

KIC 008823658

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})
008823658-01	OBS	No	384.756065	162.641821	4915.6	2.621	17.1	12.3	1.00	5788	7.09	0.93
008823658-02	OBS	No	337.658228	270.348676	1859.0	12.429	10.3	8.7	1.00	5788	4.29	1.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008823658-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008823658-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

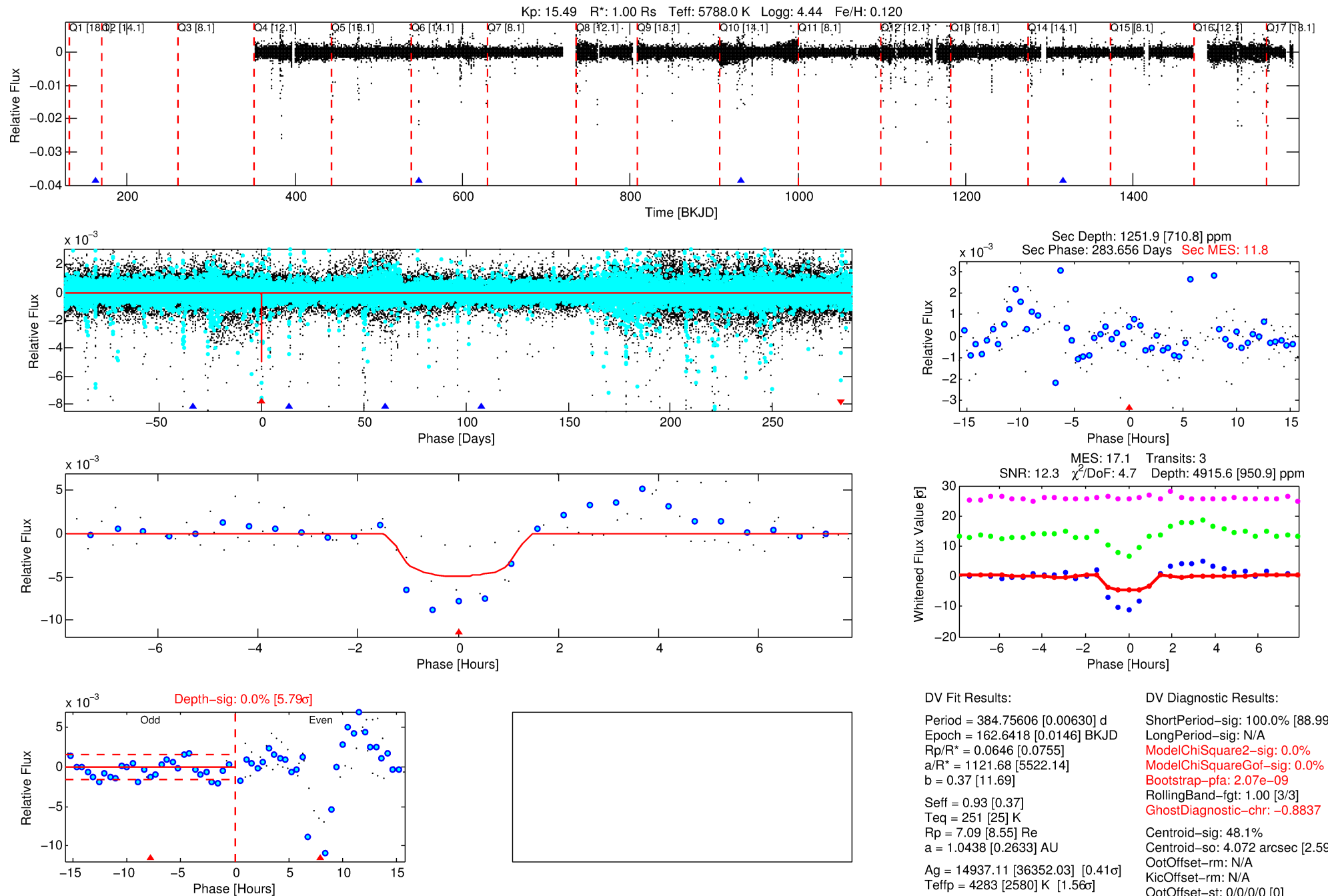
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008823658-01

No Significant Match Found

DV One-Page Summary

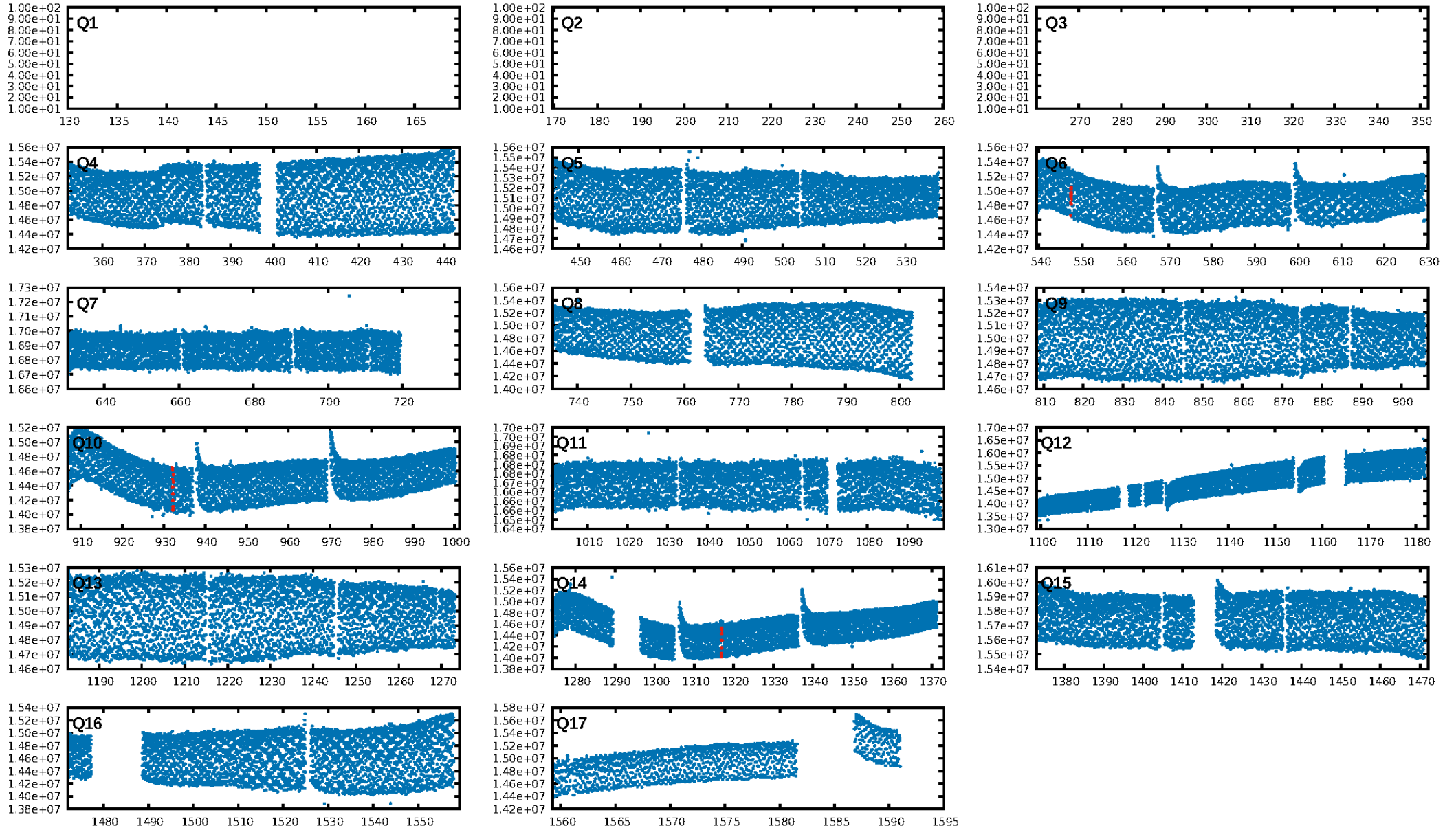
KIC: 8823658 Candidate: 1 of 2 Period: 384.756 d



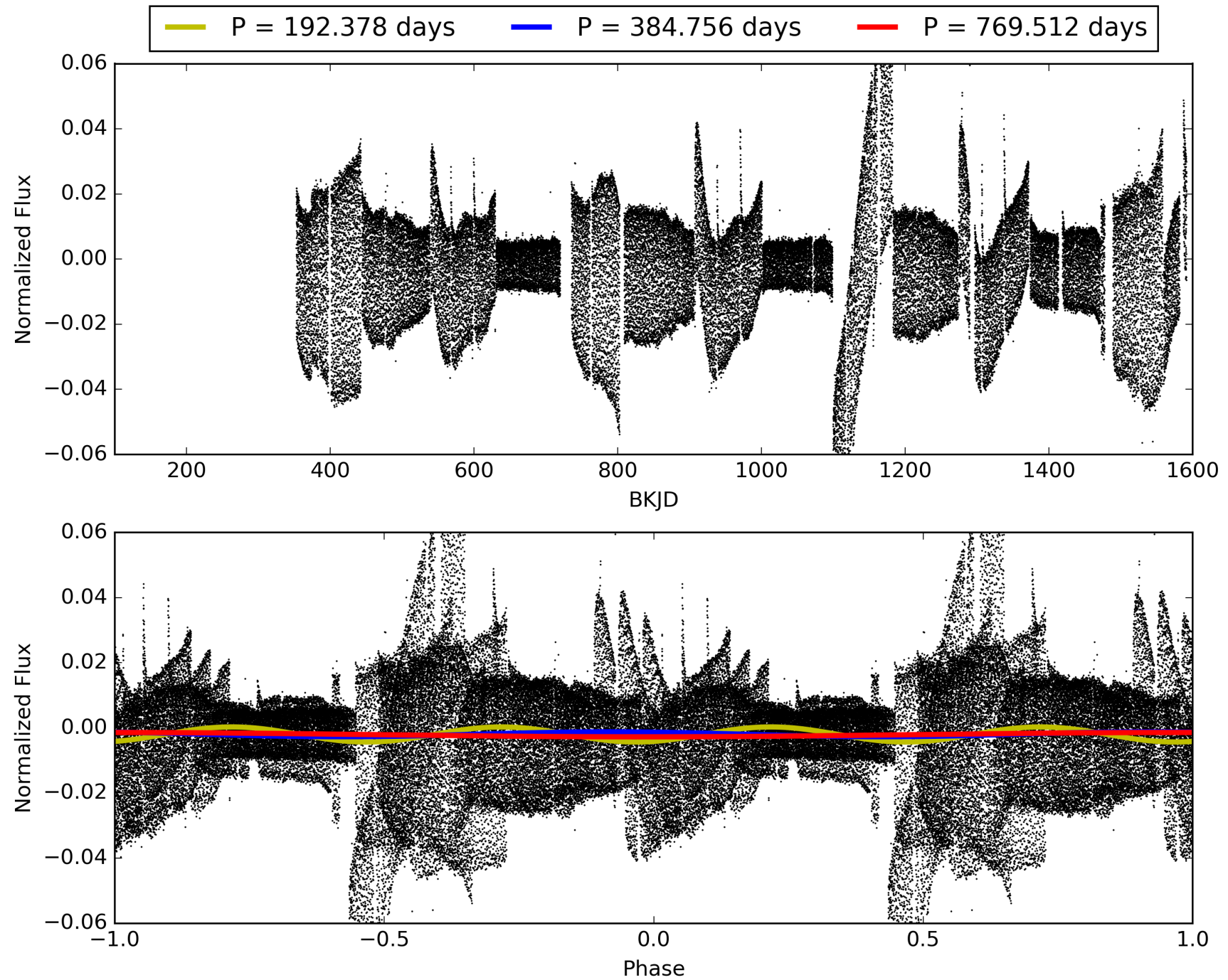
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:54:00 Z

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

TCE 008823658-01, PDC Light Curves

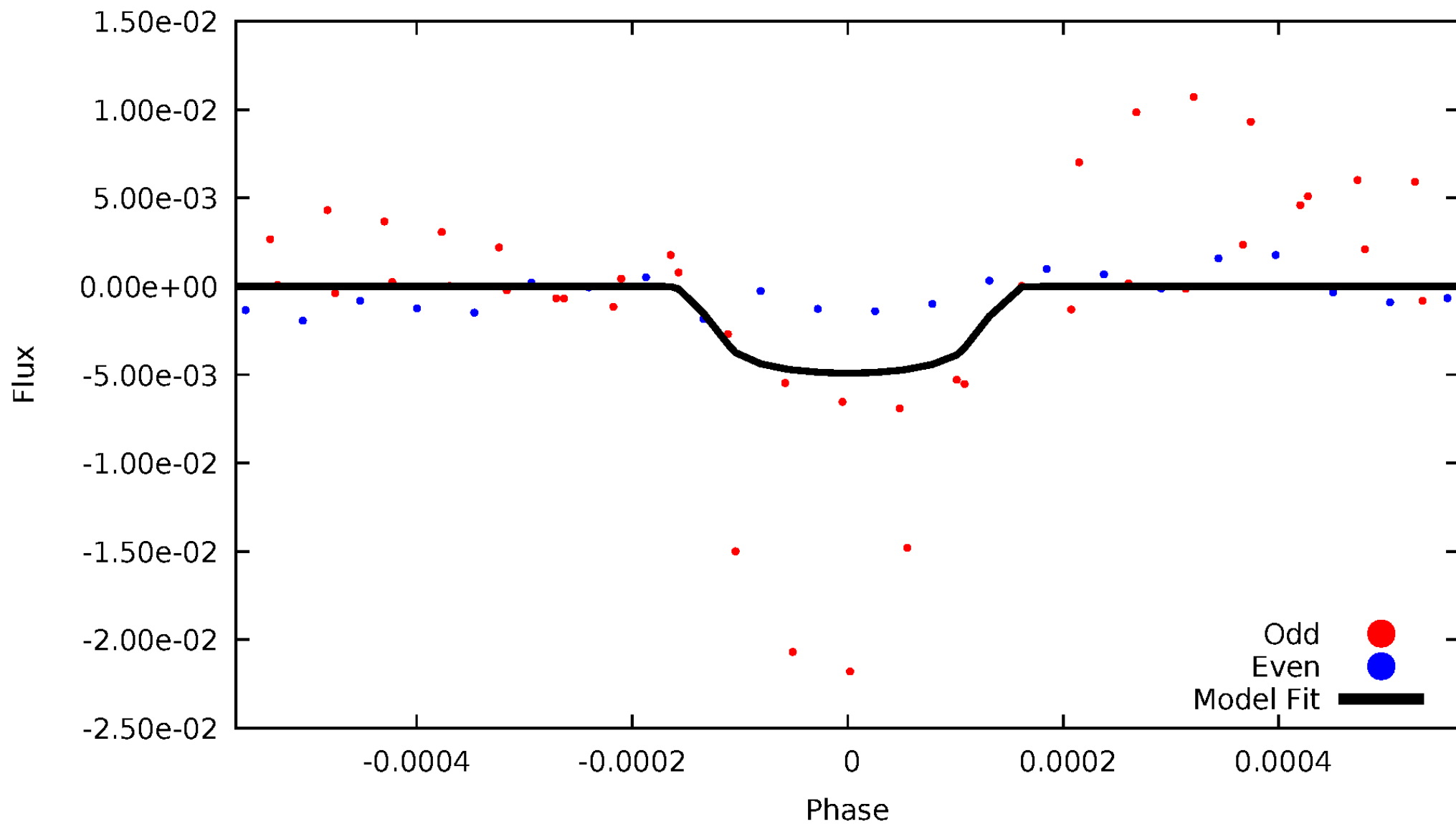


TCE 008823658-01



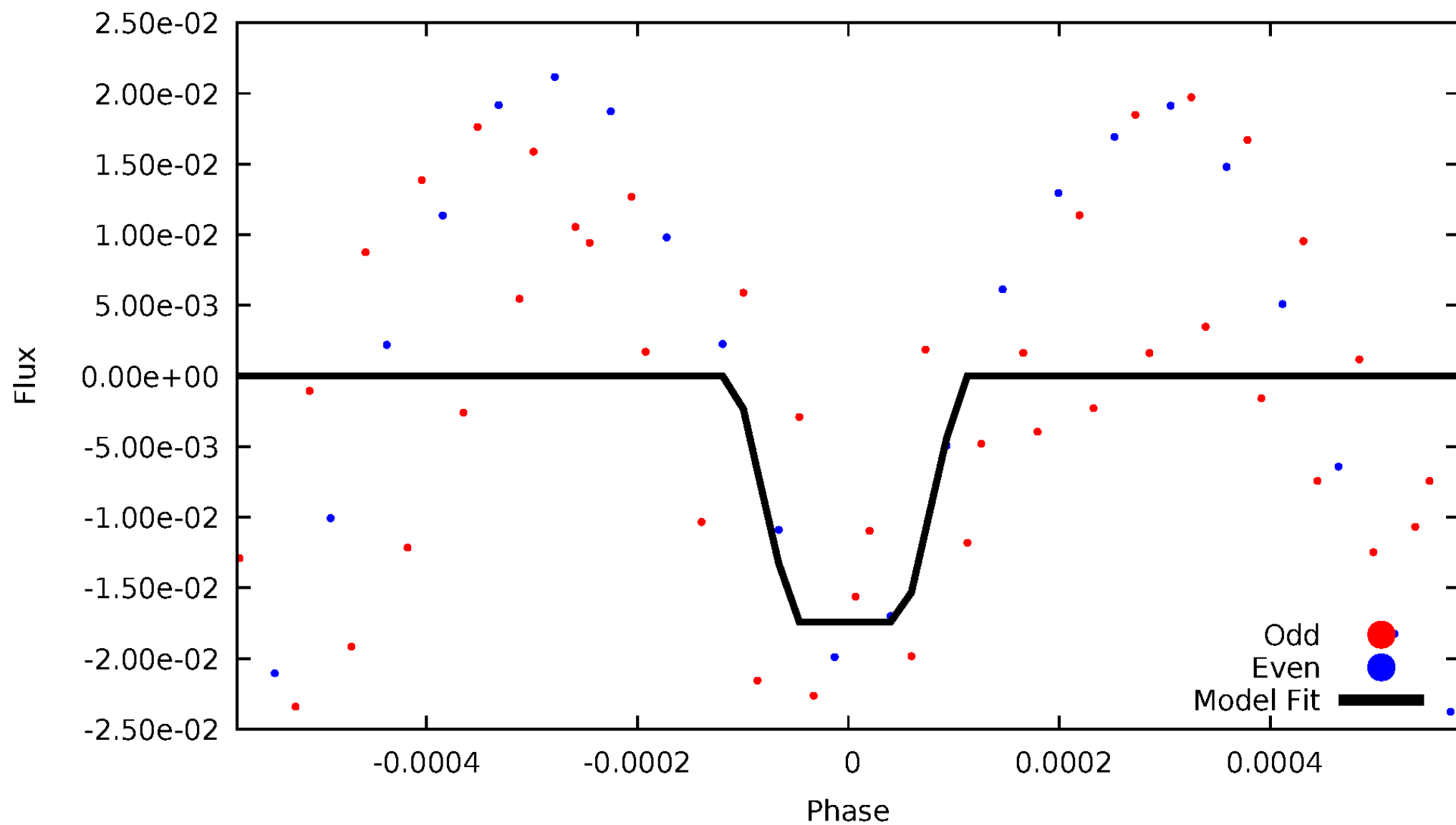
DV Odd/Even

TCE 008823658-01



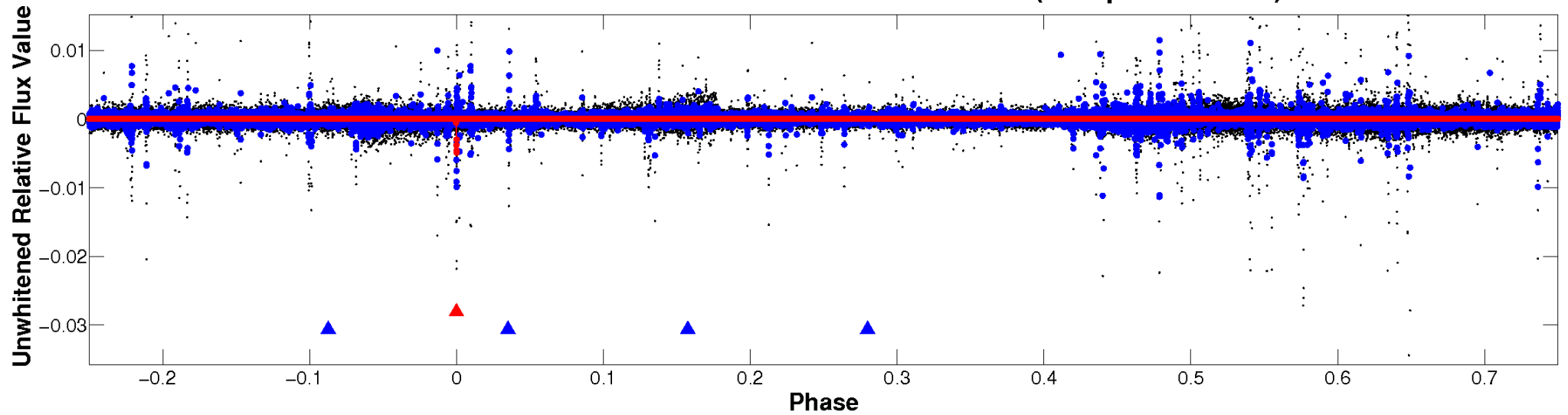
ALT Odd/Even

TCE 008823658-01

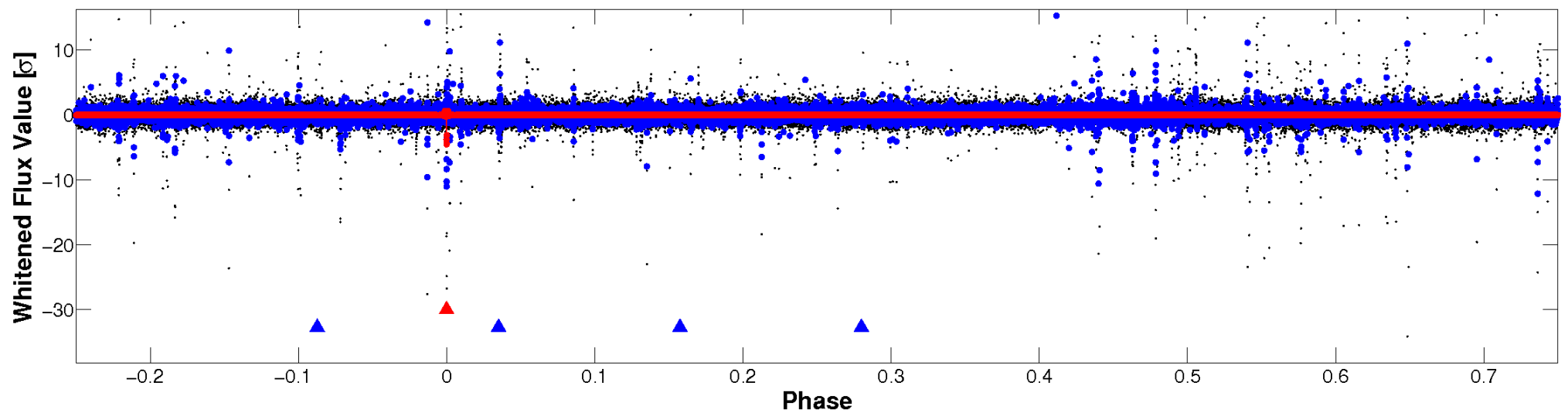


Non-Whitened Vs. Whitened Light Curve

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

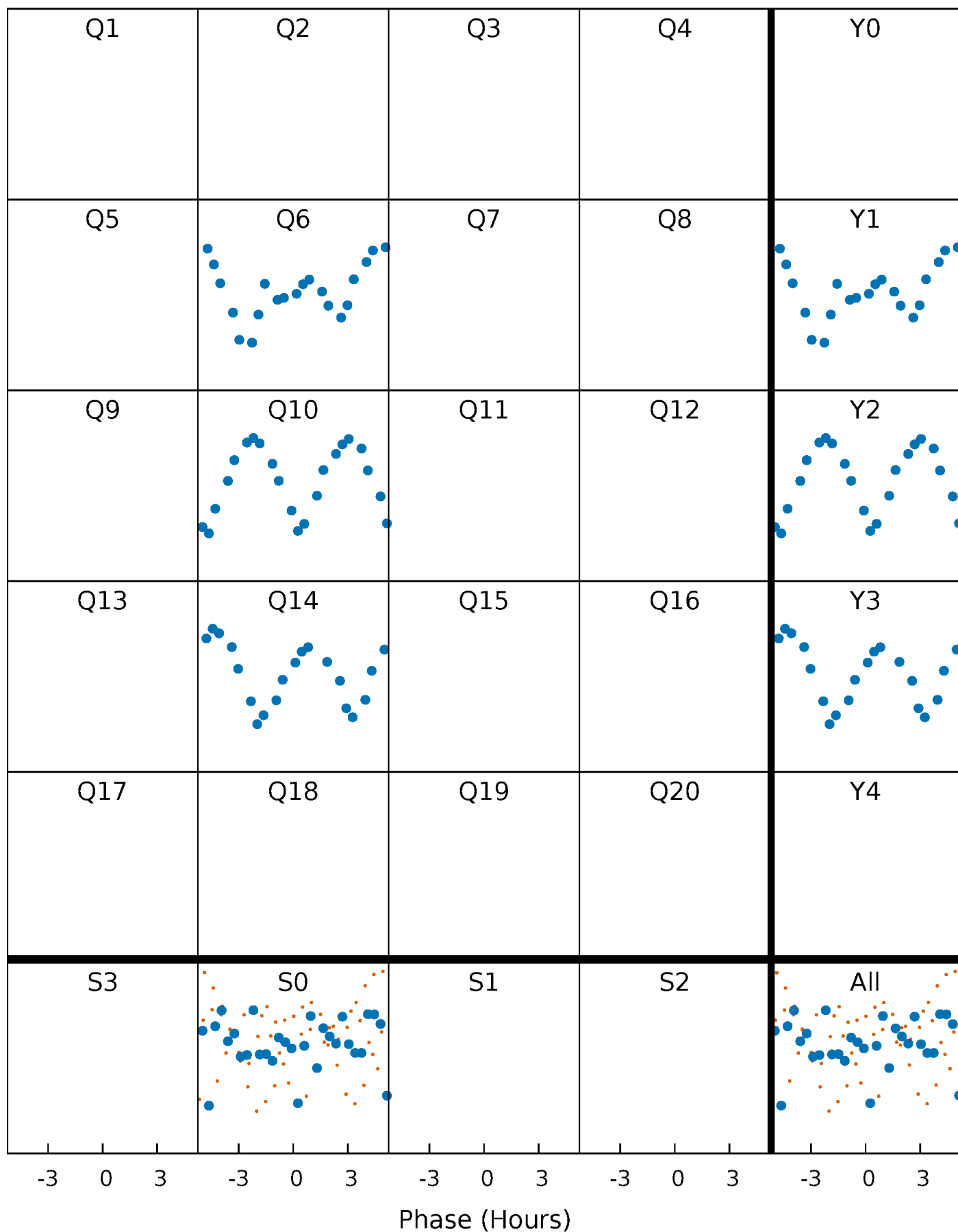


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



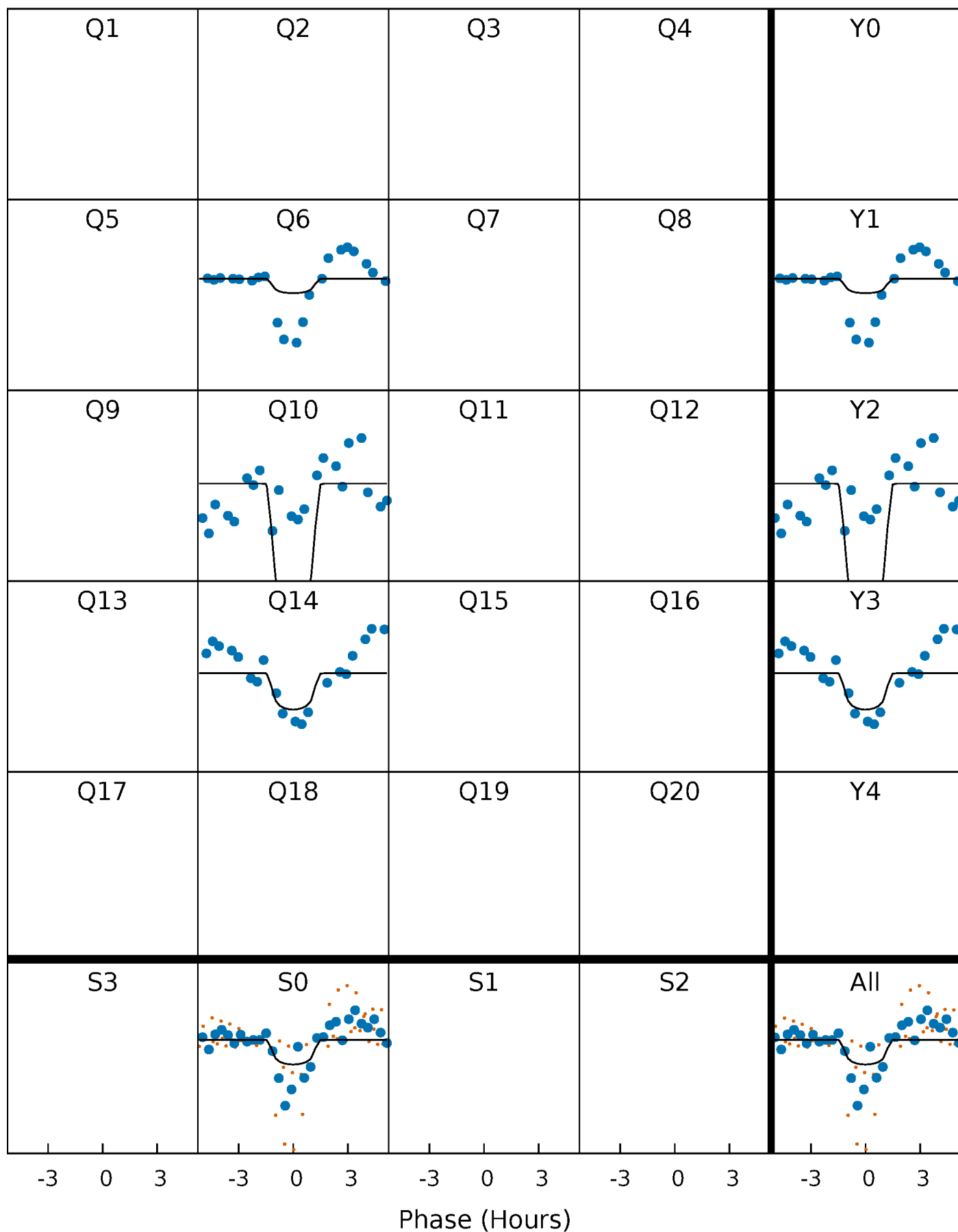
PDC Quarter-Phased Transit Curves

TCE 008823658-01 P=384.756065 Days $T_0=162.641821$ (BKJD)



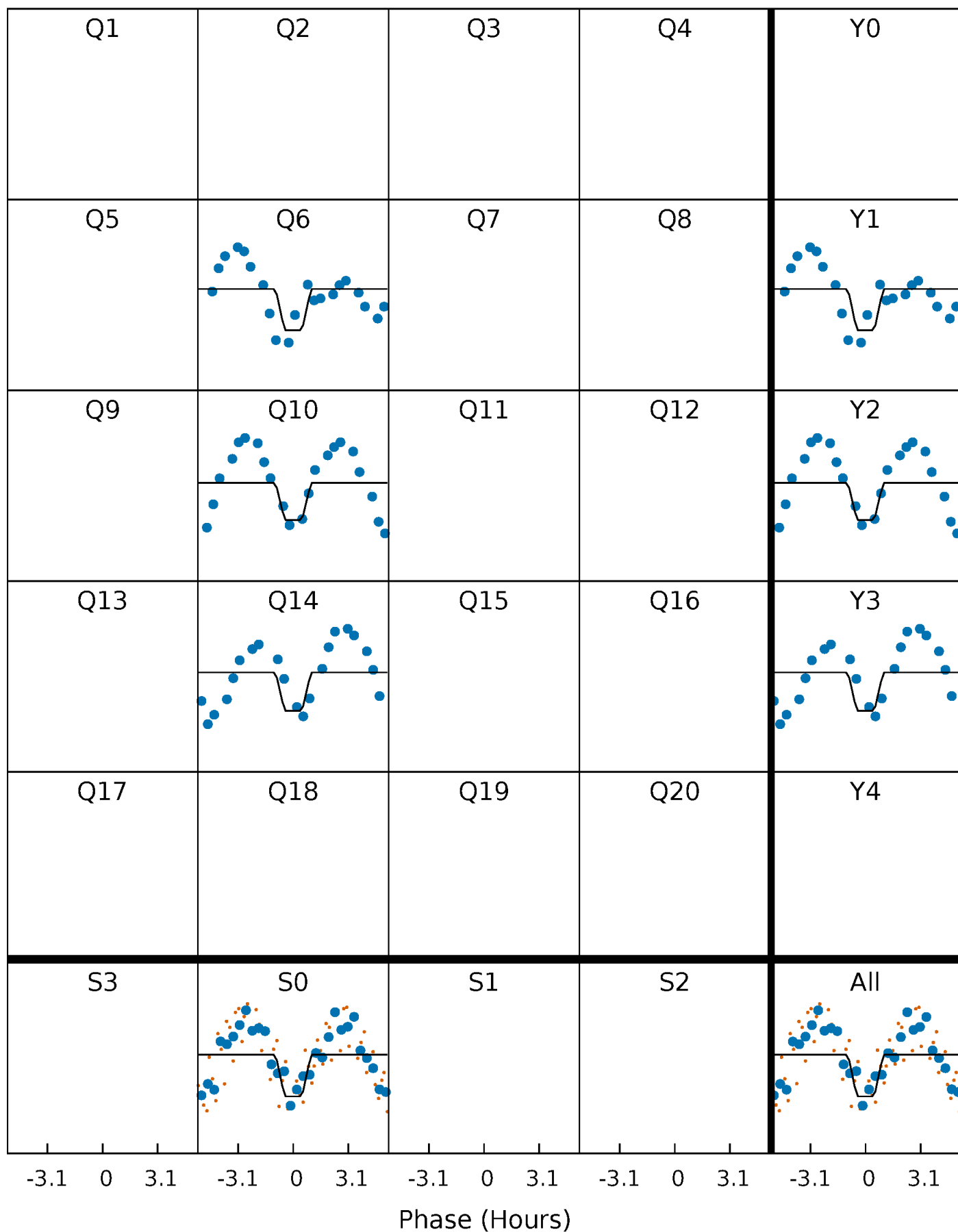
DV Quarter-Phased Transit Curves

TCE 008823658-01 P=384.756065 Days $T_0=162.641821$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

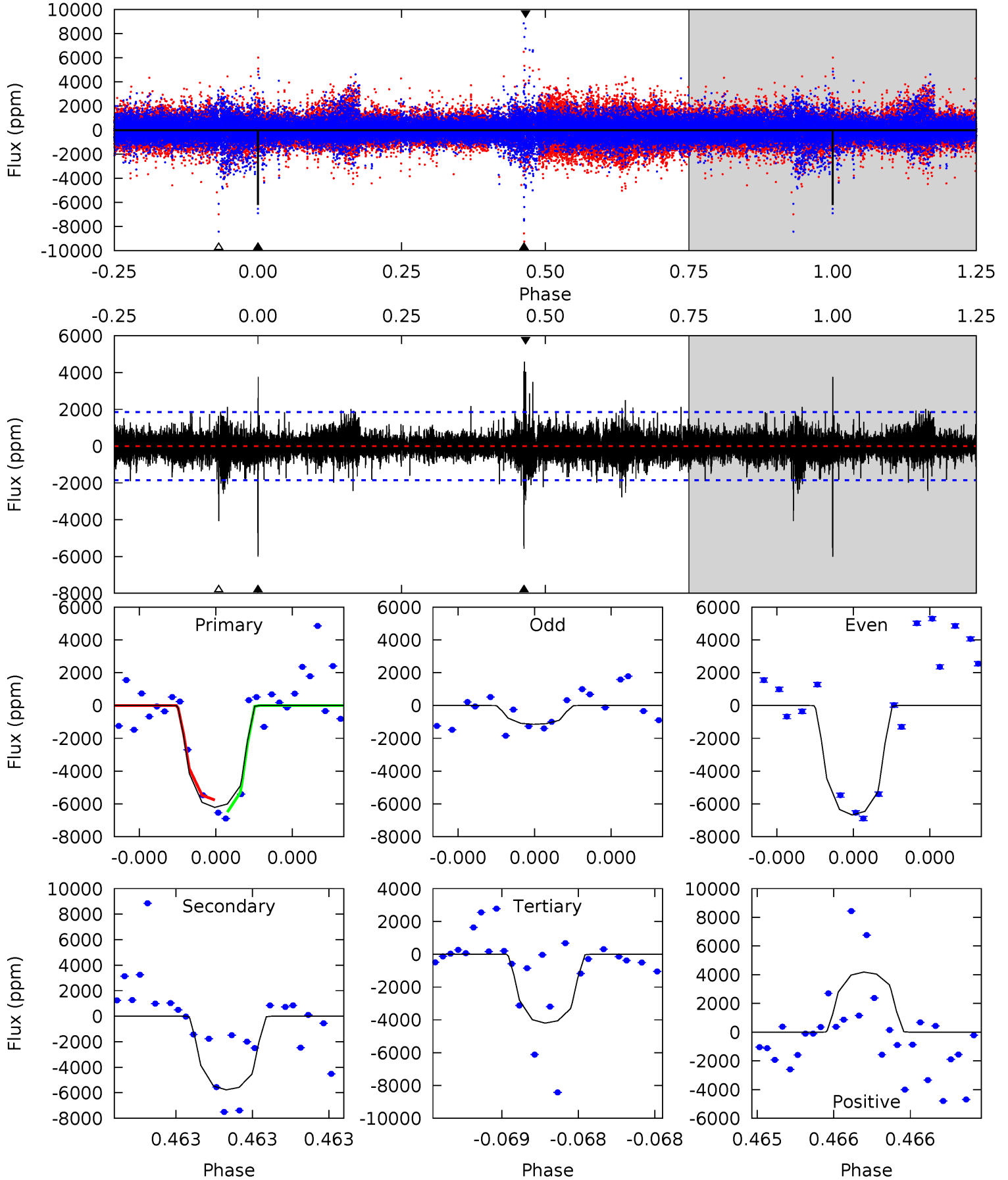
TCE 008823658-01 P=384.859442 Days $T_0=162.449806$ (BKJD)



DV Model-Shift Uniqueness Test

008823658-01, P = 384.756065 Days, E = 162.641821 Days

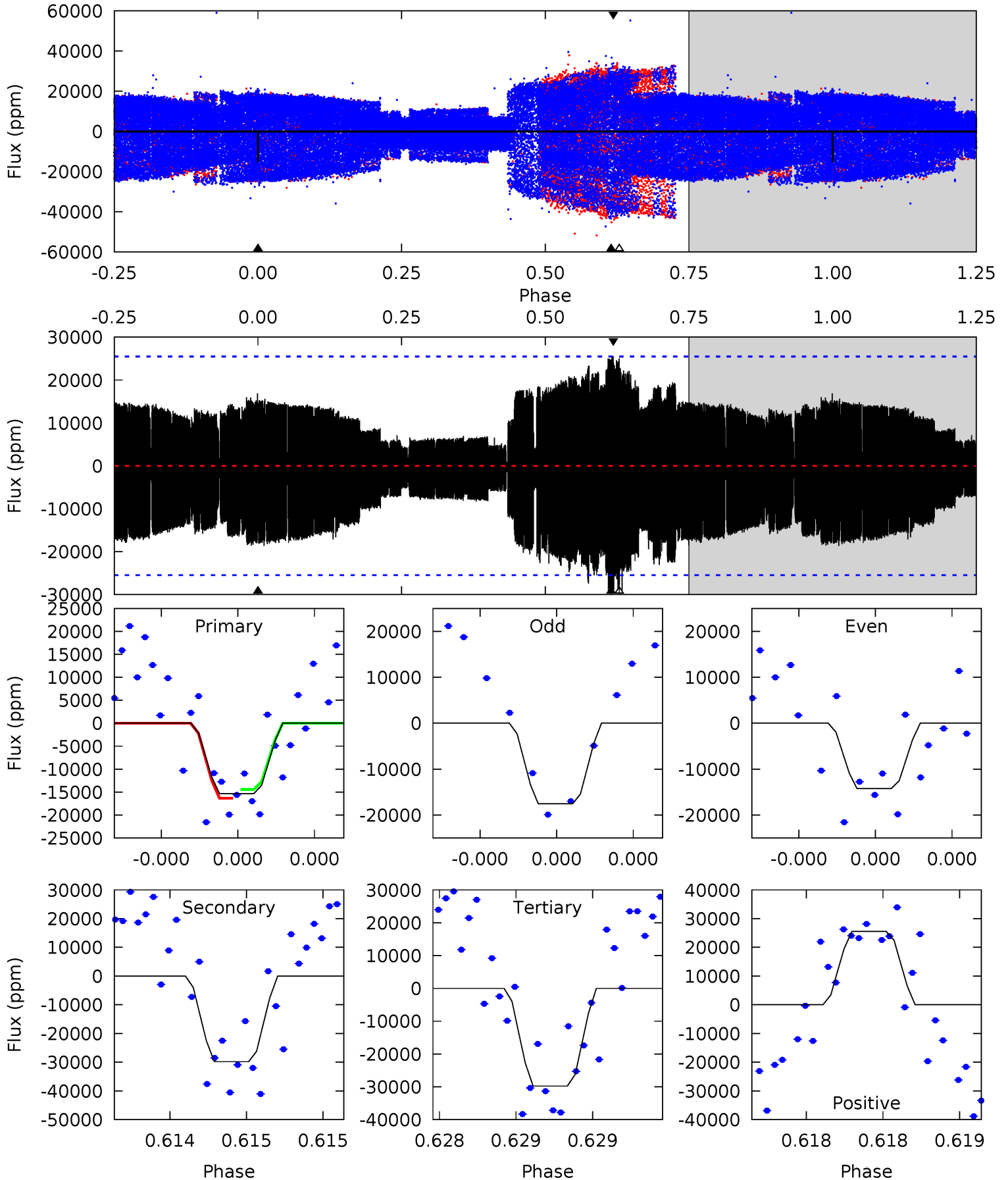
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.4	17.0	12.4	12.4	5.65	3.60	1.56	5.95	5.99	4.63	4.67	8.19	1.36	0.43	1.14



Alt Model-Shift Uniqueness Test

008823658-01, P = 384.859442 Days, E = 162.449806 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.46	6.71	6.71	5.75	5.74	3.73	2.37	-3.25	-2.30	0.00	0.96	0.34	0.96	0.46	0.22



Stellar Parameters For KIC 008823658

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5788^{+162}_{-203}	$4.444^{+0.067}_{-0.202}$	$0.120^{+0.200}_{-0.300}$	$1.005^{+0.300}_{-0.129}$	$1.024^{+0.125}_{-0.113}$	$1.422^{+0.497}_{-0.753}$
	+3%/-4%	+2%/-5%	+167%/-250%	+30%/-13%	+12%/-11%	+35%/-53%
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 008823658-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-5575 ± 327	$9.76^{+8.08}_{-6.61}$	357^{+25}_{-18}	5433^{+5465}_{-1151}	$35229^{+302652}_{-24721}$
Alt.	-29799 ± 4438	$15.62^{+8.66}_{-8.72}$	355^{+27}_{-19}	6508^{+4345}_{-1197}	$74945^{+300099}_{-44612}$

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

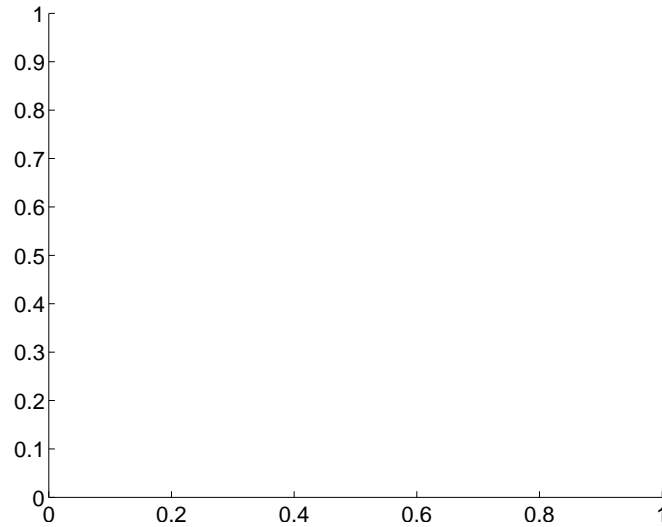
Supplemental centroid analysis for 008823658-01. Kepler magnitude: 15.49. Transit SNR 12.28

There are 0 quarters with good PRF difference image offsets

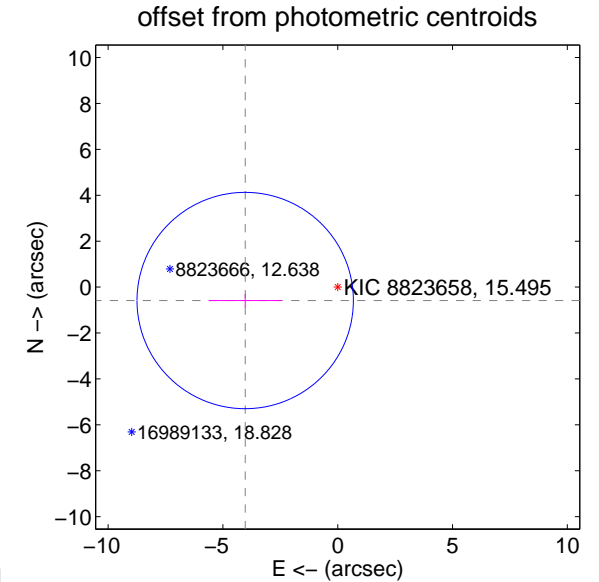
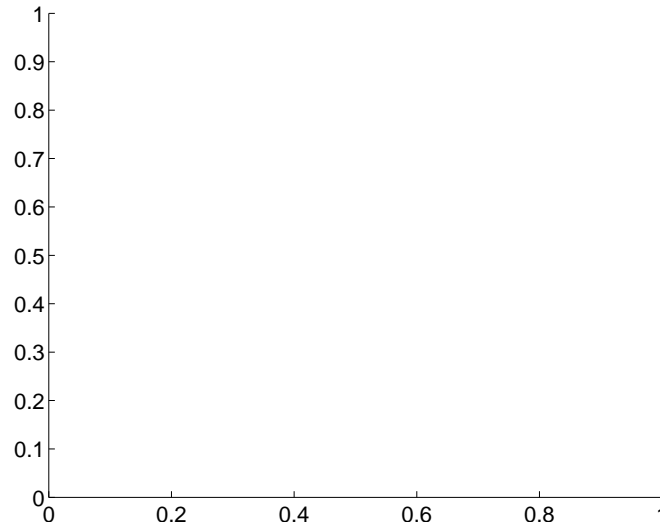
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	4.07 ± 1.57	2.59	4.03 ± 1.59	-0.59 ± 0.29

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC

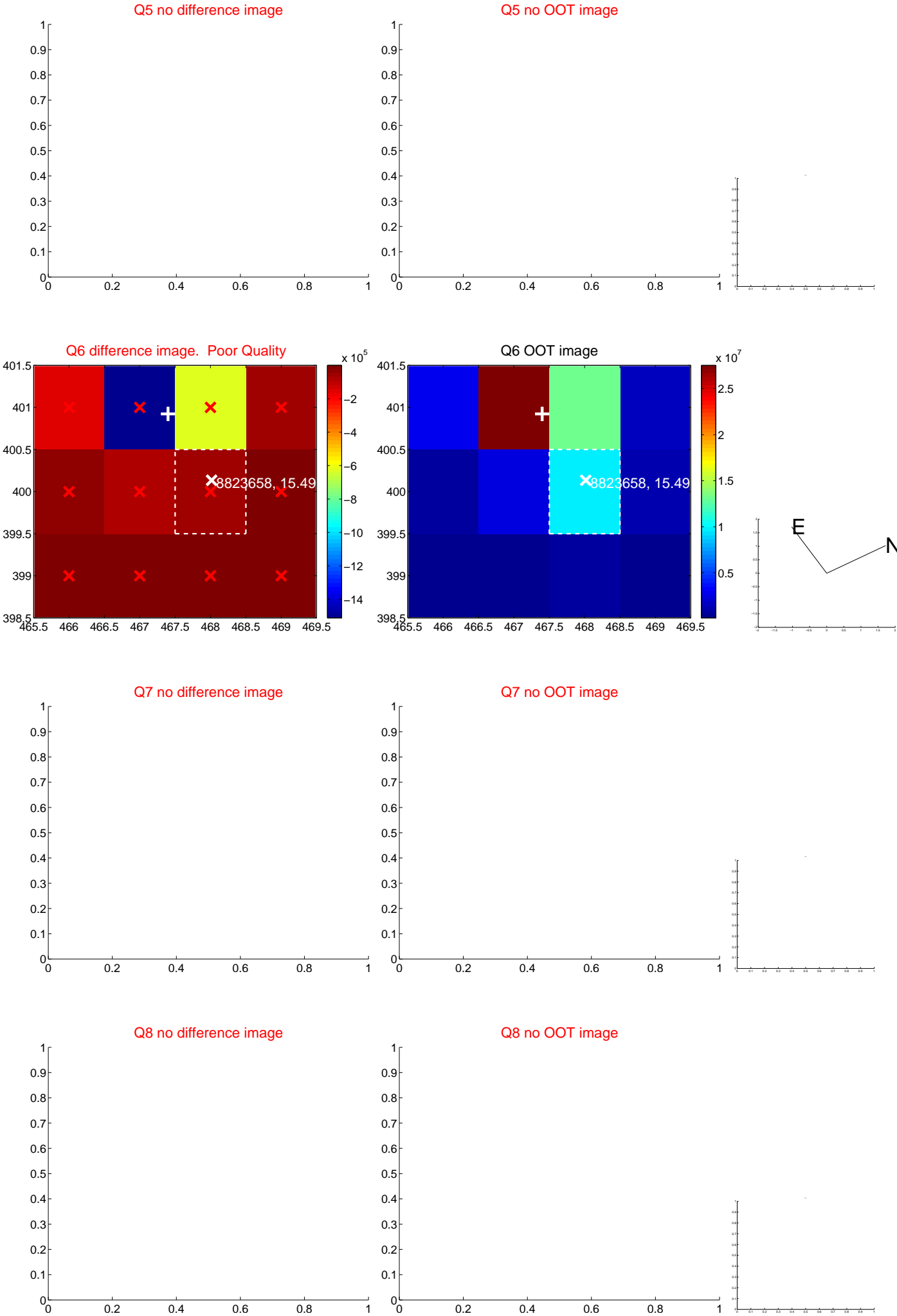


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

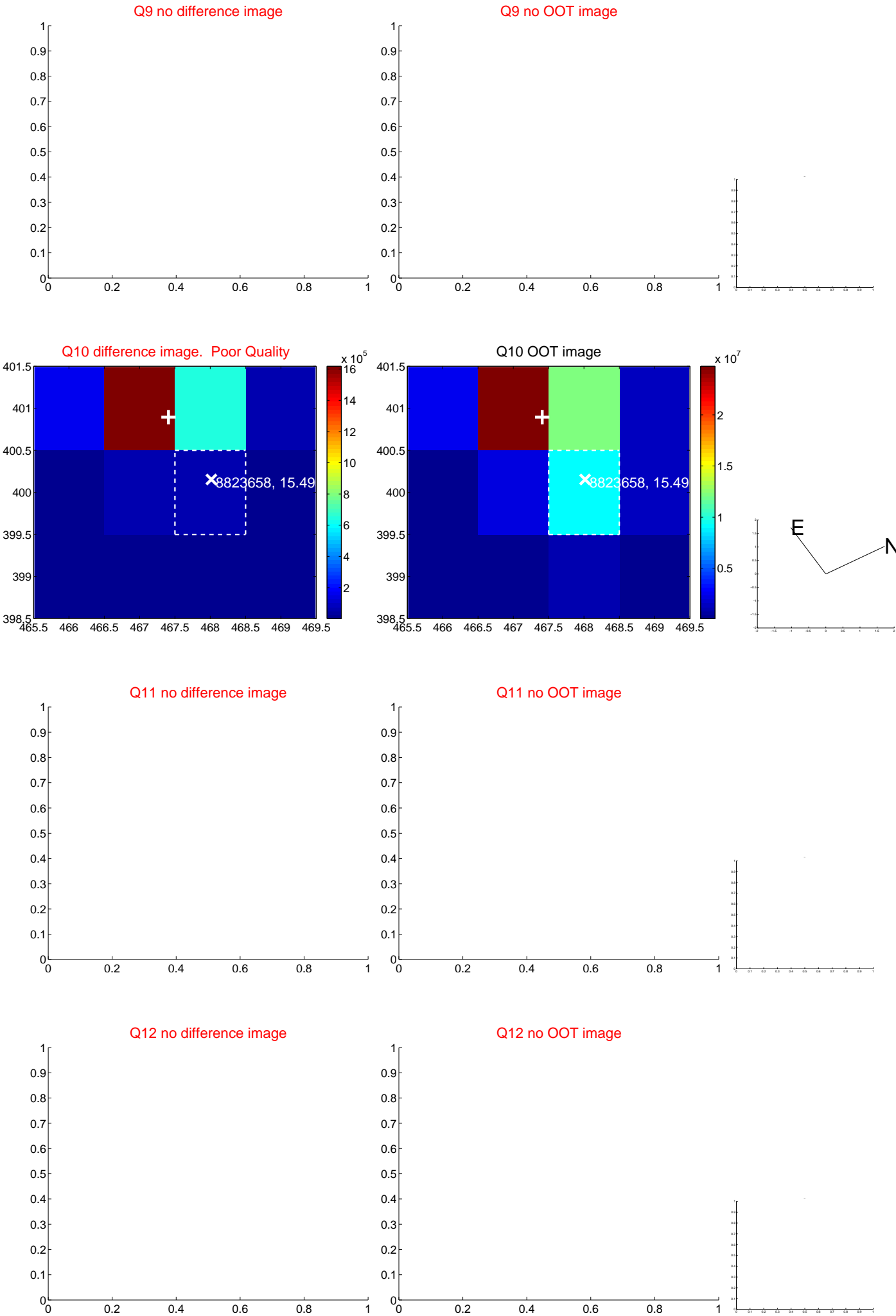
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



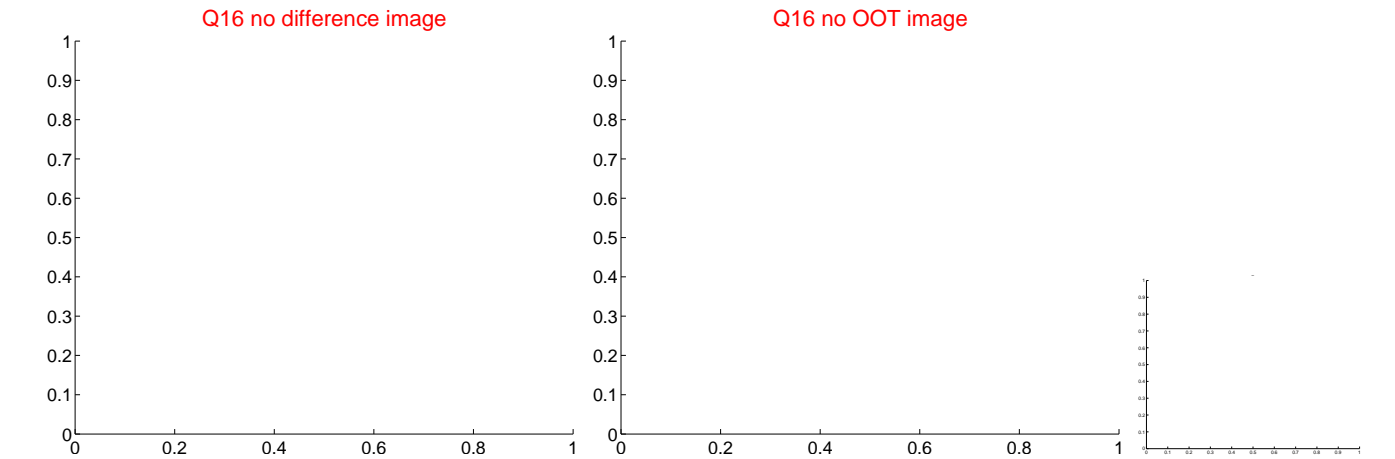
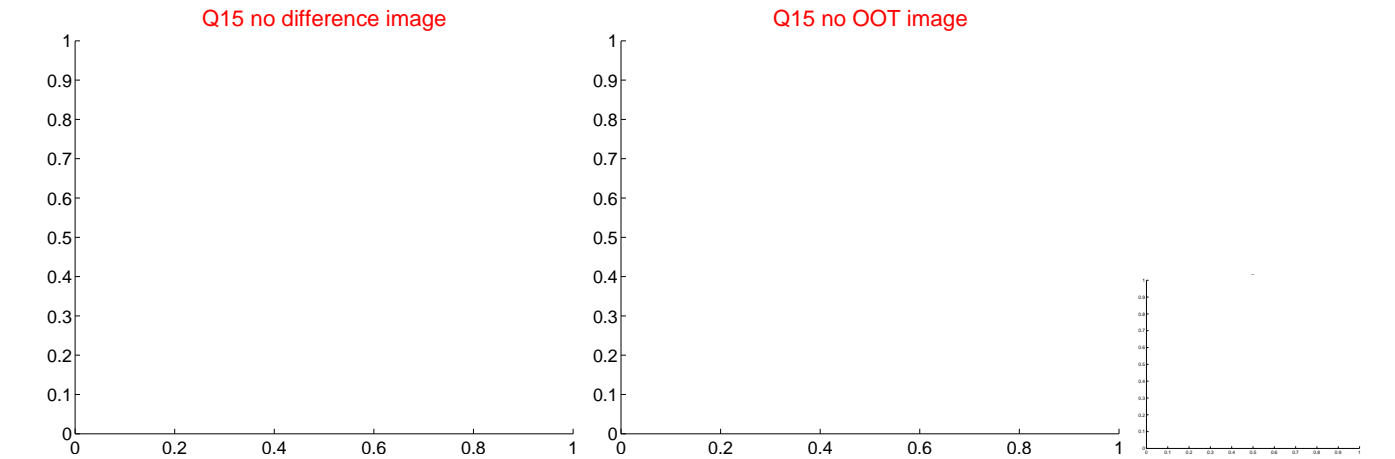
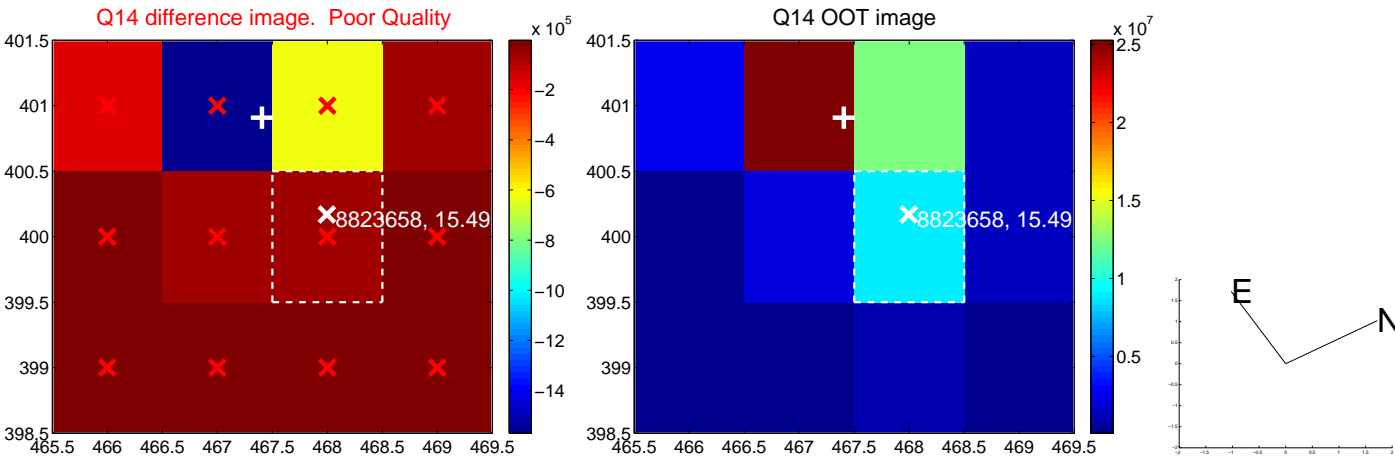
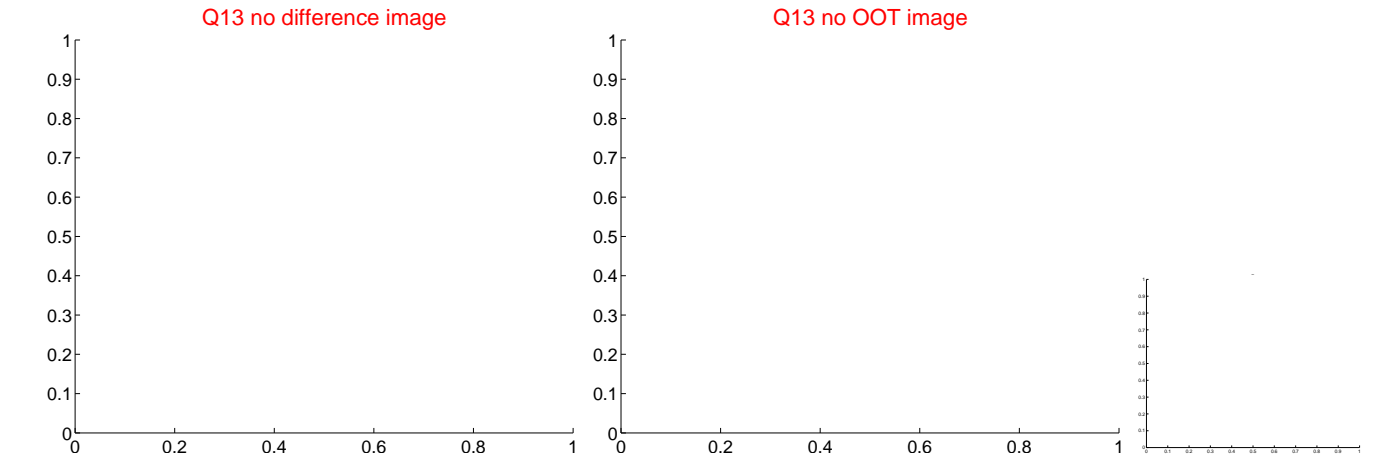
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



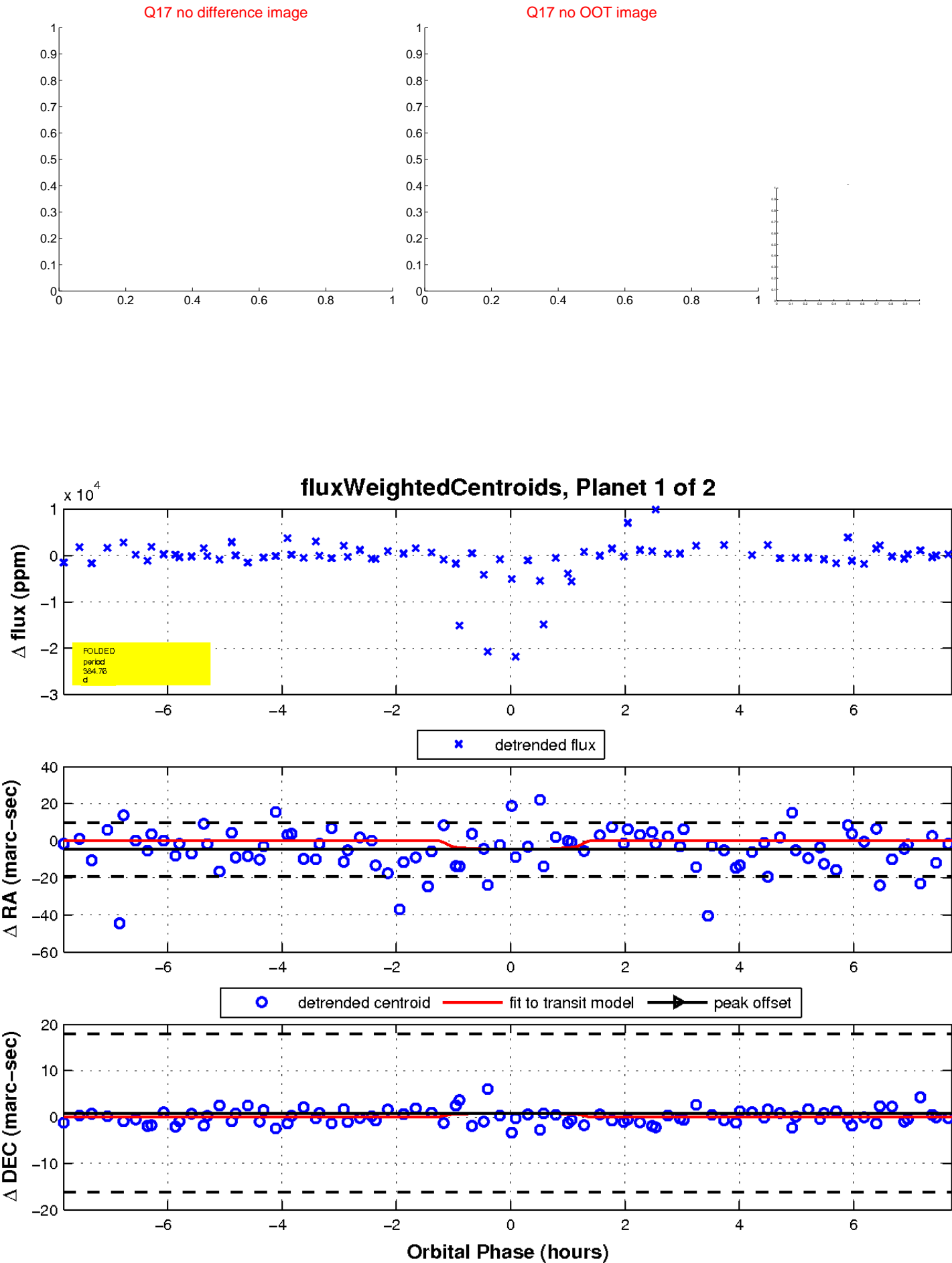
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

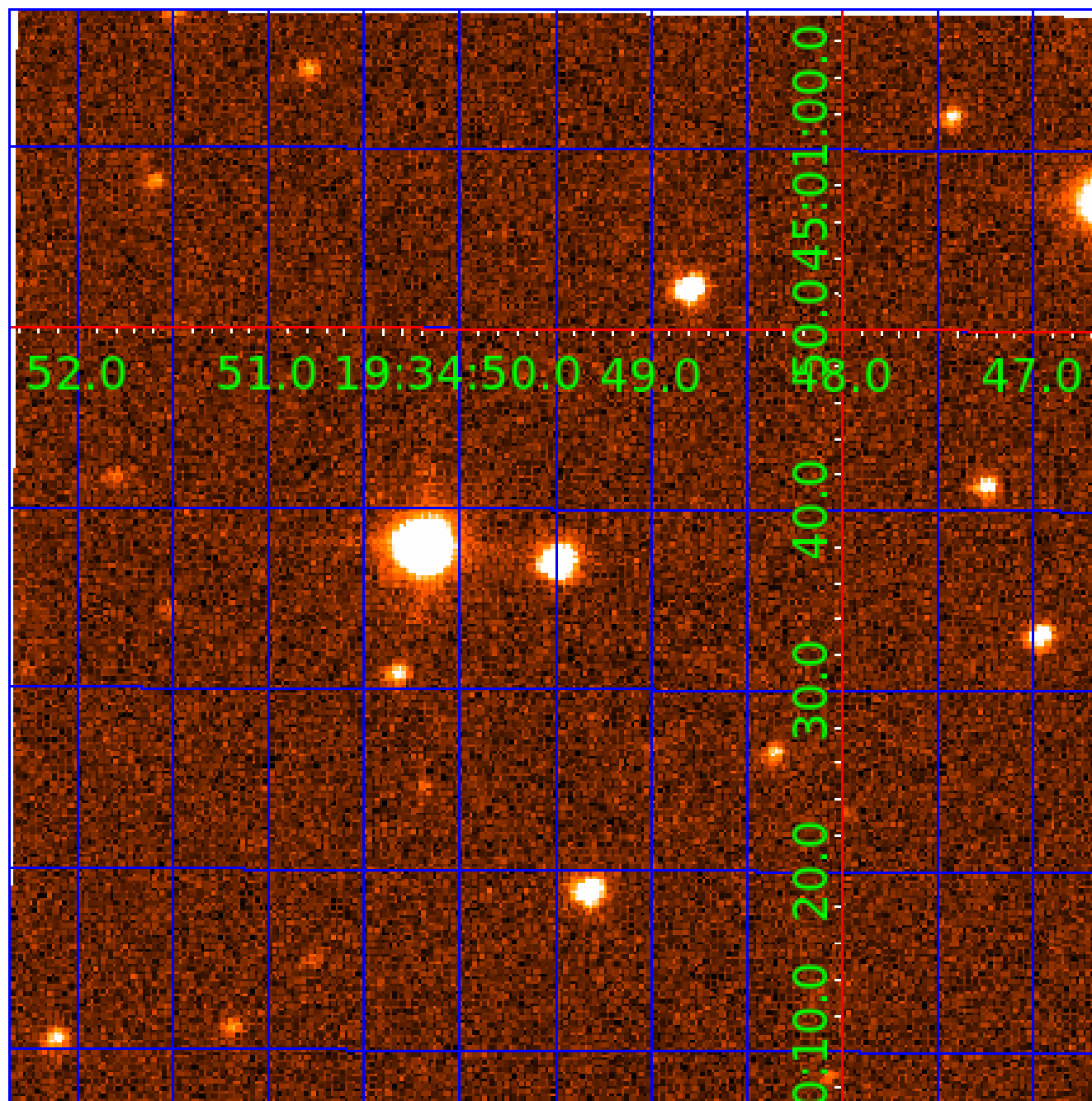


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008823658

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})
008823658-01	OBS	No	384.756065	162.641821	4915.6	2.621	17.1	12.3	1.00	5788	7.09	0.93
008823658-02	OBS	No	337.658228	270.348676	1859.0	12.429	10.3	8.7	1.00	5788	4.29	1.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008823658-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008823658-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

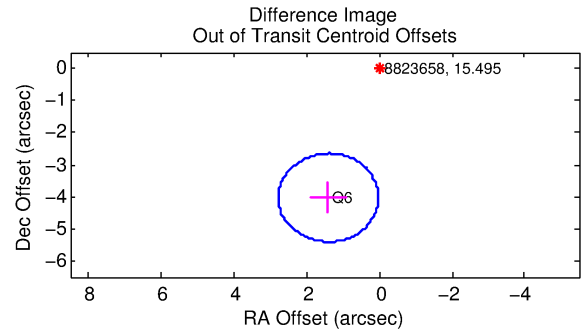
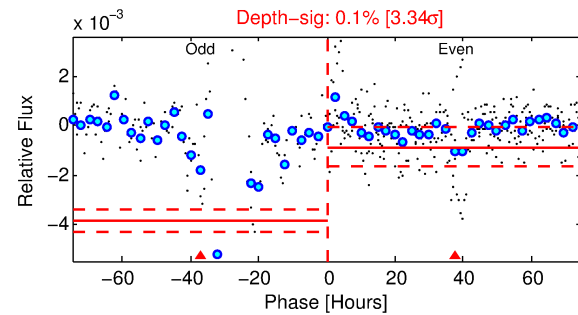
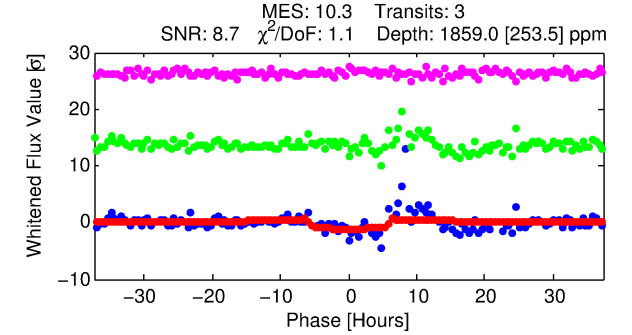
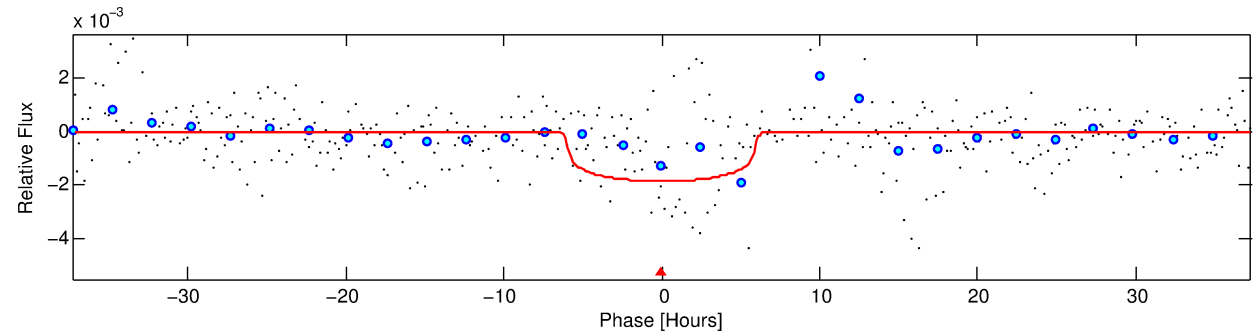
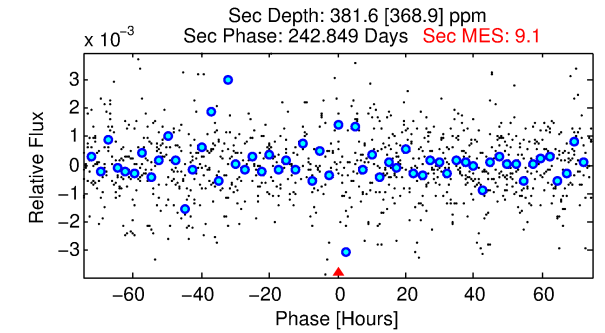
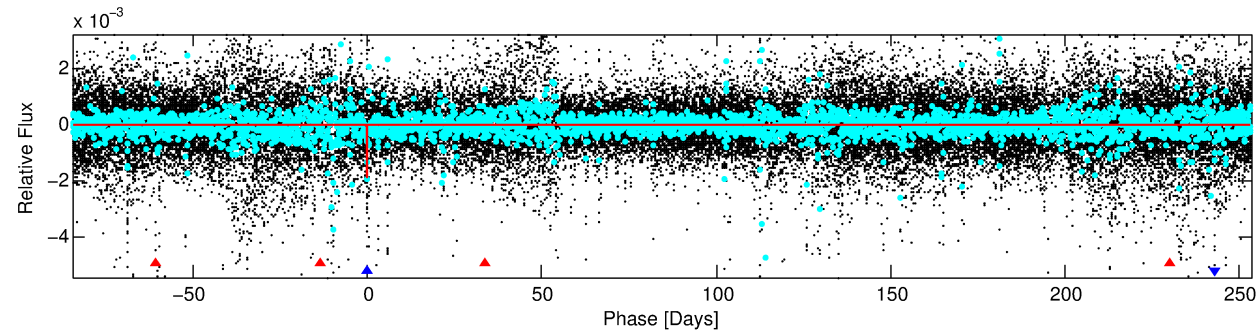
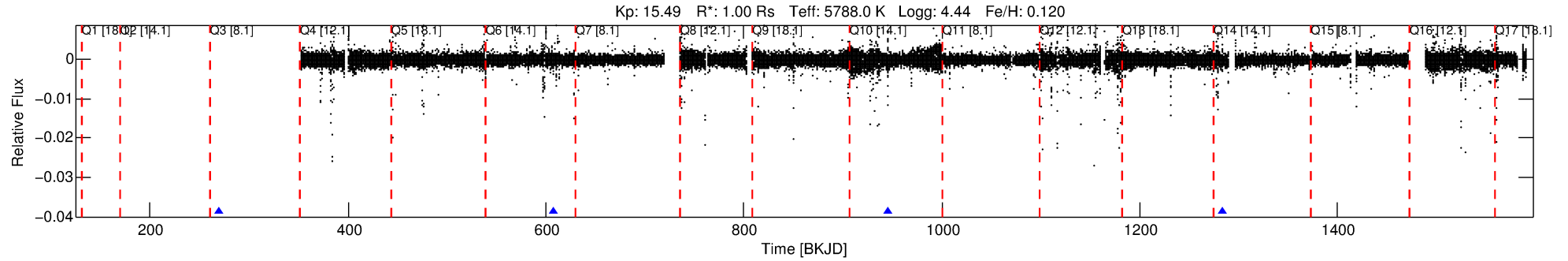
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008823658-02

No Significant Match Found

DV One-Page Summary

KIC: 8823658 Candidate: 2 of 2 Period: 337.658 d



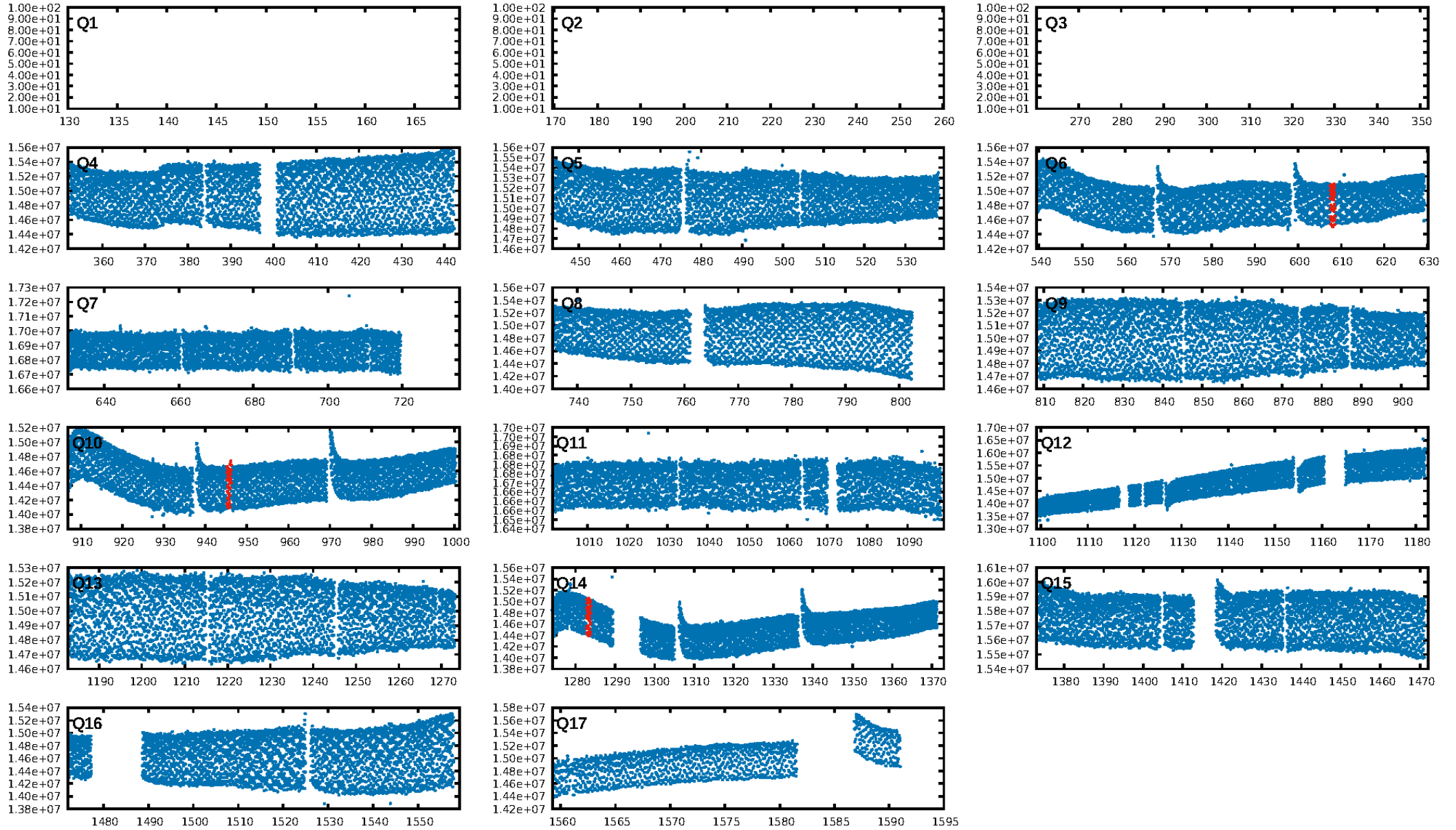
DV Fit Results:

Period = 337.65823 [0.01096] d
Epoch = 270.3487 [0.0221] BKJD
Rp/R* = 0.0391 [0.0198]
a/R* = 213.68 [456.65]
b = 0.14 [14.98]
Seff = 1.11 [0.44]
Teq = 262 [26] K
Rp = 4.29 [2.52] Re
a = 0.9567 [0.2414] AU
Ag = 10442.21 [15109.20] [0.69σ]
Teffp = 4090 [1438] K [2.66σ]

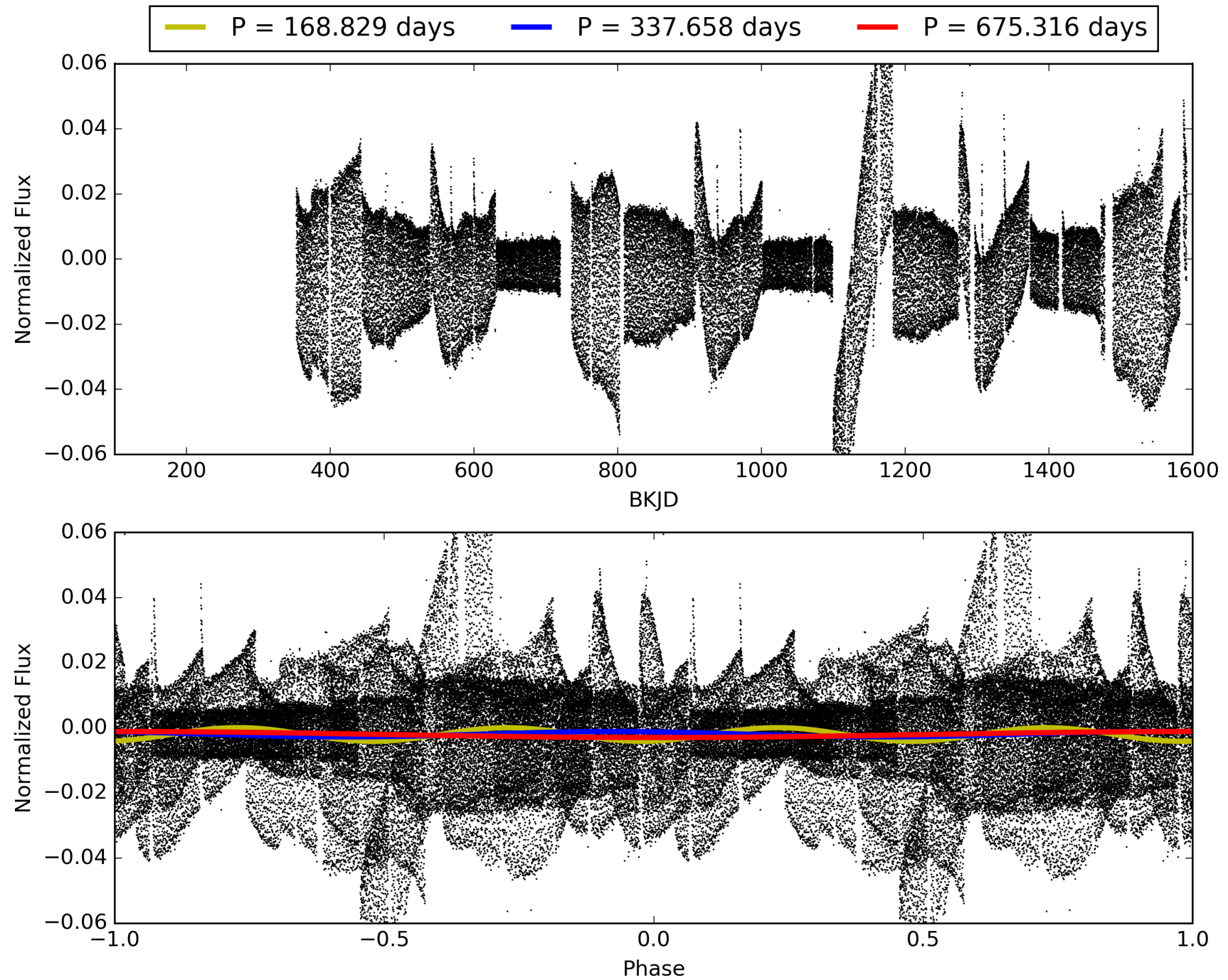
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [88.99σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 58.1%
Bootstrap-pfa: 3.66e-06
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.8055
Centroid-sig: 0.5%
Centroid-so: 5.733 arcsec [2.48σ]
OotOffset-rm: 4.262 arcsec [9.29σ]
KicOffset-rm: 6.642 arcsec [14.31σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 008823658-02, PDC Light Curves

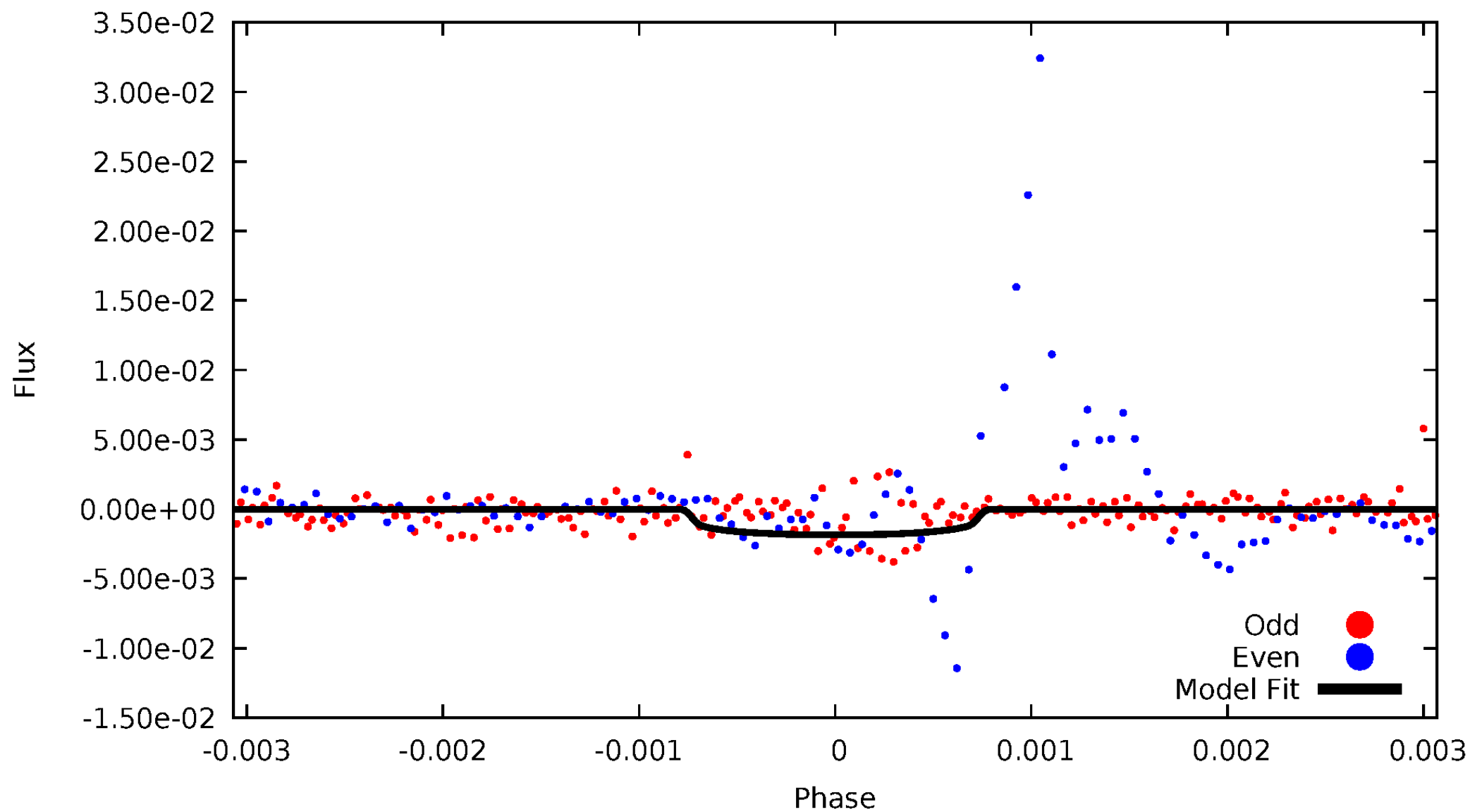


TCE 008823658-02



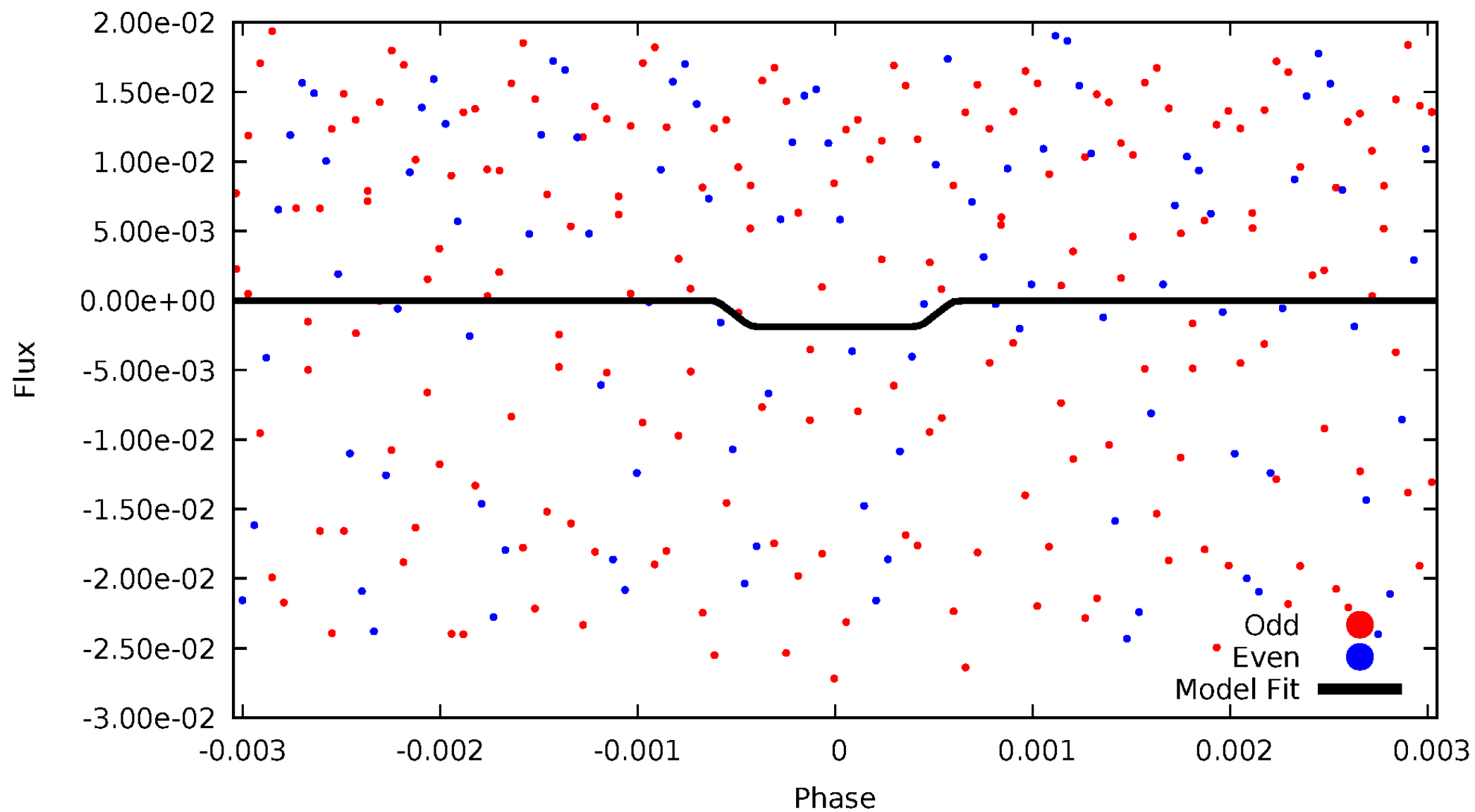
DV Odd/Even

TCE 008823658-02



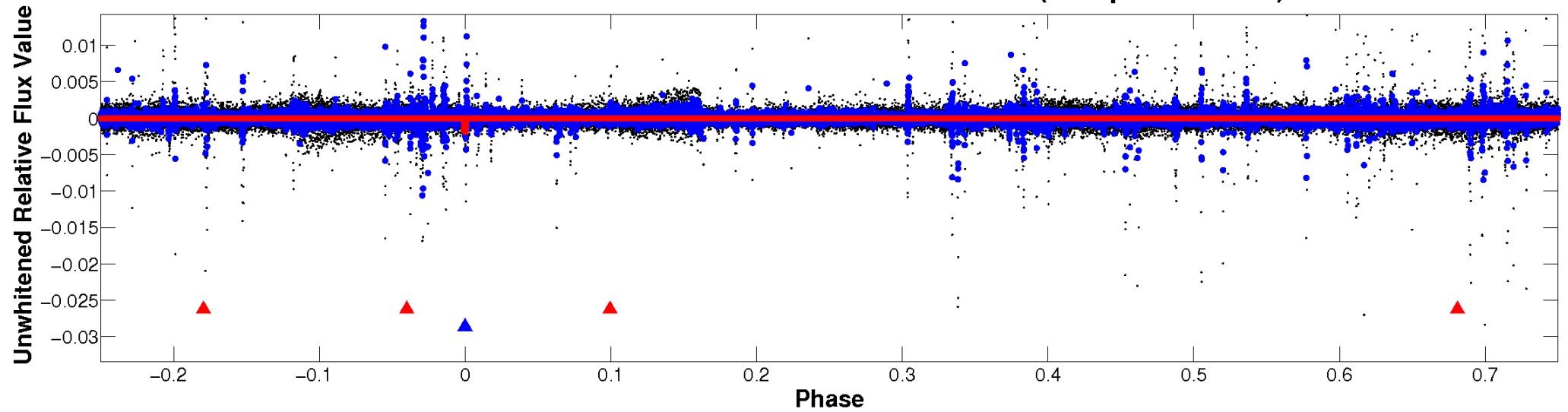
ALT Odd/Even

TCE 008823658-02

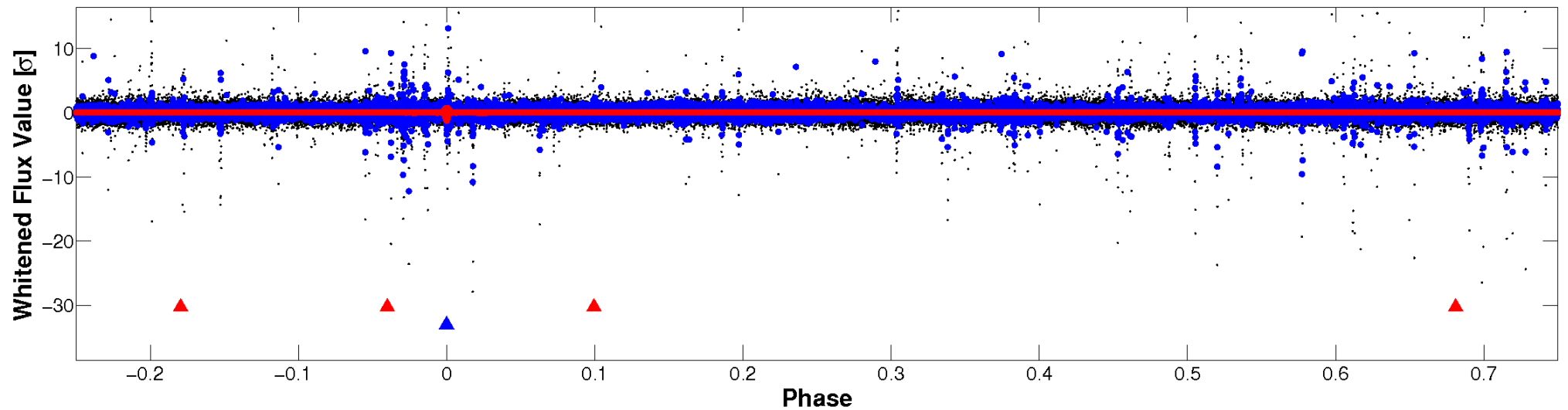


Non-Whitened Vs. Whitened Light Curve

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

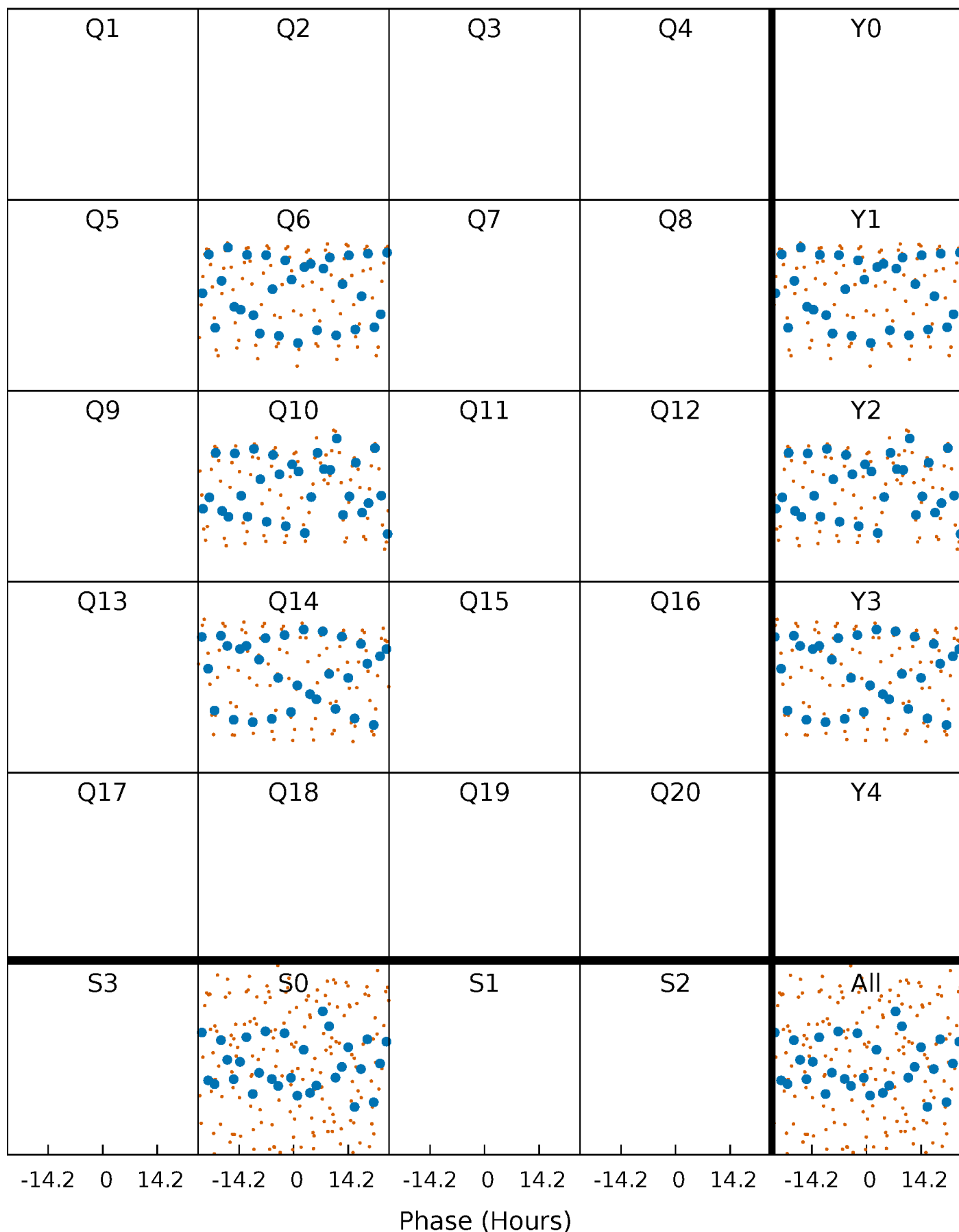


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



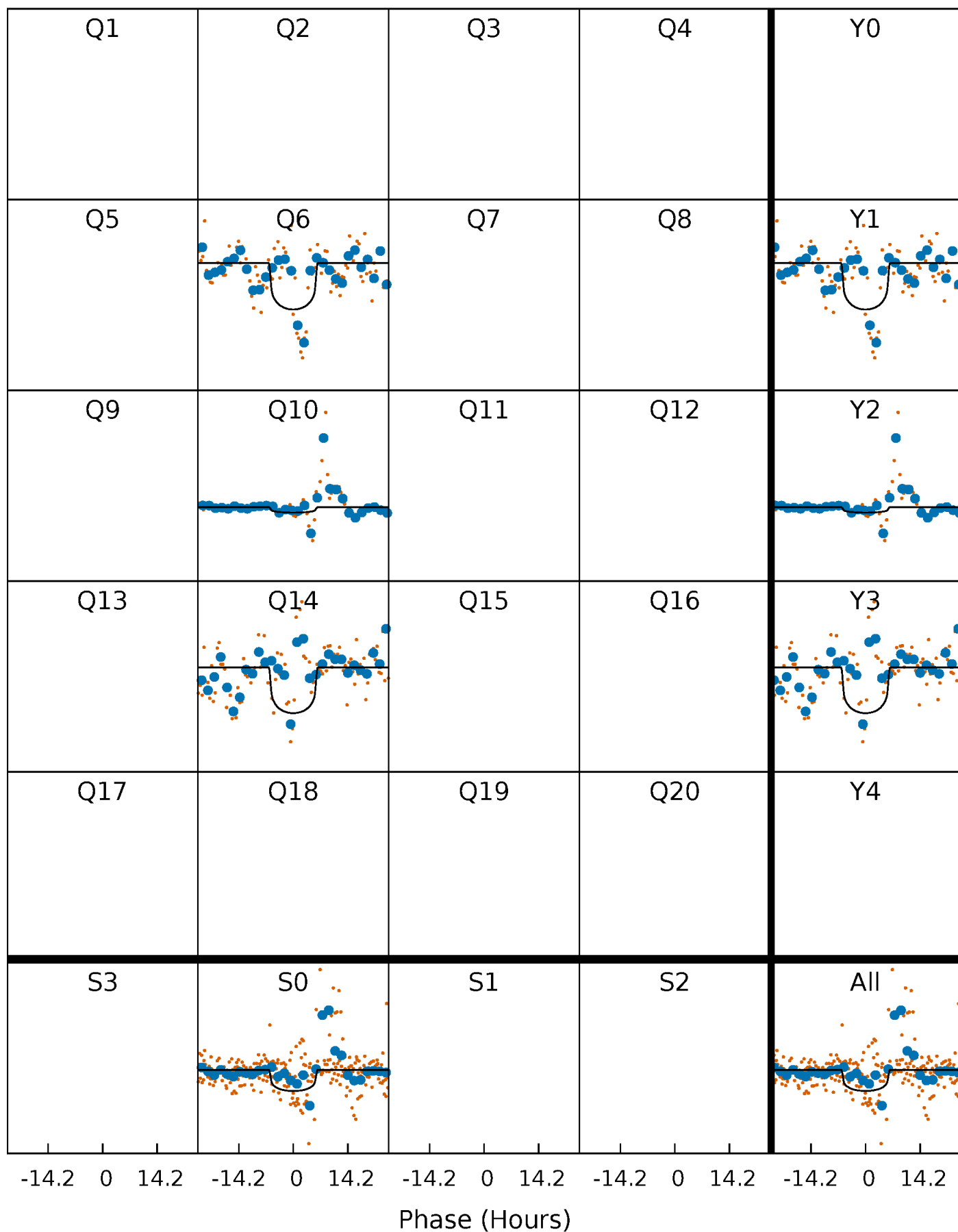
PDC Quarter-Phased Transit Curves

TCE 008823658-02 $P=337.658228$ Days $T_0=270.348676$ (BKJD)



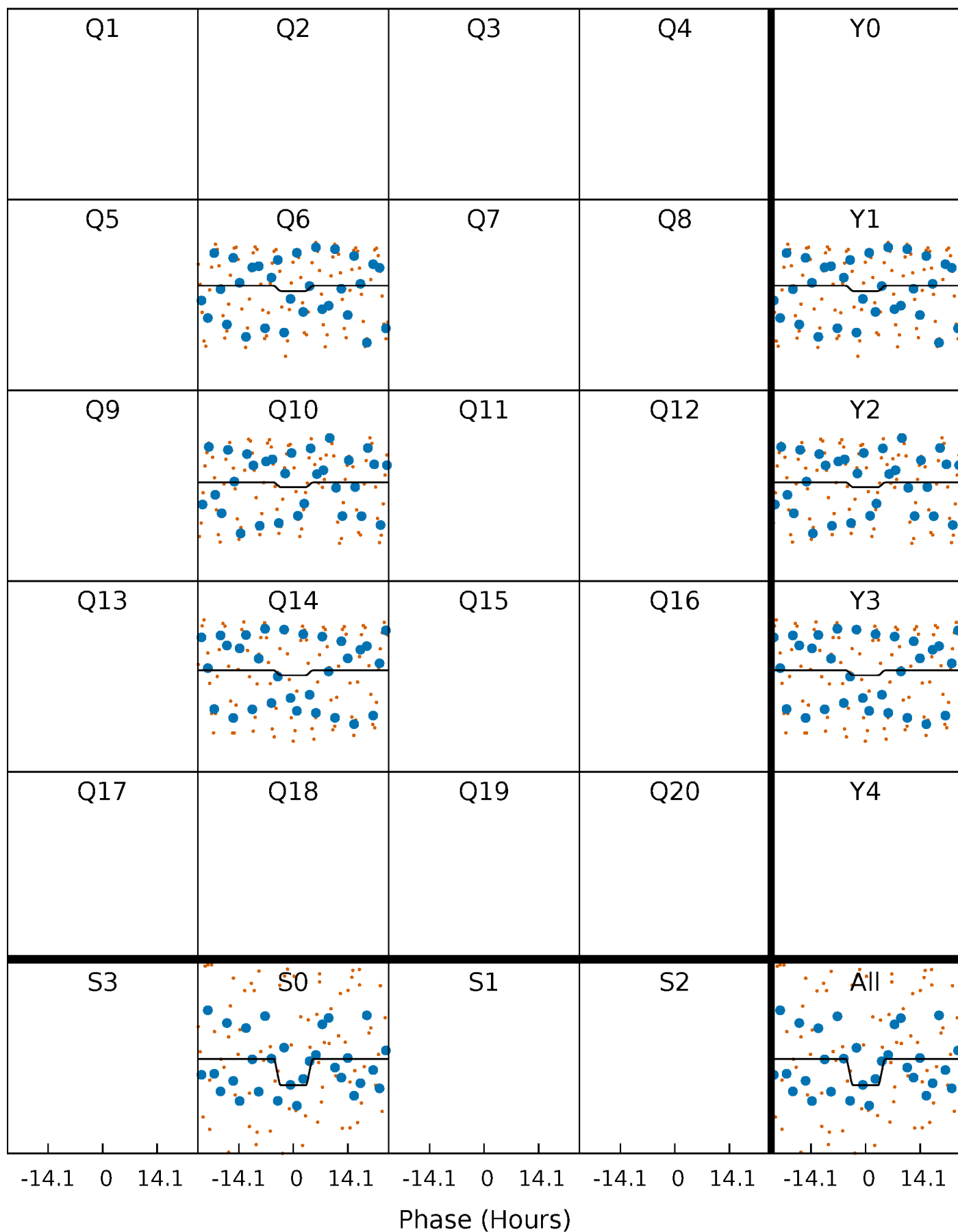
DV Quarter-Phased Transit Curves

TCE 008823658-02 $P=337.658228$ Days $T_0=270.348676$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

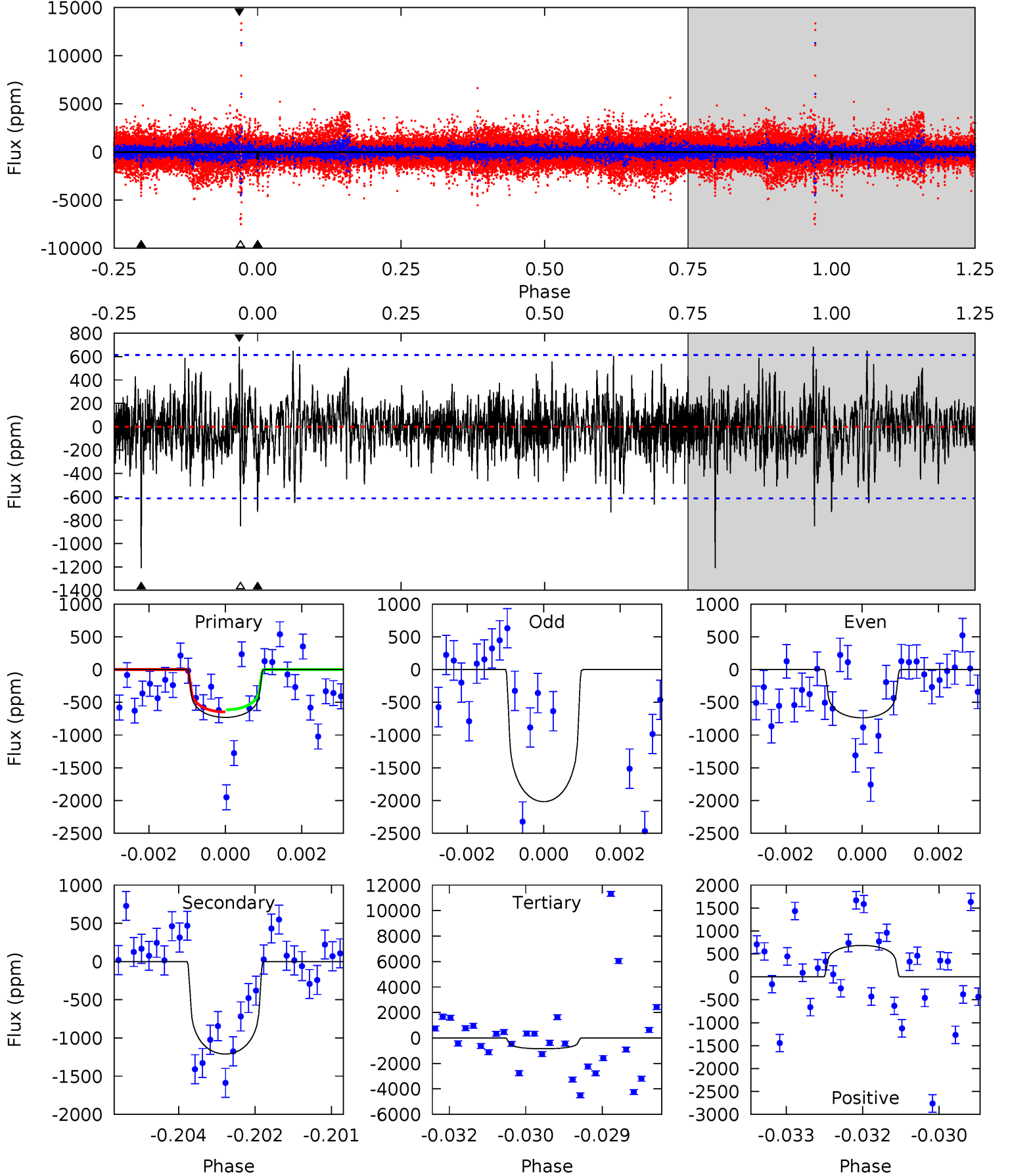
TCE 008823658-02 P=337.593180 Days $T_0=270.536861$ (BKJD)



DV Model-Shift Uniqueness Test

008823658-02, $P = 337.658228$ Days, $E = 270.348676$ Days

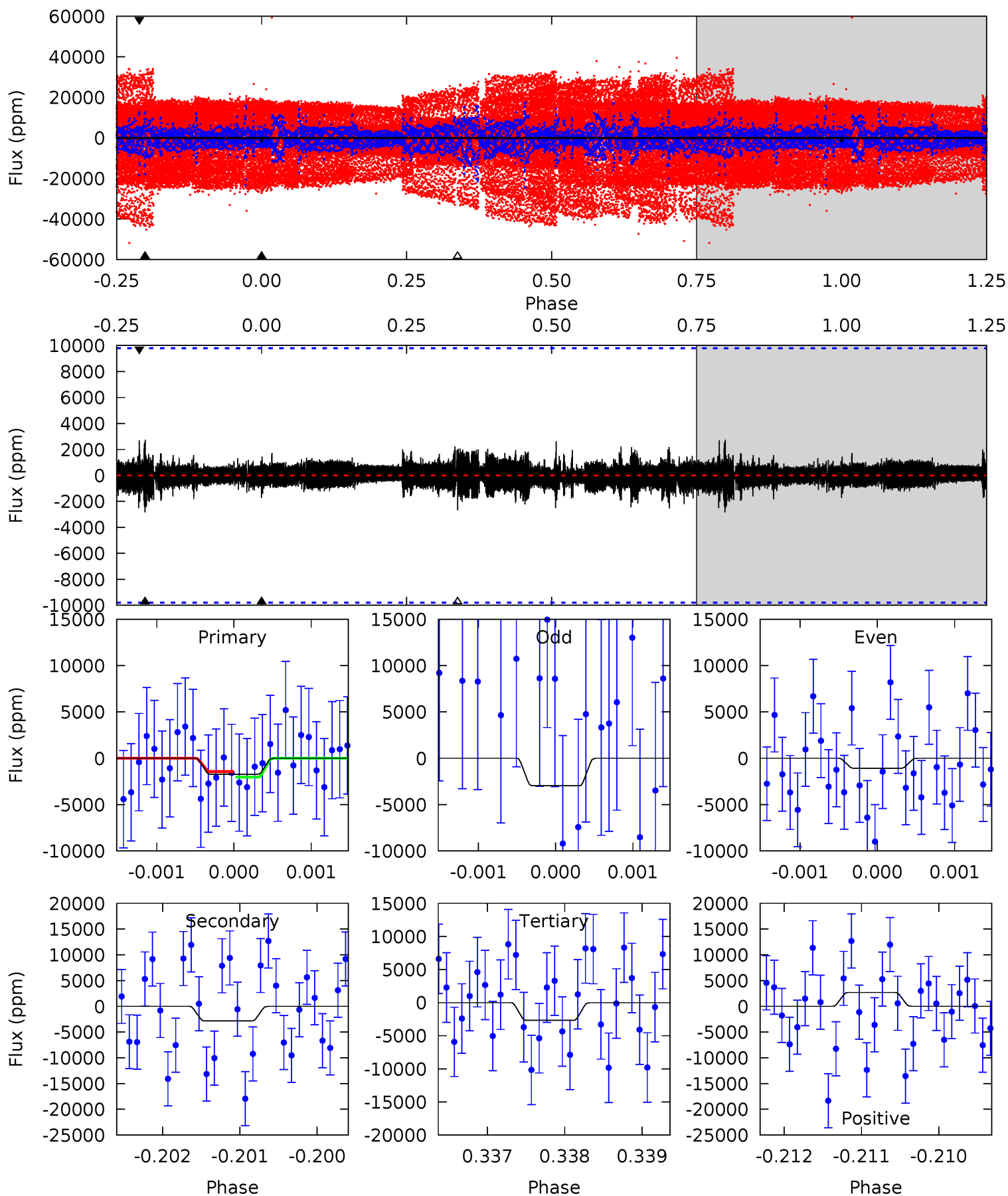
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.39	10.6	7.45	5.99	5.37	3.16	1.43	-1.06	0.40	3.13	4.59	4.75	1.07	0.36	0.14



Alt Model-Shift Uniqueness Test

008823658-02, P = 337.593180 Days, E = 270.536861 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.95	1.57	1.48	1.49	5.41	3.22	0.36	-0.53	-0.53	0.09	0.08	0.48	0.55	0.49	0.17



Stellar Parameters For KIC 008823658

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5788^{+162}_{-203}	$4.444^{+0.067}_{-0.202}$	$0.120^{+0.200}_{-0.300}$	$1.005^{+0.300}_{-0.129}$	$1.024^{+0.125}_{-0.113}$	$1.422^{+0.497}_{-0.753}$
	+3%/-4%	+2%/-5%	+167%/-250%	+30%/-13%	+12%/-11%	+35%/-53%
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 008823658-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1210 ± 114	$4.63^{+2.57}_{-2.21}$	374^{+27}_{-21}	5415^{+2206}_{-900}	28317^{+80542}_{-16777}
Alt.	-2837 ± 1811	$5.13^{+2.37}_{-2.20}$	373^{+28}_{-21}	6219^{+2781}_{-1610}	$52337^{+127230}_{-39396}$

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 $A_{obs} \gg 1.0$

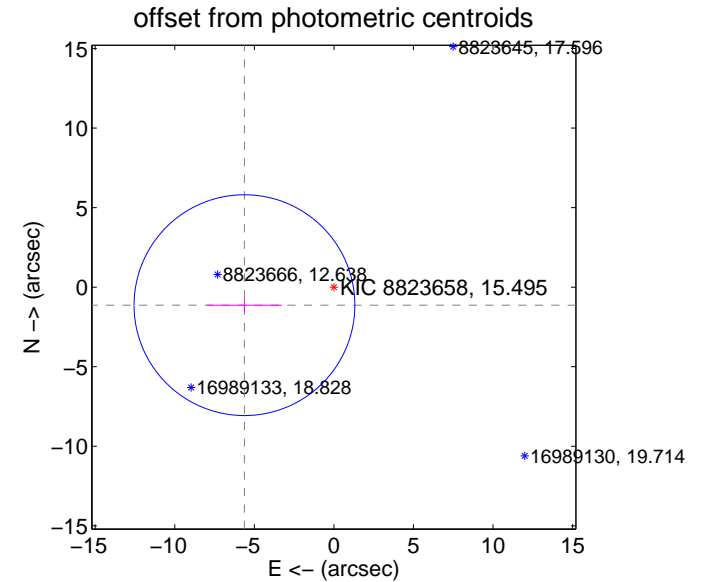
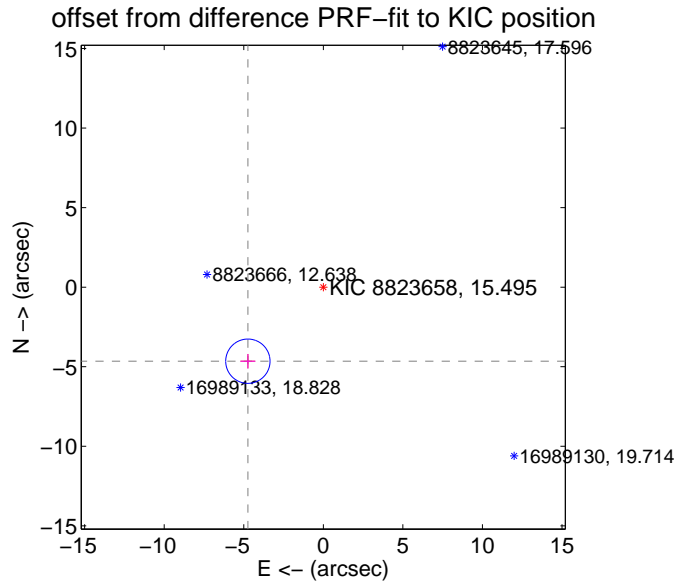
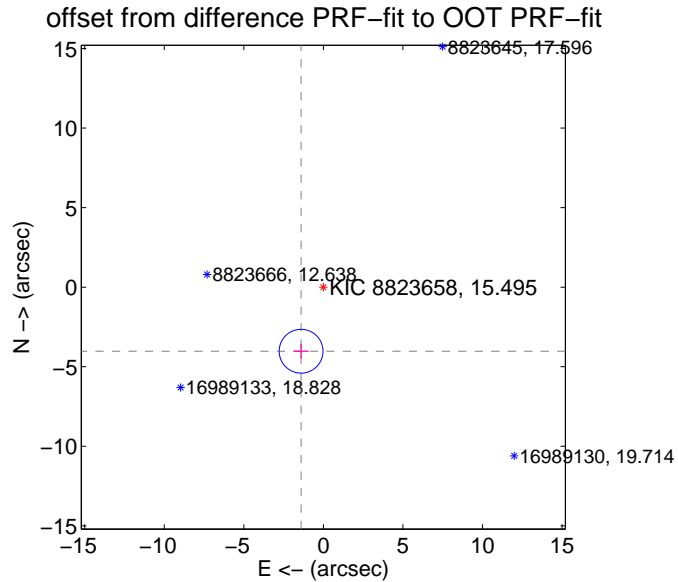
DV Centroid Data

Supplemental centroid analysis for 008823658-02. Kepler magnitude: 15.49. Transit SNR 8.70

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 3.40 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.262 ± 0.459	9.29	1.400 ± 0.471	-4.026 ± 0.457
PRF-fit source offset from KIC position	6.642 ± 0.464	14.31	4.741 ± 0.471	-4.652 ± 0.457
photometric centroid source offset	5.73 ± 2.31	2.48	5.62 ± 2.36	-1.13 ± 0.43



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.

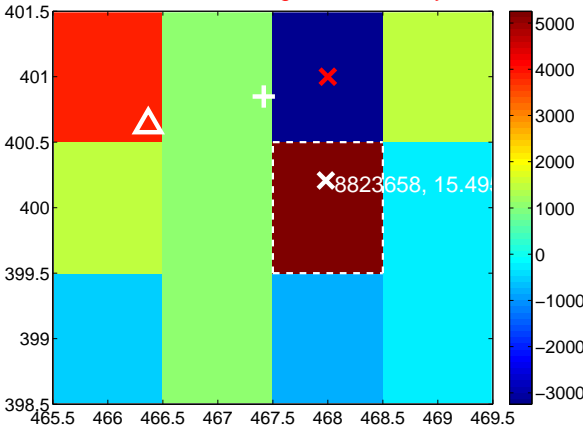
Q5 no difference image



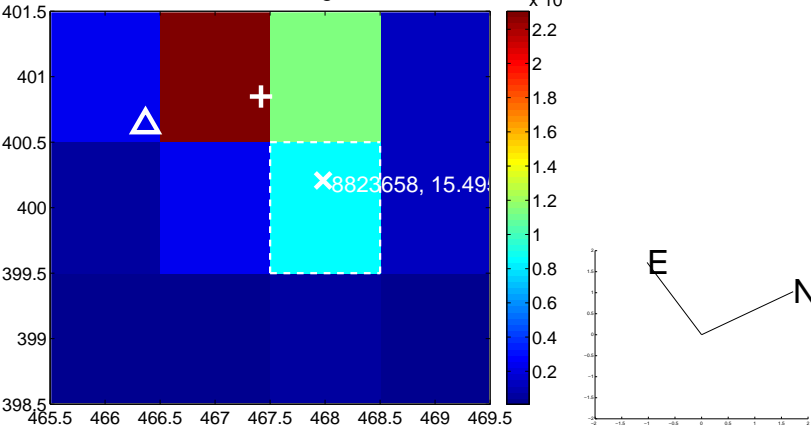
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



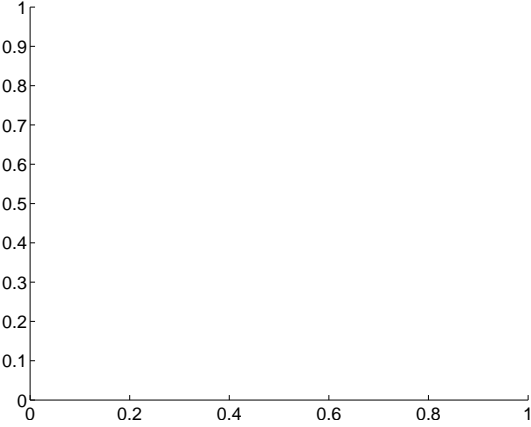
Q7 no difference image



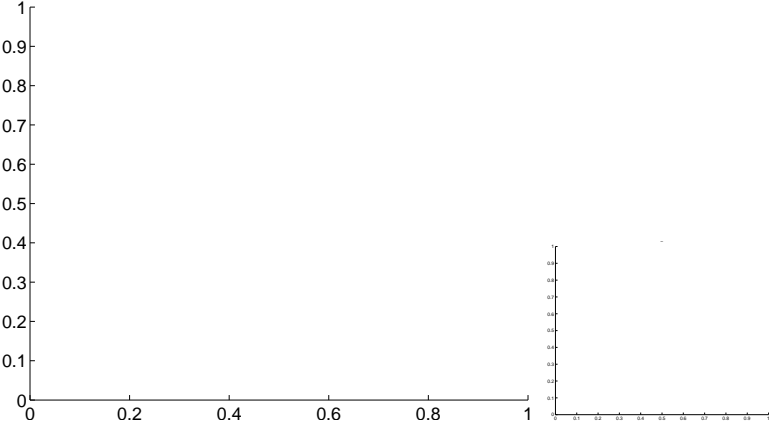
Q7 no OOT image



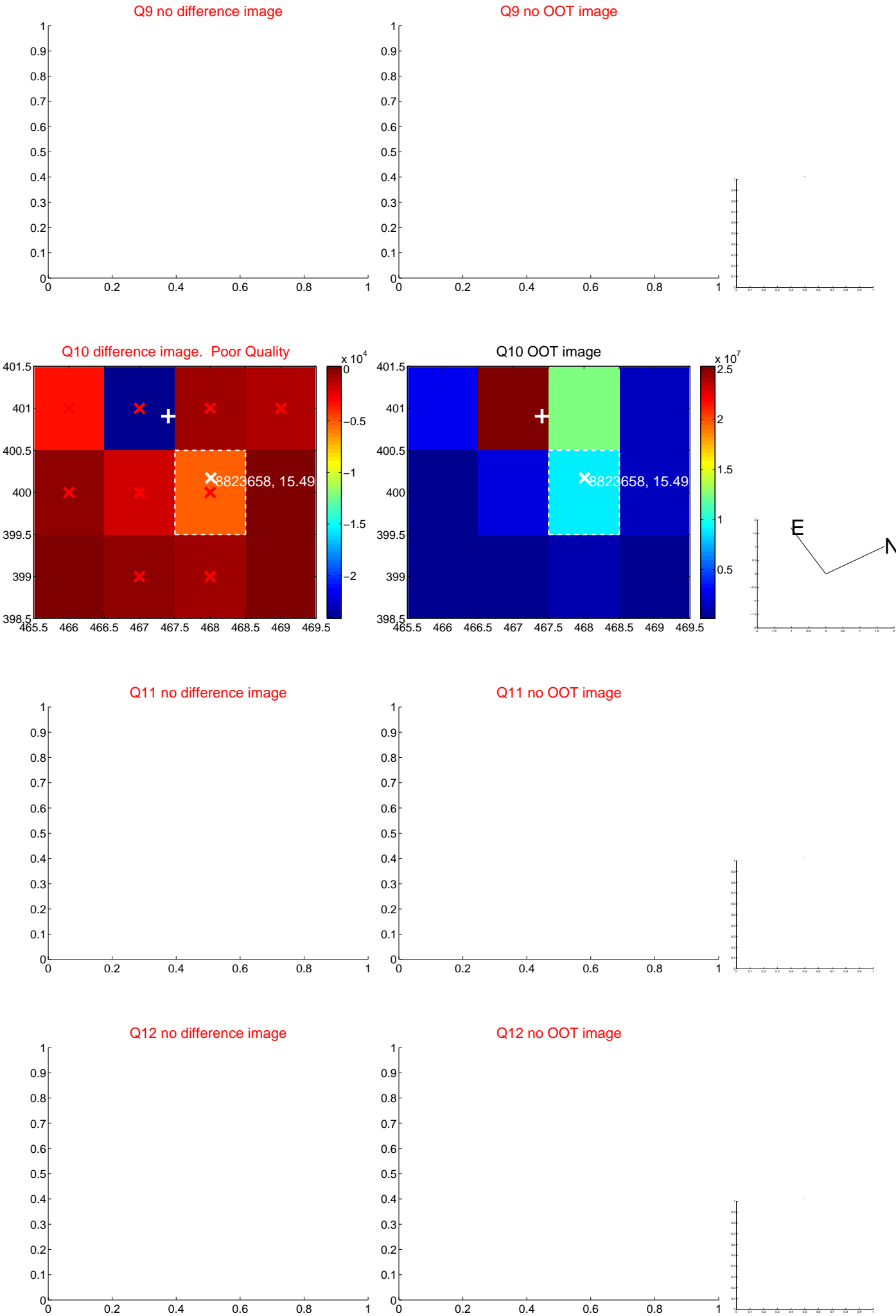
Q8 no difference image



Q8 no OOT image



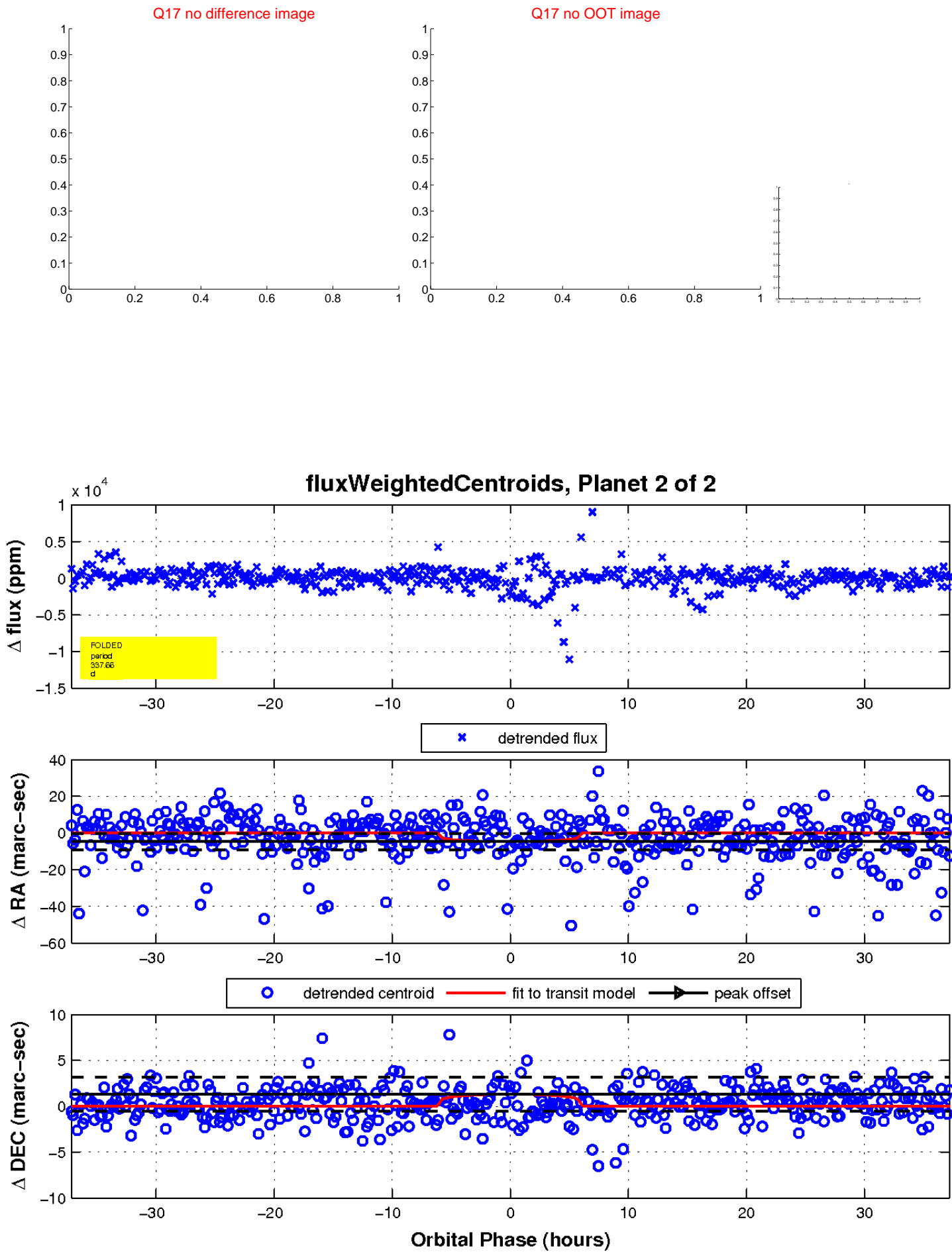
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

