

KIC 009084512

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})
009084512-01	OBS	No	2.106636	133.337421	14.8	9.147	9.6	8.1	1.58	7350	0.70	4901.88
009084512-02	OBS	No	285.804620	203.682109	212.4	12.923	16.7	8.4	1.58	7350	2.53	7.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009084512-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009084512-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

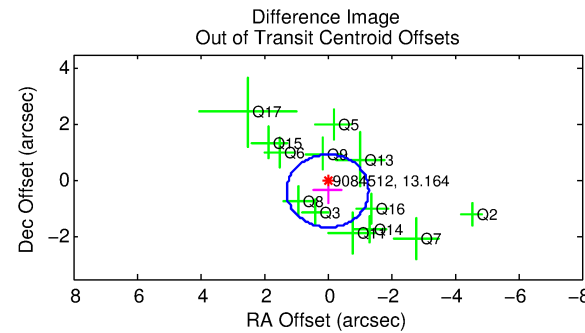
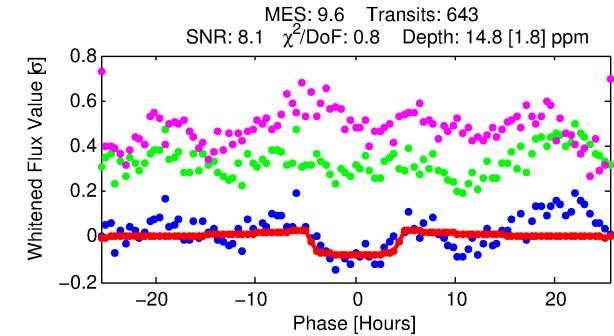
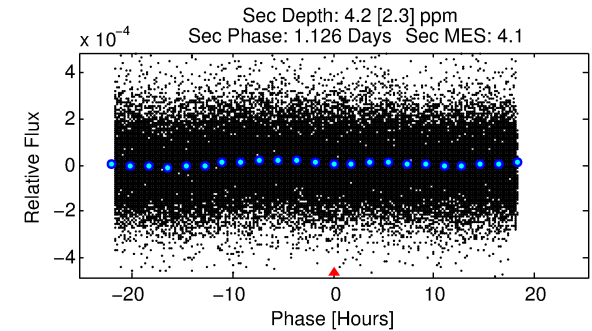
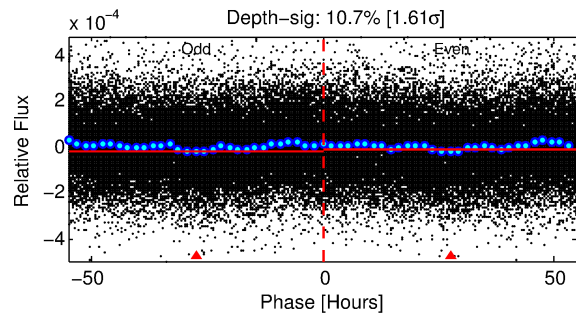
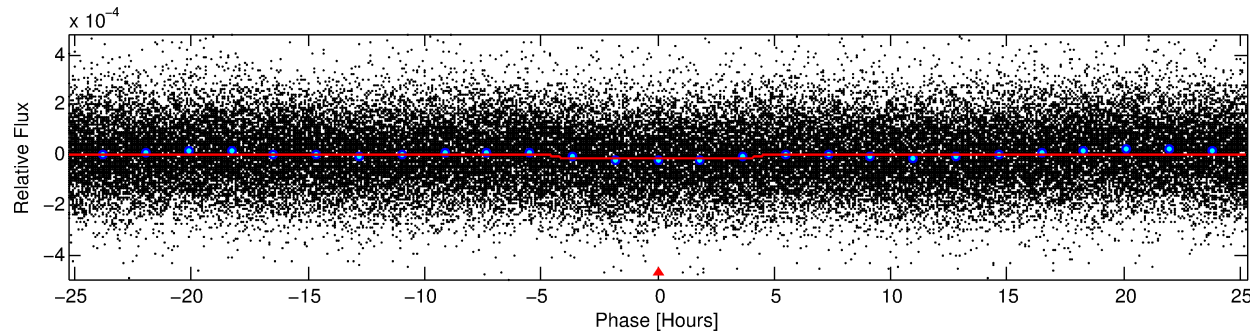
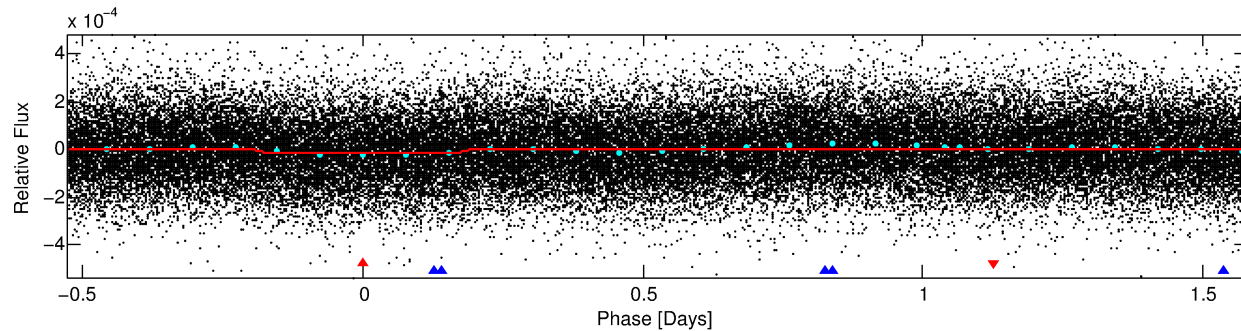
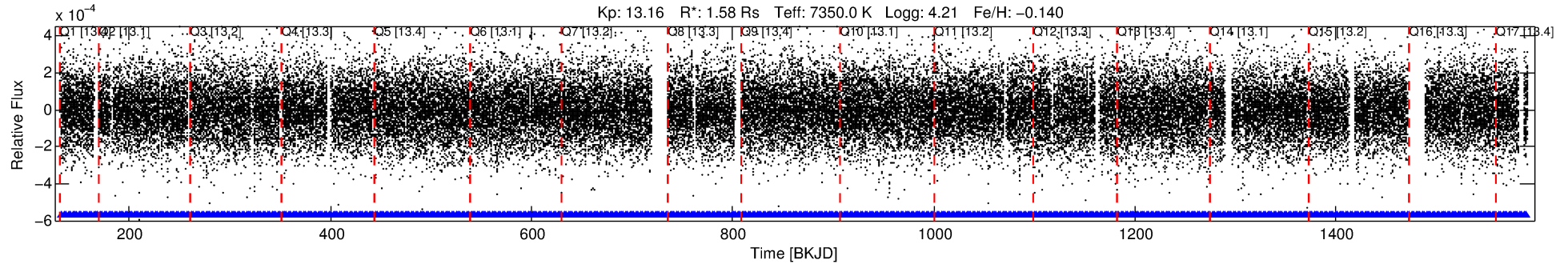
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009084512-01

No Significant Match Found

DV One-Page Summary

KIC: 9084512 Candidate: 1 of 2 Period: 2.107 d



DV Fit Results:

Period = 2.10664 [0.00003] d
Epoch = 133.3374 [0.0082] BKJD
Rp/R* = 0.0041 [0.0011]
a/R* = 1.22 [0.68]
b = 0.90 [0.36]
Seff = 4901.88 [2022.45]
Teq = 2134 [220] K
Rp = 0.70 [0.30] Re
a = 0.0365 [0.0097] AU
Ag = 6.24 [5.27] [0.99 σ]
Teffp = 5213 [1019] K [2.95 σ]

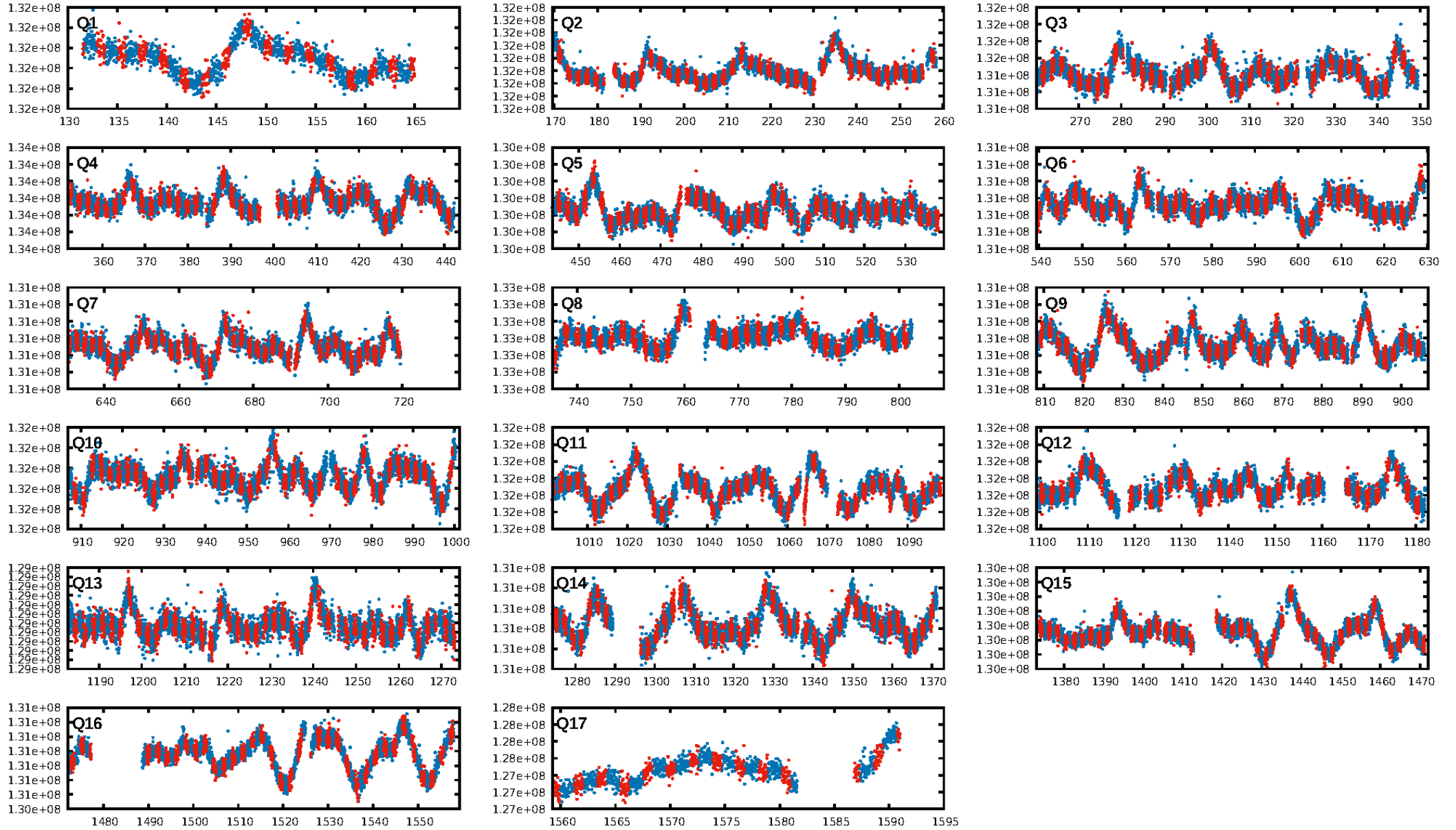
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [430.04 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareG-sig: N/A
Bootstrap-pfa: 2.66e-21
RollingBand-fgt: 1.00 [613/613]
GhostDiagnostic-chr: -23.65
Centroid-sig: 11.2%
Centroid-so: 1.288 arcsec [0.95 σ]
OotOffset-rm: 0.363 arcsec [0.84 σ]
KicOffset-rm: 0.438 arcsec [1.00 σ]
OotOffset-st: 3/4/2/4 [13]
KicOffset-st: 3/4/2/4 [13]
DiffImageQuality-fgm: 0.69 [9/13]
DiffImageOverlap-fno: 1.00 [17/17]

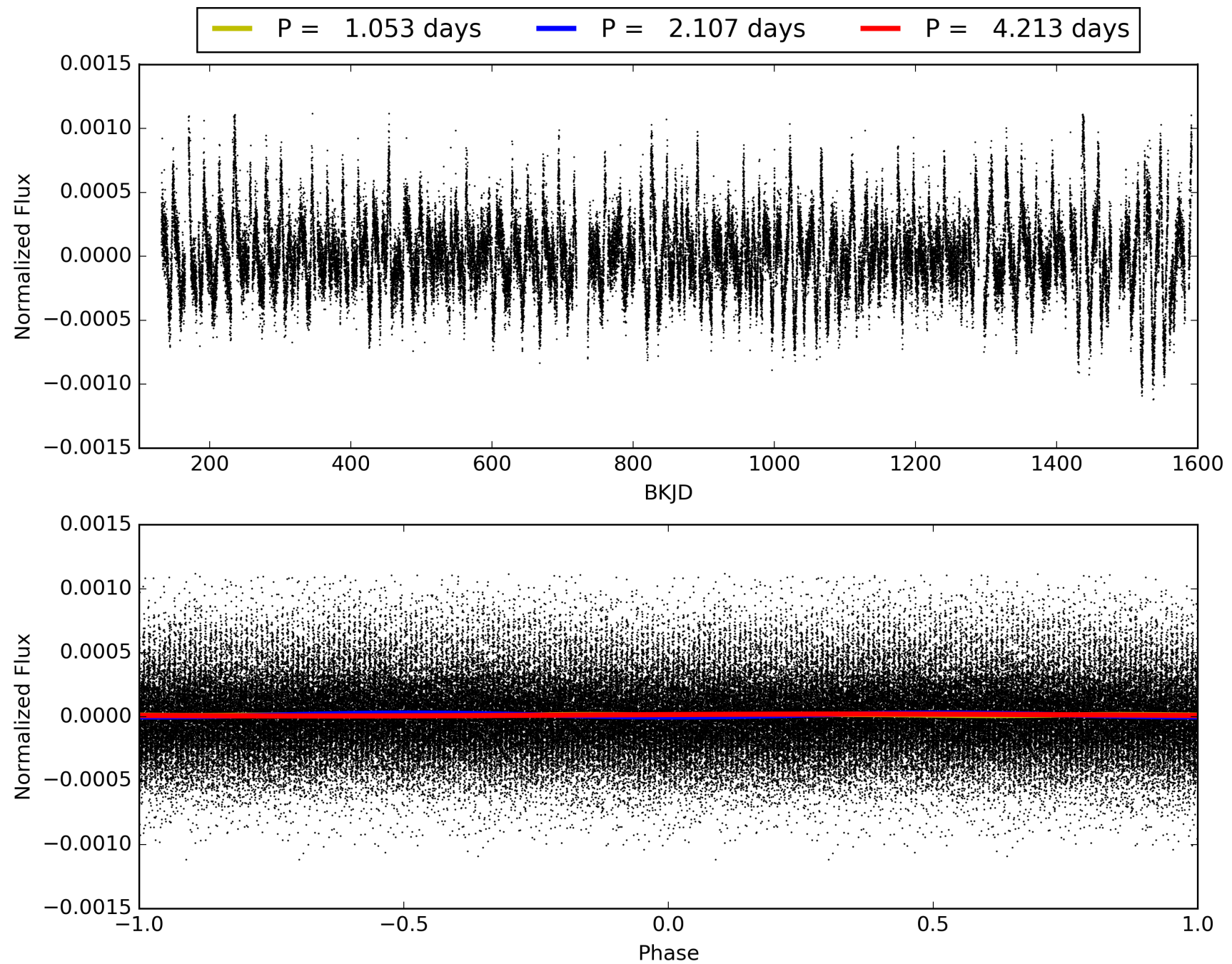
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:58:44 Z

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

TCE 009084512-01, PDC Light Curves

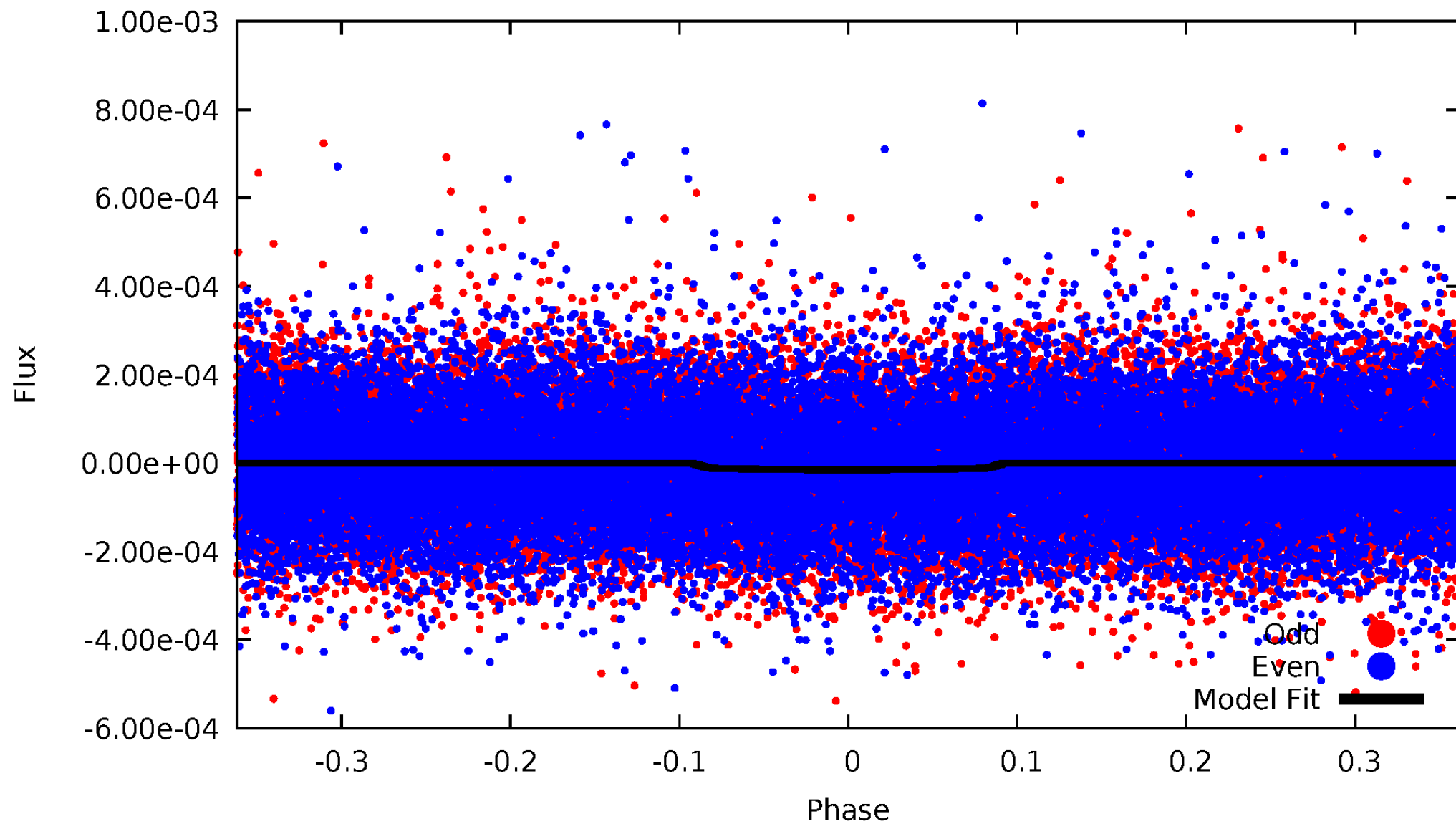


TCE 009084512-01



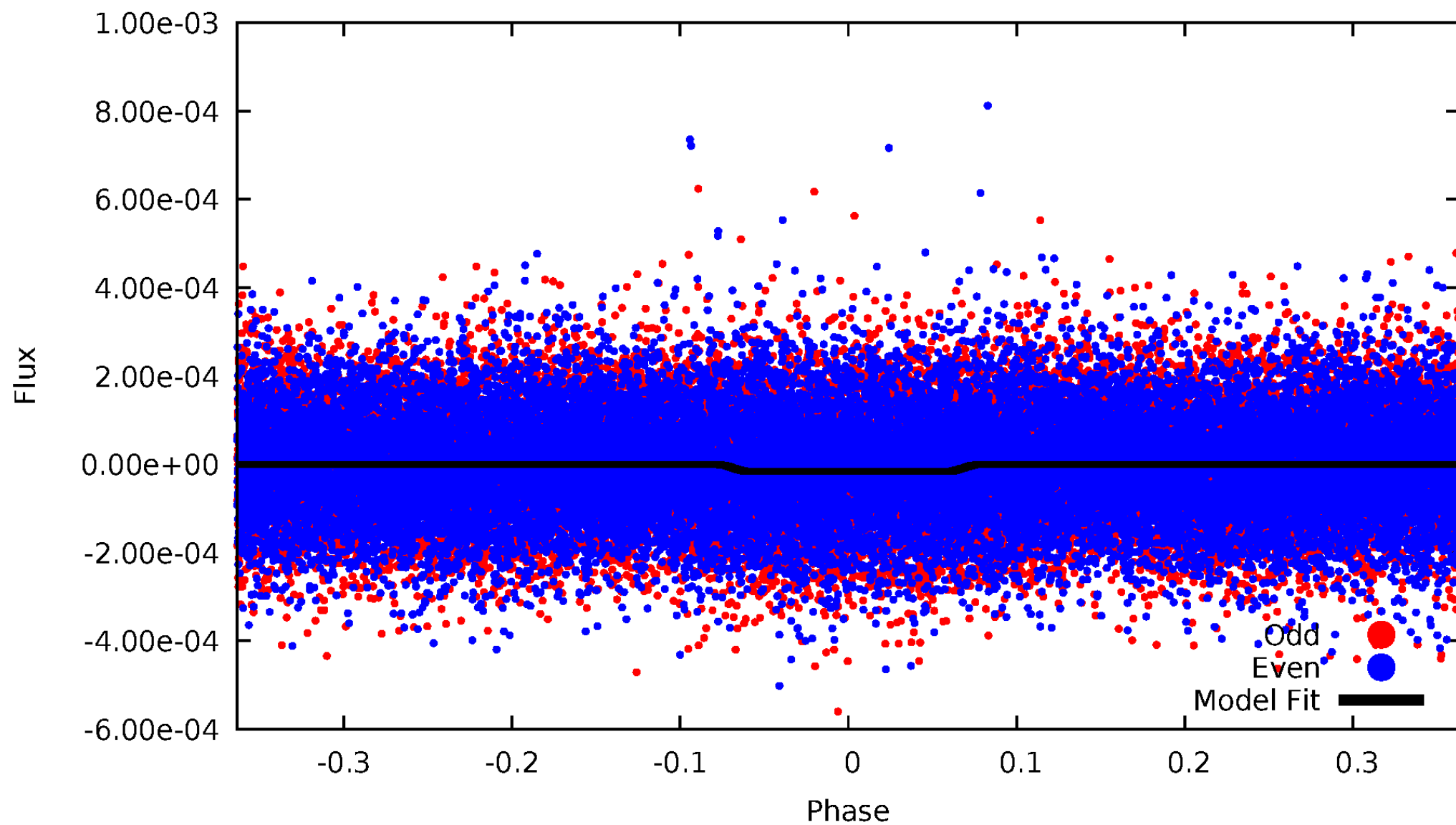
DV Odd/Even

TCE 009084512-01

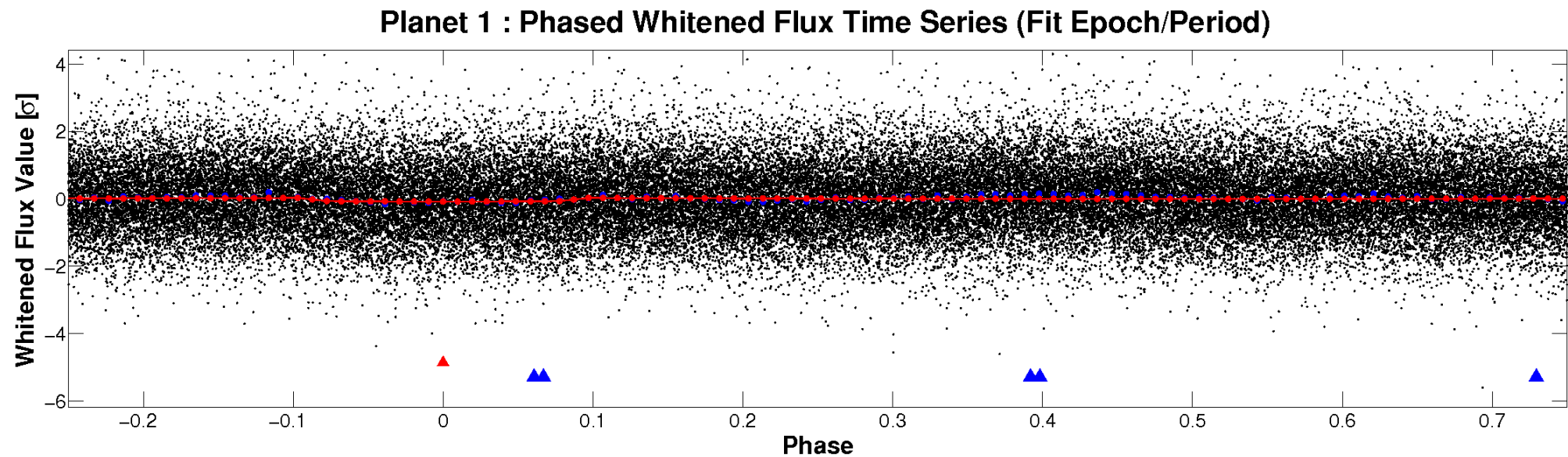
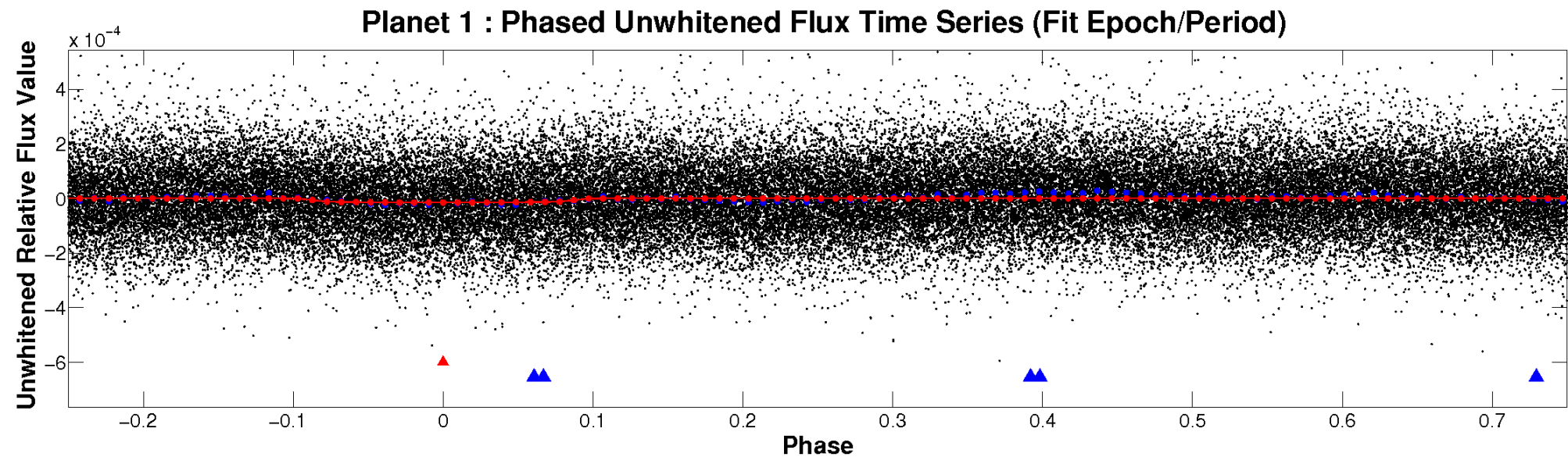


ALT Odd/Even

TCE 009084512-01

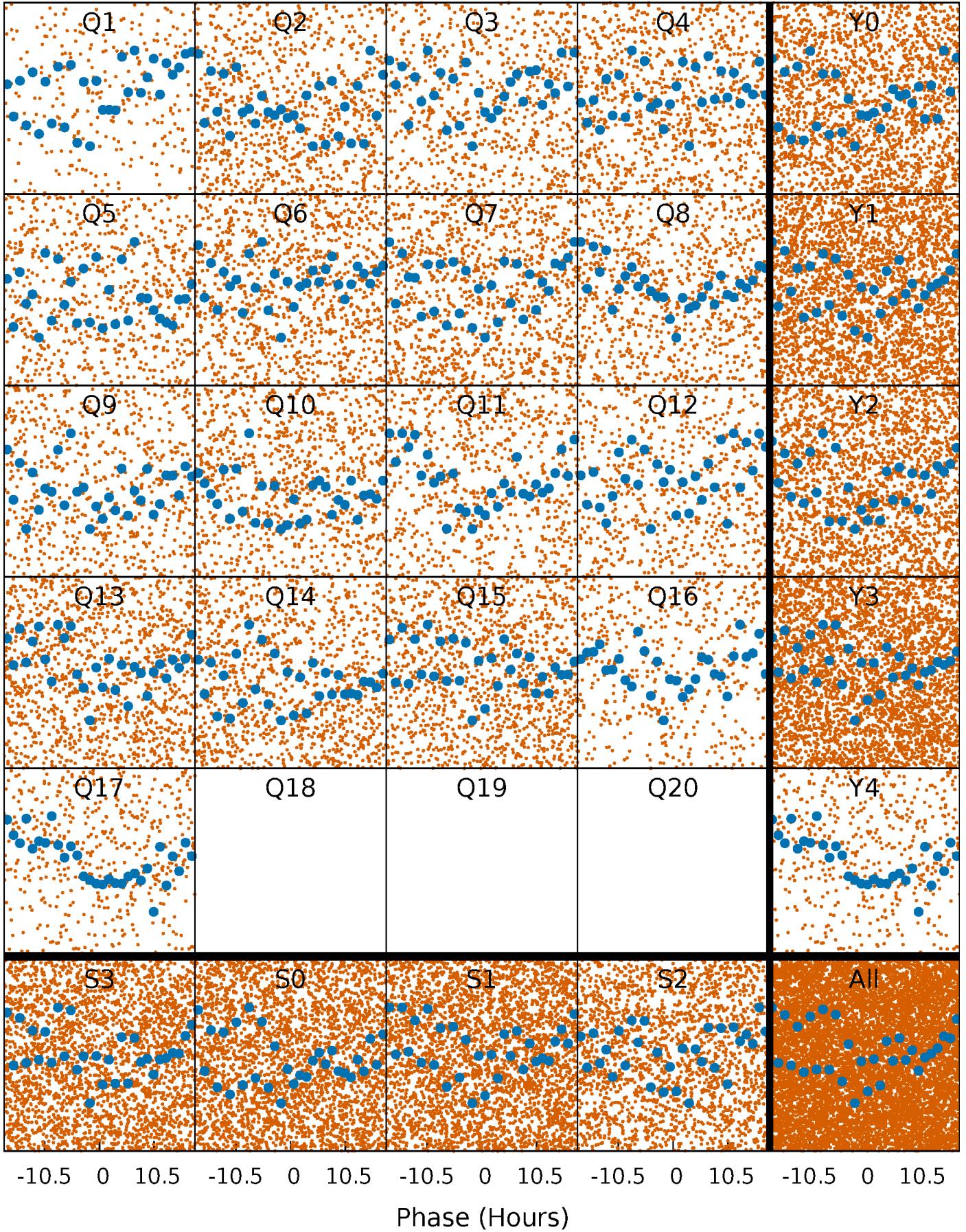


Non-Whitened Vs. Whitened Light Curve



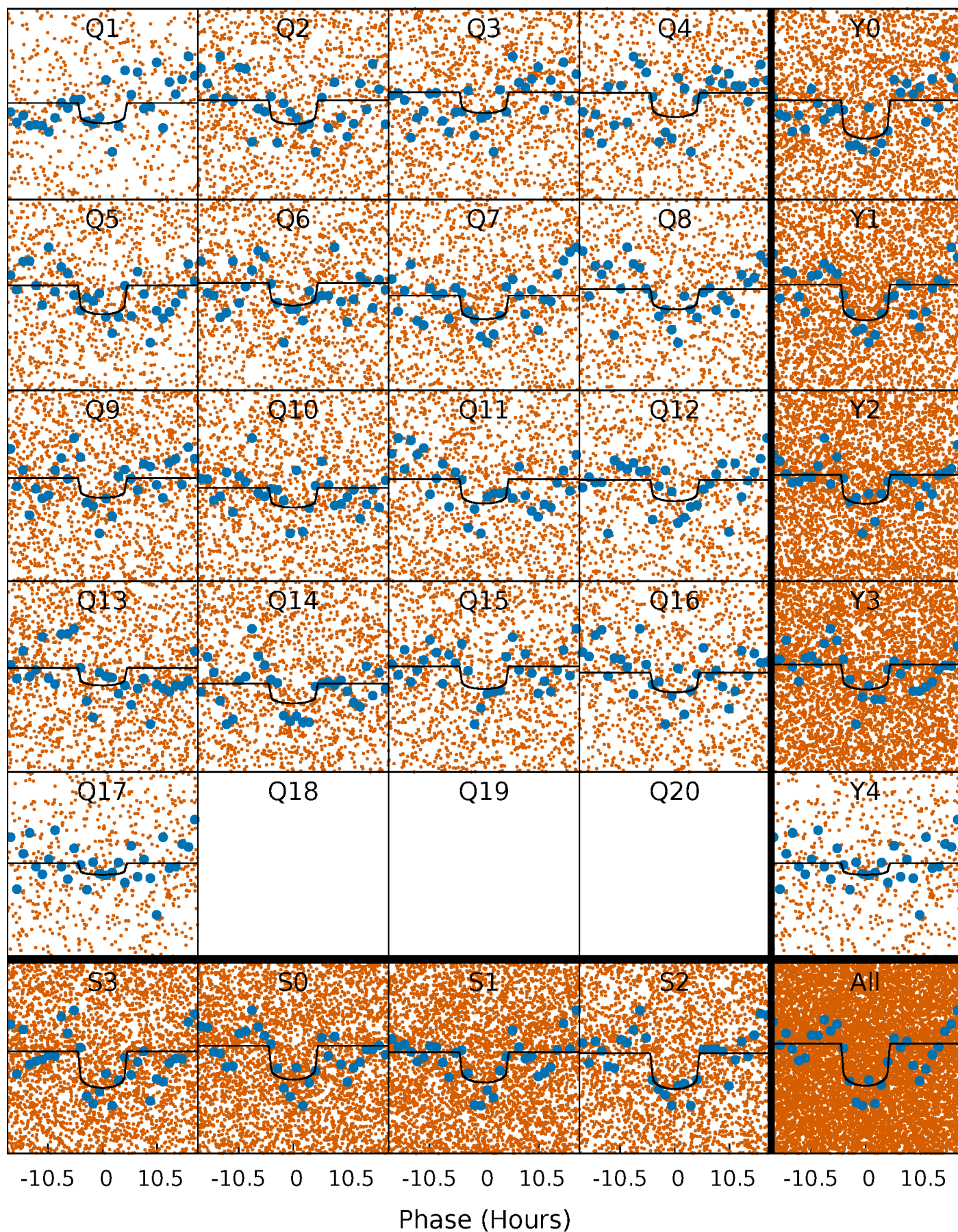
PDC Quarter-Phased Transit Curves

TCE 009084512-01 P= 2.106636 Days $T_0=133.337421$ (BKJD)



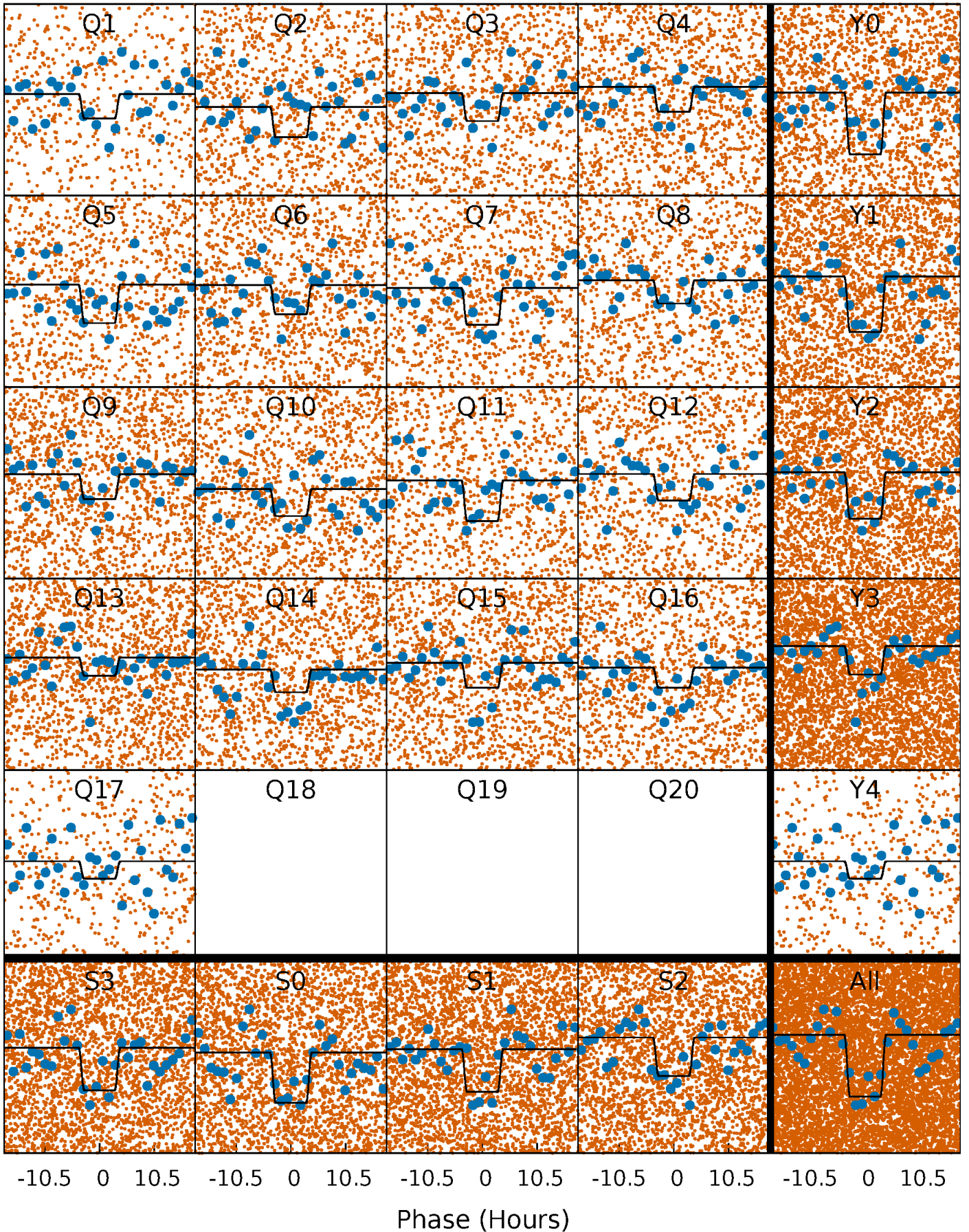
DV Quarter-Phased Transit Curves

TCE 009084512-01 P= 2.106636 Days $T_0=133.337421$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

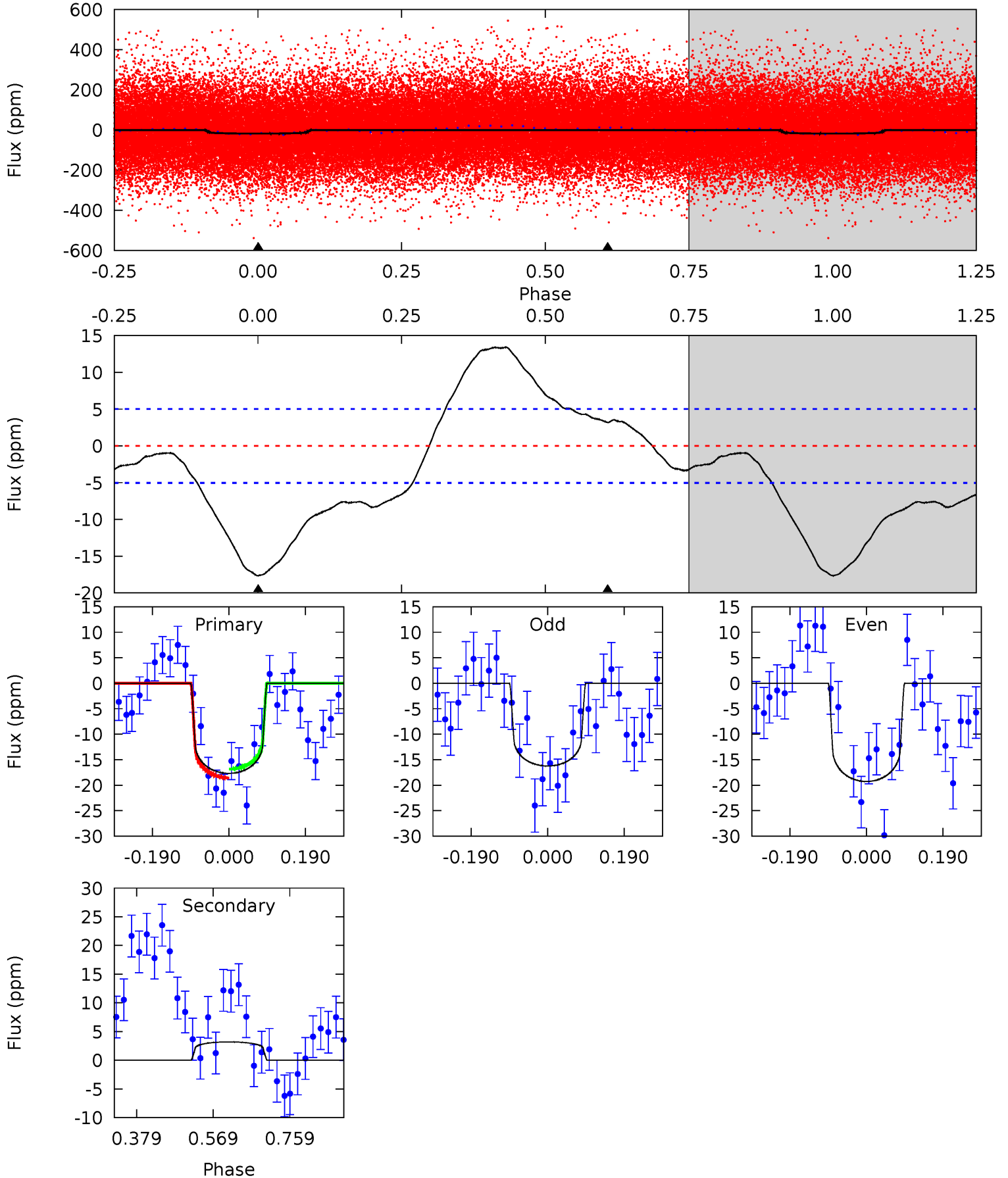
TCE 009084512-01 P= 2.106625 Days $T_0=133.336588$ (BKJD)



DV Model-Shift Uniqueness Test

009084512-01, P = 2.106636 Days, E = 131.230785 Days

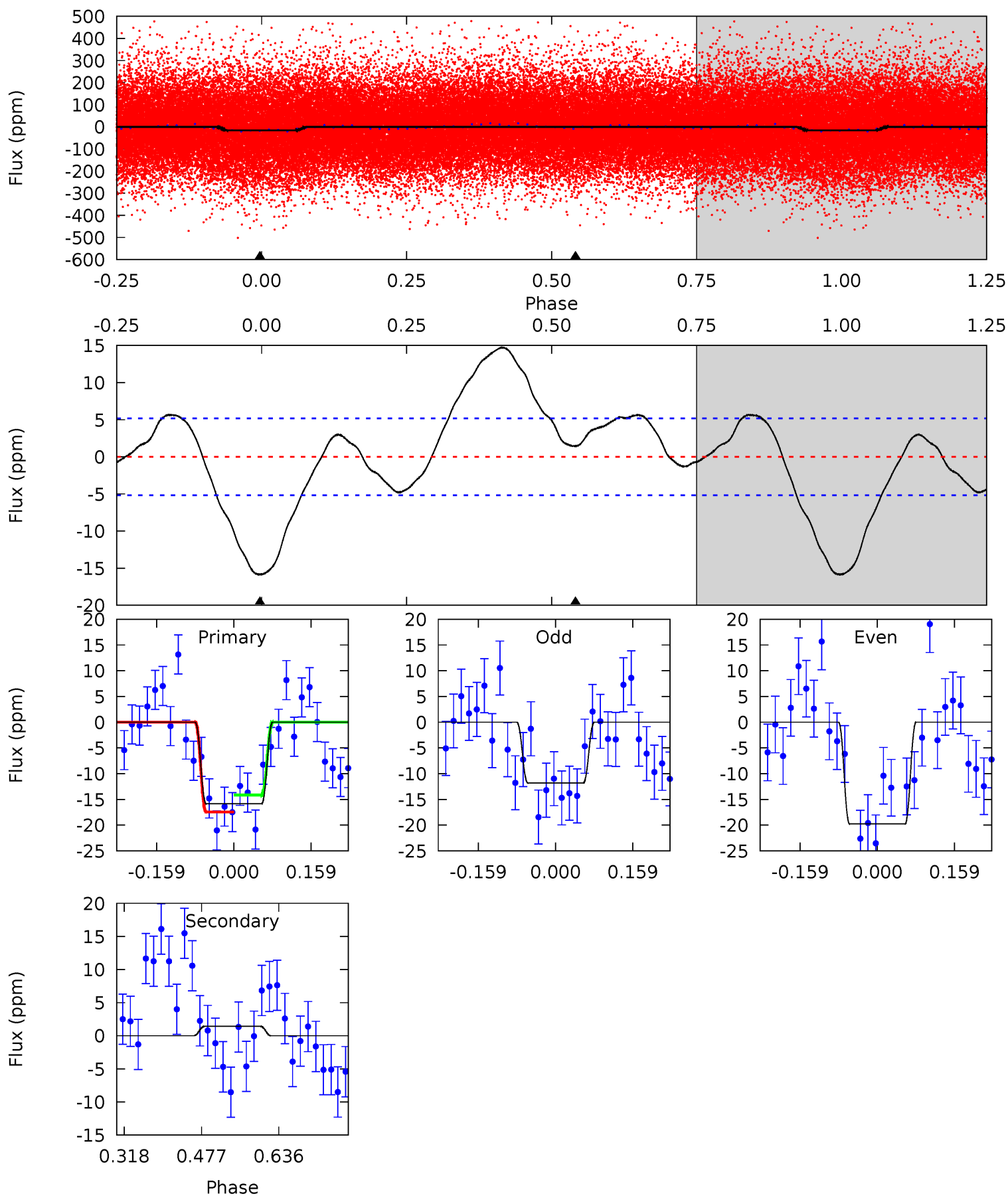
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	-2.82	0	0	4.43	1.31	7.00	15.6	15.6	-2.82	-2.82	1.33	0.96	0.43	0.78



Alt Model-Shift Uniqueness Test

009084512-01, P = 2.106625 Days, E = 131.229963 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	-1.23	0	0	4.47	1.41	3.90	13.7	13.7	-1.23	-1.23	3.44	0.99	0.48	1.42



Stellar Parameters For KIC 009084512

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7350^{+231}_{-334}	$4.205^{+0.105}_{-0.195}$	$-0.140^{+0.200}_{-0.350}$	$1.580^{+0.517}_{-0.278}$	$1.462^{+0.219}_{-0.219}$	$0.522^{+0.271}_{-0.285}$
	+3%/-5%	+2%/-5%	+143%/-250%	+33%/-18%	+15%/-15%	+52%/-55%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009084512-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	3 ± 1	$0.72^{+0.23}_{-0.21}$	3013^{+237}_{-194}	-4939^{+557}_{-831}	$-4.330^{+2.194}_{-4.971}$
Alt.	1 ± 1	$0.71^{+0.22}_{-0.19}$	3007^{+243}_{-188}	-4230^{+836}_{-820}	$-1.786^{+1.555}_{-3.026}$

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

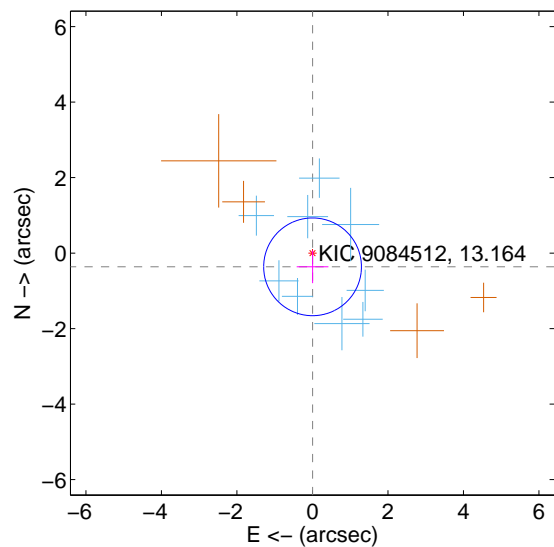
Supplemental centroid analysis for 009084512-01. Kepler magnitude: 13.16. Transit SNR 8.13

There are 9 quarters with good PRF difference image offsets

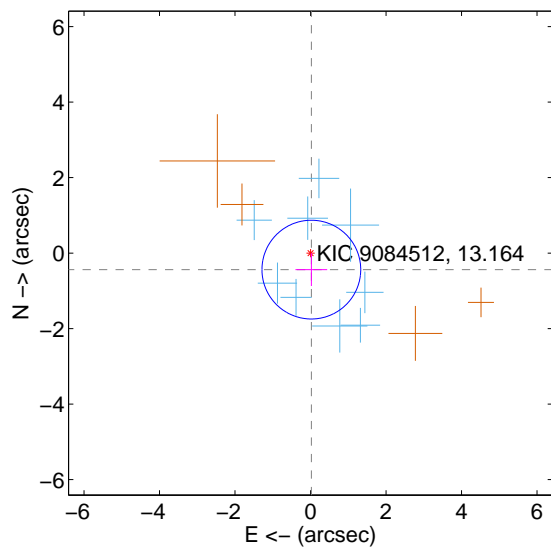
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.363 ± 0.431	0.84	-0.003 ± 0.420	-0.363 ± 0.431
PRF-fit source offset from KIC position	0.438 ± 0.436	1.00	-0.022 ± 0.420	-0.437 ± 0.436
photometric centroid source offset	1.29 ± 1.35	0.95	0.02 ± 1.33	-1.29 ± 1.35

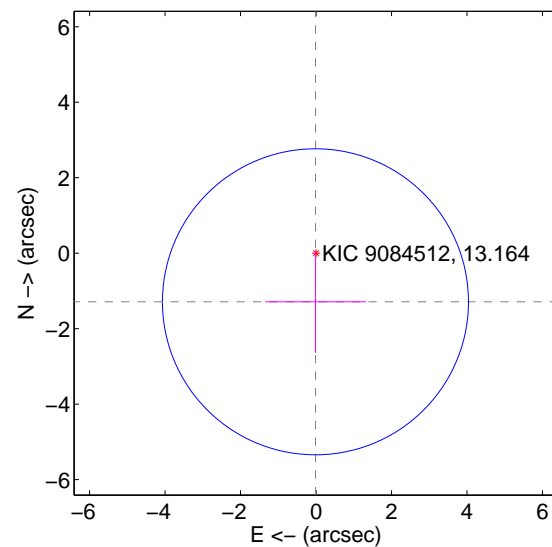
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

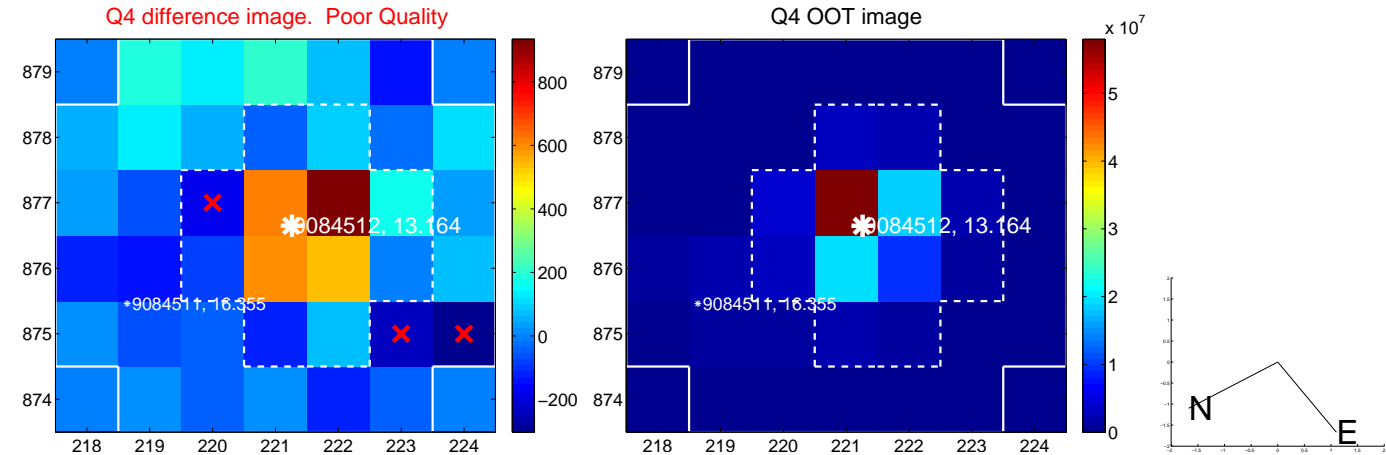
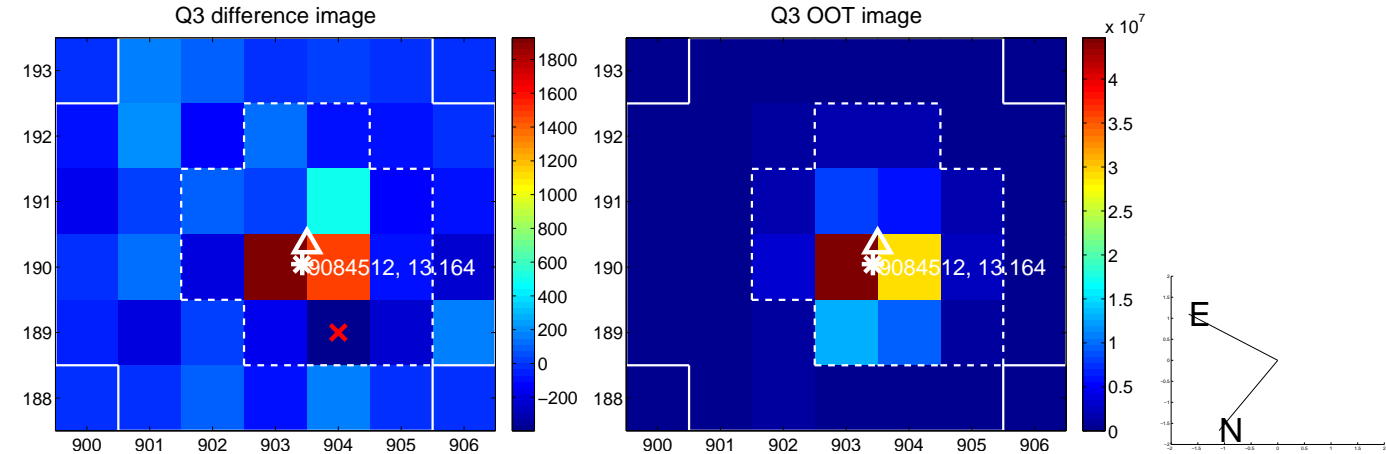
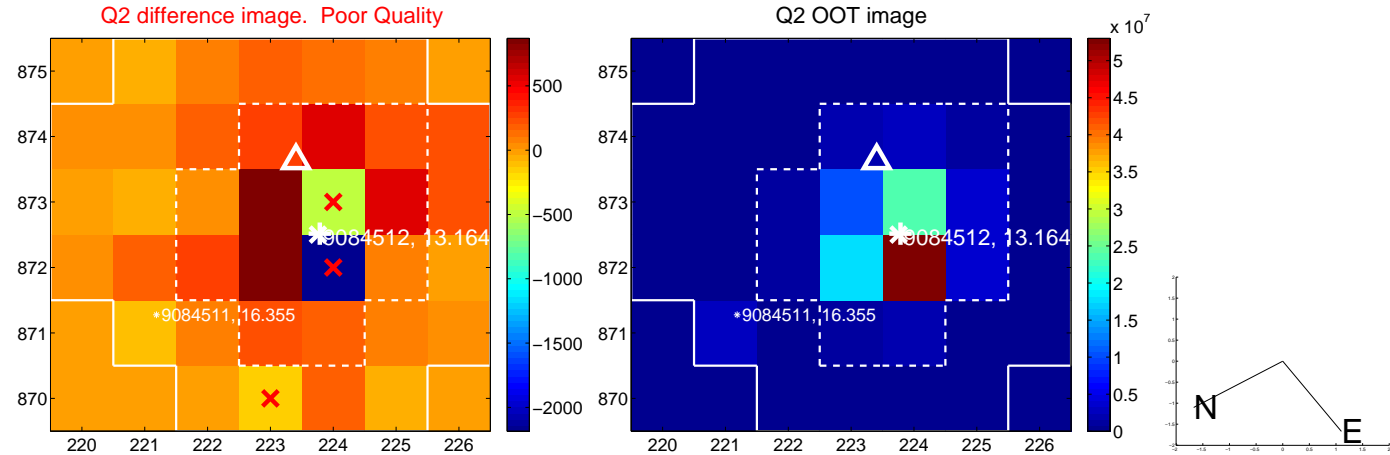
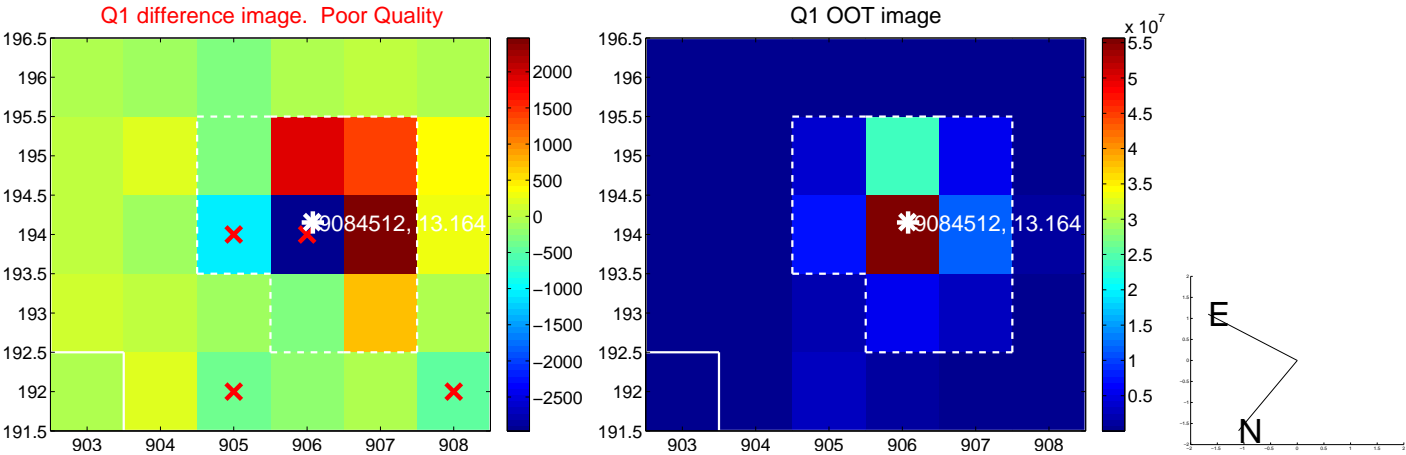


offset from photometric centroids

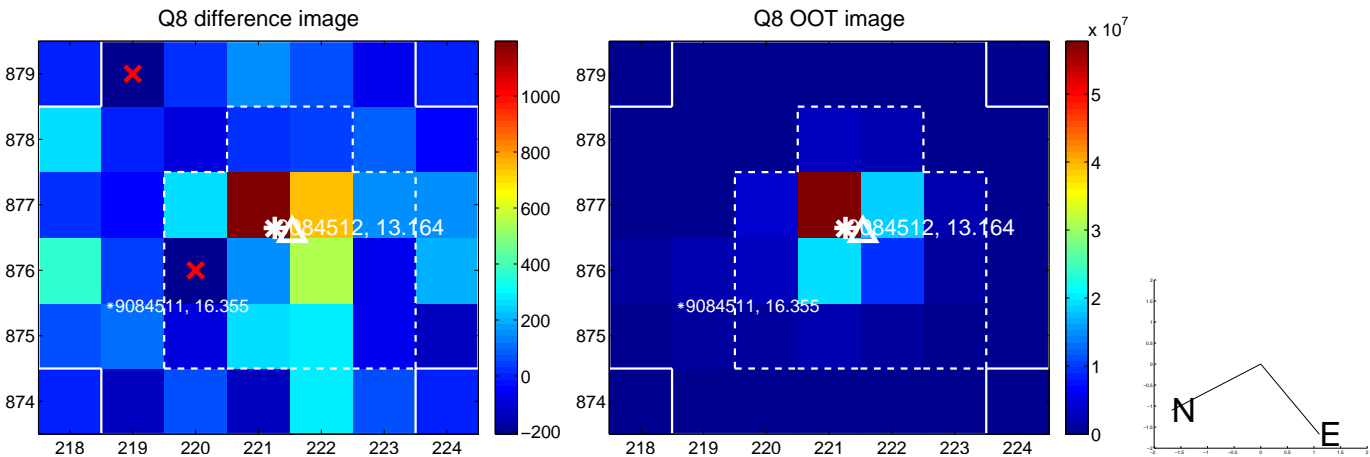
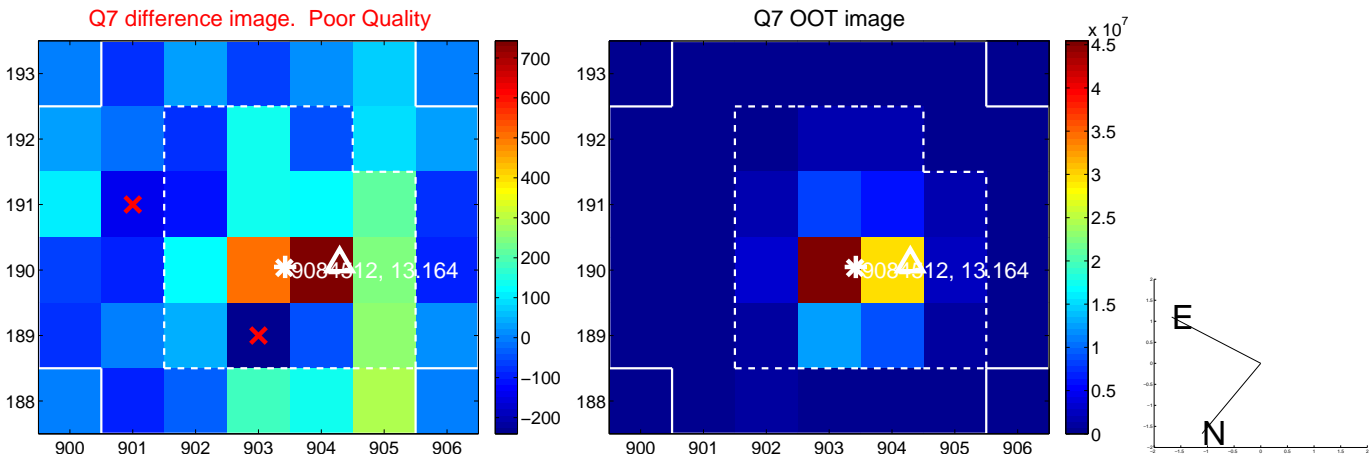
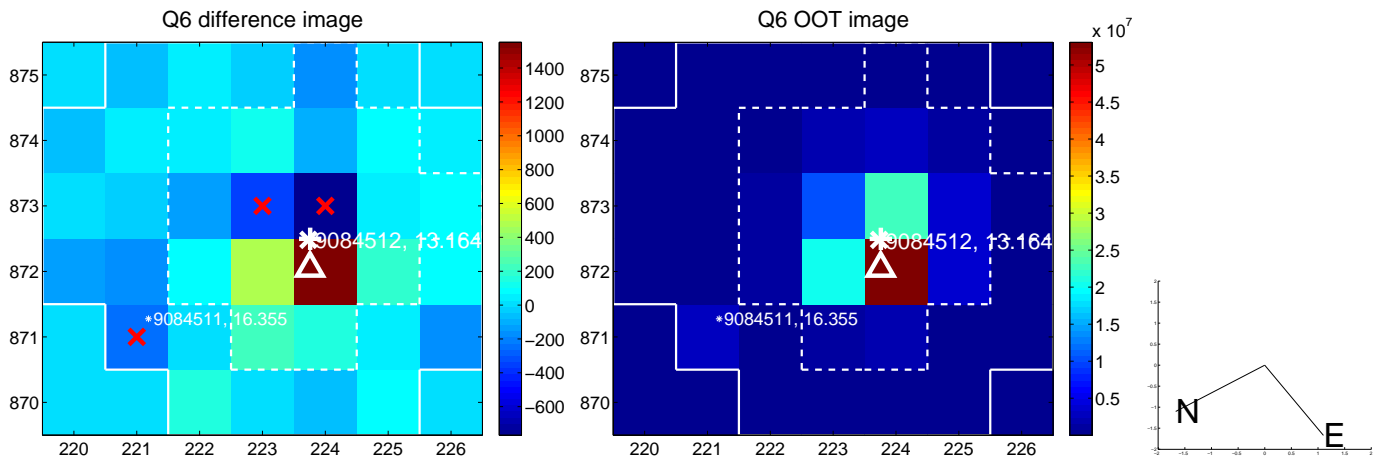
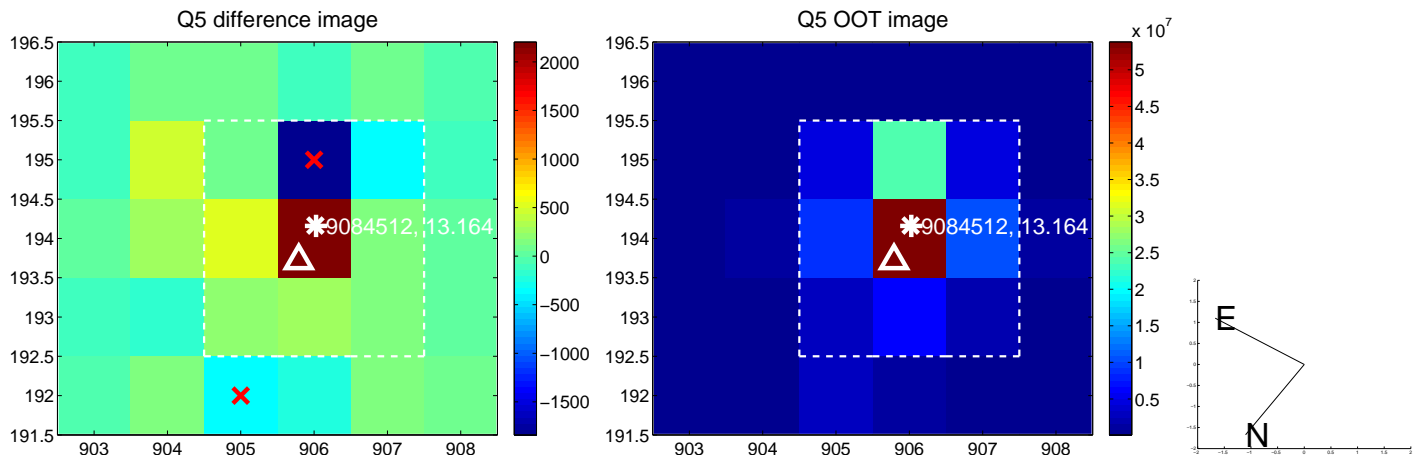


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

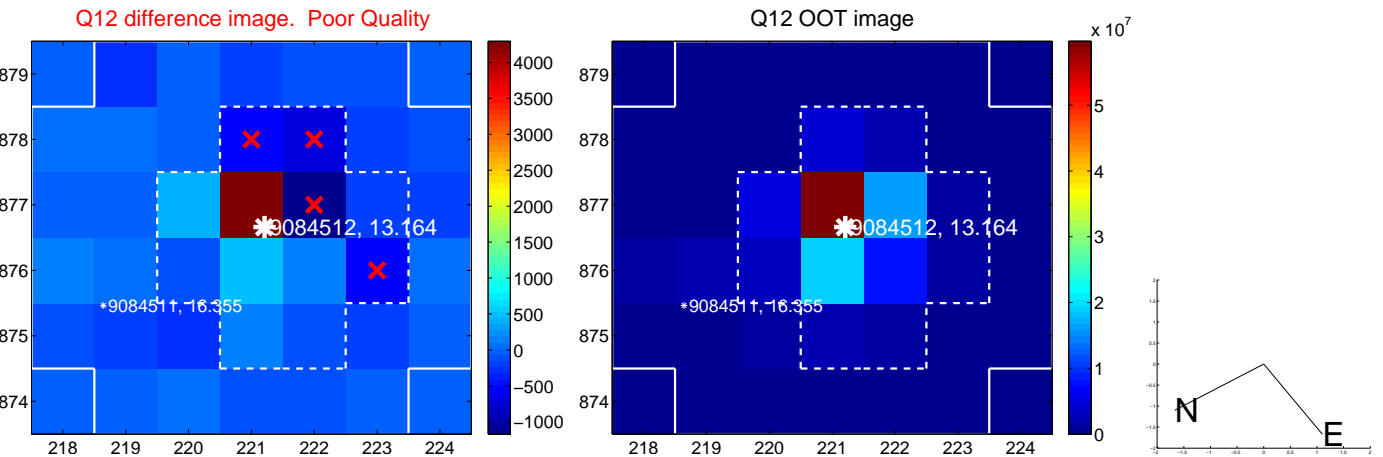
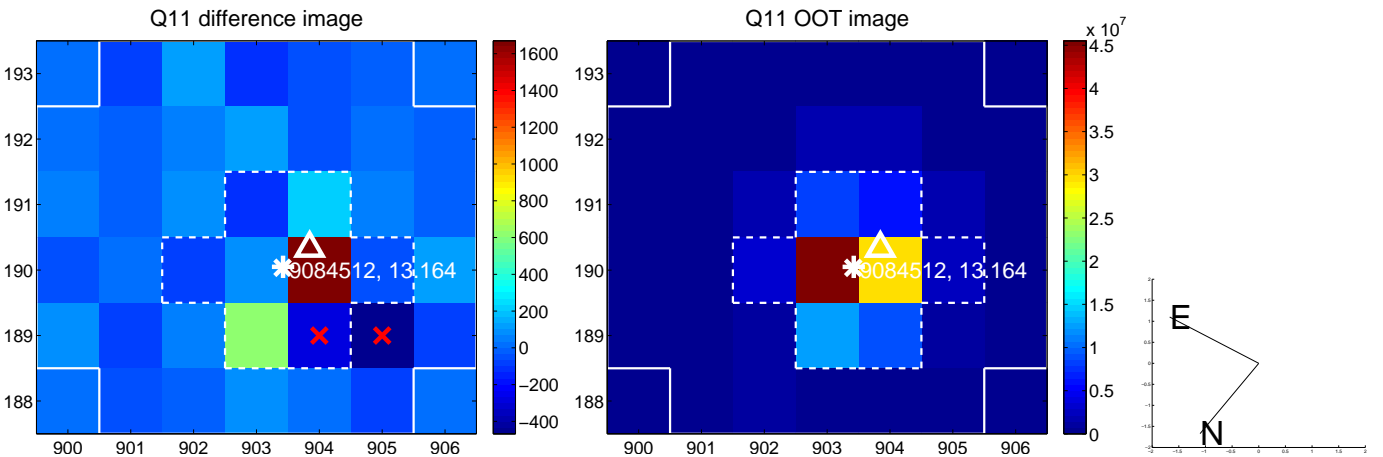
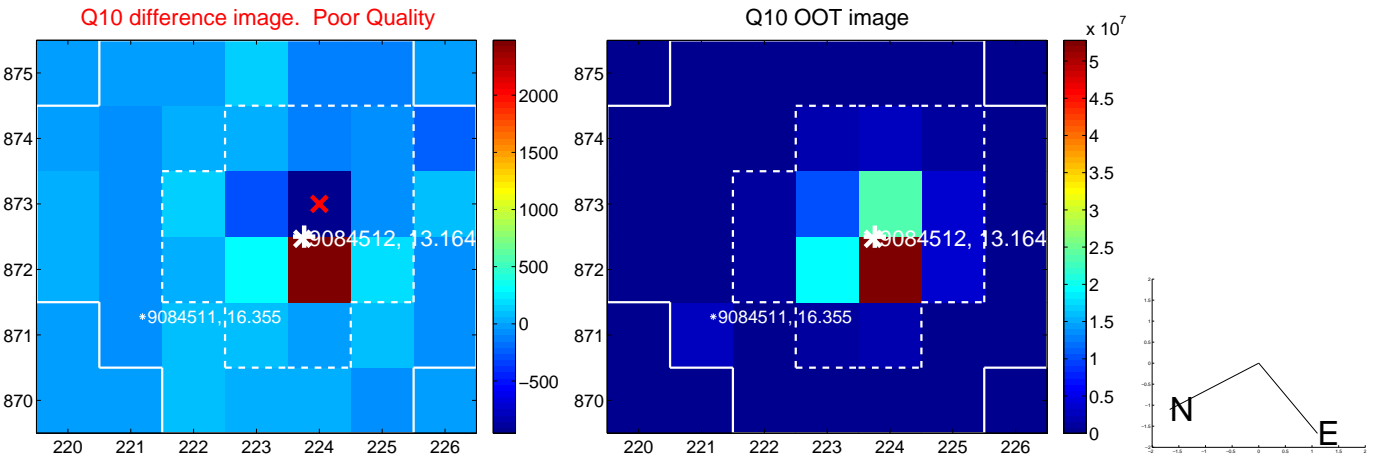
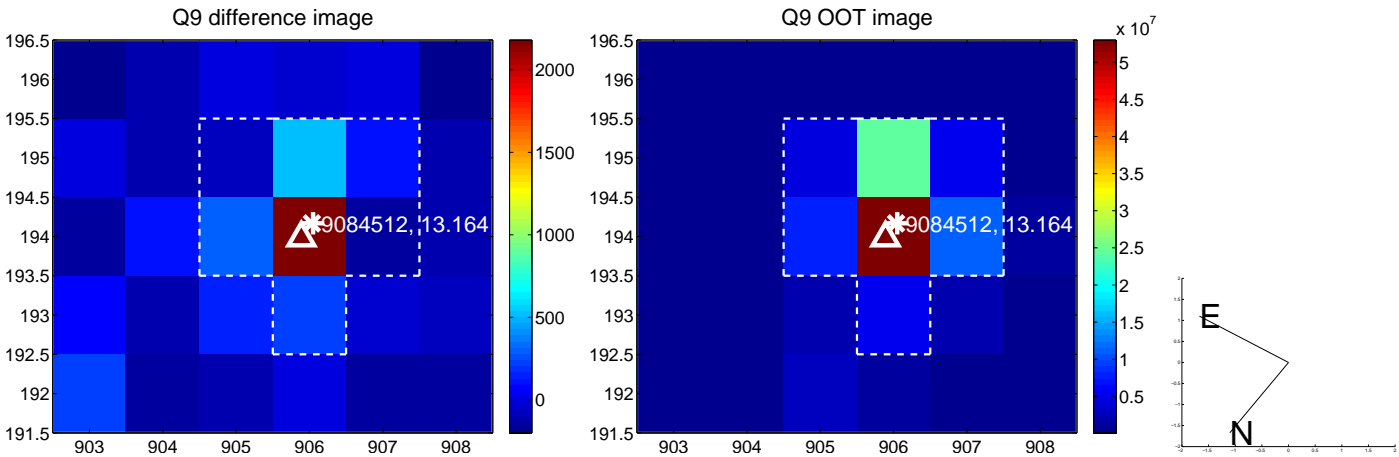
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



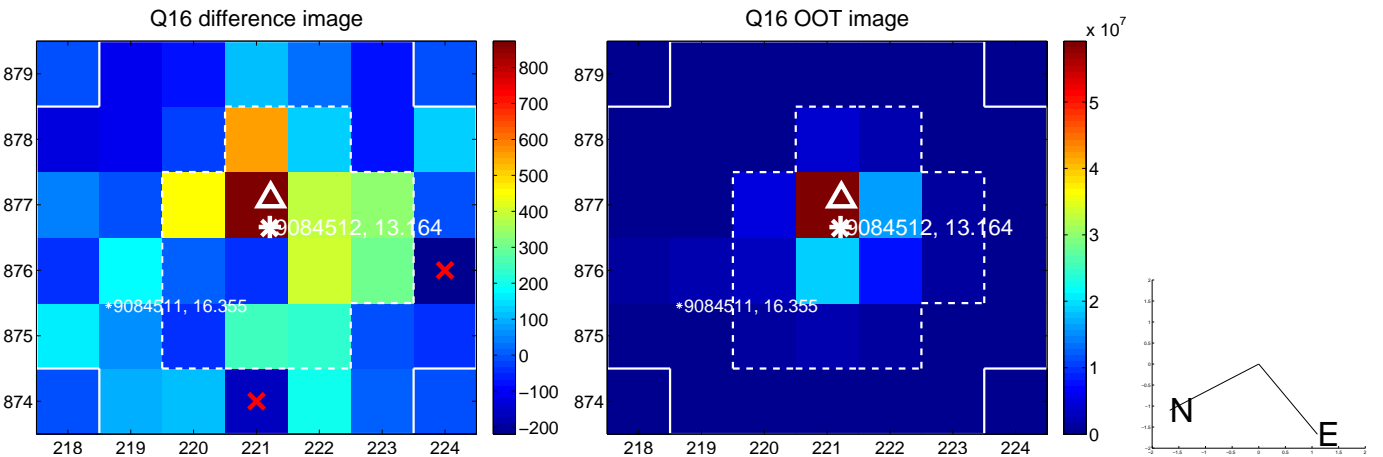
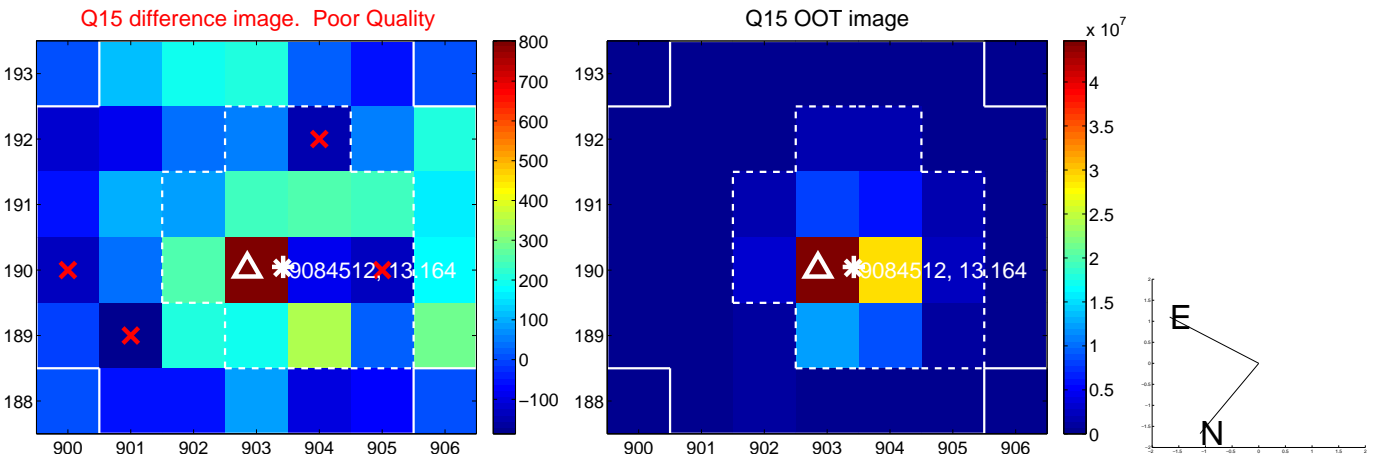
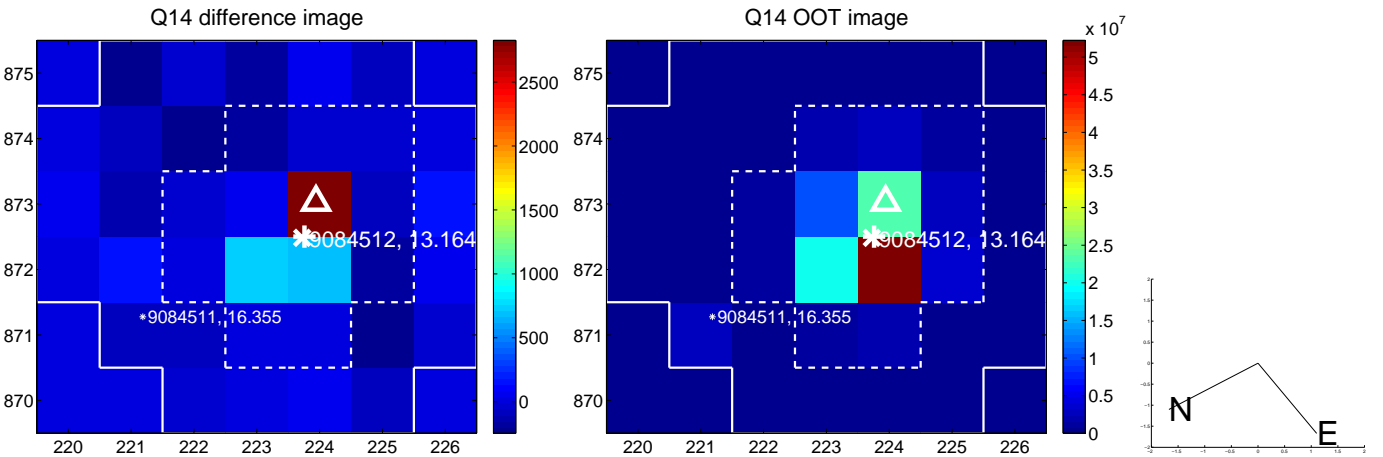
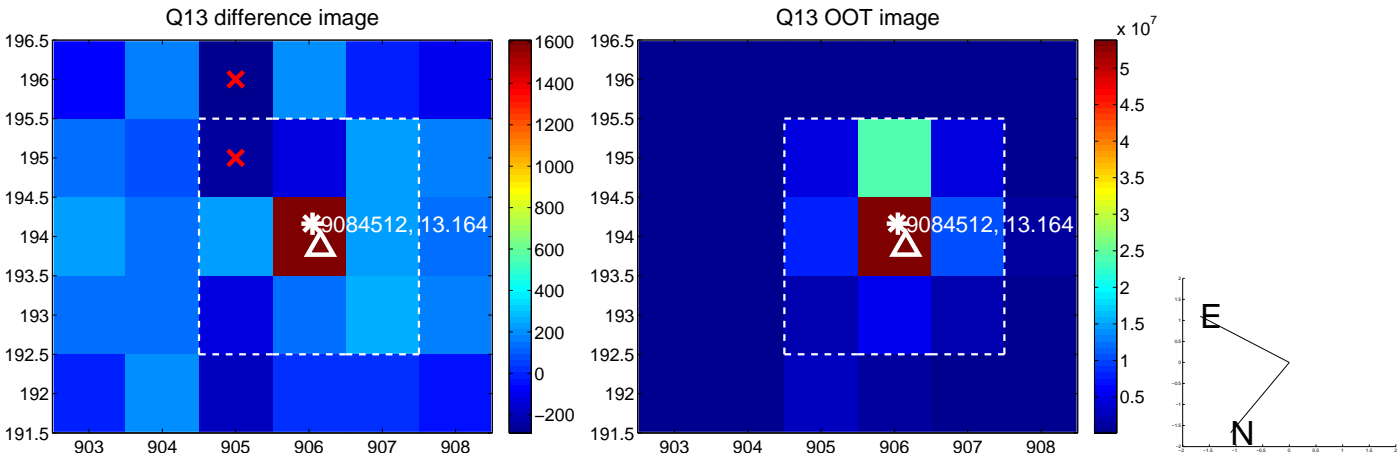
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



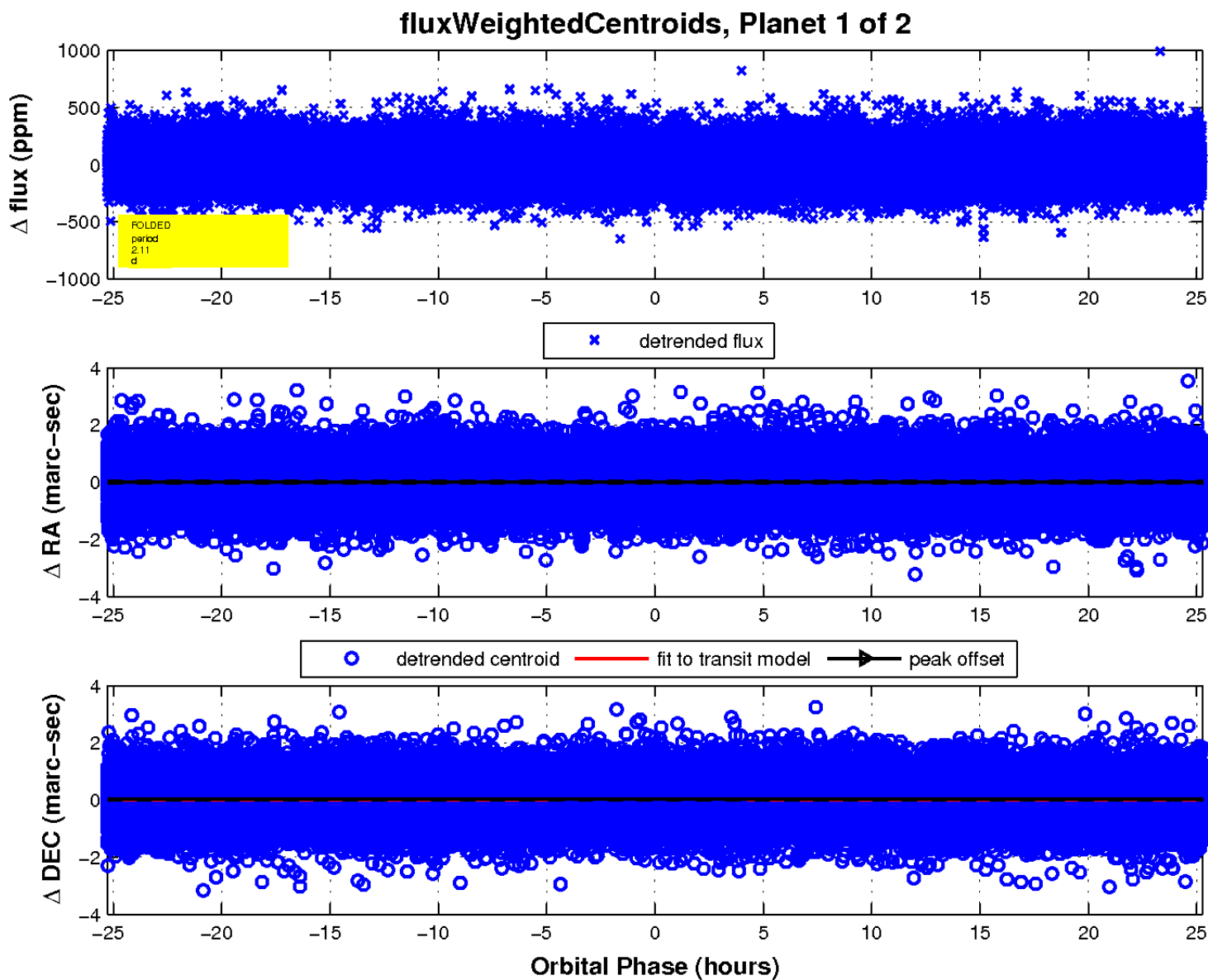
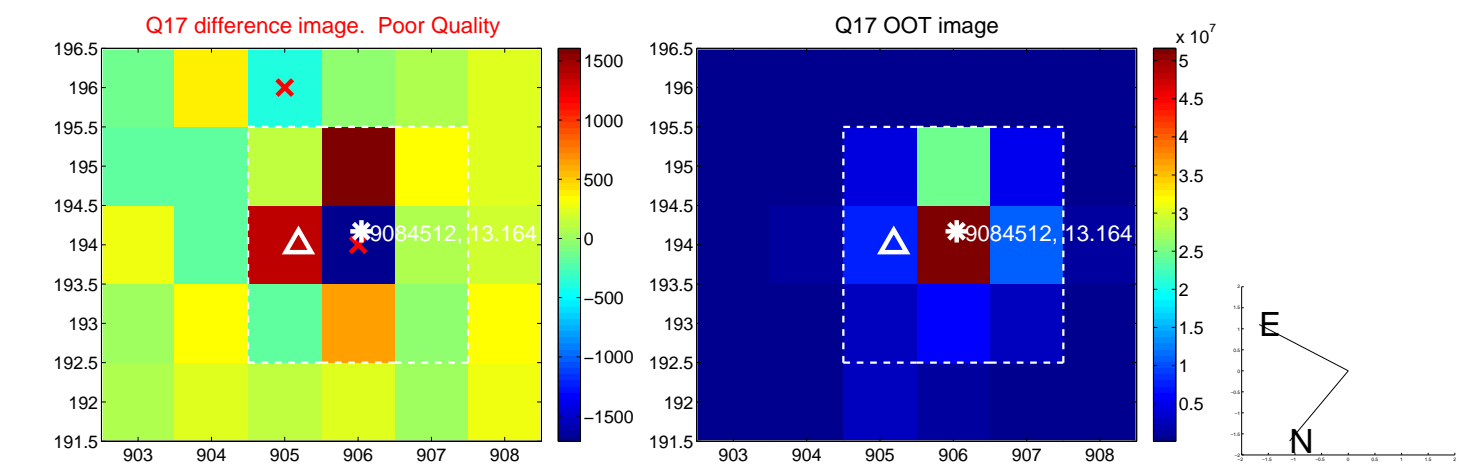
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

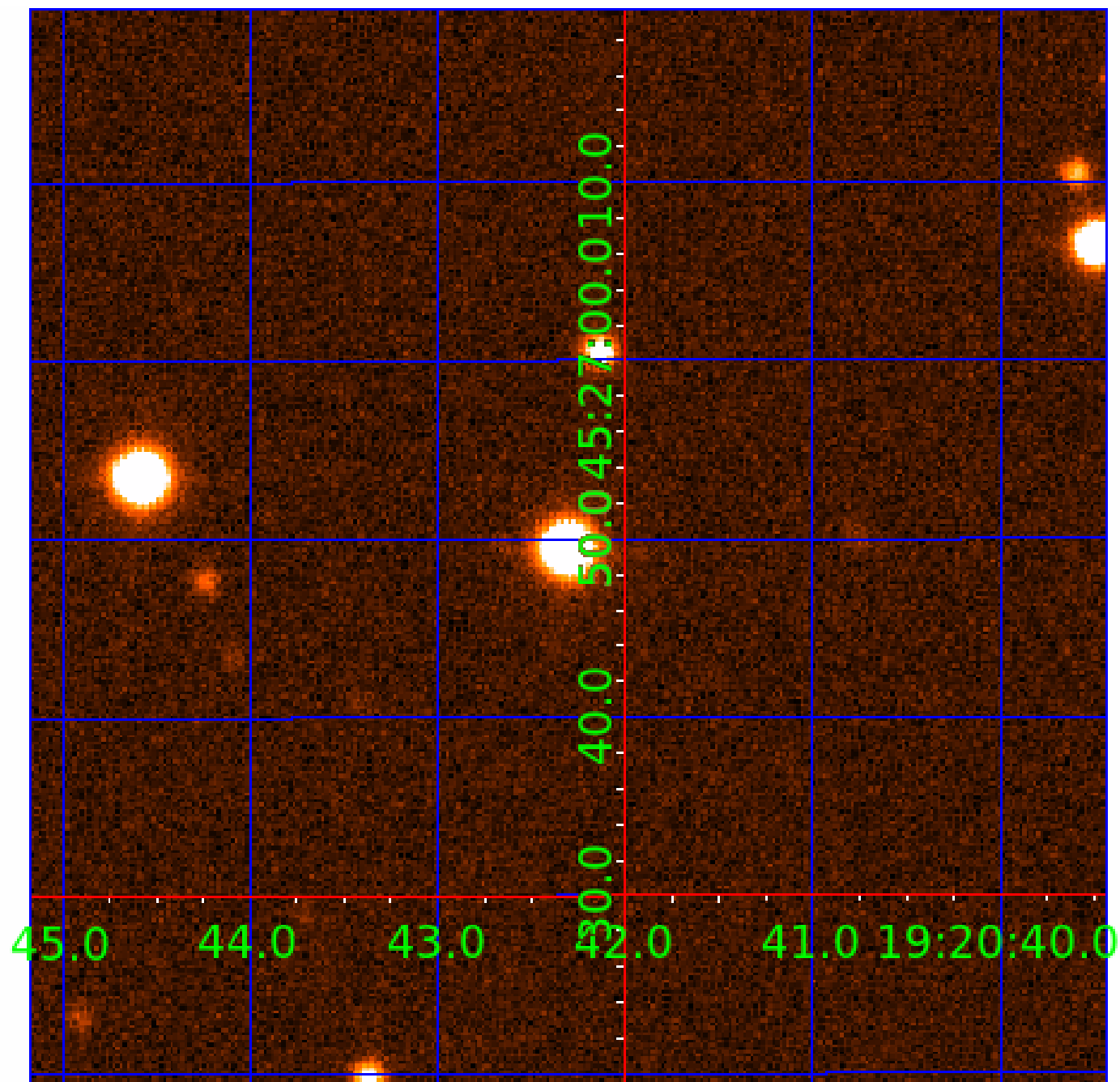


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009084512

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})
009084512-01	OBS	No	2.106636	133.337421	14.8	9.147	9.6	8.1	1.58	7350	0.70	4901.88
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009084512-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009084512-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

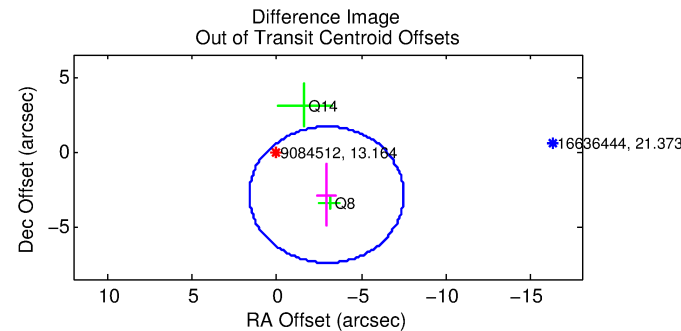
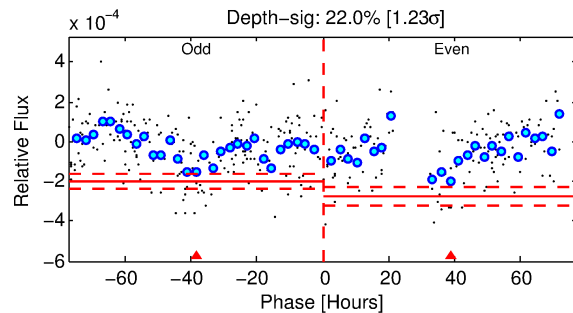
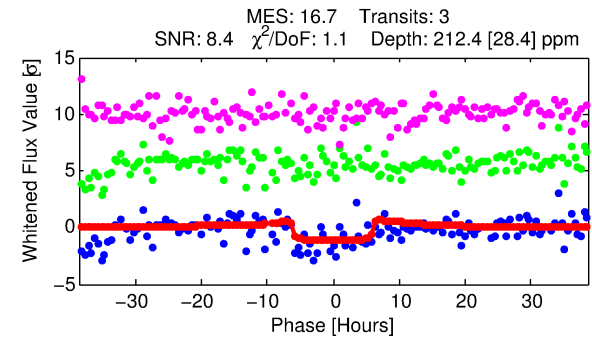
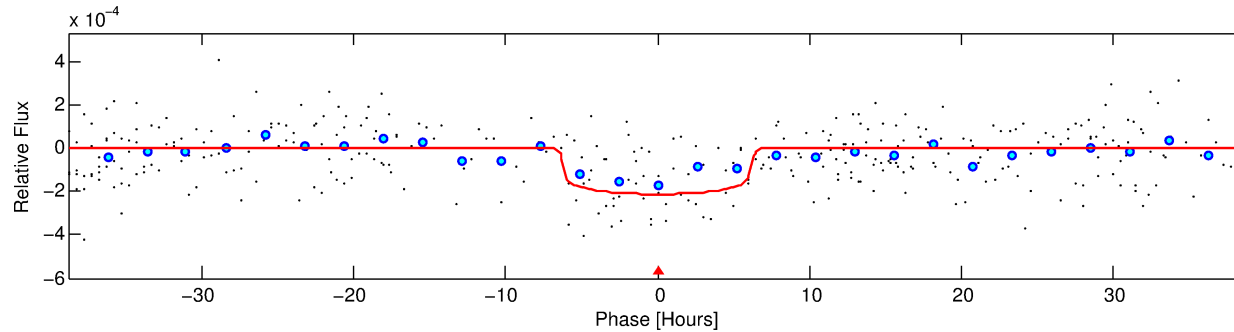
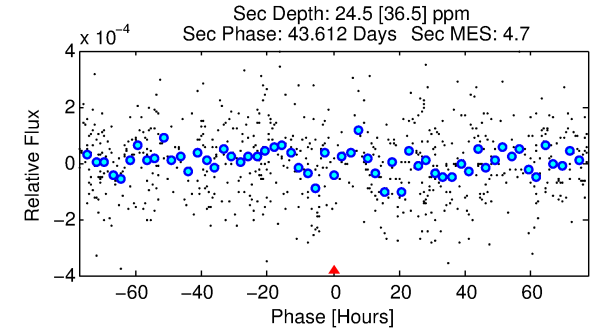
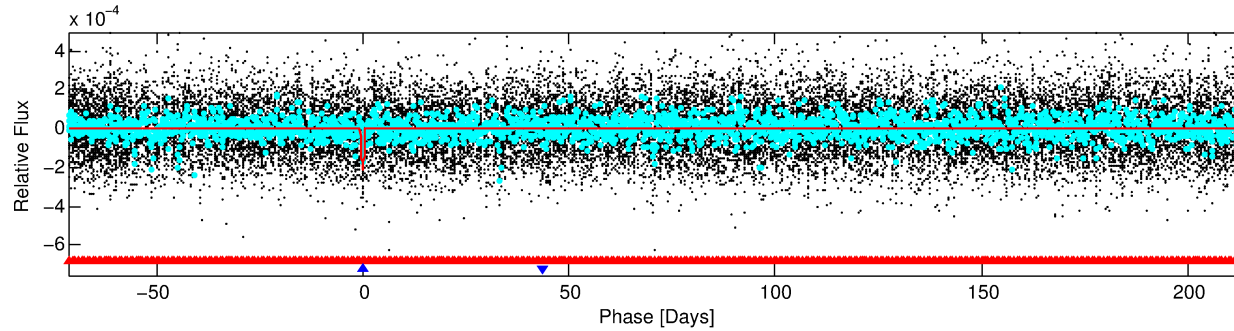
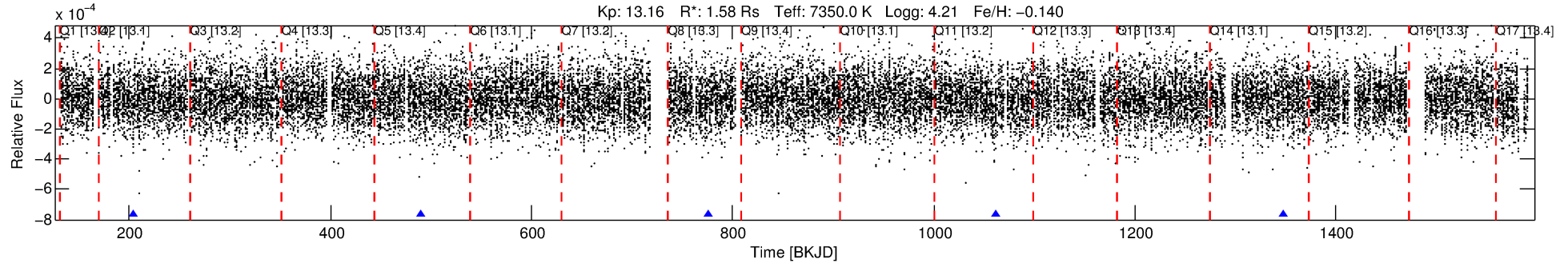
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009084512-02

No Significant Match Found

DV One-Page Summary

KIC: 9084512 Candidate: 2 of 2 Period: 285.805 d



DV Fit Results:

Period = 285.80462 [0.00978] d
Epoch = 203.6821 [0.0214] BKJD
Rp/R* = 0.0147 [0.0031]
a/R* = 107.92 [132.36]
b = 0.79 [0.59]
Seff = 7.03 [2.90]
Teq = 415 [43] K
Rp = 2.53 [0.99] Re
a = 0.9635 [0.2549] AU
Ag = 1957.97 [3124.17] [0.63σ]
Teffp = 4271 [1668] K [2.31σ]

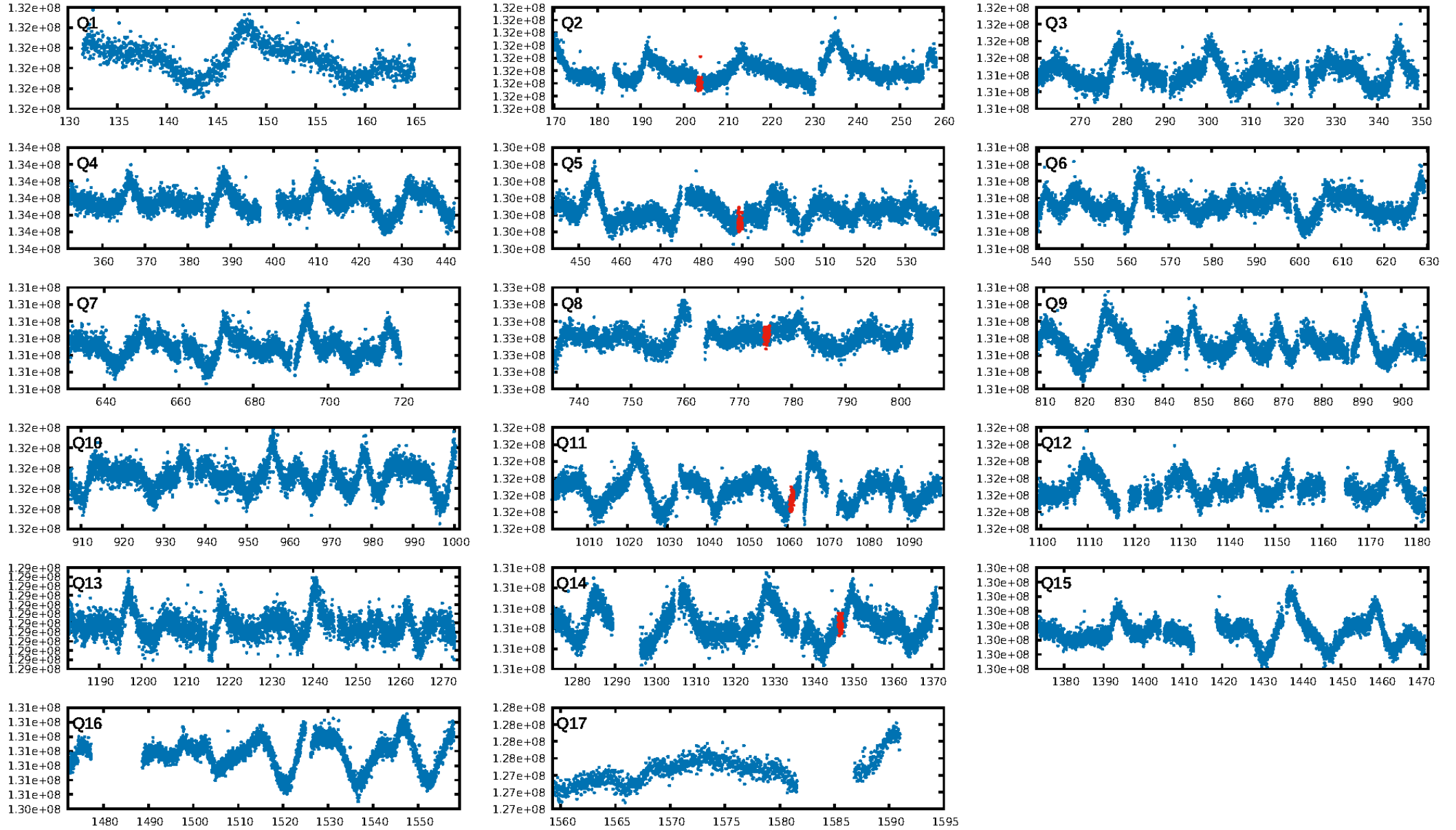
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [430.04σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.9%
ModelChiSquareGof-sig: 94.5%
Bootstrap-pfa: 5.96e-28
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 4.757
Centroid-sig: 73.8%
Centroid-so: 0.578 arcsec [0.61σ]
OotOffset-rm: 4.112 arcsec [2.71σ]
KicOffset-rm: 4.165 arcsec [2.75σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 0.00 [0/5]

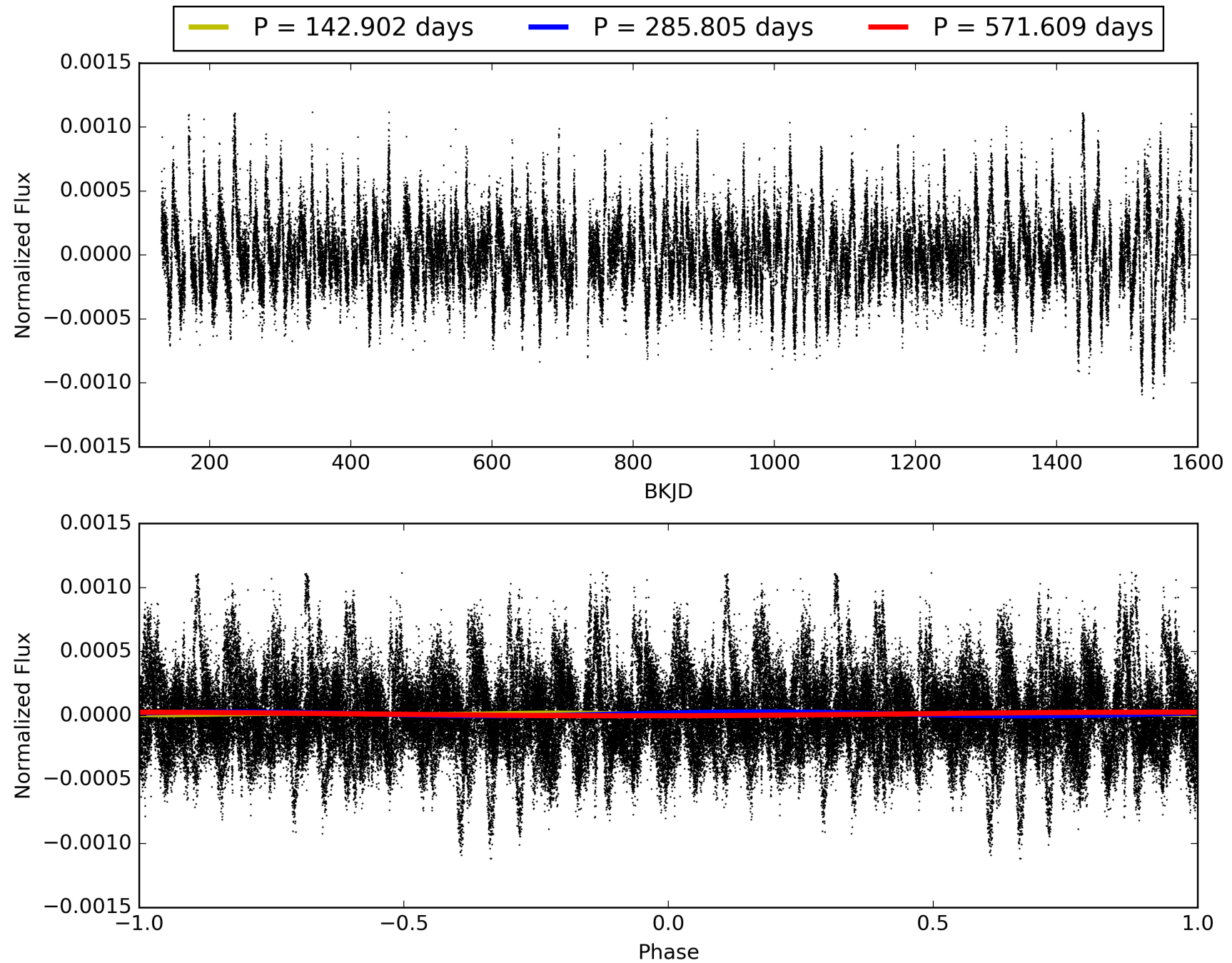
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:58:55 Z

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

TCE 009084512-02, PDC Light Curves

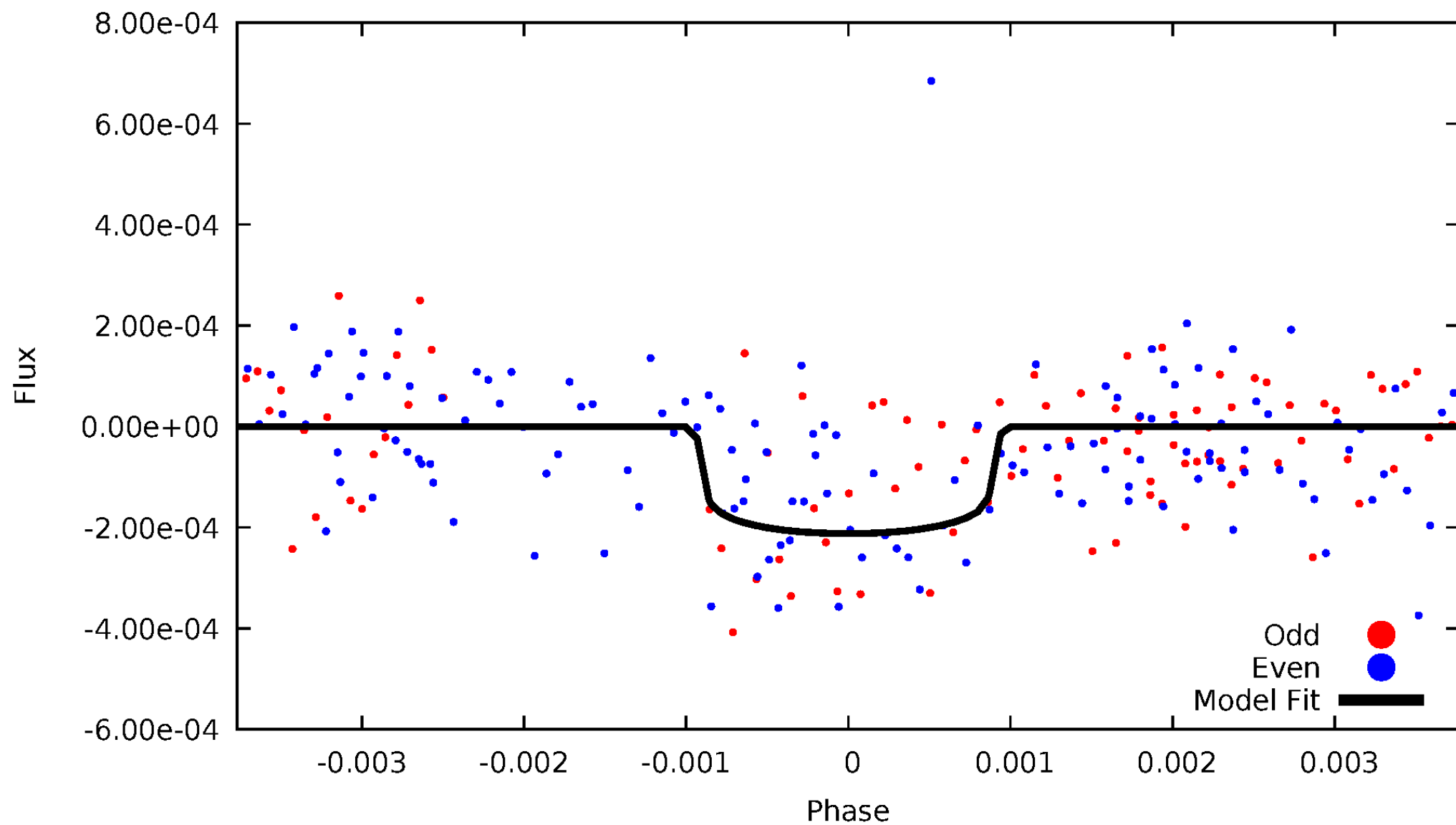


TCE 009084512-02



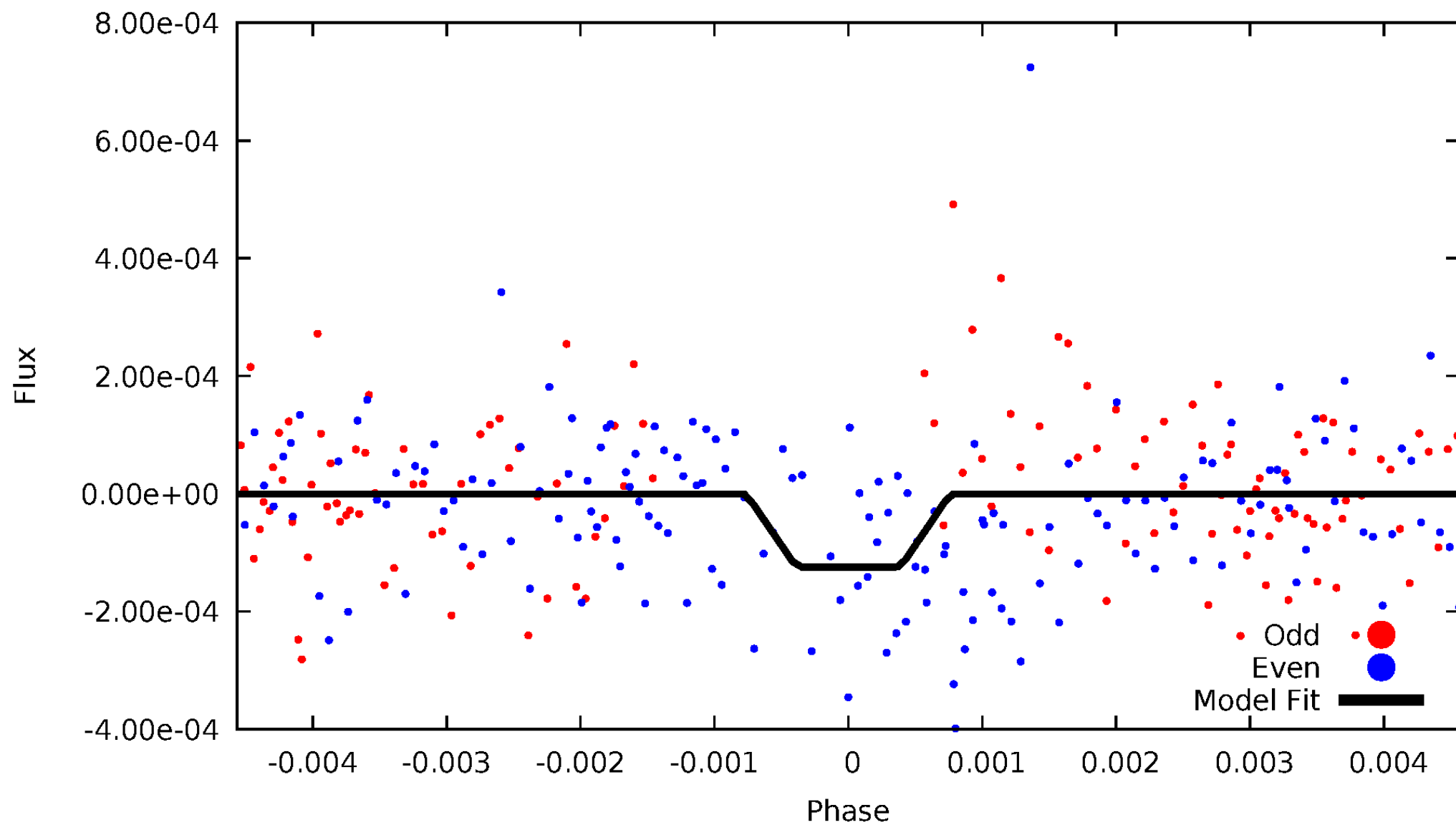
DV Odd/Even

TCE 009084512-02



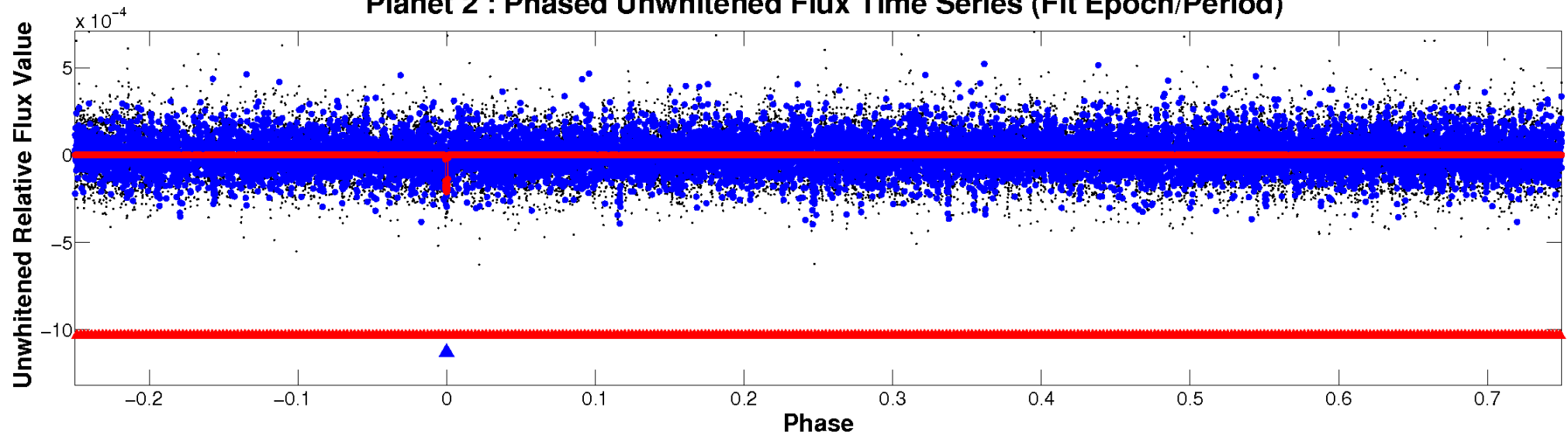
ALT Odd/Even

TCE 009084512-02

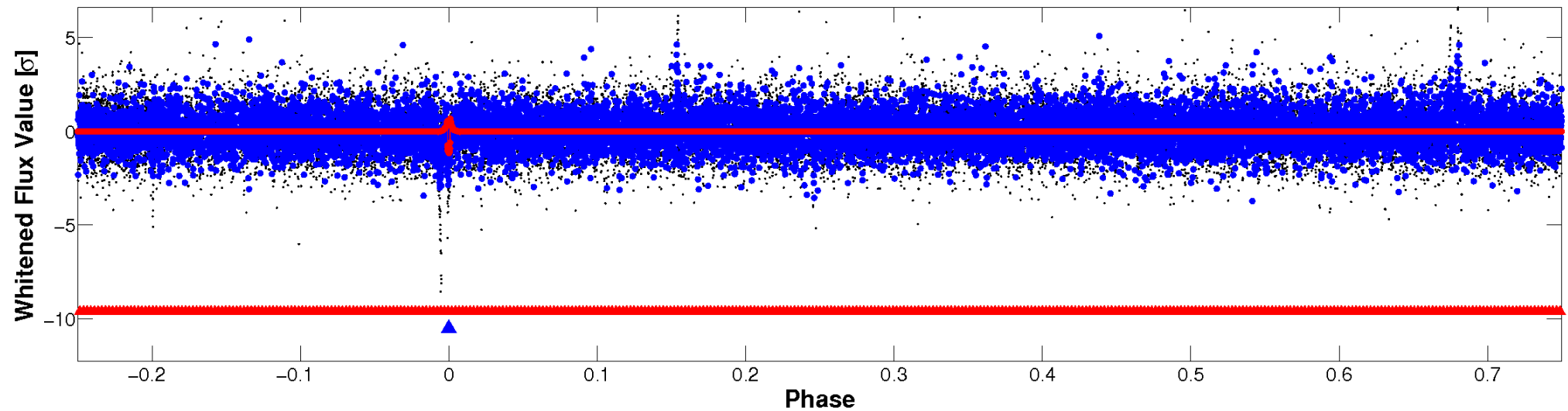


Non-Whitened Vs. Whitened Light Curve

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

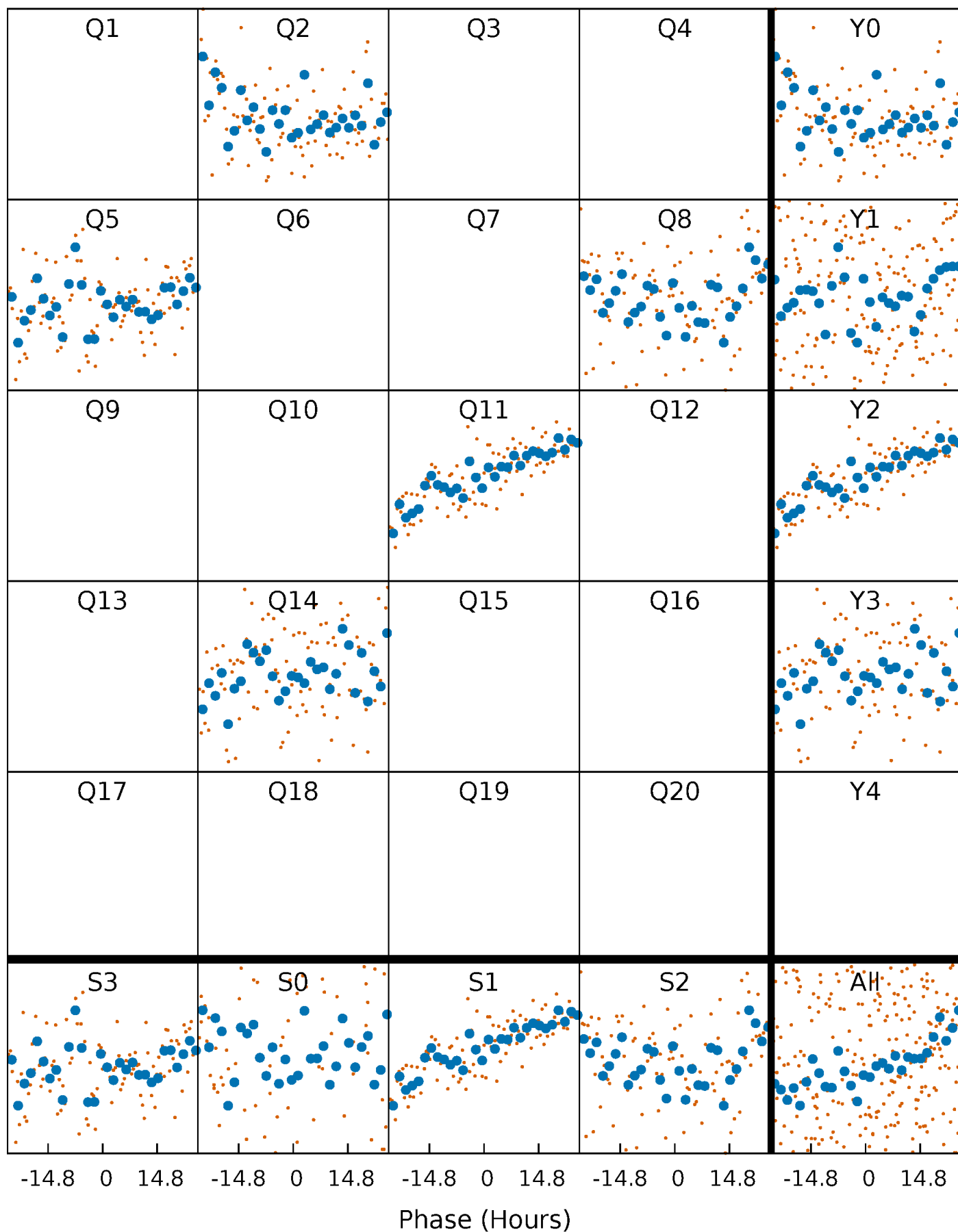


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



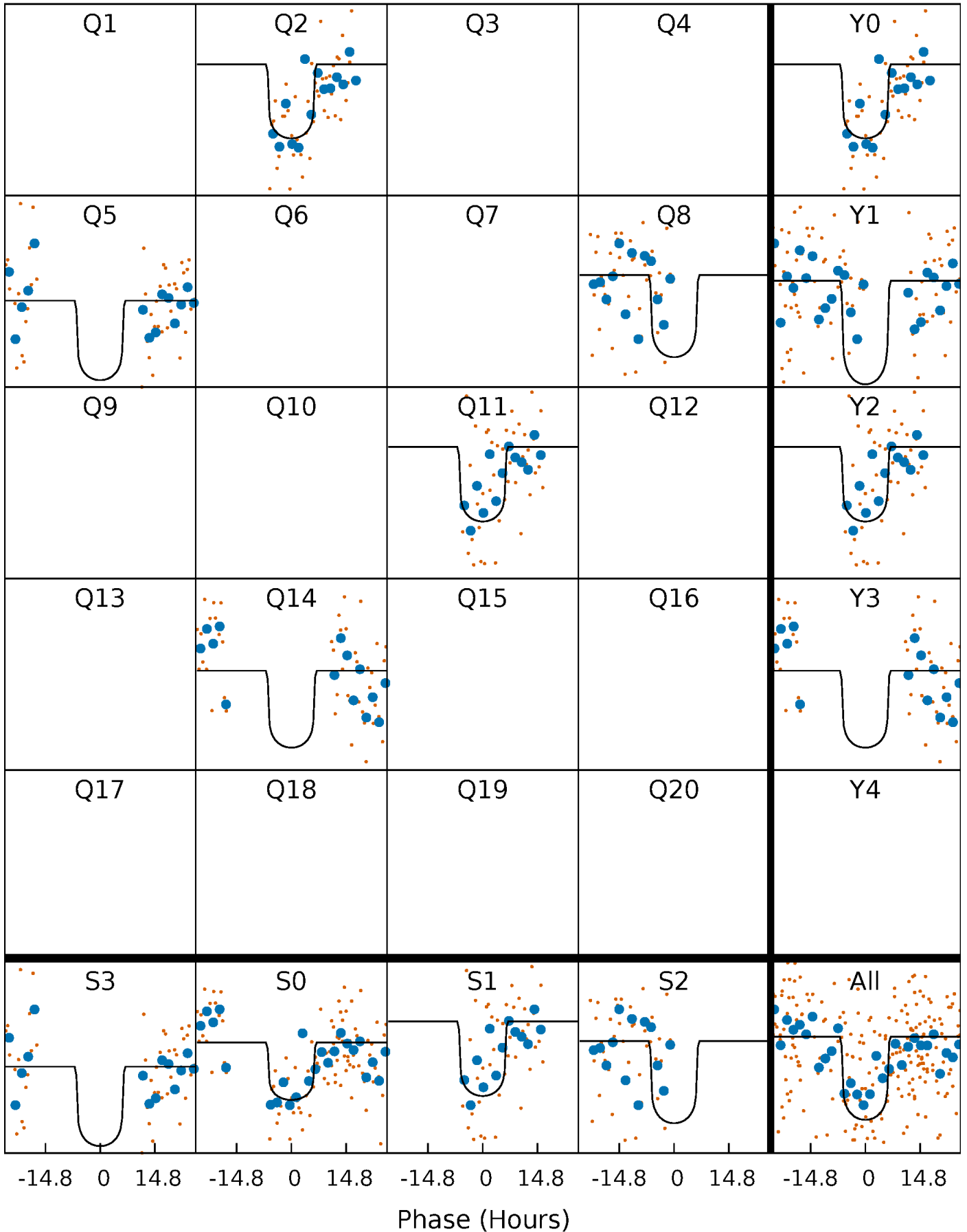
PDC Quarter-Phased Transit Curves

TCE 009084512-02 P=285.804620 Days $T_0=203.682109$ (BKJD)



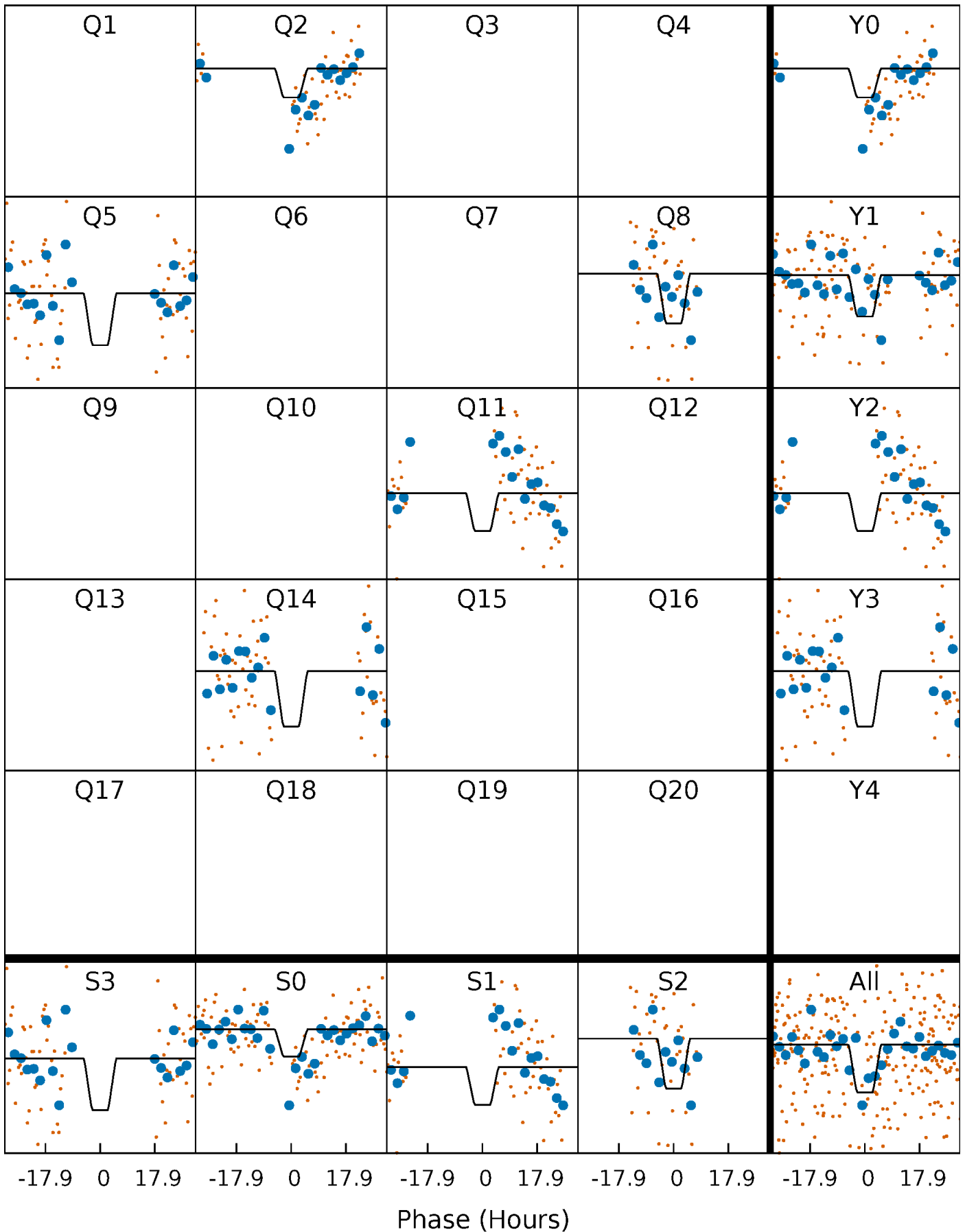
DV Quarter-Phased Transit Curves

TCE 009084512-02 P=285.804620 Days $T_0=203.682109$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

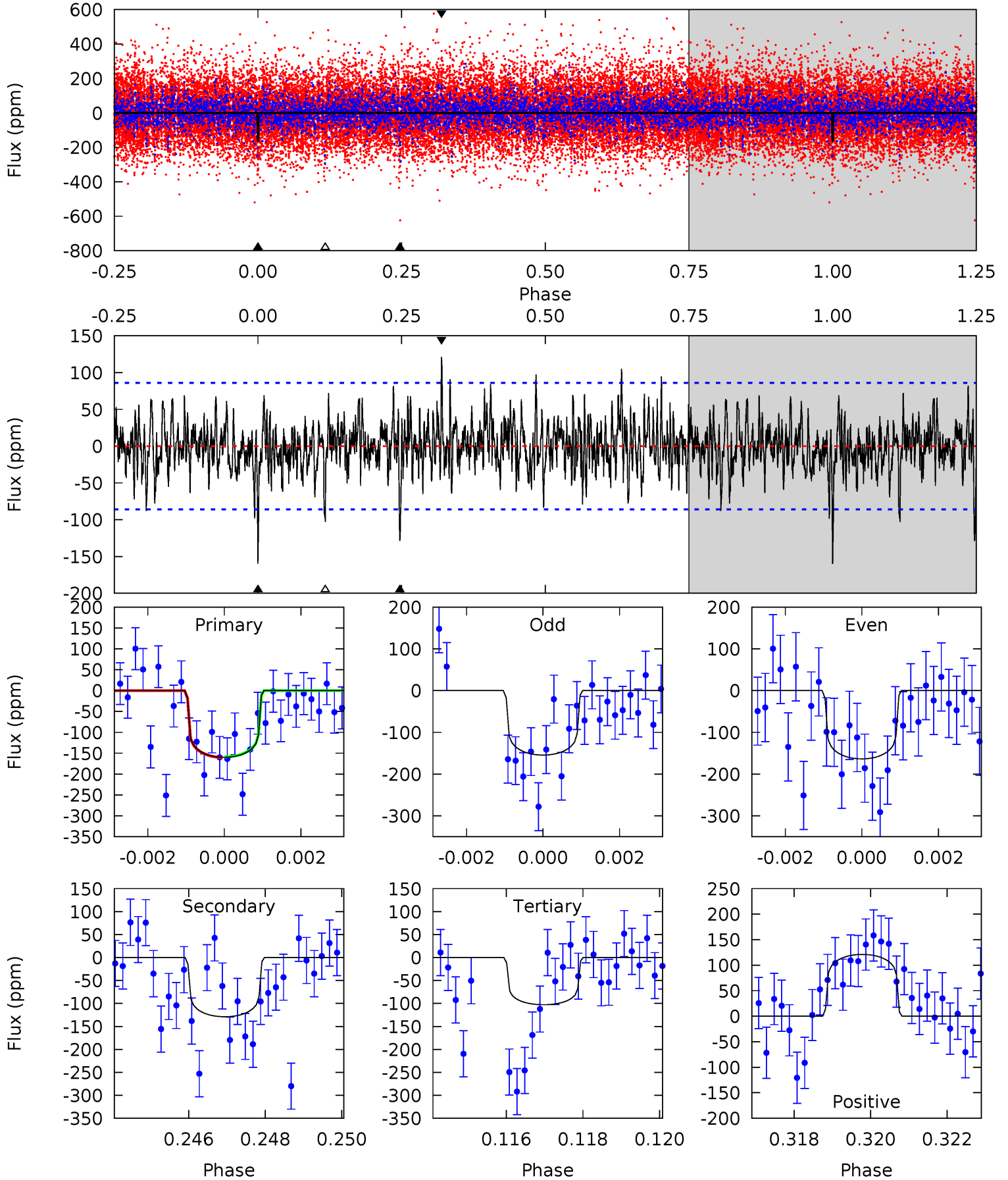
TCE 009084512-02 $P=285.749714$ Days $T_0=203.440275$ (BKJD)



DV Model-Shift Uniqueness Test

009084512-02, P = 285.804620 Days, E = 203.682109 Days

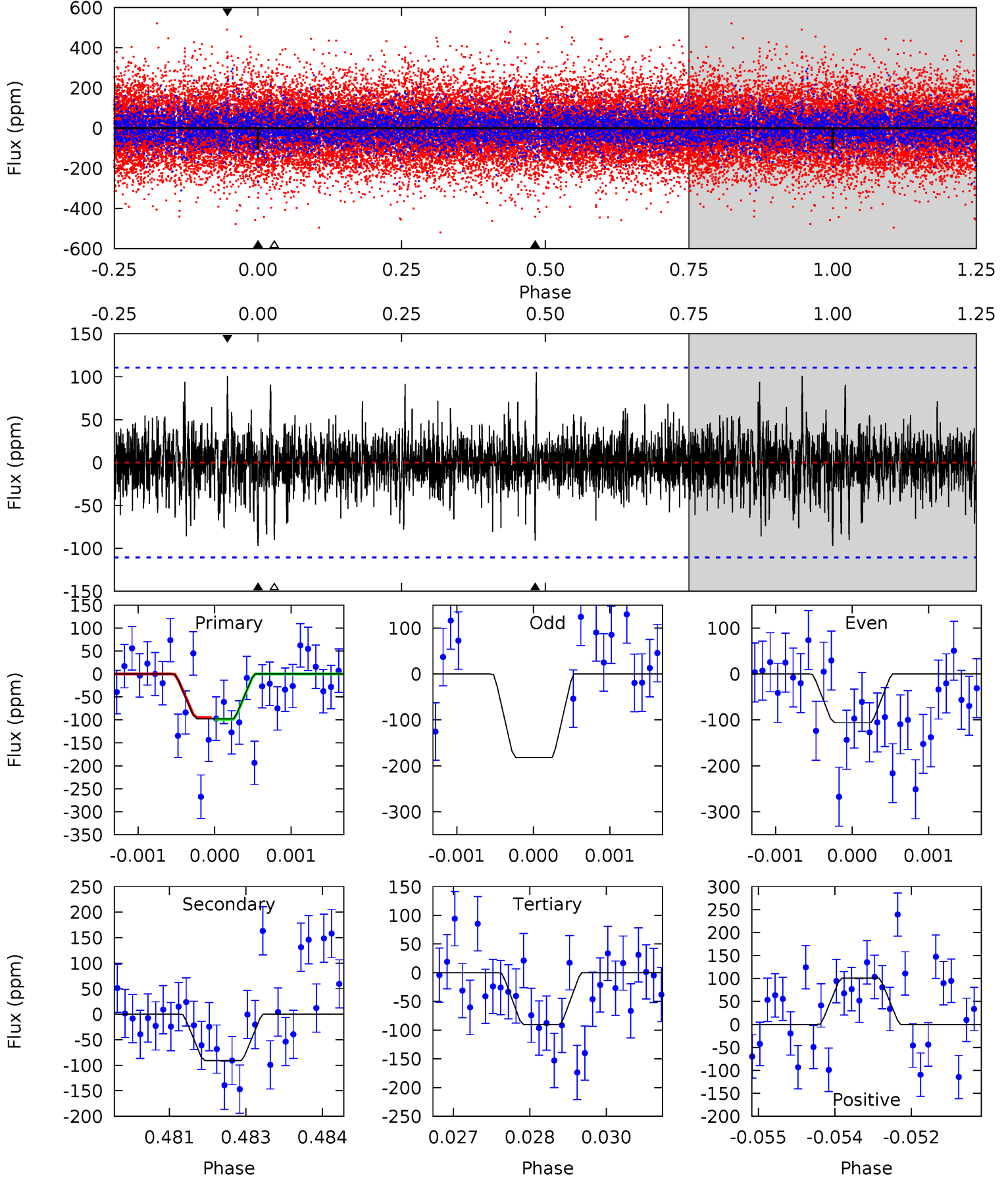
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.92	8.00	6.38	7.52	5.33	3.10	1.75	3.54	2.41	1.62	0.49	0.28	0.84	0.43	0.05



Alt Model-Shift Uniqueness Test

009084512-02, P = 285.749714 Days, E = 203.440275 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.75	4.42	4.38	4.92	5.38	3.18	1.07	0.37	-0.17	0.04	-0.50	1.07	-0.71	0.52	0.07



Stellar Parameters For KIC 009084512

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7350^{+231}_{-334}	$4.205^{+0.105}_{-0.195}$	$-0.140^{+0.200}_{-0.350}$	$1.580^{+0.517}_{-0.278}$	$1.462^{+0.219}_{-0.219}$	$0.522^{+0.271}_{-0.285}$
	+3%/-5%	+2%/-5%	+143%/-250%	+33%/-18%	+15%/-15%	+52%/-55%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009084512-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-129±16	$2.62^{+0.75}_{-0.65}$	586^{+45}_{-37}	6364^{+906}_{-683}	9501^{+6497}_{-3727}
Alt.	-91±21	$1.96^{+0.64}_{-0.52}$	583^{+44}_{-35}	6654^{+1429}_{-867}	11592^{+11601}_{-5233}

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 $A_{obs} \gg 1.0$

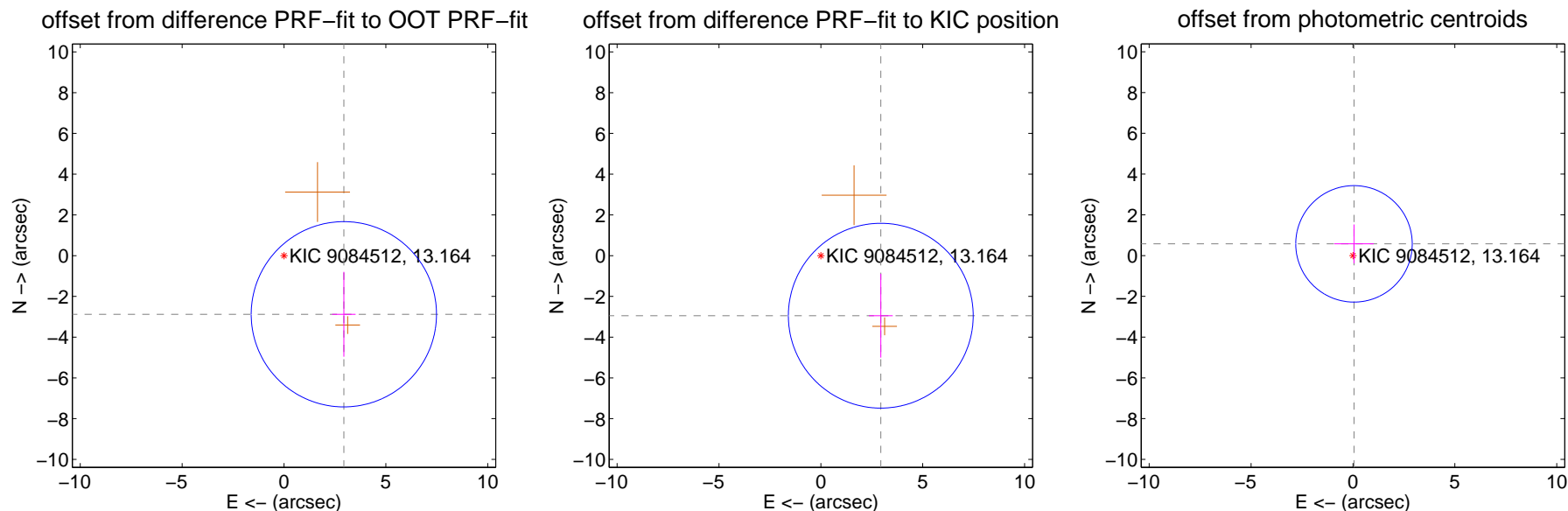
DV Centroid Data

Supplemental centroid analysis for 009084512-02. Kepler magnitude: 13.16. Transit SNR 8.43

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.112 ± 1.516	2.71	-2.938 ± 0.578	-2.877 ± 2.084
PRF-fit source offset from KIC position	4.165 ± 1.512	2.75	-2.942 ± 0.586	-2.948 ± 2.055
photometric centroid source offset	0.58 ± 0.95	0.61	-0.05 ± 0.97	0.58 ± 0.95



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

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

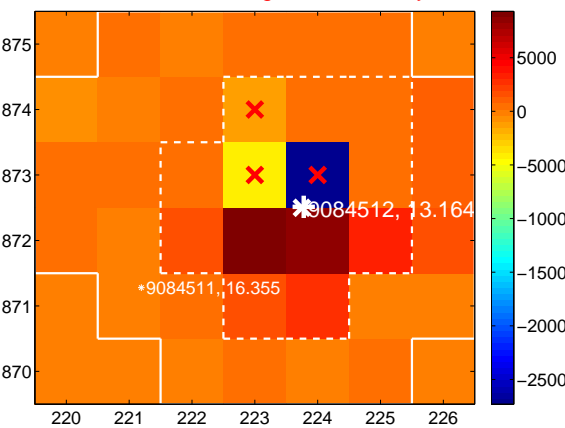
Q1 no difference image



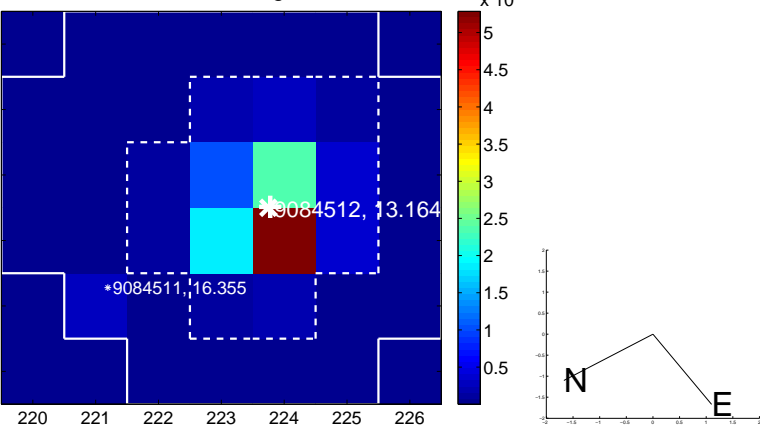
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



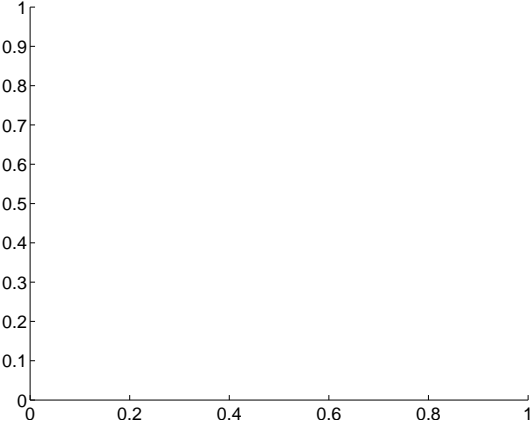
Q3 no difference image



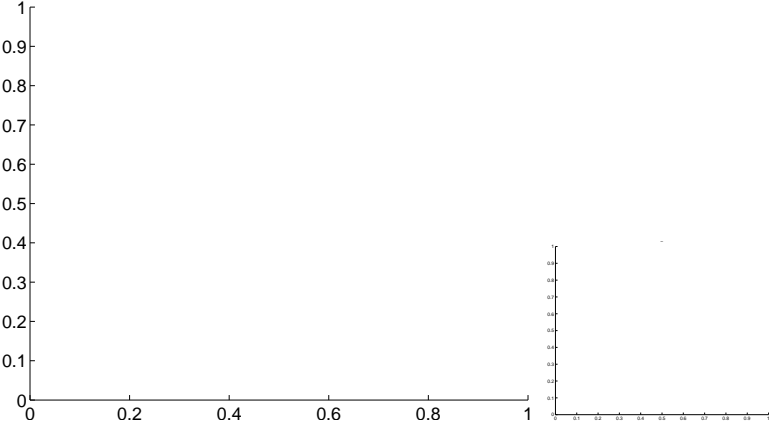
Q3 no OOT image



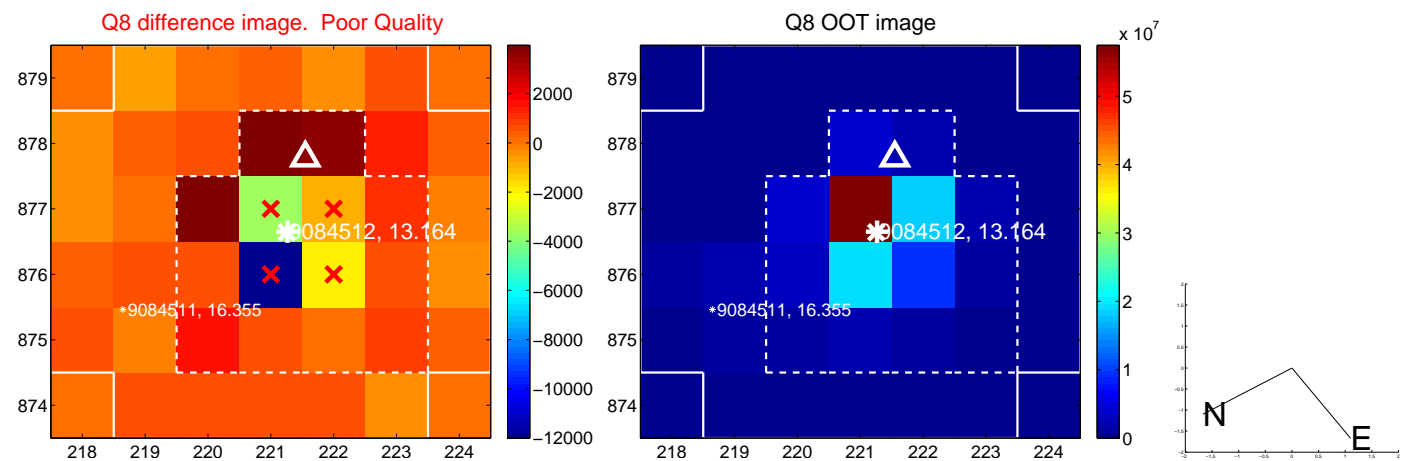
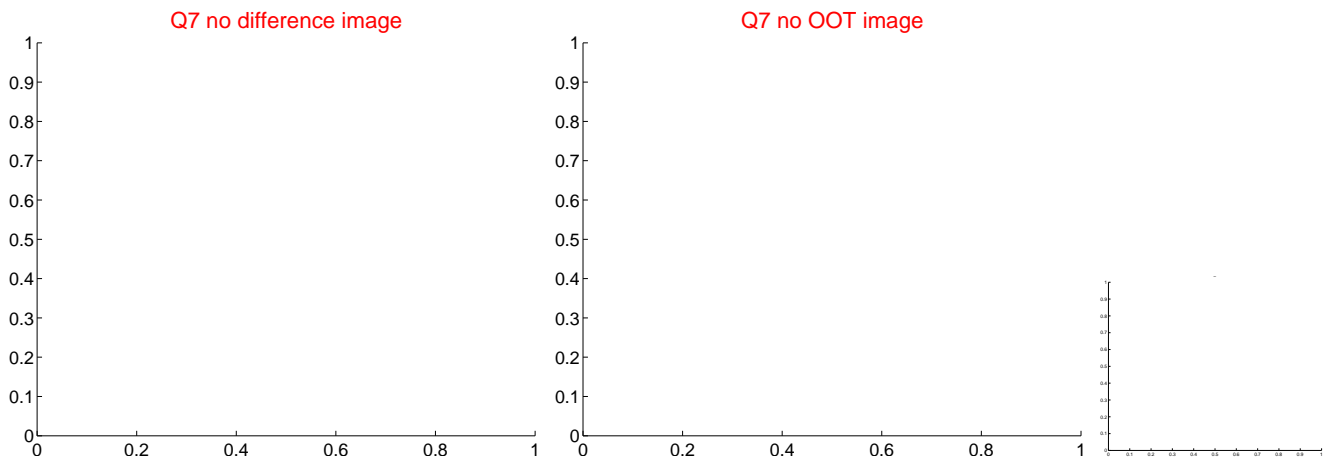
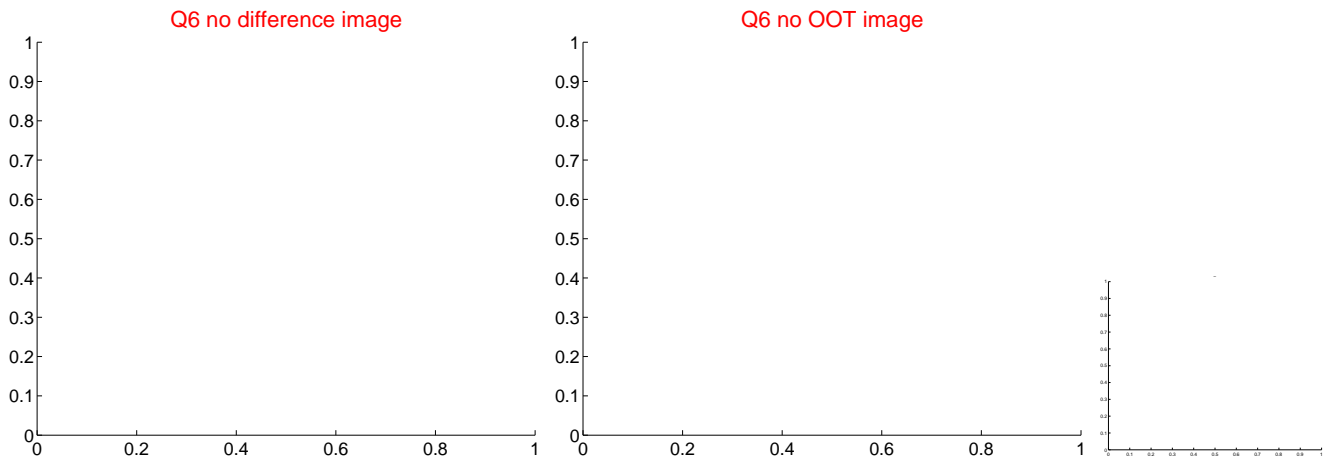
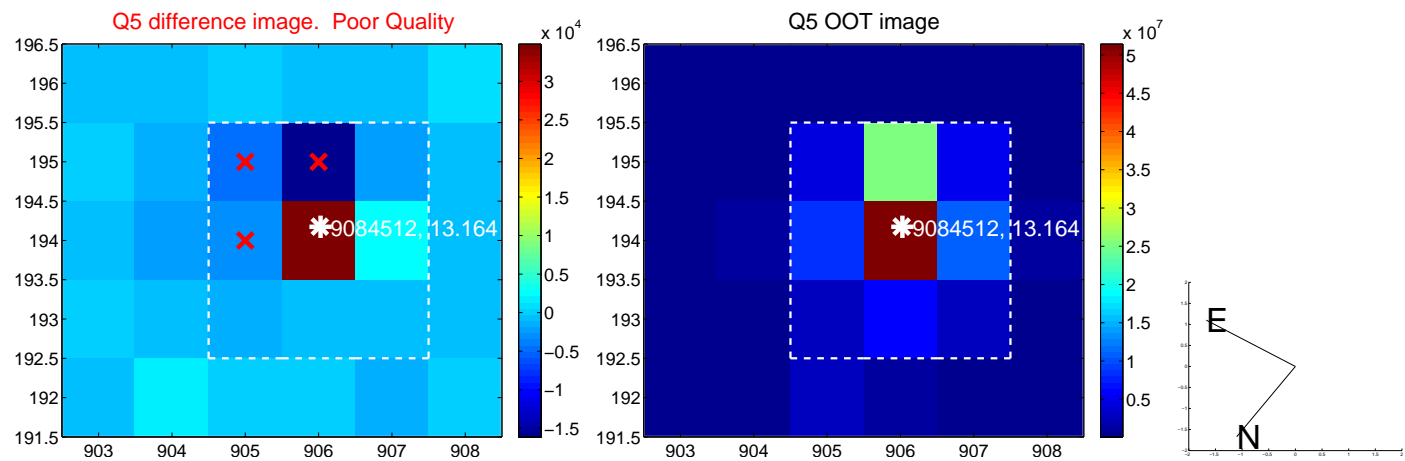
Q4 no difference image



Q4 no OOT image



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

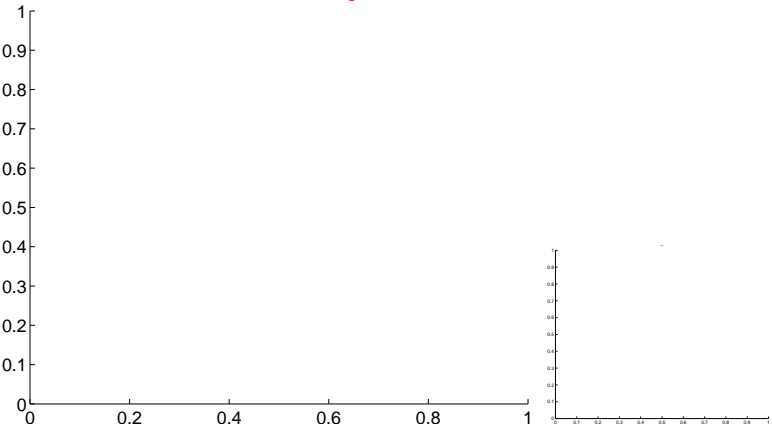


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q9 no difference image



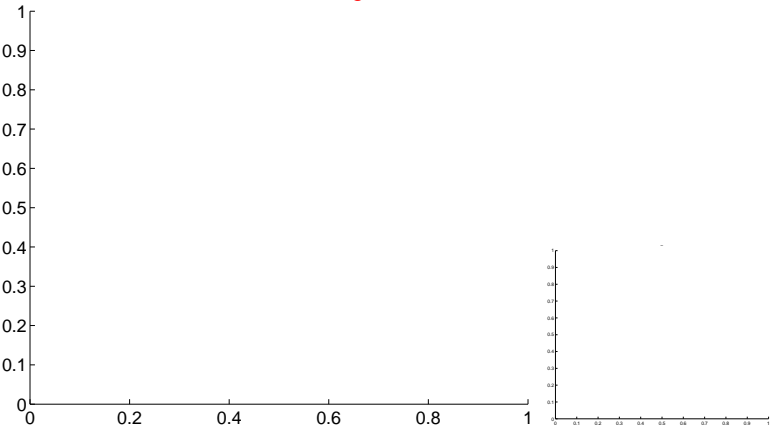
Q9 no OOT image



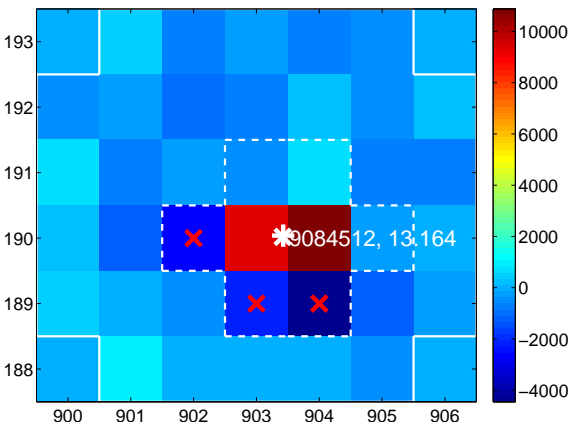
Q10 no difference image



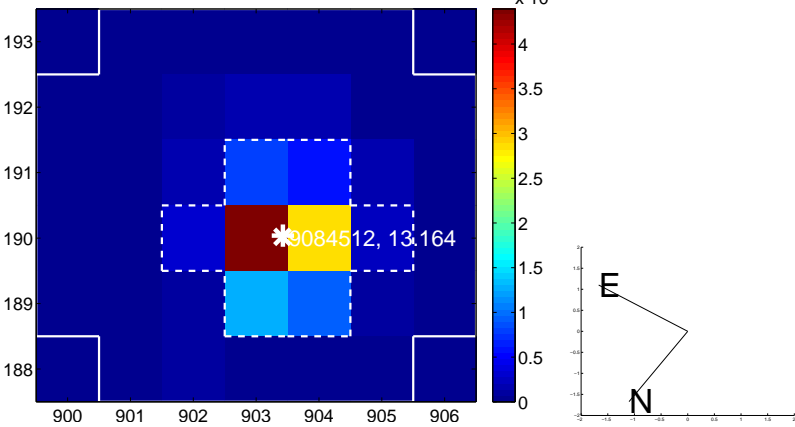
Q10 no OOT image



Q11 difference image. Poor Quality



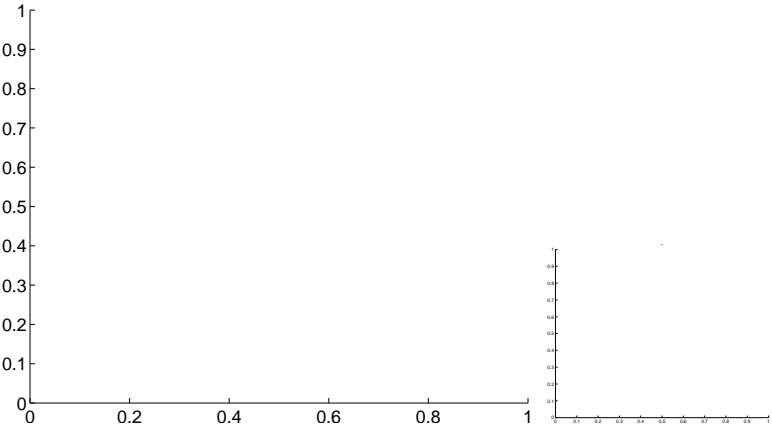
Q11 OOT image



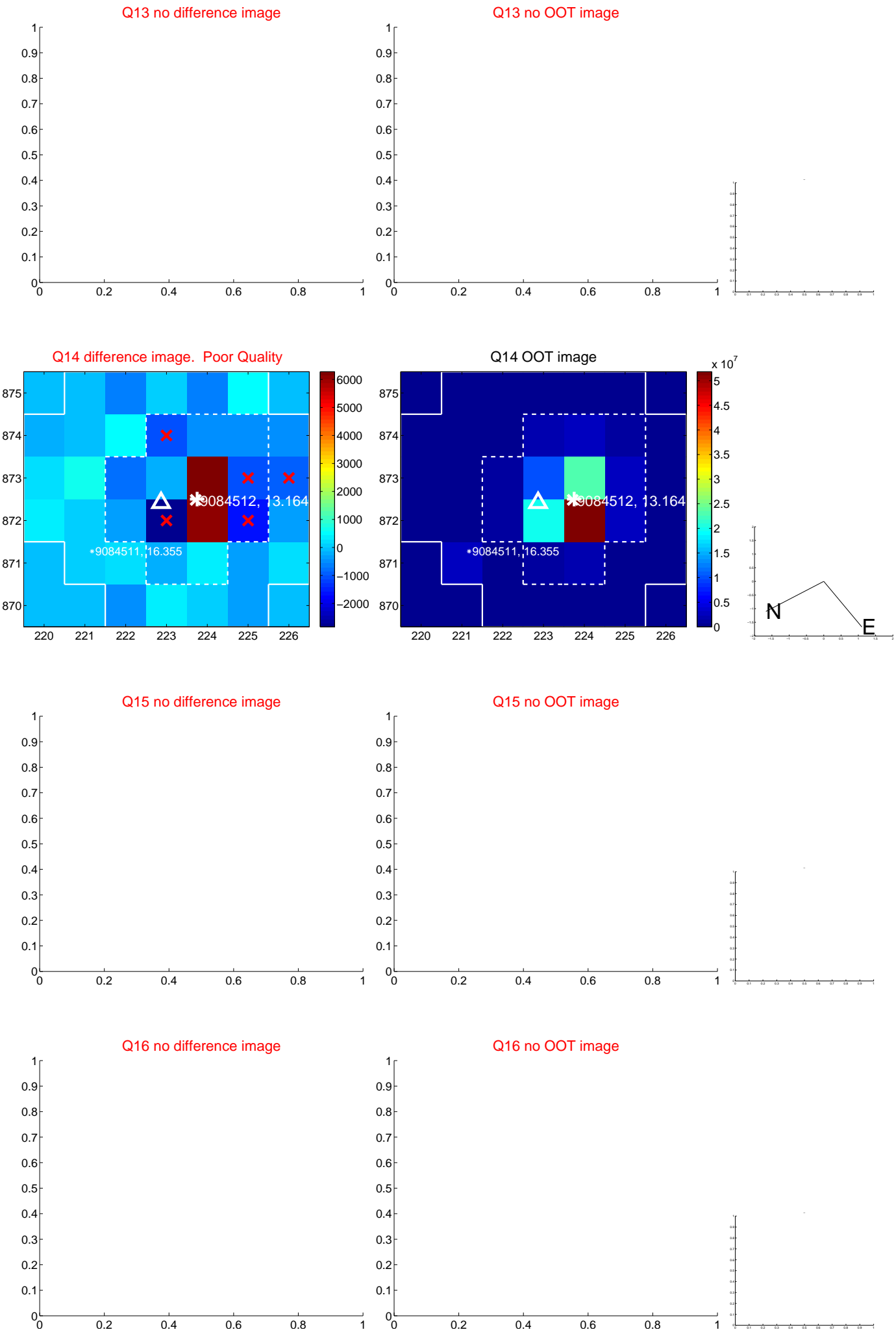
Q12 no difference image



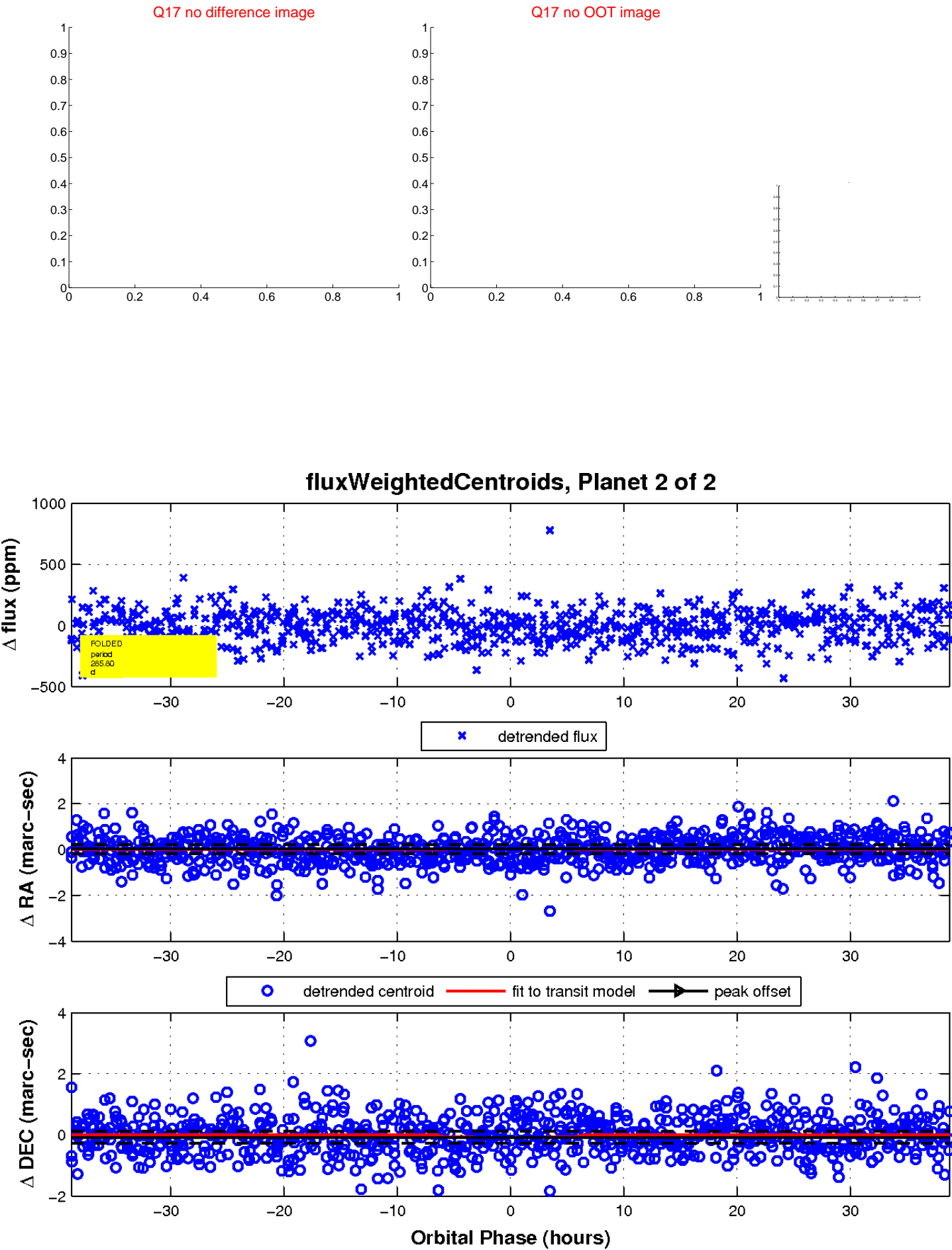
Q12 no OOT image



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



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



UKIRT Image

Declination

