

KIC 009764506

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})
009764506-01	OBS	No	2.064565	131.874332	39.6	5.034	12.3	8.6	2.99	7505	2.20	15954.25
009764506-02	OBS	No	1.032238	132.287769	22.1	5.573	9.8	5.8	2.99	7505	1.49	40204.48
009764506-03	OBS	No	91.118080	147.252193	744.2	6.013	11.0	9.4	2.99	7505	15.24	102.29
009764506-04	OBS	No	322.006015	287.873338	1179.0	8.680	10.8	10.6	2.99	7505	18.52	19.00
009764506-05	OBS	No	64.352992	188.301458	702.9	6.201	10.5	9.1	2.99	7505	14.84	162.64
009764506-06	OBS	No	100.521220	198.962913	1226.9	10.941	10.5	11.1	2.99	7505	19.30	89.74
009764506-07	OBS	No	70.555710	134.858518	676.9	6.643	9.6	8.9	2.99	7505	9.62	143.86
009764506-08	OBS	No	179.677589	246.024579	556.7	5.342	9.2	8.3	2.99	7505	7.53	41.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009764506-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009764506-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009764506-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT
009764506-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

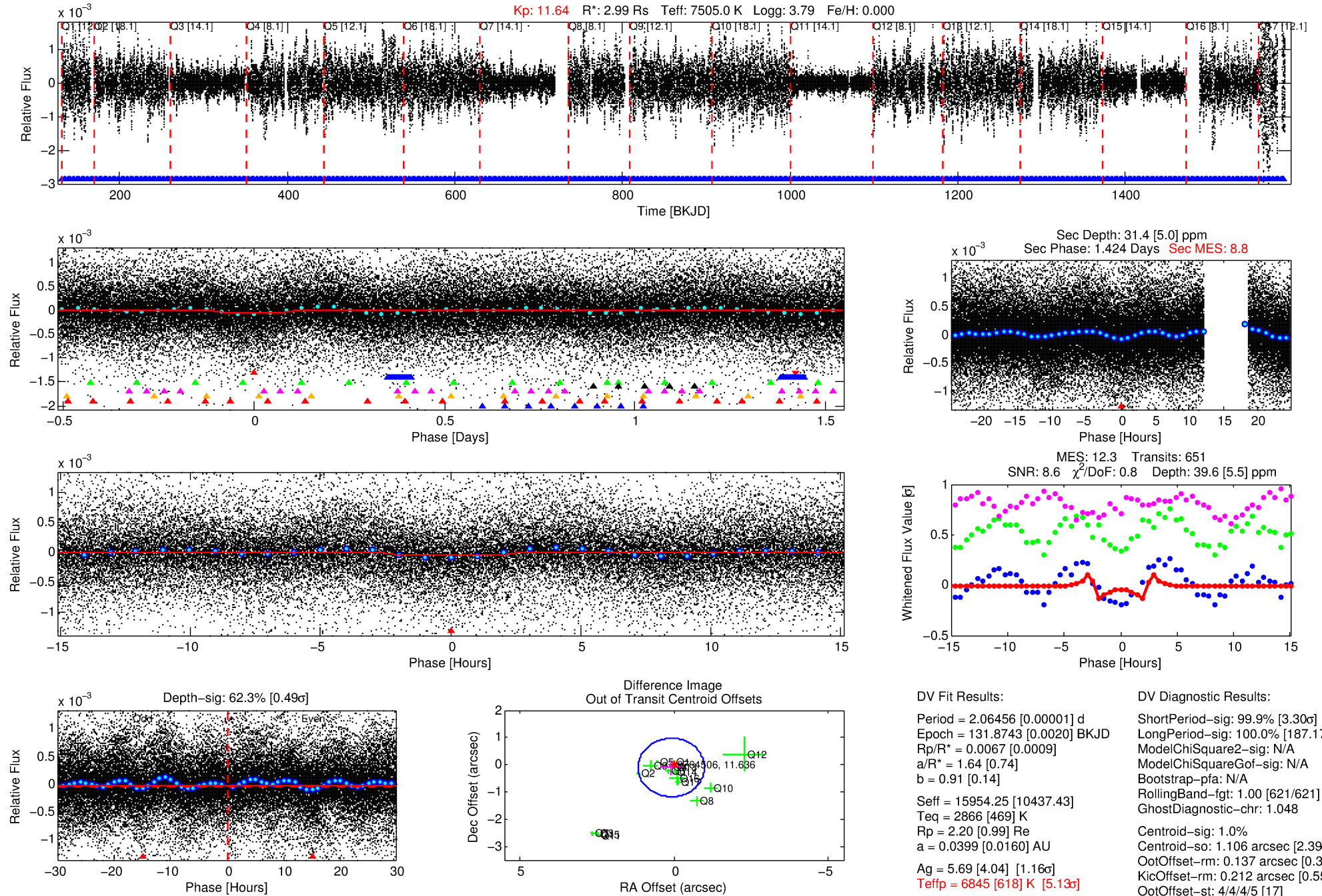
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009764506-01

No Significant Match Found

DV One-Page Summary

KIC: 9764506 Candidate: 1 of 8 Period: 2.065 d



DV Fit Results:

Period = 2.06456 [0.00001] d
 Epoch = 131.8743 [0.0020] BKJD
 Rp/R* = 0.0067 [0.0009]
 a/R* = 1.64 [0.74]
 b = 0.91 [0.14]
 Seff = 15954.25 [10437.43]
 Teq = 2866 [469] K
 Rp = 2.20 [0.99] Re
 a = 0.0399 [0.0160] AU
 Ag = 5.69 [4.04] [1.16 σ]
 Teffp = 6845 [618] K [5.13 σ]

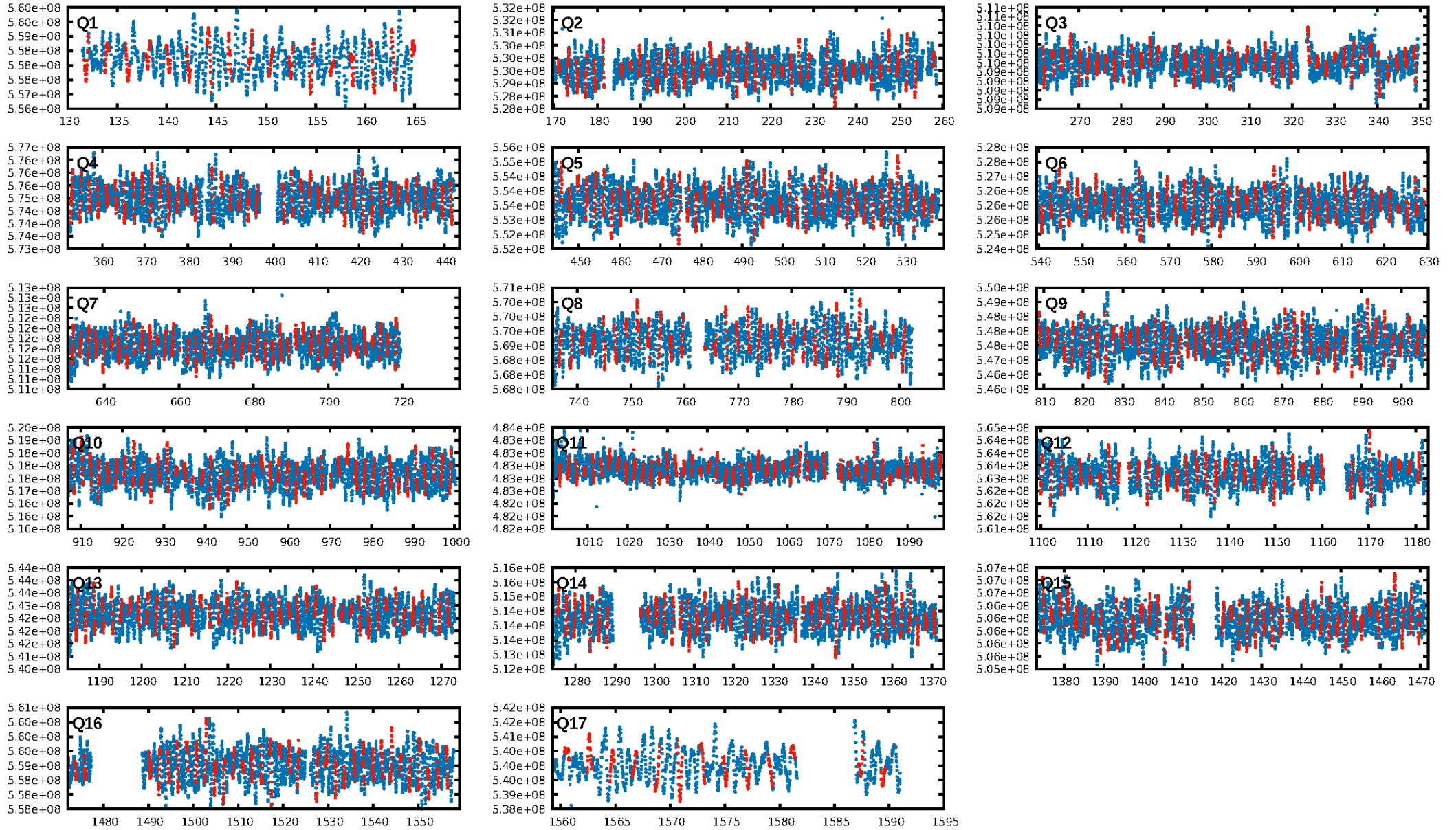
DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.30 σ]
 LongPeriod-sig: 100.0% [187.17 σ]
 ModelChiSquare2-sig: N/A
 ModelChiSquareGof-sig: N/A
 Bootstrap-pfa: N/A
 RollingBand-fgt: 1.00 [621/621]
 GhostDiagnostic-chr: 1.048
 Centroid-sig: 1.0%
 Centroid-so: 1.106 arcsec [2.39 σ]
 OotOffset-rm: 0.137 arcsec [0.38 σ]
 KicOffset-rm: 0.212 arcsec [0.55 σ]
 OotOffset-st: 4/4/4/5 [17]
 KicOffset-st: 4/4/4/5 [17]
 DiffImageQuality-fgm: 0.53 [9/17]
 DiffImageOverlap-fno: 0.00 [0/17]

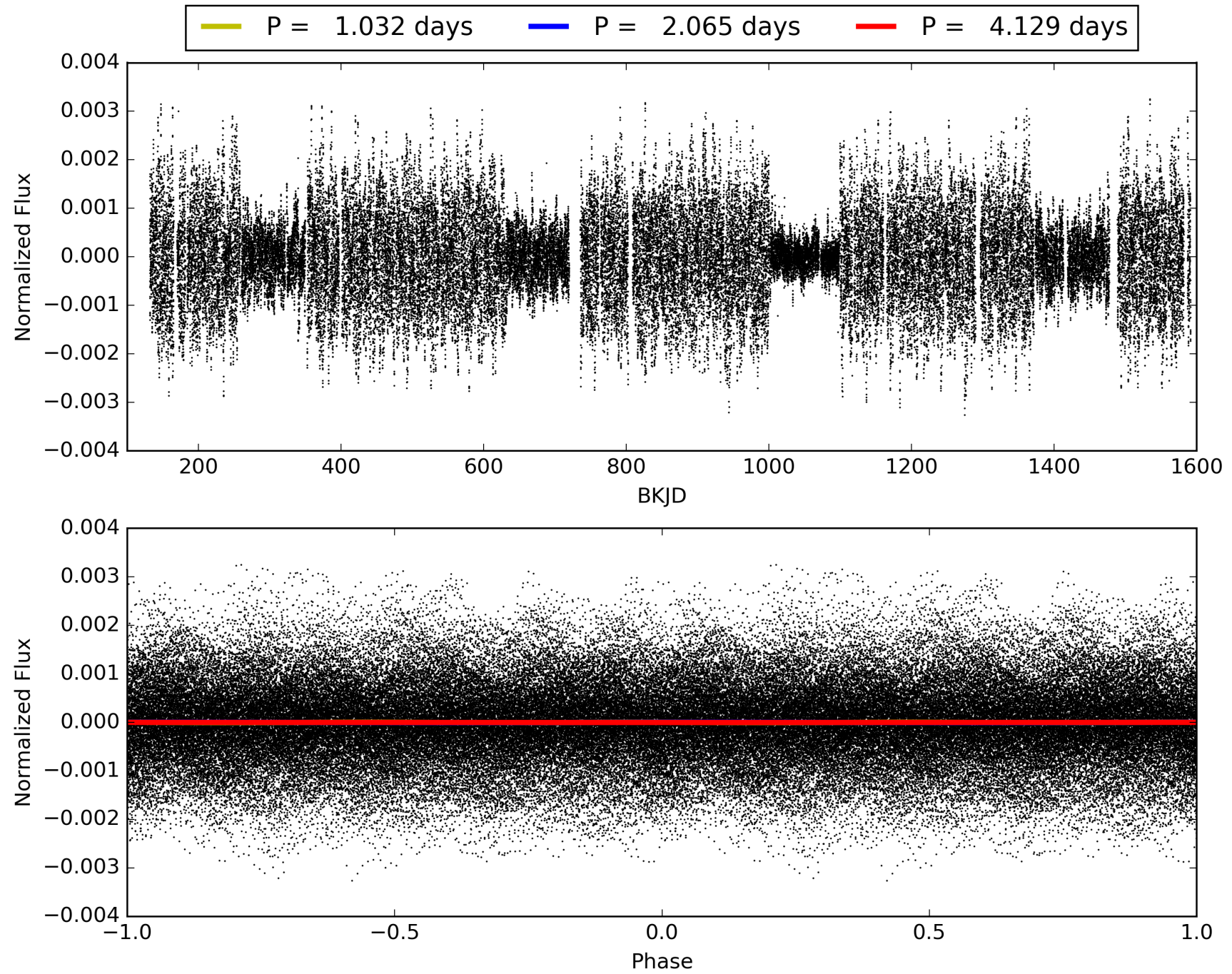
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009764506-01, PDC Light Curves

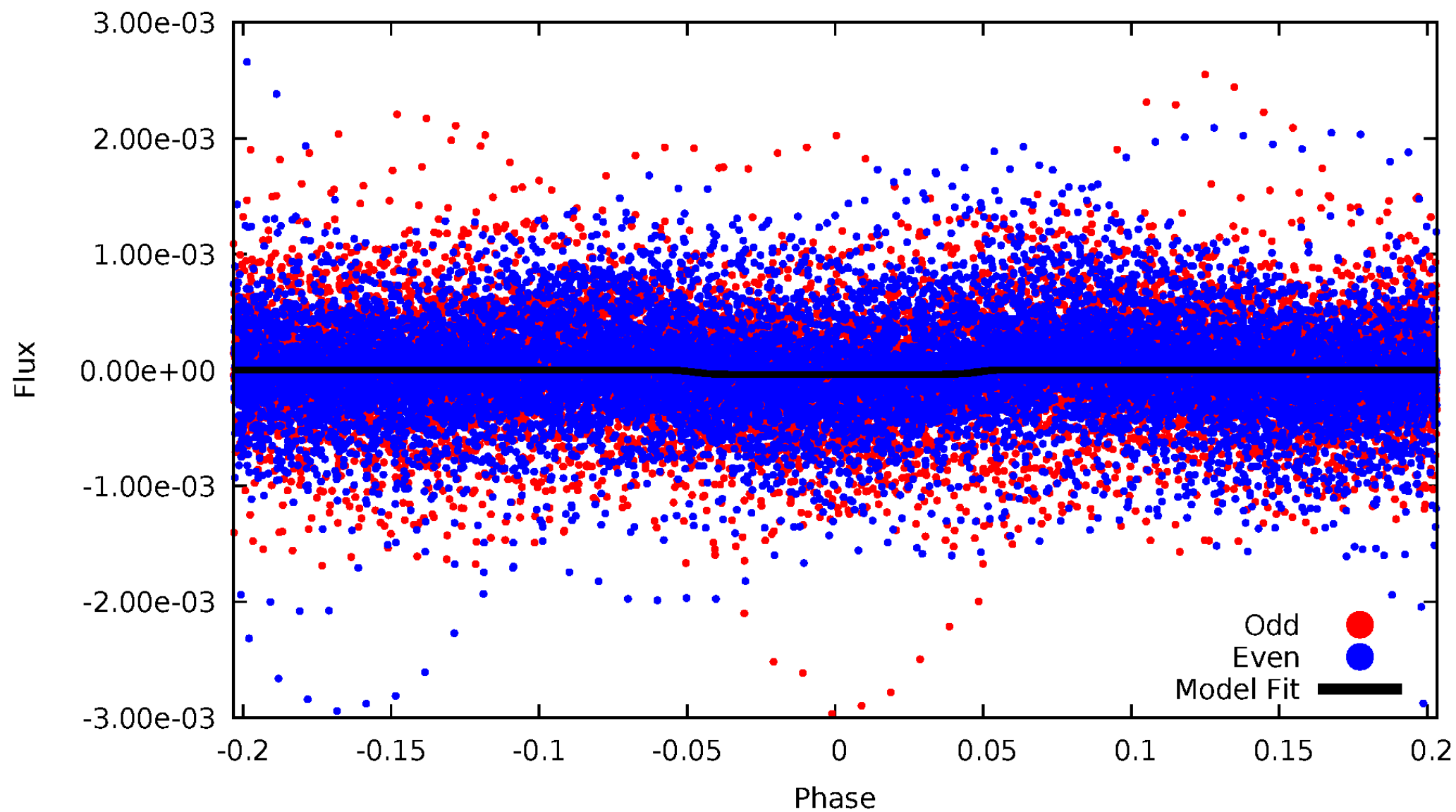


TCE 009764506-01



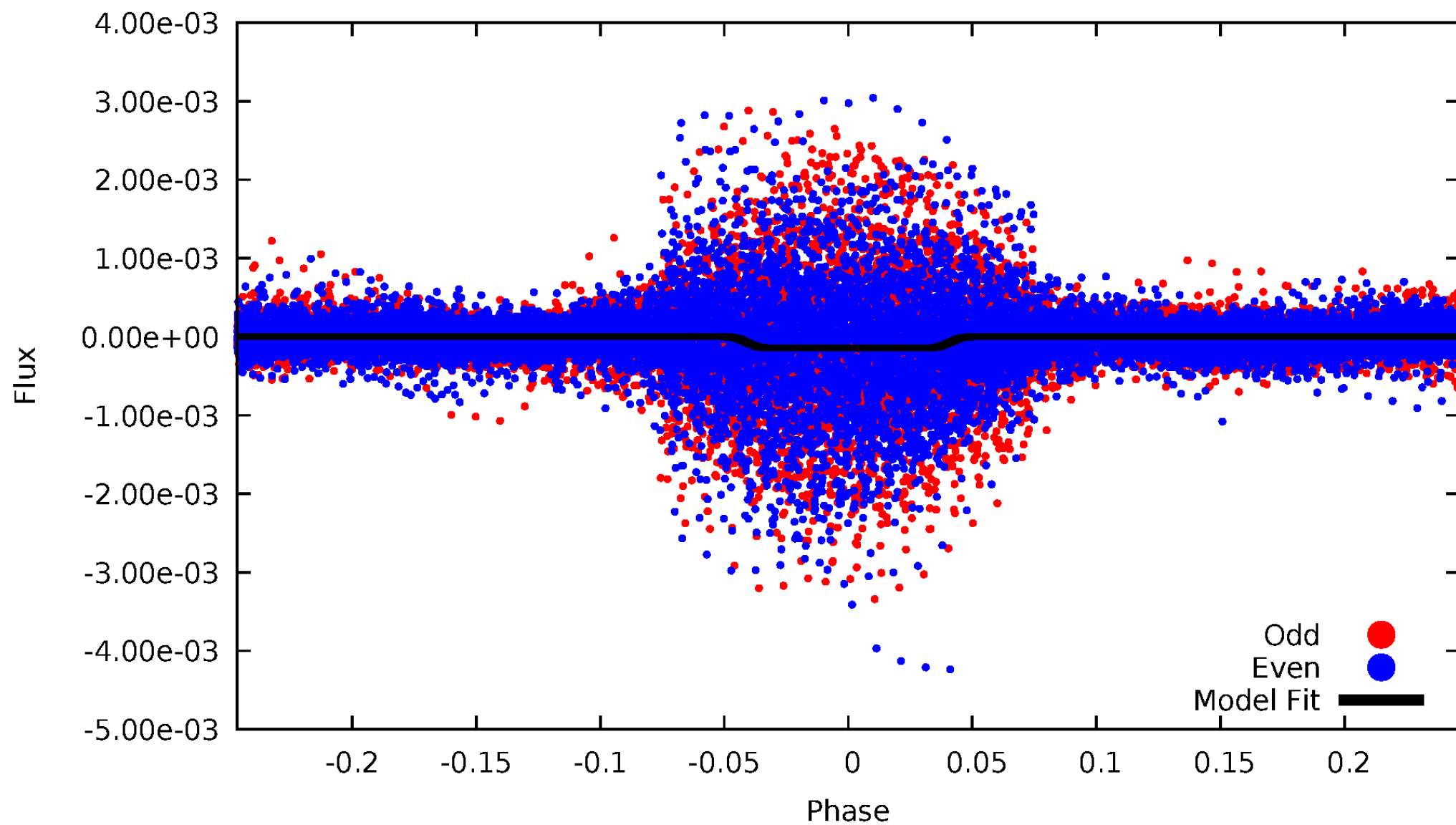
DV Odd/Even

TCE 009764506-01

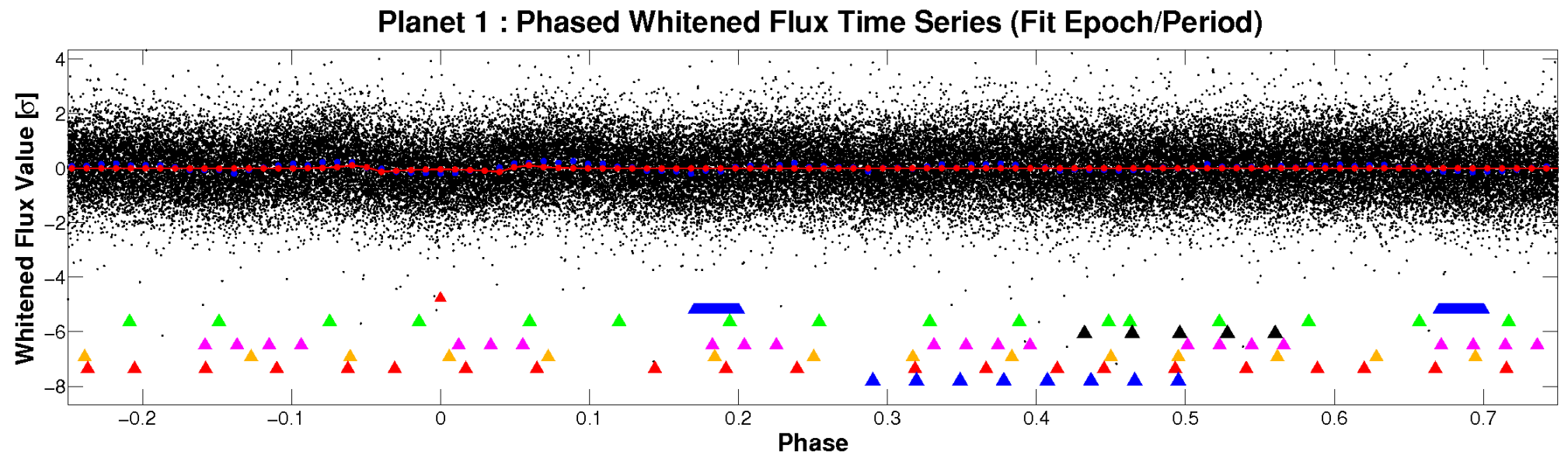
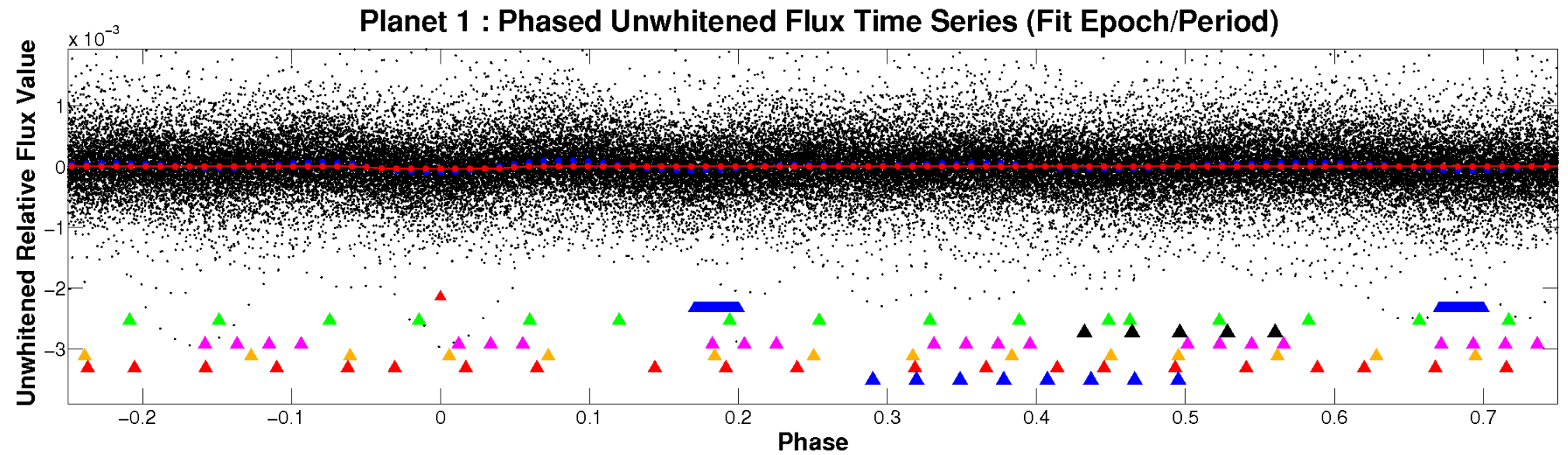


ALT Odd/Even

TCE 009764506-01

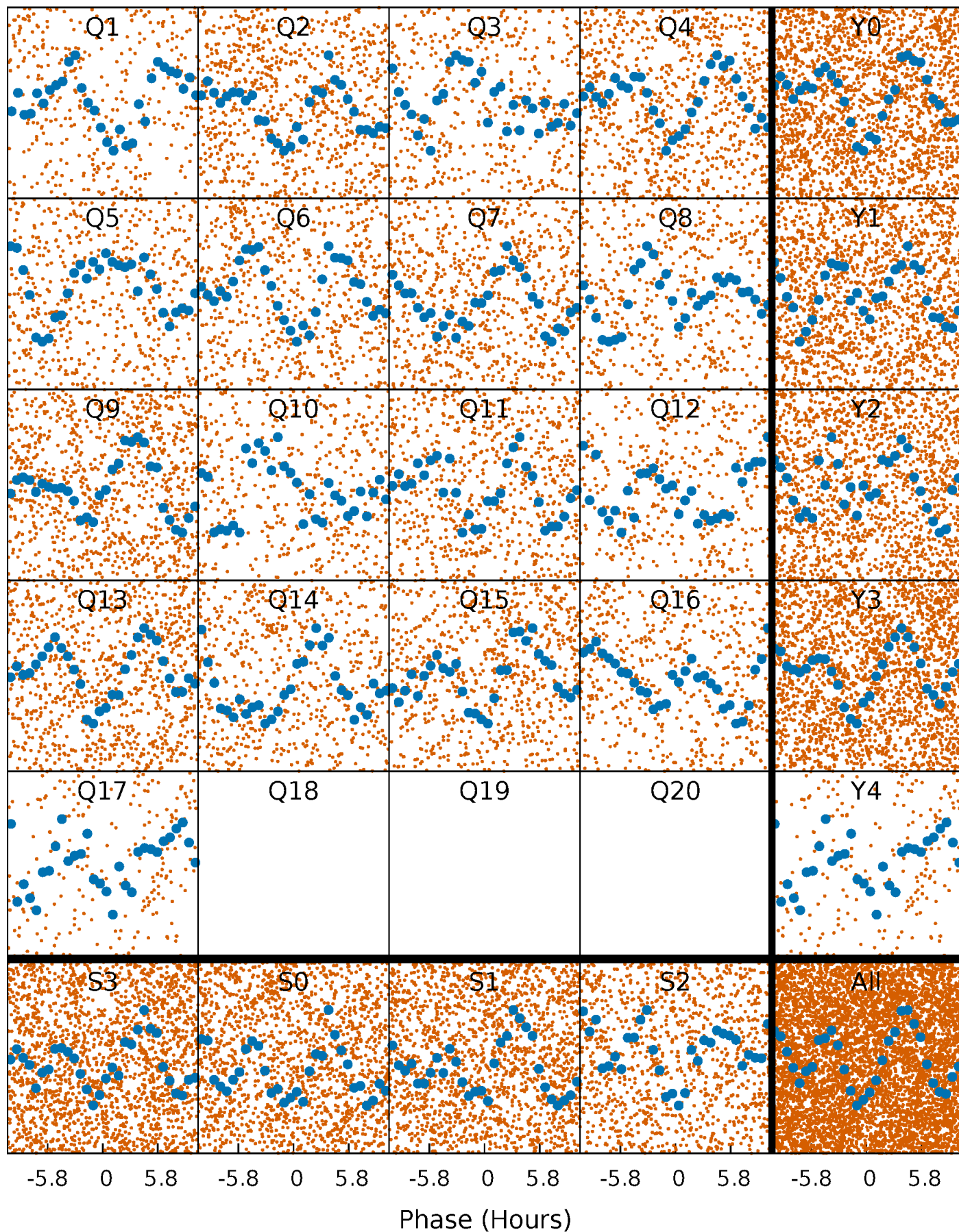


Non-Whitened Vs. Whitened Light Curve



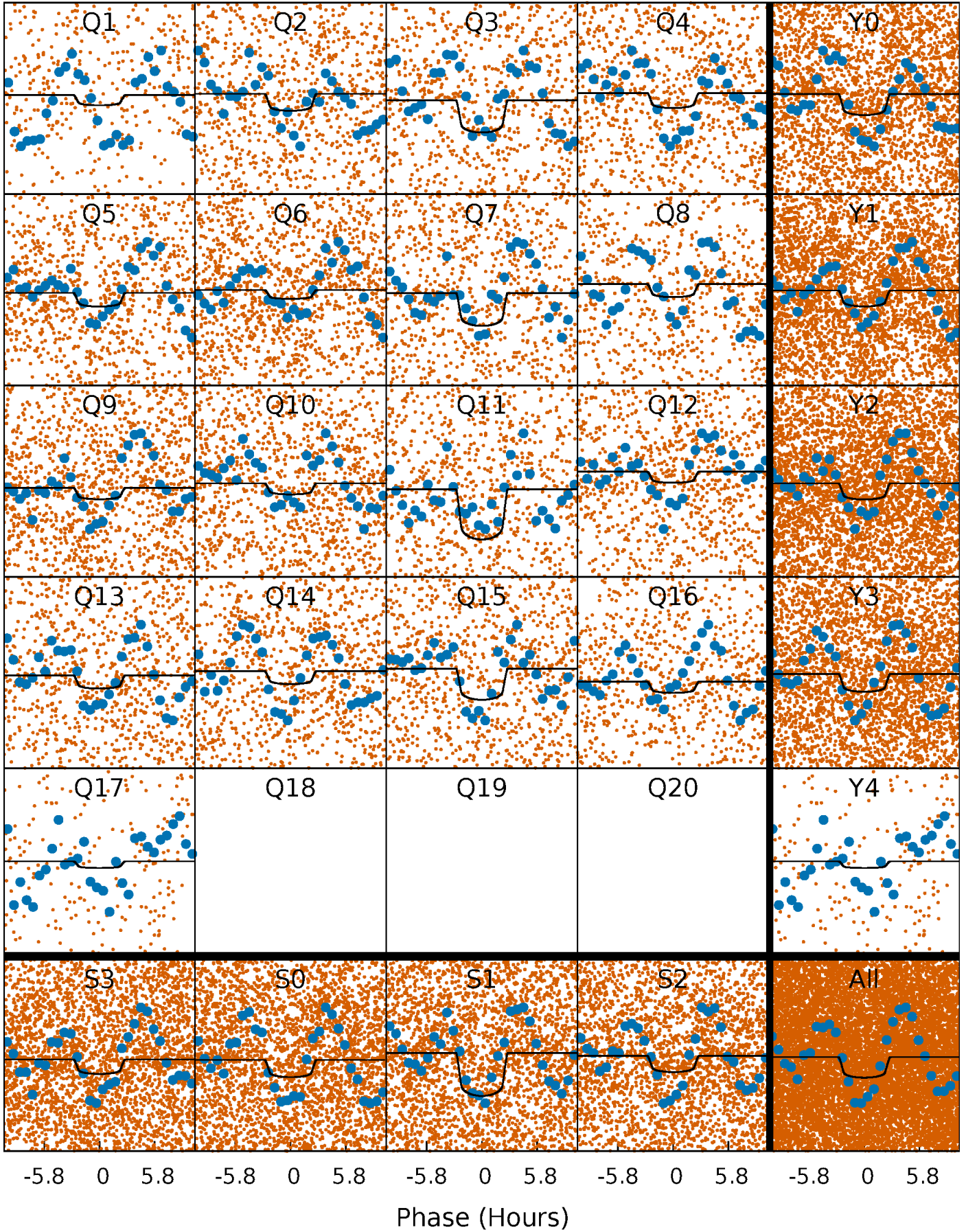
PDC Quarter-Phased Transit Curves

TCE 009764506-01 P= 2.064565 Days $T_0=131.874332$ (BKJD)



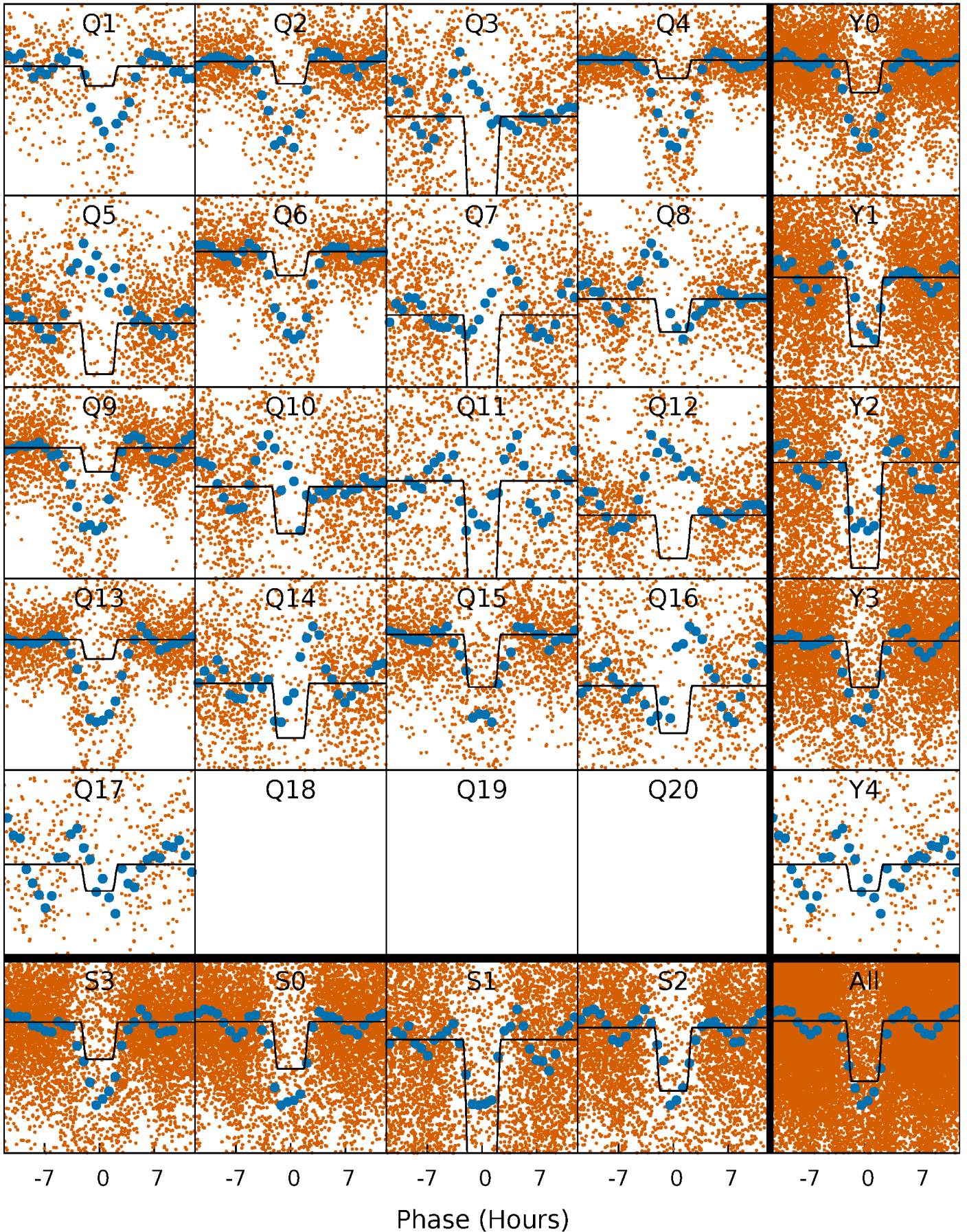
DV Quarter-Phased Transit Curves

TCE 009764506-01 P= 2.064565 Days $T_0=131.874332$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

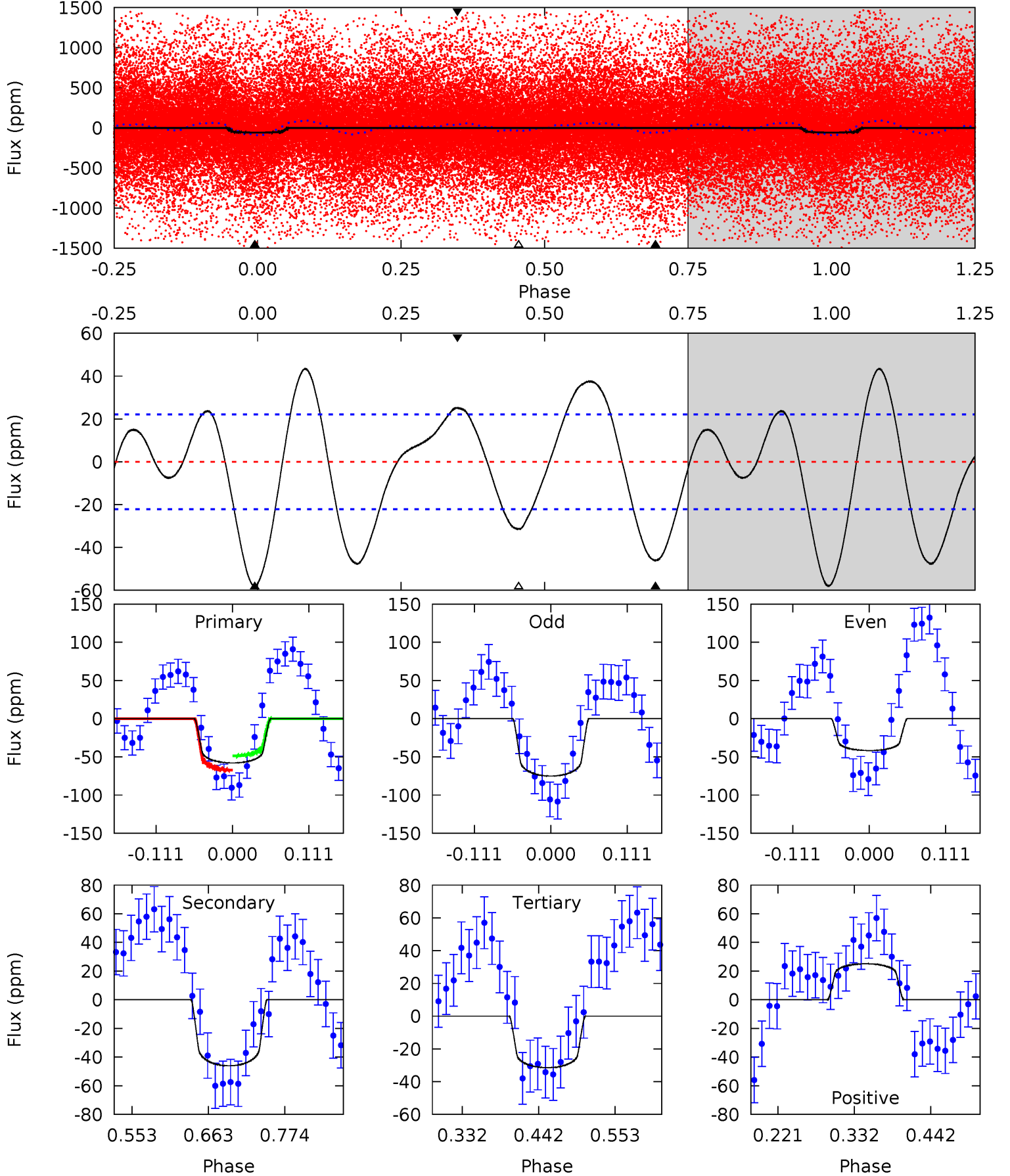
TCE 009764506-01 P= 2.064520 Days $T_0=131.881479$ (BKJD)



DV Model-Shift Uniqueness Test

009764506-01, P = 2.064565 Days, E = 129.809767 Days

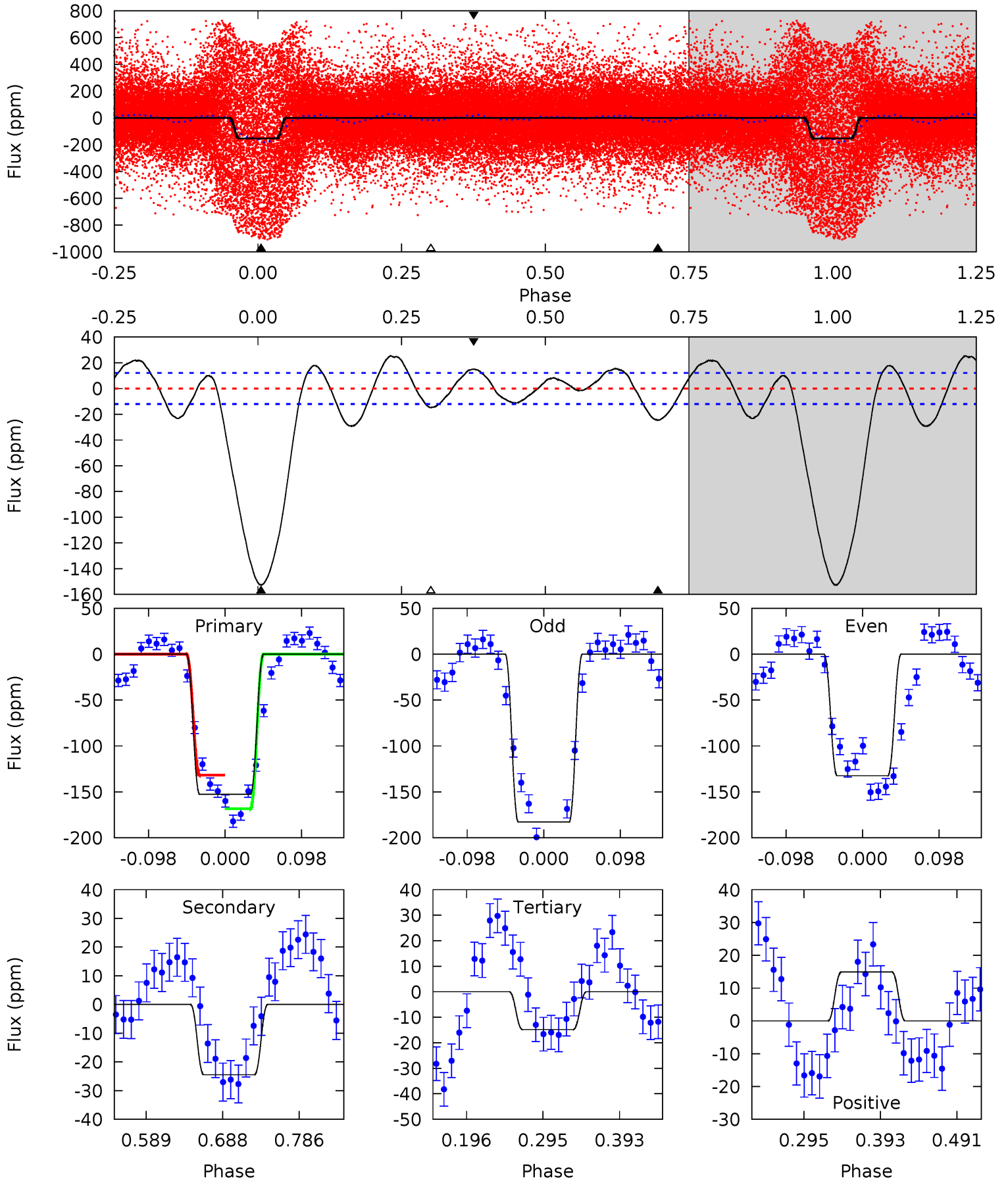
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	9.47	6.47	5.16	4.54	1.60	4.51	5.45	6.75	3.00	4.31	3.42	1.08	0.43	1.90



Alt Model-Shift Uniqueness Test

009764506-01, P = 2.064520 Days, E = 129.816959 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
57.9	9.28	5.62	5.65	4.57	1.65	4.96	52.3	52.2	3.66	3.63	9.50	1.21	0.14	6.94



Stellar Parameters For KIC 009764506

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7505^{+209}_{-314}	$3.785^{+0.368}_{-0.092}$	$0.000^{+0.200}_{-0.350}$	$2.989^{+0.425}_{-1.275}$	$1.984^{+0.088}_{-0.500}$	$0.105^{+0.310}_{-0.030}$
	+3%/-4%	+10%/-2%	+inf%/-inf%	+14%/-43%	+4%/-25%	+296%/-29%
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 009764506-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-46 ± 5	$2.01^{+0.46}_{-0.48}$	3899^{+266}_{-404}	7476^{+818}_{-670}	$9.725^{+6.106}_{-3.268}$
Alt.	-24 ± 3	$3.63^{+0.57}_{-0.73}$	3896^{+265}_{-397}	4685^{+237}_{-264}	$1.609^{+0.834}_{-0.415}$

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

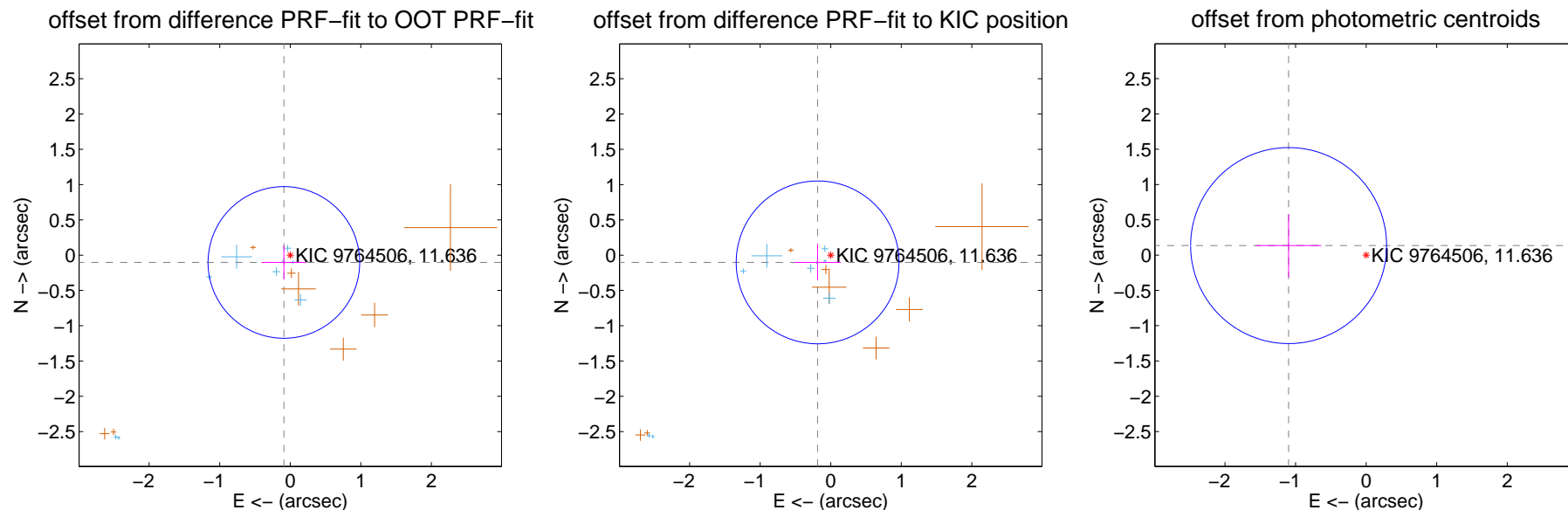
DV Centroid Data

Supplemental centroid analysis for 009764506-01. **Kepler magnitude: 11.64.** Transit SNR 8.63

There are 9 quarters with good PRF difference image offsets

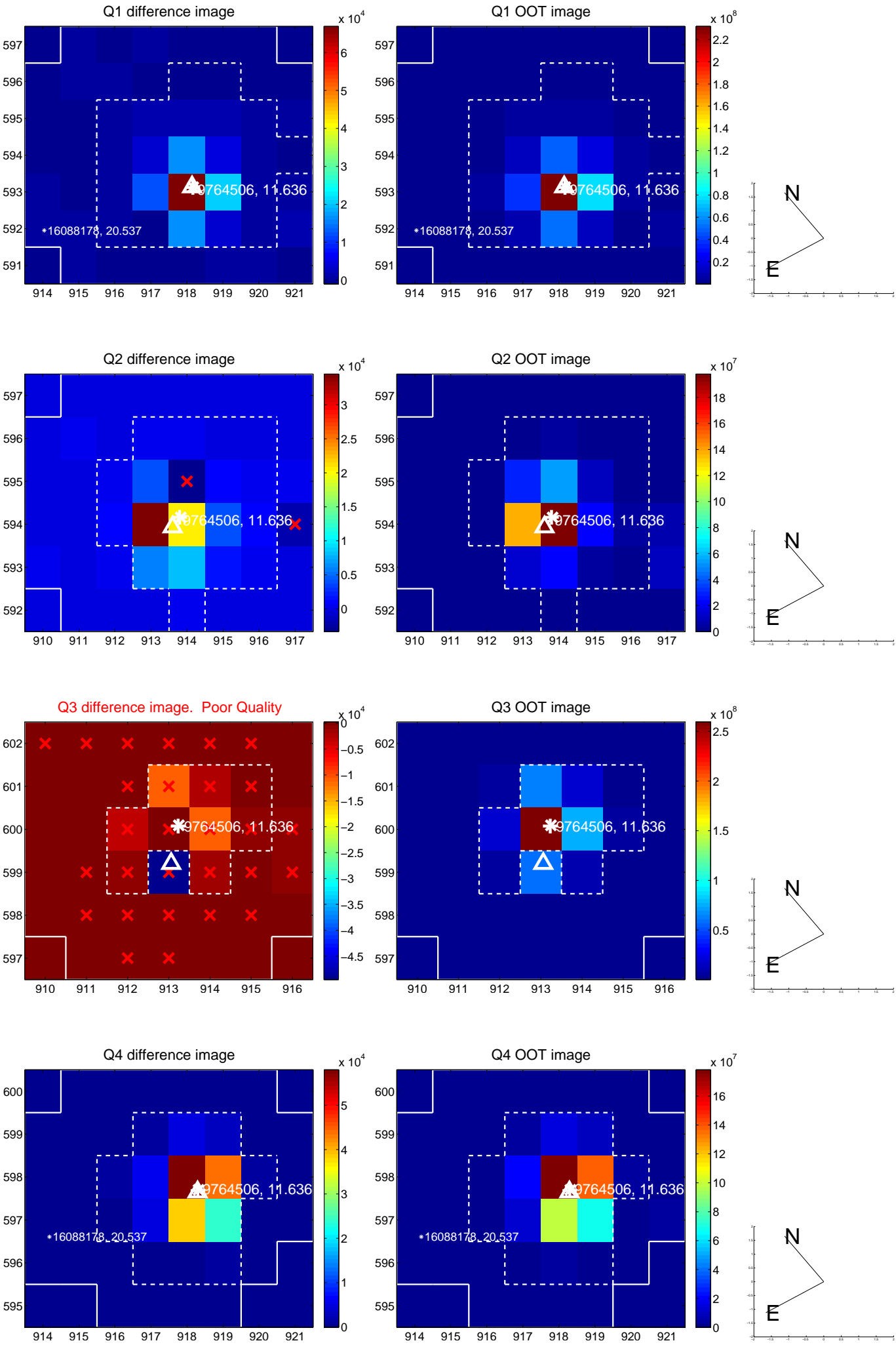
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.137 ± 0.358	0.38	0.090 ± 0.318	-0.103 ± 0.239
PRF-fit source offset from KIC position	0.212 ± 0.385	0.55	0.186 ± 0.327	-0.102 ± 0.255
photometric centroid source offset	1.11 ± 0.46	2.39	1.10 ± 0.46	0.13 ± 0.45

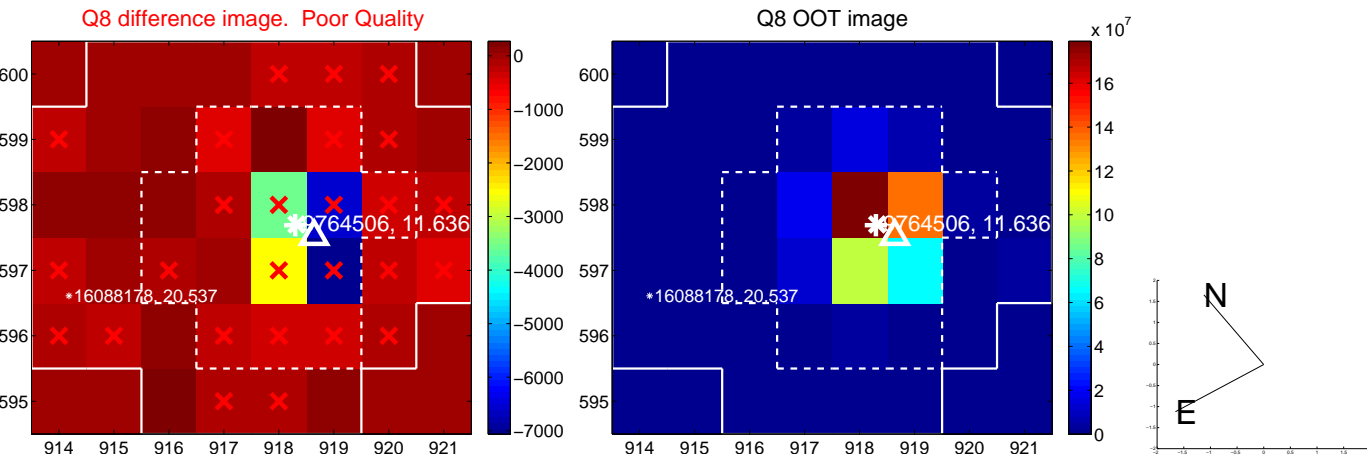
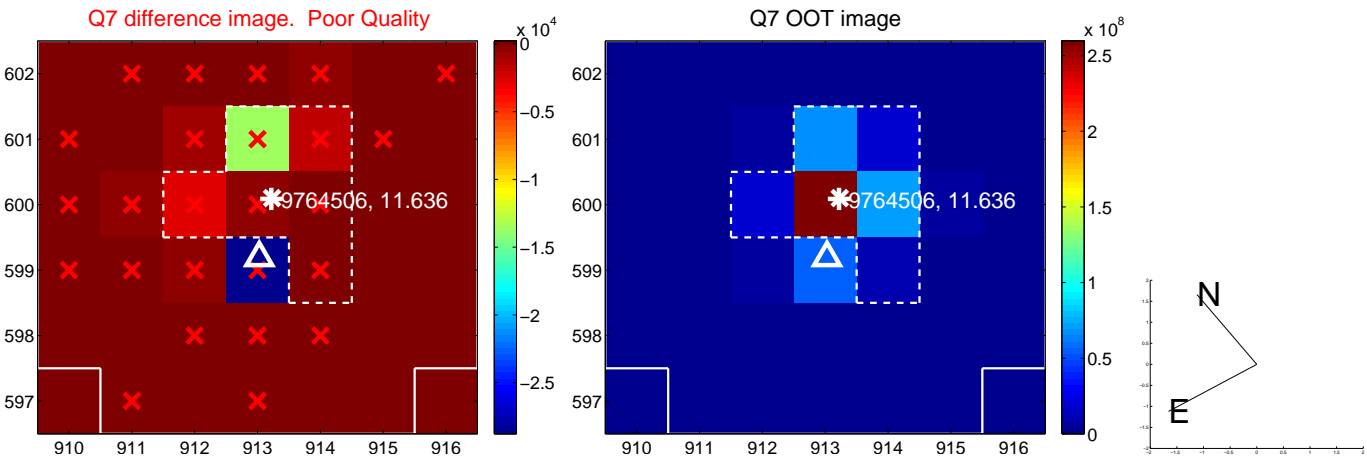
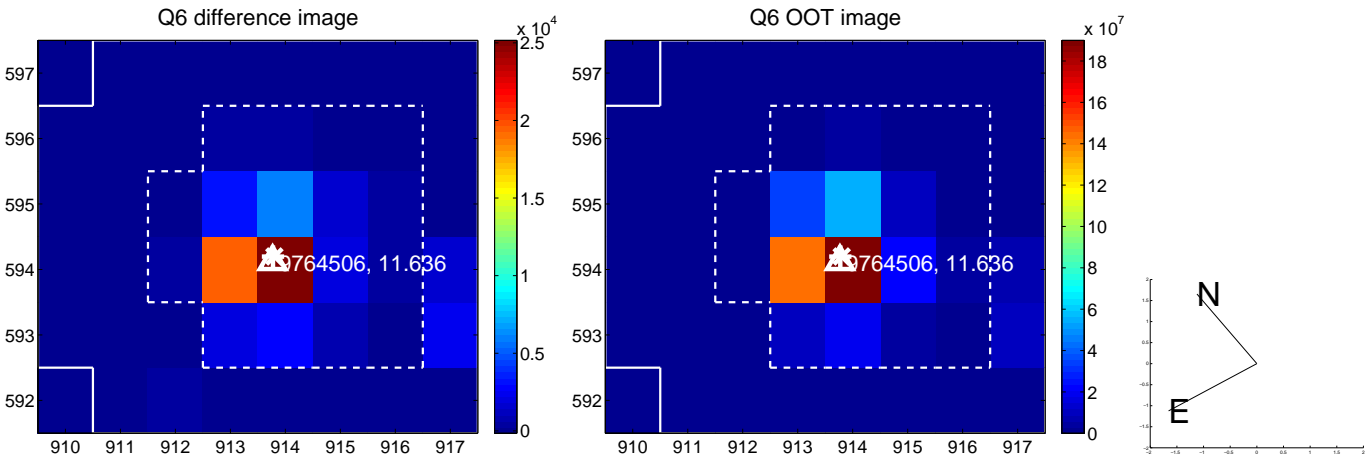
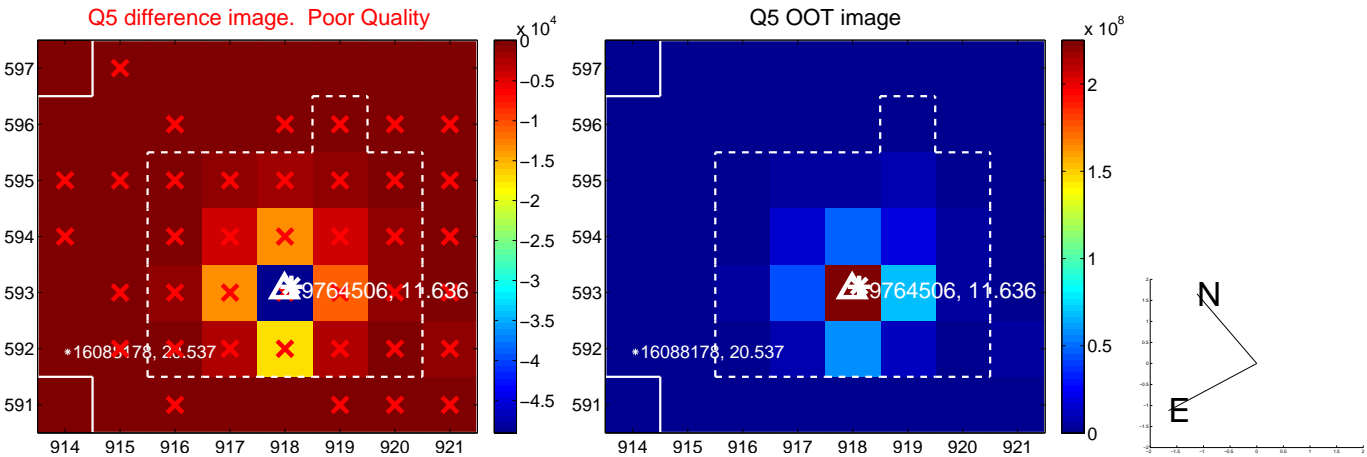


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

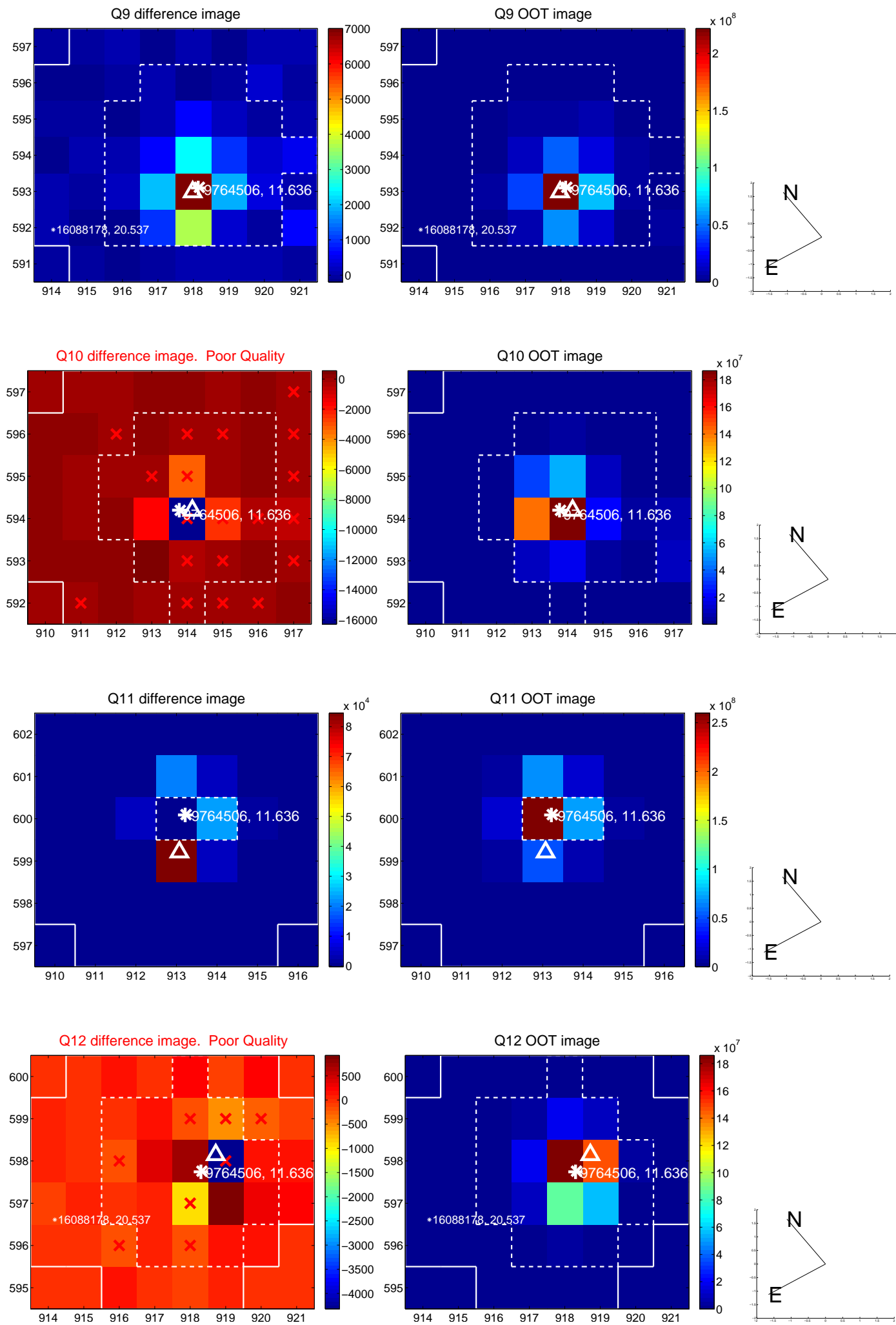
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



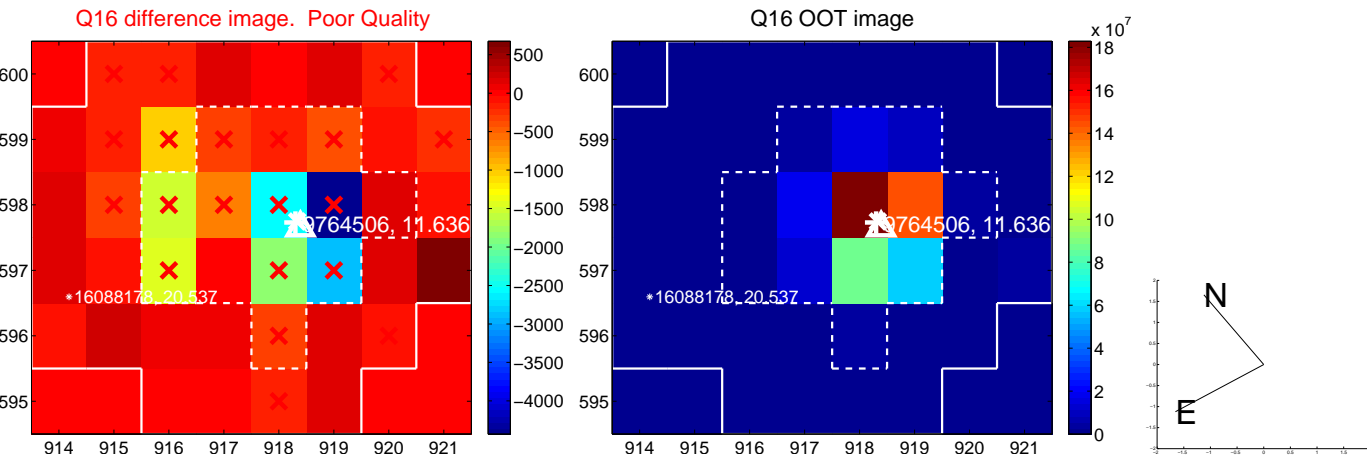
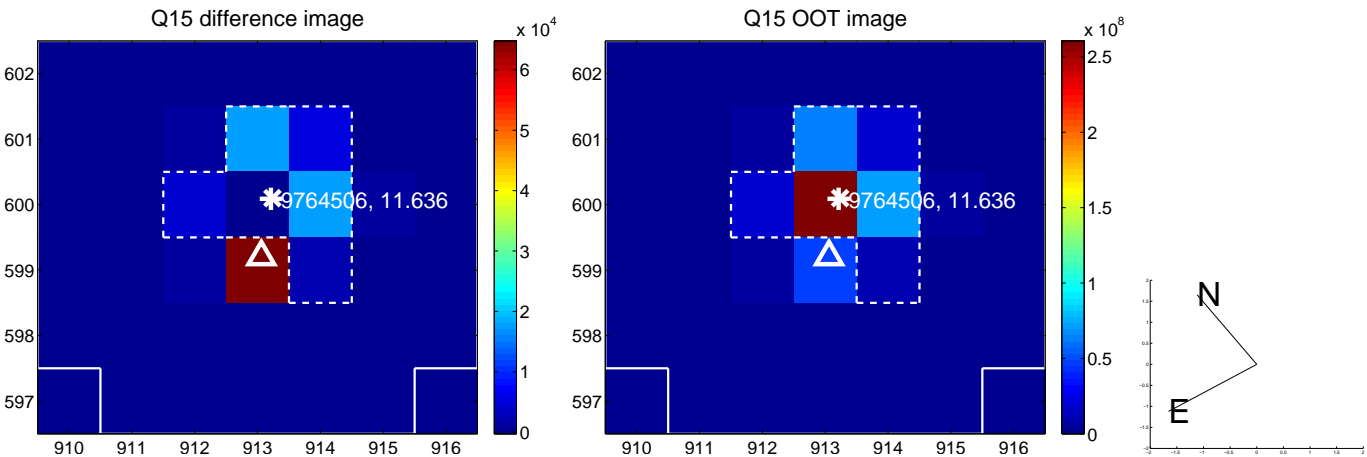
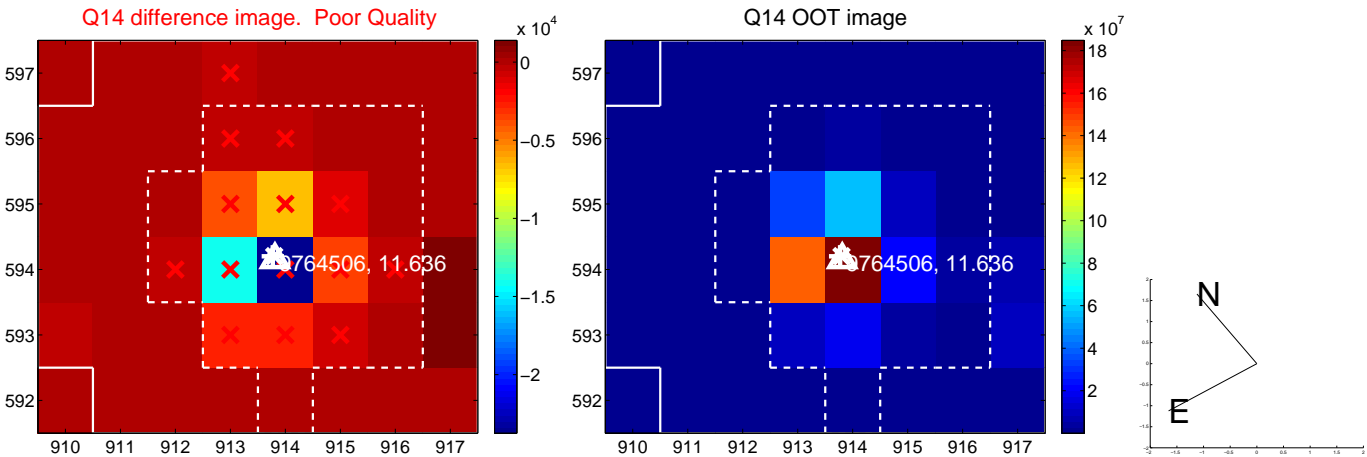
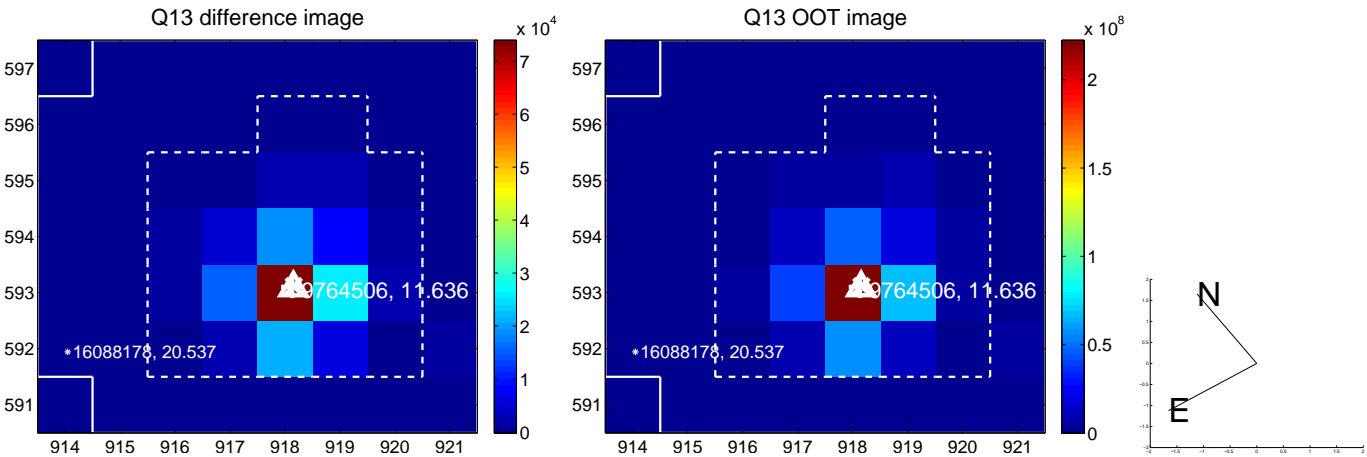
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



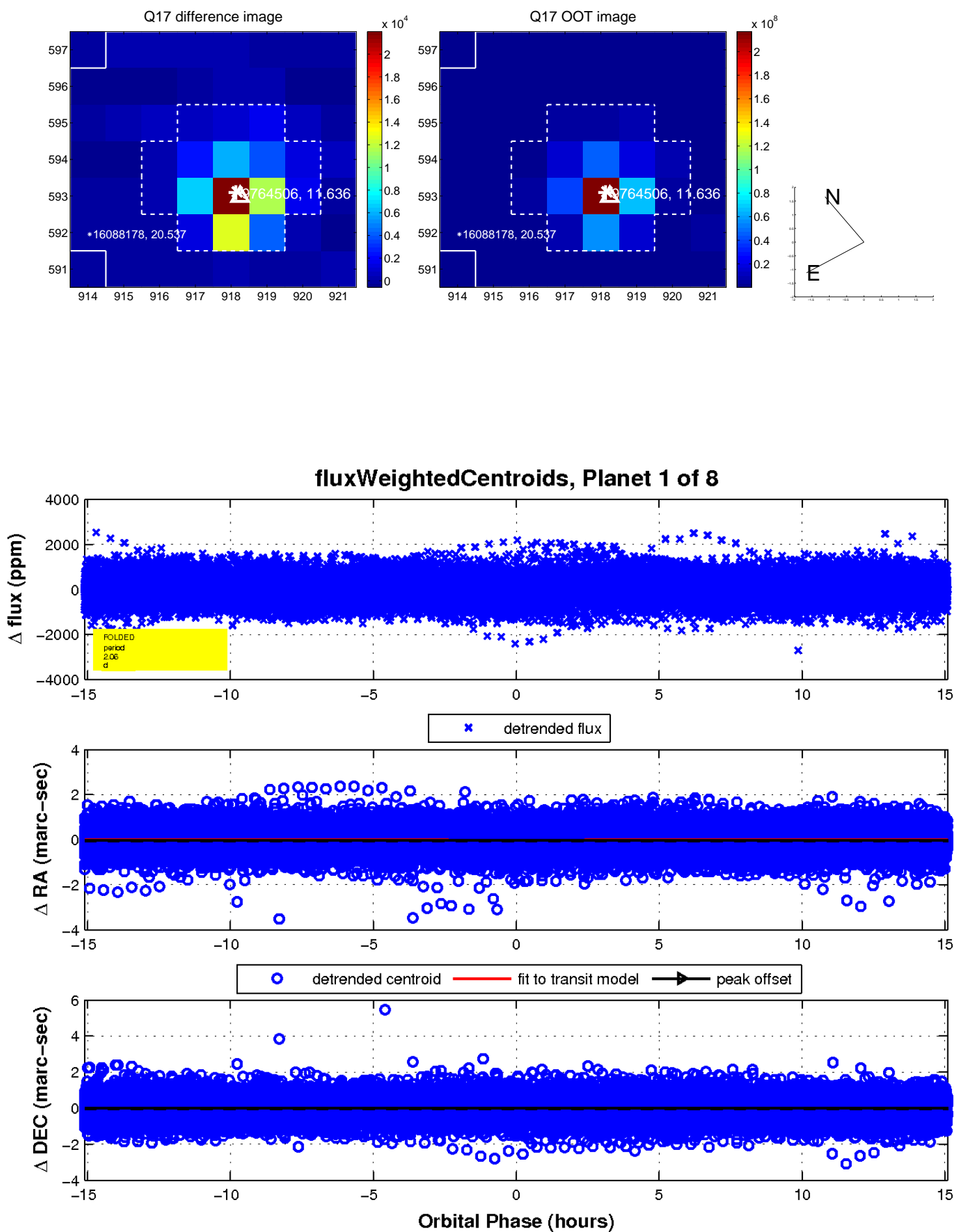
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

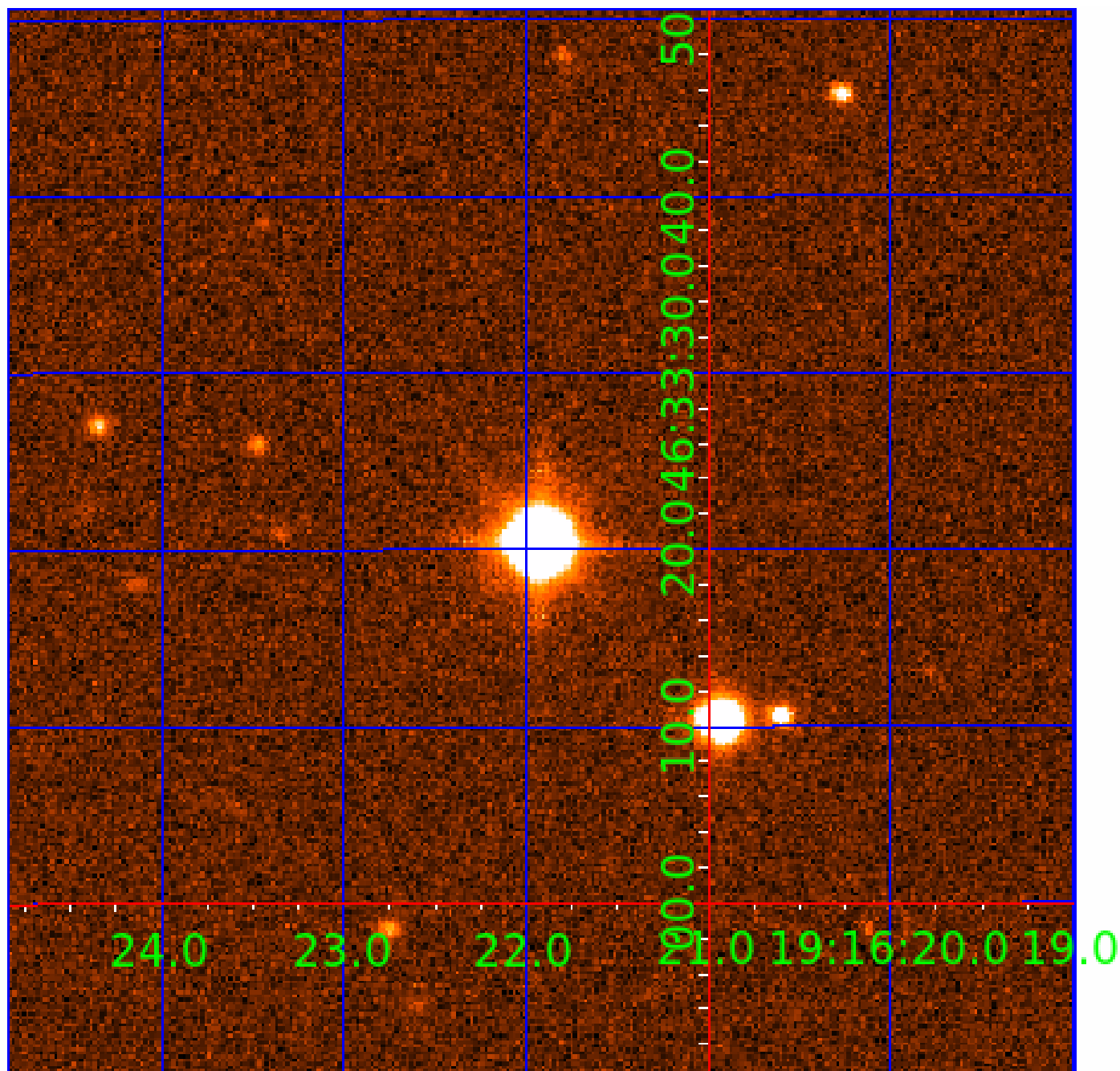


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009764506

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})
009764506-01	OBS	No	2.064565	131.874332	39.6	5.034	12.3	8.6	2.99	7505	2.20	15954.25
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009764506-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009764506-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009764506-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT
009764506-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

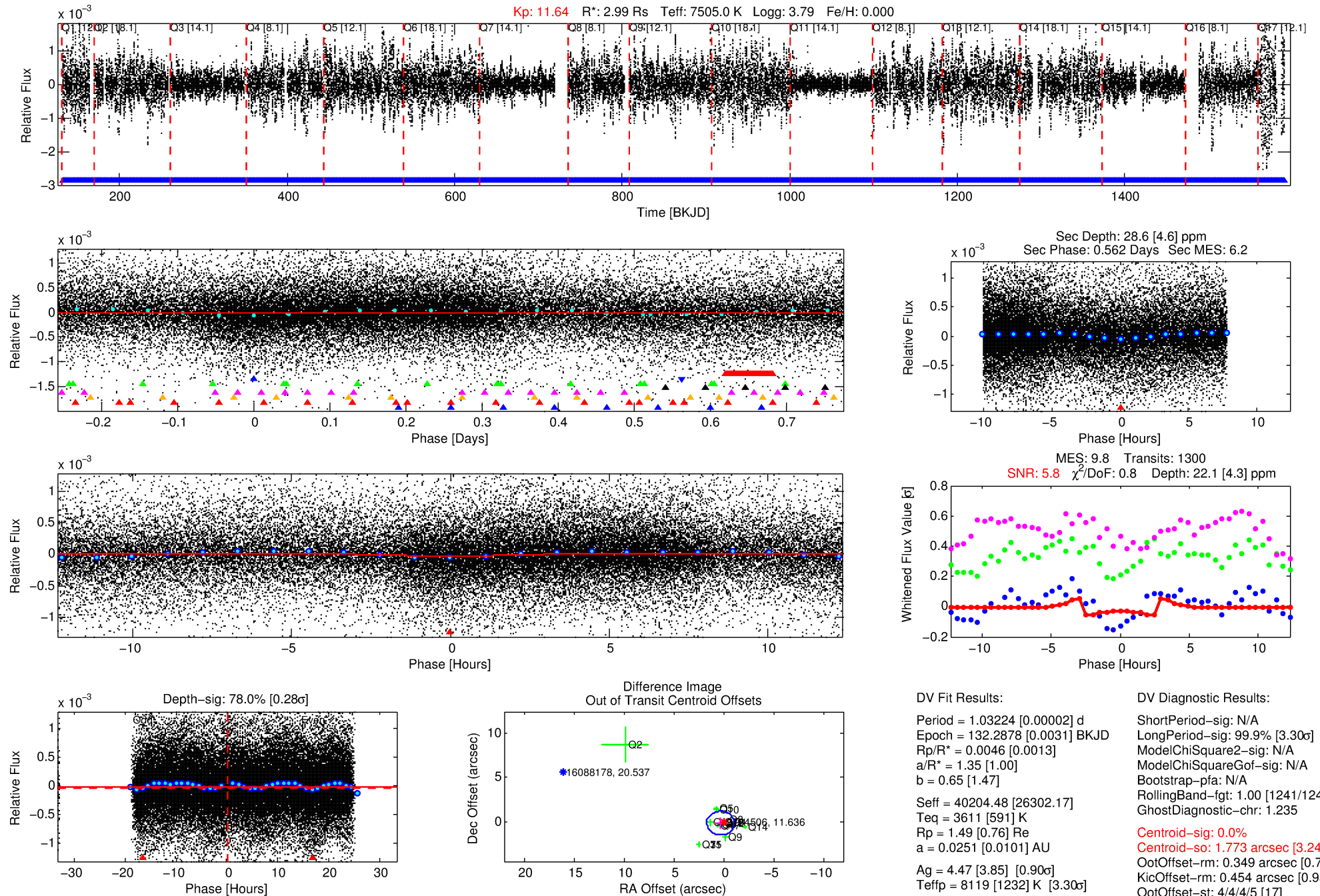
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009764506-02

No Significant Match Found

DV One-Page Summary

KIC: 9764506 Candidate: 2 of 8 Period: 1.032 d



DV Fit Results:

Period = 1.03224 [0.00002] d
Epoch = 132.2878 [0.0031] BKJD
Rp/R* = 0.0046 [0.0013]
a/R* = 1.35 [1.00]
b = 0.65 [1.47]
Seff = 40204.48 [26302.17]
Teq = 3611 [591] K
Rp = 1.49 [0.76] Re
a = 0.0251 [0.0101] AU
Ag = 4.47 [3.85] [0.90σ]
Teffp = 8119 [1232] K [3.30σ]

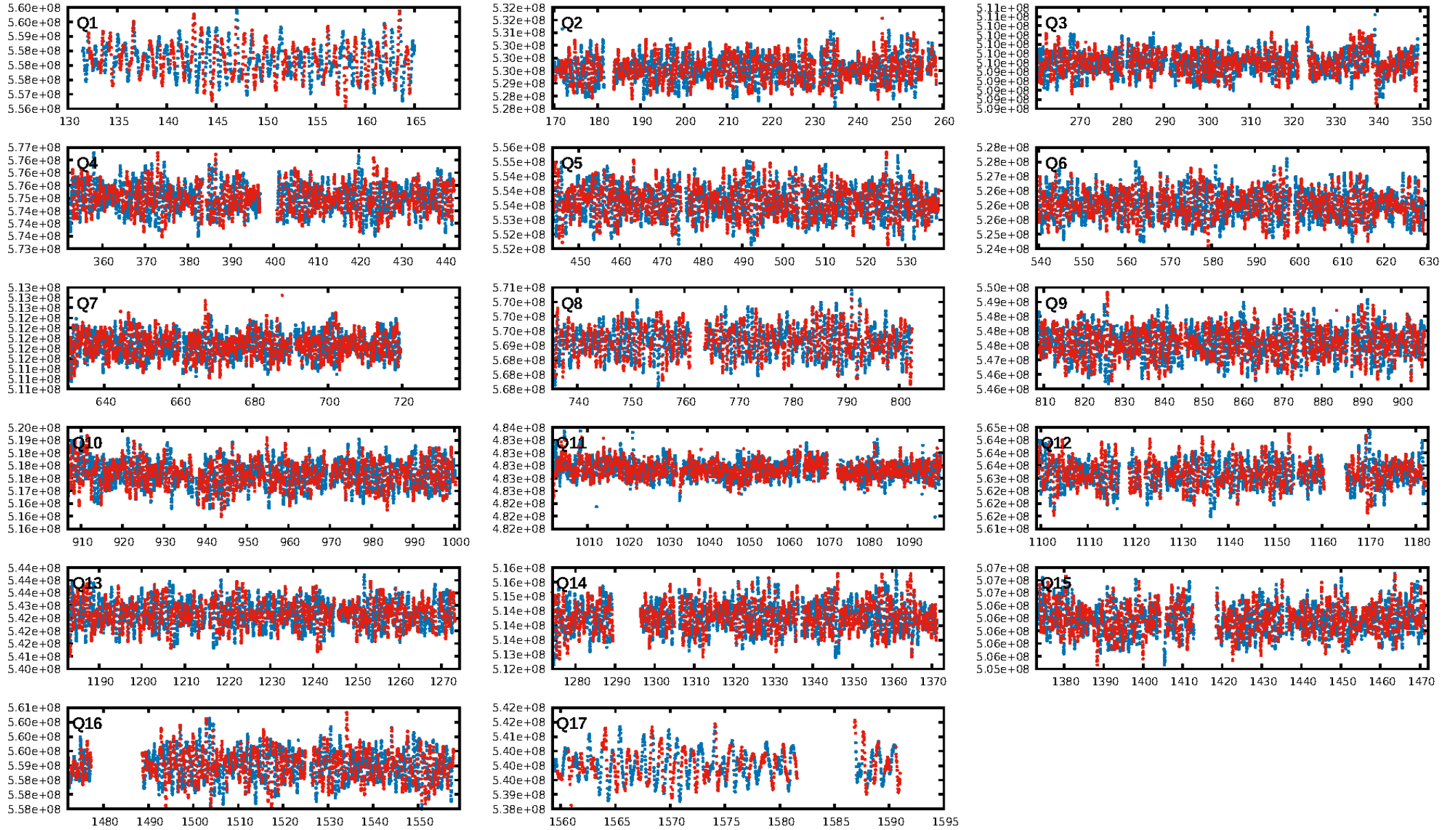
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.9% [3.30σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1241/1241]
GhostDiagnostic-chr: 1.235
Centroid-sig: 0.0%
Centroid-so: 1.773 arcsec [3.24σ]
OotOffset-rm: 0.349 arcsec [0.77σ]
KicOffset-rm: 0.454 arcsec [0.95σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.53 [9/17]
DiffImageOverlap-fno: 1.00 [17/17]

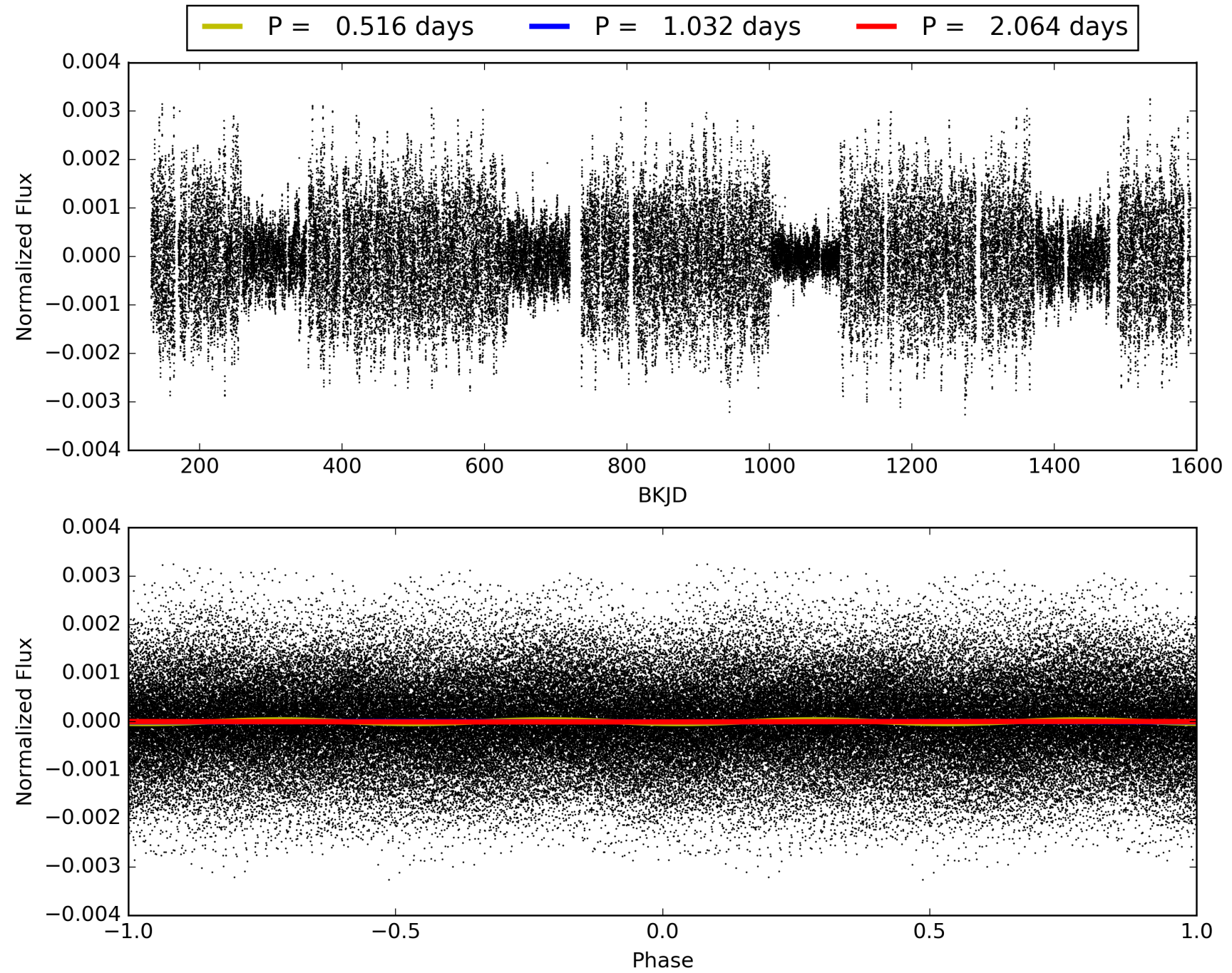
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:36:16 Z

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

TCE 009764506-02, PDC Light Curves

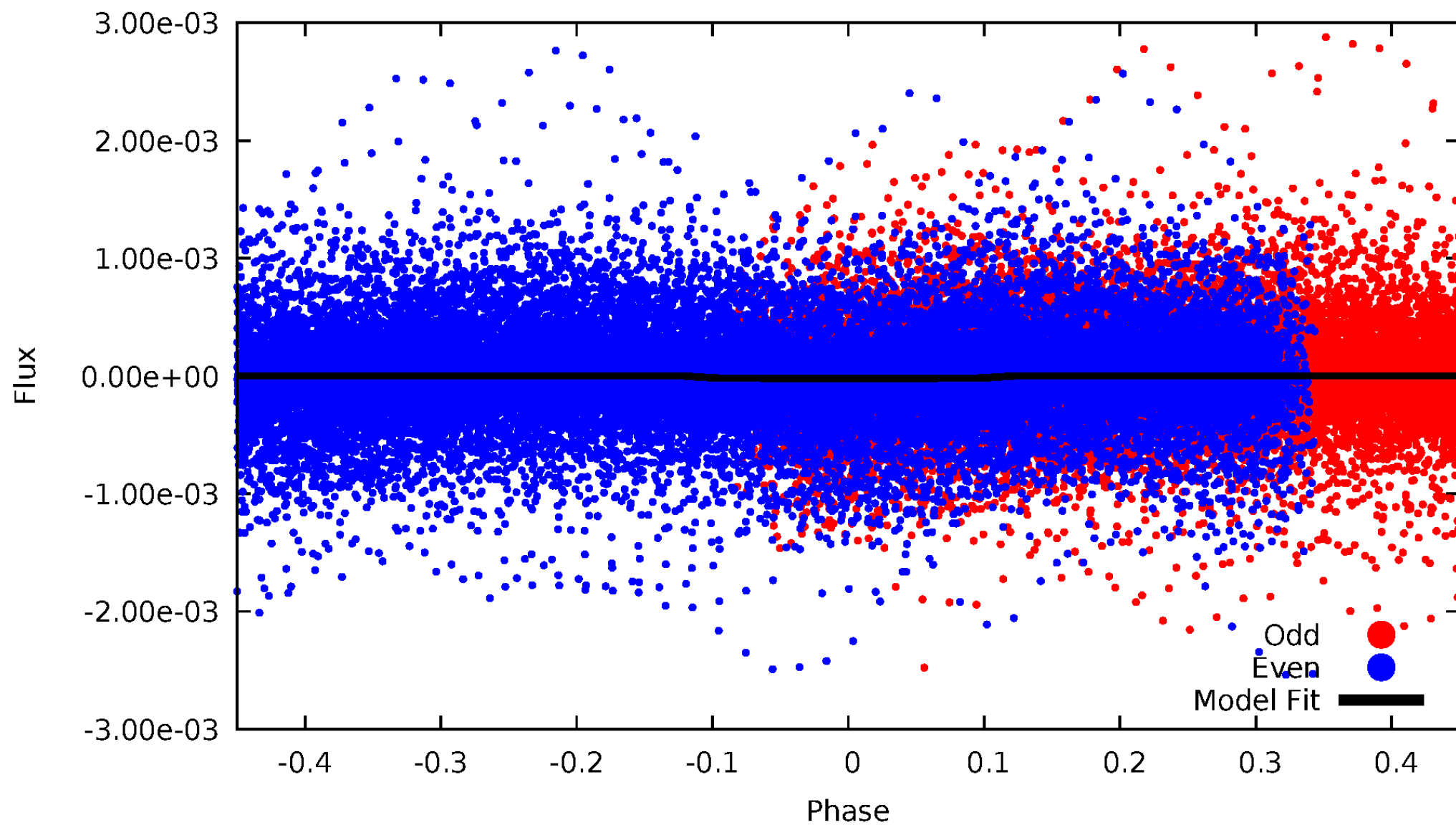


TCE 009764506-02



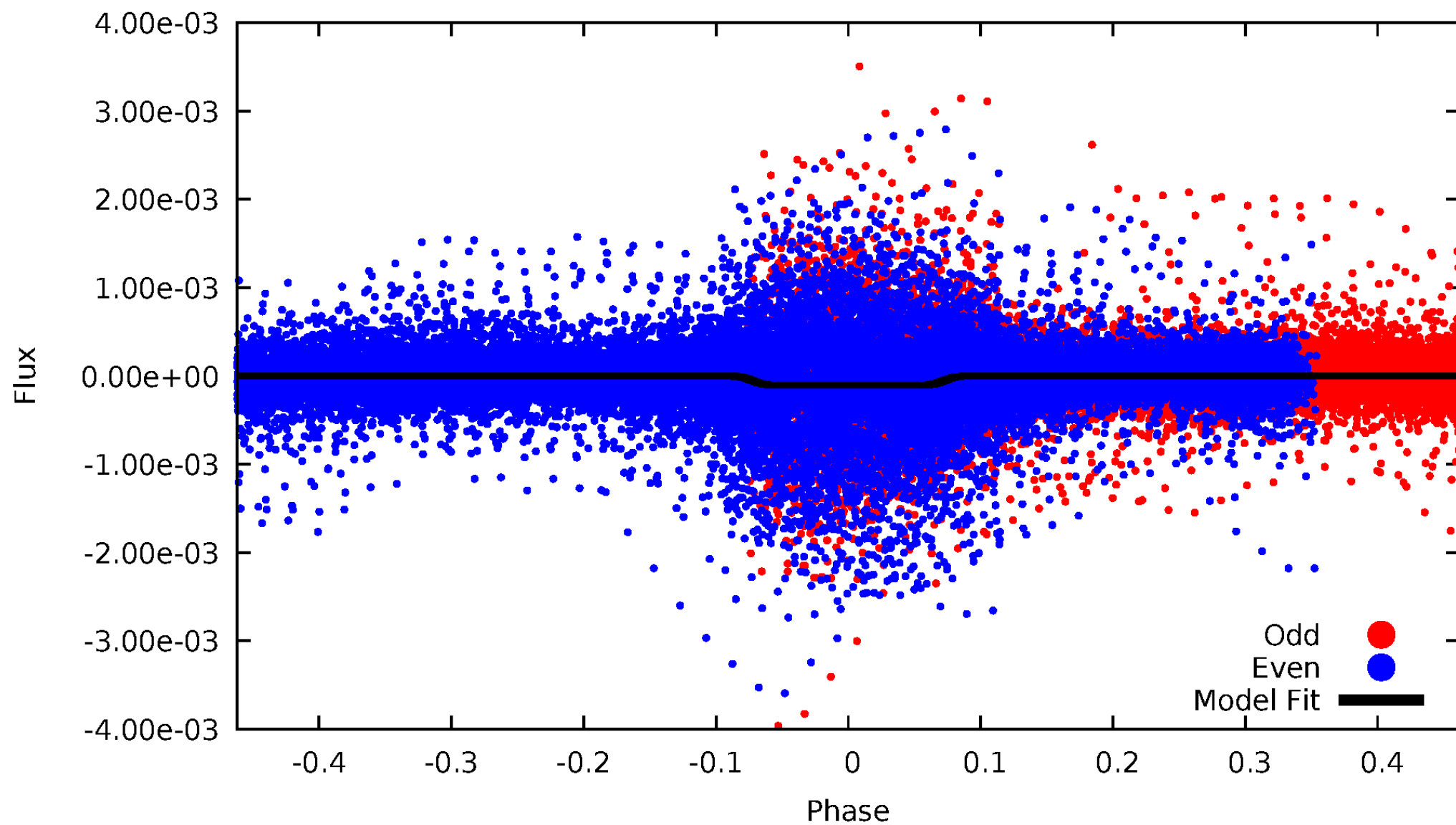
DV Odd/Even

TCE 009764506-02



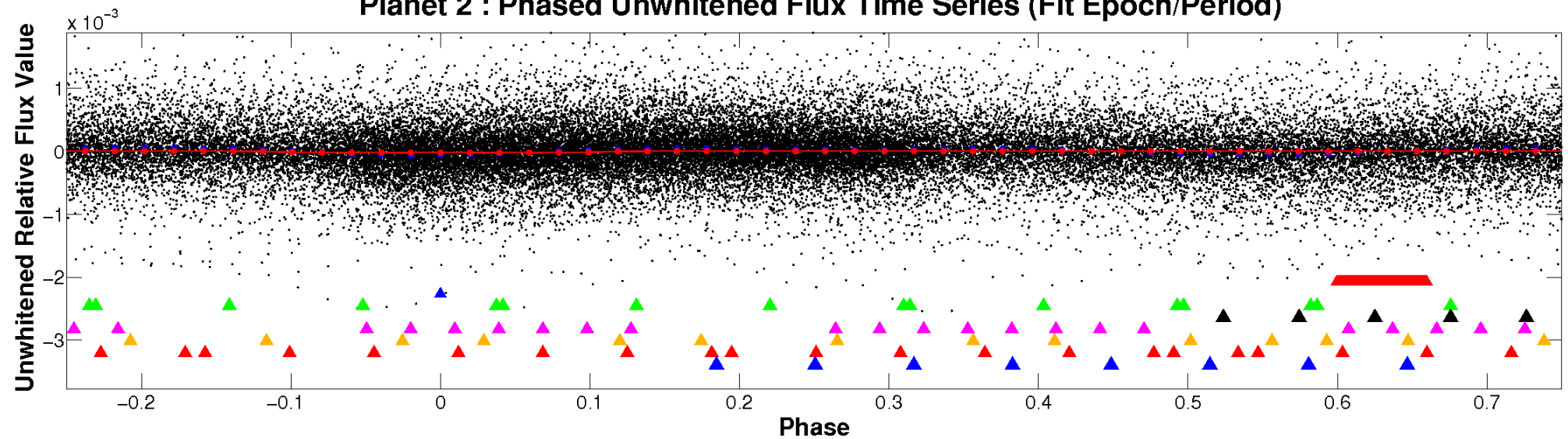
ALT Odd/Even

TCE 009764506-02

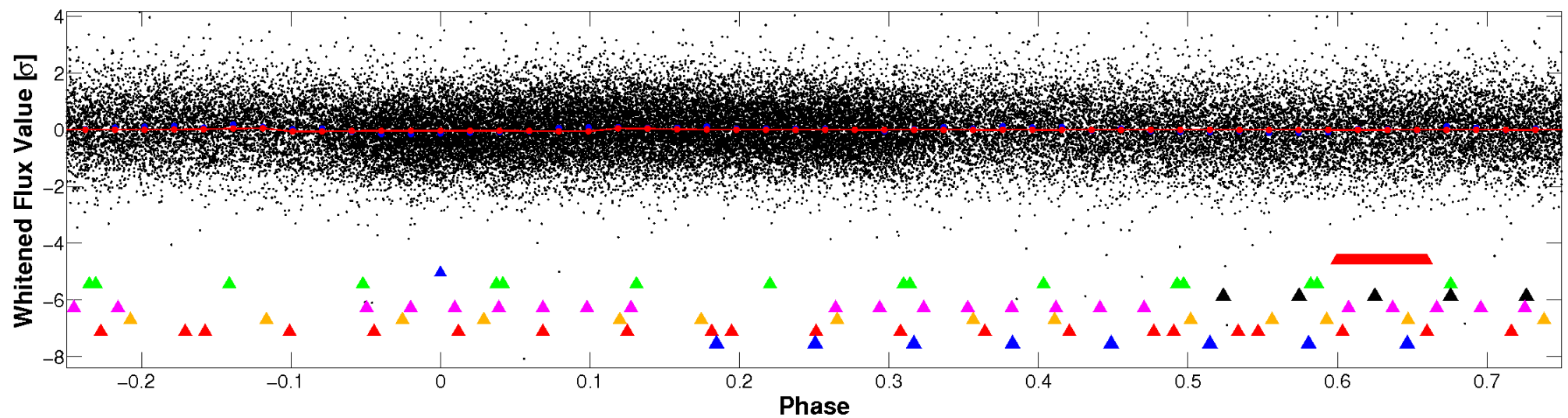


Non-Whitened Vs. Whitened Light Curve

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

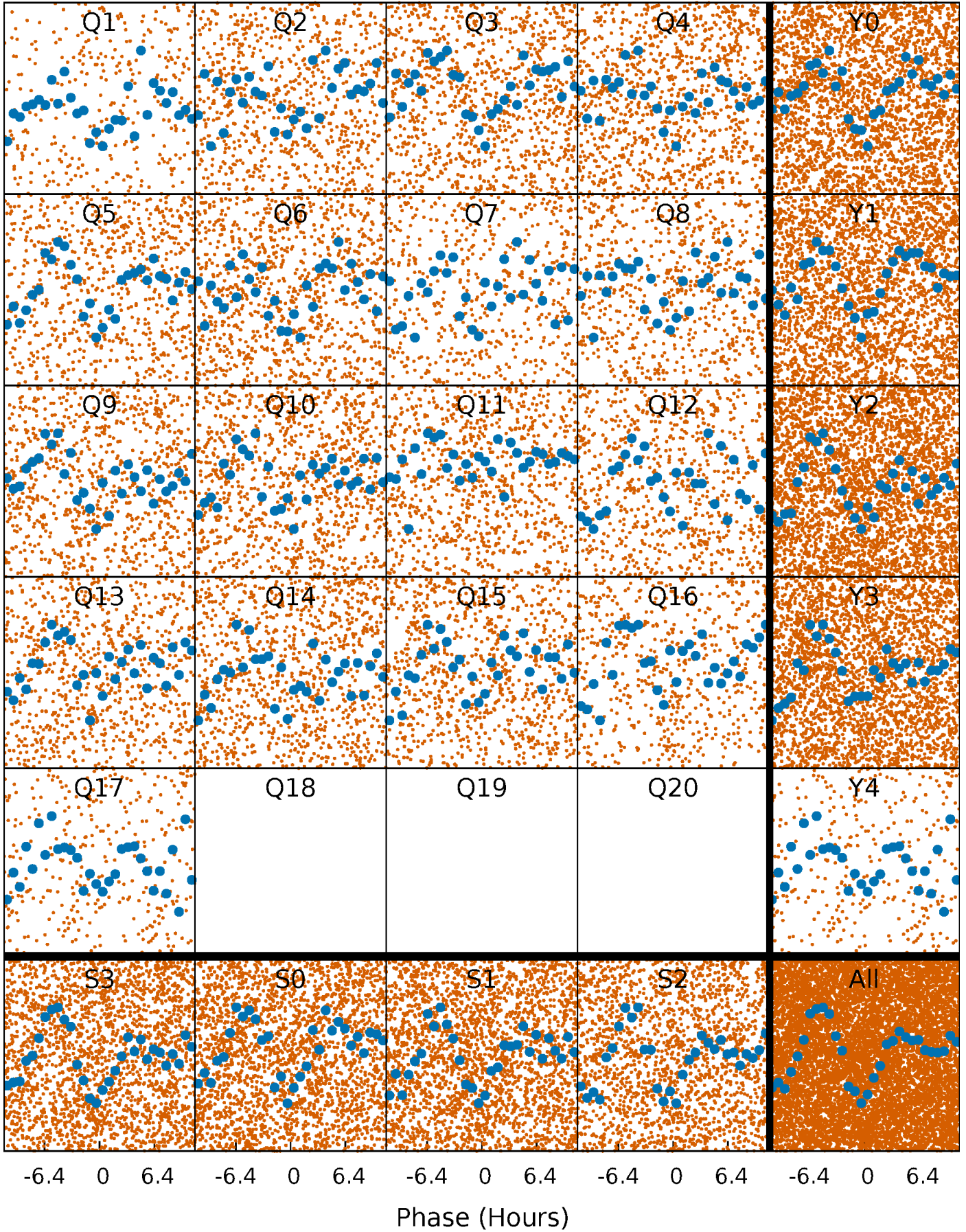


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



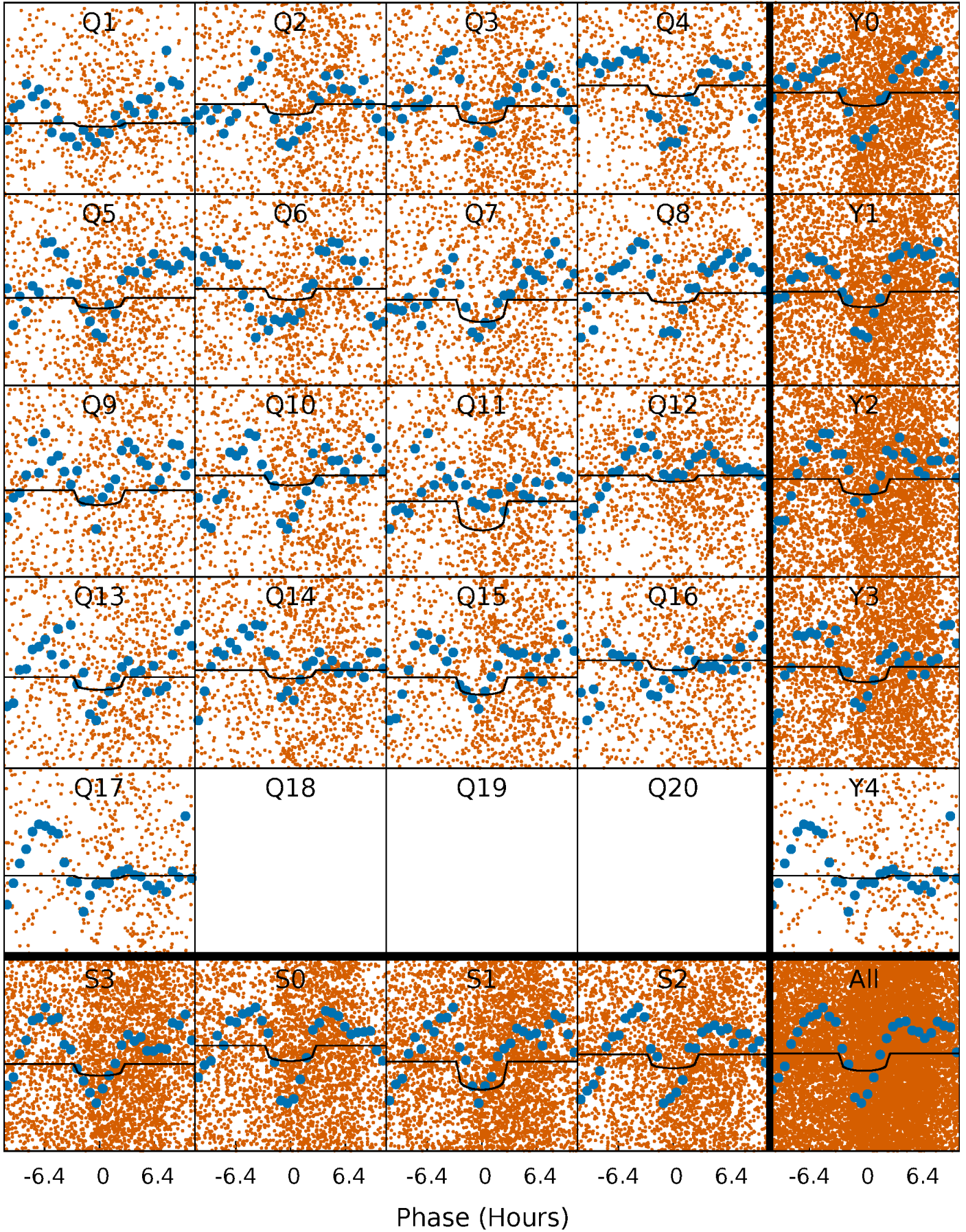
PDC Quarter-Phased Transit Curves

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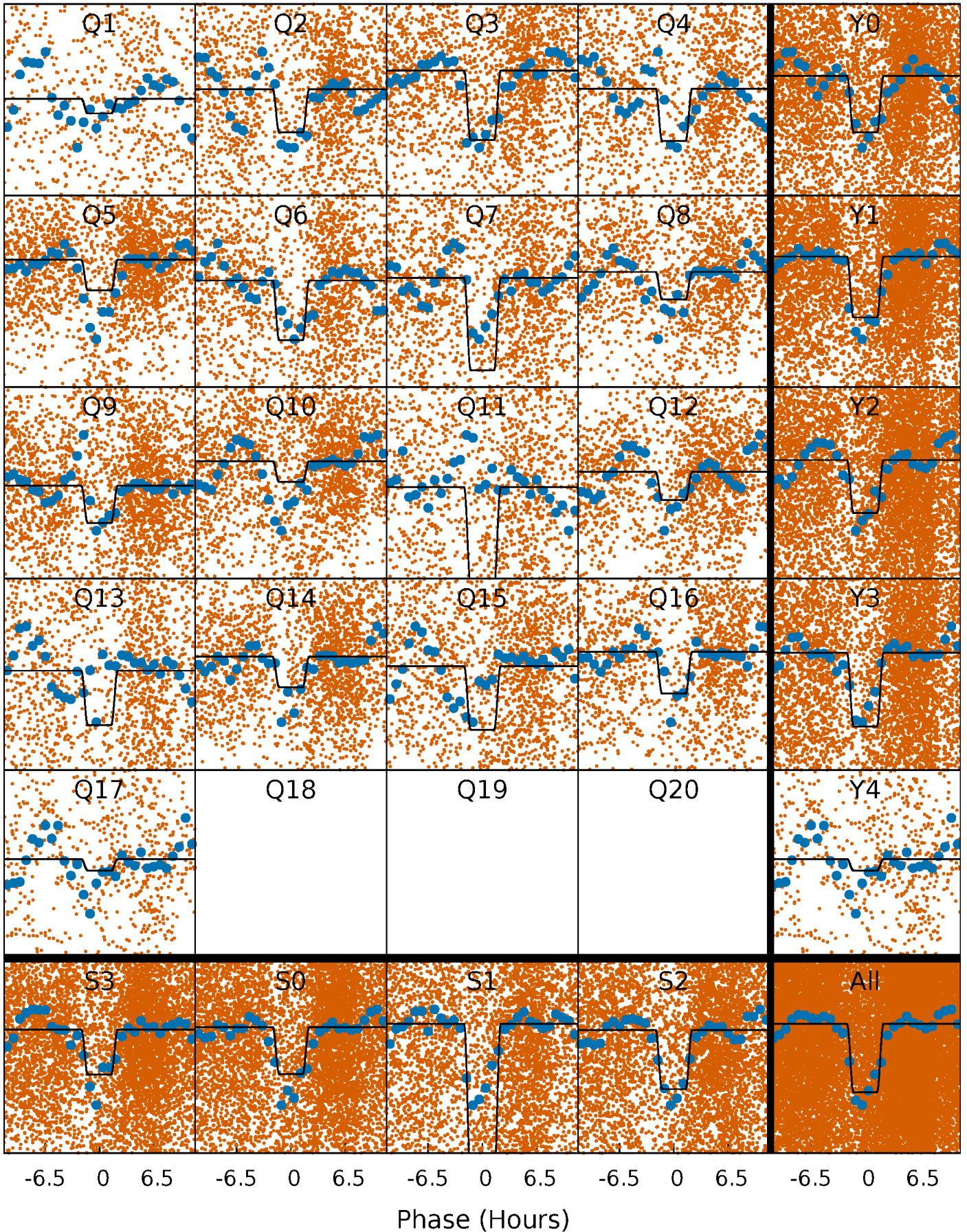
DV Quarter-Phased Transit Curves

TCE 009764506-02 P= 1.032238 Days $T_0=132.287769$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

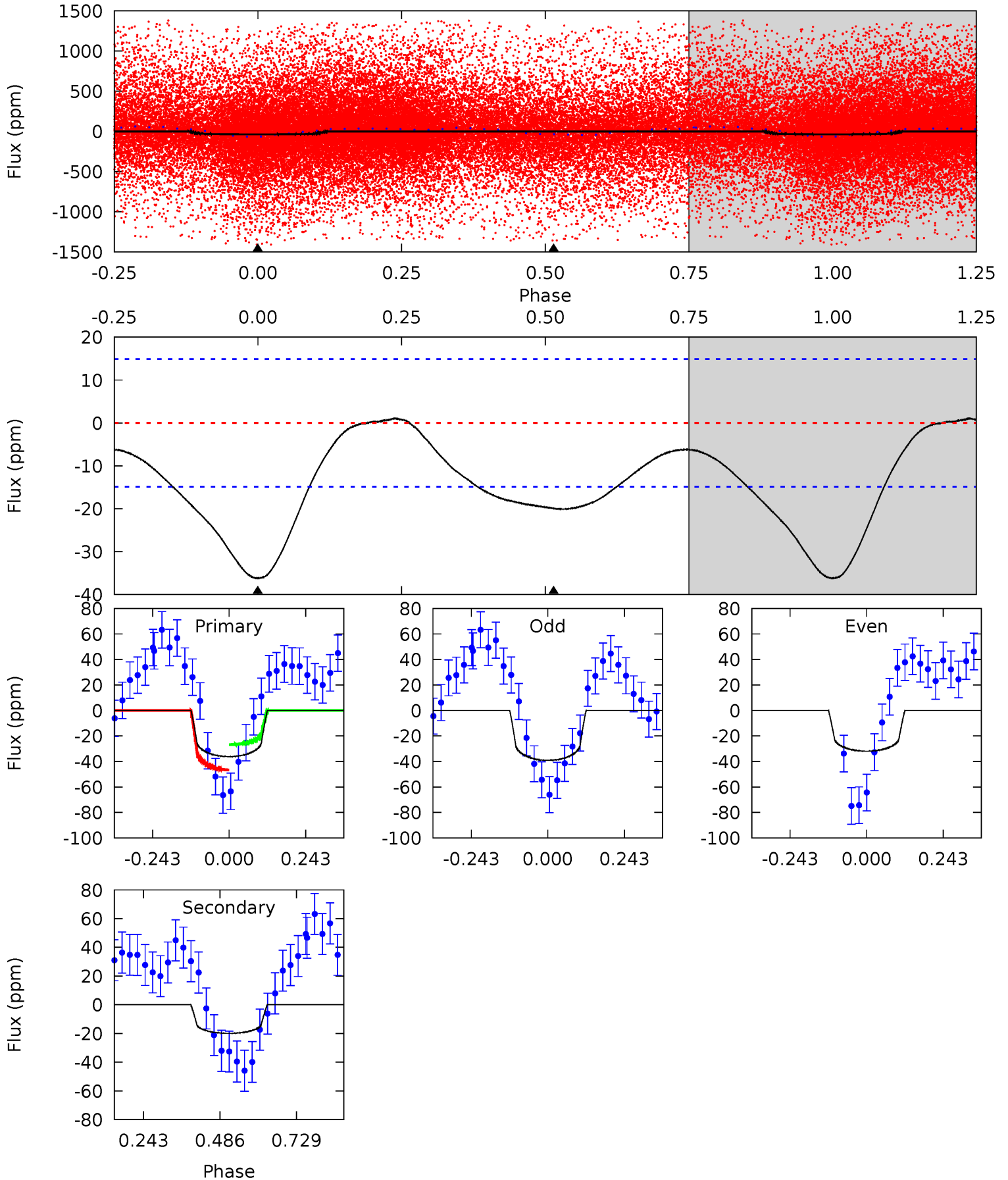
TCE 009764506-02 P= 1.032236 Days $T_0=132.279586$ (BKJD)



DV Model-Shift Uniqueness Test

009764506-02, P = 1.032238 Days, E = 131.255531 Days

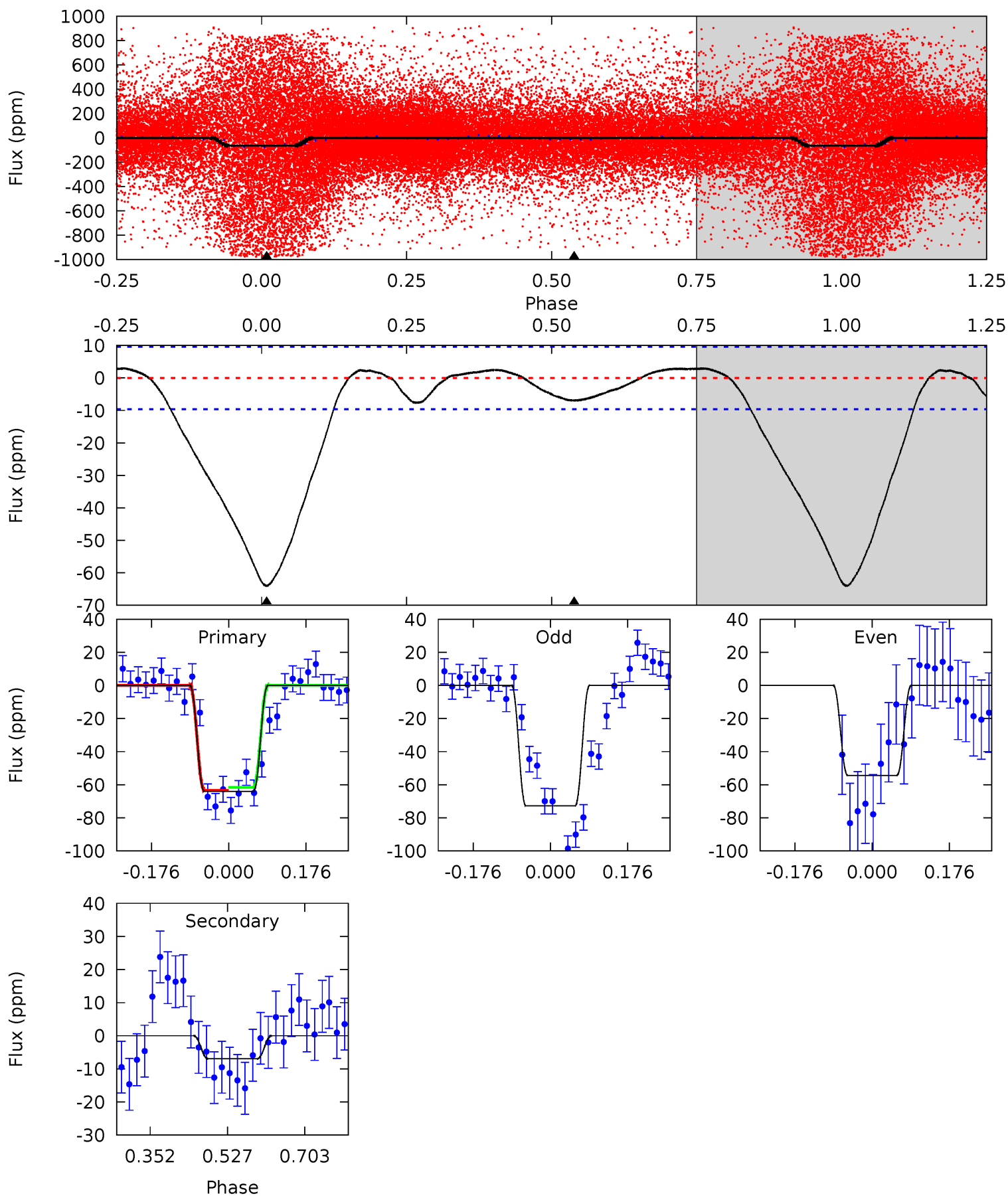
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	5.86	0	0	4.37	1.17	0.79	10.6	10.6	5.86	5.86	1.06	0.96	0.03	2.88



Alt Model-Shift Uniqueness Test

009764506-02, P = 1.032236 Days, E = 131.247350 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.6	3.21	0	0	4.44	1.35	1.60	29.6	29.6	3.21	3.21	4.24	1.54	0.04	0.40



Stellar Parameters For KIC 009764506

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7505^{+209}_{-314}	$3.785^{+0.368}_{-0.092}$	$0.000^{+0.200}_{-0.350}$	$2.989^{+0.425}_{-1.275}$	$1.984^{+0.088}_{-0.500}$	$0.105^{+0.310}_{-0.030}$
	+3%/-4%	+10%/-2%	+inf%/-inf%	+14%/-43%	+4%/-25%	+296%/-29%
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 009764506-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-20 ± 3	$1.36^{+0.53}_{-0.44}$	4929^{+321}_{-487}	7147^{+1792}_{-1129}	$3.569^{+4.167}_{-1.710}$
Alt.	-7 ± 2	$3.06^{+0.63}_{-0.68}$	4889^{+352}_{-521}	-3147^{+6566}_{-660}	$0.249^{+0.167}_{-0.095}$

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

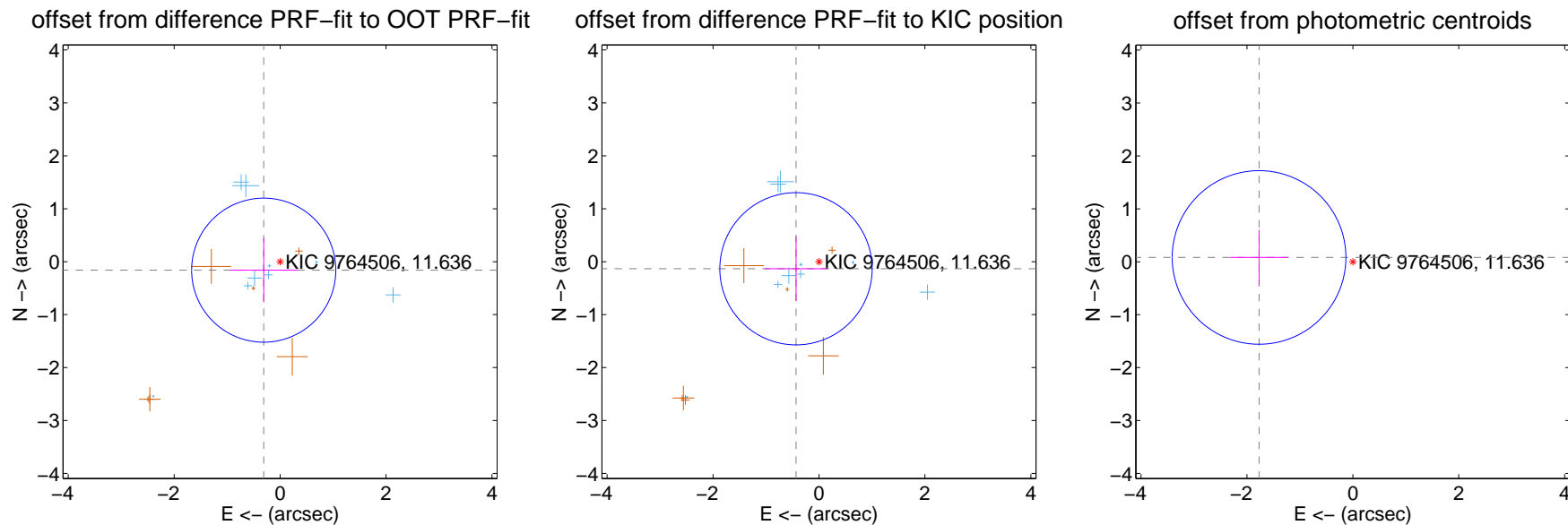
DV Centroid Data

Supplemental centroid analysis for 009764506-02. **Kepler magnitude: 11.64.** Transit SNR 5.84

There are 9 quarters with good PRF difference image offsets

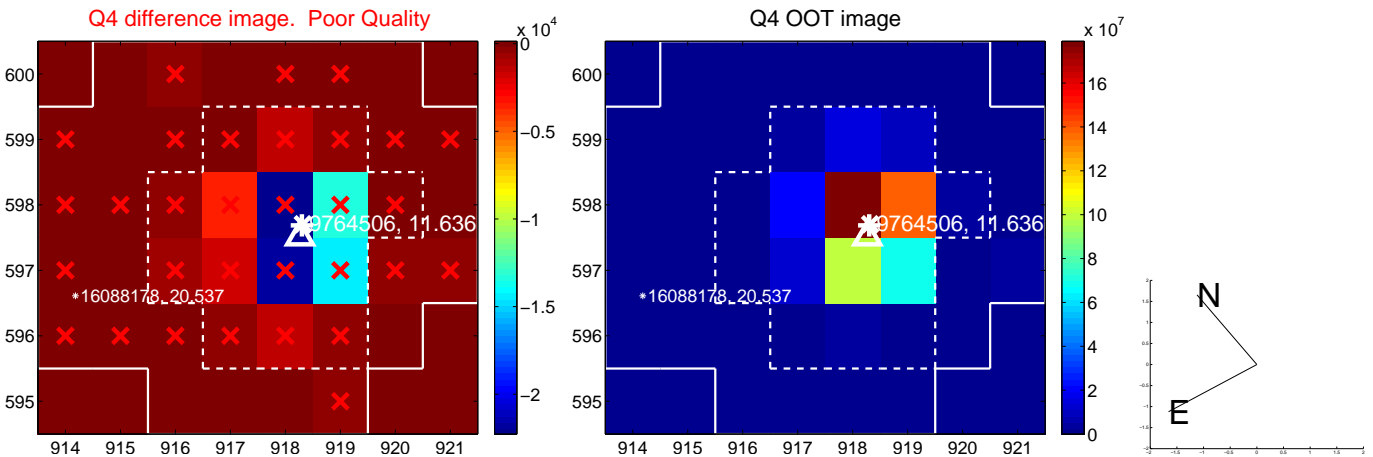
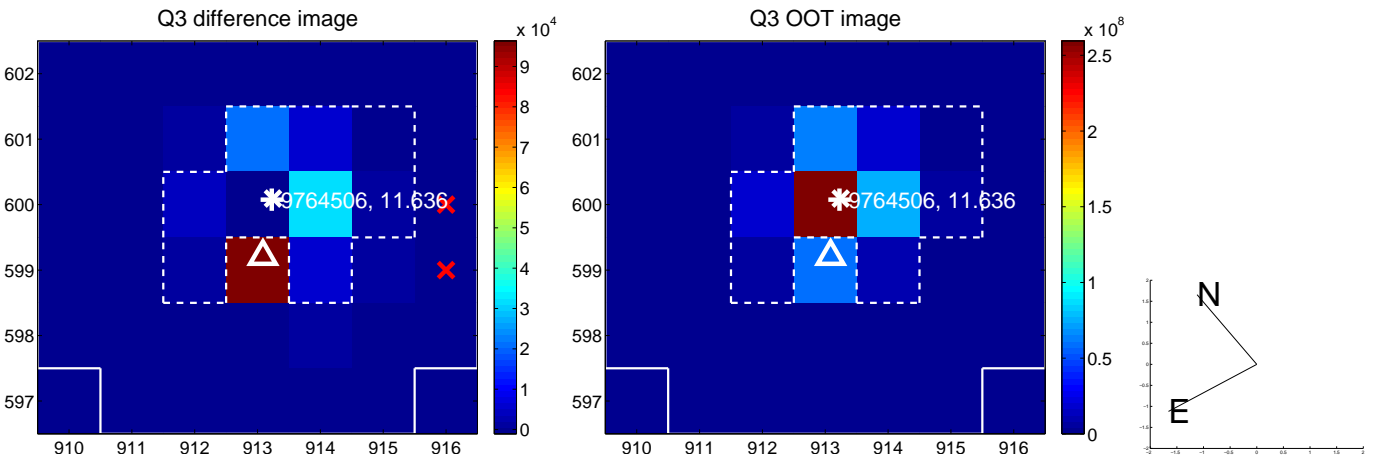
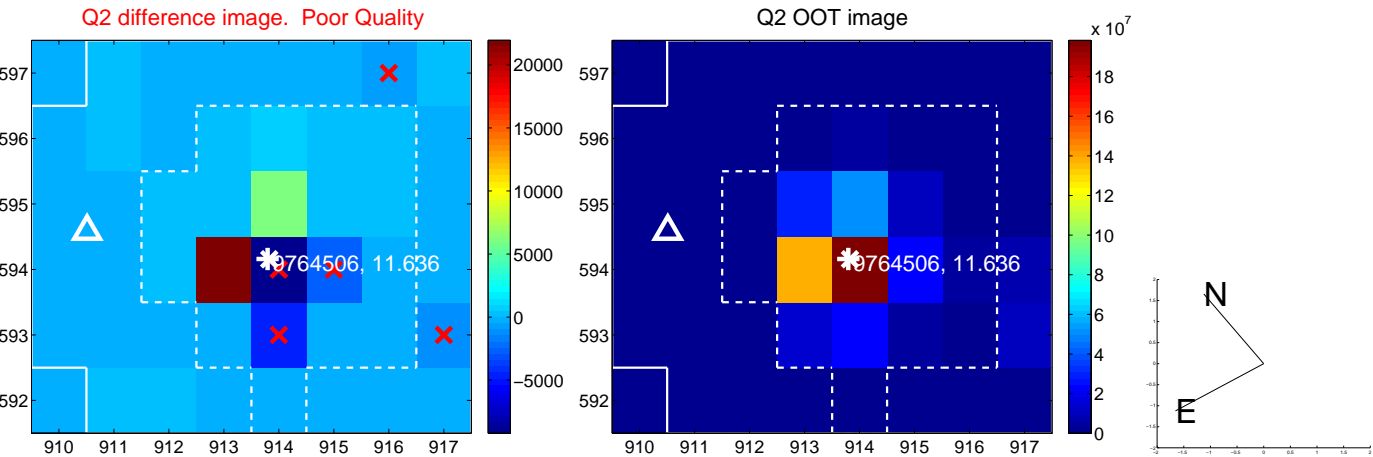
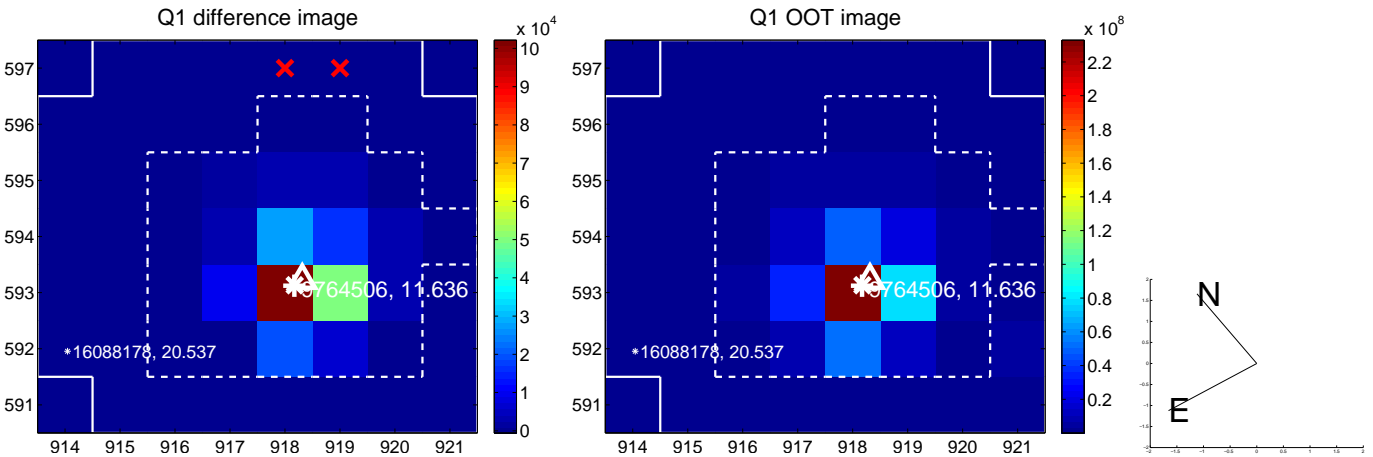
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.349 ± 0.454	0.77	0.310 ± 0.641	-0.160 ± 0.606
PRF-fit source offset from KIC position	0.454 ± 0.479	0.95	0.434 ± 0.596	-0.134 ± 0.607
photometric centroid source offset	1.77 ± 0.55	3.24	1.77 ± 0.55	0.08 ± 0.52

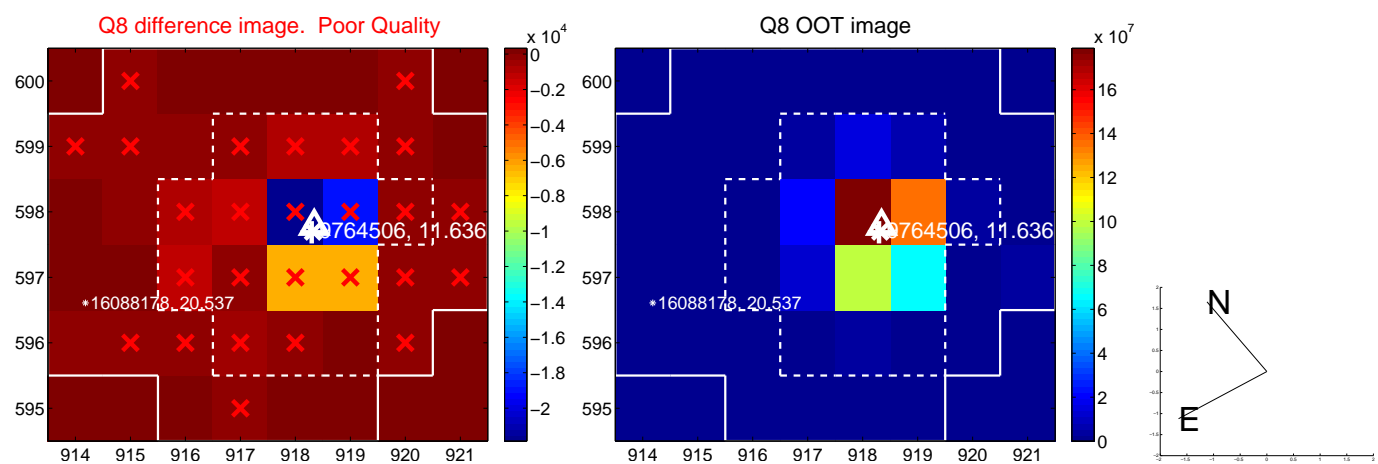
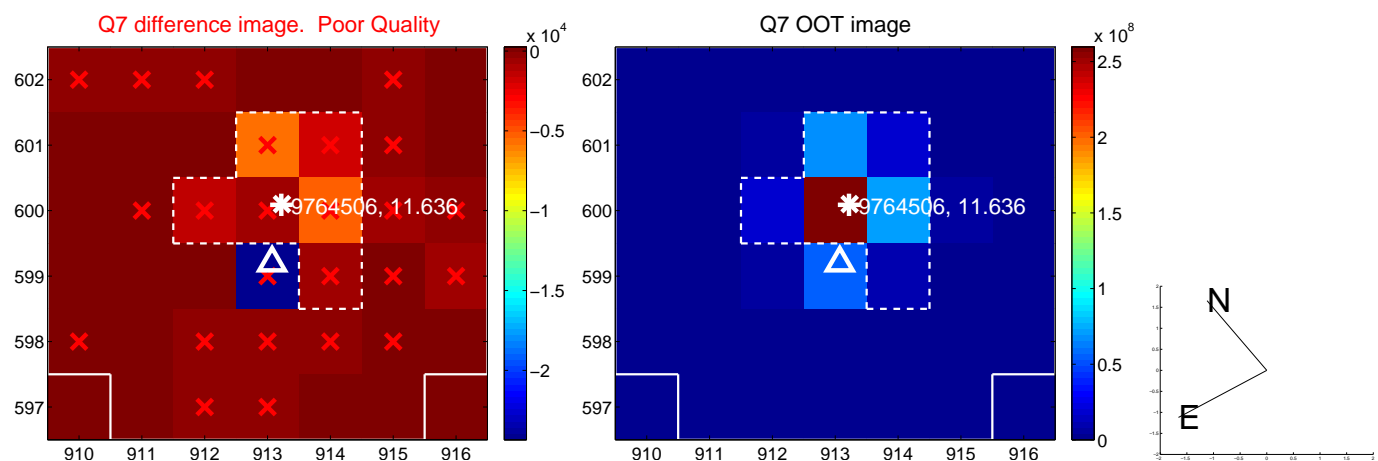
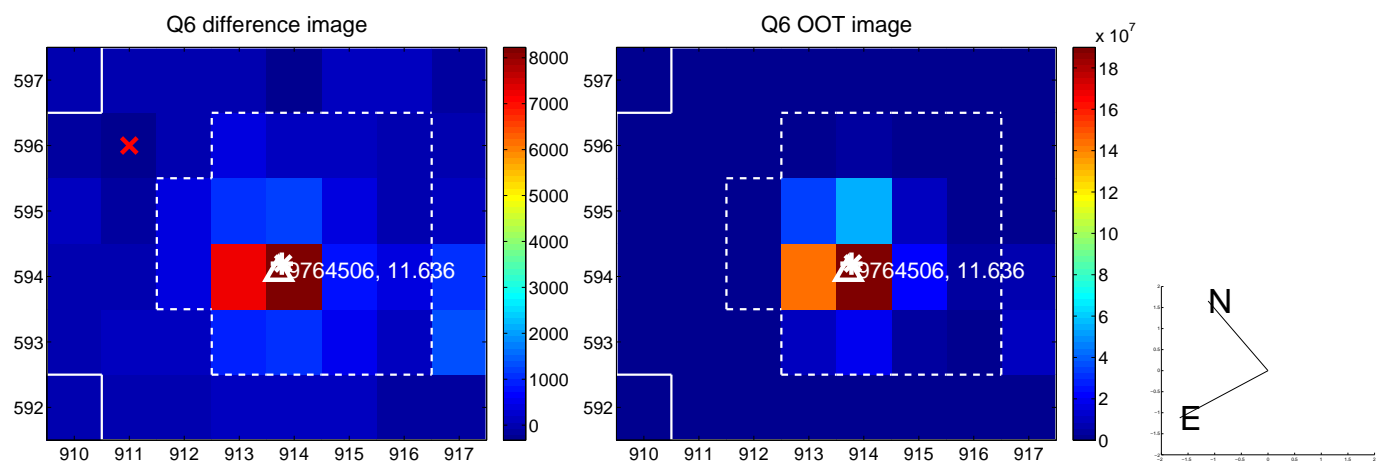
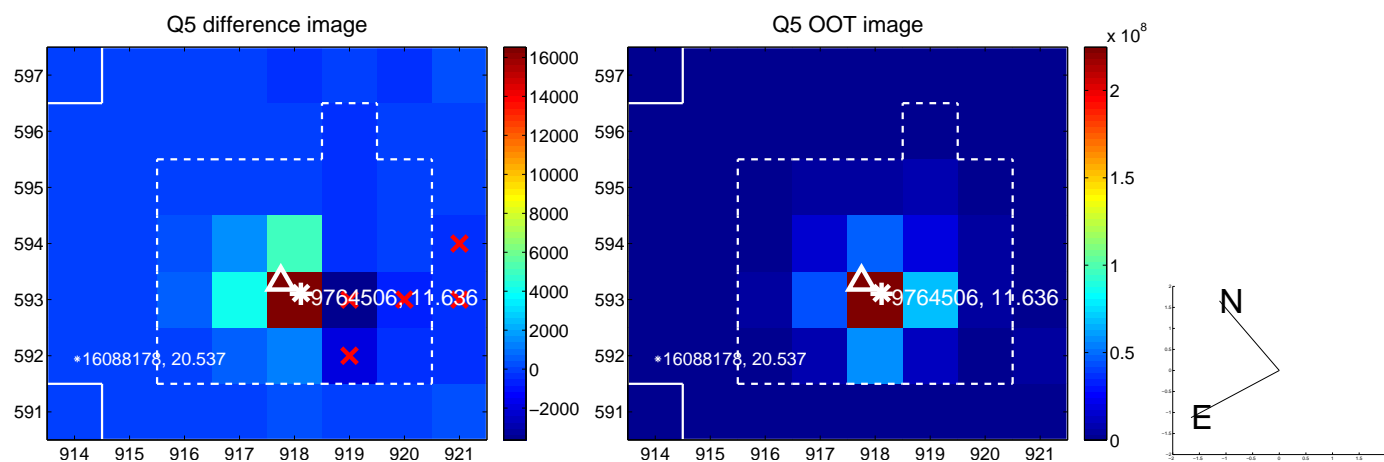


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

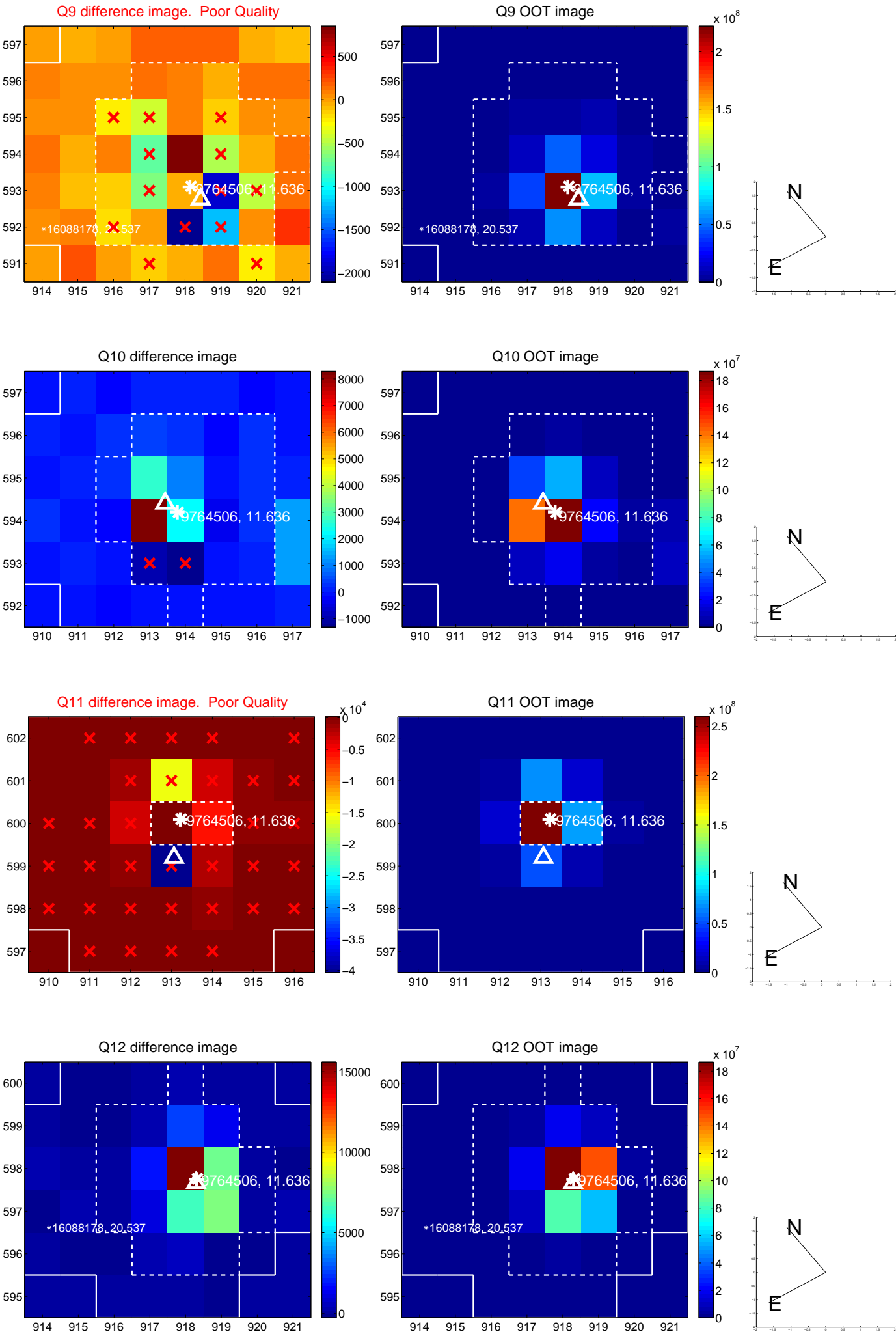
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



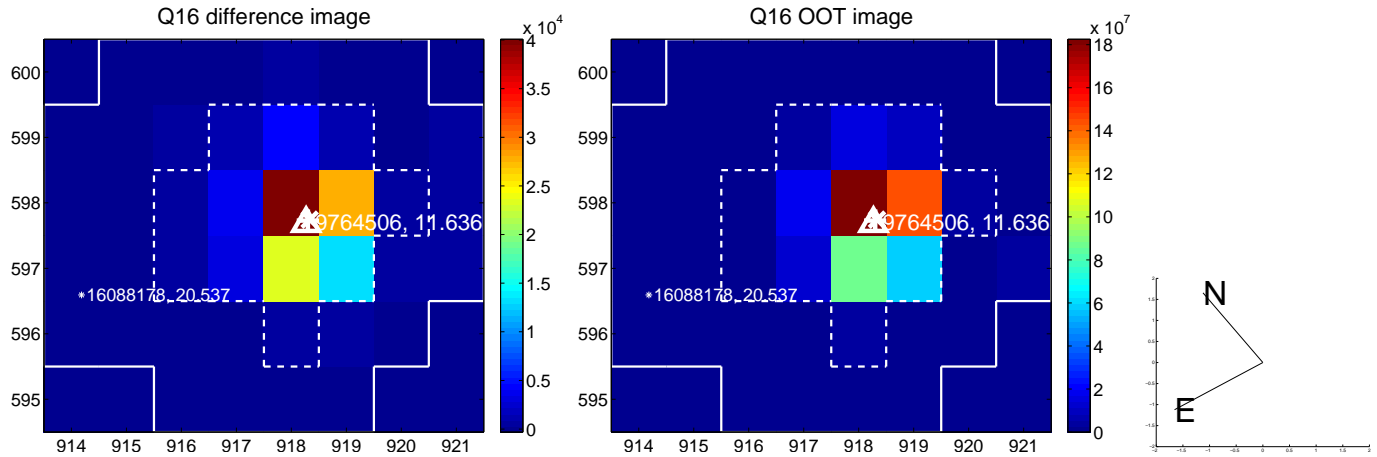
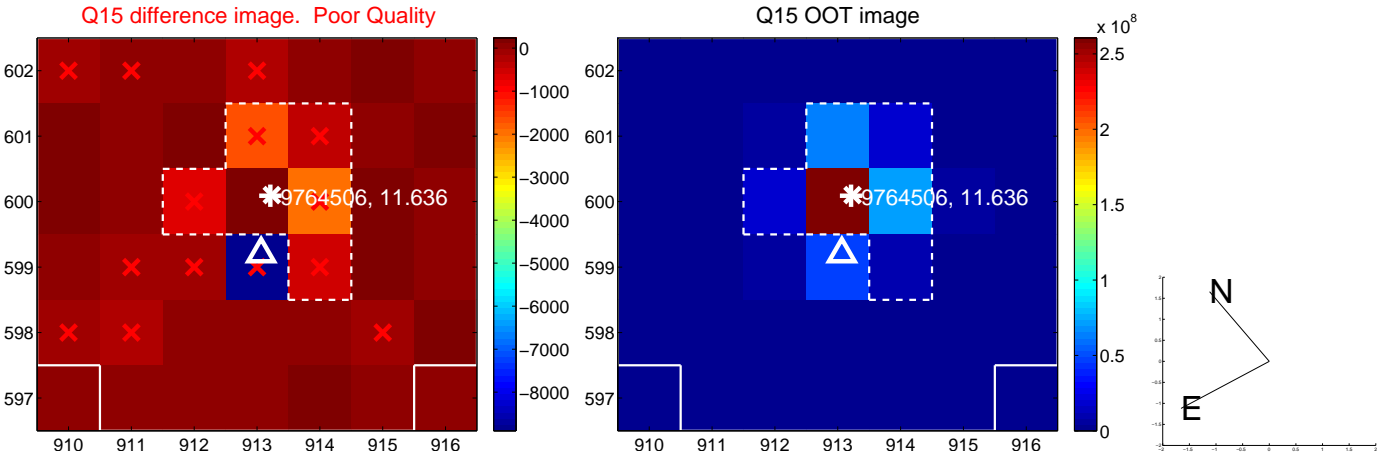
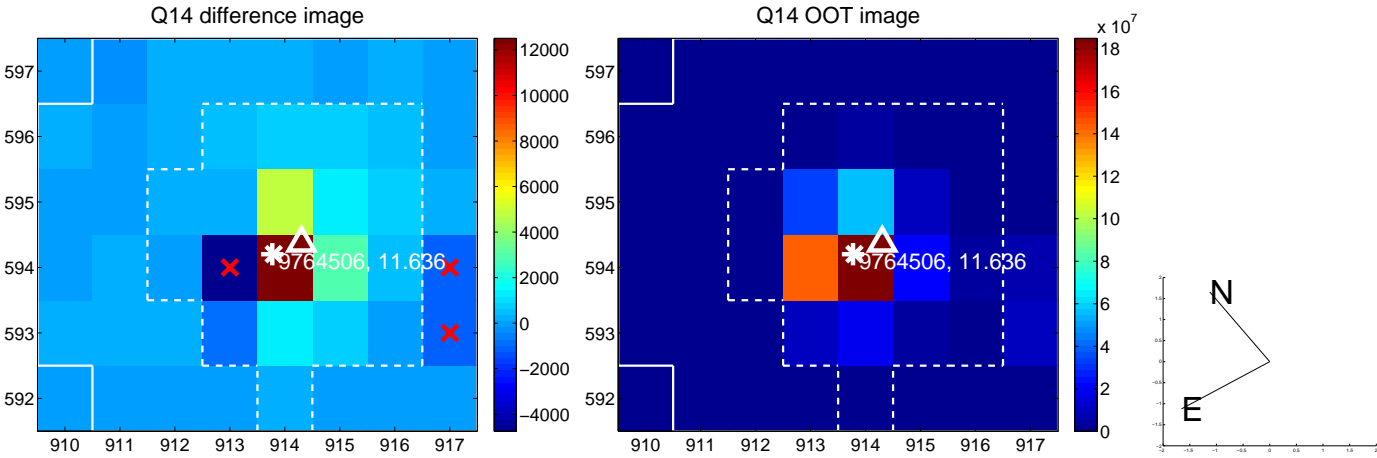
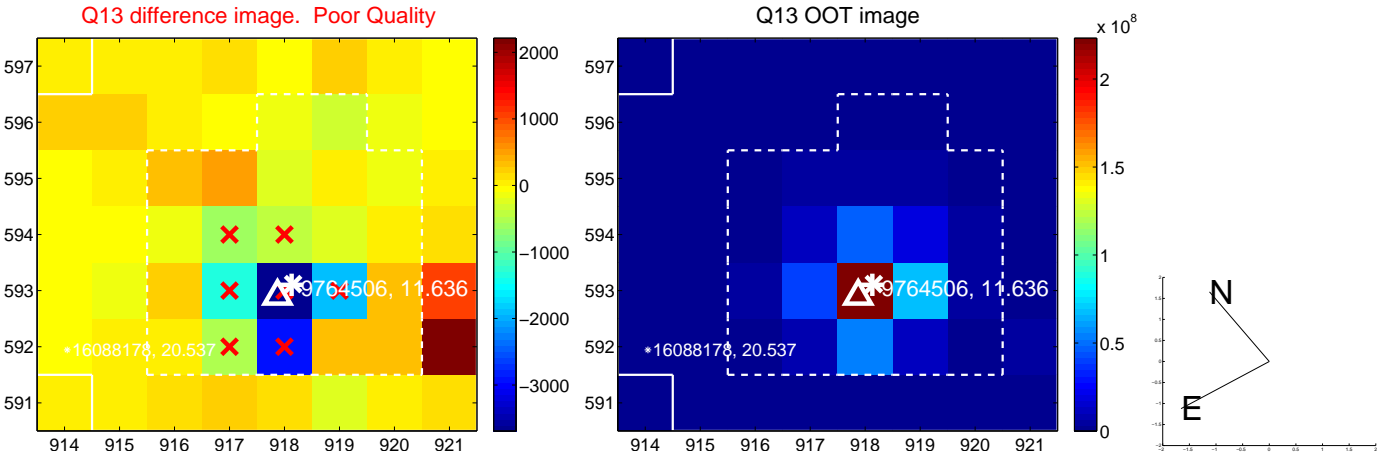
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



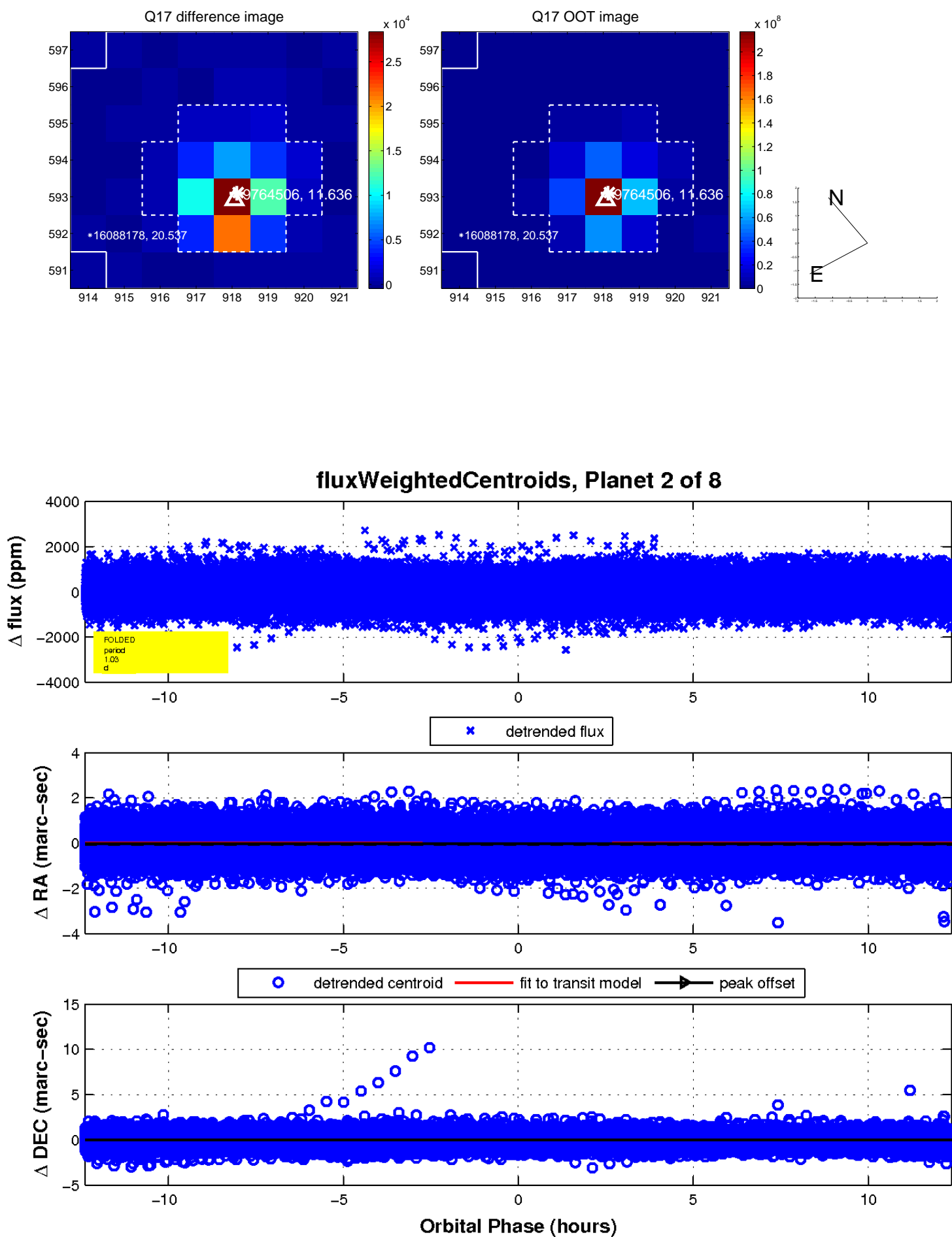
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

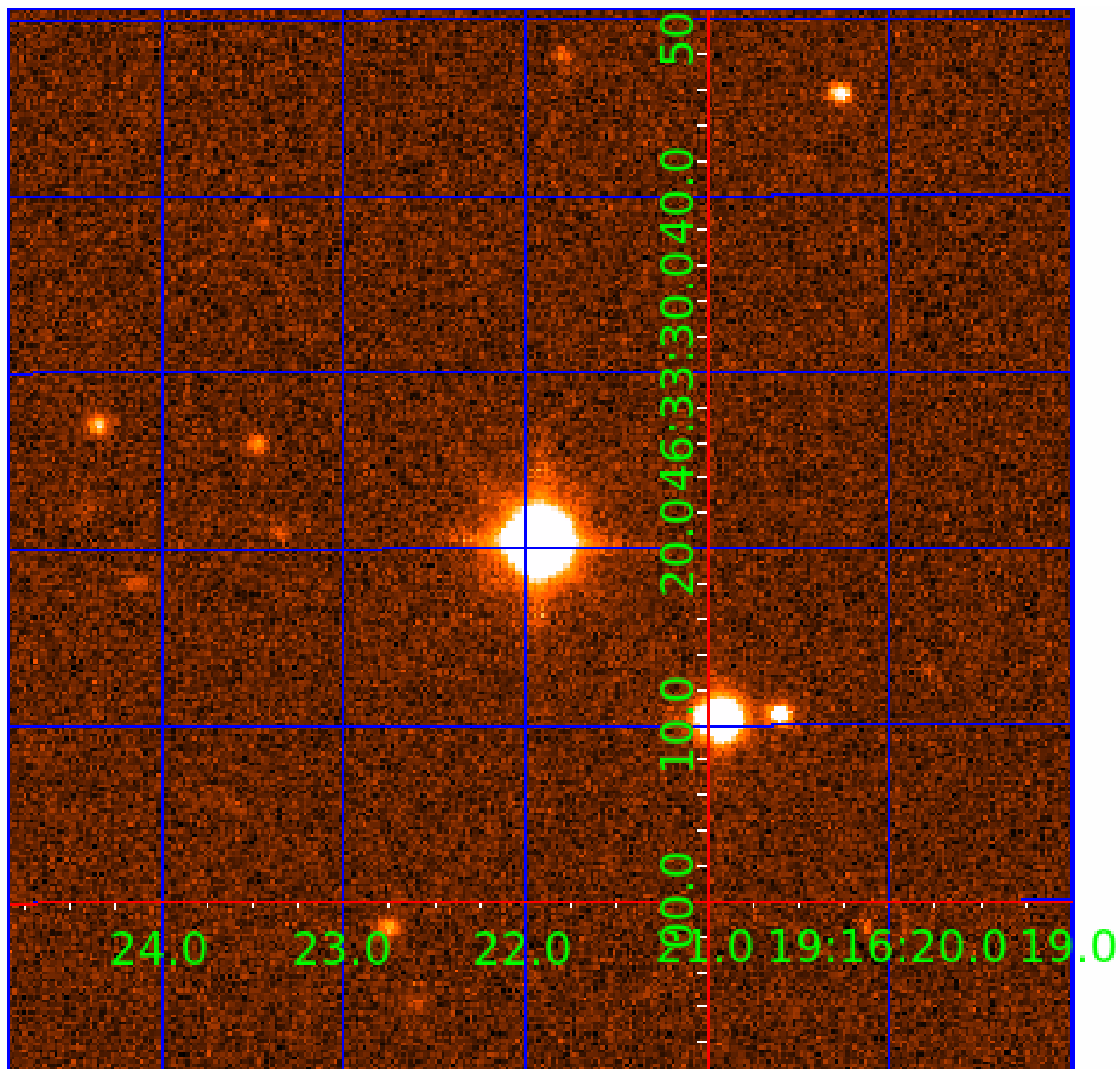


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009764506

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})
009764506-01	OBS	No	2.064565	131.874332	39.6	5.034	12.3	8.6	2.99	7505	2.20	15954.25
009764506-02	OBS	No	1.032238	132.287769	22.1	5.573	9.8	5.8	2.99	7505	1.49	40204.48
009764506-03	OBS	No	91.118080	147.252193	744.2	6.013	11.0	9.4	2.99	7505	15.24	102.29
009764506-04	OBS	No	322.006015	287.873338	1179.0	8.680	10.8	10.6	2.99	7505	18.52	19.00
009764506-05	OBS	No	64.352992	188.301458	702.9	6.201	10.5	9.1	2.99	7505	14.84	162.64
009764506-06	OBS	No	100.521220	198.962913	1226.9	10.941	10.5	11.1	2.99	7505	19.30	89.74
009764506-07	OBS	No	70.555710	134.858518	676.9	6.643	9.6	8.9	2.99	7505	9.62	143.86
009764506-08	OBS	No	179.677589	246.024579	556.7	5.342	9.2	8.3	2.99	7505	7.53	41.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009764506-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009764506-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009764506-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT
009764506-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

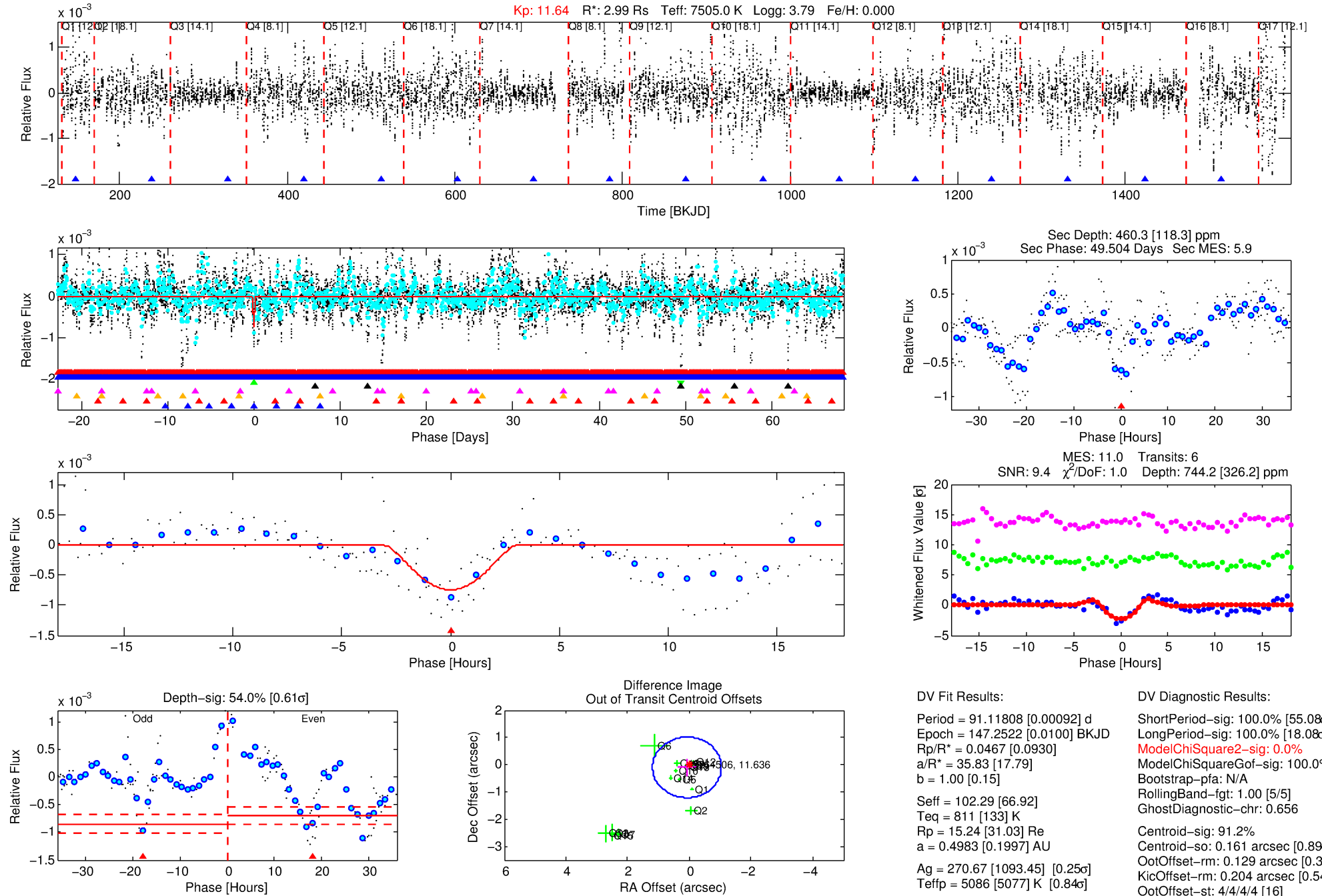
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009764506-03

No Significant Match Found

DV One-Page Summary

KIC: 9764506 Candidate: 3 of 8 Period: 91.118 d



DV Fit Results:

Period = 91.11808 [0.00092] d
Epoch = 147.2522 [0.0100] BKJD
Rp/R* = 0.0467 [0.0930]
a/R* = 35.83 [17.79]
b = 1.00 [0.15]
Seff = 102.29 [66.92]
Teff = 811 [133] K
Rp = 15.24 [31.03] Re
a = 0.4983 [0.1997] AU
Ag = 270.67 [1093.45] [0.25 σ]
Teffp = 5086 [5077] K [0.84 σ]

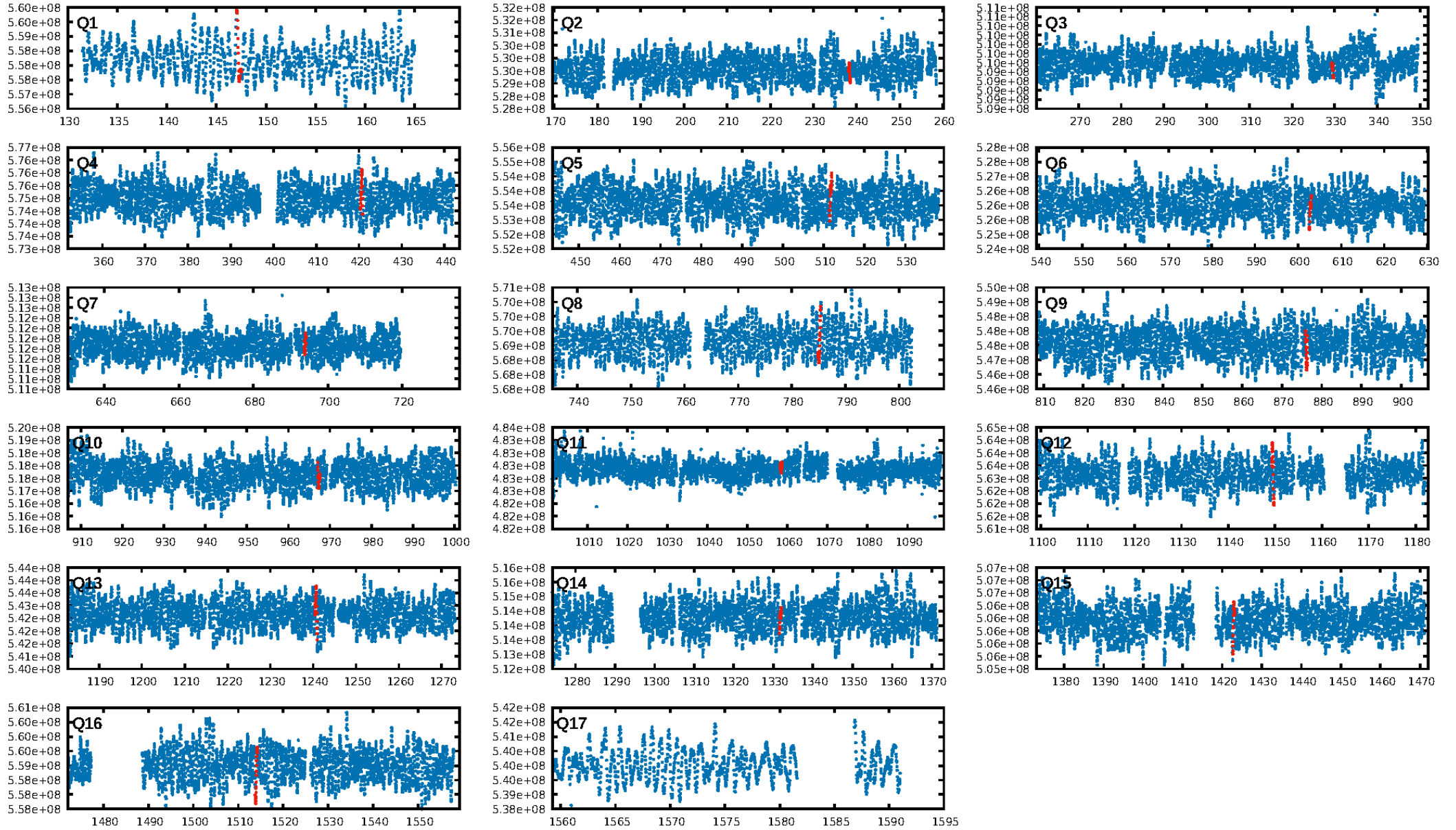
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [55.08 σ]
LongPeriod-sig: 100.0% [18.08 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.656
Centroid-sig: 91.2%
Centroid-so: 0.161 arcsec [0.89 σ]
OotOffset-rm: 0.129 arcsec [0.35 σ]
KicOffset-rm: 0.204 arcsec [0.54 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.44 [7/16]
DiffImageOverlap-fno: 0.00 [0/16]

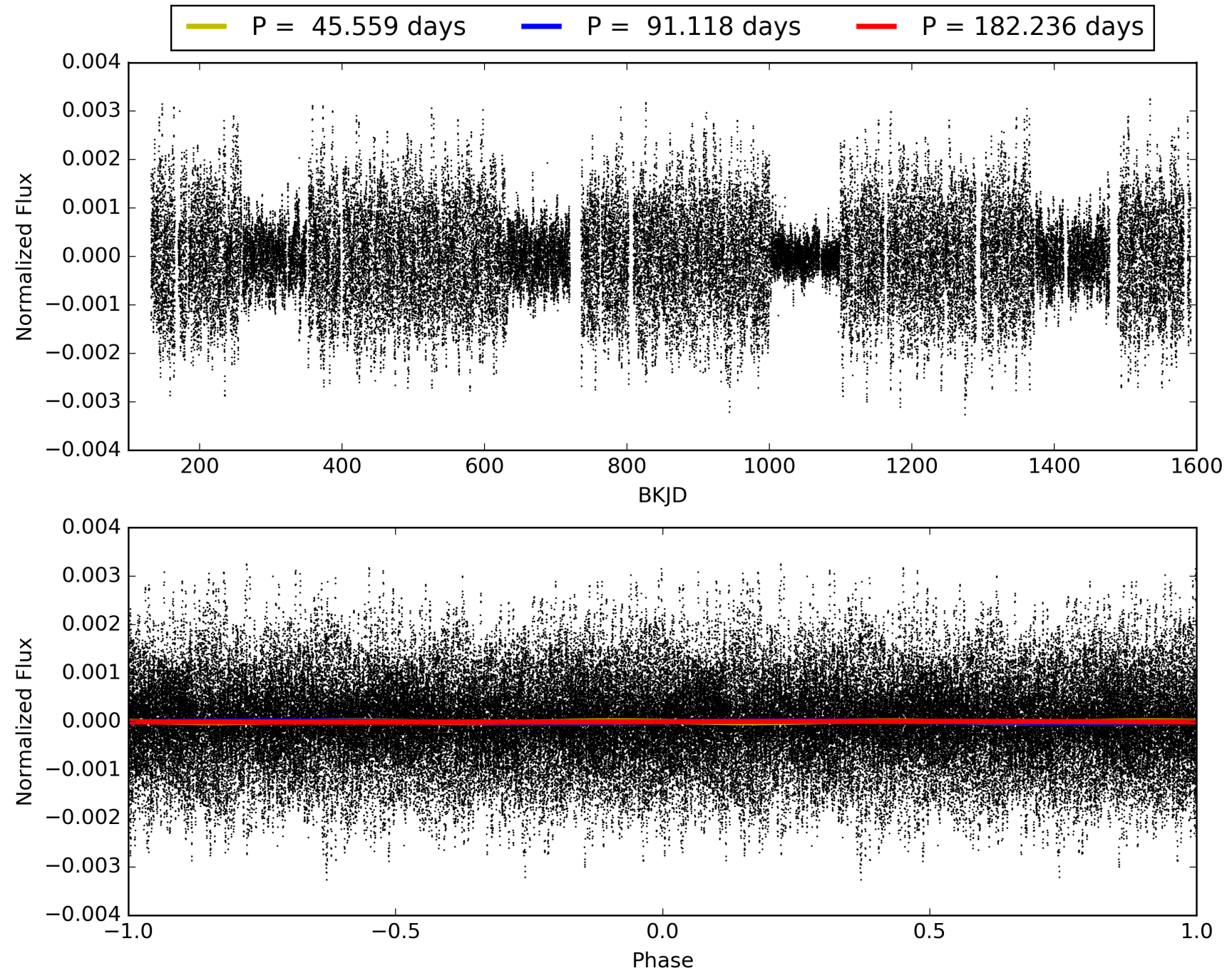
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:36:24 Z

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

TCE 009764506-03, PDC Light Curves

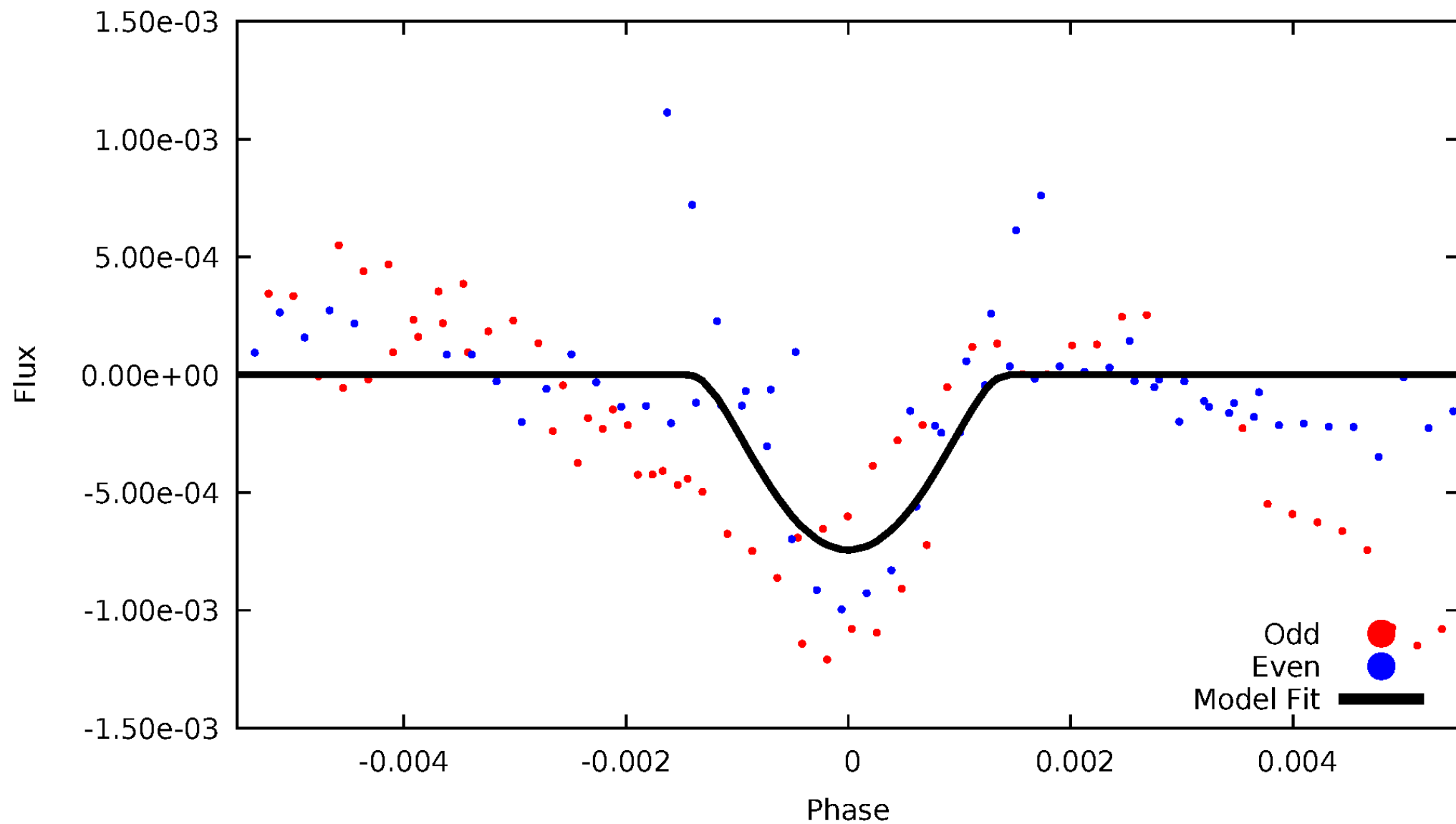


TCE 009764506-03



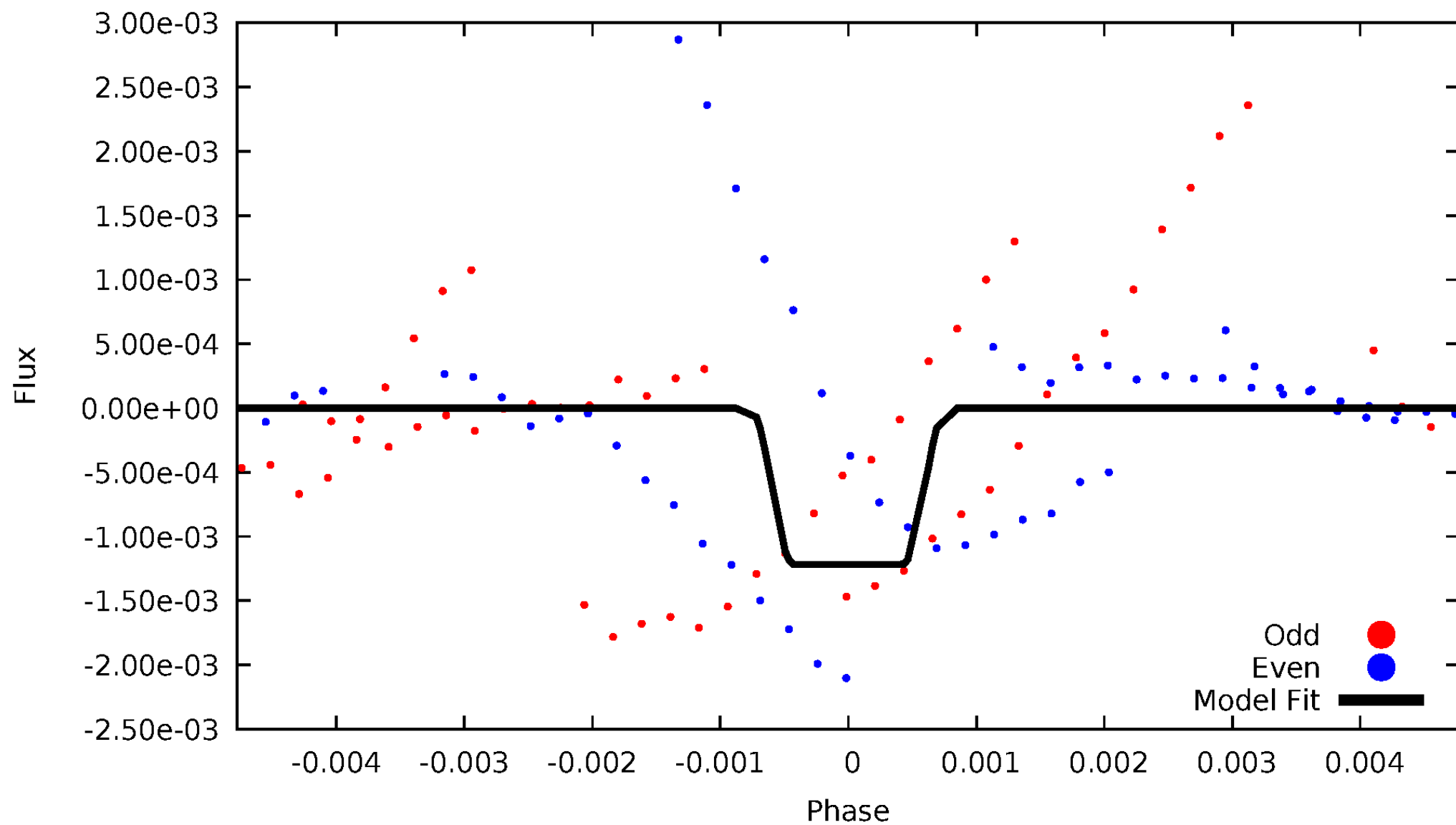
DV Odd/Even

TCE 009764506-03



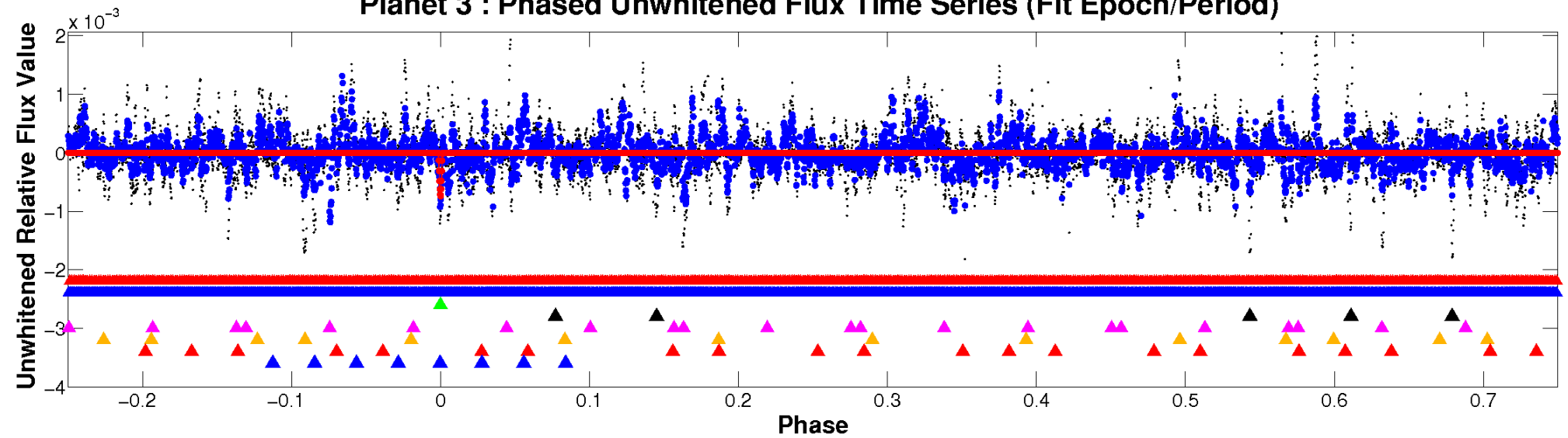
ALT Odd/Even

TCE 009764506-03

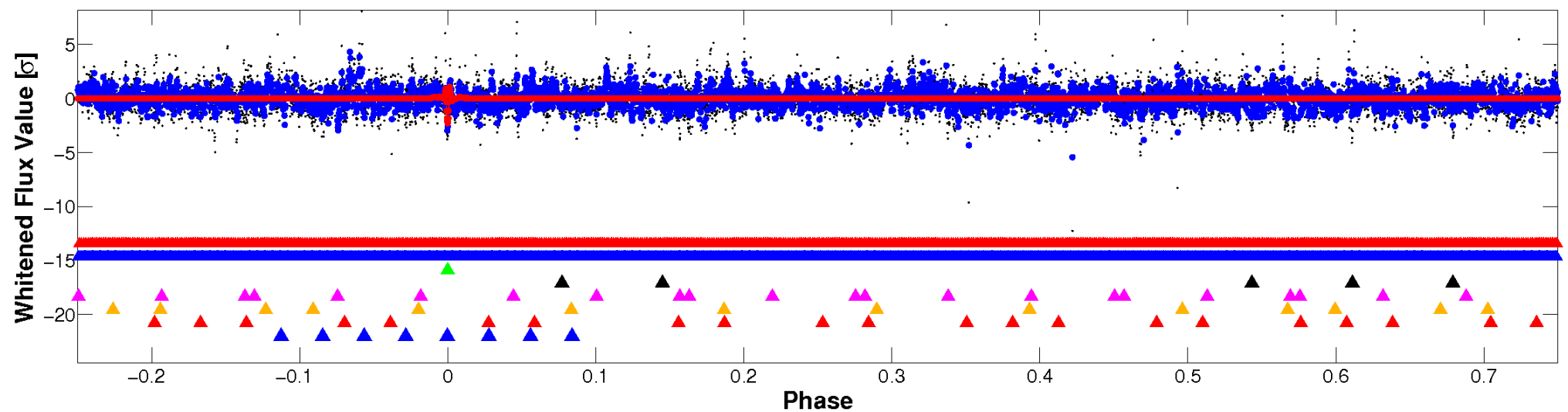


Non-Whitened Vs. Whitened Light Curve

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

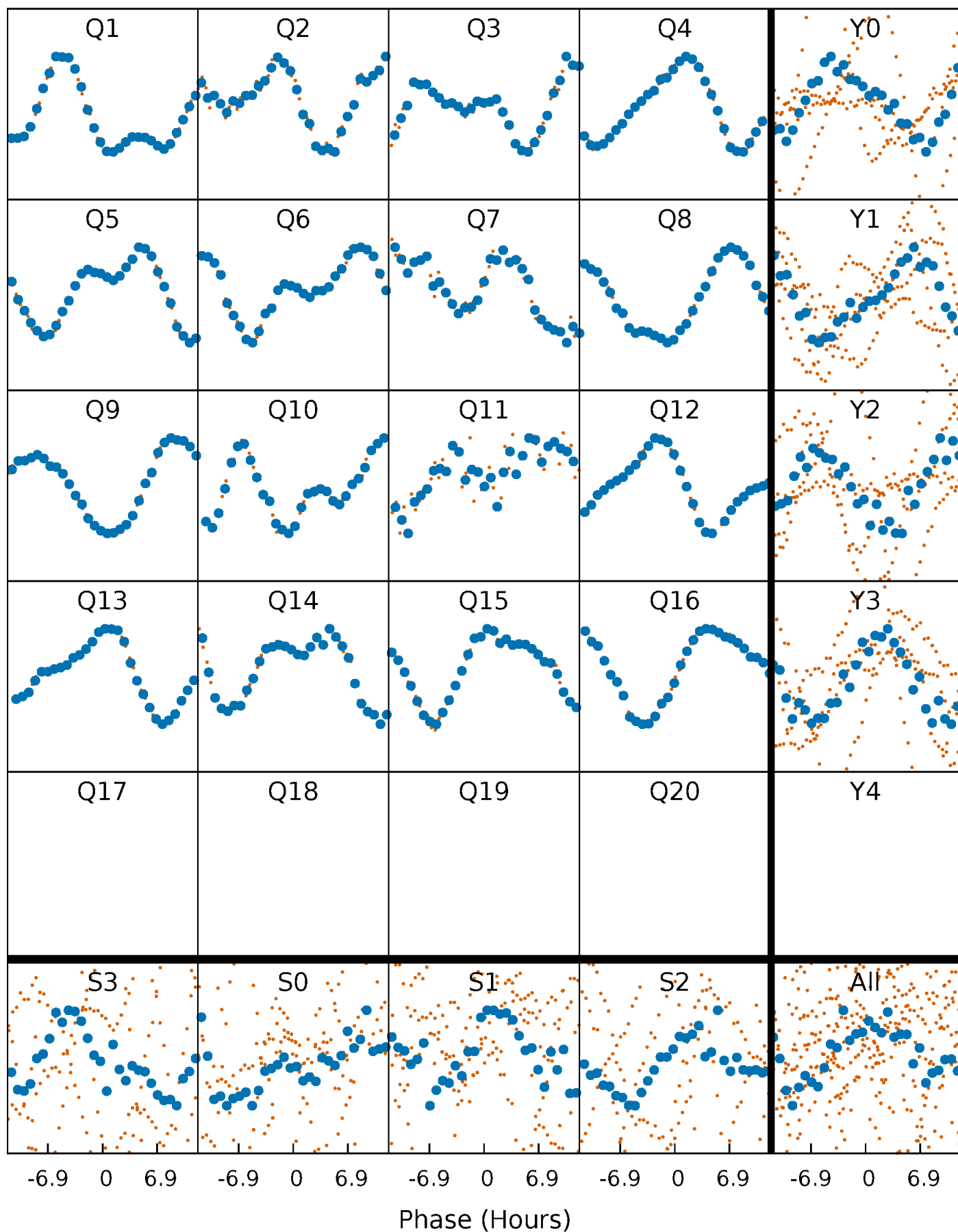


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



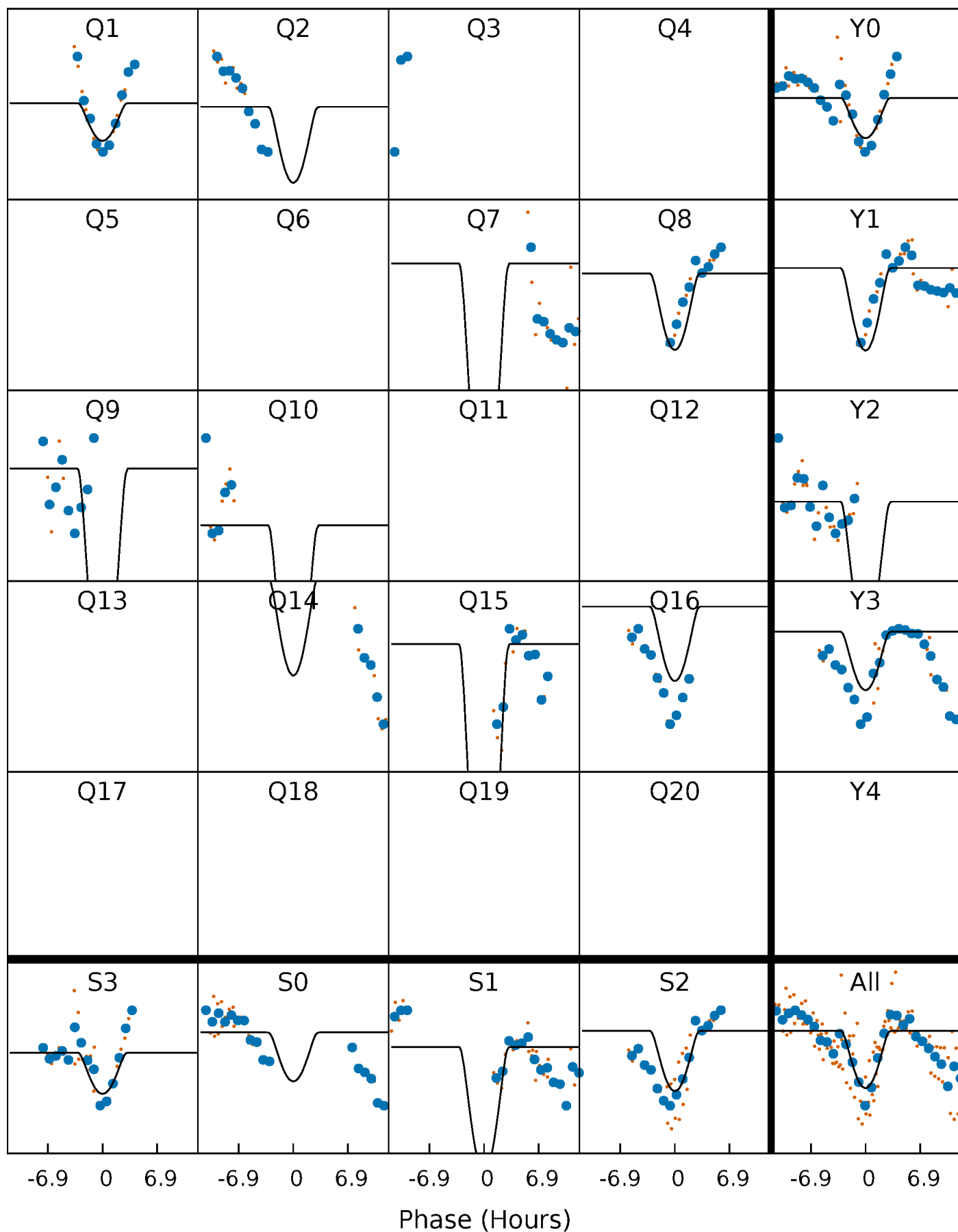
PDC Quarter-Phased Transit Curves

TCE 009764506-03 P= 91.118080 Days $T_0=147.252193$ (BKJD)



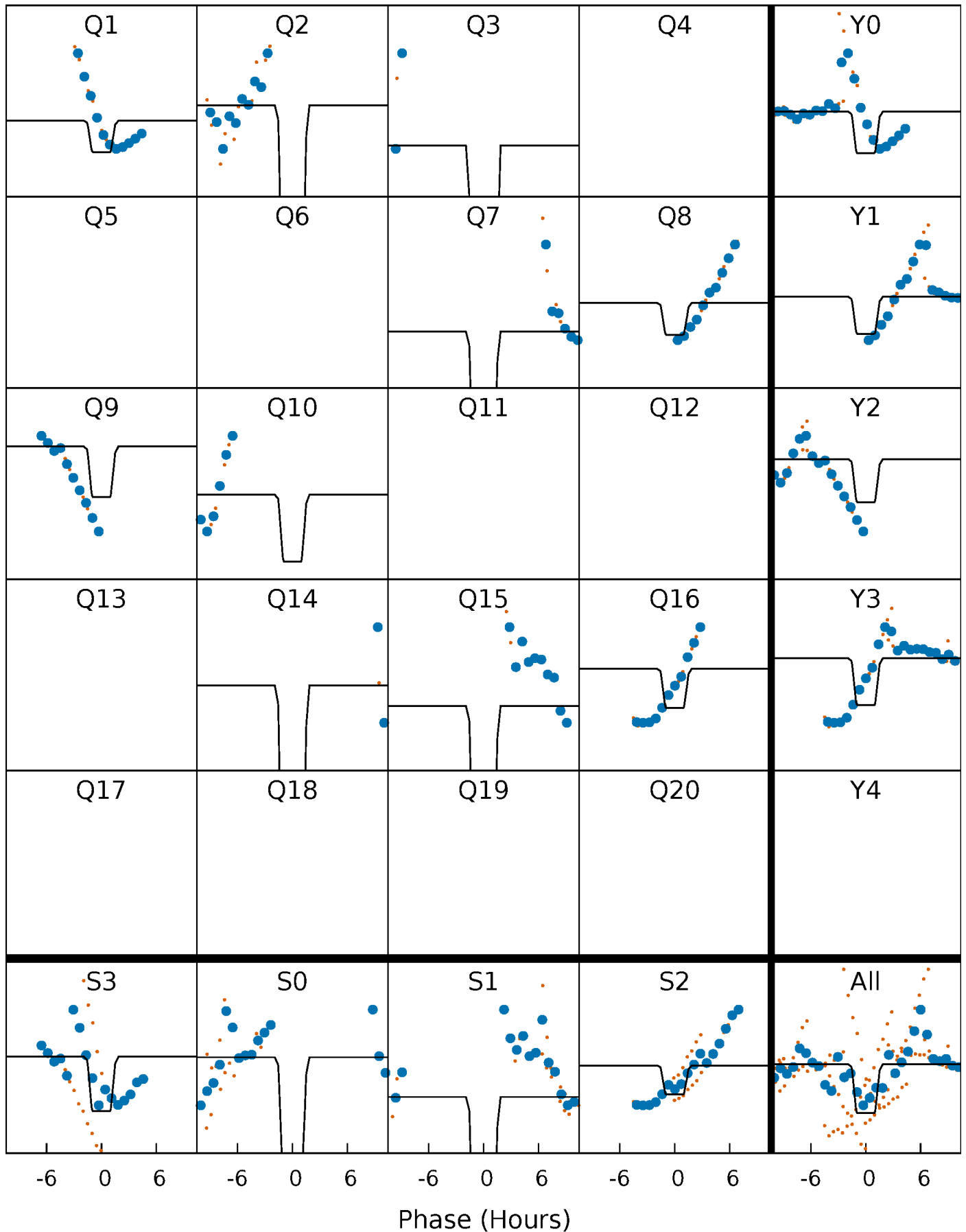
DV Quarter-Phased Transit Curves

TCE 009764506-03 P= 91.118080 Days $T_0=147.252193$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

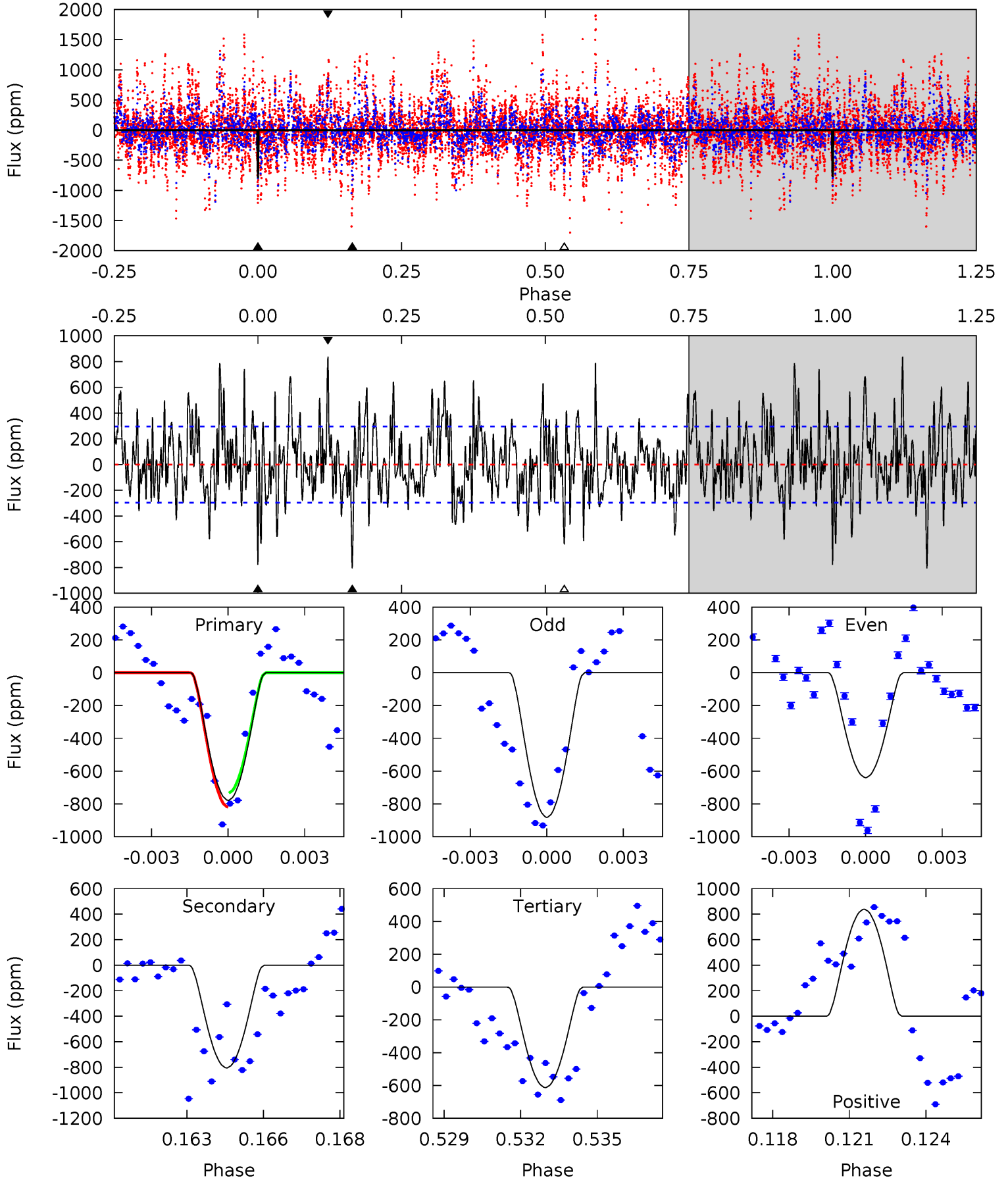
TCE 009764506-03 P= 91.116298 Days $T_0=147.224720$ (BKJD)



DV Model-Shift Uniqueness Test

009764506-03, P = 91.118080 Days, E = 56.134113 Days

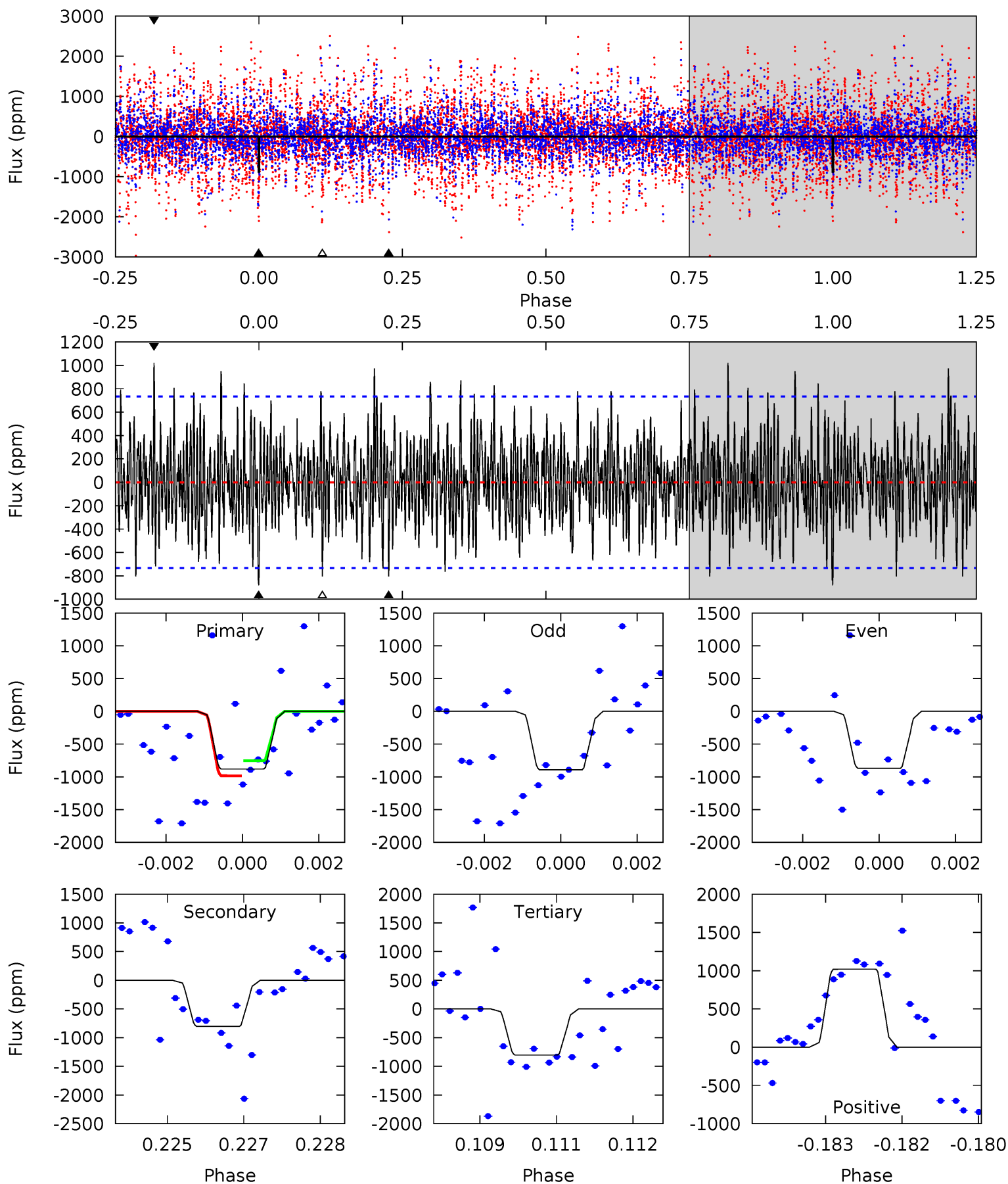
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	14.3	10.9	14.9	5.26	2.97	4.11	2.93	-1.07	3.42	-0.59	2.07	1.12	0.51	0.77



Alt Model-Shift Uniqueness Test

009764506-03, P = 91.116298 Days, E = 56.108422 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.45	5.90	5.89	7.47	5.37	3.17	2.16	0.57	-1.02	0.01	-1.58	0.08	1.05	0.54	0.85



Stellar Parameters For KIC 009764506

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7505^{+209}_{-314}	$3.785^{+0.368}_{-0.092}$	$0.000^{+0.200}_{-0.350}$	$2.989^{+0.425}_{-1.275}$	$1.984^{+0.088}_{-0.500}$	$0.105^{+0.310}_{-0.030}$
	+3%/-4%	+10%/-2%	+inf%/-inf%	+14%/-43%	+4%/-25%	+296%/-29%
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 009764506-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-805 ± 56	$26.19^{+24.72}_{-17.53}$	1102^{+80}_{-115}	4362^{+3028}_{-858}	158^{+1288}_{-116}
Alt.	-805 ± 137	$22.72^{+24.23}_{-16.25}$	1101^{+76}_{-116}	4586^{+3990}_{-1009}	201^{+2141}_{-152}

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 $A_{obs} \gg 1.0$

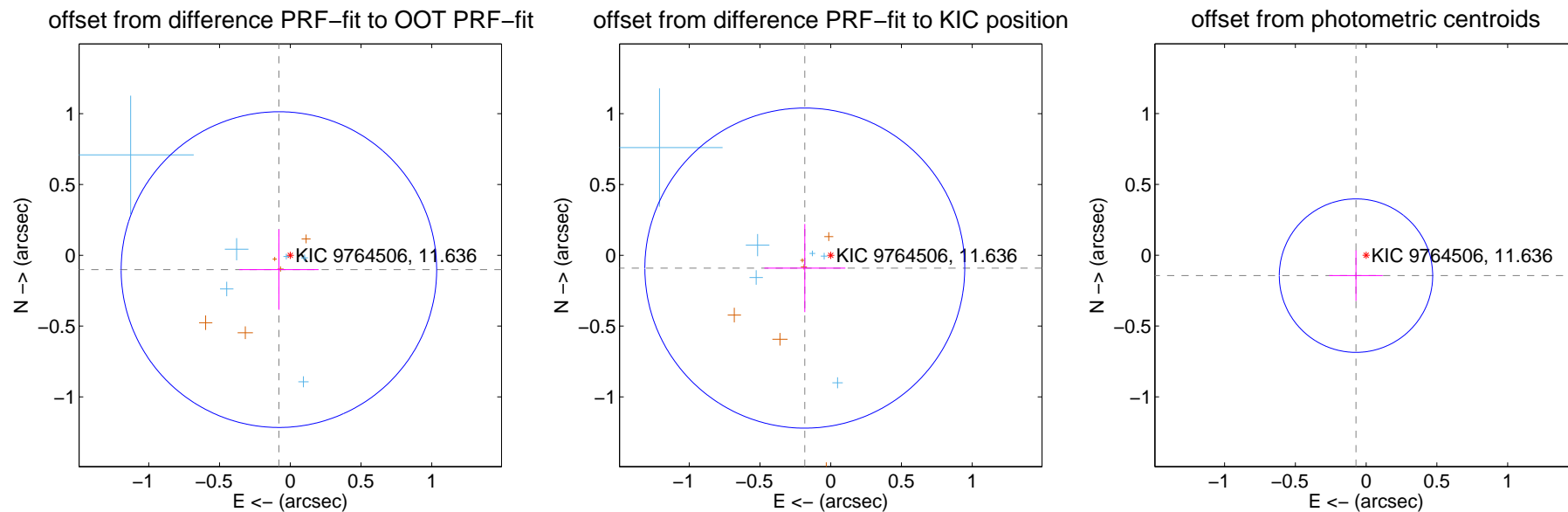
DV Centroid Data

Supplemental centroid analysis for 009764506-03. **Kepler magnitude: 11.64.** Transit SNR 9.39

There are 7 quarters with good PRF difference image offsets

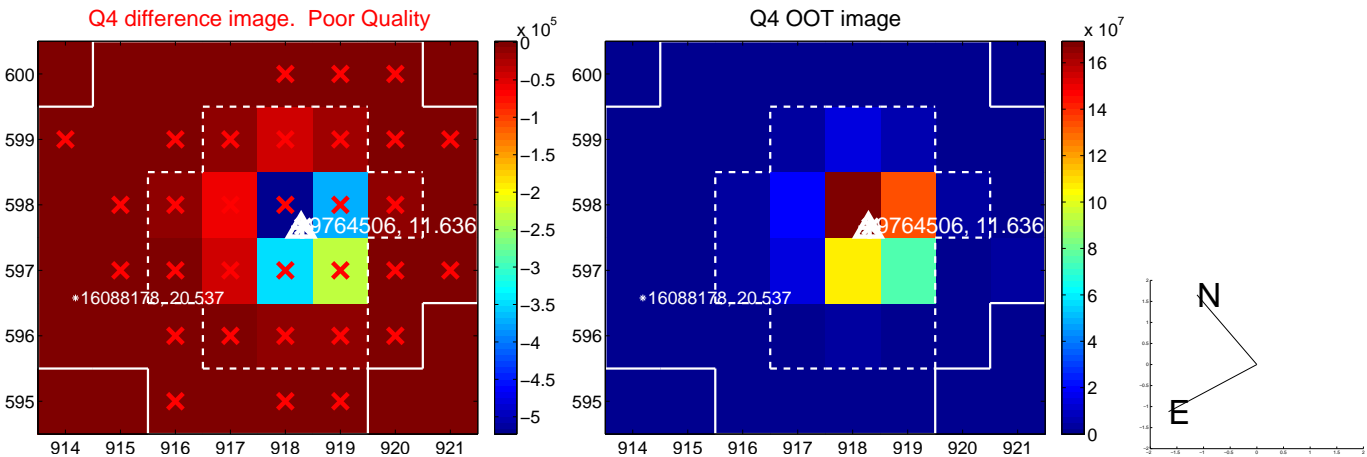
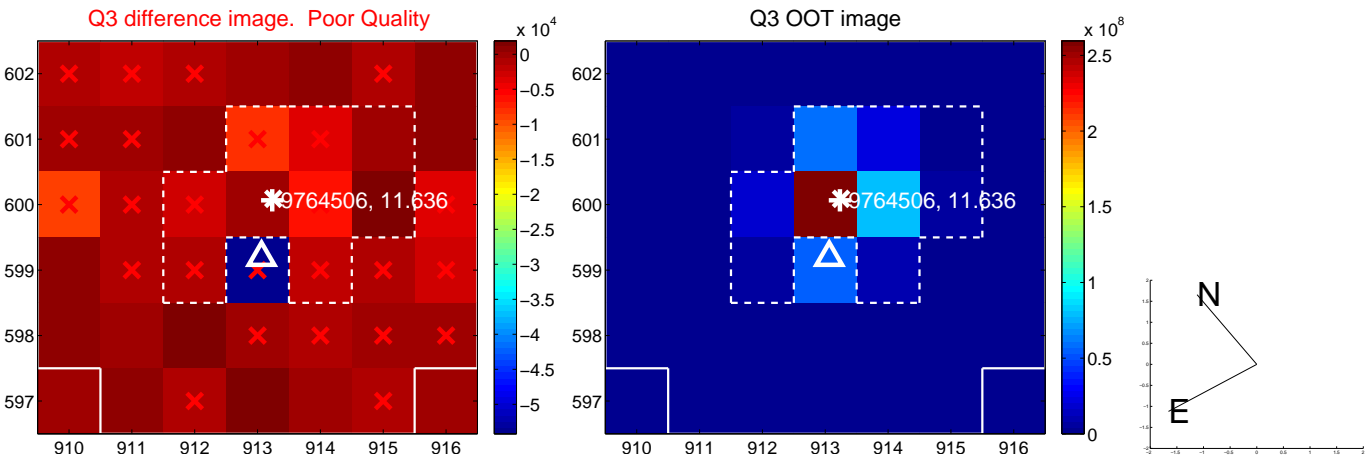
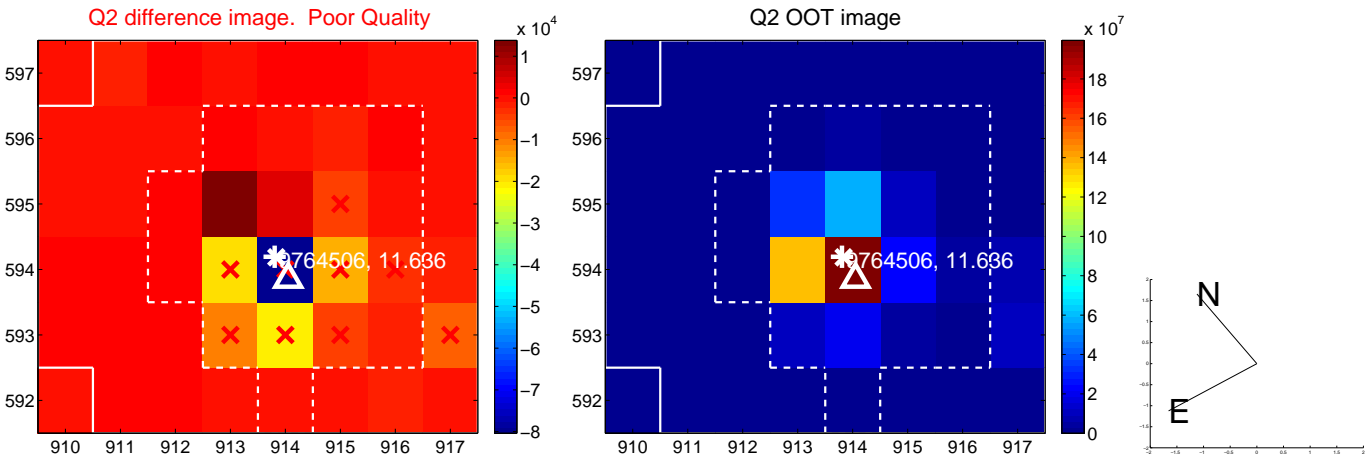
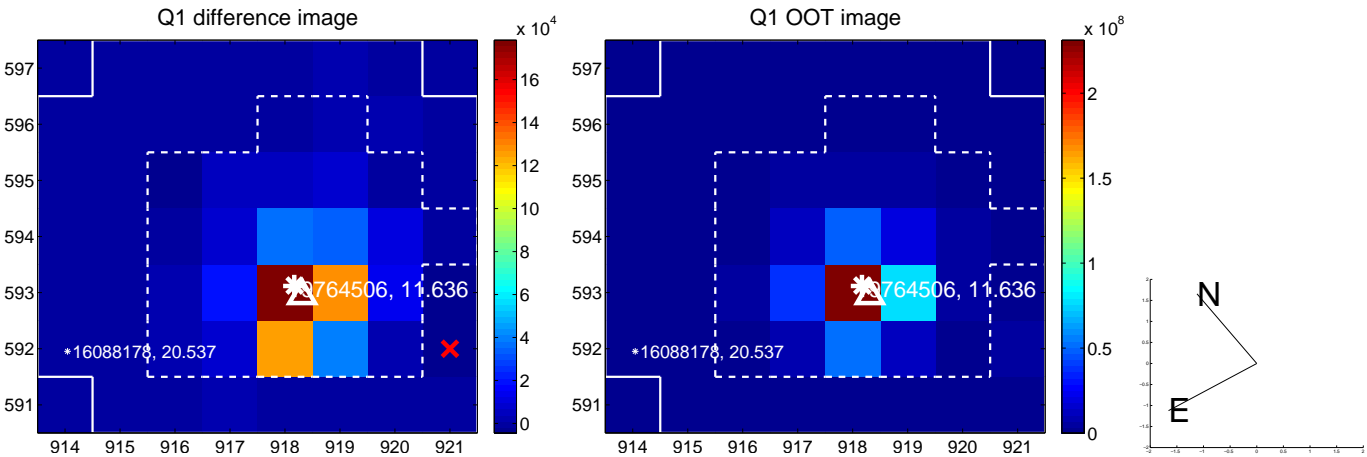
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.129 ± 0.372	0.35	0.080 ± 0.280	-0.101 ± 0.284
PRF-fit source offset from KIC position	0.204 ± 0.377	0.54	0.183 ± 0.286	-0.090 ± 0.311
photometric centroid source offset	0.16 ± 0.18	0.89	0.07 ± 0.19	-0.14 ± 0.18

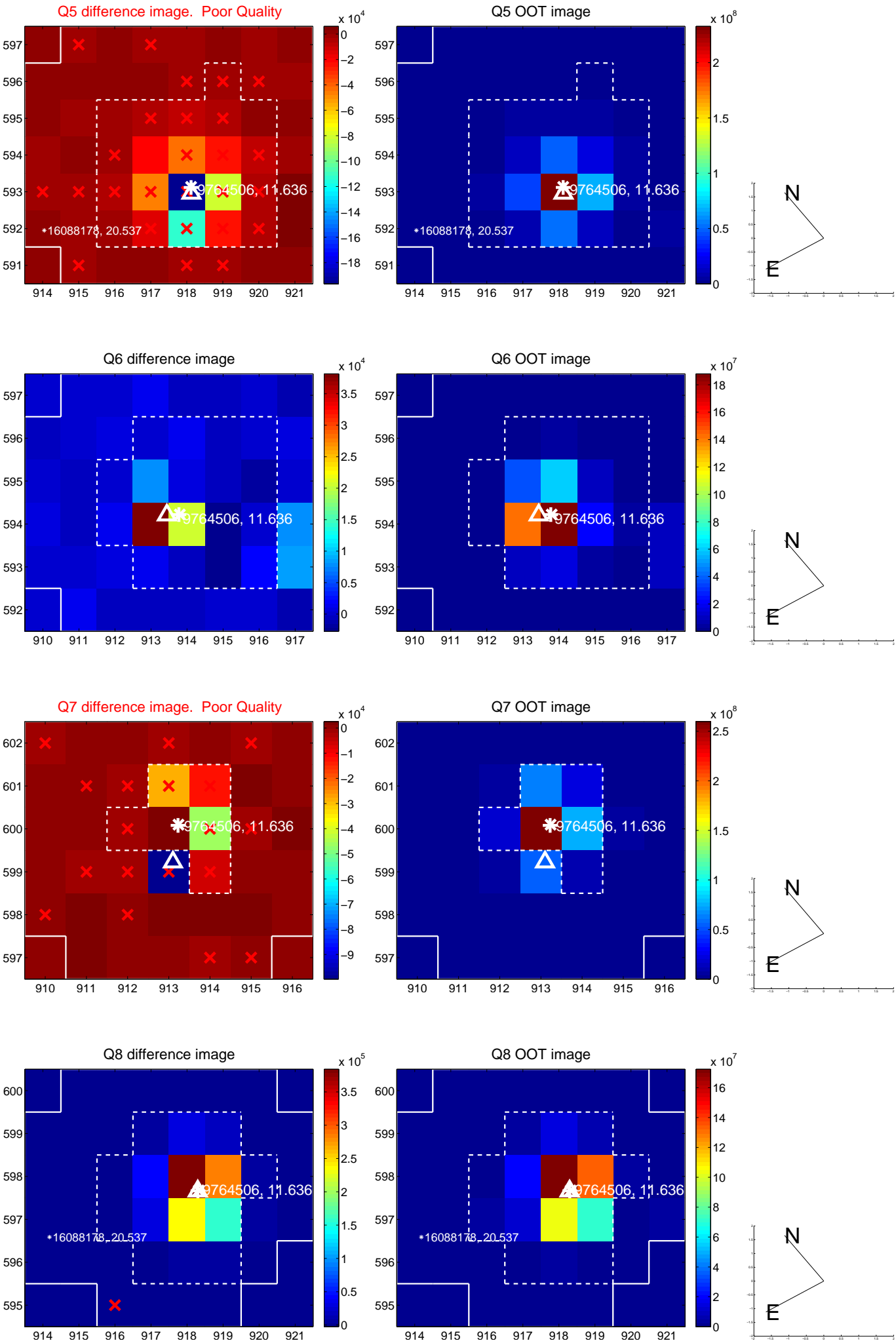


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

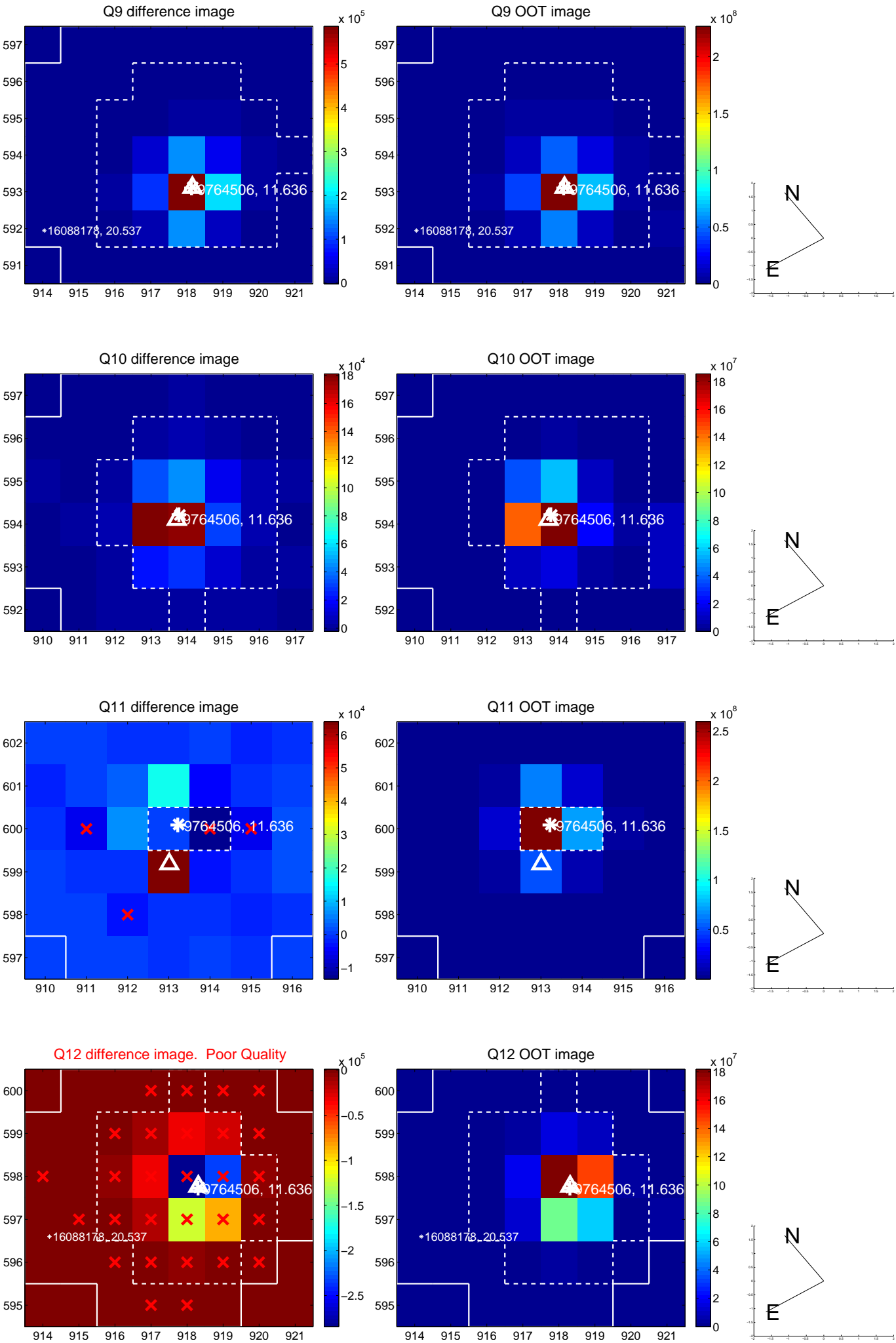
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



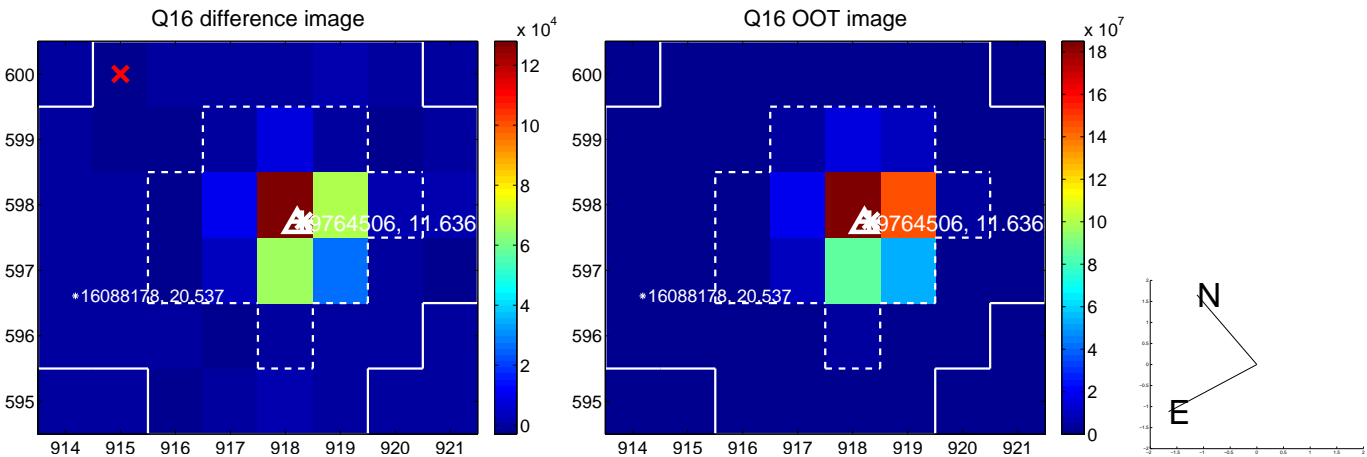
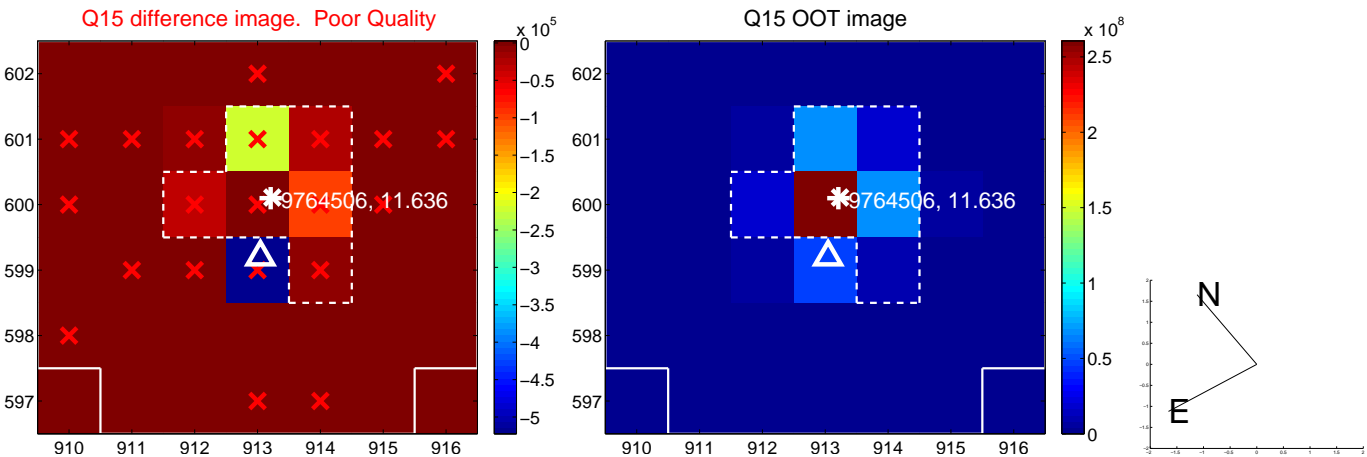
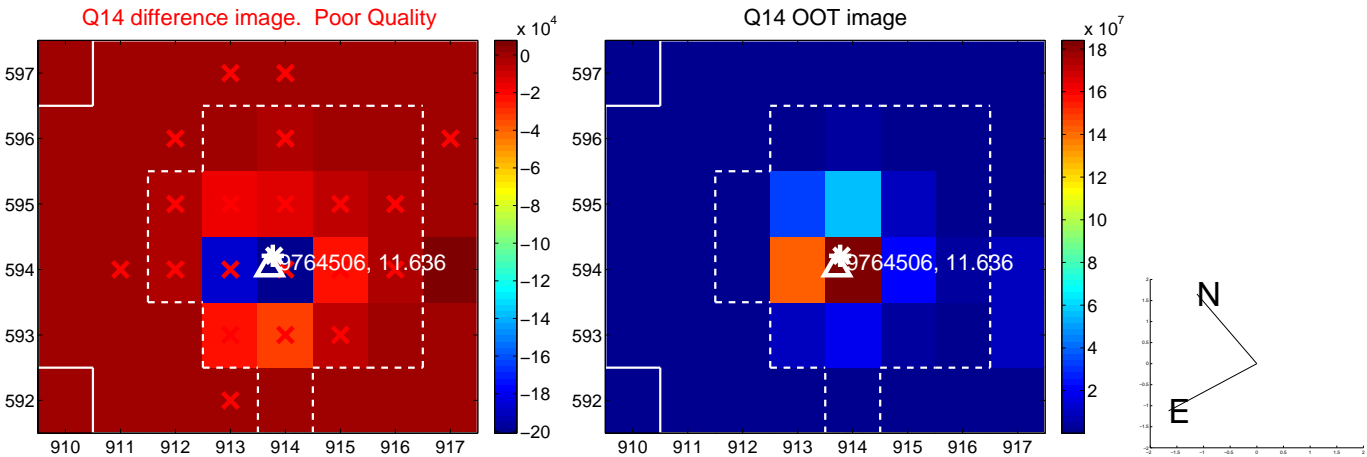
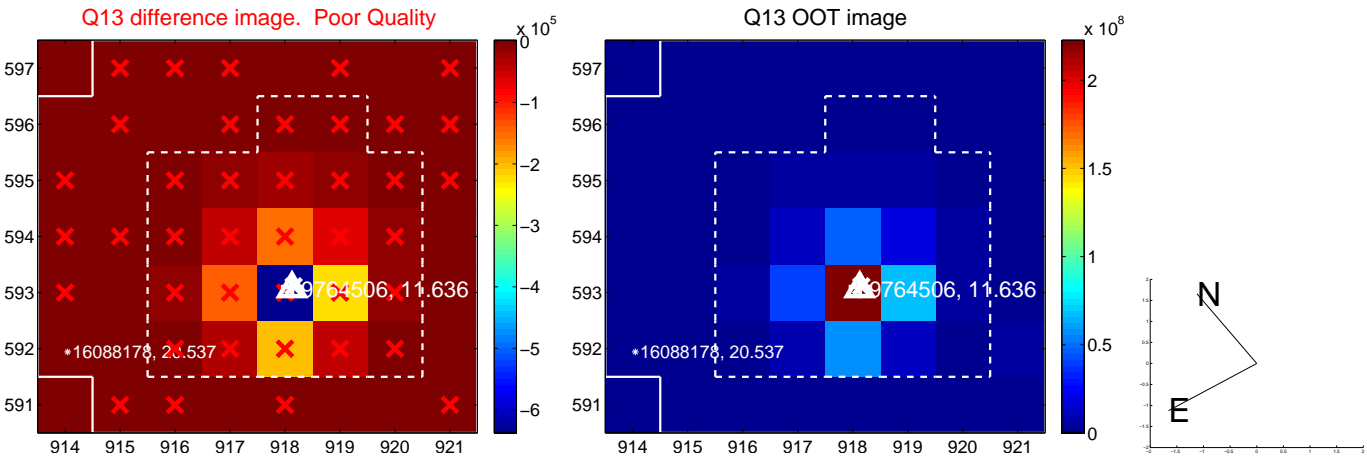
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



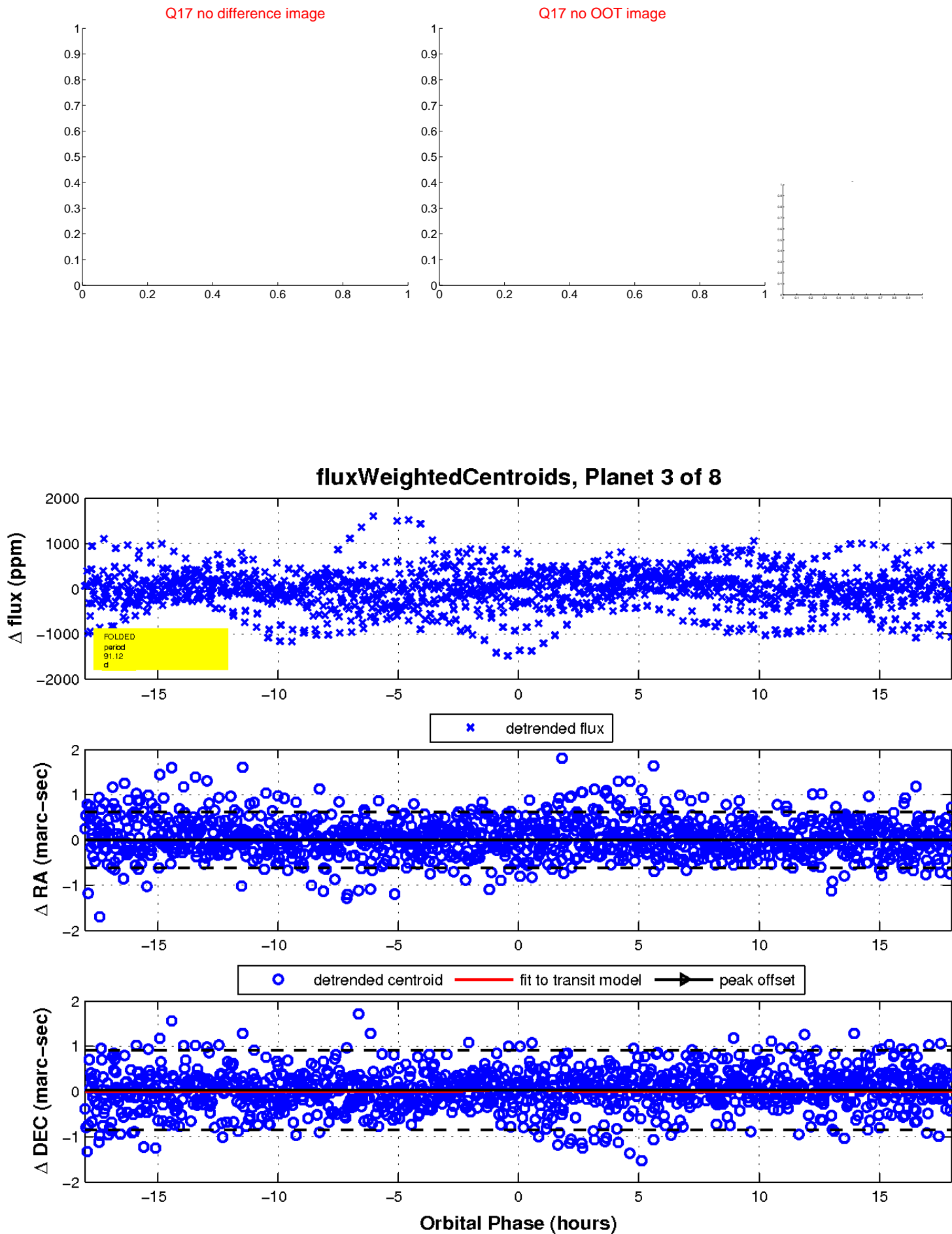
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

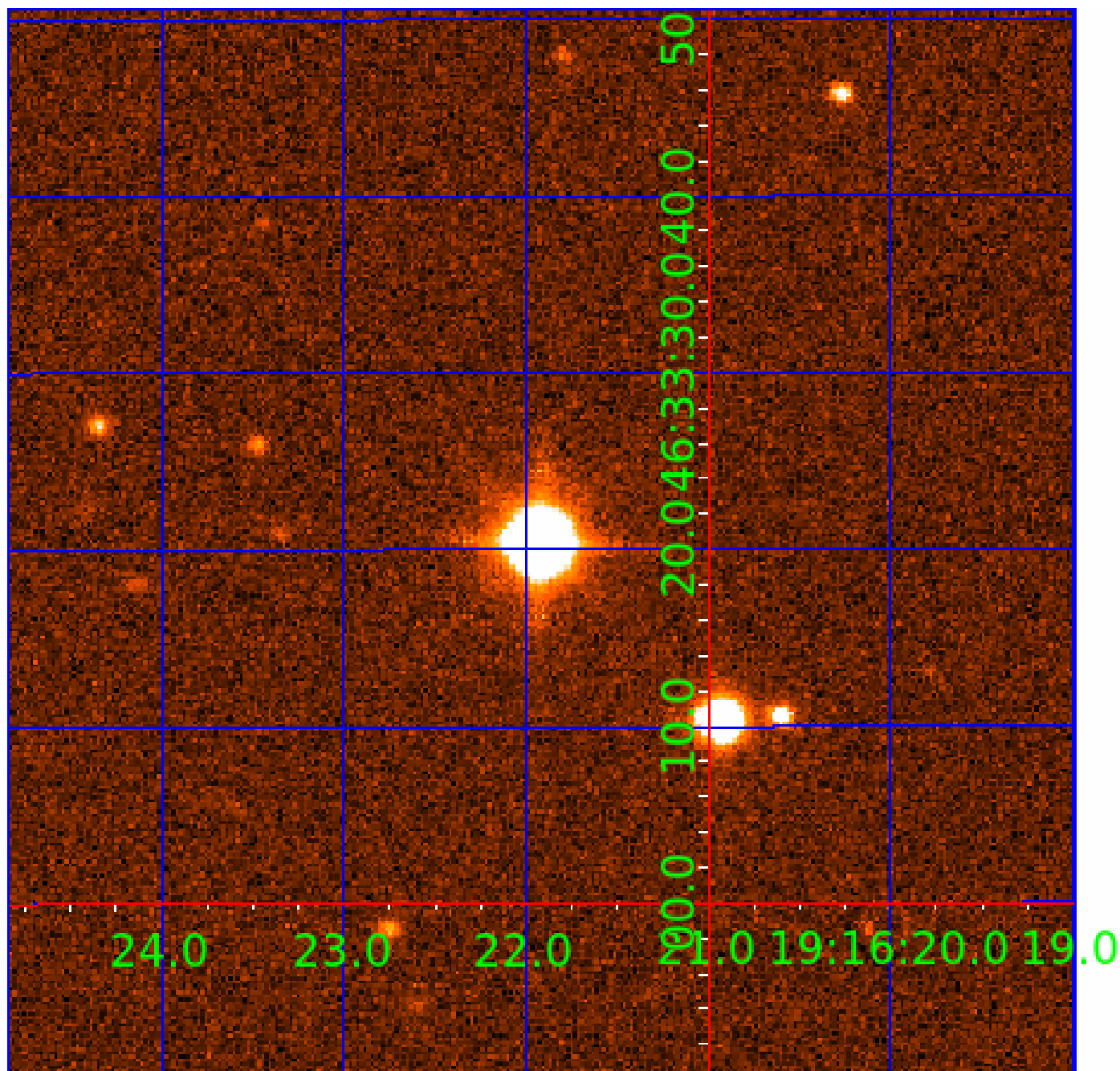


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009764506

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})
009764506-01	OBS	No	2.064565	131.874332	39.6	5.034	12.3	8.6	2.99	7505	2.20	15954.25
009764506-02	OBS	No	1.032238	132.287769	22.1	5.573	9.8	5.8	2.99	7505	1.49	40204.48
009764506-03	OBS	No	91.118080	147.252193	744.2	6.013	11.0	9.4	2.99	7505	15.24	102.29
009764506-04	OBS	No	322.006015	287.873338	1179.0	8.680	10.8	10.6	2.99	7505	18.52	19.00
009764506-05	OBS	No	64.352992	188.301458	702.9	6.201	10.5	9.1	2.99	7505	14.84	162.64
009764506-06	OBS	No	100.521220	198.962913	1226.9	10.941	10.5	11.1	2.99	7505	19.30	89.74
009764506-07	OBS	No	70.555710	134.858518	676.9	6.643	9.6	8.9	2.99	7505	9.62	143.86
009764506-08	OBS	No	179.677589	246.024579	556.7	5.342	9.2	8.3	2.99	7505	7.53	41.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009764506-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009764506-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009764506-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT
009764506-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

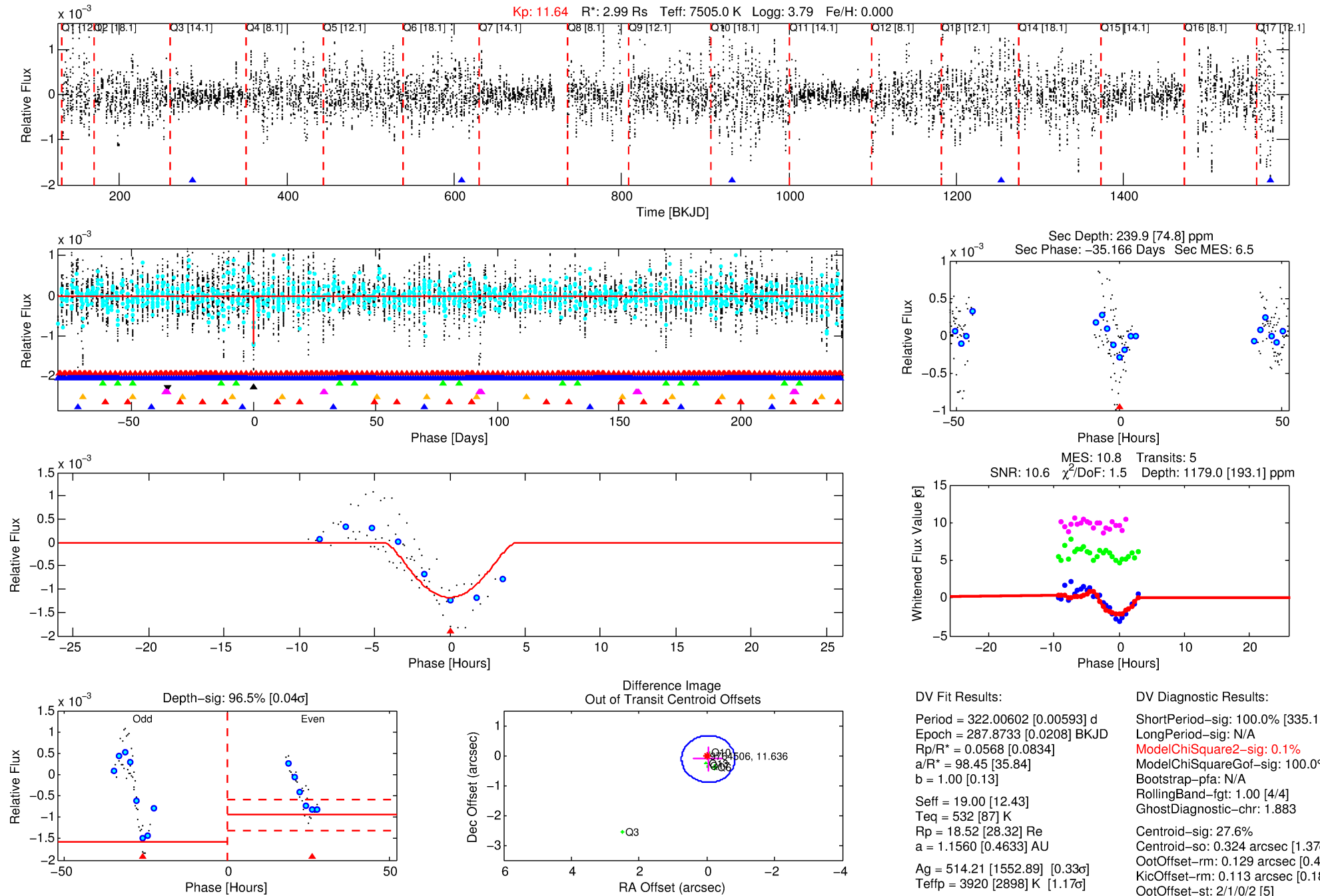
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009764506-04

No Significant Match Found

DV One-Page Summary

KIC: 9764506 Candidate: 4 of 8 Period: 322.006 d



DV Fit Results:

Period = 322.00602 [0.00593] d
Epoch = 287.8733 [0.0208] BKJD
Rp/R* = 0.0568 [0.0834]
a/R* = 98.45 [35.84]
b = 1.00 [0.13]
Seff = 19.00 [12.43]
Teq = 532 [87] K
Rp = 18.52 [28.32] Re
a = 1.1560 [0.4633] AU
Ag = 514.21 [1552.89] [0.33σ]
Teffp = 3920 [2898] K [1.17σ]

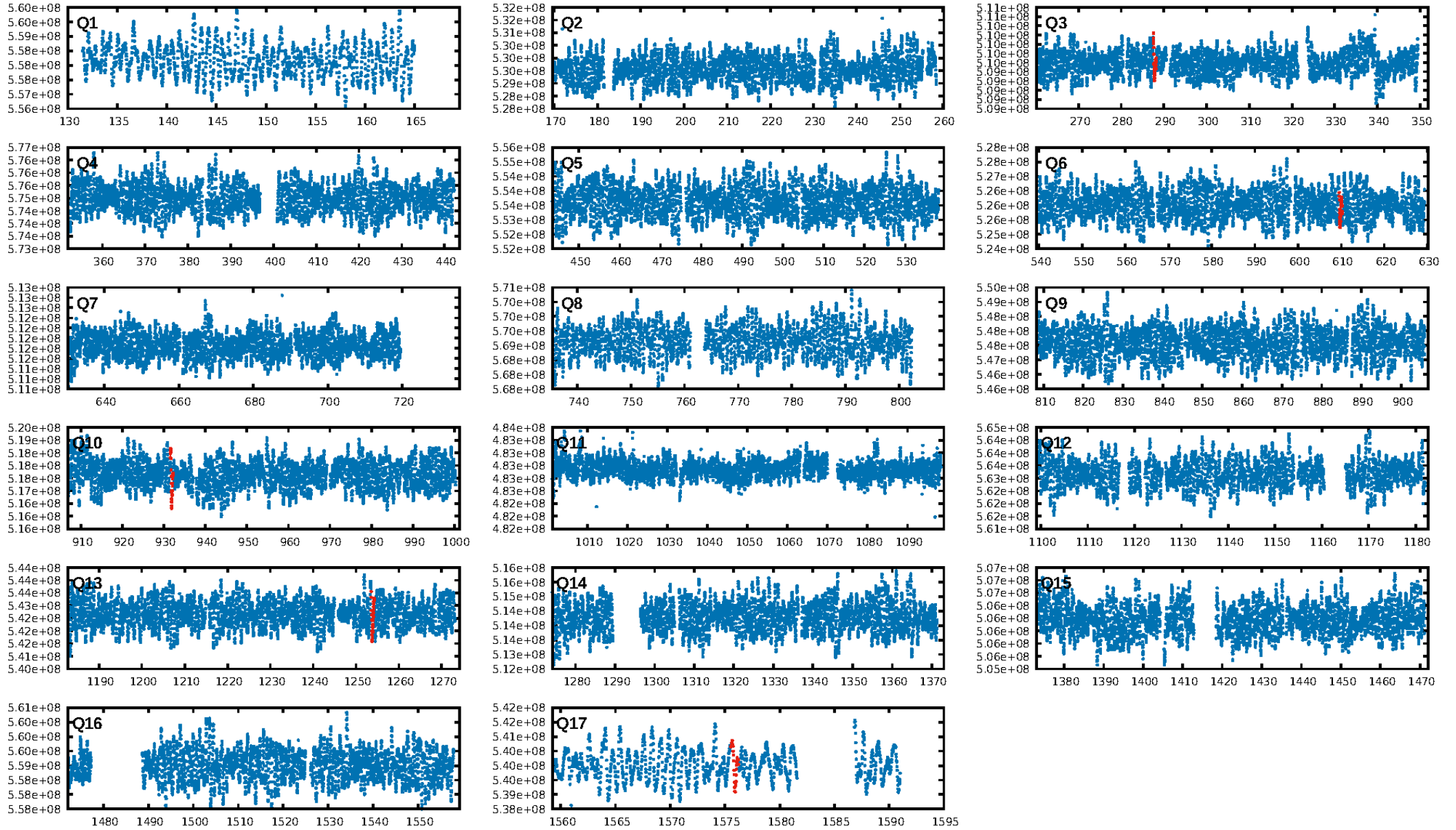
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [335.15σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.883
Centroid-sig: 27.6%
Centroid-so: 0.324 arcsec [1.37σ]
OotOffset-rm: 0.129 arcsec [0.49σ]
KicOffset-rm: 0.113 arcsec [0.18σ]
OotOffset-st: 2/1/0/2 [5]
KicOffset-st: 2/1/0/2 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 0.00 [0/5]

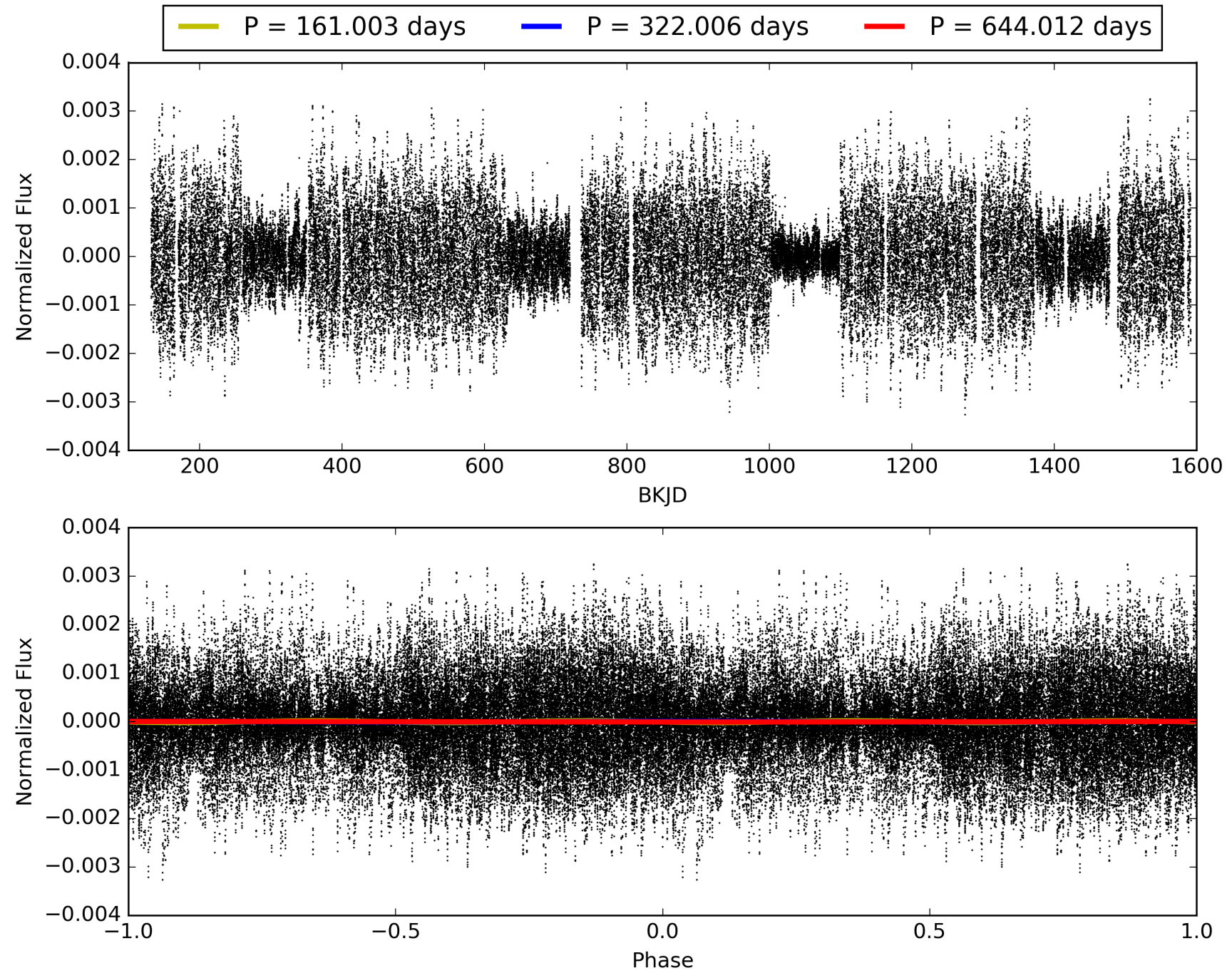
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009764506-04, PDC Light Curves

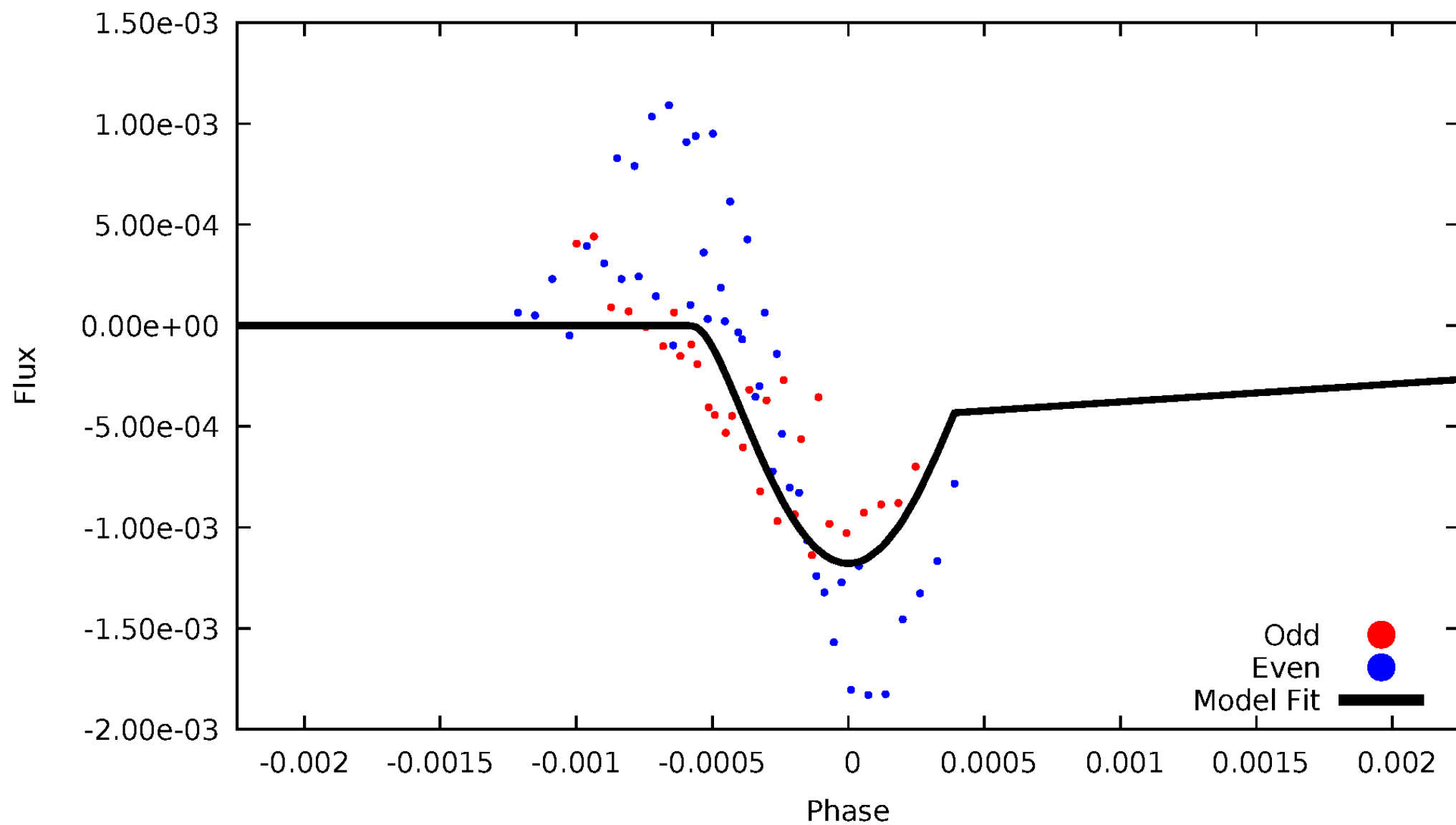


TCE 009764506-04



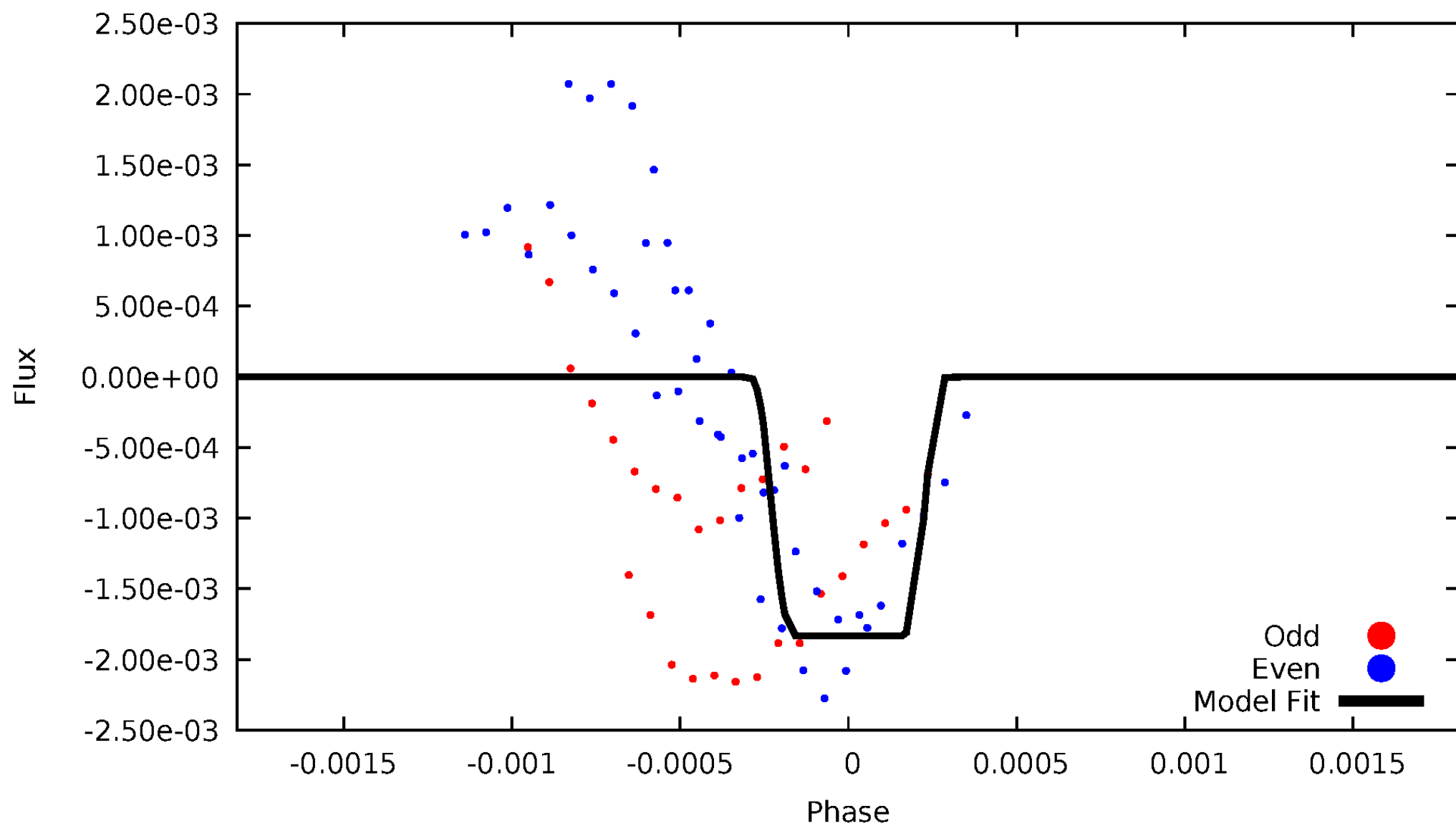
DV Odd/Even

TCE 009764506-04



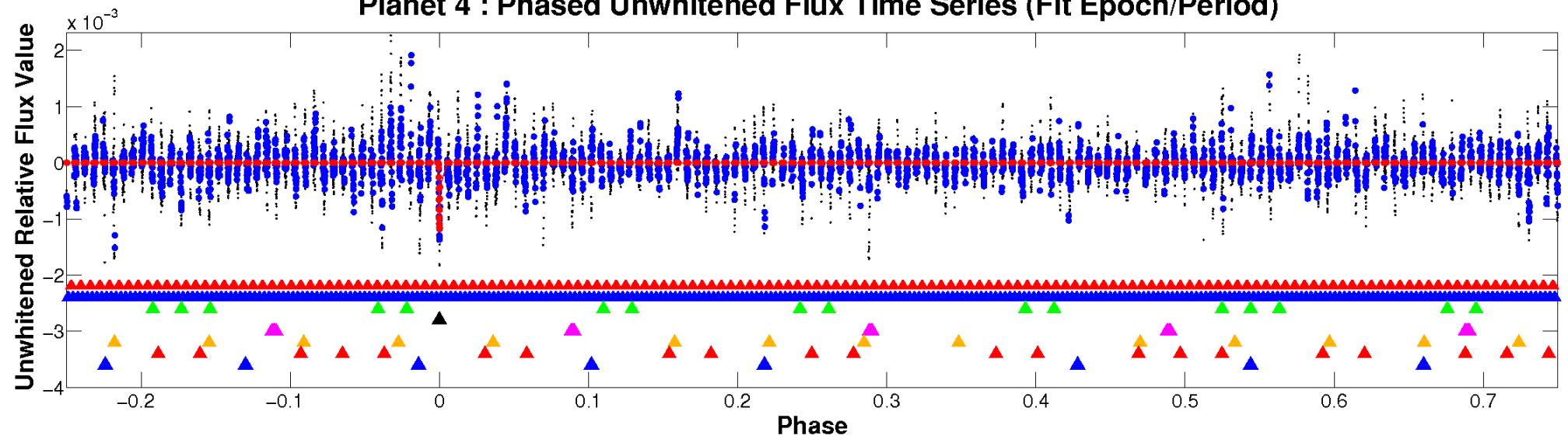
ALT Odd/Even

TCE 009764506-04

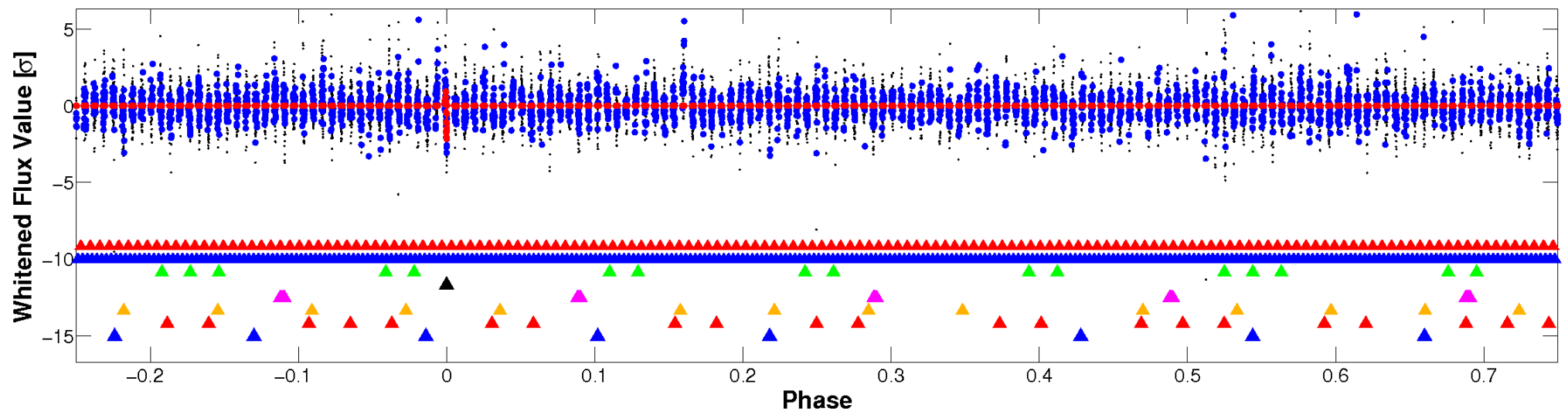


Non-Whitened Vs. Whitened Light Curve

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

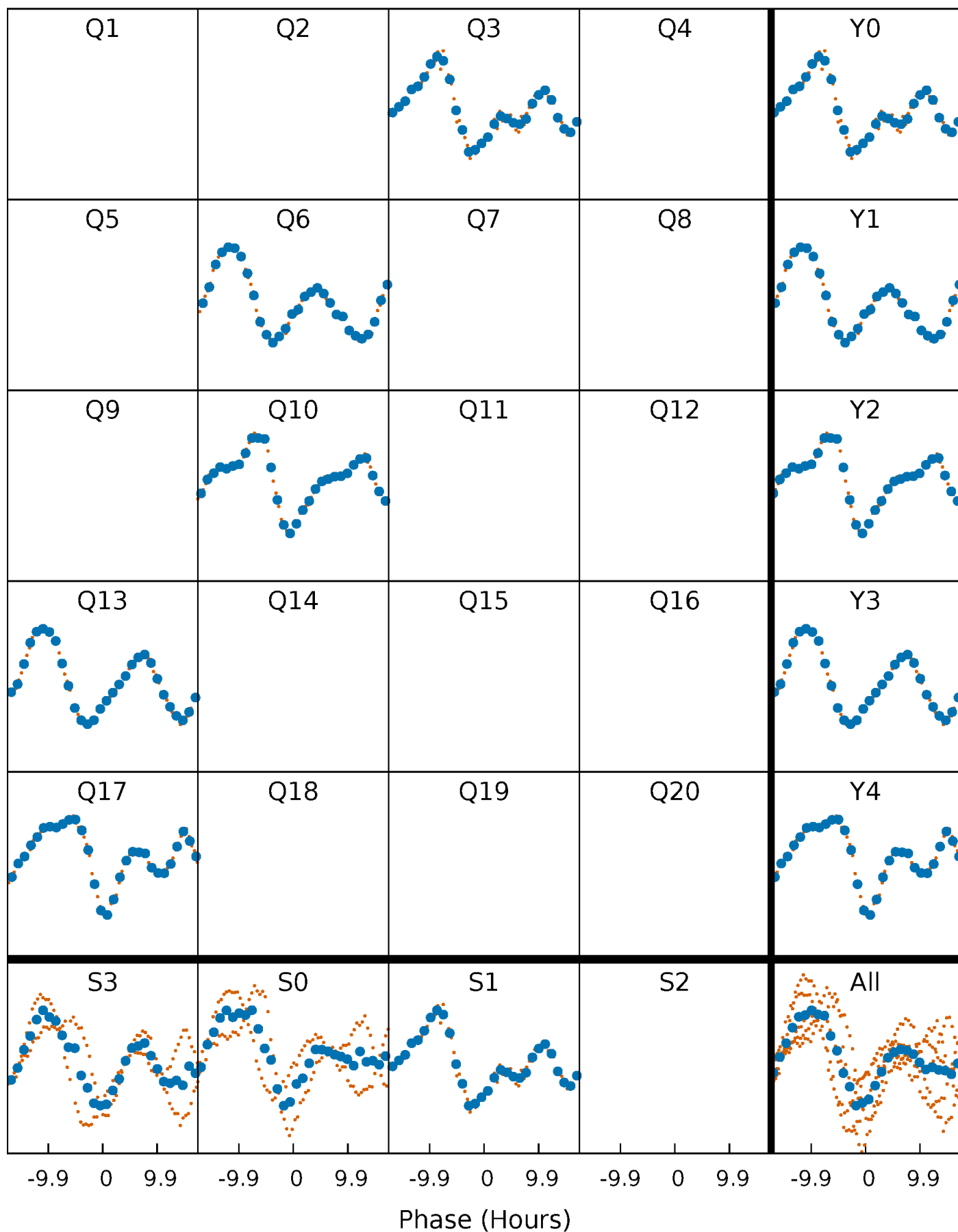


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



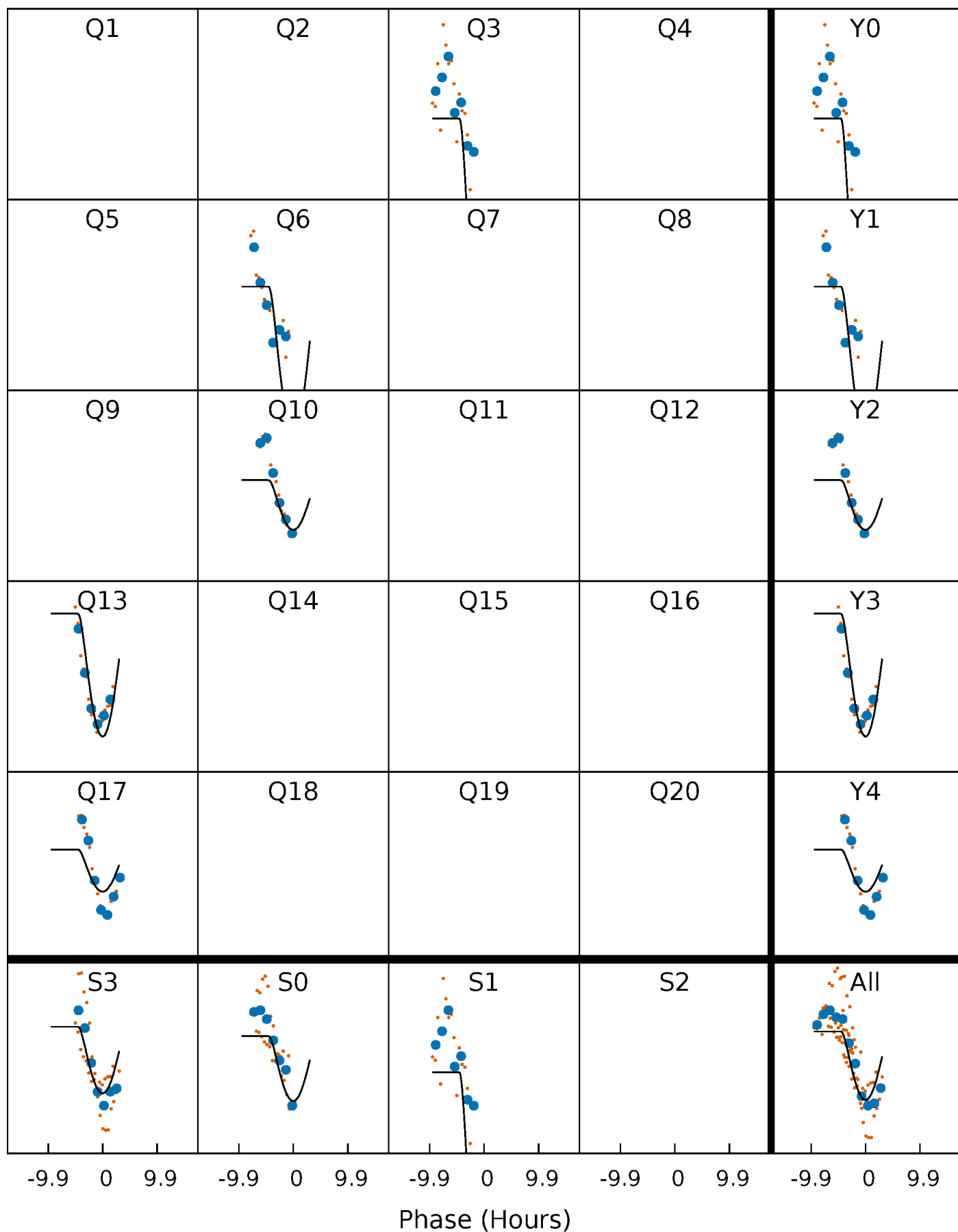
PDC Quarter-Phased Transit Curves

TCE 009764506-04 P=322.006015 Days $T_0=287.873338$ (BKJD)



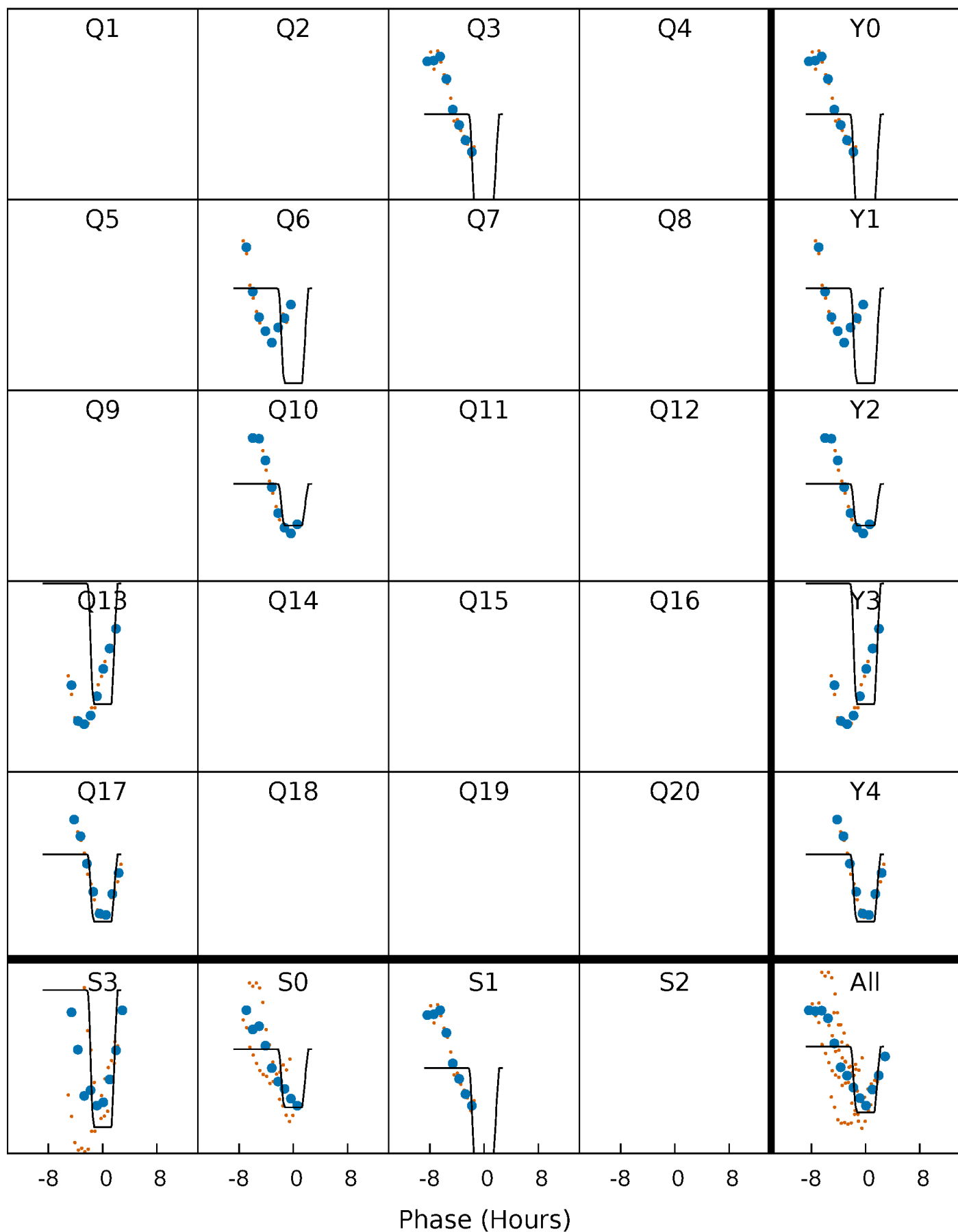
DV Quarter-Phased Transit Curves

TCE 009764506-04 P=322.006015 Days $T_0=287.873338$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

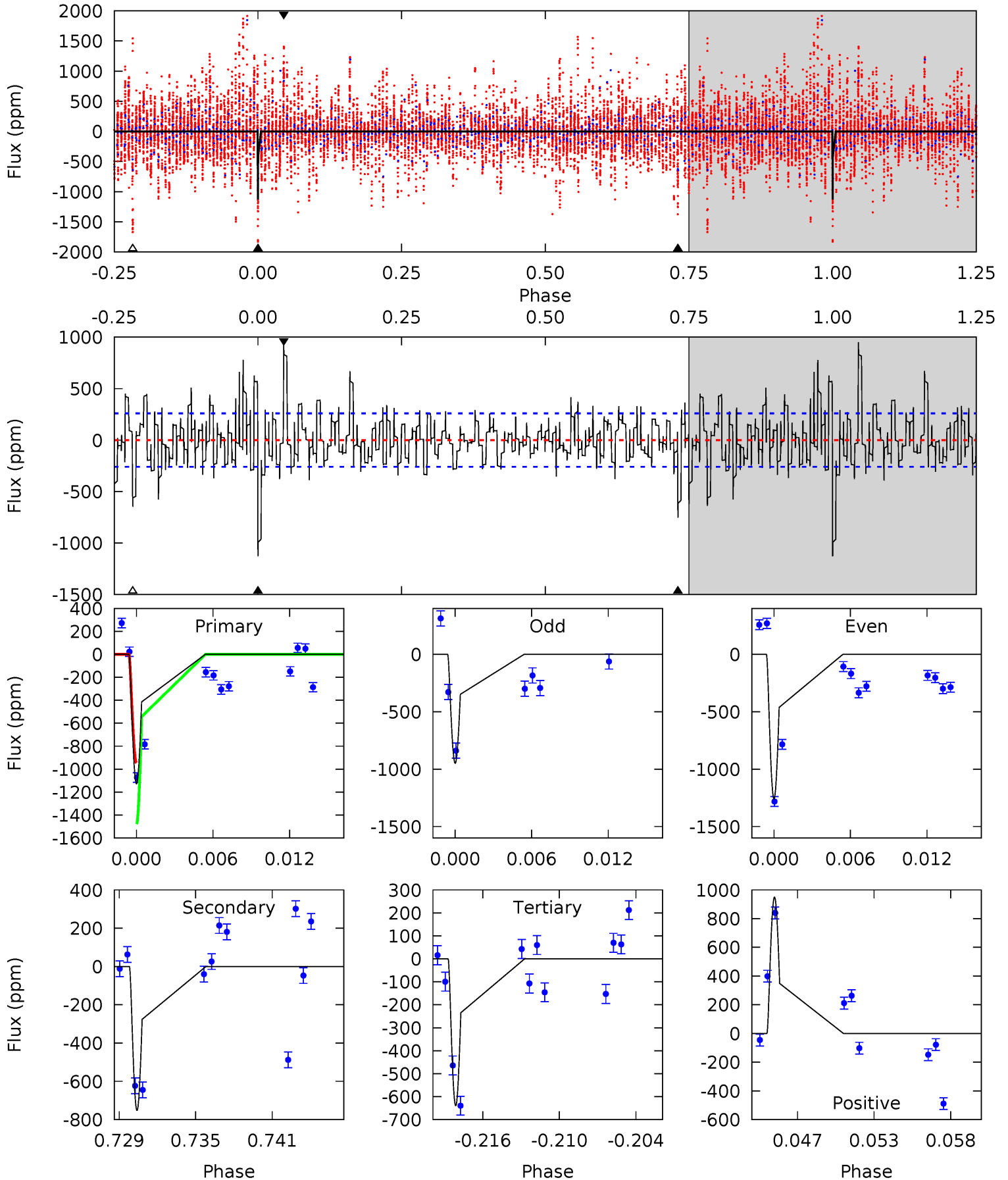
TCE 009764506-04 P=322.015218 Days $T_0=287.849363$ (BKJD)



DV Model-Shift Uniqueness Test

009764506-04, P = 322.006015 Days, E = 287.873338 Days

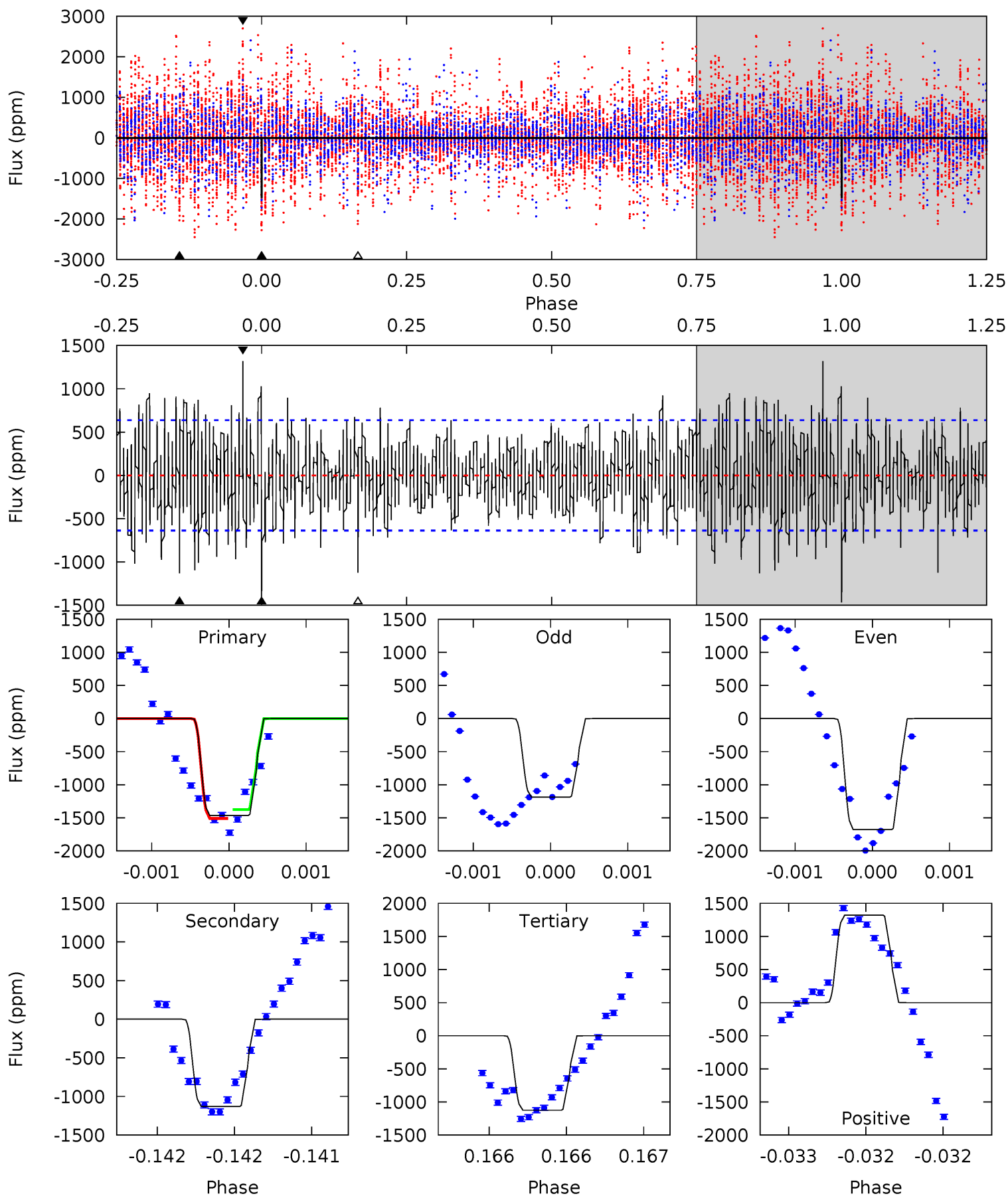
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.3	14.9	12.6	18.8	5.13	2.76	3.88	9.68	3.53	2.24	-3.91	3.02	0.83	0.46	4.75



Alt Model-Shift Uniqueness Test

009764506-04, P = 322.015218 Days, E = 287.849363 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	9.80	9.75	11.5	5.53	3.42	3.15	2.95	1.25	0.04	-1.66	2.07	0.88	0.47	0.57



Stellar Parameters For KIC 009764506

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7505^{+209}_{-314}	$3.785^{+0.368}_{-0.092}$	$0.000^{+0.200}_{-0.350}$	$2.989^{+0.425}_{-1.275}$	$1.984^{+0.088}_{-0.500}$	$0.105^{+0.310}_{-0.030}$
	+3%/-4%	+10%/-2%	+inf%/-inf%	+14%/-43%	+4%/-25%	+296%/-29%
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 009764506-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-752 ± 51	$23.10^{+22.62}_{-15.19}$	722^{+49}_{-79}	4568^{+2755}_{-967}	983^{+7169}_{-725}
Alt.	-1129 ± 115	$21.21^{+21.26}_{-14.56}$	722^{+52}_{-82}	5049^{+4341}_{-1074}	1814^{+15449}_{-1346}

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 $A_{obs} \gg 1.0$

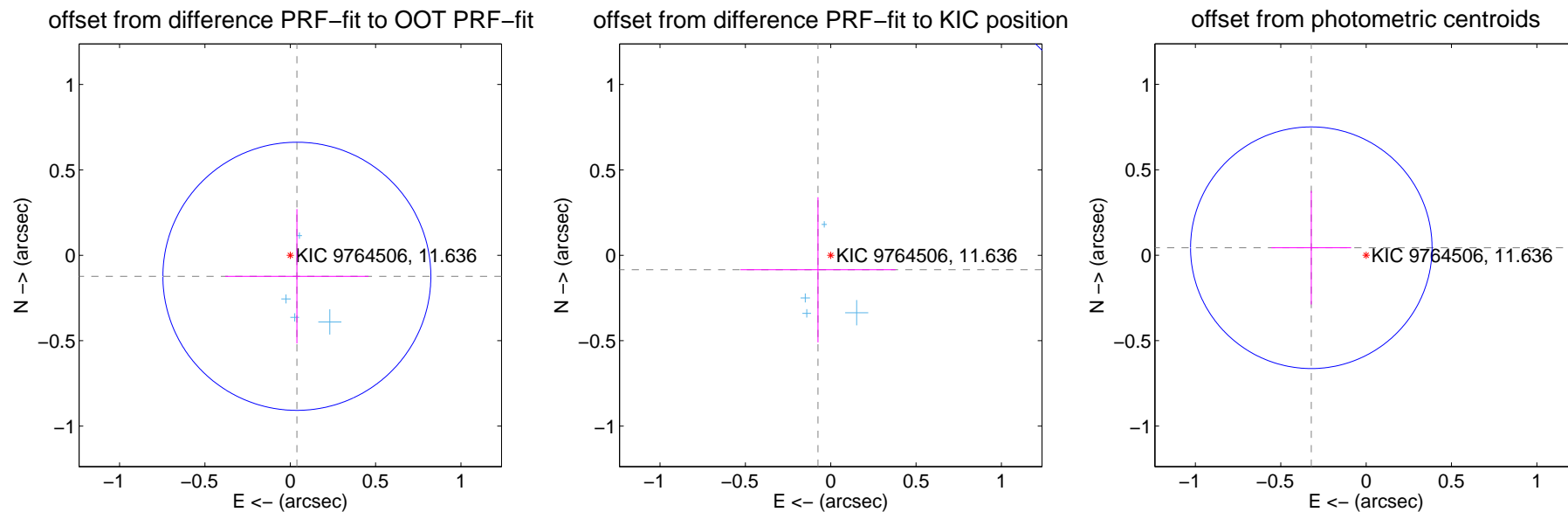
DV Centroid Data

Supplemental centroid analysis for 009764506-04. **Kepler magnitude: 11.64.** Transit SNR 10.63

There are 5 quarters with good PRF difference image offsets

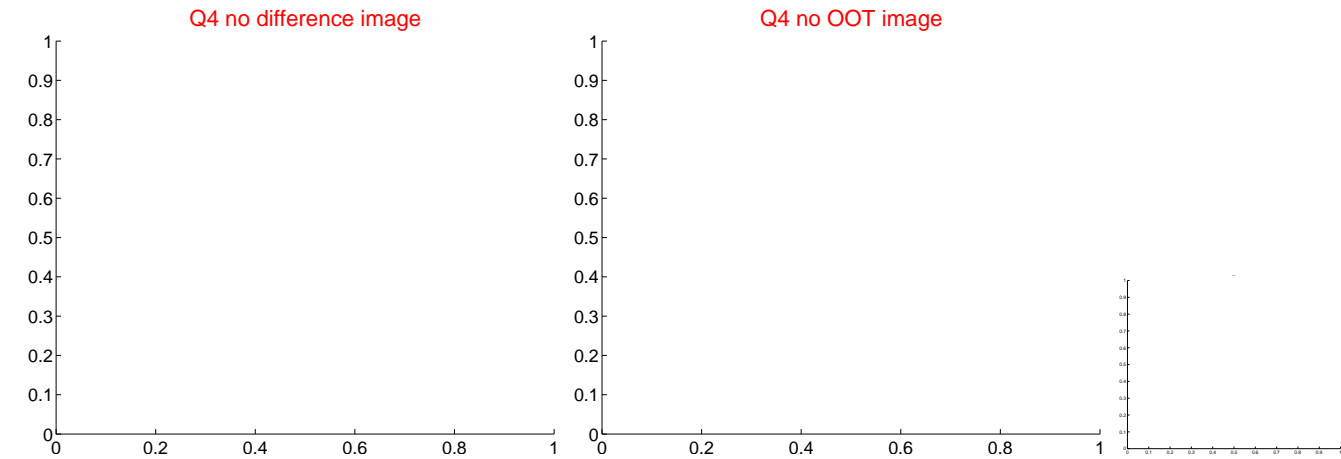
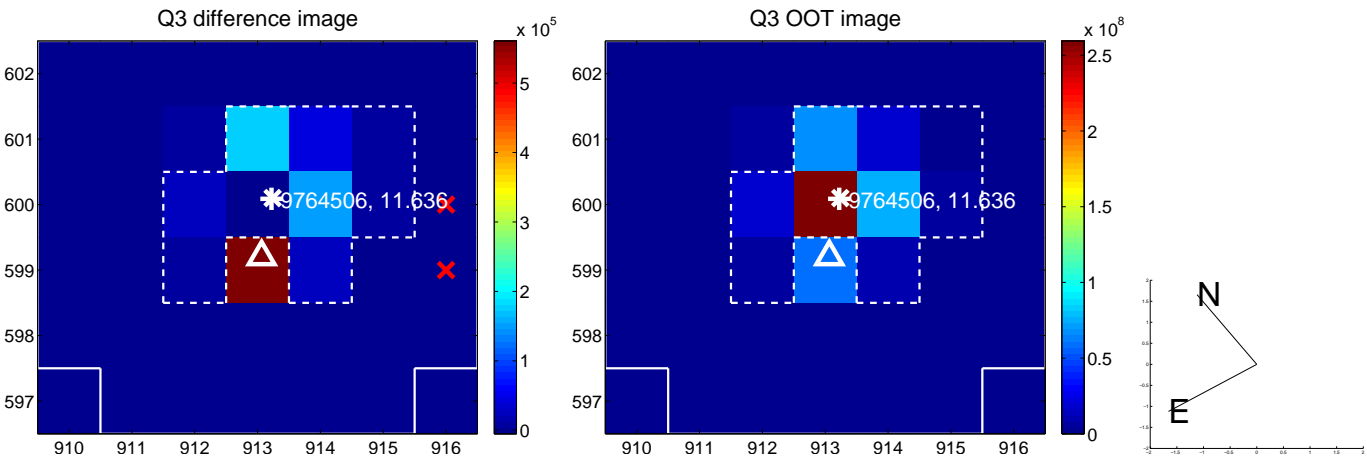
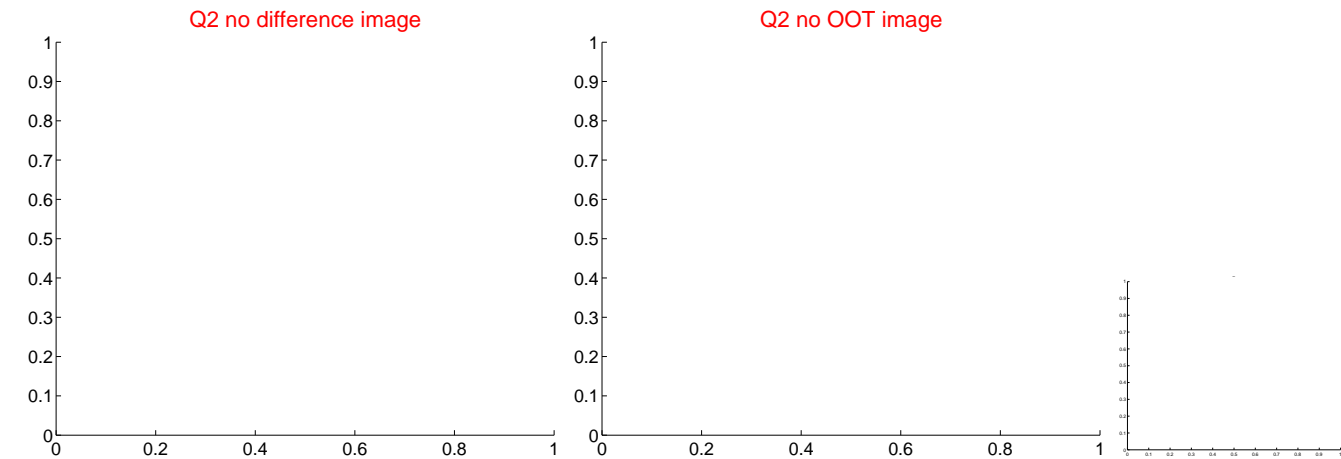
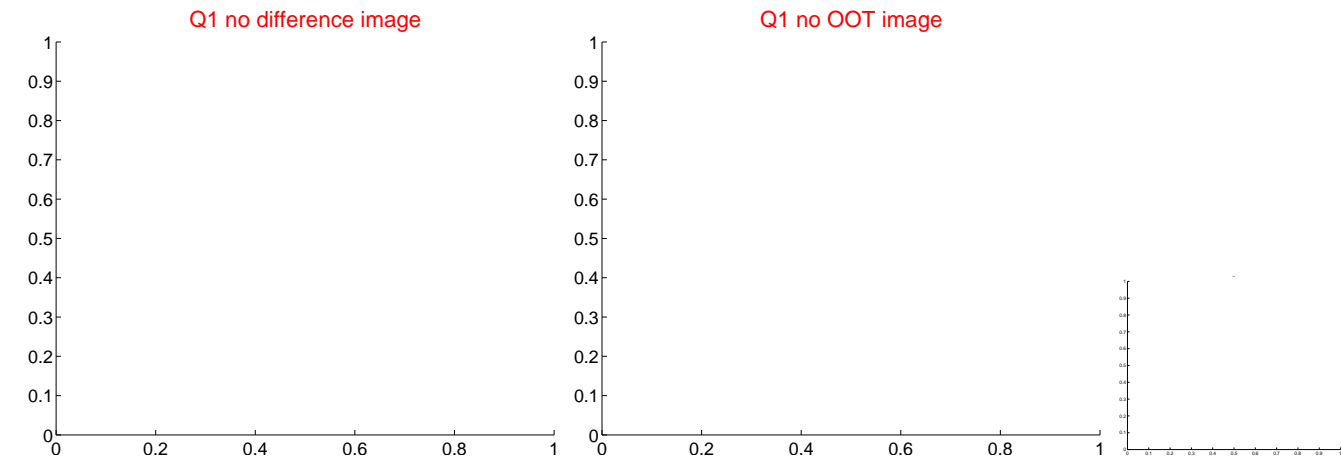
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.129 ± 0.262	0.49	-0.039 ± 0.420	-0.123 ± 0.393
PRF-fit source offset from KIC position	0.113 ± 0.612	0.18	0.075 ± 0.455	-0.085 ± 0.425
photometric centroid source offset	0.32 ± 0.24	1.37	0.32 ± 0.23	0.04 ± 0.33



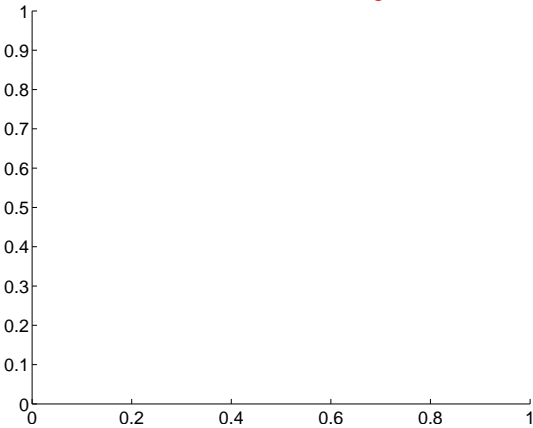
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

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



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

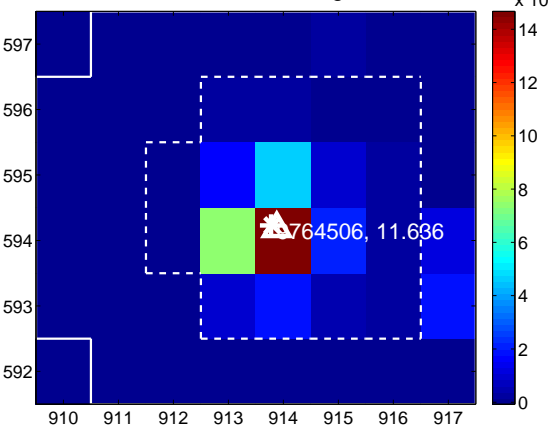
Q5 no difference image



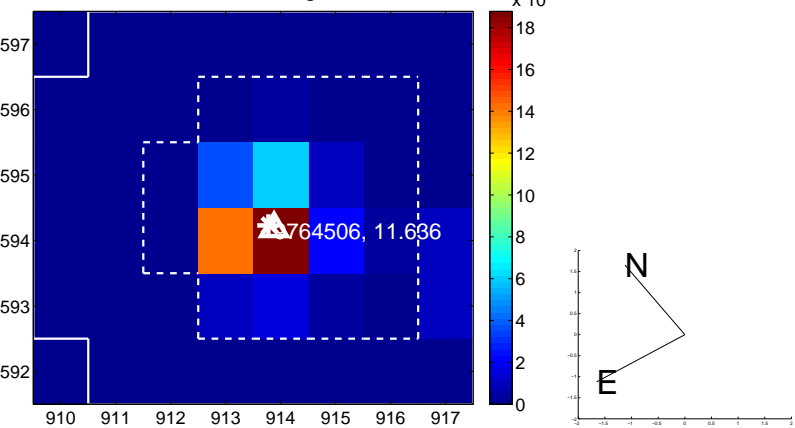
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



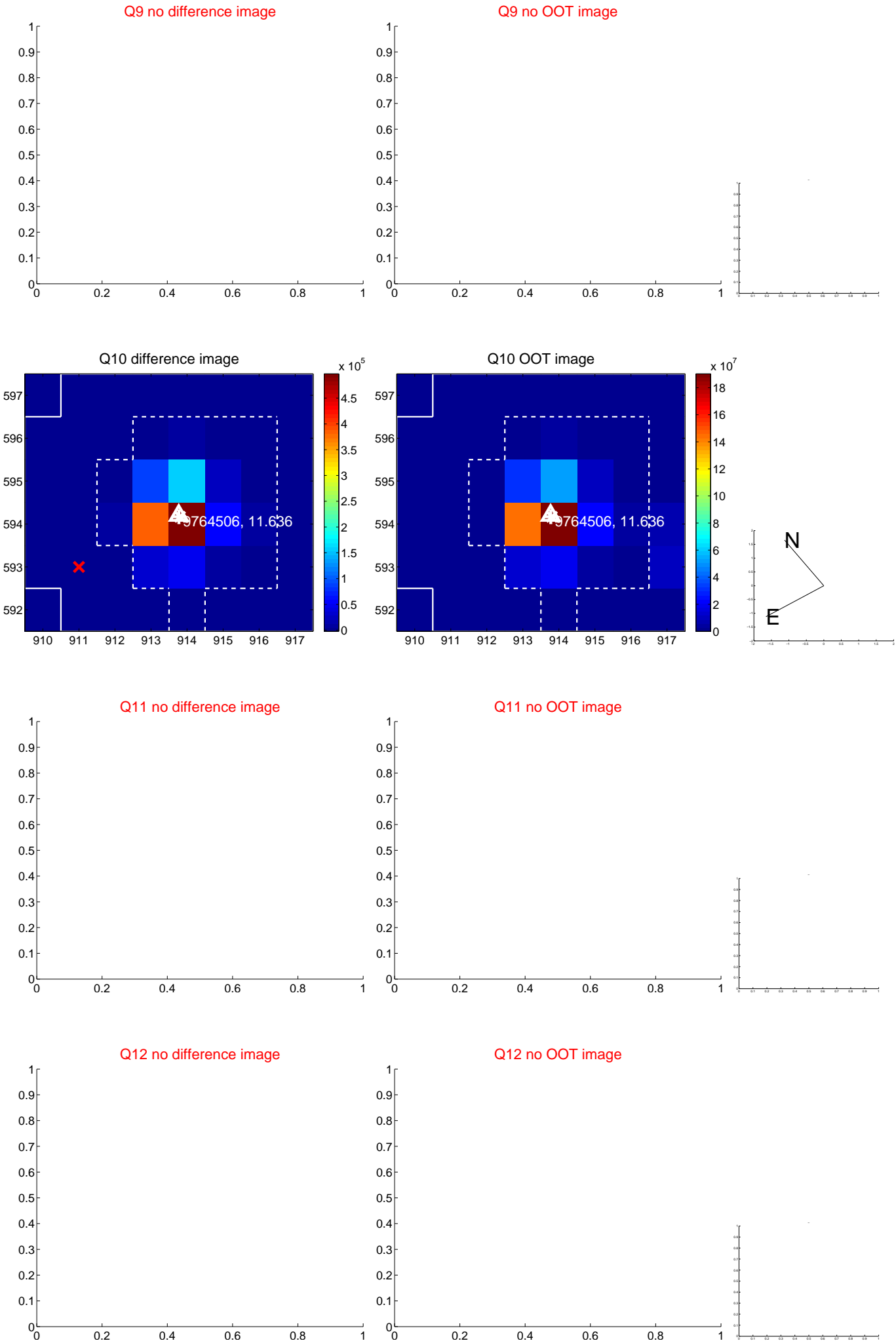
Q8 no difference image



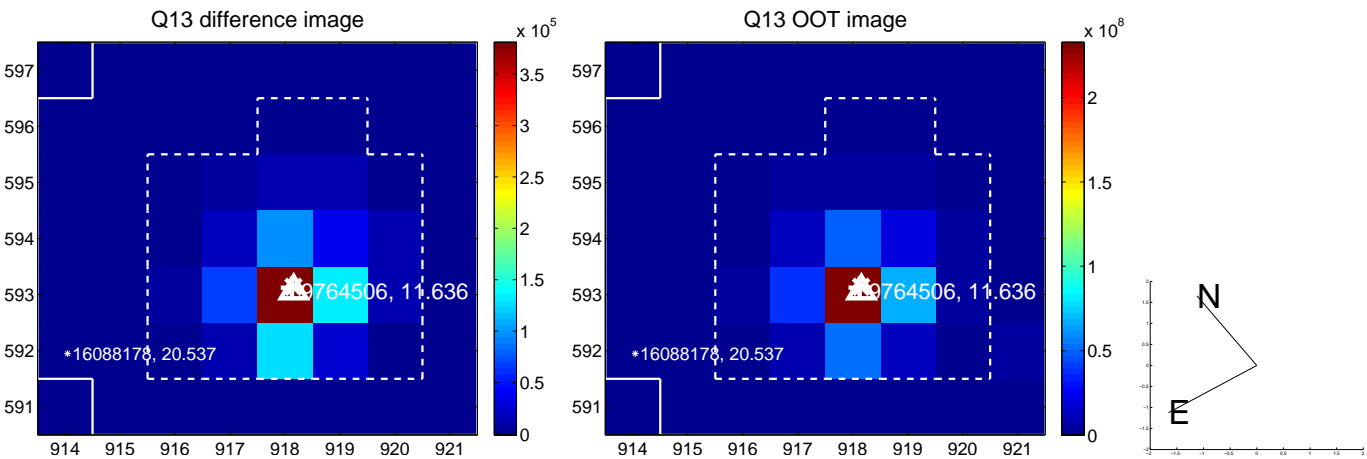
Q8 no OOT image



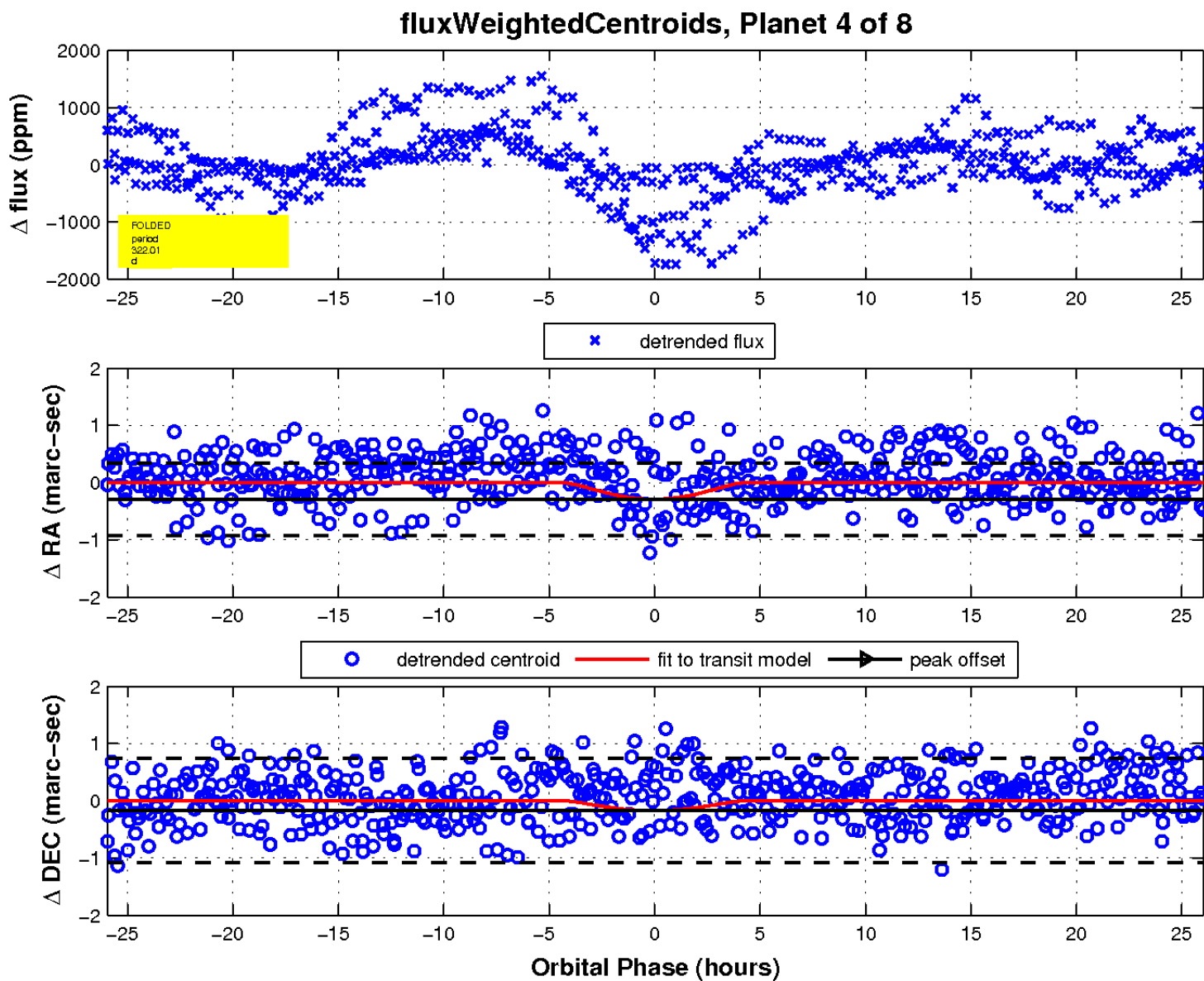
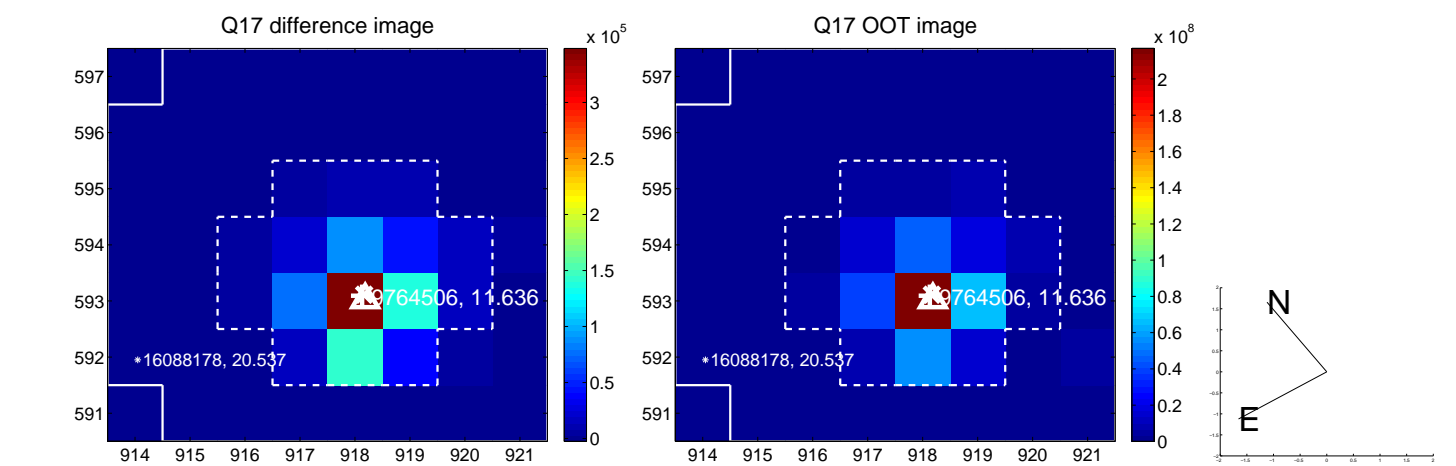
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

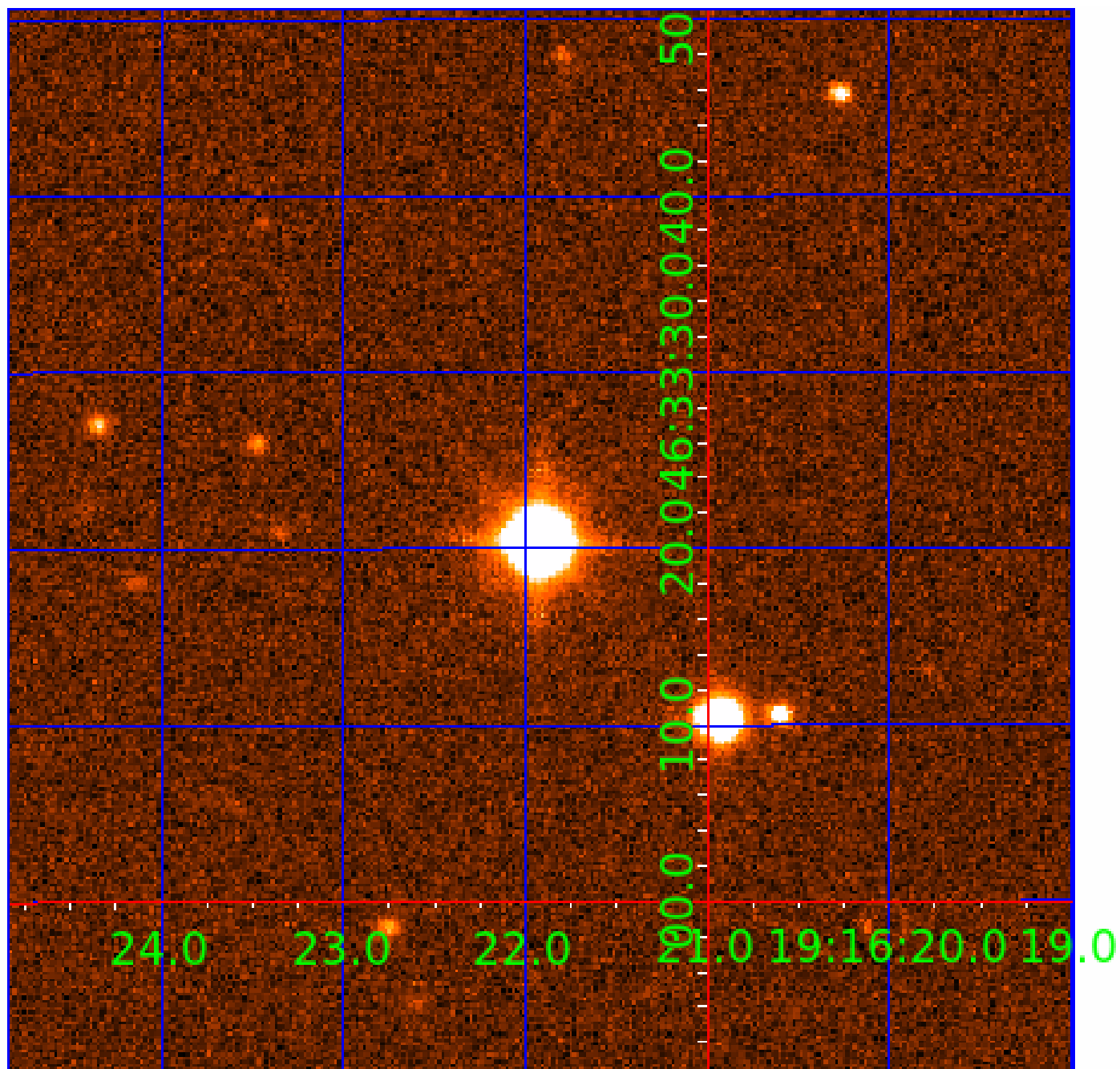


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009764506

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})
009764506-01	OBS	No	2.064565	131.874332	39.6	5.034	12.3	8.6	2.99	7505	2.20	15954.25
009764506-02	OBS	No	1.032238	132.287769	22.1	5.573	9.8	5.8	2.99	7505	1.49	40204.48
009764506-03	OBS	No	91.118080	147.252193	744.2	6.013	11.0	9.4	2.99	7505	15.24	102.29
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009764506-06	OBS	No	100.521220	198.962913	1226.9	10.941	10.5	11.1	2.99	7505	19.30	89.74
009764506-07	OBS	No	70.555710	134.858518	676.9	6.643	9.6	8.9	2.99	7505	9.62	143.86
009764506-08	OBS	No	179.677589	246.024579	556.7	5.342	9.2	8.3	2.99	7505	7.53	41.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009764506-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009764506-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009764506-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT
009764506-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

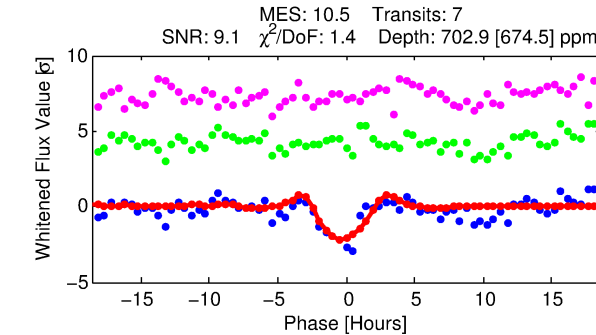
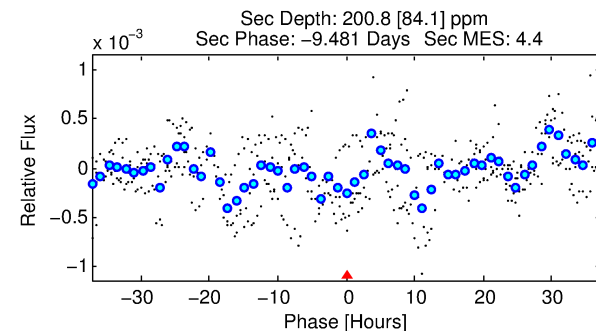
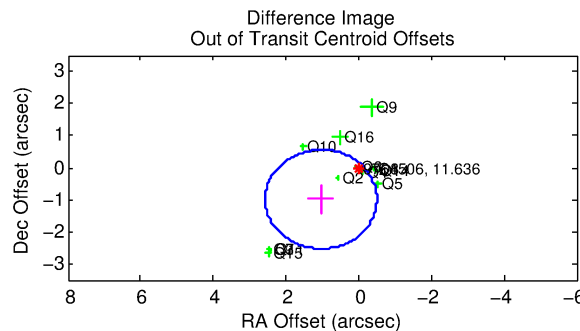
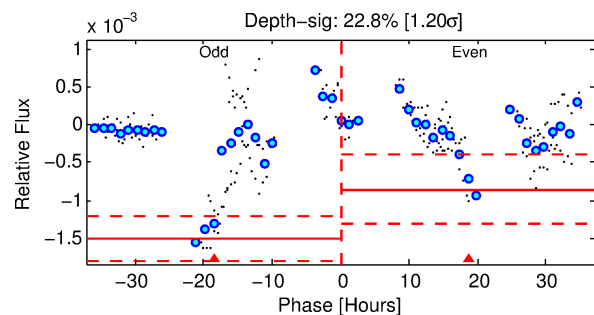
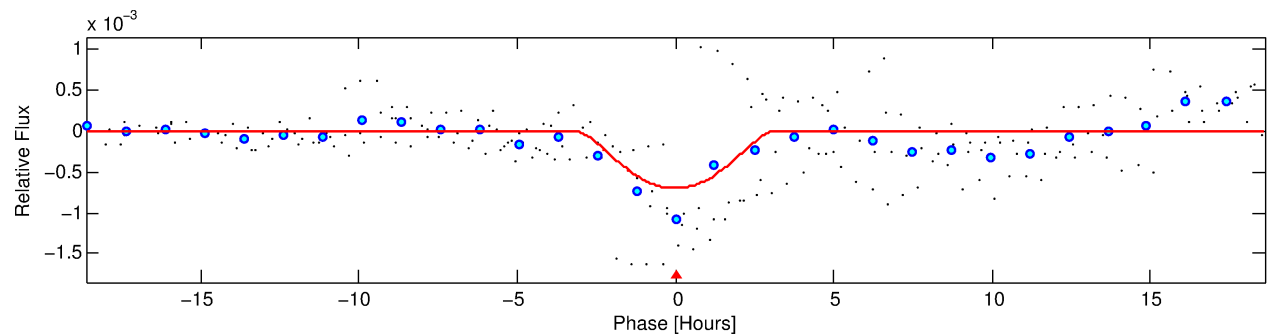
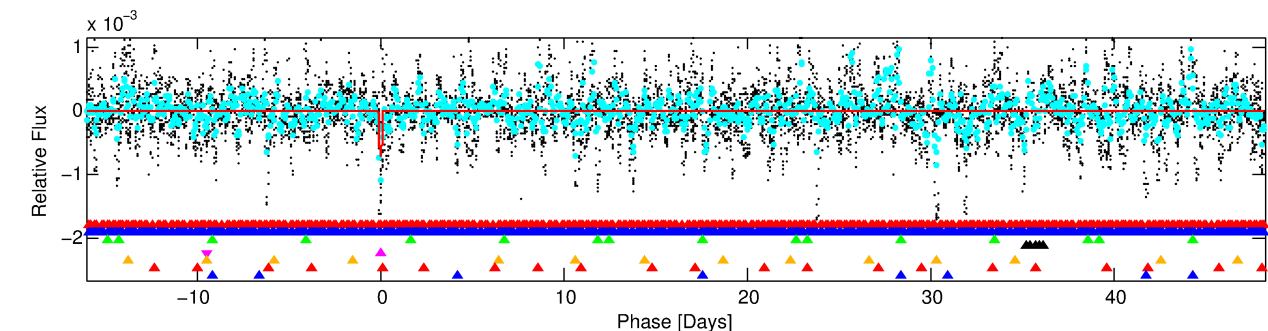
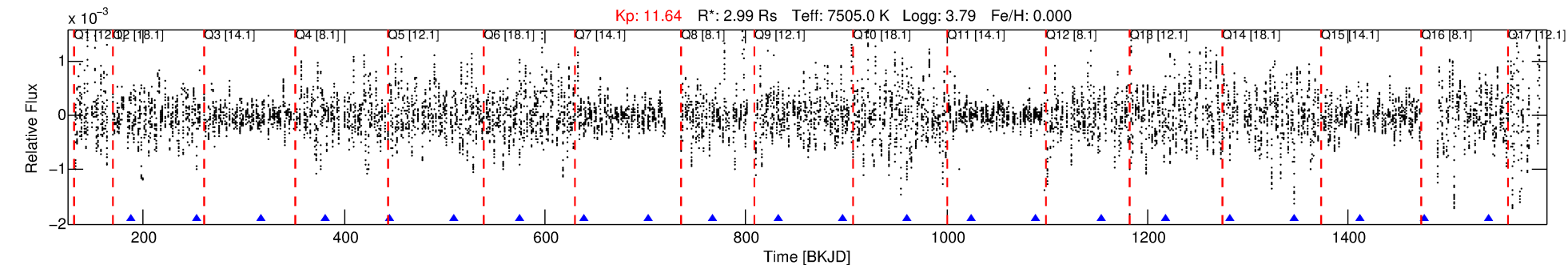
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009764506-05

No Significant Match Found

DV One-Page Summary

KIC: 9764506 Candidate: 5 of 8 Period: 64.353 d



DV Fit Results:

Period = 64.35299 [0.00110] d
Epoch = 188.3015 [0.0126] BKJD
Rp/R* = 0.0455 [0.1090]
a/R* = 24.21 [14.57]
b = 1.00 [0.13]
Seff = 162.64 [106.40]
Teq = 911 [149] K
Rp = 14.84 [36.10] Re
a = 0.3951 [0.1584] AU
Ag = 78.33 [379.84] [0.20 σ]
Teff = 4188 [5037] K [0.65 σ]

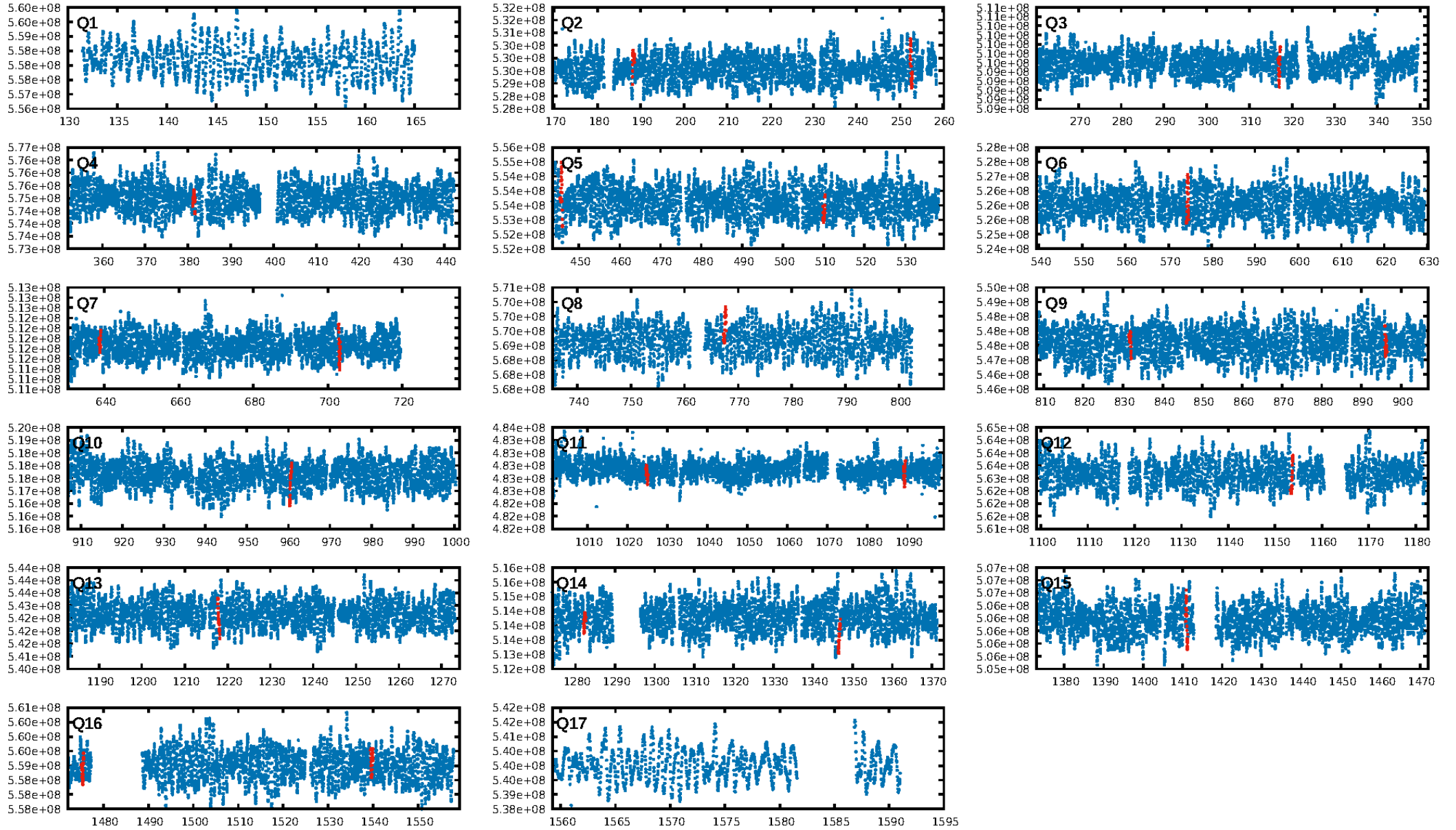
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [187.17 σ]
LongPeriod-sig: 100.0% [16.38 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -2.212
Centroid-sig: 4.7%
Centroid-so: 0.347 arcsec [1.89 σ]
OotOffset-rm: 1.433 arcsec [2.79 σ]
OotOffset-st: 4/4/3/2 [13]
KicOffset-rm: 1.496 arcsec [3.19 σ]
KicOffset-st: 4/4/3/2 [13]
DiffImageQuality-fgm: 0.46 [6/13]
DiffImageOverlap-fno: 0.00 [0/13]

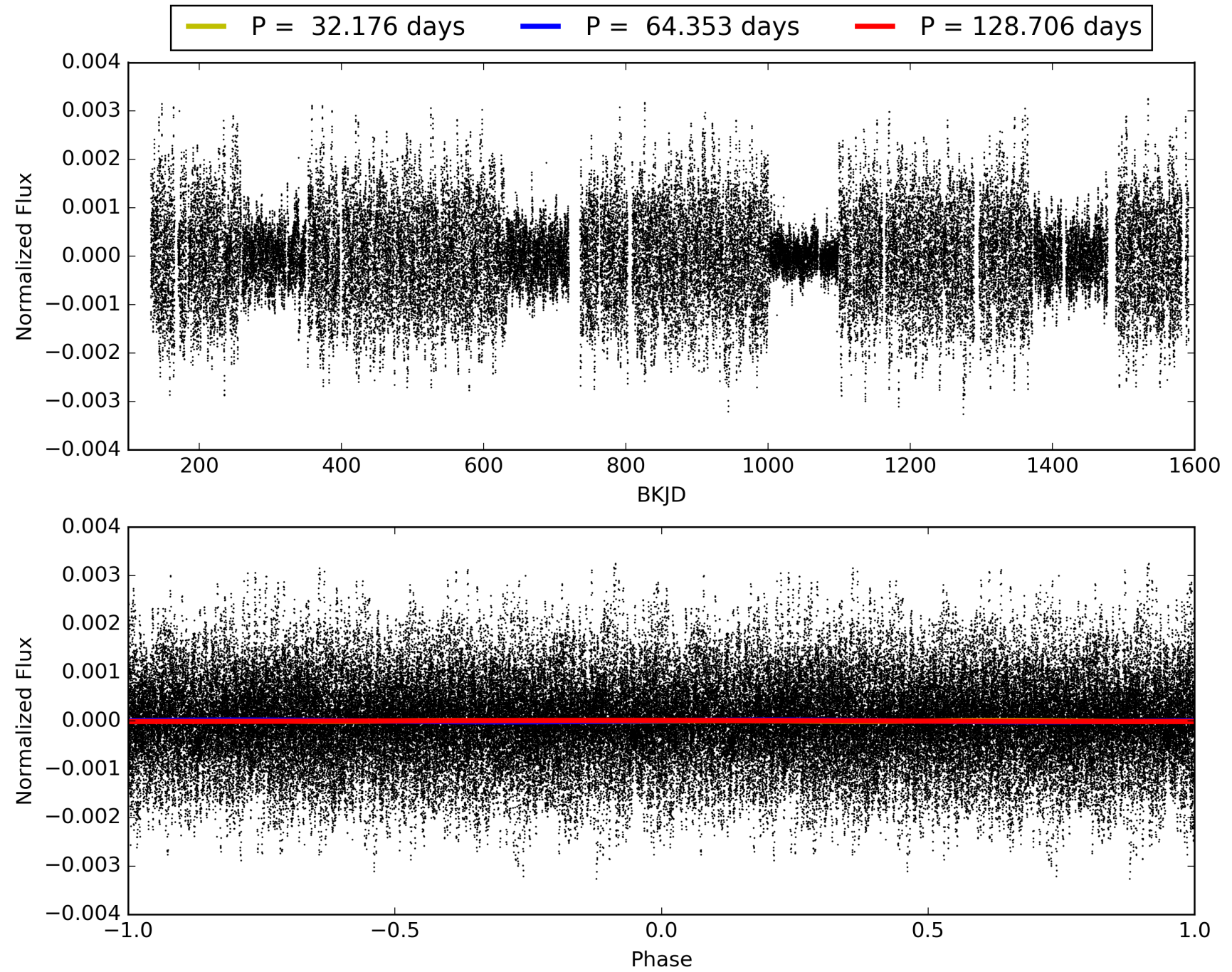
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:36:31 Z

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

TCE 009764506-05, PDC Light Curves

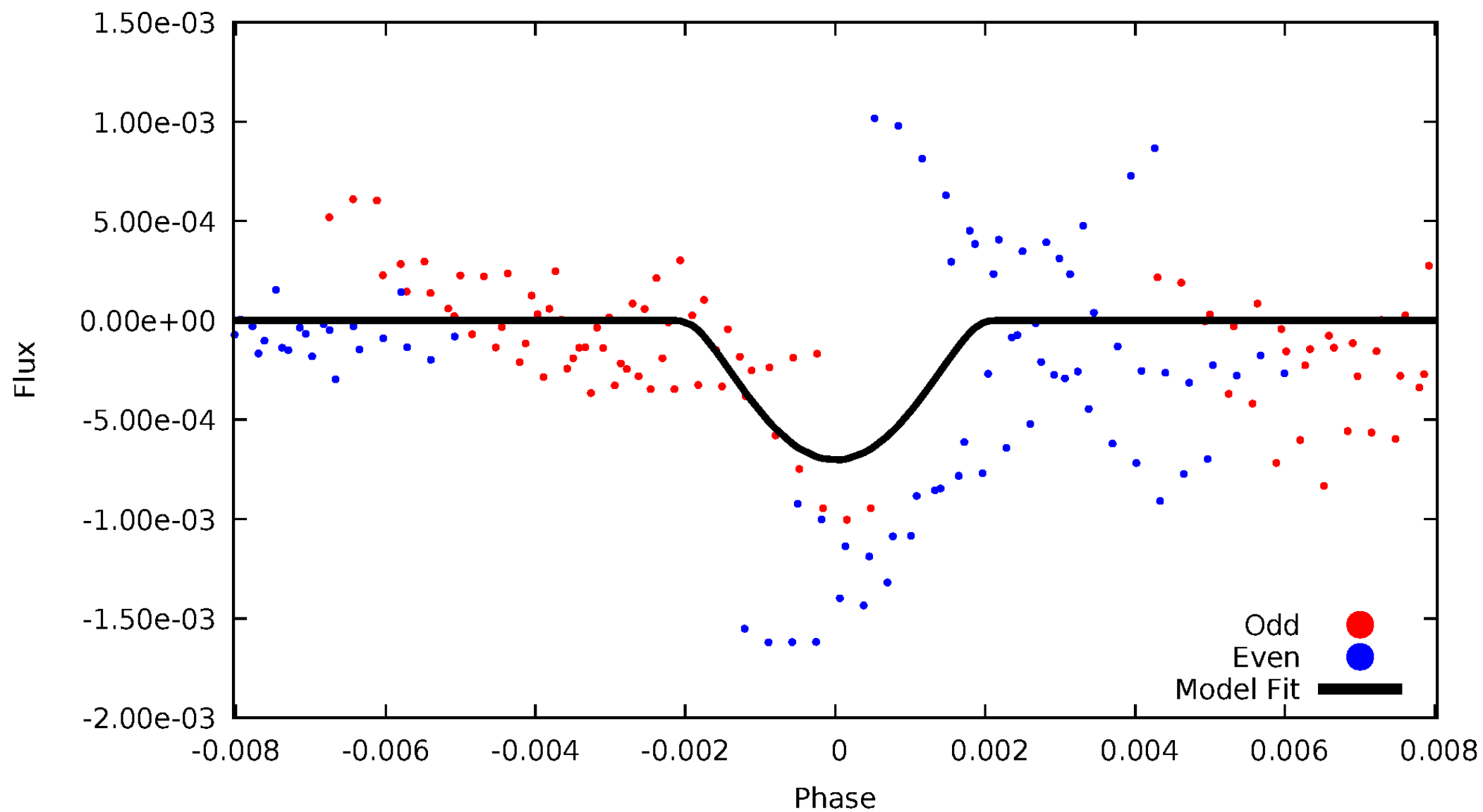


TCE 009764506-05



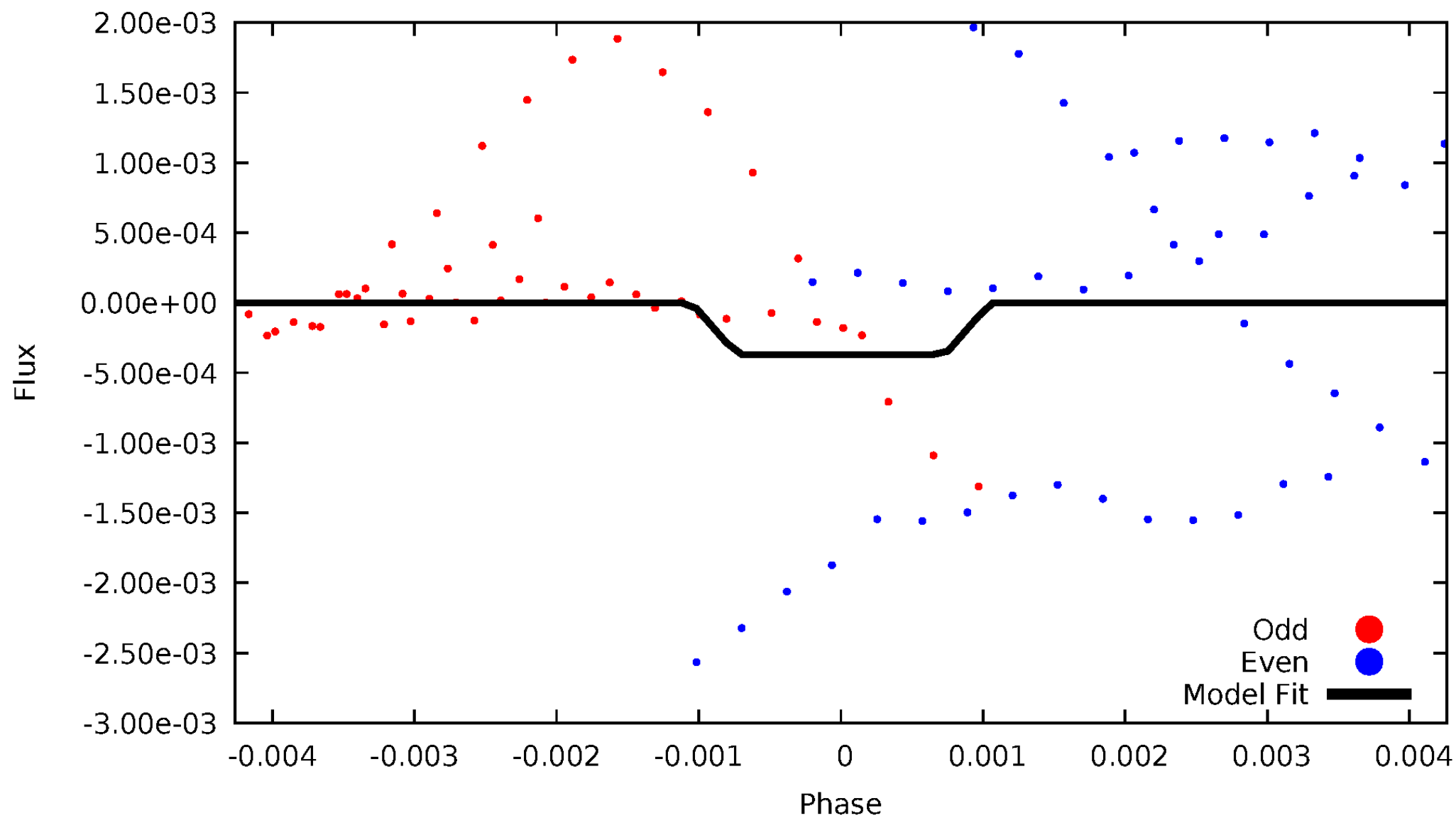
DV Odd/Even

TCE 009764506-05



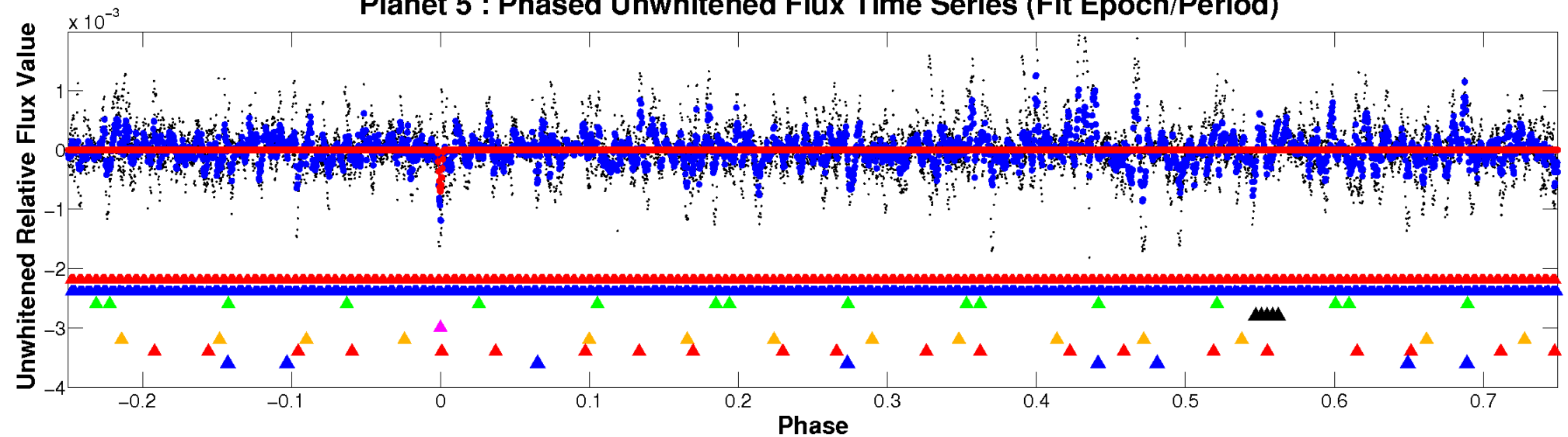
ALT Odd/Even

TCE 009764506-05

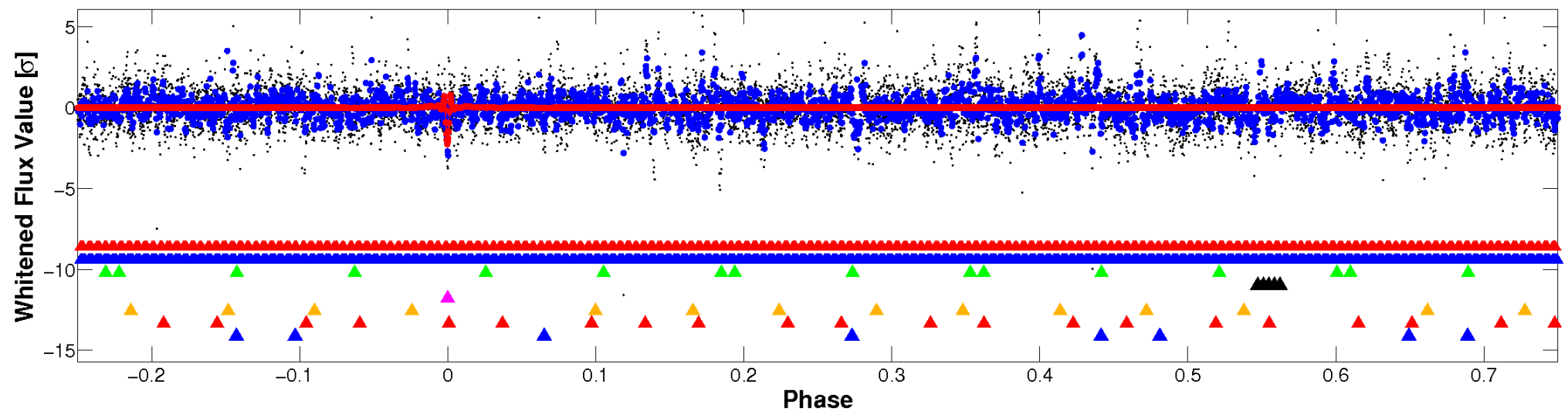


Non-Whitened Vs. Whitened Light Curve

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

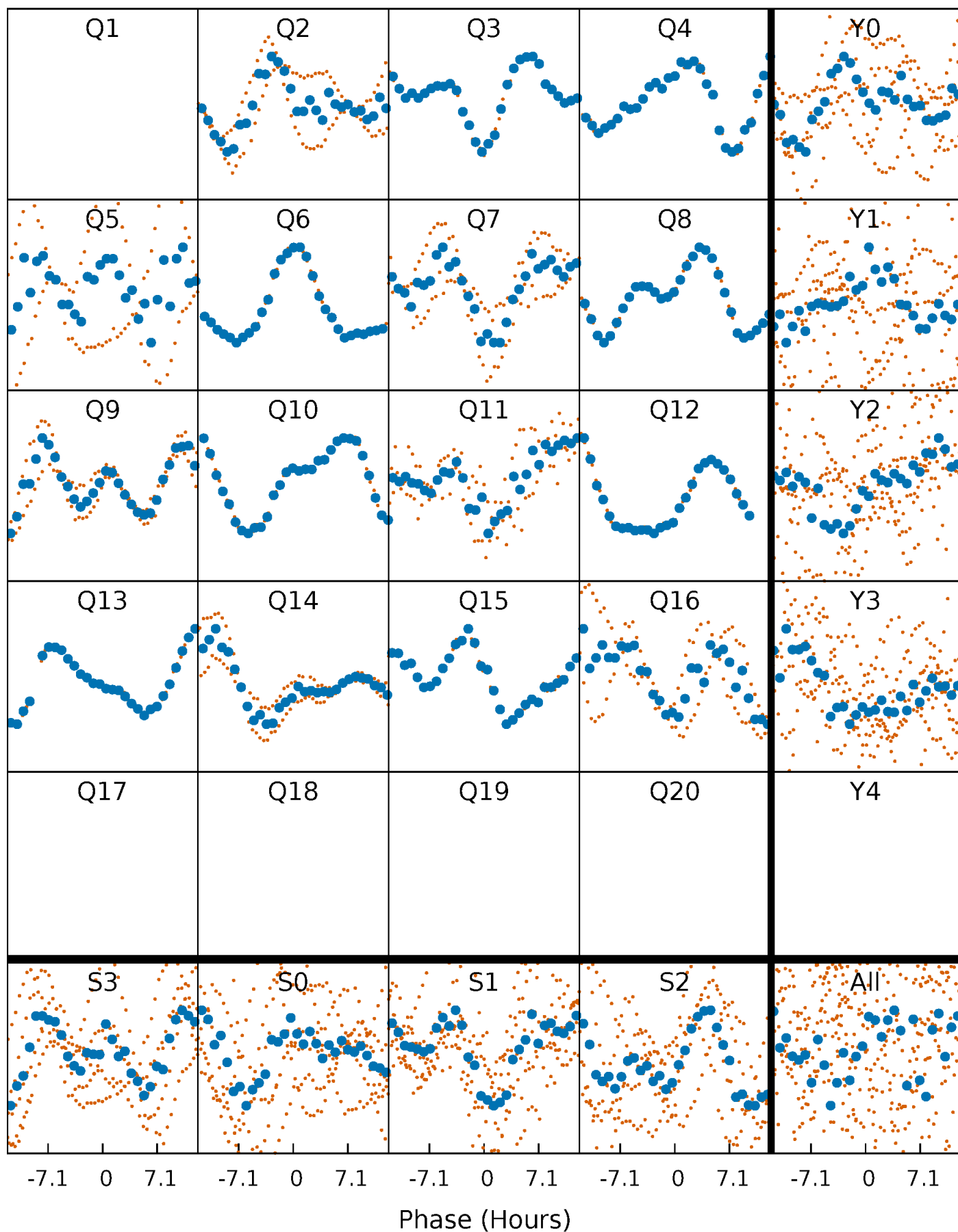


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



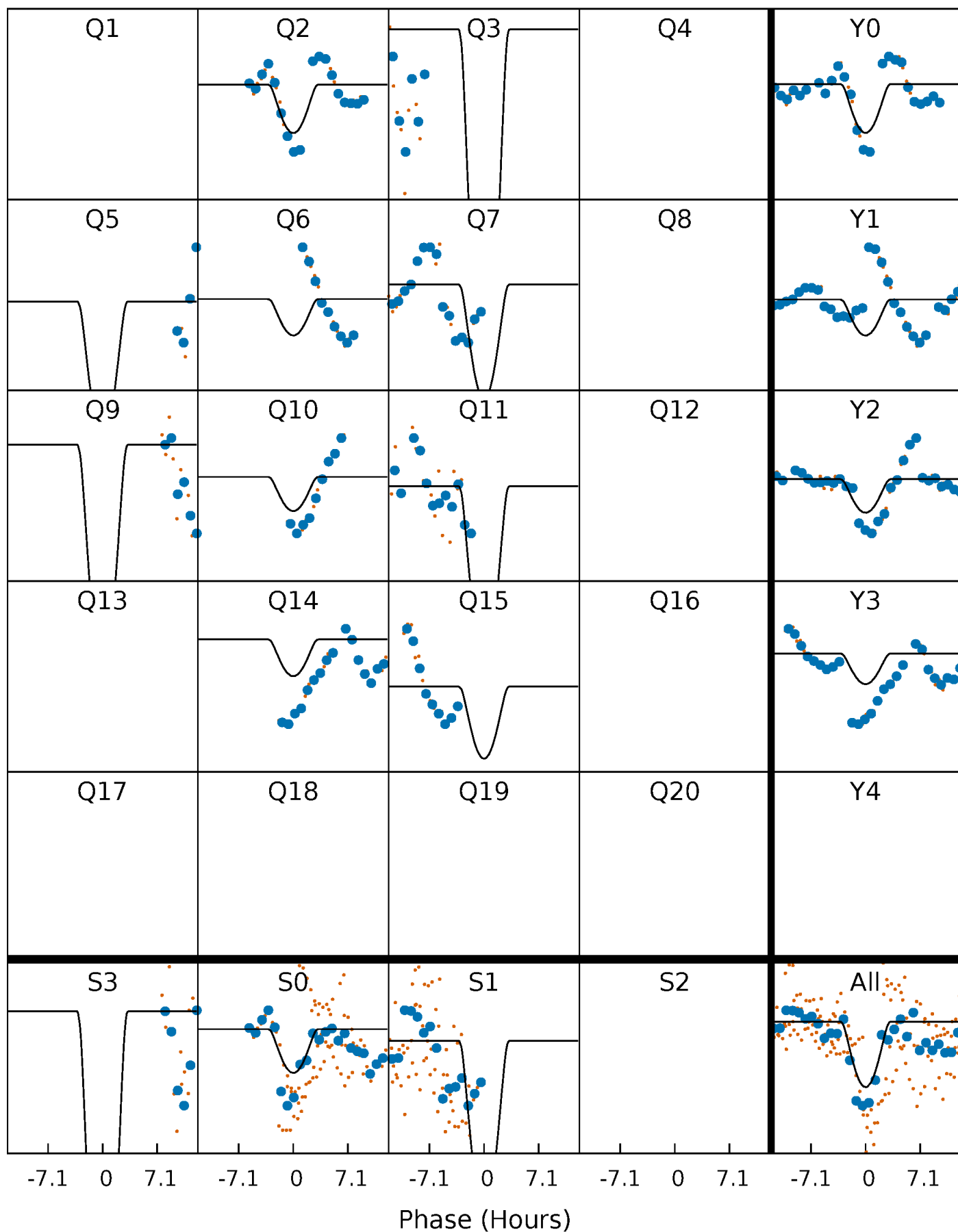
PDC Quarter-Phased Transit Curves

TCE 009764506-05 $P = 64.352992$ Days $T_0 = 188.301458$ (BKJD)



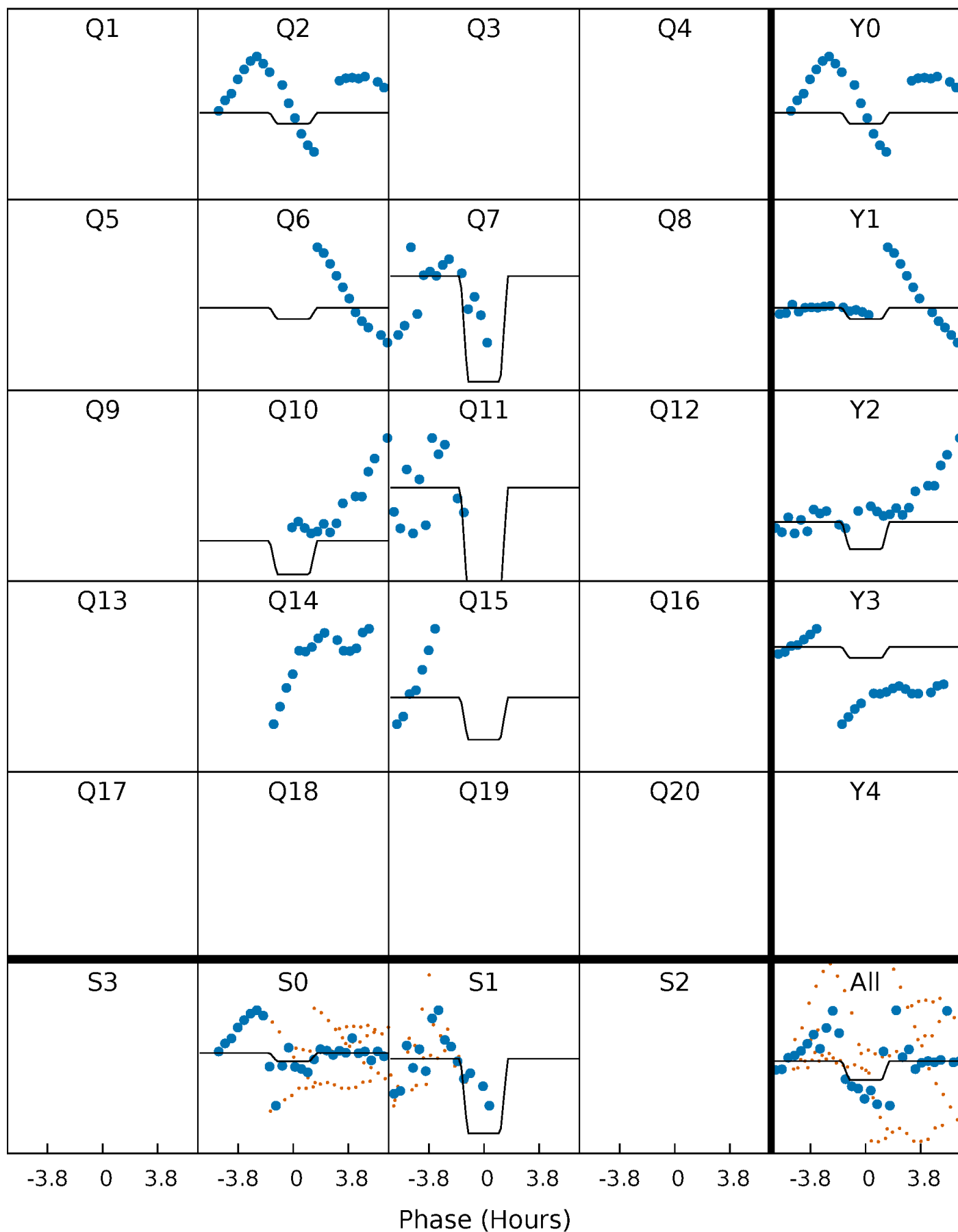
DV Quarter-Phased Transit Curves

TCE 009764506-05 $P = 64.352992$ Days $T_0 = 188.301458$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

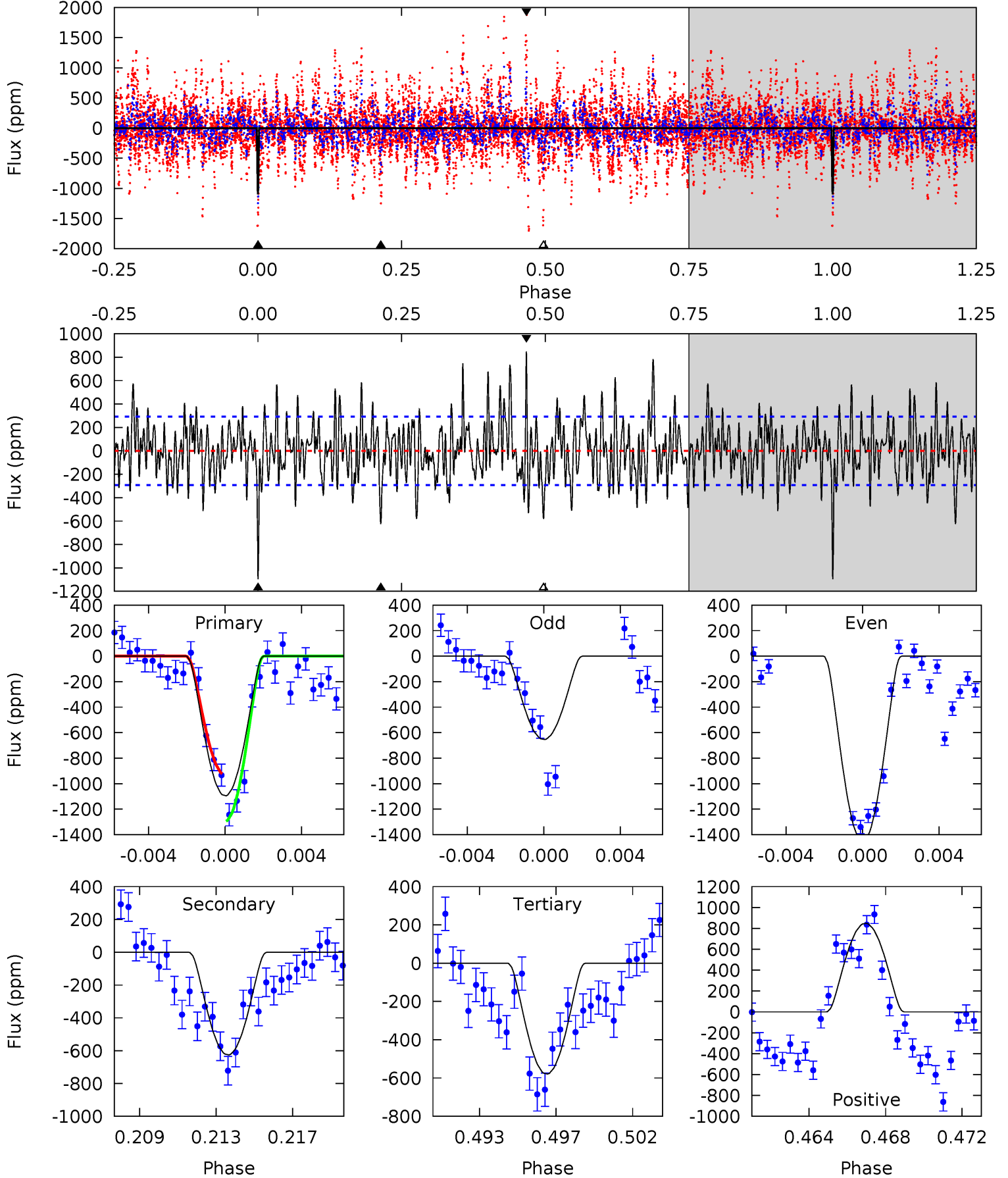
TCE 009764506-05 $P = 64.354139$ Days $T_0 = 188.268277$ (BKJD)



DV Model-Shift Uniqueness Test

009764506-05, $P = 64.352992$ Days, $E = 123.948466$ Days

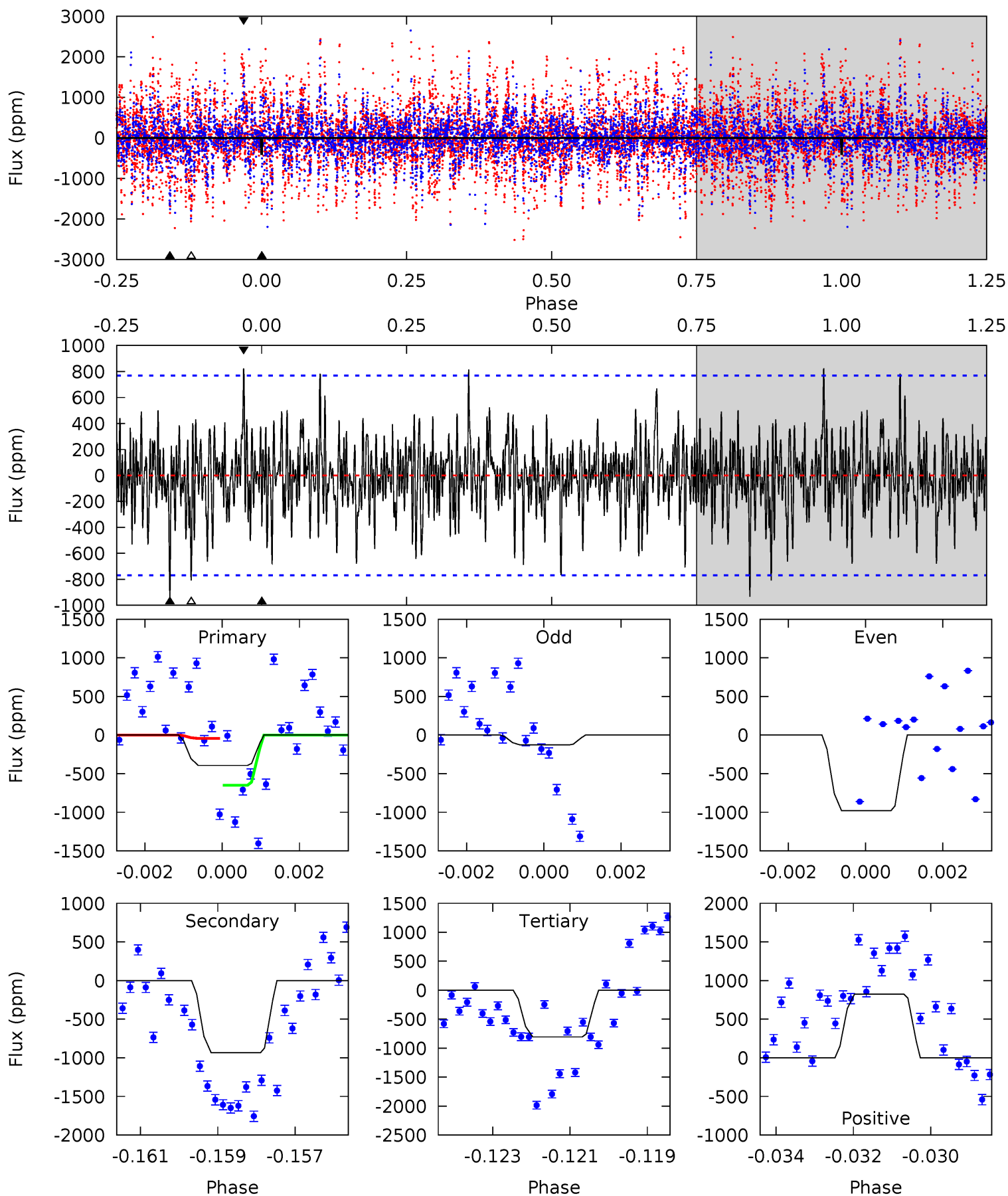
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.4	11.1	10.3	15.1	5.19	2.86	3.72	9.15	4.37	0.83	-3.95	6.97	0.61	0.44	3.33



Alt Model-Shift Uniqueness Test

009764506-05, P = 64.354139 Days, E = 123.914138 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.72	6.46	5.59	5.70	5.33	3.09	1.60	-2.87	-2.98	0.87	0.76	3.09	4.04	0.47	2.11



Stellar Parameters For KIC 009764506

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7505^{+209}_{-314}	$3.785^{+0.368}_{-0.092}$	$0.000^{+0.200}_{-0.350}$	$2.989^{+0.425}_{-1.275}$	$1.984^{+0.088}_{-0.500}$	$0.105^{+0.310}_{-0.030}$
	+3%/-4%	+10%/-2%	+inf%/-inf%	+14%/-43%	+4%/-25%	+296%/-29%
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 009764506-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-626 ± 56	$27.56^{+27.19}_{-17.44}$	1241^{+70}_{-129}	4077^{+2153}_{-796}	69^{+403}_{-51}
Alt.	-933 ± 144	$22.98^{+26.53}_{-15.46}$	1240^{+79}_{-129}	4698^{+3743}_{-1106}	144^{+1221}_{-113}

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

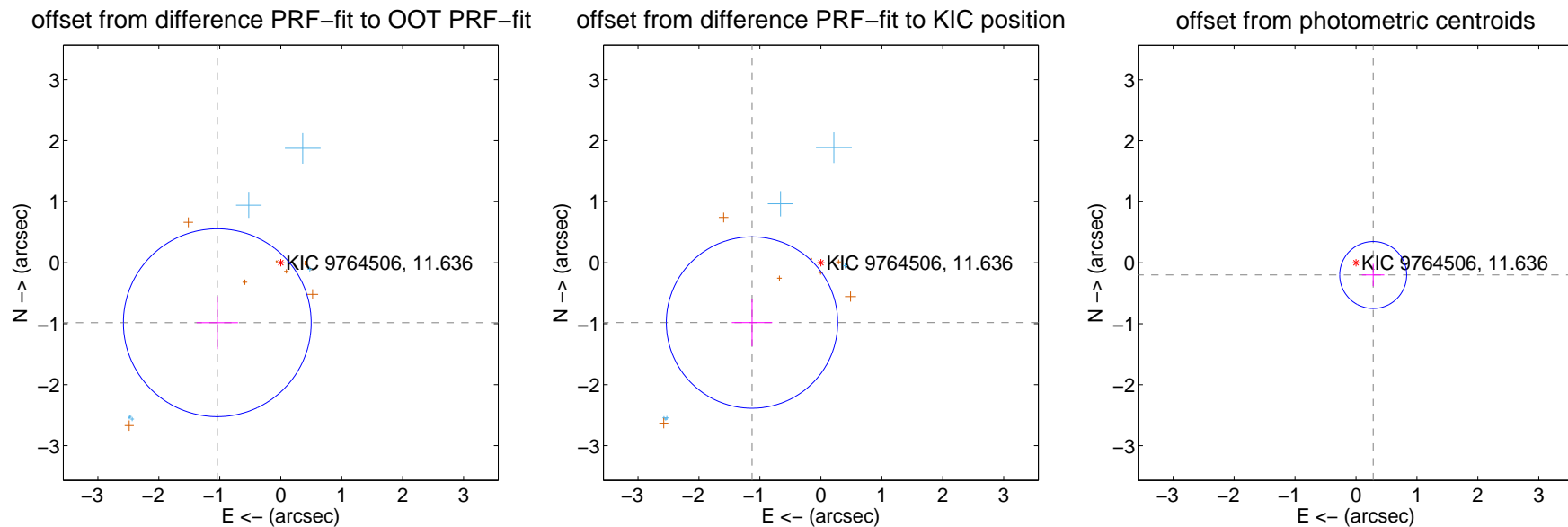
DV Centroid Data

Supplemental centroid analysis for 009764506-05. **Kepler magnitude: 11.64.** Transit SNR 9.09

There are 6 quarters with good PRF difference image offsets

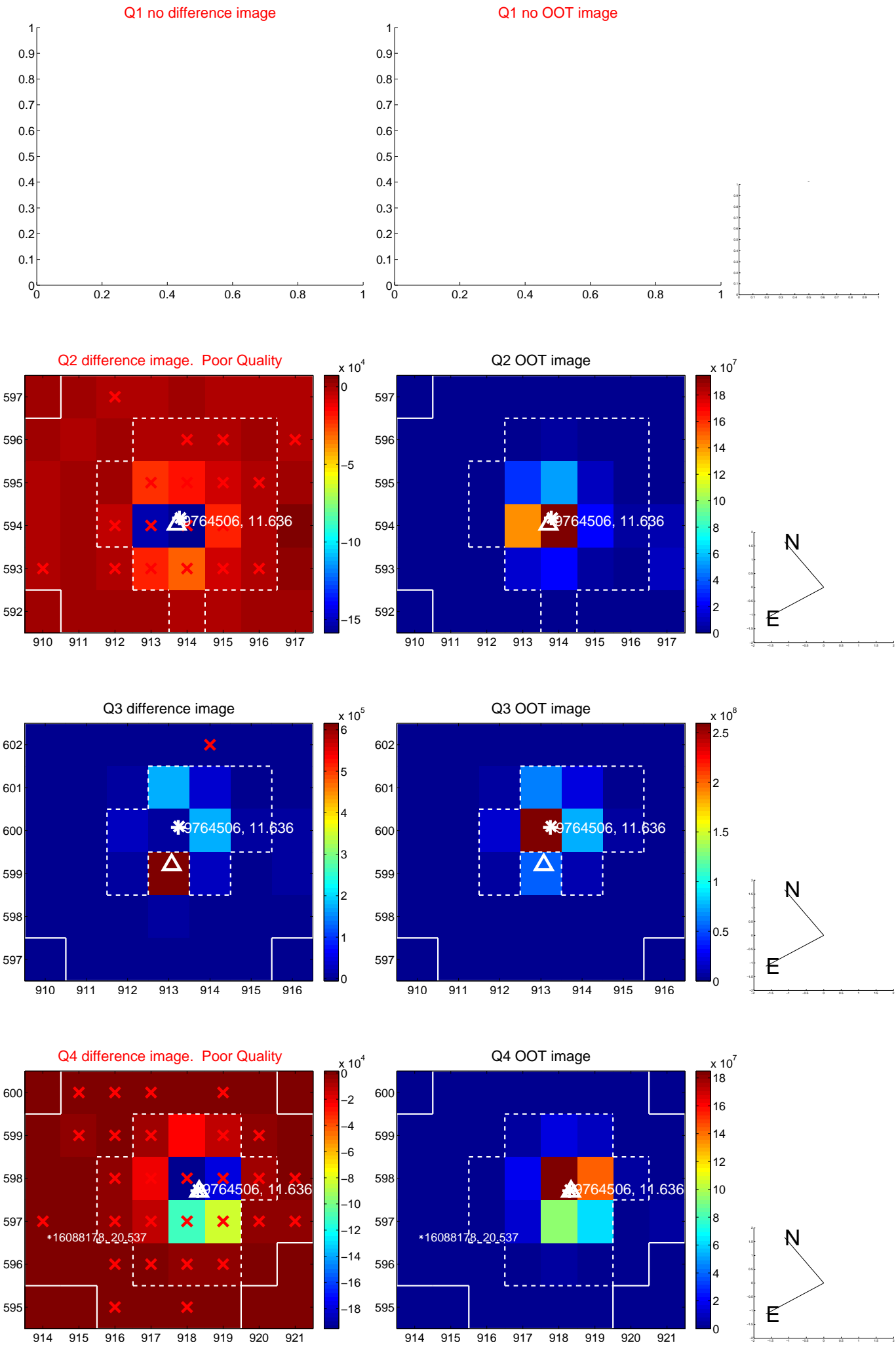
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.433 ± 0.514	2.79	1.041 ± 0.339	-0.984 ± 0.433
PRF-fit source offset from KIC position	1.496 ± 0.469	3.19	1.130 ± 0.333	-0.981 ± 0.388
photometric centroid source offset	0.35 ± 0.18	1.89	-0.28 ± 0.18	-0.20 ± 0.18

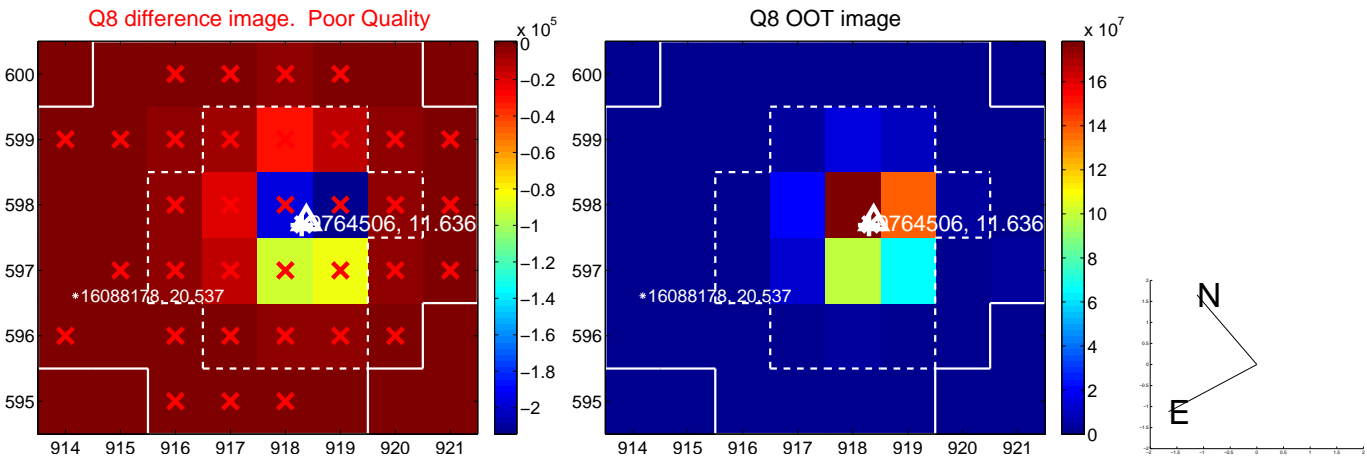
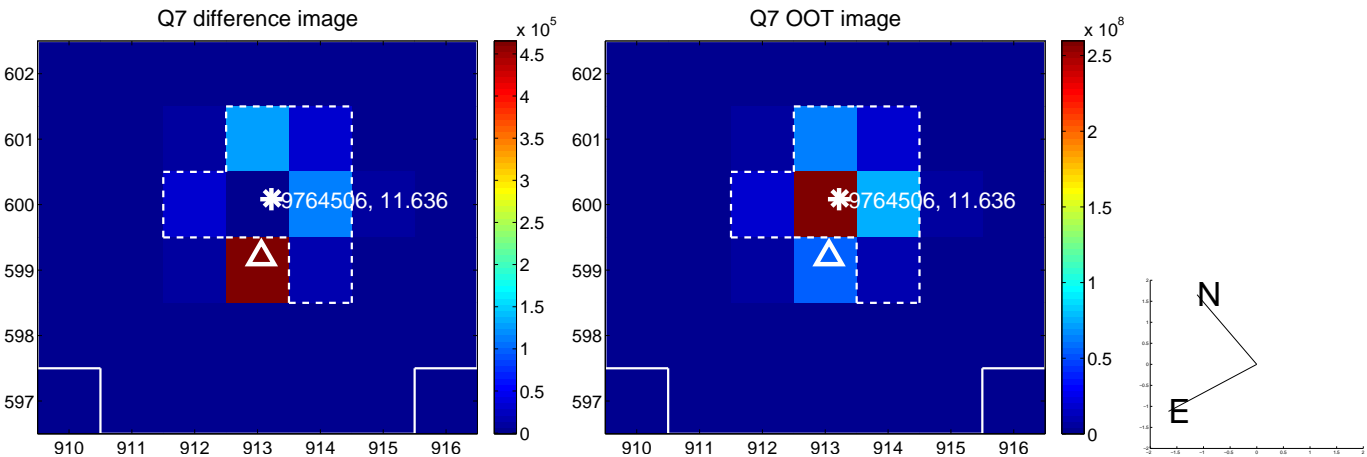
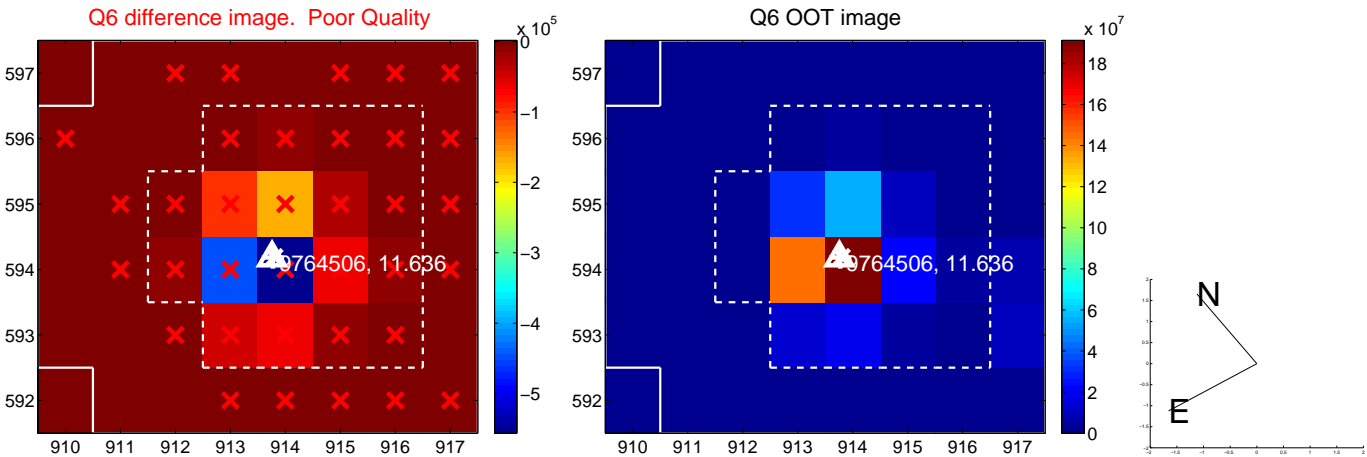
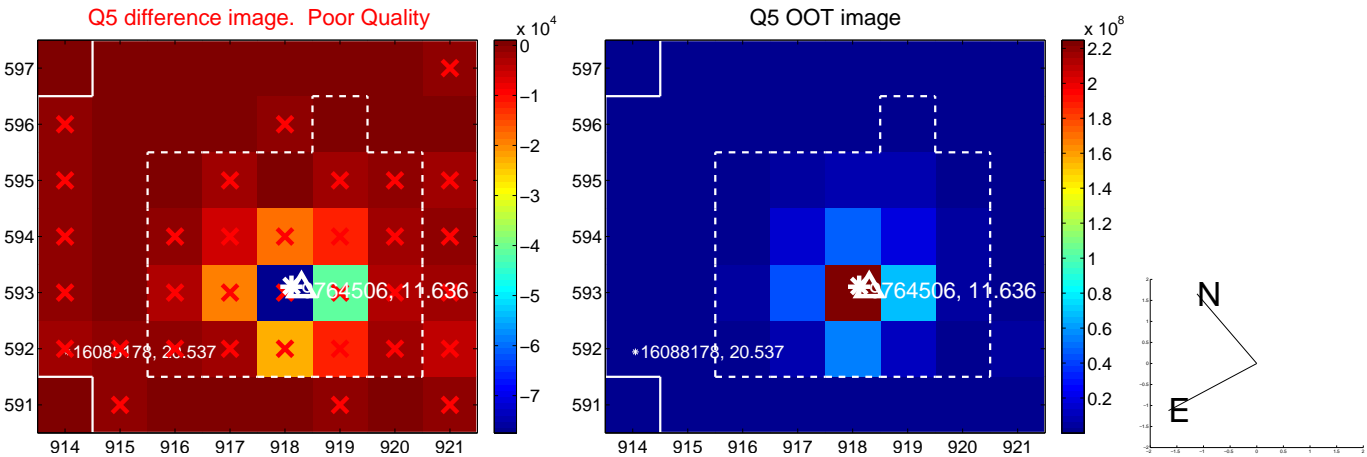


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

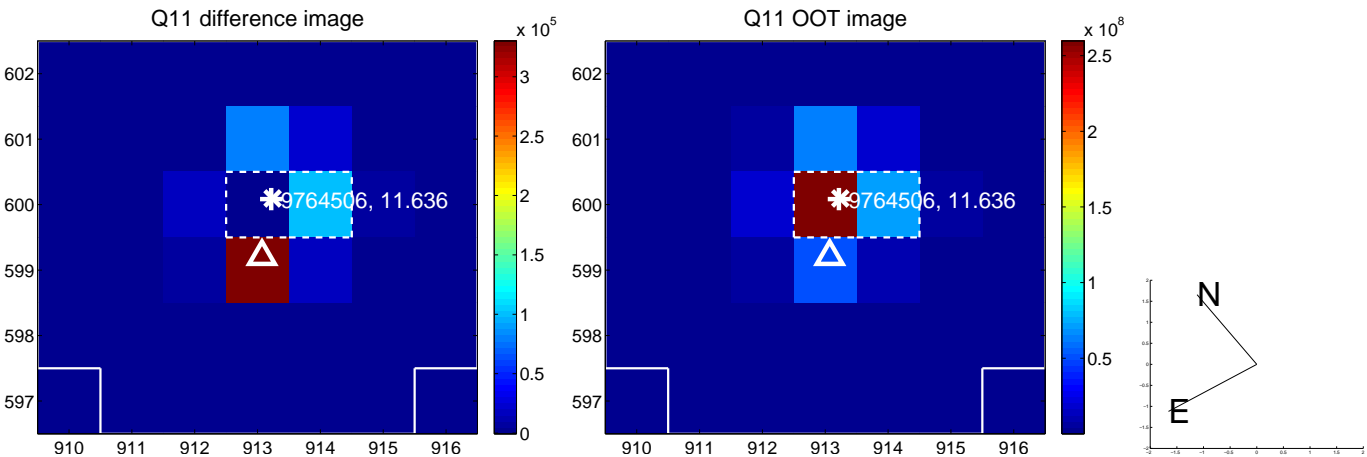
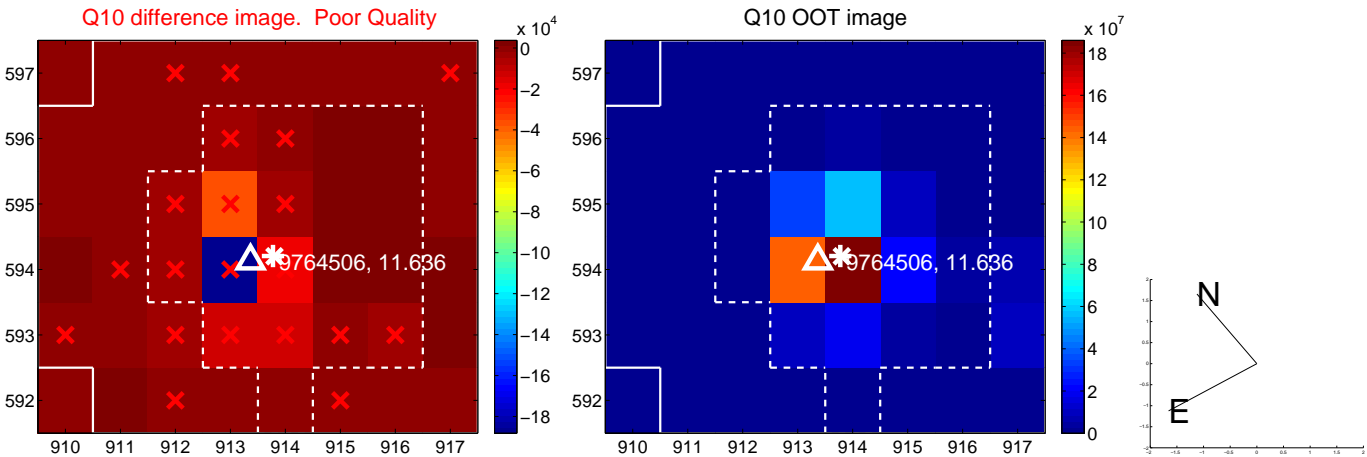
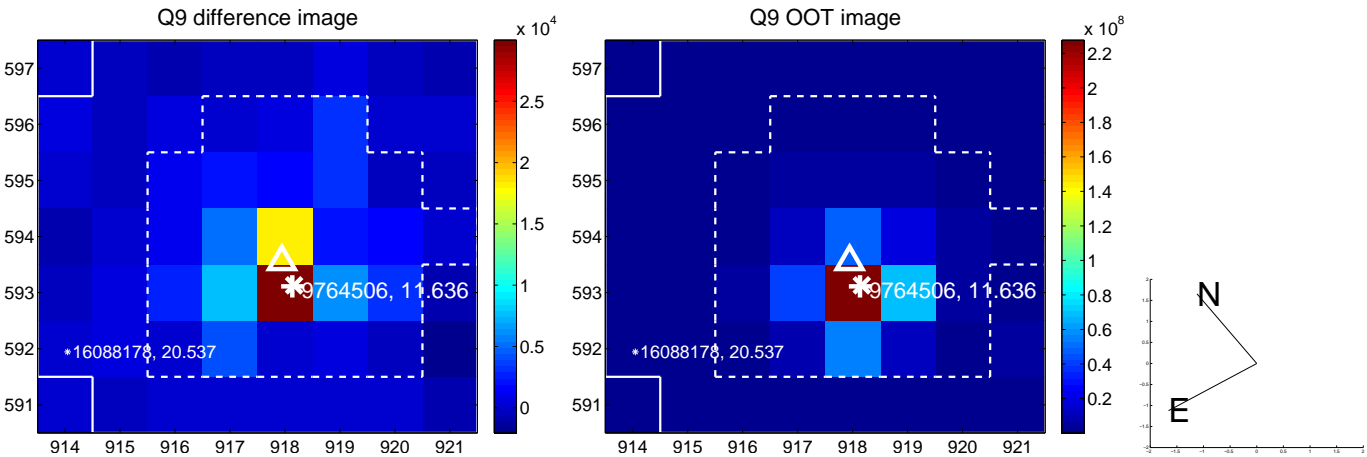
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



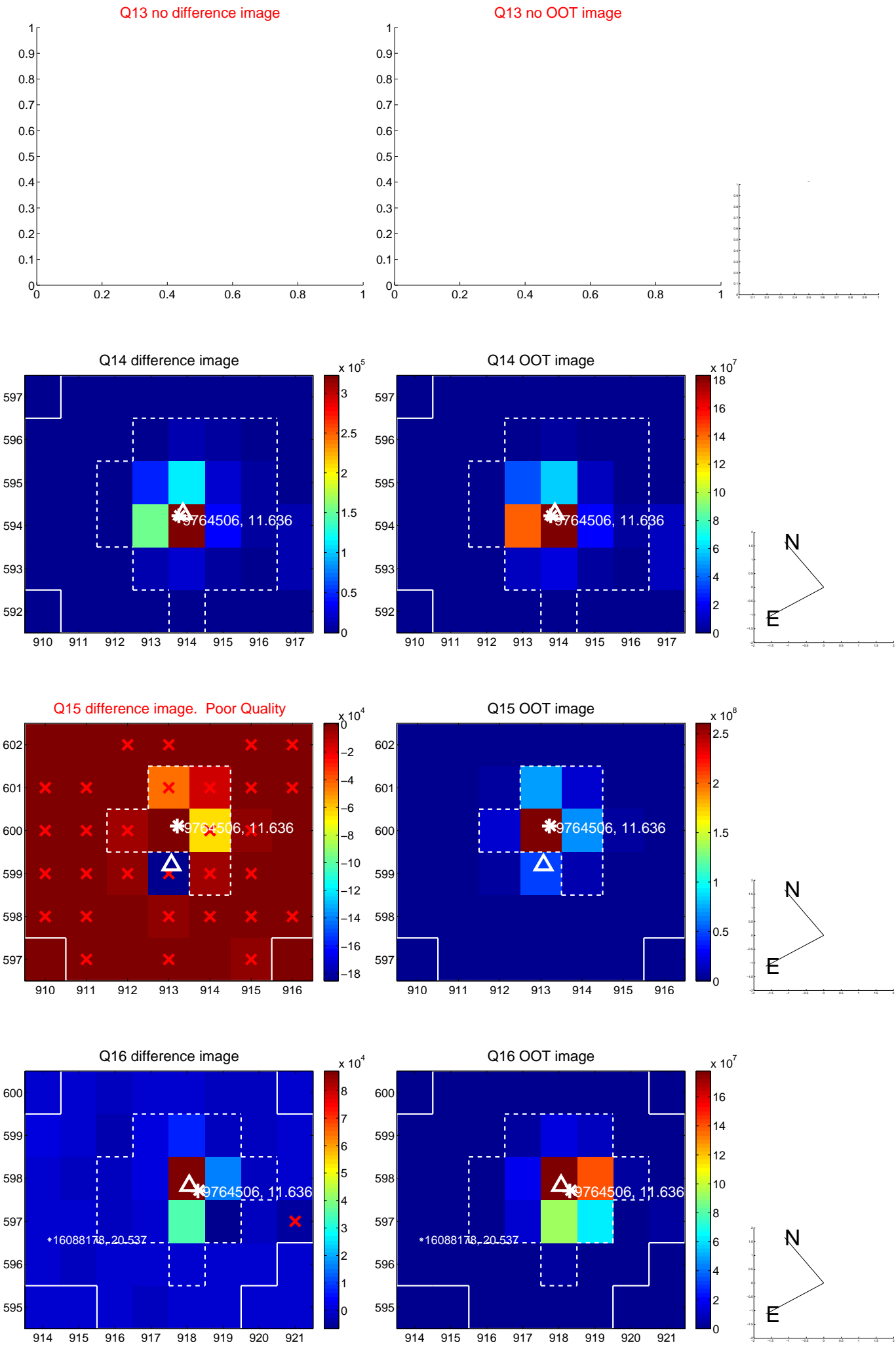
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



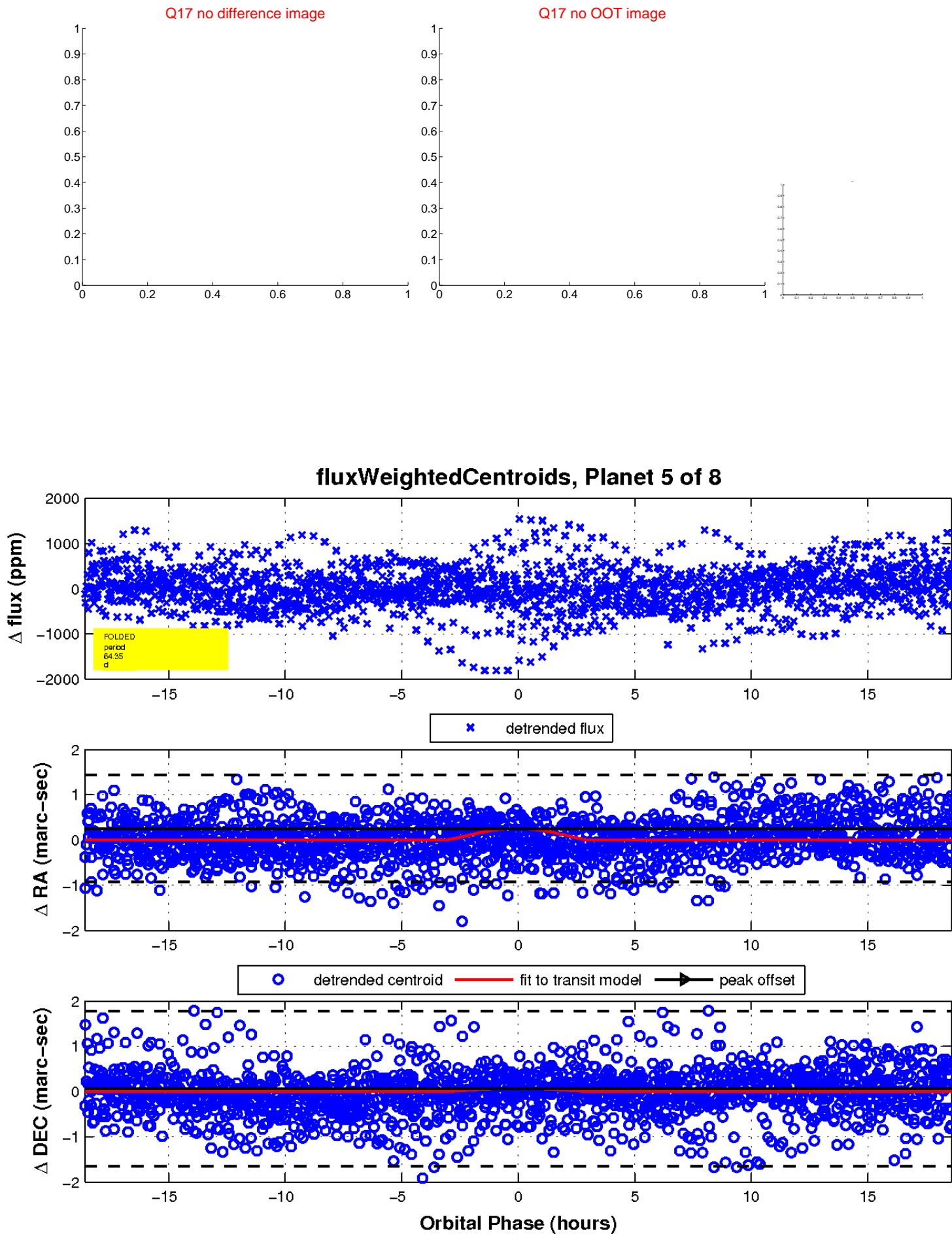
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

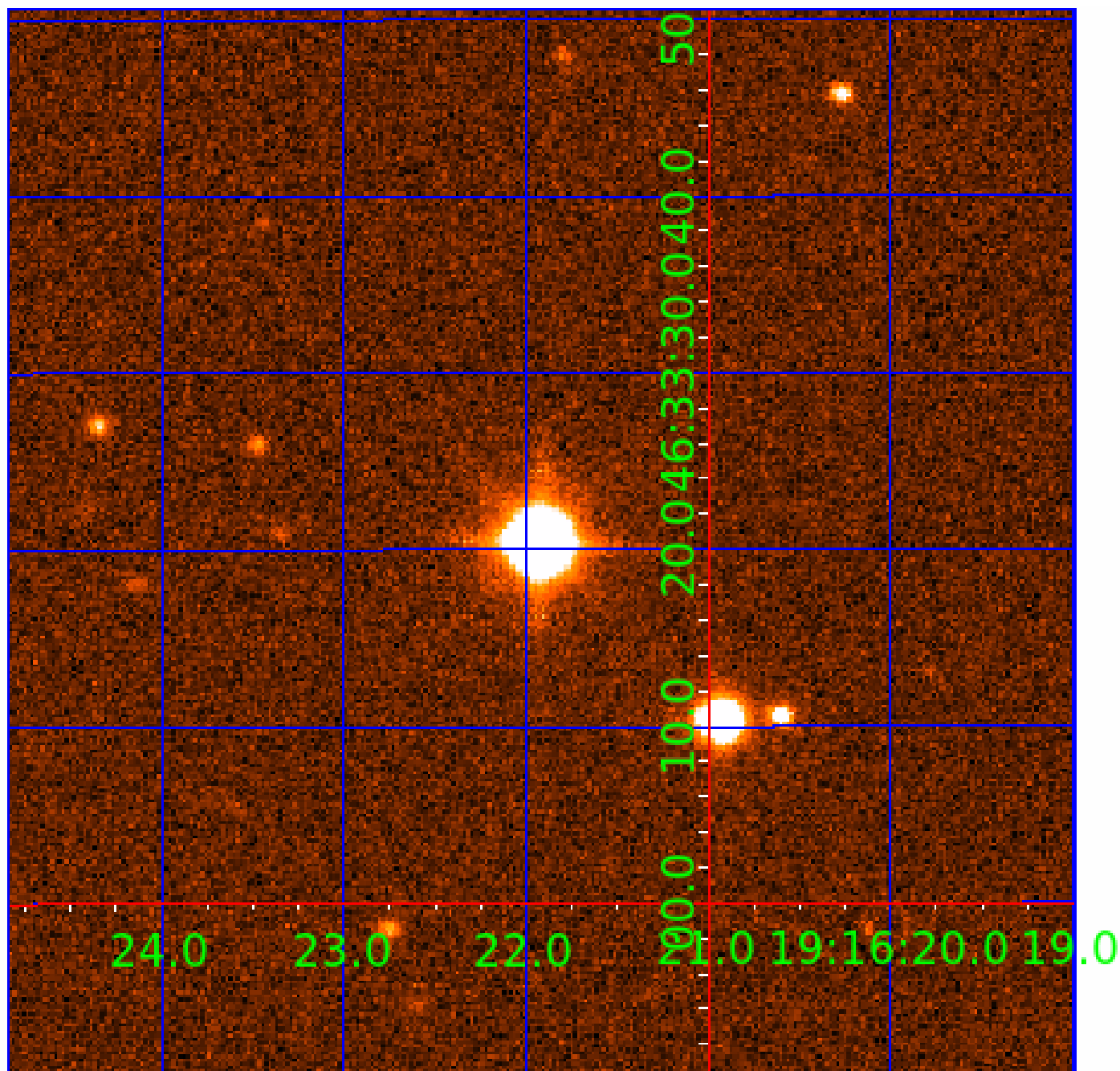


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009764506

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})
009764506-01	OBS	No	2.064565	131.874332	39.6	5.034	12.3	8.6	2.99	7505	2.20	15954.25
009764506-02	OBS	No	1.032238	132.287769	22.1	5.573	9.8	5.8	2.99	7505	1.49	40204.48
009764506-03	OBS	No	91.118080	147.252193	744.2	6.013	11.0	9.4	2.99	7505	15.24	102.29
009764506-04	OBS	No	322.006015	287.873338	1179.0	8.680	10.8	10.6	2.99	7505	18.52	19.00
009764506-05	OBS	No	64.352992	188.301458	702.9	6.201	10.5	9.1	2.99	7505	14.84	162.64
009764506-06	OBS	No	100.521220	198.962913	1226.9	10.941	10.5	11.1	2.99	7505	19.30	89.74
009764506-07	OBS	No	70.555710	134.858518	676.9	6.643	9.6	8.9	2.99	7505	9.62	143.86
009764506-08	OBS	No	179.677589	246.024579	556.7	5.342	9.2	8.3	2.99	7505	7.53	41.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009764506-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009764506-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009764506-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT
009764506-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

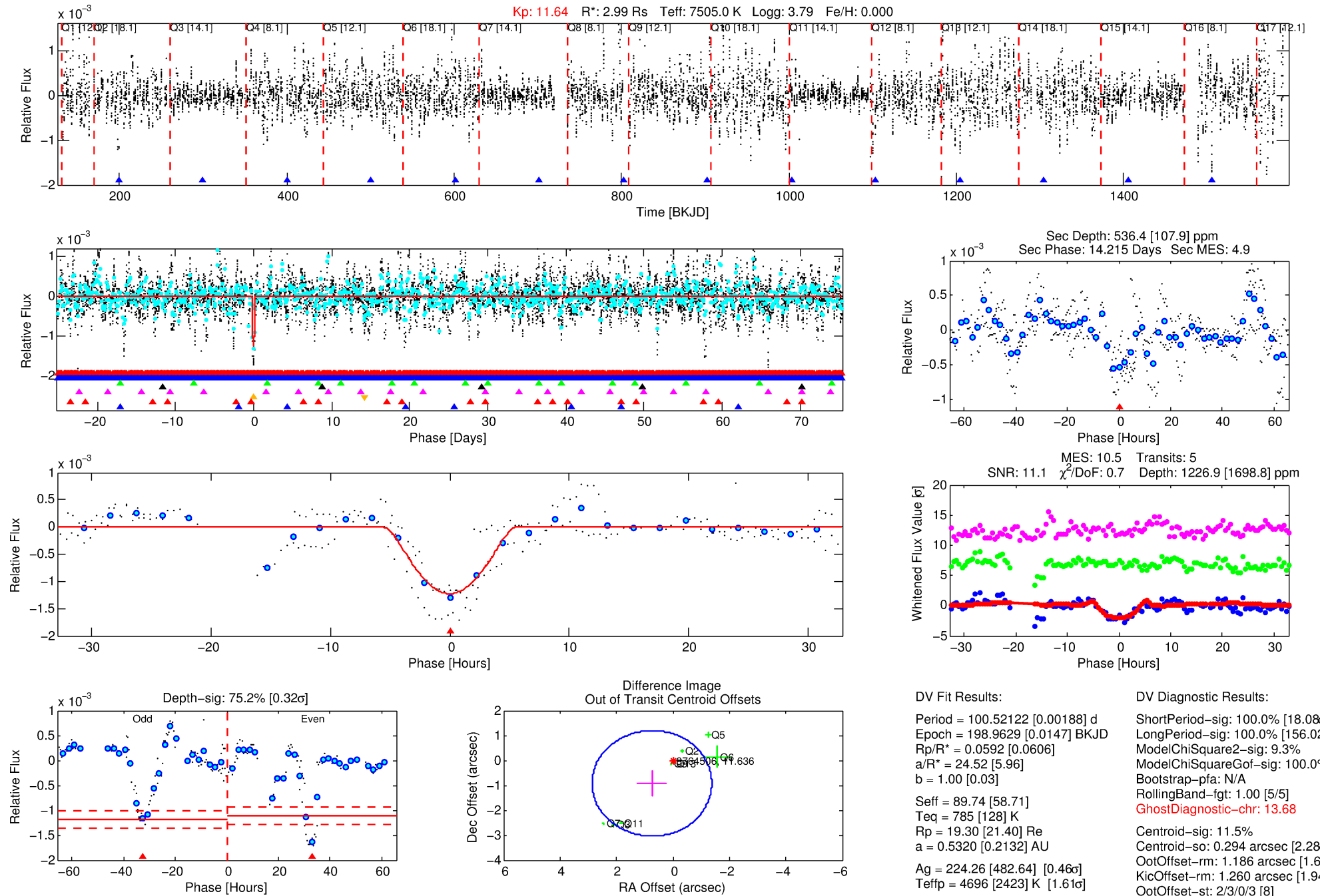
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009764506-06

No Significant Match Found

DV One-Page Summary

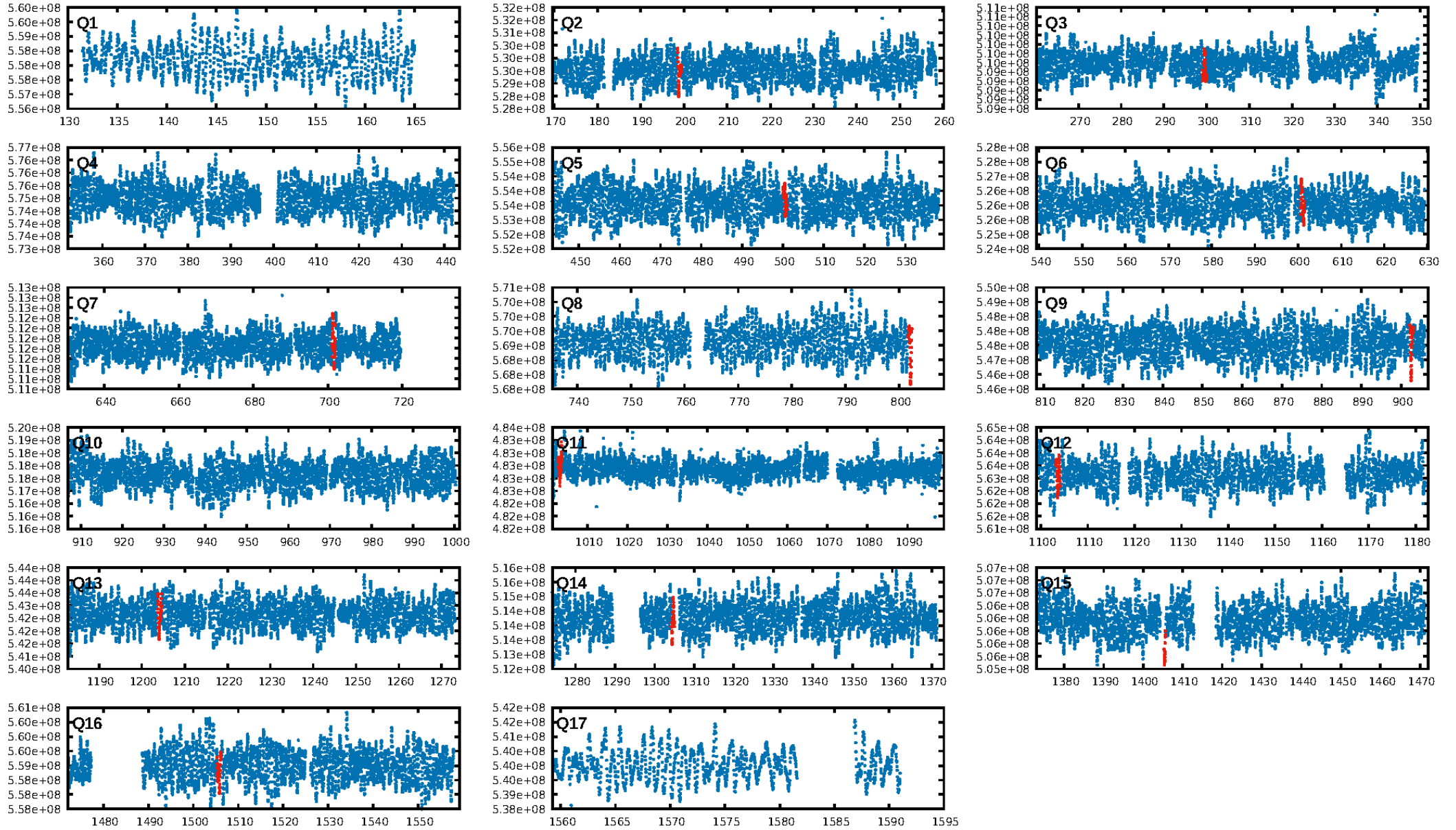
KIC: 9764506 Candidate: 6 of 8 Period: 100.521 d



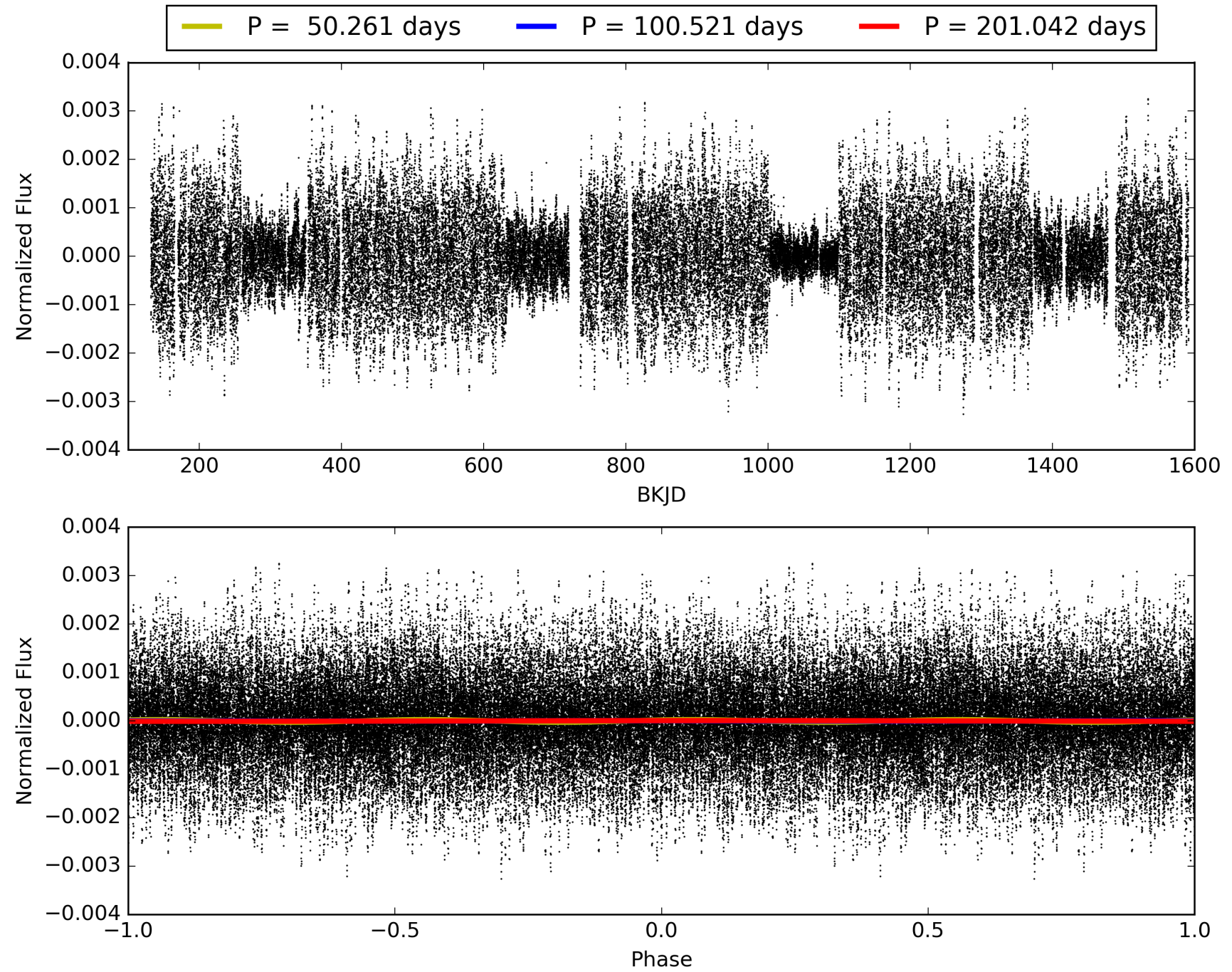
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:36:35 Z

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

TCE 009764506-06, PDC Light Curves

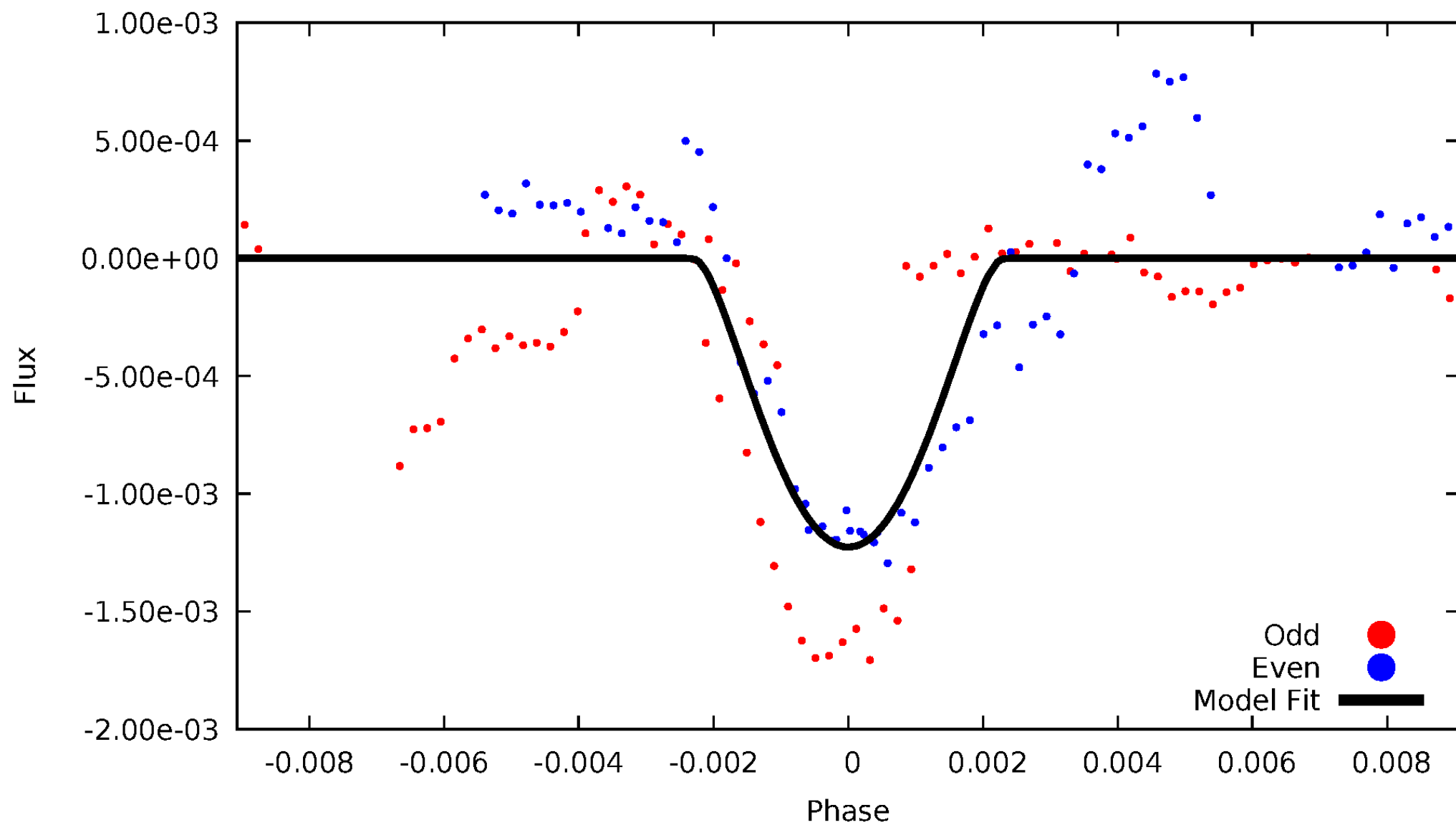


TCE 009764506-06



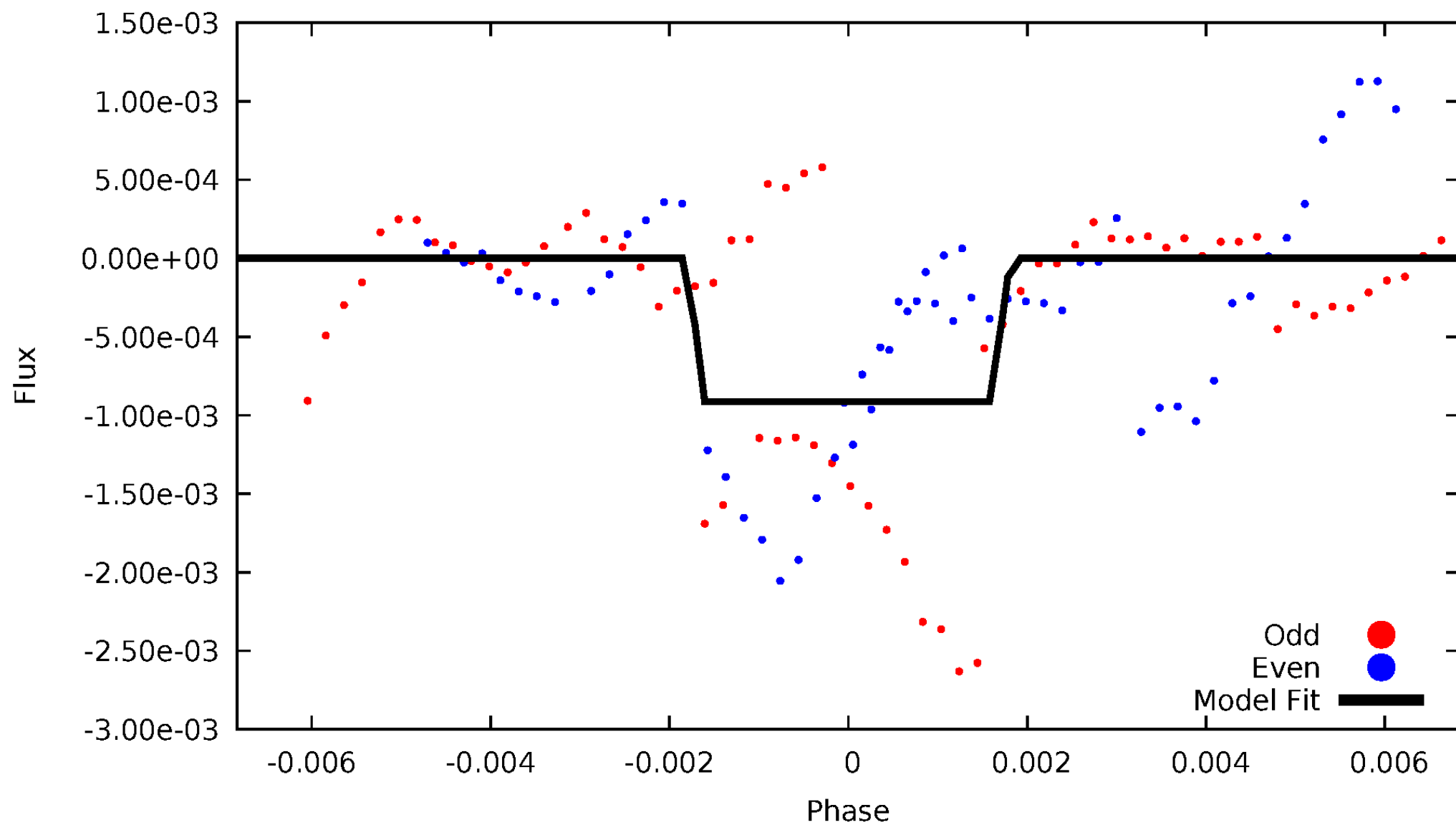
DV Odd/Even

TCE 009764506-06



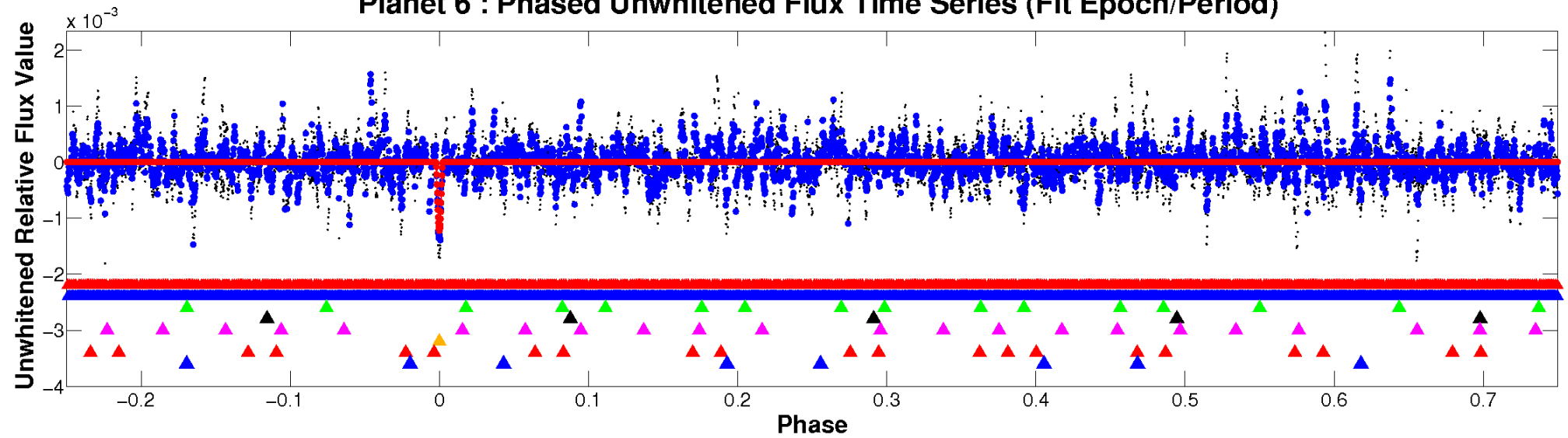
ALT Odd/Even

TCE 009764506-06

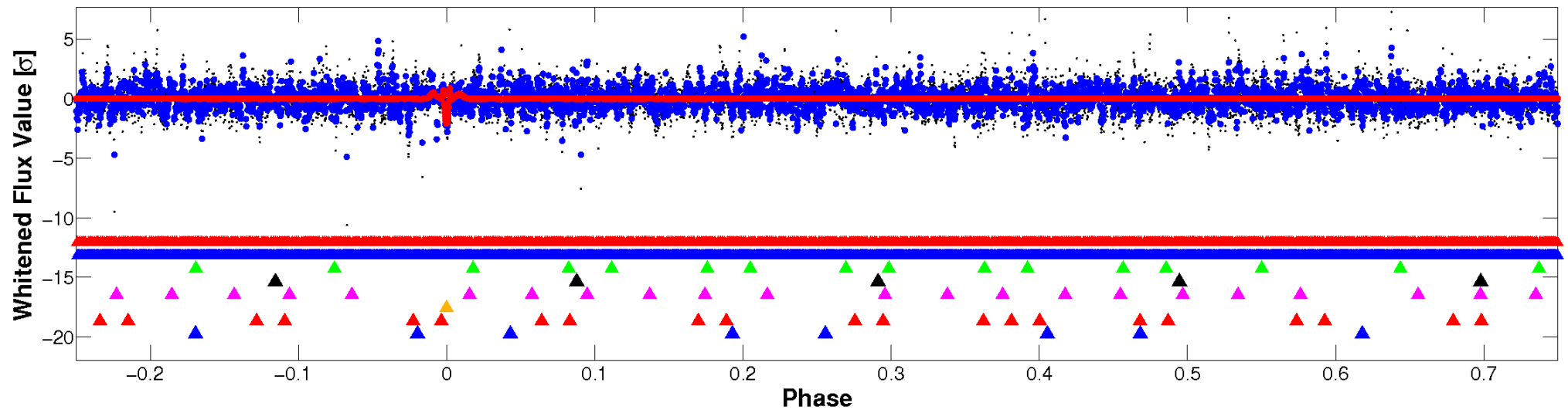


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

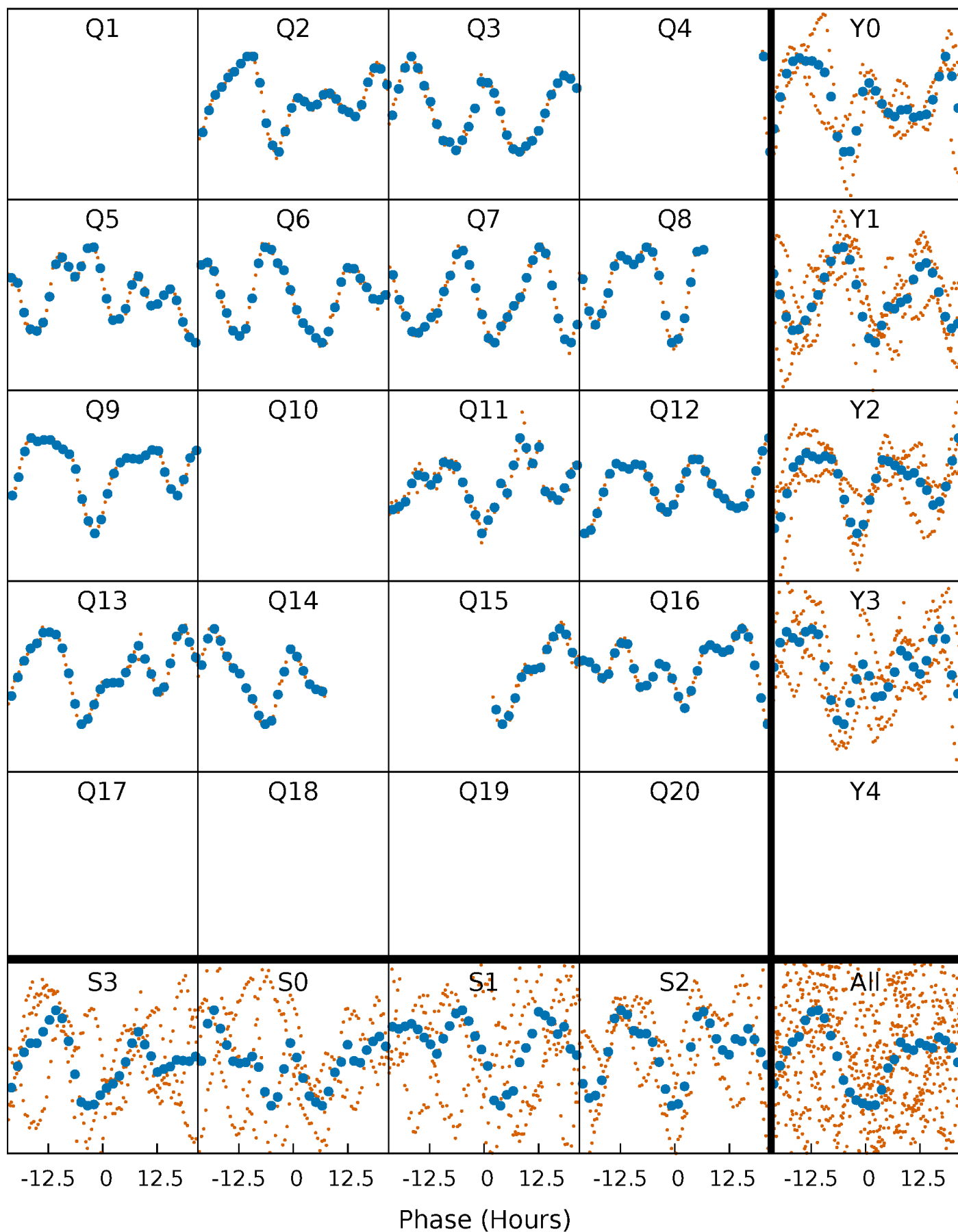


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



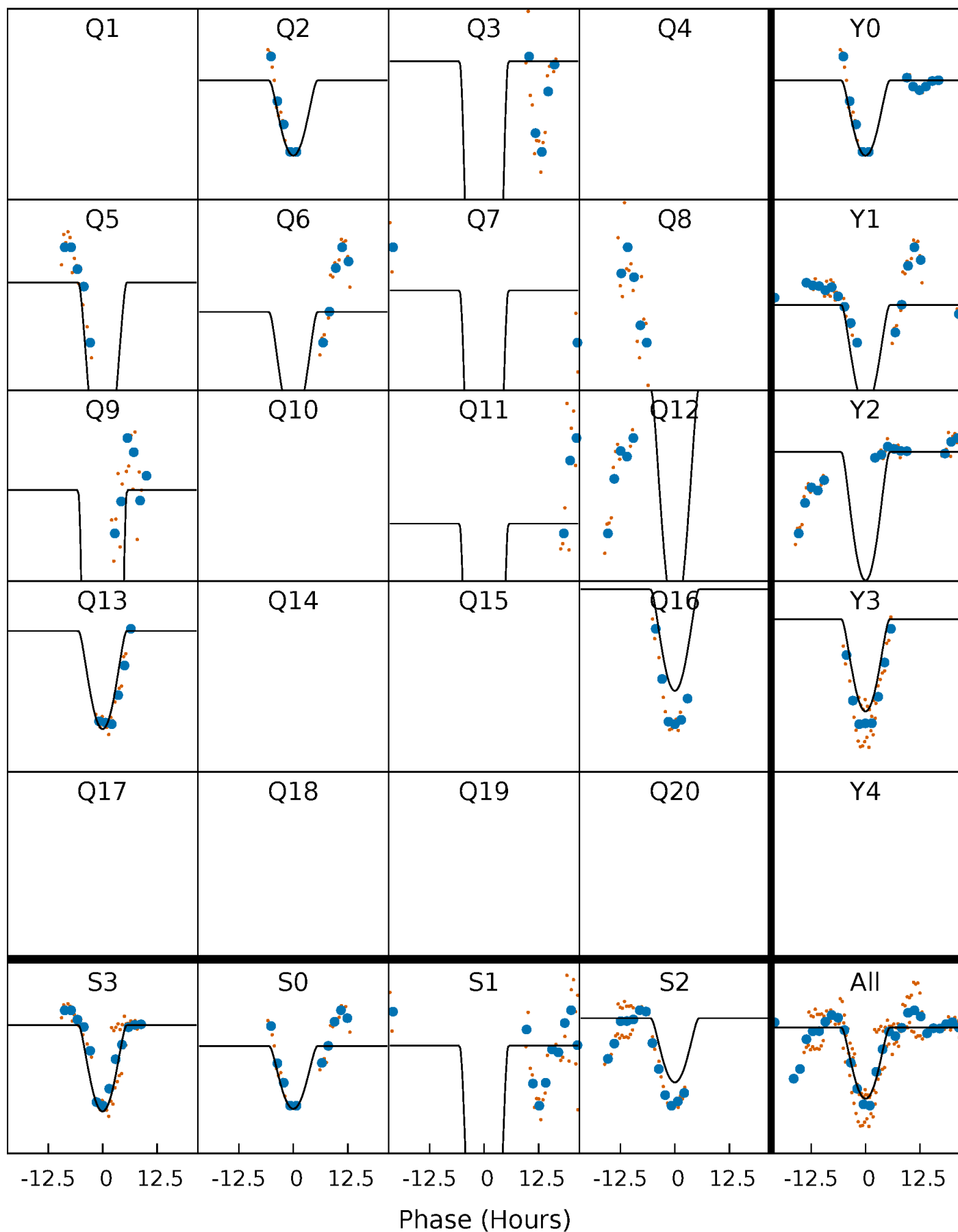
PDC Quarter-Phased Transit Curves

TCE 009764506-06 $P=100.521220$ Days $T_0=198.962913$ (BKJD)



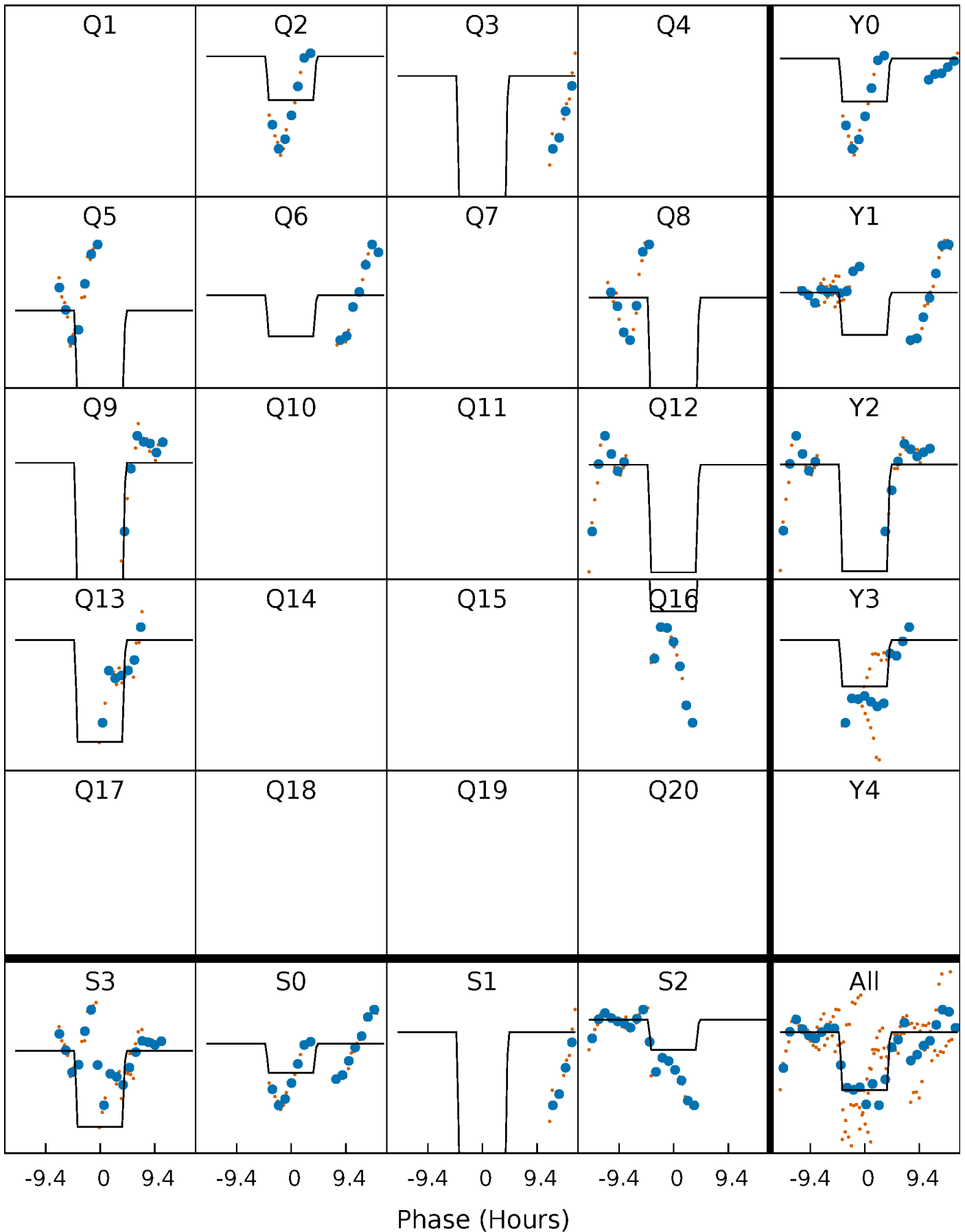
DV Quarter-Phased Transit Curves

TCE 009764506-06 P=100.521220 Days $T_0=198.962913$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

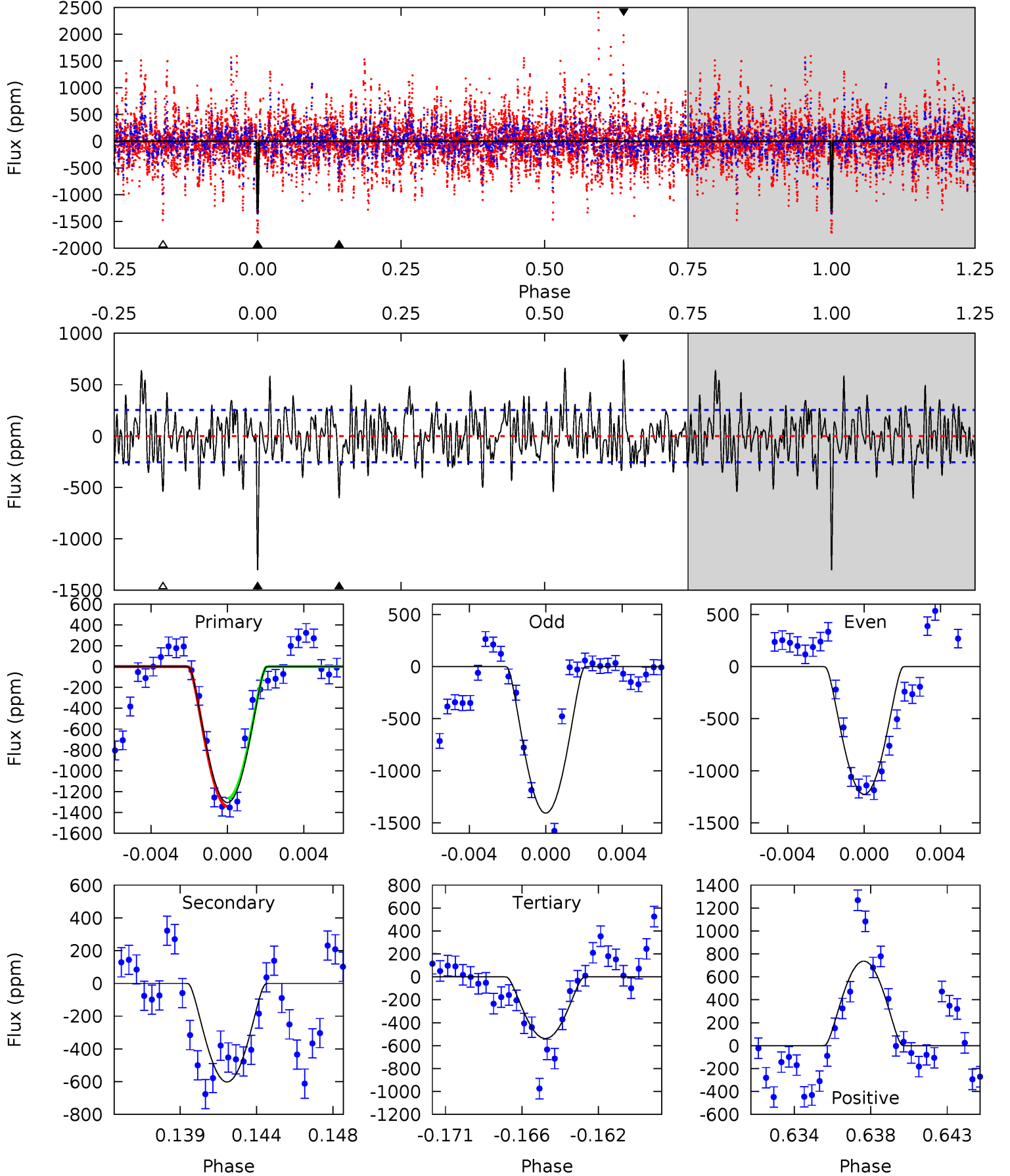
TCE 009764506-06 P=100.523776 Days $T_0=198.878307$ (BKJD)



DV Model-Shift Uniqueness Test

009764506-06, $P = 100.521220$ Days, $E = 98.441693$ Days

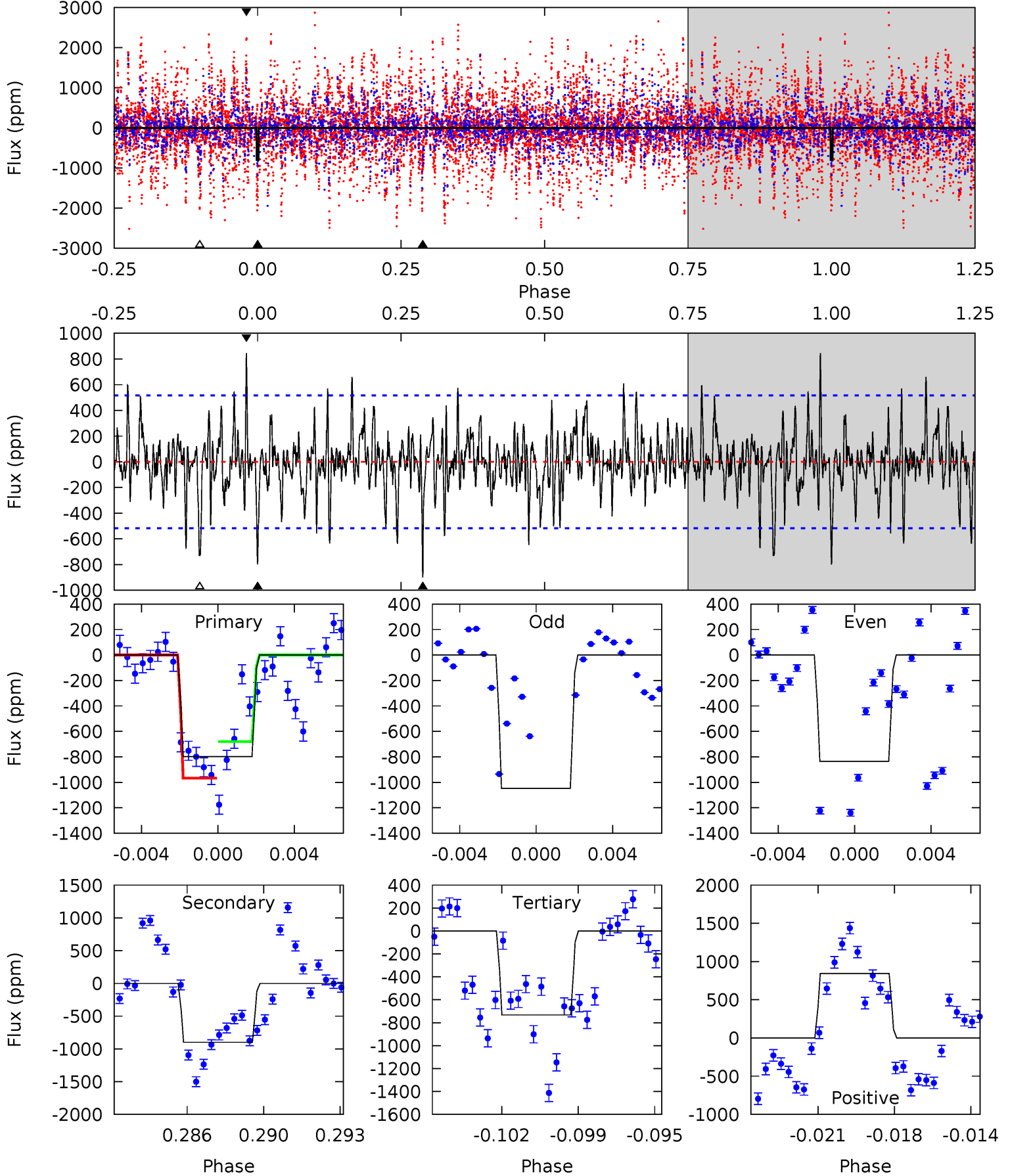
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.6	12.3	11.0	15.0	5.18	2.84	3.89	15.6	11.6	1.30	-2.75	1.82	0.84	0.36	0.78



Alt Model-Shift Uniqueness Test

009764506-06, P = 100.523776 Days, E = 98.354531 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.06	9.08	7.40	8.52	5.22	2.92	2.00	0.67	-0.45	1.68	0.56	1.12	1.13	0.48	1.44



Stellar Parameters For KIC 009764506

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7505^{+209}_{-314}	$3.785^{+0.368}_{-0.092}$	$0.000^{+0.200}_{-0.350}$	$2.989^{+0.425}_{-1.275}$	$1.984^{+0.088}_{-0.500}$	$0.105^{+0.310}_{-0.030}$
	+3%/-4%	+10%/-2%	+inf%/-inf%	+14%/-43%	+4%/-25%	+296%/-29%
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 009764506-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-602 ± 49	$20.76^{+15.99}_{-12.65}$	1069^{+68}_{-111}	4508^{+2401}_{-758}	211^{+1171}_{-143}
Alt.	-899 ± 99	$15.71^{+16.50}_{-11.20}$	1071^{+71}_{-113}	5508^{+6323}_{-1299}	549^{+5795}_{-416}

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

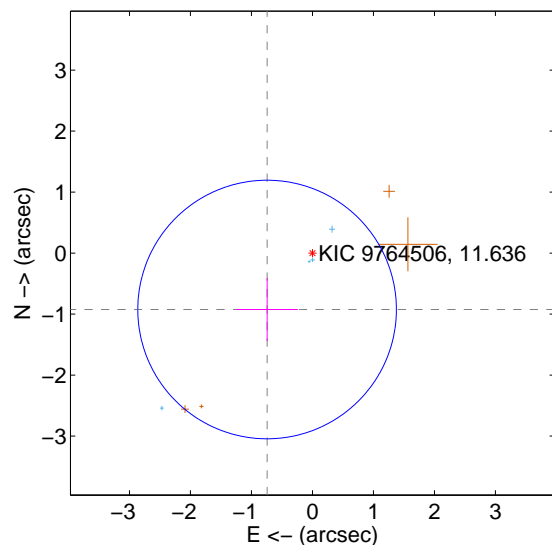
Supplemental centroid analysis for 009764506-06. **Kepler magnitude: 11.64.** Transit SNR 11.05

There are 4 quarters with good PRF difference image offsets

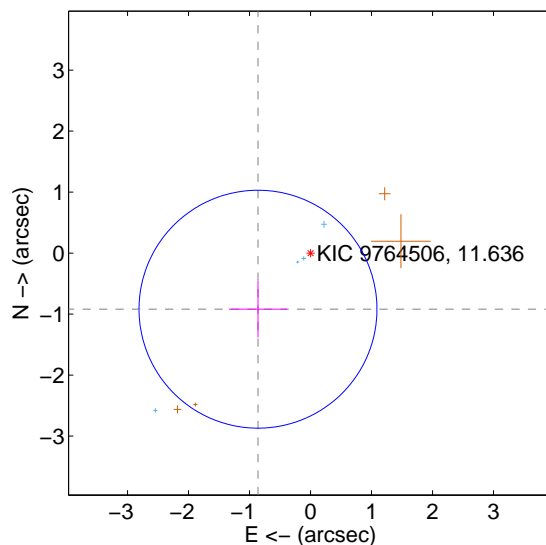
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.186 ± 0.706	1.68	0.743 ± 0.505	-0.925 ± 0.516
PRF-fit source offset from KIC position	1.260 ± 0.650	1.94	0.861 ± 0.479	-0.920 ± 0.464
photometric centroid source offset	0.29 ± 0.13	2.28	0.28 ± 0.13	-0.09 ± 0.12

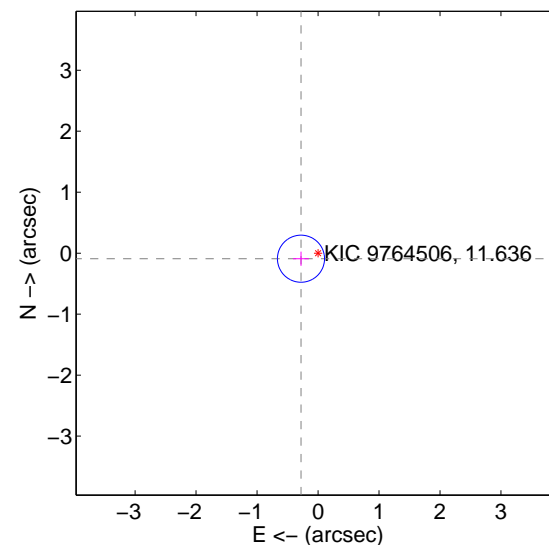
offset from difference PRF-fit to OOT PRF-fit



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.

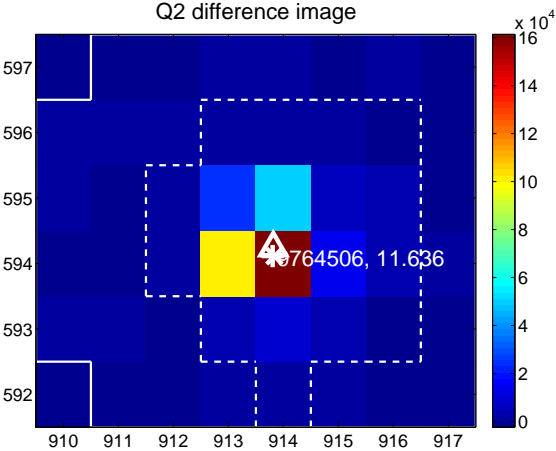
Q1 no difference image



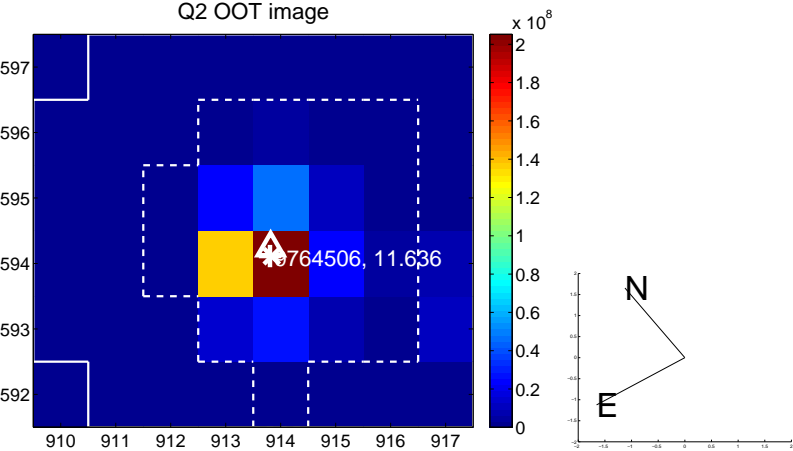
Q1 no OOT image



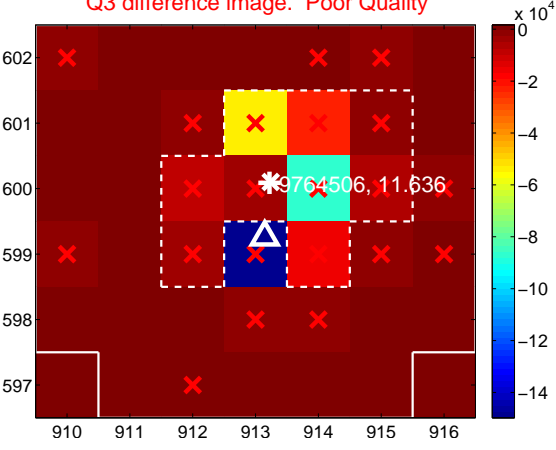
Q2 difference image



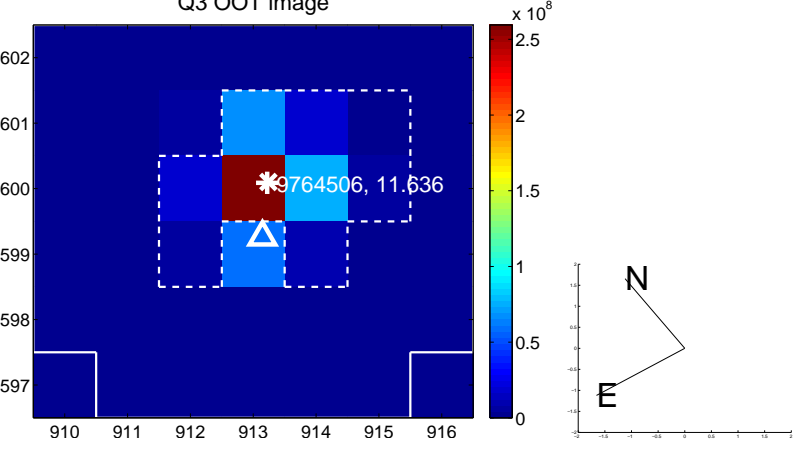
Q2 OOT image



Q3 difference image. Poor Quality



Q3 OOT image



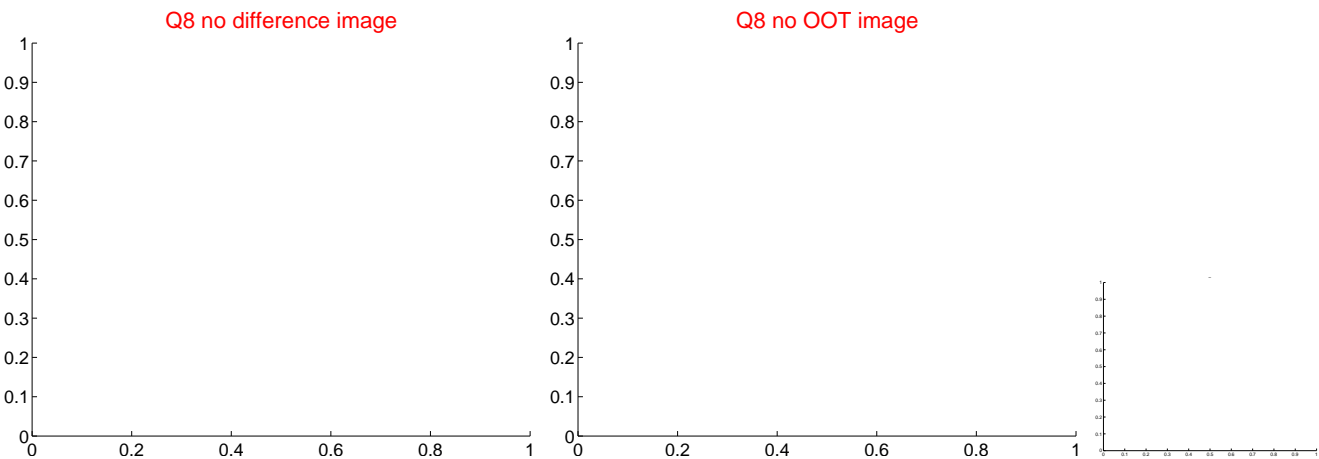
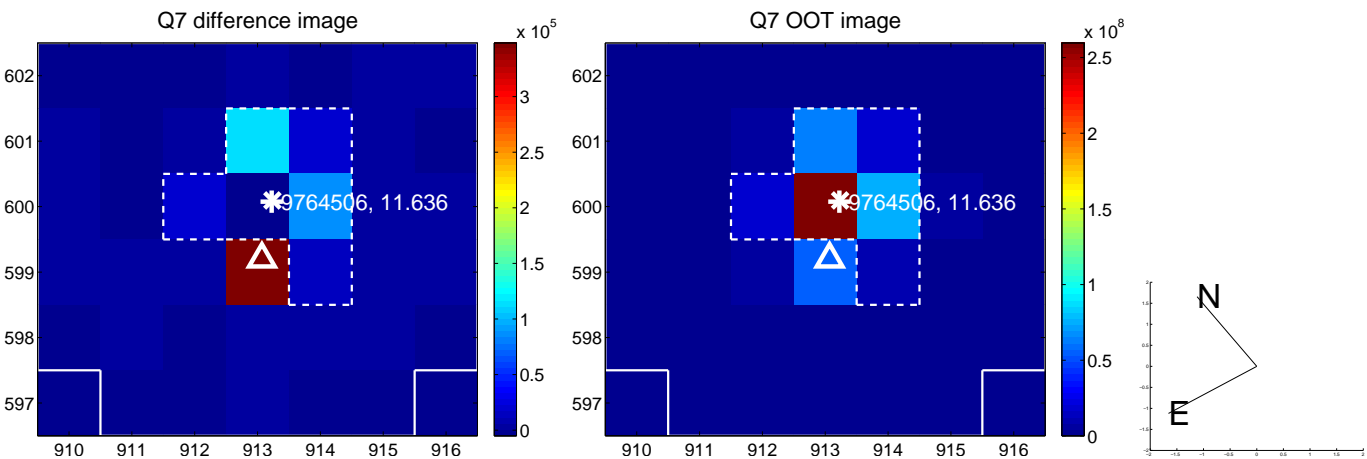
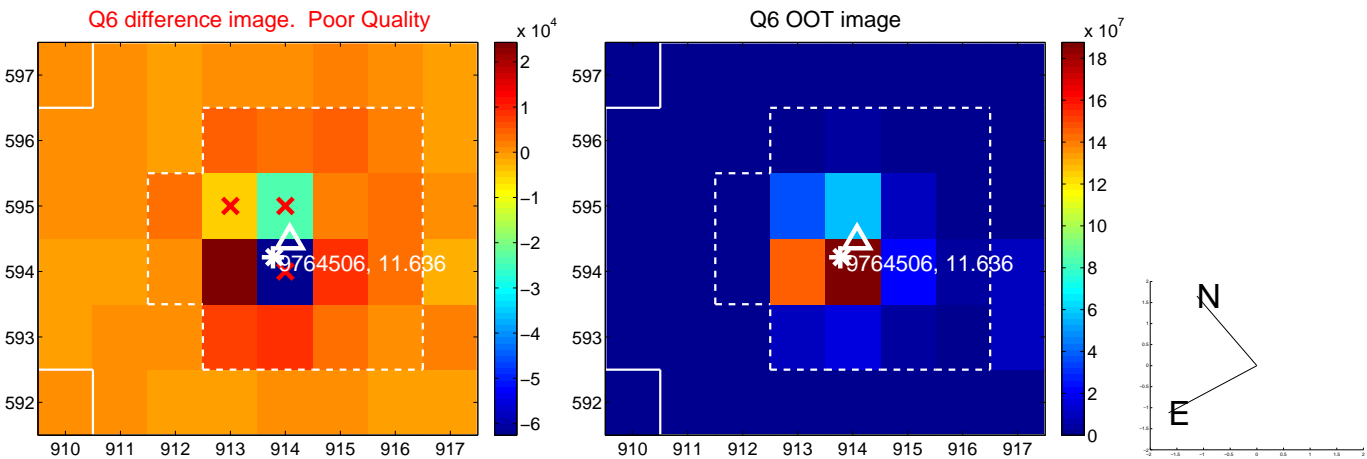
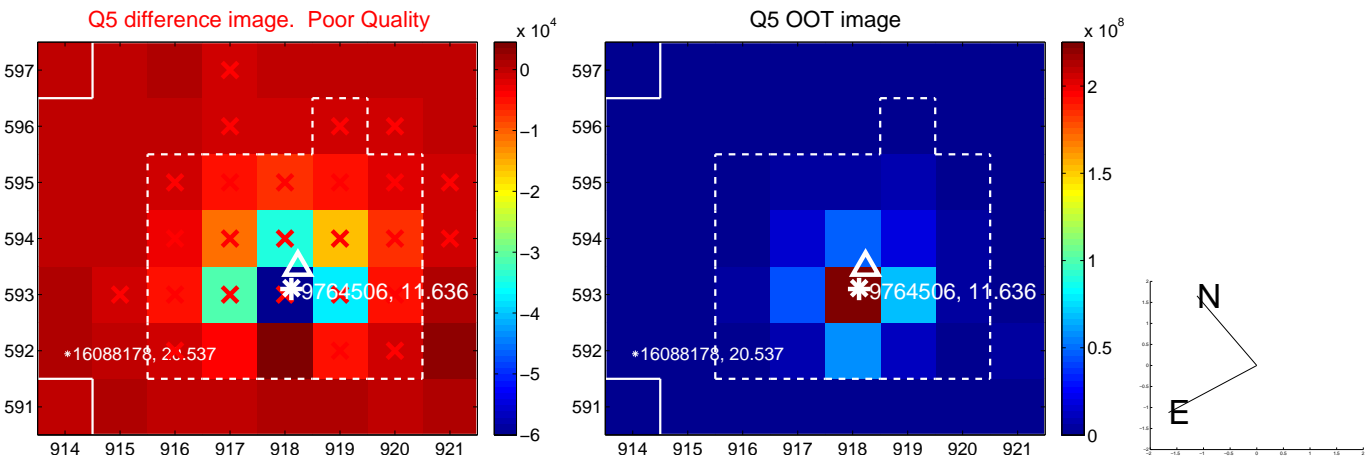
Q4 no difference image



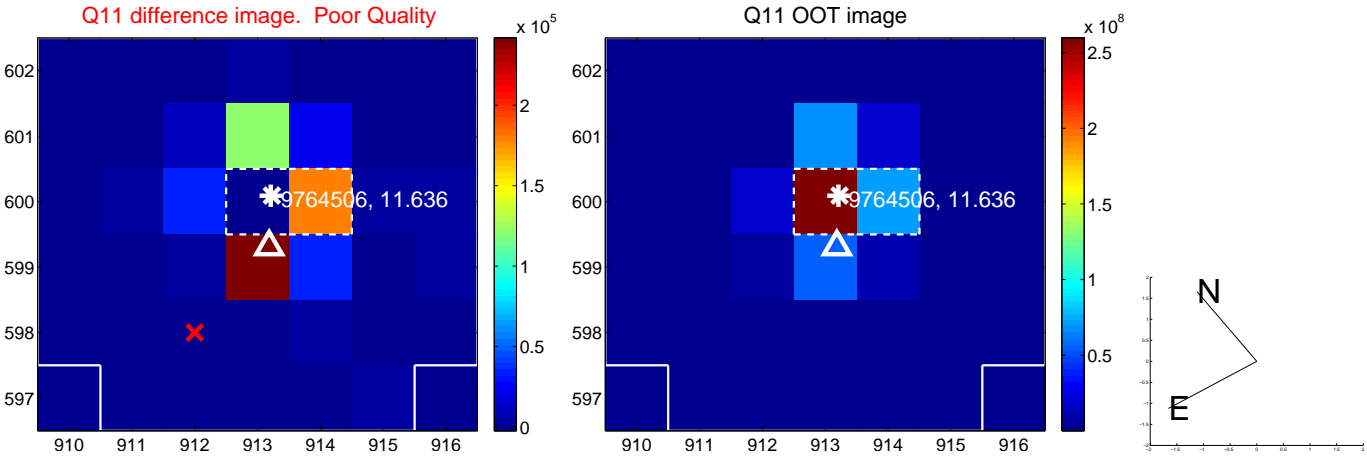
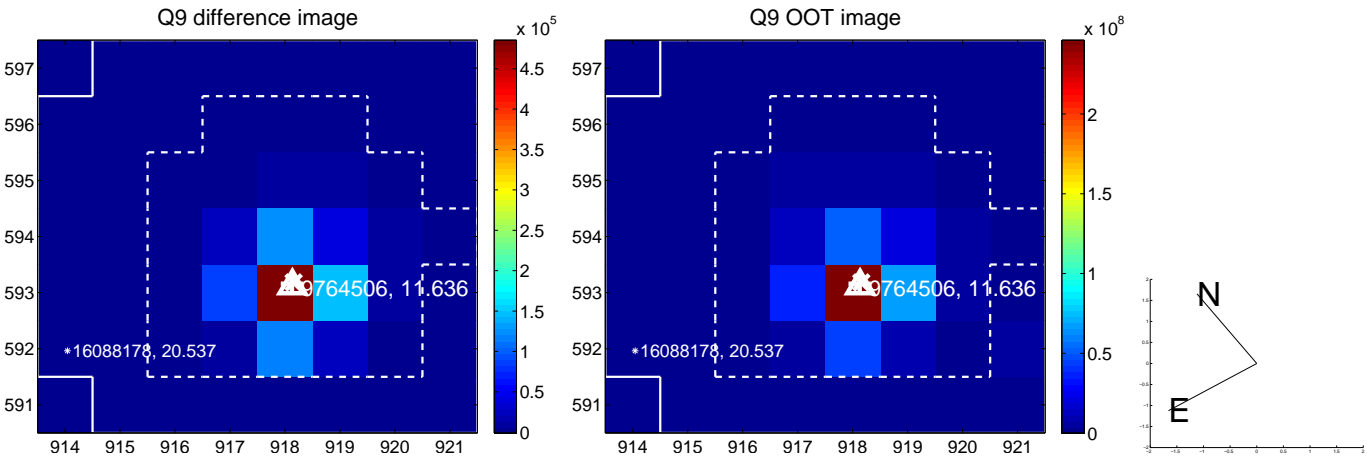
Q4 no OOT image



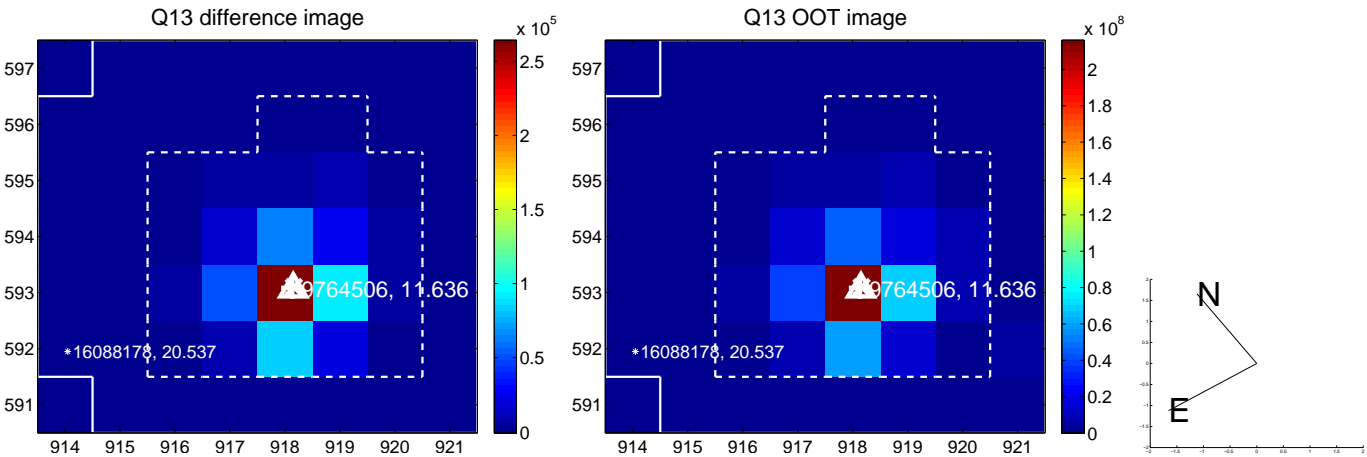
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



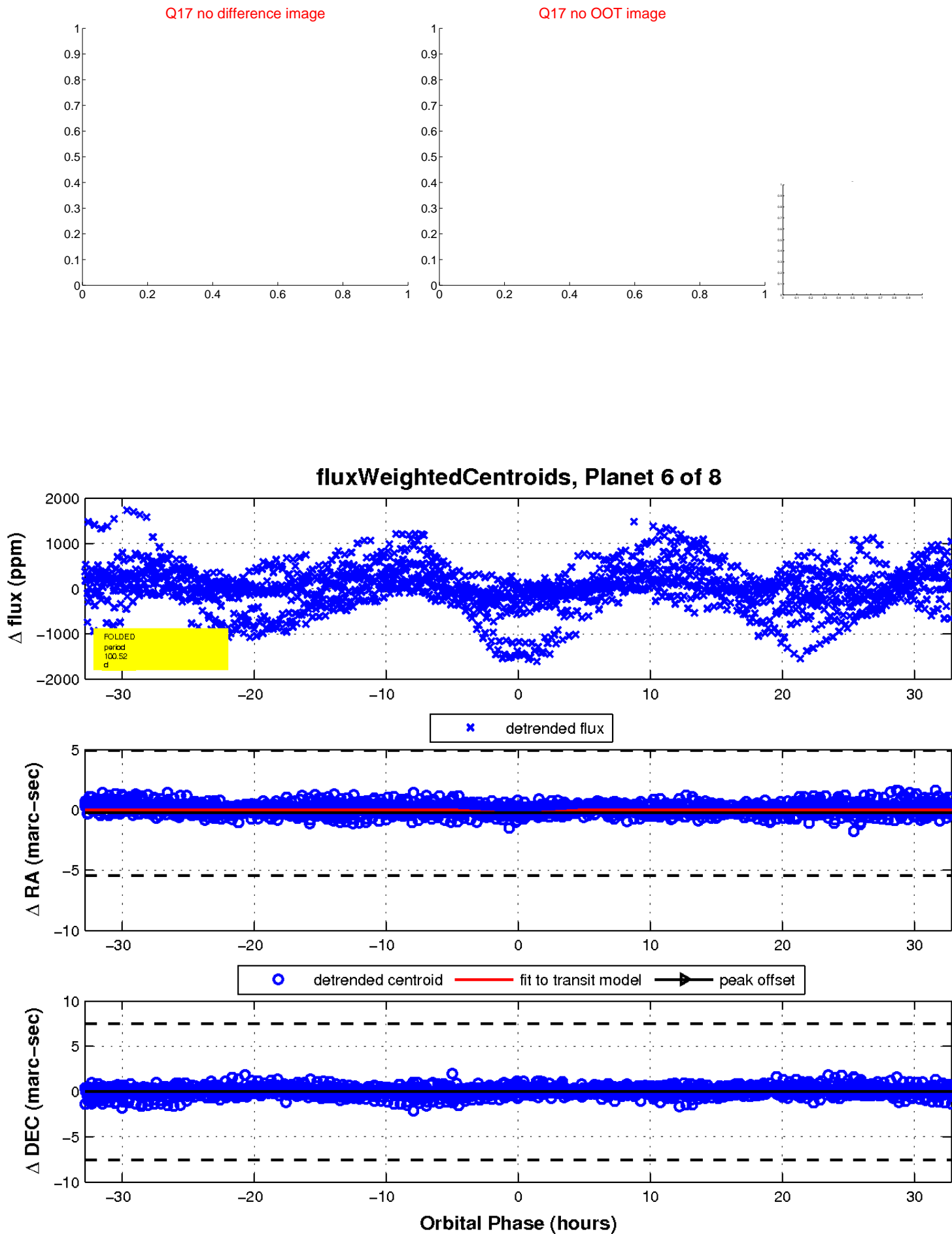
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

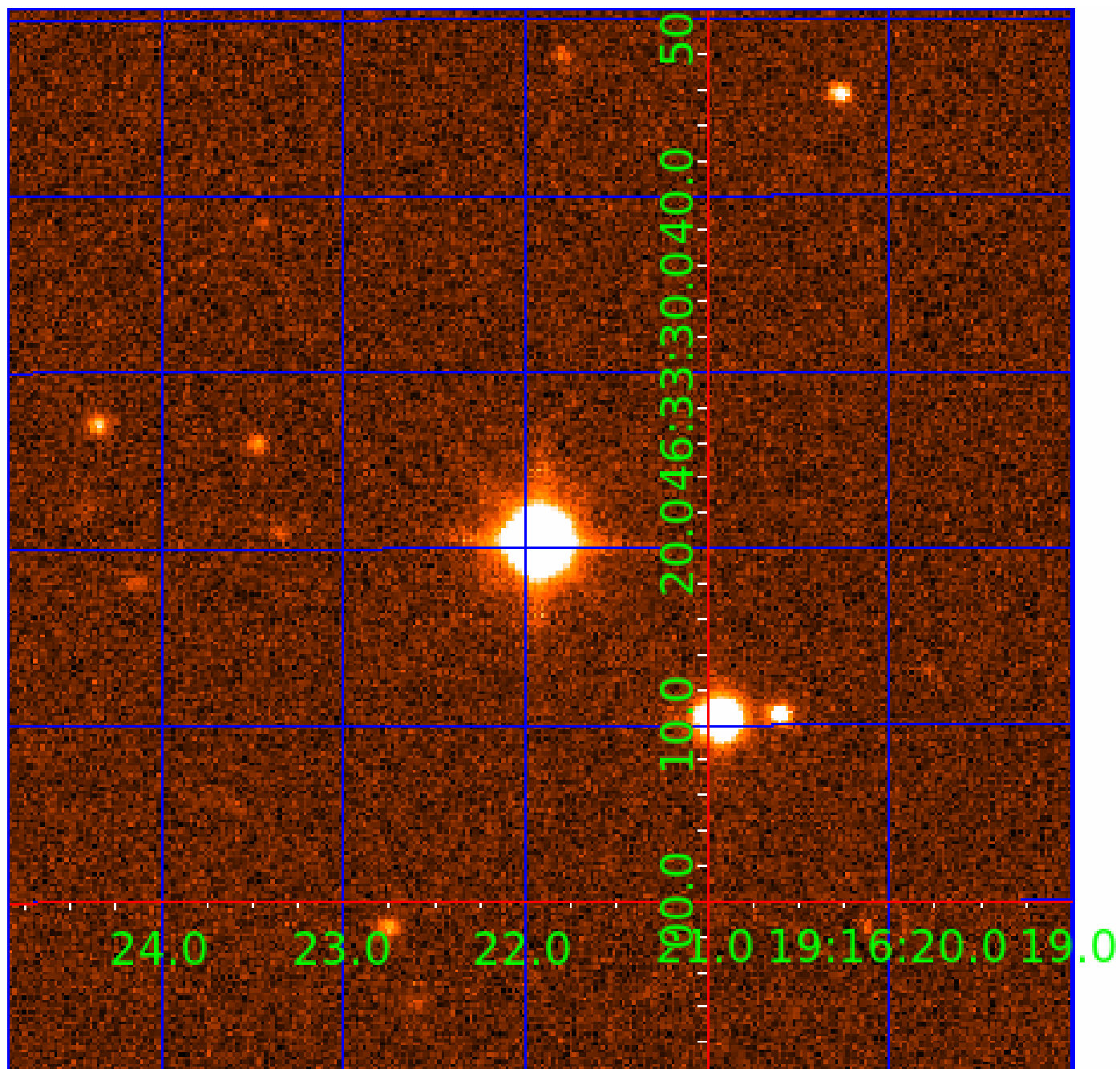


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009764506

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})
009764506-01	OBS	No	2.064565	131.874332	39.6	5.034	12.3	8.6	2.99	7505	2.20	15954.25
009764506-02	OBS	No	1.032238	132.287769	22.1	5.573	9.8	5.8	2.99	7505	1.49	40204.48
009764506-03	OBS	No	91.118080	147.252193	744.2	6.013	11.0	9.4	2.99	7505	15.24	102.29
009764506-04	OBS	No	322.006015	287.873338	1179.0	8.680	10.8	10.6	2.99	7505	18.52	19.00
009764506-05	OBS	No	64.352992	188.301458	702.9	6.201	10.5	9.1	2.99	7505	14.84	162.64
009764506-06	OBS	No	100.521220	198.962913	1226.9	10.941	10.5	11.1	2.99	7505	19.30	89.74
009764506-07	OBS	No	70.555710	134.858518	676.9	6.643	9.6	8.9	2.99	7505	9.62	143.86
009764506-08	OBS	No	179.677589	246.024579	556.7	5.342	9.2	8.3	2.99	7505	7.53	41.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009764506-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009764506-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009764506-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT
009764506-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

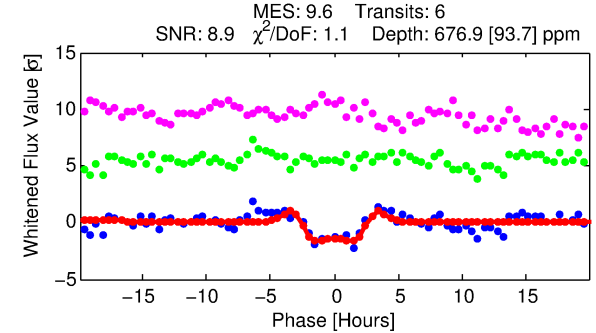
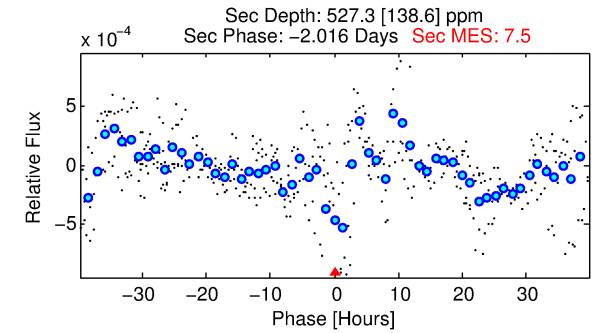
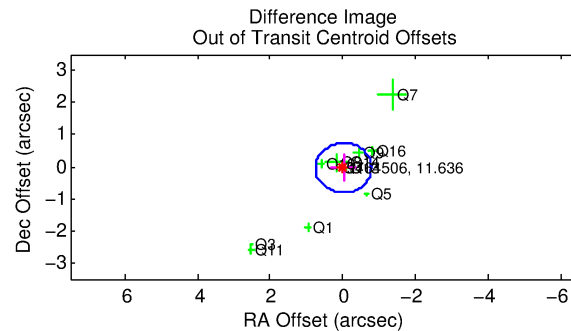
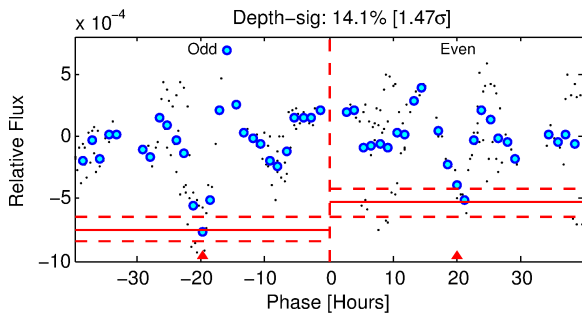
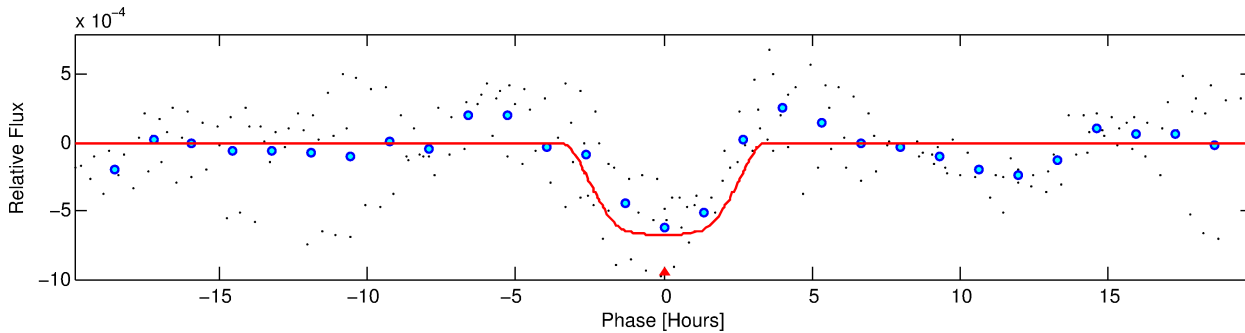
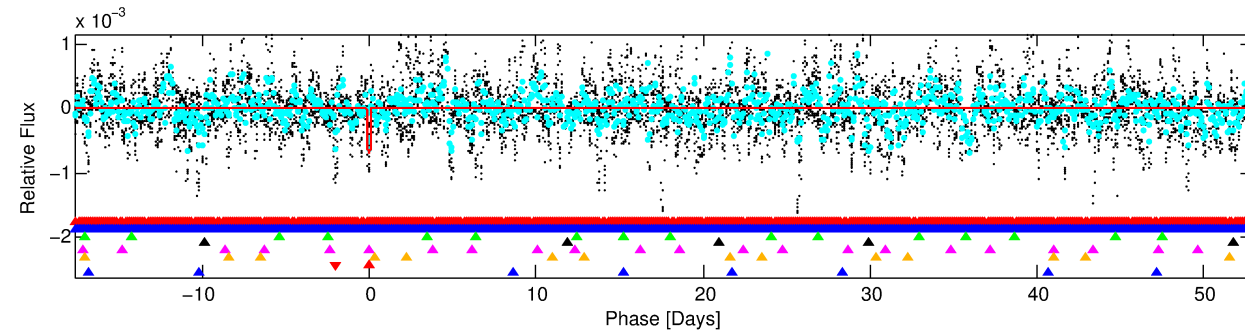
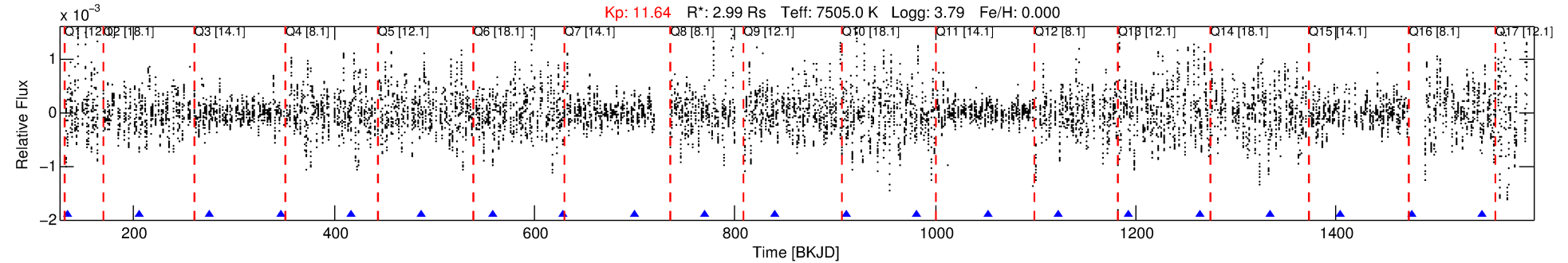
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009764506-07

No Significant Match Found

DV One-Page Summary

KIC: 9764506 Candidate: 7 of 8 Period: 70.556 d



DV Fit Results:

Period = 70.55571 [0.00080] d
Epoch = 134.8585 [0.0078] BKJD
Rp/R* = 0.0295 [0.0022]
a/R* = 30.66 [3.31]
b = 0.96 [0.01]
Seff = 143.86 [94.11]
Teff = 883 [144] K
Rp = 9.62 [4.17] Re
a = 0.4201 [0.1684] AU
Ag = 553.69 [388.38] [1.42 σ]
Teffp = 6623 [574] K [9.70 σ]

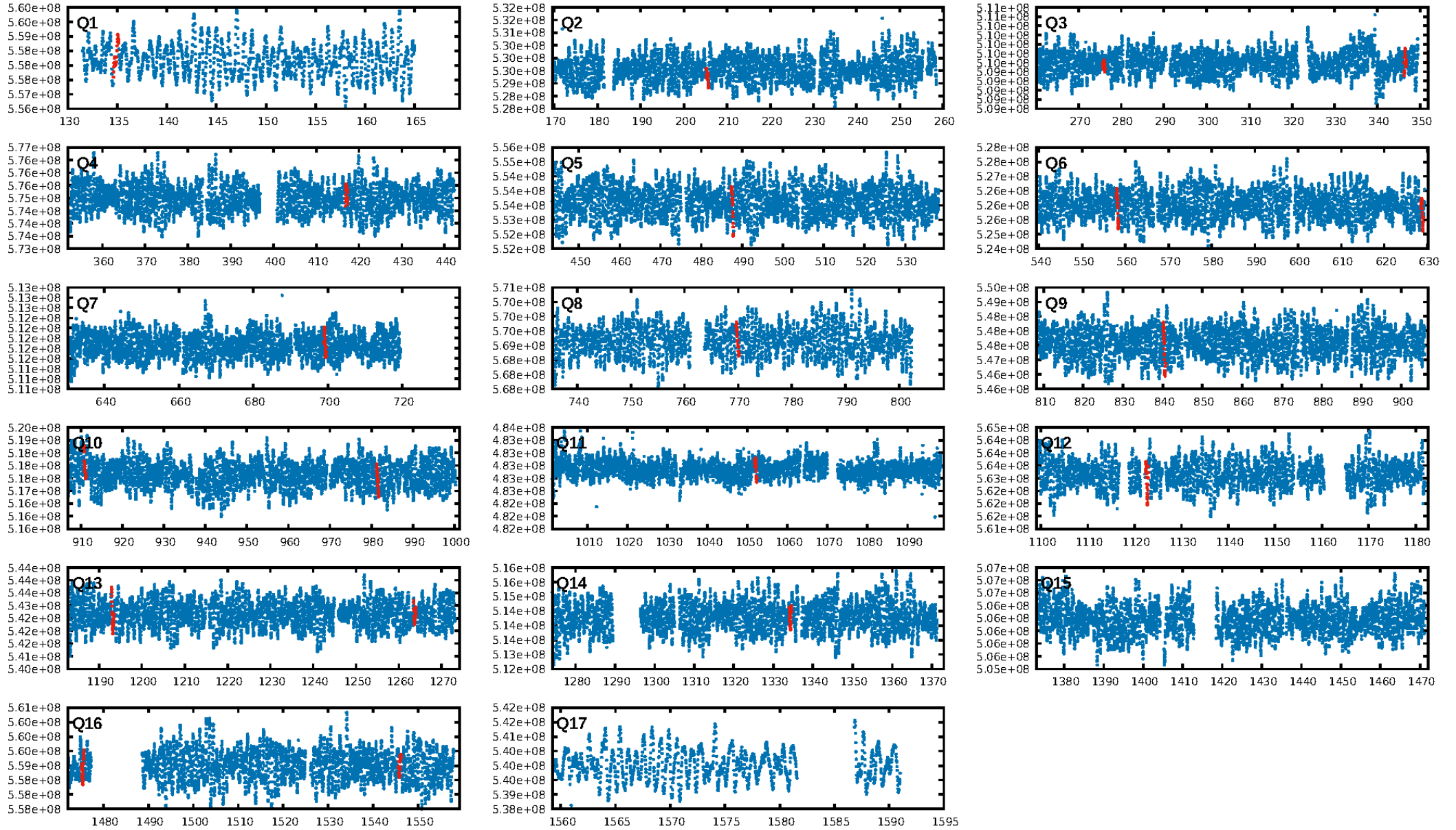
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [16.38 σ]
LongPeriod-sig: 100.0% [55.08 σ]
ModelChiSquare2-sig: 48.6%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -1.277
Centroid-sig: 0.8%
Centroid-so: 0.189 arcsec [1.11 σ]
OotOffset-rm: 0.041 arcsec [0.16 σ]
OotOffset-st: 2/3/3/4 [12]
KicOffset-rm: 0.079 arcsec [0.17 σ]
KicOffset-st: 2/3/3/4 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 0.00 [0/14]

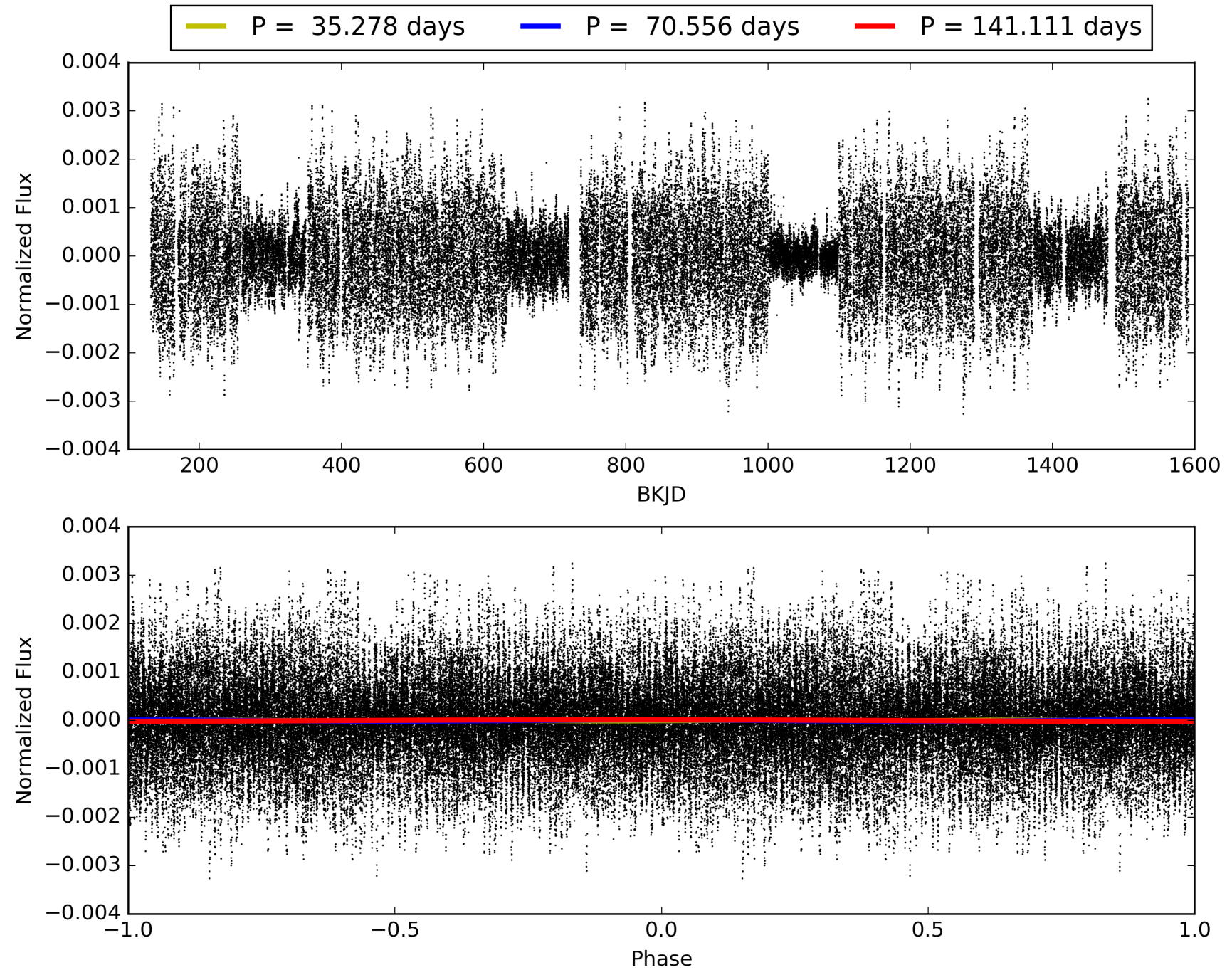
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:36:39 Z

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

TCE 009764506-07, PDC Light Curves

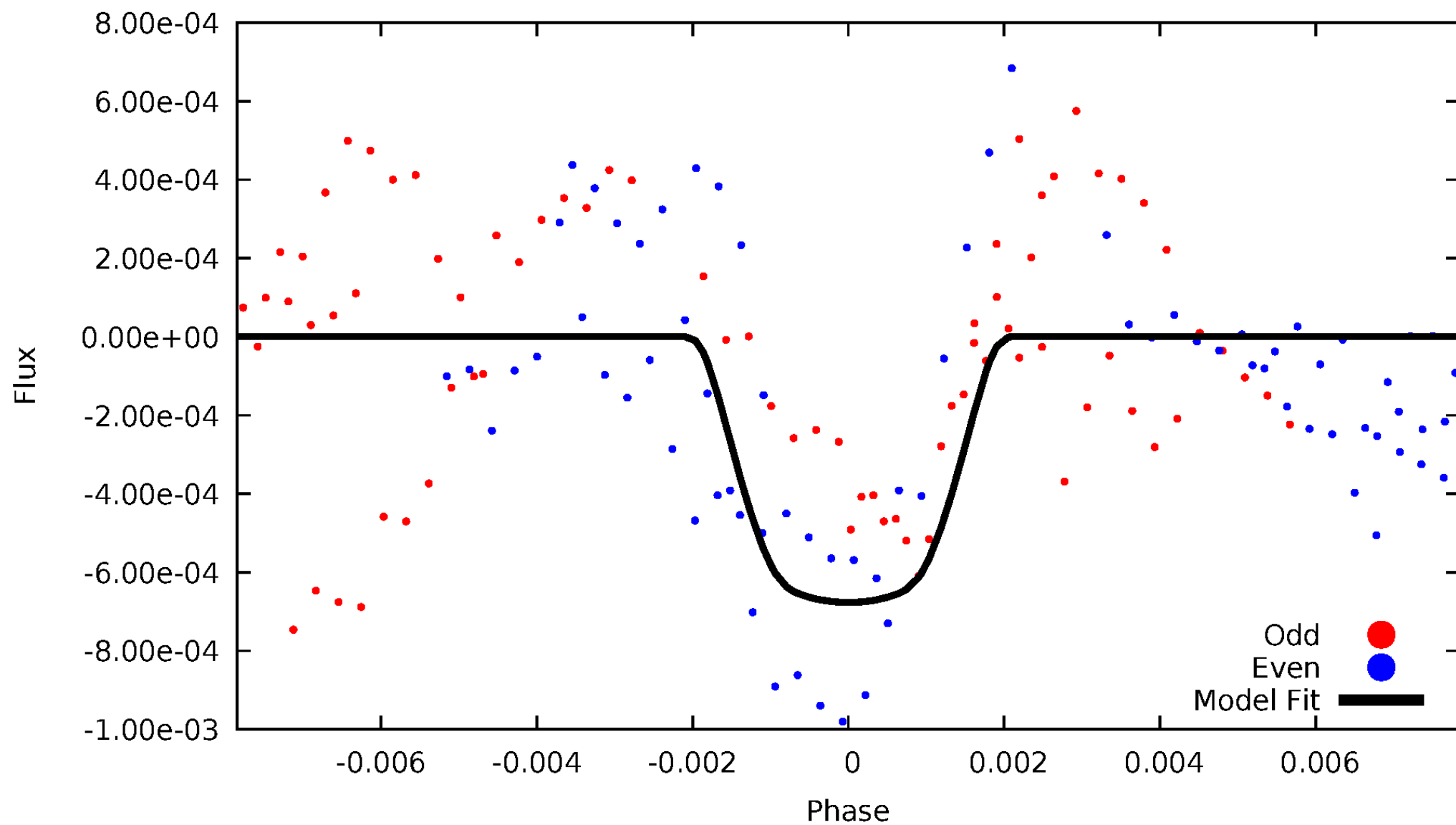


TCE 009764506-07



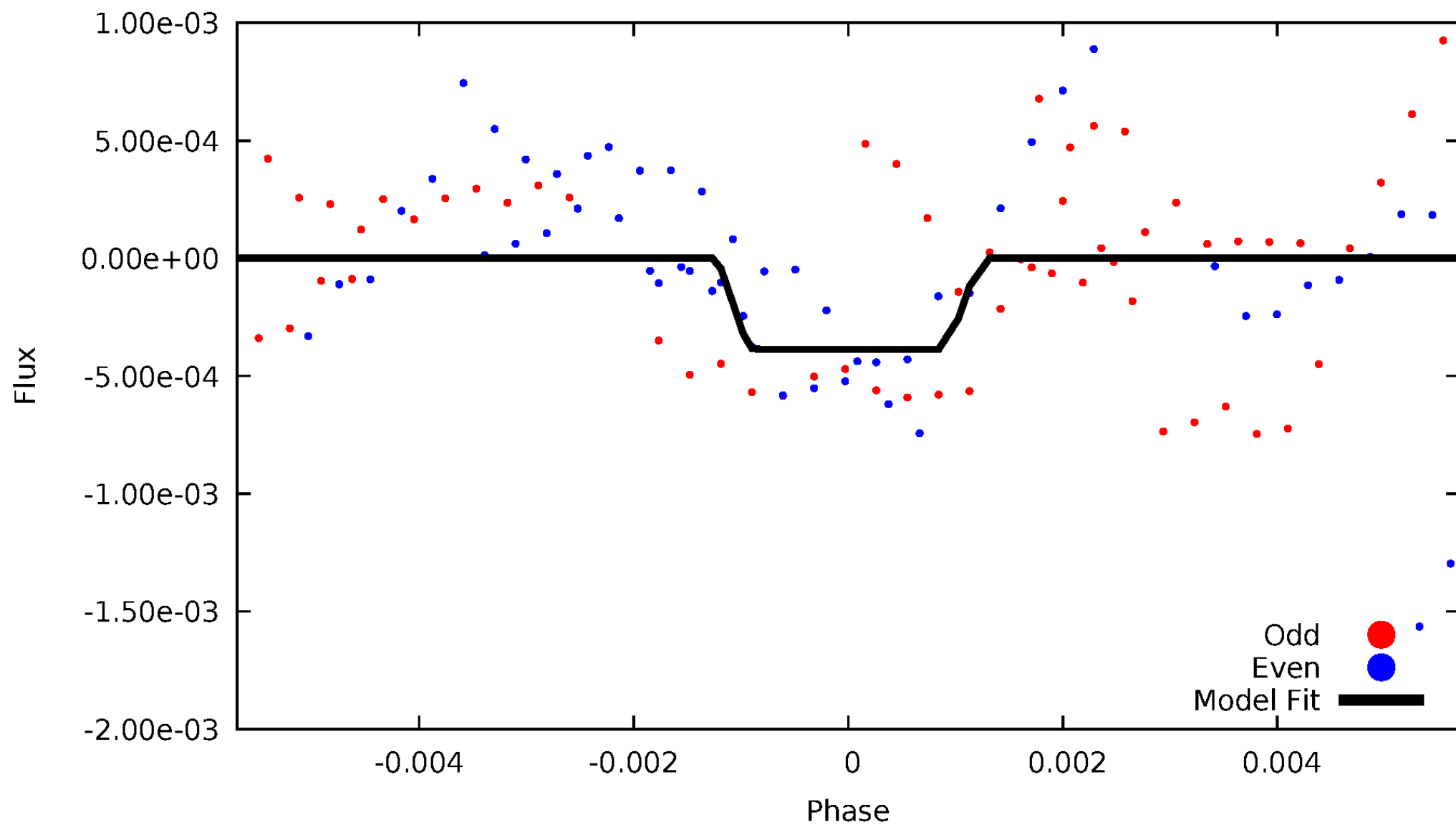
DV Odd/Even

TCE 009764506-07



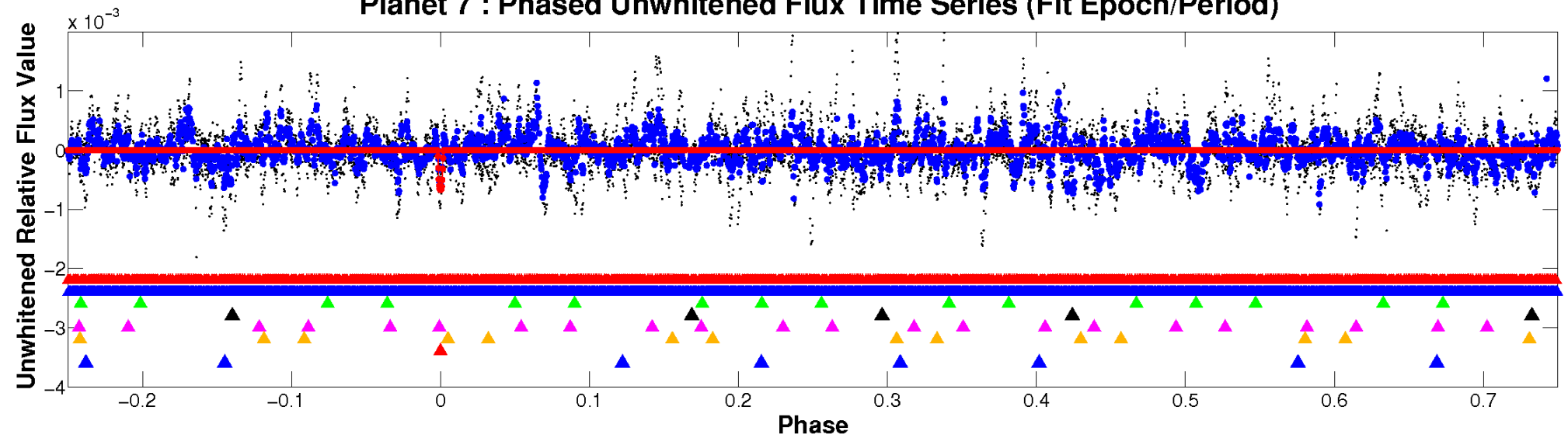
ALT Odd/Even

TCE 009764506-07

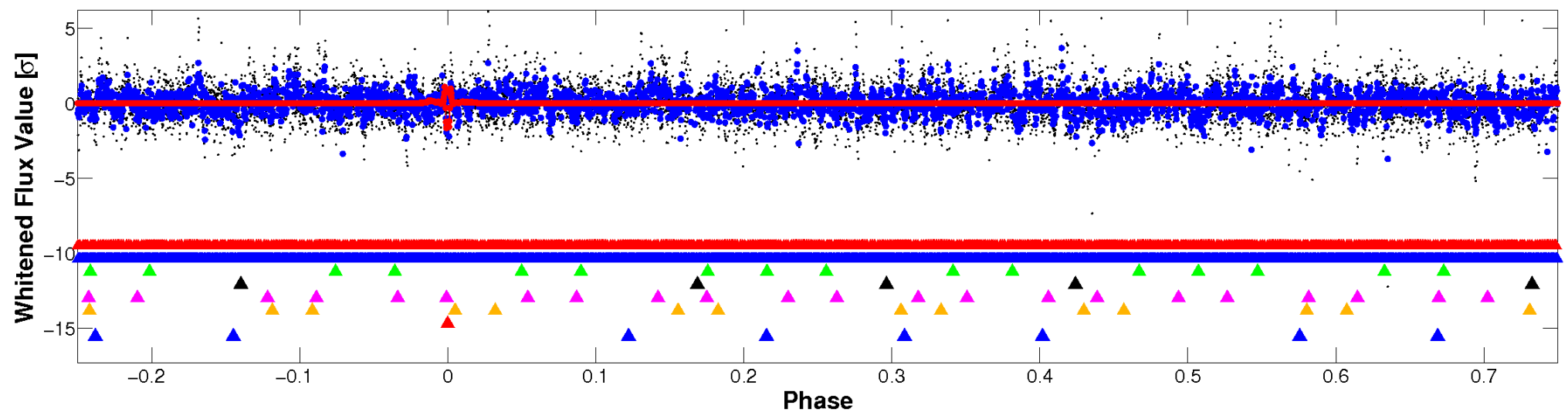


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

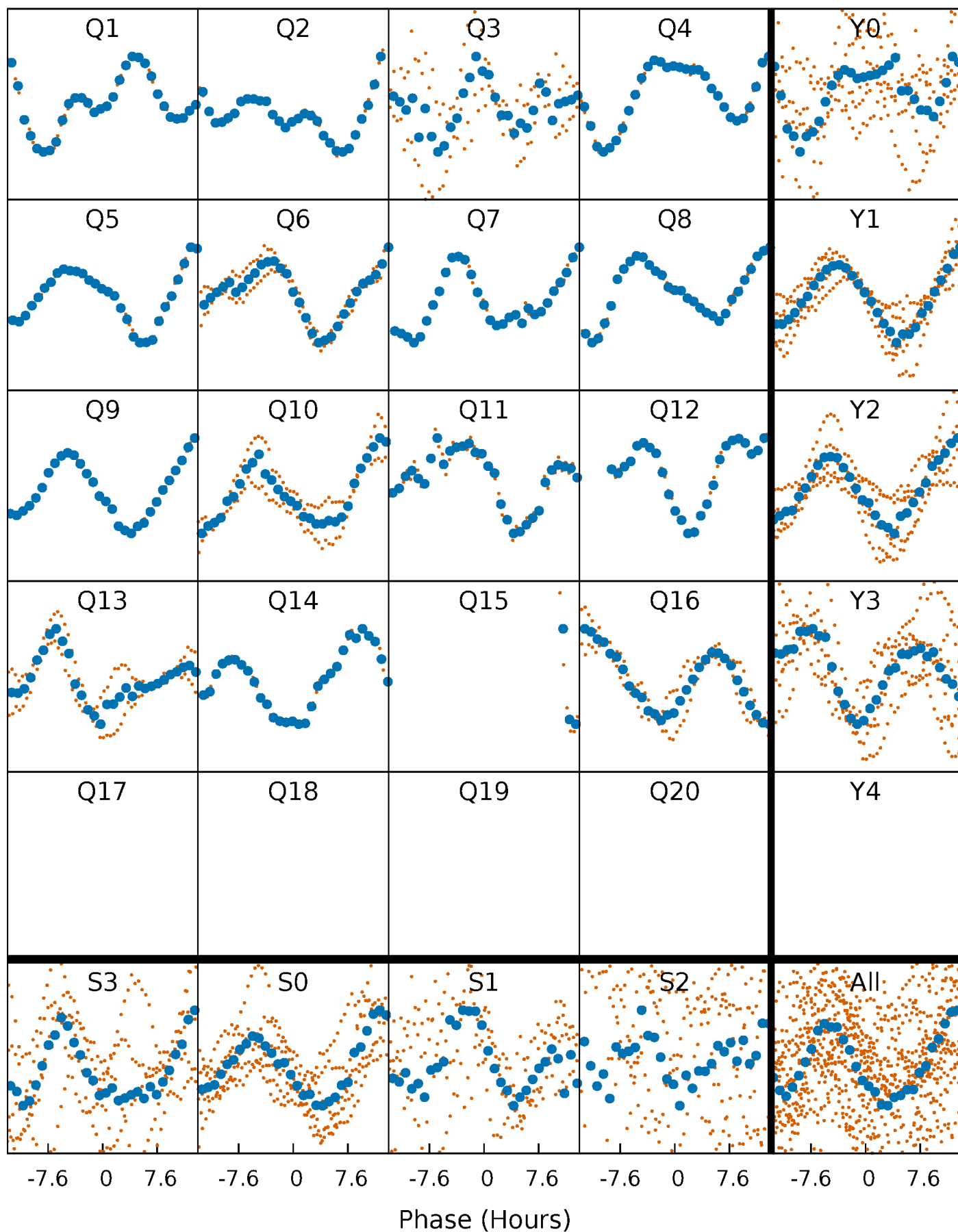


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



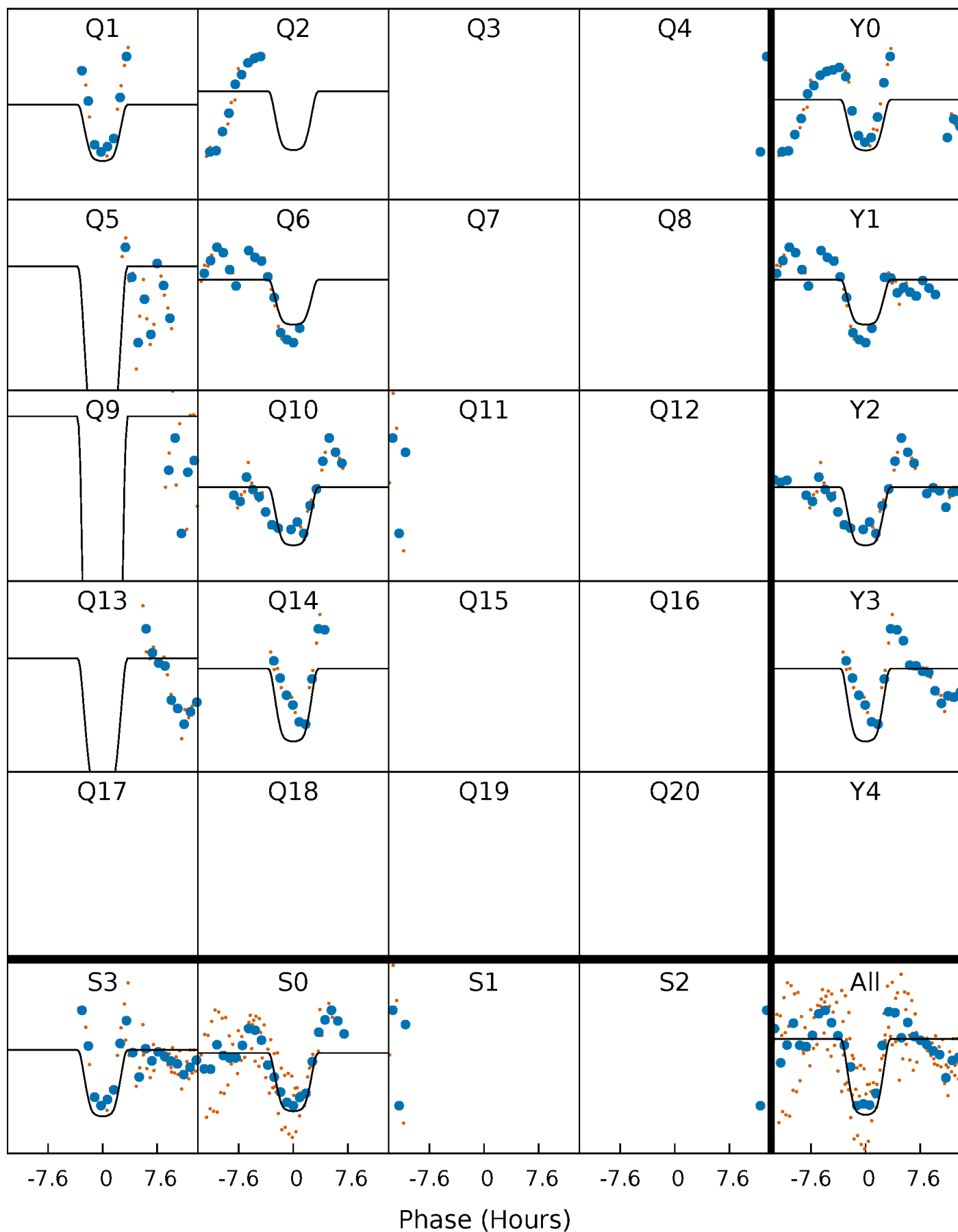
PDC Quarter-Phased Transit Curves

TCE 009764506-07 $P = 70.555710$ Days $T_0 = 134.858518$ (BKJD)



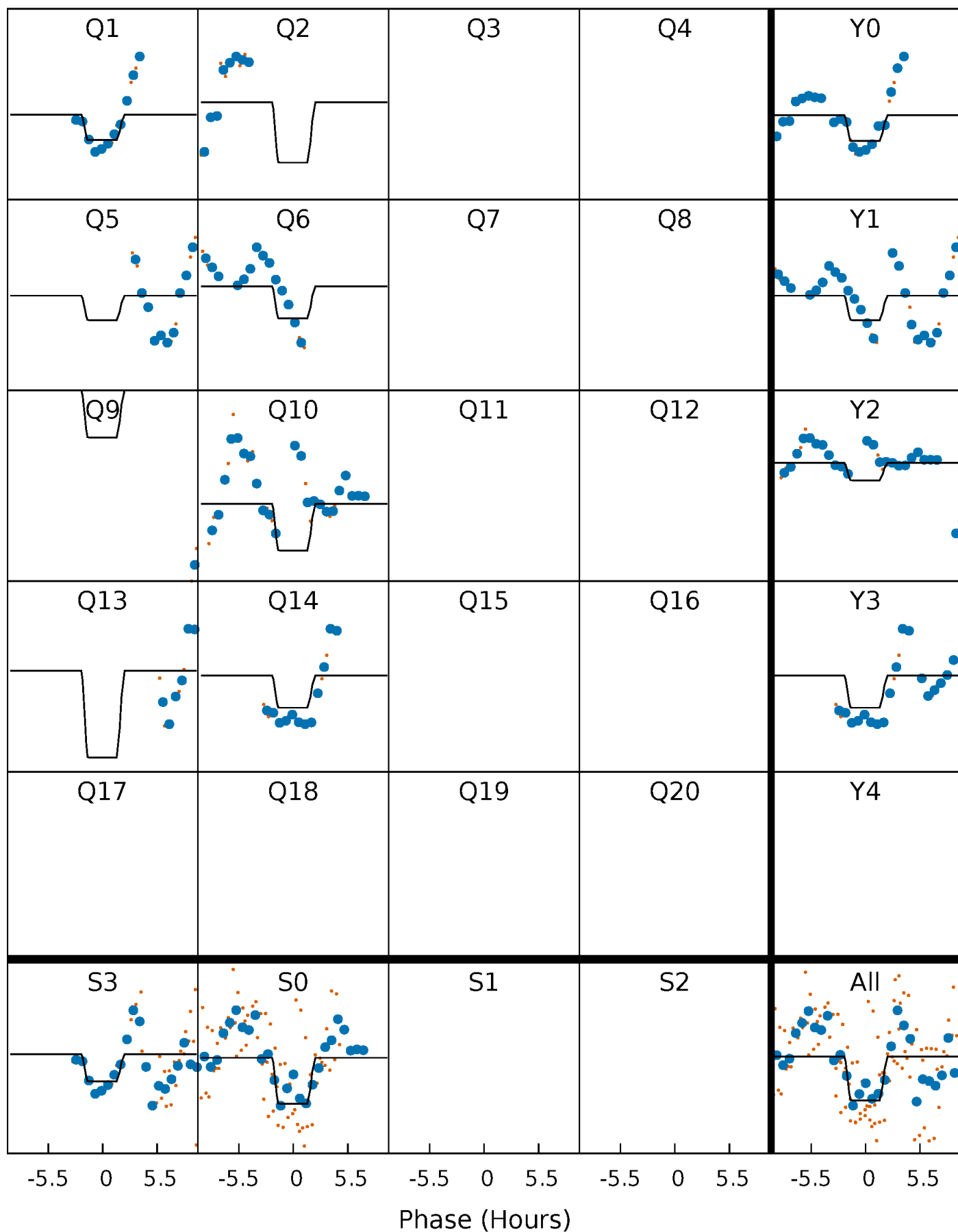
DV Quarter-Phased Transit Curves

TCE 009764506-07 $P = 70.555710$ Days $T_0 = 134.858518$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

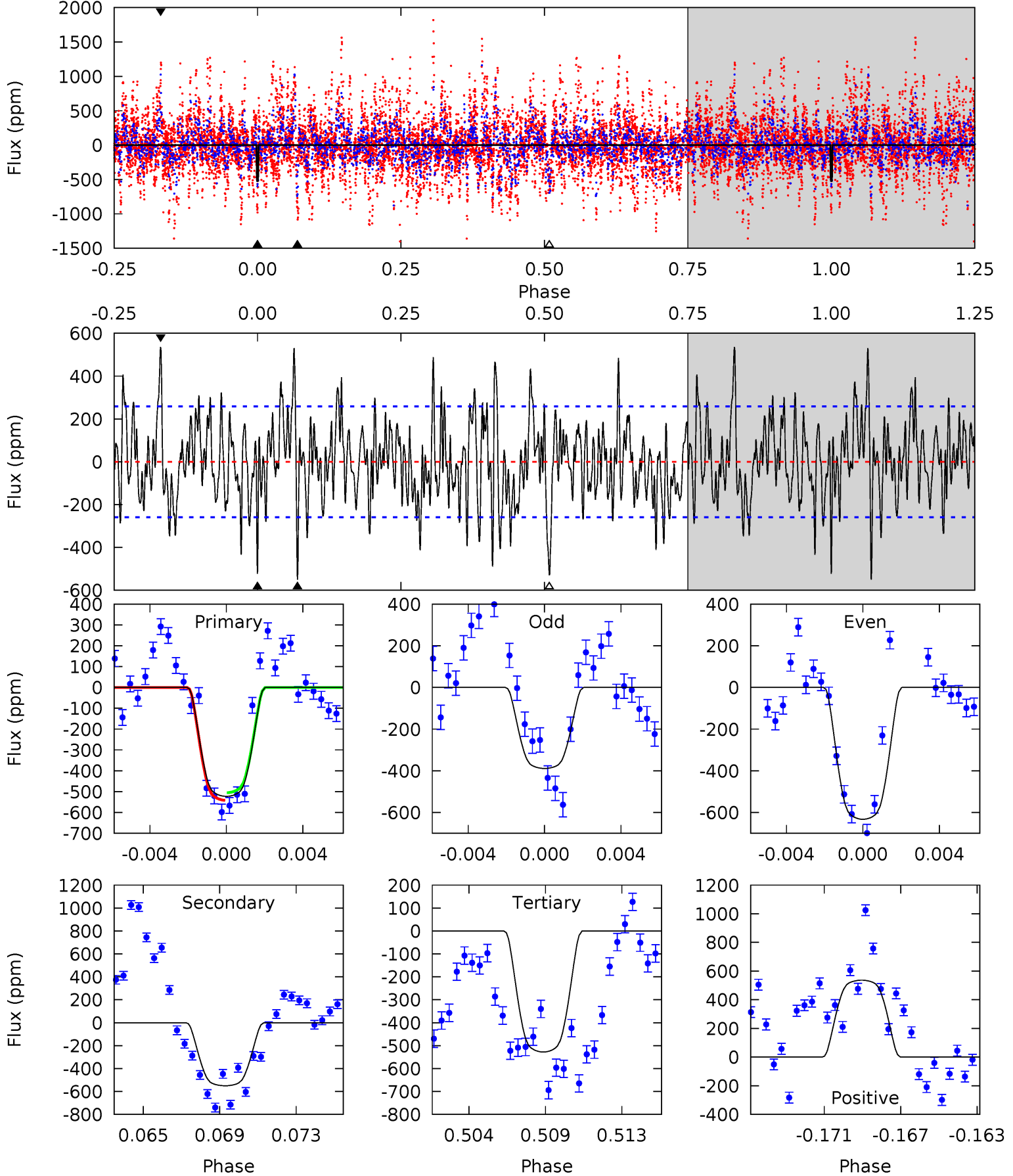
TCE 009764506-07 P= 70.556106 Days $T_0=134.845192$ (BKJD)



DV Model-Shift Uniqueness Test

009764506-07, P = 70.555710 Days, E = 64.302808 Days

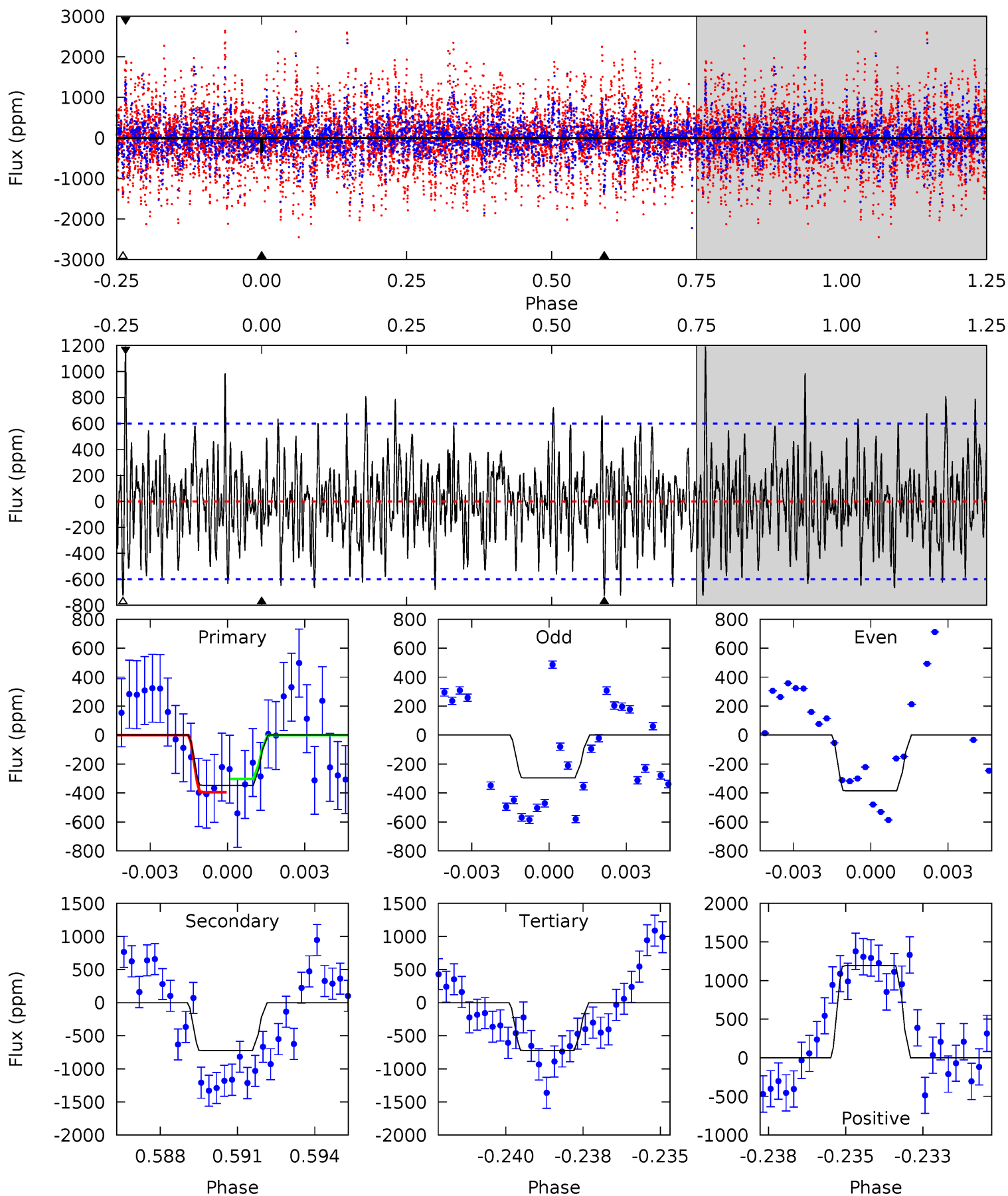
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	11.1	10.6	10.8	5.20	2.87	3.33	-0.11	-0.28	0.45	0.27	2.36	1.04	0.49	0.37



Alt Model-Shift Uniqueness Test

009764506-07, P = 70.556106 Days, E = 64.289086 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.07	6.41	6.39	10.5	5.29	3.02	2.20	-3.33	-7.46	0.01	-4.12	0.38	0.69	0.62	0.41



Stellar Parameters For KIC 009764506

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7505^{+209}_{-314}	$3.785^{+0.368}_{-0.092}$	$0.000^{+0.200}_{-0.350}$	$2.989^{+0.425}_{-1.275}$	$1.984^{+0.088}_{-0.500}$	$0.105^{+0.310}_{-0.030}$
	+3%/-4%	+10%/-2%	+inf%/-inf%	+14%/-43%	+4%/-25%	+296%/-29%
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 009764506-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-550 ± 50	$9.12^{+1.42}_{-1.99}$	1202^{+83}_{-129}	6581^{+382}_{-366}	636^{+351}_{-169}
Alt.	-726 ± 113	$6.03^{+1.14}_{-1.40}$	1203^{+81}_{-125}	9094^{+977}_{-879}	1870^{+1174}_{-543}

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 $A_{obs} \gg 1.0$

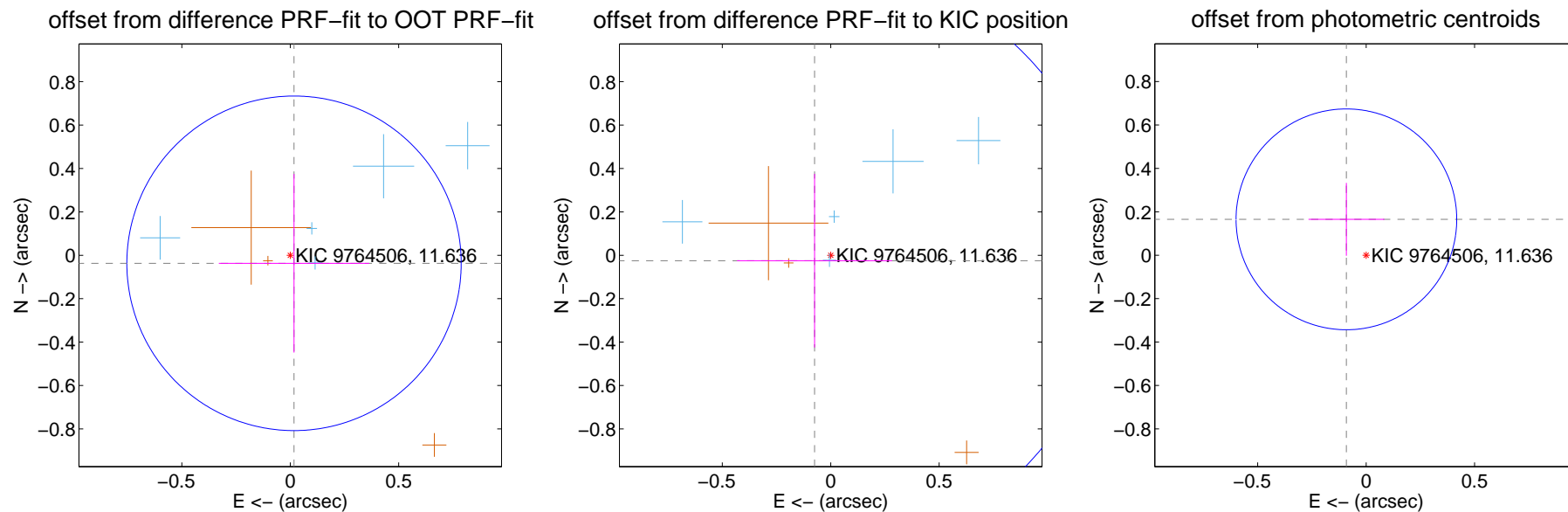
DV Centroid Data

Supplemental centroid analysis for 009764506-07. **Kepler magnitude: 11.64.** Transit SNR 8.88

There are 5 quarters with good PRF difference image offsets

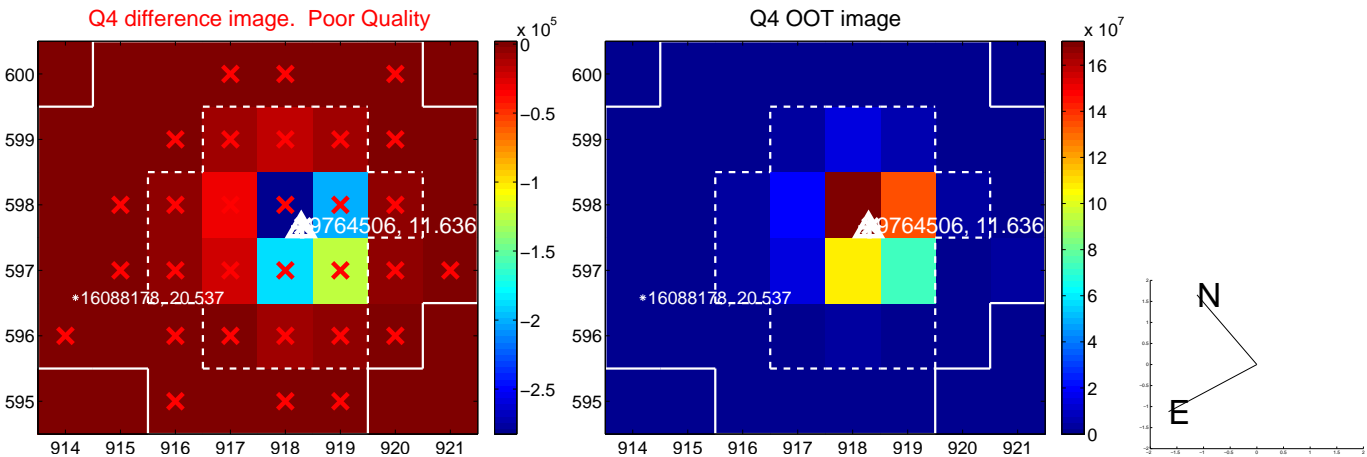
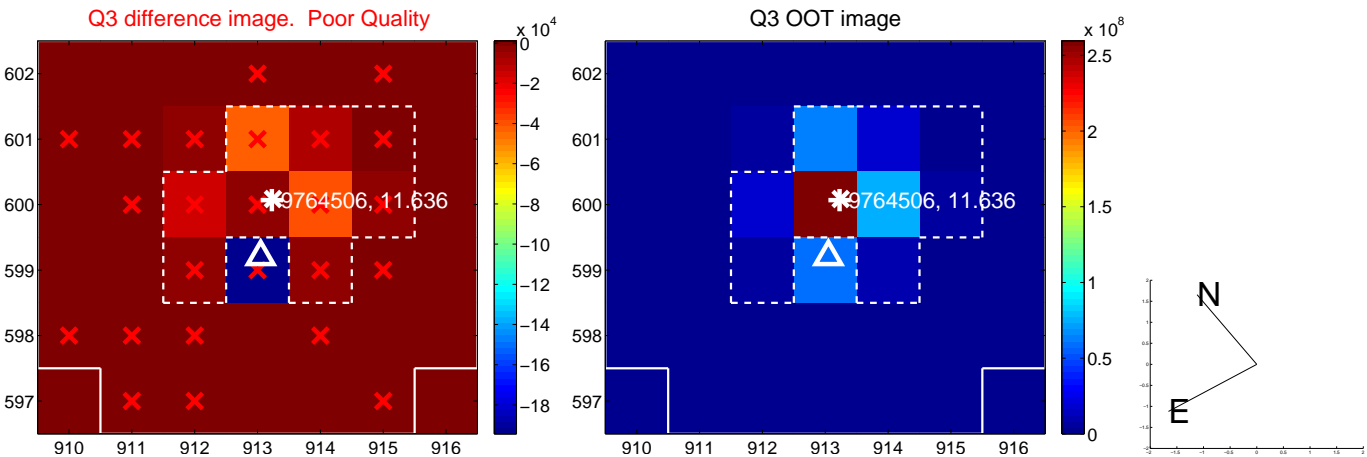
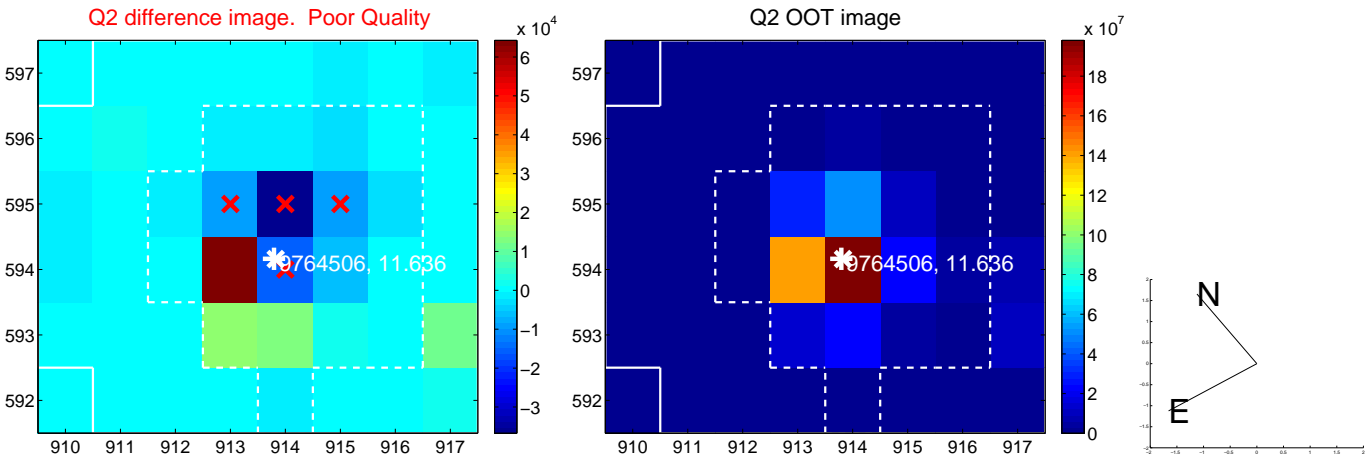
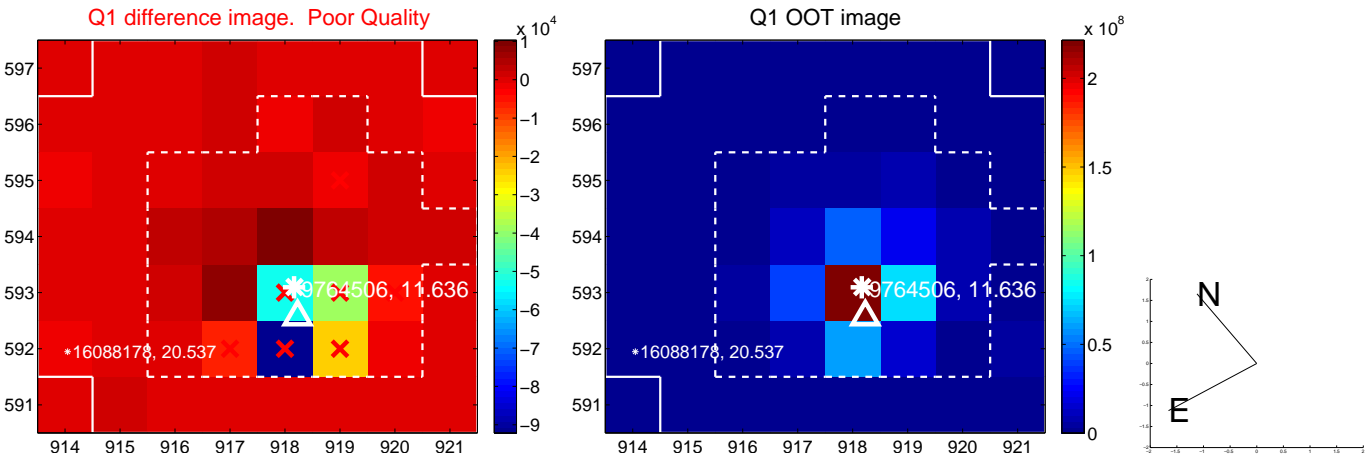
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.041 ± 0.257	0.16	-0.017 ± 0.347	-0.037 ± 0.411
PRF-fit source offset from KIC position	0.079 ± 0.453	0.17	0.075 ± 0.357	-0.025 ± 0.400
photometric centroid source offset	0.19 ± 0.17	1.11	0.09 ± 0.17	0.17 ± 0.17

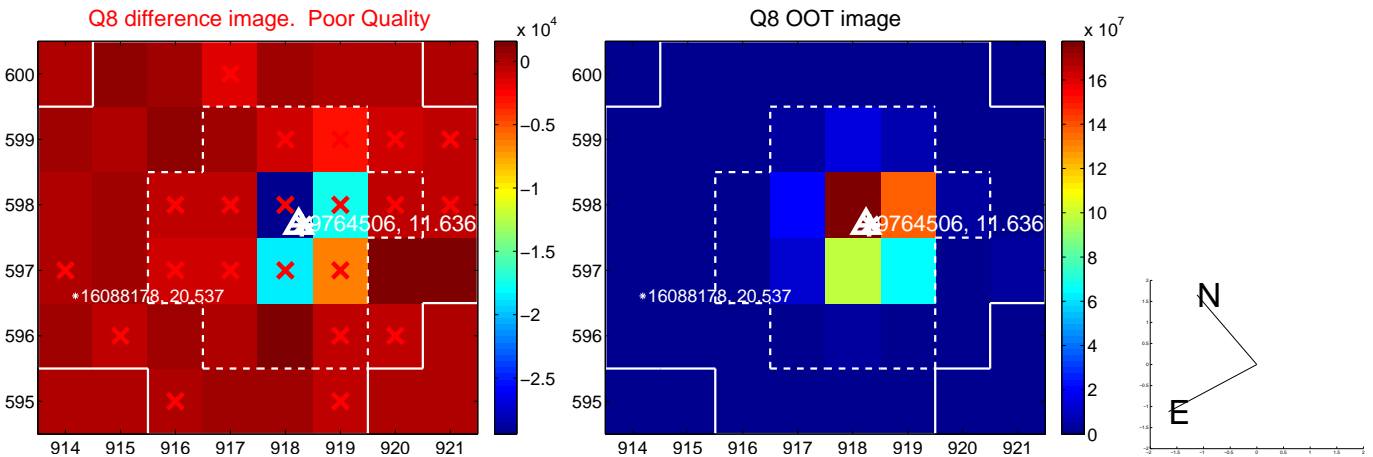
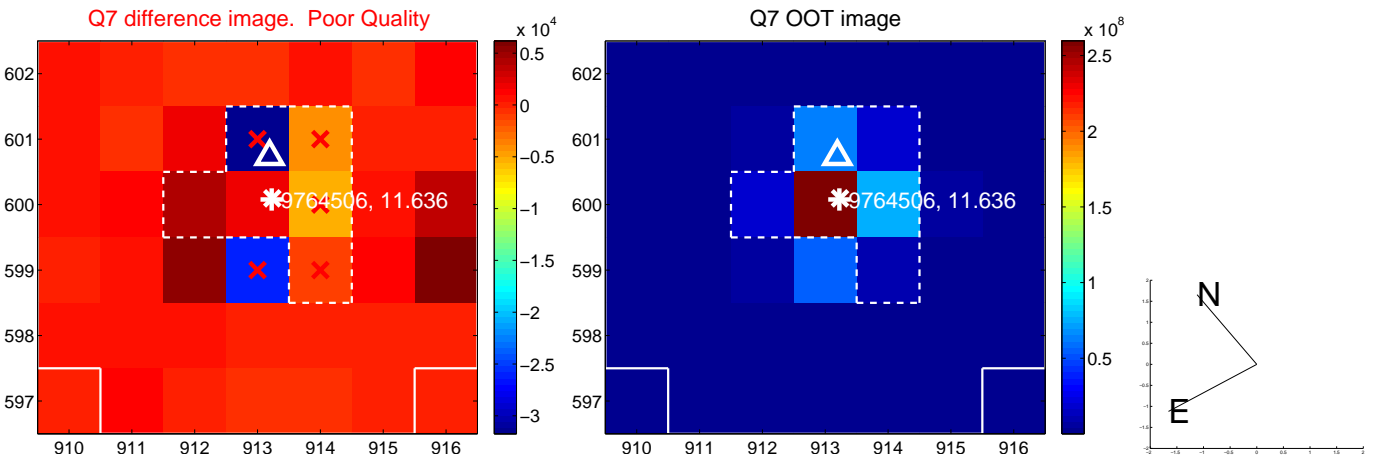
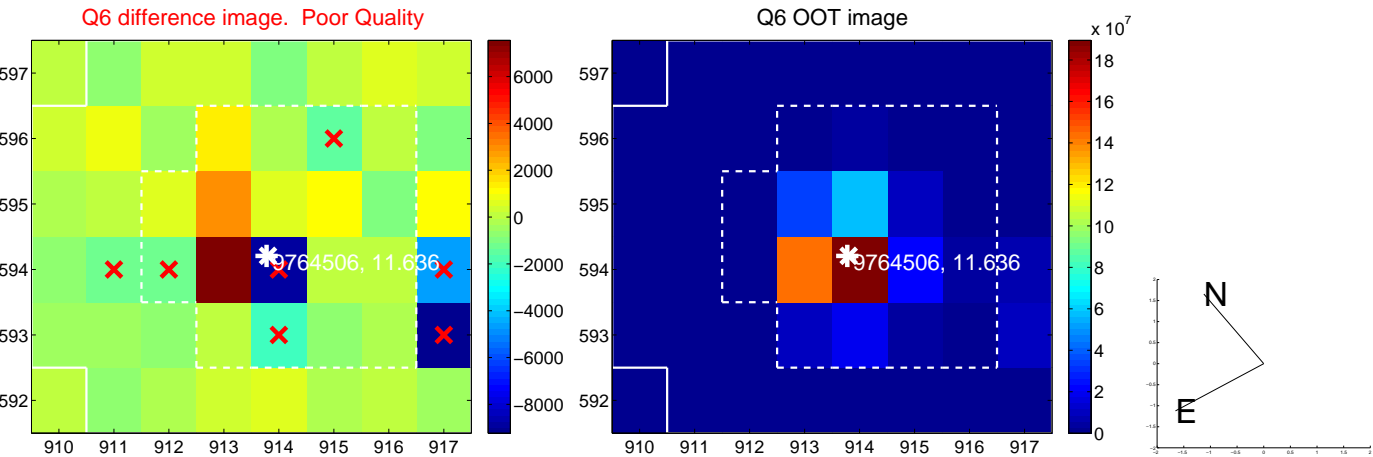
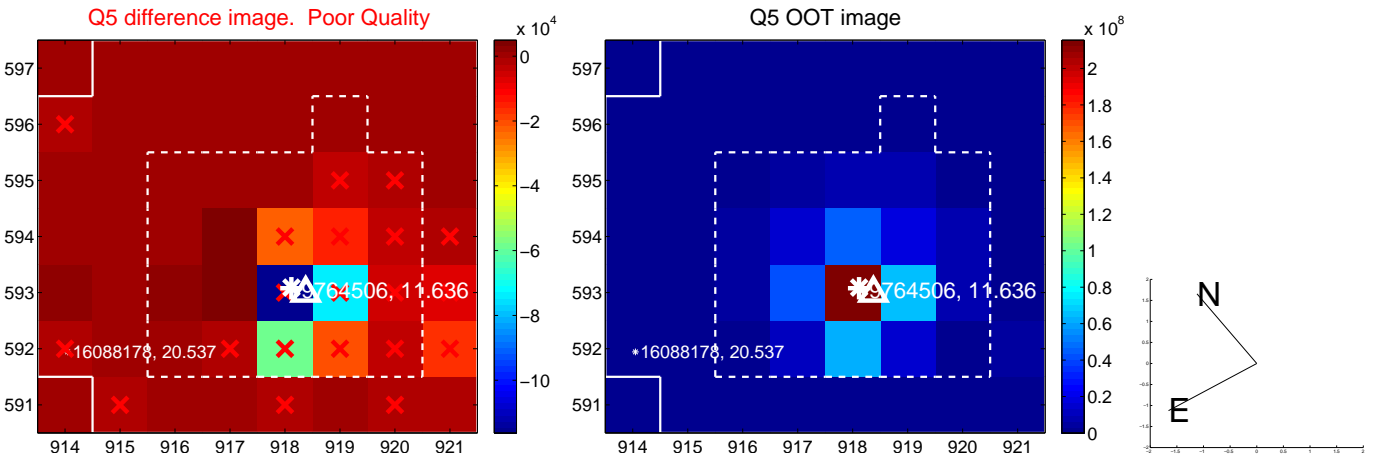


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

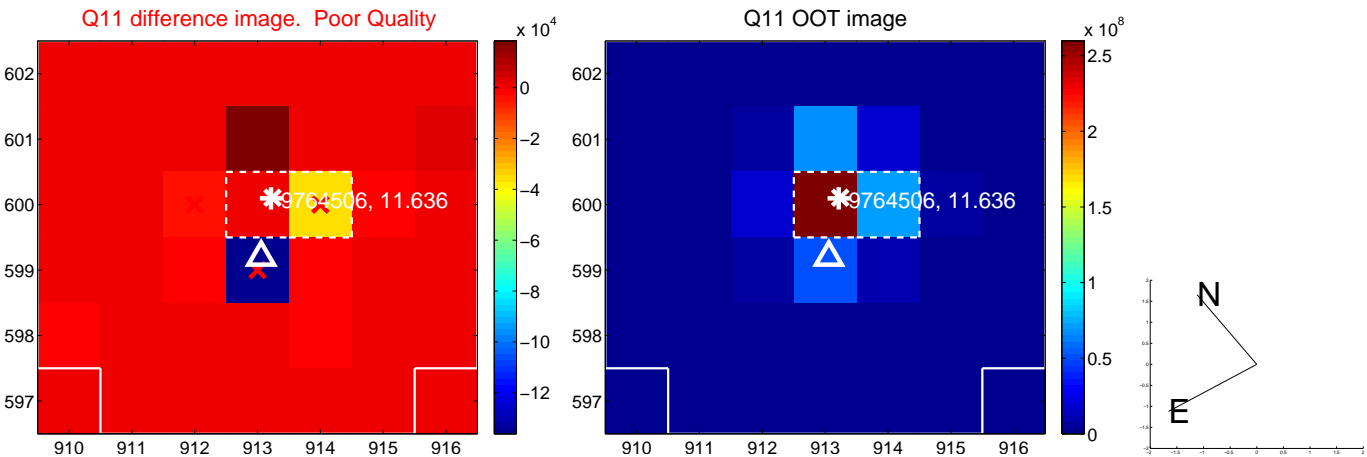
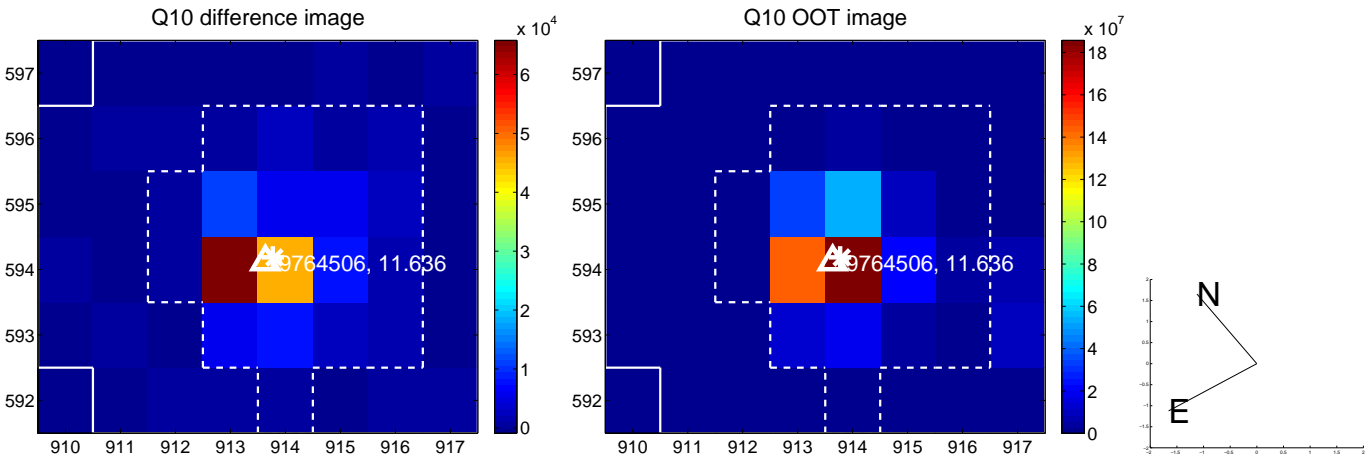
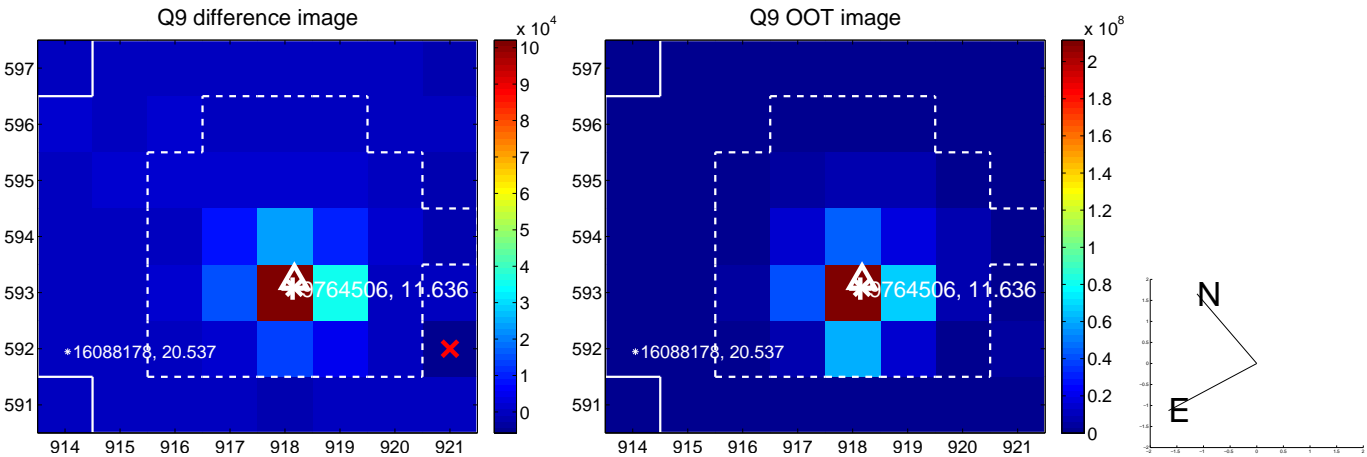
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



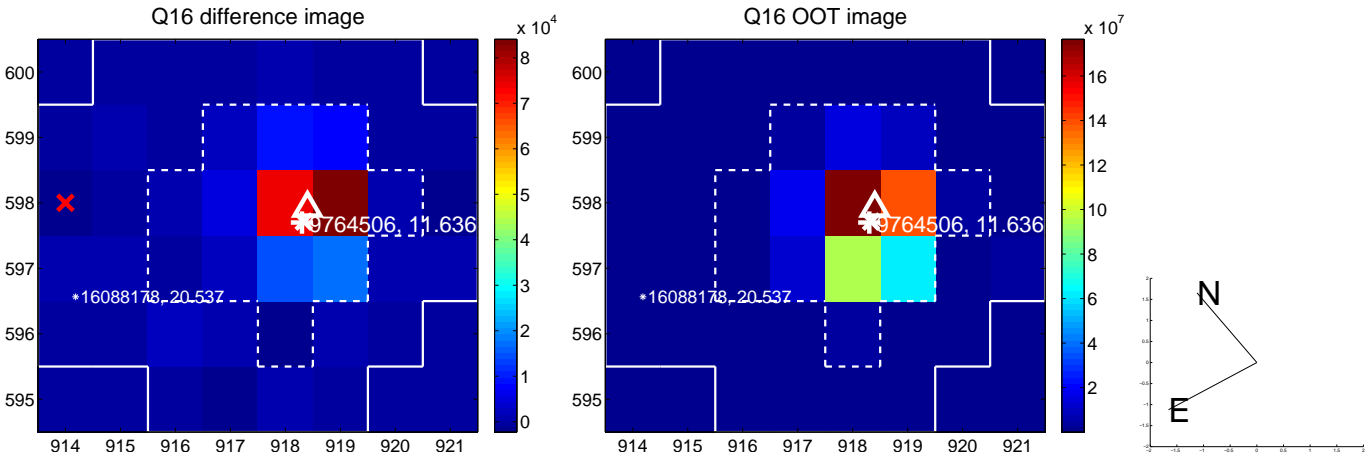
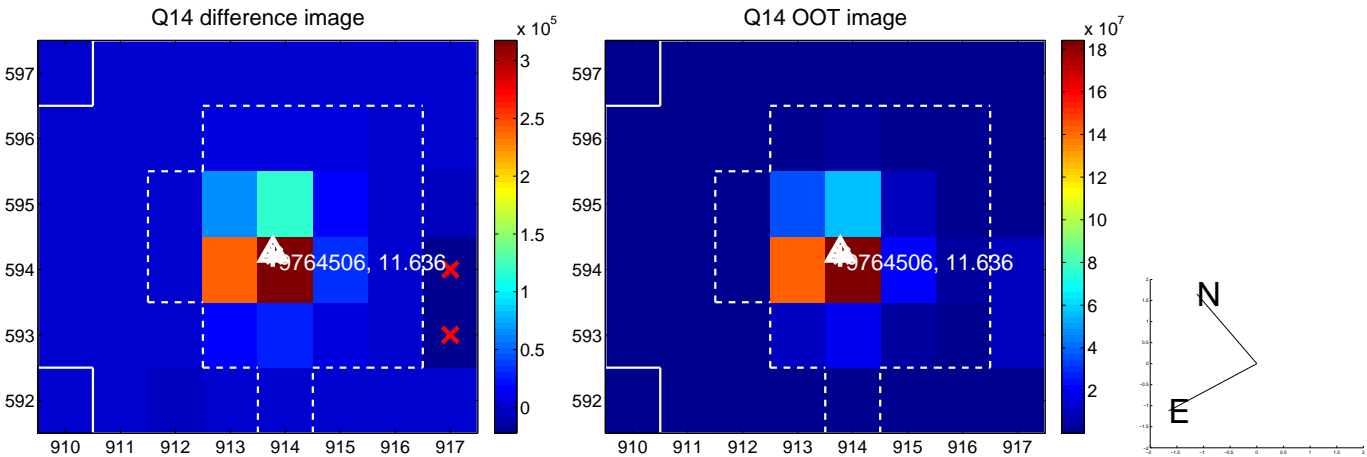
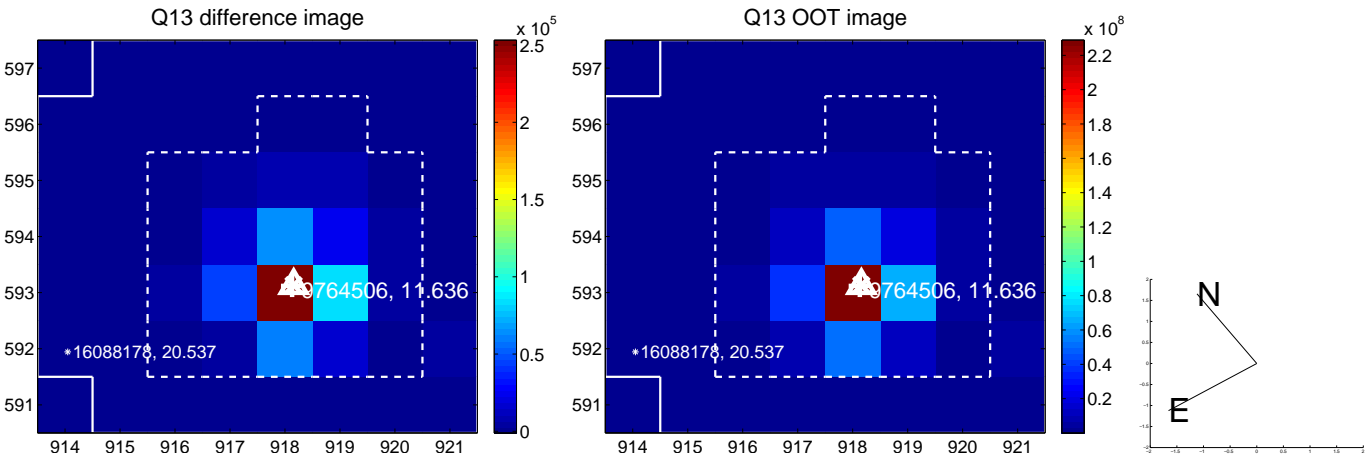
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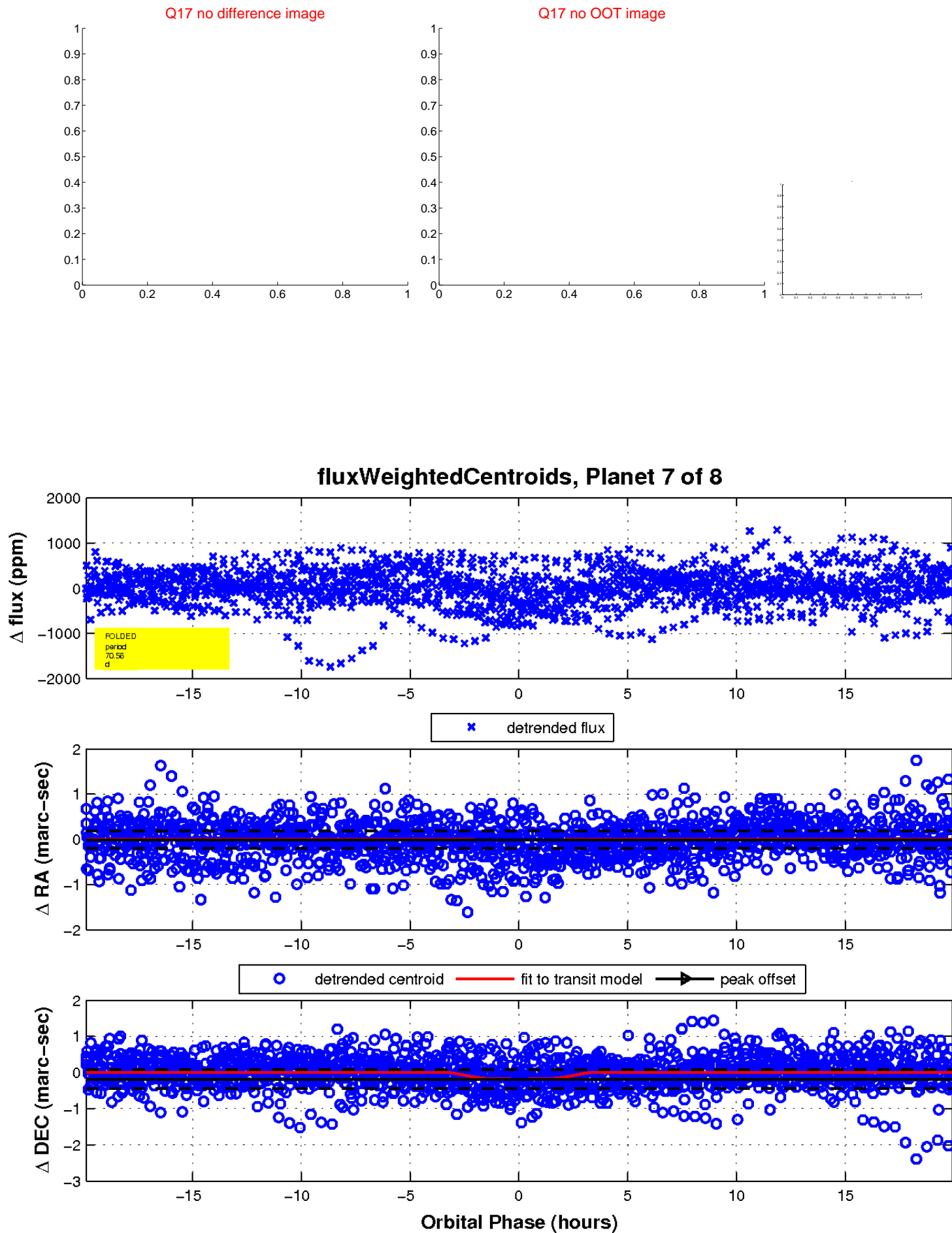
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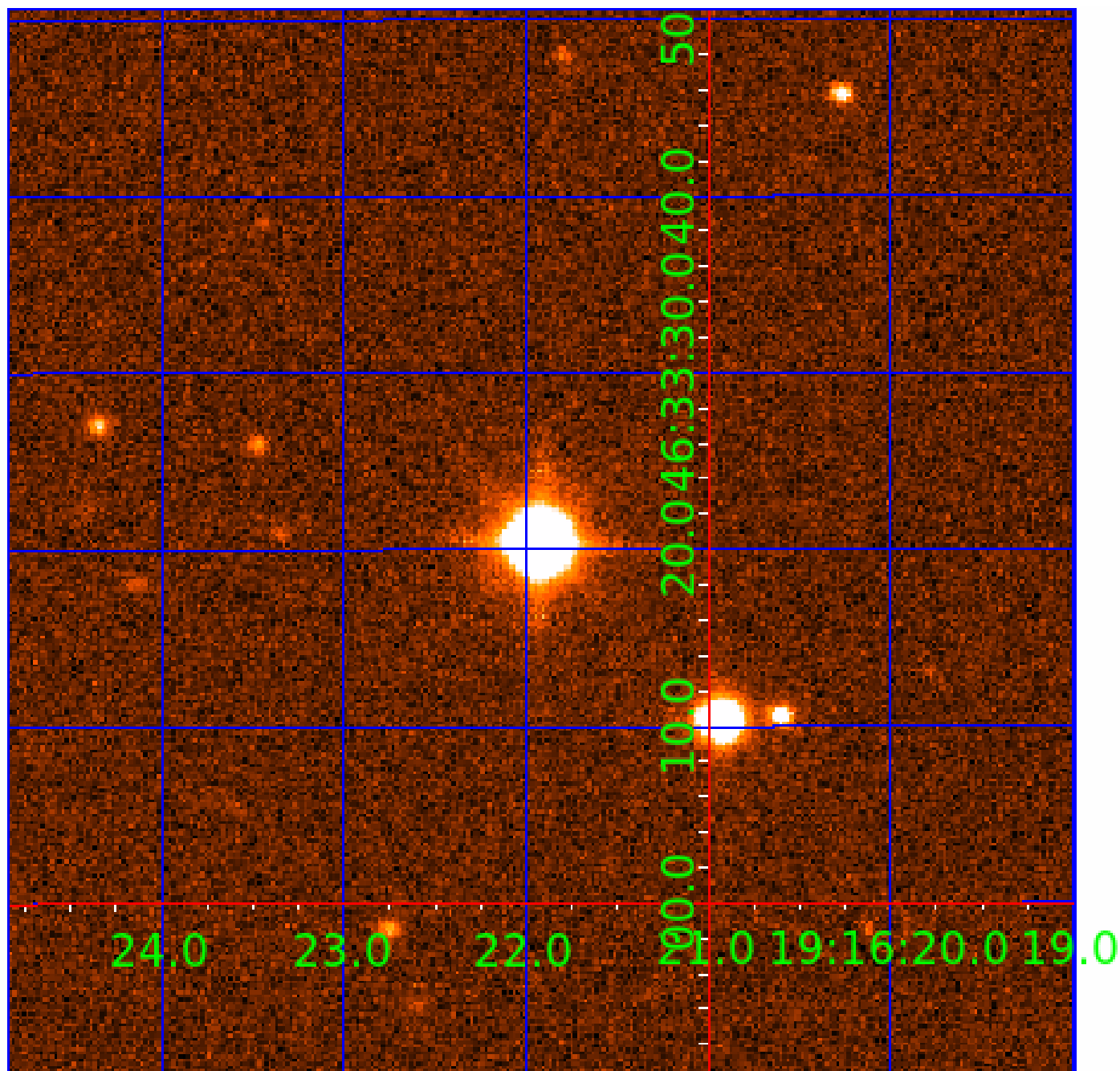


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UKIRT Image

Declination



KIC 009764506

Q1-17 DR25 TCE Parameters

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009764506-06	OBS	No	100.521220	198.962913	1226.9	10.941	10.5	11.1	2.99	7505	19.30	89.74
009764506-07	OBS	No	70.555710	134.858518	676.9	6.643	9.6	8.9	2.99	7505	9.62	143.86
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009764506-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
009764506-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT
009764506-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009764506-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

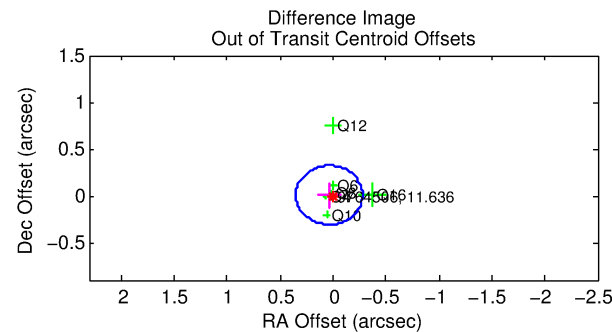
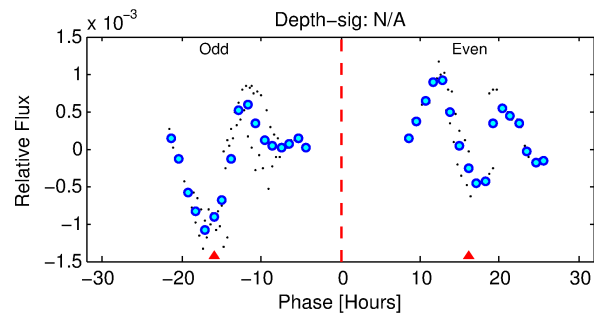
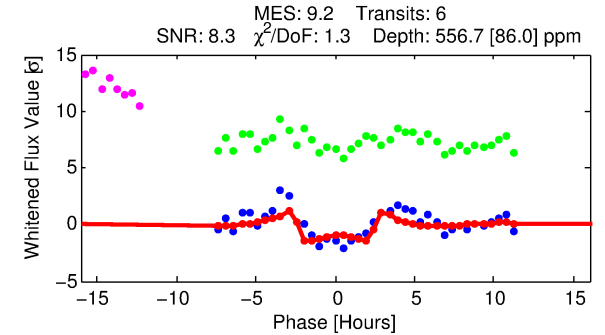
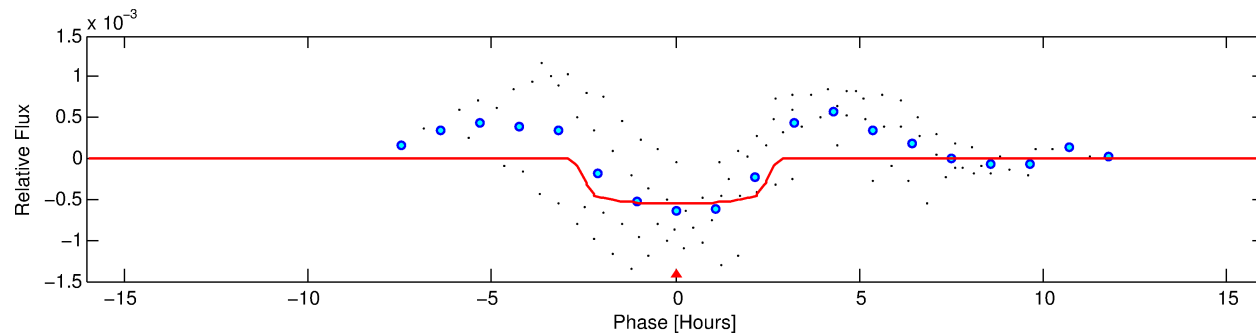
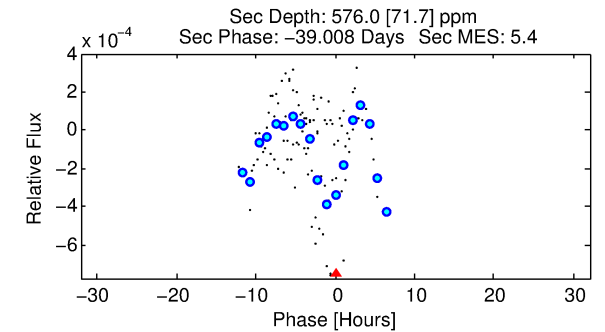
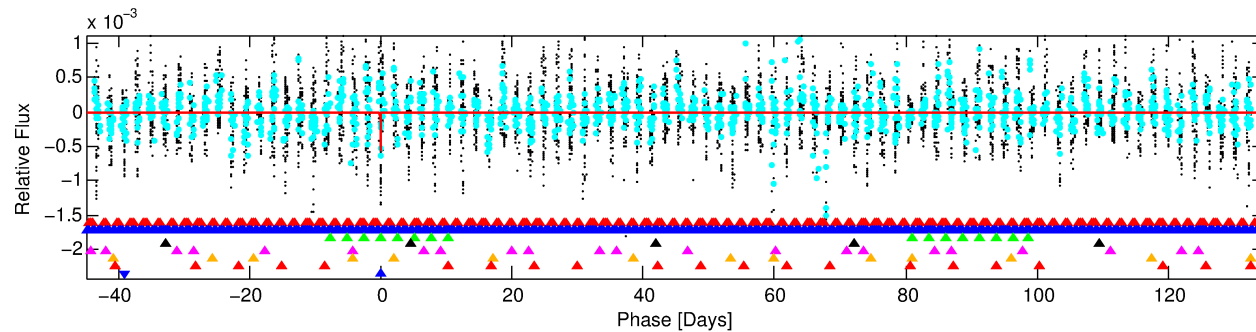
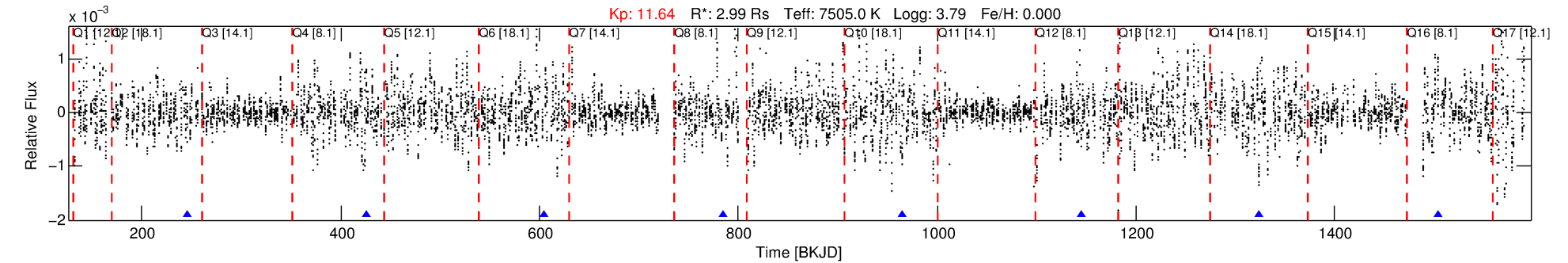
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009764506-08

No Significant Match Found

DV One-Page Summary

KIC: 9764506 Candidate: 8 of 8 Period: 179.678 d



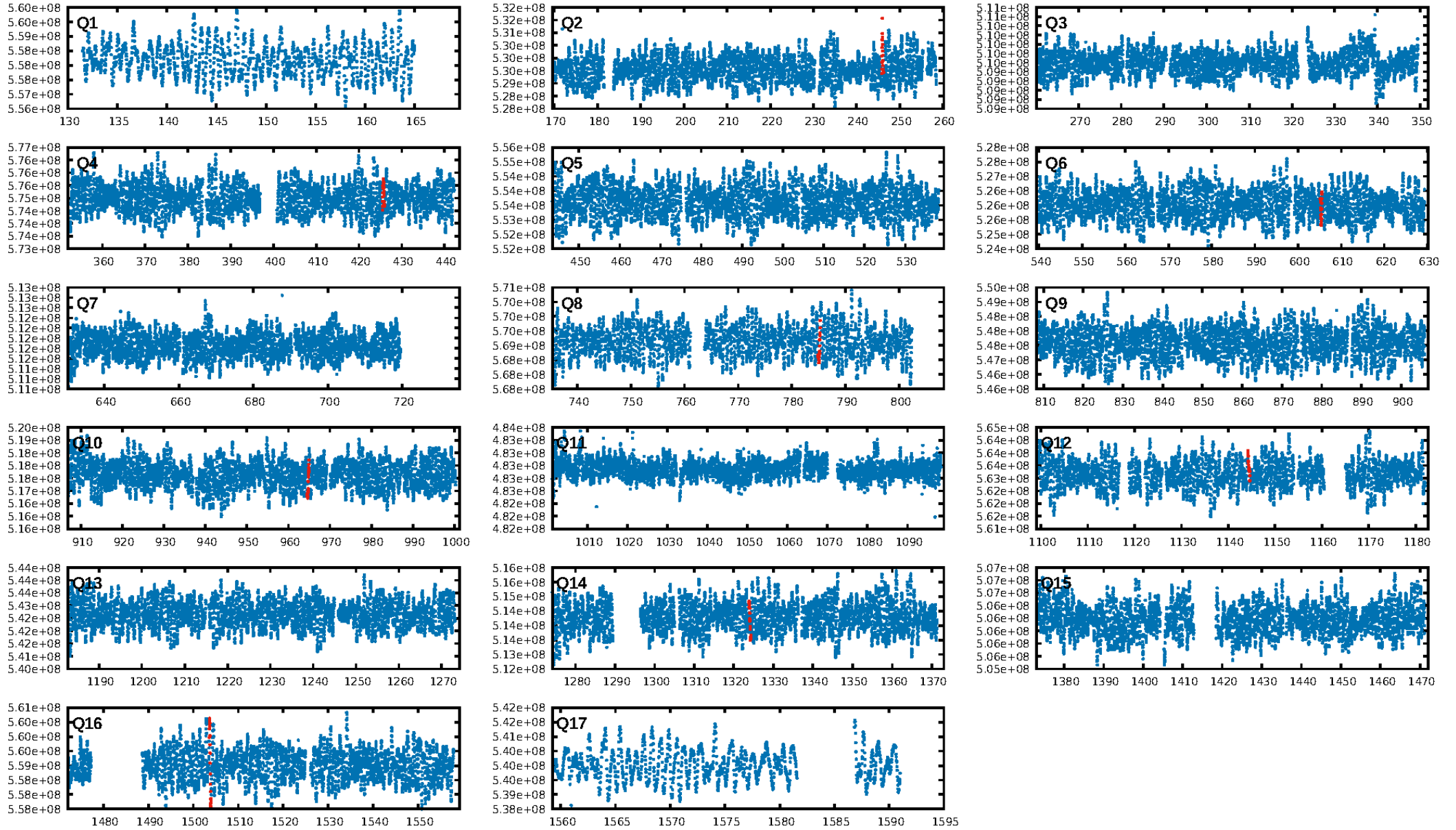
DV Fit Results:

Period = 179.67759 [0.00234] d
Epoch = 246.0246 [0.0108] BKJD
 $R_p/R^* = 0.0231$ [0.0169]
 $a/R^* = 196.67$ [881.50]
 $b = 0.68$ [3.59]
 $\text{Seff} = 41.37$ [27.06]
 $T_{\text{eq}} = 647$ [106] K
 $R_p = 7.53$ [6.38] R_e
 $a = 0.7835$ [0.3140] AU
 $A_g = 3435.14$ [5500.17] [0.62] σ
 $T_{\text{eff}} = 7654$ [2833] K [2.47] σ

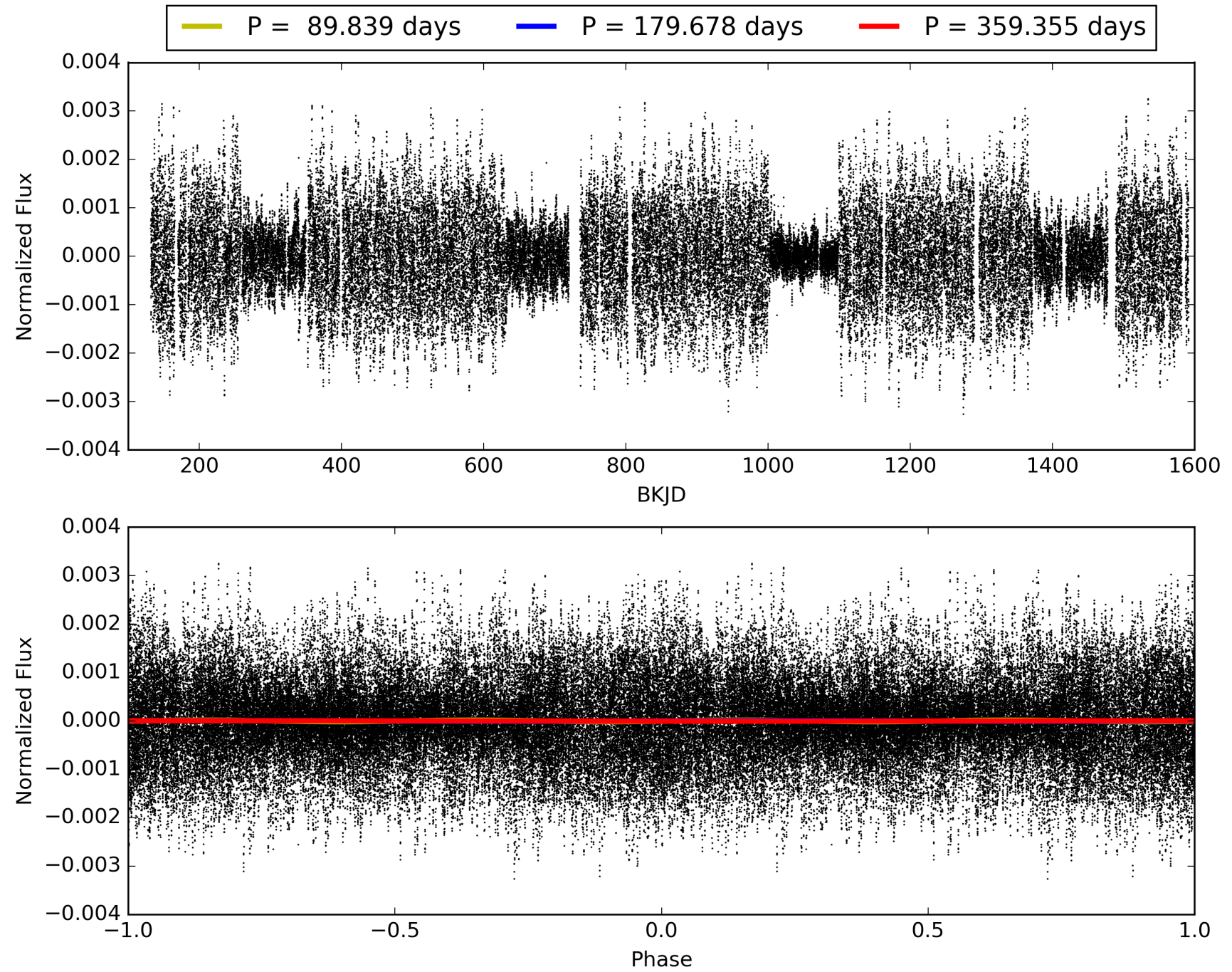
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [156.02] σ
LongPeriod-sig: 100.0% [335.15] σ
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 99.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 1.556
Centroid-sig: 53.3%
Centroid-so: 0.027 arcsec [0.10] σ
OotOffset-rm: 0.037 arcsec [0.35] σ
KicOffset-rm: 0.130 arcsec [1.44] σ
OotOffset-st: 2/0/4/0 [6]
KicOffset-st: 2/0/4/0 [6]
DiffImageQuality-fgm: 0.50 [3/6]
DiffImageOverlap-fno: 0.00 [0/7]

TCE 009764506-08, PDC Light Curves

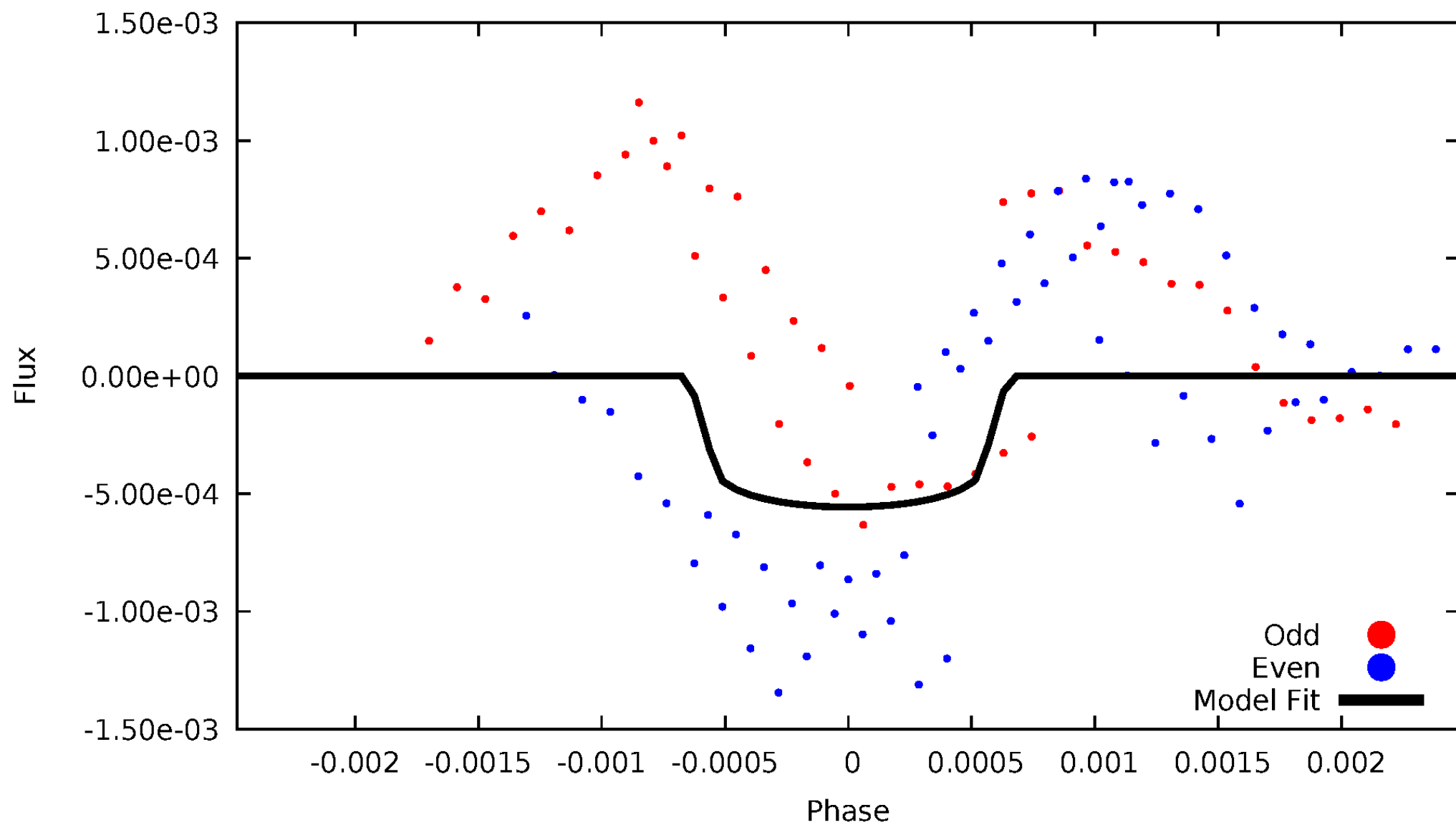


TCE 009764506-08



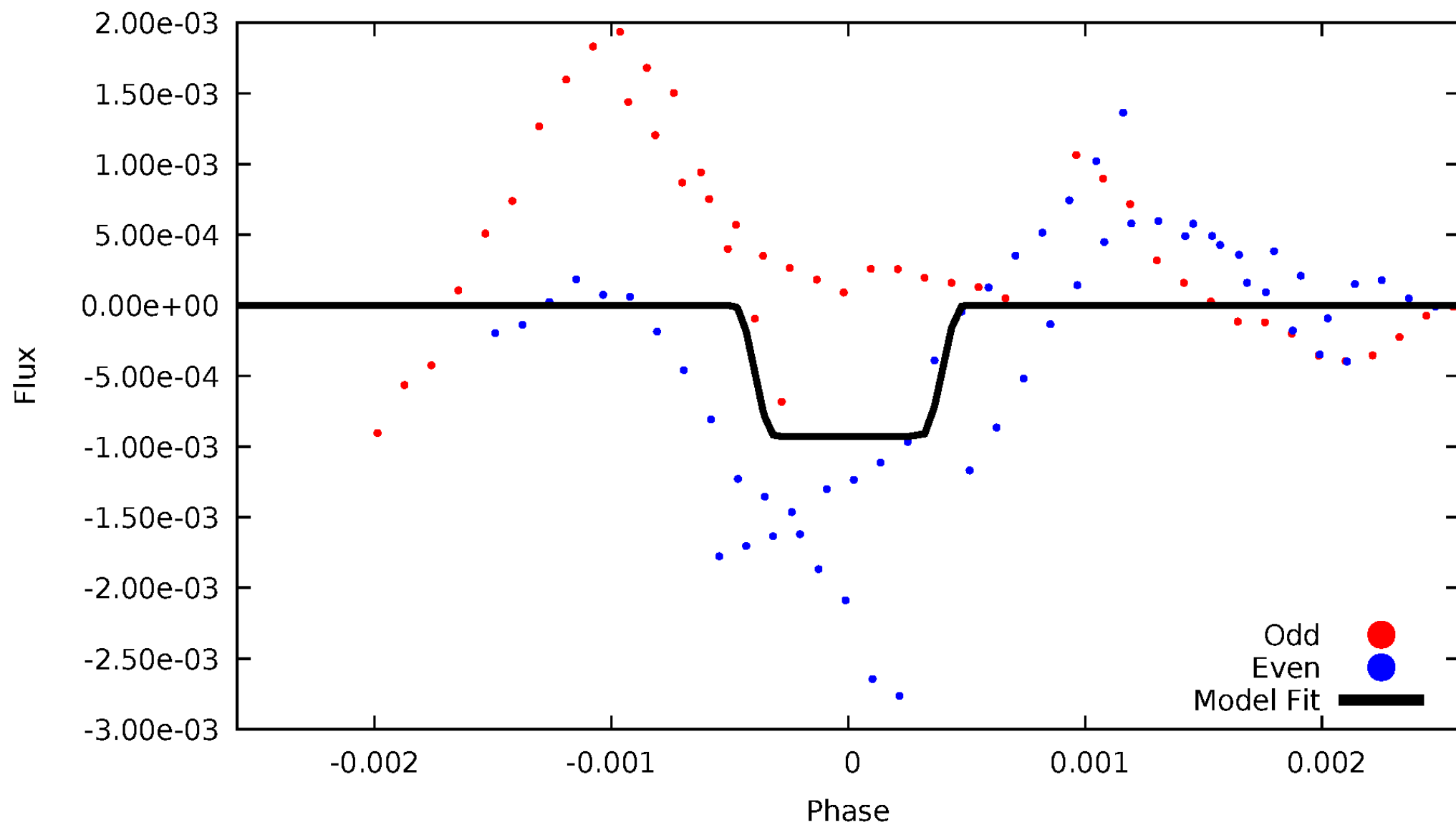
DV Odd/Even

TCE 009764506-08



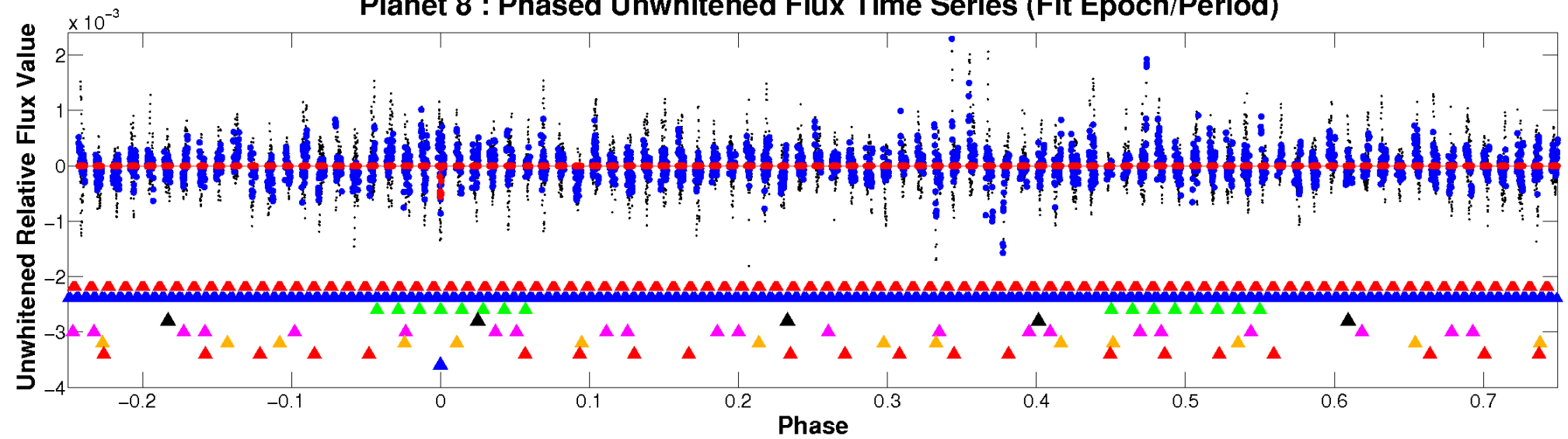
ALT Odd/Even

TCE 009764506-08

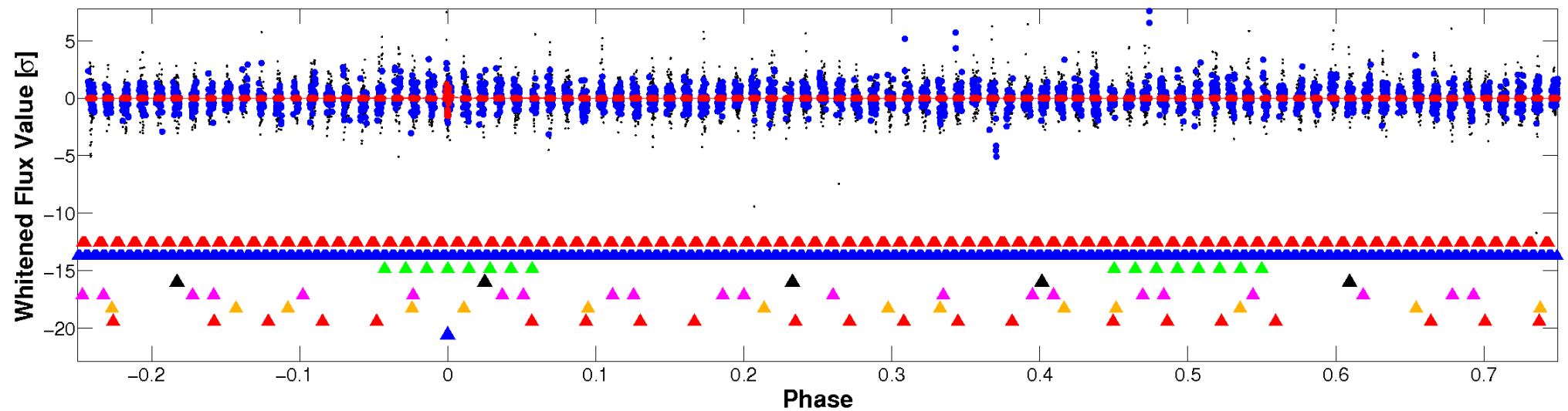


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

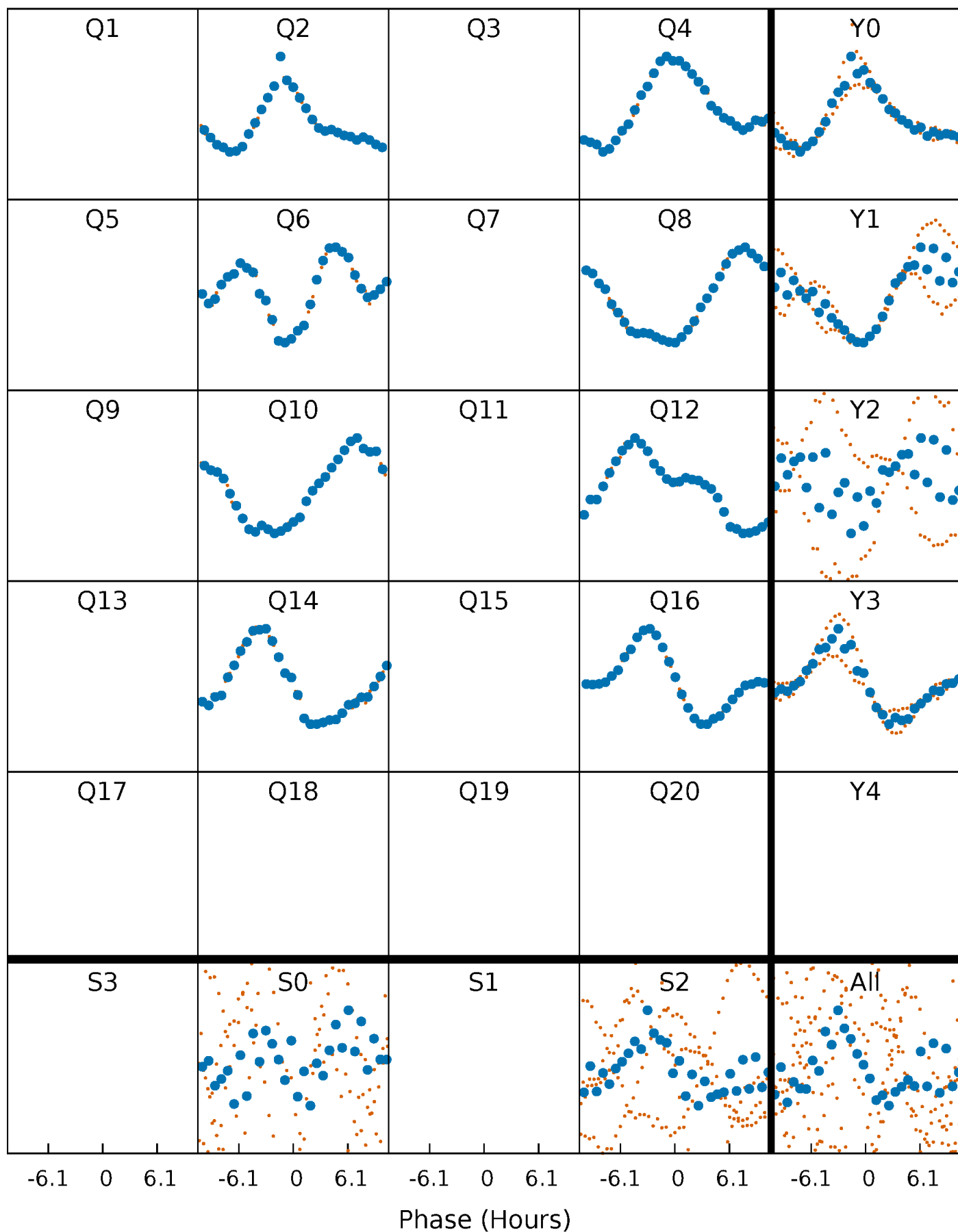


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



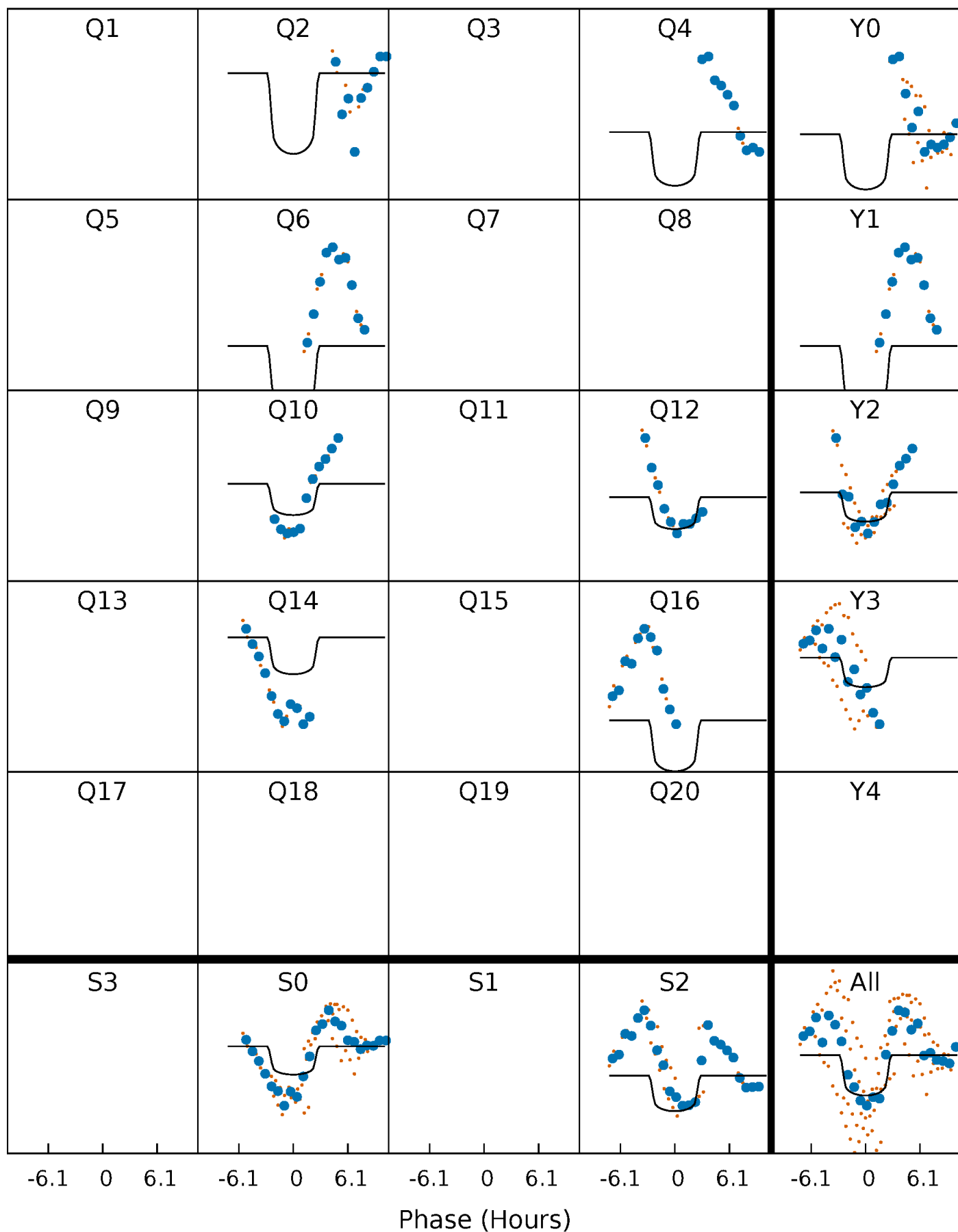
PDC Quarter-Phased Transit Curves

TCE 009764506-08 P=179.677589 Days $T_0=246.024579$ (BKJD)



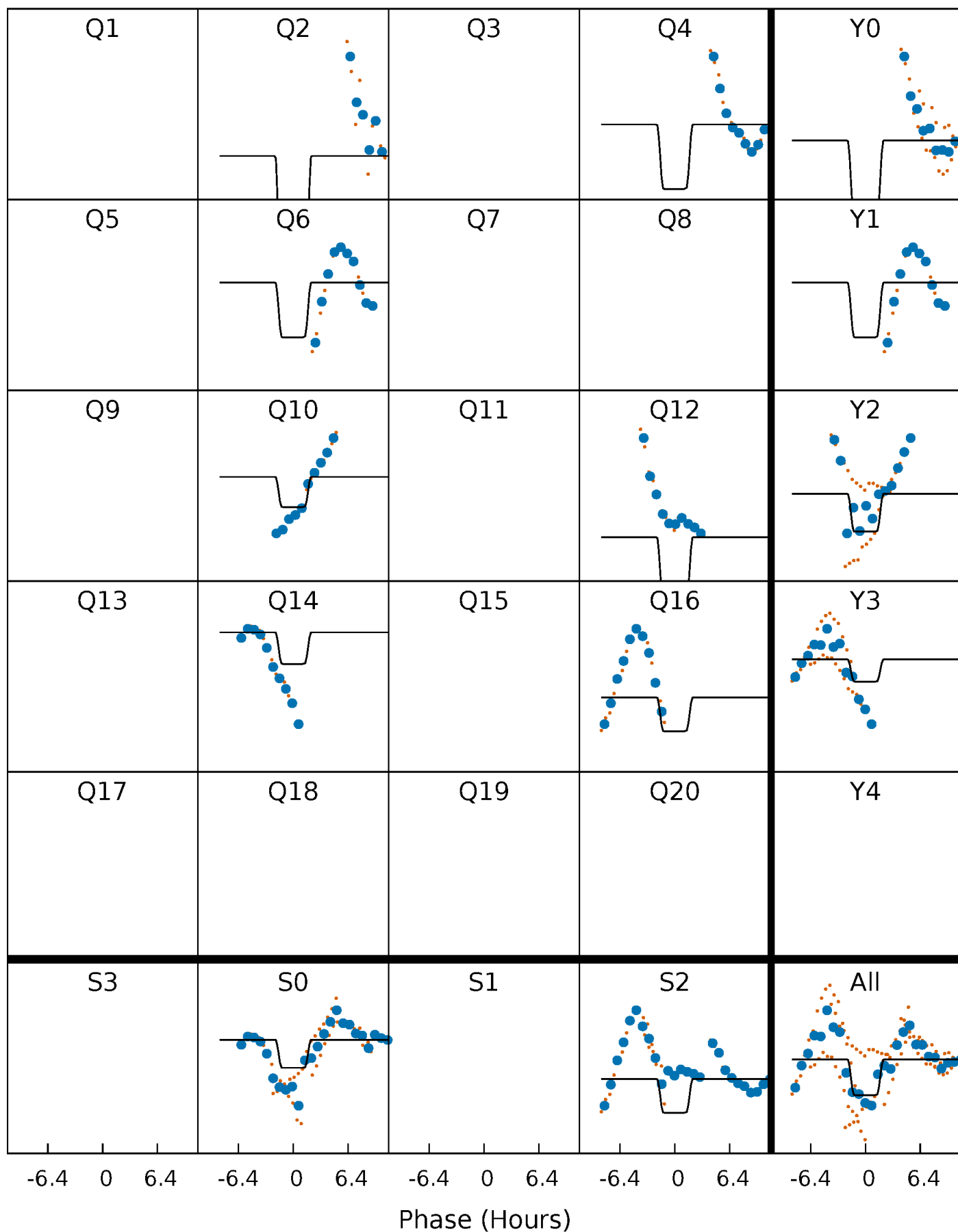
DV Quarter-Phased Transit Curves

TCE 009764506-08 P=179.677589 Days $T_0=246.024579$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

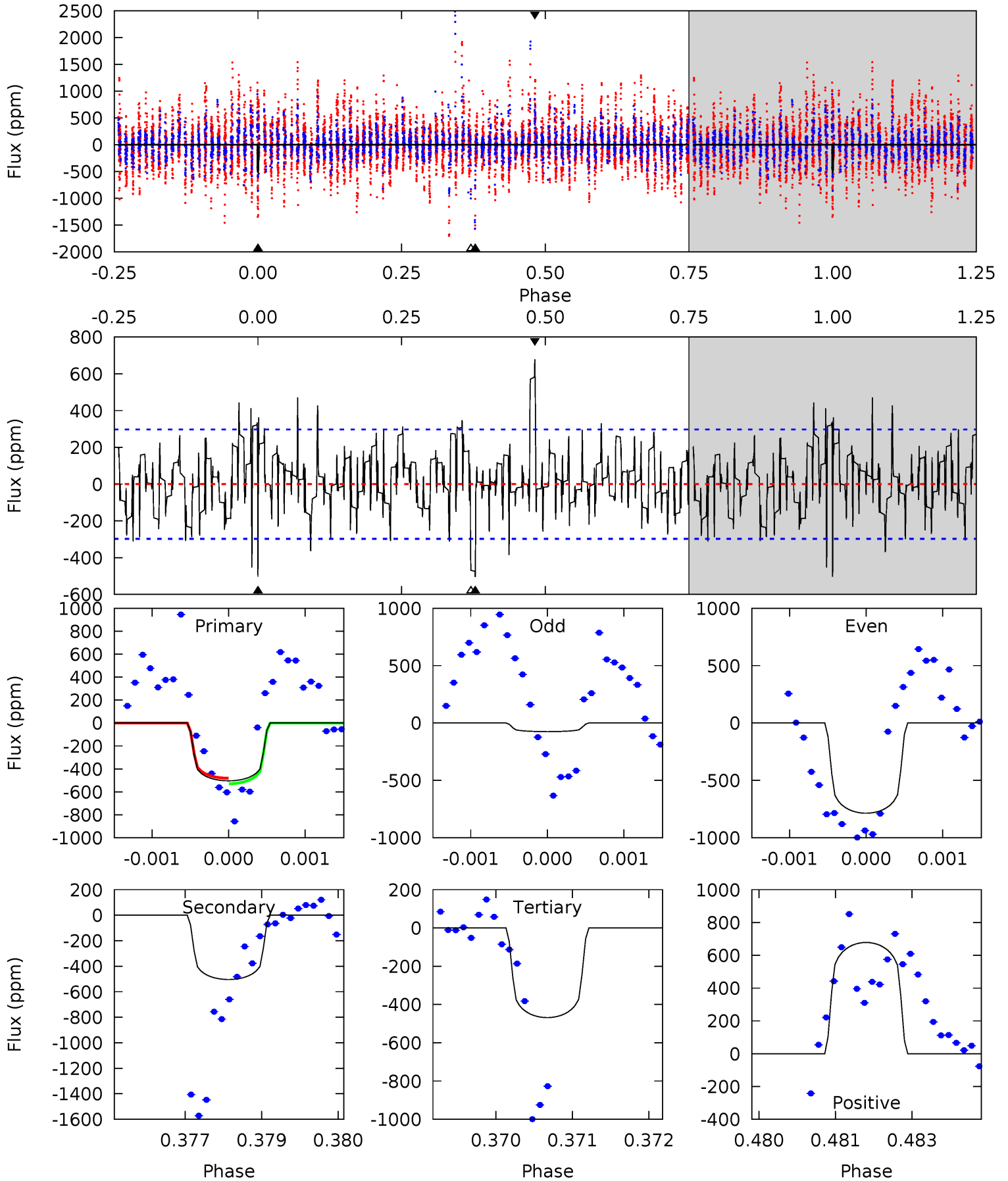
TCE 009764506-08 P=179.696194 Days $T_0=245.945927$ (BKJD)



DV Model-Shift Uniqueness Test

009764506-08, $P = 179.677589$ Days, $E = 66.346990$ Days

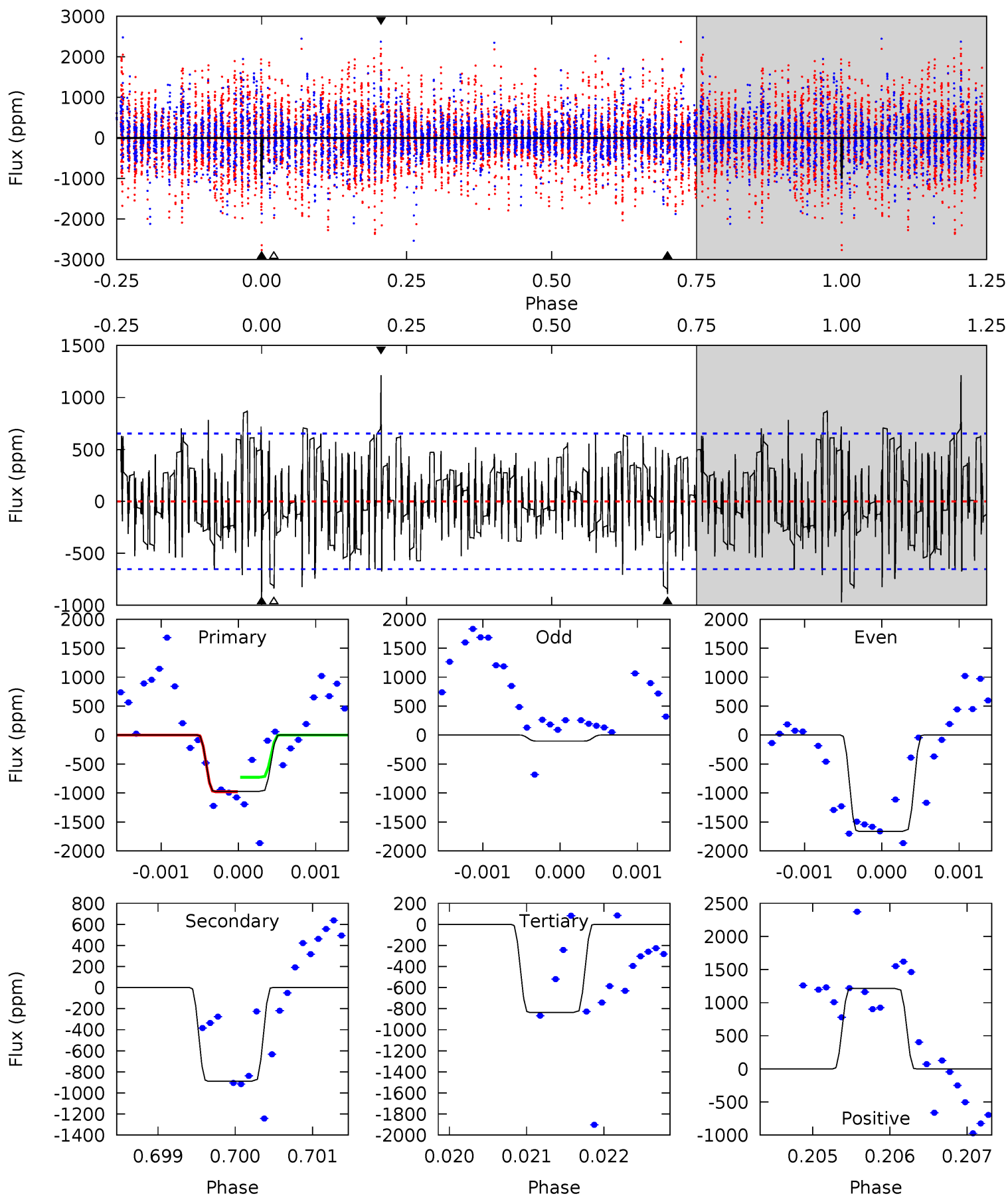
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.17	9.17	8.52	12.3	5.41	3.23	2.60	0.64	-3.17	0.65	-3.17	6.17	1.03	0.57	0.44



Alt Model-Shift Uniqueness Test

009764506-08, P = 179.696194 Days, E = 66.249733 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.15	7.44	7.01	10.2	5.46	3.31	2.26	1.14	-2.02	0.44	-2.72	6.41	1.00	0.56	1.01



Stellar Parameters For KIC 009764506

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7505^{+209}_{-314}	$3.785^{+0.368}_{-0.092}$	$0.000^{+0.200}_{-0.350}$	$2.989^{+0.425}_{-1.275}$	$1.984^{+0.088}_{-0.500}$	$0.105^{+0.310}_{-0.030}$
	+3%/-4%	+10%/-2%	+inf%/-inf%	+14%/-43%	+4%/-25%	+296%/-29%
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 009764506-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-504 ± 55	$7.46^{+5.40}_{-4.48}$	884^{+57}_{-91}	7002^{+5697}_{-1564}	2950^{+15031}_{-1957}
Alt.	-889 ± 119	$9.22^{+5.73}_{-4.80}$	878^{+59}_{-89}	7240^{+5067}_{-1464}	3434^{+11841}_{-2132}

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 $A_{obs} \gg 1.0$

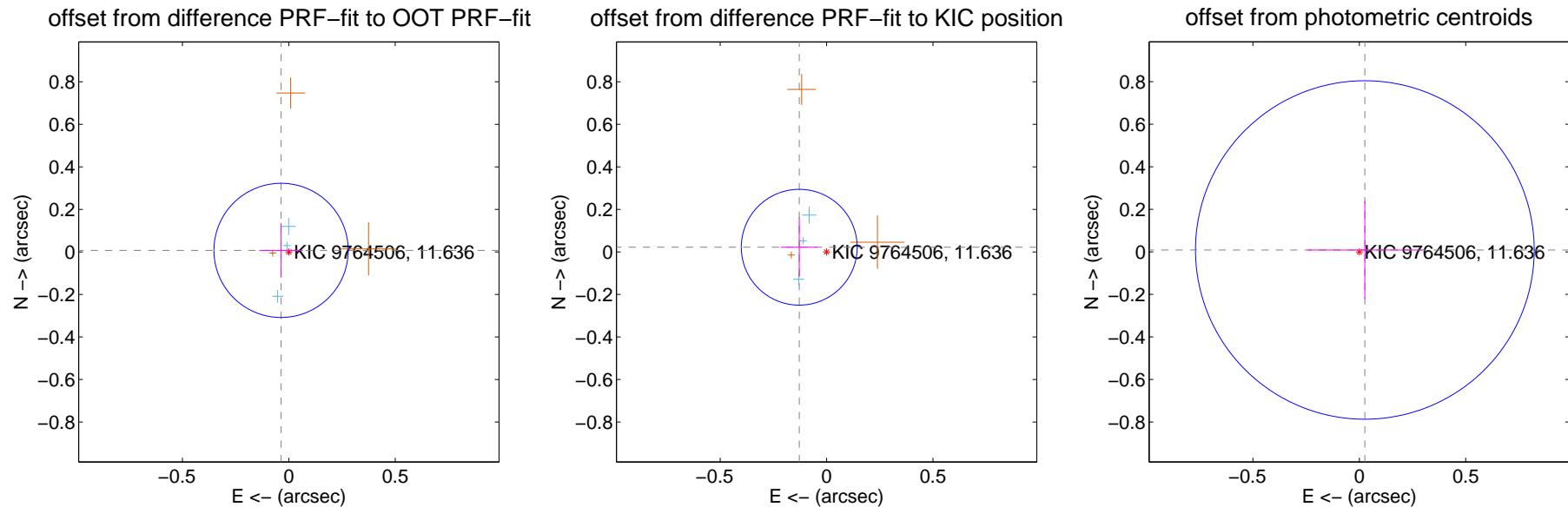
DV Centroid Data

Supplemental centroid analysis for 009764506-08. **Kepler magnitude: 11.64.** Transit SNR 8.29

There are 3 quarters with good PRF difference image offsets

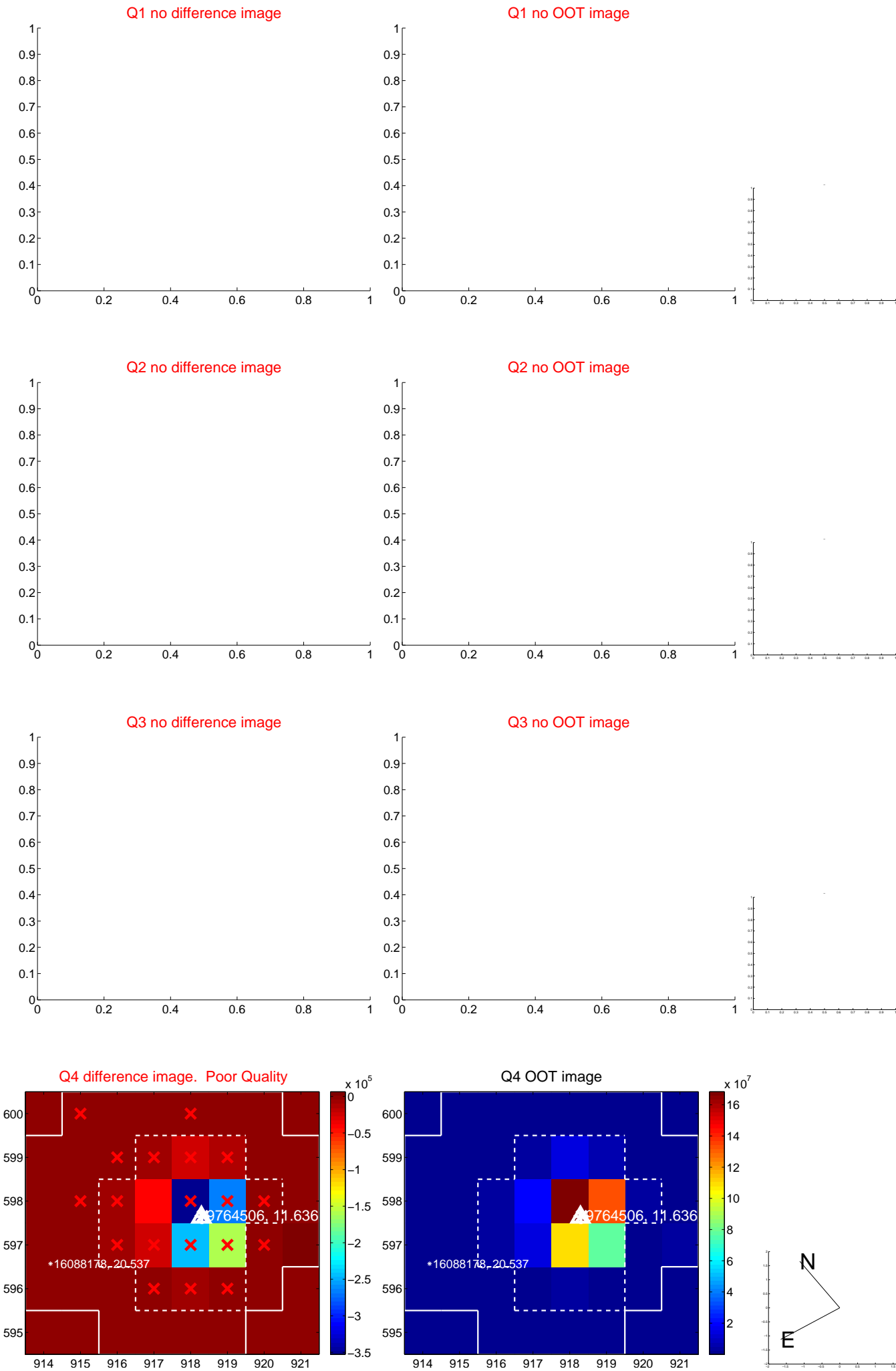
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.037 ± 0.105	0.35	0.036 ± 0.103	0.007 ± 0.128
PRF-fit source offset from KIC position	0.130 ± 0.091	1.44	0.128 ± 0.086	0.022 ± 0.140
photometric centroid source offset	0.03 ± 0.27	0.10	-0.03 ± 0.27	0.01 ± 0.23



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

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



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

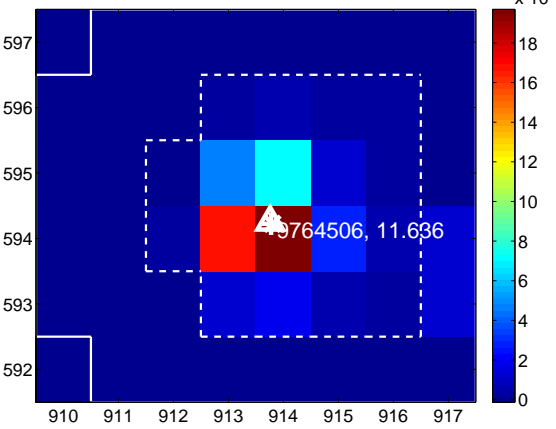
Q5 no difference image



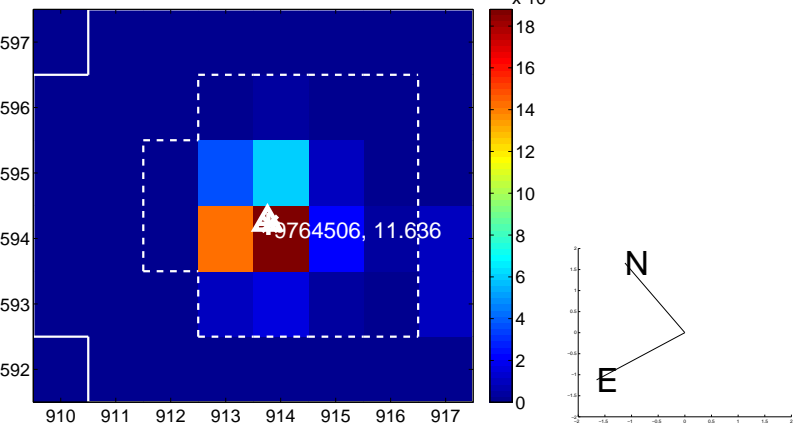
Q5 no OOT image



Q6 difference image



Q6 OOT image



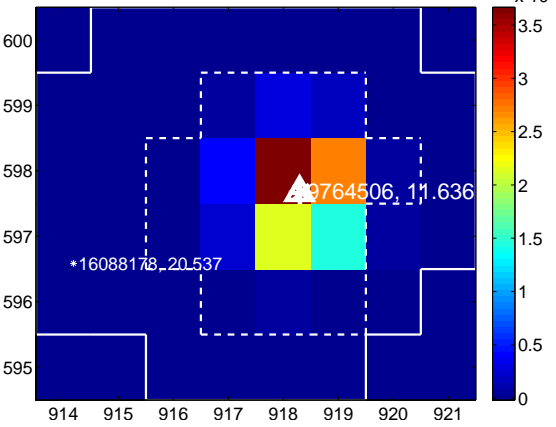
Q7 no difference image



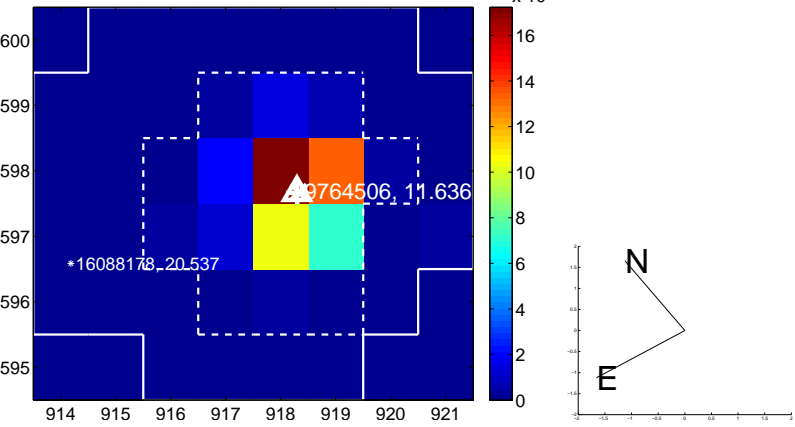
Q7 no OOT image



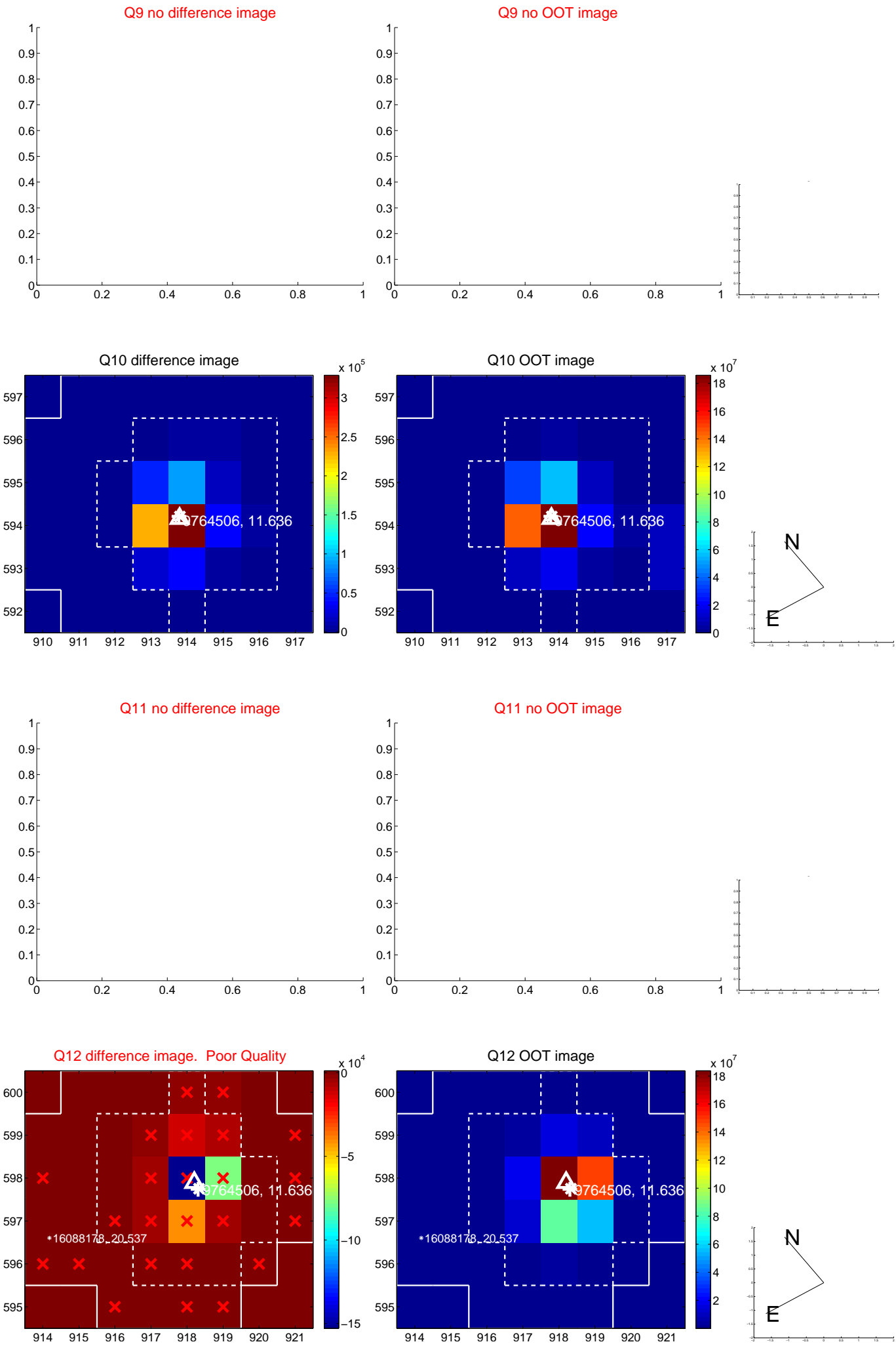
Q8 difference image



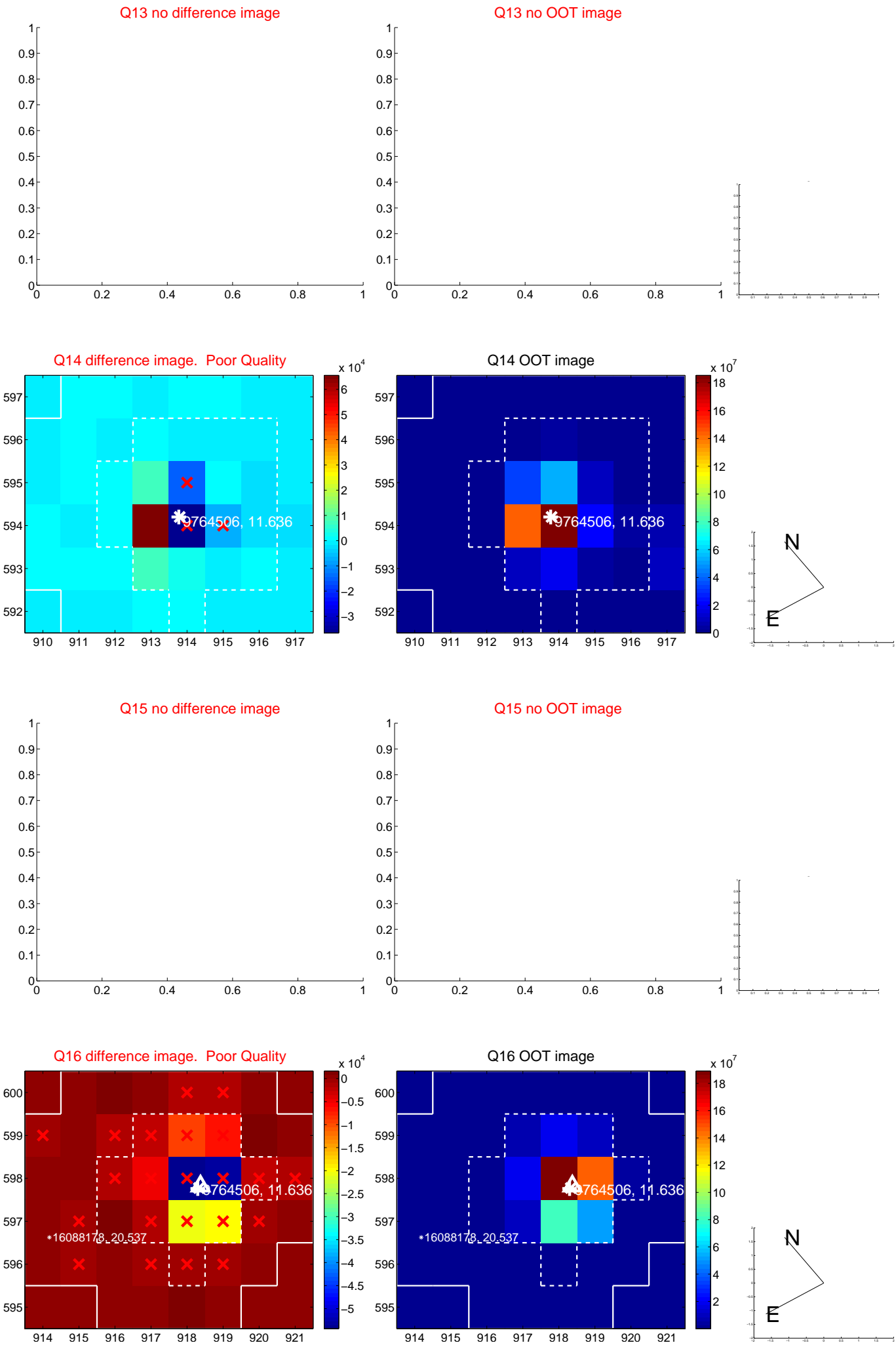
Q8 OOT image



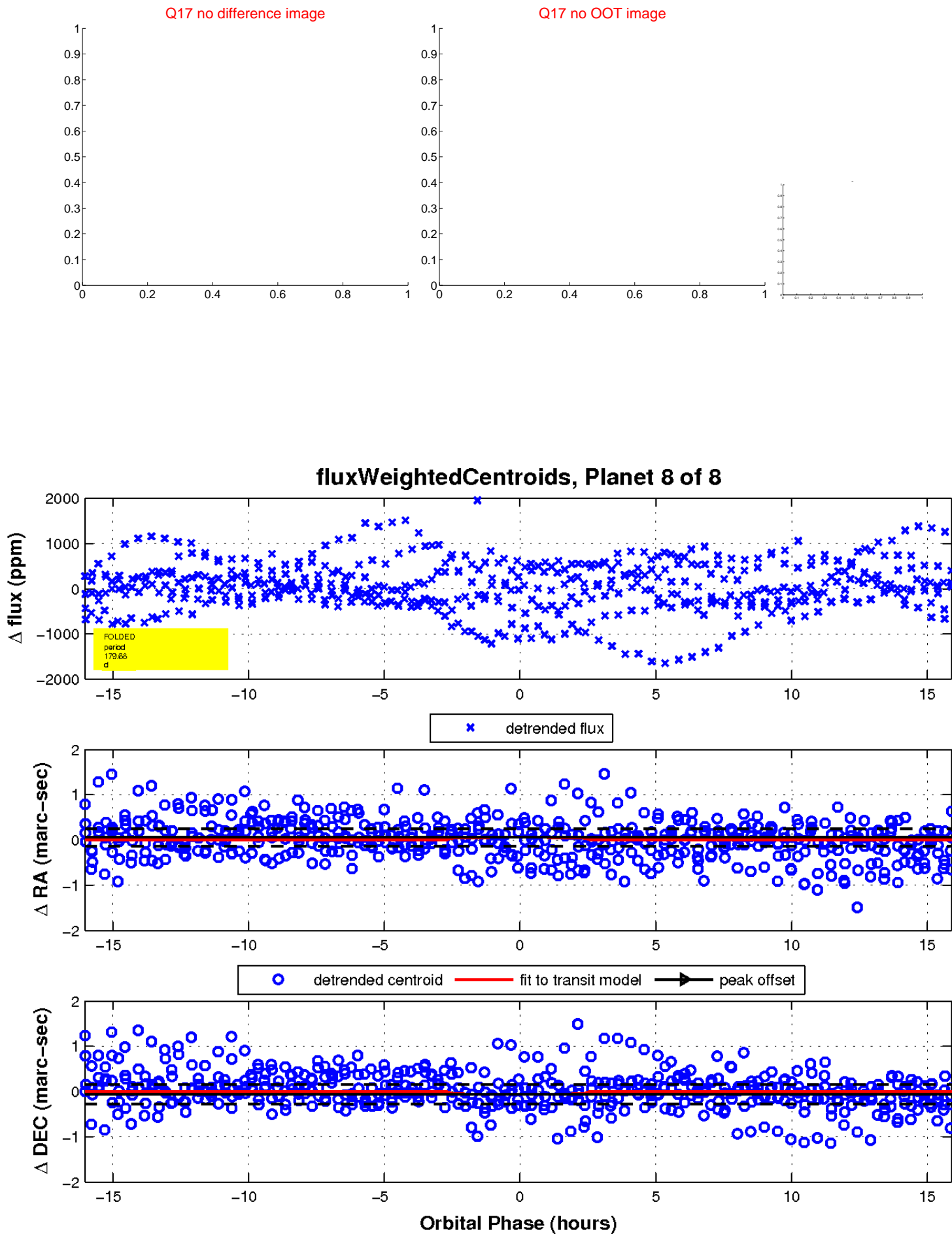
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

