

KIC 009406878

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})
009406878-01	OBS	No	518.763697	455.670510	389.3	3.890	7.4	7.8	0.89	6238	1.97	0.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009406878-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

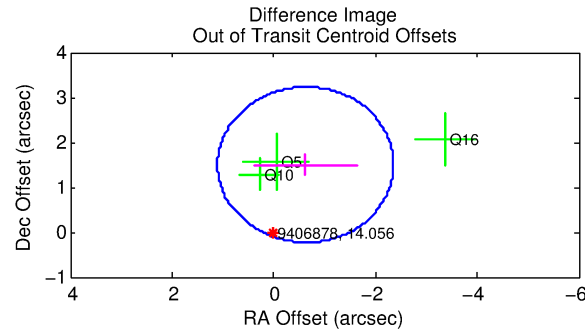
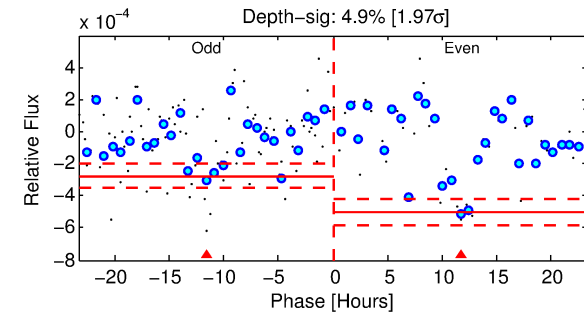
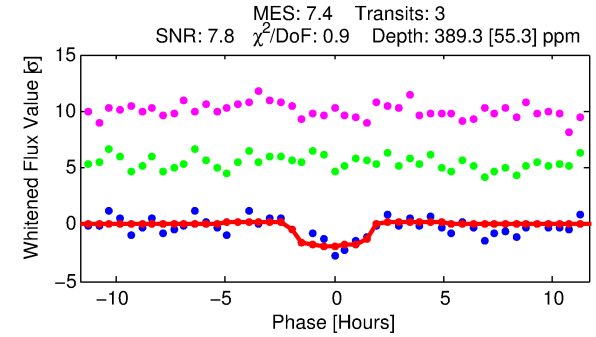
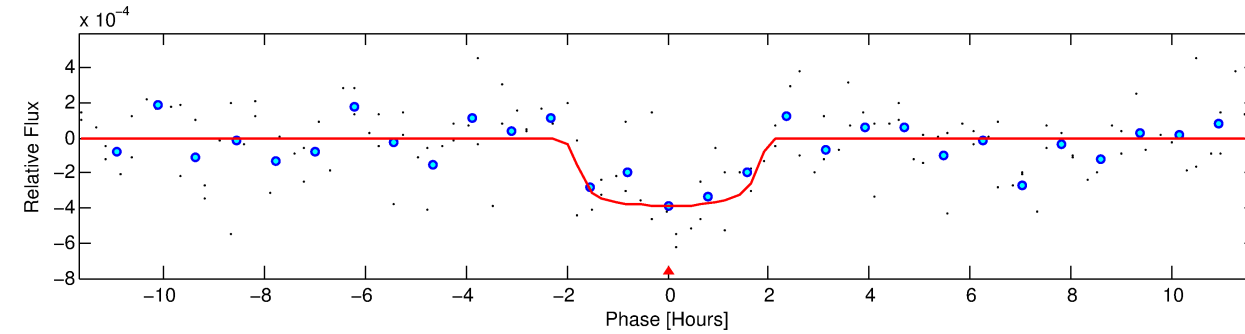
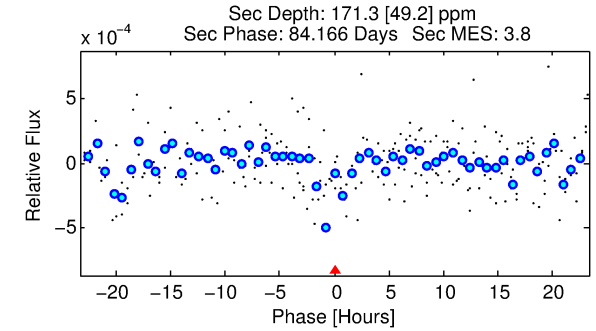
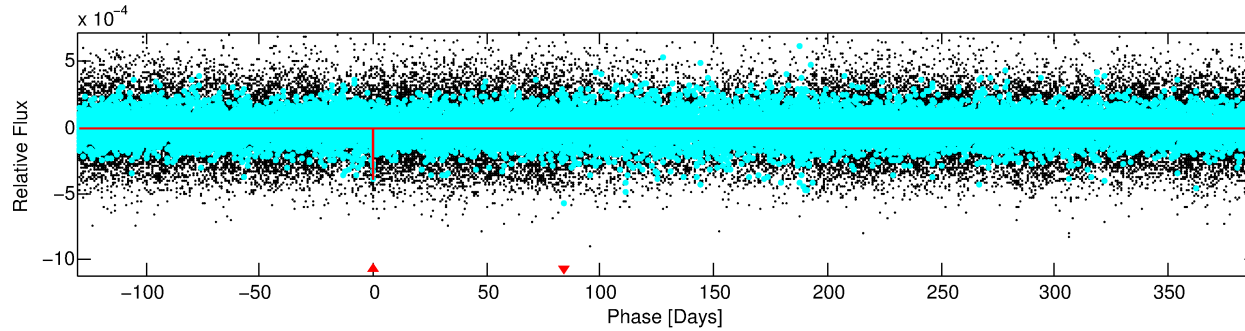
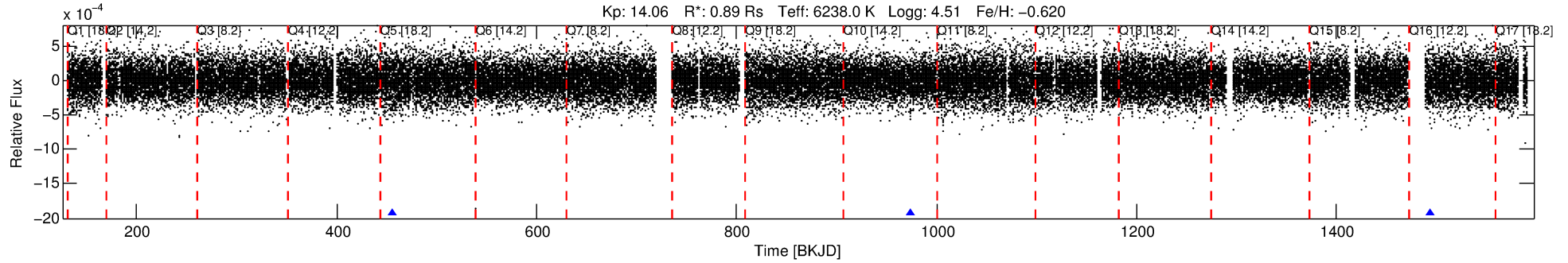
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009406878-01

No Significant Match Found

DV One-Page Summary

KIC: 9406878 Candidate: 1 of 1 Period: 518.764 d



DV Fit Results:

Period = 518.76370 [0.00779] d
Epoch = 455.6705 [0.0095] BKJD
Rp/R* = 0.0203 [0.0158]
a/R* = 601.70 [2576.39]
b = 0.83 [1.60]
Seff = 0.71 [0.27]
Teff = 234 [22] K
Rp = 1.97 [1.63] Re
a = 1.2311 [0.2990] AU
Ag = 36955.64 [59995.90] [0.62σ]
Teffp = 5013 [1990] K [2.40σ]

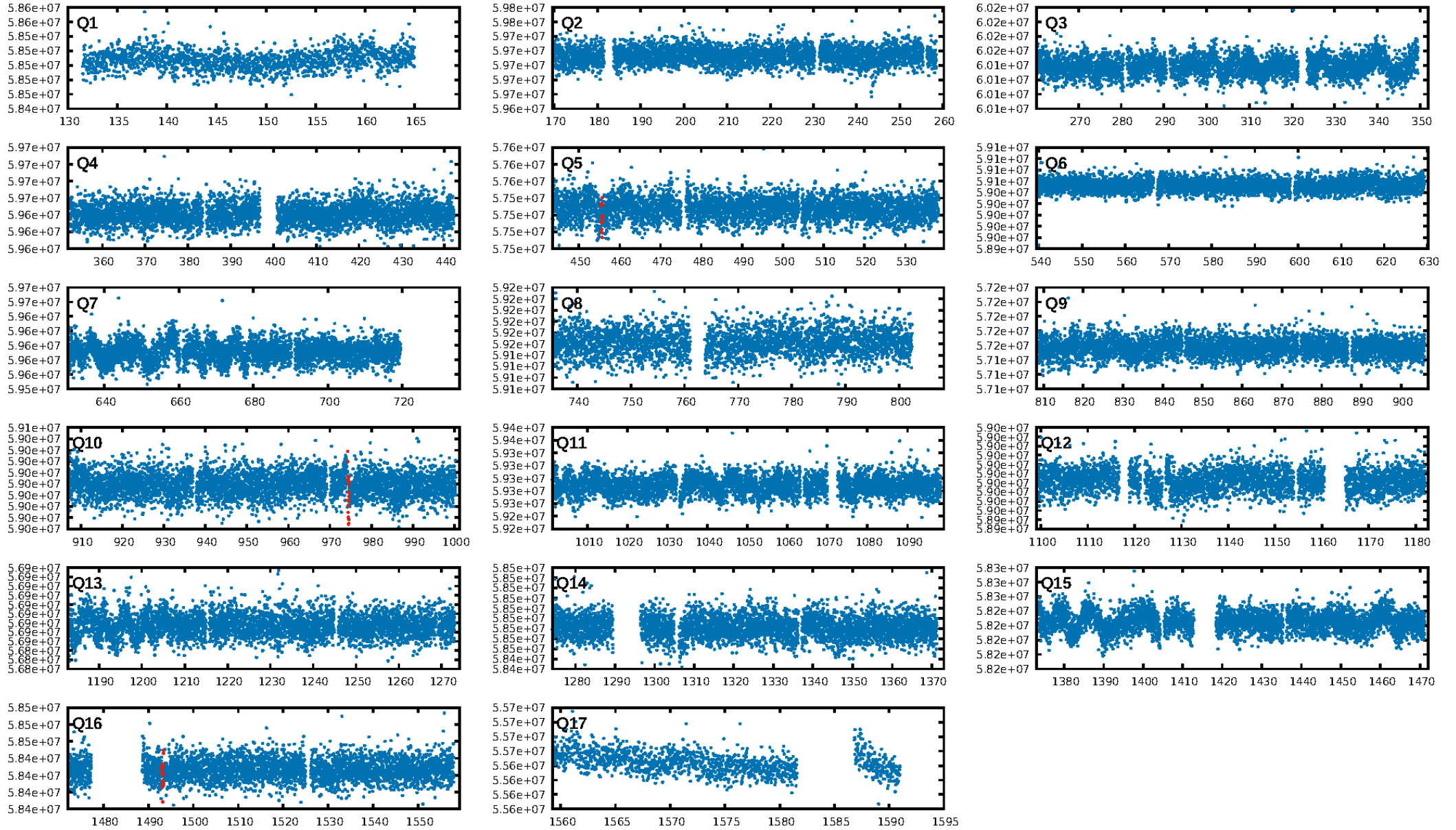
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 16.0%
ModelChiSquareGof-sig: 94.7%
Bootstrap-pfa: 4.08e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.209
Centroid-sig: 22.0%
Centroid-so: 1.879 arcsec [1.16σ]
OotOffset-rm: 1.624 arcsec [2.82σ]
KicOffset-rm: 1.927 arcsec [4.30σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

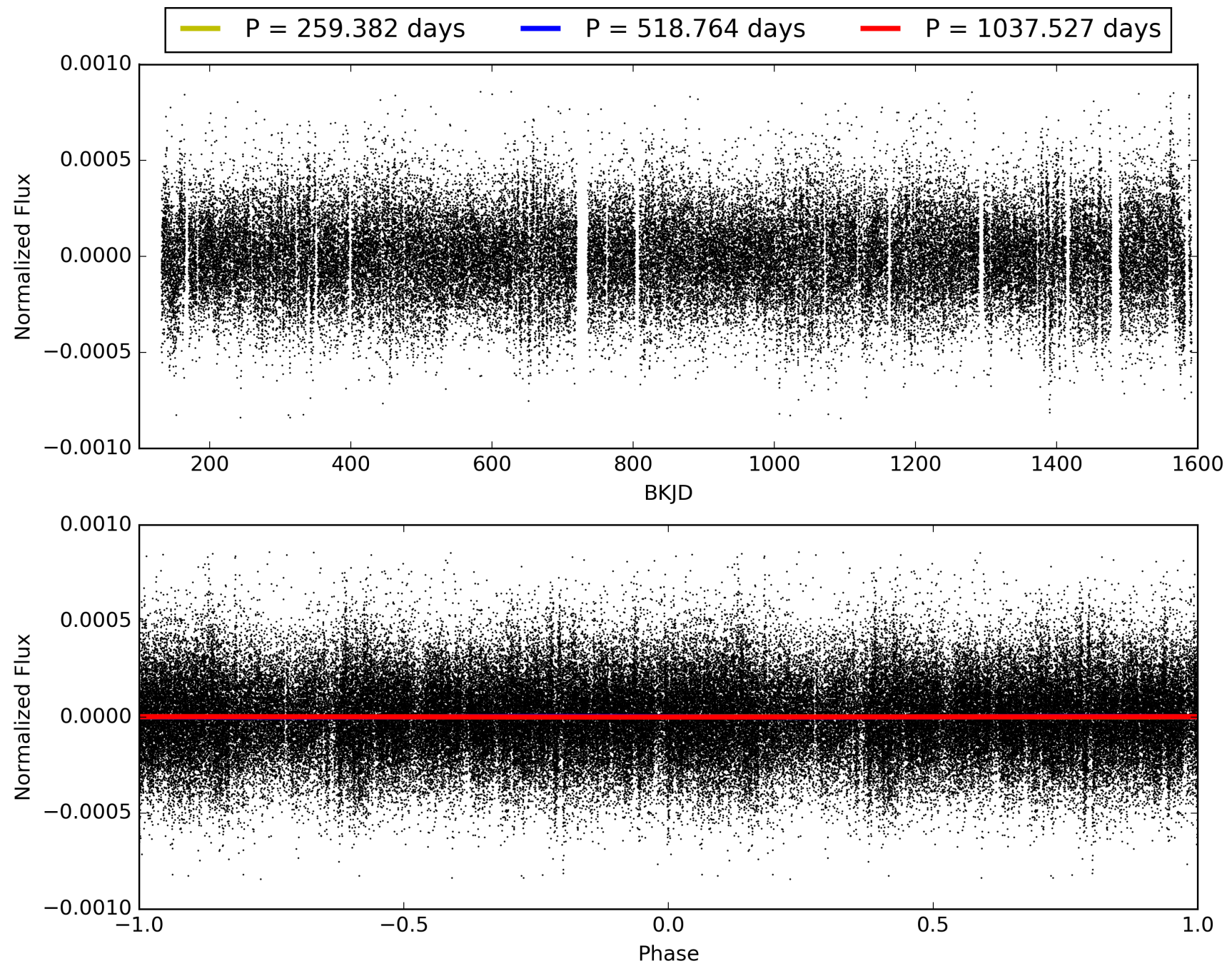
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:04:28 Z

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

TCE 009406878-01, PDC Light Curves

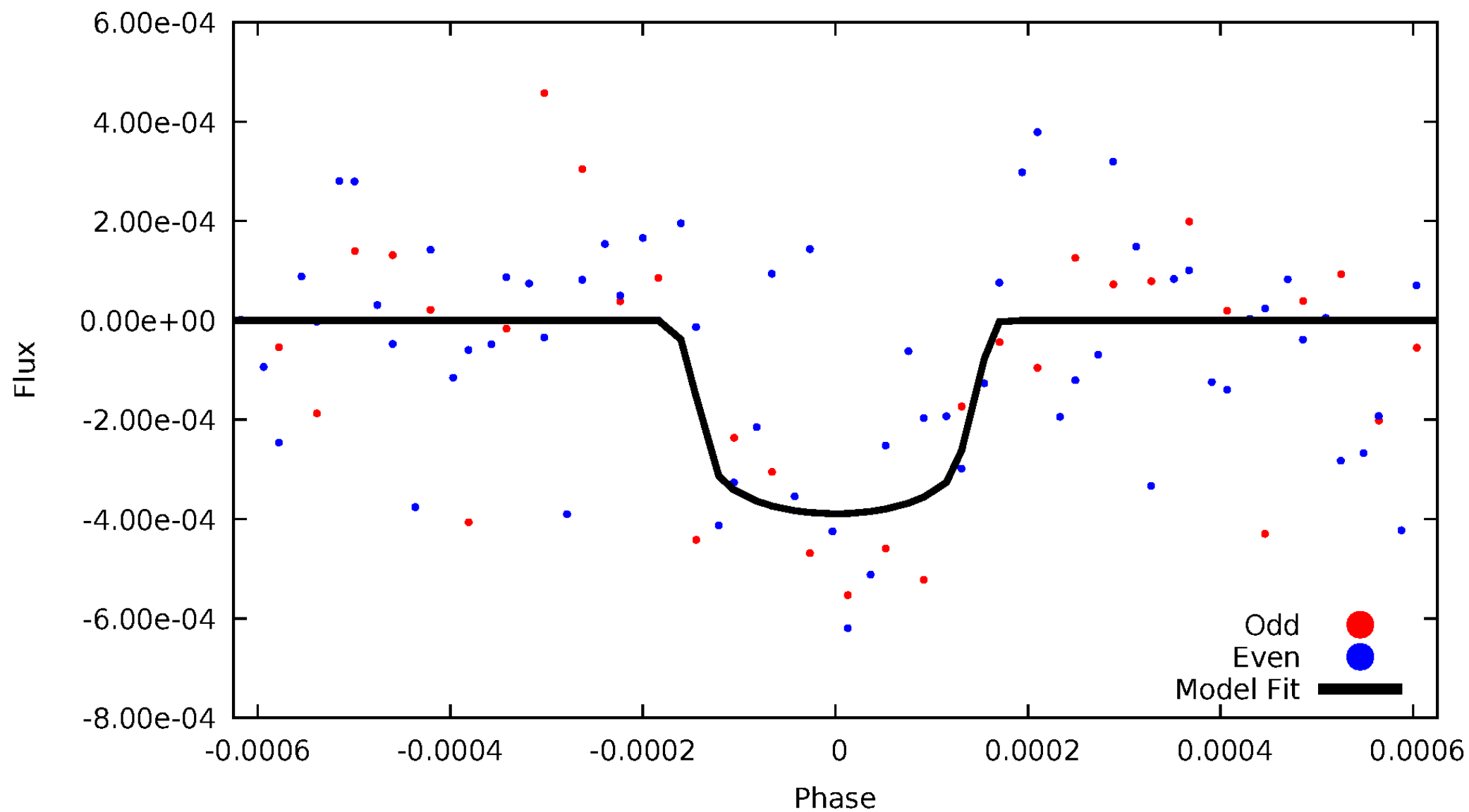


TCE 009406878-01



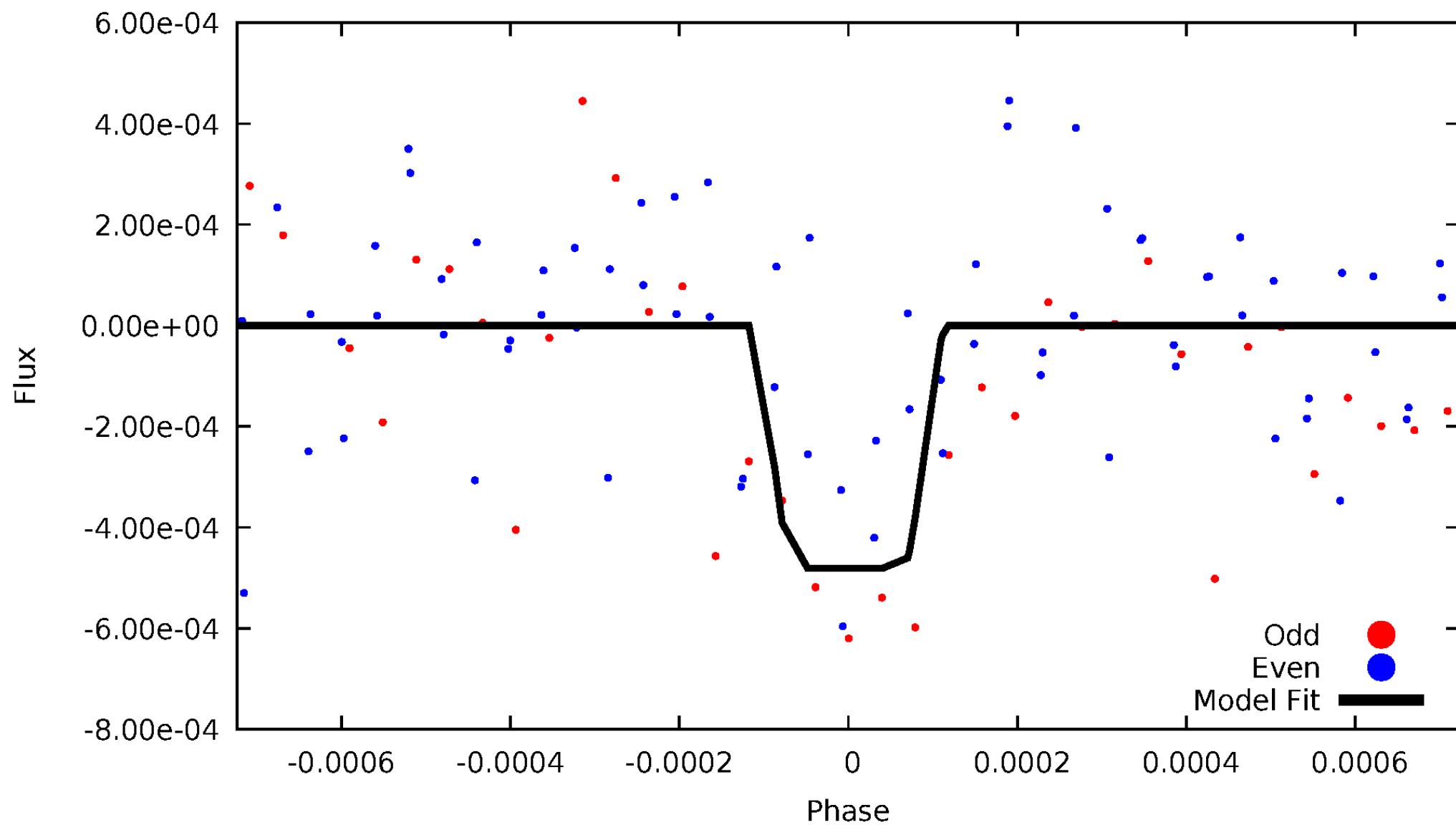
DV Odd/Even

TCE 009406878-01

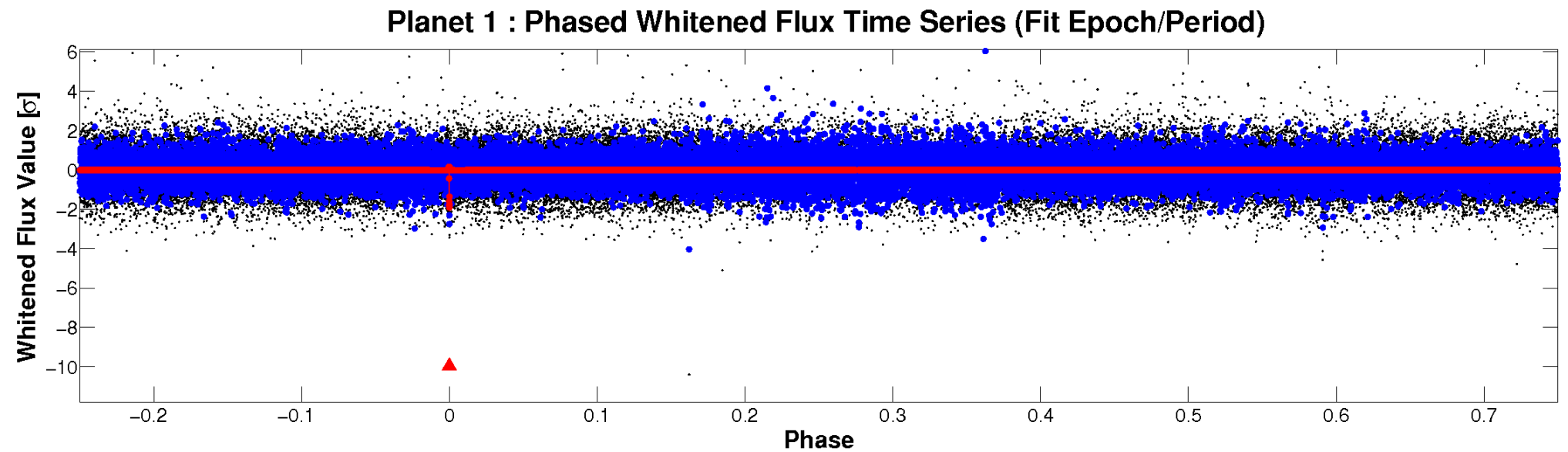
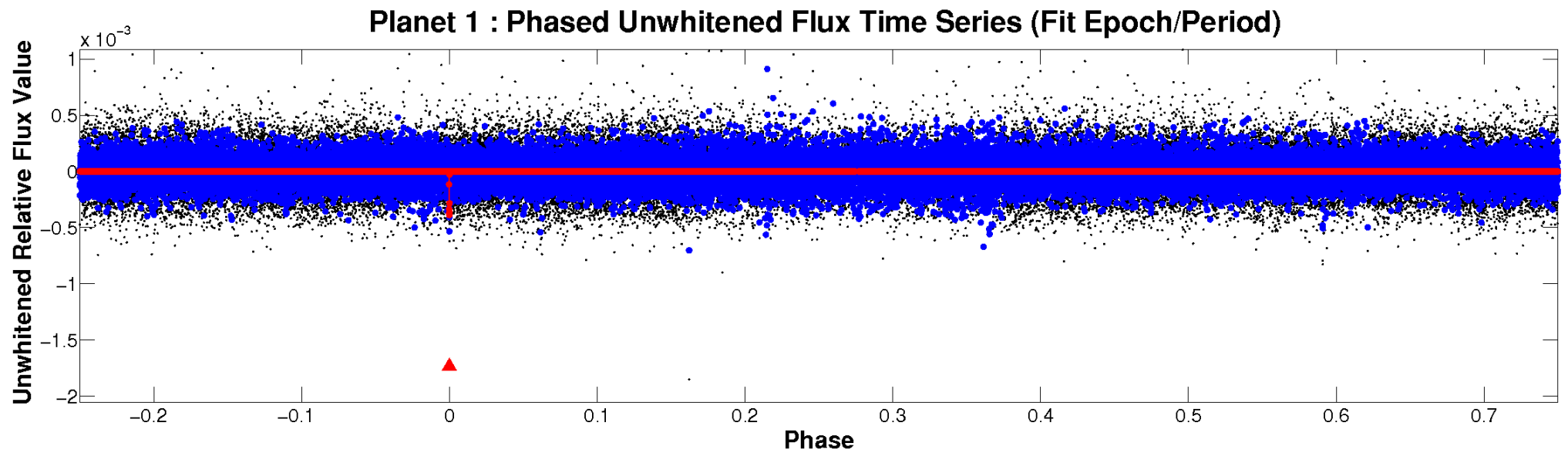


ALT Odd/Even

TCE 009406878-01

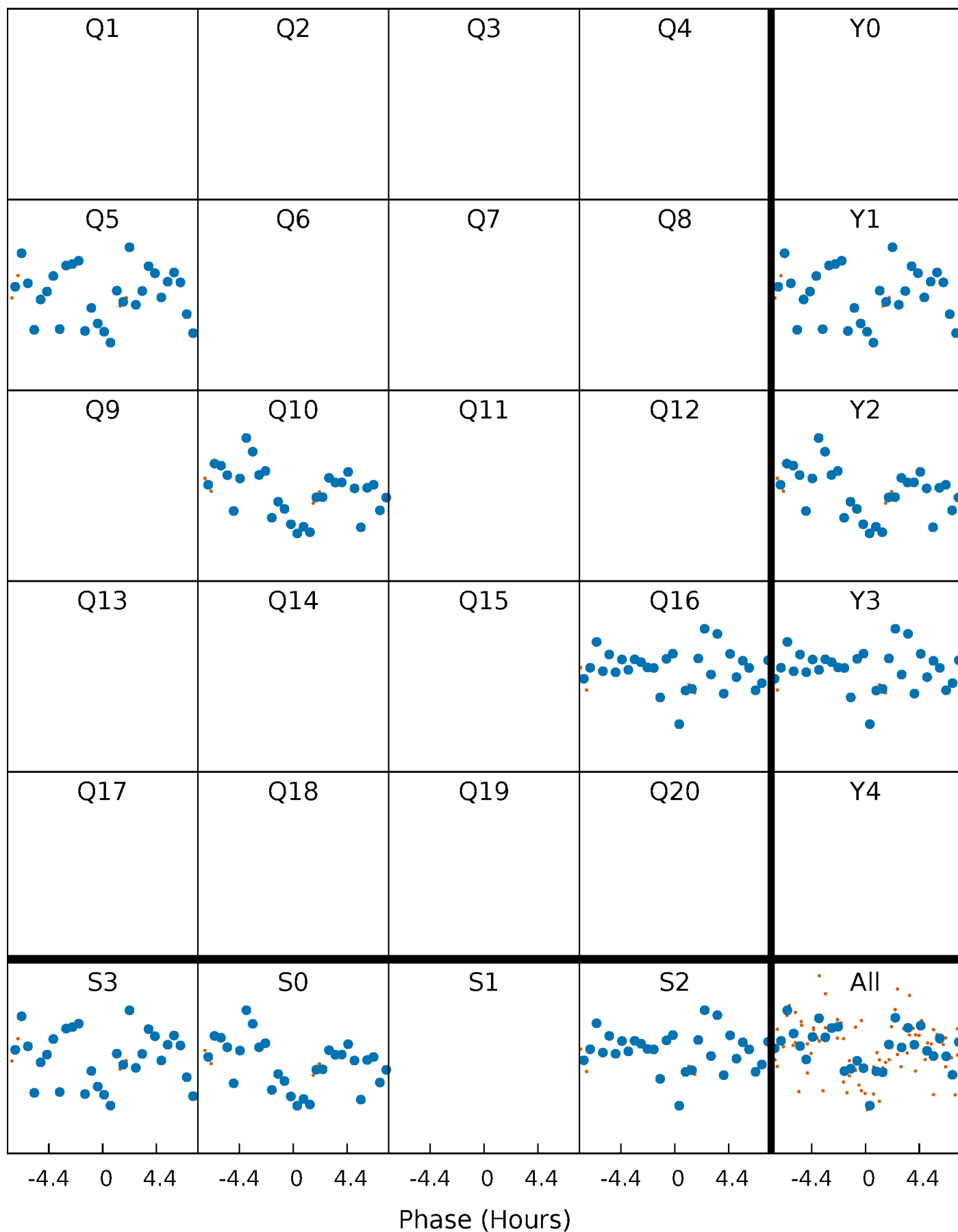


Non-Whitened Vs. Whitened Light Curve



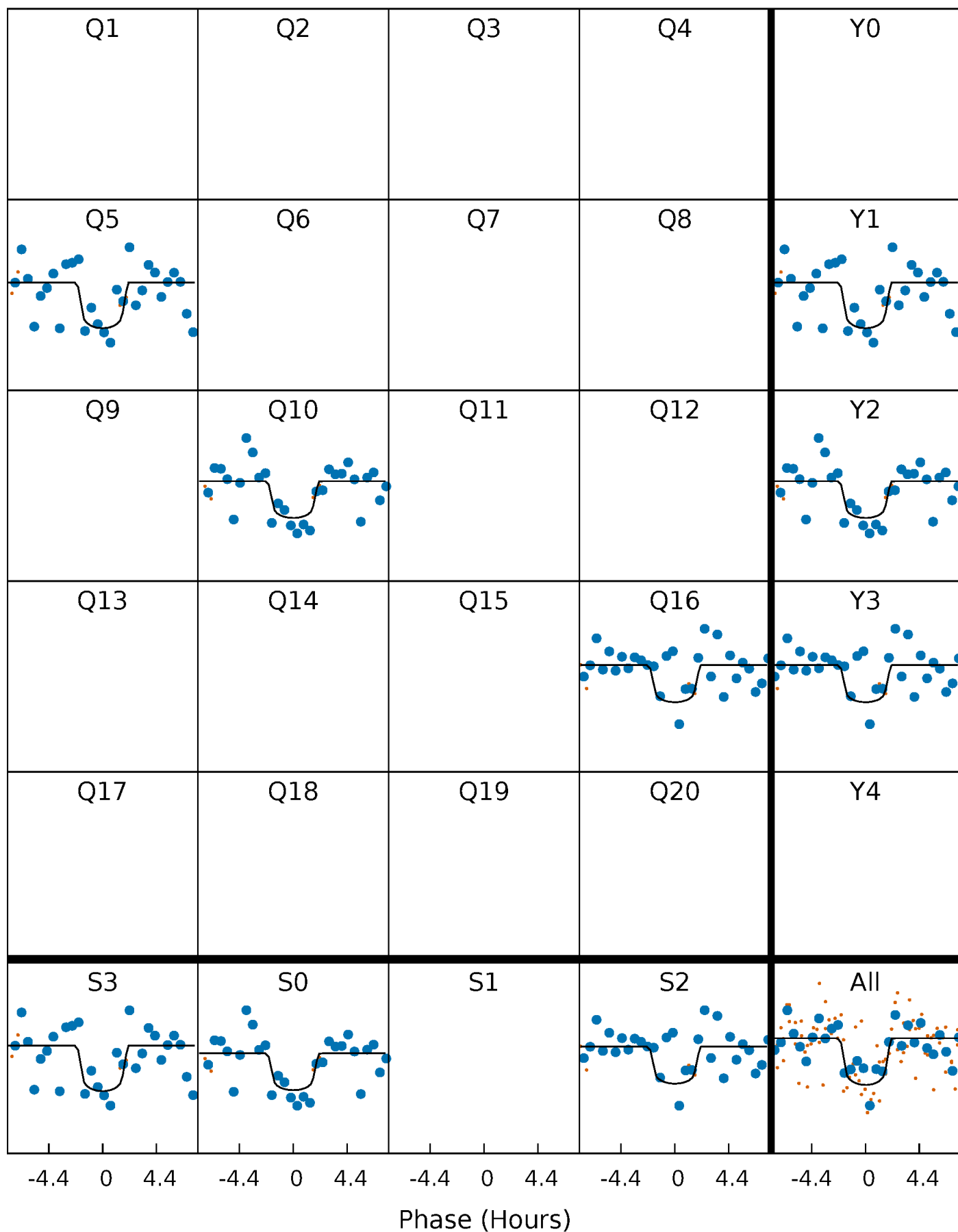
PDC Quarter-Phased Transit Curves

TCE 009406878-01 P=518.763697 Days $T_0=455.670510$ (BKJD)



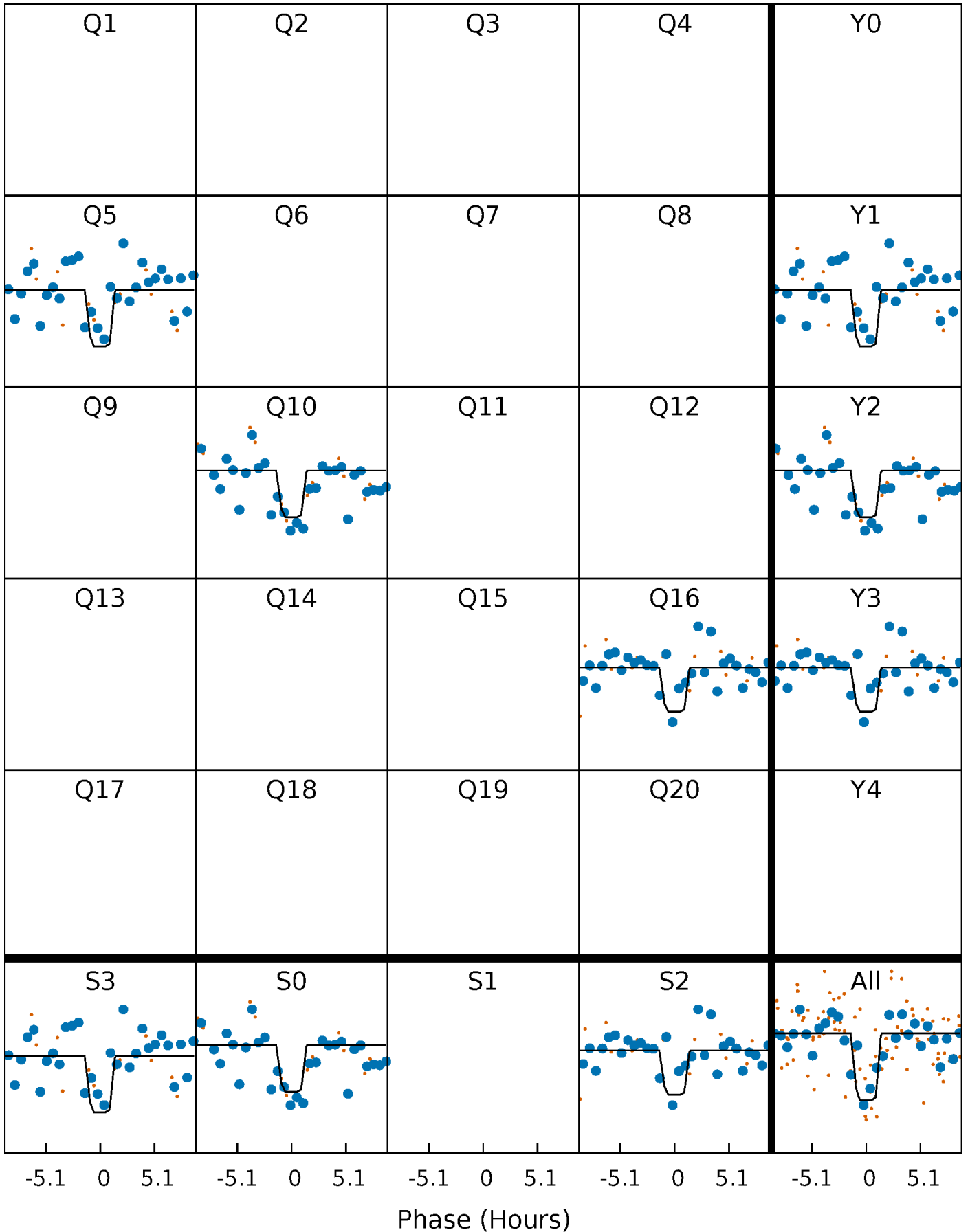
DV Quarter-Phased Transit Curves

TCE 009406878-01 P=518.763697 Days $T_0=455.670510$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

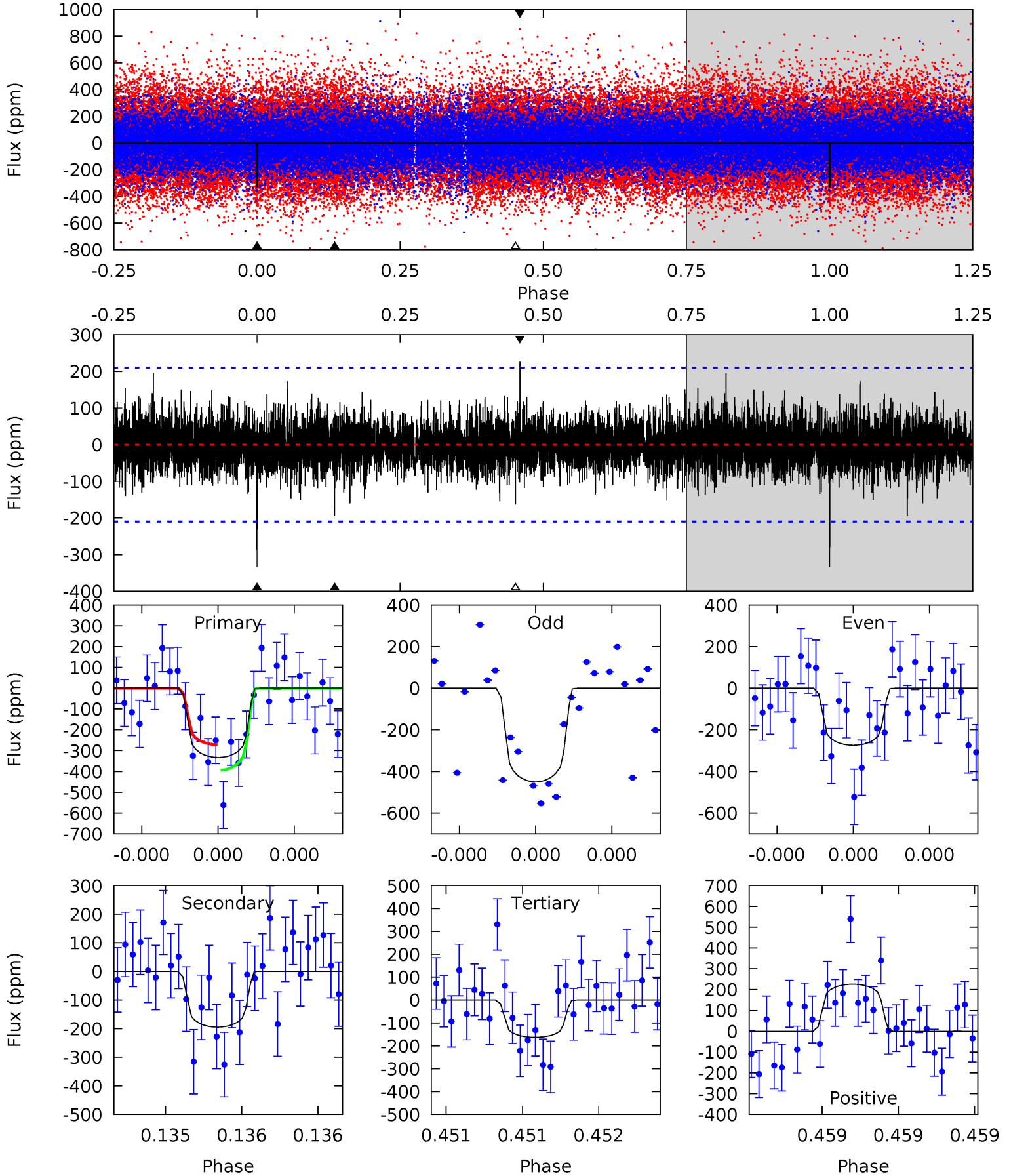
TCE 009406878-01 P=518.767221 Days $T_0=455.673477$ (BKJD)



DV Model-Shift Uniqueness Test

009406878-01, P = 518.763697 Days, E = 455.670510 Days

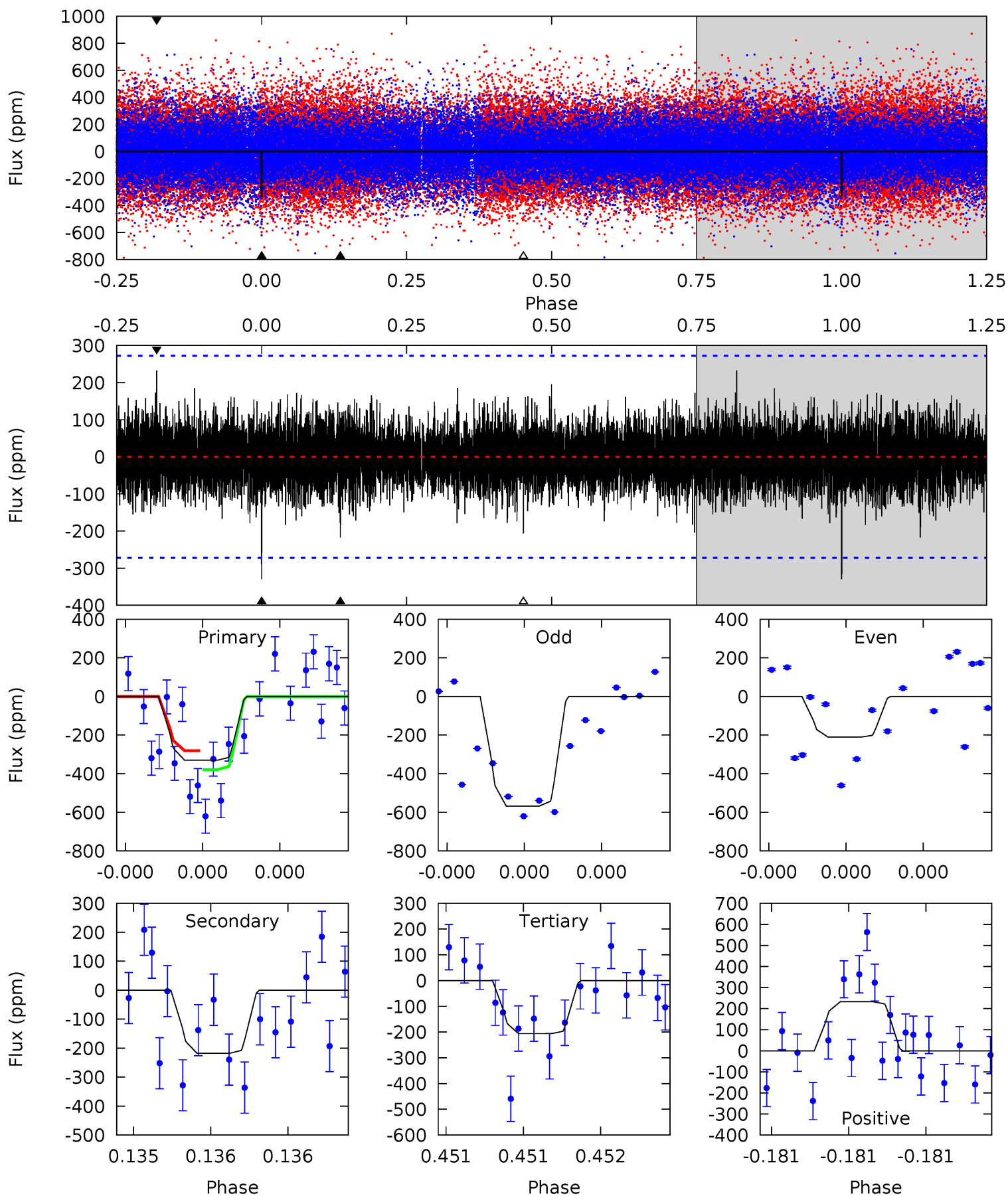
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.92	5.22	4.37	6.06	5.63	3.57	1.14	4.56	2.86	0.85	-0.84	2.24	1.00	0.40	1.65



Alt Model-Shift Uniqueness Test

009406878-01, P = 518.767221 Days, E = 455.673477 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.95	4.58	4.34	4.89	5.73	3.71	1.05	2.61	2.05	0.24	-0.32	3.48	1.33	0.41	1.03



Stellar Parameters For KIC 009406878

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6238^{+169}_{-188}	$4.506^{+0.062}_{-0.200}$	$-0.620^{+0.300}_{-0.300}$	$0.889^{+0.251}_{-0.084}$	$0.924^{+0.104}_{-0.094}$	$1.850^{+0.478}_{-0.921}$
	+3%/-3%	+1%/-4%	+48%/-48%	+28%/-9%	+11%/-10%	+26%/-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 009406878-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-195 ± 37	$2.33^{+1.53}_{-1.41}$	332^{+23}_{-15}	4928^{+2865}_{-845}	$29382^{+159482}_{-18885}$
Alt.	-218 ± 48	$2.42^{+1.61}_{-1.41}$	331^{+23}_{-14}	4965^{+2691}_{-906}	$30755^{+139490}_{-20258}$

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

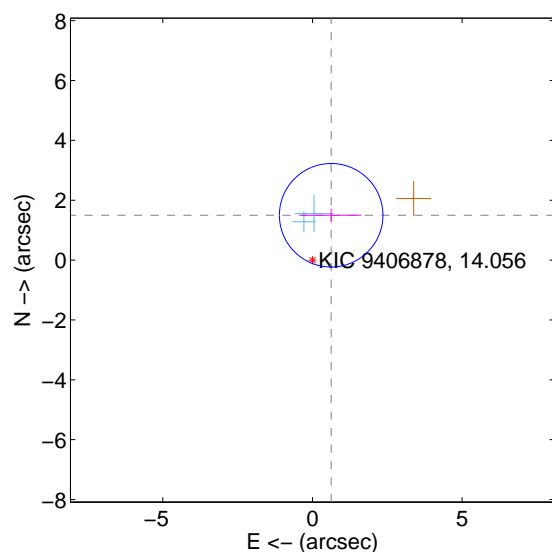
Supplemental centroid analysis for 009406878-01. Kepler magnitude: 14.06. Transit SNR 7.84

There are 2 quarters with good PRF difference image offsets

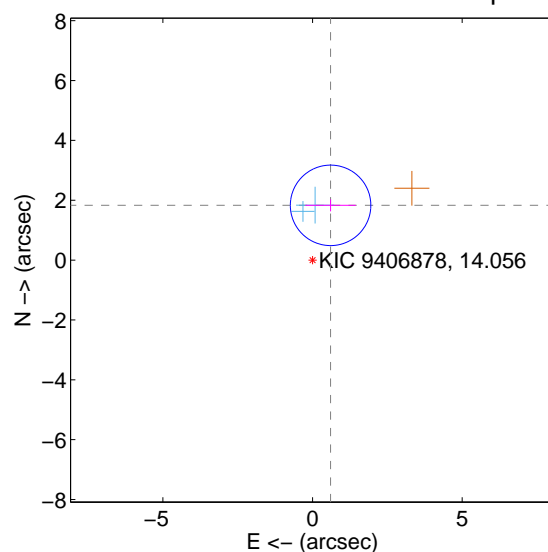
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.624 ± 0.577	2.82	-0.626 ± 1.002	1.499 ± 0.216
PRF-fit source offset from KIC position	1.927 ± 0.448	4.30	-0.603 ± 0.842	1.830 ± 0.202
photometric centroid source offset	1.88 ± 1.62	1.16	1.72 ± 1.56	-0.77 ± 1.89

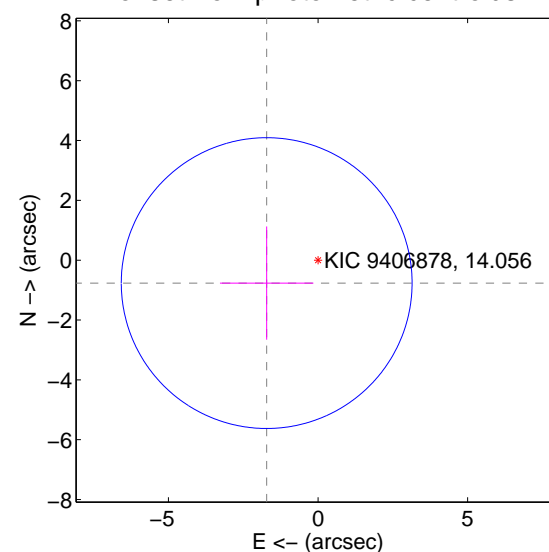
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

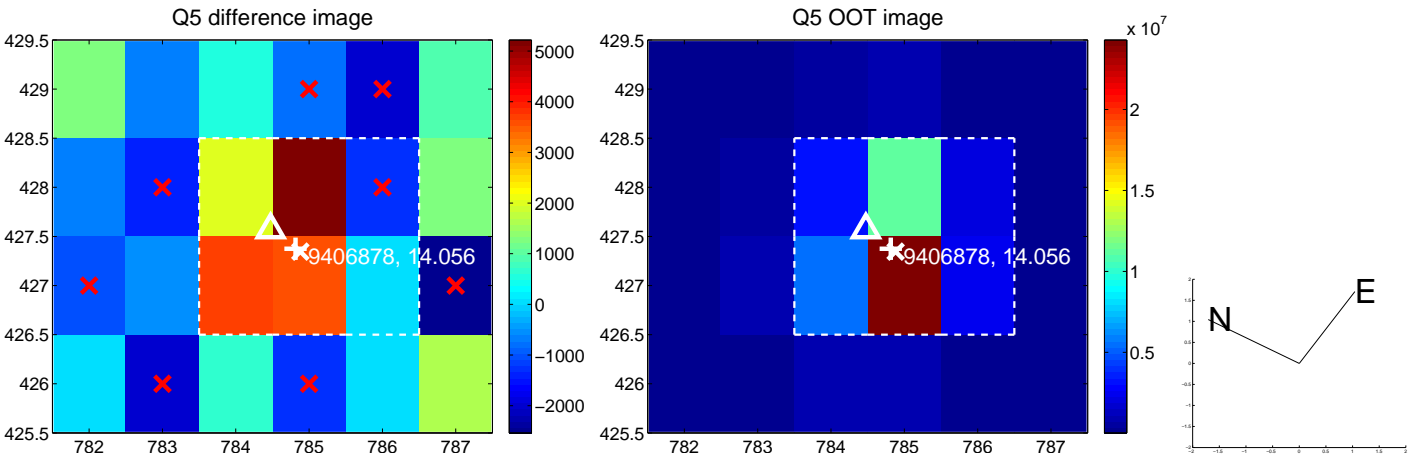


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

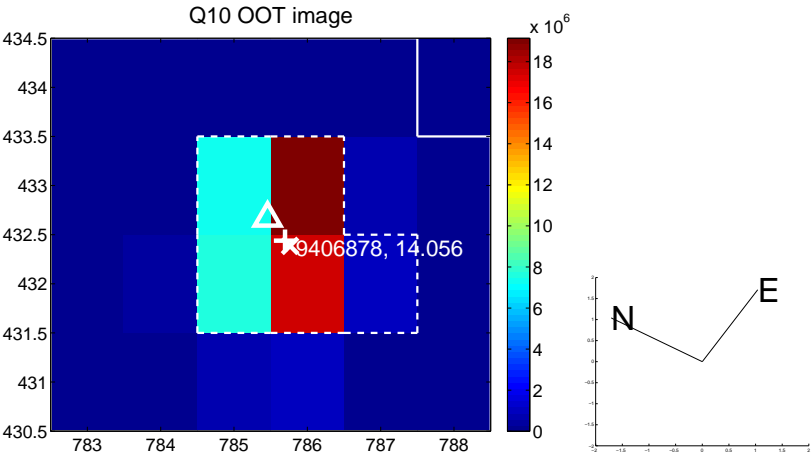
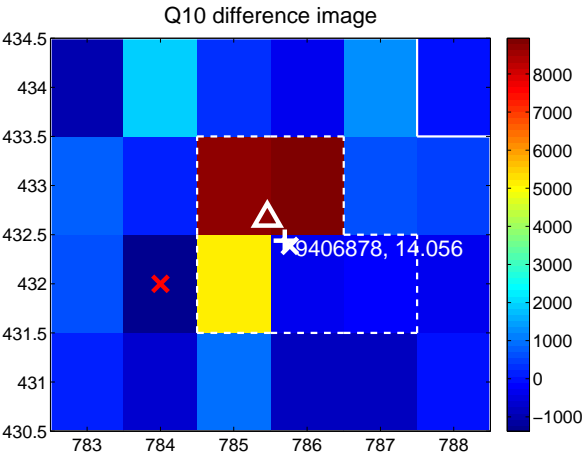
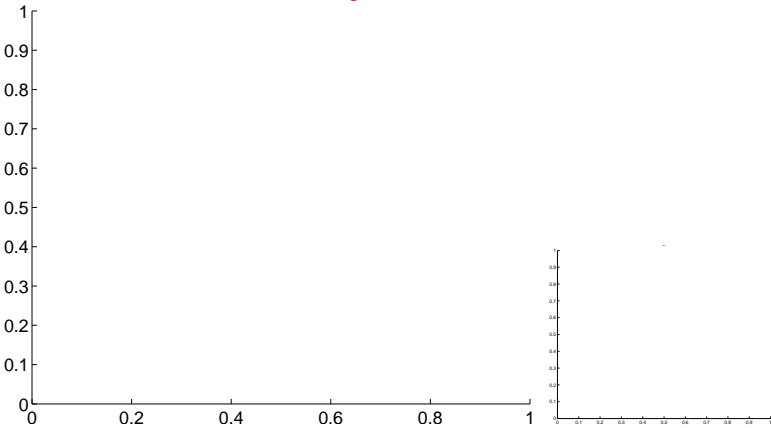


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

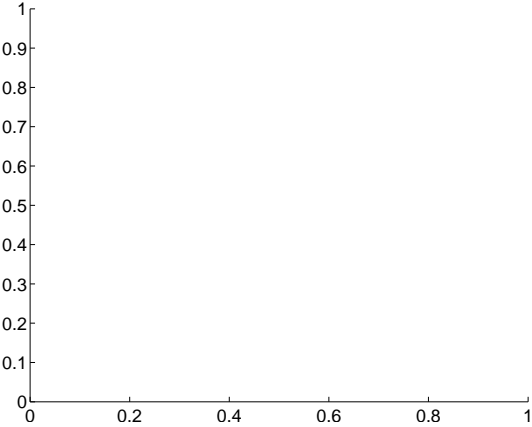
Q9 no difference image



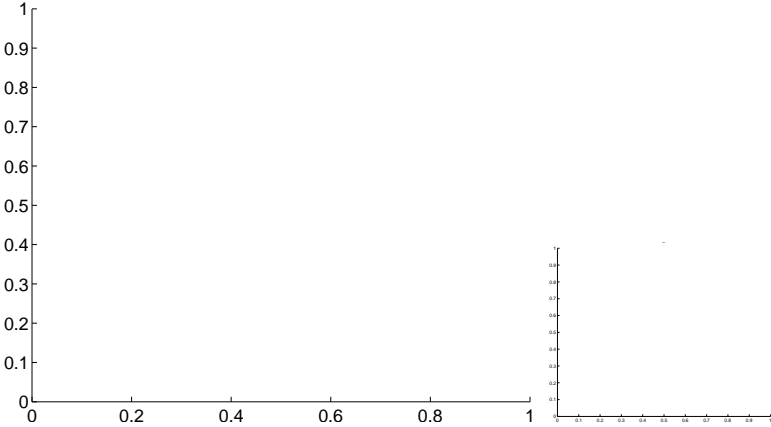
Q9 no OOT image



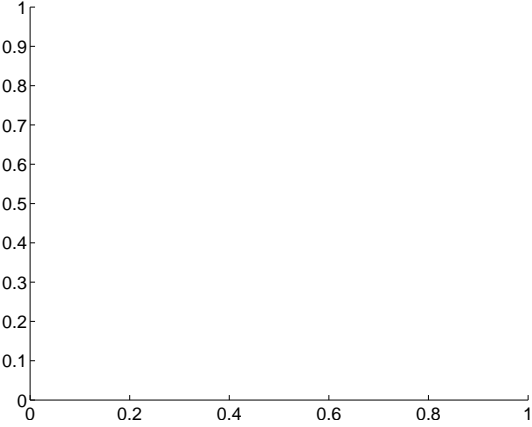
Q11 no difference image



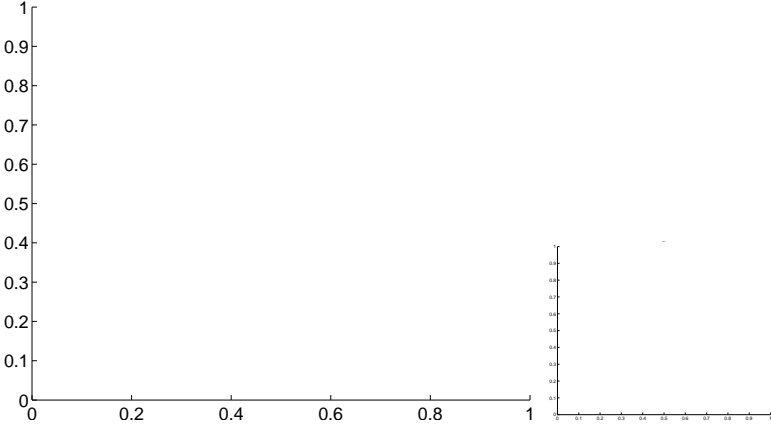
Q11 no OOT image



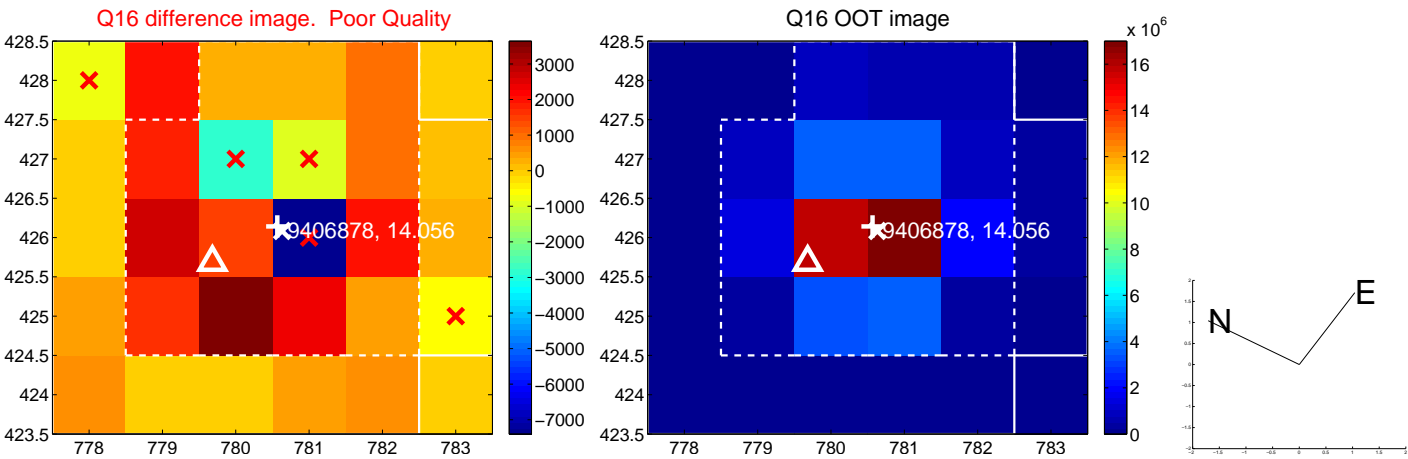
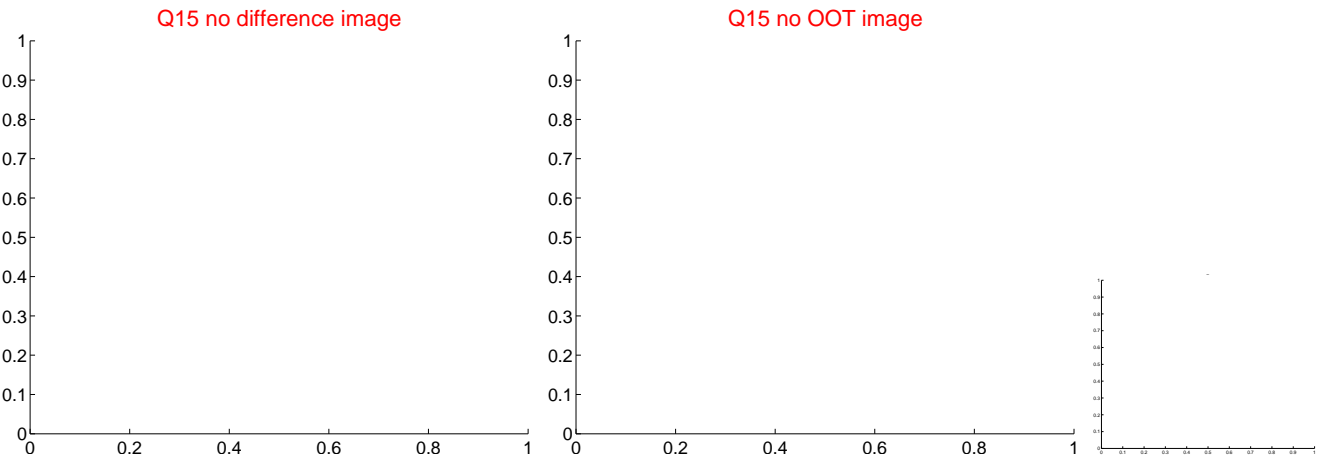
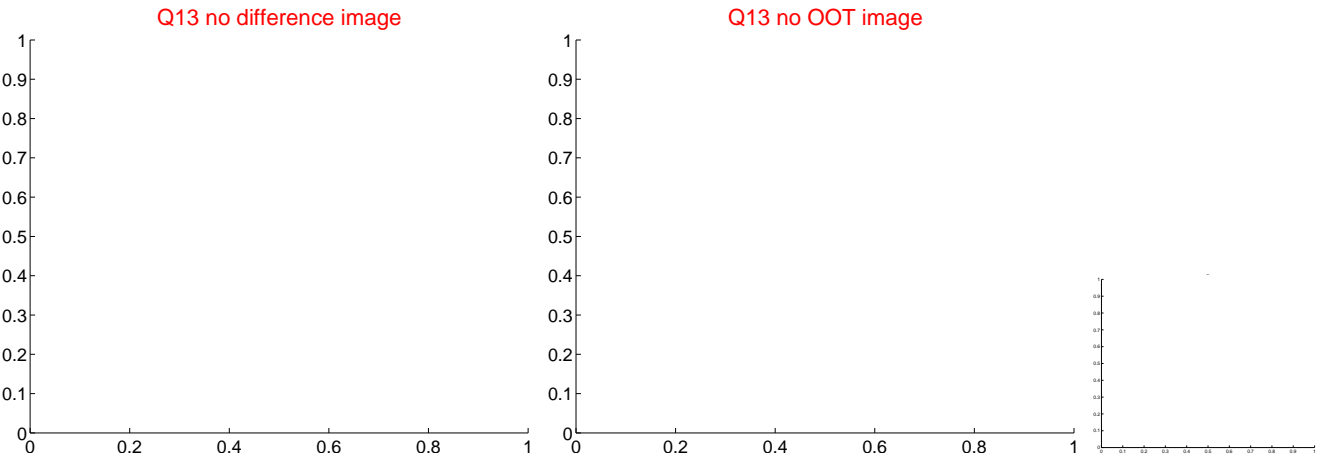
Q12 no difference image



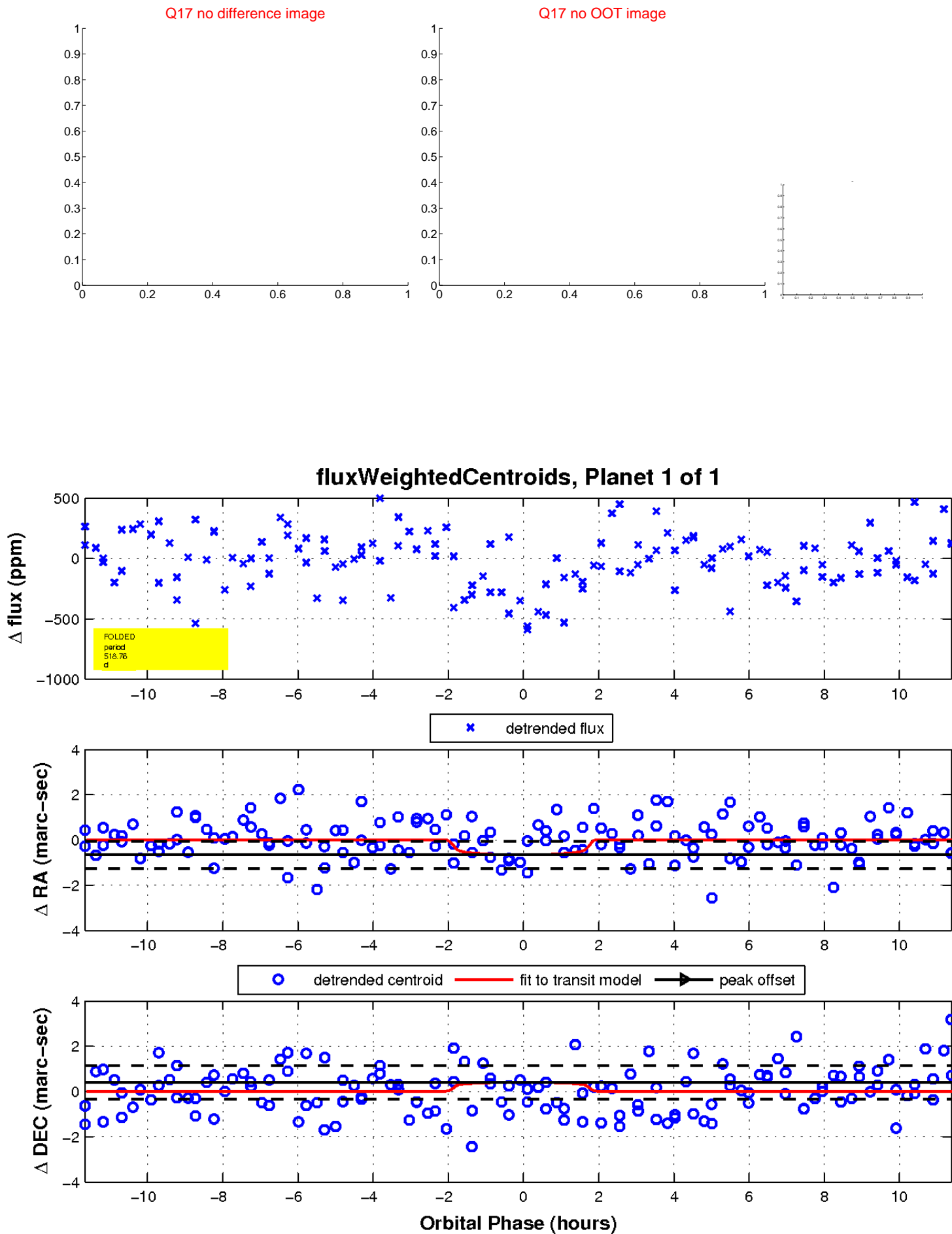
Q12 no OOT image



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



UKIRT Image

Declination

