

KIC 006103377

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})
006103377-01	OBS	3004.01	20.070832	136.944048	356.6	6.621	11.1	10.4	1.51	5902	3.38	110.33
006103377-02	OBS	3004.02	7.039571	137.428382	243.8	3.062	8.1	8.3	1.51	5902	2.81	446.06

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006103377-01	OBS	PC	0.98	0	0	0	0	NO_COMMENT
006103377-02	OBS	PC	0.98	0	0	0	0	CENT_FEW_DIFFS

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

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

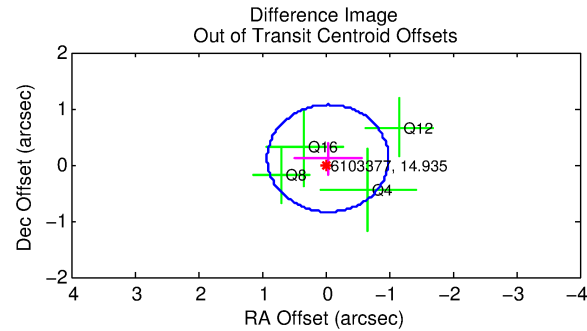
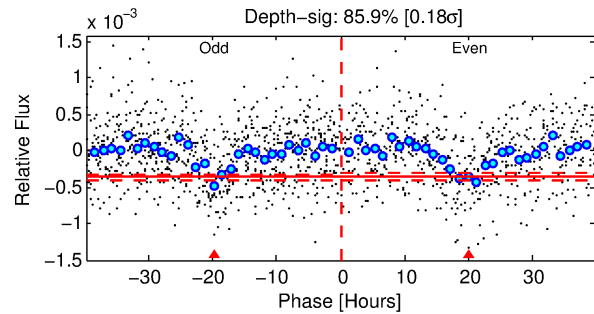
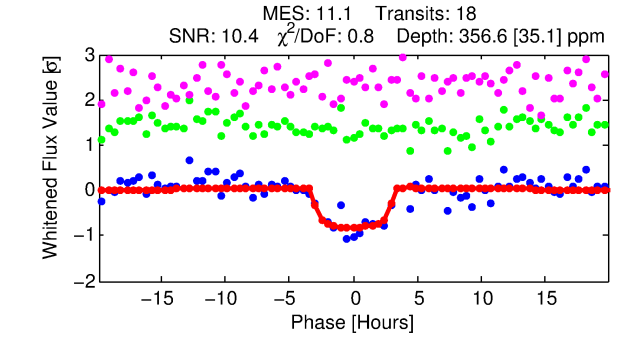
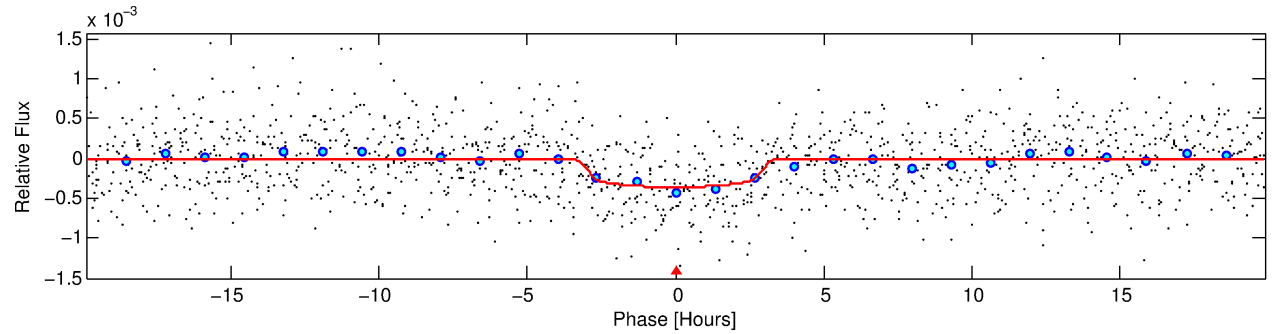
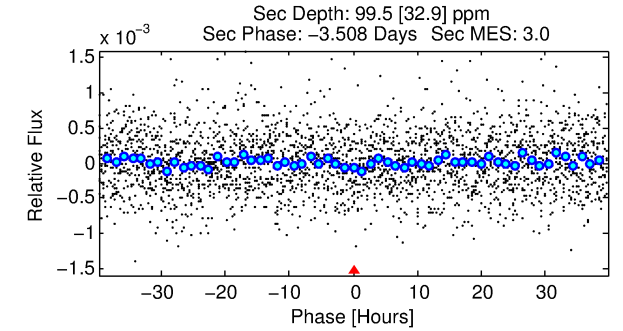
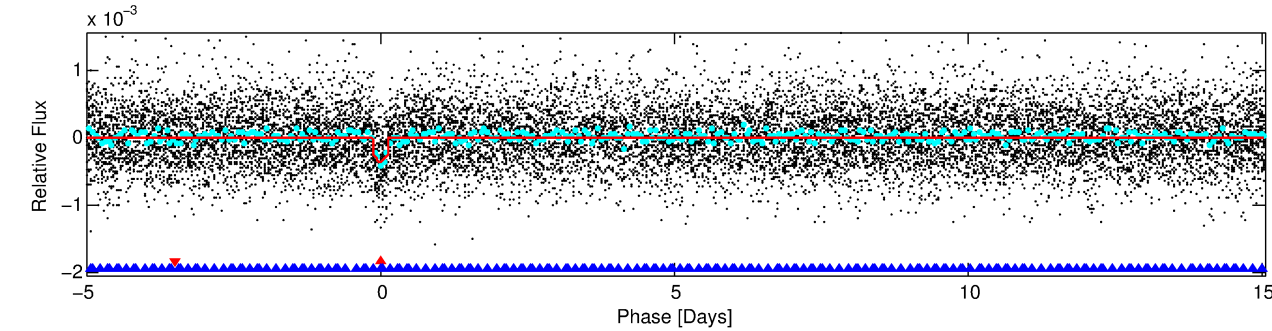
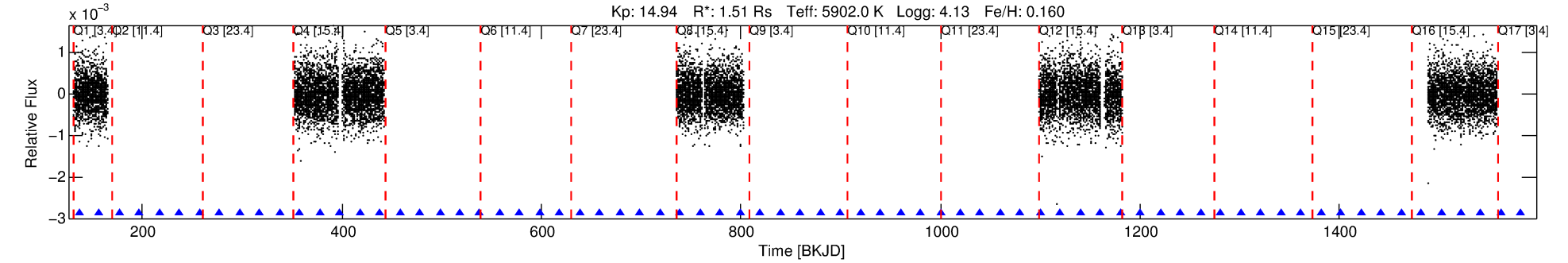
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006103377-01

No Significant Match Found

DV One-Page Summary

KIC: 6103377 Candidate: 1 of 2 Period: 20.071 d
KOI: K03004.01 Corr: 0.962



DV Fit Results:

Period = 20.07083 [0.00027] d
Epoch = 136.9440 [0.0113] BKJD
Rp/R* = 0.0205 [0.0040]
a/R* = 11.29 [10.04]
b = 0.90 [0.20]
Seff = 110.33 [34.88]
Teff = 826 [65] K
Rp = 3.38 [0.96] Re
a = 0.1502 [0.0295] AU
Ag = 107.95 [64.71] [1.65σ]
Teffp = 4119 [530] K [6.16σ]

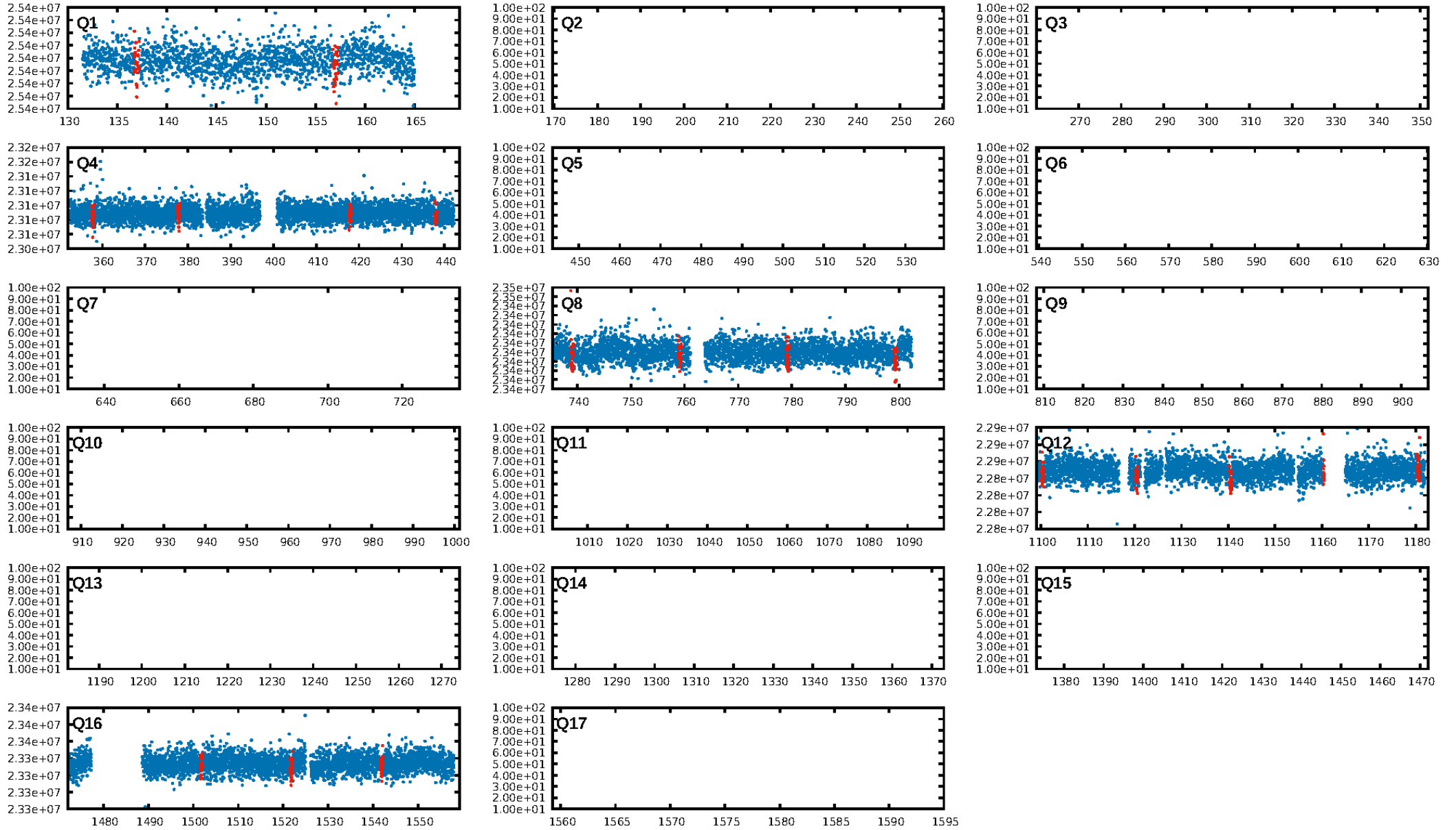
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.87σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.05e-25
RollingBand-fgt: 1.00 [16/16]
GhostDiagnostic-chr: -9.441
Centroid-sig: 64.0%
Centroid-so: 0.891 arcsec [0.59σ]
OotOffset-rm: 0.119 arcsec [0.37σ]
KicOffset-rm: 0.065 arcsec [0.15σ]
OotOffset-st: 0/0/4/0 [4]
KicOffset-st: 0/0/4/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [5/5]

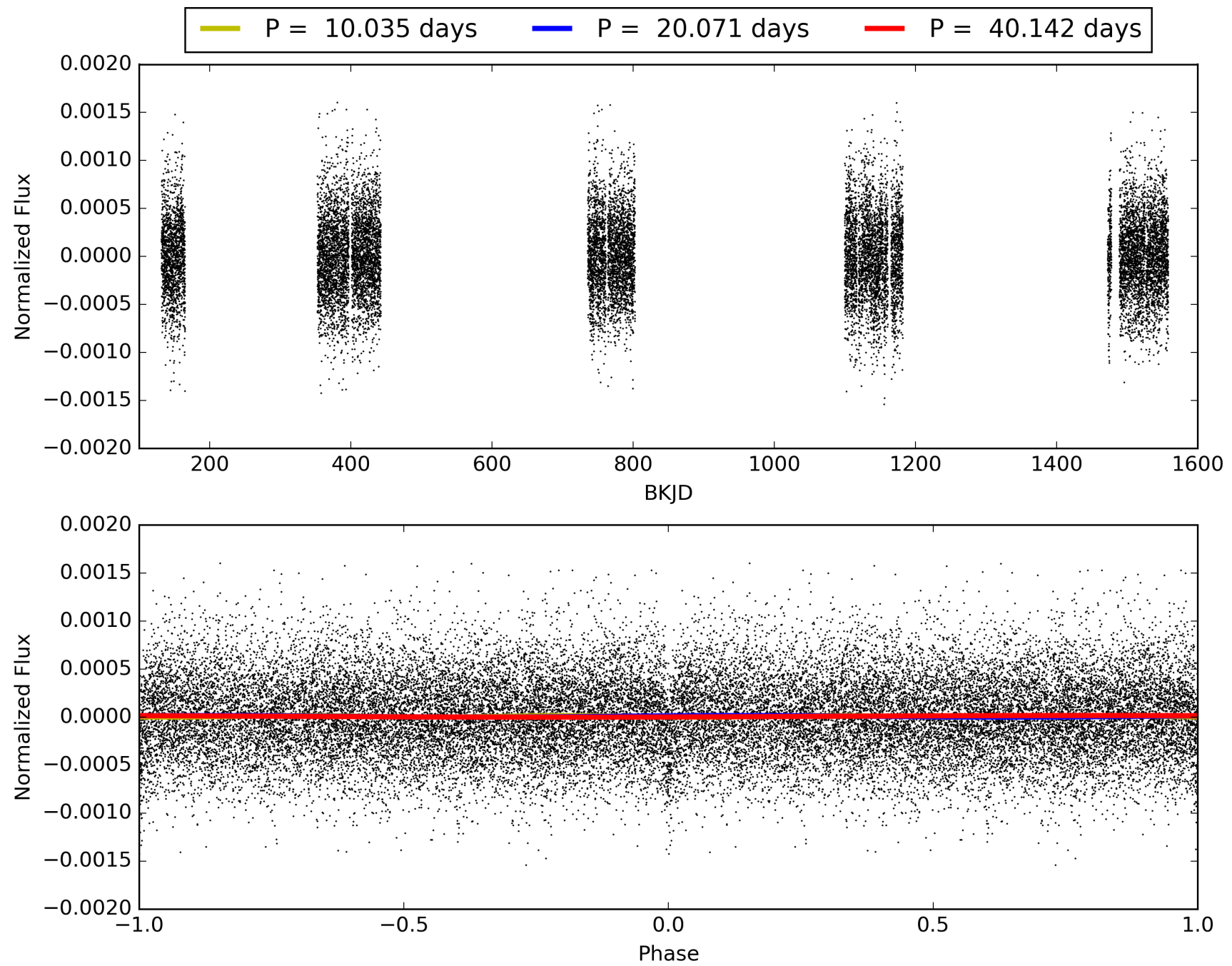
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 03:21:19 Z

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

TCE 006103377-01, PDC Light Curves

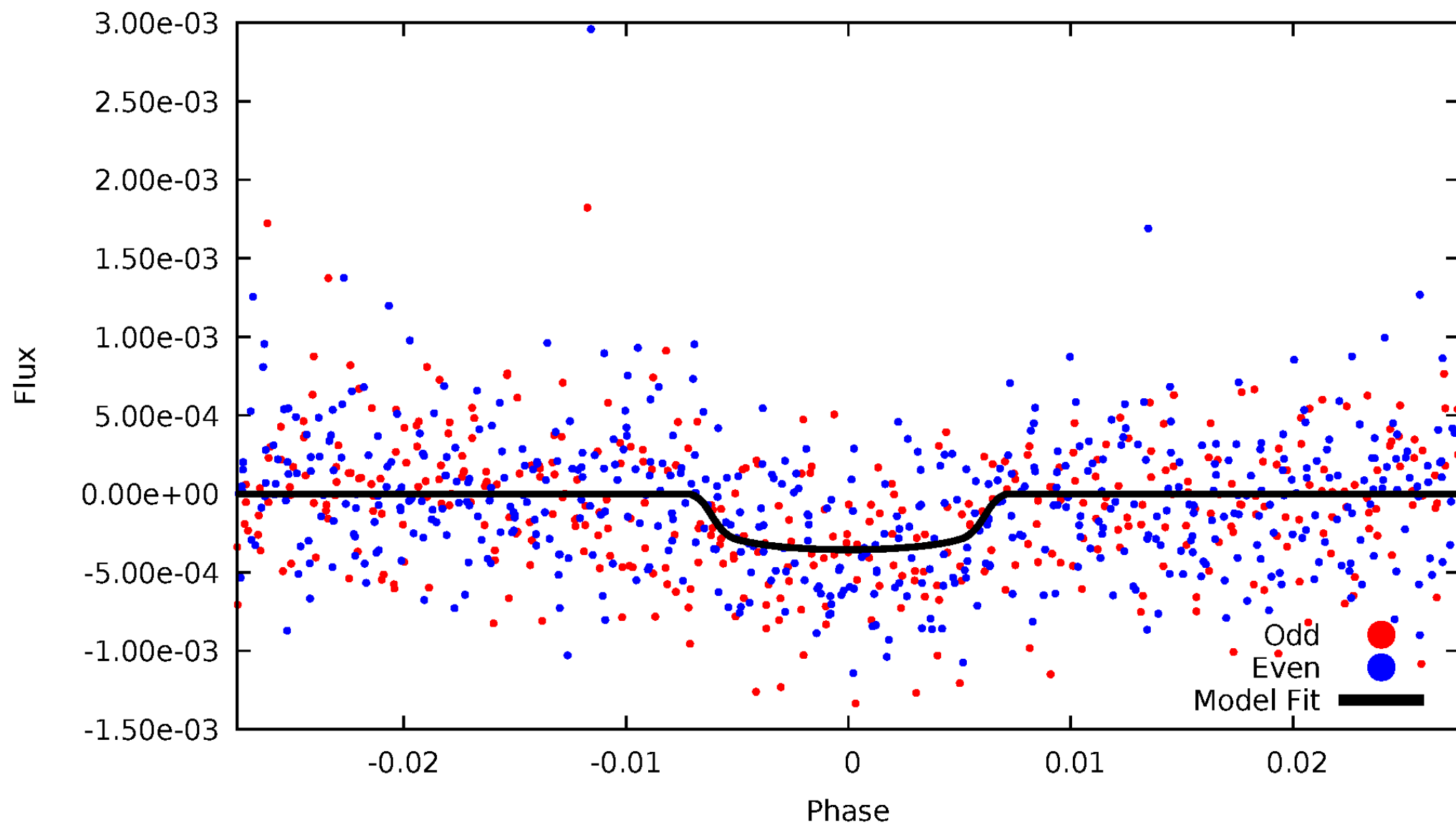


TCE 006103377-01



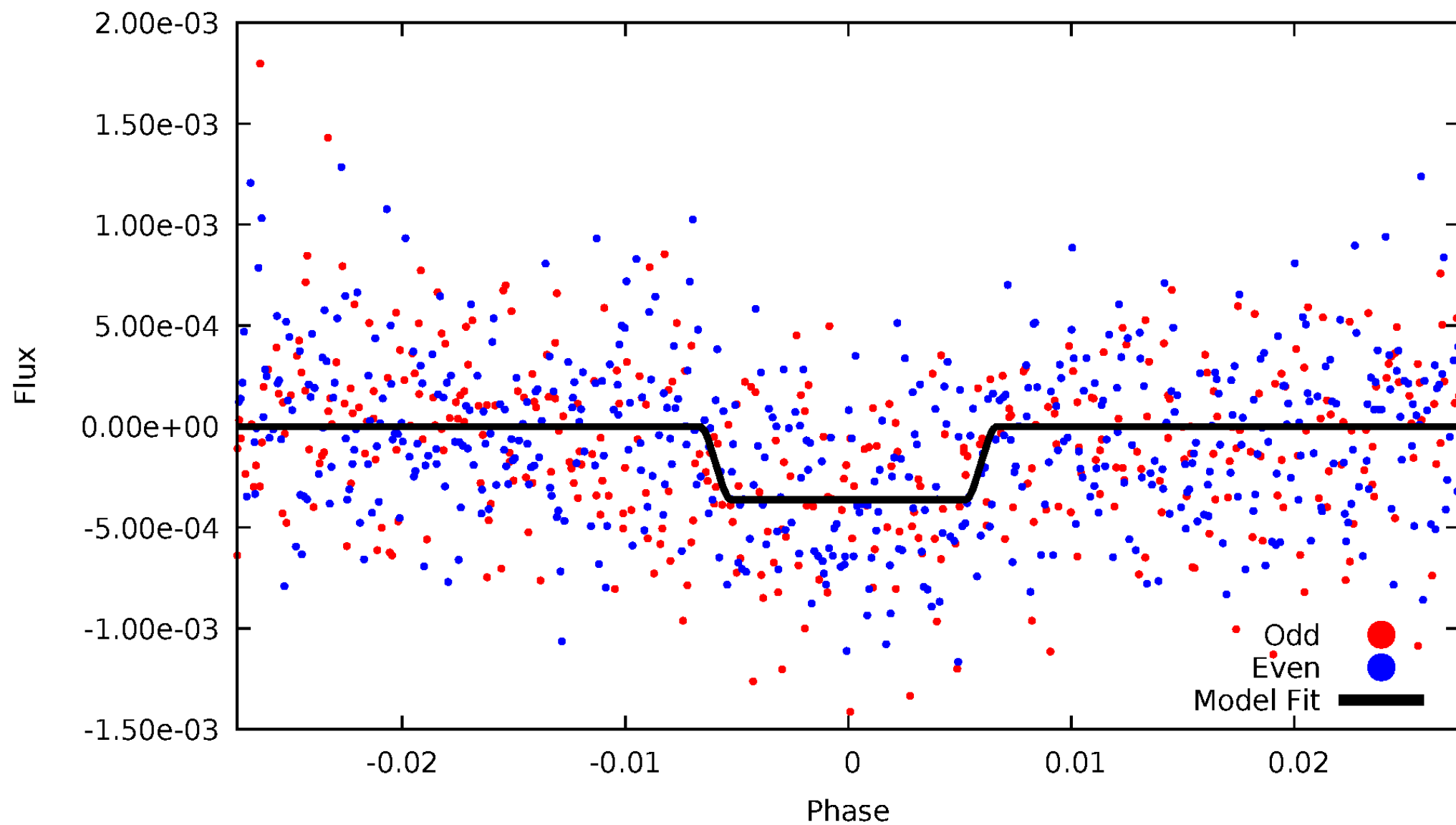
DV Odd/Even

TCE 006103377-01

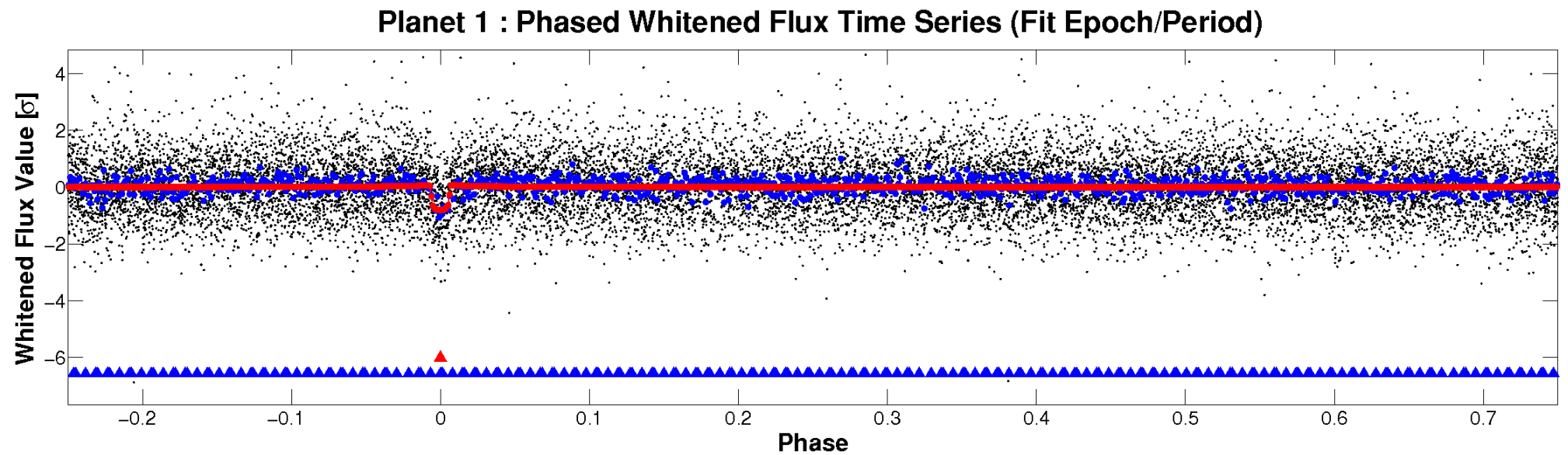
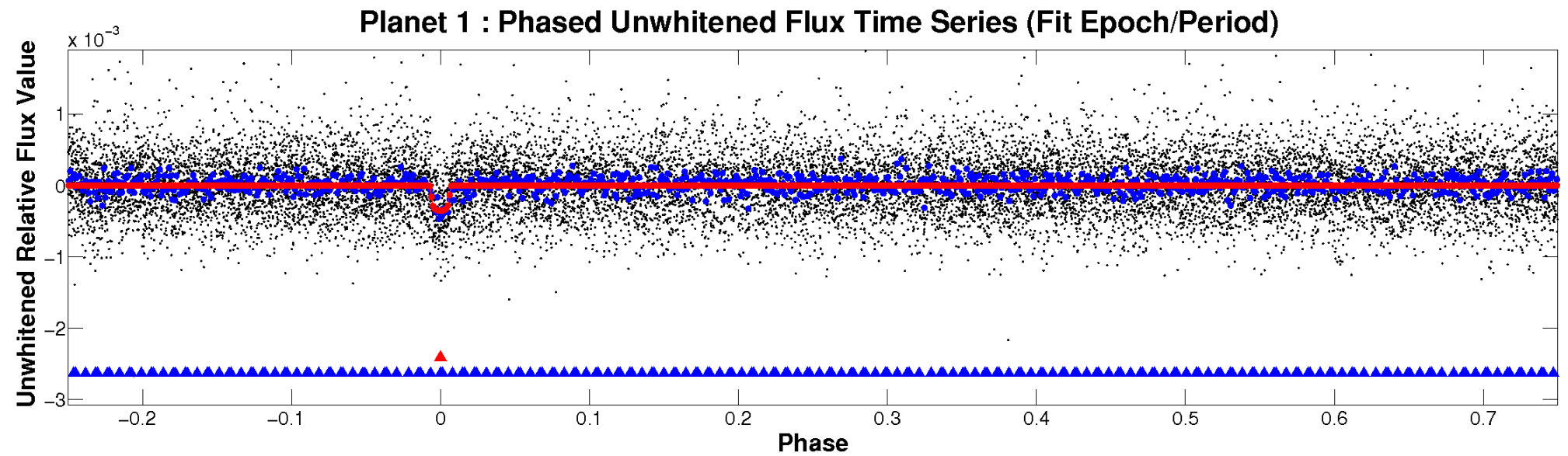


ALT Odd/Even

TCE 006103377-01



Non-Whitened Vs. Whitened Light Curve



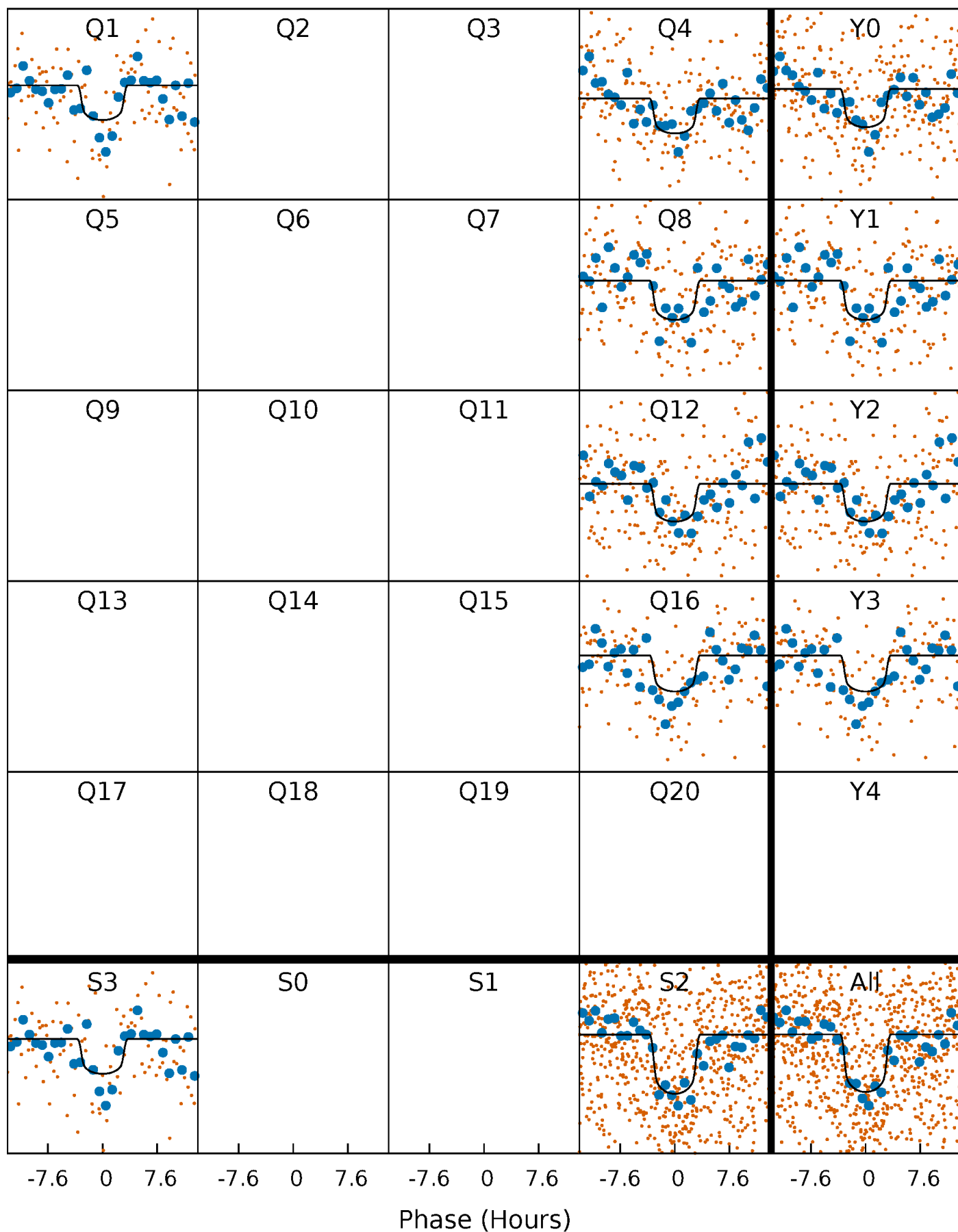
PDC Quarter-Phased Transit Curves

TCE 006103377-01 P= 20.070832 Days $T_0=136.944048$ (BKJD)



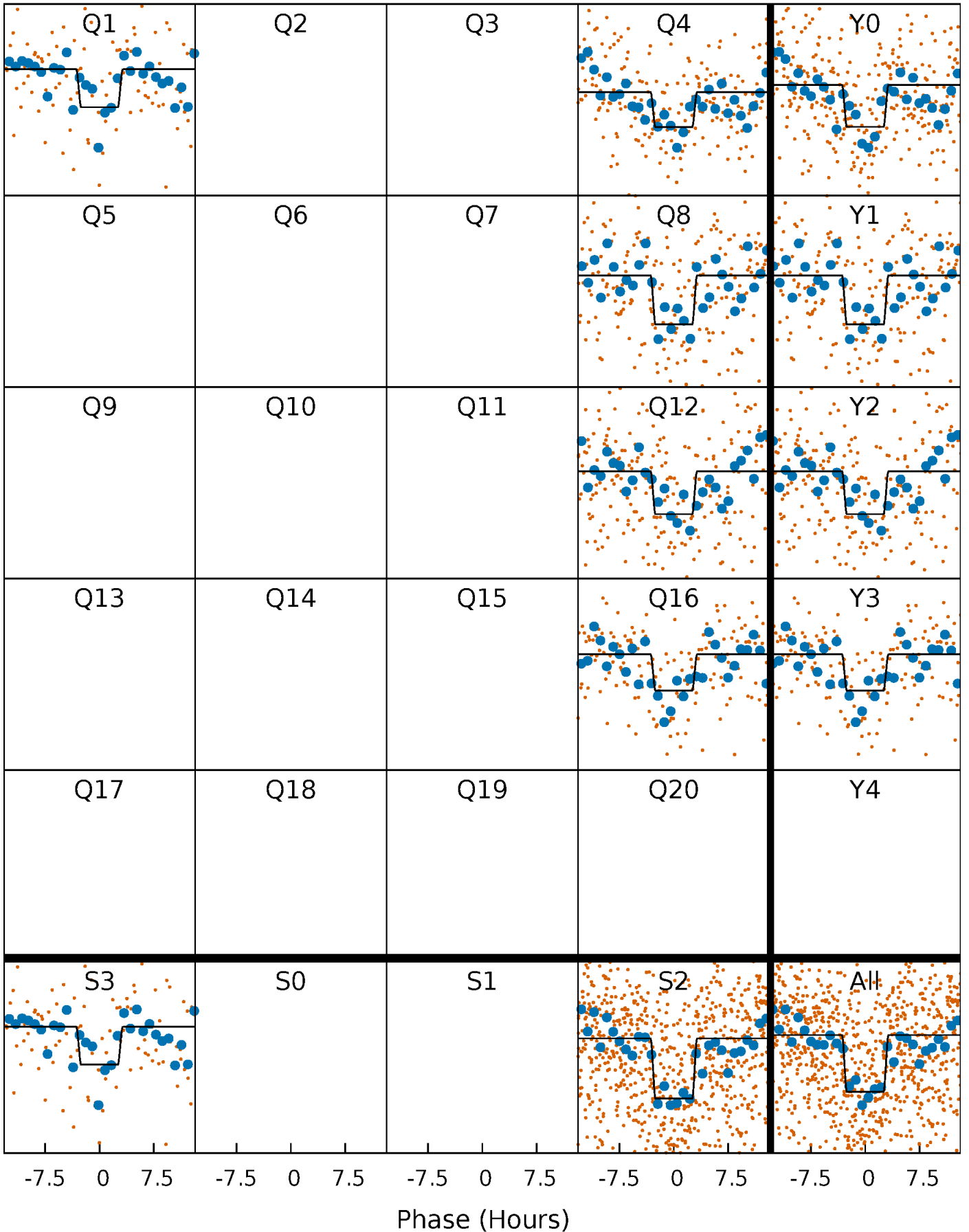
DV Quarter-Phased Transit Curves

TCE 006103377-01 P= 20.070832 Days $T_0=136.944048$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

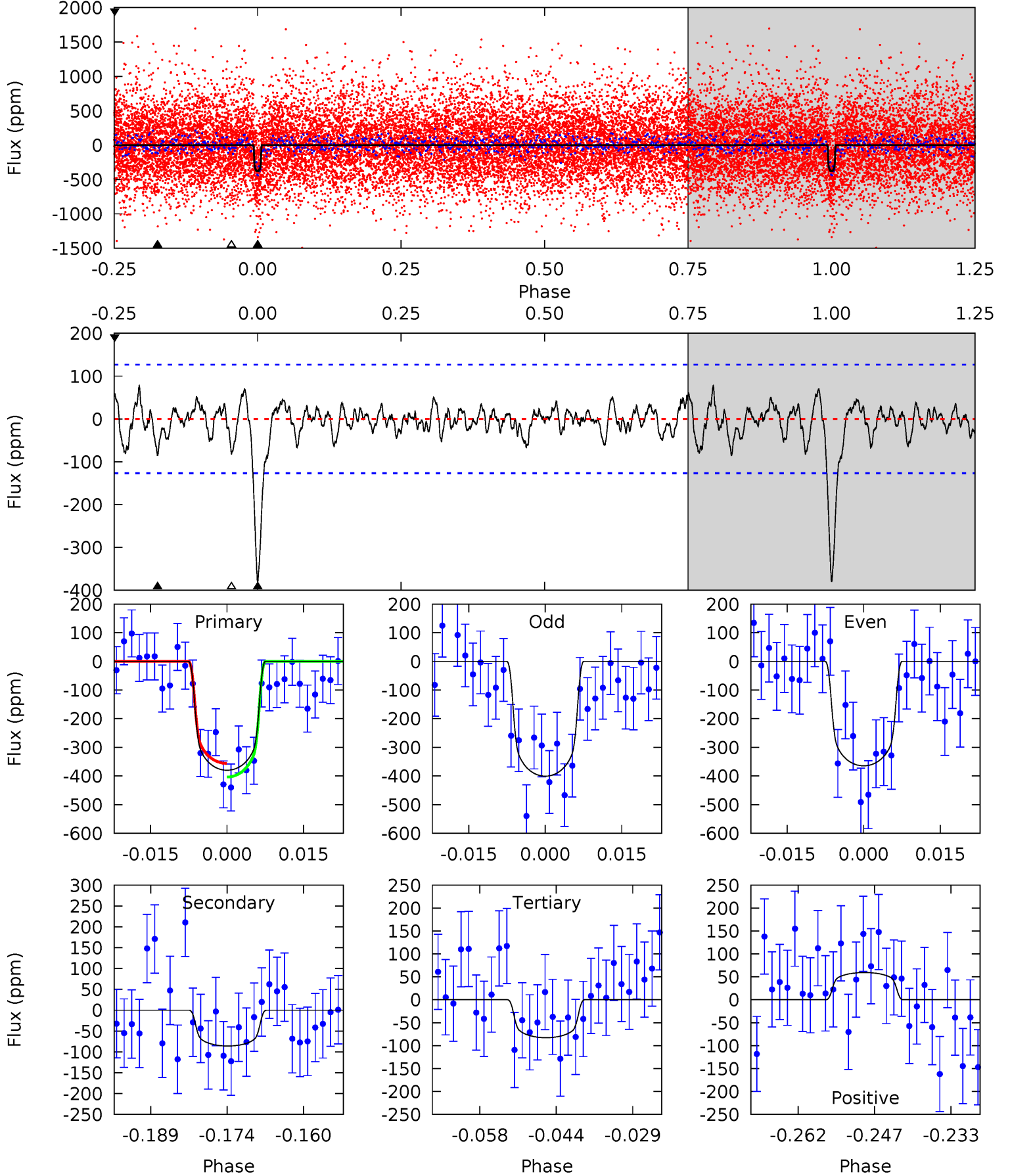
TCE 006103377-01 P= 20.070727 Days $T_0=136.949968$ (BKJD)



DV Model-Shift Uniqueness Test

006103377-01, $P = 20.070832$ Days, $E = 116.873216$ Days

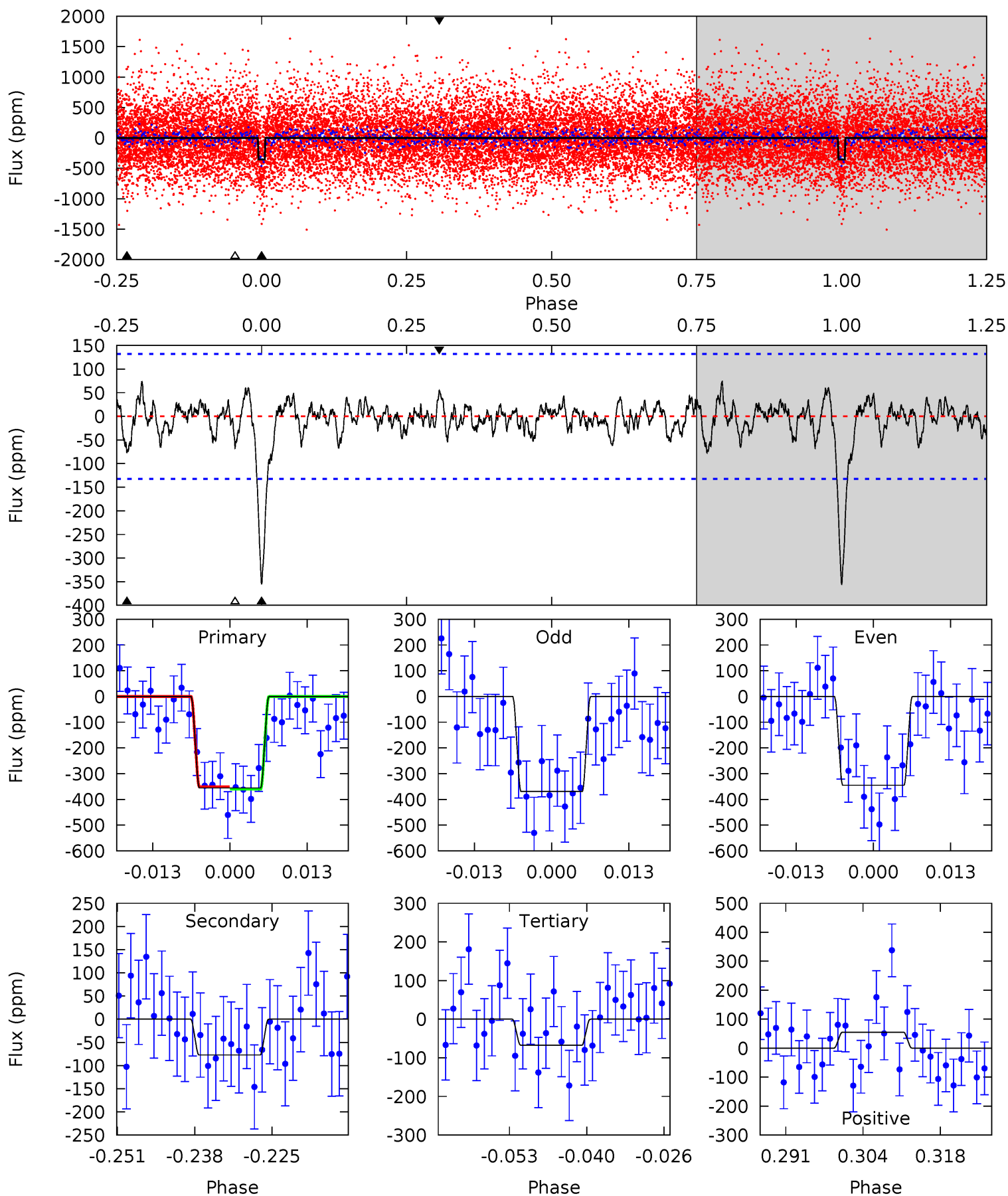
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.9	3.36	3.23	2.32	4.95	2.44	1.09	11.6	12.5	0.13	1.04	0.70	1.01	0.17	0.93



Alt Model-Shift Uniqueness Test

006103377-01, P = 20.070727 Days, E = 116.879241 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	2.90	2.53	2.07	4.97	2.48	0.92	10.8	11.3	0.37	0.84	0.46	1.07	0.17	0.17



Stellar Parameters For KIC 006103377

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5902^{+70}_{-79}	$4.128^{+0.182}_{-0.098}$	$0.160^{+0.150}_{-0.150}$	$1.513^{+0.256}_{-0.313}$	$1.120^{+0.110}_{-0.090}$	$0.456^{+0.427}_{-0.153}$
	+1%/-1%	+4%/-2%	+94%/-94%	+17%/-21%	+10%/-8%	+94%/-33%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006103377-01 / KOI 3004.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-86 ± 26	$3.34^{+0.72}_{-0.77}$	1148^{+50}_{-65}	4200^{+430}_{-366}	95^{+71}_{-38}
Alt.	-77 ± 27	$3.04^{+0.71}_{-0.66}$	1148^{+47}_{-63}	4257^{+481}_{-407}	101^{+84}_{-45}

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

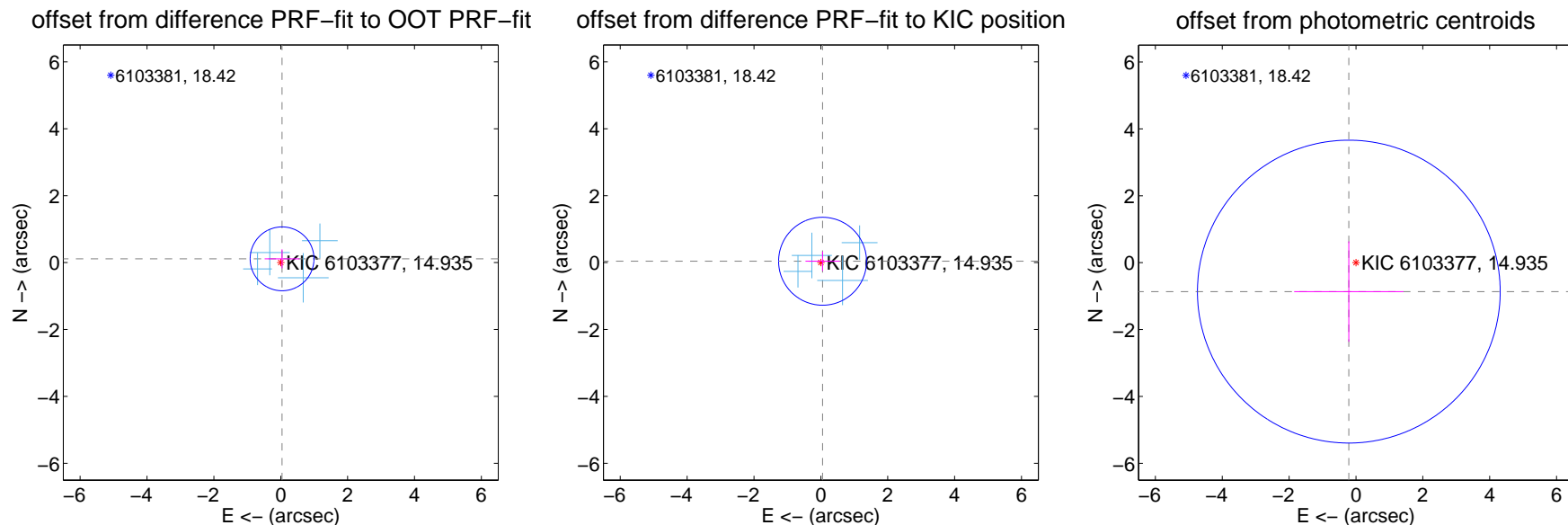
DV Centroid Data

Supplemental centroid analysis for 006103377-01. Kepler magnitude: 14.94. Transit SNR 10.37

There are 4 quarters with good PRF difference image offsets

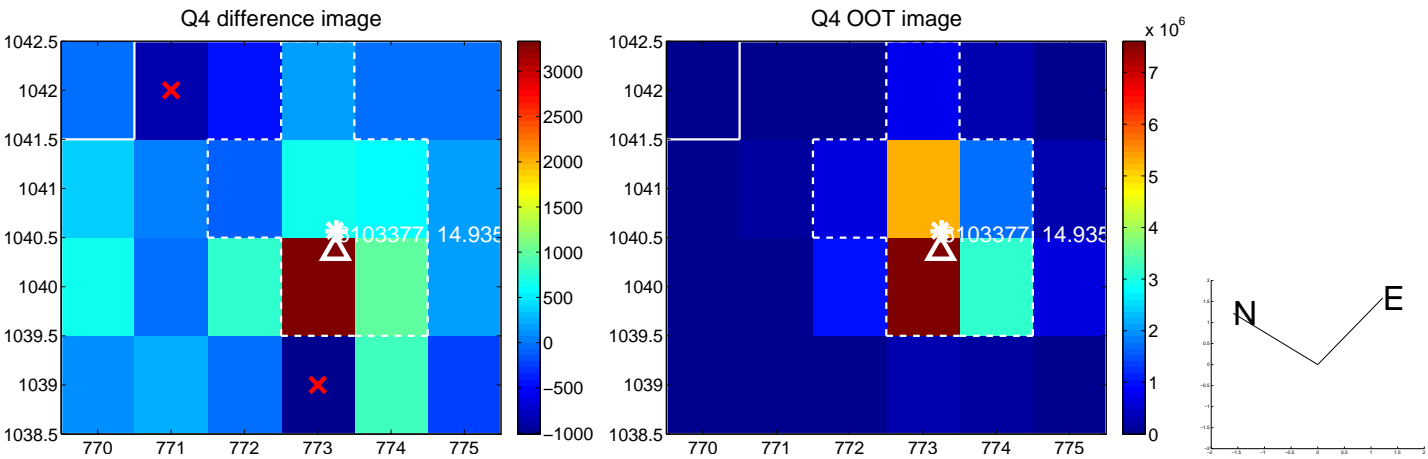
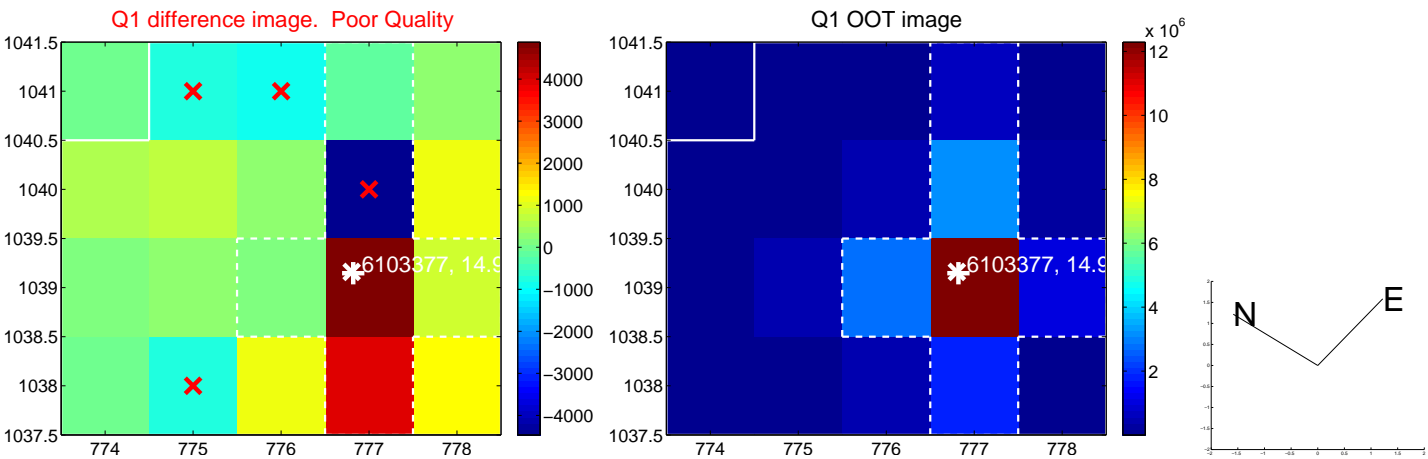
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.119 ± 0.318	0.37	-0.039 ± 0.522	0.112 ± 0.283
PRF-fit source offset from KIC position	0.065 ± 0.438	0.15	-0.051 ± 0.511	0.040 ± 0.287
photometric centroid source offset	0.89 ± 1.51	0.59	0.21 ± 1.64	-0.87 ± 1.50

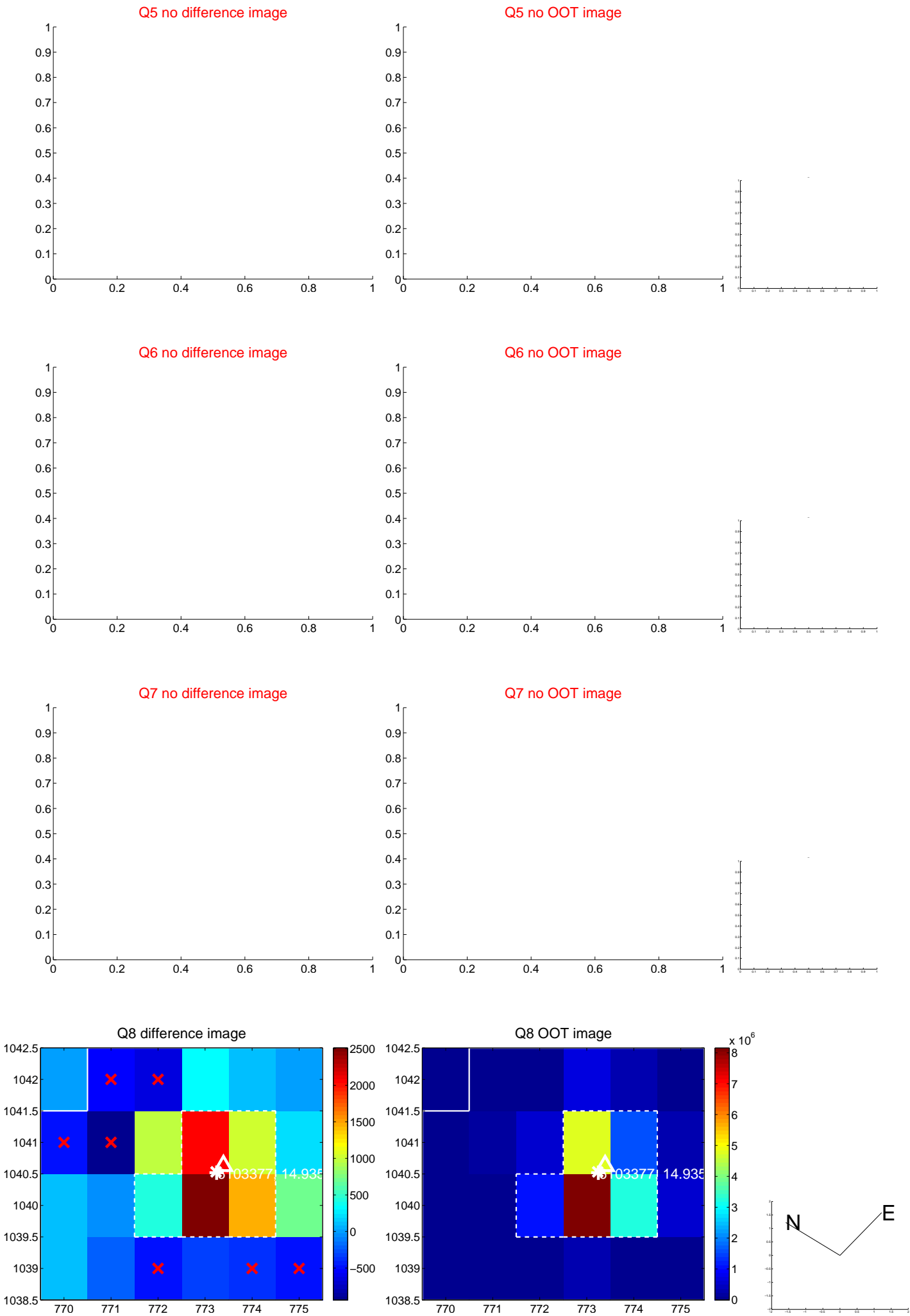


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

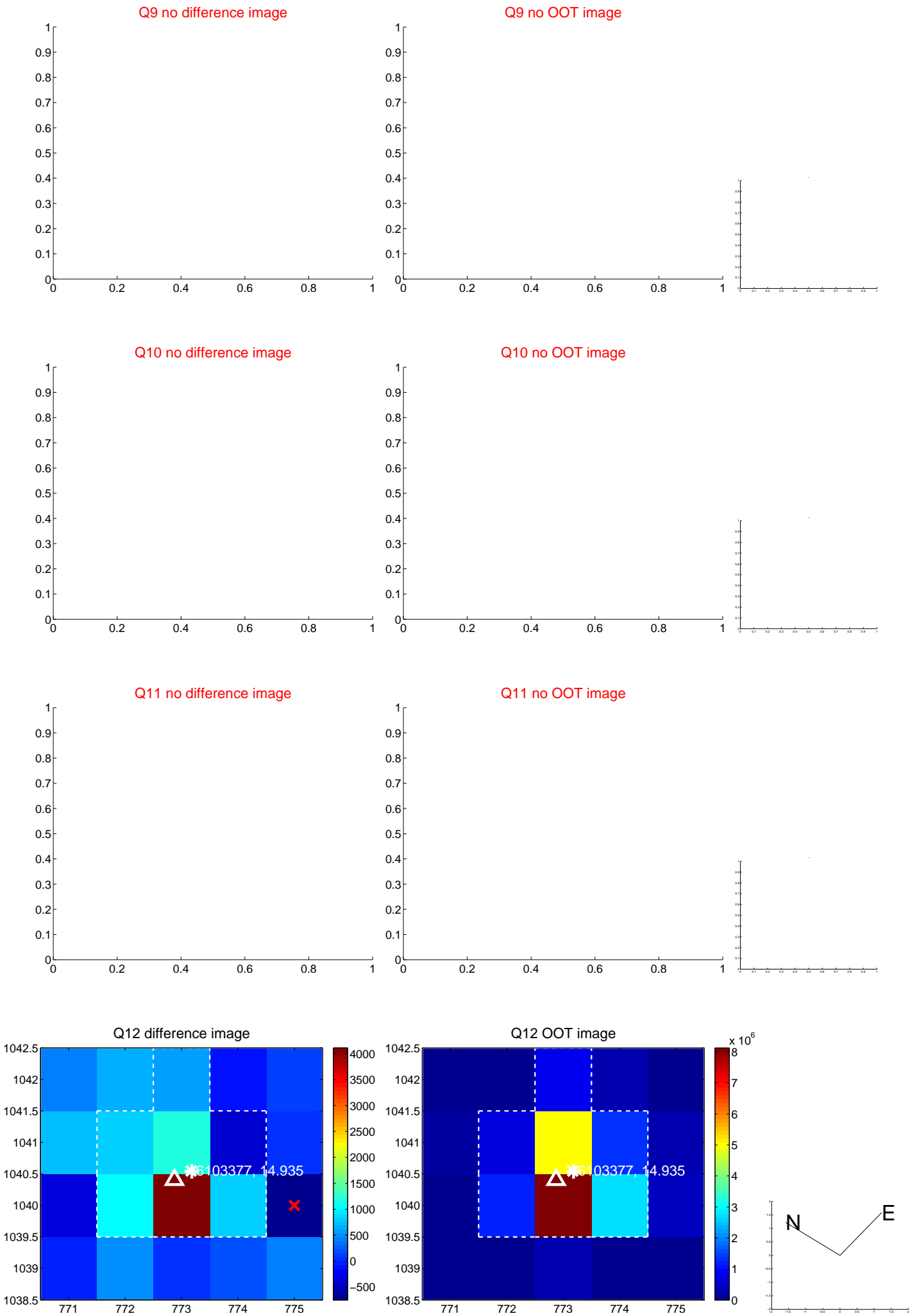
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



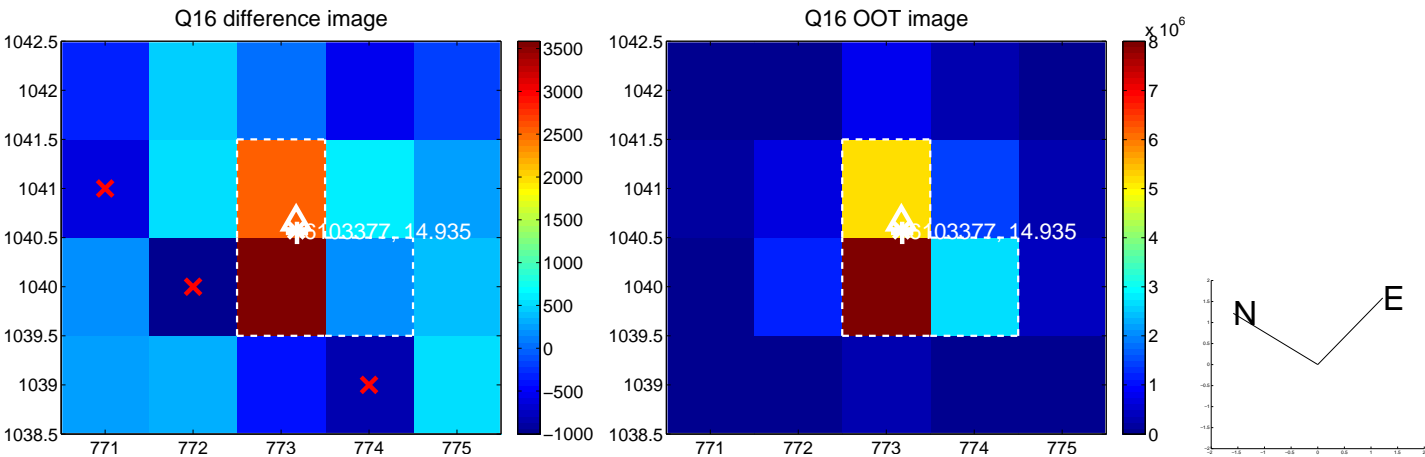
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



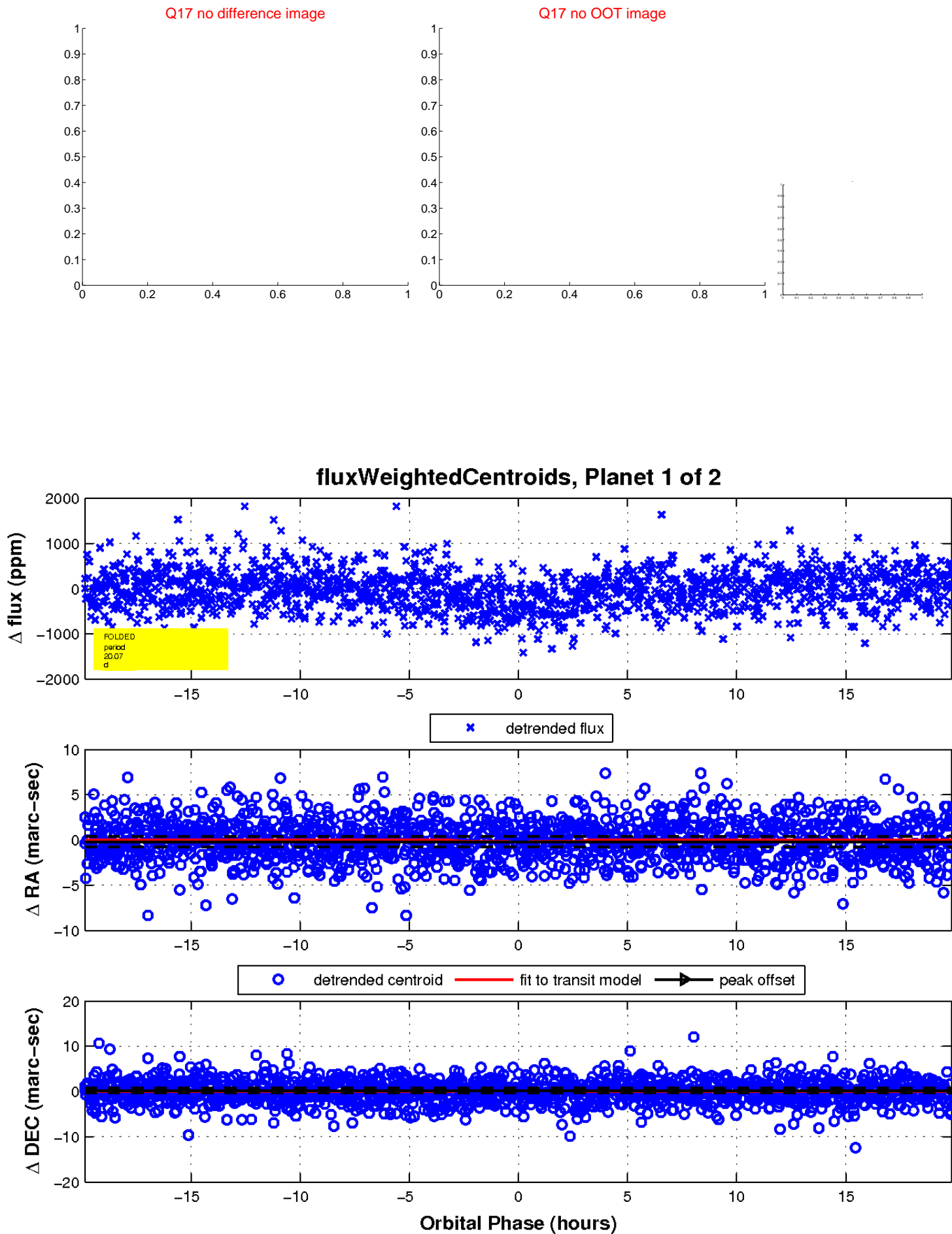
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

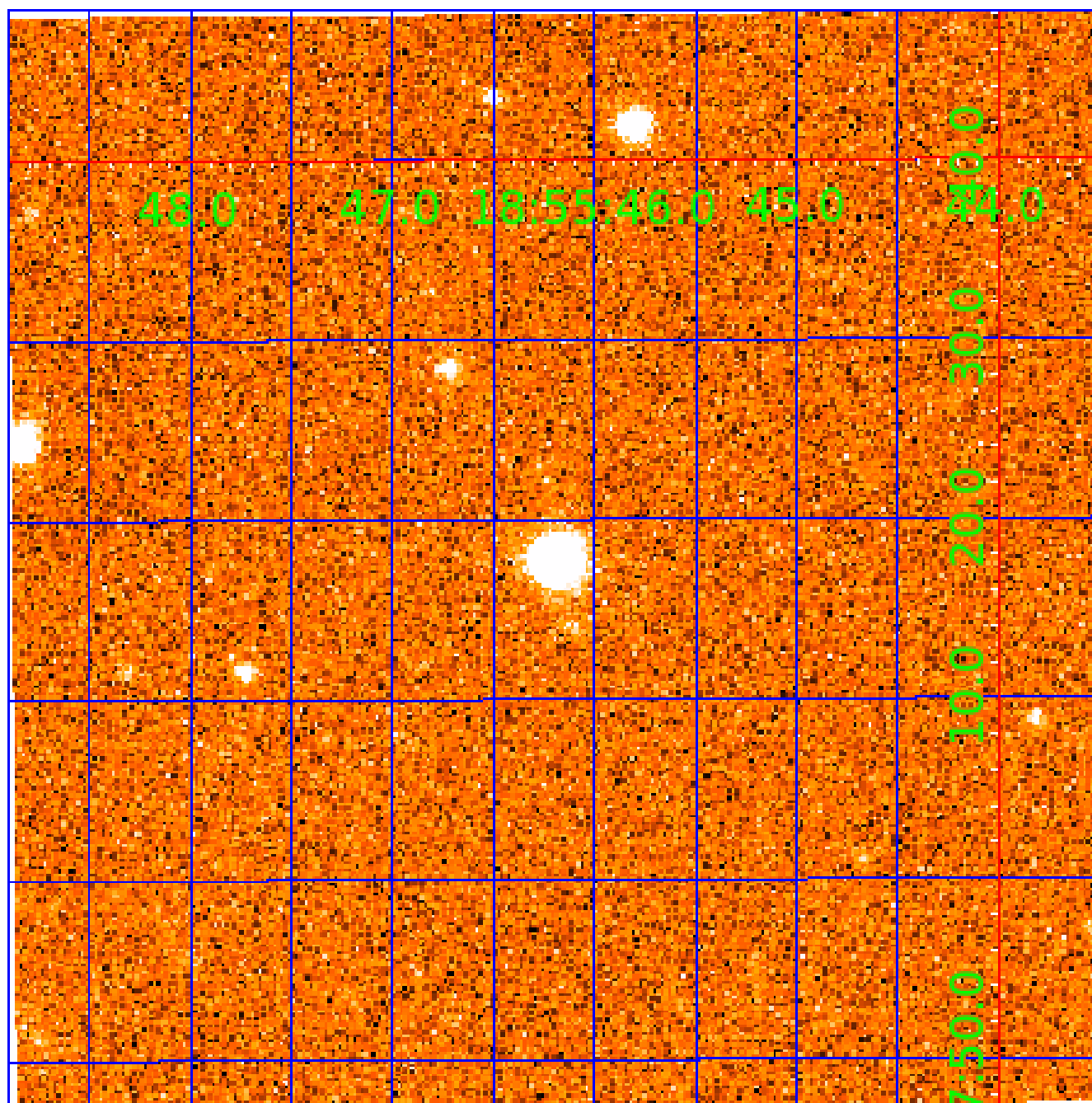


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006103377

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})
006103377-01	OBS	3004.01	20.070832	136.944048	356.6	6.621	11.1	10.4	1.51	5902	3.38	110.33
006103377-02	OBS	3004.02	7.039571	137.428382	243.8	3.062	8.1	8.3	1.51	5902	2.81	446.06

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006103377-01	OBS	PC	0.98	0	0	0	0	NO_COMMENT
006103377-02	OBS	PC	0.98	0	0	0	0	CENT_FEW_DIFFS

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

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

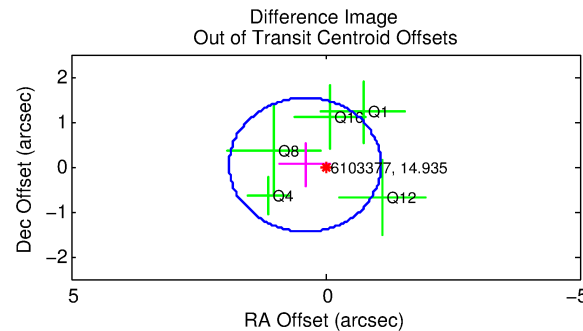
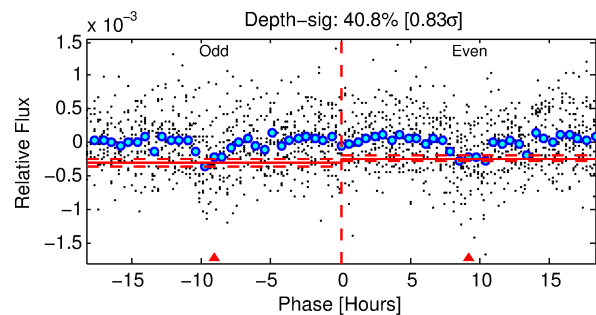
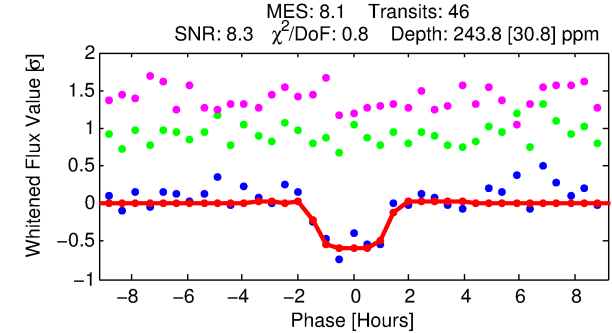
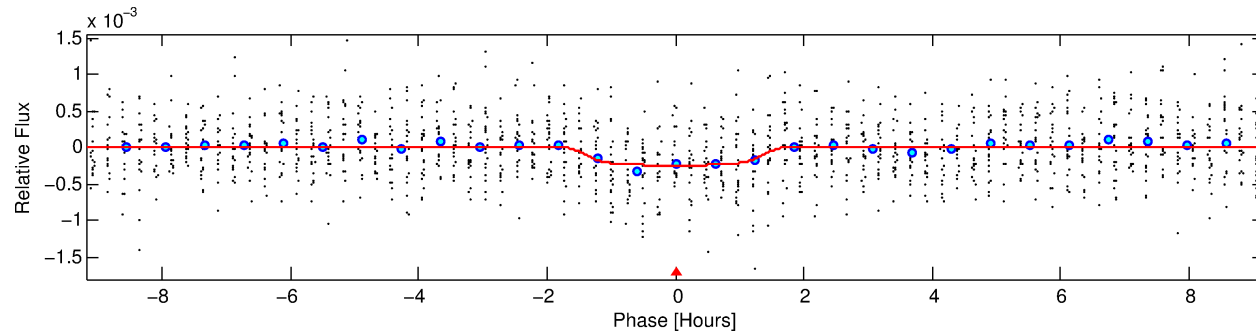
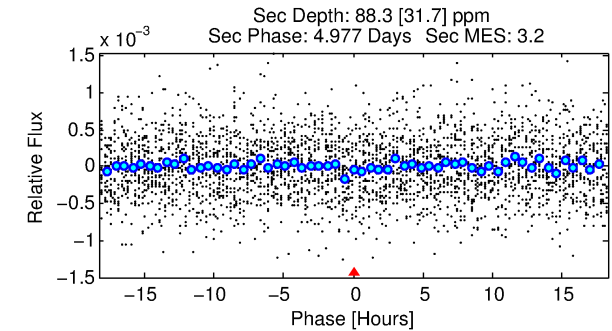
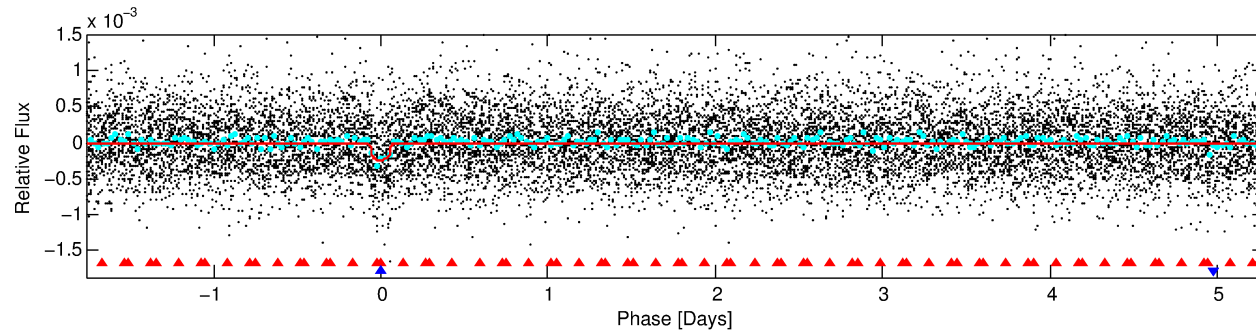
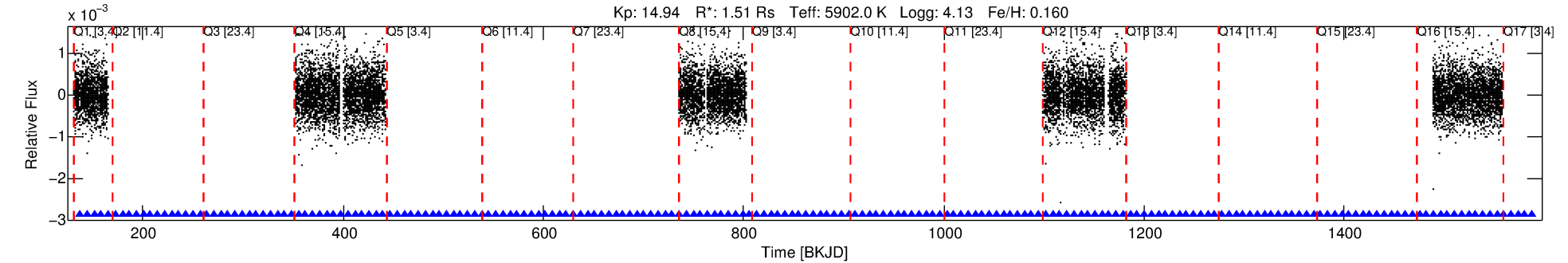
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006103377-02

No Significant Match Found

DV One-Page Summary

KIC: 6103377 Candidate: 2 of 2 Period: 7.040 d
KOI: K03004.02 Corr: 0.950



DV Fit Results:

Period = 7.03957 [0.00006] d
Epoch = 137.4284 [0.0071] BKJD
Rp/R* = 0.0170 [0.0118]
a/R* = 8.37 [28.41]
b = 0.90 [0.73]
Seff = 446.06 [141.01]
Teff = 1172 [93] K
Rp = 2.80 [2.04] Re
a = 0.0747 [0.0147] AU
Ag = 34.47 [50.72] [0.66σ]
Teffp = 4390 [1579] K [2.03σ]

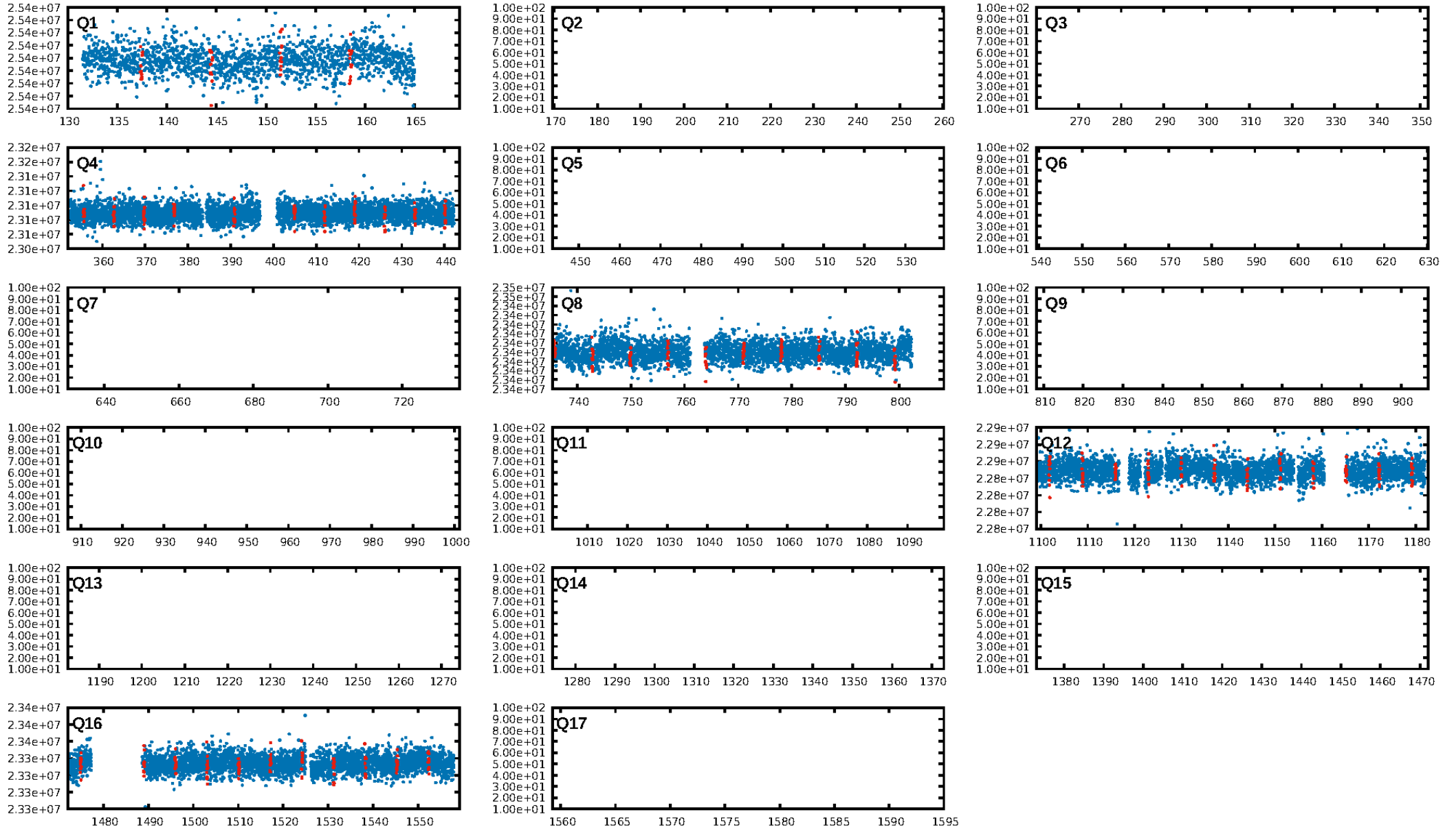
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [42.87σ]
ModelChiSquare2-sig: 91.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.47e-15
RollingBand-fgt: 1.00 [42/42]
GhostDiagnostic-chr: -7.488
Centroid-sig: 55.9%
Centroid-so: 0.774 arcsec [0.39σ]
OotOffset-rm: 0.402 arcsec [0.81σ]
KicOffset-rm: 0.400 arcsec [0.79σ]
OotOffset-st: 0/0/4/1 [5]
KicOffset-st: 0/0/4/1 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 1.00 [5/5]

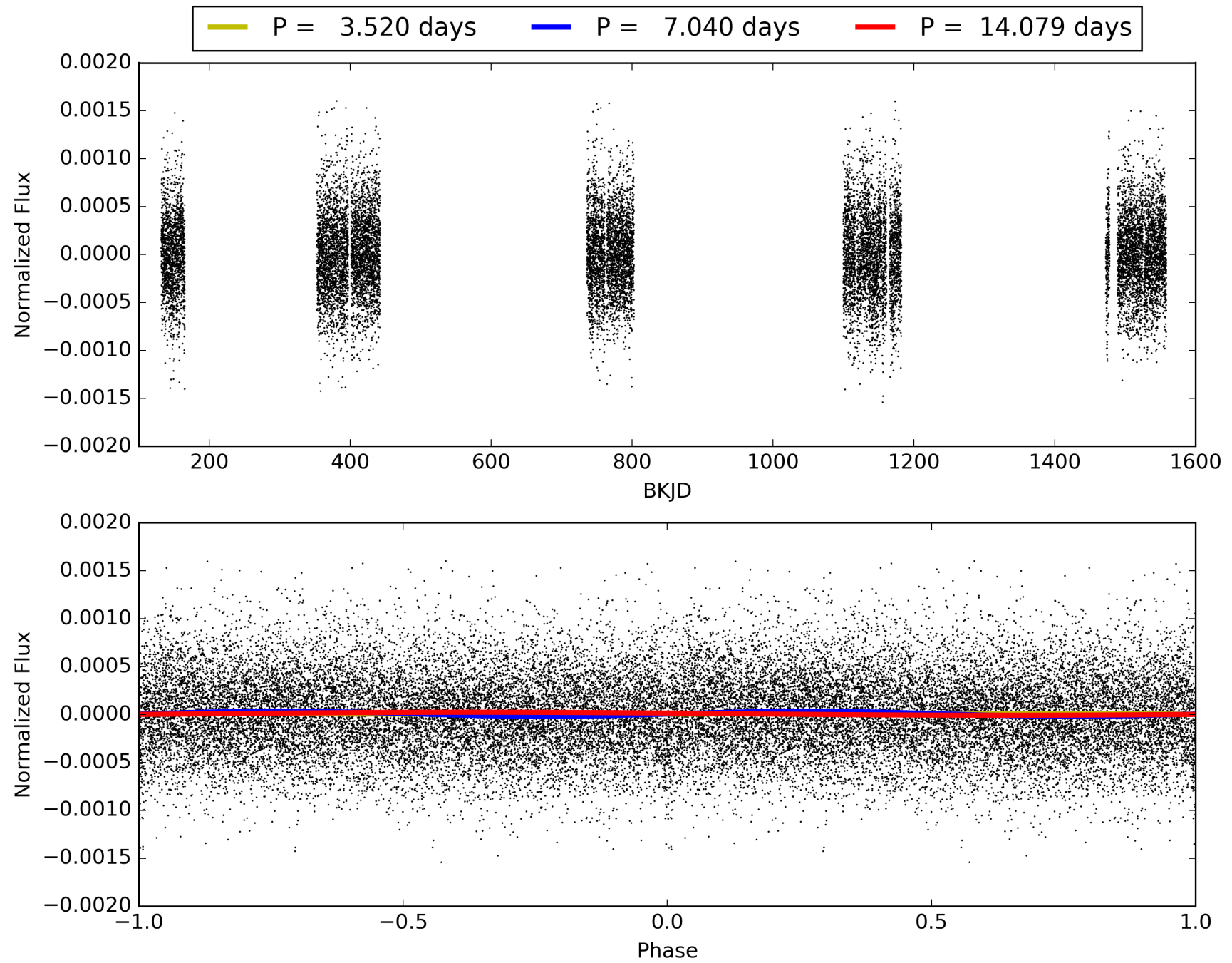
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 03:21:23 Z

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

TCE 006103377-02, PDC Light Curves

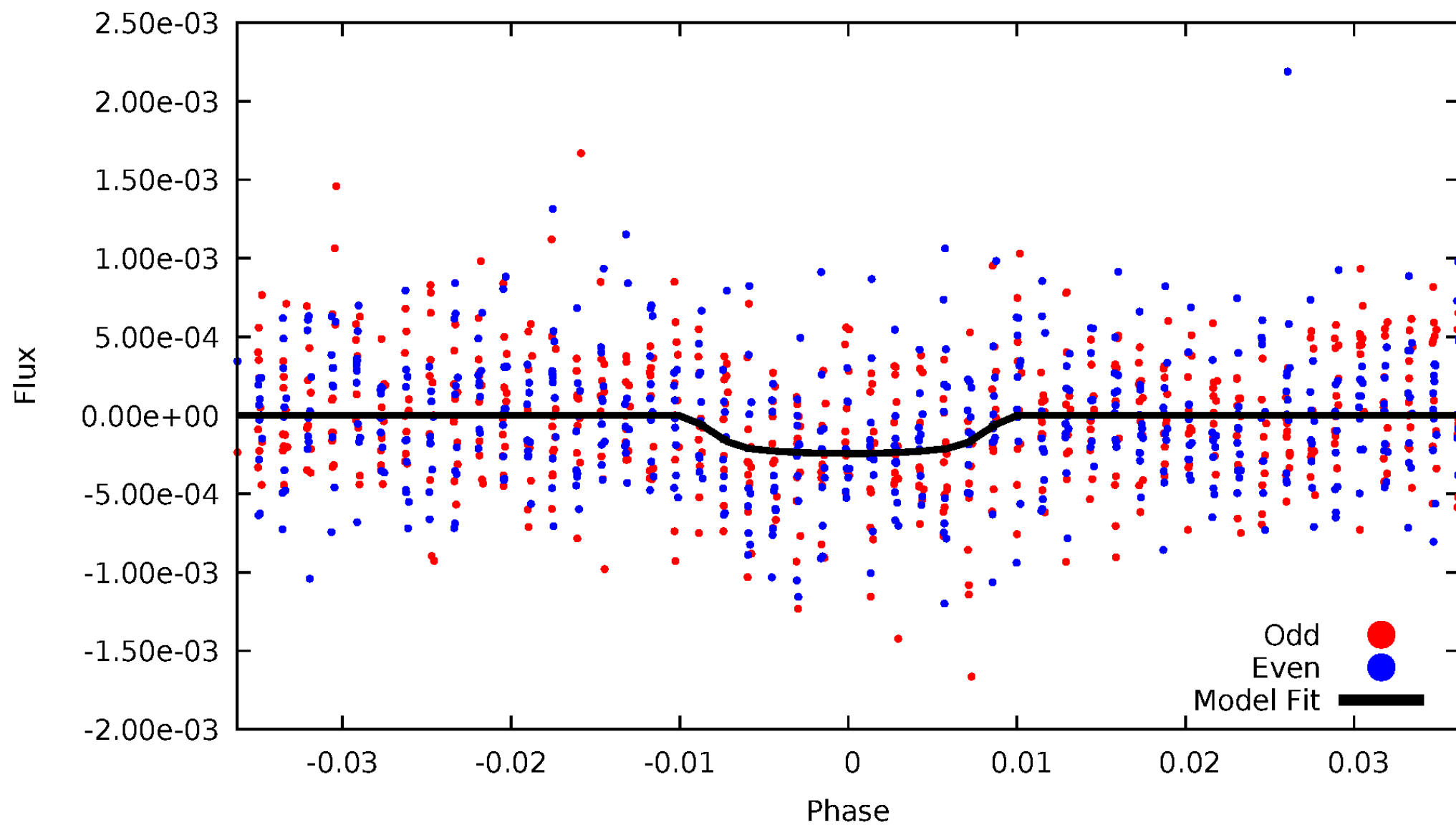


TCE 006103377-02



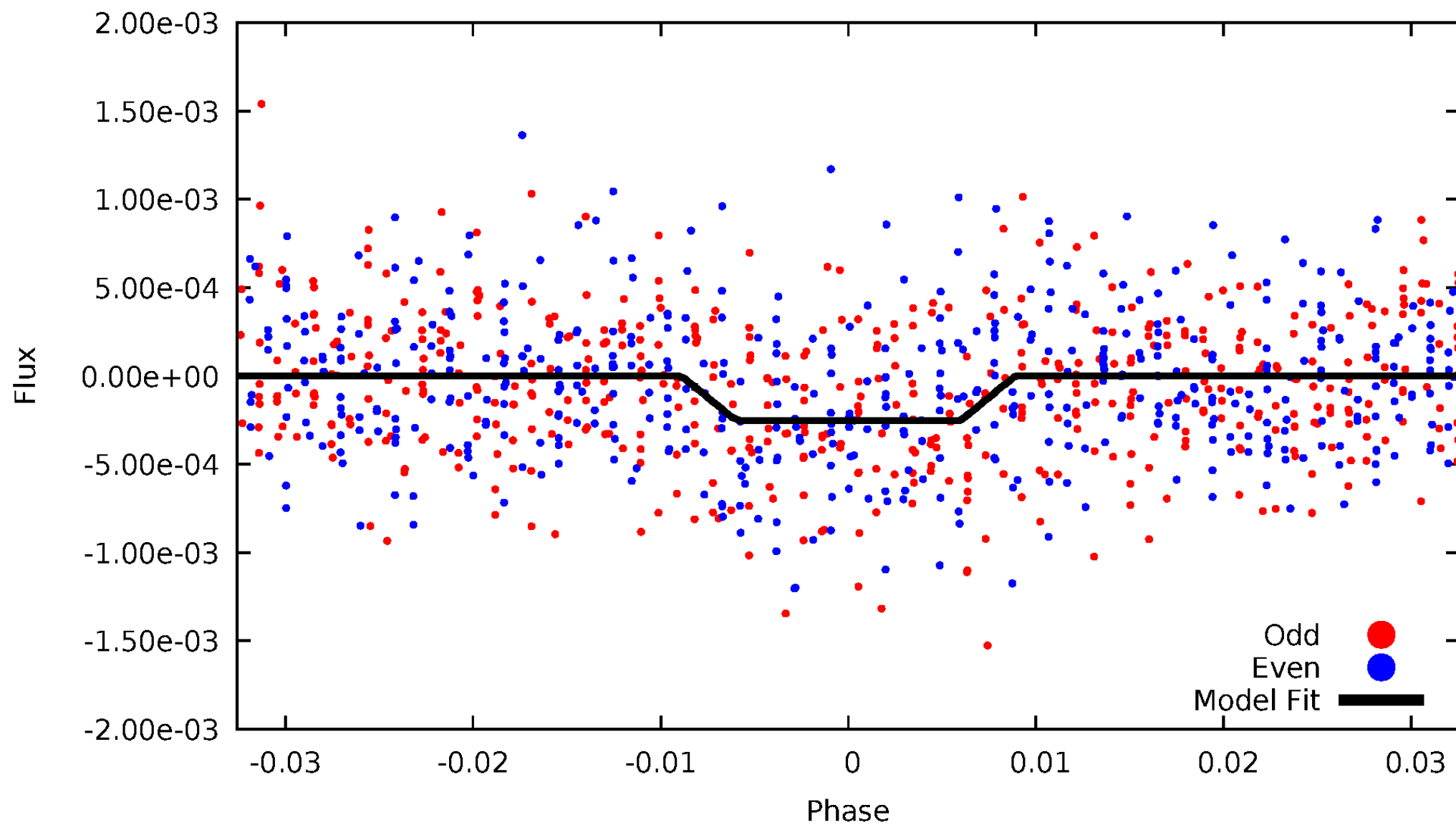
DV Odd/Even

TCE 006103377-02



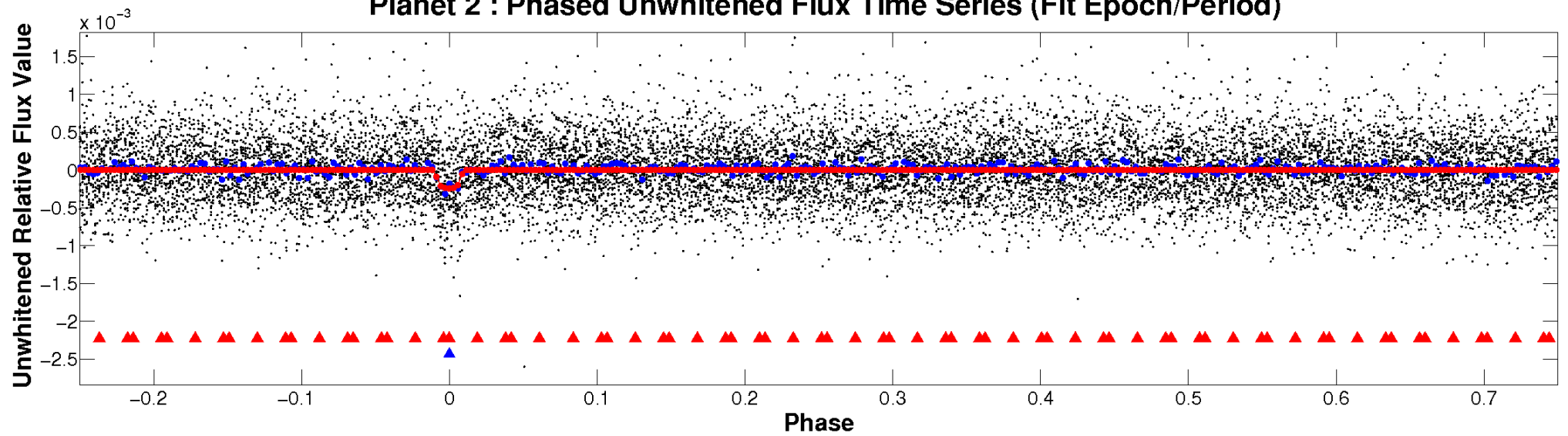
ALT Odd/Even

TCE 006103377-02

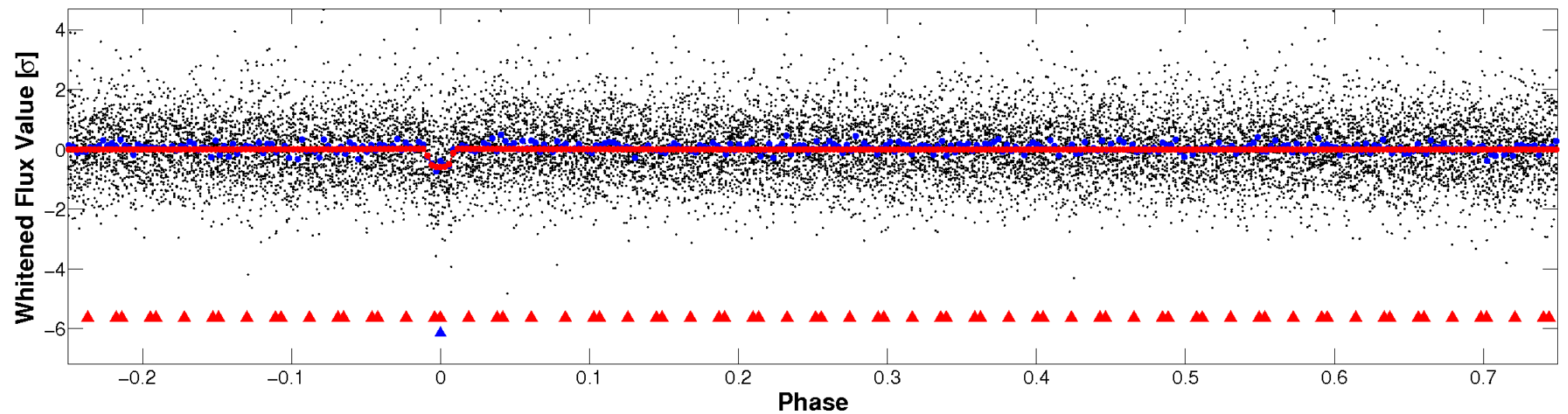


Non-Whitened Vs. Whitened Light Curve

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 006103377-02 P= 7.039571 Days $T_0=137.428382$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 006103377-02 $P = 7.039571$ Days $T_0 = 137.428382$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

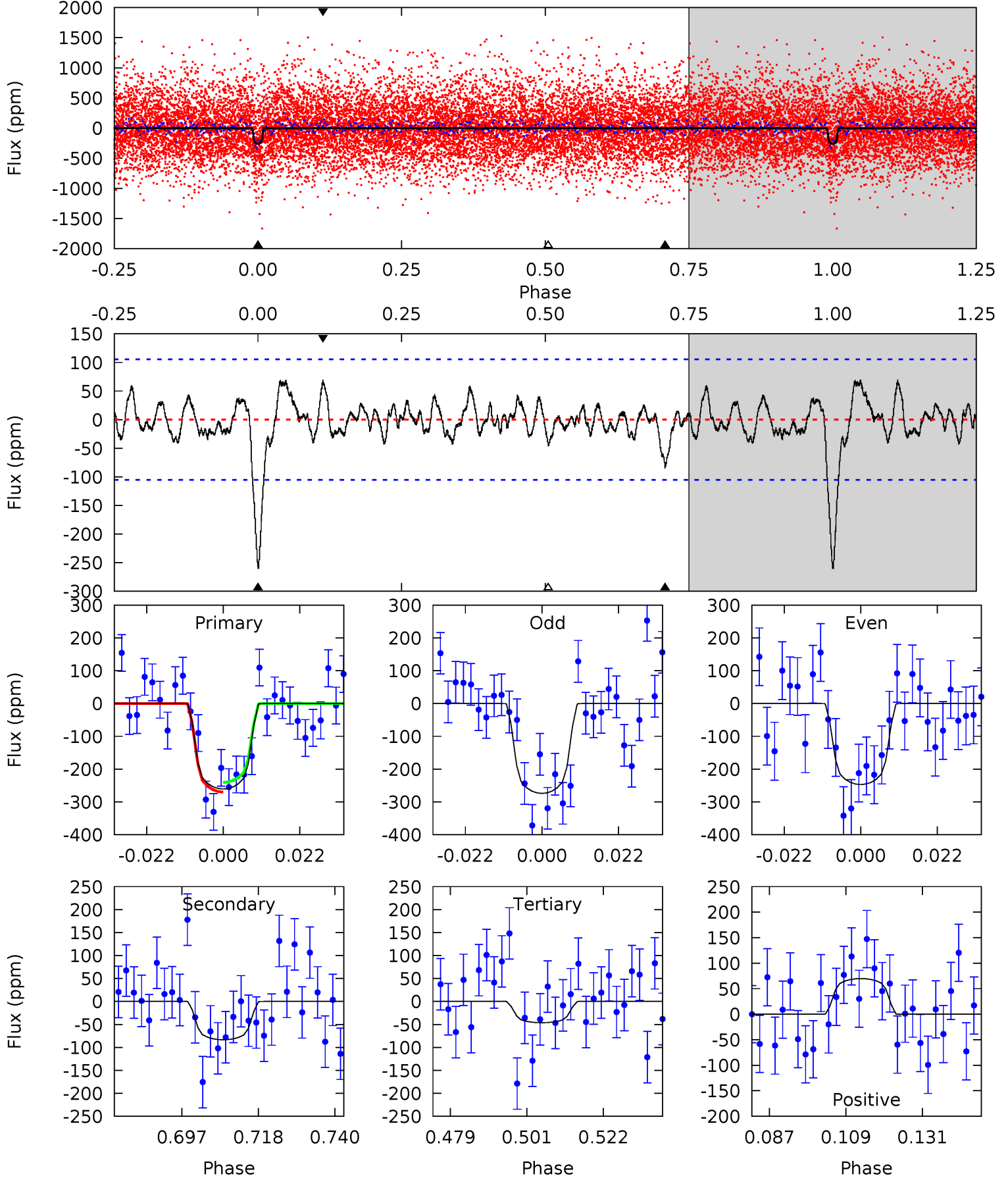
TCE 006103377-02 $P = 7.039504$ Days $T_0 = 137.436784$ (BKJD)



DV Model-Shift Uniqueness Test

006103377-02, P = 7.039571 Days, E = 130.388811 Days

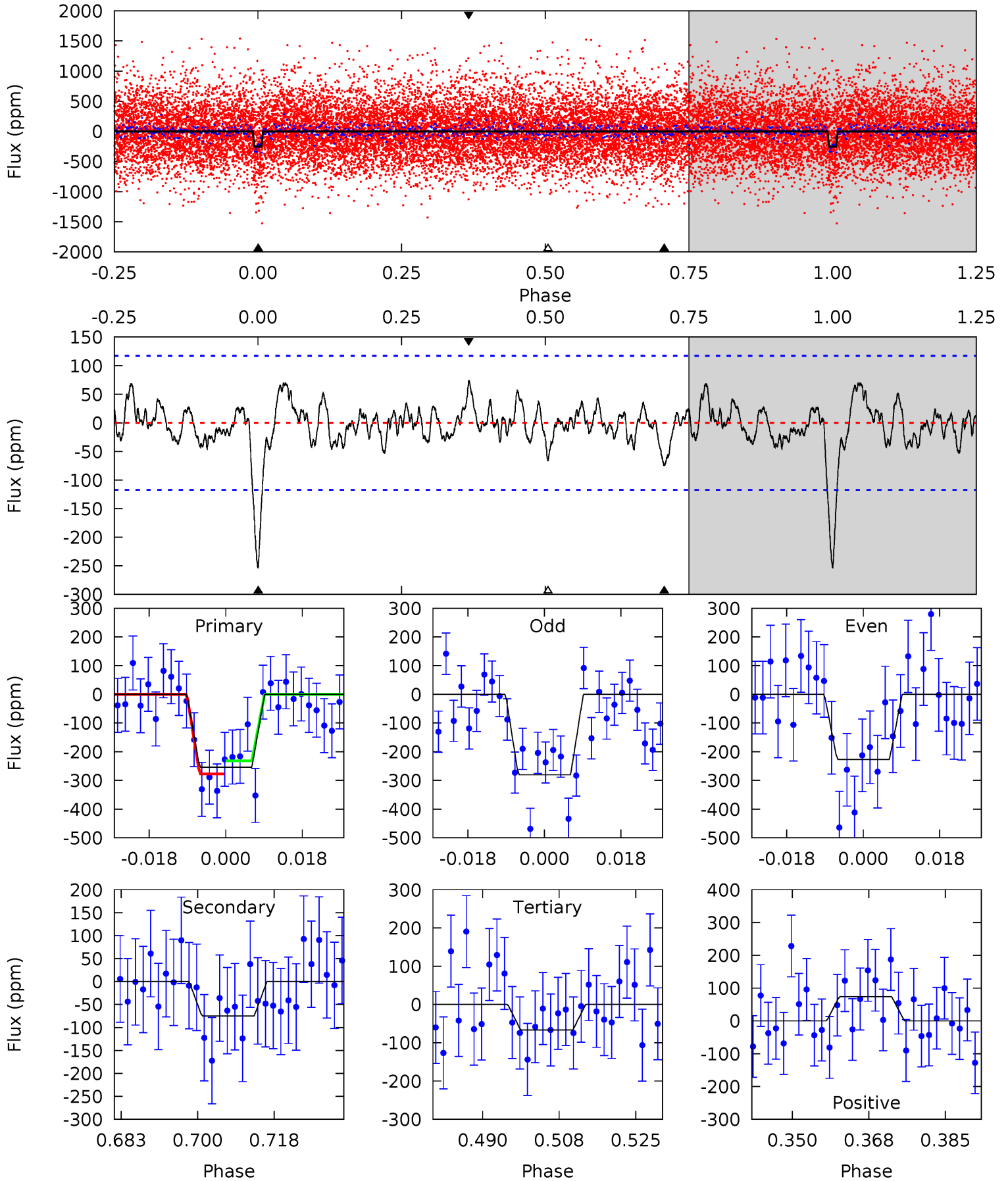
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	3.86	2.14	3.23	4.87	2.29	1.07	9.92	8.83	1.72	0.63	0.63	0.93	0.21	0.68



Alt Model-Shift Uniqueness Test

006103377-02, P = 7.039504 Days, E = 130.397280 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	3.15	2.80	3.10	4.92	2.38	1.06	7.86	7.55	0.35	0.05	1.12	0.93	0.23	0.95



Stellar Parameters For KIC 006103377

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5902^{+70}_{-79}	$4.128^{+0.182}_{-0.098}$	$0.160^{+0.150}_{-0.150}$	$1.513^{+0.256}_{-0.313}$	$1.120^{+0.110}_{-0.090}$	$0.456^{+0.427}_{-0.153}$
	+1%/-1%	+4%/-2%	+94%/-94%	+17%/-21%	+10%/-8%	+94%/-33%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006103377-02 / KOI 3004.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-83 ± 22	$2.90^{+2.04}_{-1.71}$	1623^{+75}_{-97}	4369^{+2218}_{-723}	30^{+150}_{-19}
Alt.	-75 ± 24	$2.81^{+1.99}_{-1.70}$	1625^{+75}_{-89}	4352^{+2180}_{-764}	29^{+149}_{-19}

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

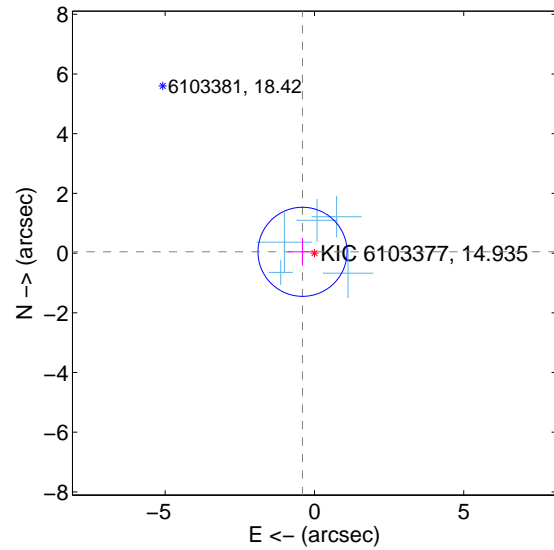
Supplemental centroid analysis for 006103377-02. Kepler magnitude: 14.94. Transit SNR 8.32

There are 5 quarters with good PRF difference image offsets

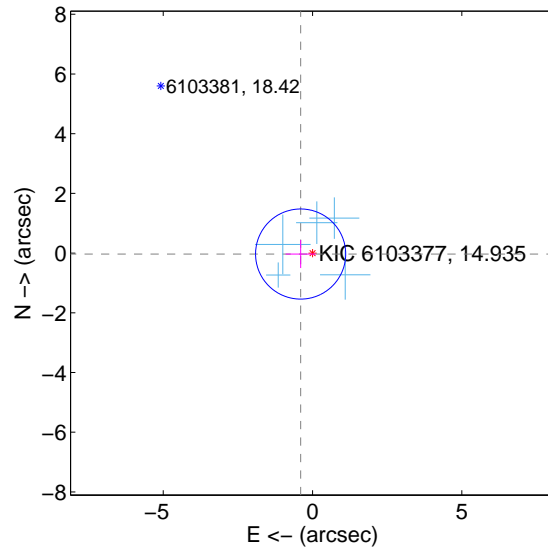
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.402 ± 0.497	0.81	0.399 ± 0.498	0.043 ± 0.464
PRF-fit source offset from KIC position	0.400 ± 0.503	0.79	0.398 ± 0.503	-0.031 ± 0.470
photometric centroid source offset	0.77 ± 1.99	0.39	0.26 ± 2.07	0.73 ± 1.98

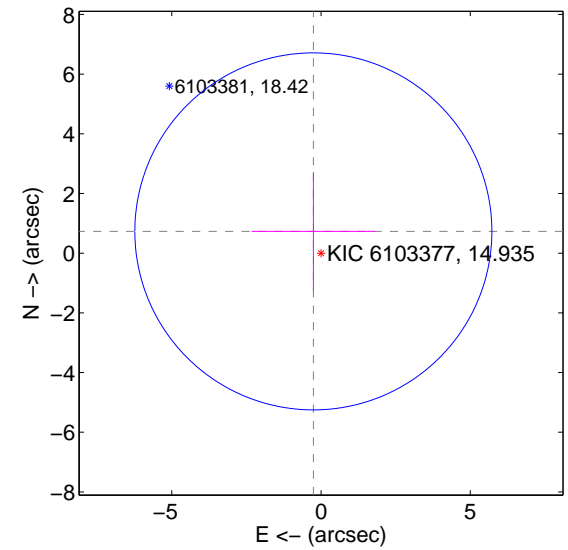
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

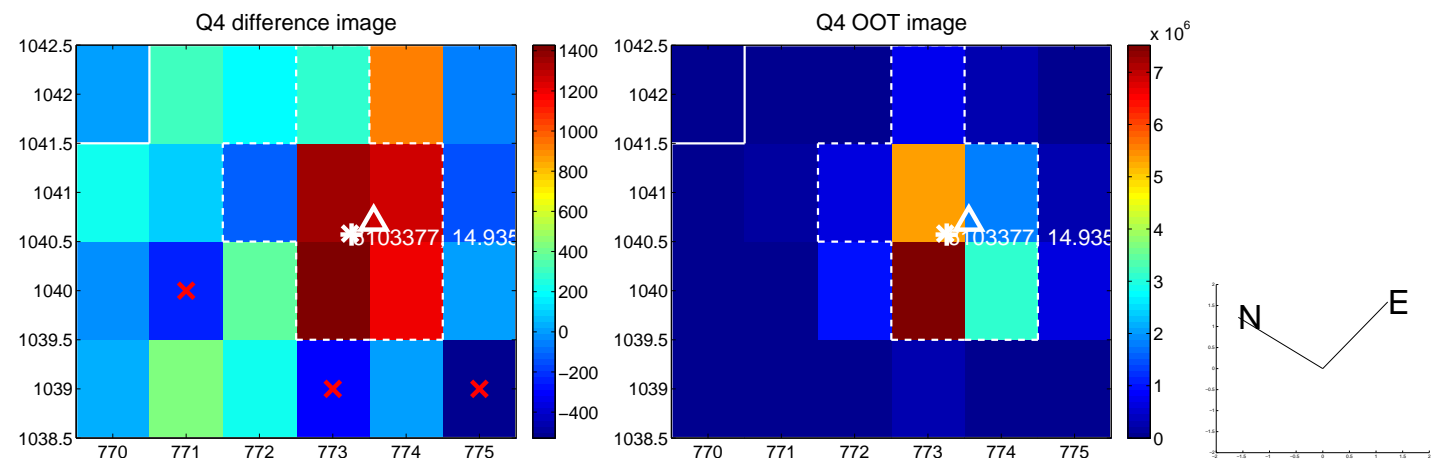
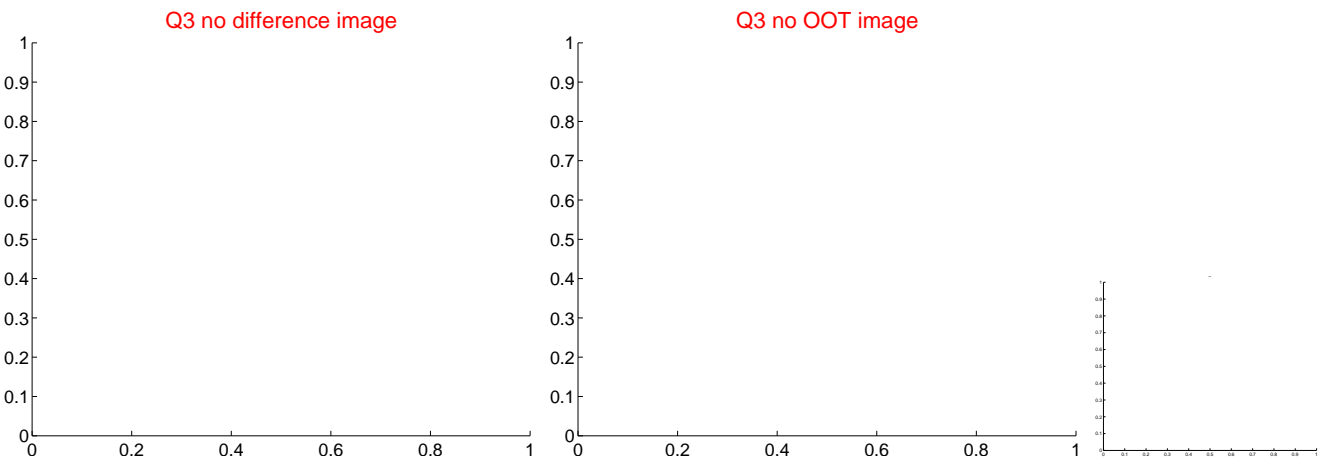
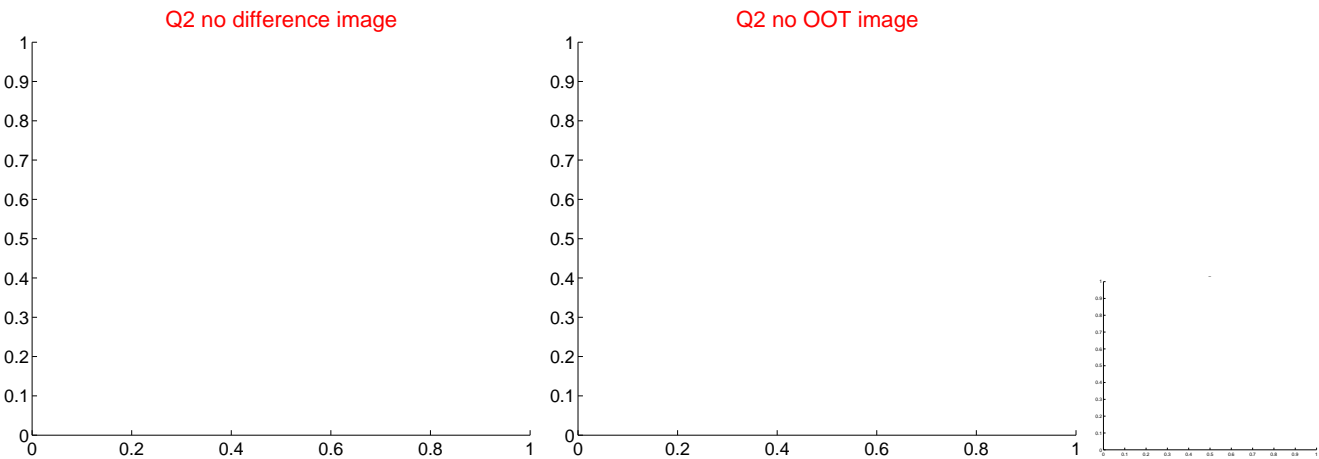
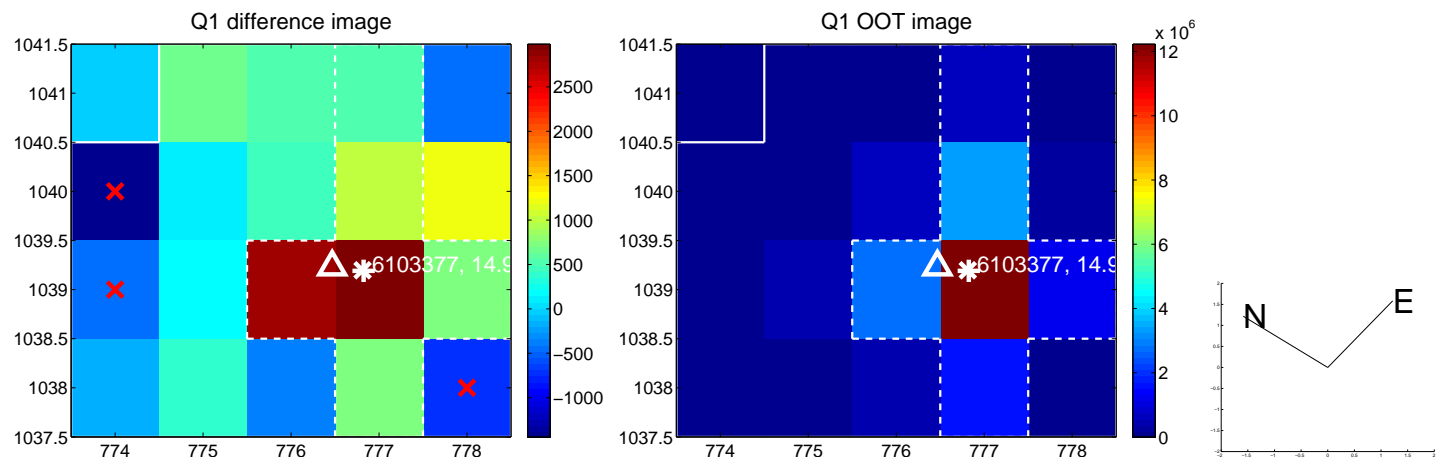


offset from photometric centroids

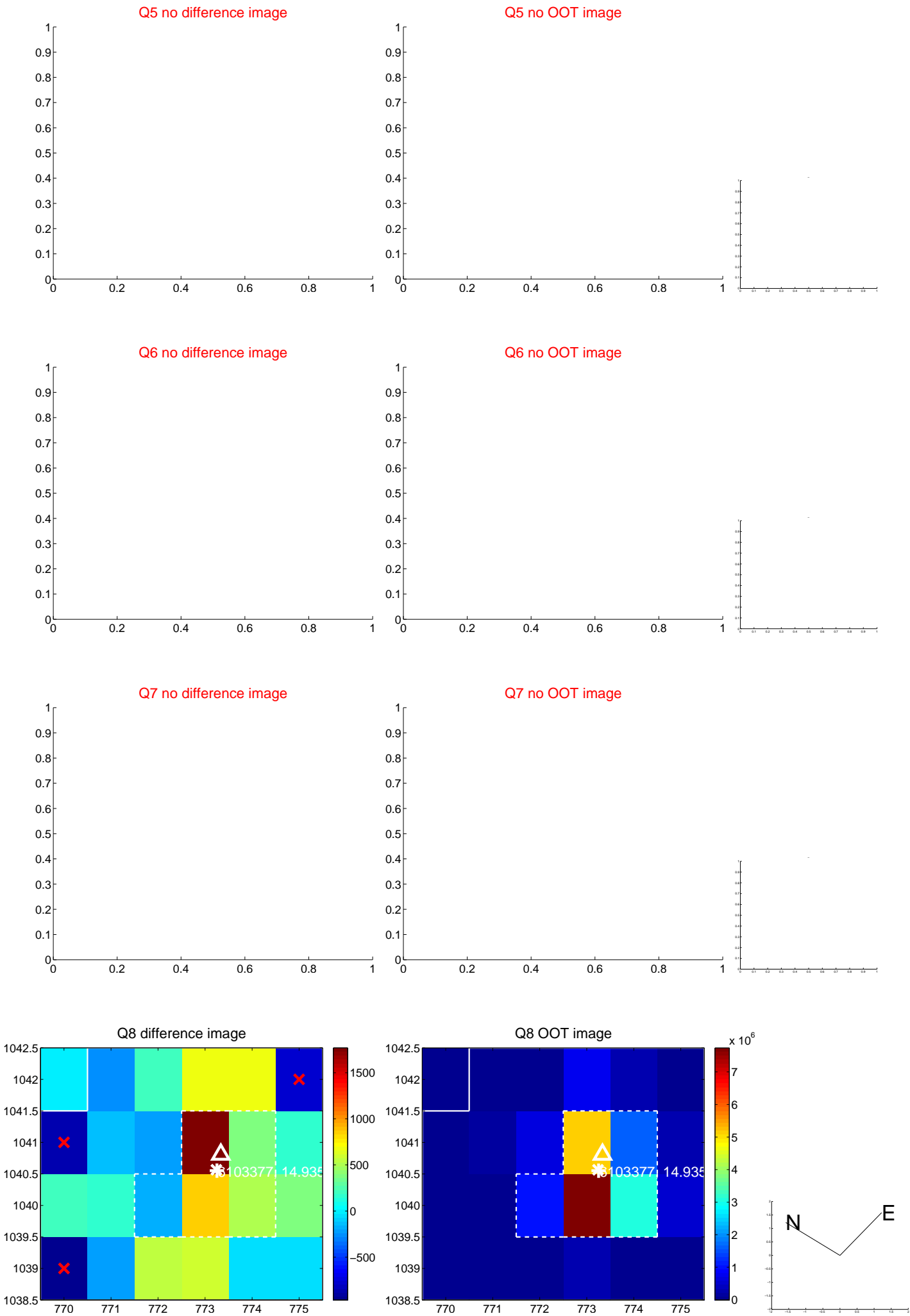


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

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



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



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

Q9 no difference image



Q9 no OOT image



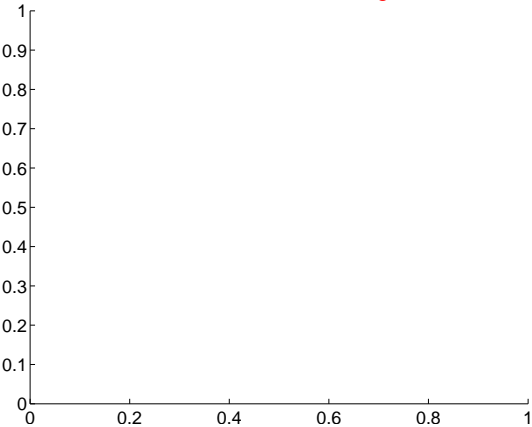
Q10 no difference image



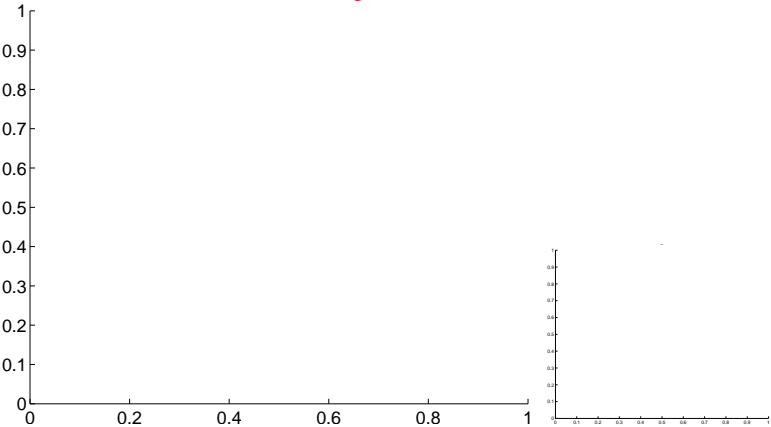
Q10 no OOT image



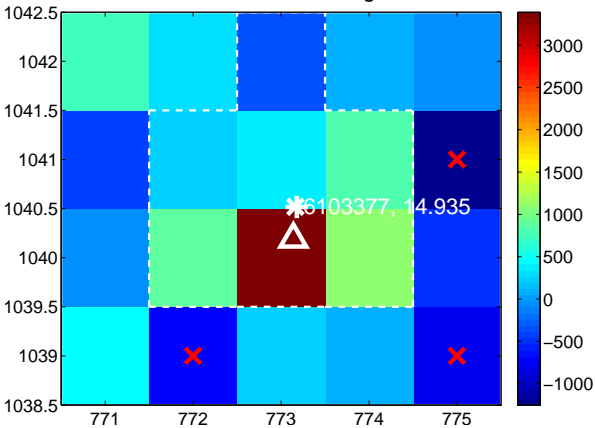
Q11 no difference image



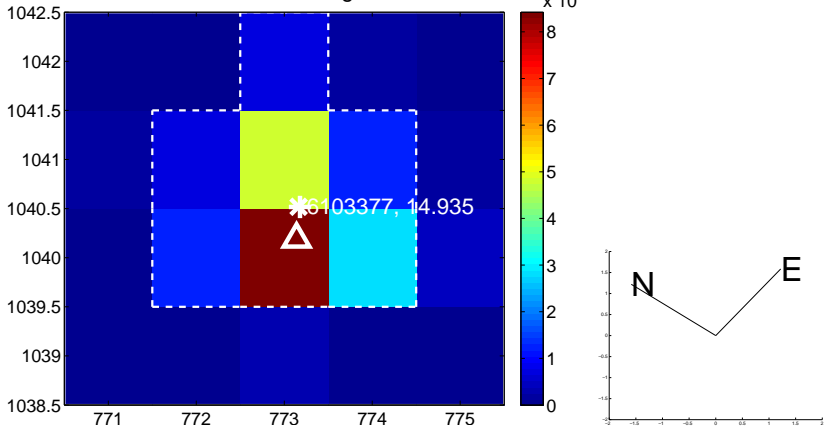
Q11 no OOT image



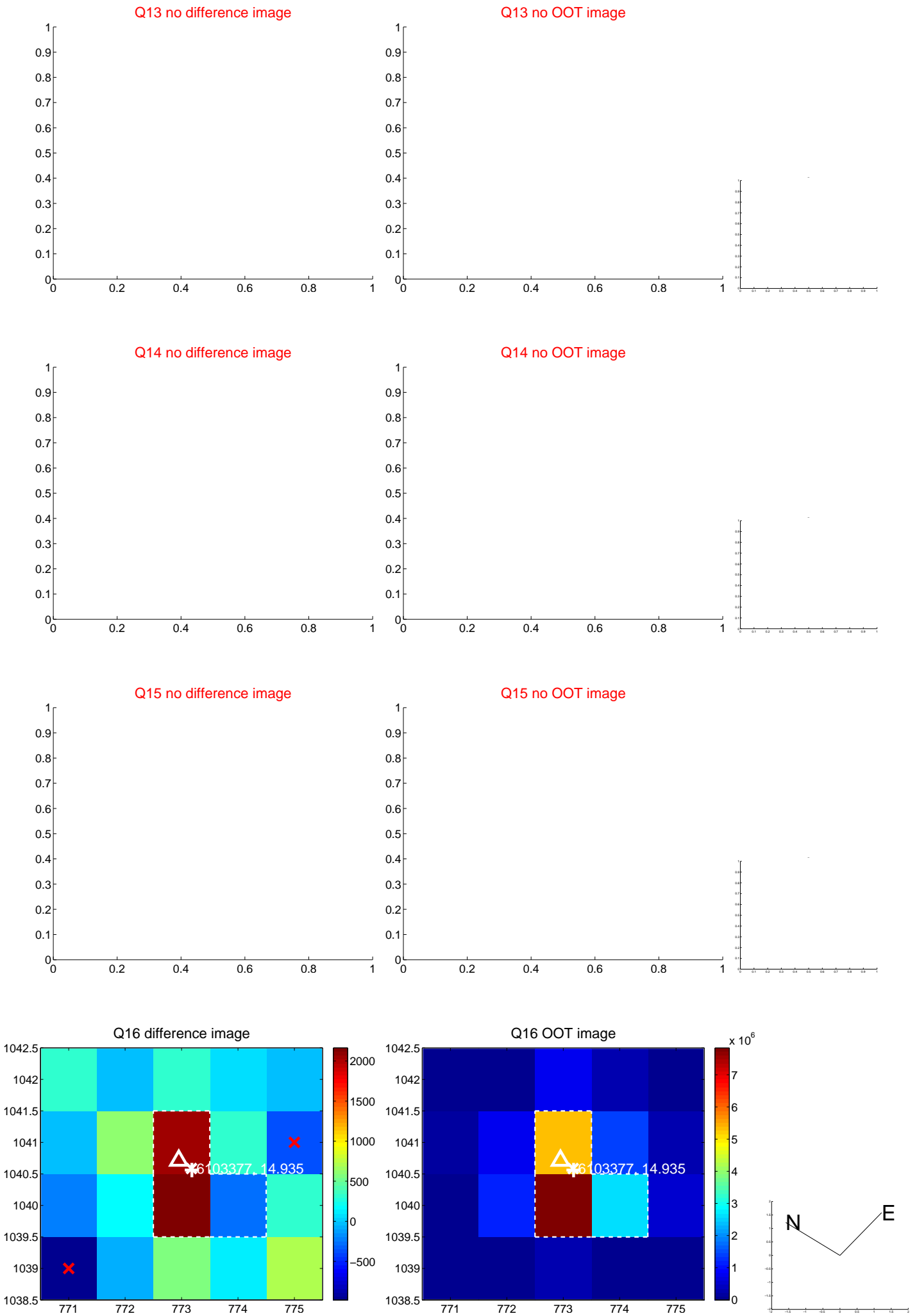
Q12 difference image



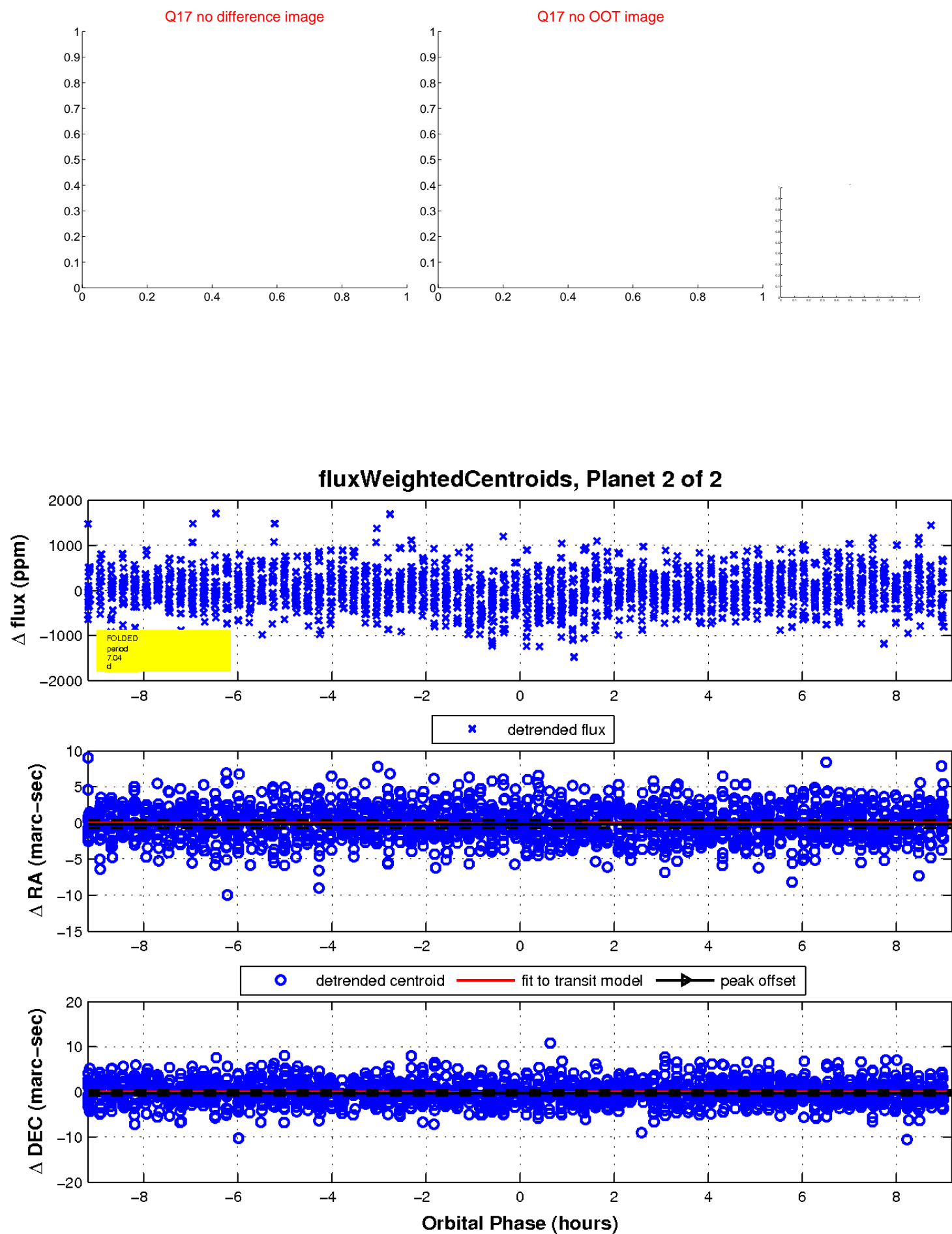
Q12 OOT image



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.



UKIRT Image

Declination

