

KIC 012316447

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})
012316447-01	OBS	3575.01	17.907570	139.745719	260364.9	3.500	2969.4	-1.0	1.04	6173	51.47	73.42
012316447-02	OBS	No	17.907662	134.895468	23424.0	5.721	286.0	276.9	1.04	6173	18.07	73.42
012316447-03	OBS	No	4.476732	135.901723	0.3	1.529	143.0	0.0	1.04	6173	0.07	466.19
012316447-04	OBS	No	4.477116	134.971077	14712.3	15.000	141.1	-1.0	1.04	6173	12.62	466.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012316447-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
012316447-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012316447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— SAME_NTL_PERIOD—CENT_FEW_DIFFS
012316447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS

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.

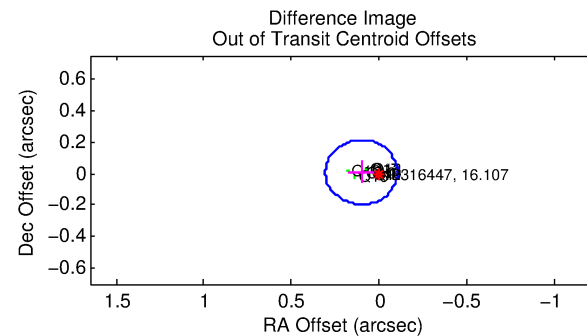
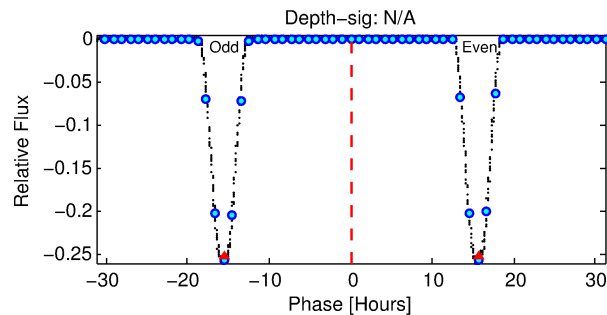
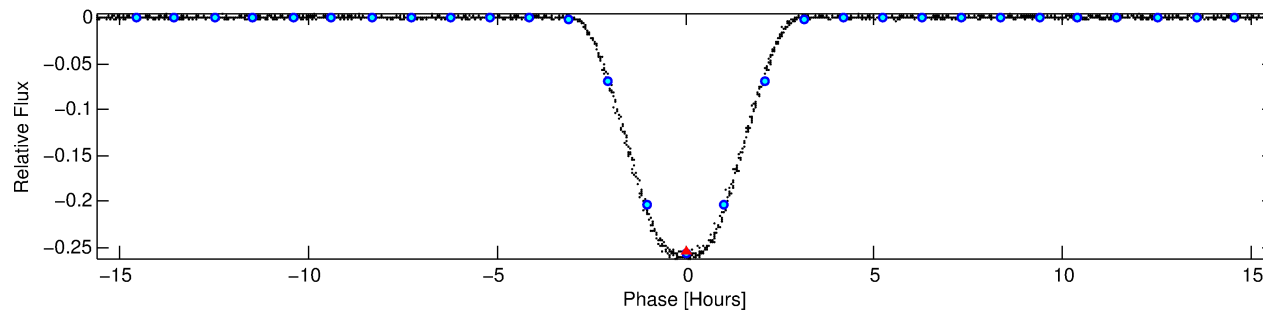
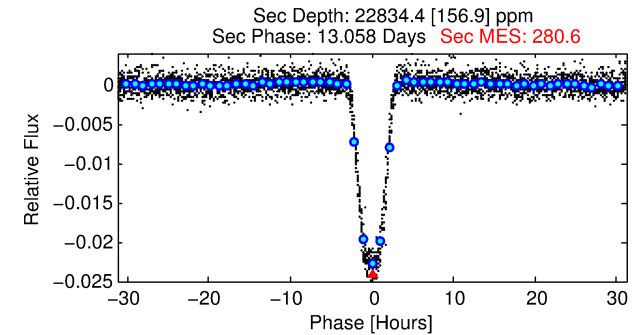
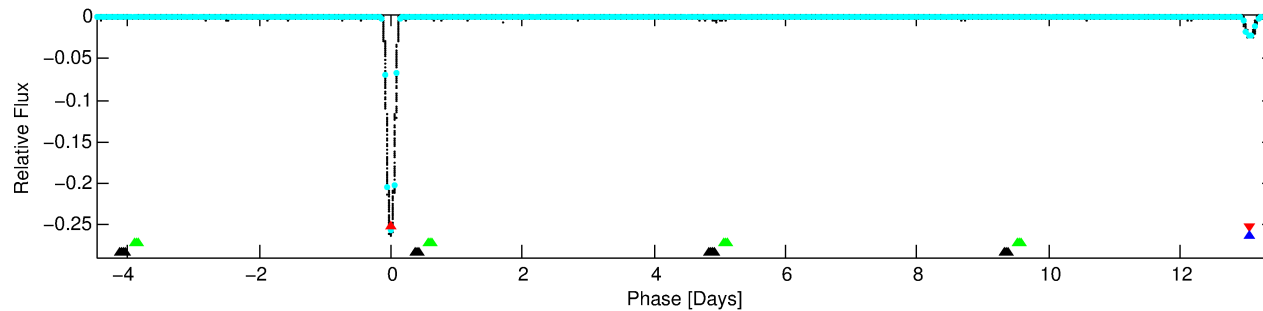
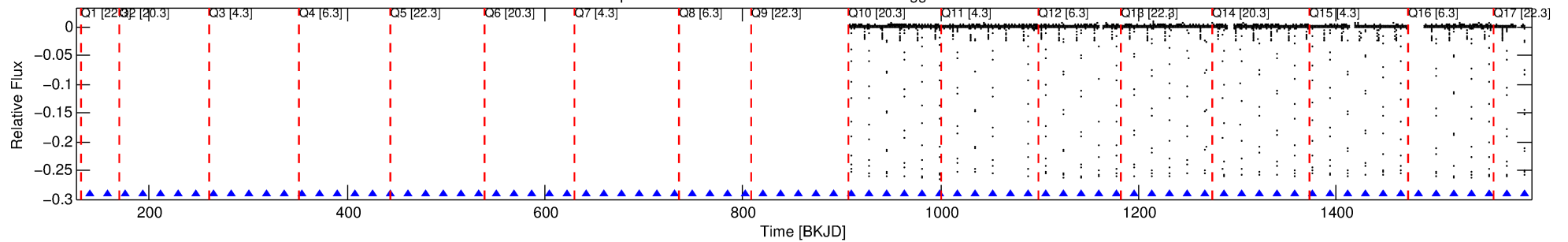
Ephemeris Match Information For 012316447-01

No Significant Match Found

DV One-Page Summary

KIC: 12316447 Candidate: 1 of 4 Period: 17.908 d
KOI: K03575.01 Corr: 0.782

Kp: 16.11 R*: 1.04 Rs Teff: 6173.0 K Logg: 4.45 Fe/H: -0.040



TPS TCE Results:

Period = 17.90757 d
Epoch = 139.7457 BKJD

DV fit results are unavailable

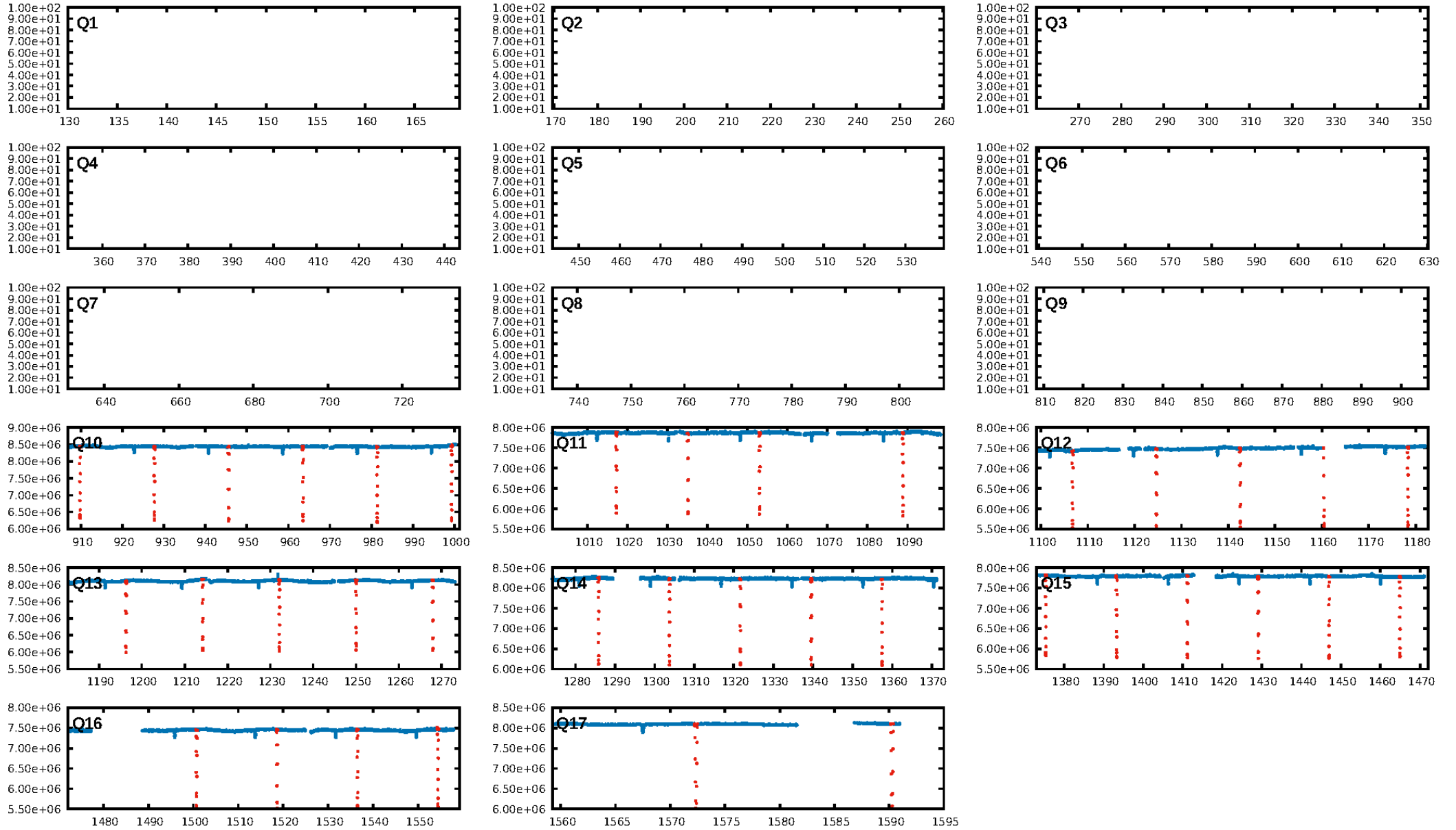
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [20.93σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [35/35]
GhostDiagnostic-chr: 2.782
Centroid-sig: N/A
Centroid-so: 0.856 arcsec [216.58σ]
OotOffset-rm: 0.104 arcsec [1.51σ]
KicOffset-rm: 0.030 arcsec [0.43σ]
OotOffset-st: 2/2/2/2 [8]
KicOffset-st: 2/2/2/2 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 0.00 [0/8]

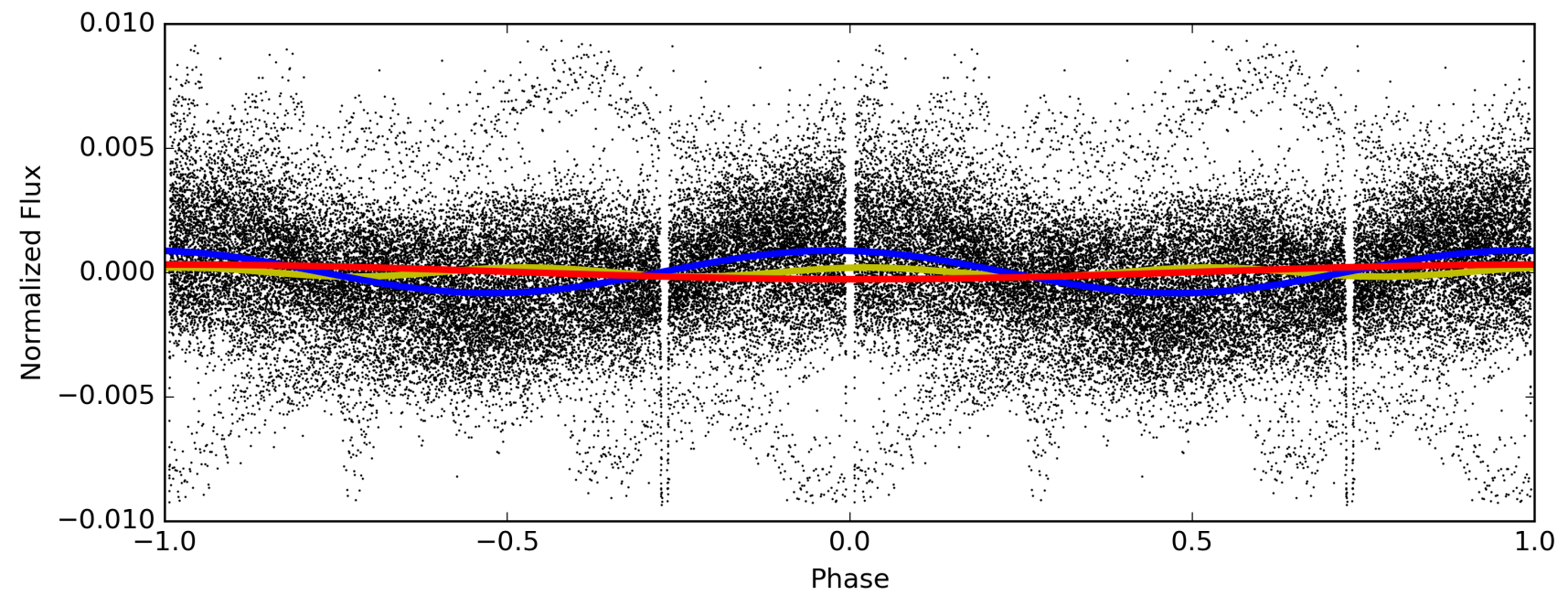
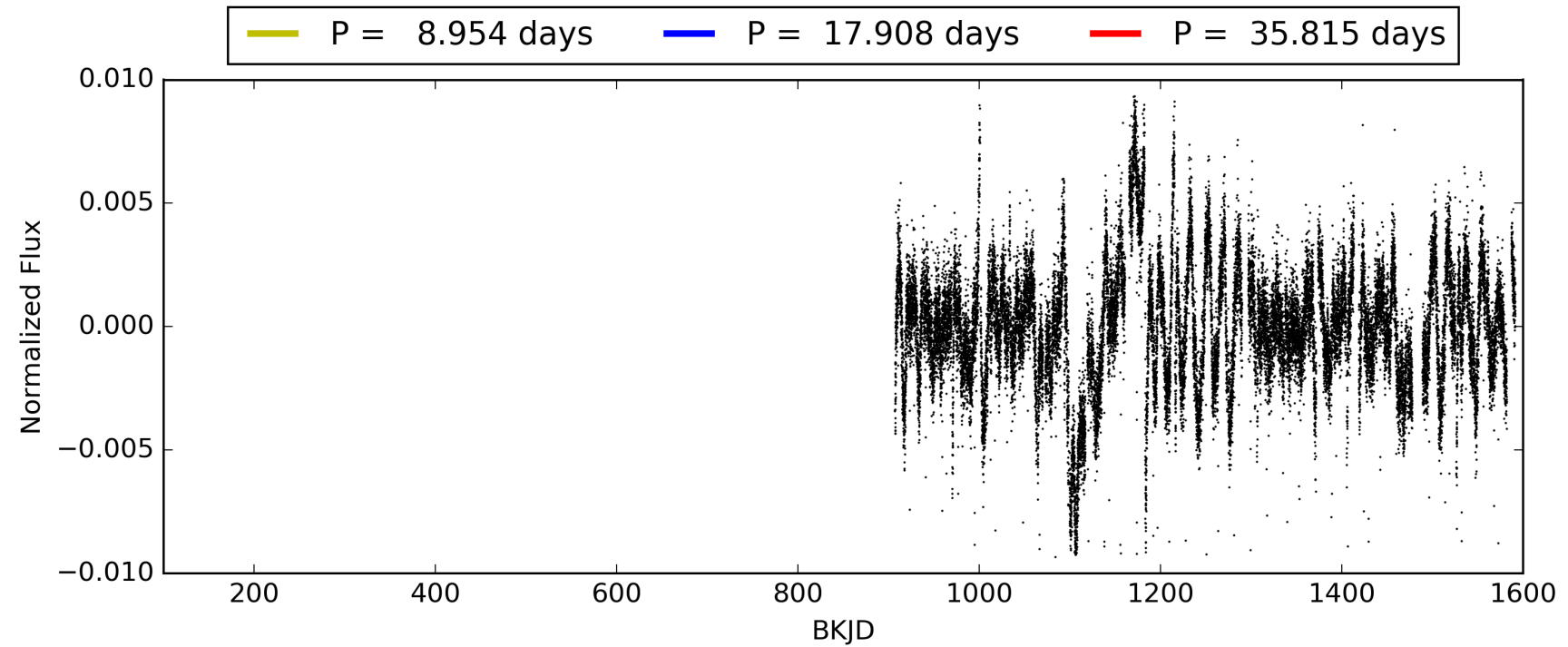
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:16:04 Z

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

TCE 012316447-01, PDC Light Curves

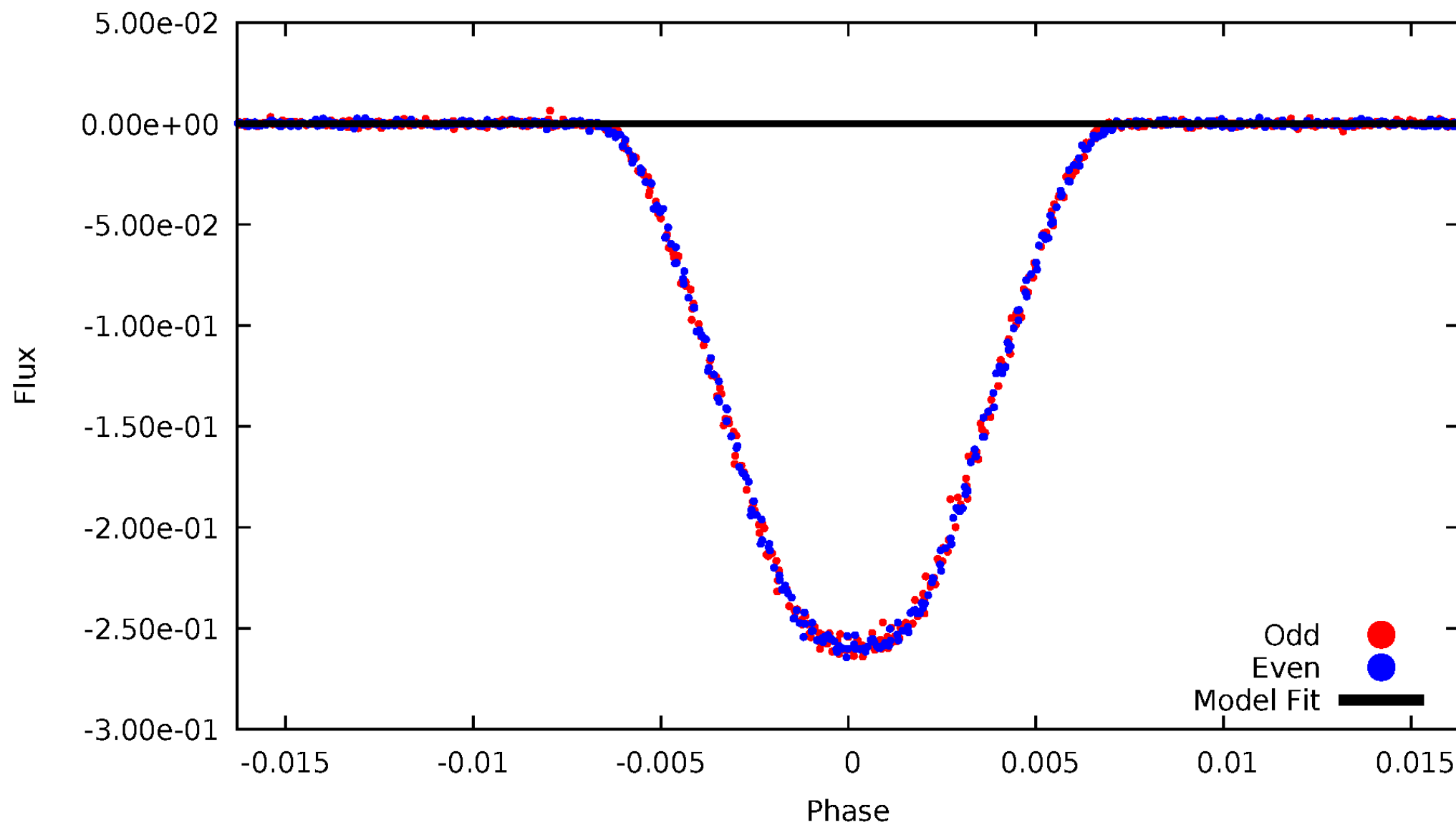


TCE 012316447-01



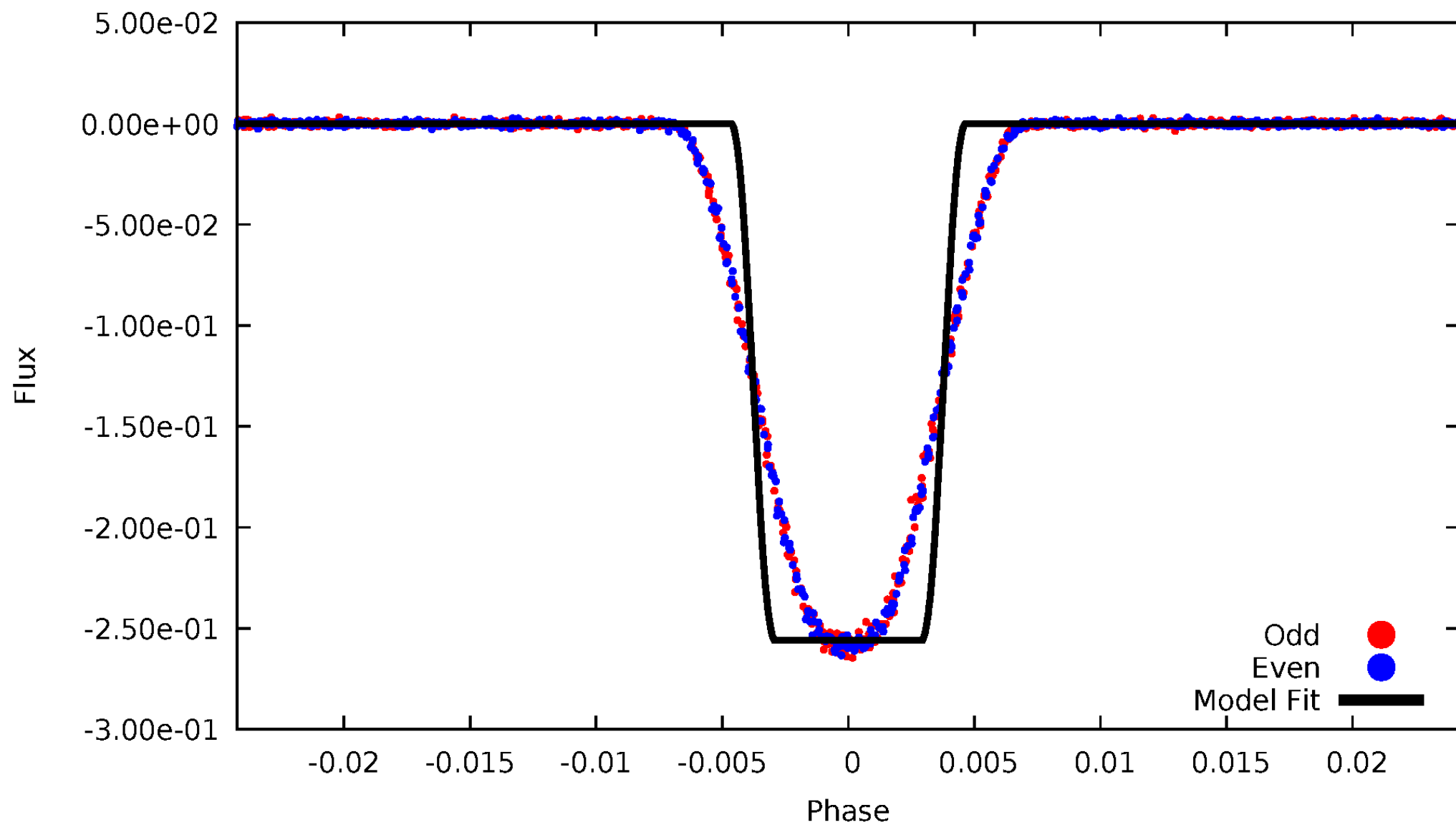
DV Odd/Even

TCE 012316447-01



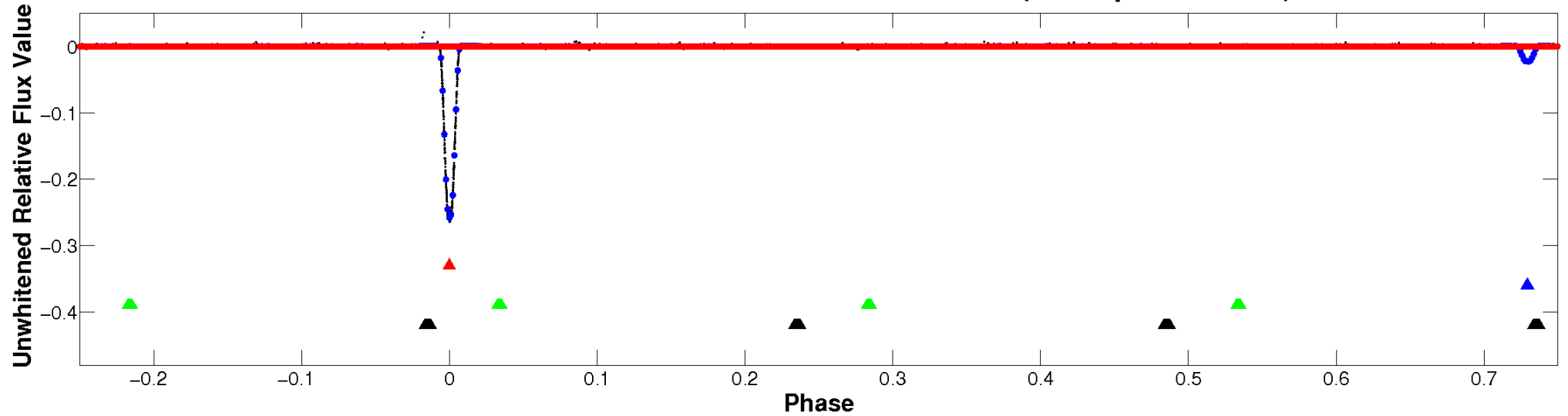
ALT Odd/Even

TCE 012316447-01



Non-Whitened Vs. Whitened Light Curve

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

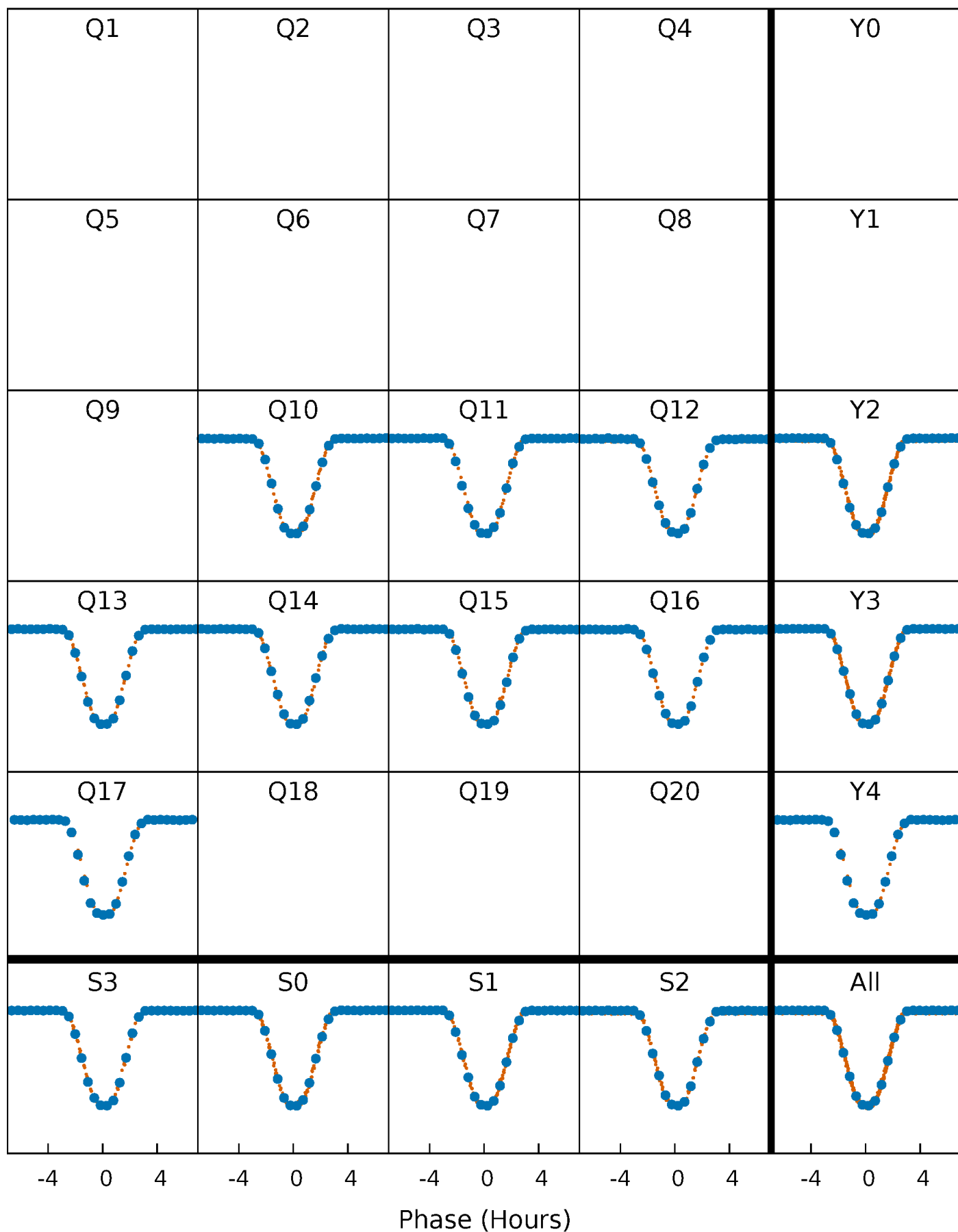


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



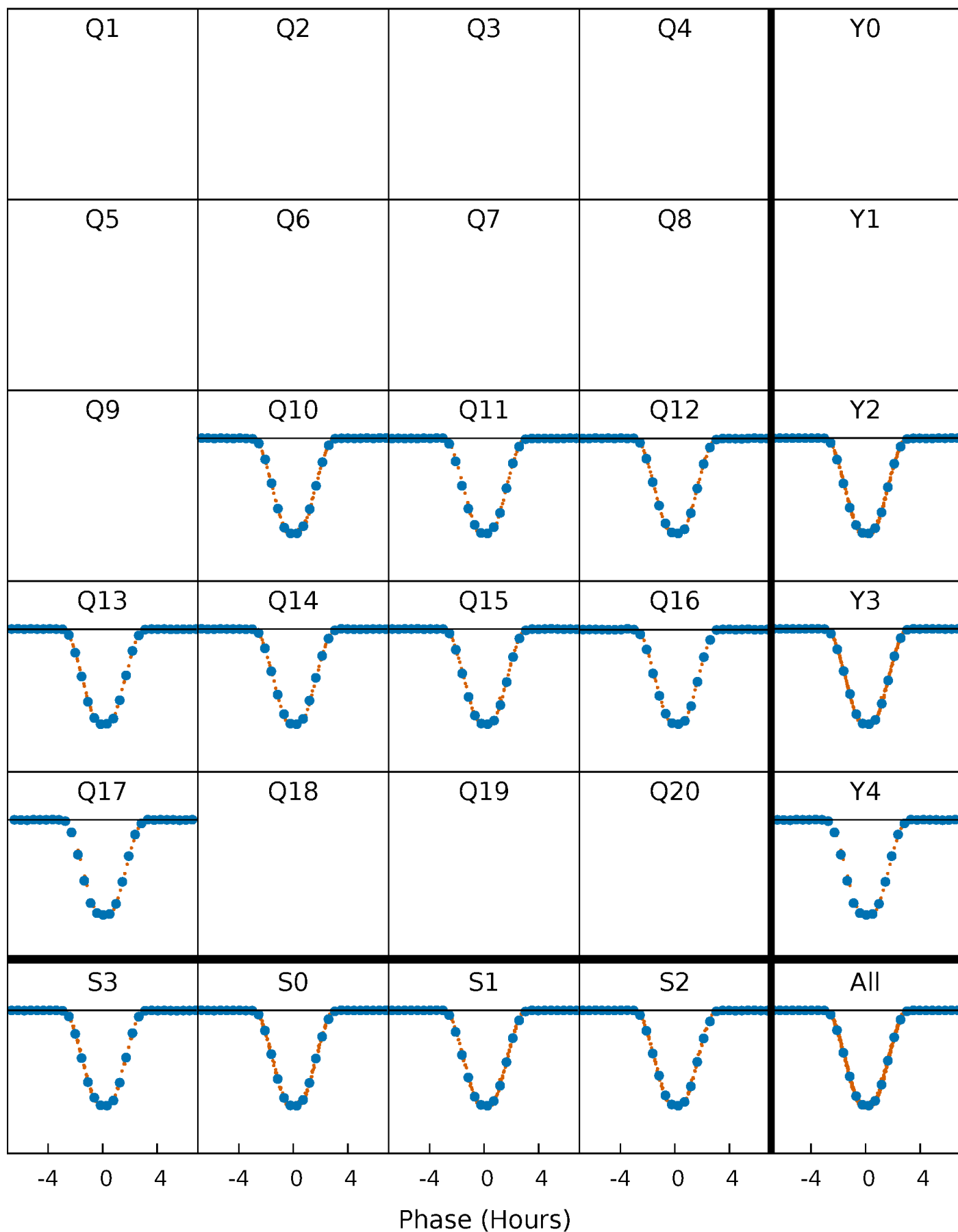
PDC Quarter-Phased Transit Curves

TCE 012316447-01 P= 17.907570 Days $T_0=139.745719$ (BKJD)



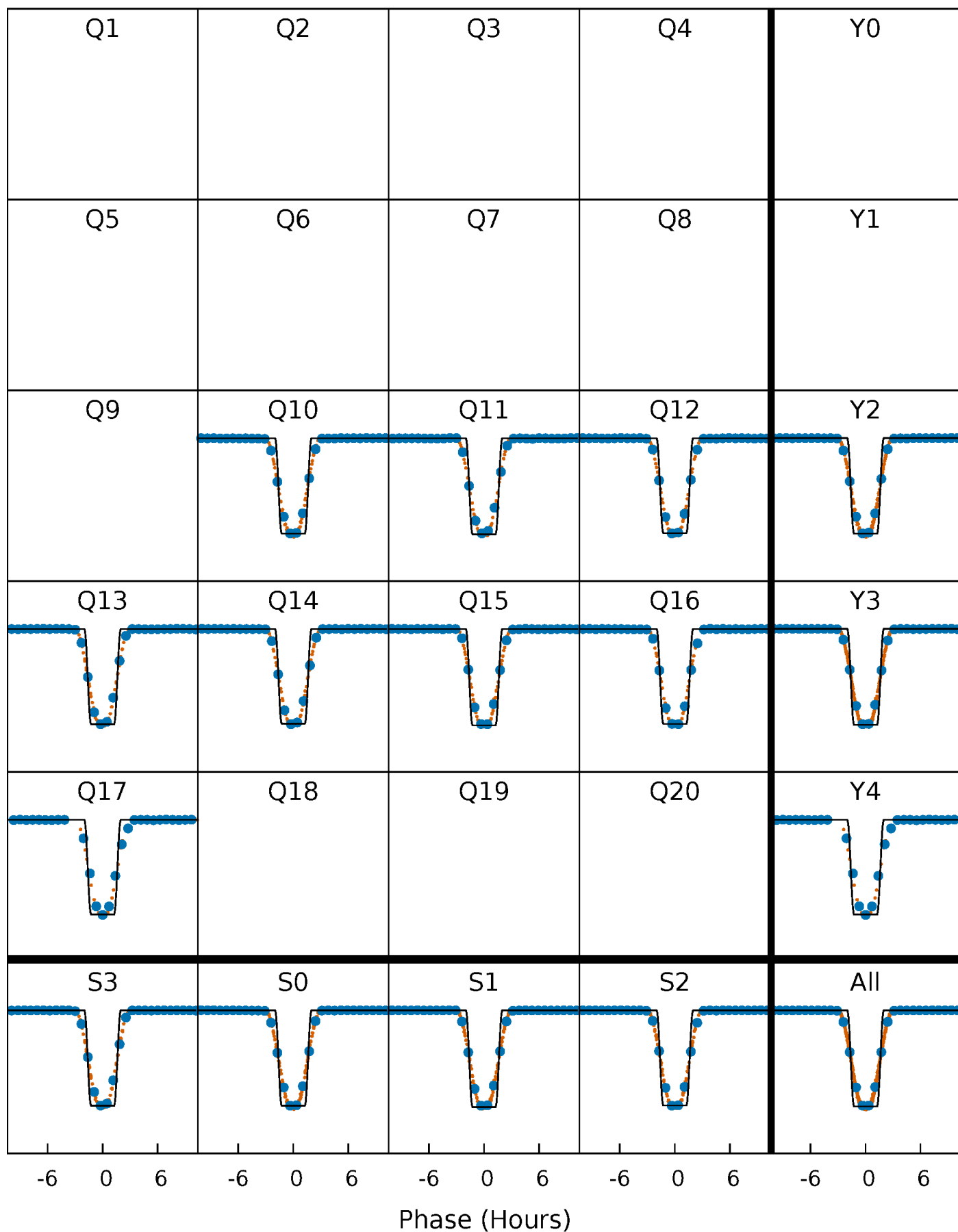
DV Quarter-Phased Transit Curves

TCE 012316447-01 P= 17.907570 Days $T_0=139.745719$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

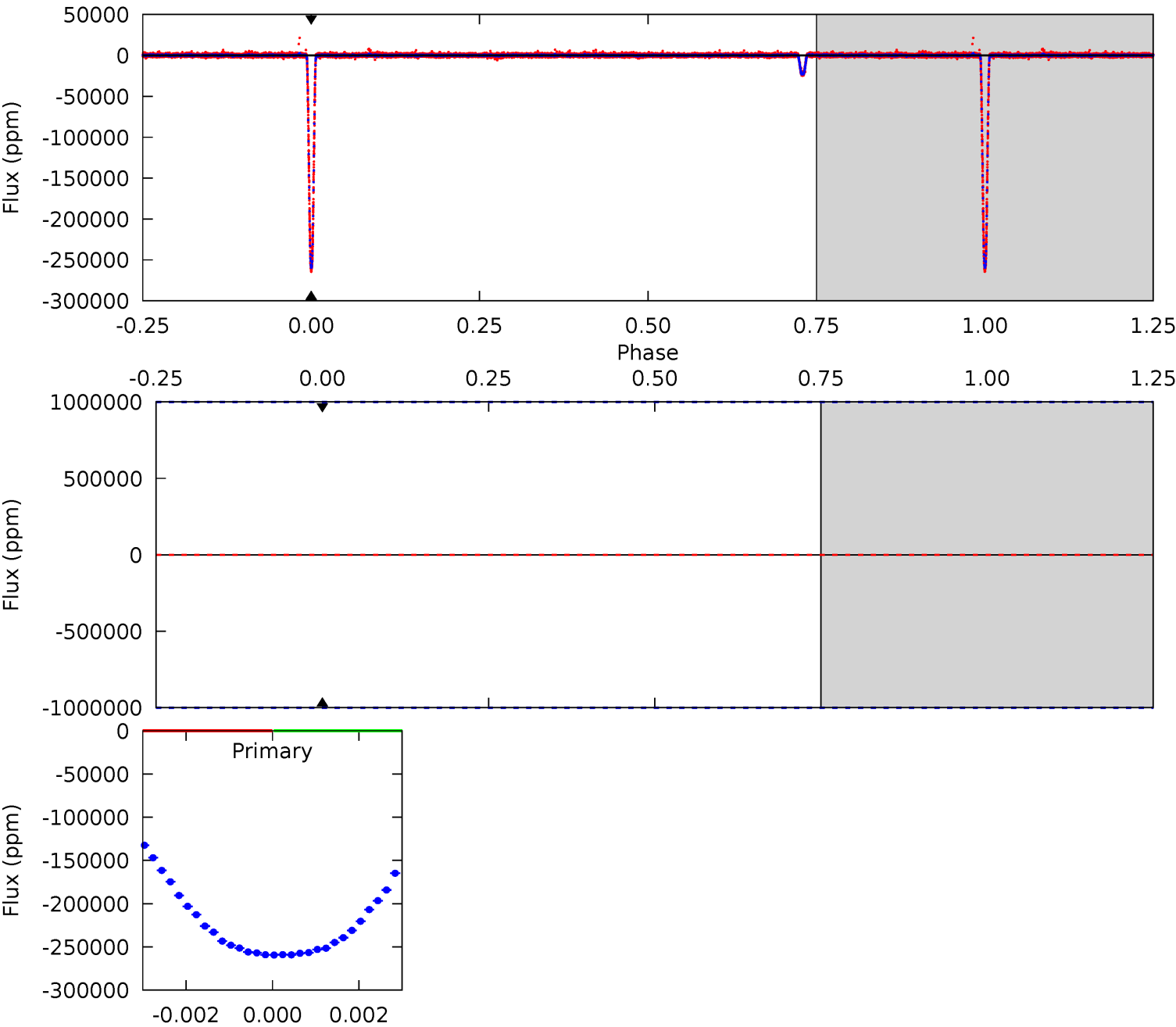
TCE 012316447-01 P= 17.907570 Days $T_0=139.749695$ (BKJD)



DV Model-Shift Uniqueness Test

012316447-01, P = 17.907570 Days, E = 139.745719 Days

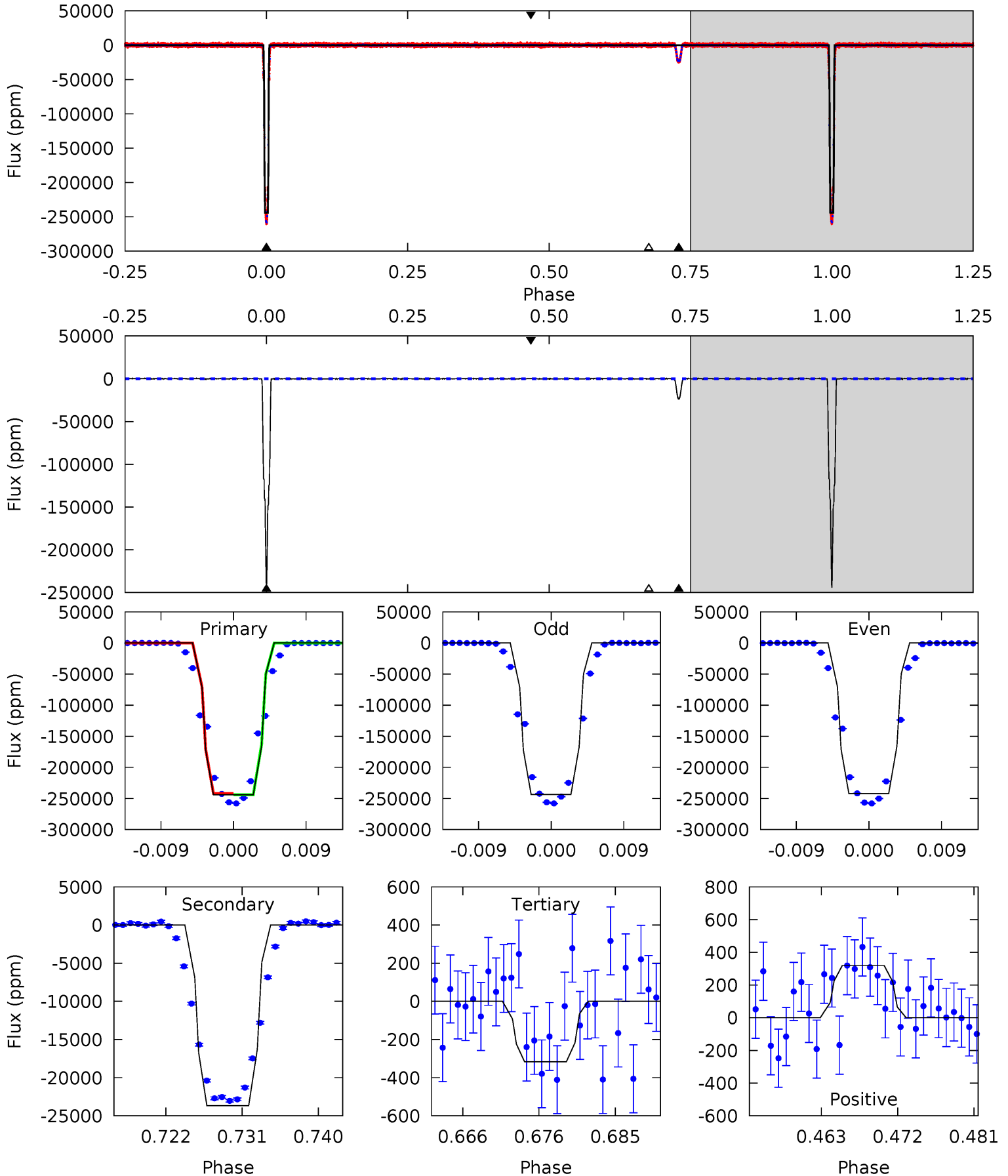
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

012316447-01, P = 17.907570 Days, E = 139.749695 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3015	292.1	3.90	3.94	5.04	2.60	1.27	3011	3011	288.2	288.1	9.62	1.00	0.00	5.22



Stellar Parameters For KIC 012316447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6173^{+193}_{-236}	$4.447^{+0.054}_{-0.216}$	$-0.040^{+0.250}_{-0.300}$	$1.041^{+0.341}_{-0.114}$	$1.104^{+0.146}_{-0.162}$	$1.379^{+0.408}_{-0.746}$
	+3%/-4%	+1%/-5%	+625%/-750%	+33%/-11%	+13%/-15%	+30%/-54%
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 012316447-01 / KOI 3575.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$53.35^{+14.55}_{-12.44}$	1066^{+78}_{-60}	-2887^{+8291}_{-2357}	$-11.844^{+433.034}_{-312.901}$
Alt.	-23661 ± 81	$60.37^{+15.20}_{-12.24}$	1070^{+80}_{-59}	3810^{+307}_{-269}	68^{+38}_{-25}

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

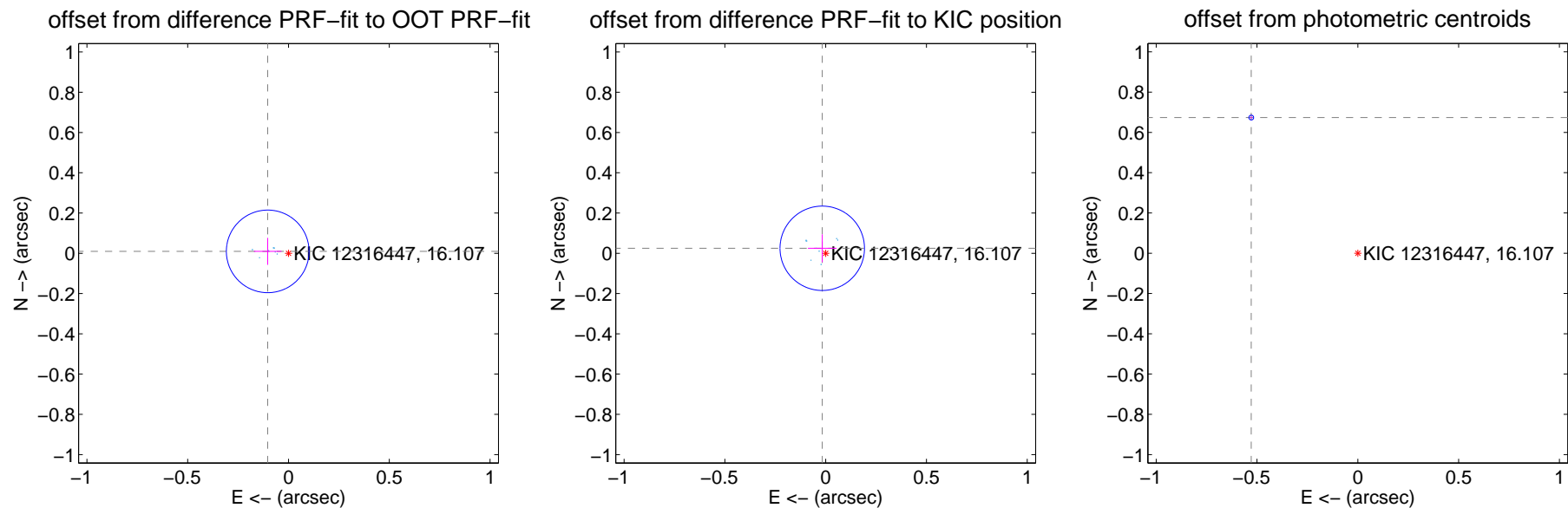
DV Centroid Data

Supplemental centroid analysis for 012316447-01. Kepler magnitude: 16.11. Transit SNR -1.00

There are 8 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.104 ± 0.068	1.51	0.103 ± 0.068	0.010 ± 0.067
PRF-fit source offset from KIC position	0.030 ± 0.070	0.43	0.017 ± 0.071	0.025 ± 0.069
photometric centroid source offset	0.86 ± 0.00	216.58	0.53 ± 0.00	0.67 ± 0.00



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.

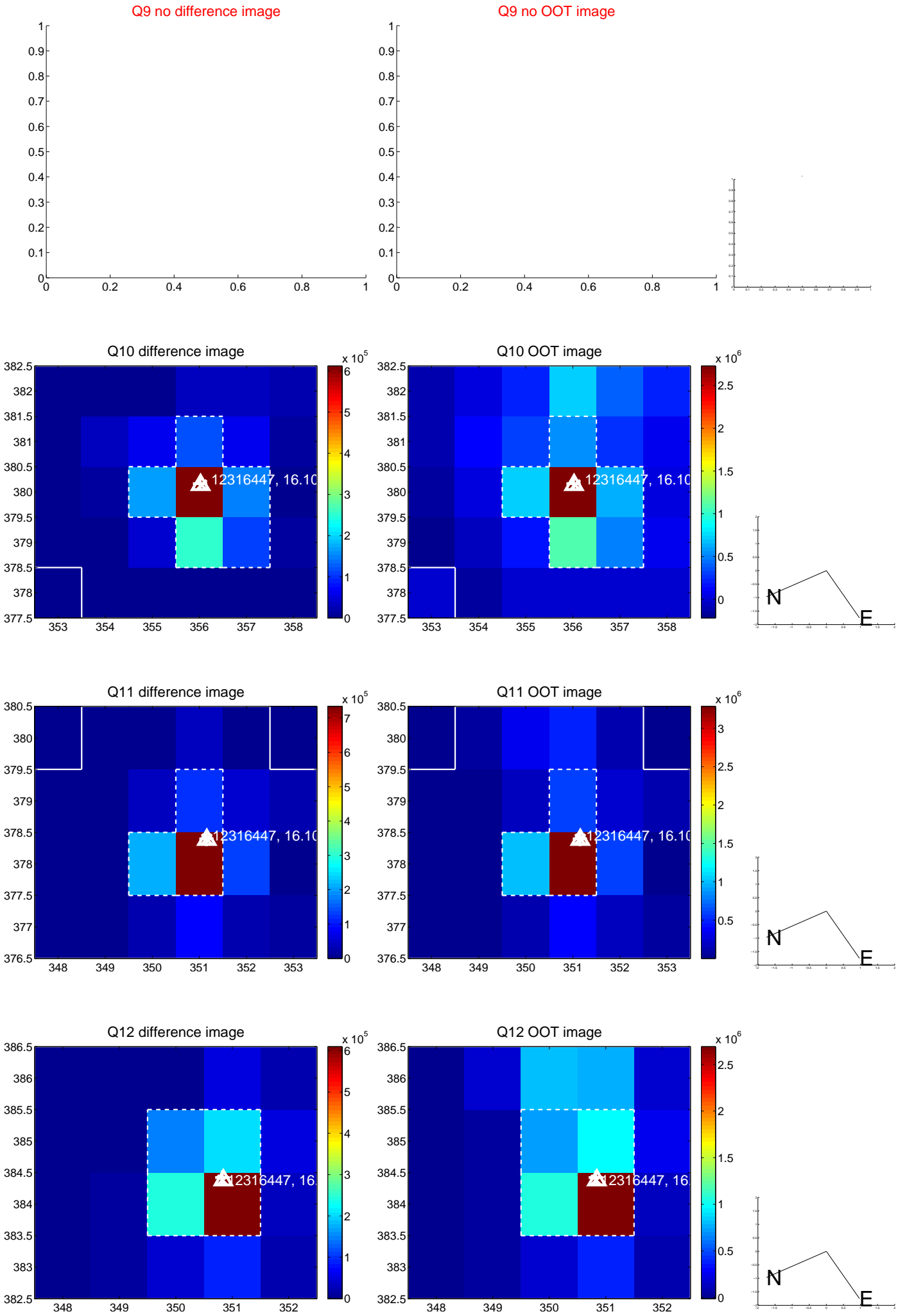
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



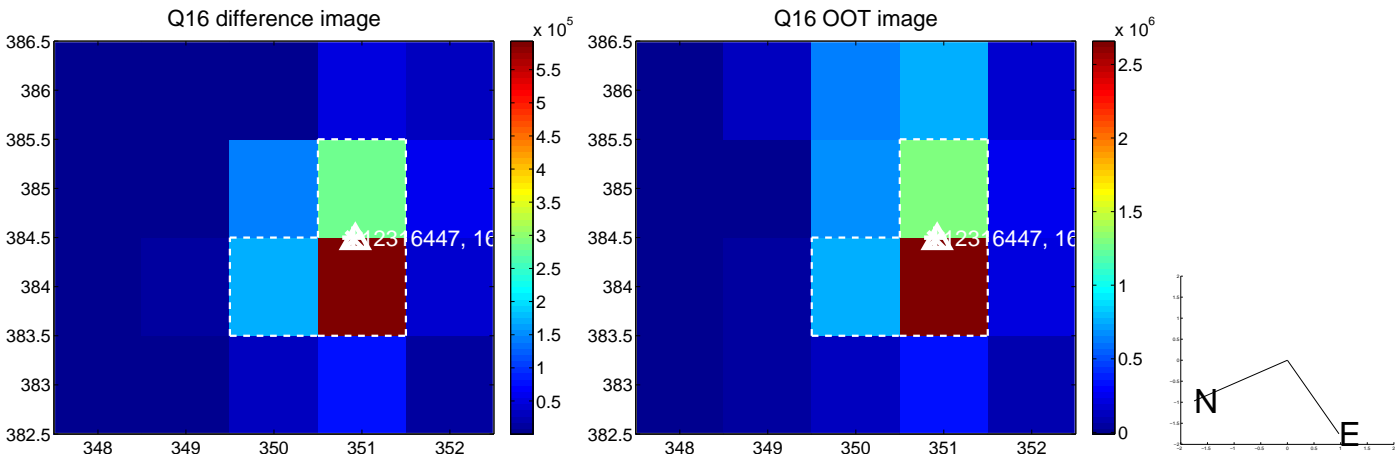
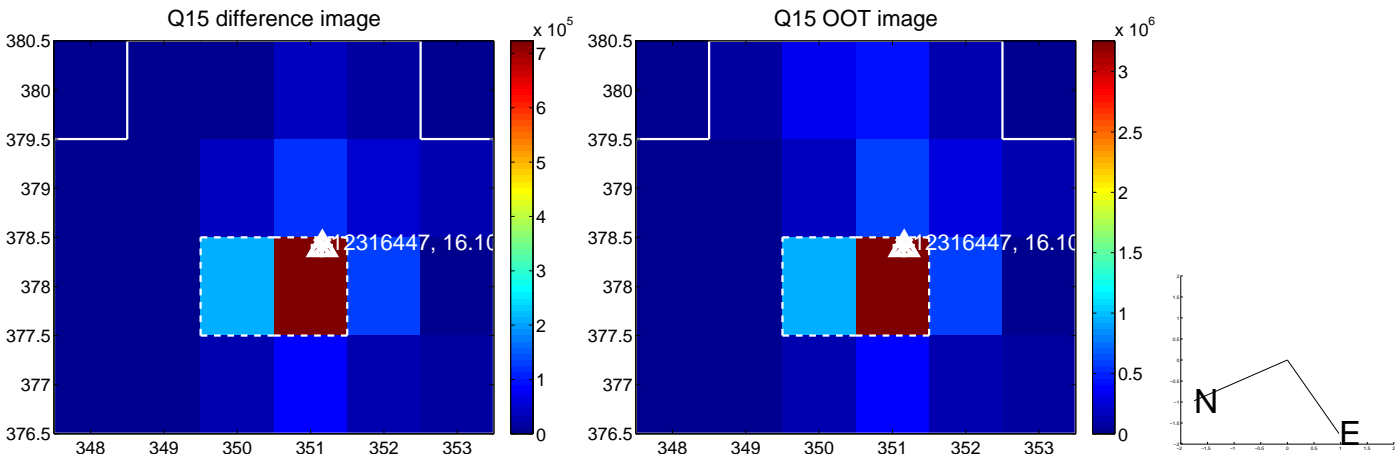
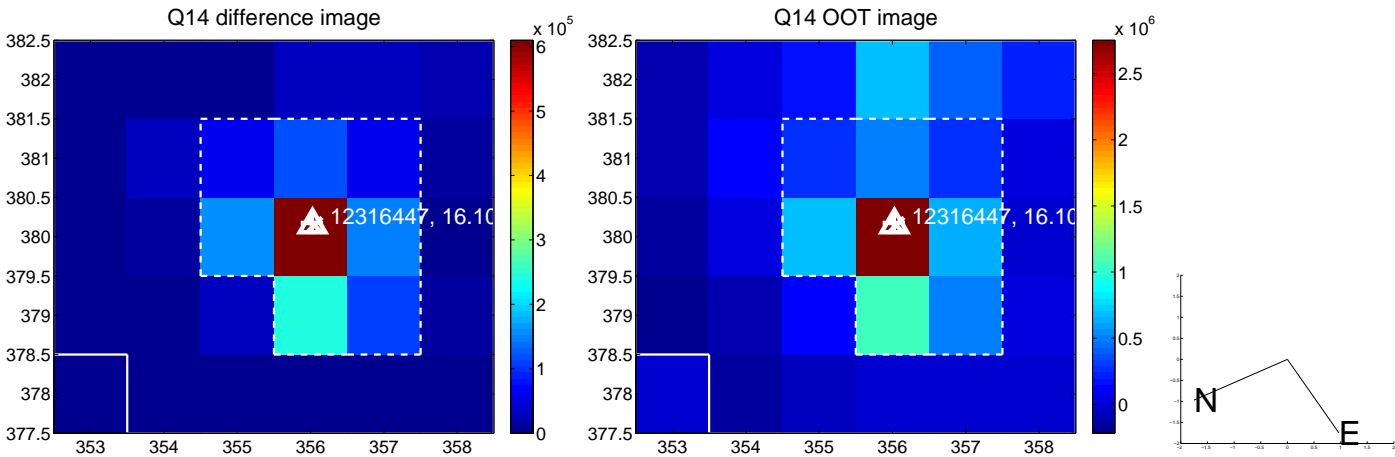
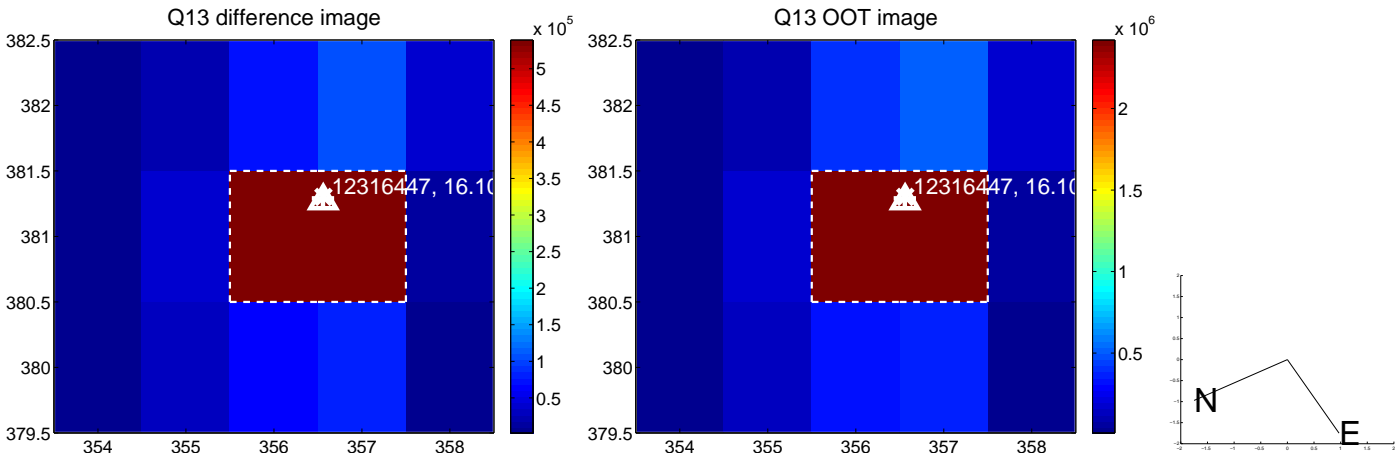
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



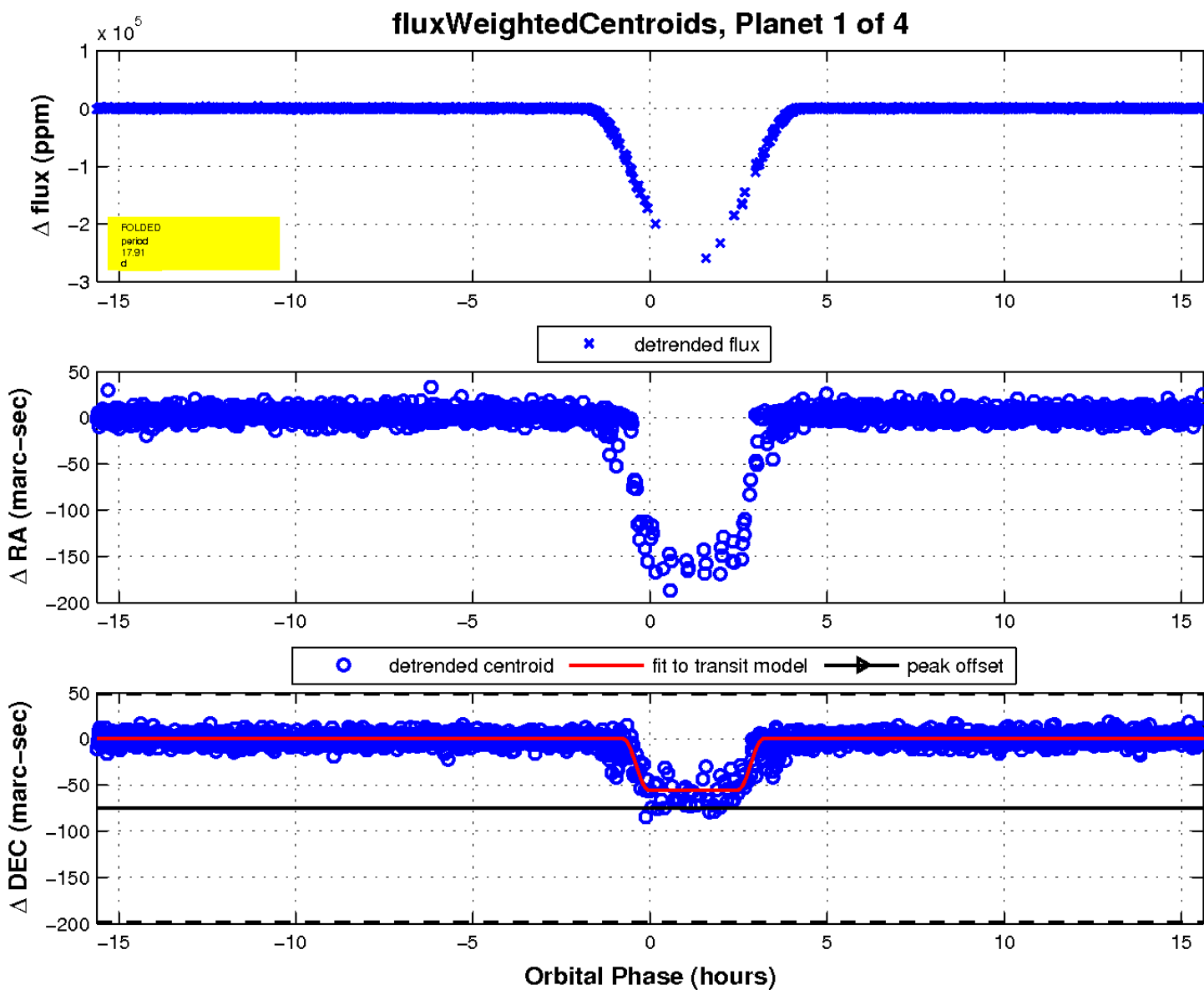
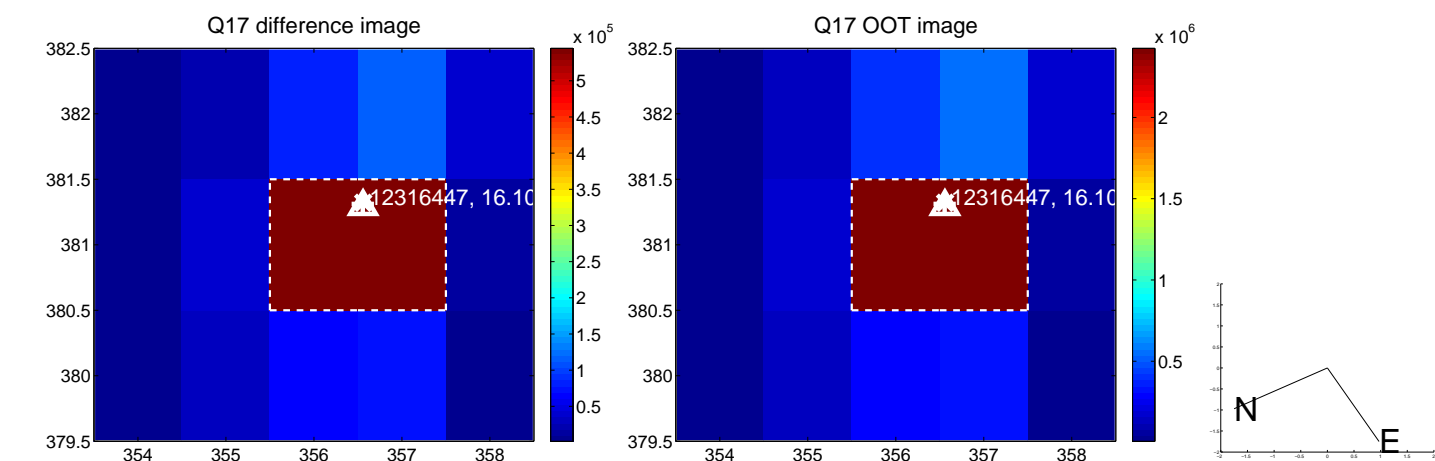
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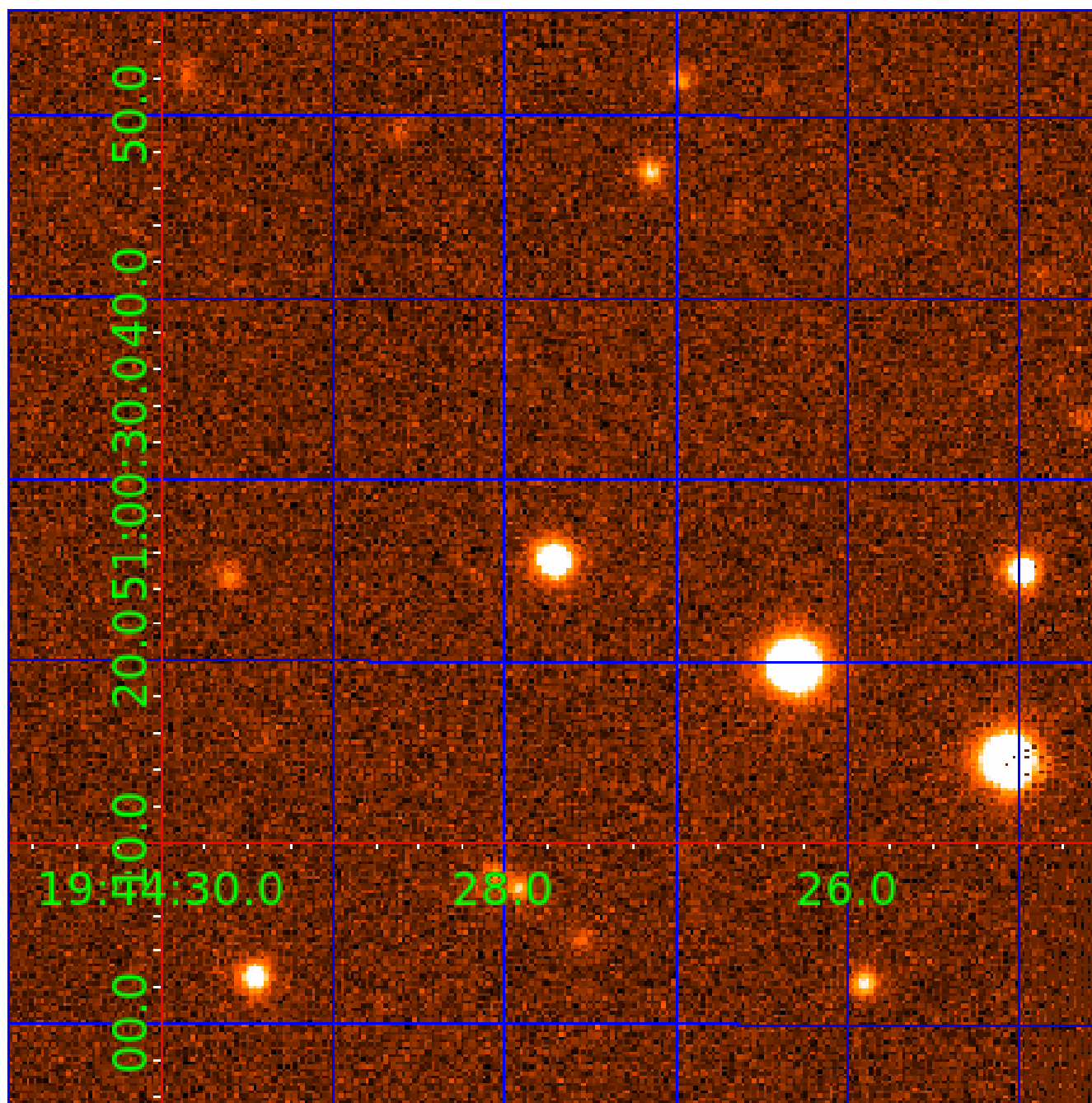


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012316447

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})
012316447-01	OBS	3575.01	17.907570	139.745719	260364.9	3.500	2969.4	-1.0	1.04	6173	51.47	73.42
012316447-02	OBS	No	17.907662	134.895468	23424.0	5.721	286.0	276.9	1.04	6173	18.07	73.42
012316447-03	OBS	No	4.476732	135.901723	0.3	1.529	143.0	0.0	1.04	6173	0.07	466.19
012316447-04	OBS	No	4.477116	134.971077	14712.3	15.000	141.1	-1.0	1.04	6173	12.62	466.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012316447-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
012316447-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012316447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
012316447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS

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.

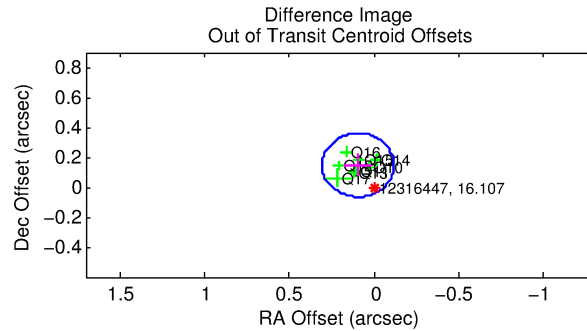
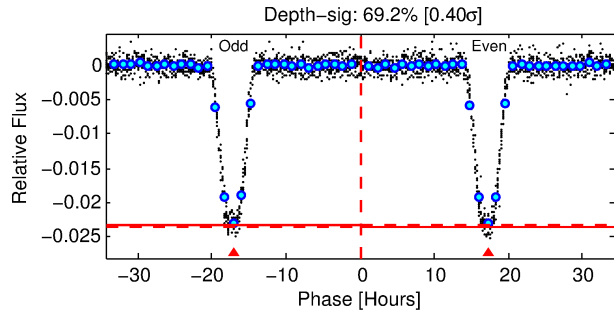
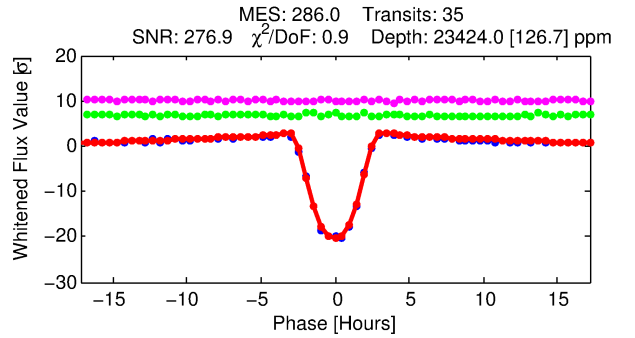
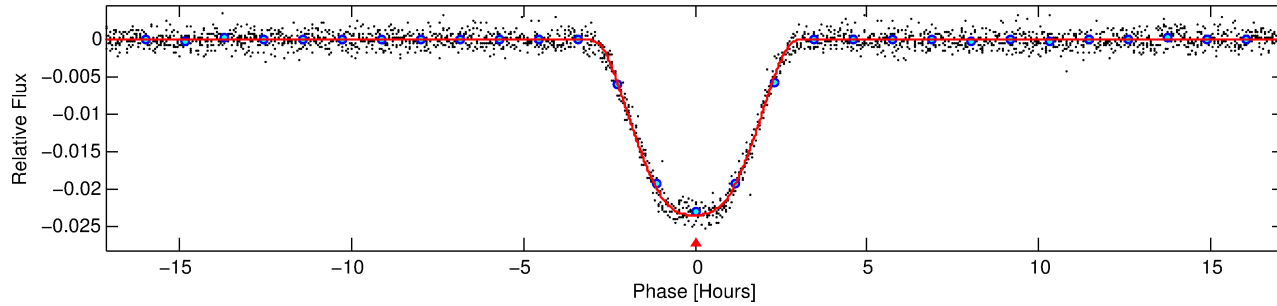
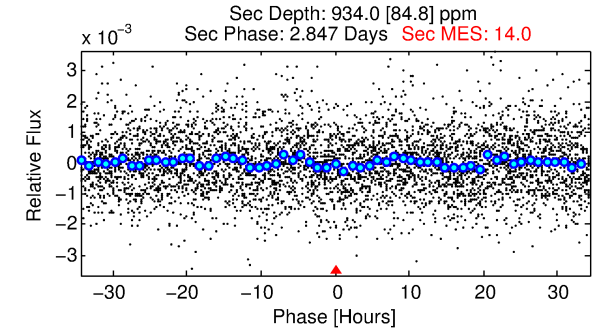
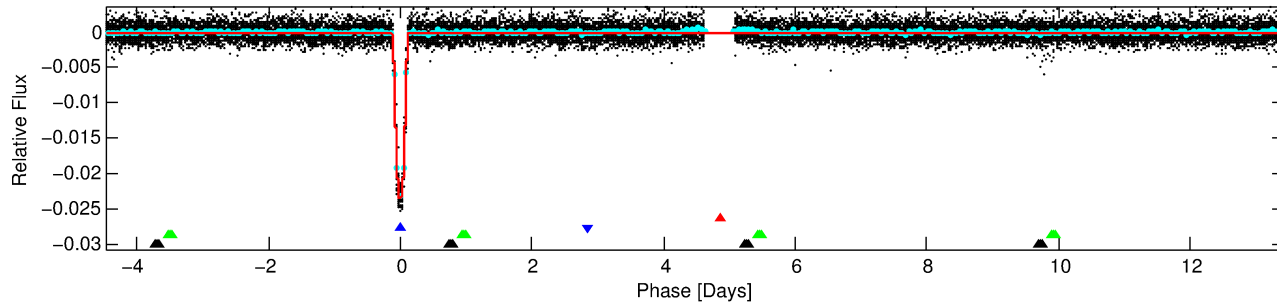
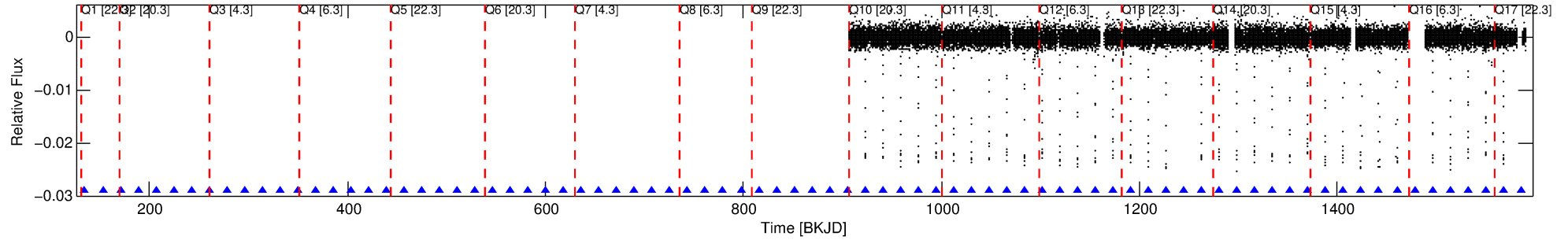
Ephemeris Match Information For 012316447-02

No Significant Match Found

DV One-Page Summary

KIC: 12316447 Candidate: 2 of 4 Period: 17.908 d
KOI: K03575 Corr: No Ephemeris Match

Kp: 16.11 R*: 1.04 Rs Teff: 6173.0 K Logg: 4.45 Fe/H: -0.040



DV Fit Results:

Period = 17.90766 [0.00002] d
Epoch = 134.8955 [0.0014] BKJD
Rp/R* = 0.1591 [0.0007]
a/R* = 19.46 [0.14]
b = 0.83 [0.00]
Seff = 73.42 [31.24]
Teq = 746 [79] K
Rp = 18.07 [5.92] Re
a = 0.1386 [0.0380] AU
Ag = 30.21 [12.31] [2.37σ]
Teff = 2705 [120] K [13.58σ]

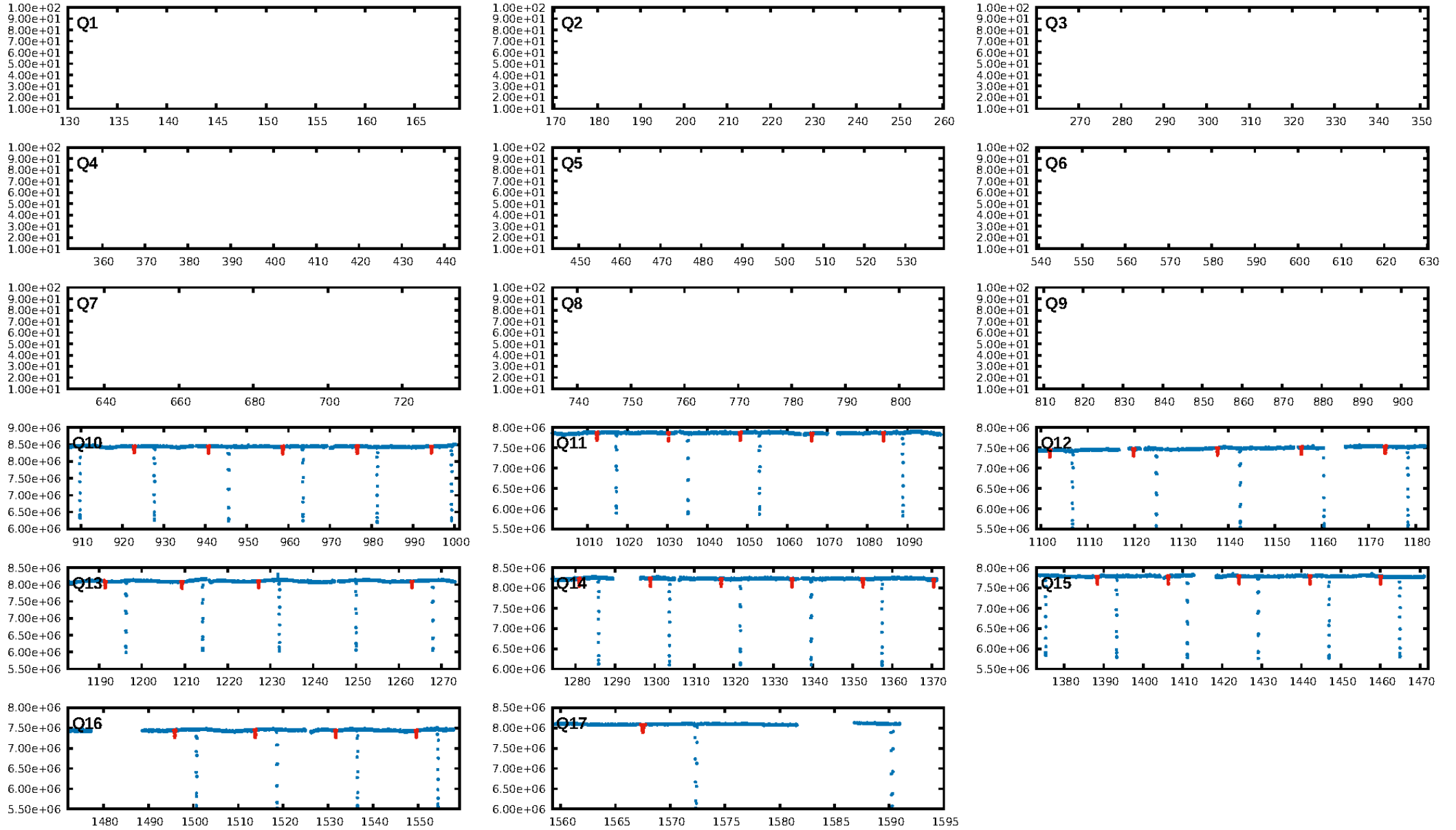
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [34/34]
GhostDiagnostic-chr: 3.585
Centroid-sig: N/A
Centroid-so: 0.941 arcsec [20.93σ]
OotOffset-rm: 0.175 arcsec [2.48σ]
KicOffset-rm: 0.159 arcsec [2.22σ]
OotOffset-st: 2/2/2 [8]
KicOffset-st: 2/2/2 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [8/8]

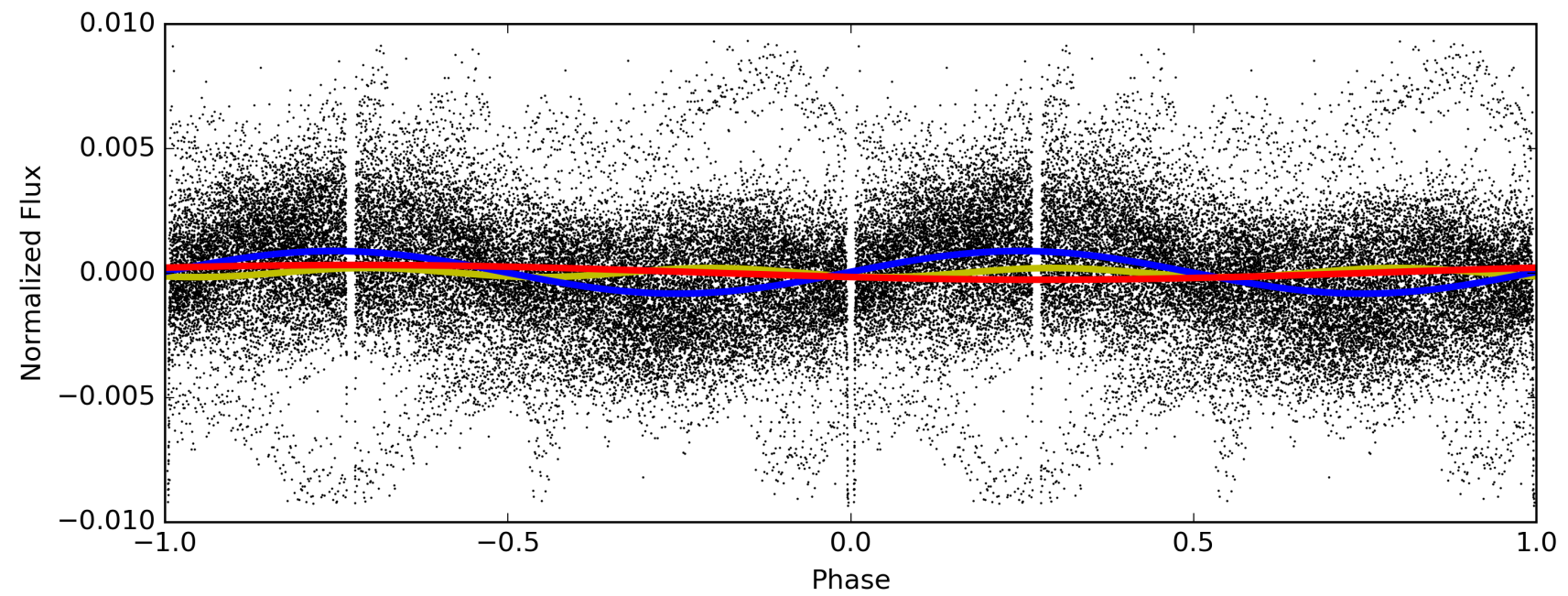
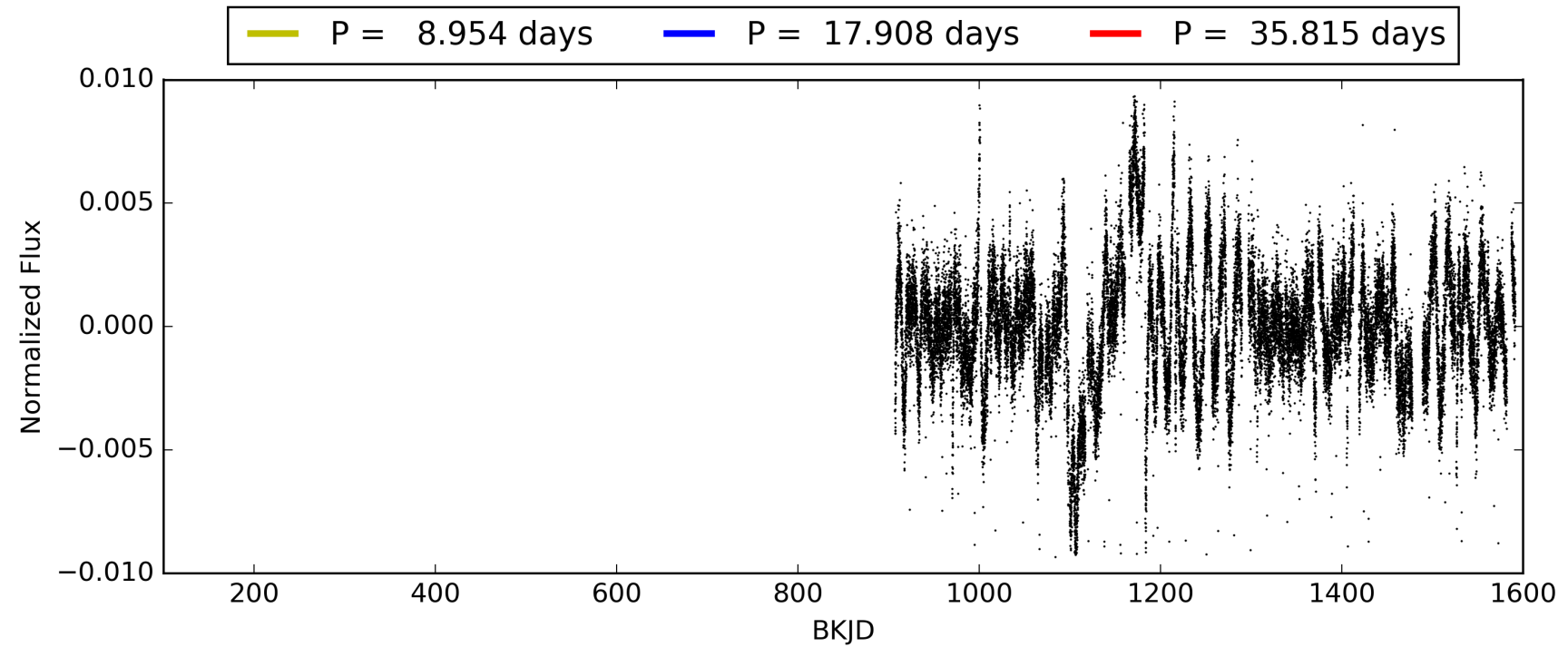
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:16:07 Z

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

TCE 012316447-02, PDC Light Curves

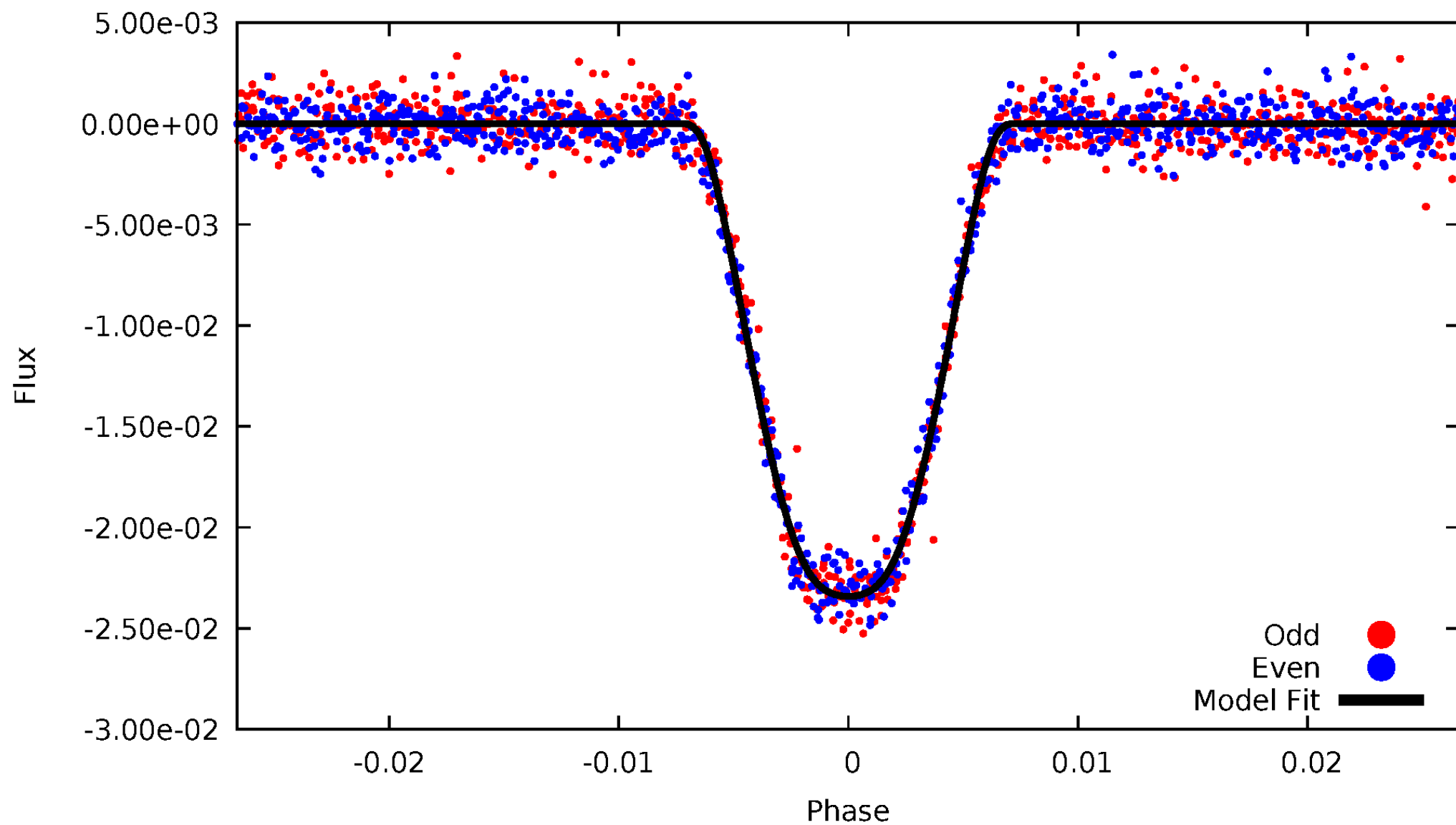


TCE 012316447-02



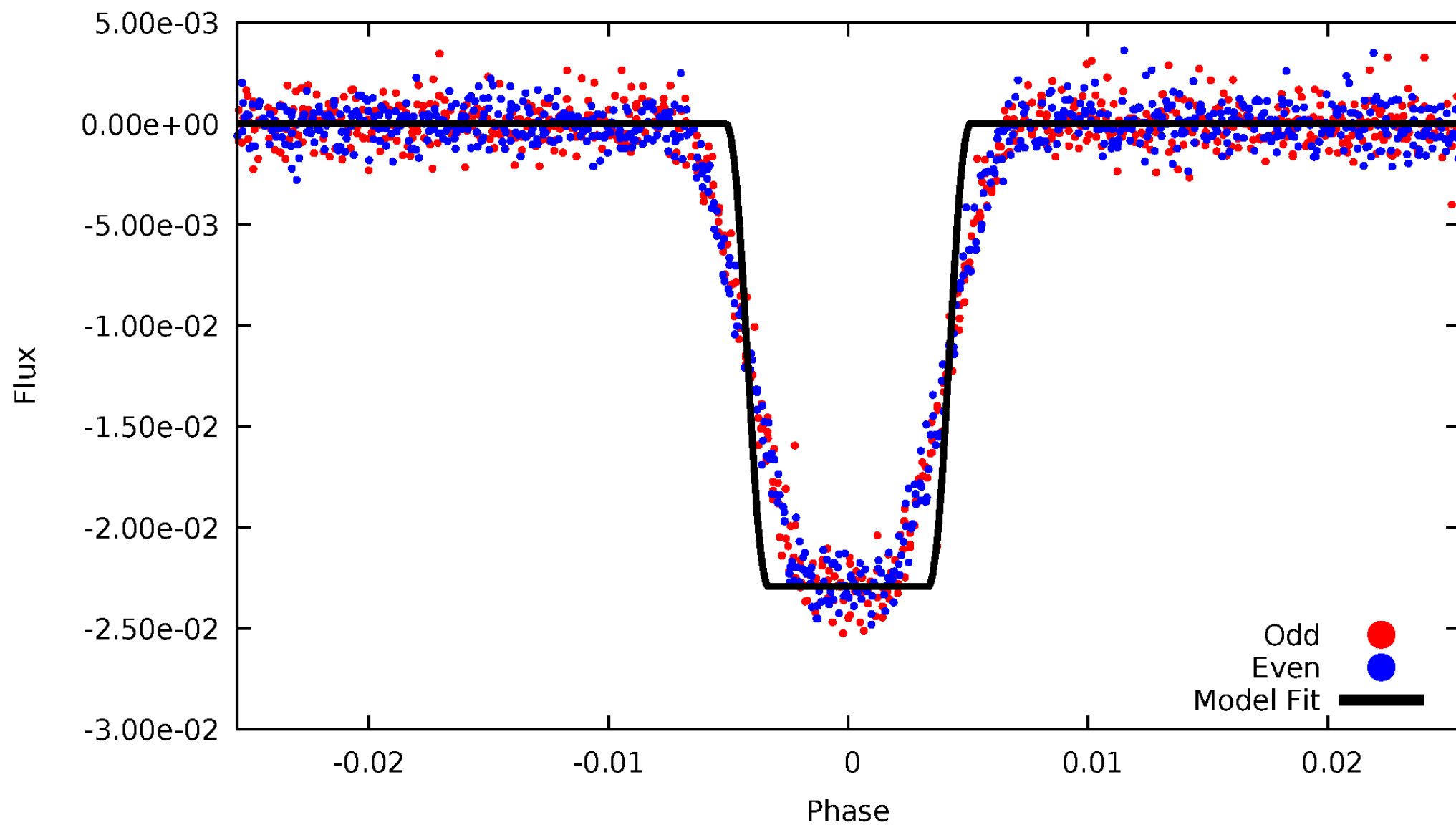
DV Odd/Even

TCE 012316447-02



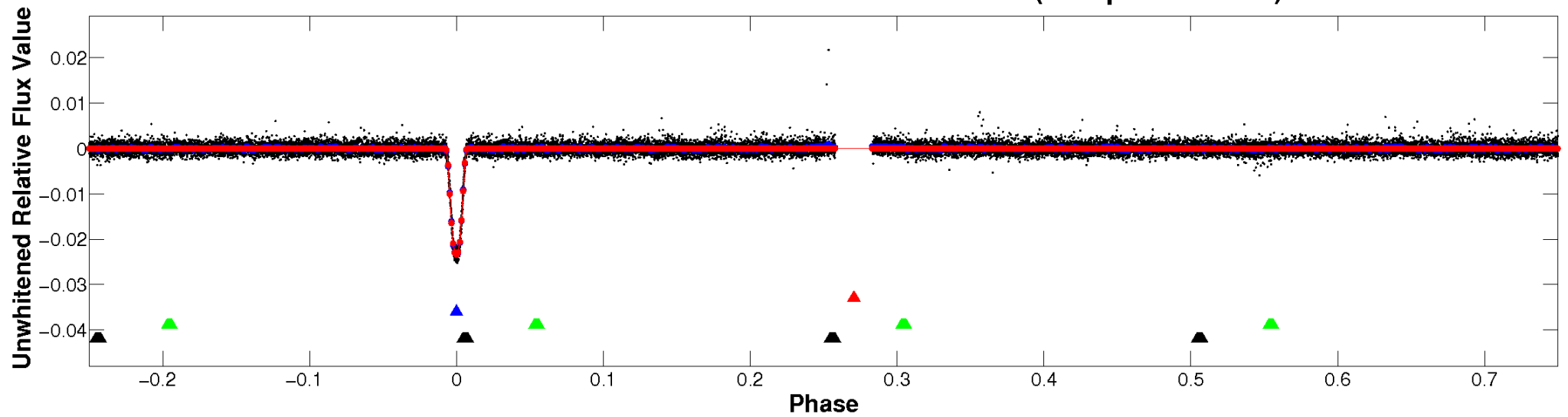
ALT Odd/Even

TCE 012316447-02

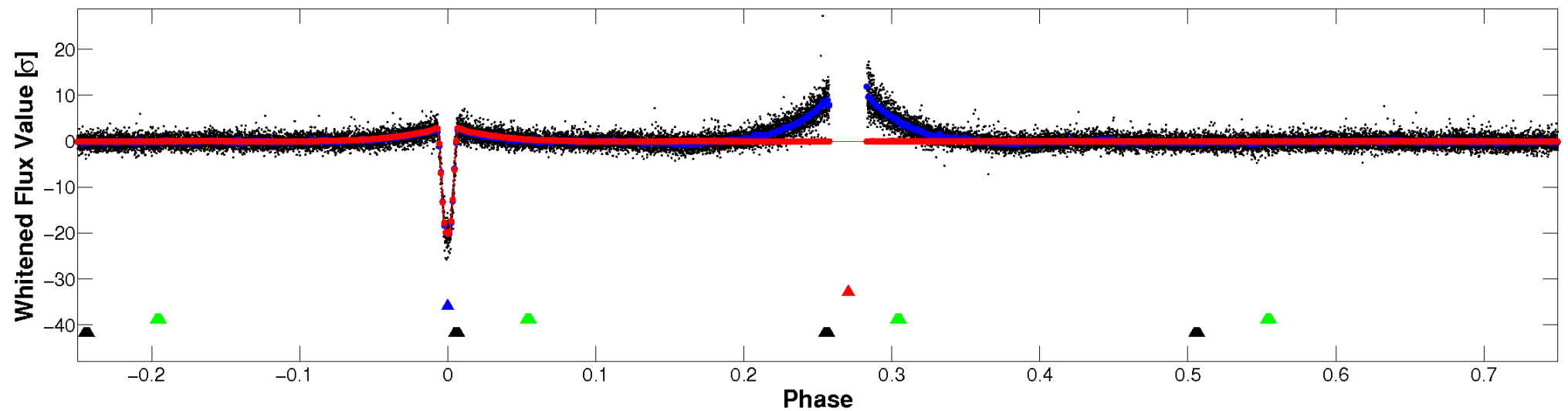


Non-Whitened Vs. Whitened Light Curve

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

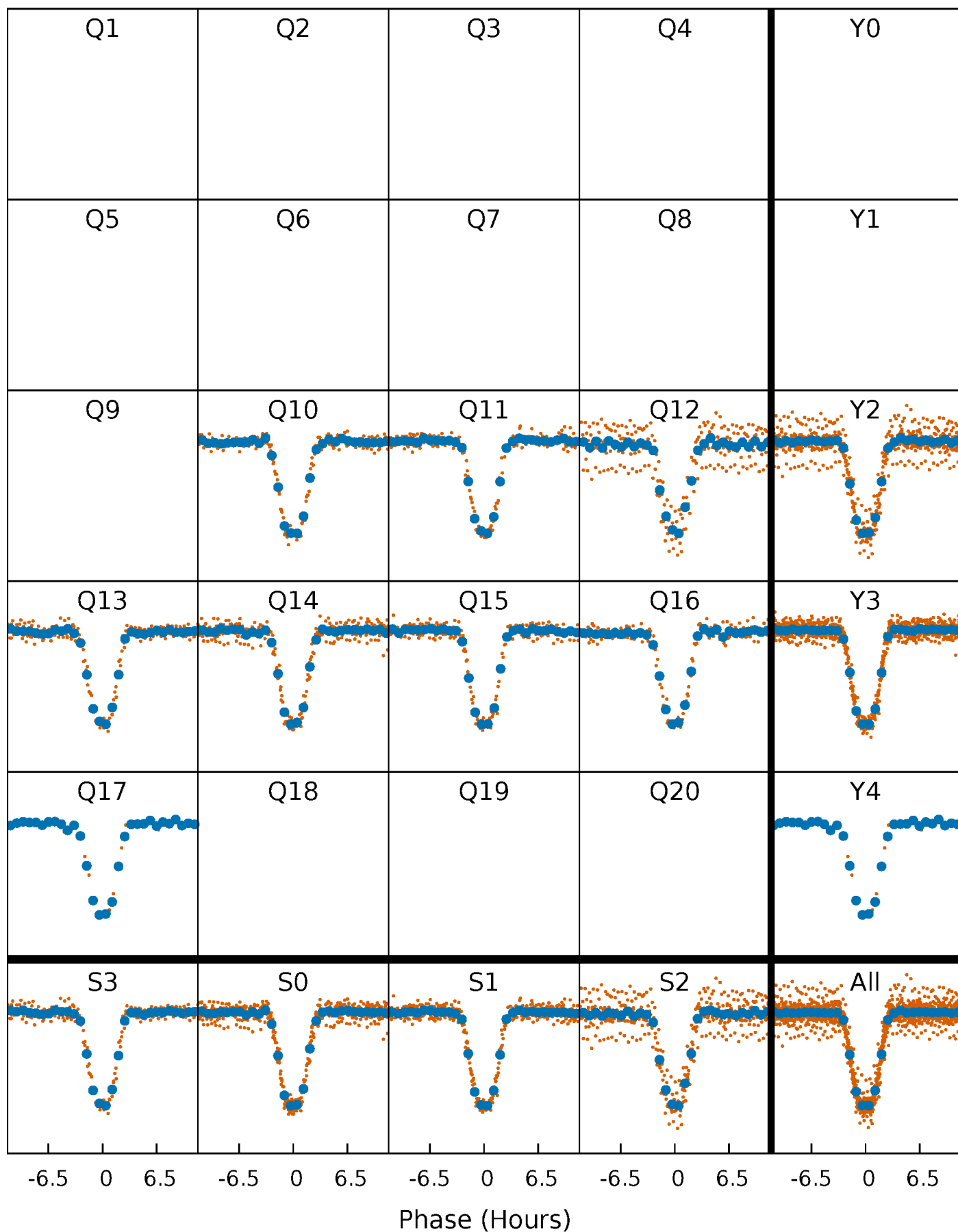


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



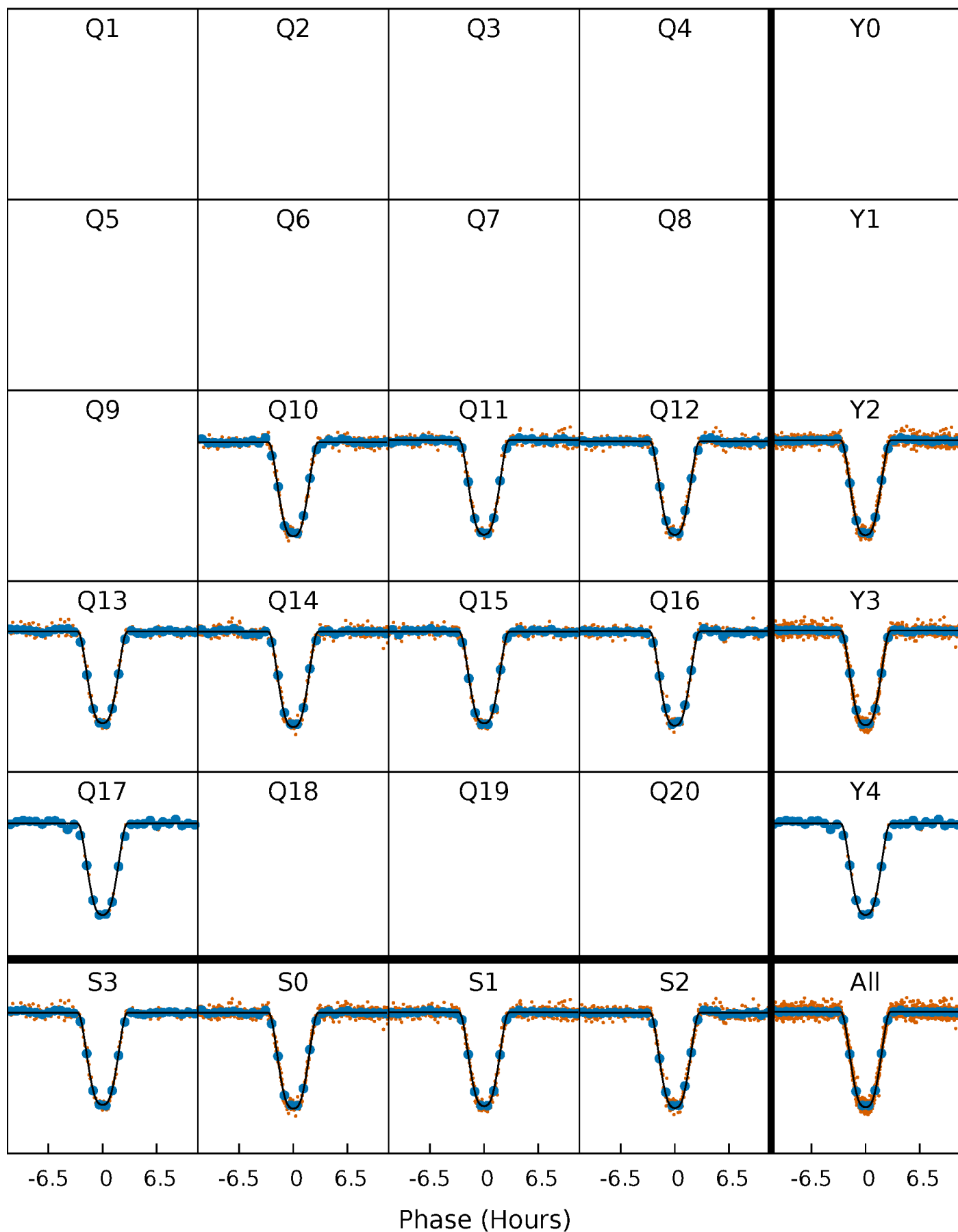
PDC Quarter-Phased Transit Curves

TCE 012316447-02 P= 17.907662 Days $T_0=134.895468$ (BKJD)



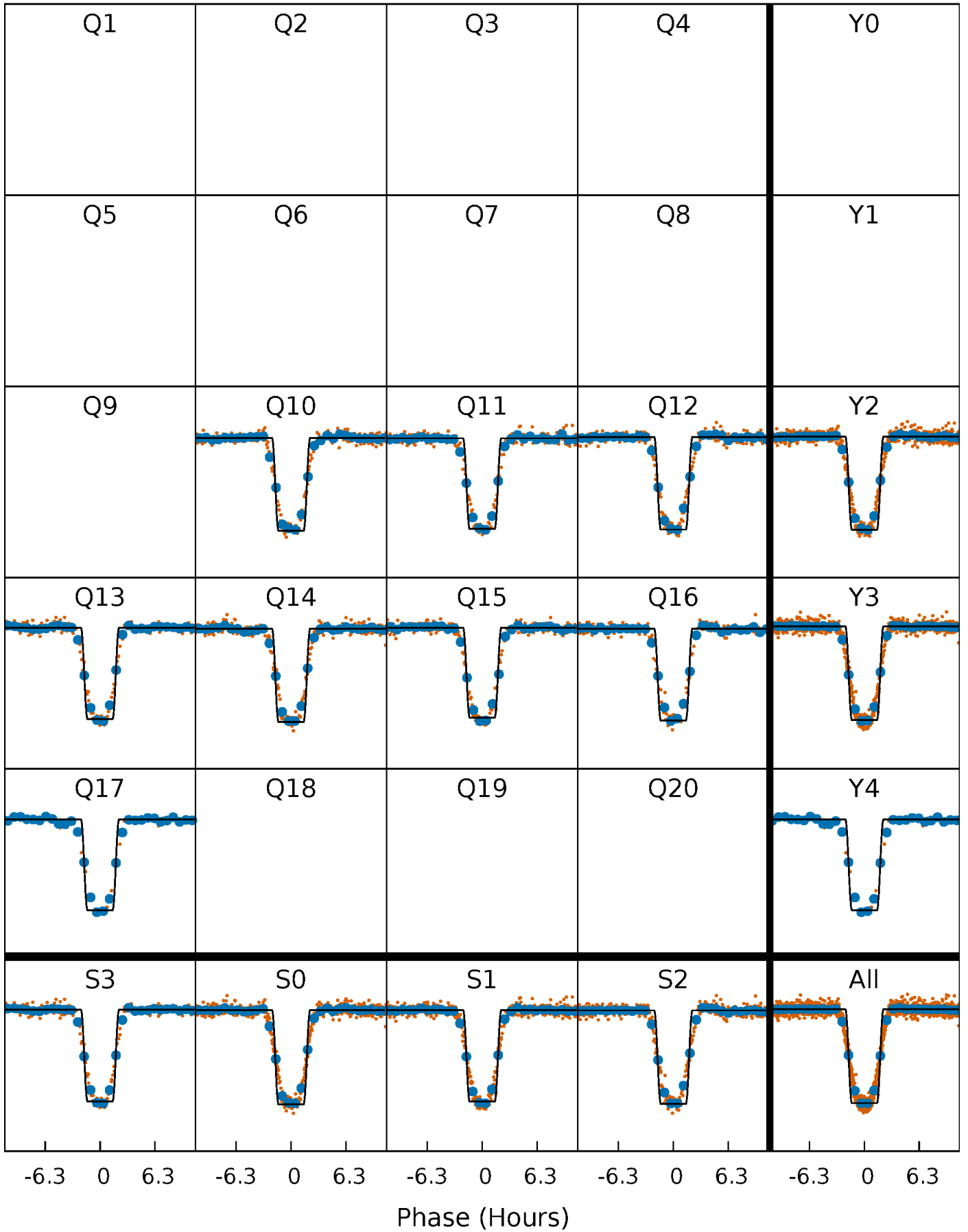
DV Quarter-Phased Transit Curves

TCE 012316447-02 P= 17.907662 Days $T_0=134.895468$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

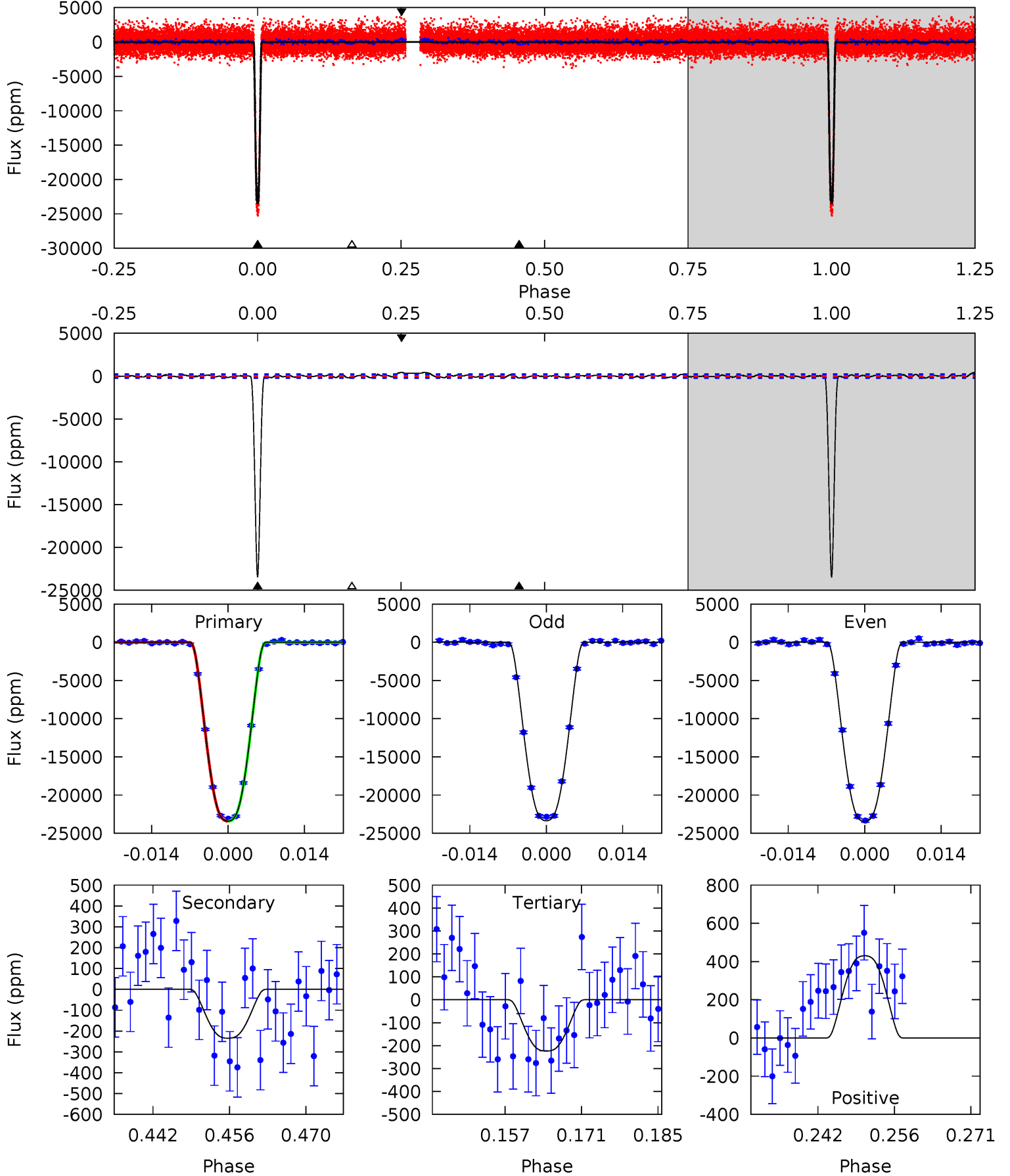
TCE 012316447-02 P= 17.907662 Days $T_0=134.895458$ (BKJD)



DV Model-Shift Uniqueness Test

012316447-02, P = 17.907662 Days, E = 134.895468 Days

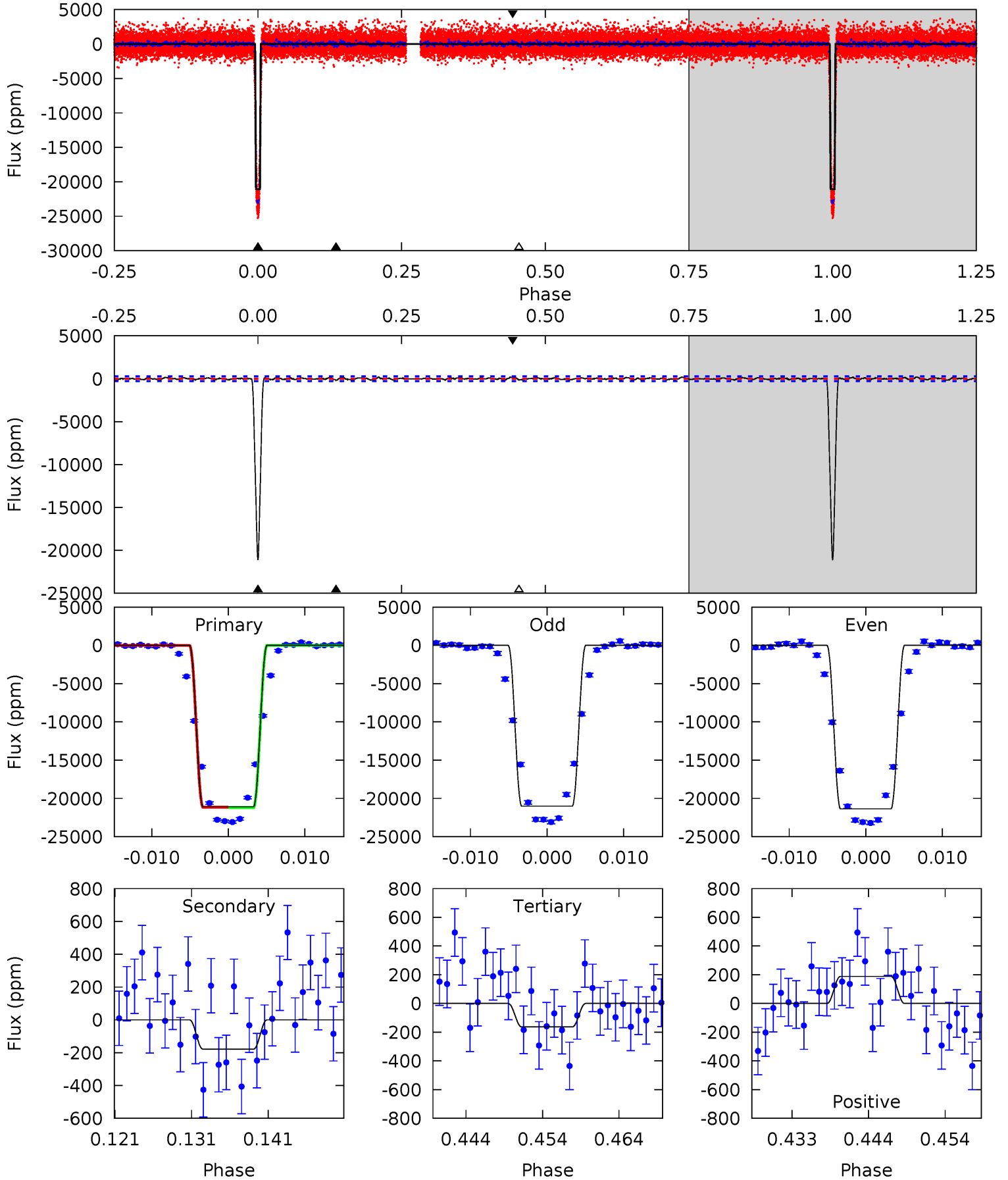
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
509.9	5.11	4.88	9.37	4.96	2.45	2.48	505.0	500.5	0.23	-4.26	1.16	1.00	0.02	0.01



Alt Model-Shift Uniqueness Test

012316447-02, $P = 17.907662$ Days, $E = 134.895458$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
390.7	3.31	3.03	3.49	5.02	2.57	1.25	387.6	387.2	0.27	-0.18	3.23	1.00	0.01	0.44



Stellar Parameters For KIC 012316447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6173^{+193}_{-236}	$4.447^{+0.054}_{-0.216}$	$-0.040^{+0.250}_{-0.300}$	$1.041^{+0.341}_{-0.114}$	$1.104^{+0.146}_{-0.162}$	$1.379^{+0.408}_{-0.746}$
	+3%/-4%	+1%/-5%	+625%/-750%	+33%/-11%	+13%/-15%	+30%/-54%
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 012316447-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-235 ± 46	$18.82^{+2.99}_{-1.75}$	1070^{+84}_{-59}	2677^{+83}_{-88}	$6.707^{+2.022}_{-2.023}$
Alt.	-179 ± 54	$17.95^{+3.14}_{-1.69}$	1071^{+84}_{-59}	2619^{+111}_{-127}	$5.596^{+2.238}_{-2.093}$

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

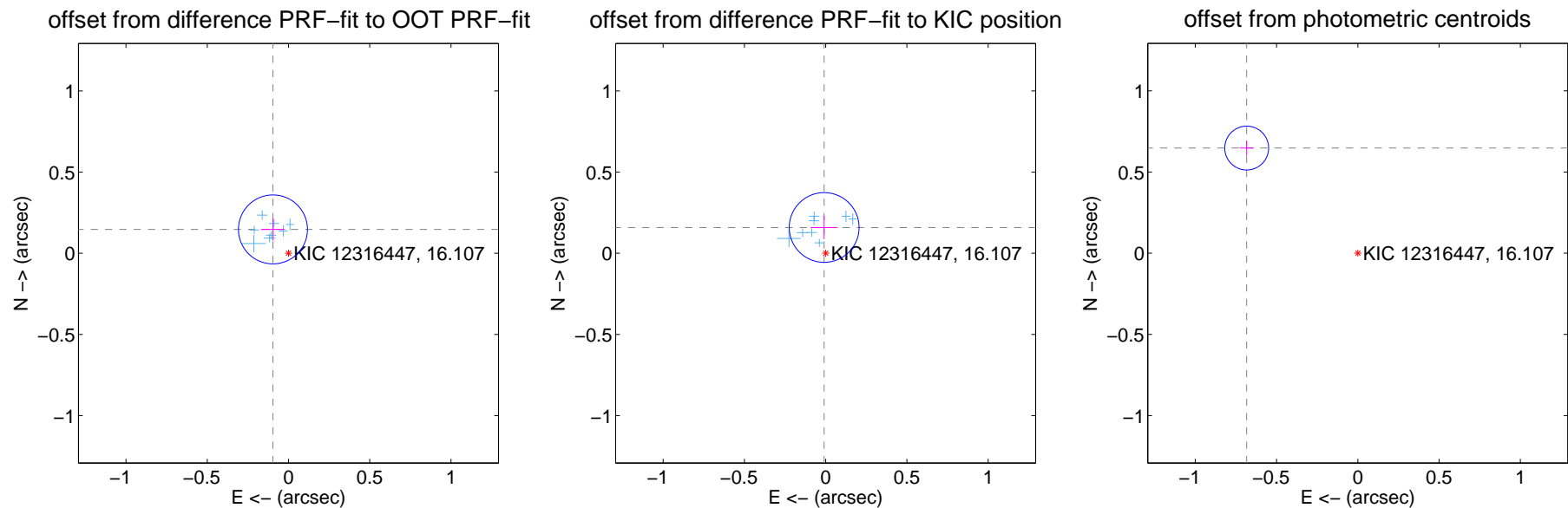
DV Centroid Data

Supplemental centroid analysis for 012316447-02. Kepler magnitude: 16.11. Transit SNR 276.87

There are 8 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.175 ± 0.071	2.48	0.096 ± 0.074	0.147 ± 0.069
PRF-fit source offset from KIC position	0.159 ± 0.072	2.22	0.009 ± 0.083	0.159 ± 0.072
photometric centroid source offset	0.94 ± 0.04	20.93	0.68 ± 0.04	0.65 ± 0.05



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.

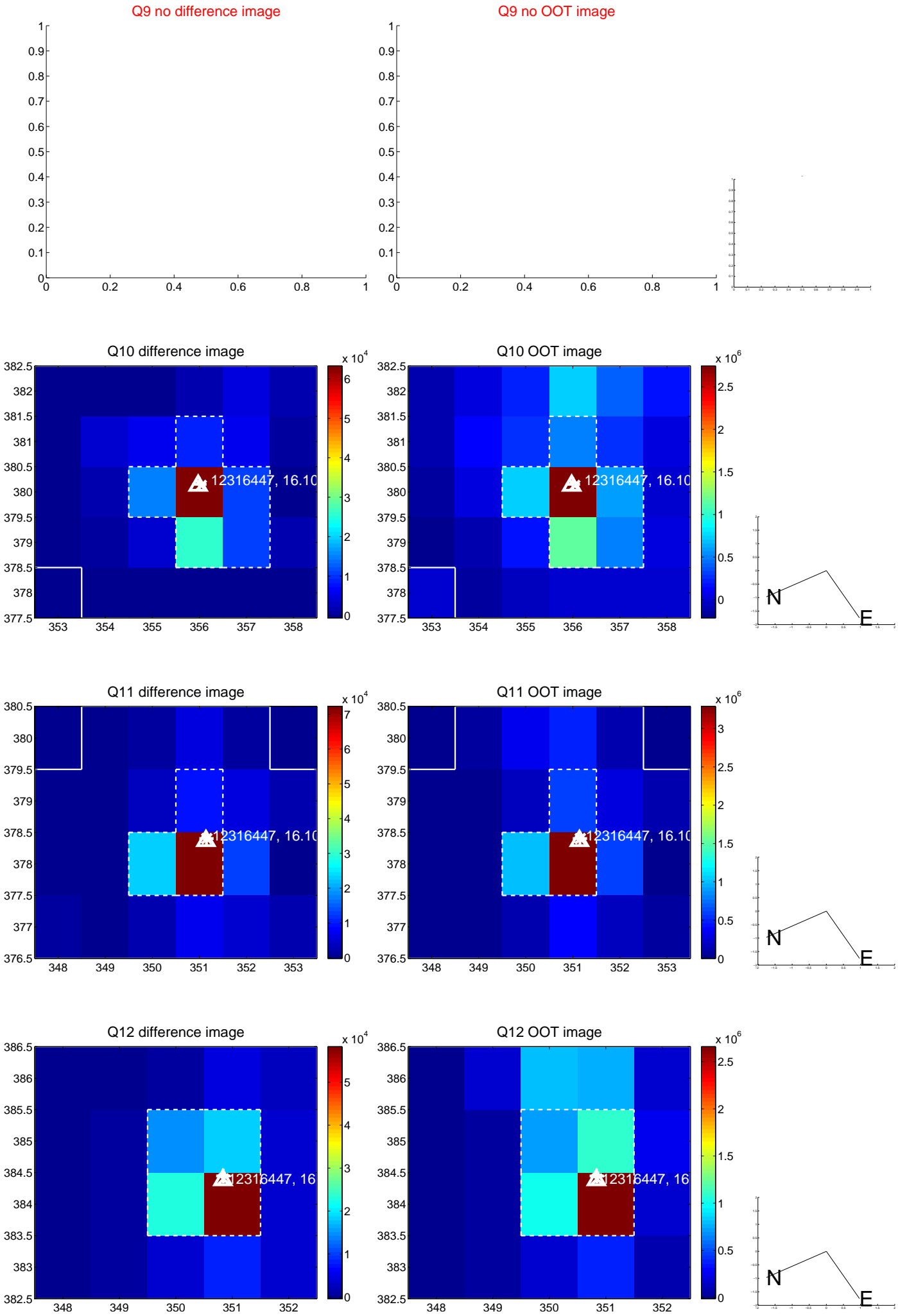
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



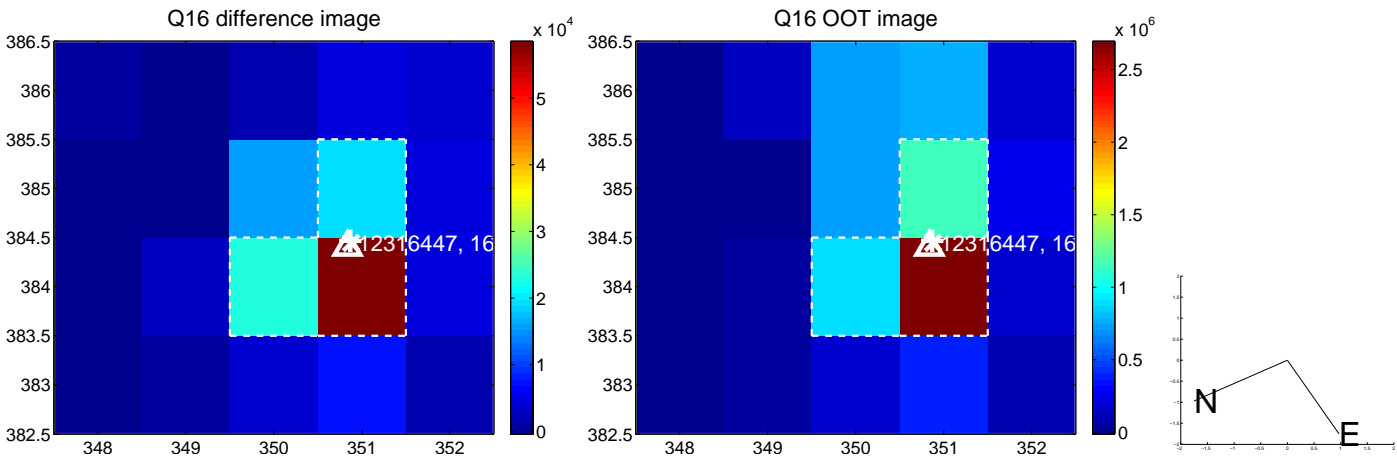
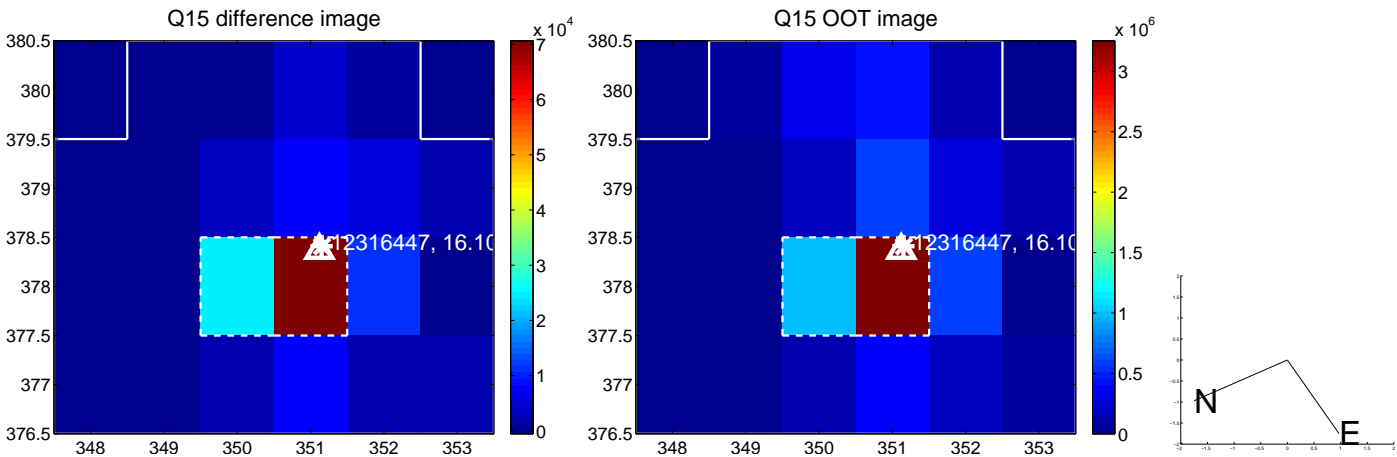
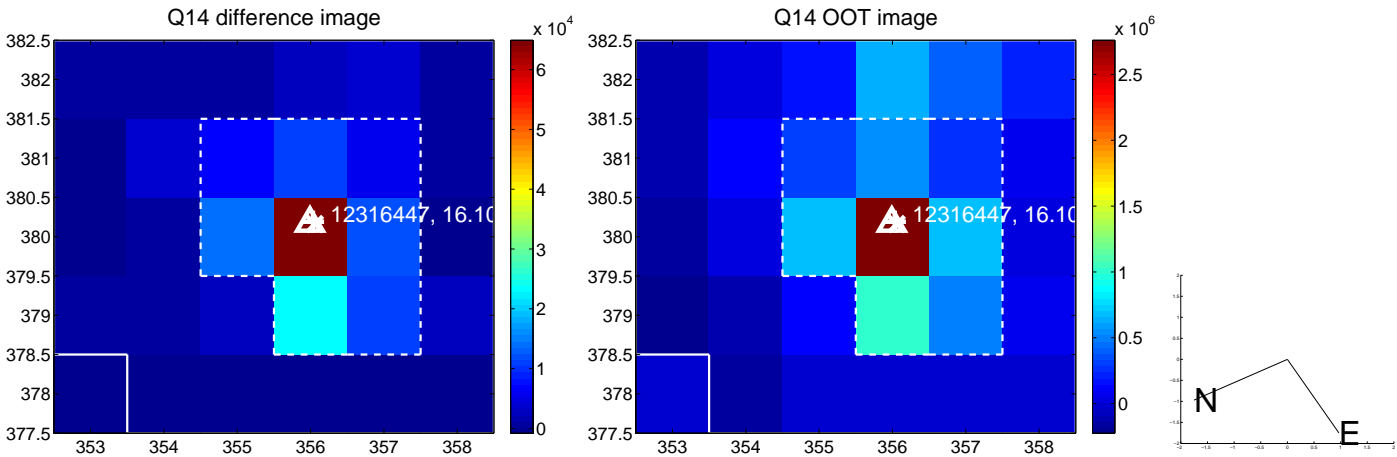
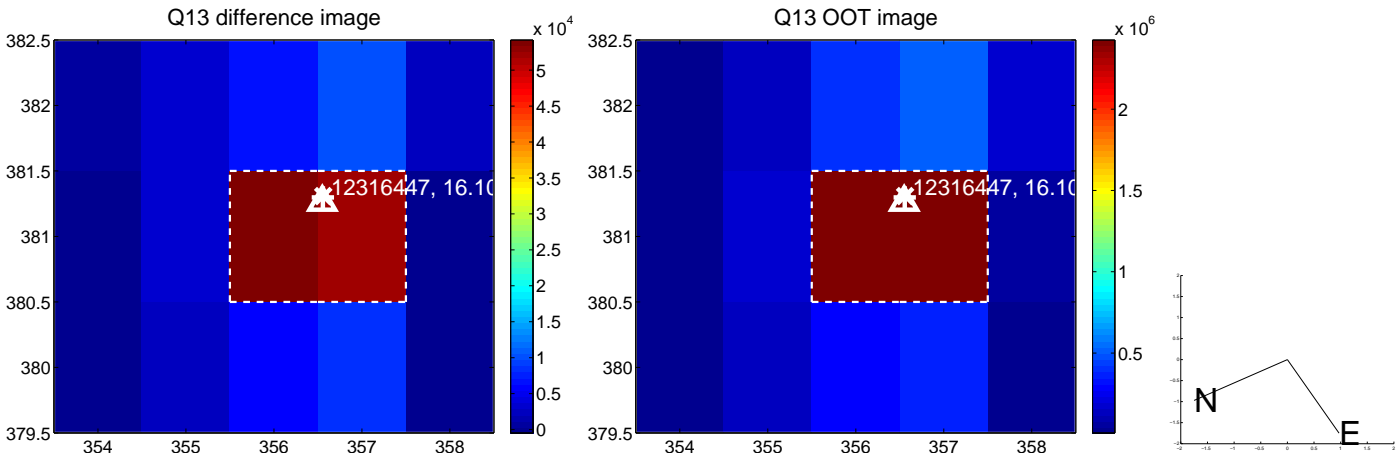
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



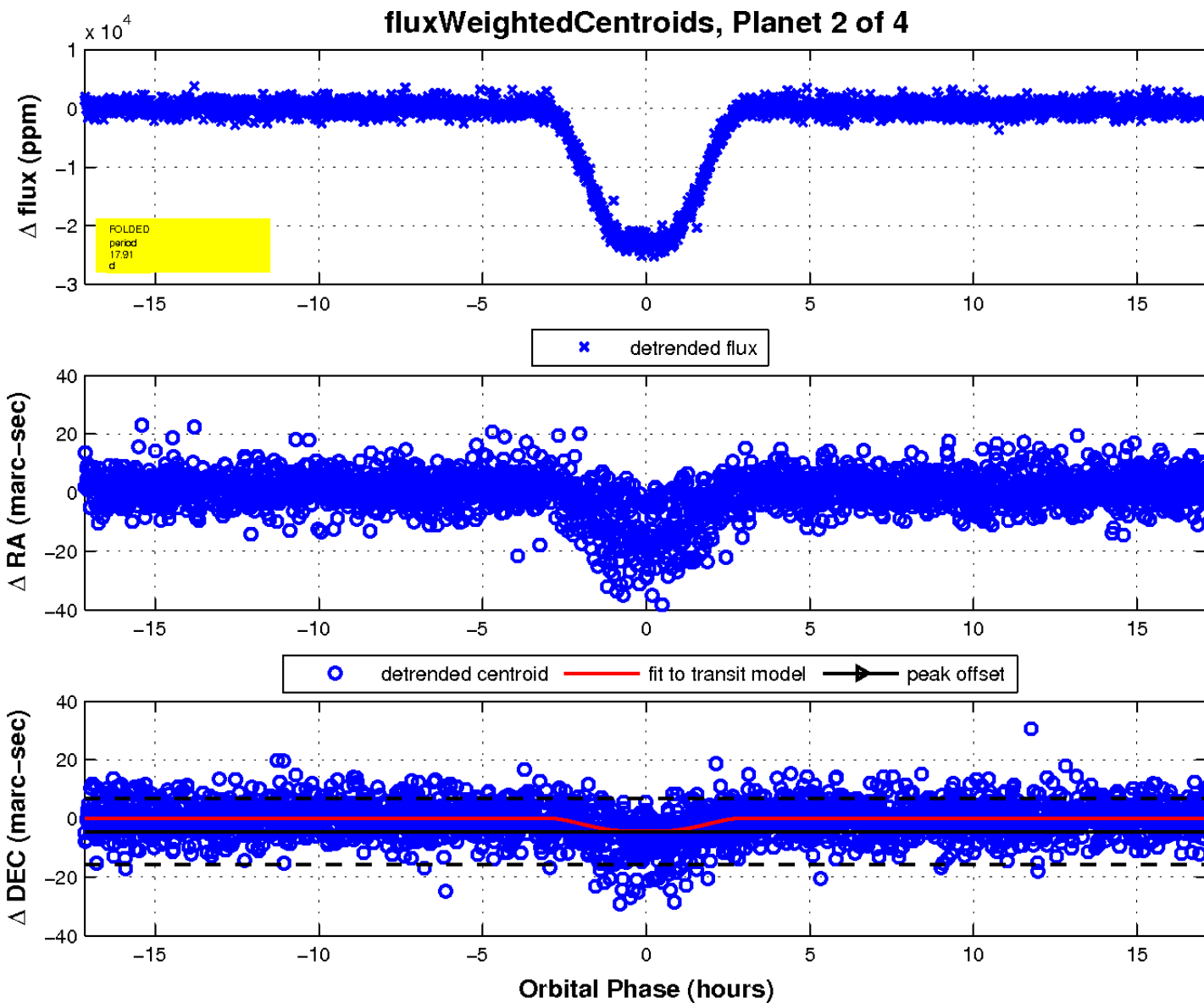
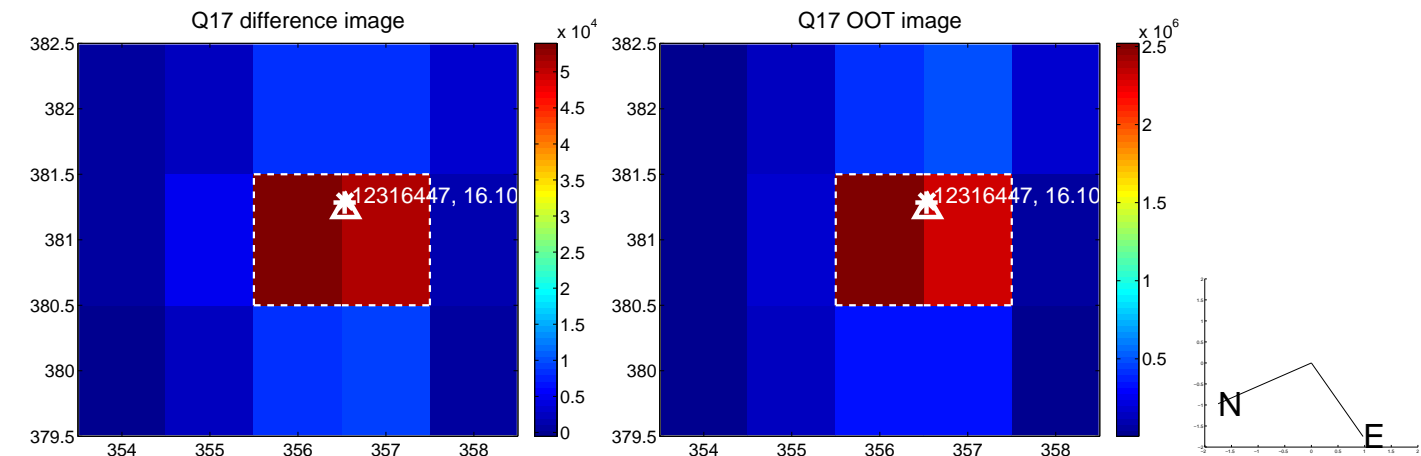
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

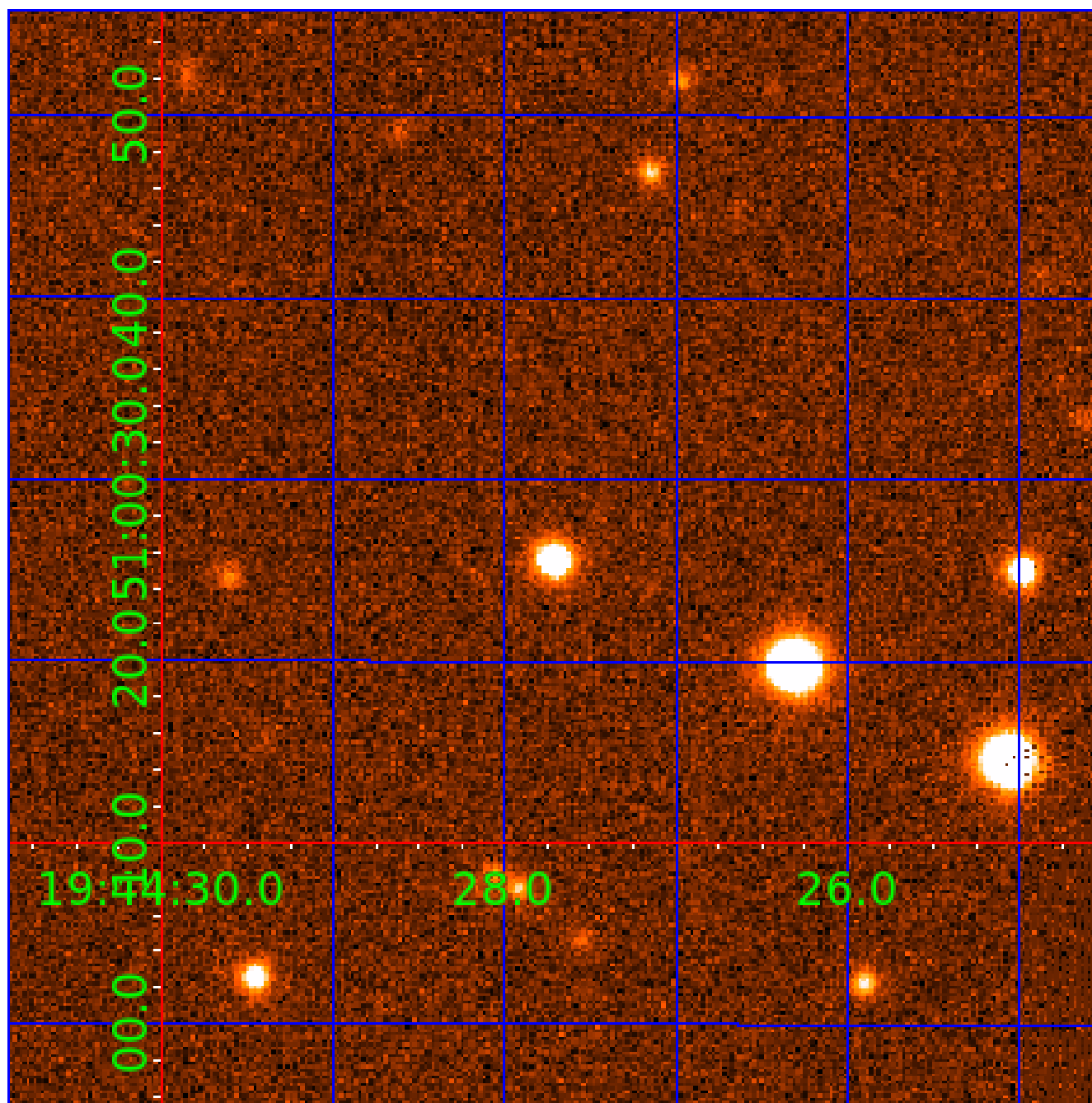


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012316447

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})
012316447-01	OBS	3575.01	17.907570	139.745719	260364.9	3.500	2969.4	-1.0	1.04	6173	51.47	73.42
012316447-02	OBS	No	17.907662	134.895468	23424.0	5.721	286.0	276.9	1.04	6173	18.07	73.42
012316447-03	OBS	No	4.476732	135.901723	0.3	1.529	143.0	0.0	1.04	6173	0.07	466.19
012316447-04	OBS	No	4.477116	134.971077	14712.3	15.000	141.1	-1.0	1.04	6173	12.62	466.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012316447-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
012316447-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012316447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
012316447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS

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.

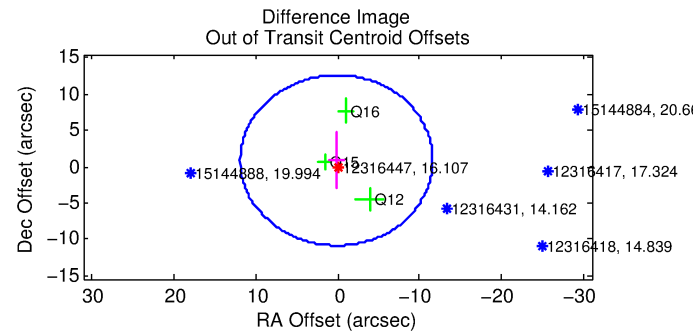
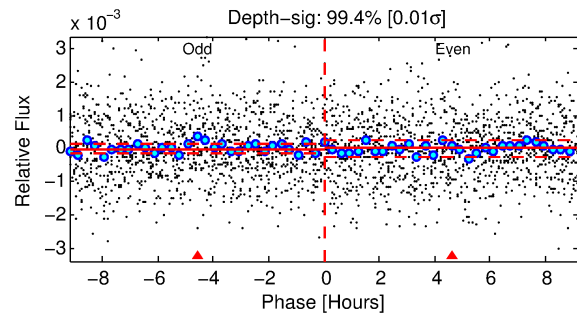
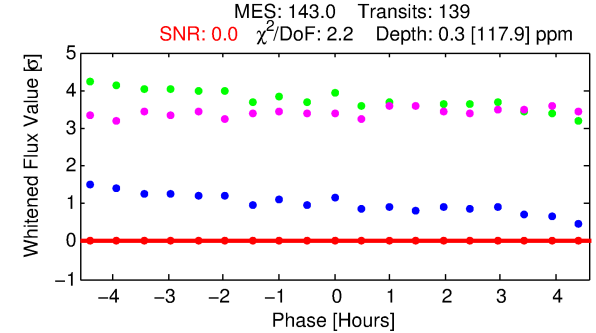
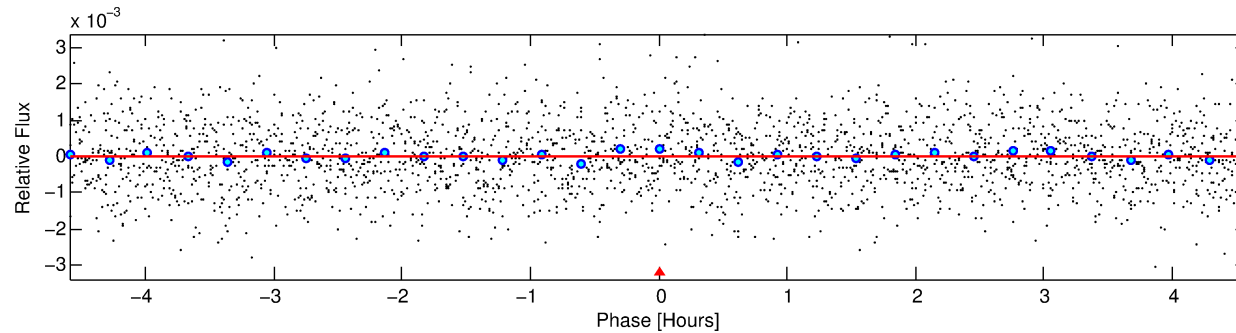
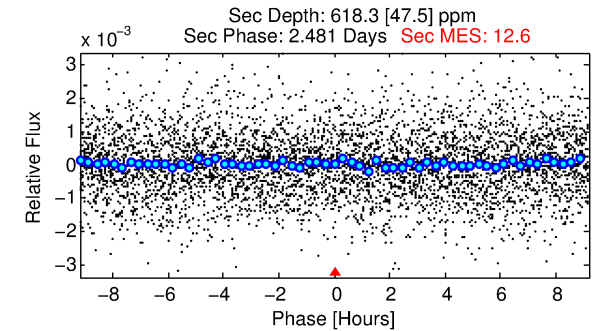
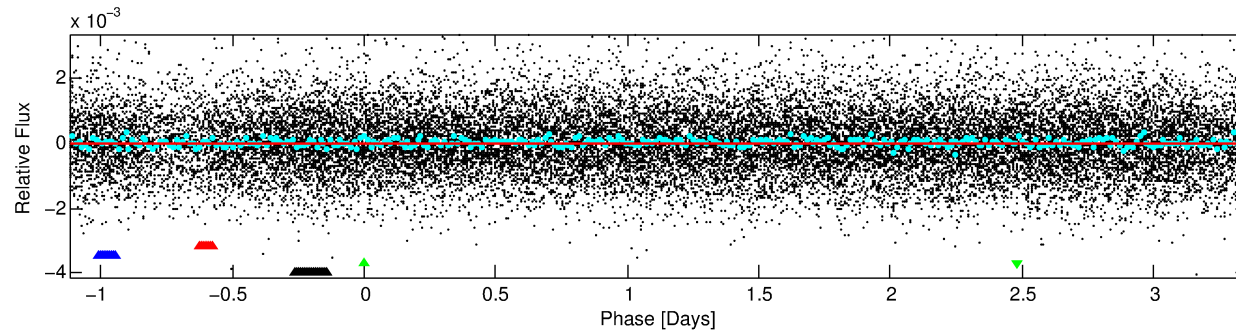
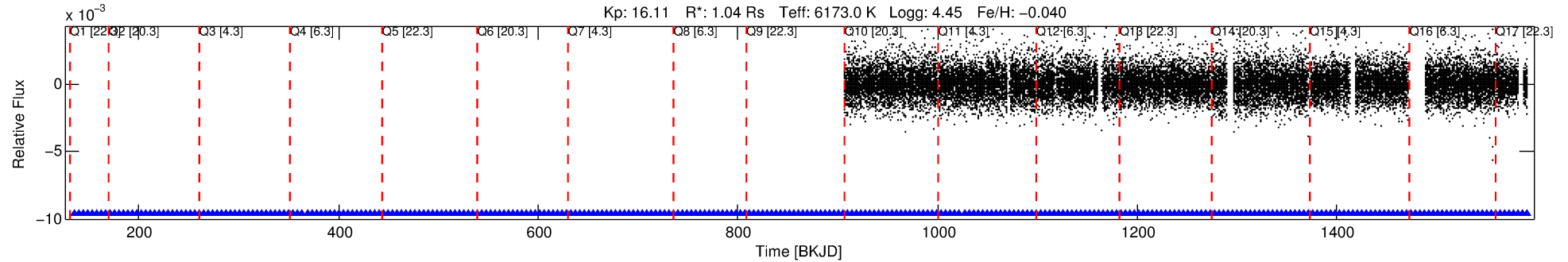
Ephemeris Match Information For 012316447-03

No Significant Match Found

DV One-Page Summary

KIC: 12316447 Candidate: 3 of 4 Period: 4.477 d

KOI: K03575 Corr: No Ephemeris Match



DV Fit Results:

Period = 4.47673 [0.05786] d
Epoch = 135.9017 [10.7677] BKJD
Rp/R* = 0.0006 [0.1135]
a/R* = 12.70 [2359.91]
b = 0.82 [78.68]
Seff = 466.19 [198.51]
Teq = 1185 [126] K
Rp = 0.07 [12.89] Re
a = 0.0550 [0.0151] AU
Ag = 242209.58 [95817926.21] [0.00σ]
Teffp = 40640 [4019396] K [0.01σ]

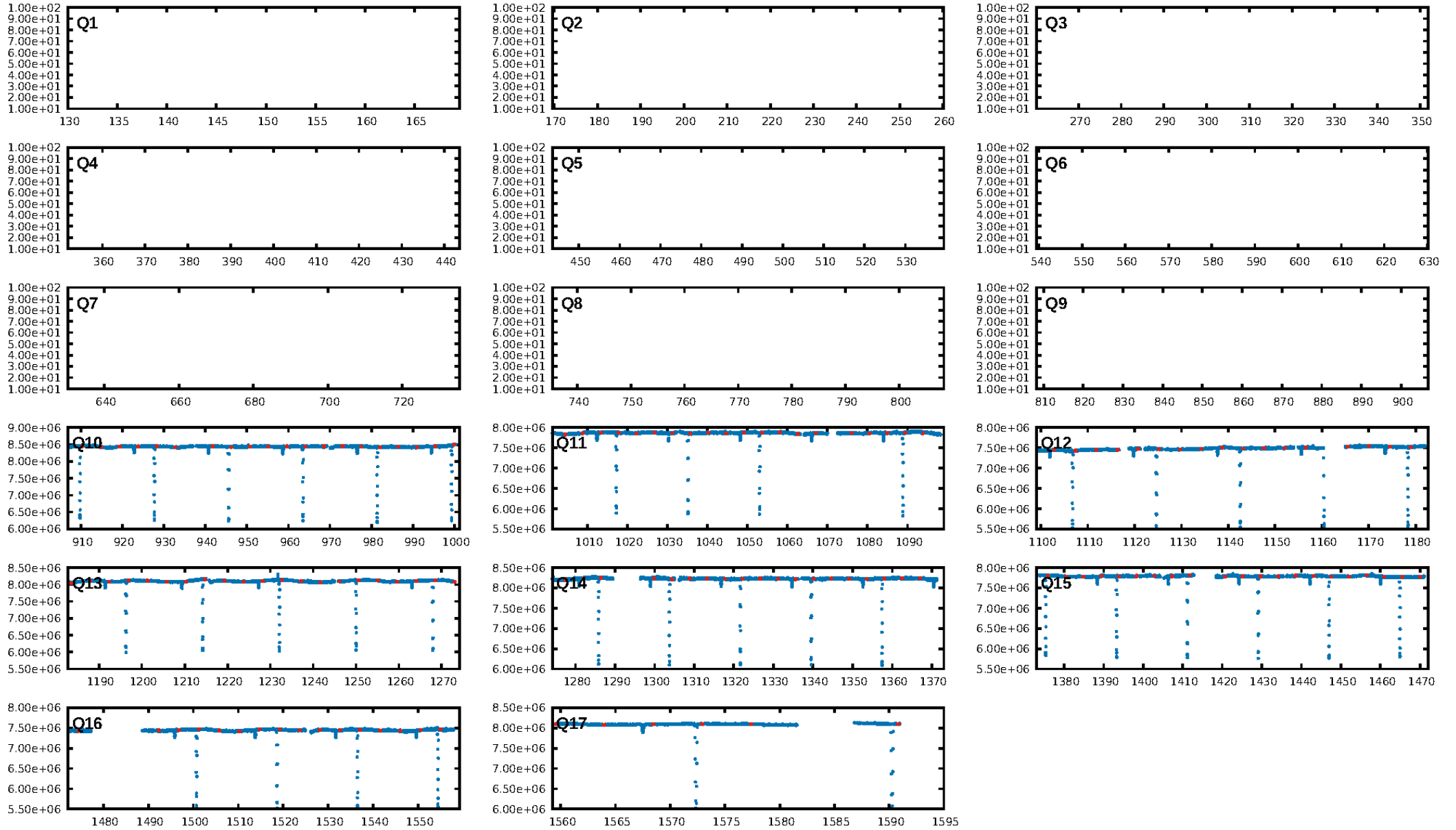
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 1.2%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [133/133]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
QotOffset-rm: 0.880 arcsec [0.22σ]
KicOffset-rm: 0.883 arcsec [0.27σ]
QotOffset-st: 0/1/2/0 [3]
KicOffset-st: 0/1/2/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.00 [0/8]

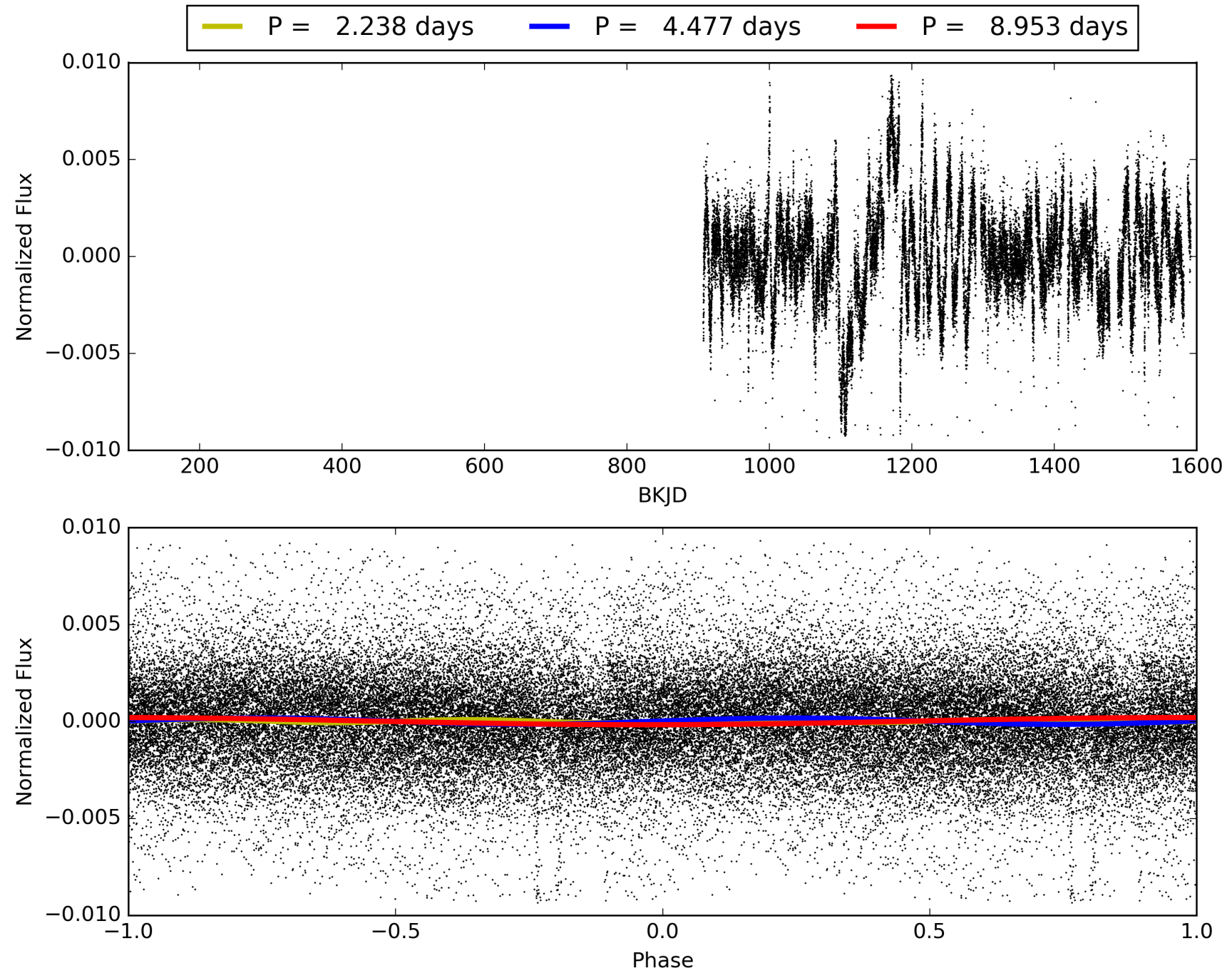
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:16:12 Z

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

TCE 012316447-03, PDC Light Curves

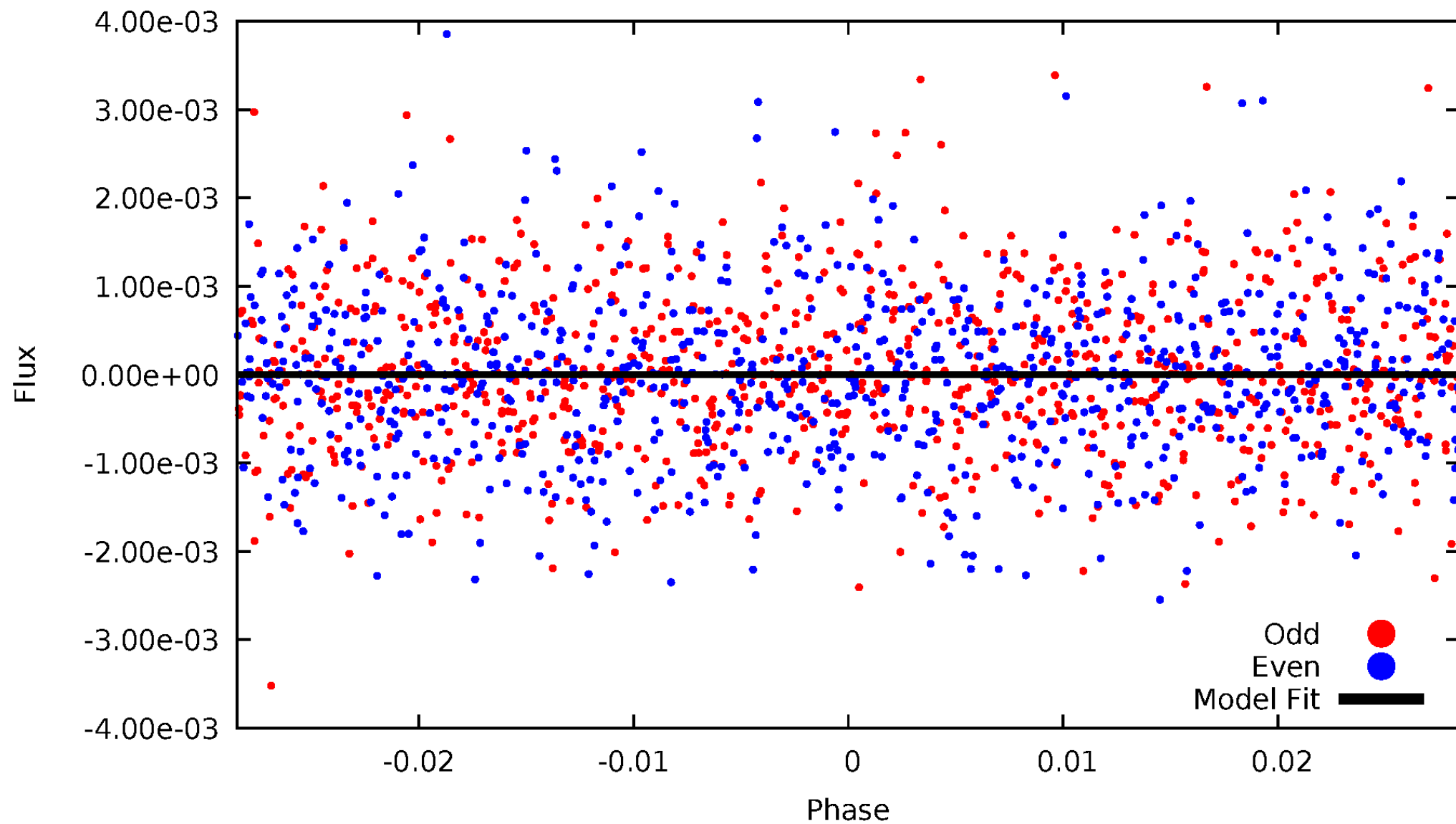


TCE 012316447-03



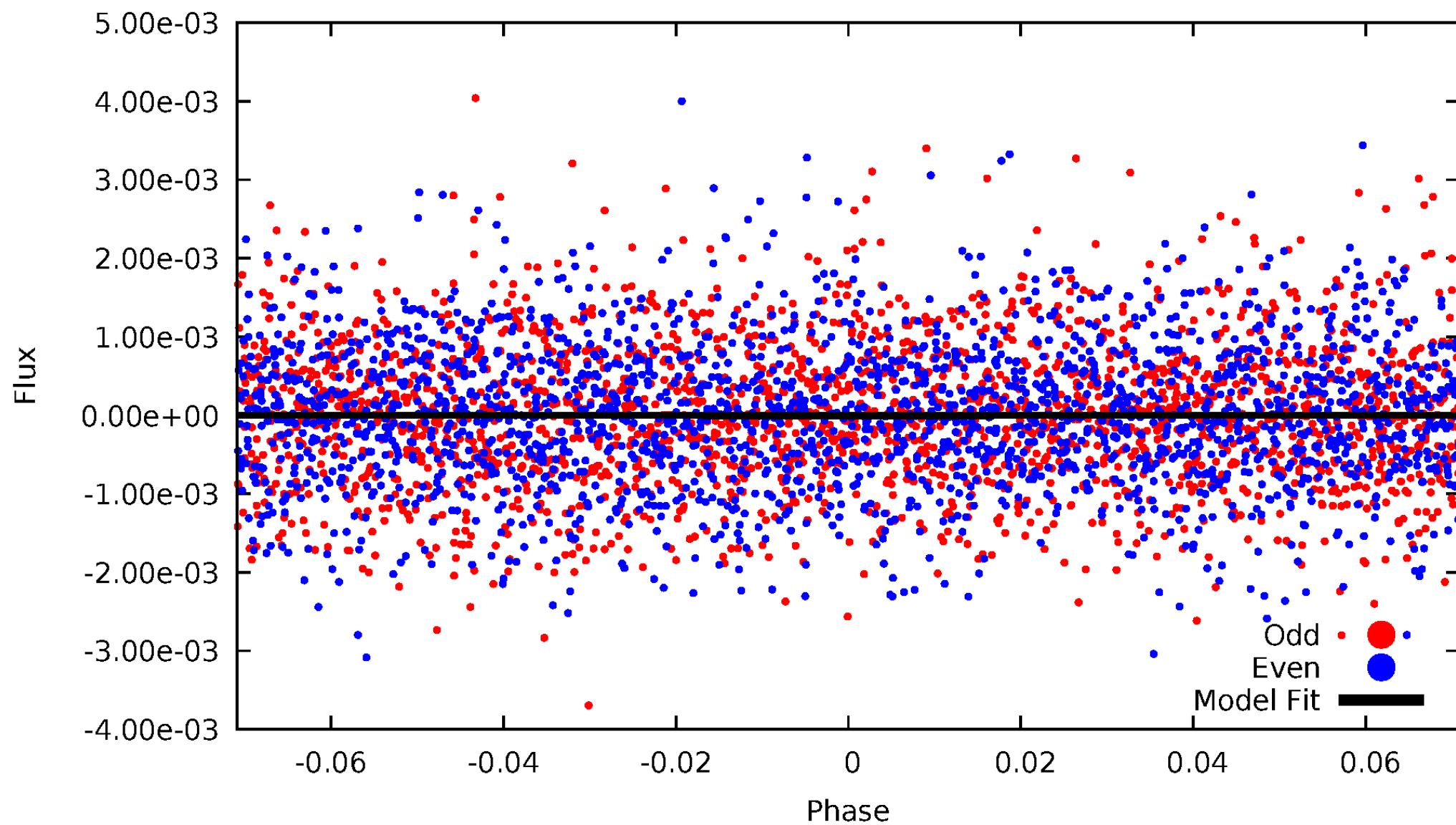
DV Odd/Even

TCE 012316447-03



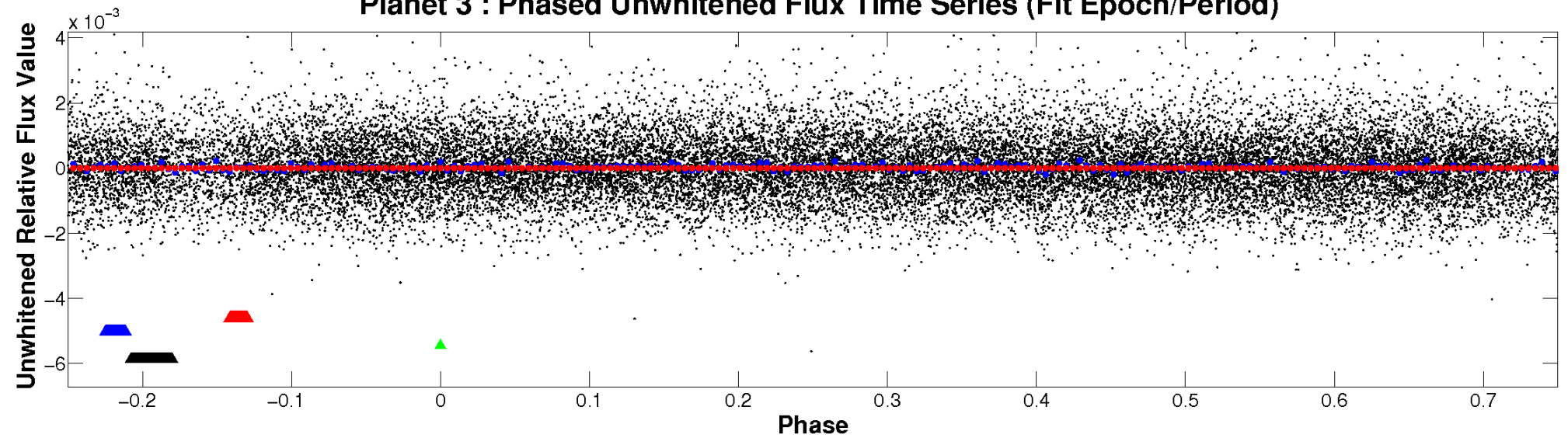
ALT Odd/Even

TCE 012316447-03

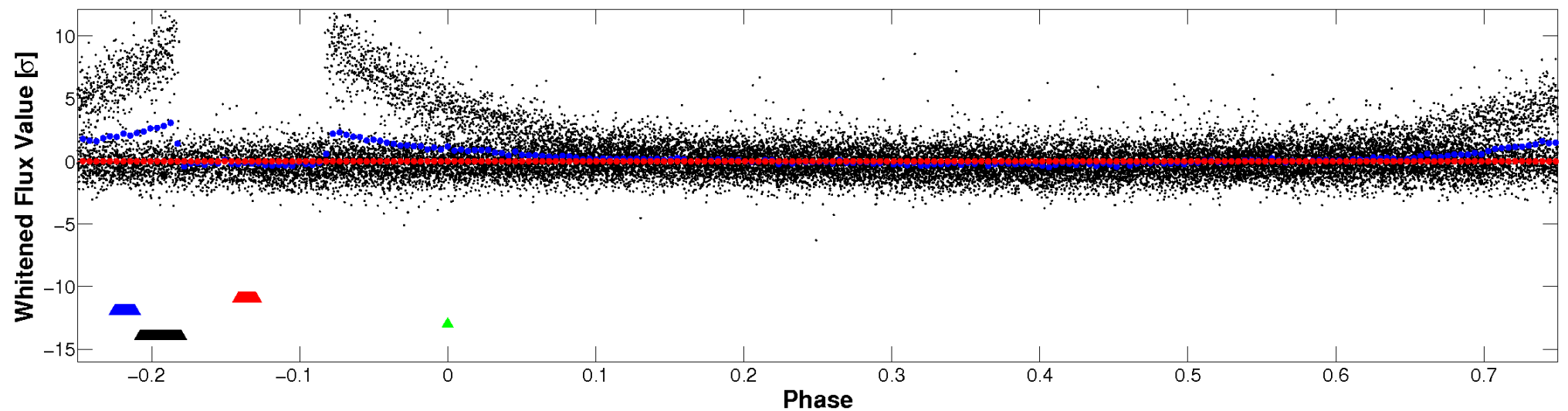


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

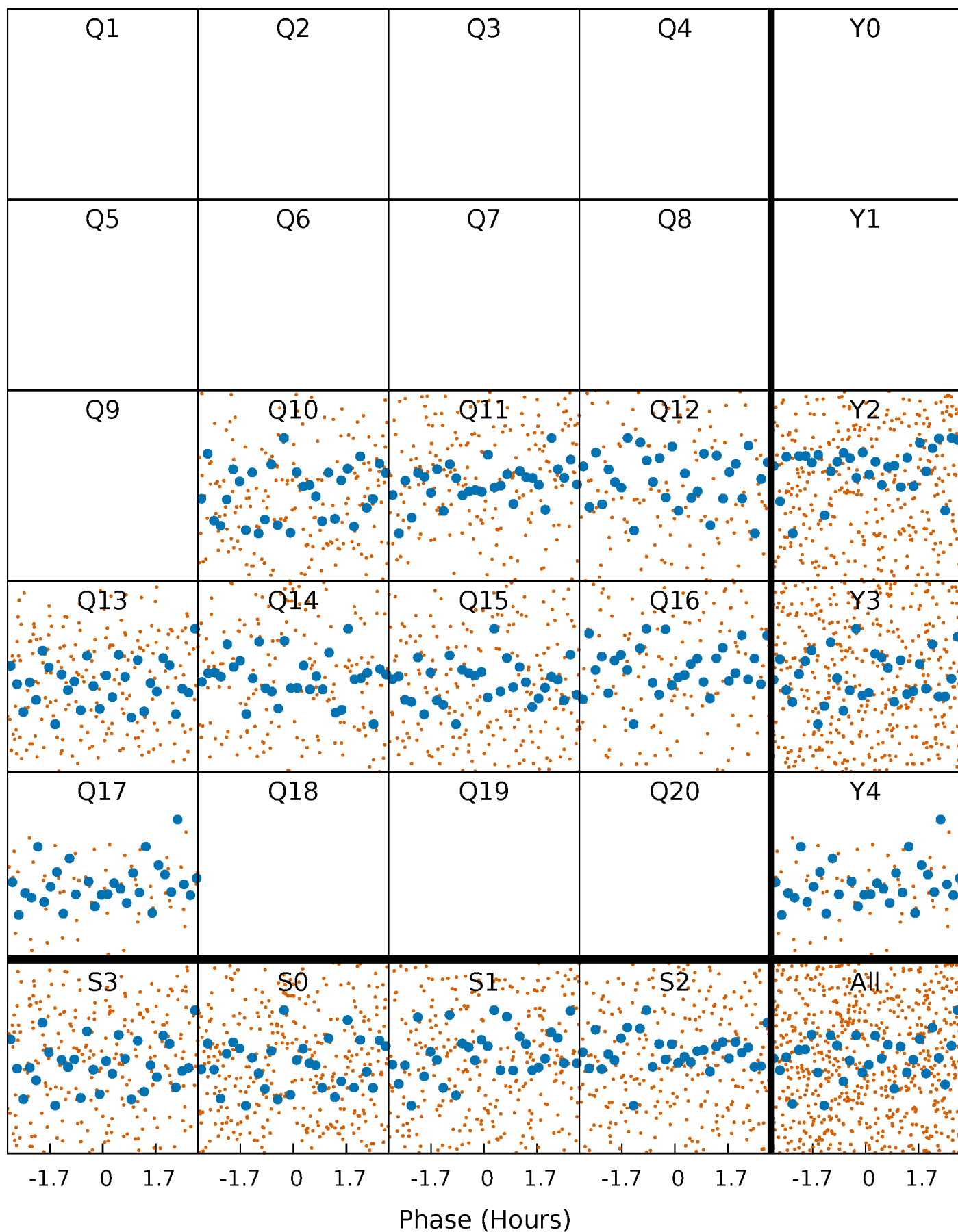


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



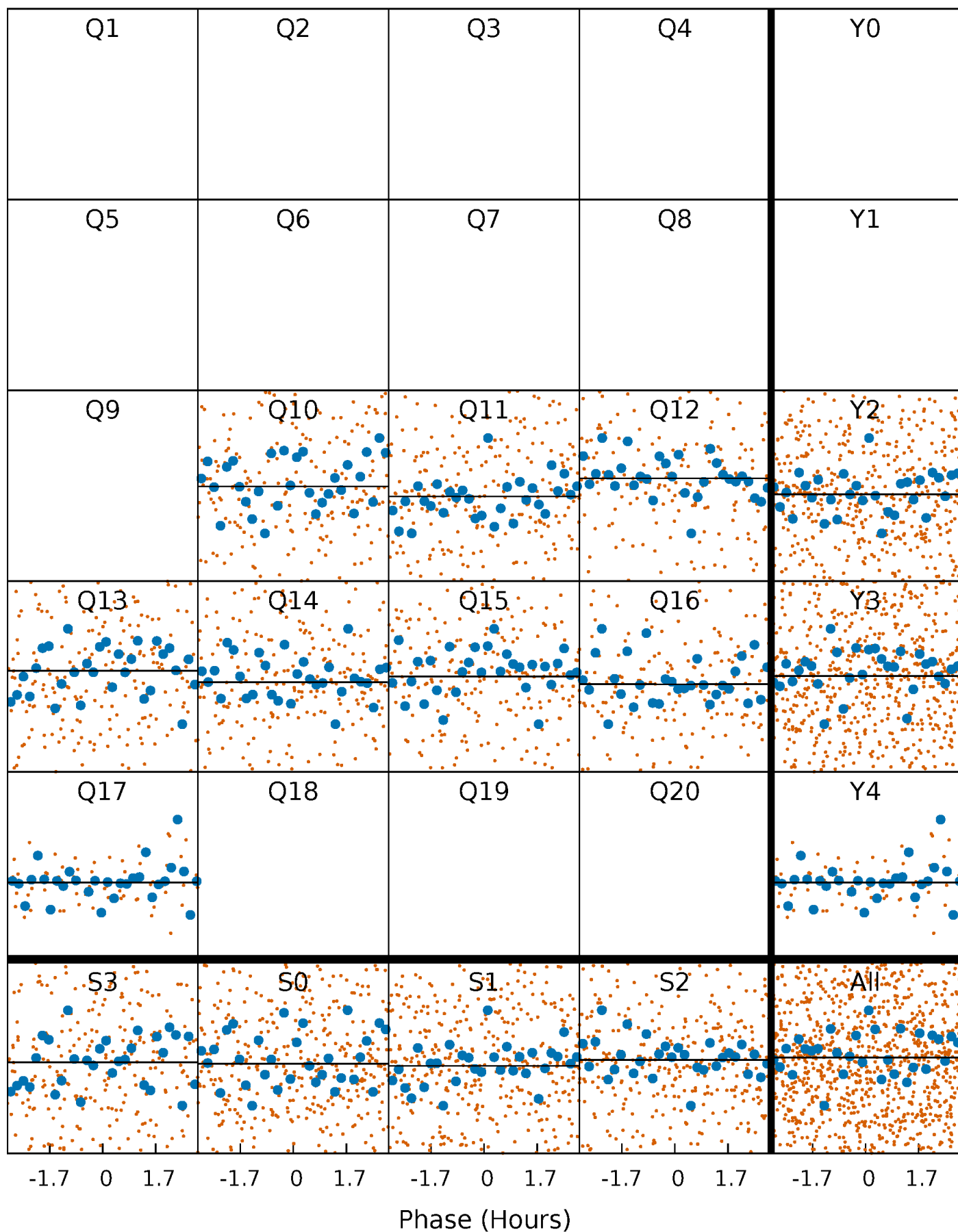
PDC Quarter-Phased Transit Curves

TCE 012316447-03 P= 4.476732 Days $T_0=135.901723$ (BKJD)



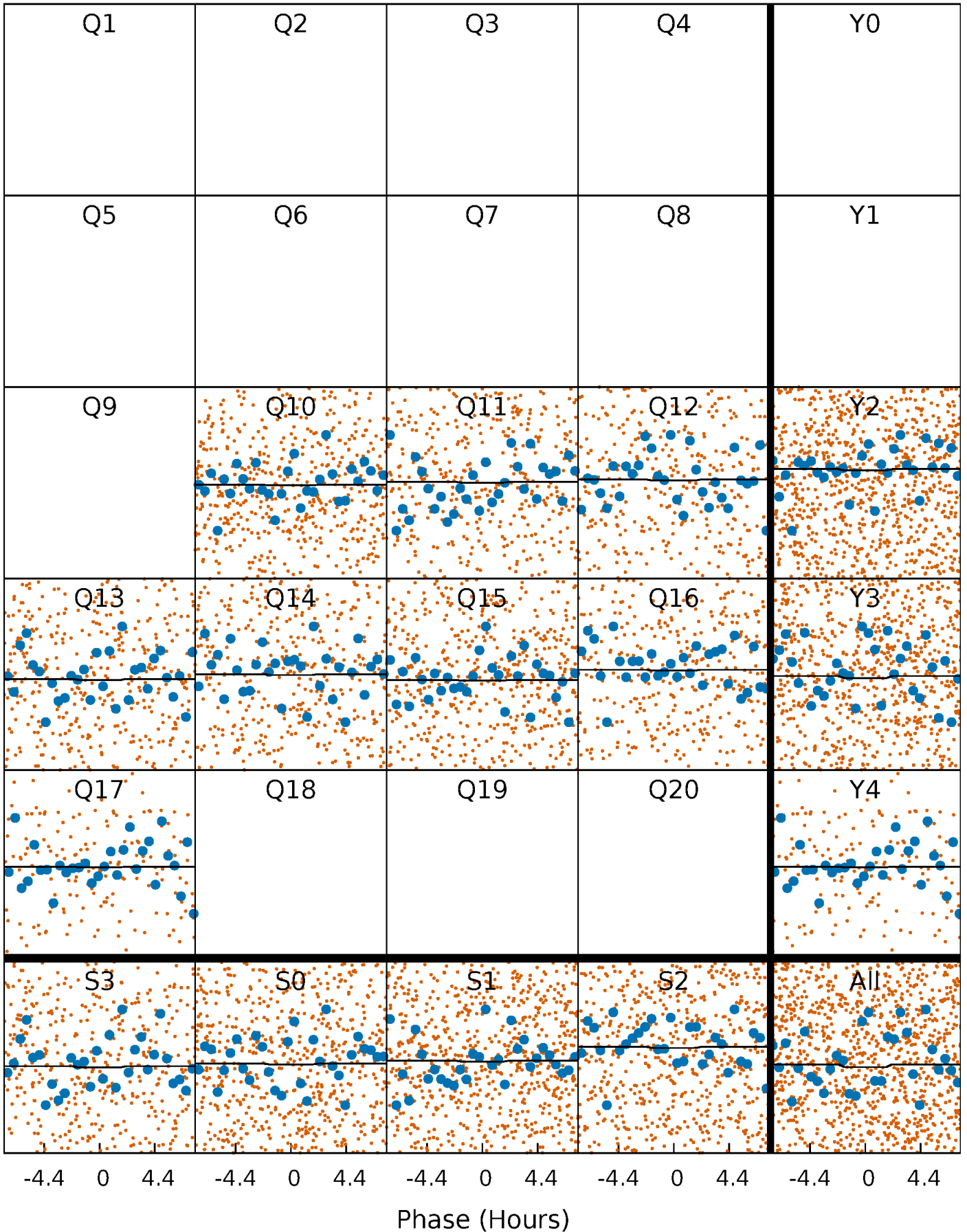
DV Quarter-Phased Transit Curves

TCE 012316447-03 P= 4.476732 Days $T_0=135.901723$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

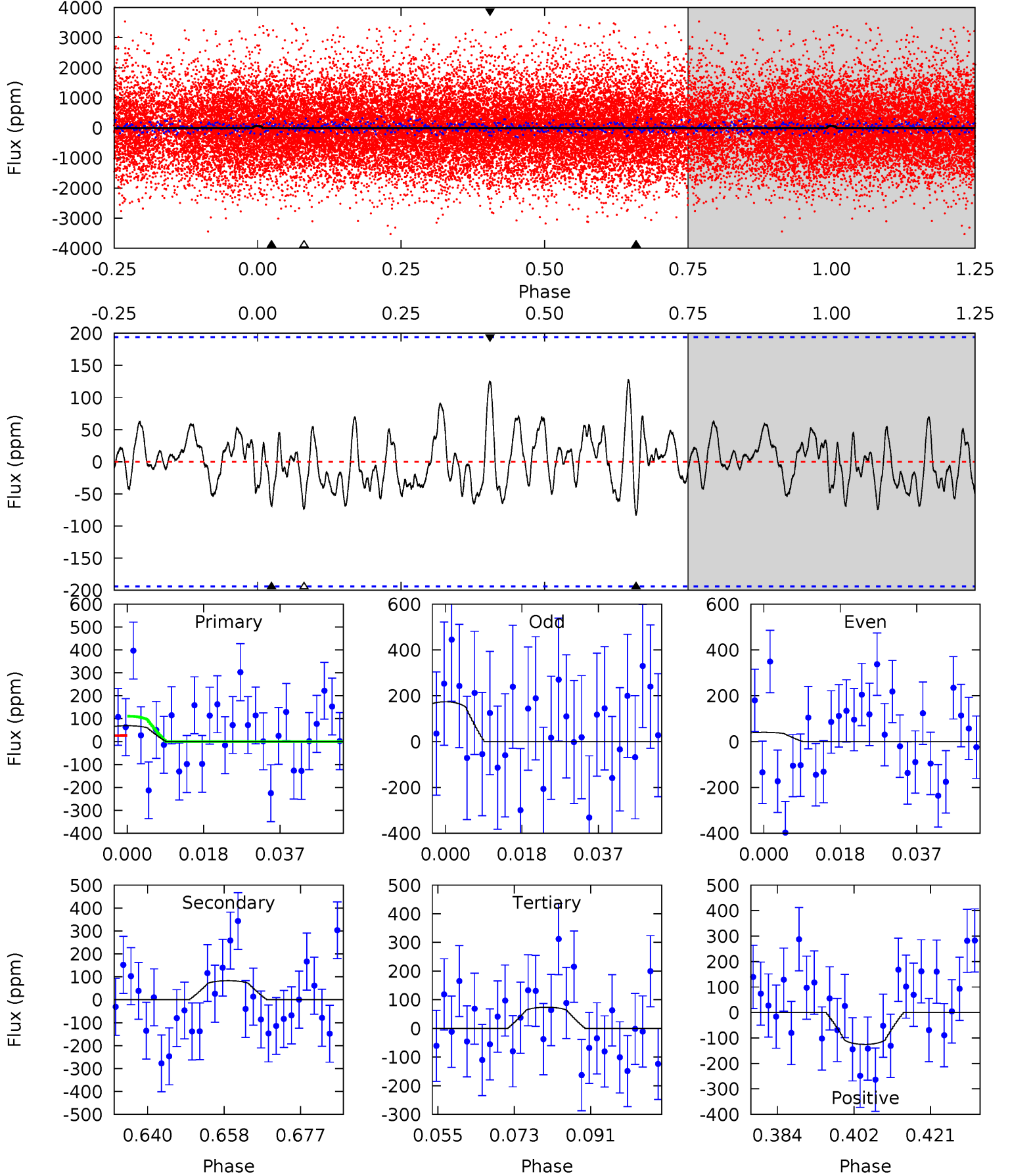
TCE 012316447-03 P= 4.476734 Days $T_0=135.904092$ (BKJD)



DV Model-Shift Uniqueness Test

012316447-03, P = 4.476732 Days, E = 135.901723 Days

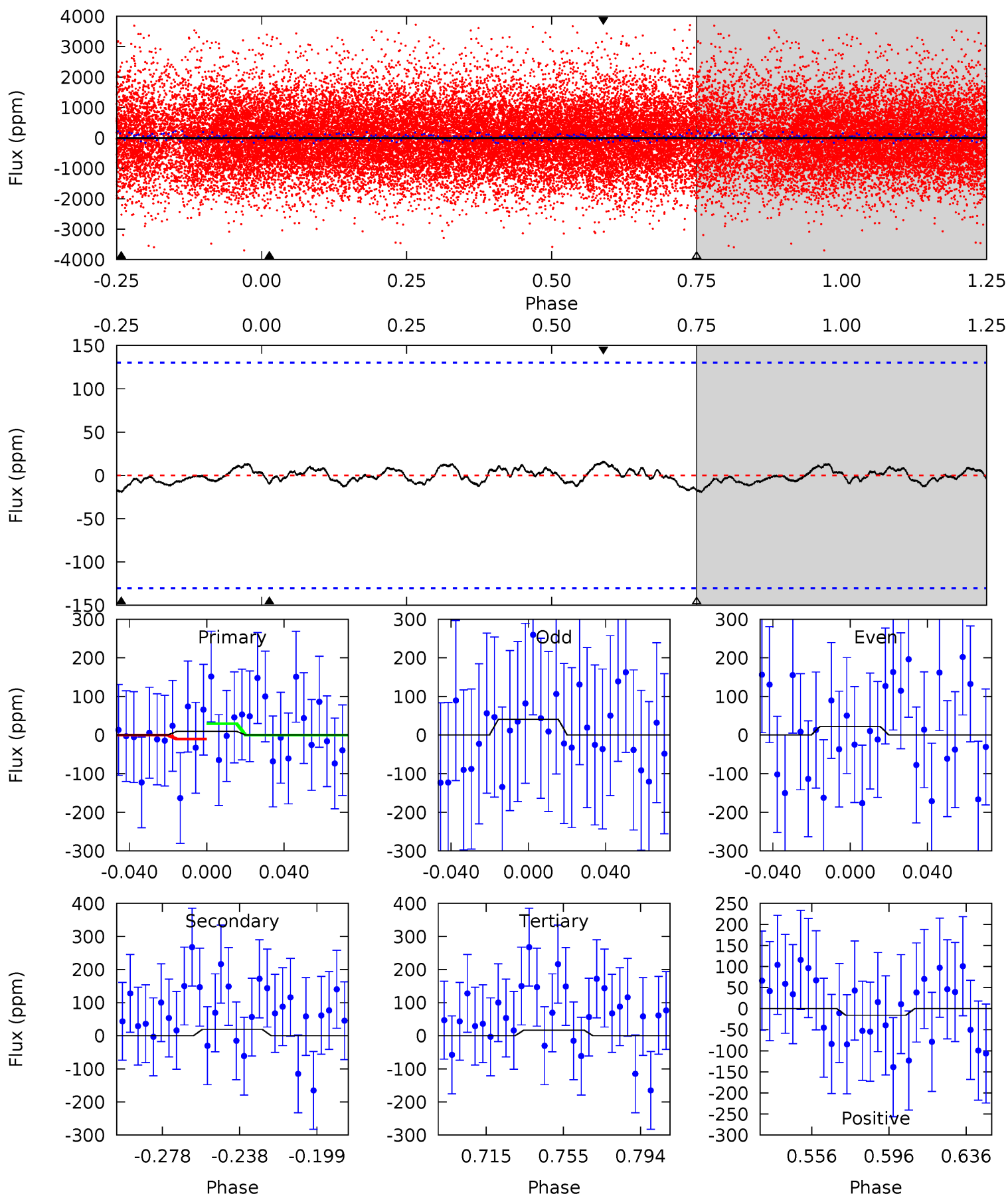
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.75	2.10	1.87	3.17	4.91	2.36	0.93	-0.12	-1.42	0.23	-1.07	1.70	1.30	0.61	1.07



Alt Model-Shift Uniqueness Test

012316447-03, P = 4.476734 Days, E = 135.904092 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.35	0.69	0.62	0.58	4.75	2.06	0.26	-0.27	-0.23	0.07	0.11	0.33	0.50	0.45	0.34



Stellar Parameters For KIC 012316447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6173^{+193}_{-236}	$4.447^{+0.054}_{-0.216}$	$-0.040^{+0.250}_{-0.300}$	$1.041^{+0.341}_{-0.114}$	$1.104^{+0.146}_{-0.162}$	$1.379^{+0.408}_{-0.746}$
	+3%/-4%	+1%/-5%	+625%/-750%	+33%/-11%	+13%/-15%	+30%/-54%
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 012316447-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-83 ± 39	$8.84^{+10.00}_{-6.13}$	1694^{+124}_{-87}	2756^{+1353}_{-1007}	$1.532^{+14.623}_{-1.217}$
Alt.	-19 ± 27	$8.84^{+10.37}_{-5.95}$	1692^{+129}_{-91}	-1963^{+5078}_{-466}	$0.235^{+3.171}_{-0.359}$

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 $A_{obs} \gg 1.0$

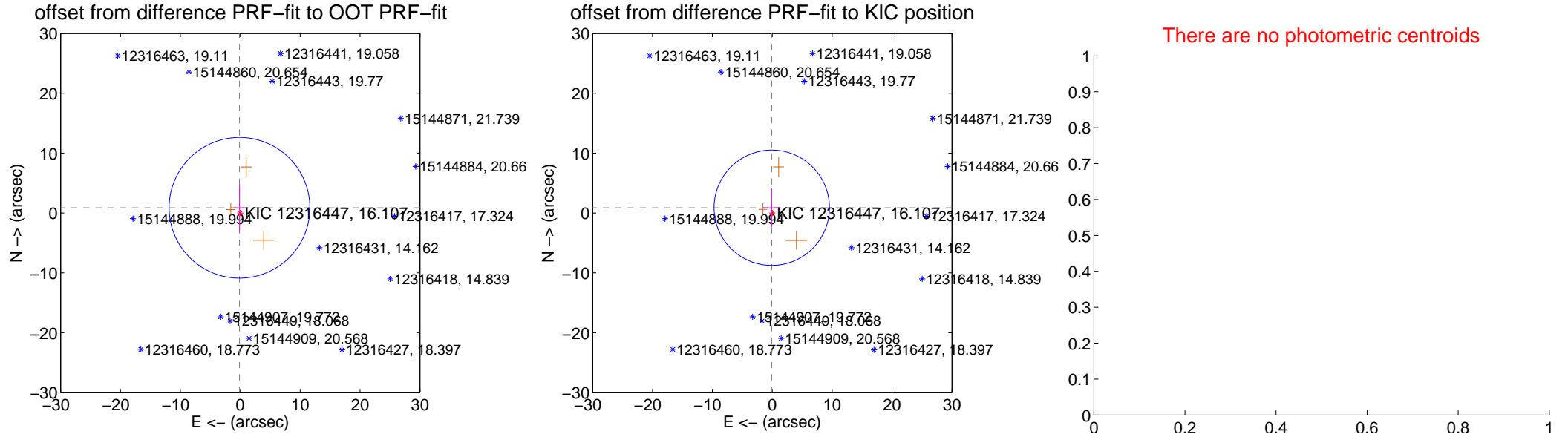
DV Centroid Data

Supplemental centroid analysis for 012316447-03. Kepler magnitude: 16.11. Transit SNR 0.00

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.880 ± 3.918	0.22	0.132 ± 0.946	0.870 ± 3.891
PRF-fit source offset from KIC position	0.883 ± 3.211	0.27	0.082 ± 1.443	0.879 ± 3.222
photometric centroid source offset	—	—	—	—



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.

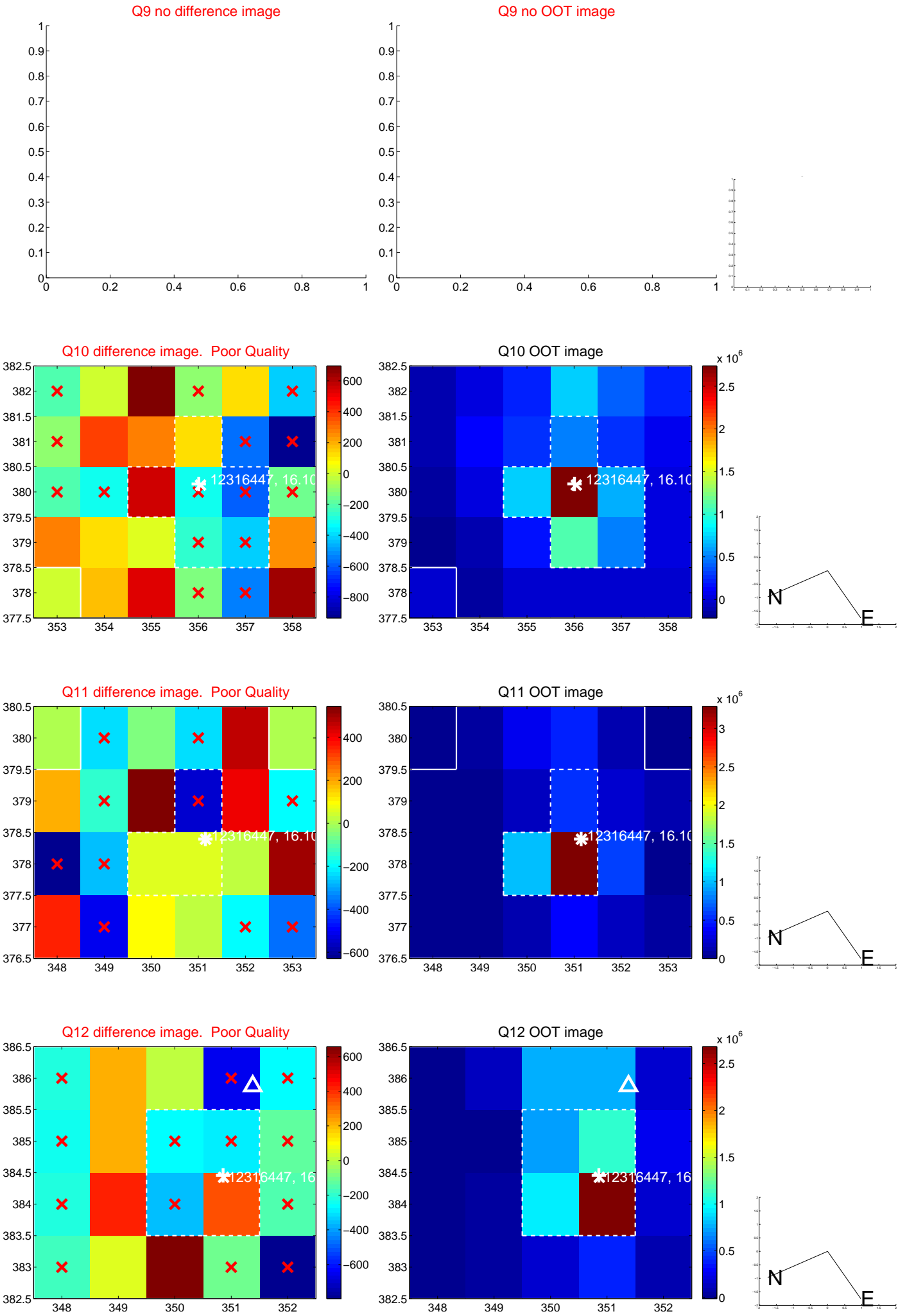
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



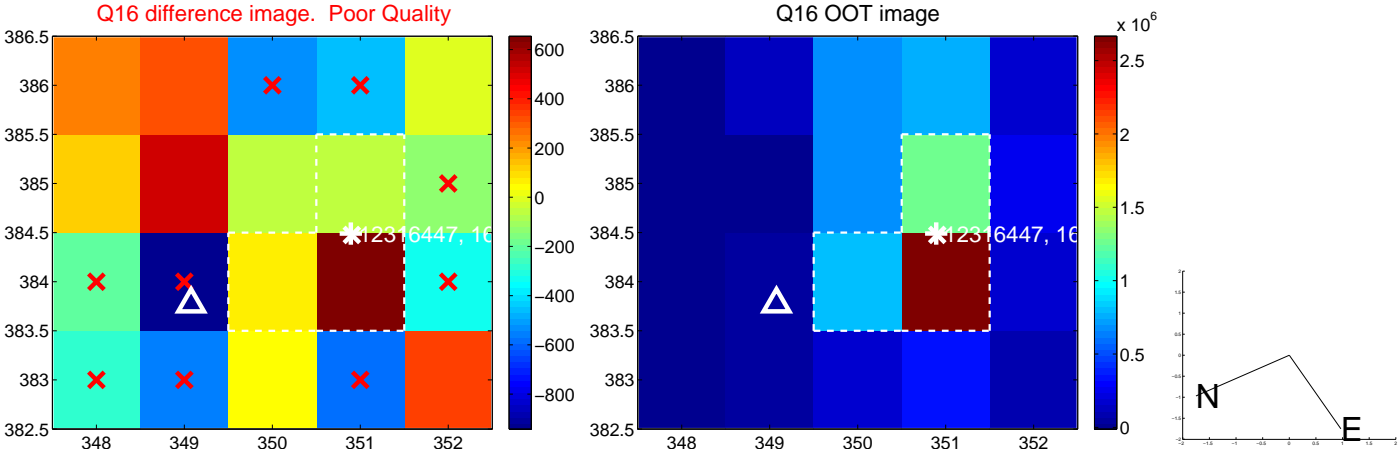
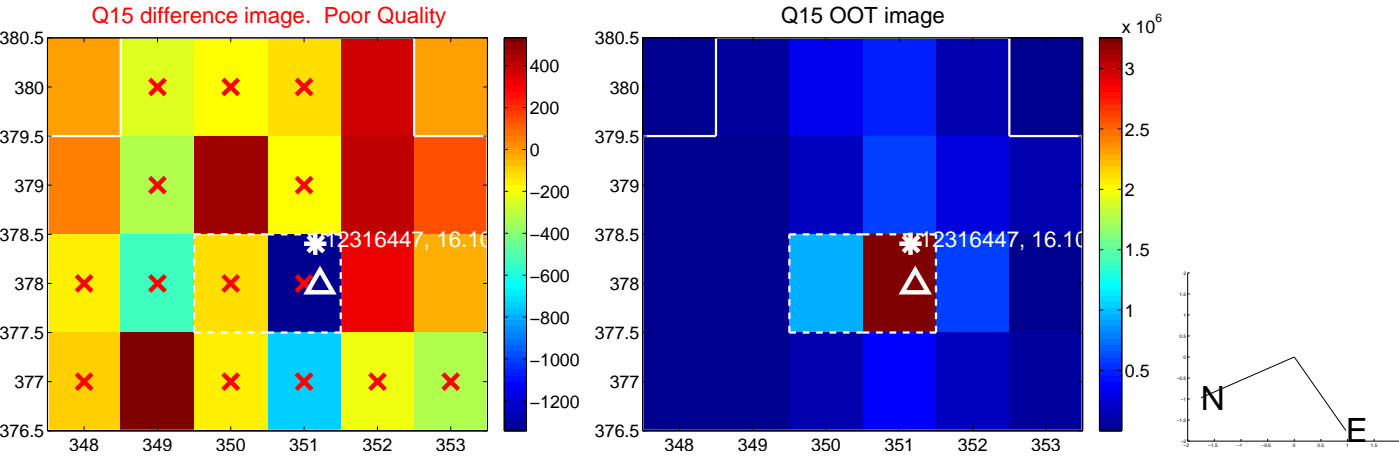
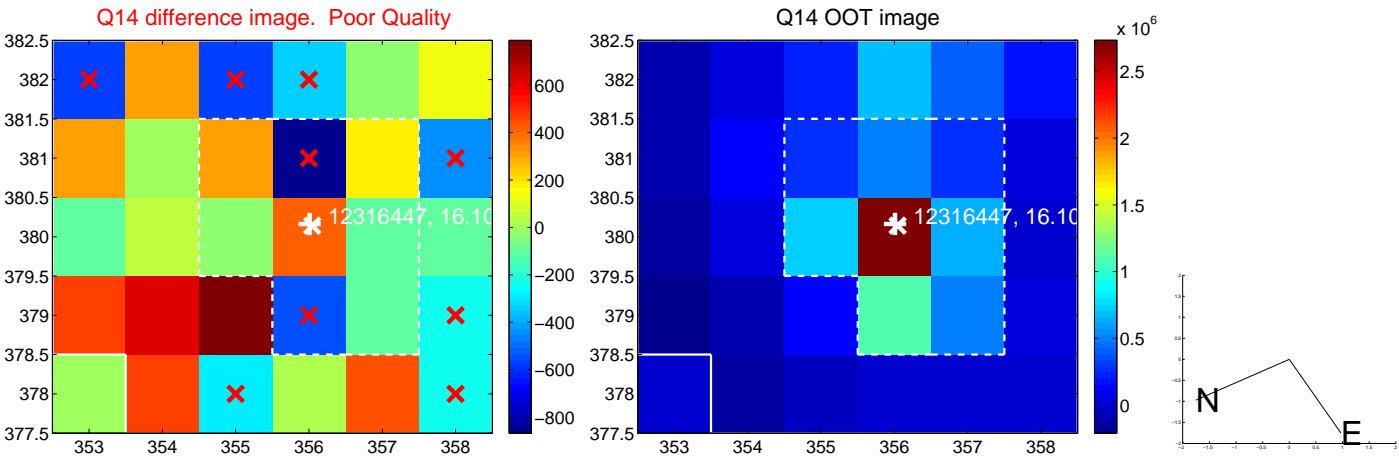
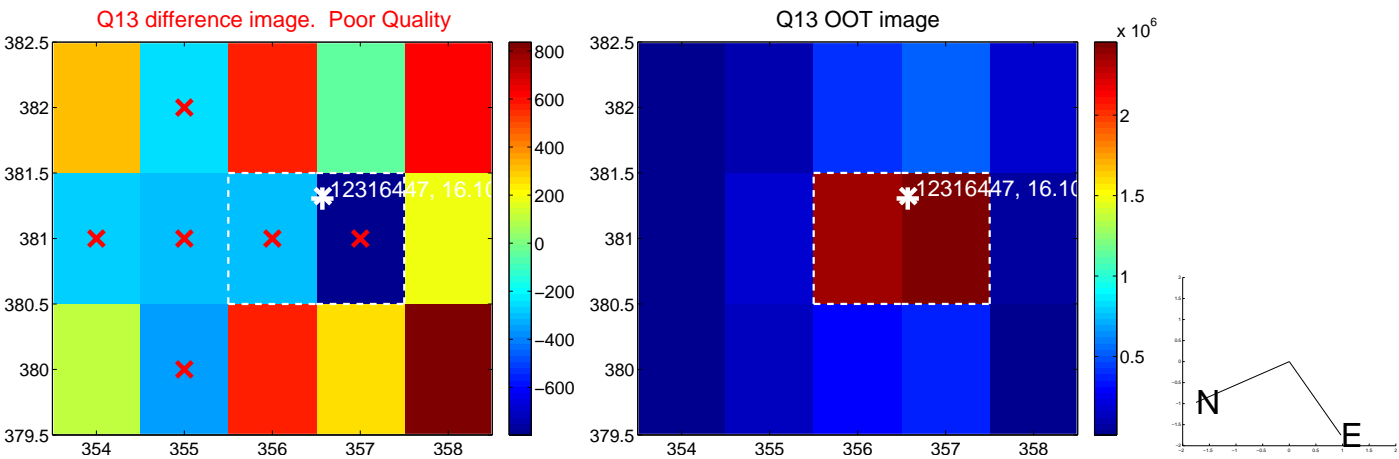
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



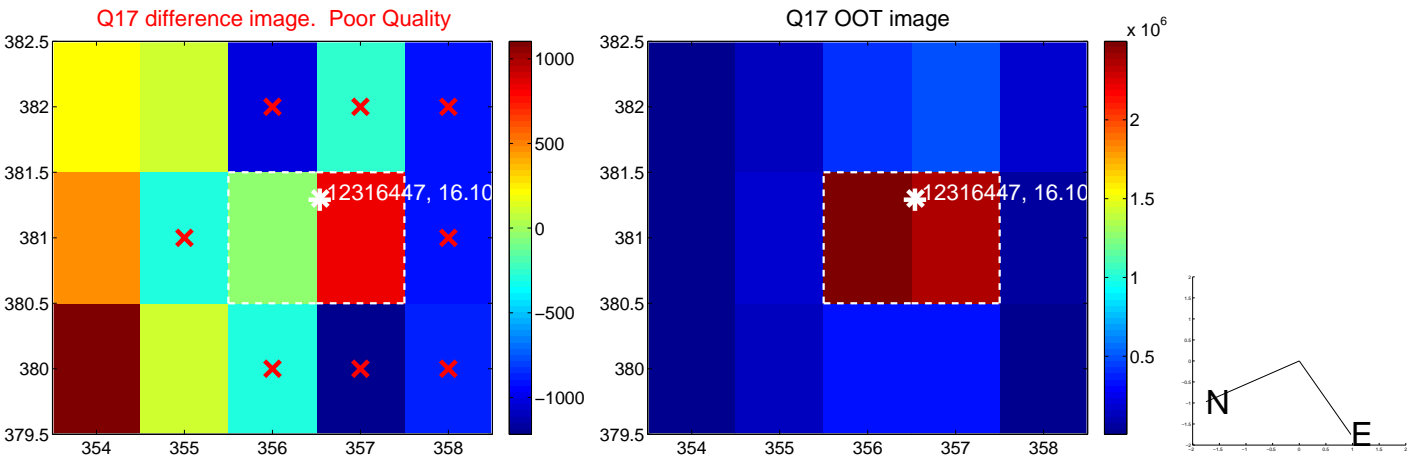
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



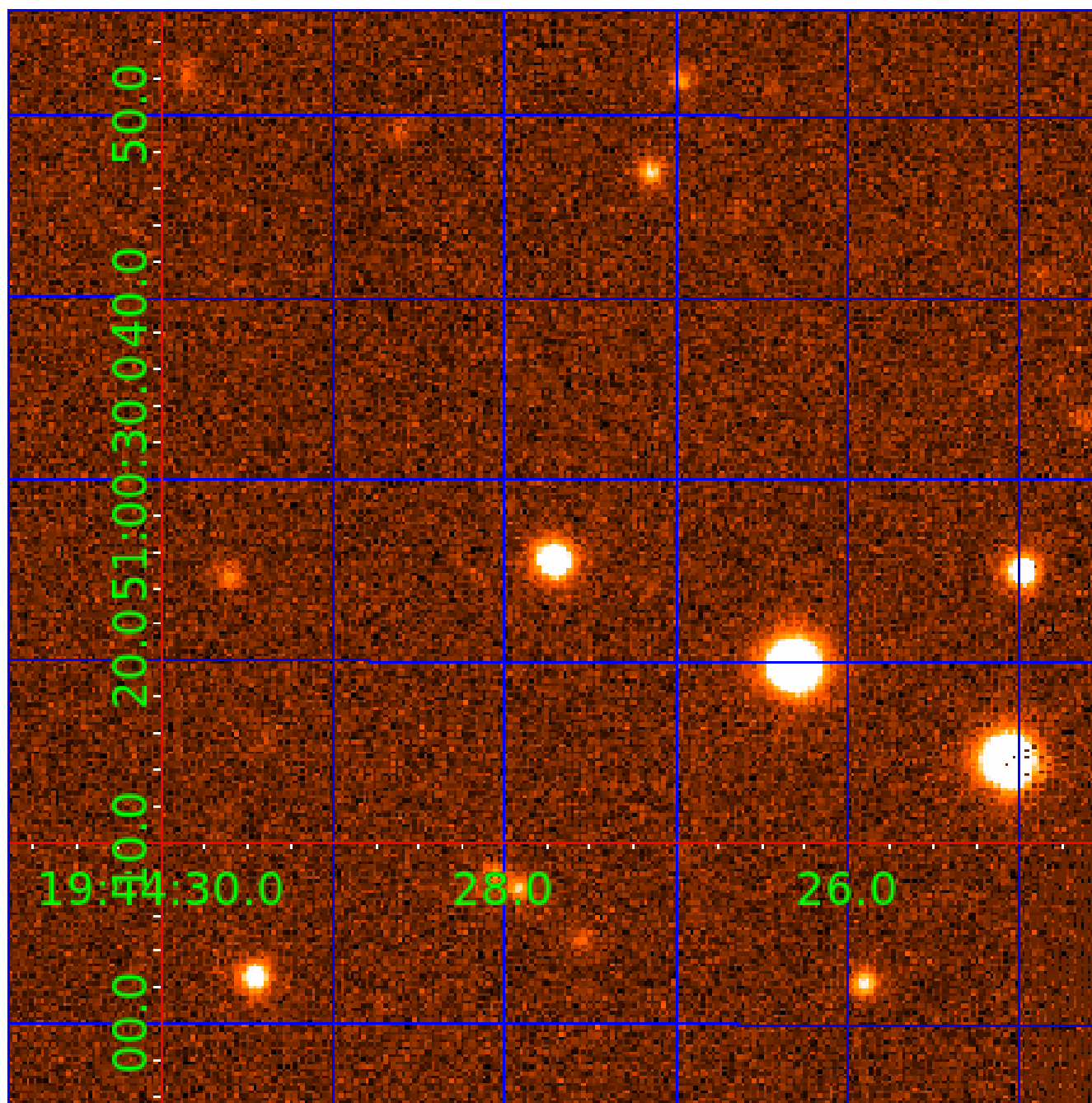
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 012316447

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})
012316447-01	OBS	3575.01	17.907570	139.745719	260364.9	3.500	2969.4	-1.0	1.04	6173	51.47	73.42
012316447-02	OBS	No	17.907662	134.895468	23424.0	5.721	286.0	276.9	1.04	6173	18.07	73.42
012316447-03	OBS	No	4.476732	135.901723	0.3	1.529	143.0	0.0	1.04	6173	0.07	466.19
012316447-04	OBS	No	4.477116	134.971077	14712.3	15.000	141.1	-1.0	1.04	6173	12.62	466.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012316447-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
012316447-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012316447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— SAME_NTL_PERIOD—CENT_FEW_DIFFS
012316447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS

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.

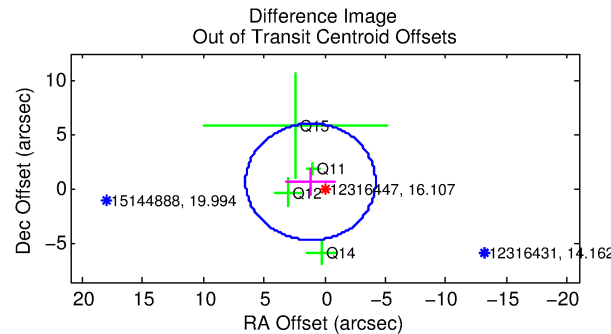
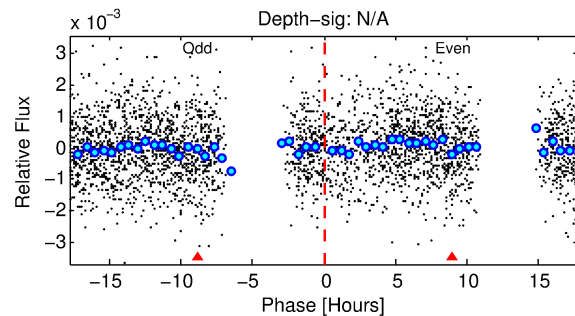
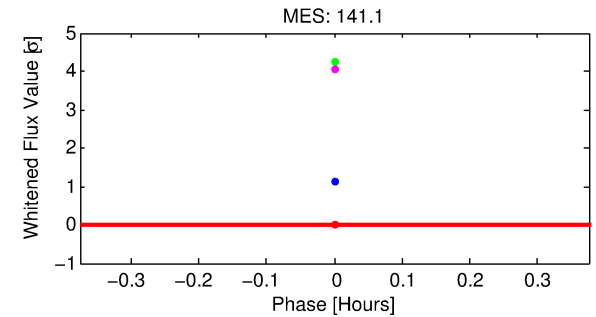
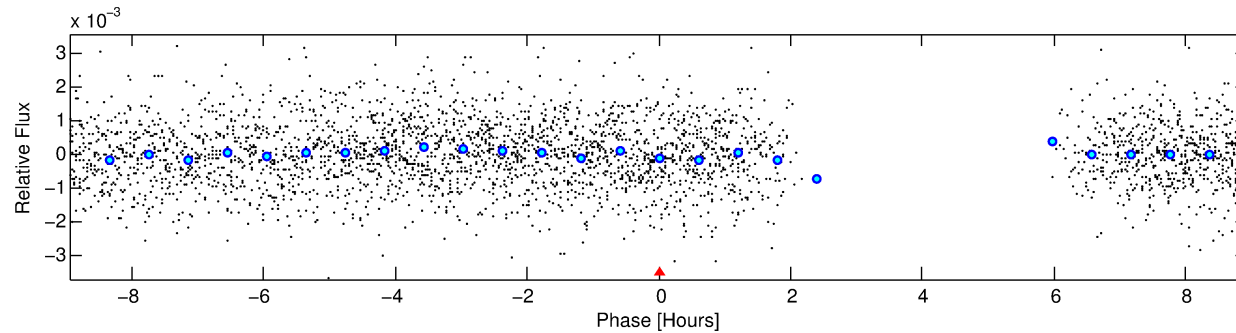
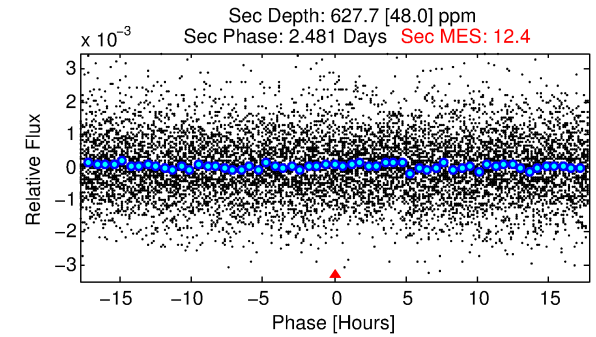
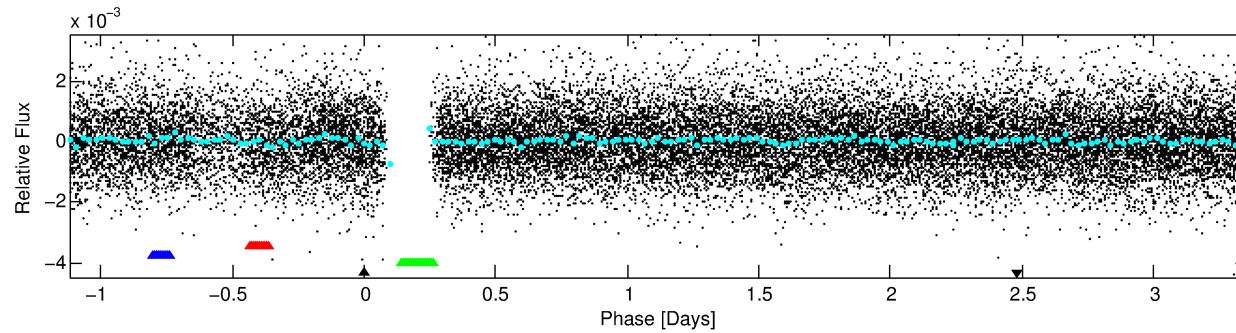
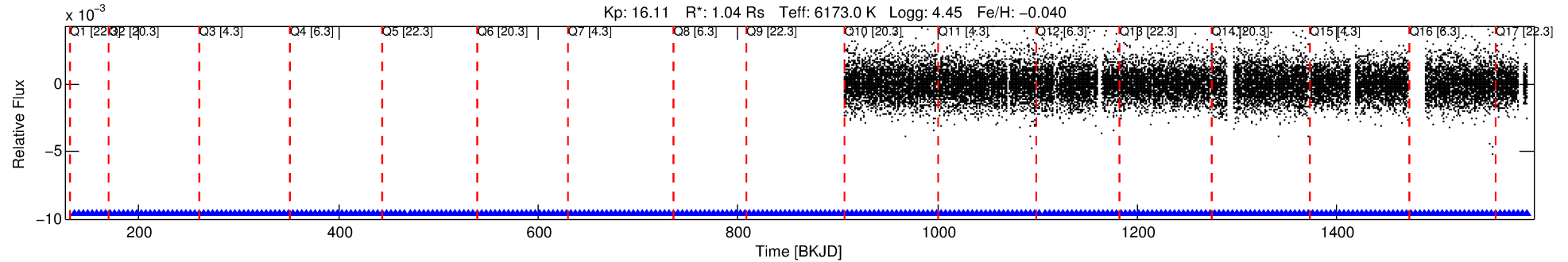
Ephemeris Match Information For 012316447-04

No Significant Match Found

DV One-Page Summary

KIC: 12316447 Candidate: 4 of 4 Period: 4.477 d

KOI: K03575 Corr: No Ephemeris Match



TPS TCE Results:

Period = 4.47712 d

Epoch = 134.9711 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]

LongPeriod-sig: 100.0% [20.93σ]

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: 0.00e+00

RollingBand-fgt: 1.00 [135/135]

GhostDiagnostic-chr: 0.3586

Centroid-sig: N/A

Centroid-so: 4.697 arcsec [0.72σ]

OotOffset-rm: 1.351 arcsec [0.76σ]

KicOffset-rm: 1.317 arcsec [0.74σ]

OotOffset-st: 1/2/1/0 [4]

KicOffset-st: 1/2/1/0 [4]

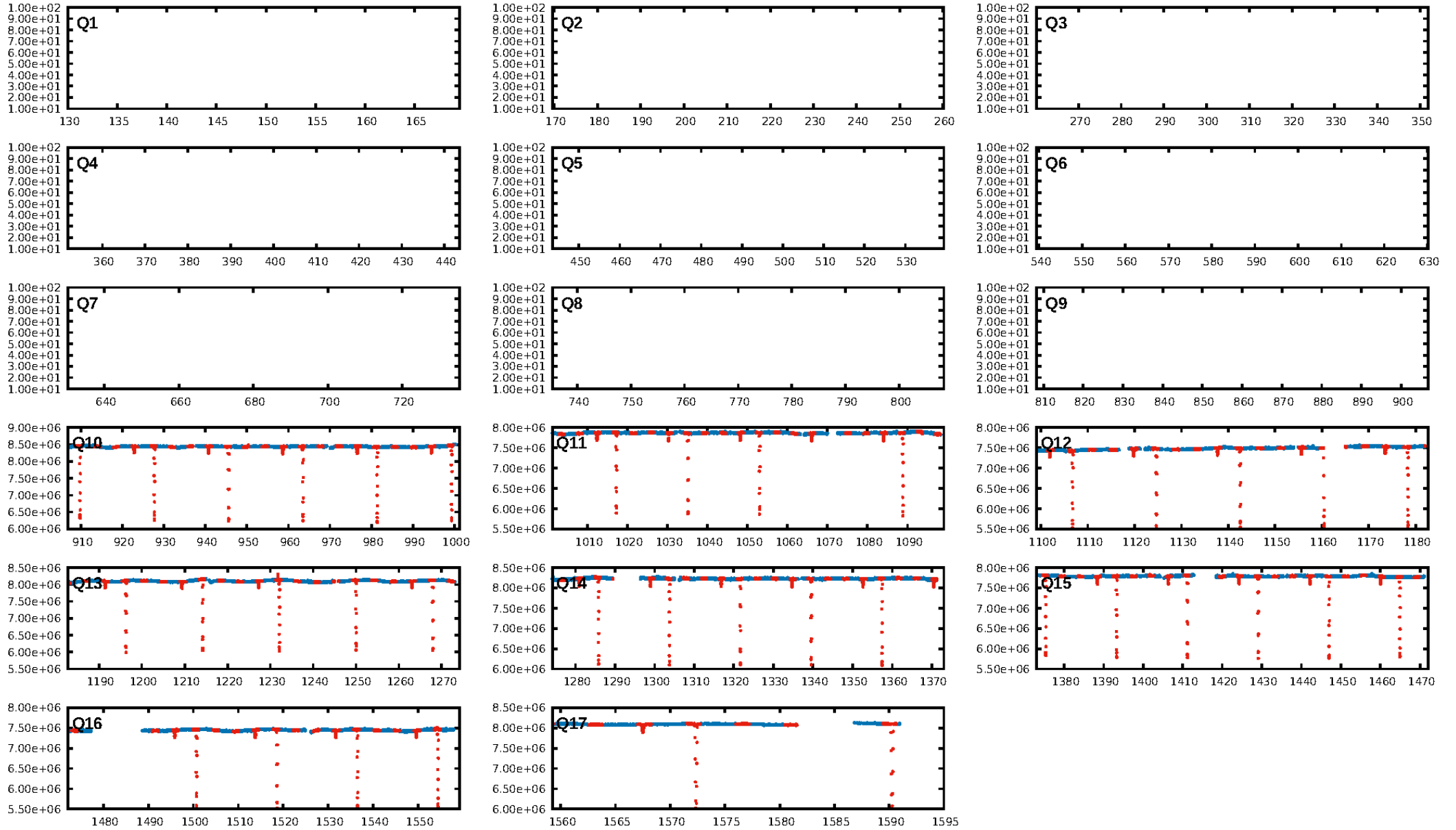
DiffImageQuality-fgm: 0.00 [0/4]

DiffImageOverlap-fno: 0.00 [0/8]

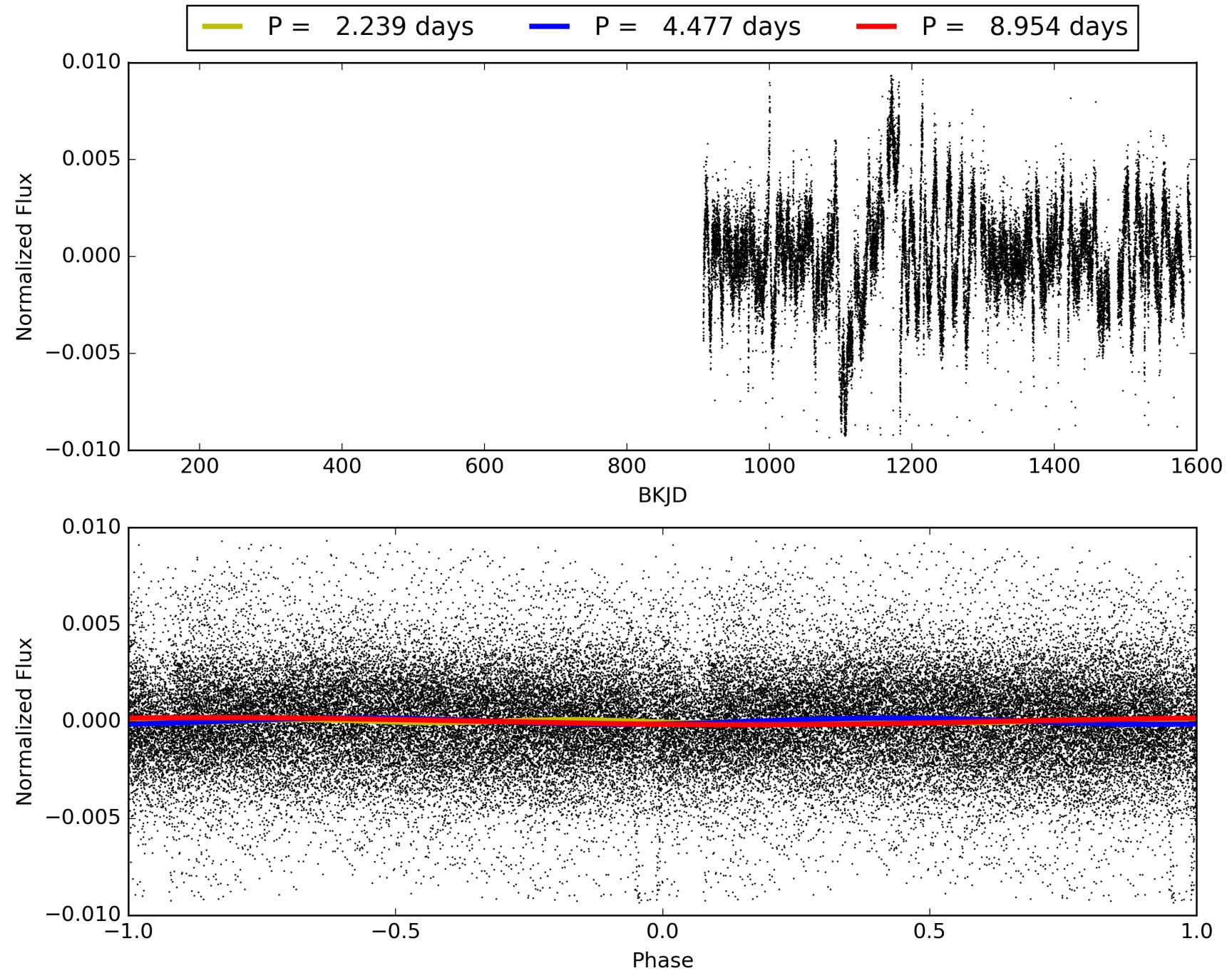
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:16:16 Z

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

TCE 012316447-04, PDC Light Curves

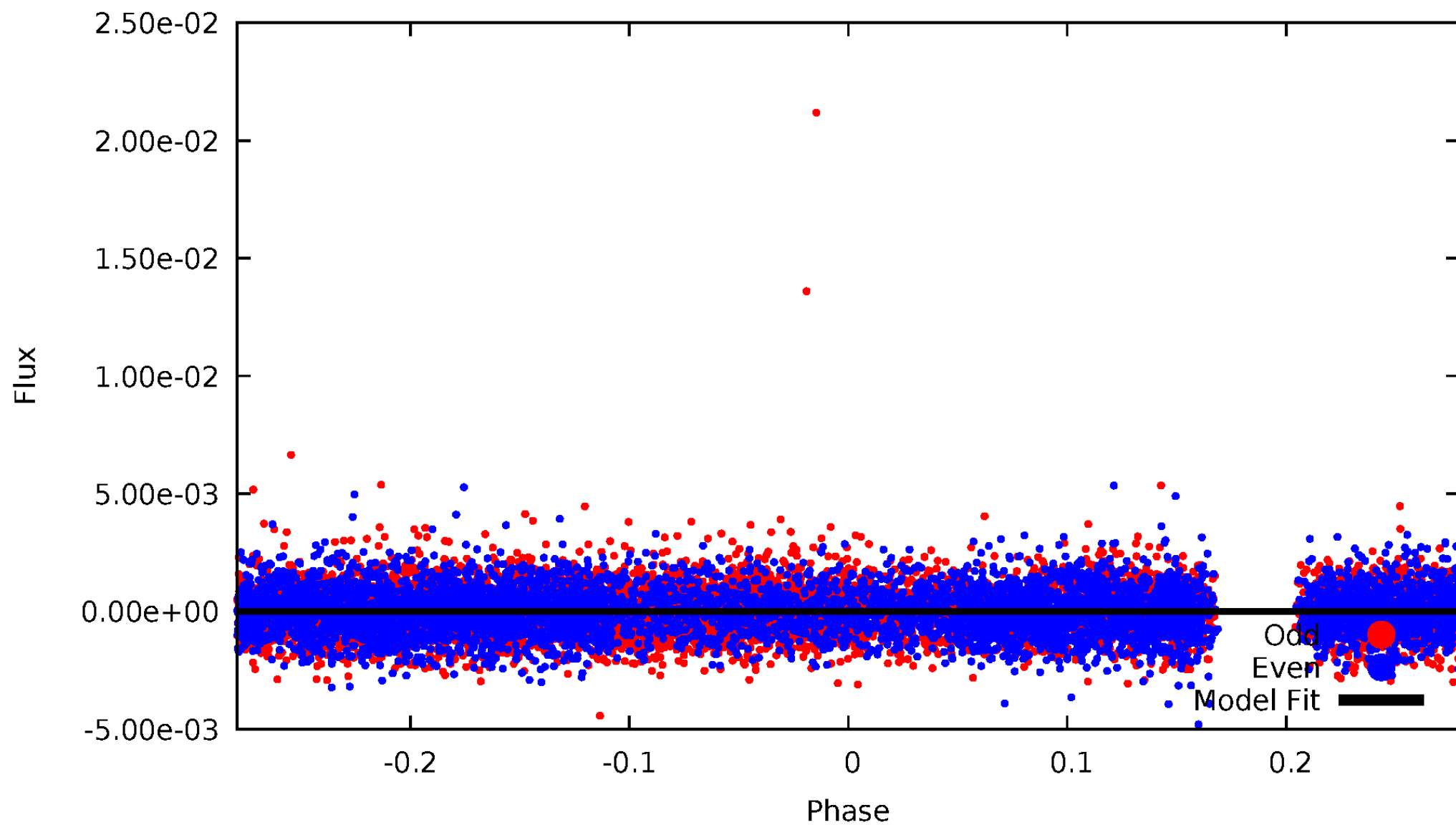


TCE 012316447-04



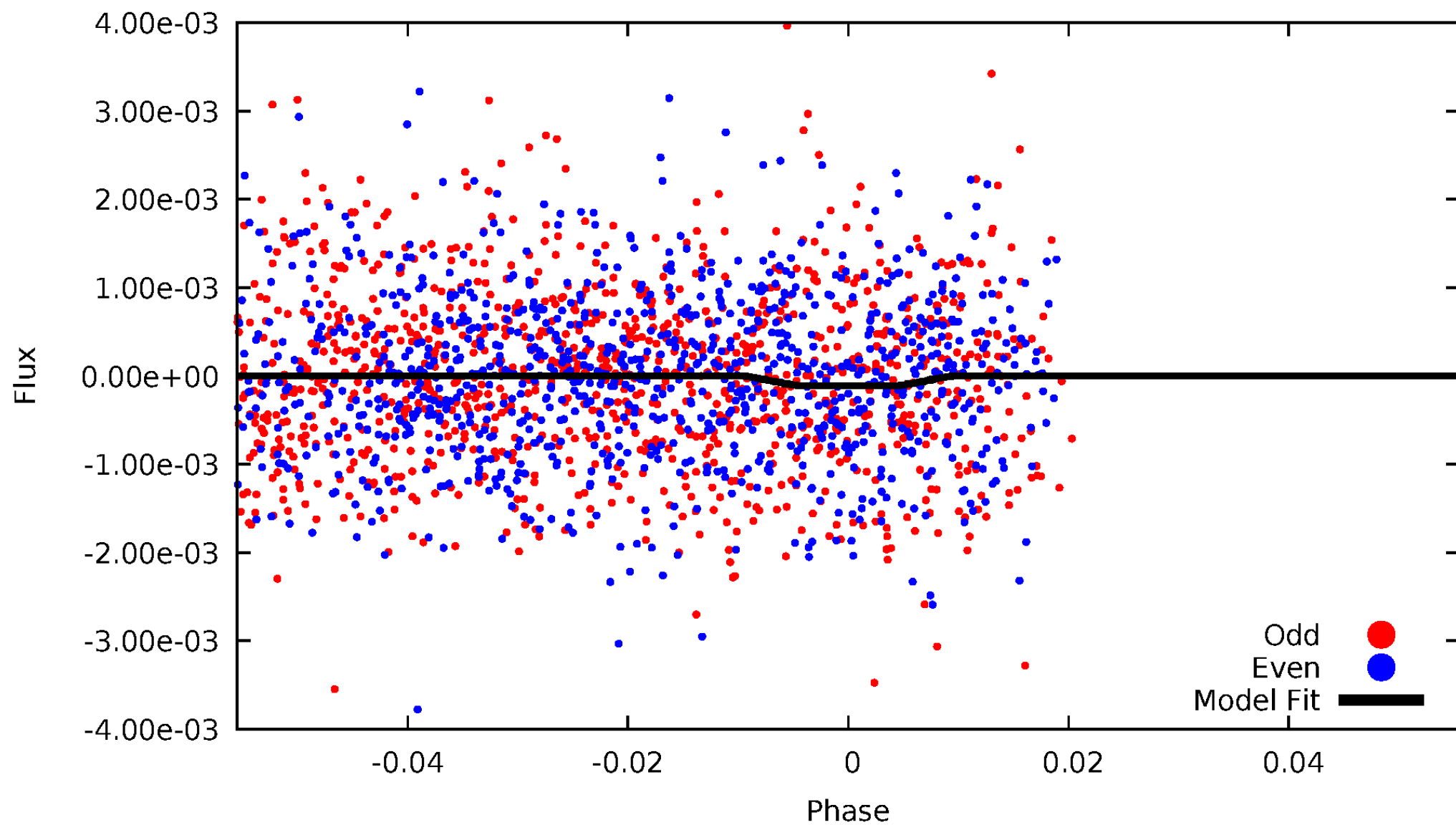
DV Odd/Even

TCE 012316447-04



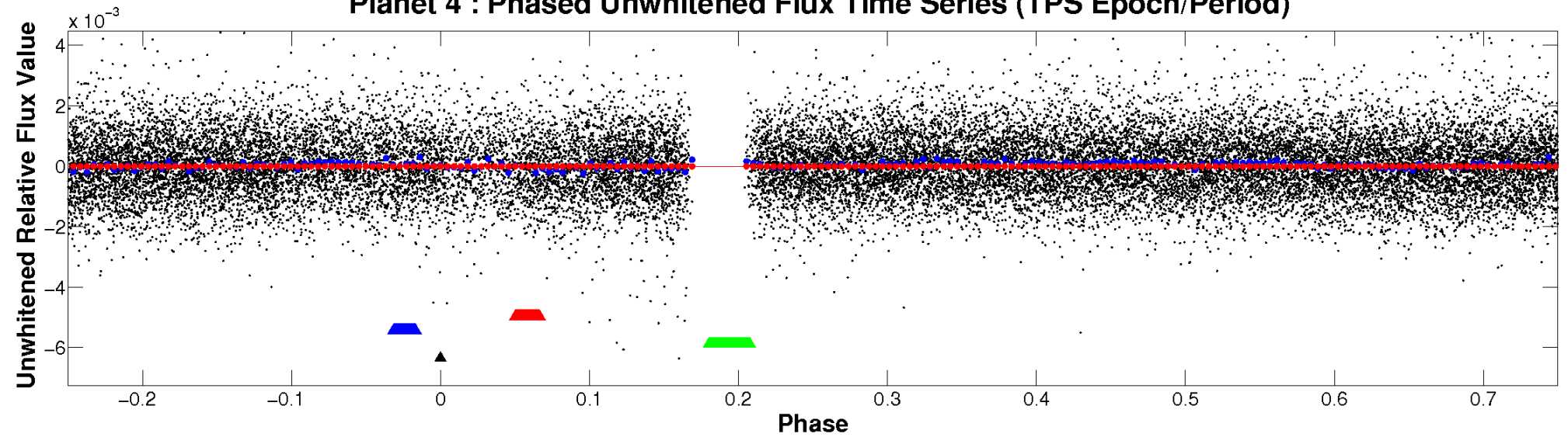
ALT Odd/Even

TCE 012316447-04



Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

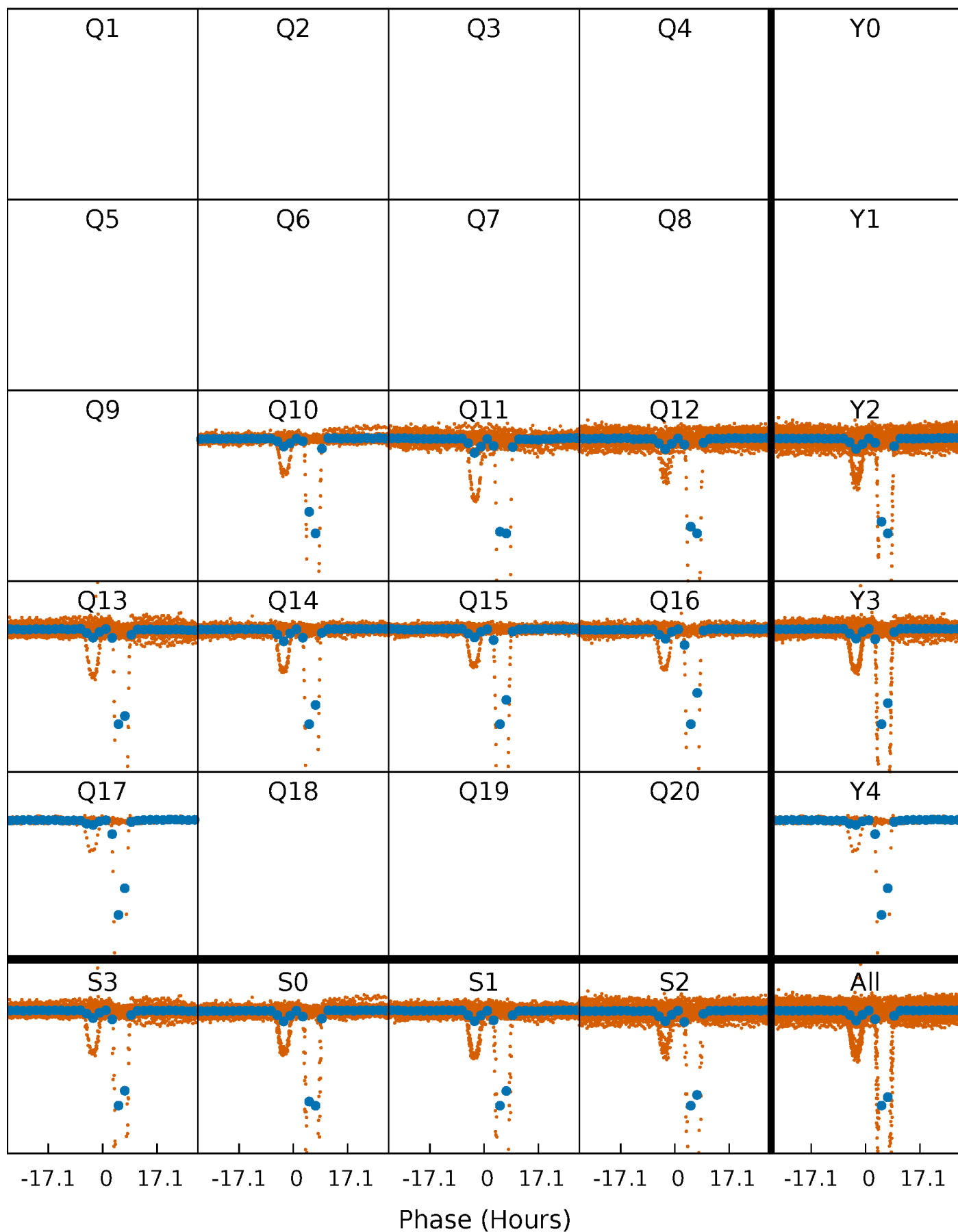


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



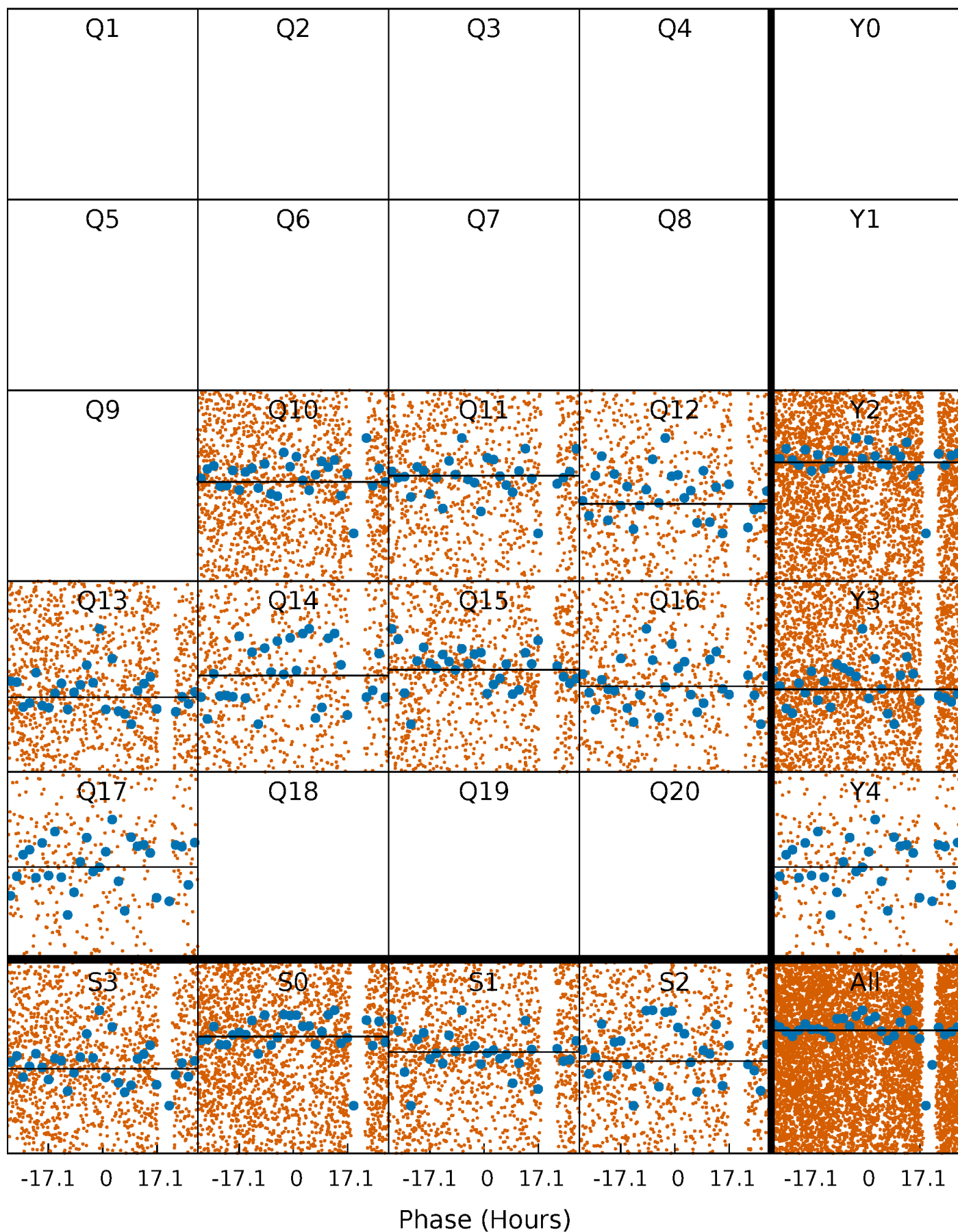
PDC Quarter-Phased Transit Curves

TCE 012316447-04 P= 4.477116 Days $T_0=134.971077$ (BKJD)



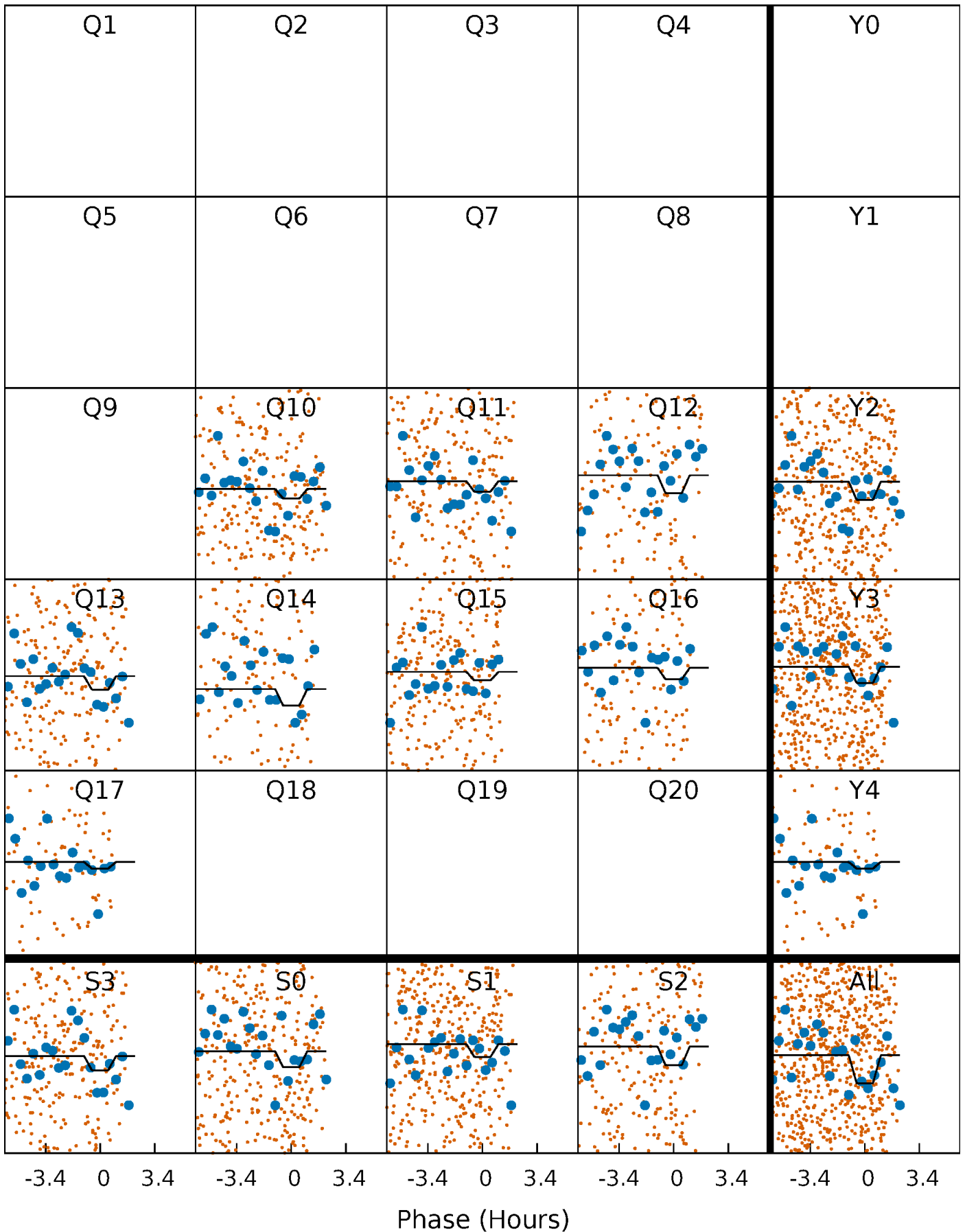
DV Quarter-Phased Transit Curves

TCE 012316447-04 P= 4.477116 Days $T_0=134.971077$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

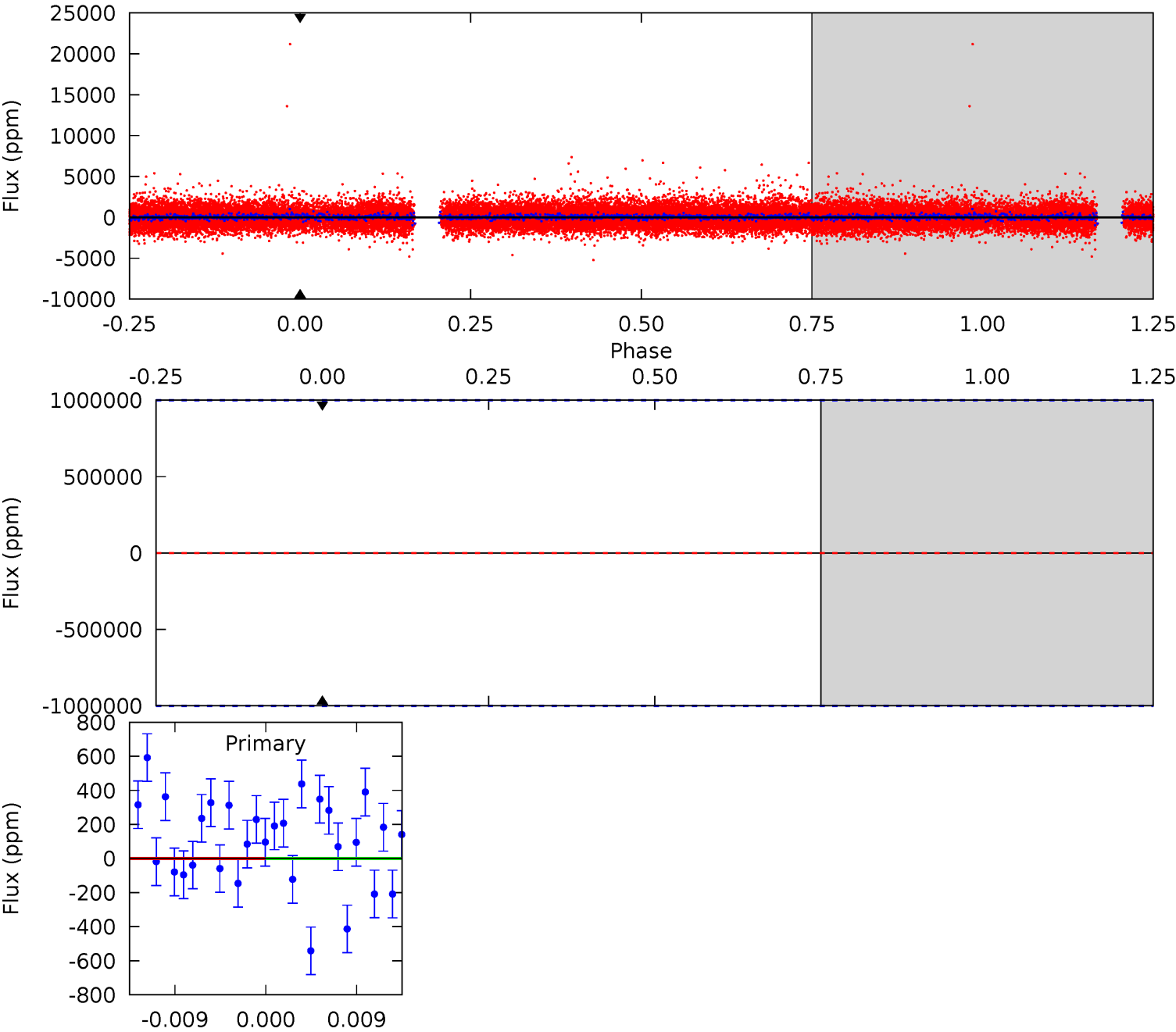
TCE 012316447-04 P= 4.477116 Days $T_0=135.635993$ (BKJD)



DV Model-Shift Uniqueness Test

012316447-04, P = 4.477116 Days, E = 134.971077 Days

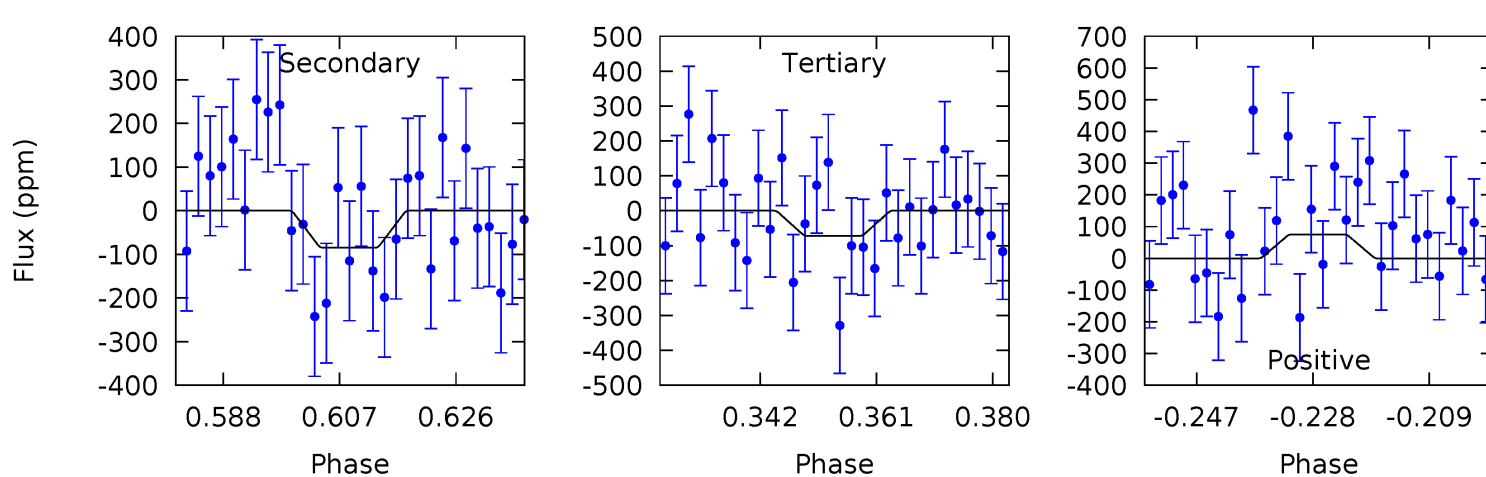
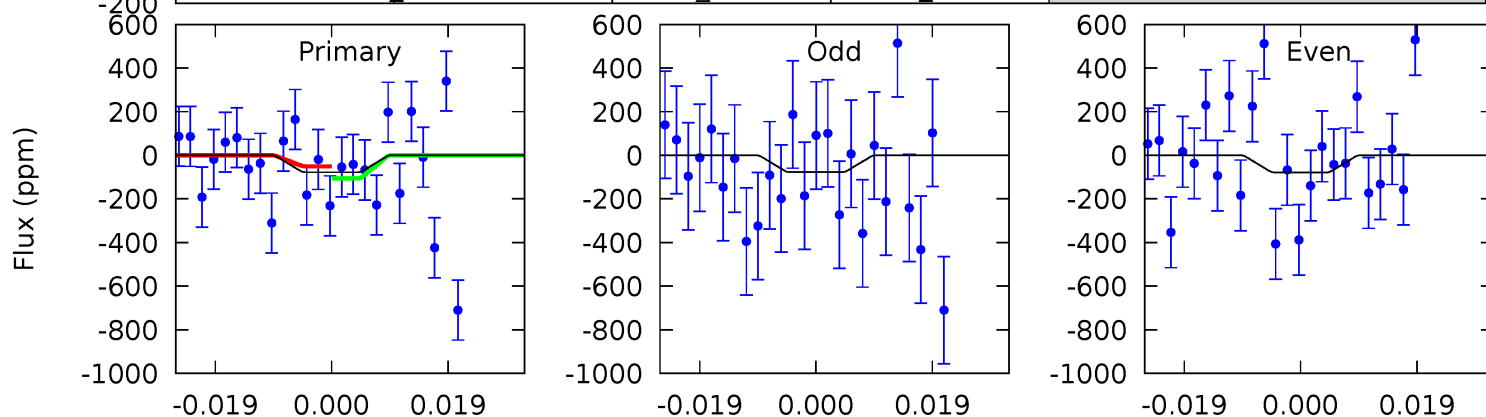
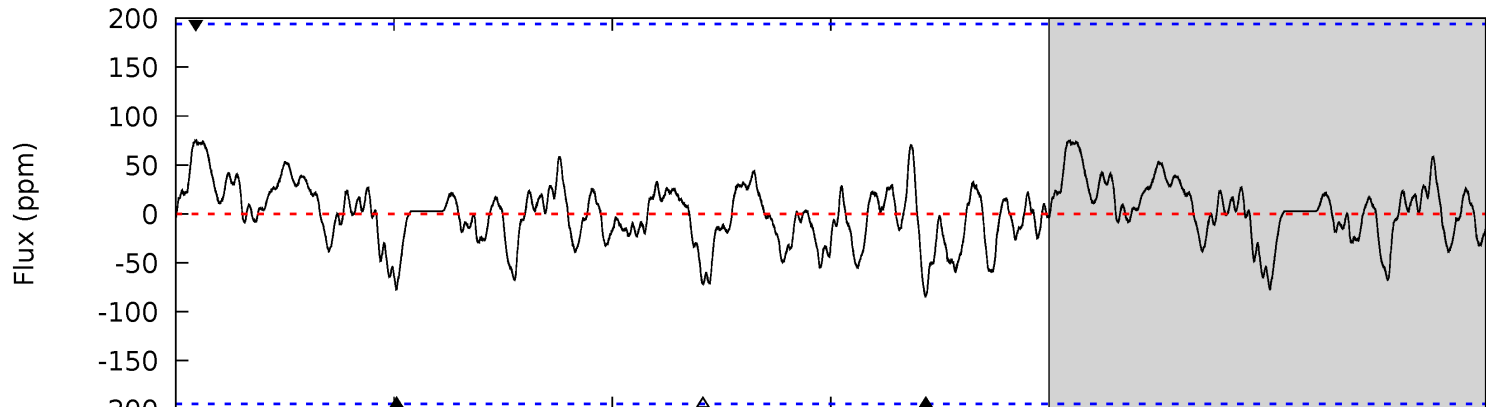
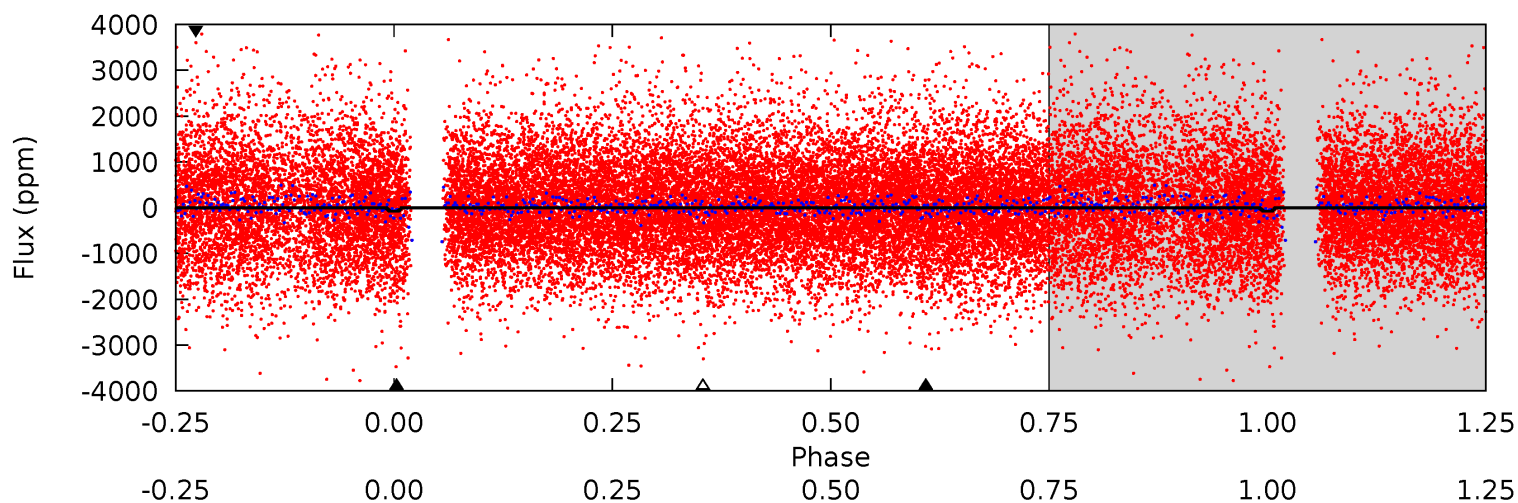
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

012316447-04, P = 4.477116 Days, E = 135.635993 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.95	2.13	1.81	1.89	4.90	2.35	0.70	0.14	0.06	0.32	0.24	0.01	0.78	0.47	0.70



Stellar Parameters For KIC 012316447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6173^{+193}_{-236}	$4.447^{+0.054}_{-0.216}$	$-0.040^{+0.250}_{-0.300}$	$1.041^{+0.341}_{-0.114}$	$1.104^{+0.146}_{-0.162}$	$1.379^{+0.408}_{-0.746}$
	+3%/-4%	+1%/-5%	+625%/-750%	+33%/-11%	+13%/-15%	+30%/-54%
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 012316447-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$14.98^{+11.92}_{-9.59}$	1695^{+115}_{-101}	-3833^{+17304}_{-9038}	$-13.052^{+1172.727}_{-1082.214}$
Alt.	-84 ± 40	$8.64^{+8.49}_{-6.15}$	1693^{+129}_{-91}	2850^{+1400}_{-978}	$1.831^{+18.446}_{-1.476}$

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

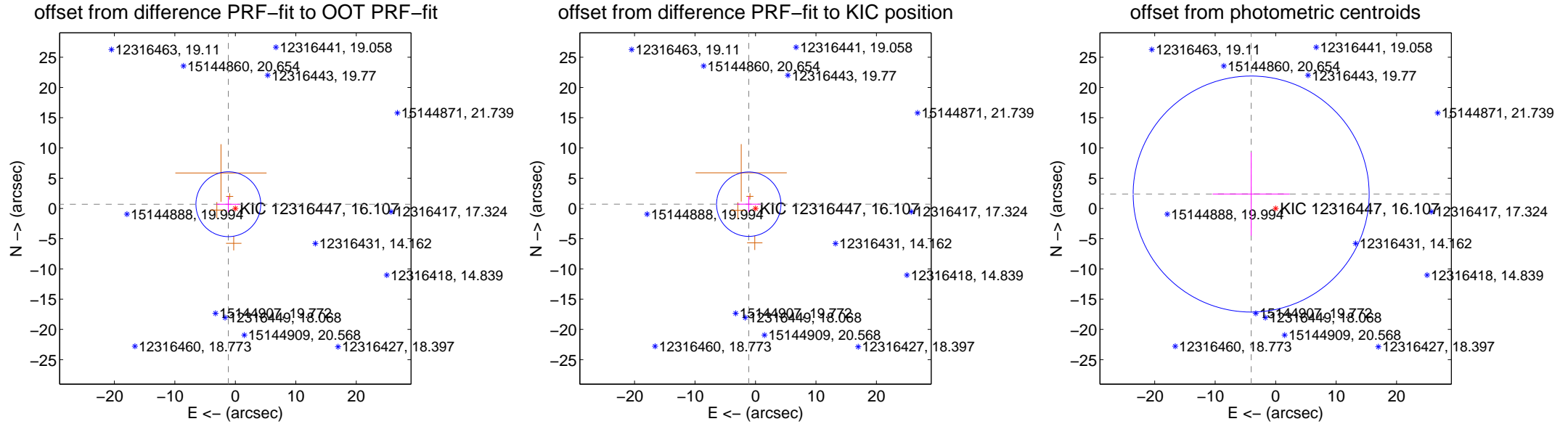
DV Centroid Data

Supplemental centroid analysis for 012316447-04. Kepler magnitude: 16.11. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.351 ± 1.786	0.76	1.157 ± 1.938	0.697 ± 1.276
PRF-fit source offset from KIC position	1.317 ± 1.774	0.74	1.113 ± 1.938	0.704 ± 1.276
photometric centroid source offset	4.70 ± 6.50	0.72	4.05 ± 6.37	2.38 ± 6.88



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.

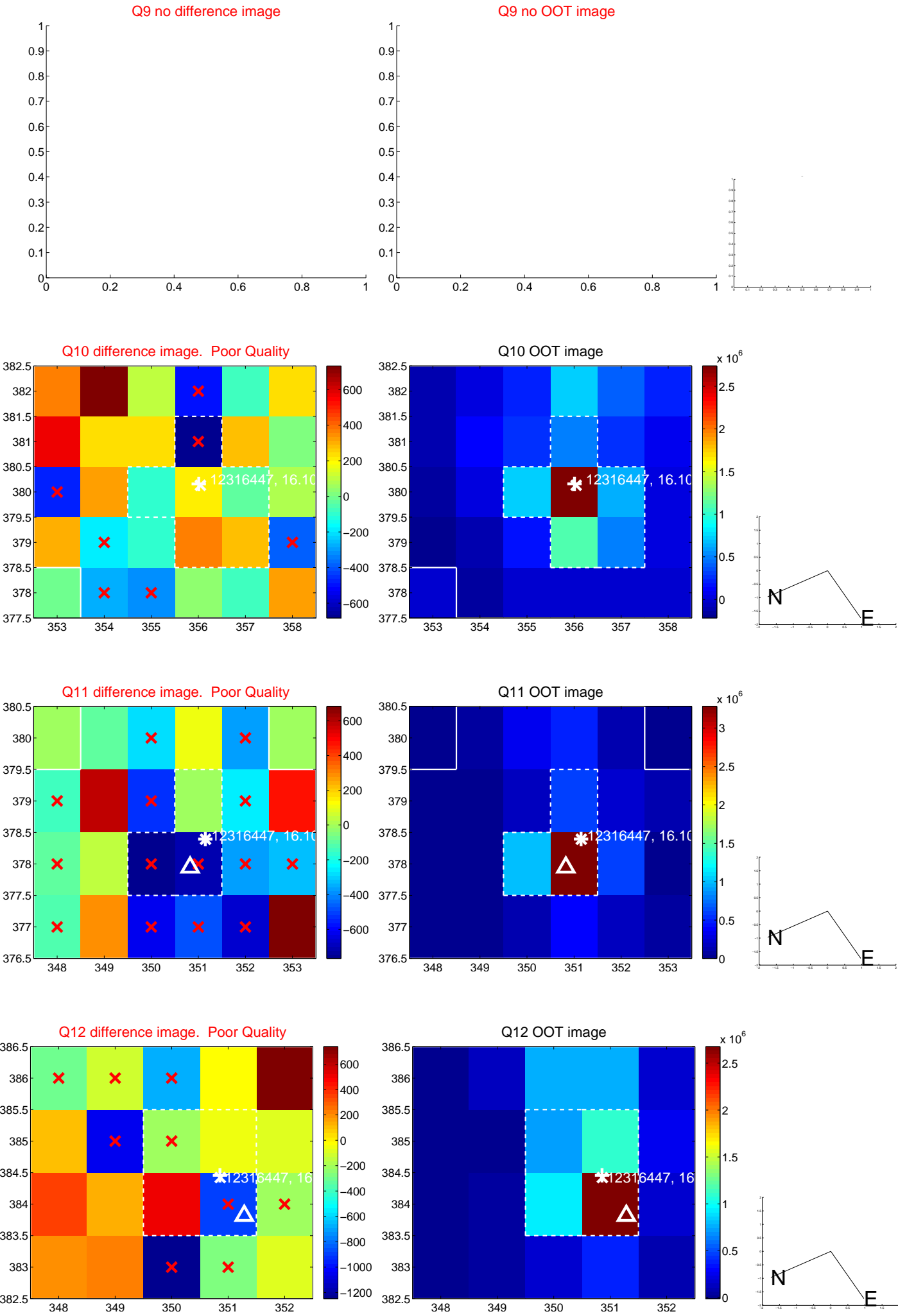
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



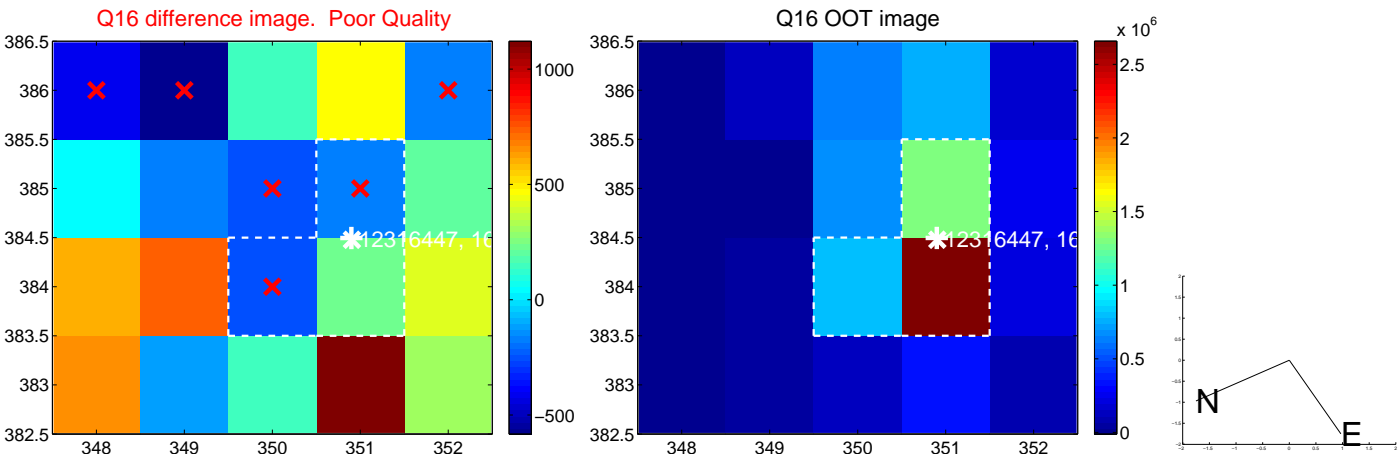
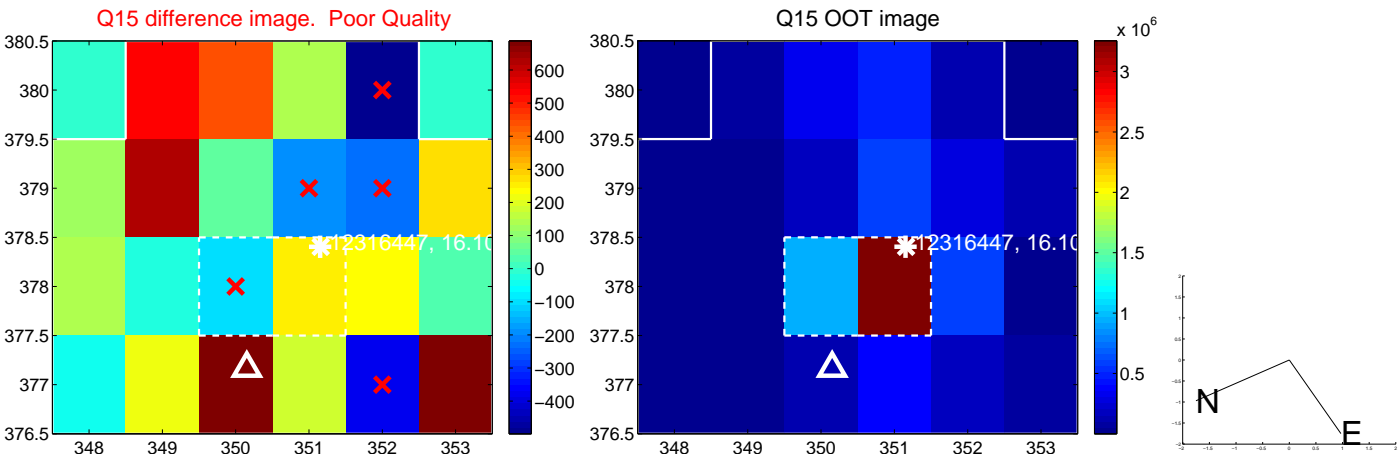
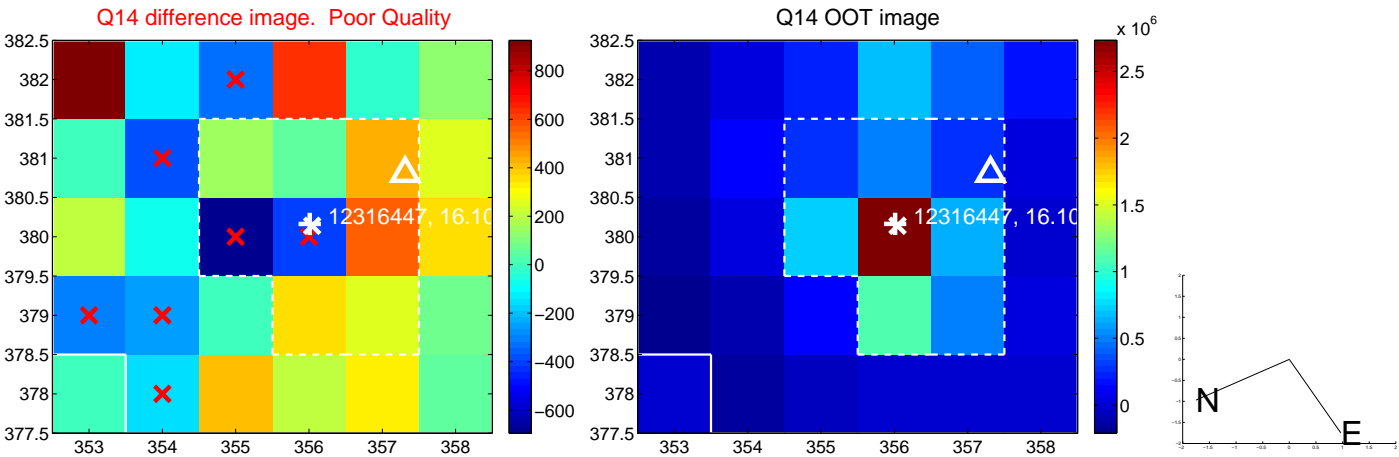
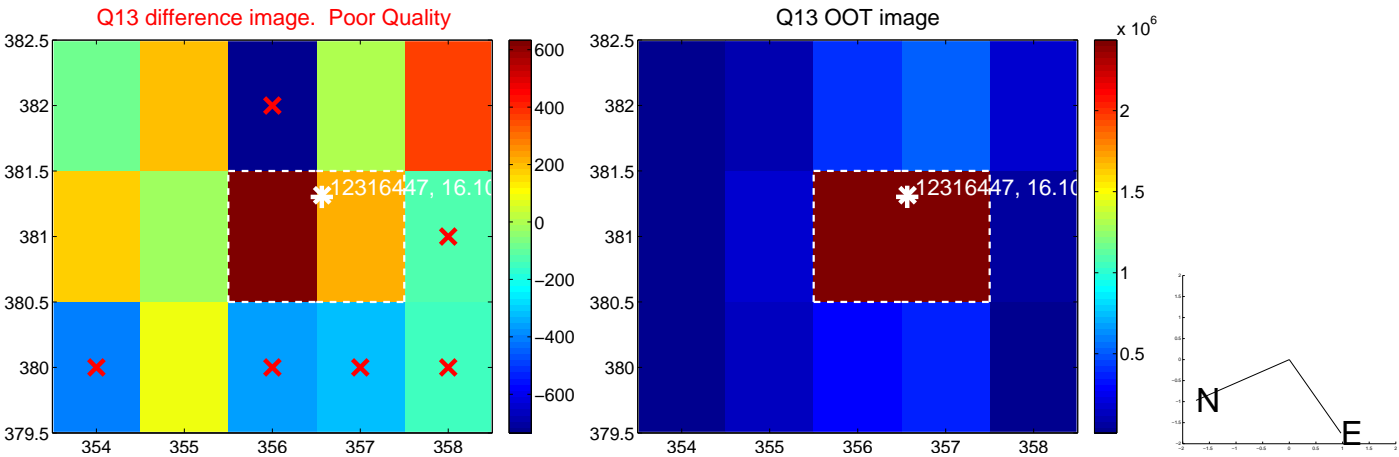
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



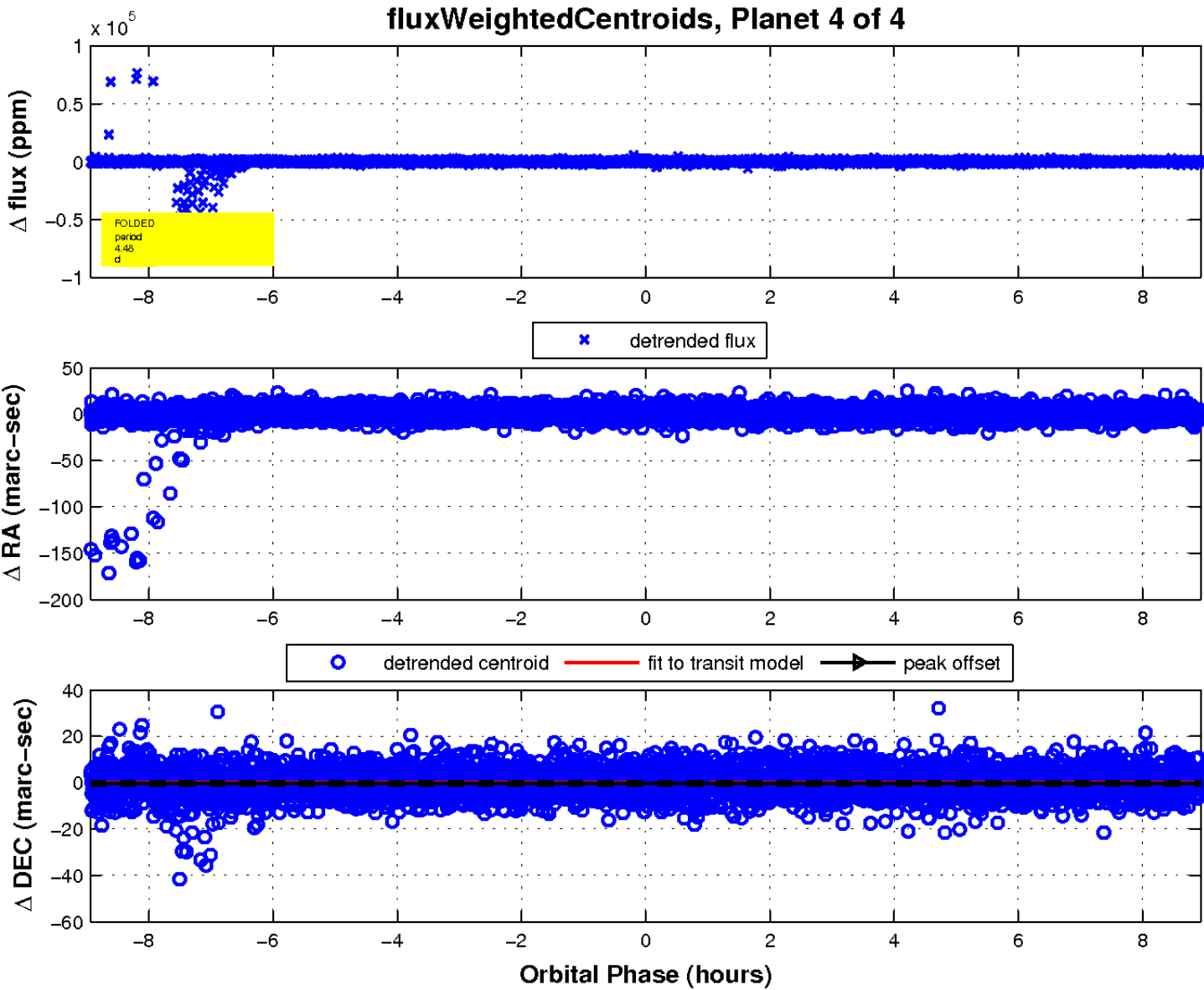
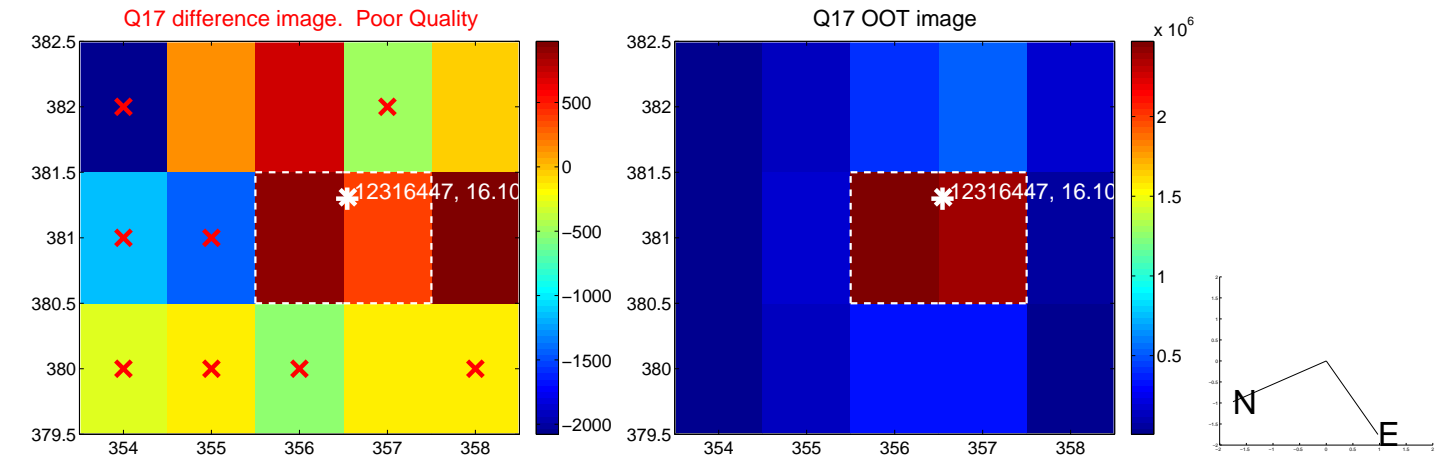
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

