

KIC 009220159

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})
009220159-01	OBS	No	428.201711	519.867727	827.8	16.837	7.6	9.6	1.08	6214	3.19	1.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009220159-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

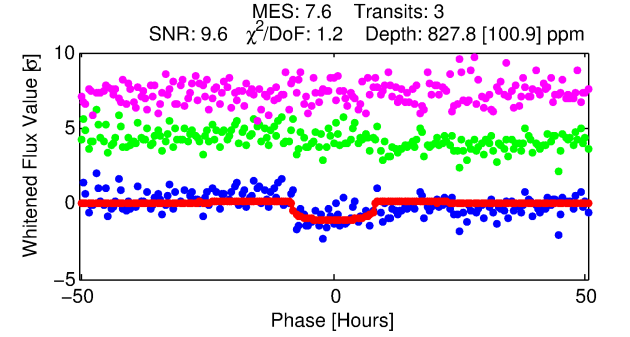
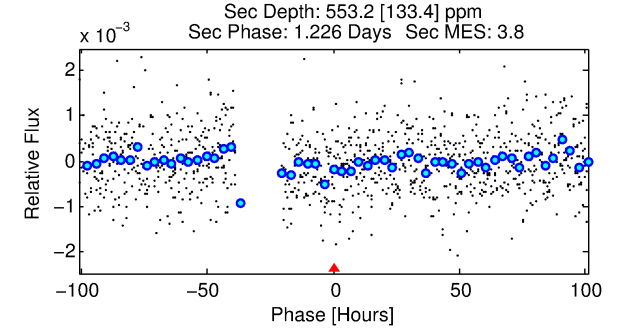
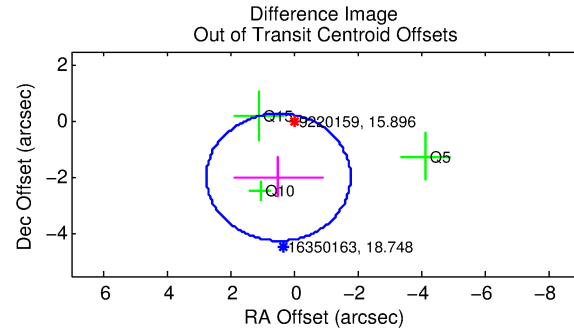
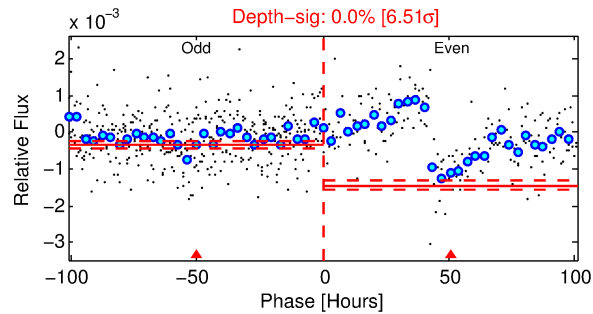
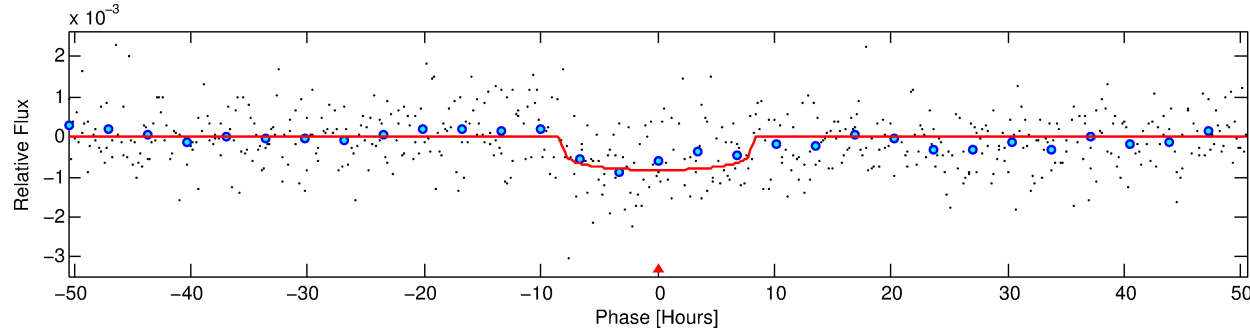
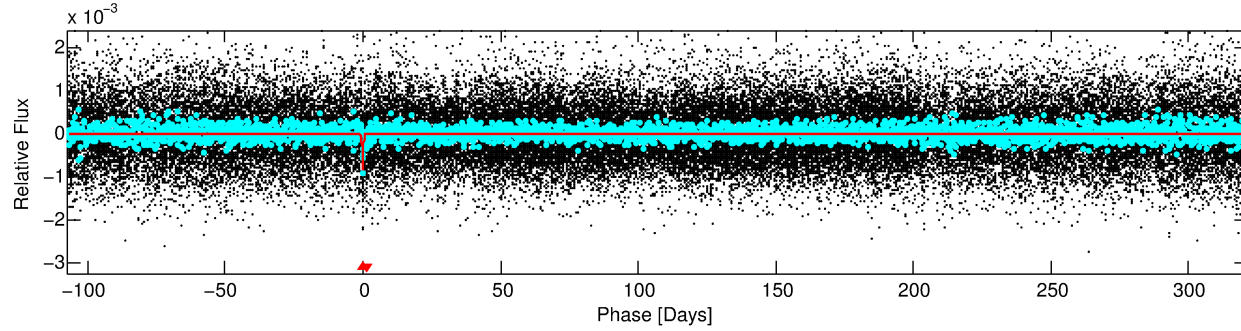
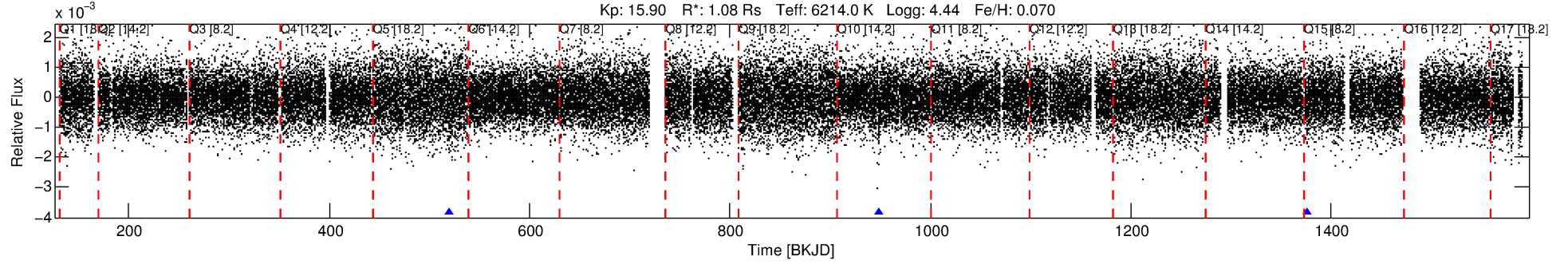
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009220159-01

No Significant Match Found

DV One-Page Summary

KIC: 9220159 Candidate: 1 of 1 Period: 428.202 d



DV Fit Results:

Period = 428.20171 [0.02079] d
Epoch = 519.8677 [0.0260] BKJD
Rp/R* = 0.0272 [0.0126]
a/R* = 171.66 [384.83]
b = 0.52 [3.12]
Seff = 1.13 [0.44]
Teq = 263 [25] K
Rp = 3.19 [1.75] Re
a = 1.1713 [0.2882] AU
Ag = 40968.69 [41806.80] [0.98 σ]
Teffp = 5780 [1400] K [3.94 σ]

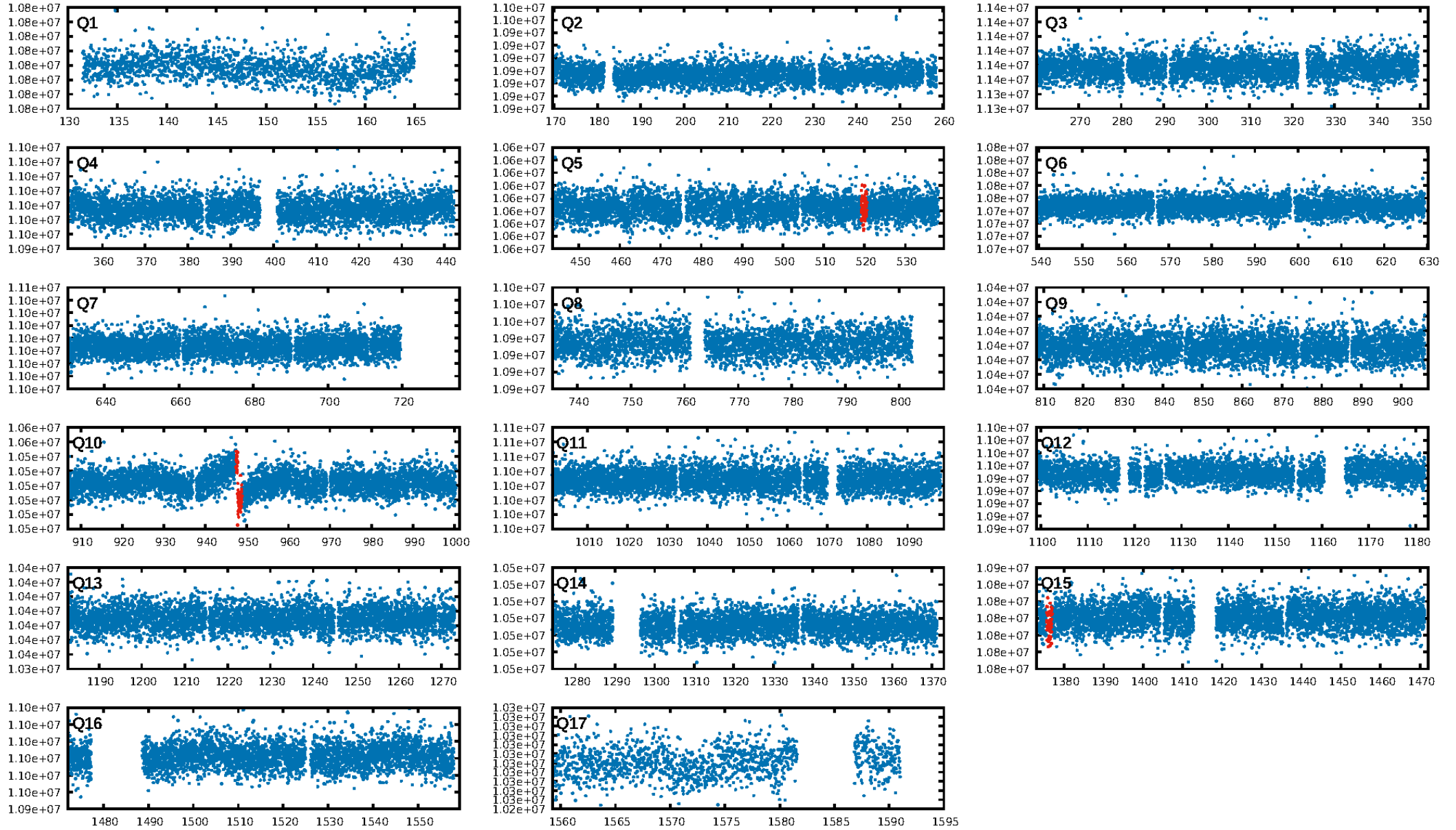
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 91.3%
Bootstrap-pfa: 2.53e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 6.311
Centroid-sig: 0.0%
Centroid-so: 4.248 arcsec [2.86 σ]
OotOffset-rm: 2.041 arcsec [2.70 σ]
KicOffset-rm: 2.245 arcsec [1.81 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

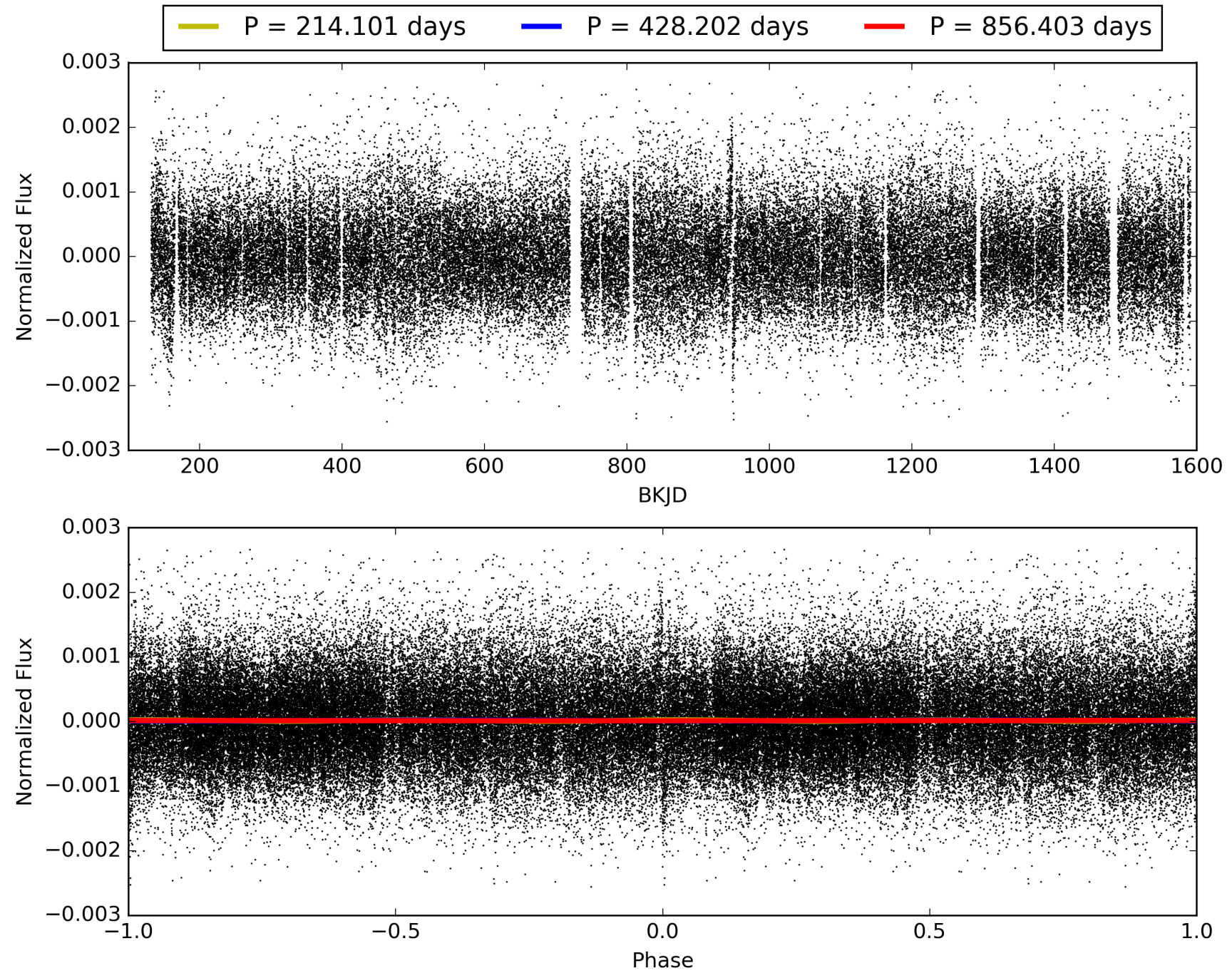
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:29:58 Z

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

TCE 009220159-01, PDC Light Curves

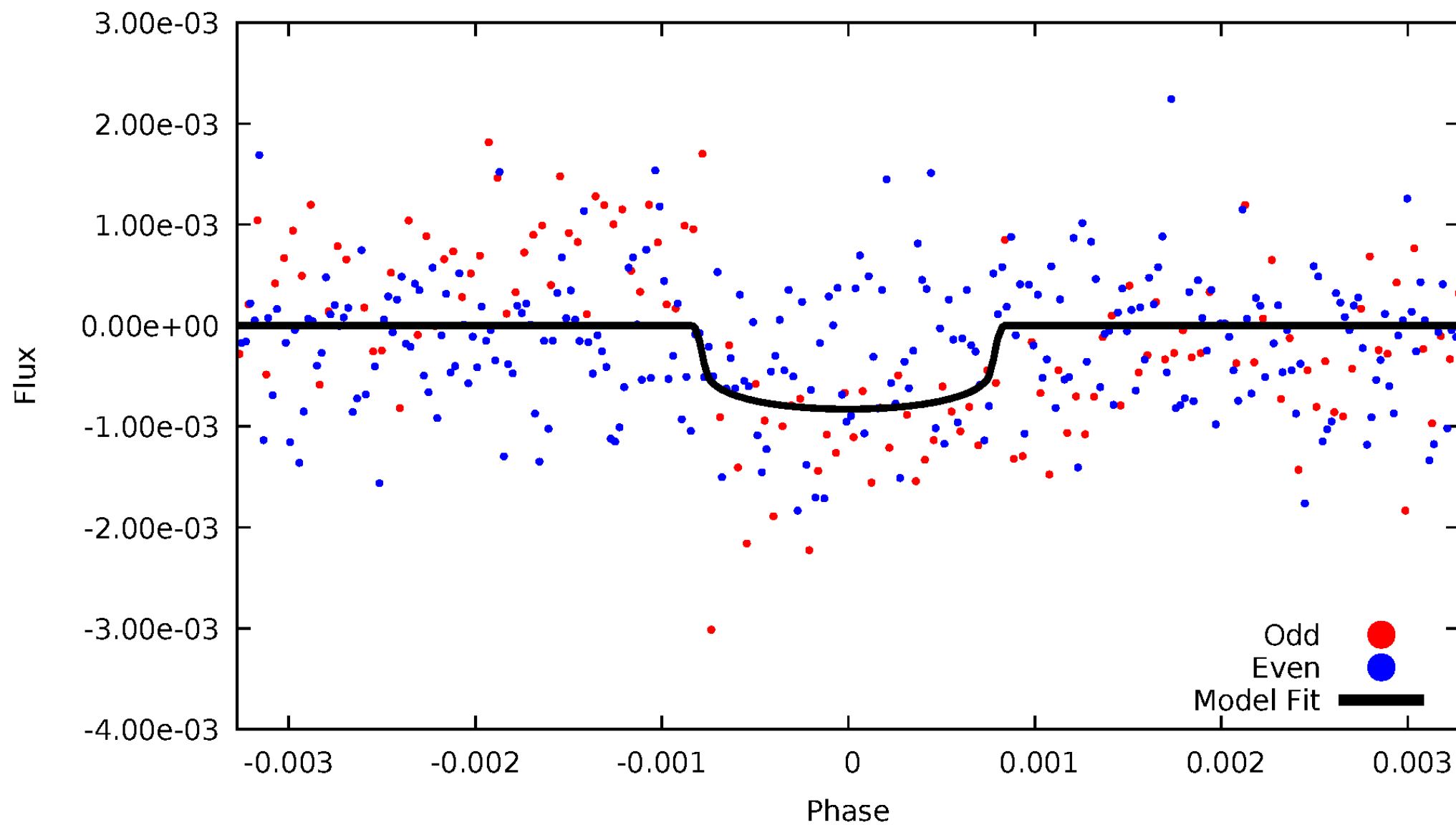


TCE 009220159-01



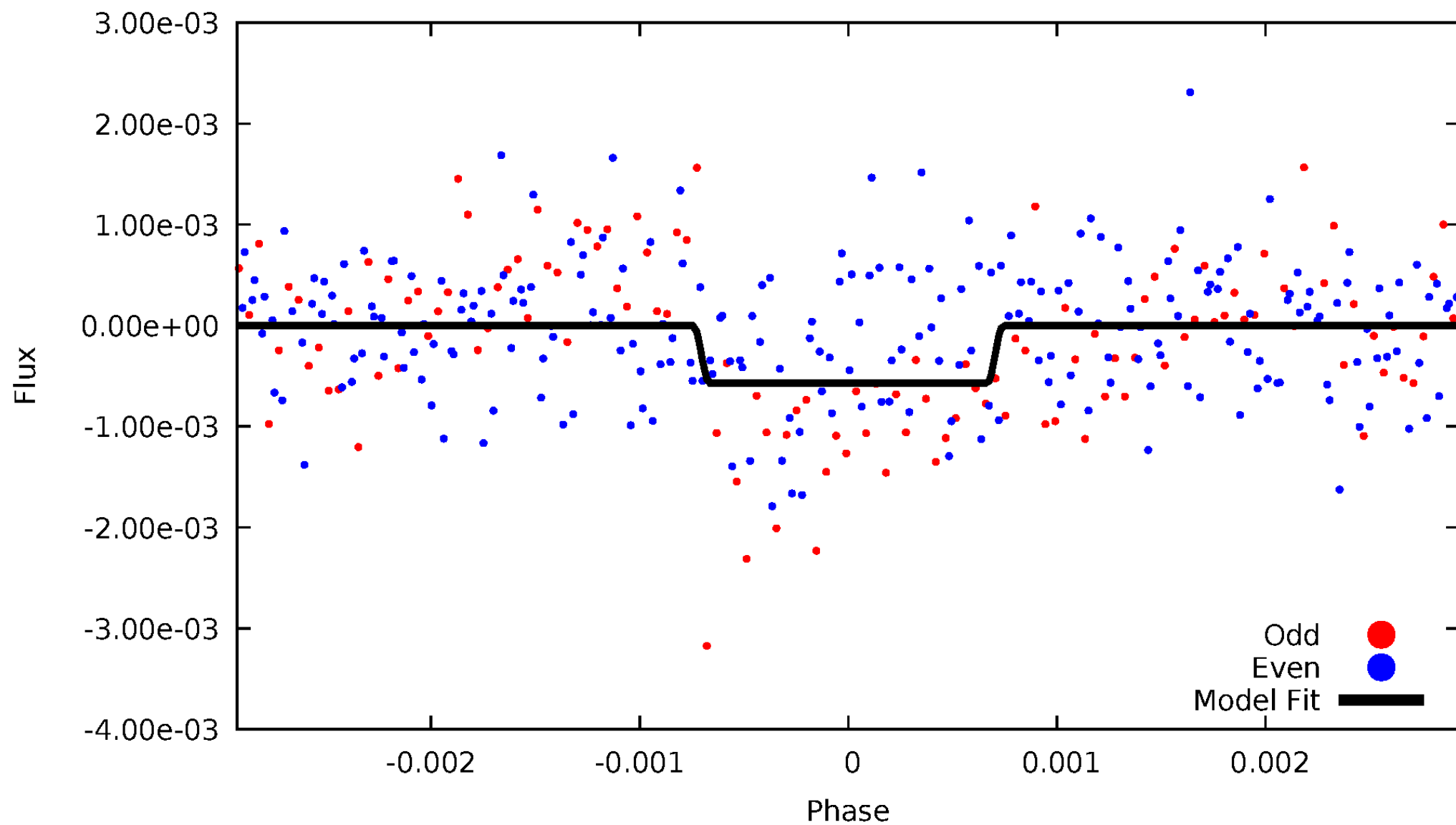
DV Odd/Even

TCE 009220159-01



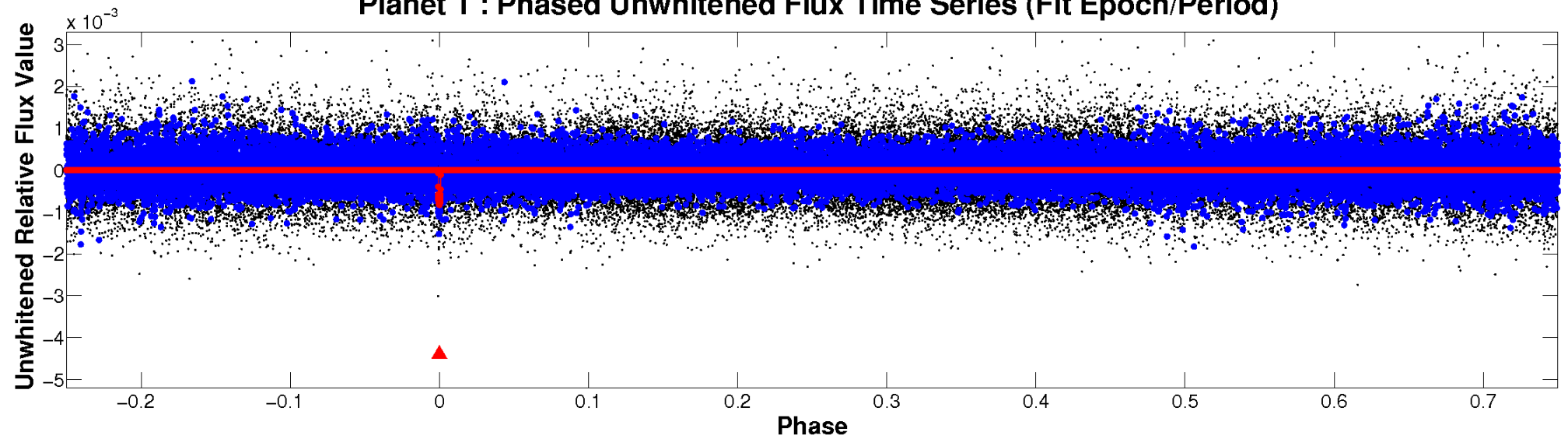
ALT Odd/Even

TCE 009220159-01

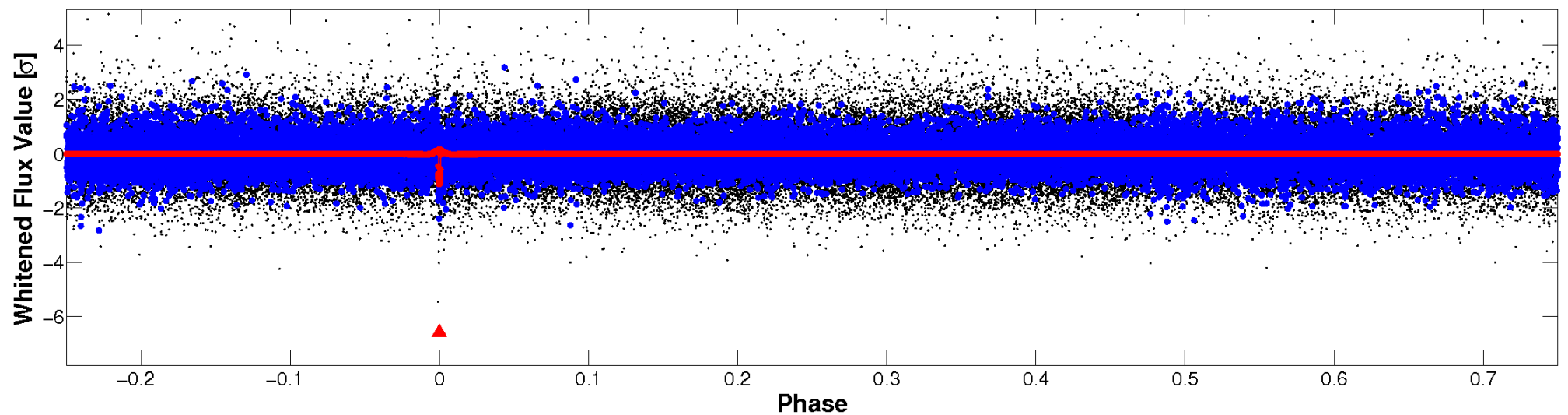


Non-Whitened Vs. Whitened Light Curve

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 009220159-01 P=428.201711 Days $T_0=519.867727$ (BKJD)



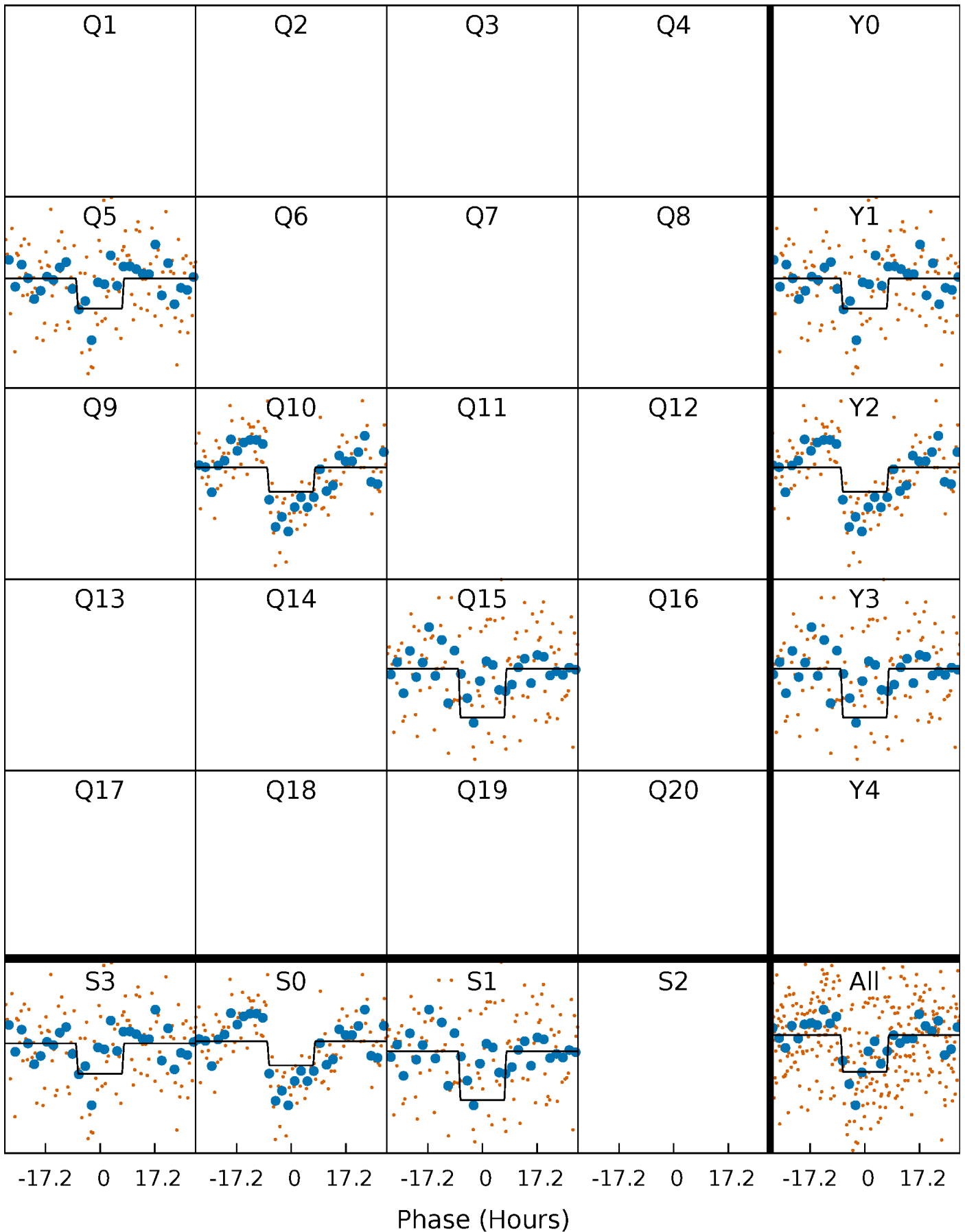
DV Quarter-Phased Transit Curves

TCE 009220159-01 P=428.201711 Days $T_0=519.867727$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

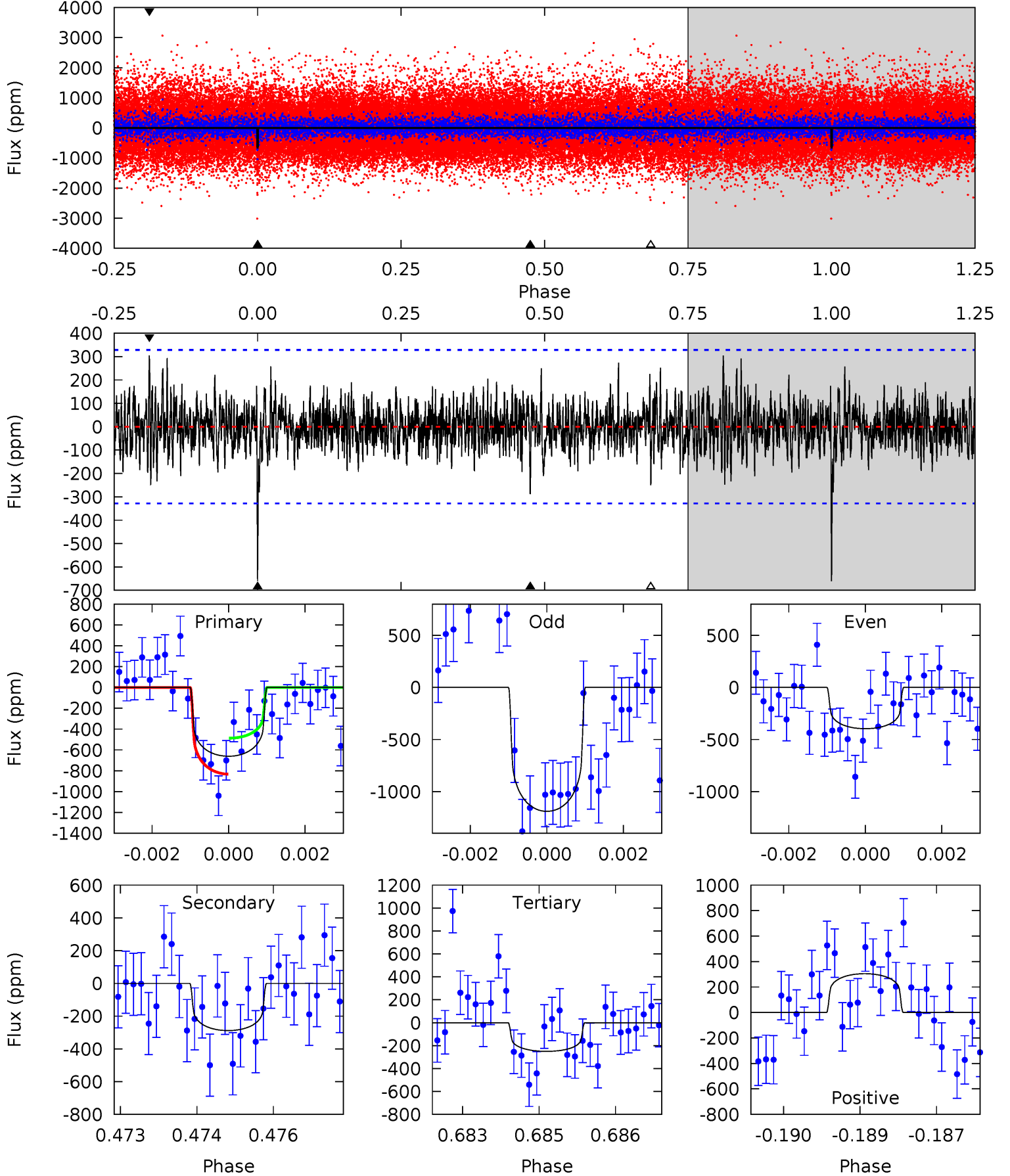
TCE 009220159-01 P=428.137571 Days $T_0=519.907577$ (BKJD)



DV Model-Shift Uniqueness Test

009220159-01, P = 428.201711 Days, E = 91.666016 Days

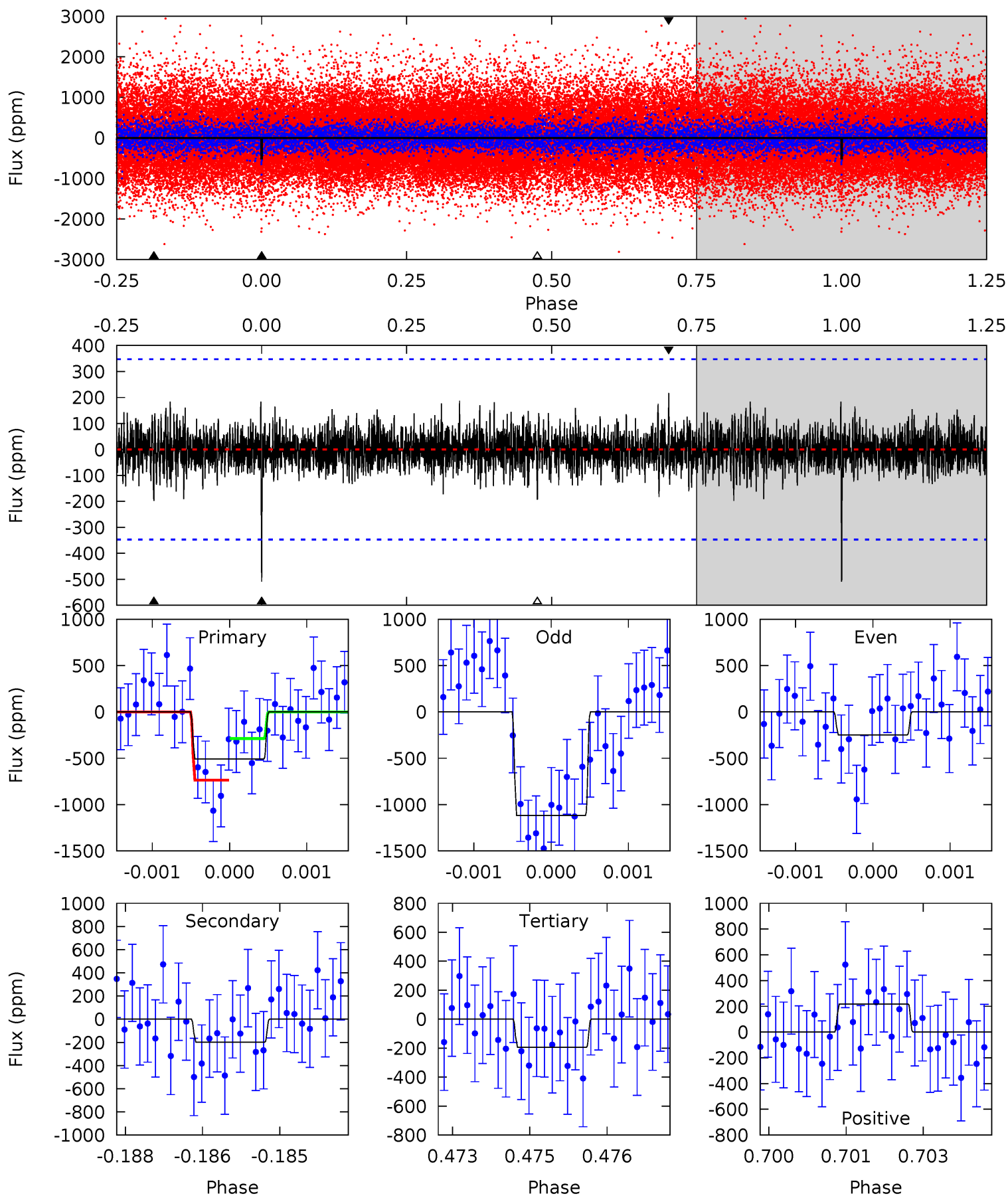
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	4.70	4.08	4.97	5.36	3.14	1.21	6.70	5.81	0.62	-0.27	6.10	1.50	0.32	2.80



Alt Model-Shift Uniqueness Test

009220159-01, $P = 428.137571$ Days, $E = 91.770006$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.89	3.07	3.00	3.36	5.38	3.18	0.79	4.89	4.53	0.07	-0.29	6.38	1.80	0.30	3.47



Stellar Parameters For KIC 009220159

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6214^{+174}_{-239}	$4.442^{+0.060}_{-0.192}$	$0.070^{+0.250}_{-0.350}$	$1.076^{+0.318}_{-0.127}$	$1.169^{+0.141}_{-0.173}$	$1.321^{+0.354}_{-0.674}$
	+3%/-4%	+1%/-4%	+357%/-500%	+30%/-12%	+12%/-15%	+27%/-51%
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 009220159-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-288 ± 61	$3.40^{+1.52}_{-1.62}$	374^{+23}_{-20}	4989^{+1511}_{-750}	18536^{+48650}_{-10035}
Alt.	-198 ± 64	$2.94^{+1.59}_{-1.41}$	374^{+27}_{-20}	4823^{+1784}_{-792}	16780^{+51201}_{-10342}

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

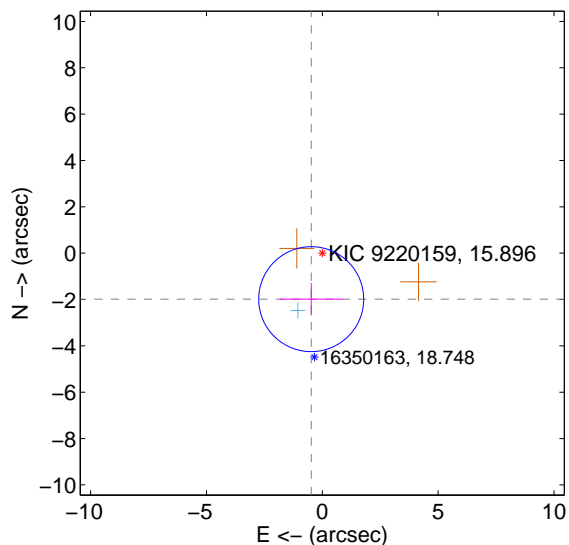
Supplemental centroid analysis for 009220159-01. Kepler magnitude: 15.90. Transit SNR 9.64

There are 1 quarters with good PRF difference image offsets

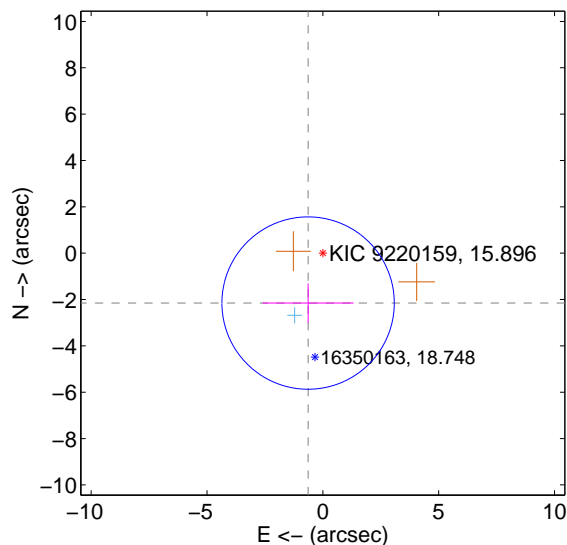
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.041 ± 0.755	2.70	0.479 ± 1.362	-1.984 ± 0.703
PRF-fit source offset from KIC position	2.245 ± 1.240	1.81	0.636 ± 1.965	-2.153 ± 0.846
photometric centroid source offset	4.25 ± 1.48	2.86	1.20 ± 1.27	-4.07 ± 1.50

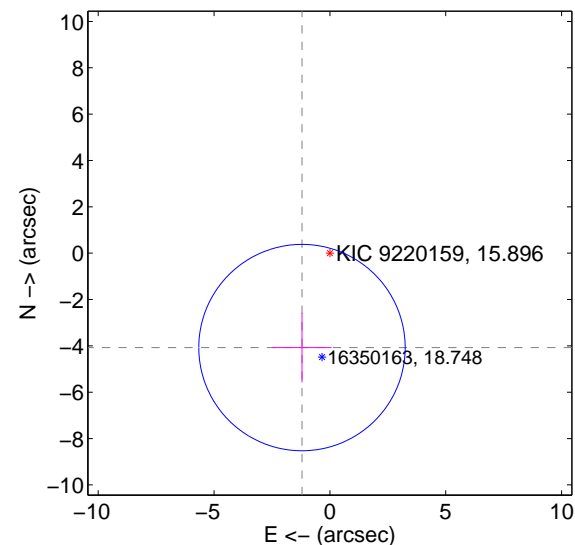
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

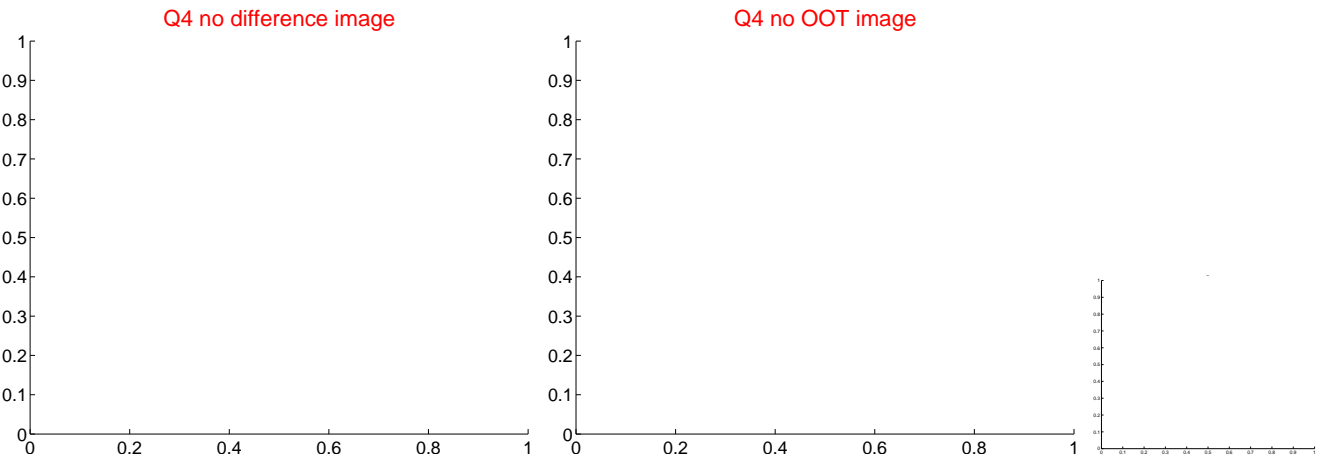
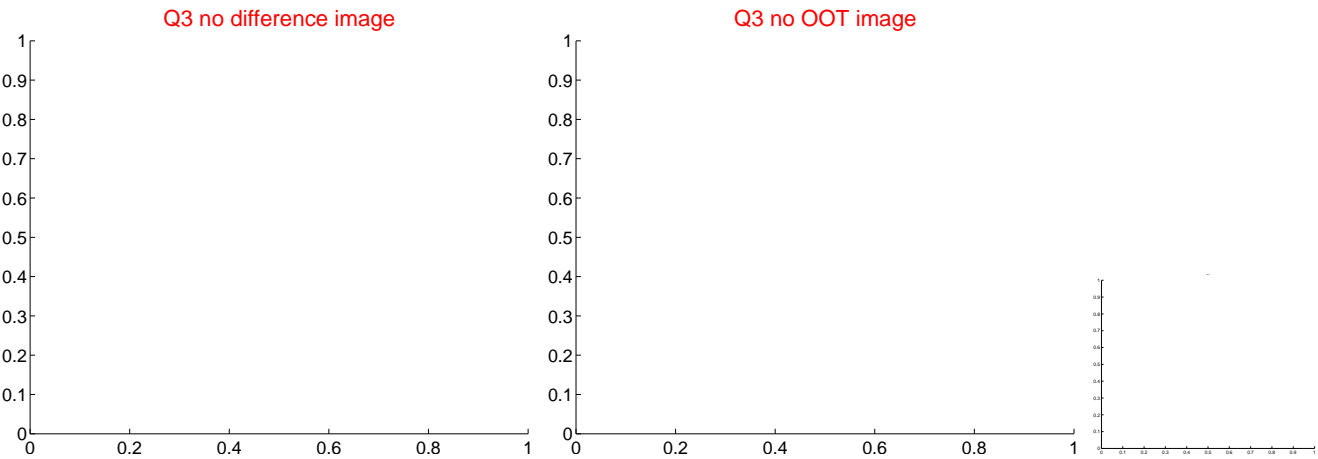
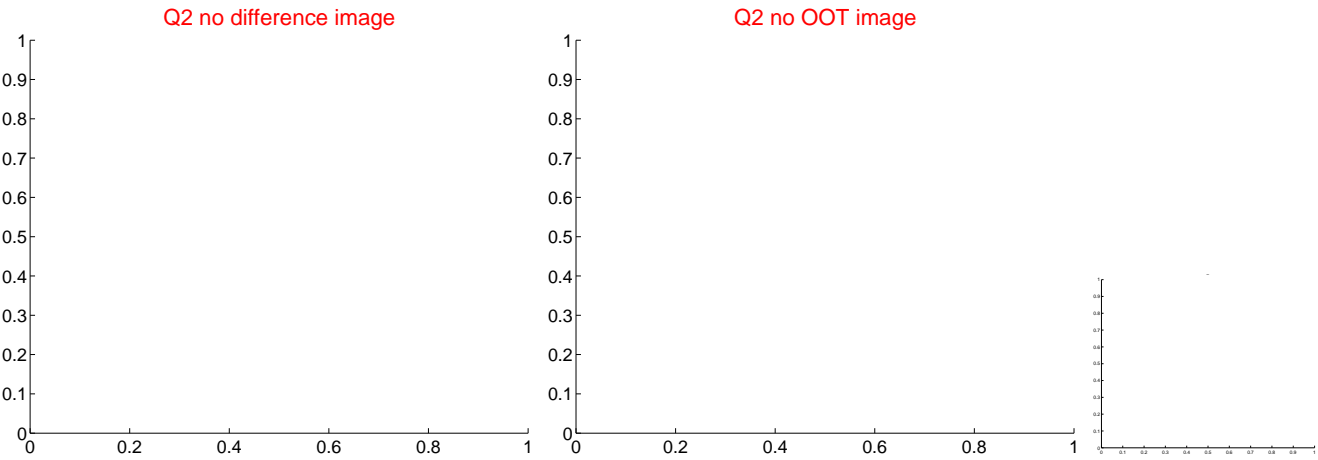
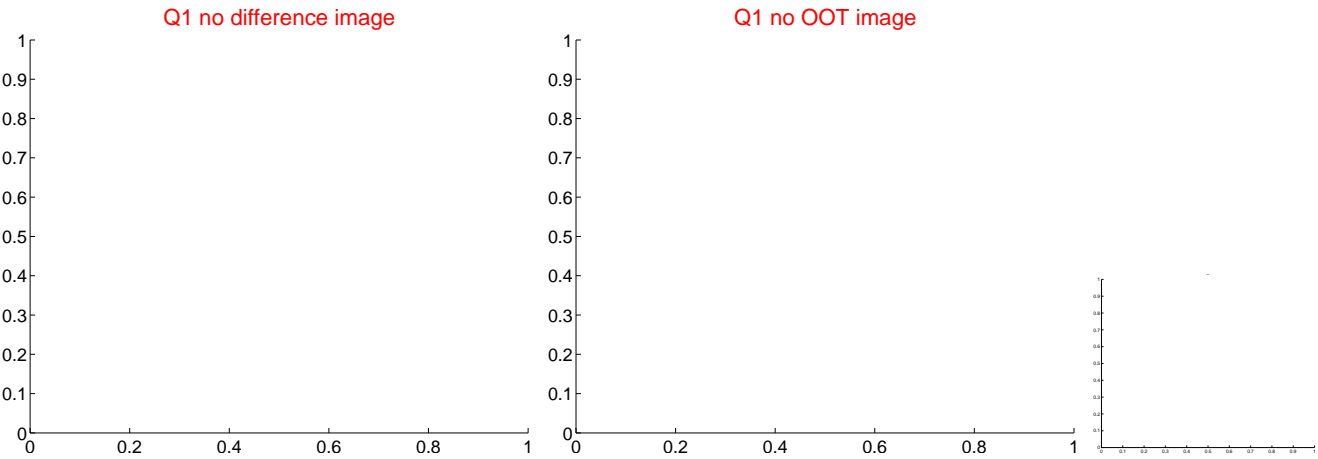


offset from photometric centroids

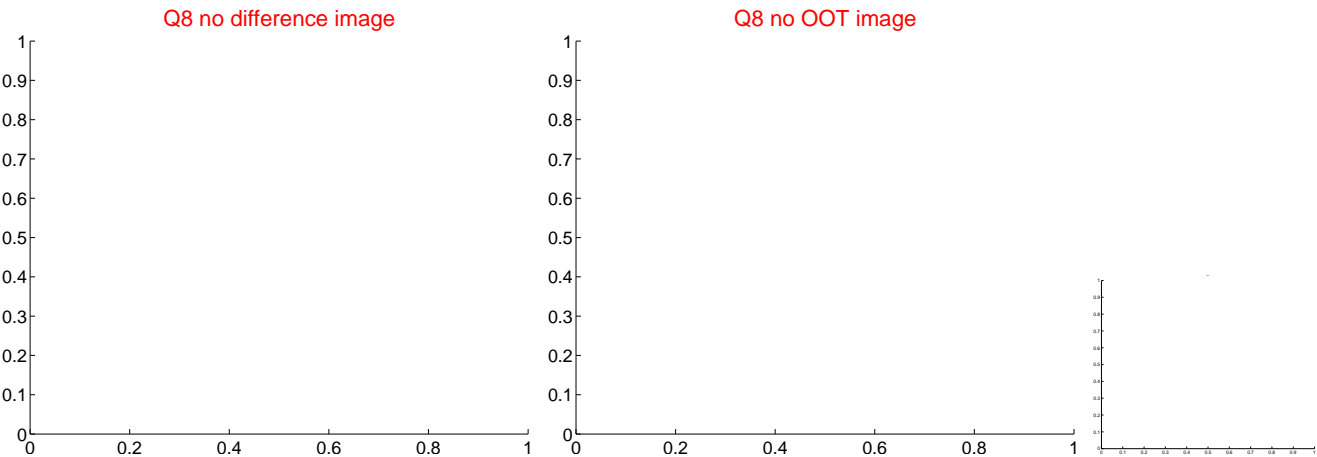
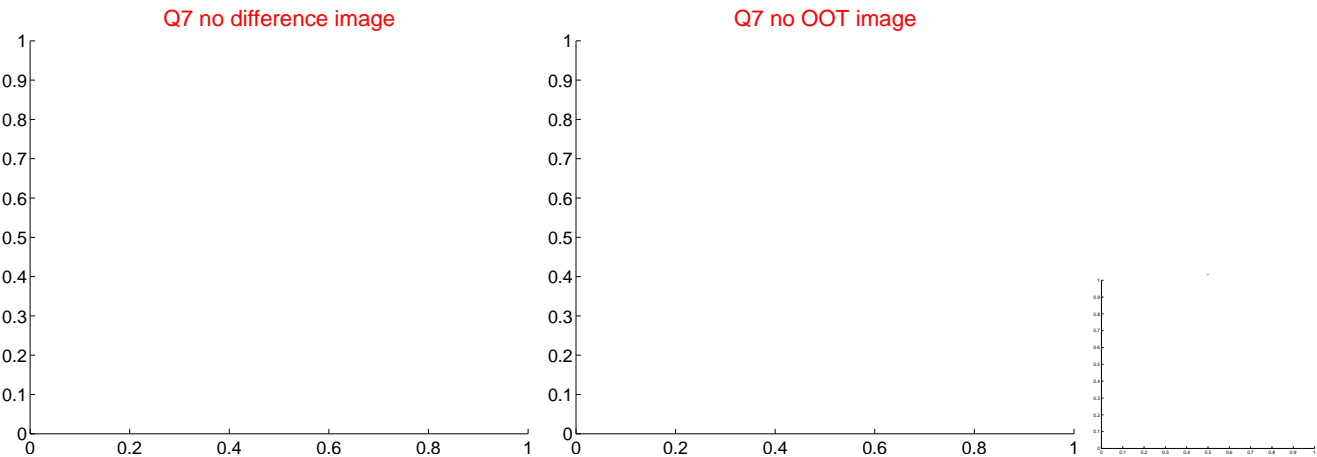
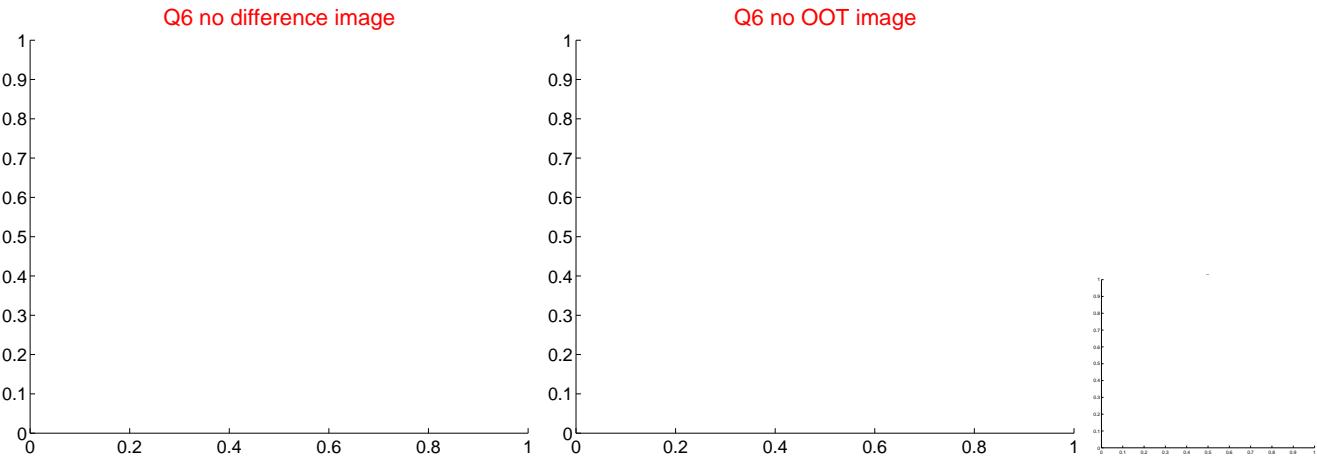
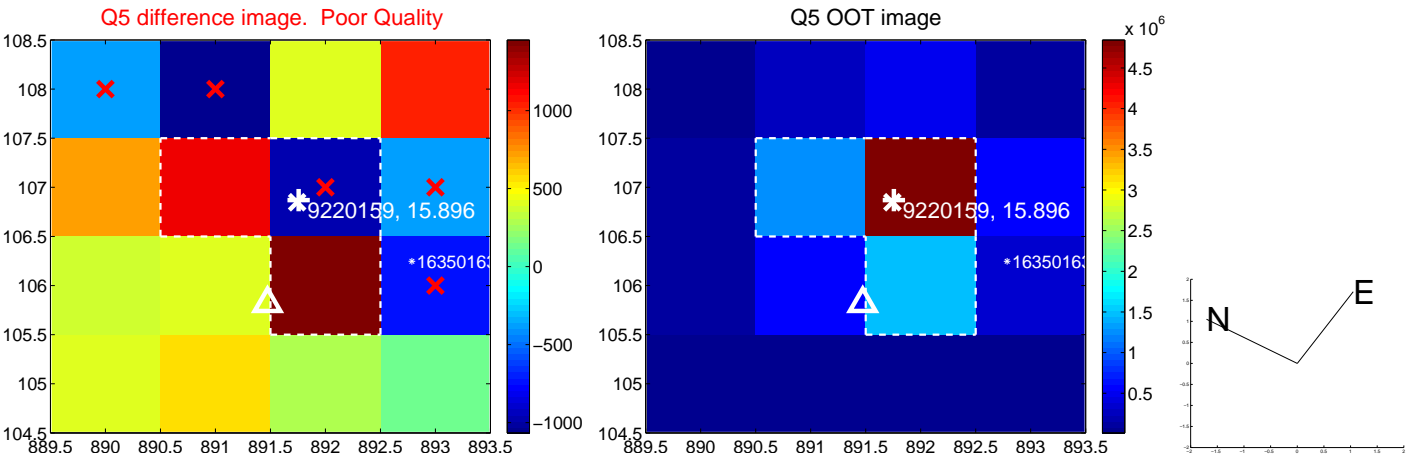


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

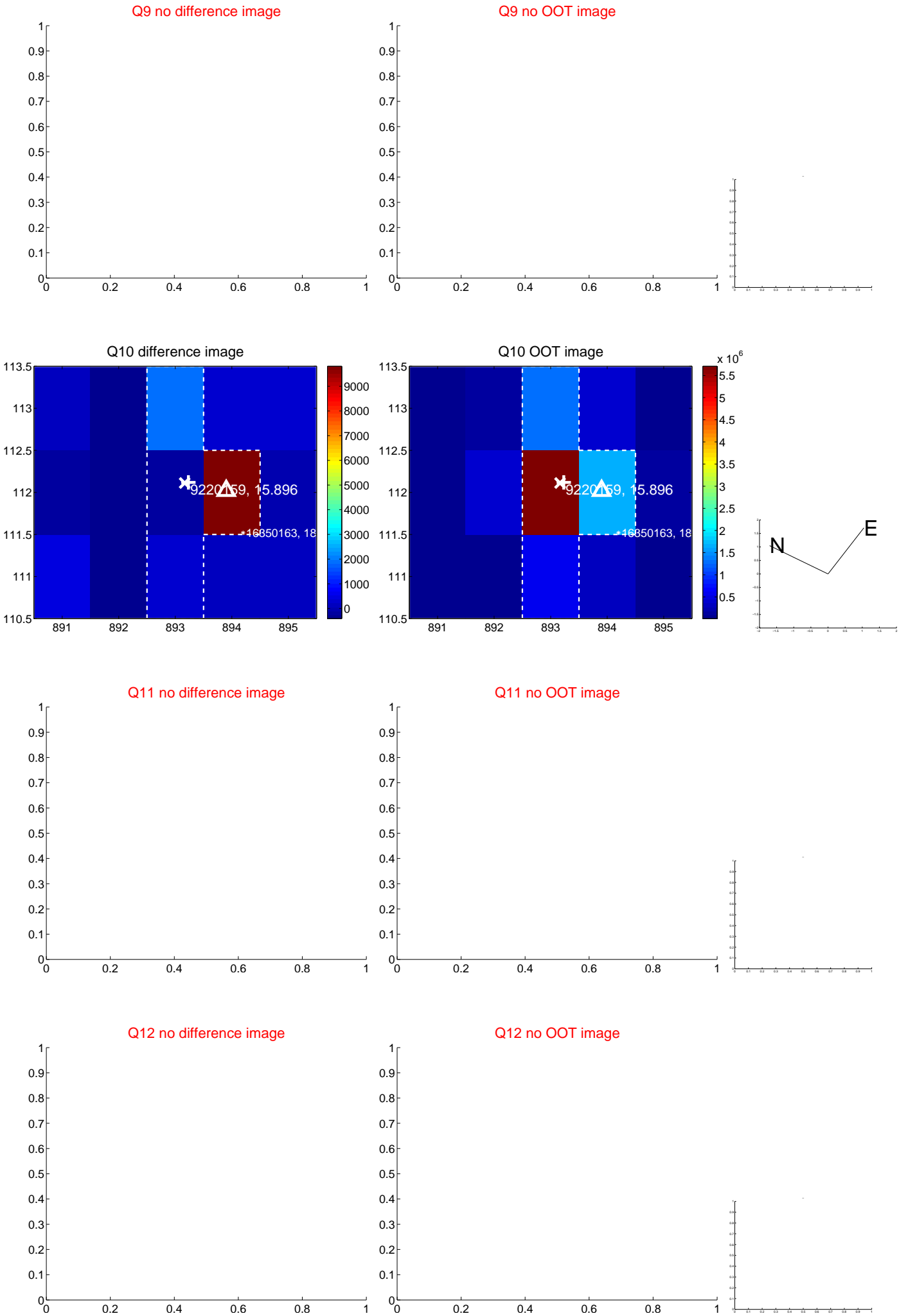
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



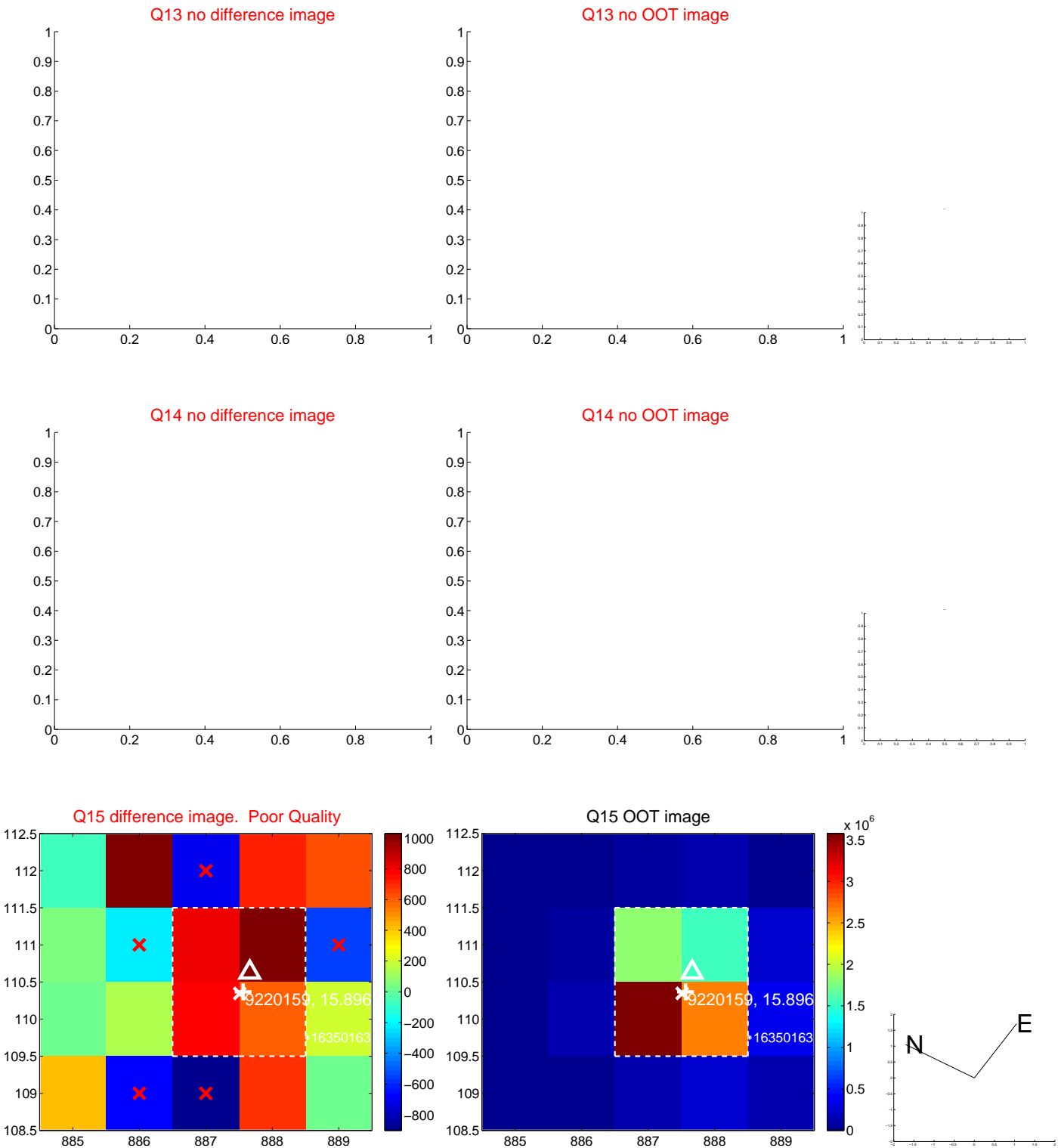
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

