

KIC 009777757

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})
009777757-01	OBS	4243.01	1.332568	132.050764	31.6	4.691	12.4	13.0	2.24	6613	1.47	12474.22
009777757-02	OBS	No	349.598428	234.211126	363.8	6.019	10.8	7.7	2.24	6613	4.66	7.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009777757-01	OBS	FP	0.00	0	0	1	1	CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
009777757-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_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.

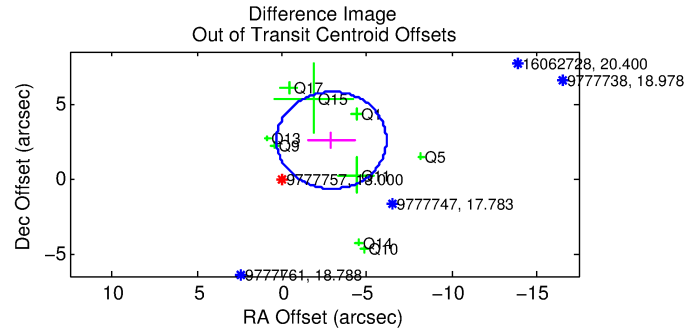
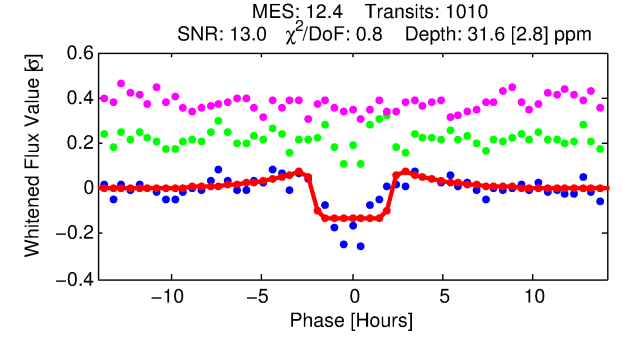
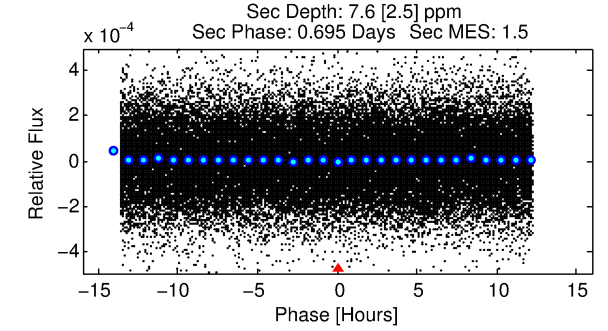
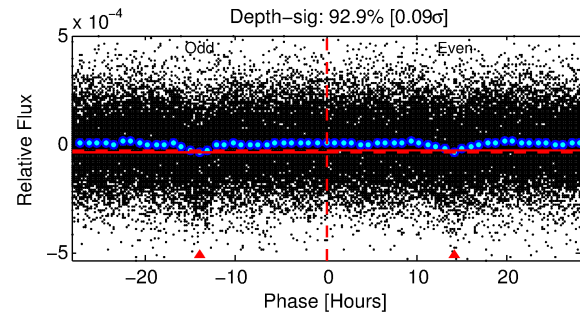
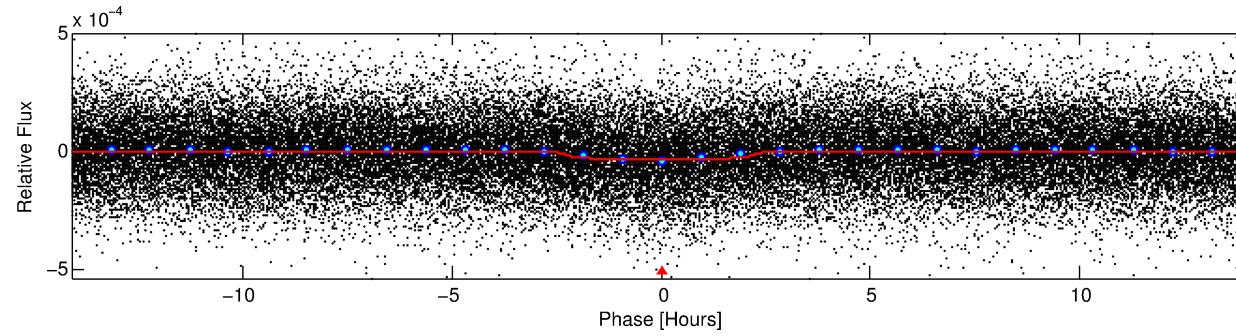
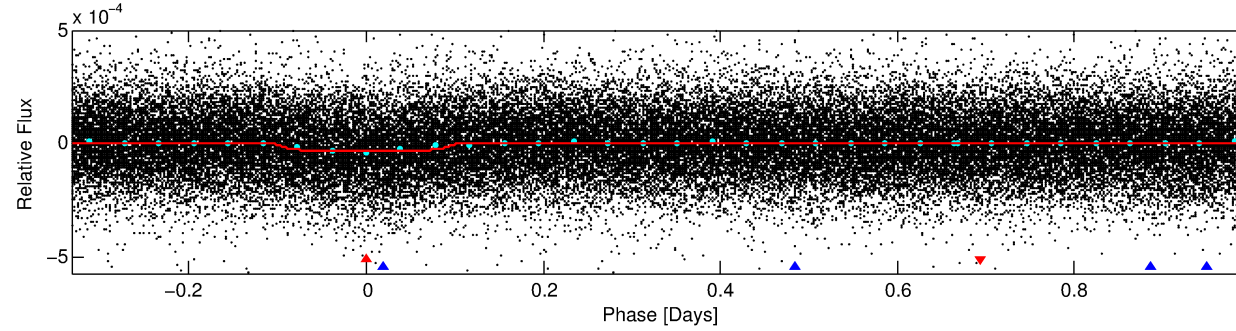
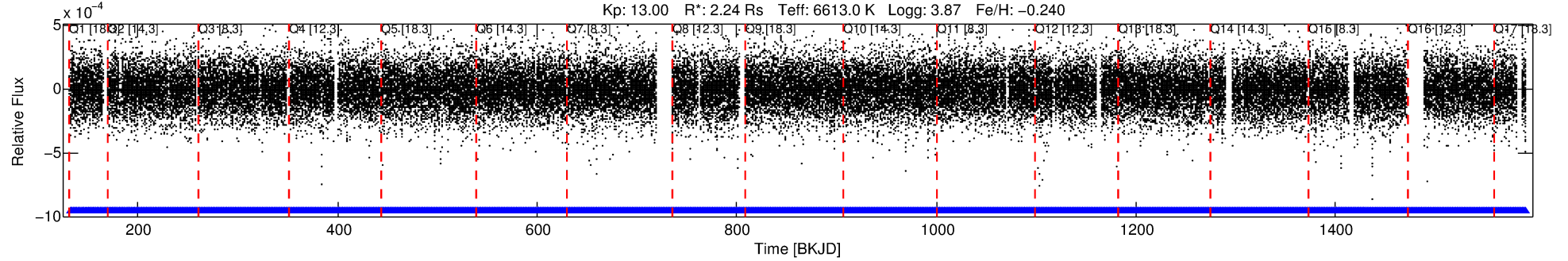
Ephemeris Match Information For 009777757-01

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($\prime\prime$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
009777757-01	9777757	BR-Cyg-pri	9899416	1:1	1477.6	371	4	10.03	13.00	20902.00	Col-Anomaly	0	0.24	0.07

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9777757 Candidate: 1 of 2 Period: 1.333 d
KOI: K04243.01 Corr: 0.912



DV Fit Results:

Period = 1.33257 [0.00001] d
Epoch = 132.0508 [0.0026] BKJD
Rp/R* = 0.0060 [0.0013]
a/R* = 1.35 [0.78]
b = 0.90 [0.27]
Seff = 12474.22 [8615.01]
Teq = 2695 [465] K
Rp = 1.47 [0.71] Re
a = 0.0262 [0.0110] AU
Ag = 1.34 [1.17] [0.29σ]
Teffp = 4483 [646] K [2.25σ]

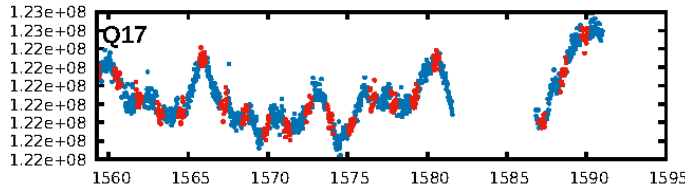
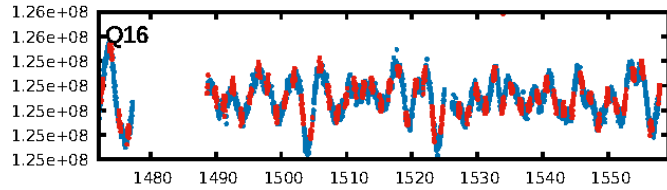
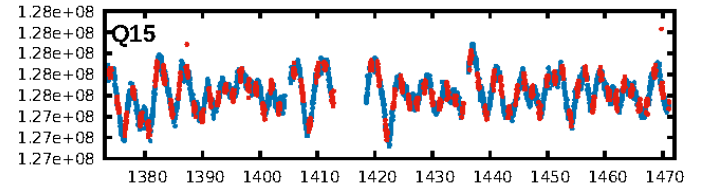
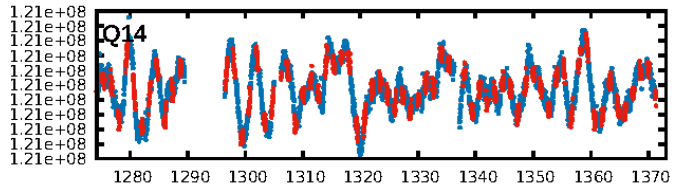
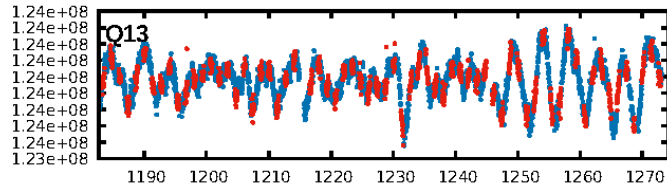
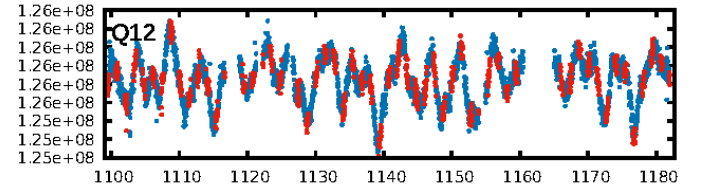
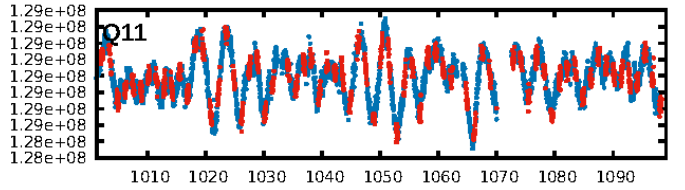
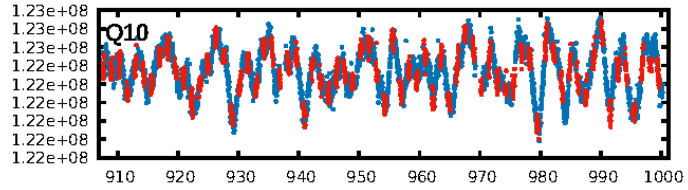
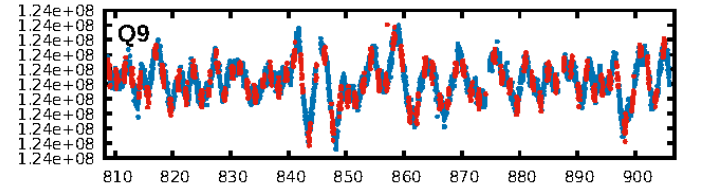
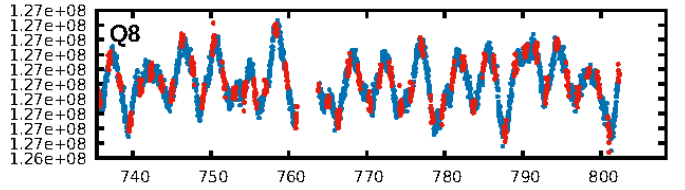
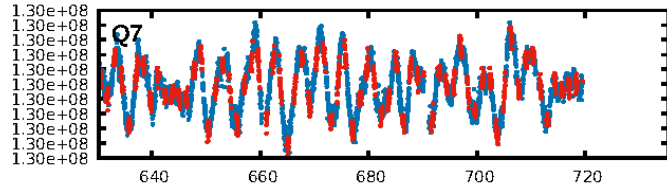
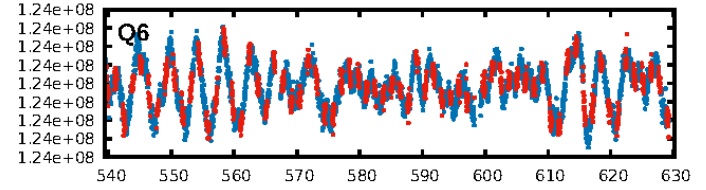
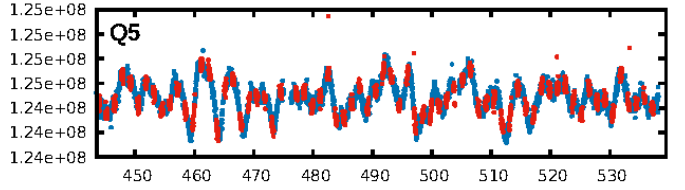
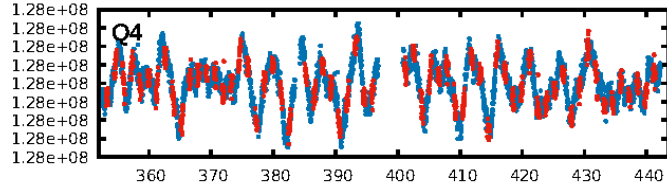
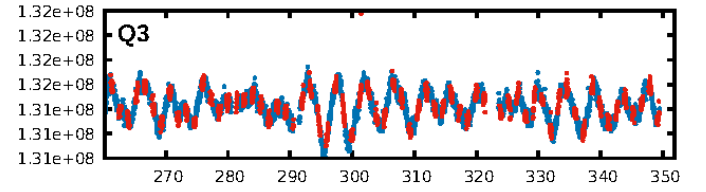
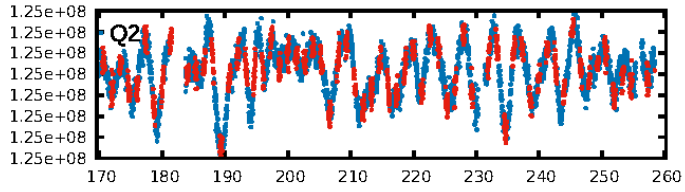
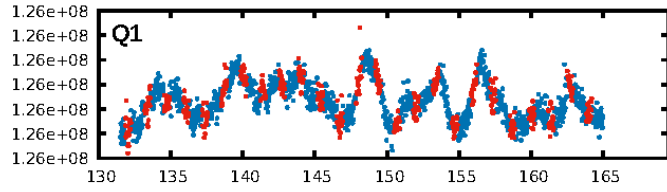
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1095.30σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.39e-28
RollingBand-fgt: 1.00 [965/965]
GhostDiagnostic-chr: 1.836
Centroid-sig: 0.0%
Centroid-so: 2.365 arcsec [4.13σ]
OotOffset-rm: 3.888 arcsec [3.61σ]
KicOffset-rm: 3.972 arcsec [3.69σ]
OotOffset-st: 2/2/0/5 [9]
KicOffset-st: 2/2/0/5 [9]
DiffImageQuality-fgm: 0.00 [0/9]
DiffImageOverlap-fno: 1.00 [17/17]

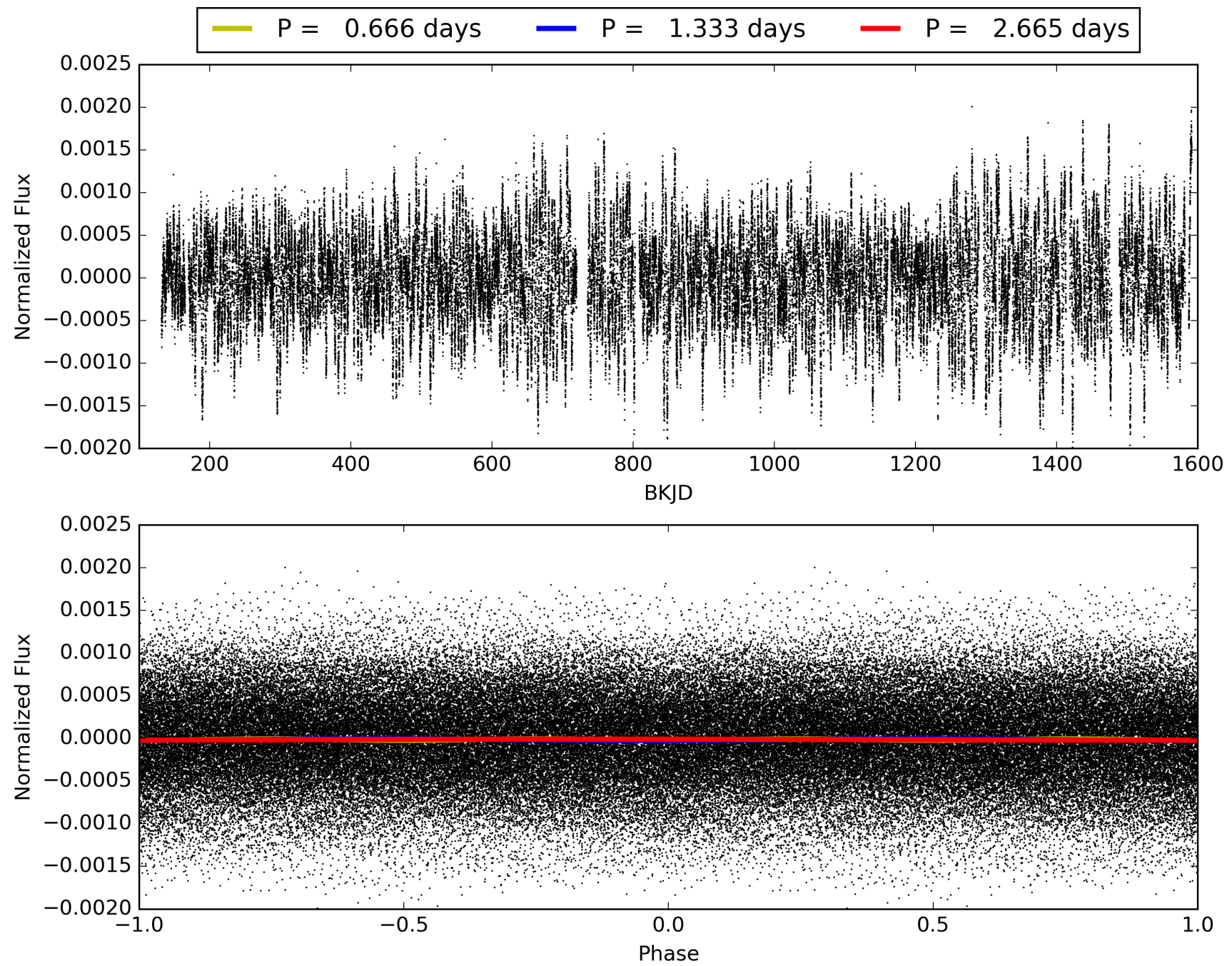
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:50:15 Z

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

TCE 009777757-01, PDC Light Curves

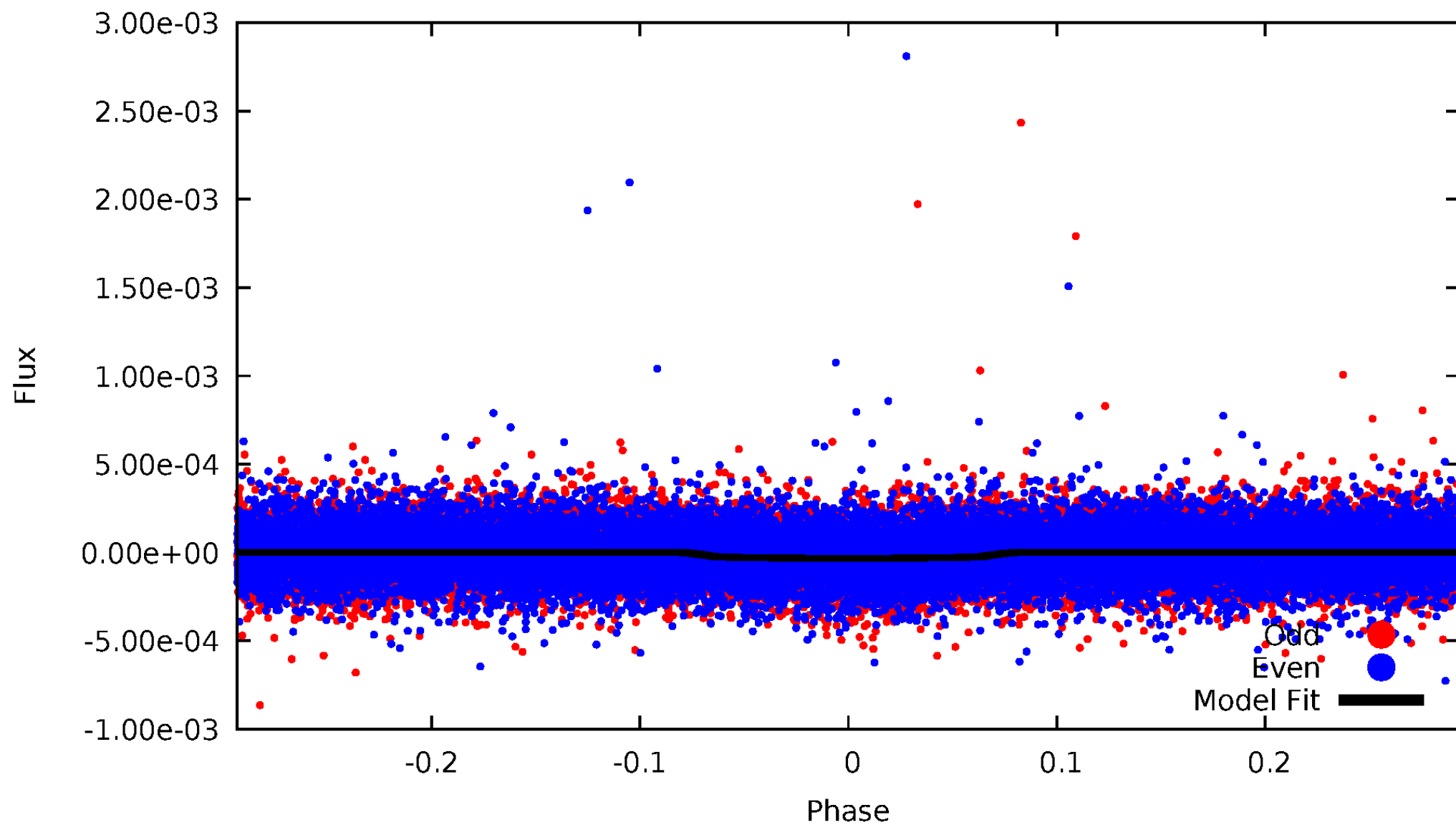


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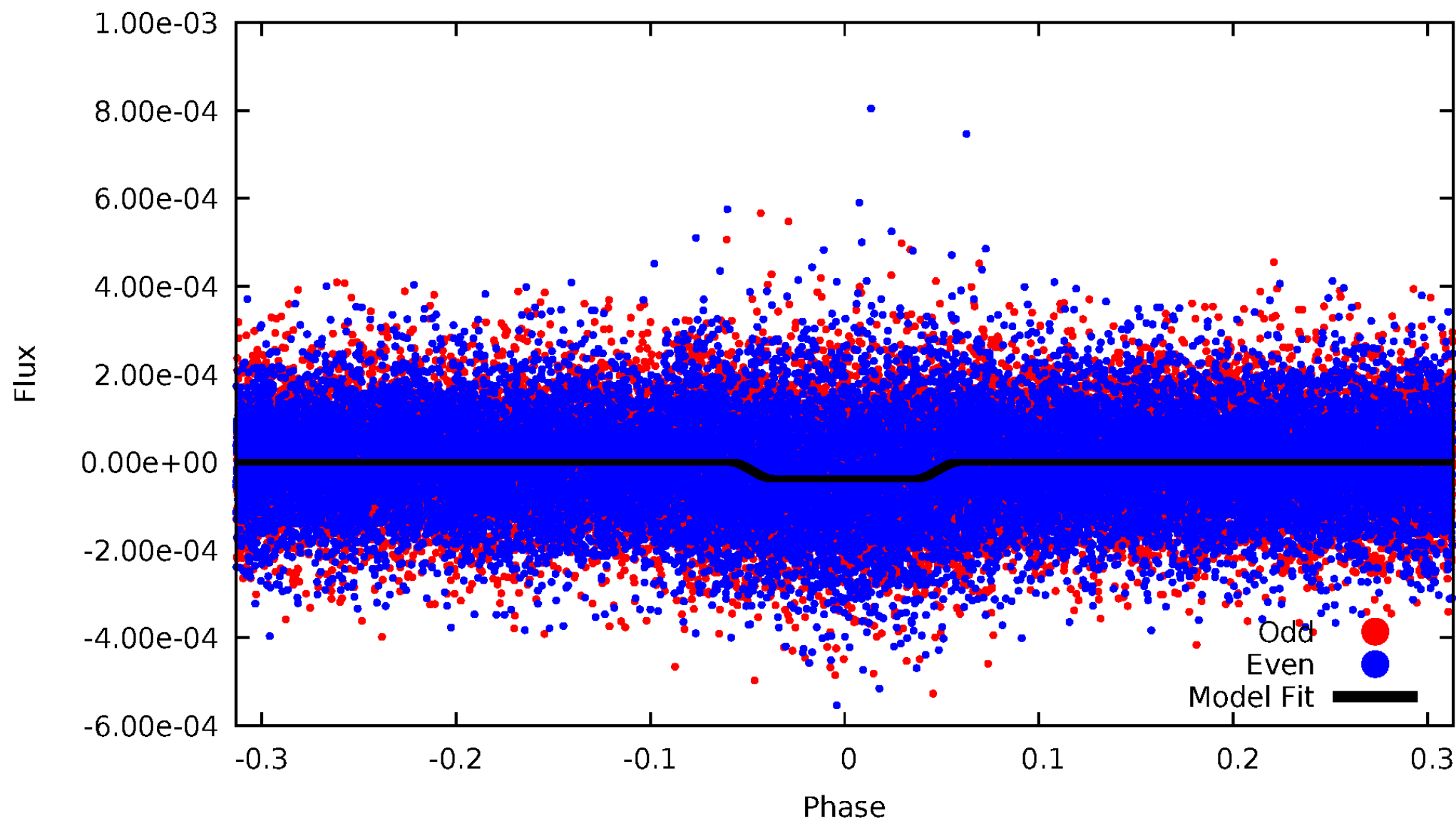
DV Odd/Even

TCE 009777757-01



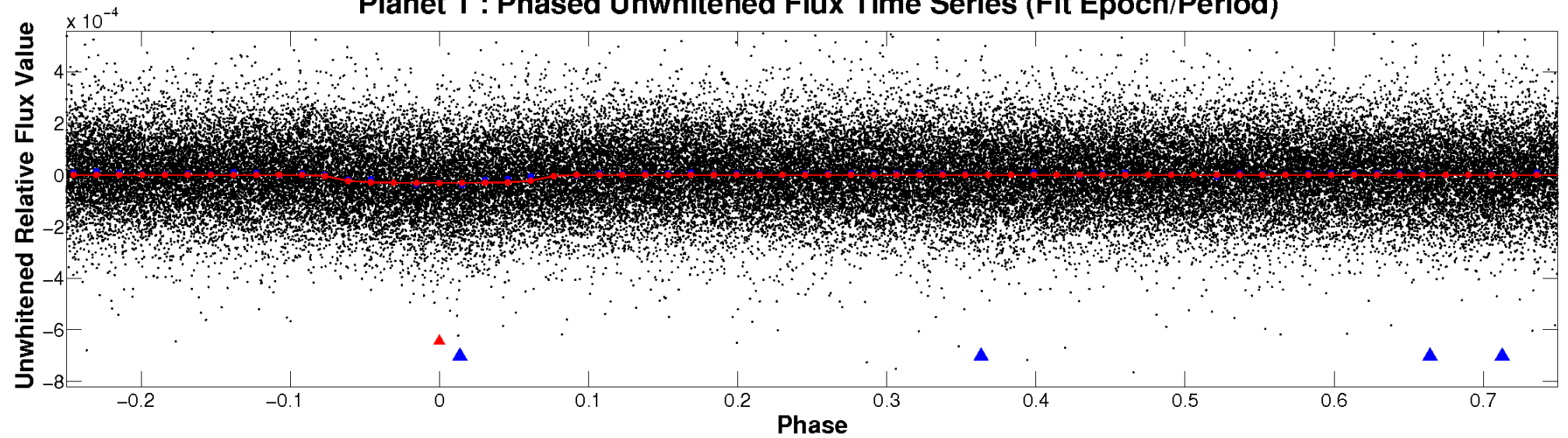
ALT Odd/Even

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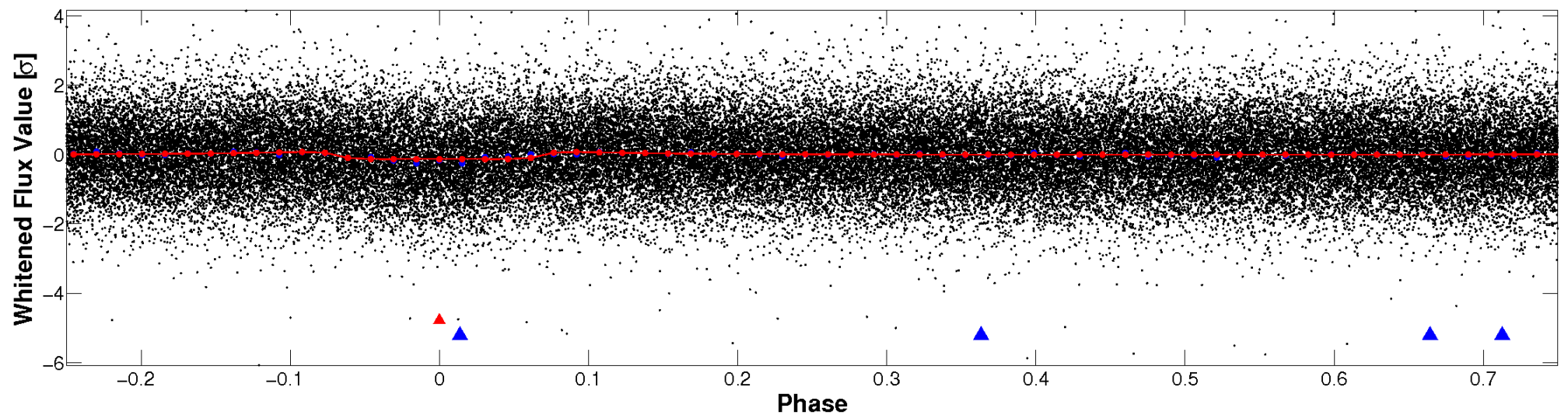


Non-Whitened Vs. Whitened Light Curve

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

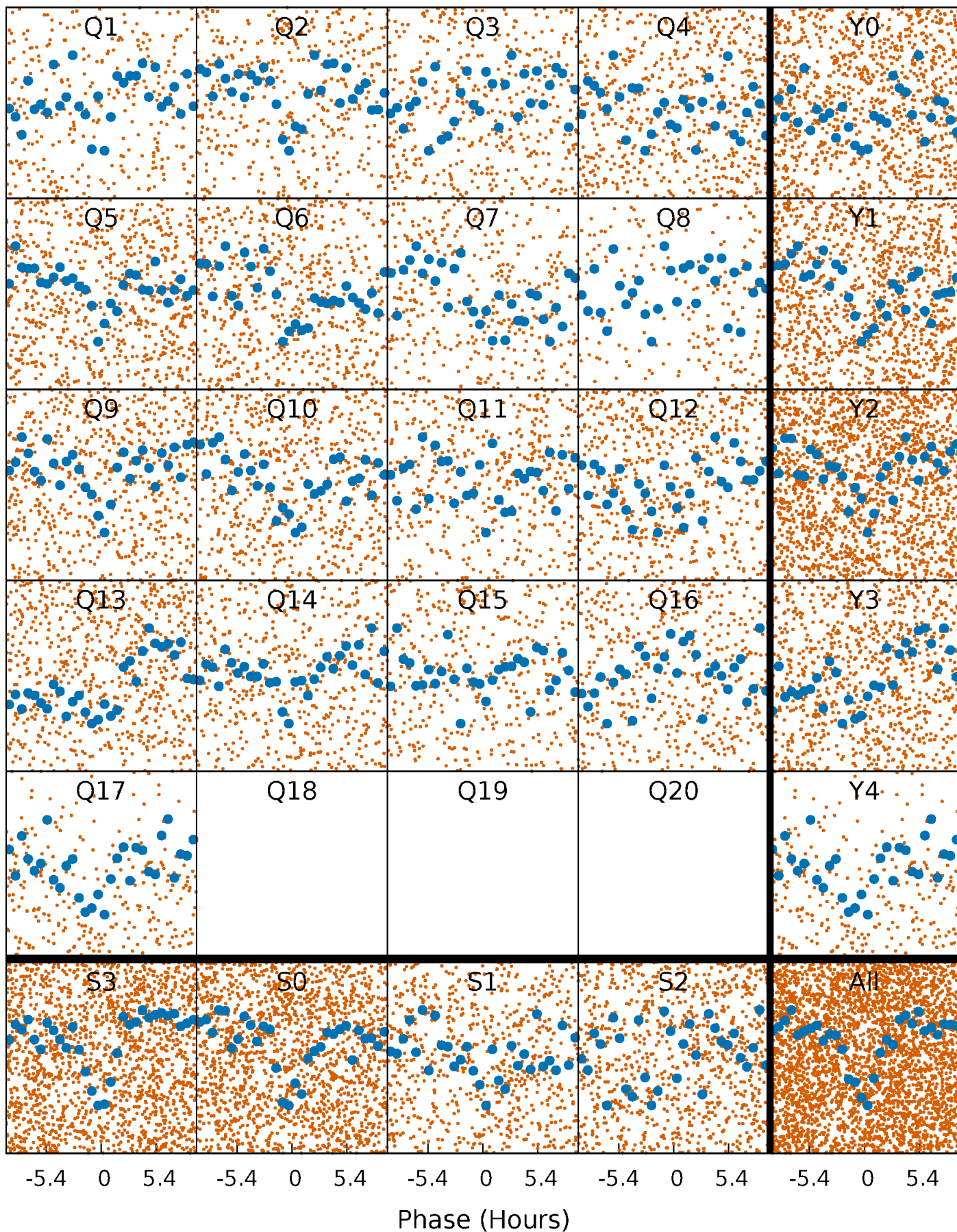


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



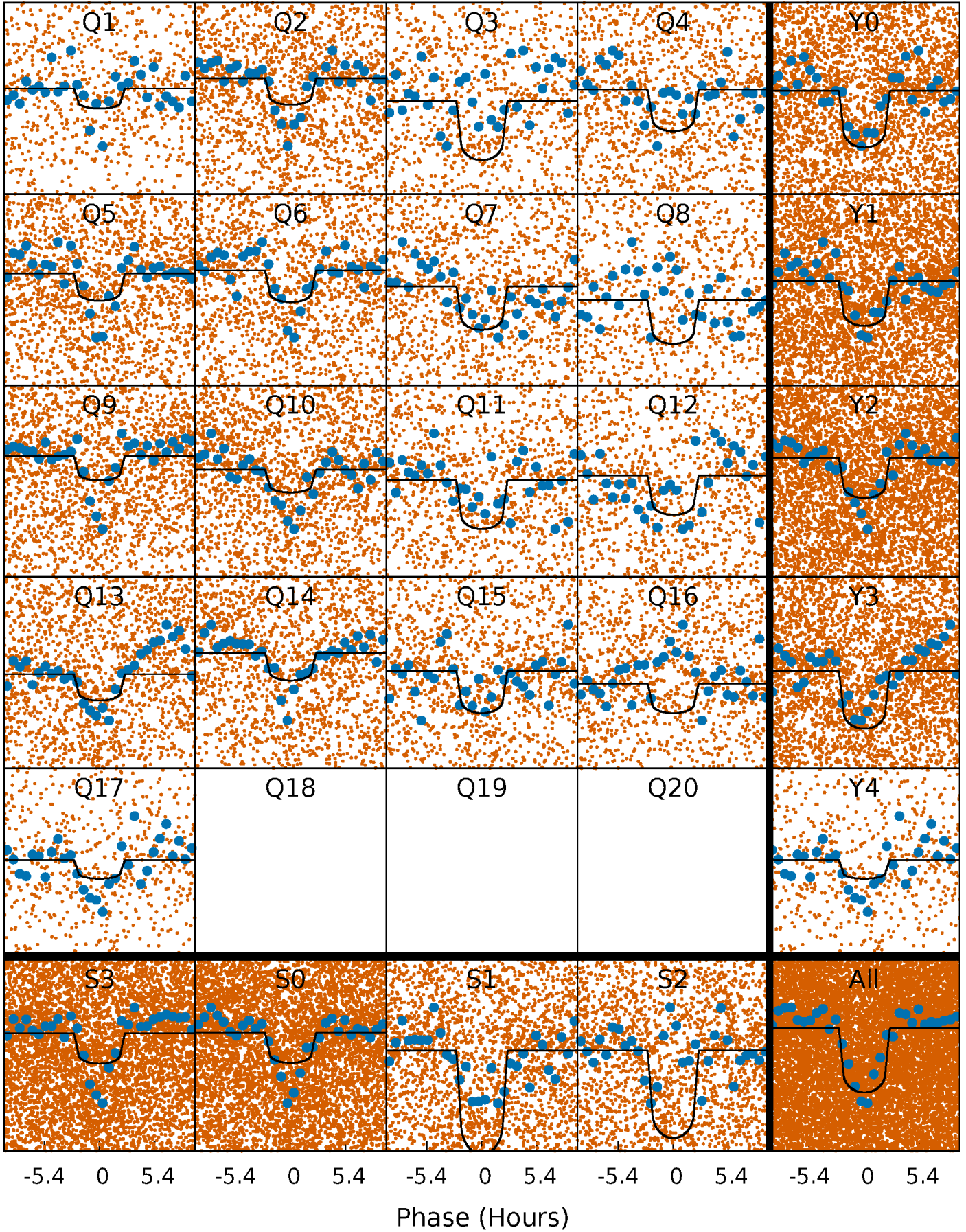
PDC Quarter-Phased Transit Curves

TCE 009777757-01 P= 1.332568 Days $T_0=132.050764$ (BKJD)



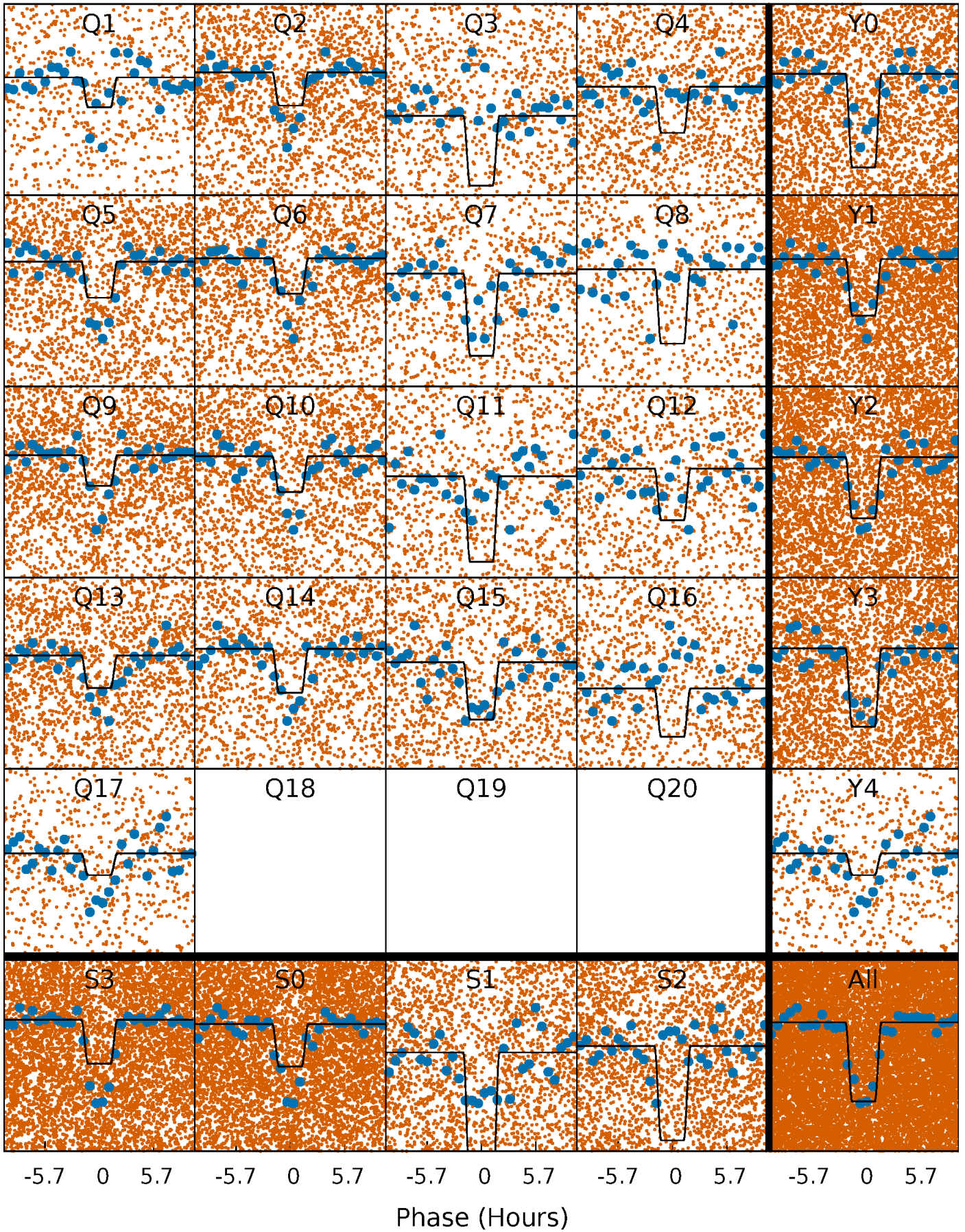
DV Quarter-Phased Transit Curves

TCE 009777757-01 P= 1.332568 Days $T_0=132.050764$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

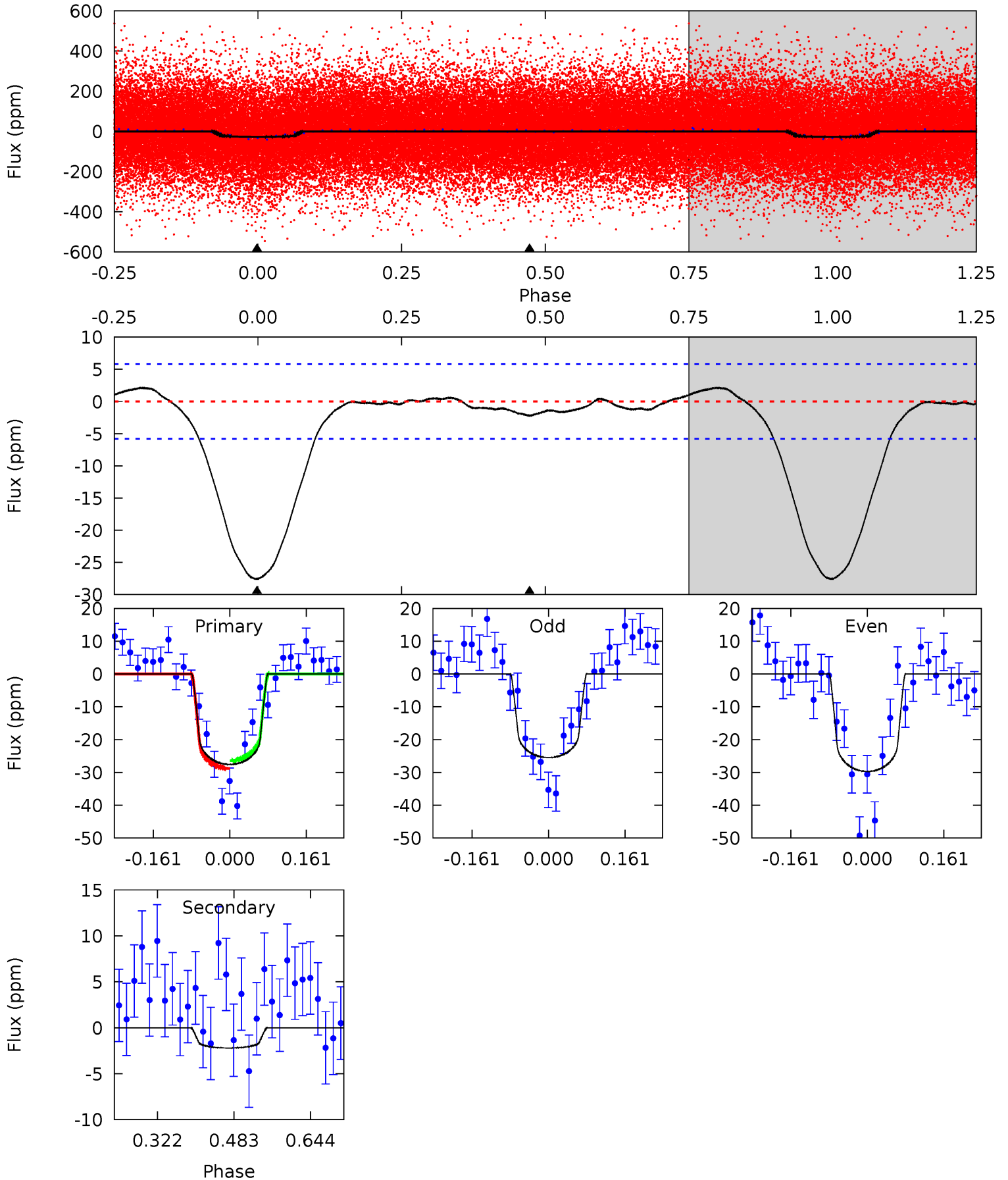
TCE 009777757-01 P= 1.332553 Days $T_0=132.051040$ (BKJD)



DV Model-Shift Uniqueness Test

009777757-01, P = 1.332568 Days, E = 130.718196 Days

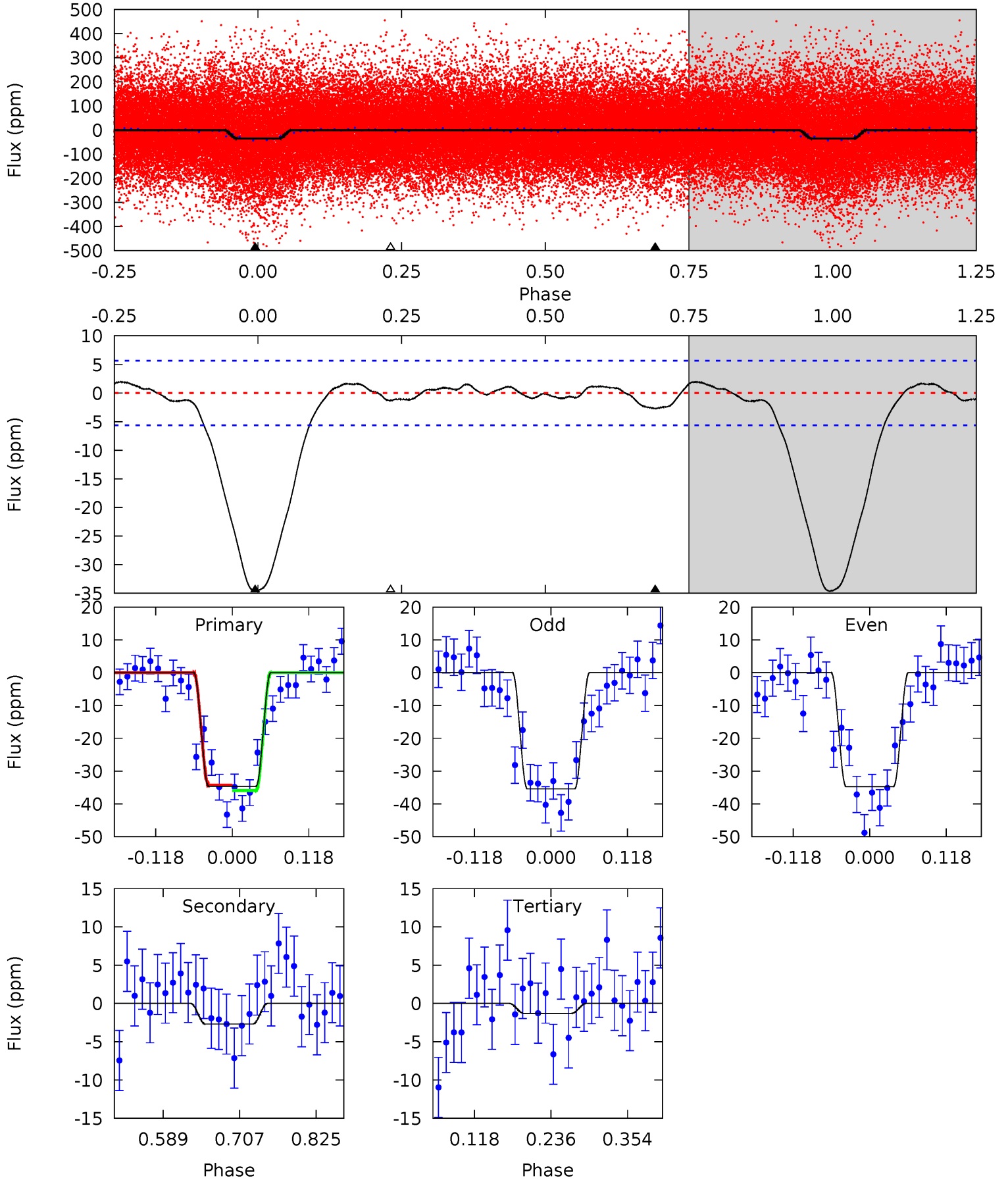
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.2	1.70	0	0	4.46	1.40	0.75	21.2	21.2	1.70	1.70	1.64	0.96	0.07	0.92



Alt Model-Shift Uniqueness Test

009777757-01, P = 1.332553 Days, E = 130.718487 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.7	2.16	1.04	0	4.53	1.56	0.71	26.7	27.7	1.11	2.16	0.27	0.90	0.05	0.68



Stellar Parameters For KIC 009777757

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6613^{+182}_{-250}	$3.870^{+0.397}_{-0.132}$	$-0.240^{+0.250}_{-0.300}$	$2.237^{+0.520}_{-0.965}$	$1.355^{+0.198}_{-0.272}$	$0.171^{+0.667}_{-0.065}$
	+3%/-4%	+10%/-3%	+104%/-125%	+23%/-43%	+15%/-20%	+391%/-38%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009777757-01 / KOI 4243.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2 ± 1	$1.35^{+0.41}_{-0.36}$	3671^{+293}_{-414}	3087^{+832}_{-6225}	$0.435^{+0.594}_{-0.275}$
Alt.	-3 ± 1	$1.40^{+0.41}_{-0.40}$	3665^{+286}_{-422}	3237^{+680}_{-6038}	$0.494^{+0.573}_{-0.253}$

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

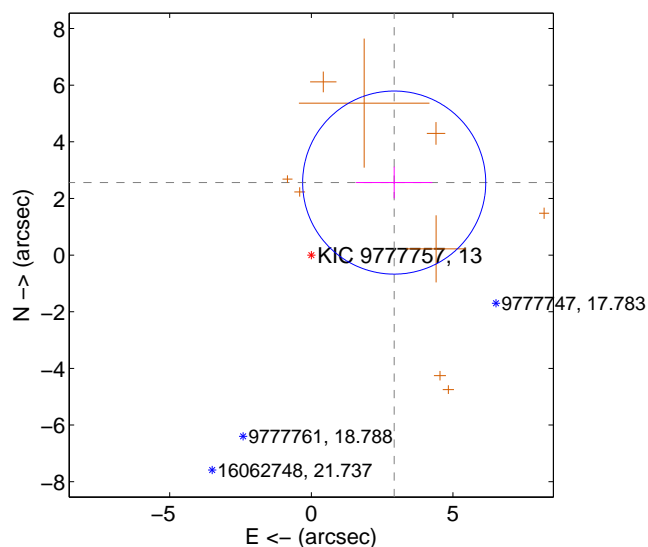
Supplemental centroid analysis for 009777757-01. Kepler magnitude: 13.00. Transit SNR 12.99

There are 0 quarters with good PRF difference image offsets

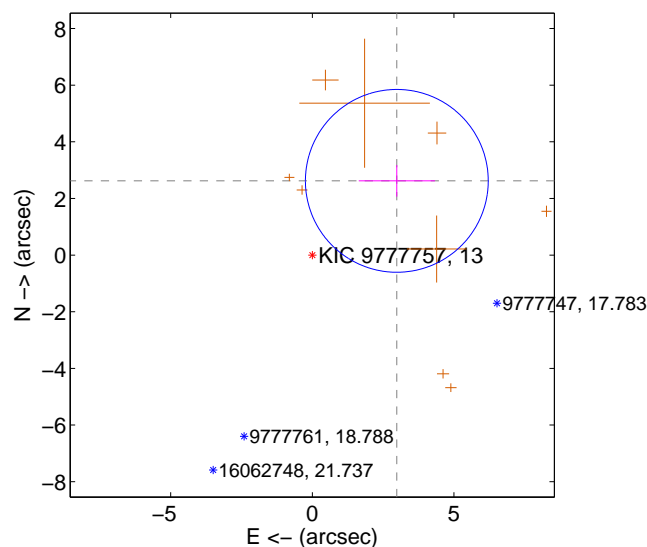
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.888 ± 1.077	3.61	-2.926 ± 1.346	2.561 ± 0.558
PRF-fit source offset from KIC position	3.972 ± 1.076	3.69	-2.984 ± 1.346	2.621 ± 0.556
photometric centroid source offset	2.36 ± 0.57	4.13	-0.63 ± 0.53	2.28 ± 0.58

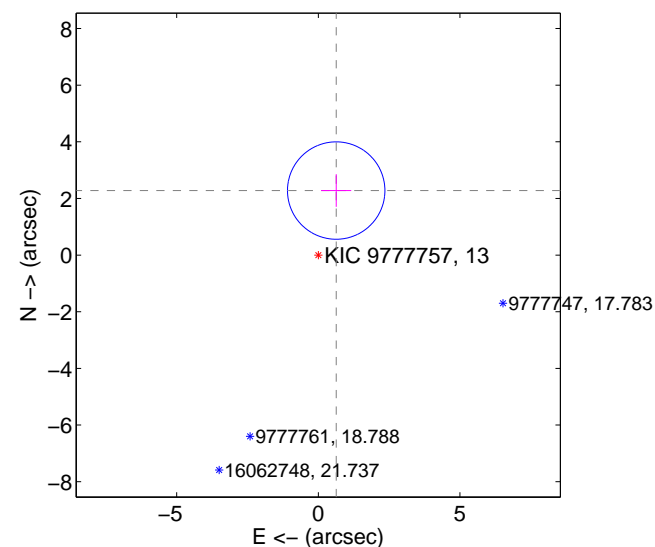
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

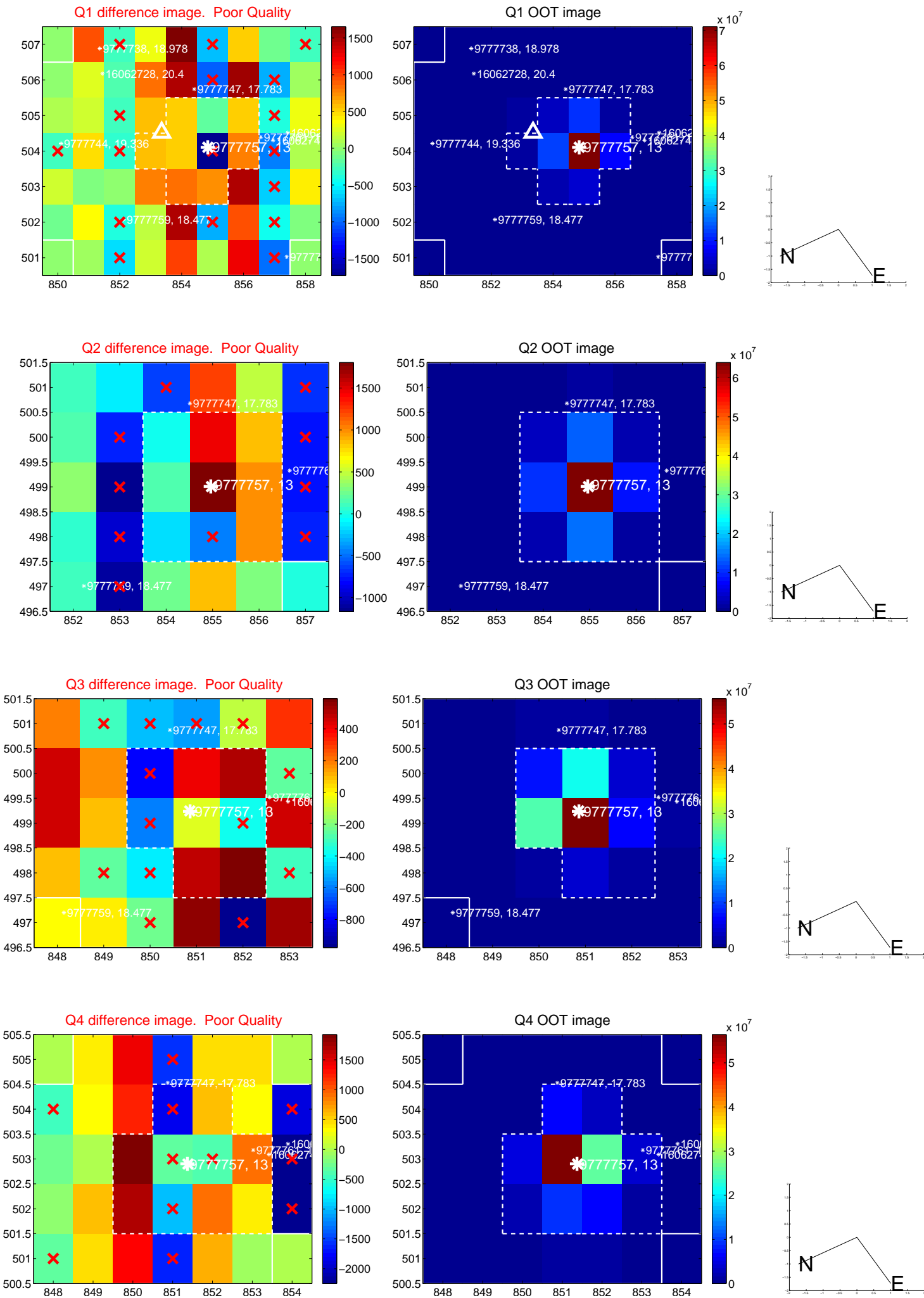


offset from photometric centroids

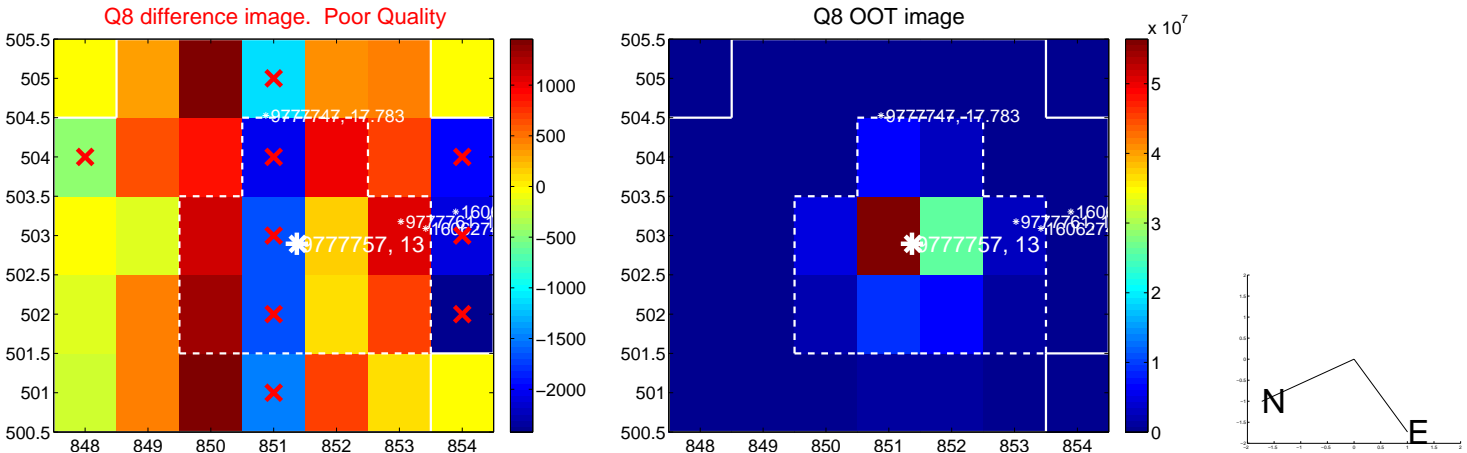
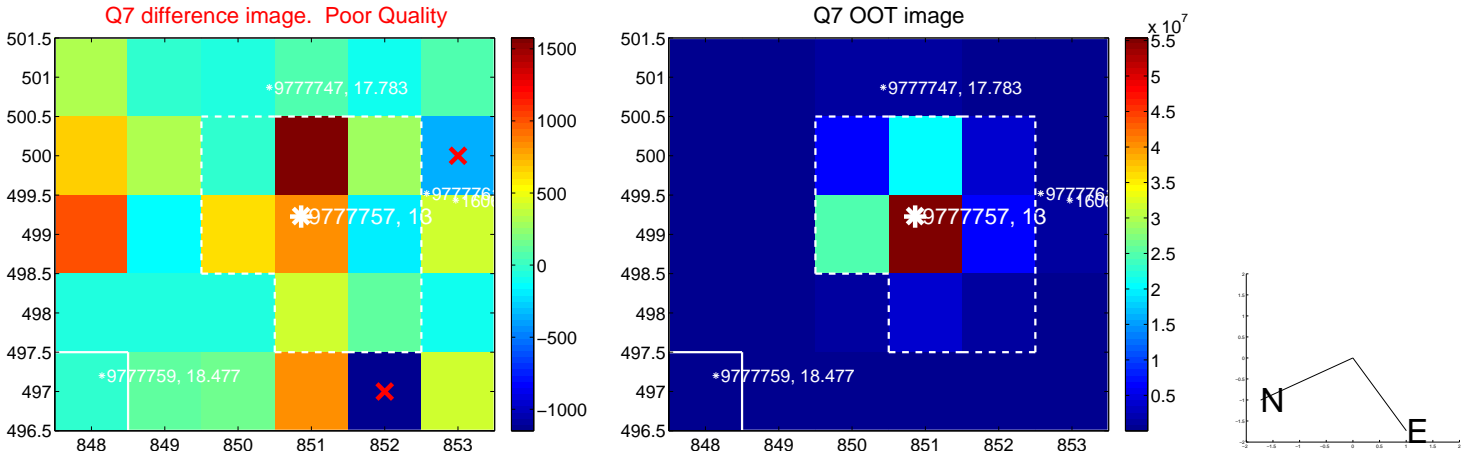
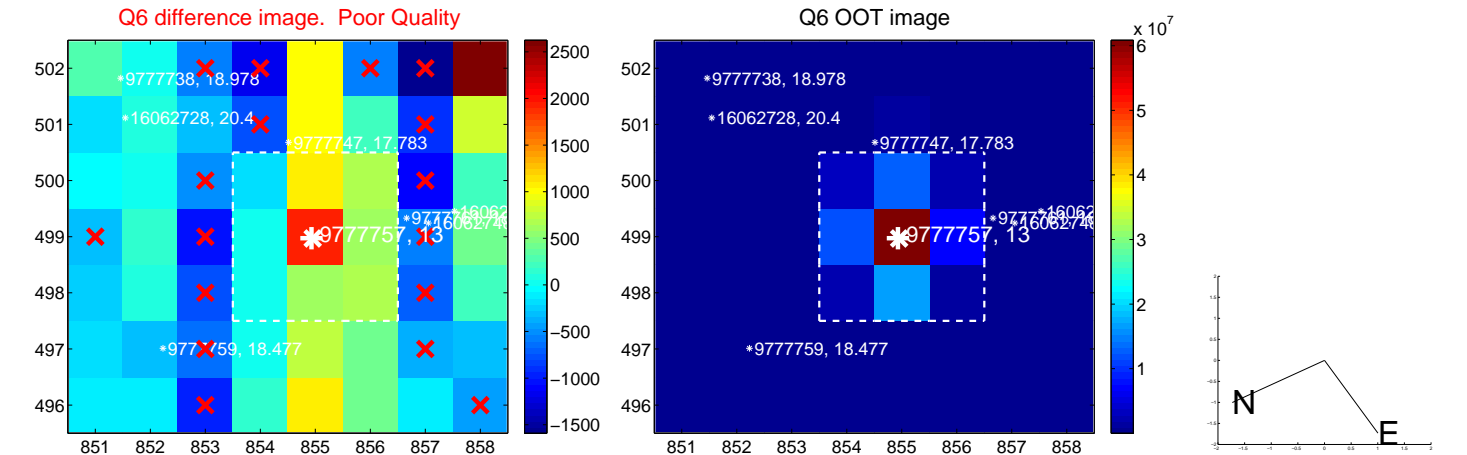
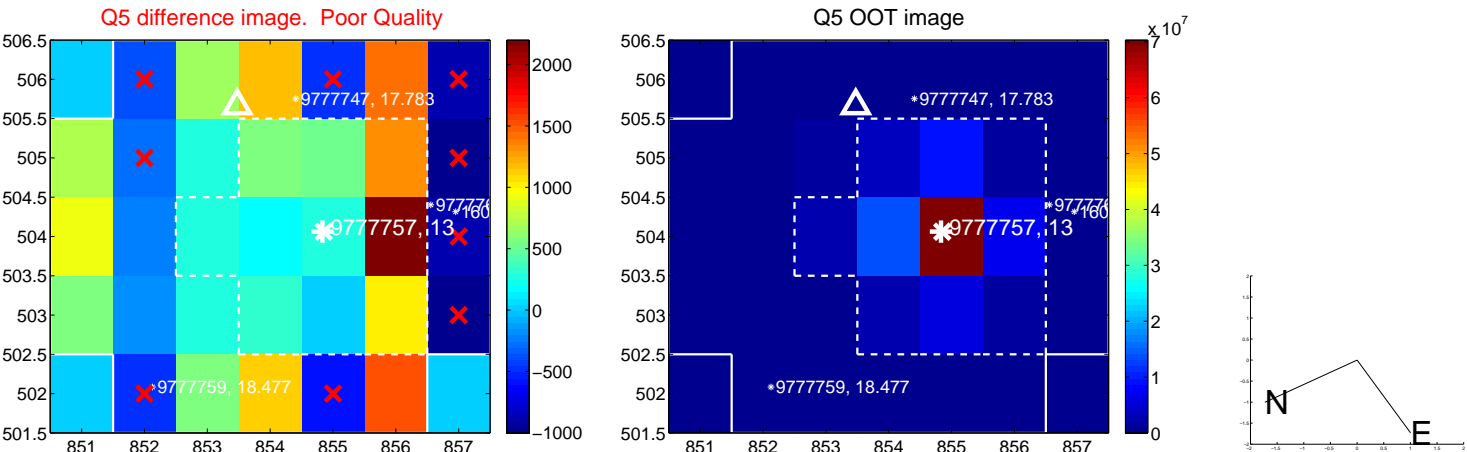


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

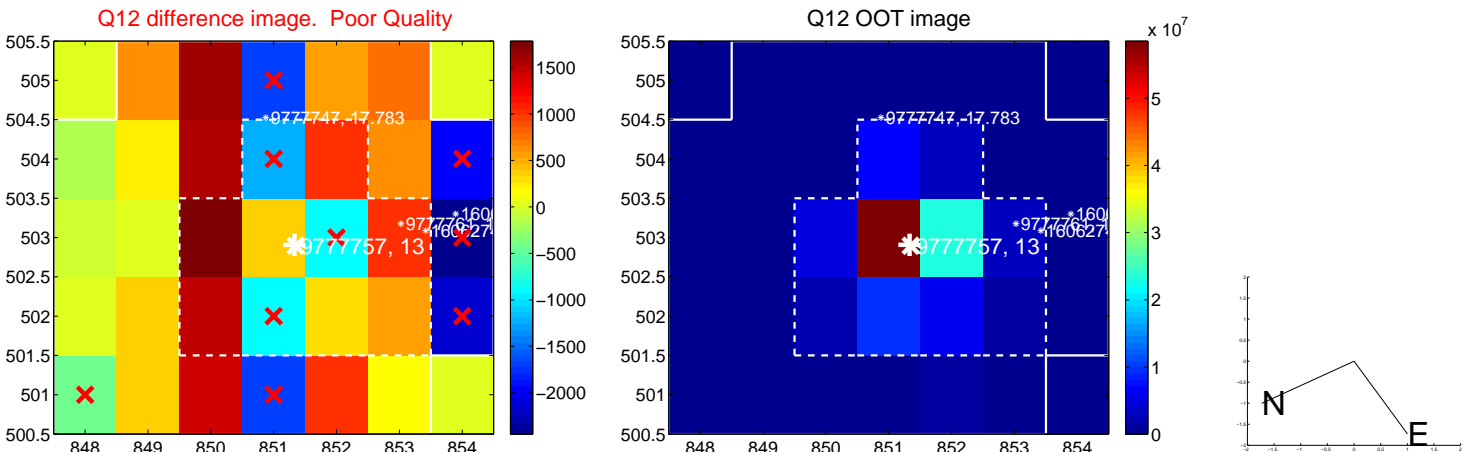
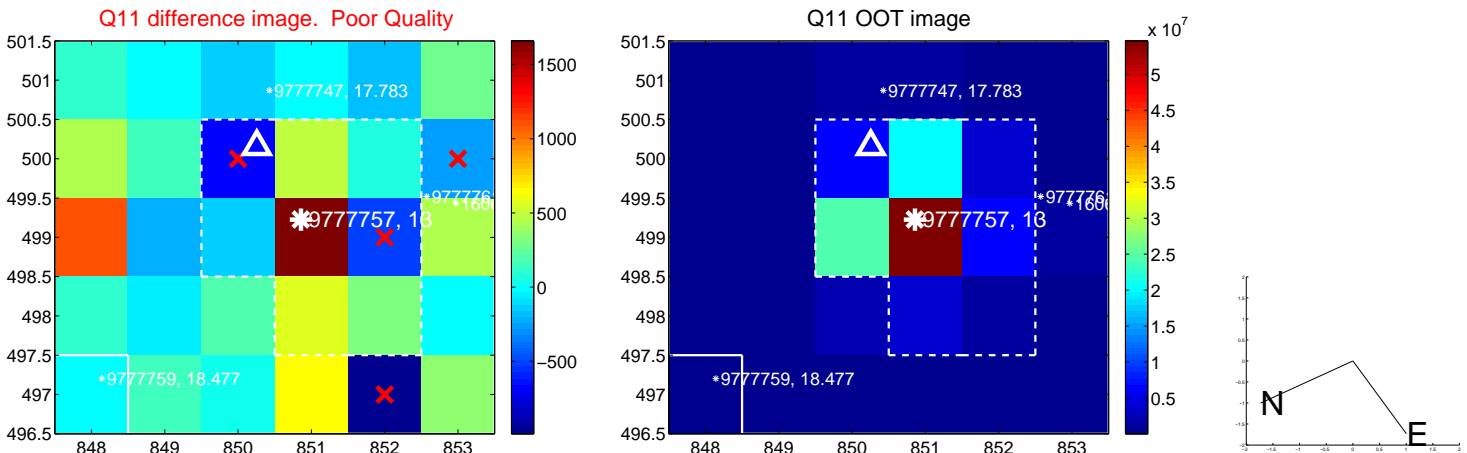
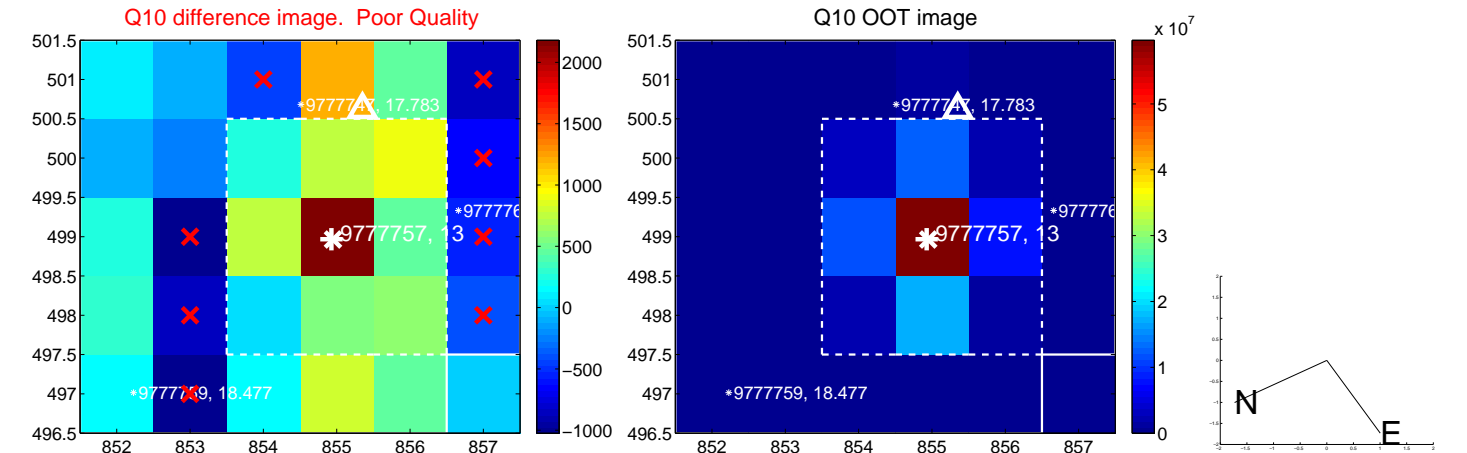
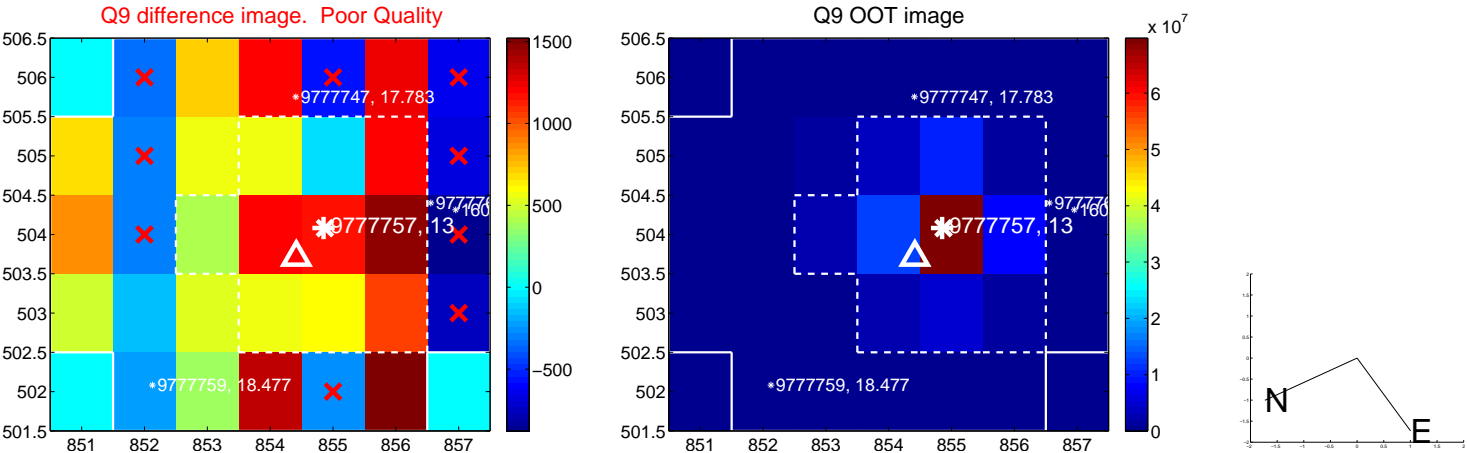
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



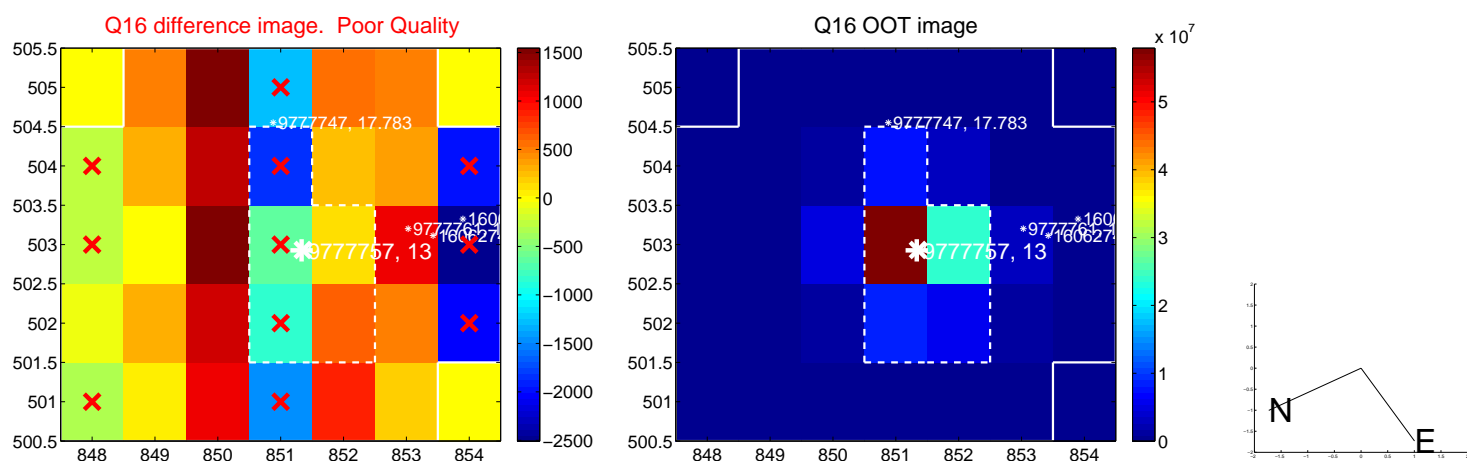
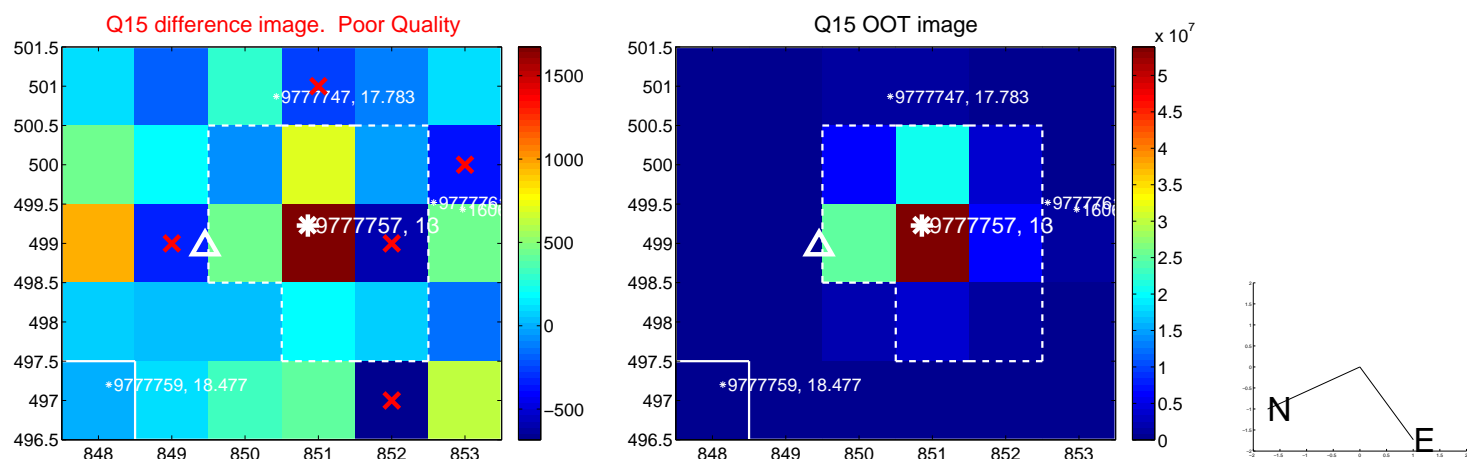
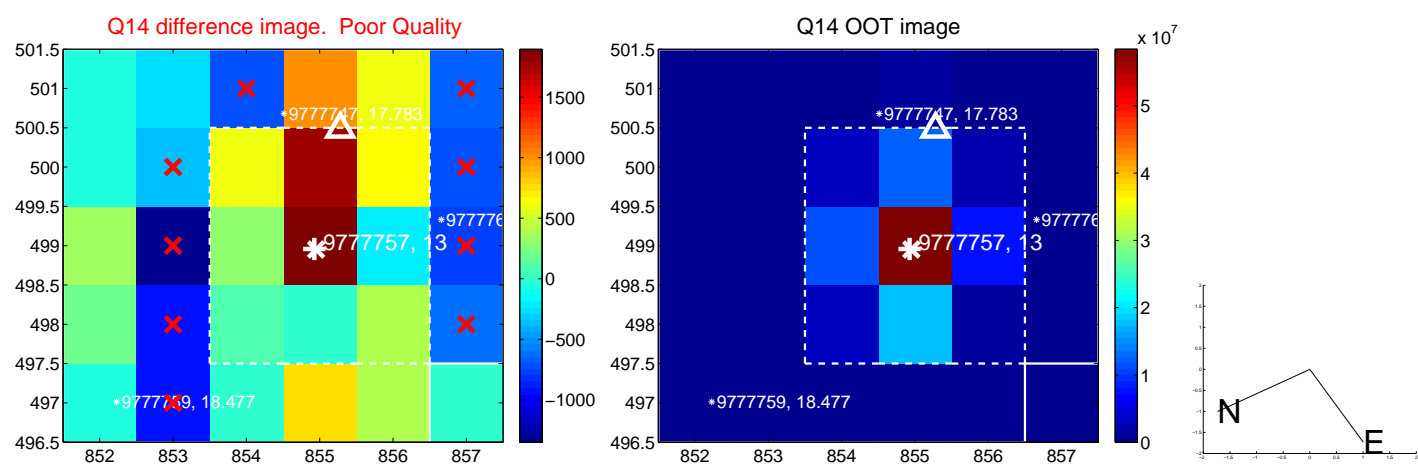
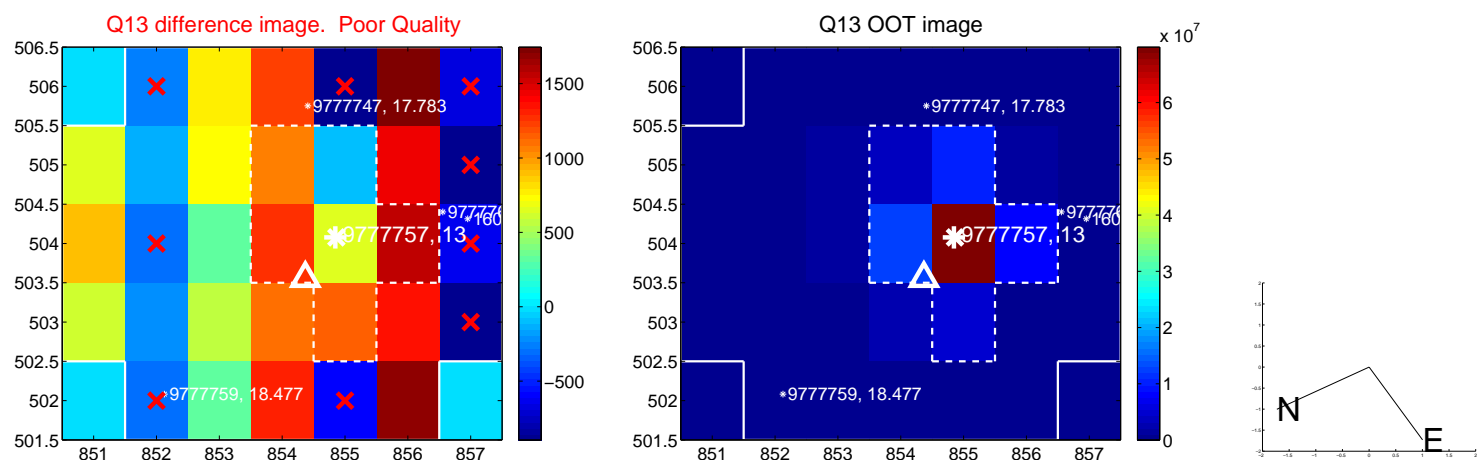
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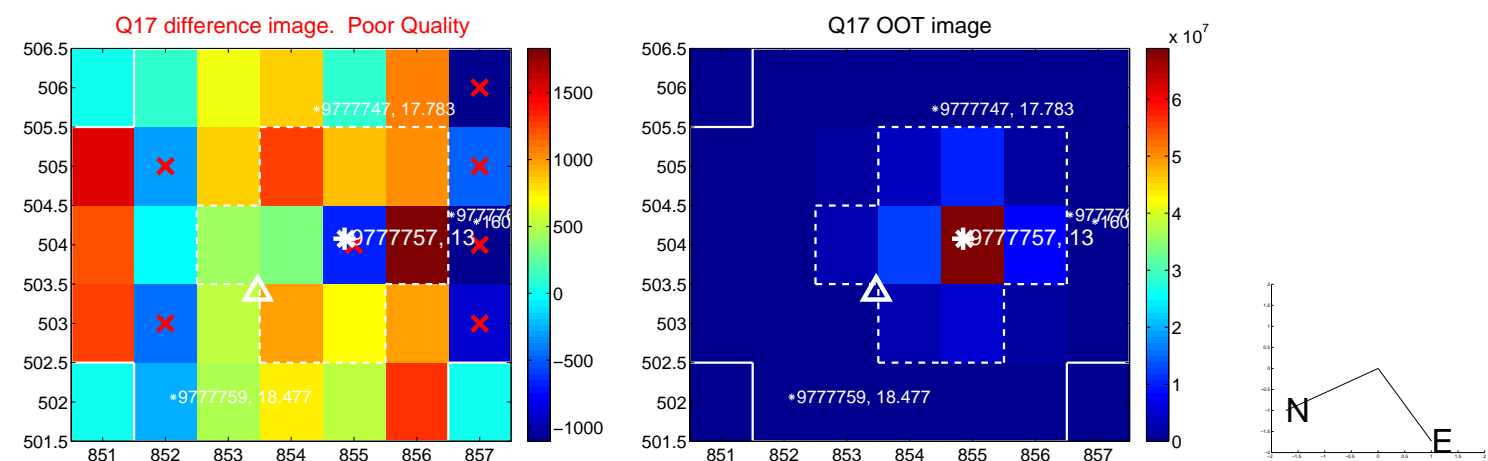
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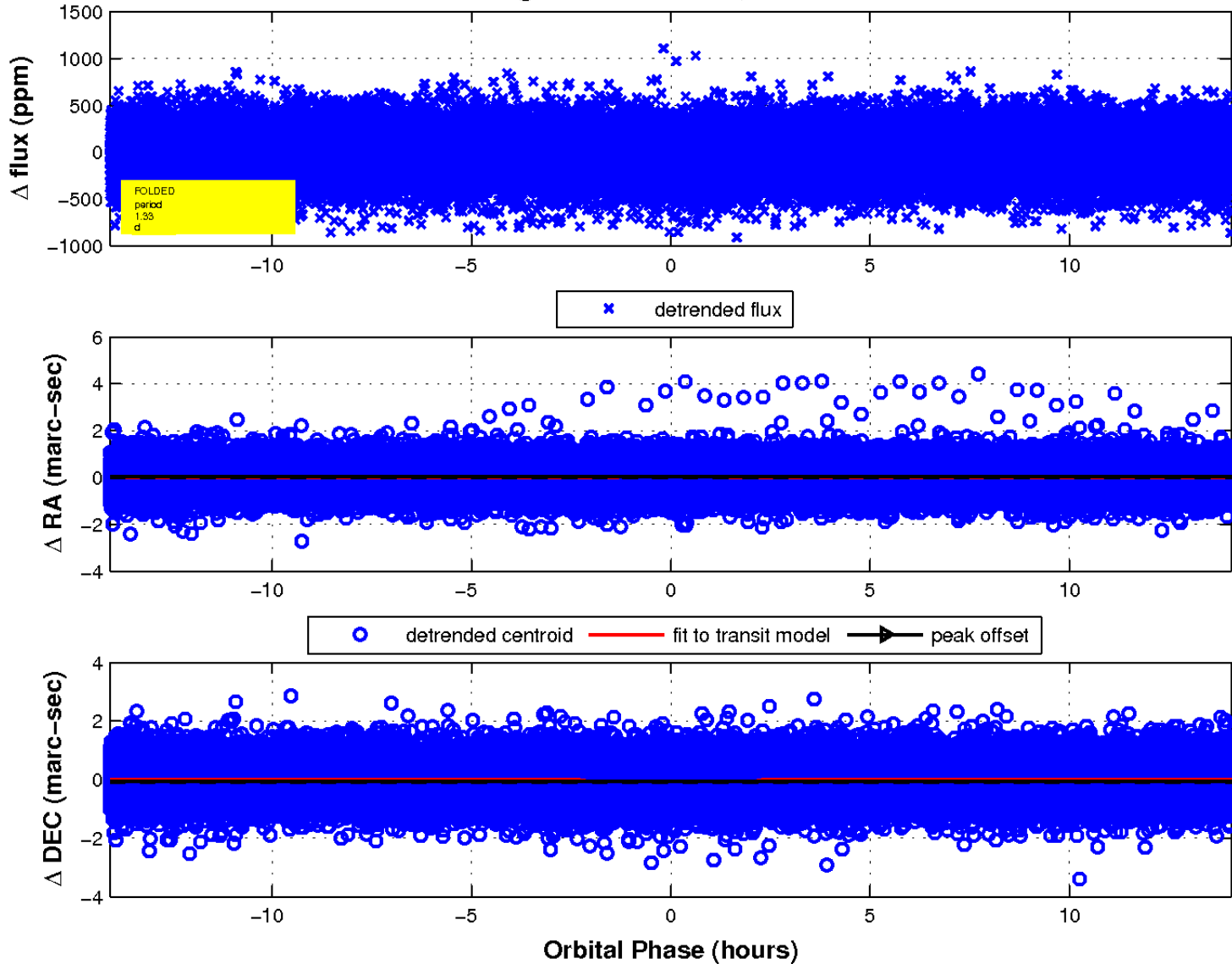
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



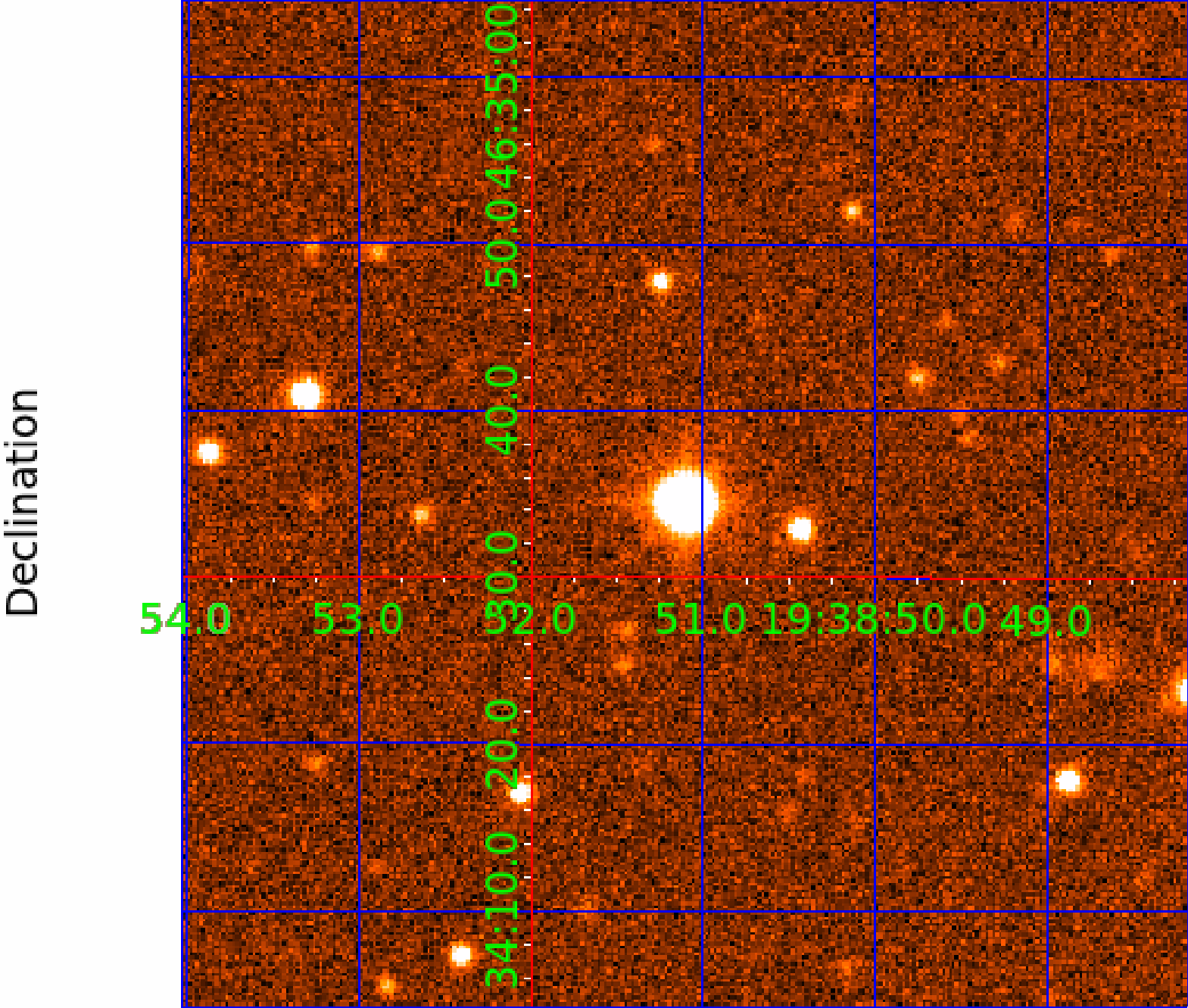
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 009777757

Q1-17 DR25 TCE Parameters

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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 009777757-02

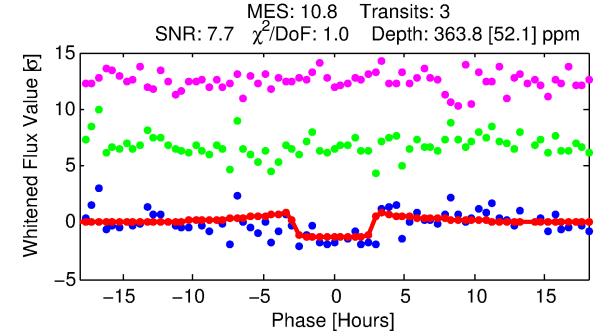
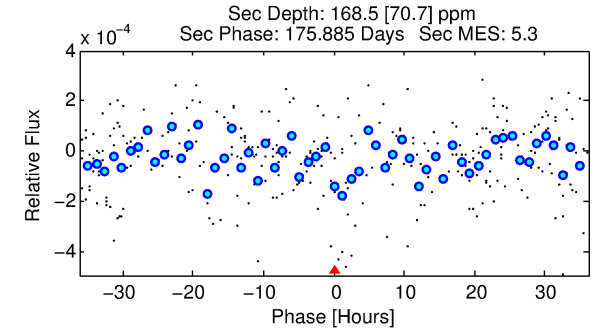
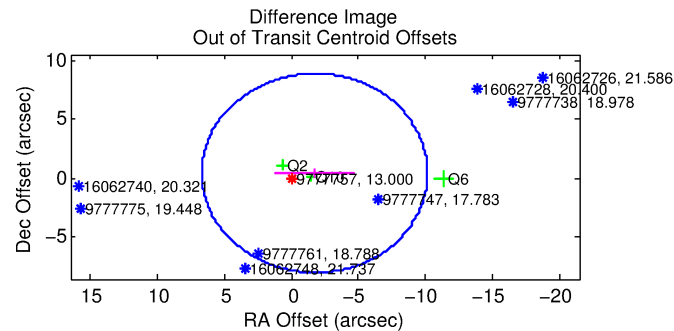
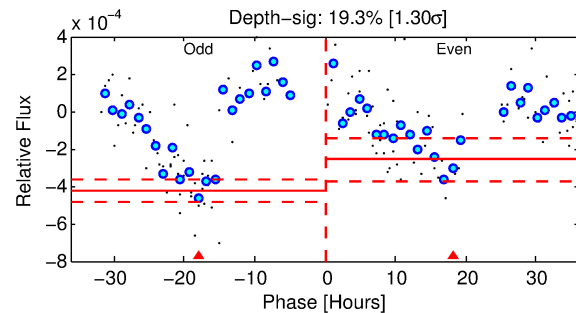
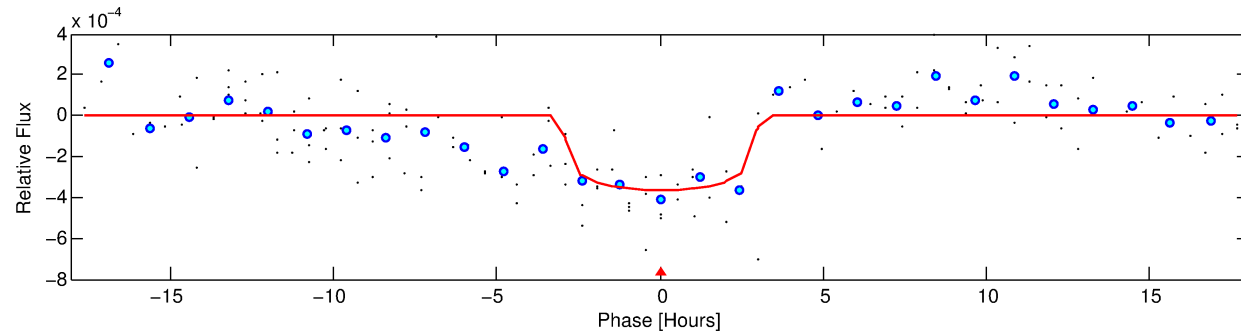
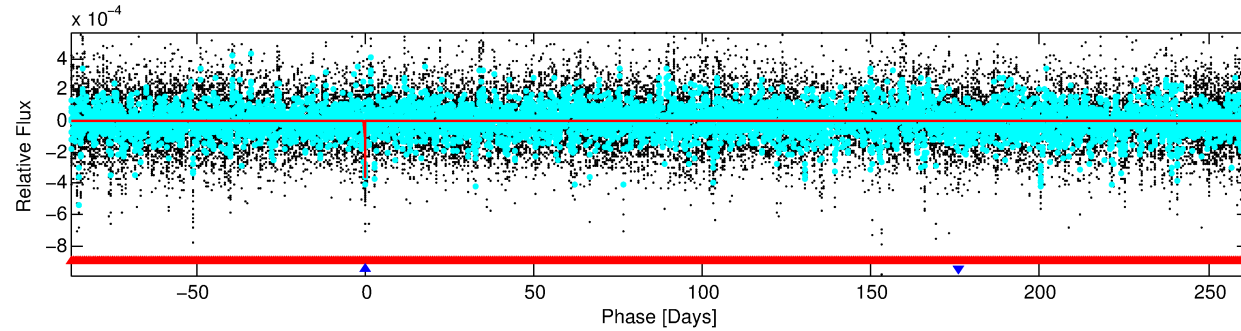
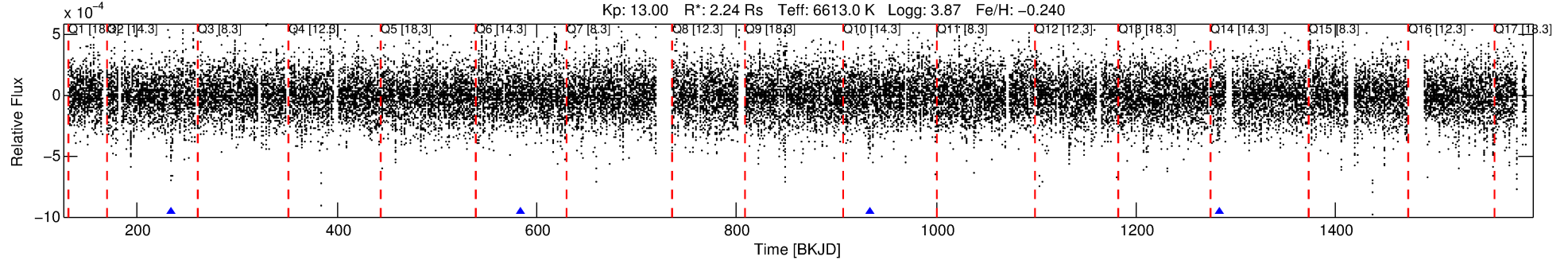
No Significant Match Found

DV One-Page Summary

KIC: 9777757 Candidate: 2 of 2 Period: 349.598 d

KOI: K04243 Corr: No Ephemeris Match

Kp: 13.00 R*: 2.24 Rs Teff: 6613.0 K Logg: 3.87 Fe/H: -0.240



DV Fit Results:

Period = 349.59843 [0.00583] d
Epoch = 234.2111 [0.0121] BKJD
Rp/R* = 0.0191 [0.0547]
a/R* = 298.01 [4869.05]
b = 0.77 [8.88]
Seff = 7.43 [5.13]
Teq = 421 [73] K
Rp = 4.65 [13.51] Re
a = 1.0745 [0.4502] AU
Ag = 4938.24 [28618.81] [0.17σ]
Teffp = 5456 [7854] K [0.64σ]

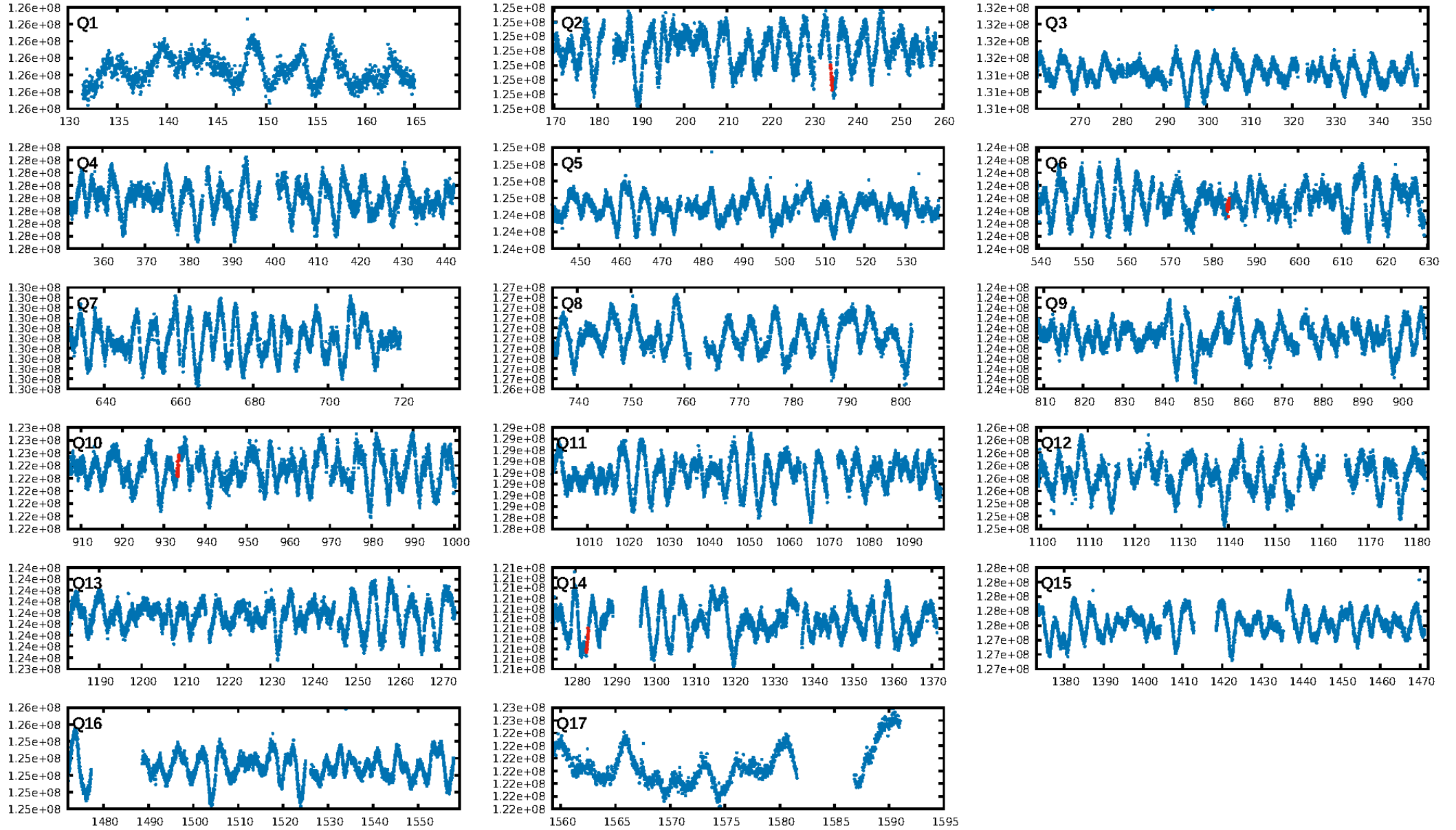
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1095.30σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 52.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.59e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.114
Centroid-sig: 46.2%
Centroid-so: 0.860 arcsec [1.16σ]
OotOffset-rm: 1.796 arcsec [0.64σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-rm: 1.872 arcsec [0.67σ]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

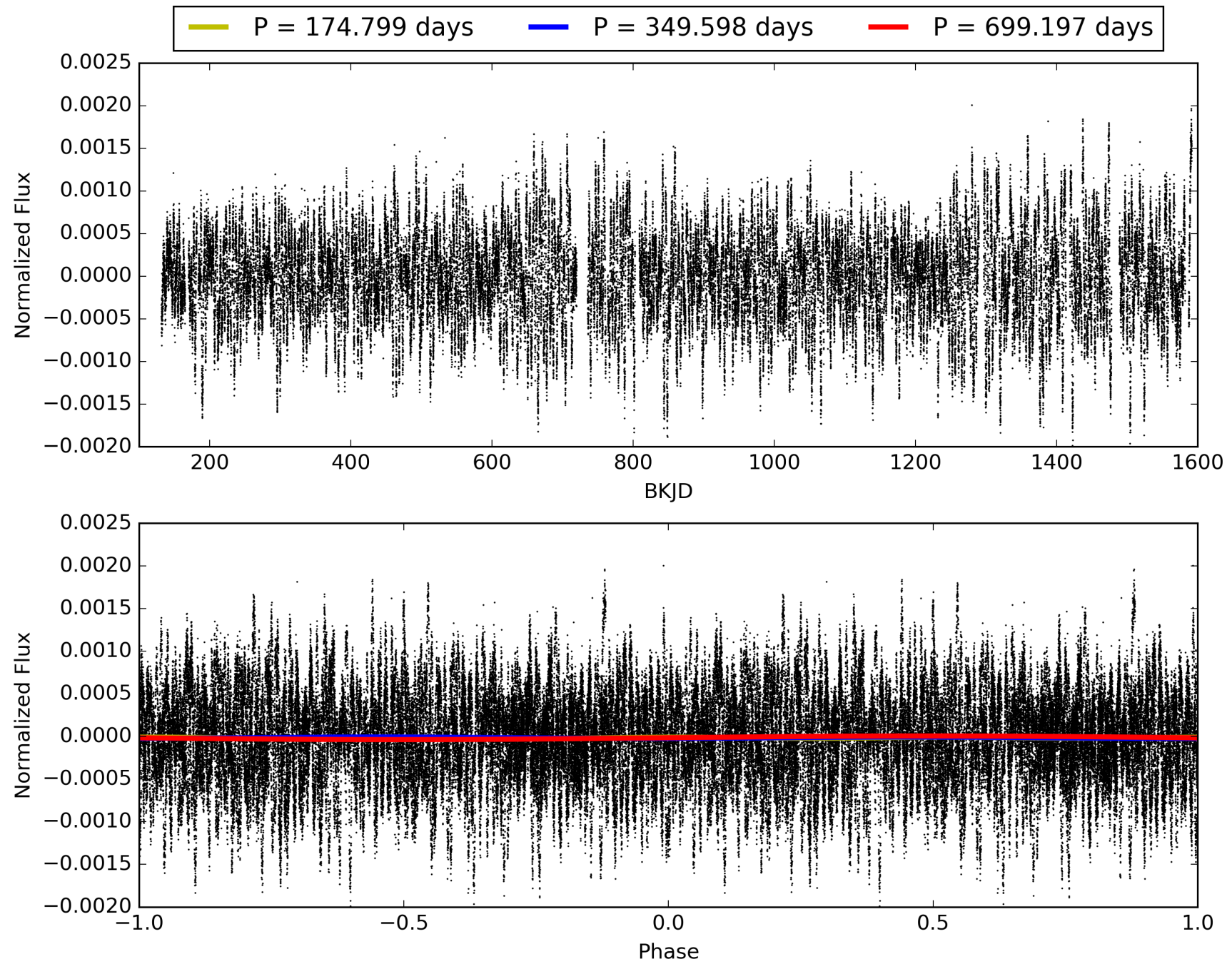
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:50:28 Z

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

TCE 009777757-02, PDC Light Curves

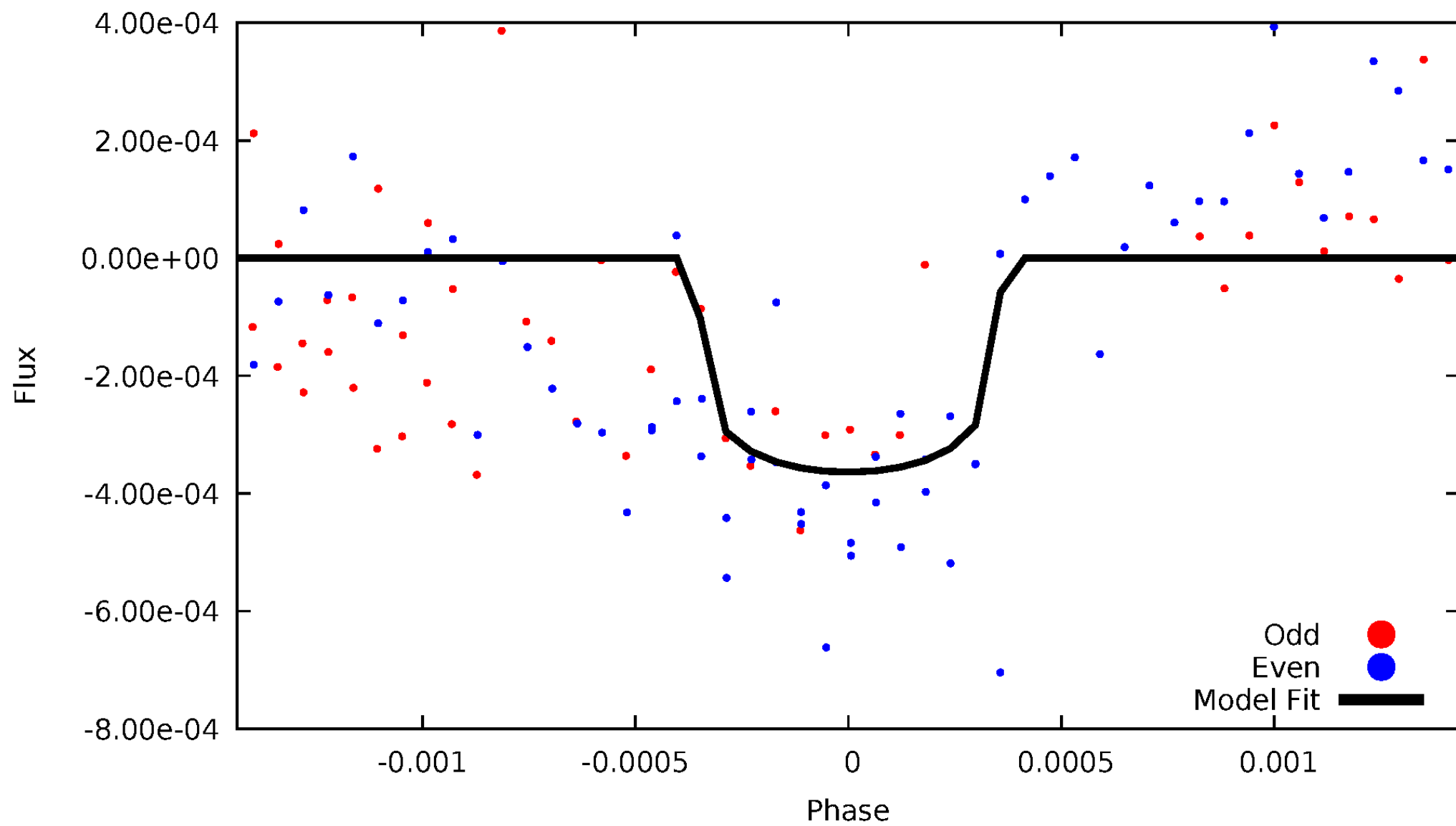


TCE 009777757-02



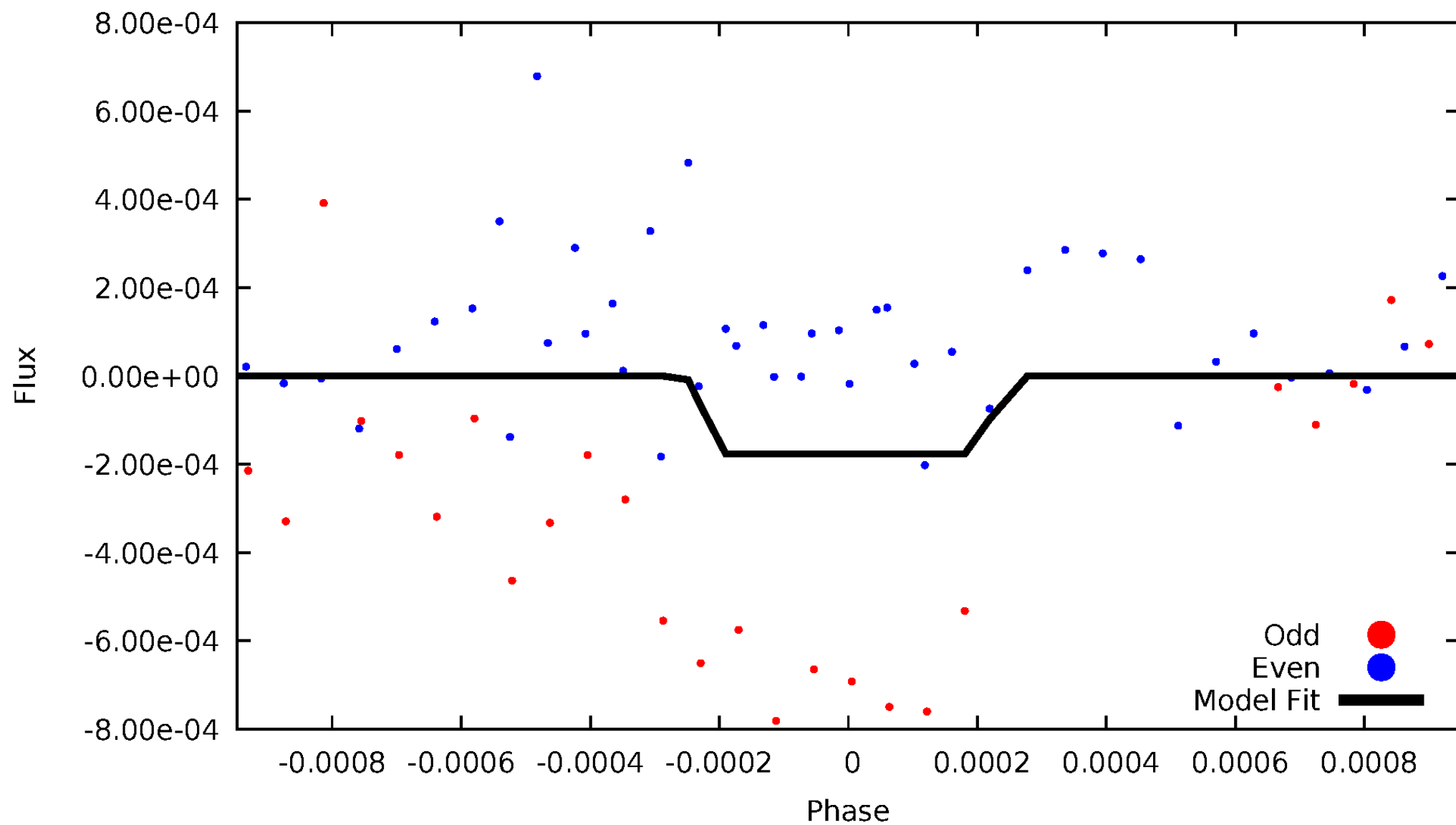
DV Odd/Even

TCE 009777757-02



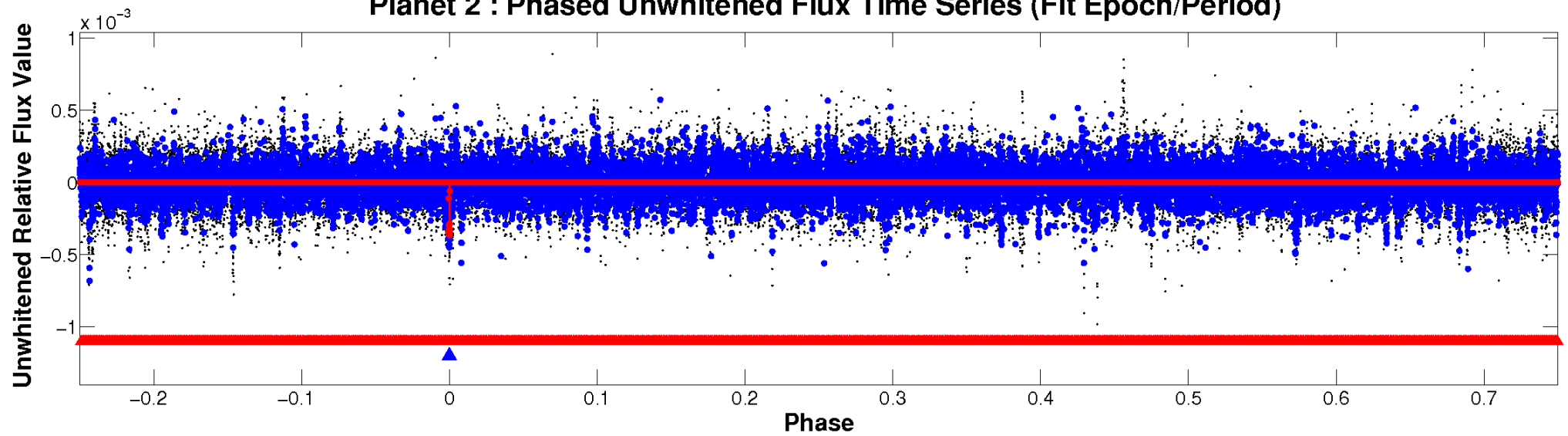
ALT Odd/Even

TCE 009777757-02

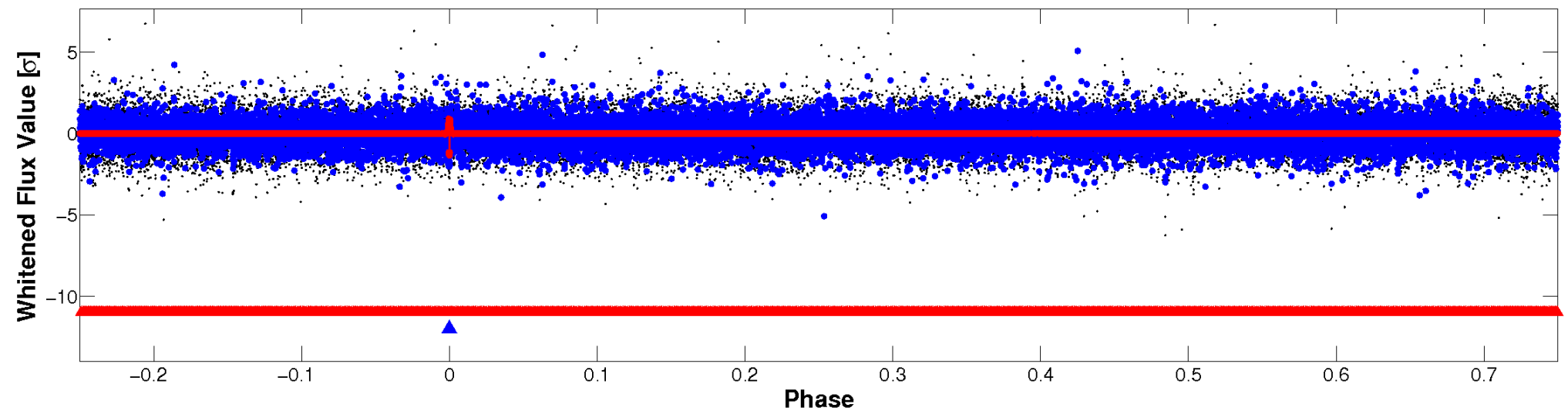


Non-Whitened Vs. Whitened Light Curve

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

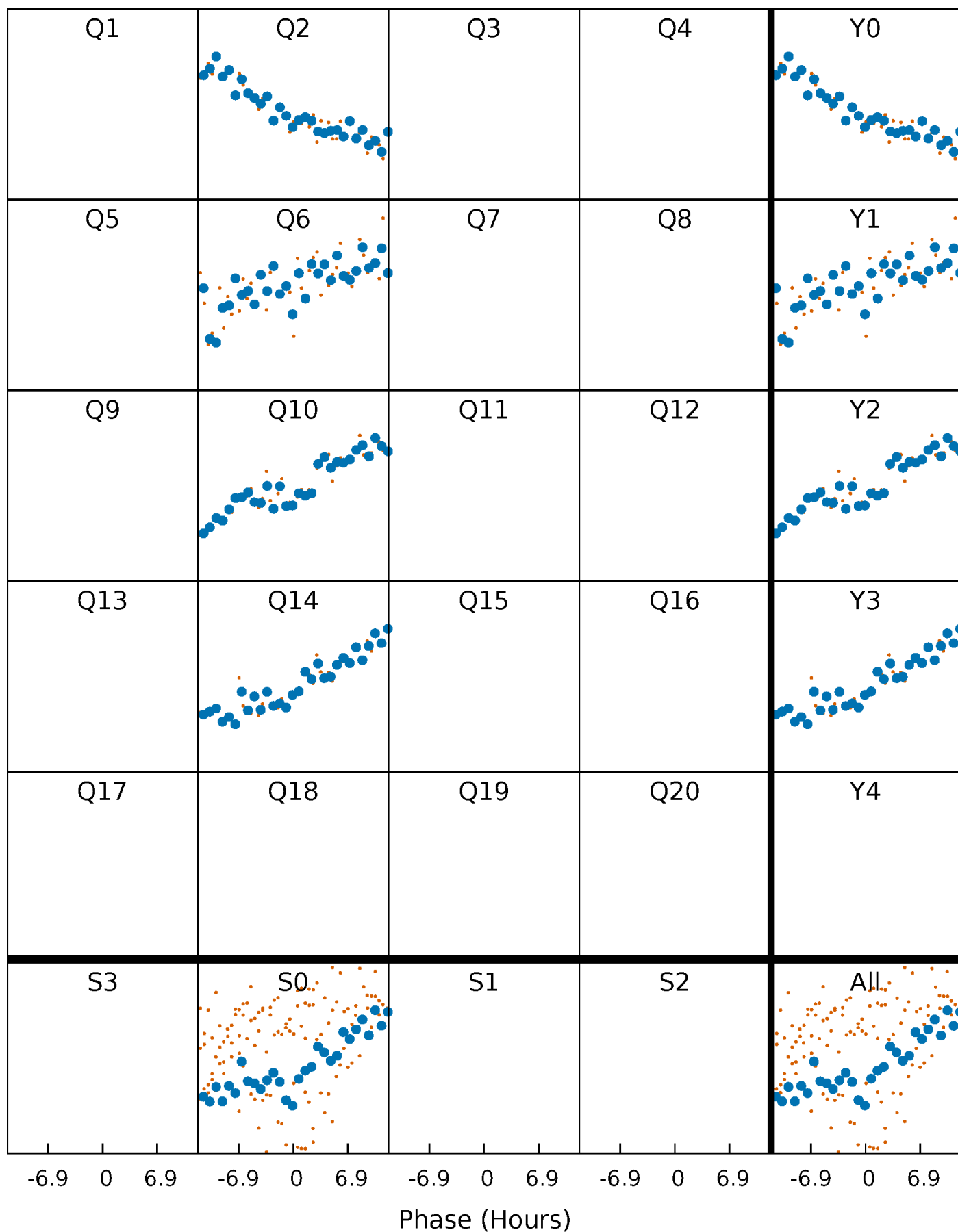


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



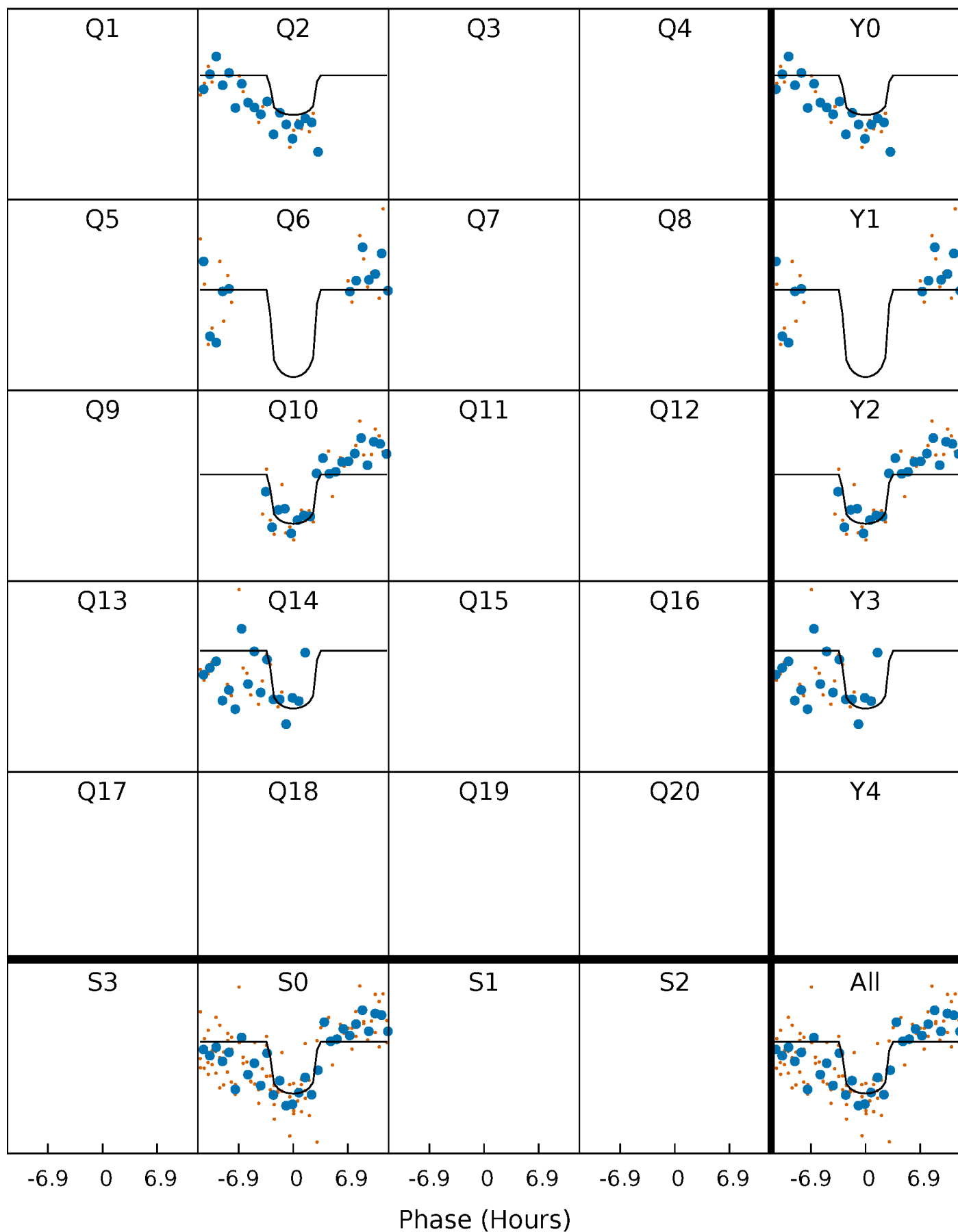
PDC Quarter-Phased Transit Curves

TCE 009777757-02 P=349.598428 Days $T_0=234.211126$ (BKJD)



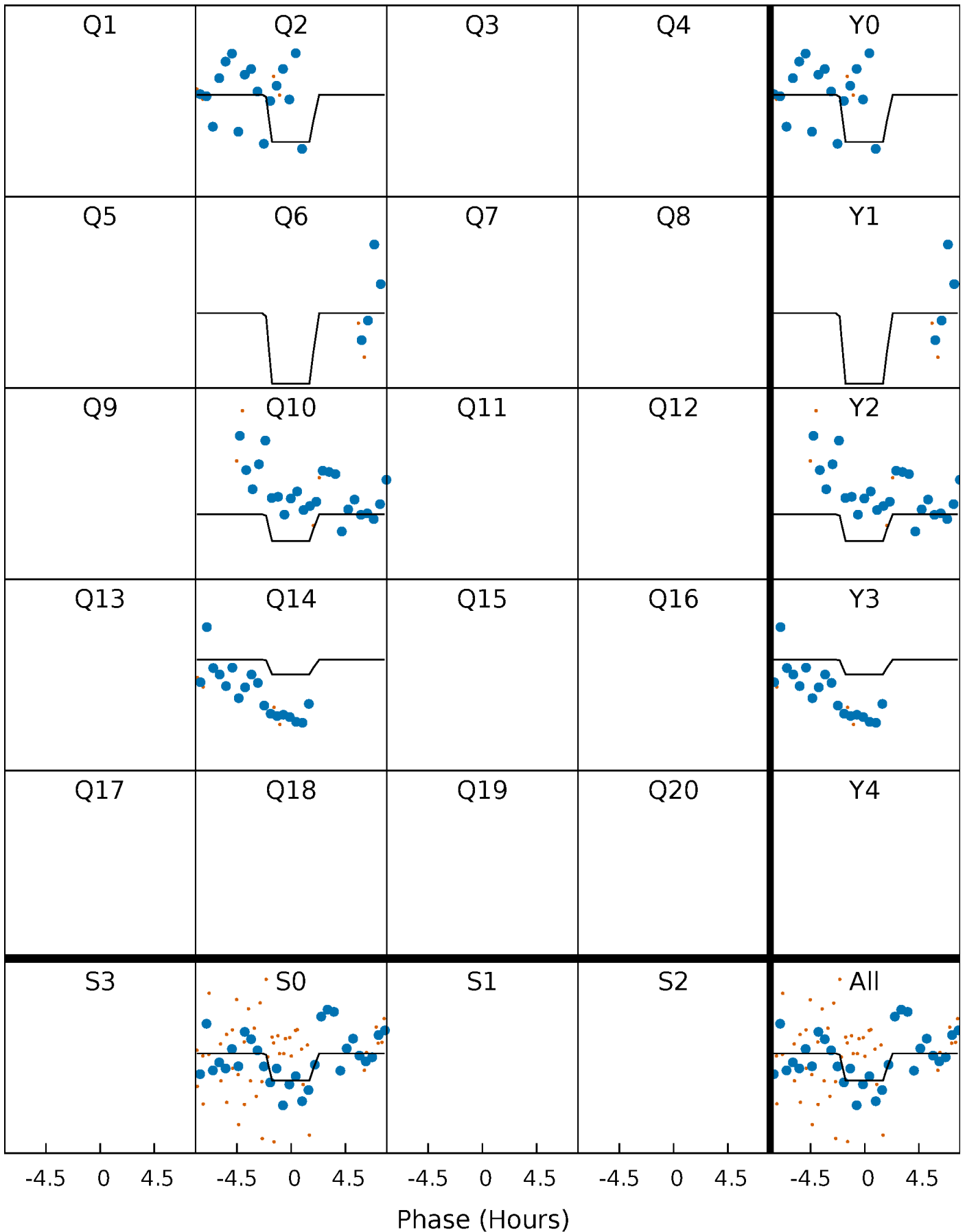
DV Quarter-Phased Transit Curves

TCE 009777757-02 P=349.598428 Days $T_0=234.211126$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

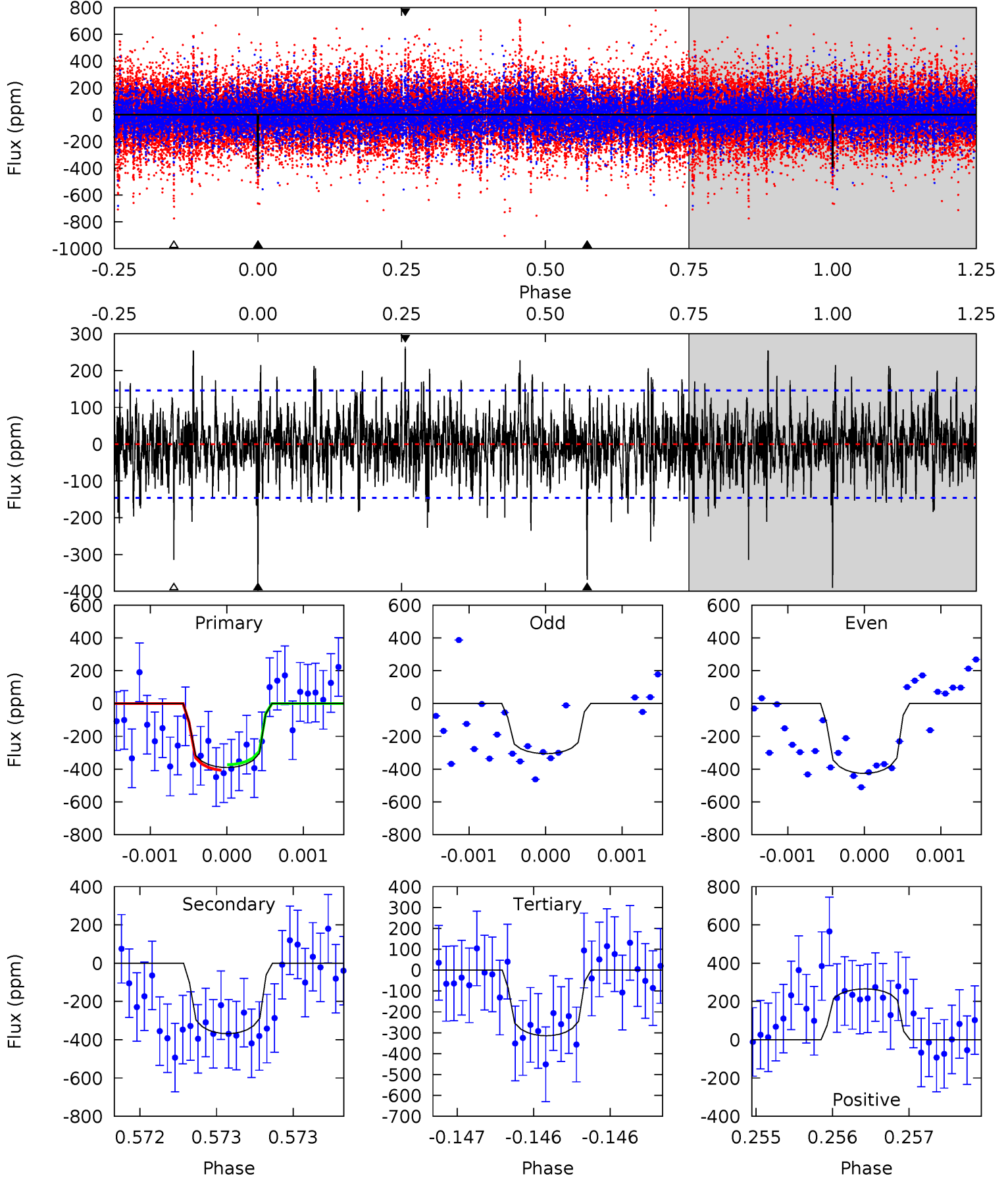
TCE 009777757-02 P=349.570533 Days $T_0=234.294496$ (BKJD)



DV Model-Shift Uniqueness Test

009777757-02, P = 349.598428 Days, E = 234.211126 Days

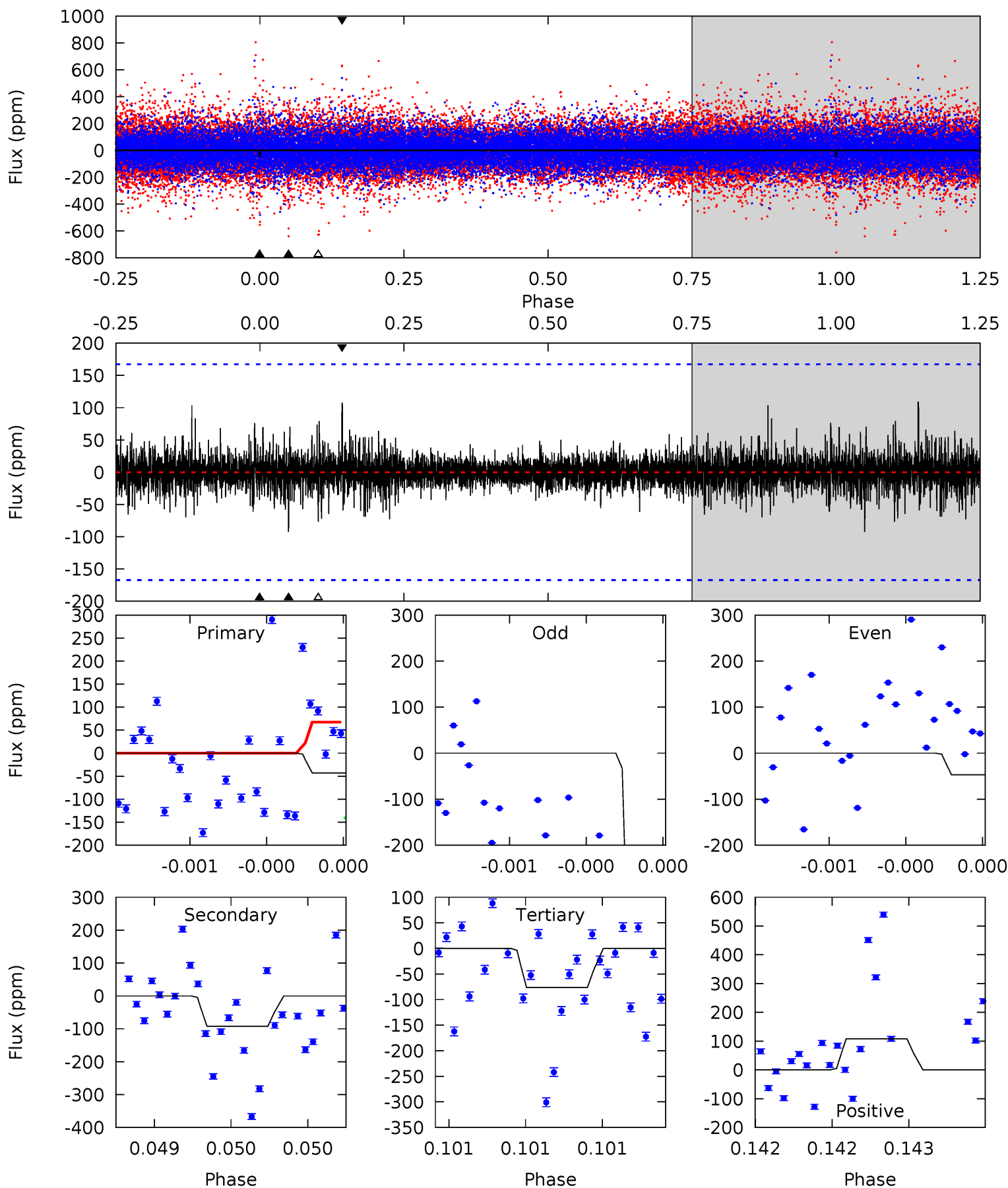
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.7	13.9	11.8	10.0	5.51	3.39	2.42	2.87	4.71	2.03	3.87	2.00	1.08	0.40	0.64



Alt Model-Shift Uniqueness Test

009777757-02, P = 349.570533 Days, E = 234.294496 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.44	3.09	2.55	3.61	5.58	3.50	0.57	-1.11	-2.17	0.54	-0.52	12.4	-13.9	0.54	1.22



Stellar Parameters For KIC 009777757

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6613^{+182}_{-250}	$3.870^{+0.397}_{-0.132}$	$-0.240^{+0.250}_{-0.300}$	$2.237^{+0.520}_{-0.965}$	$1.355^{+0.198}_{-0.272}$	$0.171^{+0.667}_{-0.065}$
	+3%/-4%	+10%/-3%	+104%/-125%	+23%/-43%	+15%/-20%	+391%/-38%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009777757-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-368 ± 27	$10.08^{+10.49}_{-6.91}$	569^{+46}_{-59}	4482^{+3328}_{-941}	2283^{+21299}_{-1712}
Alt.	-93 ± 30	$9.16^{+9.61}_{-6.35}$	577^{+40}_{-64}	3622^{+2035}_{-722}	658^{+6240}_{-506}

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 $A_{obs} \gg 1.0$

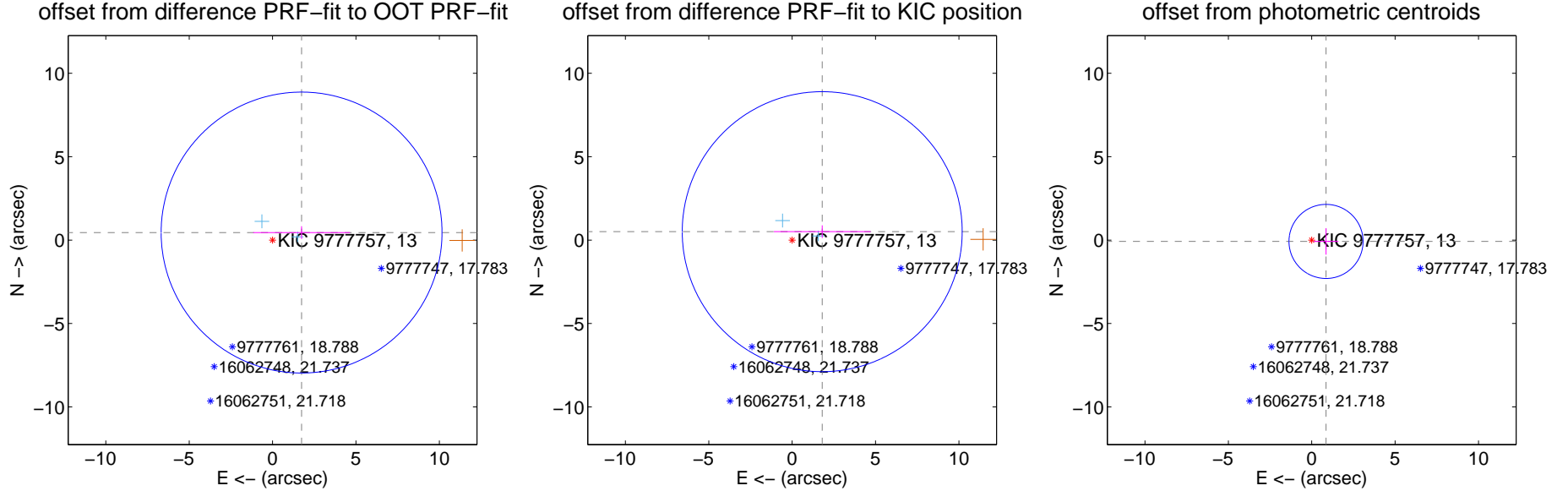
DV Centroid Data

Supplemental centroid analysis for 009777757-02. Kepler magnitude: 13.00. Transit SNR 7.72

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.796 ± 2.808	0.64	-1.738 ± 2.899	0.452 ± 0.383
PRF-fit source offset from KIC position	1.872 ± 2.798	0.67	-1.802 ± 2.904	0.505 ± 0.379
photometric centroid source offset	0.86 ± 0.74	1.16	-0.86 ± 0.74	-0.08 ± 0.79



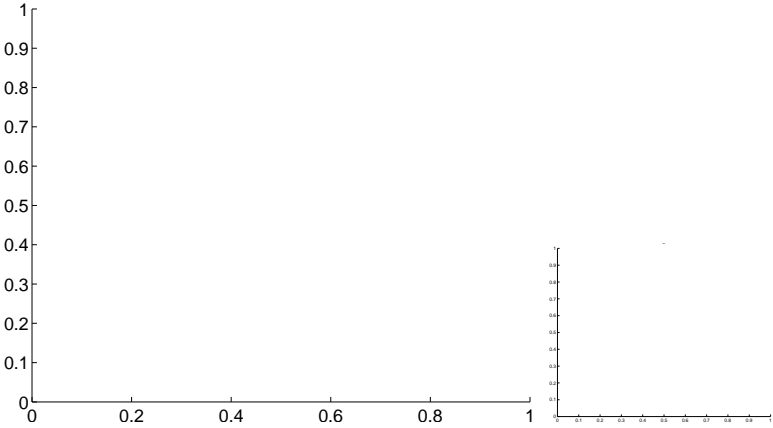
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

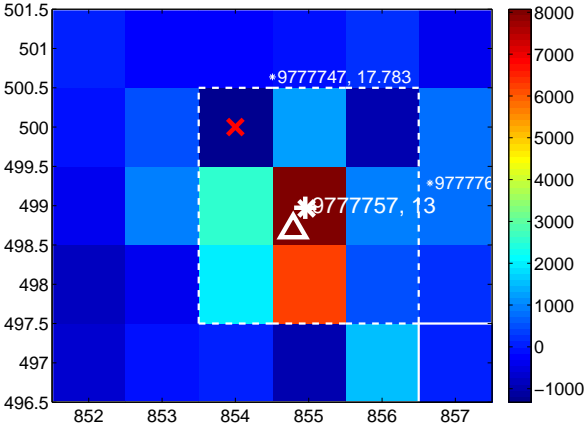
Q1 no difference image



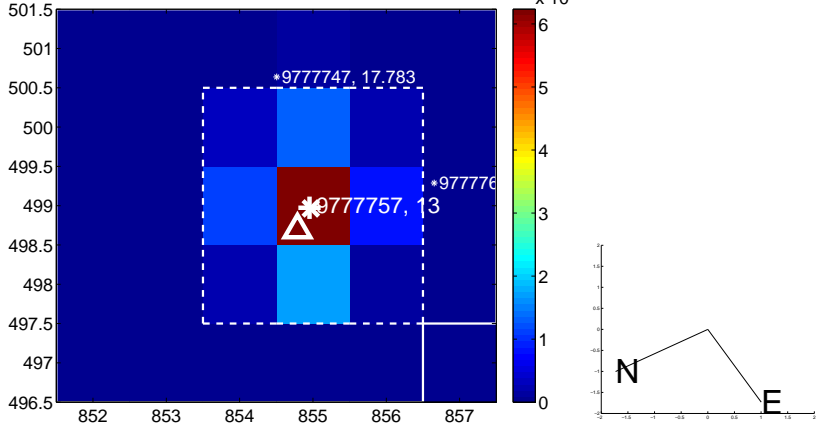
Q1 no OOT image



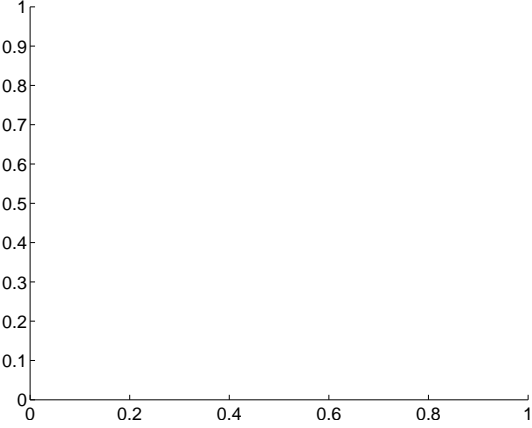
Q2 difference image



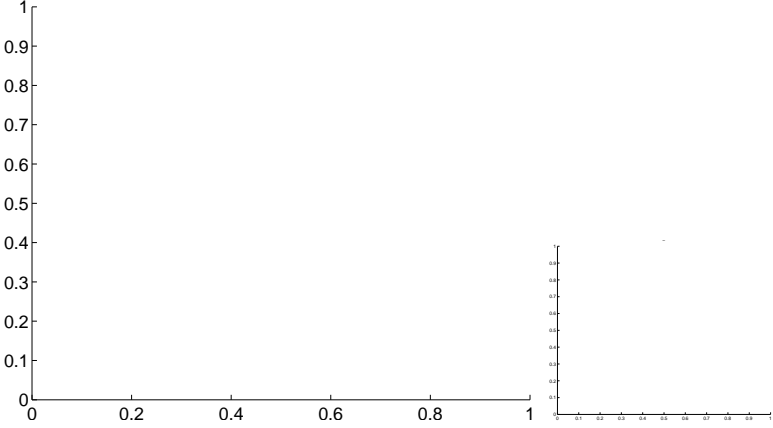
Q2 OOT image



Q3 no difference image



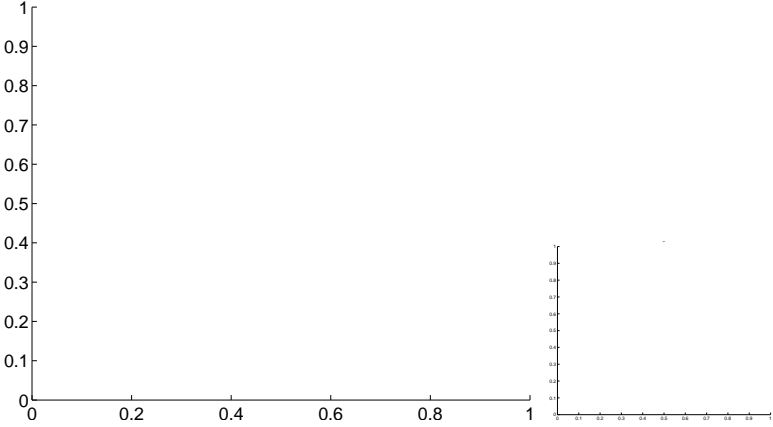
Q3 no OOT image



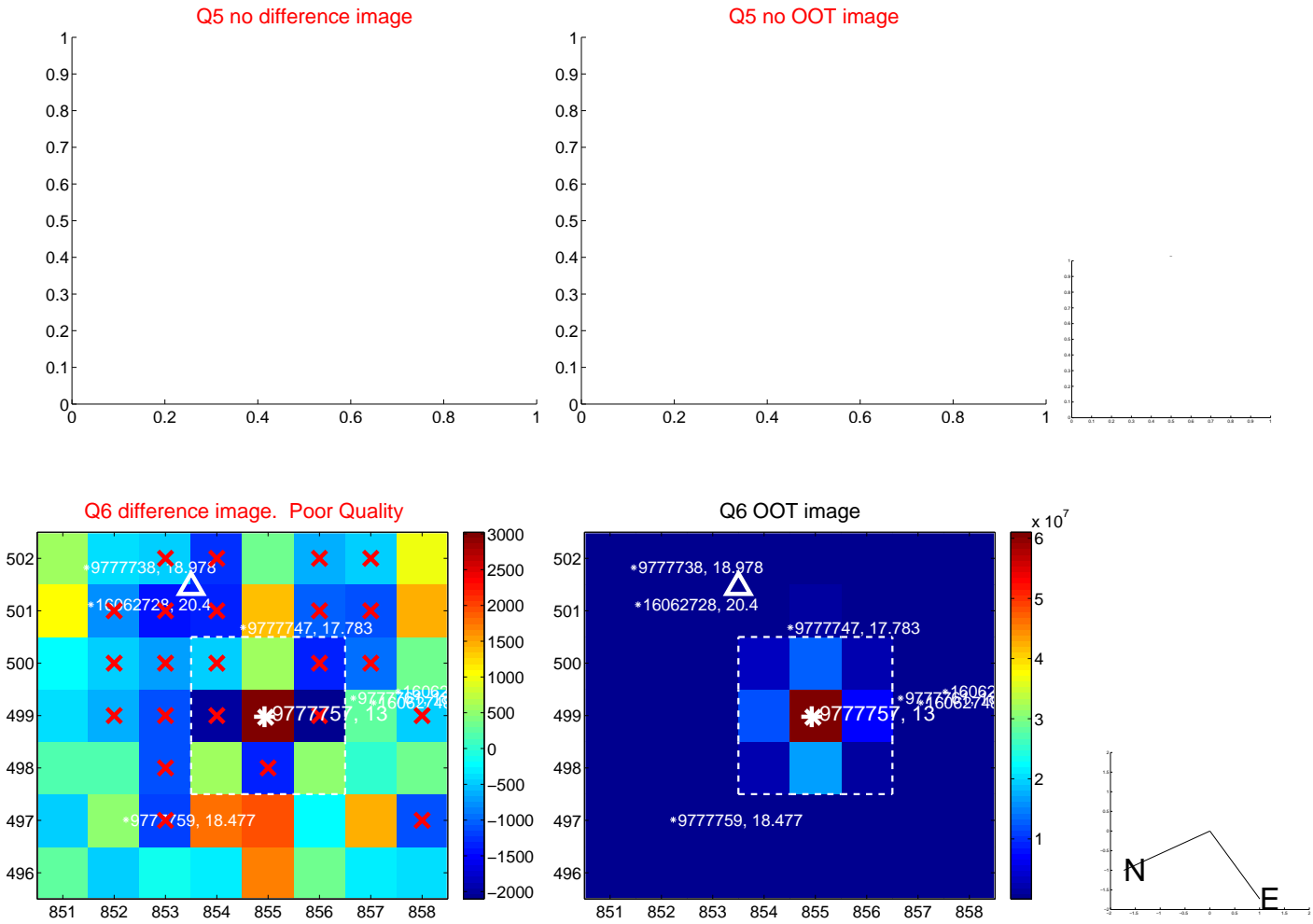
Q4 no difference image



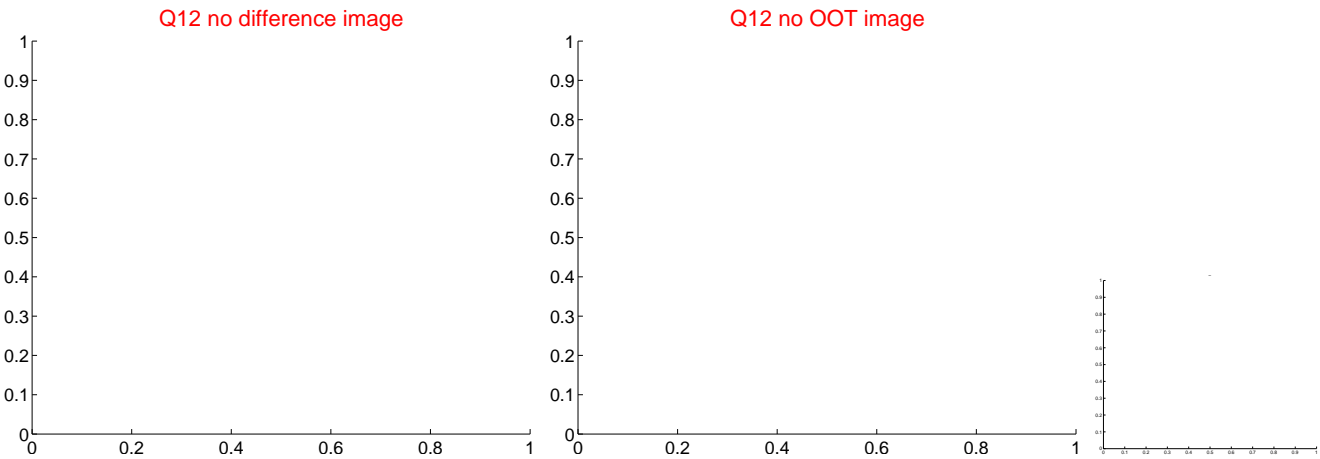
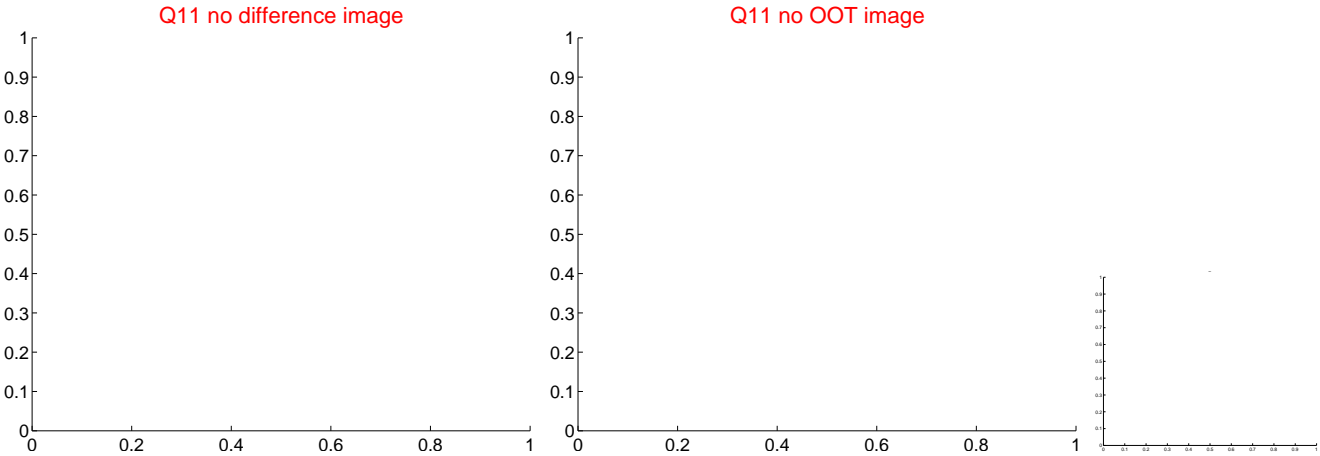
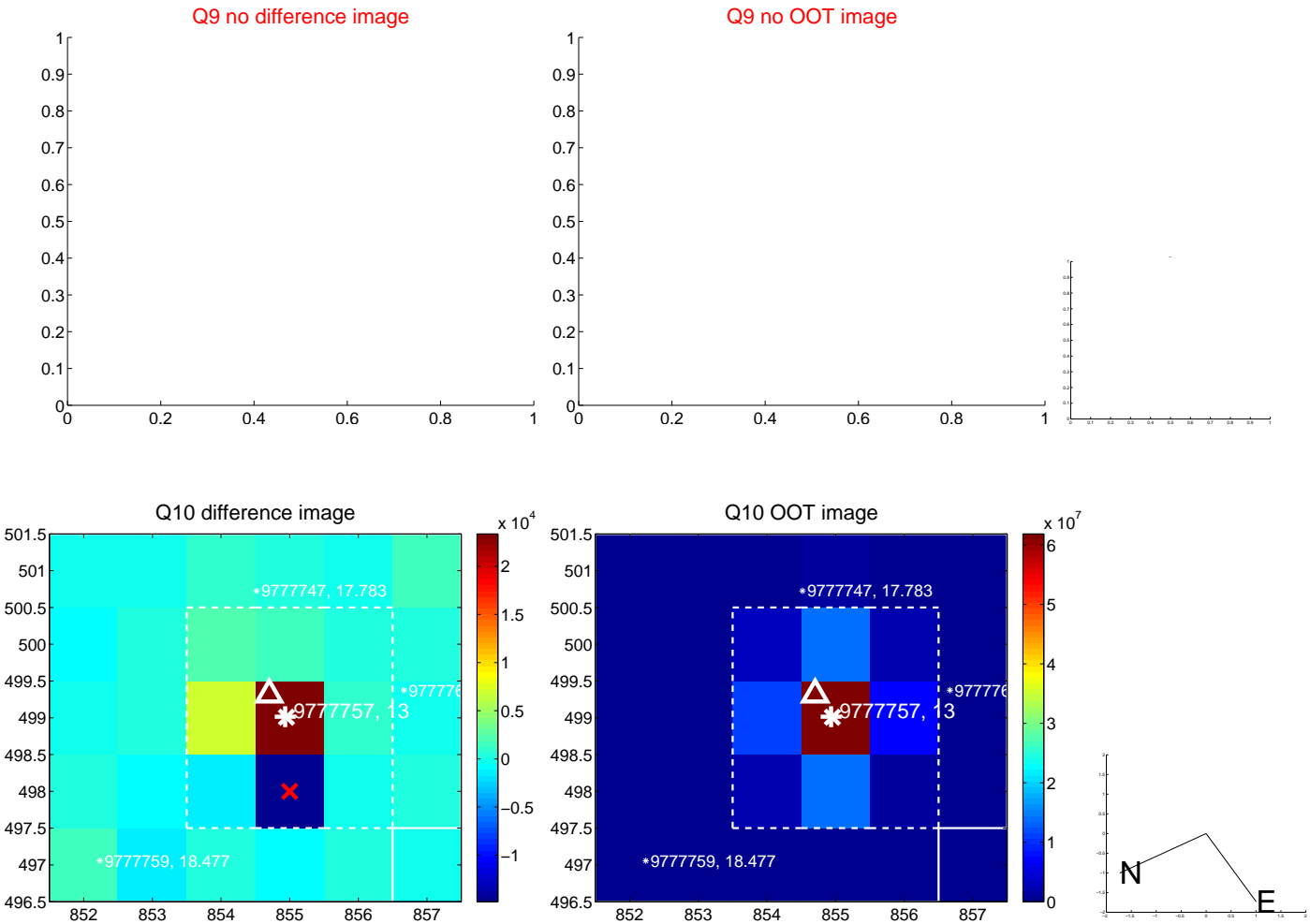
Q4 no OOT image



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



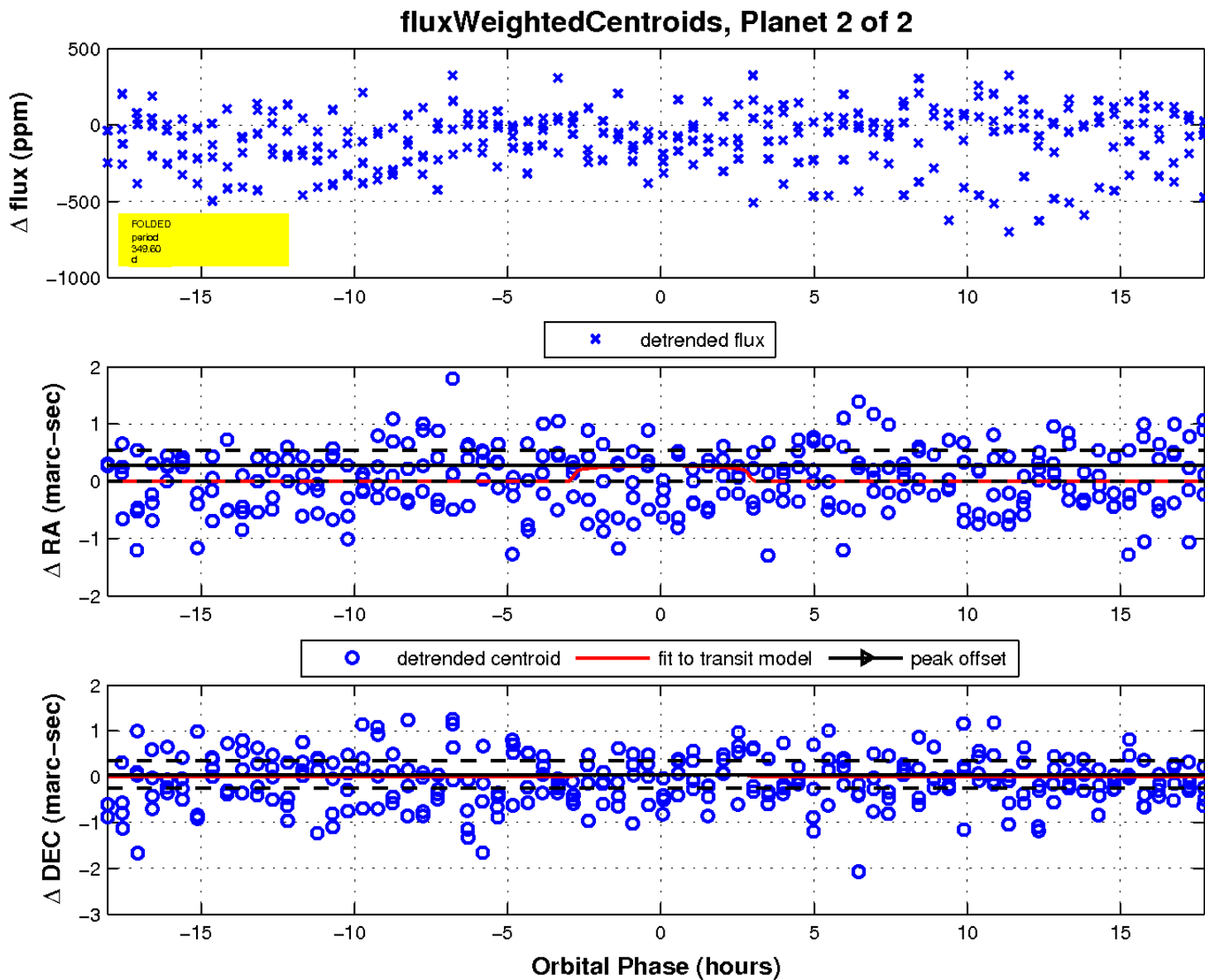
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

