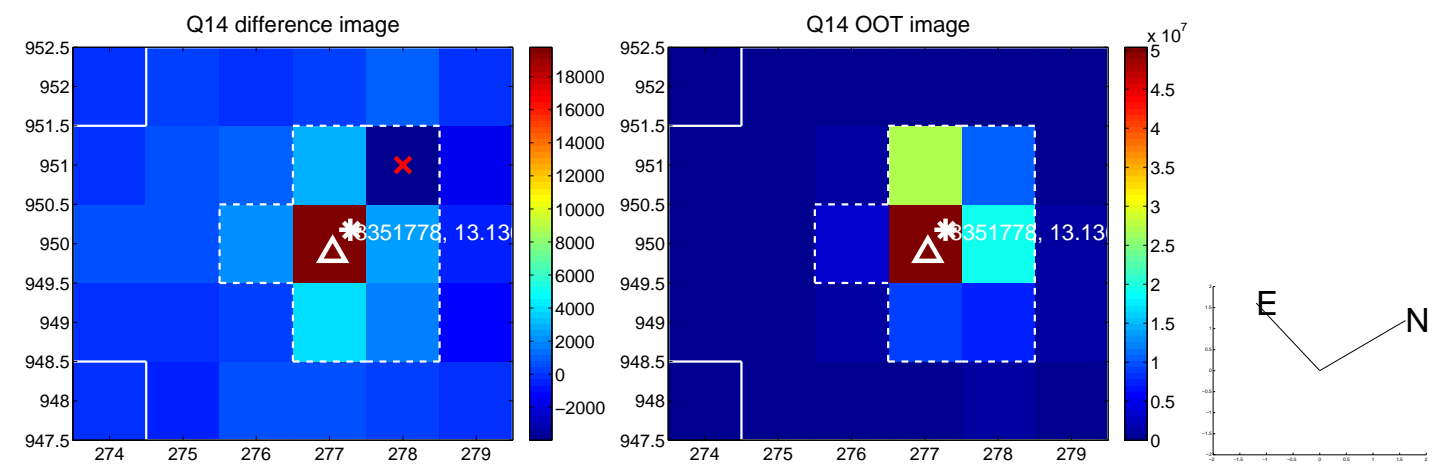
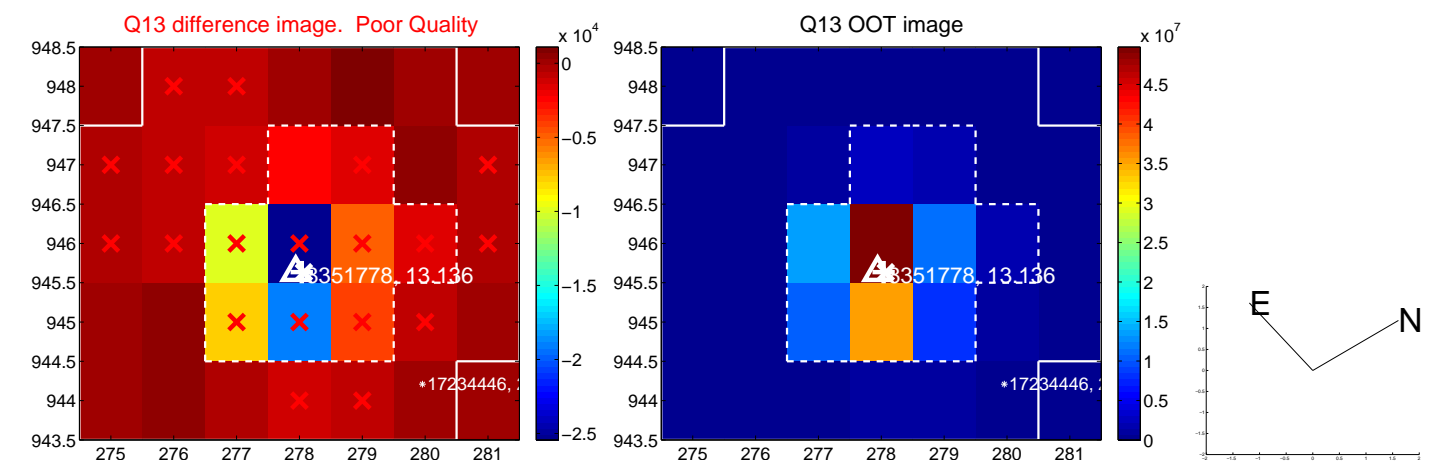
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



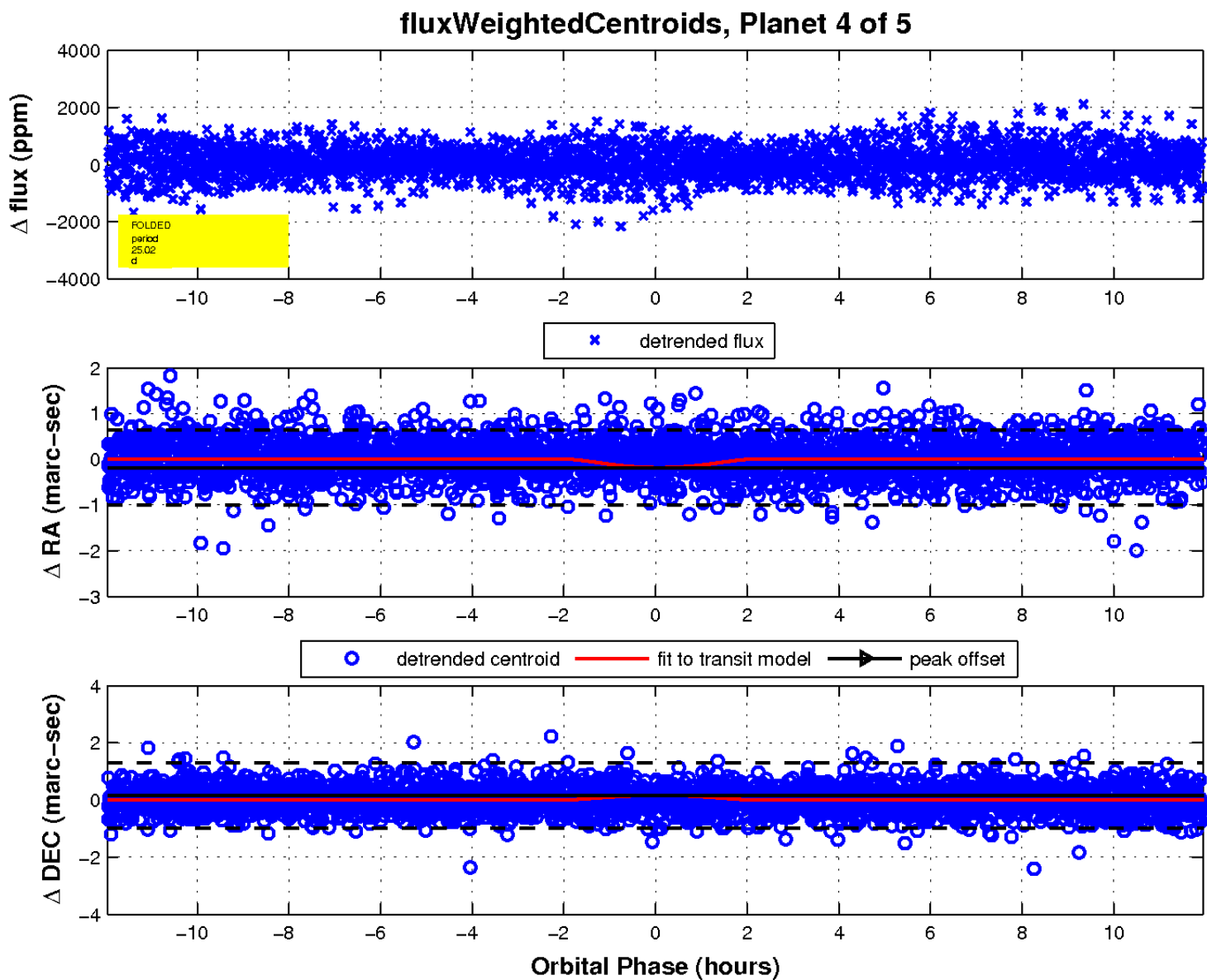
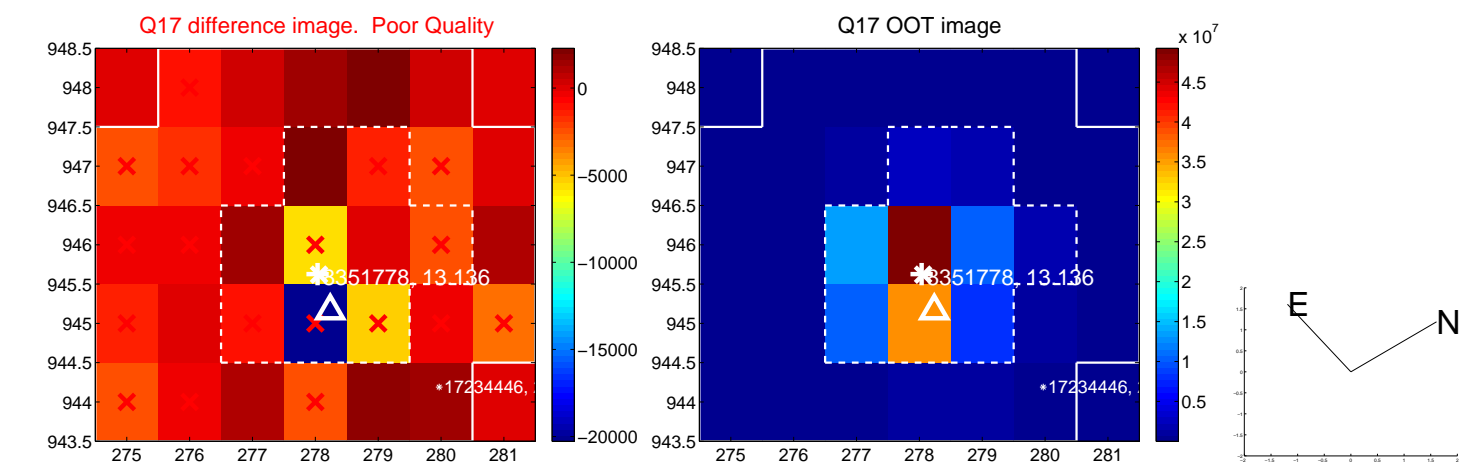
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

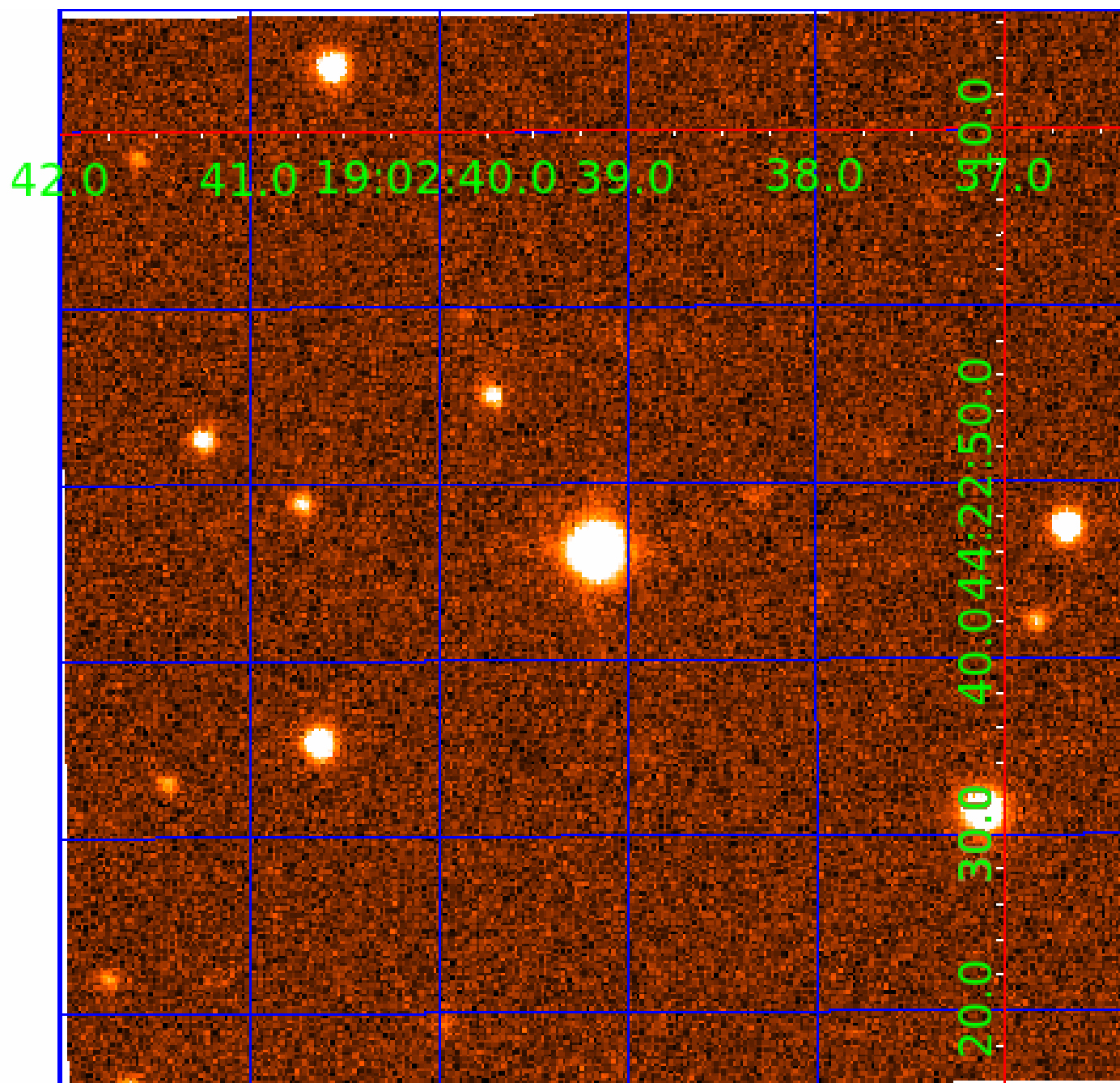


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008351778

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})
008351778-01	OBS	No	1.030447	132.558646	34.2	6.603	11.4	6.3	1.96	7435	1.16	19425.75
008351778-03	OBS	No	0.515238	131.614138	191.2	1.633	12.0	24.1	1.96	7435	2.75	48948.00
008351778-04	OBS	No	25.024272	135.221275	688.9	3.987	9.2	8.4	1.96	7435	9.76	276.23
008351778-05	OBS	No	1.656636	132.481588	180.9	5.000	10.1	-1.0	1.96	7435	2.65	10314.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008351778-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008351778-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
008351778-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—HALO_GHOST
008351778-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

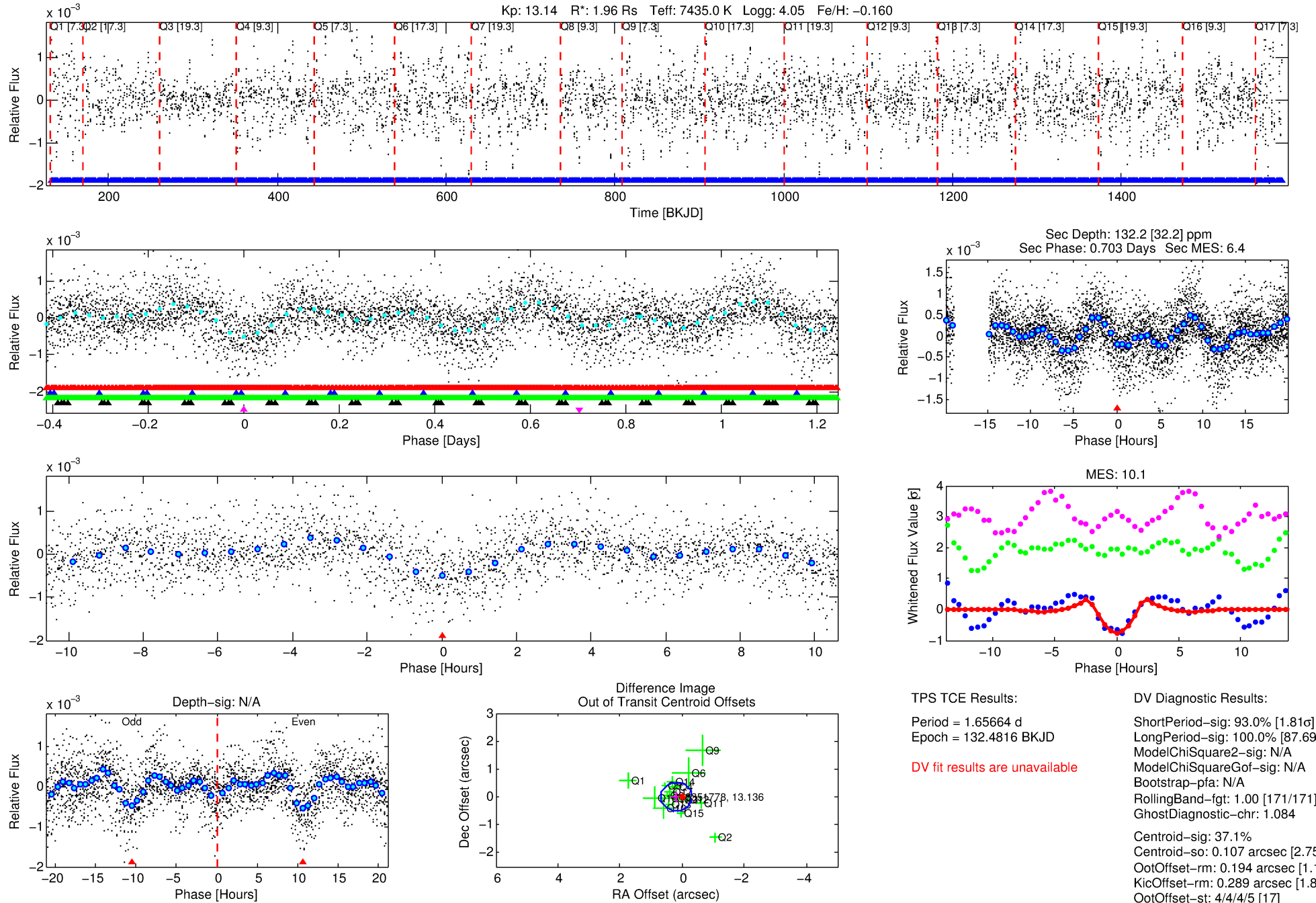
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008351778-05

No Significant Match Found

DV One-Page Summary

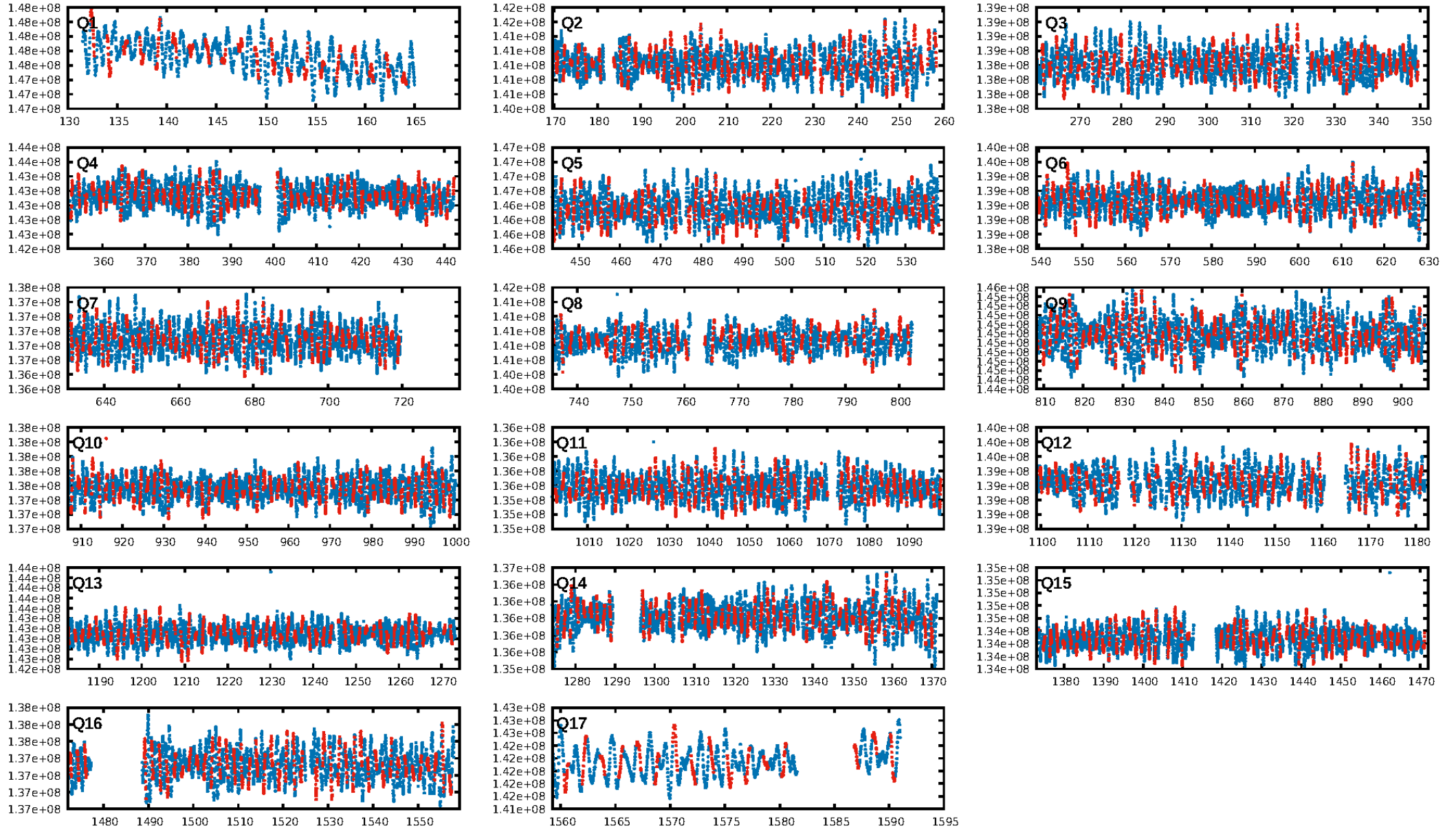
KIC: 8351778 Candidate: 5 of 5 Period: 1.657 d



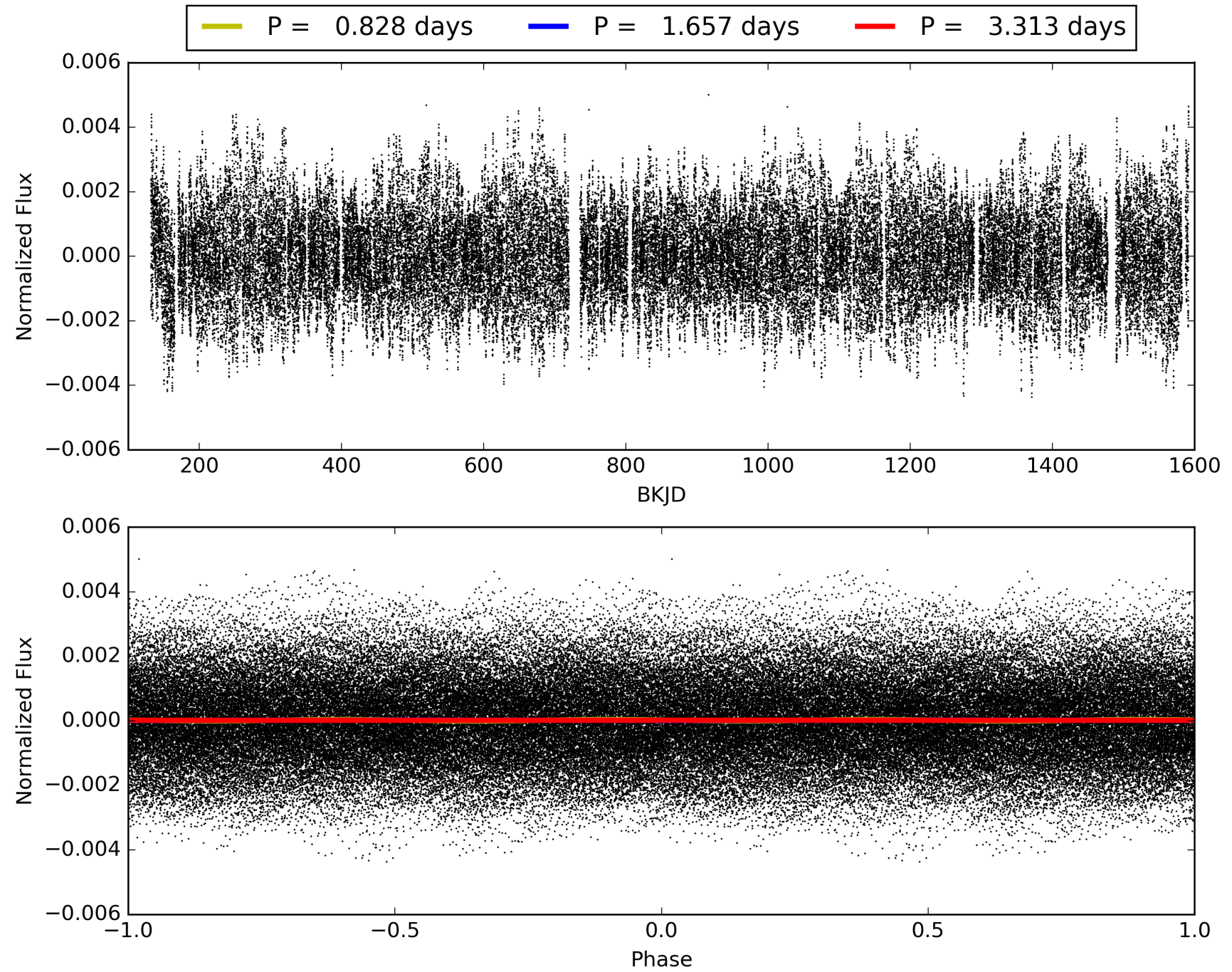
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:48:18 Z

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

TCE 008351778-05, PDC Light Curves

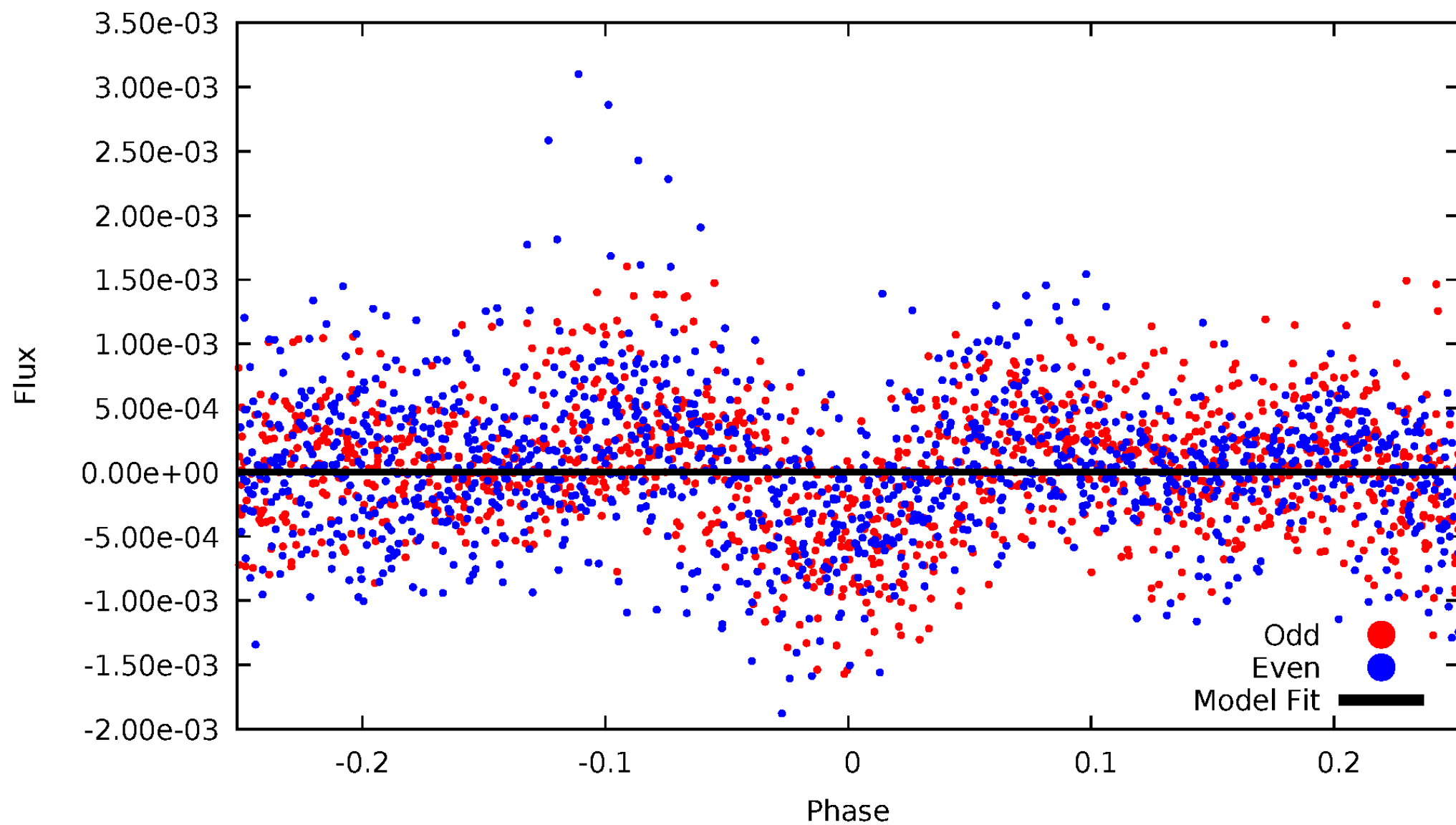


TCE 008351778-05



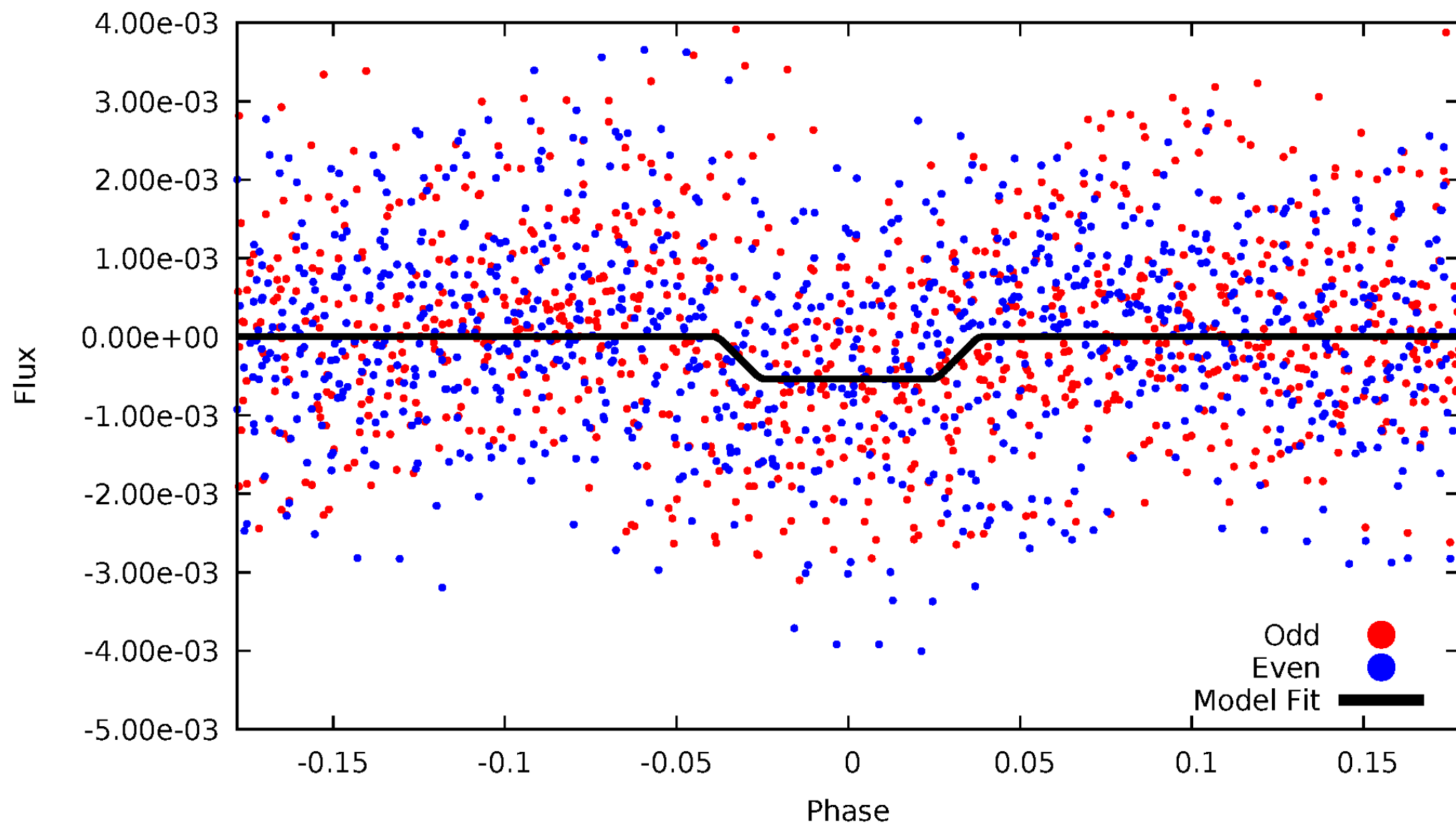
DV Odd/Even

TCE 008351778-05



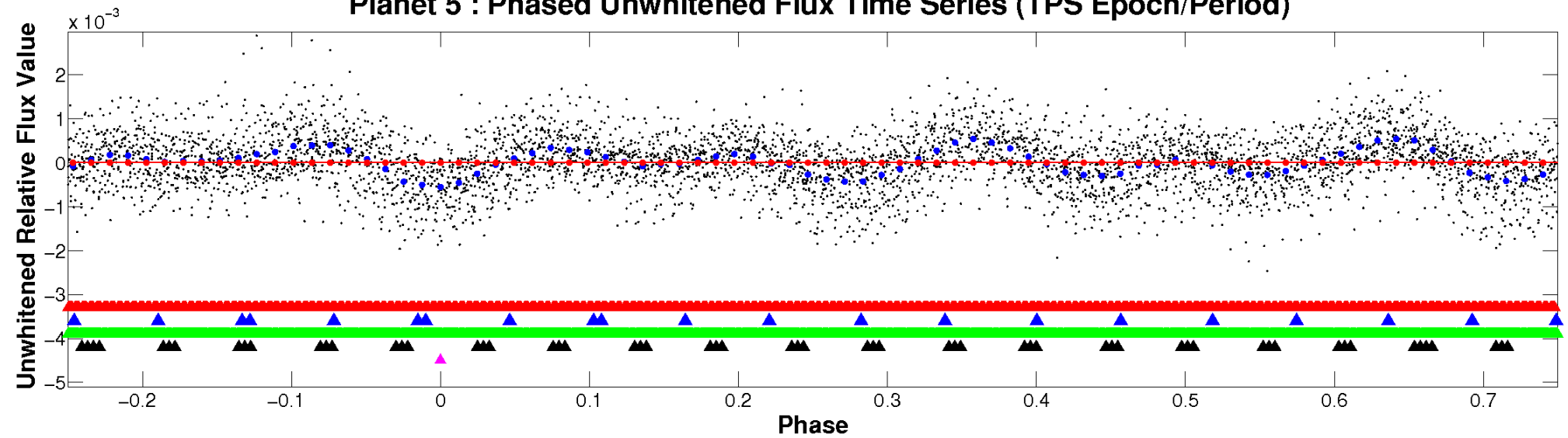
ALT Odd/Even

TCE 008351778-05

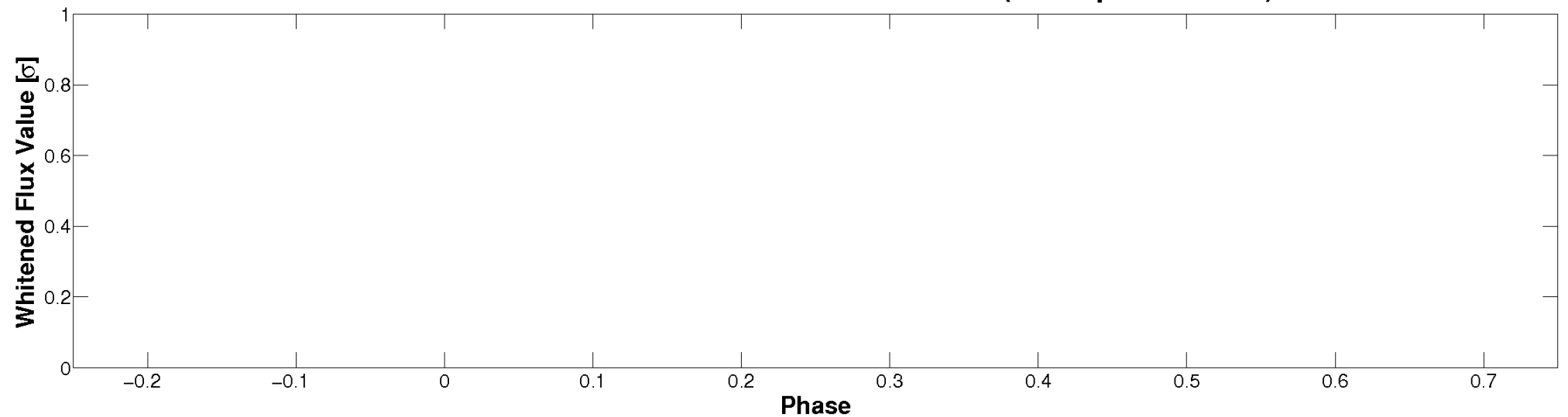


Non-Whitened Vs. Whitened Light Curve

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

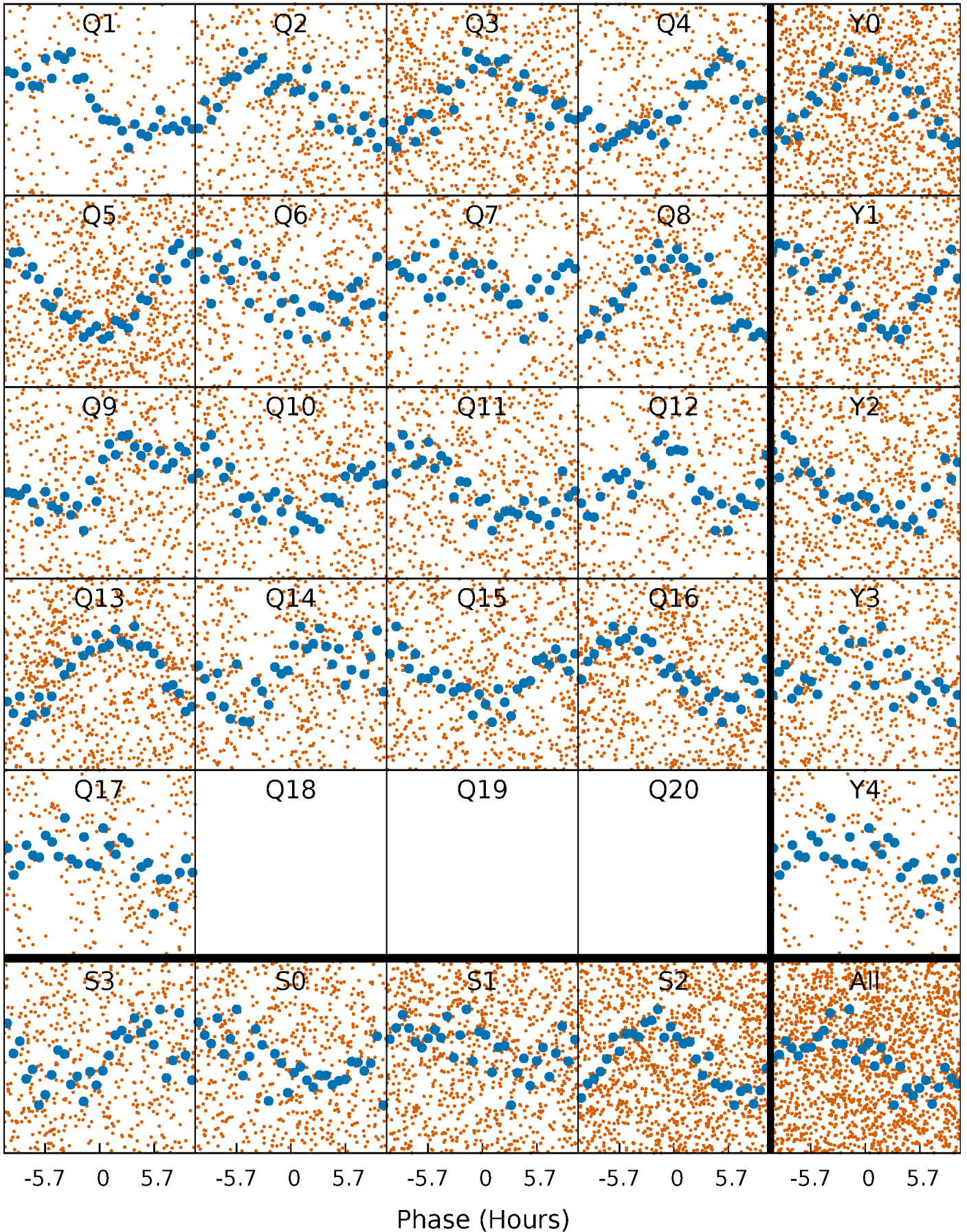


Planet 5 : Phased Whitened Flux Time Series (TPS Epoch/Period)



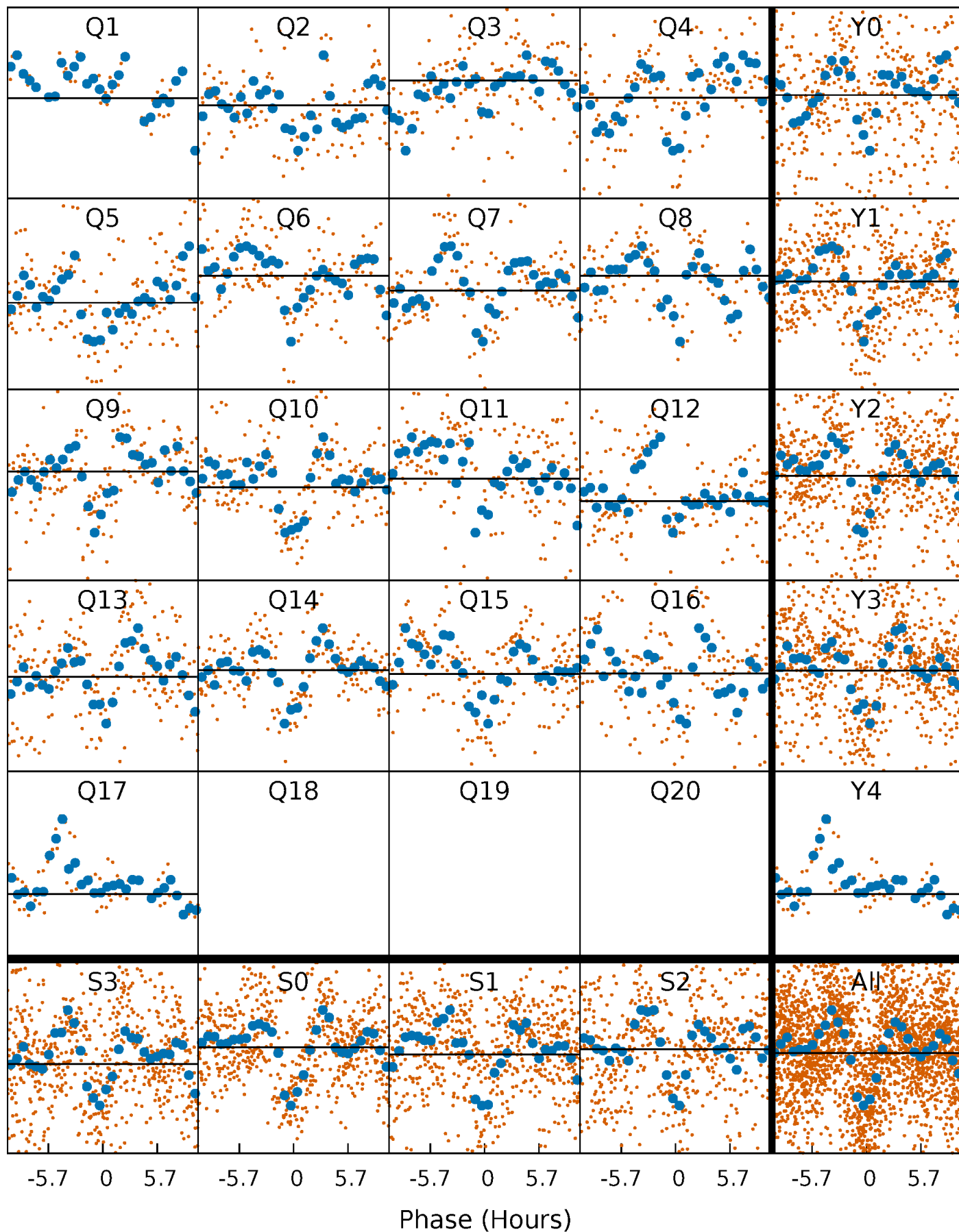
PDC Quarter-Phased Transit Curves

TCE 008351778-05 P= 1.656636 Days $T_0=132.481588$ (BKJD)



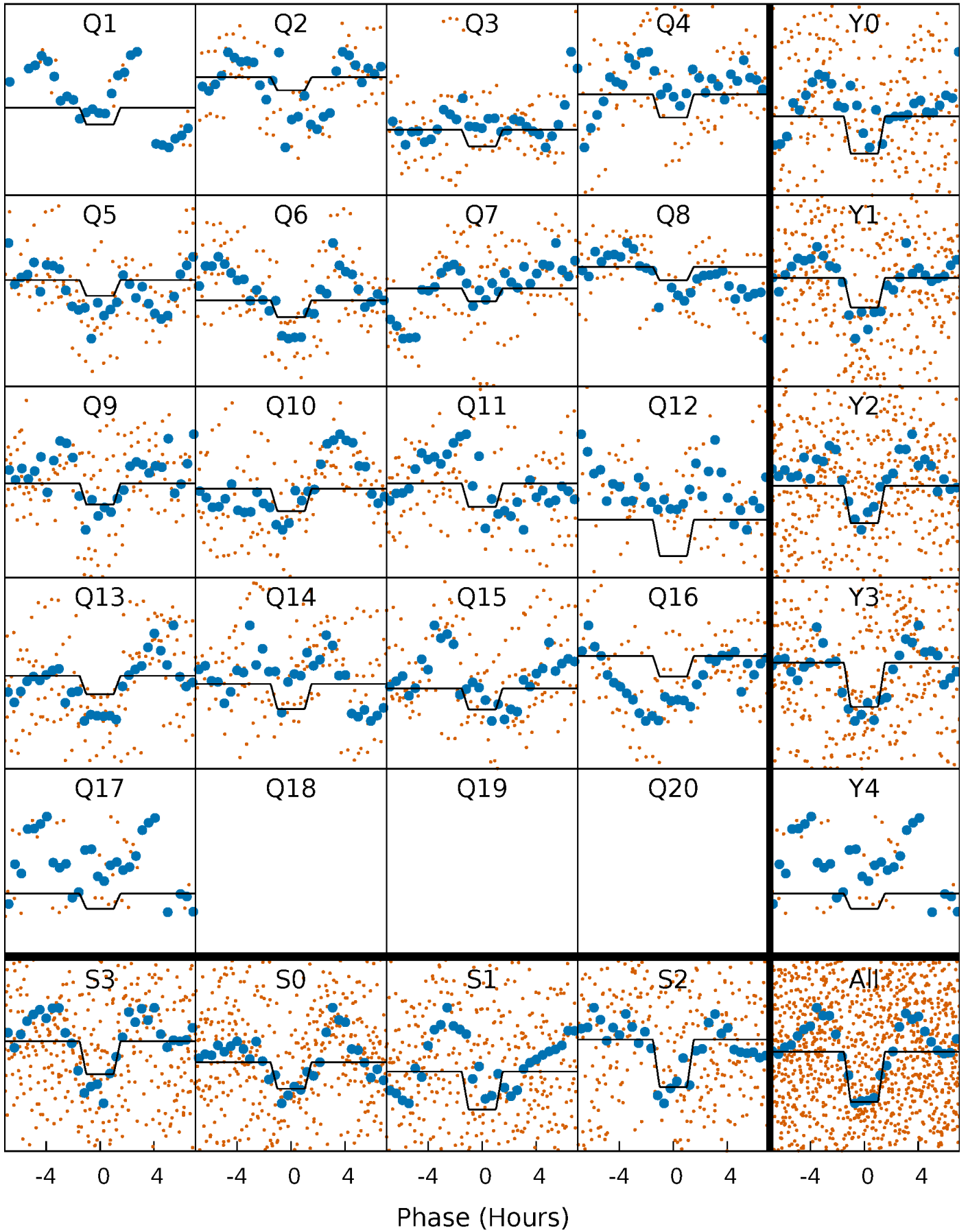
DV Quarter-Phased Transit Curves

TCE 008351778-05 $P = 1.656636$ Days $T_0 = 132.481588$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

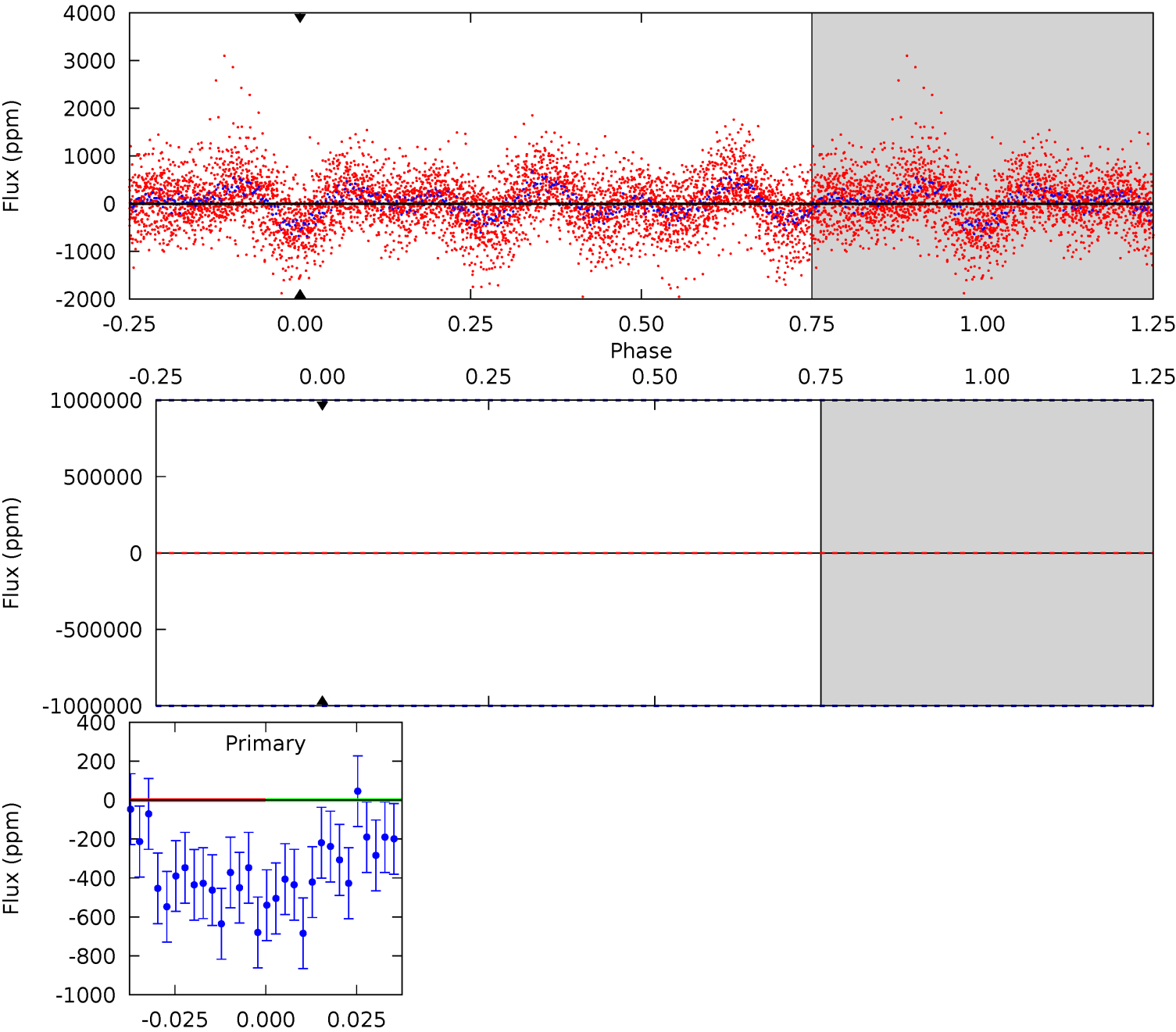
TCE 008351778-05 P= 1.656636 Days $T_0=132.471114$ (BKJD)



DV Model-Shift Uniqueness Test

008351778-05, P = 1.656636 Days, E = 130.824952 Days

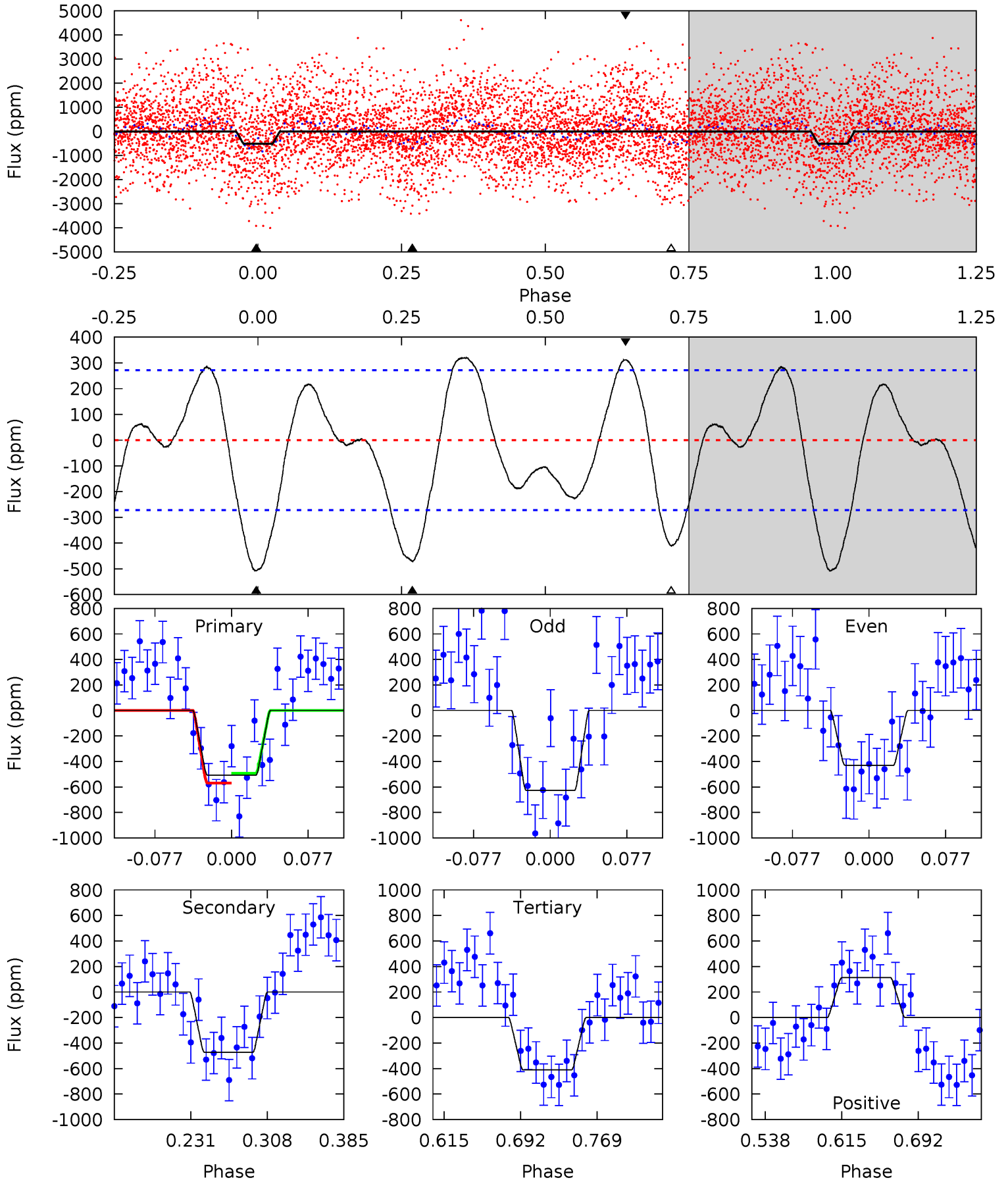
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

008351778-05, P = 1.656636 Days, E = 130.814478 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.63	8.02	6.97	5.32	4.62	1.77	3.16	1.66	3.31	1.05	2.70	1.67	0.90	0.39	0.65



Stellar Parameters For KIC 008351778

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7435^{+235}_{-314}	$4.052^{+0.193}_{-0.158}$	$-0.160^{+0.250}_{-0.350}$	$1.957^{+0.568}_{-0.465}$	$1.573^{+0.212}_{-0.259}$	$0.295^{+0.311}_{-0.130}$
	+3%/-4%	+5%/-4%	+156%/-219%	+29%/-24%	+13%/-16%	+105%/-44%
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 008351778-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$15.15^{+17.18}_{-10.61}$	3563^{+289}_{-267}	-5609^{+47289}_{-31866}	$-3.795^{+441.774}_{-401.081}$
Alt.	-472 ± 59	$16.16^{+17.58}_{-11.24}$	3562^{+256}_{-252}	3875^{+3029}_{-6593}	$1.000^{+9.521}_{-0.766}$

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

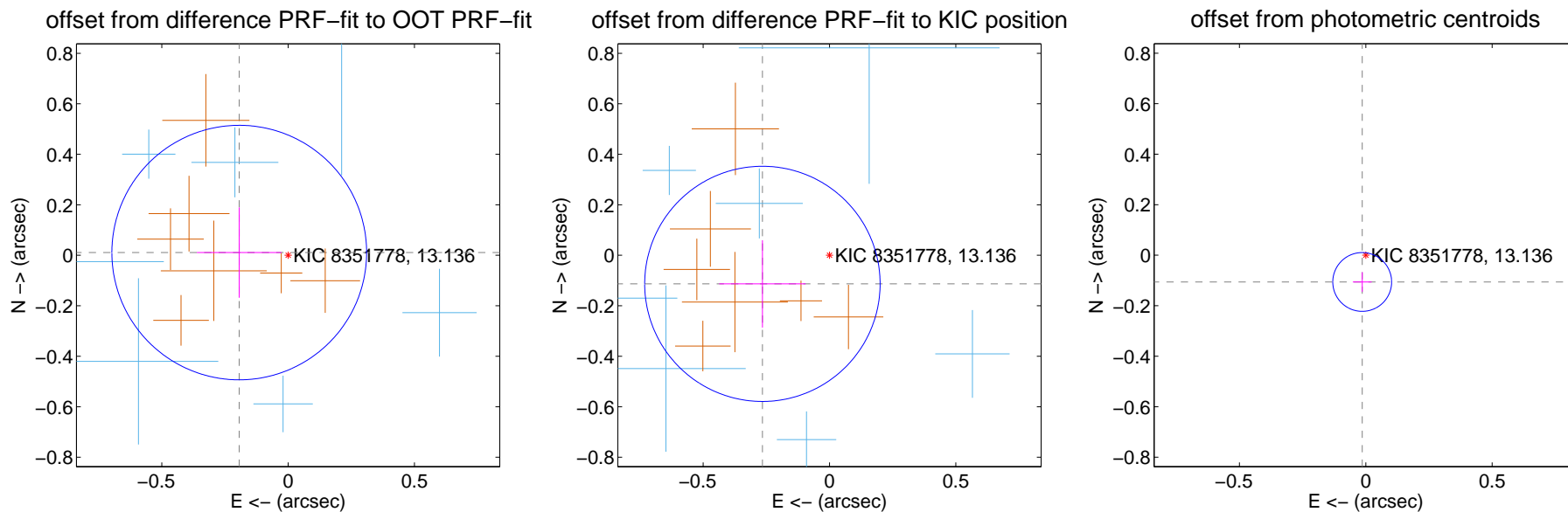
DV Centroid Data

Supplemental centroid analysis for 008351778-05. Kepler magnitude: 13.14. Transit SNR -1.00

There are 9 quarters with good PRF difference image offsets

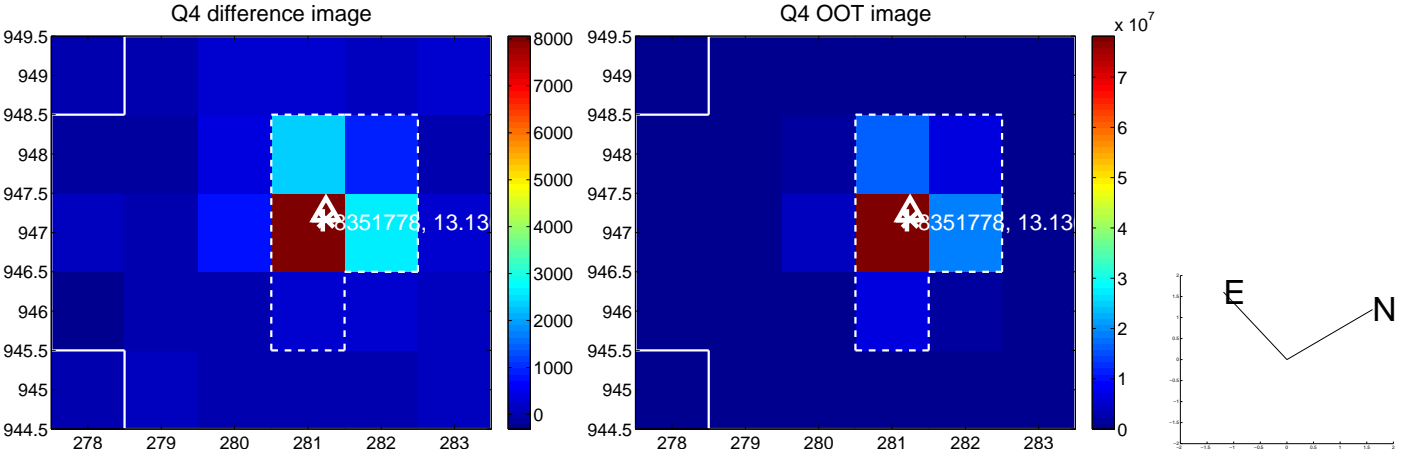
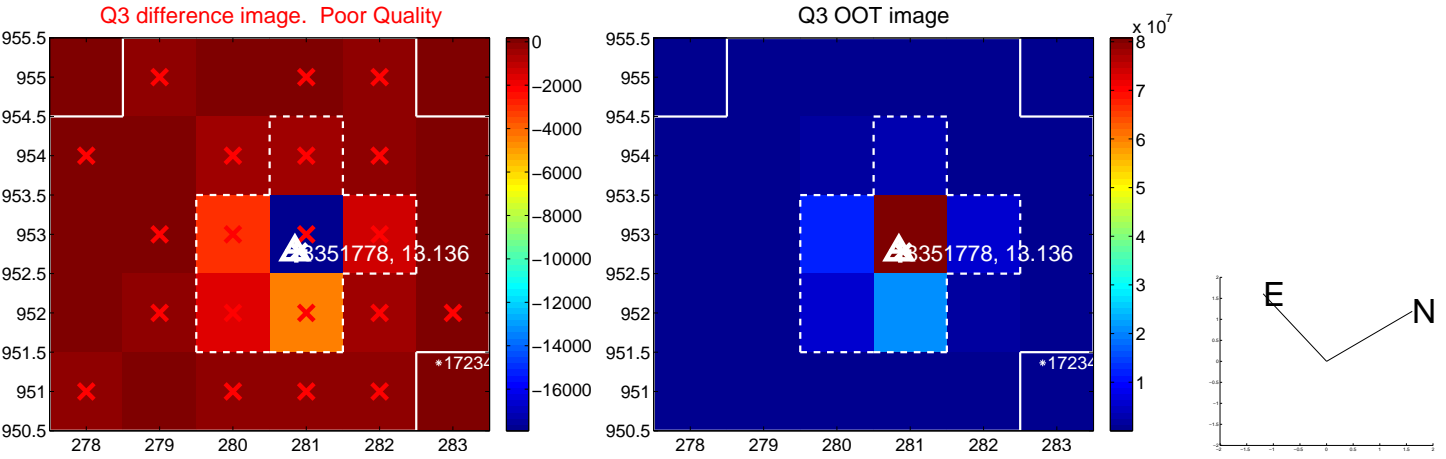
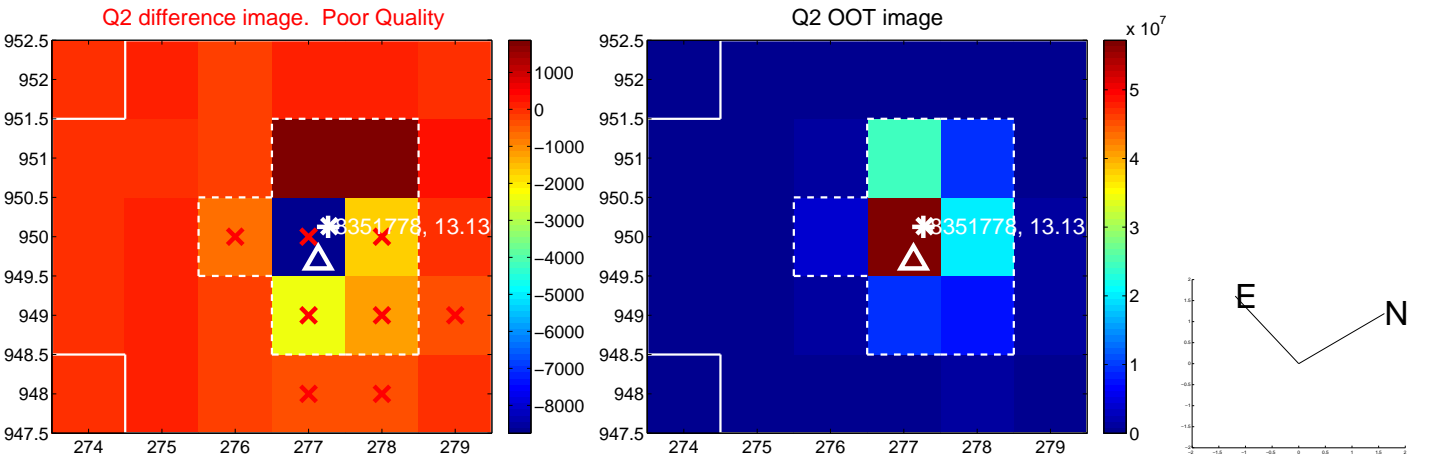
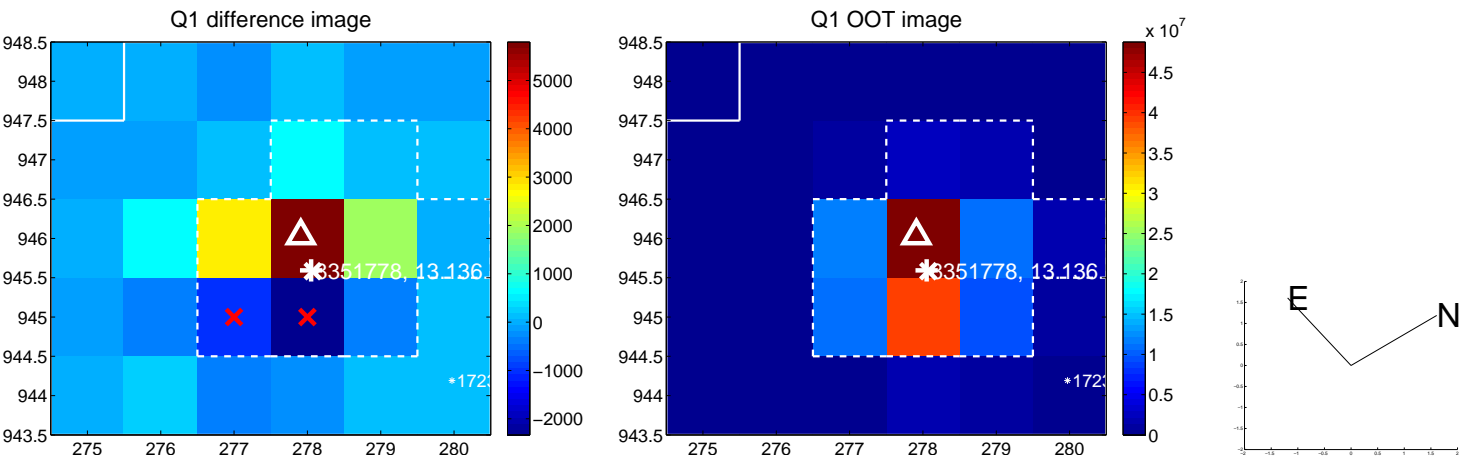
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.194 ± 0.168	1.15	0.193 ± 0.167	0.011 ± 0.179
PRF-fit source offset from KIC position	0.289 ± 0.155	1.86	0.265 ± 0.171	-0.113 ± 0.173
photometric centroid source offset	0.11 ± 0.04	2.75	0.01 ± 0.04	-0.11 ± 0.04

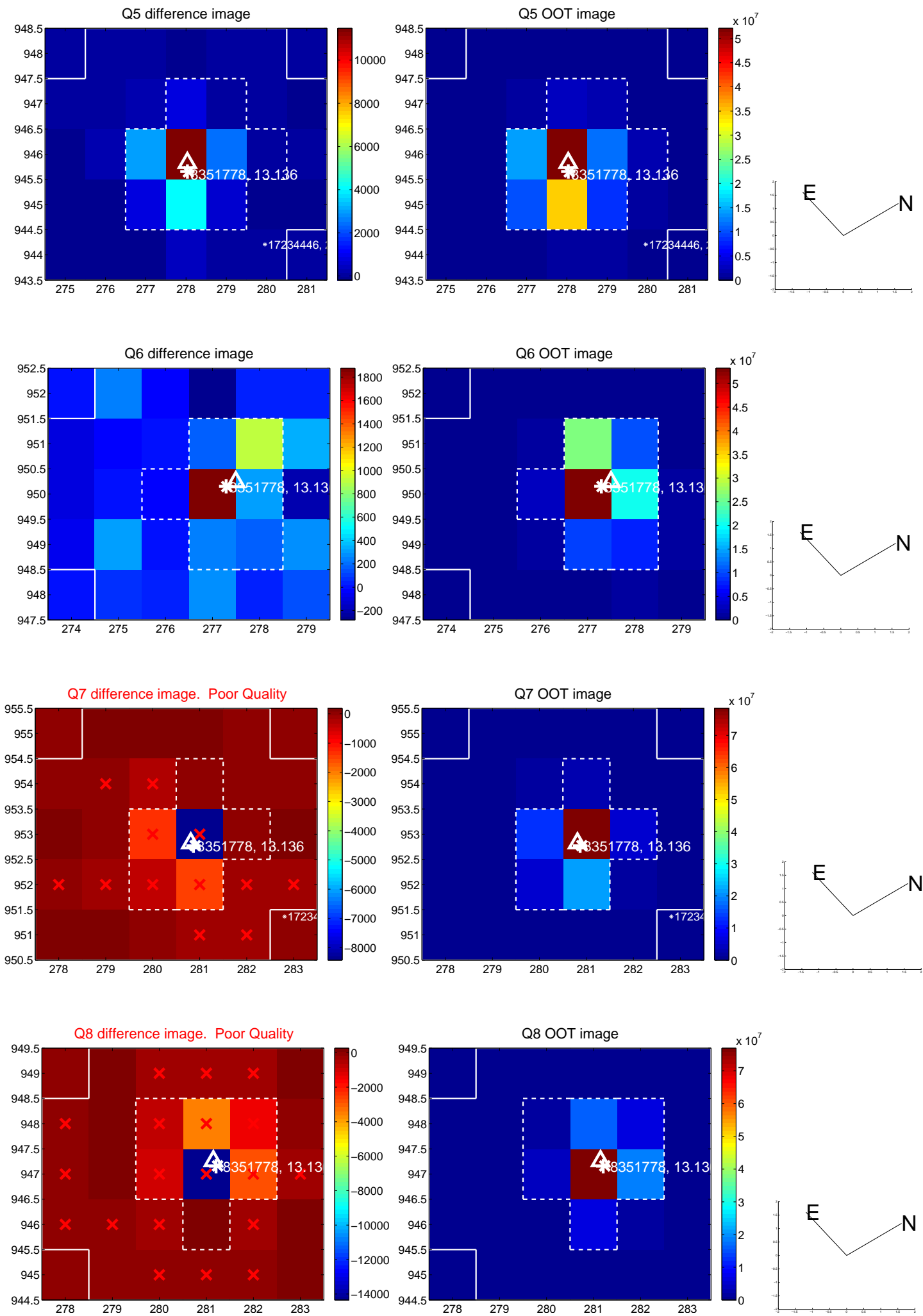


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

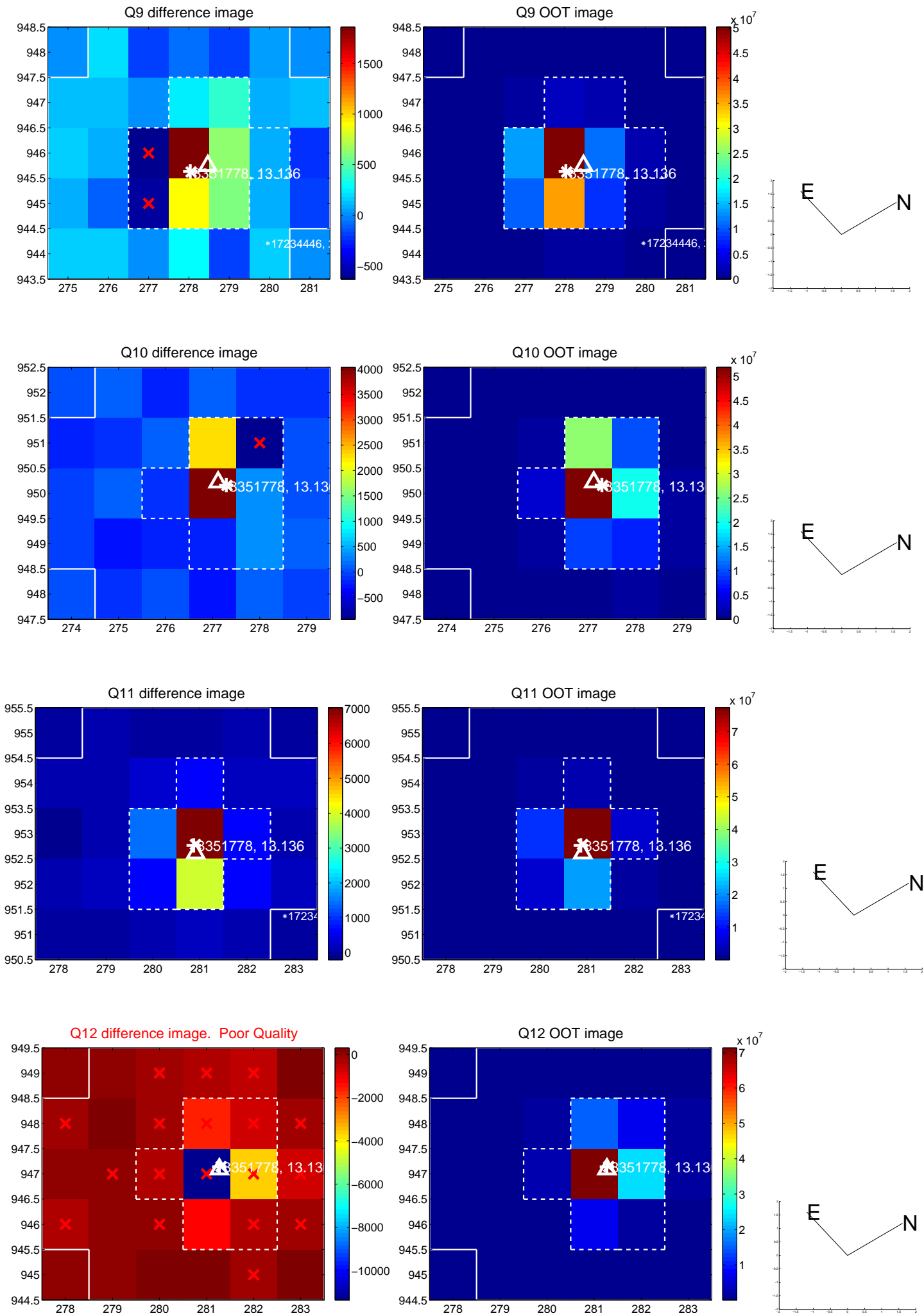
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



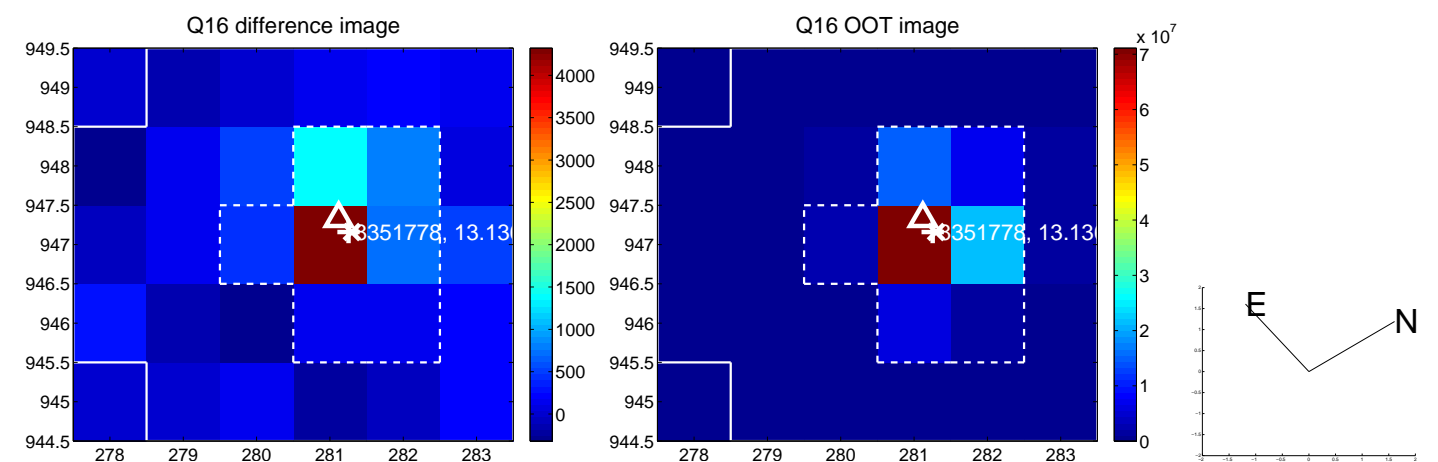
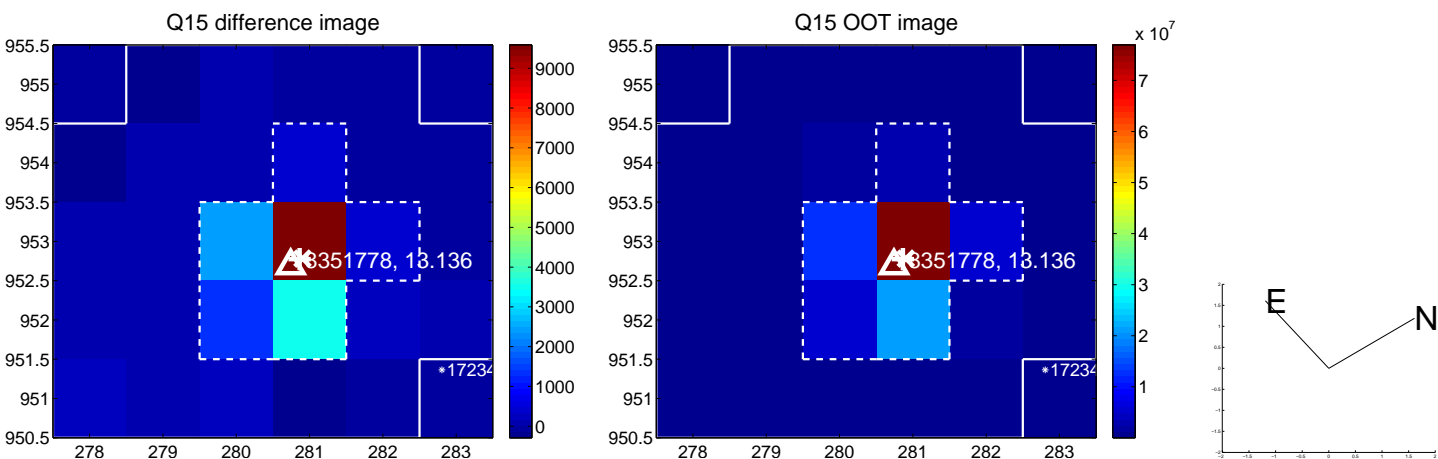
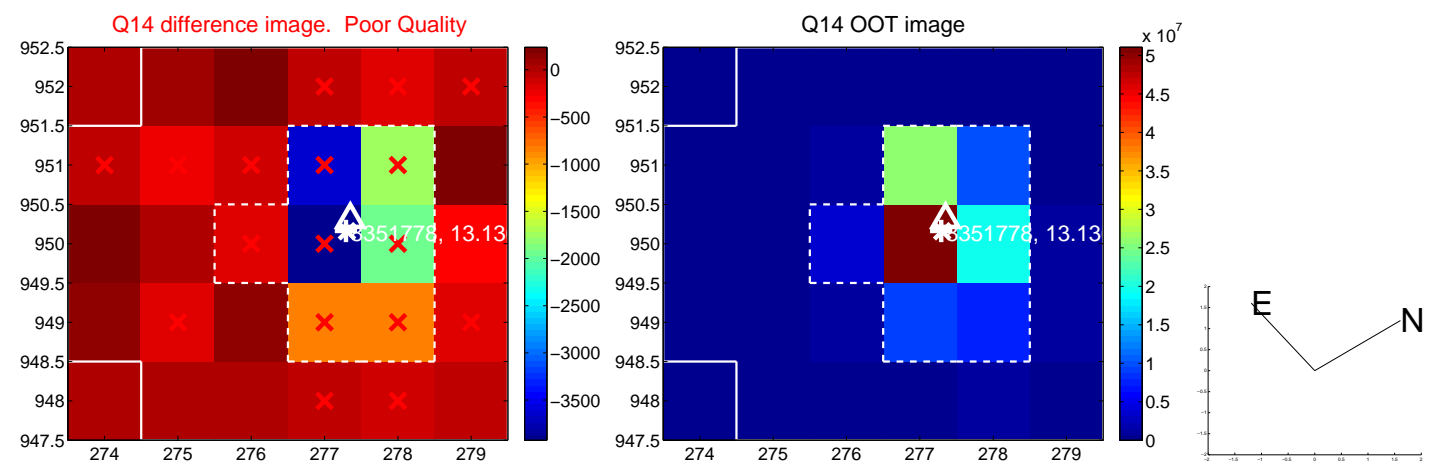
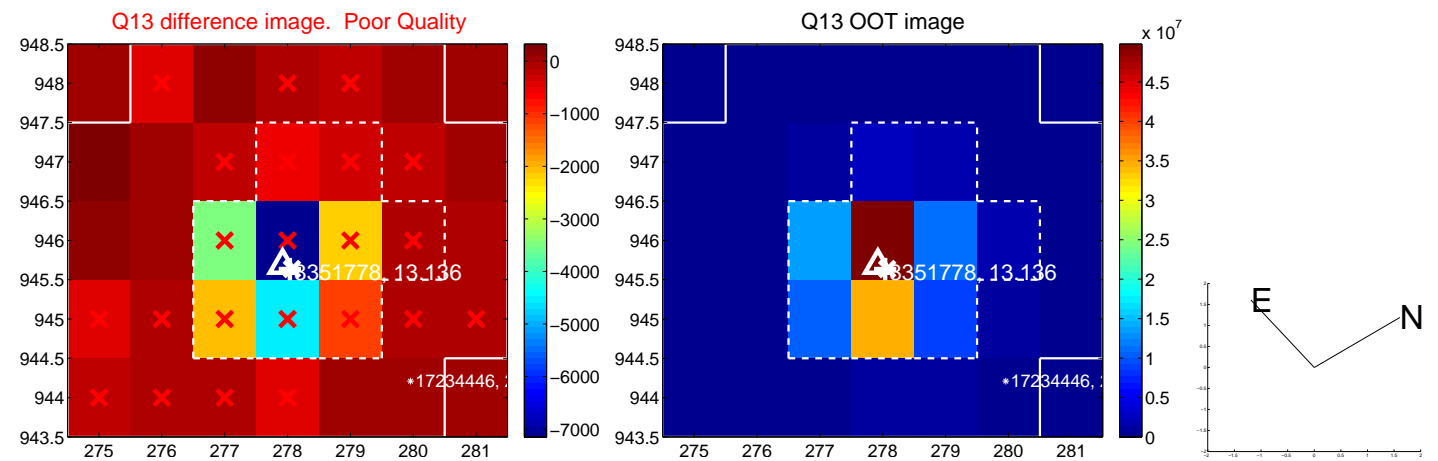
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



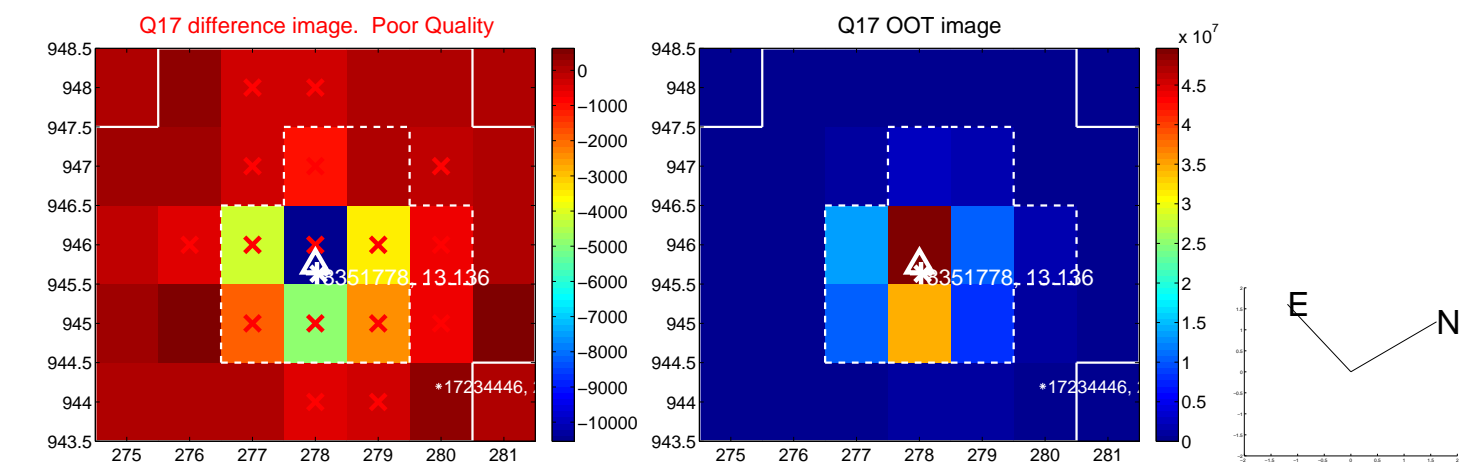
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



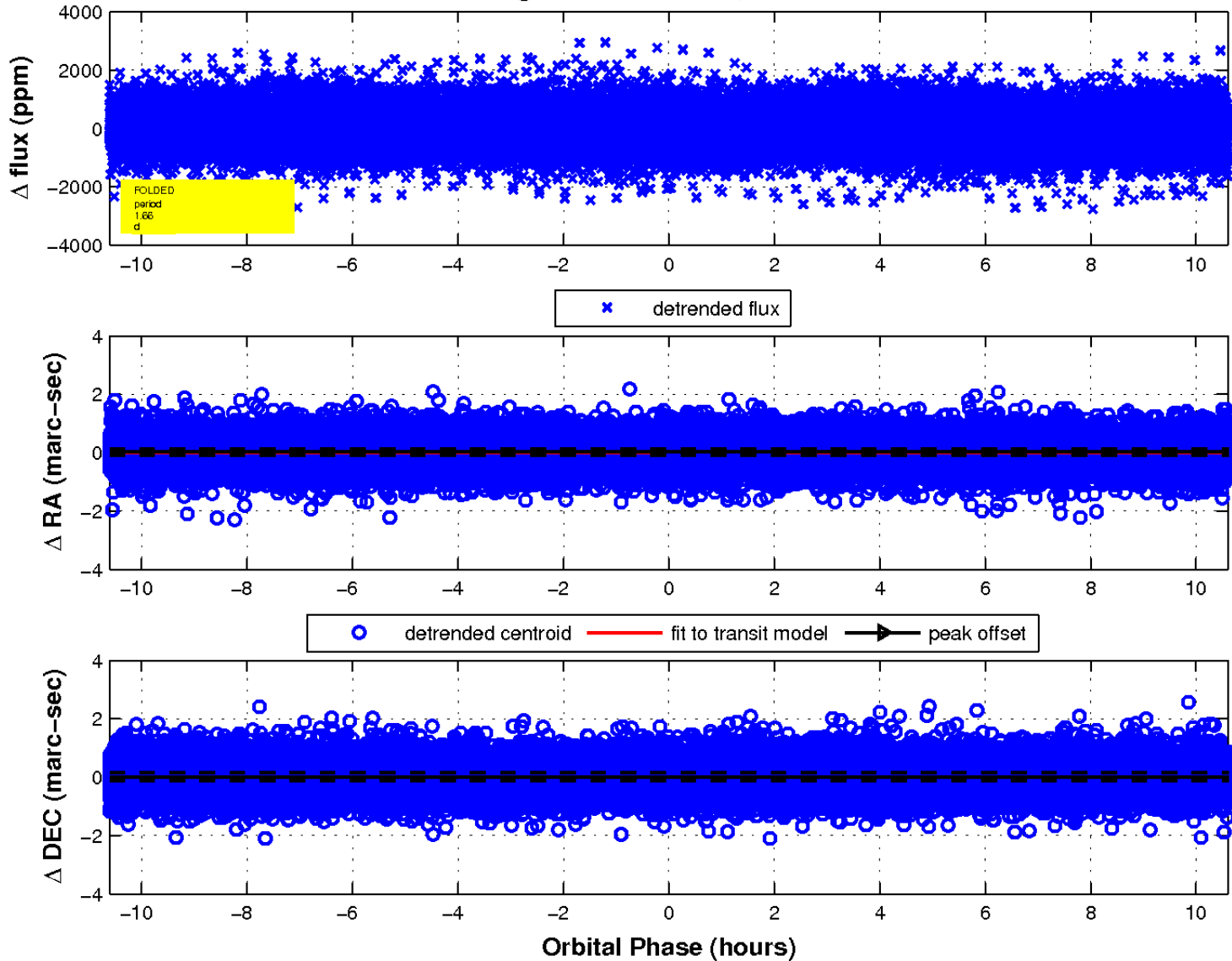
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 5 of 5



UKIRT Image

Declination

