

KIC 009955598

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})
009955598-01	OBS	1925.01	68.958270	179.083247	117.7	3.210	27.3	26.2	0.89	5455	1.14	6.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009955598-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED

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.

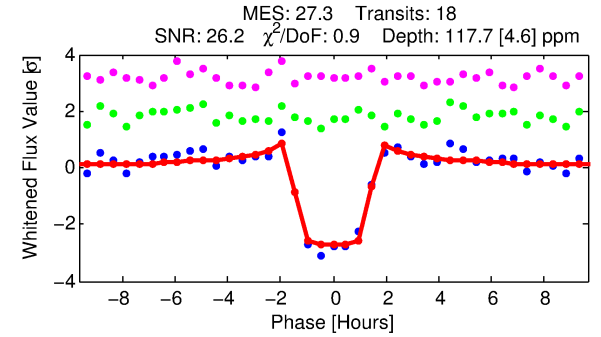
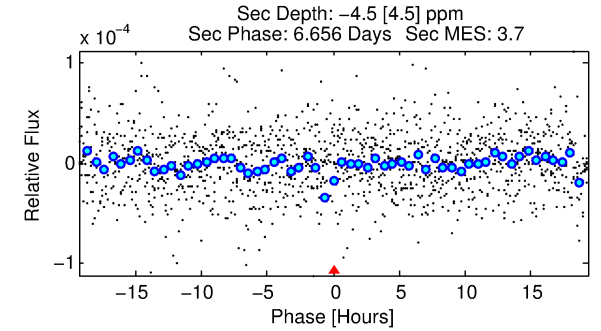
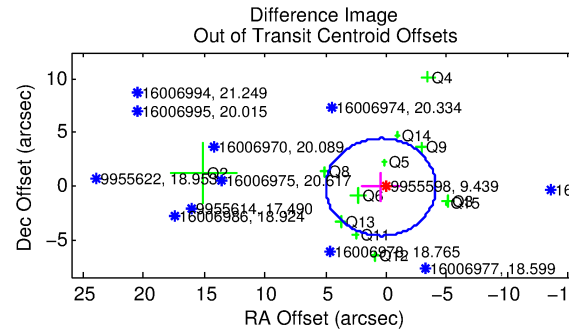
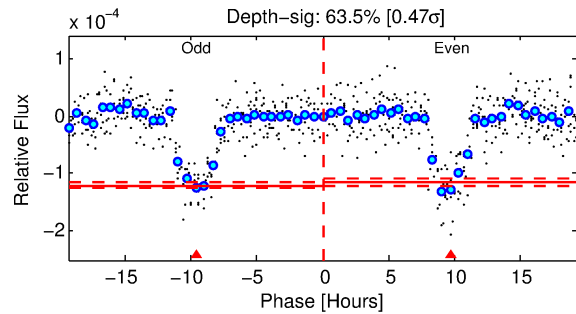
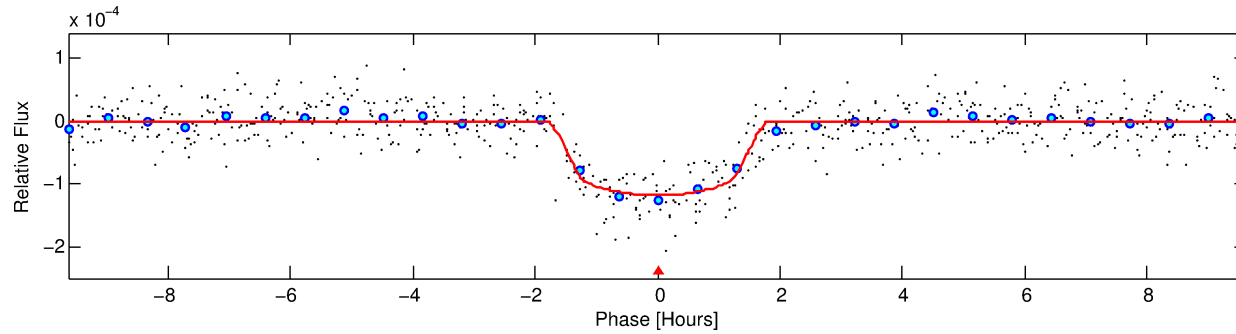
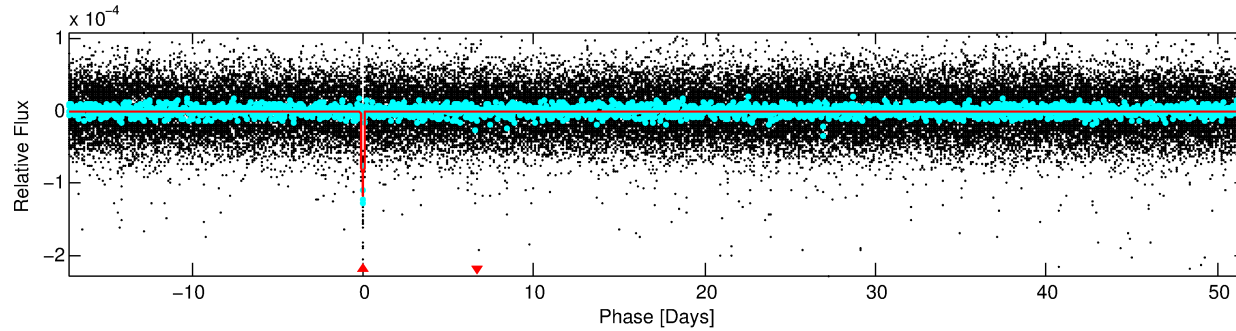
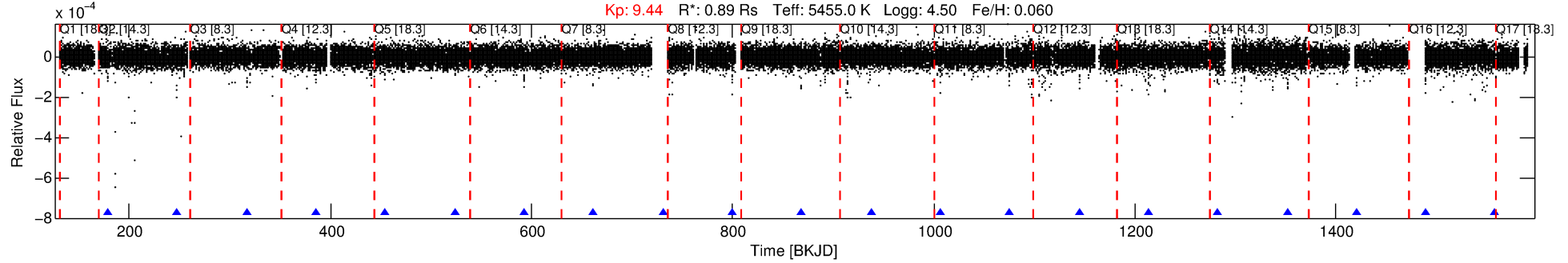
Ephemeris Match Information For 009955598-01

No Significant Match Found

DV One-Page Summary

KIC: 9955598 Candidate: 1 of 1 Period: 68.958 d
KOI: K01925.01 Name: Kepler-409b Corr: 0.979

Kp: 9.44 R*: 0.89 Rs Teff: 5455.0 K Logg: 4.50 Fe/H: 0.060



DV Fit Results:

Period = 68.95827 [0.00019] d
Epoch = 179.0832 [0.0021] BKJD
Rp/R* = 0.0118 [0.0022]
a/R* = 79.42 [63.69]
b = 0.89 [0.19]
Seff = 6.18 [0.50]
Teq = 402 [8] K
Rp = 1.14 [0.22] Re
a = 0.3182 [0.0113] AU
Ag = N/A
Teffp = N/A

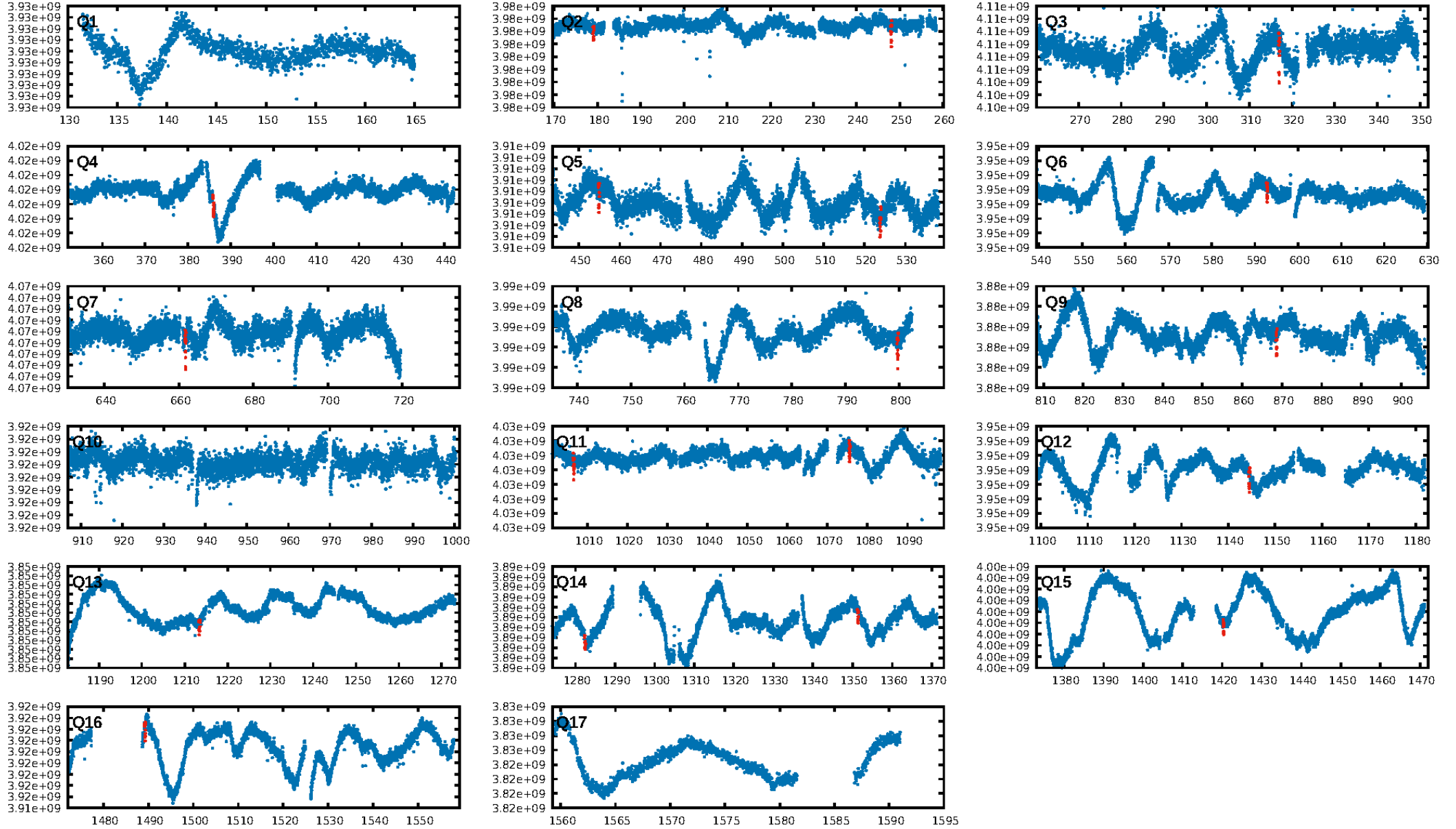
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 41.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.69e-114
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 3.061 arcsec [3.47σ]
OotOffset-rm: 0.457 arcsec [0.30σ]
KicOffset-rm: 0.927 arcsec [0.60σ]
OotOffset-st: 3/3/3/3 [12]
KicOffset-st: 3/3/3/3 [12]
DiffImageQuality-fgm: 0.08 [1/12]
DiffImageOverlap-fno: 1.00 [12/12]

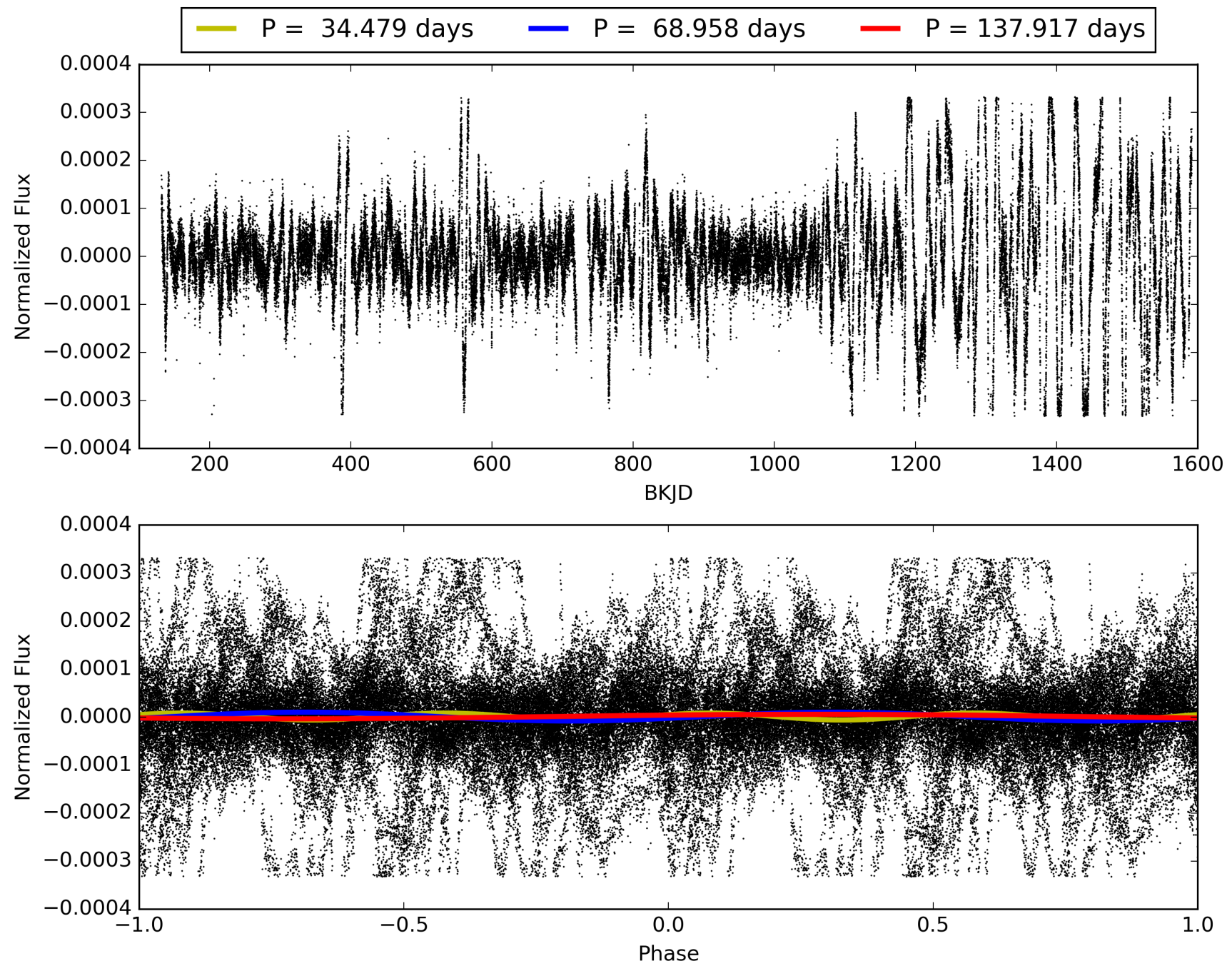
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:00:55 Z

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

TCE 009955598-01, PDC Light Curves

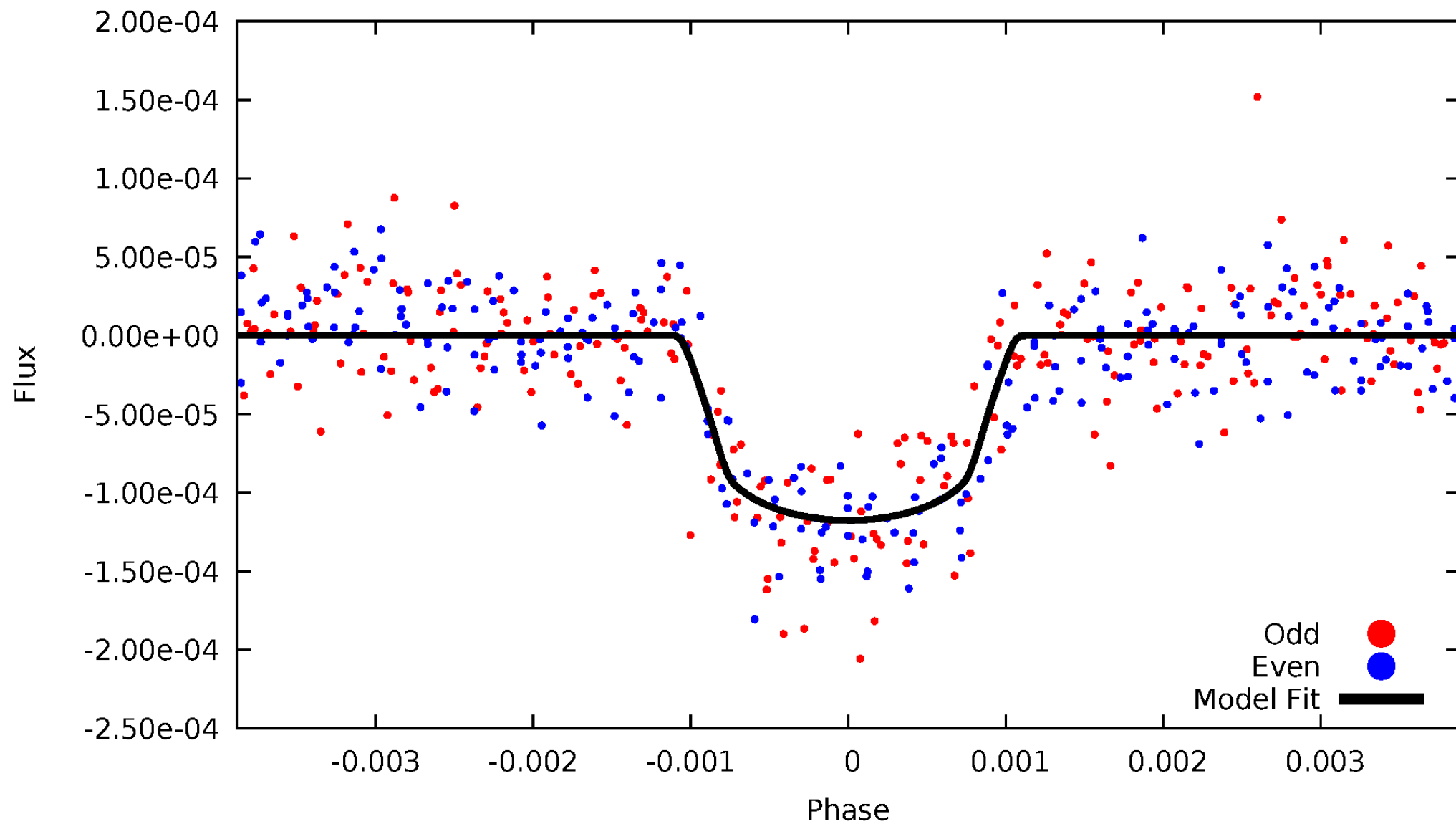


TCE 009955598-01



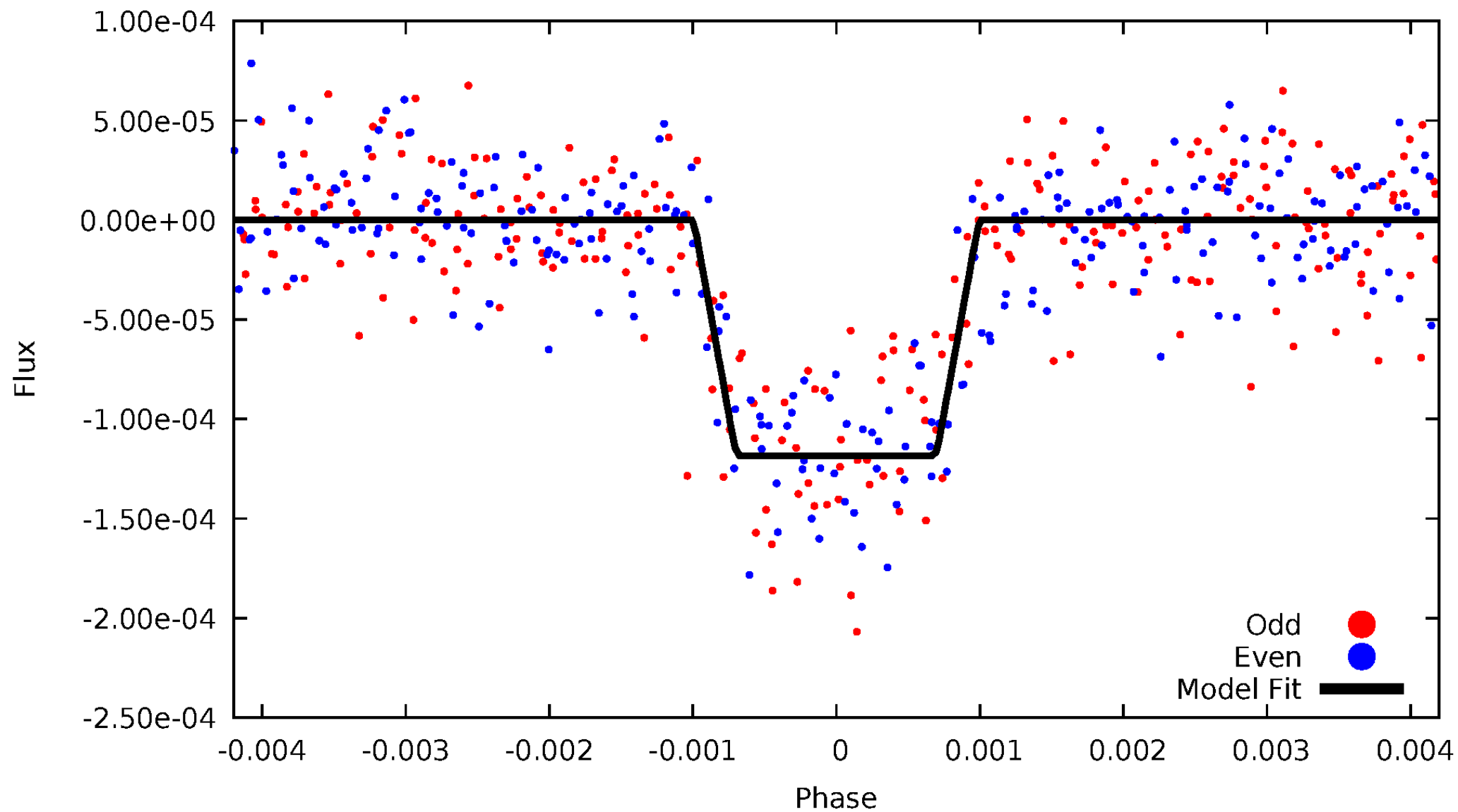
DV Odd/Even

TCE 009955598-01



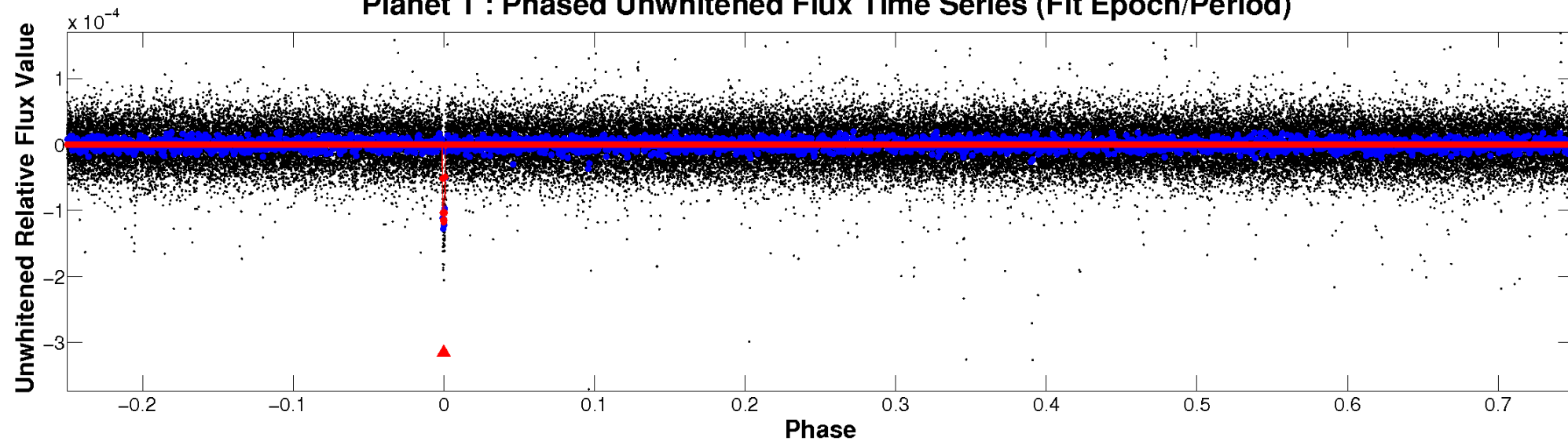
ALT Odd/Even

TCE 009955598-01

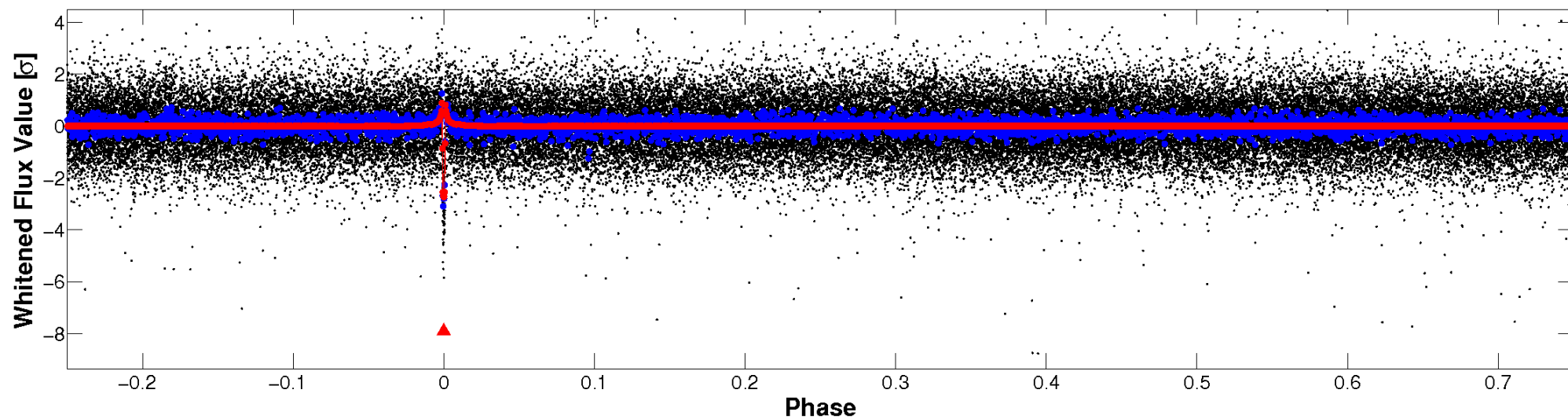


Non-Whitened Vs. Whitened Light Curve

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

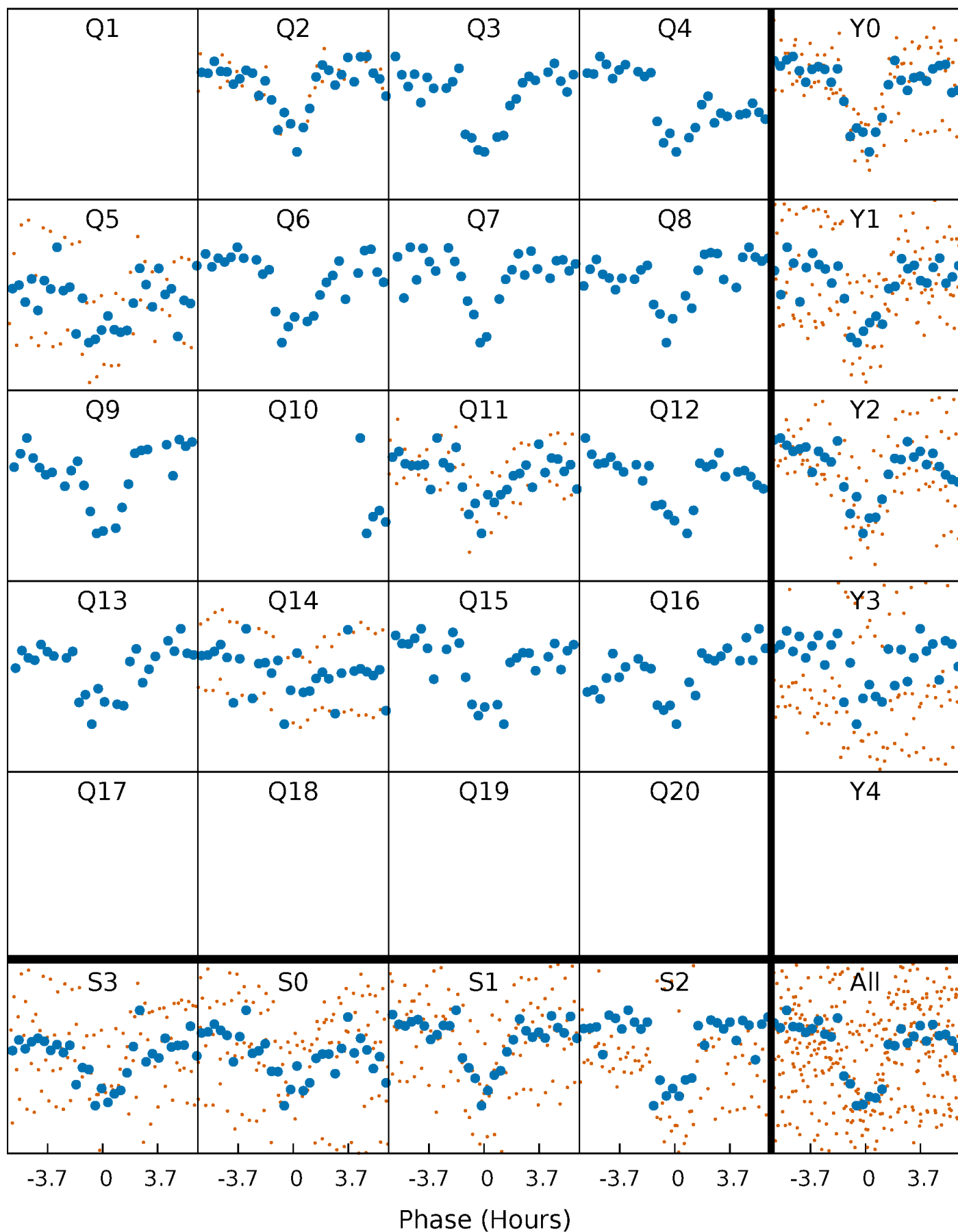


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



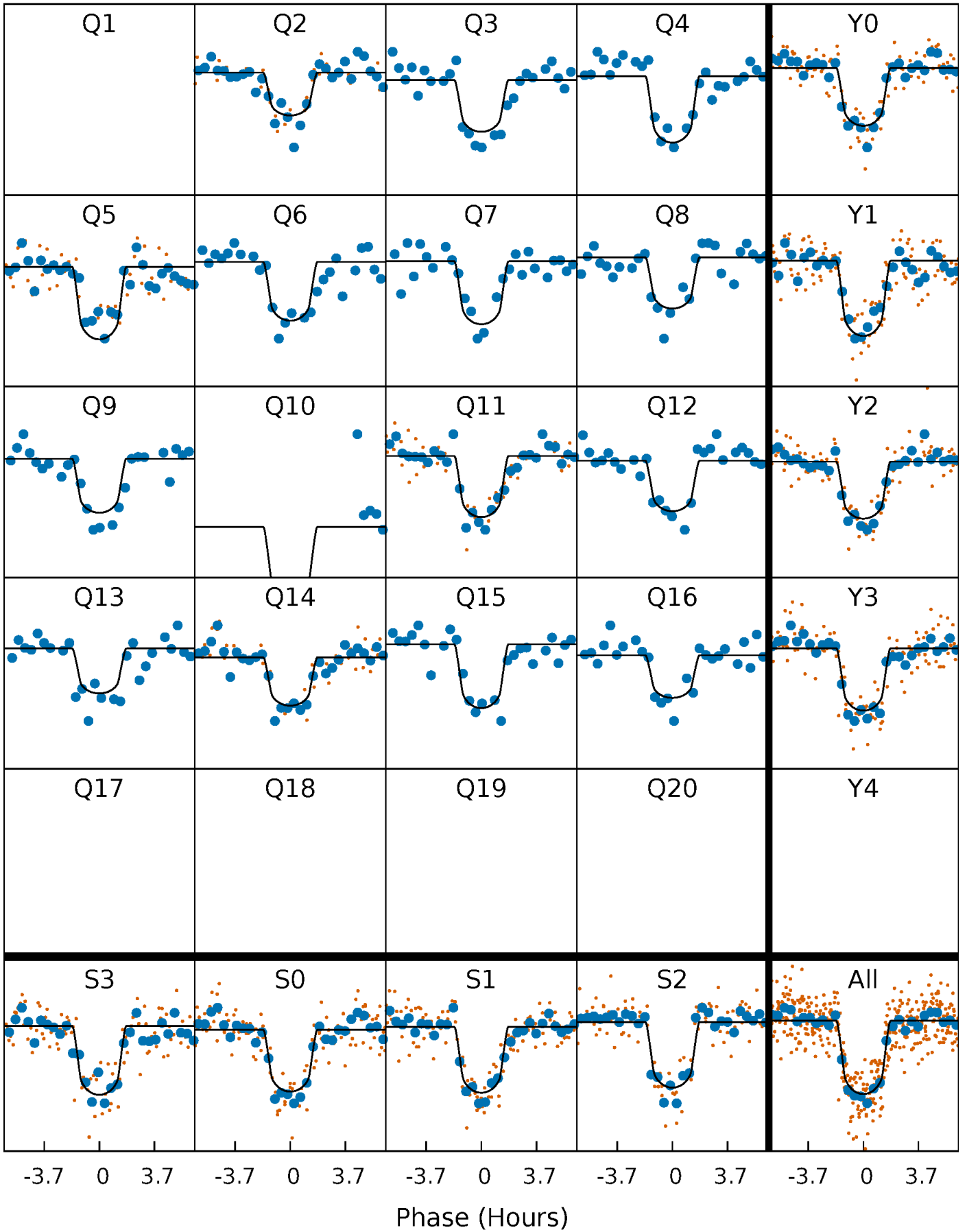
PDC Quarter-Phased Transit Curves

TCE 009955598-01 P= 68.958270 Days $T_0=179.083247$ (BKJD)



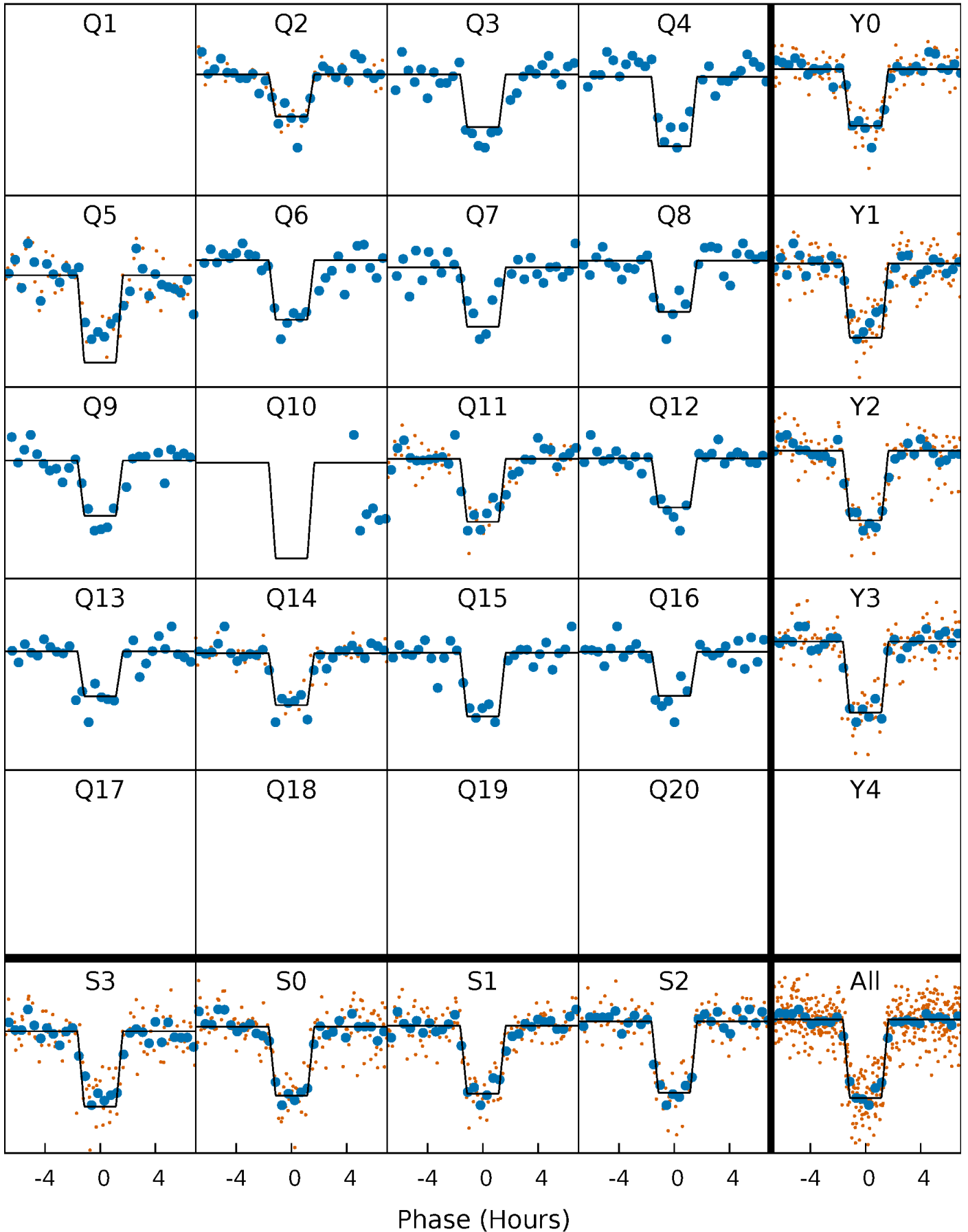
DV Quarter-Phased Transit Curves

TCE 009955598-01 P= 68.958270 Days $T_0=179.083247$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

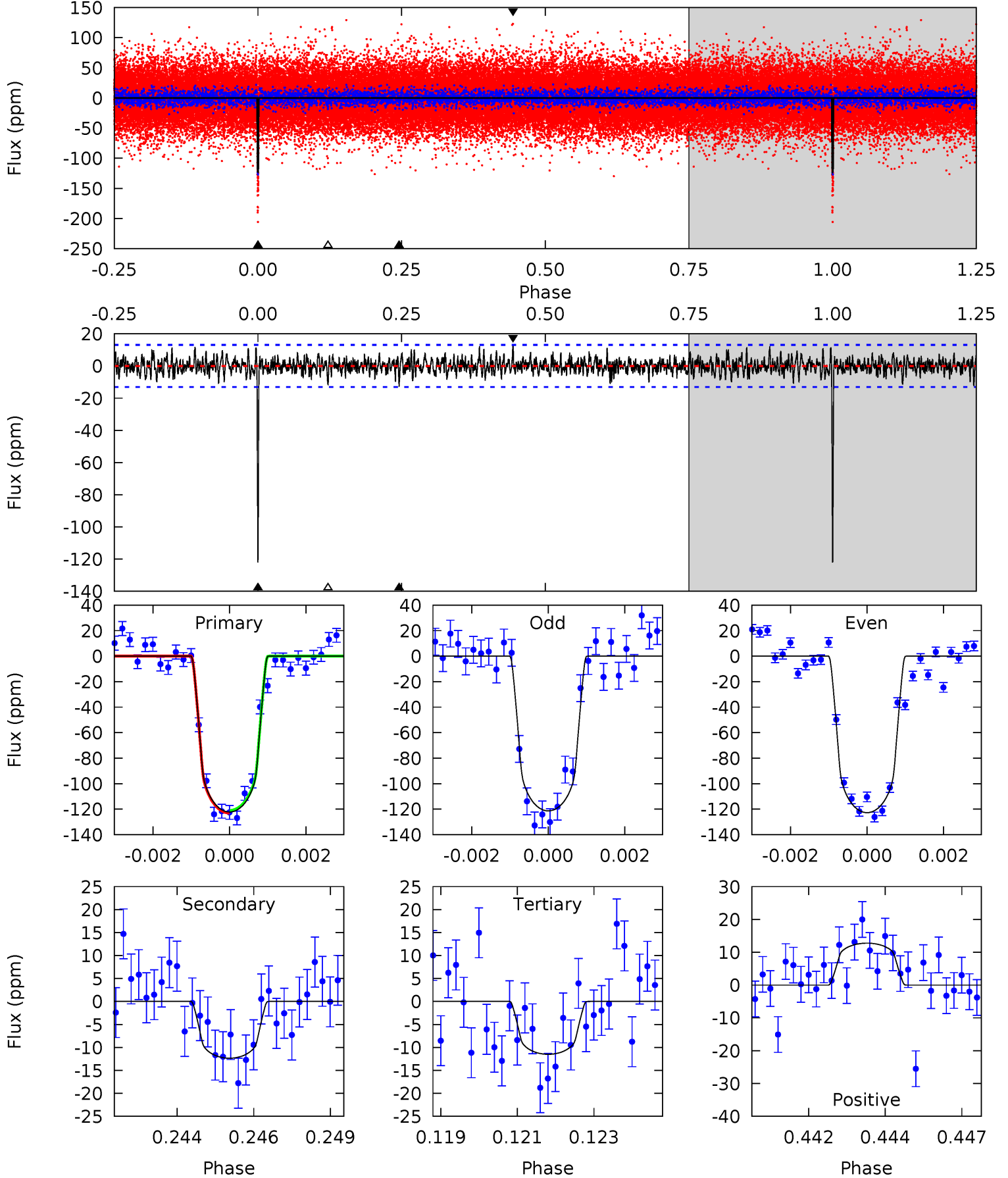
TCE 009955598-01 P= 68.958778 Days $T_0=179.078019$ (BKJD)



DV Model-Shift Uniqueness Test

009955598-01, P = 68.958270 Days, E = 110.124977 Days

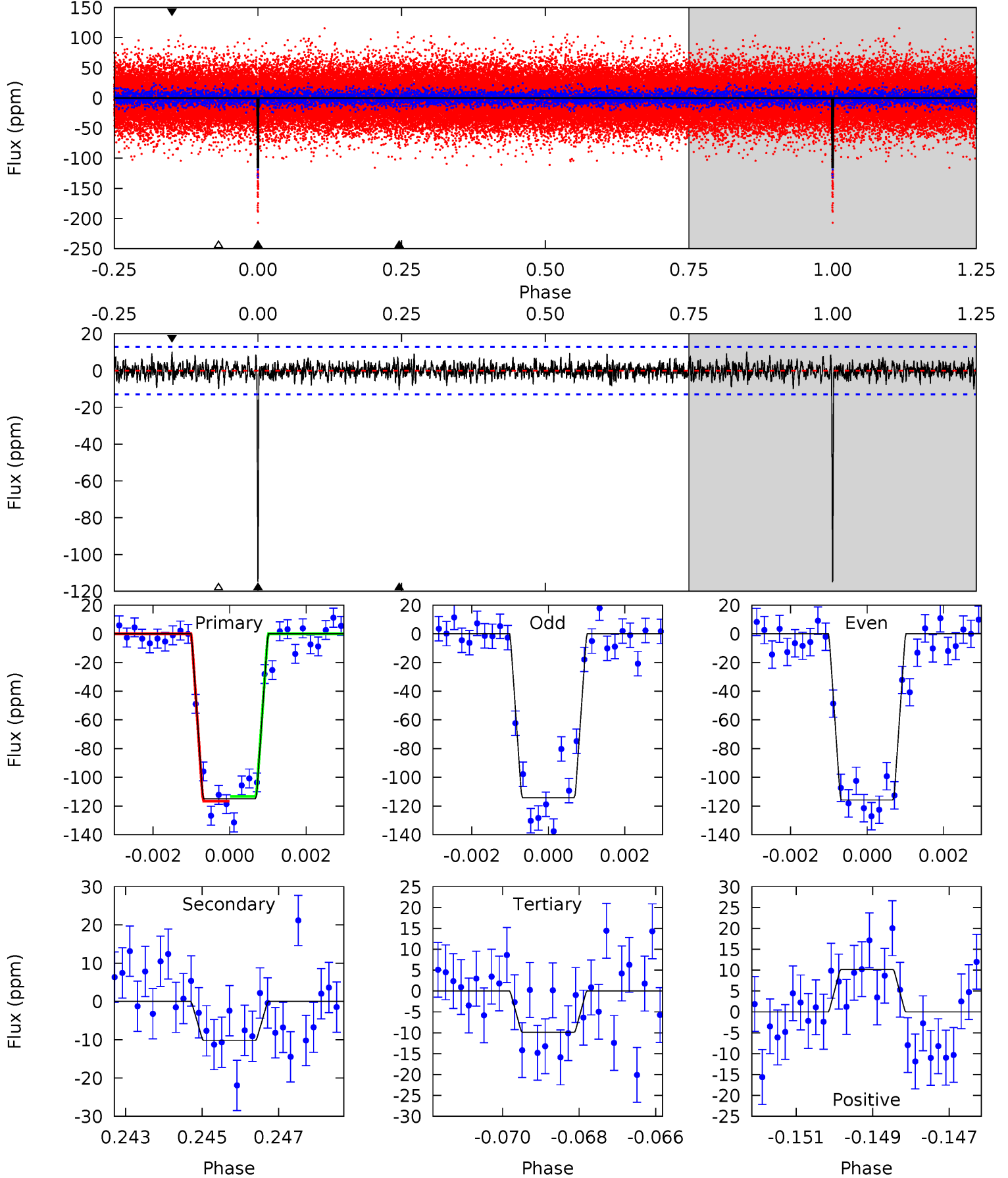
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.6	5.01	4.67	5.18	5.31	3.06	1.45	44.9	44.4	0.34	-0.17	0.28	0.97	0.09	0.42



Alt Model-Shift Uniqueness Test

009955598-01, P = 68.958778 Days, E = 110.119241 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
47.5	4.21	4.08	4.20	5.33	3.09	1.13	43.4	43.3	0.13	0.01	0.34	0.95	0.08	0.67



Stellar Parameters For KIC 009955598

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5455^{+73}_{-82}	$4.497^{+0.027}_{-0.030}$	$0.060^{+0.150}_{-0.150}$	$0.888^{+0.036}_{-0.036}$	$0.902^{+0.050}_{-0.055}$	$1.817^{+0.194}_{-0.175}$
	+1%/-2%	+1%/-1%	+250%/-250%	+4%/-4%	+6%/-6%	+11%/-10%
Source	SPE72	AST69	SPE72	DSEP		

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

Secondary Eclipse Parameters for KIC 009955598-01 / KOI 1925.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-12 ± 2	$1.14^{+0.20}_{-0.22}$	562^{+10}_{-10}	3445^{+262}_{-205}	507^{+316}_{-163}
Alt.	-10 ± 2	$1.04^{+0.24}_{-0.22}$	562^{+10}_{-11}	3454^{+310}_{-243}	522^{+345}_{-197}

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 $A_{obs} \gg 1.0$

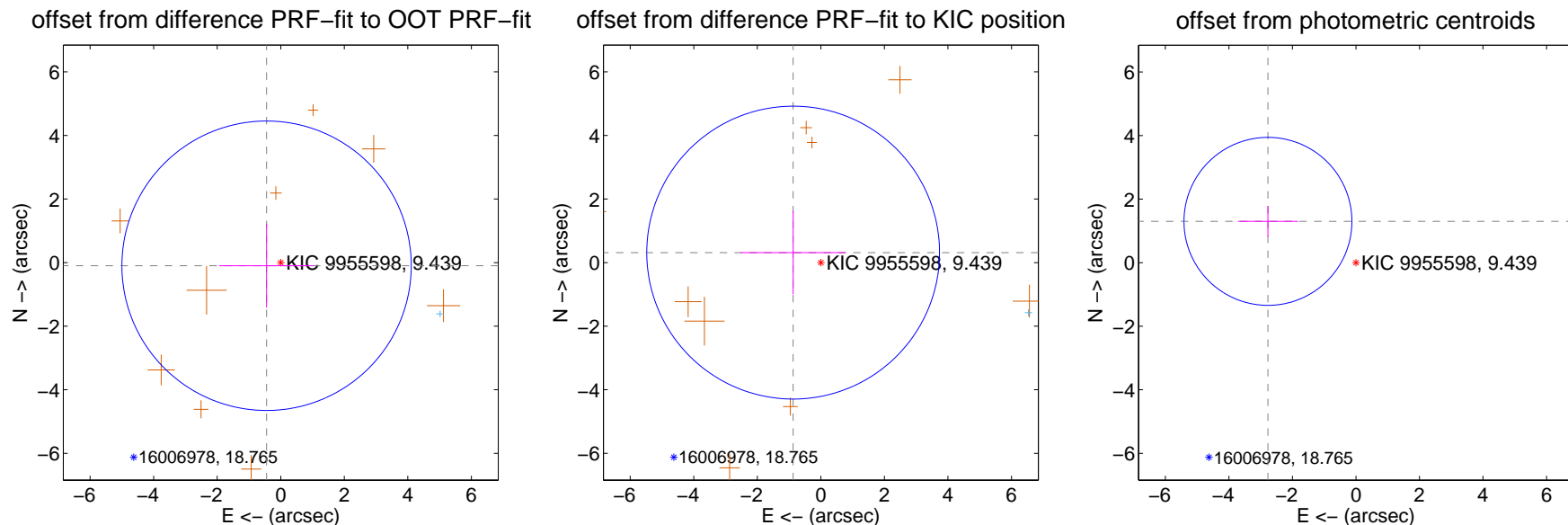
DV Centroid Data

Supplemental centroid analysis for 009955598-01. **Kepler magnitude: 9.44.** Transit SNR 26.22

There are 1 quarters with good PRF difference image offsets

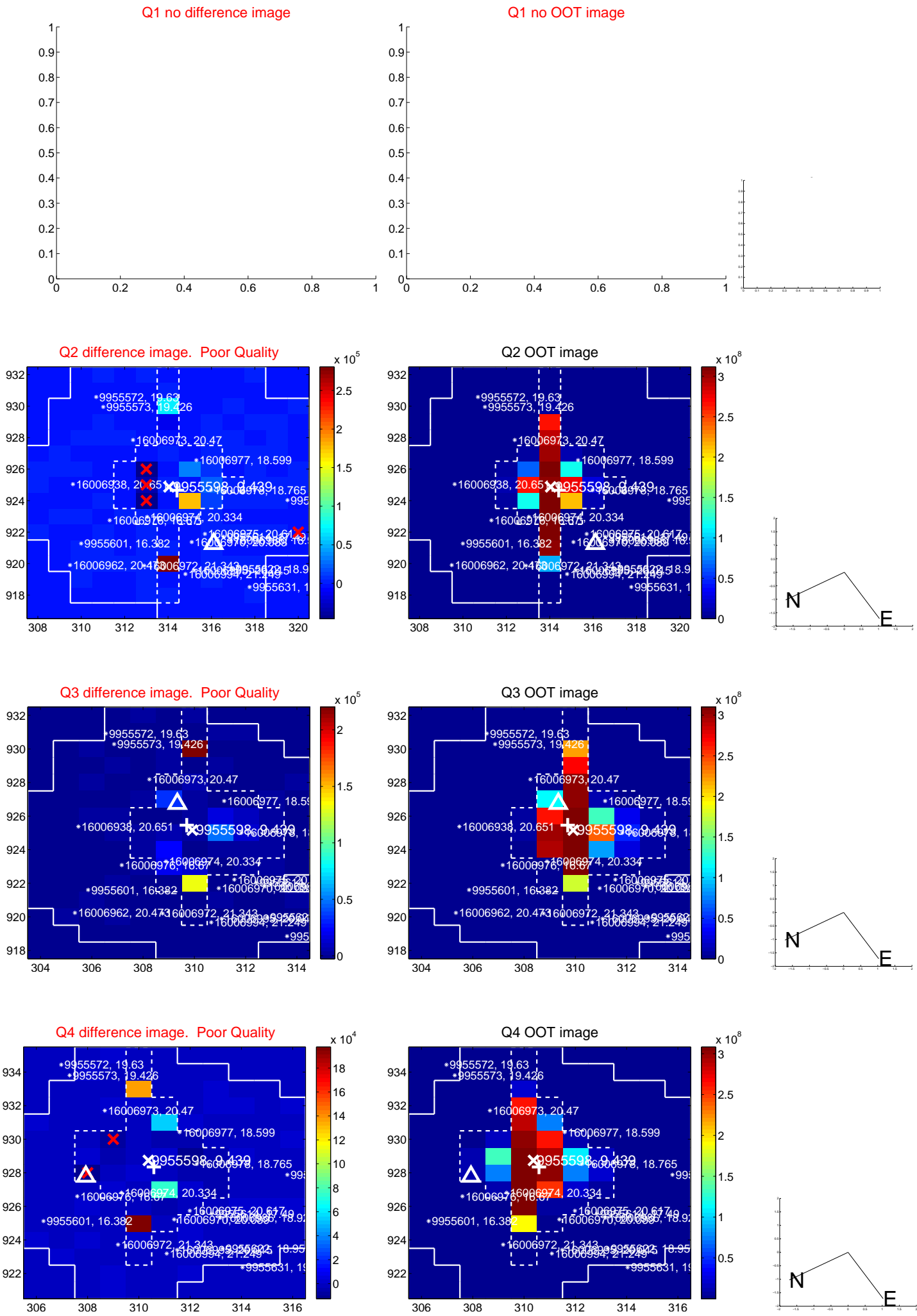
The direct PRF centroid is offset from the target star catalog position by about 1.52 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.457 ± 1.518	0.30	0.446 ± 1.488	-0.099 ± 1.319
PRF-fit source offset from KIC position	0.927 ± 1.536	0.60	0.872 ± 1.659	0.314 ± 1.310
photometric centroid source offset	3.06 ± 0.88	3.47	2.77 ± 0.95	1.30 ± 0.49

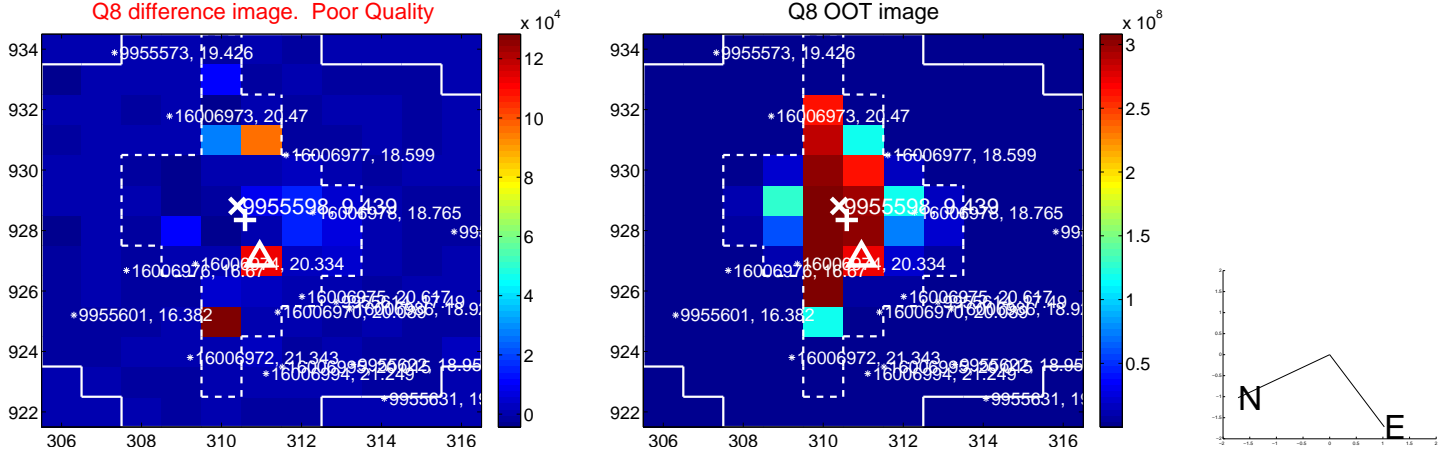
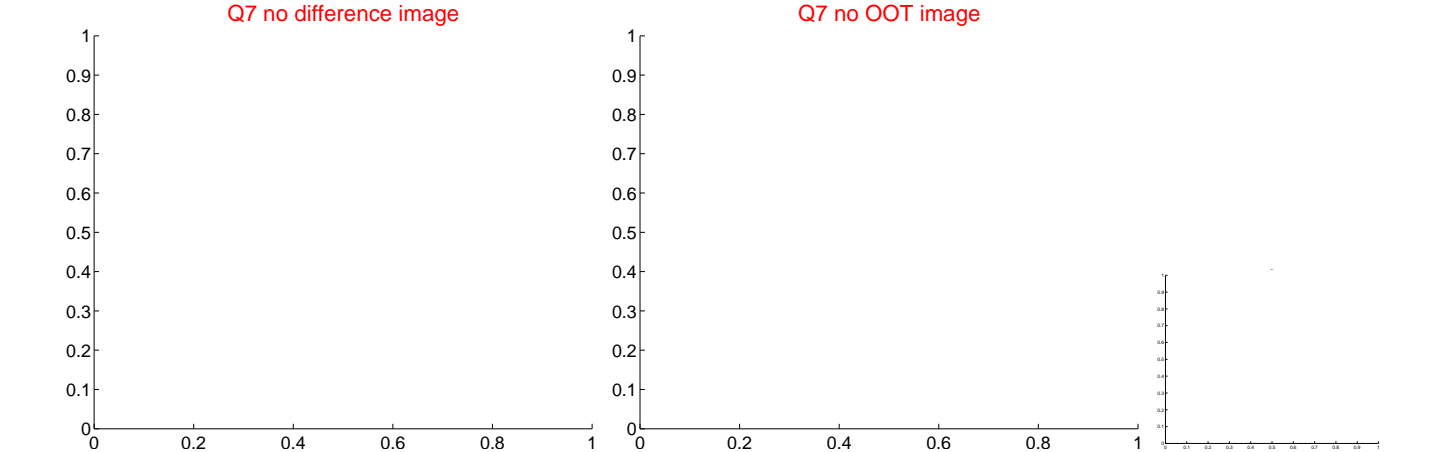
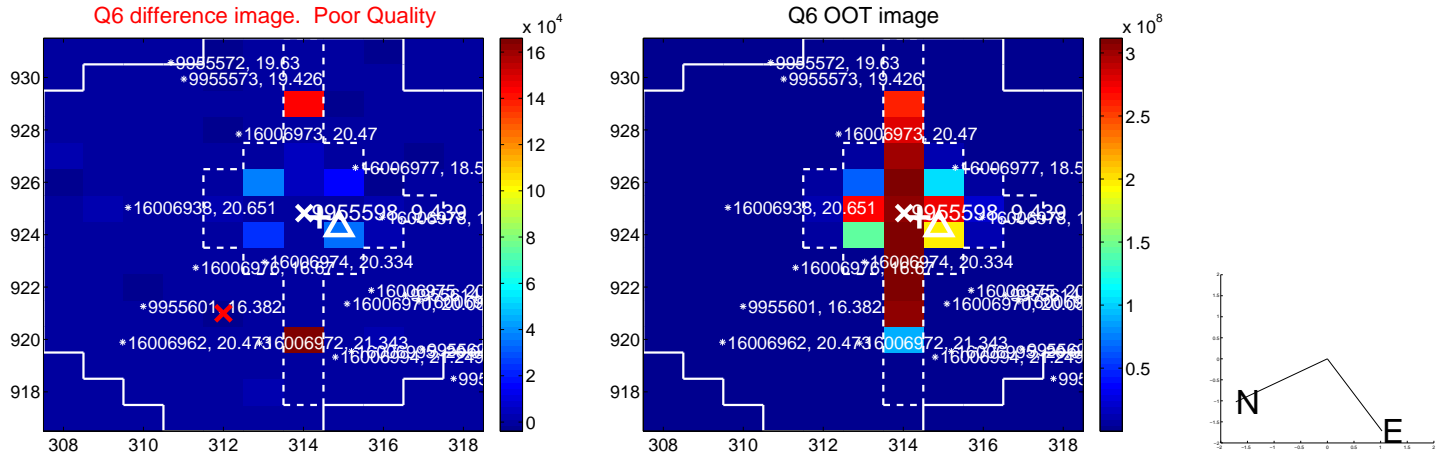
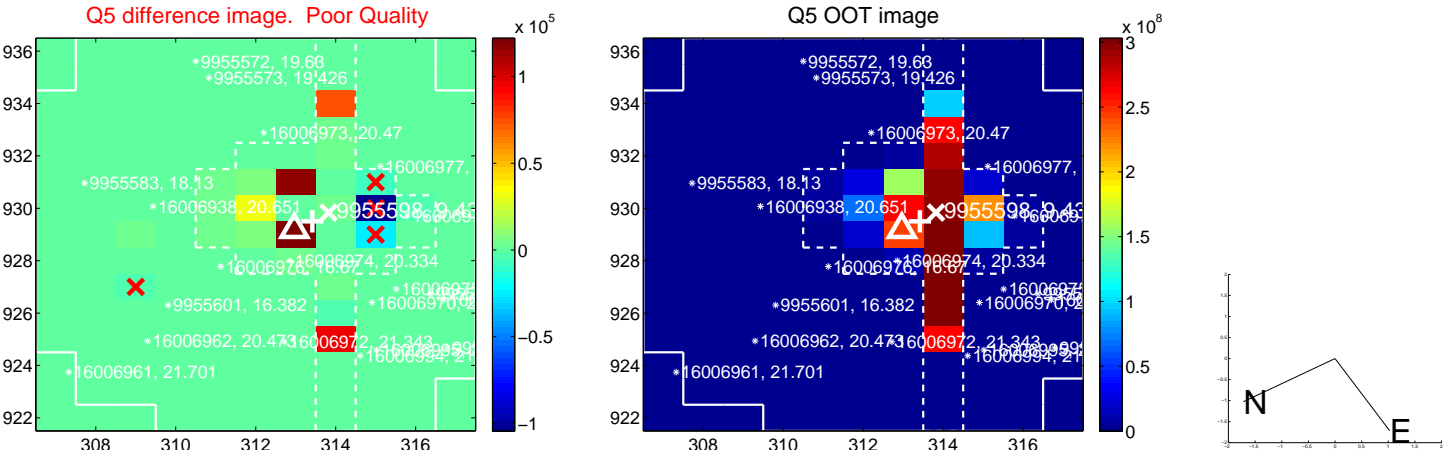


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

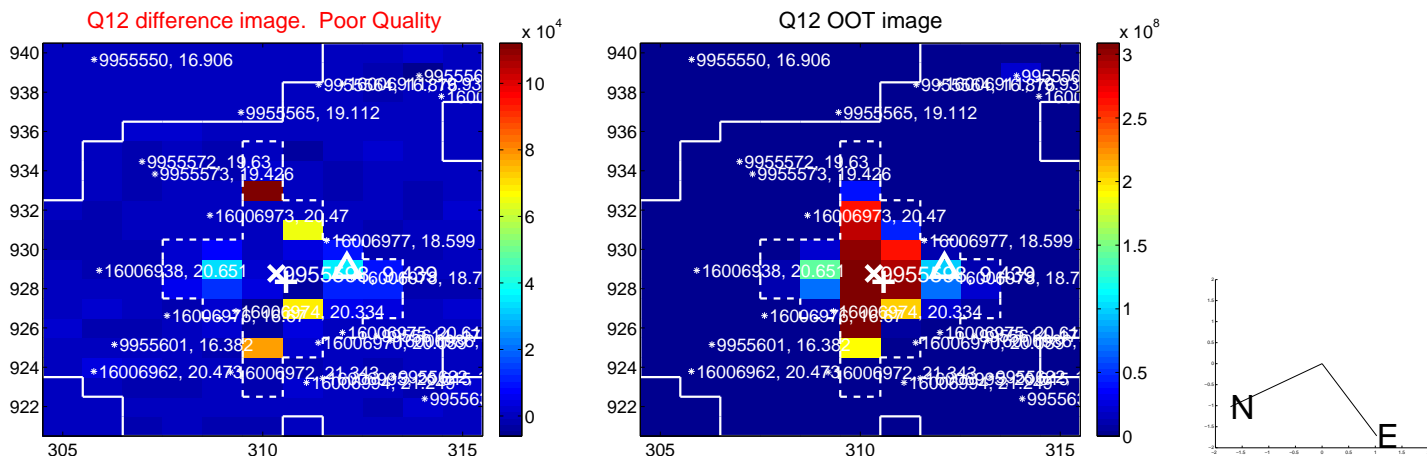
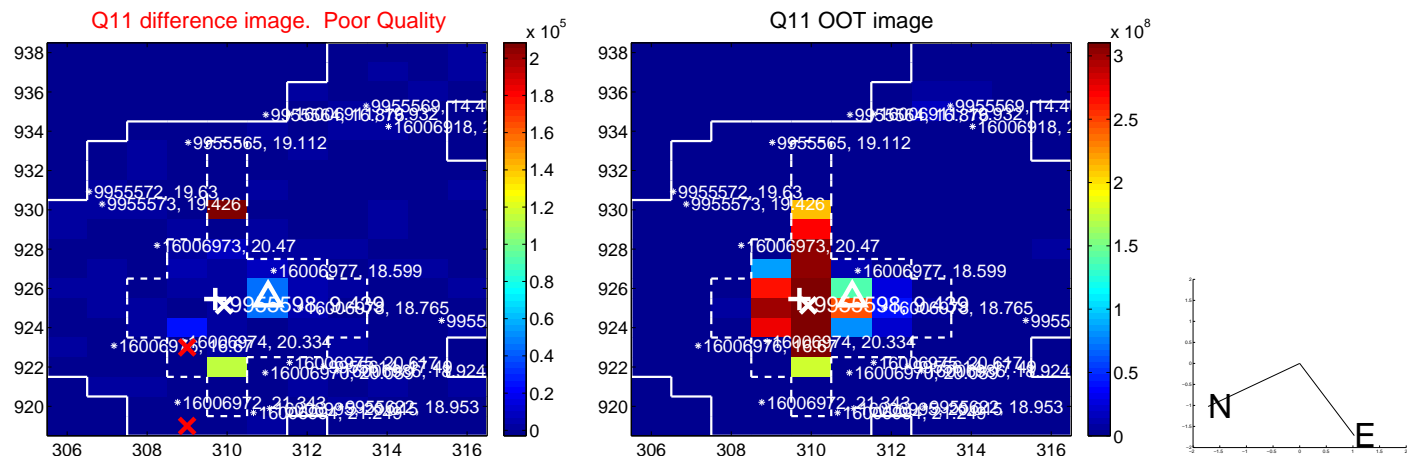
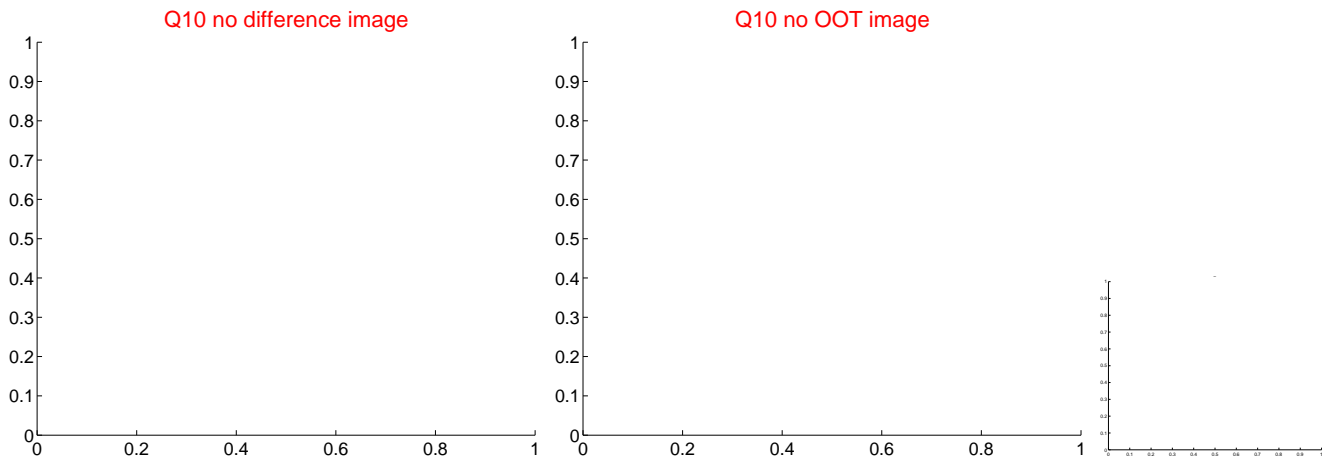
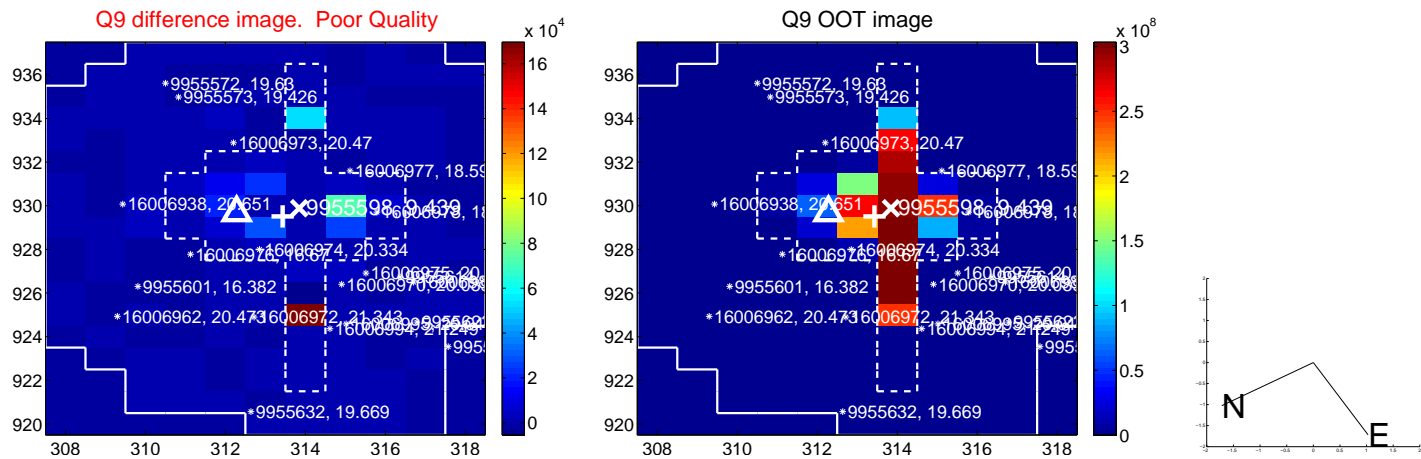
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



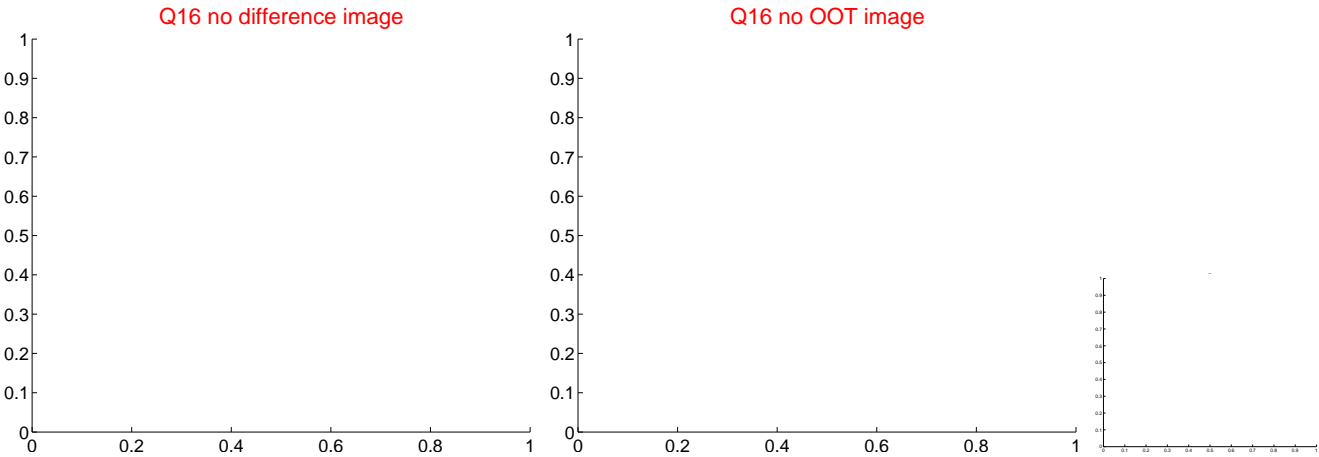
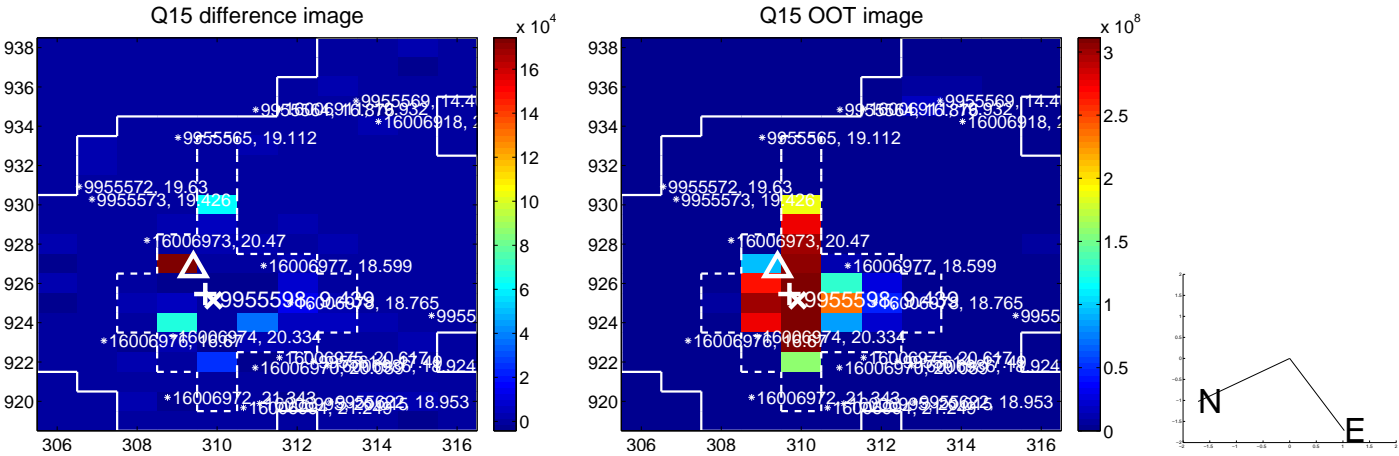
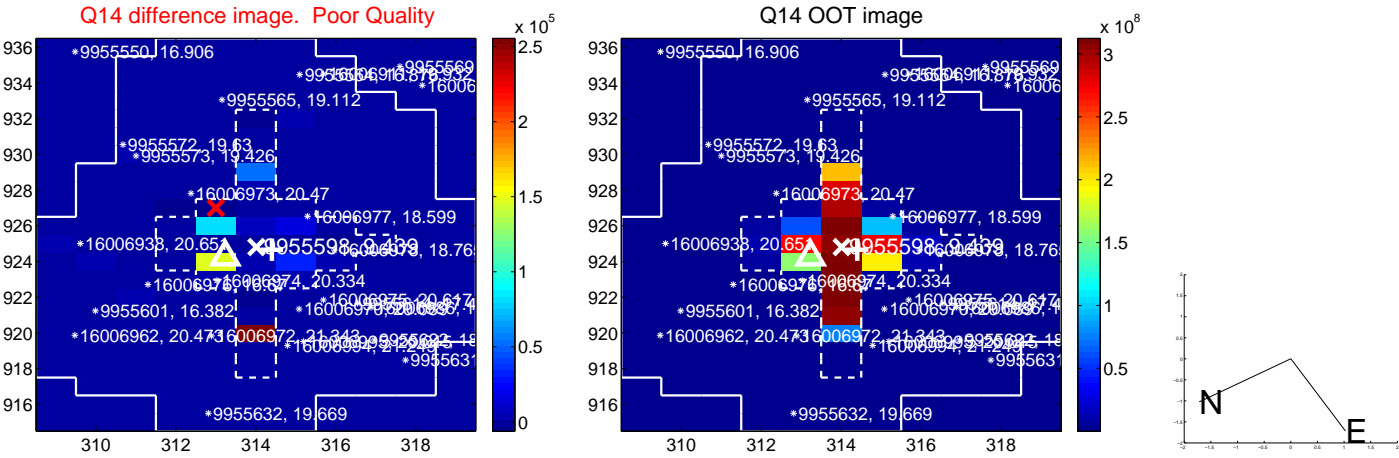
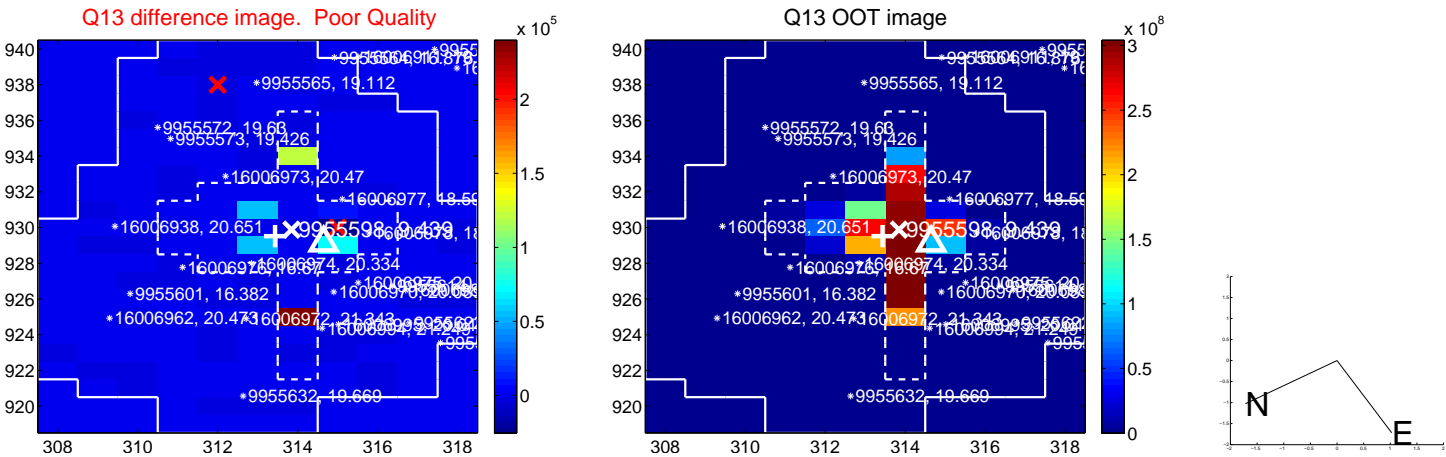
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



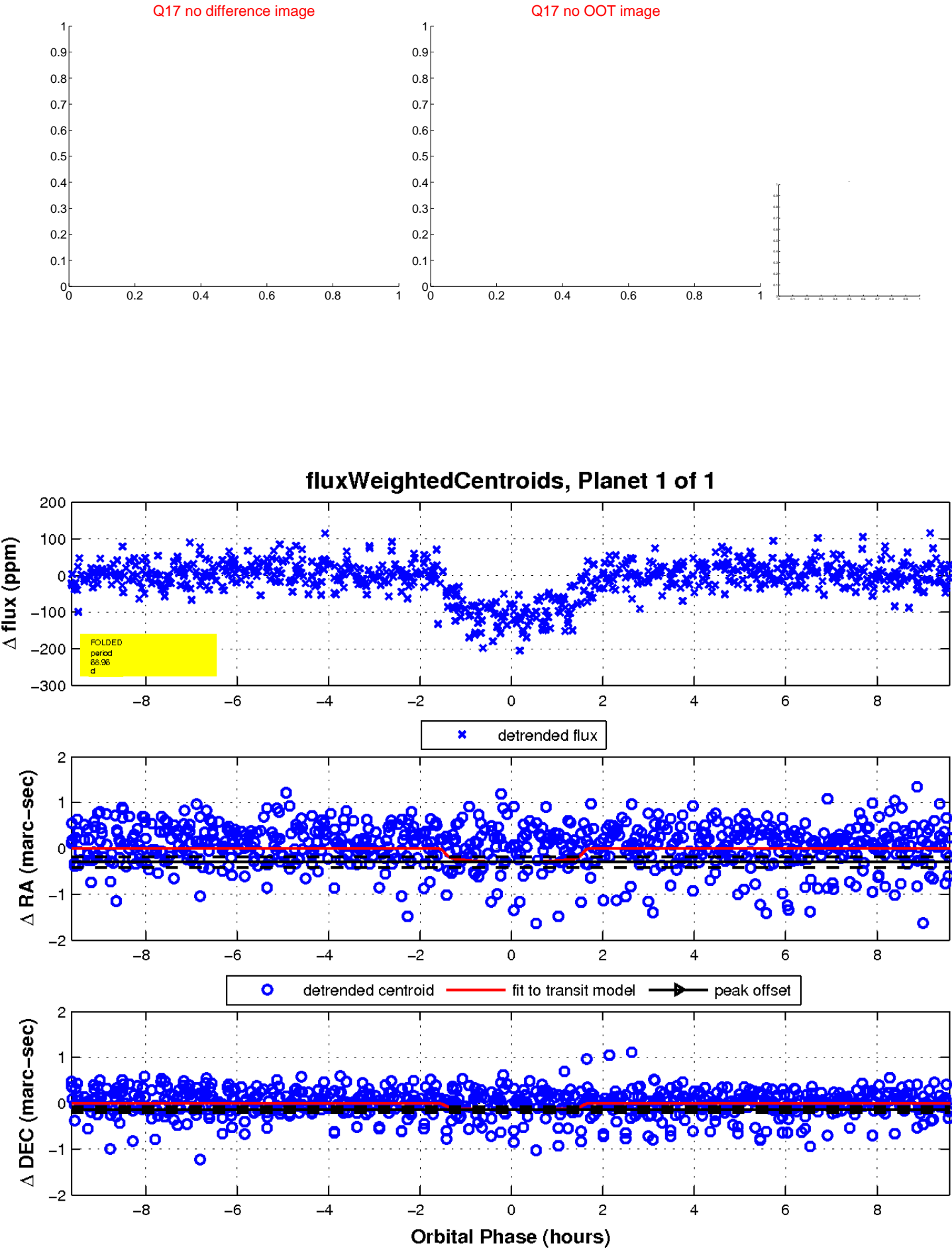
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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UKIRT Image

Declination

