

KIC 012646841

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})
012646841-01	OBS	No	529.675121	265.175188	3009.7	17.872	15.0	7.5	0.27	3344	1.49	0.01
012646841-02	OBS	No	443.921618	413.185188	4432.1	6.275	13.0	8.6	0.27	3344	1.80	0.02
012646841-03	OBS	No	426.771036	464.186345	5534.6	15.107	11.8	9.3	0.27	3344	2.17	0.02
012646841-04	OBS	No	442.297645	466.773537	3528.9	7.779	11.2	6.9	0.27	3344	1.61	0.02
012646841-05	OBS	No	243.711732	192.019221	2018.7	9.064	10.9	6.6	0.27	3344	1.22	0.04
012646841-06	OBS	No	5.621501	136.923495	3998.5	1.500	10.1	-1.0	0.27	3344	1.72	5.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012646841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
012646841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_KIC_POS
012646841-06	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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

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

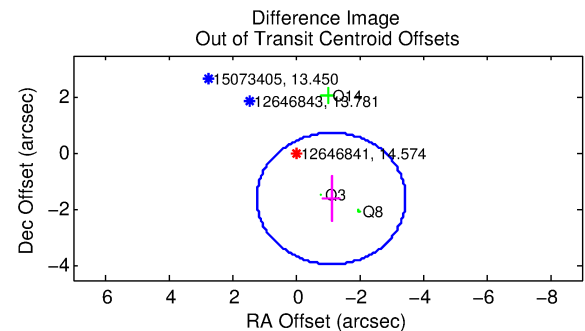
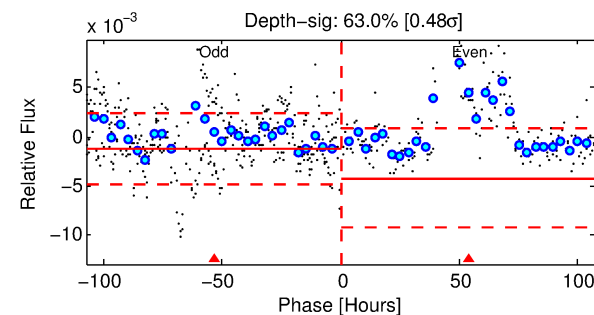
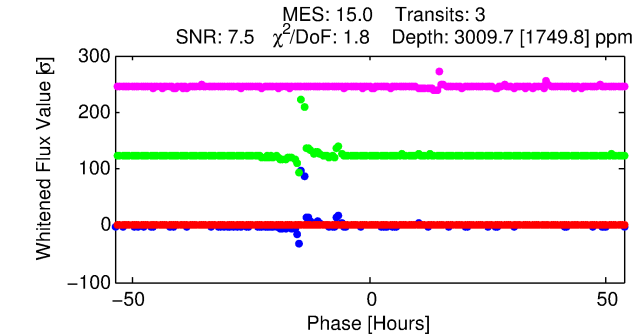
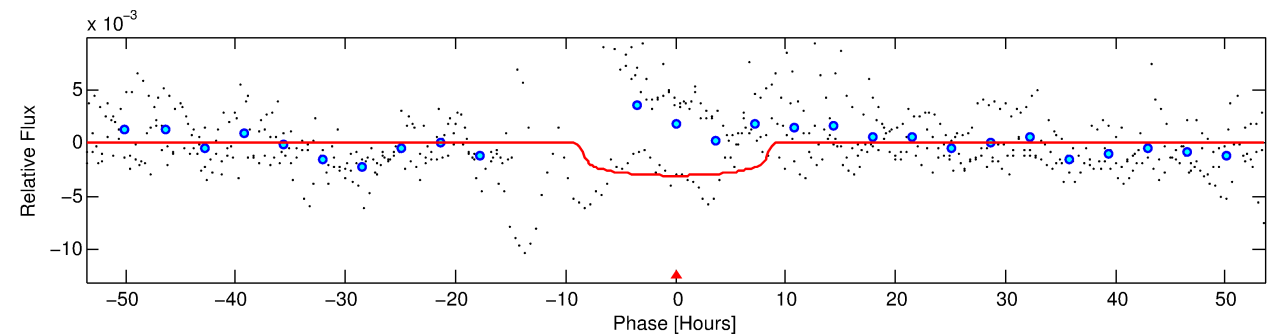
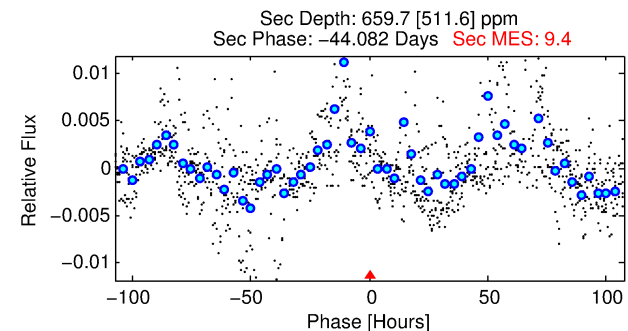
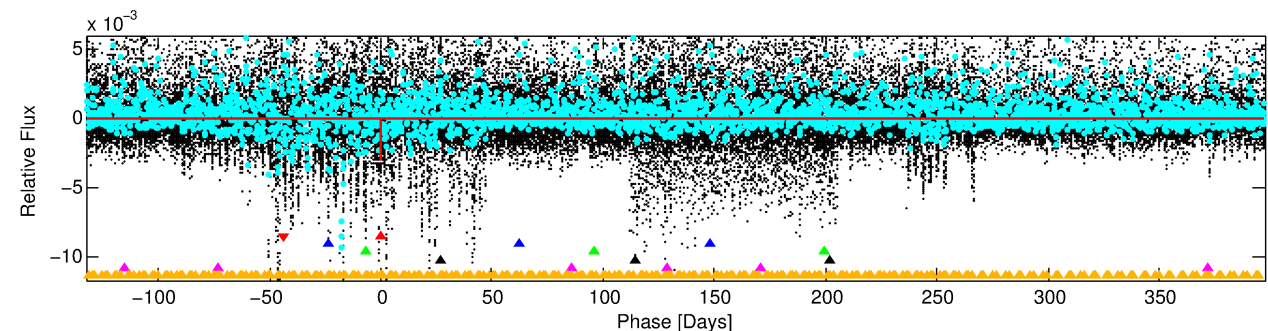
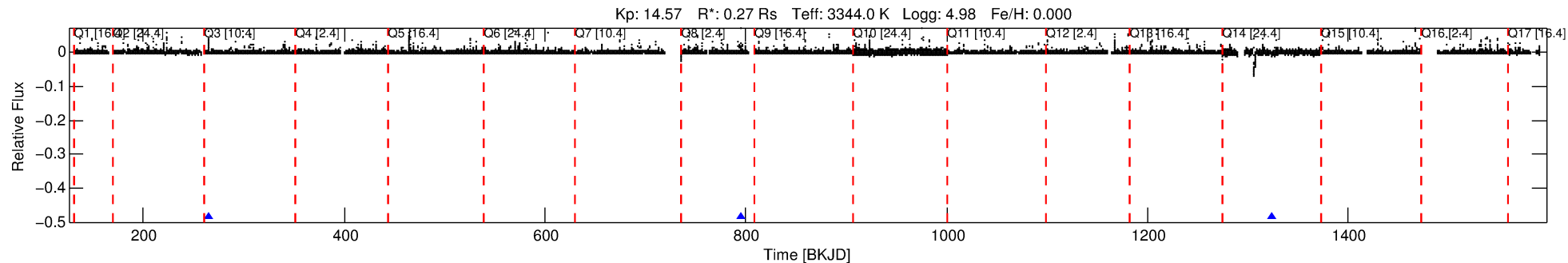
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012646841-01

No Significant Match Found

DV One-Page Summary

KIC: 12646841 Candidate: 1 of 6 Period: 529.675 d



DV Fit Results:

Period = 529.67512 [0.04925] d
Epoch = 265.1752 [0.0549] BKJD
Rp/R* = 0.0499 [0.0333]
a/R* = 231.91 [572.63]
b = 0.23 [10.16]
Seff = 0.01 [0.00]
Teq = 85 [3] K
Rp = 1.49 [1.02] Re
a = 0.8170 [0.0862] AU
Ag = 108948.22 [168888.25] [0.65σ]
Teffp = 2400 [928] K [2.49σ]

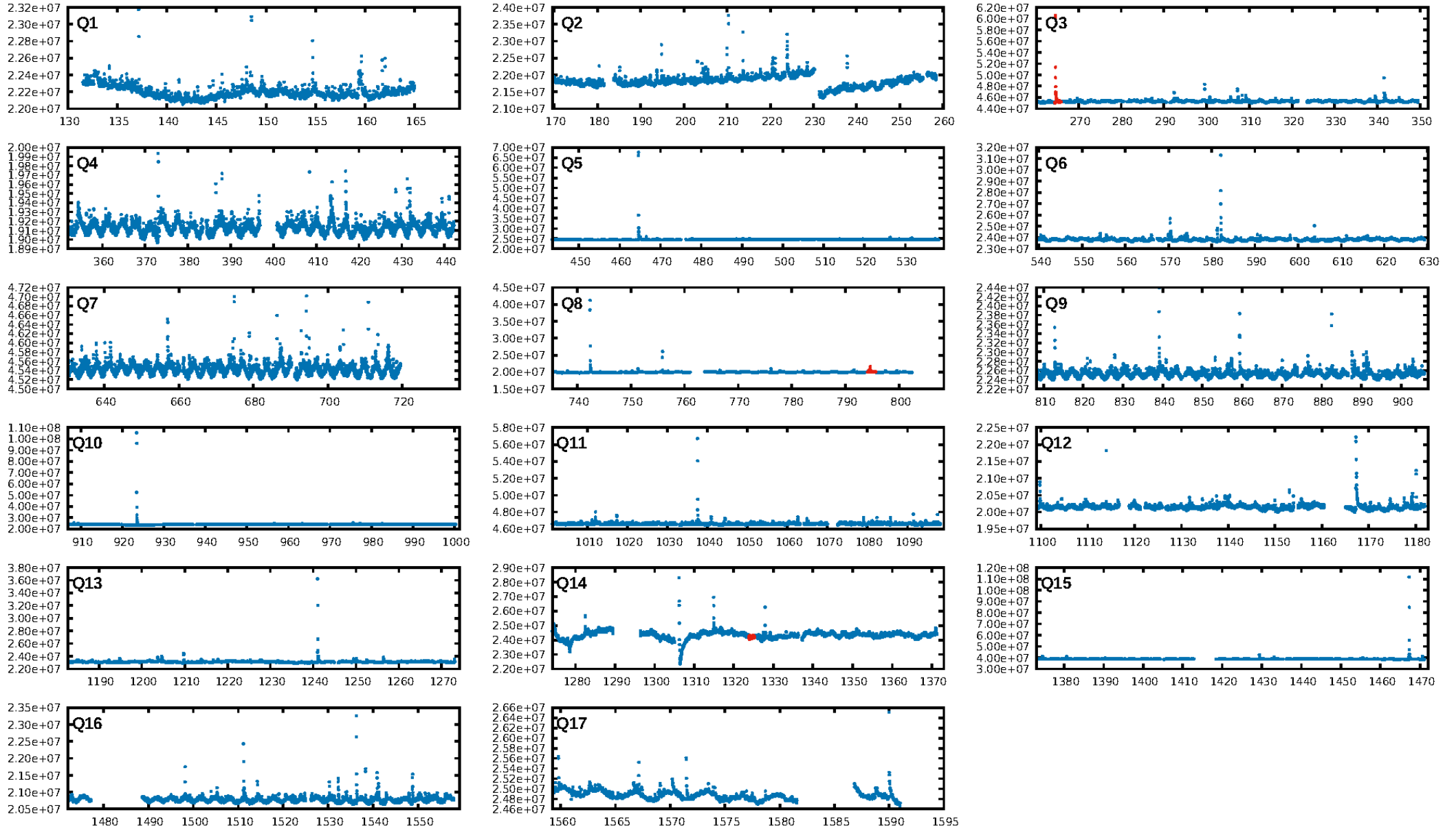
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [108.65σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 17.3%
ModelChiSquareGof-sig: 71.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 8.986
Centroid-sig: N/A
Centroid-so: 1.156 arcsec [4.48σ]
OotOffset-rm: 1.953 arcsec [2.50σ]
KicOffset-rm: 0.421 arcsec [0.69σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.33 [1/3]

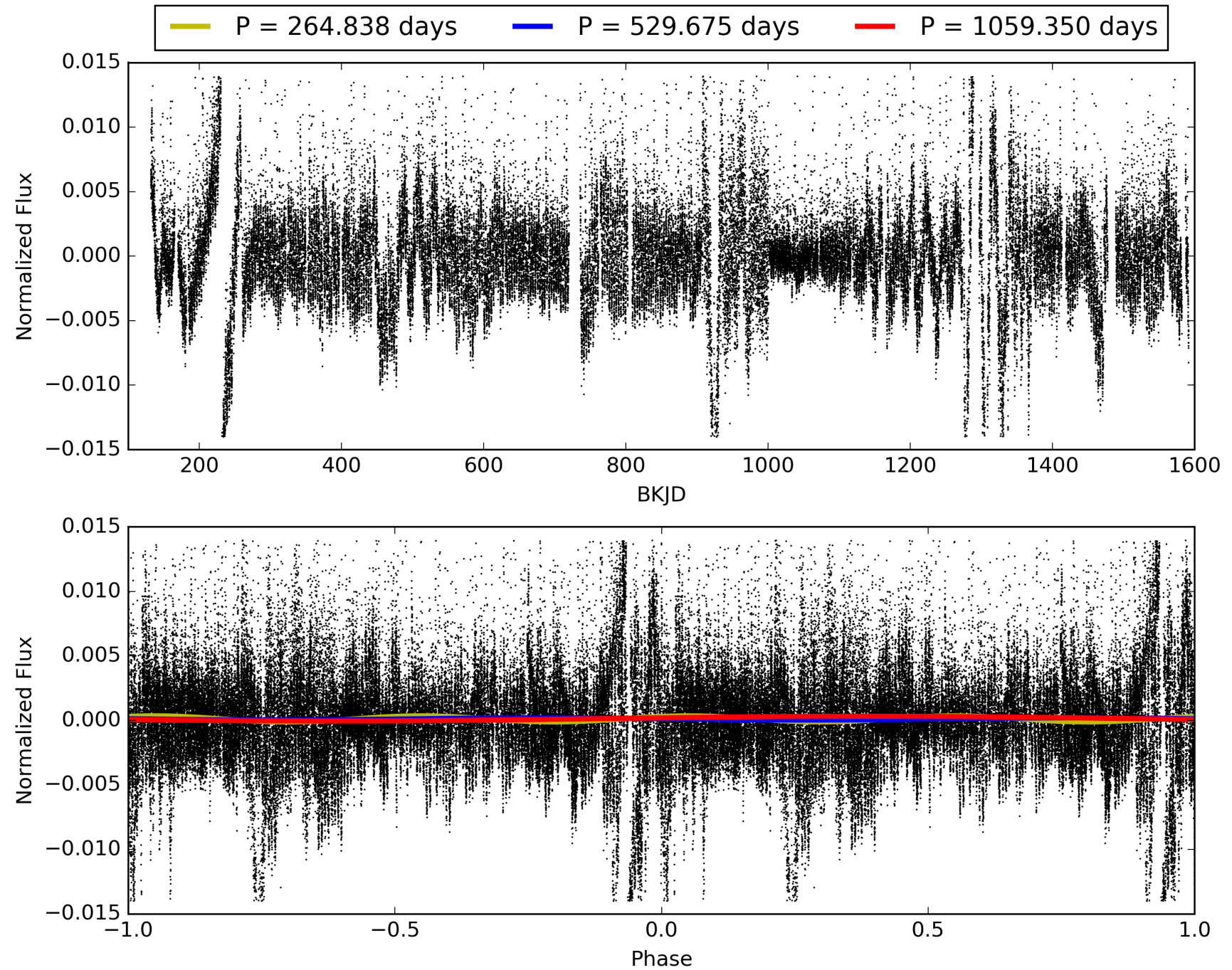
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:37:30 Z

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

TCE 012646841-01, PDC Light Curves

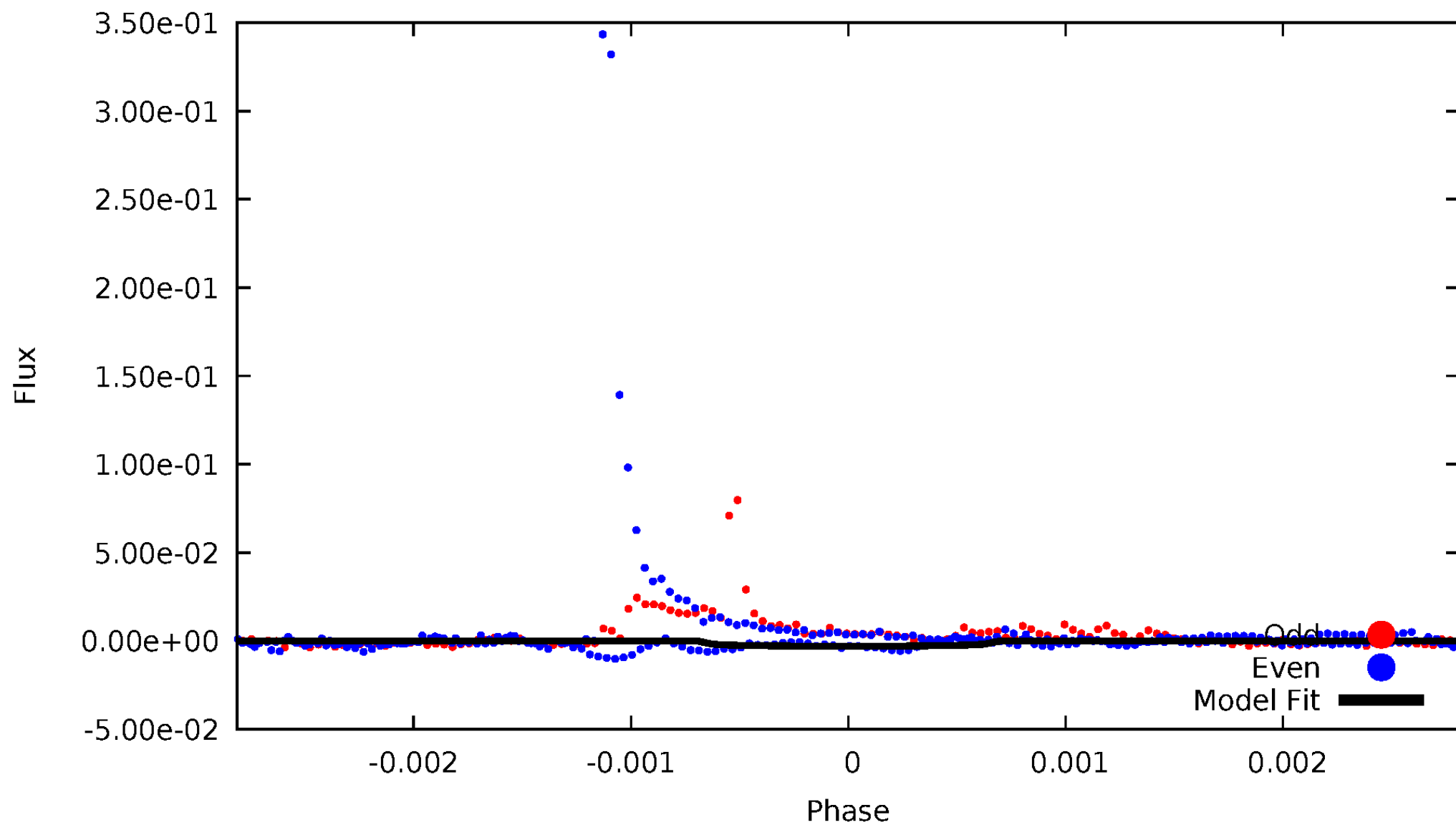


TCE 012646841-01



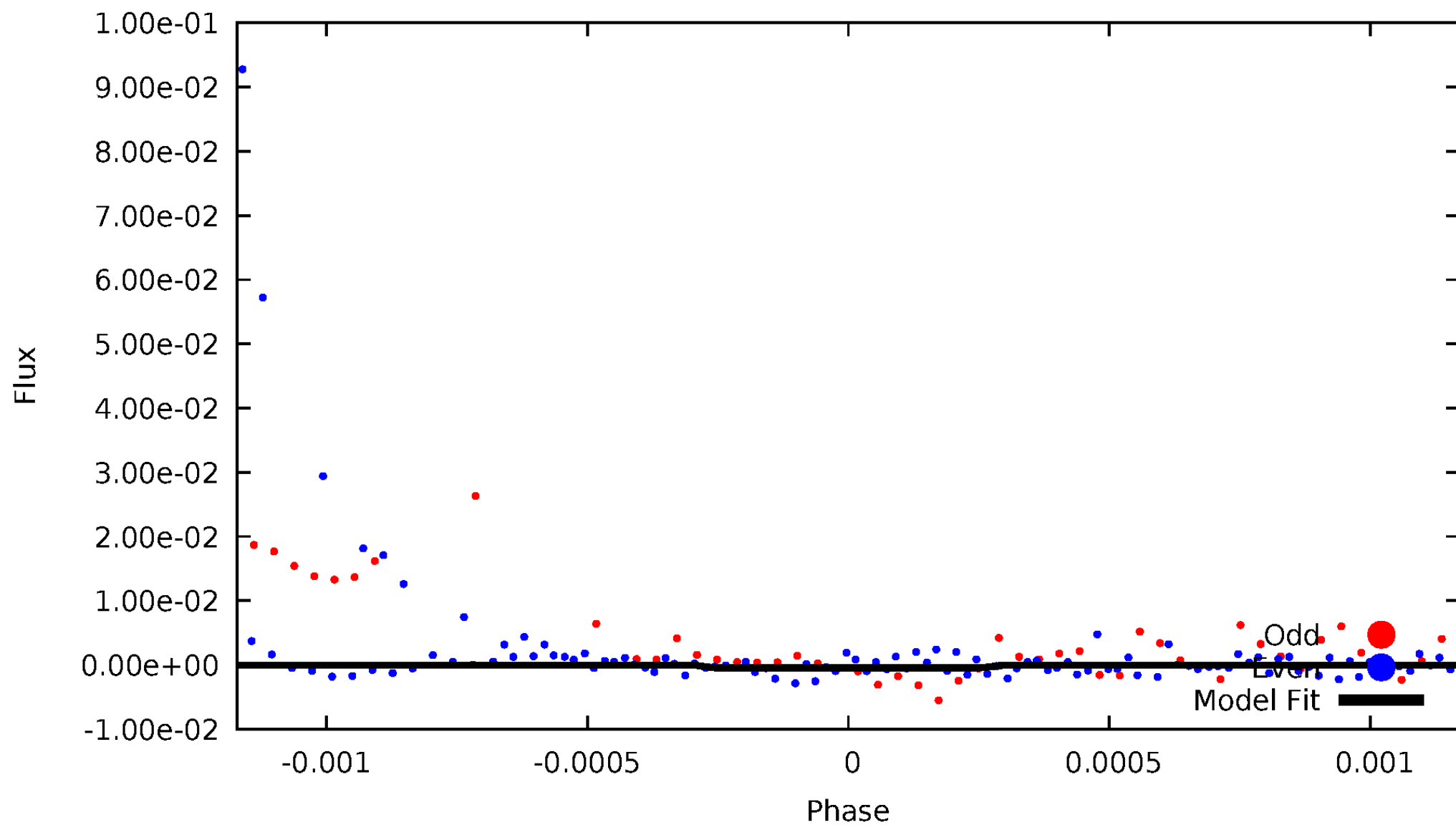
DV Odd/Even

TCE 012646841-01



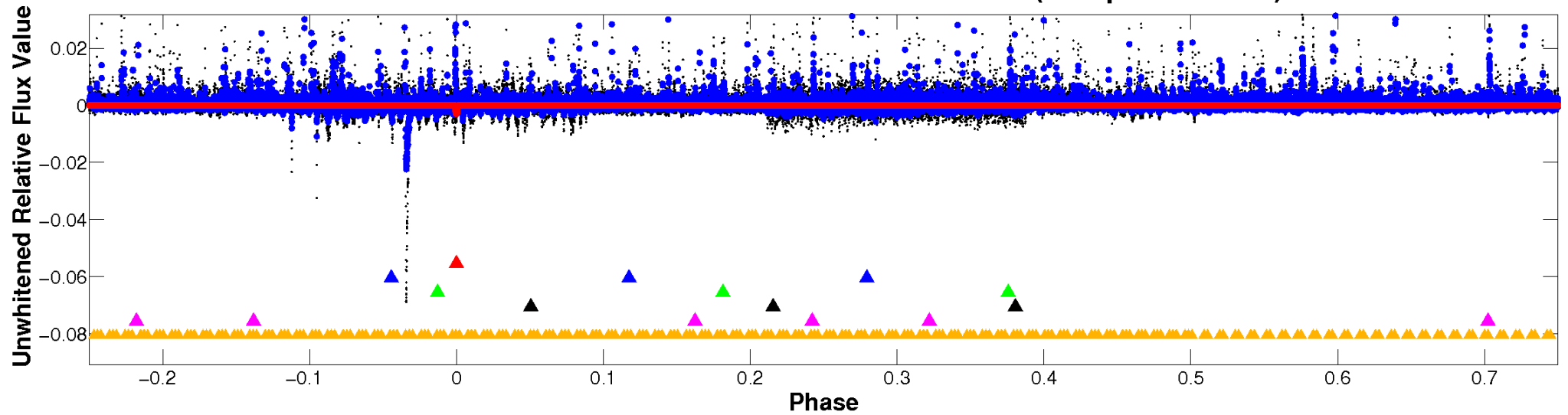
ALT Odd/Even

TCE 012646841-01

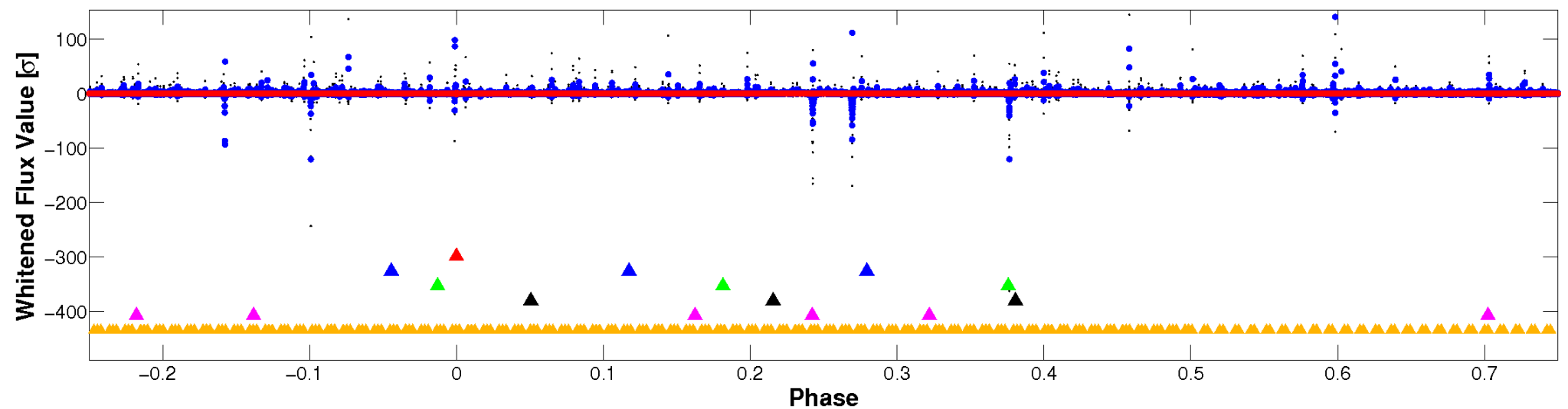


Non-Whitened Vs. Whitened Light Curve

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

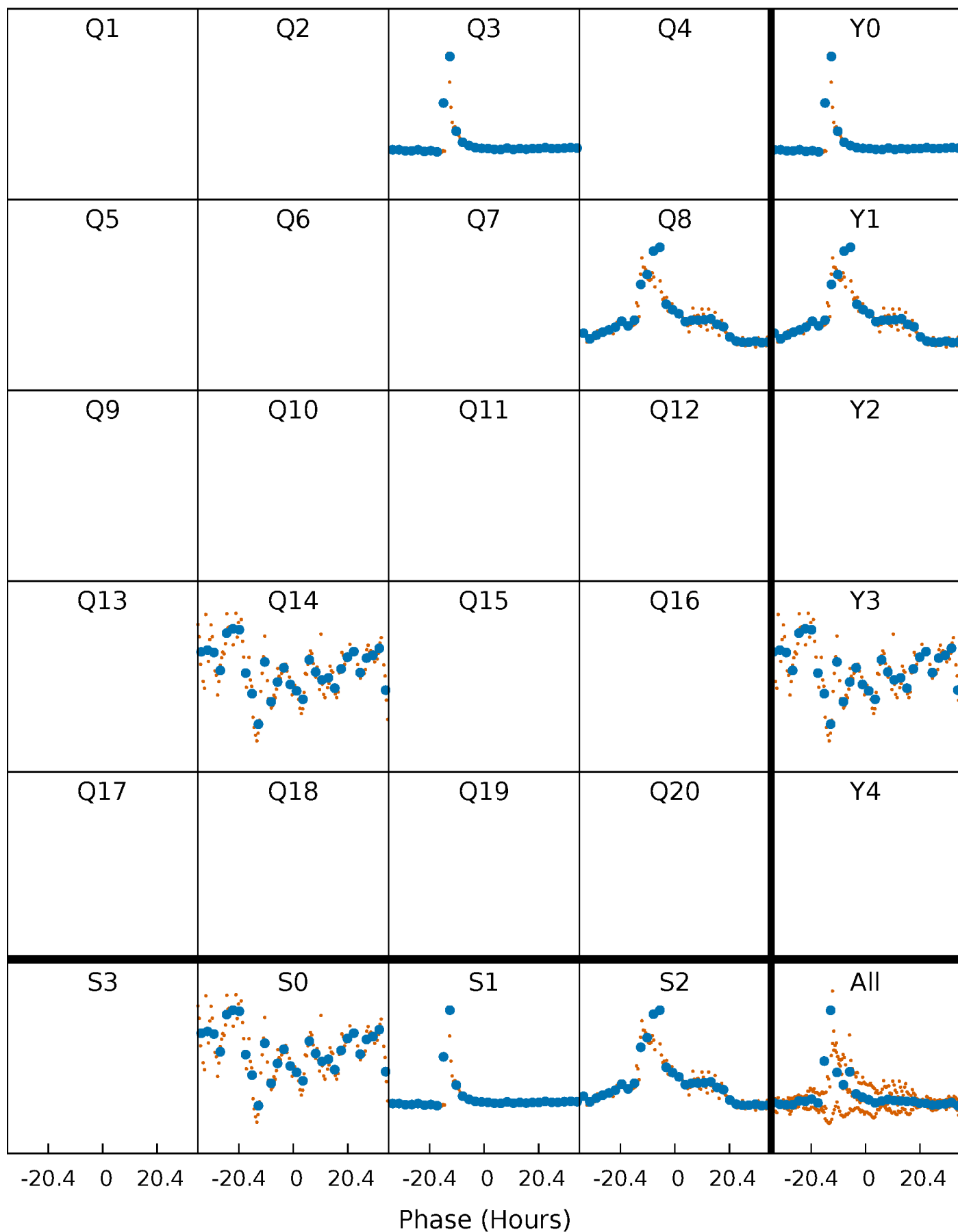


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 012646841-01 P=529.675121 Days $T_0=265.175188$ (BKJD)



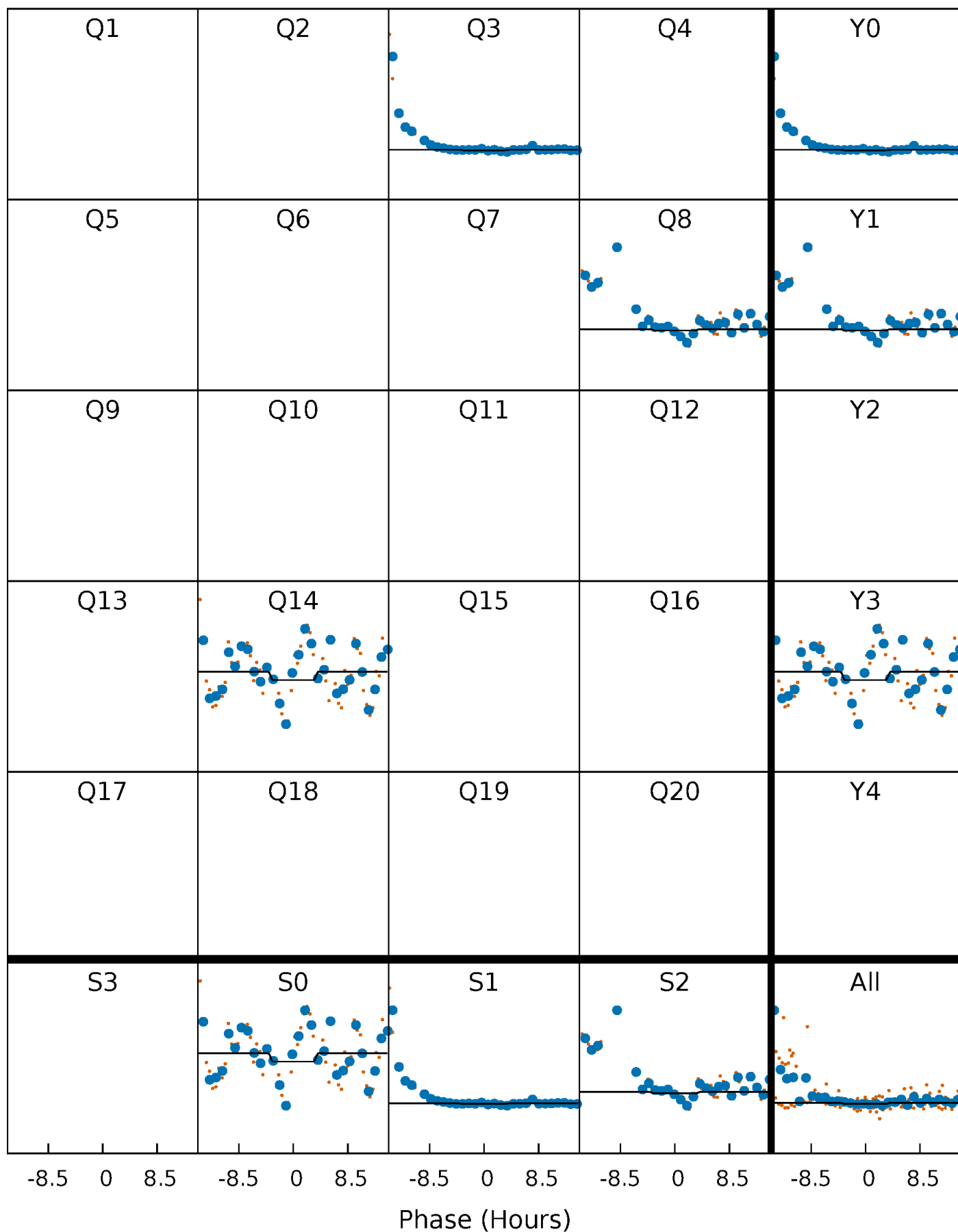
DV Quarter-Phased Transit Curves

TCE 012646841-01 P=529.675121 Days $T_0=265.175188$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

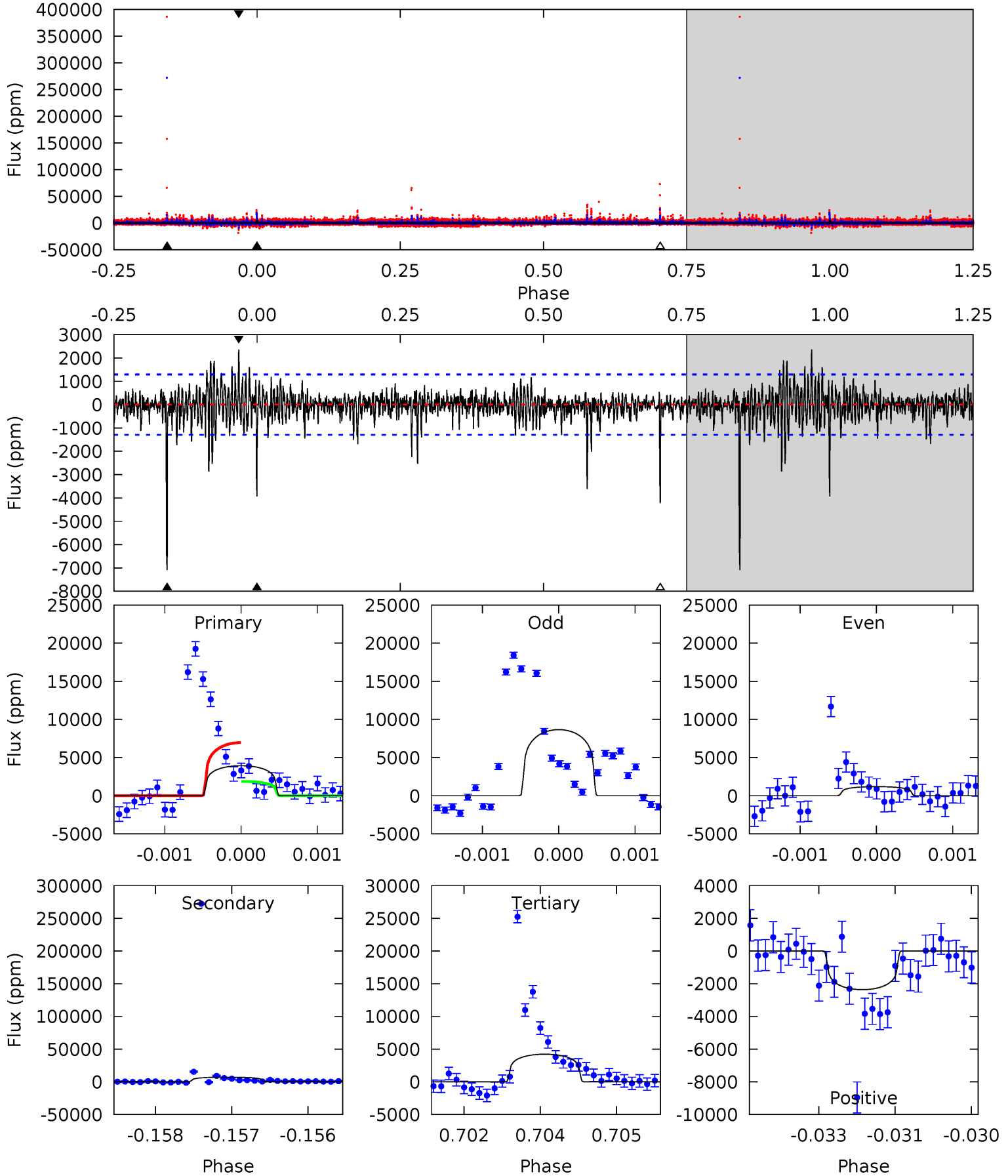
TCE 012646841-01 P=529.726421 Days $T_0=265.252843$ (BKJD)



DV Model-Shift Uniqueness Test

012646841-01, P = 529.675121 Days, E = 265.175188 Days

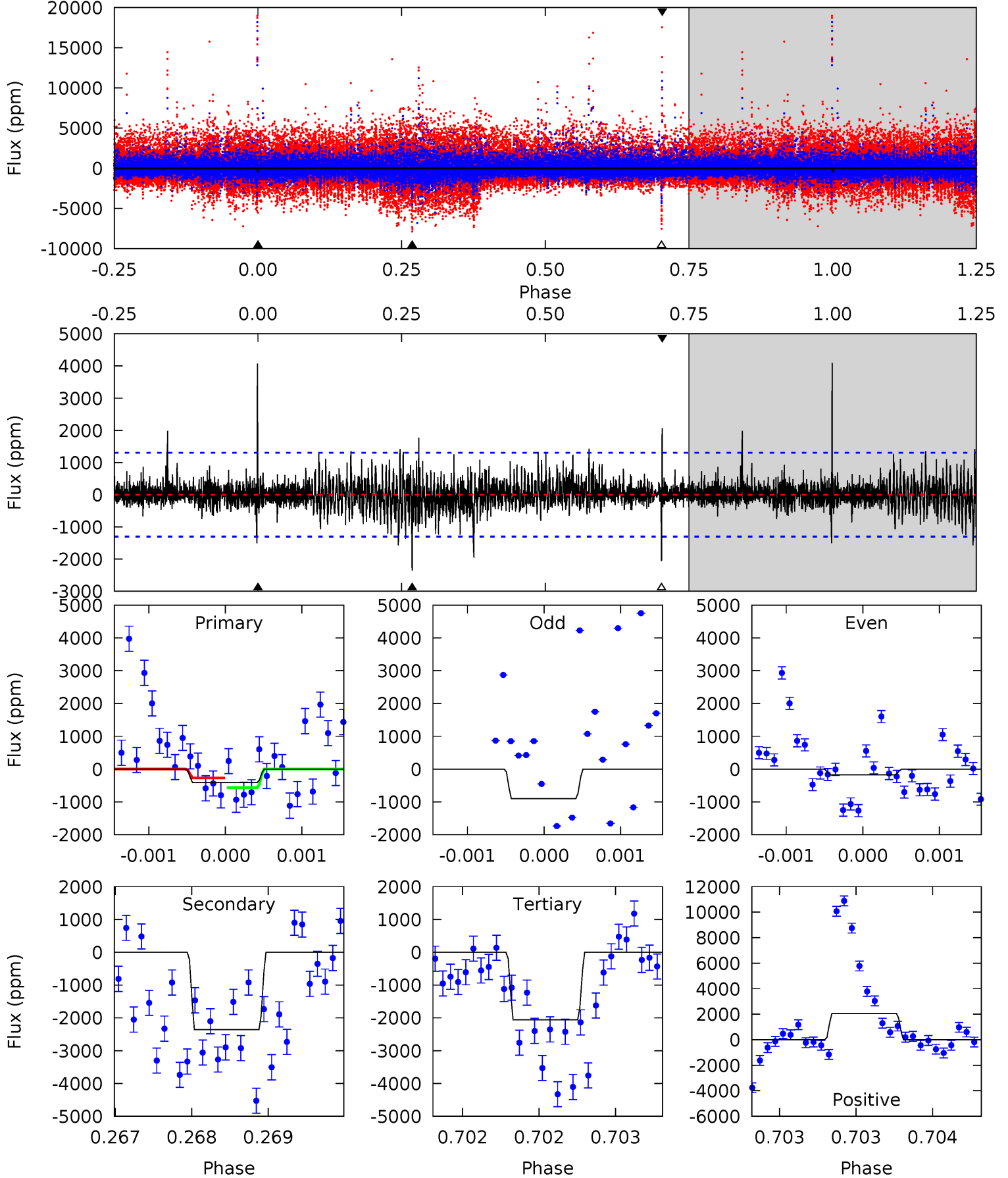
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	29.5	17.6	9.83	5.39	3.19	2.03	-1.20	6.52	11.9	19.6	5.51	0.86	0.25	10.4



Alt Model-Shift Uniqueness Test

012646841-01, P = 529.726421 Days, E = 265.252843 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.77	10.0	8.76	8.77	5.54	3.43	1.49	-6.99	-7.01	1.28	1.26	1.23	1.32	0.63	0.64



Stellar Parameters For KIC 012646841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3344^{+43}_{-40}	$4.976^{+0.045}_{-0.045}$	$0.000^{+0.100}_{-0.100}$	$0.274^{+0.041}_{-0.030}$	$0.259^{+0.052}_{-0.034}$	$17.720^{+4.538}_{-3.605}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+15%/-11%	+20%/-13%	+26%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 012646841-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-7091 ± 241	$1.58^{+0.95}_{-0.90}$	119^{+3}_{-3}	3910^{+1514}_{-557}	$1059670^{+4745628}_{-647734}$
Alt.	-2359 ± 235	$0.93^{+0.88}_{-0.60}$	119^{+3}_{-3}	3849^{+1988}_{-717}	$995622^{+6617629}_{-730486}$

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 $A_{obs} \gg 1.0$

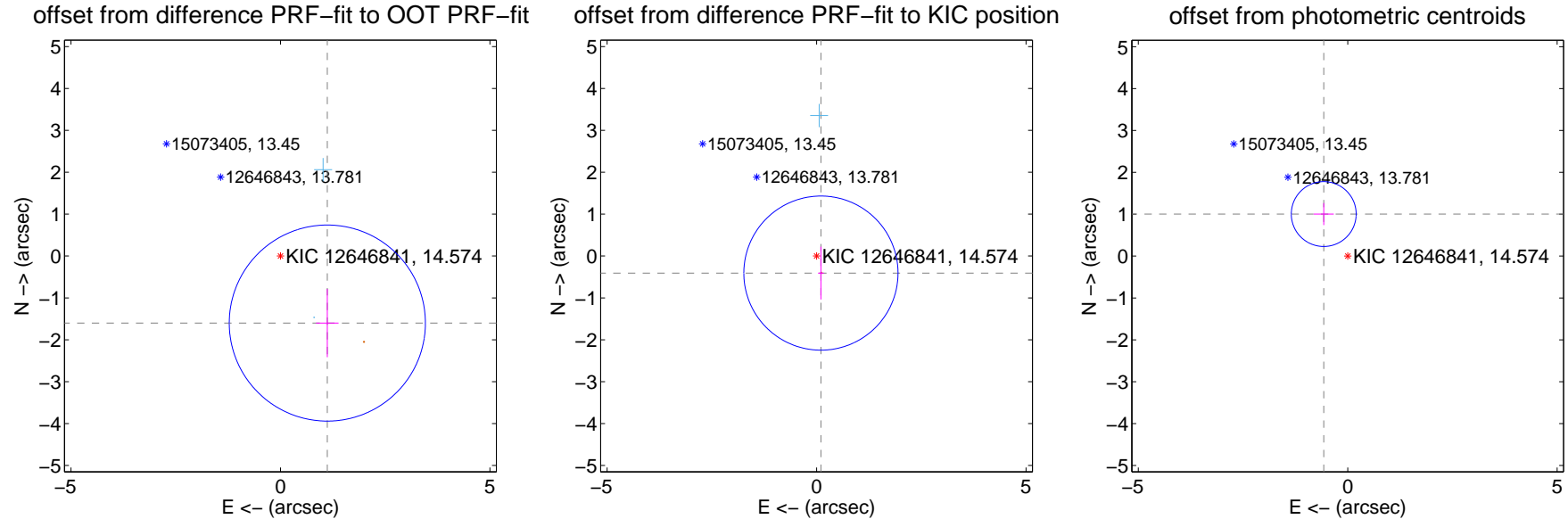
DV Centroid Data

Supplemental centroid analysis for 012646841-01. Kepler magnitude: 14.57. Transit SNR 7.45

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.61 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.953 ± 0.780	2.50	-1.119 ± 0.268	-1.601 ± 0.815
PRF-fit source offset from KIC position	0.421 ± 0.613	0.69	-0.104 ± 0.067	-0.408 ± 0.631
photometric centroid source offset	1.16 ± 0.26	4.48	0.57 ± 0.24	1.00 ± 0.26



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



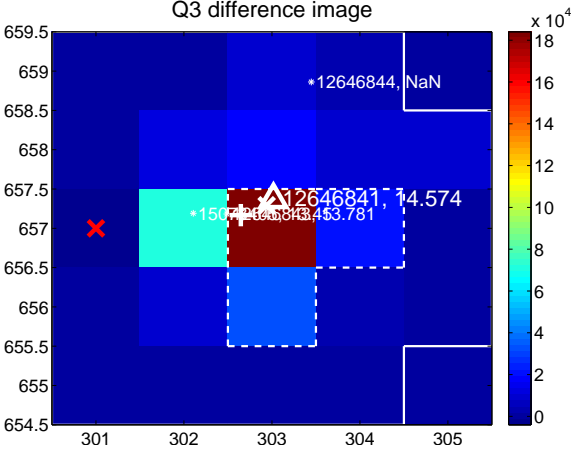
Q2 no difference image



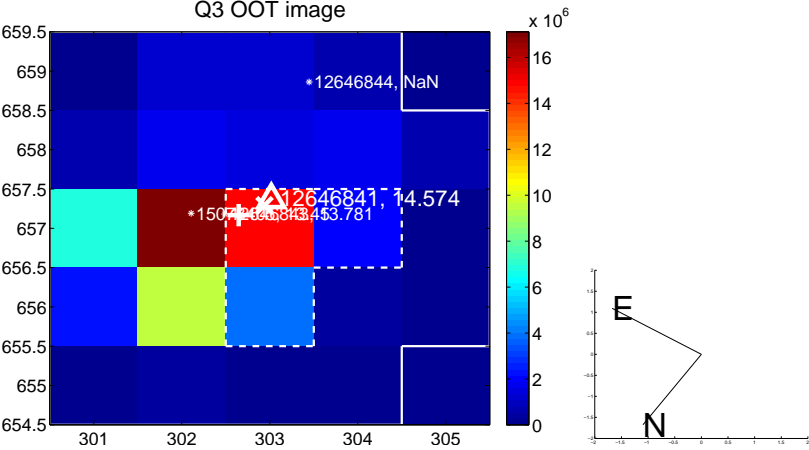
Q2 no OOT image



Q3 difference image



Q3 OOT image



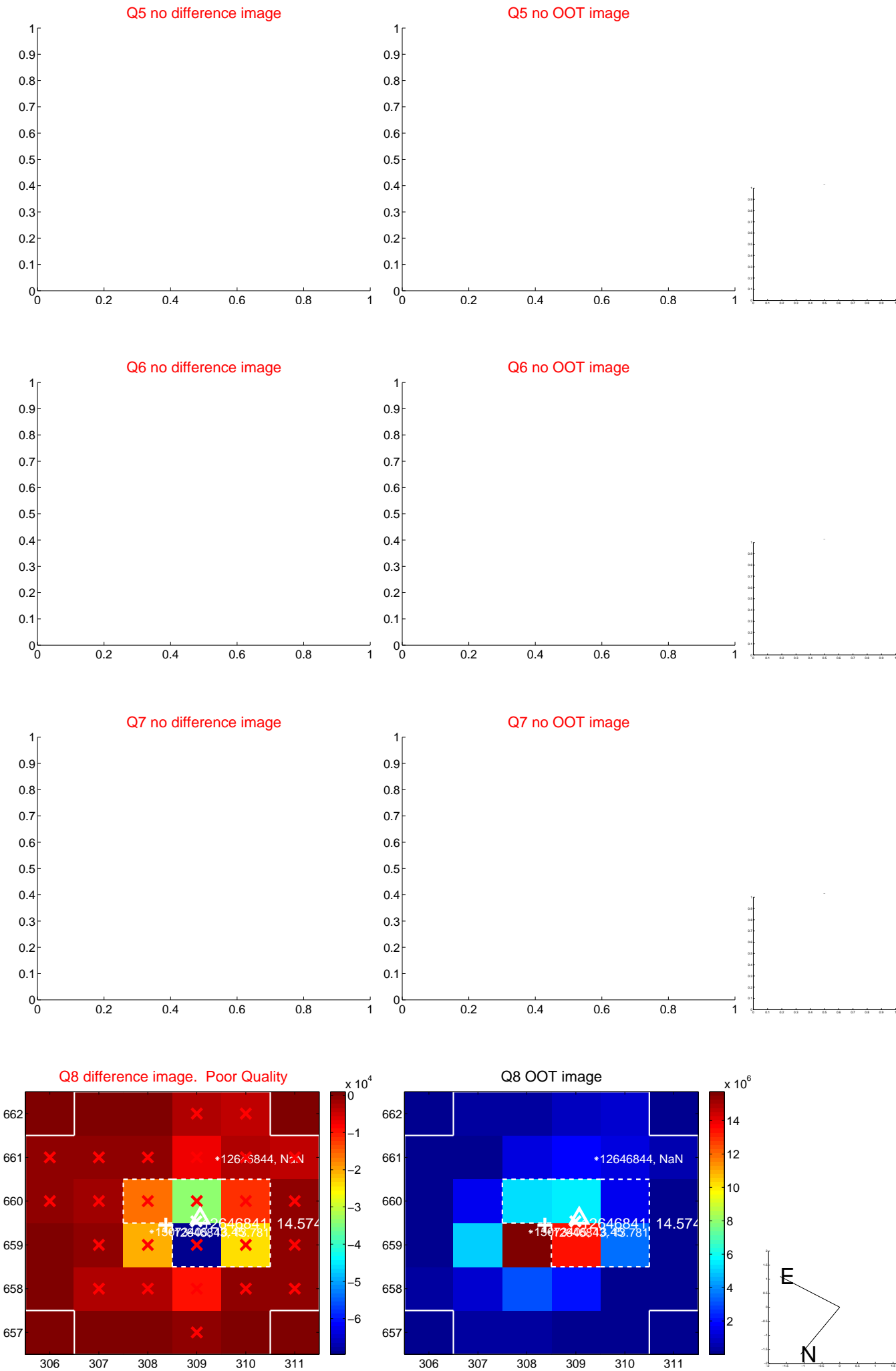
Q4 no difference image



Q4 no OOT image



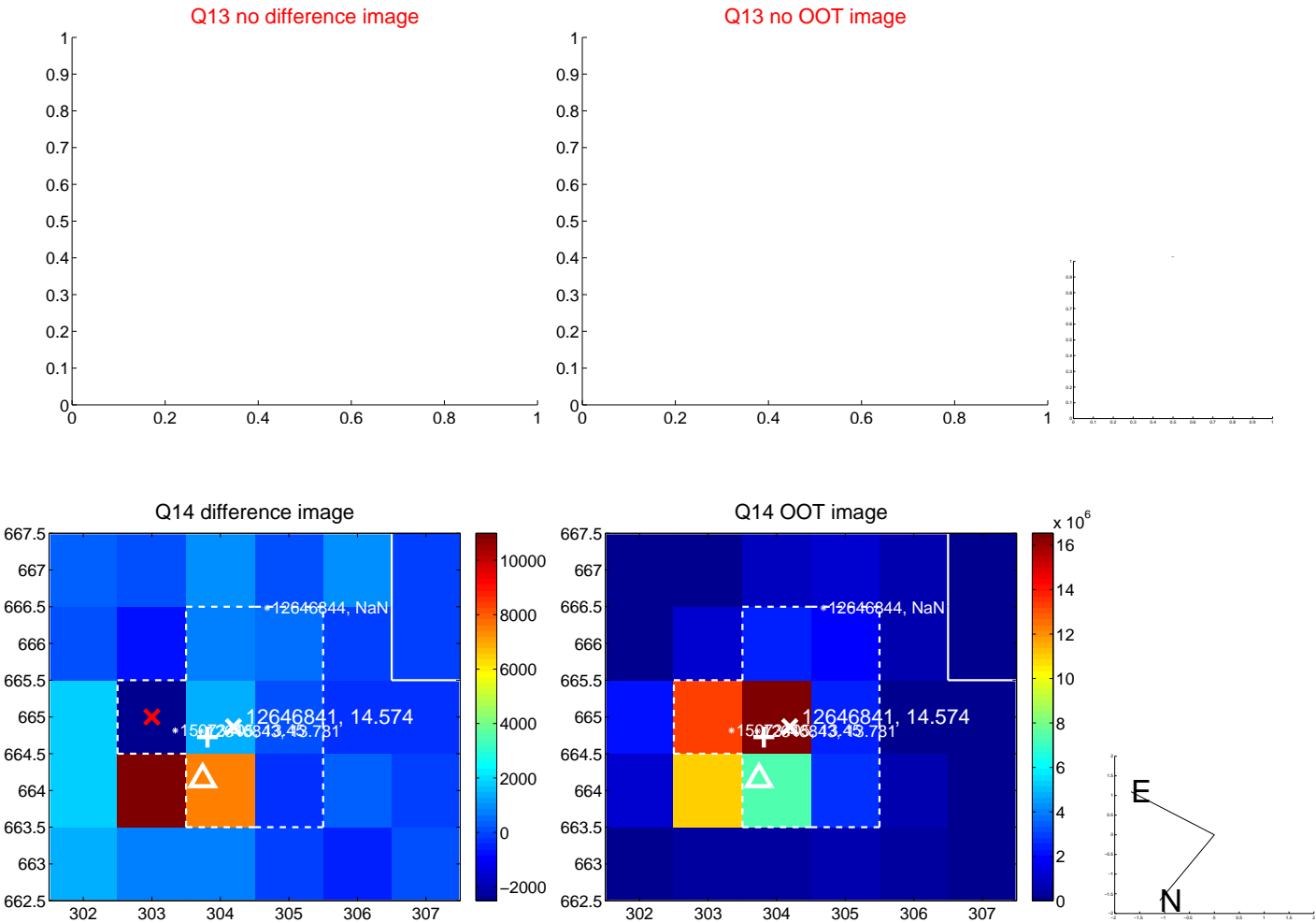
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



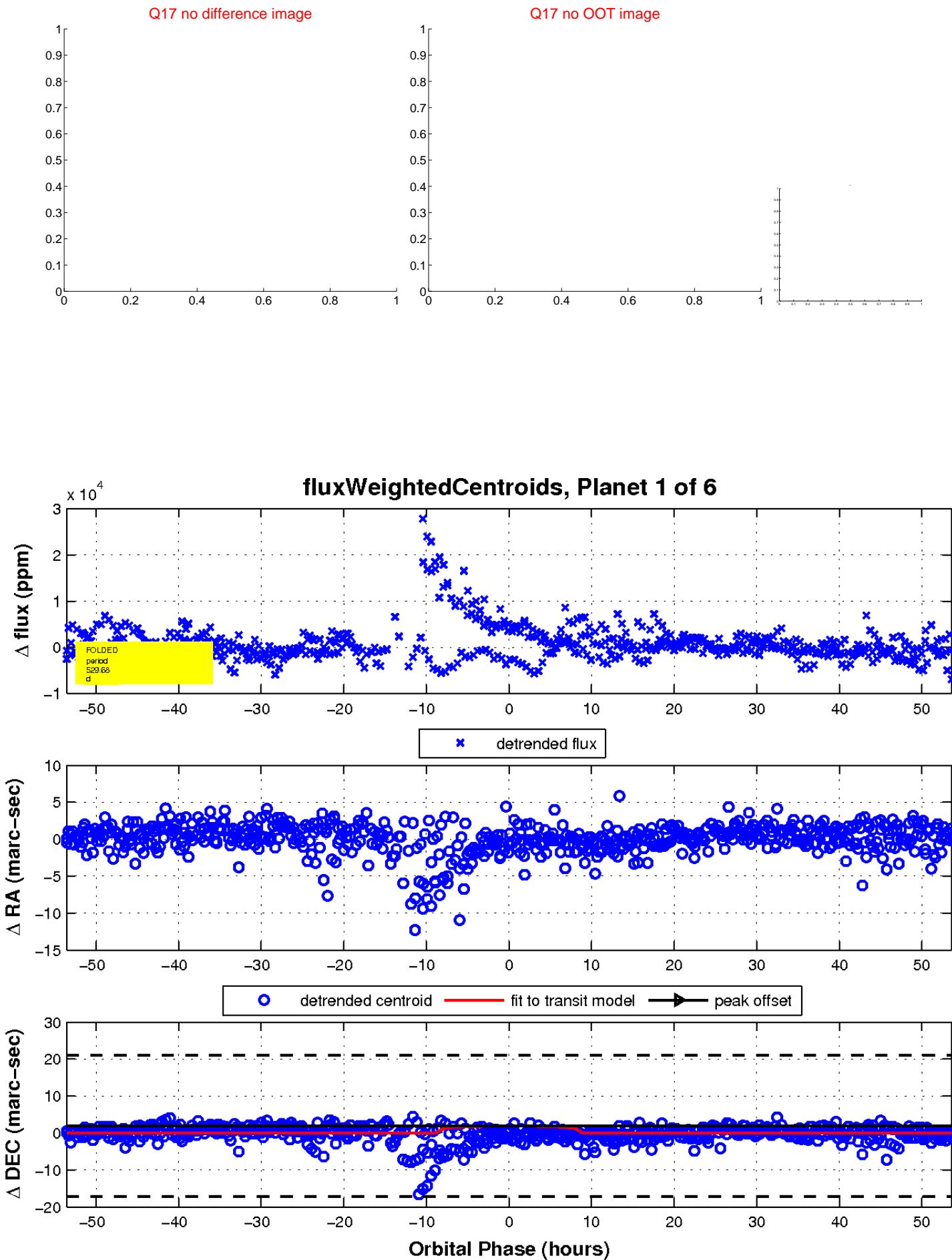
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

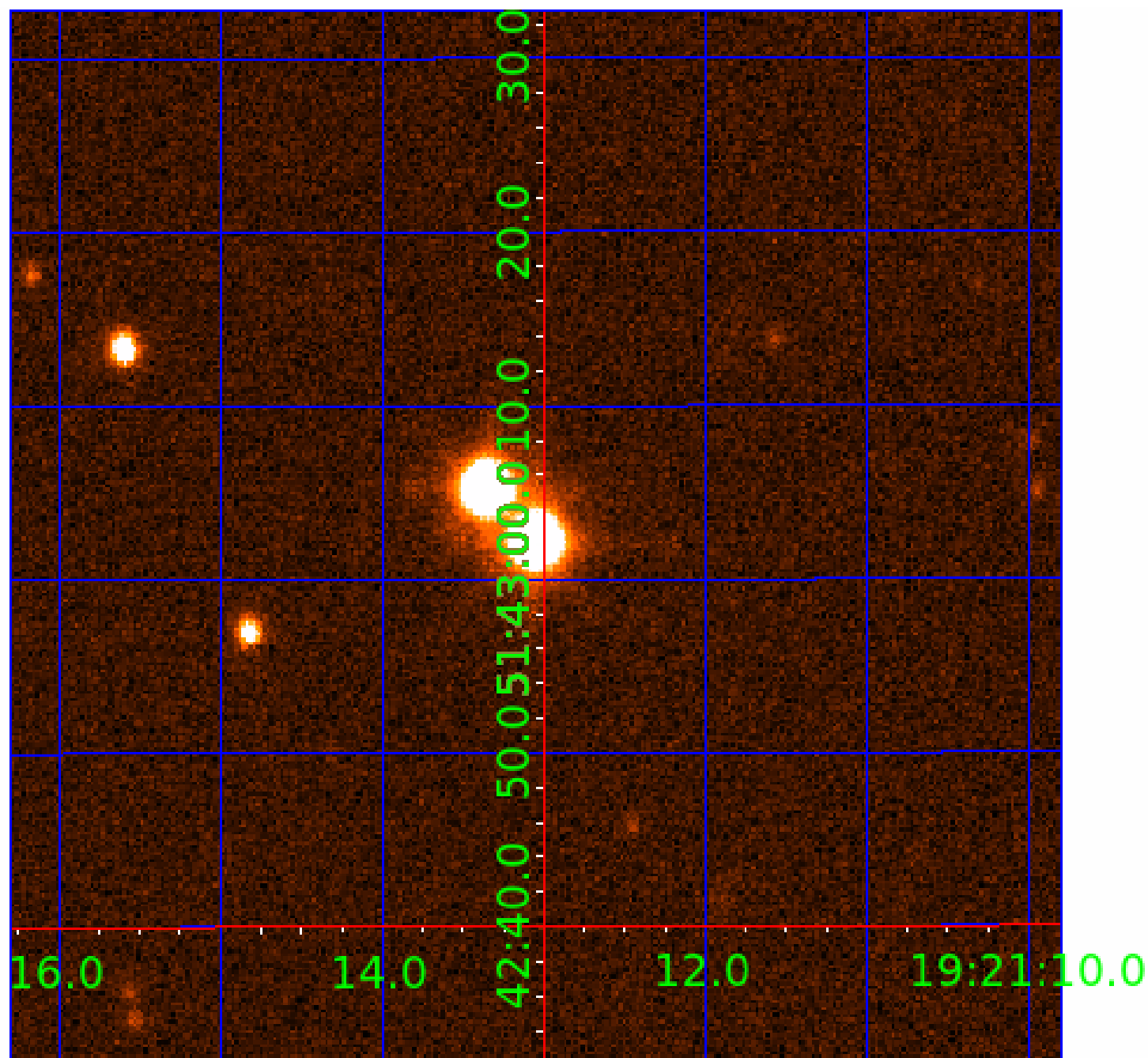


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012646841

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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012646841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
012646841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_KIC_POS
012646841-06	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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

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

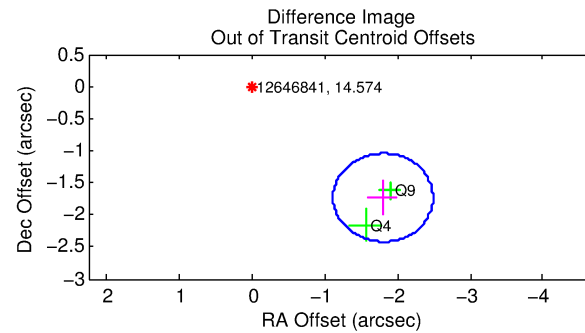
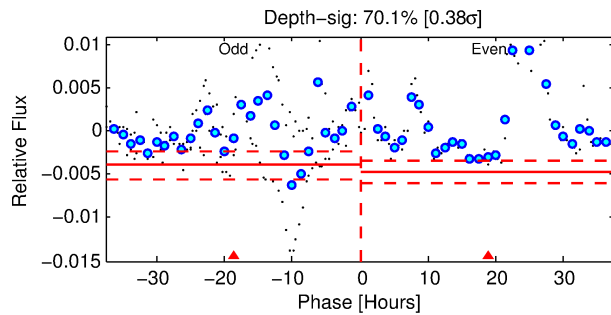
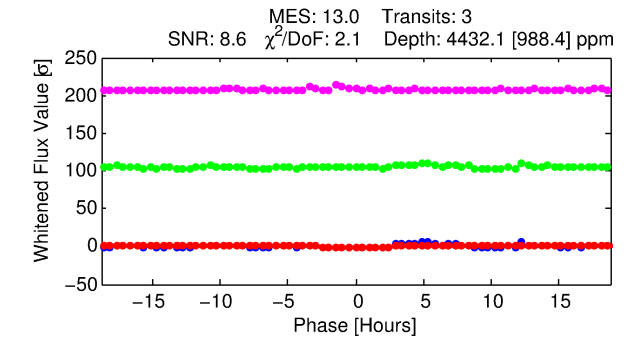
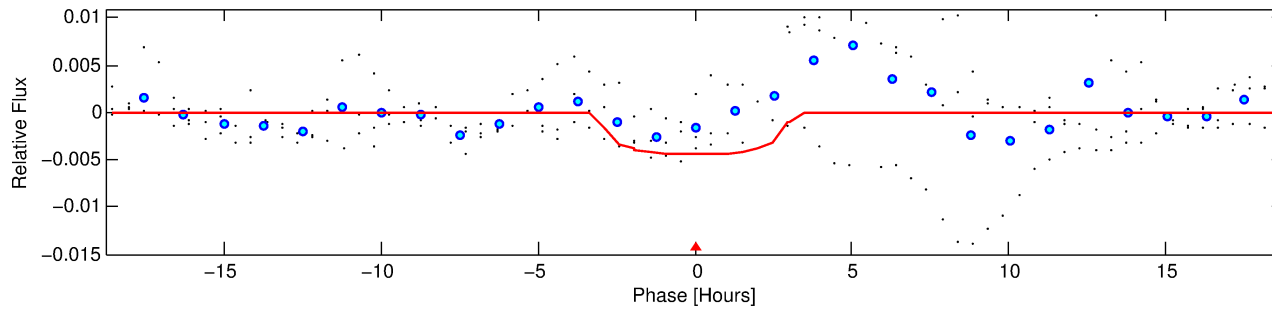
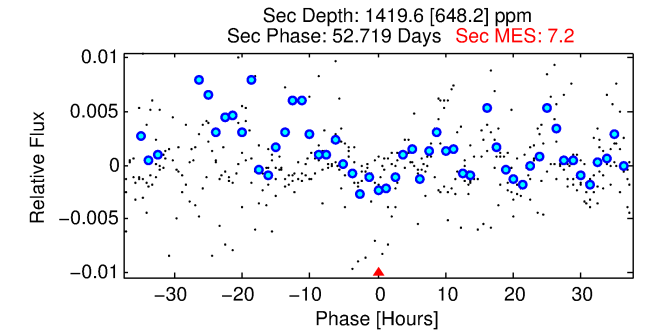
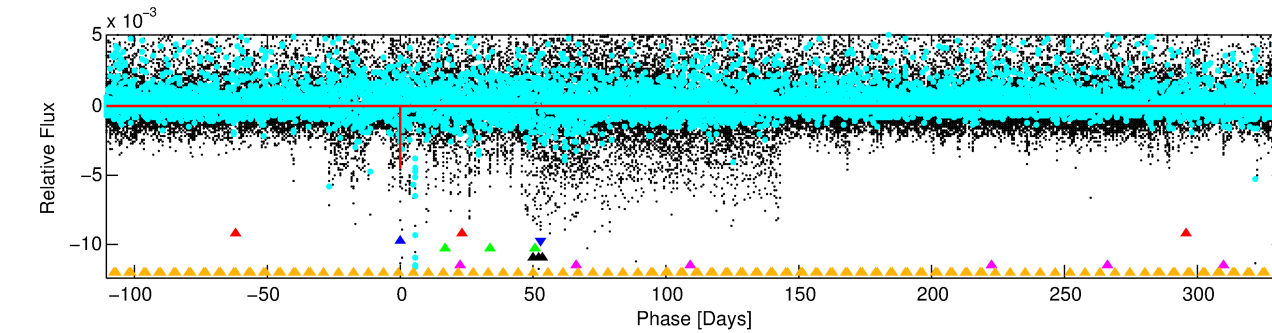
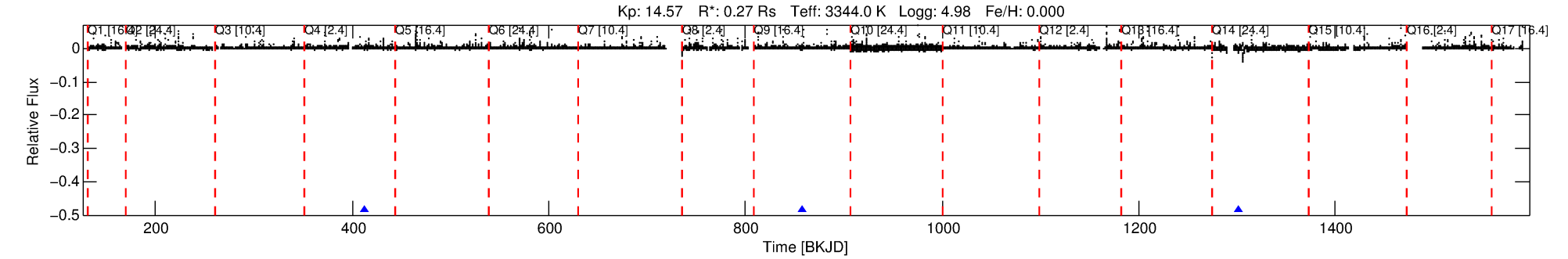
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012646841-02

No Significant Match Found

DV One-Page Summary

KIC: 12646841 Candidate: 2 of 6 Period: 443.922 d



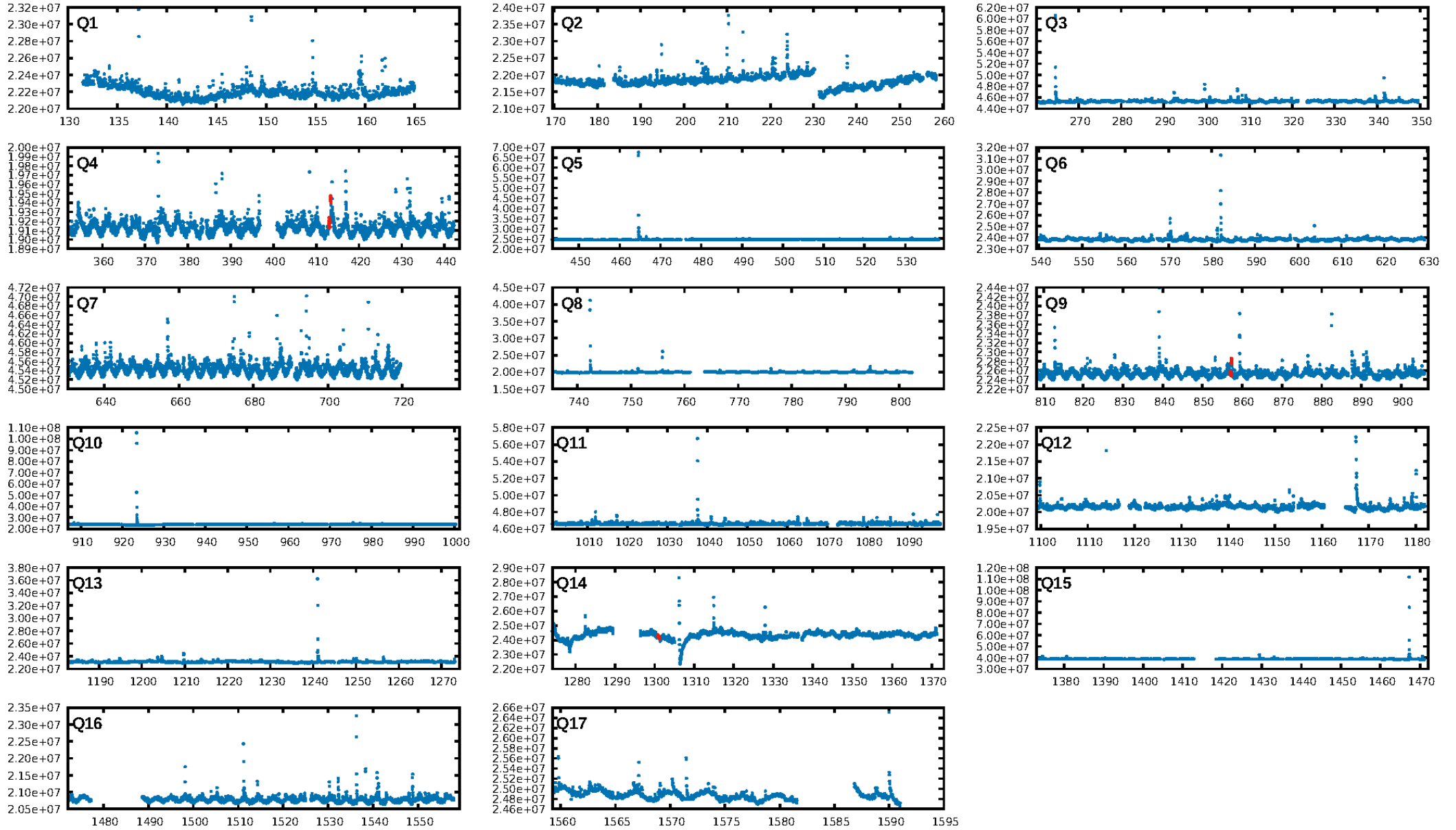
DV Fit Results:

Period = 443.92162 [0.00779] d
Epoch = 413.1852 [0.0090] BKJD
Rp/R* = 0.0602 [0.1460]
a/R* = 572.73 [5937.30]
b = 0.03 [337.50]
Seff = 0.02 [0.00]
Teq = 91 [3] K
Rp = 1.80 [4.37] Re
a = 0.7262 [0.0767] AU
Ag = 127265.68 [620468.30] [0.21 σ]
Teffp = 2646 [3224] K [0.79 σ]

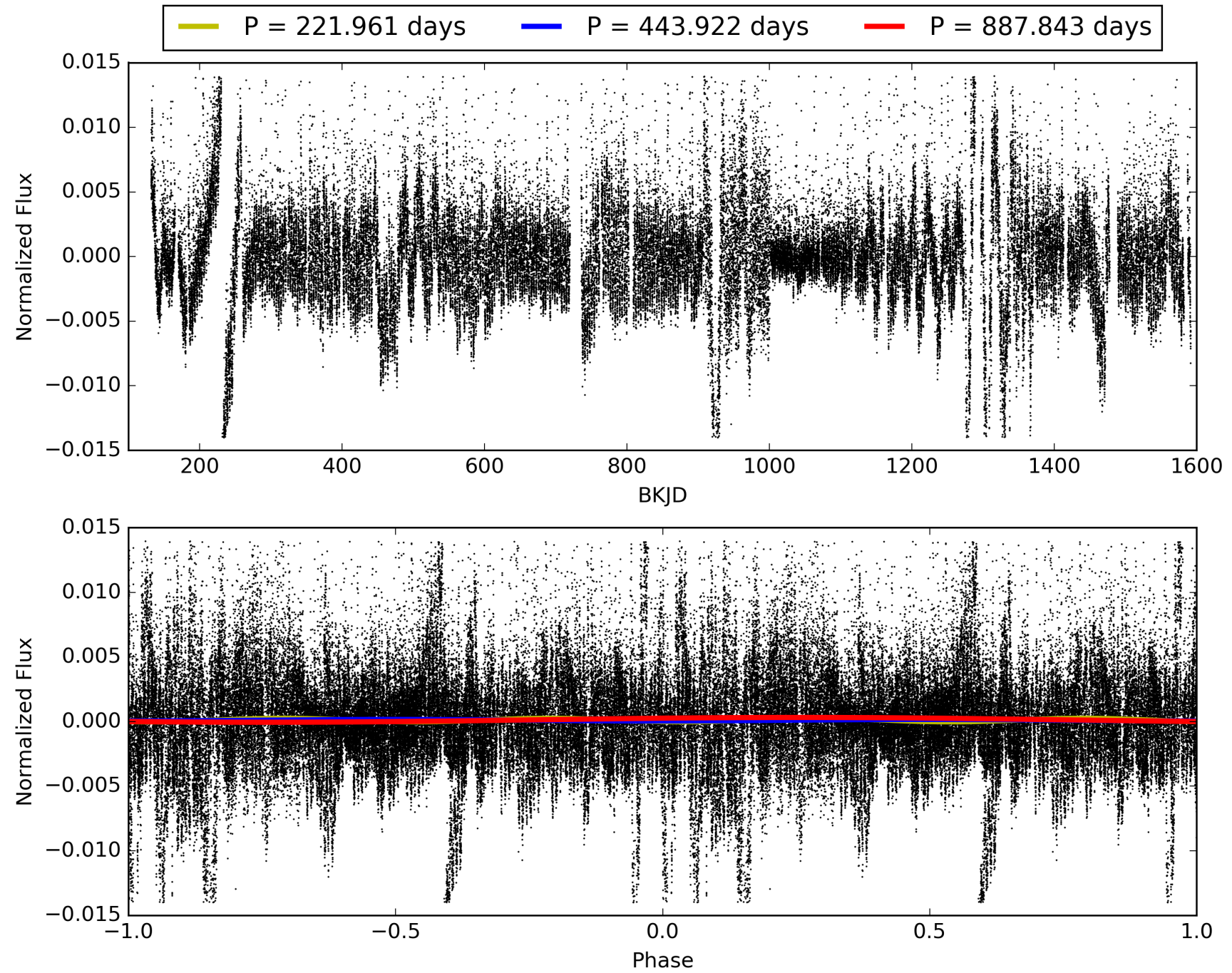
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.90 σ]
LongPeriod-sig: 100.0% [108.65 σ]
ModelChiSquare2-sig: 2.1%
ModelChiSquareGof-sig: 70.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.079
Centroid-sig: N/A
Centroid-so: 2.123 arcsec [8.80 σ]
OotOffset-rm: 2.500 arcsec [10.89 σ]
KicOffset-rm: 0.558 arcsec [0.95 σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.67 [2/3]

TCE 012646841-02, PDC Light Curves

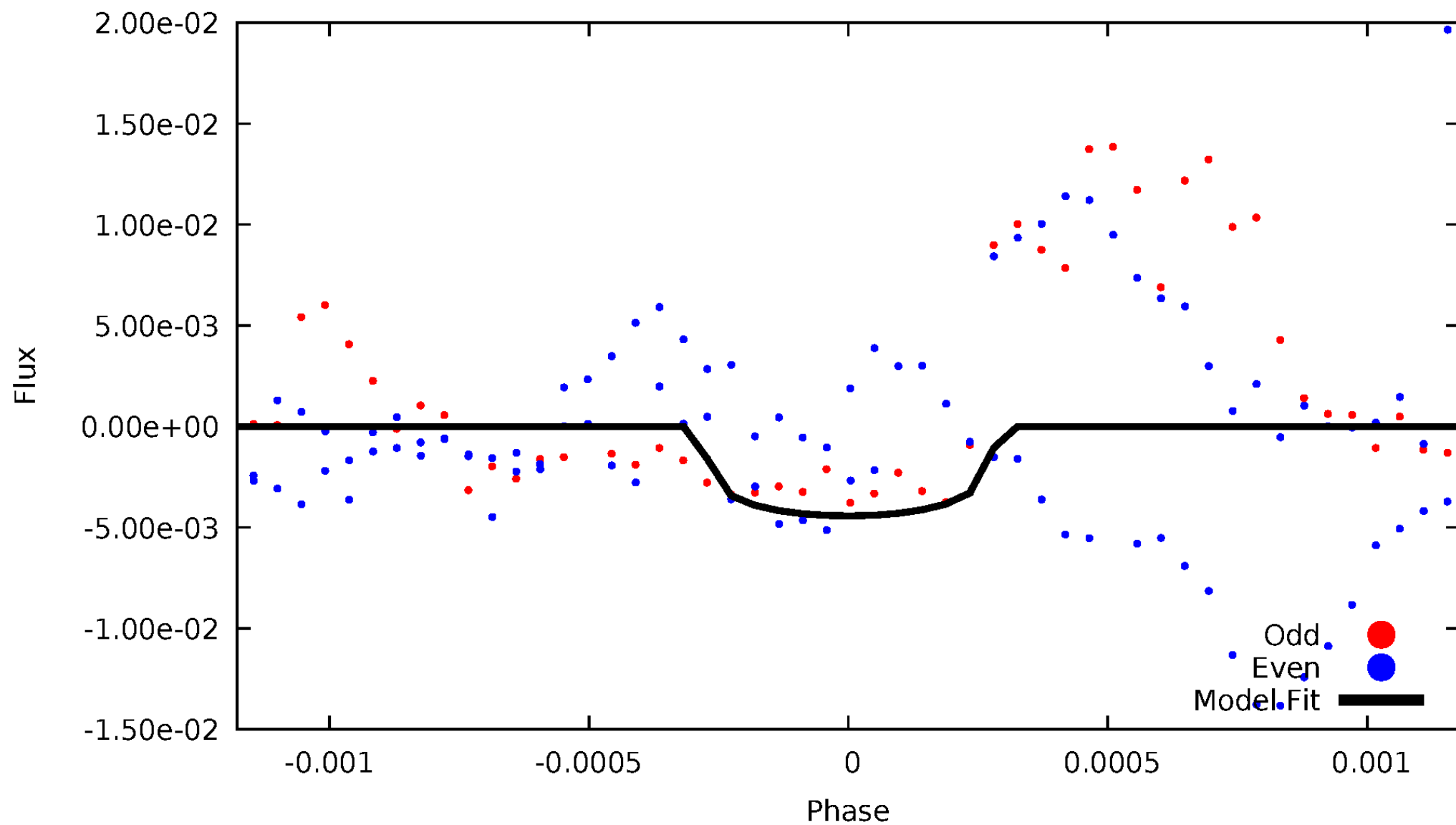


TCE 012646841-02



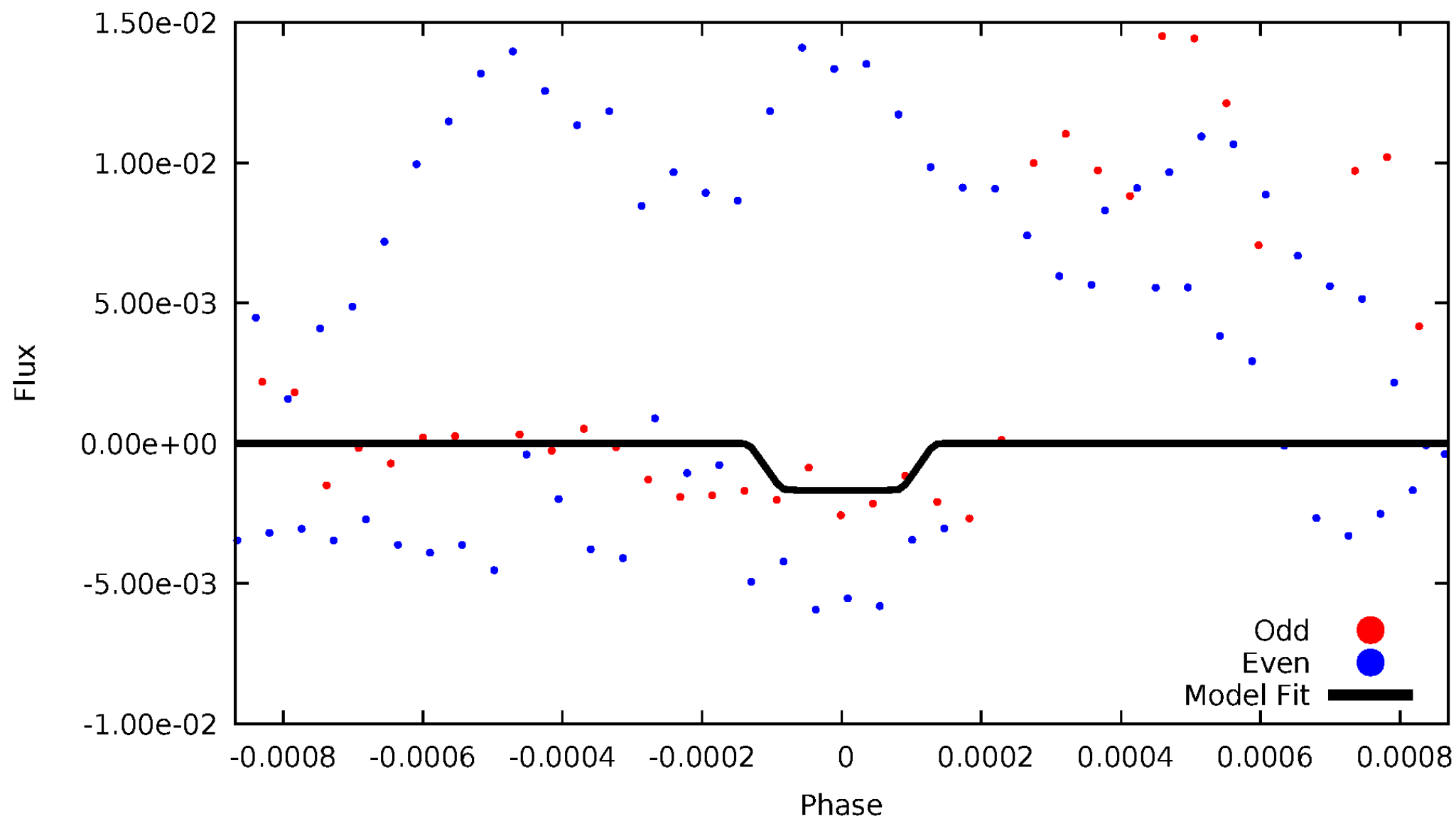
DV Odd/Even

TCE 012646841-02



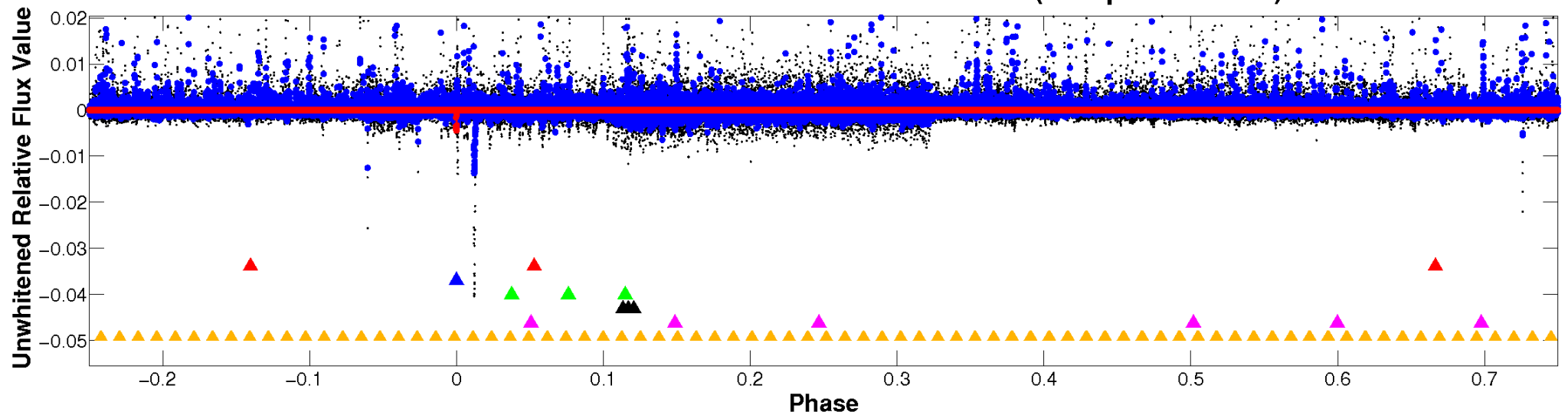
ALT Odd/Even

TCE 012646841-02

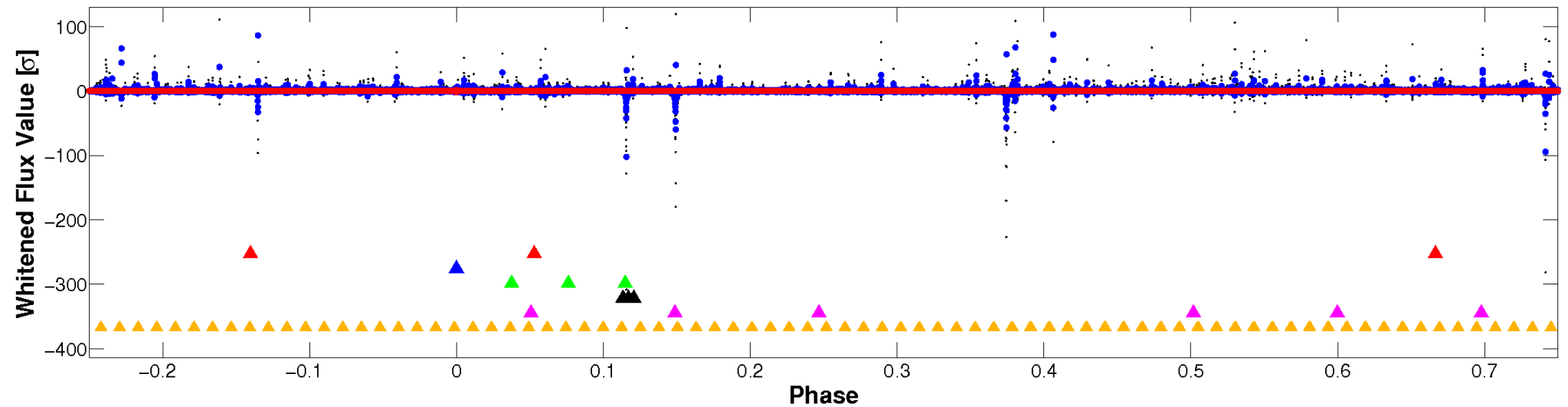


Non-Whitened Vs. Whitened Light Curve

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

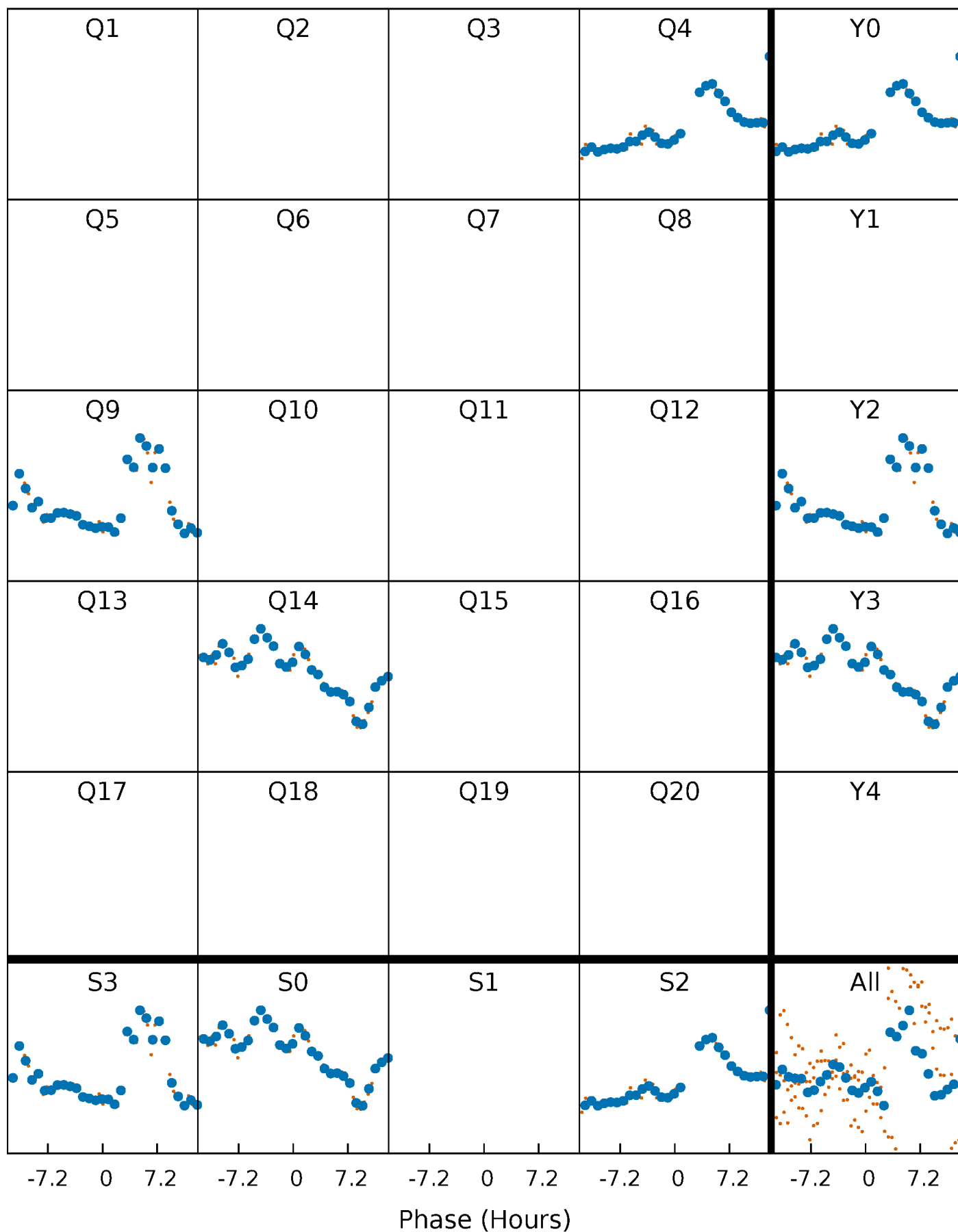


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



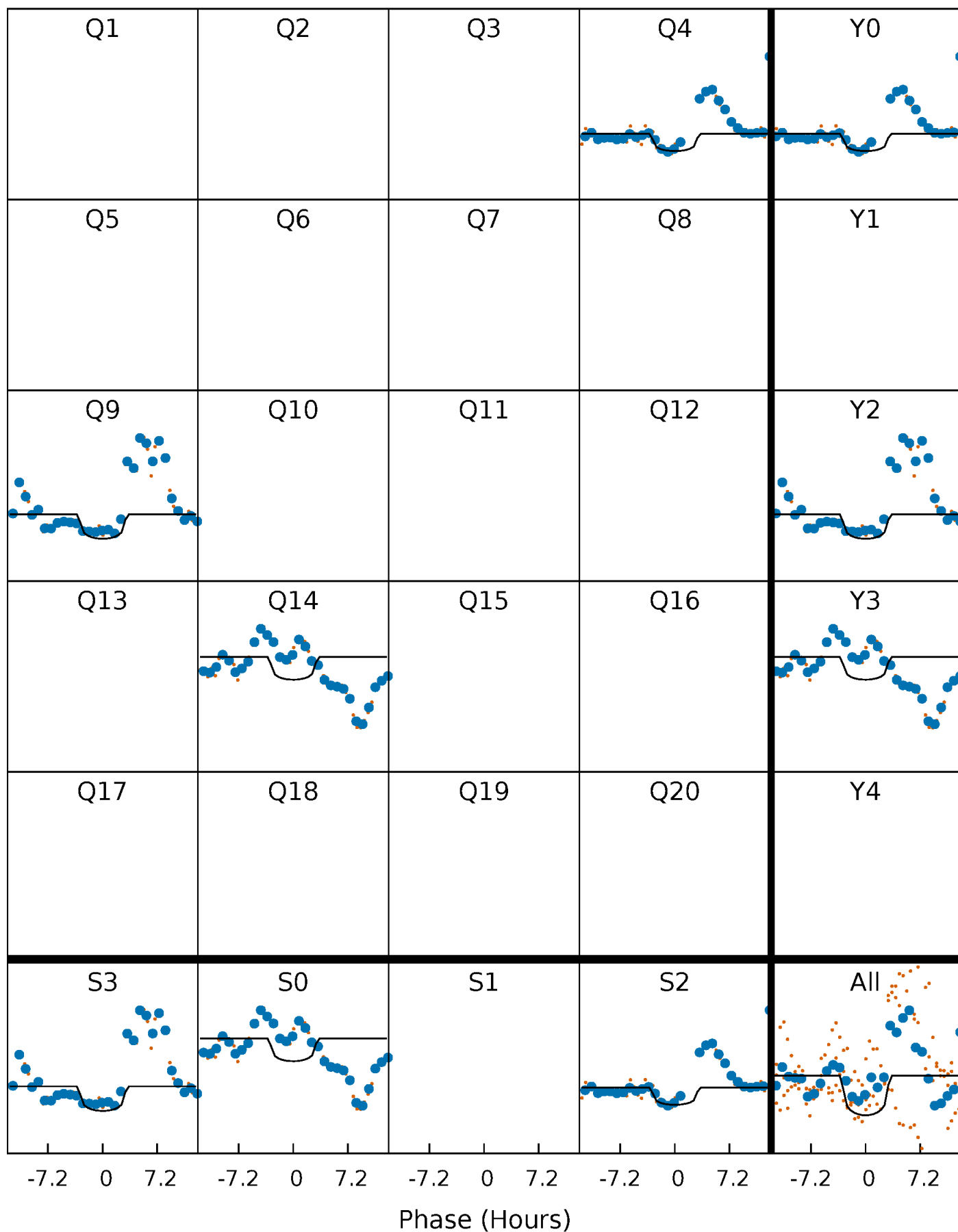
PDC Quarter-Phased Transit Curves

TCE 012646841-02 P=443.921618 Days $T_0=413.185188$ (BKJD)



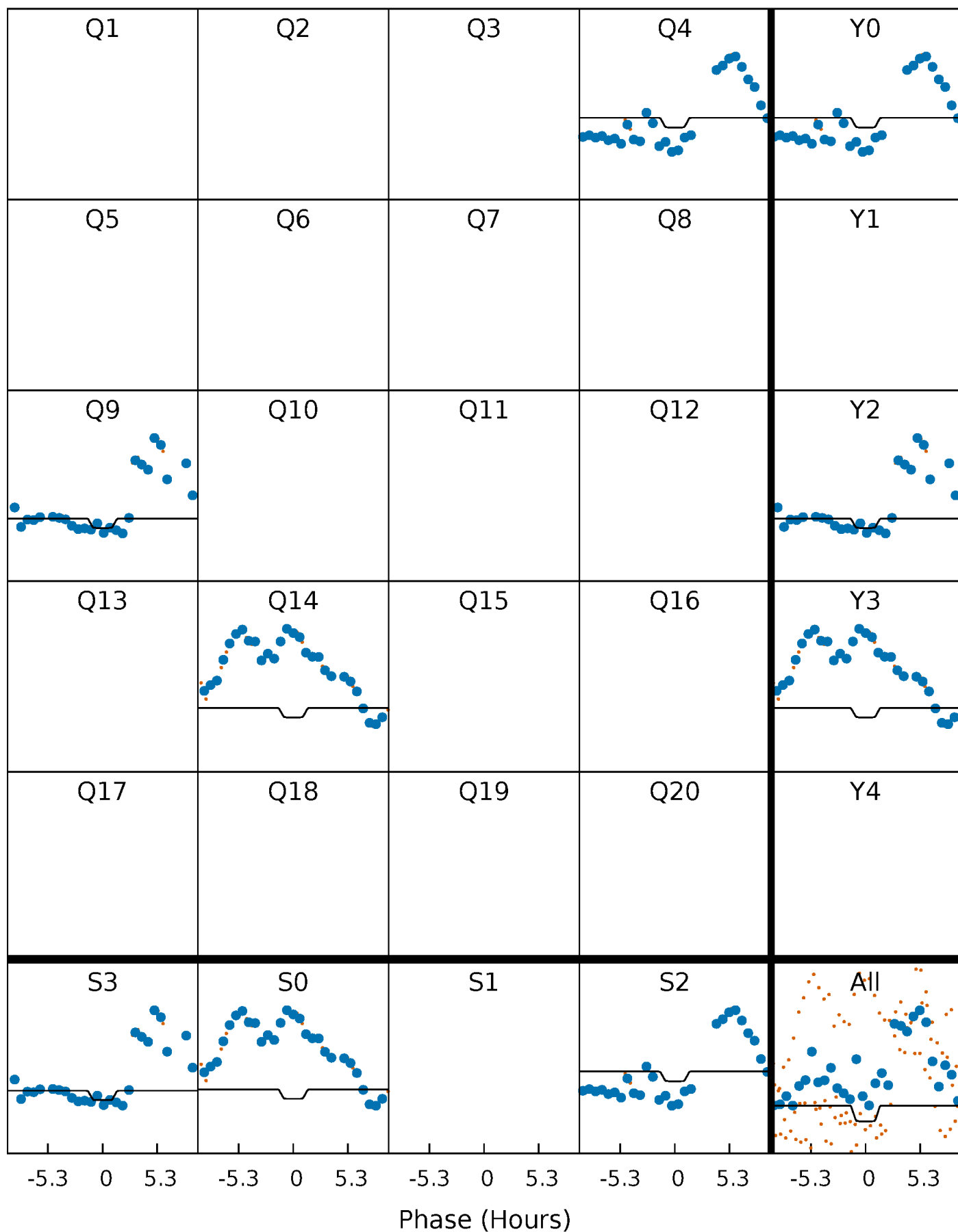
DV Quarter-Phased Transit Curves

TCE 012646841-02 $P=443.921618$ Days $T_0=413.185188$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

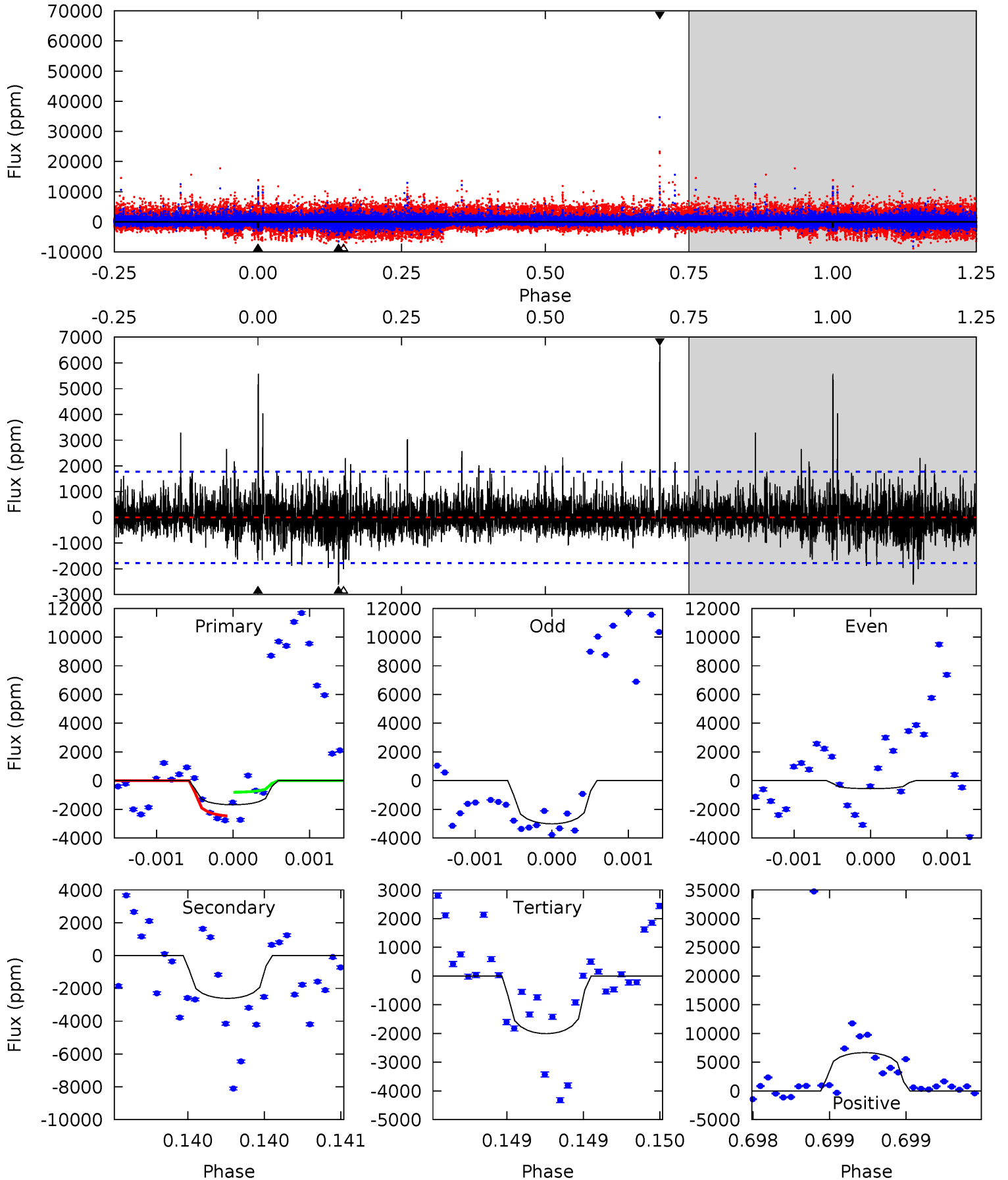
TCE 012646841-02 P=443.966769 Days $T_0=413.142361$ (BKJD)



DV Model-Shift Uniqueness Test

012646841-02, P = 443.921618 Days, E = 413.185188 Days

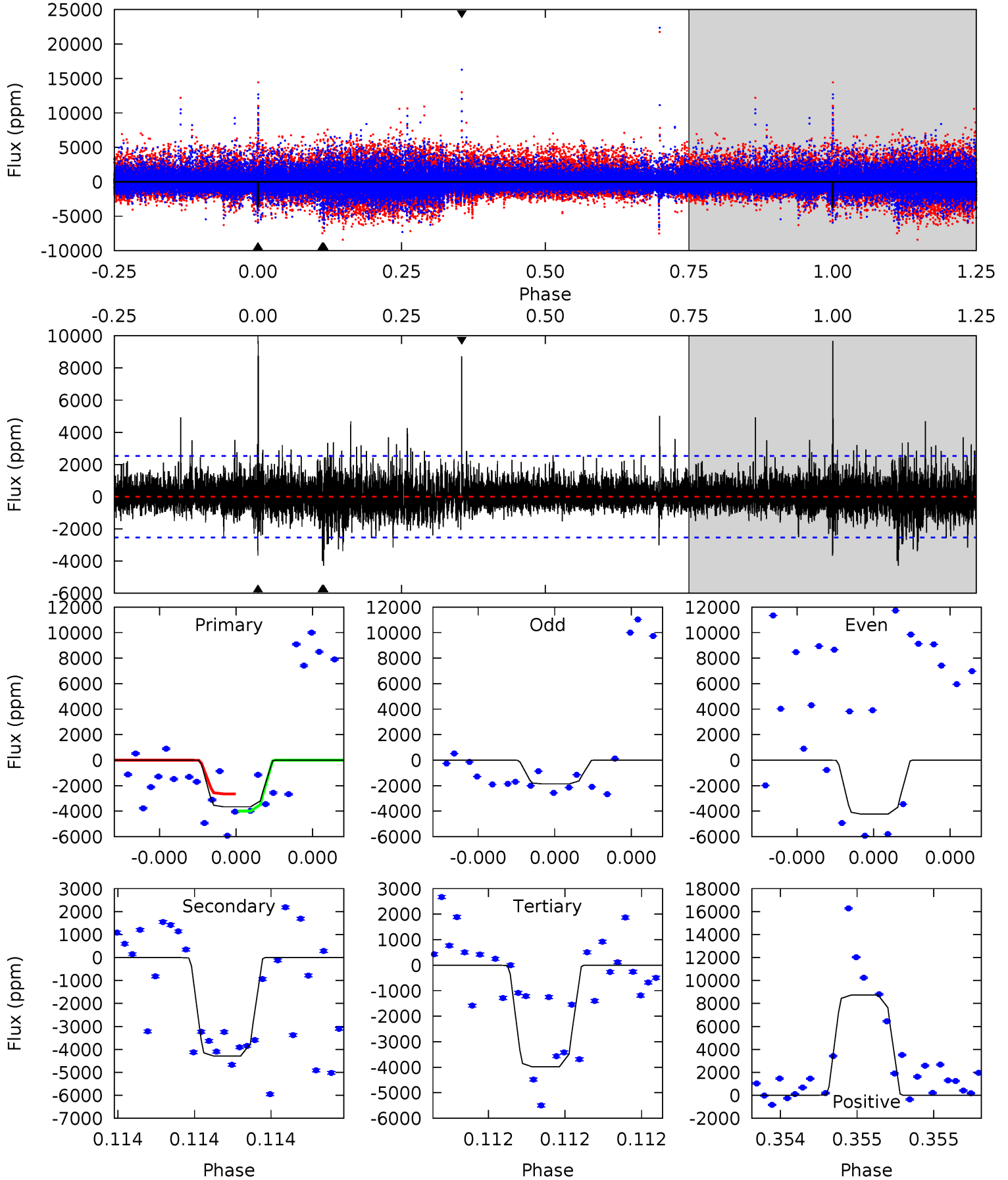
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.28	8.18	6.28	20.9	5.56	3.45	1.63	-1.00	-15.6	1.89	-12.7	0.37	0.56	0.72	2.62



Alt Model-Shift Uniqueness Test

012646841-02, P = 443.966769 Days, E = 413.142361 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.18	9.60	8.91	19.5	5.67	3.63	1.56	-0.73	-11.3	0.68	-9.93	2.56	-1.19	0.69	1.44



Stellar Parameters For KIC 012646841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3344^{+43}_{-40}	$4.976^{+0.045}_{-0.045}$	$0.000^{+0.100}_{-0.100}$	$0.274^{+0.041}_{-0.030}$	$0.259^{+0.052}_{-0.034}$	$17.720^{+4.538}_{-3.605}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+15%/-11%	+20%/-13%	+26%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 012646841-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2611 ± 319	$3.67^{+3.67}_{-2.44}$	127^{+3}_{-3}	2611^{+973}_{-390}	$56002^{+445275}_{-42199}$
Alt.	-4287 ± 447	$3.66^{+3.68}_{-2.56}$	127^{+3}_{-3}	2822^{+1197}_{-466}	$95172^{+914941}_{-72210}$

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 $A_{obs} \gg 1.0$

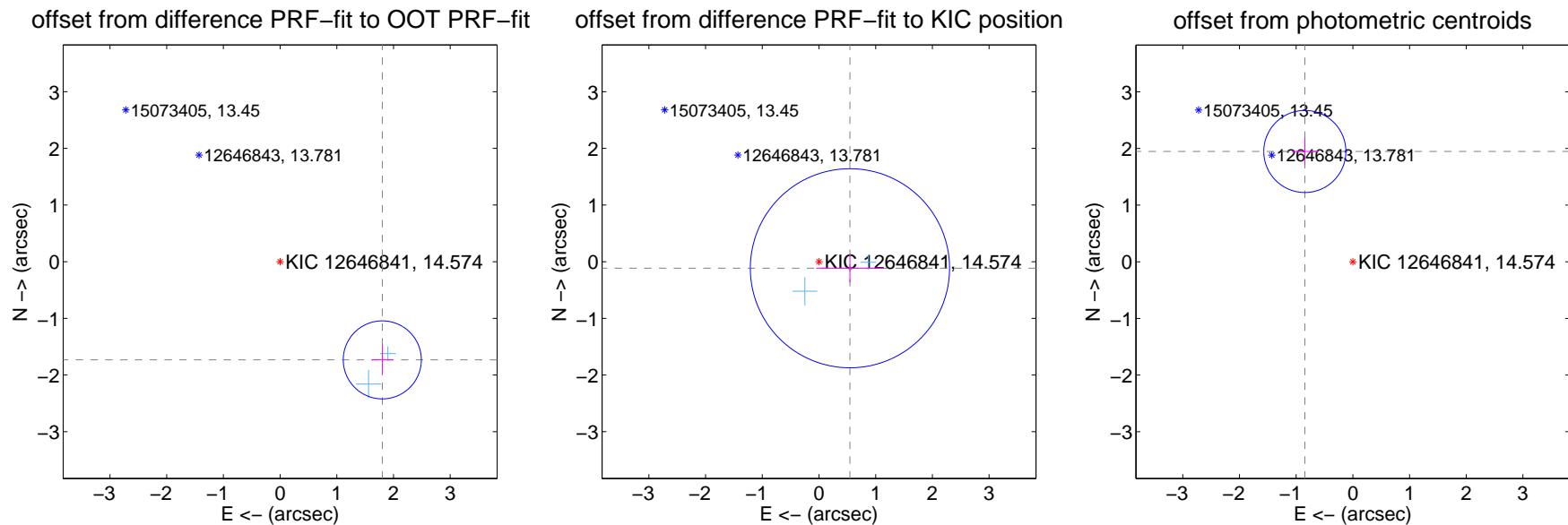
DV Centroid Data

Supplemental centroid analysis for 012646841-02. Kepler magnitude: 14.57. Transit SNR 8.64

There are 2 quarters with good PRF difference image offsets

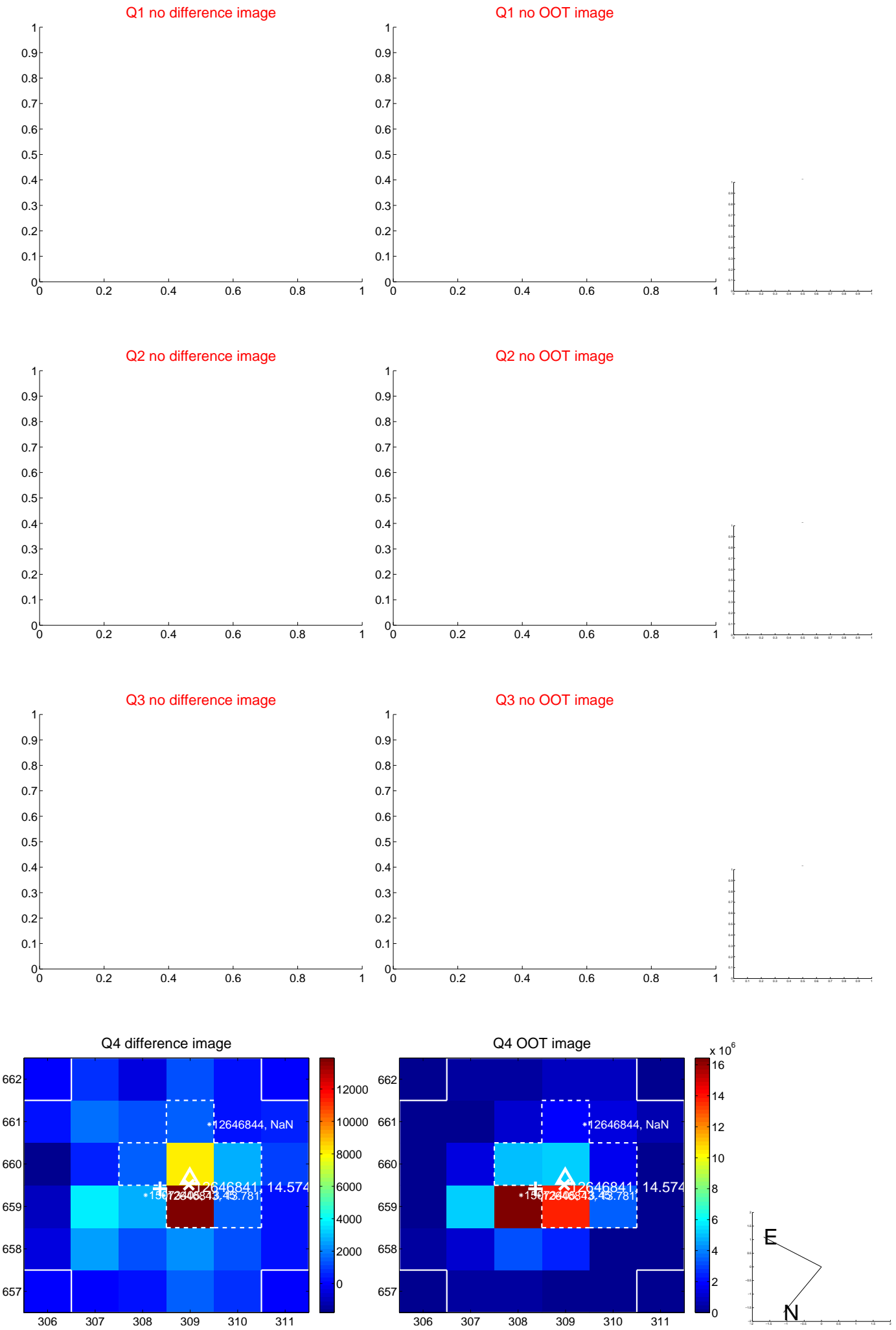
The direct PRF centroid is offset from the target star catalog position by about 1.91 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.500 ± 0.229	10.89	-1.802 ± 0.193	-1.732 ± 0.263
PRF-fit source offset from KIC position	0.558 ± 0.585	0.95	-0.546 ± 0.596	-0.116 ± 0.251
photometric centroid source offset	2.12 ± 0.24	8.80	0.85 ± 0.23	1.95 ± 0.24



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.

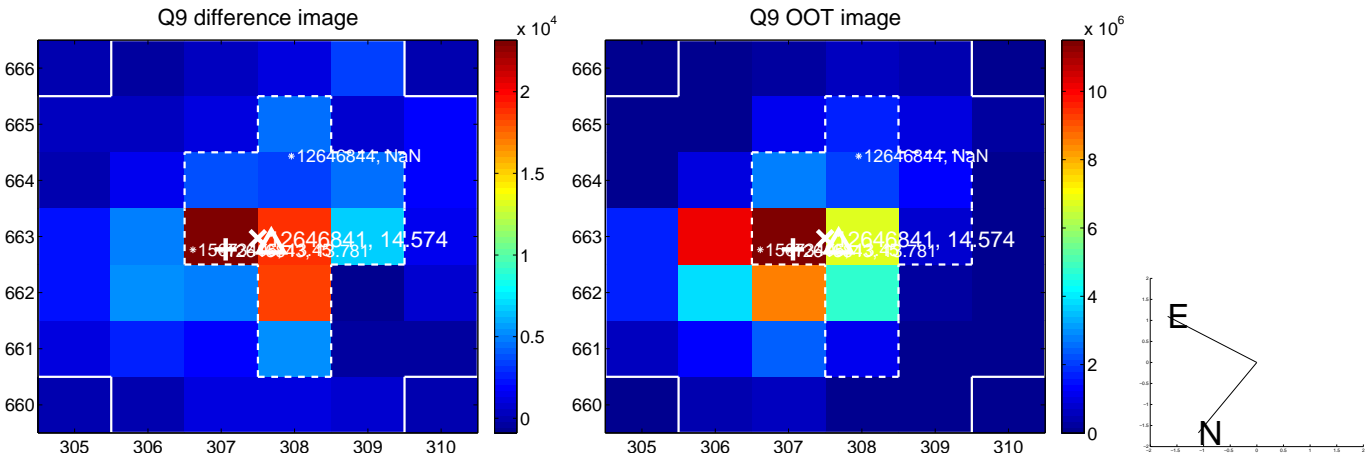
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



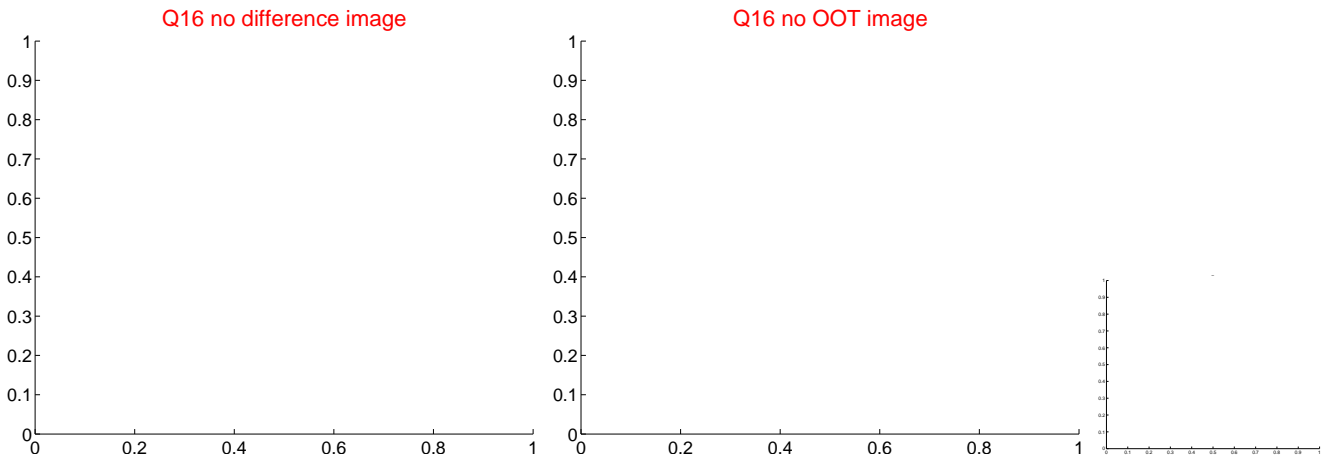
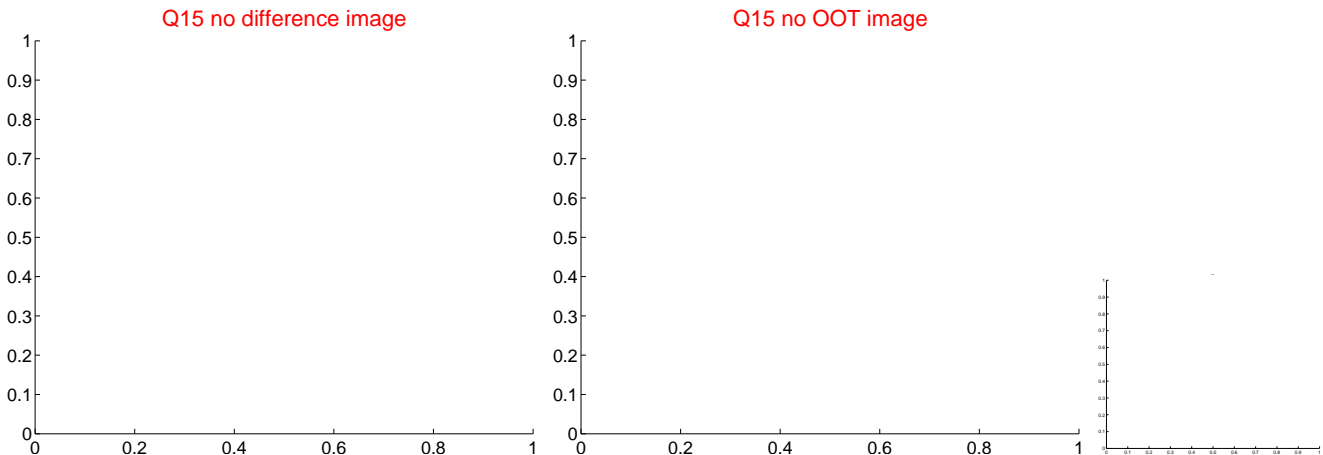
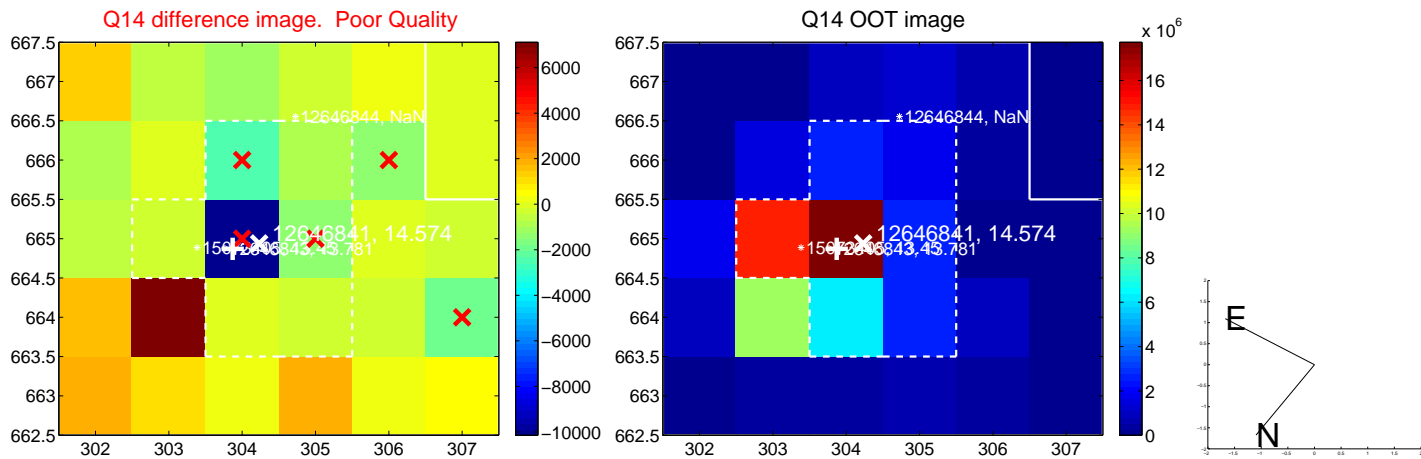
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



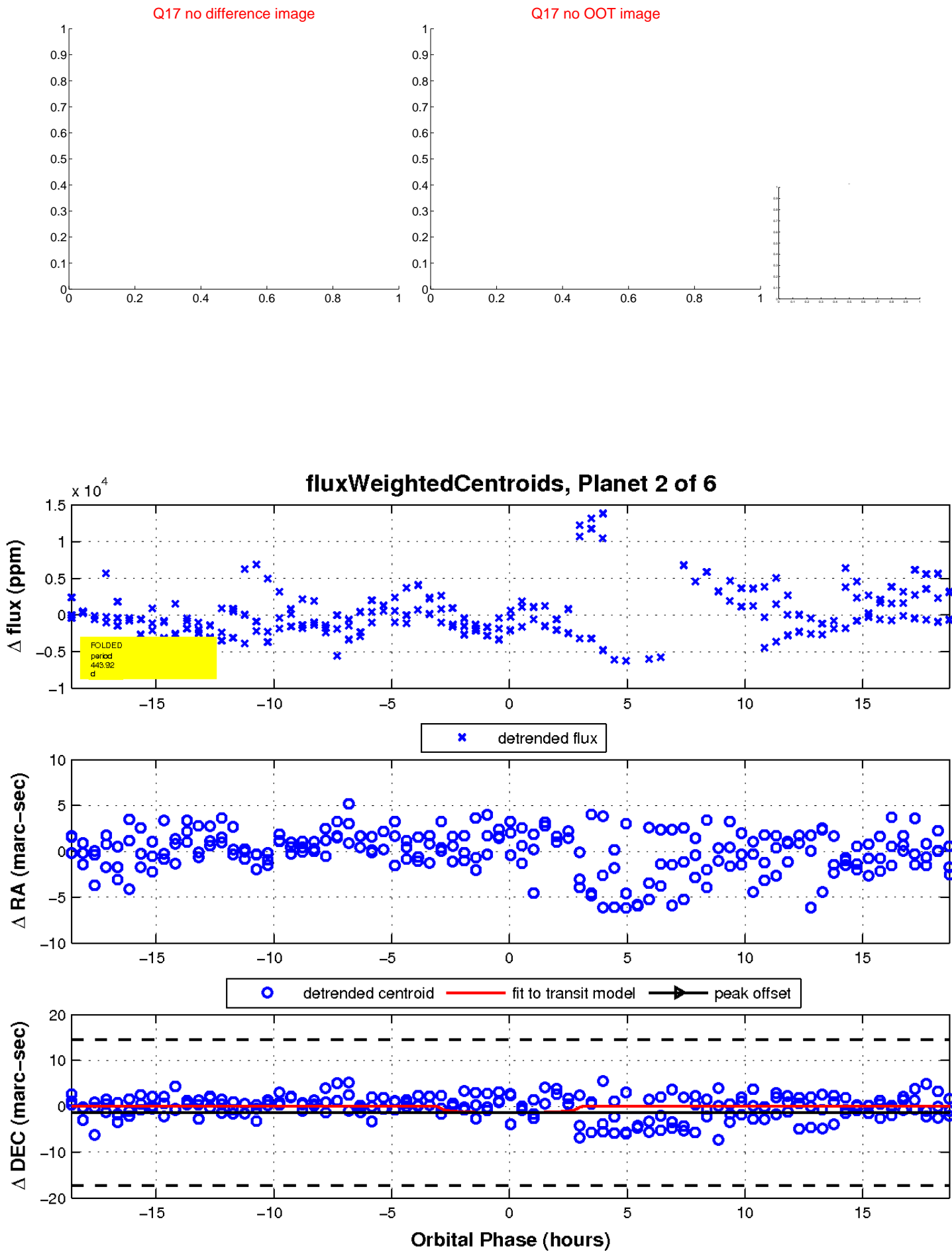
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

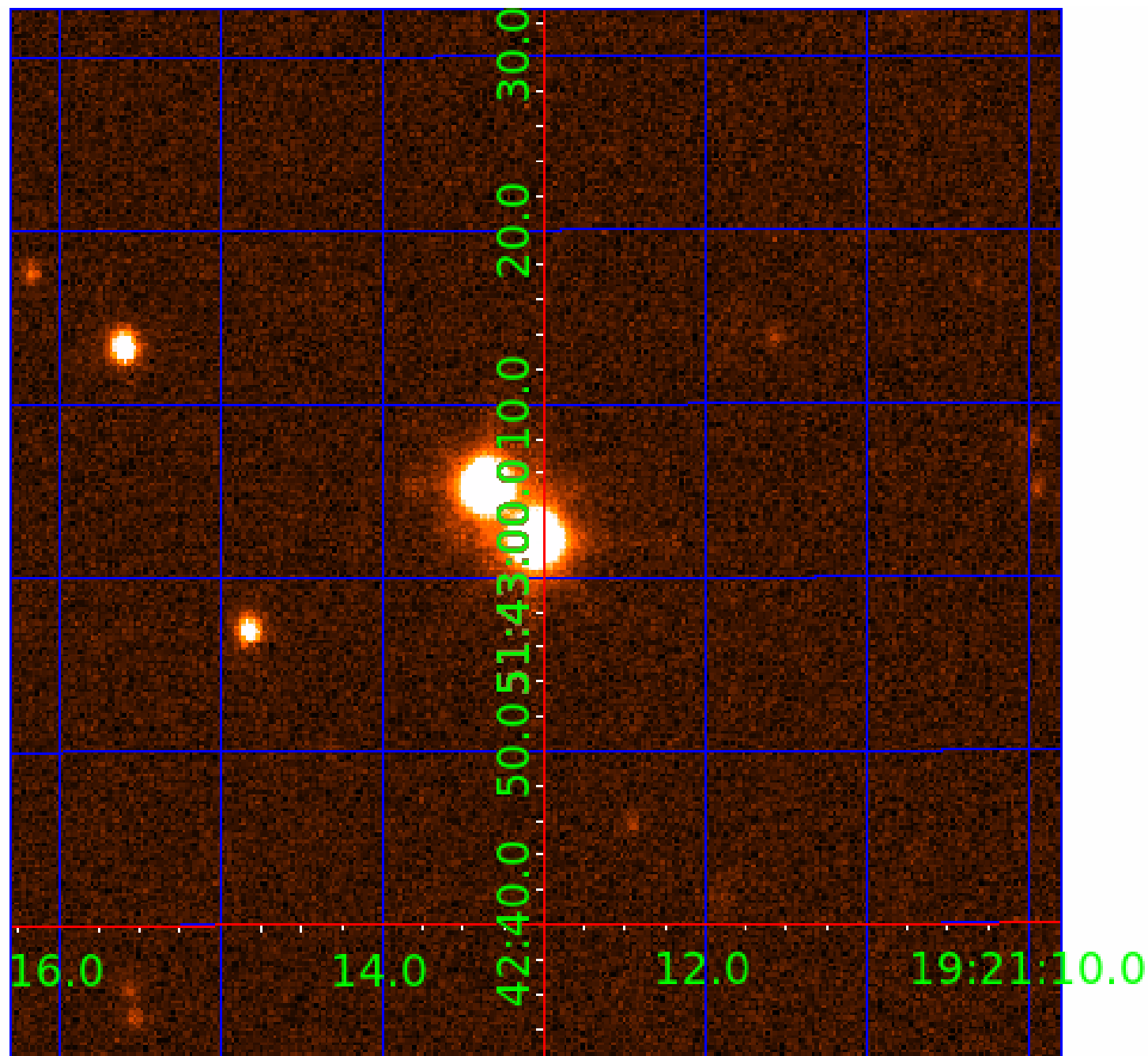


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012646841

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})
012646841-01	OBS	No	529.675121	265.175188	3009.7	17.872	15.0	7.5	0.27	3344	1.49	0.01
012646841-02	OBS	No	443.921618	413.185188	4432.1	6.275	13.0	8.6	0.27	3344	1.80	0.02
012646841-03	OBS	No	426.771036	464.186345	5534.6	15.107	11.8	9.3	0.27	3344	2.17	0.02
012646841-04	OBS	No	442.297645	466.773537	3528.9	7.779	11.2	6.9	0.27	3344	1.61	0.02
012646841-05	OBS	No	243.711732	192.019221	2018.7	9.064	10.9	6.6	0.27	3344	1.22	0.04
012646841-06	OBS	No	5.621501	136.923495	3998.5	1.500	10.1	-1.0	0.27	3344	1.72	5.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012646841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
012646841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_KIC_POS
012646841-06	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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.

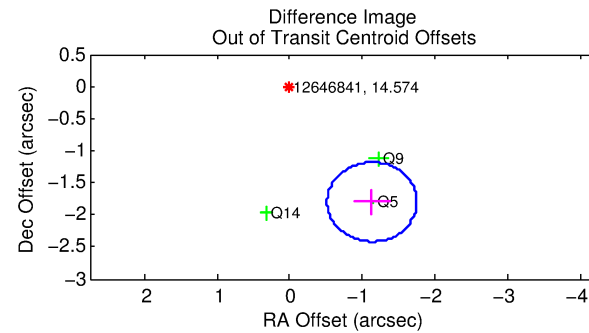
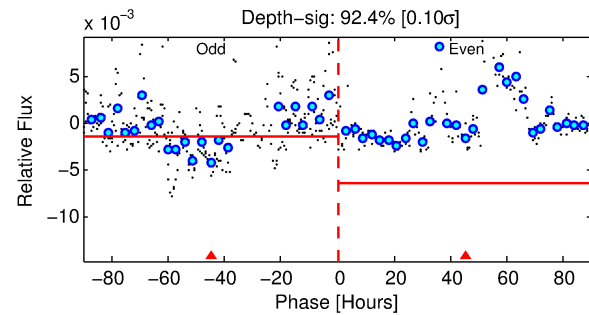
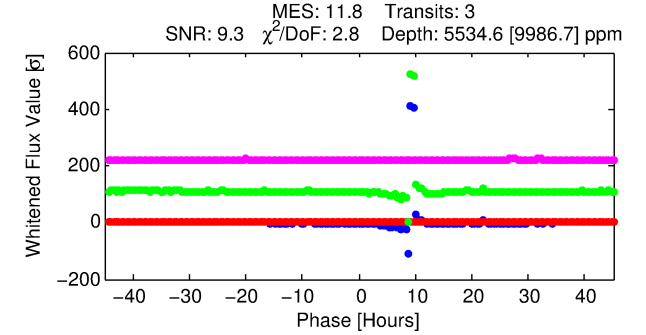
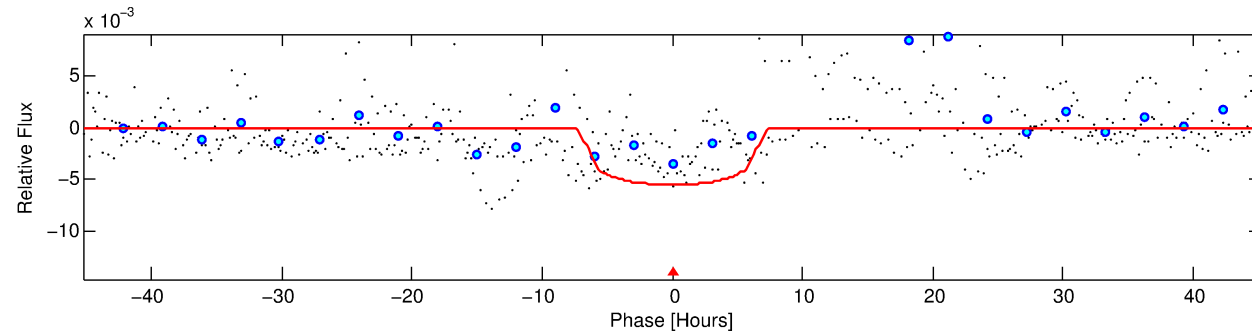
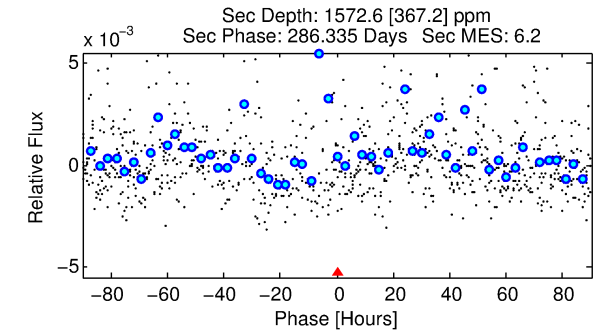
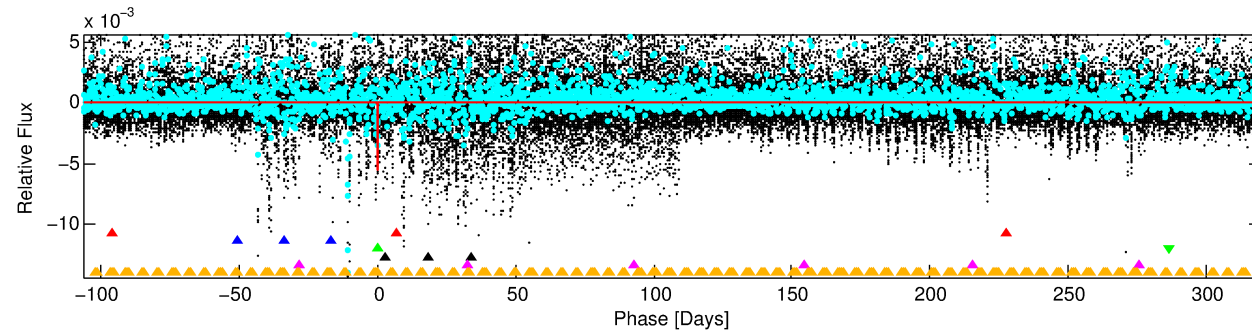
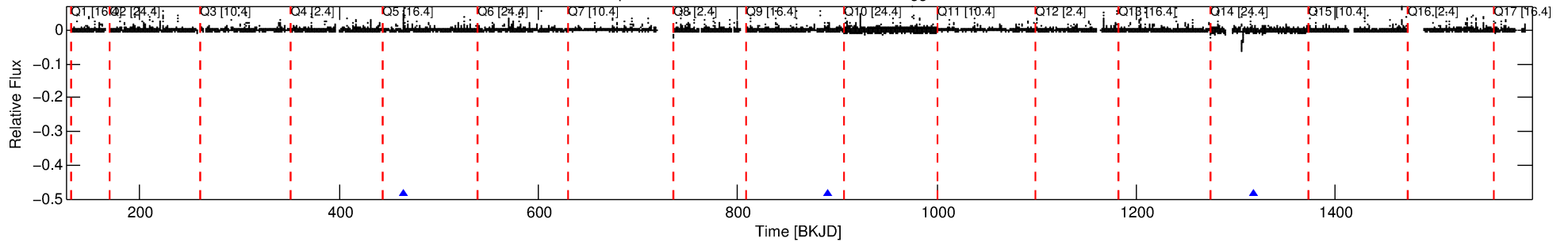
Ephemeris Match Information For 012646841-03

No Significant Match Found

DV One-Page Summary

KIC: 12646841 Candidate: 3 of 6 Period: 426.771 d

Kp: 14.57 R*: 0.27 Rs Teff: 3344.0 K Logg: 4.98 Fe/H: 0.000



DV Fit Results:

Period = 426.77104 [0.24455] d
Epoch = 464.1863 [0.2422] BKJD
Rp/R* = 0.0727 [0.0991]
a/R* = 174.67 [665.57]
b = 0.70 [2.75]
Seff = 0.02 [0.00]
Teq = 92 [3] K
Rp = 2.18 [2.98] Re
a = 0.7074 [0.0747] AU
Ag = 91511.74 [250428.32] [0.37σ]
Teffp = 2469 [1688] K [1.41σ]

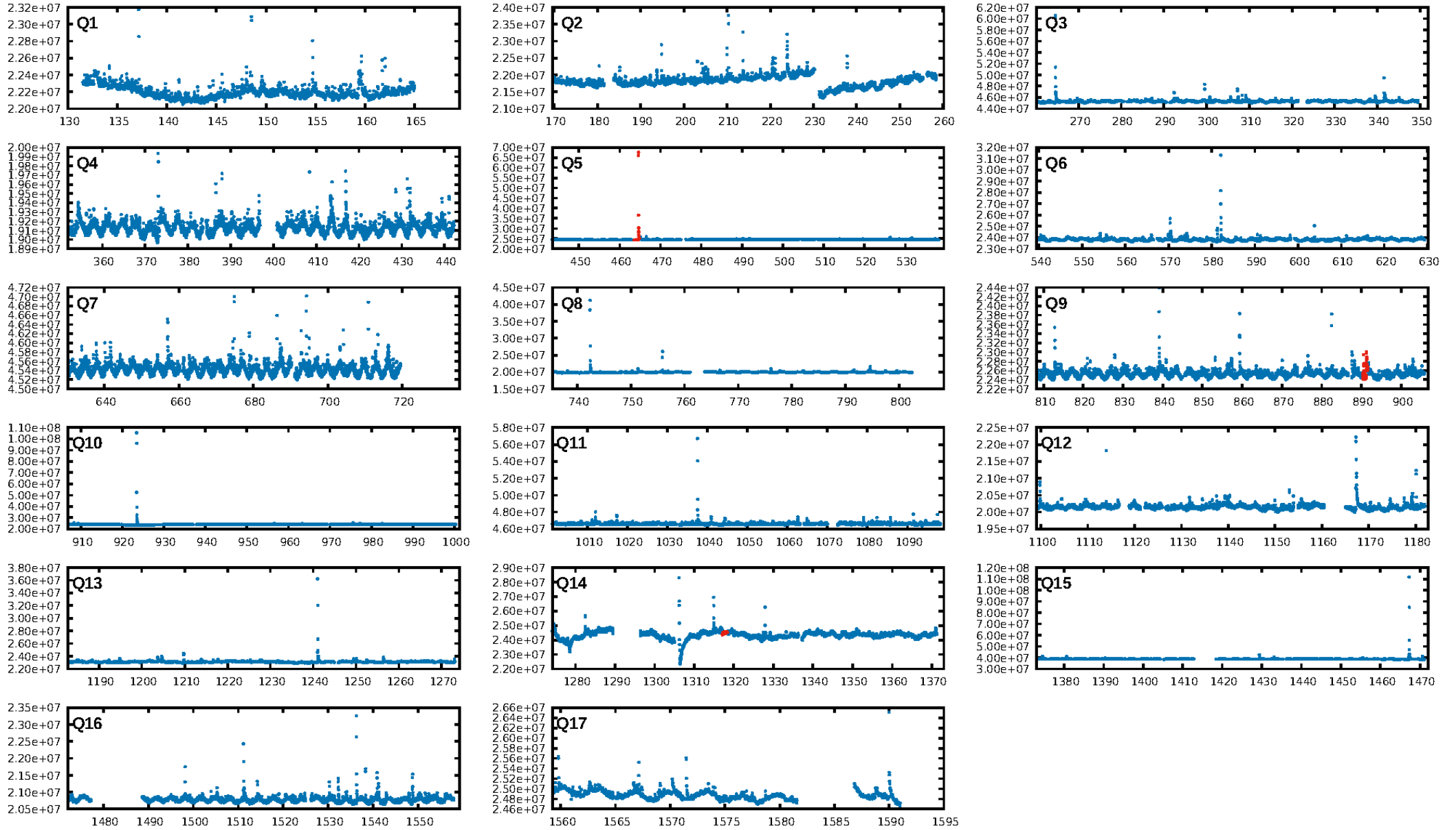
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [249.38σ]
LongPeriod-sig: 100.0% [21.93σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 83.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.9052
Centroid-sig: N/A
Centroid-so: 2.326 arcsec [14.04σ]
OotOffset-rm: 2.127 arcsec [10.34σ]
KicOffset-rm: 0.380 arcsec [2.39σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.33 [1/3]

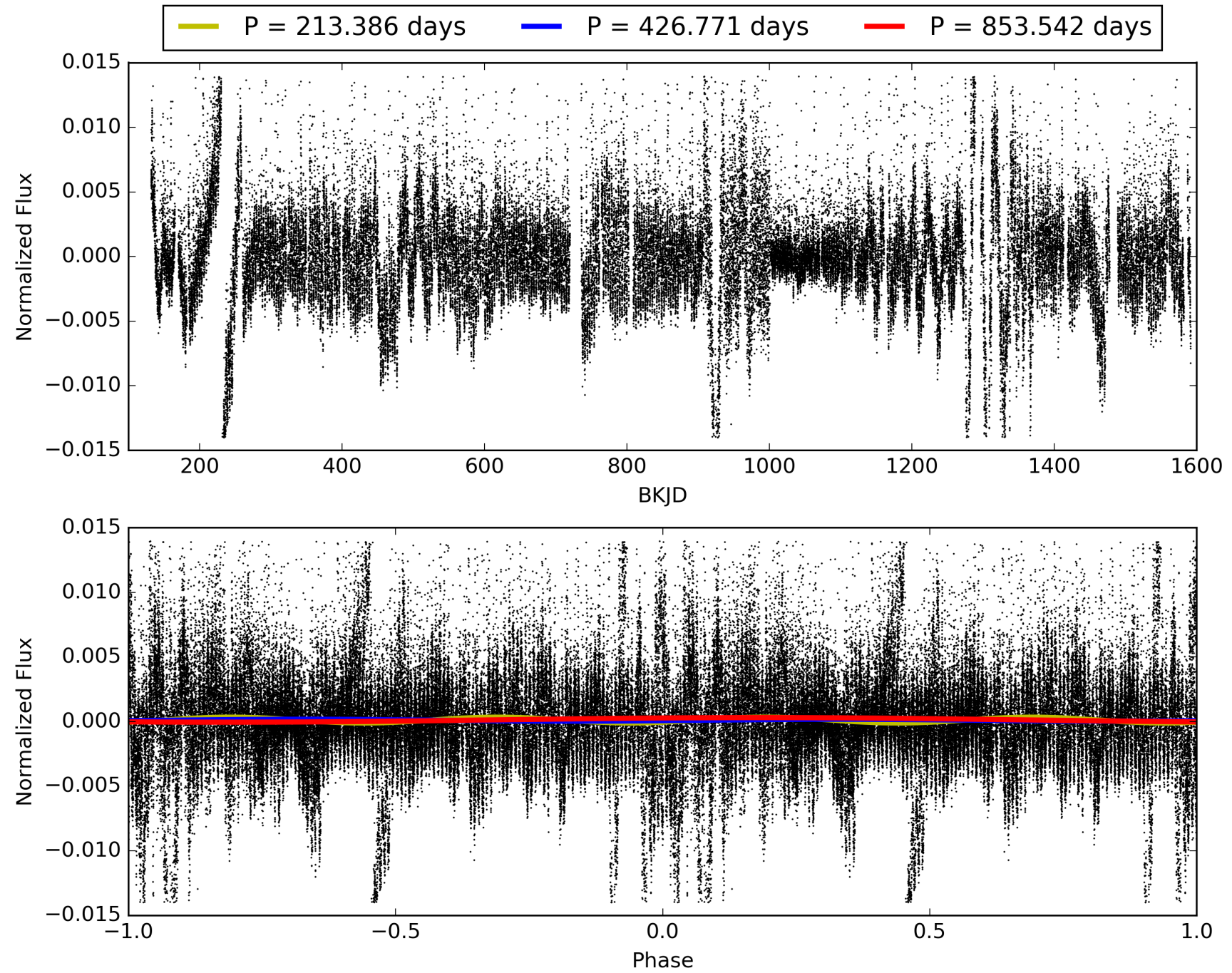
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:37:49 Z

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

TCE 012646841-03, PDC Light Curves

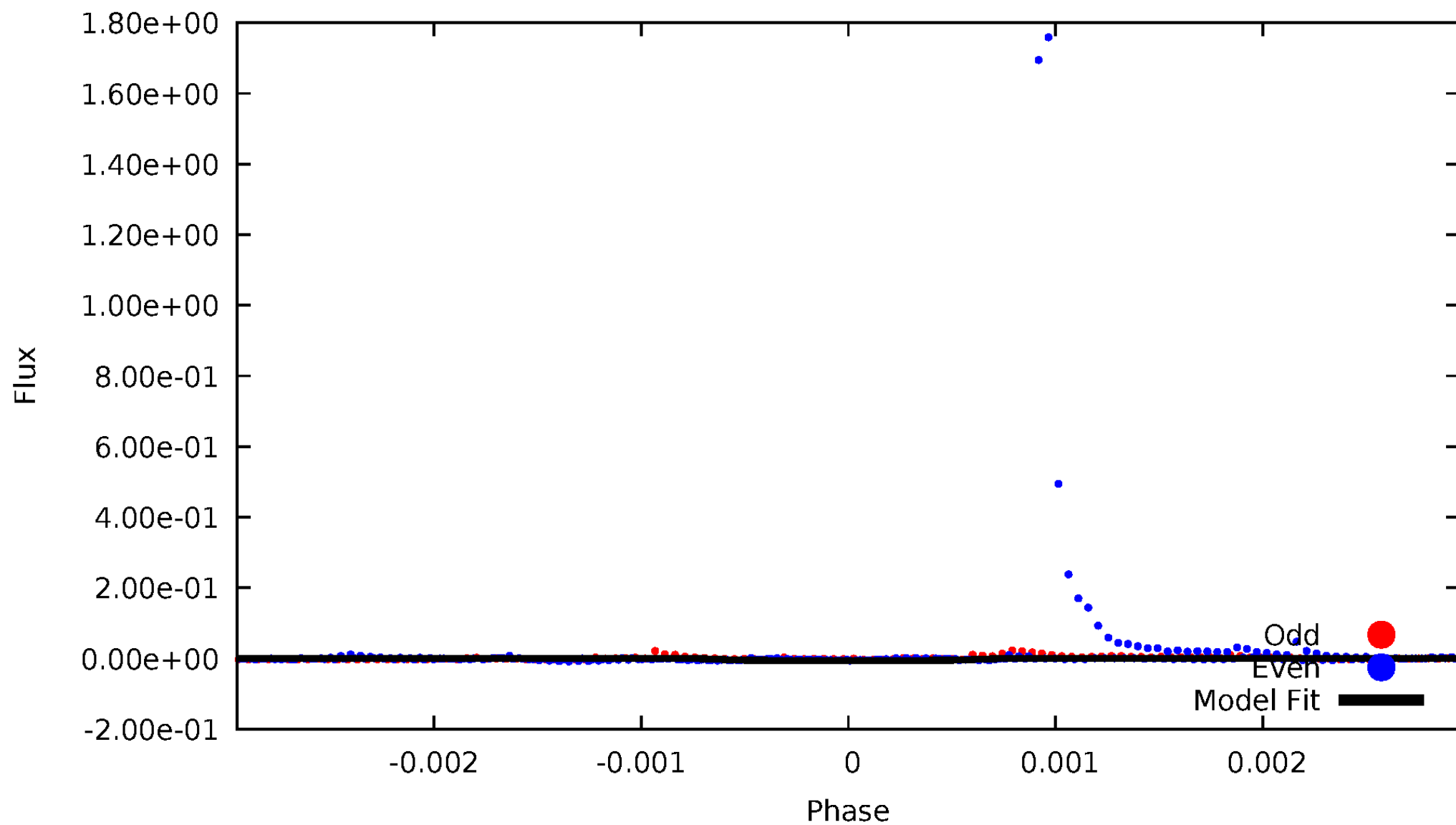


TCE 012646841-03



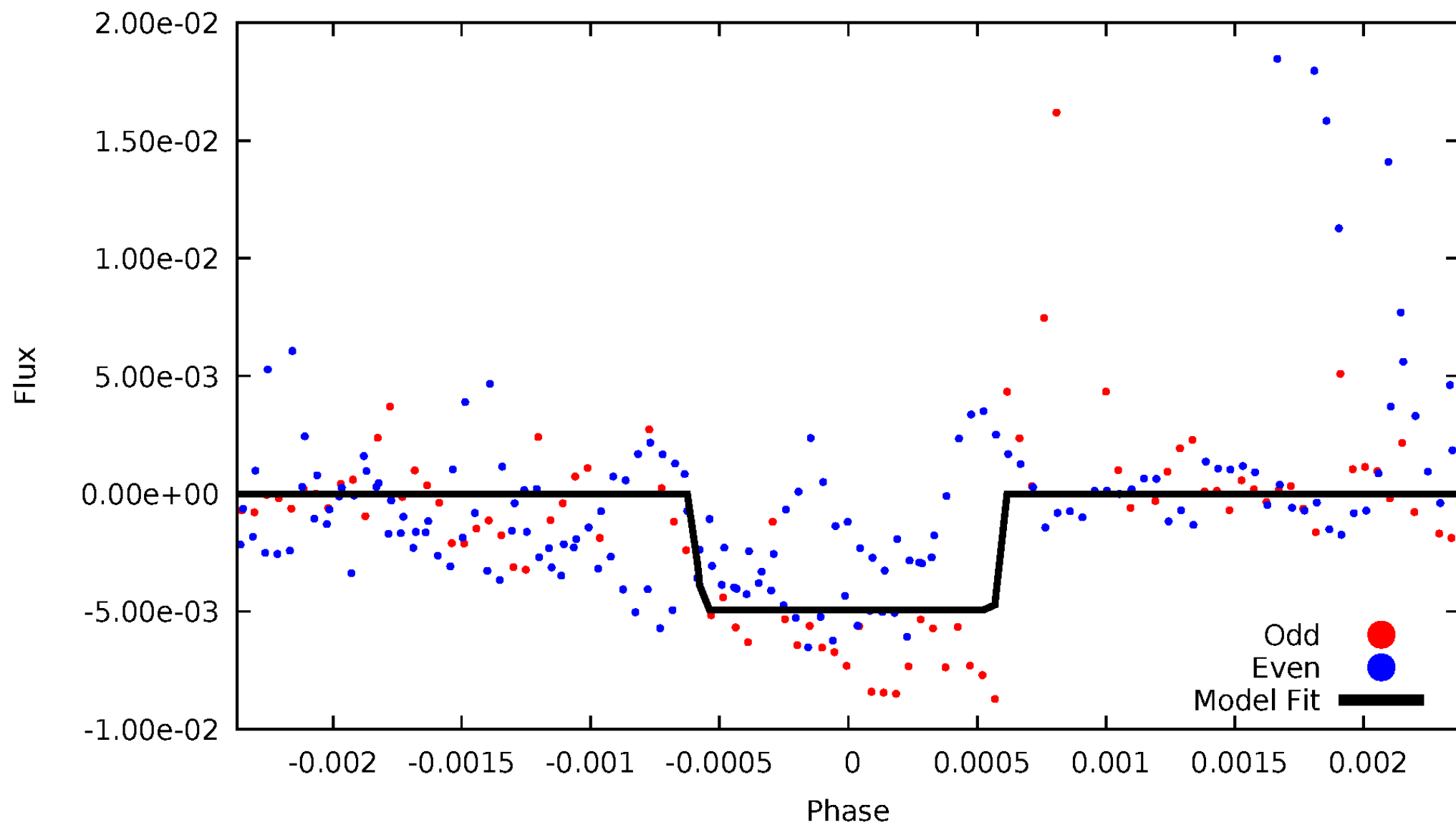
DV Odd/Even

TCE 012646841-03



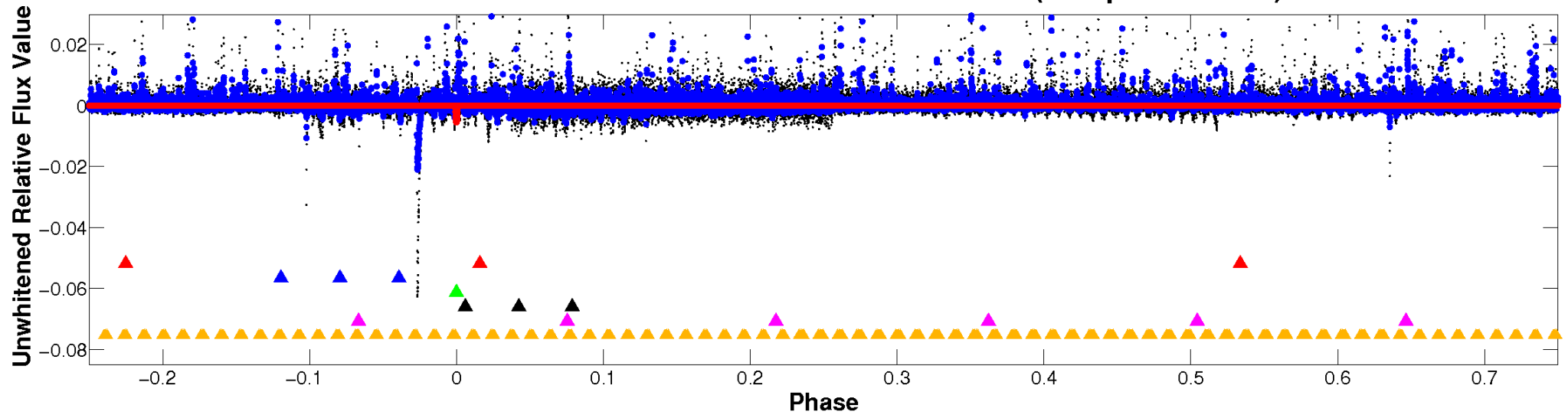
ALT Odd/Even

TCE 012646841-03

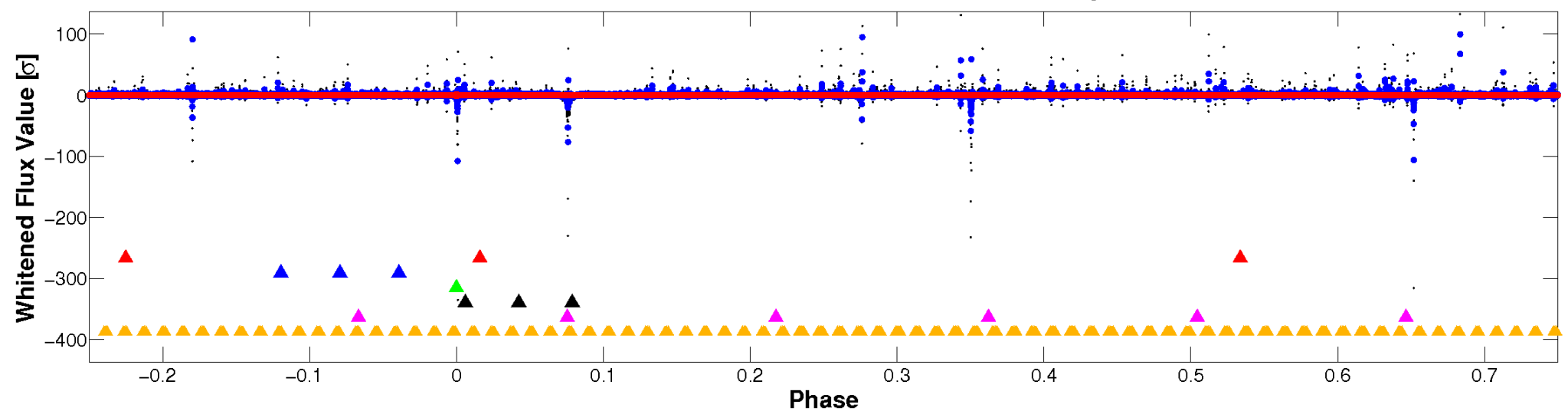


Non-Whitened Vs. Whitened Light Curve

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

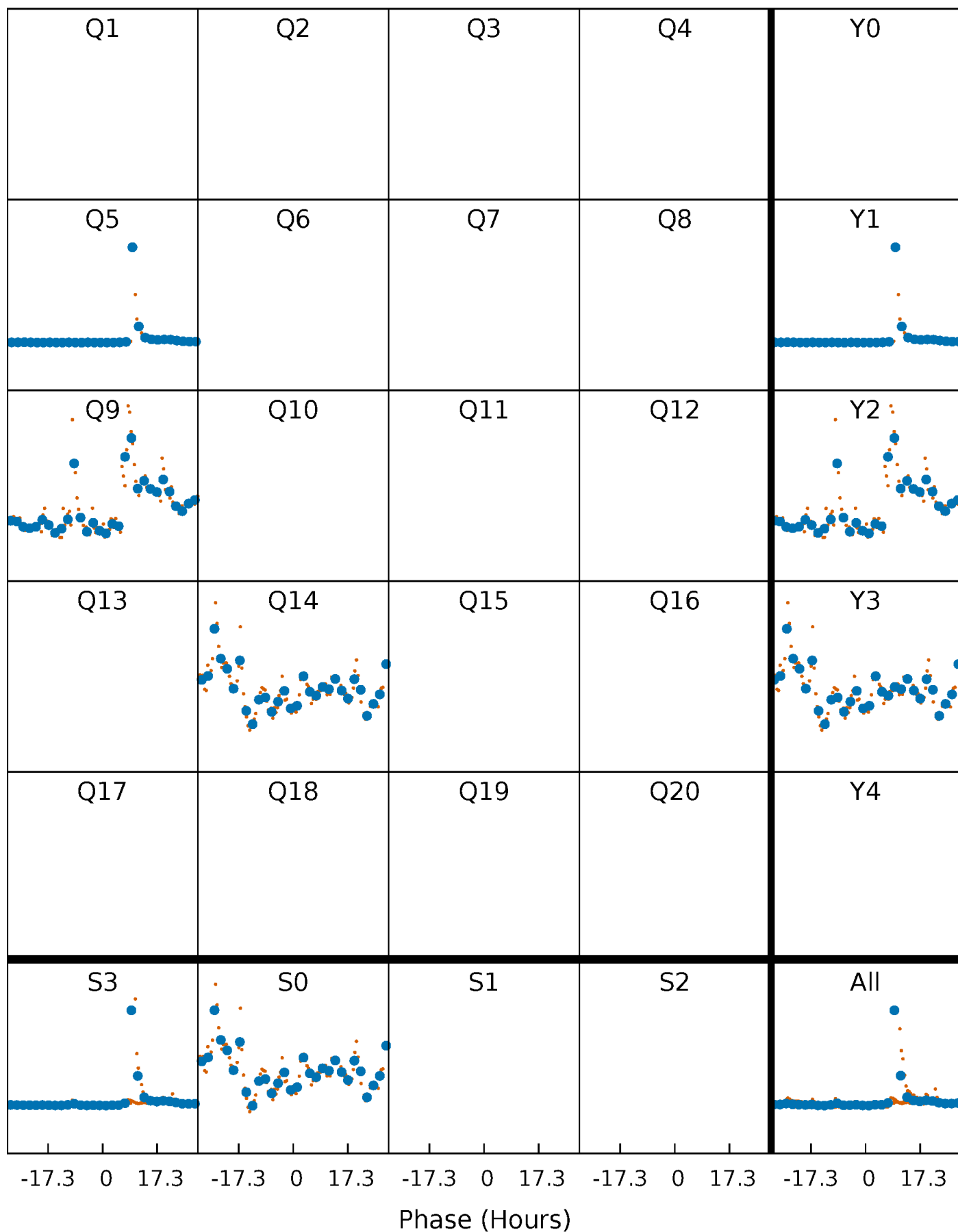


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



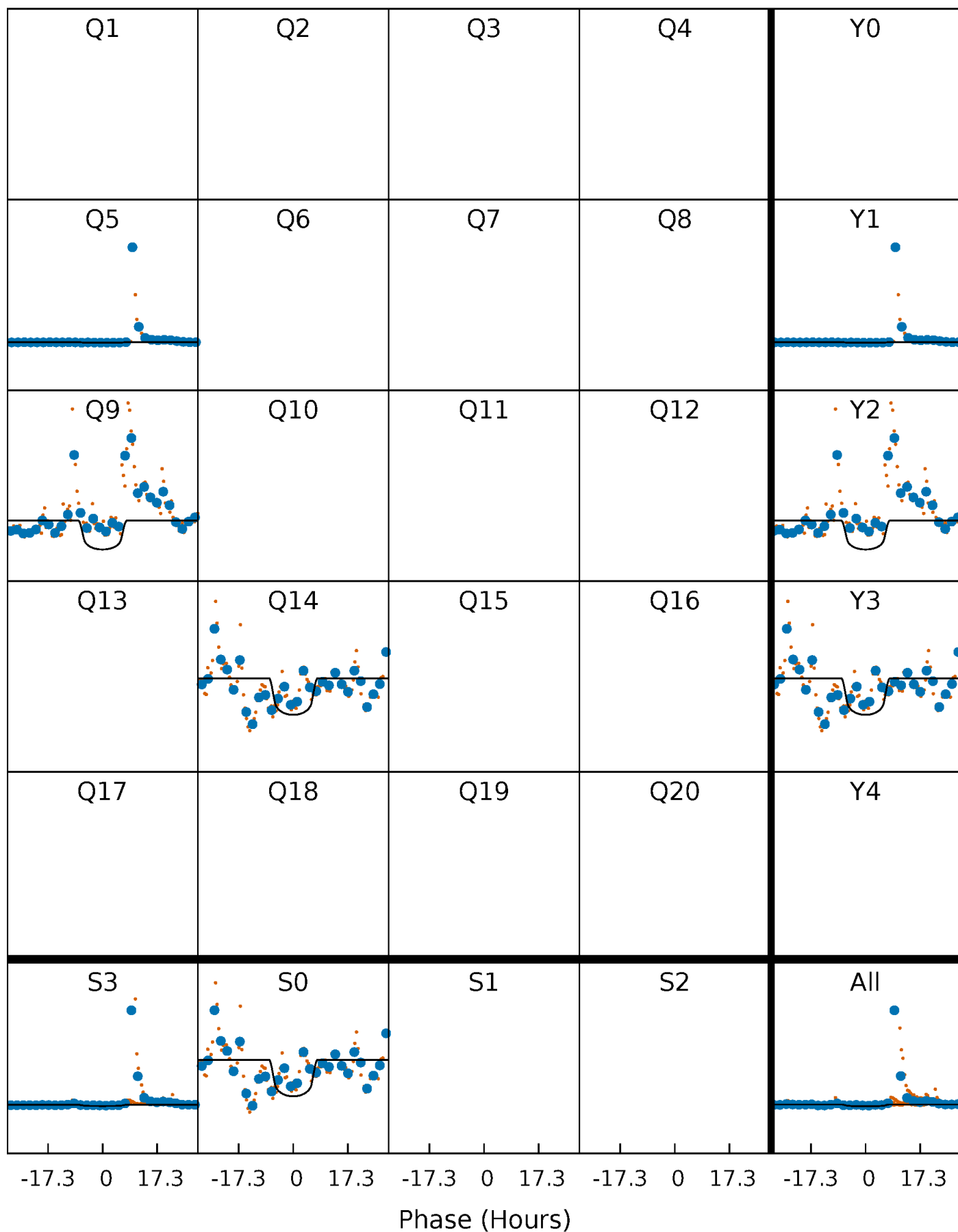
PDC Quarter-Phased Transit Curves

TCE 012646841-03 $P=426.771036$ Days $T_0=464.186345$ (BKJD)



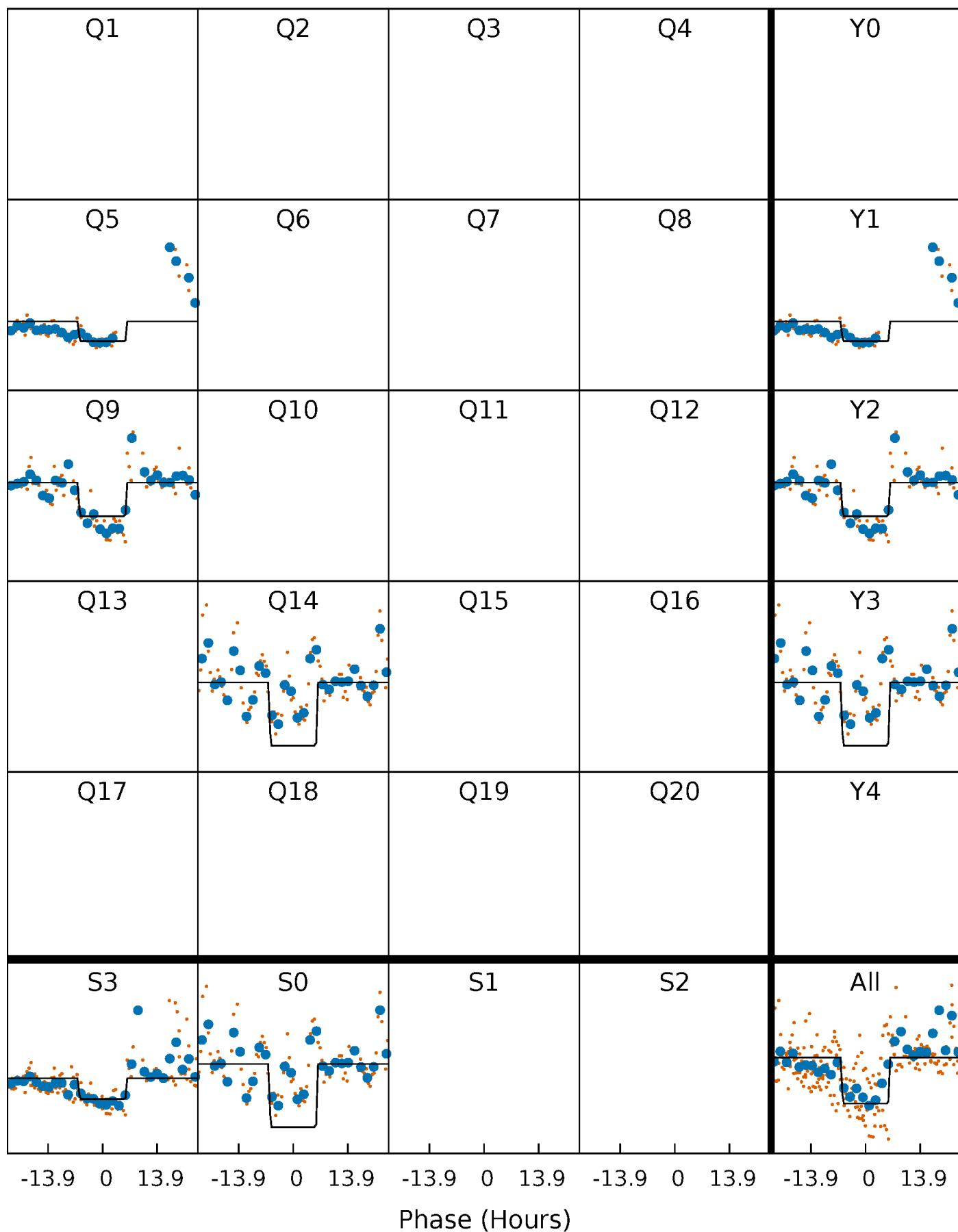
DV Quarter-Phased Transit Curves

TCE 012646841-03 $P=426.771036$ Days $T_0=464.186345$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

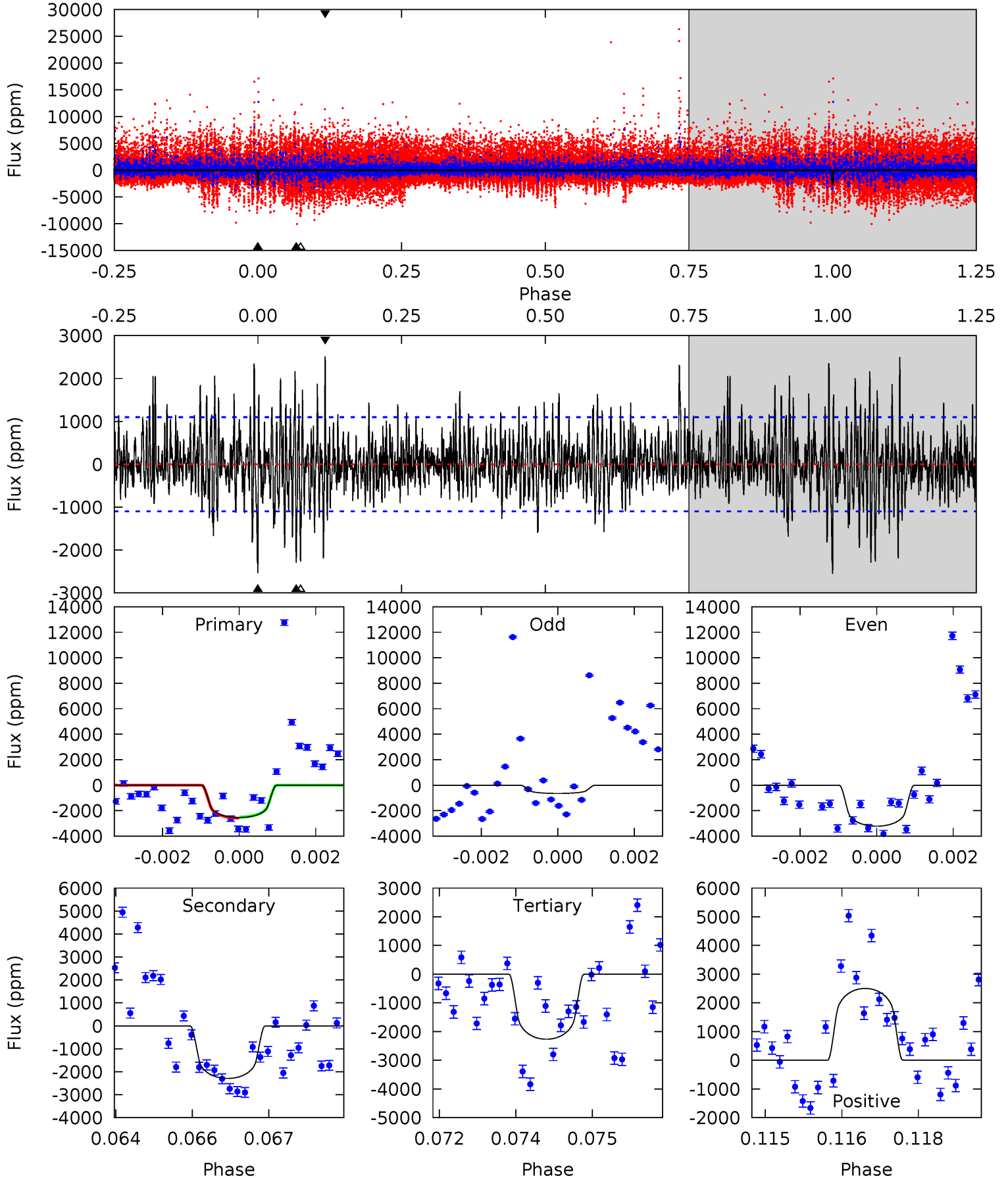
TCE 012646841-03 $P=426.693600$ Days $T_0=464.256730$ (BKJD)



DV Model-Shift Uniqueness Test

012646841-03, P = 426.771036 Days, E = 37.415309 Days

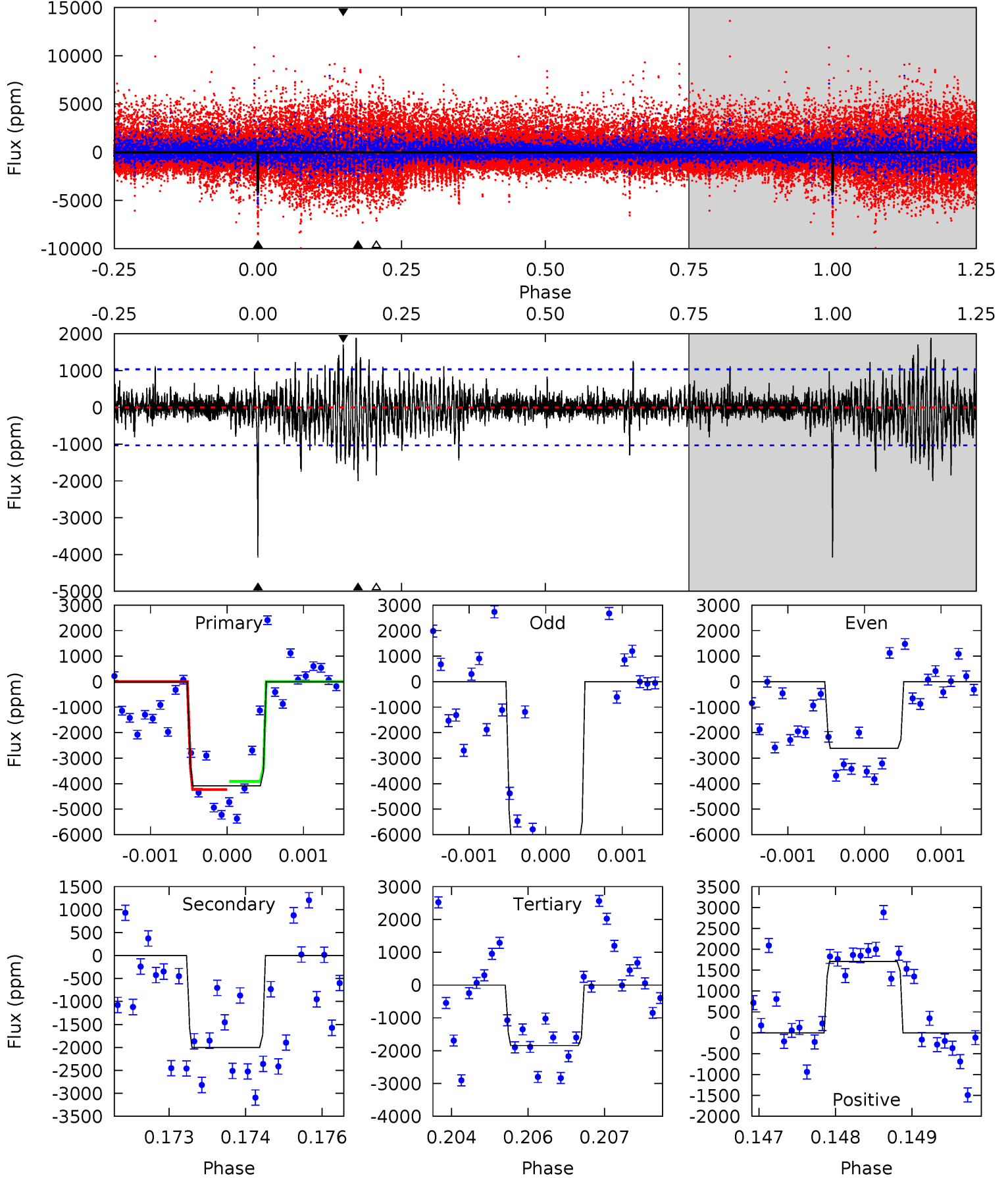
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	11.2	11.1	12.2	5.37	3.17	2.74	1.33	0.18	0.12	-1.03	0.64	0.97	0.50	0.19



Alt Model-Shift Uniqueness Test

012646841-03, P = 426.693600 Days, E = 37.563130 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.4	10.5	9.66	8.96	5.42	3.24	1.87	11.7	12.4	0.83	1.53	8.27	0.88	0.32	0.84



Stellar Parameters For KIC 012646841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3344^{+43}_{-40}	$4.976^{+0.045}_{-0.045}$	$0.000^{+0.100}_{-0.100}$	$0.274^{+0.041}_{-0.030}$	$0.259^{+0.052}_{-0.034}$	$17.720^{+4.538}_{-3.605}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+15%/-11%	+20%/-13%	+26%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 012646841-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2293 ± 204	$3.05^{+2.60}_{-2.10}$	128^{+3}_{-3}	2721^{+1079}_{-387}	$70262^{+601565}_{-50266}$
Alt.	-2001 ± 191	$3.07^{+2.55}_{-1.95}$	128^{+3}_{-3}	2654^{+879}_{-362}	$59686^{+365276}_{-42308}$

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 $A_{obs} \gg 1.0$

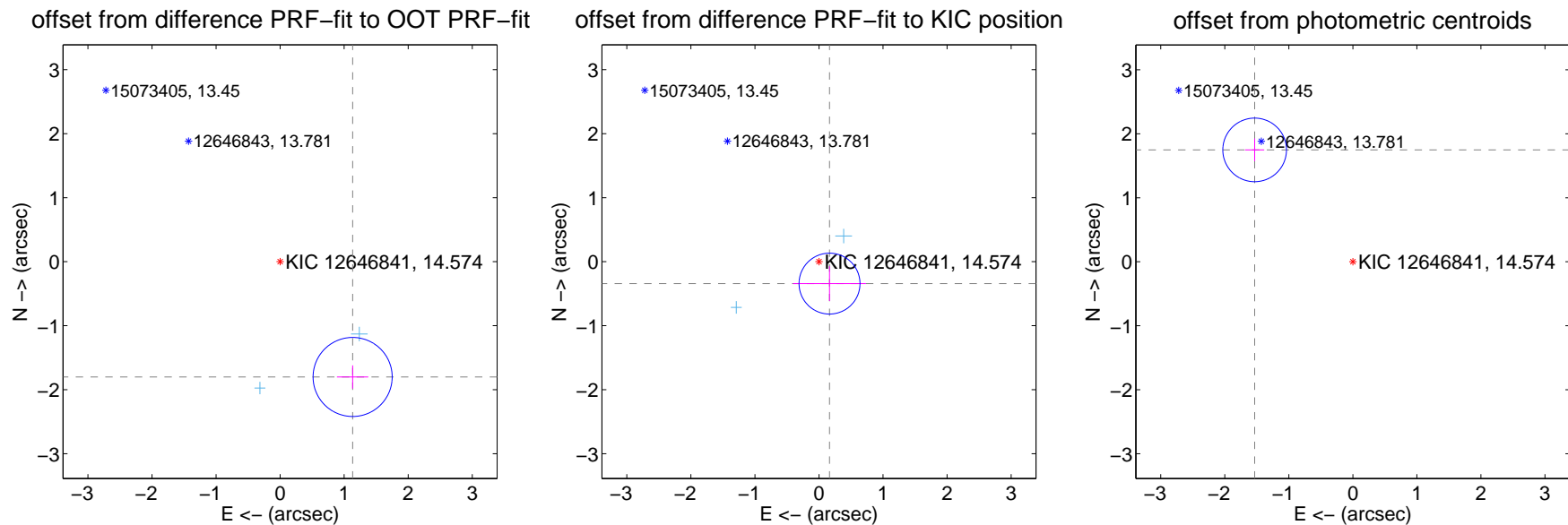
DV Centroid Data

Supplemental centroid analysis for 012646841-03. Kepler magnitude: 14.57. Transit SNR 9.29

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.59 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.127 ± 0.206	10.34	-1.132 ± 0.244	-1.801 ± 0.181
PRF-fit source offset from KIC position	0.380 ± 0.159	2.39	-0.164 ± 0.569	-0.342 ± 0.272
photometric centroid source offset	2.33 ± 0.17	14.04	1.53 ± 0.15	1.75 ± 0.18

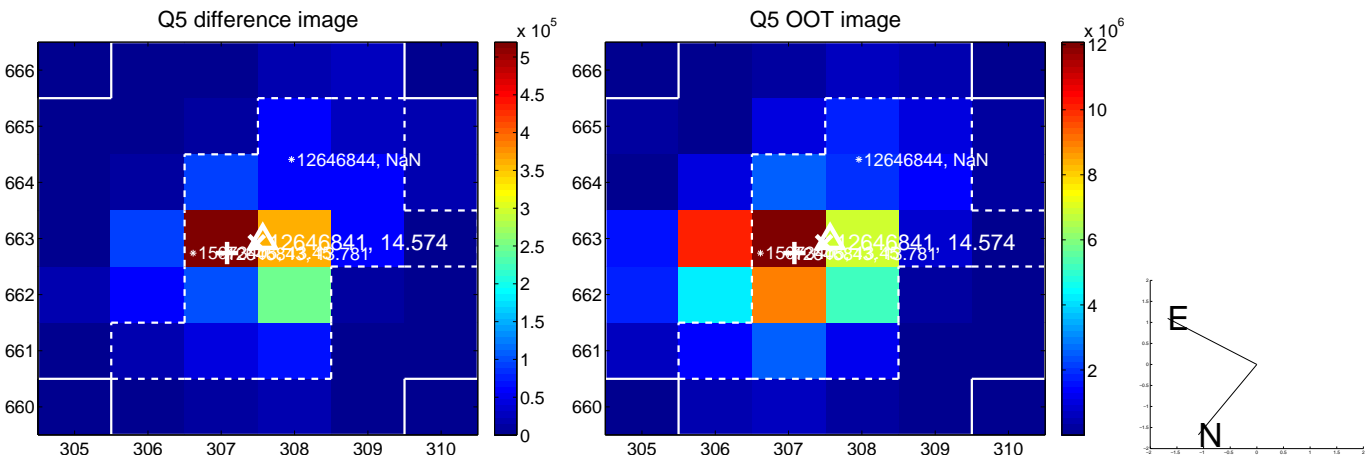


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

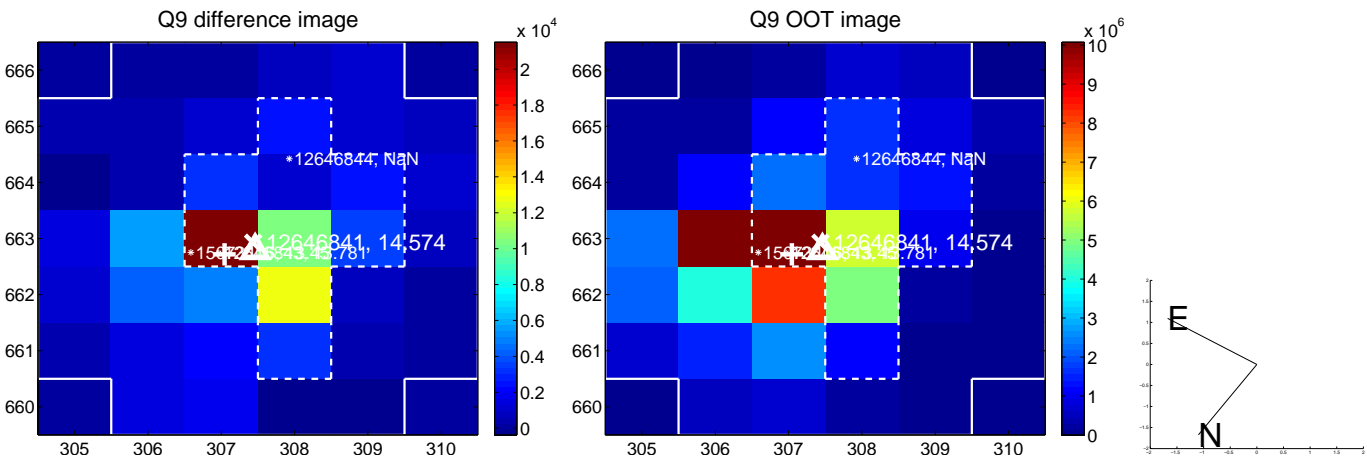
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



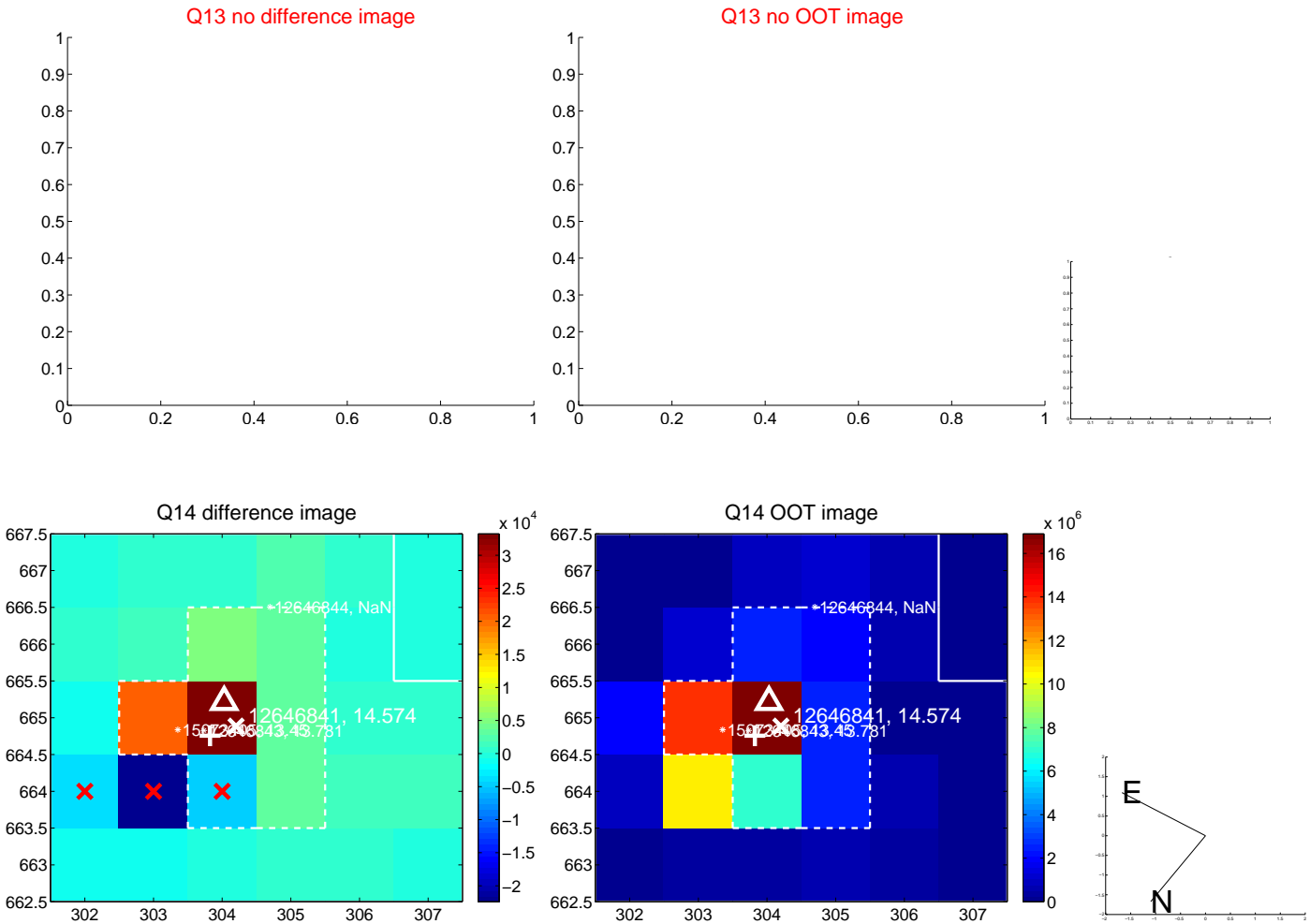
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



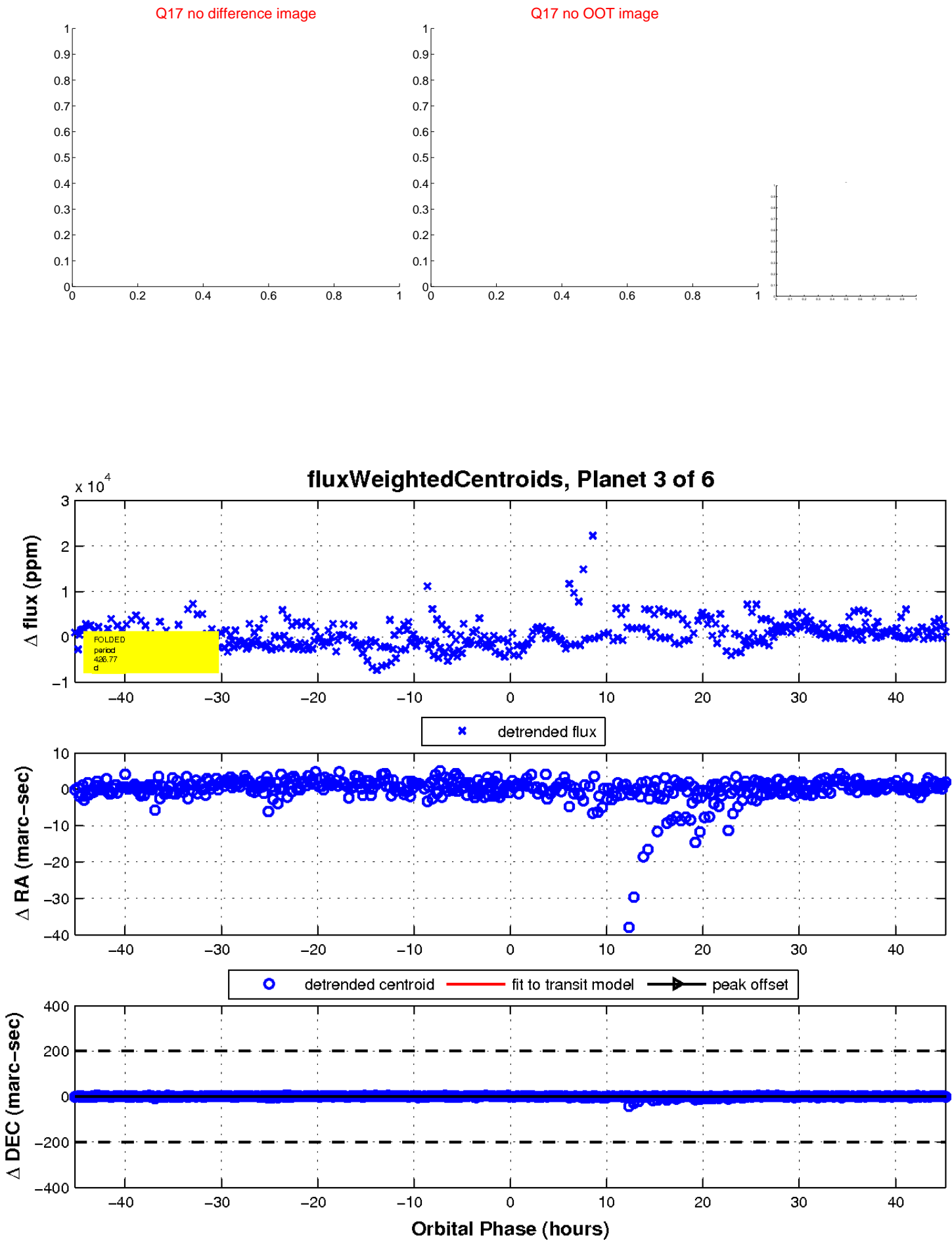
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

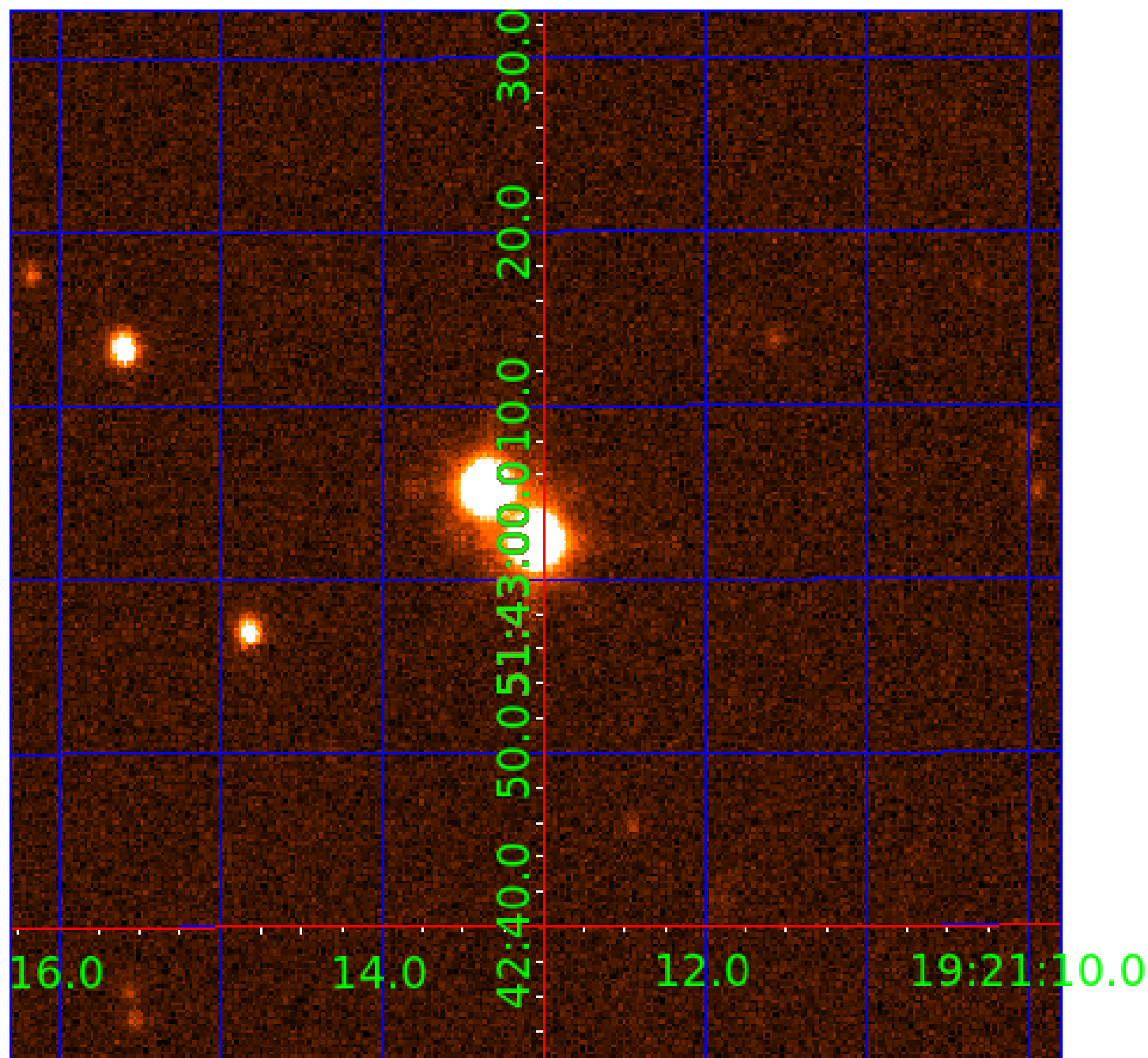


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012646841

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})
012646841-01	OBS	No	529.675121	265.175188	3009.7	17.872	15.0	7.5	0.27	3344	1.49	0.01
012646841-02	OBS	No	443.921618	413.185188	4432.1	6.275	13.0	8.6	0.27	3344	1.80	0.02
012646841-03	OBS	No	426.771036	464.186345	5534.6	15.107	11.8	9.3	0.27	3344	2.17	0.02
012646841-04	OBS	No	442.297645	466.773537	3528.9	7.779	11.2	6.9	0.27	3344	1.61	0.02
012646841-05	OBS	No	243.711732	192.019221	2018.7	9.064	10.9	6.6	0.27	3344	1.22	0.04
012646841-06	OBS	No	5.621501	136.923495	3998.5	1.500	10.1	-1.0	0.27	3344	1.72	5.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012646841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
012646841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_KIC_POS
012646841-06	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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.

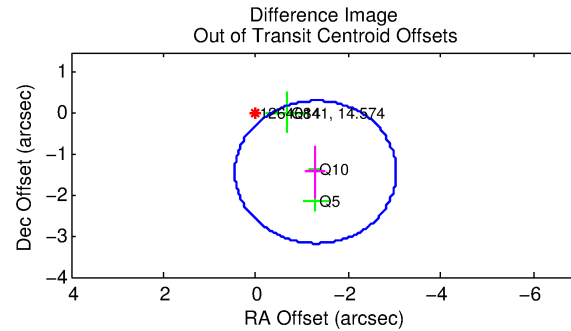
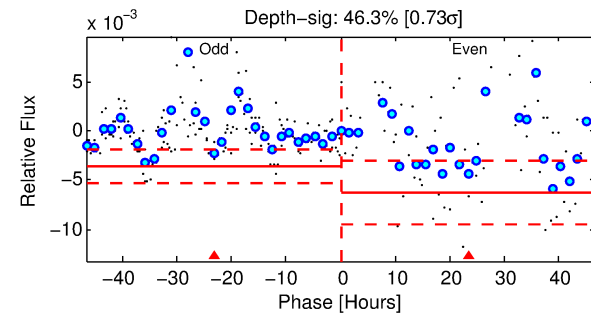
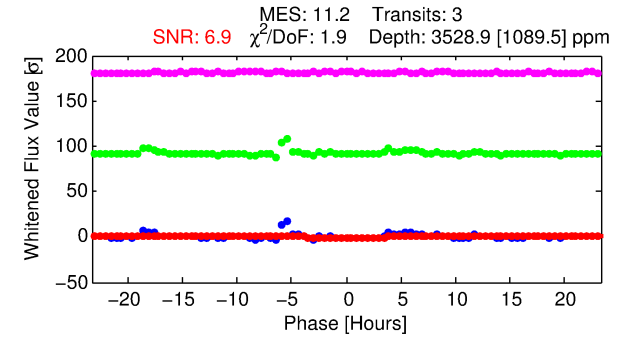
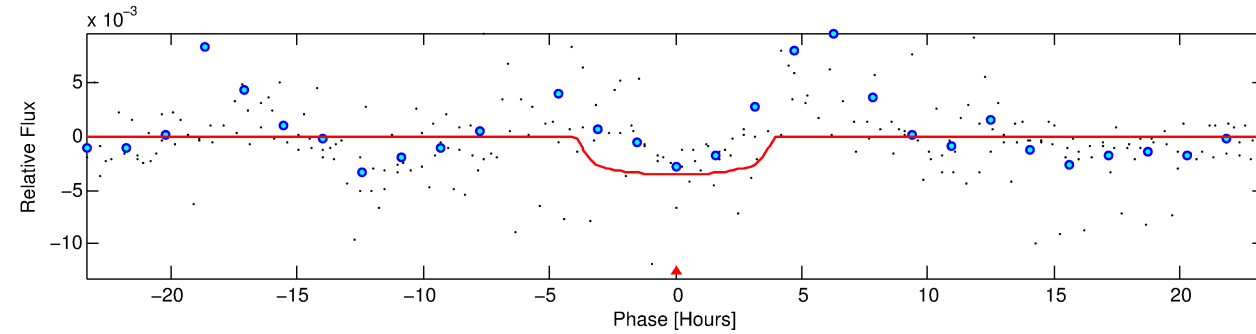
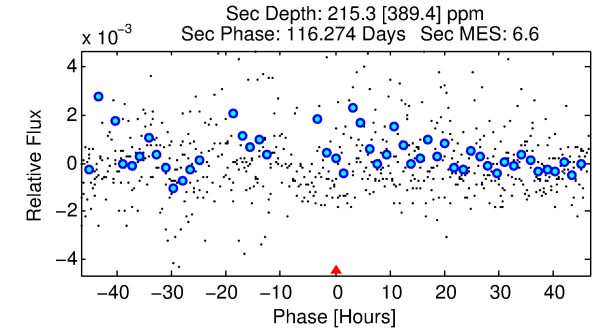
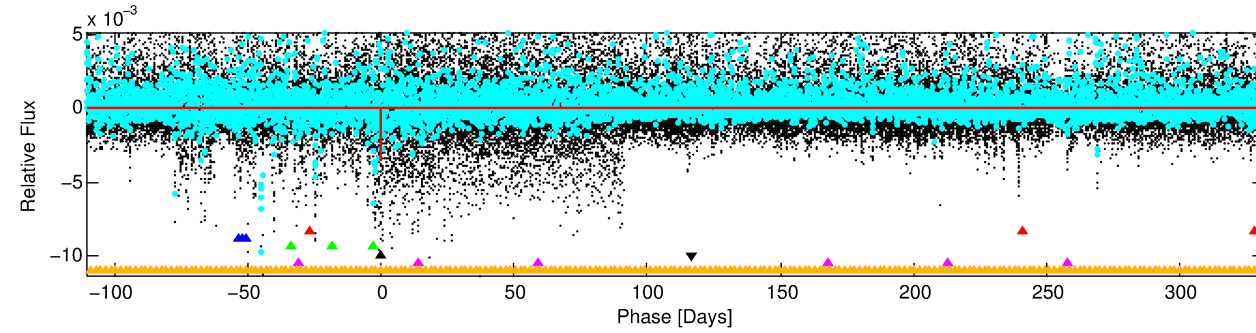
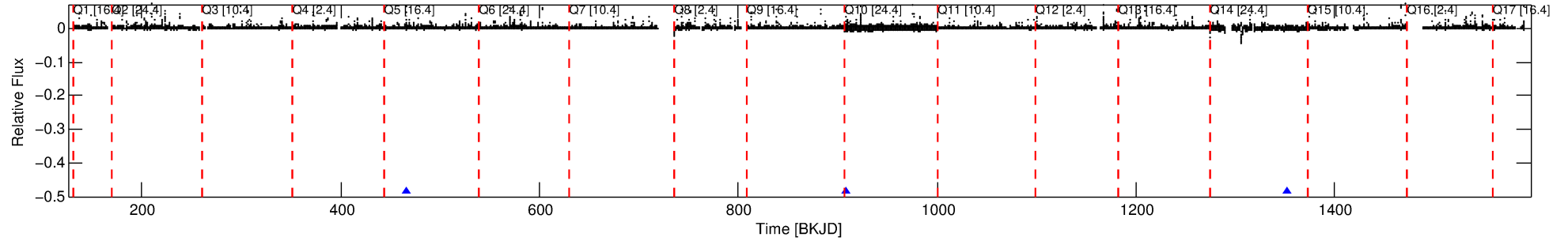
Ephemeris Match Information For 012646841-04

No Significant Match Found

DV One-Page Summary

KIC: 12646841 Candidate: 4 of 6 Period: 442.298 d

Kp: 14.57 R*: 0.27 Rs Teff: 3344.0 K Logg: 4.98 Fe/H: 0.000



DV Fit Results:

Period = 442.29765 [0.01064] d
Epoch = 466.7735 [0.0150] BKJD
Rp/R* = 0.0537 [0.1127]
a/R* = 456.01 [4066.06]
b = 0.09 [99.41]
Seff = 0.02 [0.00]
Teff = 91 [3] K
Rp = 1.61 [3.38] Re
a = 0.7244 [0.0765] AU
Ag = 24088.79 [110101.99] [0.22σ]
Teffp = 1748 [1996] K [0.83σ]

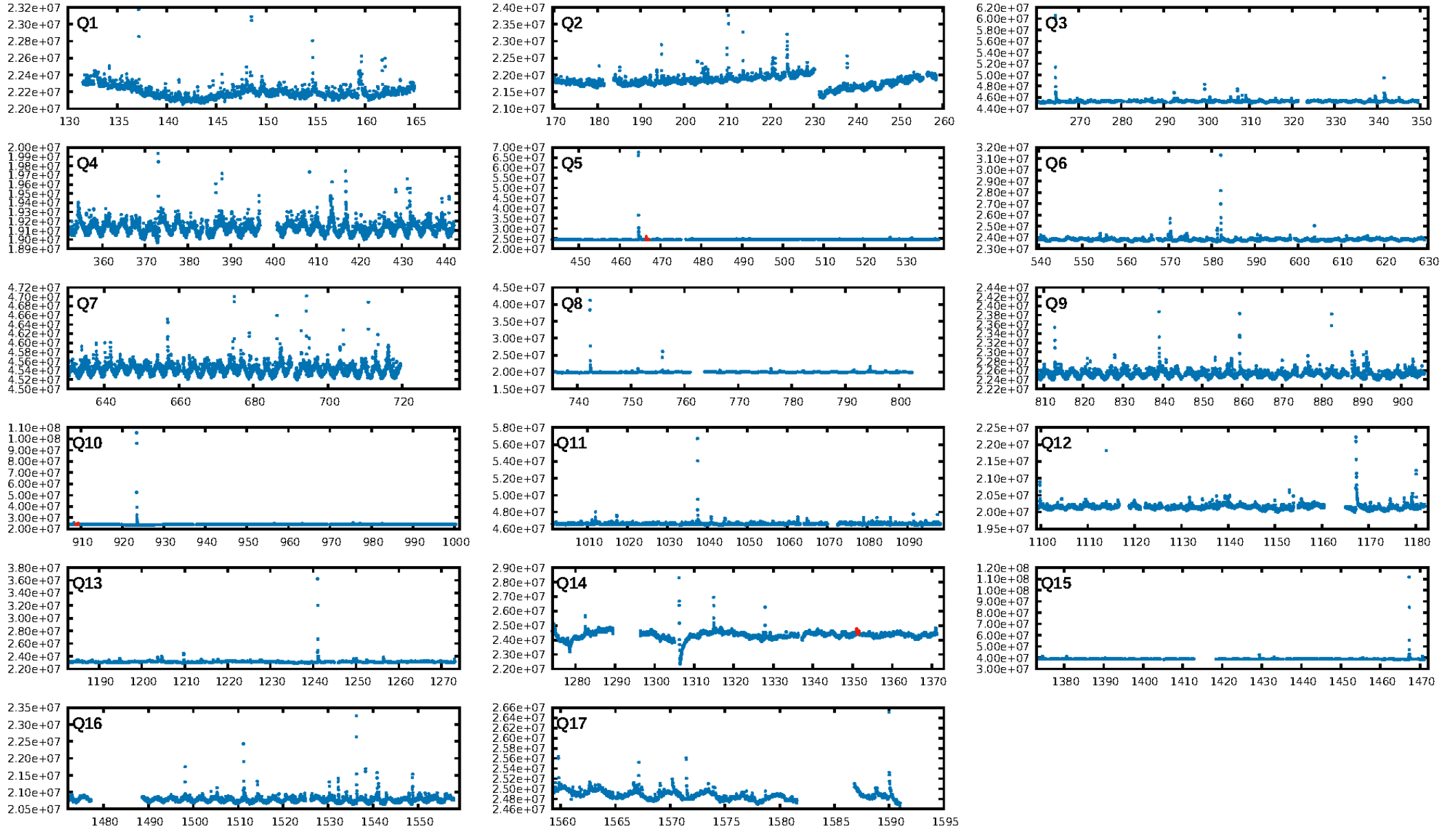
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [21.93σ]
LongPeriod-sig: 100.0% [3.90σ]
ModelChiSquare2-sig: 5.8%
ModelChiSquareGof-sig: 55.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 3.372
Centroid-sig: N/A
Centroid-so: 4.492 arcsec [15.71σ]
OotOffset-rm: 1.926 arcsec [3.31σ]
KicOffset-rm: 0.335 arcsec [0.58σ]
OotOffset-st: 2/0/0/1 [3]
KicOffset-st: 2/0/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.67 [2/3]

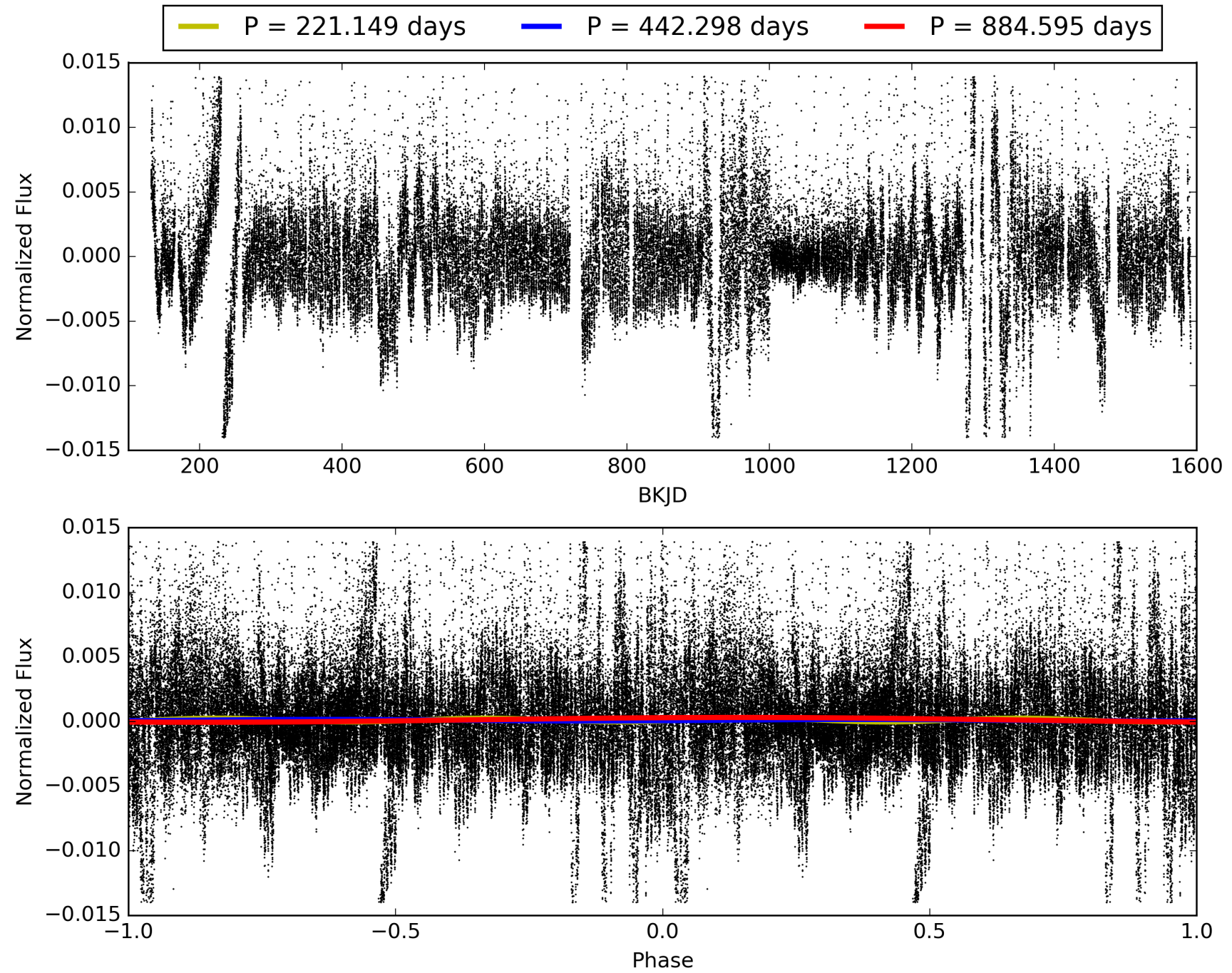
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:38:00 Z

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

TCE 012646841-04, PDC Light Curves

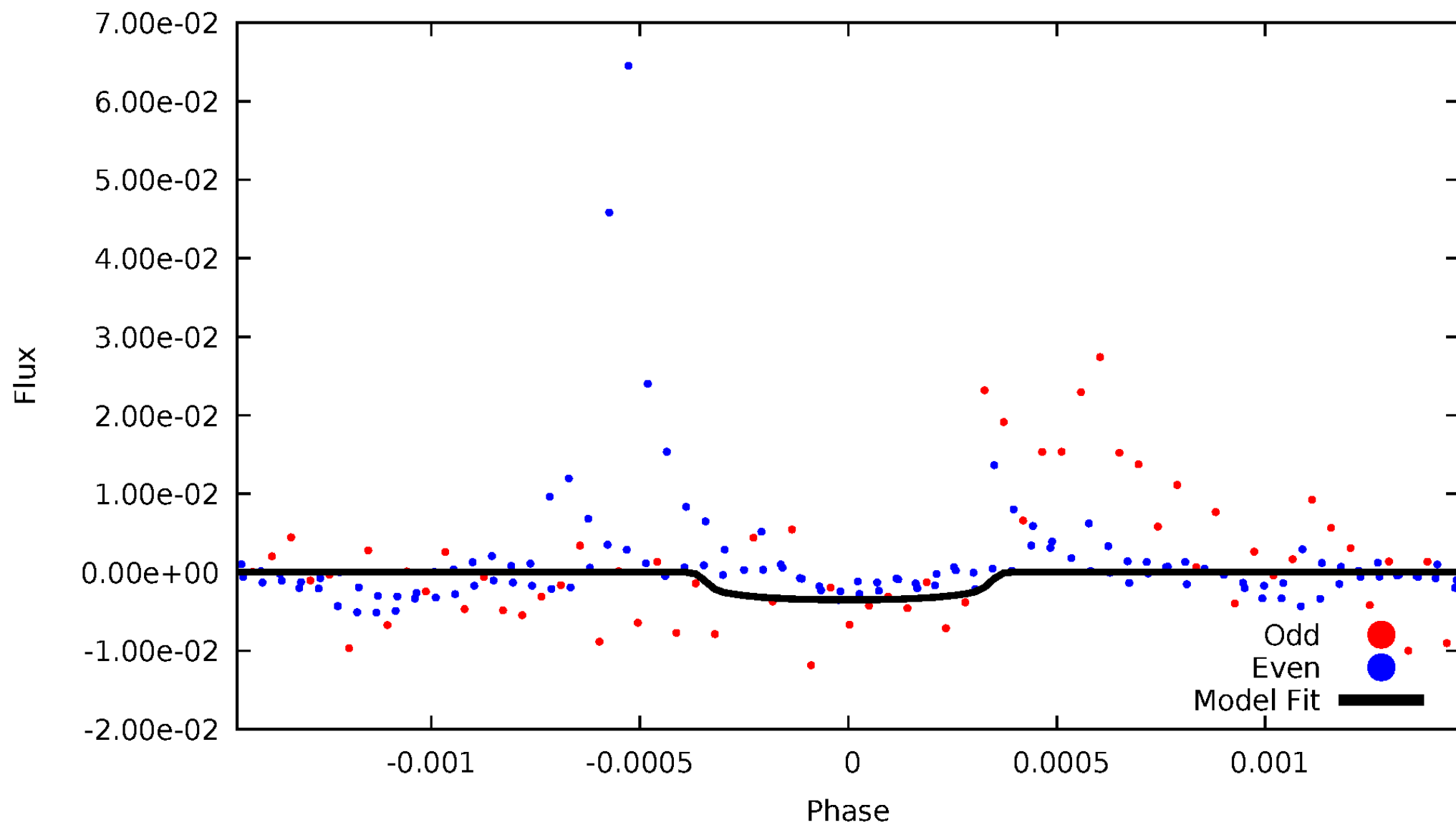


TCE 012646841-04



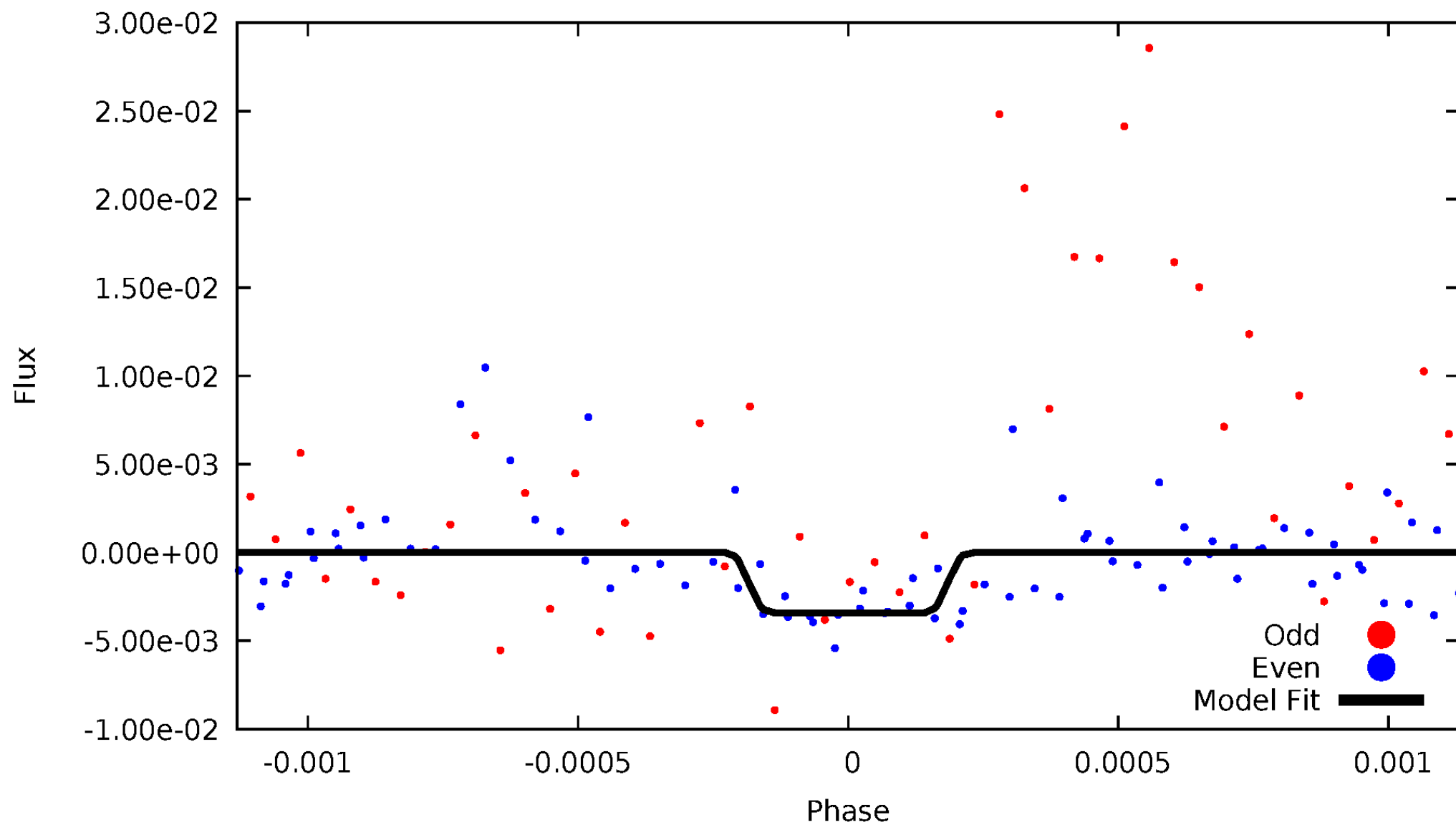
DV Odd/Even

TCE 012646841-04



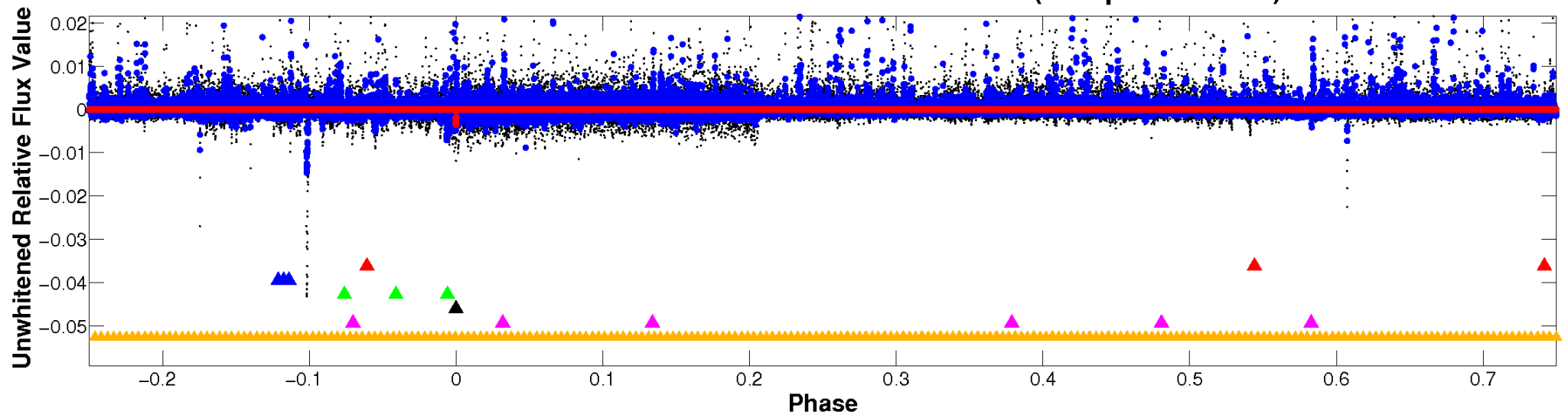
ALT Odd/Even

TCE 012646841-04

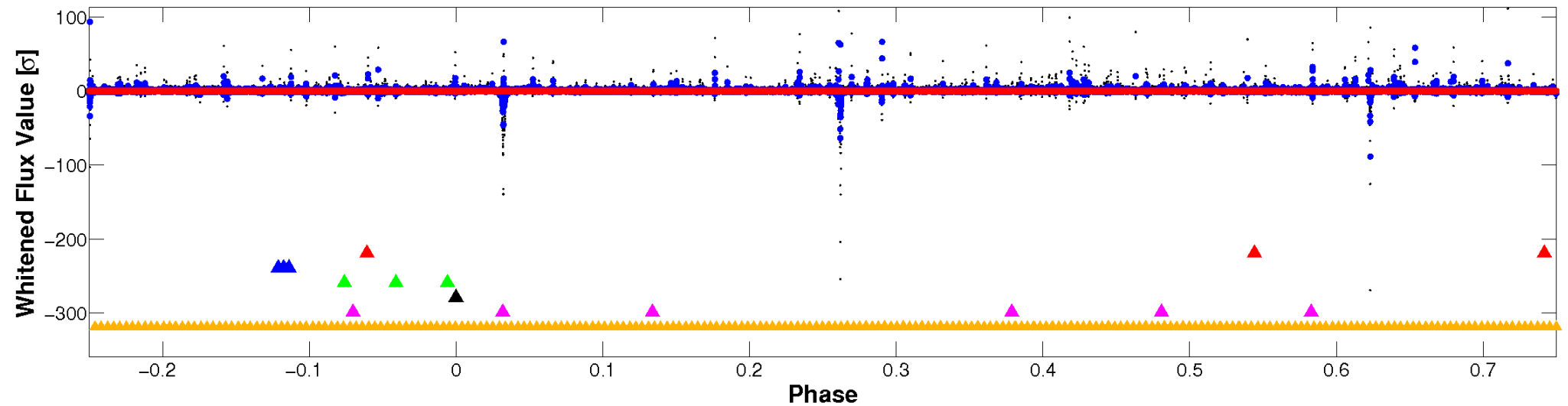


Non-Whitened Vs. Whitened Light Curve

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

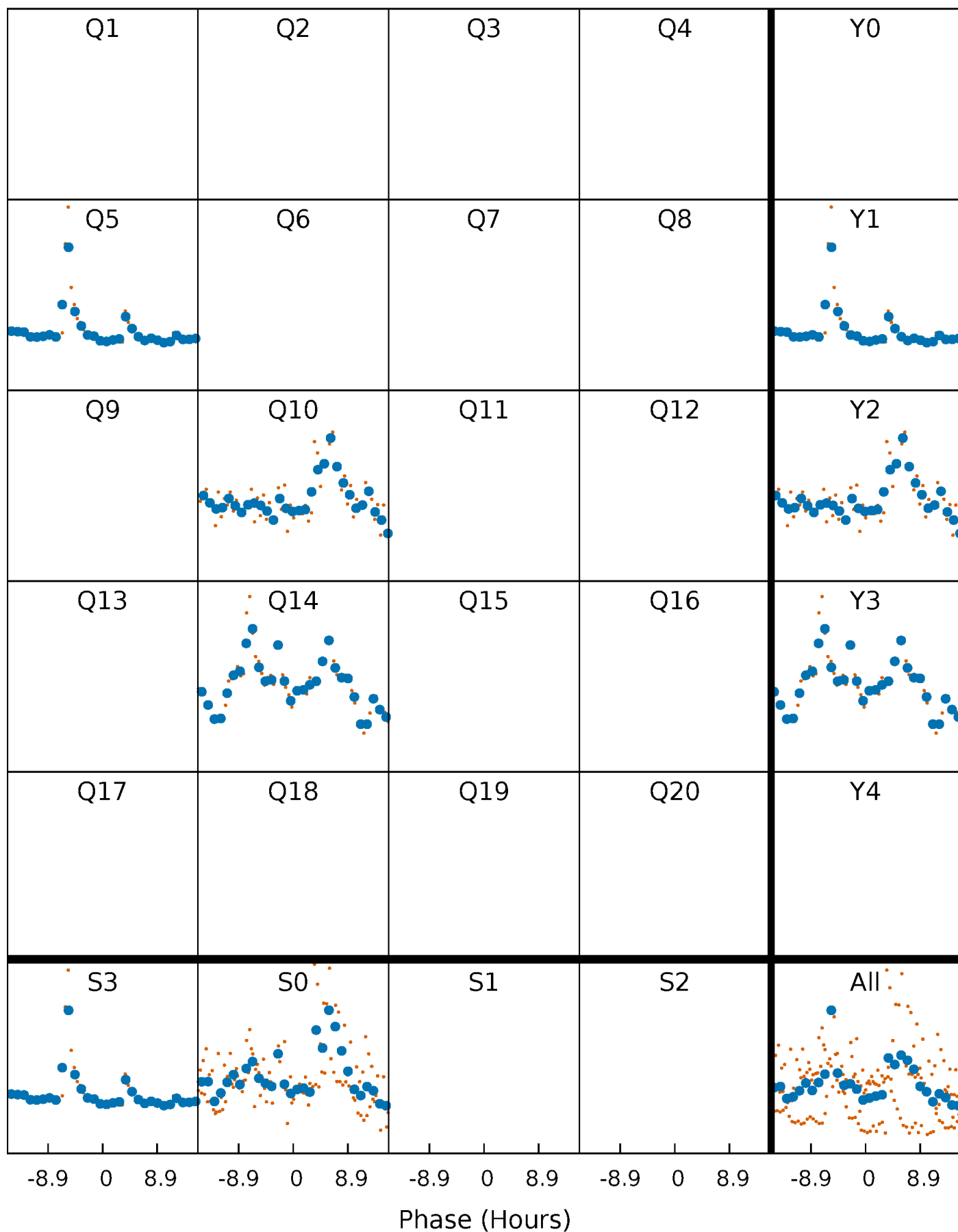


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



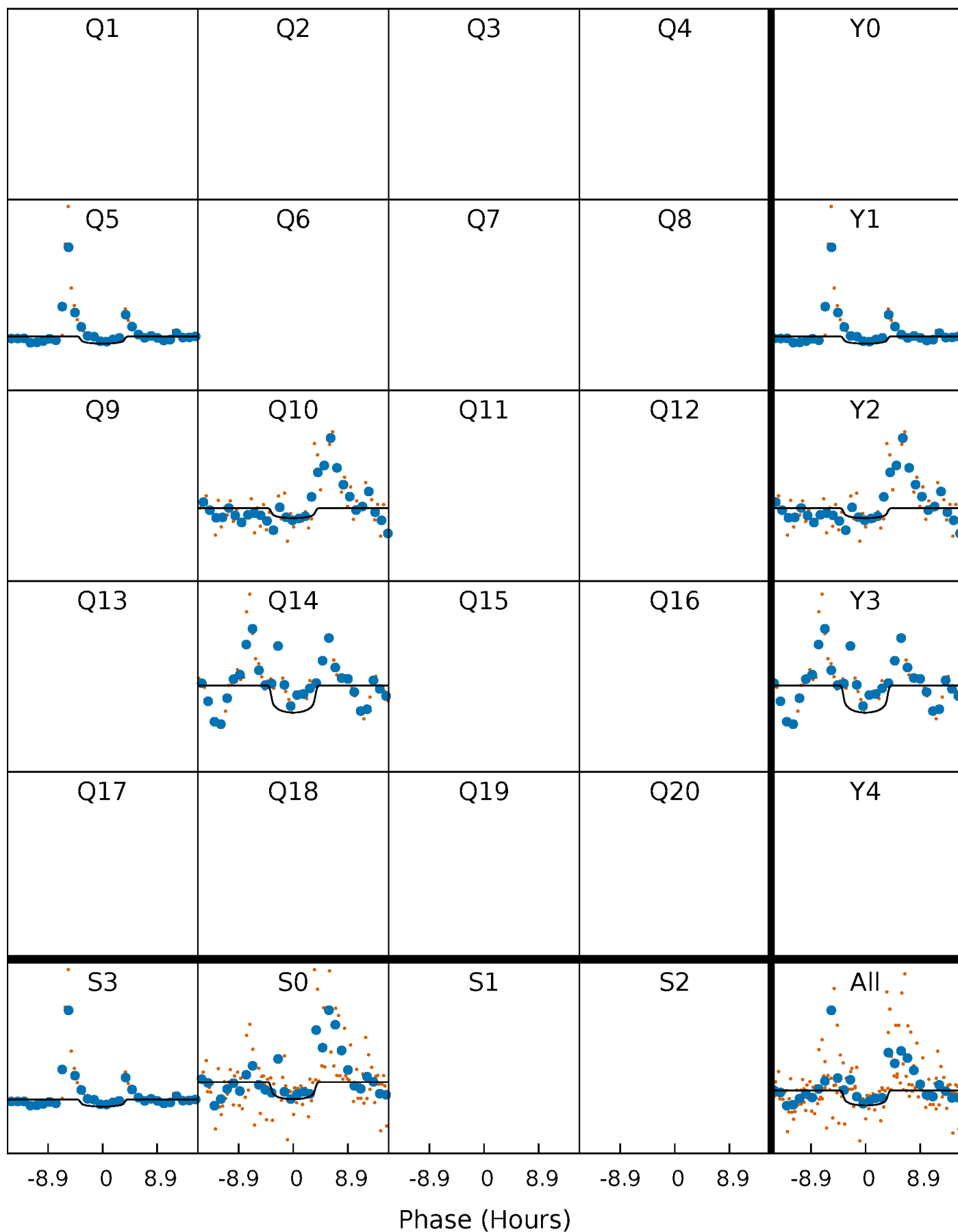
PDC Quarter-Phased Transit Curves

TCE 012646841-04 P=442.297645 Days $T_0=466.773537$ (BKJD)



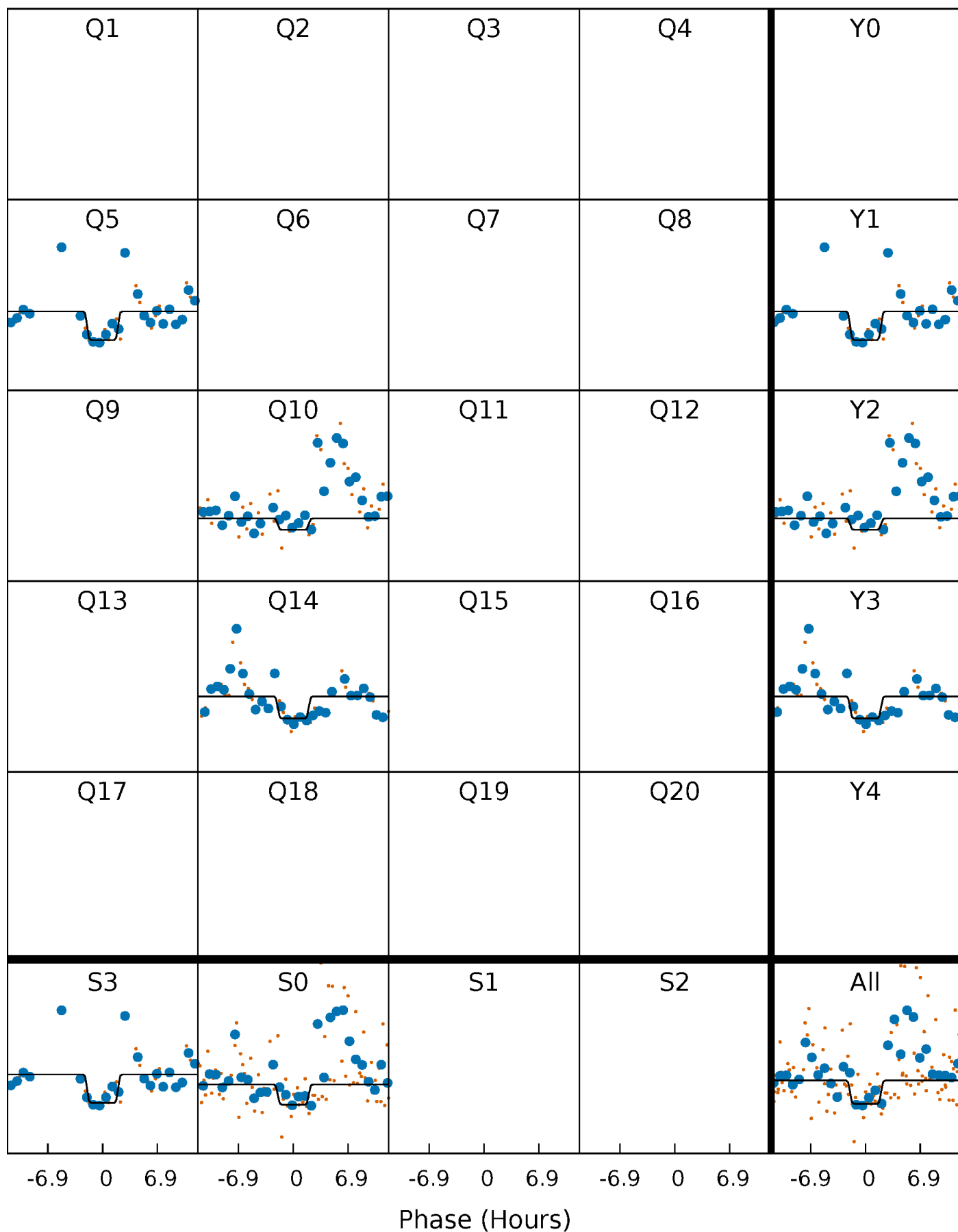
DV Quarter-Phased Transit Curves

TCE 012646841-04 $P=442.297645$ Days $T_0=466.773537$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

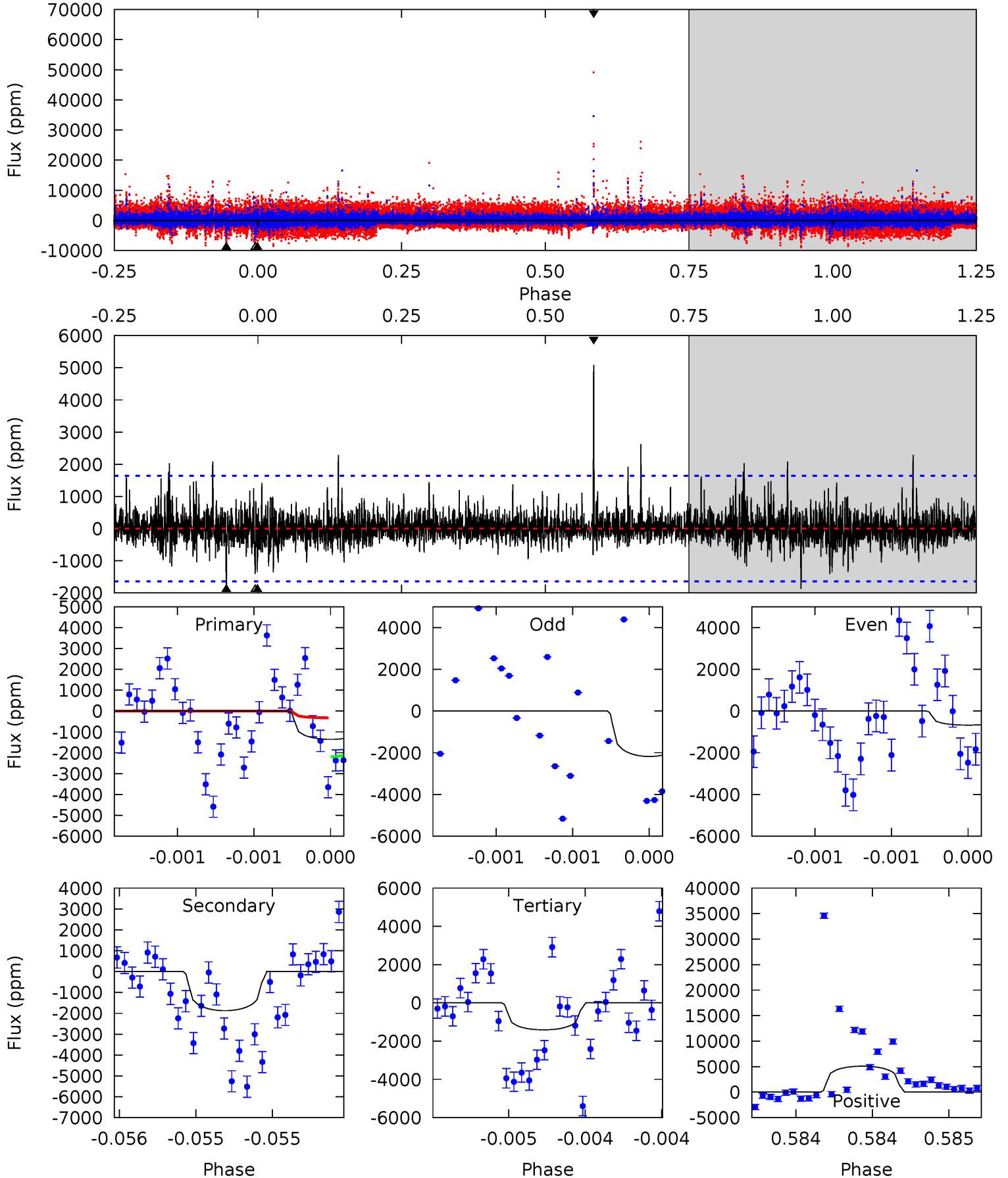
TCE 012646841-04 $P=442.277595$ Days $T_0=466.814323$ (BKJD)



DV Model-Shift Uniqueness Test

012646841-04, P = 442.297645 Days, E = 24.475892 Days

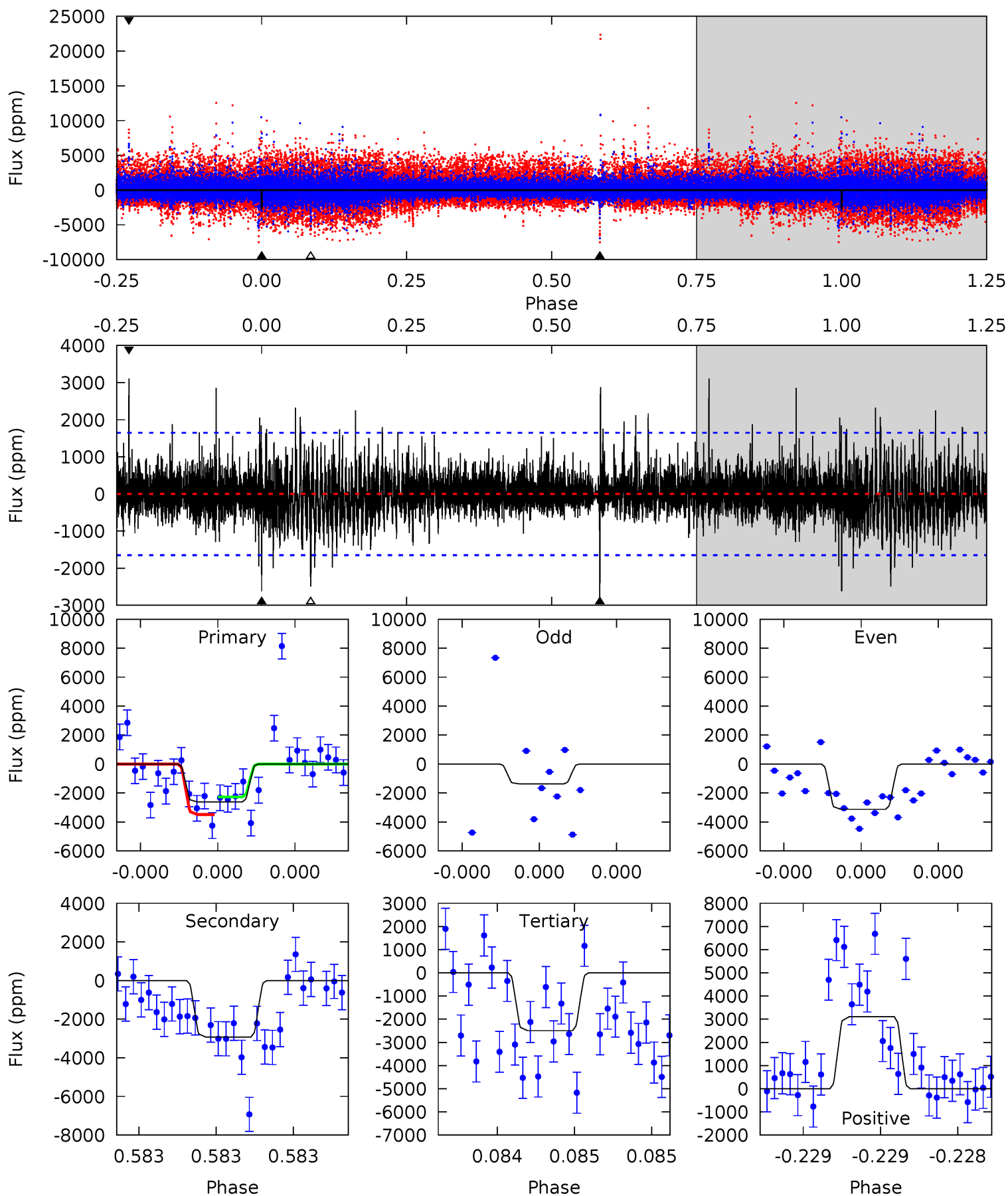
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.56	6.29	4.73	17.1	5.51	3.38	1.19	-0.17	-12.5	1.56	-10.8	0.22	2.21	0.73	3.15



Alt Model-Shift Uniqueness Test

012646841-04, P = 442.277595 Days, E = 24.536728 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.88	9.94	8.45	10.5	5.59	3.51	1.52	0.44	-1.65	1.49	-0.60	2.18	0.90	0.51	2.02



Stellar Parameters For KIC 012646841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3344^{+43}_{-40}	$4.976^{+0.045}_{-0.045}$	$0.000^{+0.100}_{-0.100}$	$0.274^{+0.041}_{-0.030}$	$0.259^{+0.052}_{-0.034}$	$17.720^{+4.538}_{-3.605}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+15%/-11%	+20%/-13%	+26%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 012646841-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1874 ± 298	$3.15^{+2.76}_{-2.11}$	127^{+3}_{-3}	2626^{+984}_{-372}	$56953^{+431287}_{-42009}$
Alt.	-2930 ± 295	$3.15^{+2.77}_{-2.01}$	127^{+3}_{-3}	2784^{+912}_{-420}	$86283^{+556394}_{-61985}$

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

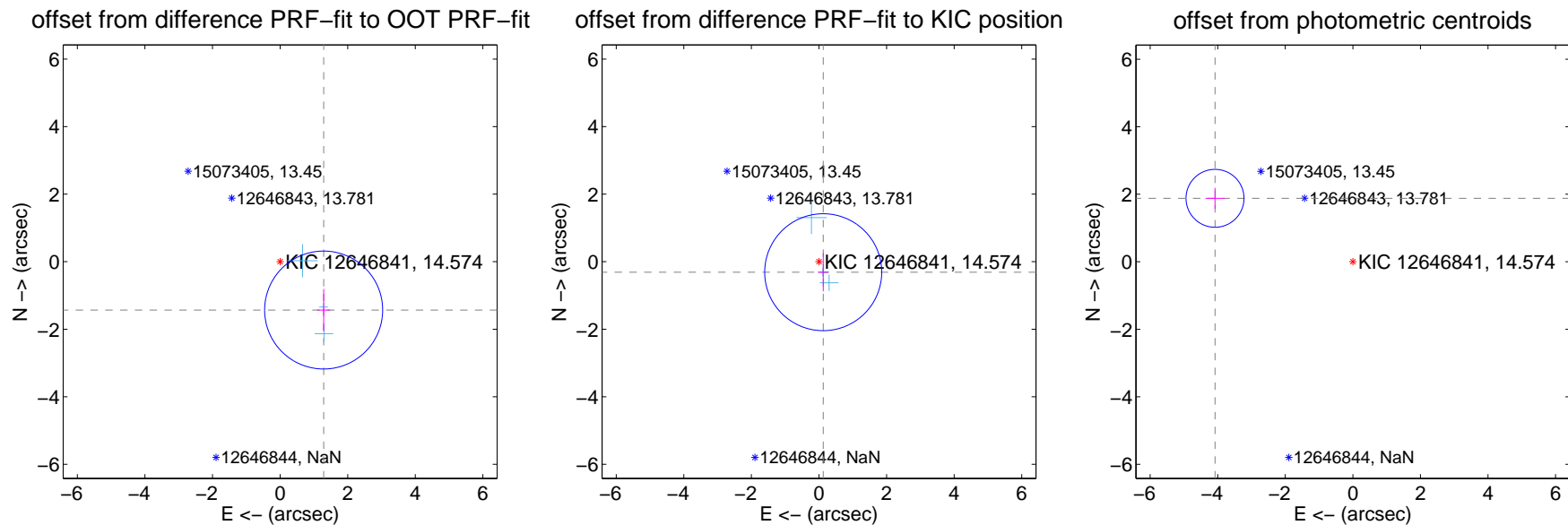
DV Centroid Data

Supplemental centroid analysis for 012646841-04. Kepler magnitude: 14.57. Transit SNR 6.91

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.55 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.926 ± 0.582	3.31	-1.288 ± 0.194	-1.431 ± 0.624
PRF-fit source offset from KIC position	0.335 ± 0.577	0.58	-0.125 ± 0.157	-0.311 ± 0.565
photometric centroid source offset	4.49 ± 0.29	15.71	4.08 ± 0.28	1.88 ± 0.31

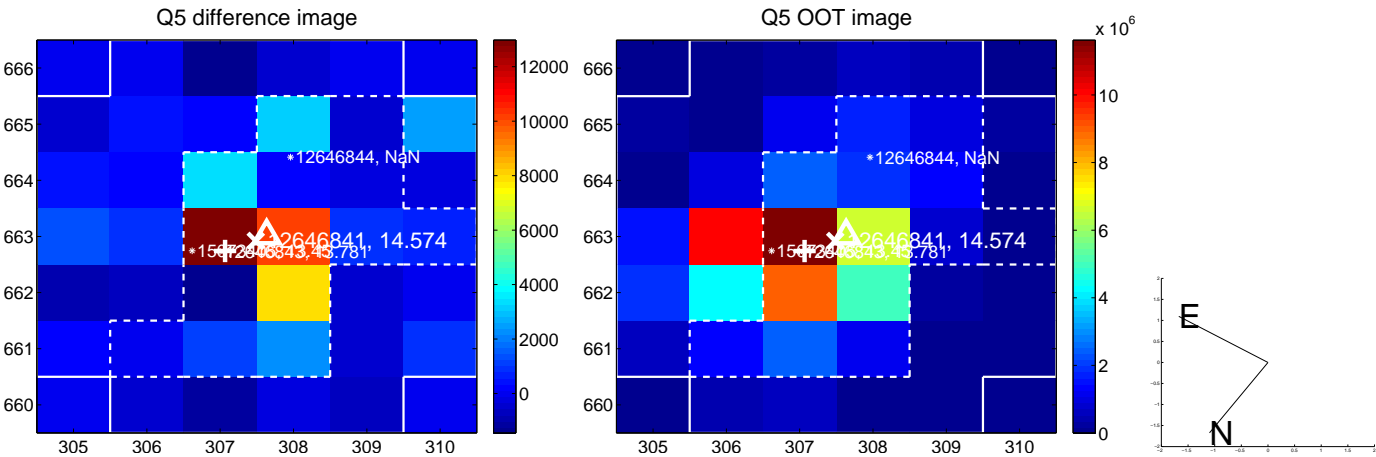


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

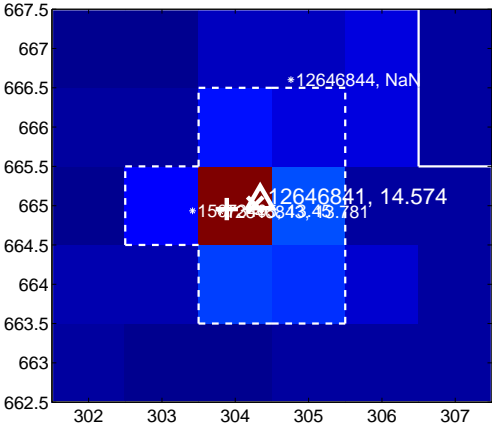
Q9 no difference image



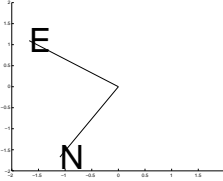
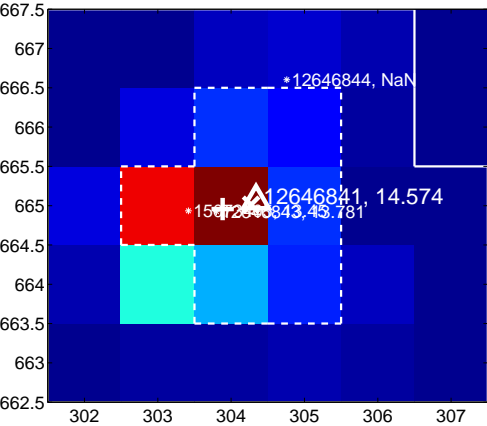
Q9 no OOT image



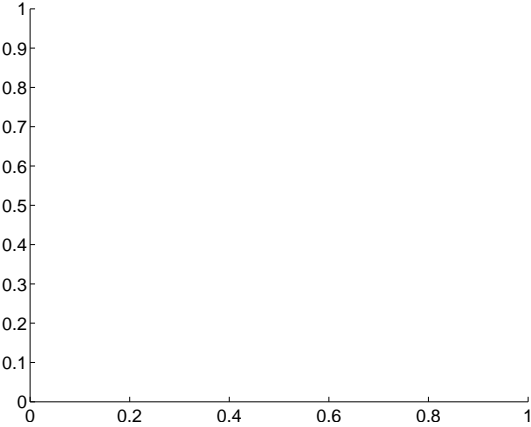
Q10 difference image



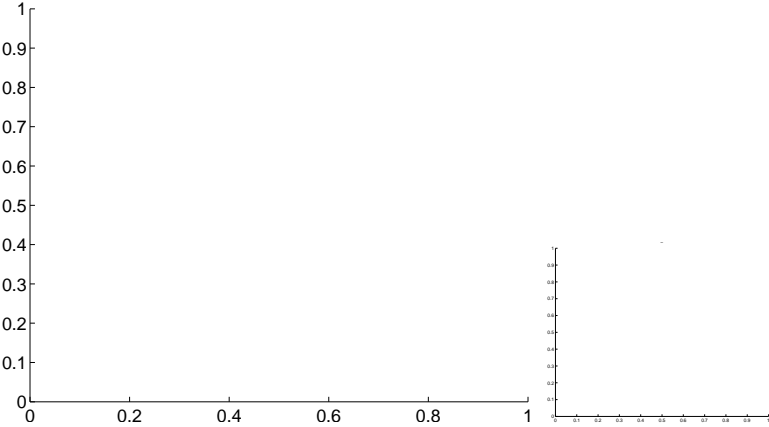
Q10 OOT image



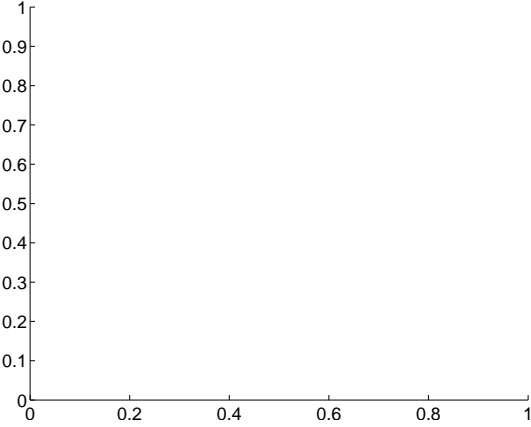
Q11 no difference image



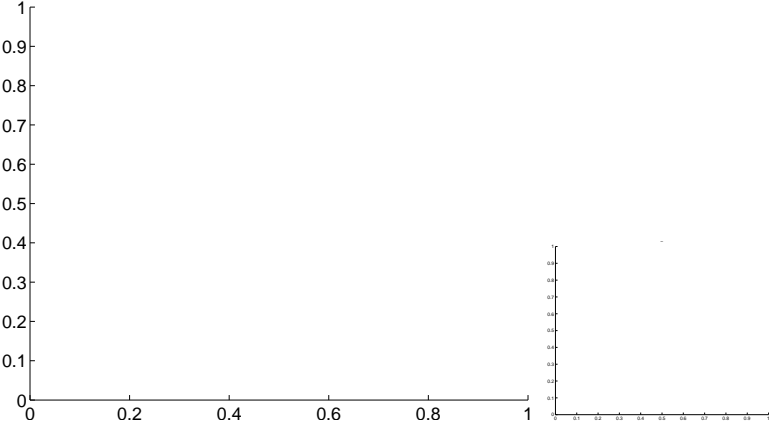
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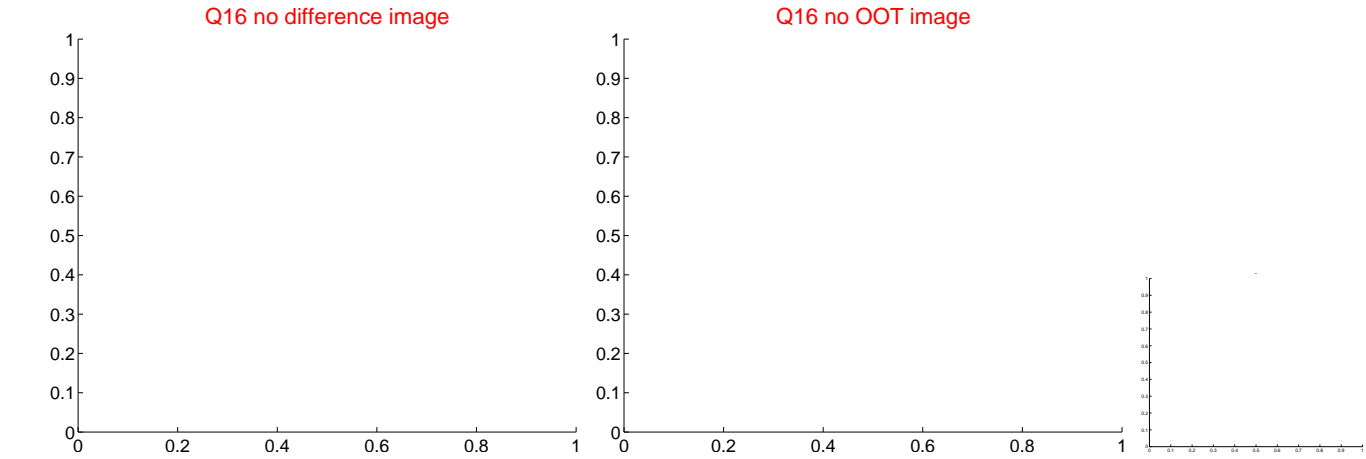
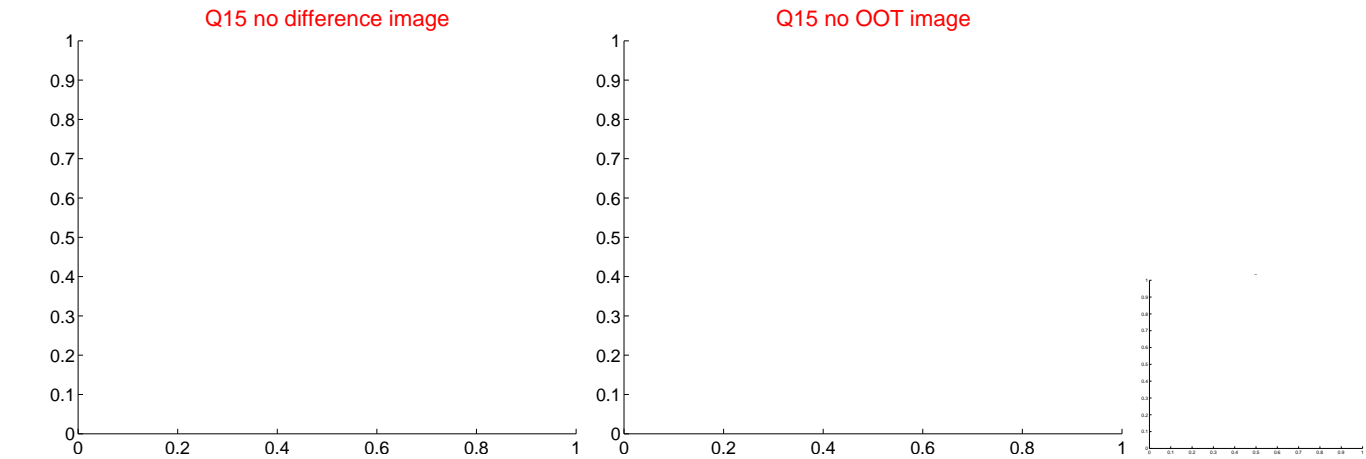
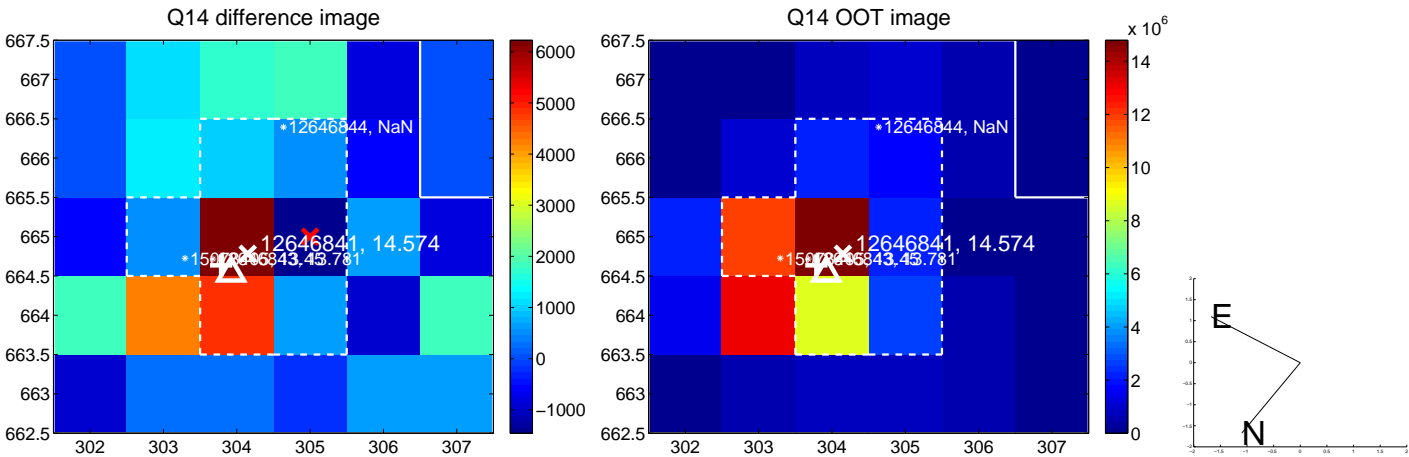
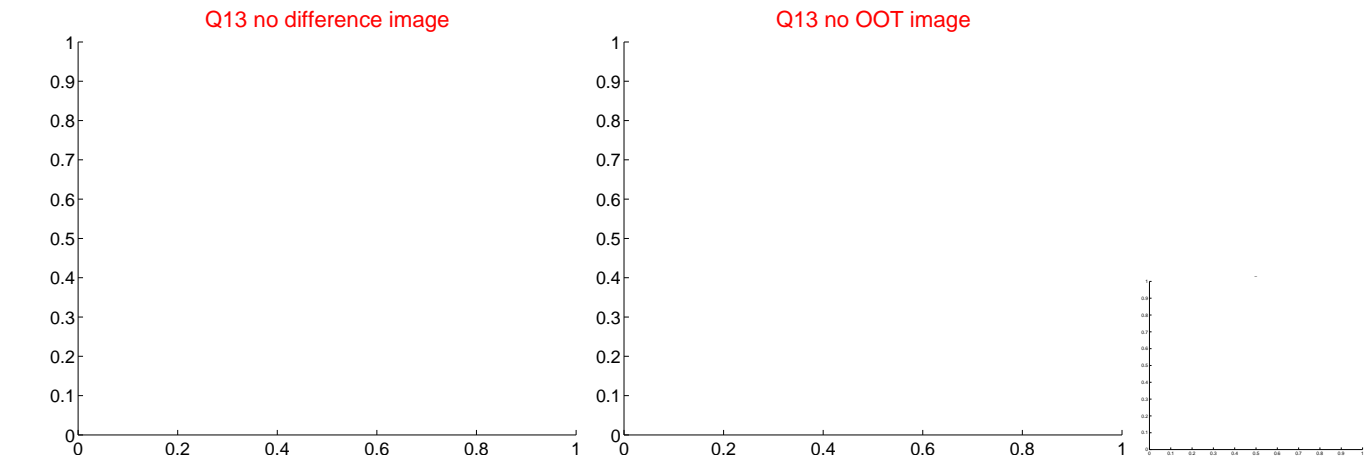
Q12 no difference image



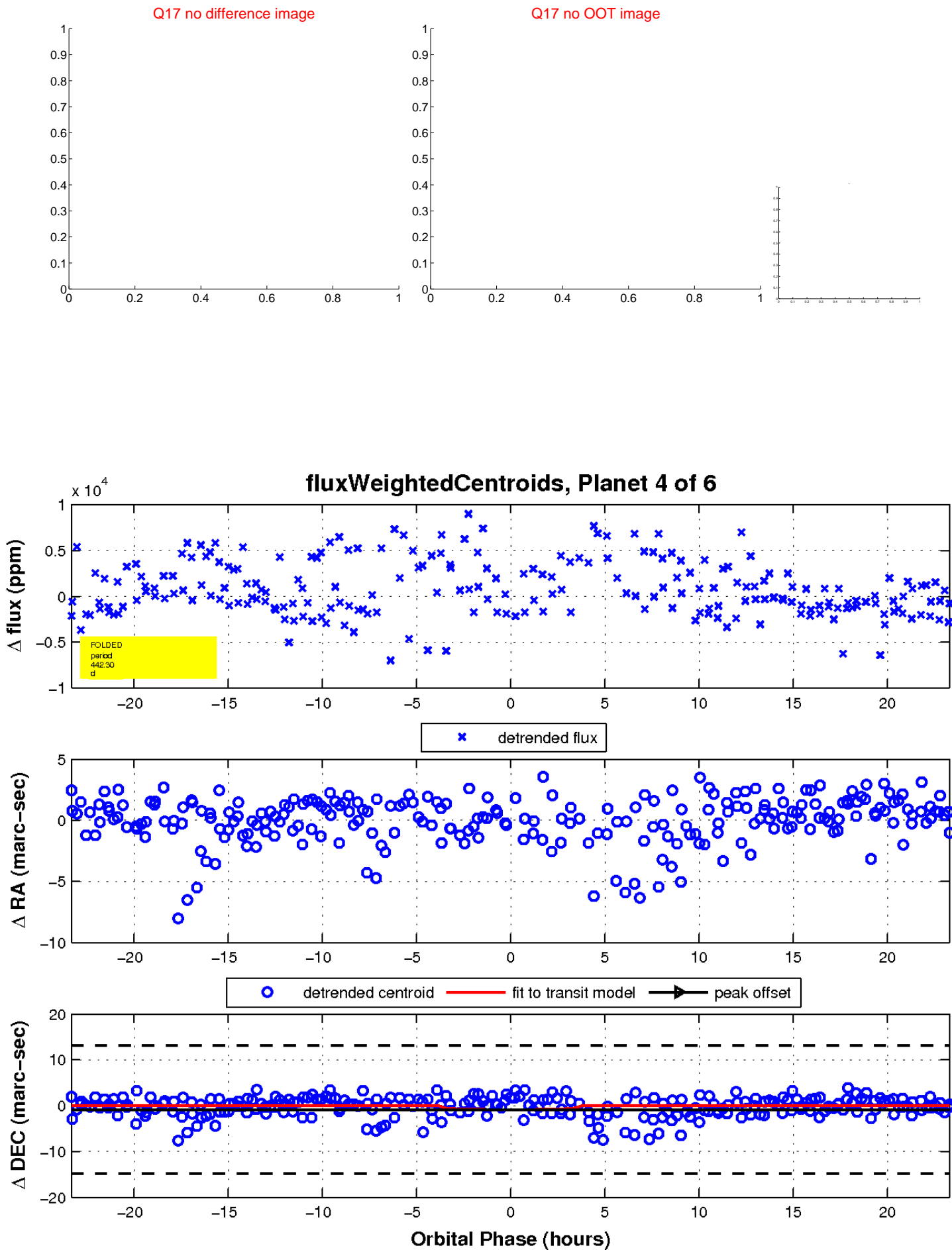
Q12 no OOT image



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

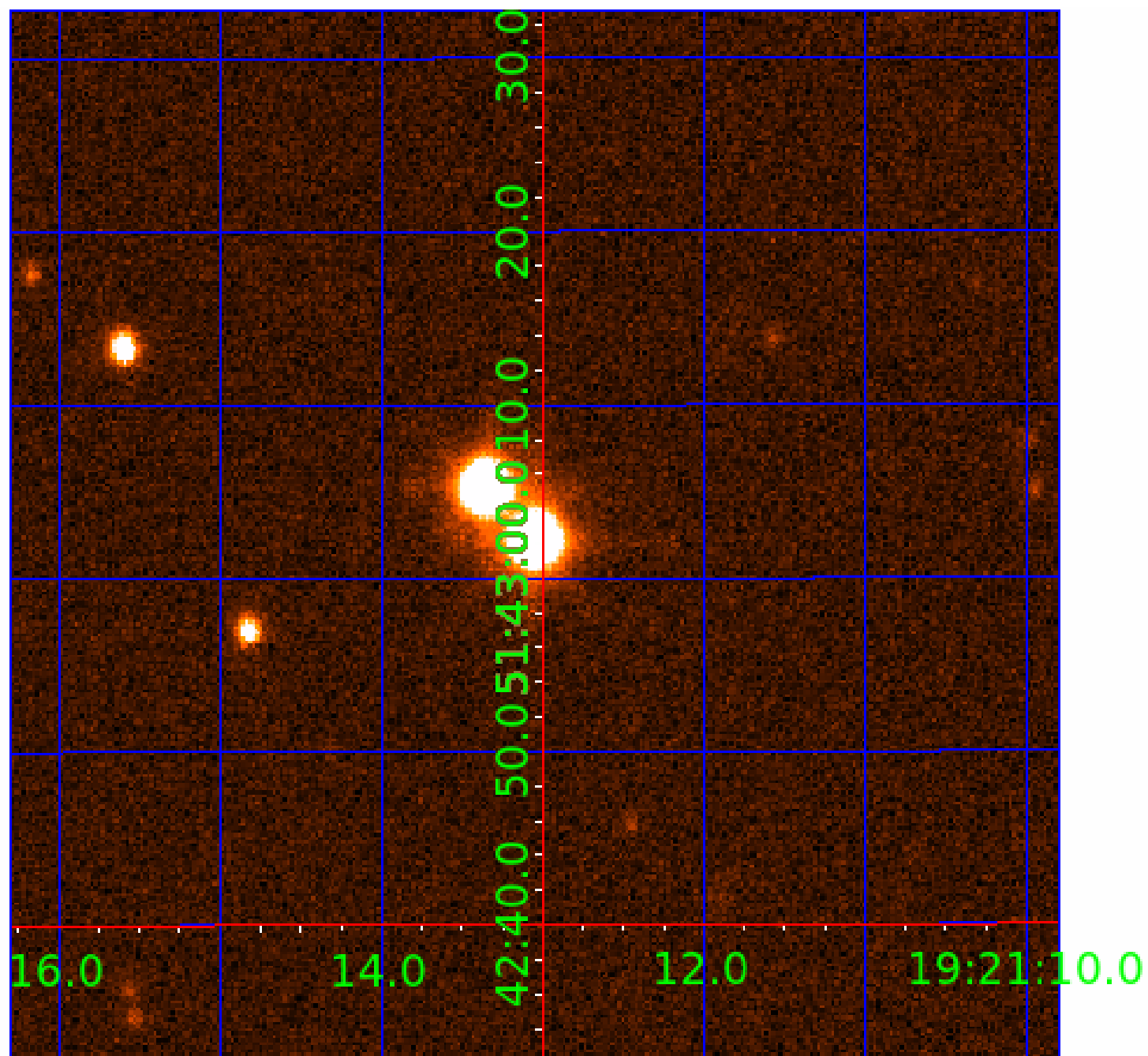


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012646841

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})
012646841-01	OBS	No	529.675121	265.175188	3009.7	17.872	15.0	7.5	0.27	3344	1.49	0.01
012646841-02	OBS	No	443.921618	413.185188	4432.1	6.275	13.0	8.6	0.27	3344	1.80	0.02
012646841-03	OBS	No	426.771036	464.186345	5534.6	15.107	11.8	9.3	0.27	3344	2.17	0.02
012646841-04	OBS	No	442.297645	466.773537	3528.9	7.779	11.2	6.9	0.27	3344	1.61	0.02
012646841-05	OBS	No	243.711732	192.019221	2018.7	9.064	10.9	6.6	0.27	3344	1.22	0.04
012646841-06	OBS	No	5.621501	136.923495	3998.5	1.500	10.1	-1.0	0.27	3344	1.72	5.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012646841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
012646841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_KIC_POS
012646841-06	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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.

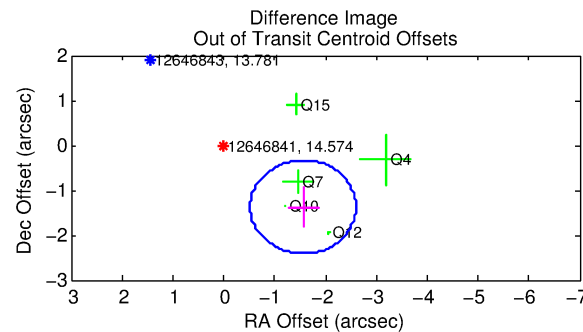
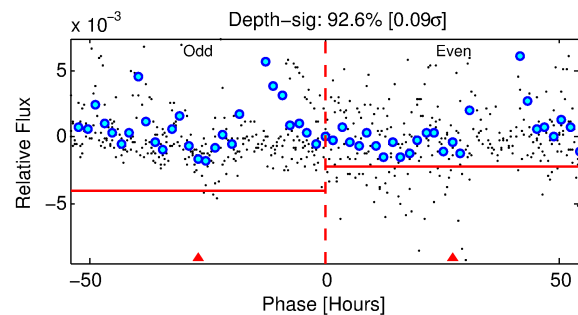
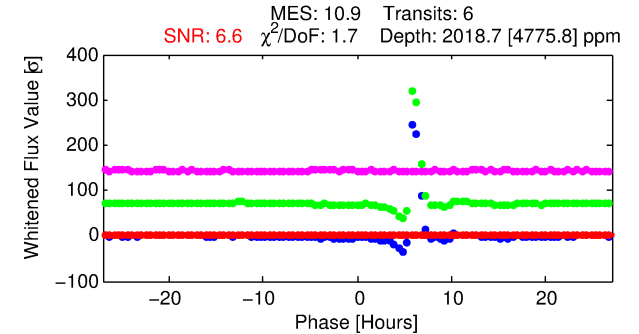
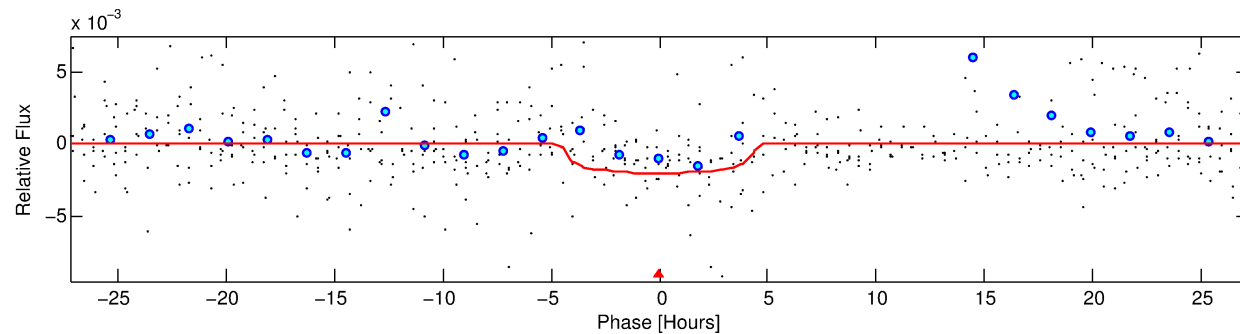
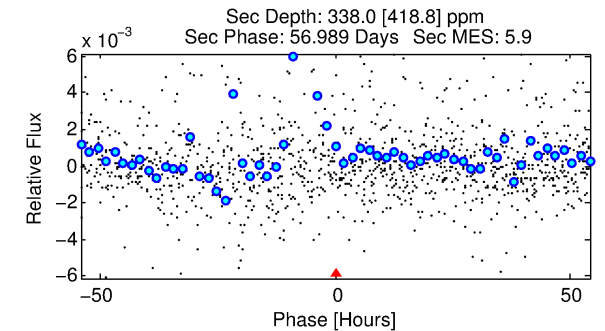
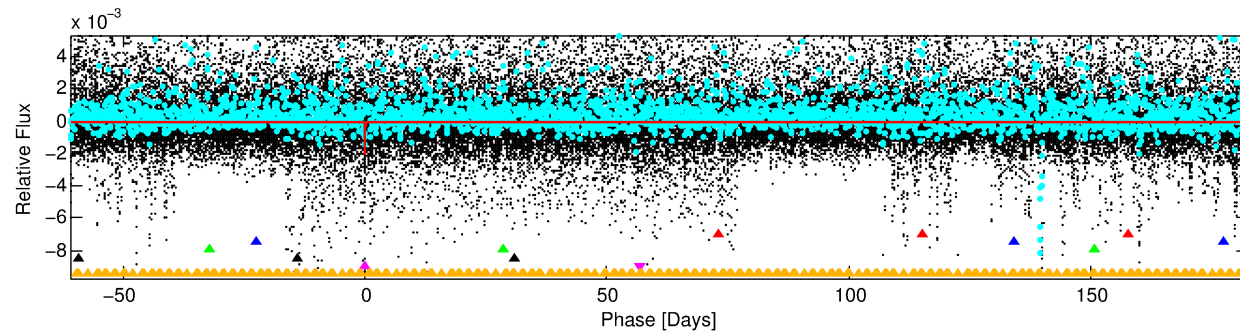
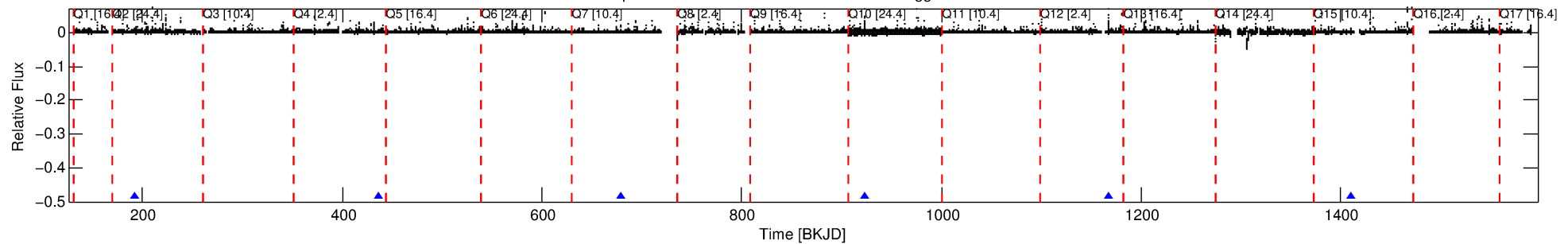
Ephemeris Match Information For 012646841-05

No Significant Match Found

DV One-Page Summary

KIC: 12646841 Candidate: 5 of 6 Period: 243.712 d

Kp: 14.57 R*: 0.27 Rs Teff: 3344.0 K Logg: 4.98 Fe/H: 0.000



DV Fit Results:

Period = 243.71173 [0.05980] d
Epoch = 192.0192 [0.1735] BKJD
Rp/R* = 0.0406 [0.3672]
a/R* = 212.90 [8077.90]
b = 0.09 [407.31]
Seff = 0.04 [0.00]
Teq = 111 [4] K
Rp = 1.21 [10.98] Re
a = 0.4869 [0.0514] AU
Ag = 29874.55 [541186.58] [0.06σ]
Teffp = 2249 [10187] K [0.21σ]

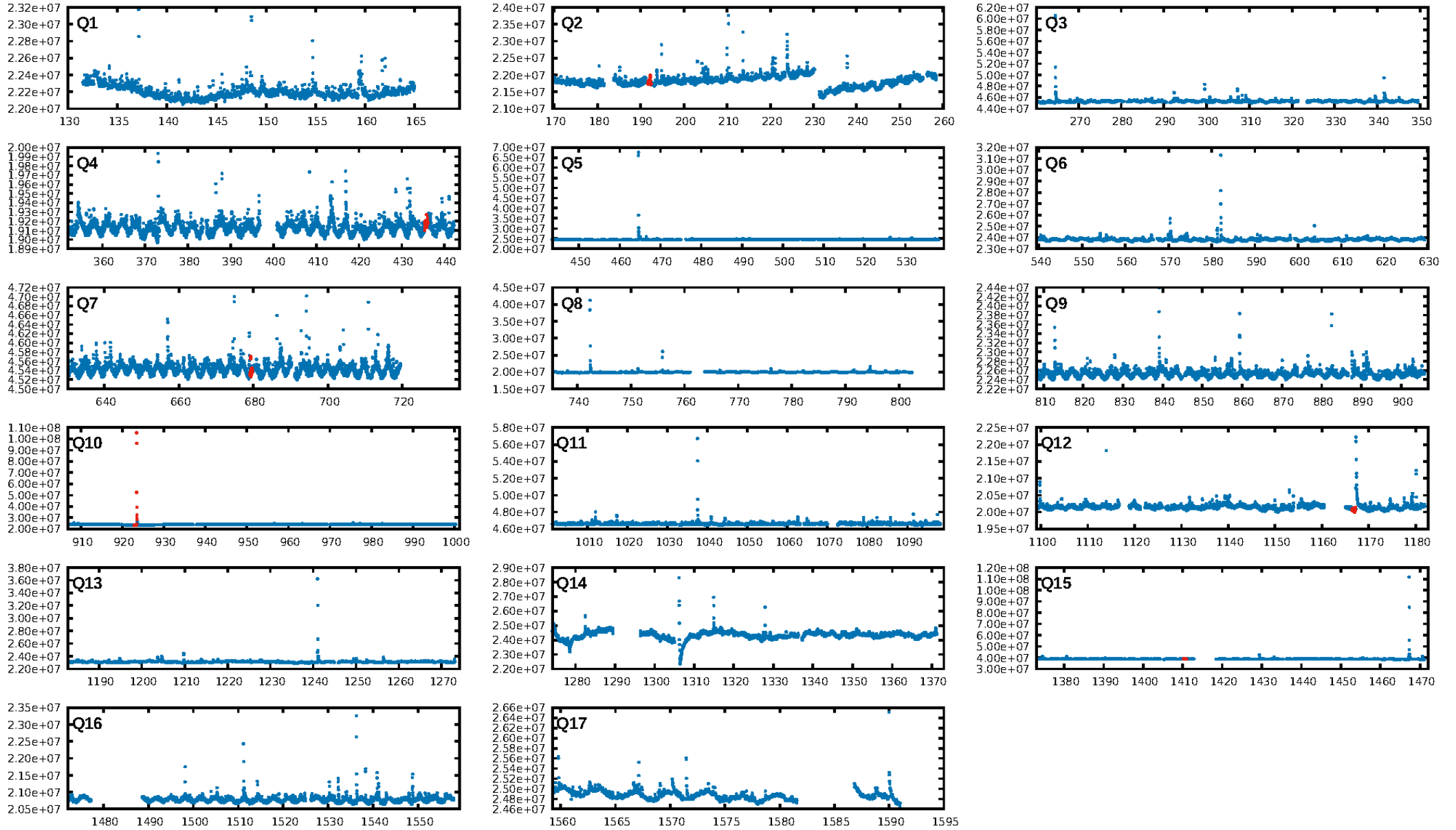
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [621.94σ]
LongPeriod-sig: 100.0% [249.38σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 38.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -4.548
Centroid-sig: N/A
Centroid-so: 1.518 arcsec [5.33σ]
OotOffset-rm: 2.080 arcsec [6.00σ]
KicOffset-rm: 0.481 arcsec [1.31σ]
OotOffset-st: 1/2/2/0 [5]
KicOffset-st: 1/2/2/0 [5]
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DiffImageOverlap-fno: 1.00 [6/6]

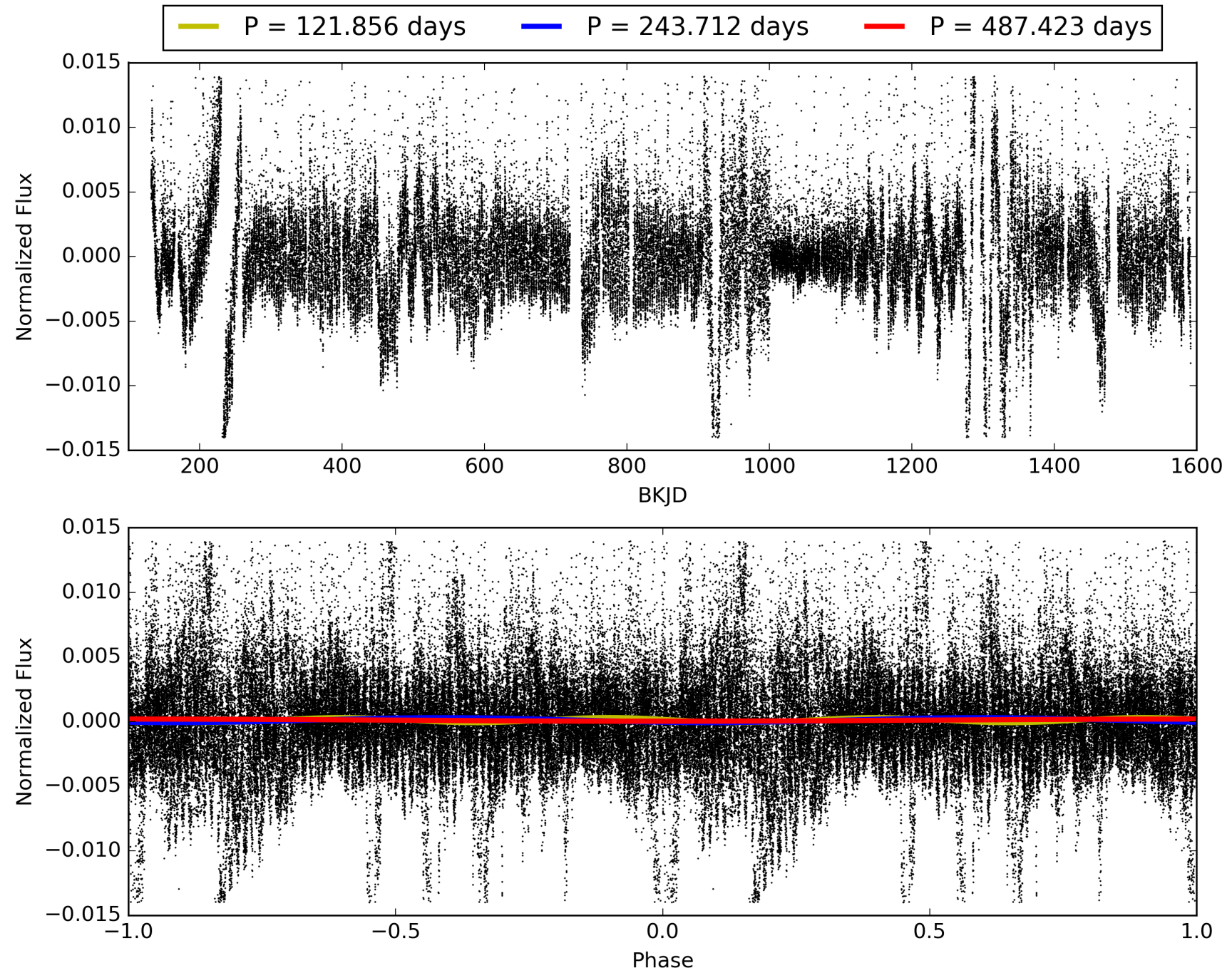
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 012646841-05, PDC Light Curves

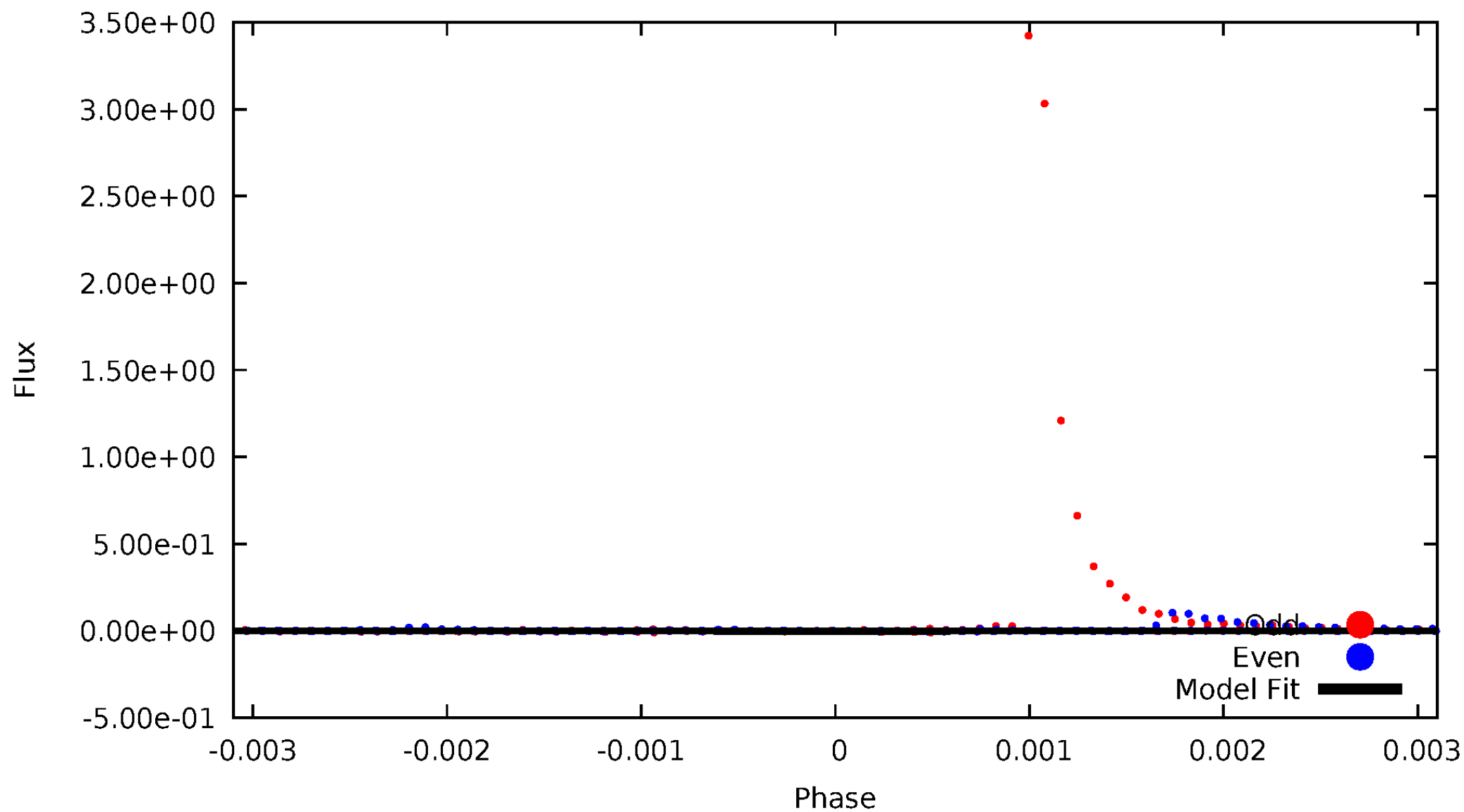


TCE 012646841-05



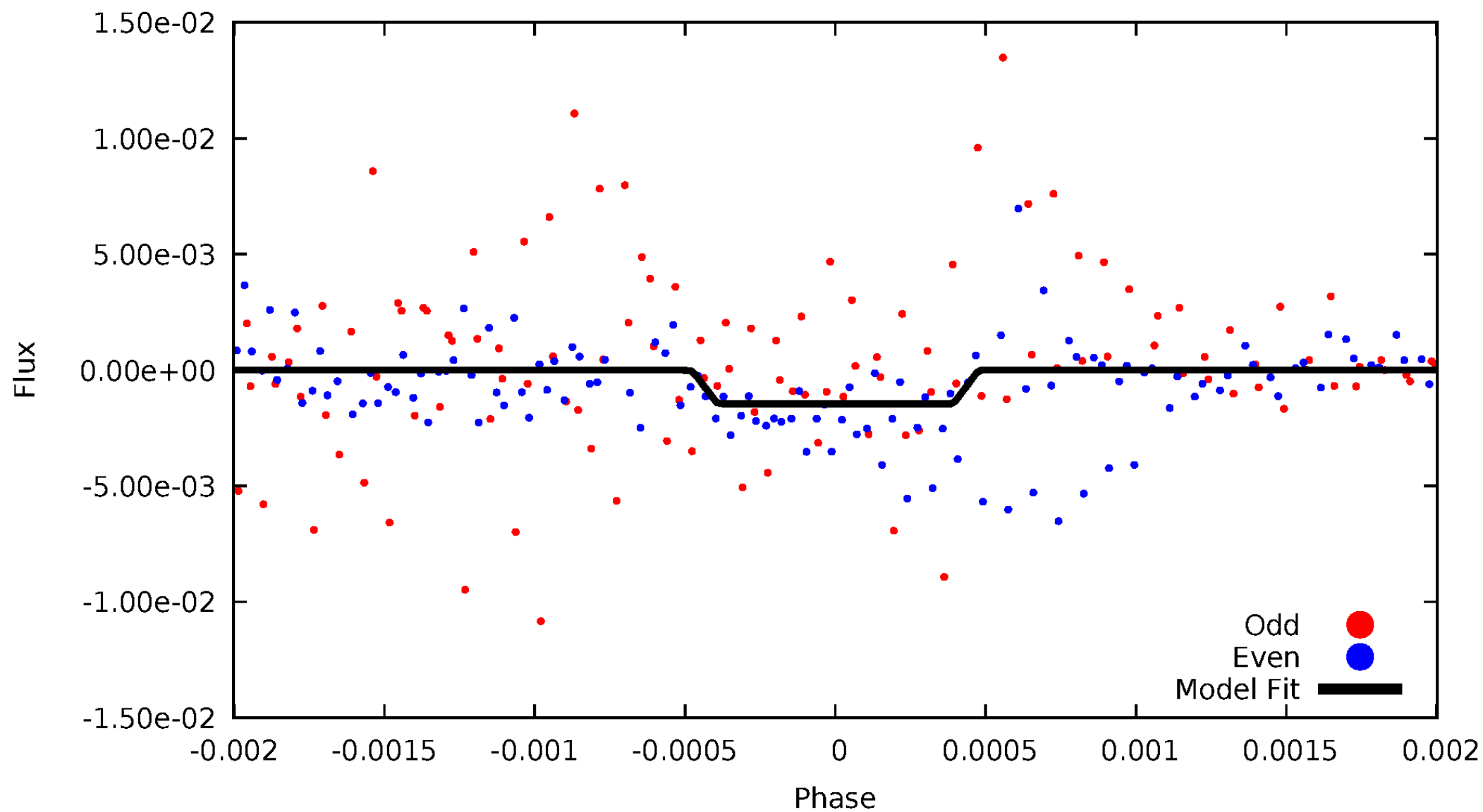
DV Odd/Even

TCE 012646841-05



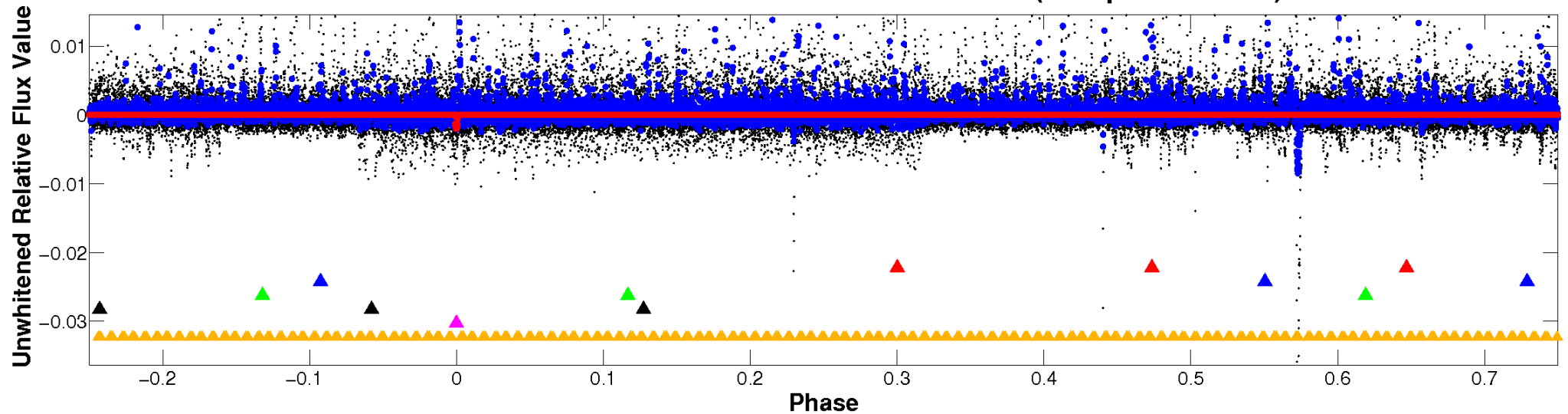
ALT Odd/Even

TCE 012646841-05

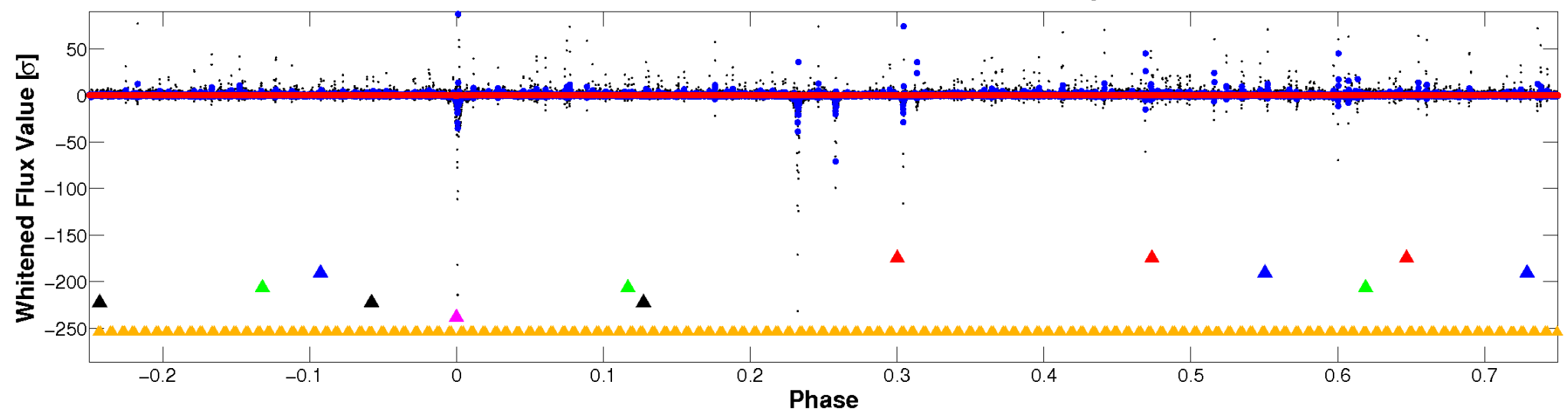


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

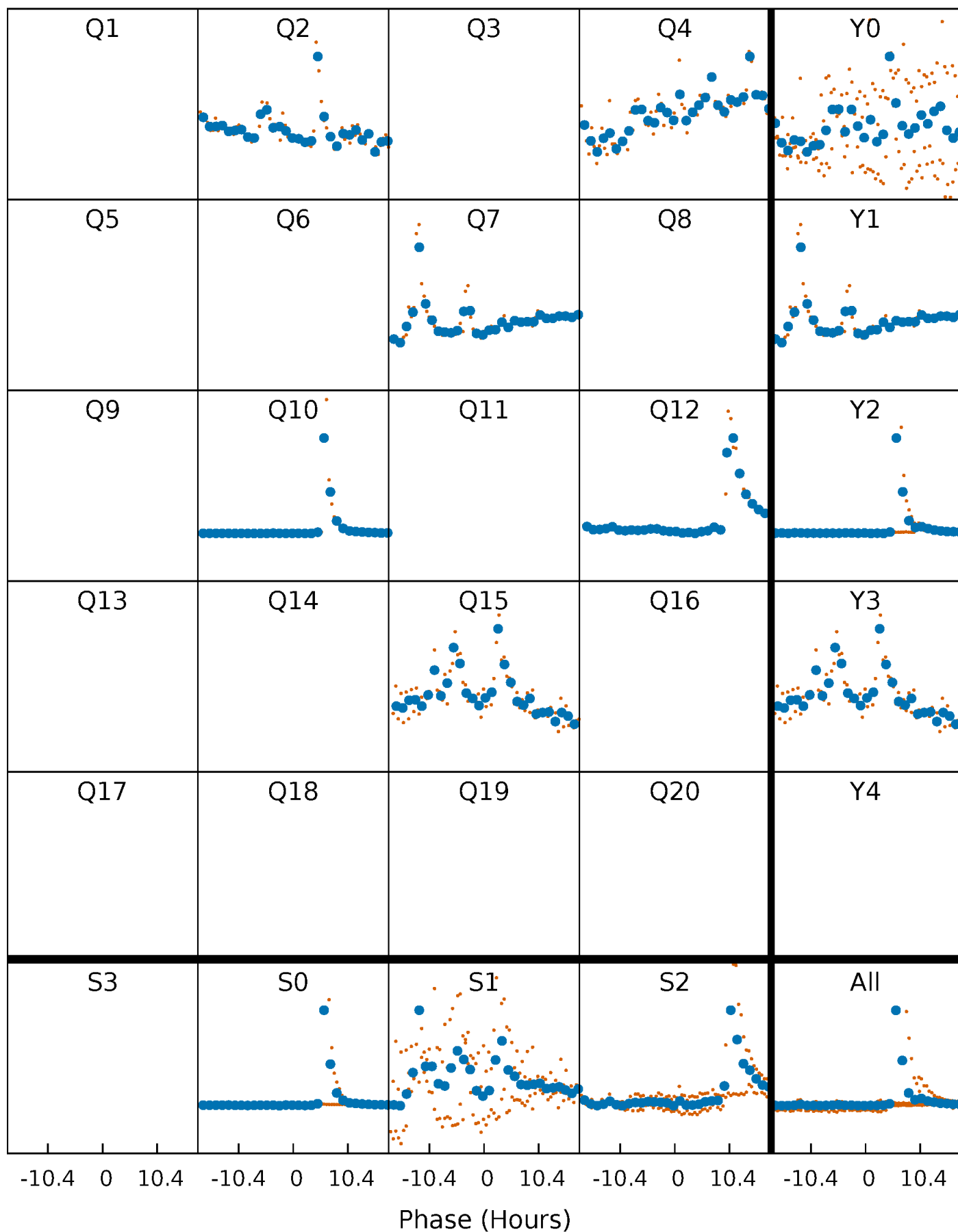


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



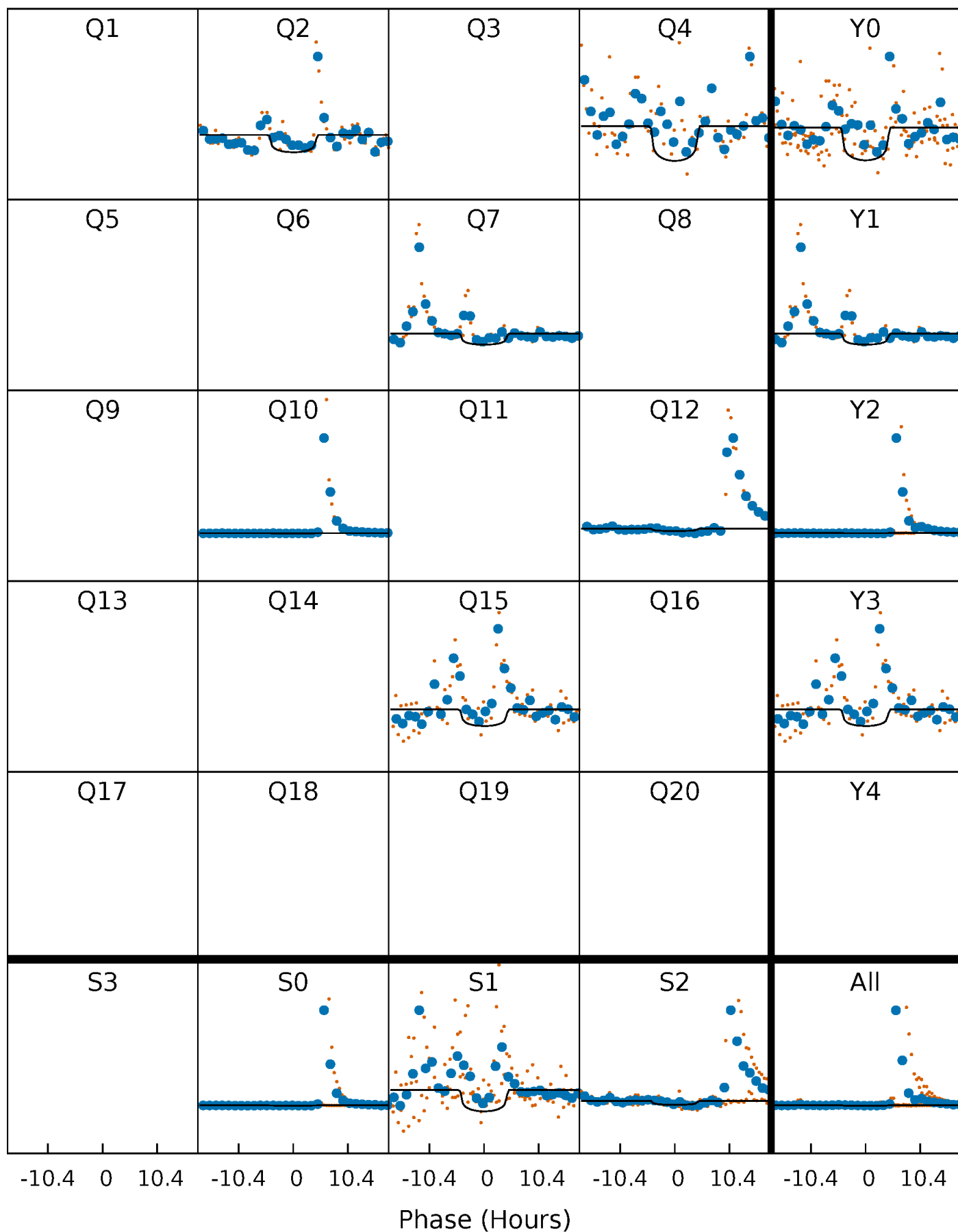
PDC Quarter-Phased Transit Curves

TCE 012646841-05 $P=243.711732$ Days $T_0=192.019221$ (BKJD)



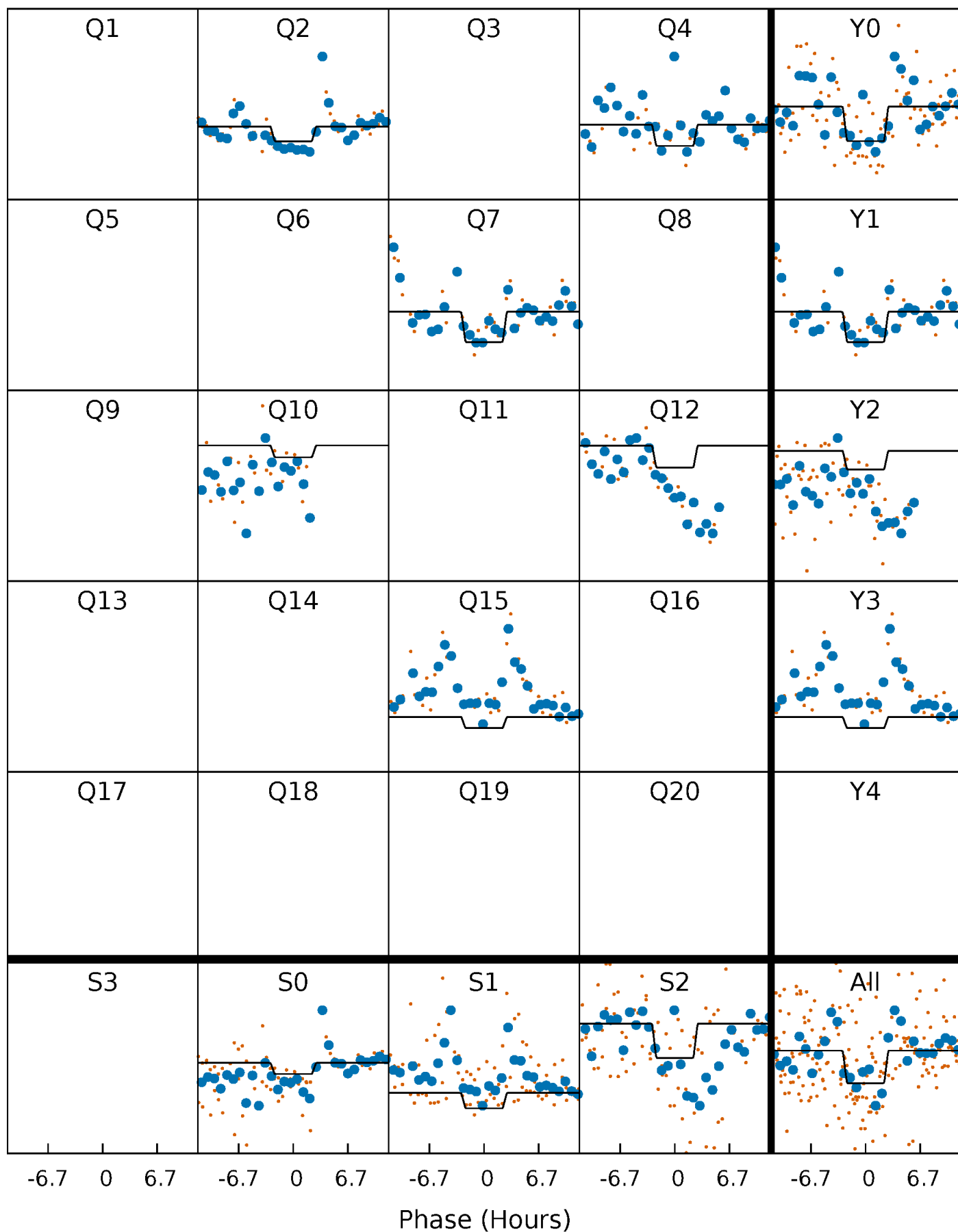
DV Quarter-Phased Transit Curves

TCE 012646841-05 $P=243.711732$ Days $T_0=192.019221$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

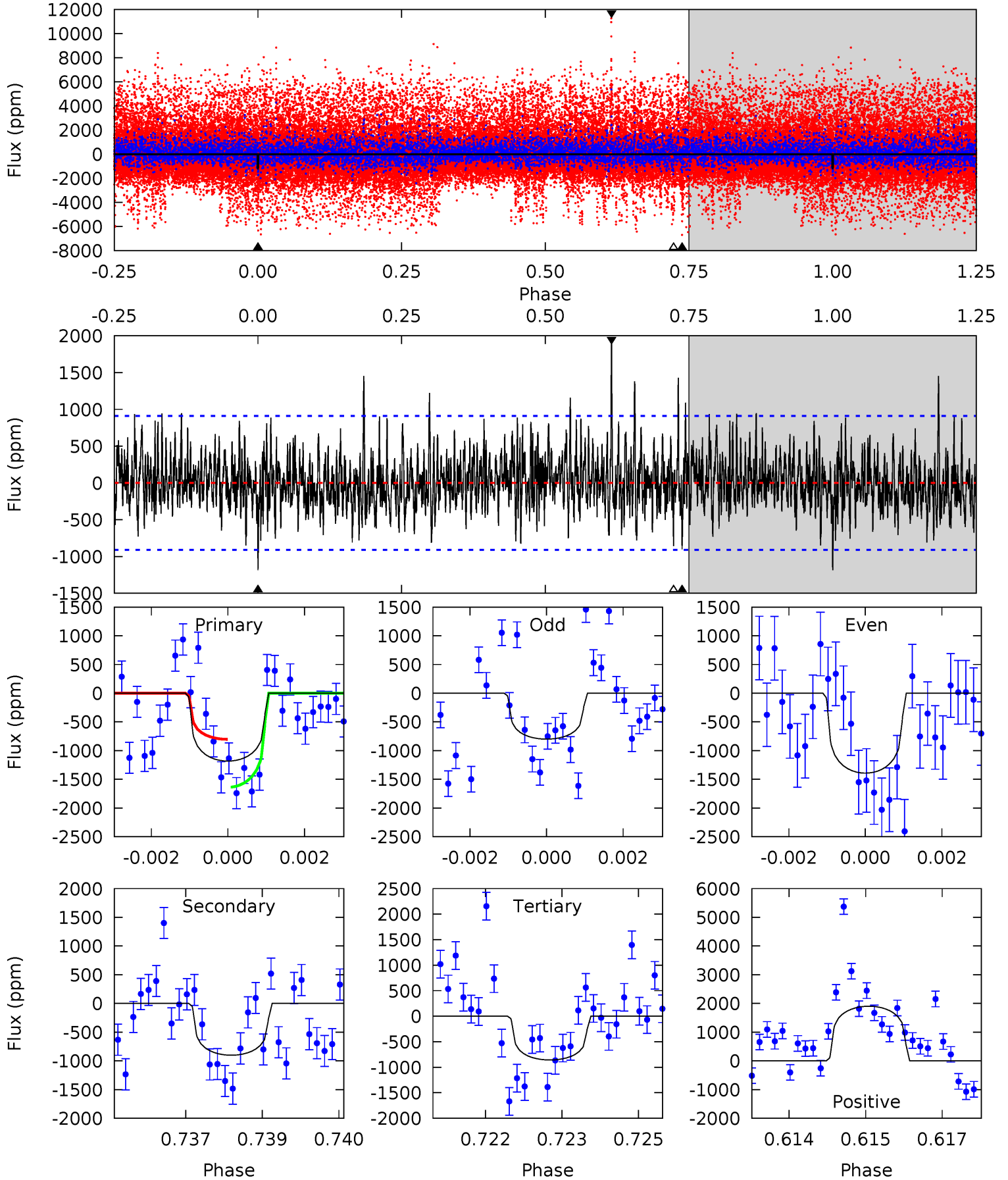
TCE 012646841-05 $P=243.697448$ Days $T_0=192.073237$ (BKJD)



DV Model-Shift Uniqueness Test

012646841-05, P = 243.711732 Days, E = 192.019221 Days

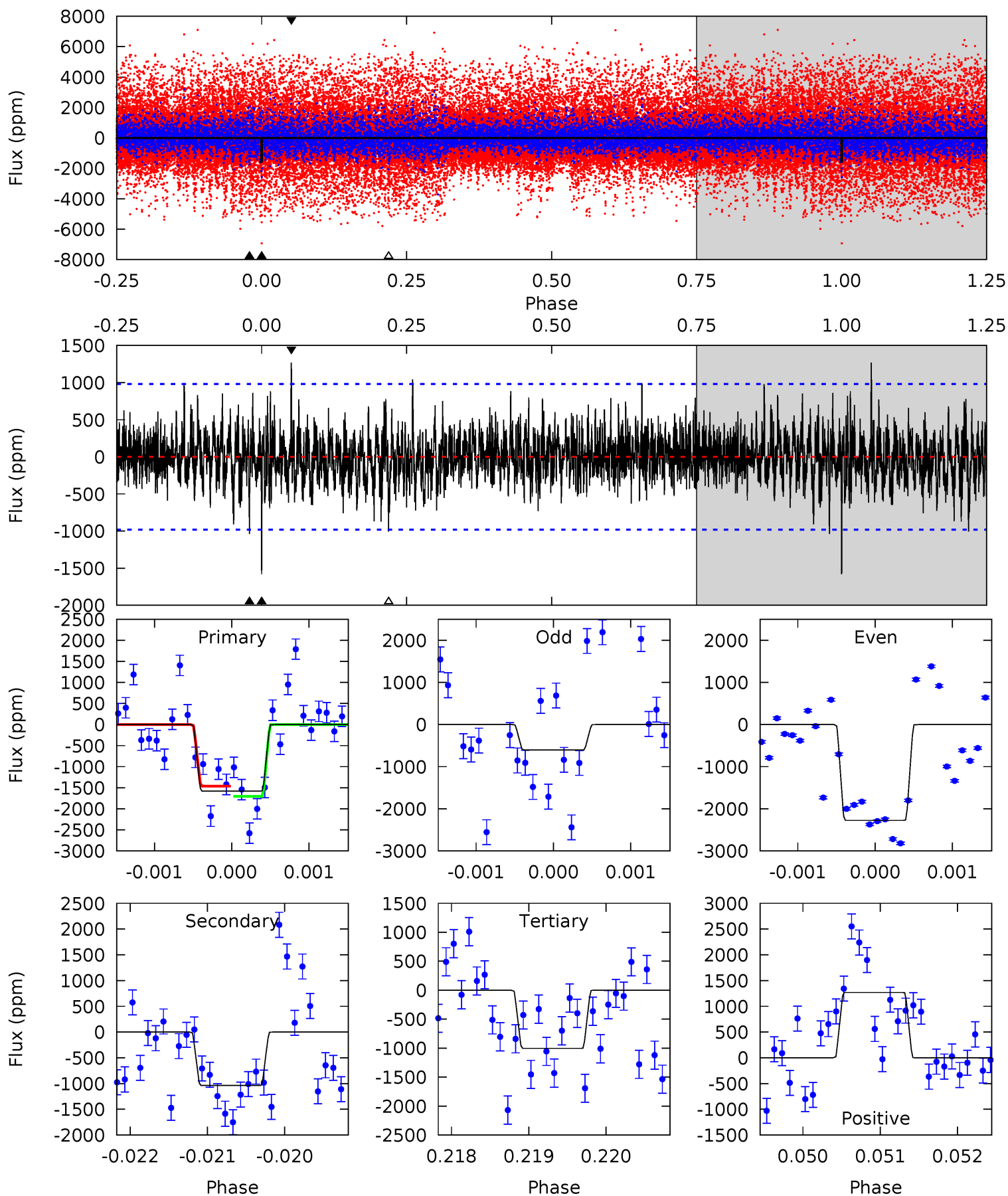
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.98	5.32	5.06	11.2	5.38	3.17	1.89	1.92	-4.25	0.26	-5.91	1.63	1.60	0.62	2.48



Alt Model-Shift Uniqueness Test

012646841-05, P = 243.697448 Days, E = 192.073237 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.79	5.77	5.59	7.06	5.46	3.30	1.47	3.20	1.73	0.19	-1.28	4.46	0.92	0.45	0.69



Stellar Parameters For KIC 012646841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3344^{+43}_{-40}	$4.976^{+0.045}_{-0.045}$	$0.000^{+0.100}_{-0.100}$	$0.274^{+0.041}_{-0.030}$	$0.259^{+0.052}_{-0.034}$	$17.720^{+4.538}_{-3.605}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+15%/-11%	+20%/-13%	+26%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 012646841-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-901±170	$7.99^{+7.92}_{-5.56}$	155^{+4}_{-4}	1964^{+608}_{-258}	1898^{+19325}_{-1467}
Alt.	-1038±180	$7.59^{+7.95}_{-5.17}$	155^{+4}_{-4}	2009^{+610}_{-269}	2402^{+22662}_{-1863}

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

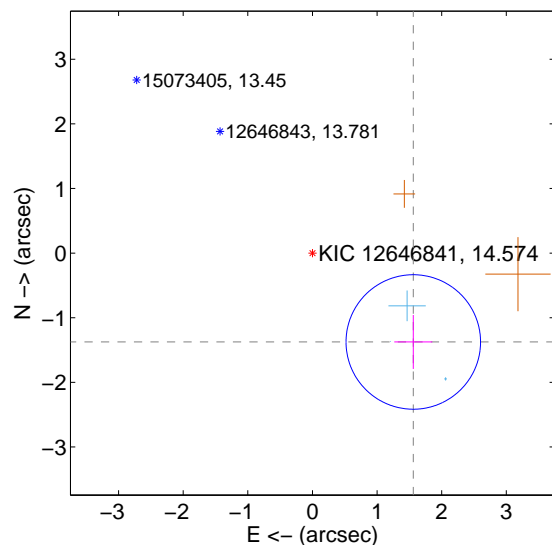
Supplemental centroid analysis for 012646841-05. Kepler magnitude: 14.57. Transit SNR 6.65

There are 3 quarters with good PRF difference image offsets

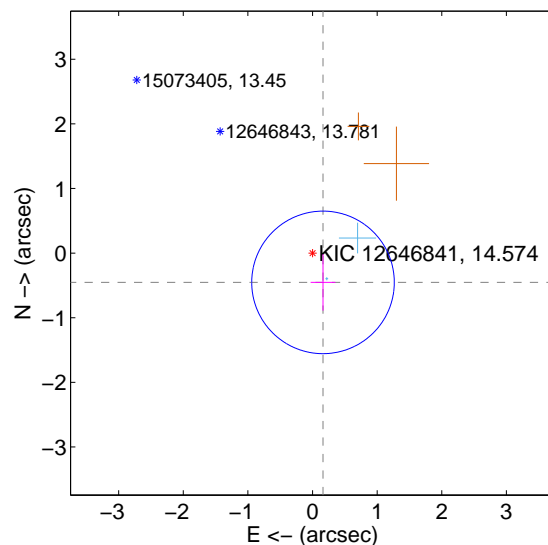
The direct PRF centroid is offset from the target star catalog position by about 1.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.080 ± 0.347	6.00	-1.560 ± 0.293	-1.375 ± 0.417
PRF-fit source offset from KIC position	0.481 ± 0.368	1.31	-0.162 ± 0.192	-0.453 ± 0.437
photometric centroid source offset	1.52 ± 0.28	5.33	0.62 ± 0.27	1.38 ± 0.29

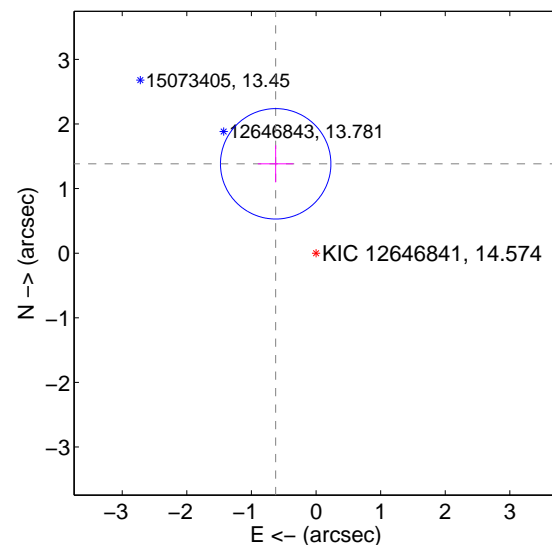
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

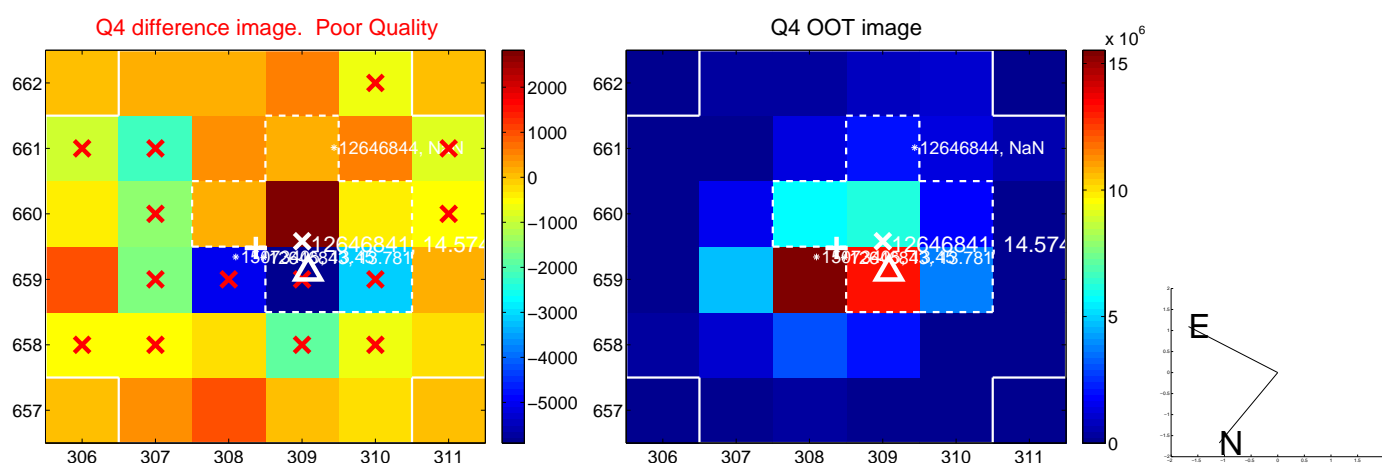
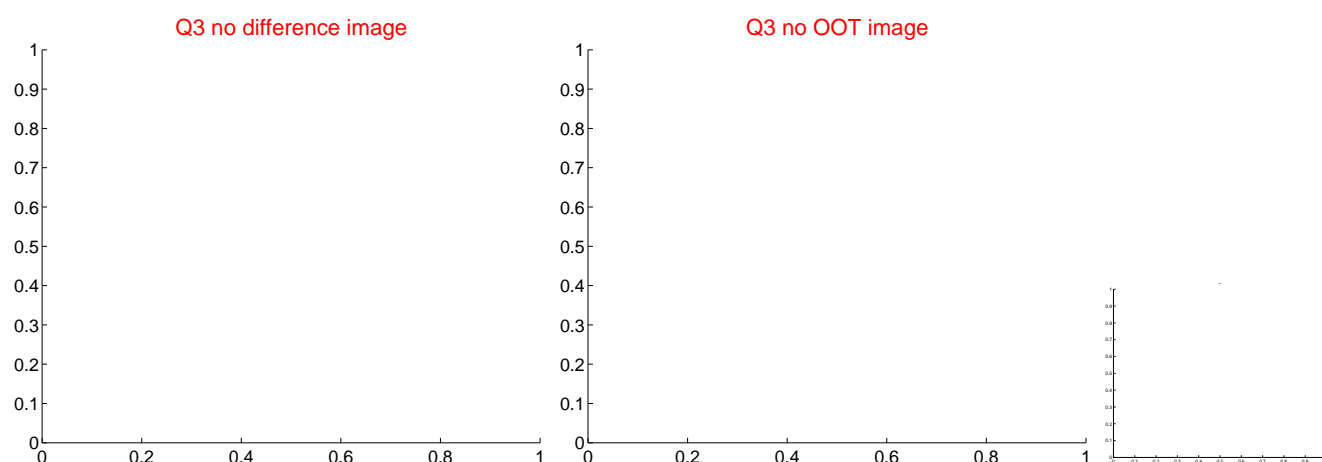
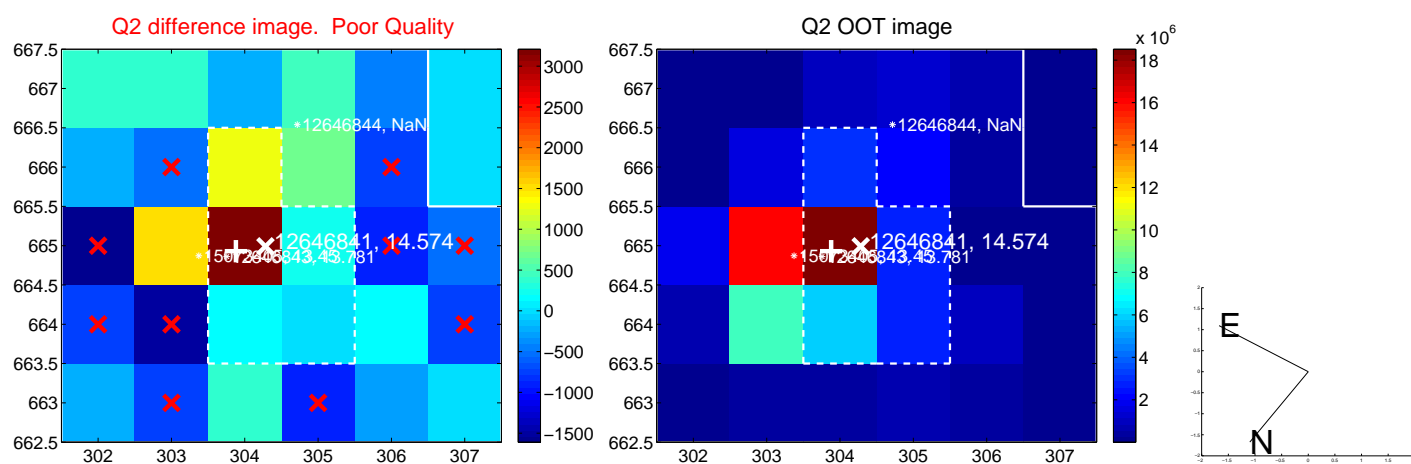
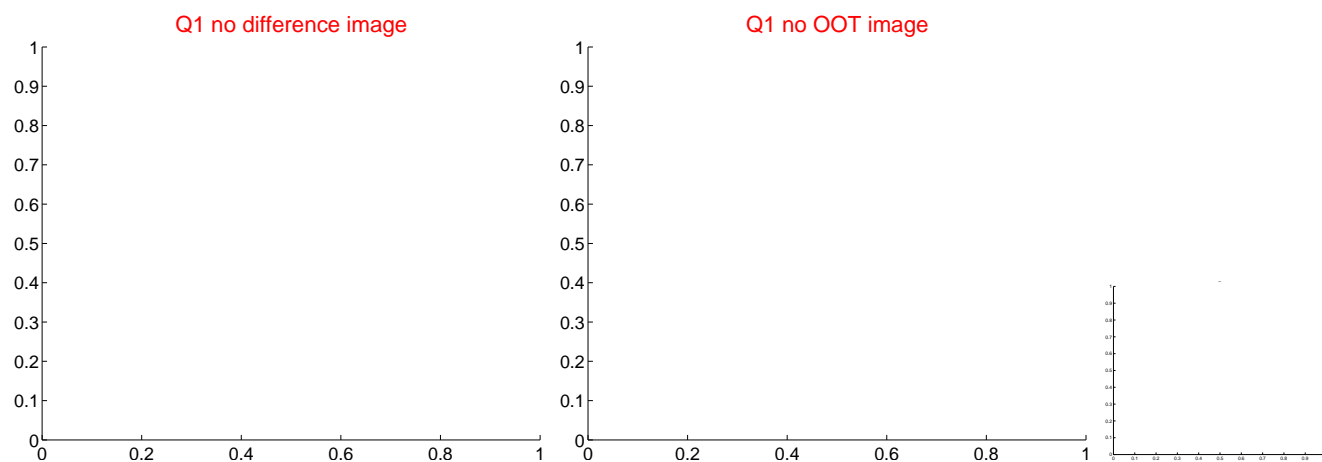


offset from photometric centroids

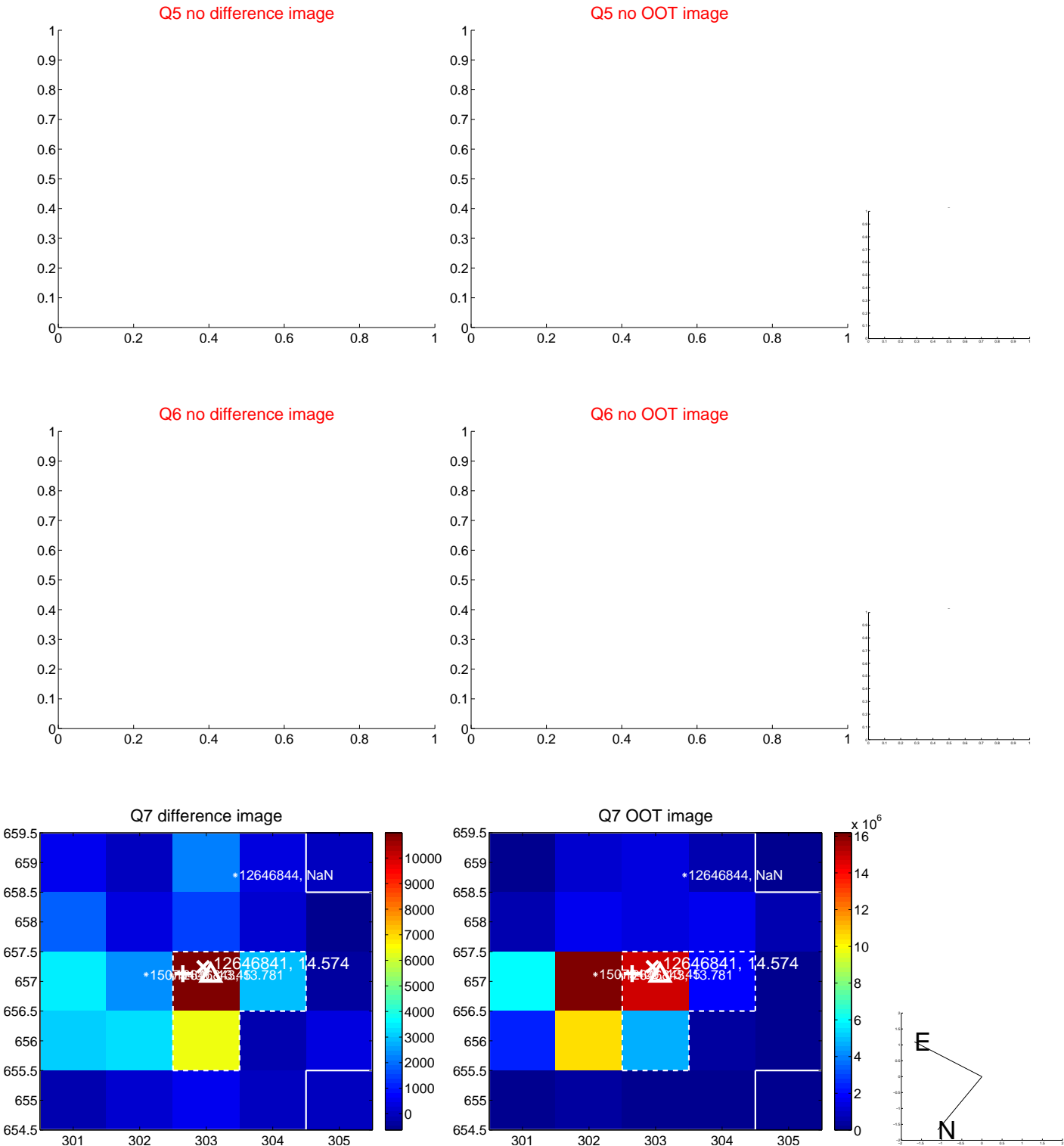


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

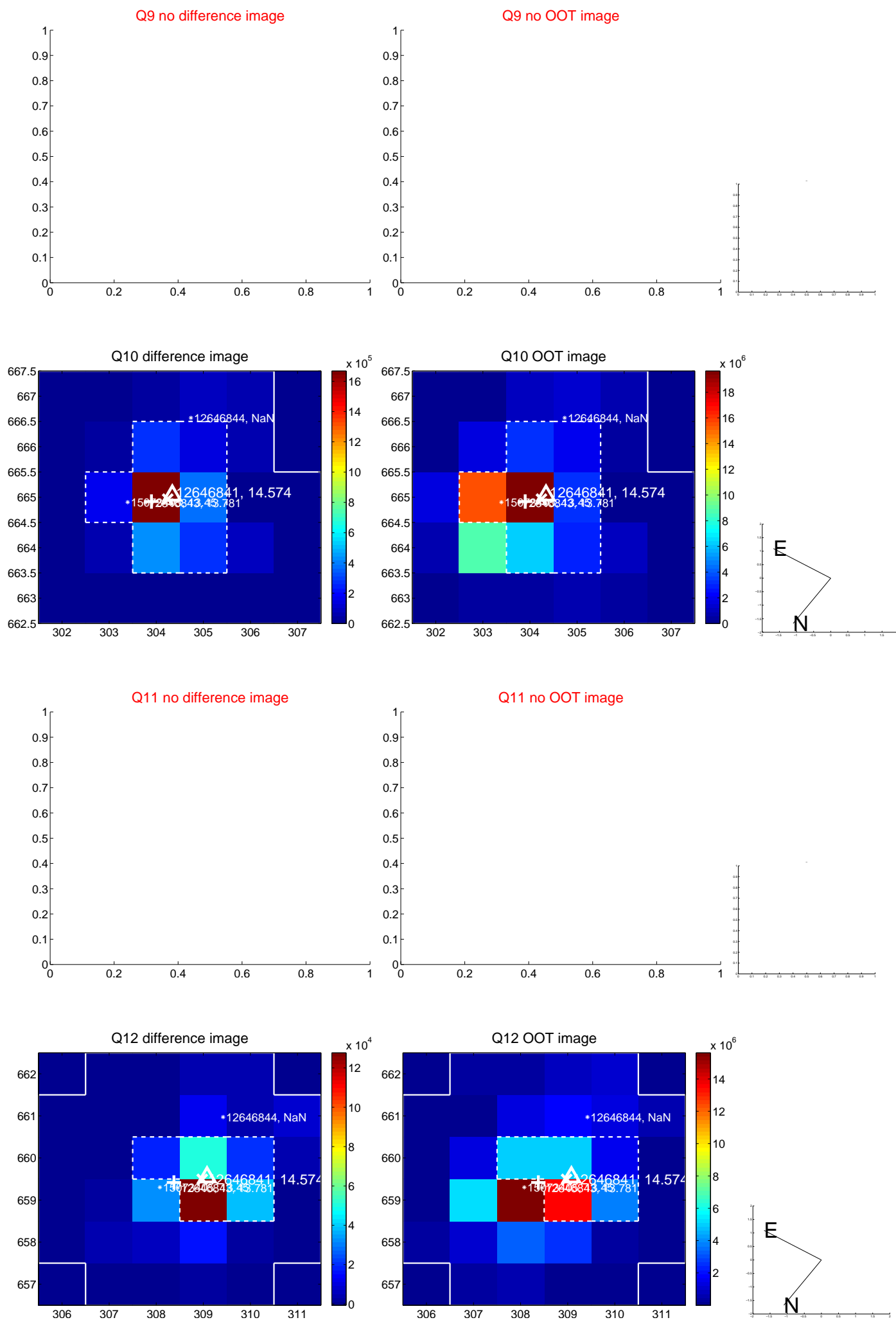
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



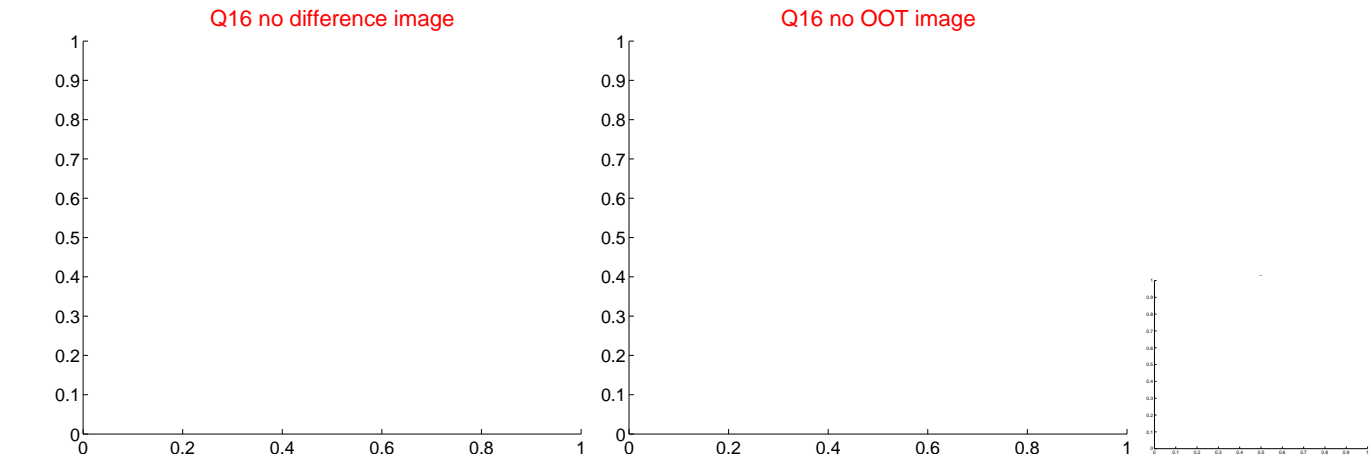
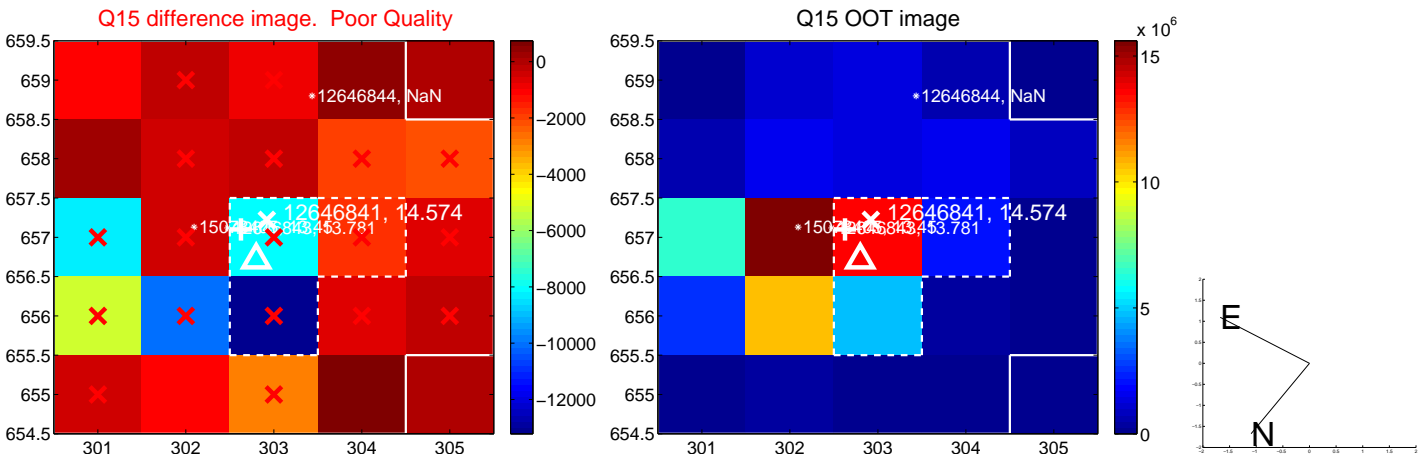
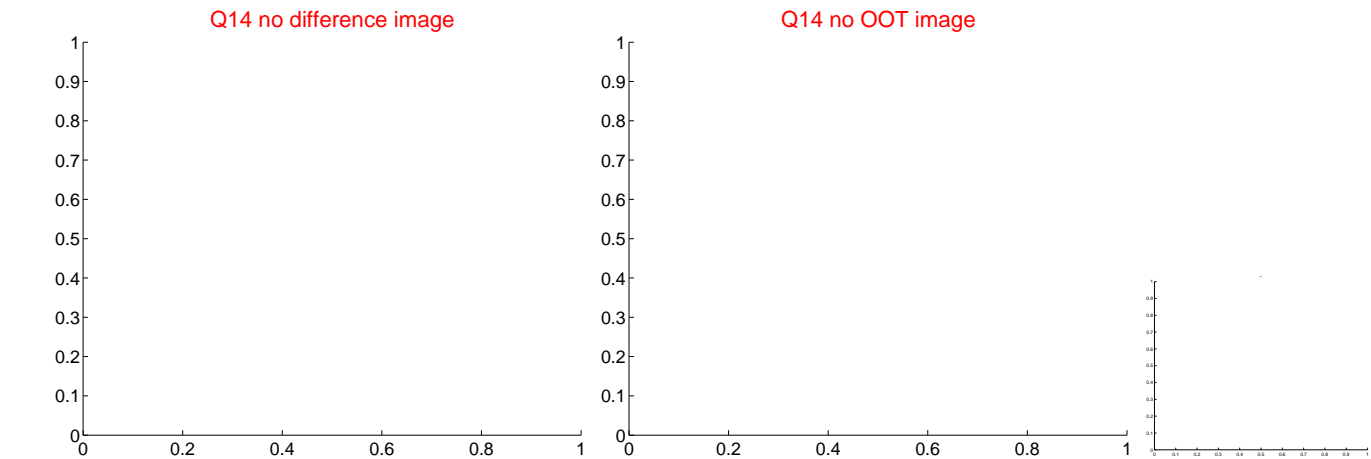
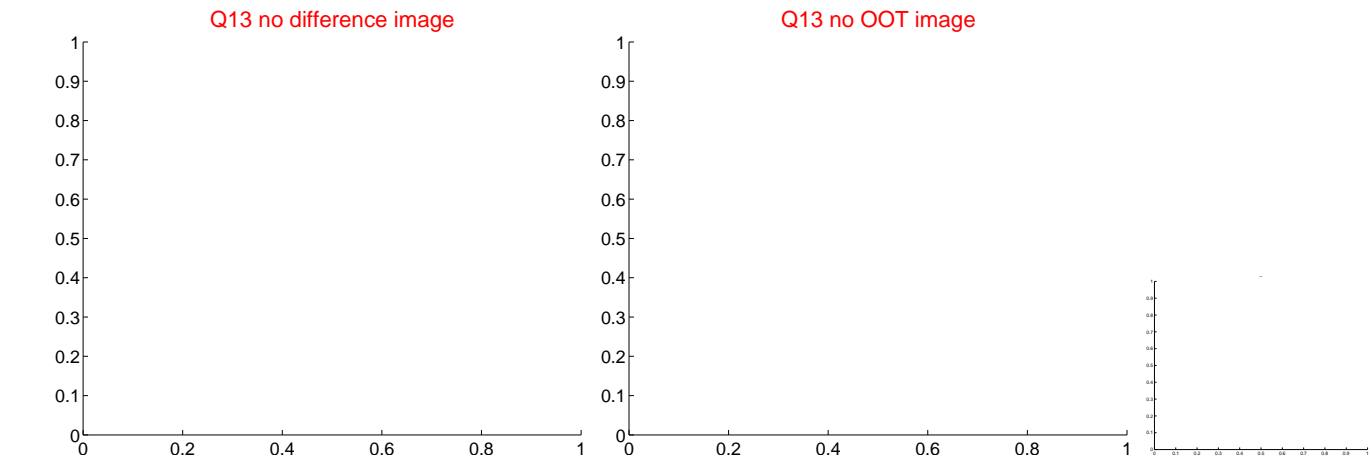
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



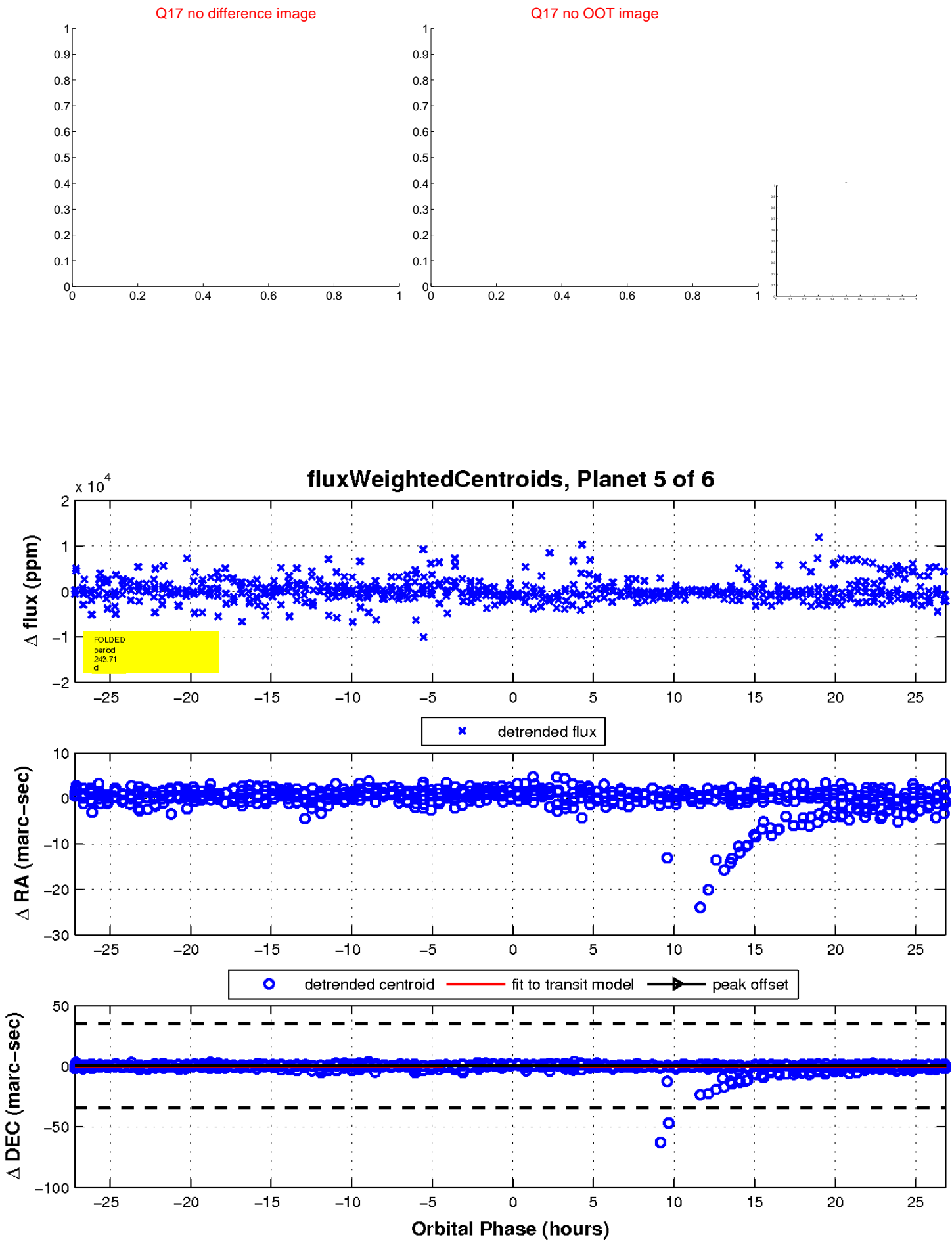
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

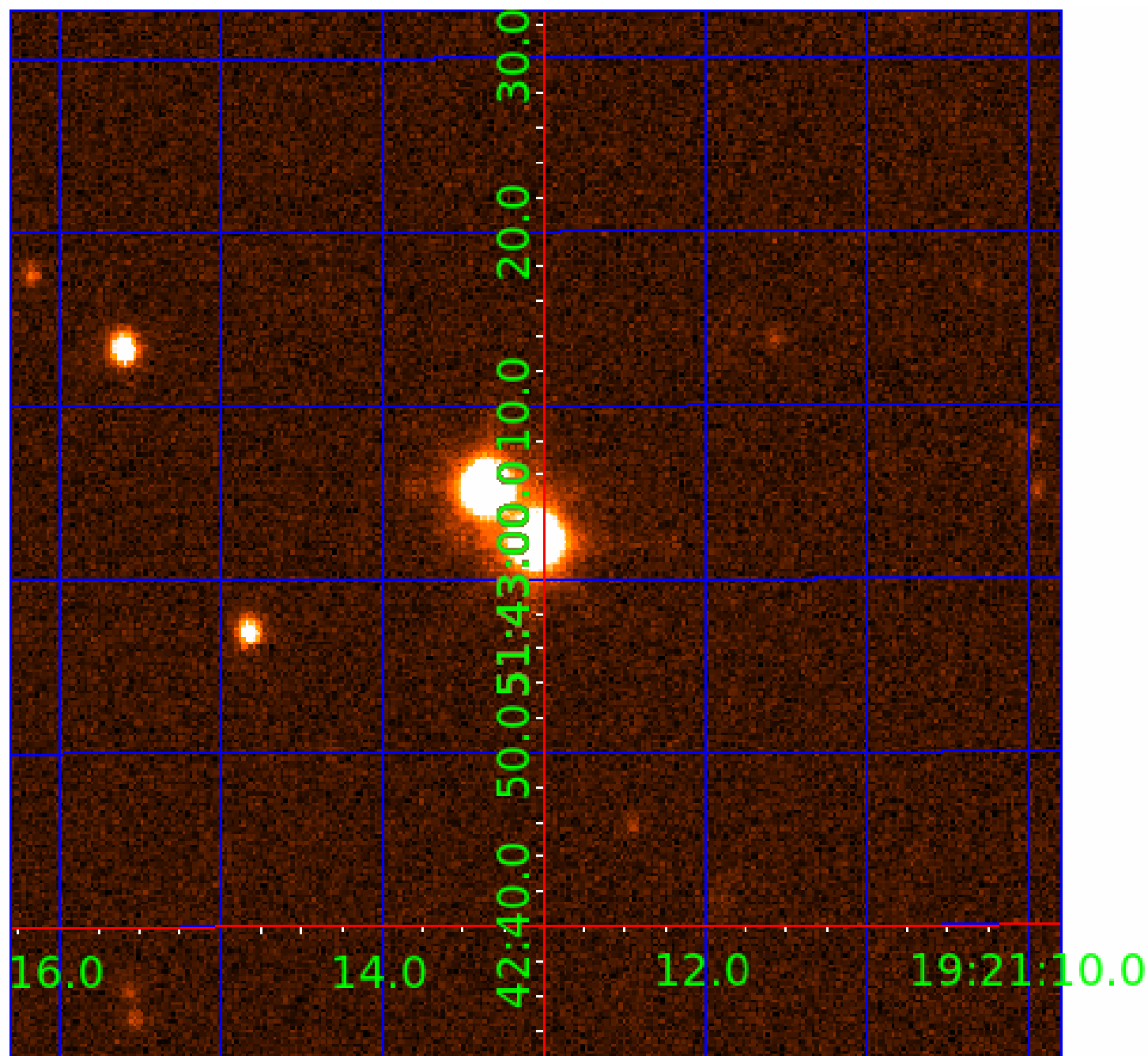


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012646841

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})
012646841-01	OBS	No	529.675121	265.175188	3009.7	17.872	15.0	7.5	0.27	3344	1.49	0.01
012646841-02	OBS	No	443.921618	413.185188	4432.1	6.275	13.0	8.6	0.27	3344	1.80	0.02
012646841-03	OBS	No	426.771036	464.186345	5534.6	15.107	11.8	9.3	0.27	3344	2.17	0.02
012646841-04	OBS	No	442.297645	466.773537	3528.9	7.779	11.2	6.9	0.27	3344	1.61	0.02
012646841-05	OBS	No	243.711732	192.019221	2018.7	9.064	10.9	6.6	0.27	3344	1.22	0.04
012646841-06	OBS	No	5.621501	136.923495	3998.5	1.500	10.1	-1.0	0.27	3344	1.72	5.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012646841-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012646841-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
012646841-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_KIC_POS
012646841-06	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST

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

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

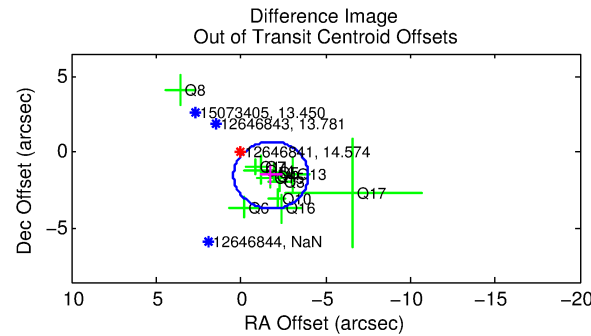
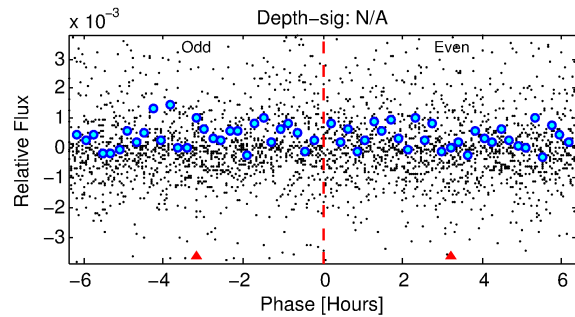
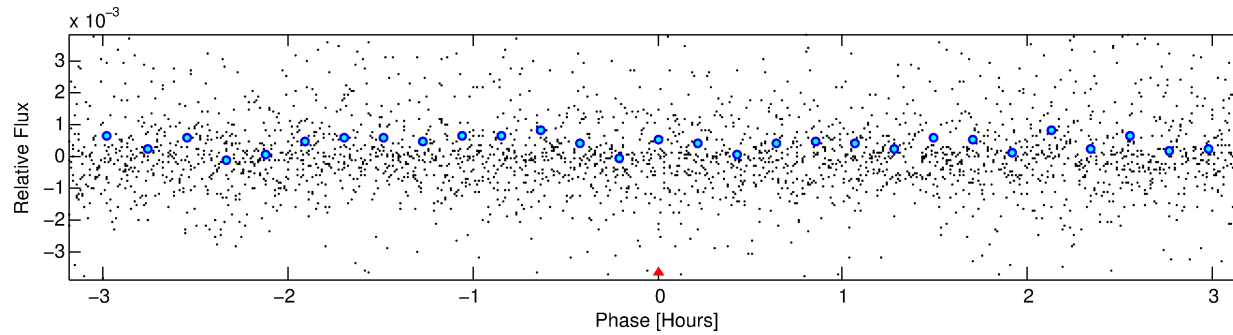
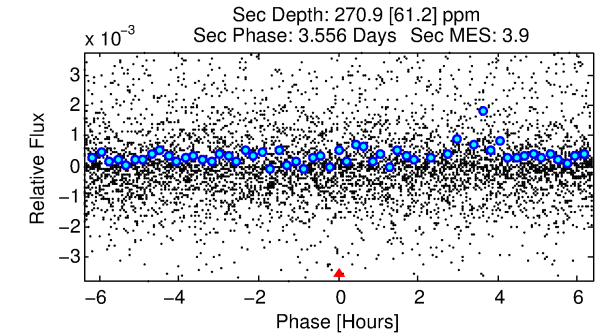
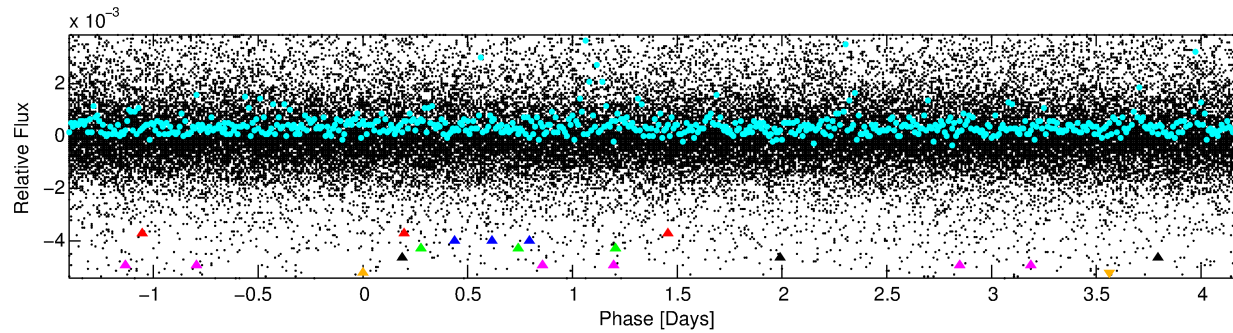
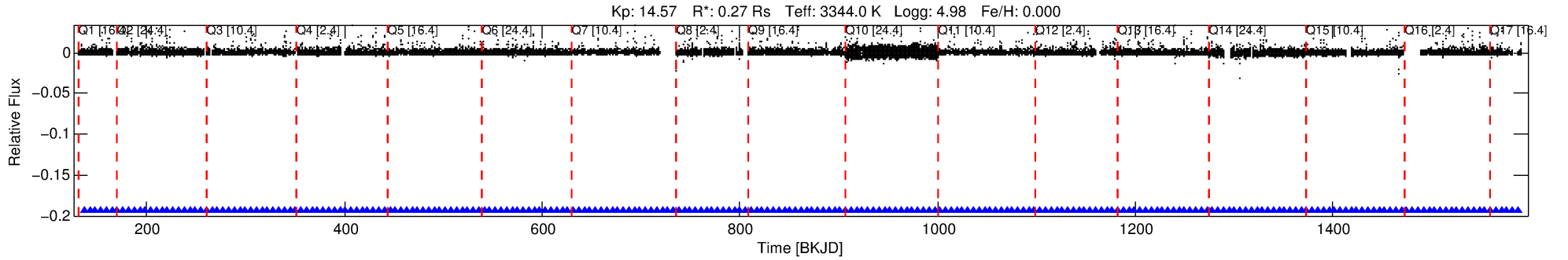
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012646841-06

No Significant Match Found

DV One-Page Summary

KIC: 12646841 Candidate: 6 of 6 Period: 5.622 d



TPS TCE Results:

Period = 5.62150 d
Epoch = 136.9235 BKJD

DV fit results are unavailable

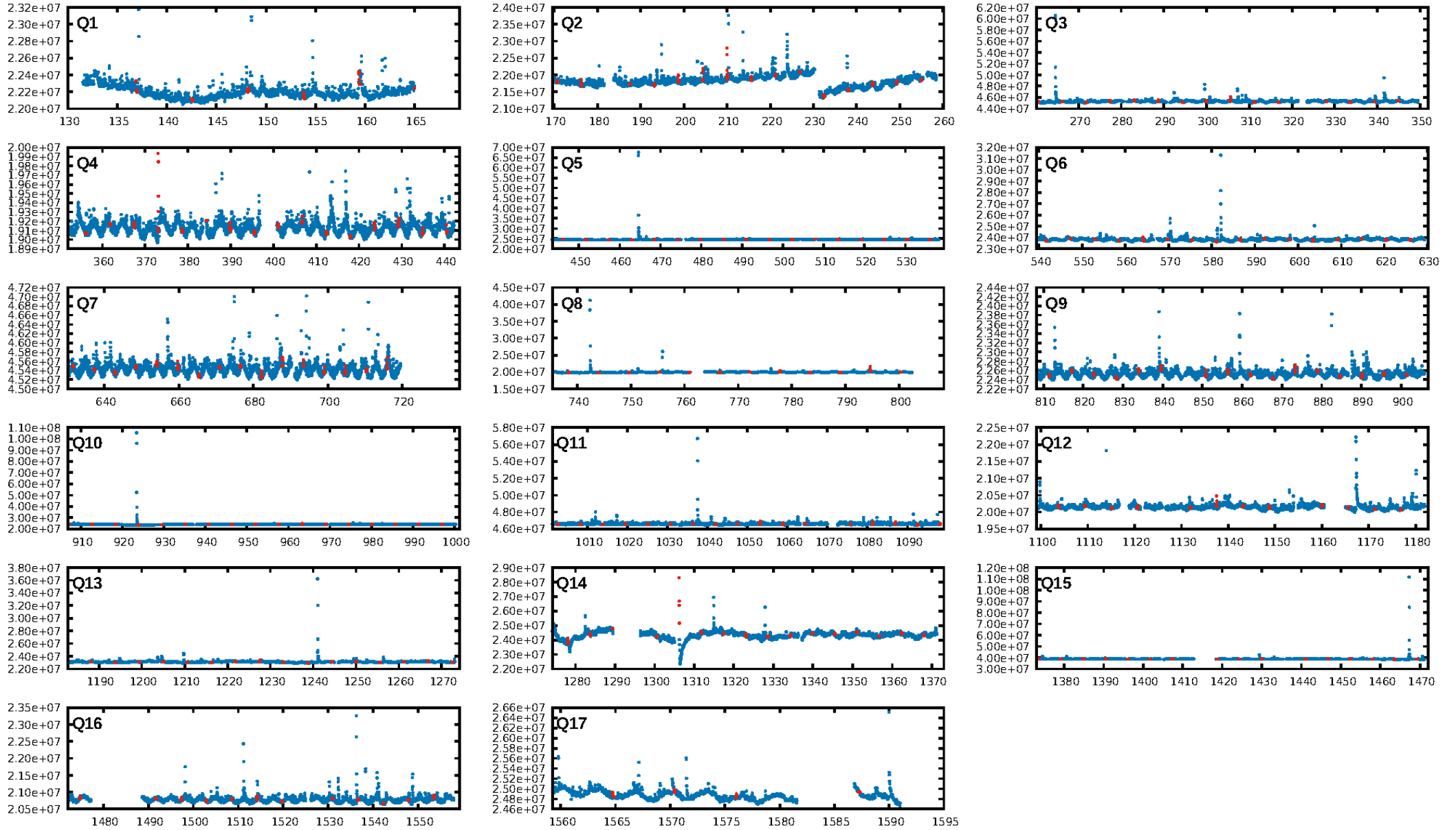
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [621.94 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [223/223]
GhostDiagnostic-chr: 0.1404
Centroid-sig: N/A
Centroid-so: 6.102 arcsec [0.89 σ]
OotOffset-rm: 2.323 arcsec [3.16 σ]
KicOffset-rm: 0.314 arcsec [0.47 σ]
OotOffset-st: 3/4/3/3 [13]
KicOffset-st: 3/4/3/3 [13]
DiffImageQuality-fgm: 0.62 [8/13]
DiffImageOverlap-fno: 1.00 [17/17]

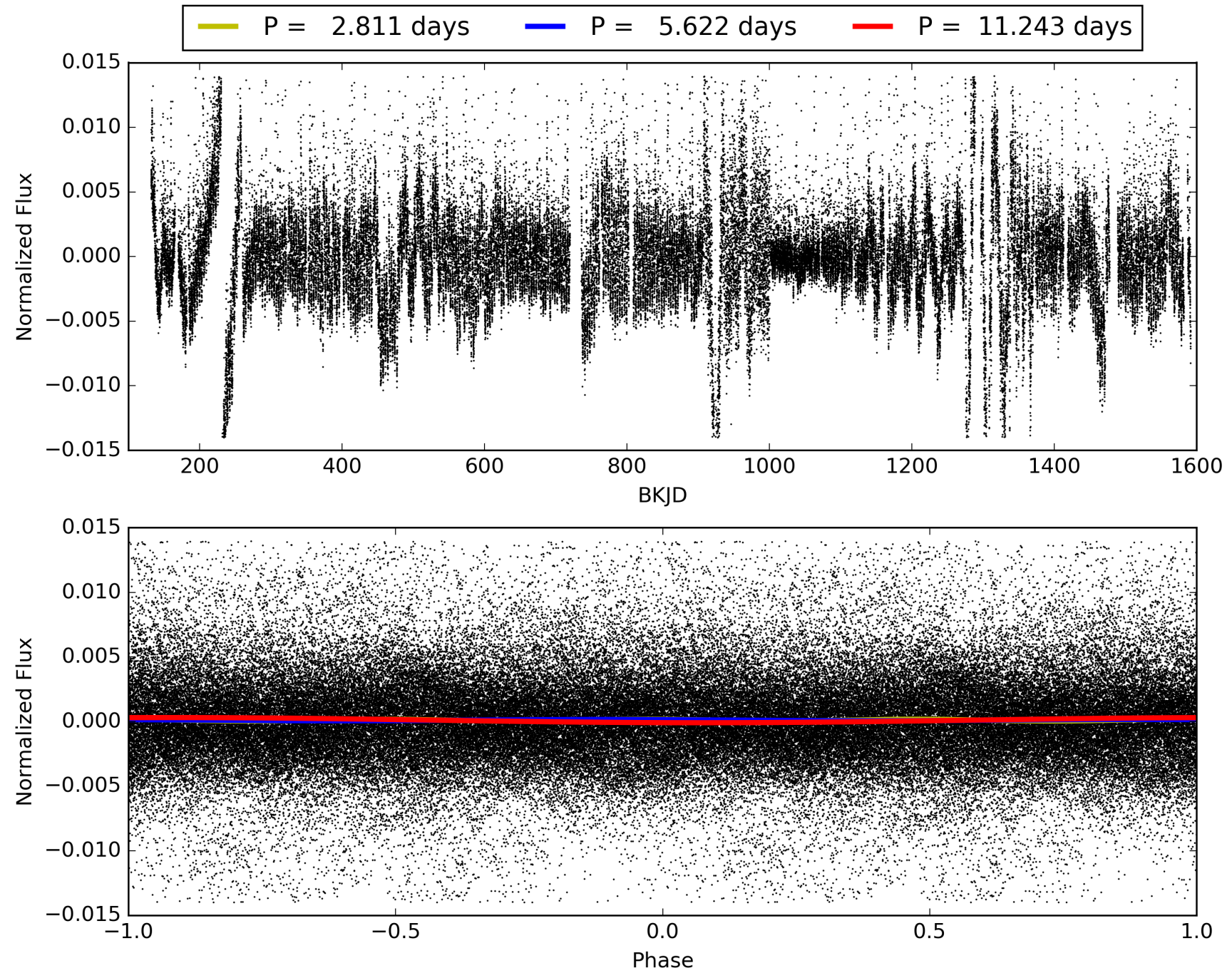
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:38:12 Z

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

TCE 012646841-06, PDC Light Curves

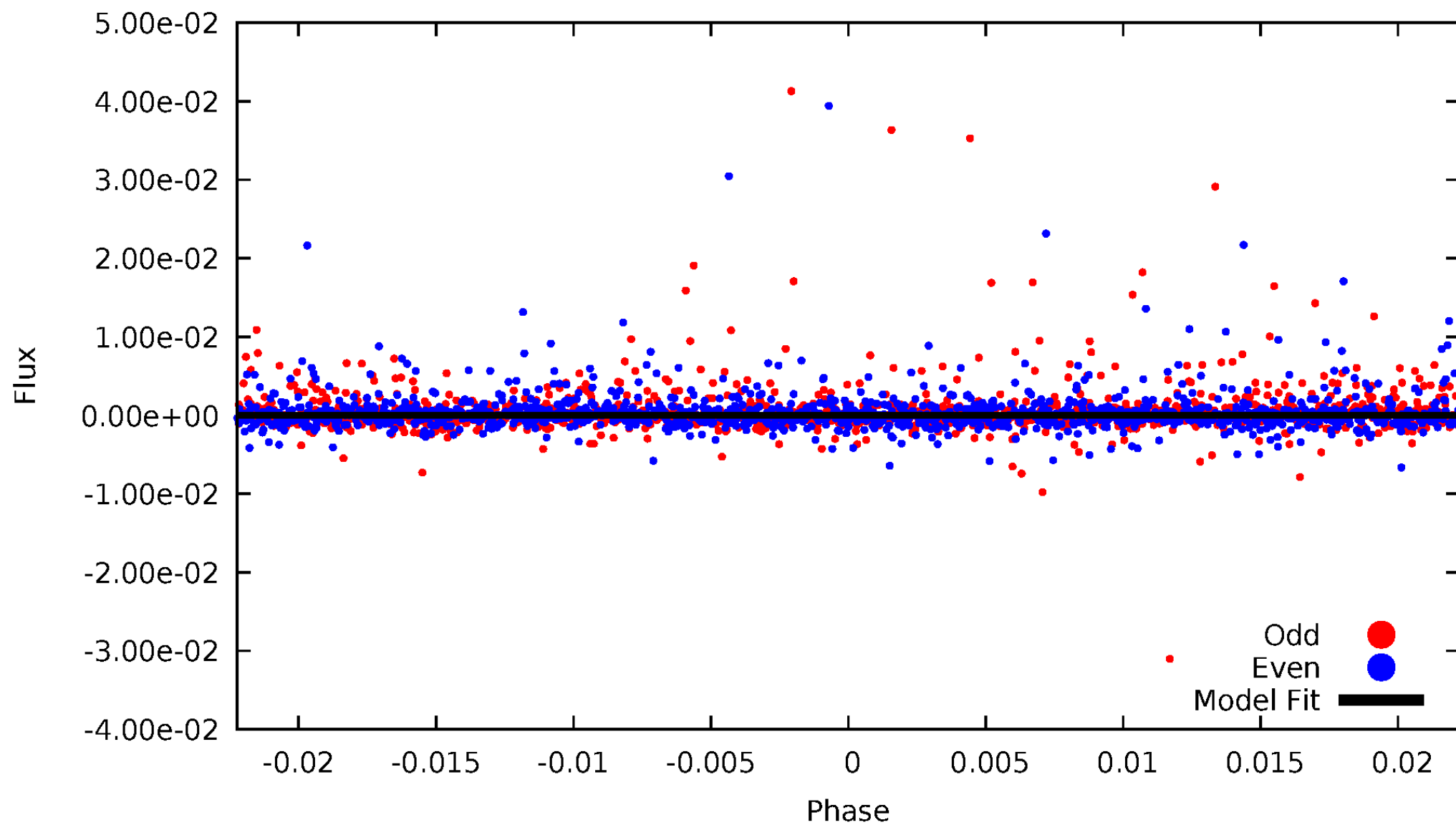


TCE 012646841-06



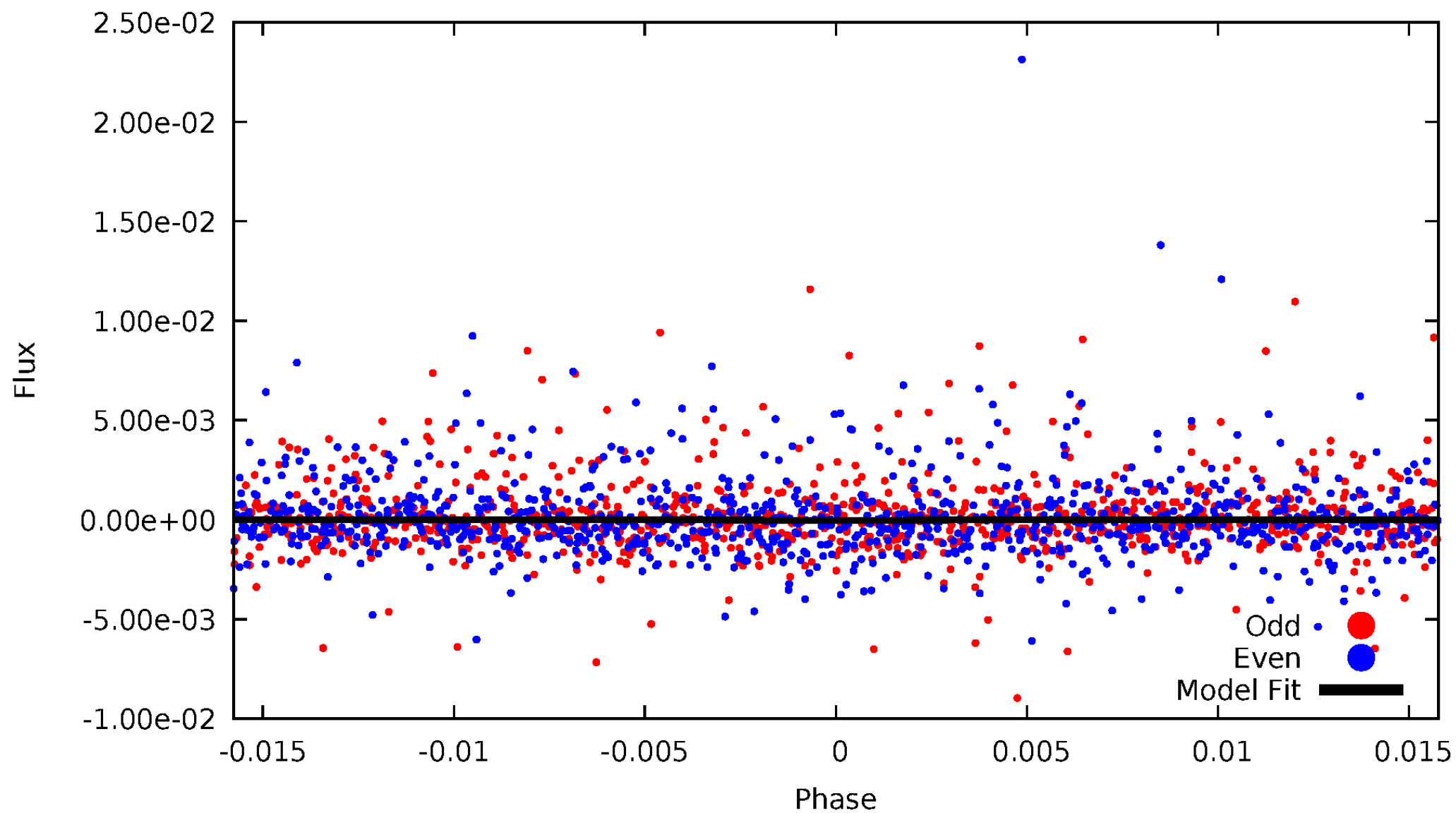
DV Odd/Even

TCE 012646841-06



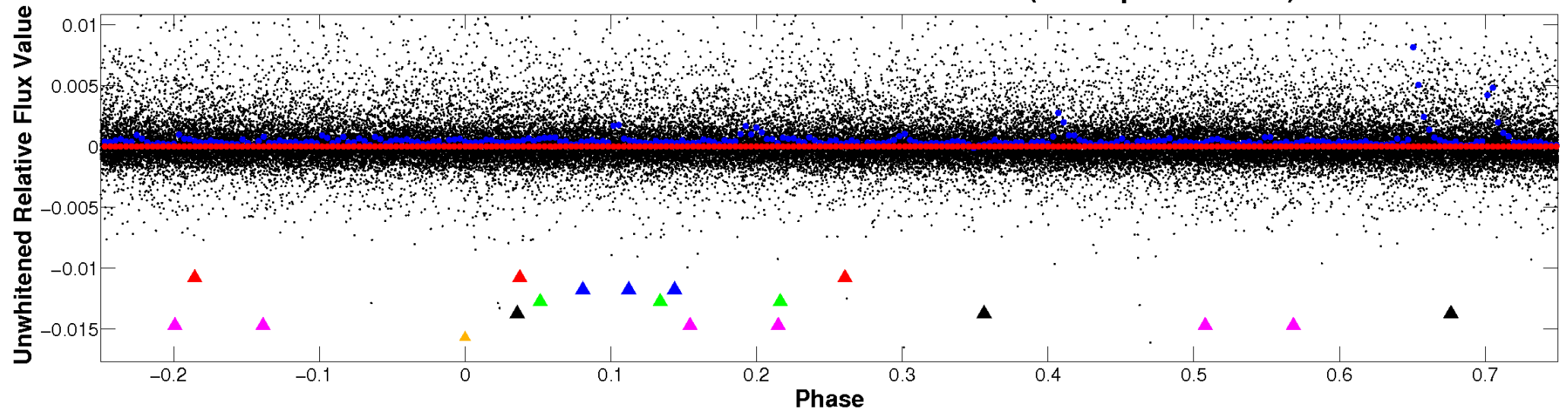
ALT Odd/Even

TCE 012646841-06

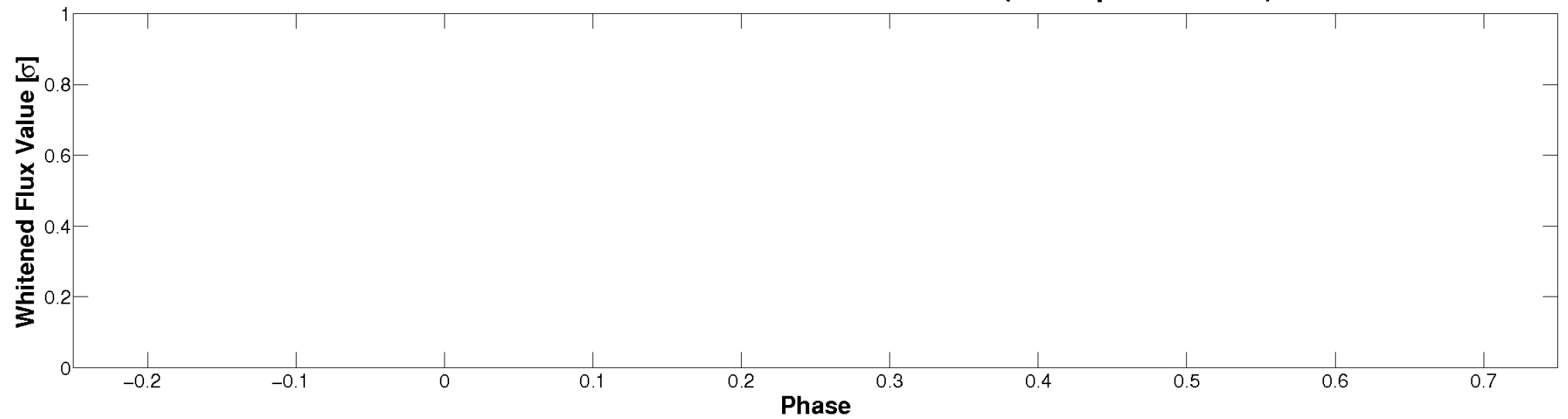


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

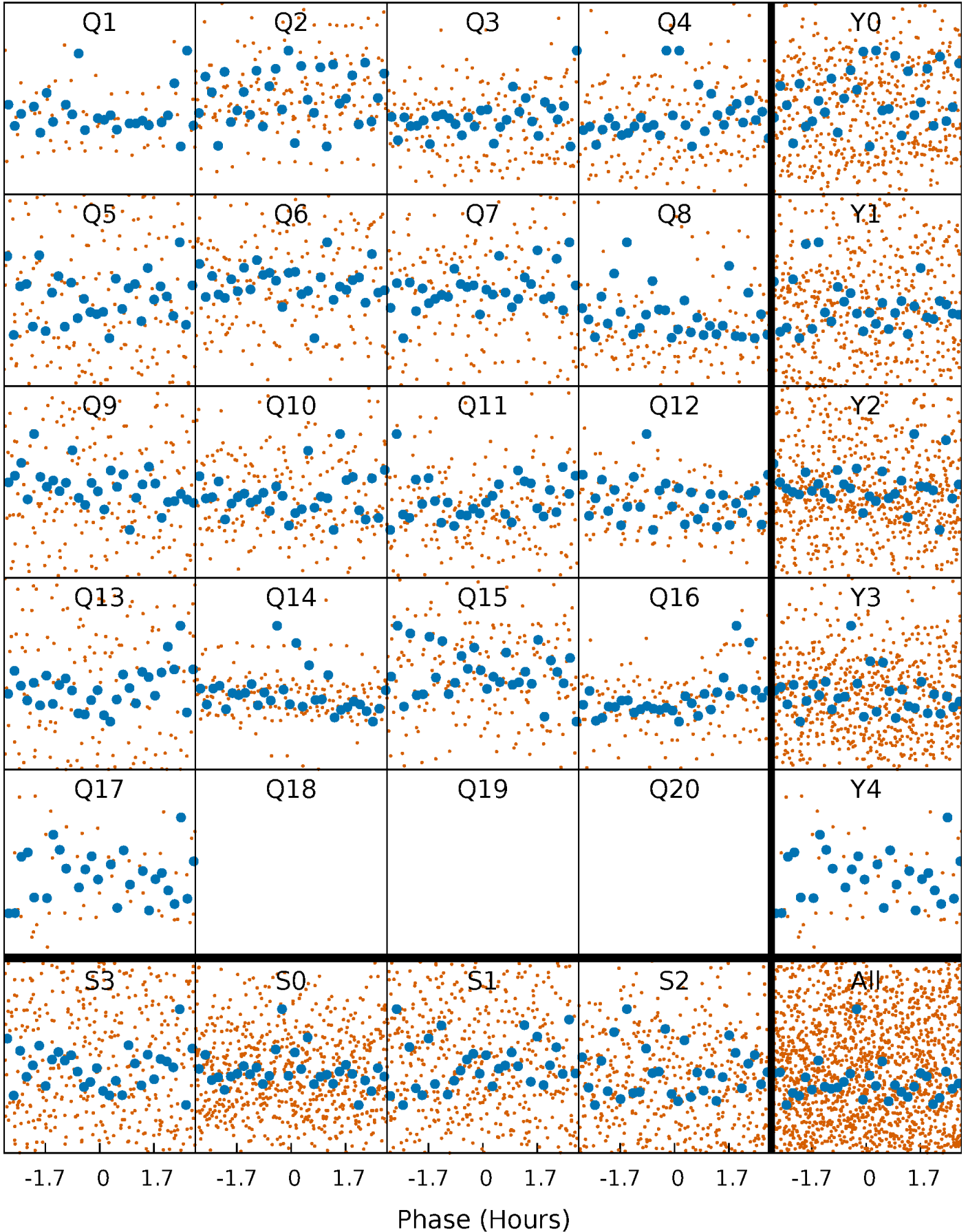


Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)



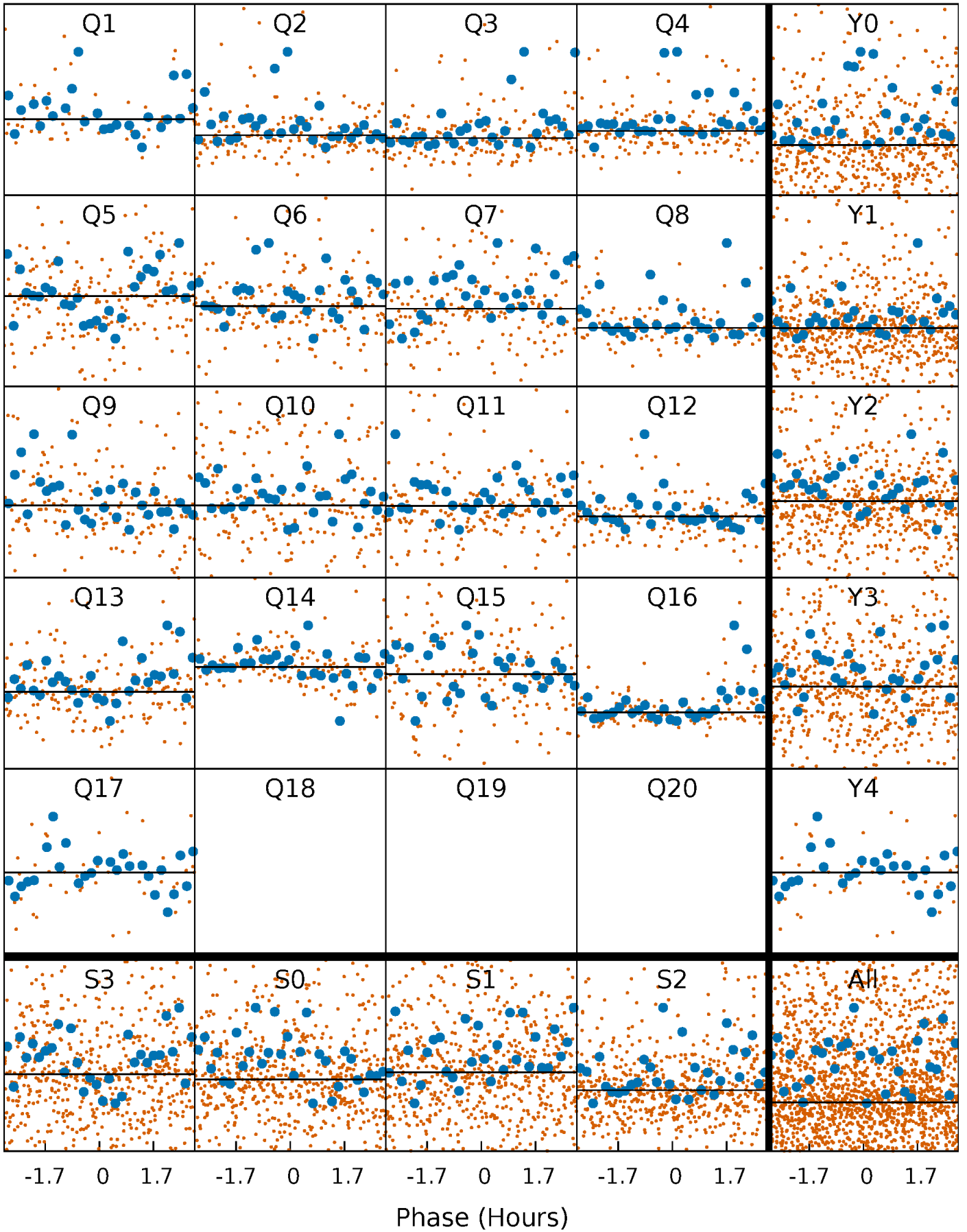
PDC Quarter-Phased Transit Curves

TCE 012646841-06 P= 5.621501 Days $T_0=136.923495$ (BKJD)



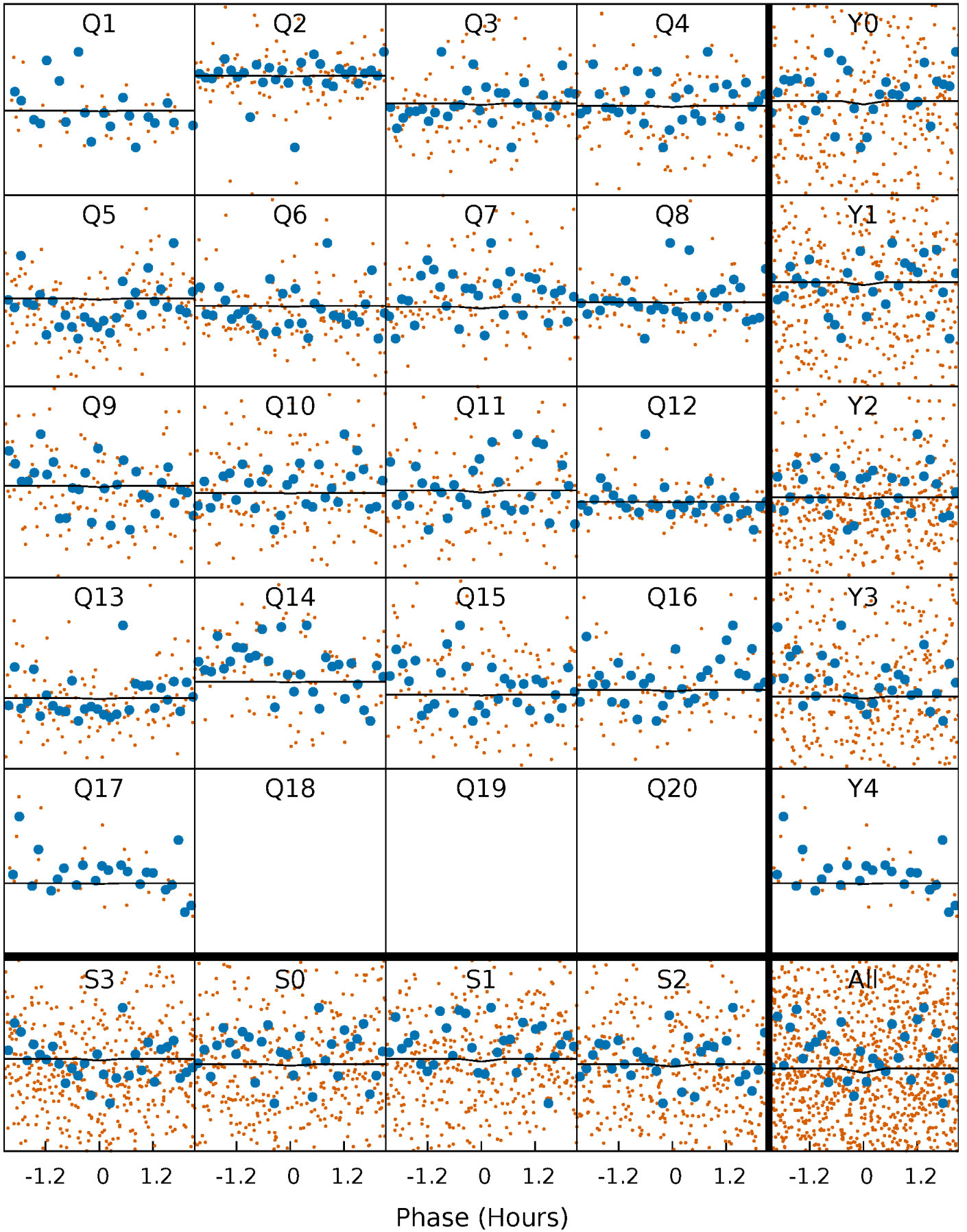
DV Quarter-Phased Transit Curves

TCE 012646841-06 P= 5.621501 Days $T_0=136.923495$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

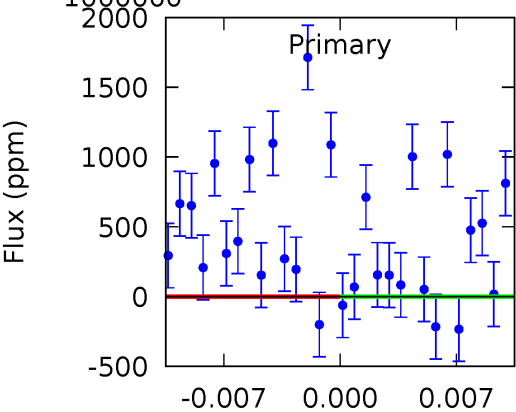
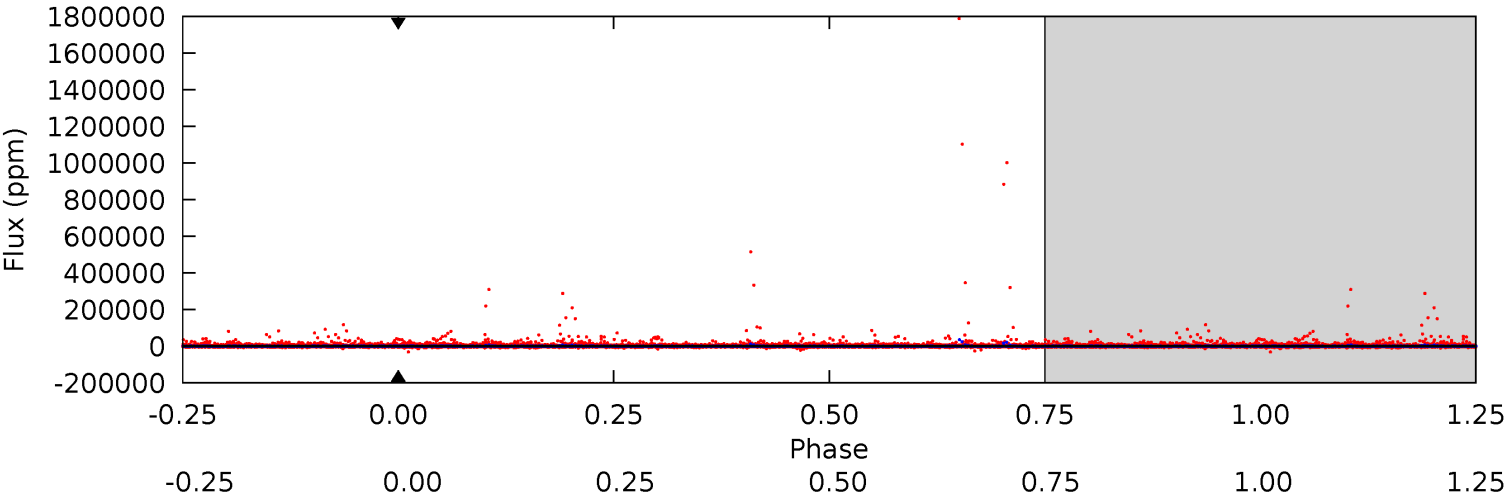
TCE 012646841-06 P= 5.621501 Days $T_0=136.936551$ (BKJD)



DV Model-Shift Uniqueness Test

012646841-06, P = 5.621501 Days, E = 131.301994 Days

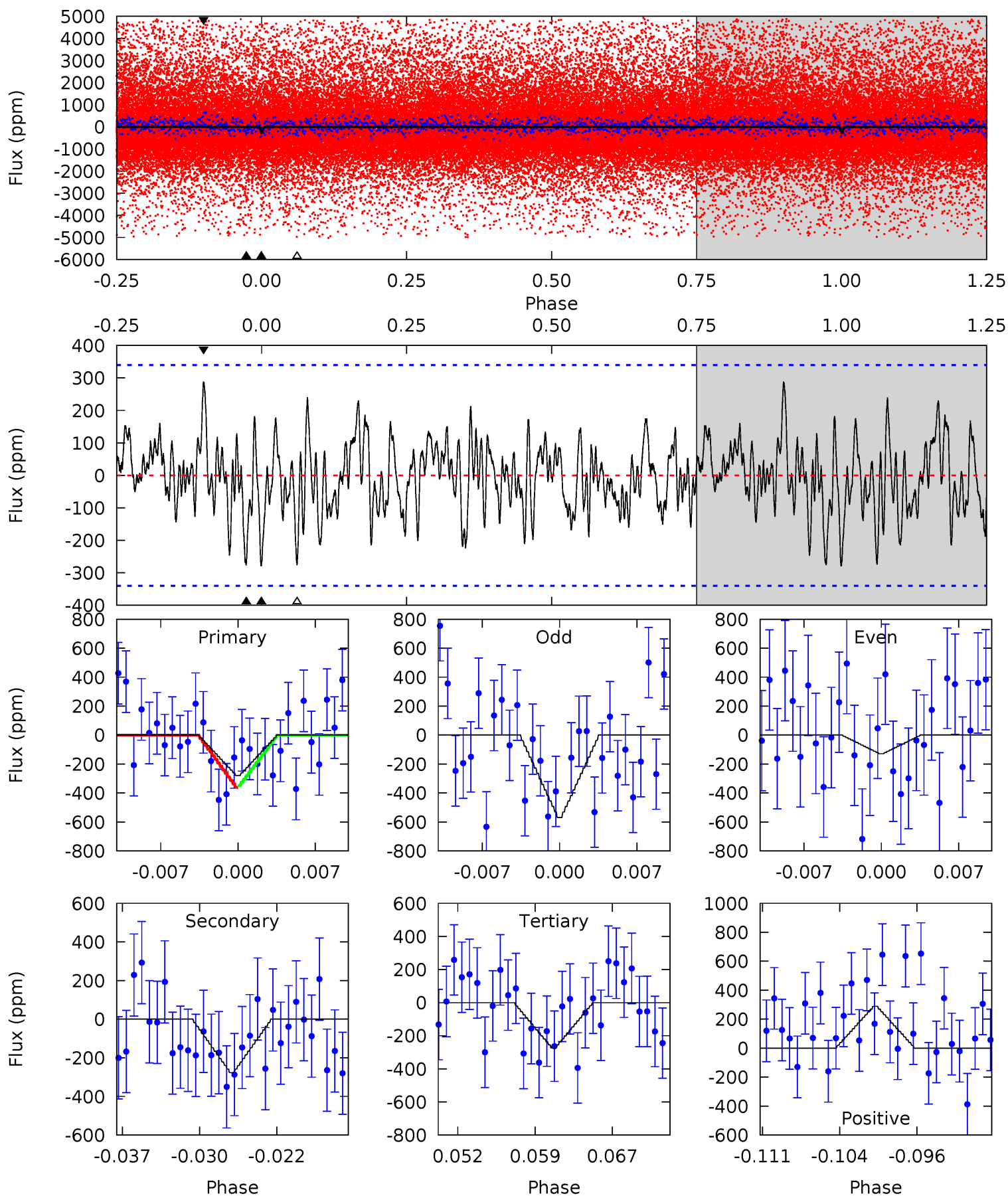
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

012646841-06, P = 5.621501 Days, E = 131.315050 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.18	4.14	4.10	4.32	5.08	2.68	1.36	0.08	-0.14	0.04	-0.18	3.32	0.10	0.51	0.09



Stellar Parameters For KIC 012646841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3344^{+43}_{-40}	$4.976^{+0.045}_{-0.045}$	$0.000^{+0.100}_{-0.100}$	$0.274^{+0.041}_{-0.030}$	$0.259^{+0.052}_{-0.034}$	$17.720^{+4.538}_{-3.605}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+15%/-11%	+20%/-13%	+26%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 012646841-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$2.86^{+2.47}_{-1.98}$	543^{+14}_{-13}	-2499^{+8616}_{-3310}	$-98.854^{+20614.363}_{-17942.465}$
Alt.	-277 ± 67	$1.95^{+2.39}_{-1.39}$	543^{+13}_{-13}	2301^{+902}_{-349}	59^{+650}_{-46}

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

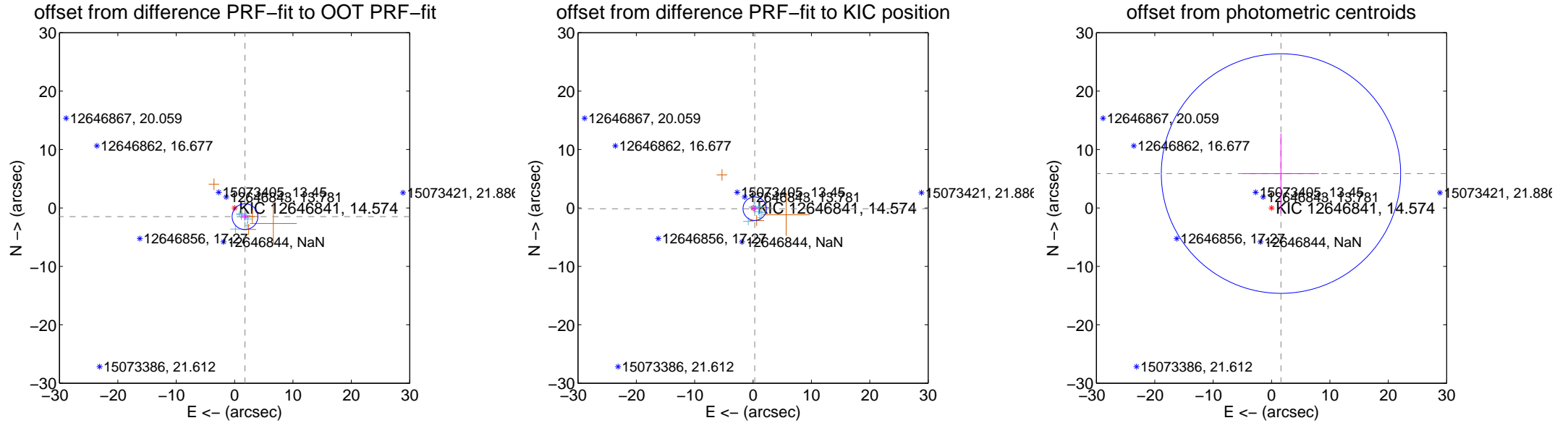
DV Centroid Data

Supplemental centroid analysis for 012646841-06. Kepler magnitude: 14.57. Transit SNR -1.00

There are 8 quarters with good PRF difference image offsets

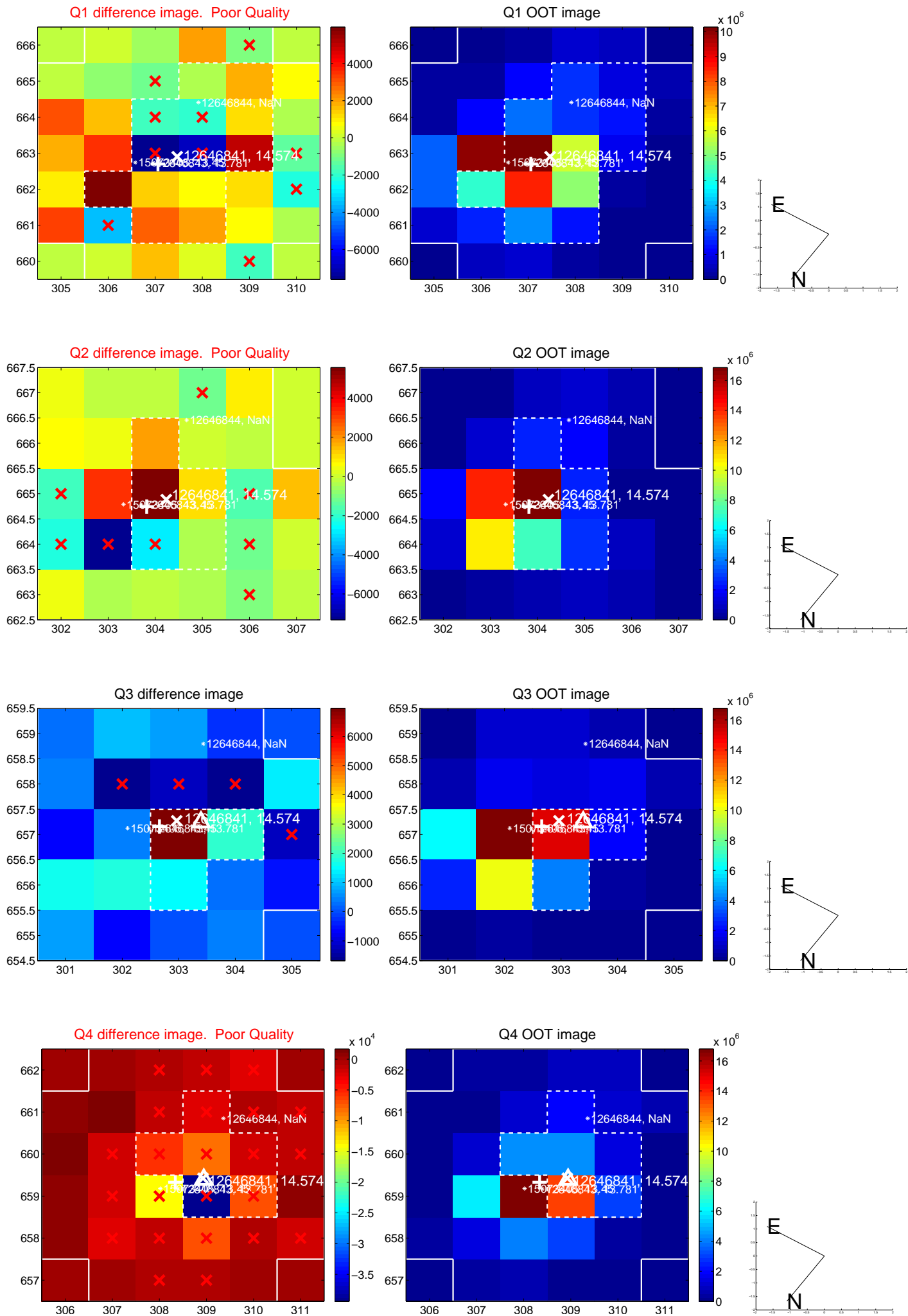
The direct PRF centroid is offset from the target star catalog position by about 1.77 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.323 \pm 0.734	3.16	-1.782 \pm 0.576	-1.490 \pm 0.552
PRF-fit source offset from KIC position	0.314 \pm 0.669	0.47	-0.287 \pm 0.577	-0.129 \pm 0.495
photometric centroid source offset	6.10 \pm 6.83	0.89	-1.62 \pm 6.53	5.88 \pm 6.86

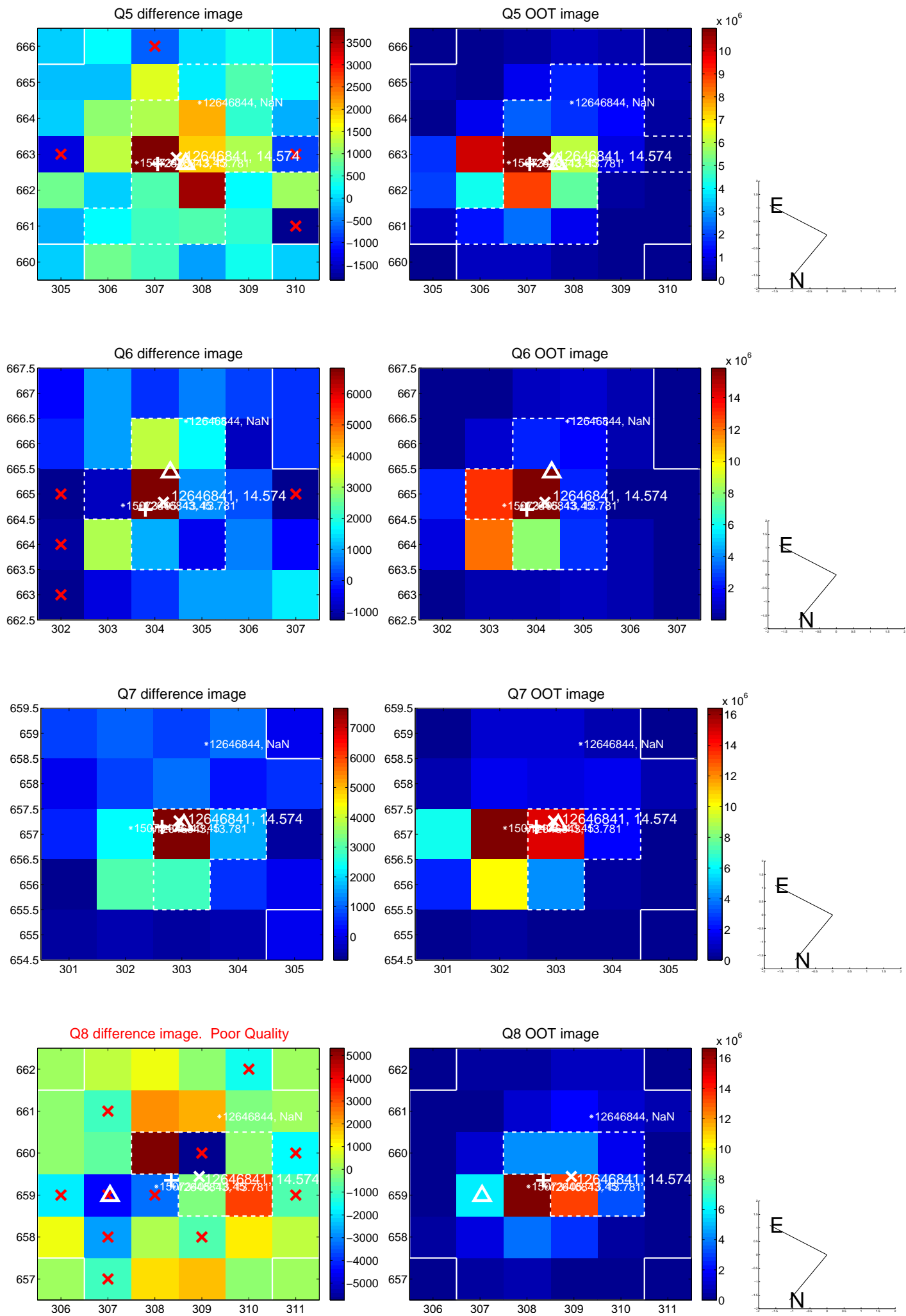


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

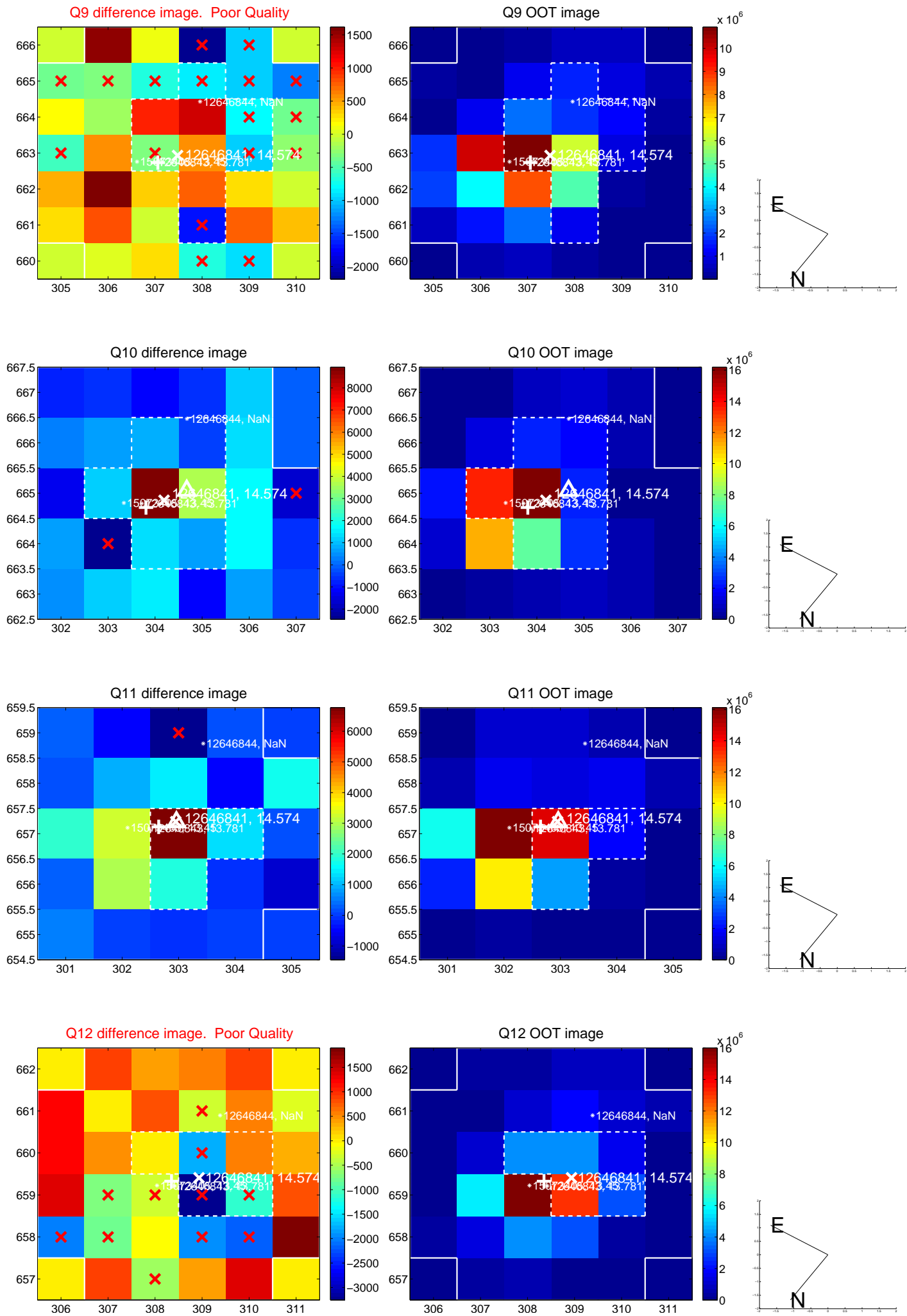
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



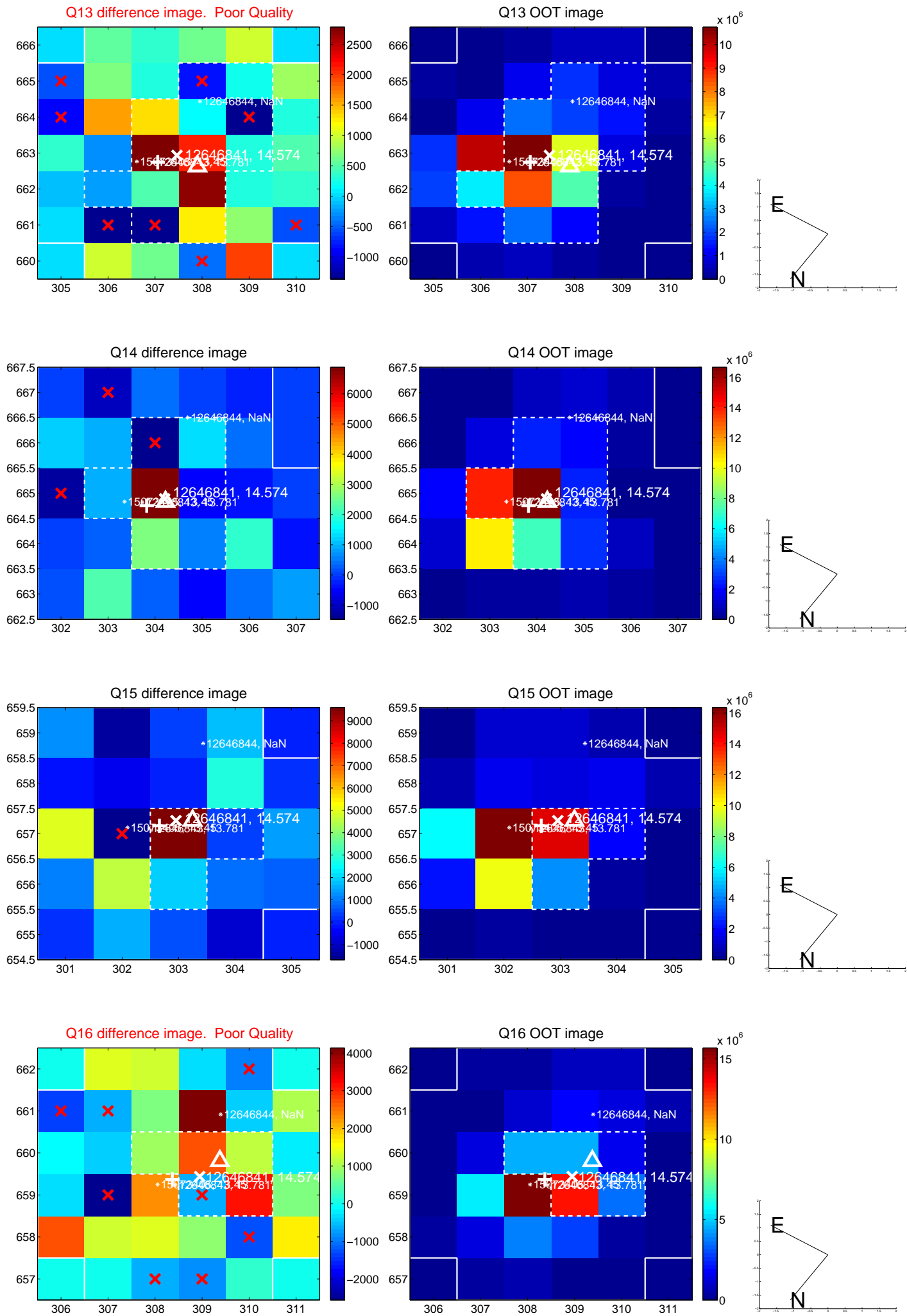
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



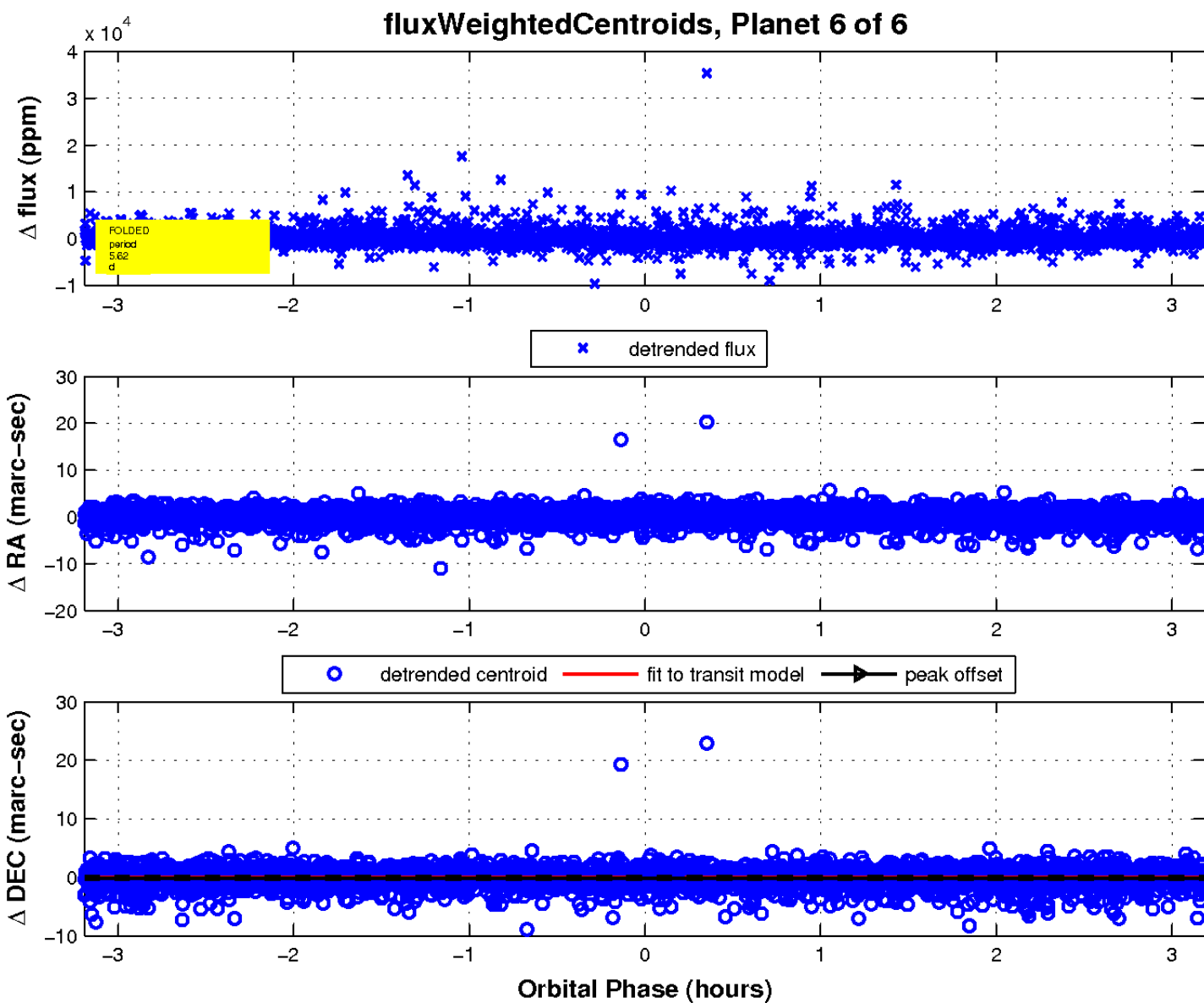
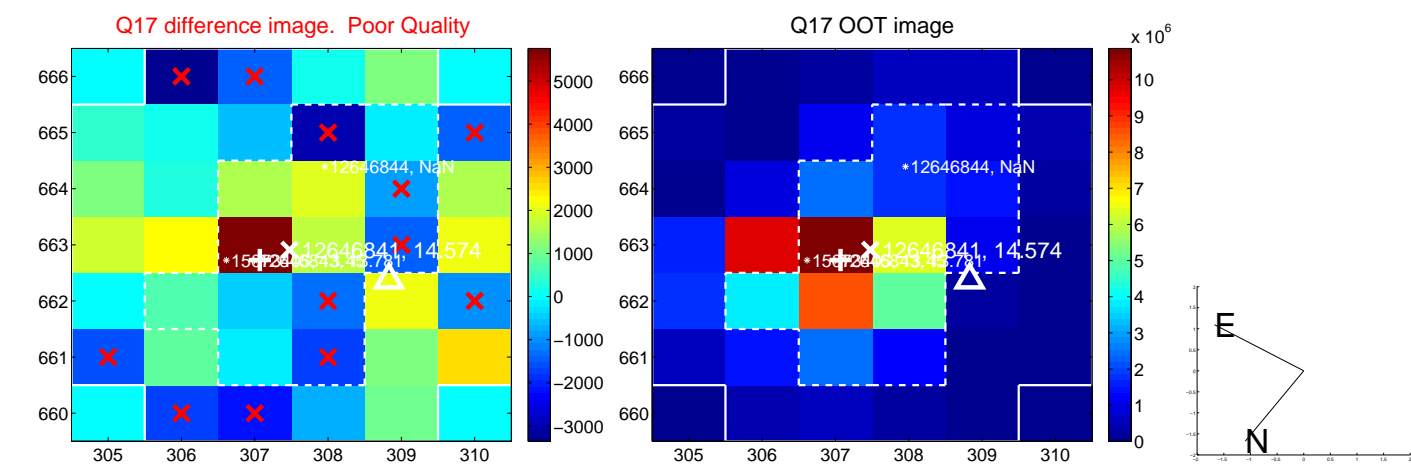
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

