

KIC 008509469

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})
008509469-01	OBS	No	1.736425	132.144440	2.9	13.435	9.5	2.5	2.64	6669	0.53	11074.58
008509469-02	OBS	No	4.287986	131.664242	124.2	0.591	21.9	11.1	2.64	6669	3.53	3317.91
008509469-03	OBS	No	3.552565	132.844438	173.3	1.111	23.5	25.2	2.64	6669	3.69	4263.95
008509469-04	OBS	No	3.158587	132.018728	137.1	1.297	19.2	19.8	2.64	6669	3.62	4987.45
008509469-05	OBS	No	11.617279	137.030891	221.9	0.798	14.4	18.7	2.64	6669	4.29	878.48
008509469-06	OBS	No	3.902163	134.168981	204.3	0.666	14.2	14.2	2.64	6669	3.89	3762.37
008509469-07	OBS	No	2.890361	133.731871	56.9	0.775	15.1	6.2	2.64	6669	2.07	5613.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509469-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
008509469-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008509469-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008509469-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
008509469-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_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.

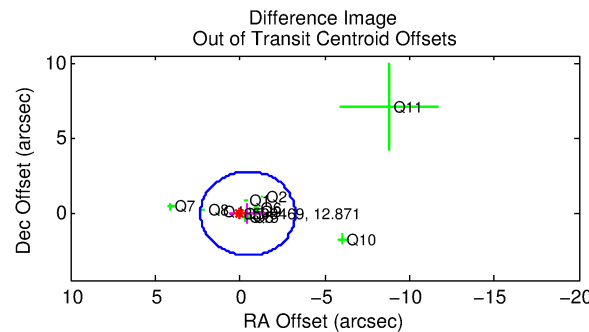
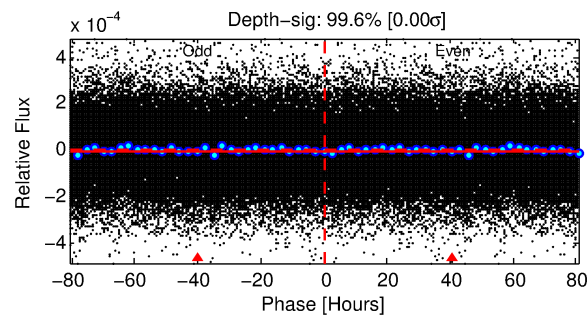
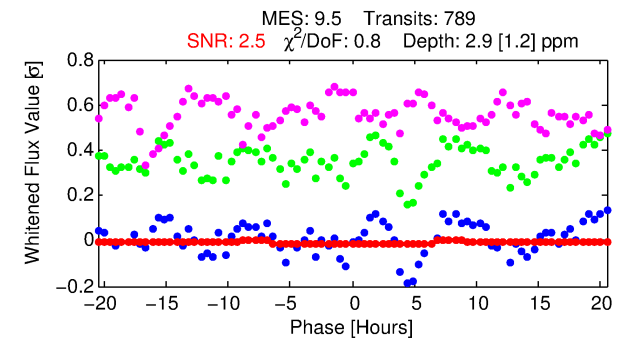
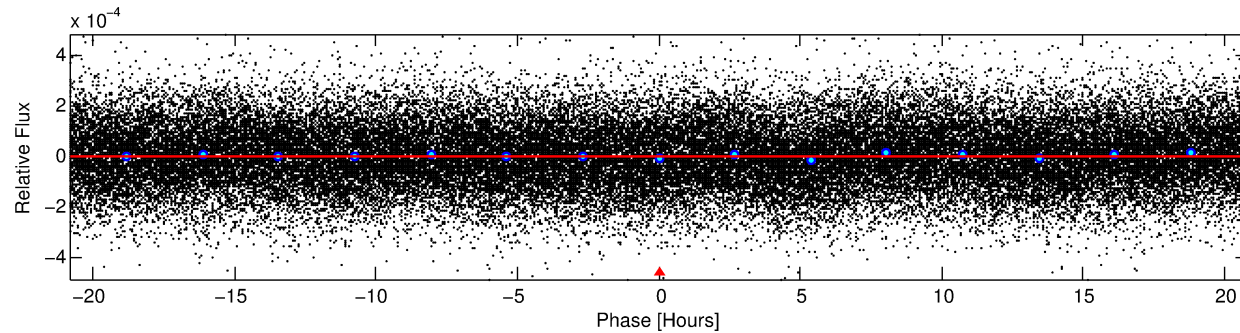
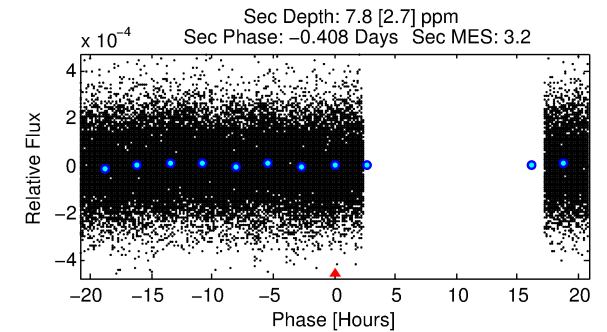
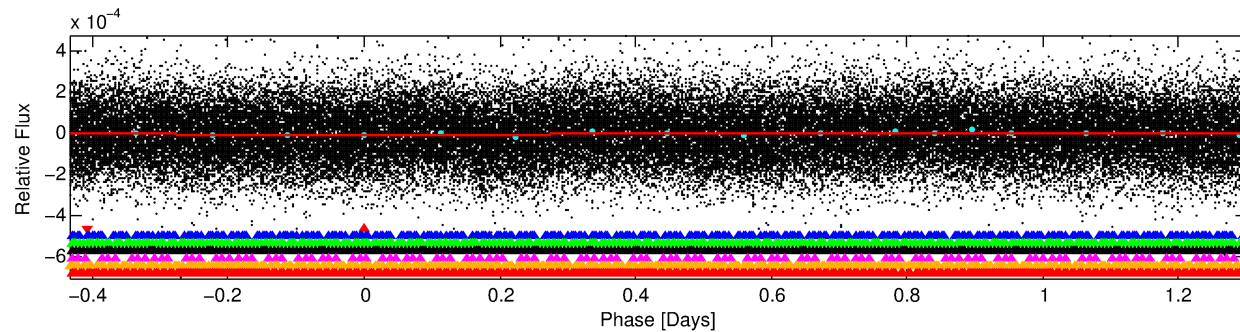
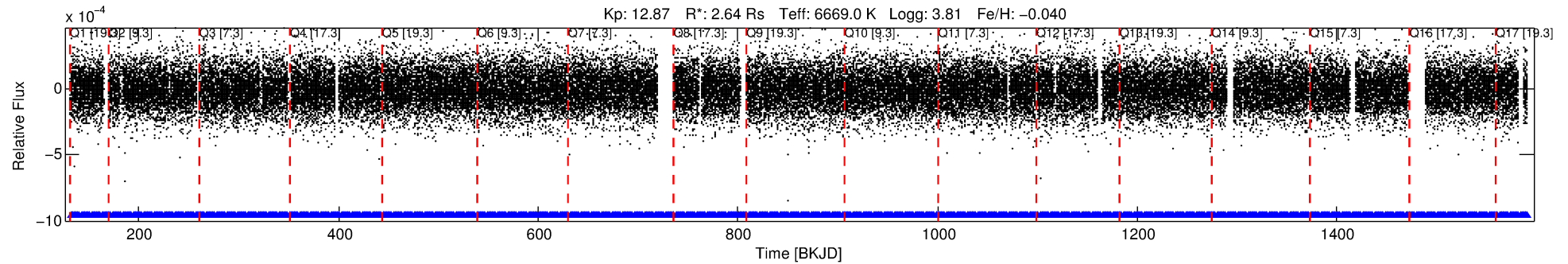
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008509469-01

No Significant Match Found

DV One-Page Summary

KIC: 8509469 Candidate: 1 of 7 Period: 1.736 d



DV Fit Results:

Period = 1.73642 [0.00014] d
Epoch = 132.1444 [0.0372] BKJD
Rp/R* = 0.0018 [0.0029]
a/R* = 1.04 [0.75]
b = 0.90 [2.10]
Seff = 11074.58 [5593.55]
Teq = 2616 [330] K
Rp = 0.53 [0.87] Re
a = 0.0334 [0.0109] AU
Ag = 17.32 [56.30] [0.29σ]
Teffp = 8251 [6633] K [0.85σ]

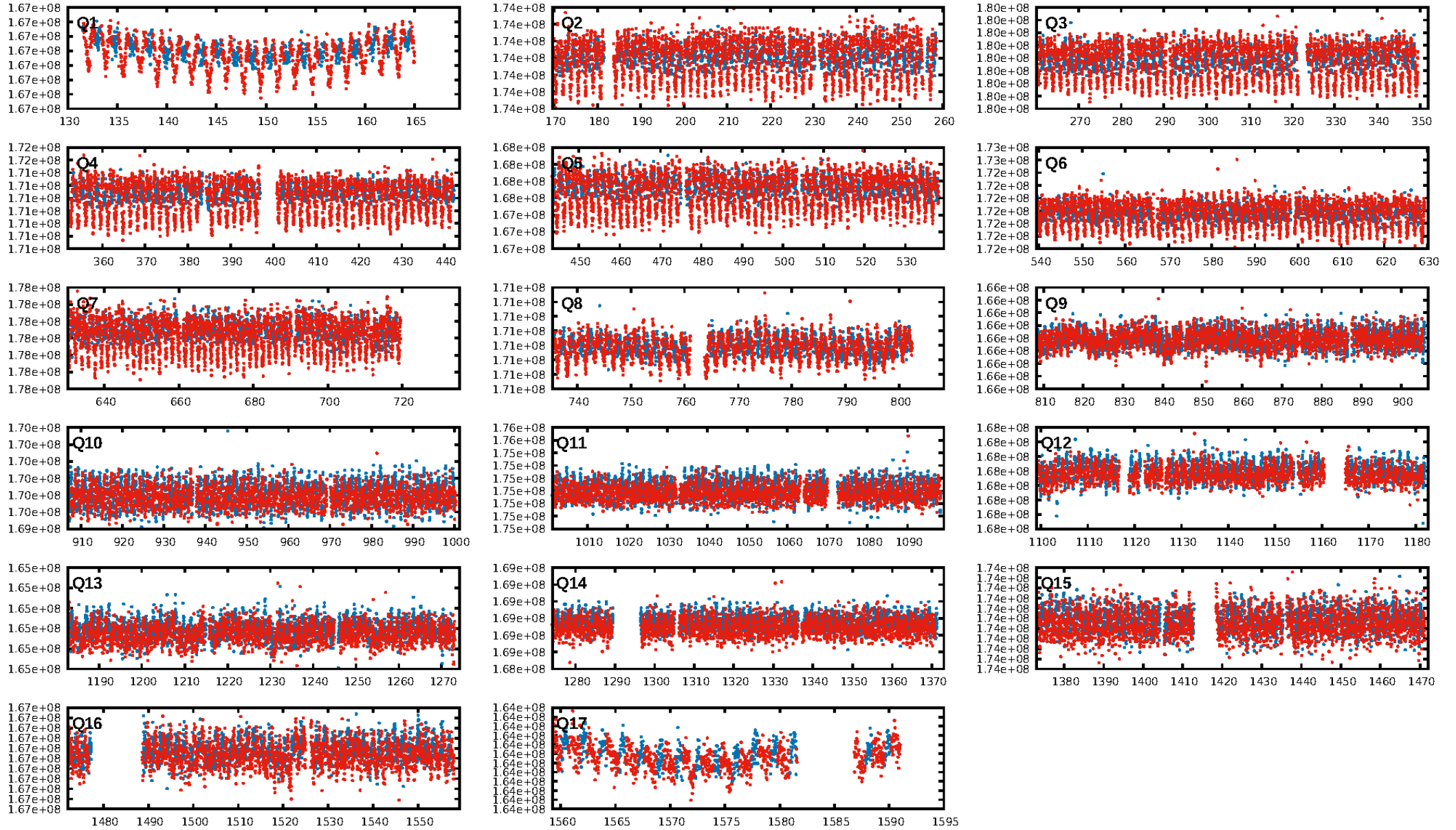
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 96.0% [2.06σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [753/753]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.476 arcsec [0.51σ]
KicOffset-rm: 0.504 arcsec [0.56σ]
OotOffset-st: 3/4/2/3 [12]
KicOffset-st: 3/4/2/3 [12]
DiffImageQuality-fgm: 0.75 [9/12]
DiffImageOverlap-fno: 0.35 [6/17]

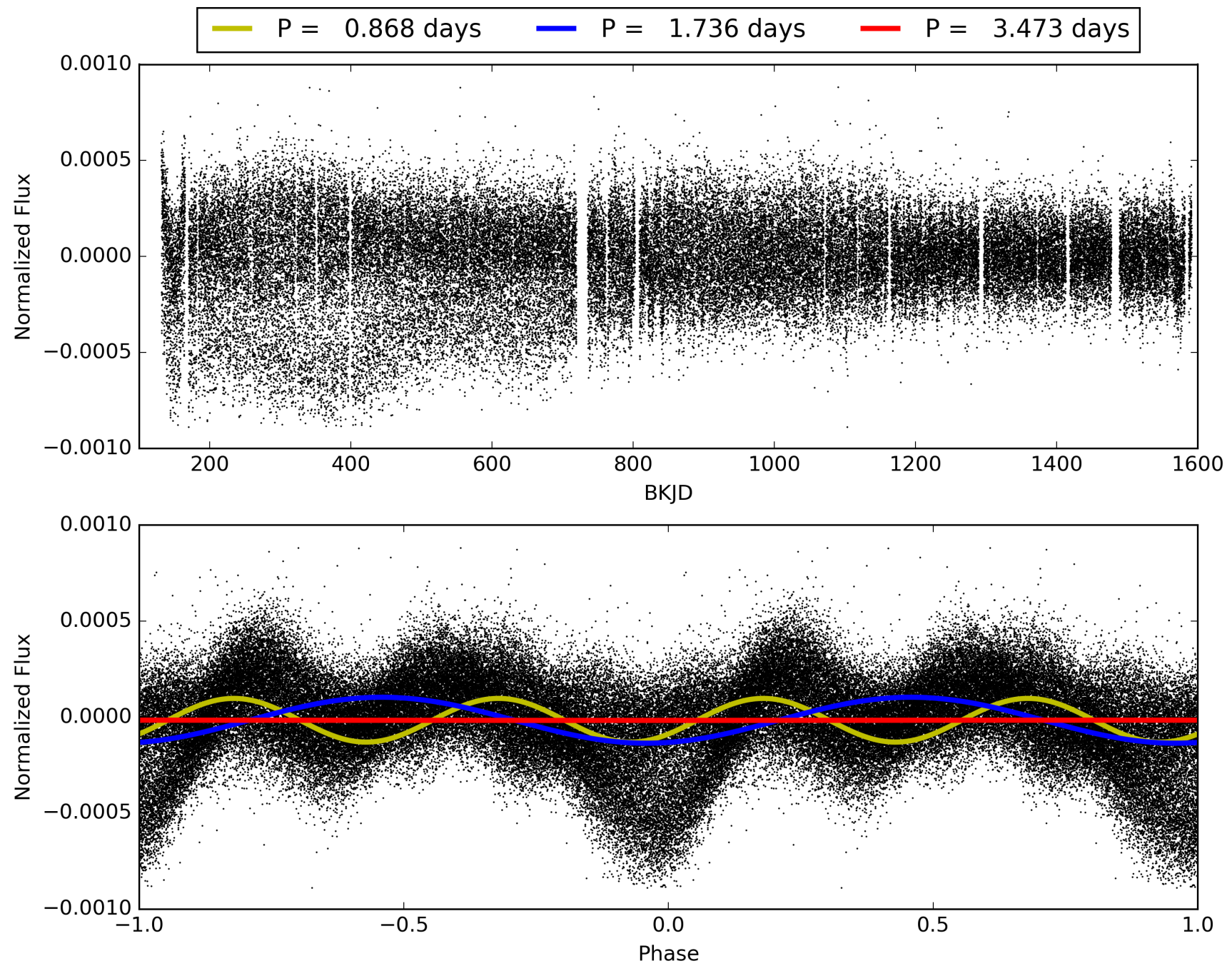
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:21:53 Z

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

TCE 008509469-01, PDC Light Curves

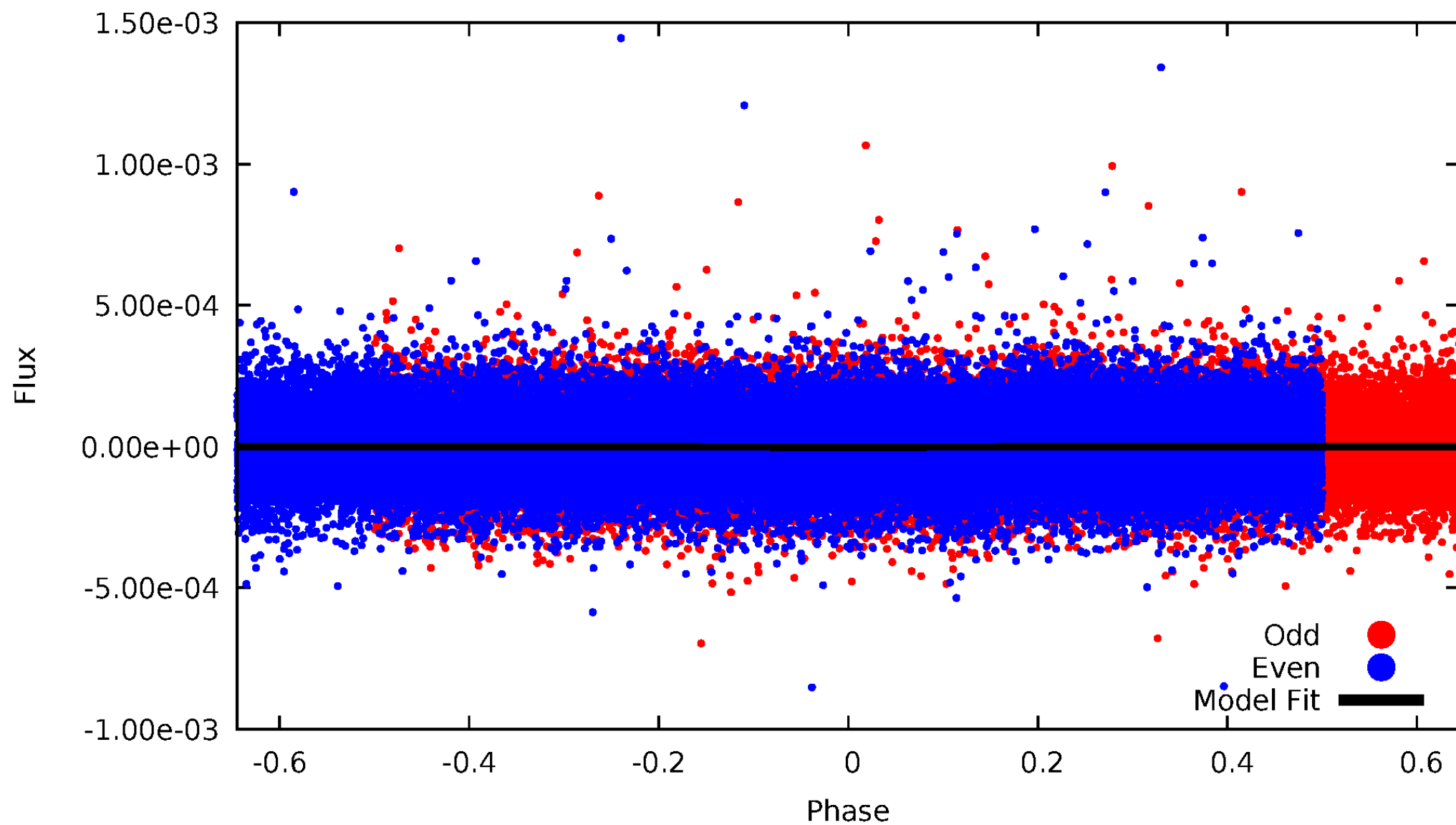


TCE 008509469-01



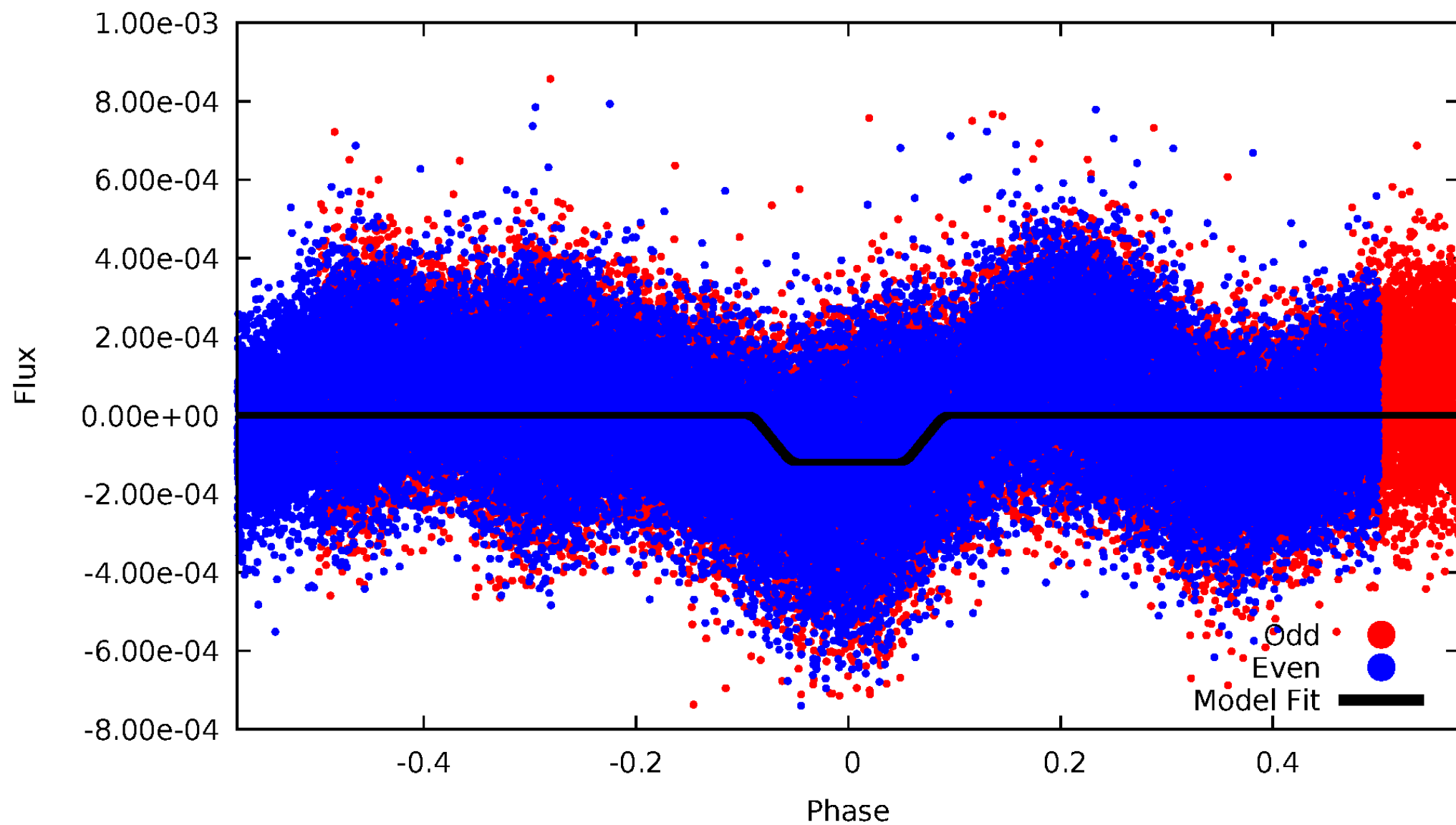
DV Odd/Even

TCE 008509469-01

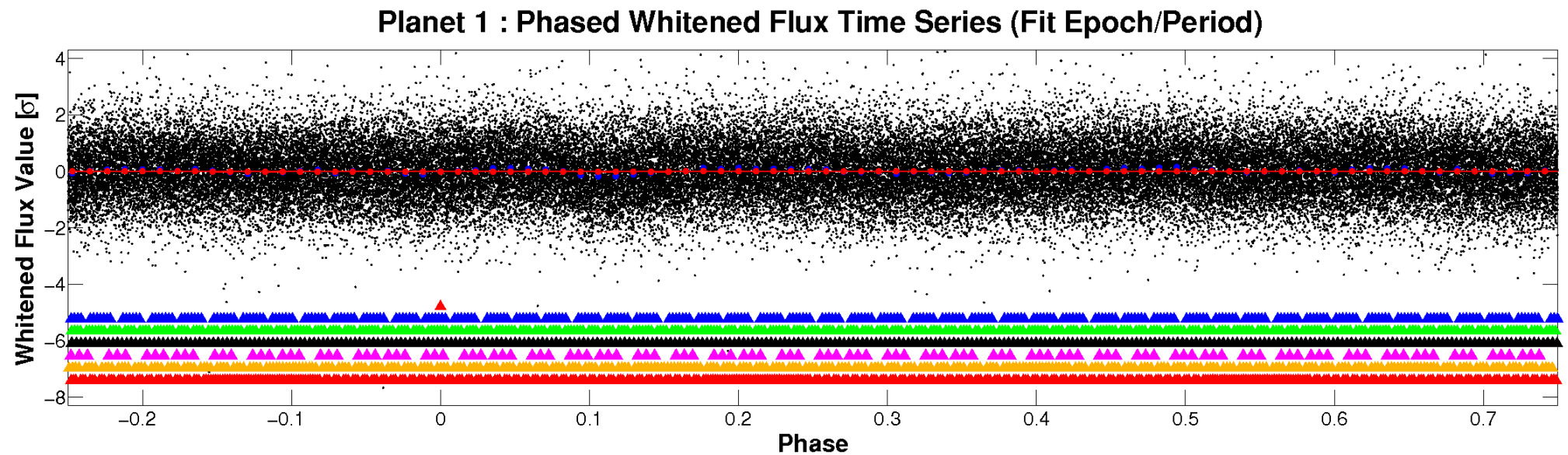
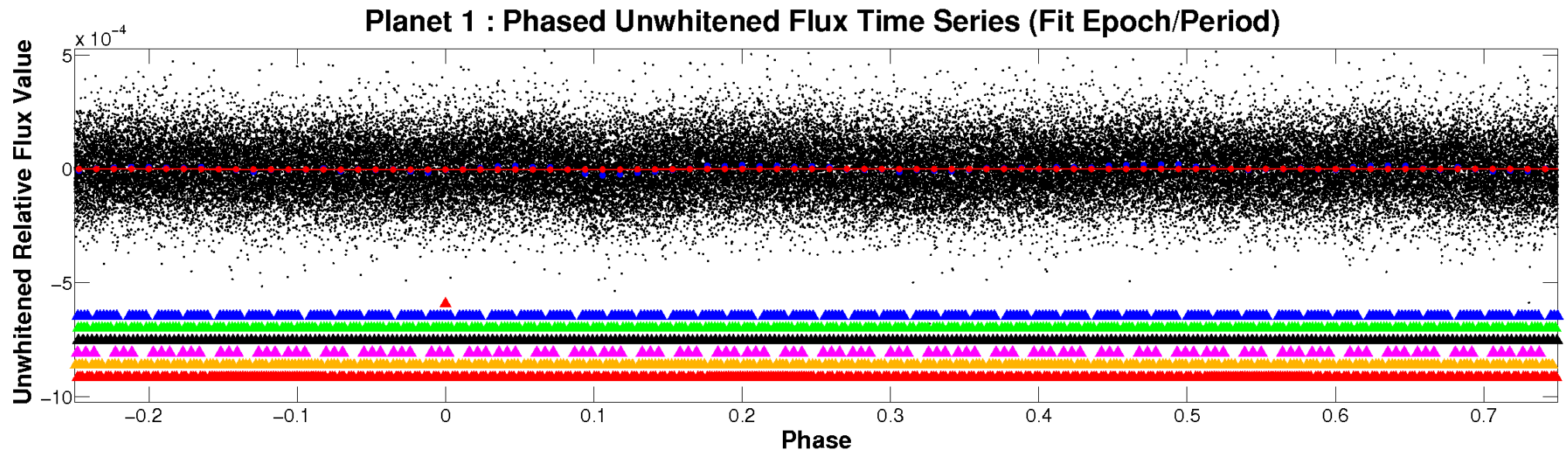


ALT Odd/Even

TCE 008509469-01

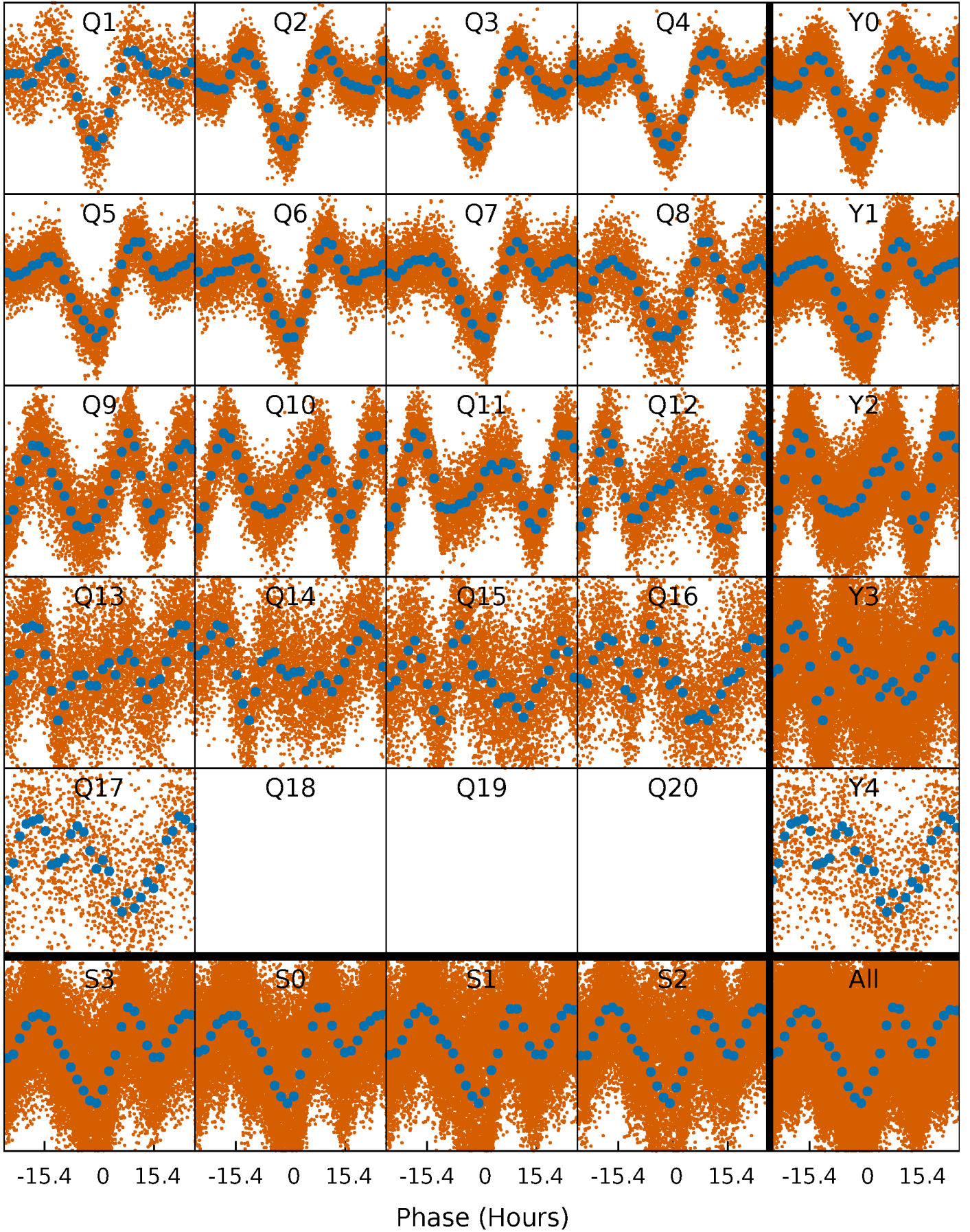


Non-Whitened Vs. Whitened Light Curve



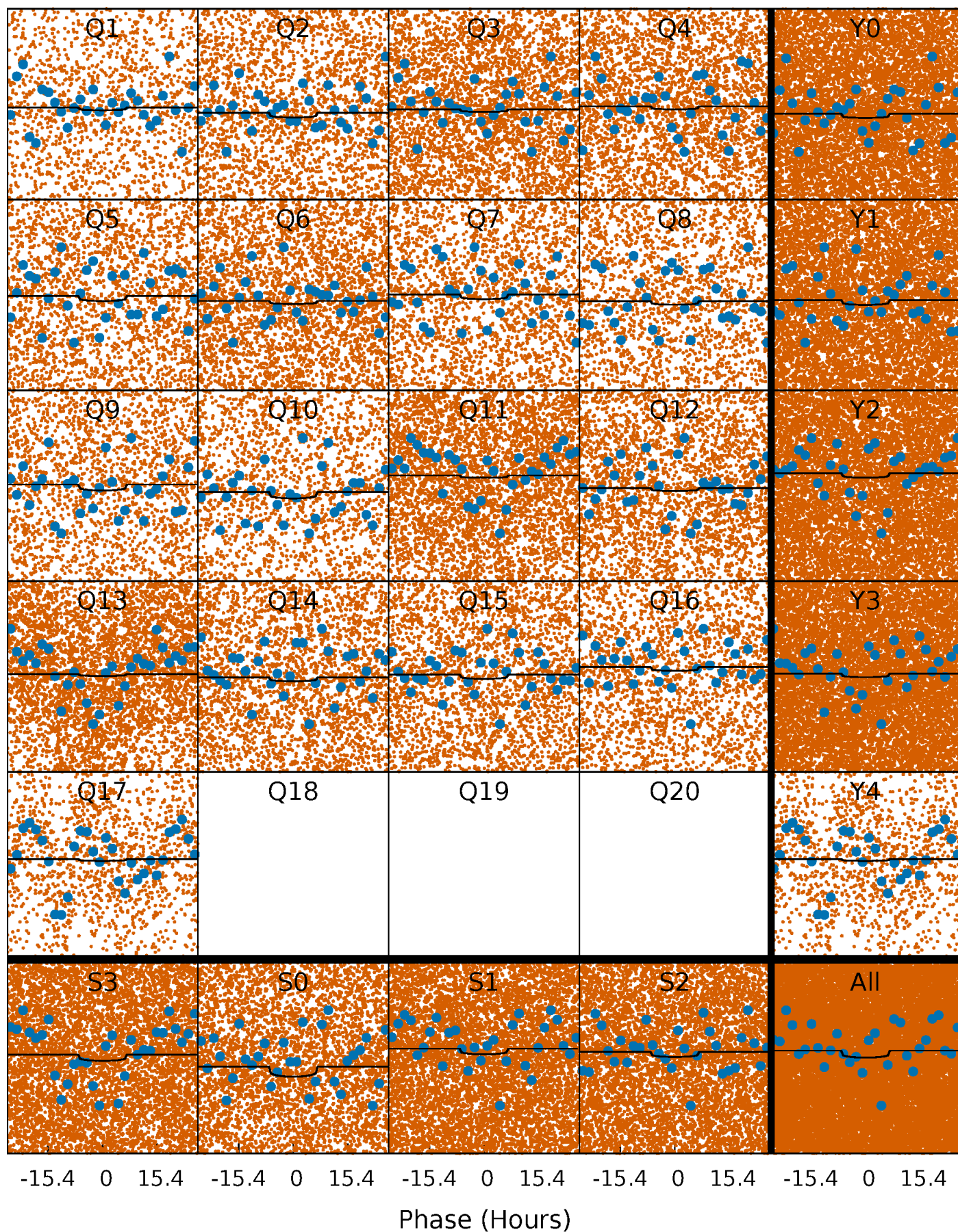
PDC Quarter-Phased Transit Curves

TCE 008509469-01 P= 1.736425 Days $T_0=132.144440$ (BKJD)



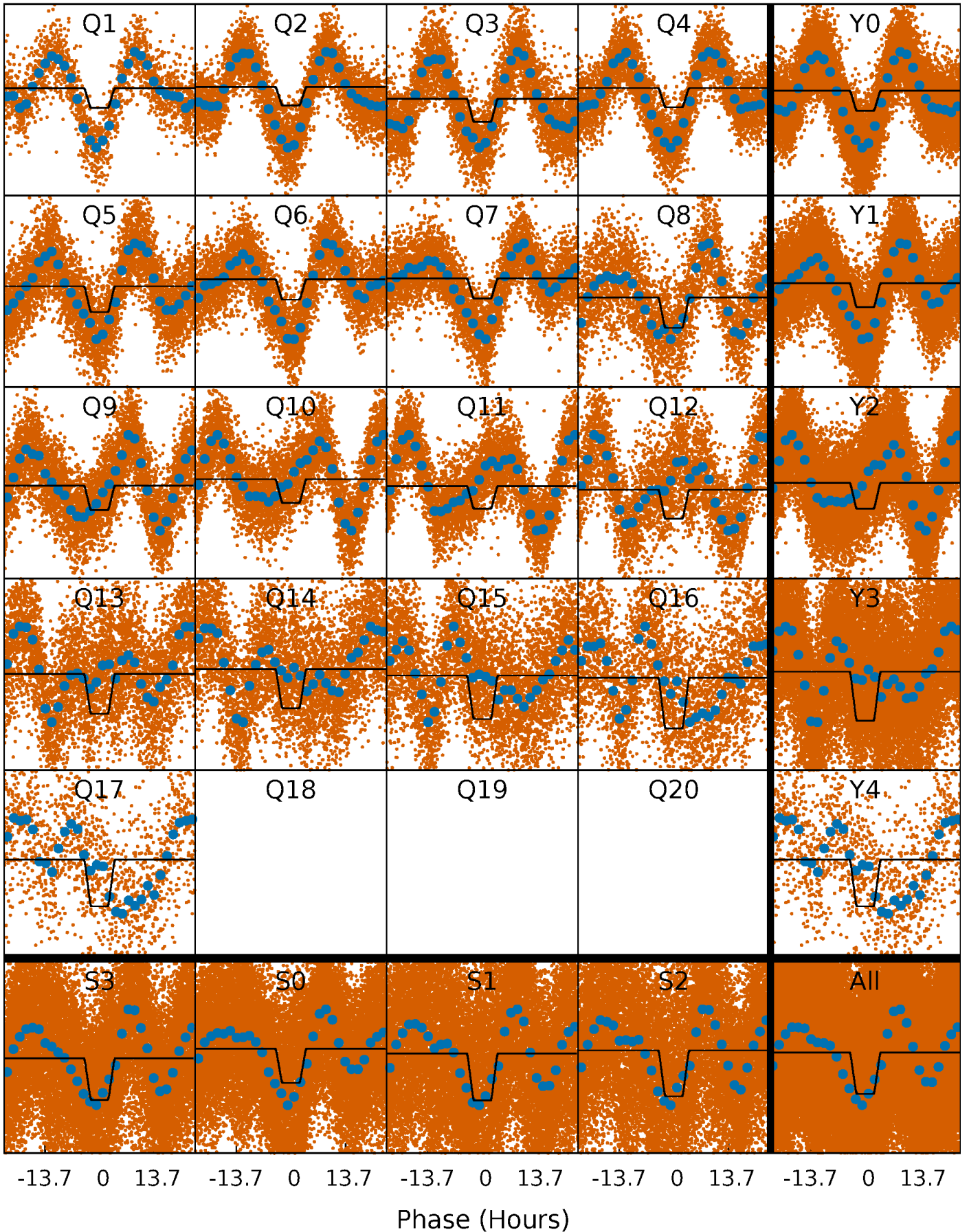
DV Quarter-Phased Transit Curves

TCE 008509469-01 P= 1.736425 Days $T_0=132.144440$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

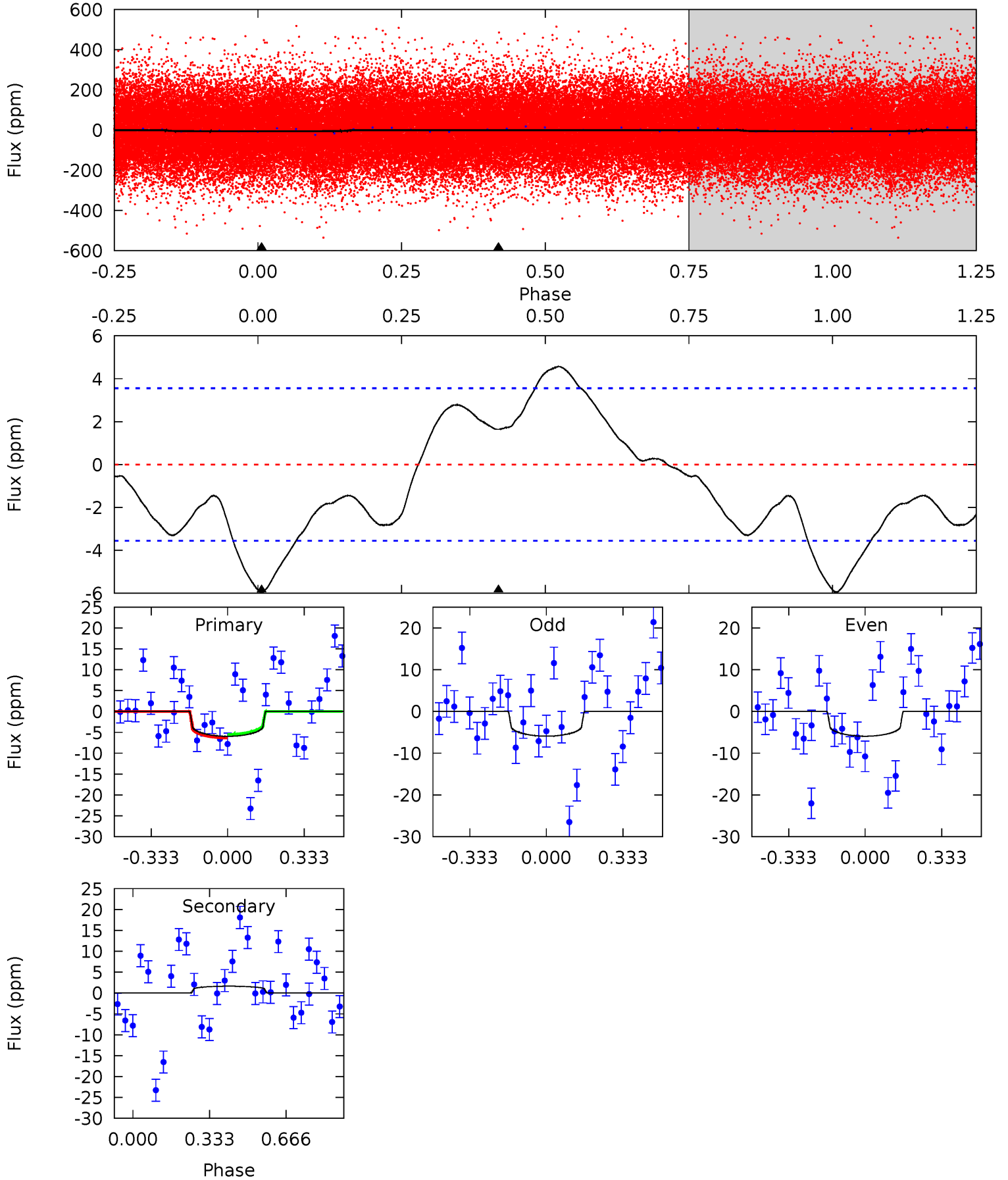
TCE 008509469-01 P= 1.736498 Days $T_0=132.125505$ (BKJD)



DV Model-Shift Uniqueness Test

008509469-01, P = 1.736425 Days, E = 130.408015 Days

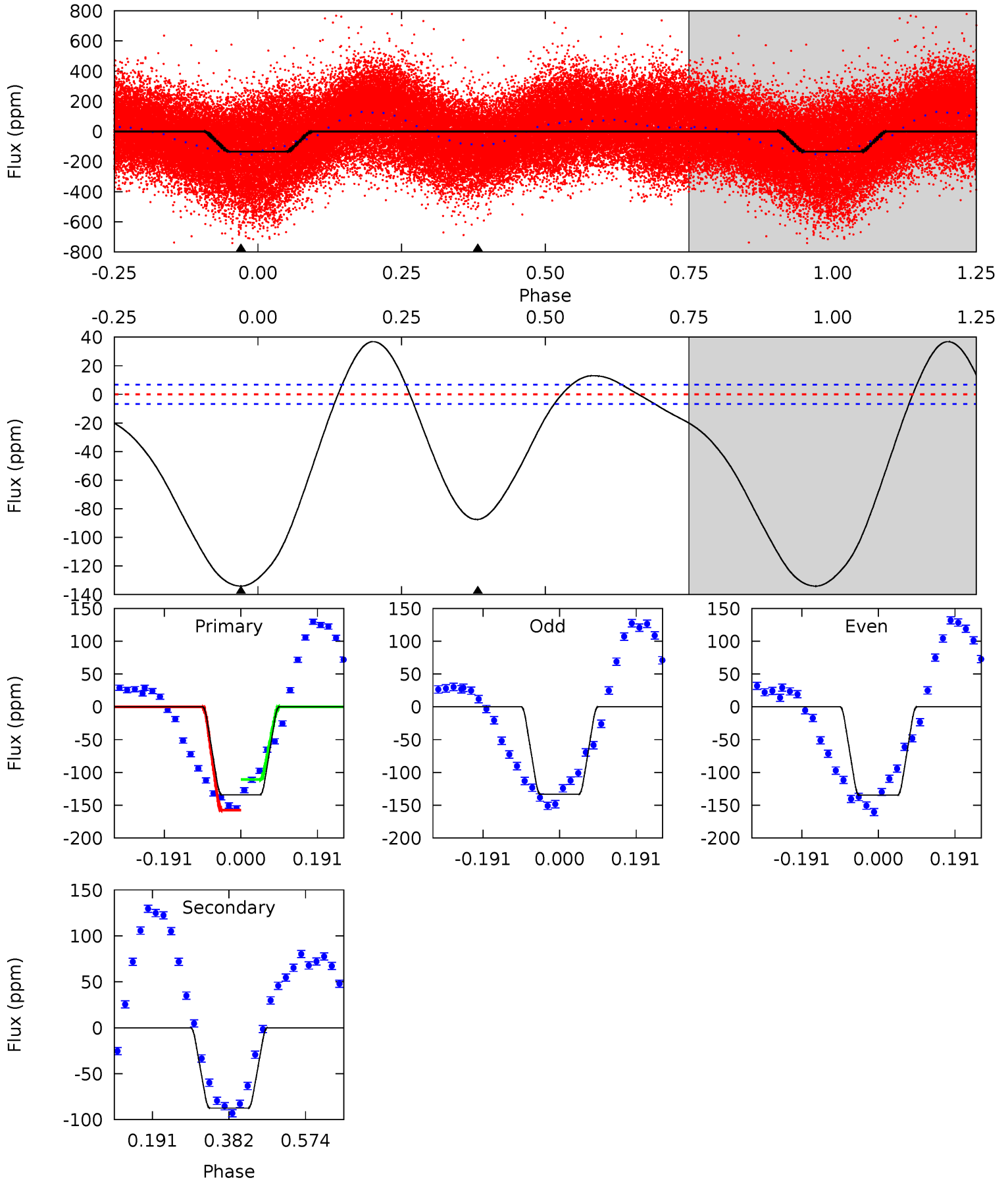
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.21	-1.98	0	0	4.31	0.97	0.37	7.21	7.21	-1.98	-1.98	0.01	0.77	0.43	0.50



Alt Model-Shift Uniqueness Test

008509469-01, P = 1.736498 Days, E = 130.389007 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
88.0	57.4	0	0	4.43	1.31	10.9	88.0	88.0	57.4	57.4	0.46	1.68	0.22	14.7



Stellar Parameters For KIC 008509469

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6669^{+179}_{-219}	$3.812^{+0.273}_{-0.117}$	$-0.040^{+0.250}_{-0.250}$	$2.643^{+0.495}_{-0.989}$	$1.650^{+0.186}_{-0.346}$	$0.126^{+0.239}_{-0.047}$
	+3%/-3%	+7%/-3%	+625%/-625%	+19%/-37%	+11%/-21%	+190%/-37%
Source	PHO1	FLK73	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 008509469-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	2 ± 1	$0.76^{+0.74}_{-0.49}$	3610^{+235}_{-305}	-4704^{+797}_{-2830}	$-1.494^{+1.144}_{-10.226}$
Alt.	-87 ± 2	$3.03^{+0.97}_{-0.88}$	3603^{+252}_{-320}	6014^{+1118}_{-655}	$5.754^{+5.853}_{-2.412}$

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

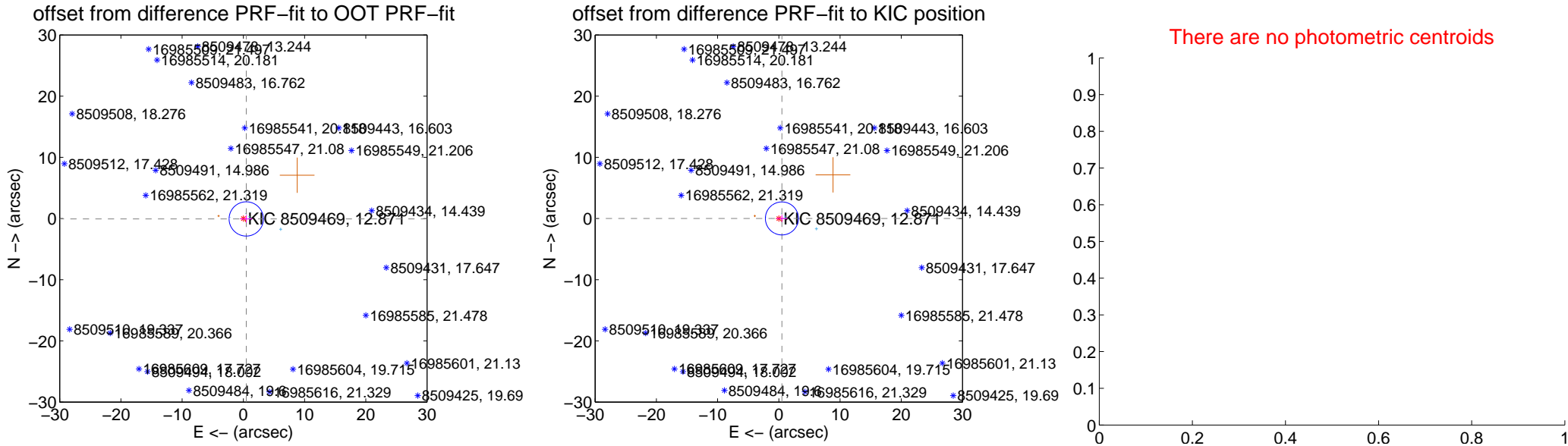
DV Centroid Data

Supplemental centroid analysis for 008509469-01. Kepler magnitude: 12.87. Transit SNR 2.46

There are 9 quarters with good PRF difference image offsets

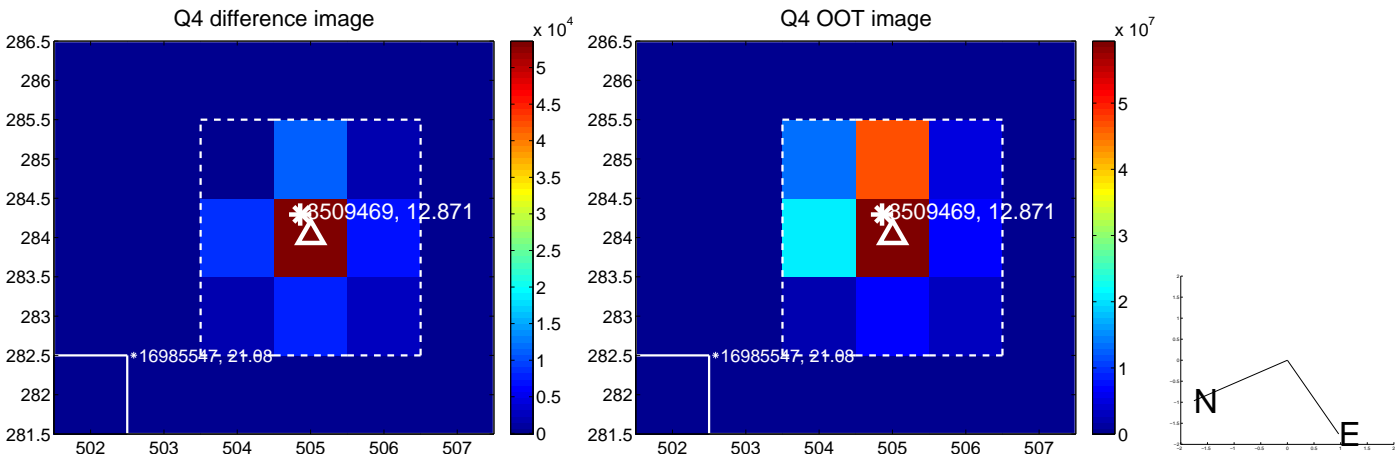
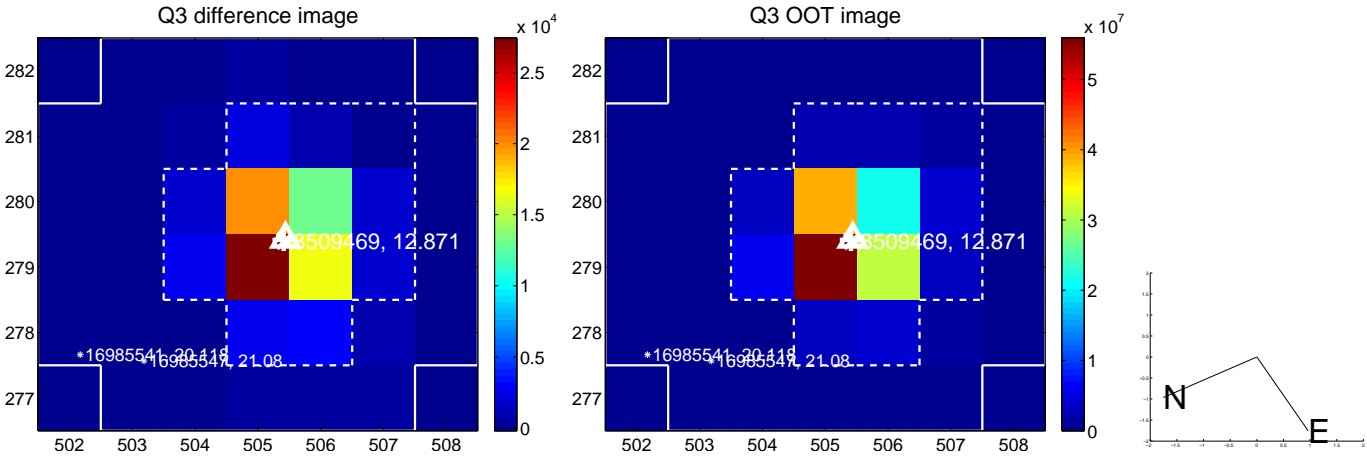
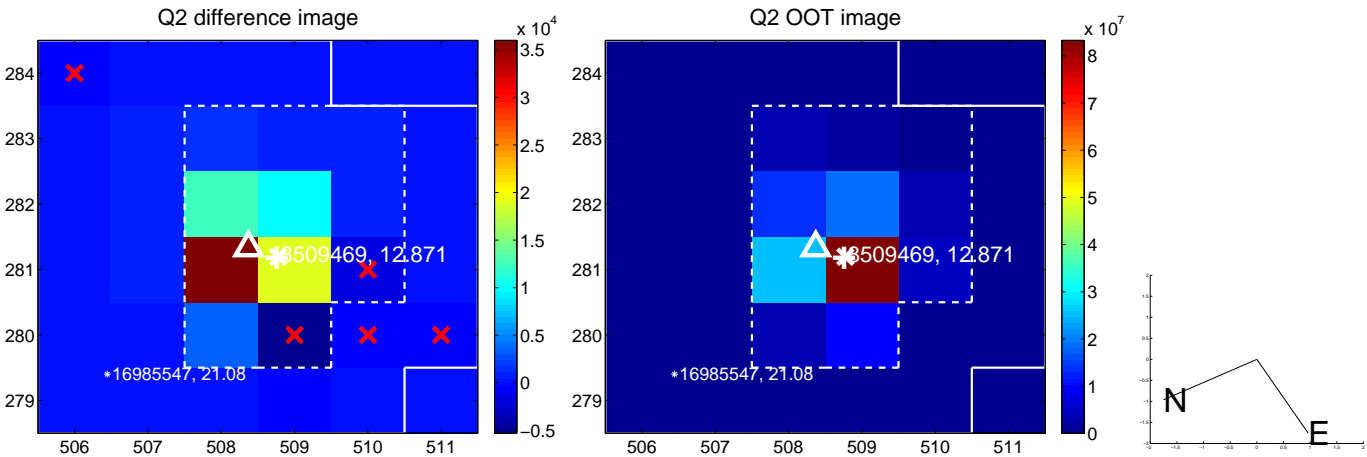
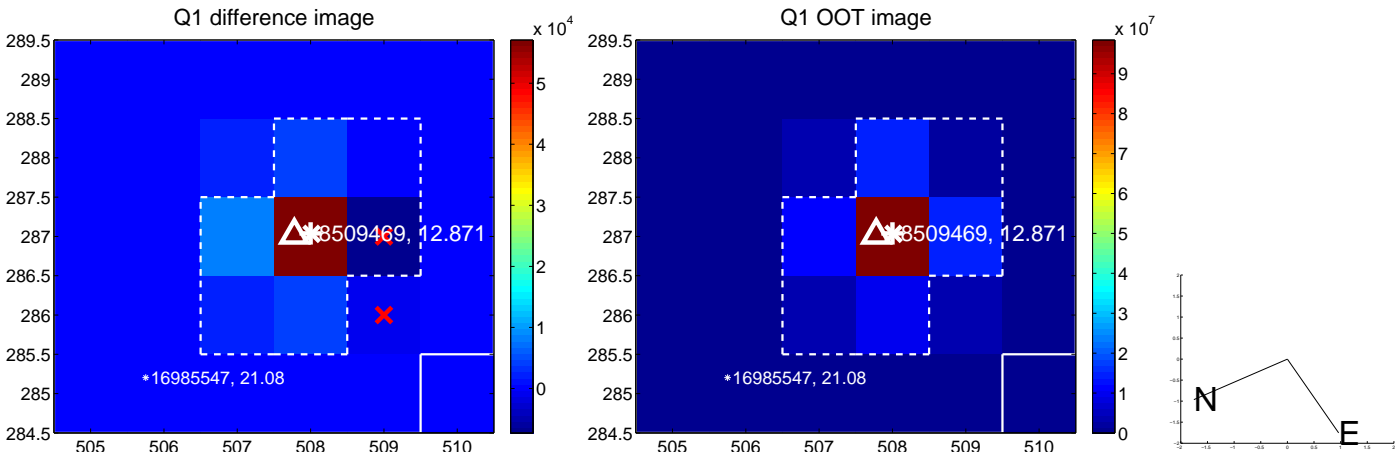
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.476 ± 0.934	0.51	-0.471 ± 0.996	-0.067 ± 0.607
PRF-fit source offset from KIC position	0.504 ± 0.899	0.56	-0.504 ± 0.892	0.014 ± 0.570
photometric centroid source offset	—	—	—	—

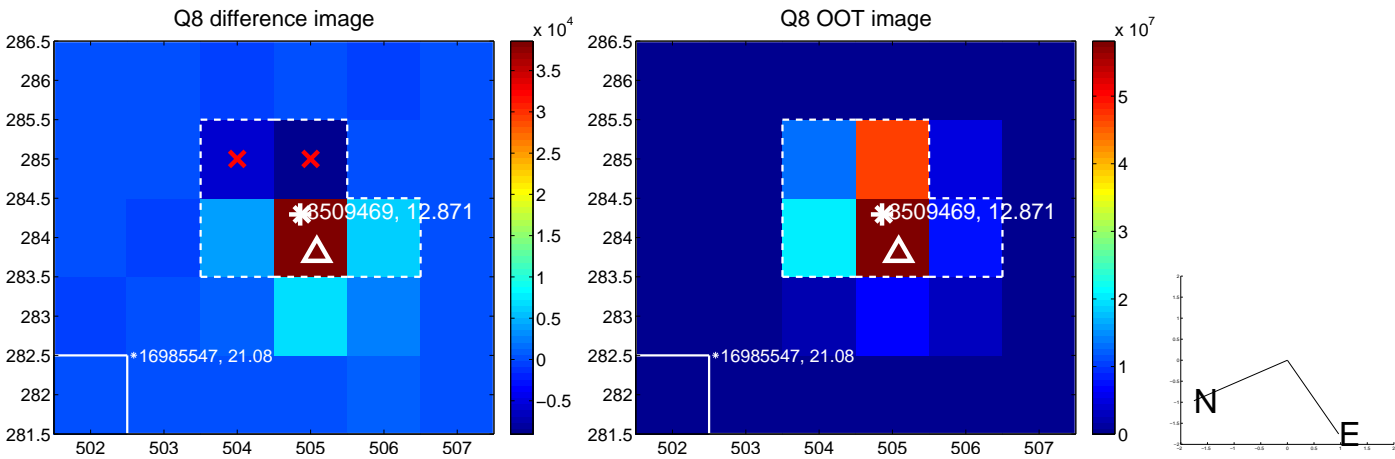
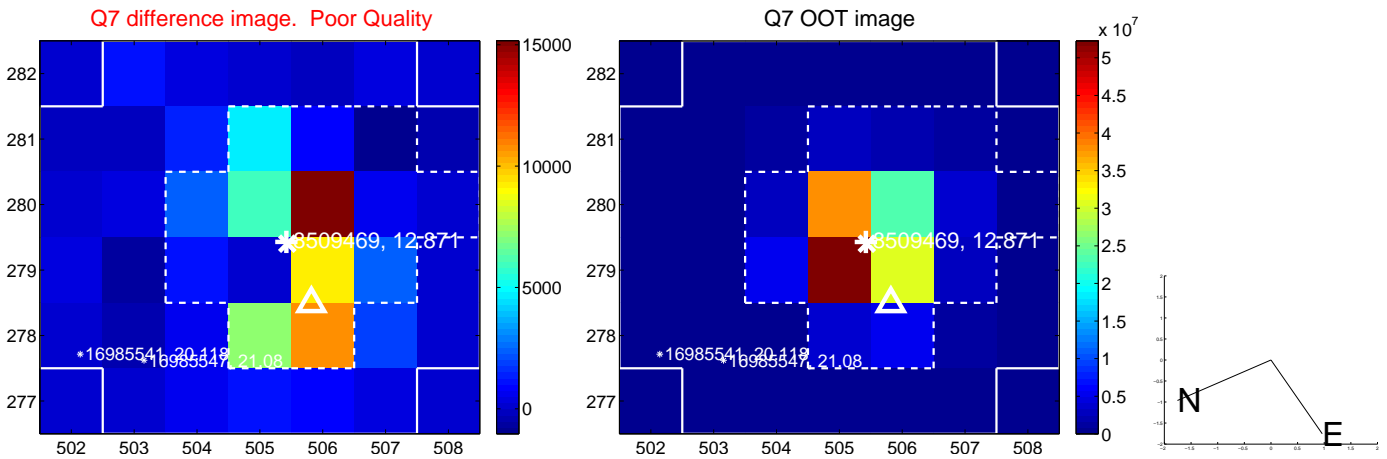
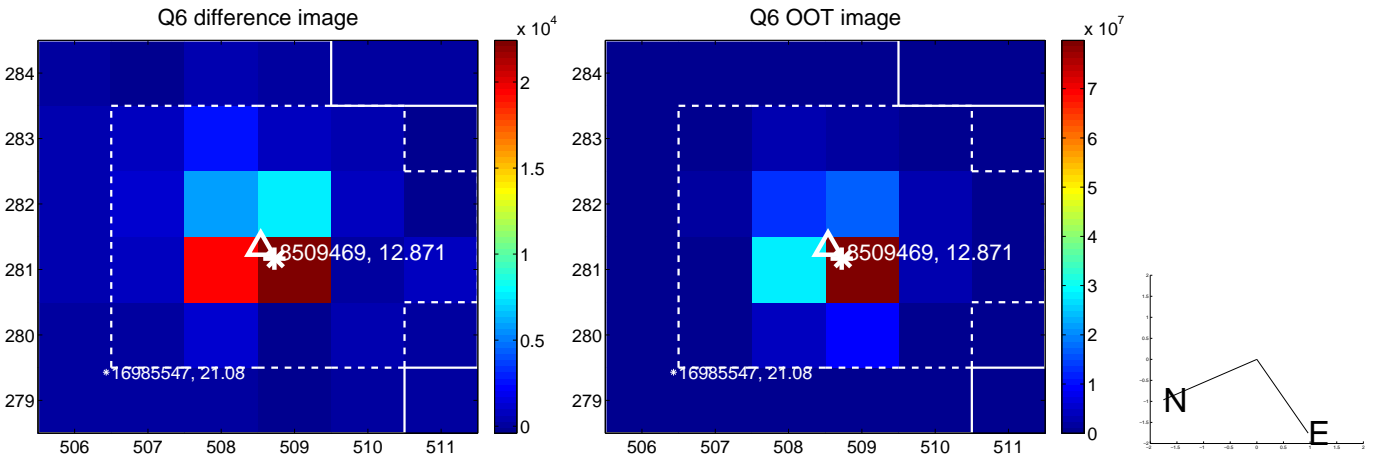
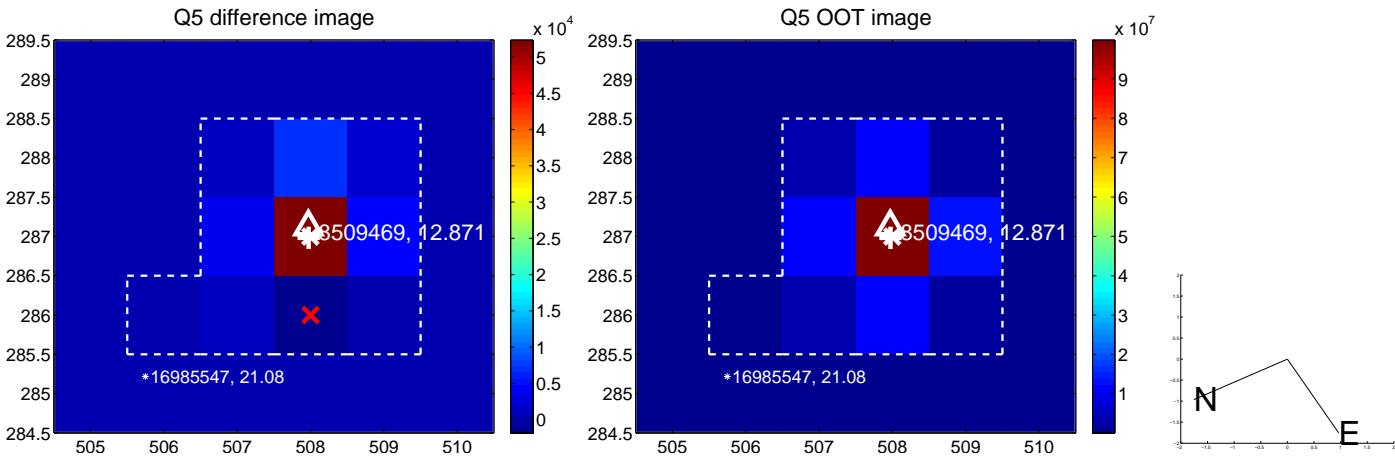


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

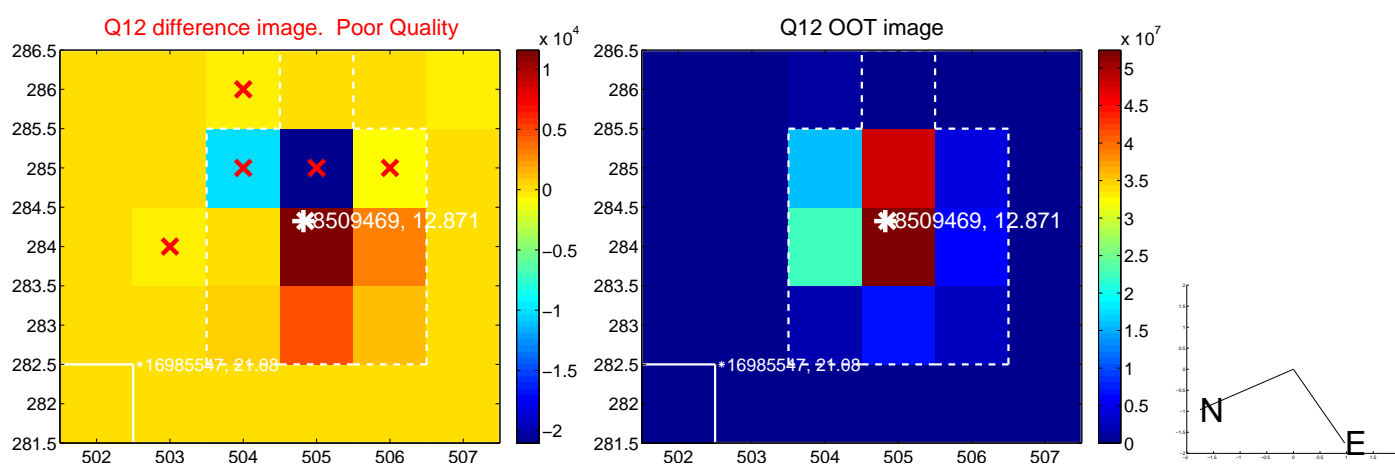
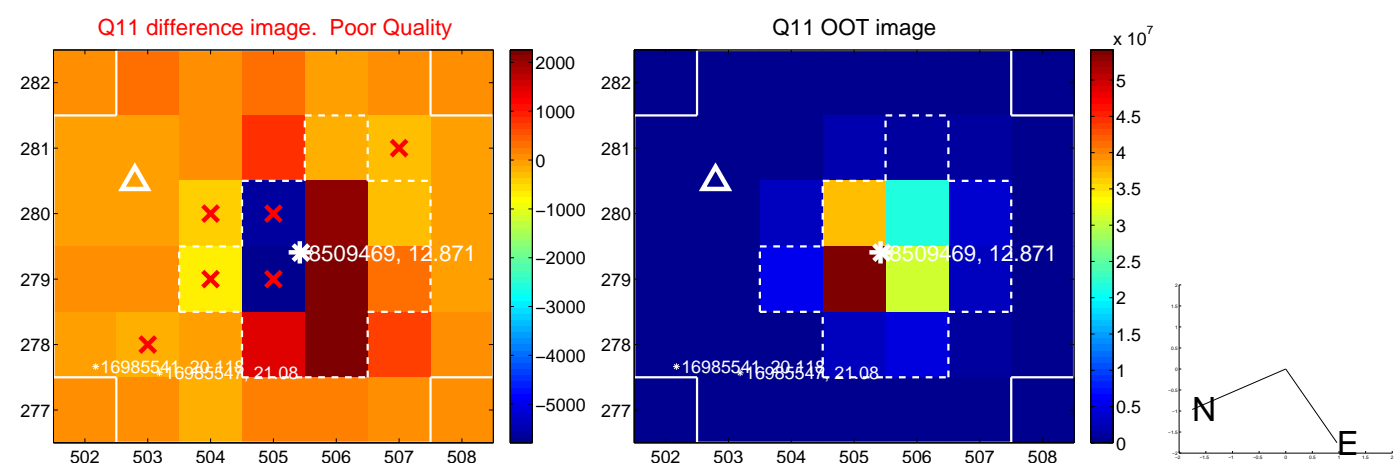
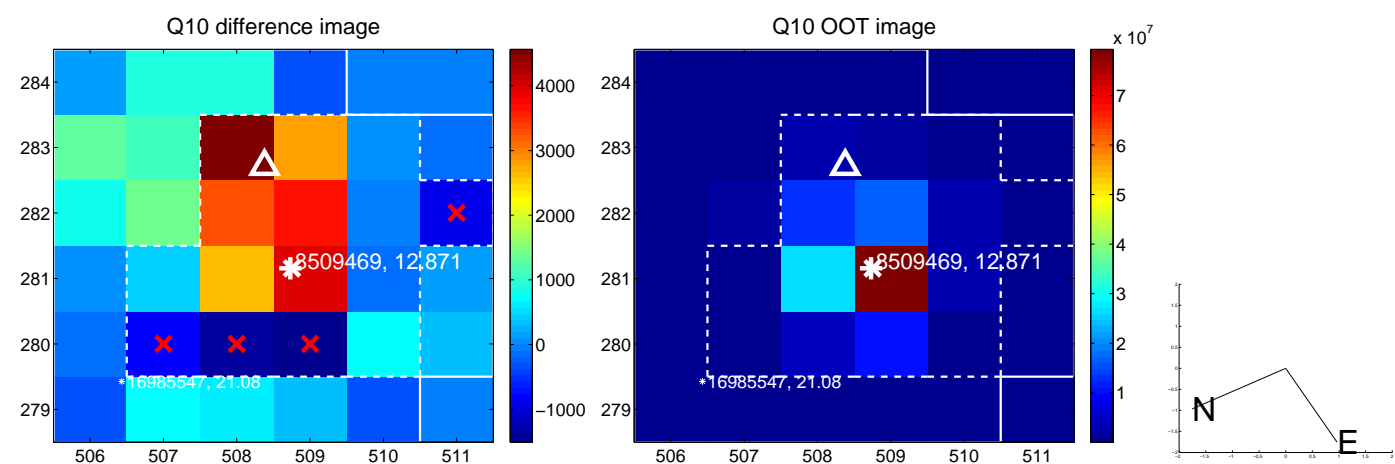
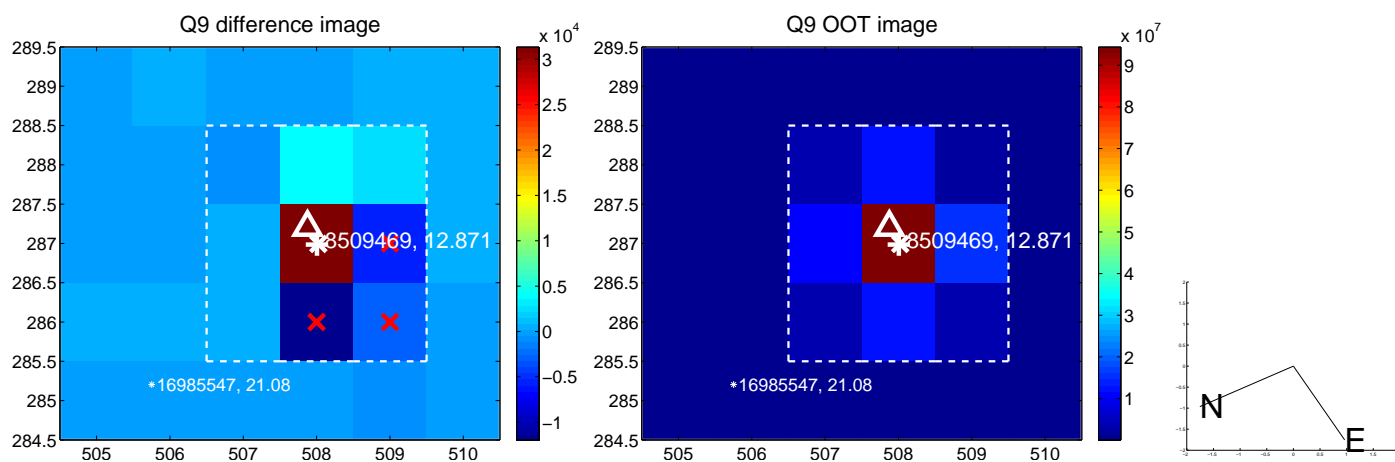
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



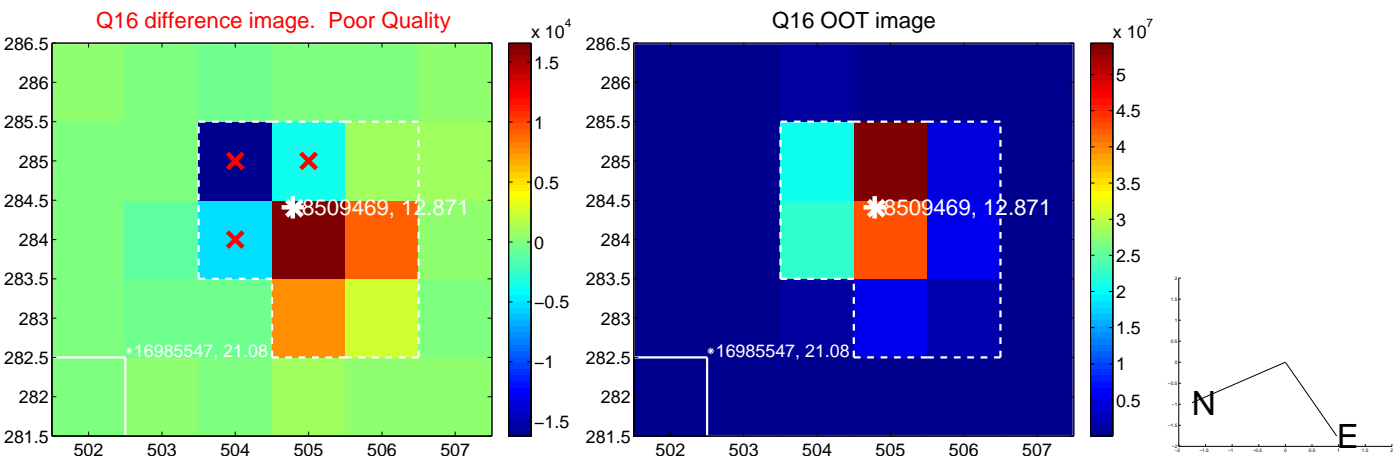
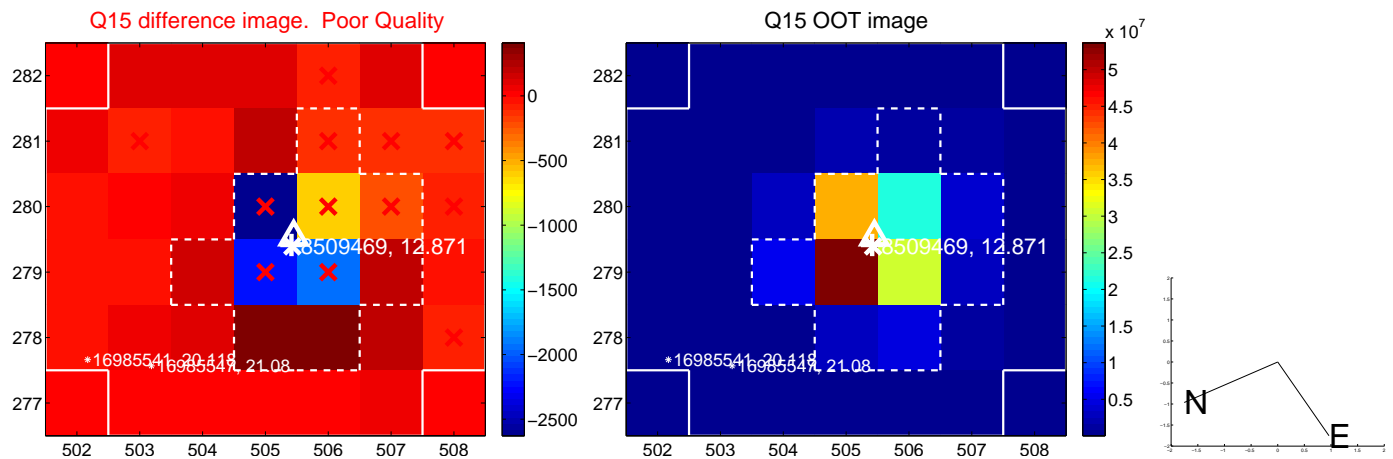
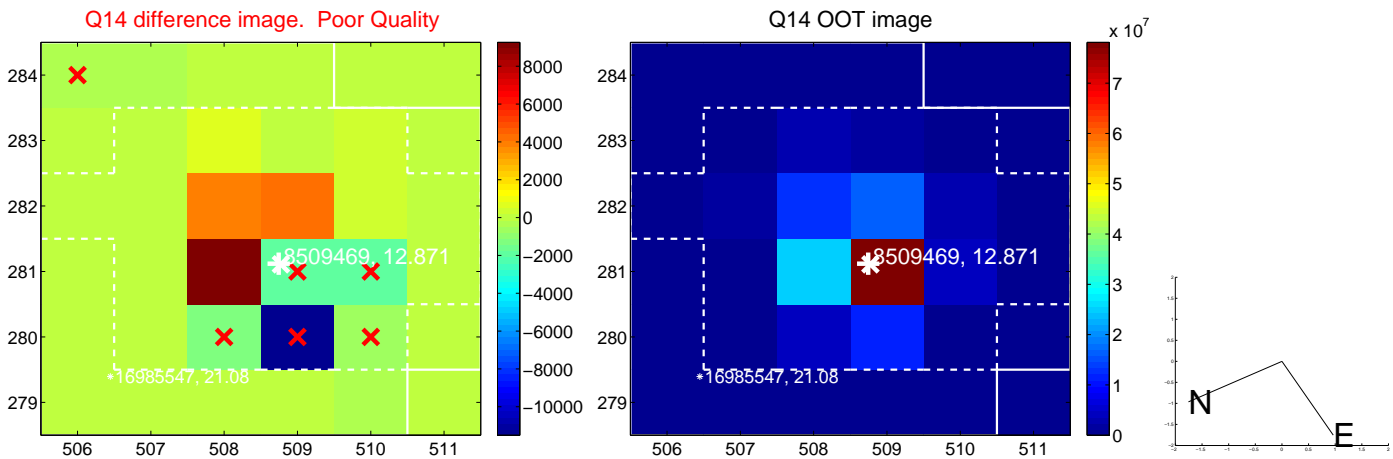
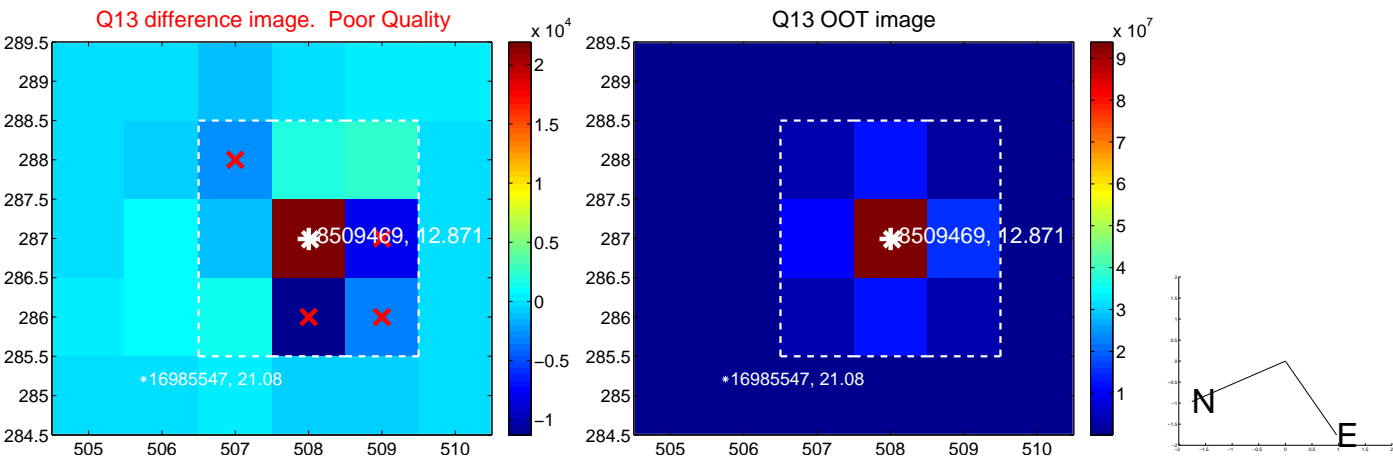
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



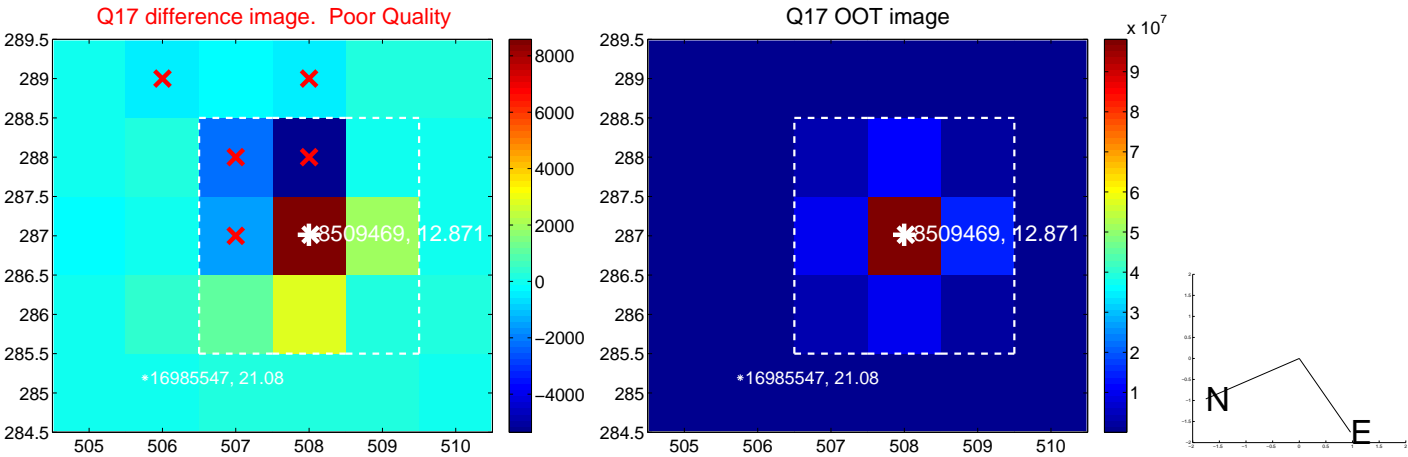
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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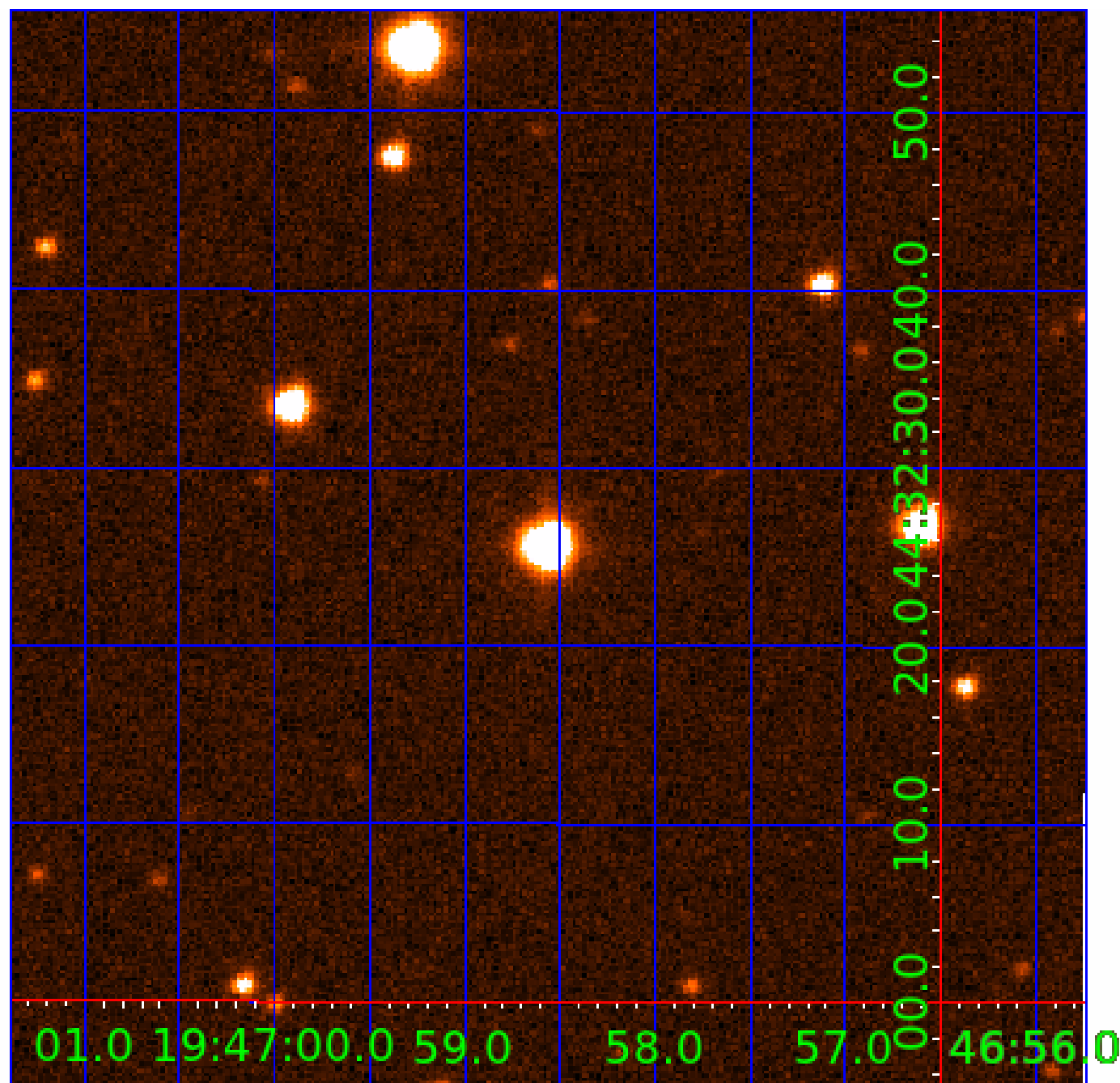
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 008509469

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})
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008509469-06	OBS	No	3.902163	134.168981	204.3	0.666	14.2	14.2	2.64	6669	3.89	3762.37
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Robovetter Results

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008509469-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
008509469-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008509469-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008509469-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
008509469-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

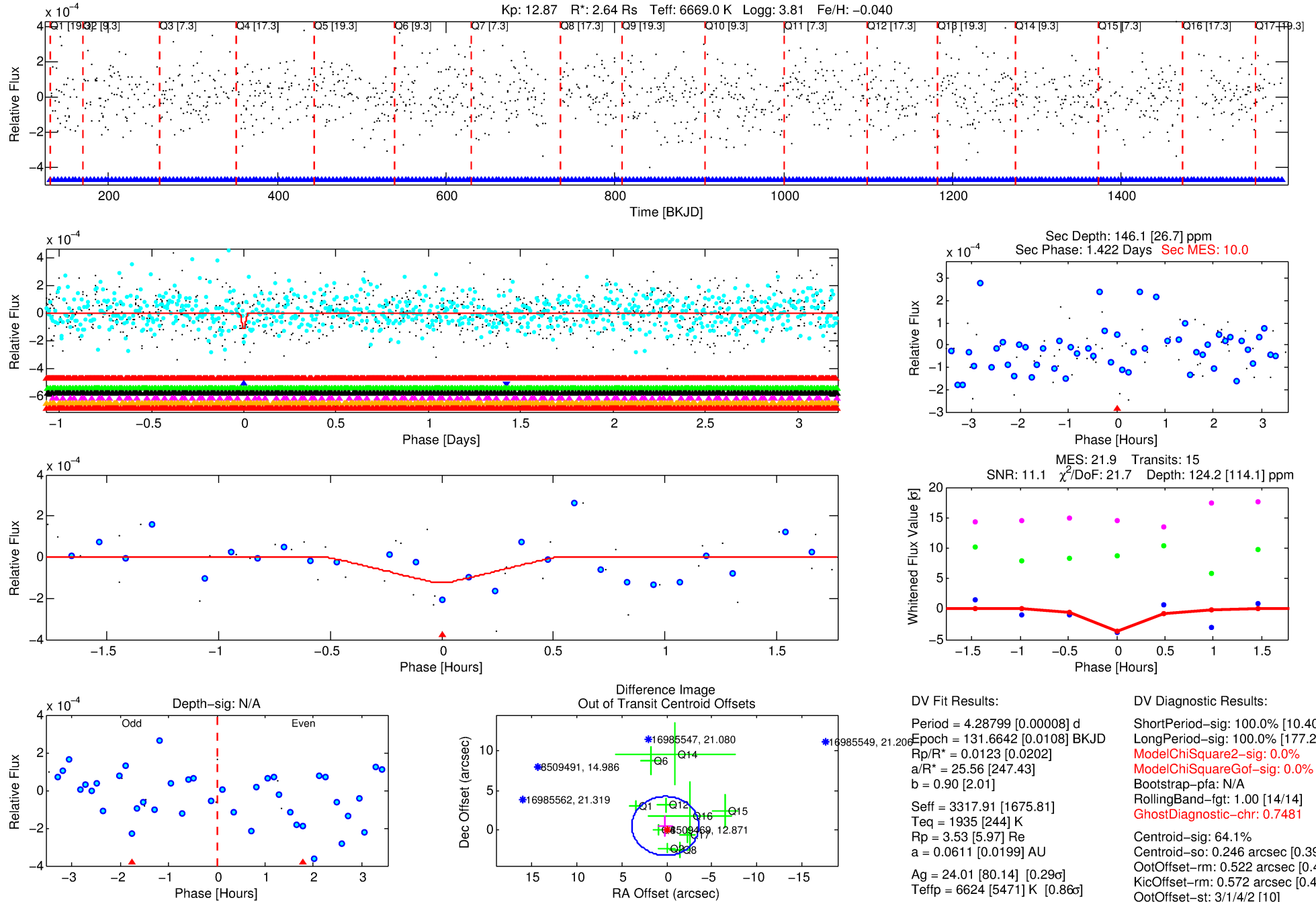
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008509469-02

No Significant Match Found

DV One-Page Summary

KIC: 8509469 Candidate: 2 of 7 Period: 4.288 d



DV Fit Results:

Period = 4.28799 [0.00008] d
Epoch = 131.6642 [0.0108] BKJD
Rp/R* = 0.0123 [0.0202]
a/R* = 25.56 [247.43]
b = 0.90 [2.01]
Seff = 3317.91 [1675.81]
Teq = 1935 [244] K
Rp = 3.53 [5.97] Re
a = 0.0611 [0.0199] AU
Ag = 24.01 [80.14] [0.29σ]
Teff = 6624 [5471] K [0.86σ]

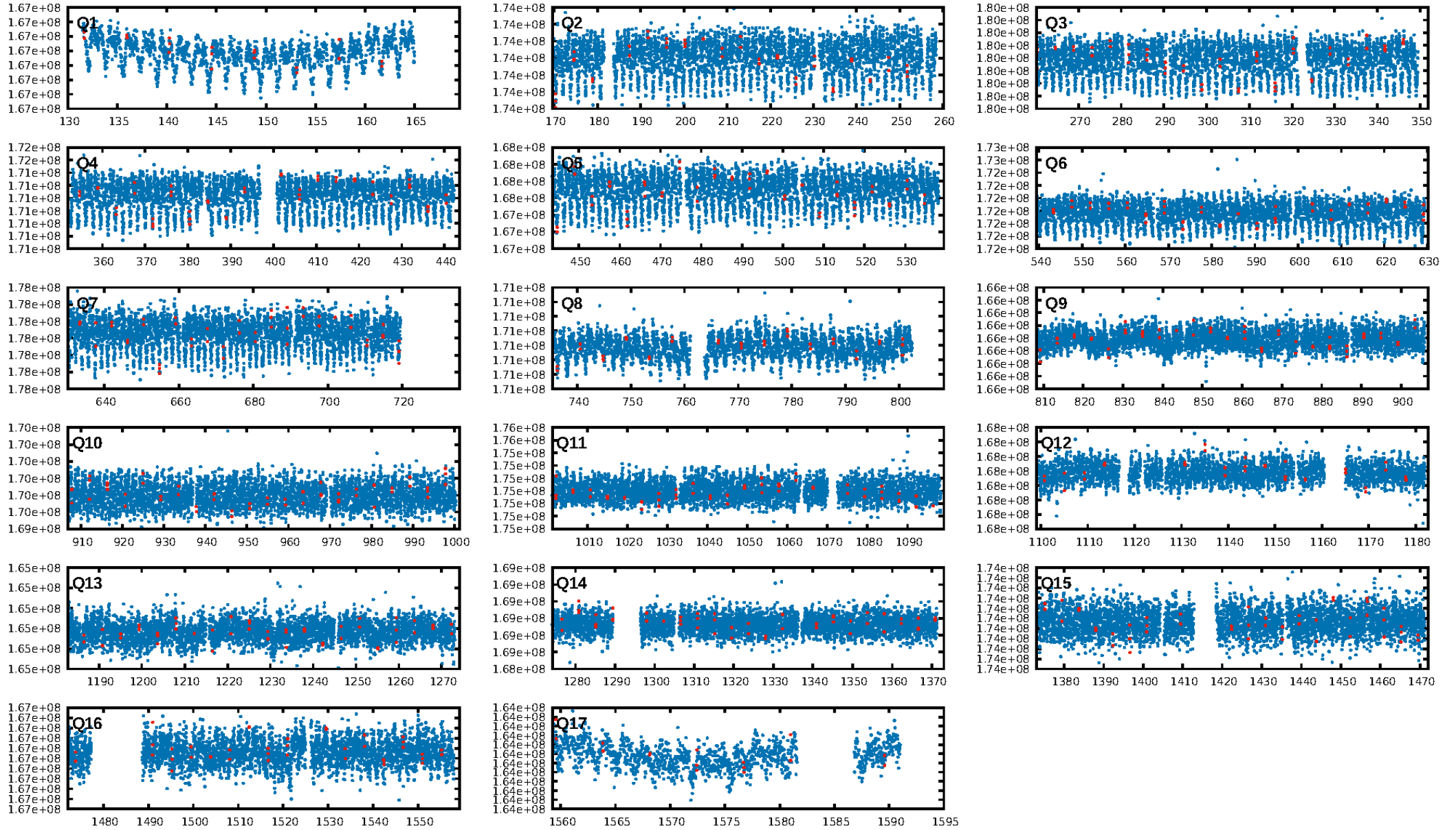
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.40σ]
LongPeriod-sig: 100.0% [177.23σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [14/14]
GhostDiagnostic-chr: 0.7481
Centroid-sig: 64.1%
Centroid-so: 0.246 arcsec [0.39σ]
OotOffset-rm: 0.522 arcsec [0.42σ]
OotOffset-st: 3/1/4/2 [10]
KicOffset-rm: 0.572 arcsec [0.49σ]
KicOffset-st: 3/1/4/2 [10]
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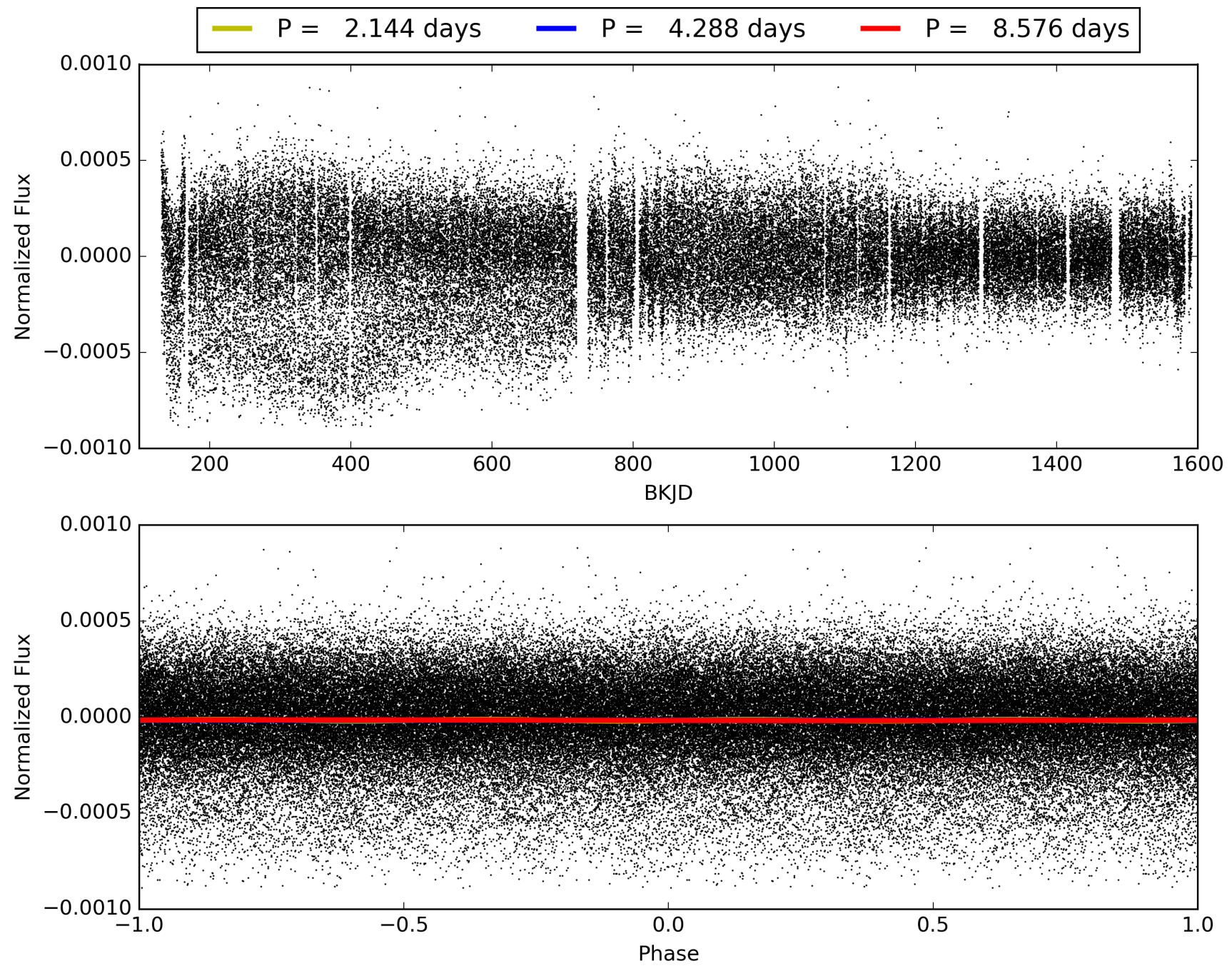
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008509469-02, PDC Light Curves

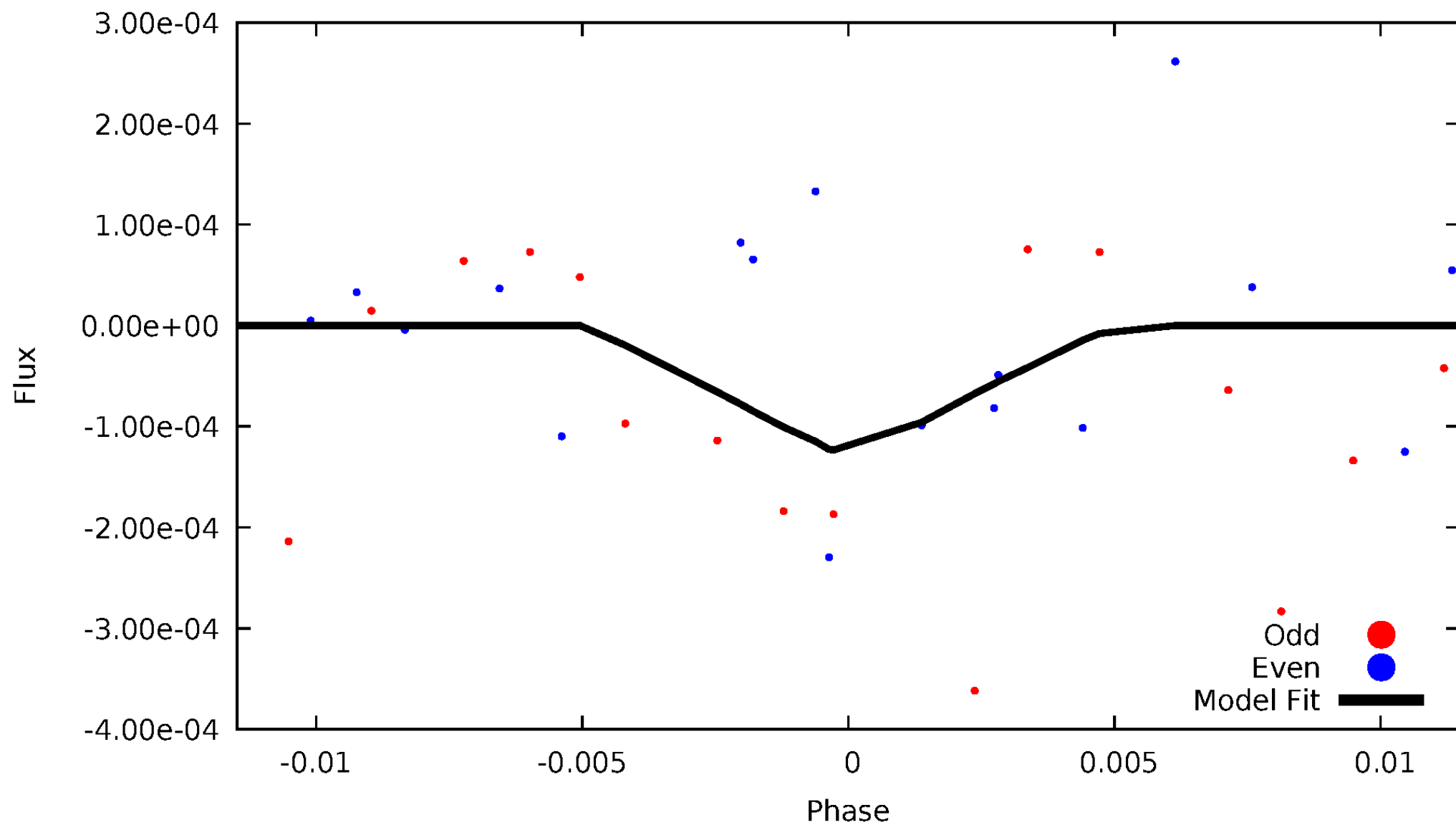


TCE 008509469-02



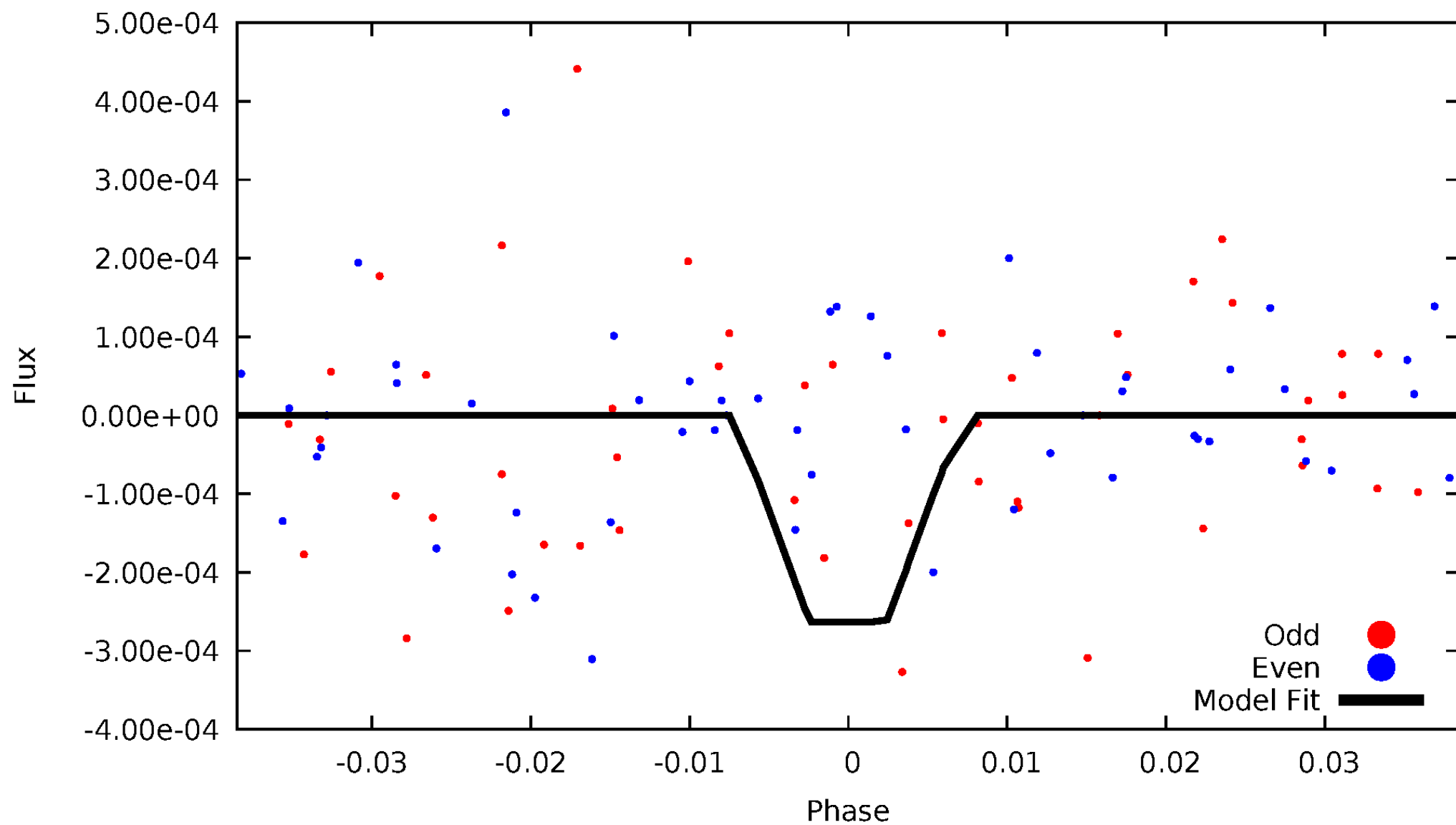
DV Odd/Even

TCE 008509469-02



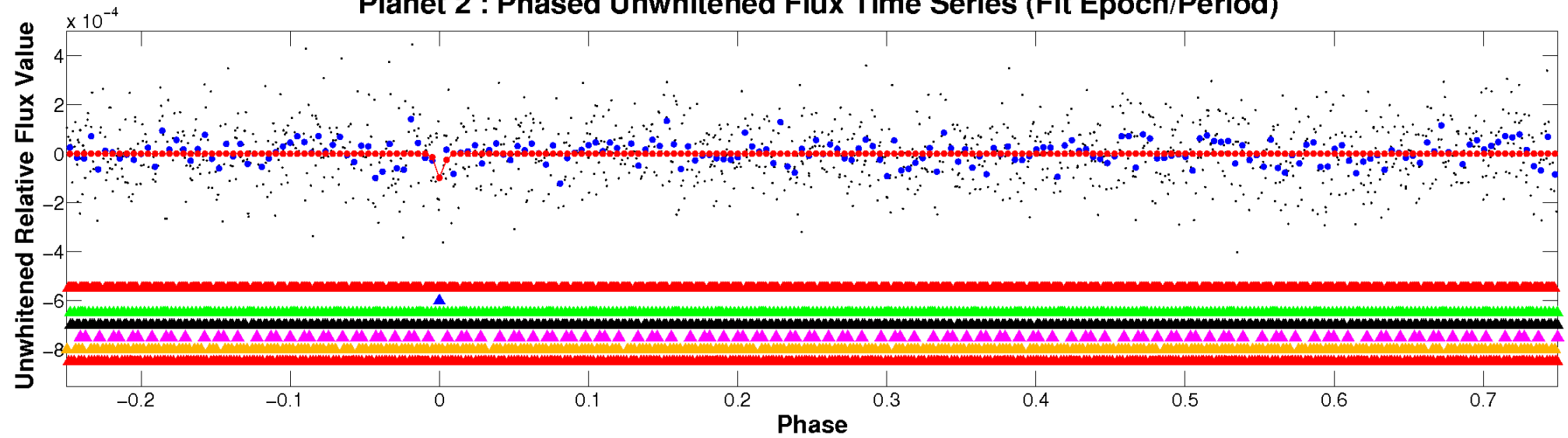
ALT Odd/Even

TCE 008509469-02

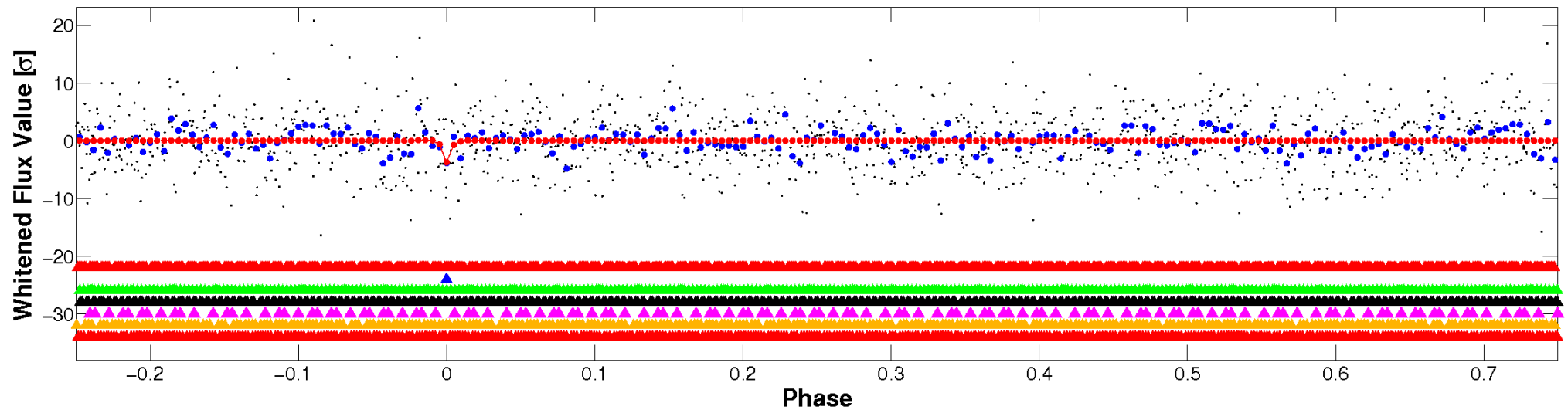


Non-Whitened Vs. Whitened Light Curve

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

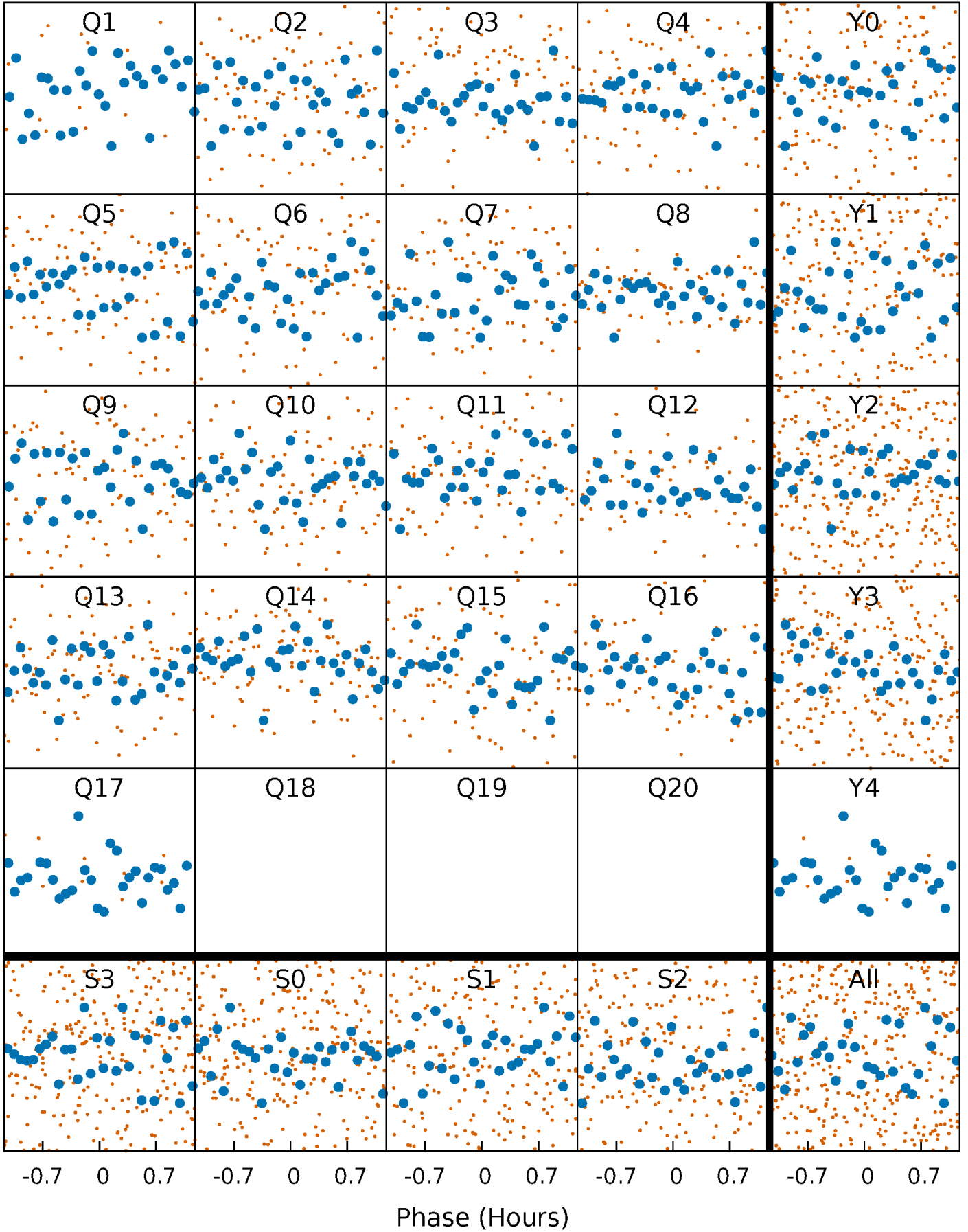


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



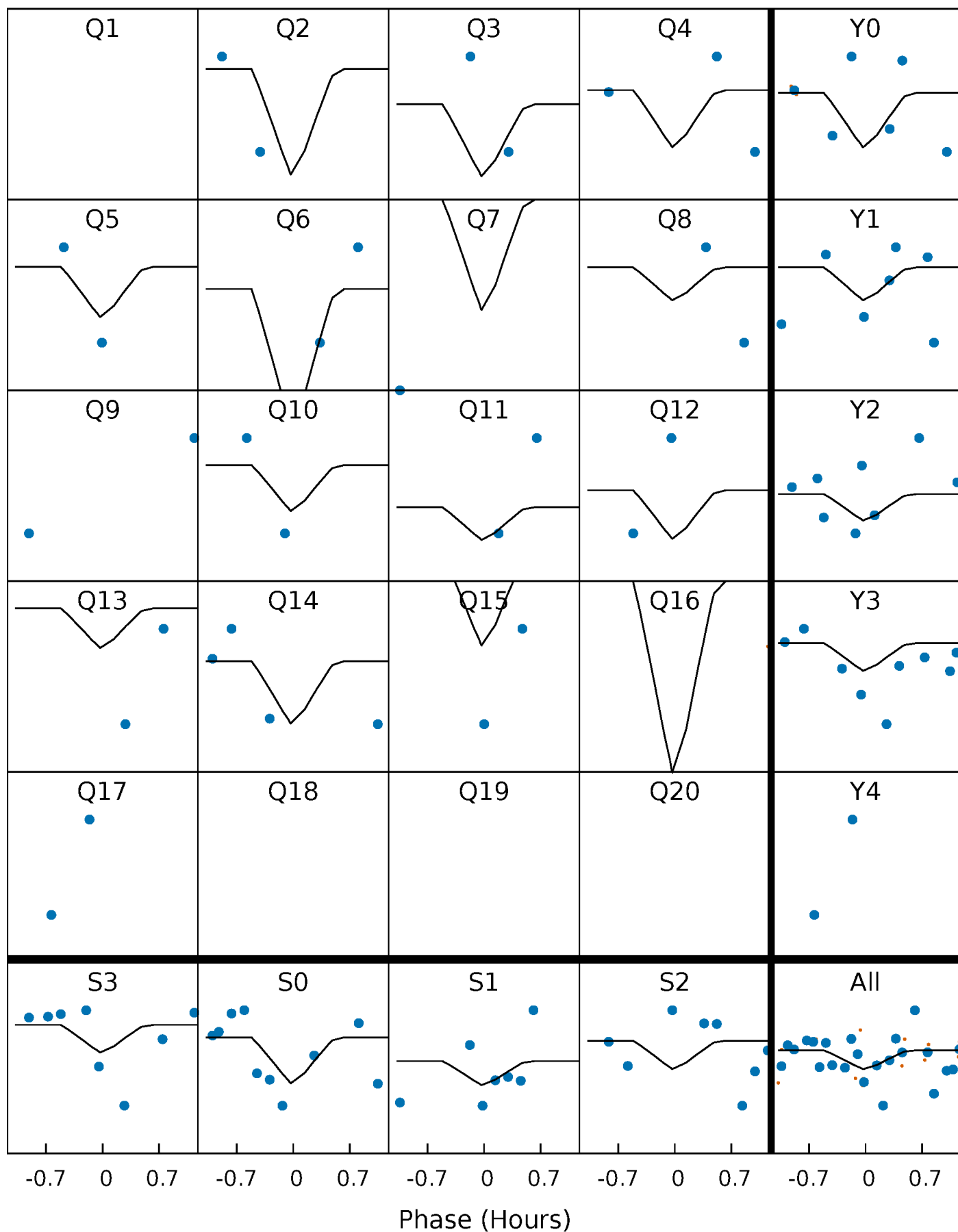
PDC Quarter-Phased Transit Curves

TCE 008509469-02 P= 4.287986 Days $T_0=131.664242$ (BKJD)



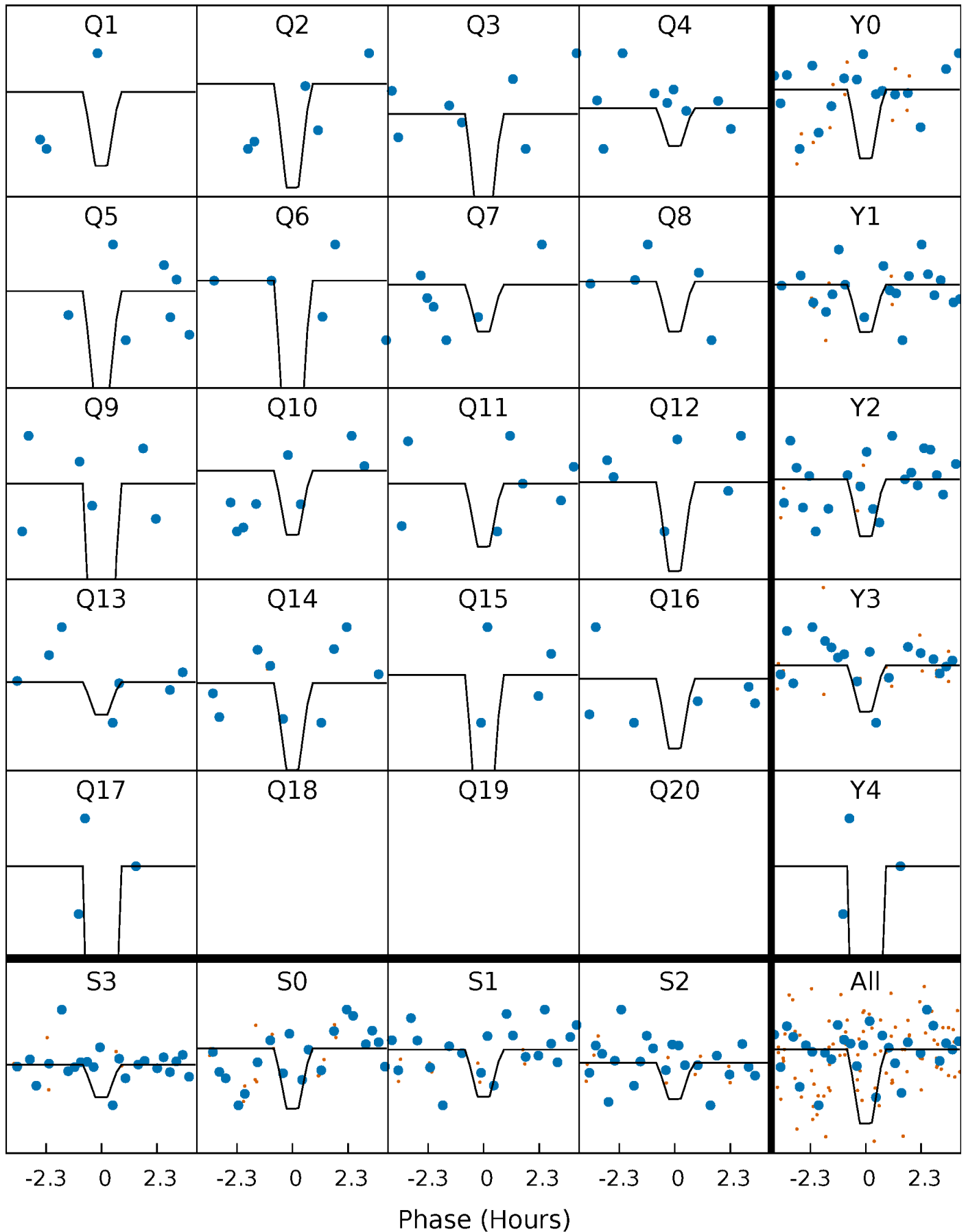
DV Quarter-Phased Transit Curves

TCE 008509469-02 P= 4.287986 Days $T_0=131.664242$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

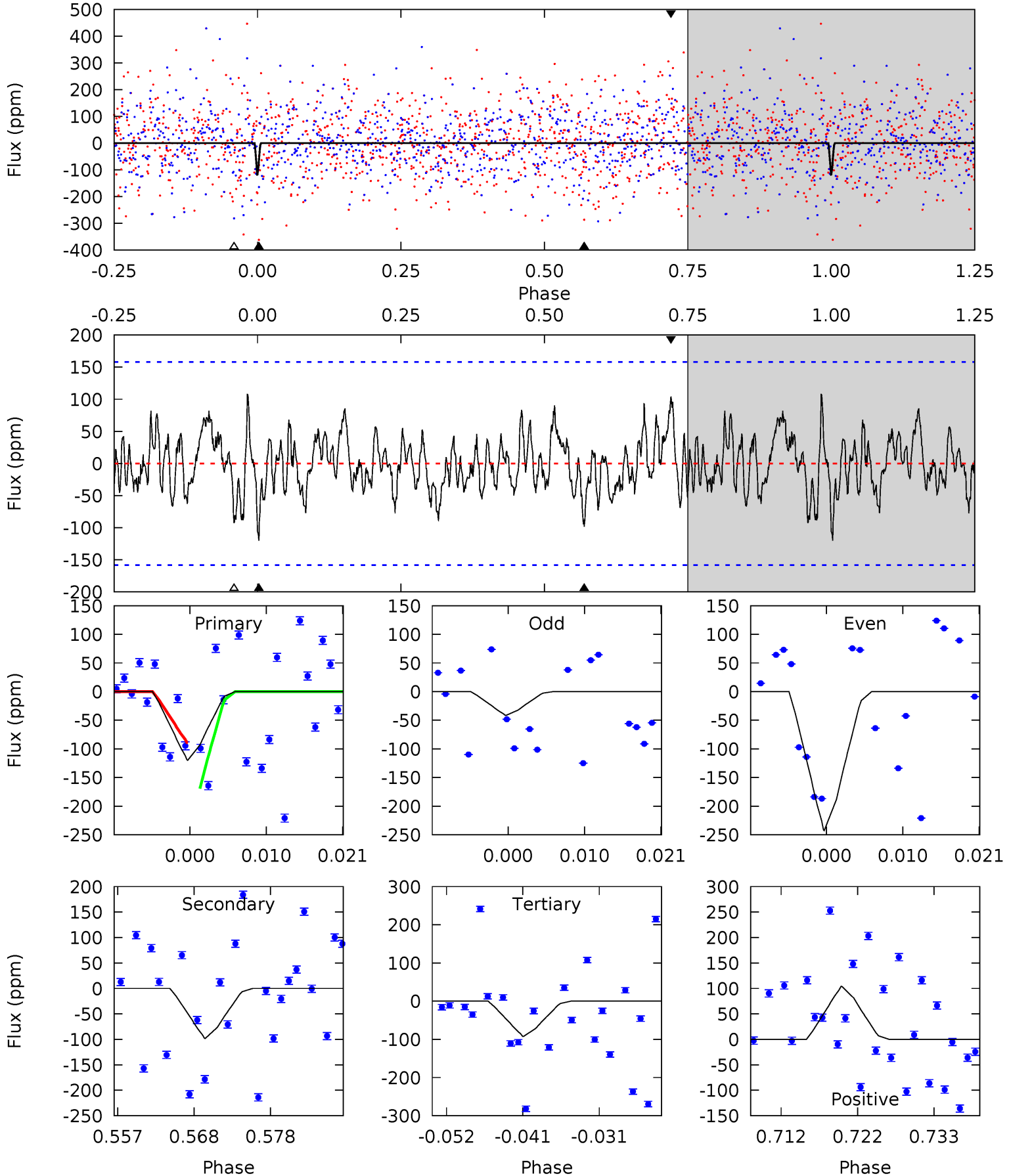
TCE 008509469-02 P= 4.288245 Days $T_0=131.594279$ (BKJD)



DV Model-Shift Uniqueness Test

008509469-02, P = 4.287986 Days, E = 131.664242 Days

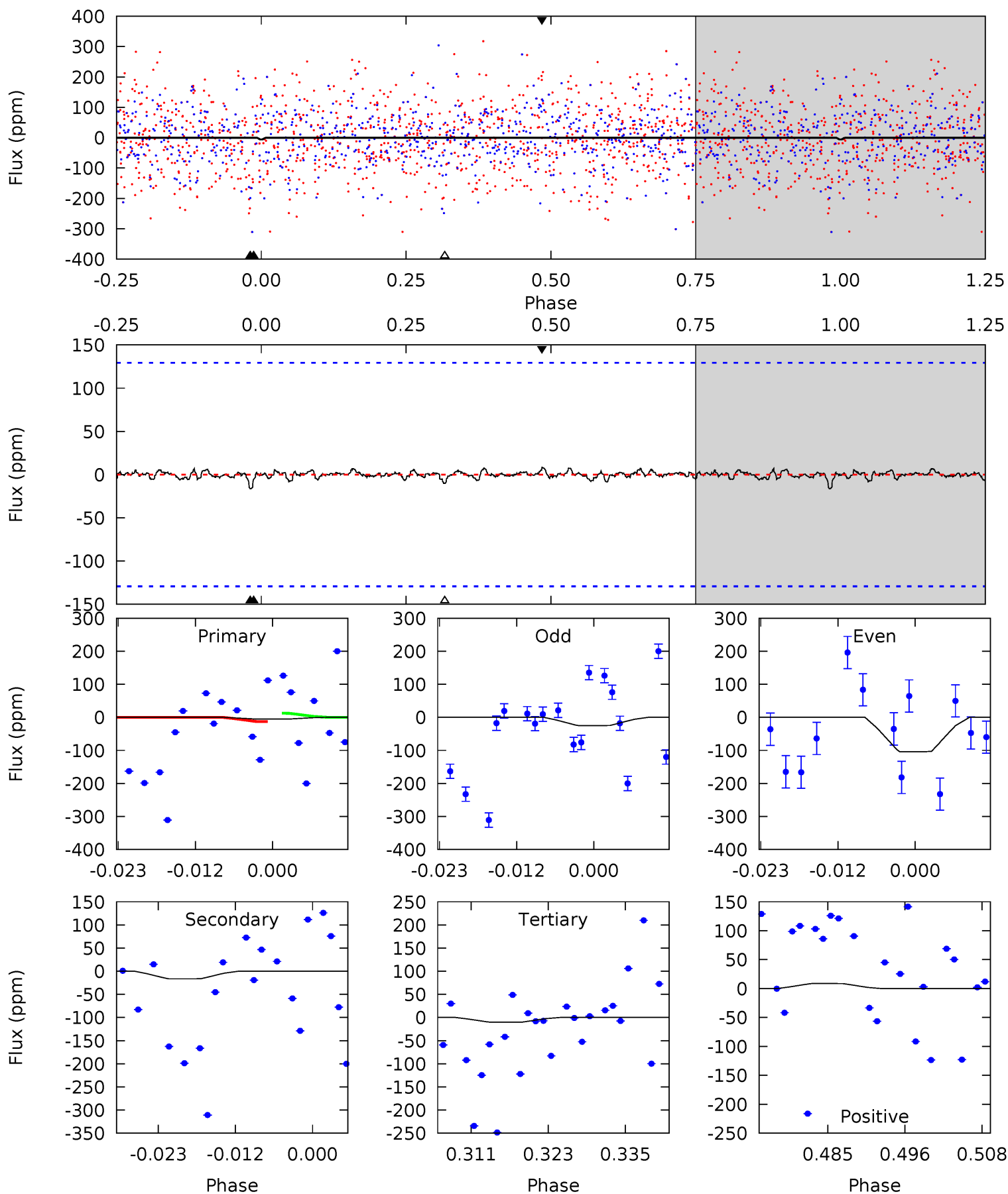
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.81	3.12	2.94	3.31	5.02	2.56	1.18	0.87	0.50	0.19	-0.19	3.17	1.00	0.47	1.28



Alt Model-Shift Uniqueness Test

008509469-02, P = 4.288245 Days, E = 131.594279 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.21	0.64	0.39	0.33	5.00	2.53	0.12	-0.19	-0.12	0.25	0.31	1.56	7.11	0.34	0.01



Stellar Parameters For KIC 008509469

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6669^{+179}_{-219}	$3.812^{+0.273}_{-0.117}$	$-0.040^{+0.250}_{-0.250}$	$2.643^{+0.495}_{-0.989}$	$1.650^{+0.186}_{-0.346}$	$0.126^{+0.239}_{-0.047}$
	+3%/-3%	+7%/-3%	+625%/-625%	+19%/-37%	+11%/-21%	+190%/-37%
Source	PHO1	FLK73	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 008509469-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-98 ± 32	$4.88^{+5.27}_{-3.25}$	2685^{+163}_{-233}	4948^{+4232}_{-1282}	$8.325^{+72.328}_{-6.528}$
Alt.	-16 ± 26	$5.85^{+4.86}_{-3.81}$	2684^{+148}_{-218}	3120^{+1644}_{-6267}	$0.829^{+6.292}_{-1.103}$

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 $A_{obs} \gg 1.0$

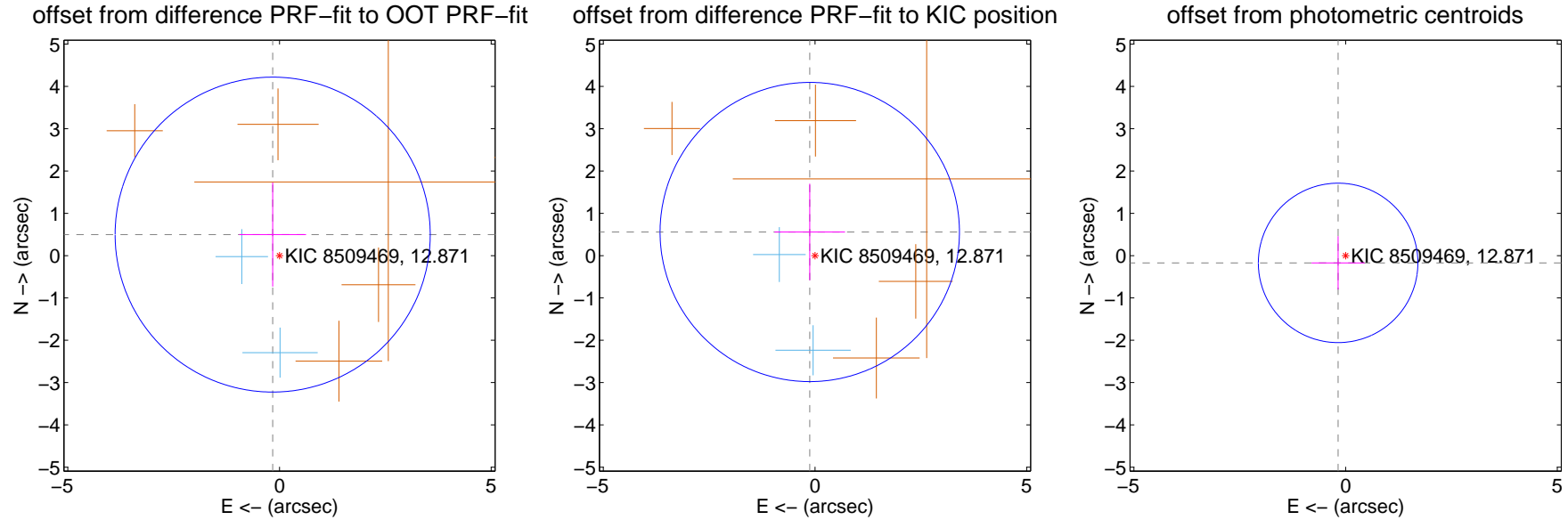
DV Centroid Data

Supplemental centroid analysis for 008509469-02. Kepler magnitude: 12.87. Transit SNR 11.06

There are 2 quarters with good PRF difference image offsets

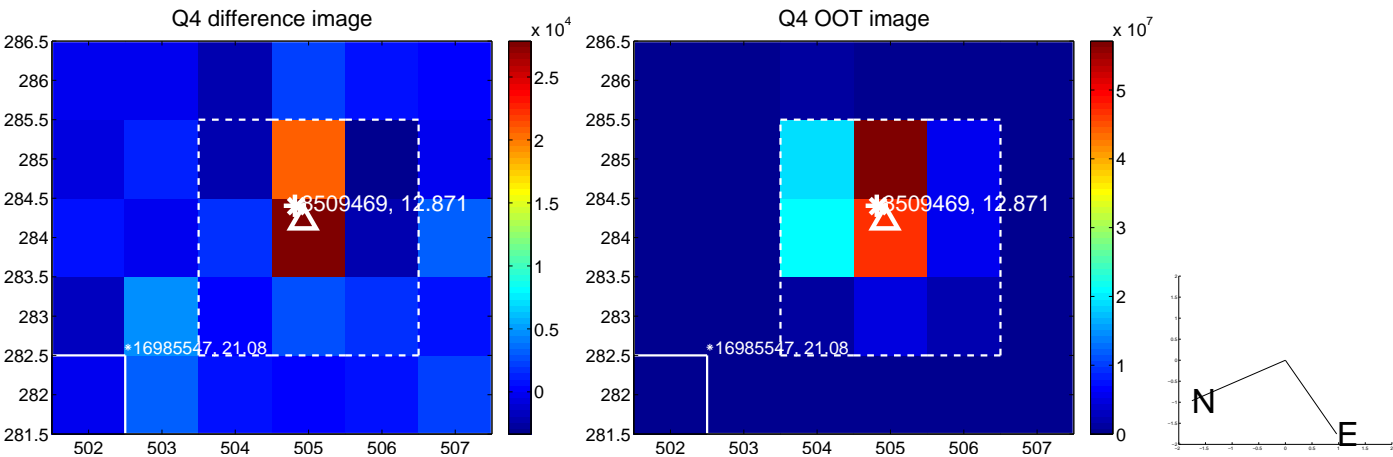
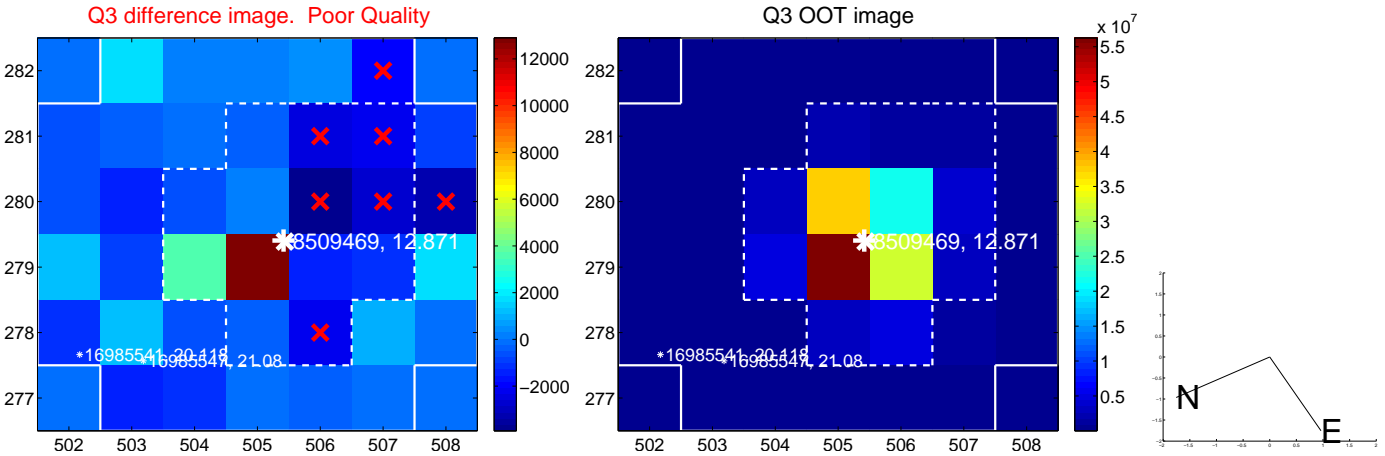
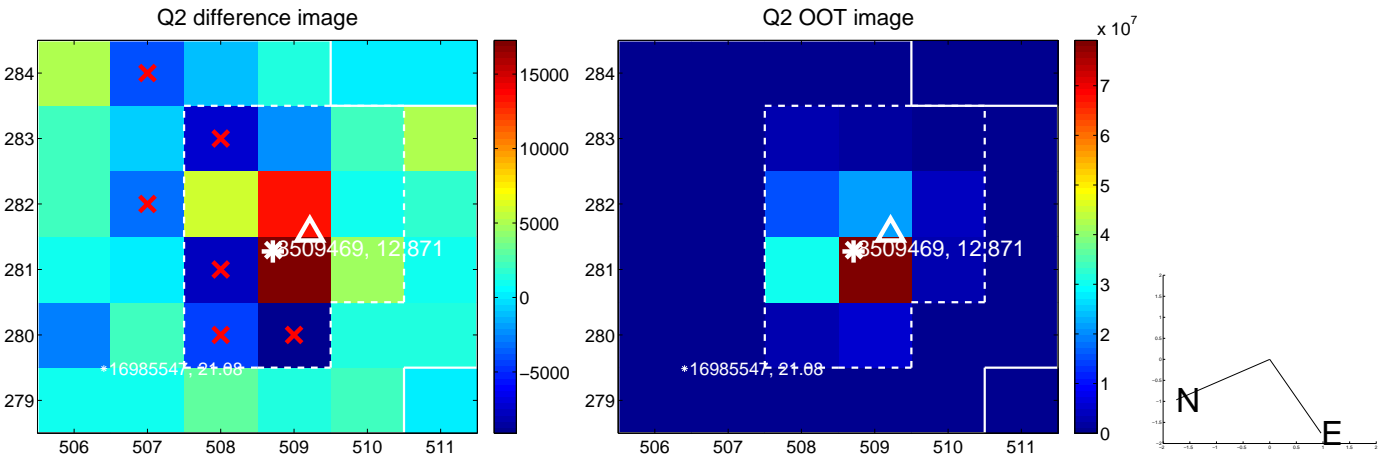
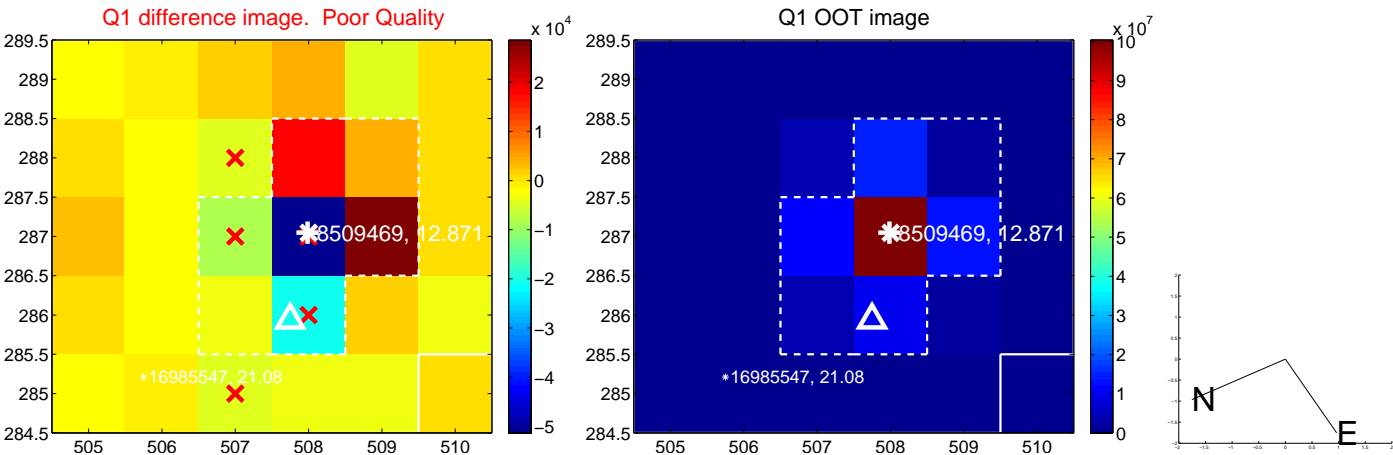
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.522 ± 1.240	0.42	0.161 ± 0.789	0.497 ± 1.230
PRF-fit source offset from KIC position	0.572 ± 1.178	0.49	0.124 ± 0.834	0.559 ± 1.140
photometric centroid source offset	0.25 ± 0.63	0.39	0.18 ± 0.63	-0.17 ± 0.63

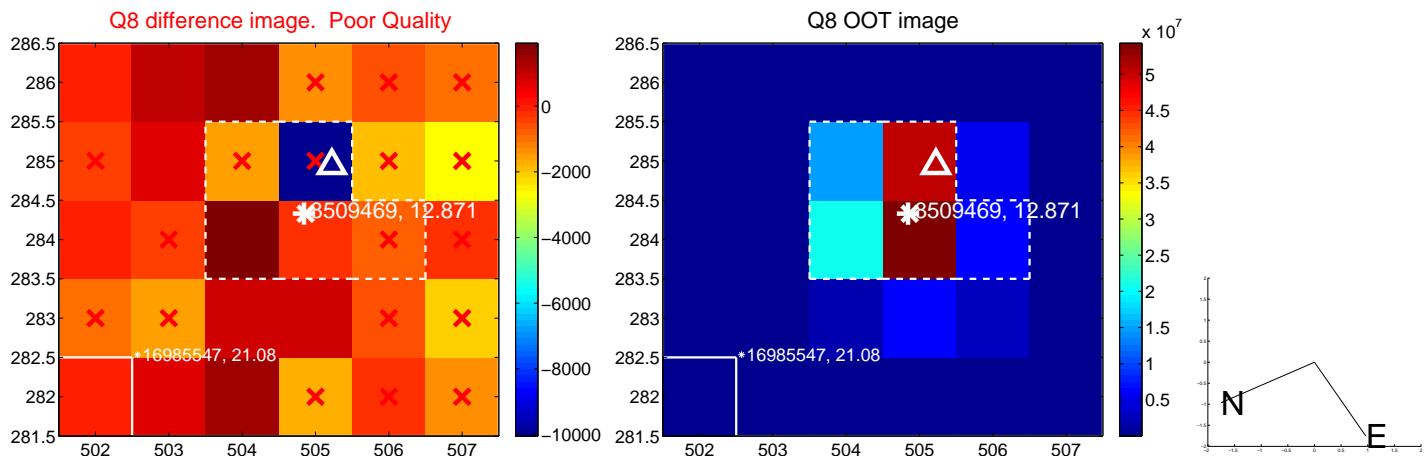
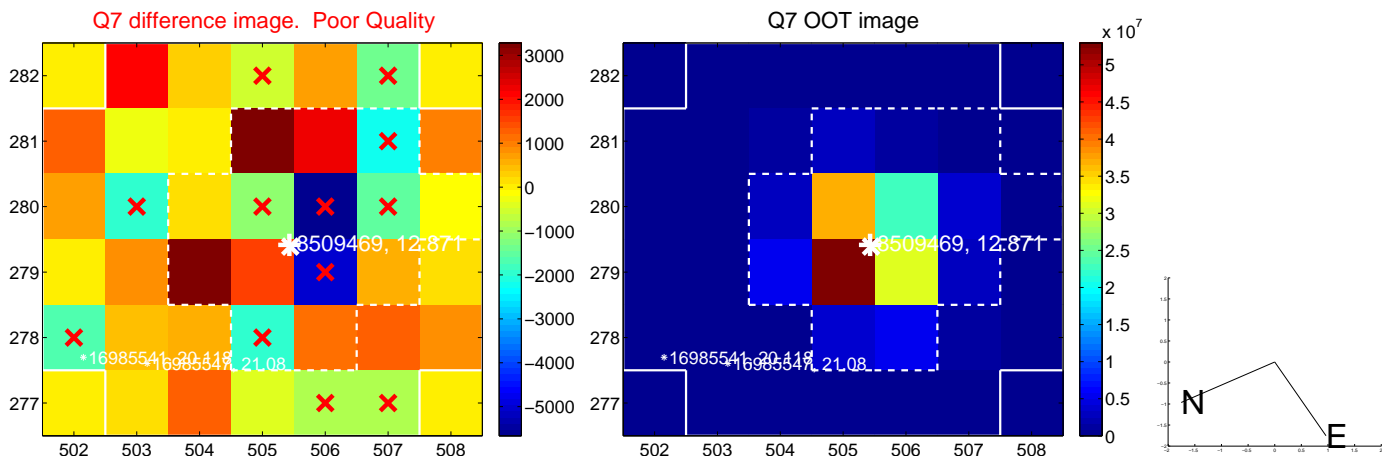
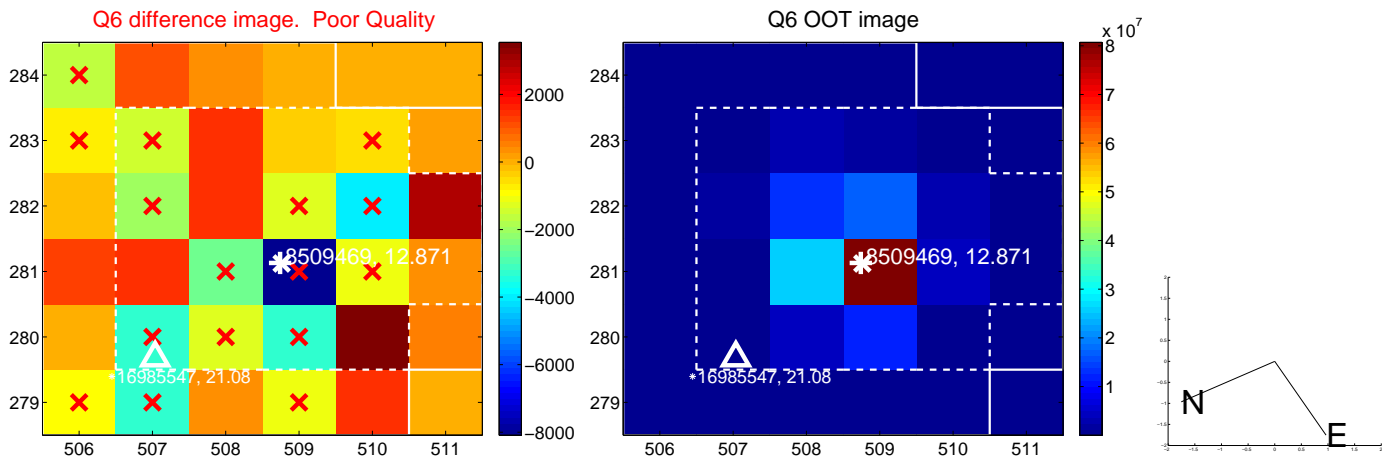
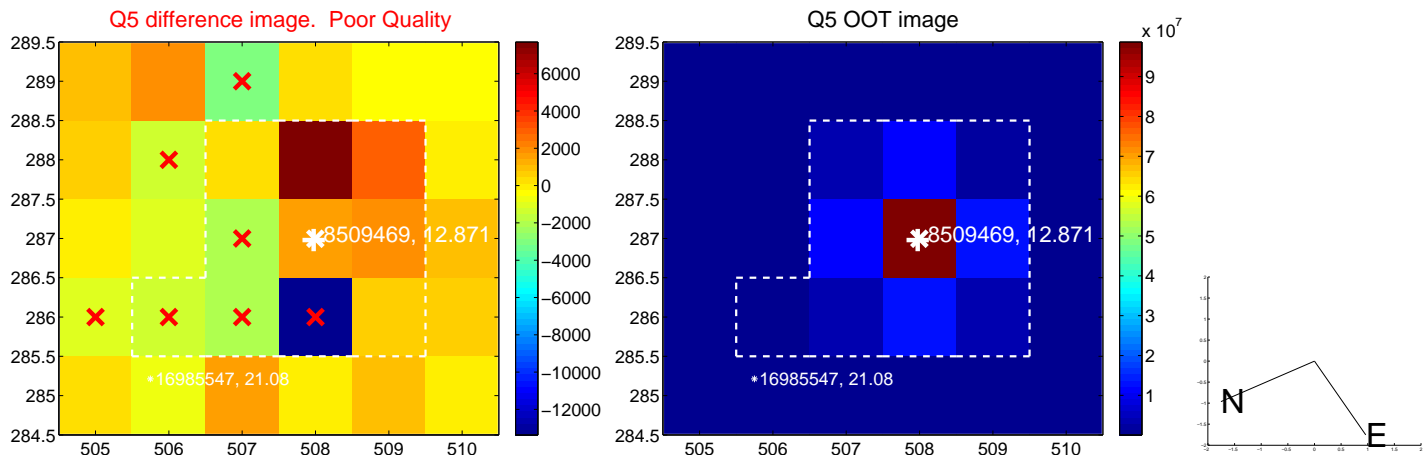


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

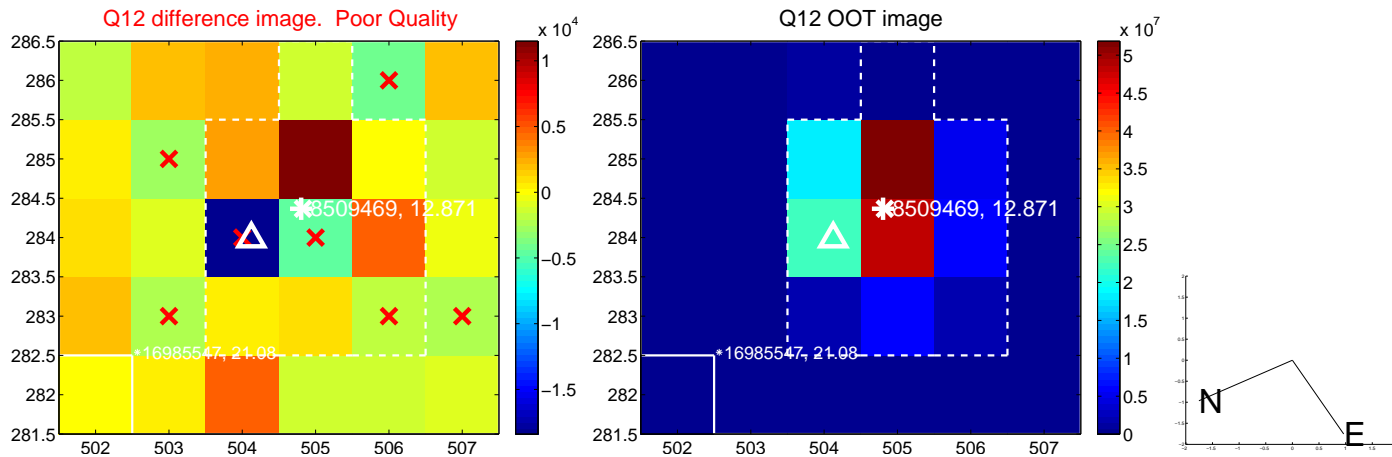
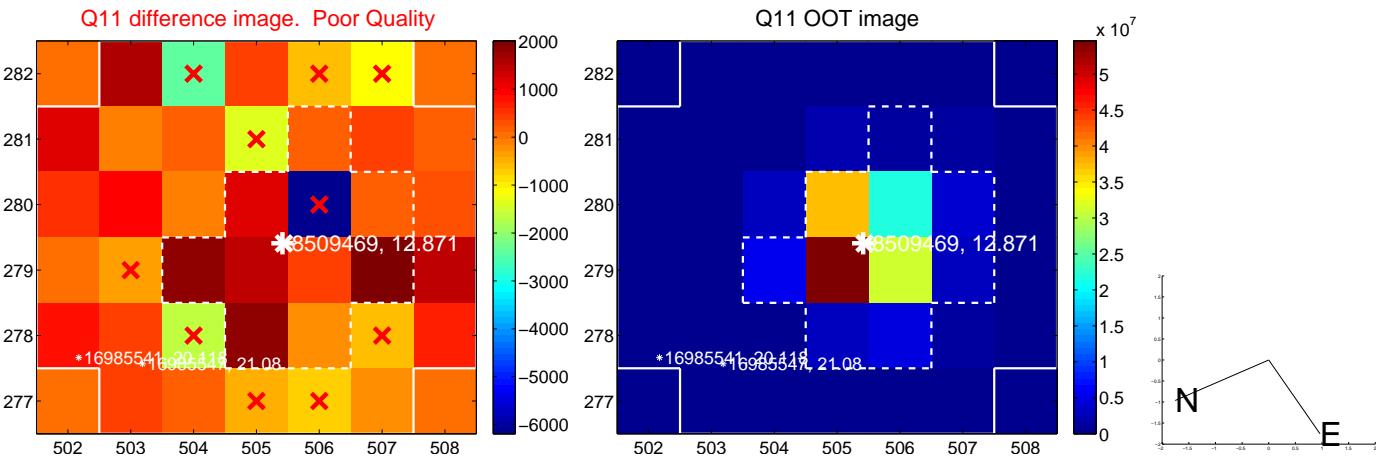
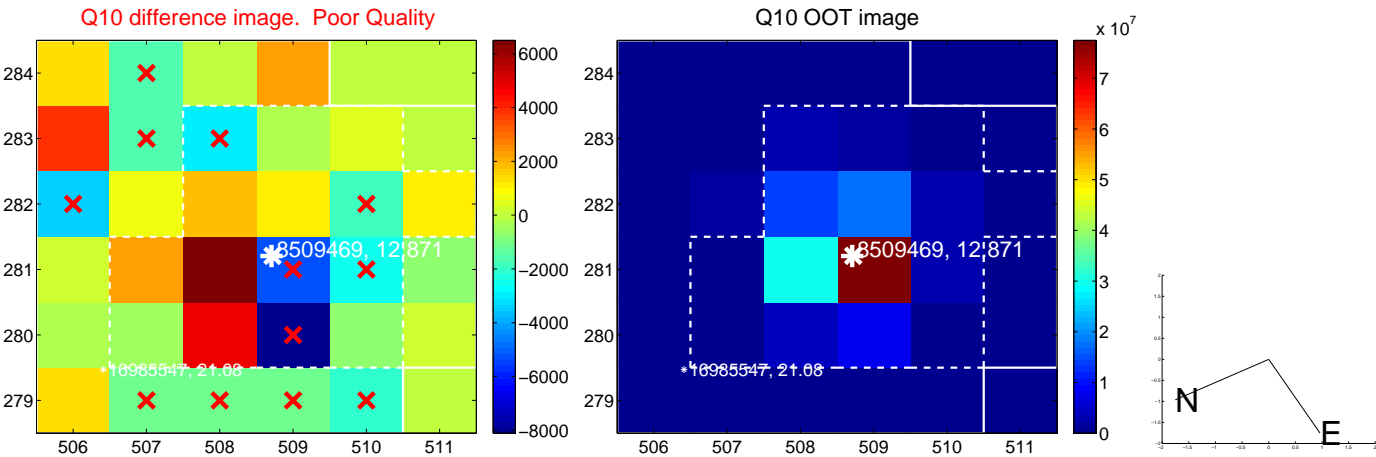
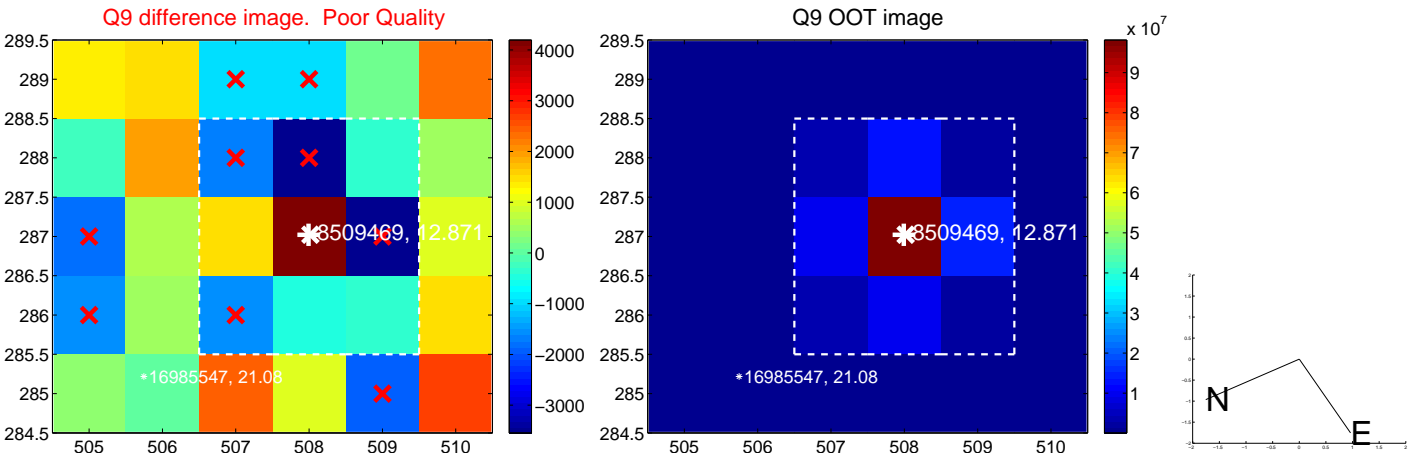
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



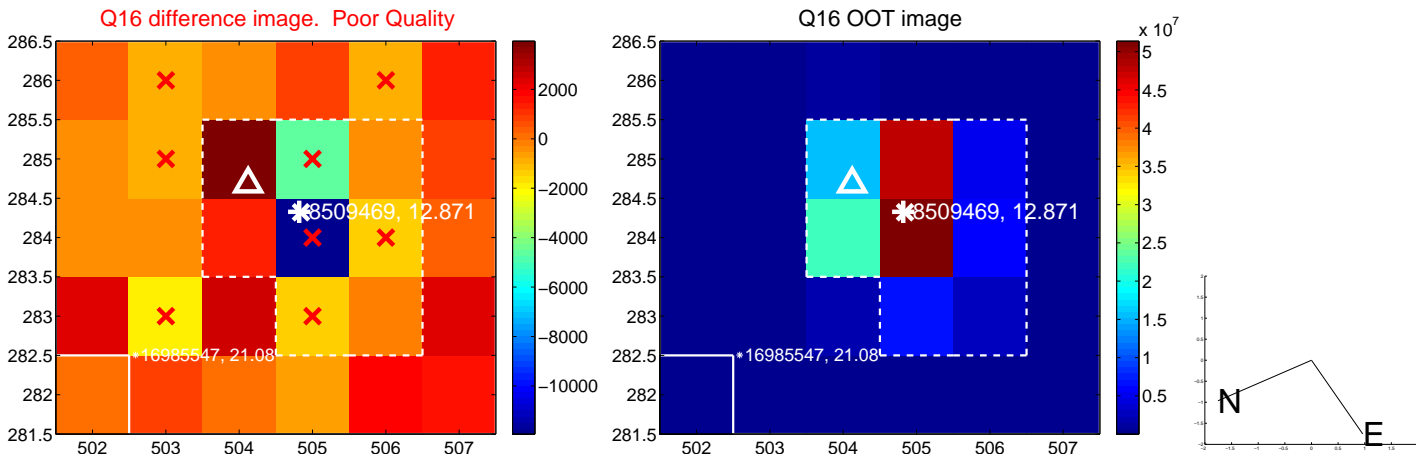
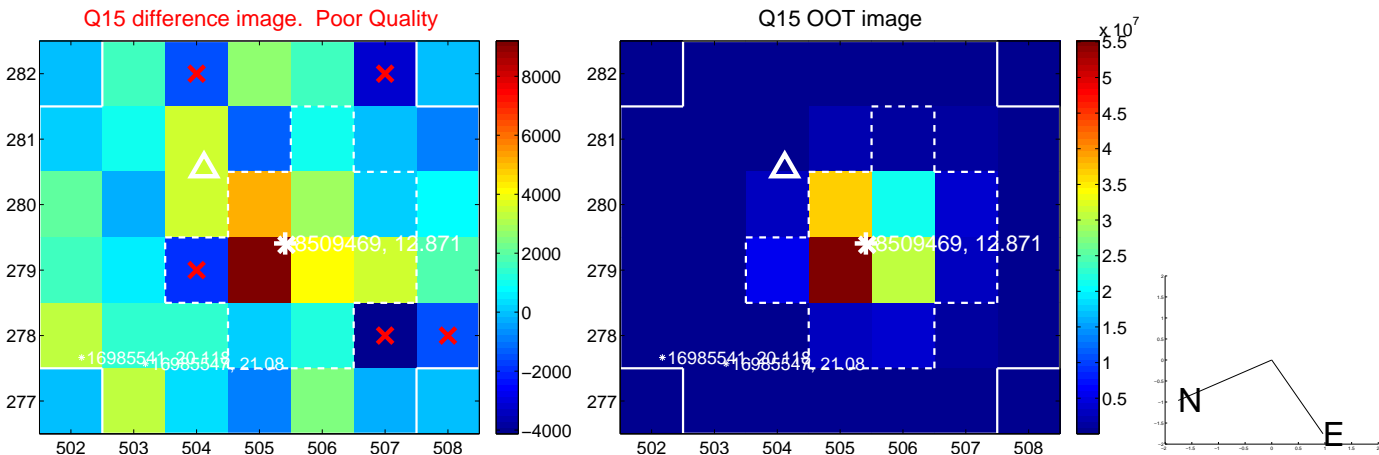
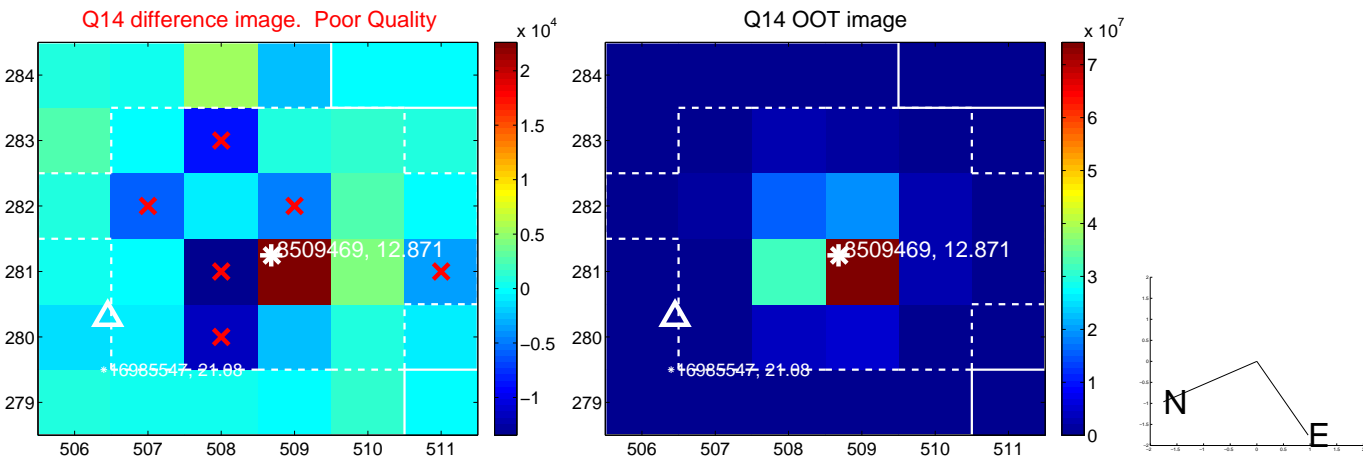
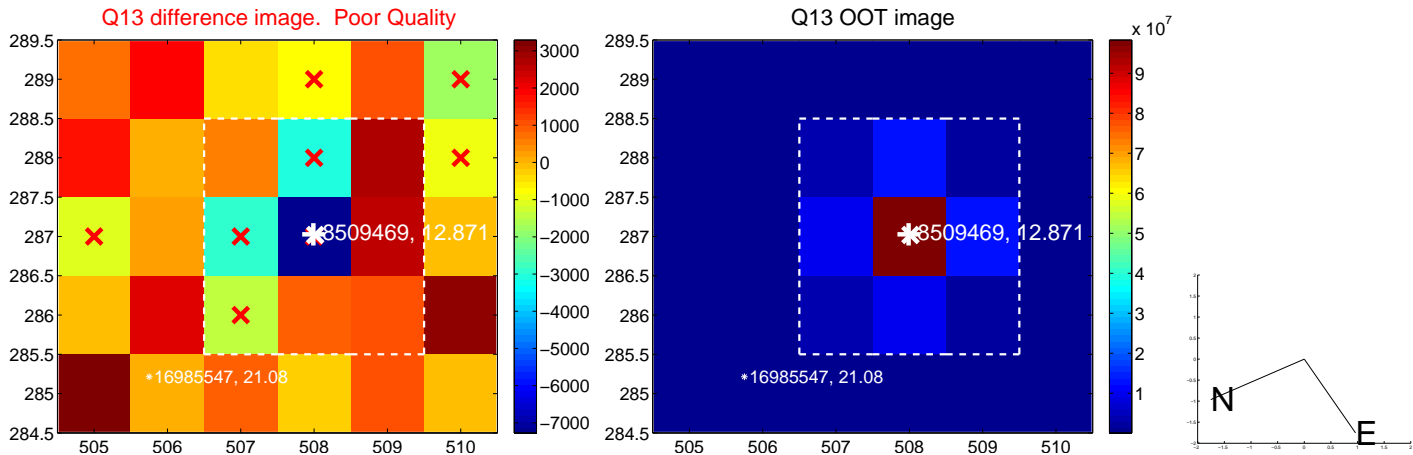
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



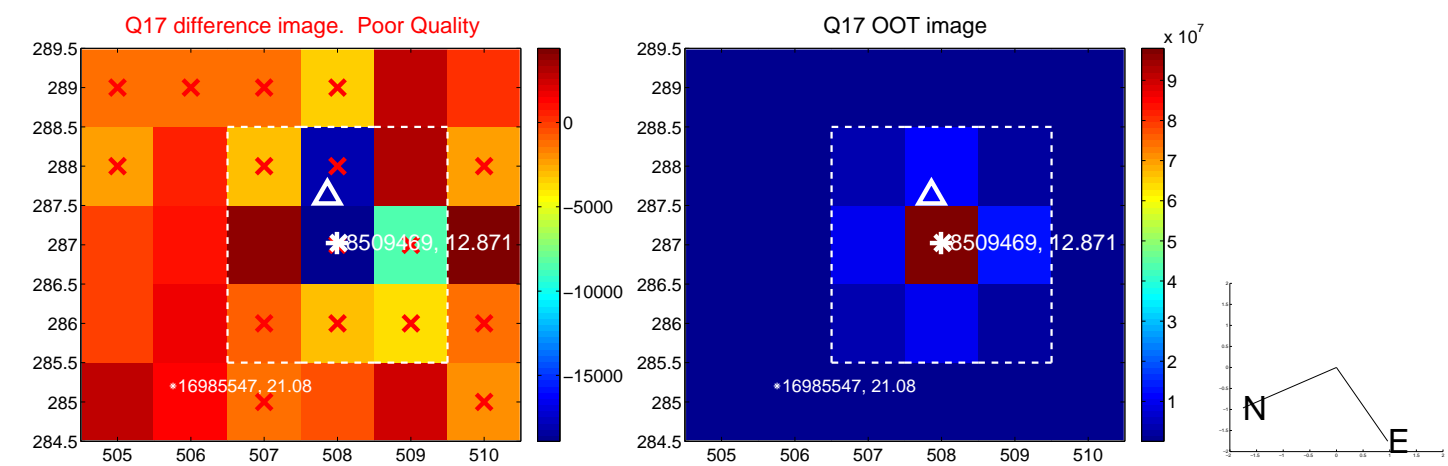
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



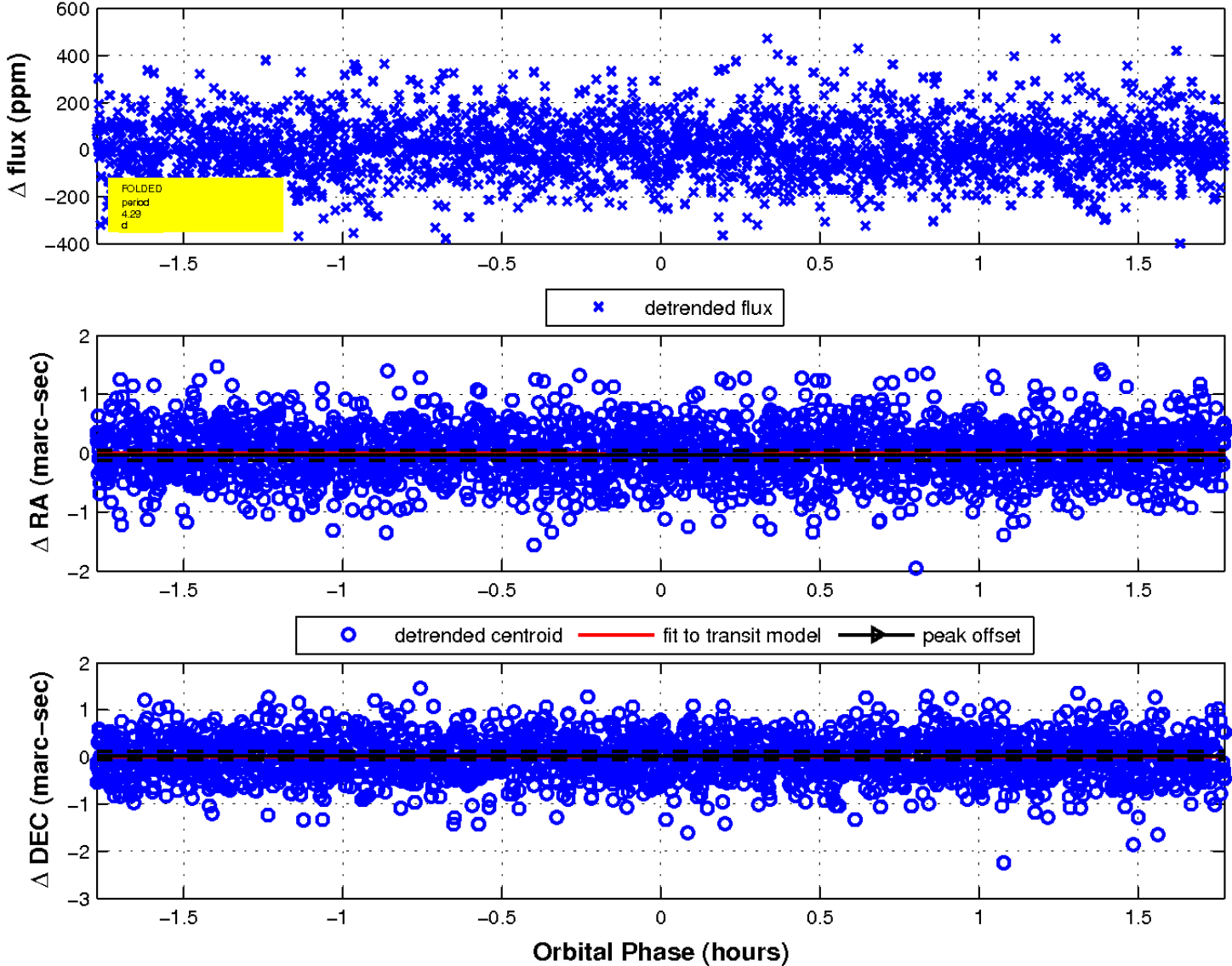
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

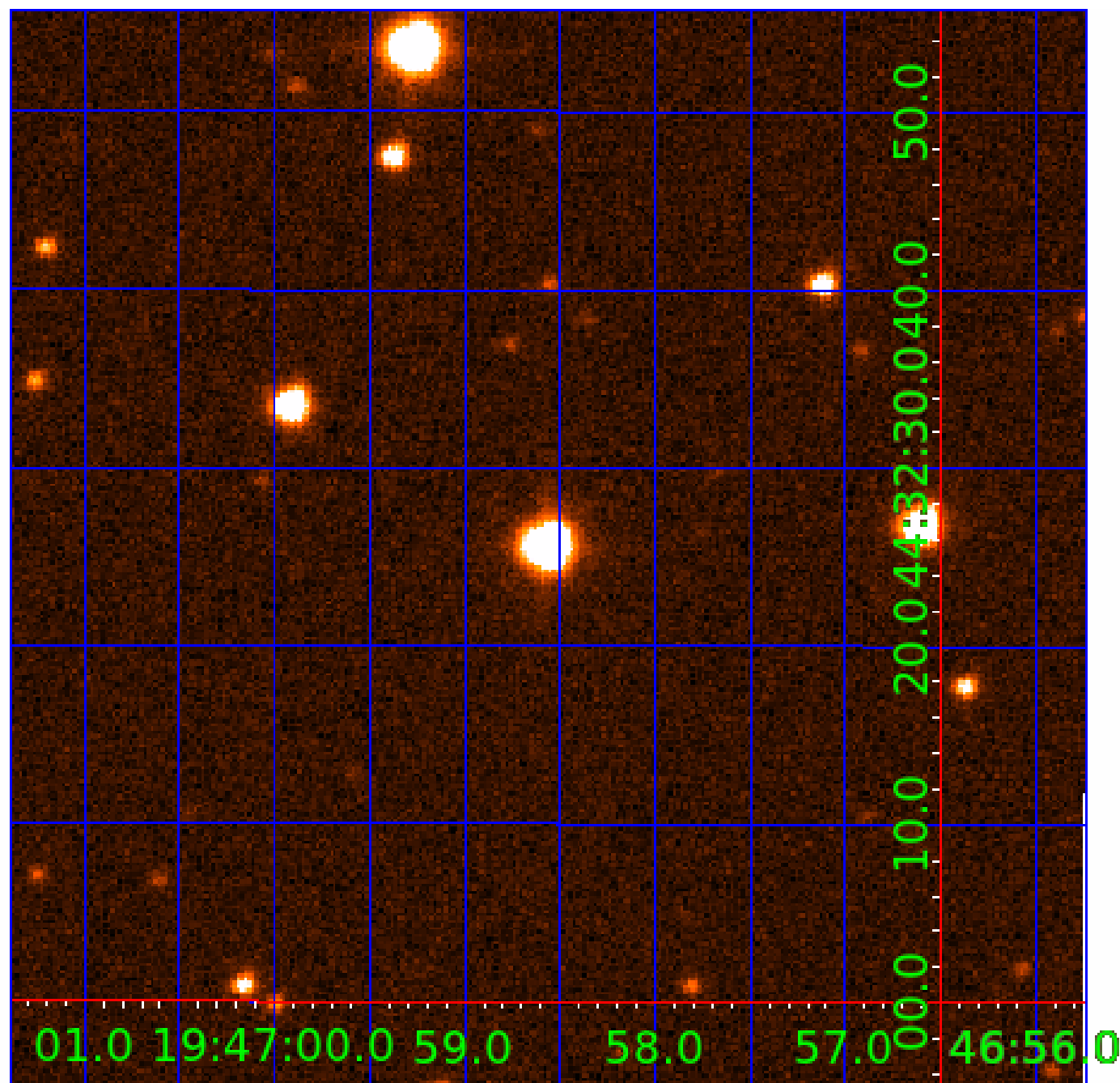


fluxWeightedCentroids, Planet 2 of 7



UKIRT Image

Declination



KIC 008509469

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})
008509469-01	OBS	No	1.736425	132.144440	2.9	13.435	9.5	2.5	2.64	6669	0.53	11074.58
008509469-02	OBS	No	4.287986	131.664242	124.2	0.591	21.9	11.1	2.64	6669	3.53	3317.91
008509469-03	OBS	No	3.552565	132.844438	173.3	1.111	23.5	25.2	2.64	6669	3.69	4263.95
008509469-04	OBS	No	3.158587	132.018728	137.1	1.297	19.2	19.8	2.64	6669	3.62	4987.45
008509469-05	OBS	No	11.617279	137.030891	221.9	0.798	14.4	18.7	2.64	6669	4.29	878.48
008509469-06	OBS	No	3.902163	134.168981	204.3	0.666	14.2	14.2	2.64	6669	3.89	3762.37
008509469-07	OBS	No	2.890361	133.731871	56.9	0.775	15.1	6.2	2.64	6669	2.07	5613.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509469-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
008509469-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008509469-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008509469-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
008509469-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_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.

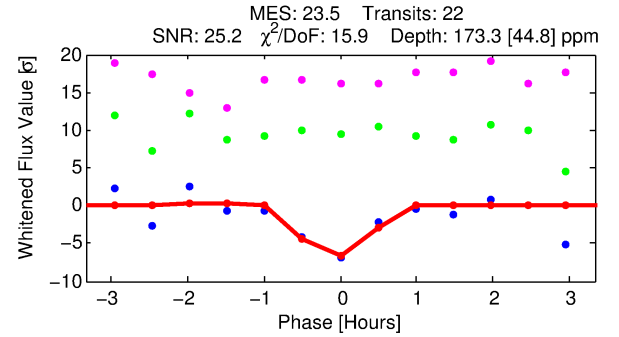
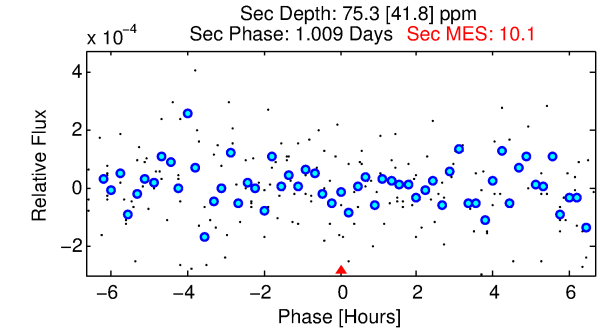
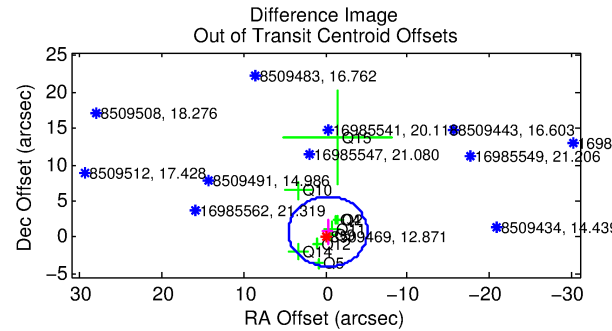
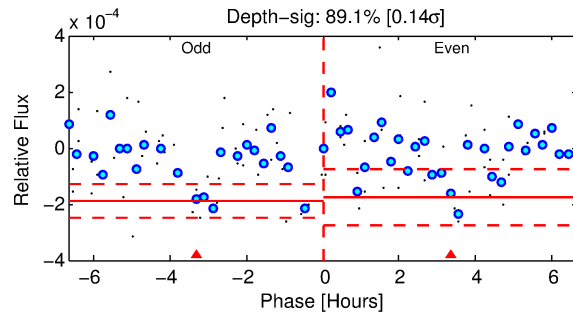
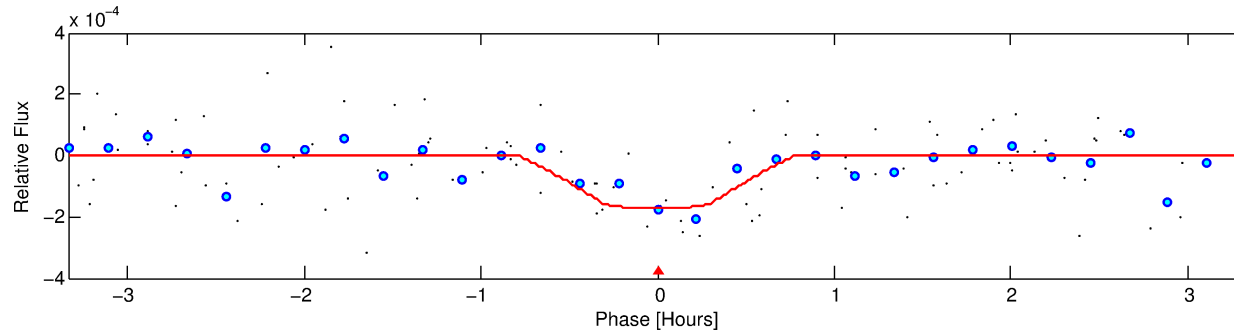
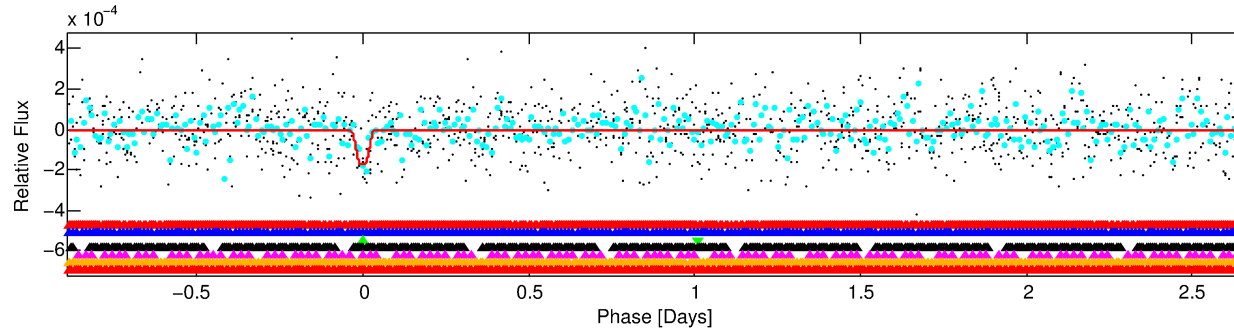
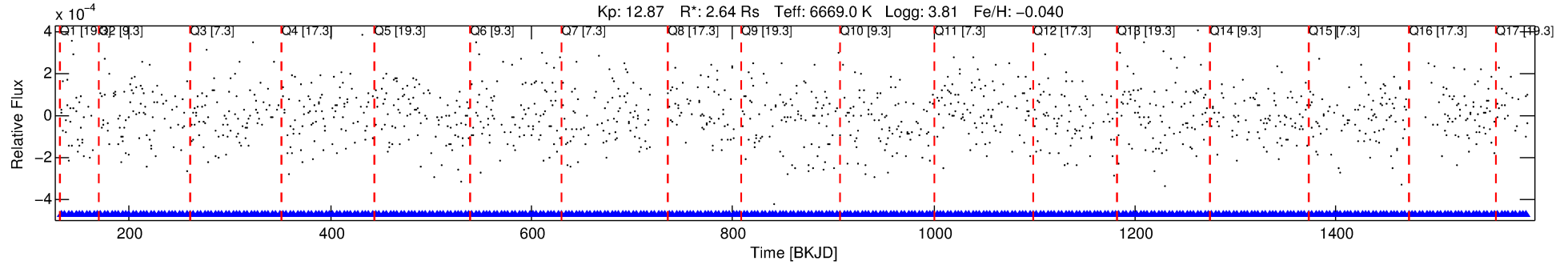
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008509469-03

No Significant Match Found

DV One-Page Summary

KIC: 8509469 Candidate: 3 of 7 Period: 3.553 d



DV Fit Results:

Period = 3.55257 [0.00003] d
Epoch = 132.8444 [0.0048] BKJD
Rp/R* = 0.0128 [0.0085]
a/R* = 19.30 [73.39]
b = 0.63 [3.55]
Seff = 4263.95 [2153.64]
Teq = 2061 [260] K
Rp = 3.69 [2.82] Re
a = 0.0539 [0.0176] AU
Ag = 8.81 [13.40] [0.58 σ]
Teffp = 5488 [1985] K [1.71 σ]

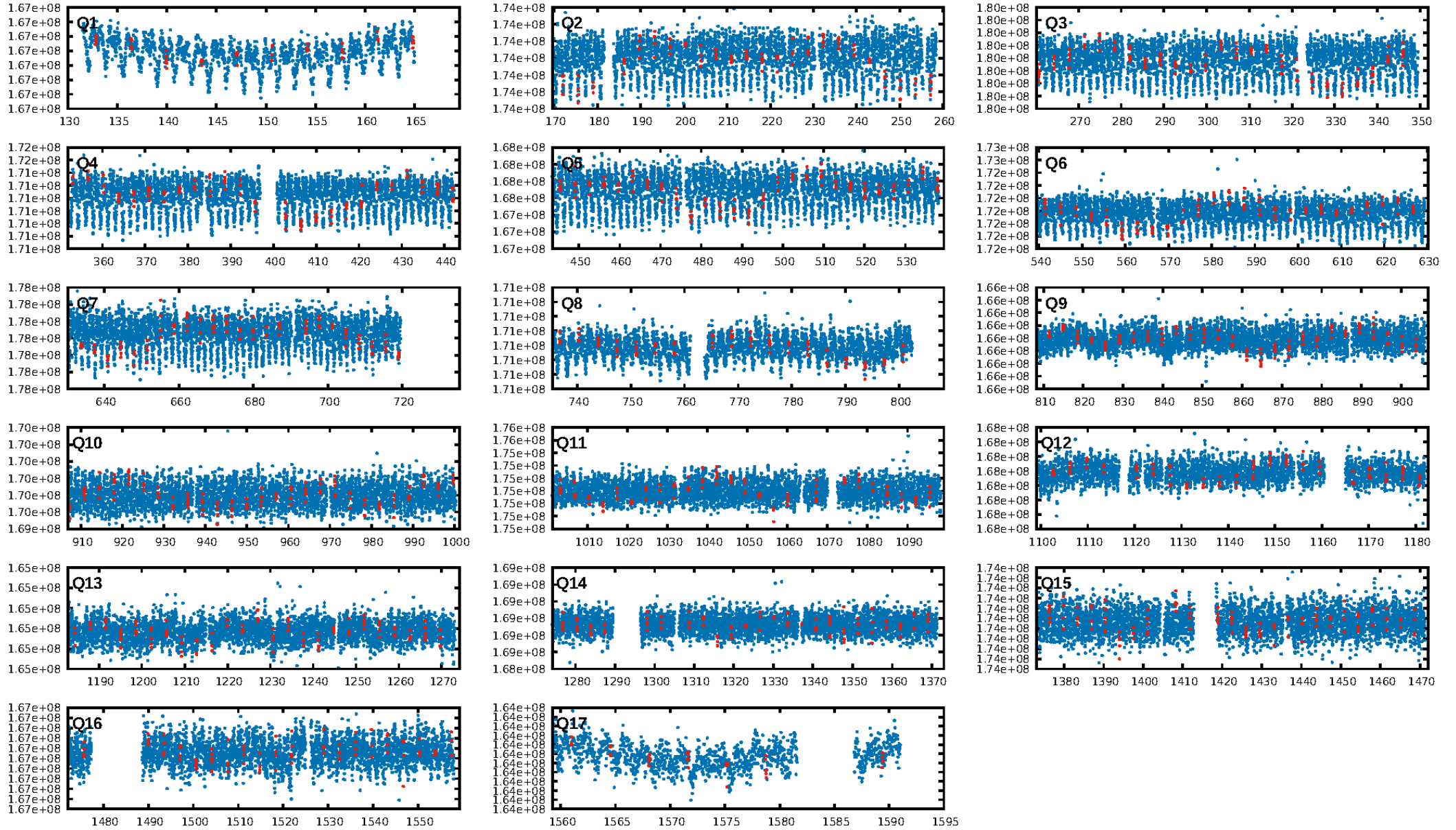
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.54 σ]
LongPeriod-sig: 100.0% [6.48 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [21/21]
GhostDiagnostic-chr: 0.6602
Centroid-sig: 0.7%
Centroid-so: 0.487 arcsec [1.72 σ]
OotOffset-rm: 0.807 arcsec [0.50 σ]
OotOffset-st: 3/2/2/2 [9]
KicOffset-rm: 0.901 arcsec [0.61 σ]
KicOffset-st: 3/2/2/2 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.94 [16/17]

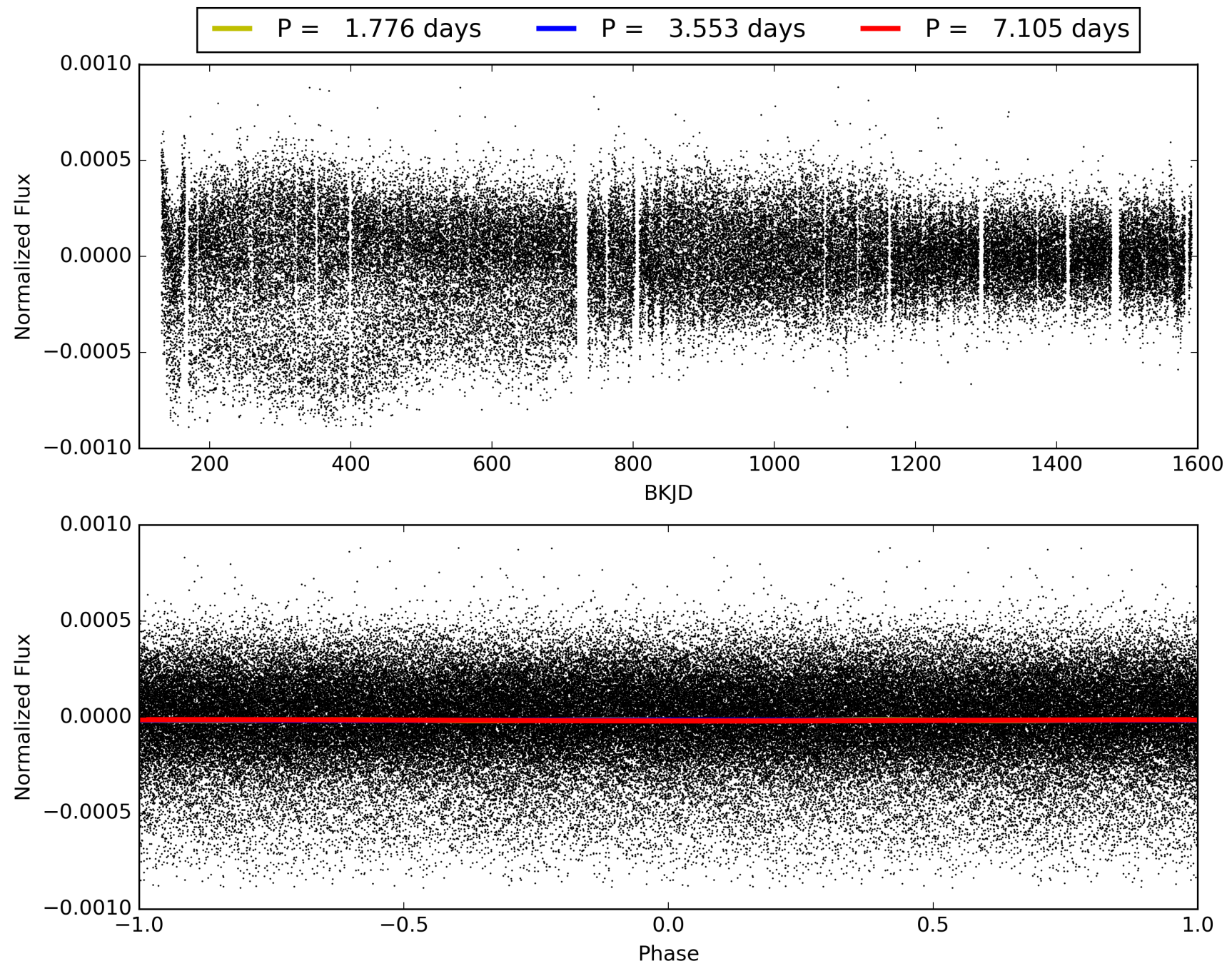
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:22:08 Z

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

TCE 008509469-03, PDC Light Curves

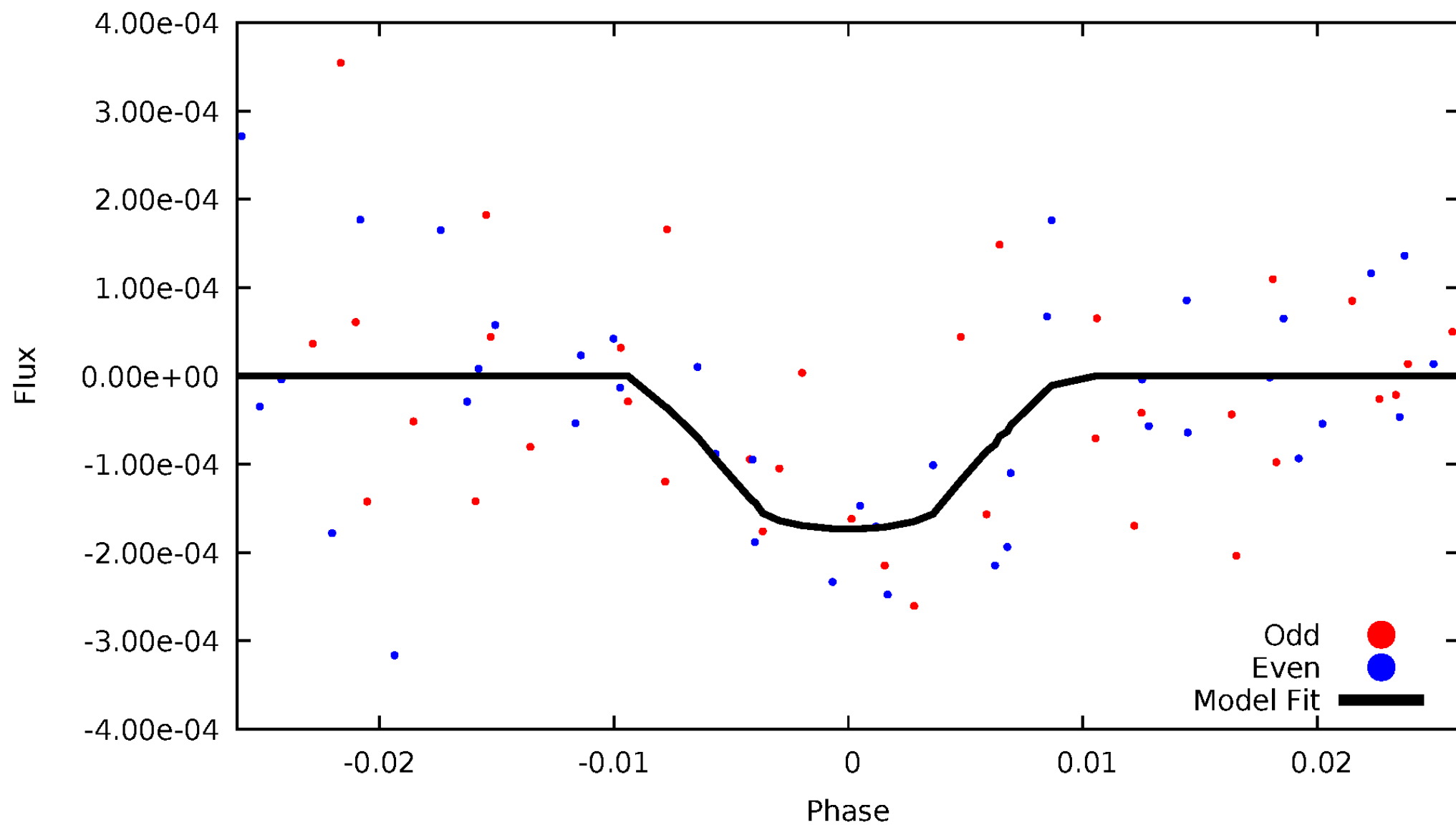


TCE 008509469-03



DV Odd/Even

TCE 008509469-03

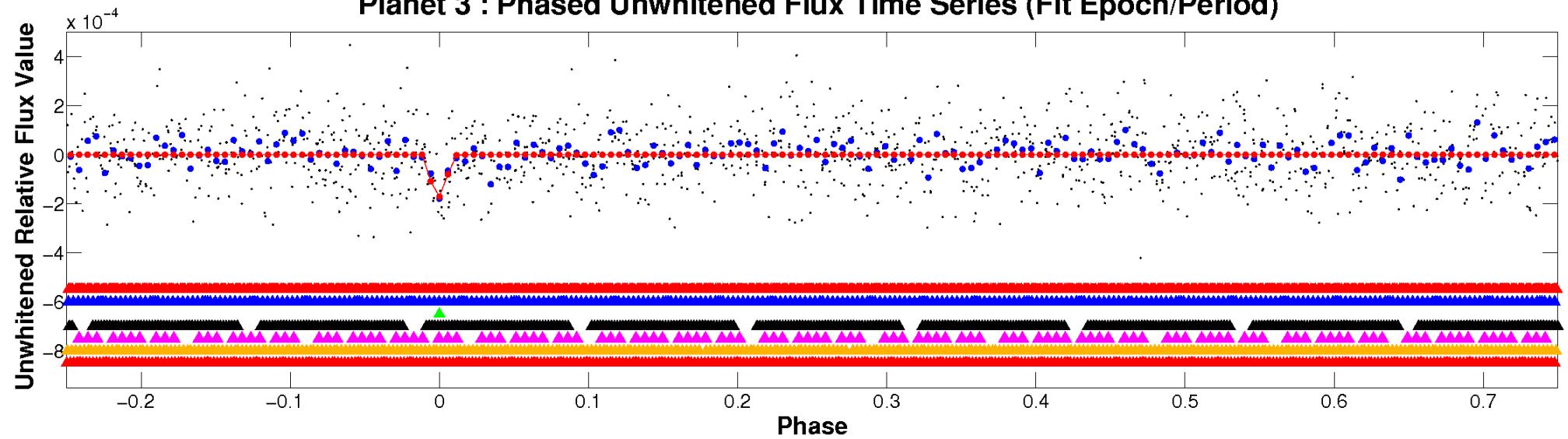


ALT Odd/Even

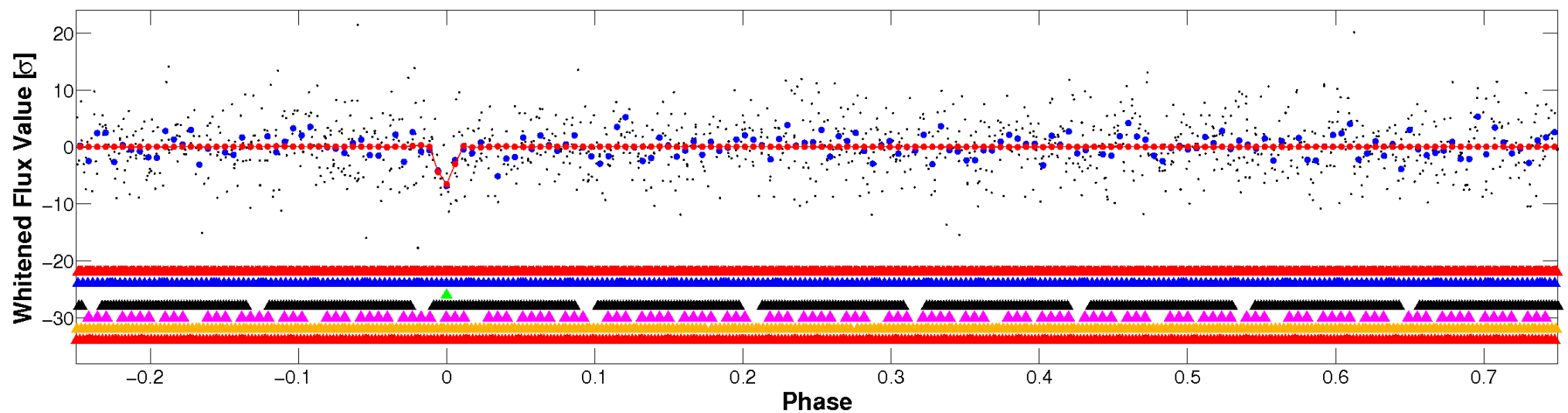
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

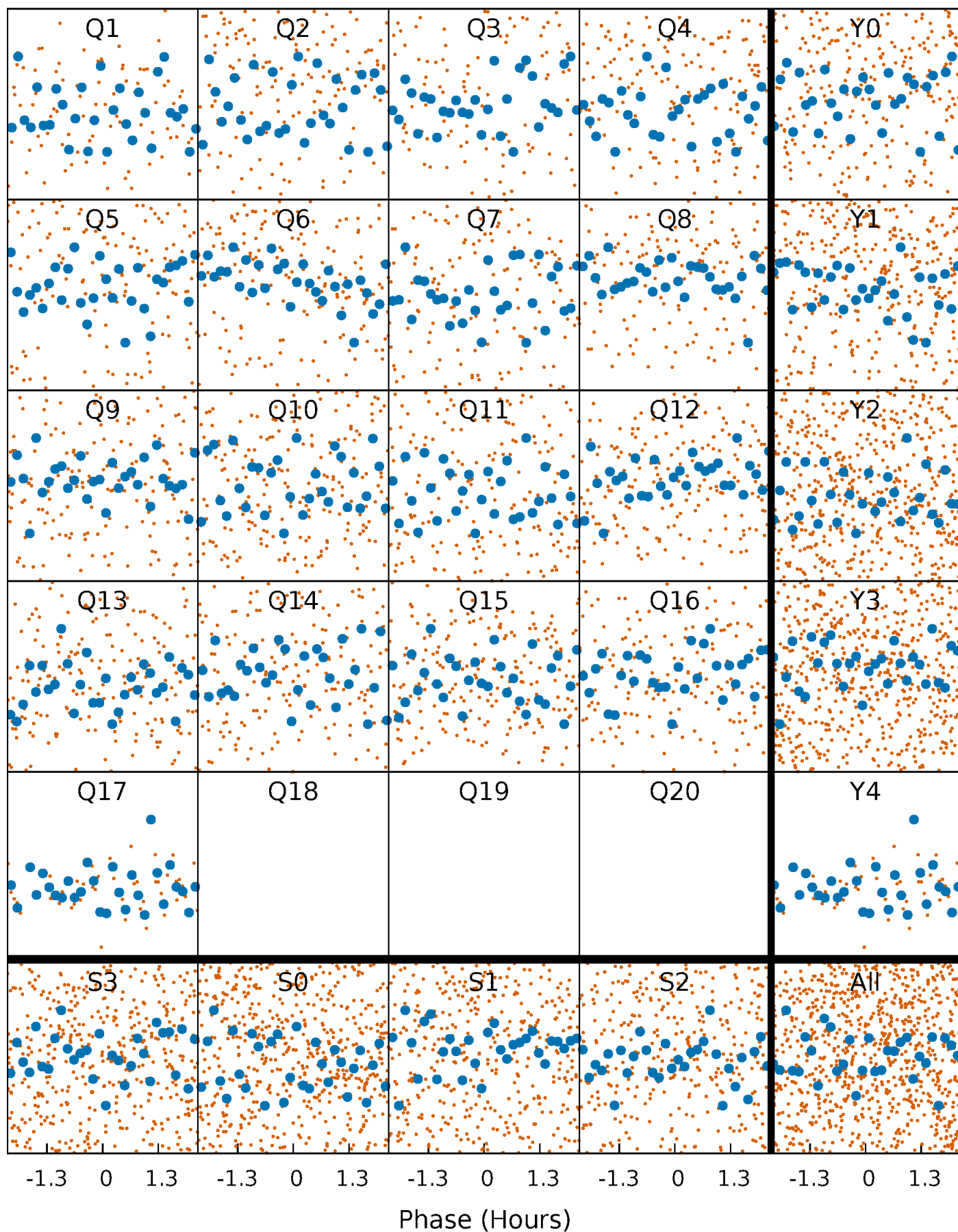


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



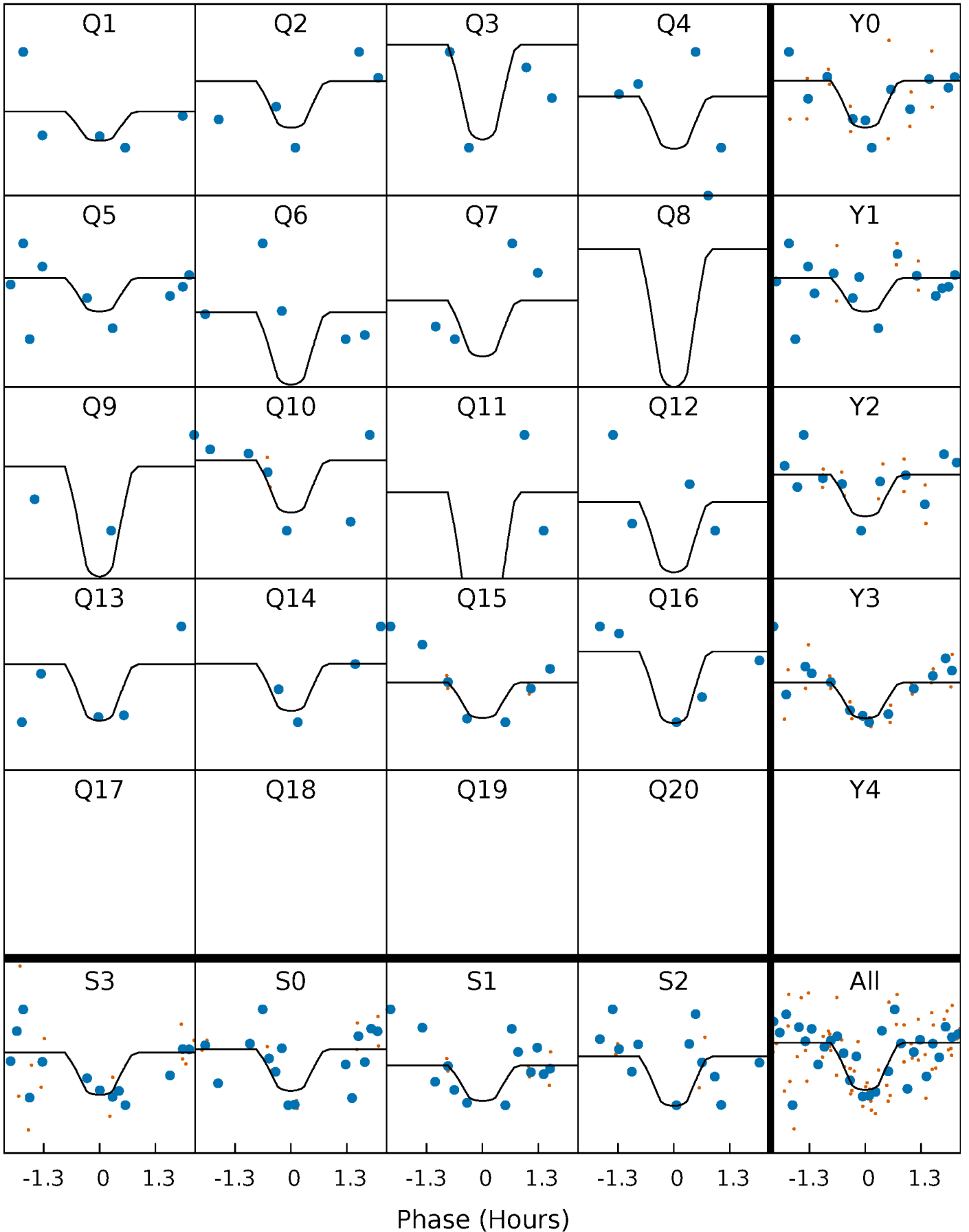
PDC Quarter-Phased Transit Curves

TCE 008509469-03 $P = 3.552565$ Days $T_0 = 132.844438$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 008509469-03 P= 3.552565 Days $T_0=132.844438$ (BKJD)

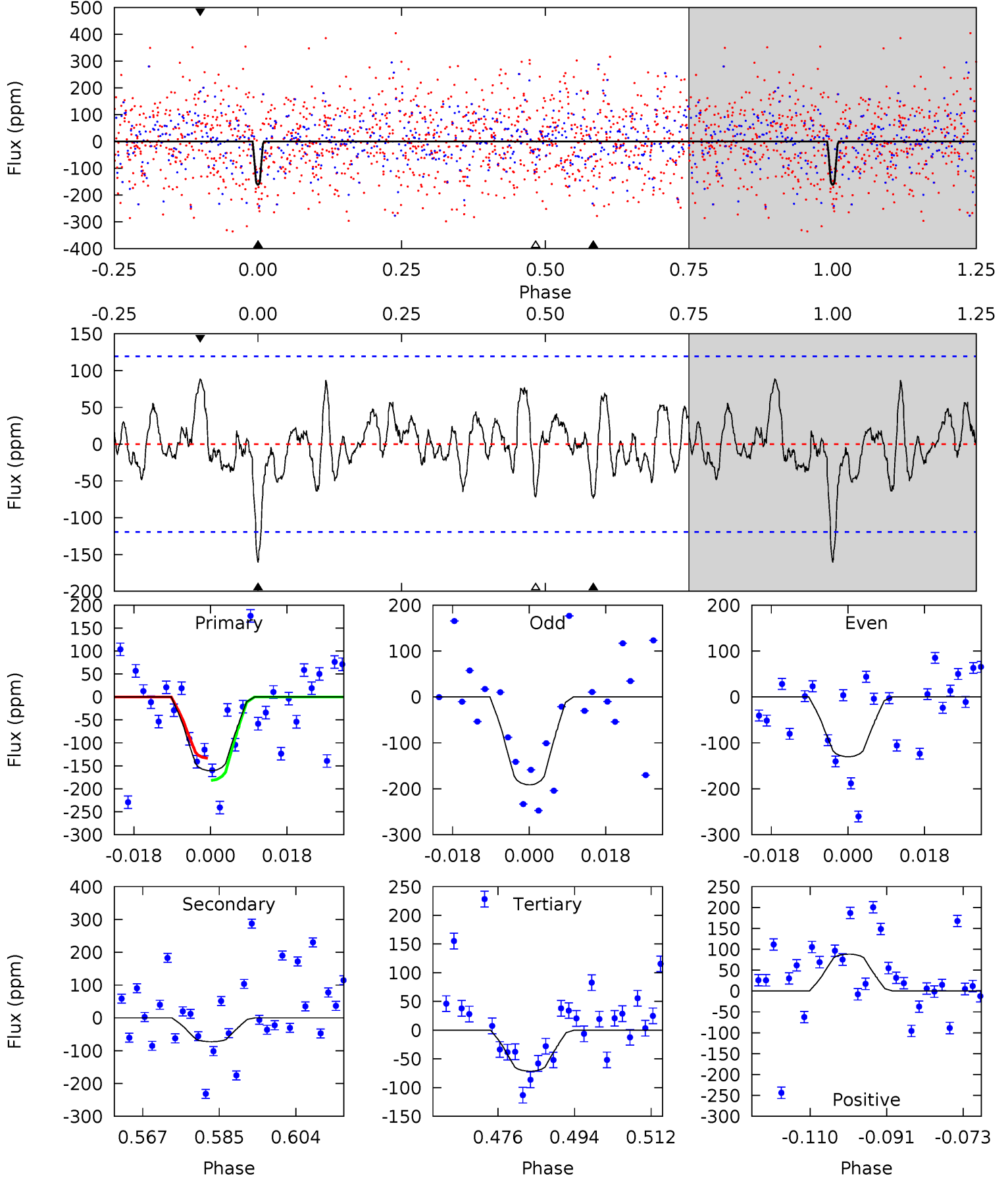


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

008509469-03, P = 3.552565 Days, E = 132.844438 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.61	2.99	2.93	3.63	4.91	2.36	1.23	3.67	2.98	0.05	-0.64	1.24	0.85	0.35	0.94



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 008509469

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6669^{+179}_{-219}	$3.812^{+0.273}_{-0.117}$	$-0.040^{+0.250}_{-0.250}$	$2.643^{+0.495}_{-0.989}$	$1.650^{+0.186}_{-0.346}$	$0.126^{+0.239}_{-0.047}$
	+3%/-3%	+7%/-3%	+625%/-625%	+19%/-37%	+11%/-21%	+190%/-37%
Source	PHO1	FLK73	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 008509469-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-73 ± 24	$3.59^{+2.35}_{-2.03}$	2849^{+165}_{-235}	5354^{+3031}_{-1105}	$8.694^{+41.242}_{-5.787}$
Alt.	N/A	N/A	N/A	N/A	N/A

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

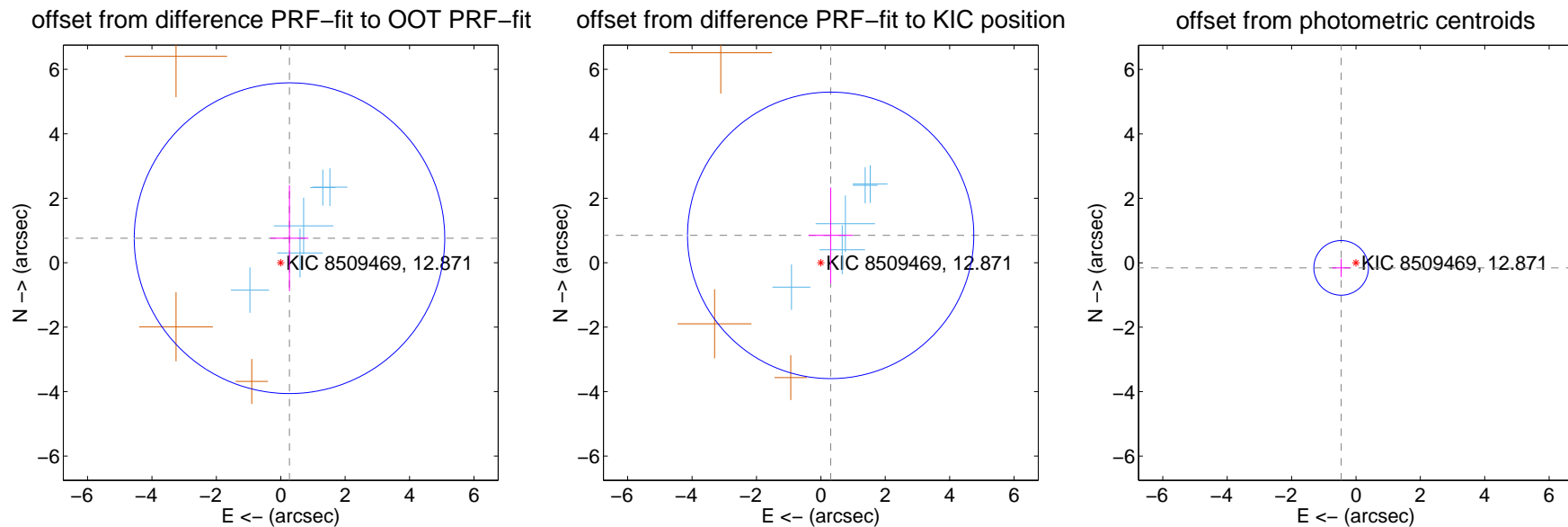
DV Centroid Data

Supplemental centroid analysis for 008509469-03. Kepler magnitude: 12.87. Transit SNR 25.16

There are 5 quarters with good PRF difference image offsets

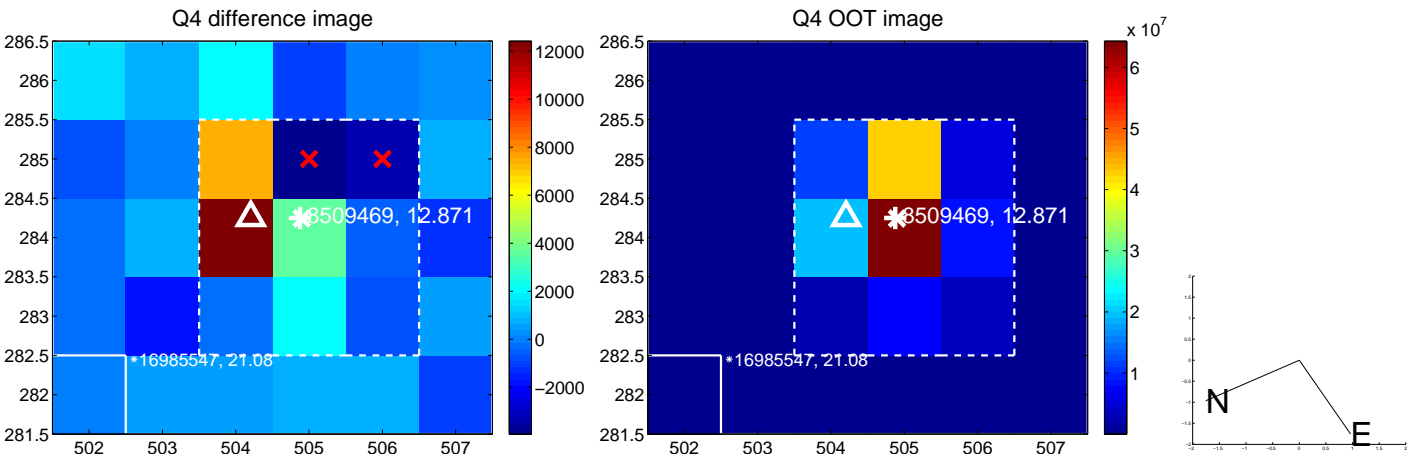
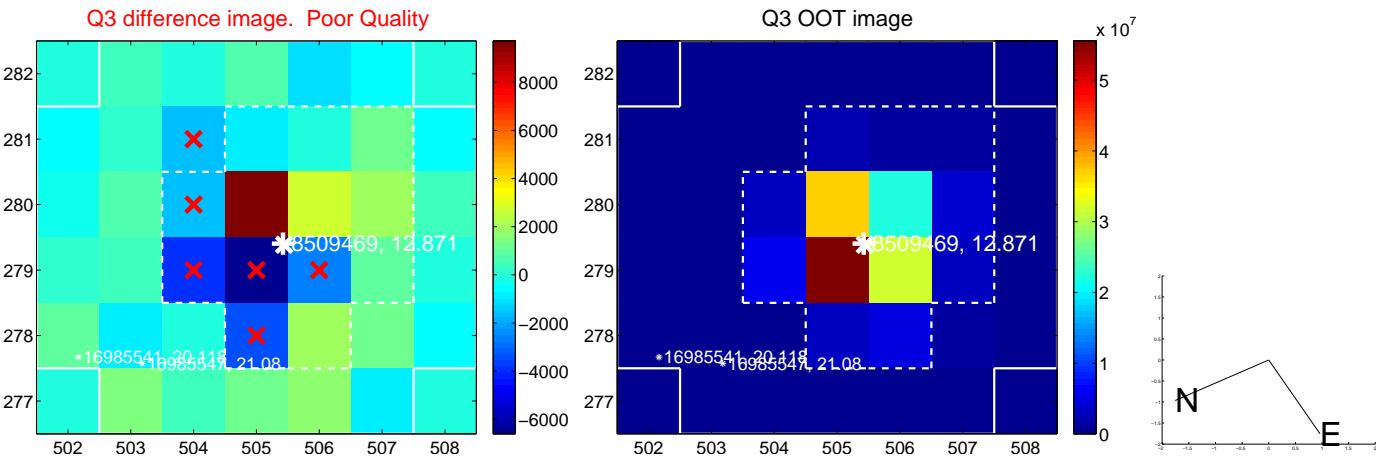
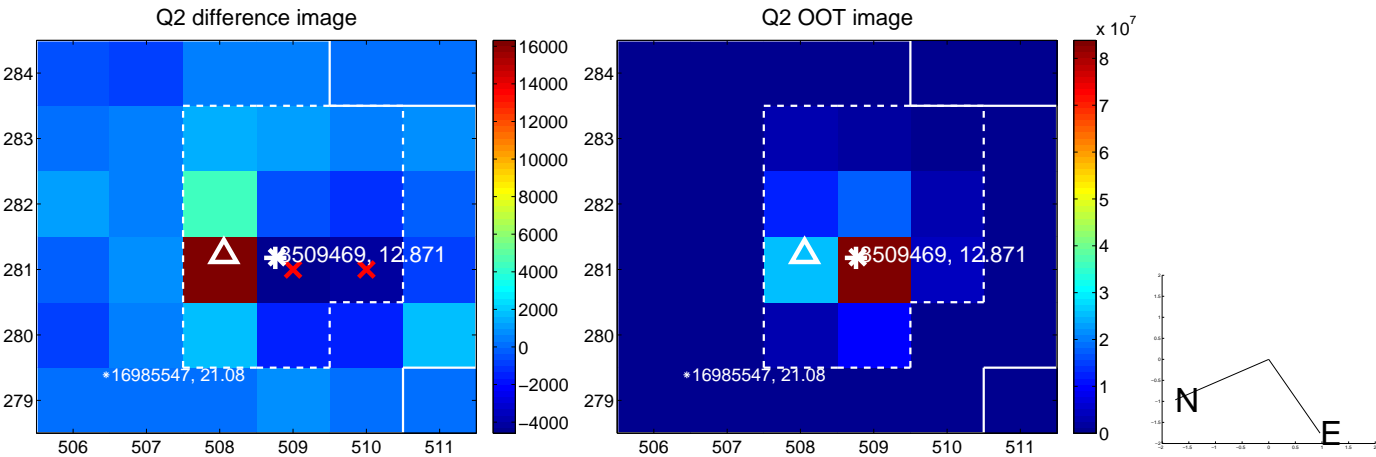
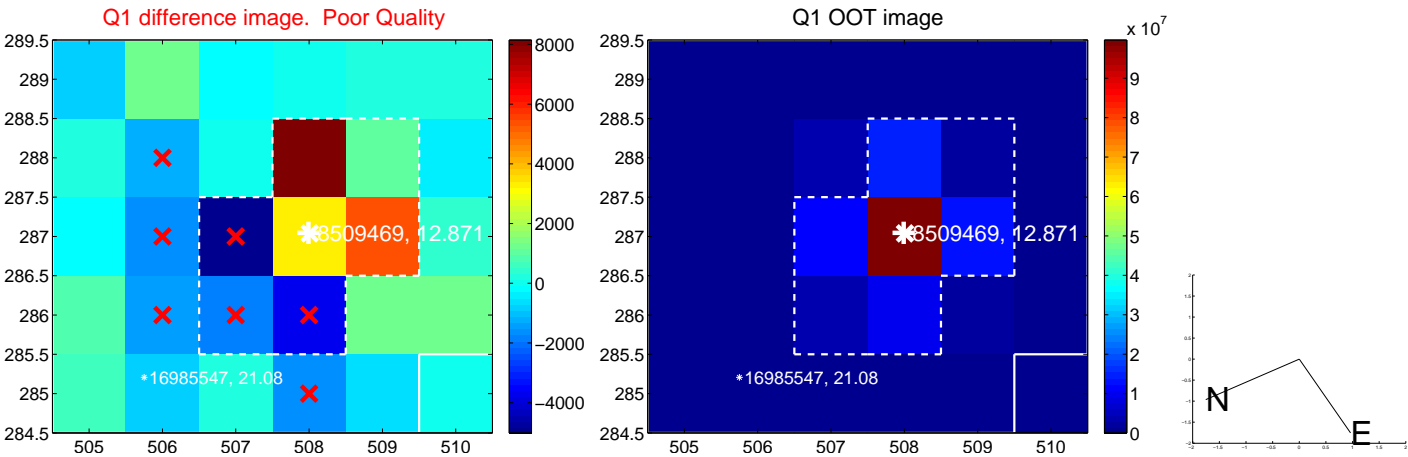
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.807 ± 1.607	0.50	-0.271 ± 0.590	0.760 ± 1.640
PRF-fit source offset from KIC position	0.901 ± 1.481	0.61	-0.304 ± 0.688	0.848 ± 1.488
photometric centroid source offset	0.49 ± 0.28	1.72	0.46 ± 0.28	-0.16 ± 0.28

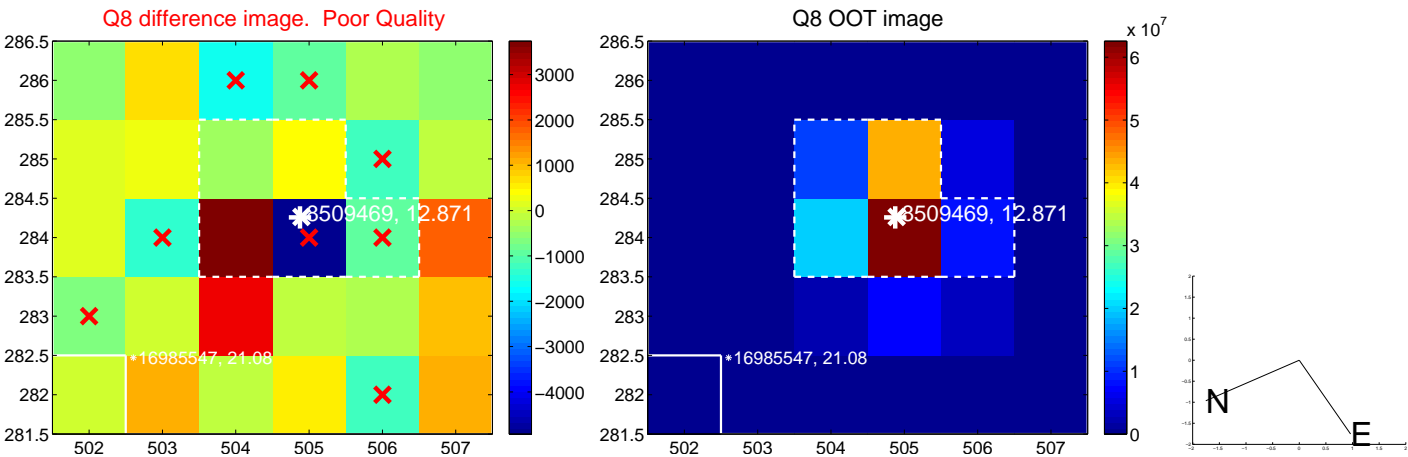
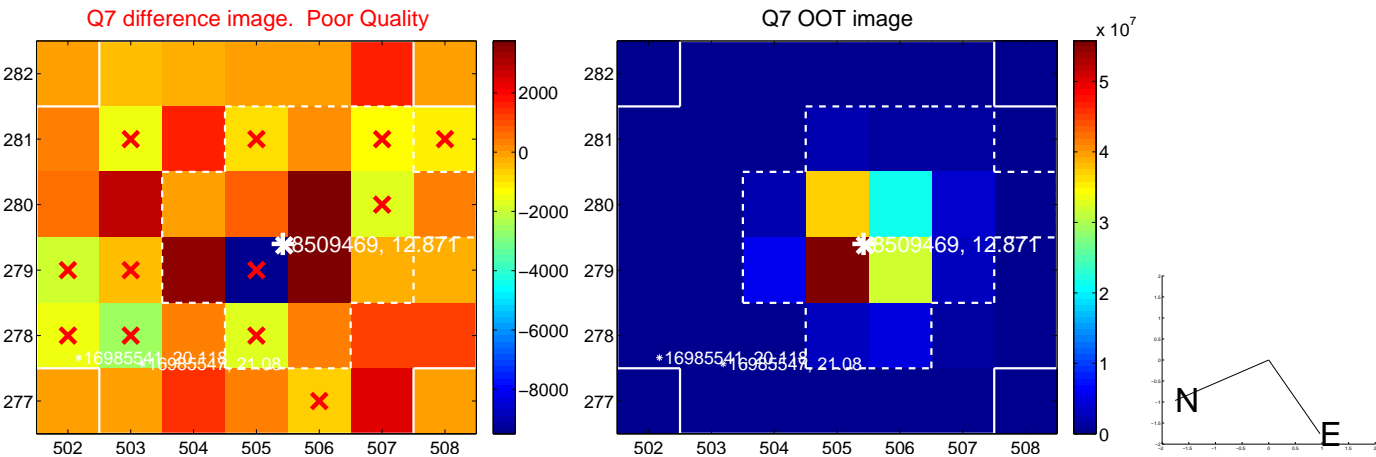
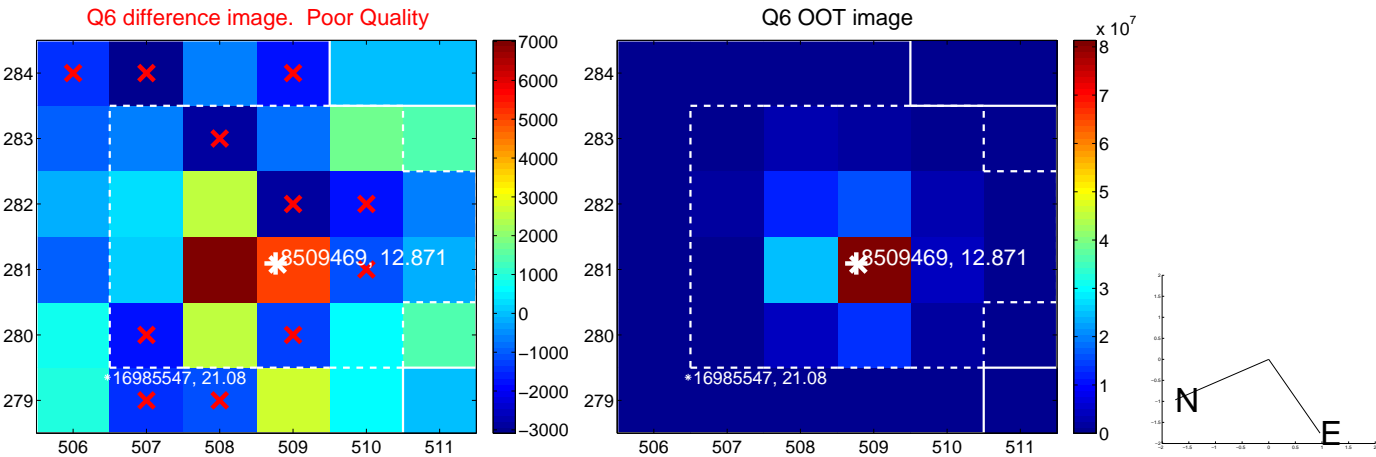
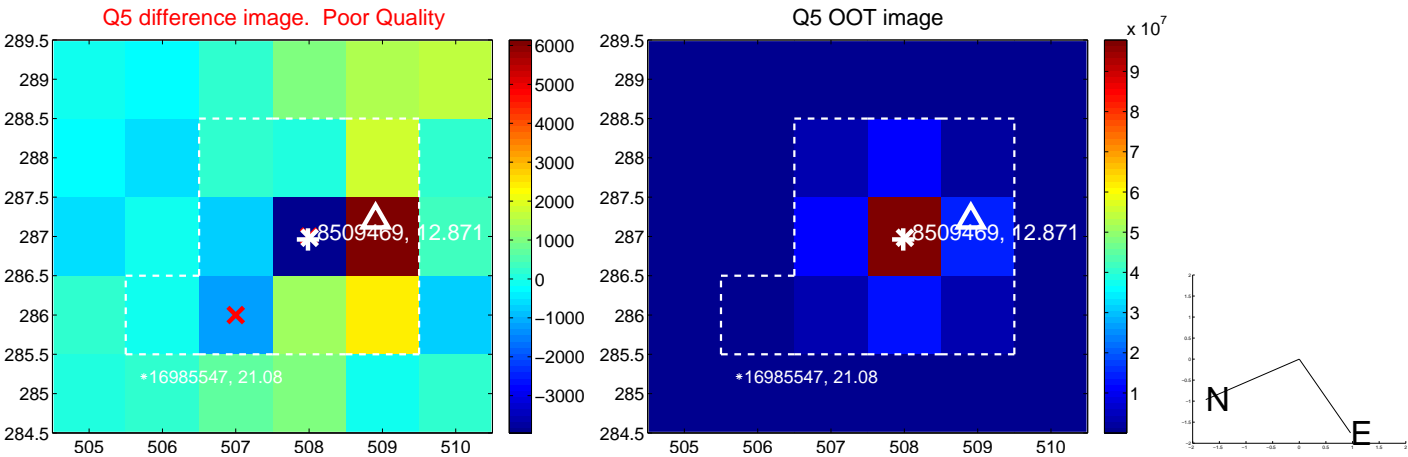


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

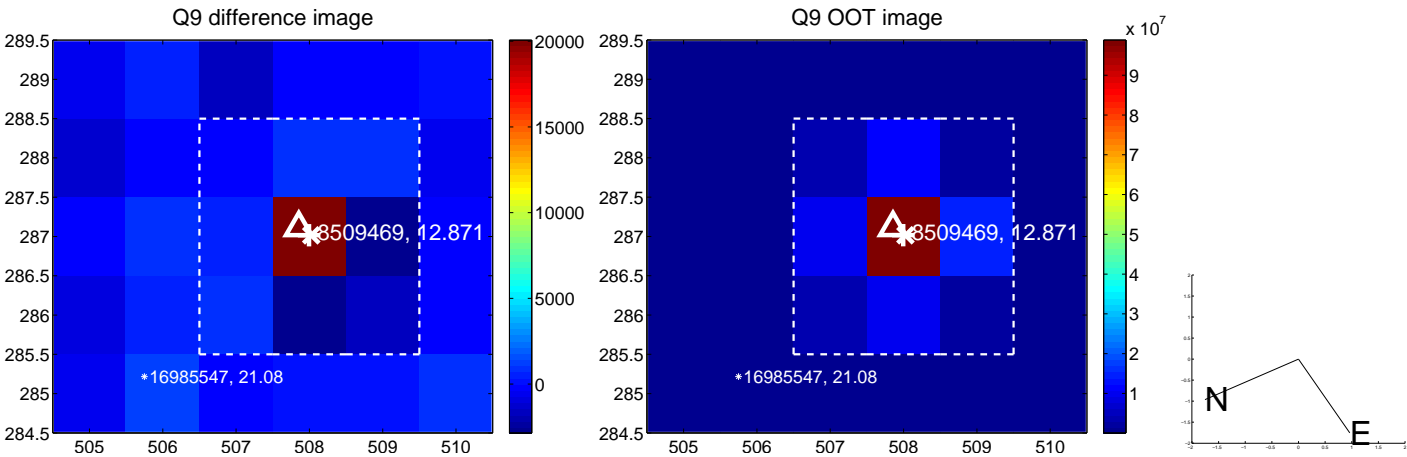
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



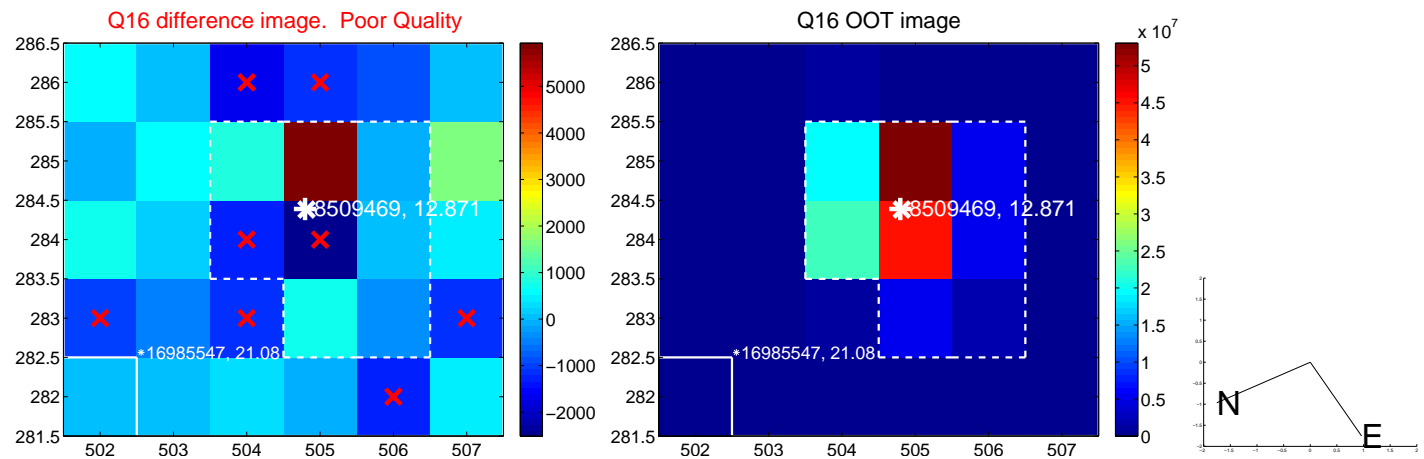
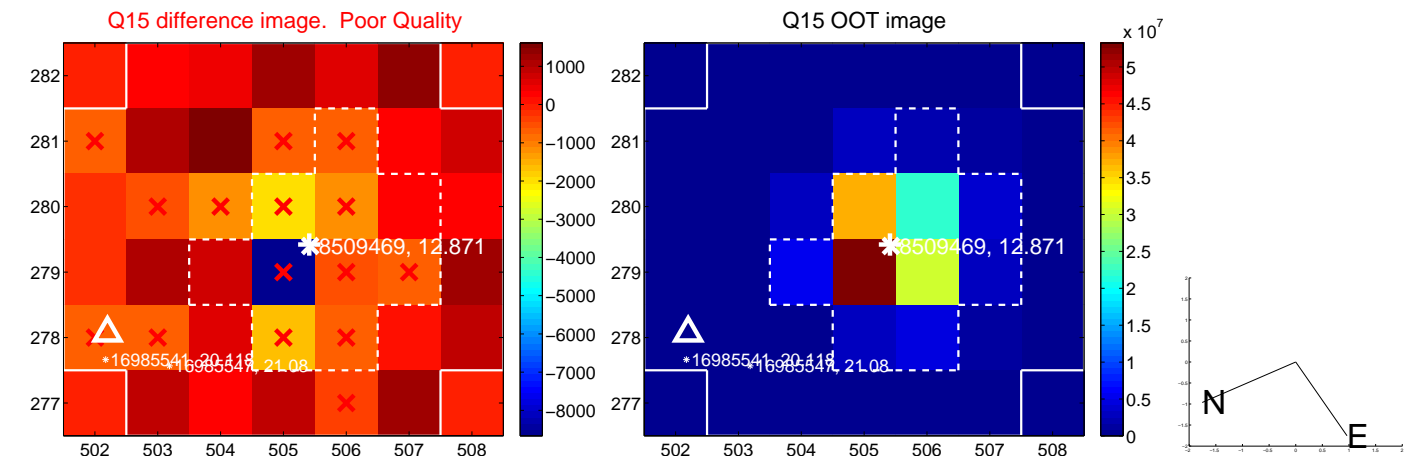
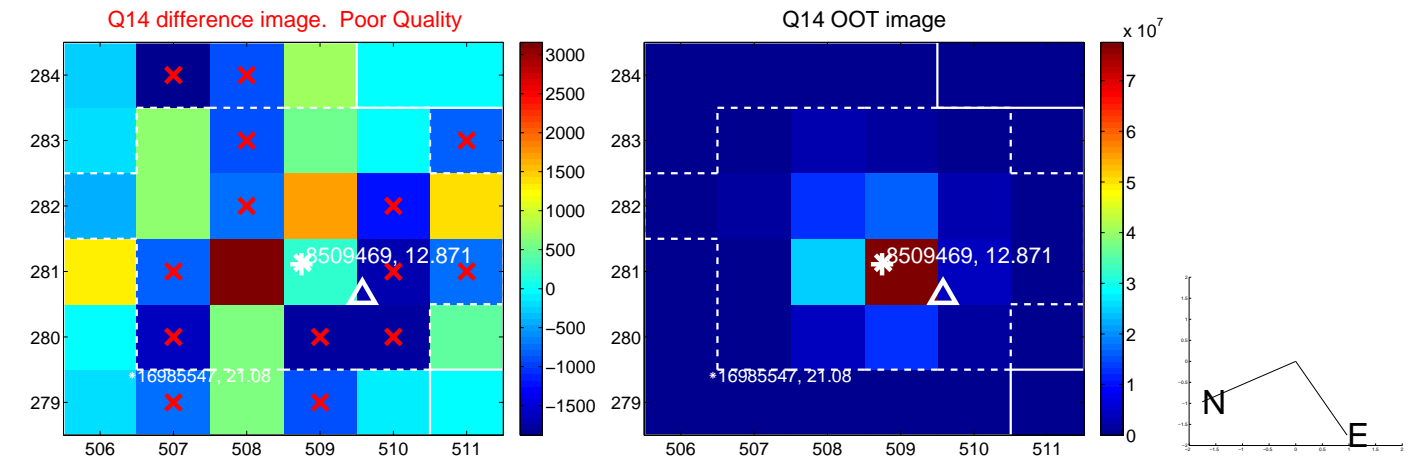
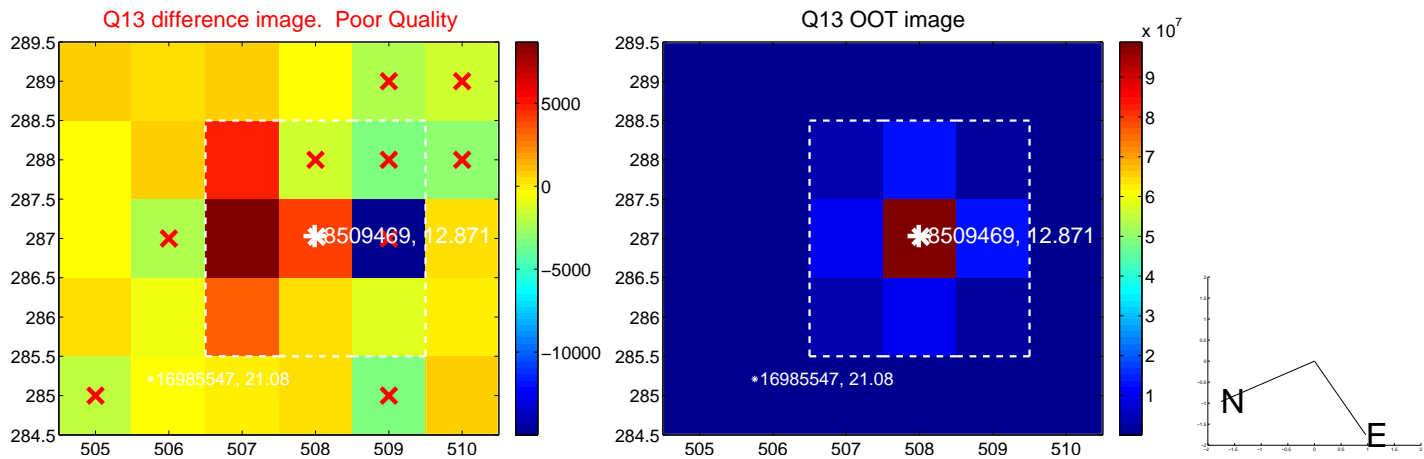
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



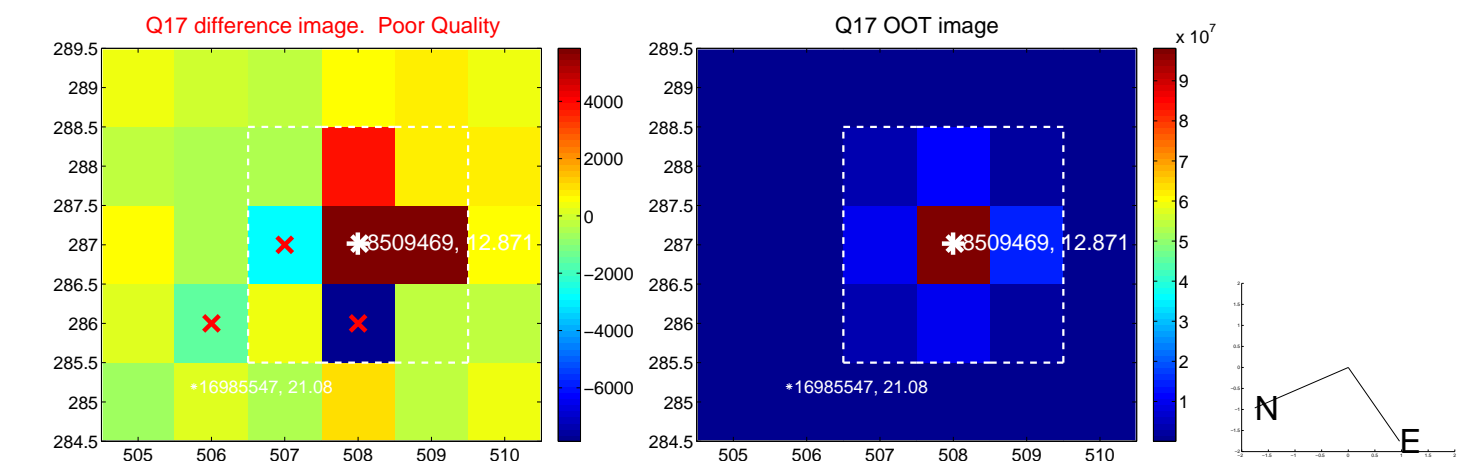
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



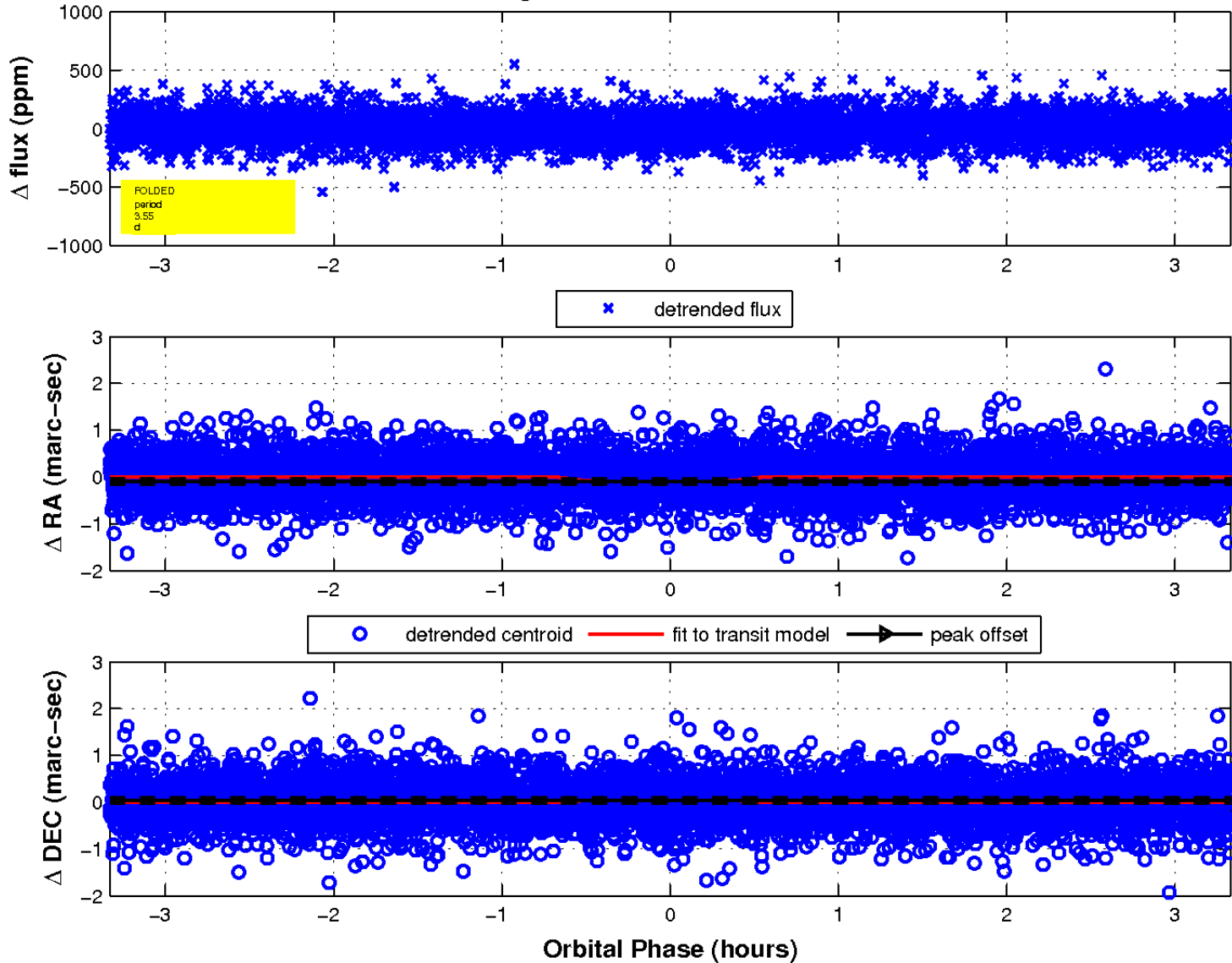
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

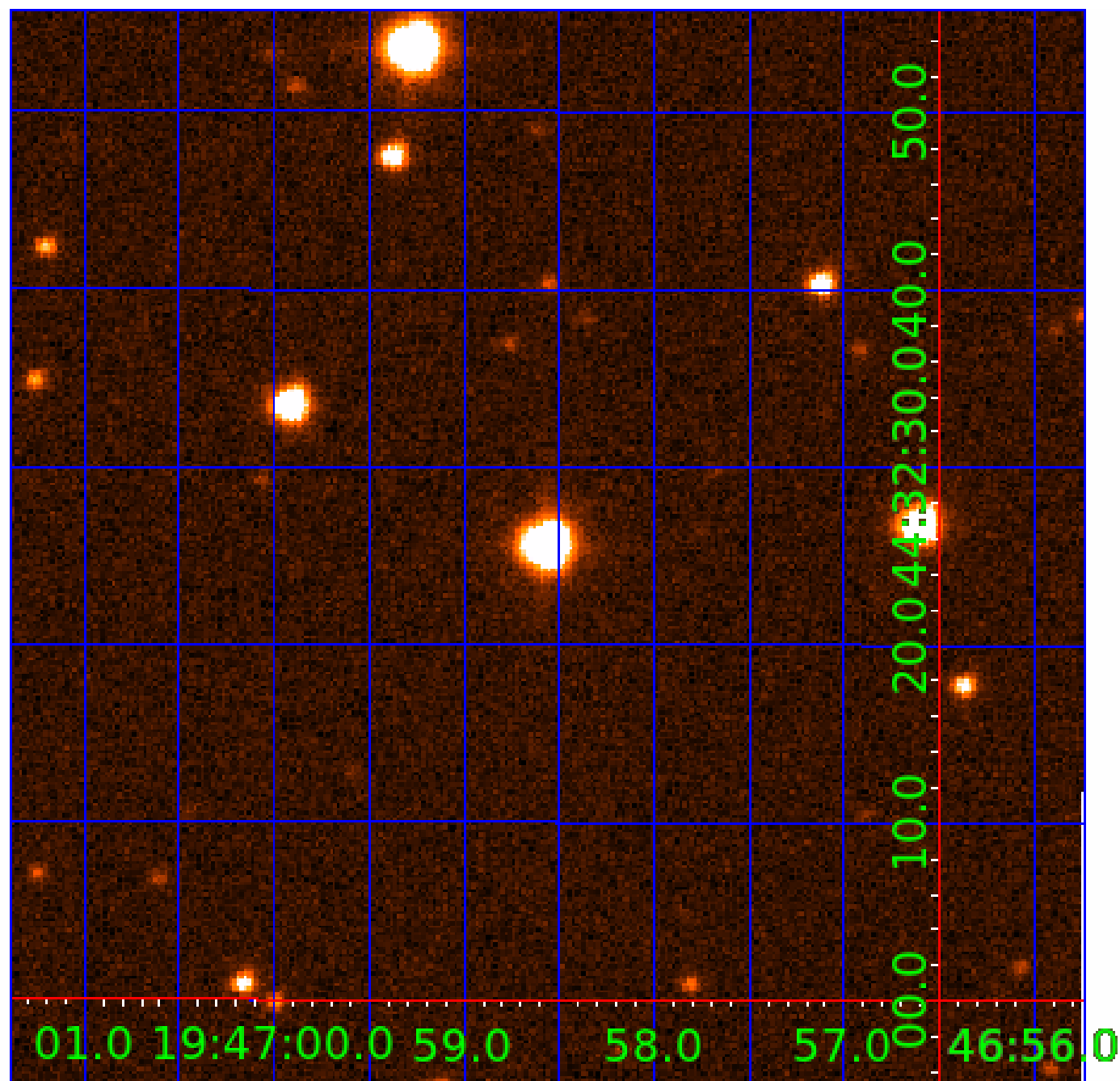


fluxWeightedCentroids, Planet 3 of 7



UKIRT Image

Declination



KIC 008509469

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})
008509469-01	OBS	No	1.736425	132.144440	2.9	13.435	9.5	2.5	2.64	6669	0.53	11074.58
008509469-02	OBS	No	4.287986	131.664242	124.2	0.591	21.9	11.1	2.64	6669	3.53	3317.91
008509469-03	OBS	No	3.552565	132.844438	173.3	1.111	23.5	25.2	2.64	6669	3.69	4263.95
008509469-04	OBS	No	3.158587	132.018728	137.1	1.297	19.2	19.8	2.64	6669	3.62	4987.45
008509469-05	OBS	No	11.617279	137.030891	221.9	0.798	14.4	18.7	2.64	6669	4.29	878.48
008509469-06	OBS	No	3.902163	134.168981	204.3	0.666	14.2	14.2	2.64	6669	3.89	3762.37
008509469-07	OBS	No	2.890361	133.731871	56.9	0.775	15.1	6.2	2.64	6669	2.07	5613.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509469-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
008509469-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008509469-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008509469-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
008509469-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_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.

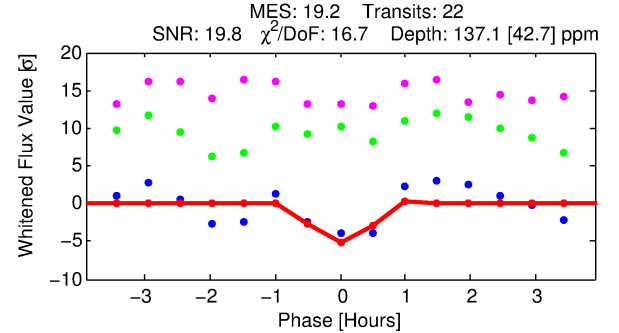
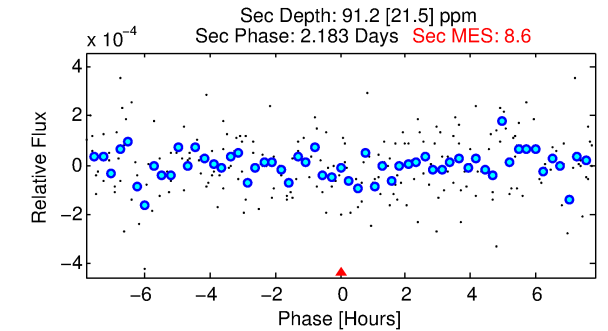
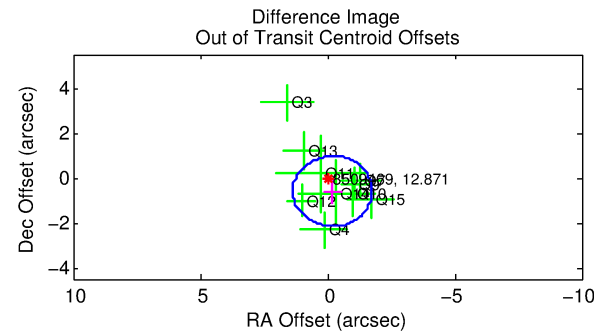
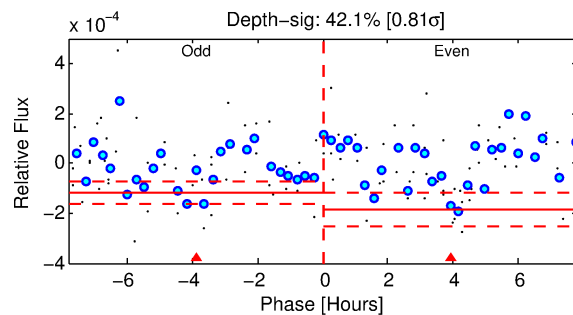
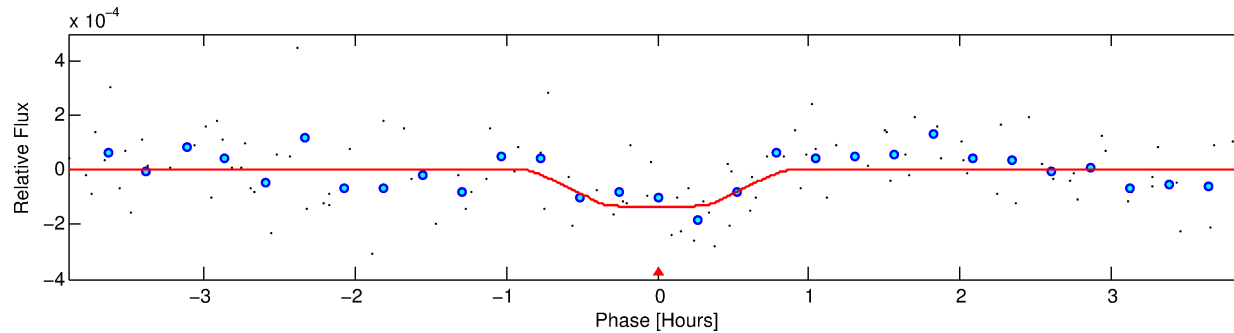
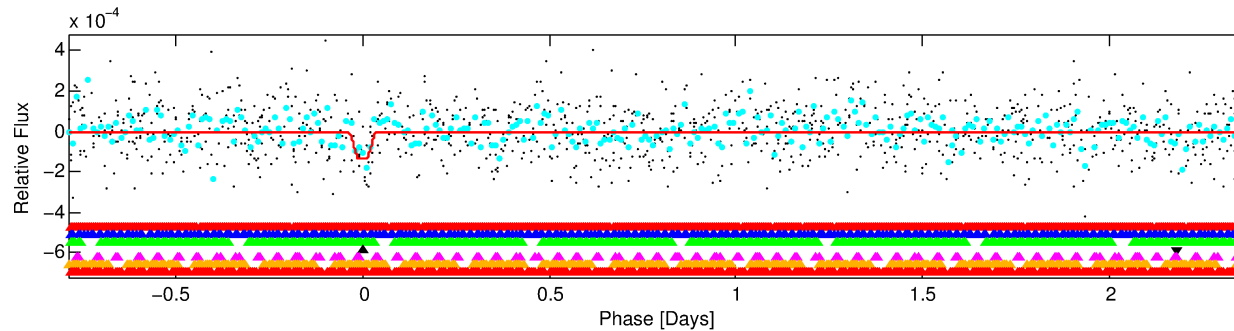
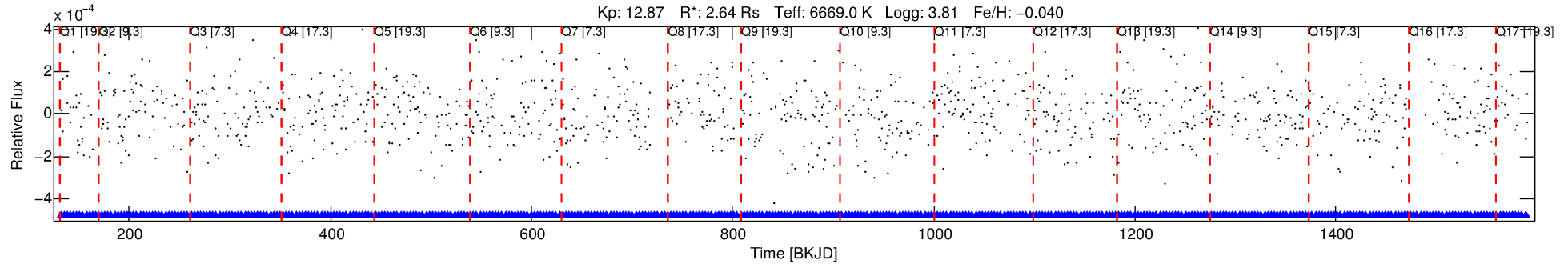
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008509469-04

No Significant Match Found

DV One-Page Summary

KIC: 8509469 Candidate: 4 of 7 Period: 3.159 d



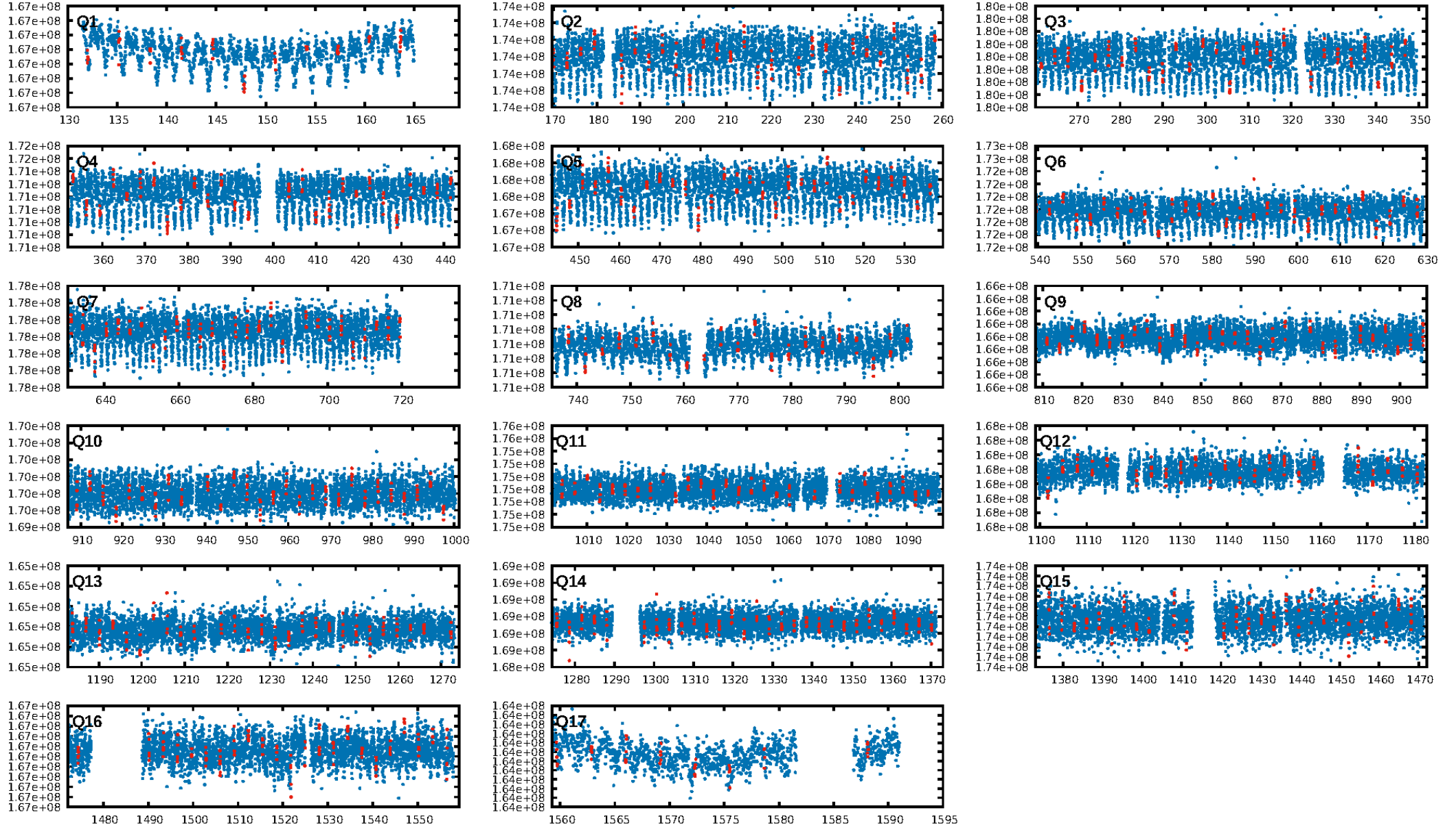
DV Fit Results:

Period = 3.15859 [0.00003] d
Epoch = 132.0187 [0.0054] BKJD
Rp/R* = 0.0125 [0.0184]
a/R* = 8.79 [74.48]
b = 0.90 [1.90]
Seff = 4987.45 [2519.06]
Teq = 2143 [271] K
Rp = 3.61 [5.48] Re
a = 0.0498 [0.0162] AU
Ag = 9.53 [28.47] [0.30 σ]
Teffp = 5821 [4294] K [0.85 σ]

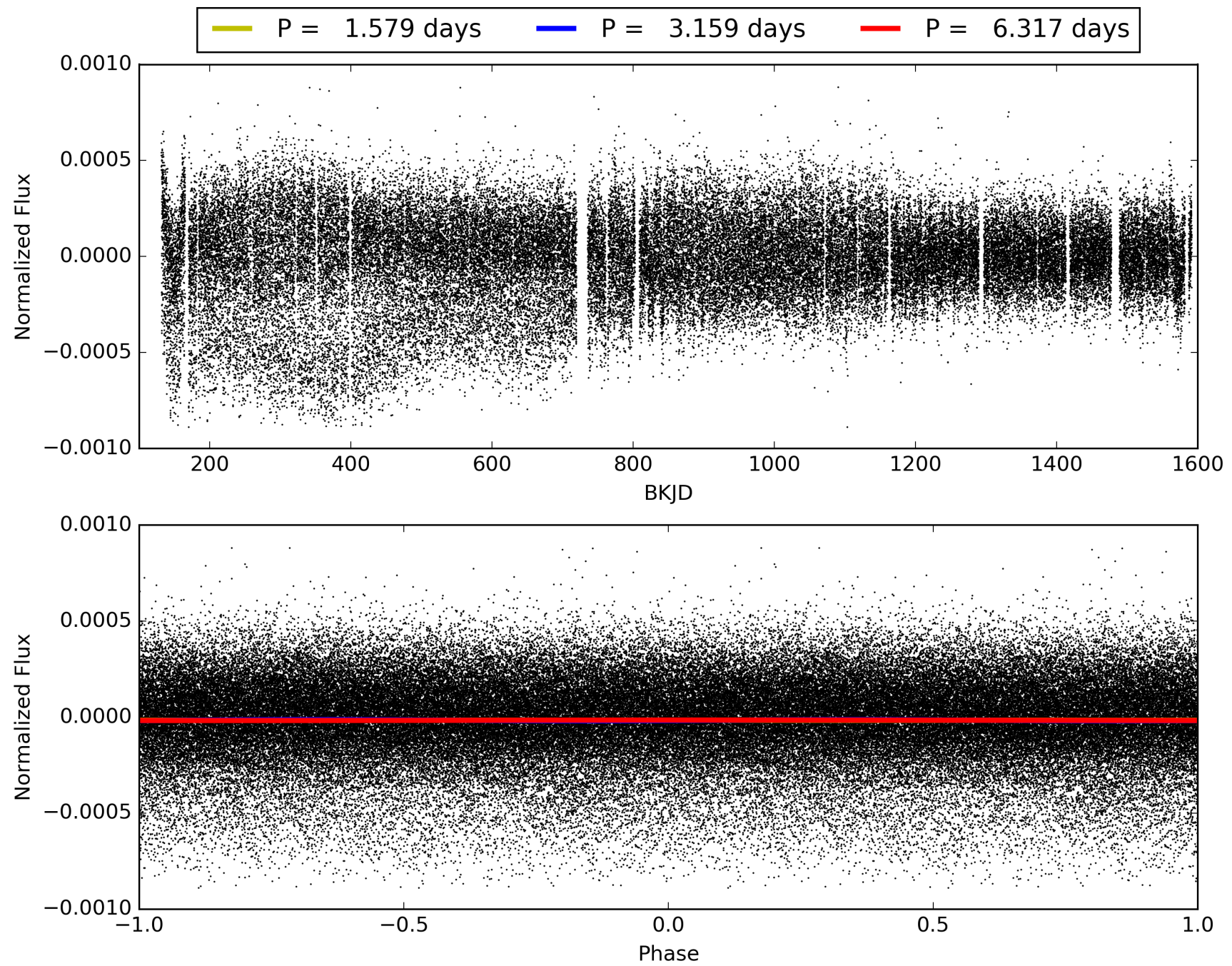
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.26 σ]
LongPeriod-sig: 100.0% [5.54 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [21/21]
GhostDiagnostic-chr: -0.7119
Centroid-sig: 20.0%
Centroid-so: 0.495 arcsec [1.56 σ]
OotOffset-rm: 0.626 arcsec [1.20 σ]
OotOffset-st: 2/4/2/2 [10]
KicOffset-rm: 0.583 arcsec [1.17 σ]
KicOffset-st: 2/4/2/2 [10]
DiffImageQuality-fgm: 0.50 [5/10]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008509469-04, PDC Light Curves

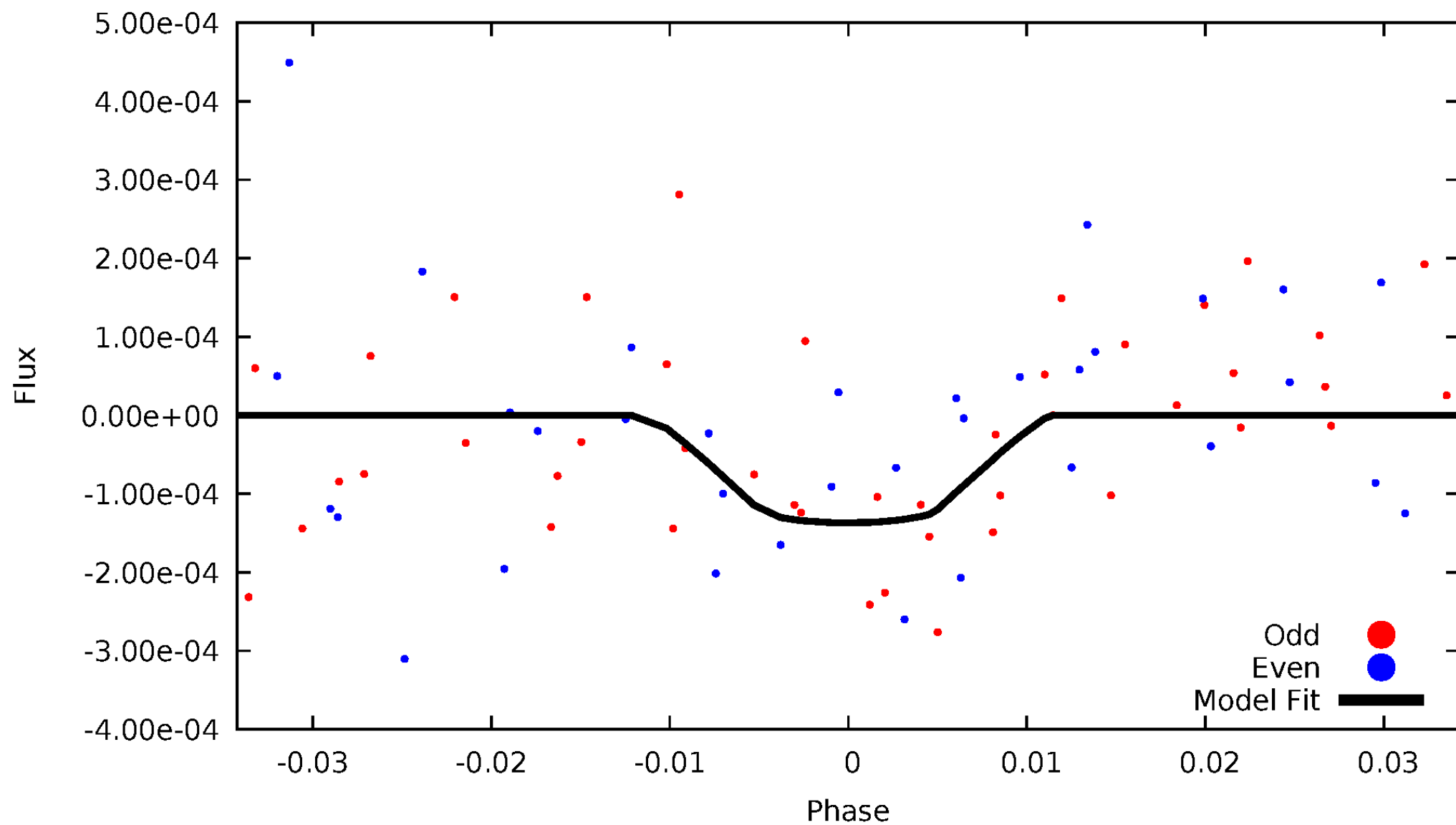


TCE 008509469-04



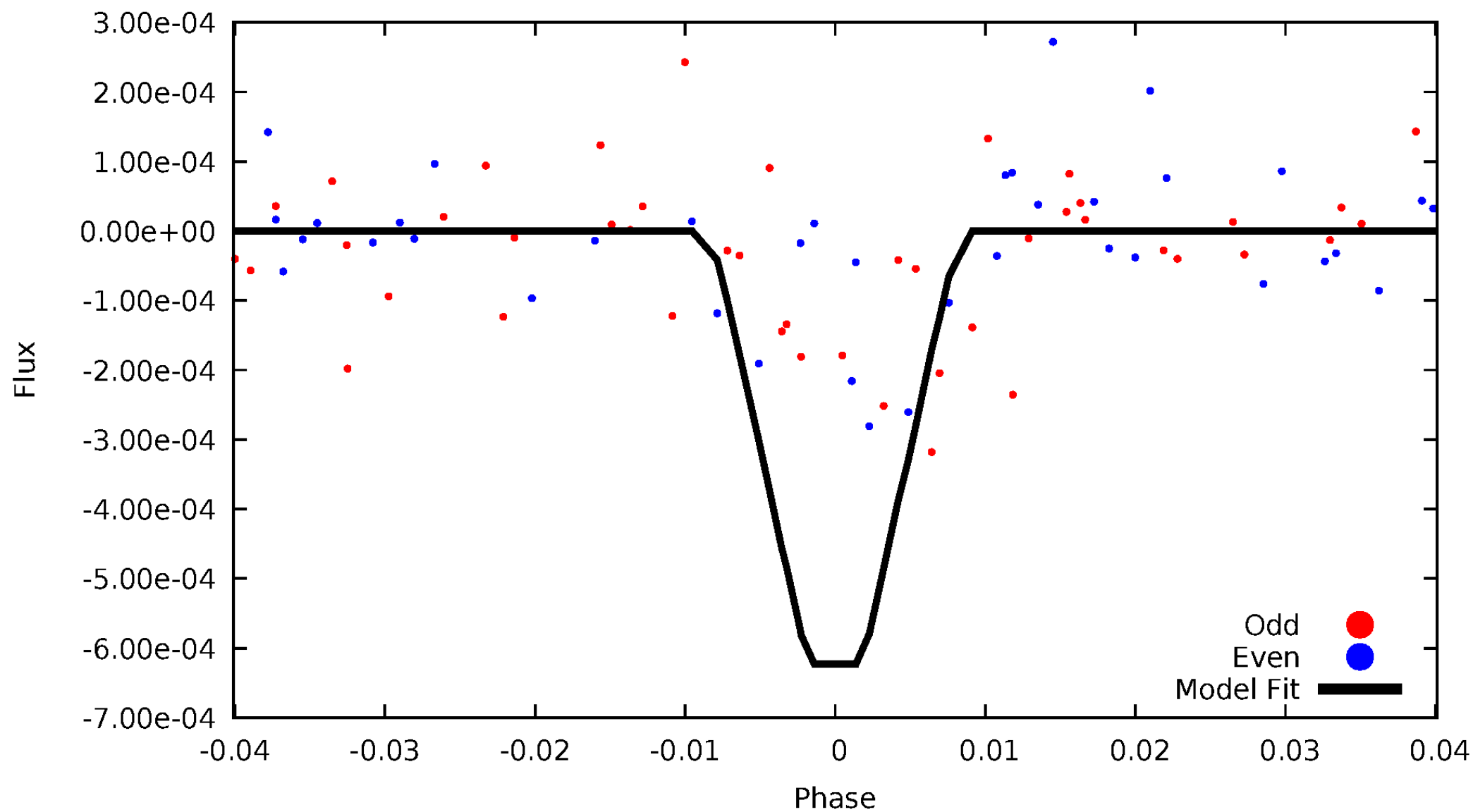
DV Odd/Even

TCE 008509469-04



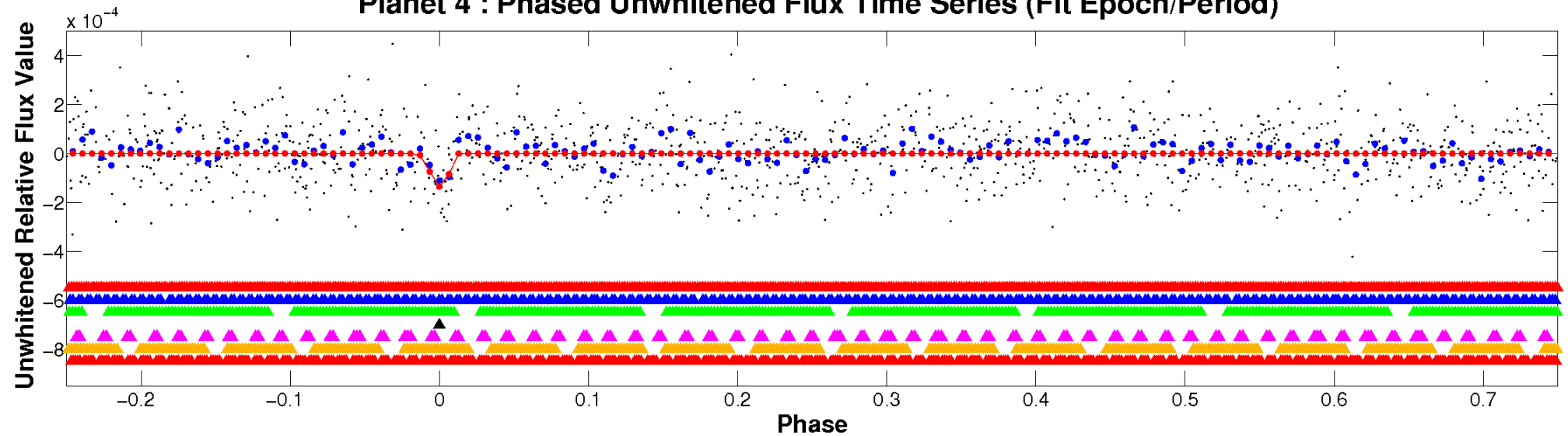
ALT Odd/Even

TCE 008509469-04

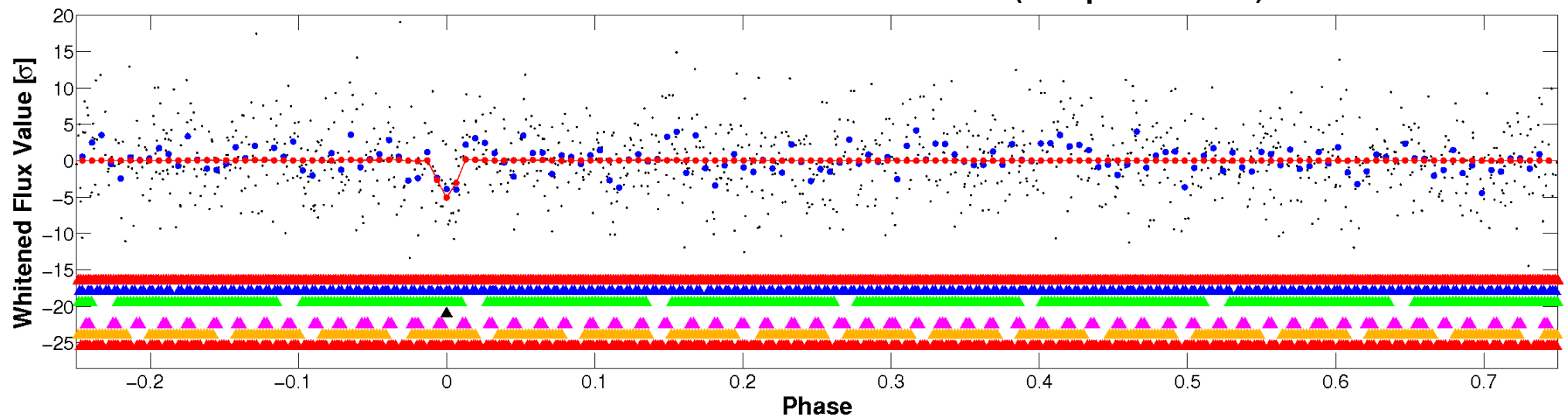


Non-Whitened Vs. Whitened Light Curve

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

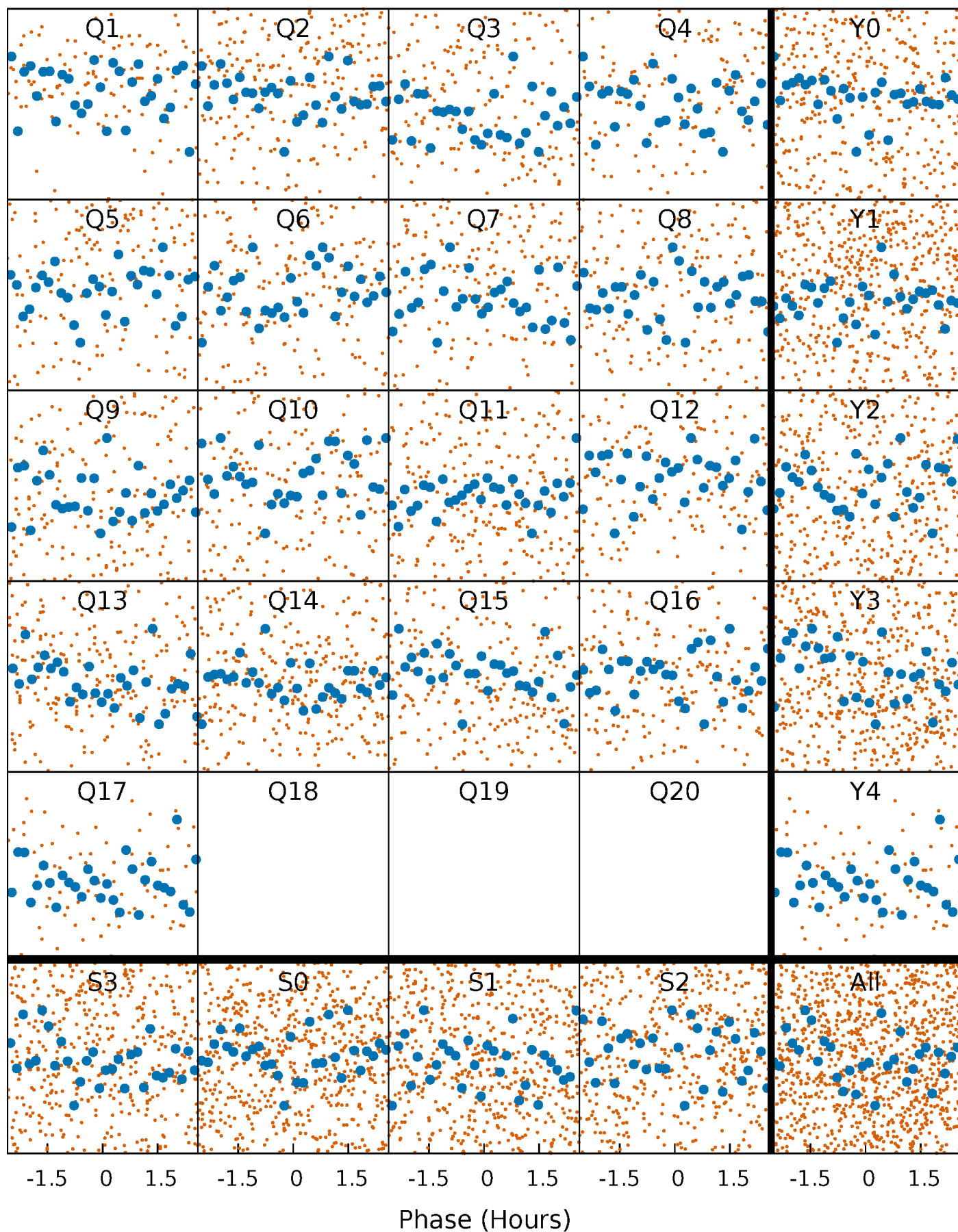


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



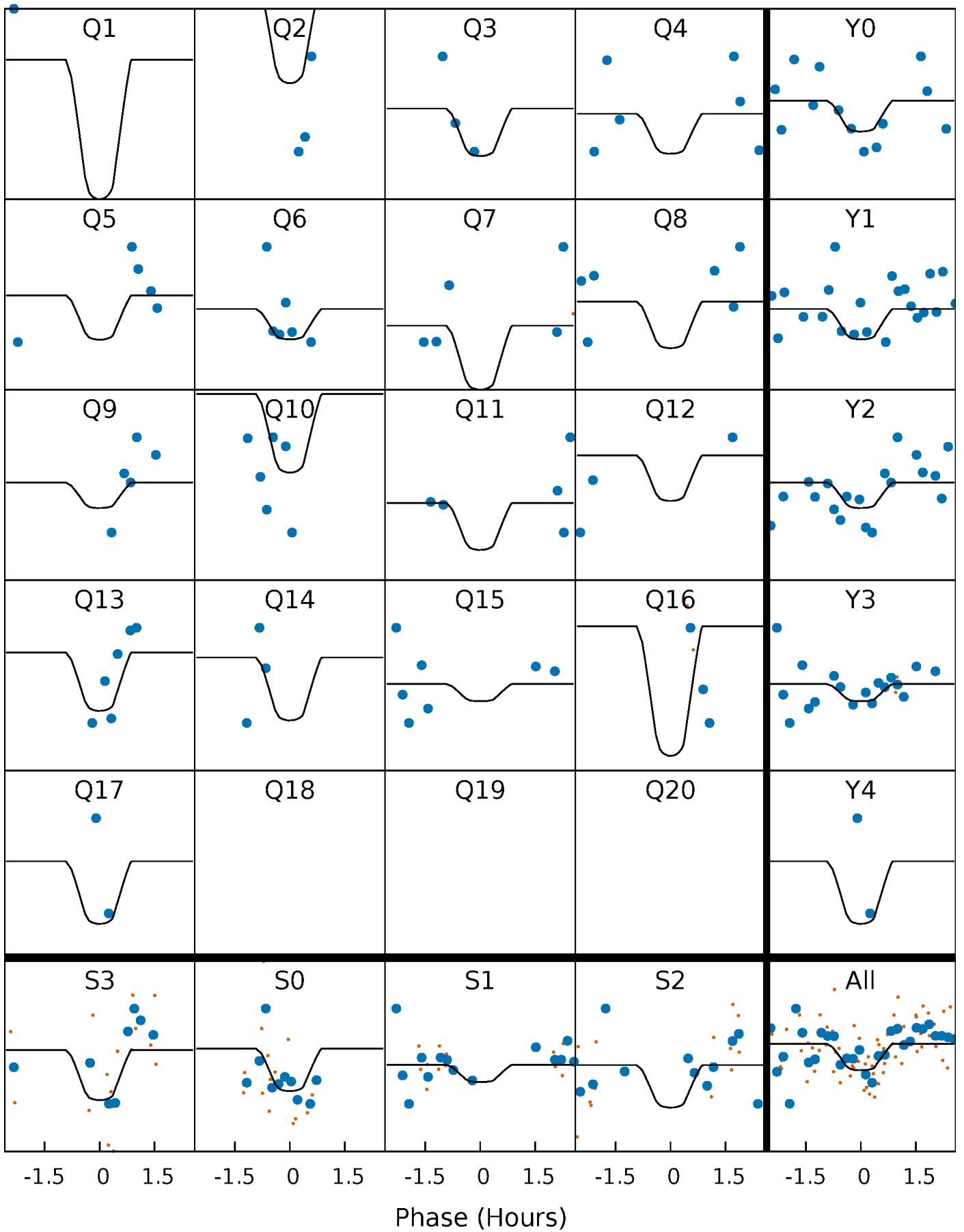
PDC Quarter-Phased Transit Curves

TCE 008509469-04 P= 3.158587 Days $T_0=132.018728$ (BKJD)



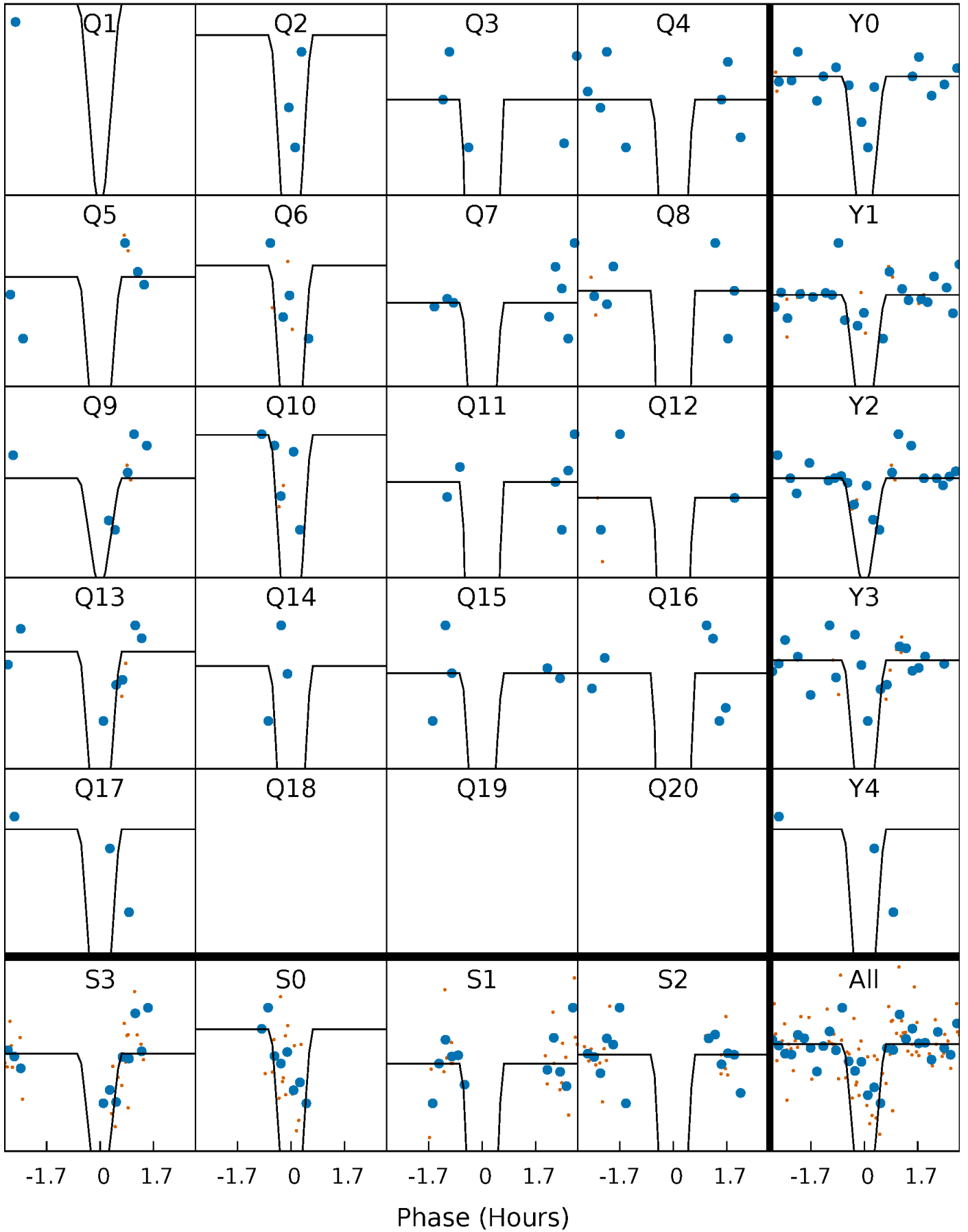
DV Quarter-Phased Transit Curves

TCE 008509469-04 P= 3.158587 Days $T_0=132.018728$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

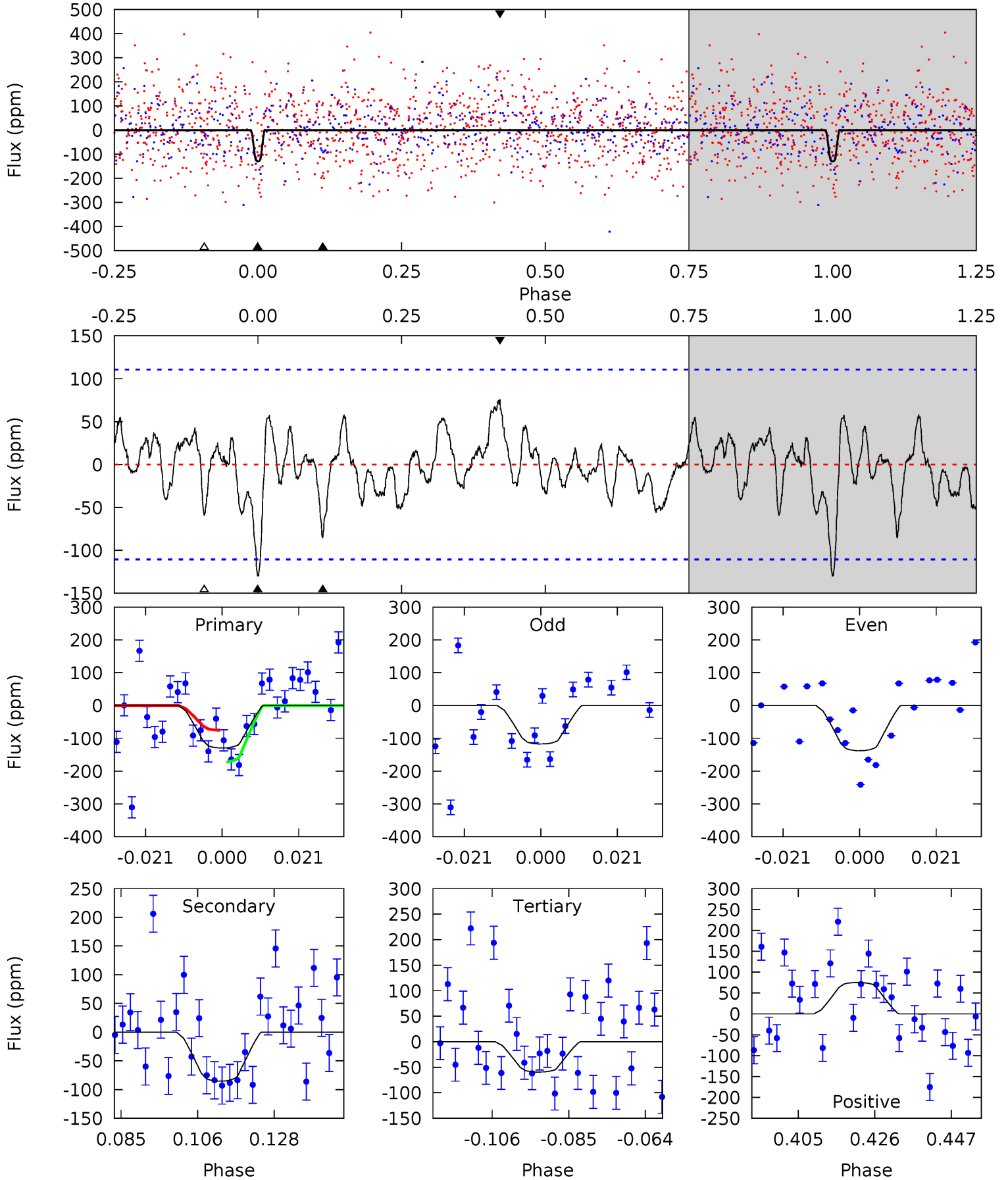
TCE 008509469-04 P= 3.158501 Days $T_0=132.034013$ (BKJD)



DV Model-Shift Uniqueness Test

008509469-04, P = 3.158587 Days, E = 132.018728 Days

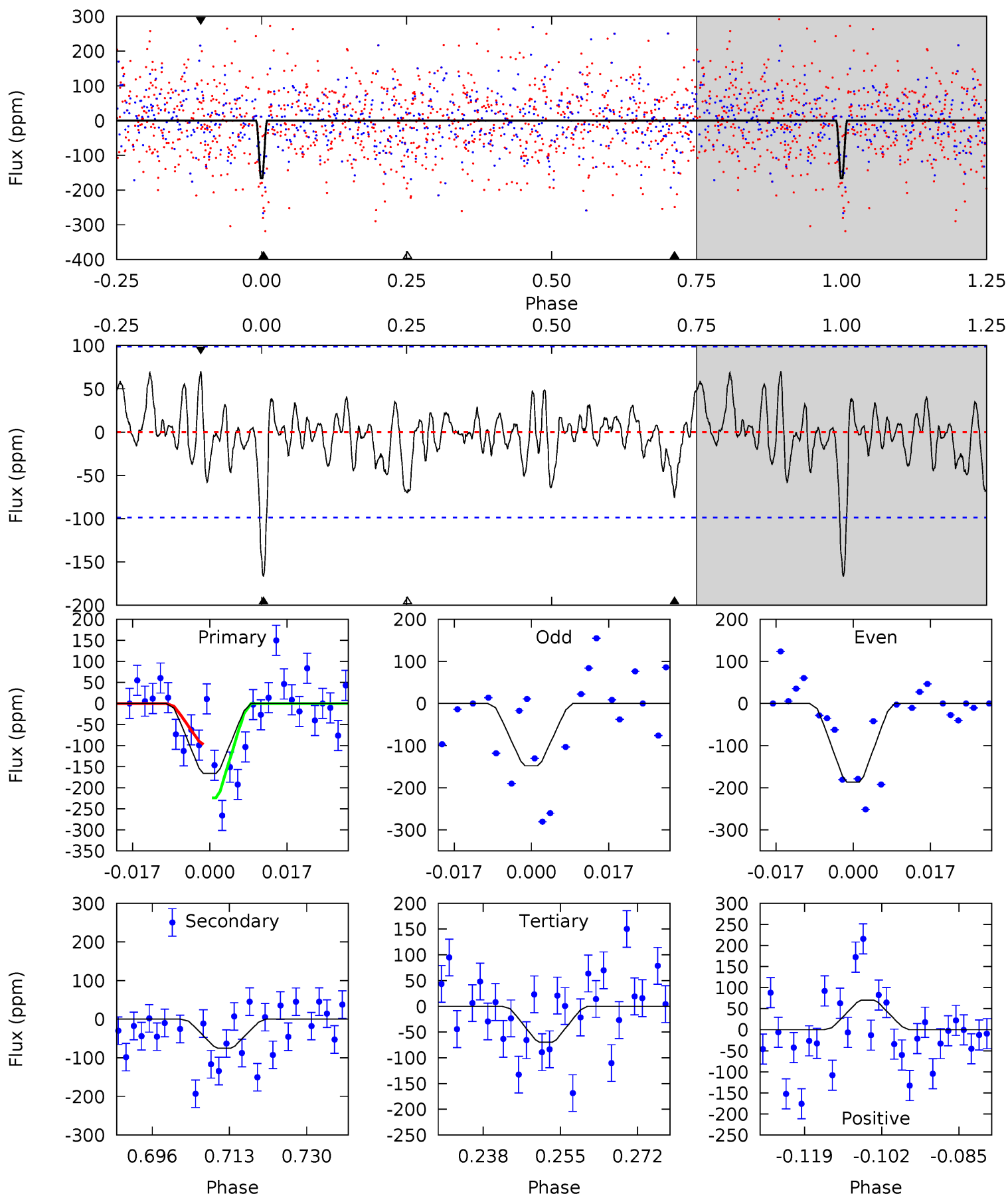
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.72	3.77	2.62	3.32	4.88	2.30	1.18	3.10	2.40	1.15	0.45	0.46	0.99	0.37	2.15



Alt Model-Shift Uniqueness Test

008509469-04, P = 3.158501 Days, E = 132.034013 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.30	3.76	3.49	3.50	4.92	2.39	1.23	4.81	4.79	0.27	0.26	0.97	0.86	0.30	3.20



Stellar Parameters For KIC 008509469

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6669^{+179}_{-219}	$3.812^{+0.273}_{-0.117}$	$-0.040^{+0.250}_{-0.250}$	$2.643^{+0.495}_{-0.989}$	$1.650^{+0.186}_{-0.346}$	$0.126^{+0.239}_{-0.047}$
	+3%/-3%	+7%/-3%	+625%/-625%	+19%/-37%	+11%/-21%	+190%/-37%
Source	PHO1	FLK73	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 008509469-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-85 ± 23	$4.87^{+4.54}_{-3.07}$	2967^{+196}_{-268}	4835^{+3099}_{-1220}	$4.774^{+27.828}_{-3.578}$
Alt.	-75 ± 20	$7.35^{+5.35}_{-4.49}$	2963^{+186}_{-272}	3906^{+1986}_{-863}	$1.796^{+10.484}_{-1.210}$

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

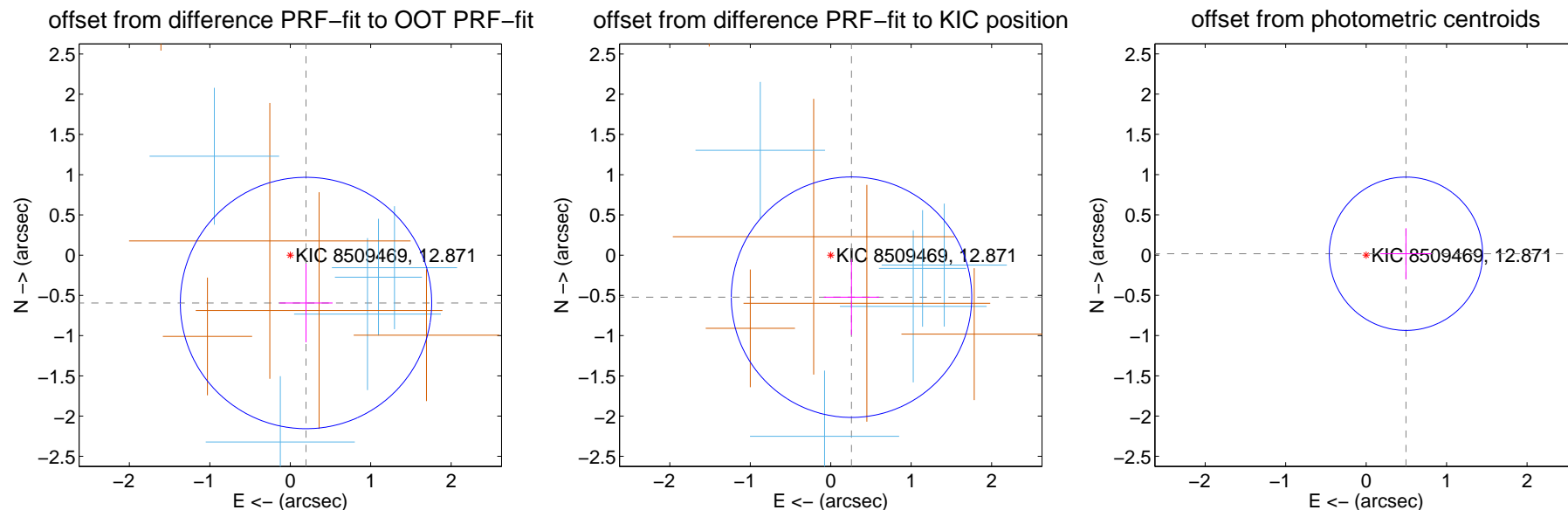
DV Centroid Data

Supplemental centroid analysis for 008509469-04. Kepler magnitude: 12.87. Transit SNR 19.79

There are 5 quarters with good PRF difference image offsets

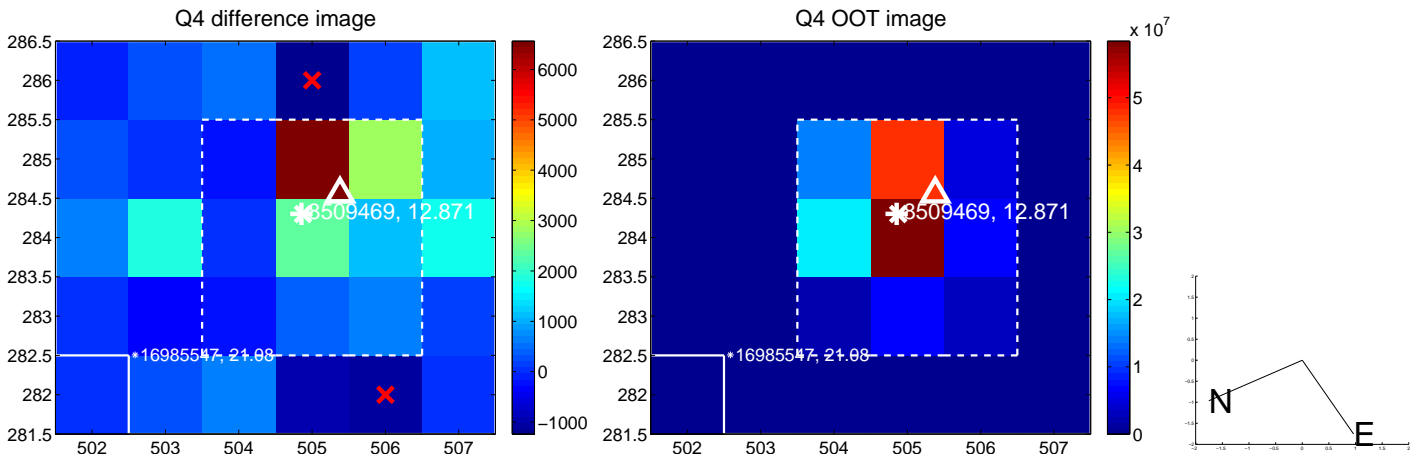
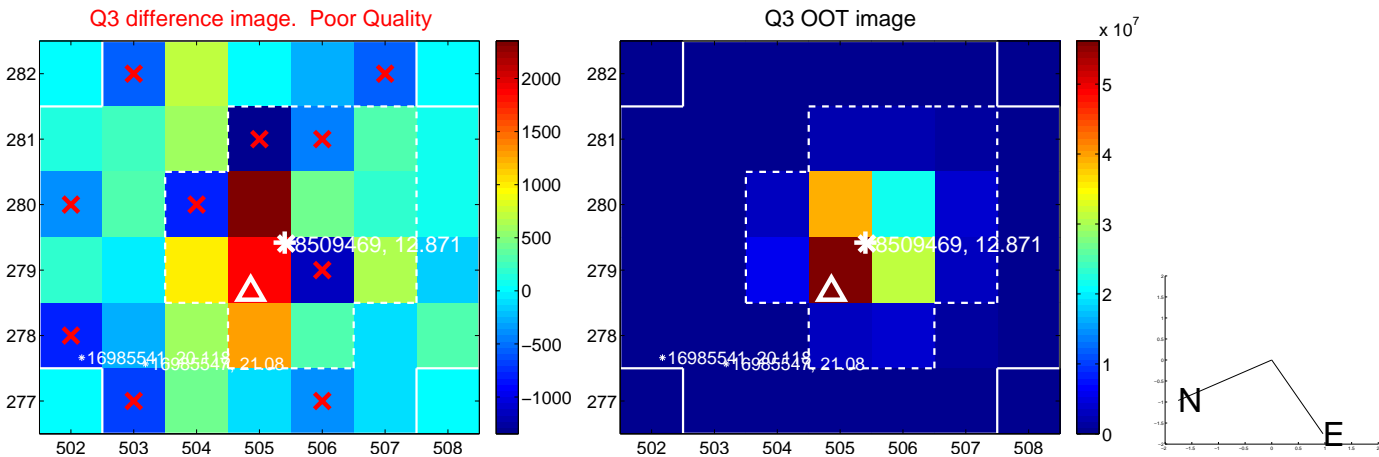
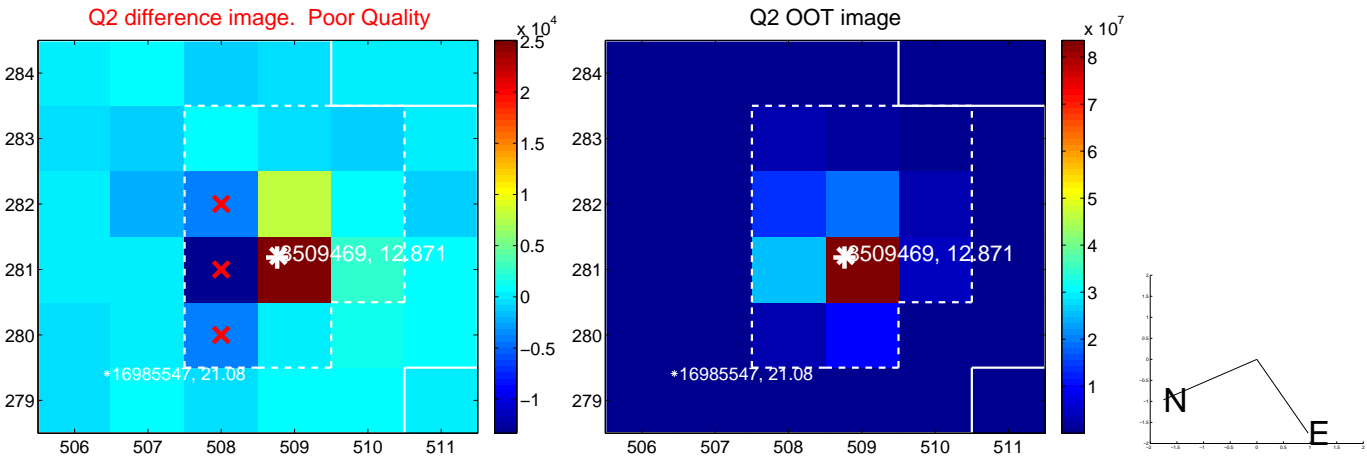
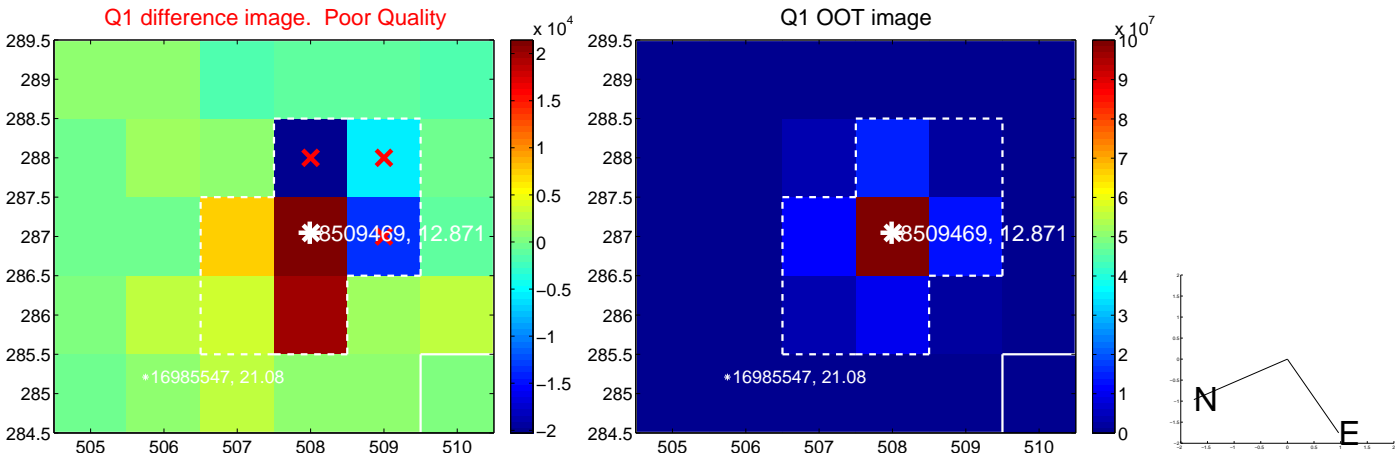
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.626 ± 0.521	1.20	-0.196 ± 0.331	-0.595 ± 0.489
PRF-fit source offset from KIC position	0.583 ± 0.498	1.17	-0.258 ± 0.344	-0.522 ± 0.469
photometric centroid source offset	0.50 ± 0.32	1.56	-0.50 ± 0.32	0.02 ± 0.32

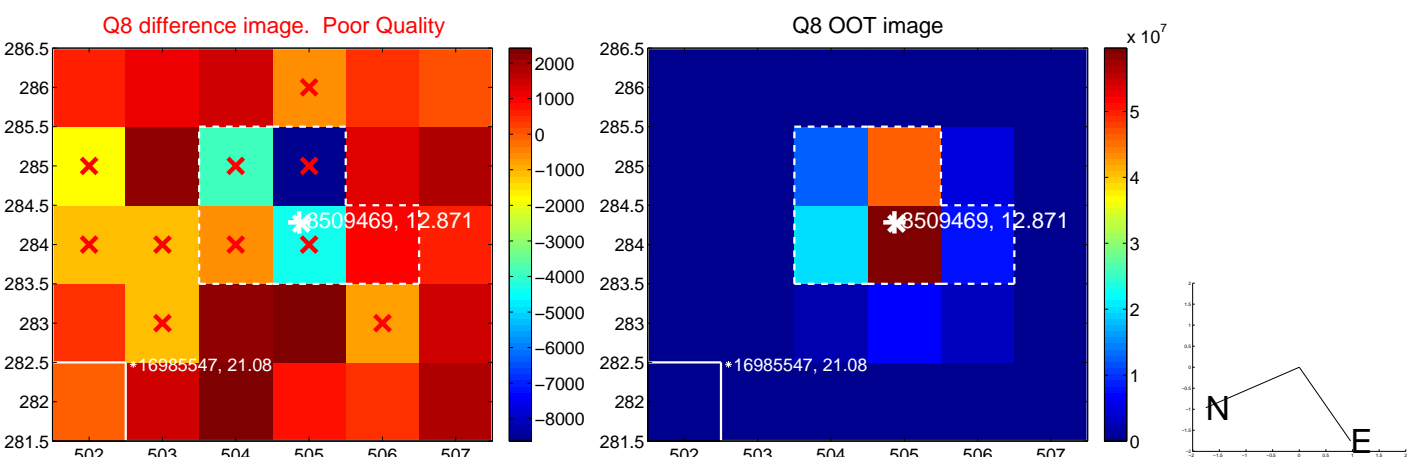
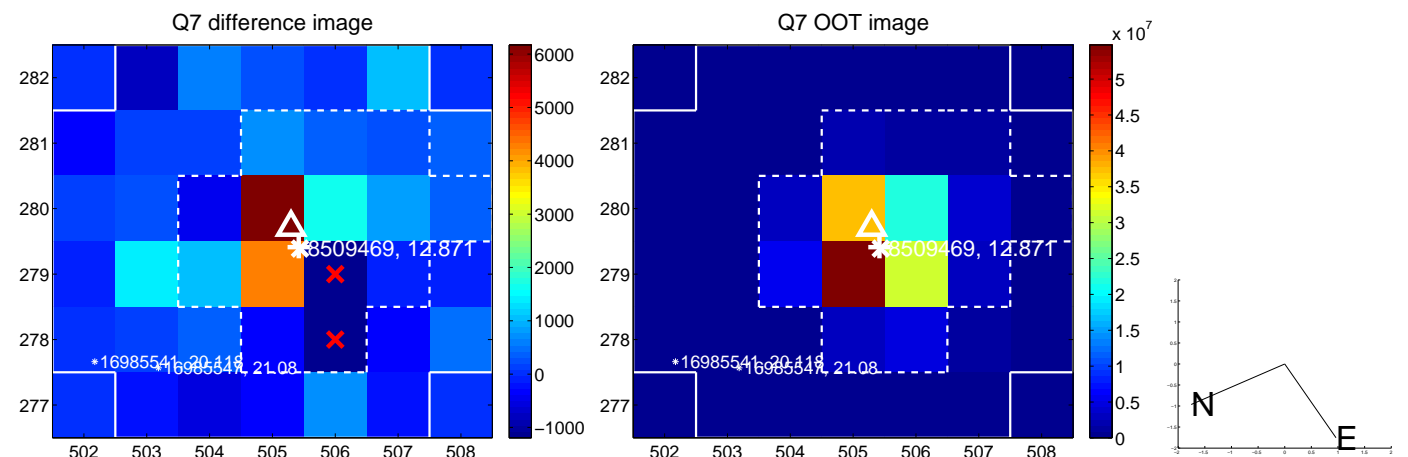
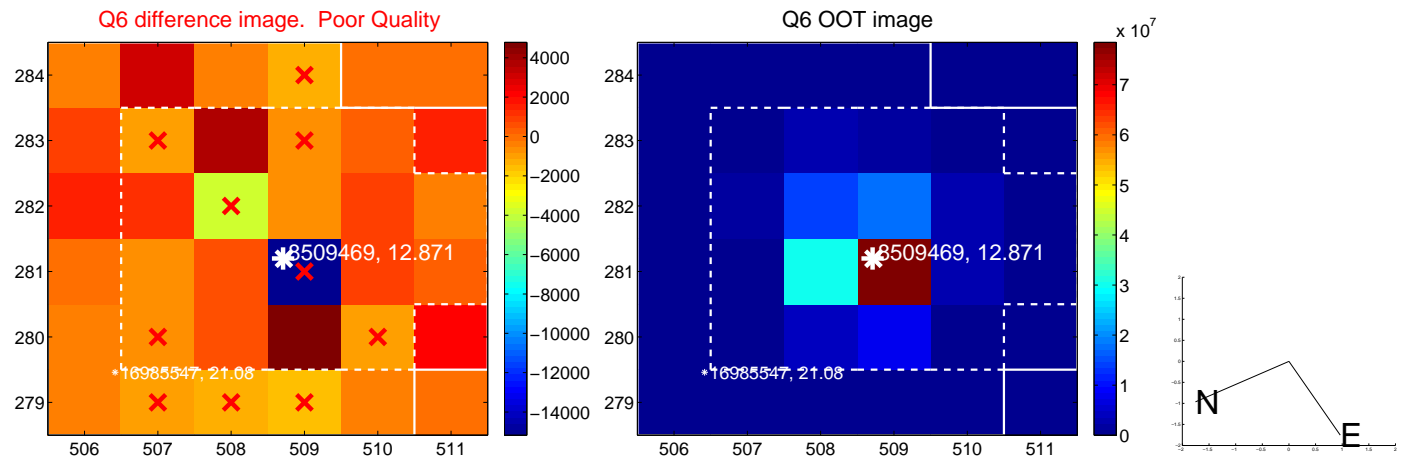
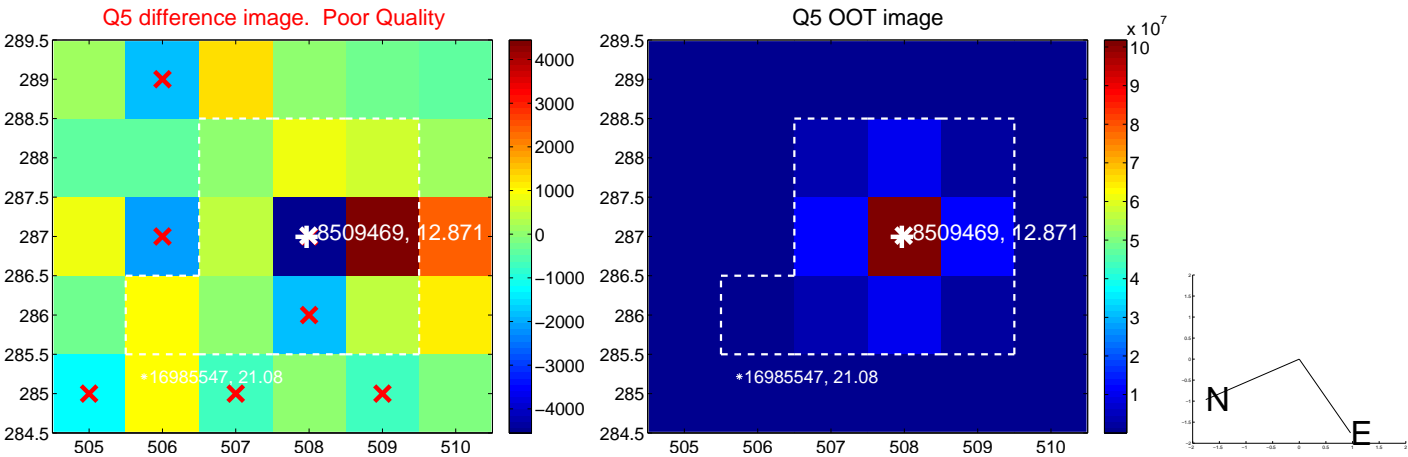


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

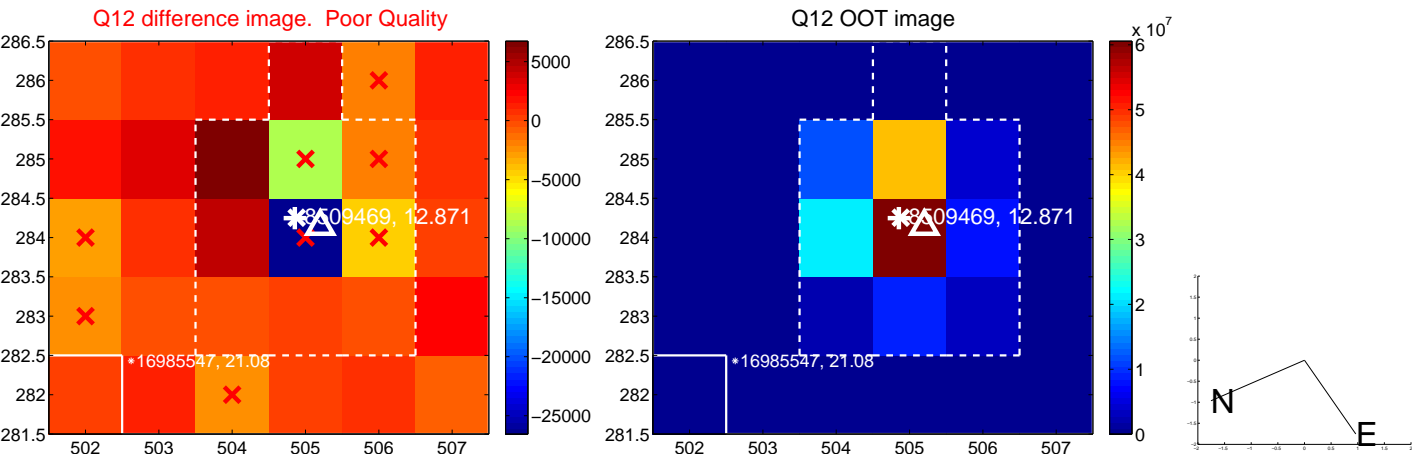
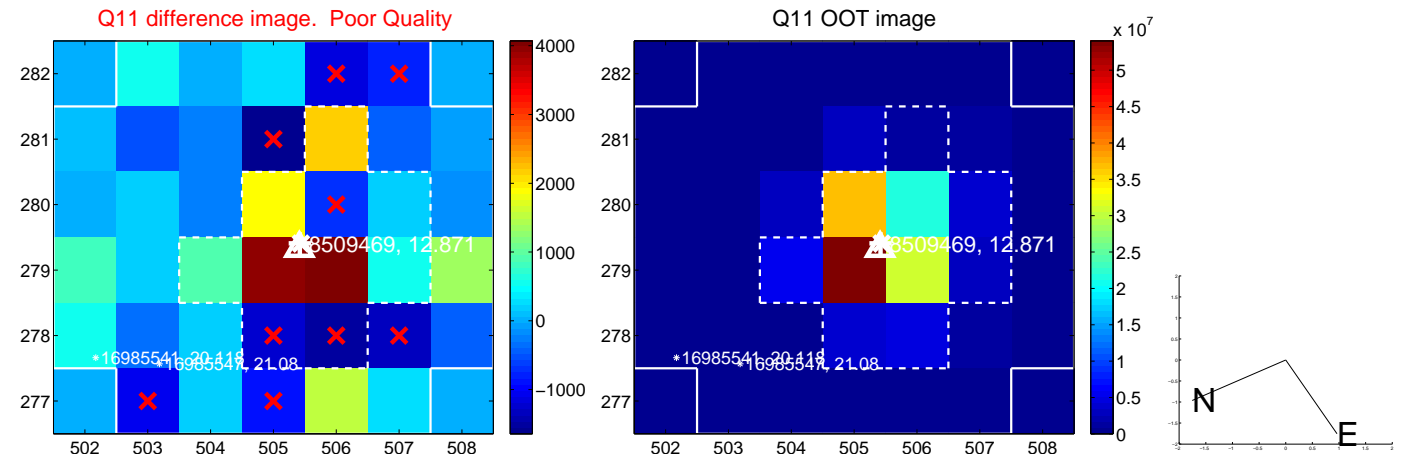
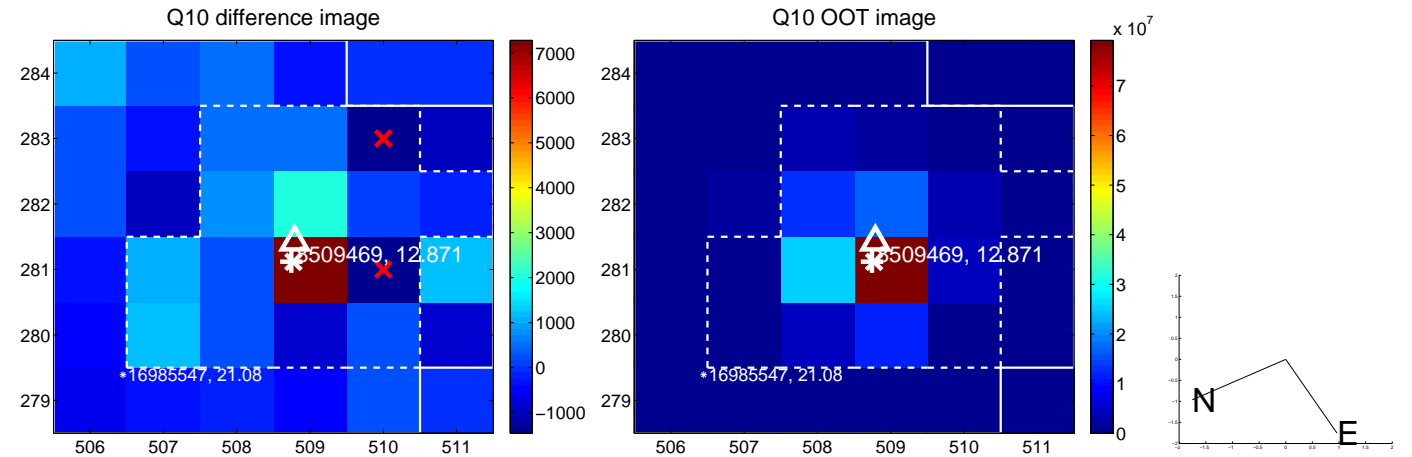
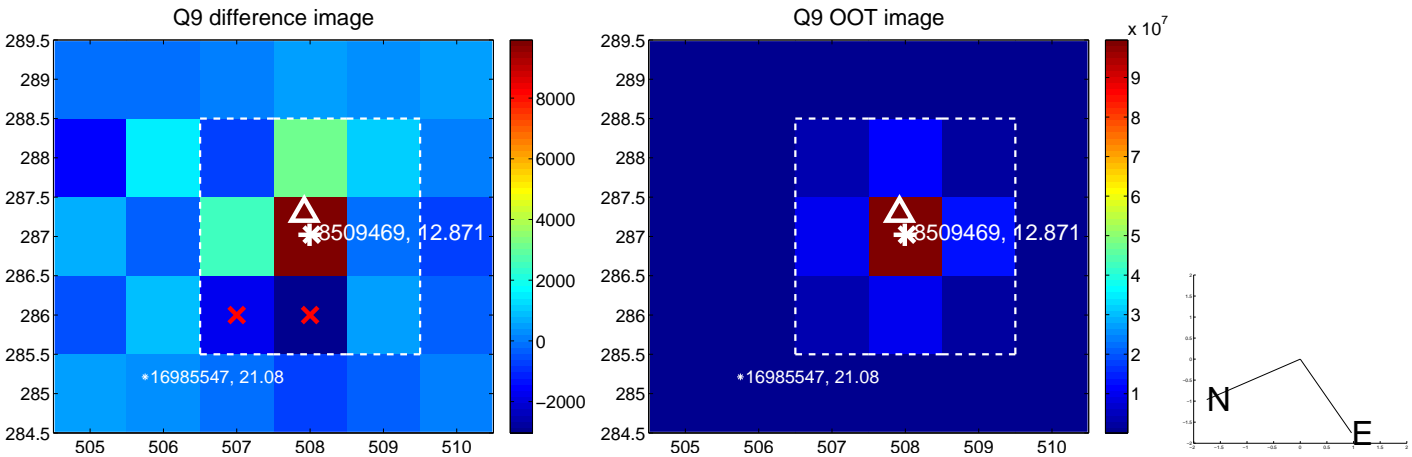
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



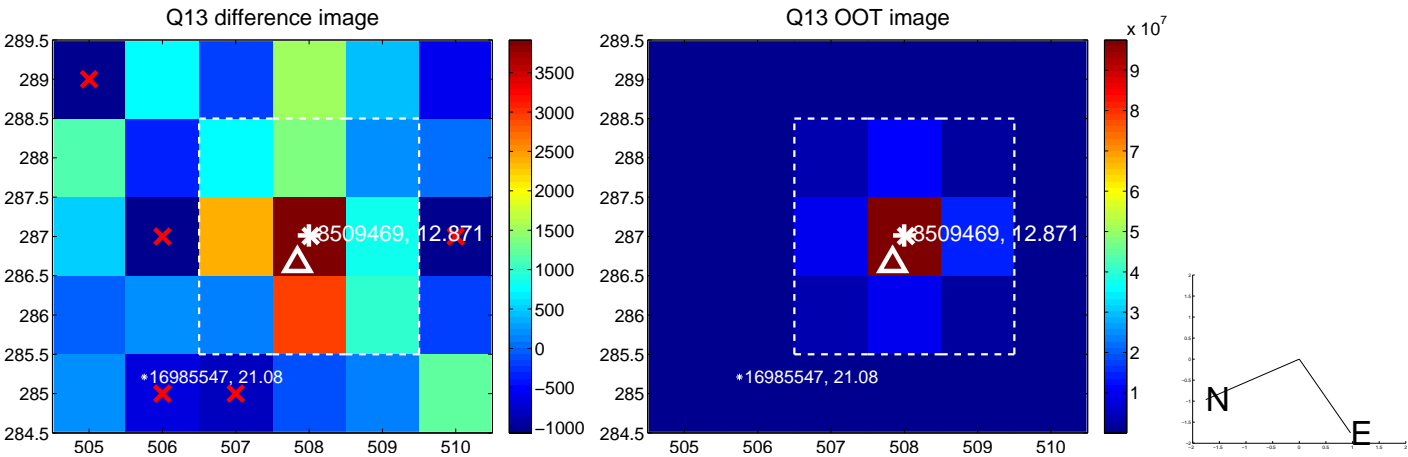
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



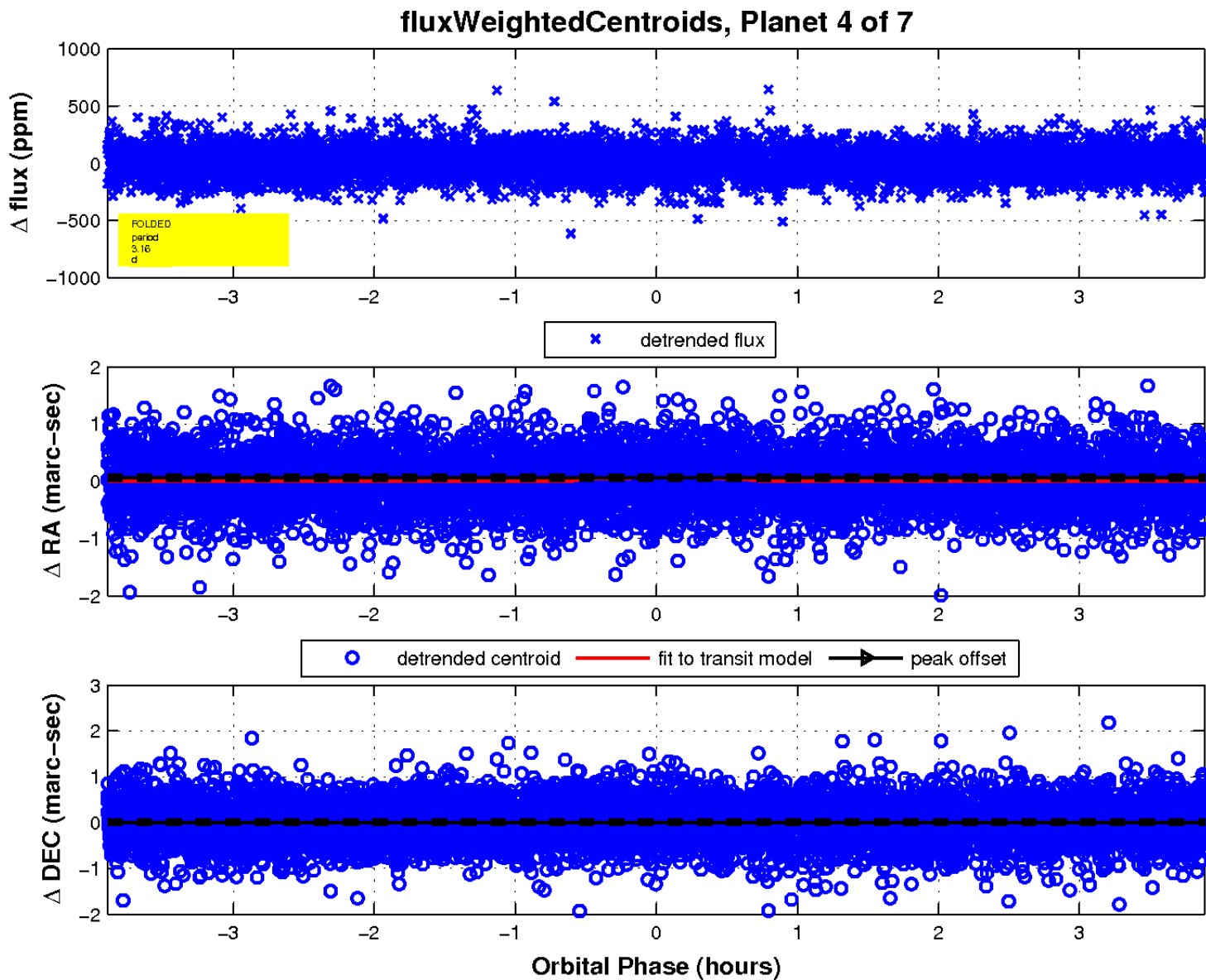
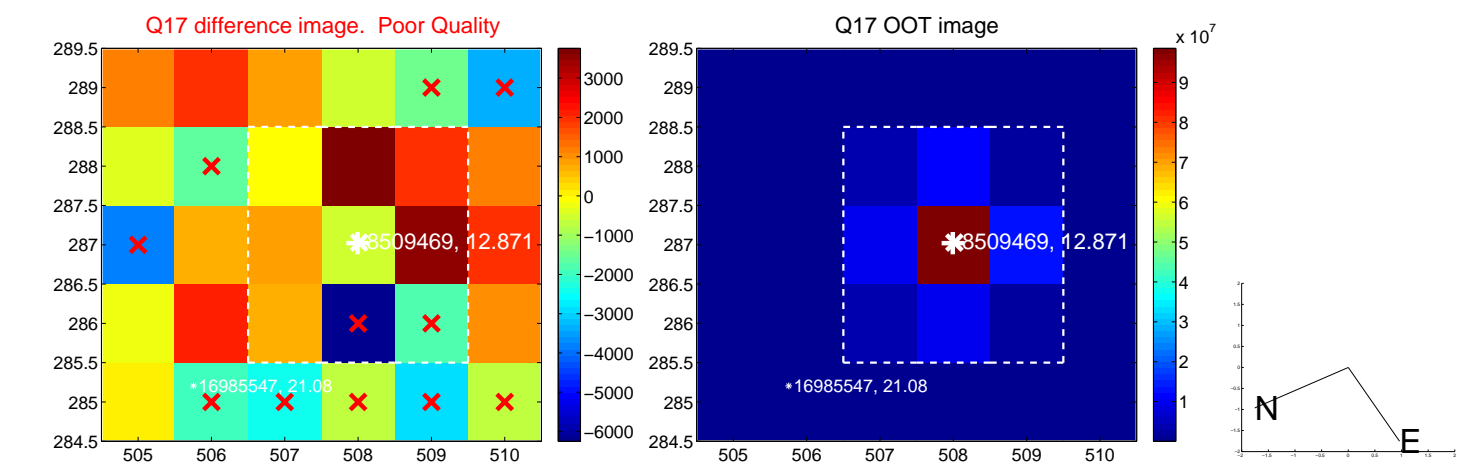
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

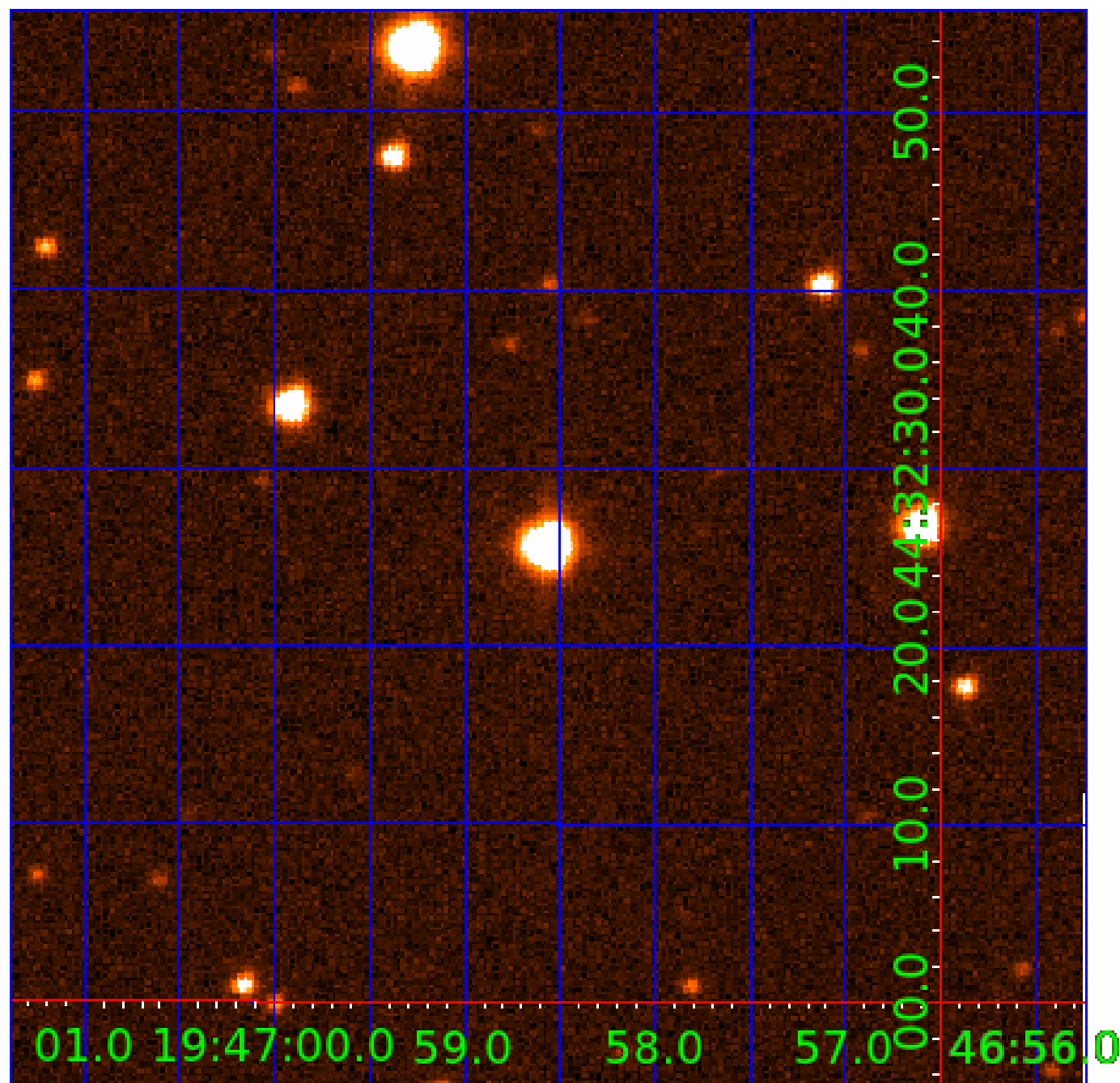


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008509469

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})
008509469-01	OBS	No	1.736425	132.144440	2.9	13.435	9.5	2.5	2.64	6669	0.53	11074.58
008509469-02	OBS	No	4.287986	131.664242	124.2	0.591	21.9	11.1	2.64	6669	3.53	3317.91
008509469-03	OBS	No	3.552565	132.844438	173.3	1.111	23.5	25.2	2.64	6669	3.69	4263.95
008509469-04	OBS	No	3.158587	132.018728	137.1	1.297	19.2	19.8	2.64	6669	3.62	4987.45
008509469-05	OBS	No	11.617279	137.030891	221.9	0.798	14.4	18.7	2.64	6669	4.29	878.48
008509469-06	OBS	No	3.902163	134.168981	204.3	0.666	14.2	14.2	2.64	6669	3.89	3762.37
008509469-07	OBS	No	2.890361	133.731871	56.9	0.775	15.1	6.2	2.64	6669	2.07	5613.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509469-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
008509469-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008509469-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008509469-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
008509469-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_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.

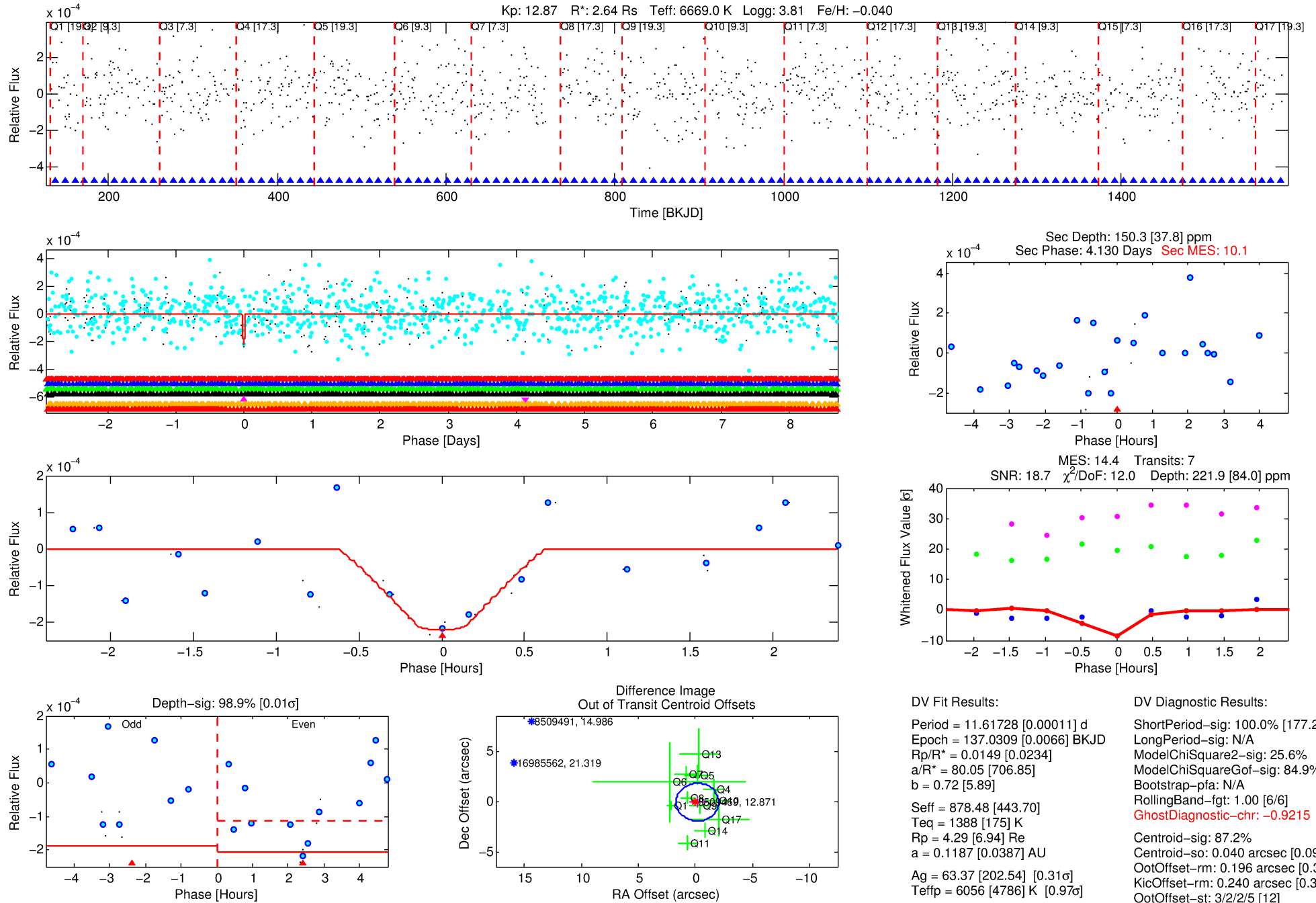
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008509469-05

No Significant Match Found

DV One-Page Summary

KIC: 8509469 Candidate: 5 of 7 Period: 11.617 d



DV Fit Results:

Period = 11.61728 [0.00011] d
Epoch = 137.0309 [0.0066] BKJD
Rp/R* = 0.0149 [0.0234]
a/R* = 80.05 [706.85]
b = 0.72 [5.89]
Seff = 878.48 [443.70]
Teq = 1388 [175] K
Rp = 4.29 [6.94] Re
a = 0.1187 [0.0387] AU
Ag = 63.37 [202.54] [0.31σ]
Teffp = 6056 [4786] K [0.97σ]

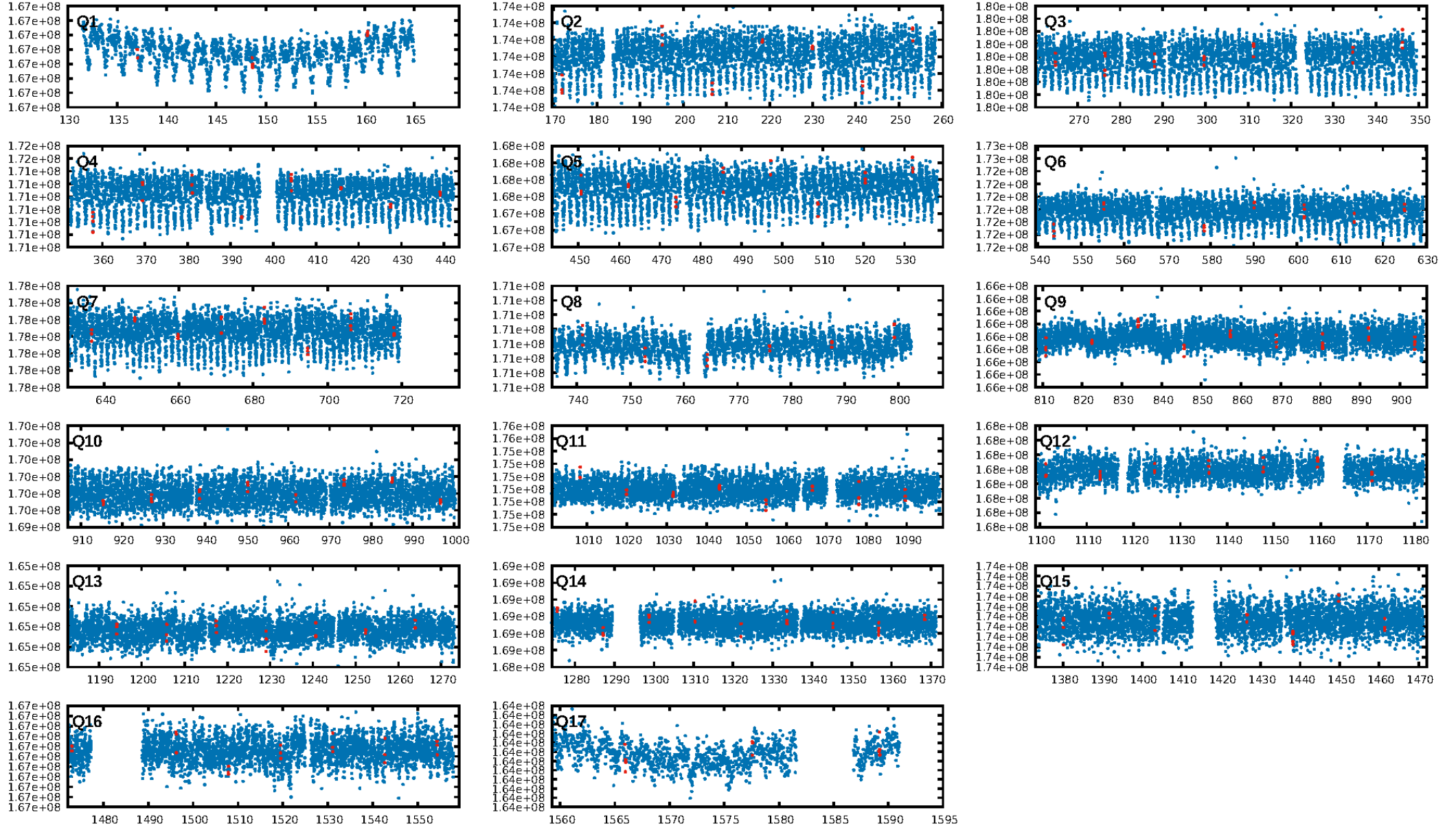
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [177.23σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 25.6%
ModelChiSquareGof-sig: 84.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -0.9215
Centroid-sig: 87.2%
Centroid-so: 0.040 arcsec [0.09σ]
OotOffset-rm: 0.196 arcsec [0.31σ]
OotOffset-st: 3/2/2/5 [12]
KicOffset-rm: 0.240 arcsec [0.37σ]
KicOffset-st: 3/2/2/5 [12]
DiffImageQuality-fgm: 0.25 [3/12]
DiffImageOverlap-fno: 0.76 [13/17]

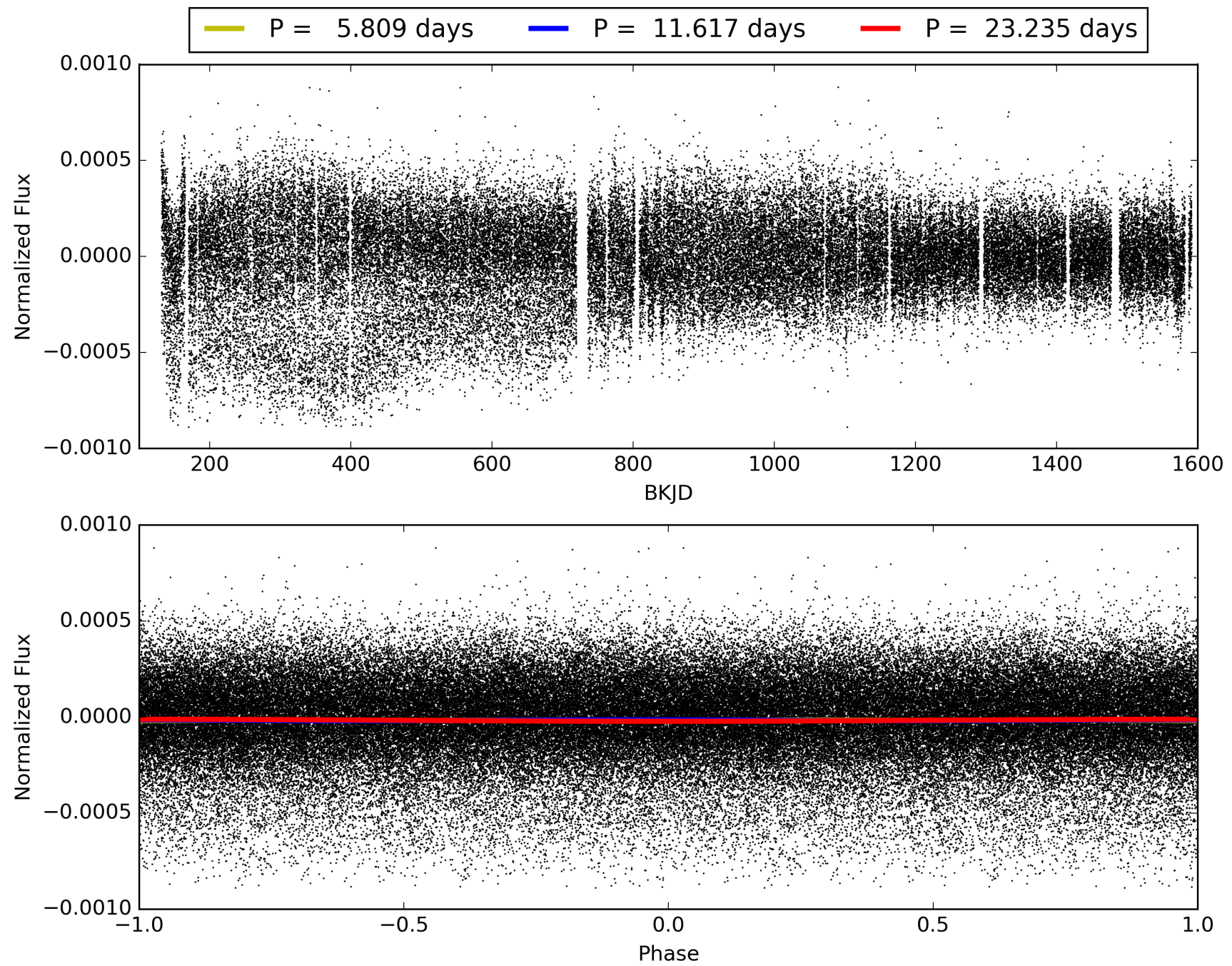
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:22:14 Z

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

TCE 008509469-05, PDC Light Curves

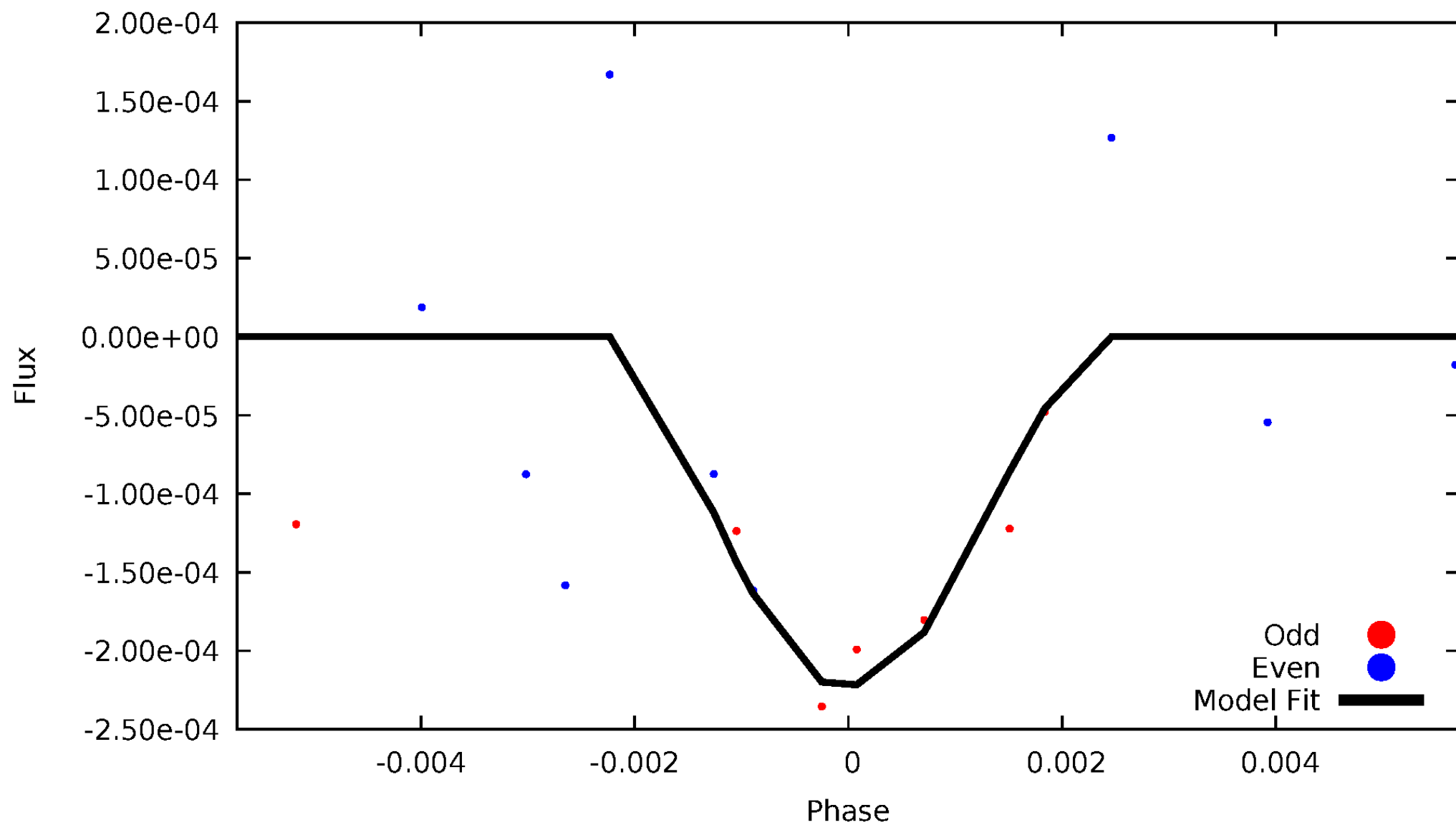


TCE 008509469-05



DV Odd/Even

TCE 008509469-05

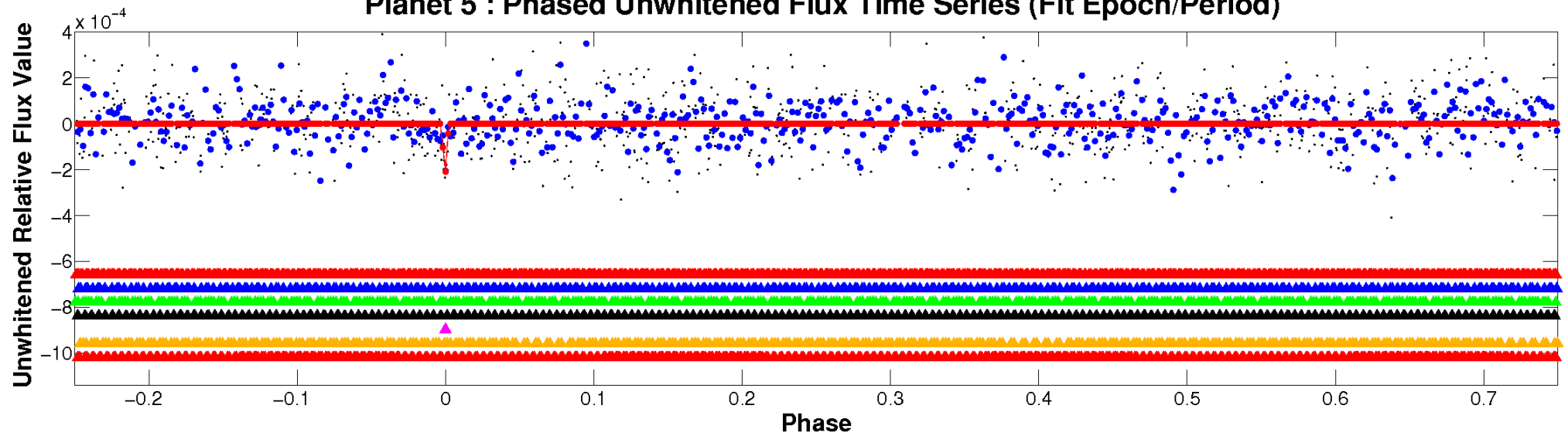


ALT Odd/Even

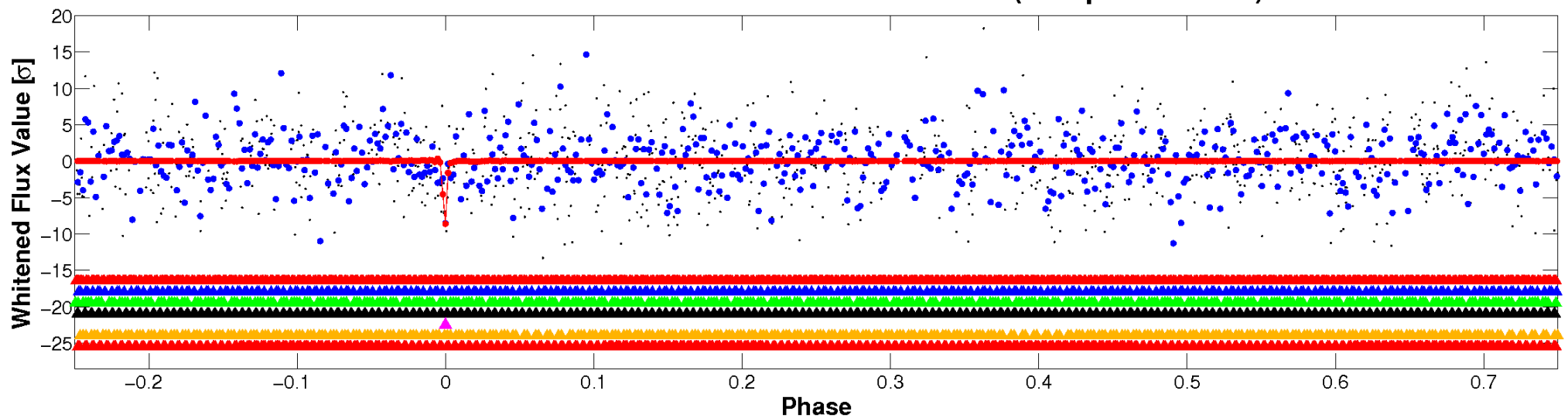
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

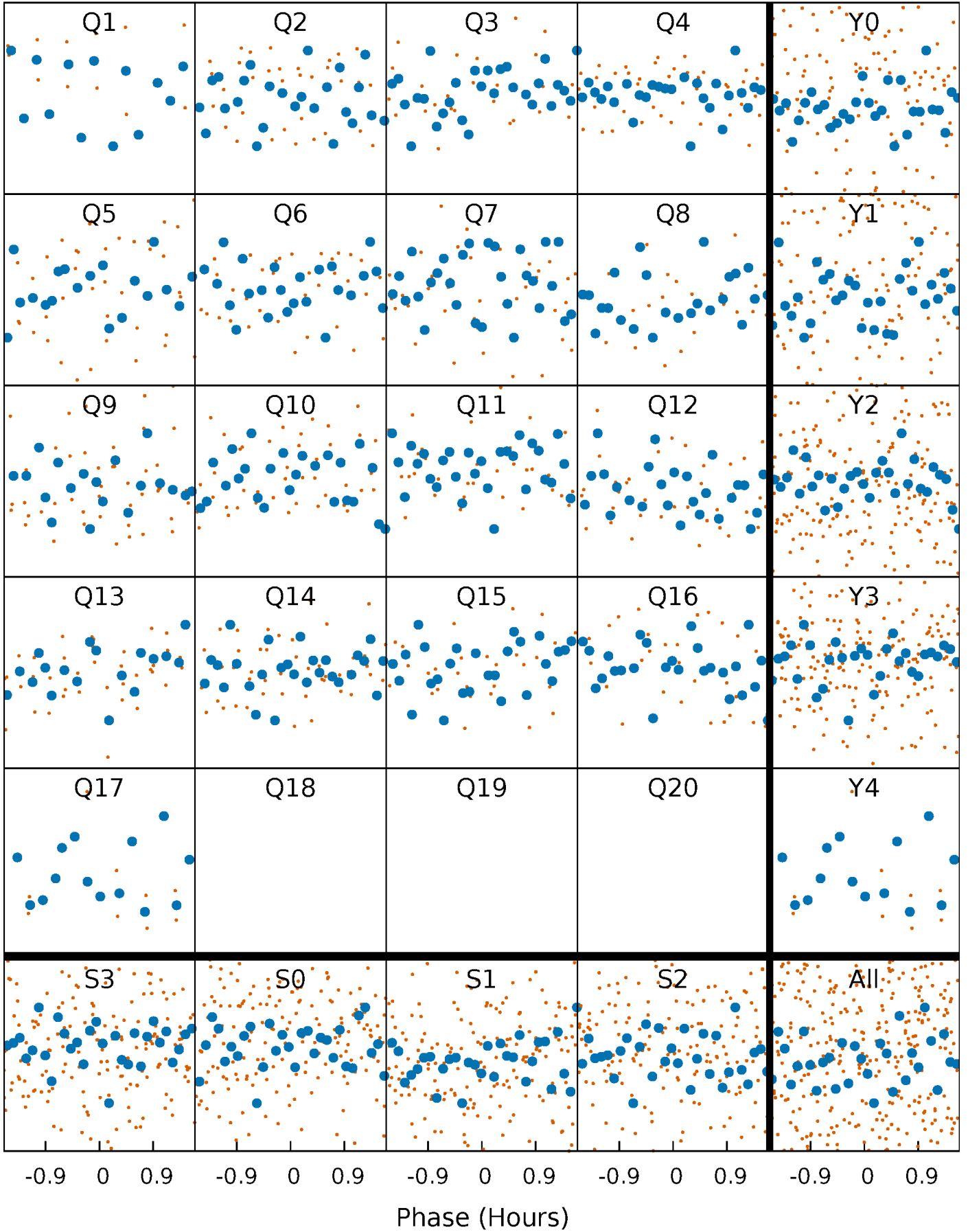


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



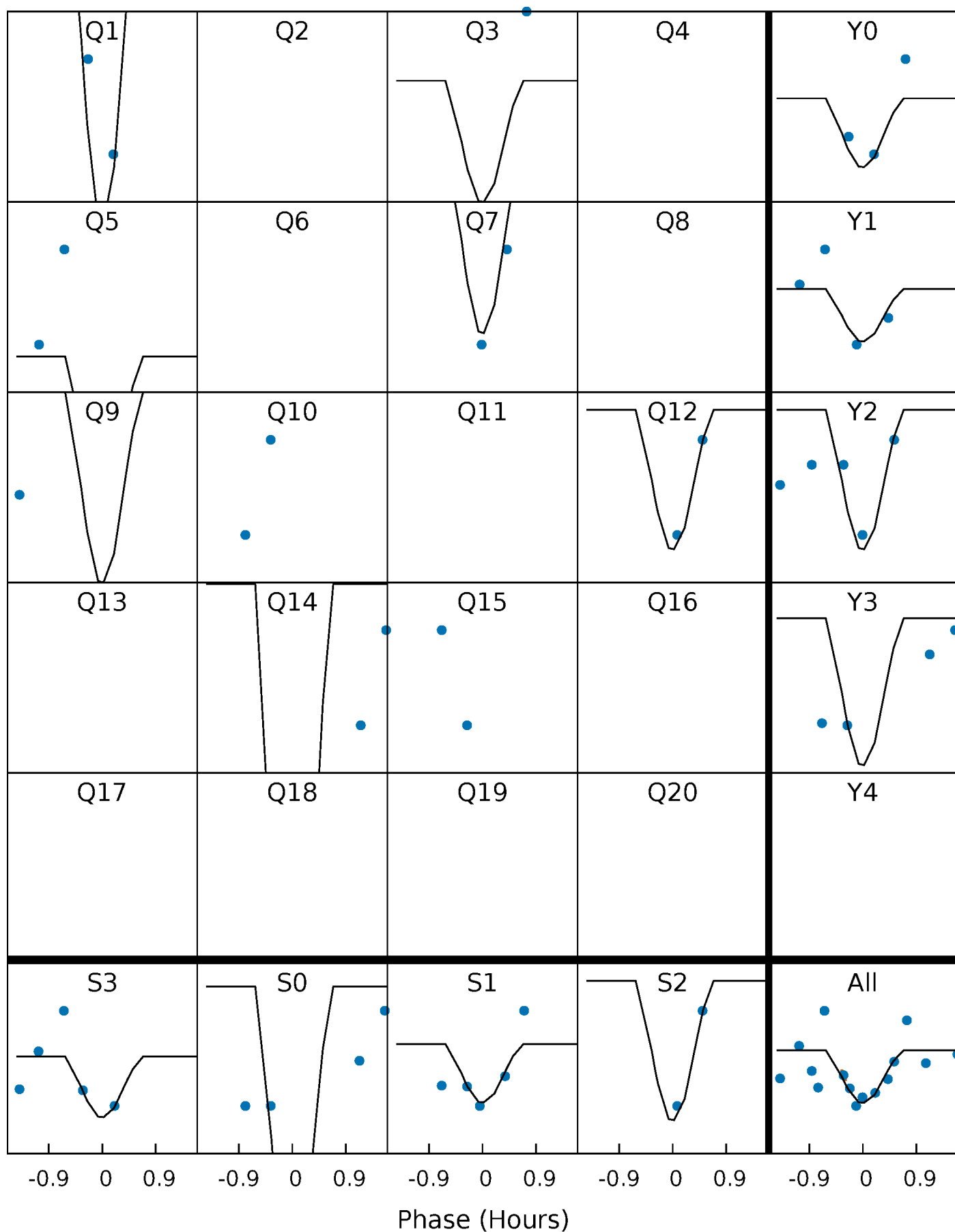
PDC Quarter-Phased Transit Curves

TCE 008509469-05 P= 11.617279 Days $T_0=137.030891$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 008509469-05 P= 11.617279 Days $T_0=137.030891$ (BKJD)

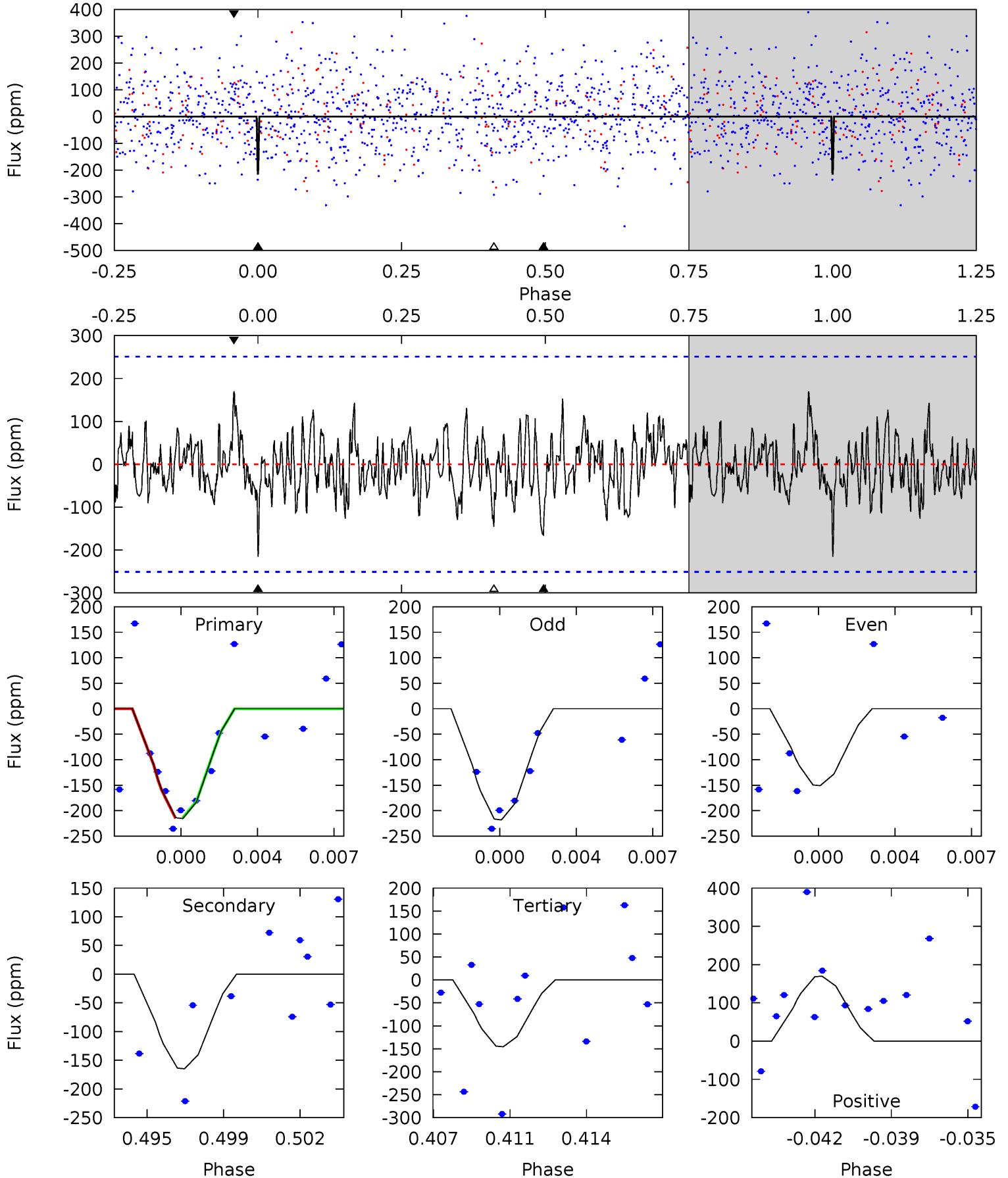


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

008509469-05, P = 11.617279 Days, E = 125.413612 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.49	3.44	3.03	3.54	5.22	2.92	1.15	1.46	0.95	0.40	-0.10	0.52	1.06	0.44	0.01



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 008509469

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6669^{+179}_{-219}	$3.812^{+0.273}_{-0.117}$	$-0.040^{+0.250}_{-0.250}$	$2.643^{+0.495}_{-0.989}$	$1.650^{+0.186}_{-0.346}$	$0.126^{+0.239}_{-0.047}$
	+3%/-3%	+7%/-3%	+625%/-625%	+19%/-37%	+11%/-21%	+190%/-37%
Source	PHO1	FLK73	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 008509469-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-165 ± 48	$6.45^{+5.77}_{-4.39}$	1917^{+117}_{-160}	5031^{+3703}_{-1150}	31^{+231}_{-23}
Alt.	N/A	N/A	N/A	N/A	N/A

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

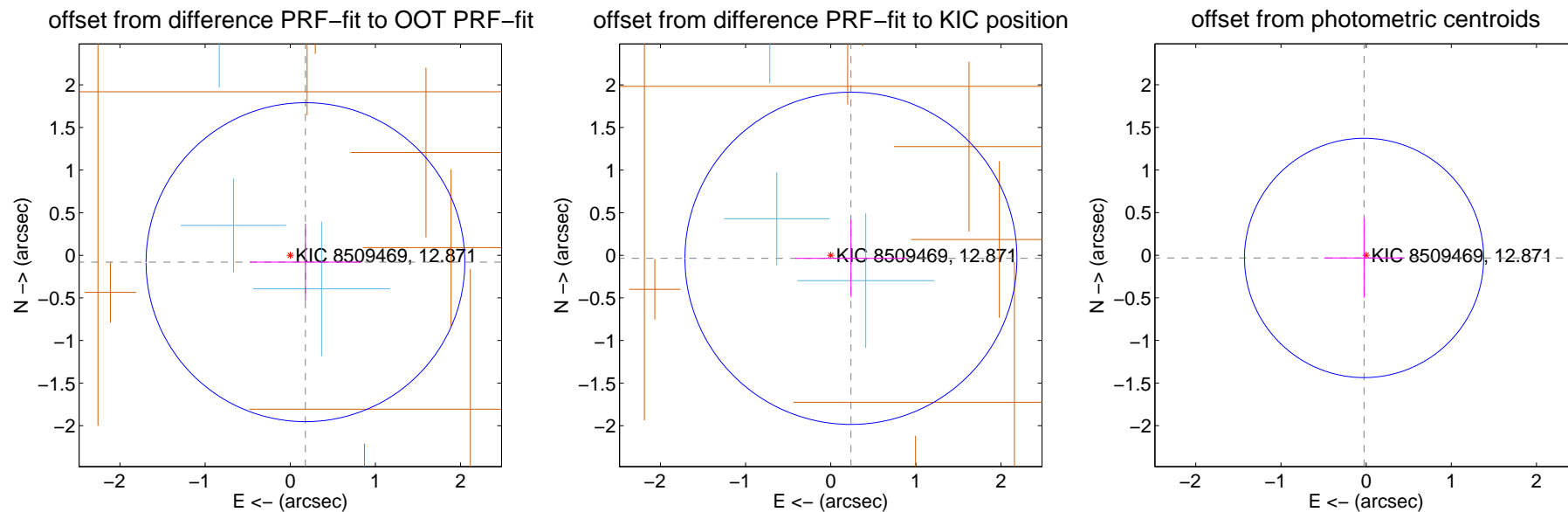
DV Centroid Data

Supplemental centroid analysis for 008509469-05. Kepler magnitude: 12.87. Transit SNR 18.68

There are 3 quarters with good PRF difference image offsets

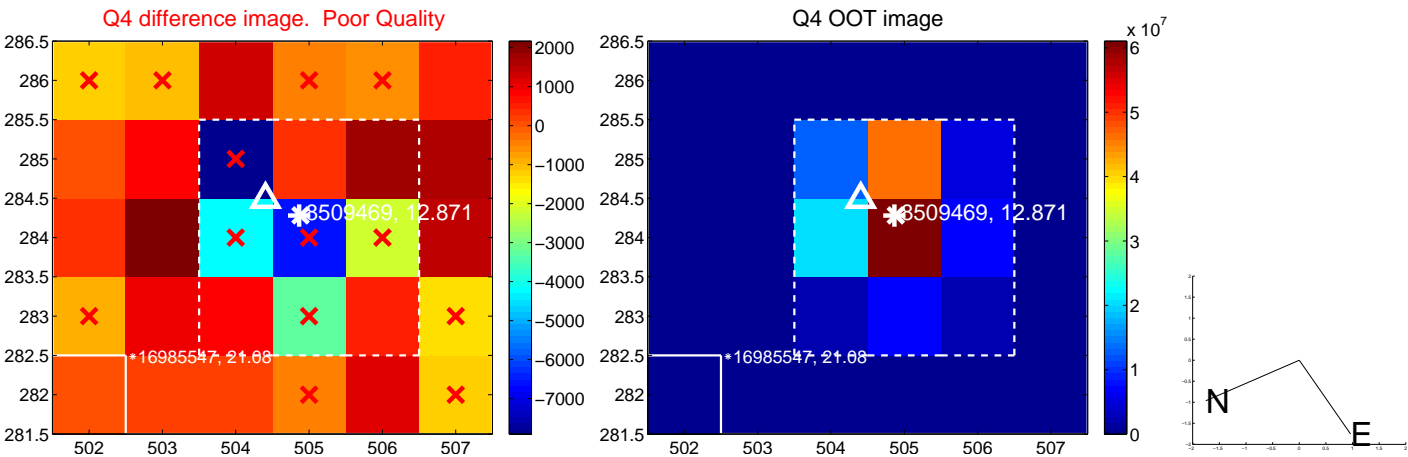
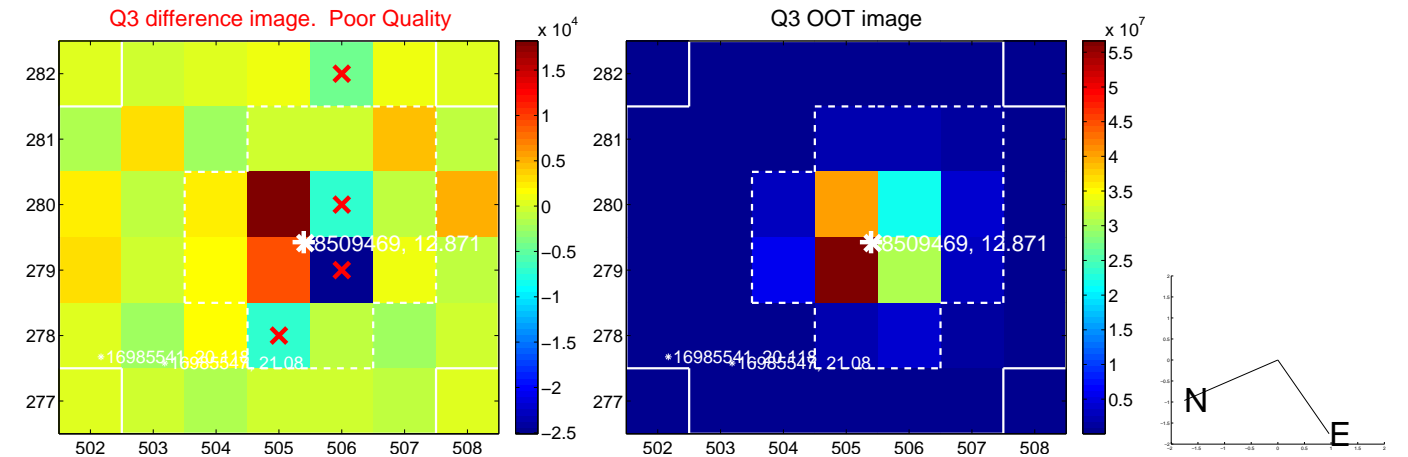
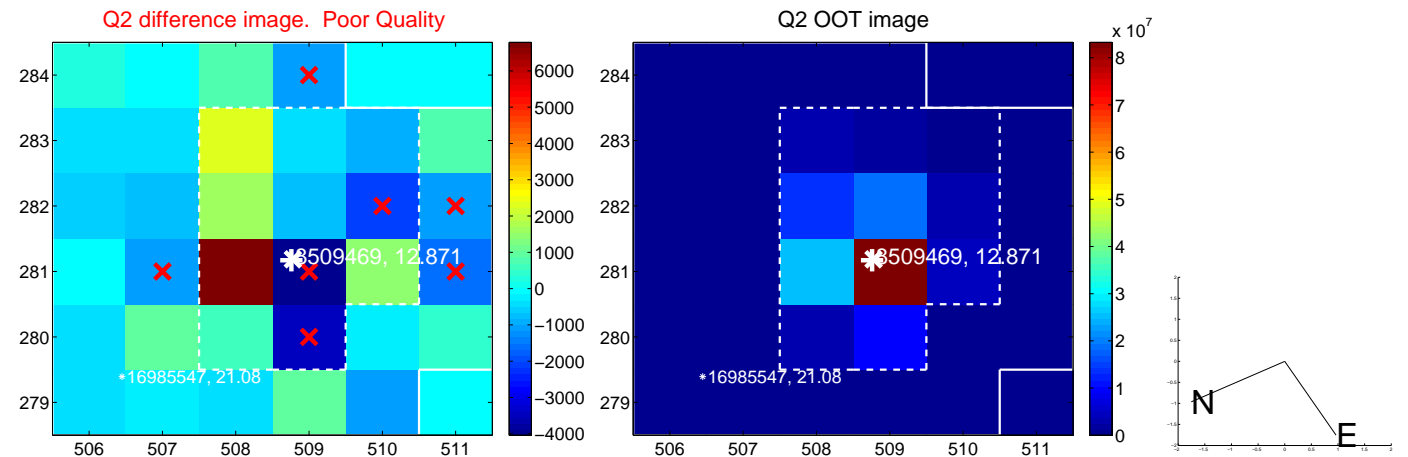
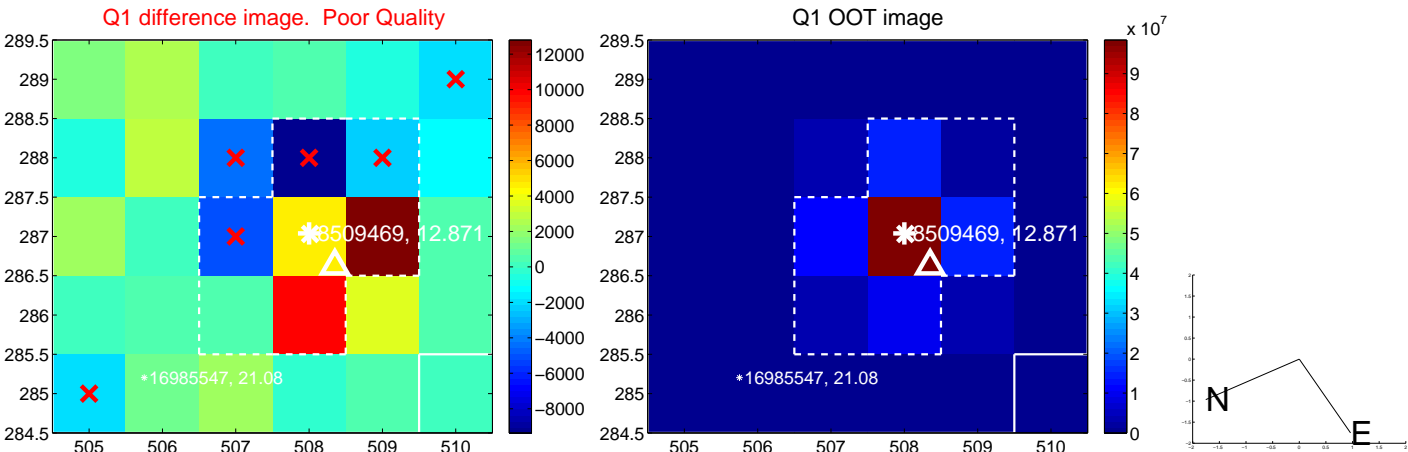
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.196 ± 0.624	0.31	-0.178 ± 0.654	-0.081 ± 0.453
PRF-fit source offset from KIC position	0.240 ± 0.650	0.37	-0.237 ± 0.654	-0.035 ± 0.453
photometric centroid source offset	0.04 ± 0.47	0.09	0.02 ± 0.47	-0.03 ± 0.47

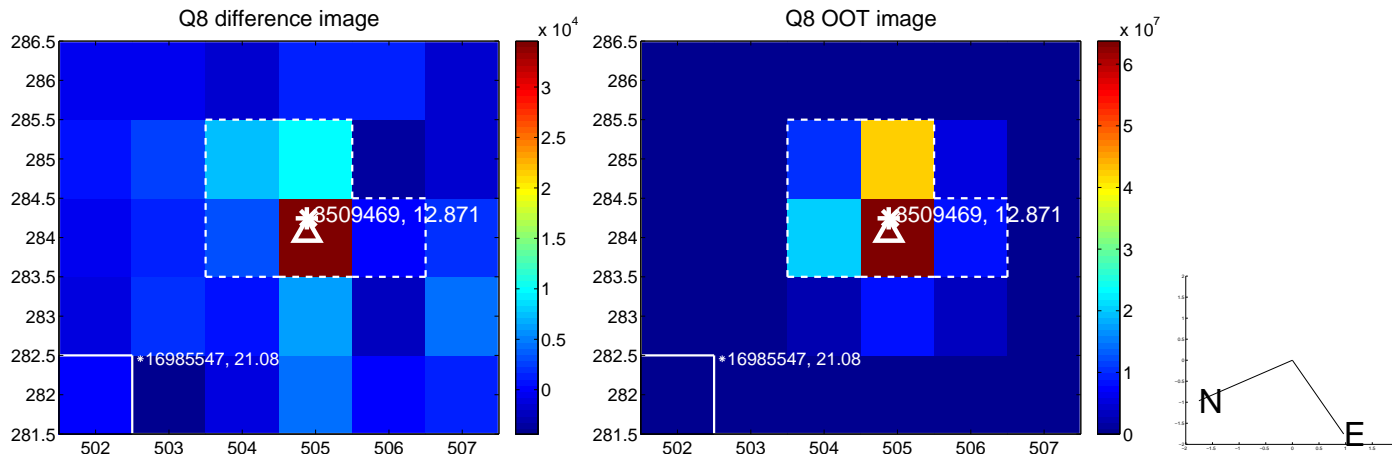
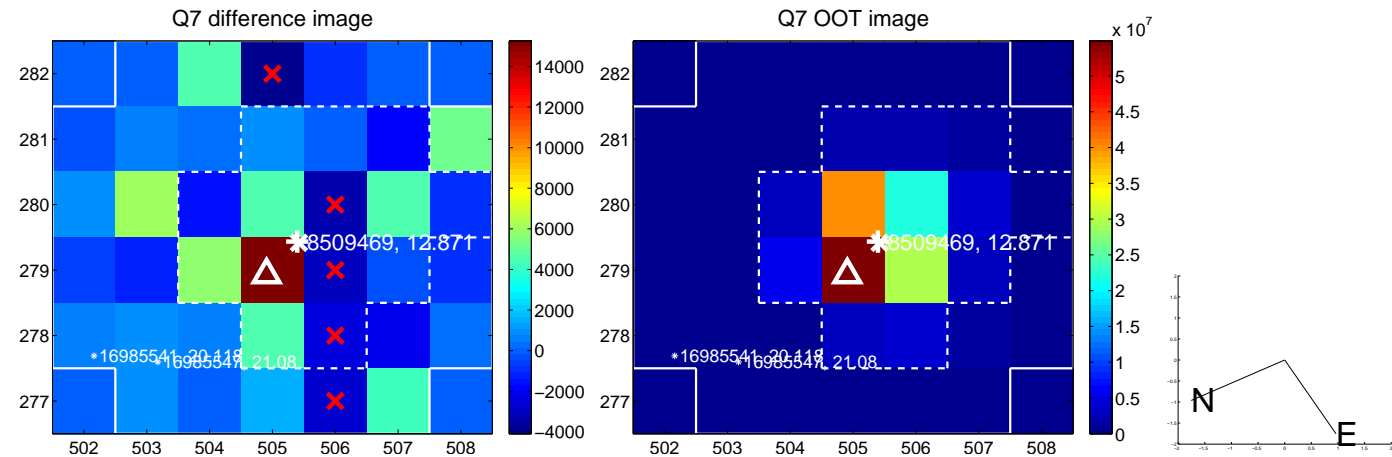
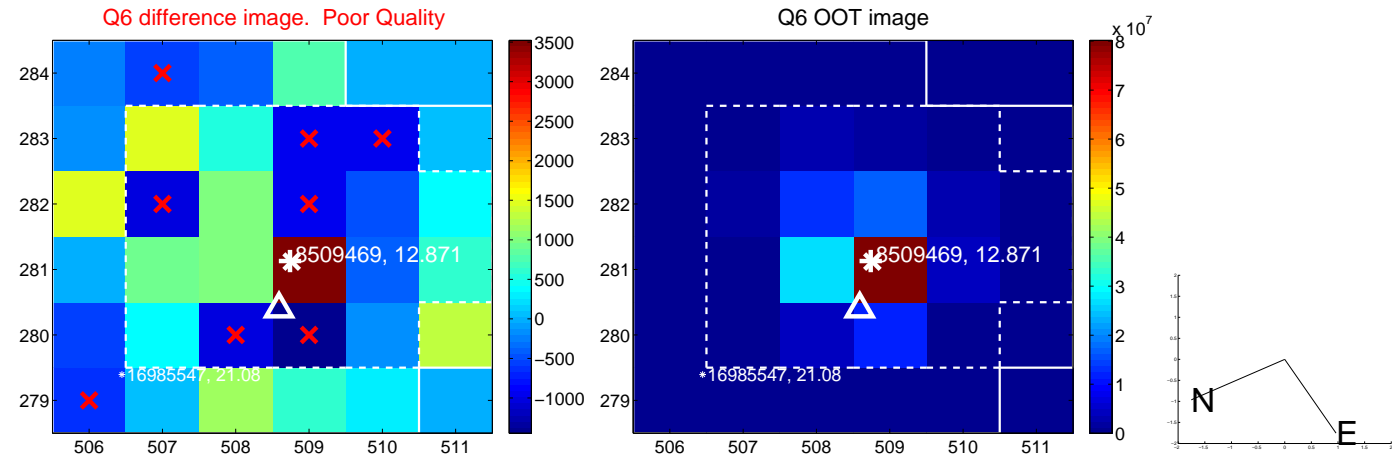
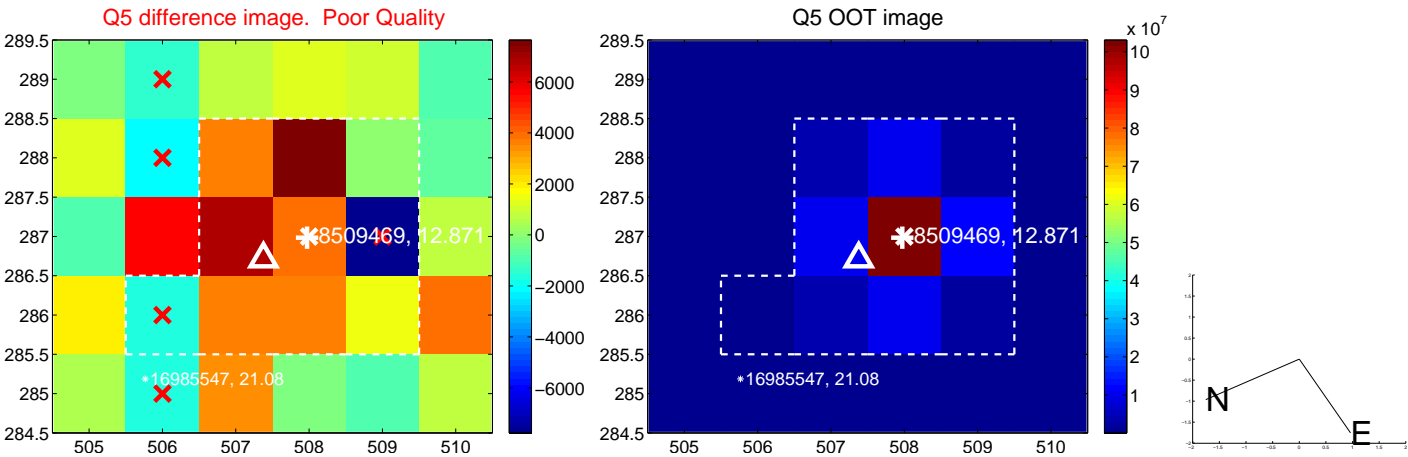


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

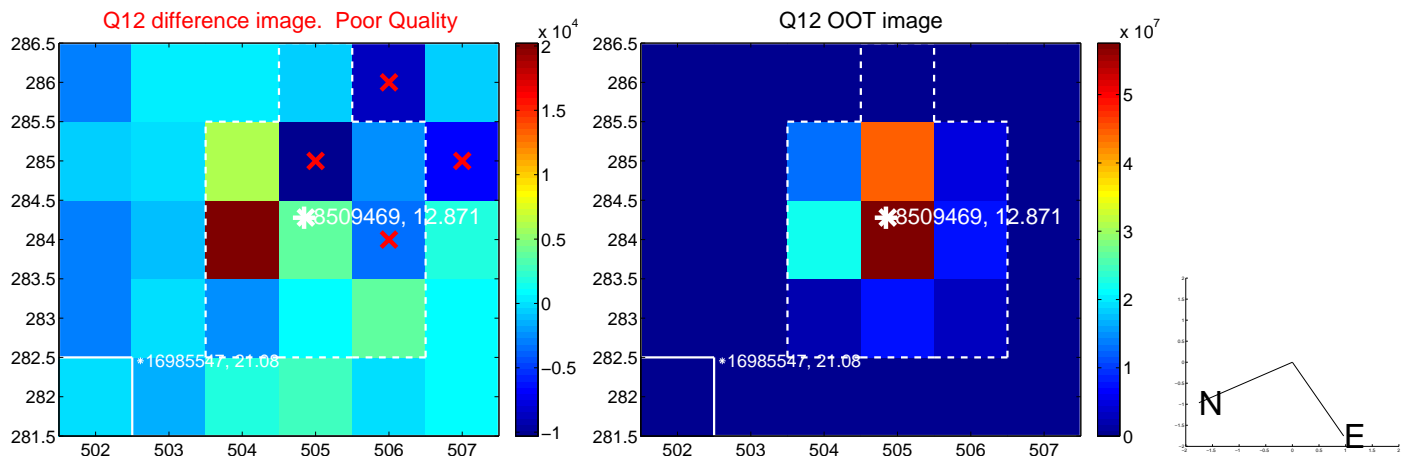
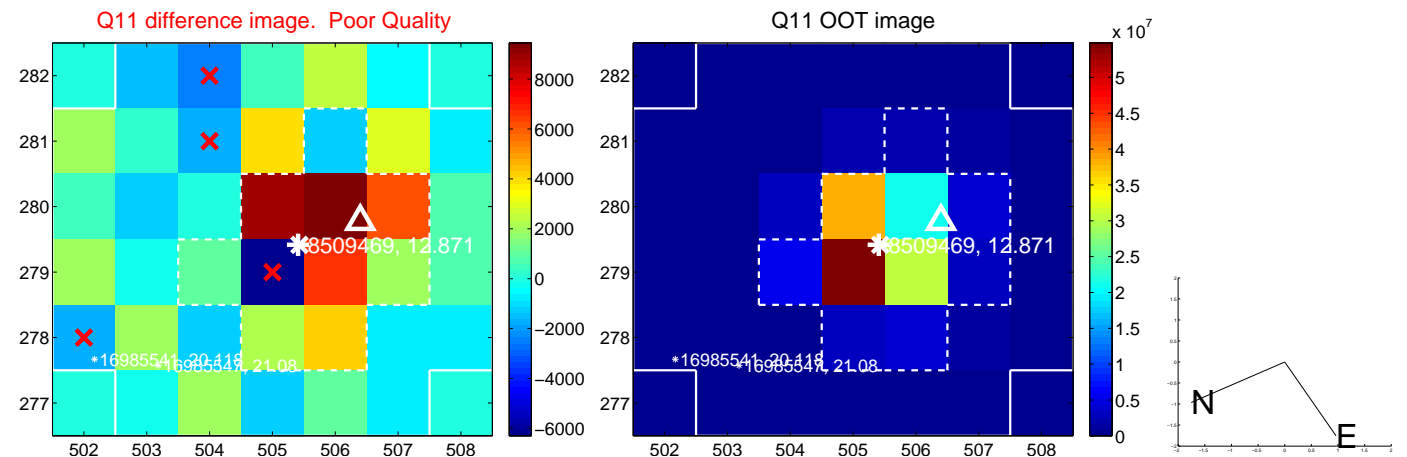
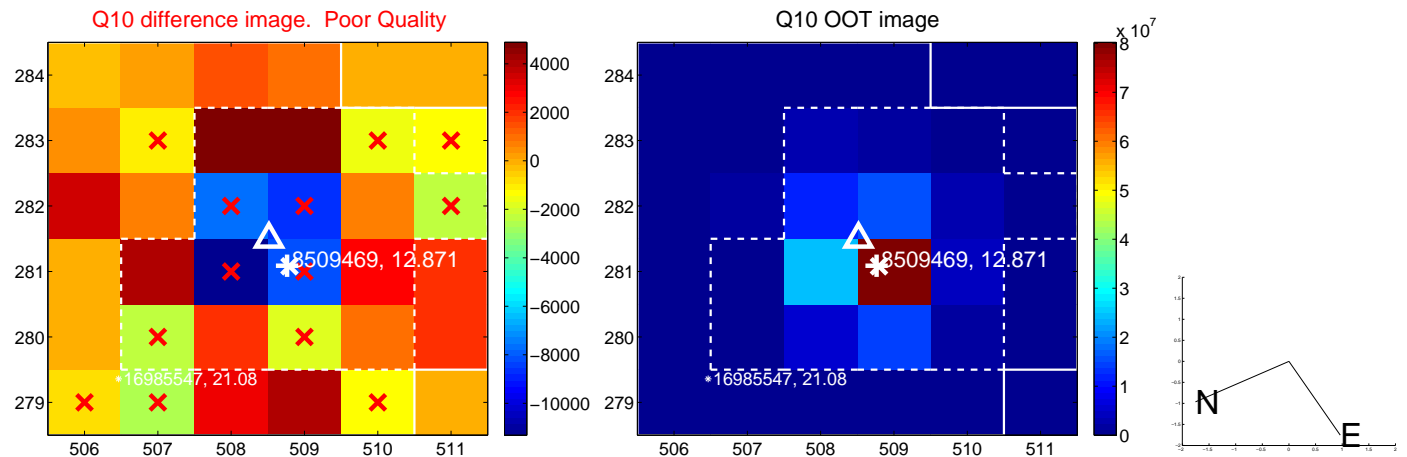
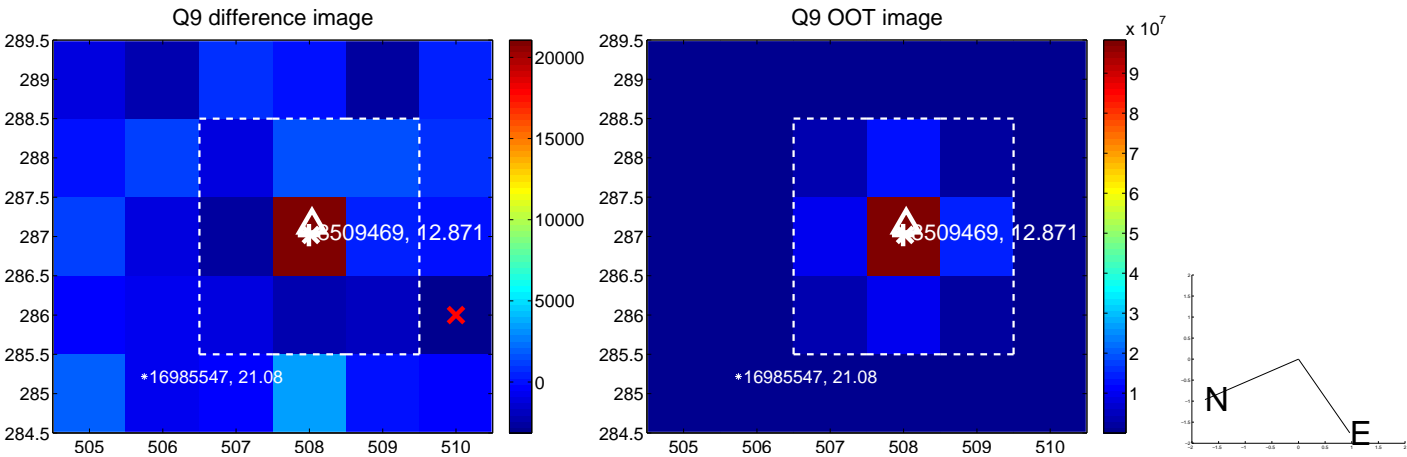
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



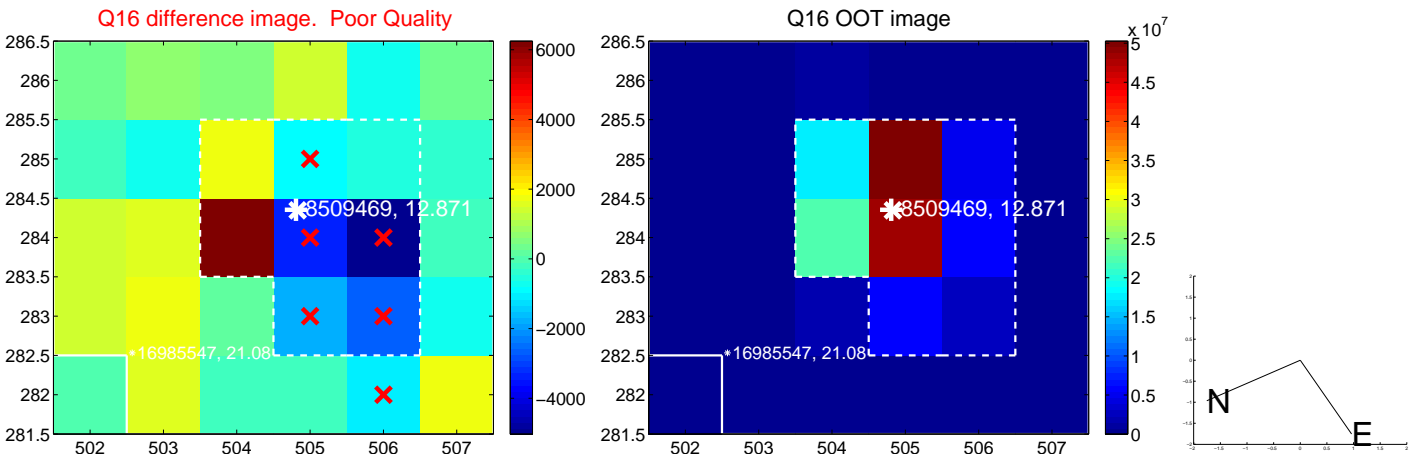
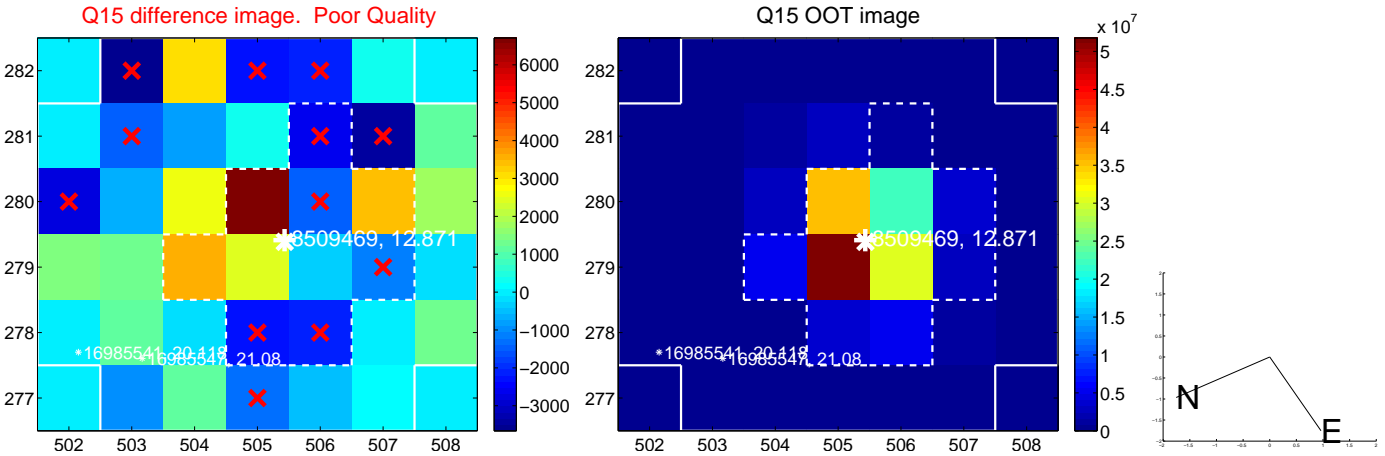
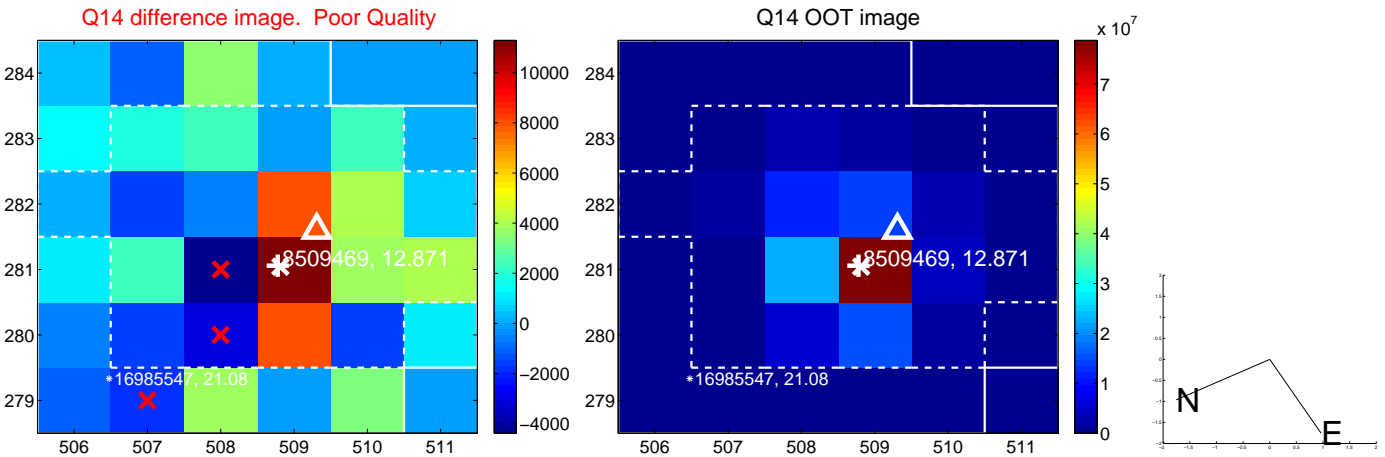
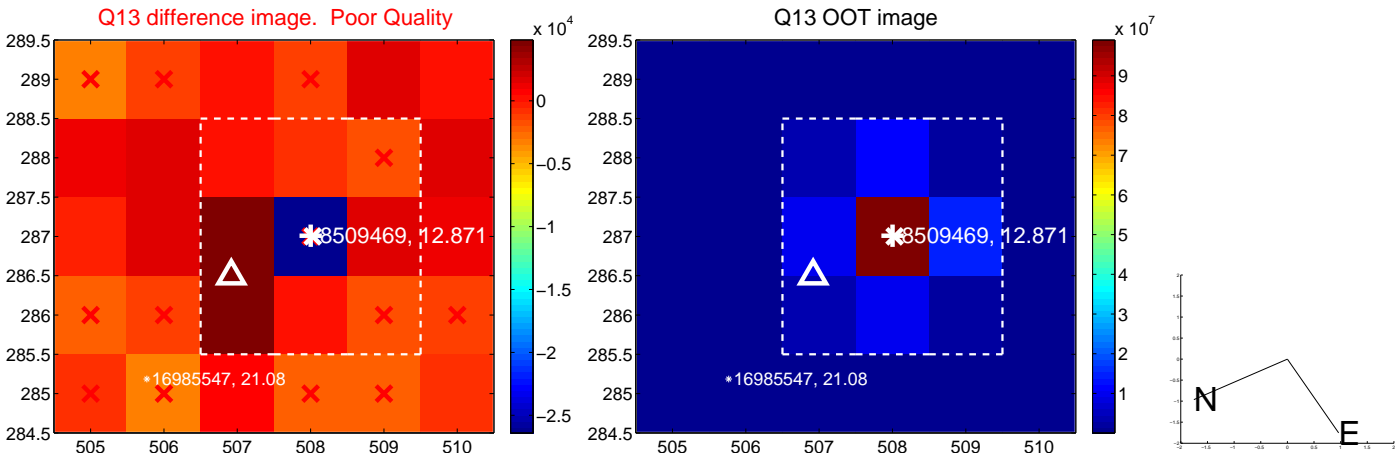
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



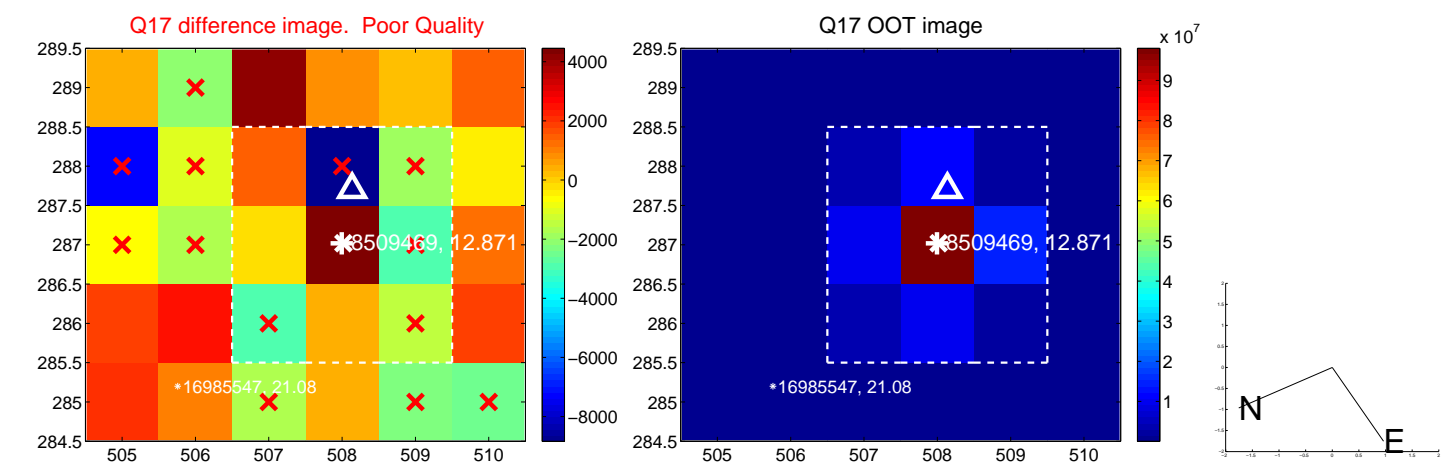
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



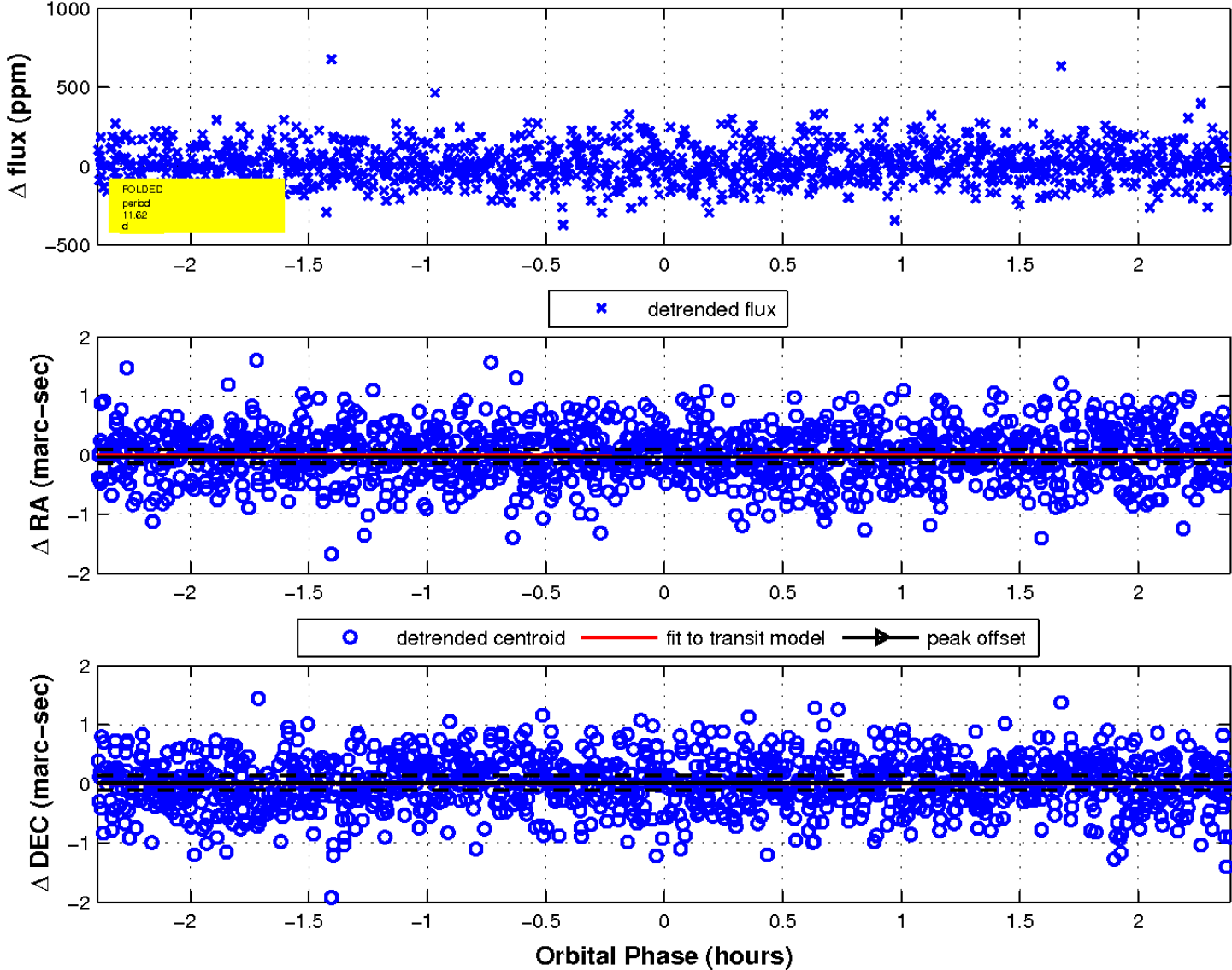
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 5 of 7



This astronomical image shows a field of stars against a dark background. A blue grid is overlaid on the image. Green text labels the axes: the horizontal axis (RA) is labeled from 01.0 to 59.0, and the vertical axis (Dec) is labeled from 00.0 to 50.0. A red horizontal line is visible at the bottom of the image.

Declination

KIC 008509469

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})
008509469-01	OBS	No	1.736425	132.144440	2.9	13.435	9.5	2.5	2.64	6669	0.53	11074.58
008509469-02	OBS	No	4.287986	131.664242	124.2	0.591	21.9	11.1	2.64	6669	3.53	3317.91
008509469-03	OBS	No	3.552565	132.844438	173.3	1.111	23.5	25.2	2.64	6669	3.69	4263.95
008509469-04	OBS	No	3.158587	132.018728	137.1	1.297	19.2	19.8	2.64	6669	3.62	4987.45
008509469-05	OBS	No	11.617279	137.030891	221.9	0.798	14.4	18.7	2.64	6669	4.29	878.48
008509469-06	OBS	No	3.902163	134.168981	204.3	0.666	14.2	14.2	2.64	6669	3.89	3762.37
008509469-07	OBS	No	2.890361	133.731871	56.9	0.775	15.1	6.2	2.64	6669	2.07	5613.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509469-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
008509469-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008509469-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008509469-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
008509469-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_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.

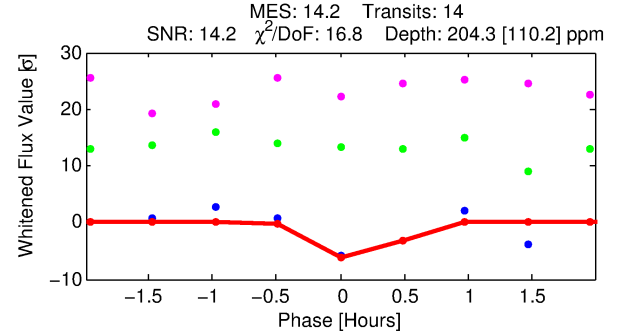
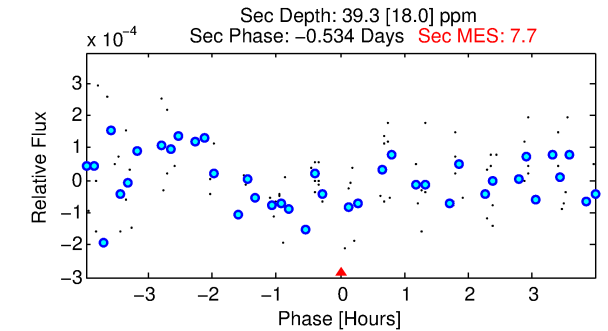
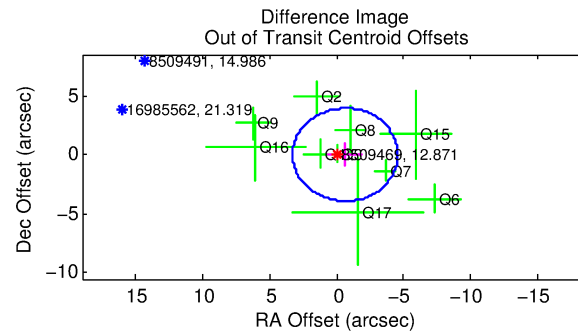
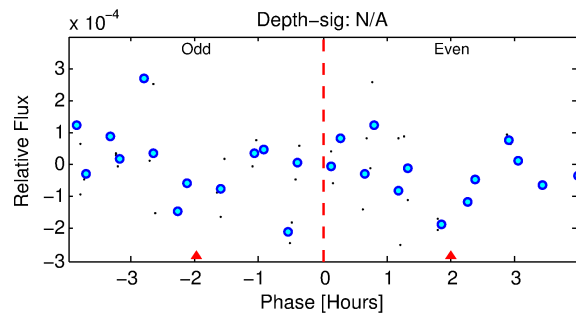
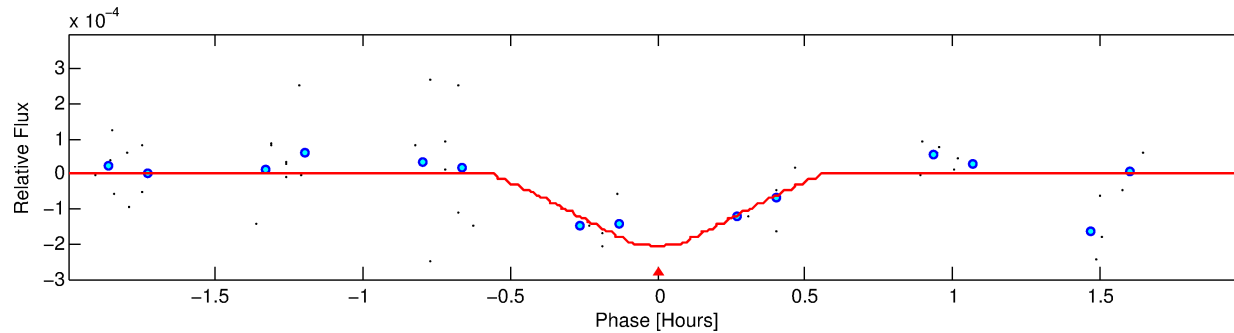
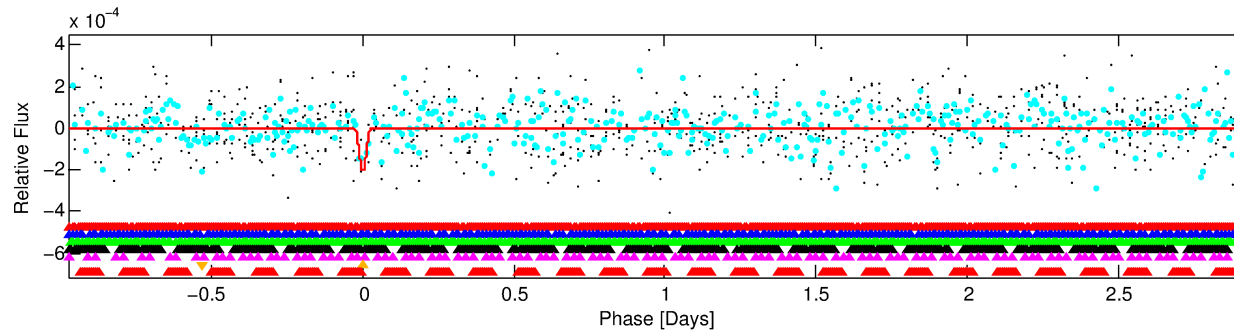
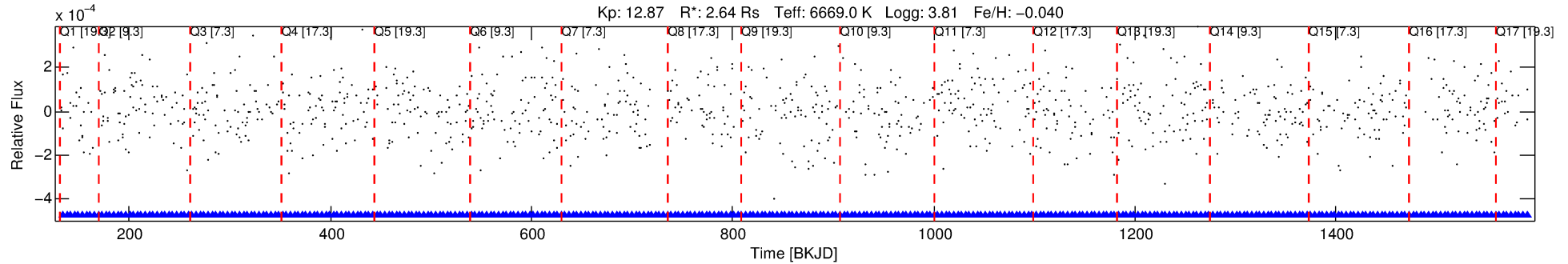
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008509469-06

No Significant Match Found

DV One-Page Summary

KIC: 8509469 Candidate: 6 of 7 Period: 3.902 d



DV Fit Results:

Period = 3.90216 [0.00005] d
Epoch = 134.1690 [0.0045] BKJD
Rp/R* = 0.0135 [0.1423]
a/R* = 44.74 [2476.97]
b = 0.17 [322.04]
Seff = 3762.37 [1900.30]
Teq = 1997 [252] K
Rp = 3.89 [41.07] Re
a = 0.0574 [0.0187] AU
Ag = 4.70 [99.28] [0.04σ]
Teffp = 4547 [23989] K [0.11σ]

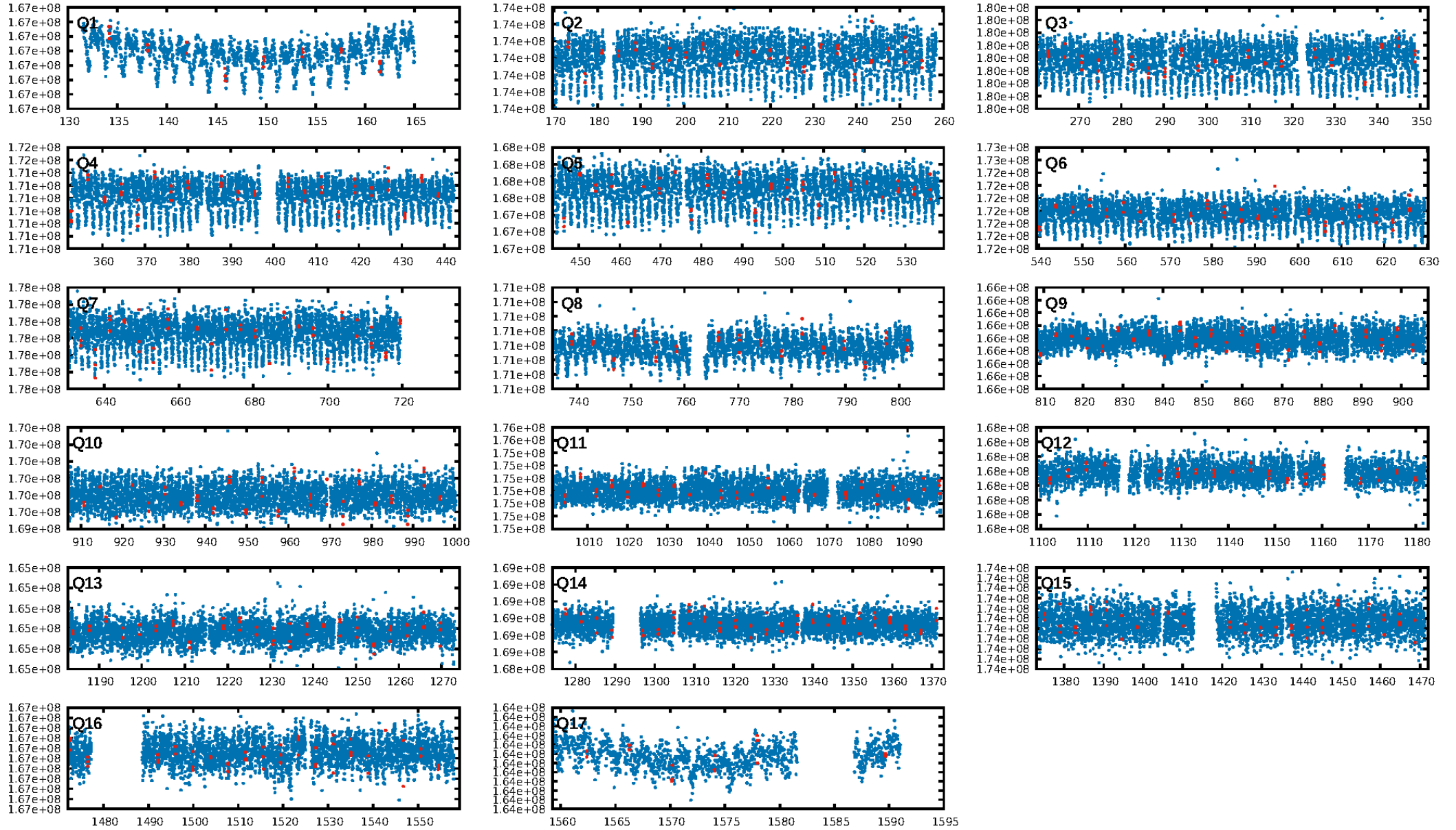
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.48σ]
LongPeriod-sig: 100.0% [10.40σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [14/14]
GhostDiagnostic-chr: 0.5283
Centroid-sig: 0.0%
Centroid-so: 0.916 arcsec [2.74σ]
OotOffset-rm: 0.640 arcsec [0.49σ]
KicOffset-rm: 0.711 arcsec [0.59σ]
OotOffset-st: 2/3/3/2 [10]
KicOffset-st: 2/3/3/2 [10]
DiffImageQuality-fgm: 0.20 [2/10]
DiffImageOverlap-fno: 0.88 [14/16]

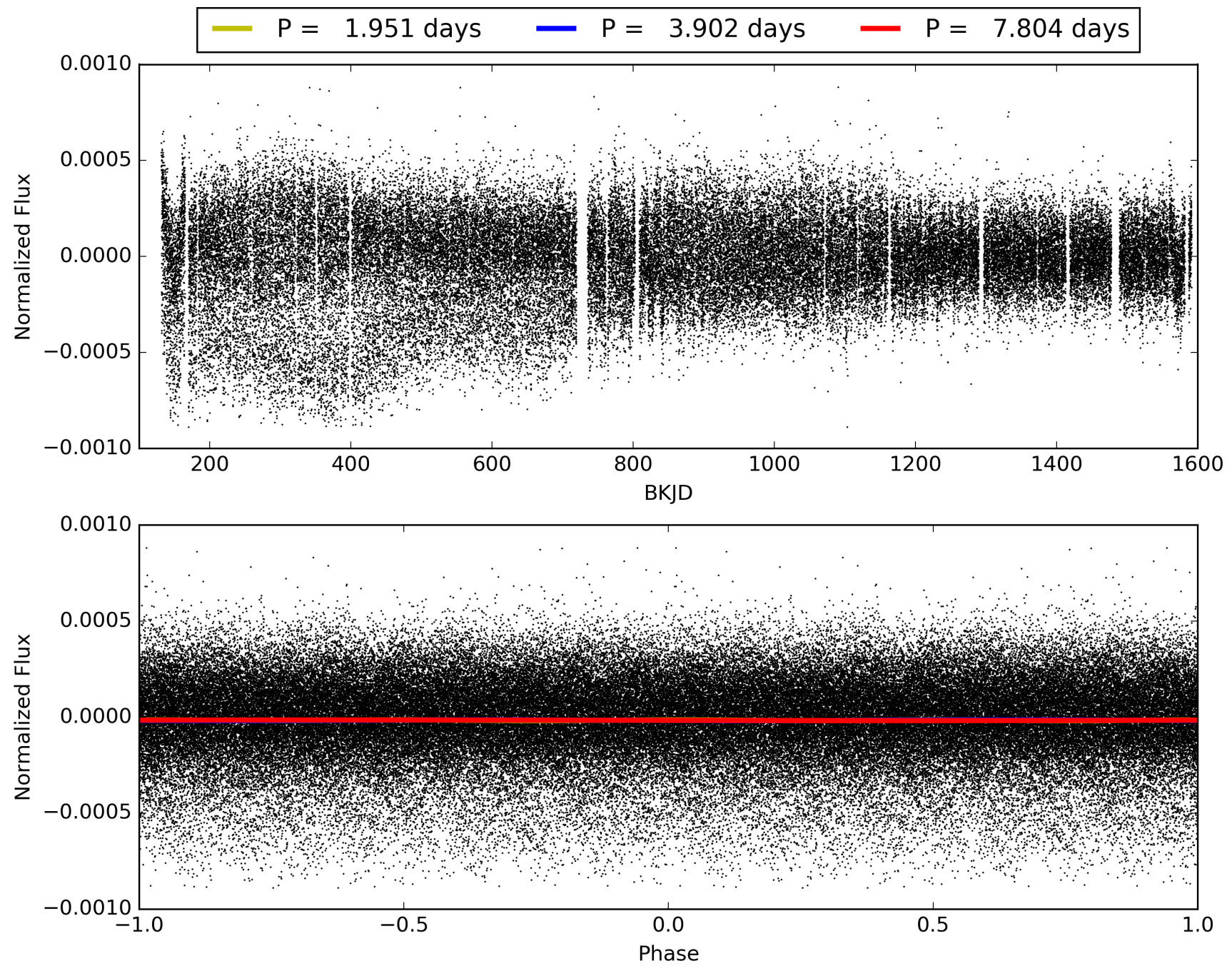
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:22:17 Z

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

TCE 008509469-06, PDC Light Curves

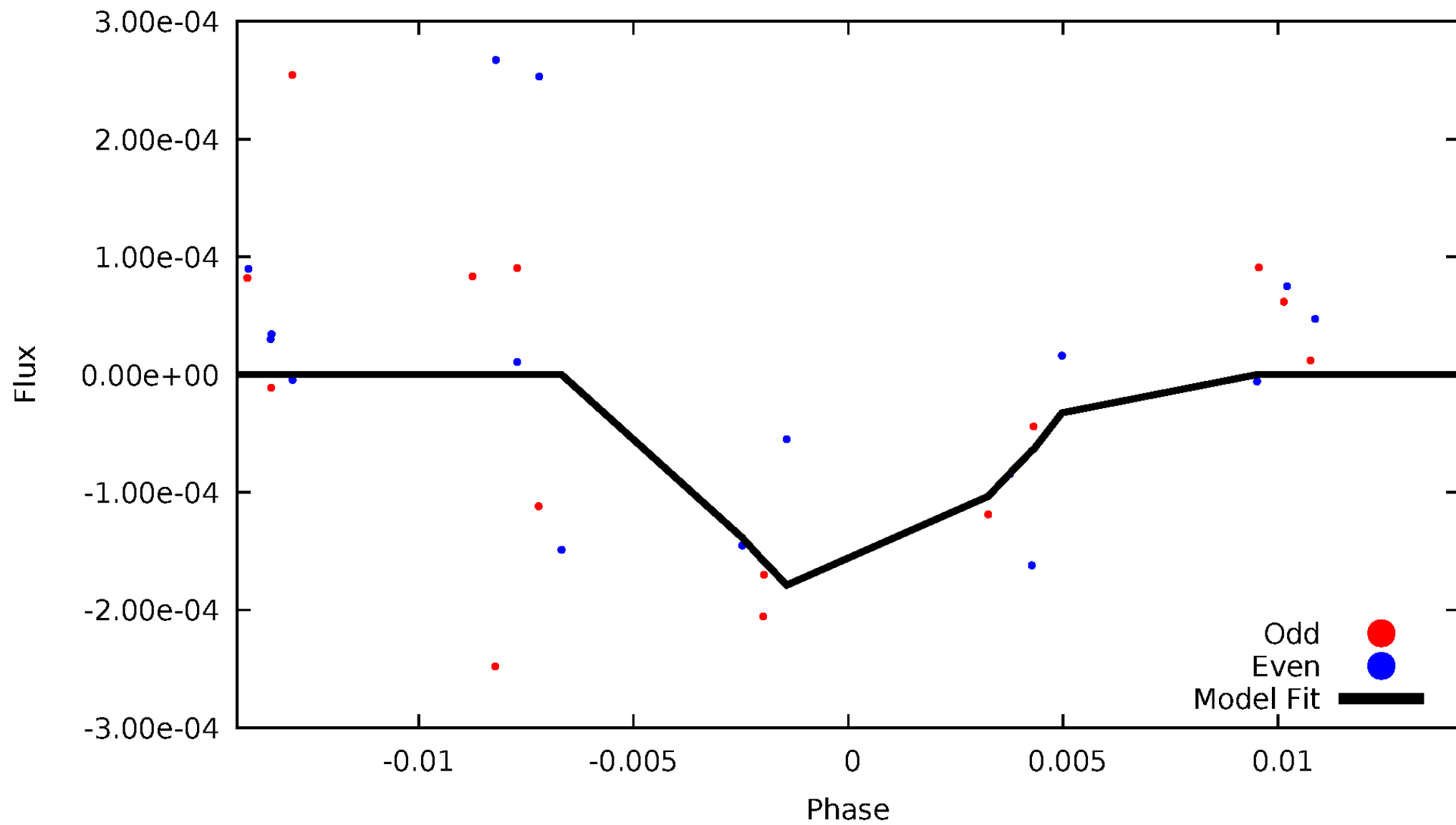


TCE 008509469-06



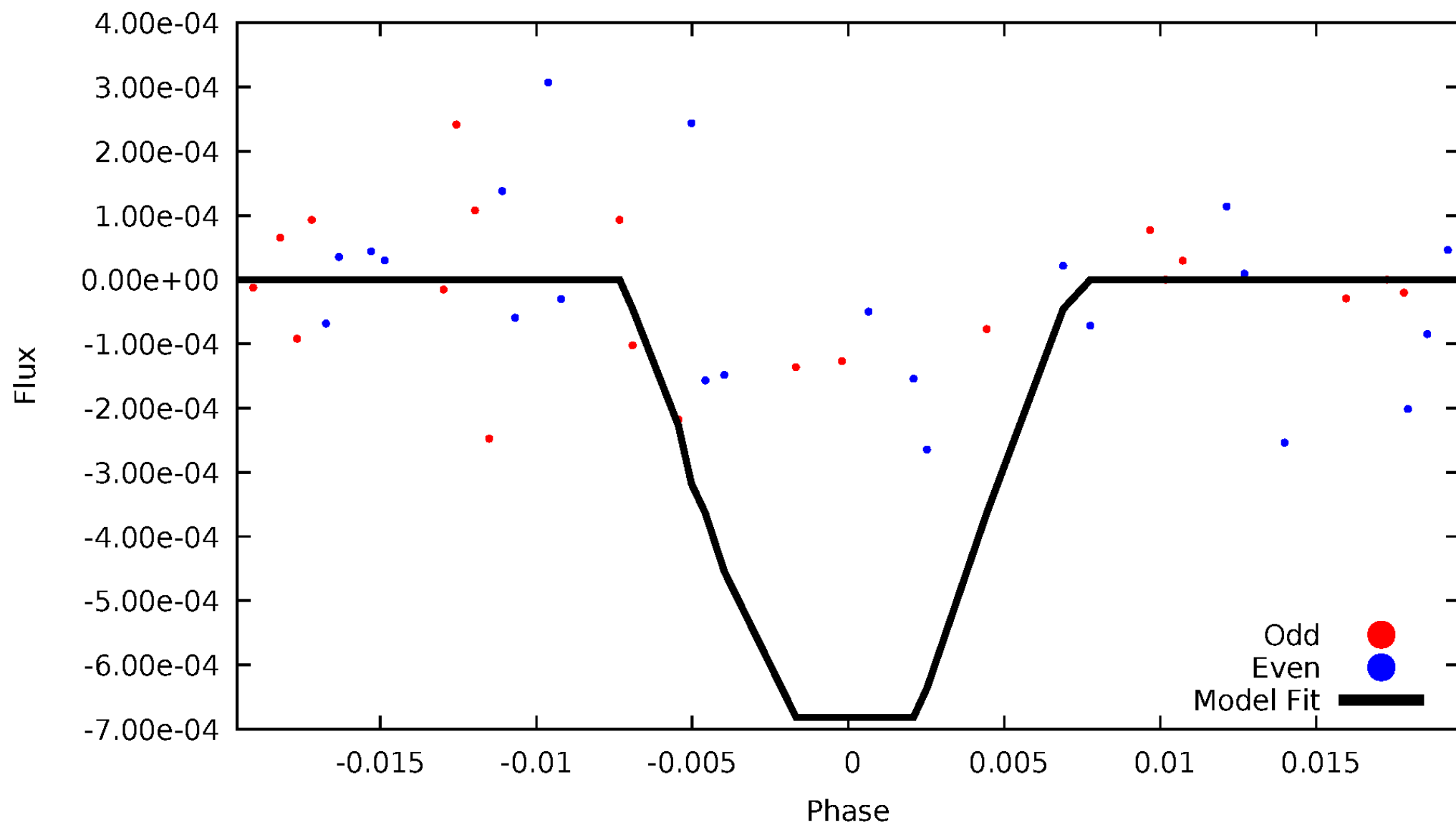
DV Odd/Even

TCE 008509469-06



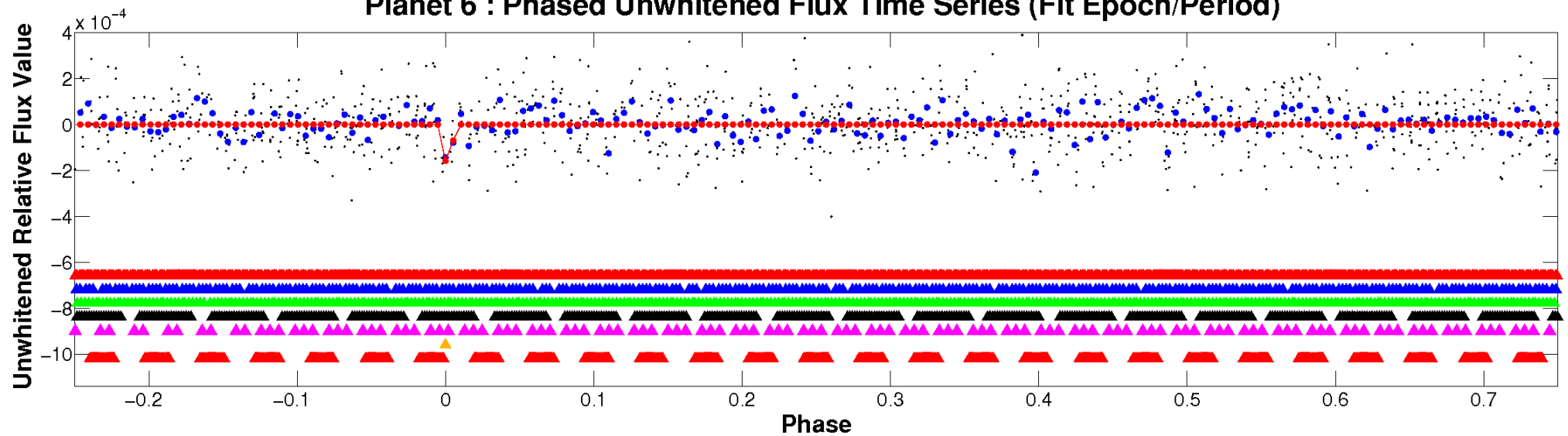
ALT Odd/Even

TCE 008509469-06

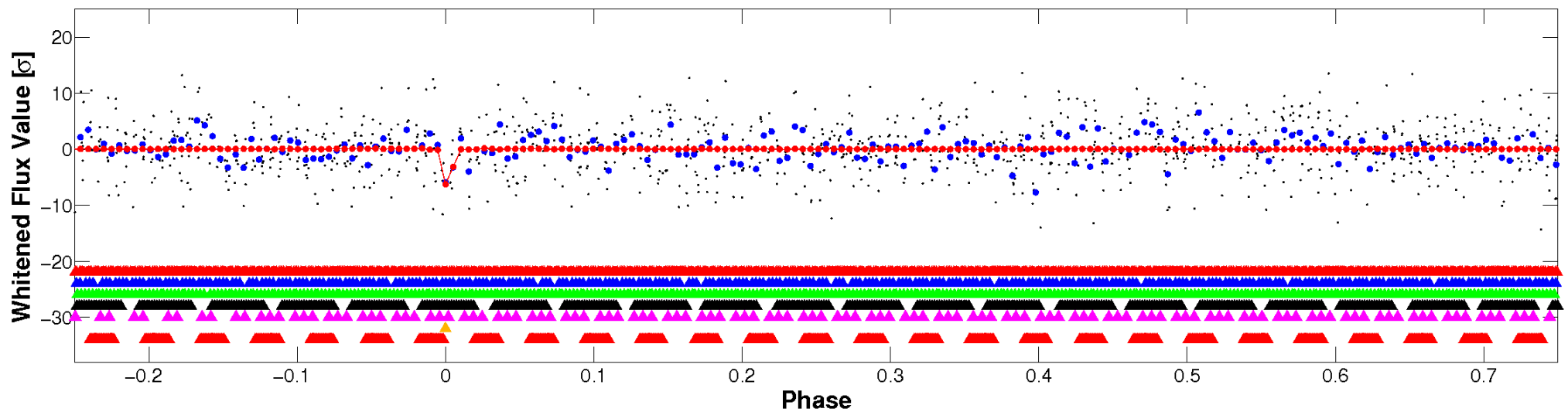


Non-Whitened Vs. Whitened Light Curve

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

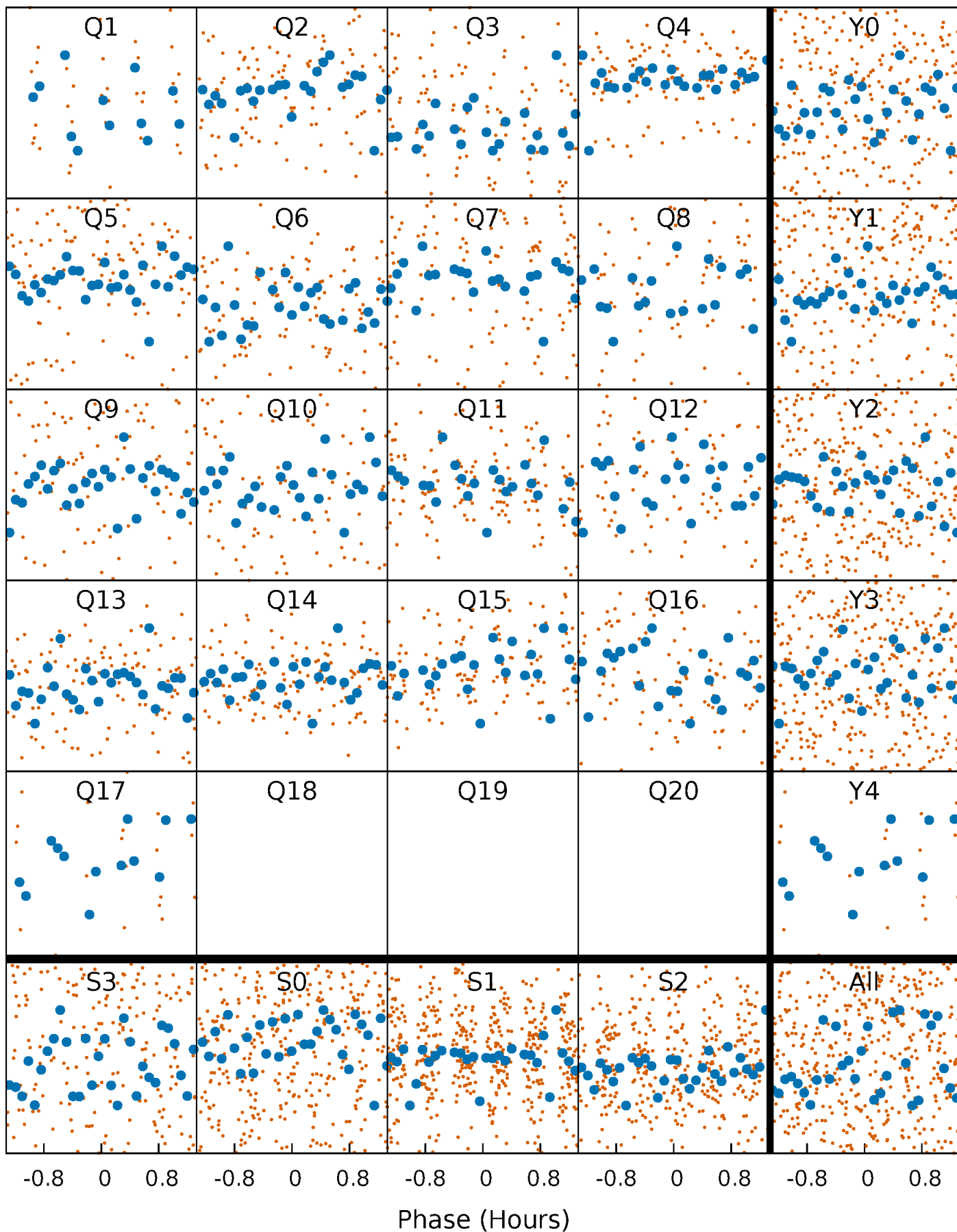


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



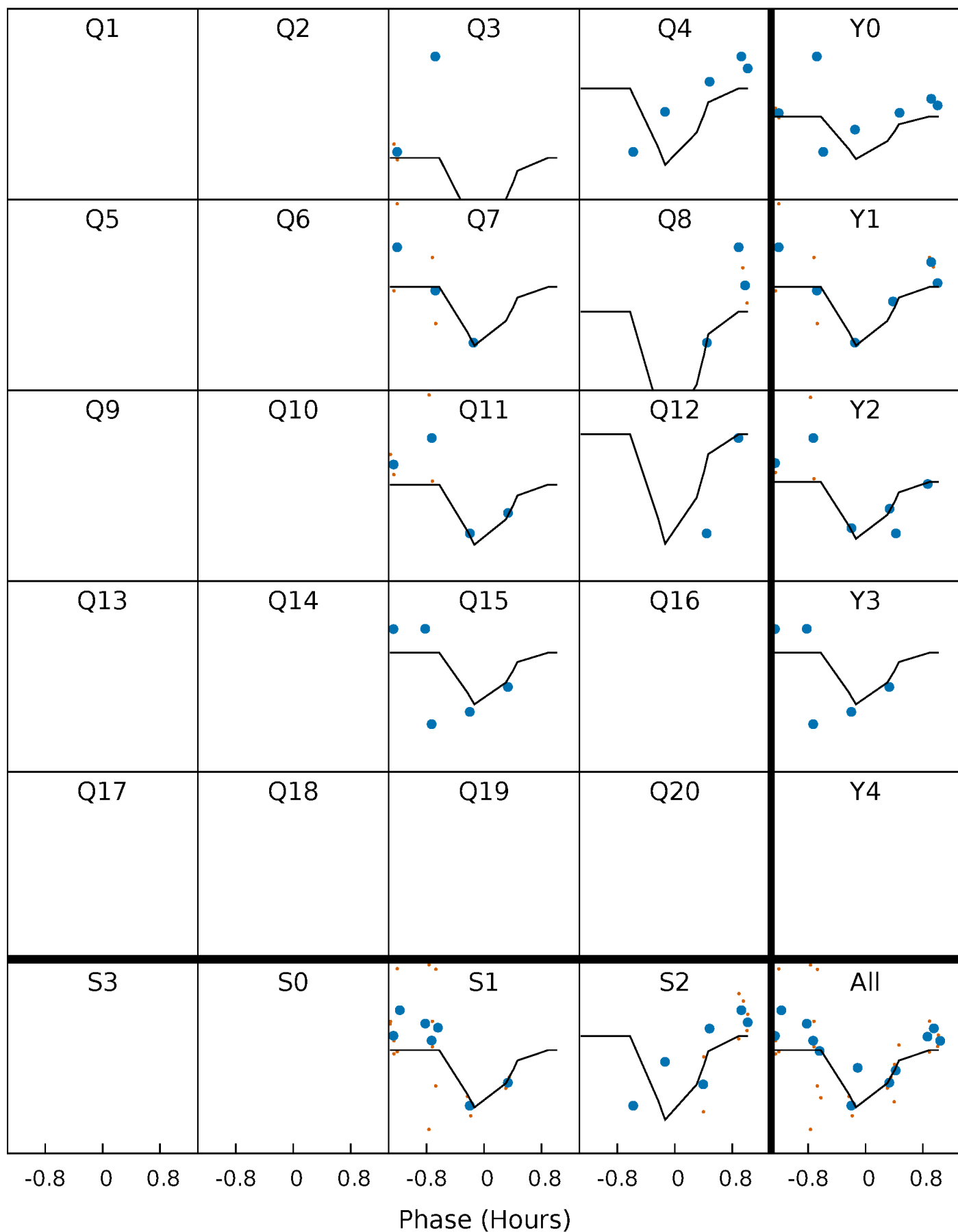
PDC Quarter-Phased Transit Curves

TCE 008509469-06 P= 3.902163 Days $T_0=134.168981$ (BKJD)



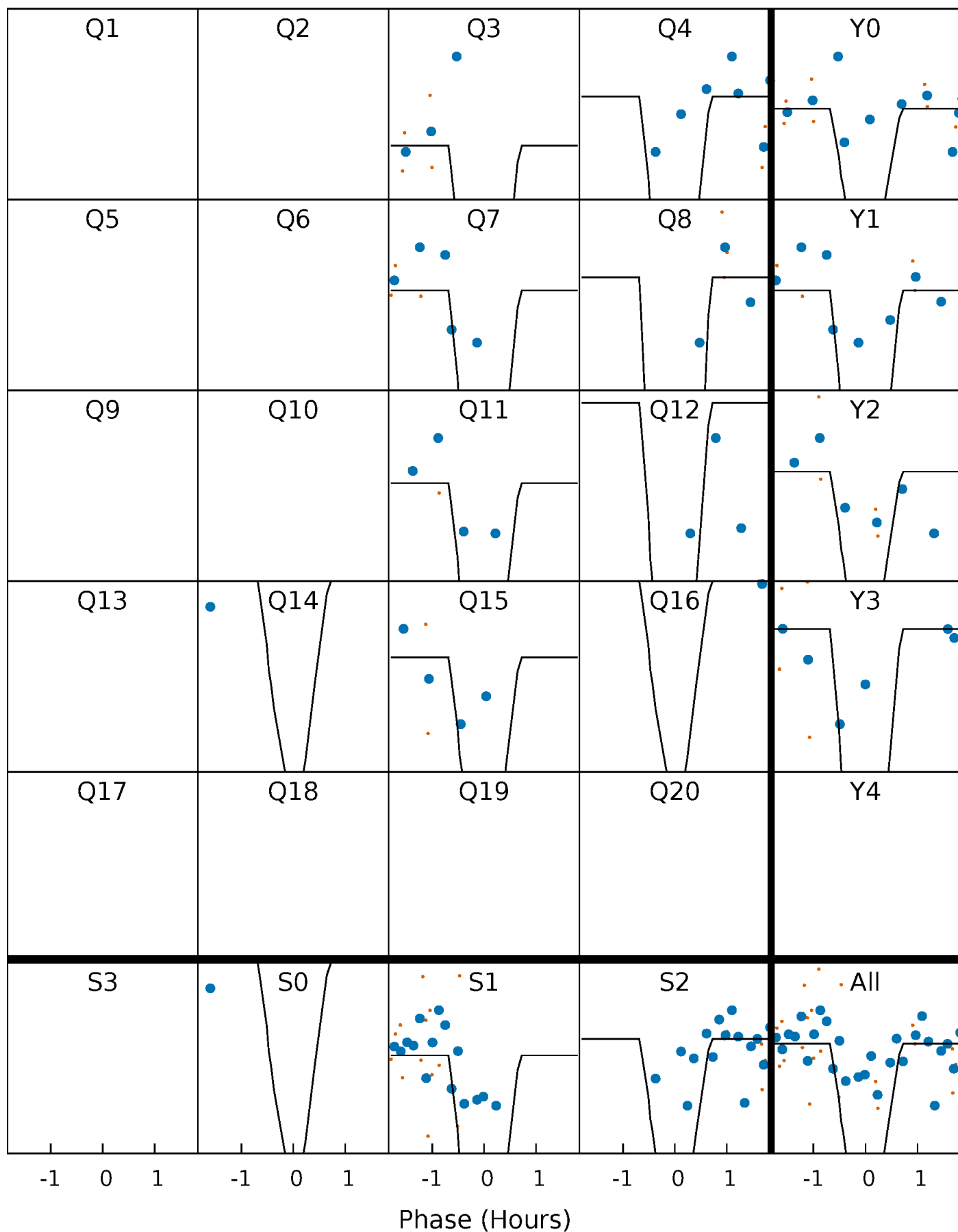
DV Quarter-Phased Transit Curves

TCE 008509469-06 P= 3.902163 Days $T_0=134.168981$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

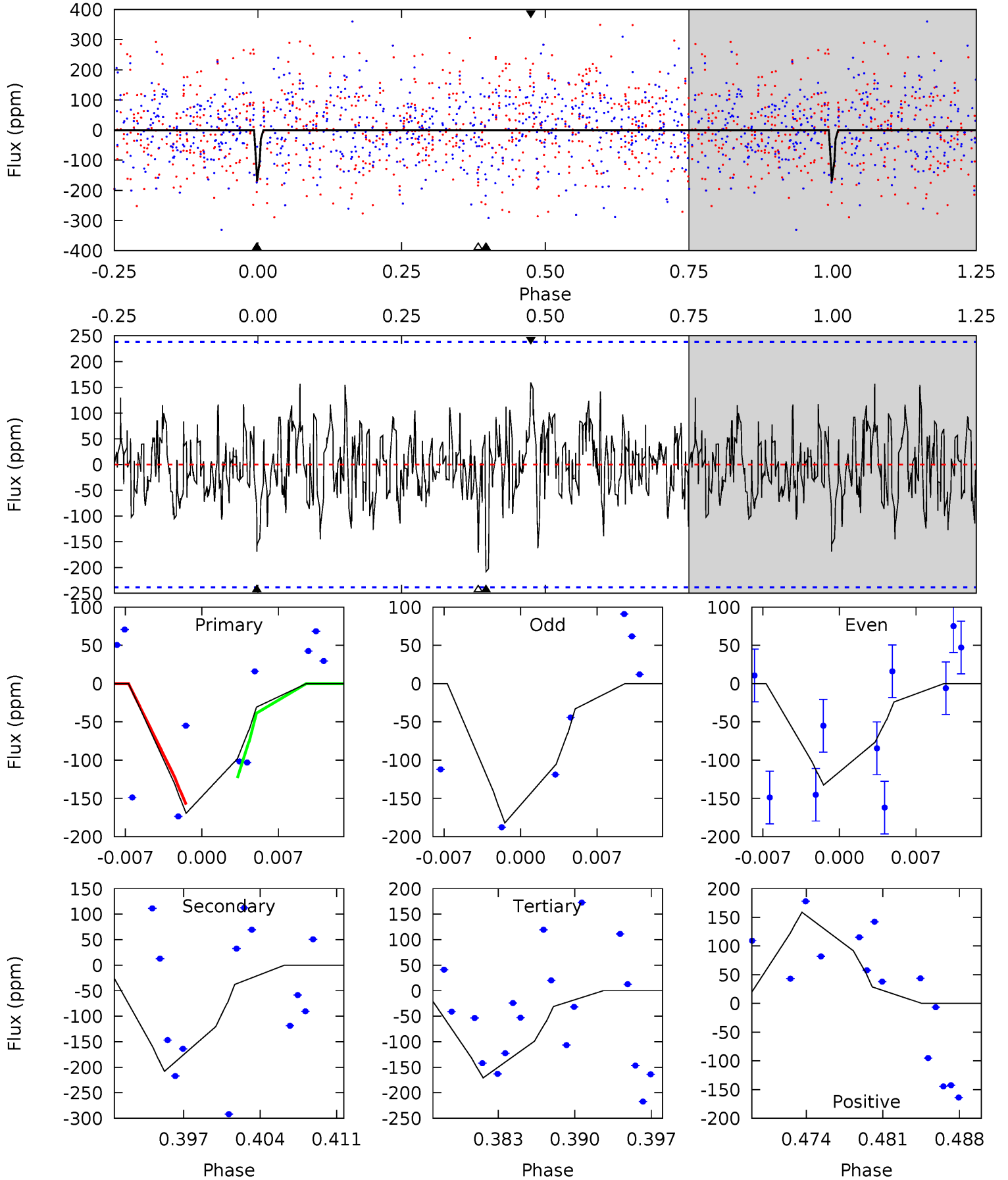
TCE 008509469-06 P= 3.902242 Days $T_0=134.156282$ (BKJD)



DV Model-Shift Uniqueness Test

008509469-06, P = 3.902163 Days, E = 130.266818 Days

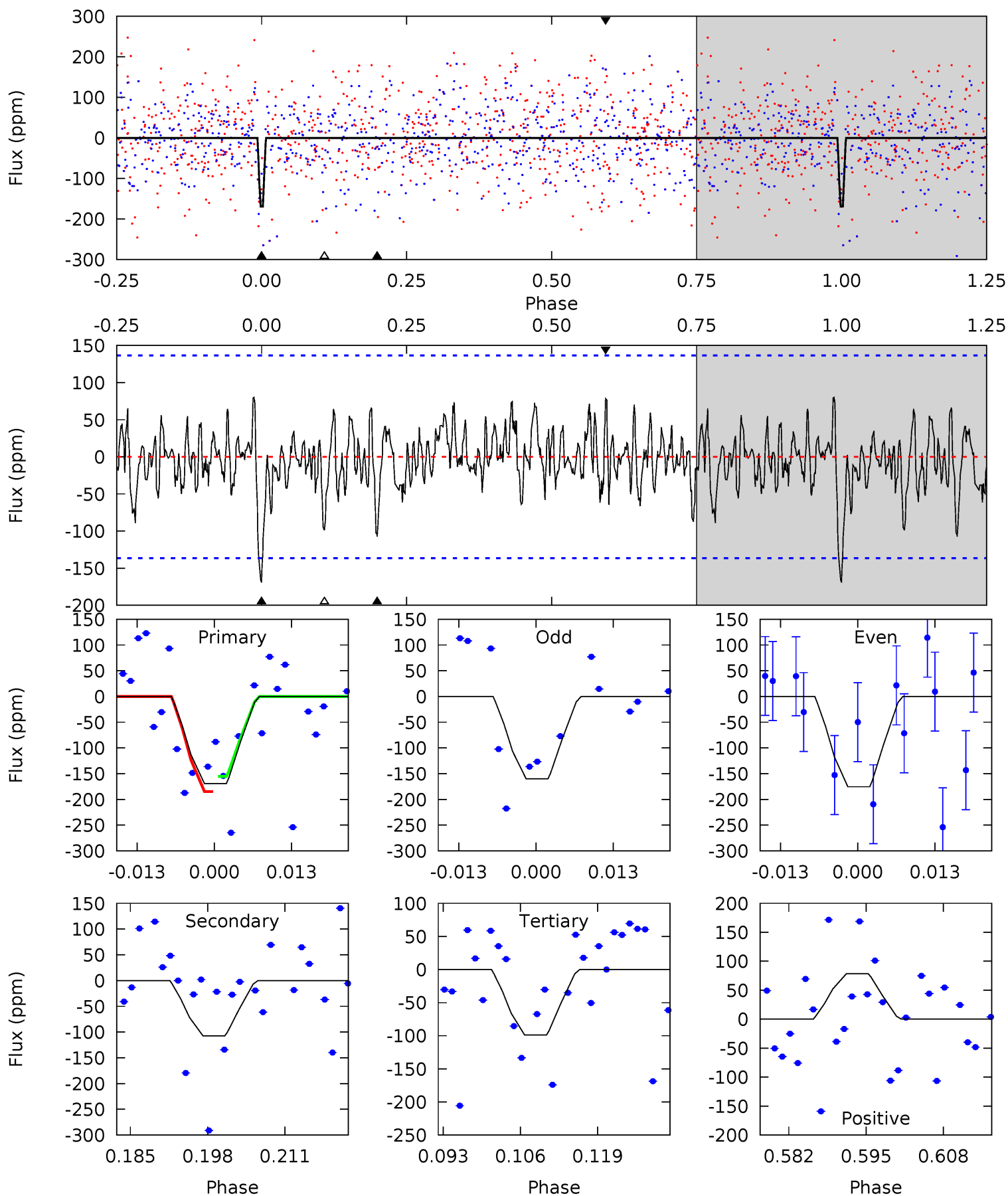
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.62	4.45	3.65	3.40	5.10	2.70	1.17	-0.03	0.22	0.79	1.05	0.57	1.00	0.43	0.36



Alt Model-Shift Uniqueness Test

008509469-06, P = 3.902242 Days, E = 130.254040 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.16	3.91	3.60	2.85	4.97	2.48	1.12	2.56	3.31	0.31	1.05	0.27	1.00	0.32	0.54



Stellar Parameters For KIC 008509469

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6669^{+179}_{-219}	$3.812^{+0.273}_{-0.117}$	$-0.040^{+0.250}_{-0.250}$	$2.643^{+0.495}_{-0.989}$	$1.650^{+0.186}_{-0.346}$	$0.126^{+0.239}_{-0.047}$
	+3%/-3%	+7%/-3%	+625%/-625%	+19%/-37%	+11%/-21%	+190%/-37%
Source	PHO1	FLK73	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 008509469-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-208 ± 47	$30.60^{+30.51}_{-21.37}$	2768^{+164}_{-273}	2471^{+1974}_{-5270}	$0.397^{+3.746}_{-0.298}$
Alt.	-107 ± 27	$28.95^{+30.63}_{-20.17}$	2762^{+166}_{-237}	-2425^{+6395}_{-448}	$0.219^{+2.245}_{-0.169}$

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

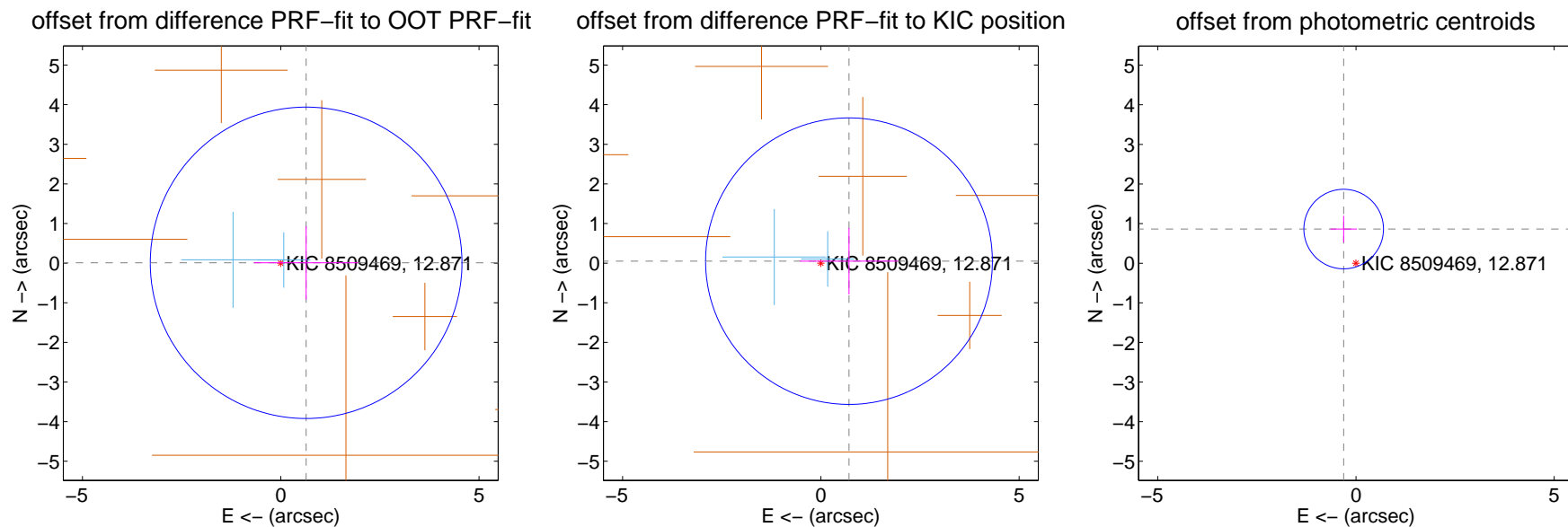
DV Centroid Data

Supplemental centroid analysis for 008509469-06. Kepler magnitude: 12.87. Transit SNR 14.17

There are 2 quarters with good PRF difference image offsets

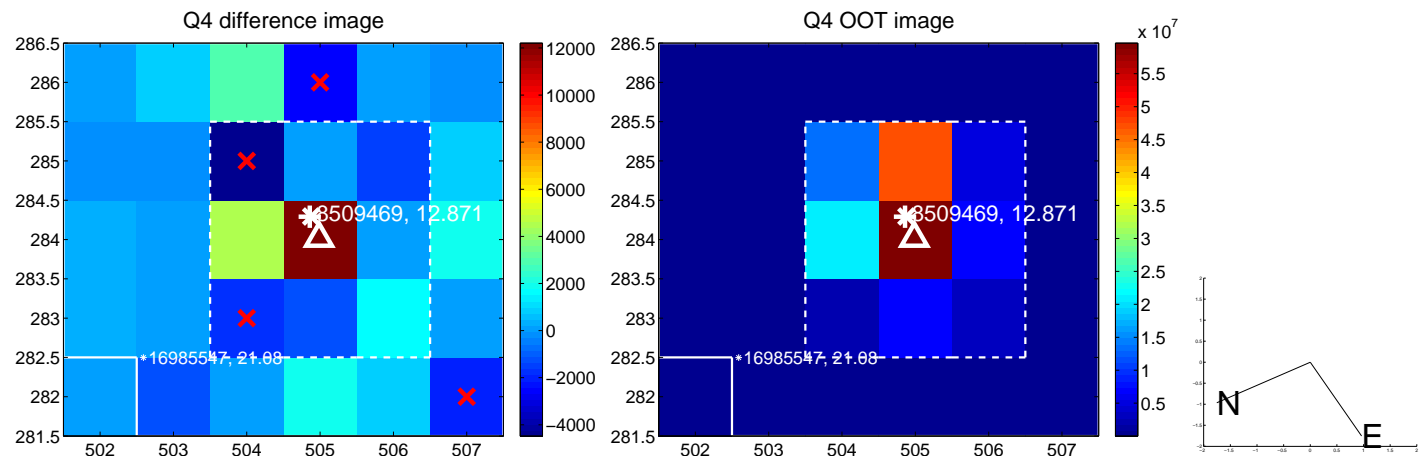
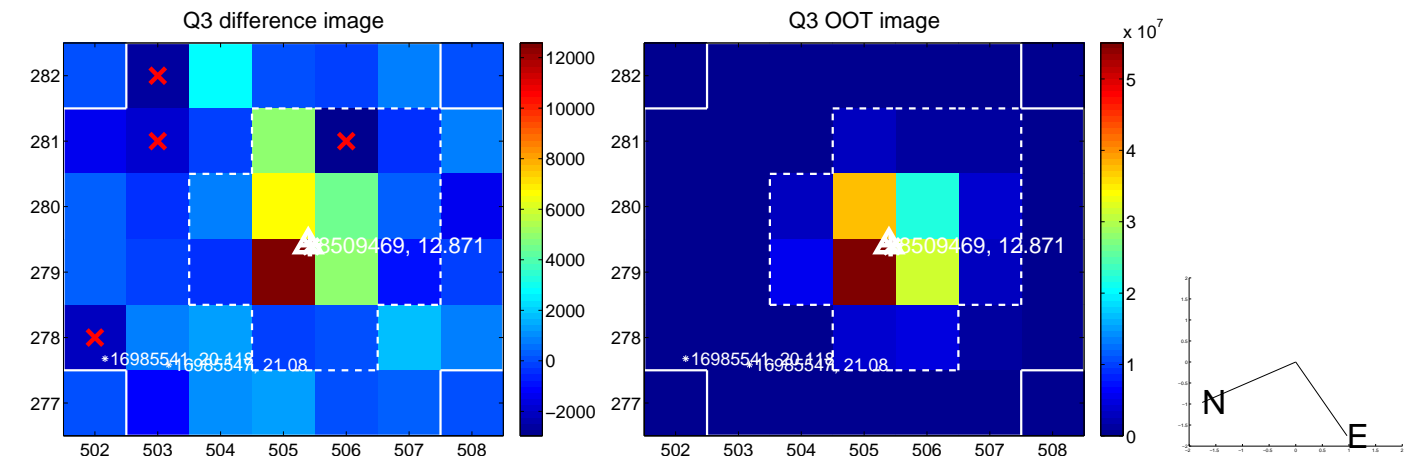
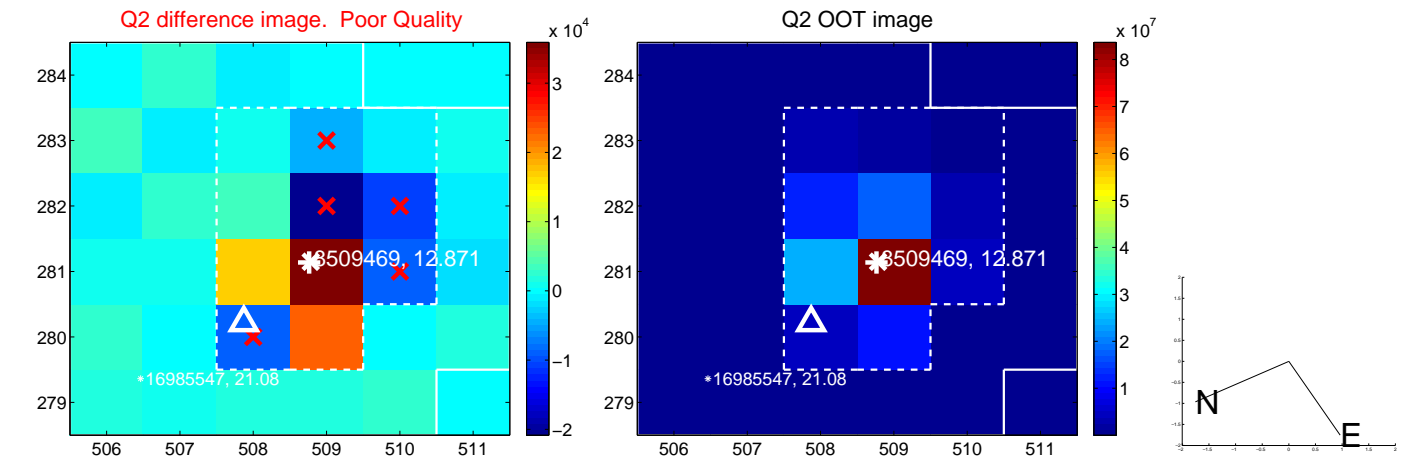
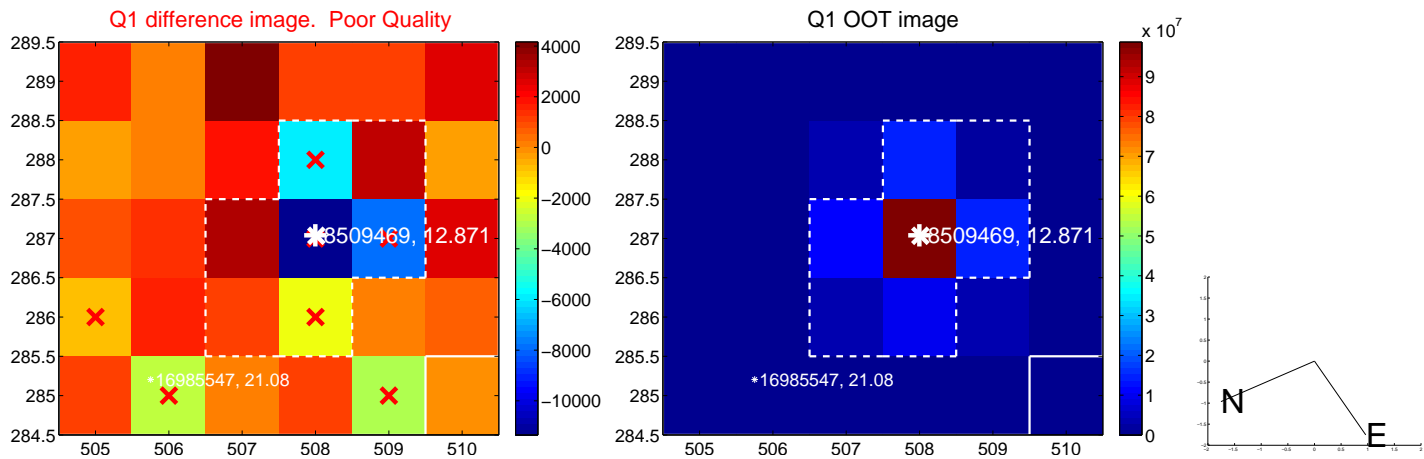
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.640 ± 1.310	0.49	-0.640 ± 1.316	0.009 ± 0.926
PRF-fit source offset from KIC position	0.711 ± 1.205	0.59	-0.709 ± 1.234	0.050 ± 0.839
photometric centroid source offset	0.92 ± 0.33	2.74	0.31 ± 0.33	0.86 ± 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.

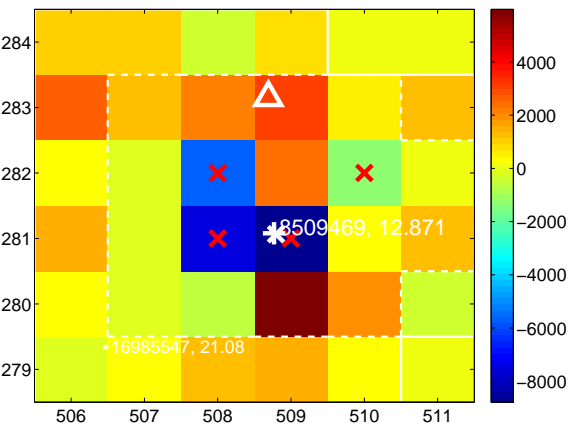
Q5 no difference image



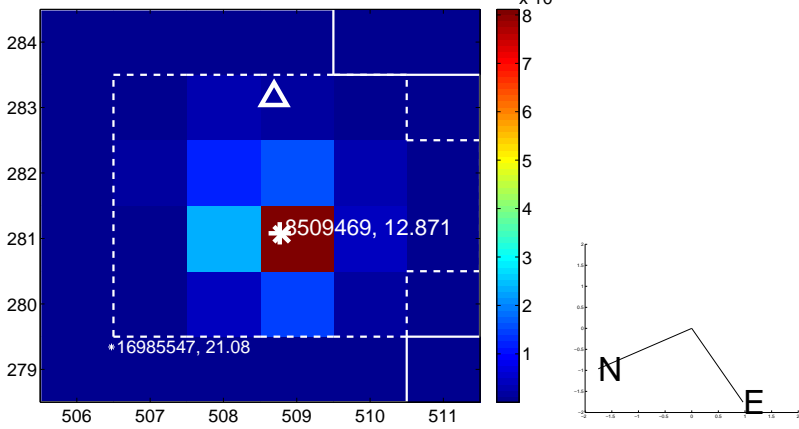
Q5 no OOT image



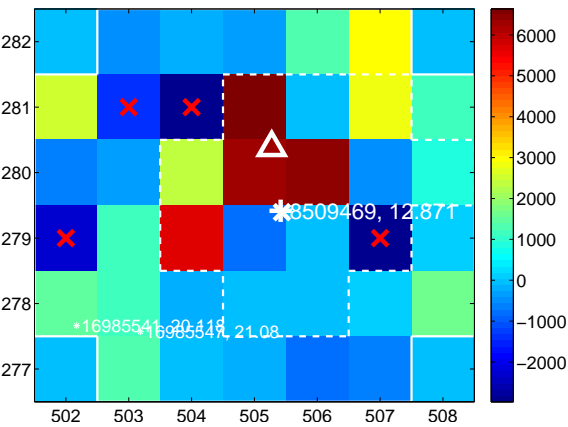
Q6 difference image. Poor Quality



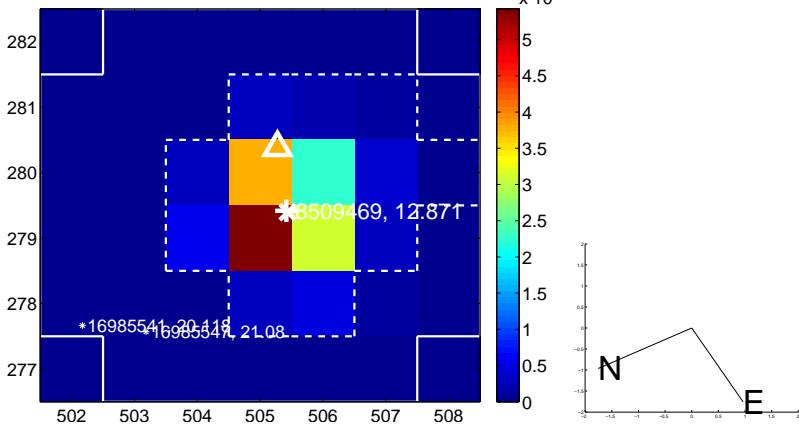
Q6 OOT image



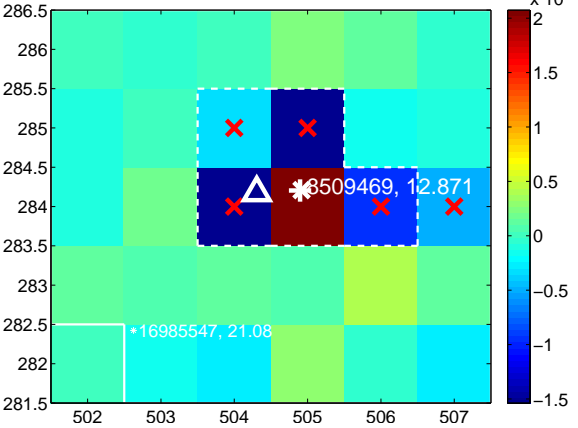
Q7 difference image. Poor Quality



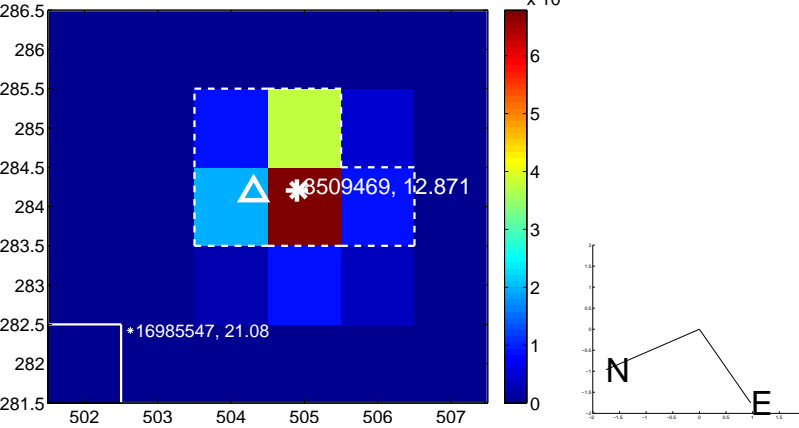
Q7 OOT image



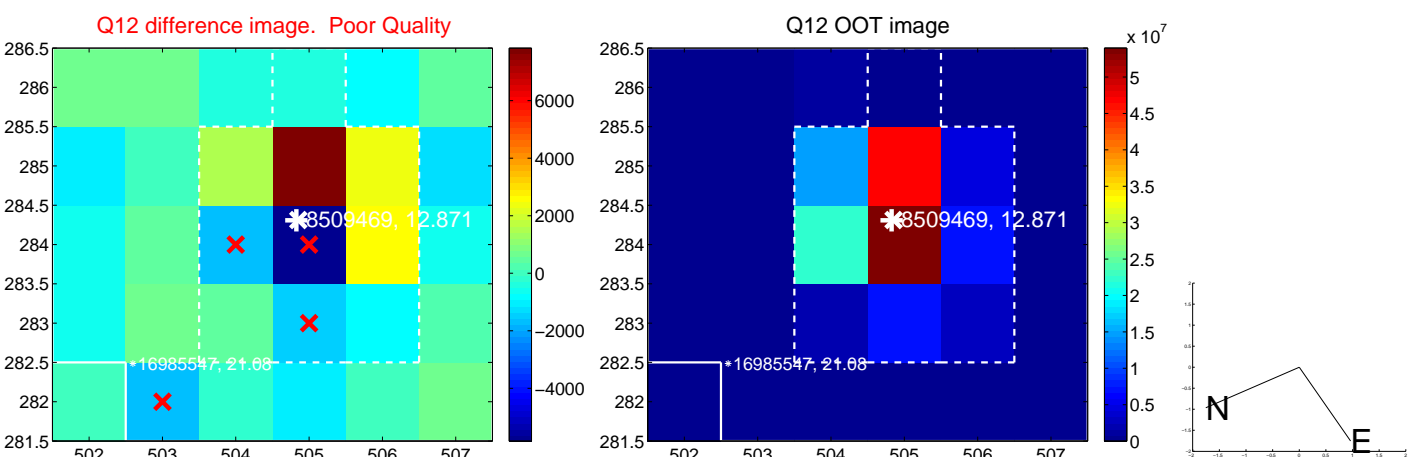
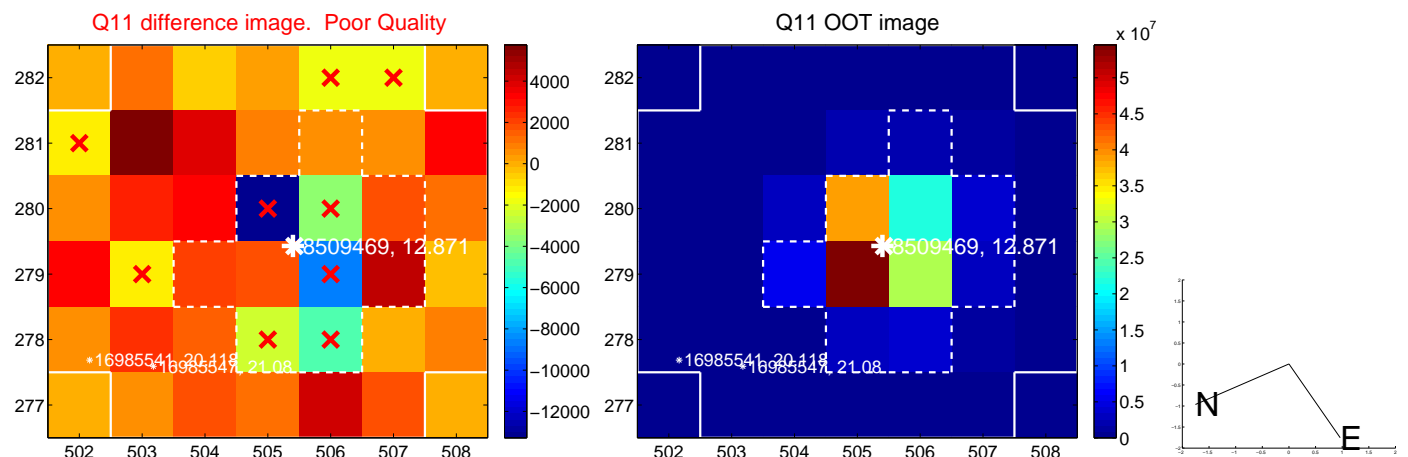
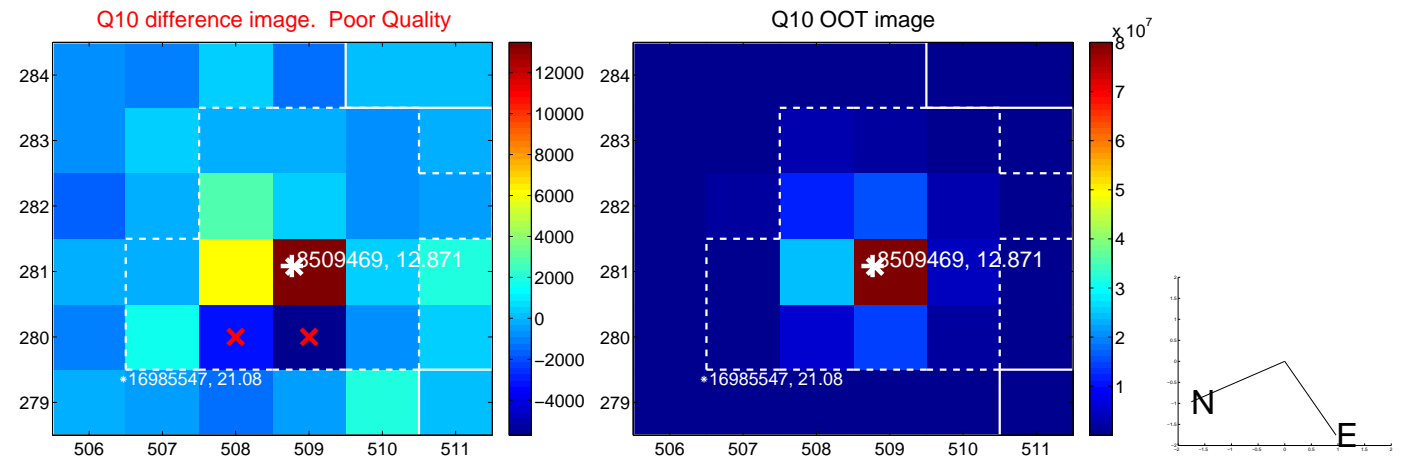
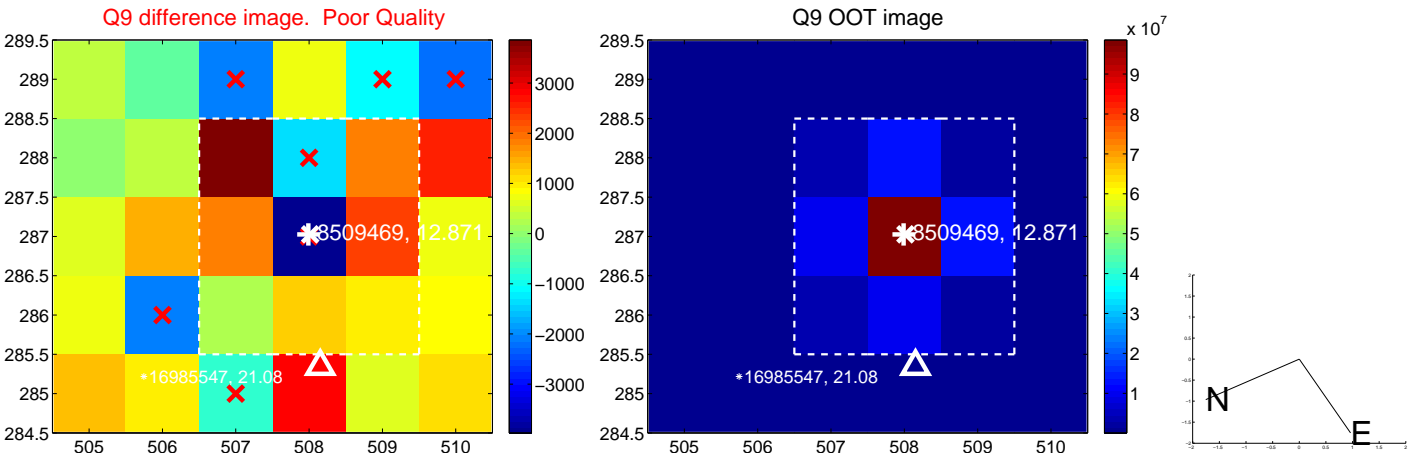
Q8 difference image. Poor Quality



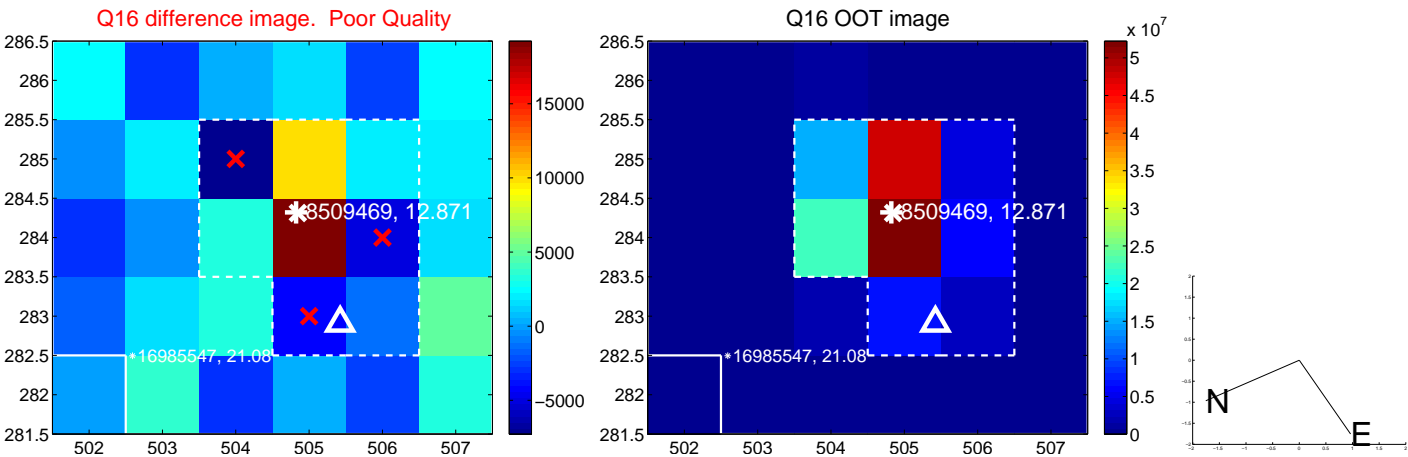
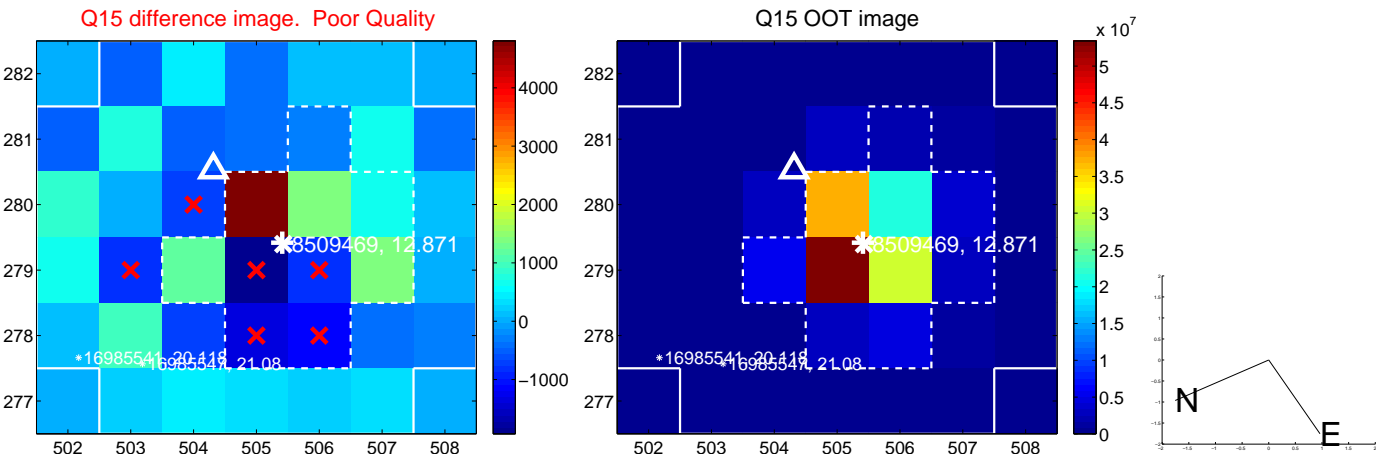
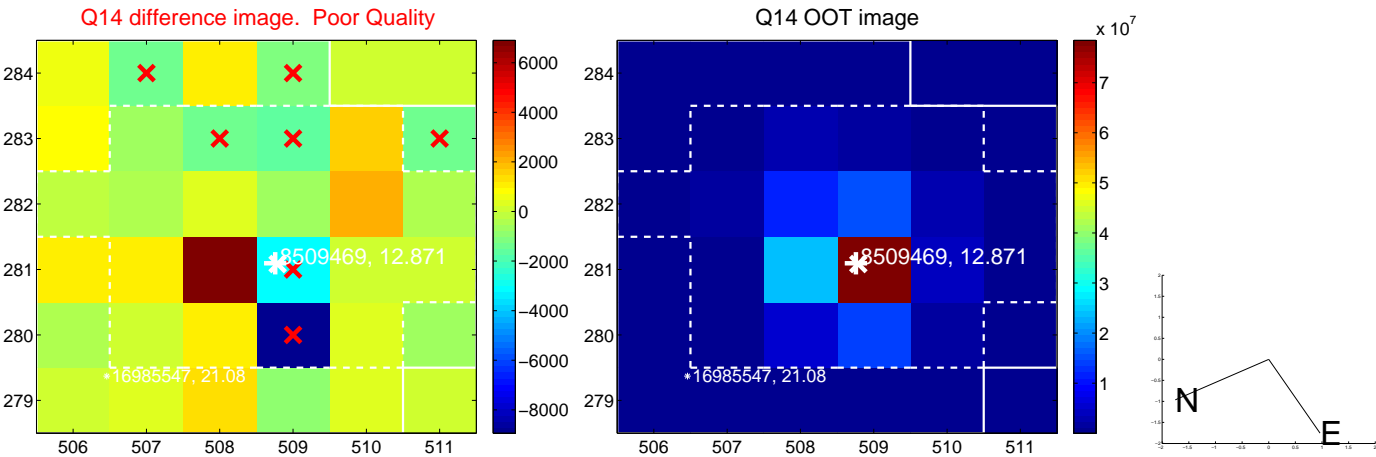
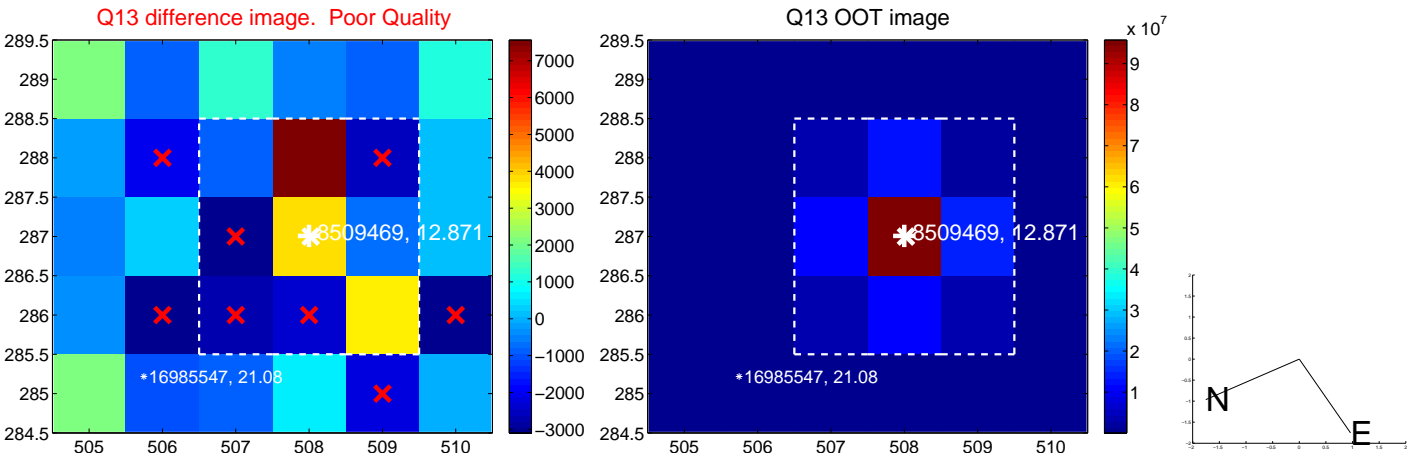
Q8 OOT image



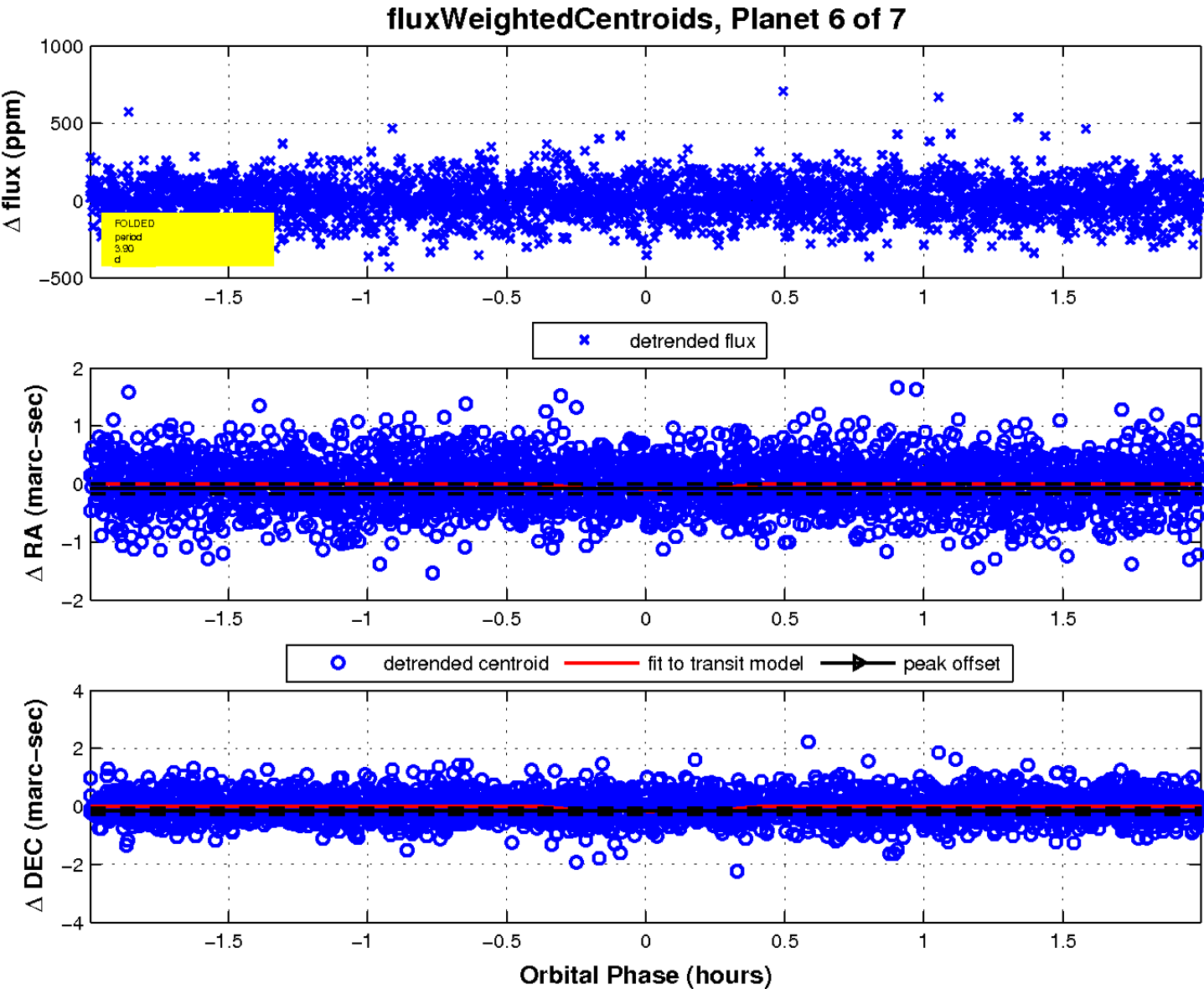
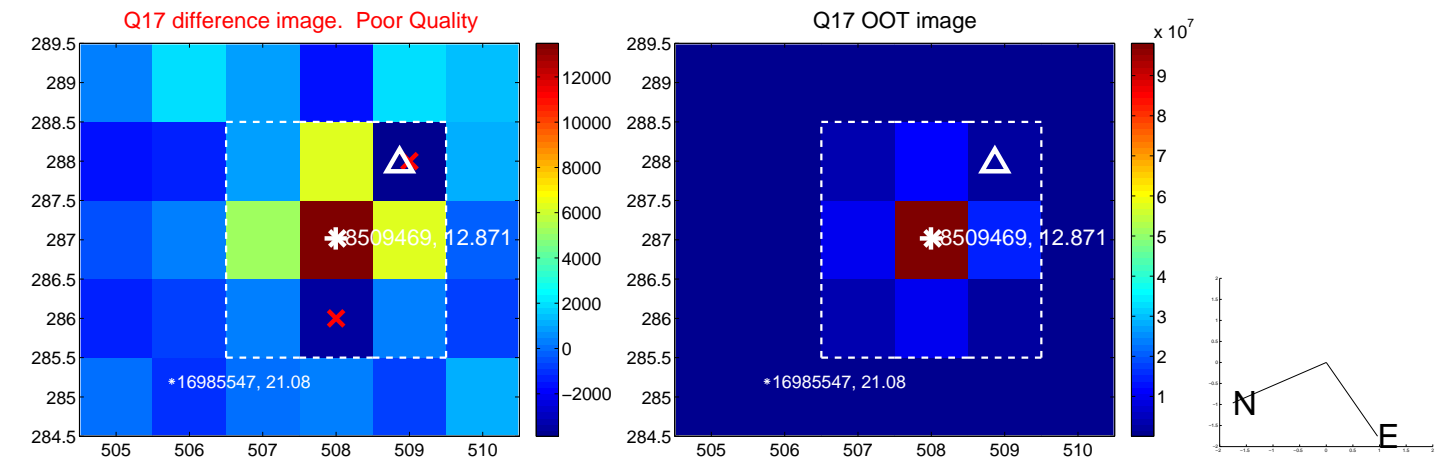
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

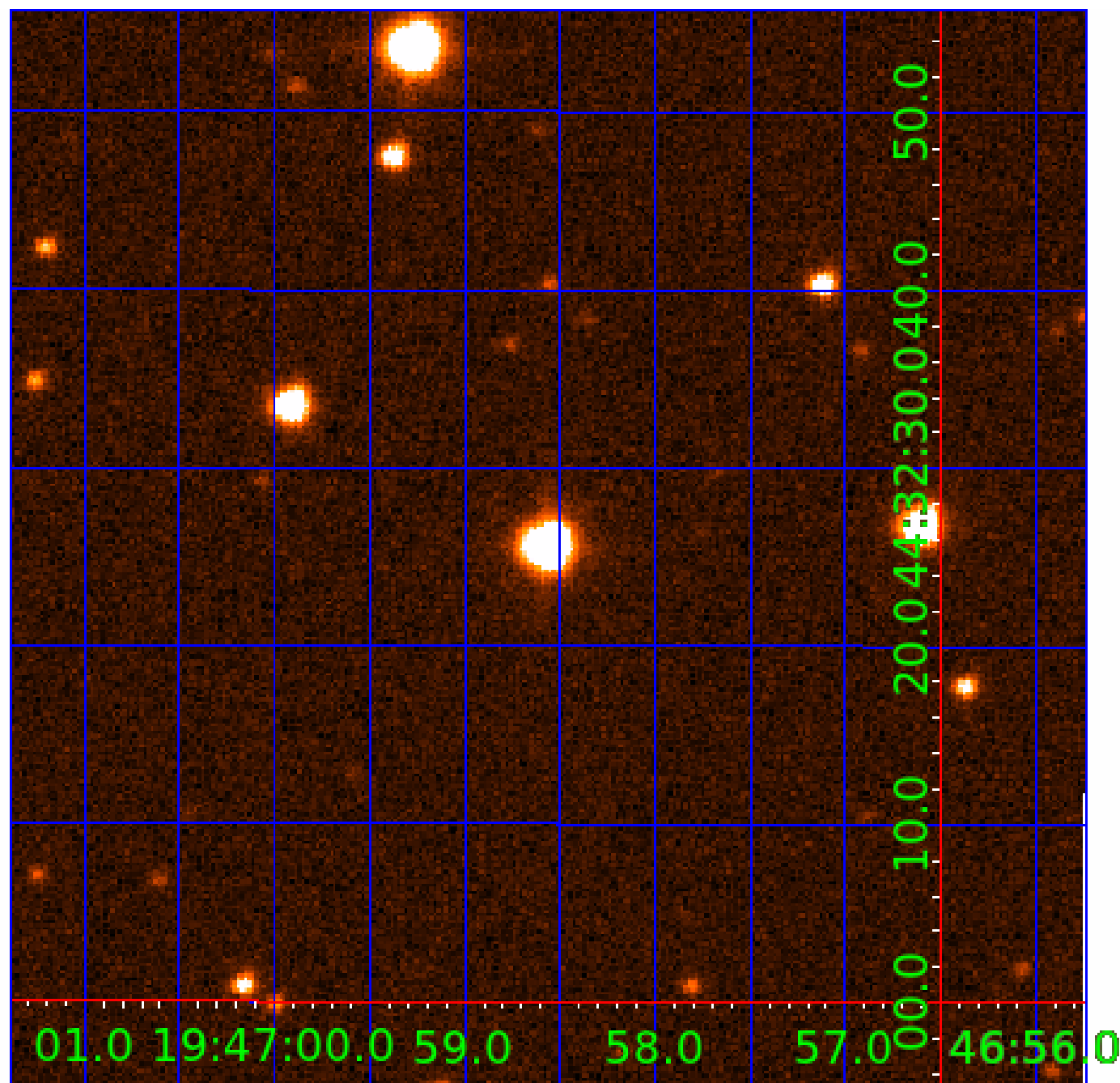


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008509469

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})
008509469-01	OBS	No	1.736425	132.144440	2.9	13.435	9.5	2.5	2.64	6669	0.53	11074.58
008509469-02	OBS	No	4.287986	131.664242	124.2	0.591	21.9	11.1	2.64	6669	3.53	3317.91
008509469-03	OBS	No	3.552565	132.844438	173.3	1.111	23.5	25.2	2.64	6669	3.69	4263.95
008509469-04	OBS	No	3.158587	132.018728	137.1	1.297	19.2	19.8	2.64	6669	3.62	4987.45
008509469-05	OBS	No	11.617279	137.030891	221.9	0.798	14.4	18.7	2.64	6669	4.29	878.48
008509469-06	OBS	No	3.902163	134.168981	204.3	0.666	14.2	14.2	2.64	6669	3.89	3762.37
008509469-07	OBS	No	2.890361	133.731871	56.9	0.775	15.1	6.2	2.64	6669	2.07	5613.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509469-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
008509469-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008509469-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008509469-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008509469-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
008509469-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_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.

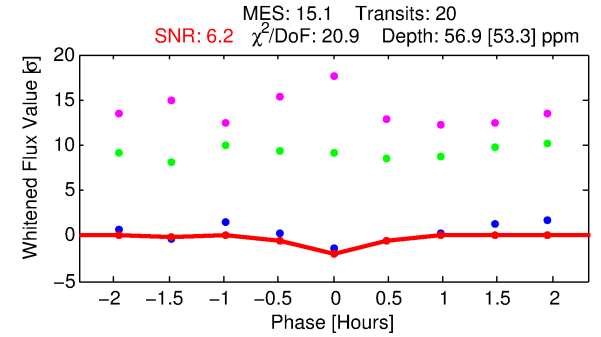
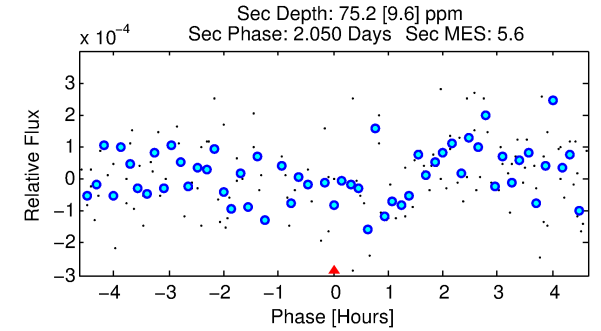
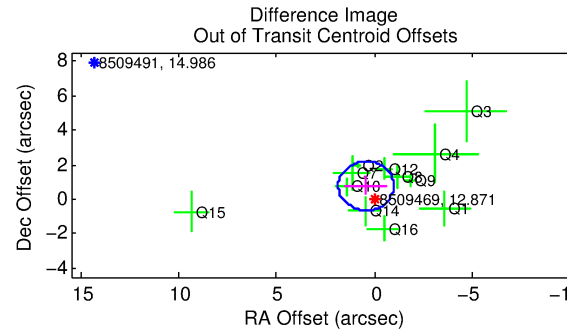
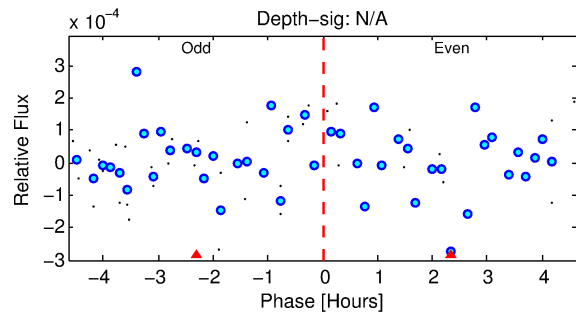
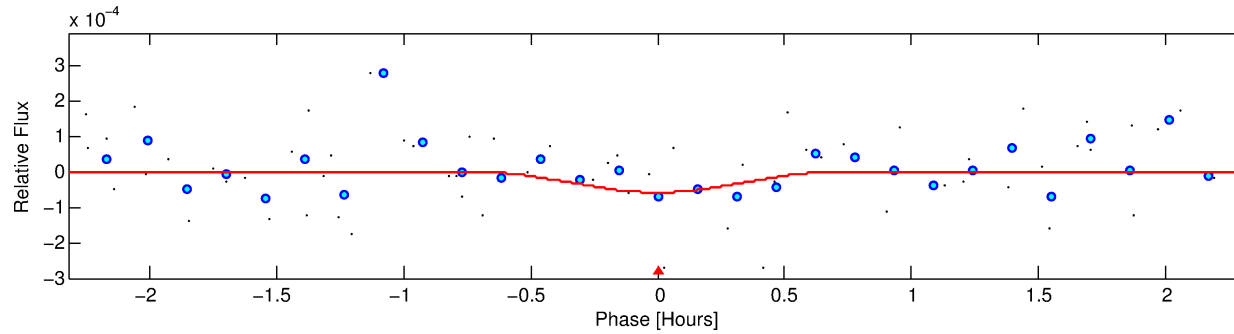
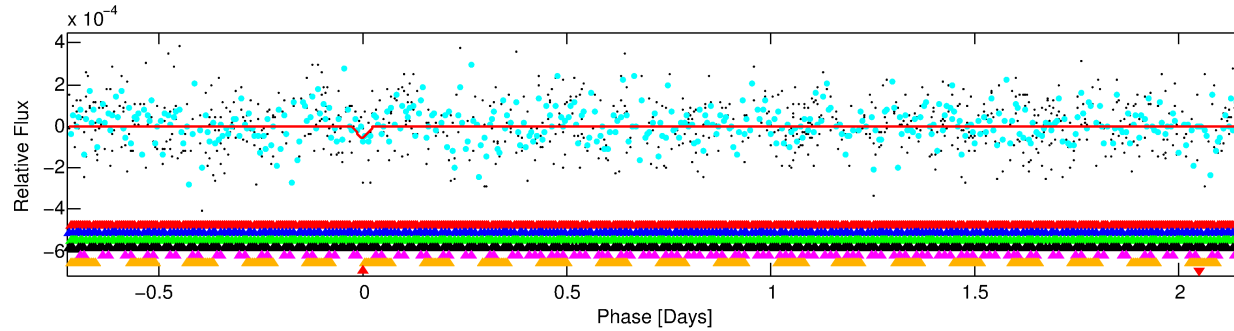
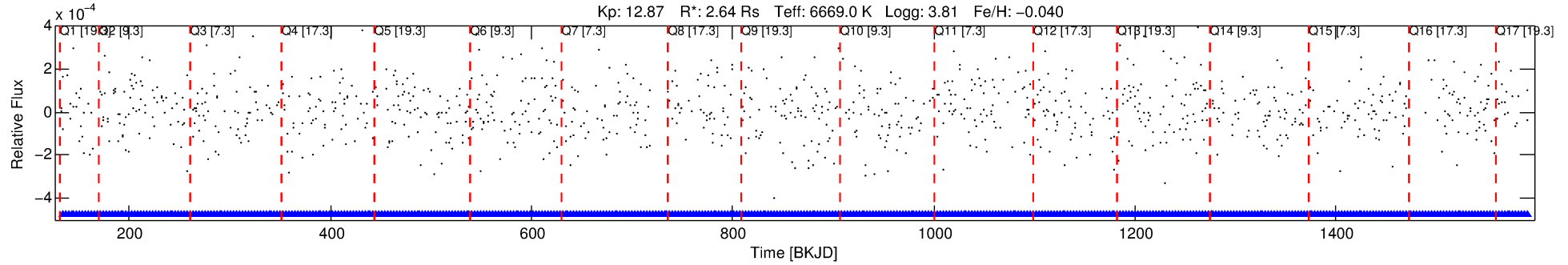
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008509469-07

No Significant Match Found

DV One-Page Summary

KIC: 8509469 Candidate: 7 of 7 Period: 2.890 d



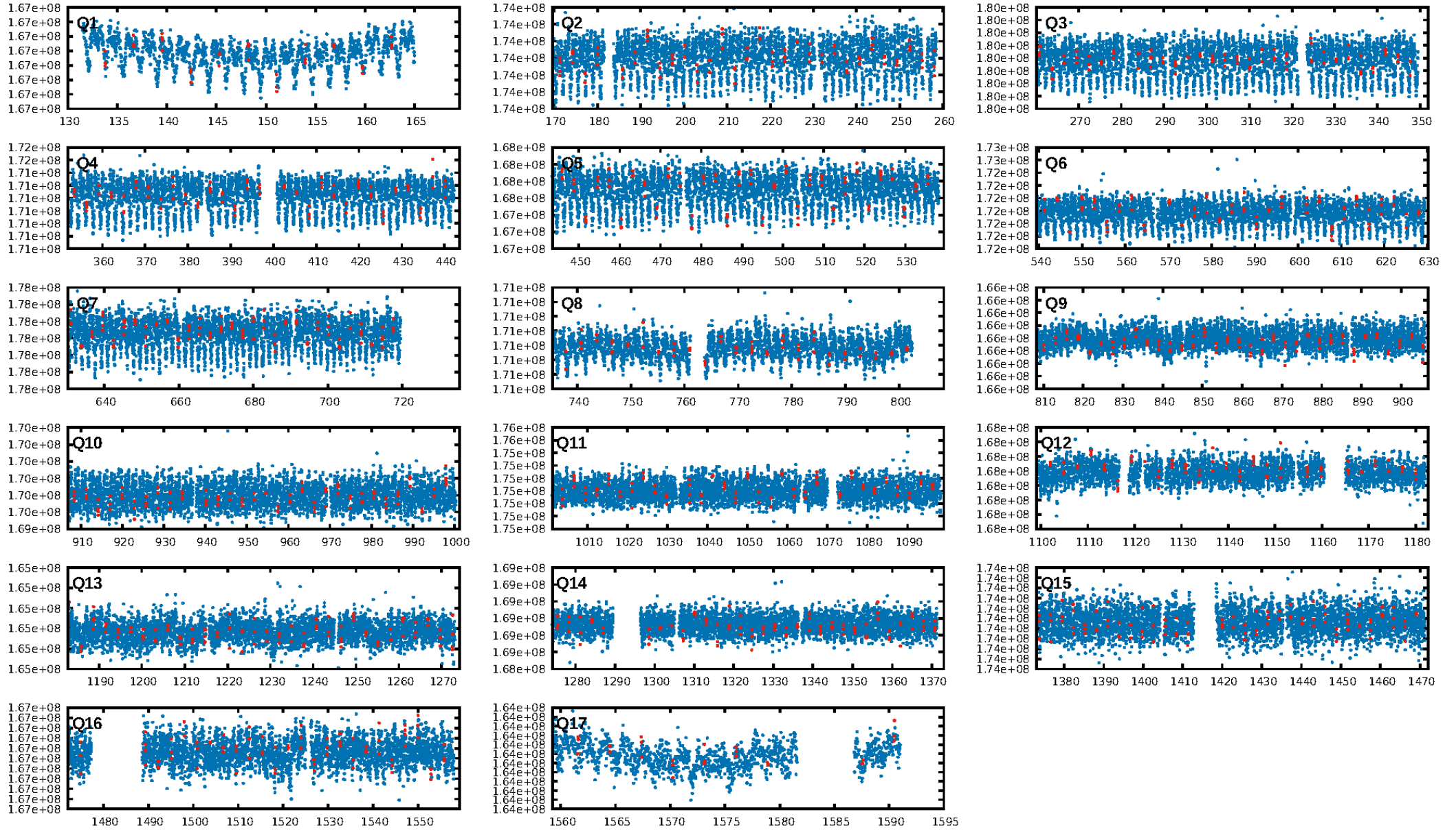
DV Fit Results:

Period = 2.89036 [0.00012] d
Epoch = 133.7319 [0.0127] BKJD
Rp/R* = 0.0072 [0.0306]
a/R* = 26.25 [622.01]
b = 0.41 [48.56]
Seff = 5613.92 [2835.48]
Teq = 2207 [279] K
Rp = 2.07 [8.85] Re
a = 0.0470 [0.0153] AU
Ag = 21.32 [182.05] [0.11σ]
Teffp = 7333 [15630] K [0.33σ]

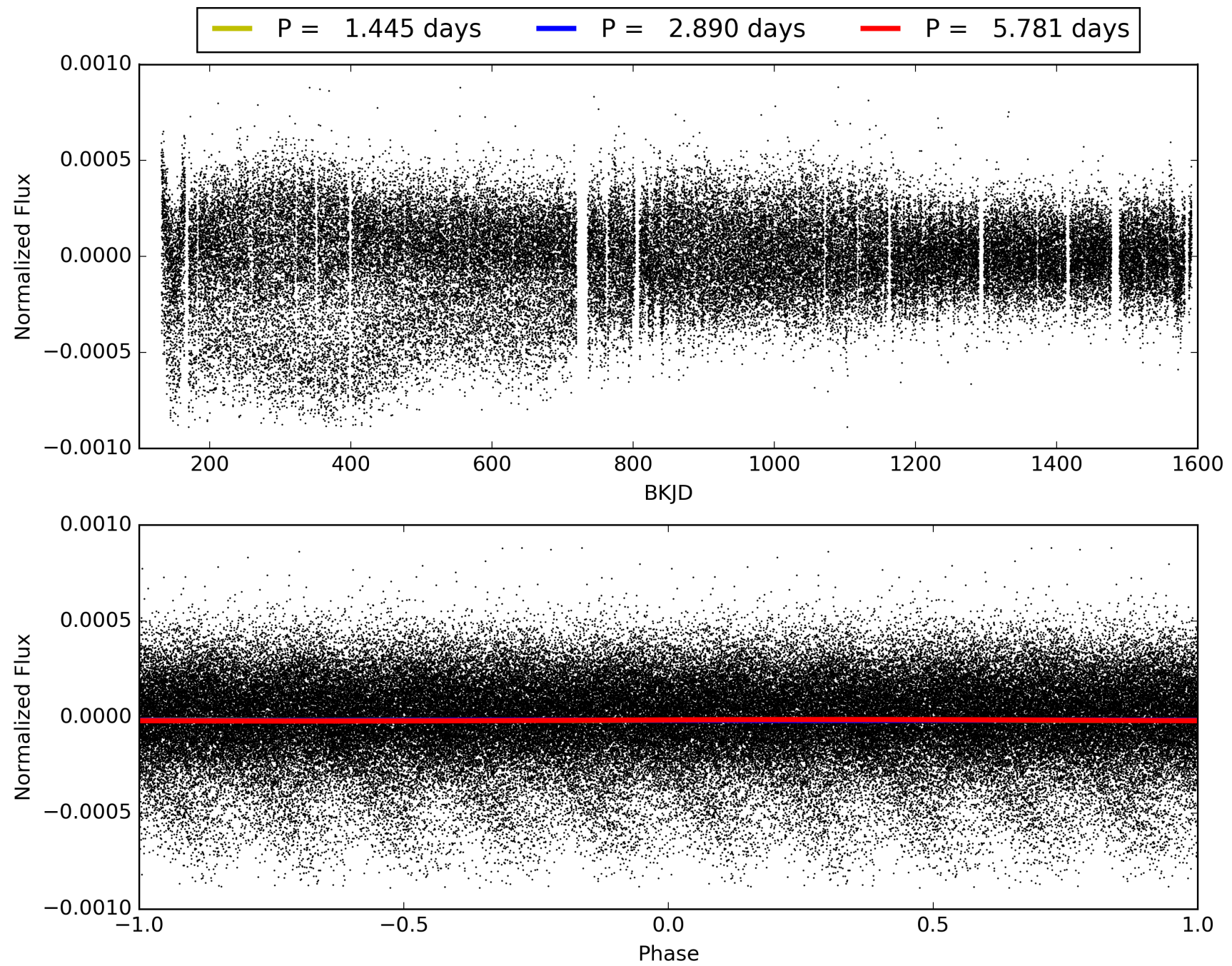
DV Diagnostic Results:

ShortPeriod-sig: 96.0% [2.06σ]
LongPeriod-sig: 100.0% [4.26σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: -1.08
Centroid-sig: 16.6%
Centroid-so: 0.914 arcsec [0.97σ]
OotOffset-rm: 0.887 arcsec [1.88σ]
OotOffset-st: 3/3/4/2 [12]
KicOffset-rm: 0.939 arcsec [2.01σ]
KicOffset-st: 3/3/4/2 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008509469-07, PDC Light Curves

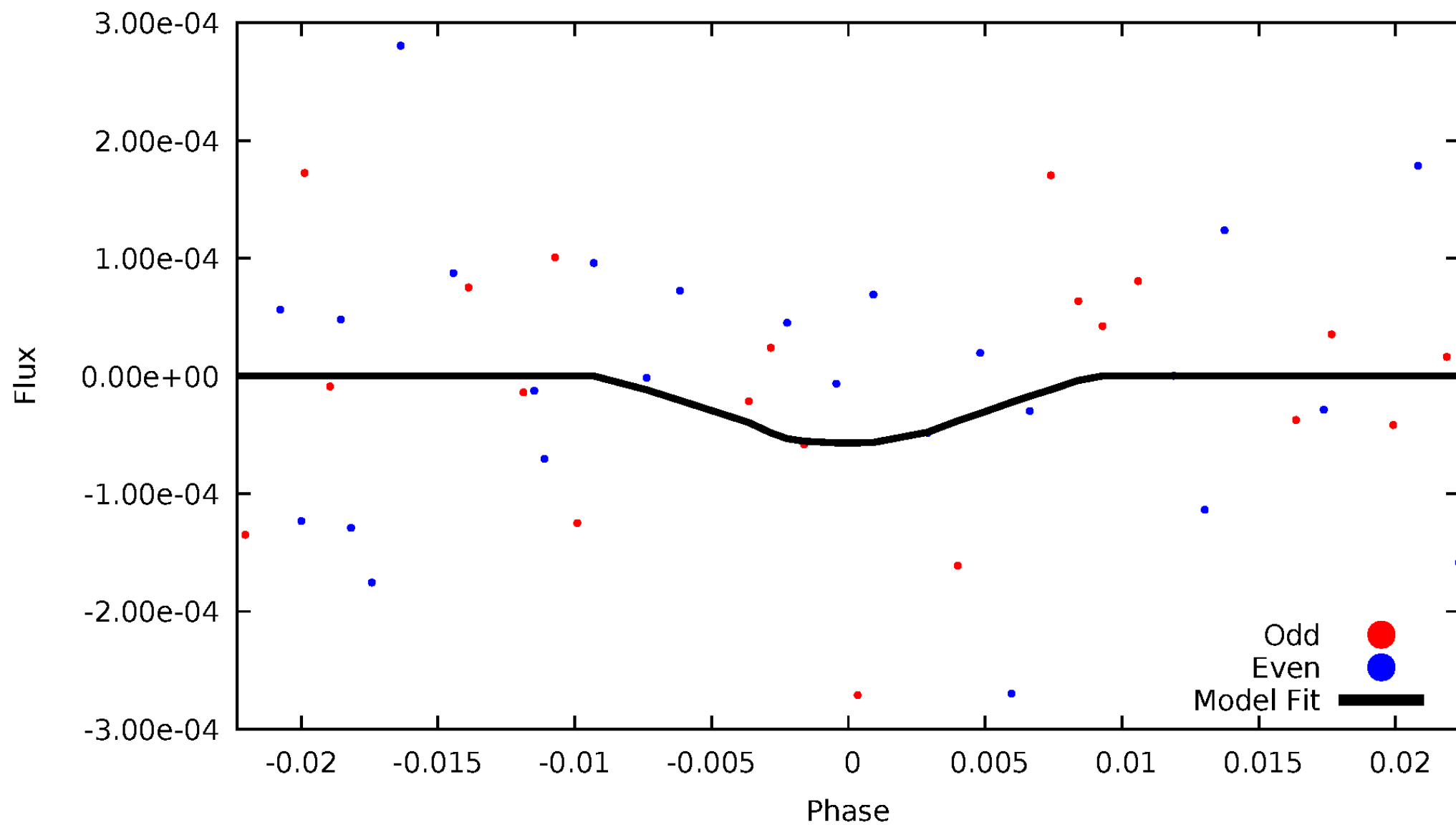


TCE 008509469-07



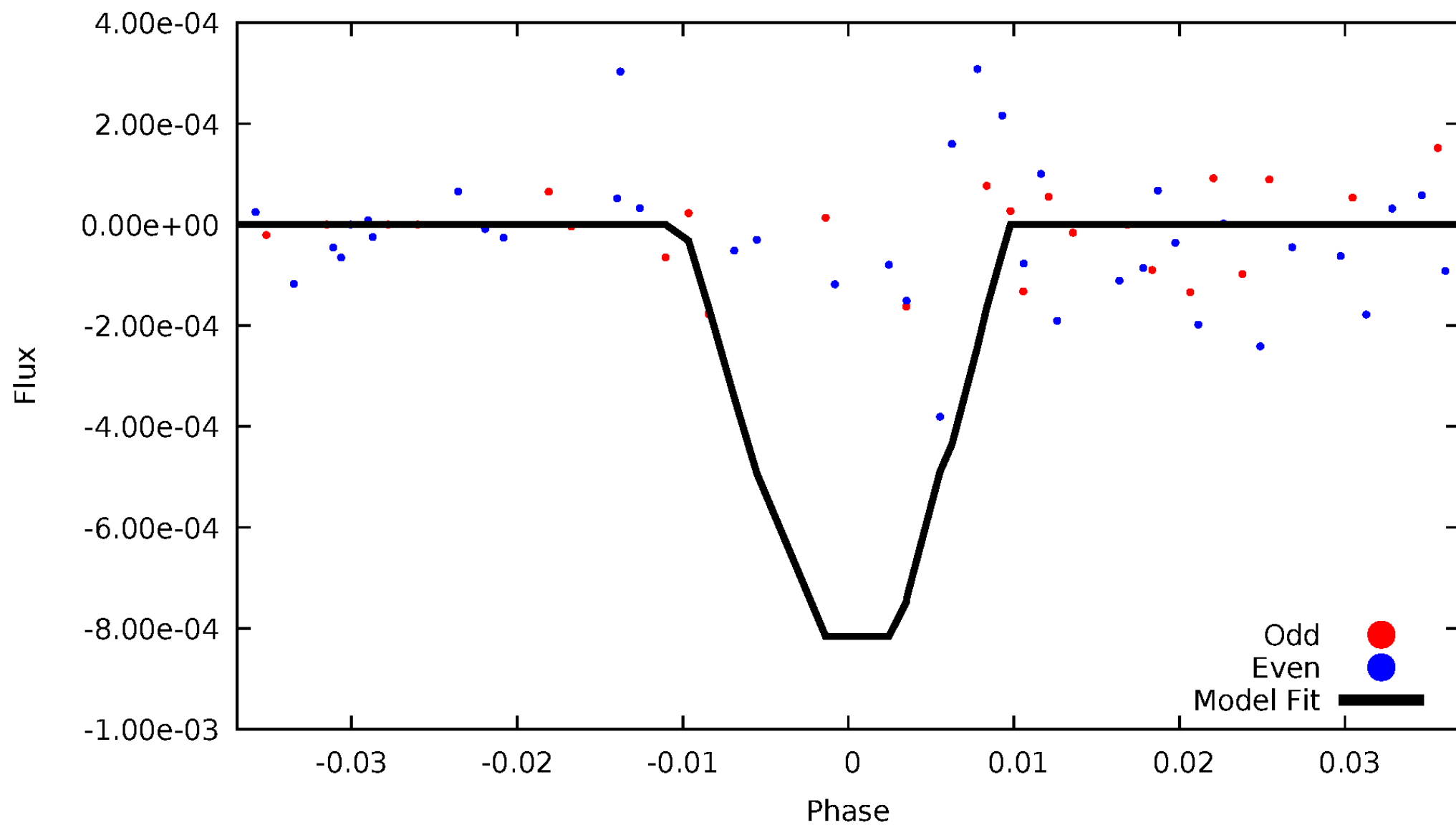
DV Odd/Even

TCE 008509469-07



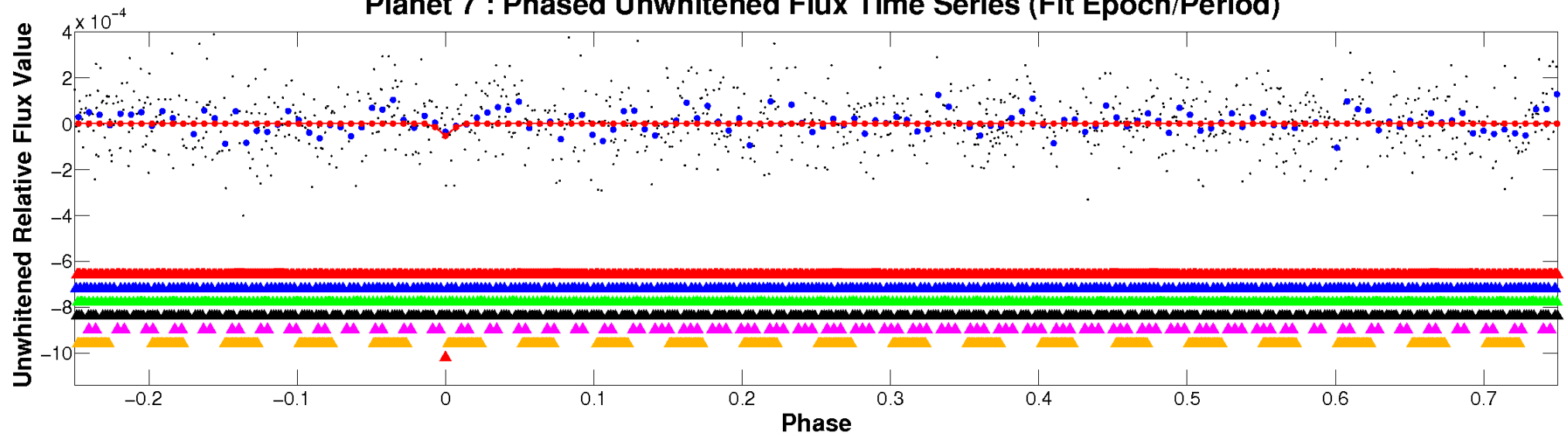
ALT Odd/Even

TCE 008509469-07

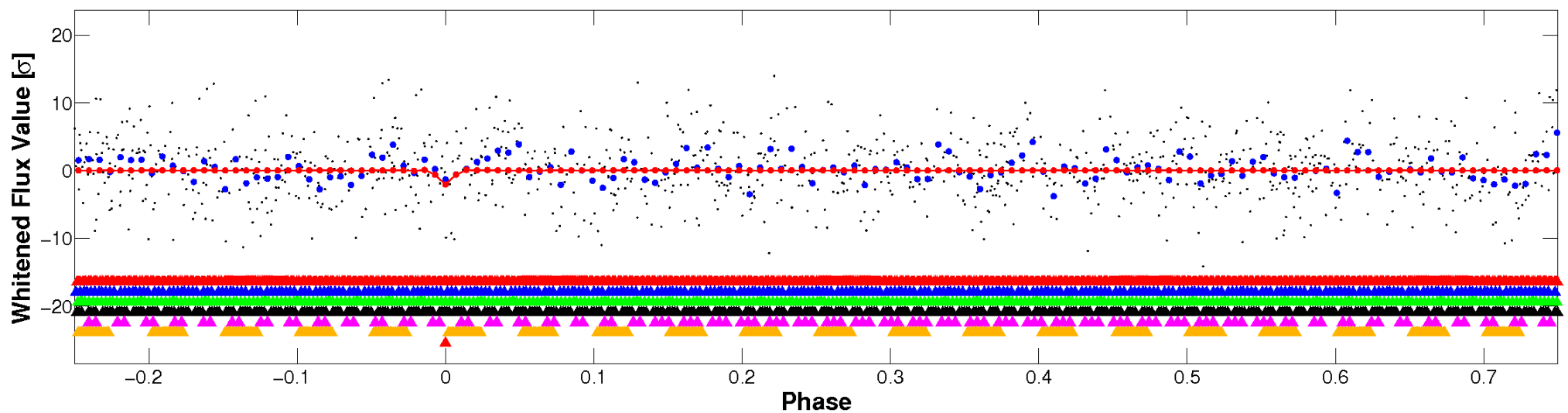


Non-Whitened Vs. Whitened Light Curve

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

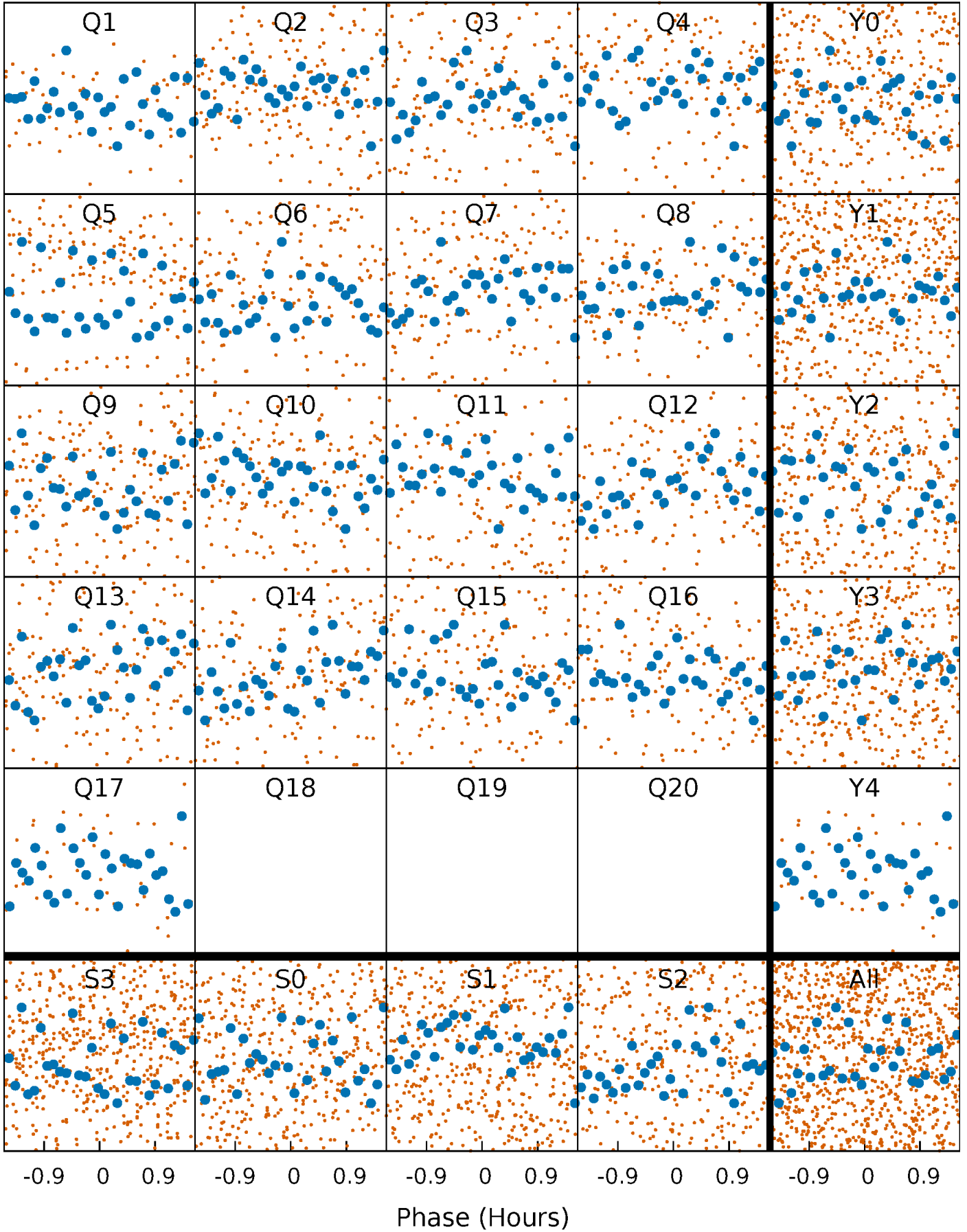


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



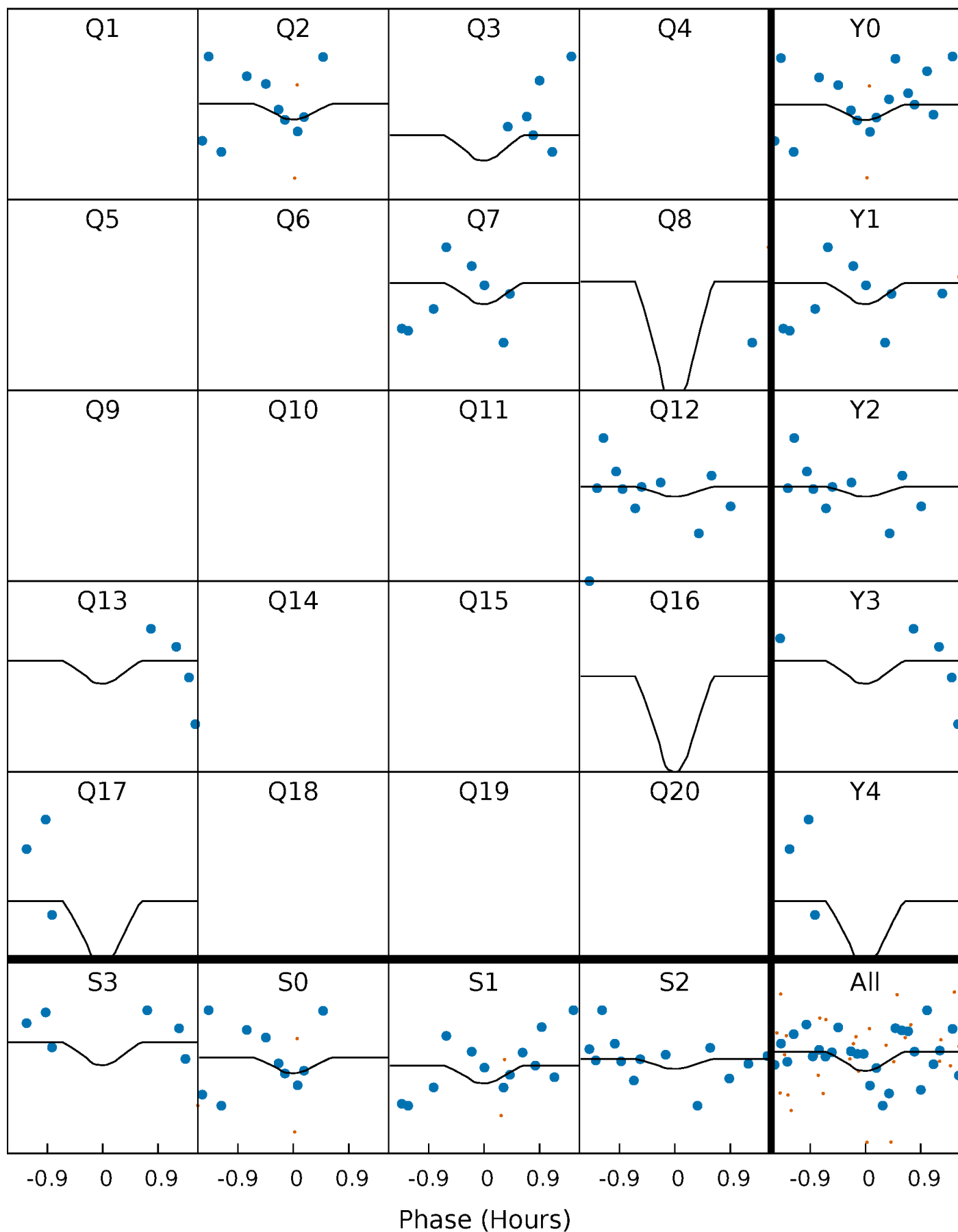
PDC Quarter-Phased Transit Curves

TCE 008509469-07 P= 2.890361 Days $T_0=133.731871$ (BKJD)



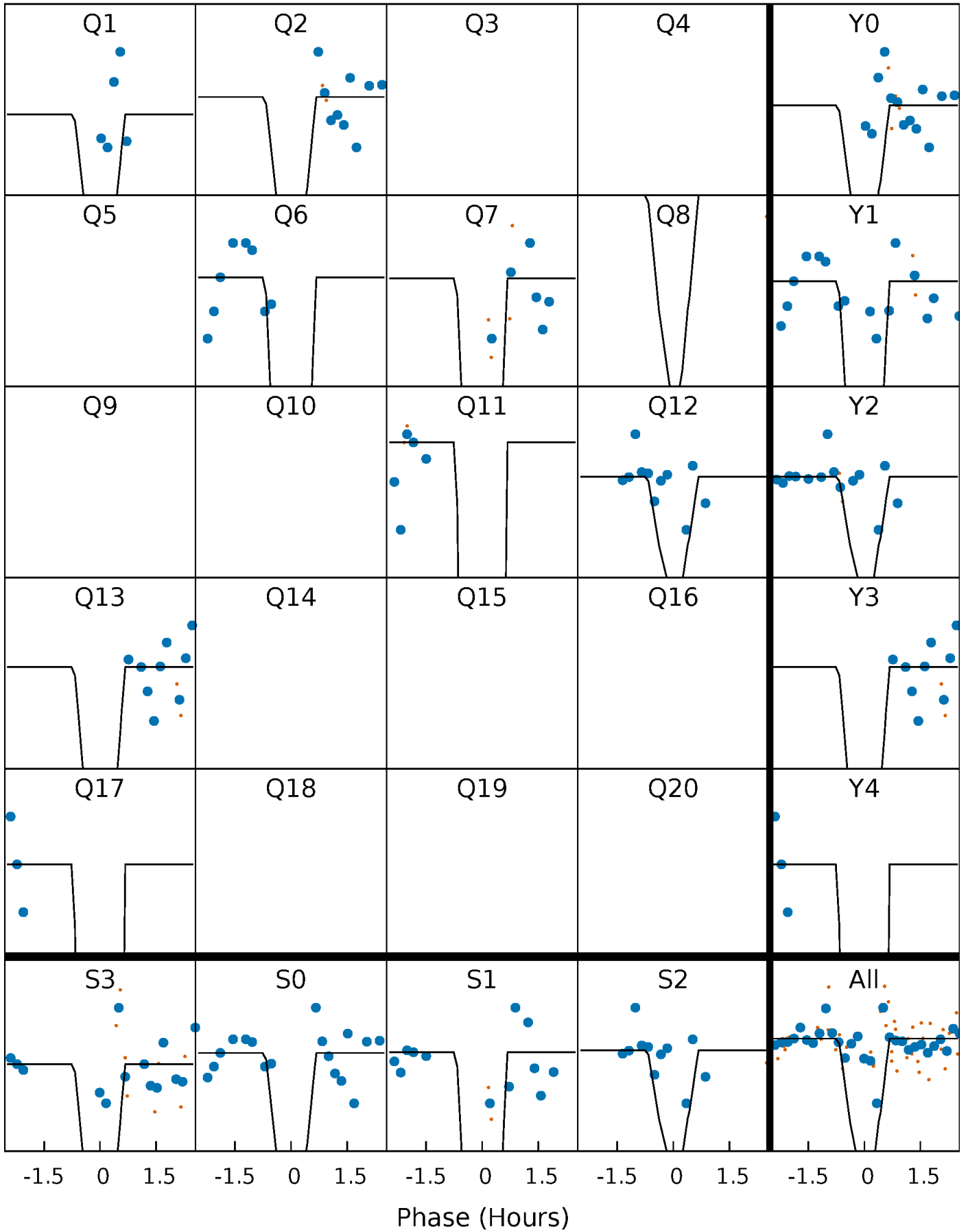
DV Quarter-Phased Transit Curves

TCE 008509469-07 P= 2.890361 Days $T_0=133.731871$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

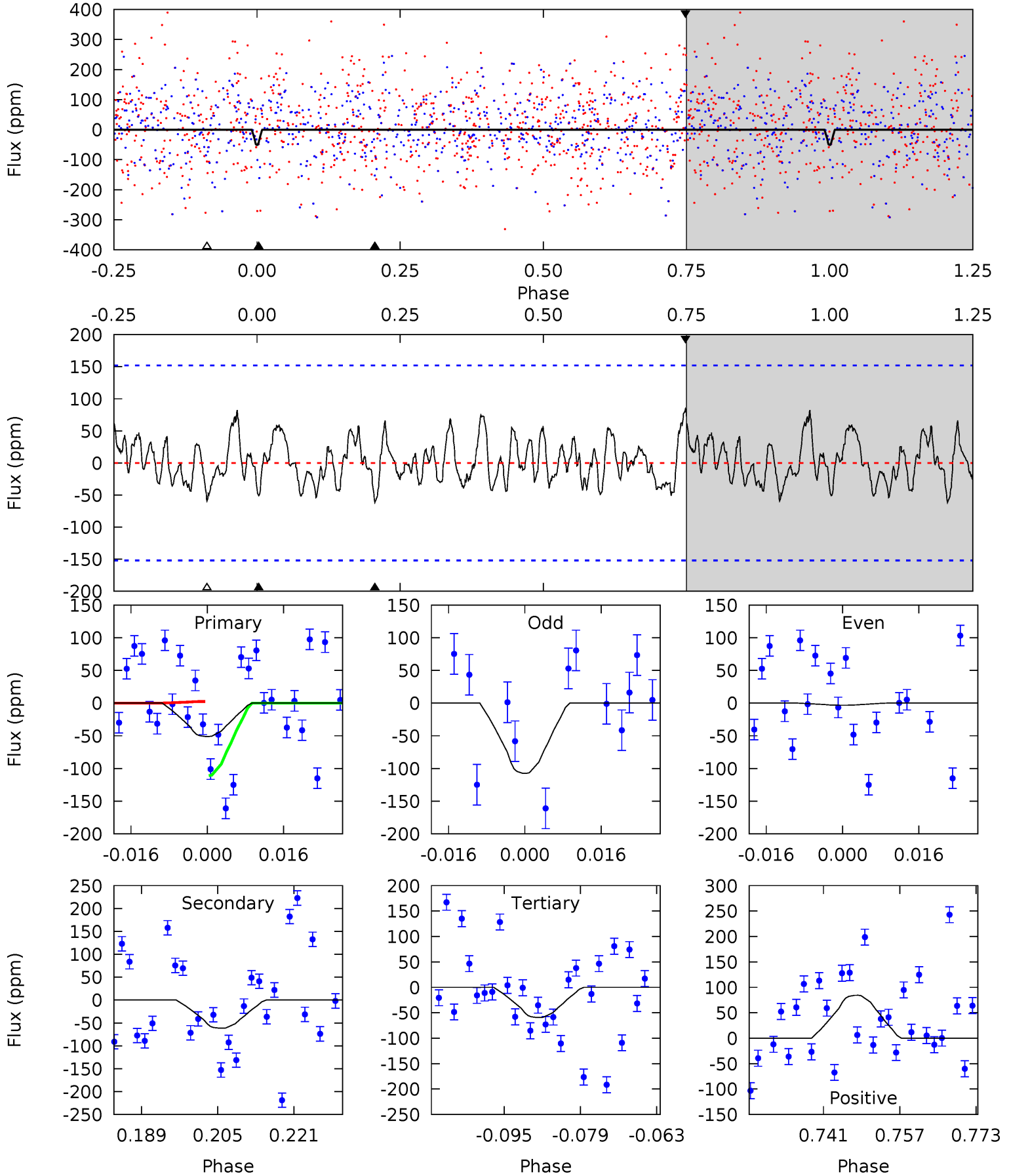
TCE 008509469-07 P= 2.890724 Days $T_0=133.601589$ (BKJD)



DV Model-Shift Uniqueness Test

008509469-07, P = 2.890361 Days, E = 130.841510 Days

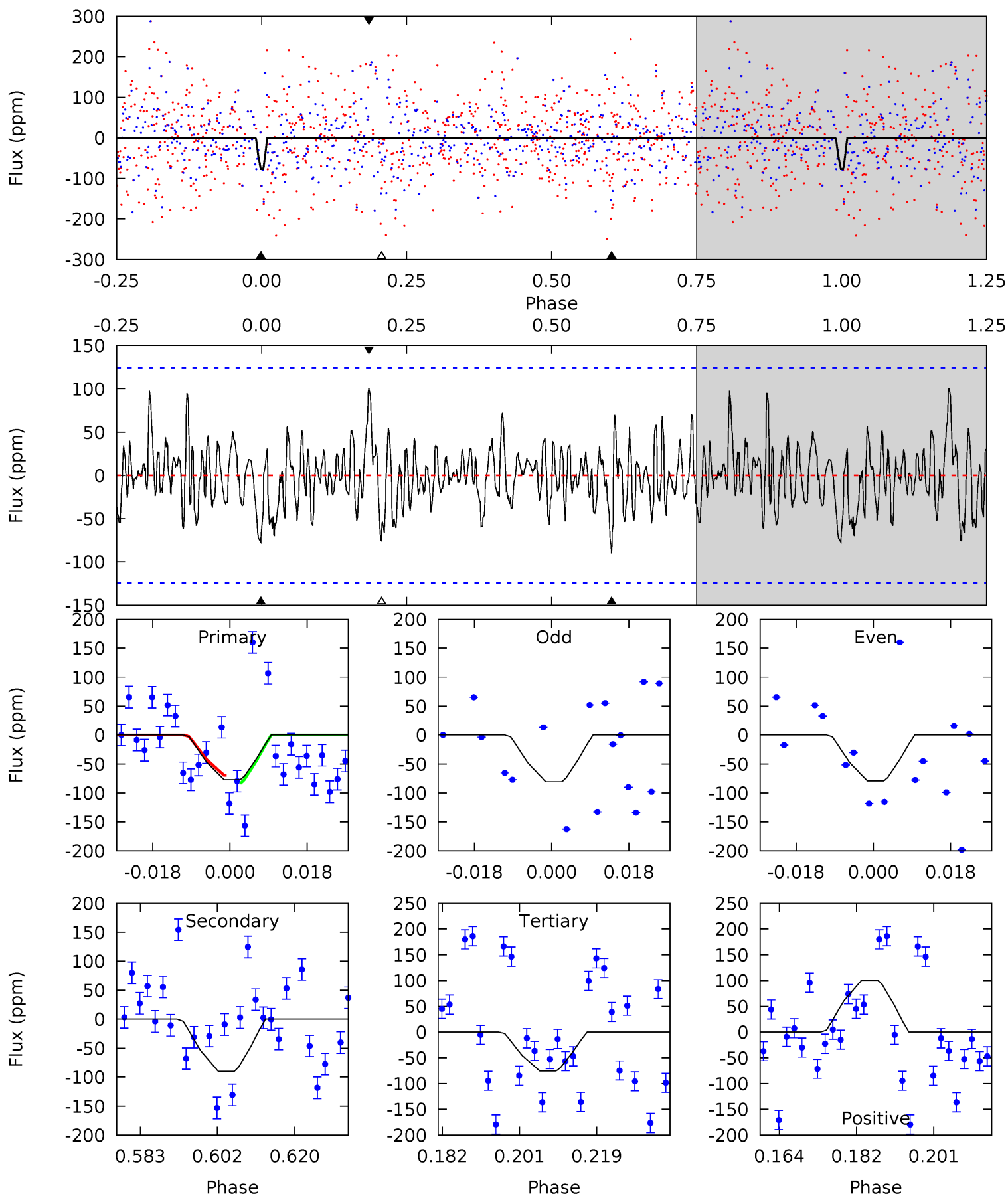
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.66	2.00	1.93	2.74	4.94	2.41	1.00	-0.27	-1.08	0.07	-0.74	1.67	3.64	0.58	1.79



Alt Model-Shift Uniqueness Test

008509469-07, P = 2.890724 Days, E = 130.710865 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.03	3.55	2.98	3.97	4.91	2.36	1.16	0.05	-0.94	0.57	-0.42	0.02	1.00	0.53	0.28



Stellar Parameters For KIC 008509469

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6669^{+179}_{-219}	$3.812^{+0.273}_{-0.117}$	$-0.040^{+0.250}_{-0.250}$	$2.643^{+0.495}_{-0.989}$	$1.650^{+0.186}_{-0.346}$	$0.126^{+0.239}_{-0.047}$
	+3%/-3%	+7%/-3%	+625%/-625%	+19%/-37%	+11%/-21%	+190%/-37%
Source	PHO1	FLK73	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 008509469-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-61 ± 31	$6.33^{+6.50}_{-4.55}$	3037^{+207}_{-263}	3919^{+3001}_{-1514}	$1.661^{+18.659}_{-1.308}$
Alt.	-90 ± 25	$9.11^{+8.05}_{-5.79}$	3030^{+195}_{-267}	3661^{+2276}_{-1336}	$1.217^{+9.139}_{-0.883}$

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

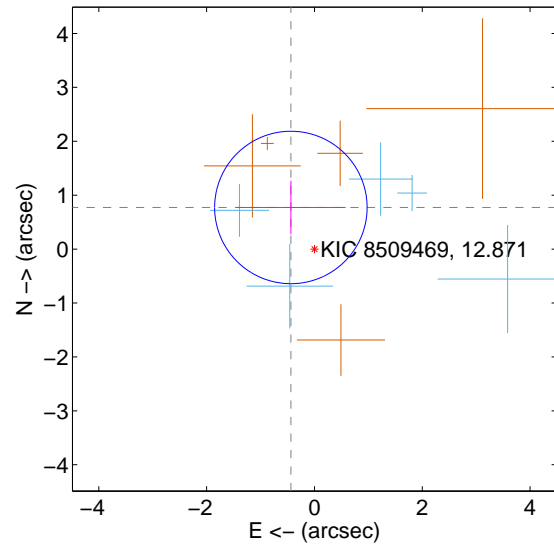
Supplemental centroid analysis for 008509469-07. Kepler magnitude: 12.87. Transit SNR 6.16

There are 5 quarters with good PRF difference image offsets

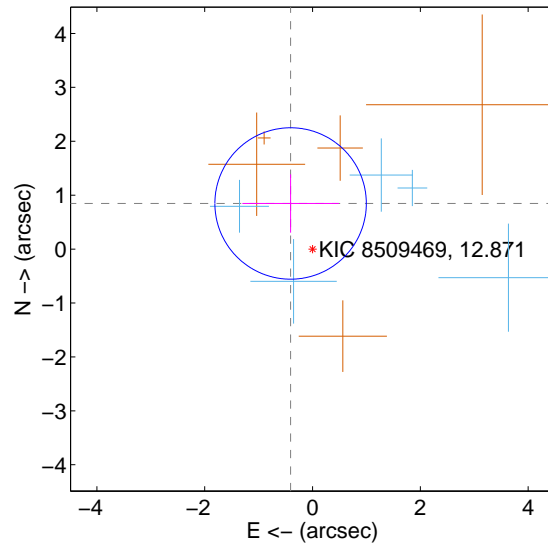
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.887 ± 0.471	1.88	0.437 ± 1.017	0.772 ± 0.496
PRF-fit source offset from KIC position	0.939 ± 0.468	2.01	0.407 ± 0.894	0.846 ± 0.541
photometric centroid source offset	0.91 ± 0.94	0.97	0.52 ± 0.94	-0.75 ± 0.95

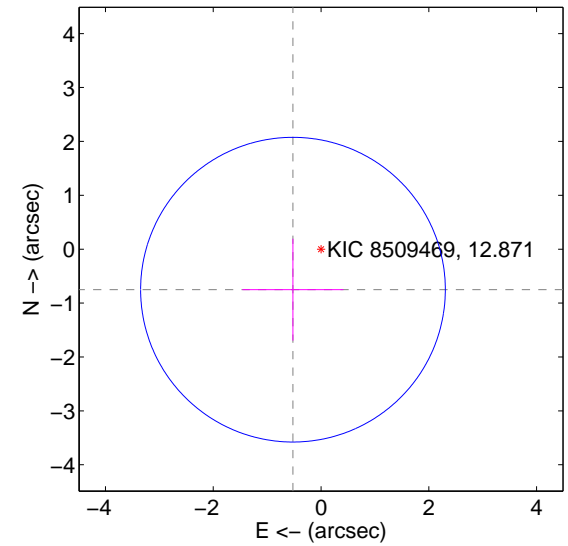
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

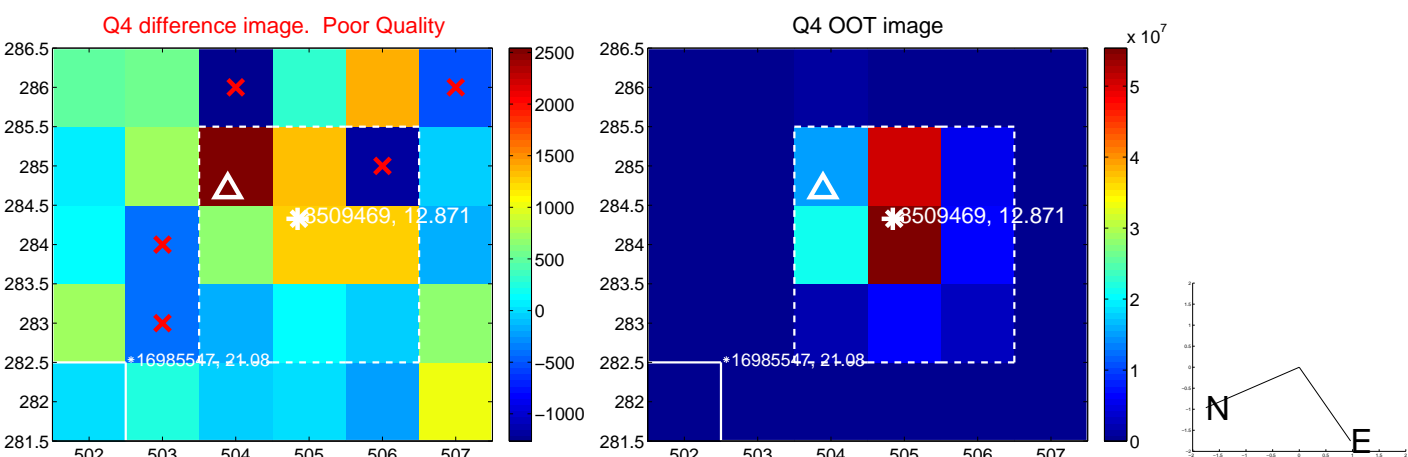
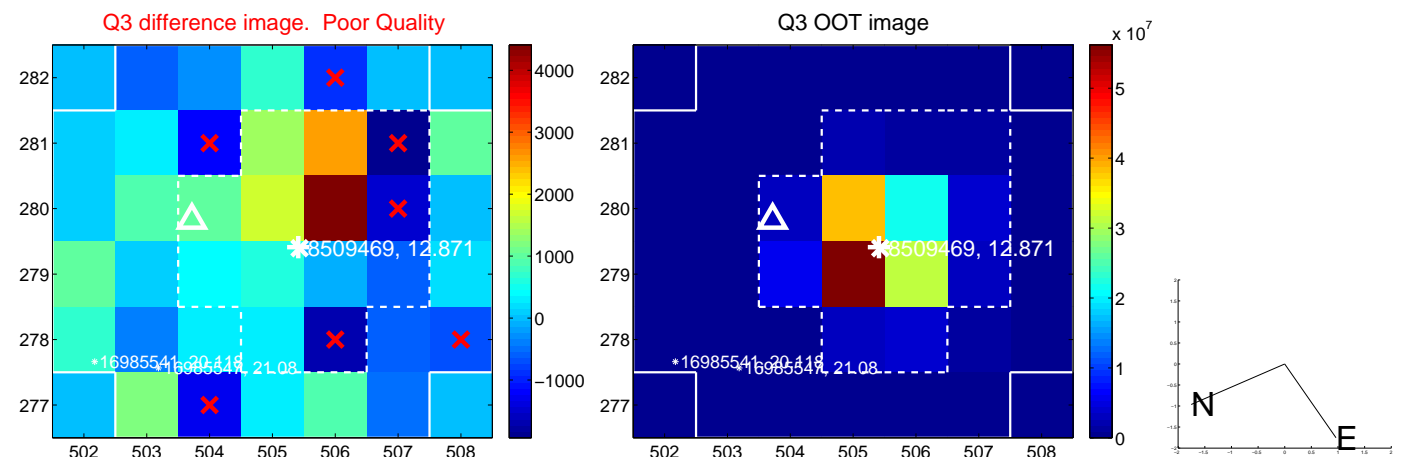
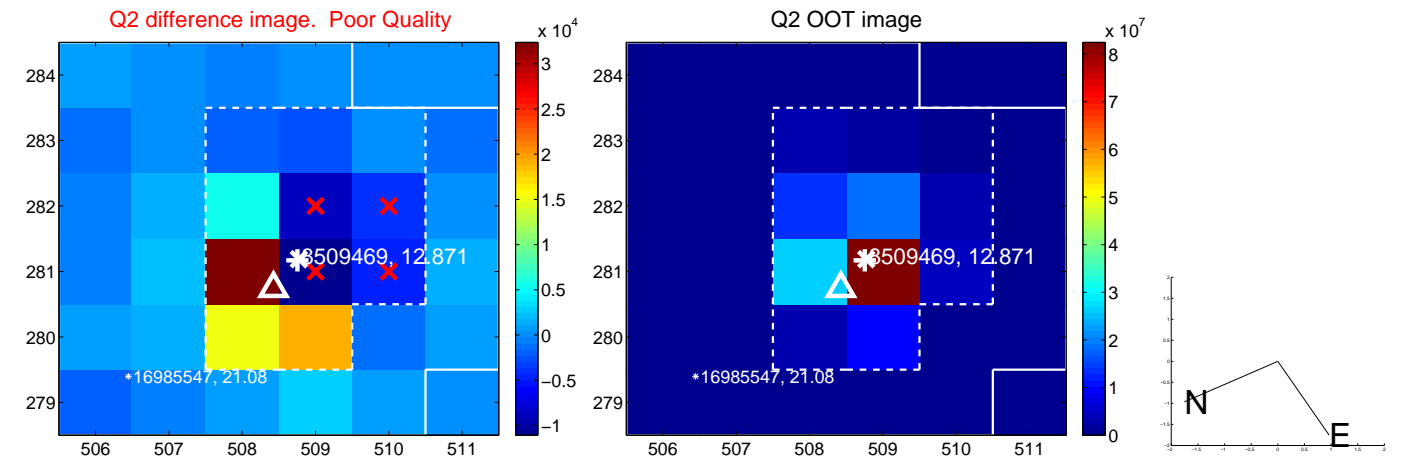
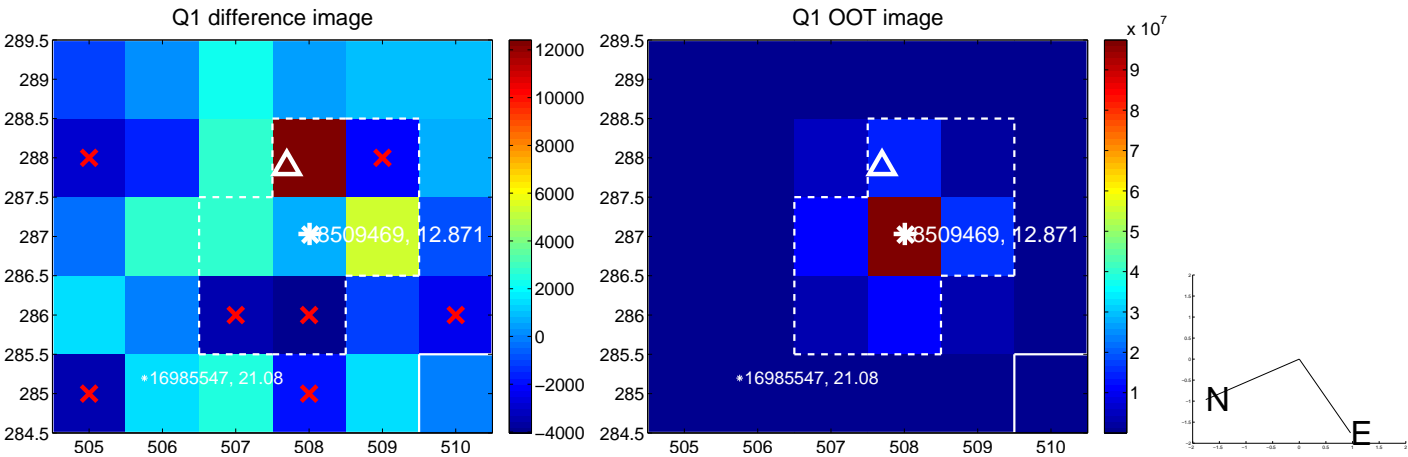


offset from photometric centroids

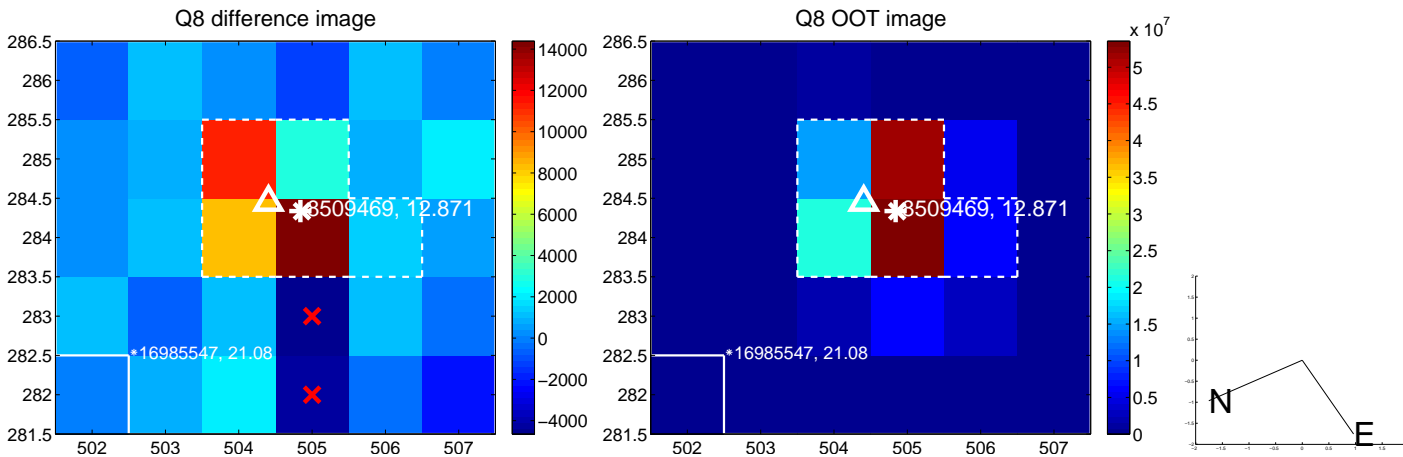
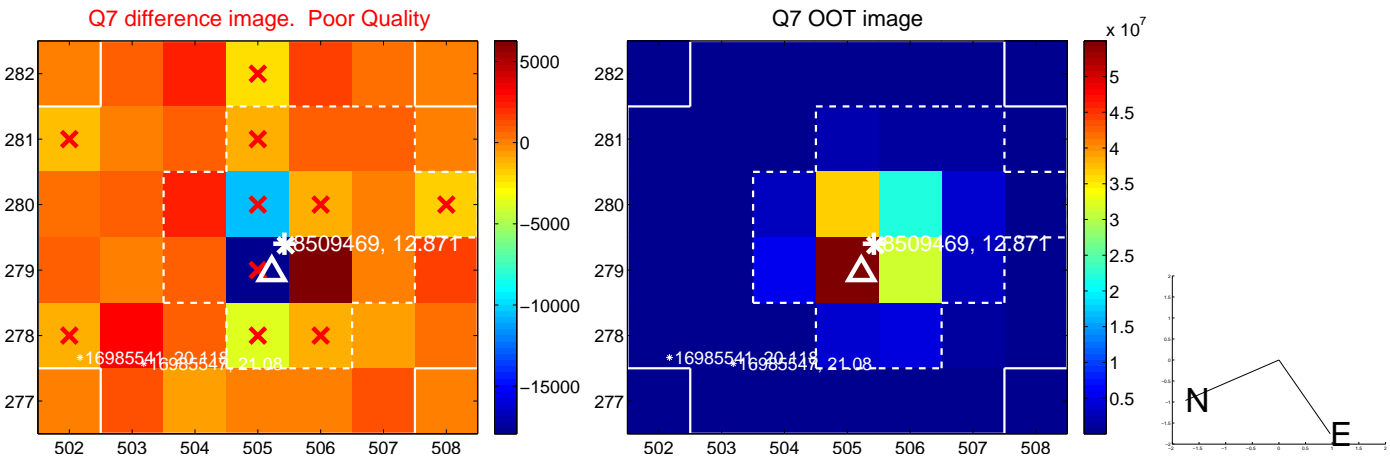
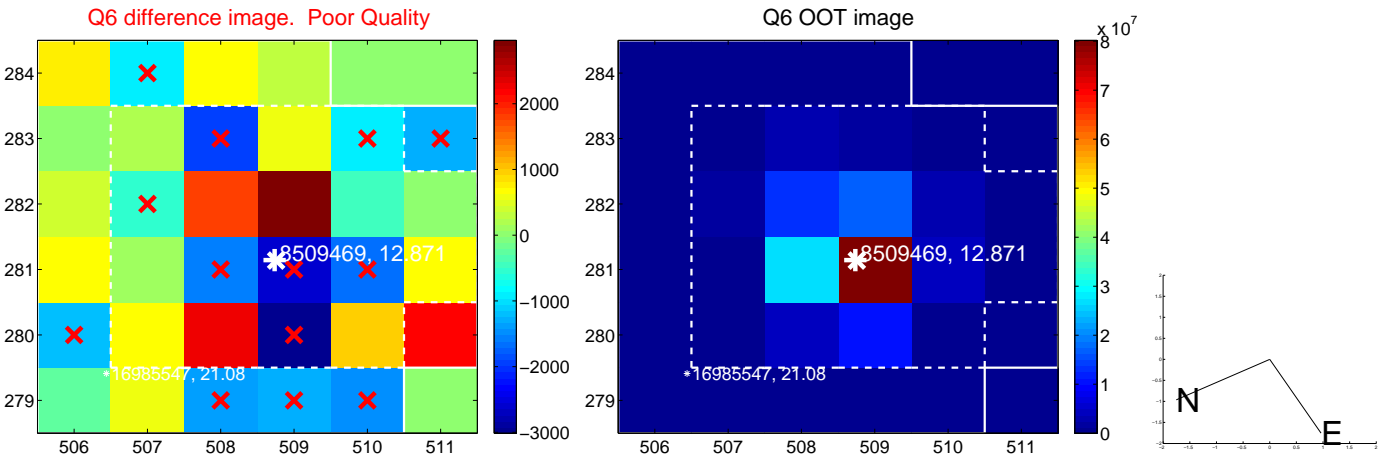
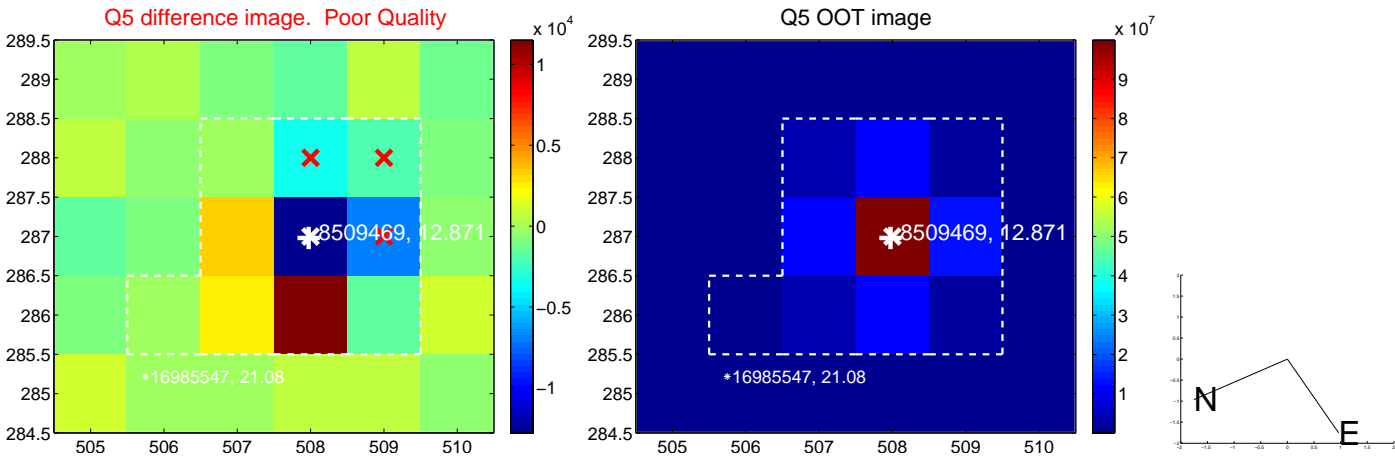


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

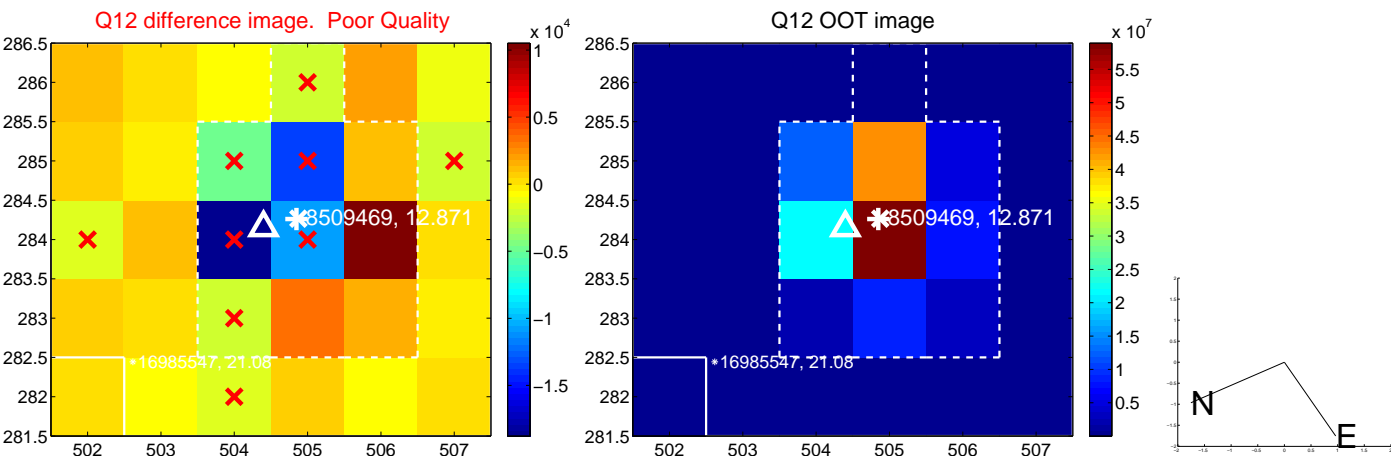
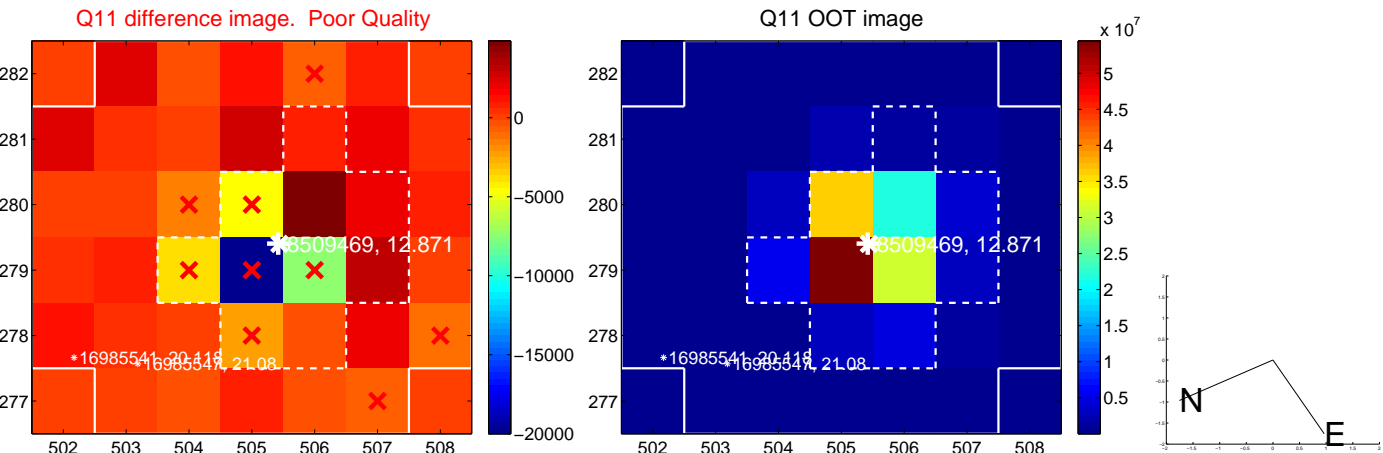
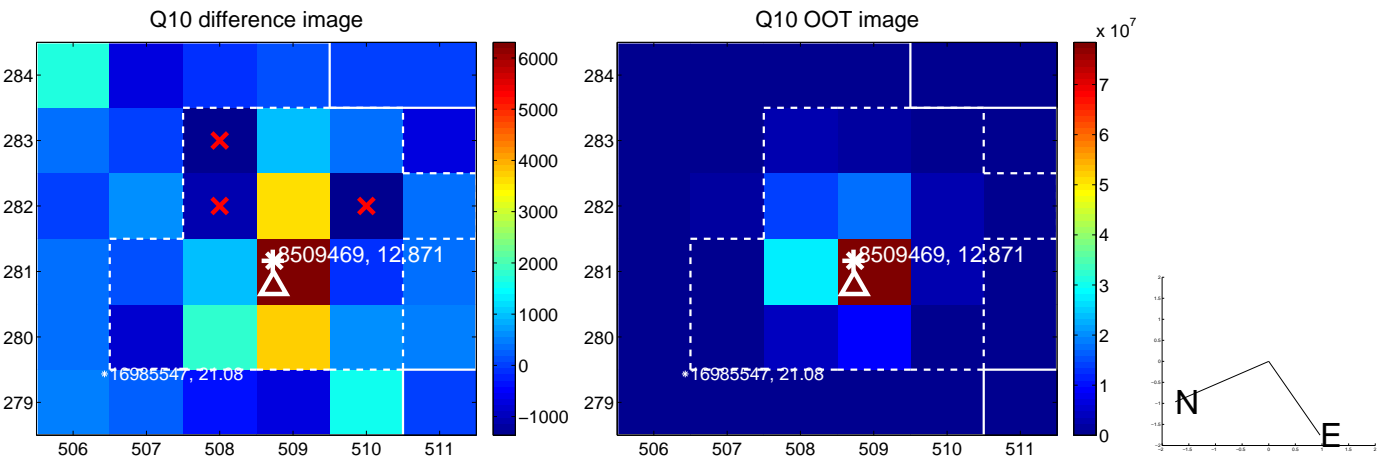
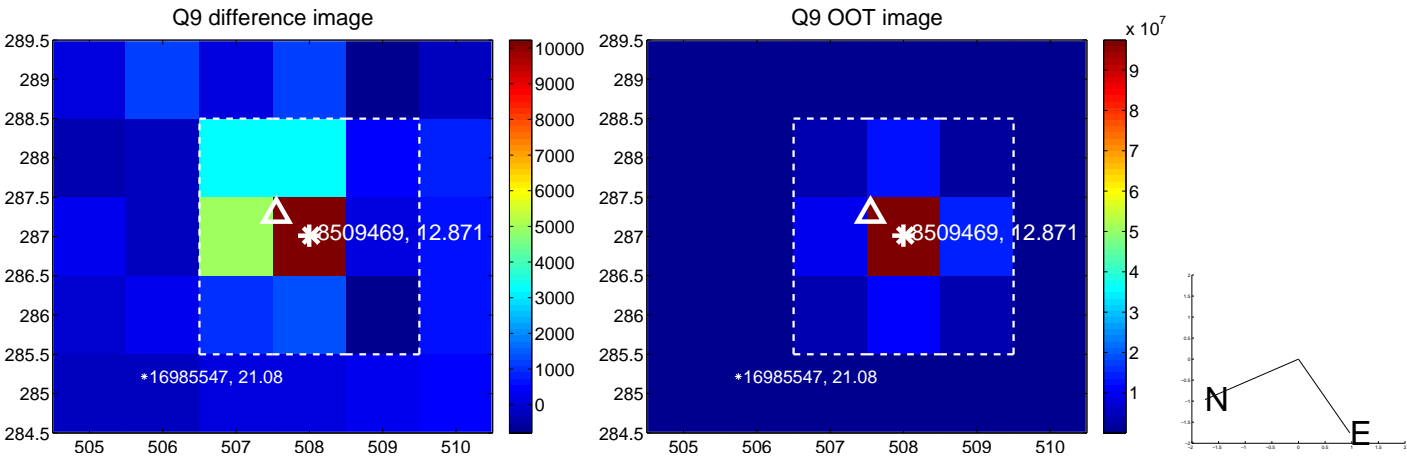
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



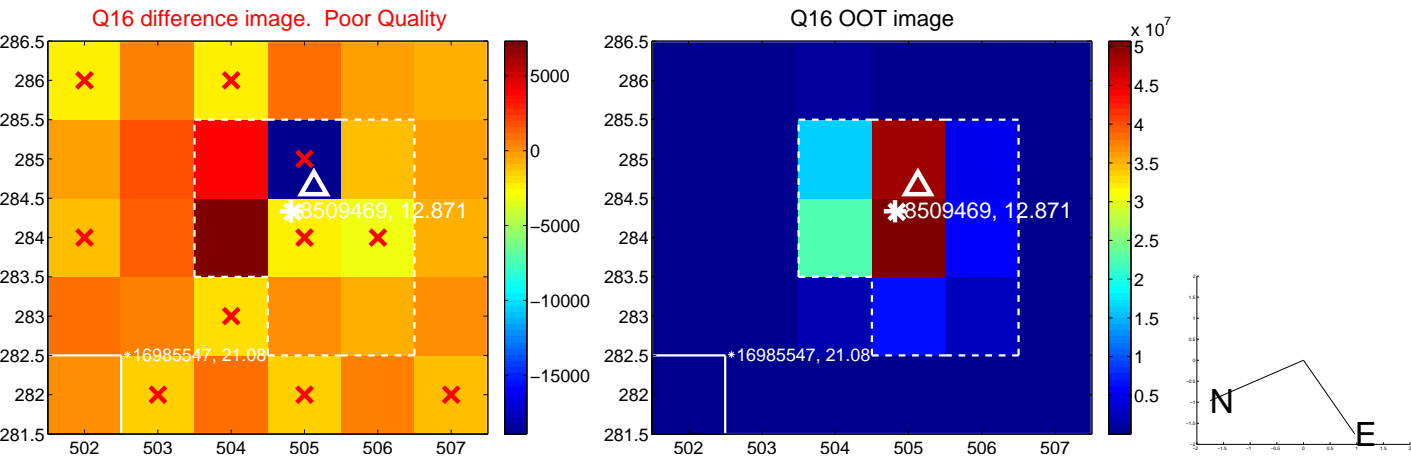
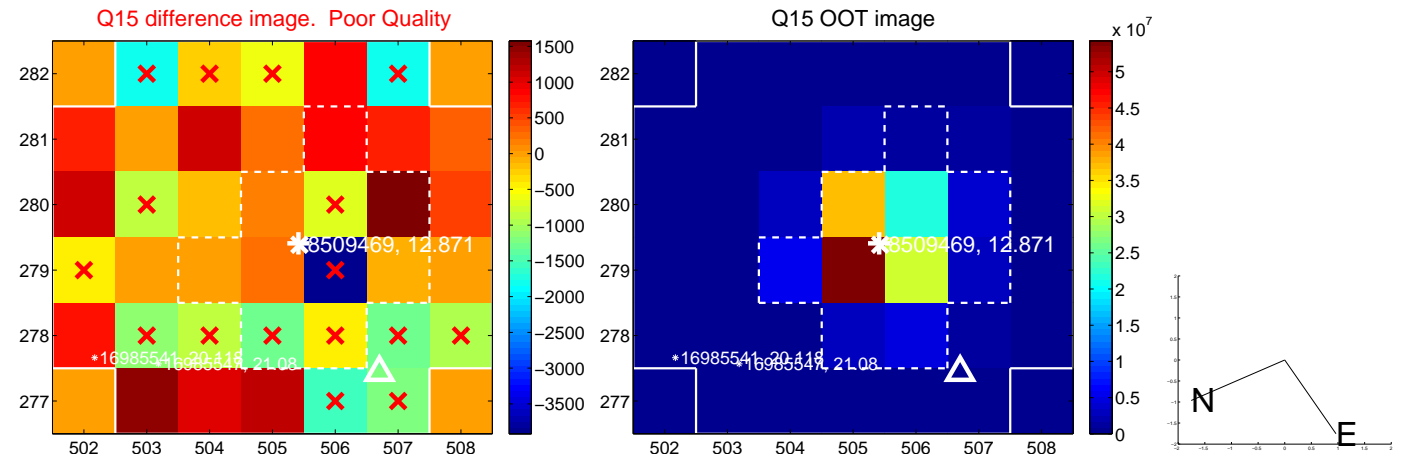
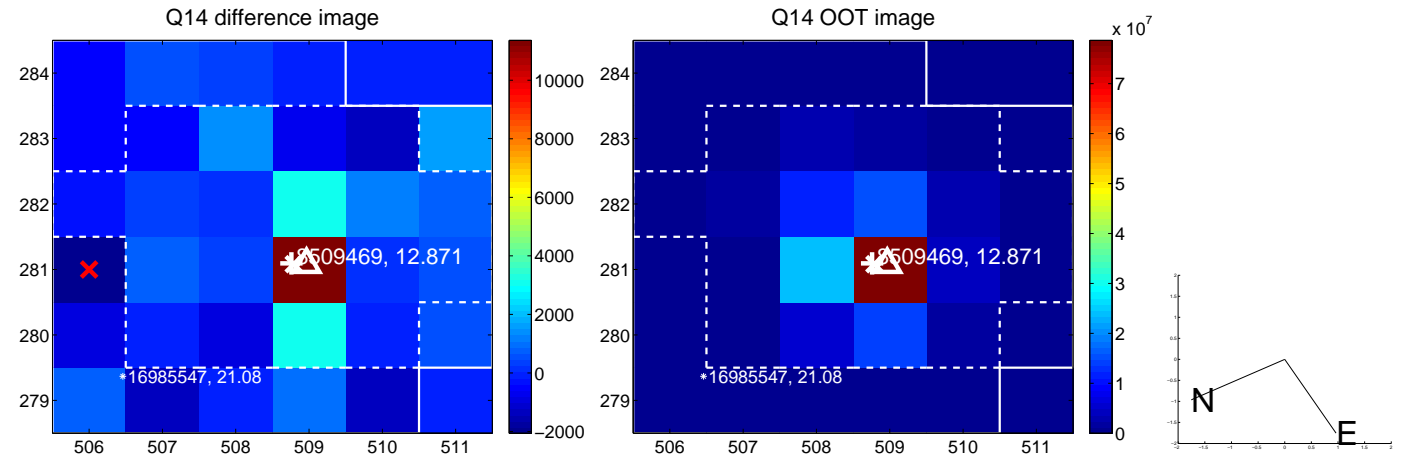
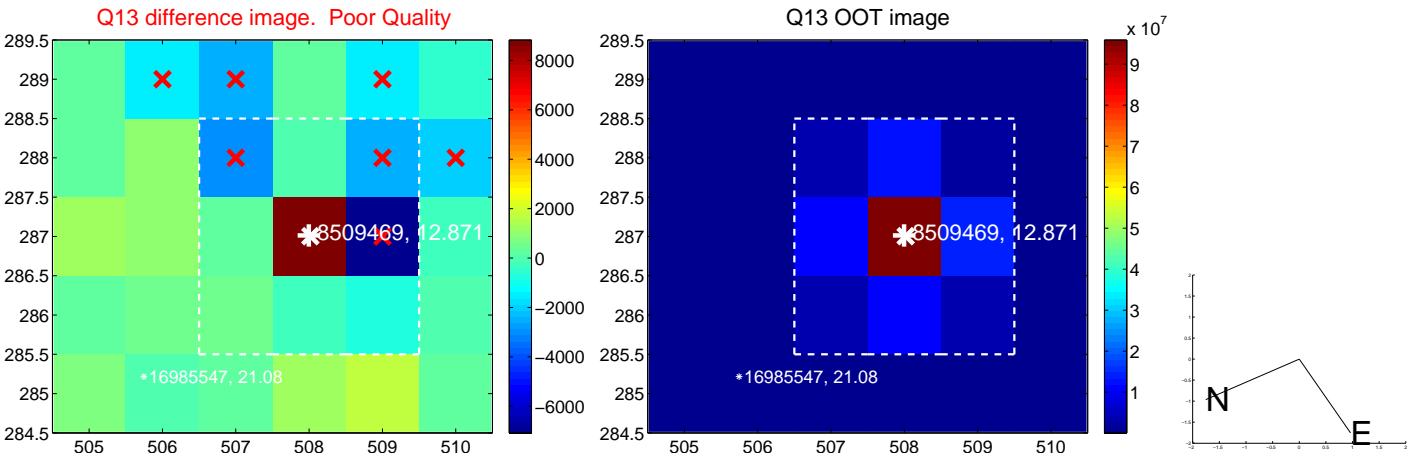
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



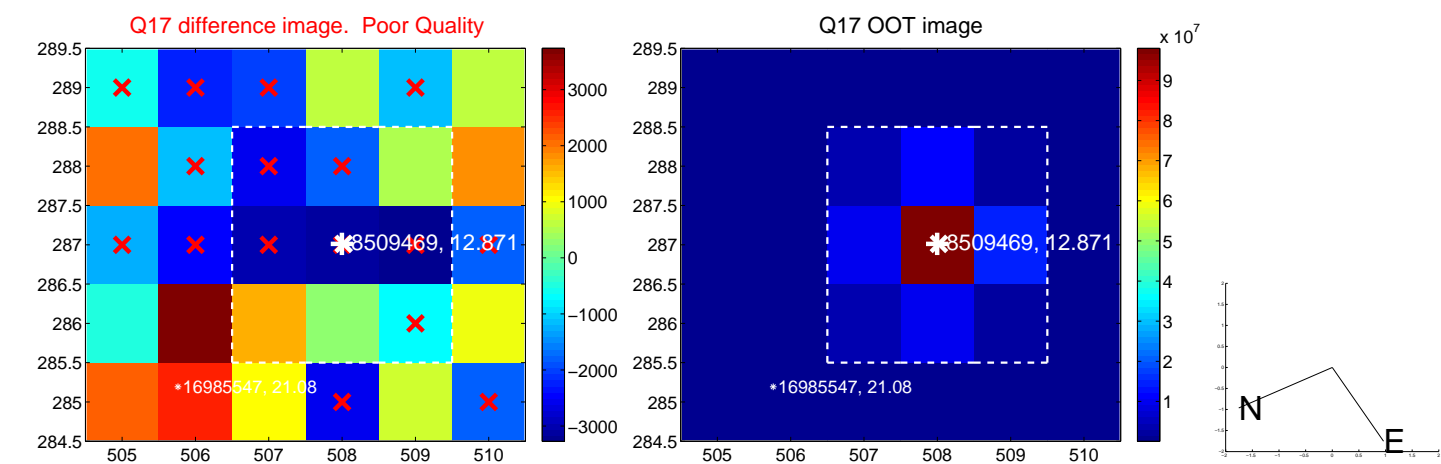
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



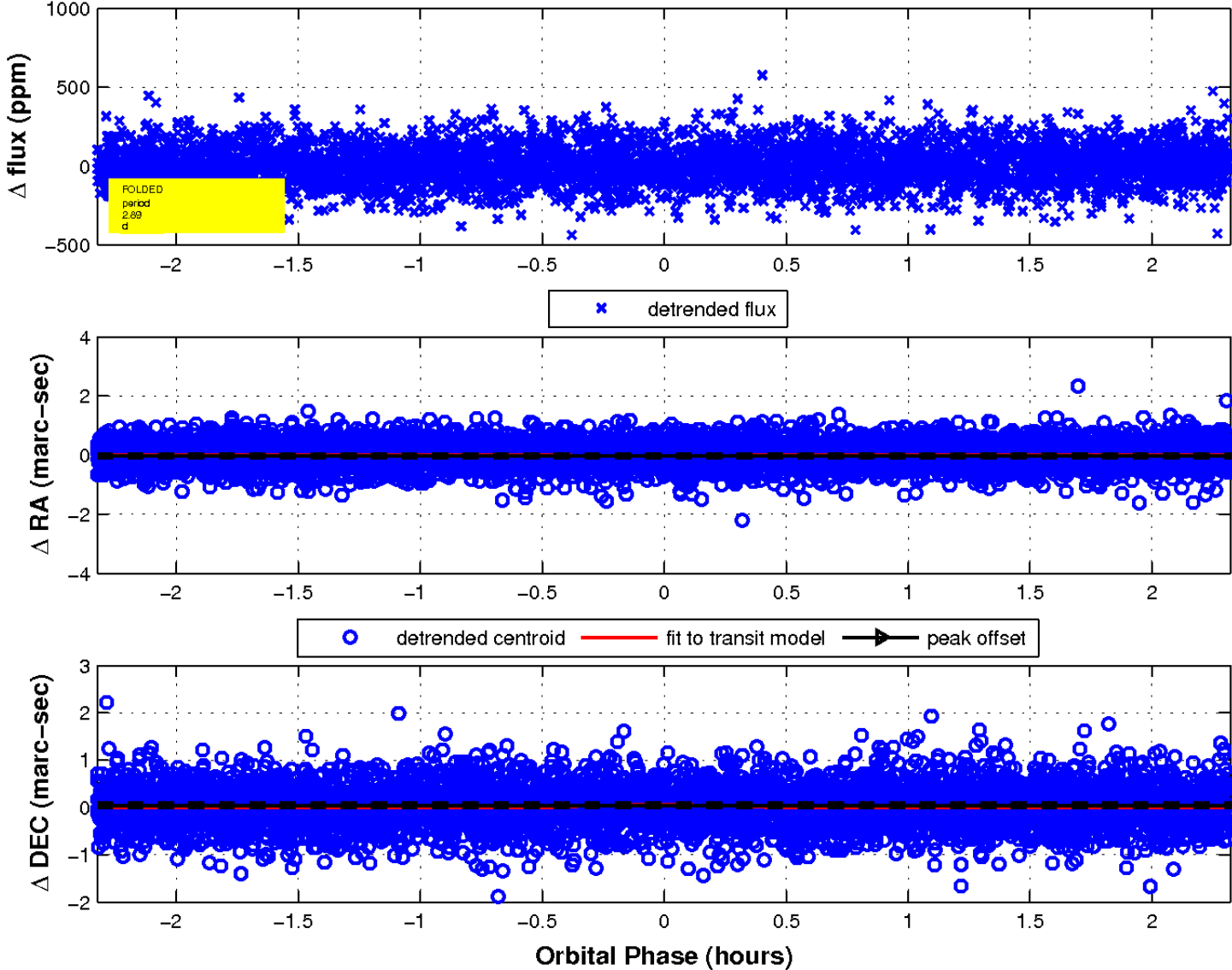
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 7 of 7



UKIRT Image

Declination

