

KIC 005724158

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})
005724158-01	OBS	No	364.648097	447.397915	1861.4	5.692	14.0	6.9	0.72	5346	3.18	0.45
005724158-02	OBS	No	607.330489	357.526313	2049.1	4.295	11.5	6.8	0.72	5346	3.22	0.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005724158-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—HALO_GHOST
005724158-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

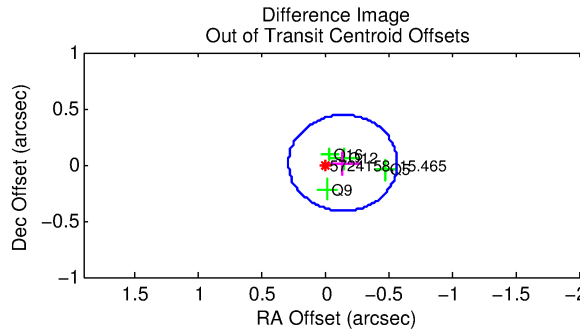
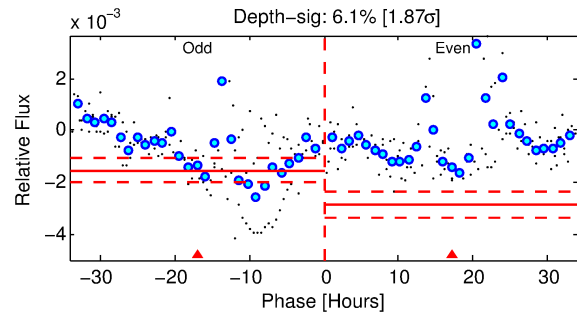
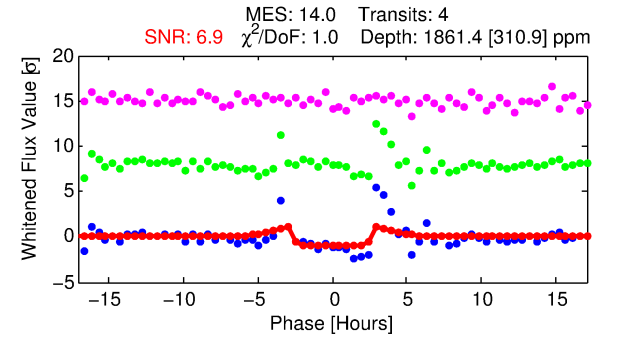
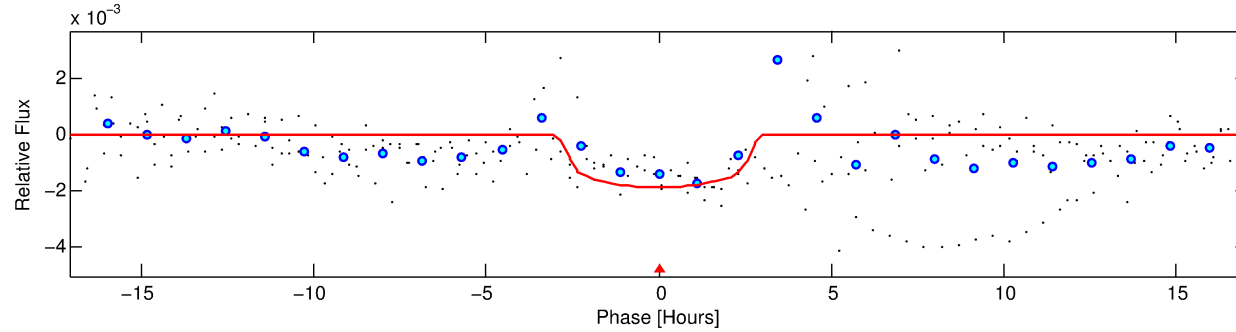
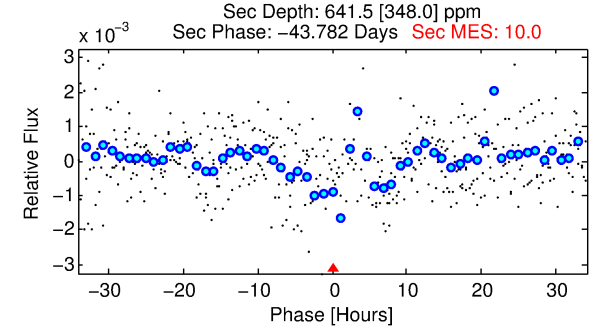
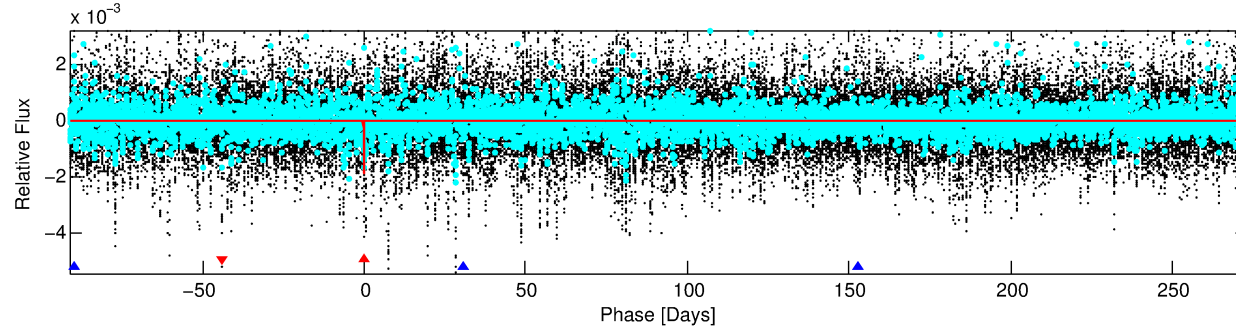
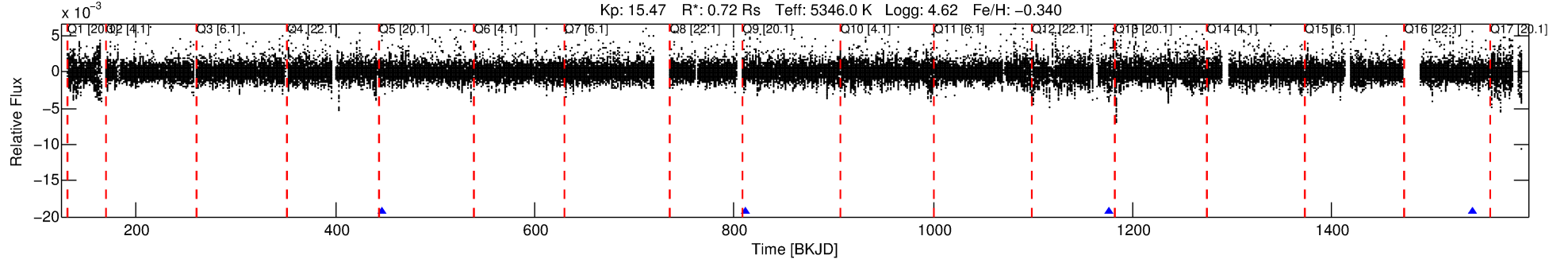
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005724158-01

No Significant Match Found

DV One-Page Summary

KIC: 5724158 Candidate: 1 of 2 Period: 364.648 d



DV Fit Results:

Period = 364.64810 [0.00451] d
Epoch = 447.3979 [0.0066] BKJD
Rp/R* = 0.0401 [0.0597]
a/R* = 449.55 [2631.81]
b = 0.49 [9.26]
Seff = 0.45 [0.10]
Teff = 208 [12] K
Rp = 3.18 [4.75] Re
a = 0.9279 [0.1278] AU
Ag = 30121.92 [91277.41] [0.33σ]
Teffp = 4246 [3213] K [1.26σ]

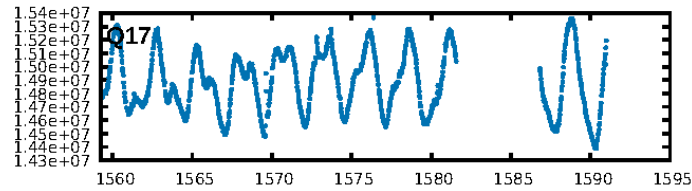
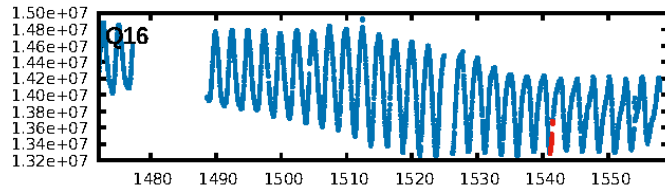
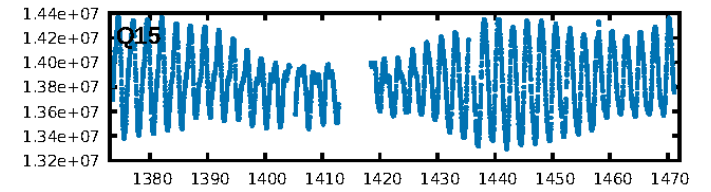
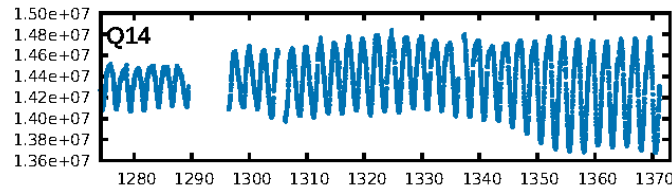
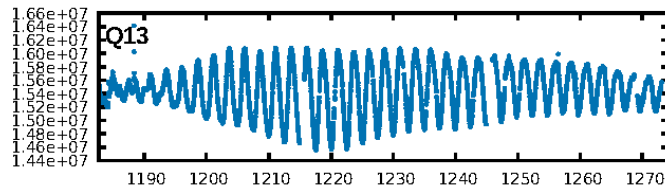
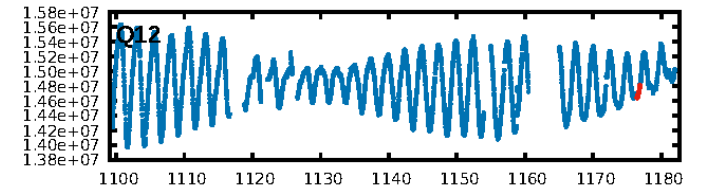
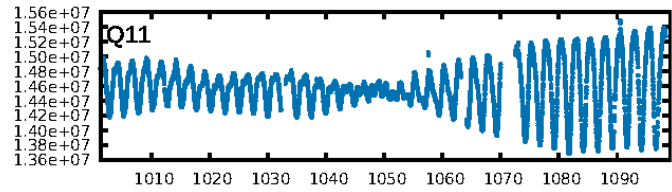
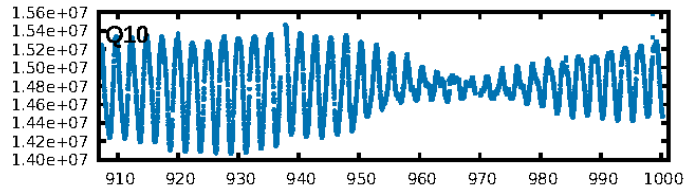
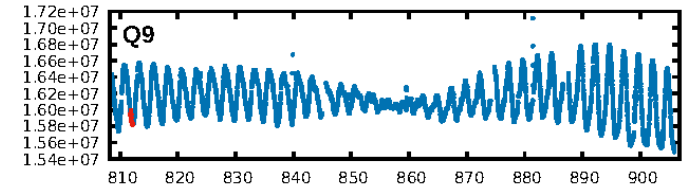
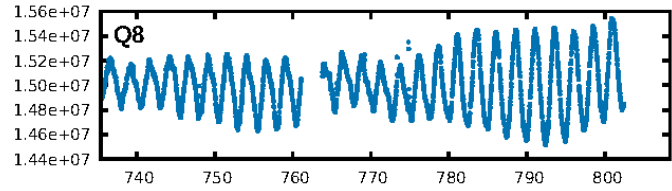
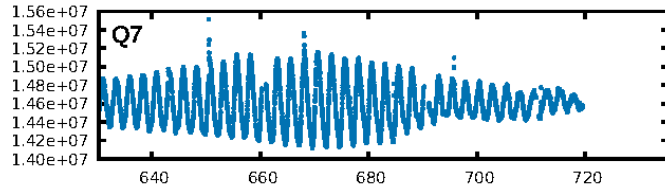
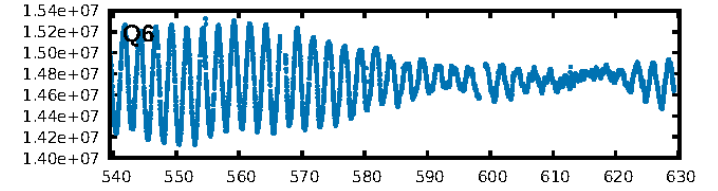
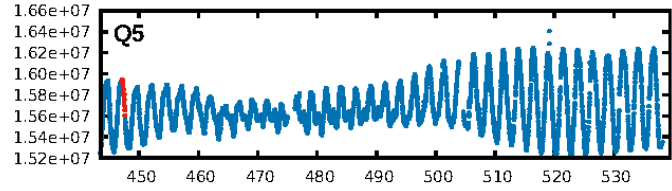
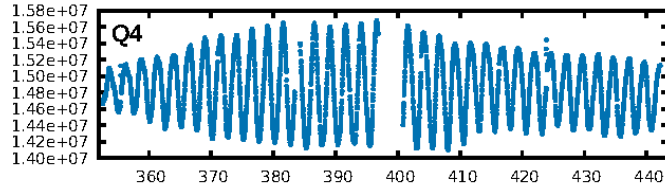
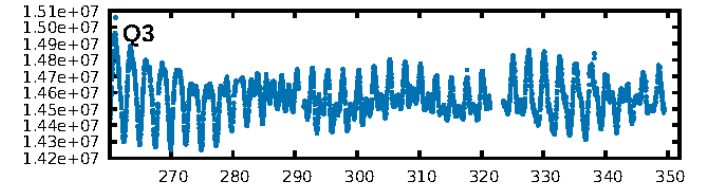
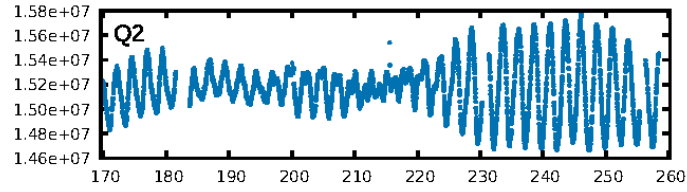
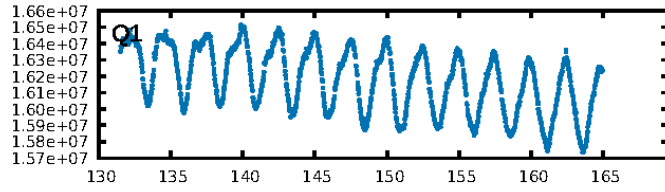
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [816.81σ]
ModelChiSquare2-sig: 8.6%
ModelChiSquareGof-sig: 80.5%
Bootstrap-pfa: 1.86e-13
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.0533
Centroid-sig: 5.7%
Centroid-so: 1.230 arcsec [1.69σ]
OotOffset-rm: 0.142 arcsec [1.00σ]
KicOffset-rm: 0.121 arcsec [1.07σ]
OotOffset-st: 0/0/2/2 [4]
KicOffset-st: 0/0/2/2 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 1.00 [4/4]

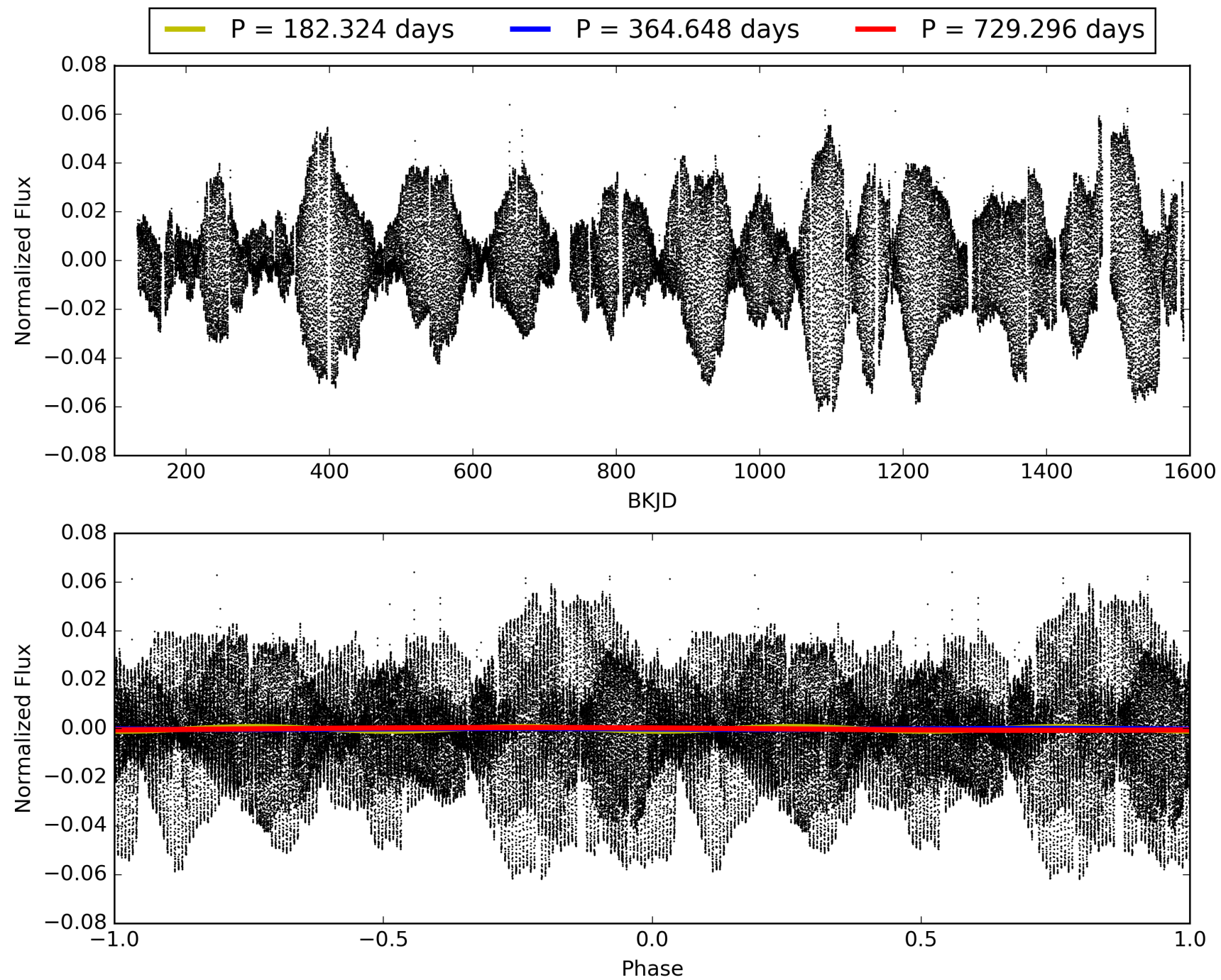
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:15:10 Z

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

TCE 005724158-01, PDC Light Curves

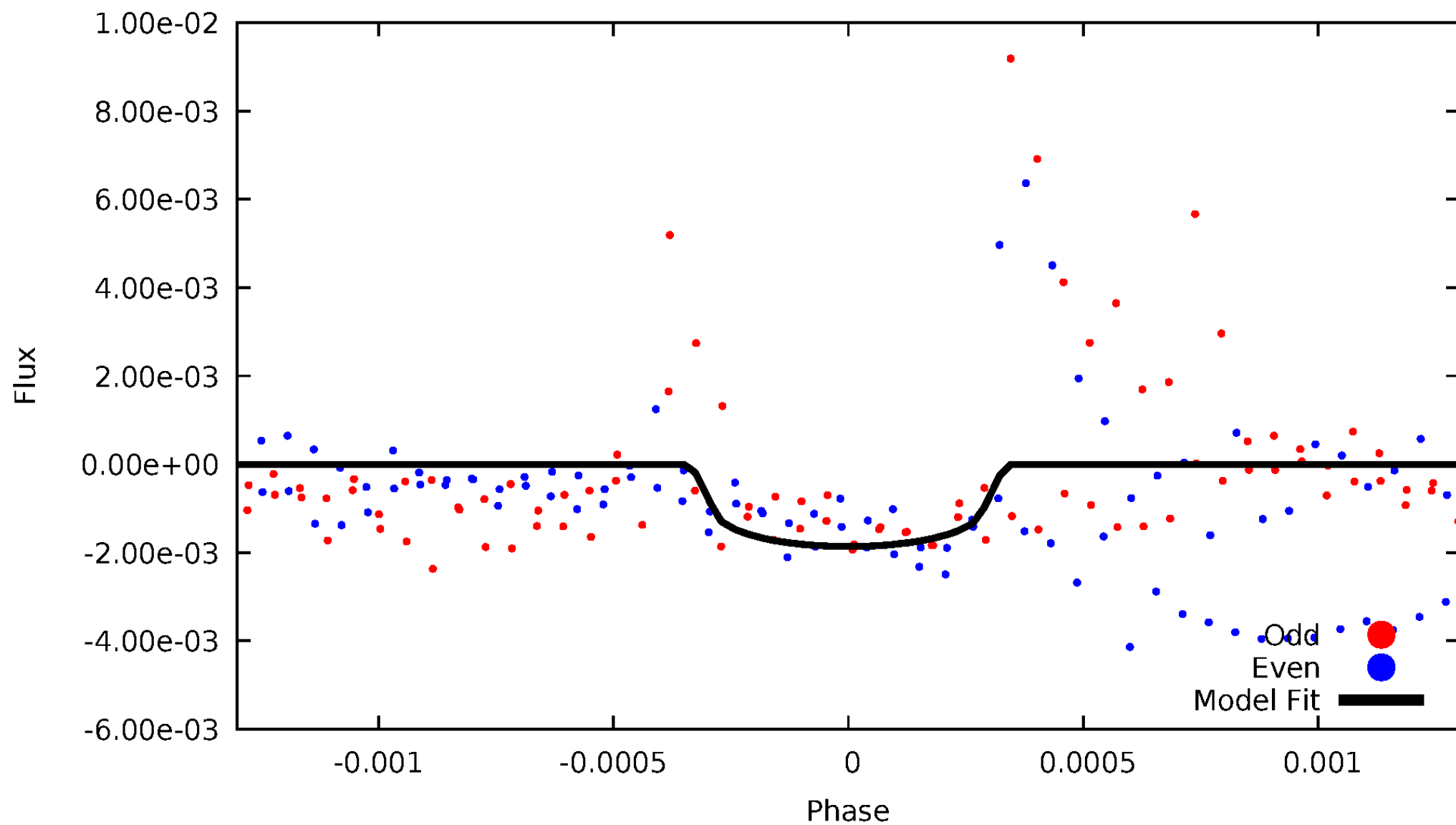


TCE 005724158-01



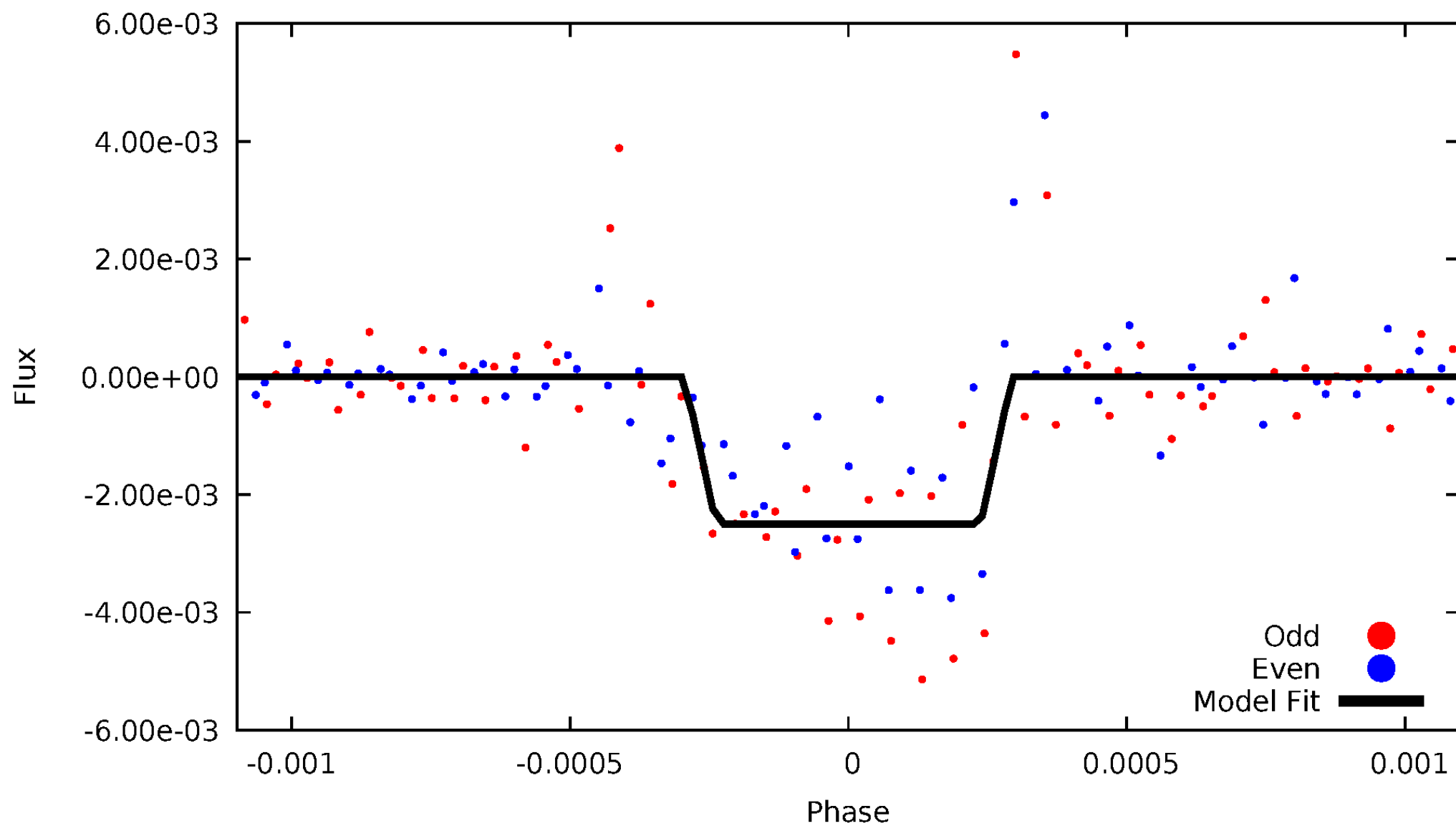
DV Odd/Even

TCE 005724158-01



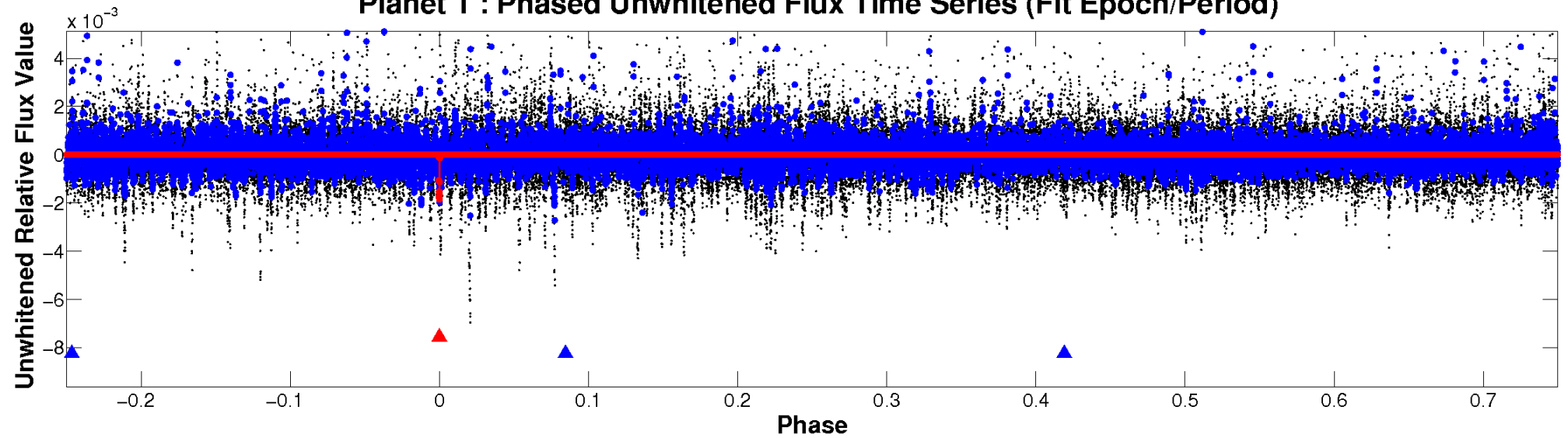
ALT Odd/Even

TCE 005724158-01

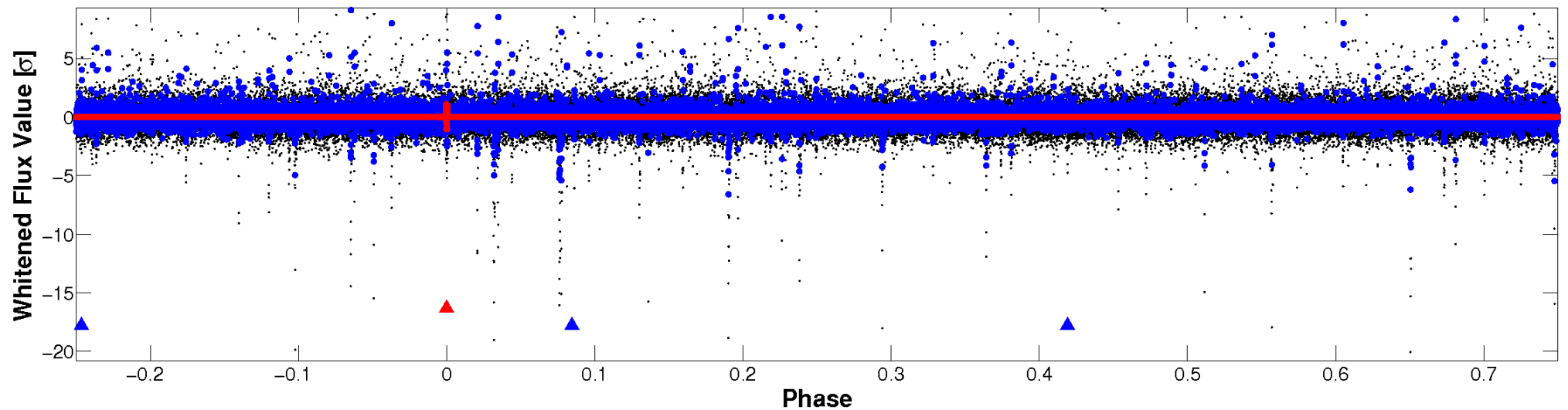


Non-Whitened Vs. Whitened Light Curve

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

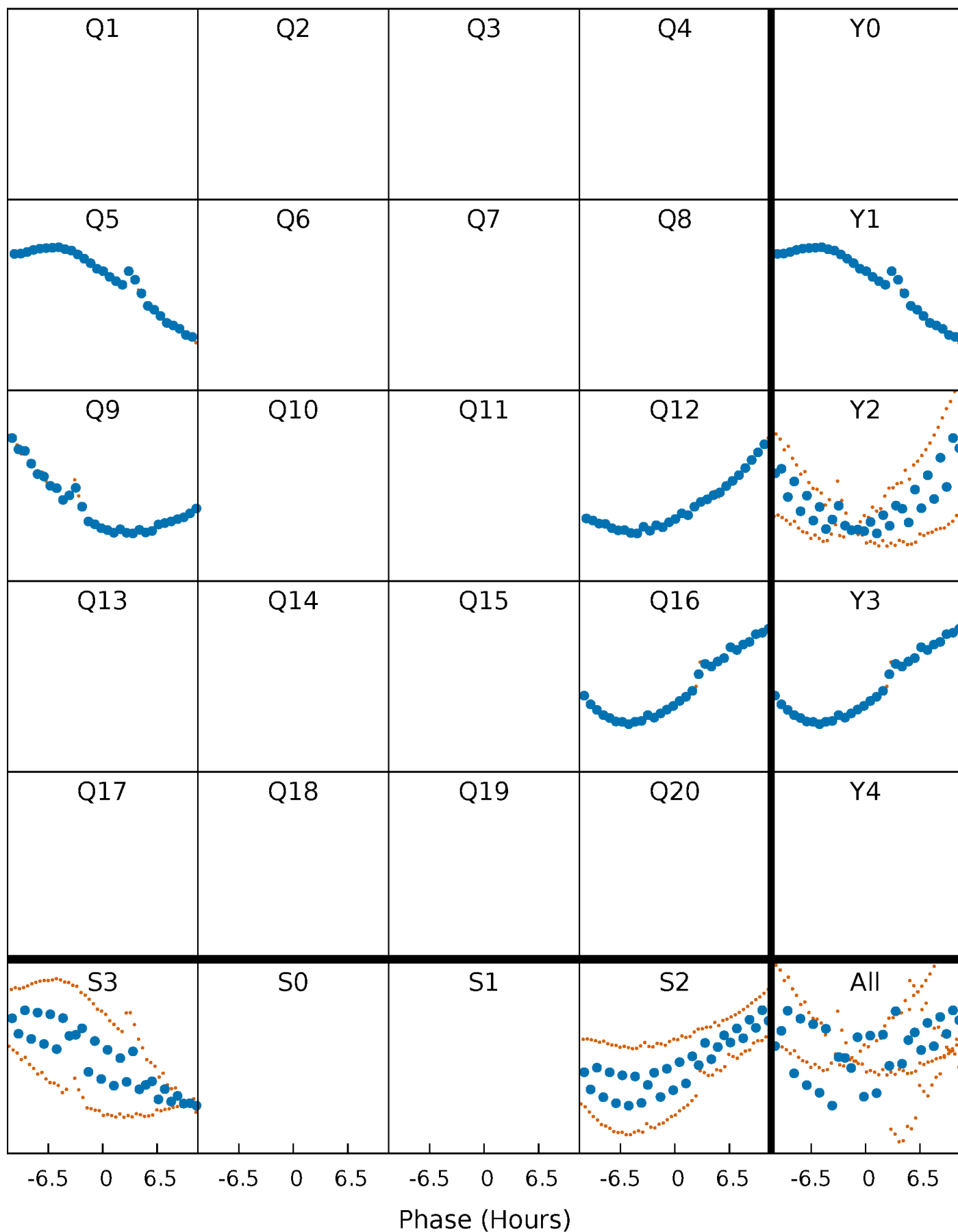


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



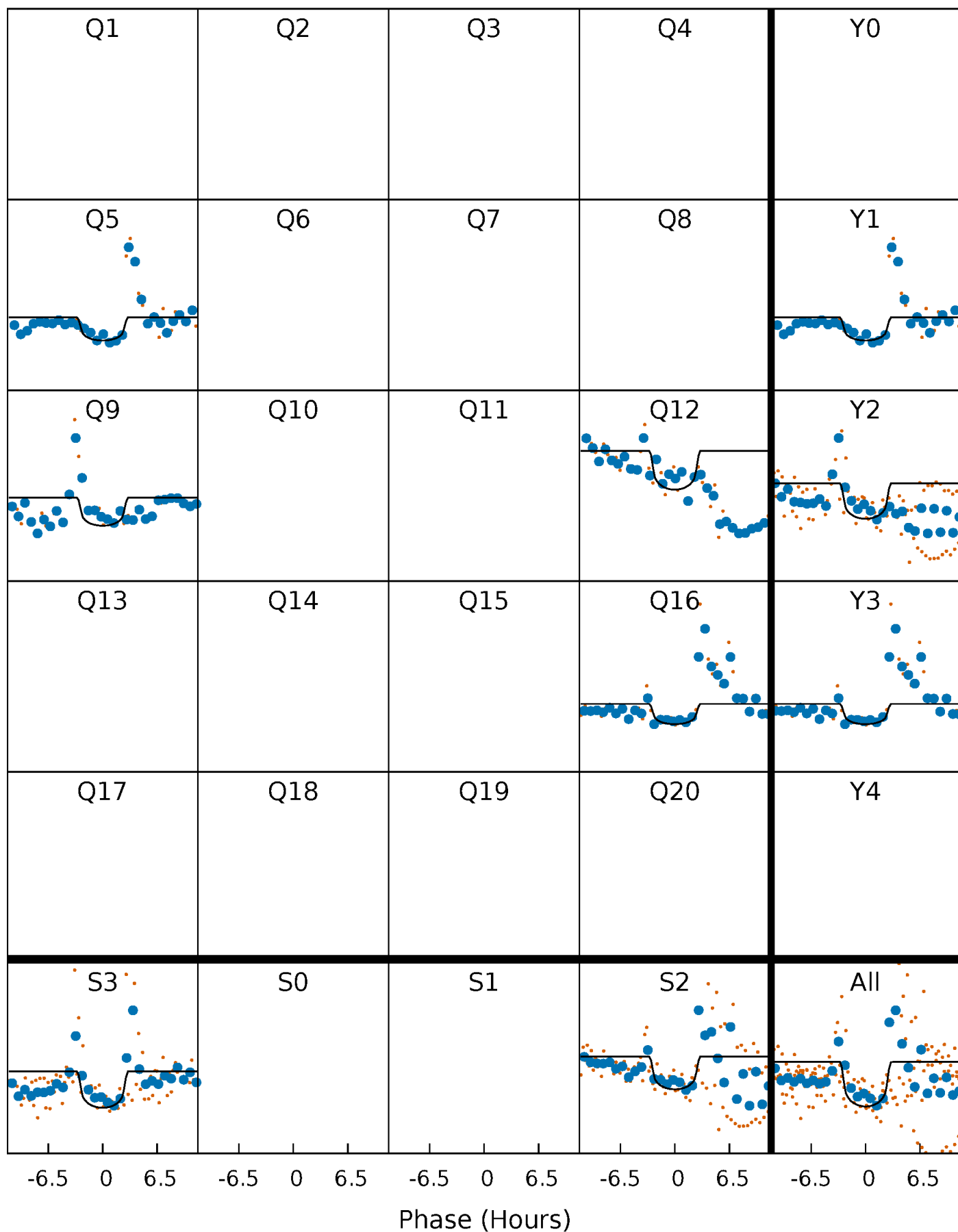
PDC Quarter-Phased Transit Curves

TCE 005724158-01 P=364.648097 Days $T_0=447.397915$ (BKJD)



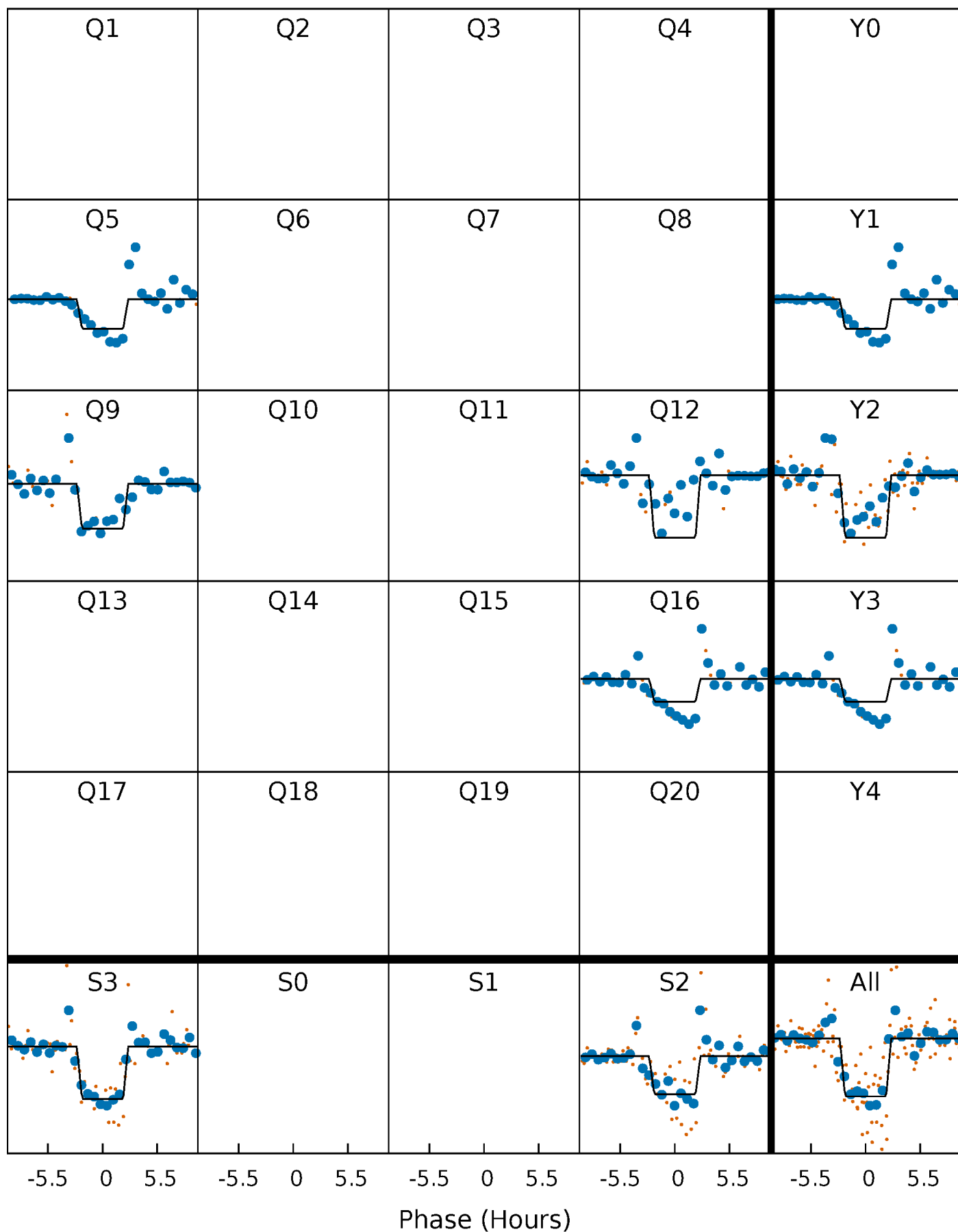
DV Quarter-Phased Transit Curves

TCE 005724158-01 P=364.648097 Days $T_0=447.397915$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

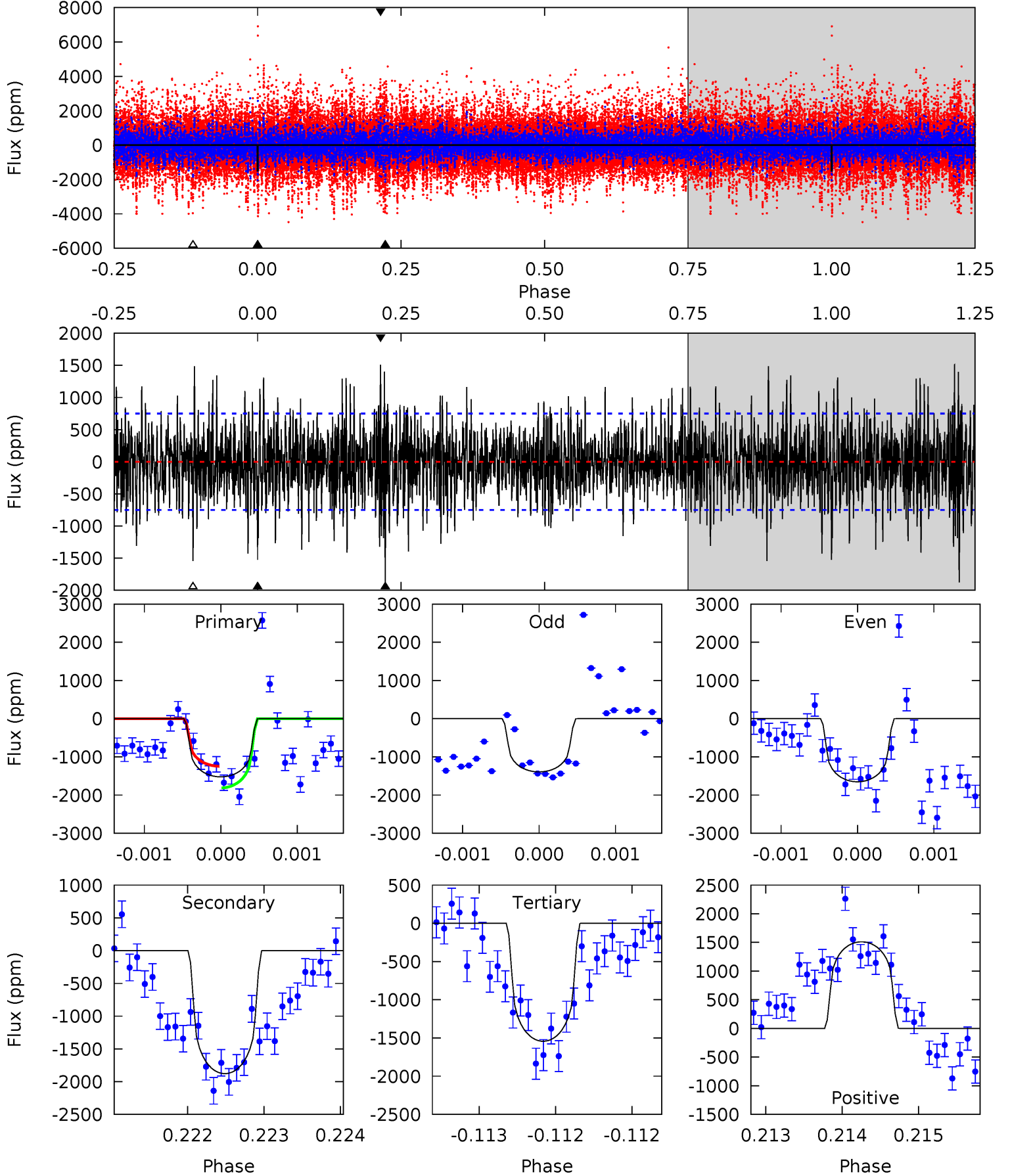
TCE 005724158-01 P=364.650501 Days $T_0=447.407091$ (BKJD)



DV Model-Shift Uniqueness Test

005724158-01, $P = 364.648097$ Days, $E = 82.749818$ Days

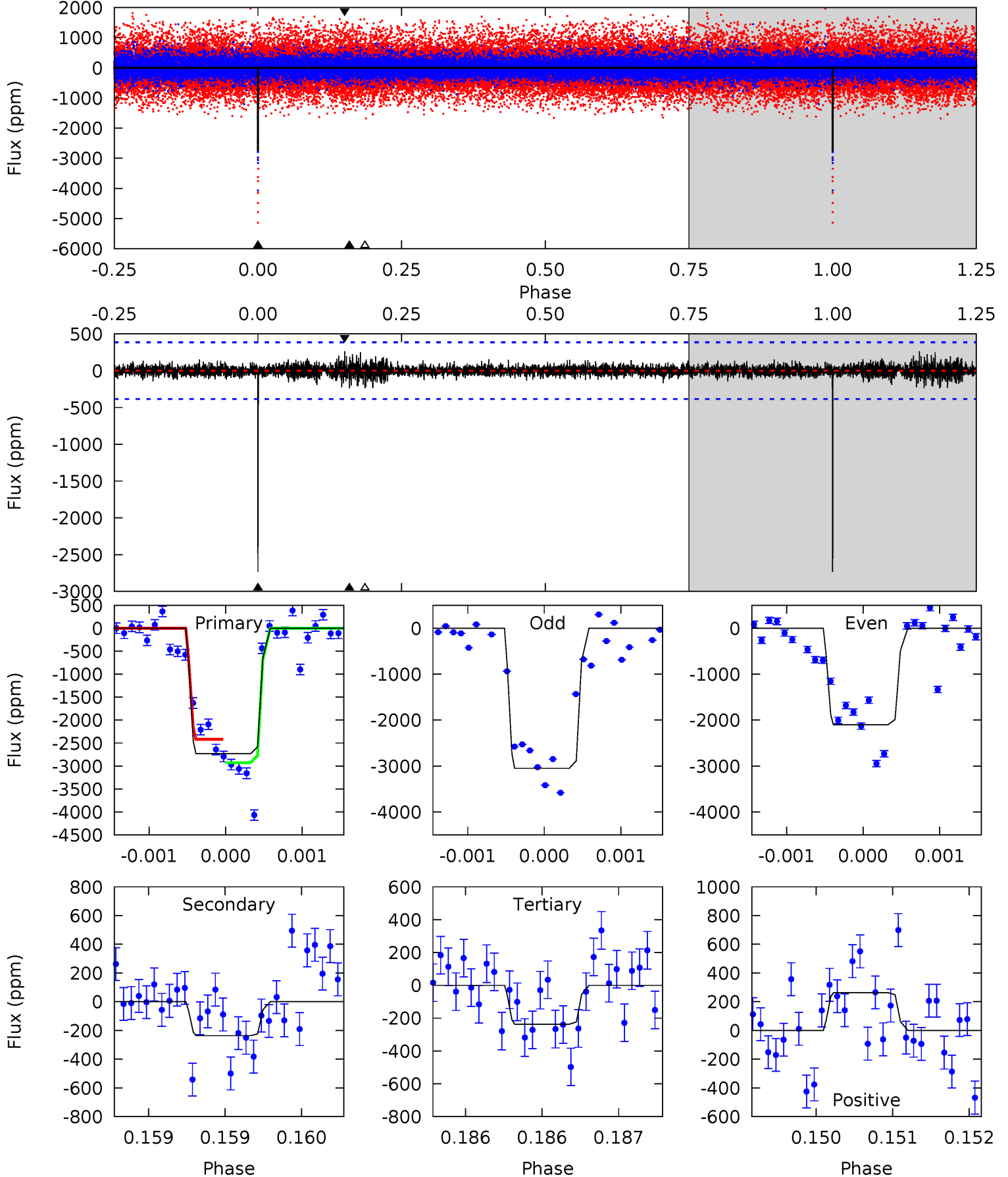
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	13.8	11.3	11.1	5.51	3.38	2.97	-0.15	0.08	2.46	2.69	0.91	0.93	0.45	2.07



Alt Model-Shift Uniqueness Test

005724158-01, $P = 364.650501$ Days, $E = 82.756590$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.4	3.41	3.41	3.78	5.55	3.44	0.63	36.0	35.6	0.01	-0.37	6.91	1.00	0.09	3.64



Stellar Parameters For KIC 005724158

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5346^{+160}_{-160}	$4.621^{+0.032}_{-0.104}$	$-0.340^{+0.300}_{-0.300}$	$0.725^{+0.122}_{-0.052}$	$0.810^{+0.076}_{-0.093}$	$2.997^{+0.510}_{-0.970}$
	+3%/-3%	+1%/-2%	+88%/-88%	+17%/-7%	+9%/-11%	+17%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005724158-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1878 ± 136	$4.77^{+4.07}_{-3.26}$	295^{+13}_{-12}	4716^{+3701}_{-1003}	$39177^{+362809}_{-28067}$
Alt.	-237 ± 69	$5.33^{+4.51}_{-3.36}$	296^{+12}_{-12}	3154^{+1237}_{-509}	3618^{+22578}_{-2580}

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 $A_{obs} \gg 1.0$

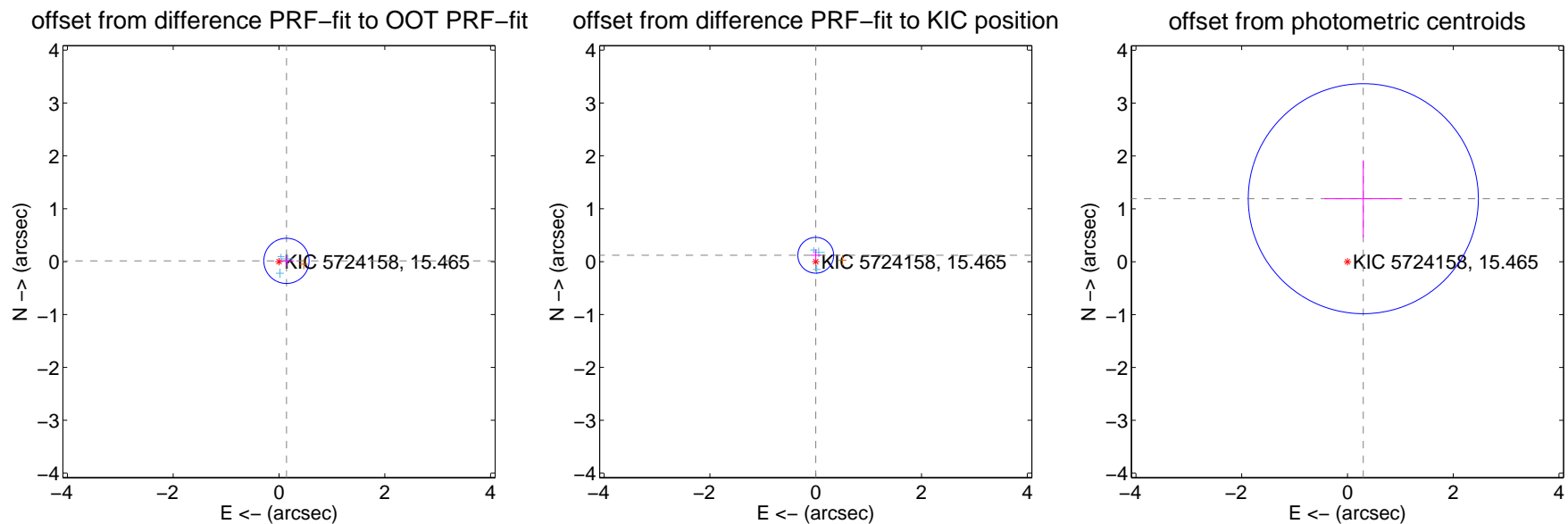
DV Centroid Data

Supplemental centroid analysis for 005724158-01. Kepler magnitude: 15.46. Transit SNR 6.87

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.142 ± 0.143	1.00	-0.141 ± 0.143	0.015 ± 0.102
PRF-fit source offset from KIC position	0.121 ± 0.113	1.07	-0.001 ± 0.092	0.121 ± 0.113
photometric centroid source offset	1.23 ± 0.73	1.69	-0.30 ± 0.74	1.19 ± 0.72

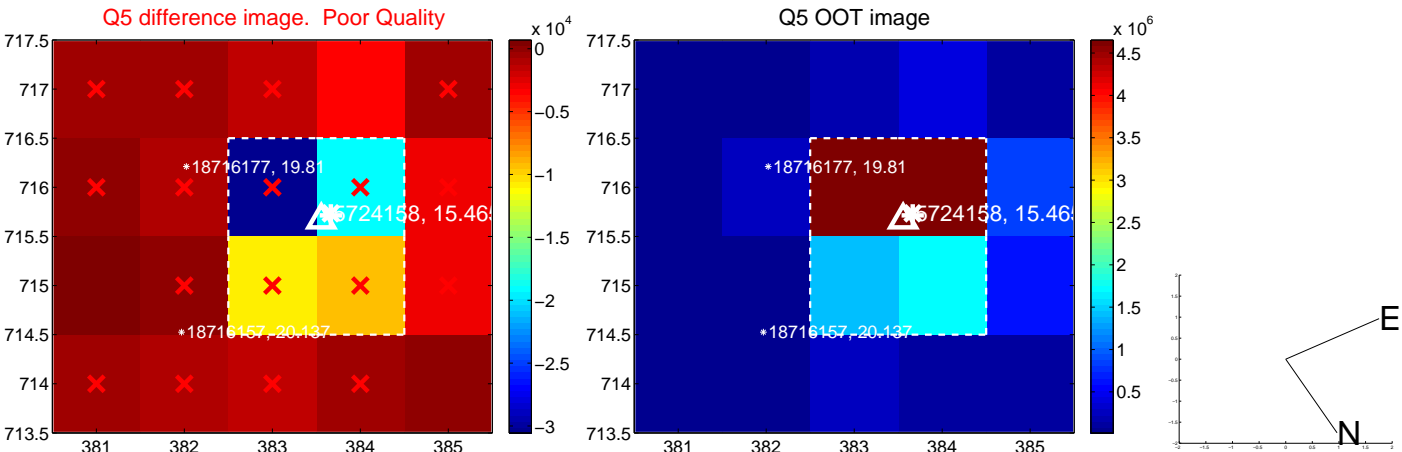


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

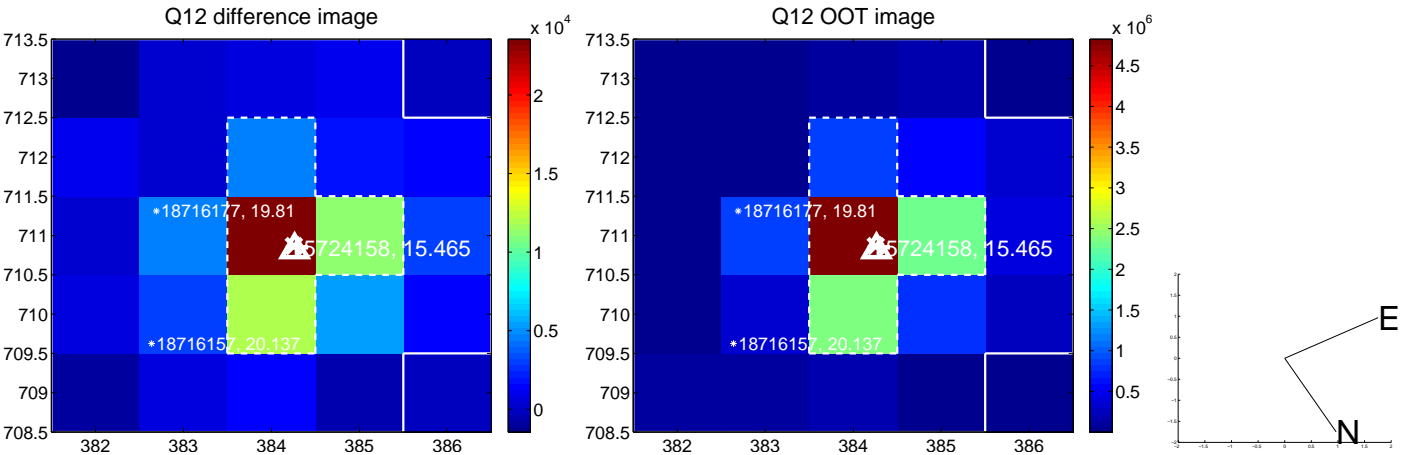
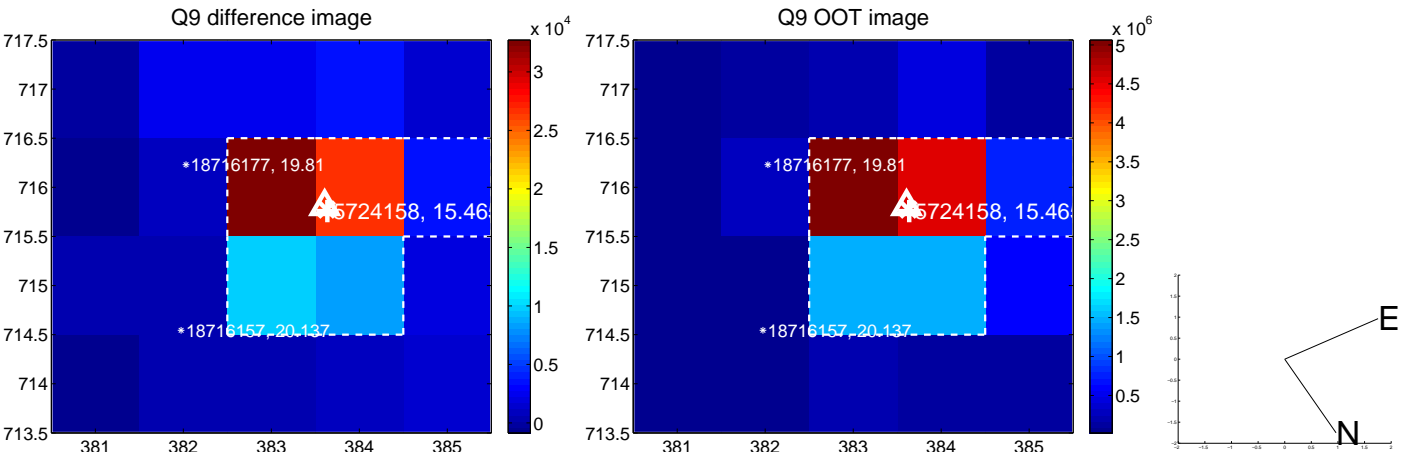
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



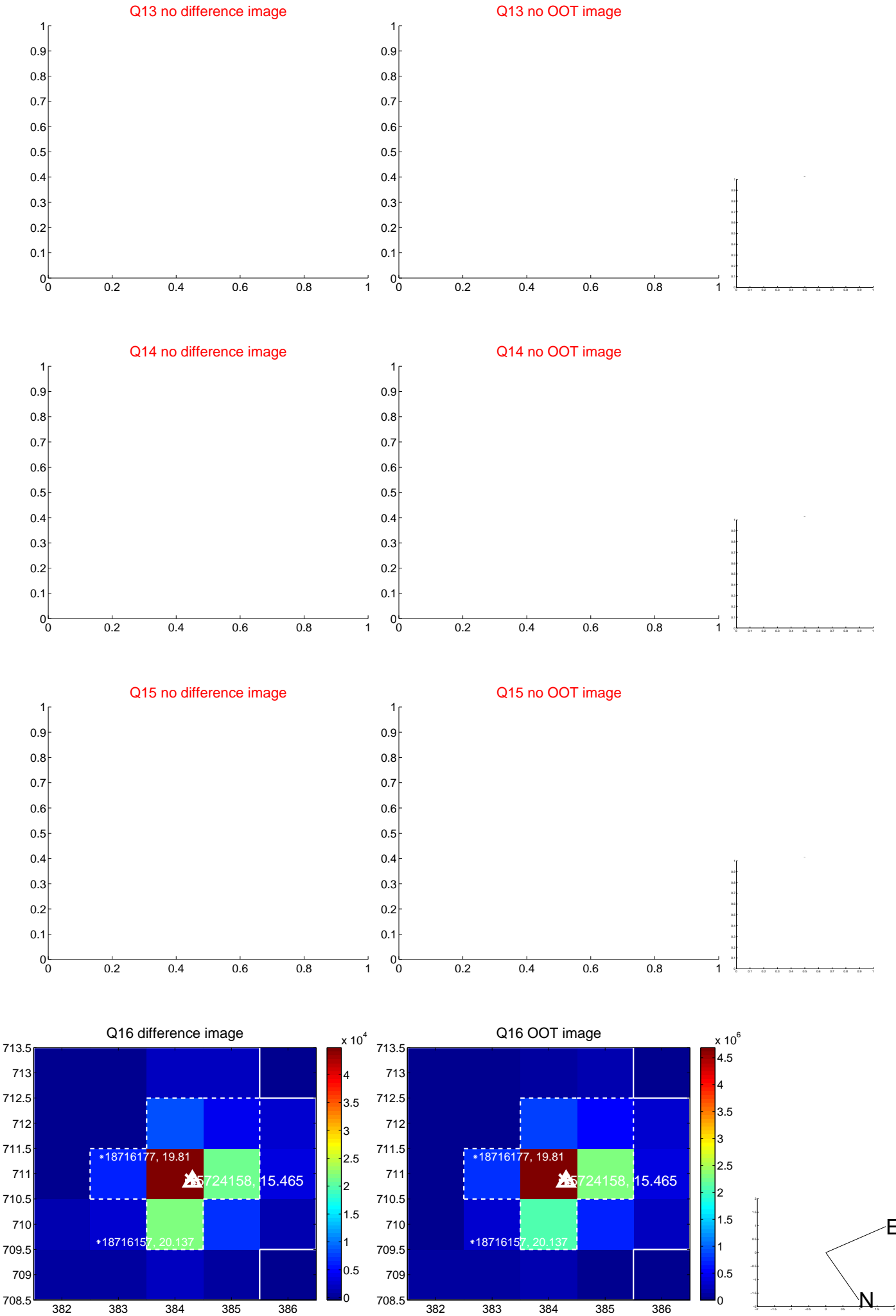
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



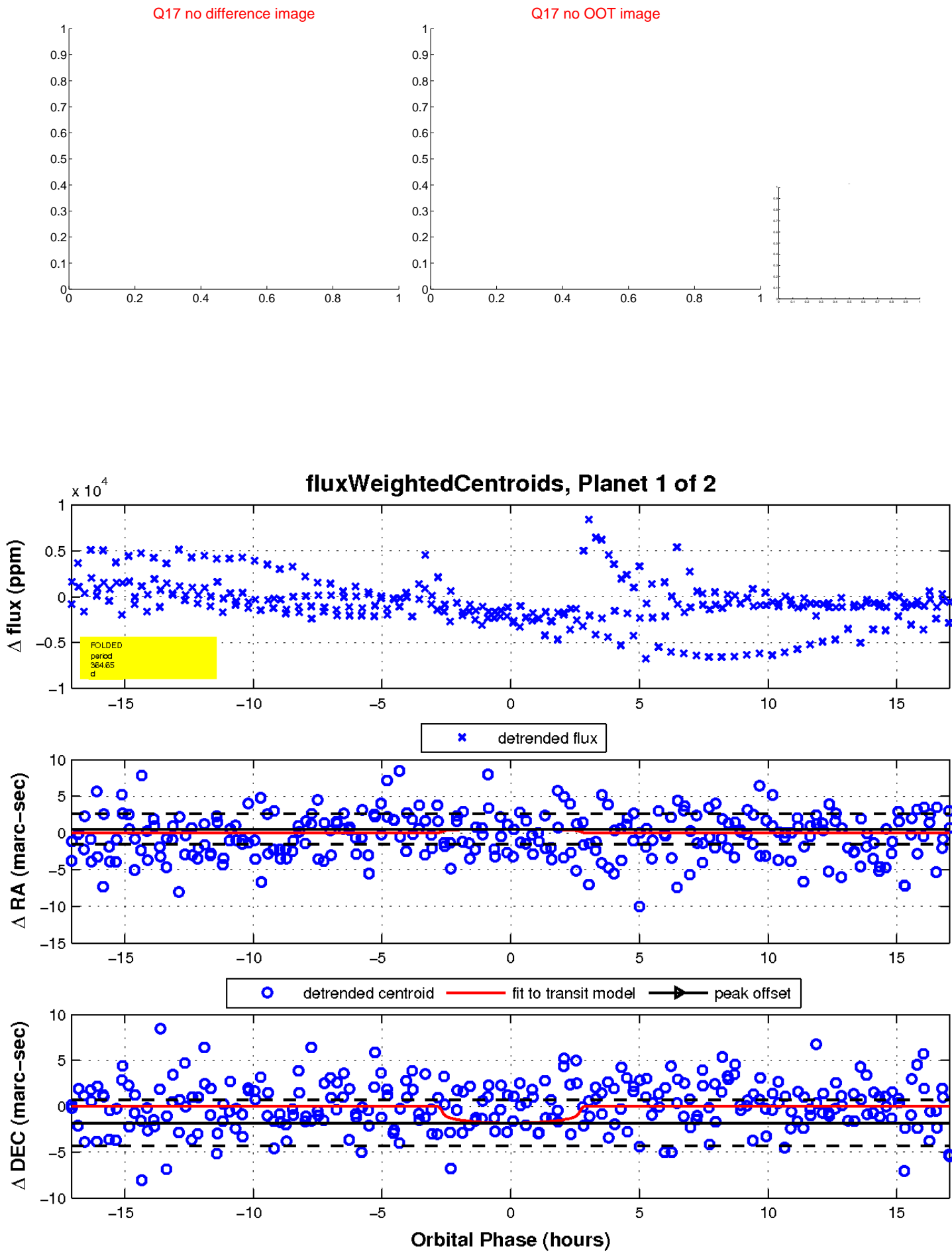
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

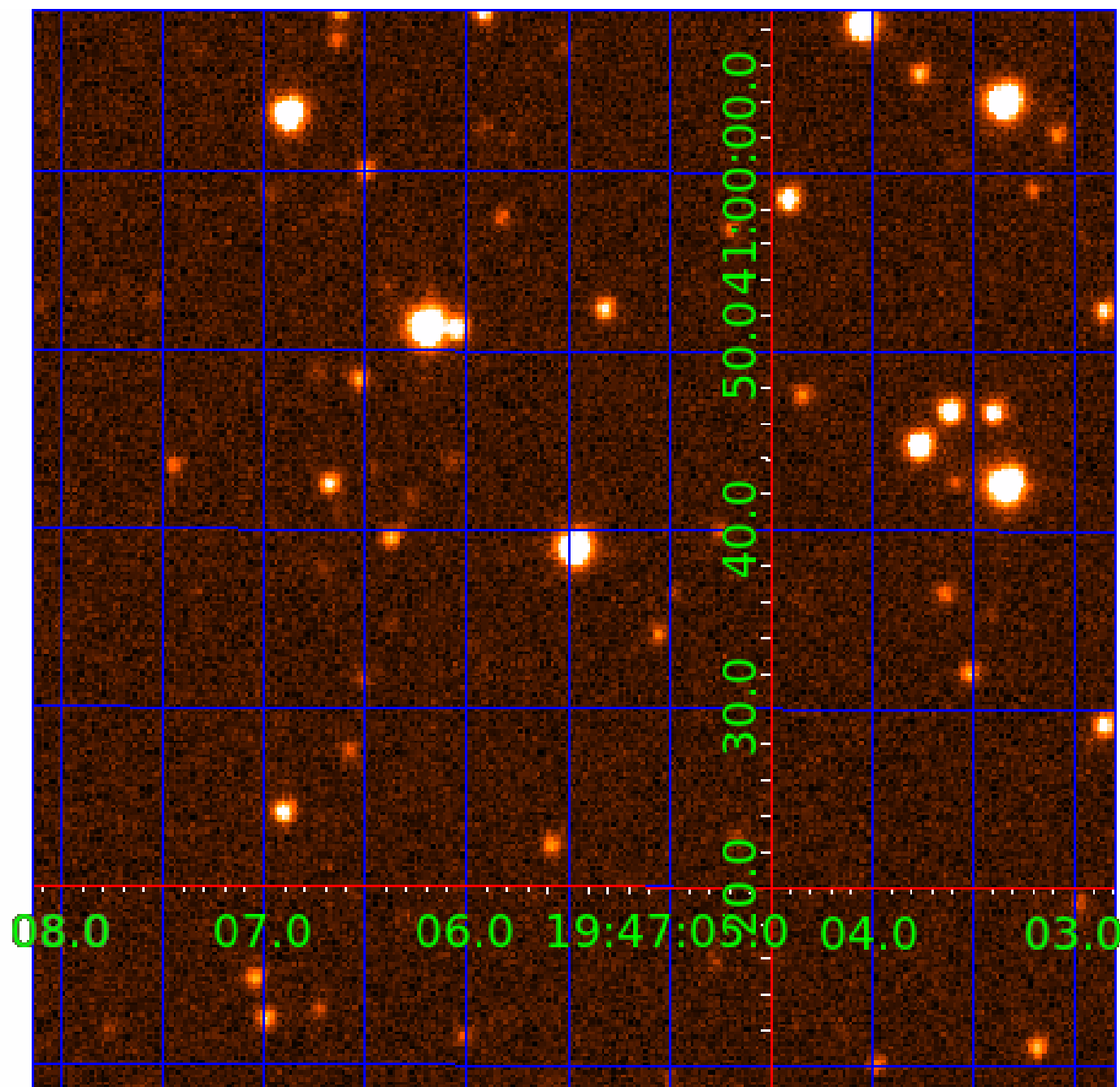


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005724158

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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005724158-02	OBS	No	607.330489	357.526313	2049.1	4.295	11.5	6.8	0.72	5346	3.22	0.23

Robovetter Results

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005724158-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

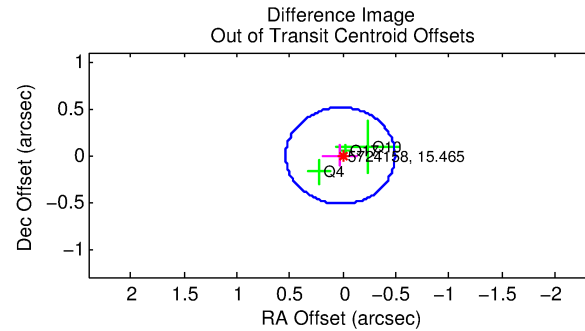
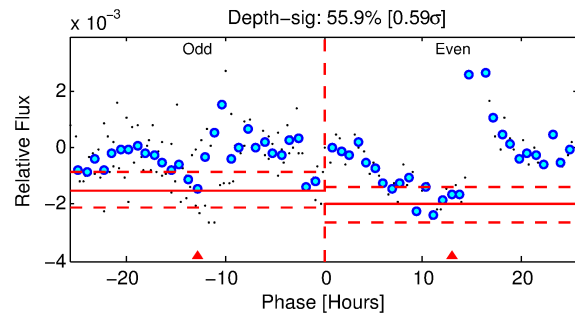
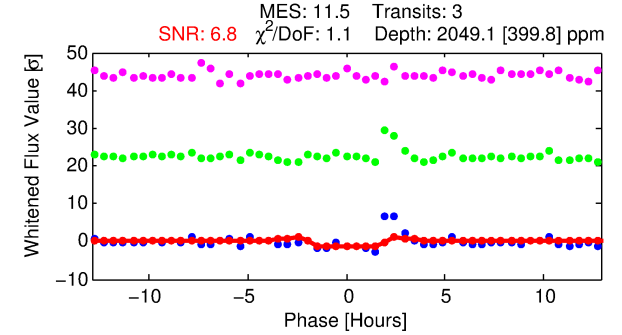
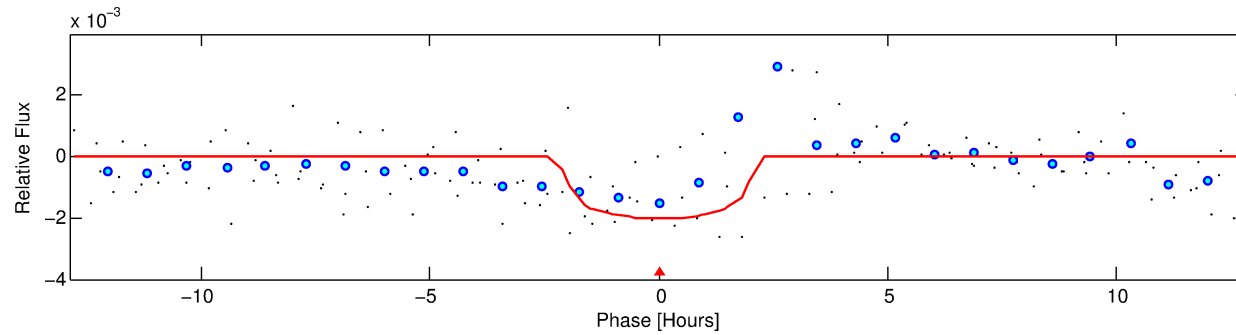
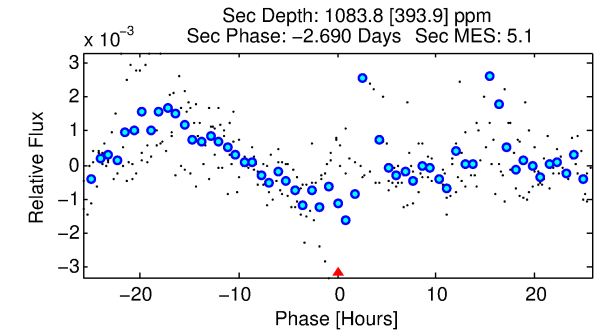
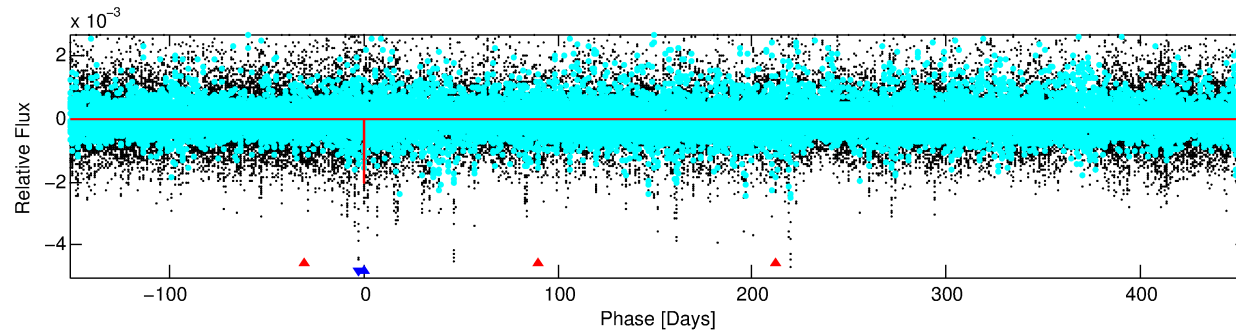
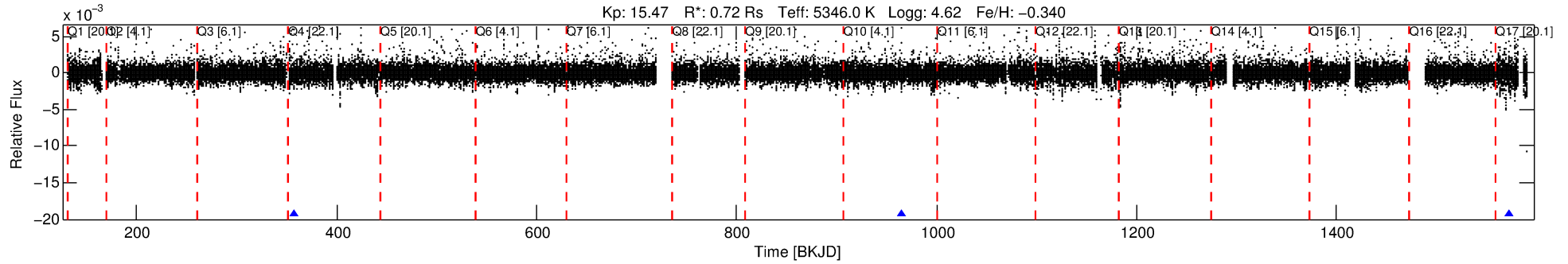
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005724158-02

No Significant Match Found

DV One-Page Summary

KIC: 5724158 Candidate: 2 of 2 Period: 607.330 d



DV Fit Results:

Period = 607.33049 [0.00565] d
Epoch = 357.5263 [0.0064] BKJD
Rp/R* = 0.0407 [0.0618]
a/R* = 1124.35 [6791.51]
b = 0.00 [1868.30]
Seff = 0.23 [0.05]
Teq = 176 [10] K
Rp = 3.22 [4.92] Re
a = 1.3038 [0.1795] AU
Ag = 97514.89 [298431.33] [0.33 σ]
Teffp = 4805 [3672] K [1.26 σ]

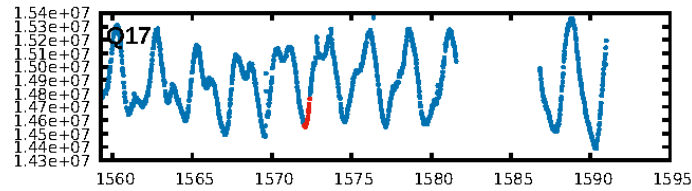
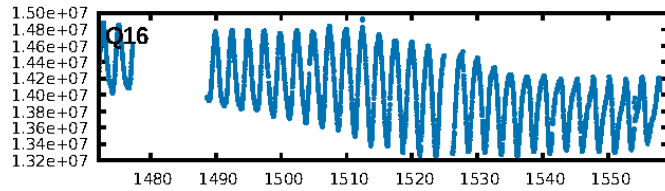
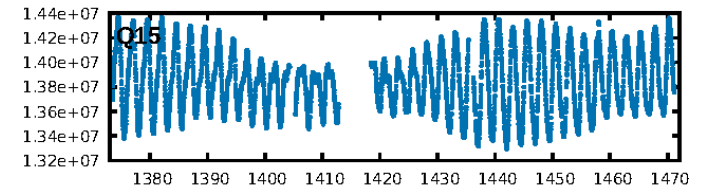
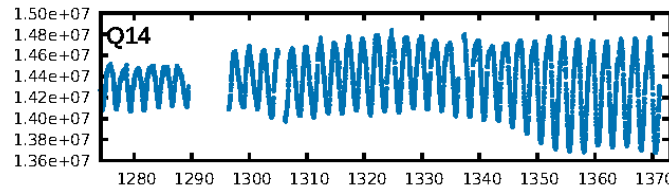
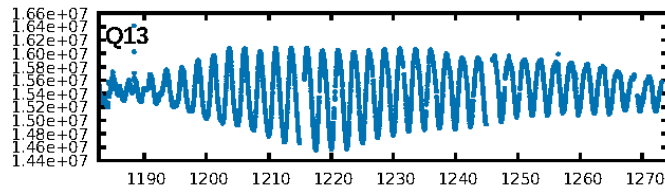
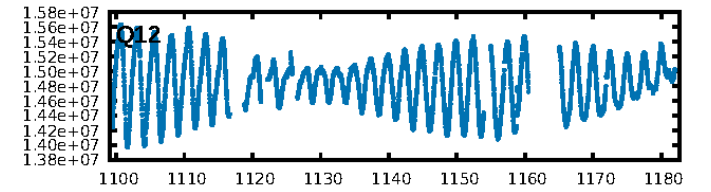
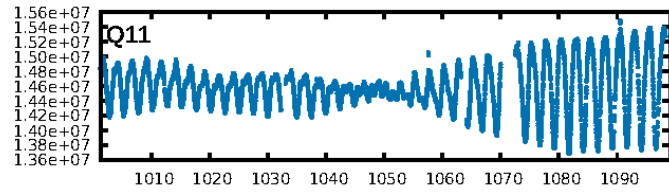
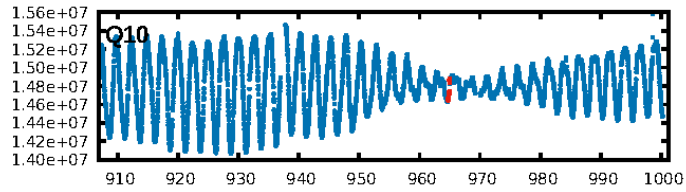
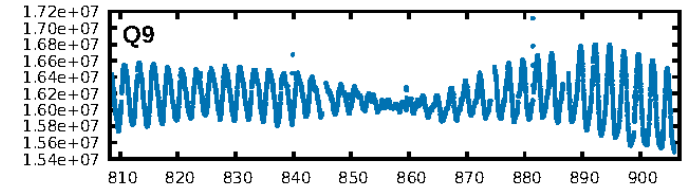
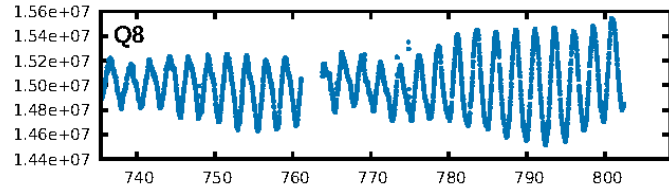
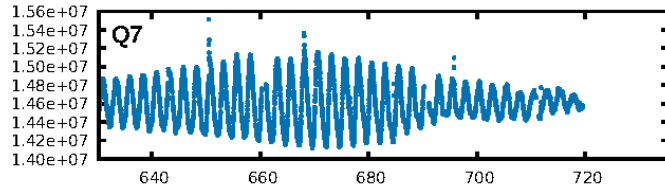
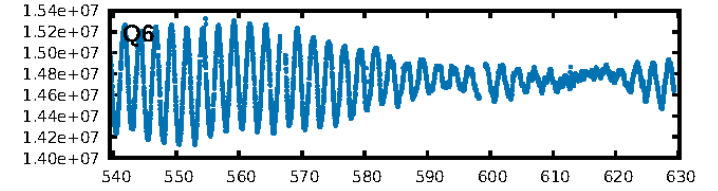
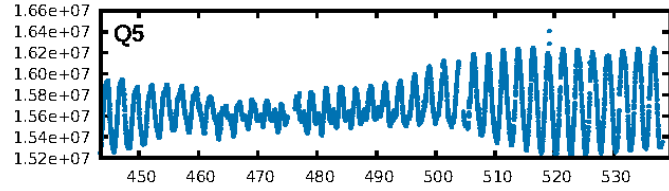
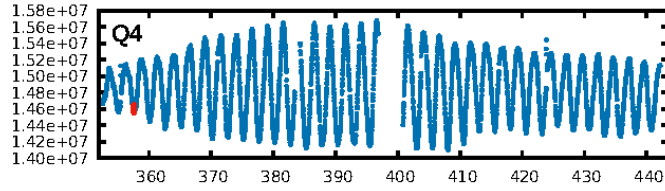
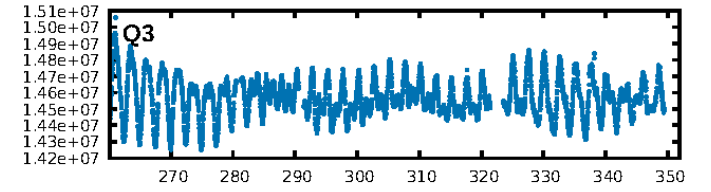
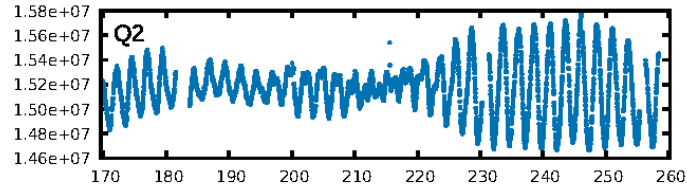
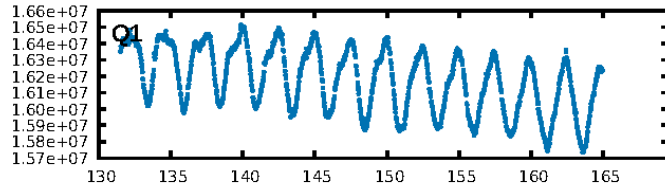
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [816.81 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 13.0%
ModelChiSquareGof-sig: 98.1%
Bootstrap-pfa: 2.51e-10
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.903
Centroid-sig: 23.3%
Centroid-so: 1.056 arcsec [1.33 σ]
OotOffset-rm: 0.021 arcsec [0.12 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 0.091 arcsec [0.73 σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

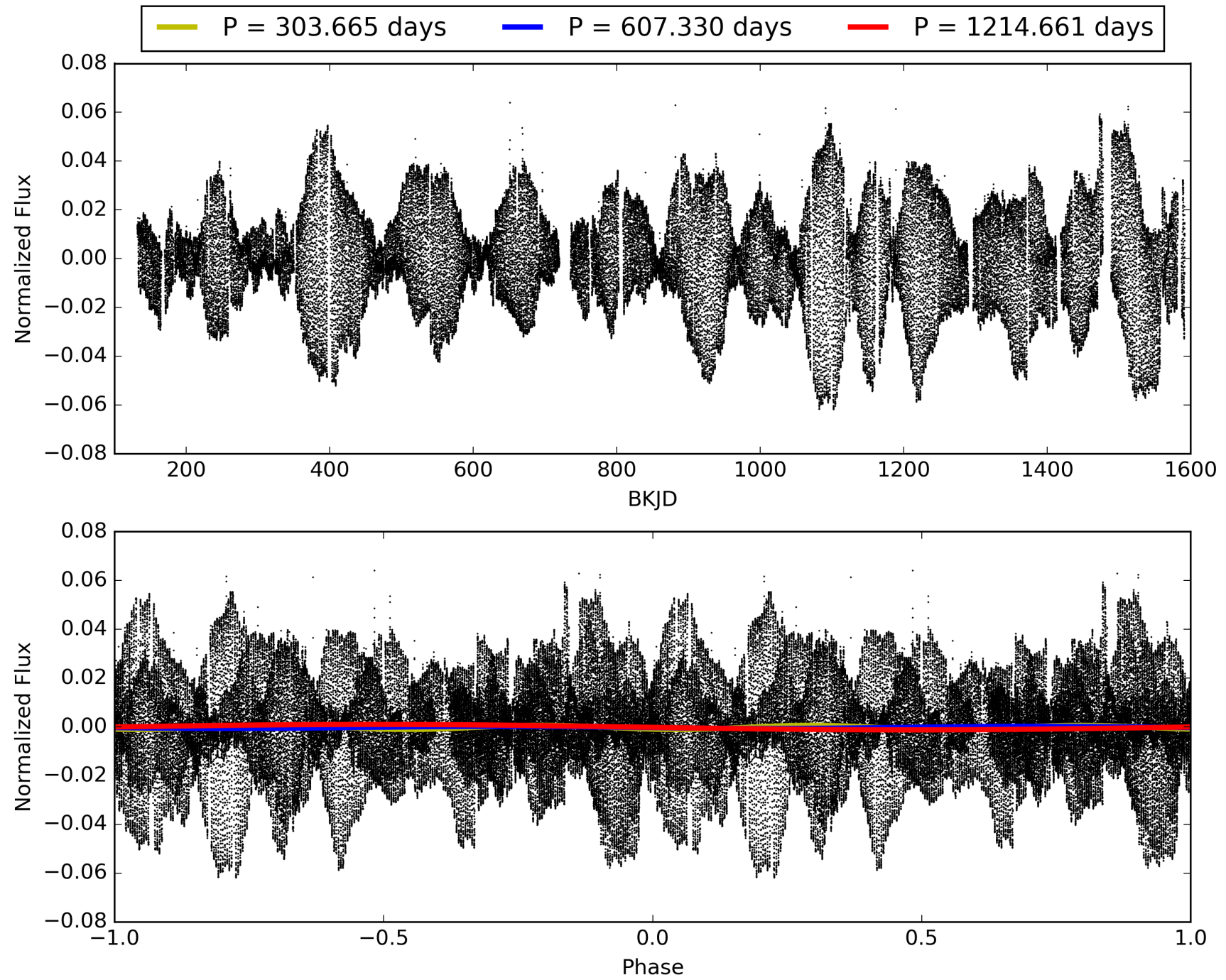
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:15:29 Z

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

TCE 005724158-02, PDC Light Curves

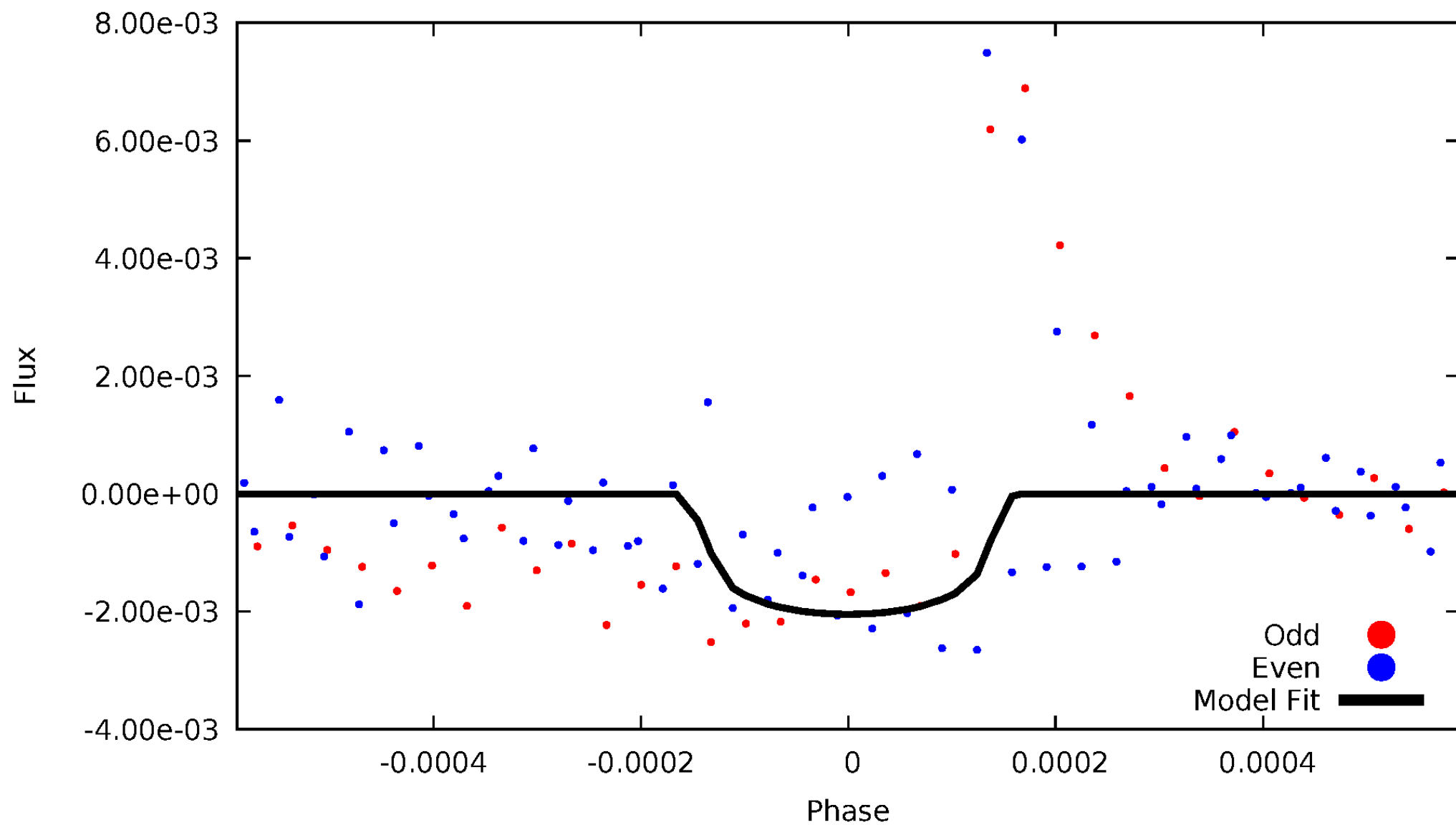


TCE 005724158-02



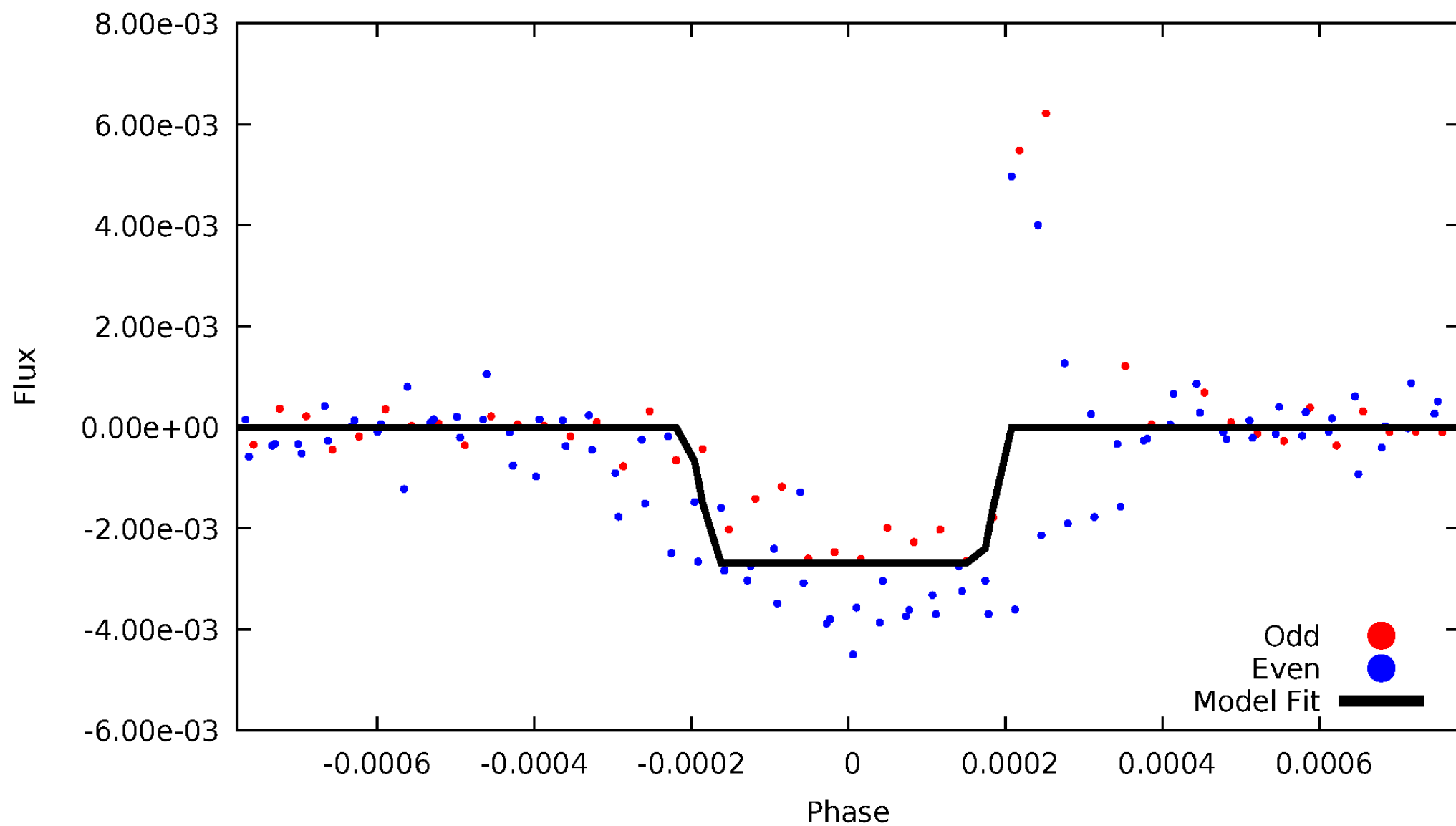
DV Odd/Even

TCE 005724158-02



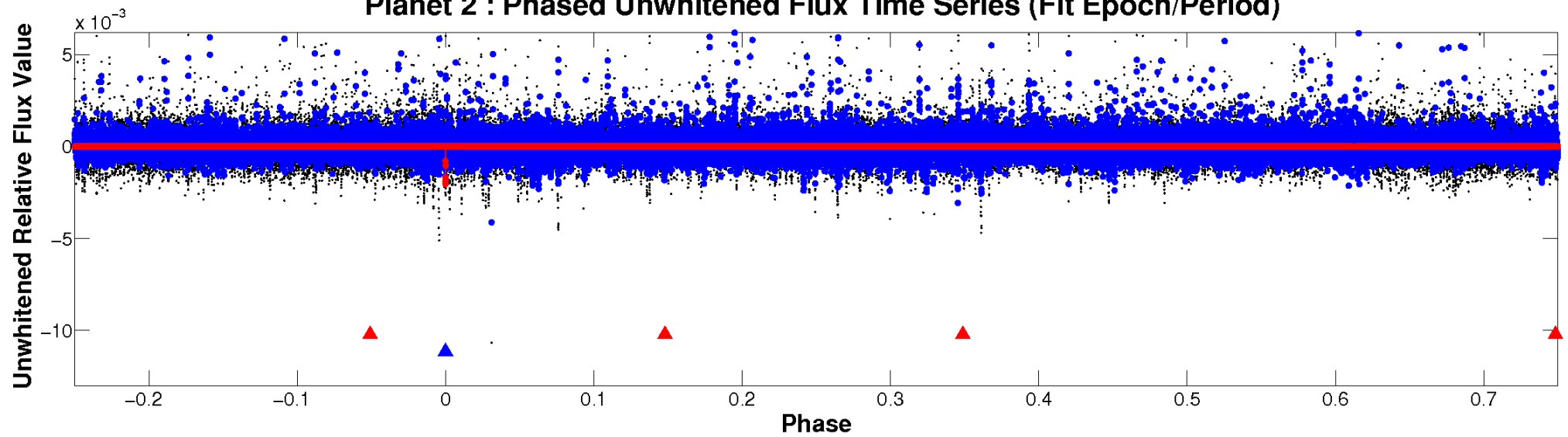
ALT Odd/Even

TCE 005724158-02

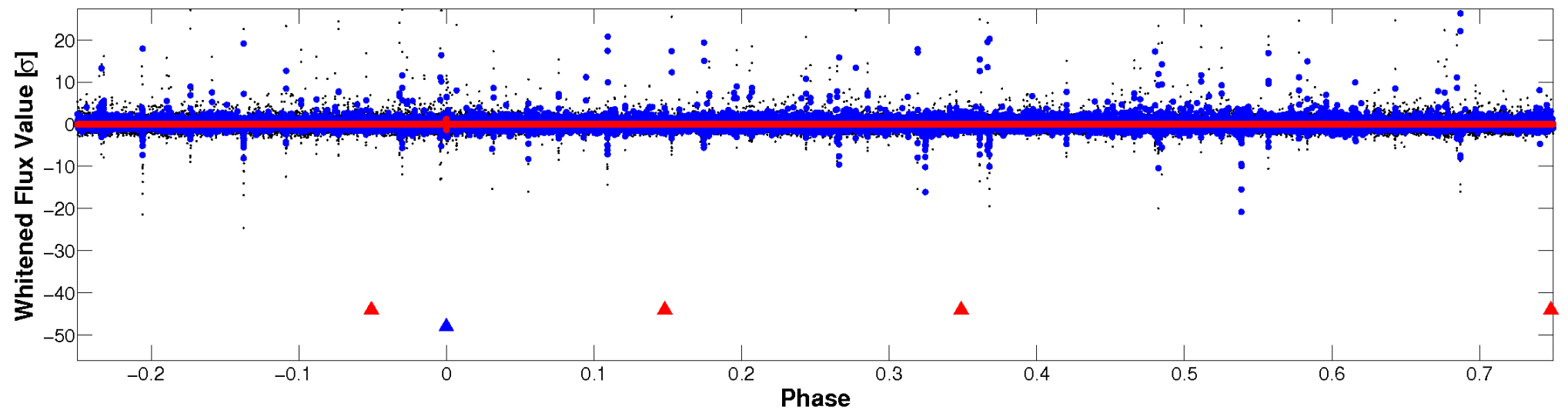


Non-Whitened Vs. Whitened Light Curve

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

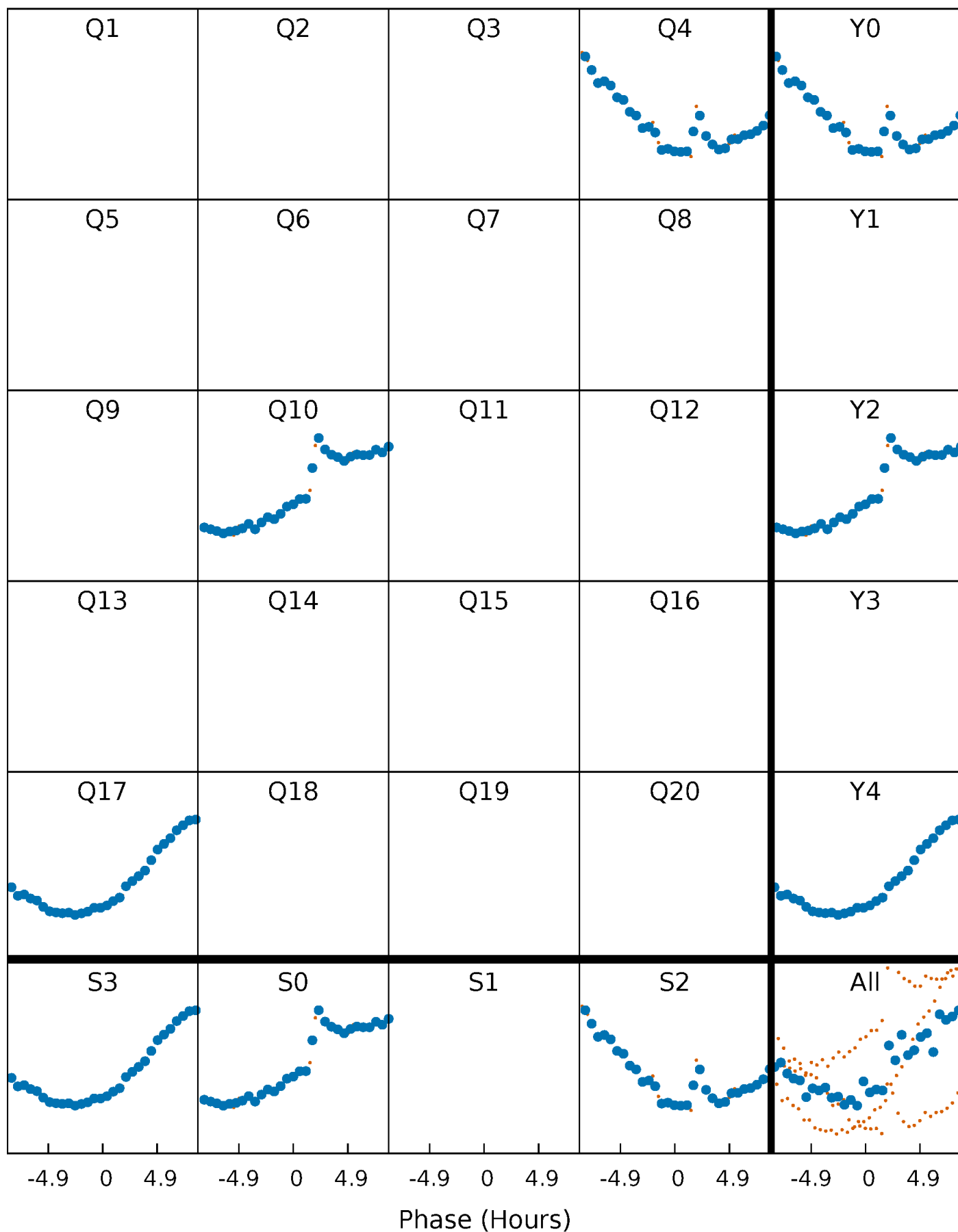


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



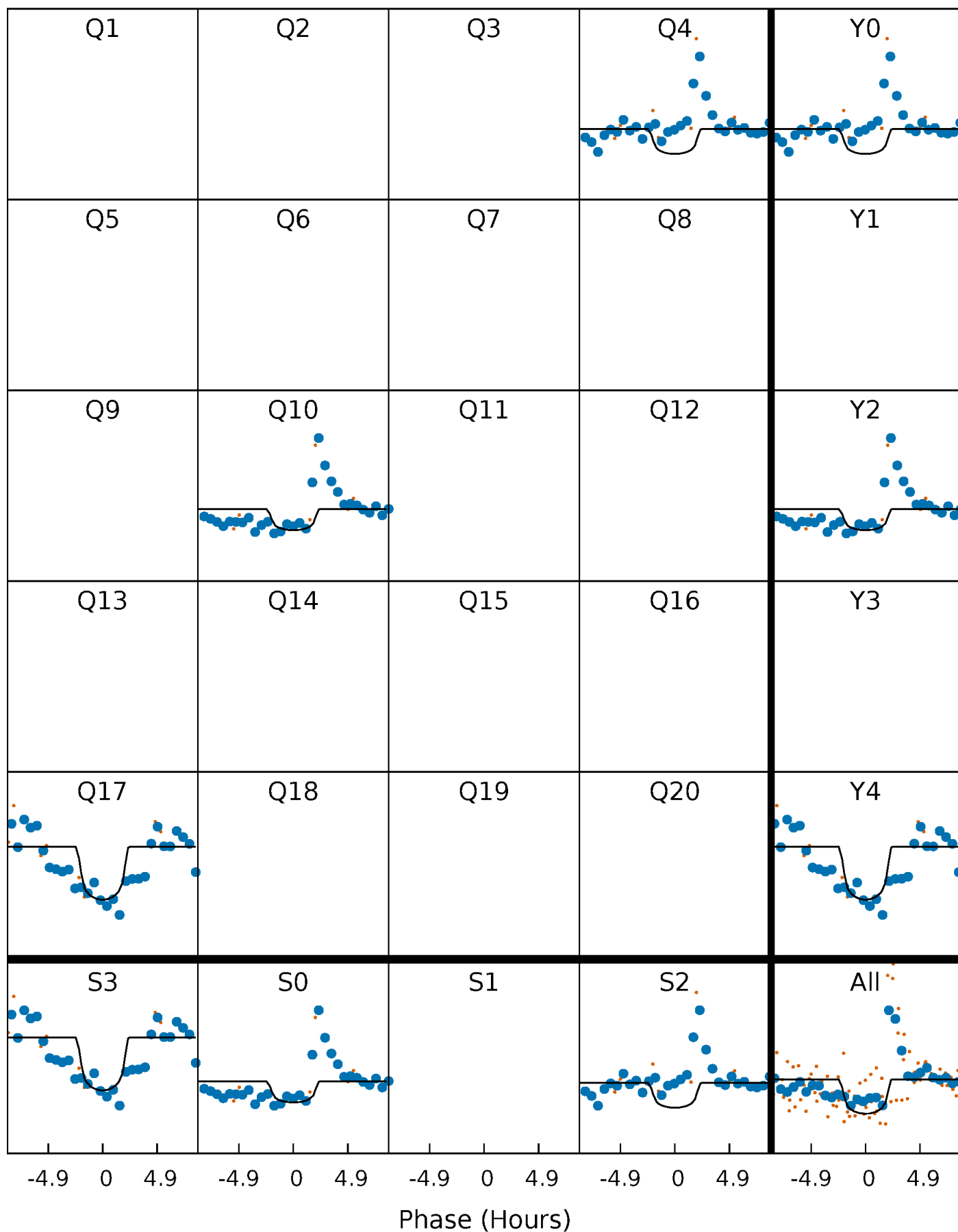
PDC Quarter-Phased Transit Curves

TCE 005724158-02 P=607.330489 Days $T_0=357.526313$ (BKJD)



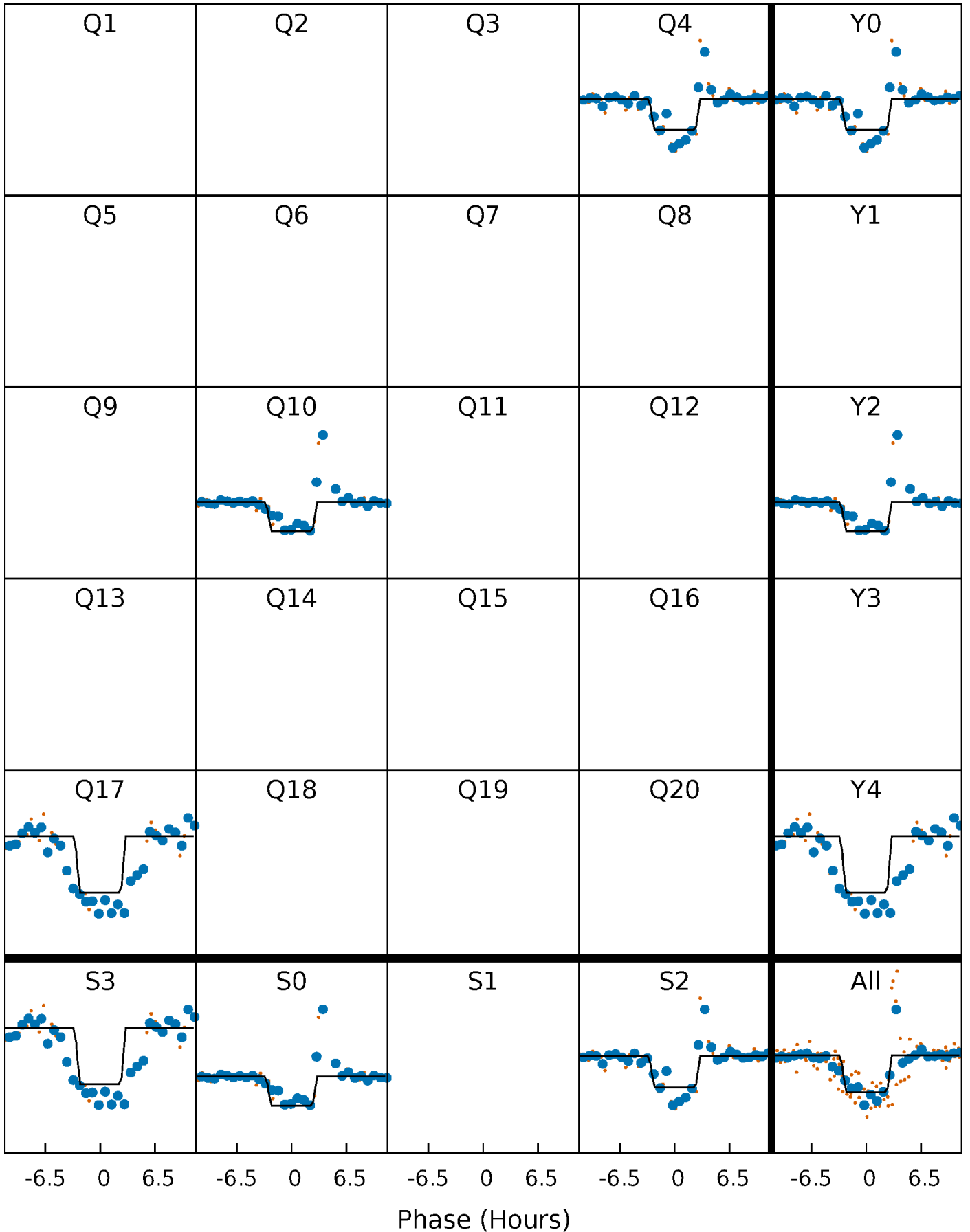
DV Quarter-Phased Transit Curves

TCE 005724158-02 P=607.330489 Days $T_0=357.526313$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

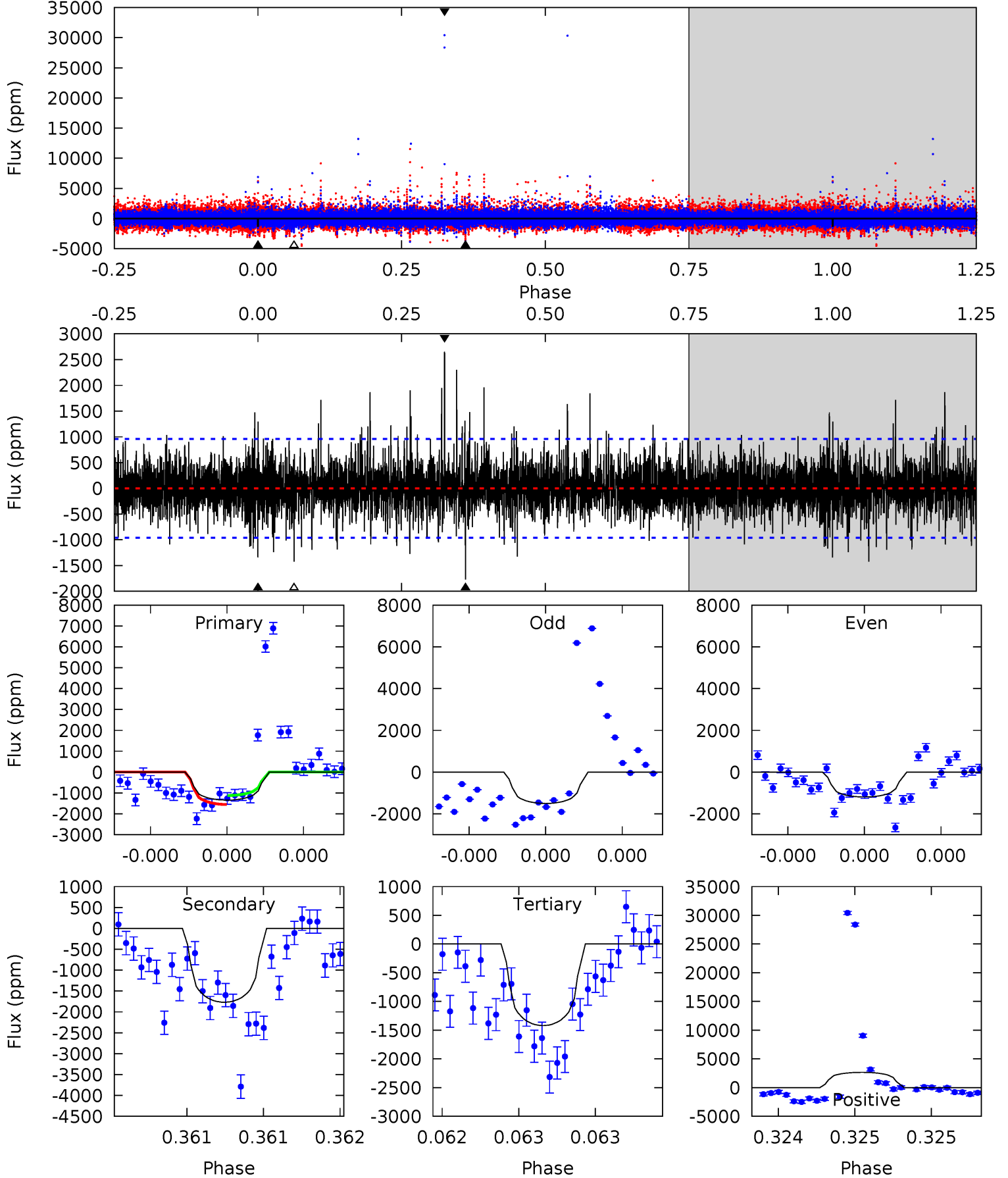
TCE 005724158-02 P=607.326270 Days $T_0=357.481179$ (BKJD)



DV Model-Shift Uniqueness Test

005724158-02, P = 607.330489 Days, E = 357.526313 Days

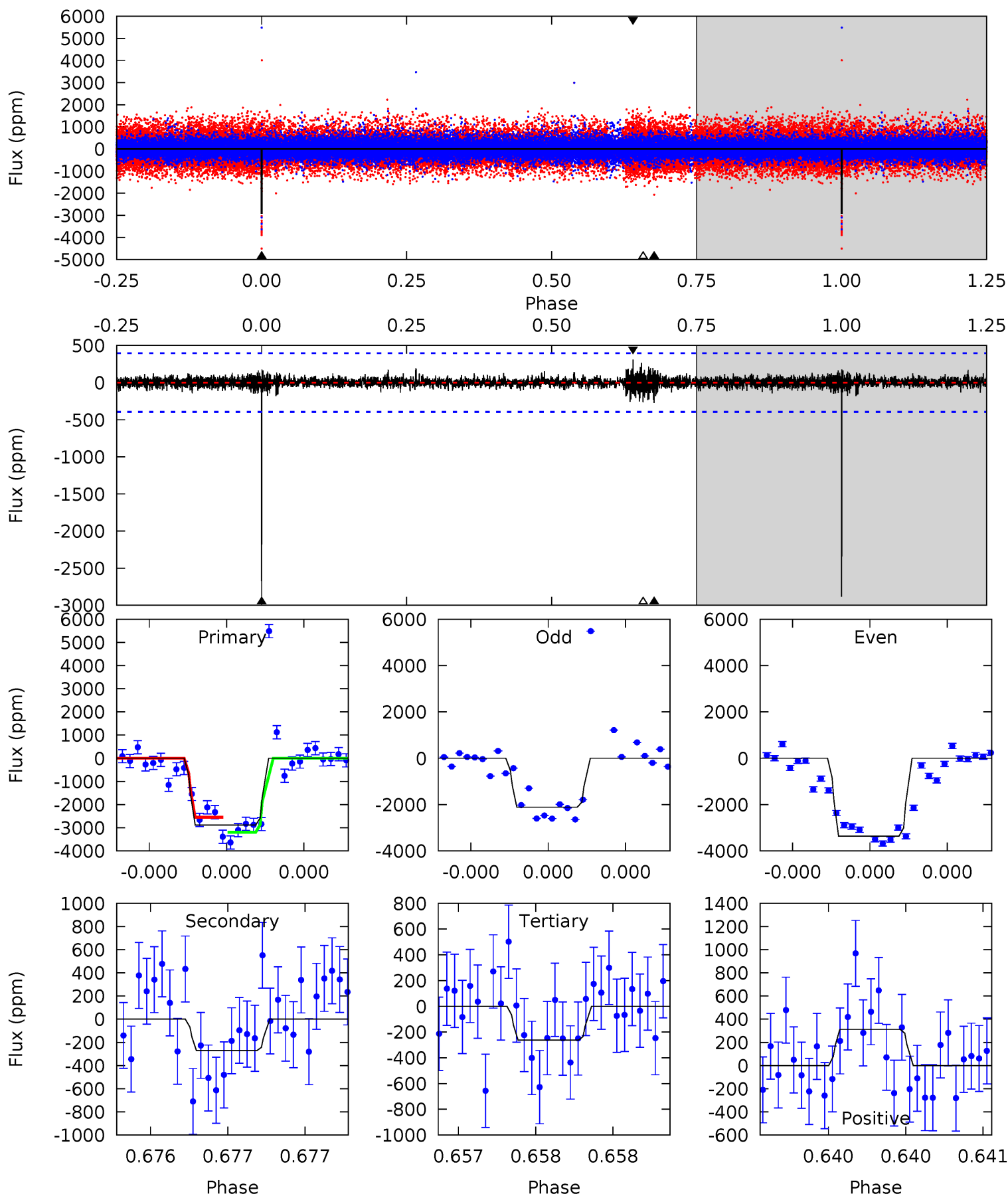
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.92	10.4	8.38	15.7	5.66	3.61	2.00	-0.46	-7.73	2.06	-5.22	0.71	0.73	0.60	1.28



Alt Model-Shift Uniqueness Test

005724158-02, P = 607.326270 Days, E = 357.481179 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.8	3.85	3.72	4.41	5.61	3.54	0.59	37.1	36.4	0.13	-0.56	8.26	0.93	0.10	4.64



Stellar Parameters For KIC 005724158

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5346^{+160}_{-160}	$4.621^{+0.032}_{-0.104}$	$-0.340^{+0.300}_{-0.300}$	$0.725^{+0.122}_{-0.052}$	$0.810^{+0.076}_{-0.093}$	$2.997^{+0.510}_{-0.970}$
	+3%/-3%	+1%/-2%	+88%/-88%	+17%/-7%	+9%/-11%	+17%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005724158-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1770 ± 170	$4.87^{+4.21}_{-3.19}$	249^{+11}_{-8}	4590^{+3145}_{-944}	$68384^{+521288}_{-49542}$
Alt.	-272 ± 71	$5.39^{+4.56}_{-3.39}$	249^{+11}_{-9}	3209^{+1252}_{-498}	8509^{+51514}_{-5993}

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 $A_{obs} \gg 1.0$

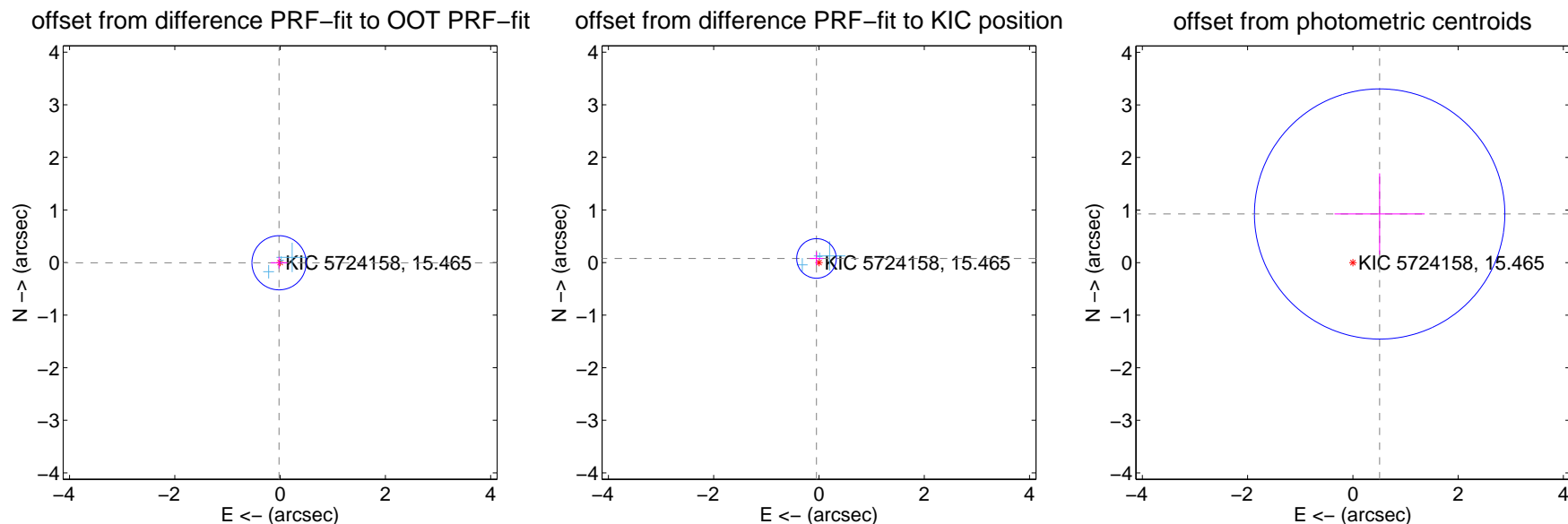
DV Centroid Data

Supplemental centroid analysis for 005724158-02. Kepler magnitude: 15.46. Transit SNR 6.78

There are 3 quarters with good PRF difference image offsets

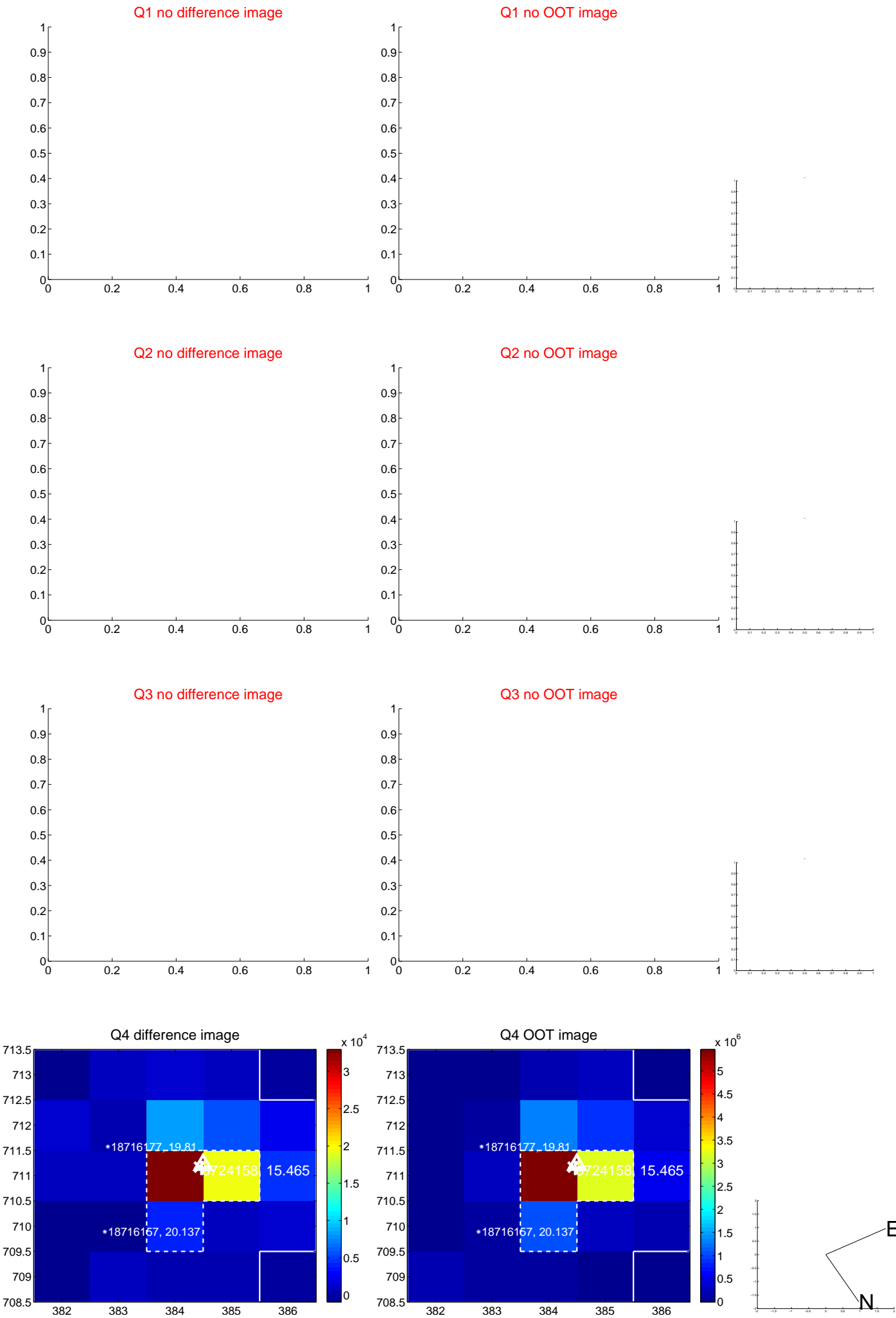
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.021 ± 0.172	0.12	0.020 ± 0.158	-0.005 ± 0.110
PRF-fit source offset from KIC position	0.091 ± 0.125	0.73	0.047 ± 0.126	0.078 ± 0.125
photometric centroid source offset	1.06 ± 0.79	1.33	-0.51 ± 0.86	0.93 ± 0.77



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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

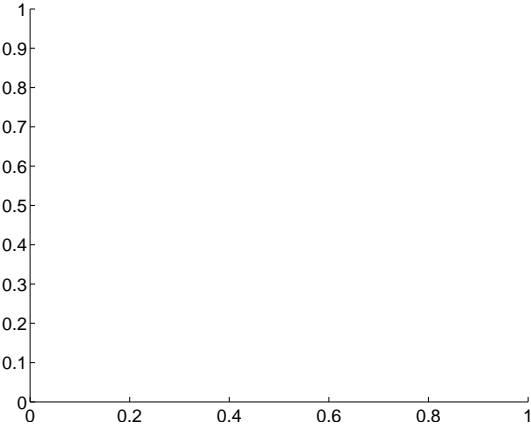


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

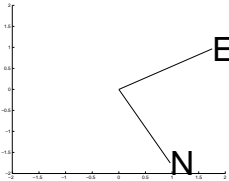
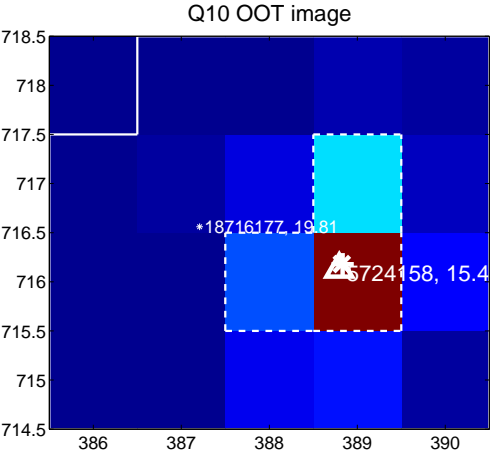
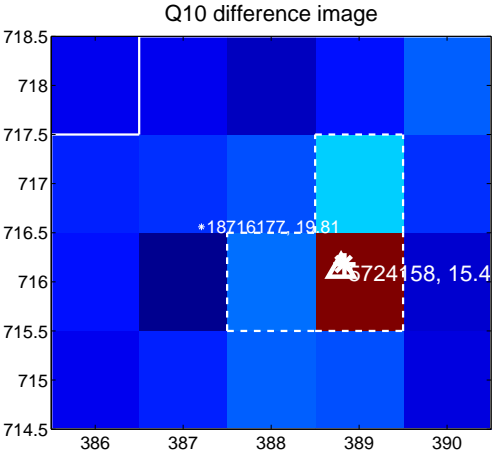
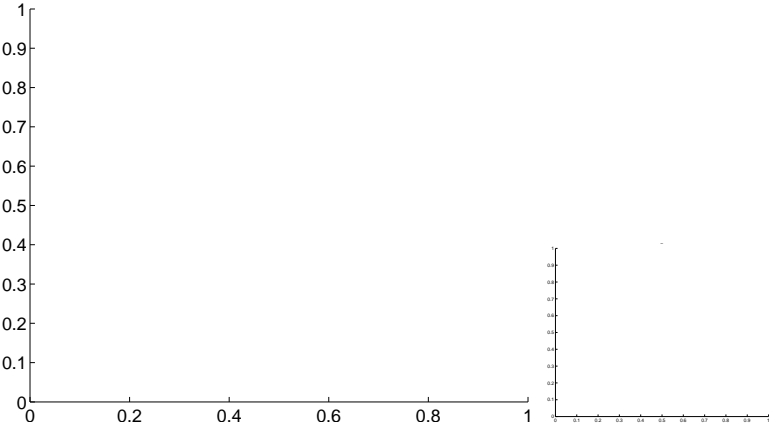


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

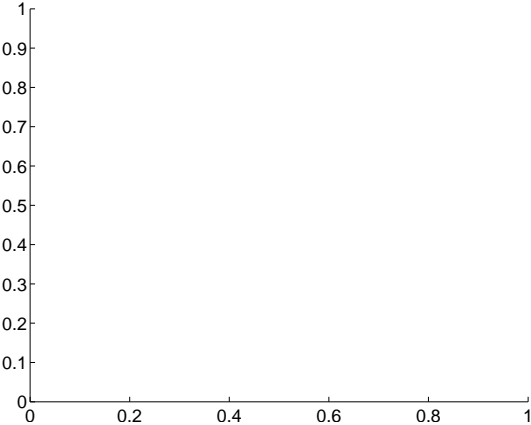
Q9 no difference image



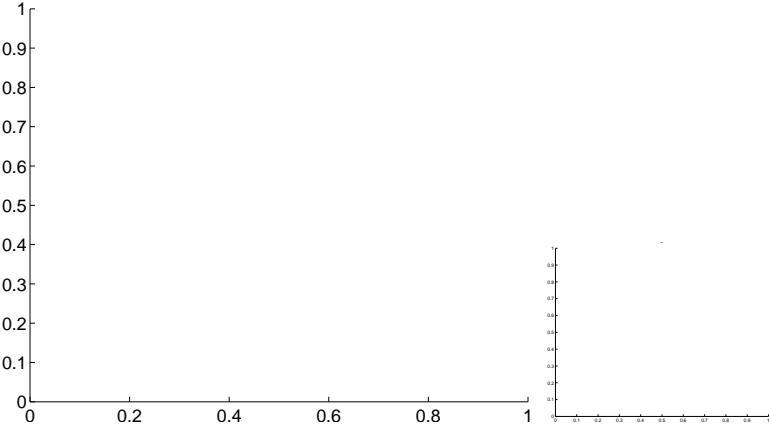
Q9 no OOT image



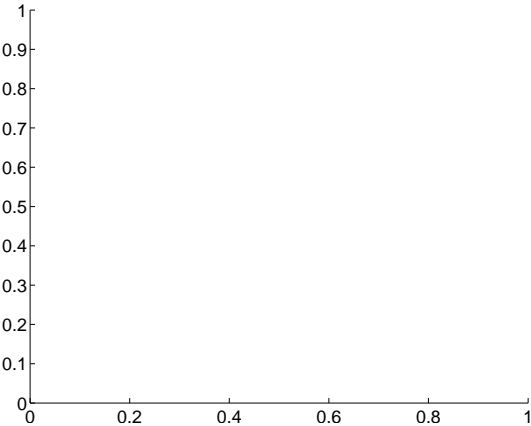
Q11 no difference image



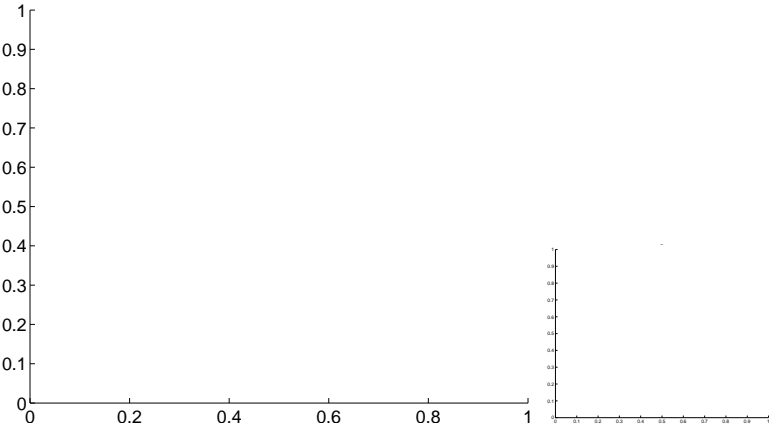
Q11 no OOT image



Q12 no difference image



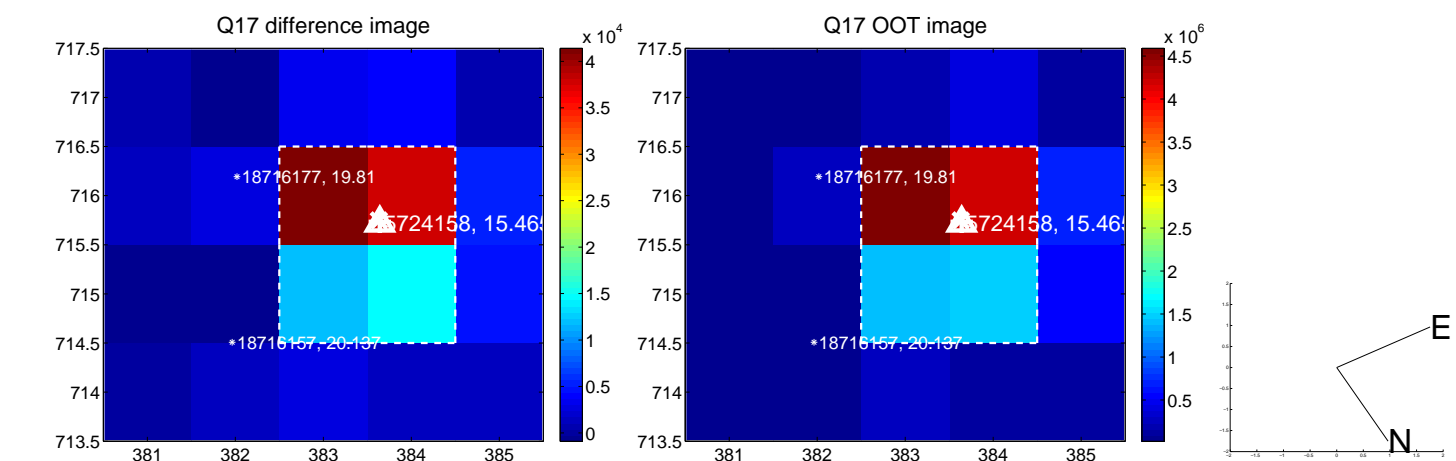
Q12 no OOT image



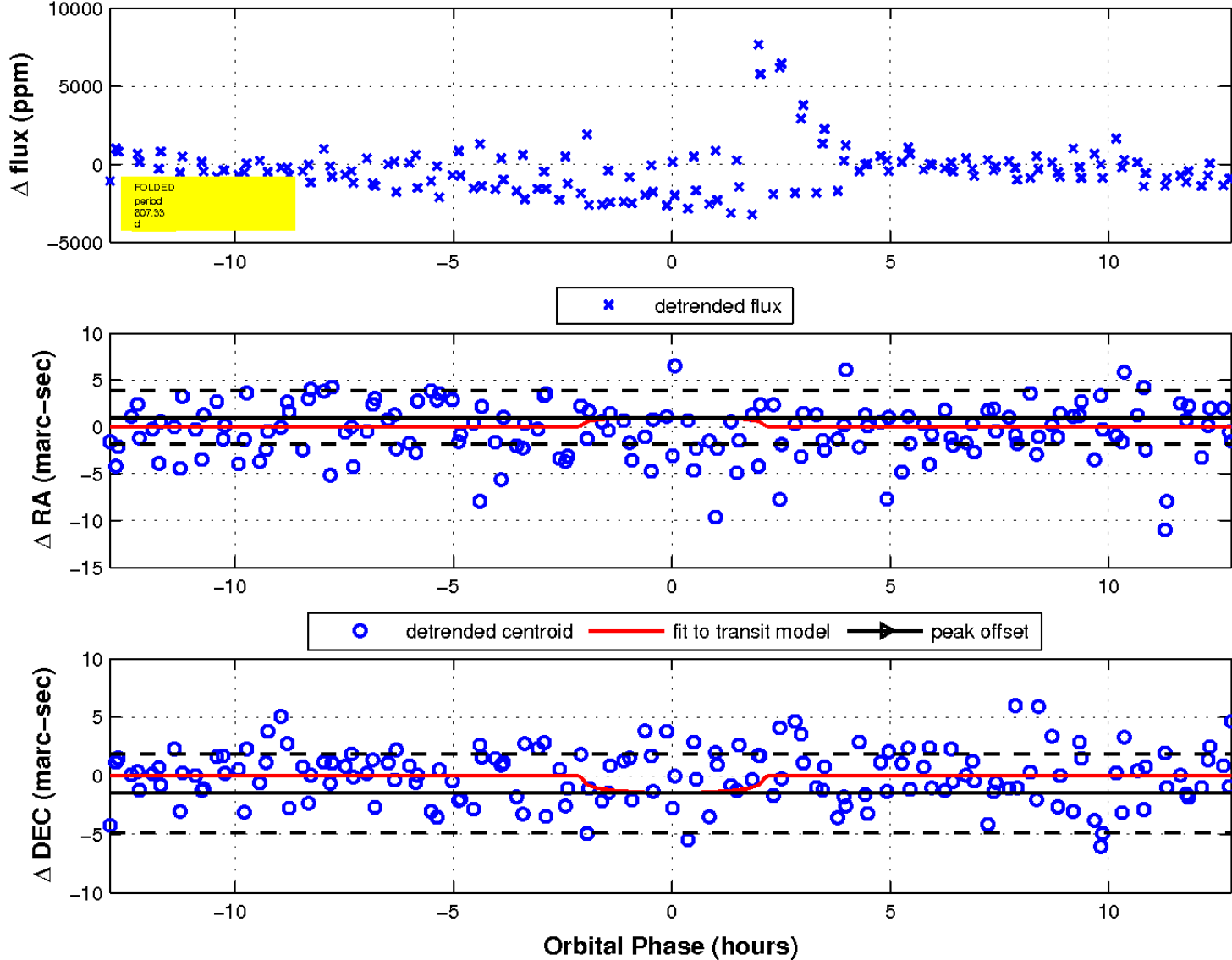
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

