

KIC 008162598

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})
008162598-01	OBS	No	567.625590	244.839493	277.7	17.939	7.6	7.7	1.10	5600	1.95	0.63
008162598-02	OBS	No	523.131405	317.328921	244.9	7.715	7.2	6.5	1.10	5600	1.92	0.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008162598-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008162598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—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.

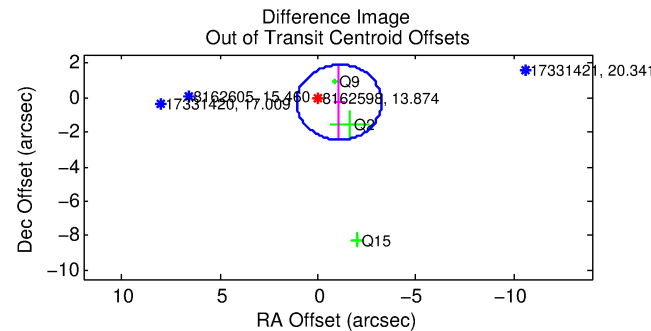
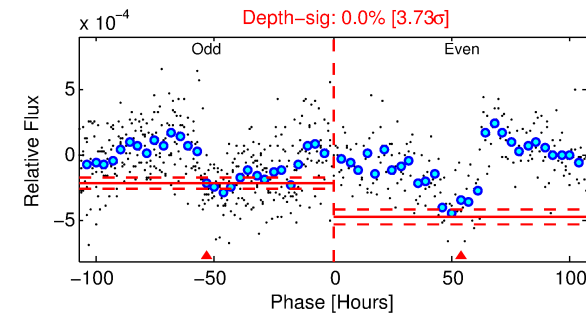
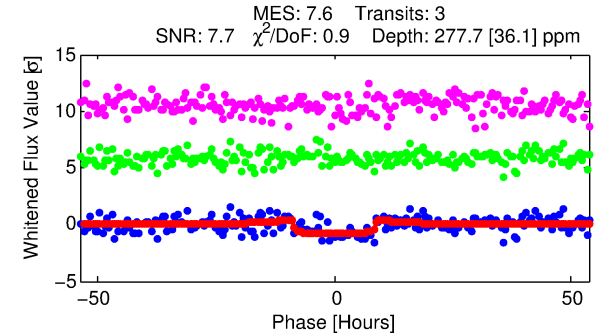
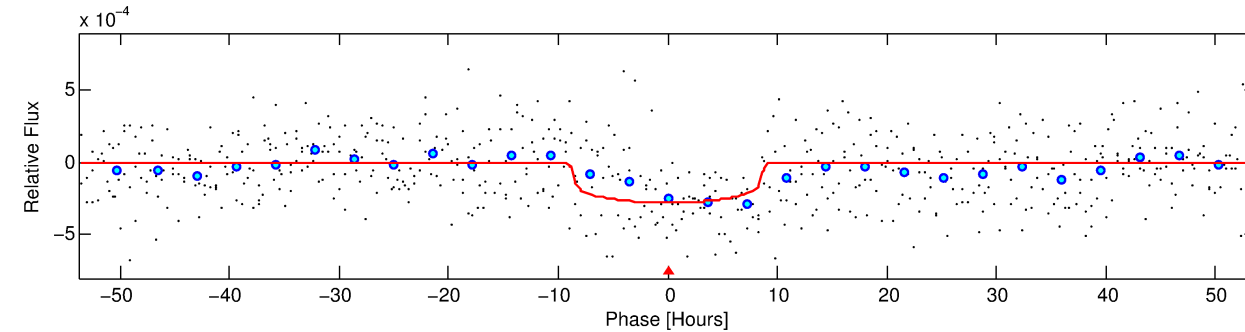
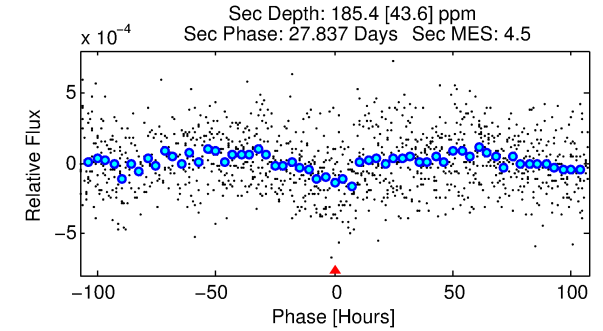
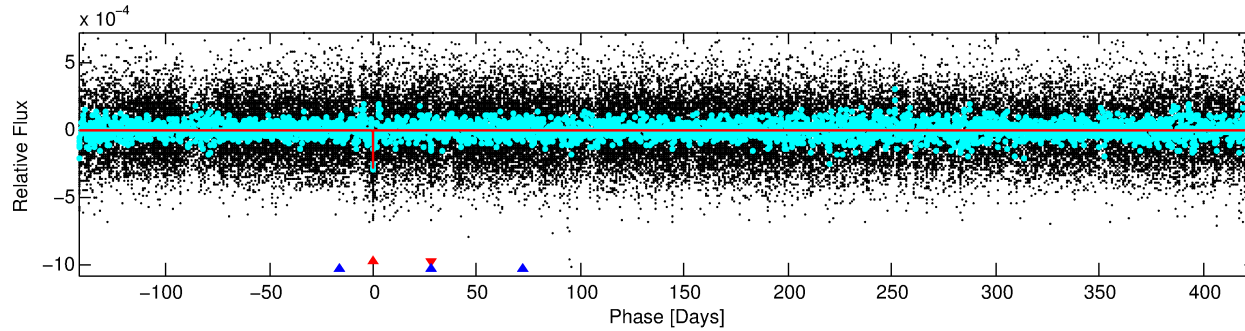
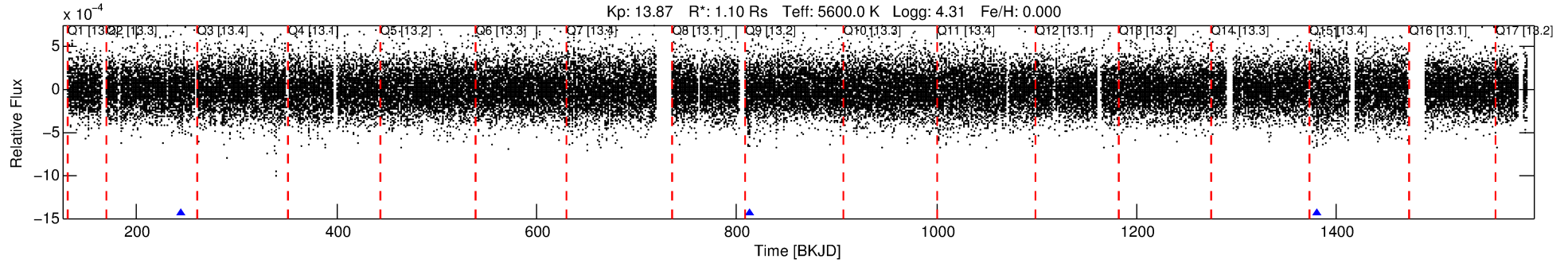
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008162598-01

No Significant Match Found

DV One-Page Summary

KIC: 8162598 Candidate: 1 of 2 Period: 567.626 d



DV Fit Results:

Period = 567.62559 [0.01613] d
Epoch = 244.8395 [0.0190] BKJD
Rp/R* = 0.0163 [0.0061]
a/R* = 178.33 [275.40]
b = 0.70 [1.14]
Seff = 0.63 [0.24]
Teff = 227 [21] K
Rp = 1.95 [0.93] Re
a = 1.2950 [0.3186] AU
Ag = 45094.91 [38971.13] [1.16σ]
Teffp = 5121 [1017] K [4.81σ]

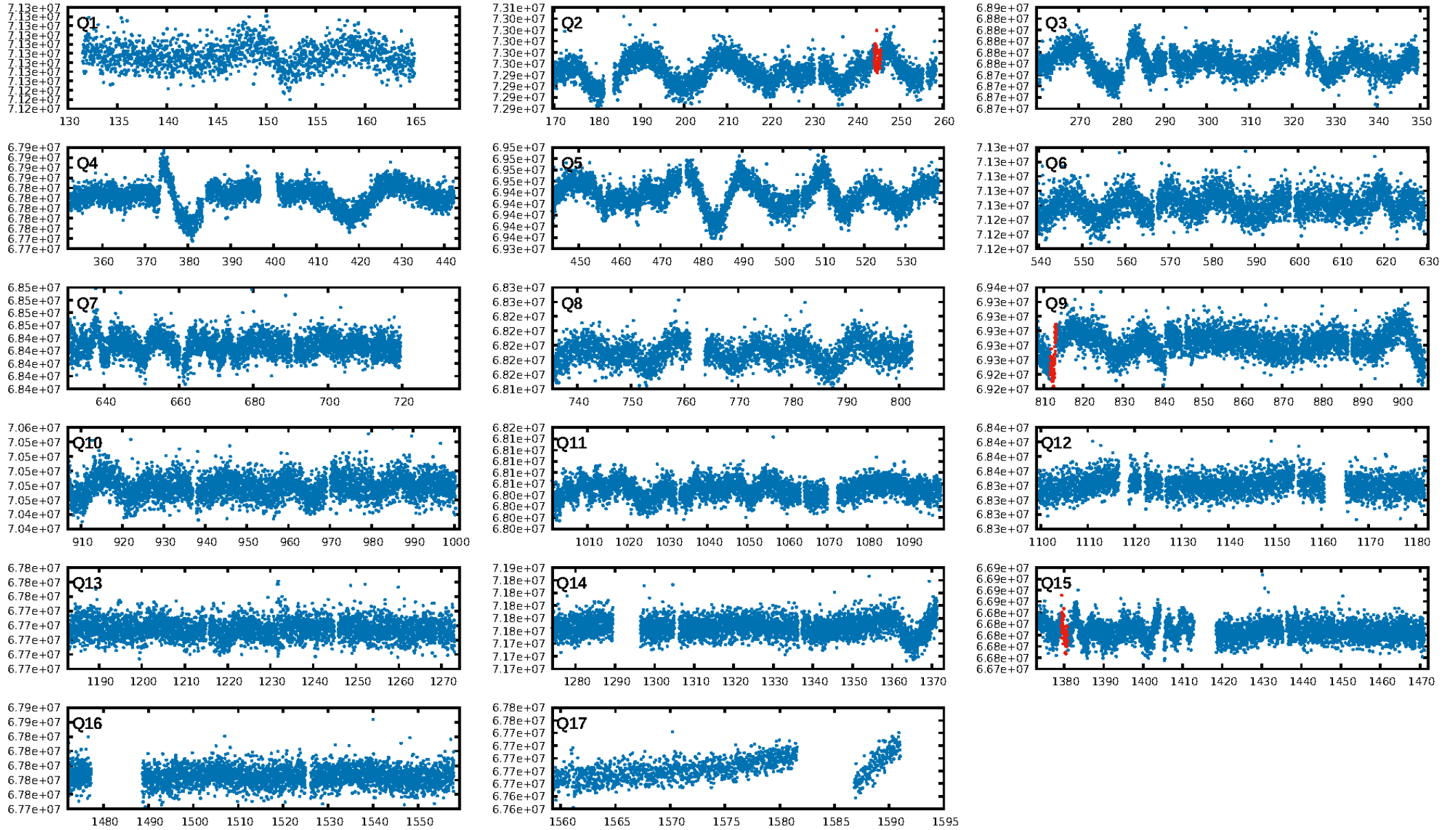
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [54.68σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.78e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.585
Centroid-sig: 17.2%
Centroid-so: 1.701 arcsec [1.20σ]
OotOffset-rm: 1.115 arcsec [1.54σ]
KicOffset-rm: 1.182 arcsec [1.53σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

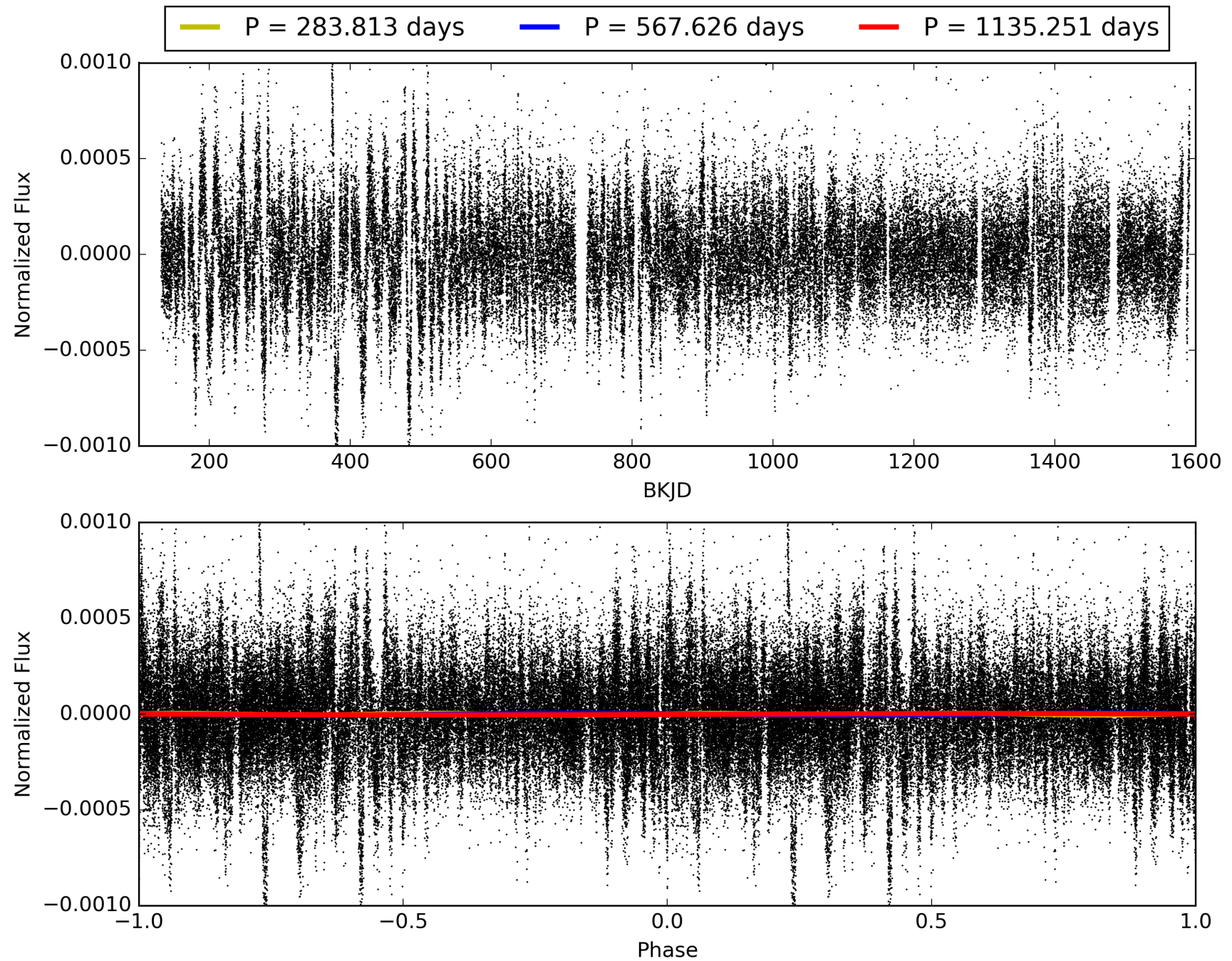
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:46:03 Z

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

TCE 008162598-01, PDC Light Curves

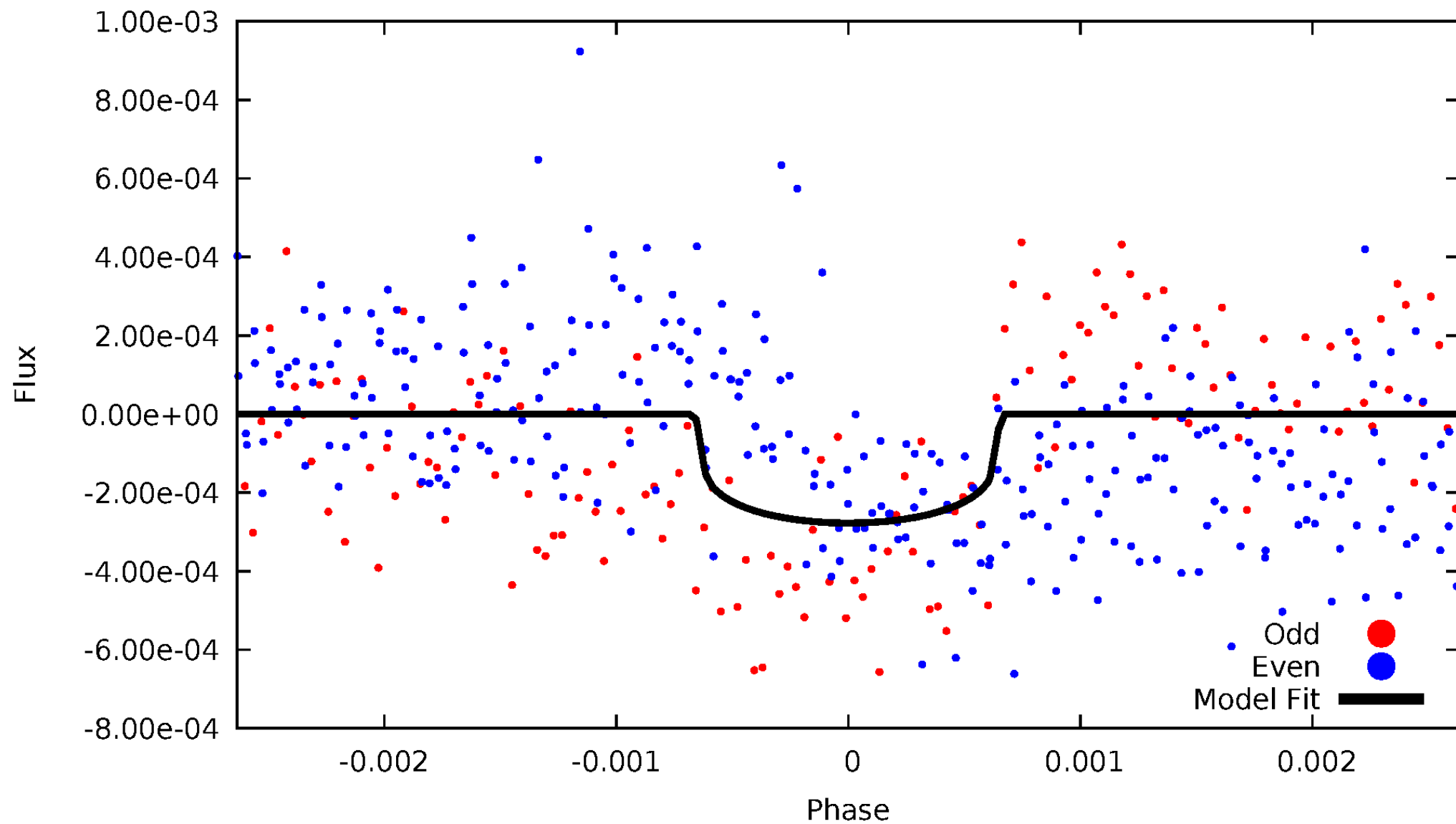


TCE 008162598-01



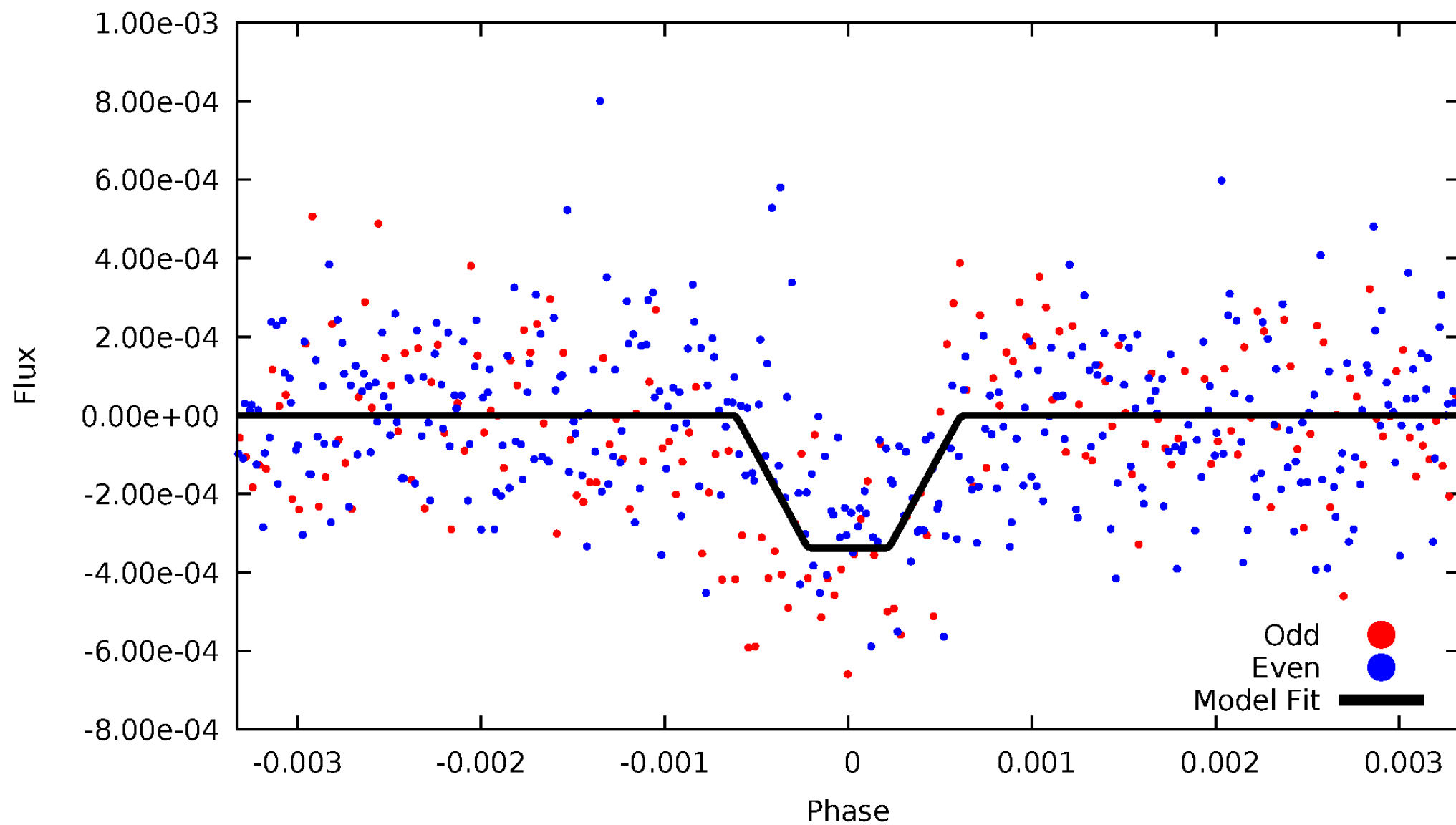
DV Odd/Even

TCE 008162598-01



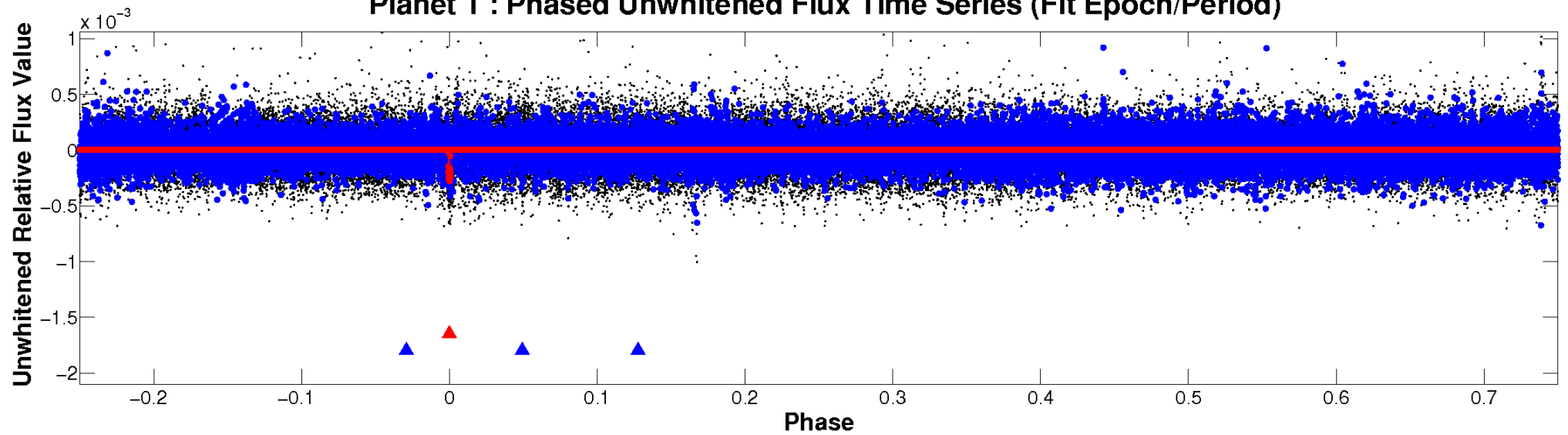
ALT Odd/Even

TCE 008162598-01

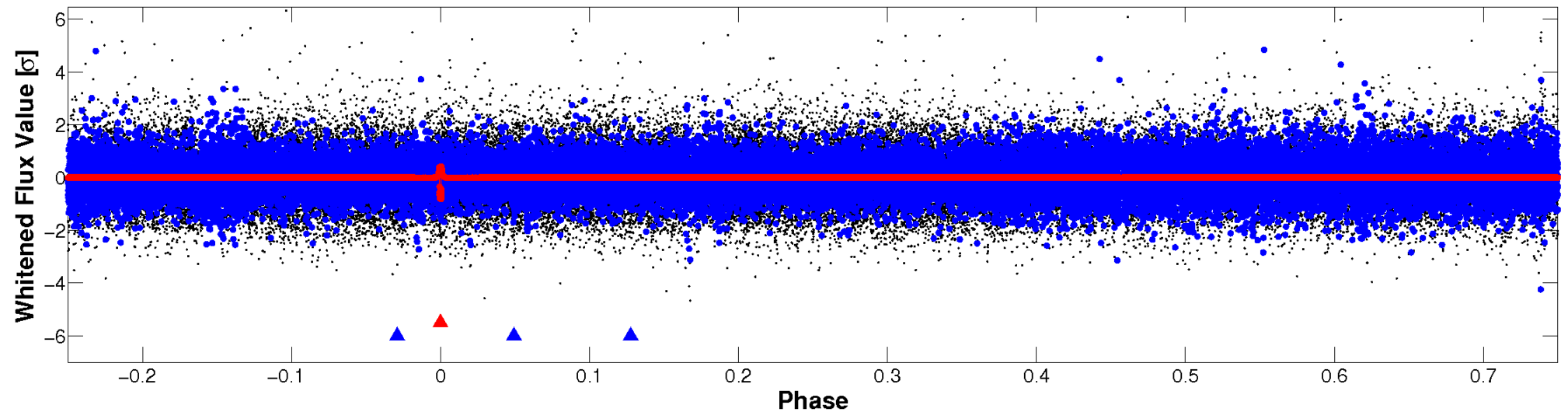


Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

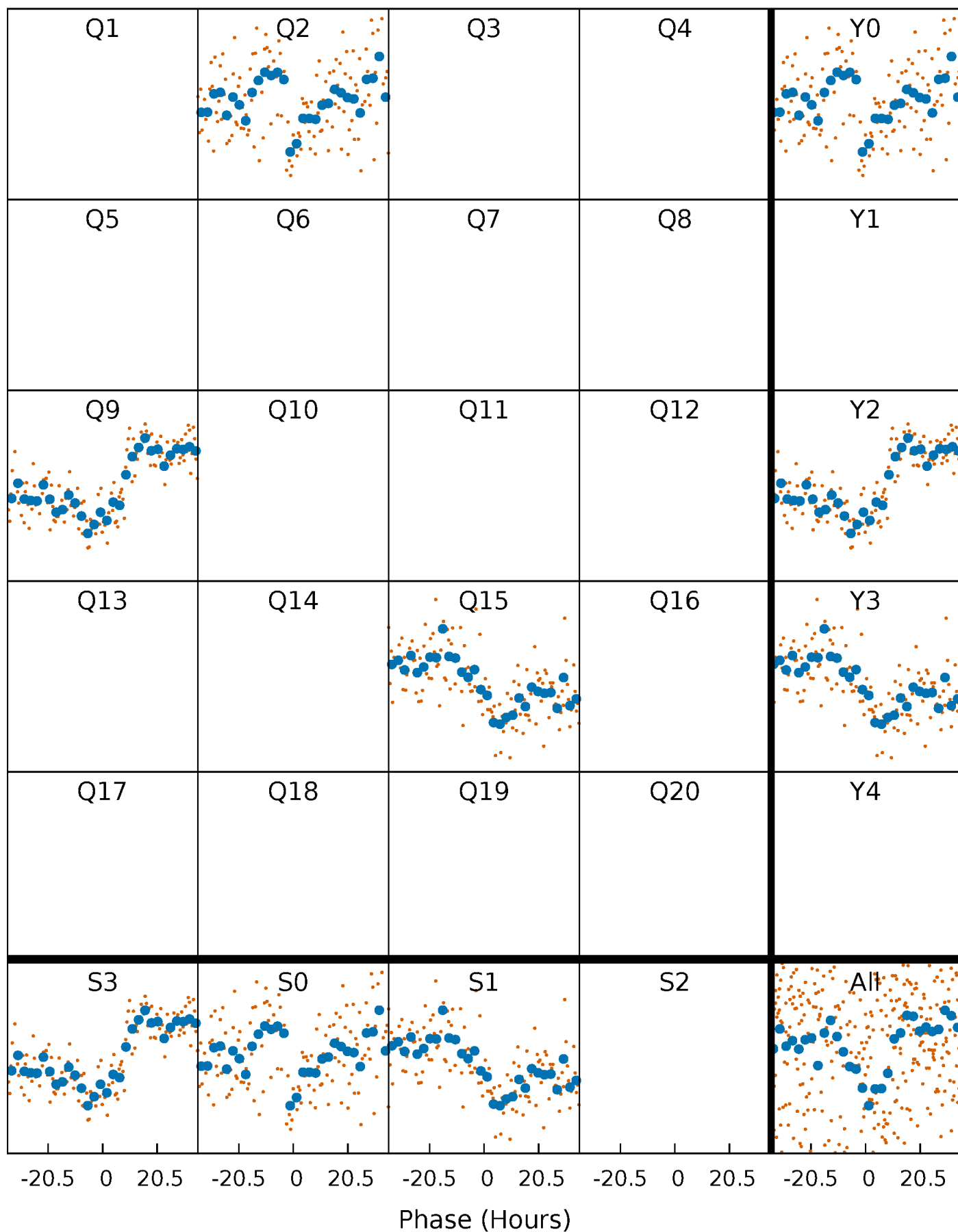


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 008162598-01 $P=567.625590$ Days $T_0=244.839493$ (BKJD)



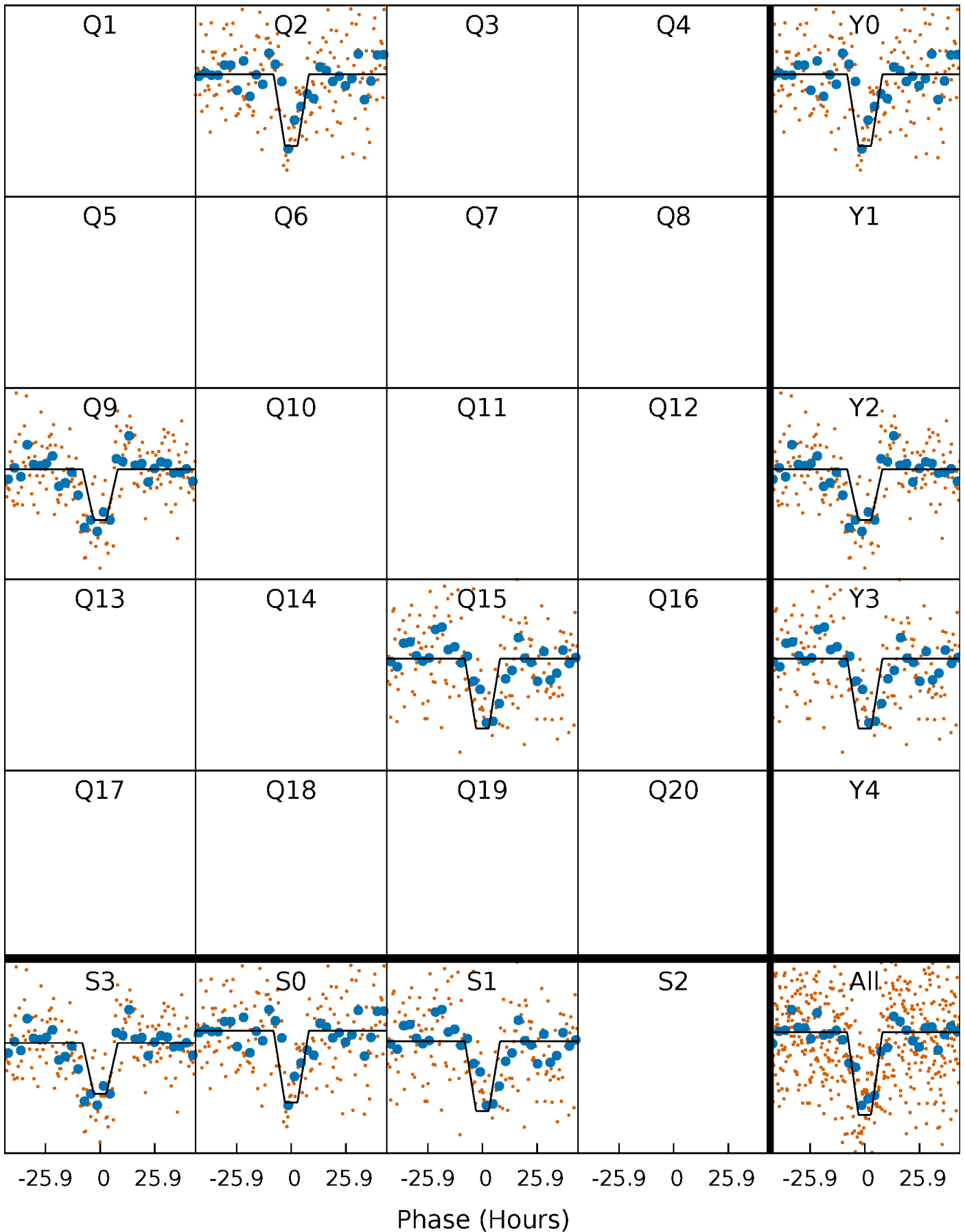
DV Quarter-Phased Transit Curves

TCE 008162598-01 $P=567.625590$ Days $T_0=244.839493$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

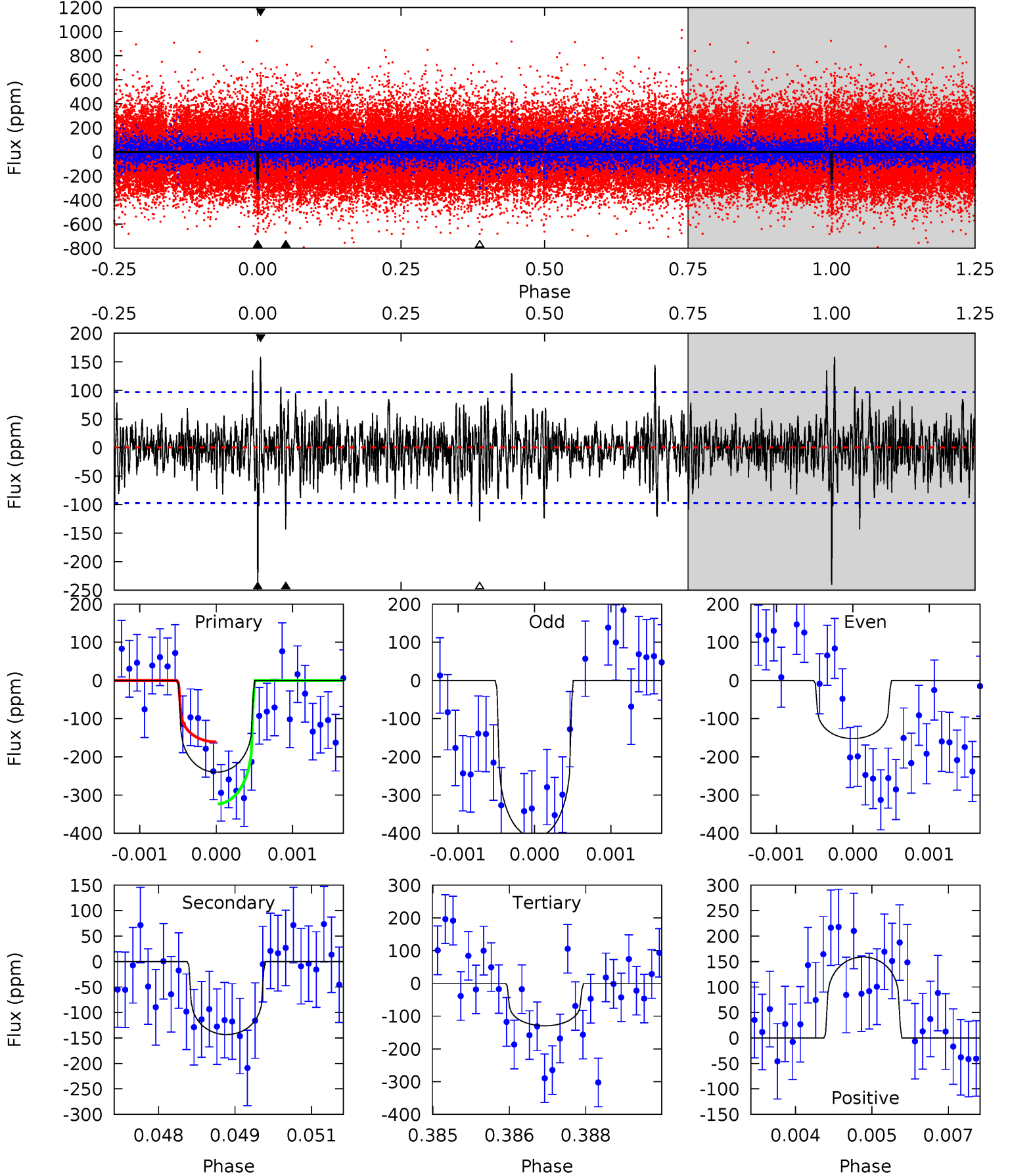
TCE 008162598-01 $P=567.657919$ Days $T_0=244.885434$ (BKJD)



DV Model-Shift Uniqueness Test

008162598-01, P = 567.625590 Days, E = 244.839493 Days

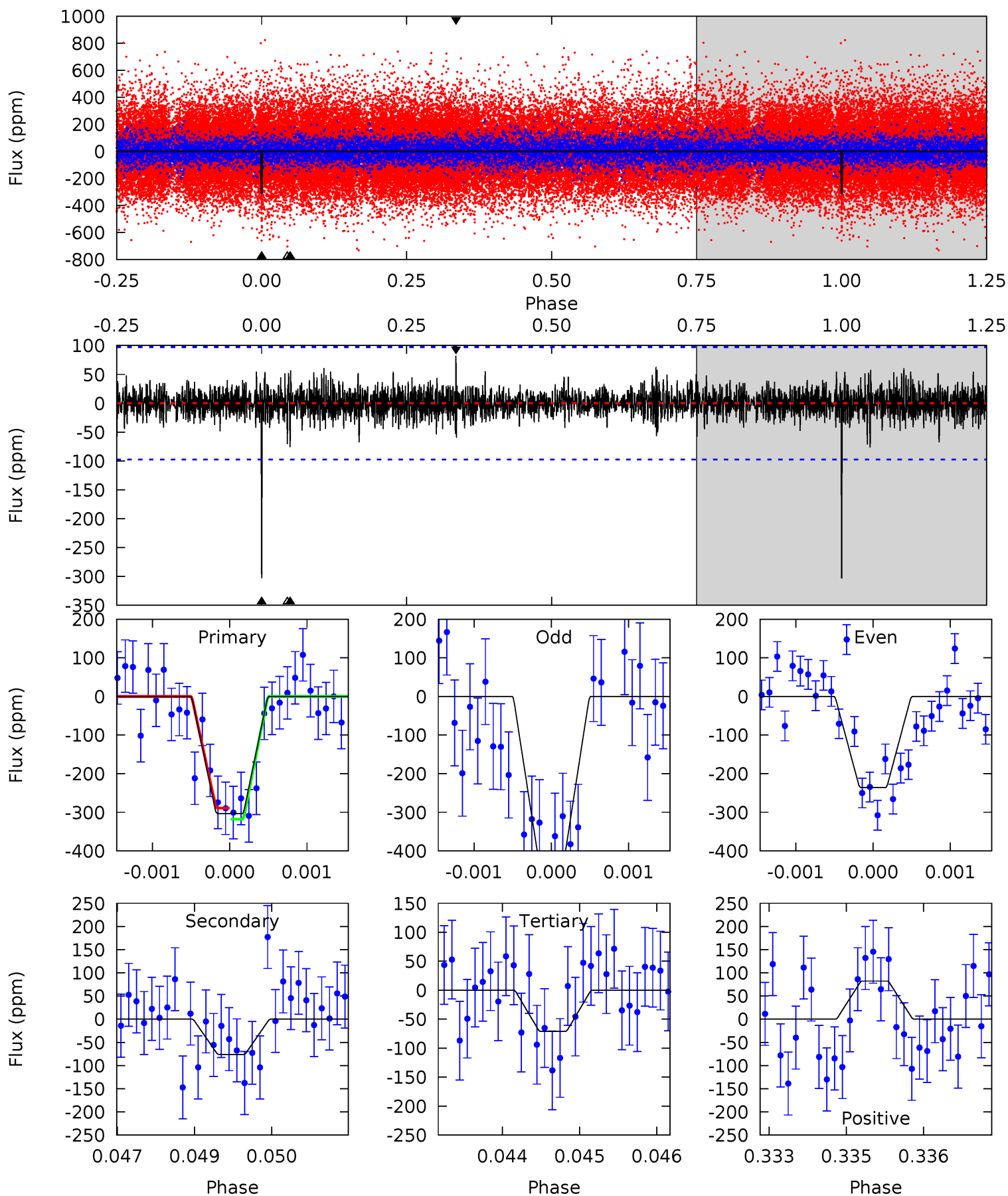
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	7.97	7.20	8.84	5.40	3.21	1.82	6.16	4.52	0.77	-0.87	6.79	1.54	0.40	4.53



Alt Model-Shift Uniqueness Test

008162598-01, P = 567.657919 Days, E = 244.885434 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	4.23	3.95	4.57	5.41	3.23	0.96	12.9	12.3	0.28	-0.34	4.54	1.24	0.21	0.82



Stellar Parameters For KIC 008162598

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5600^{+152}_{-152}	$4.312^{+0.195}_{-0.195}$	$0.000^{+0.250}_{-0.250}$	$1.096^{+0.321}_{-0.241}$	$0.900^{+0.123}_{-0.076}$	$0.962^{+0.953}_{-0.483}$
	+3%/-3%	+5%/-5%	+inf%/-inf%	+29%/-22%	+14%/-8%	+99%/-50%
Source	PHO1	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 008162598-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-143 ± 18	$1.91^{+0.84}_{-0.75}$	317^{+24}_{-21}	4950^{+1307}_{-643}	37000^{+60798}_{-19678}
Alt.	-76 ± 18	$2.15^{+0.89}_{-0.71}$	318^{+24}_{-20}	4132^{+755}_{-431}	14580^{+20275}_{-7421}

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

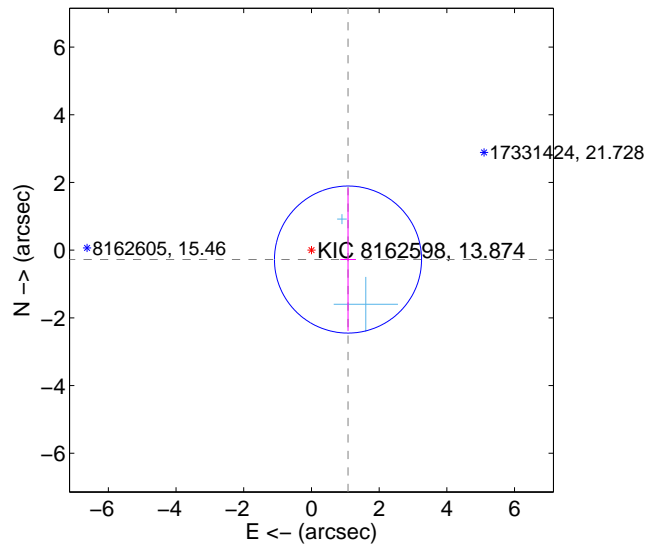
Supplemental centroid analysis for 008162598-01. Kepler magnitude: 13.87. Transit SNR 7.72

There are 2 quarters with good PRF difference image offsets

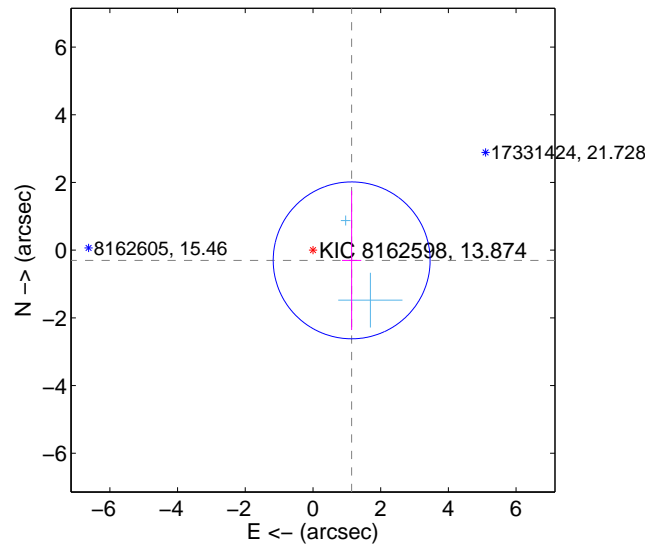
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.115 ± 0.724	1.54	-1.080 ± 0.231	-0.277 ± 2.109
PRF-fit source offset from KIC position	1.182 ± 0.773	1.53	-1.143 ± 0.284	-0.301 ± 2.059
photometric centroid source offset	1.70 ± 1.42	1.20	-1.70 ± 1.42	-0.09 ± 1.29

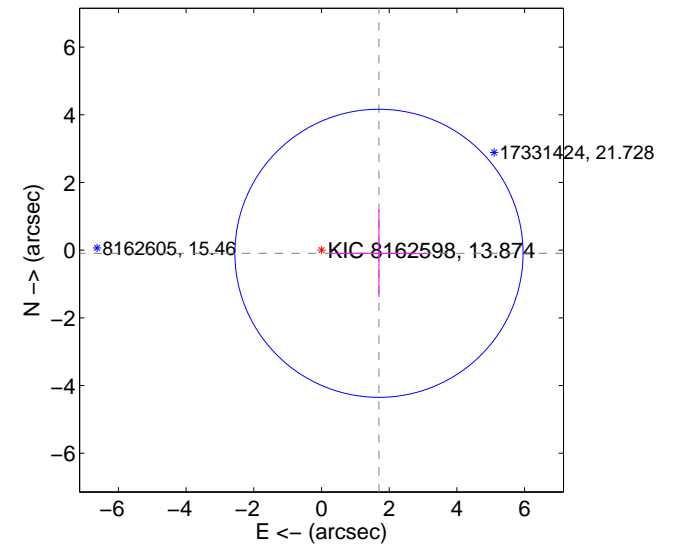
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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

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

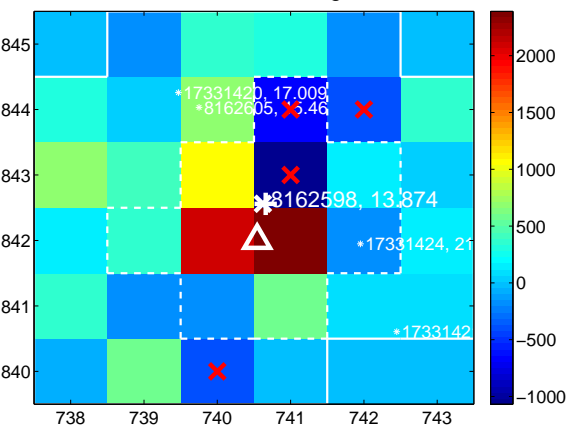
Q1 no difference image



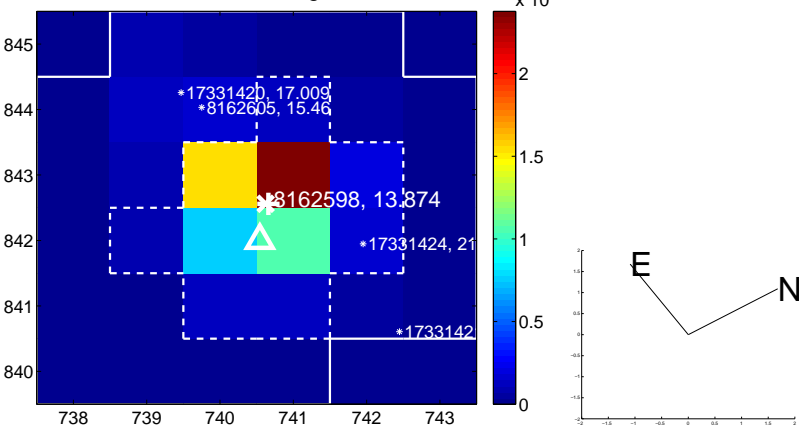
Q1 no OOT image



Q2 difference image



Q2 OOT image



Q3 no difference image



Q3 no OOT image



Q4 no difference image



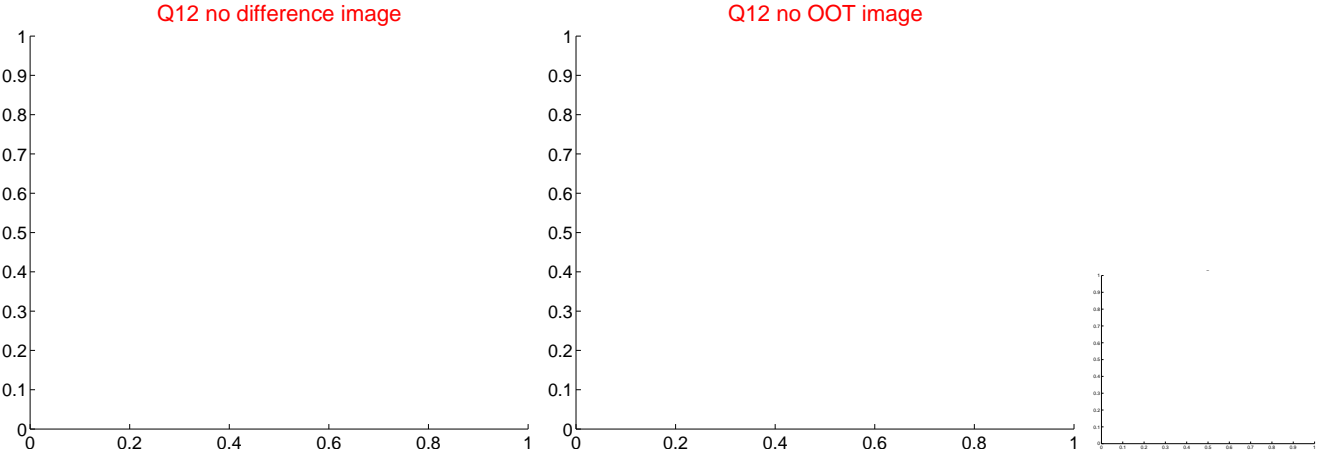
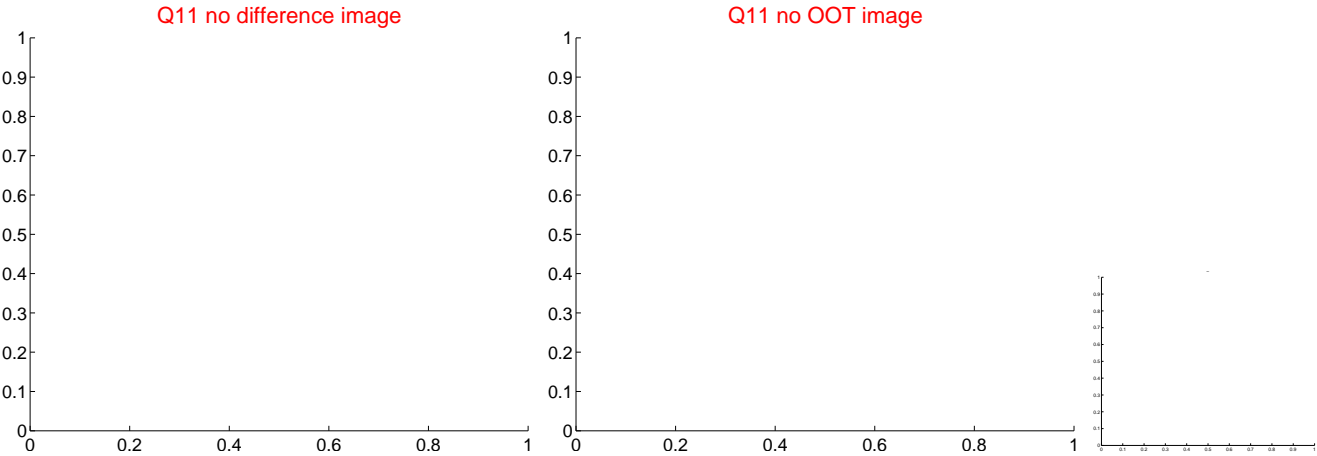
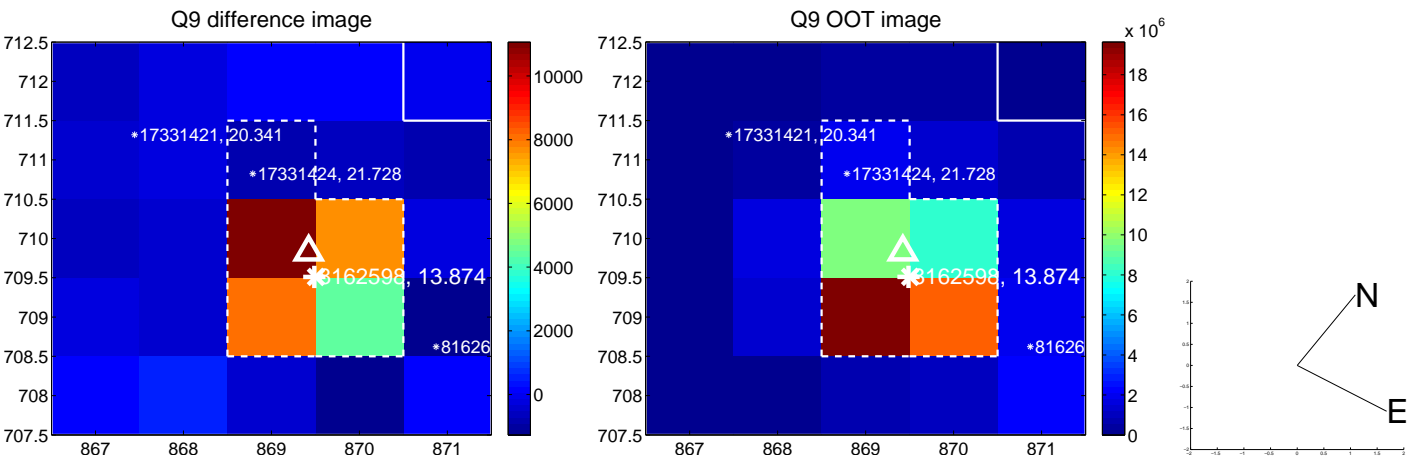
Q4 no OOT image



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.

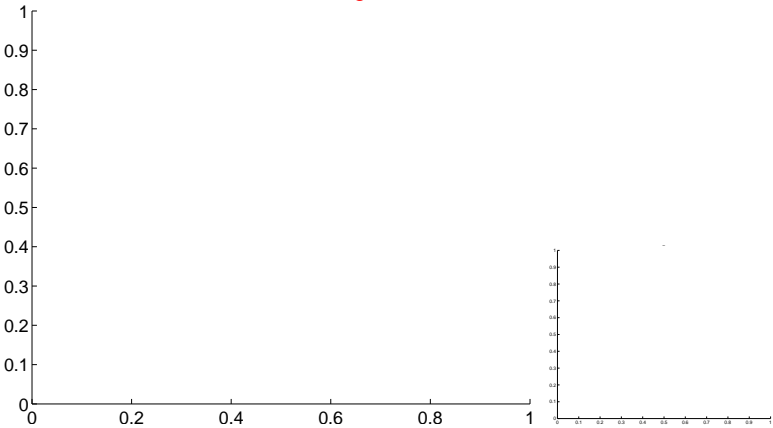


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q13 no difference image



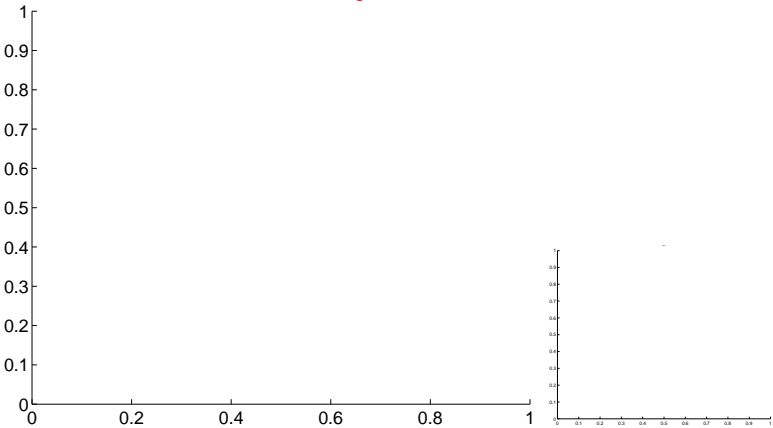
Q13 no OOT image



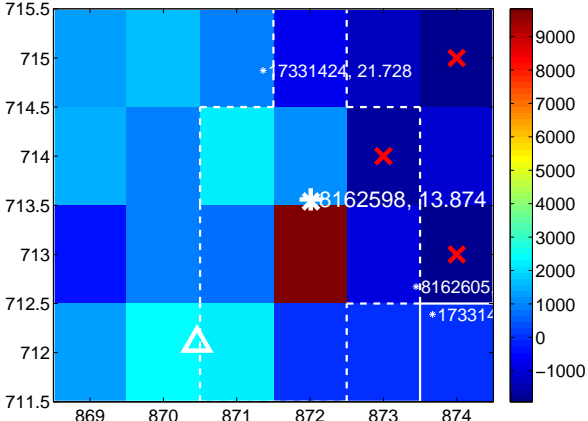
Q14 no difference image



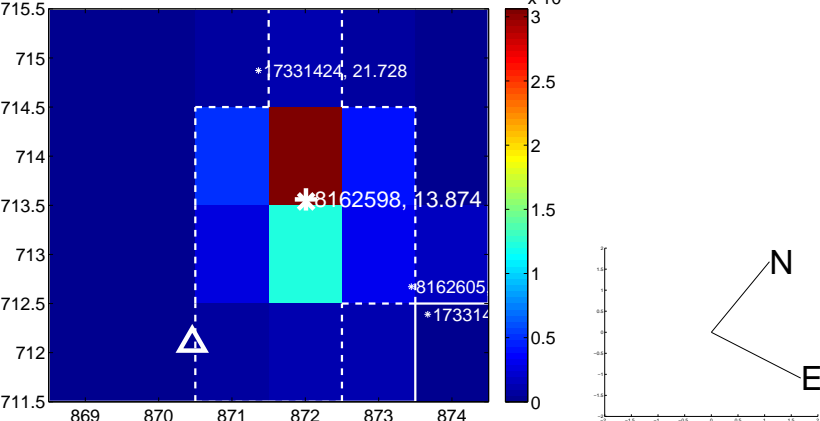
Q14 no OOT image



Q15 difference image. Poor Quality



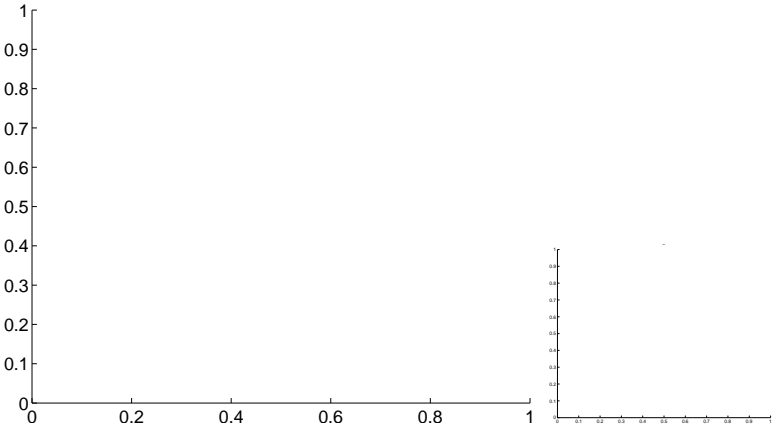
Q15 OOT image



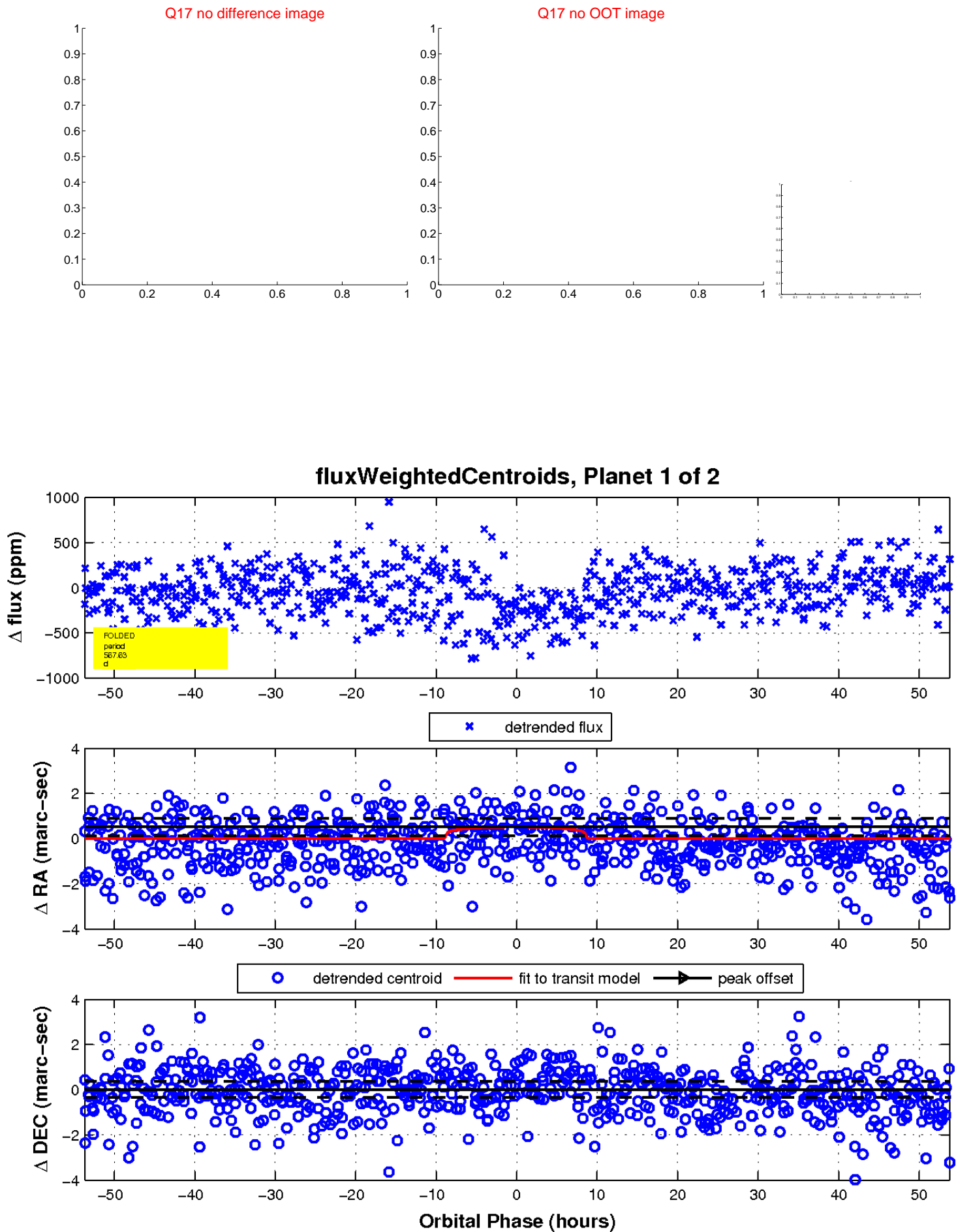
Q16 no difference image



Q16 no OOT image

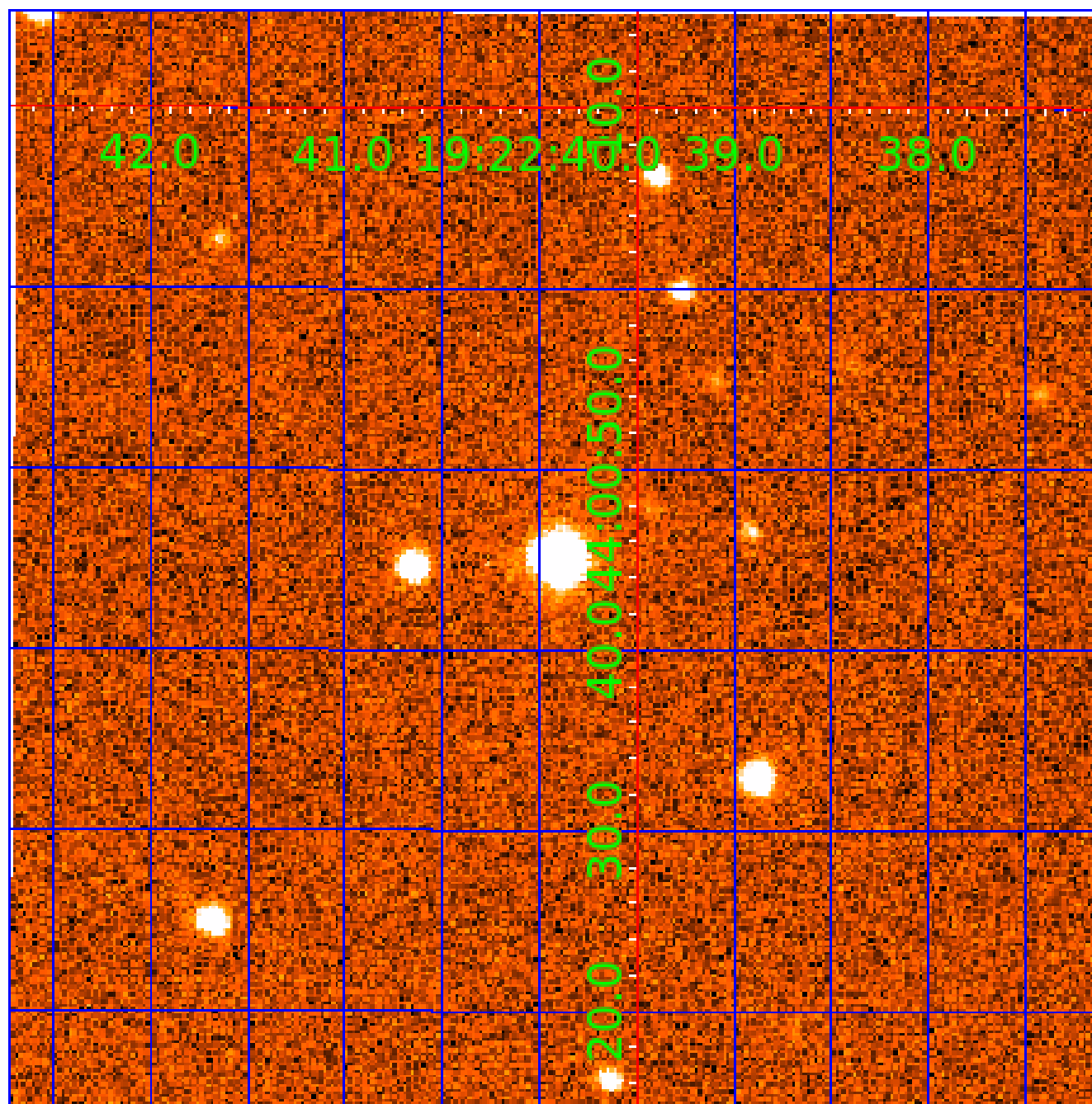


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008162598

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})
008162598-01	OBS	No	567.625590	244.839493	277.7	17.939	7.6	7.7	1.10	5600	1.95	0.63
008162598-02	OBS	No	523.131405	317.328921	244.9	7.715	7.2	6.5	1.10	5600	1.92	0.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008162598-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
008162598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—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.

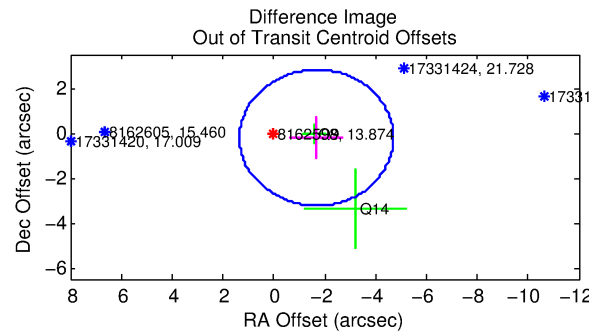
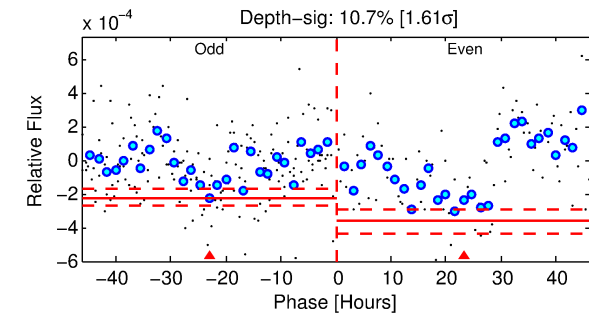
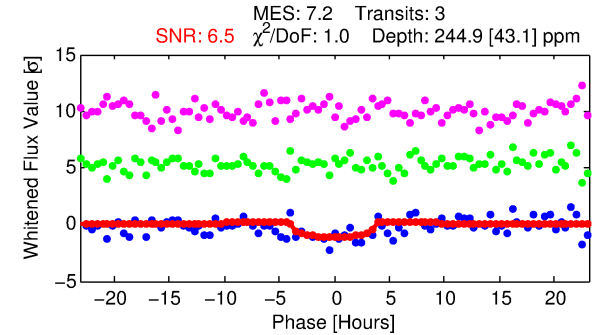
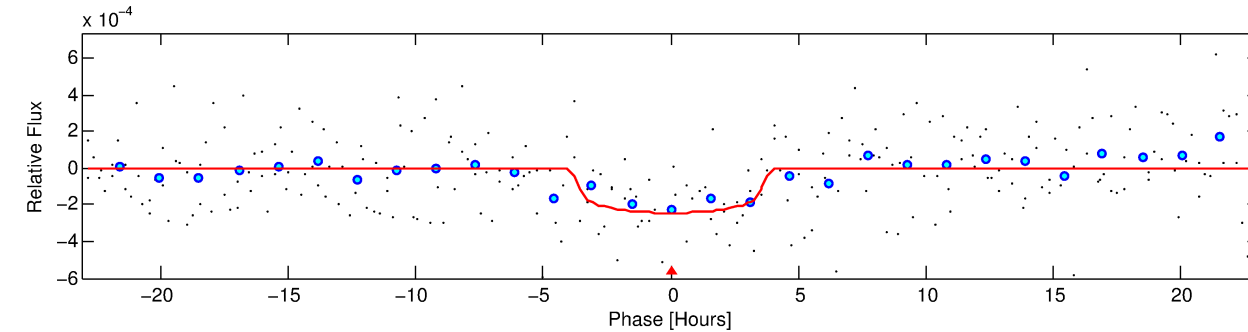
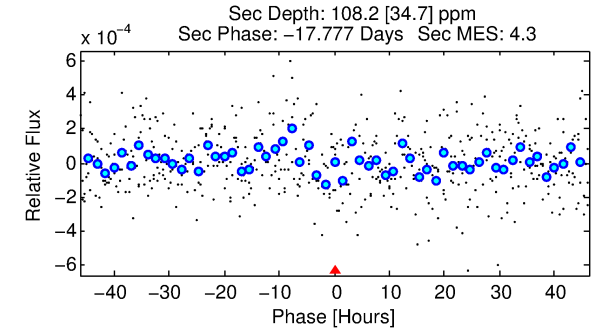
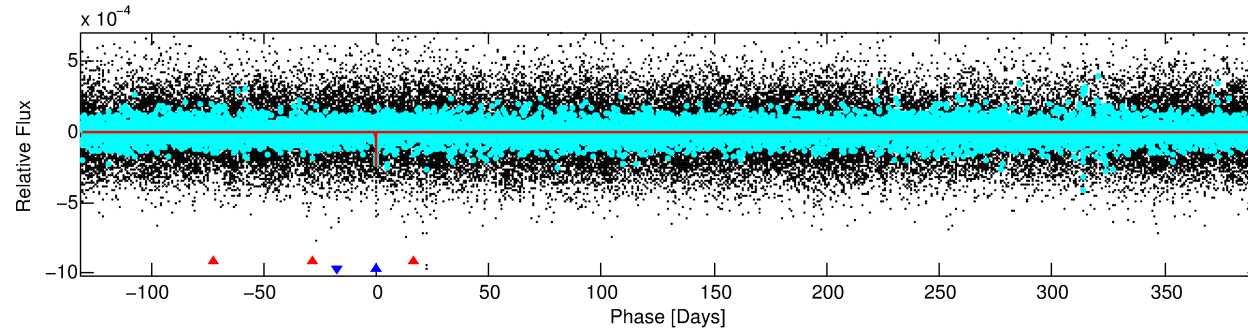
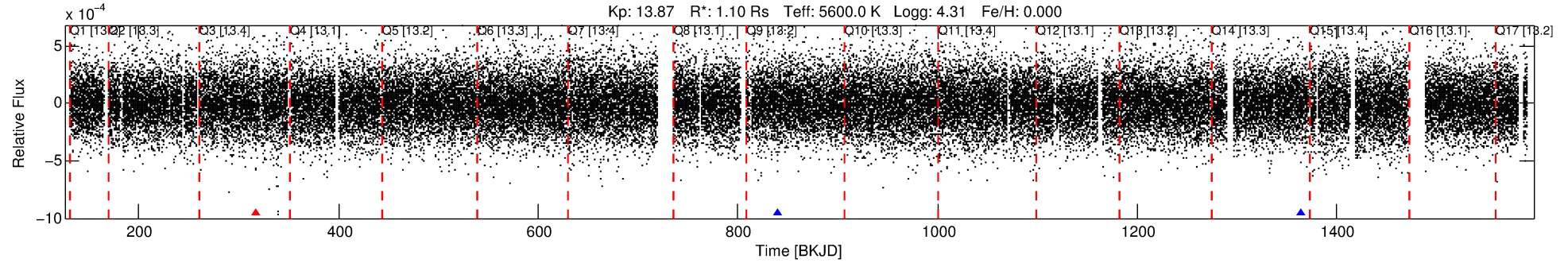
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008162598-02

No Significant Match Found

DV One-Page Summary

KIC: 8162598 Candidate: 2 of 2 Period: 523.131 d



DV Fit Results:

Period = 523.13140 [0.01339] d
Epoch = 317.3289 [0.0191] BKJD
Rp/R* = 0.0161 [0.0234]
a/R* = 313.50 [1991.84]
b = 0.82 [2.64]
Seff = 0.70 [0.26]
Teq = 234 [22] K
Rp = 1.92 [2.86] Re
a = 1.2264 [0.3017] AU
Ag = 24209.10 [71499.20] [0.34σ]
Teffp = 4504 [3303] K [1.29σ]

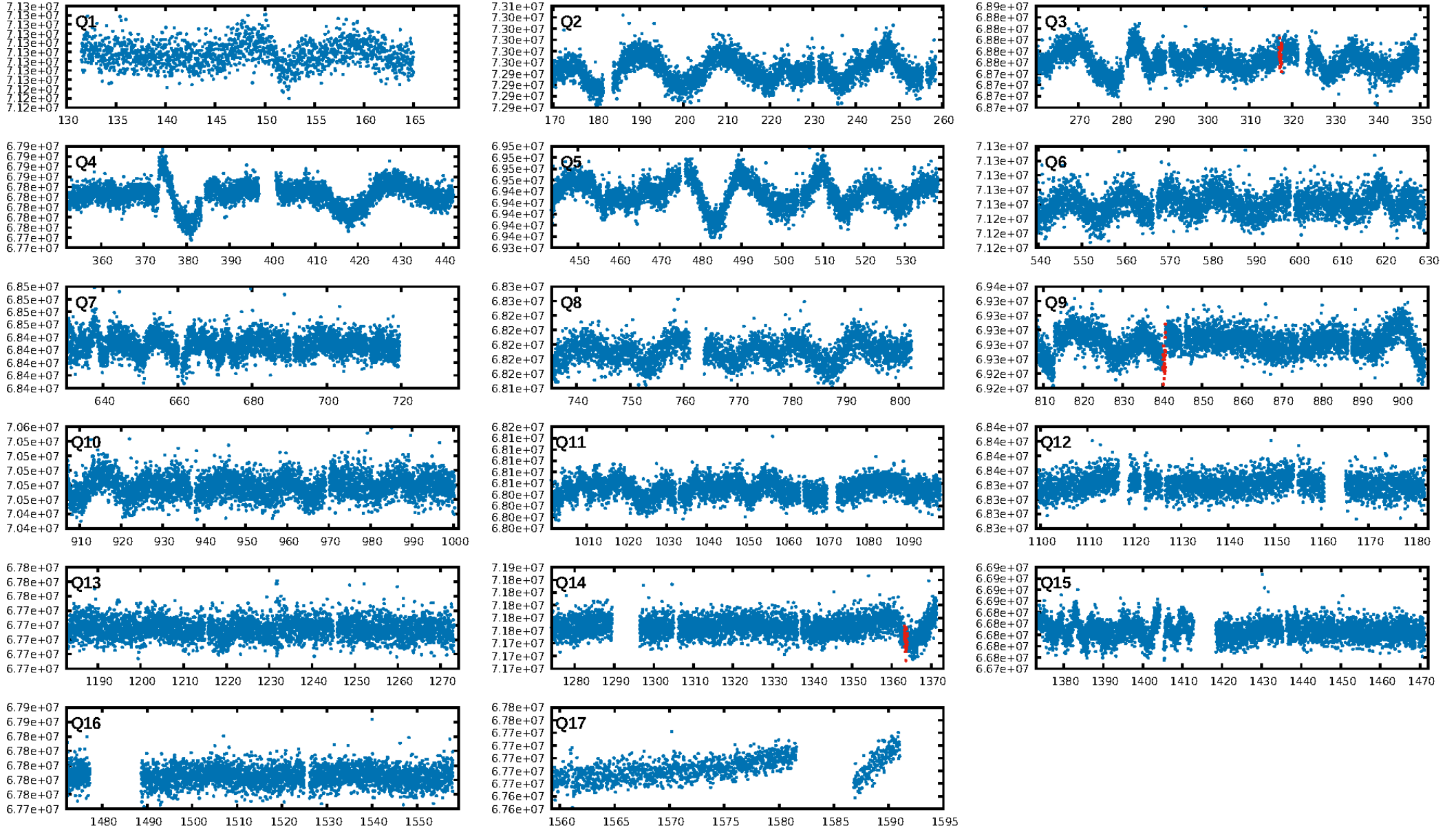
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [54.68σ]
ModelChiSquare2-sig: 28.9%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.47e-09
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: 12.25
Centroid-sig: 4.9%
Centroid-so: 3.811 arcsec [1.69σ]
OotOffset-rm: 1.693 arcsec [1.68σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-rm: 1.769 arcsec [1.76σ]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

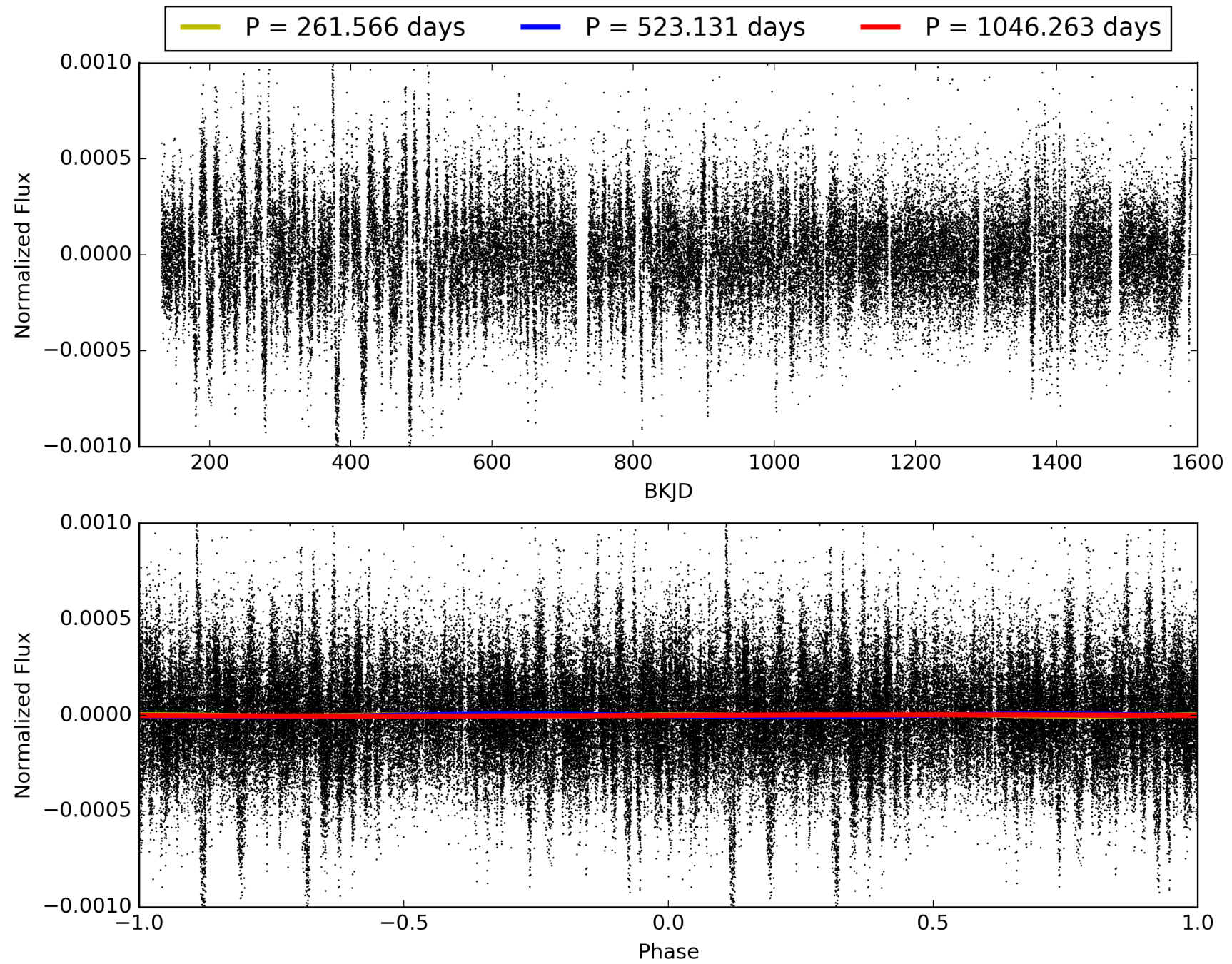
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:46:15 Z

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

TCE 008162598-02, PDC Light Curves

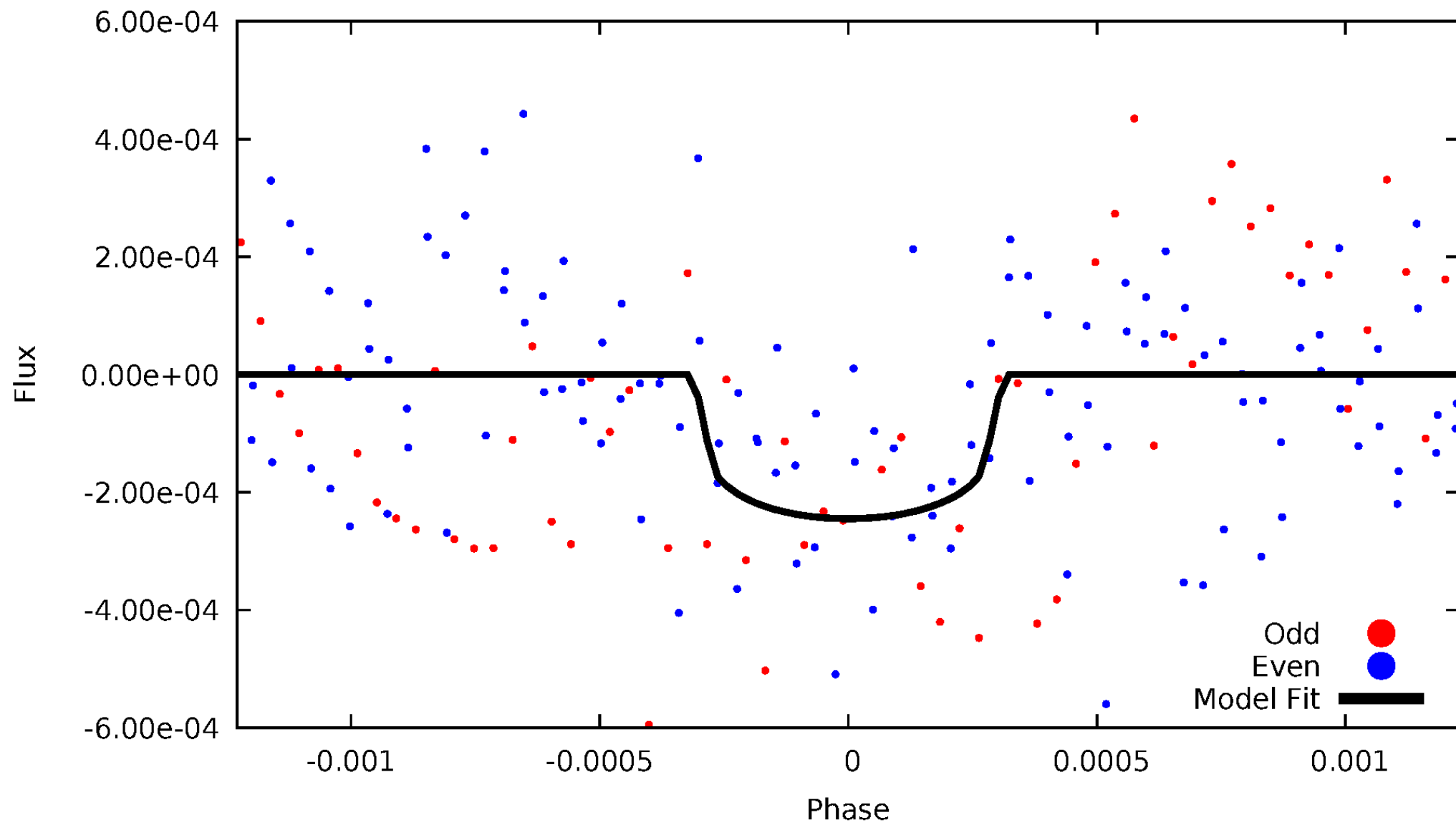


TCE 008162598-02



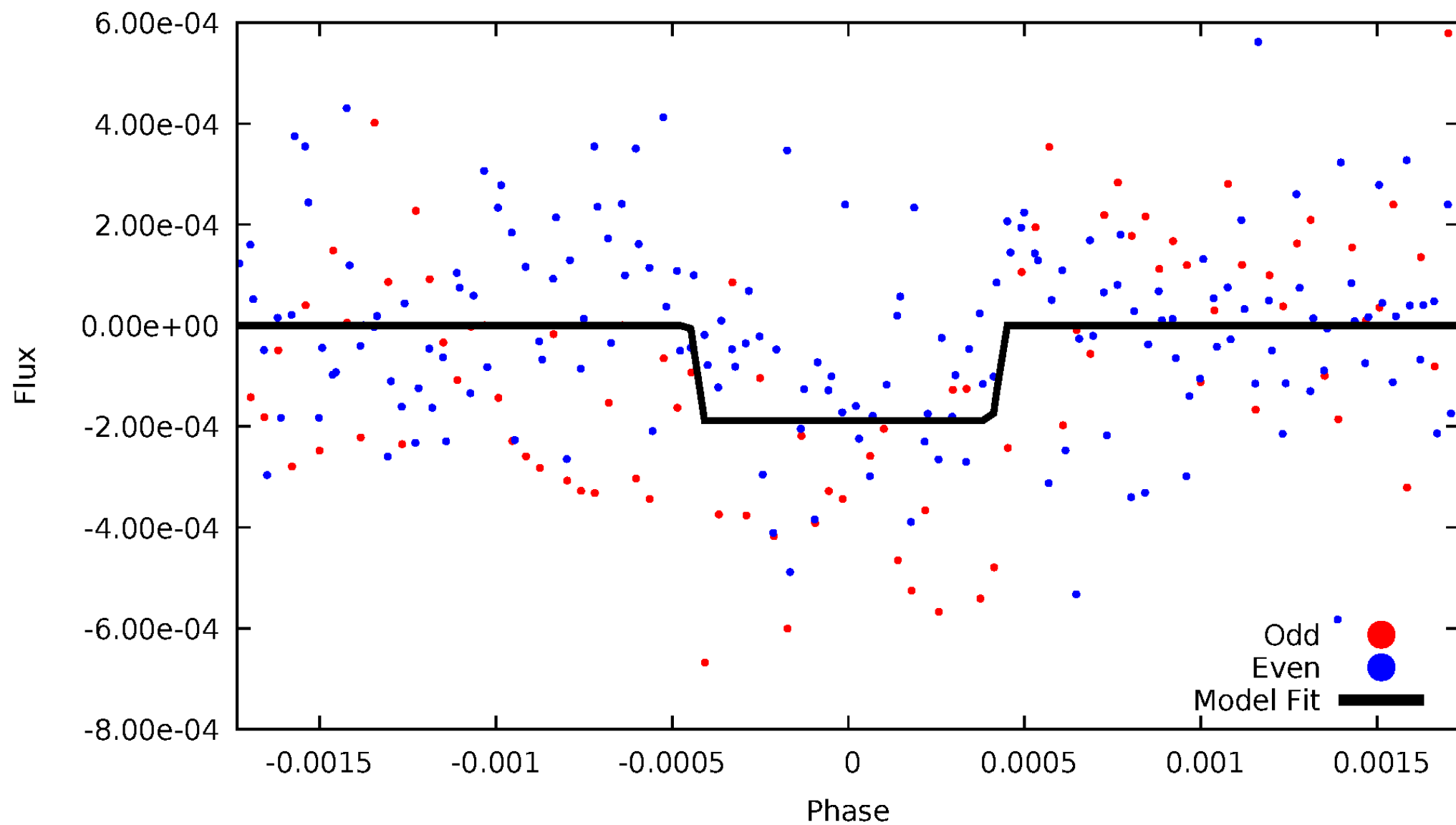
DV Odd/Even

TCE 008162598-02



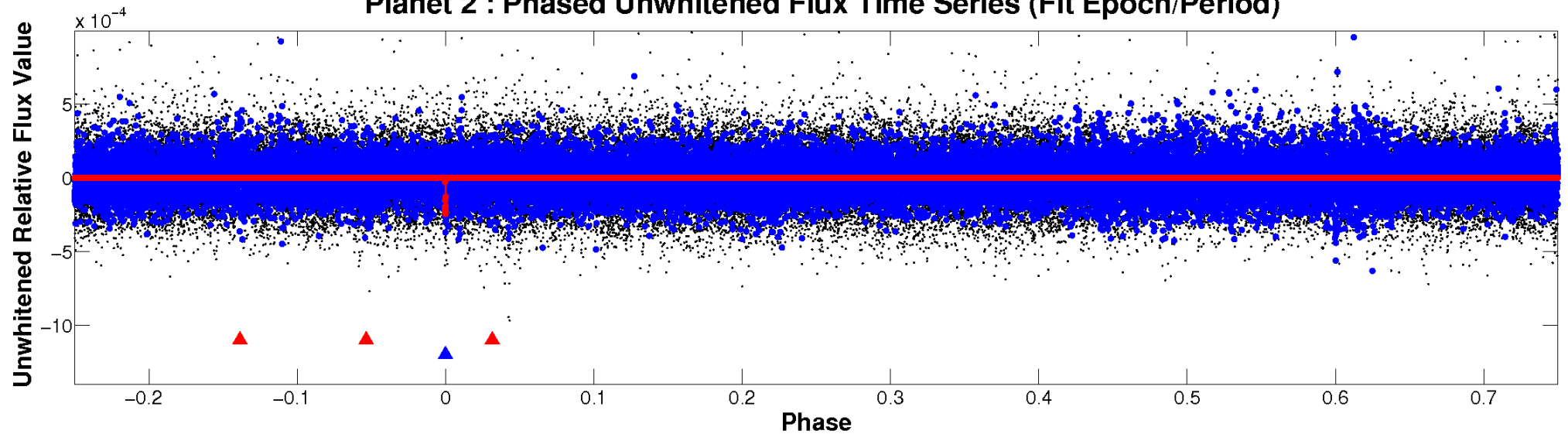
ALT Odd/Even

TCE 008162598-02

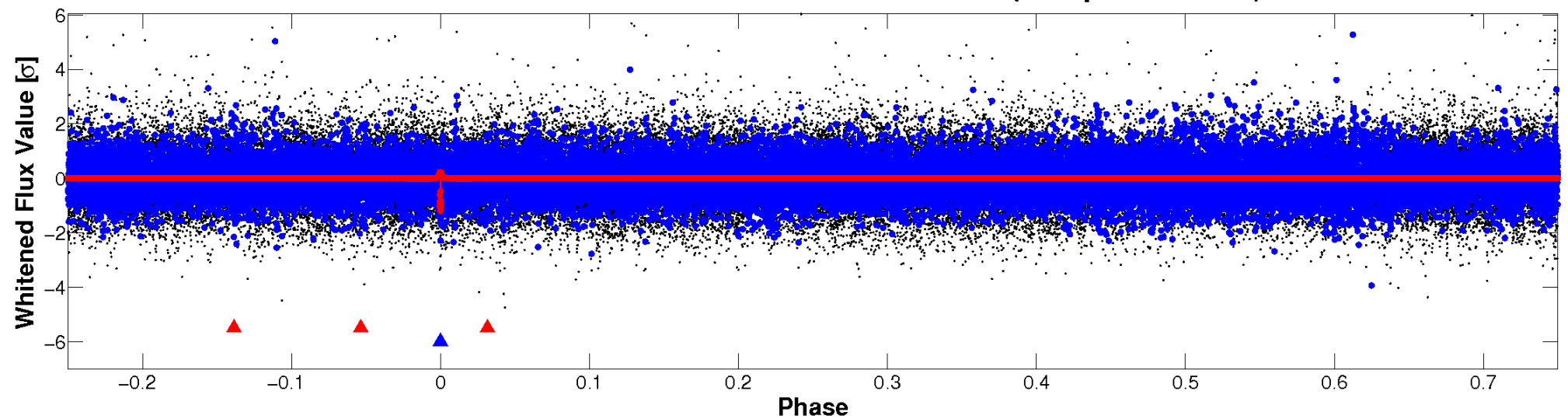


Non-Whitened Vs. Whitened Light Curve

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

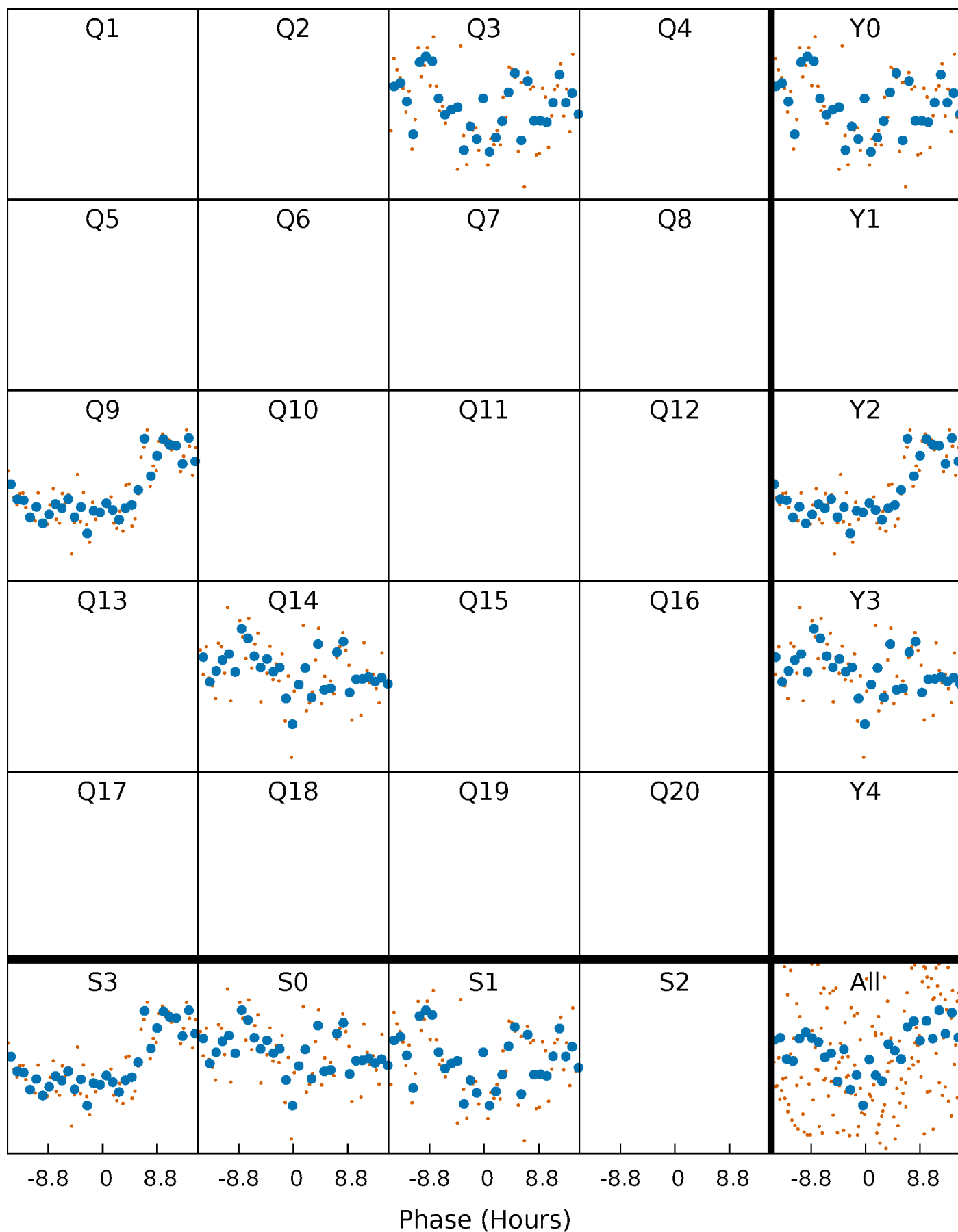


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



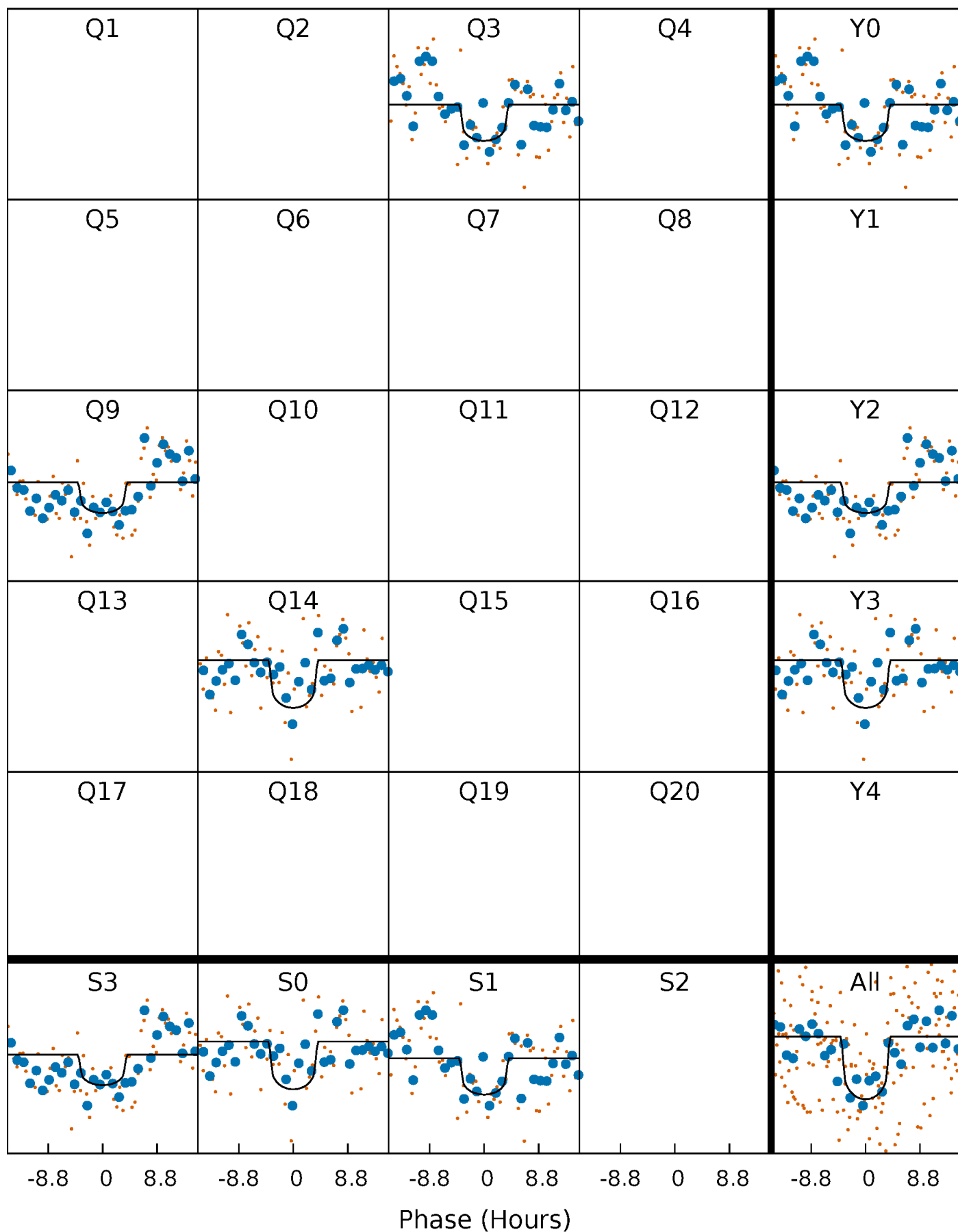
PDC Quarter-Phased Transit Curves

TCE 008162598-02 P=523.131405 Days $T_0=317.328921$ (BKJD)



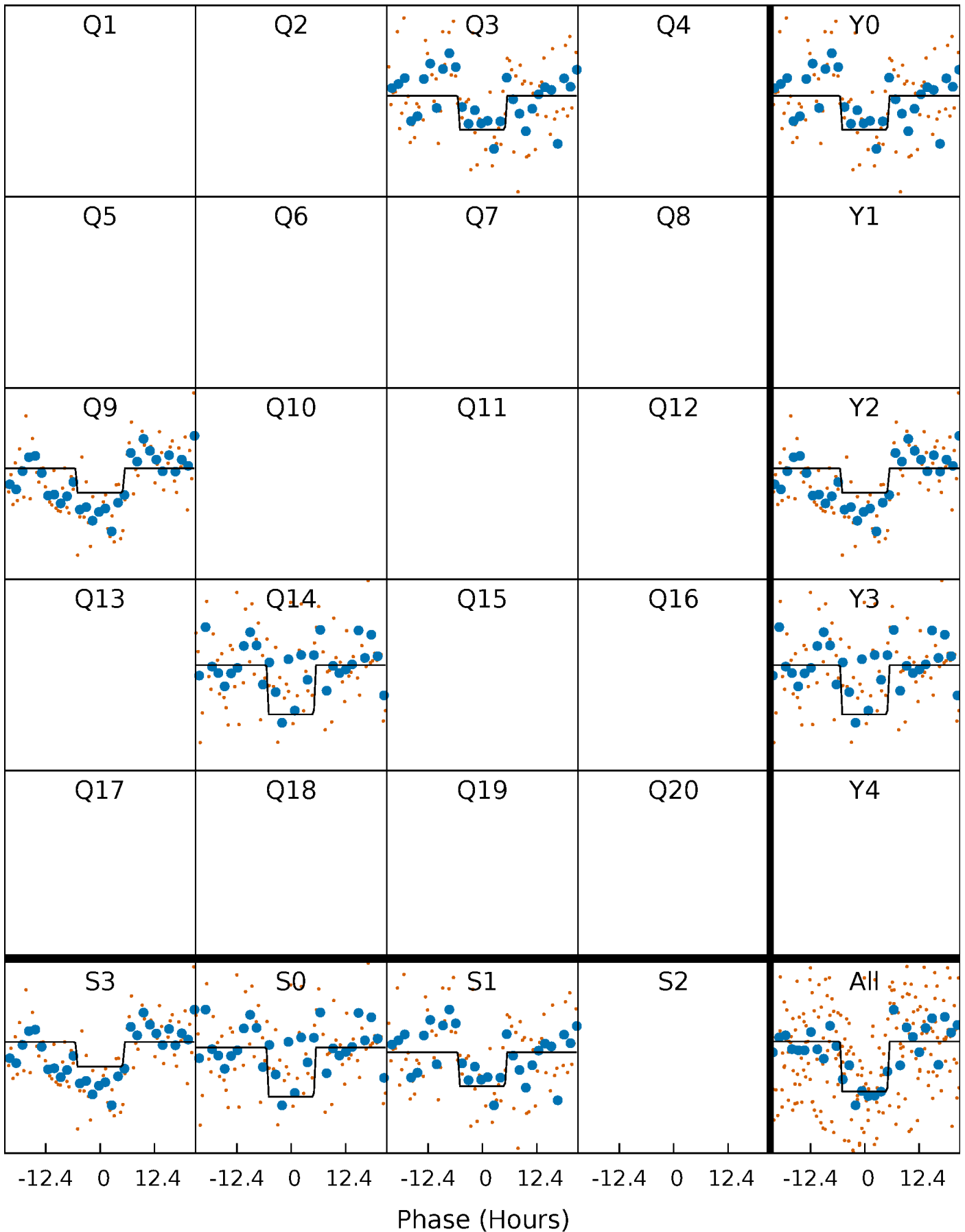
DV Quarter-Phased Transit Curves

TCE 008162598-02 P=523.131405 Days $T_0=317.328921$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

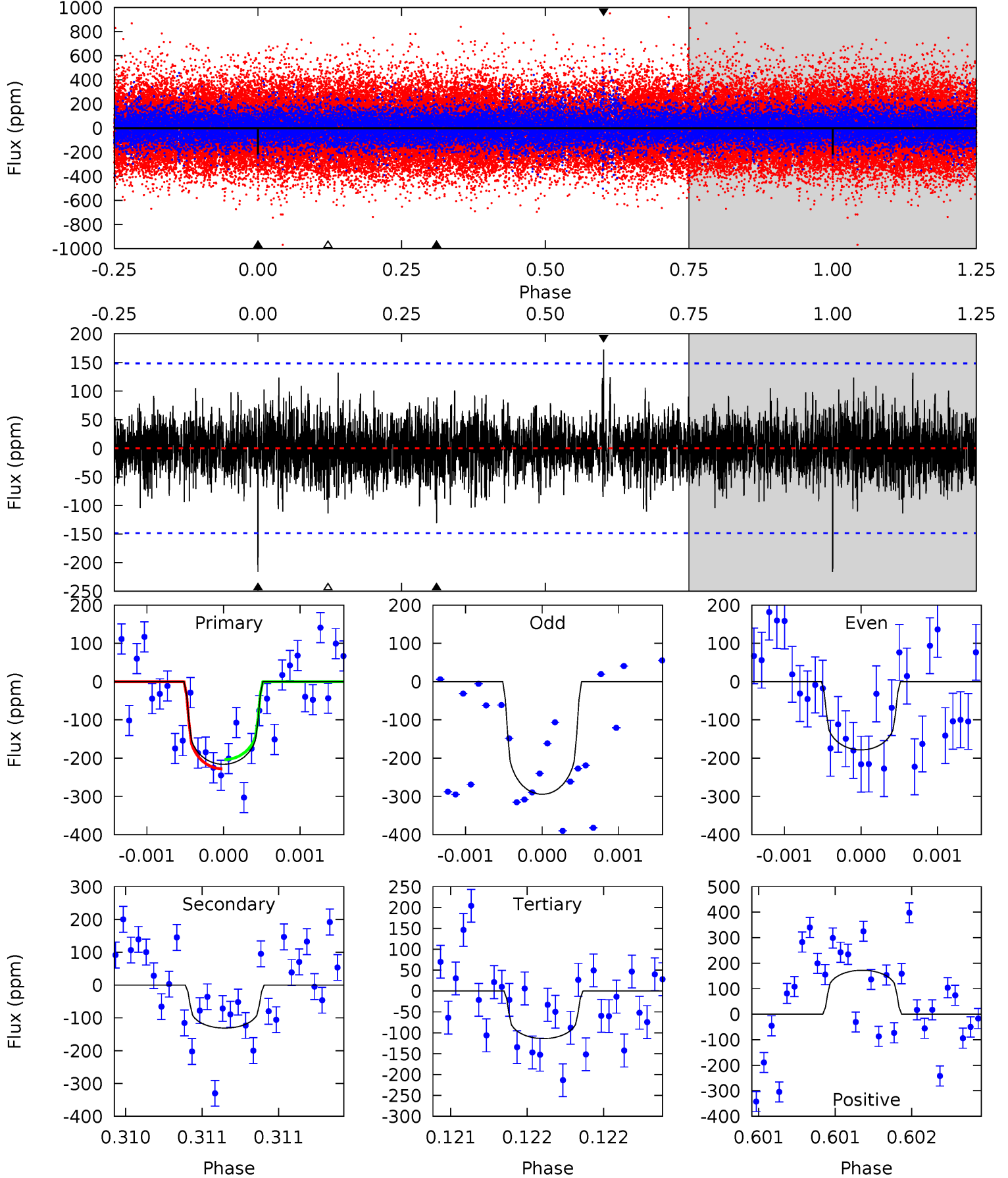
TCE 008162598-02 $P=523.201304$ Days $T_0=317.261852$ (BKJD)



DV Model-Shift Uniqueness Test

008162598-02, P = 523.131405 Days, E = 317.328921 Days

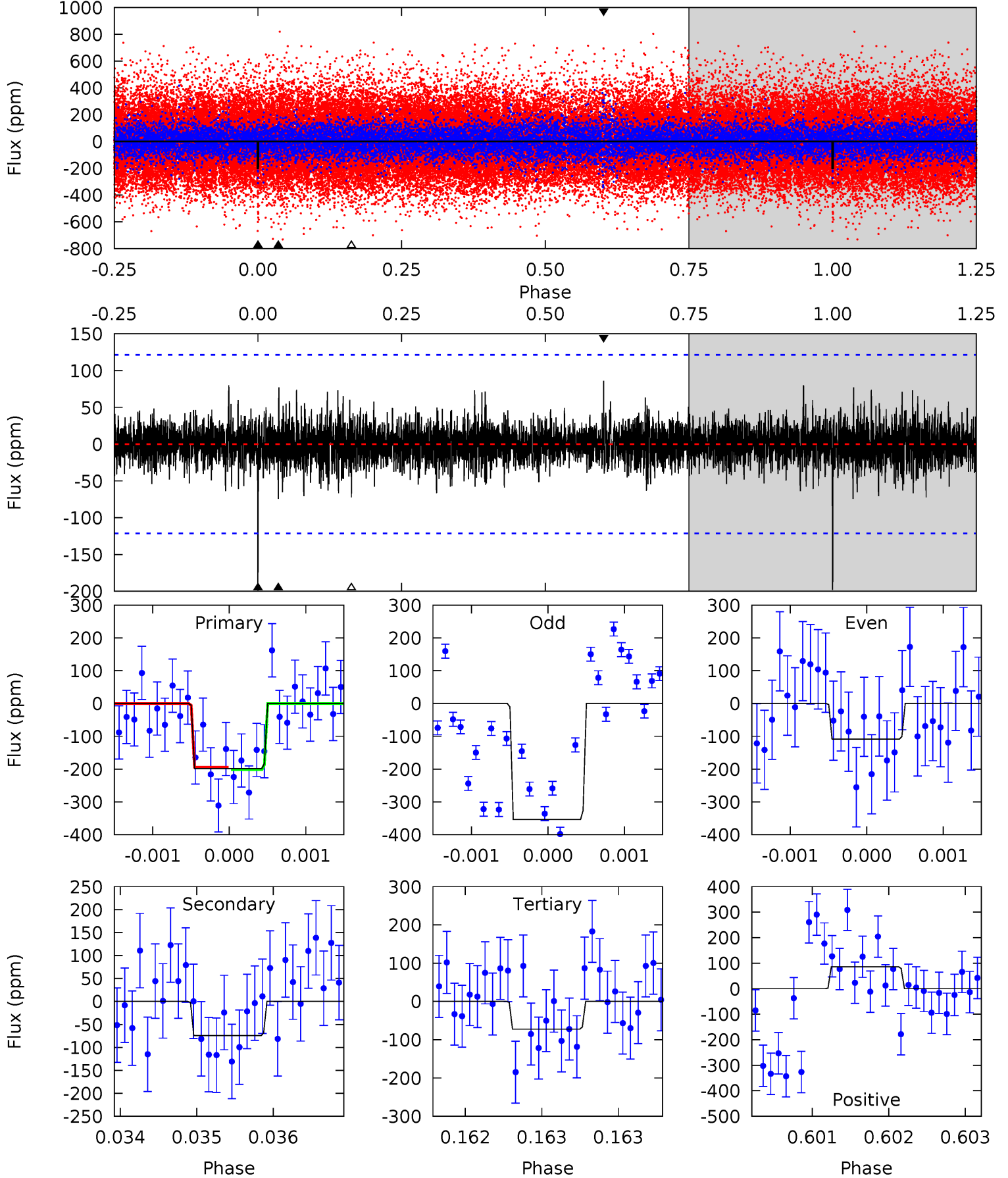
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.05	4.89	4.25	6.42	5.53	3.42	1.22	3.80	1.63	0.64	-1.53	2.02	0.98	0.44	0.45



Alt Model-Shift Uniqueness Test

008162598-02, P = 523.201304 Days, E = 317.261852 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.92	3.34	3.25	3.87	5.47	3.32	0.83	5.67	5.05	0.09	-0.52	5.19	1.31	0.30	0.16



Stellar Parameters For KIC 008162598

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5600^{+152}_{-152}	$4.312^{+0.195}_{-0.195}$	$0.000^{+0.250}_{-0.250}$	$1.096^{+0.321}_{-0.241}$	$0.900^{+0.123}_{-0.076}$	$0.962^{+0.953}_{-0.483}$
	+3%/-3%	+5%/-5%	+inf%/-inf%	+29%/-22%	+14%/-8%	+99%/-50%
Source	PHO1	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 008162598-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-131 ± 27	$2.89^{+2.52}_{-1.97}$	327^{+25}_{-24}	4170^{+2625}_{-834}	$13178^{+118634}_{-9556}$
Alt.	-74 ± 22	$2.62^{+2.42}_{-1.71}$	327^{+25}_{-23}	3868^{+2170}_{-724}	8764^{+65241}_{-6453}

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 $A_{obs} \gg 1.0$

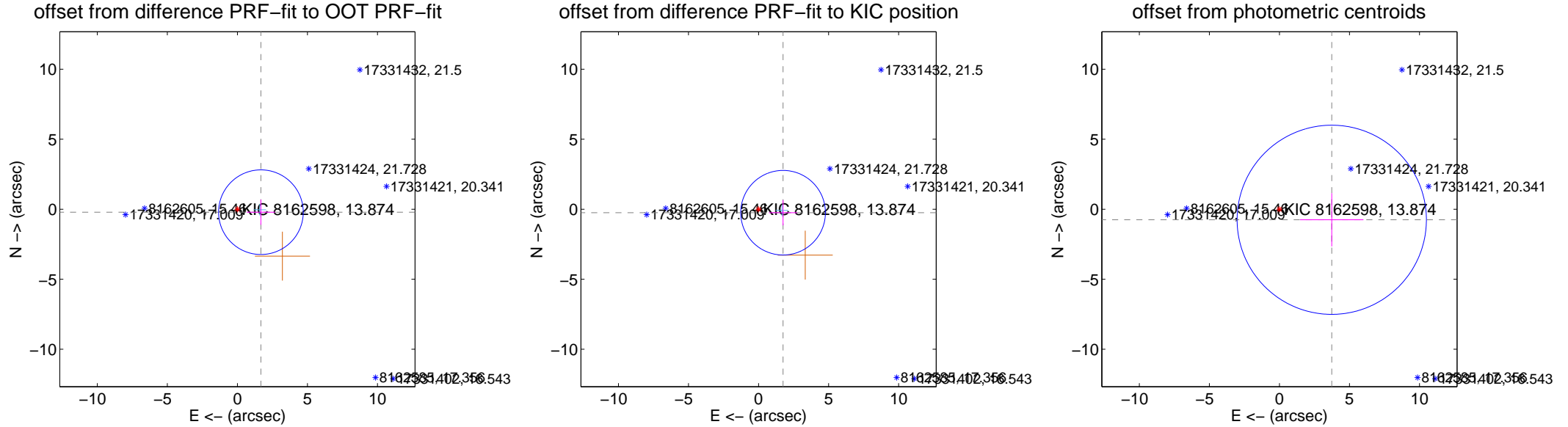
DV Centroid Data

Supplemental centroid analysis for 008162598-02. Kepler magnitude: 13.87. Transit SNR 6.48

There are 1 quarters with good PRF difference image offsets

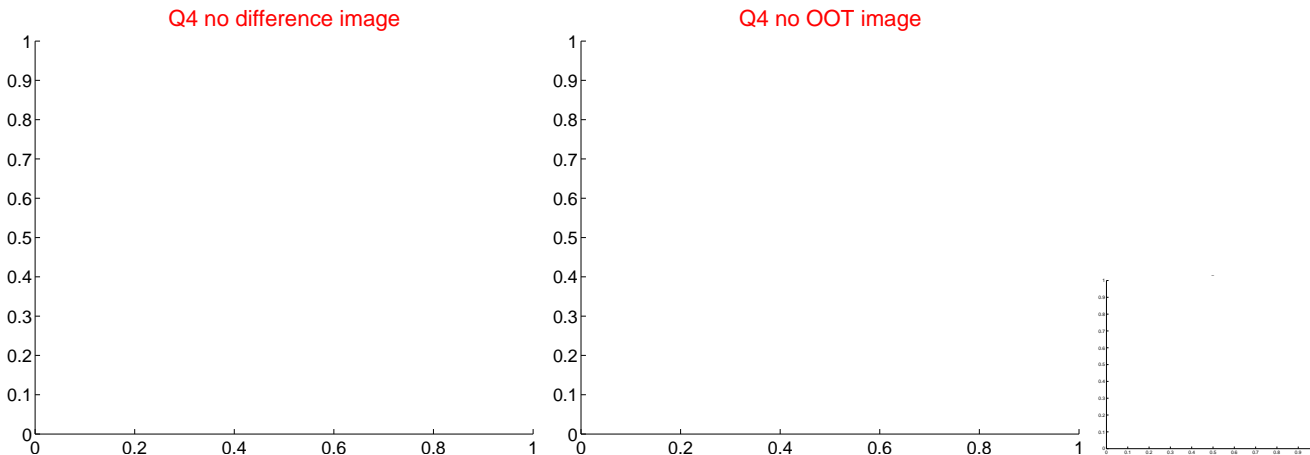
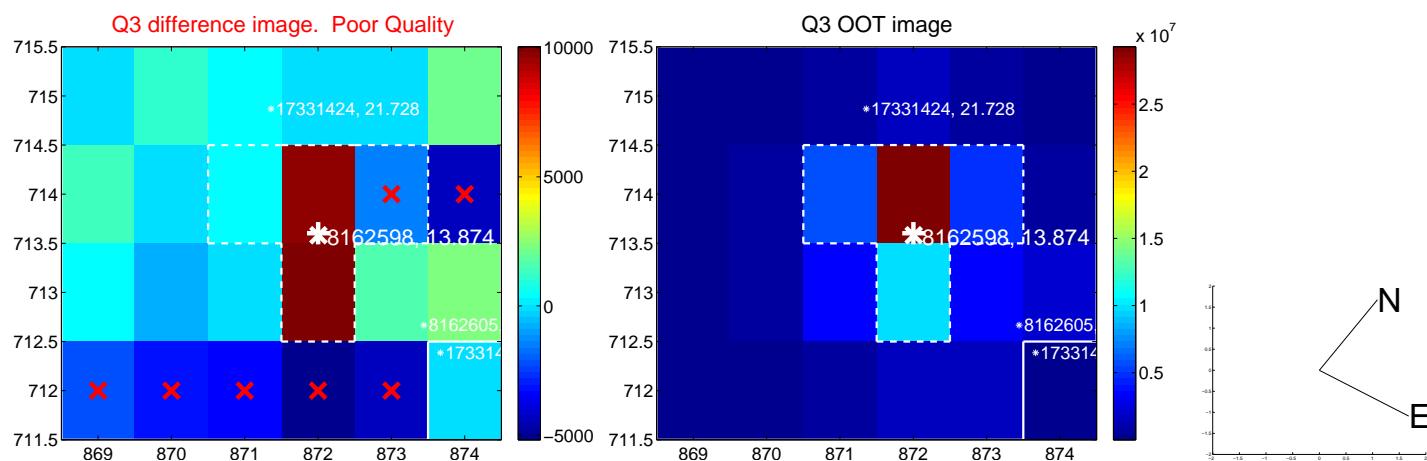
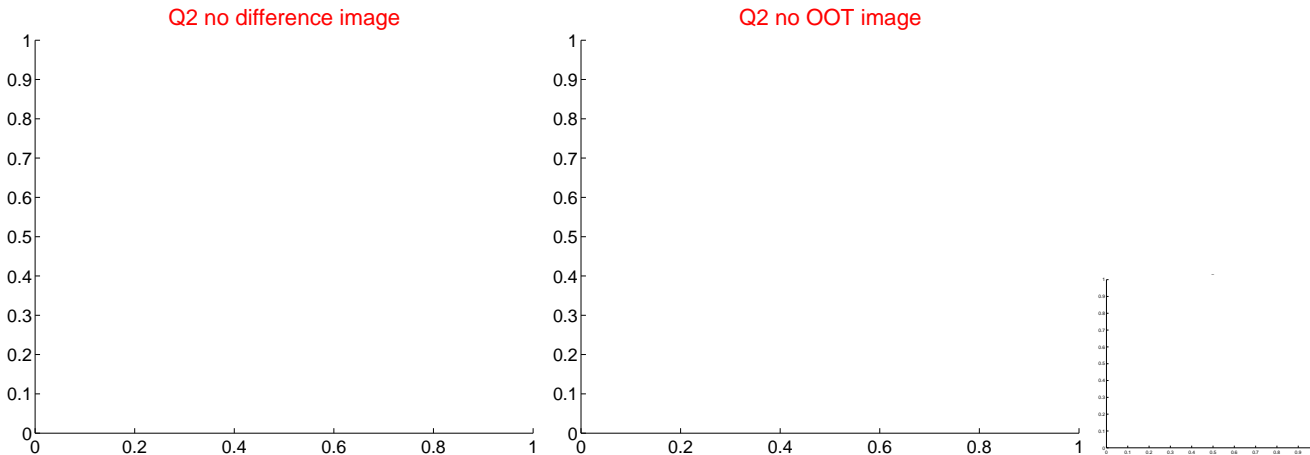
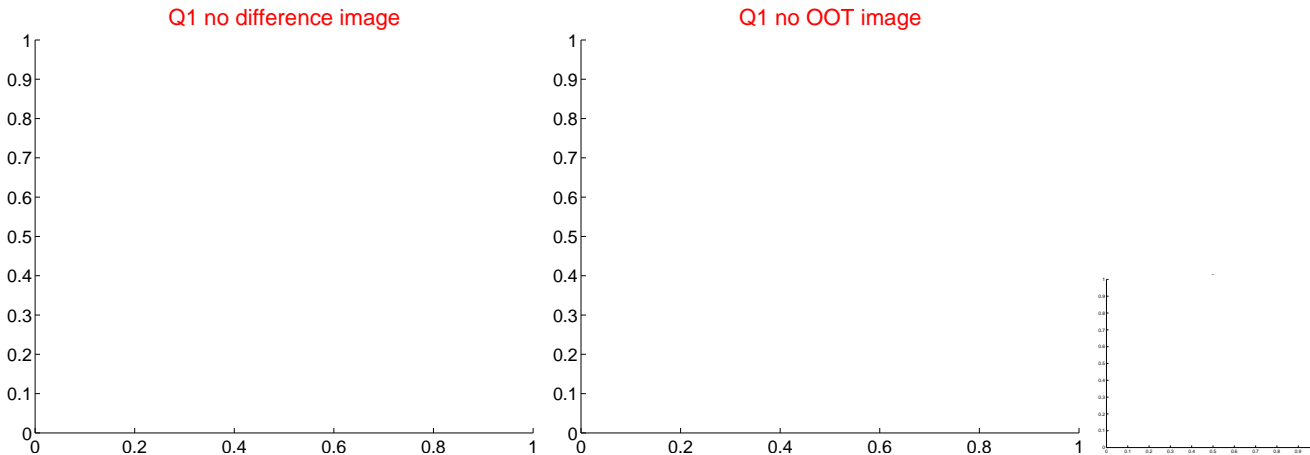
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.693 ± 1.008	1.68	-1.680 ± 1.009	-0.212 ± 0.899
PRF-fit source offset from KIC position	1.769 ± 1.007	1.76	-1.751 ± 1.009	-0.249 ± 0.899
photometric centroid source offset	3.81 ± 2.25	1.69	-3.74 ± 2.27	-0.75 ± 1.90



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.

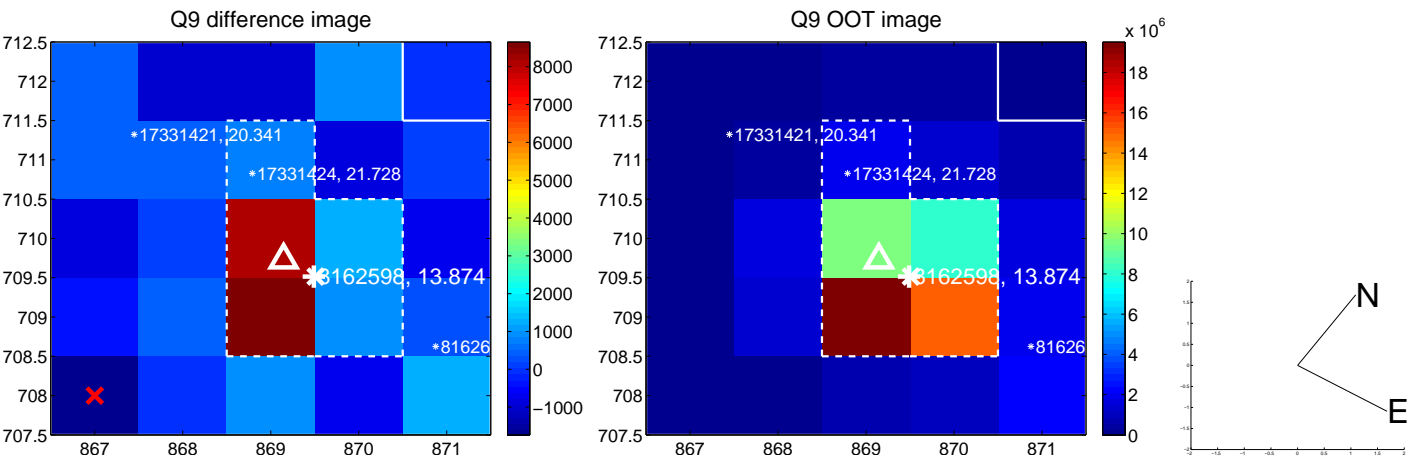
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

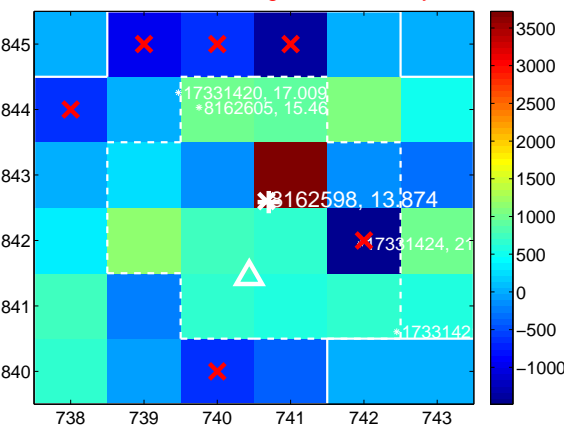
Q13 no difference image



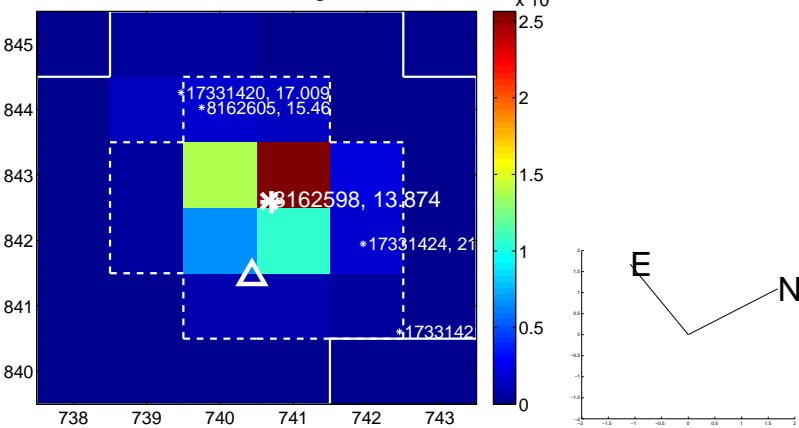
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



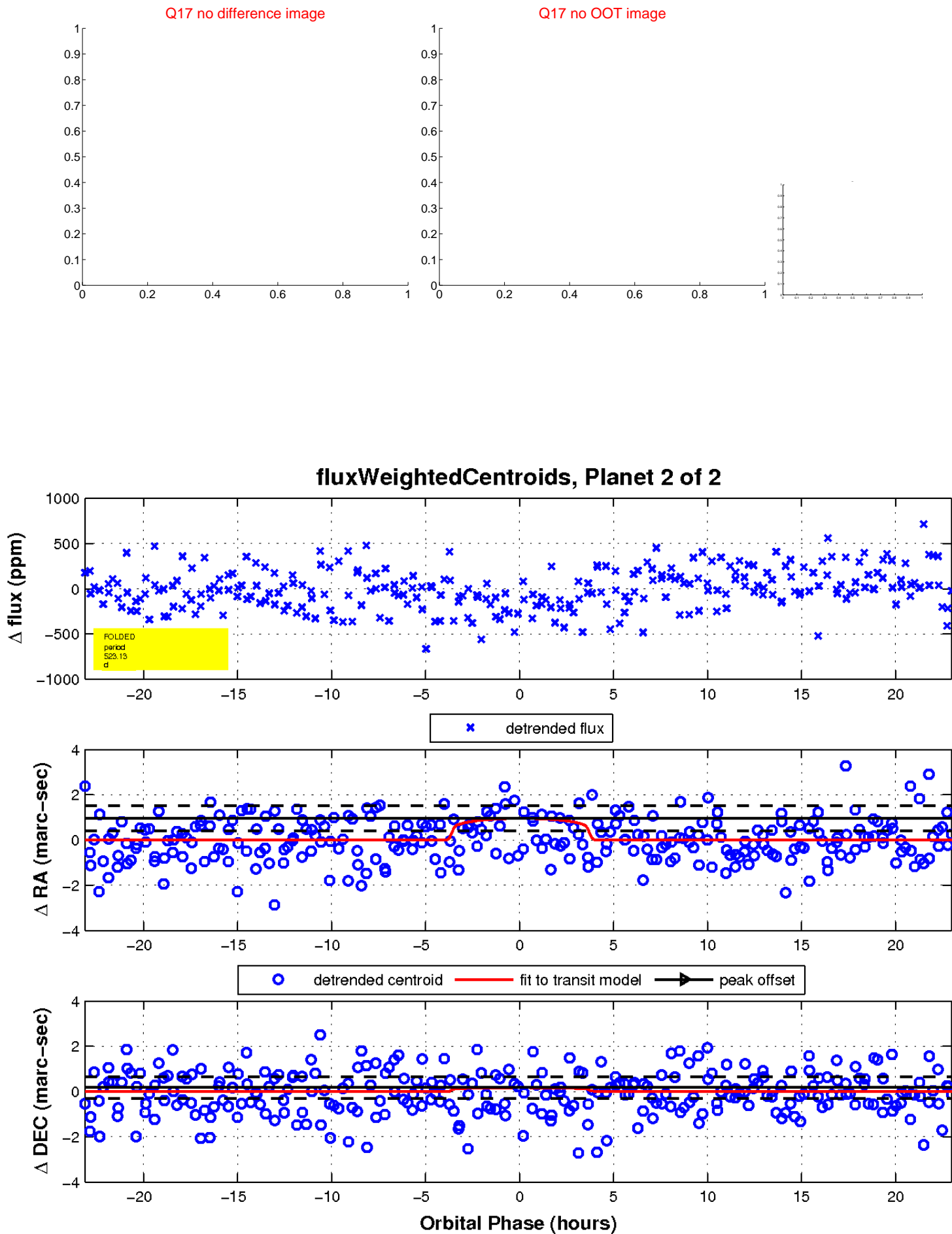
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

