

KIC 004165502

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})
004165502-01	OBS	No	160.371765	142.357901	715.2	6.753	7.4	7.4	0.73	4813	2.47	0.96

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004165502-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

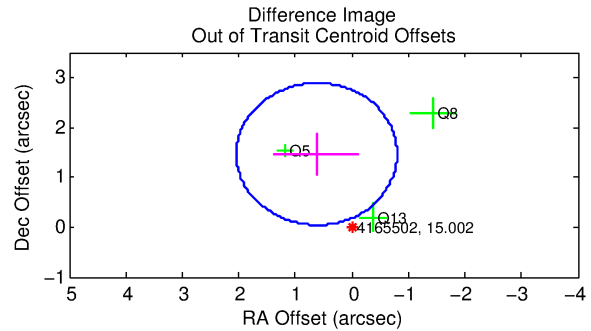
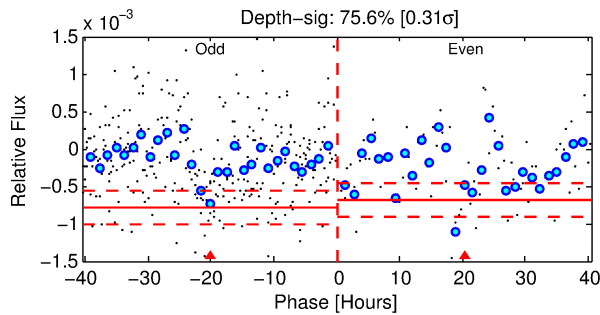
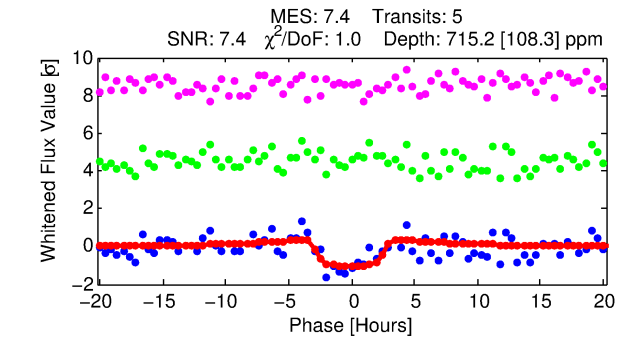
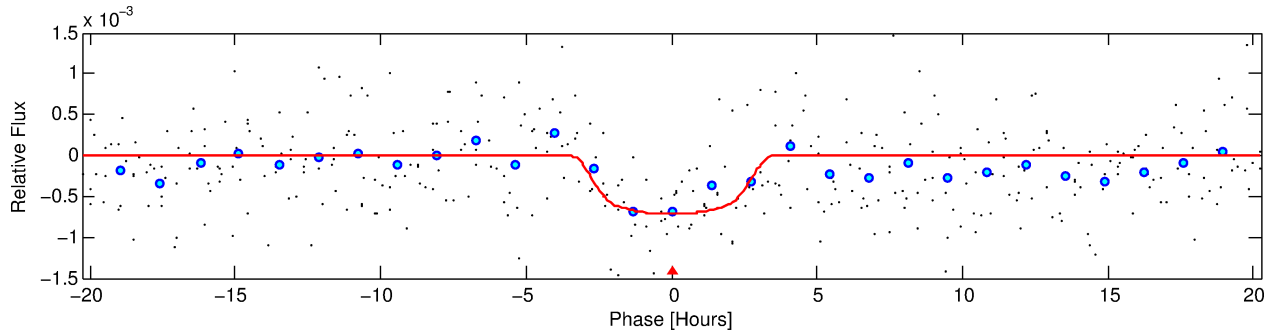
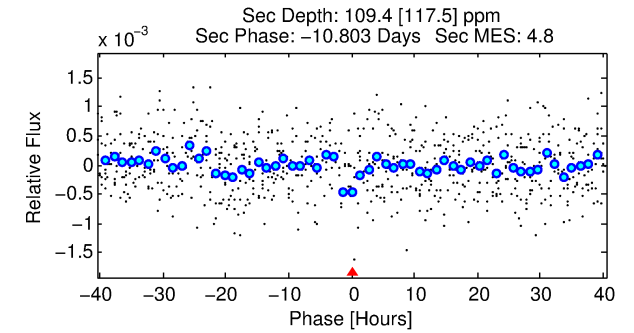
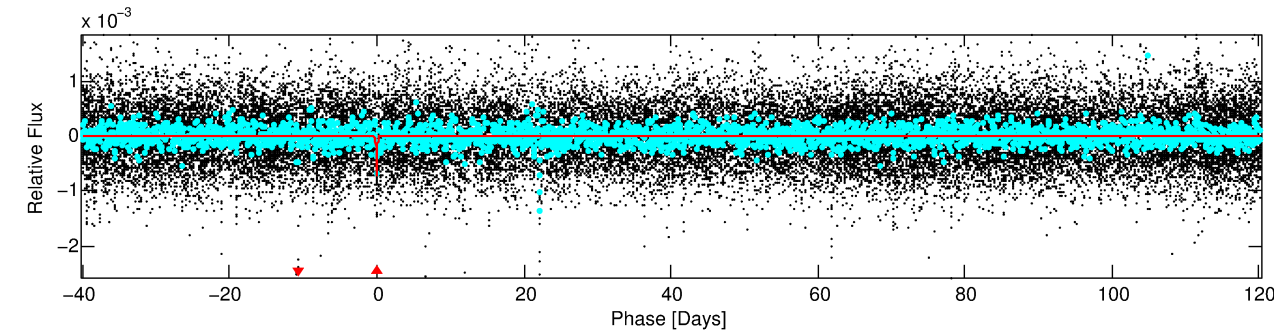
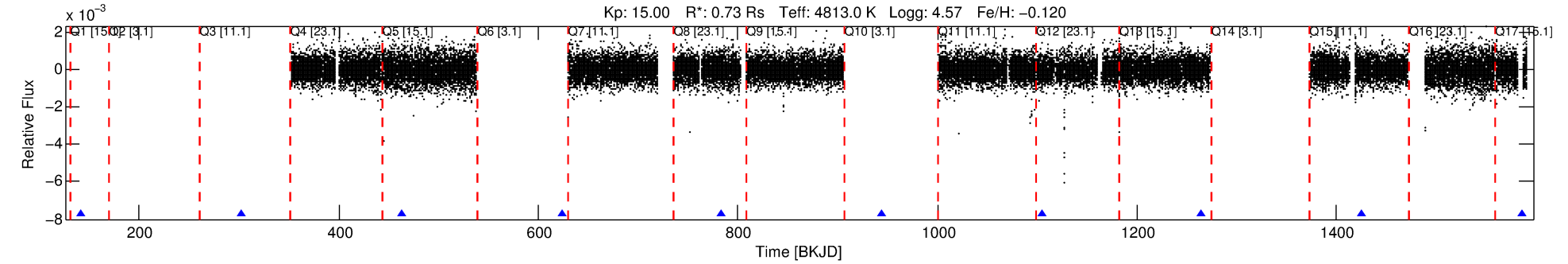
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004165502-01

No Significant Match Found

DV One-Page Summary

KIC: 4165502 Candidate: 1 of 1 Period: 160.372 d



DV Fit Results:

Period = 160.37176 [0.00462] d
Epoch = 142.3579 [0.0276] BKJD
Rp/R* = 0.0312 [0.0049]
a/R* = 81.36 [40.09]
b = 0.93 [0.08]
Seff = 0.96 [0.17]
Teq = 252 [11] K
Rp = 2.47 [0.46] Re
a = 0.5145 [0.0405] AU
Ag = 2603.84 [2929.55] [0.89σ]
Teffp = 2786 [786] K [3.2σ]

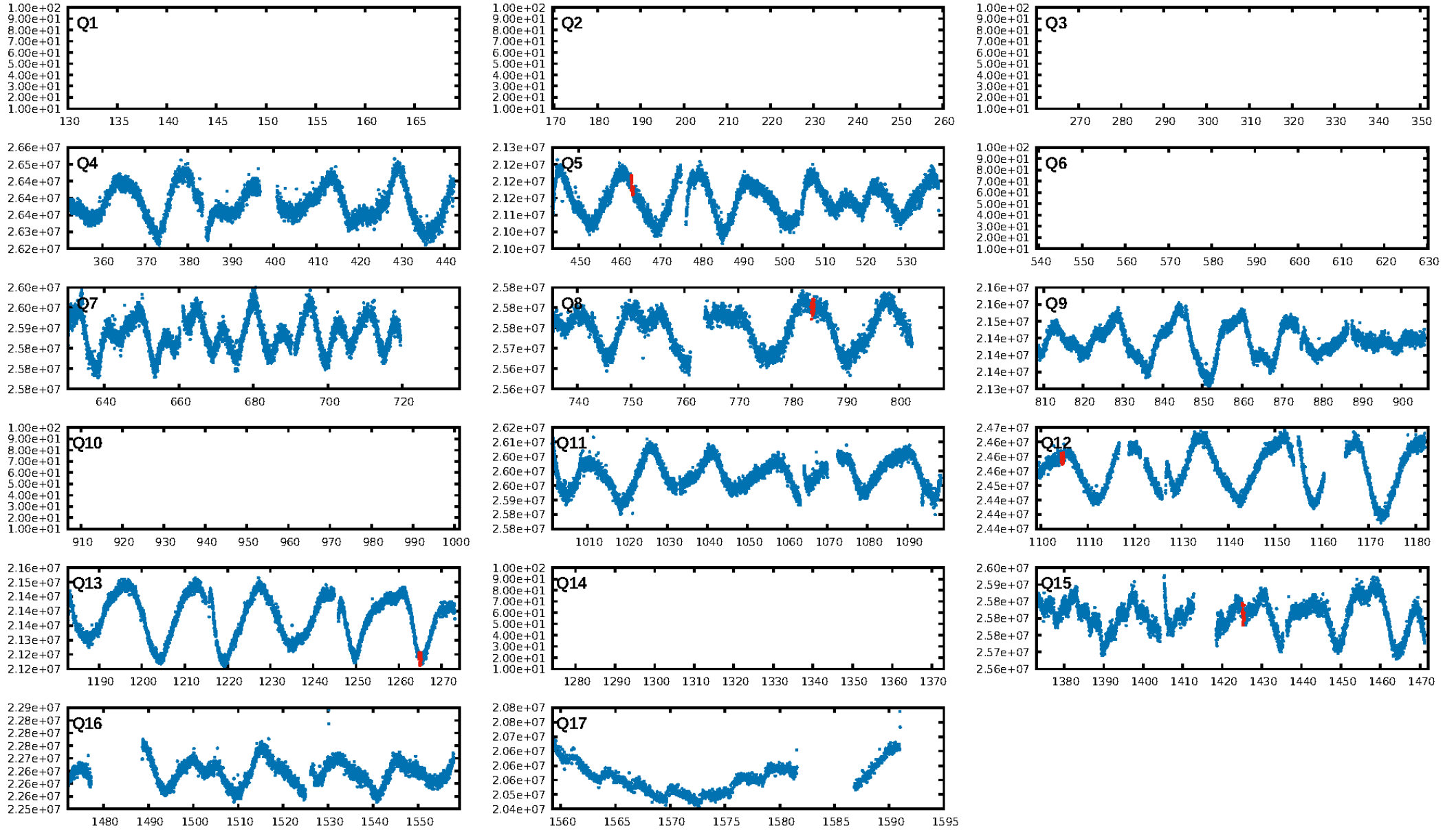
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 85.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.92e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.8215
Centroid-sig: 8.4%
Centroid-so: 5.529 arcsec [13.00σ]
OotOffset-rm: 1.589 arcsec [3.35σ]
KicOffset-rm: 7.281 arcsec [18.22σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [4/4]

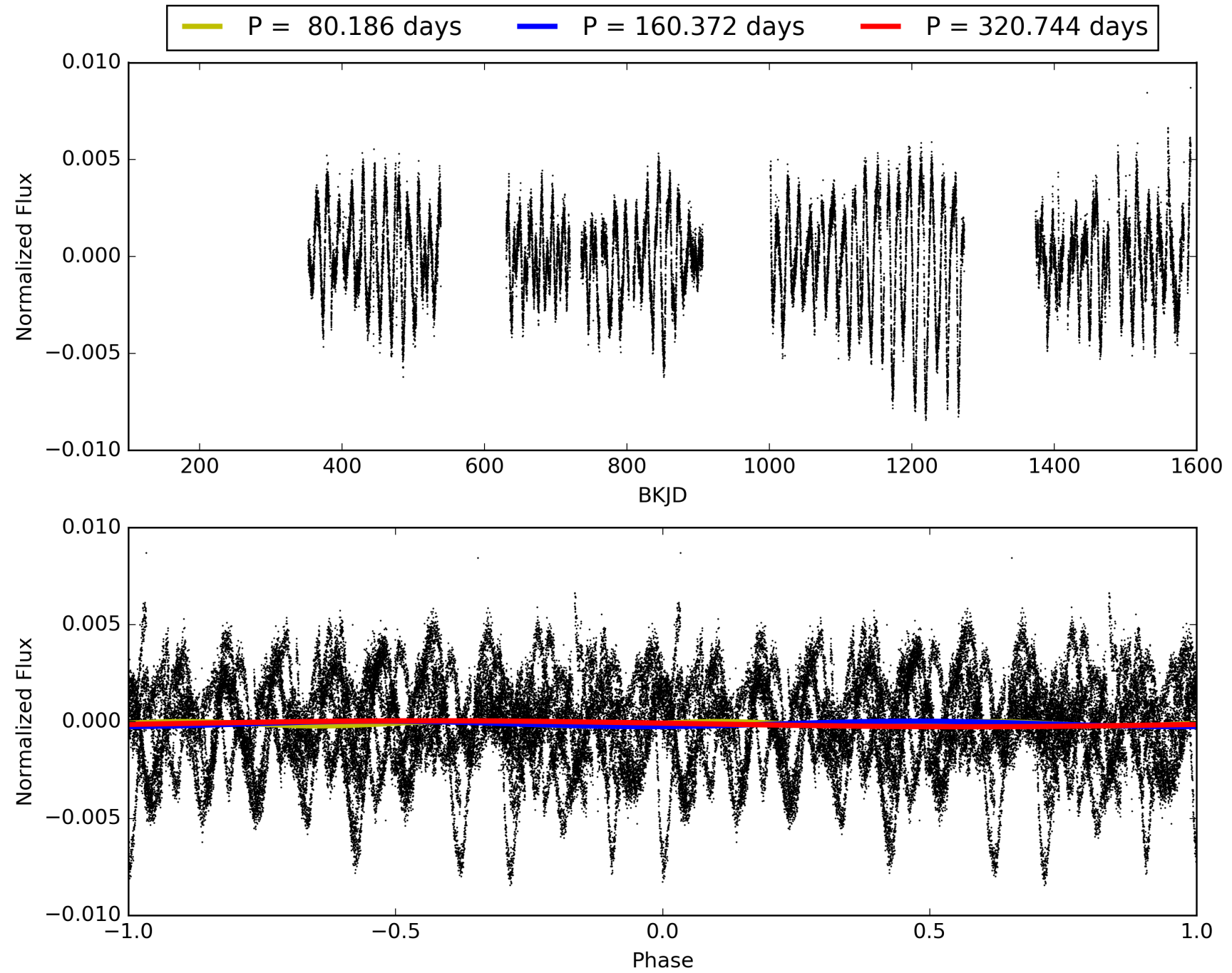
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 03:48:19 Z

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

TCE 004165502-01, PDC Light Curves

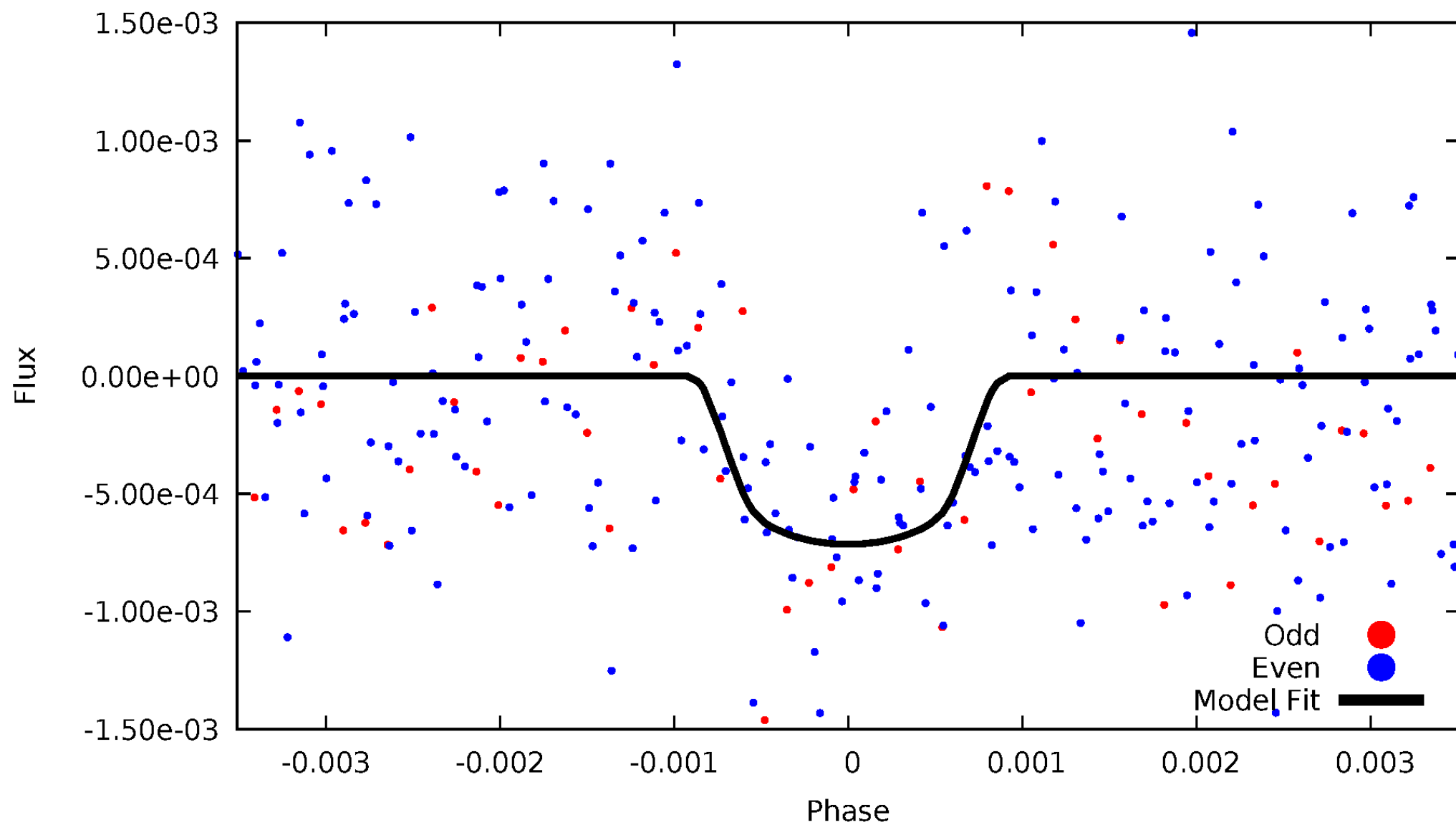


TCE 004165502-01



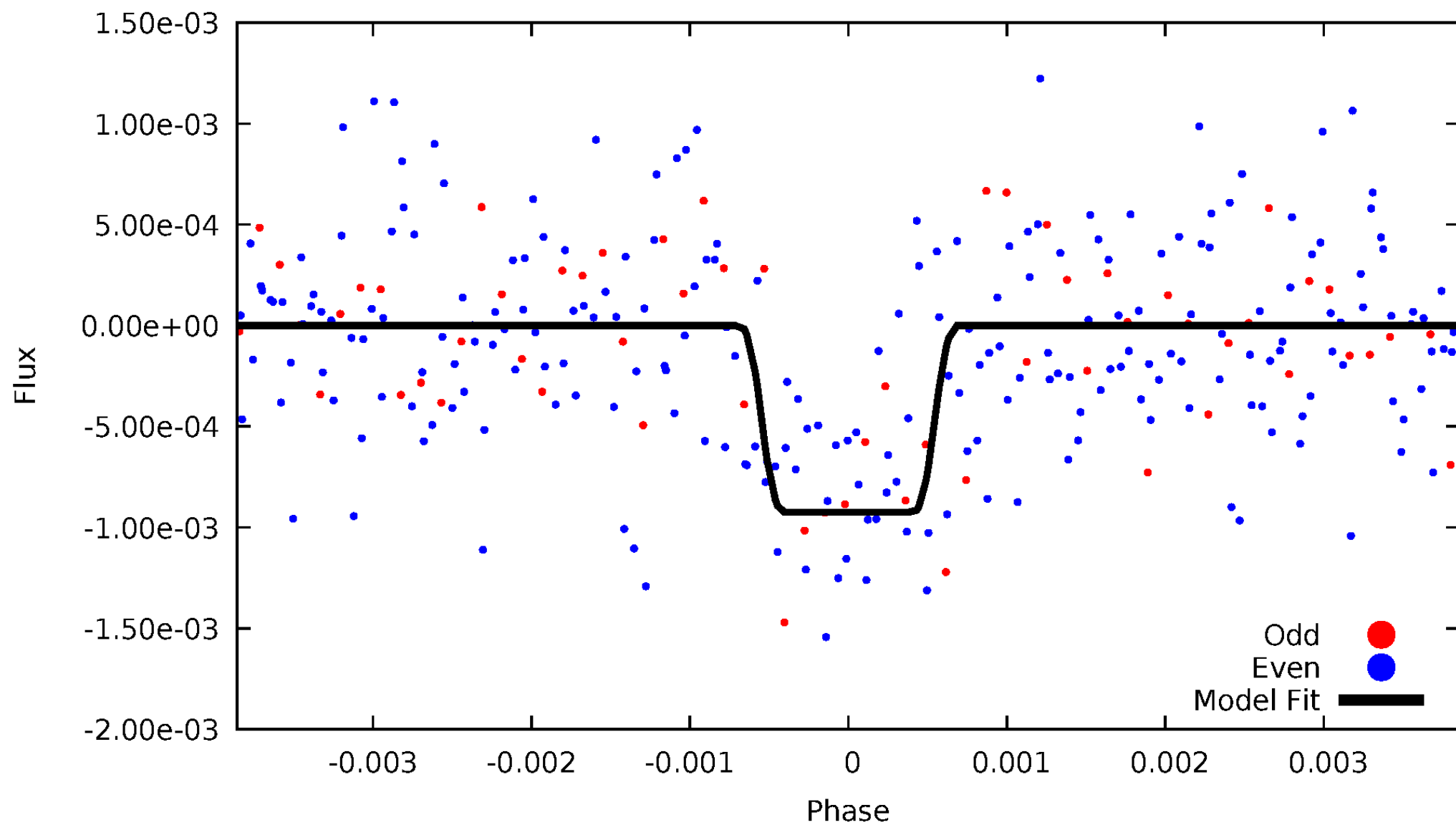
DV Odd/Even

TCE 004165502-01



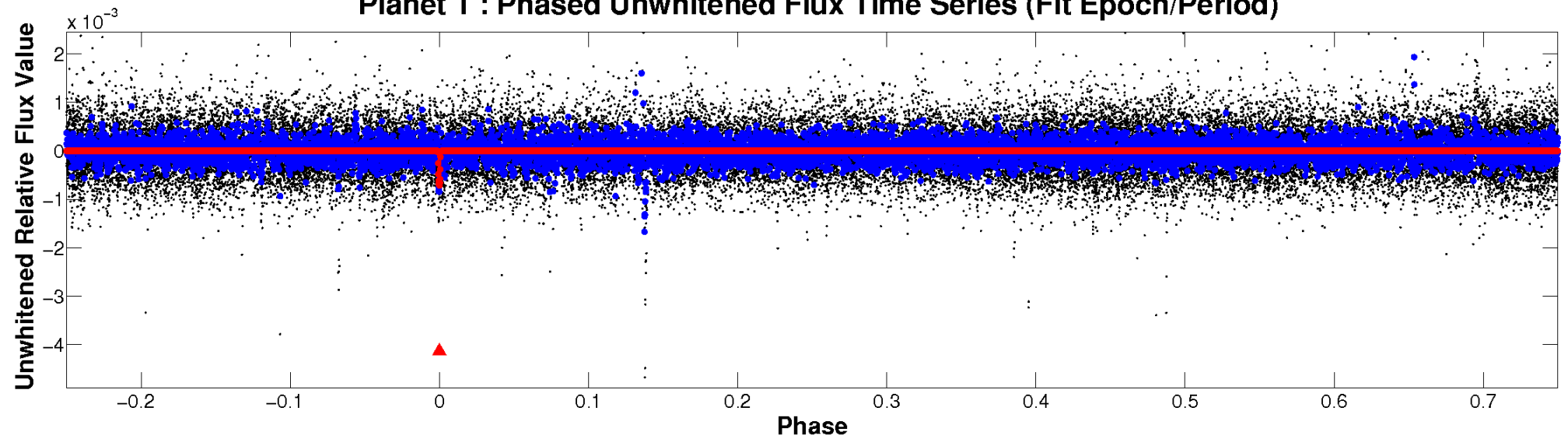
ALT Odd/Even

TCE 004165502-01

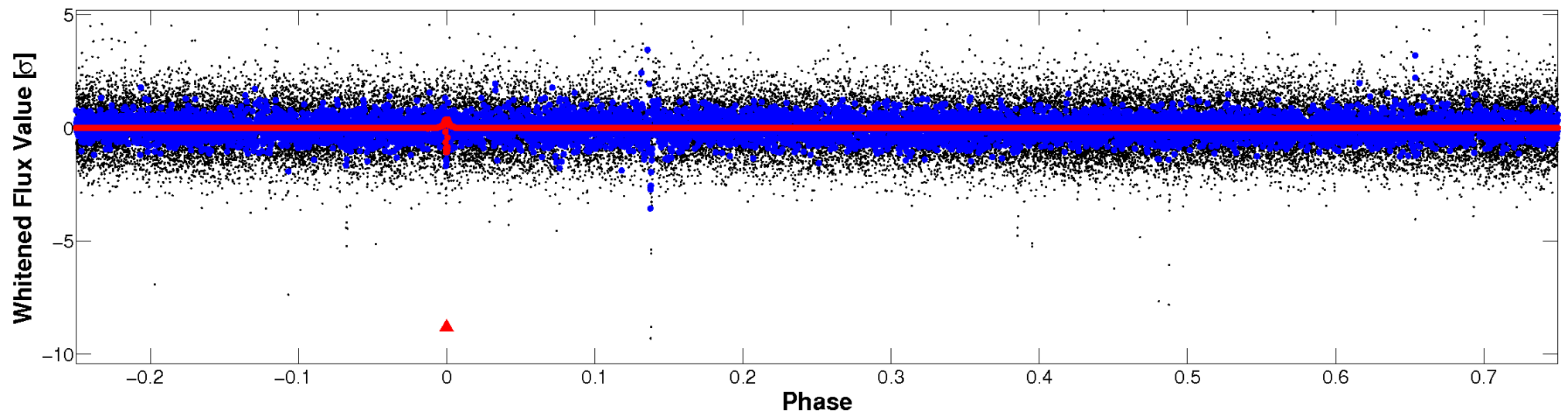


Non-Whitened Vs. Whitened Light Curve

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

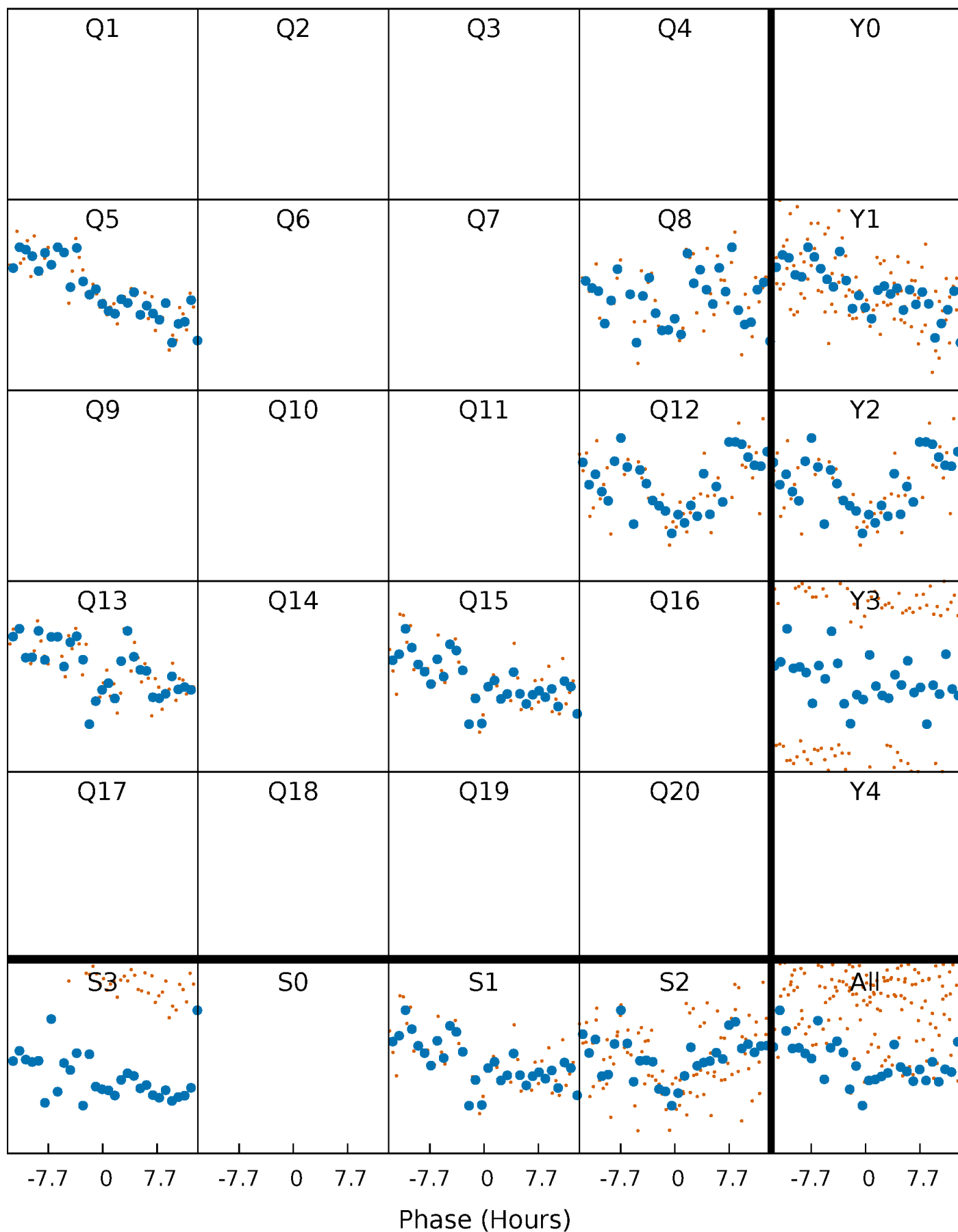


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



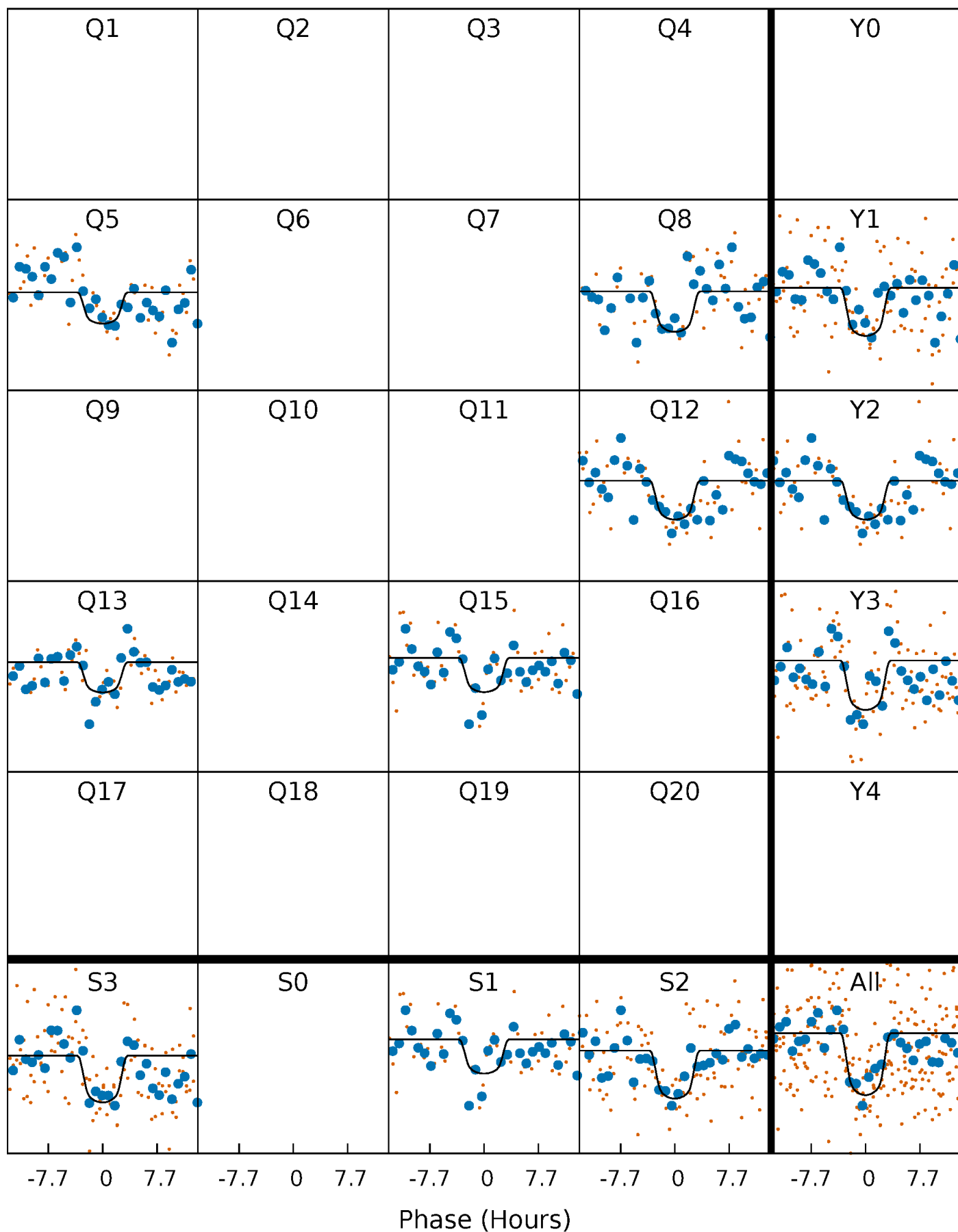
PDC Quarter-Phased Transit Curves

TCE 004165502-01 P=160.371765 Days $T_0=142.357901$ (BKJD)



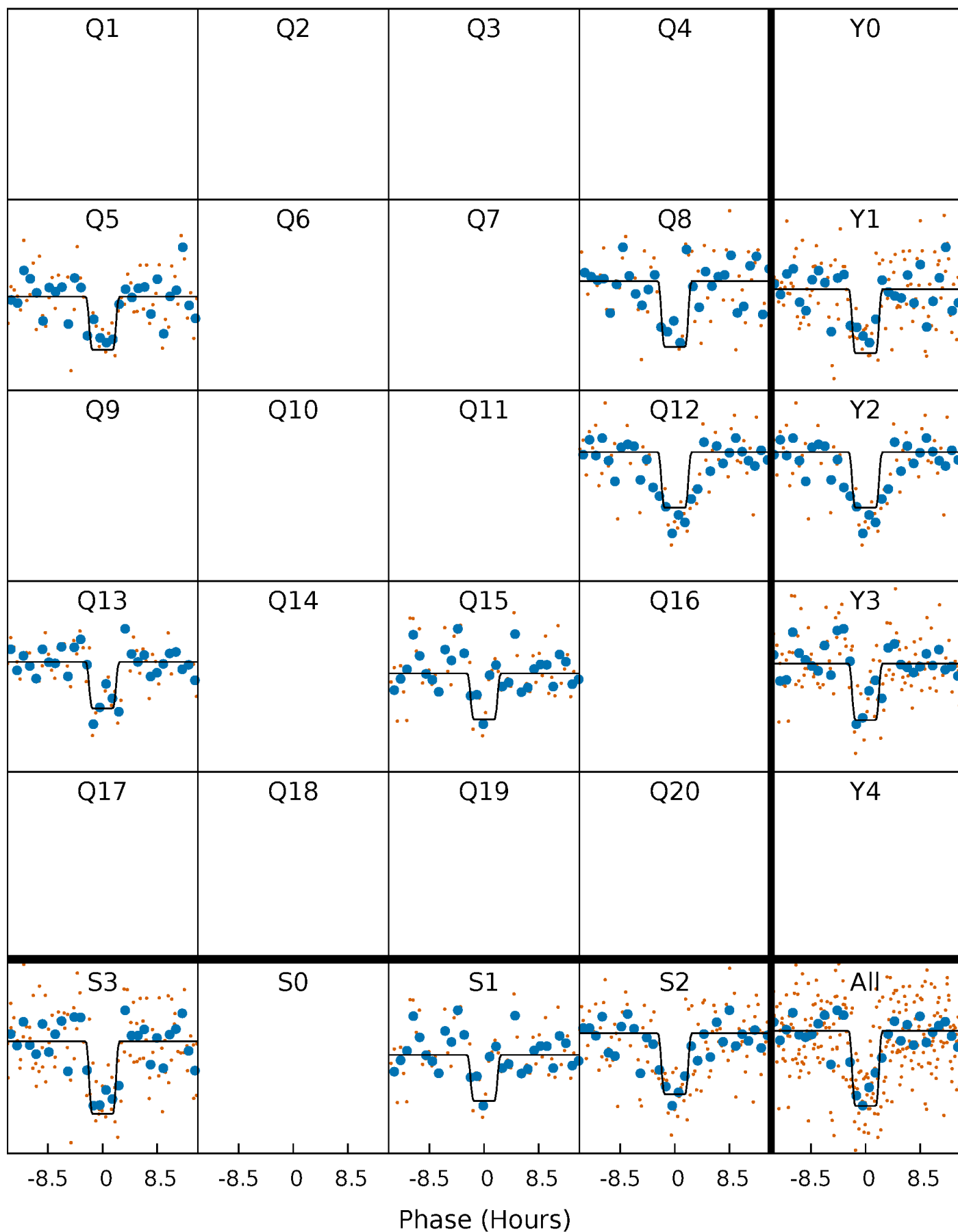
DV Quarter-Phased Transit Curves

TCE 004165502-01 P=160.371765 Days $T_0=142.357901$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

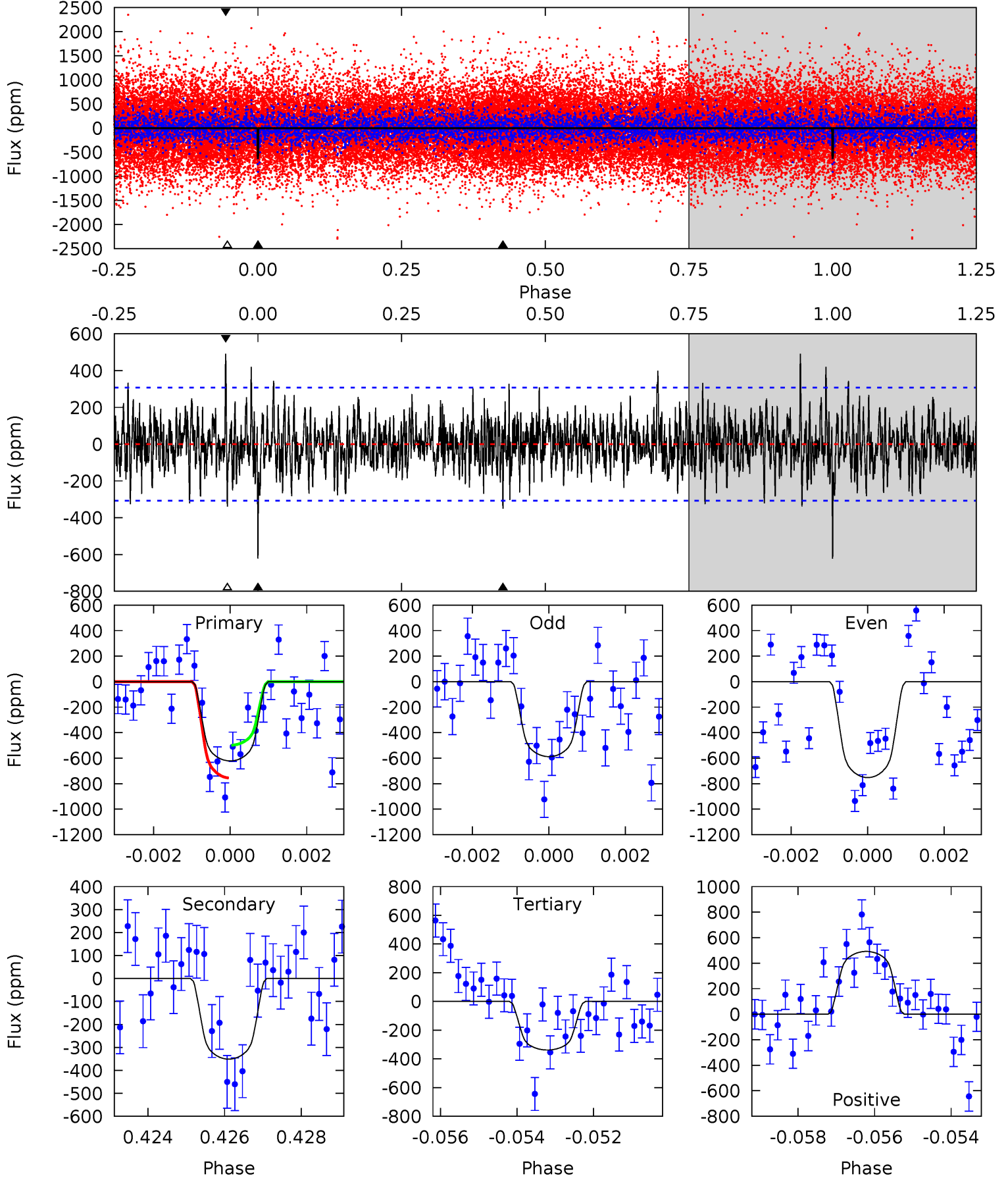
TCE 004165502-01 P=160.368089 Days $T_0=142.371351$ (BKJD)



DV Model-Shift Uniqueness Test

004165502-01, P = 160.371765 Days, E = 142.357901 Days

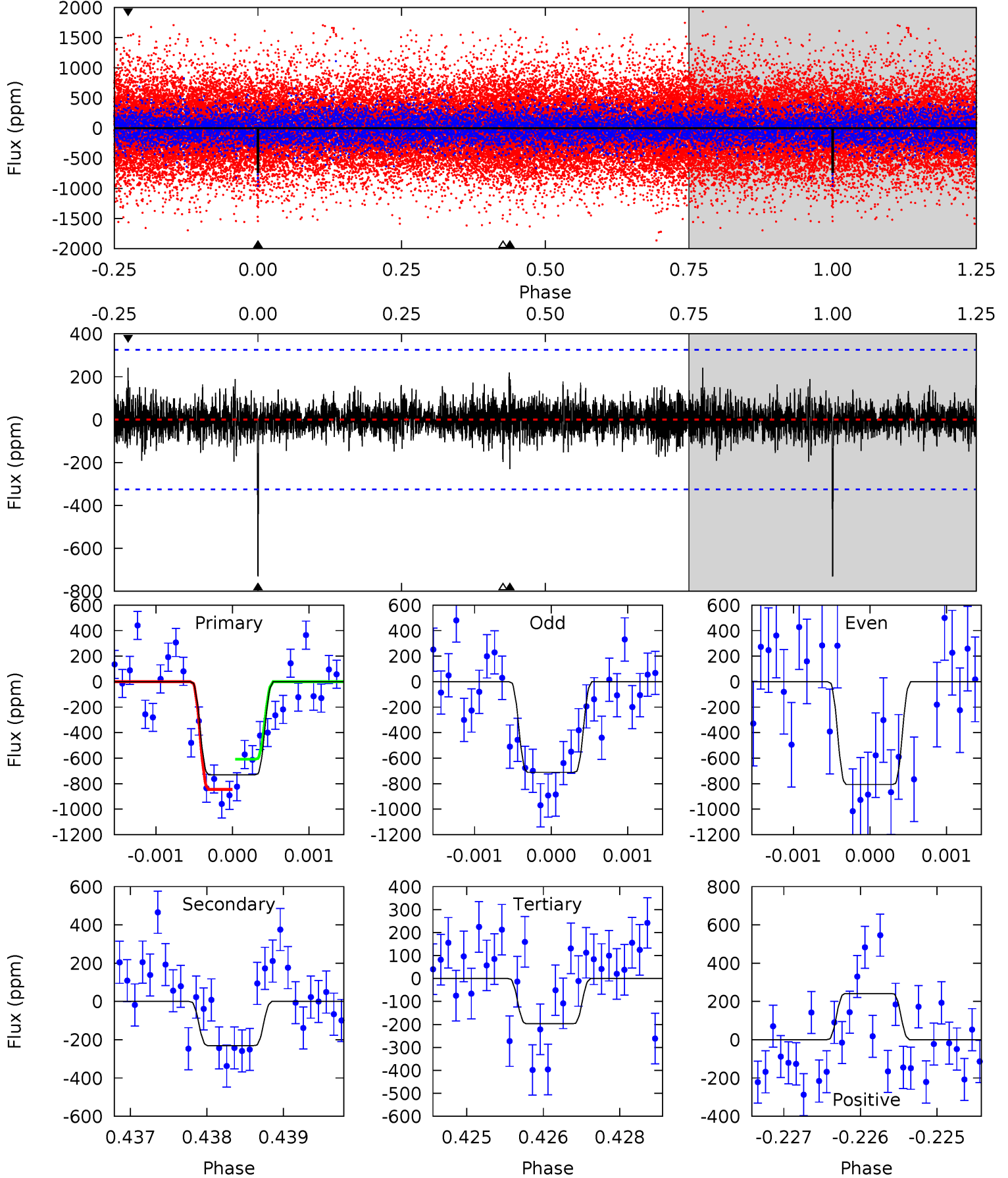
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	6.09	5.87	8.53	5.34	3.11	1.81	4.92	2.25	0.22	-2.44	1.17	0.95	0.44	2.23



Alt Model-Shift Uniqueness Test

004165502-01, P = 160.368089 Days, E = 142.371351 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	3.83	3.28	4.01	5.41	3.22	0.87	8.86	8.12	0.55	-0.18	0.66	1.05	0.25	1.97



Stellar Parameters For KIC 004165502

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4813^{+170}_{-170}	$4.565^{+0.061}_{-0.039}$	$-0.120^{+0.300}_{-0.300}$	$0.726^{+0.062}_{-0.069}$	$0.706^{+0.088}_{-0.054}$	$2.597^{+0.740}_{-0.400}$
	+4%/-4%	+1%/-1%	+250%/-250%	+9%/-10%	+12%/-8%	+28%/-15%
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 004165502-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-351 ± 58	$2.47^{+0.44}_{-0.41}$	351^{+15}_{-15}	3970^{+275}_{-272}	8399^{+3677}_{-2504}
Alt.	-231 ± 60	$2.42^{+0.42}_{-0.42}$	351^{+14}_{-15}	3715^{+301}_{-261}	5866^{+3143}_{-2097}

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

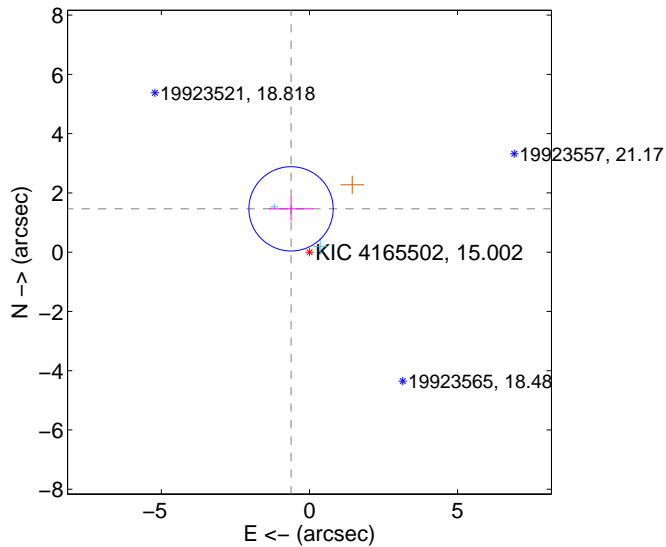
Supplemental centroid analysis for 004165502-01. Kepler magnitude: 15.00. Transit SNR 7.44

There are 2 quarters with good PRF difference image offsets

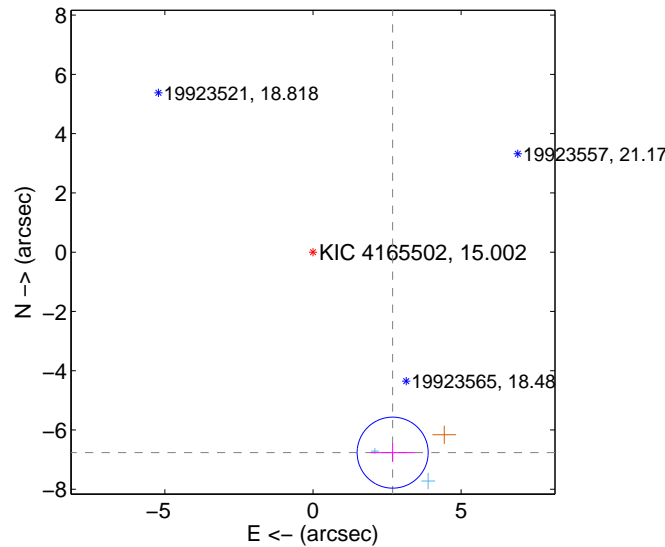
The OOT PRF centroid is offset from the target star catalog position by about 8.67 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.589 ± 0.474	3.35	0.622 ± 0.744	1.462 ± 0.407
PRF-fit source offset from KIC position	7.281 ± 0.400	18.22	-2.689 ± 0.749	-6.766 ± 0.310
photometric centroid source offset	5.53 ± 0.43	13.00	-2.12 ± 0.23	-5.11 ± 0.45

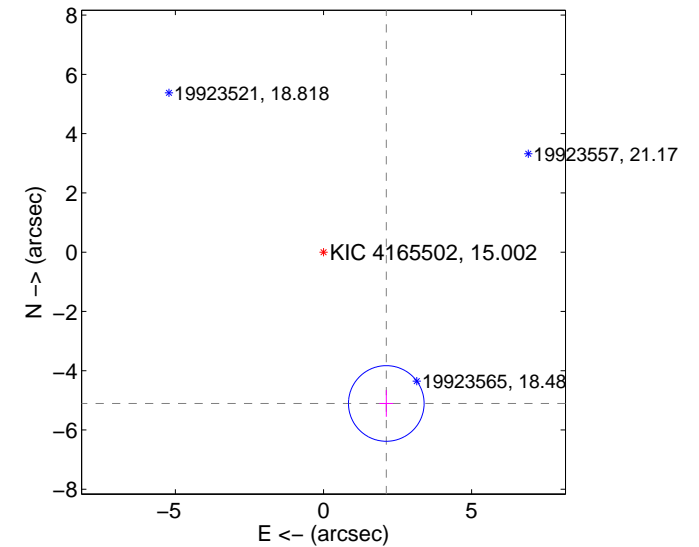
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

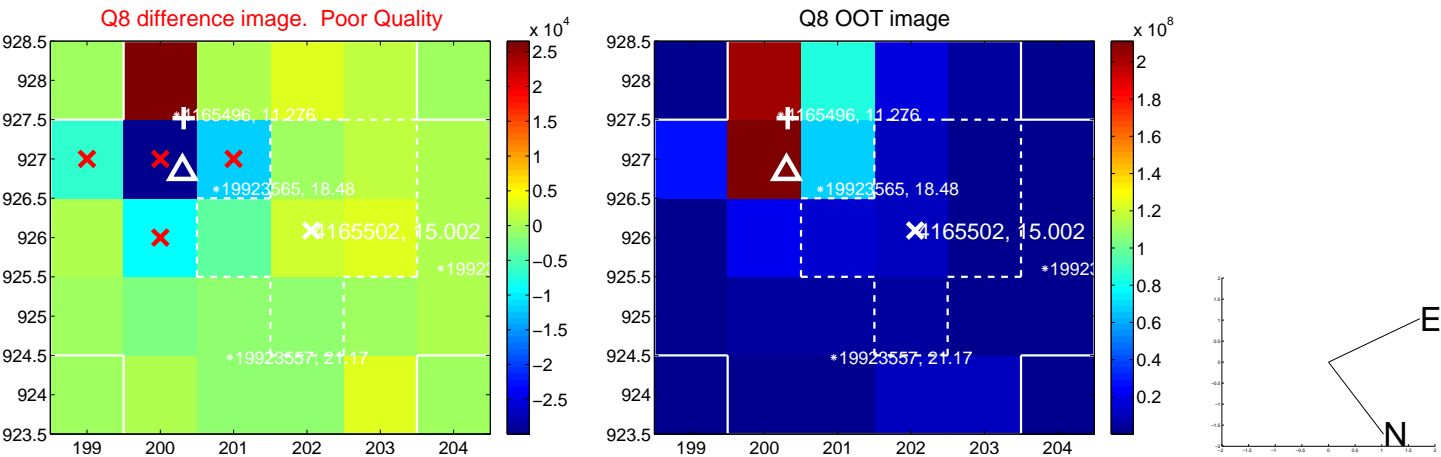
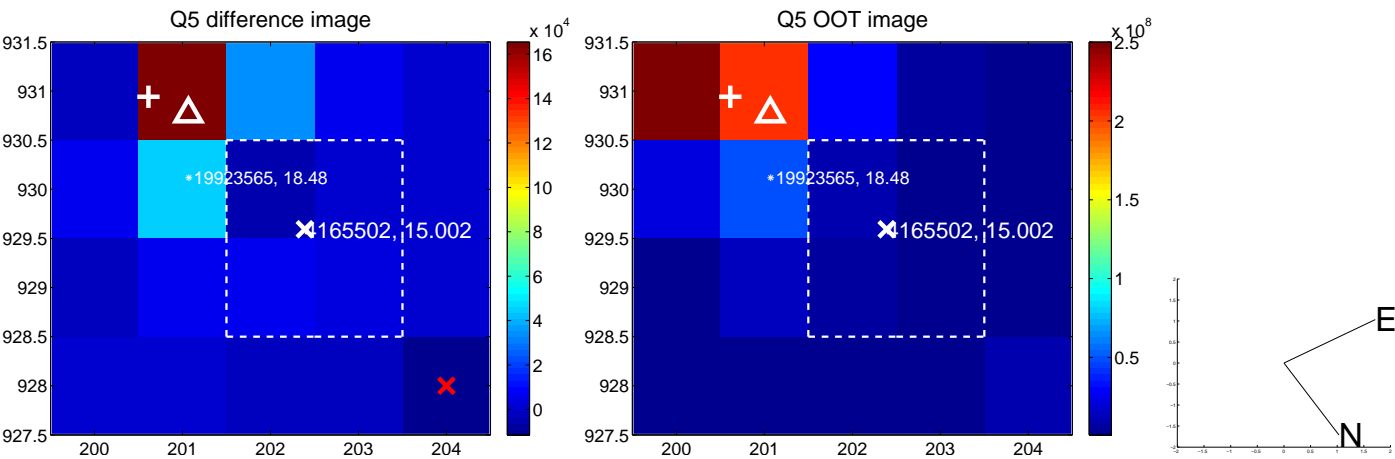


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



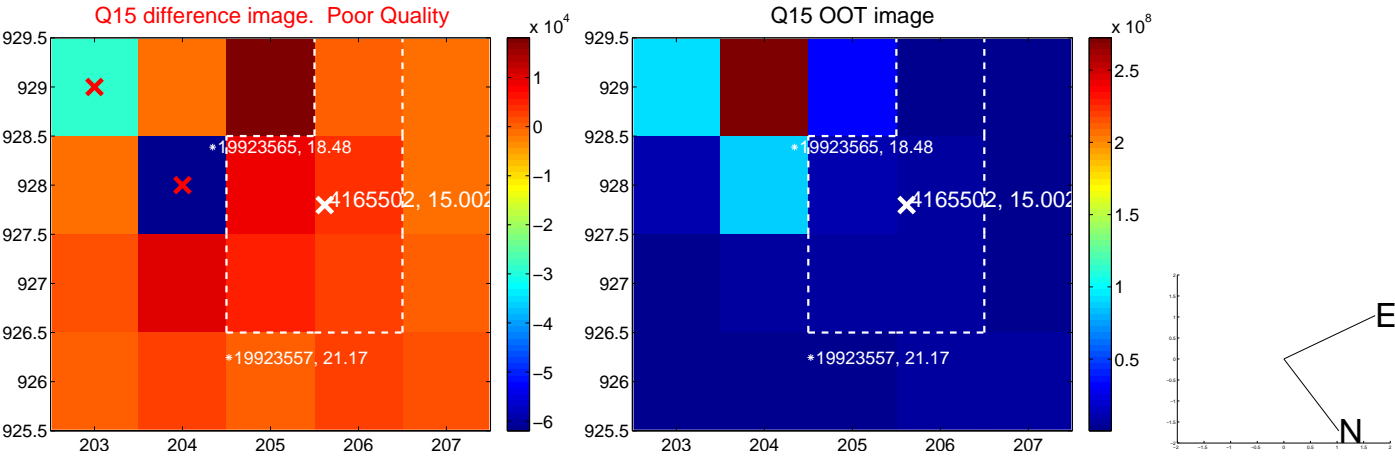
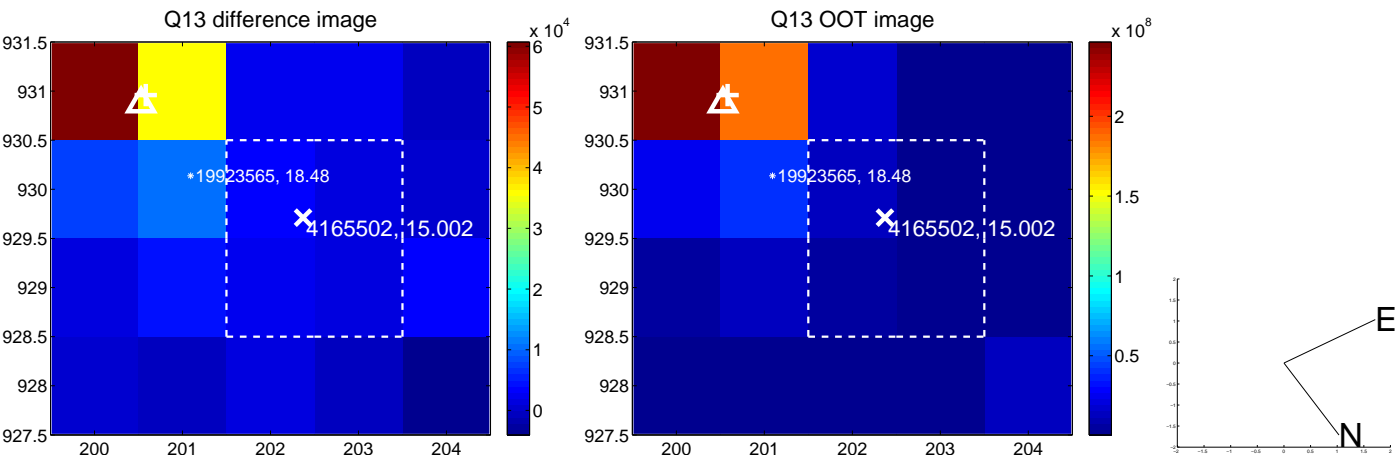
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



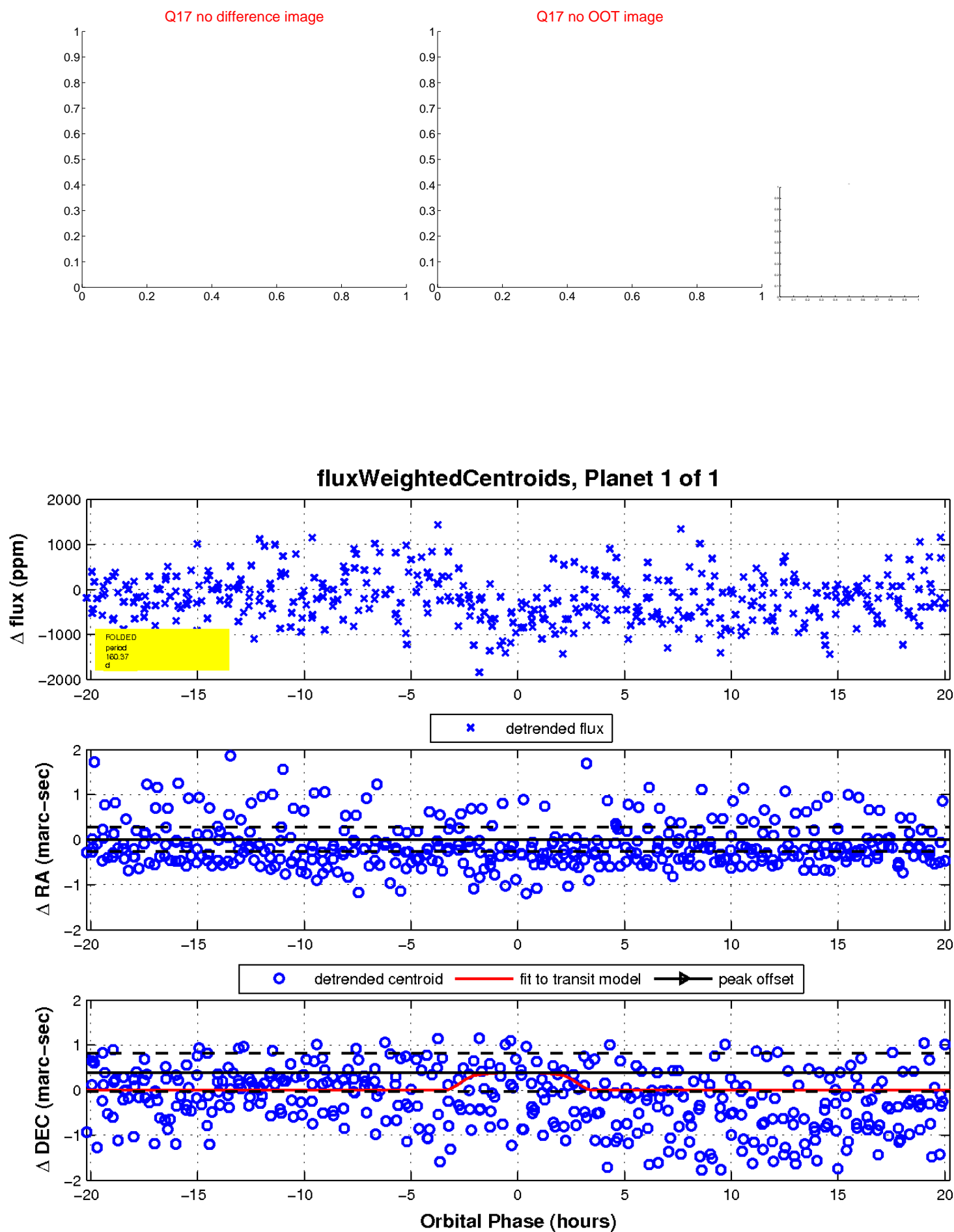
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

