

KIC 003631048

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})
003631048-01	OBS	No	87.971899	131.871987	1928.6	10.500	11.9	-1.0	0.56	3683	2.38	0.51
003631048-02	OBS	No	89.272784	198.992372	2669.4	3.365	9.6	7.4	0.56	3683	2.89	0.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003631048-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST
003631048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_MEAS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

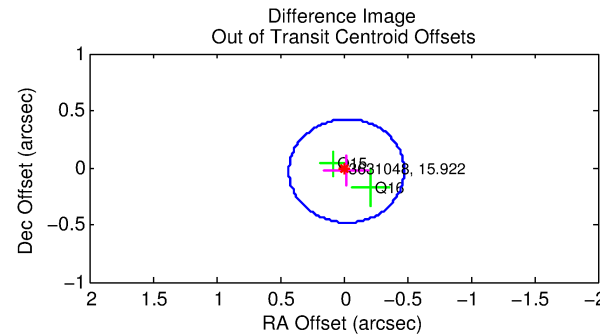
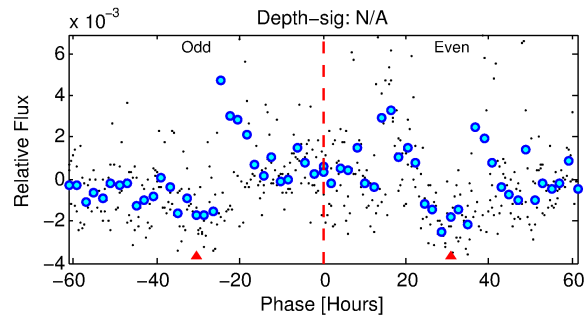
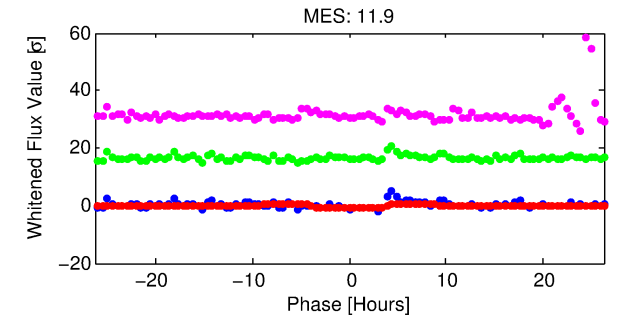
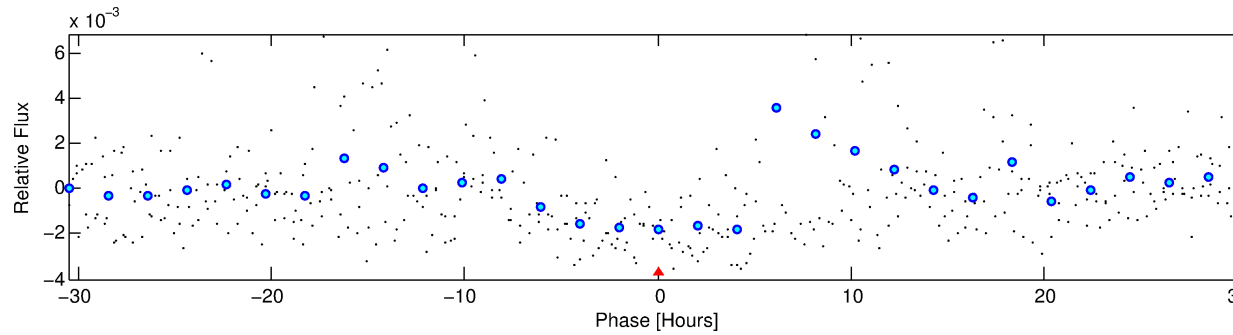
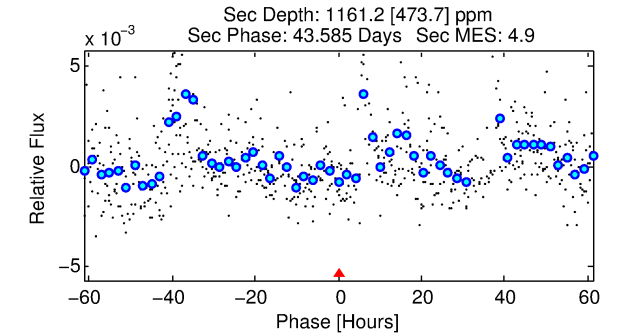
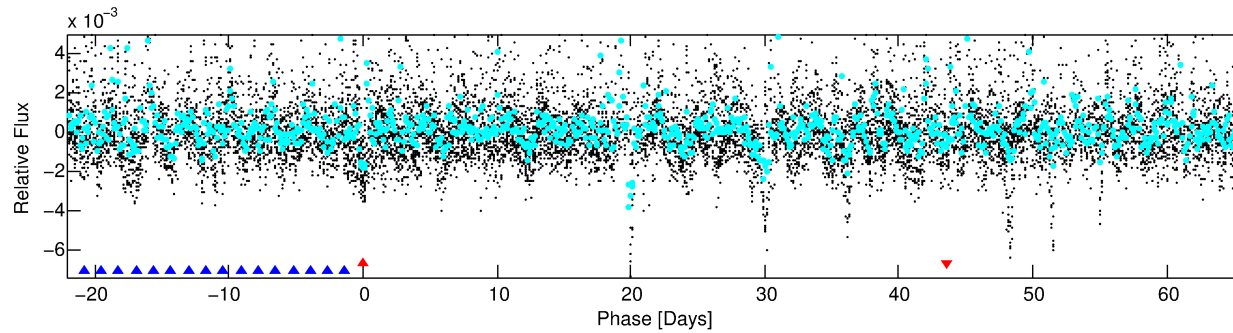
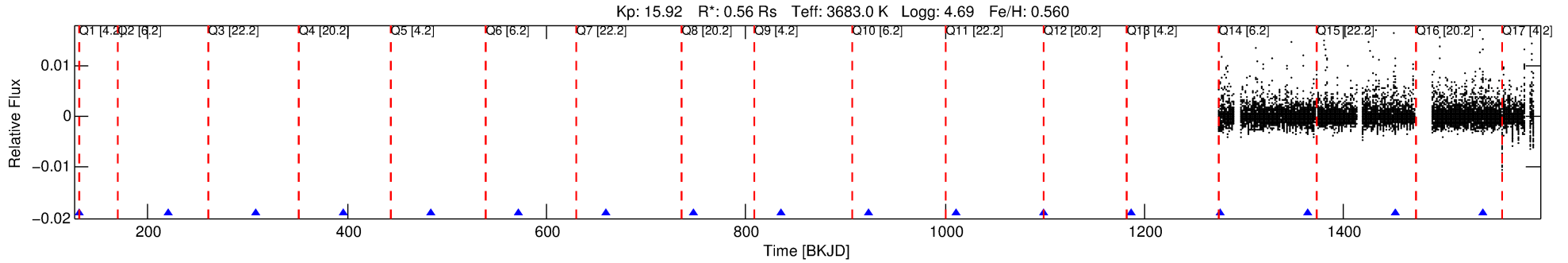
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003631048-01

No Significant Match Found

DV One-Page Summary

KIC: 3631048 Candidate: 1 of 2 Period: 87.972 d



TPS TCE Results:

Period = 87.97190 d
Epoch = 131.8720 BKJD

DV fit results are unavailable

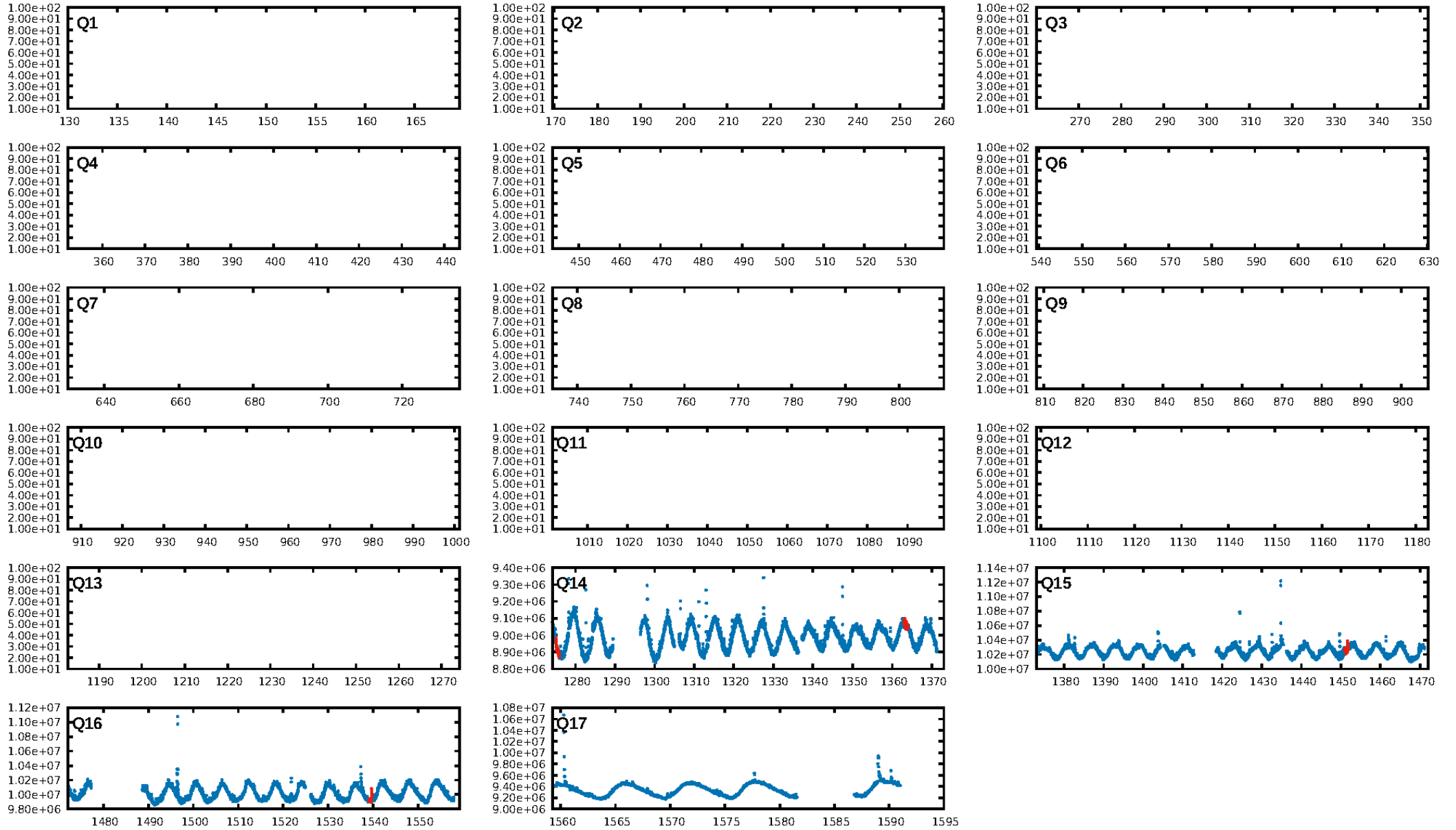
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.5% [2.83σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.92e-15
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.1186
Centroid-sig: 10.5%
Centroid-so: 1.250 arcsec [1.45σ]
OotOffset-rm: 0.036 arcsec [0.24σ]
KicOffset-rm: 0.201 arcsec [1.15σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

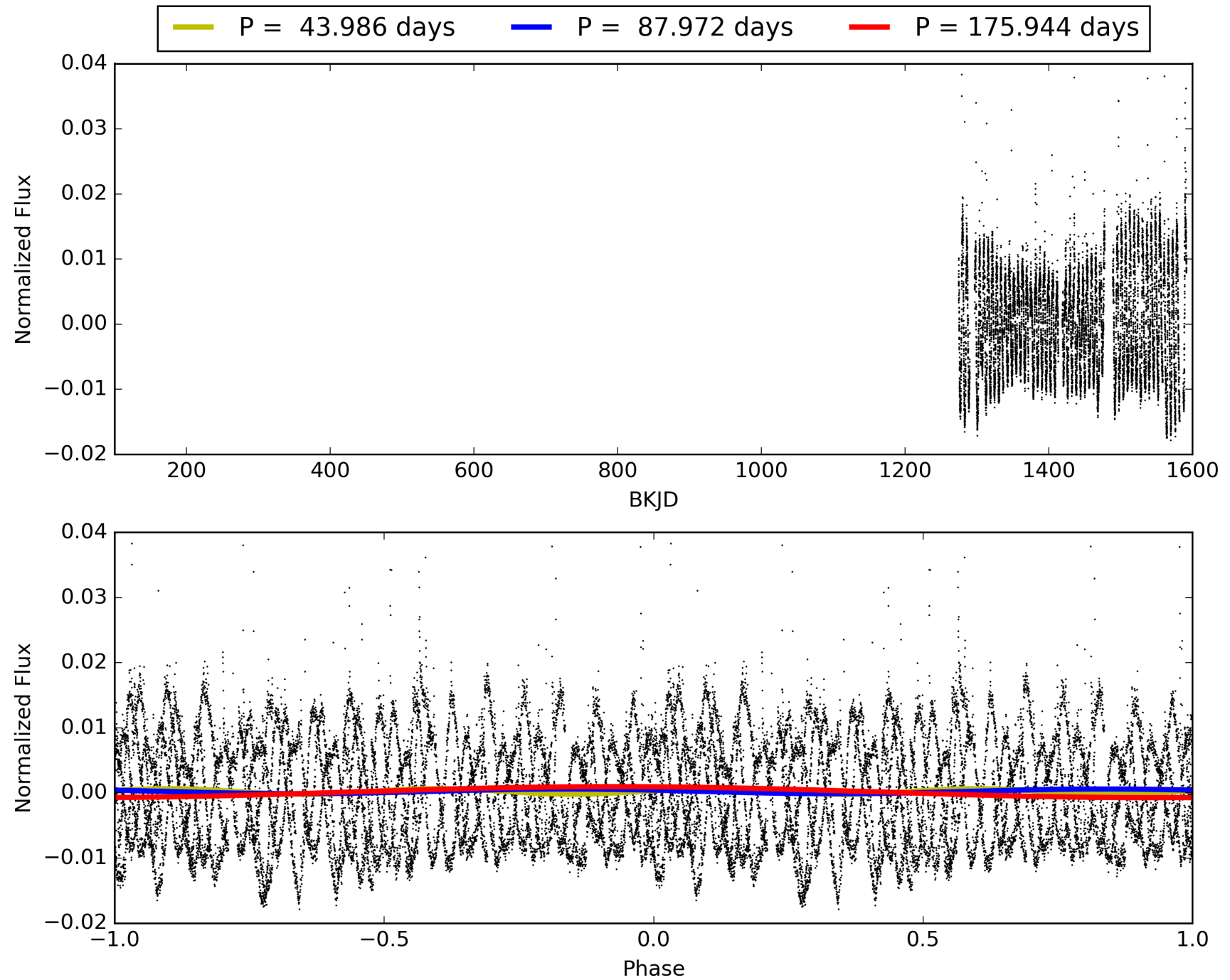
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:29:41 Z

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

TCE 003631048-01, PDC Light Curves

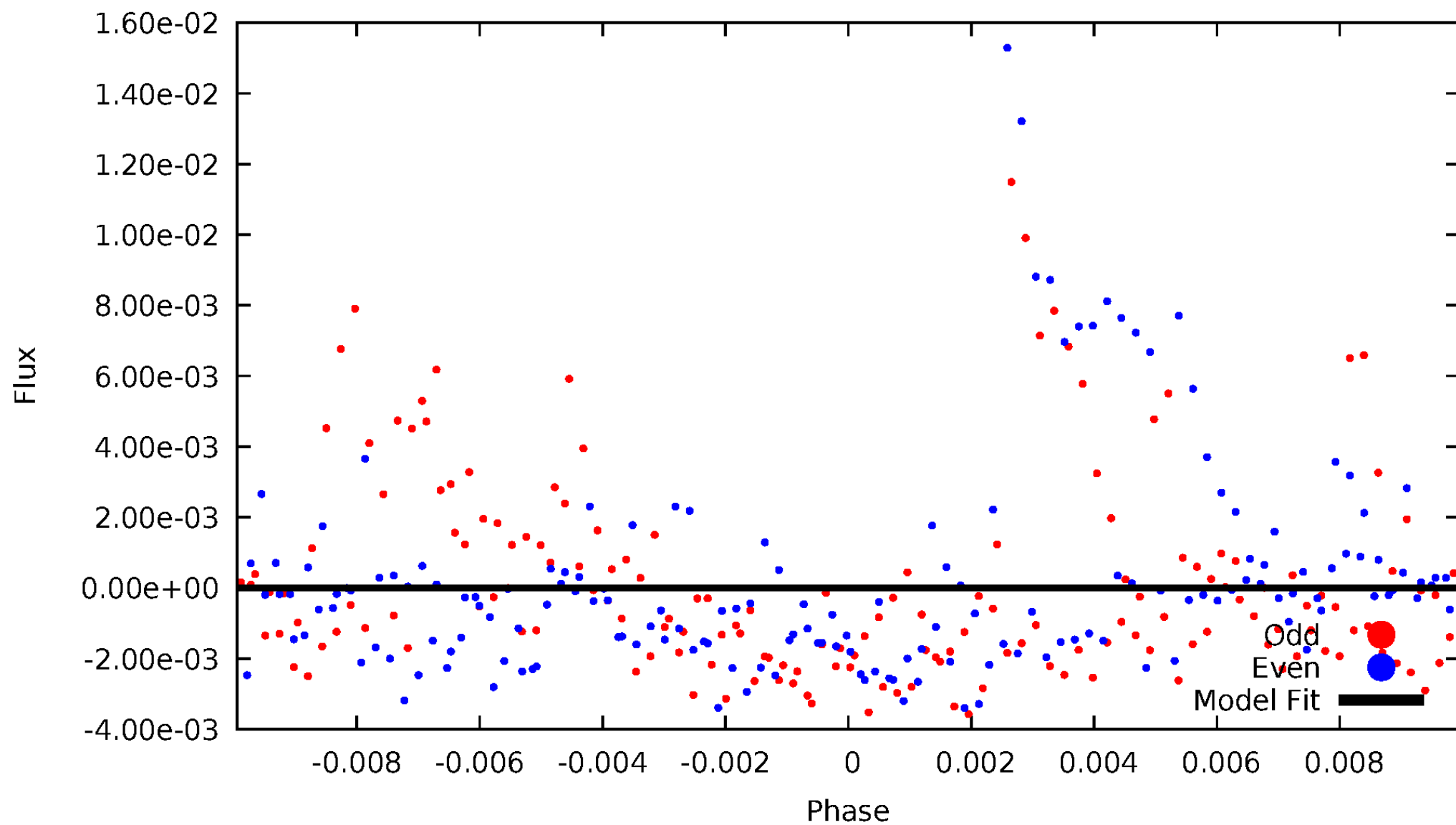


TCE 003631048-01



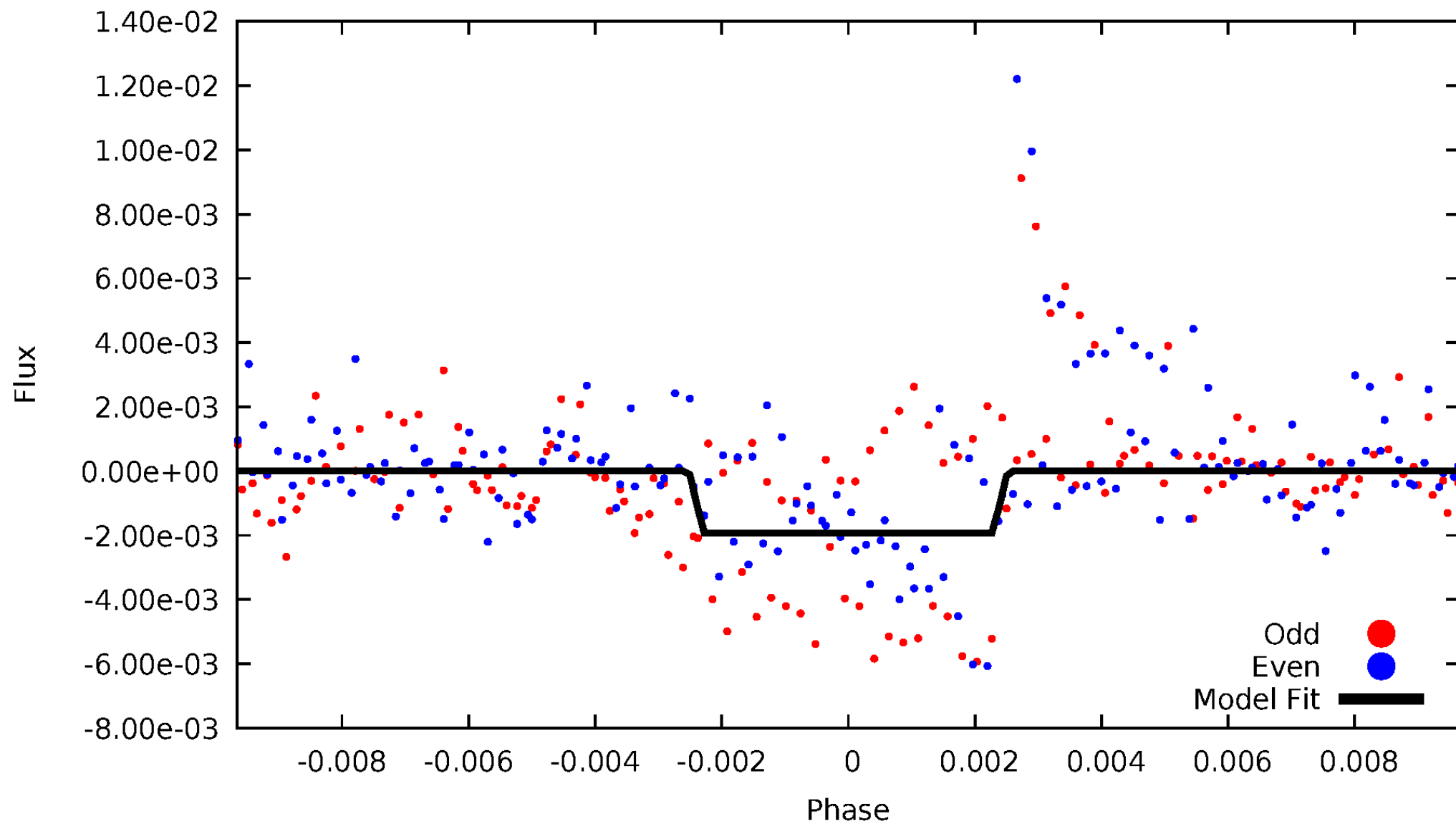
DV Odd/Even

TCE 003631048-01



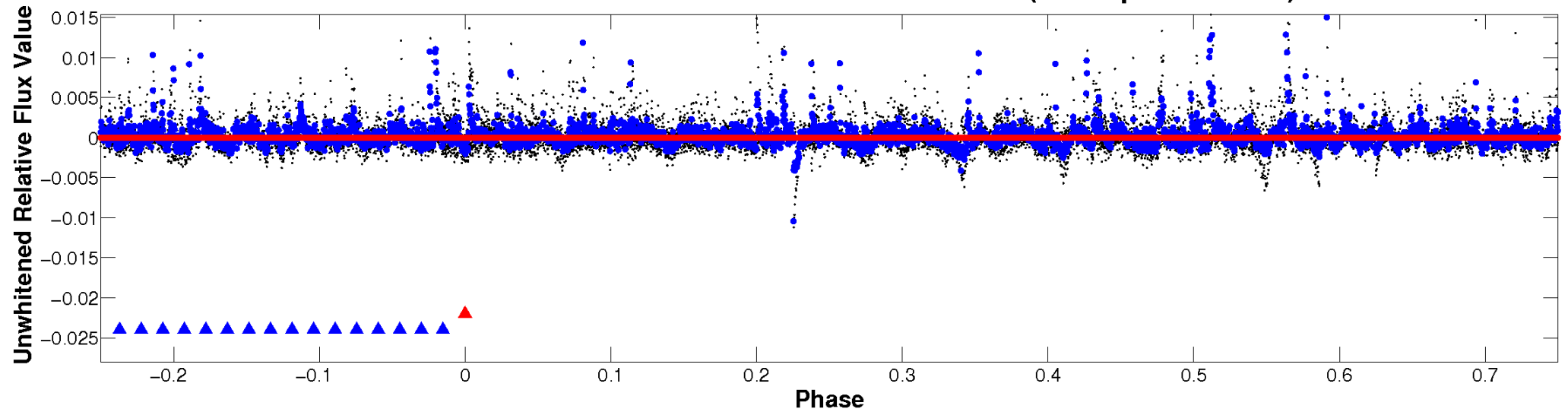
ALT Odd/Even

TCE 003631048-01

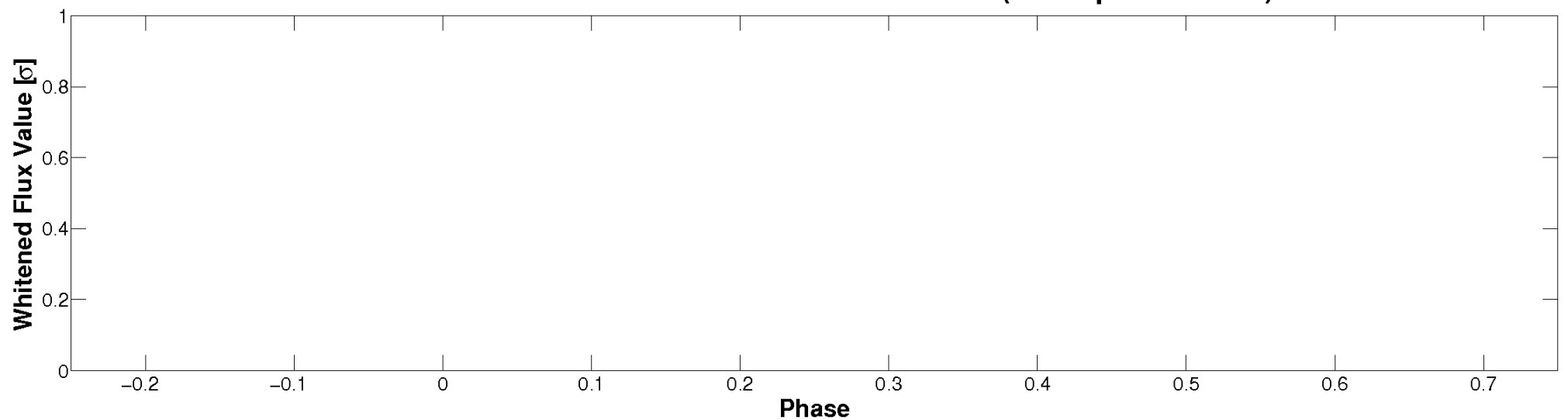


Non-Whitened Vs. Whitened Light Curve

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

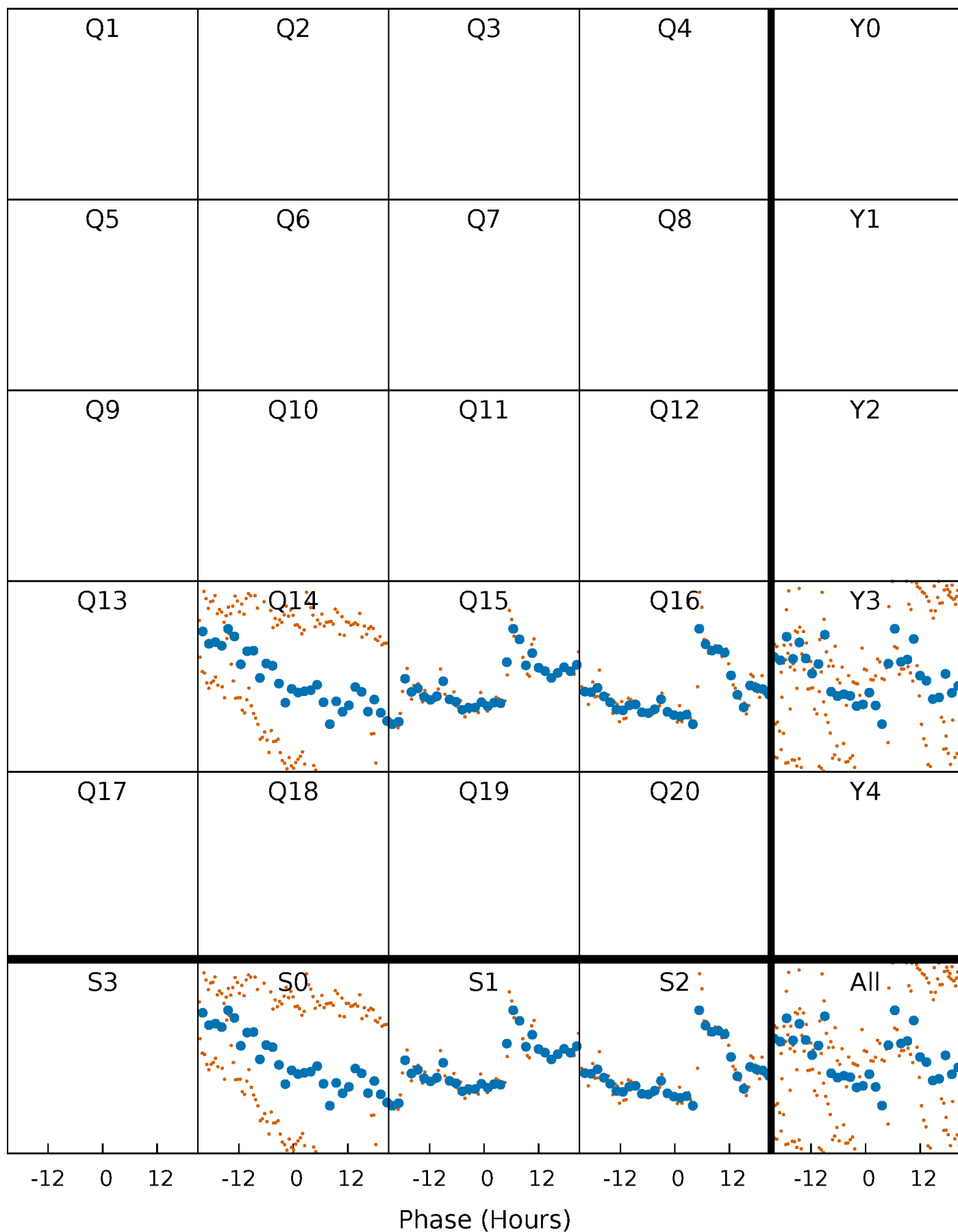


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



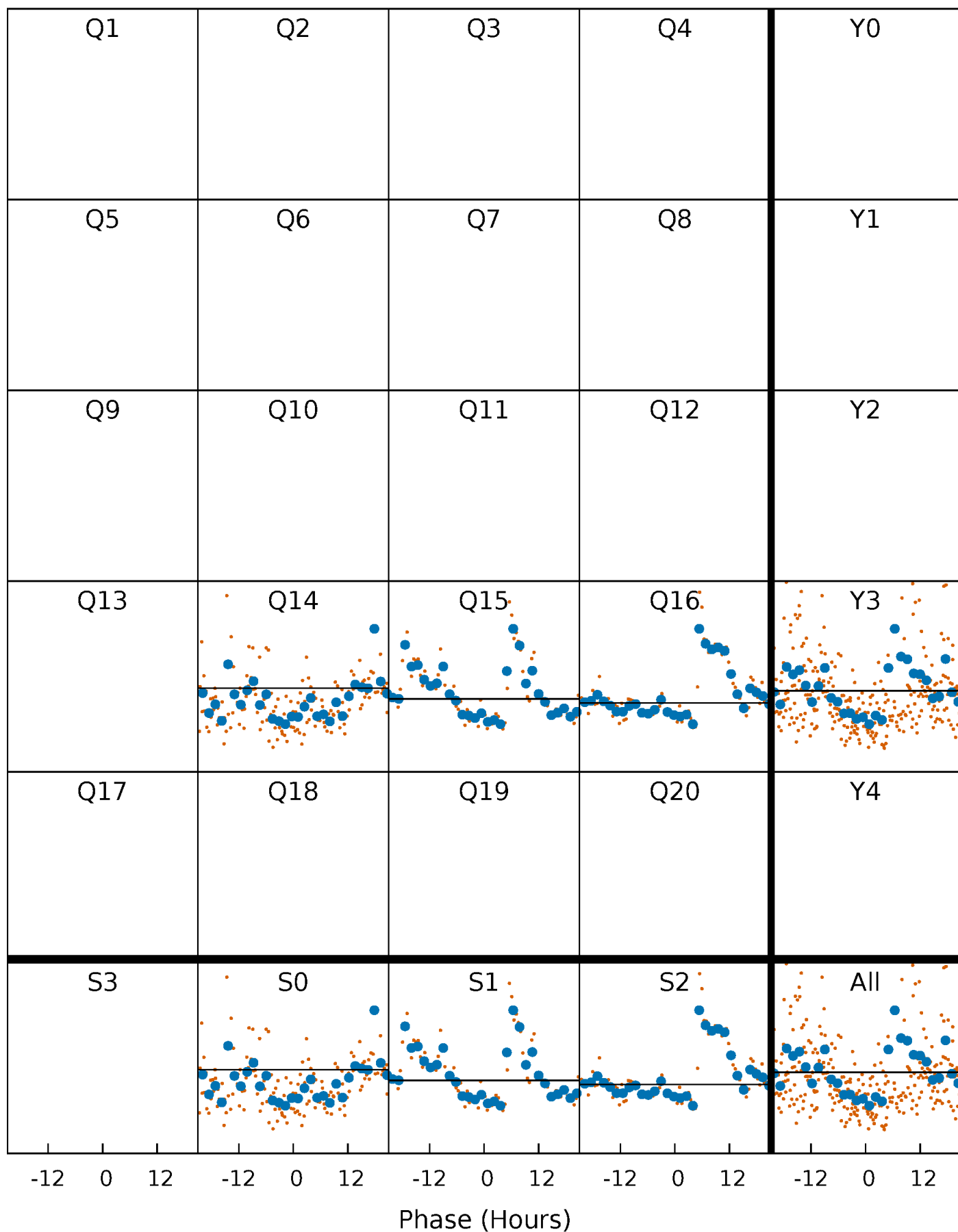
PDC Quarter-Phased Transit Curves

TCE 003631048-01 P= 87.971899 Days $T_0=131.871987$ (BKJD)



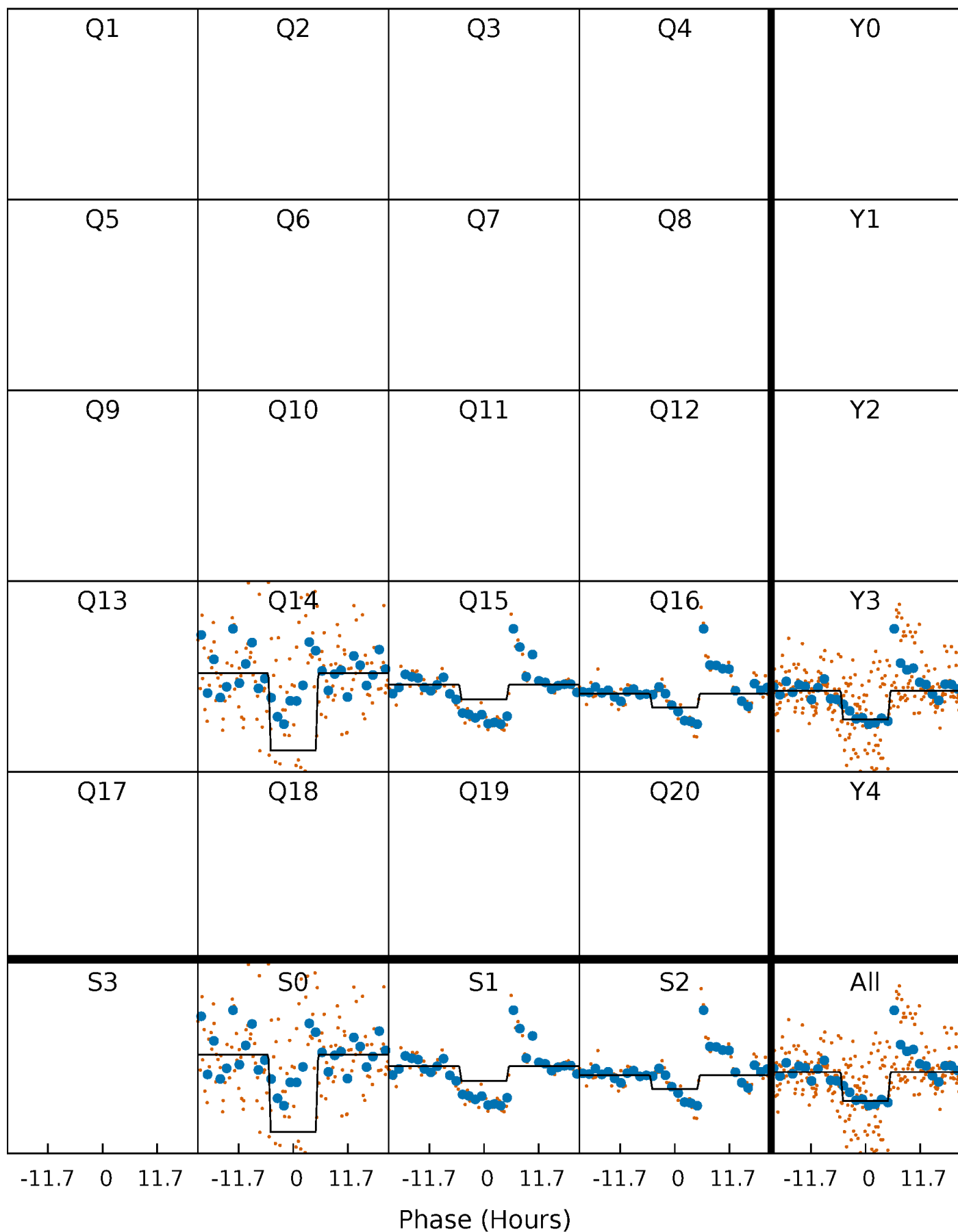
DV Quarter-Phased Transit Curves

TCE 003631048-01 P= 87.971899 Days $T_0=131.871987$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

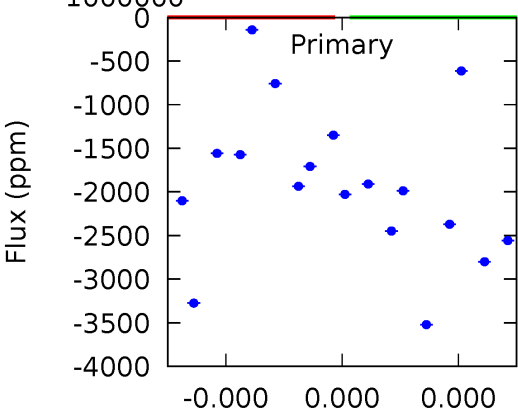
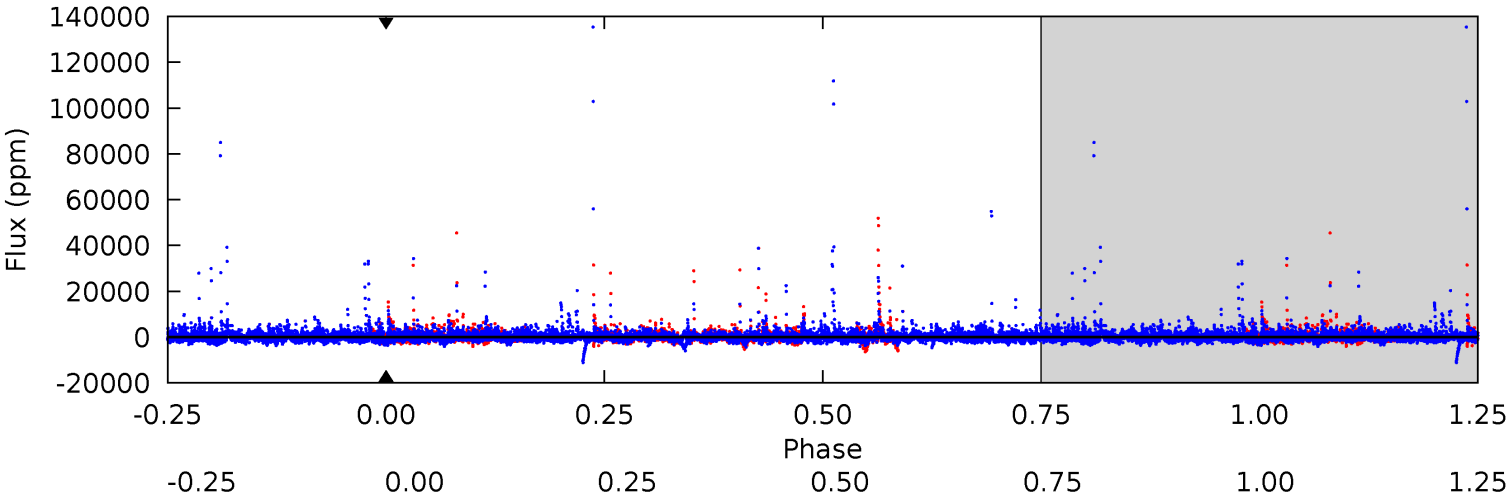
TCE 003631048-01 P= 87.971899 Days $T_0=131.865241$ (BKJD)



DV Model-Shift Uniqueness Test

003631048-01, P = 87.971899 Days, E = 131.871987 Days

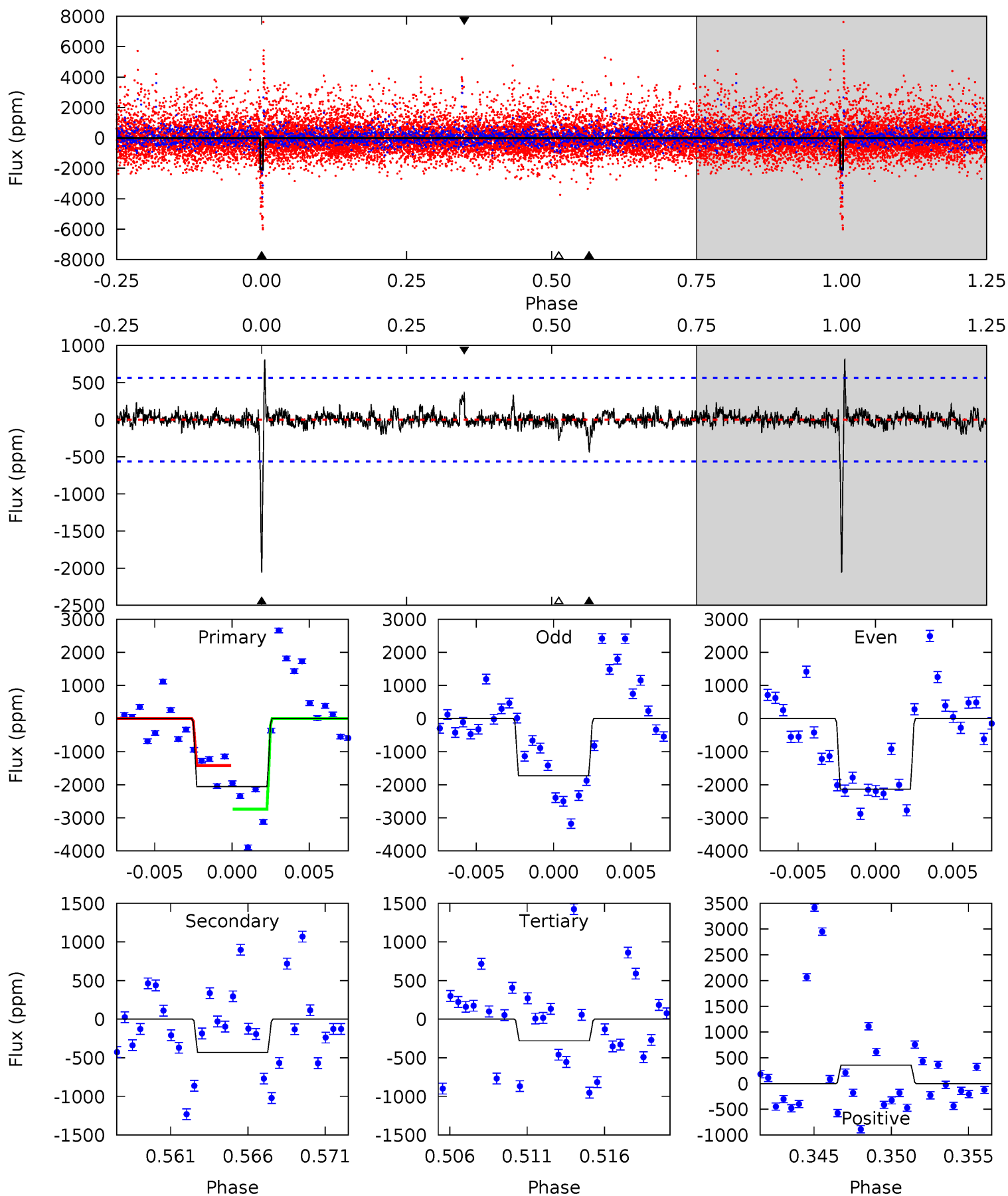
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

003631048-01, P = 87.971899 Days, E = 131.865241 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	3.95	2.58	3.28	5.16	2.81	0.66	16.3	15.6	1.37	0.67	1.83	1.09	0.28	6.06



Stellar Parameters For KIC 003631048

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3683^{+117}_{-147}	$4.688^{+0.075}_{-0.020}$	$0.560^{+0.050}_{-0.250}$	$0.563^{+0.033}_{-0.081}$	$0.564^{+0.036}_{-0.072}$	$4.449^{+1.735}_{-0.434}$
	+3%/-4%	+2%/-0%	+9%/-45%	+6%/-14%	+6%/-13%	+39%/-10%
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 003631048-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$4.89^{+5.14}_{-3.48}$	298^{+11}_{-14}	-3085^{+10451}_{-4366}	$-4740.708^{+381184.042}_{-452622.361}$
Alt.	-430 ± 109	$5.63^{+4.91}_{-3.69}$	298^{+12}_{-12}	2411^{+793}_{-333}	750^{+5453}_{-550}

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 $A_{\text{obs}} \gg 1.0$

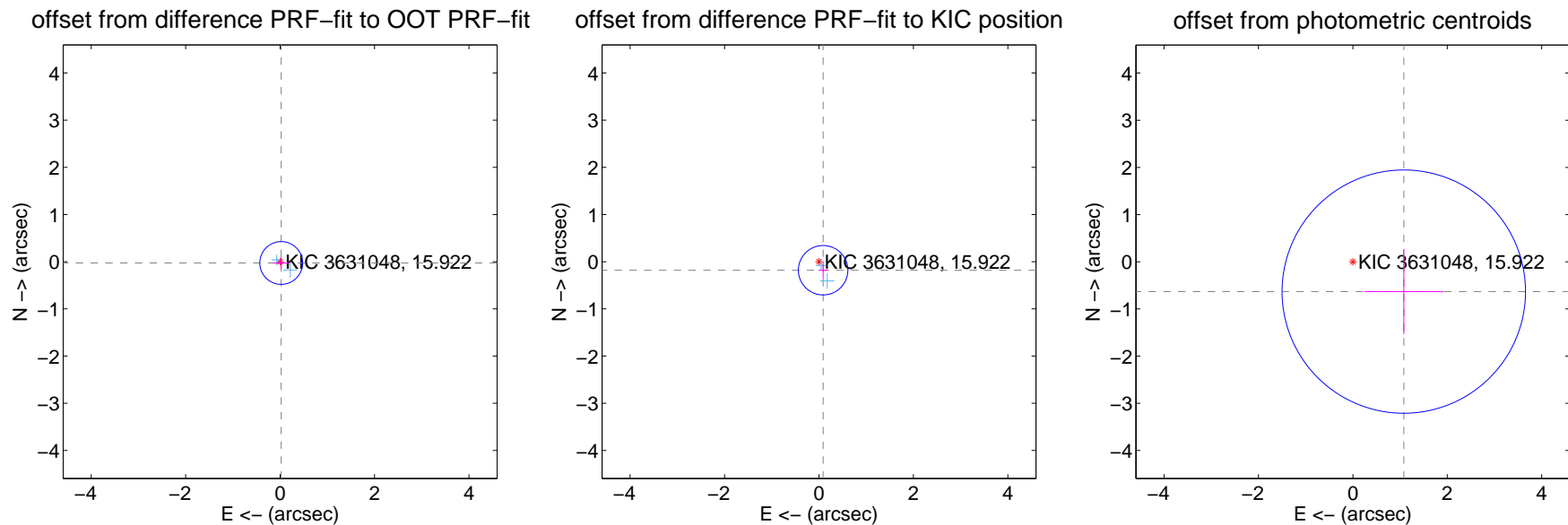
DV Centroid Data

Supplemental centroid analysis for 003631048-01. Kepler magnitude: 15.92. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.036 ± 0.151	0.24	-0.024 ± 0.174	-0.027 ± 0.132
PRF-fit source offset from KIC position	0.201 ± 0.175	1.15	-0.088 ± 0.098	-0.181 ± 0.188
photometric centroid source offset	1.25 ± 0.86	1.45	-1.08 ± 0.84	-0.63 ± 0.91



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.



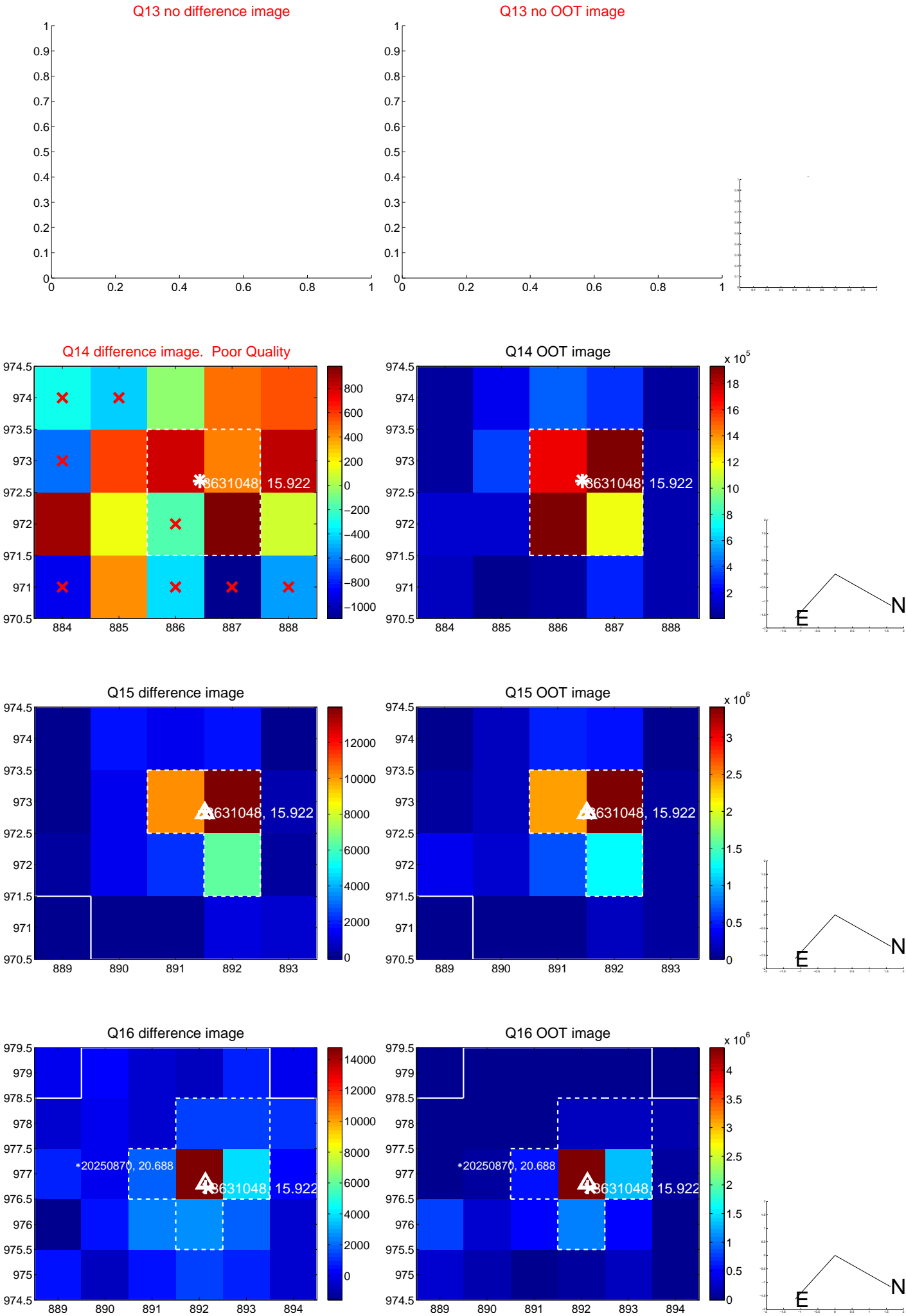
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



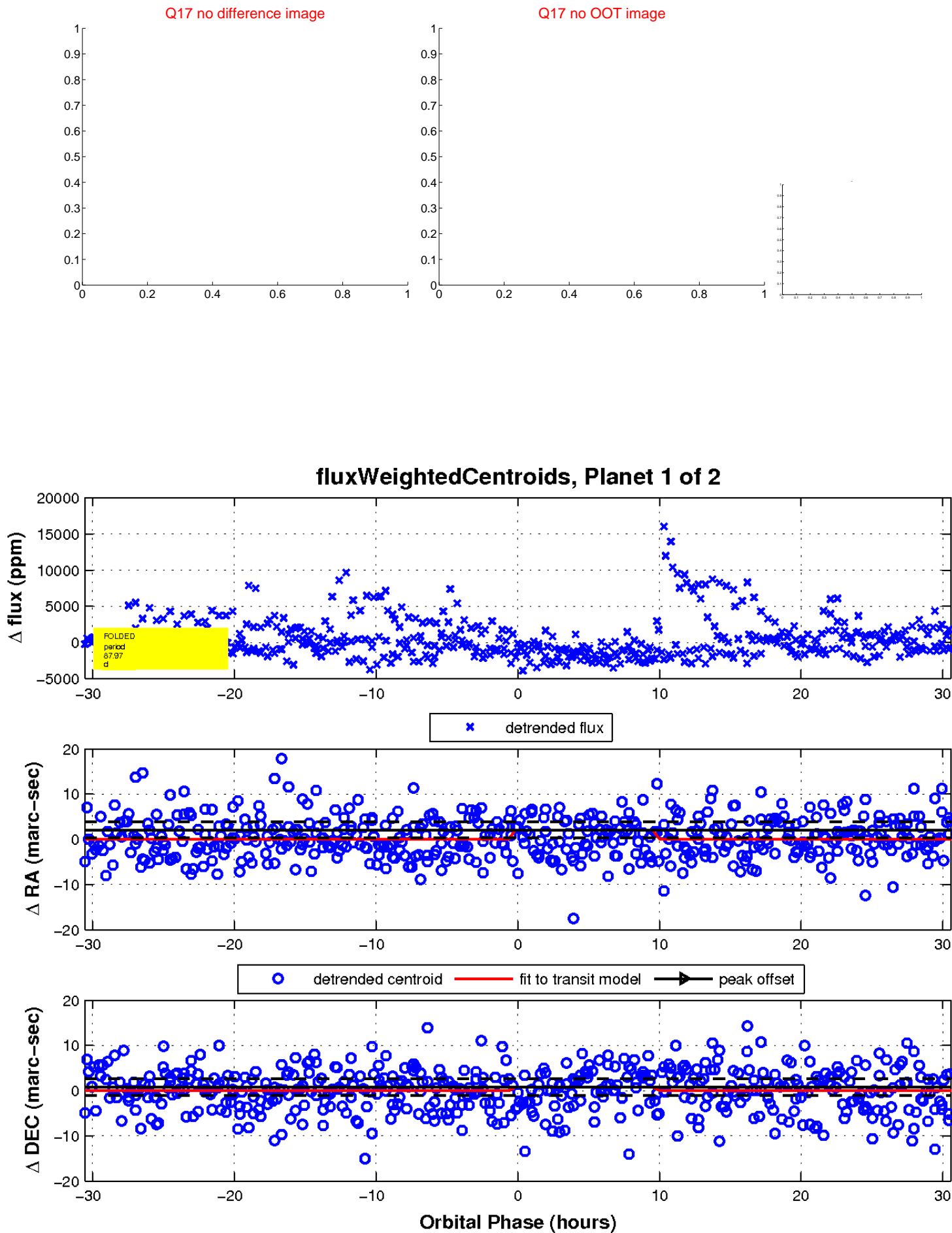
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

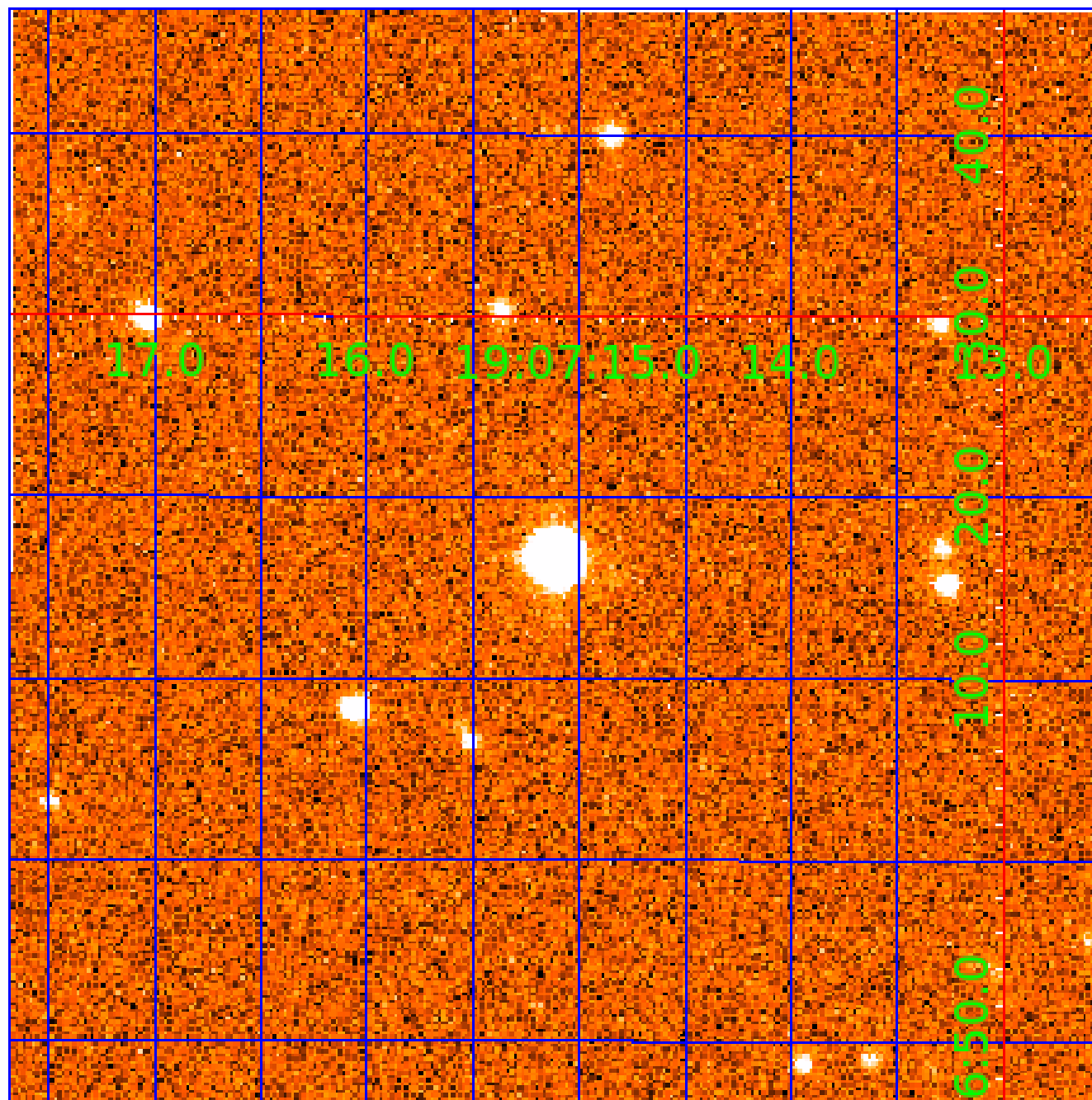


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003631048

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})
003631048-01	OBS	No	87.971899	131.871987	1928.6	10.500	11.9	-1.0	0.56	3683	2.38	0.51
003631048-02	OBS	No	89.272784	198.992372	2669.4	3.365	9.6	7.4	0.56	3683	2.89	0.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003631048-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST
003631048-02	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_MEAS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

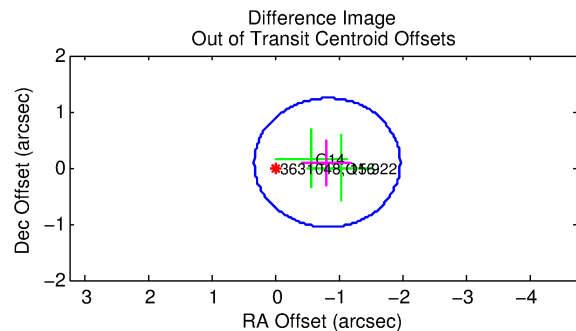
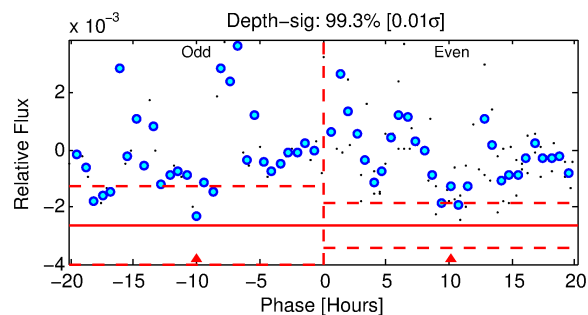
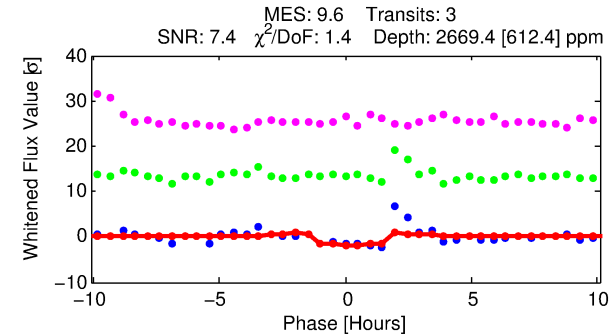
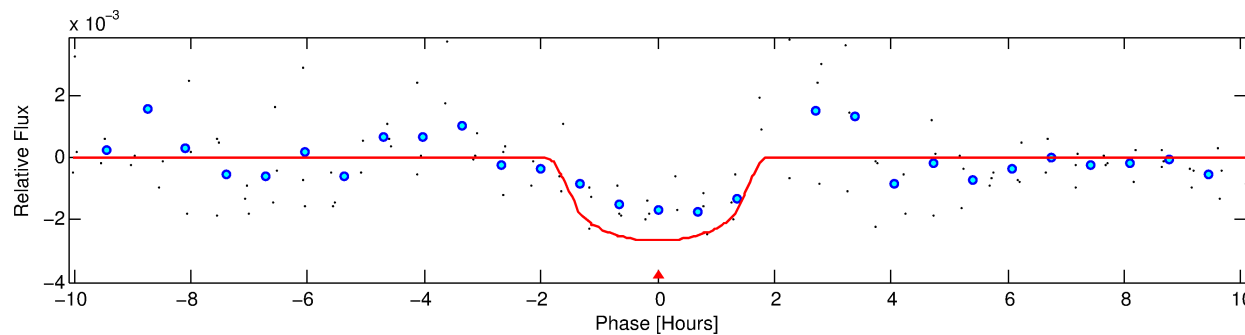
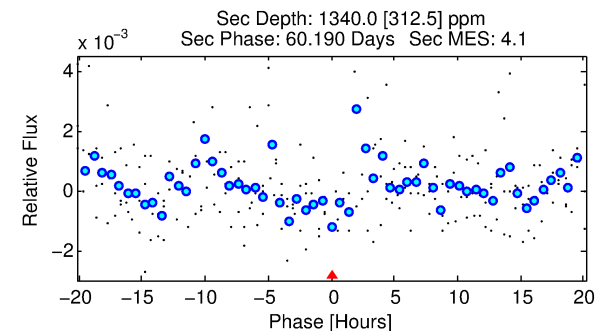
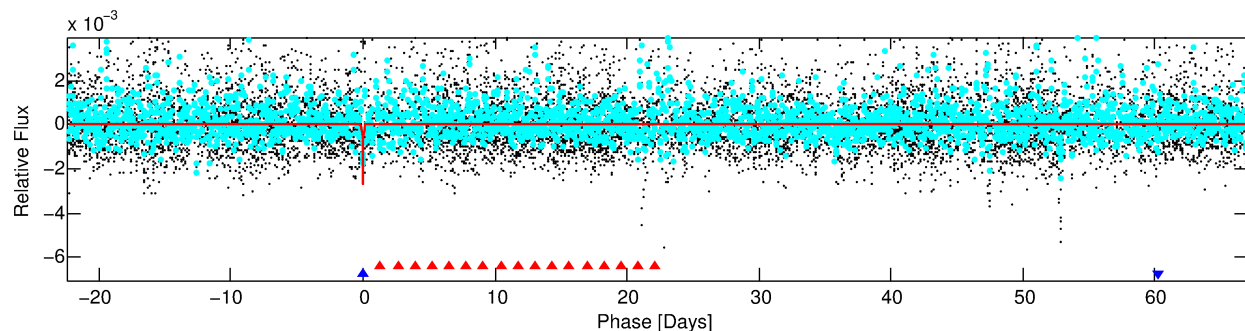
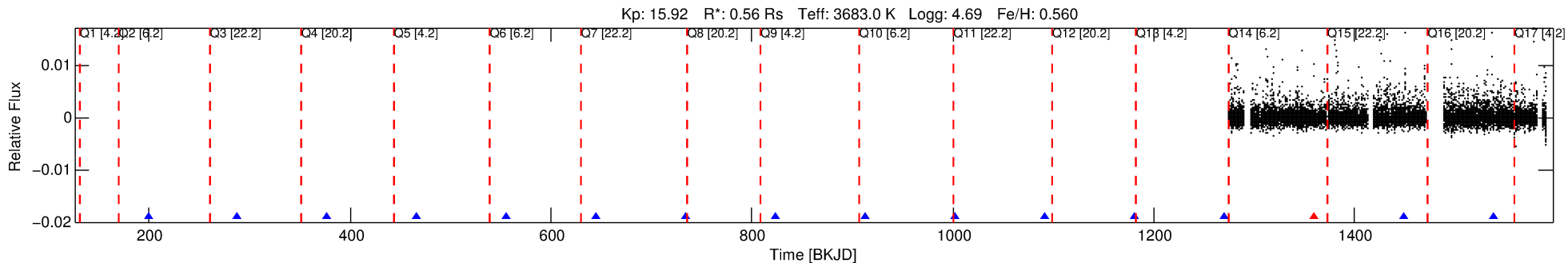
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003631048-02

No Significant Match Found

DV One-Page Summary

KIC: 3631048 Candidate: 2 of 2 Period: 89.273 d



DV Fit Results:

Period = 89.27278 [0.00295] d
Epoch = 198.9924 [0.0412] BKJD
Rp/R* = 0.0470 [0.0801]
a/R* = 193.31 [1020.25]
b = 0.43 [10.19]
Seff = 0.50 [0.11]
Teq = 215 [12] K
Rp = 2.89 [4.94] Re
a = 0.3230 [0.0361] AU
Ag = 9214.69 [31502.75] [0.29σ]
Teffp = 3250 [2778] K [1.09σ]

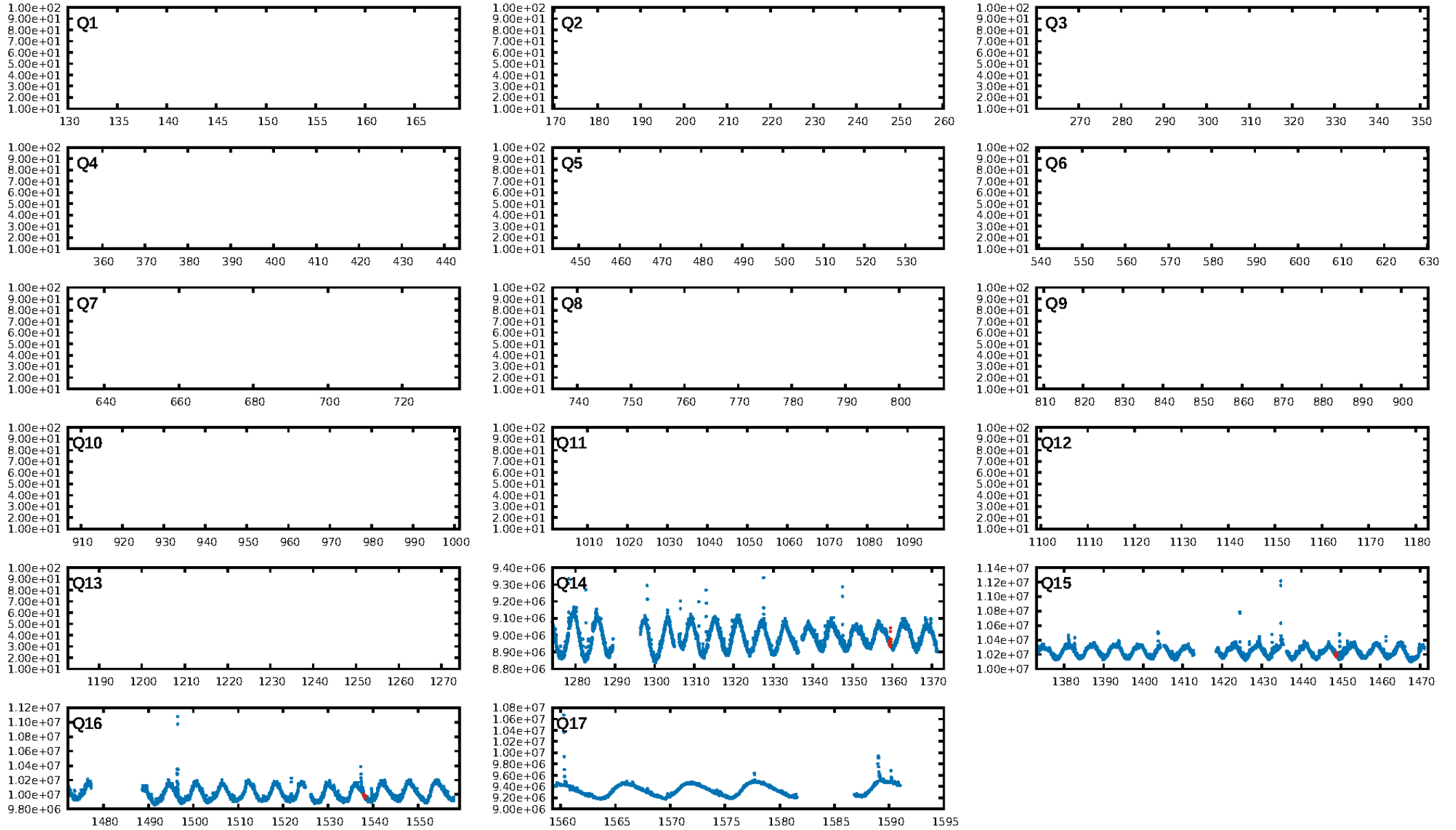
DV Diagnostic Results:

ShortPeriod-sig: 99.5% [2.83σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 61.0%
ModelChiSquareGof-sig: 73.4%
Bootstrap-pfa: 2.15e-11
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: -76.15
Centroid-sig: 33.4%
Centroid-so: 1.315 arcsec [1.00σ]
OotOffset-rm: 0.813 arcsec [2.12σ]
KicOffset-rm: 0.765 arcsec [2.00σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

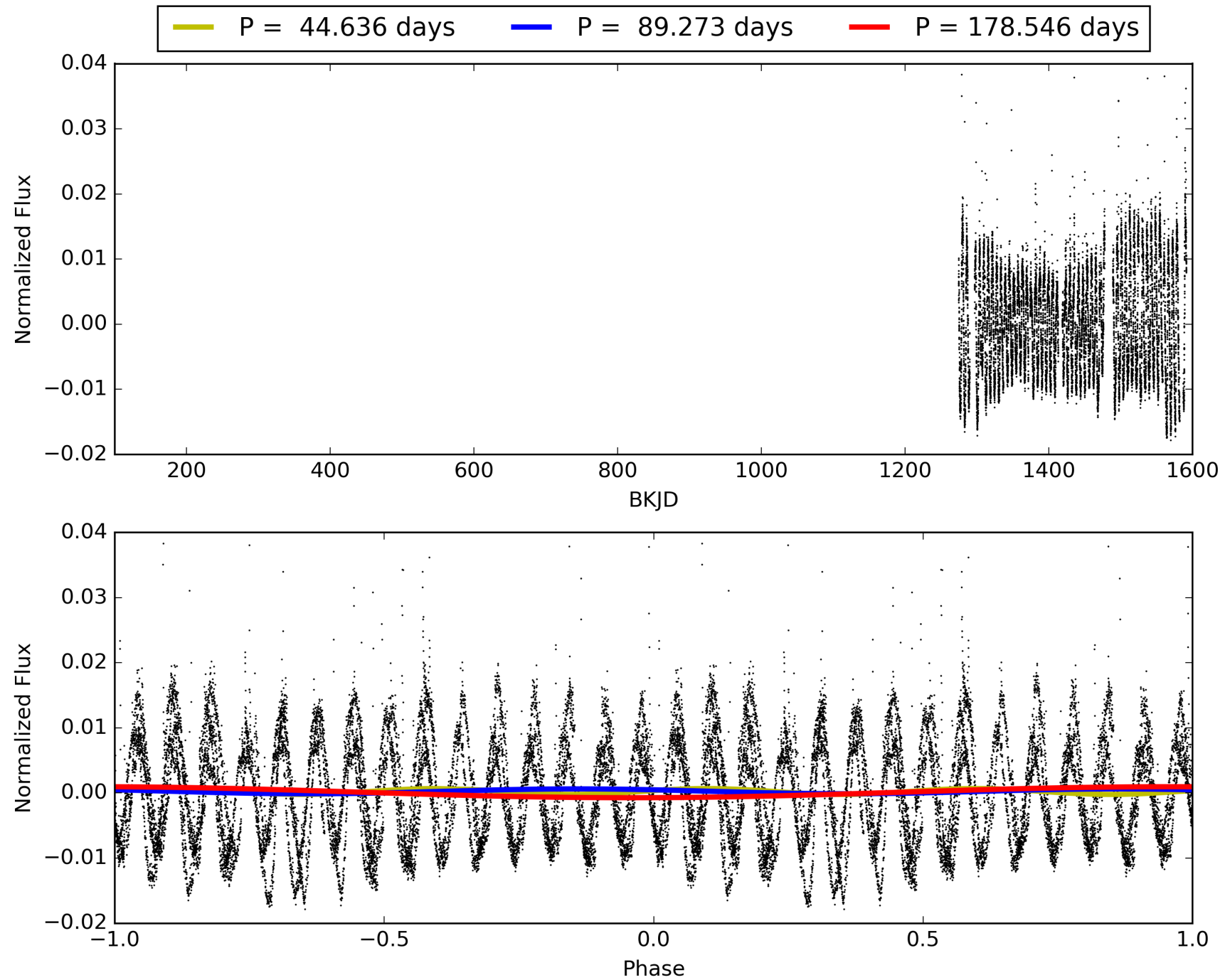
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:29:44 Z

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

TCE 003631048-02, PDC Light Curves

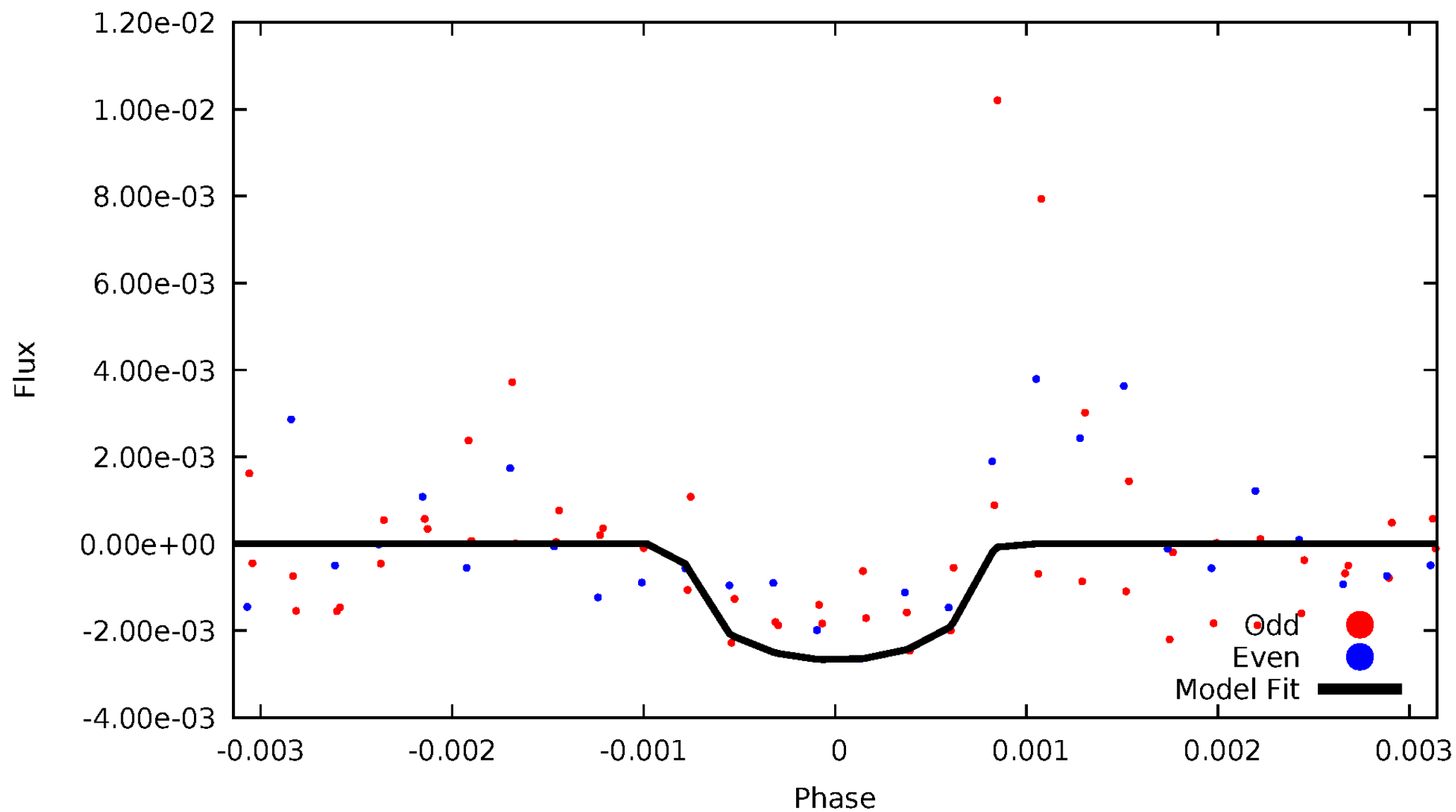


TCE 003631048-02



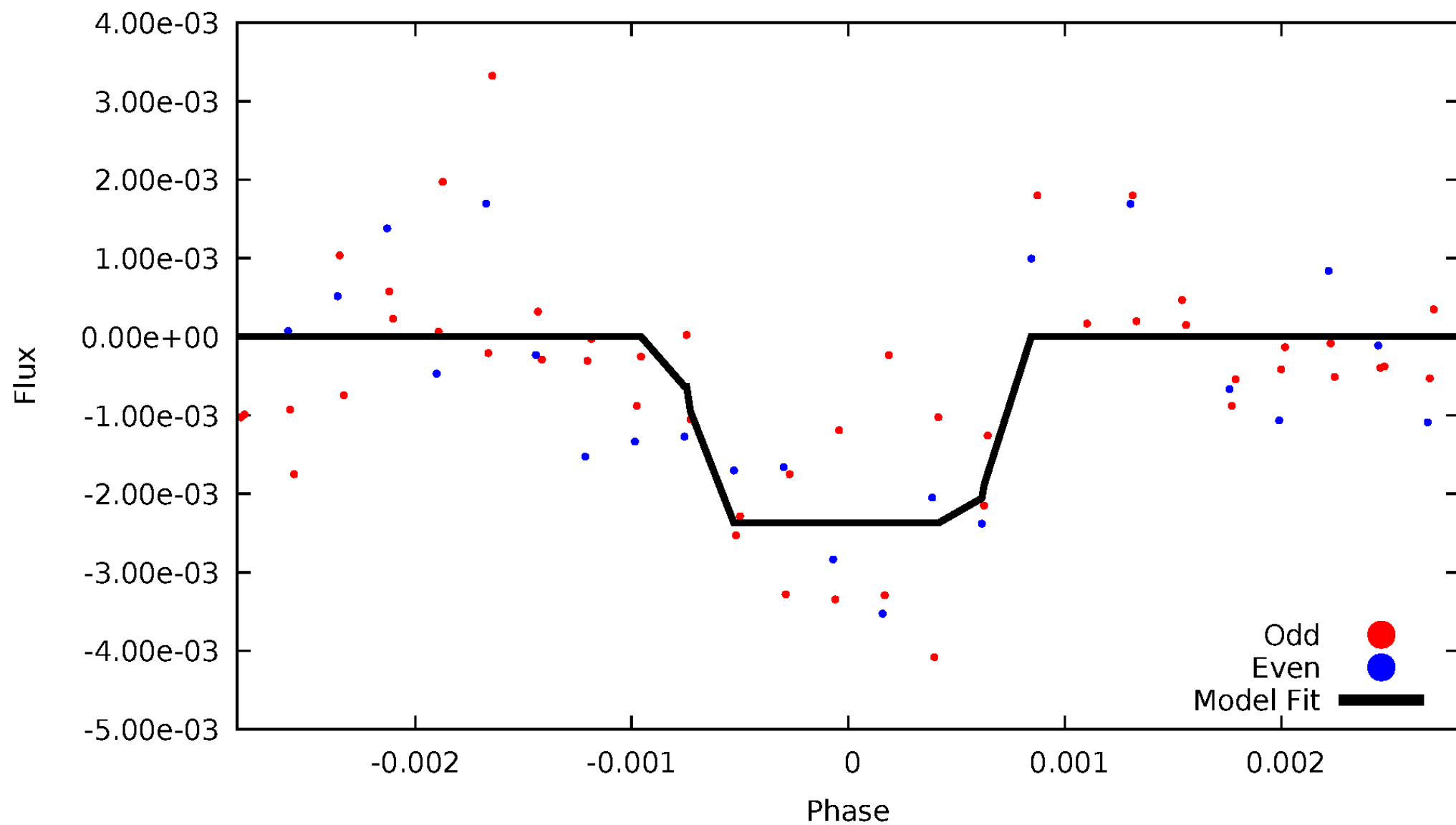
DV Odd/Even

TCE 003631048-02



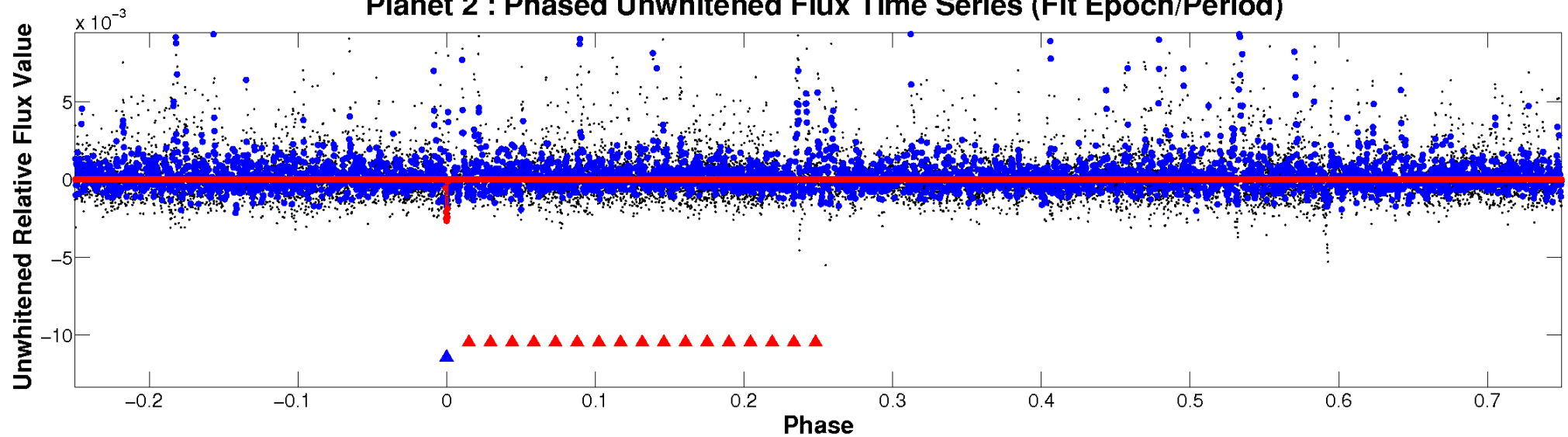
ALT Odd/Even

TCE 003631048-02

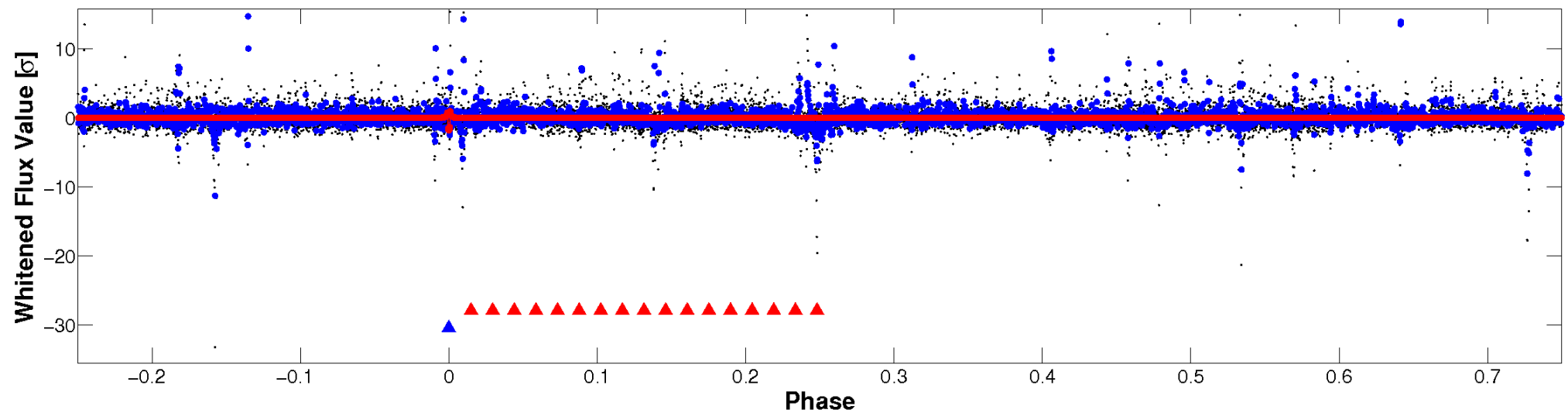


Non-Whitened Vs. Whitened Light Curve

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

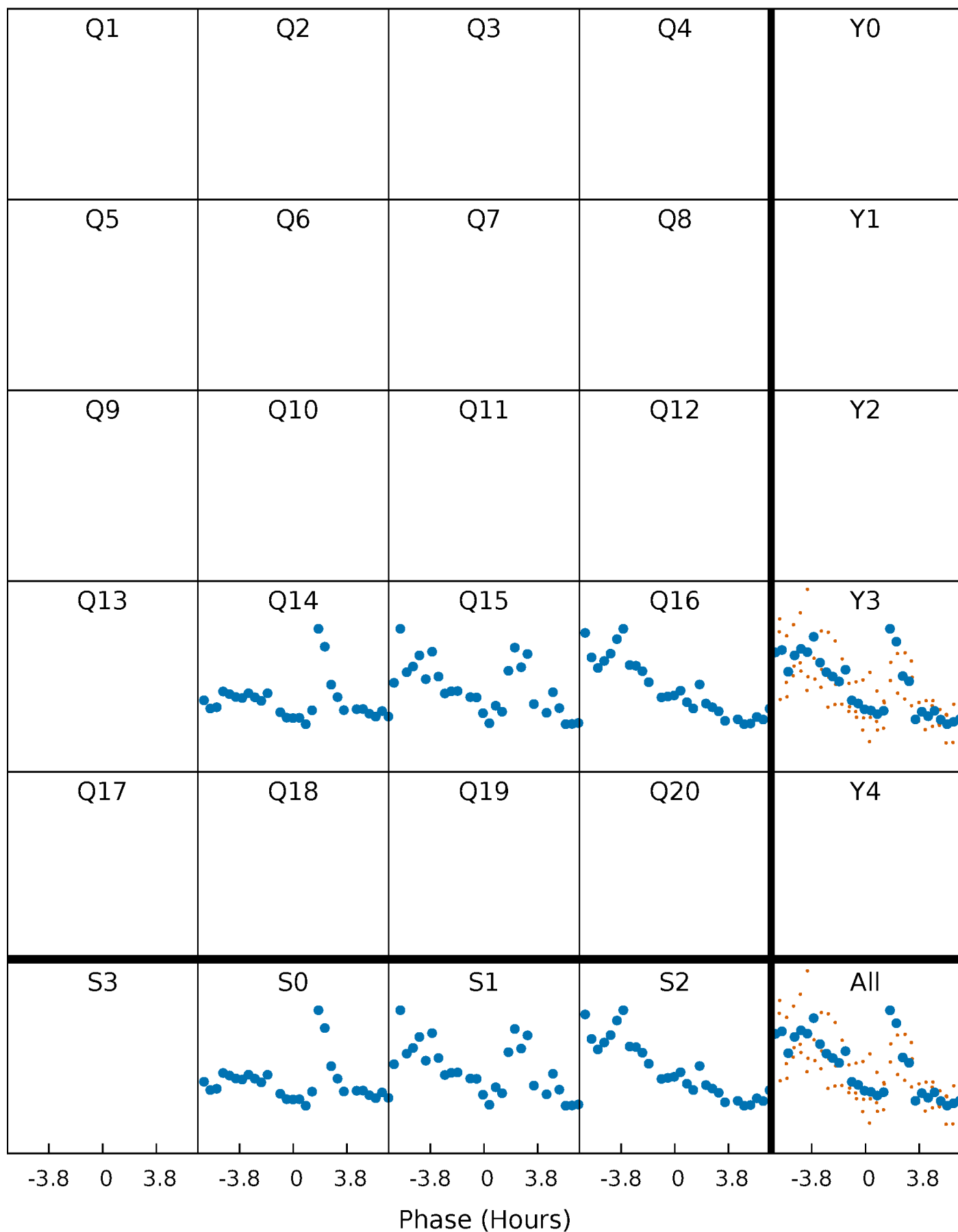


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



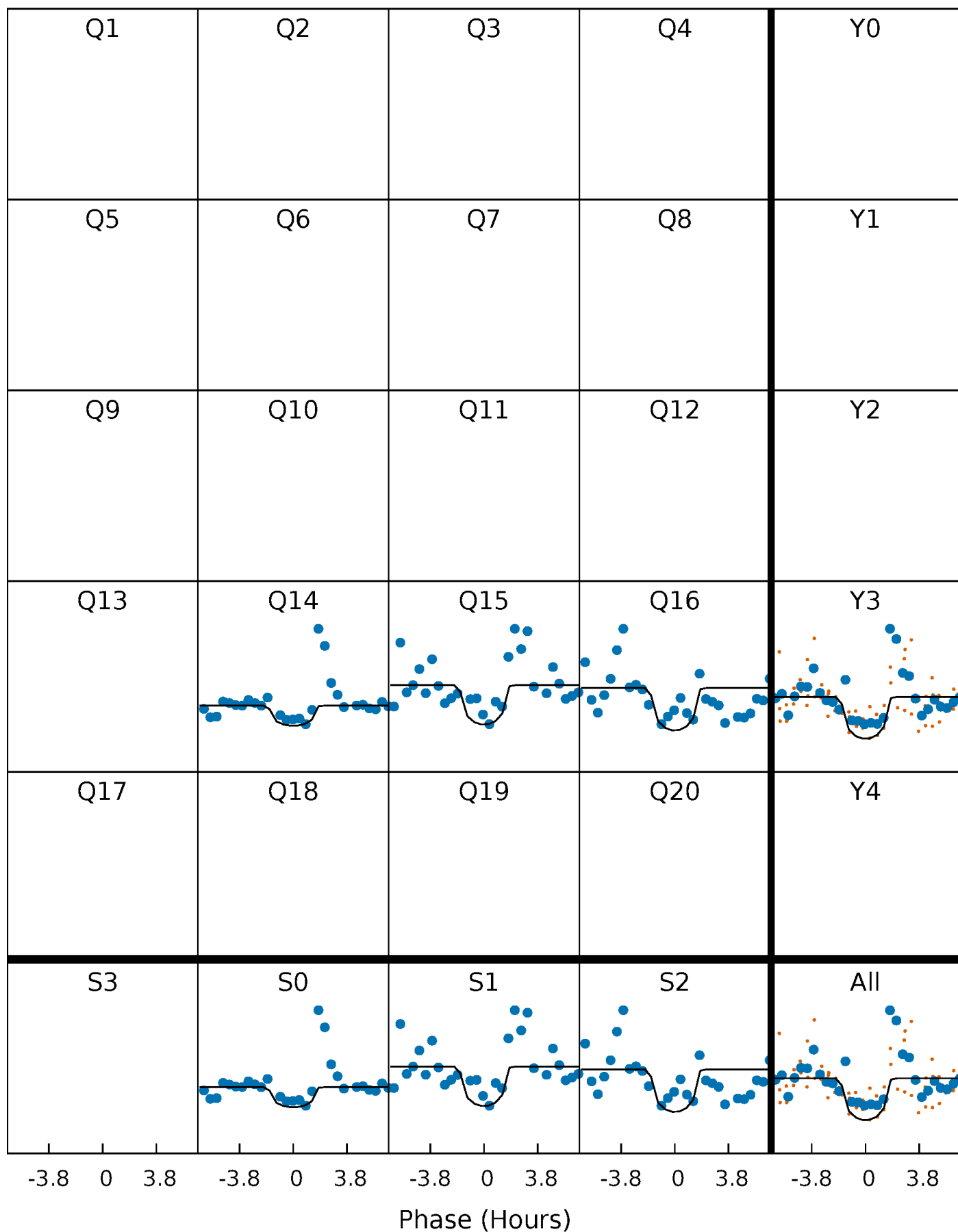
PDC Quarter-Phased Transit Curves

TCE 003631048-02 $P = 89.272784$ Days $T_0 = 198.992372$ (BKJD)



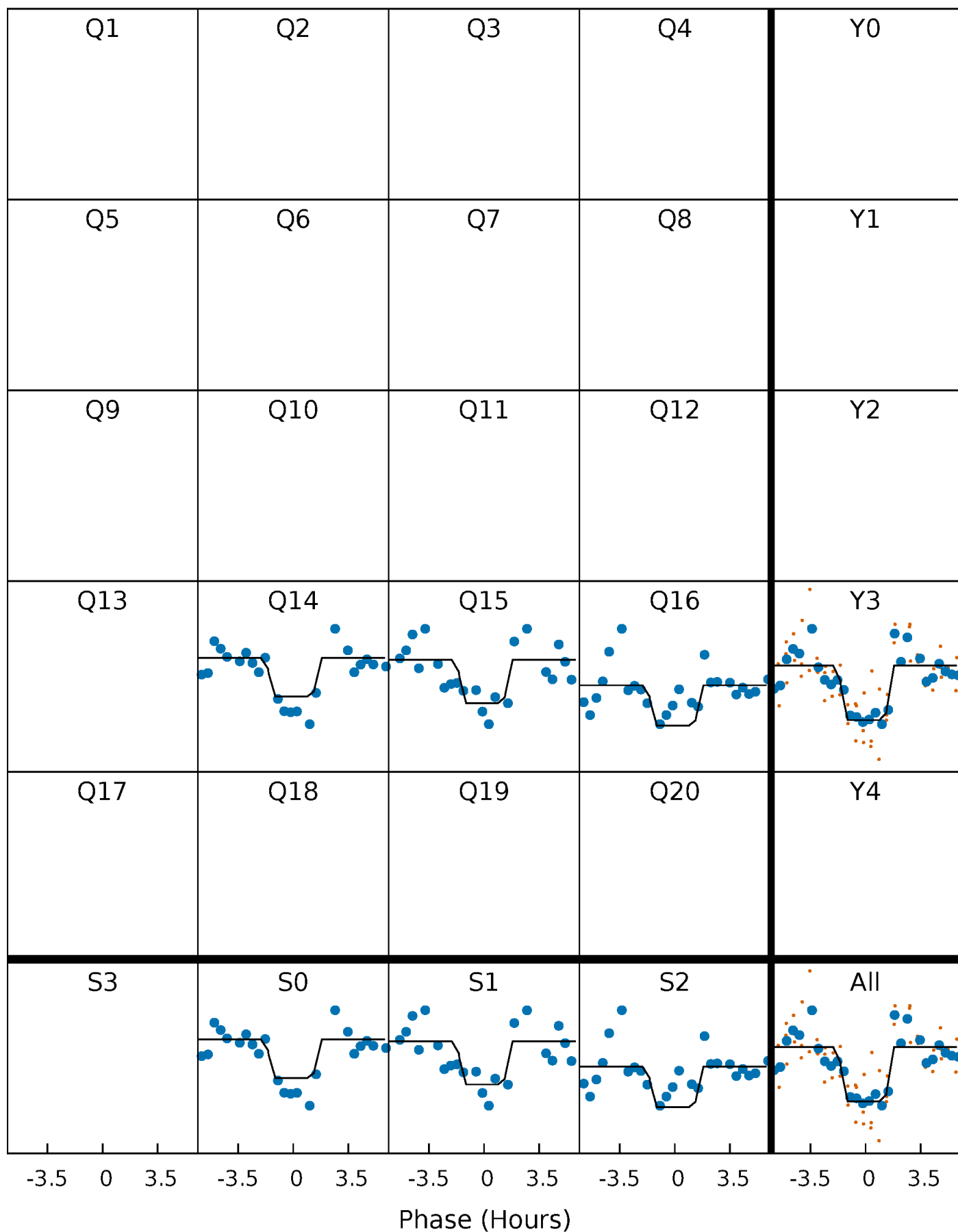
DV Quarter-Phased Transit Curves

TCE 003631048-02 P= 89.272784 Days $T_0=198.992372$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

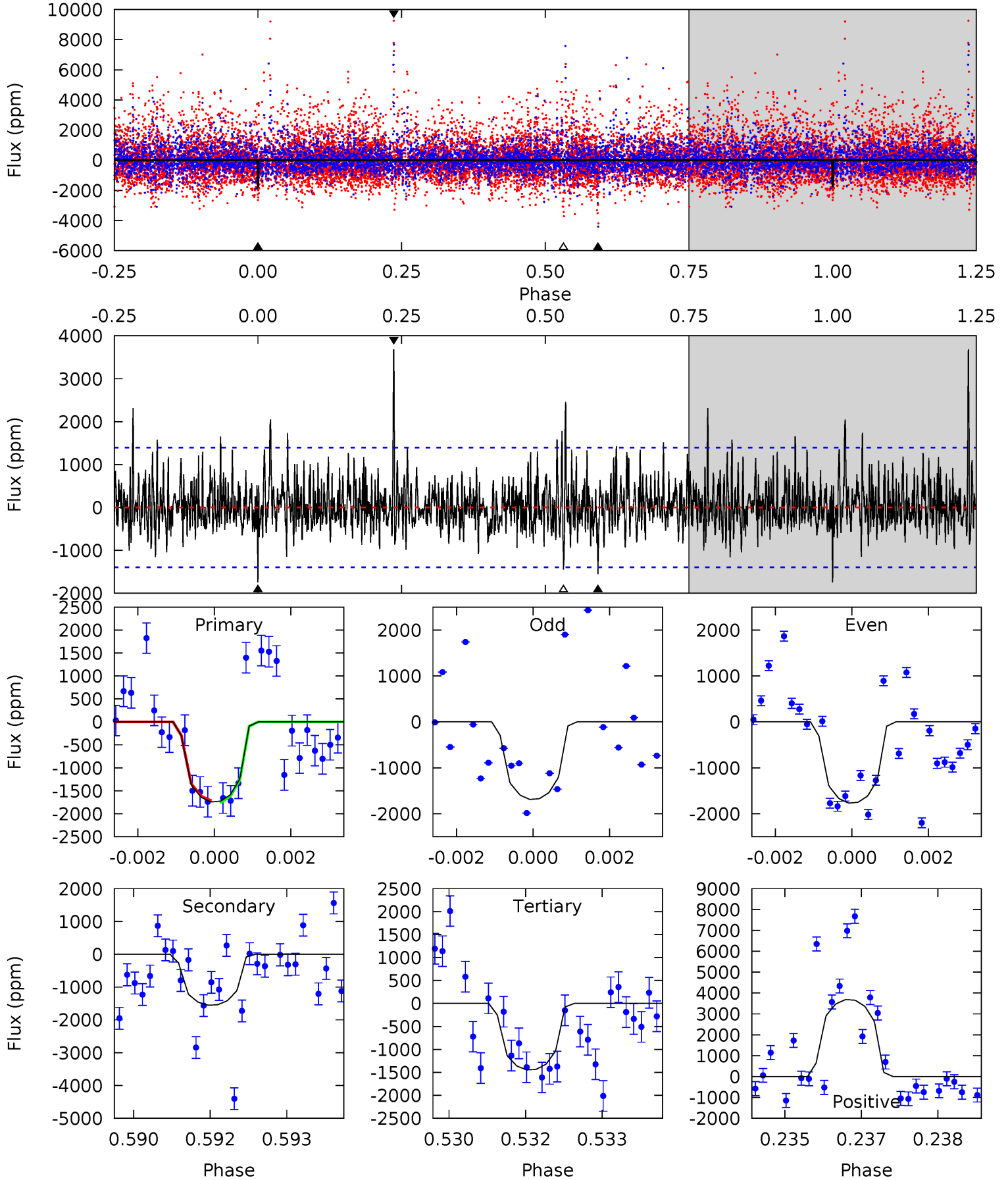
TCE 003631048-02 P= 89.271276 Days $T_0=199.011309$ (BKJD)



DV Model-Shift Uniqueness Test

003631048-02, P = 89.272784 Days, E = 198.992372 Days

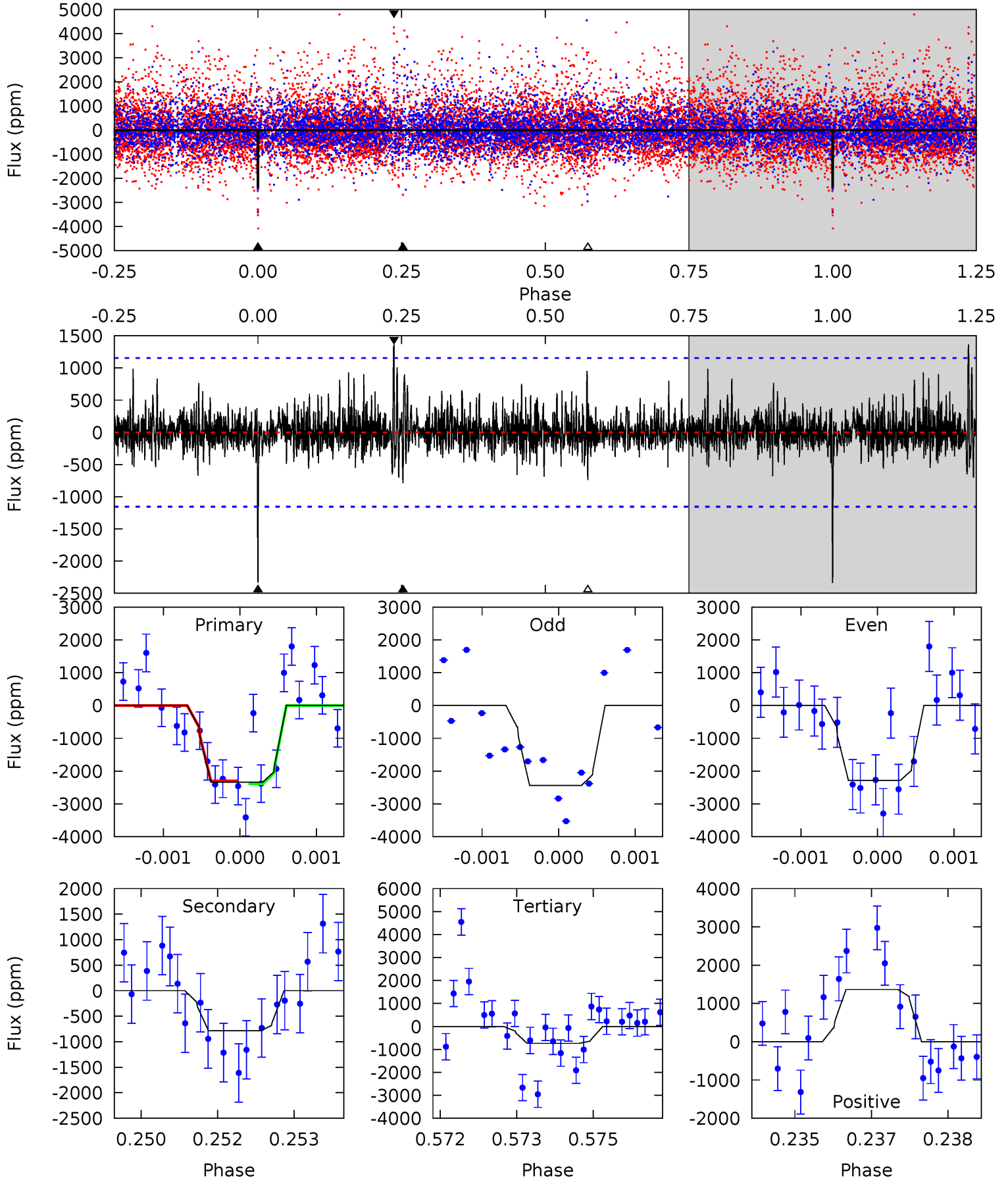
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.68	5.95	5.55	14.1	5.34	3.12	1.76	1.13	-7.45	0.40	-8.18	0.08	1.00	0.68	0.08



Alt Model-Shift Uniqueness Test

003631048-02, P = 89.271276 Days, E = 199.011309 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	3.67	3.44	6.38	5.39	3.20	1.00	7.47	4.54	0.23	-2.70	0.32	0.96	0.37	0.21



Stellar Parameters For KIC 003631048

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3683^{+117}_{-147}	$4.688^{+0.075}_{-0.020}$	$0.560^{+0.050}_{-0.250}$	$0.563^{+0.033}_{-0.081}$	$0.564^{+0.036}_{-0.072}$	$4.449^{+1.735}_{-0.434}$
	+3%/-4%	+2%/-0%	+9%/-45%	+6%/-14%	+6%/-13%	+39%/-10%
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 003631048-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1552 ± 261	$4.65^{+4.10}_{-3.14}$	296^{+11}_{-12}	2983^{+1398}_{-483}	4220^{+35260}_{-3093}
Alt.	-787 ± 214	$4.68^{+4.08}_{-3.23}$	297^{+11}_{-14}	2715^{+1125}_{-390}	2094^{+18636}_{-1516}

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

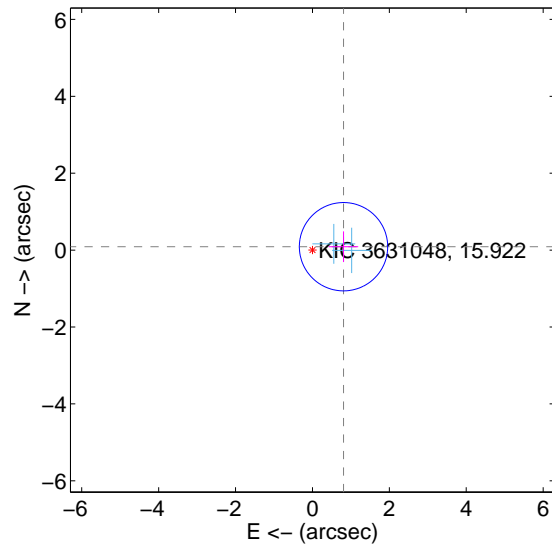
Supplemental centroid analysis for 003631048-02. Kepler magnitude: 15.92. Transit SNR 7.36

There are 2 quarters with good PRF difference image offsets

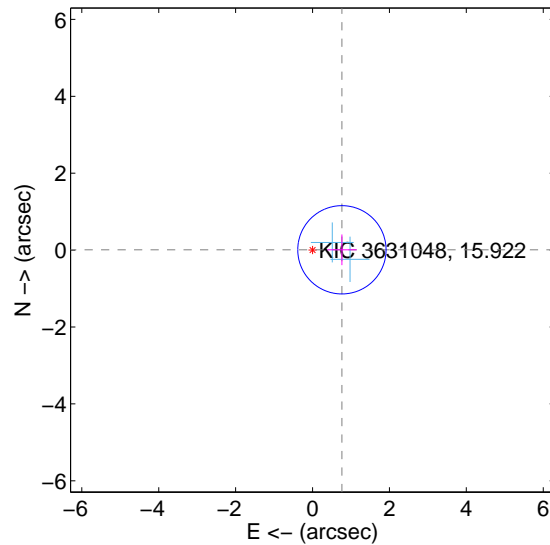
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.813 ± 0.383	2.12	-0.808 ± 0.383	0.088 ± 0.399
PRF-fit source offset from KIC position	0.765 ± 0.383	2.00	-0.764 ± 0.383	0.008 ± 0.399
photometric centroid source offset	1.32 ± 1.31	1.00	1.31 ± 1.31	-0.04 ± 1.45

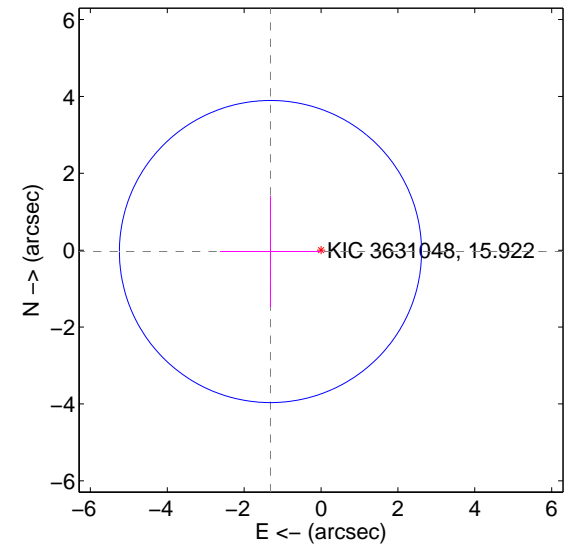
offset from difference PRF-fit to OOT PRF-fit



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.



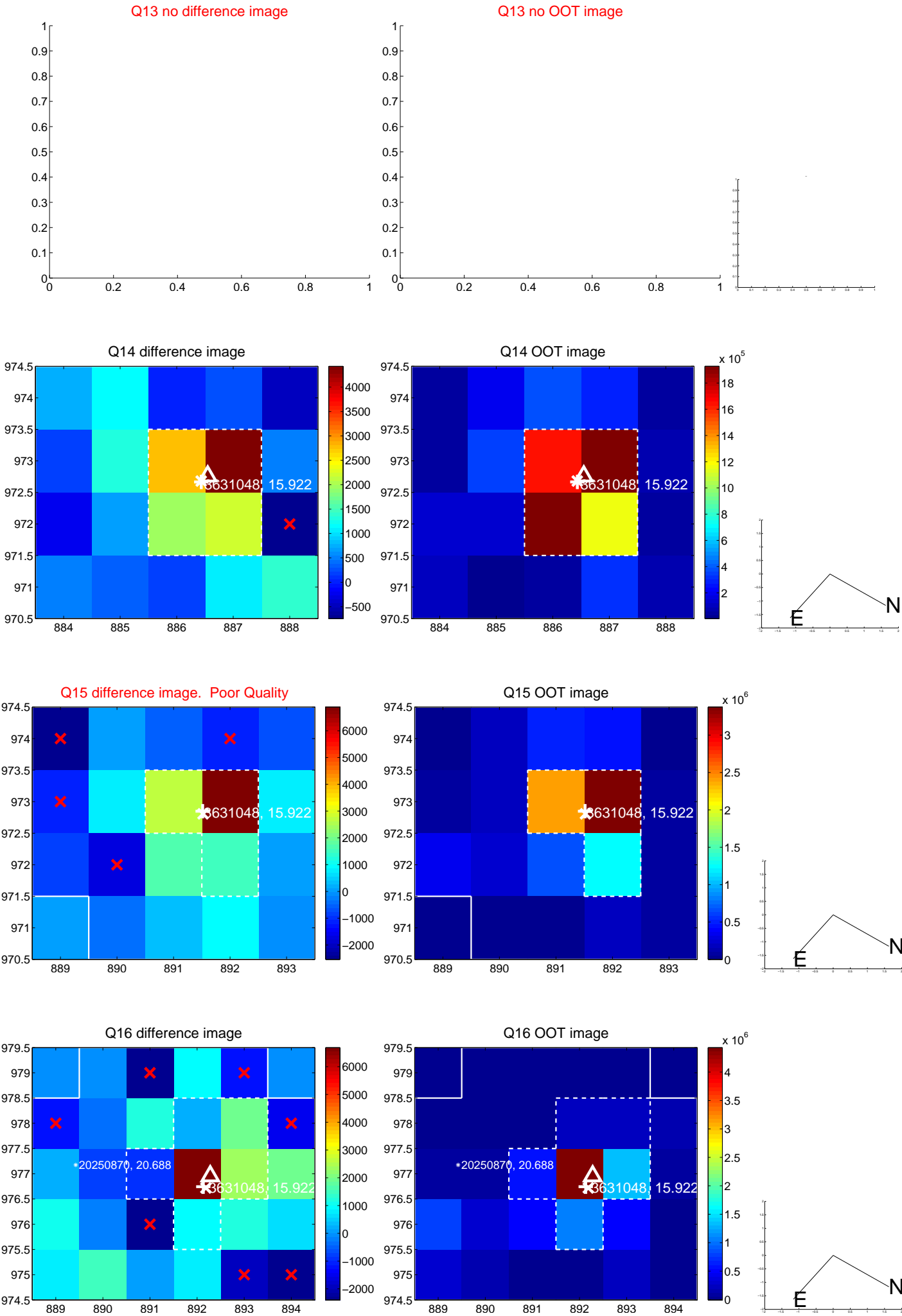
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



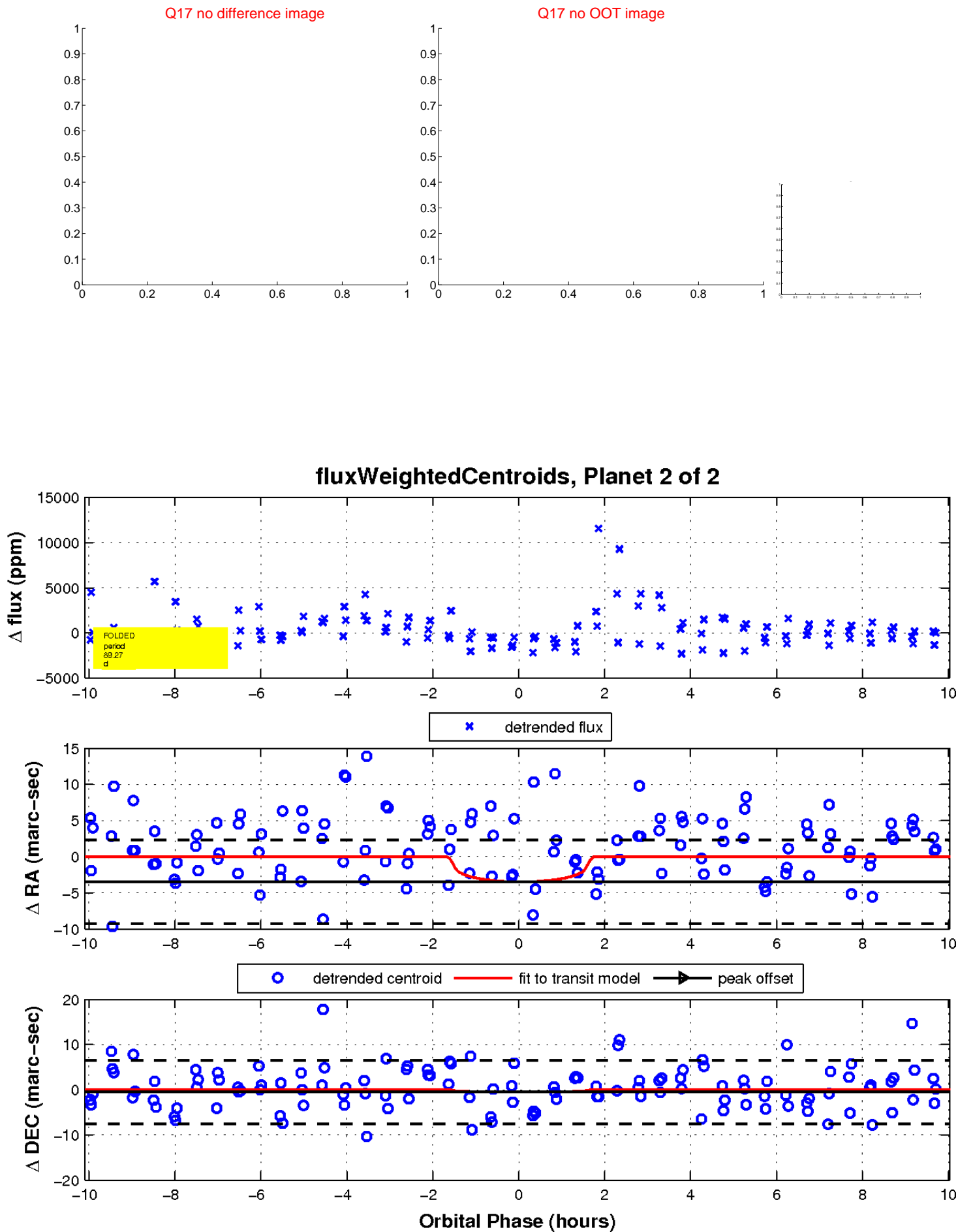
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

