

KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

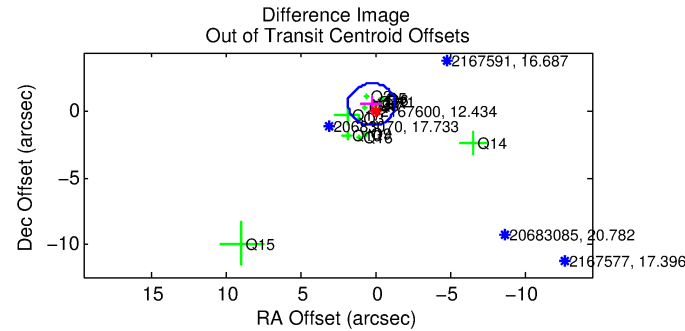
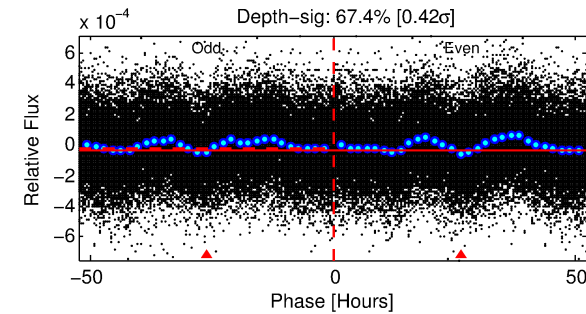
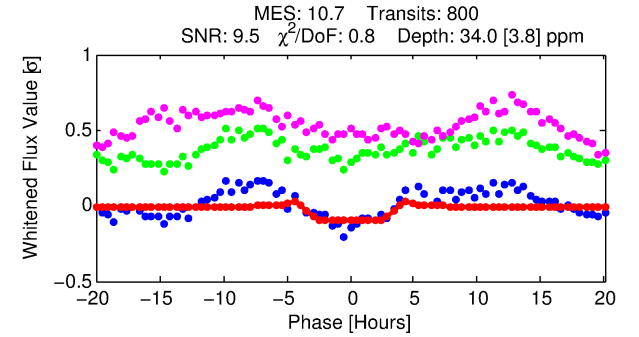
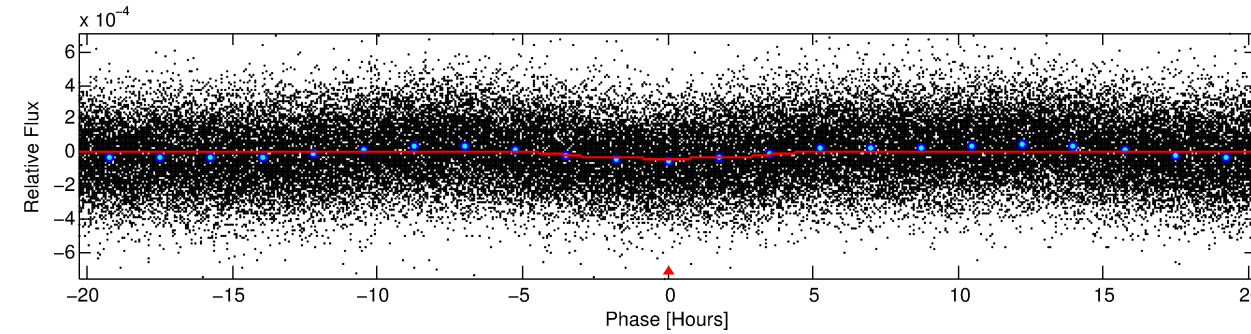
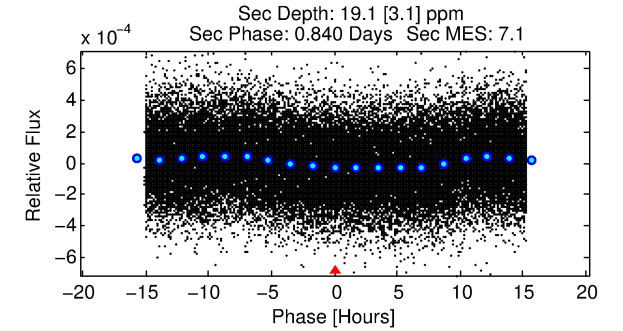
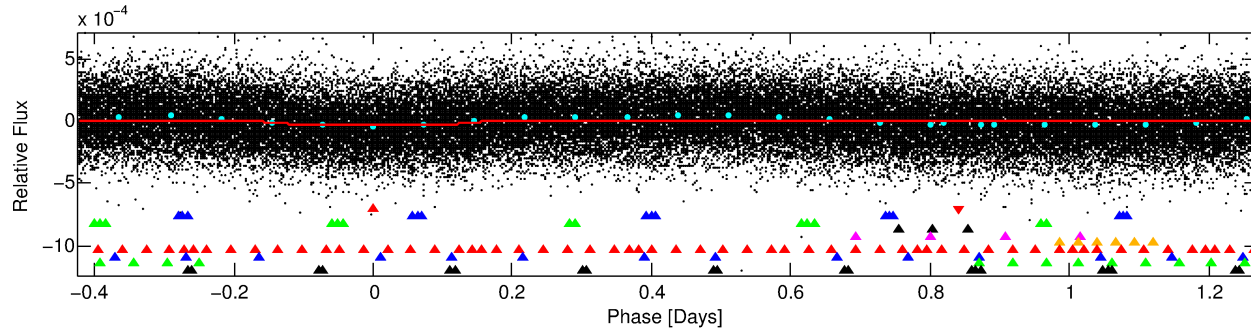
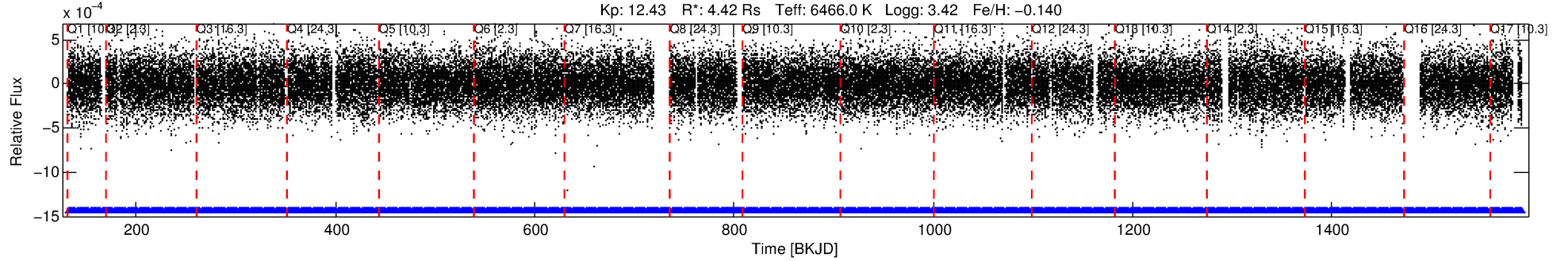
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-01

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 1 of 10 Period: 1.691 d



DV Fit Results:

Period = 1.69146 [0.00003] d
Epoch = 132.4678 [0.0099] BKJD
Rp/R* = 0.0073 [0.0005]
a/R* = 1.04 [0.01]
b = 0.99 [0.01]
Seff = 25964.16 [16853.74]
Teq = 3237 [525] K
Rp = 3.50 [1.47] Re
a = 0.0343 [0.0137] AU
Ag = 1.00 [0.68] [0.01σ]
Teffp = 5011 [292] K [2.95σ]

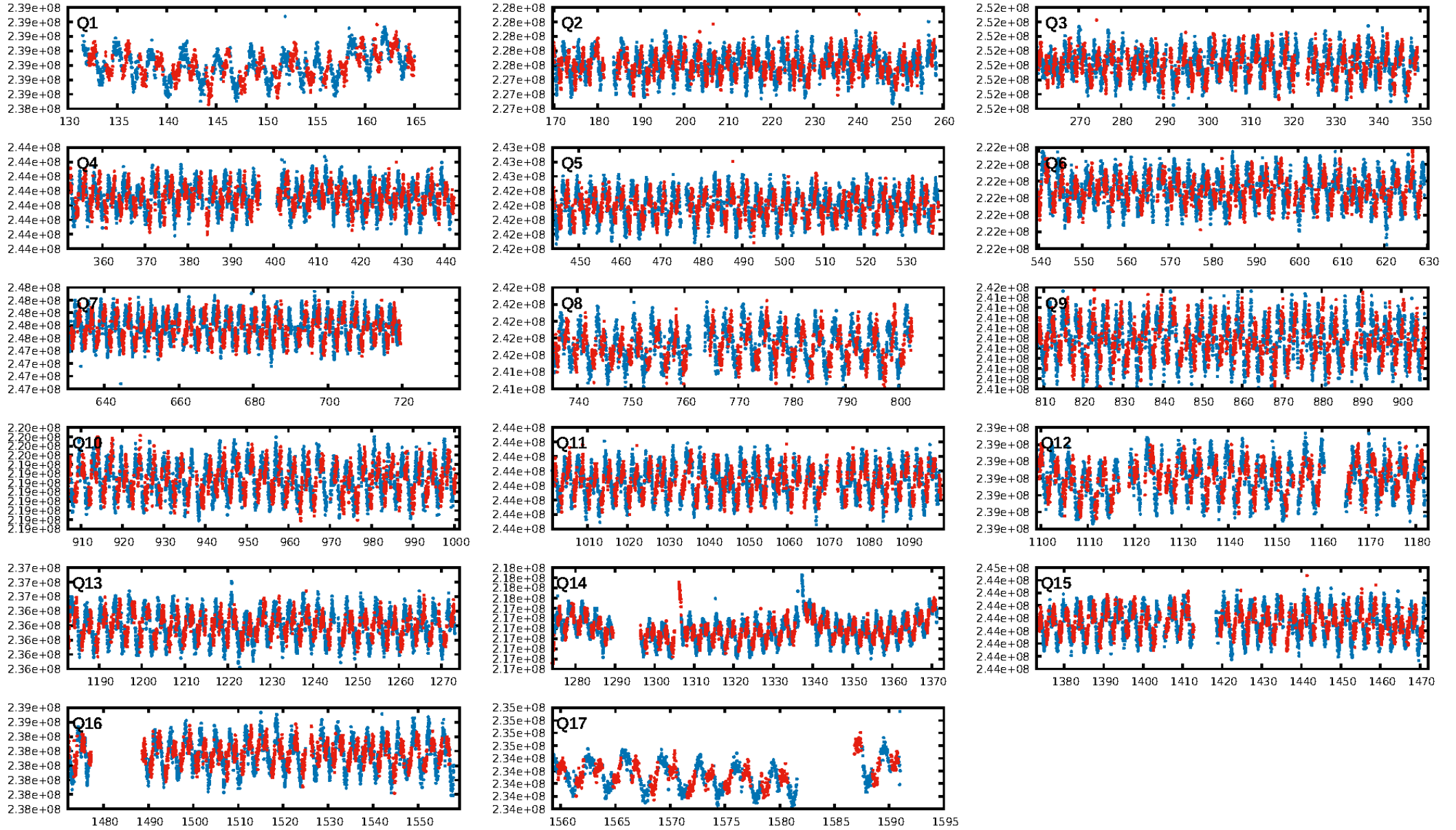
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [59.04σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [764/764]
GhostDiagnostic-chr: 1.248
Centroid-sig: 0.0%
Centroid-so: 1.698 arcsec [3.03σ]
OotOffset-rm: 0.607 arcsec [1.15σ]
KicOffset-rm: 0.631 arcsec [1.19σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 0.87 [13/15]
DiffImageOverlap-fno: 1.00 [17/17]

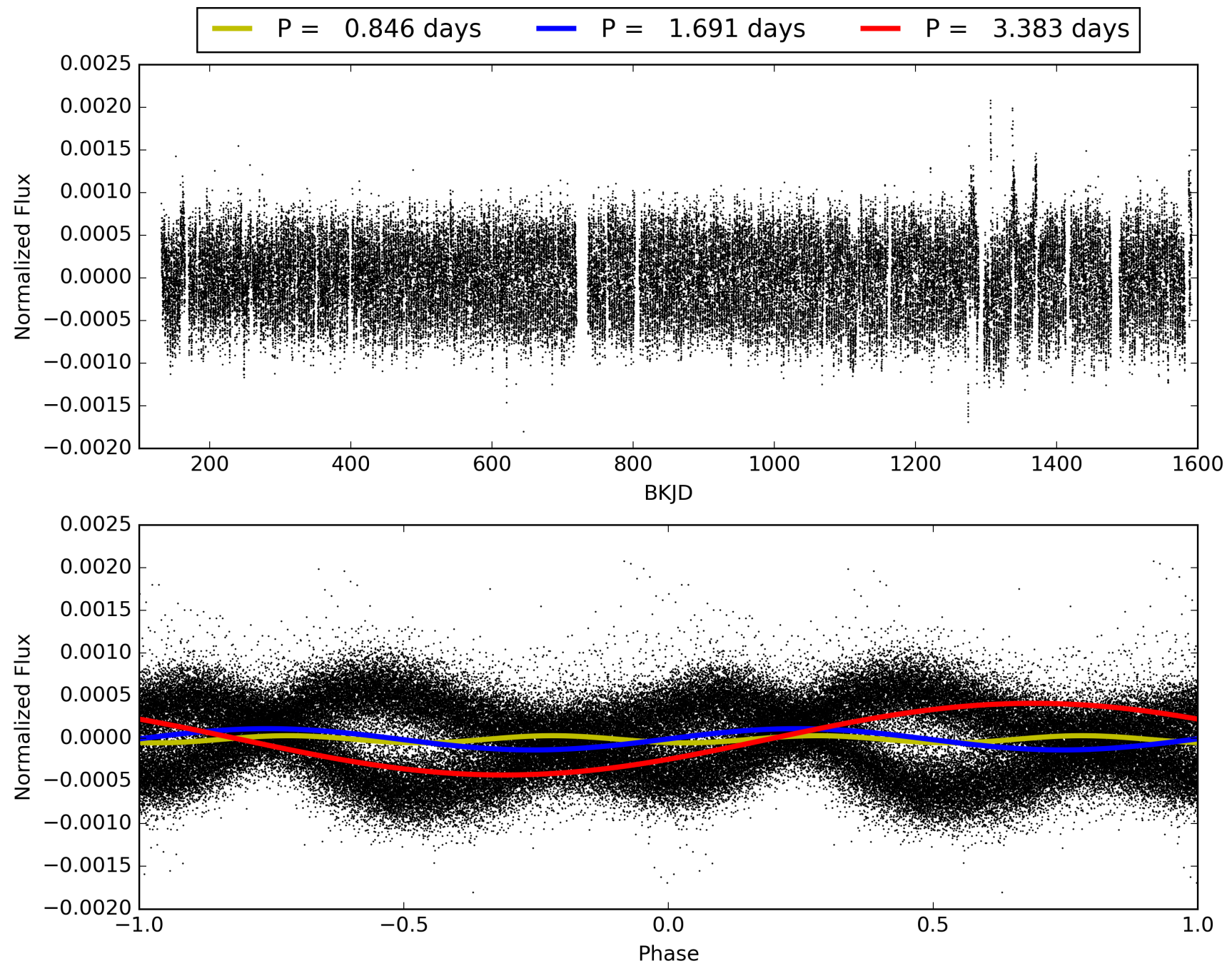
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:23:57 Z

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

TCE 002167600-01, PDC Light Curves

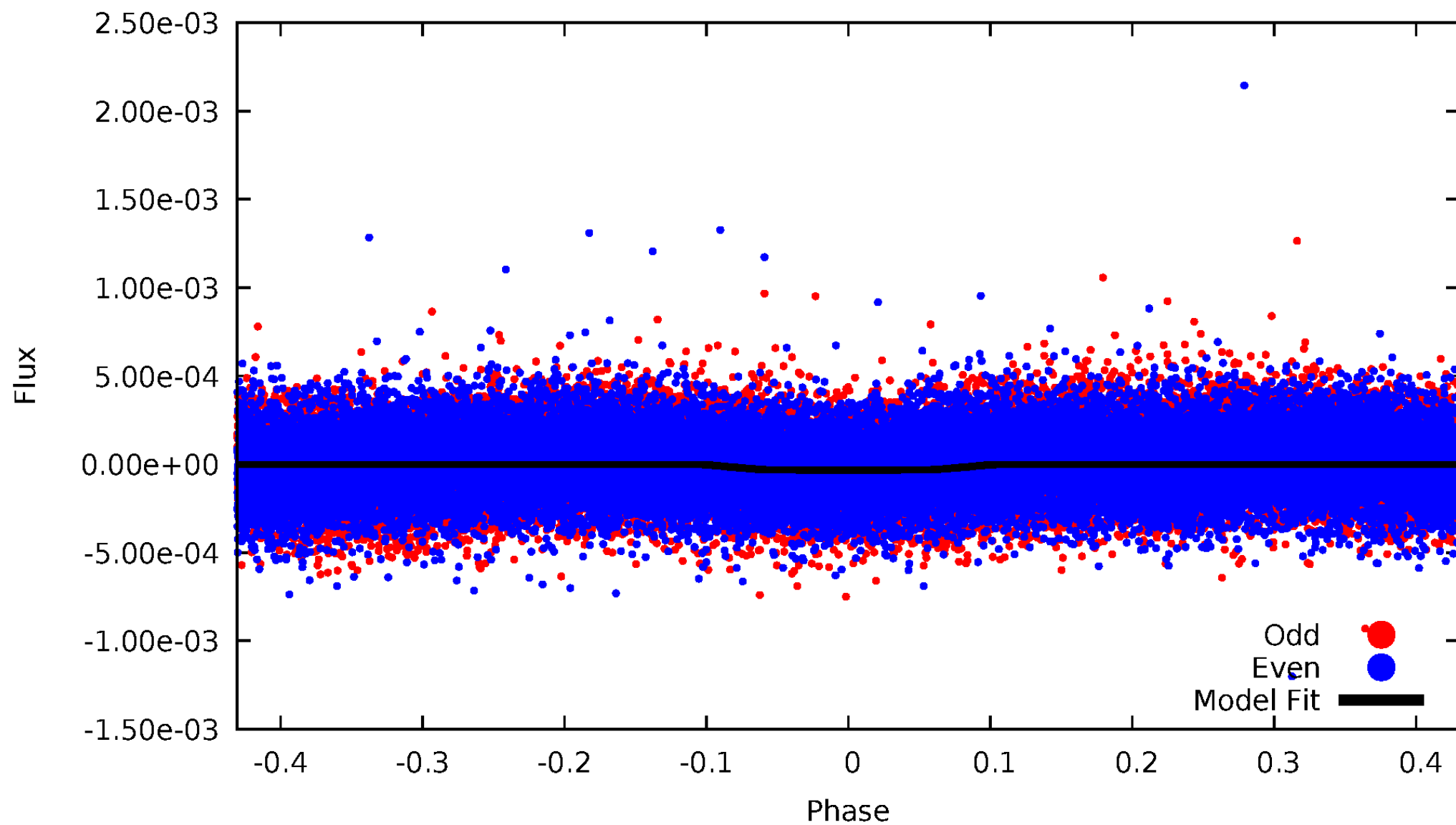


TCE 002167600-01



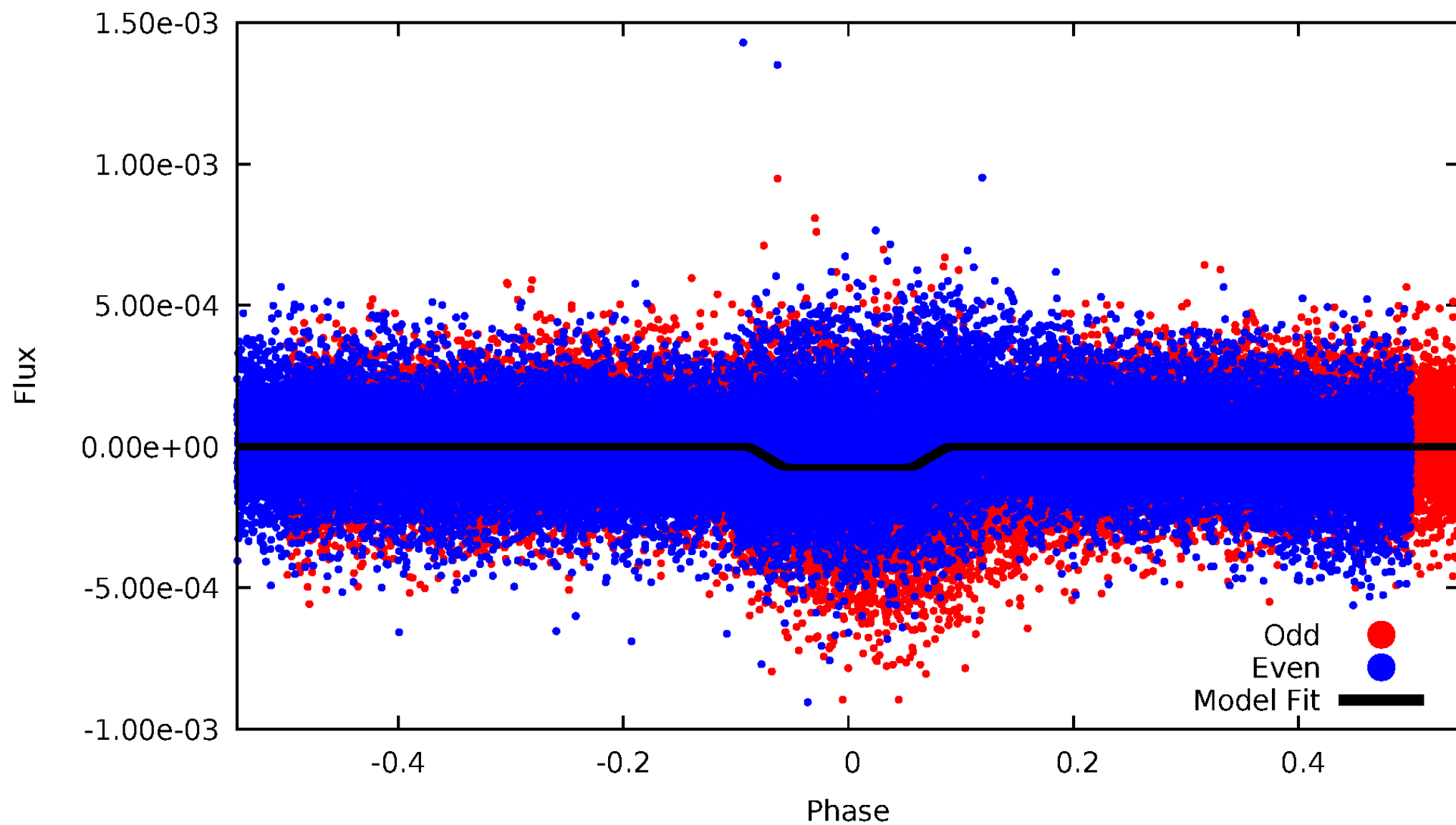
DV Odd/Even

TCE 002167600-01



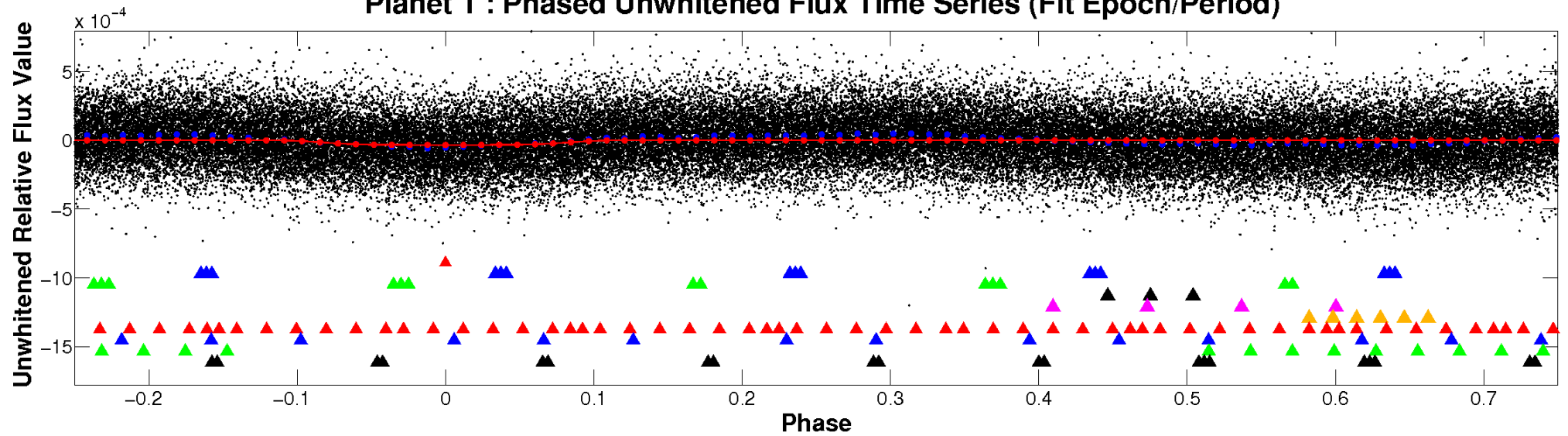
ALT Odd/Even

TCE 002167600-01

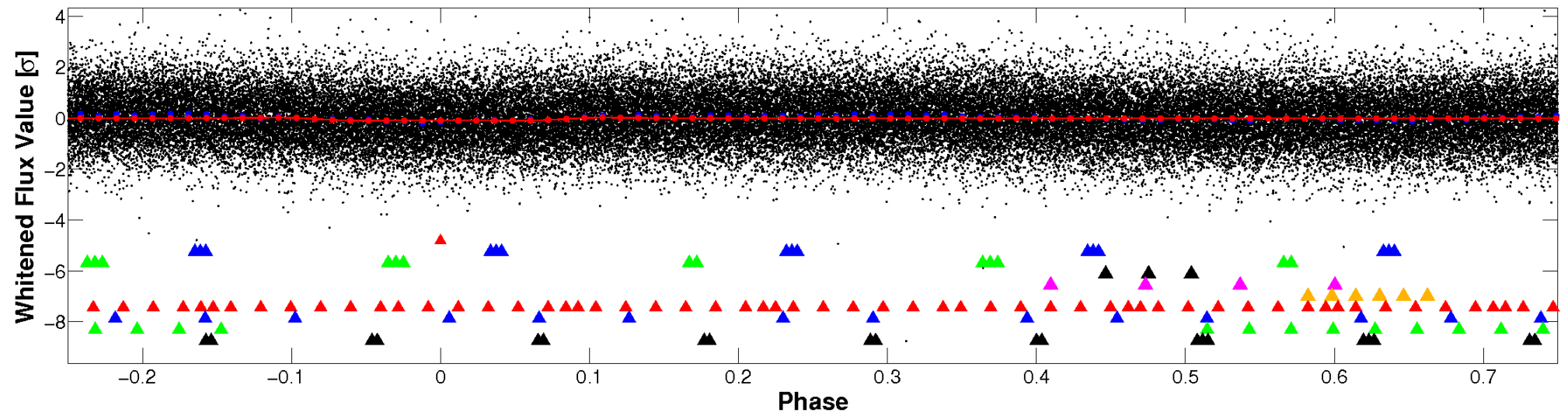


Non-Whitened Vs. Whitened Light Curve

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

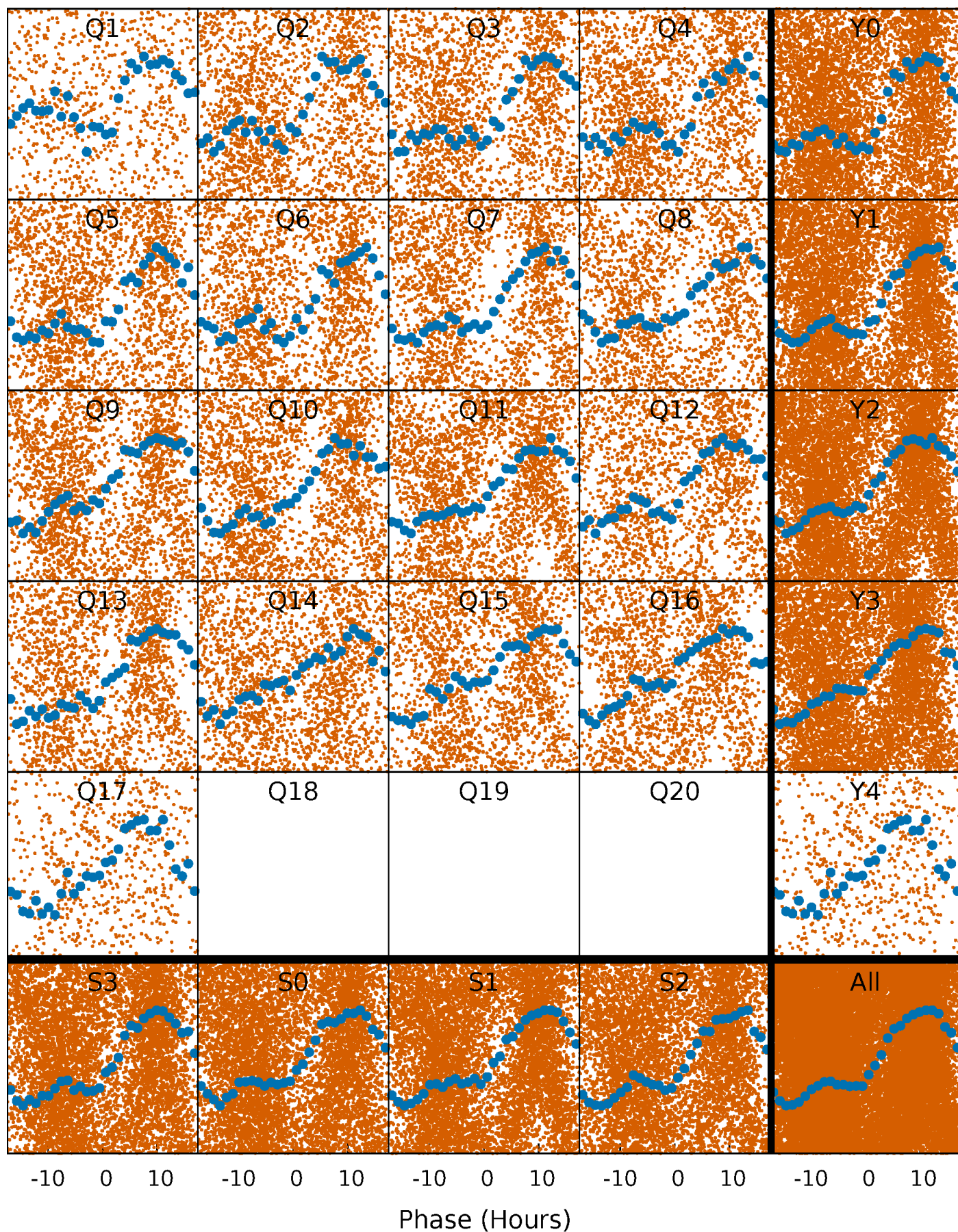


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



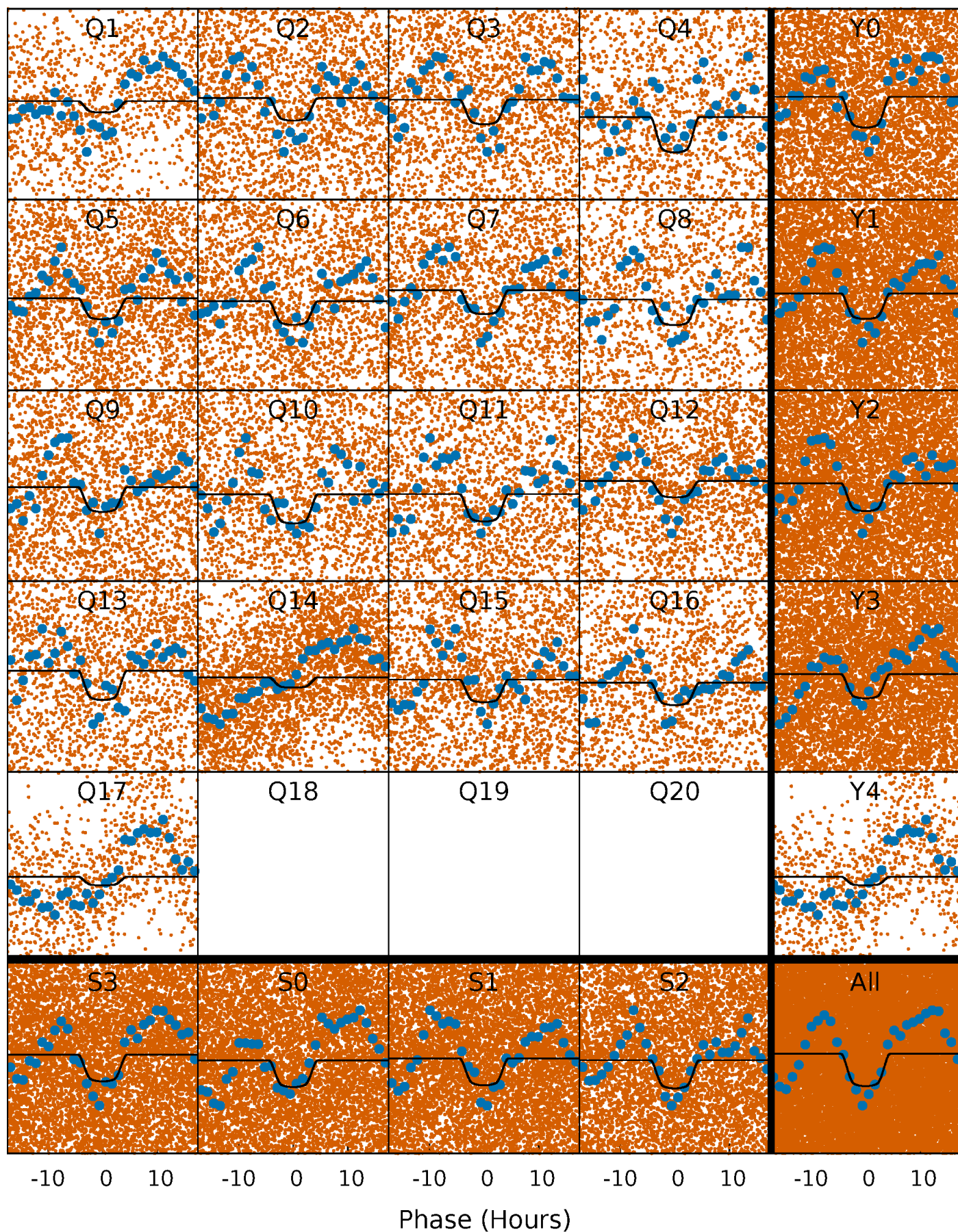
PDC Quarter-Phased Transit Curves

TCE 002167600-01 P= 1.691463 Days $T_0=132.467761$ (BKJD)



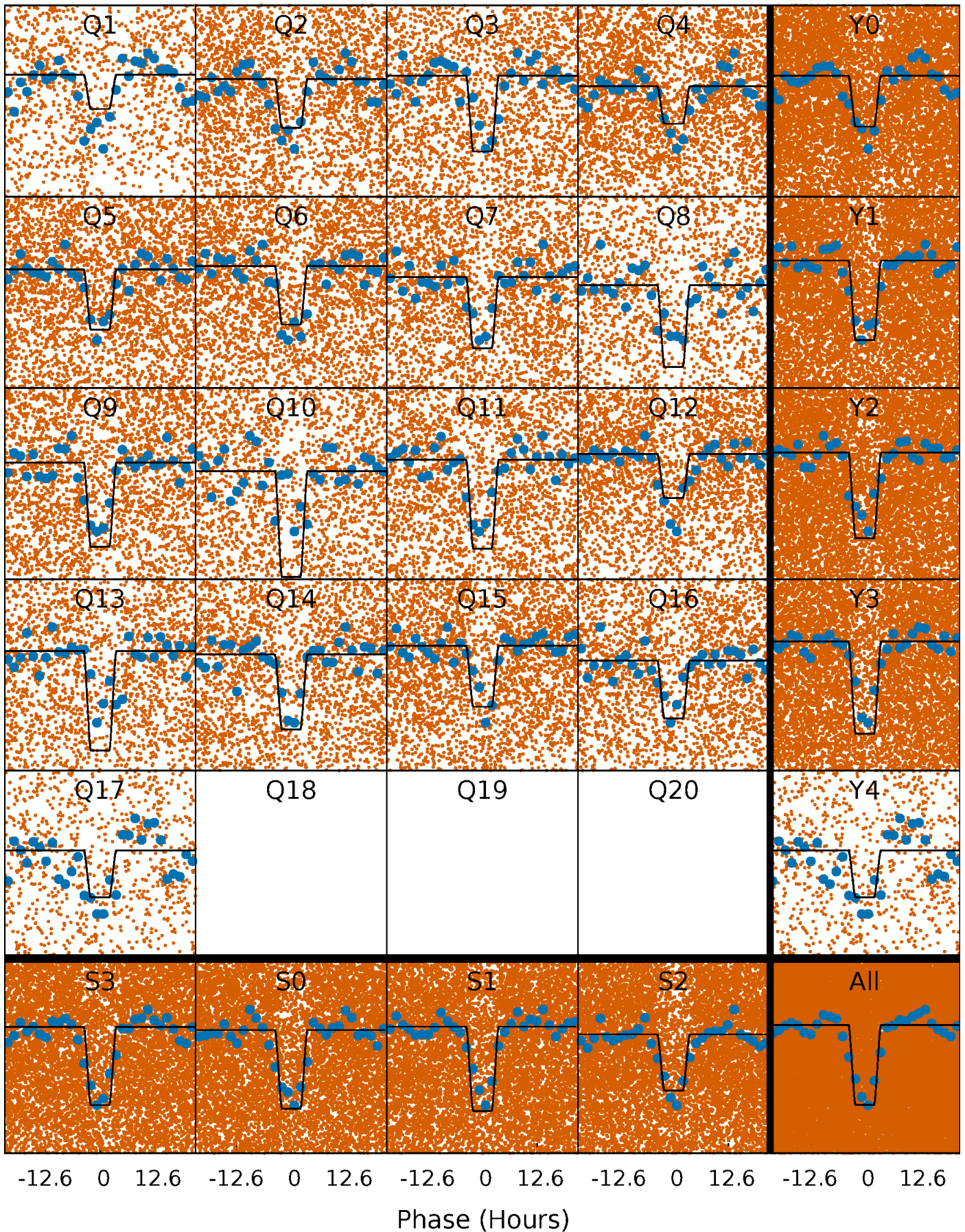
DV Quarter-Phased Transit Curves

TCE 002167600-01 P= 1.691463 Days $T_0=132.467761$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

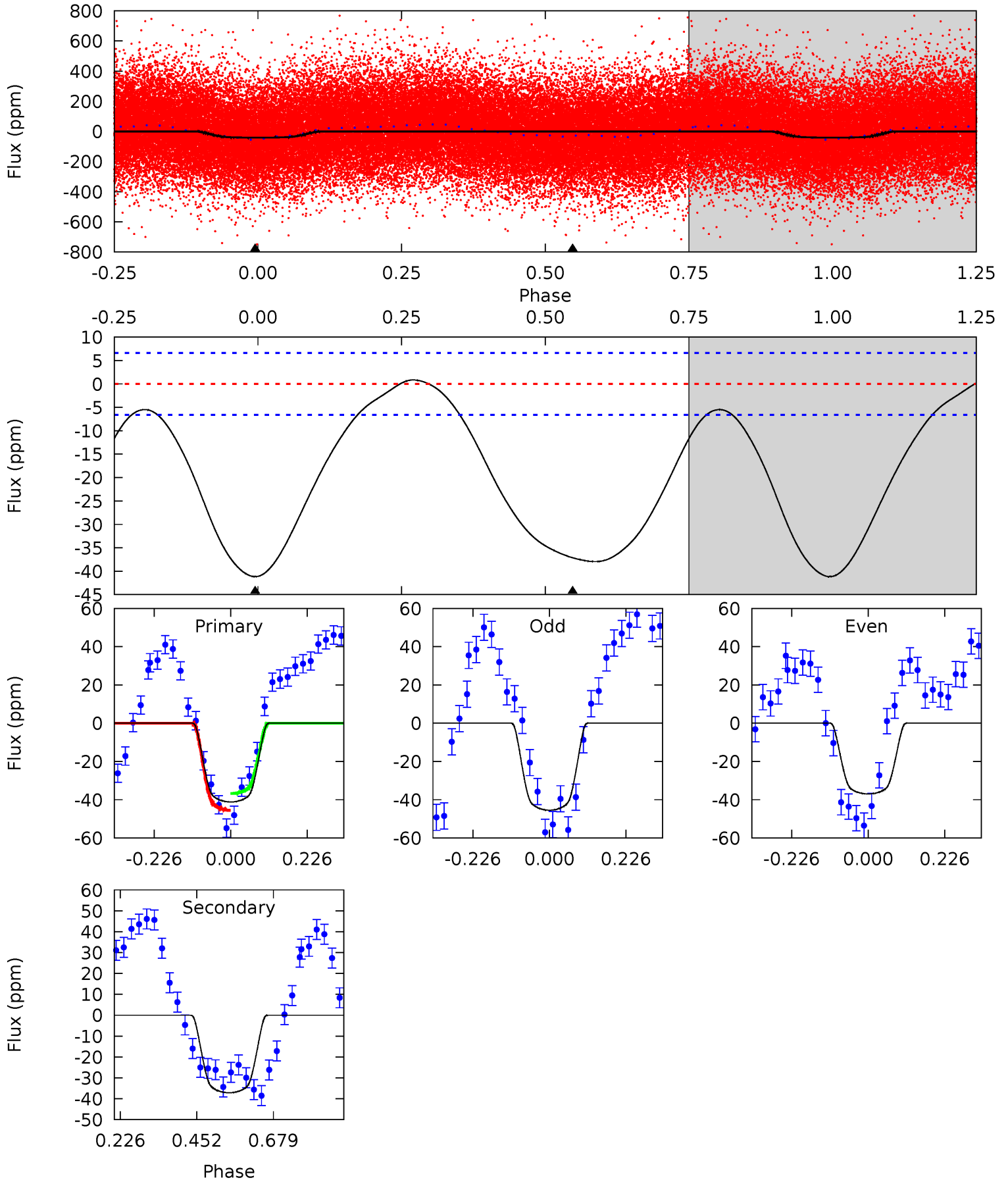
TCE 002167600-01 P= 1.691388 Days $T_0=132.477770$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-01, P = 1.691463 Days, E = 130.776298 Days

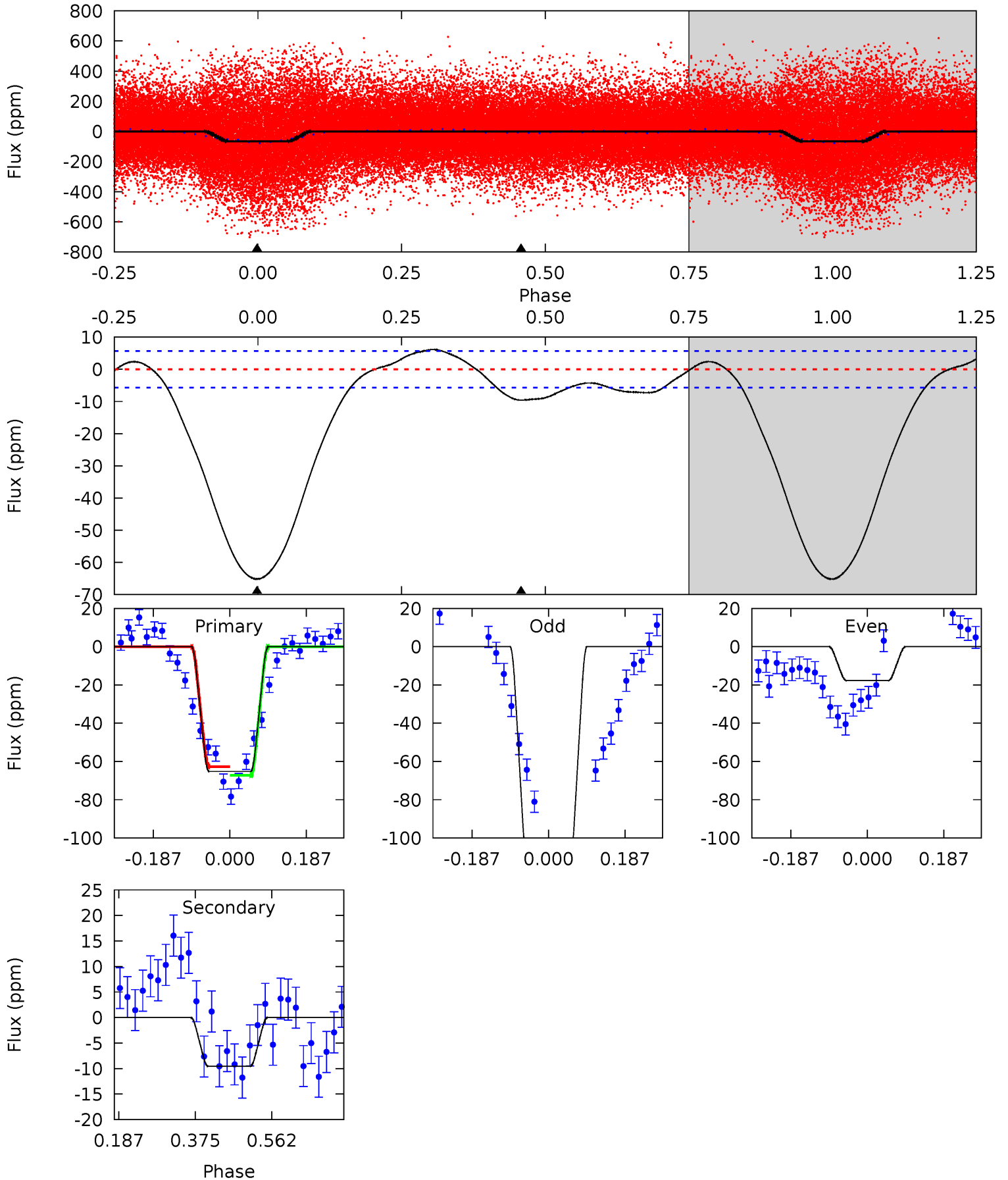
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.3	24.6	0	0	4.39	1.21	0.59	27.3	27.3	24.6	24.6	2.84	0.96	0.02	2.97



Alt Model-Shift Uniqueness Test

002167600-01, P = 1.691388 Days, E = 130.786382 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.7	7.44	0	0	4.43	1.32	2.99	50.7	50.7	7.44	7.44	37.2	1.11	0.09	1.75



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-37 ± 2	$3.35^{+0.46}_{-0.73}$	4440^{+263}_{-451}	5712^{+254}_{-251}	$2.111^{+1.095}_{-0.461}$
Alt.	-10 ± 1	$3.96^{+0.55}_{-0.82}$	4431^{+260}_{-439}	3268^{+444}_{-5613}	$0.391^{+0.193}_{-0.097}$

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 $A_{obs} \gg 1.0$

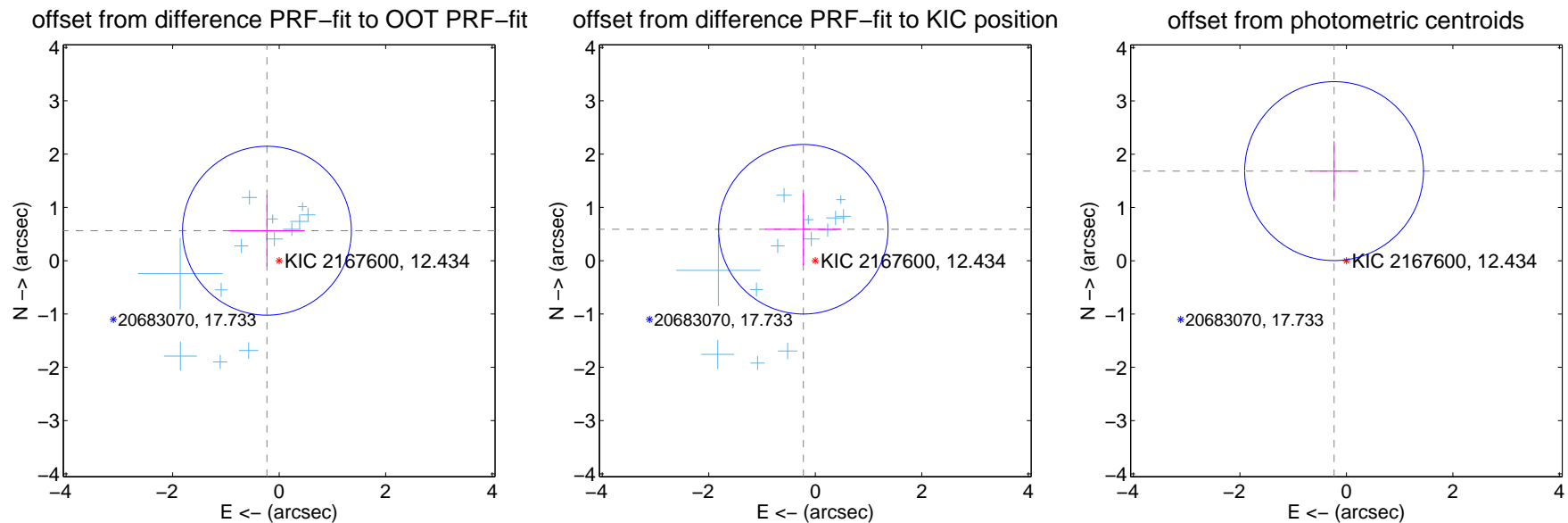
DV Centroid Data

Supplemental centroid analysis for 002167600-01. Kepler magnitude: 12.43. Transit SNR 9.52

There are 13 quarters with good PRF difference image offsets

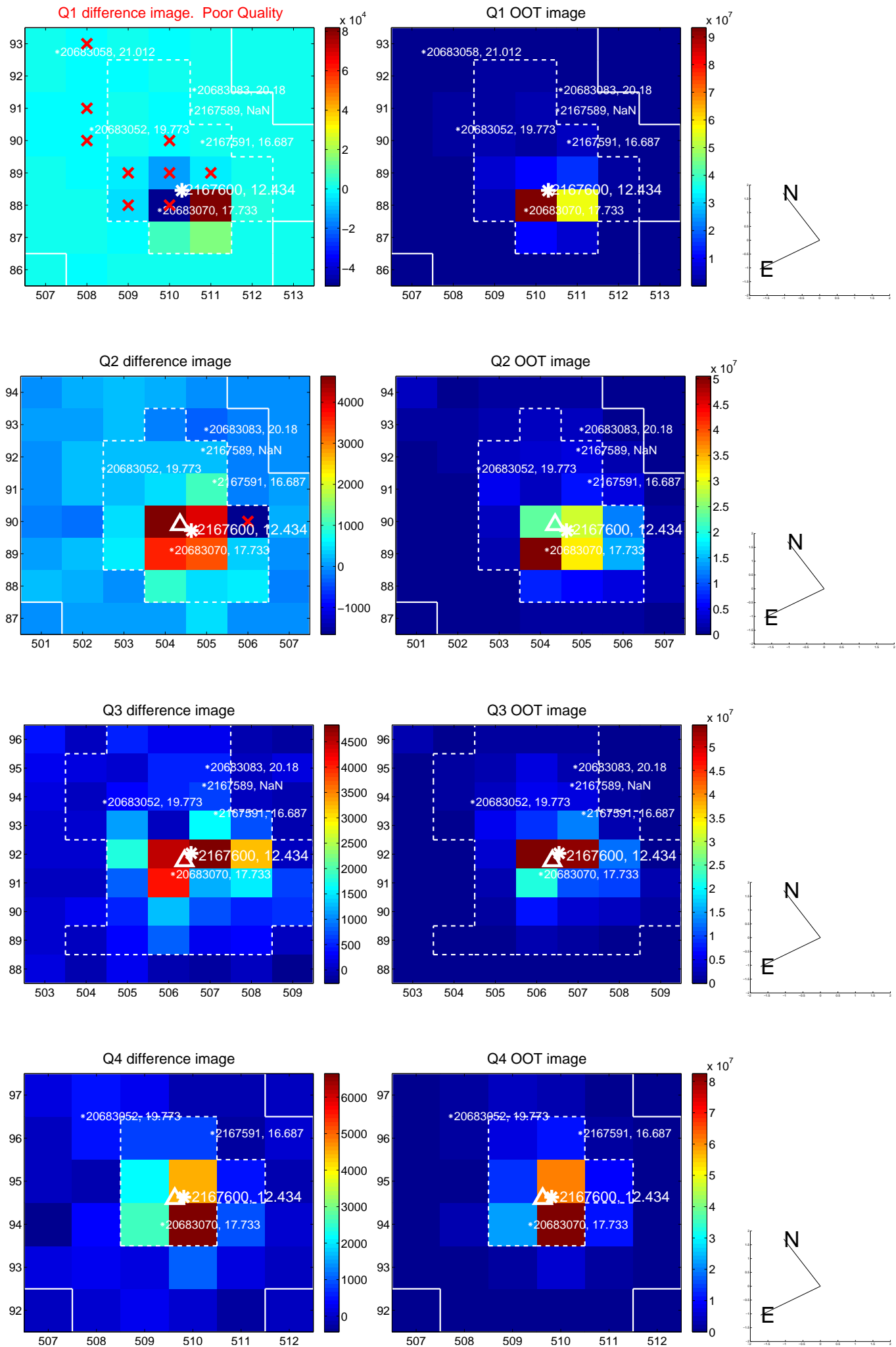
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.607 ± 0.528	1.15	0.229 ± 0.709	0.563 ± 0.666
PRF-fit source offset from KIC position	0.631 ± 0.530	1.19	0.224 ± 0.716	0.590 ± 0.679
photometric centroid source offset	1.70 ± 0.56	3.03	0.23 ± 0.45	1.68 ± 0.56

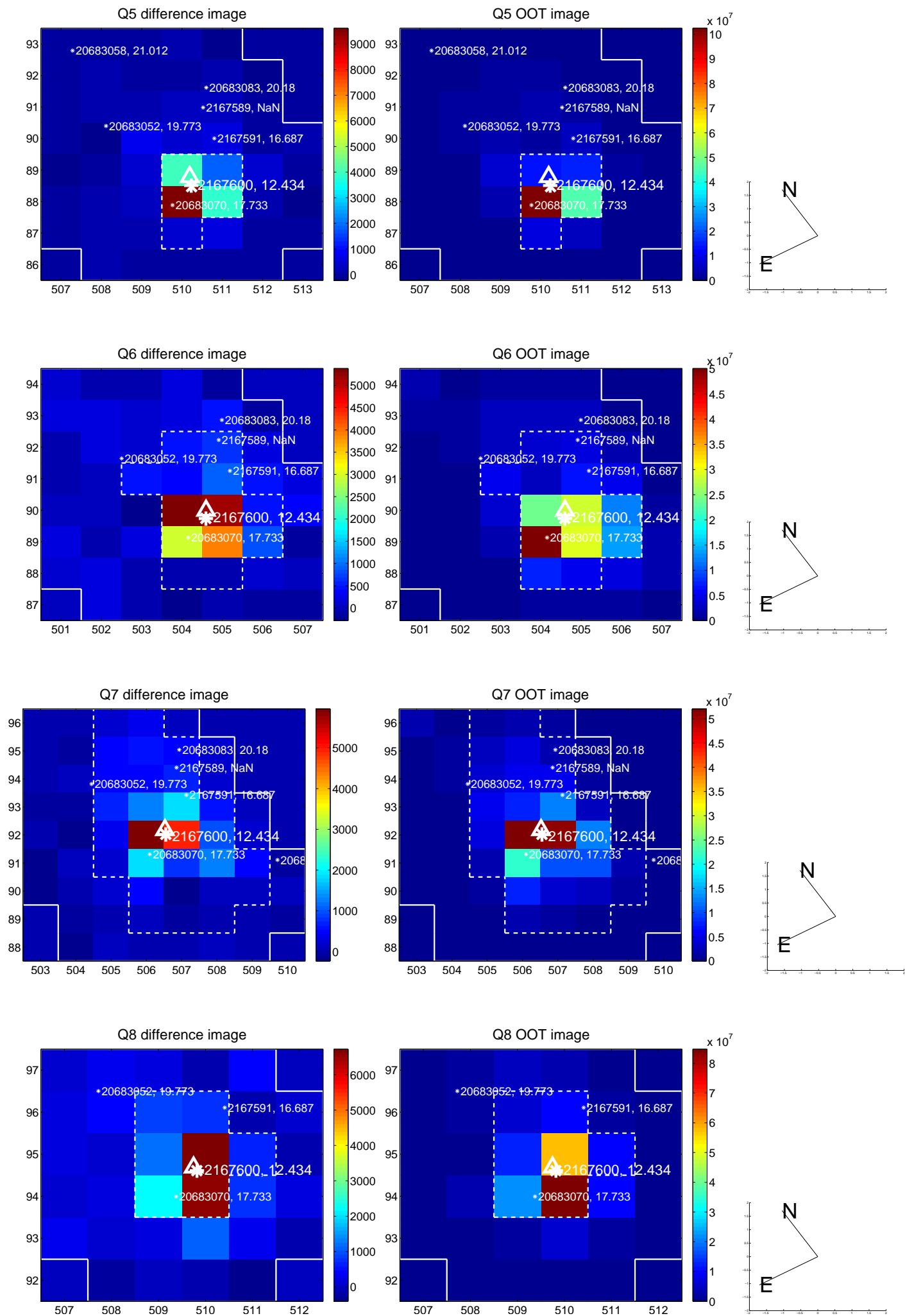


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

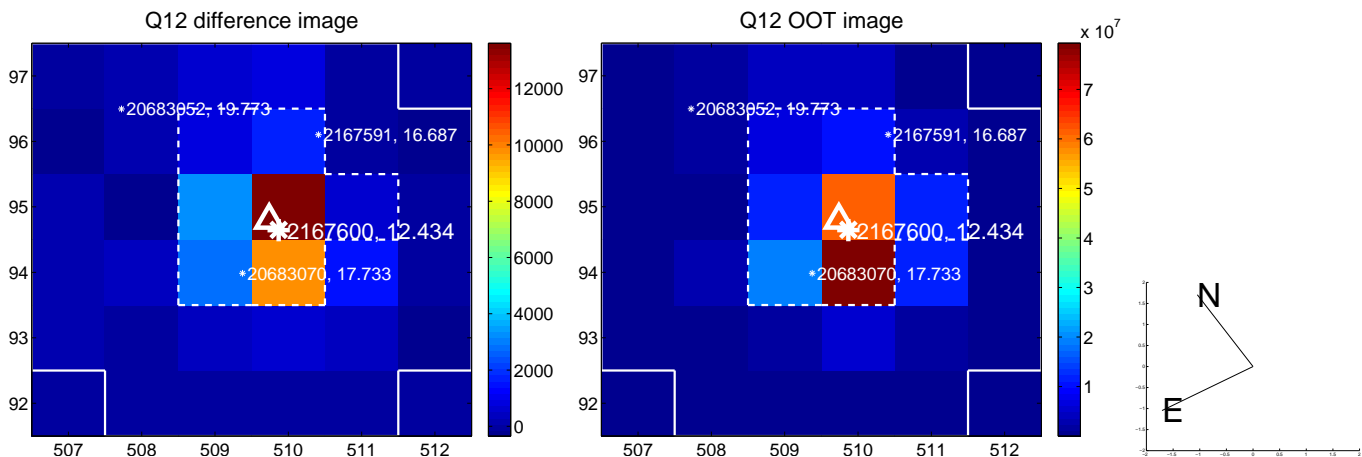
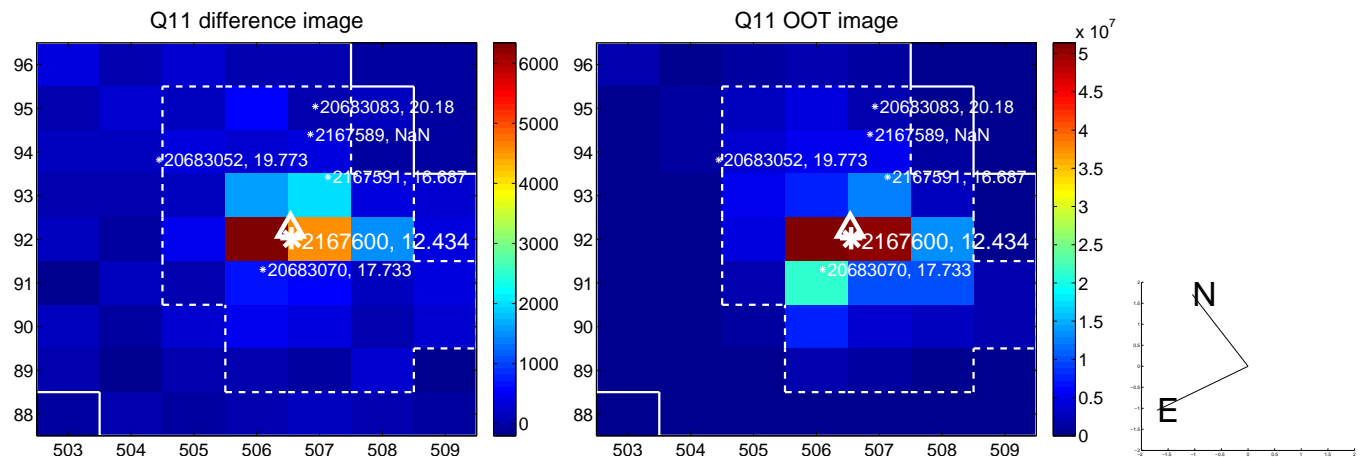
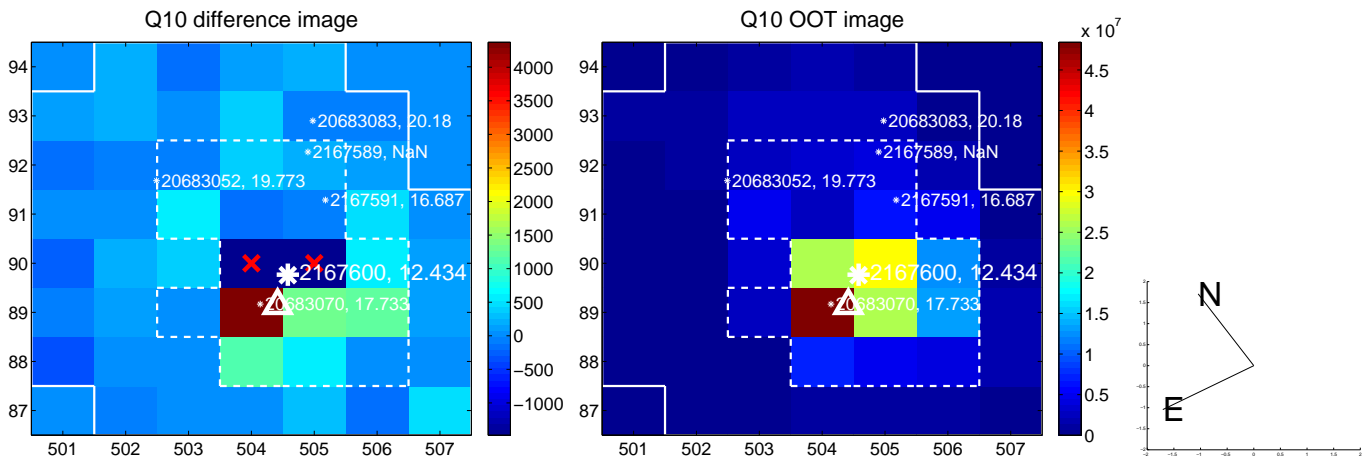
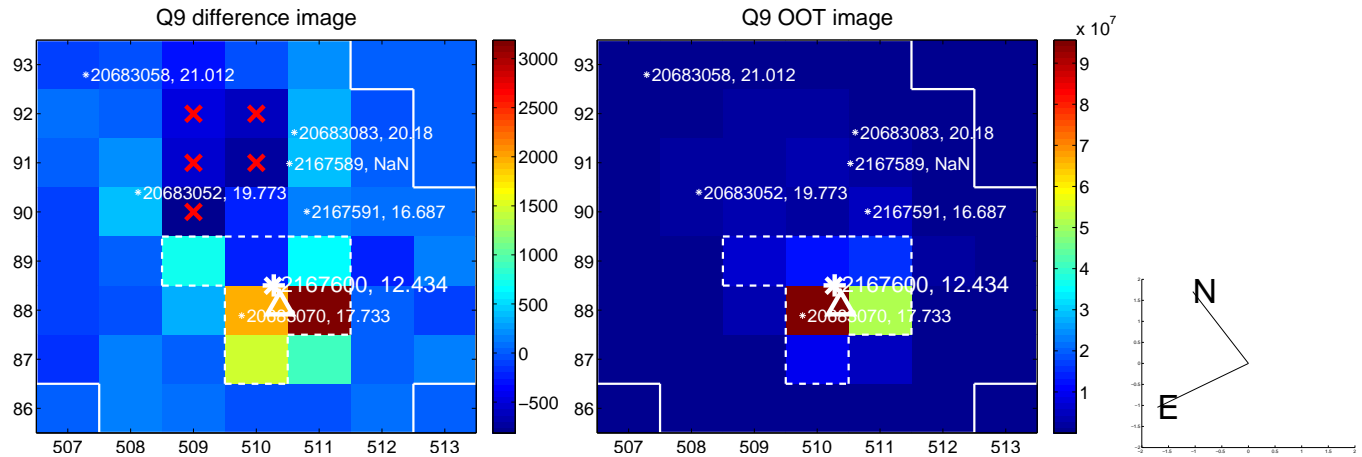
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



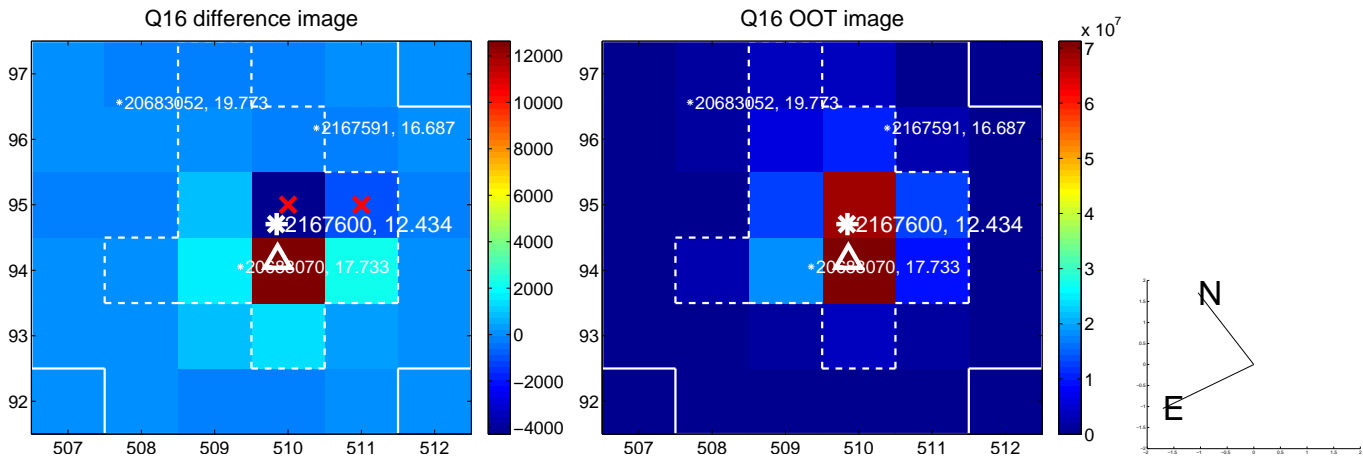
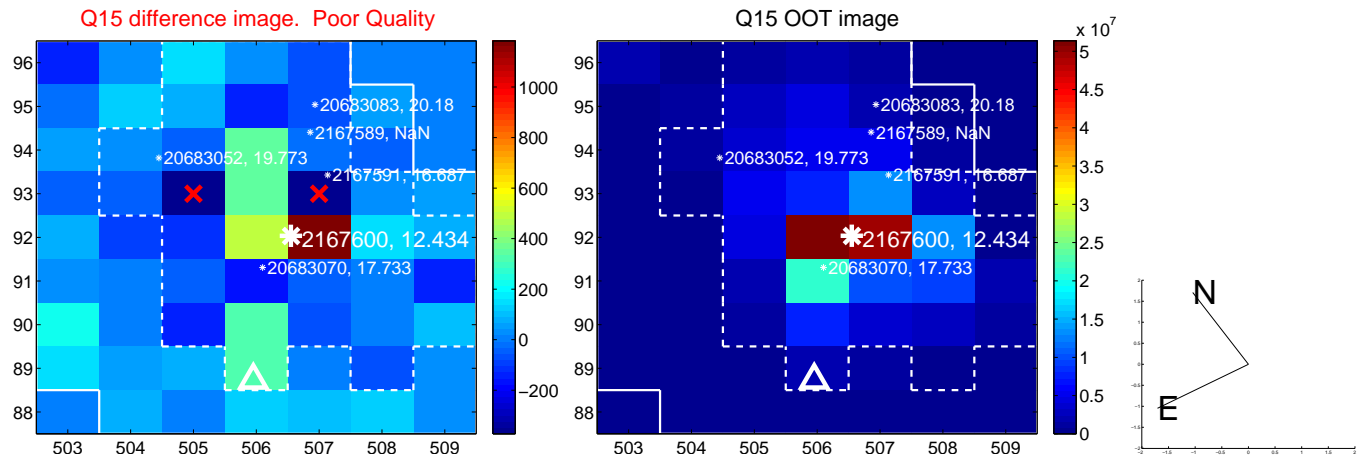
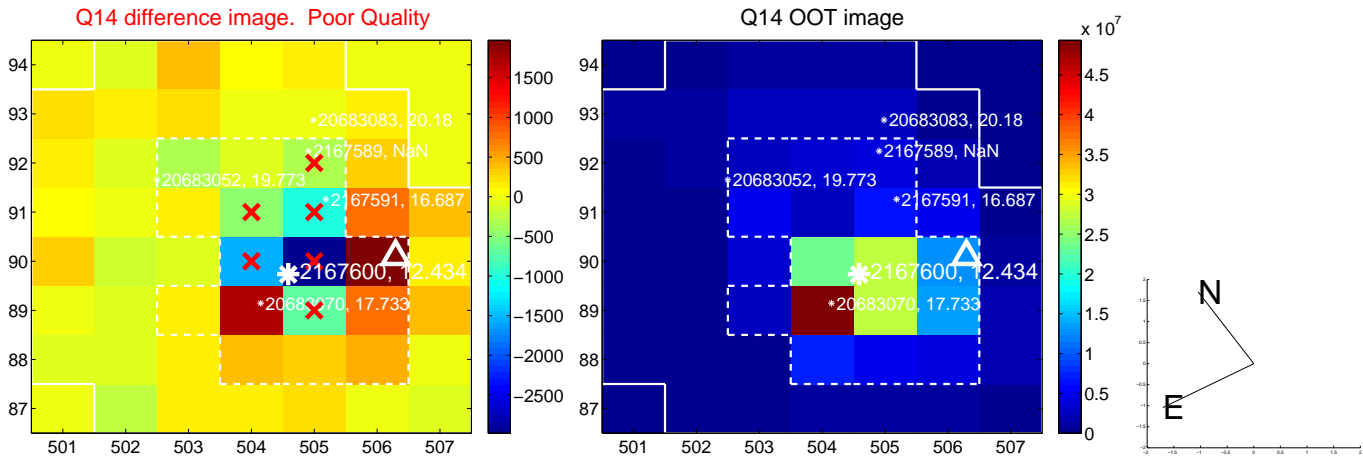
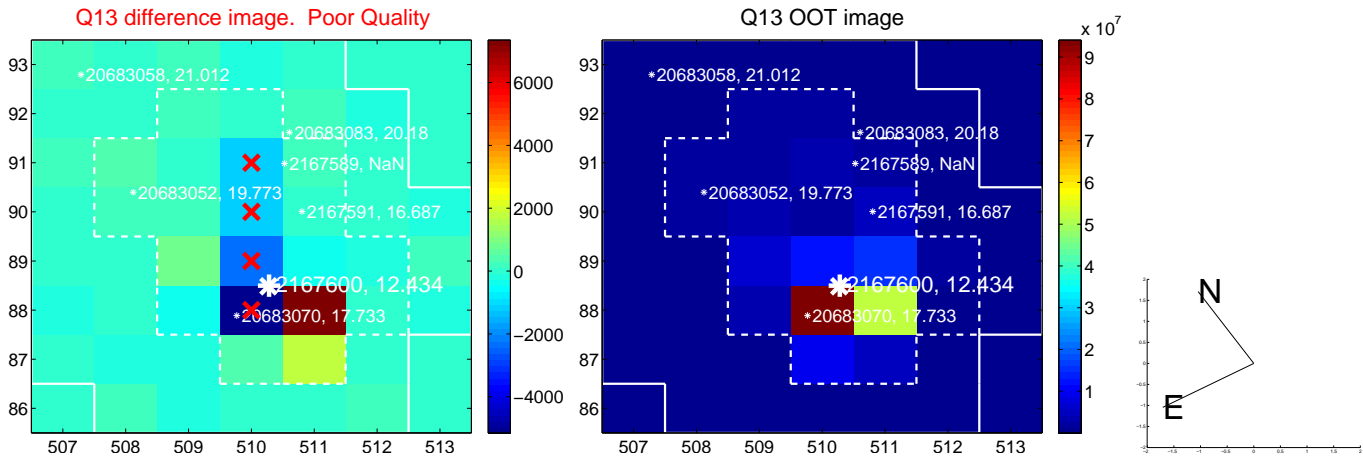
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



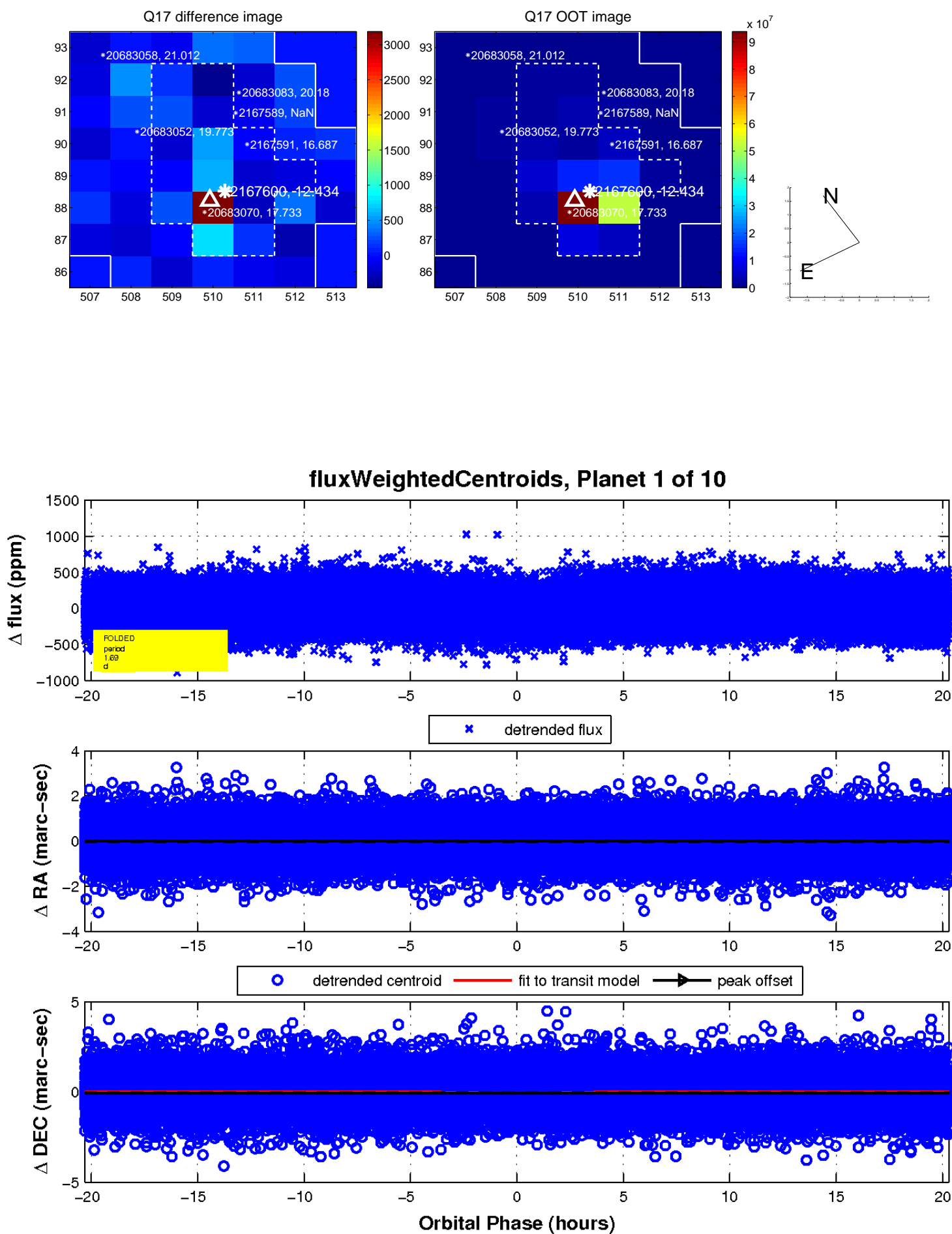
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

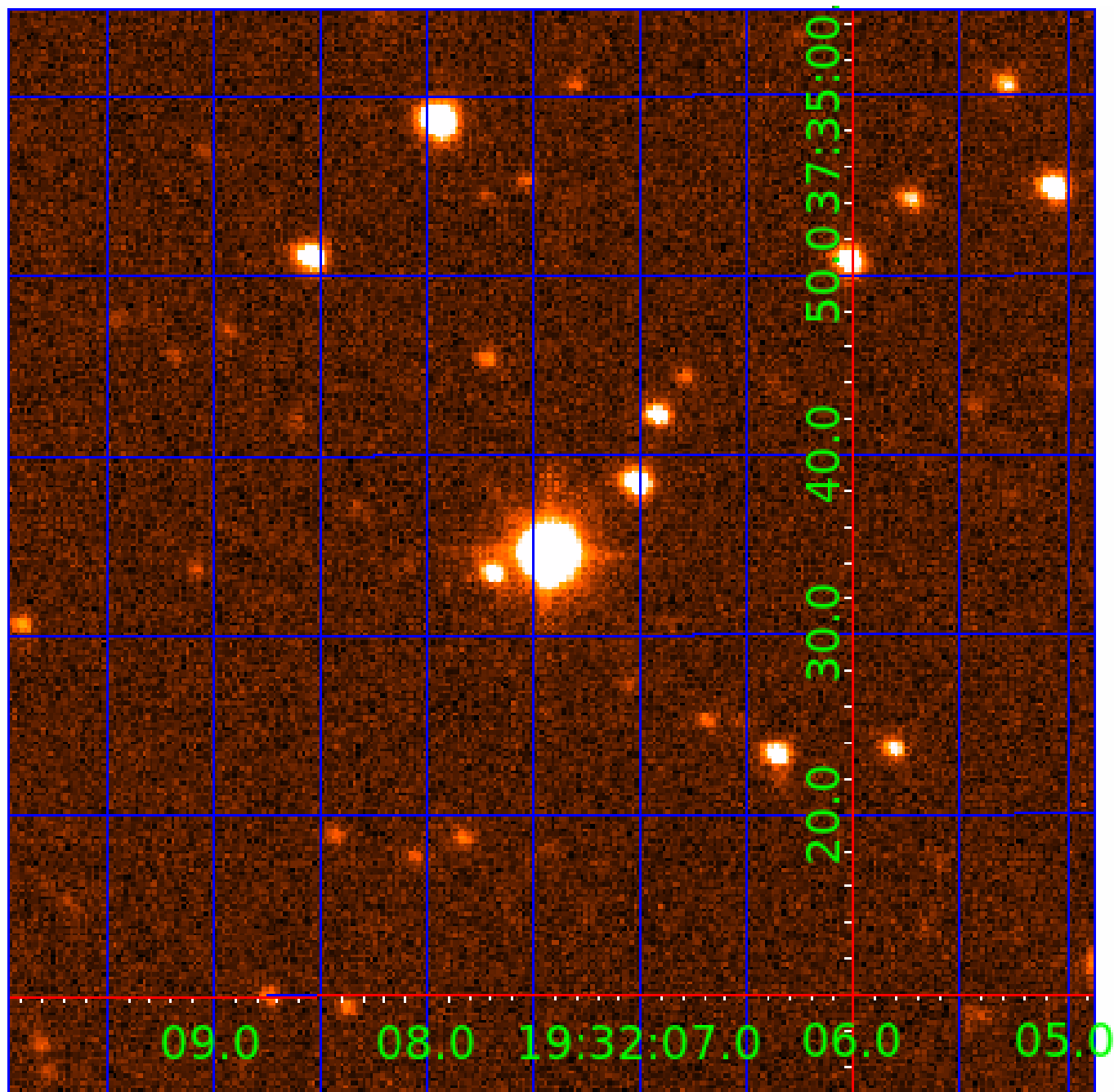


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

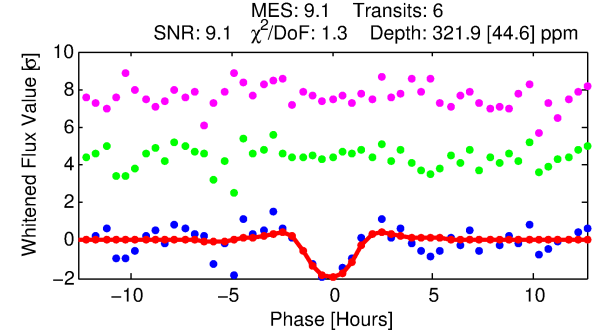
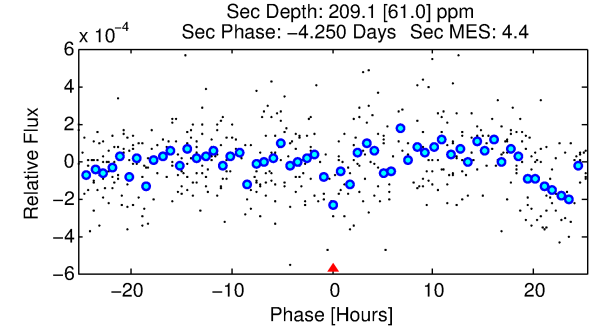
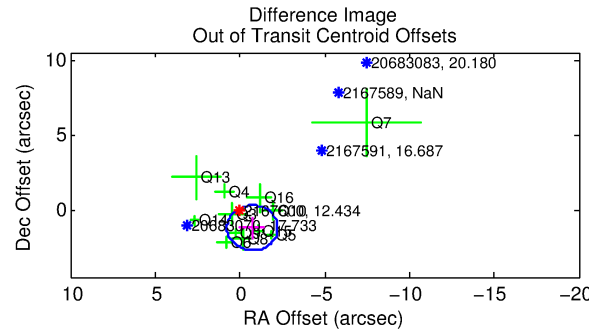
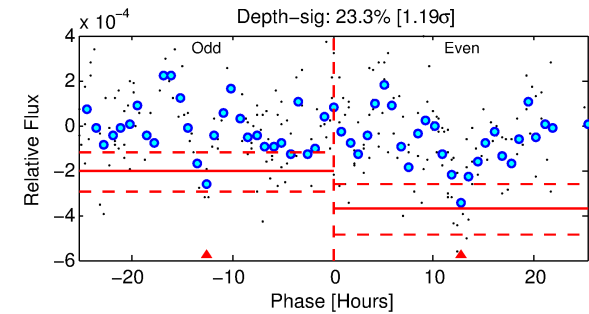
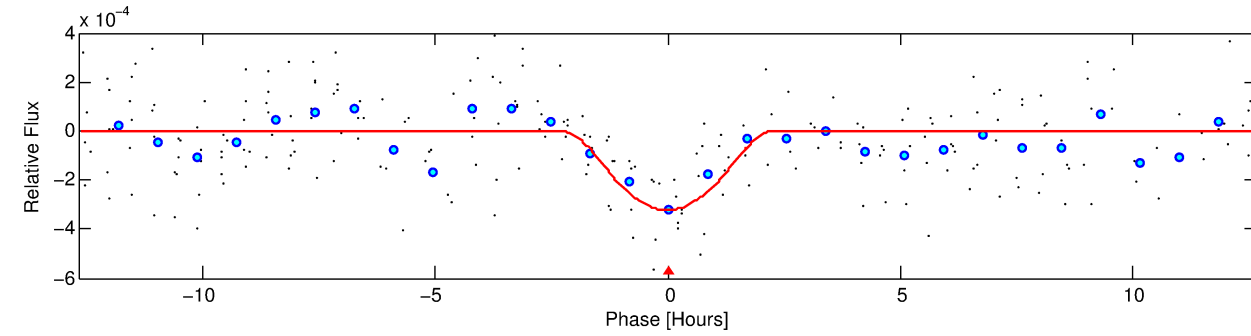
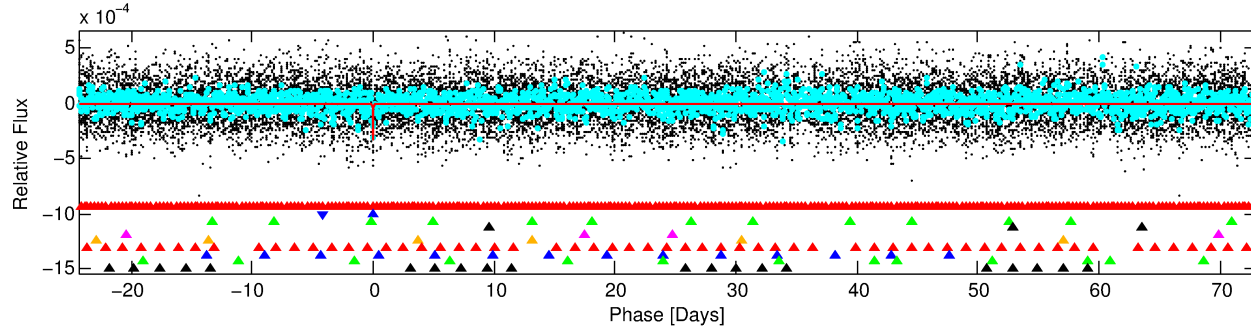
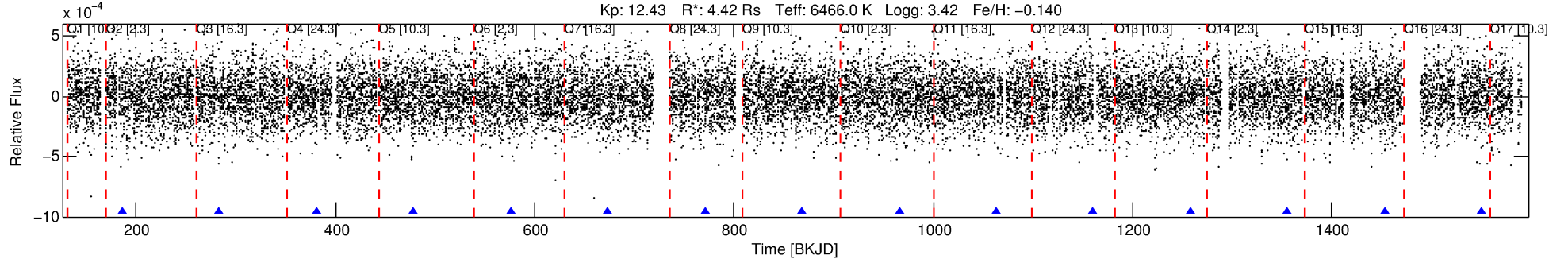
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-02

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 2 of 10 Period: 97.427 d



DV Fit Results:

Period = 97.42704 [0.00143] d
Epoch = 186.3281 [0.0112] BKJD
Rp/R* = 0.0302 [0.0965]
a/R* = 45.74 [43.04]
b = 1.00 [0.15]
Seff = 116.72 [75.77]
Teq = 838 [136] K
Rp = 14.53 [46.86] Re
a = 0.5114 [0.2043] AU
Ag = 142.39 [916.09] [0.15 σ]
Teffp = 4476 [7165] K [0.51 σ]

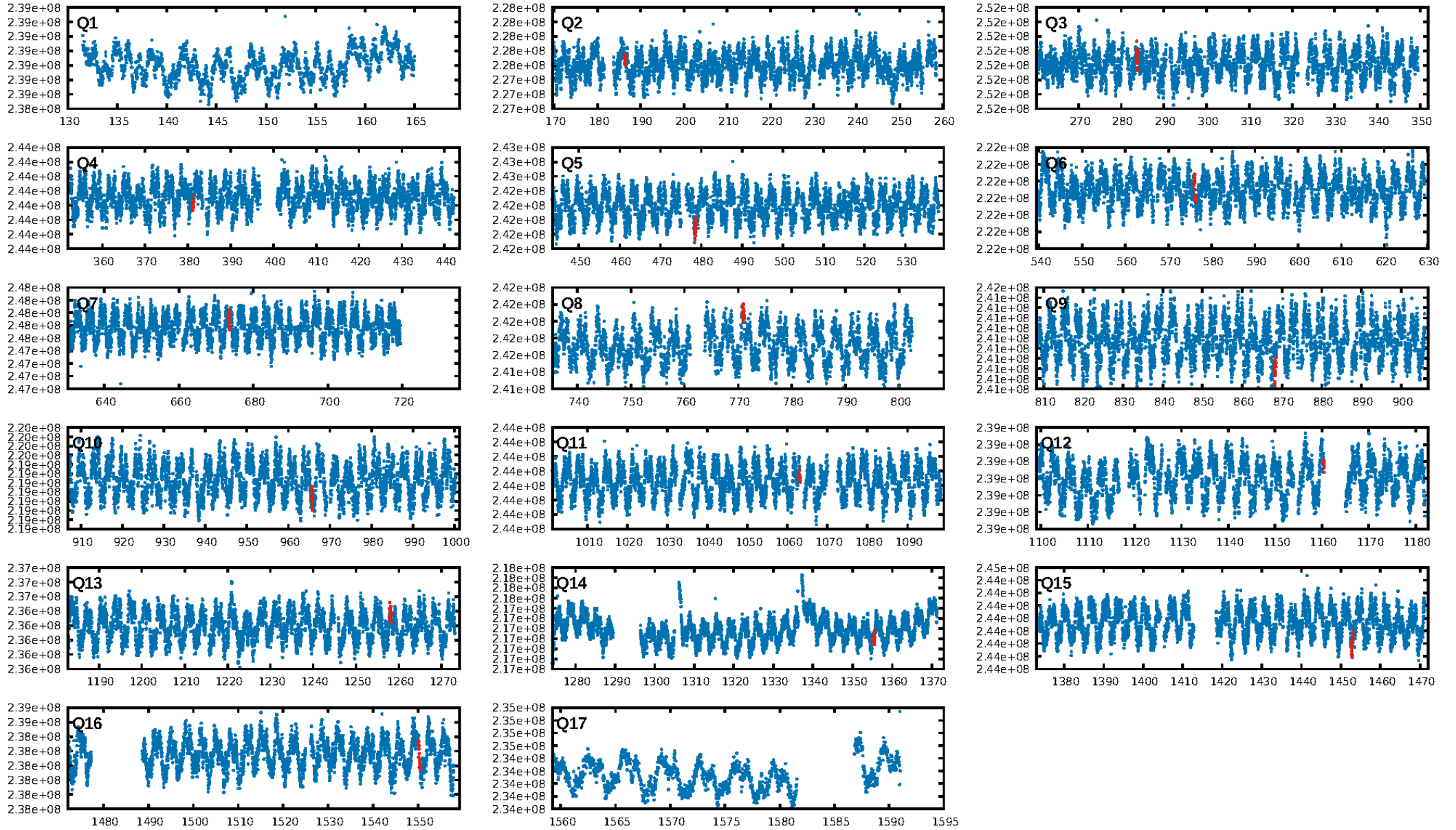
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [118.47 σ]
LongPeriod-sig: 100.0% [24.11 σ]
ModelChiSquare2-sig: 5.4%
ModelChiSquareGof-sig: 94.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -597.9
Centroid-sig: 0.2%
Centroid-so: 1.547 arcsec [2.26 σ]
OotOffset-rm: 1.425 arcsec [2.85 σ]
KicOffset-rm: 1.428 arcsec [3.10 σ]
OotOffset-st: 3/3/3/3 [12]
KicOffset-st: 3/3/3/3 [12]
DiffImageQuality-fgm: 0.50 [6/12]
DiffImageOverlap-fno: 0.31 [4/13]

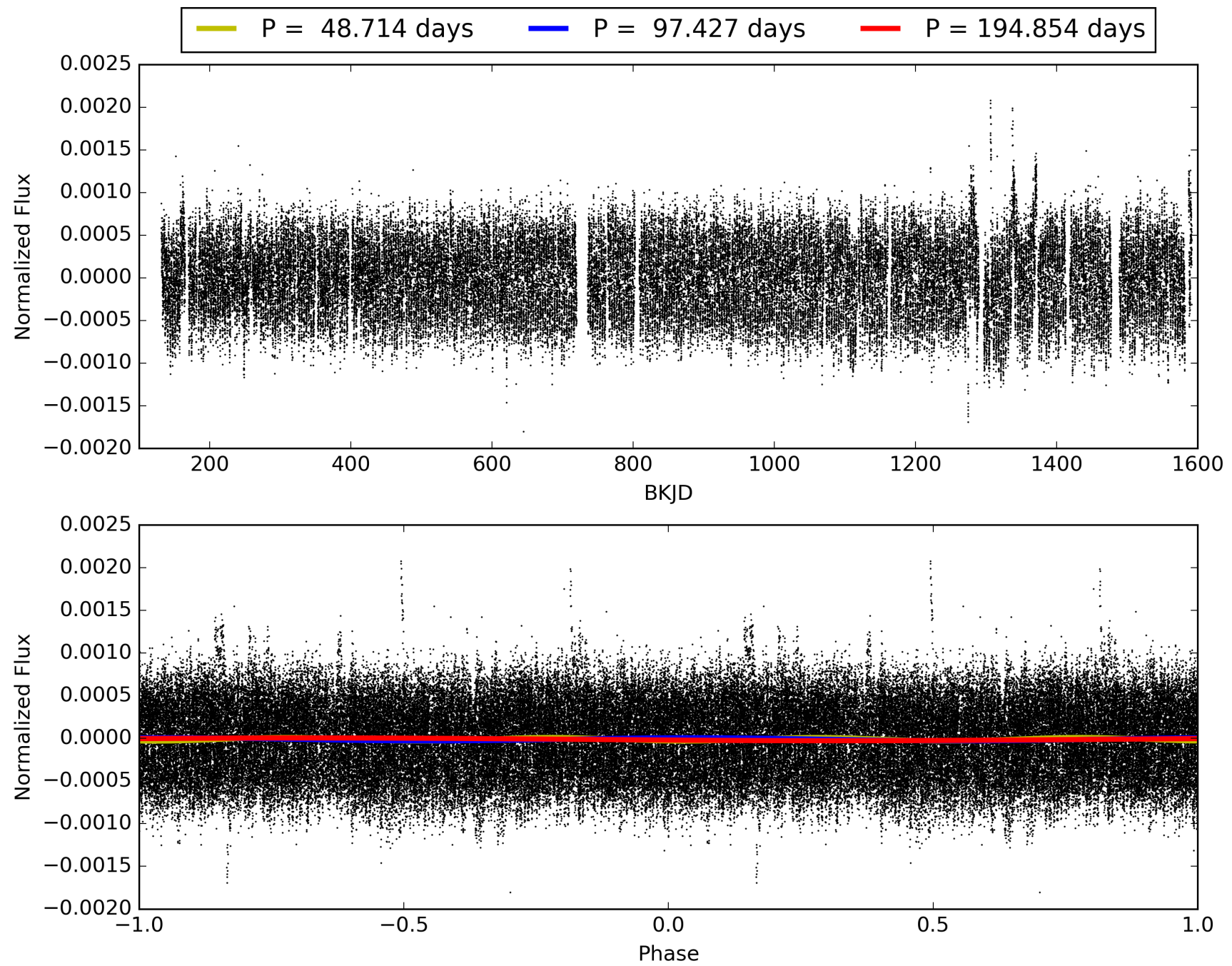
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:24:09 Z

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

TCE 002167600-02, PDC Light Curves

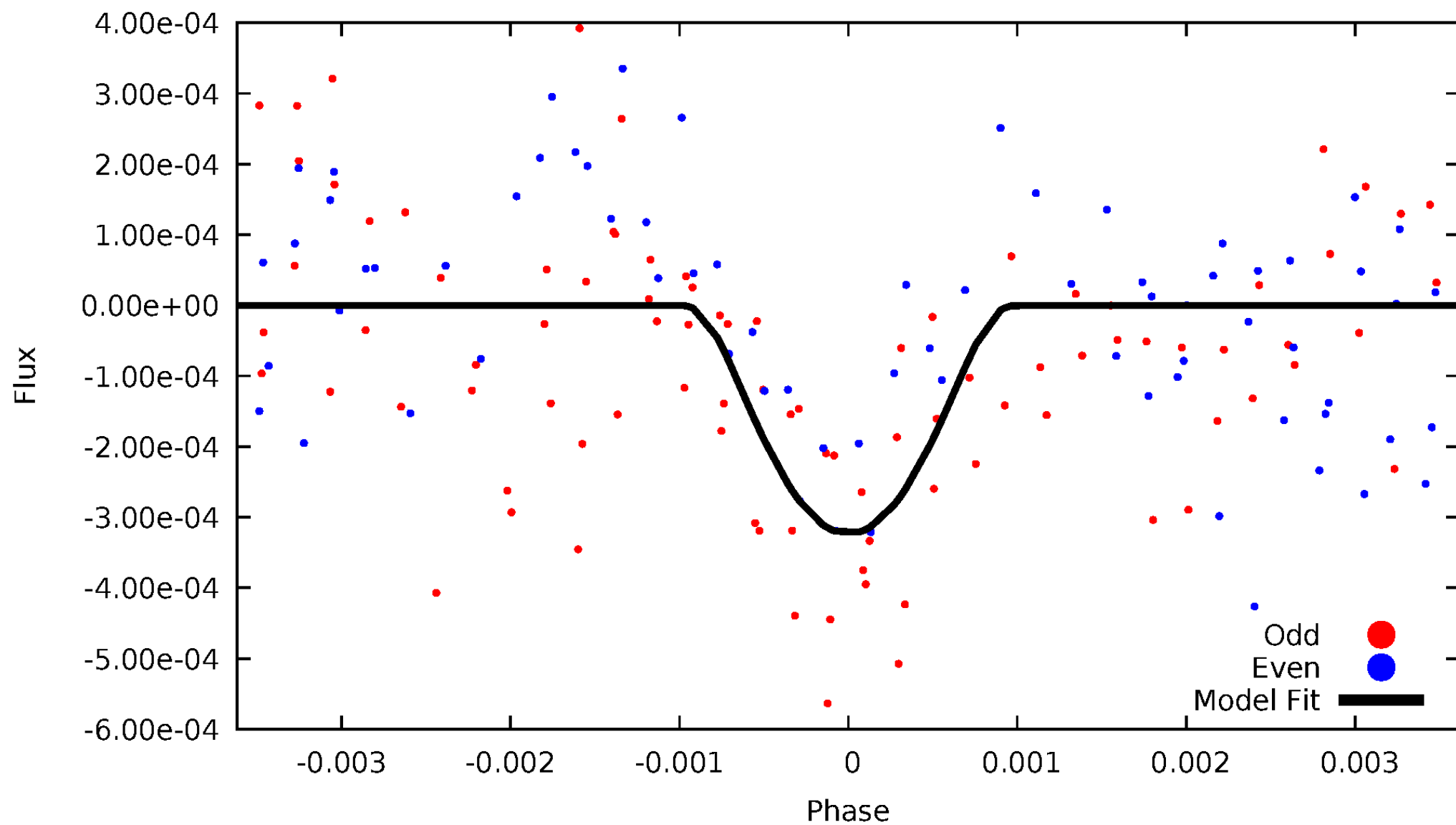


TCE 002167600-02



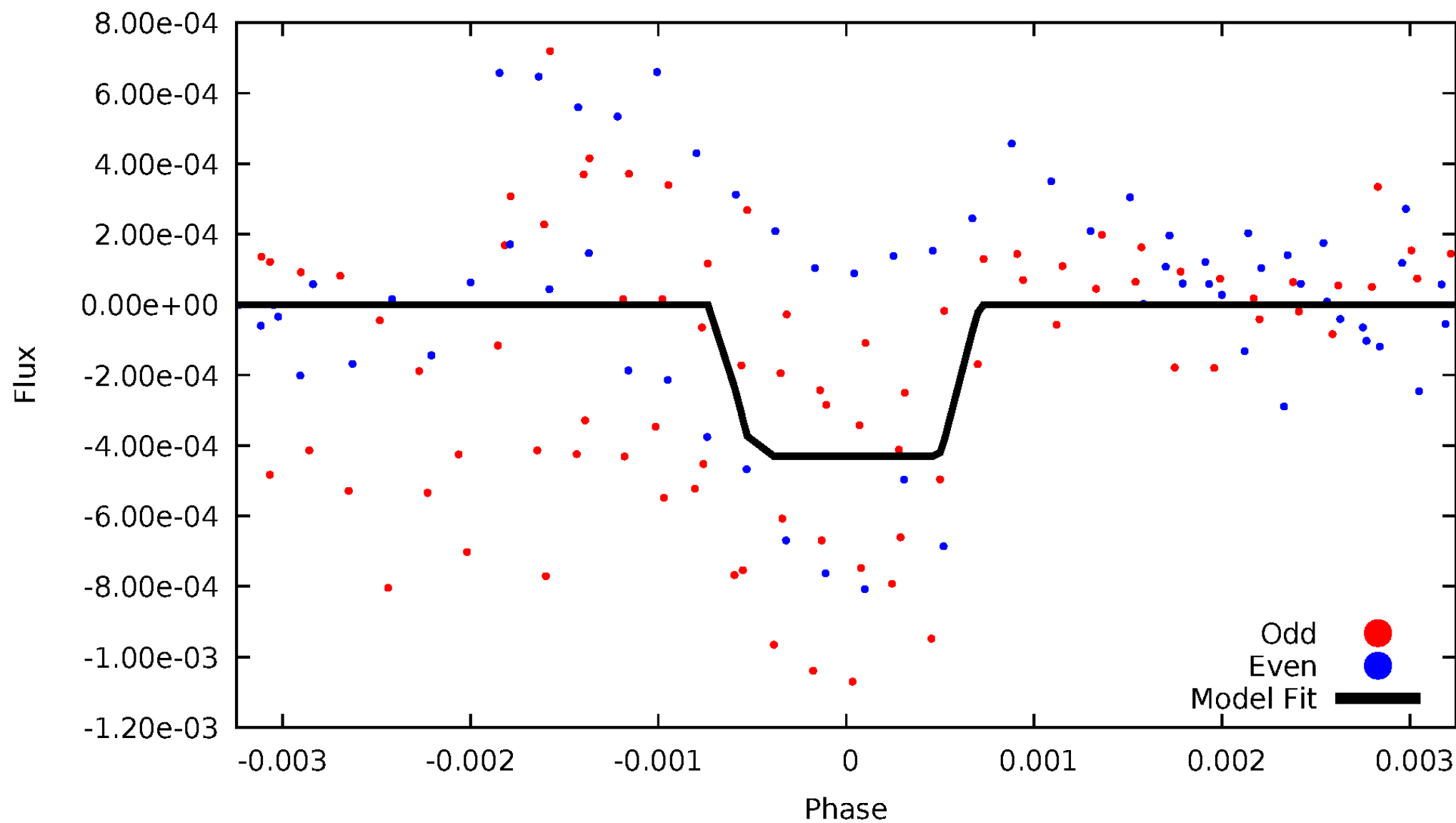
DV Odd/Even

TCE 002167600-02



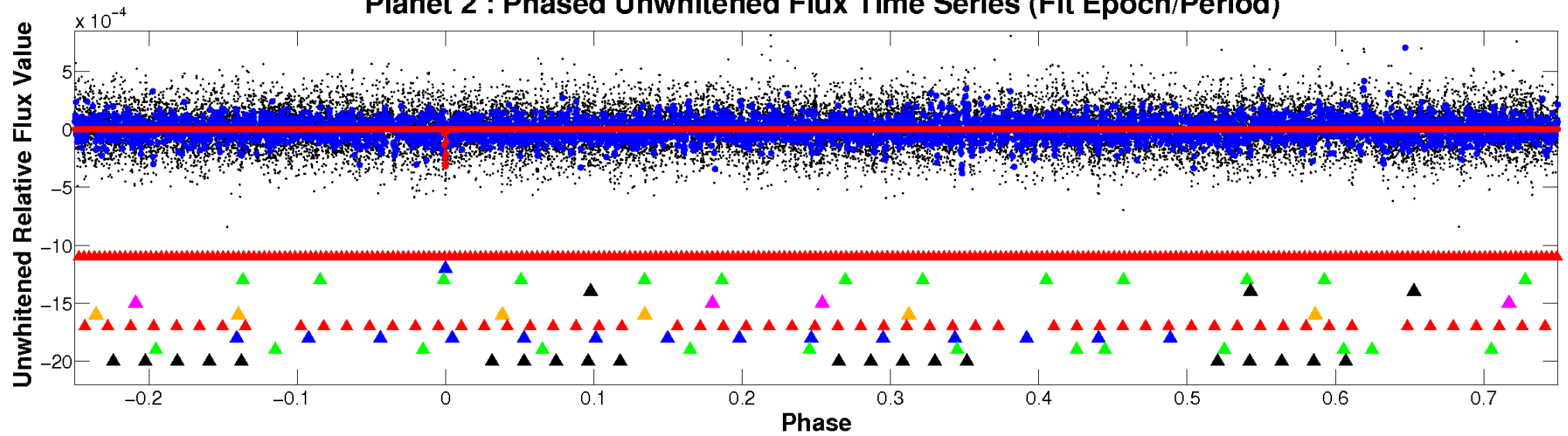
ALT Odd/Even

TCE 002167600-02

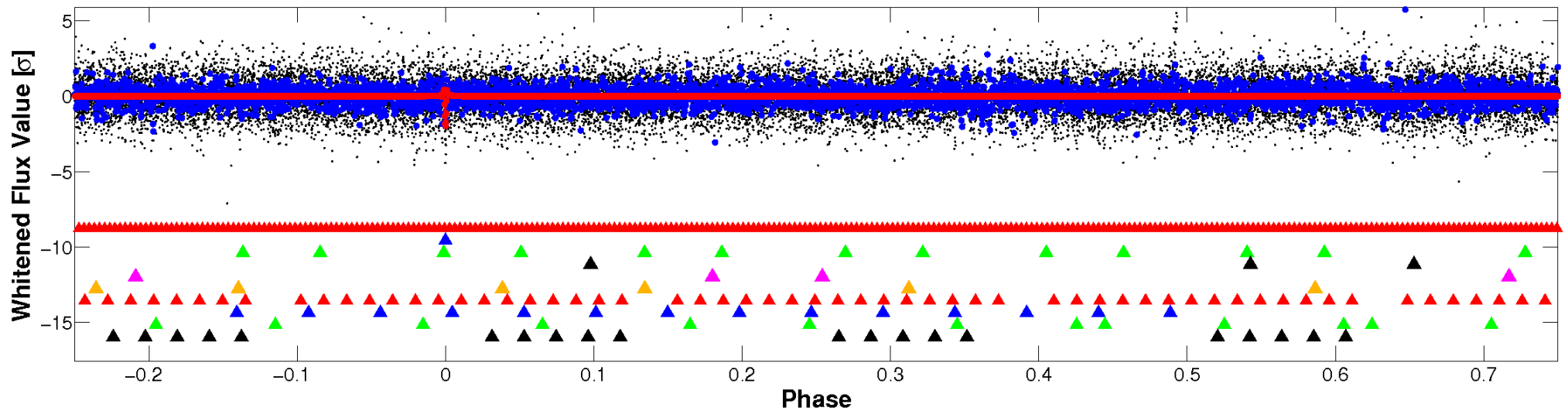


Non-Whitened Vs. Whitened Light Curve

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

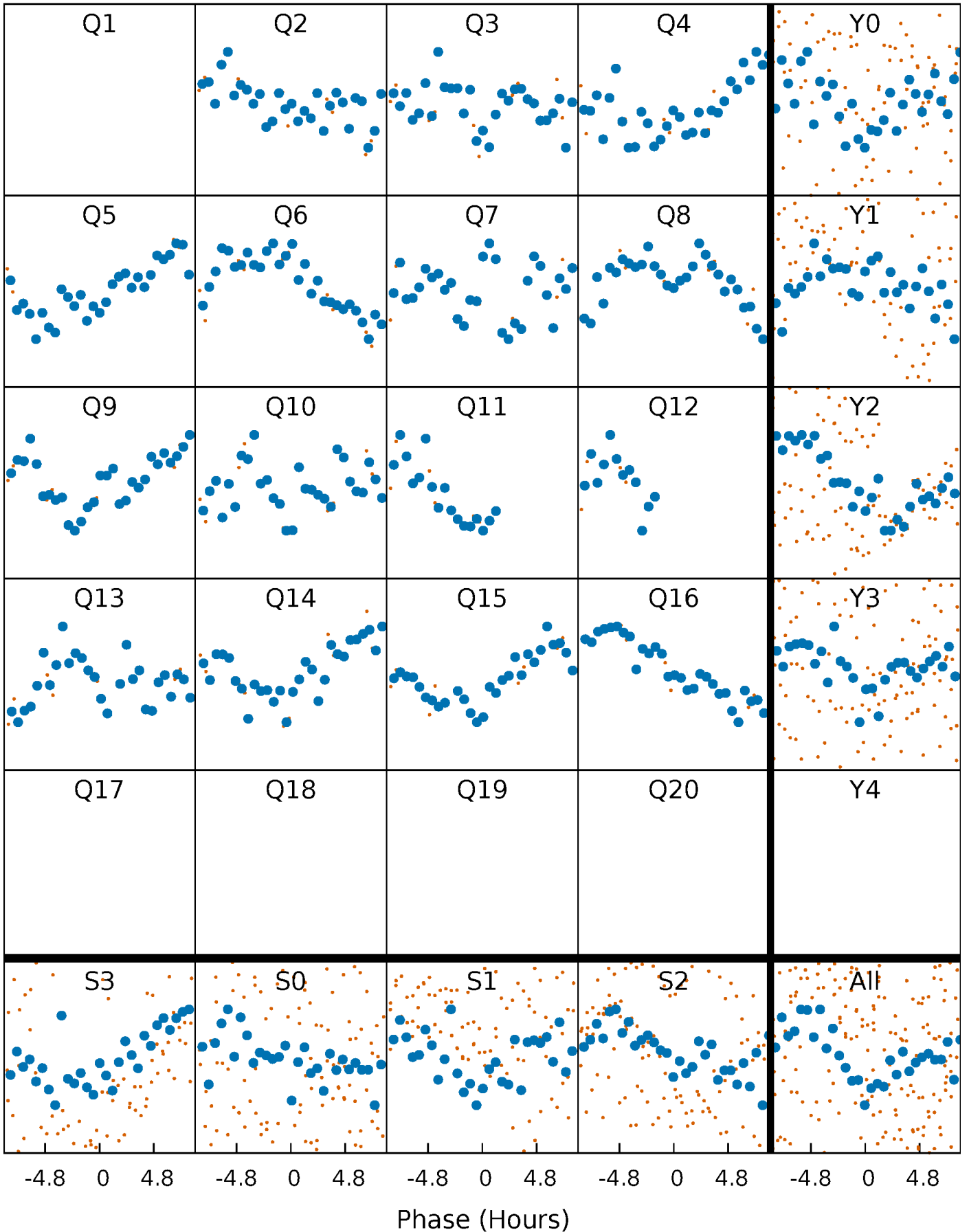


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



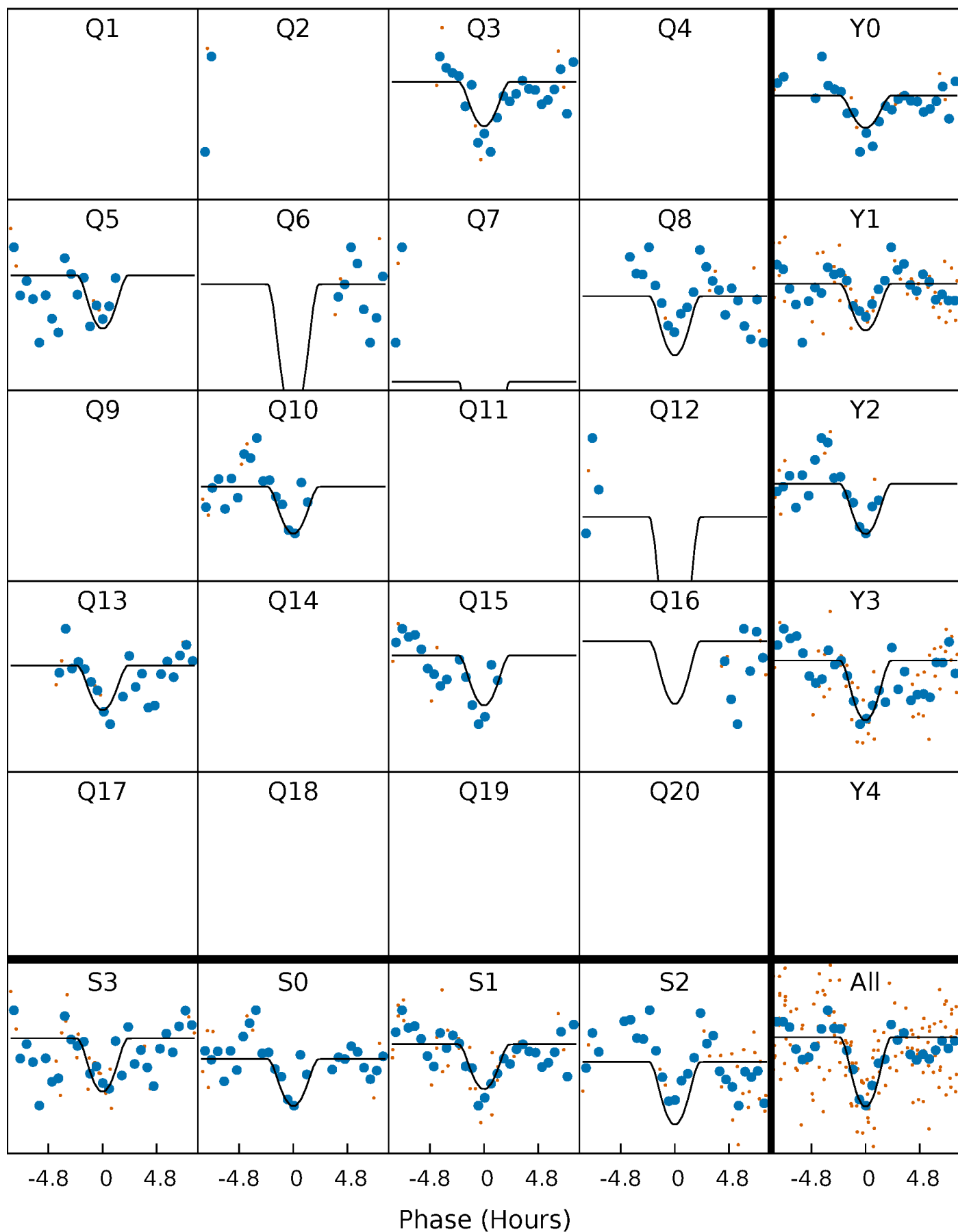
PDC Quarter-Phased Transit Curves

TCE 002167600-02 $P = 97.427044$ Days $T_0 = 186.328120$ (BKJD)



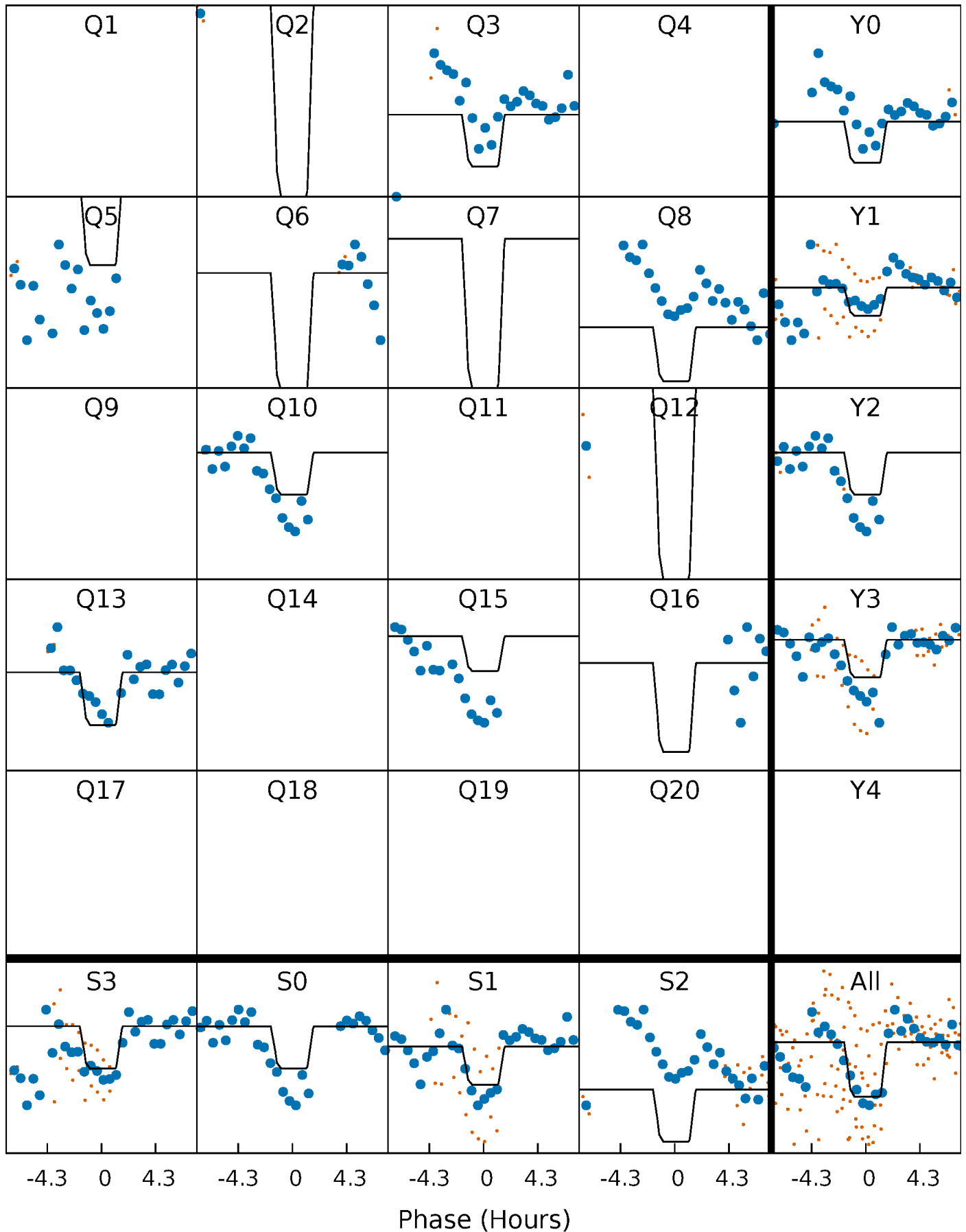
DV Quarter-Phased Transit Curves

TCE 002167600-02 P= 97.427044 Days $T_0=186.328120$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

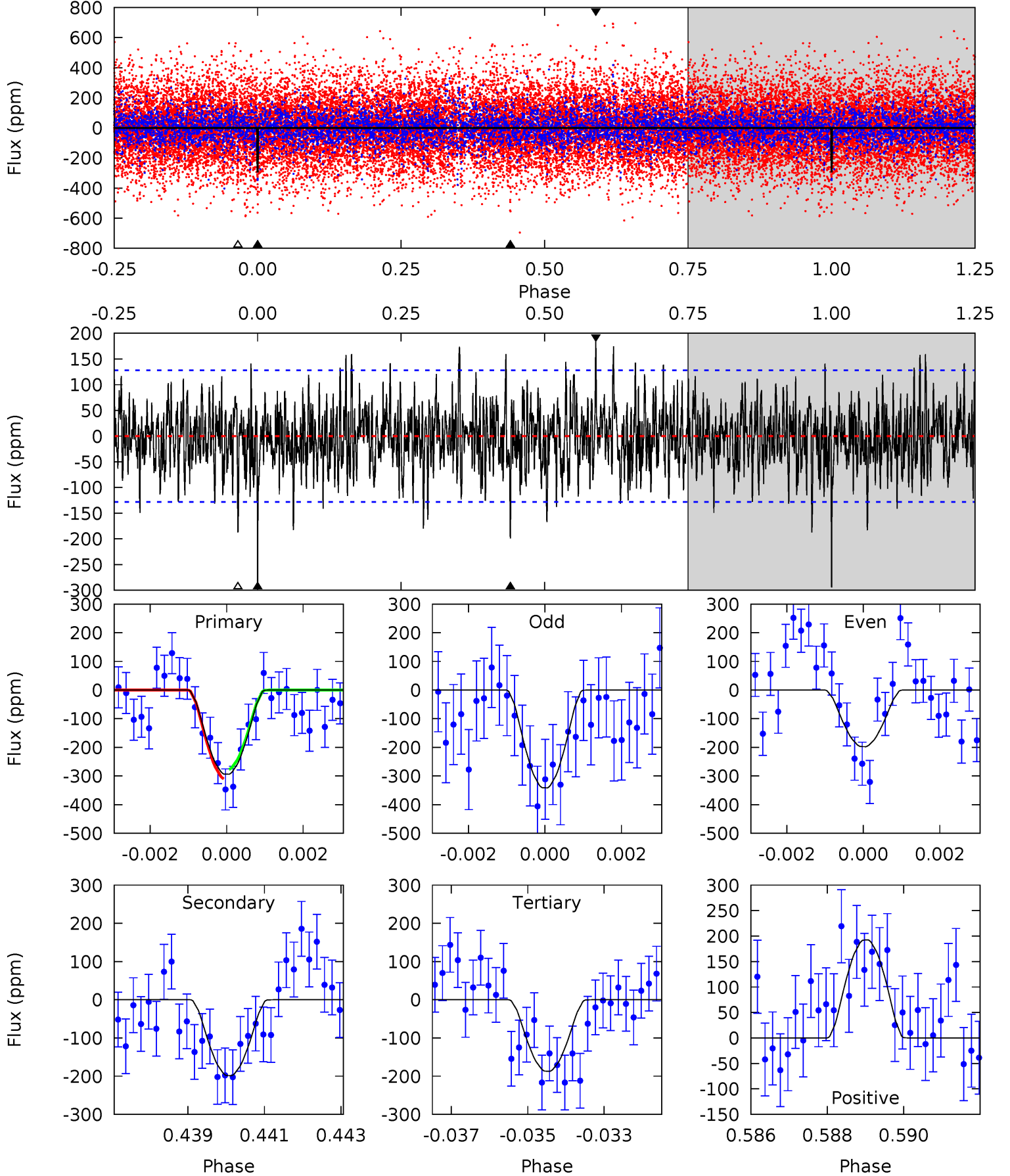
TCE 002167600-02 P= 97.427724 Days $T_0=186.326007$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-02, P = 97.427044 Days, E = 88.901076 Days

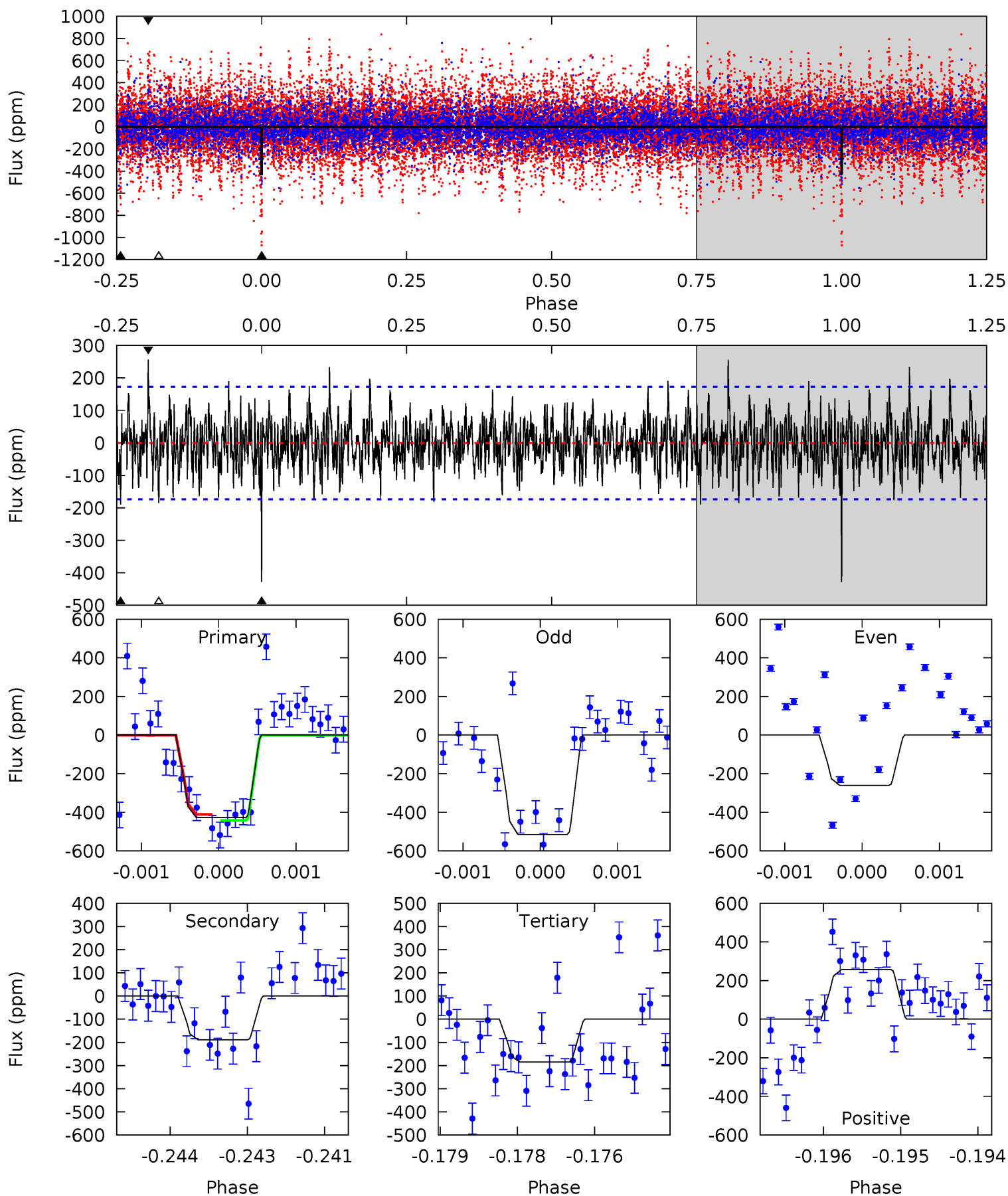
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	8.27	7.80	8.02	5.33	3.10	2.19	4.44	4.23	0.47	0.25	2.84	1.08	0.40	0.68



Alt Model-Shift Uniqueness Test

002167600-02, P = 97.427724 Days, E = 88.898283 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	5.89	5.76	8.00	5.40	3.21	1.92	7.55	5.31	0.13	-2.11	3.84	0.87	0.38	0.48



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-199 ± 24	$32.23^{+35.57}_{-22.41}$	1152^{+70}_{-122}	3337^{+1743}_{-628}	26^{+249}_{-20}
Alt.	-189 ± 32	$32.51^{+32.81}_{-21.91}$	1145^{+71}_{-125}	3303^{+1708}_{-582}	25^{+224}_{-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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

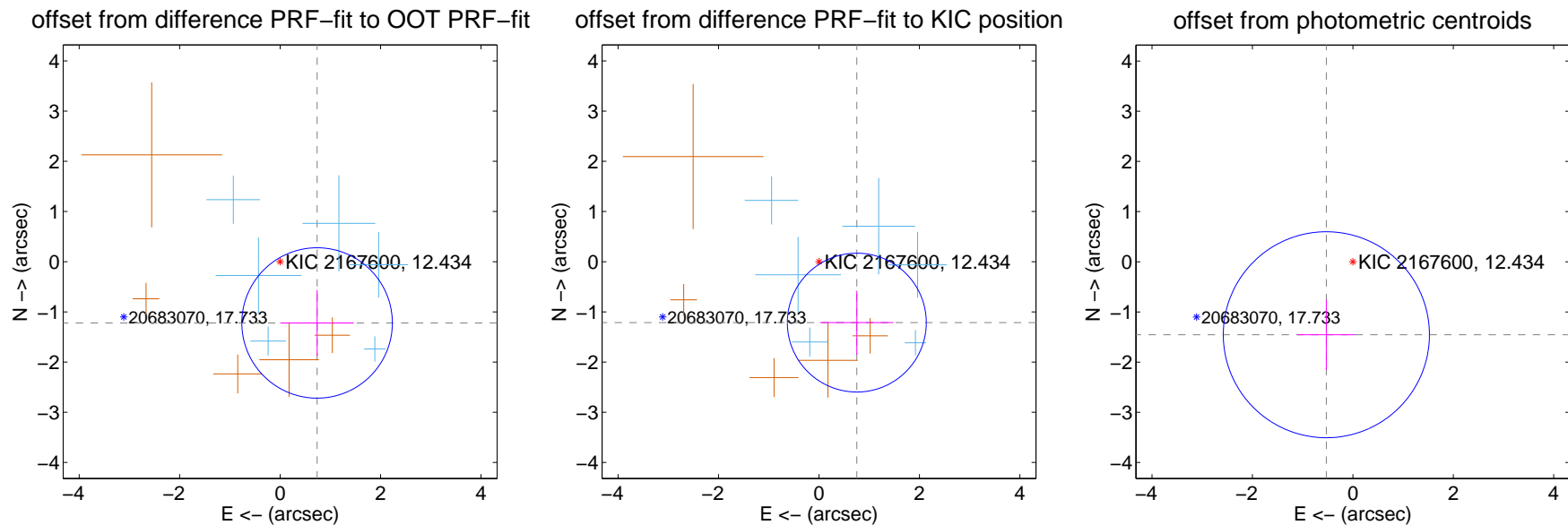
DV Centroid Data

Supplemental centroid analysis for 002167600-02. Kepler magnitude: 12.43. Transit SNR 9.07

There are 6 quarters with good PRF difference image offsets

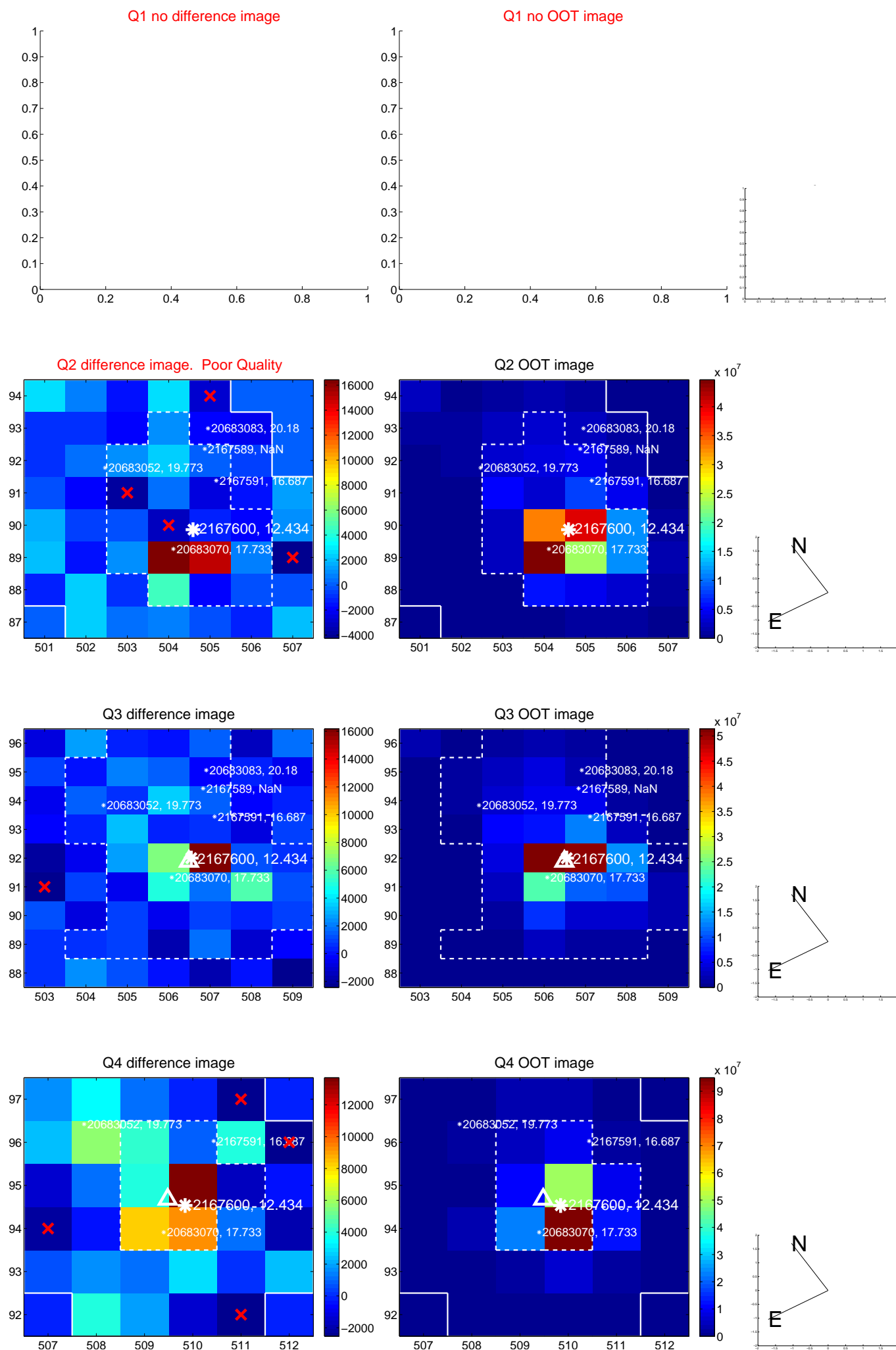
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.425 ± 0.499	2.85	-0.736 ± 0.731	-1.221 ± 0.660
PRF-fit source offset from KIC position	1.428 ± 0.461	3.10	-0.753 ± 0.731	-1.213 ± 0.636
photometric centroid source offset	1.55 ± 0.68	2.26	0.53 ± 0.58	-1.45 ± 0.70

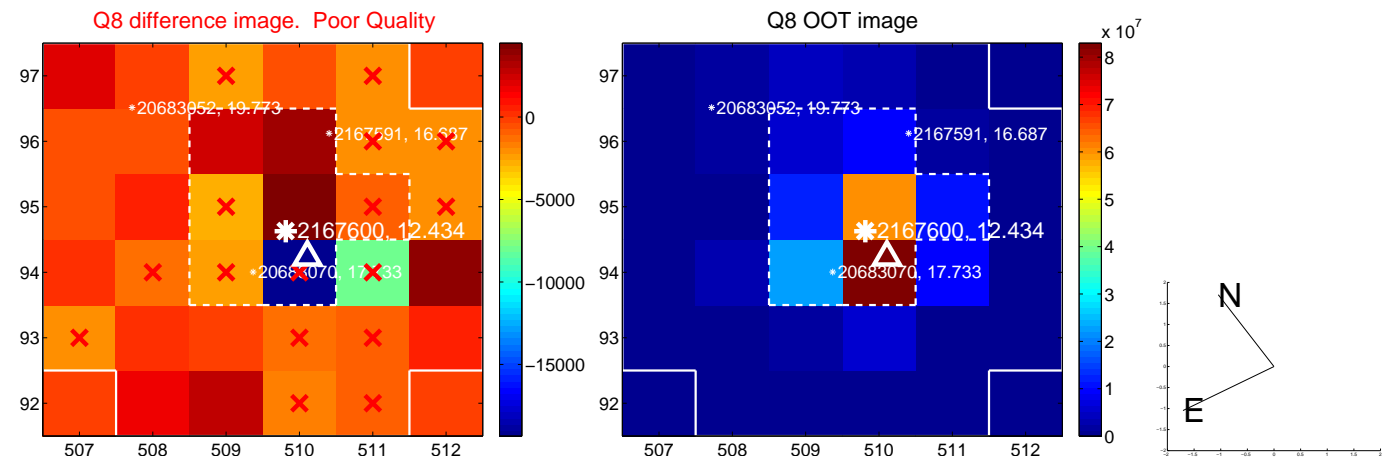
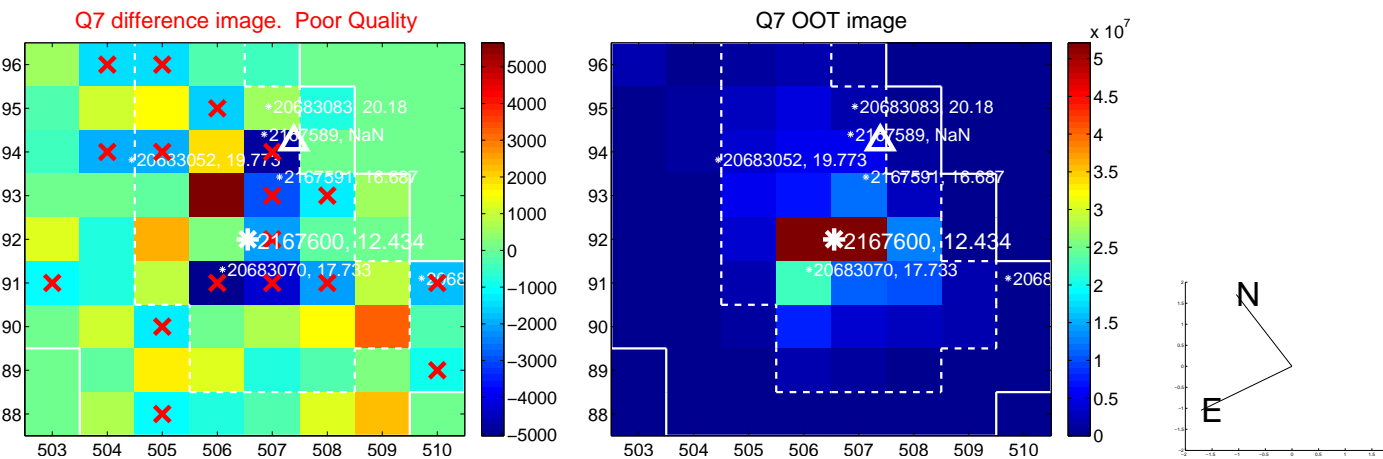
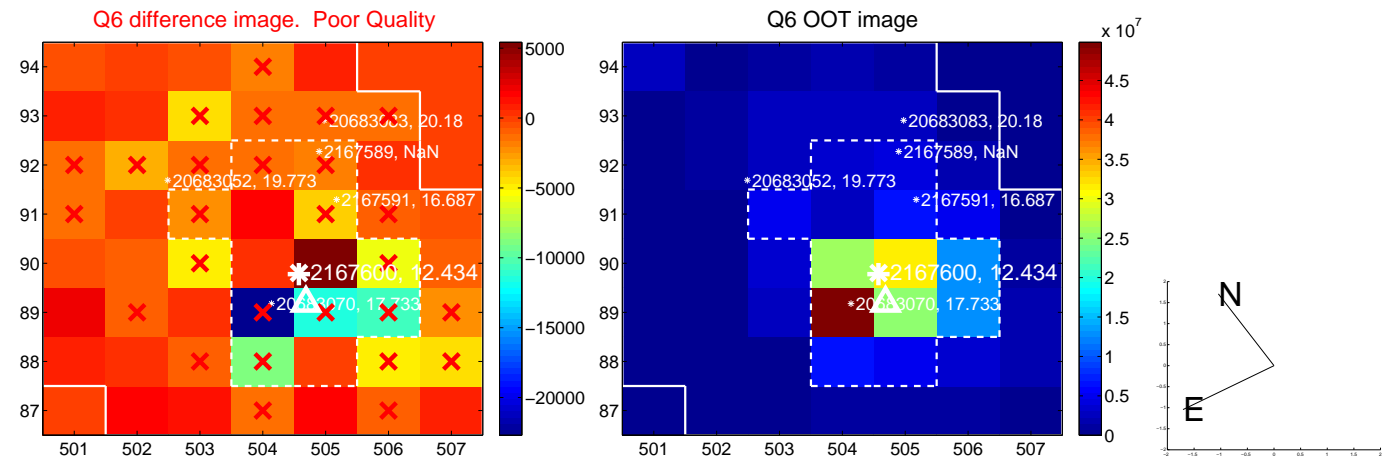
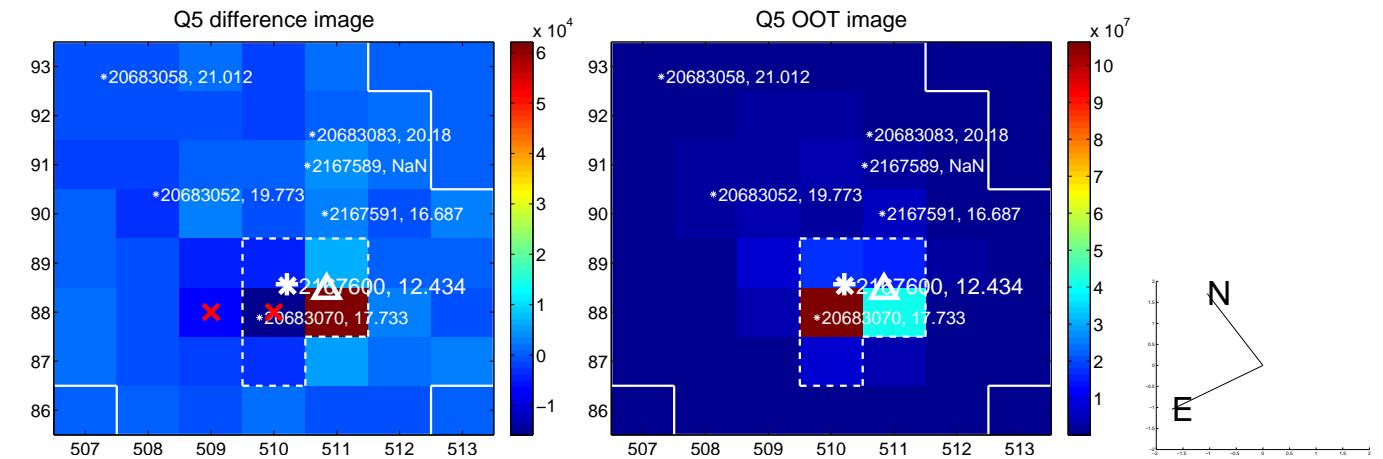


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

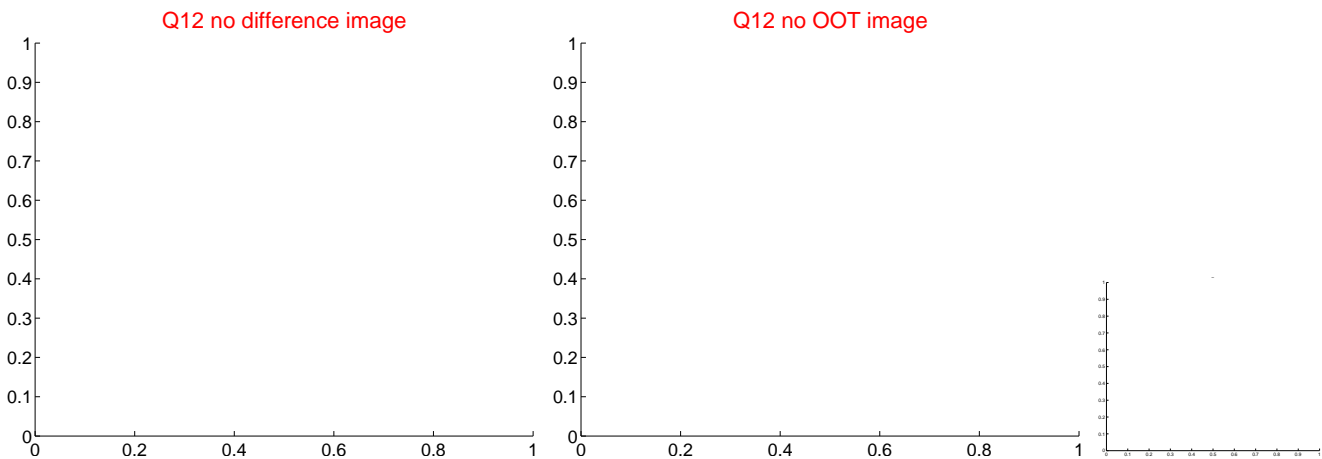
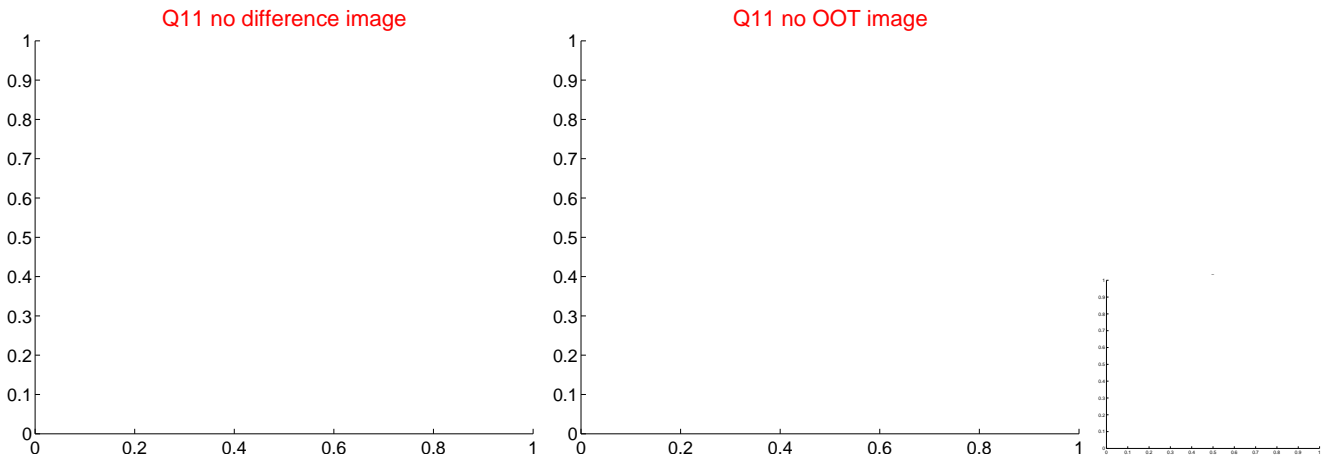
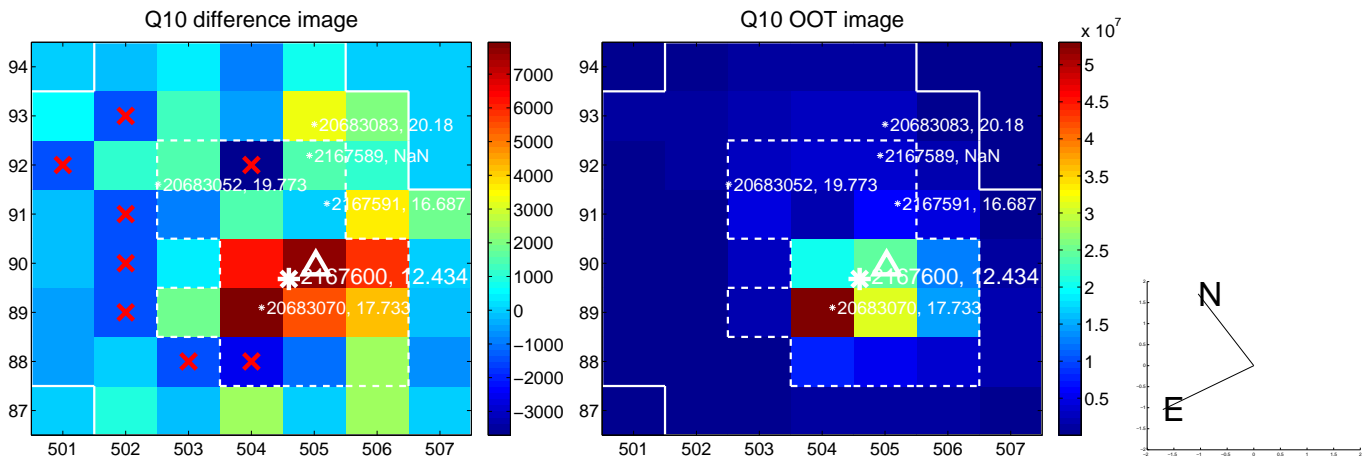
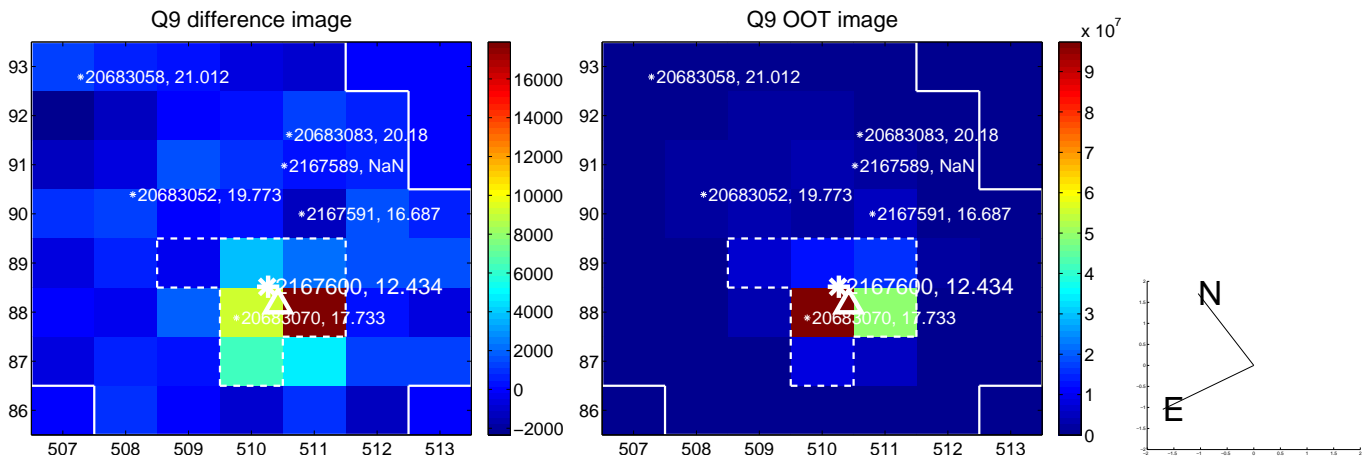
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



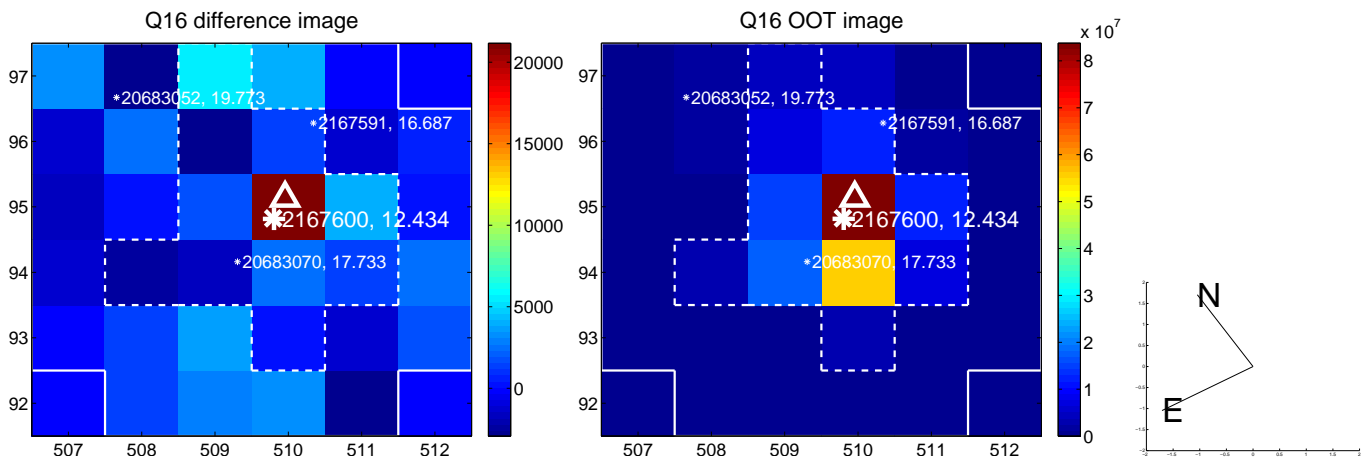
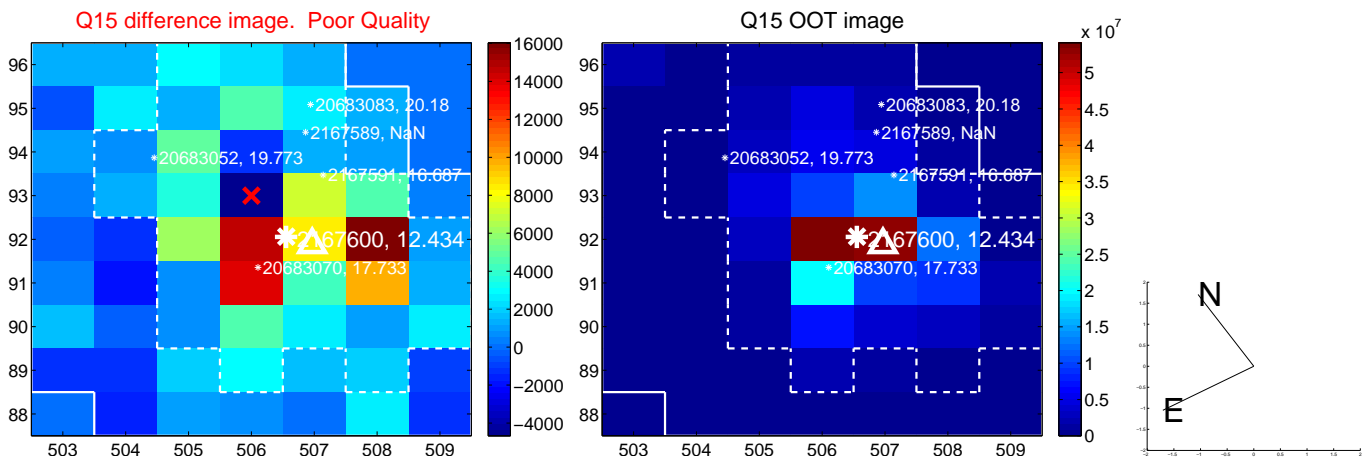
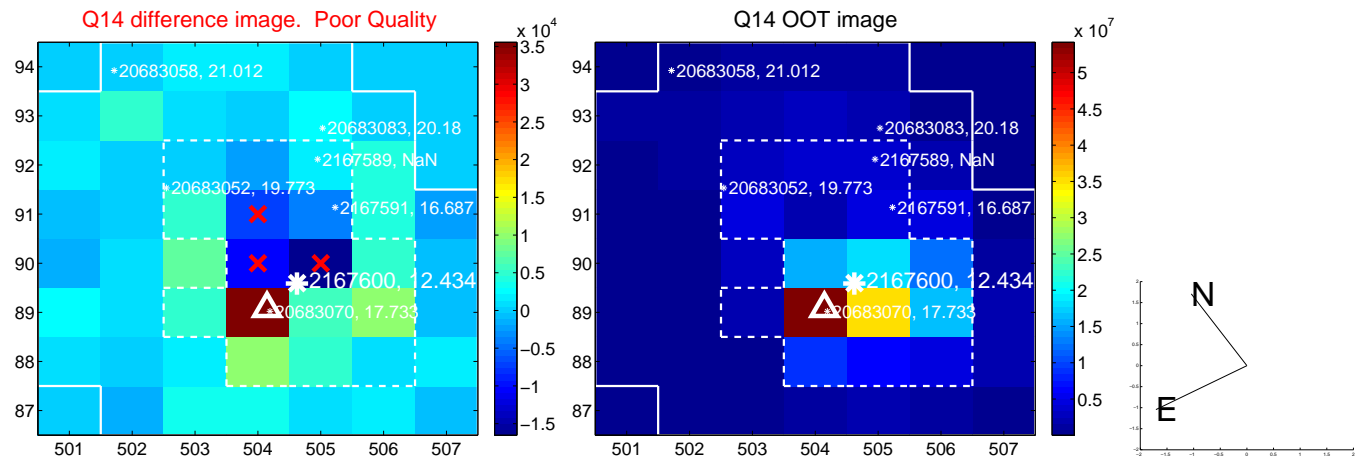
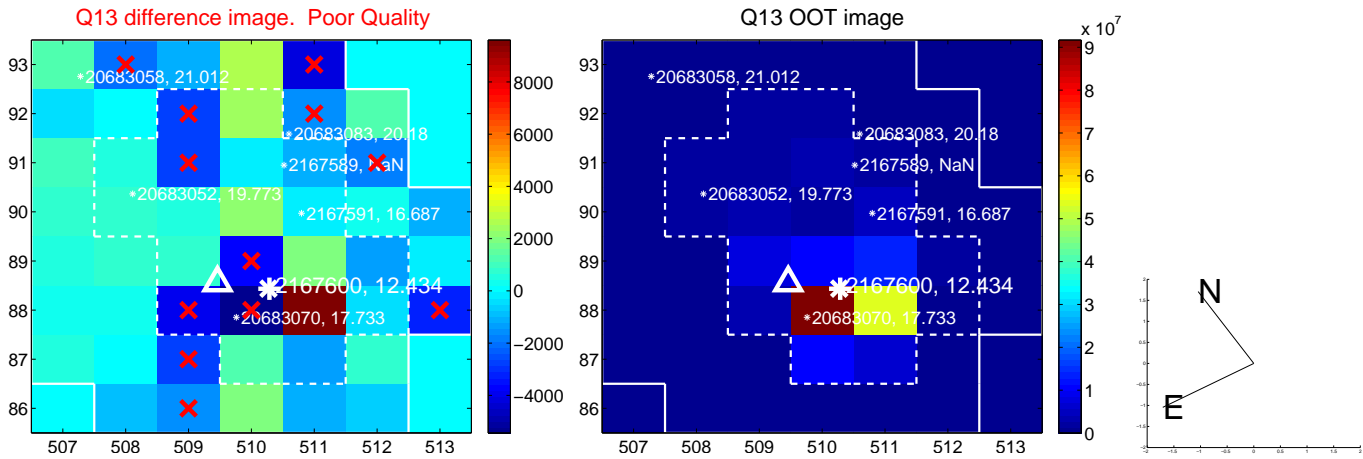
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



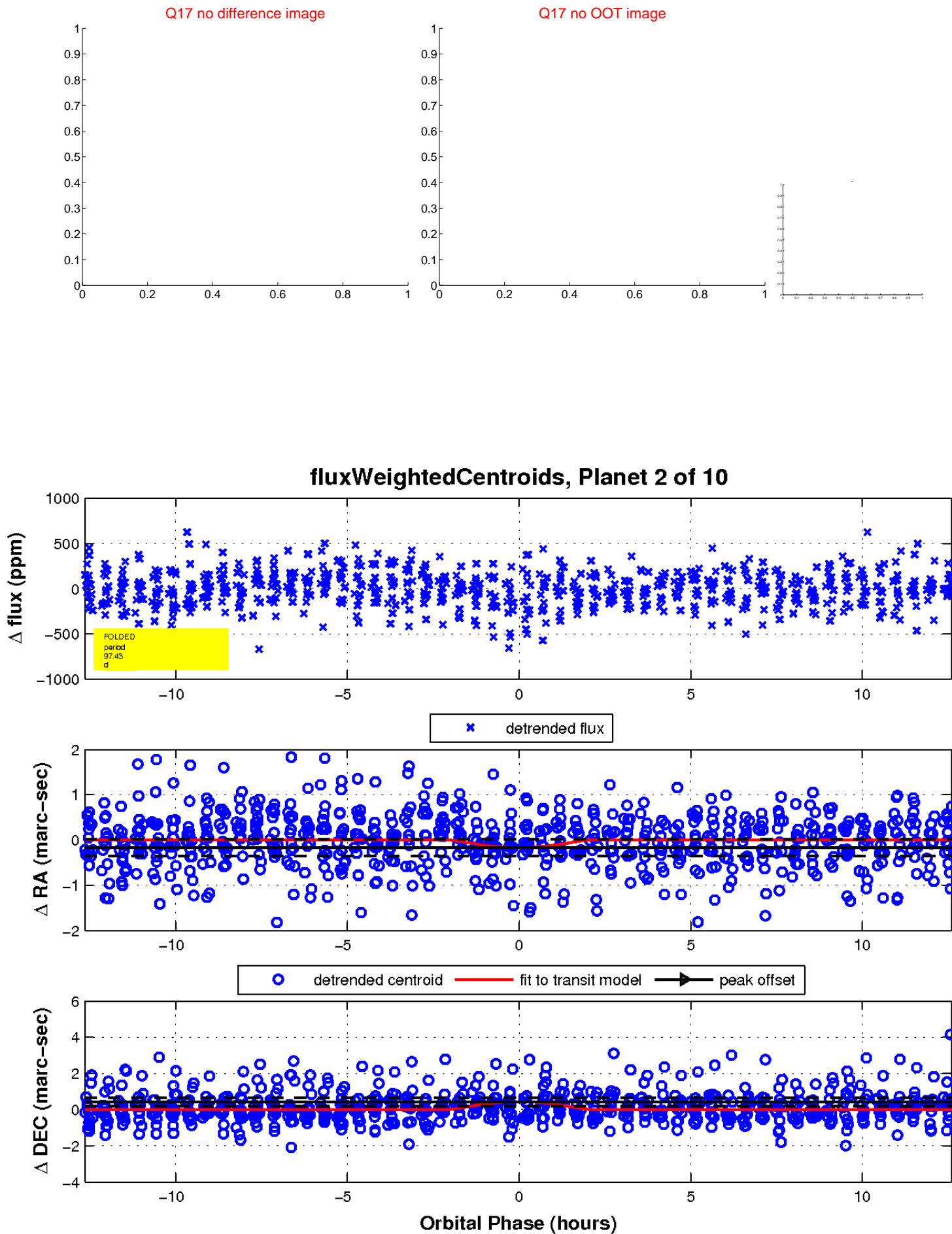
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

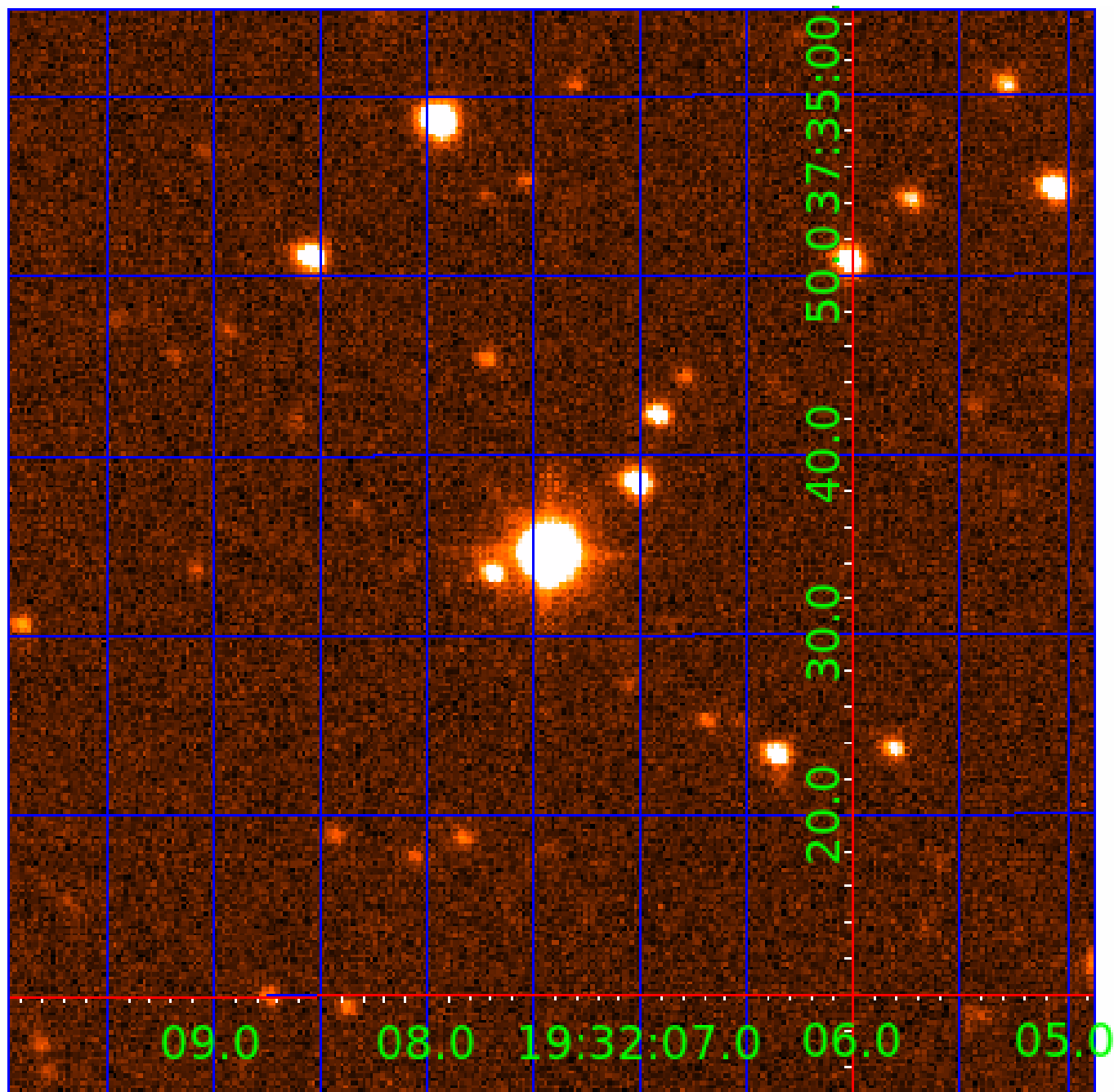


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

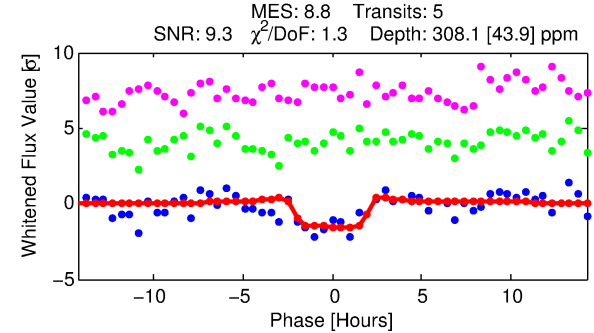
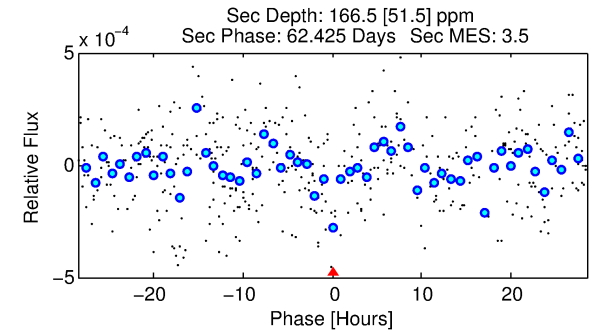
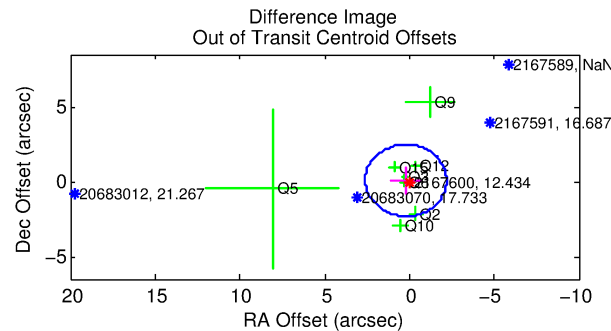
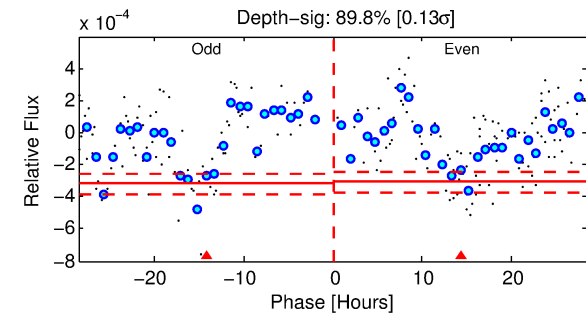
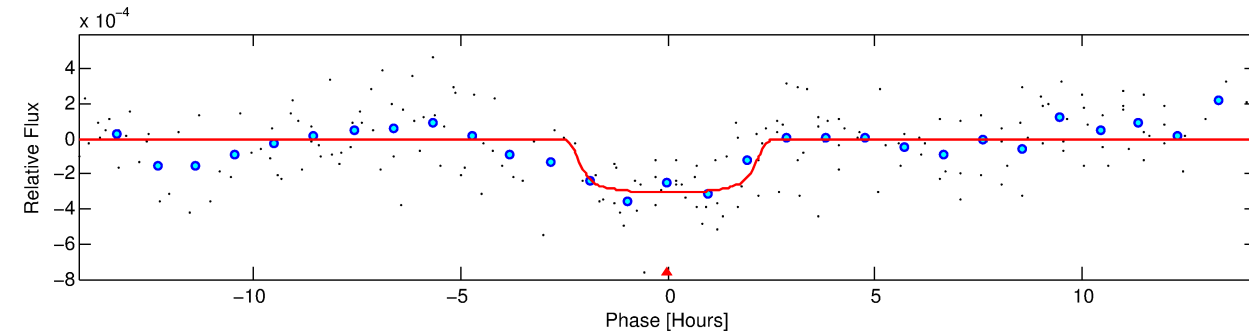
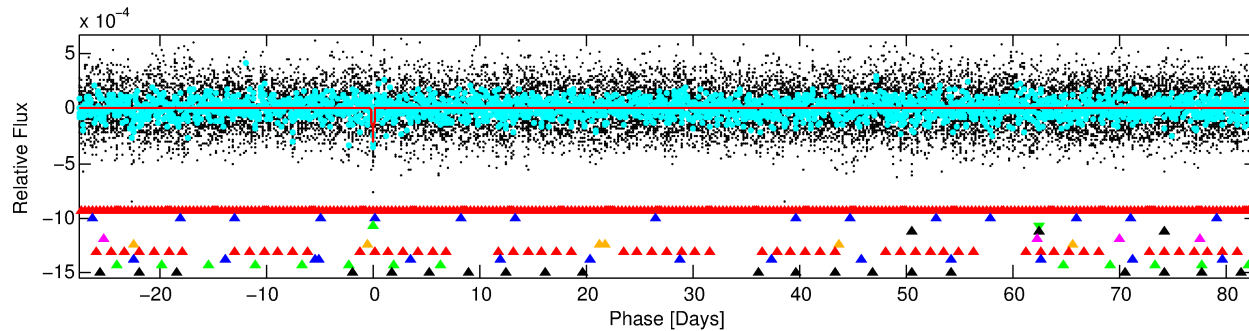
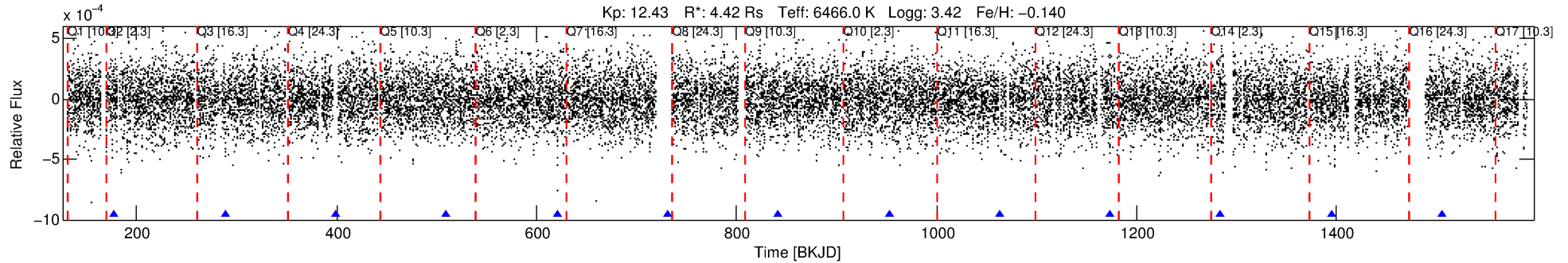
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-03

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 3 of 10 Period: 110.620 d



DV Fit Results:

Period = 110.61998 [0.00185] d
Epoch = 178.0951 [0.0143] BKJD
Rp/R* = 0.0187 [0.0081]
a/R* = 86.54 [209.32]
b = 0.90 [0.54]
Seff = 98.54 [63.96]
Teq = 803 [130] K
Rp = 9.02 [5.41] Re
a = 0.5566 [0.2224] AU
Ag = 348.49 [390.40] [0.89σ]
Teffp = 5367 [1242] K [3.65σ]

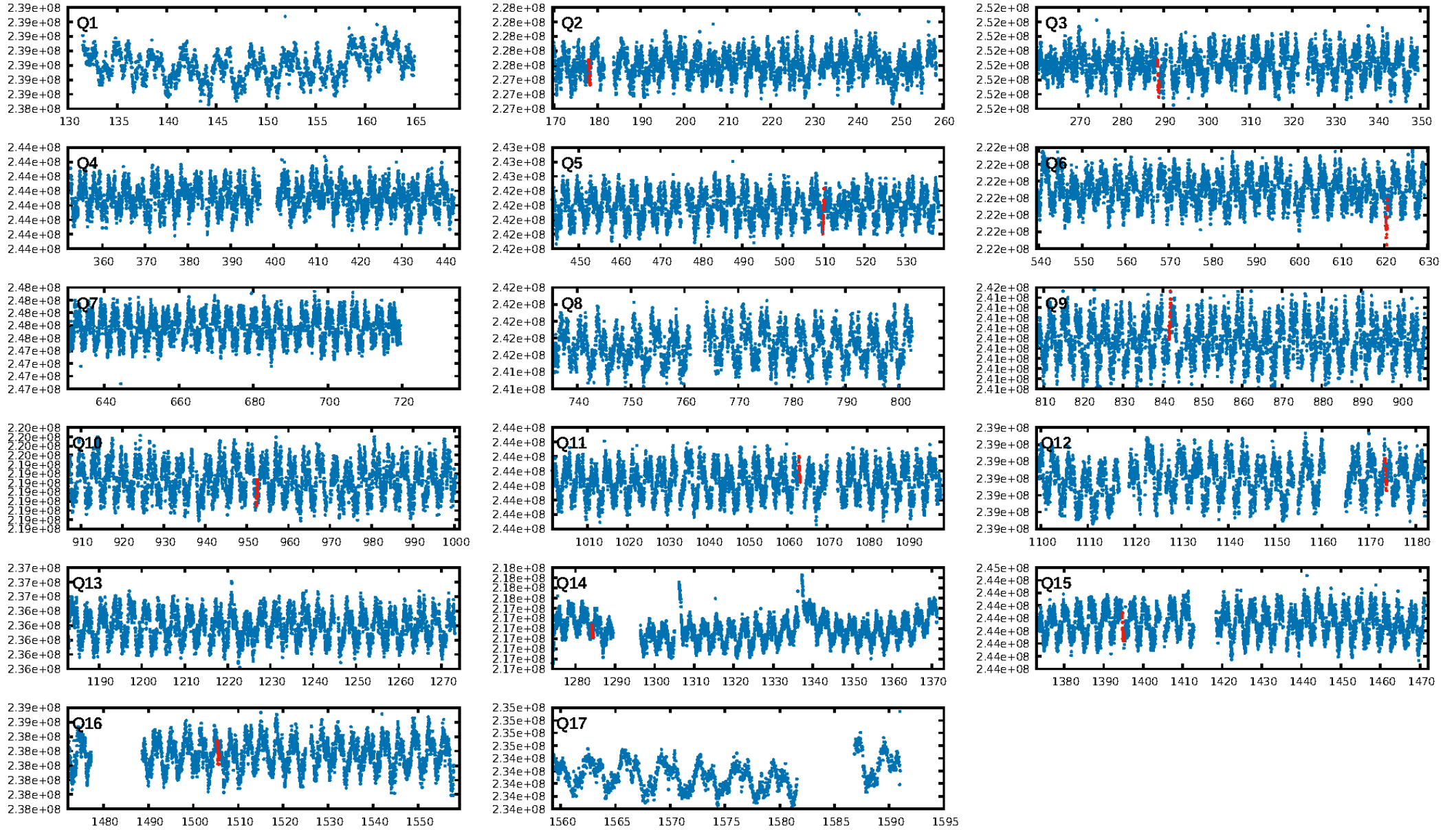
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [39.46σ]
LongPeriod-sig: 100.0% [17.46σ]
ModelChiSquare2-sig: 9.5%
ModelChiSquareGof-sig: 99.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.6675
Centroid-sig: 45.8%
Centroid-so: 0.535 arcsec [0.86σ]
OotOffset-rm: 0.229 arcsec [0.29σ]
KicOffset-rm: 0.205 arcsec [0.21σ]
OotOffset-st: 3/2/1/2 [8]
KicOffset-st: 3/2/1/2 [8]
DiffImageQuality-fgm: 0.62 [5/8]
DiffImageOverlap-fno: 0.56 [5/9]

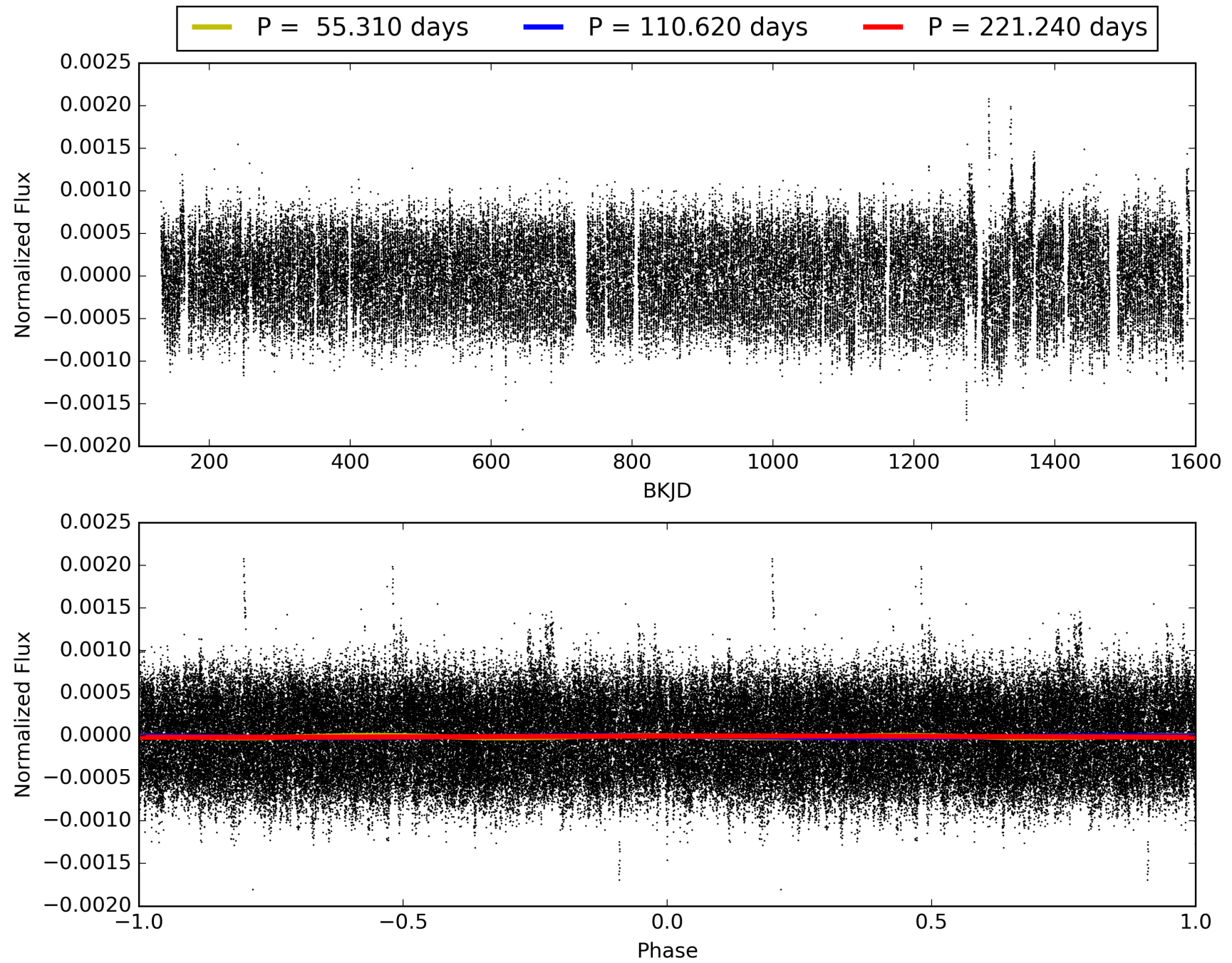
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:24:14 Z

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

TCE 002167600-03, PDC Light Curves

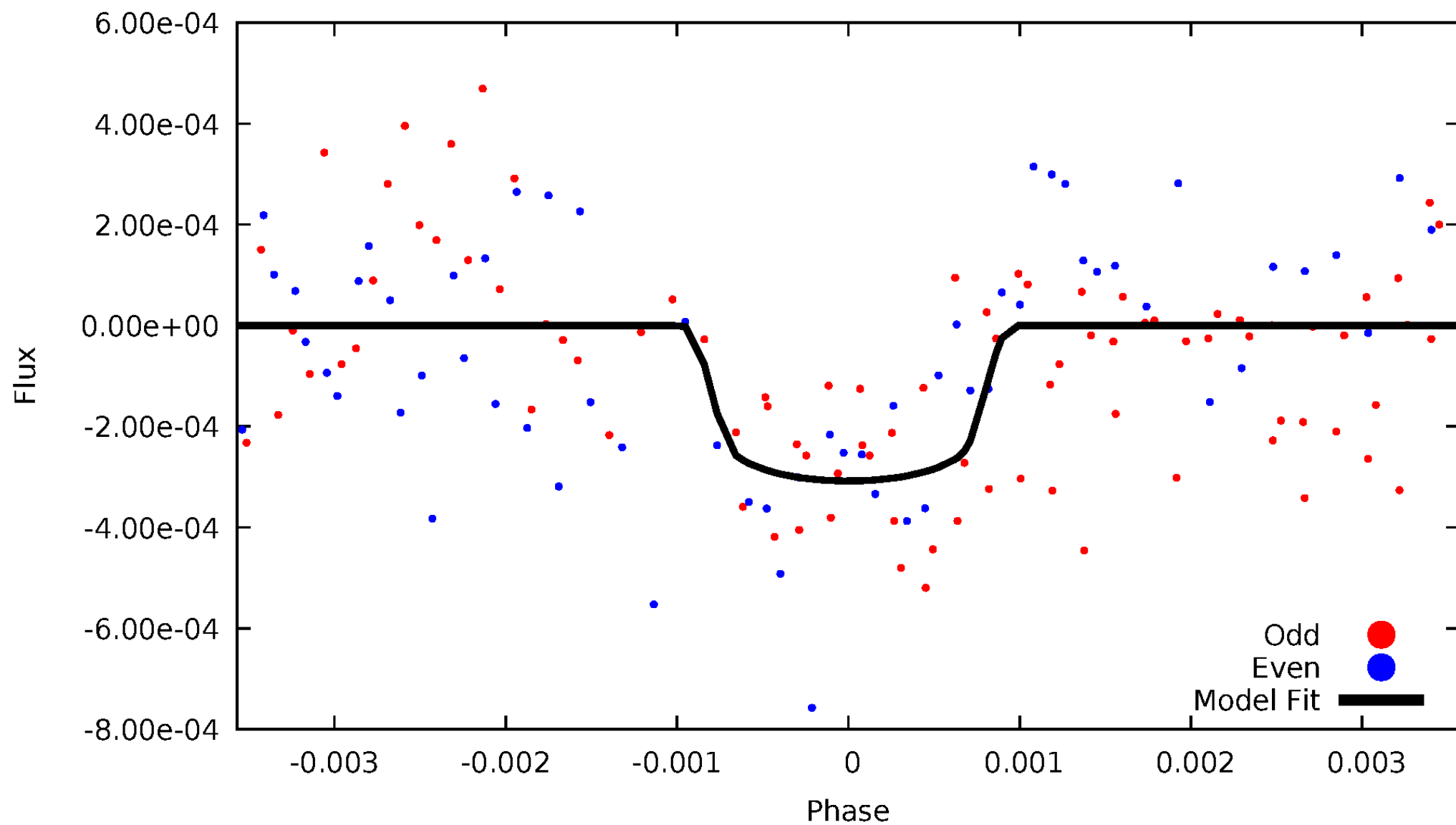


TCE 002167600-03



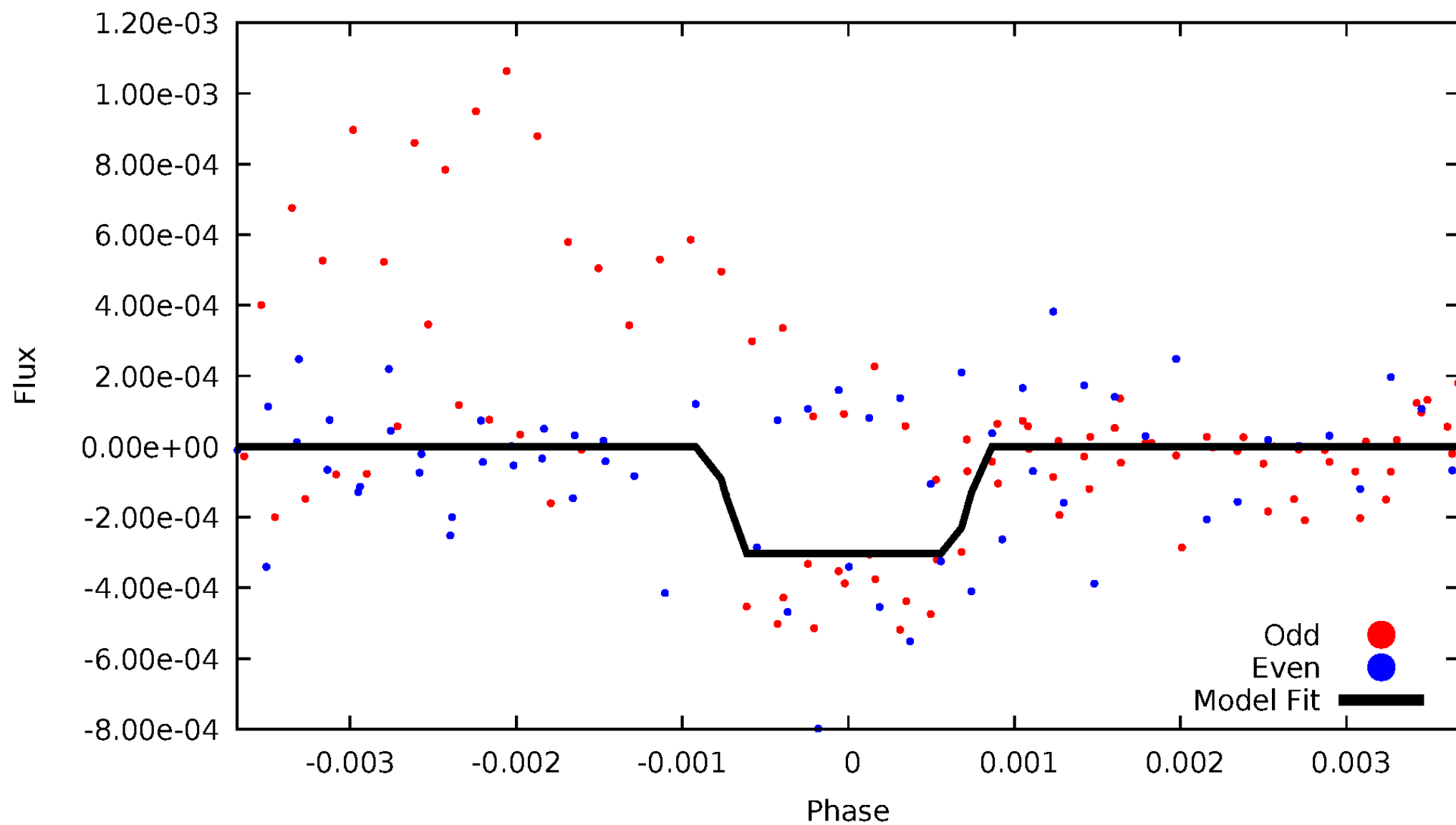
DV Odd/Even

TCE 002167600-03

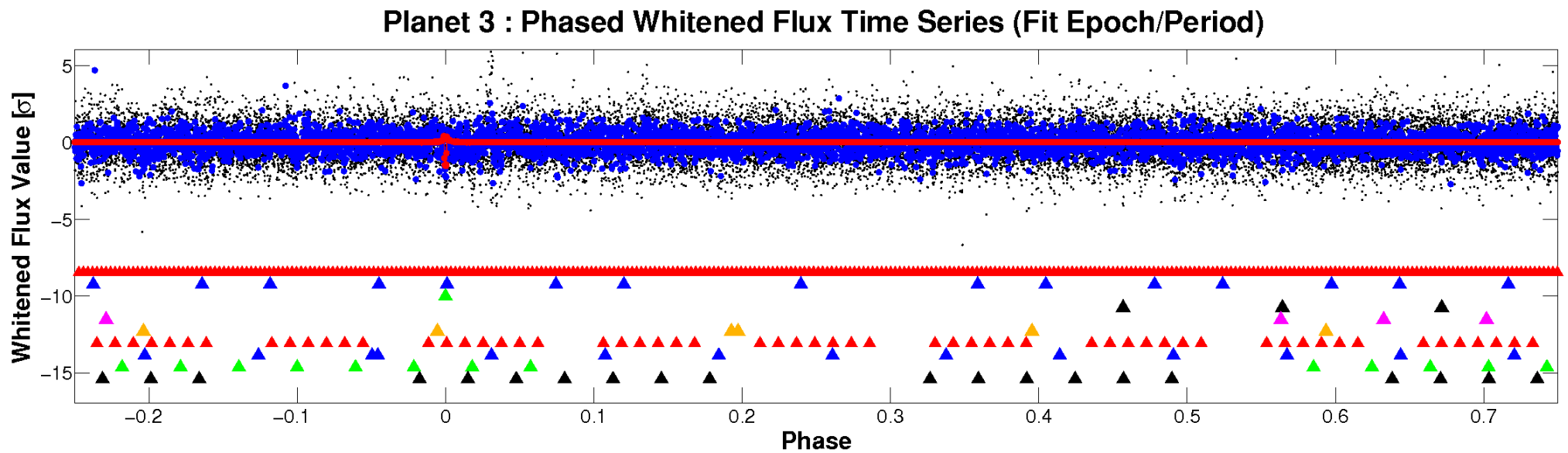
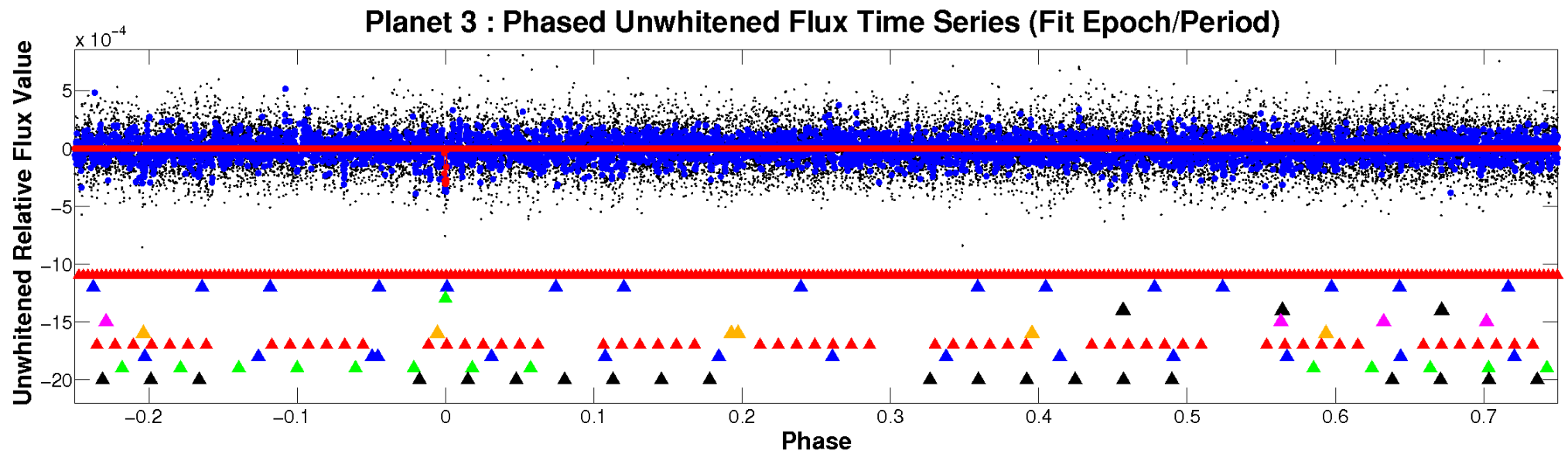


ALT Odd/Even

TCE 002167600-03

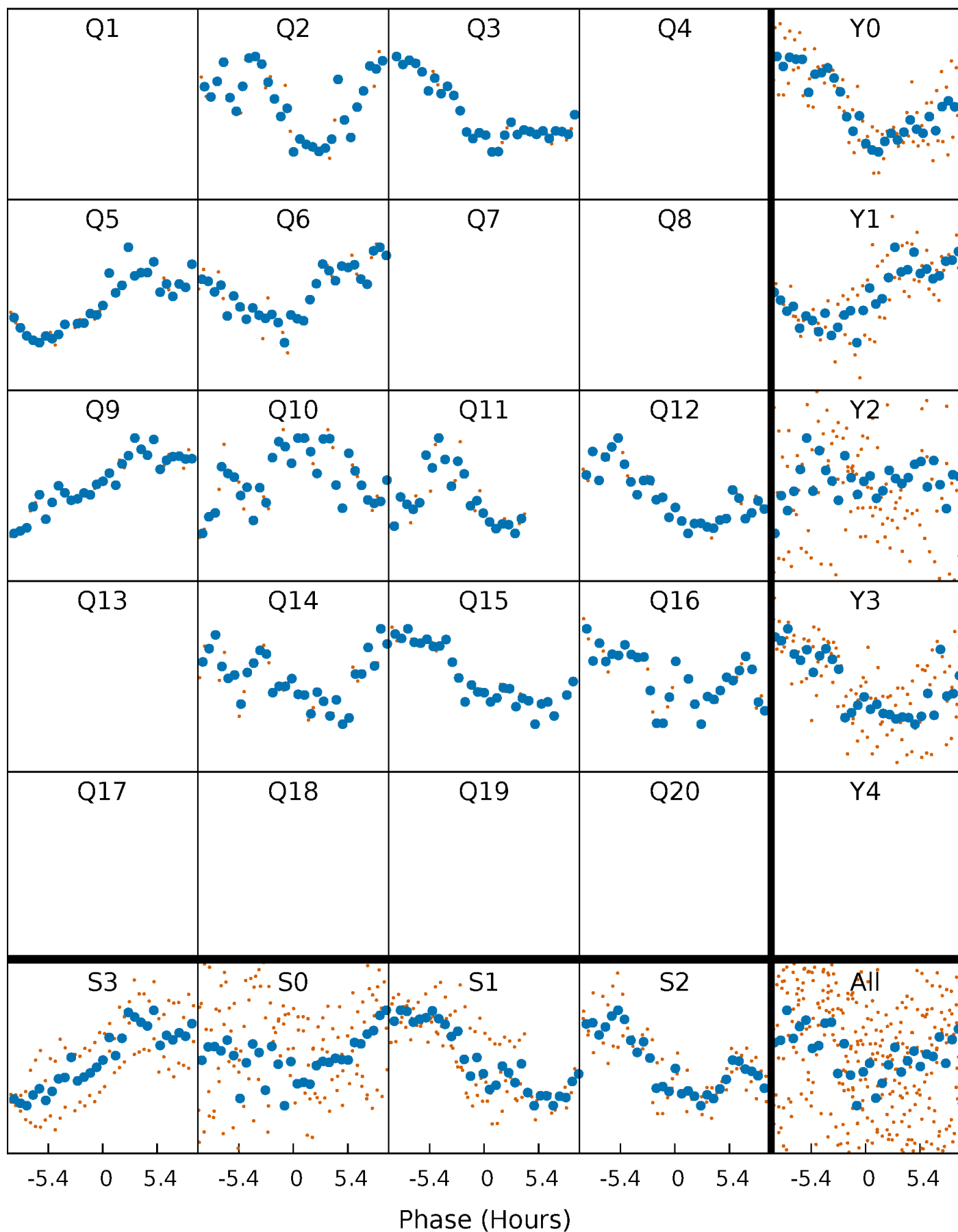


Non-Whitened Vs. Whitened Light Curve



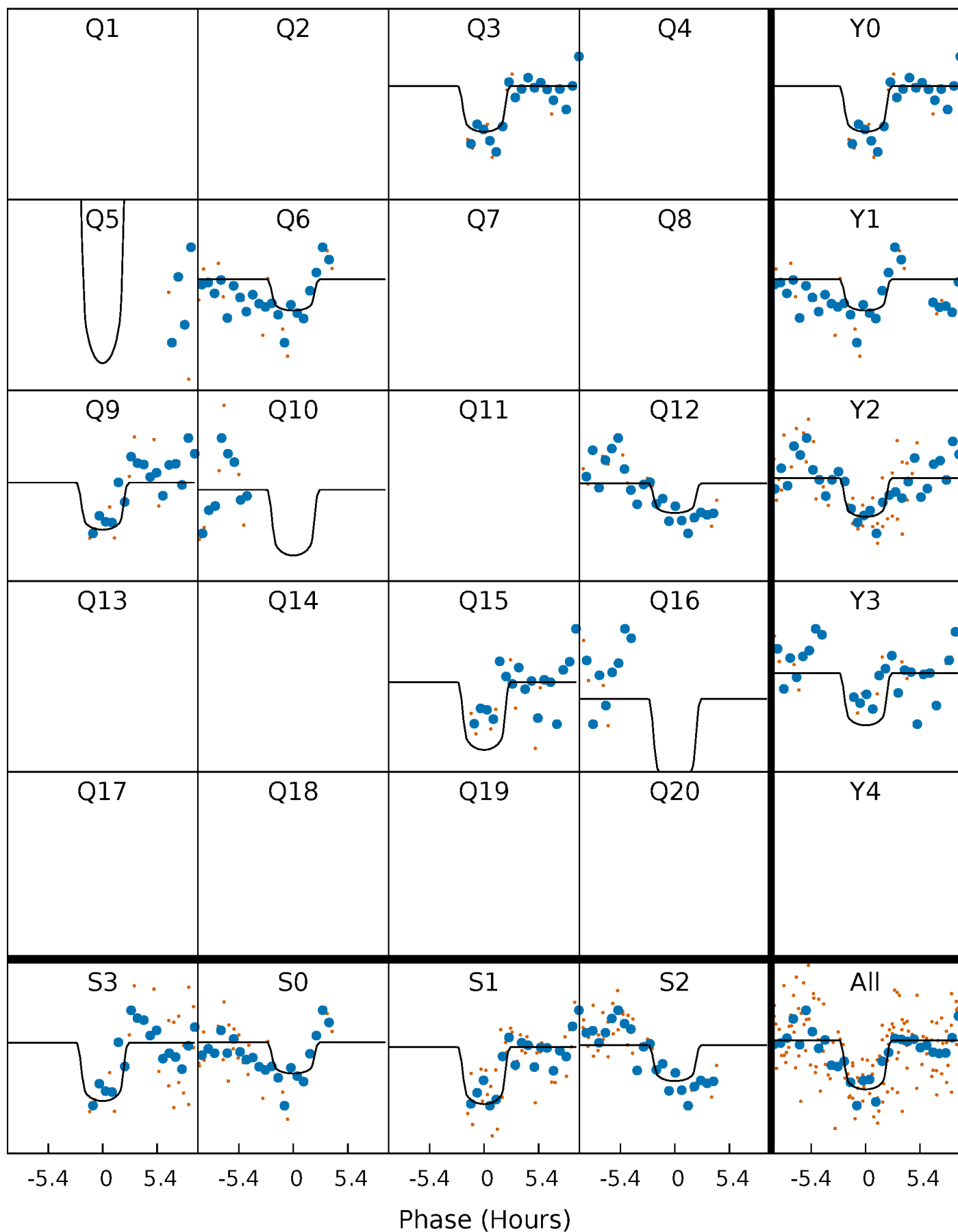
PDC Quarter-Phased Transit Curves

TCE 002167600-03 P=110.619981 Days $T_0=178.095141$ (BKJD)



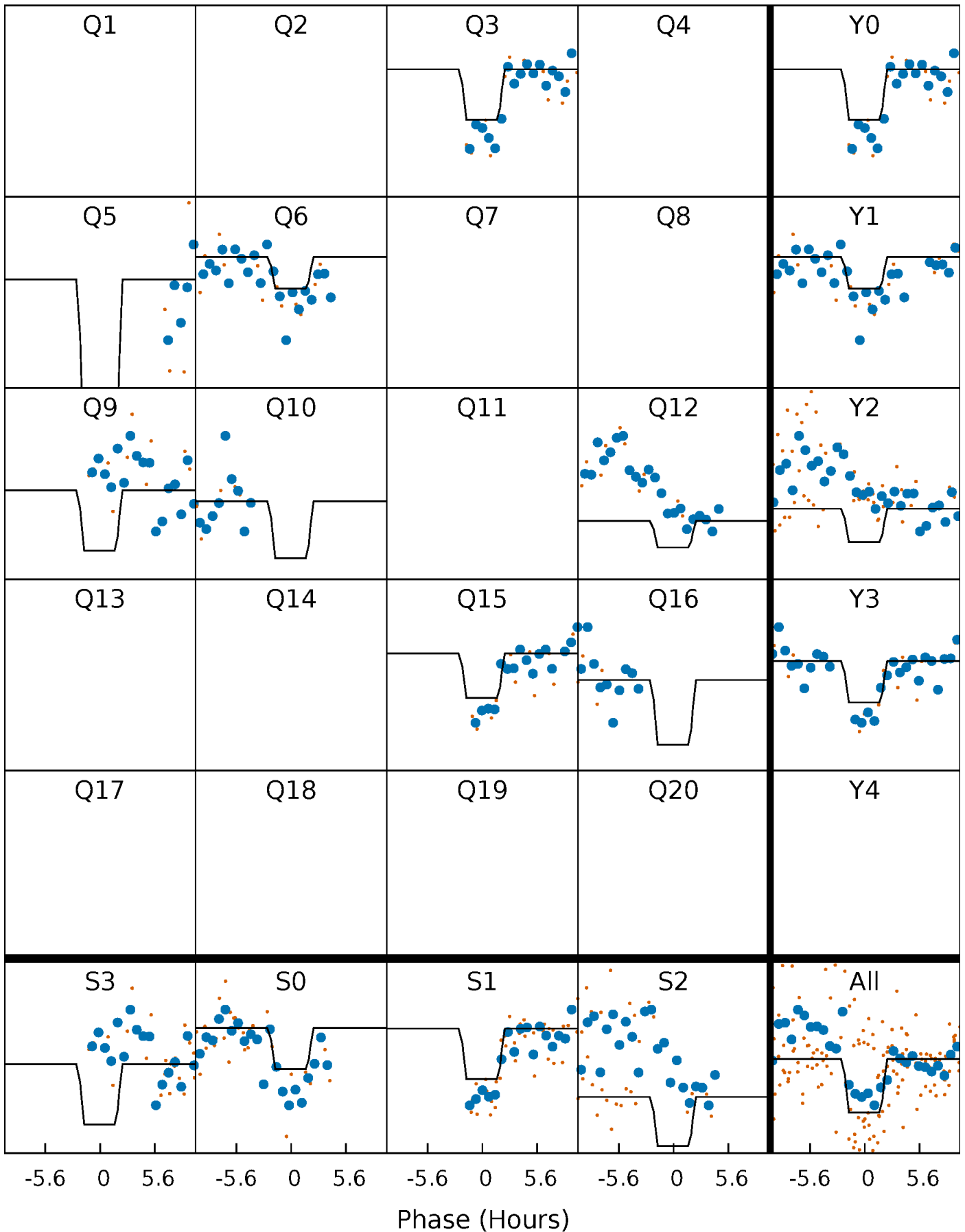
DV Quarter-Phased Transit Curves

TCE 002167600-03 P=110.619981 Days $T_0=178.095141$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

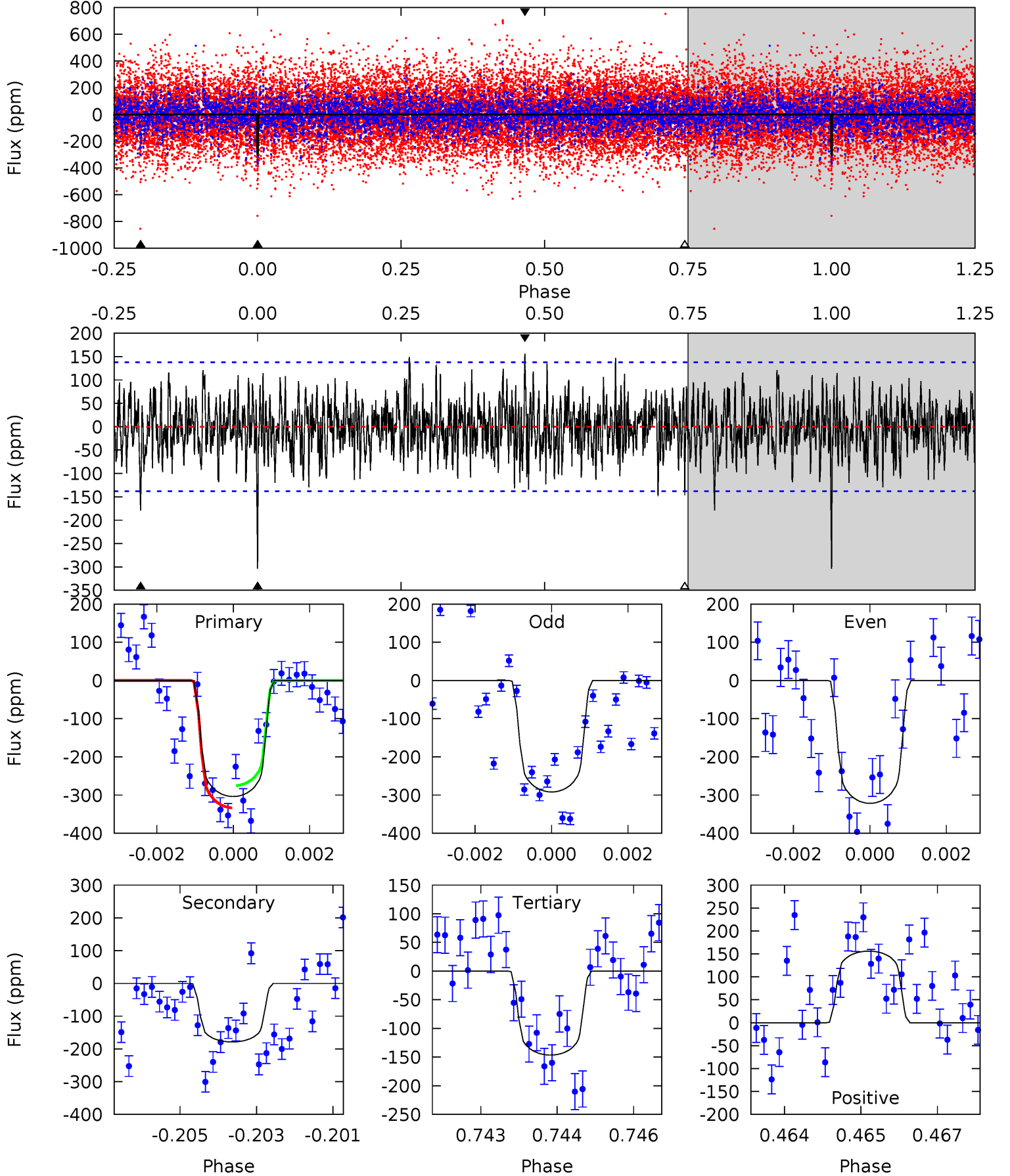
TCE 002167600-03 P=110.618975 Days $T_0=178.095786$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-03, P = 110.619981 Days, E = 67.475160 Days

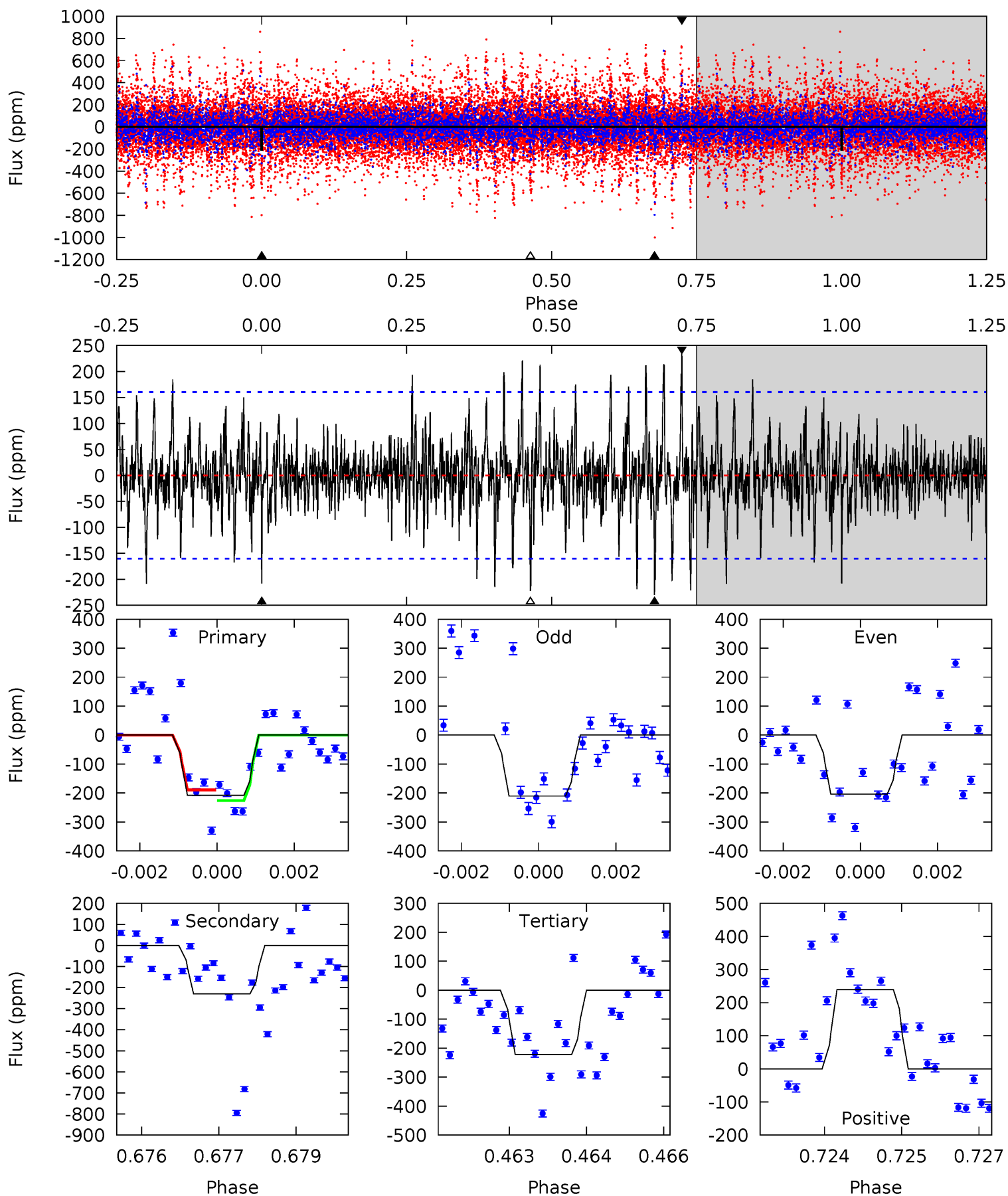
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	6.92	5.67	6.04	5.34	3.11	1.79	6.09	5.72	1.25	0.88	0.56	0.82	0.34	1.12



Alt Model-Shift Uniqueness Test

002167600-03, P = 110.618975 Days, E = 67.476811 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.97	7.71	7.44	8.01	5.37	3.16	1.86	-0.47	-1.04	0.27	-0.30	0.12	0.52	0.51	0.61



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-179 ± 26	$8.14^{+4.22}_{-3.55}$	1101^{+62}_{-110}	5446^{+1822}_{-791}	439^{+913}_{-248}
Alt.	-230 ± 30	$7.85^{+4.13}_{-3.69}$	1110^{+60}_{-109}	5930^{+2353}_{-904}	616^{+1585}_{-358}

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 $A_{obs} \gg 1.0$

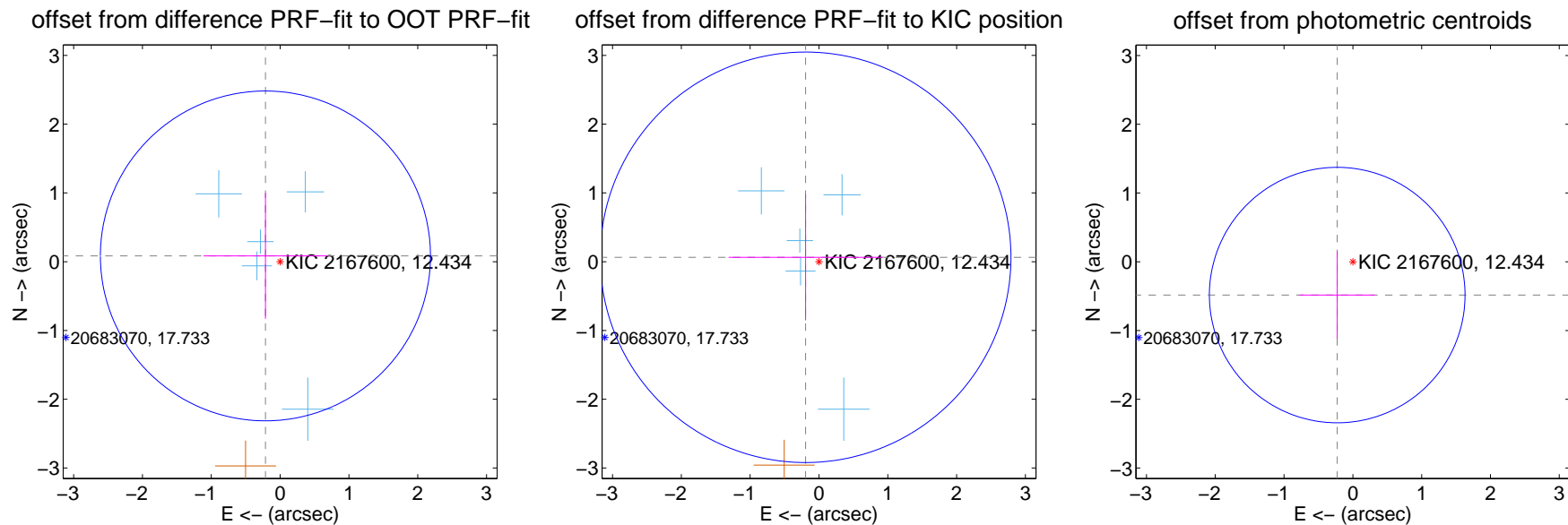
DV Centroid Data

Supplemental centroid analysis for 002167600-03. Kepler magnitude: 12.43. Transit SNR 9.28

There are 5 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.229 ± 0.799	0.29	0.213 ± 0.901	0.084 ± 0.915
PRF-fit source offset from KIC position	0.205 ± 0.995	0.21	0.195 ± 1.119	0.064 ± 0.916
photometric centroid source offset	0.54 ± 0.62	0.86	0.23 ± 0.55	-0.48 ± 0.63



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.

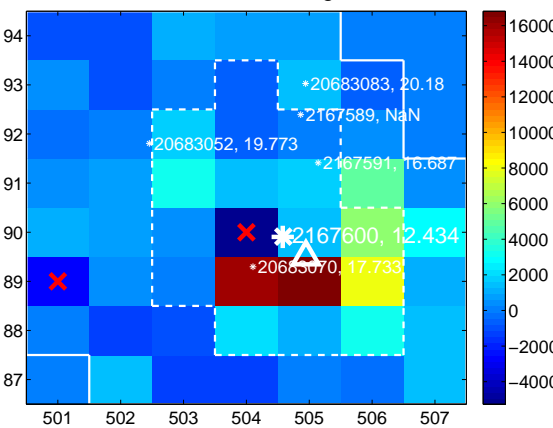
Q1 no difference image



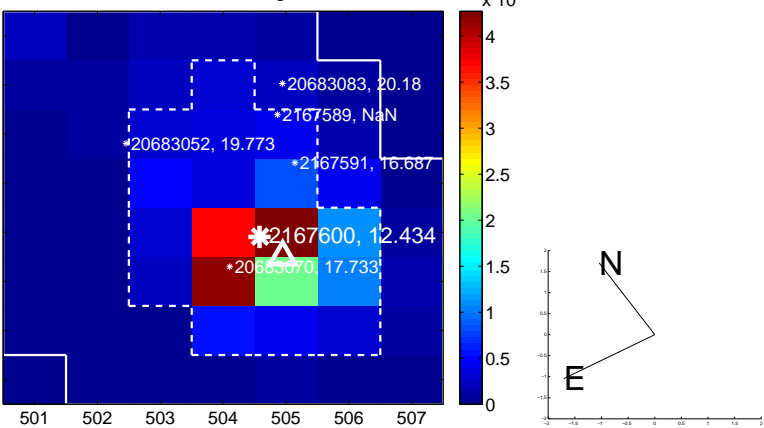
Q1 no OOT image



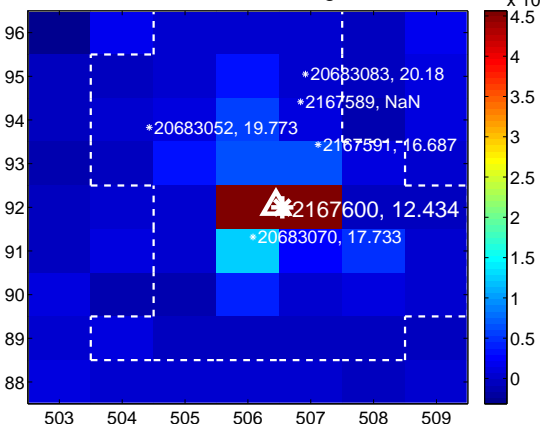
Q2 difference image



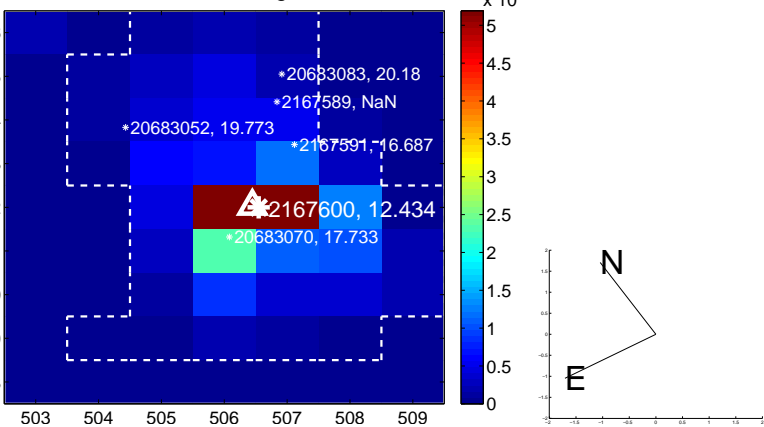
Q2 OOT image



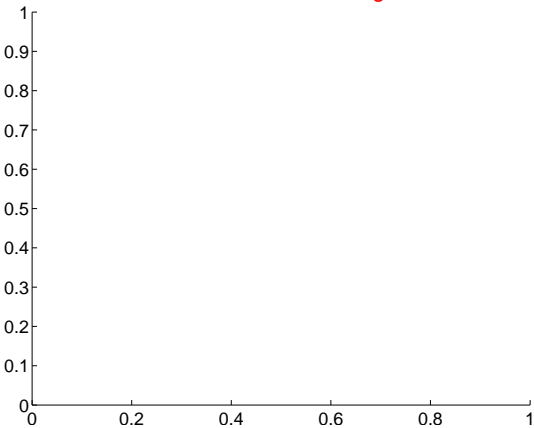
Q3 difference image



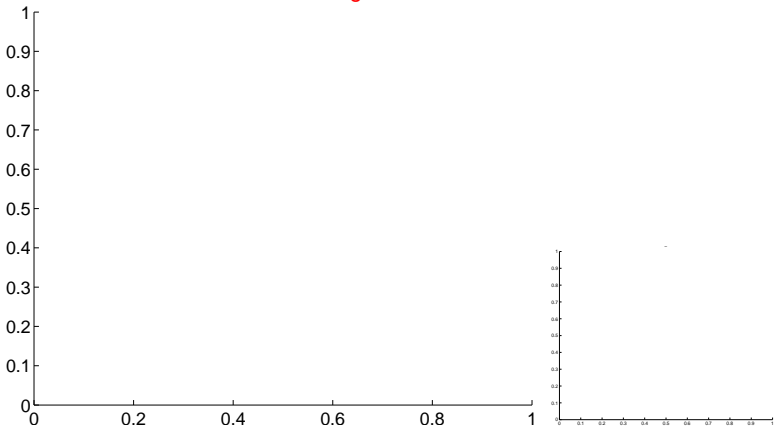
Q3 OOT image



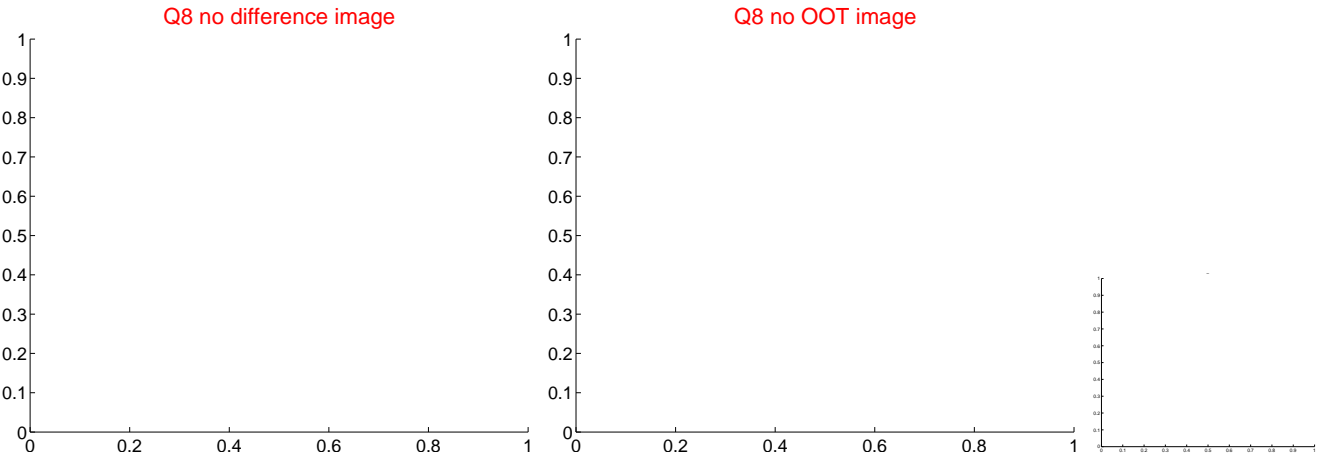
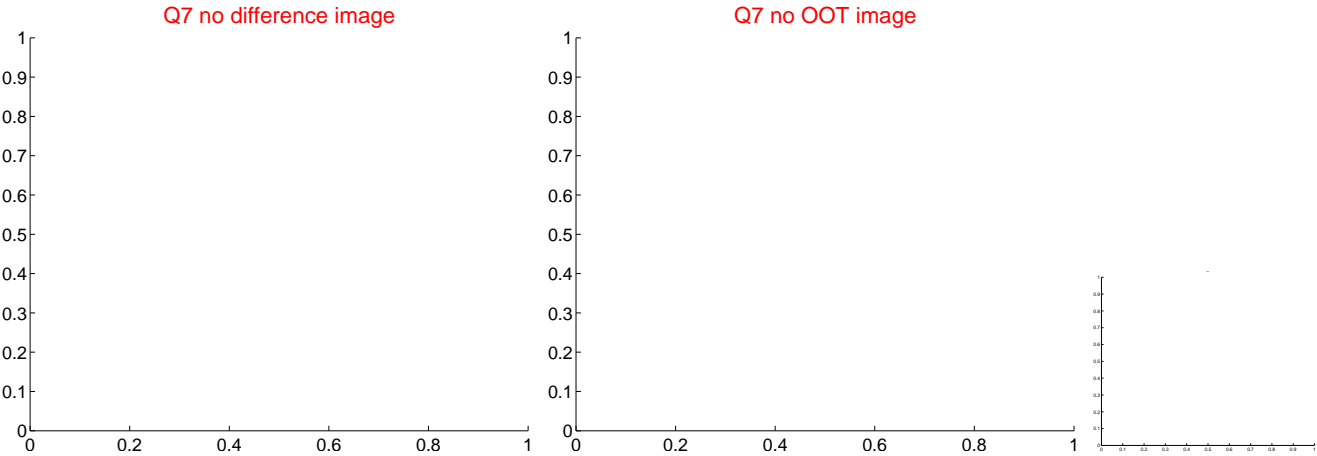
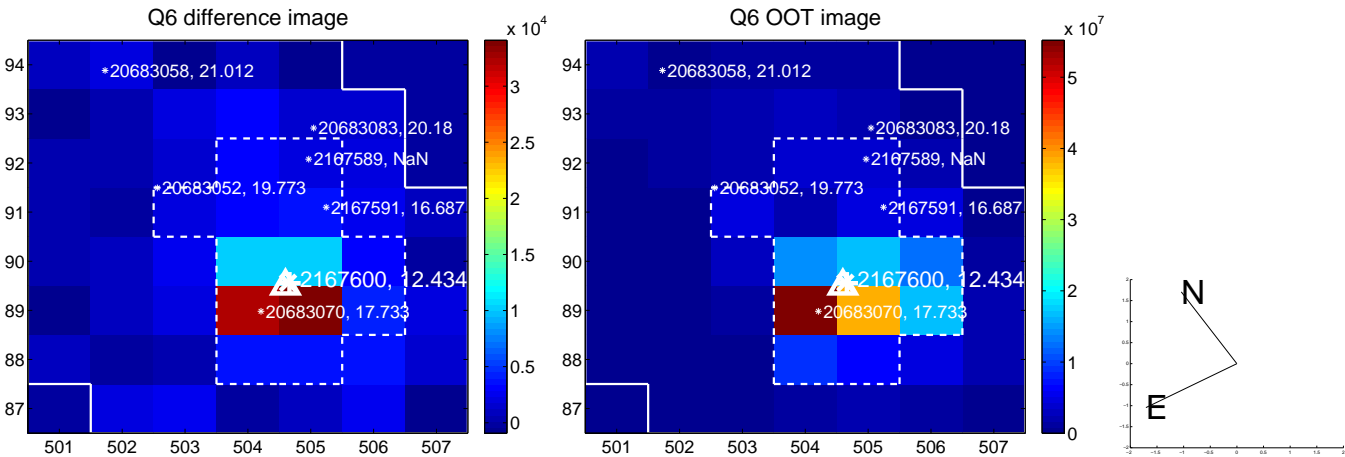
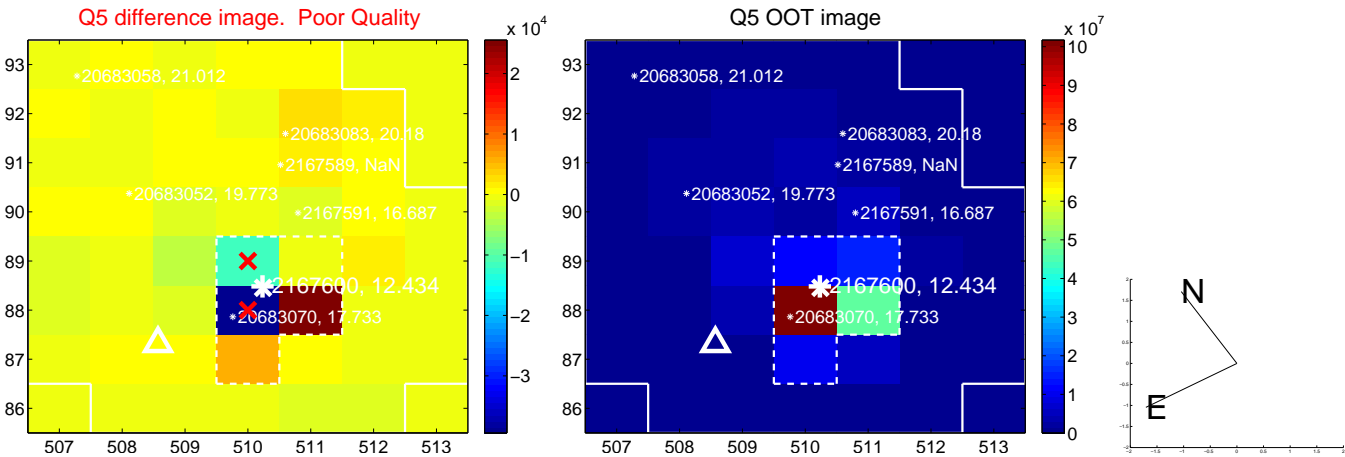
Q4 no difference image



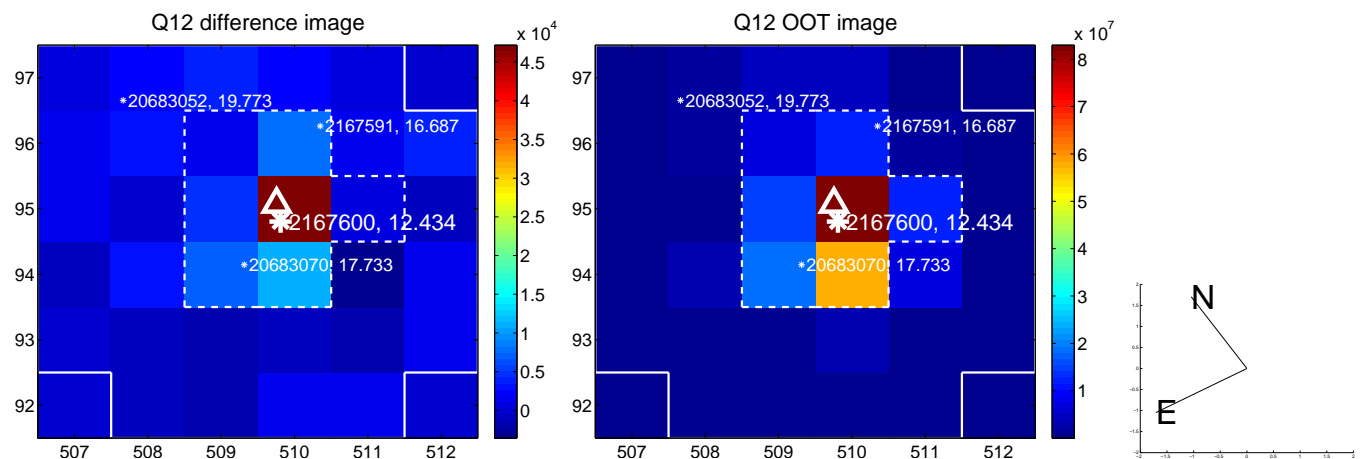
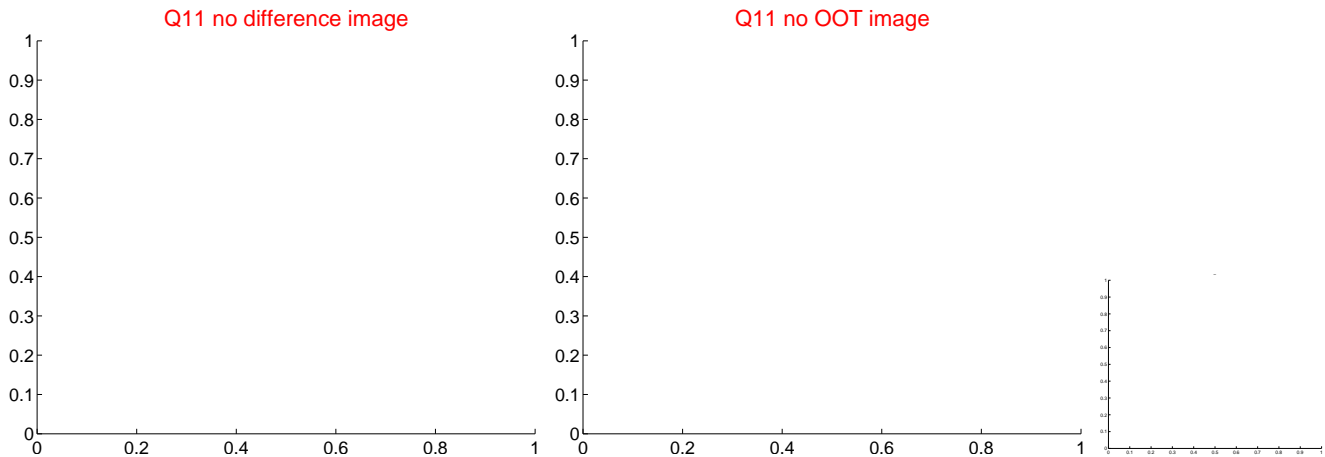
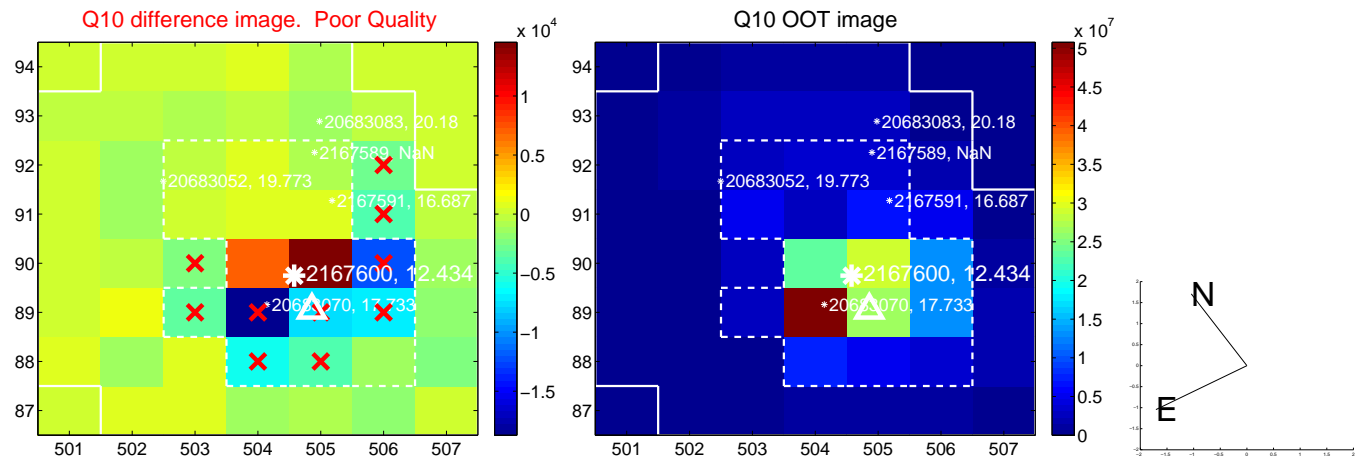
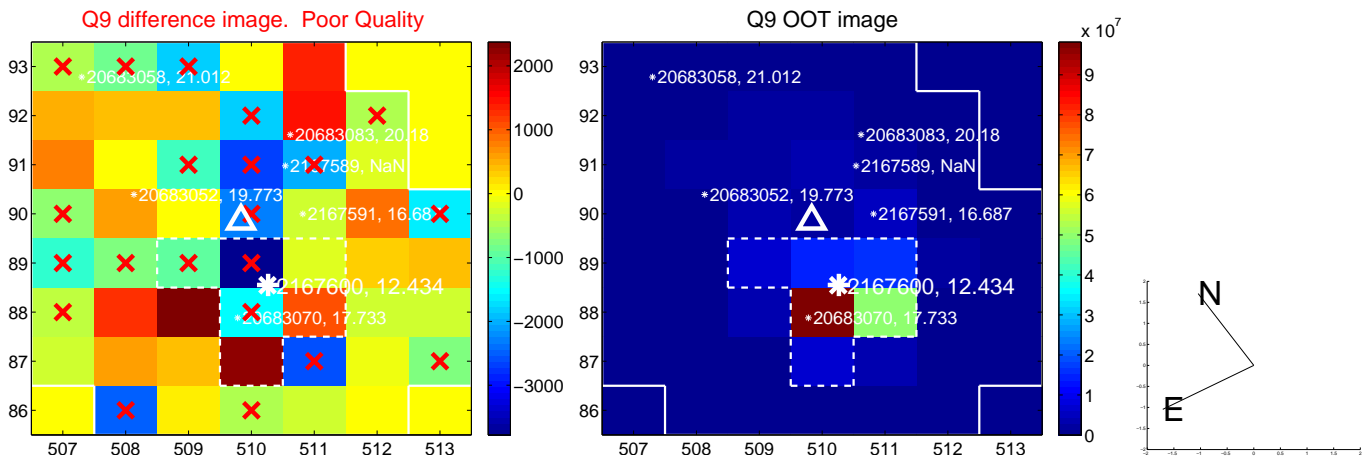
Q4 no OOT image



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.



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

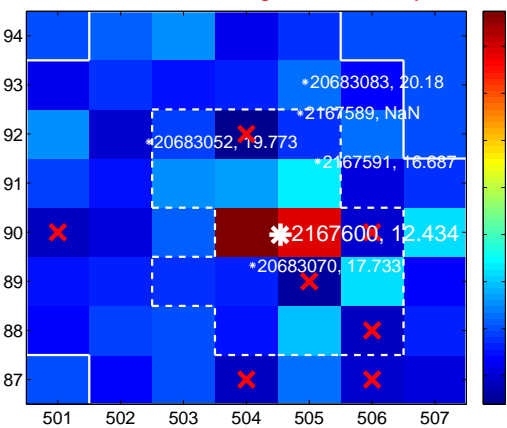
Q13 no difference image



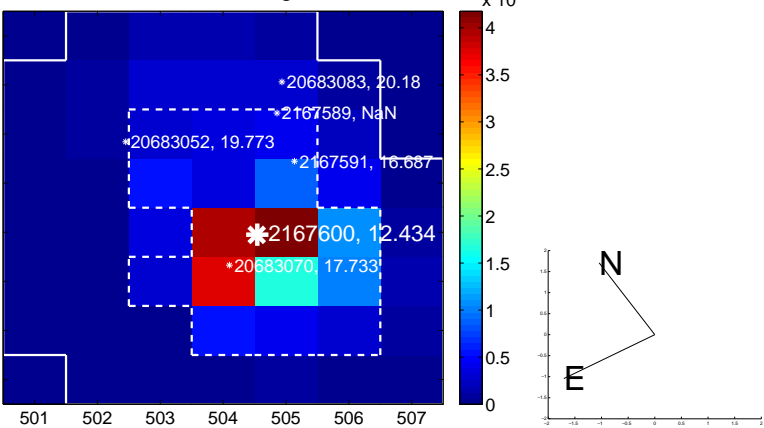
Q13 no OOT image



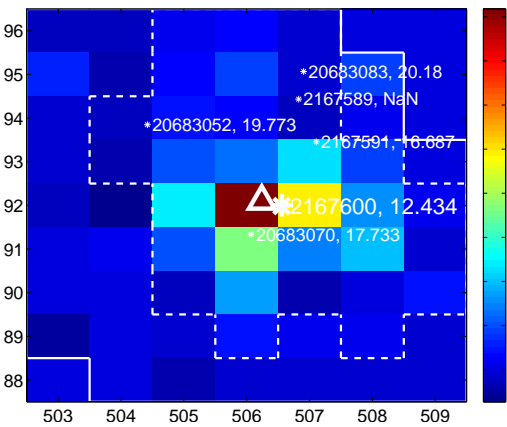
Q14 difference image. Poor Quality



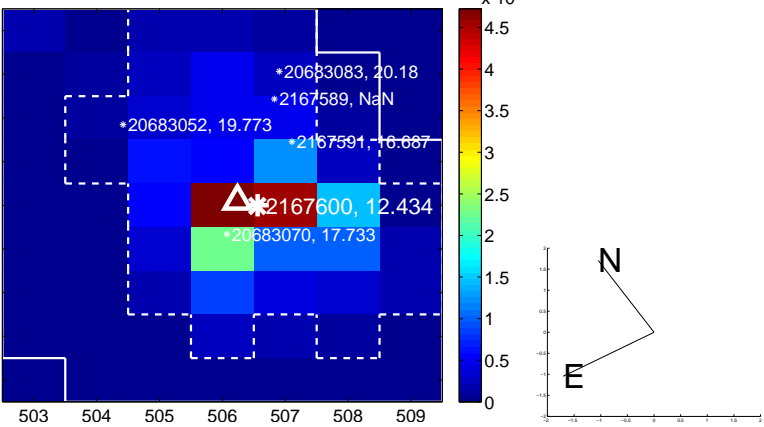
Q14 OOT image



Q15 difference image



Q15 OOT image



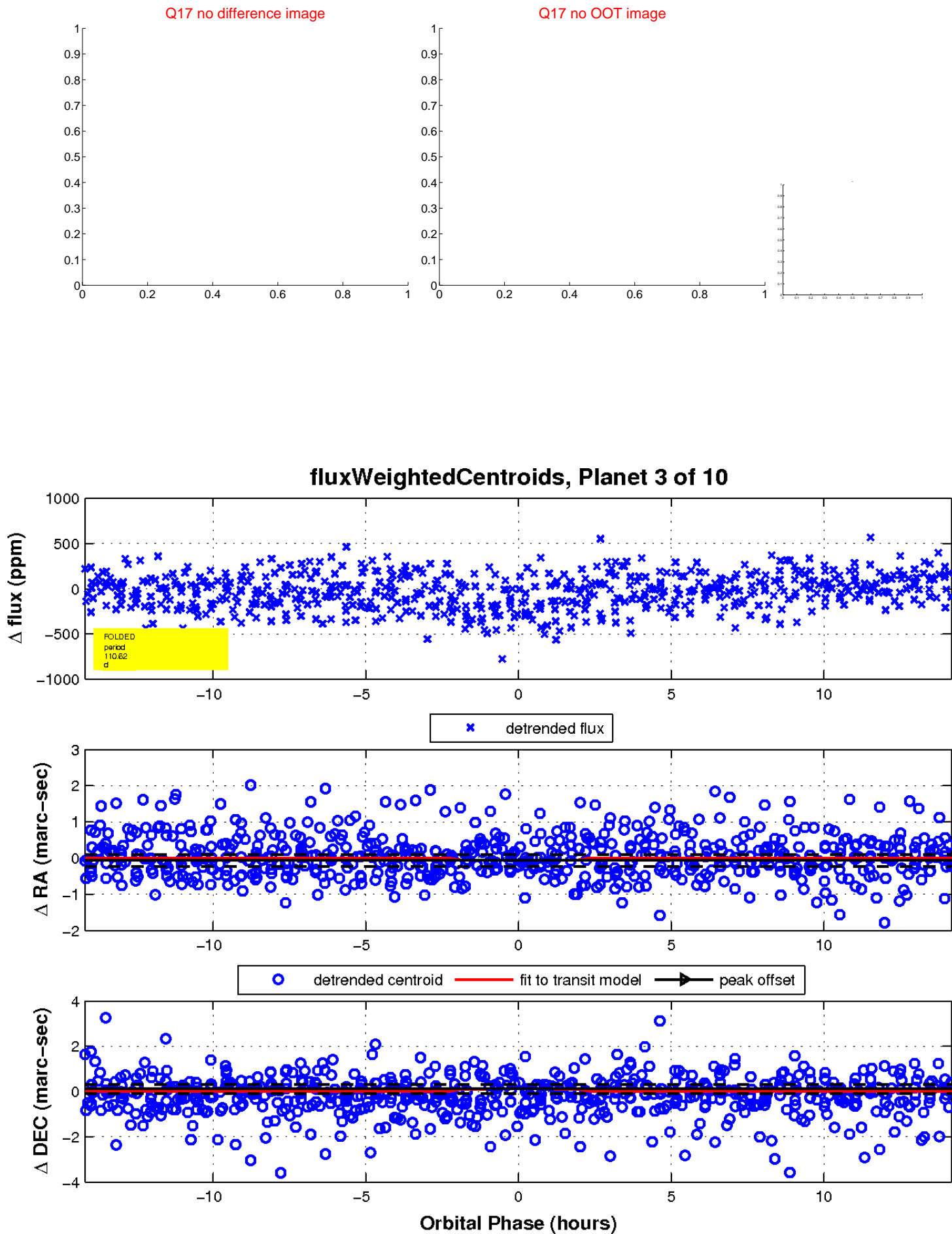
Q16 no difference image



Q16 no OOT image

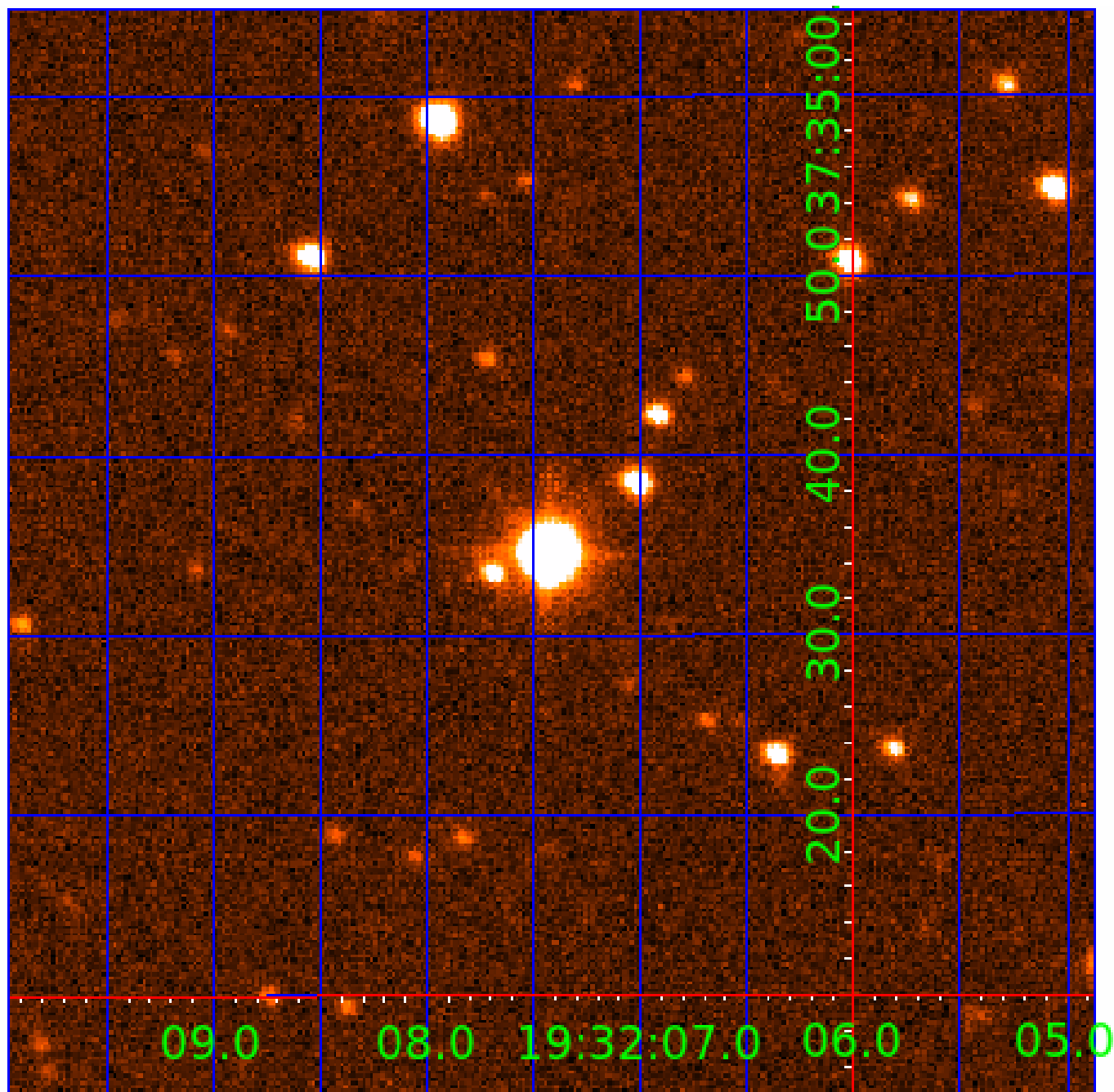


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

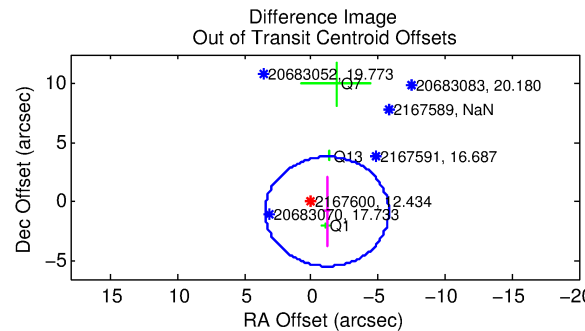
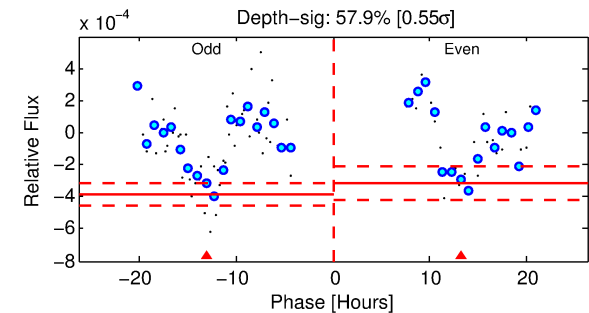
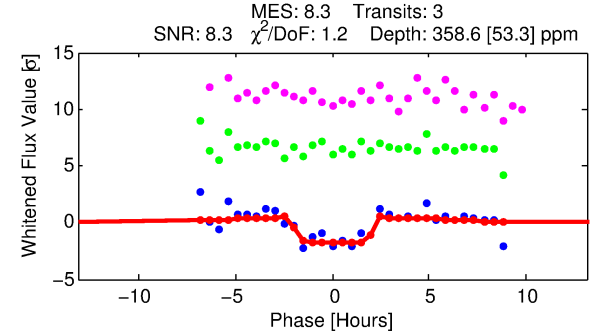
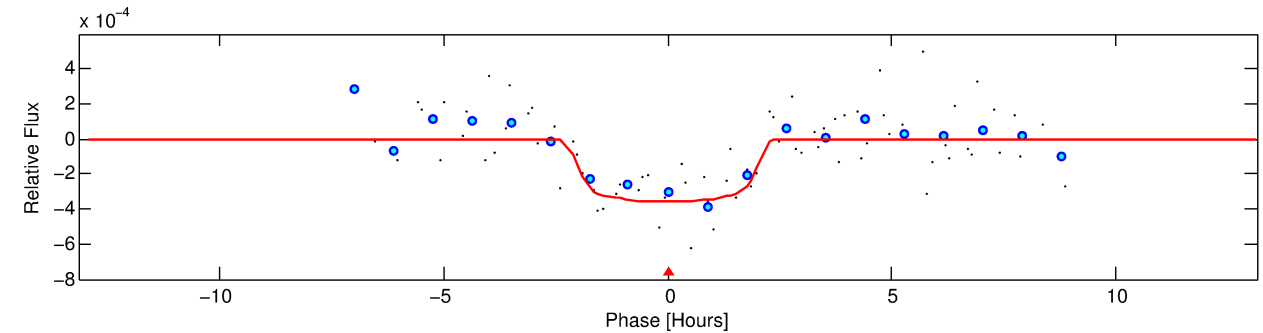
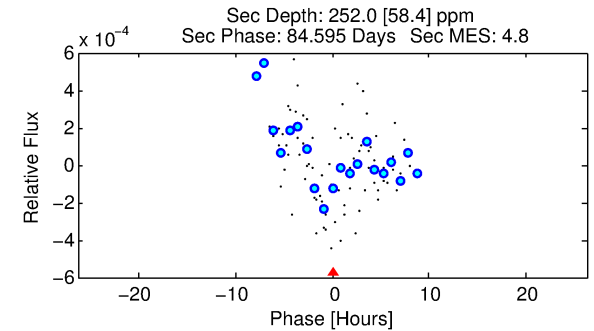
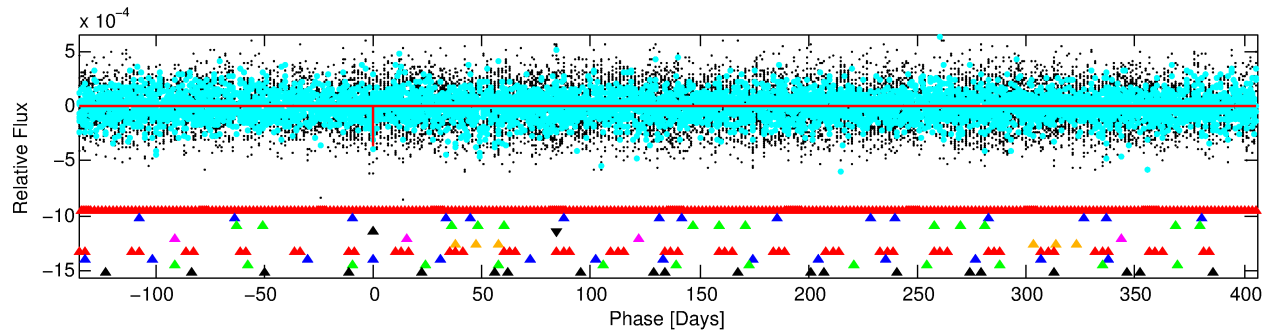
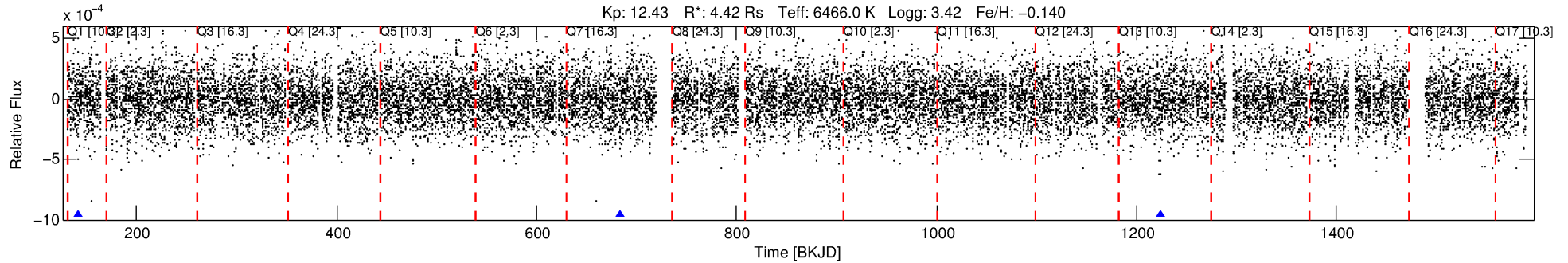
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-04

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 4 of 10 Period: 541.220 d



DV Fit Results:

Period = 541.21958 [0.00647] d
Epoch = 141.7777 [0.0090] BKJD
Rp/R* = 0.0194 [0.0101]
a/R* = 564.52 [1620.26]
b = 0.82 [1.12]
Seff = 11.86 [7.70]
Teq = 473 [77] K
Rp = 9.34 [6.23] Re
a = 1.6041 [0.6409] AU
Ag = 4093.40 [5110.92] [0.80σ]
Teffp = 5853 [1577] K [3.41σ]

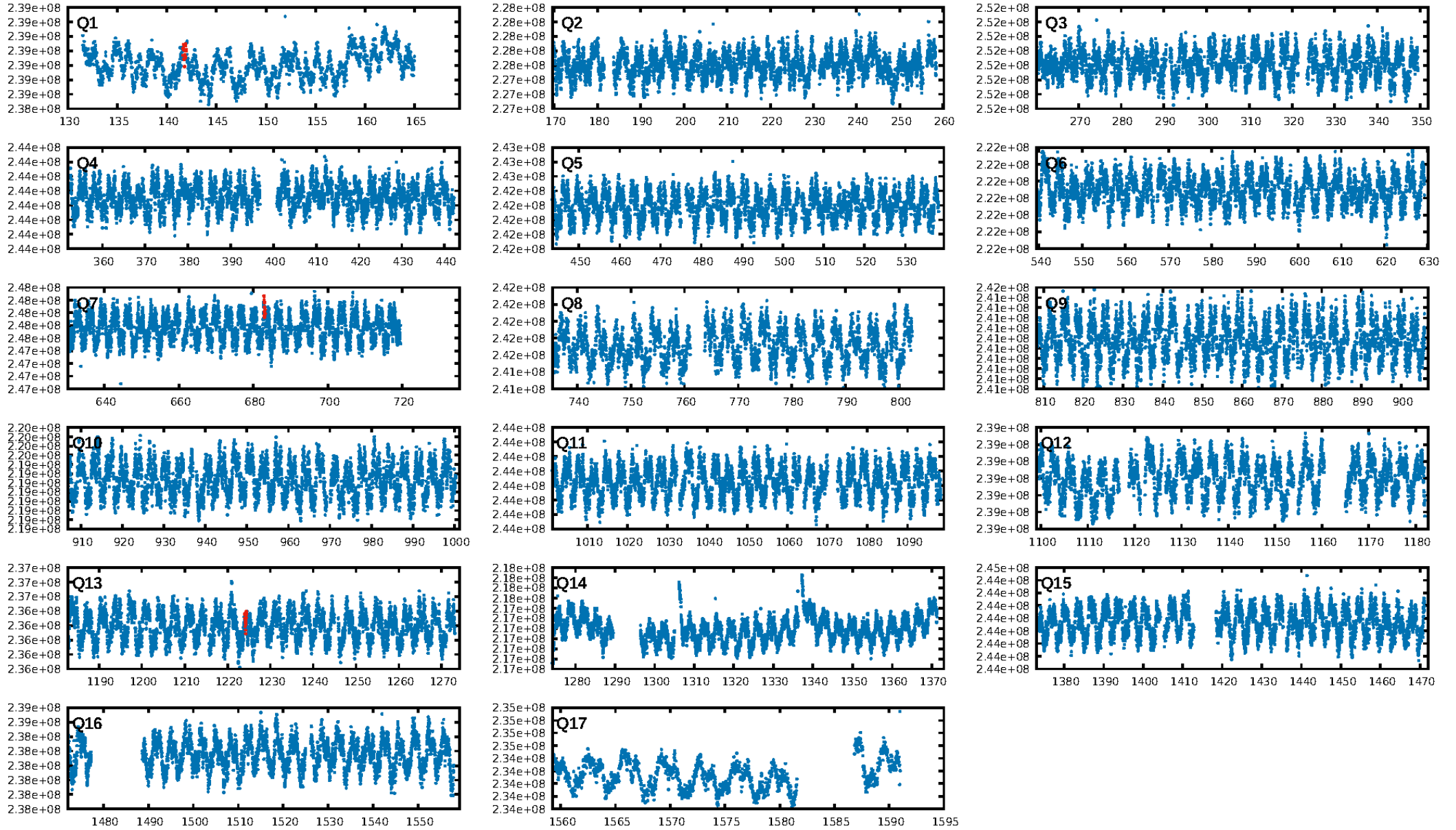
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [259.53σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 21.3%
ModelChiSquareGof-sig: 83.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.7718
Centroid-sig: 0.9%
Centroid-so: 1.763 arcsec [1.71σ]
OotOffset-rm: 1.417 arcsec [0.92σ]
KicOffset-rm: 1.445 arcsec [1.05σ]
OotOffset-st: 0/1/0/2 [3]
KicOffset-st: 0/1/0/2 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.67 [2/3]

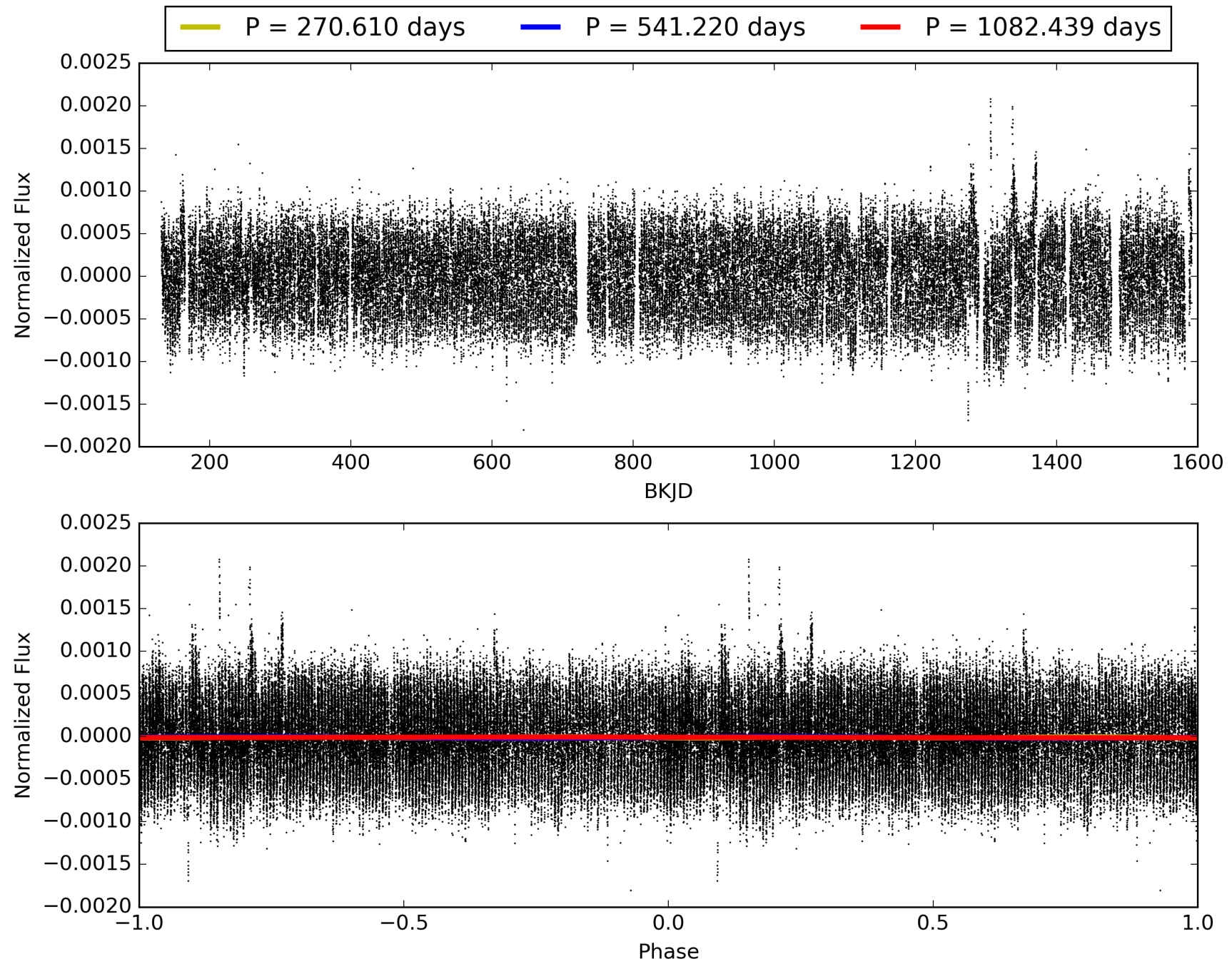
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:24:22 Z

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

TCE 002167600-04, PDC Light Curves

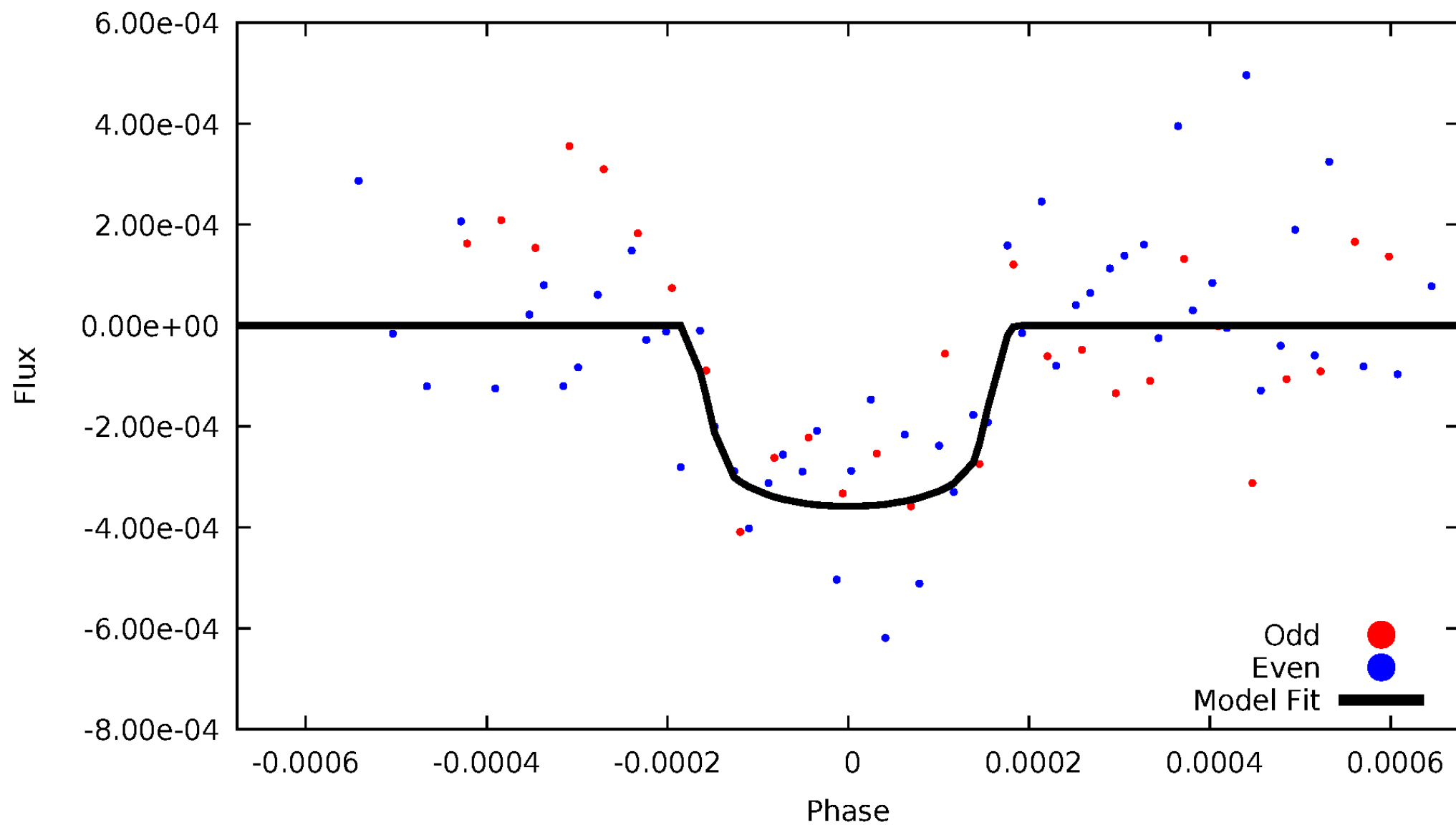


TCE 002167600-04



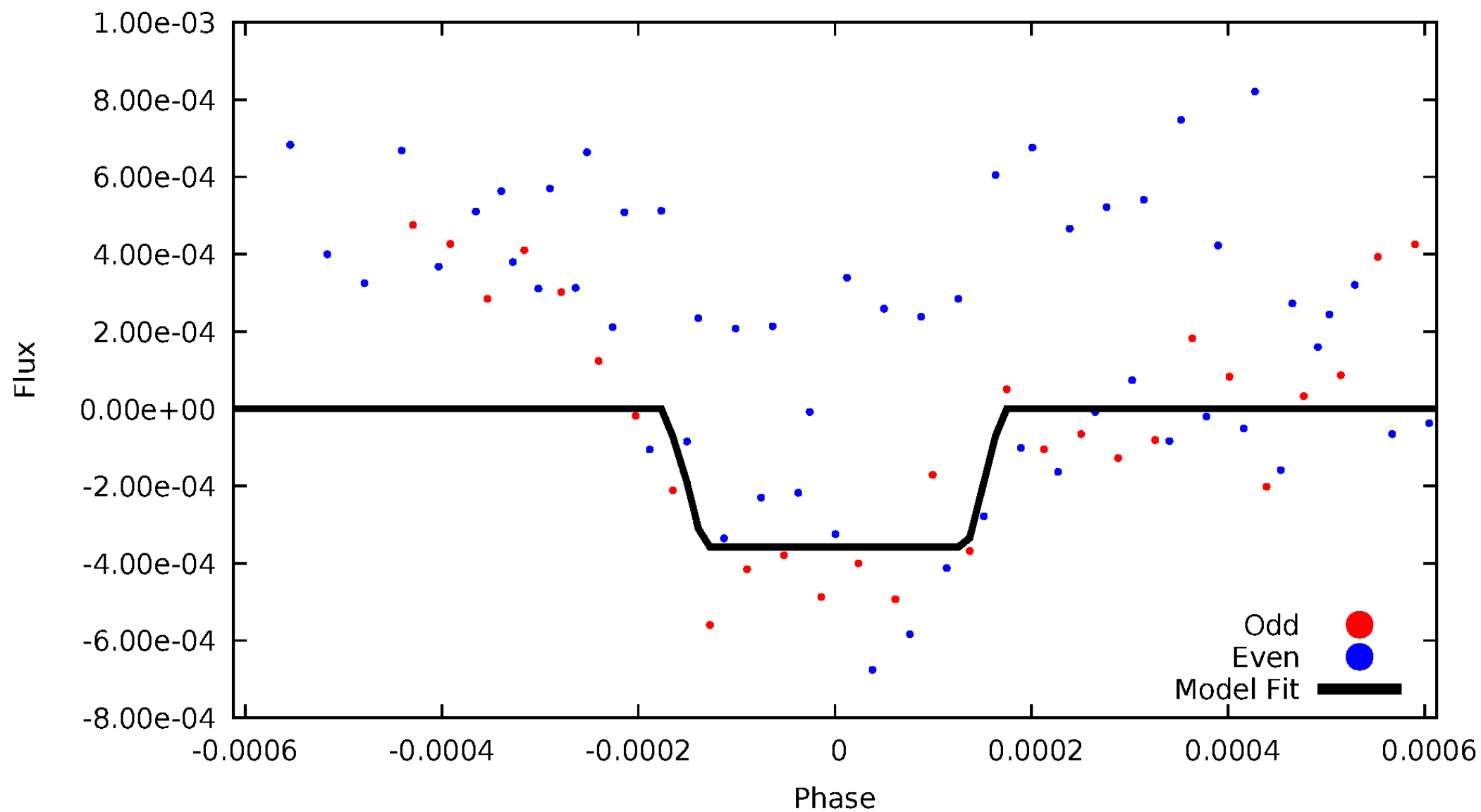
DV Odd/Even

TCE 002167600-04



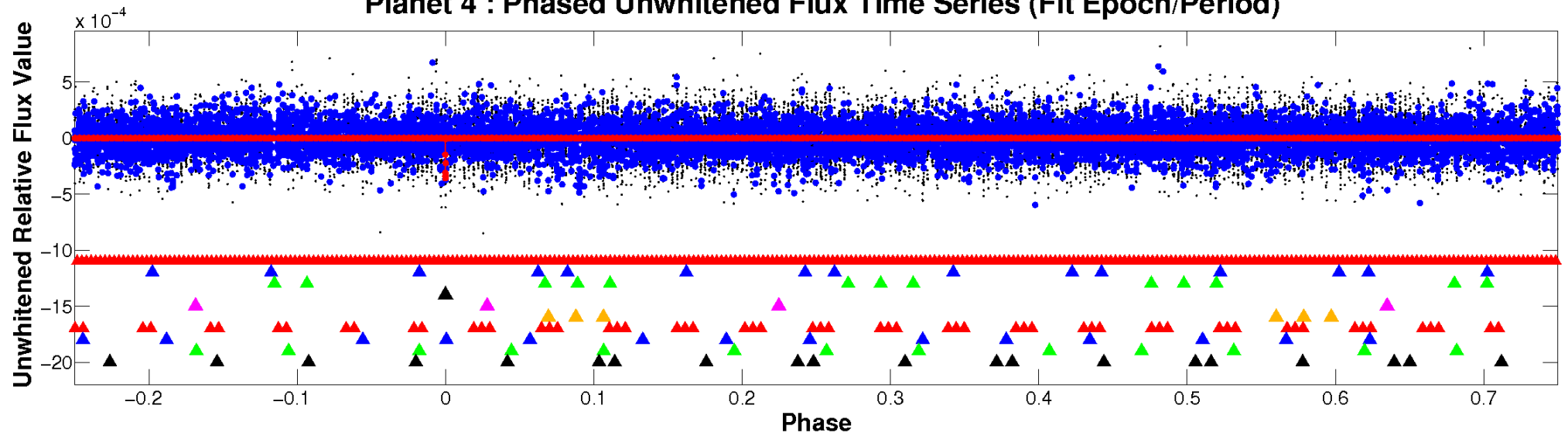
ALT Odd/Even

TCE 002167600-04

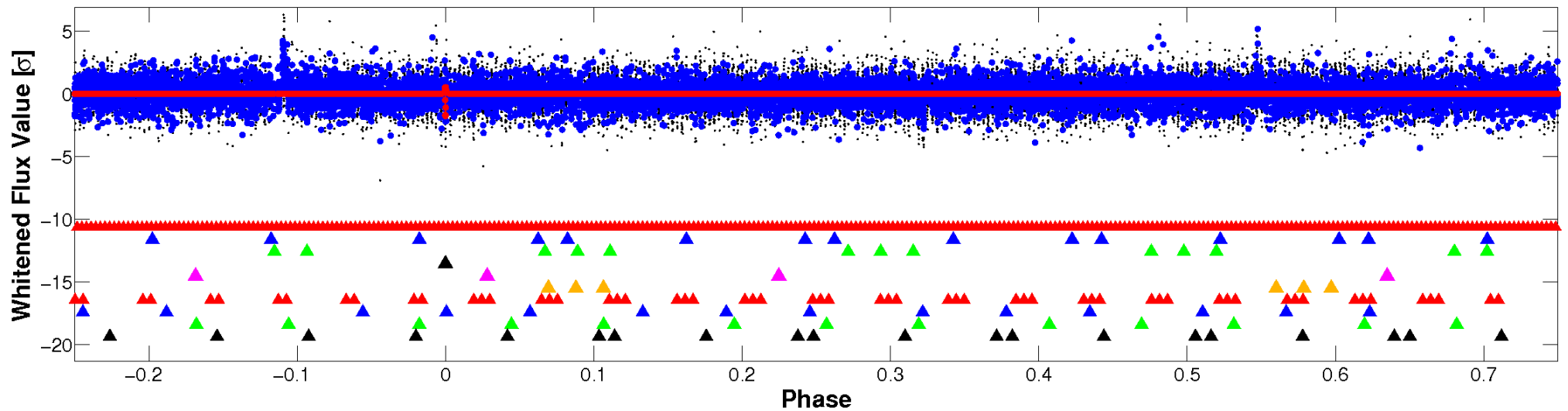


Non-Whitened Vs. Whitened Light Curve

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

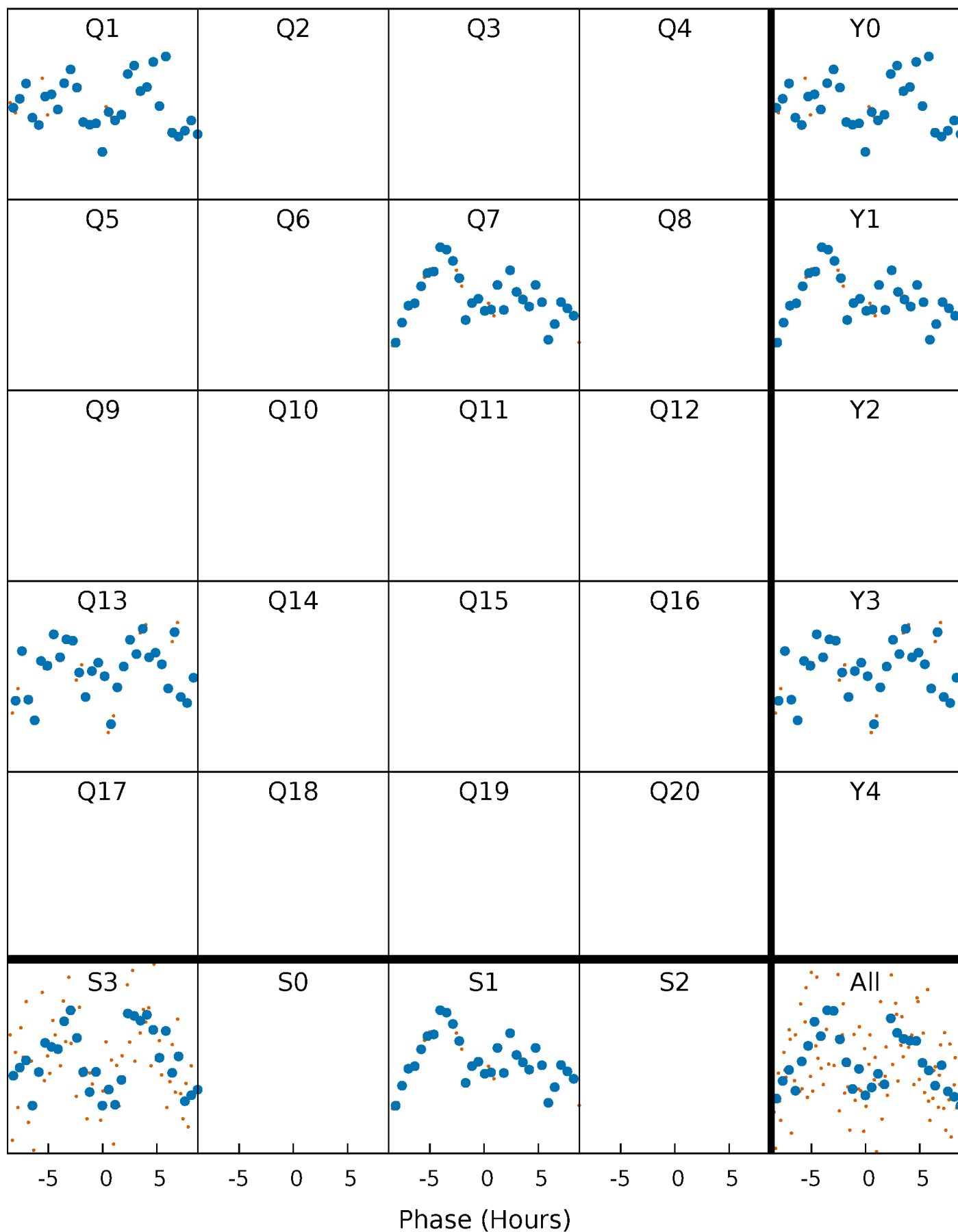


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



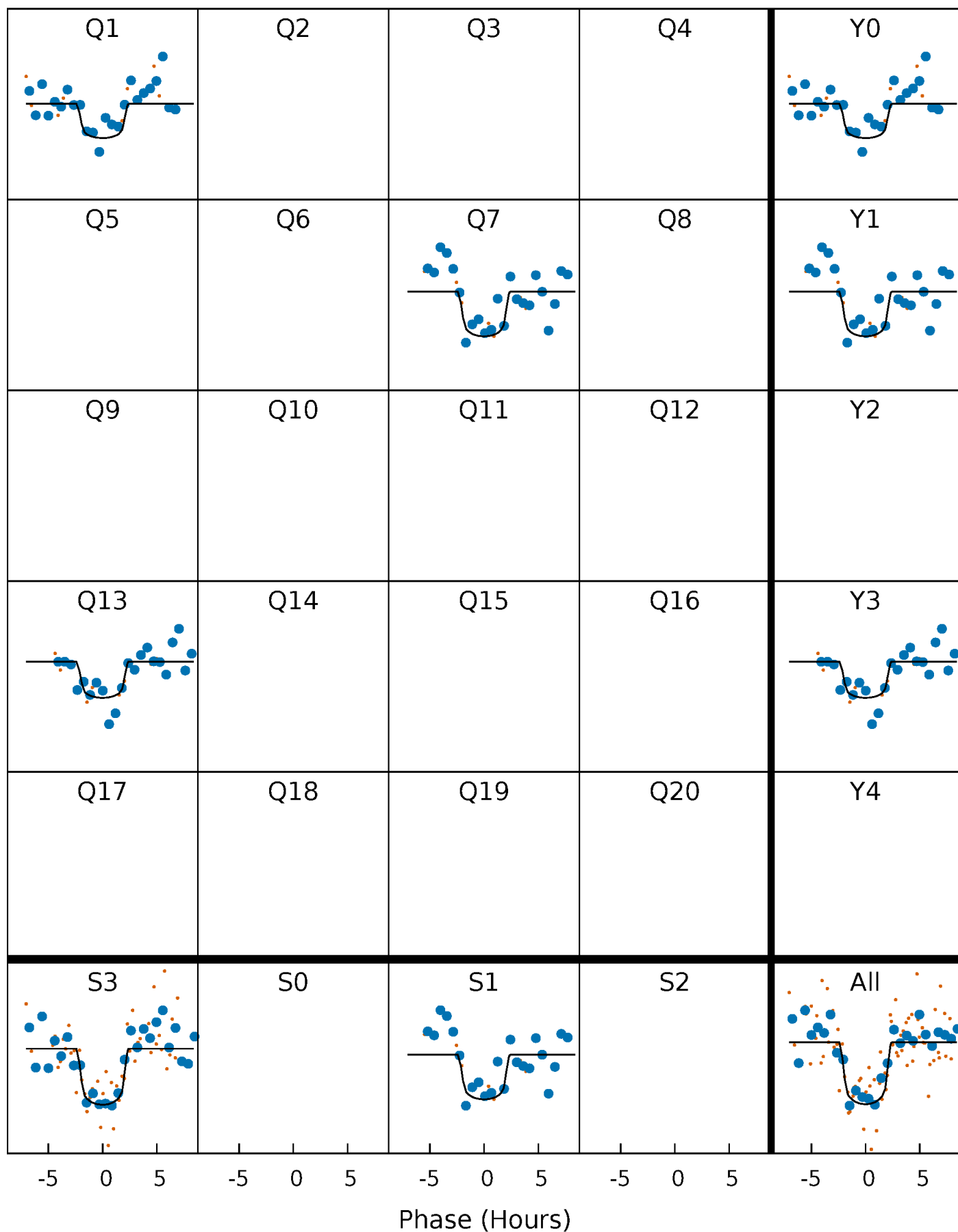
PDC Quarter-Phased Transit Curves

TCE 002167600-04 $P=541.219579$ Days $T_0=141.777664$ (BKJD)



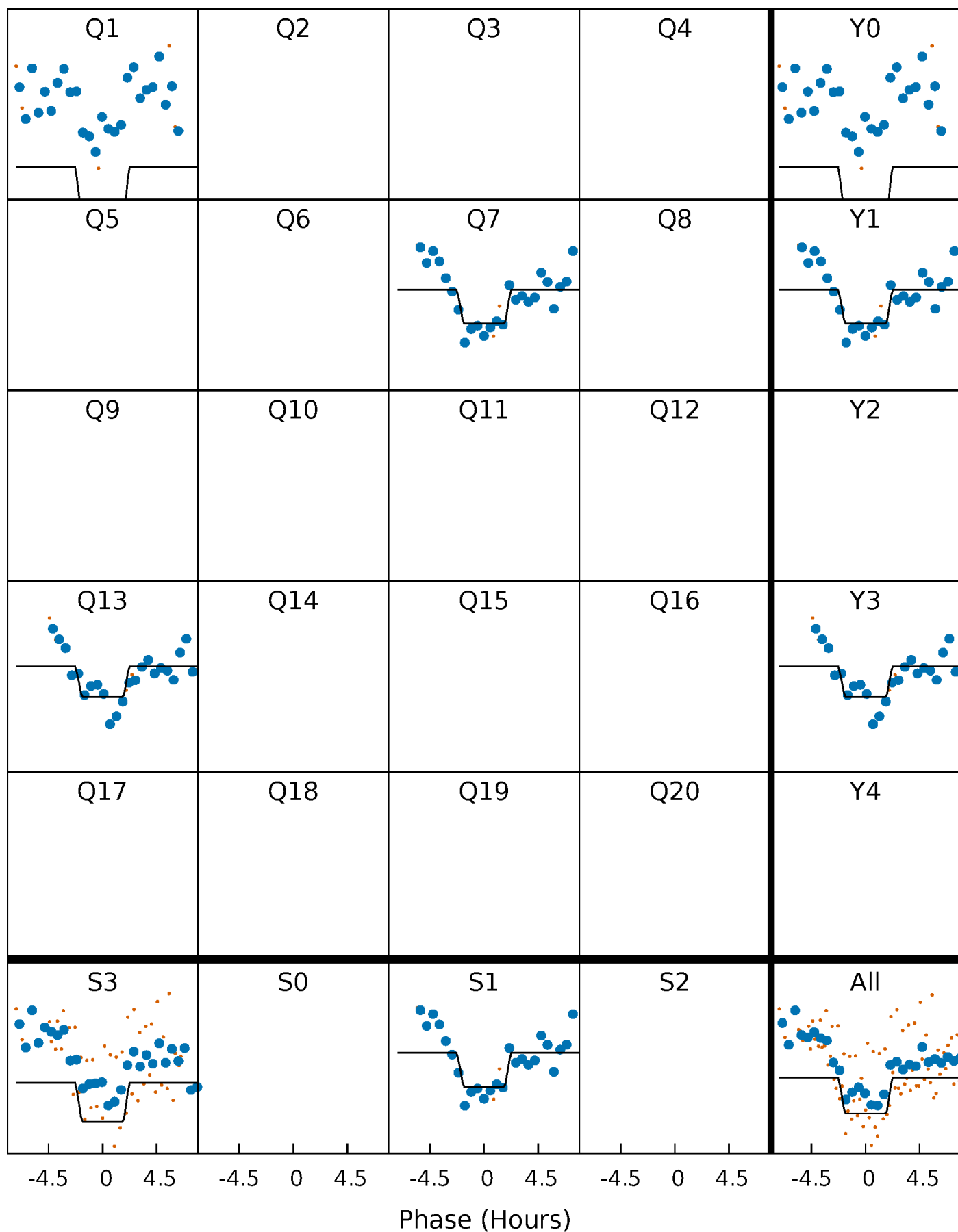
DV Quarter-Phased Transit Curves

TCE 002167600-04 $P=541.219579$ Days $T_0=141.777664$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

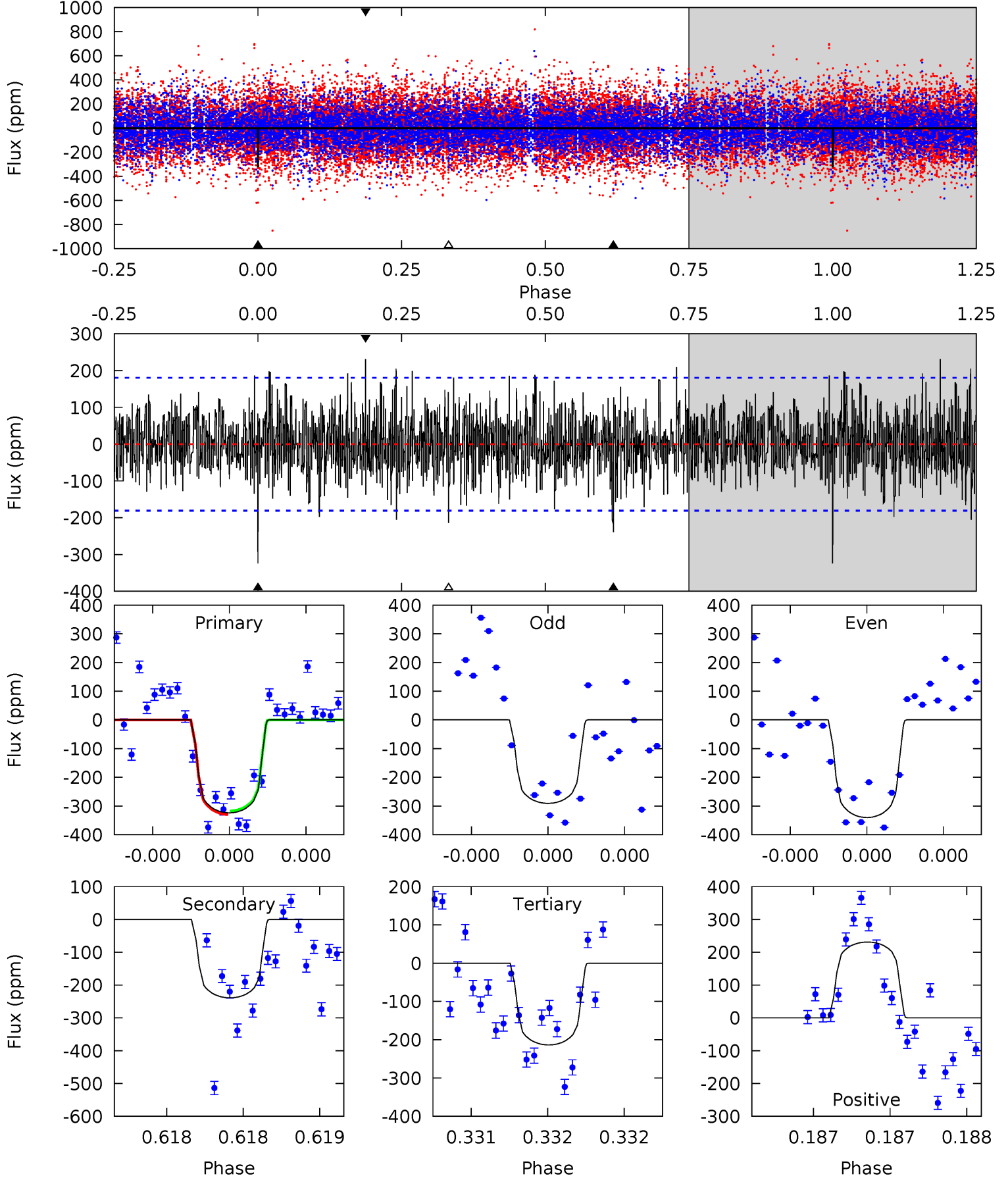
TCE 002167600-04 P=541.216892 Days $T_0=141.784546$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-04, P = 541.219579 Days, E = 141.777664 Days

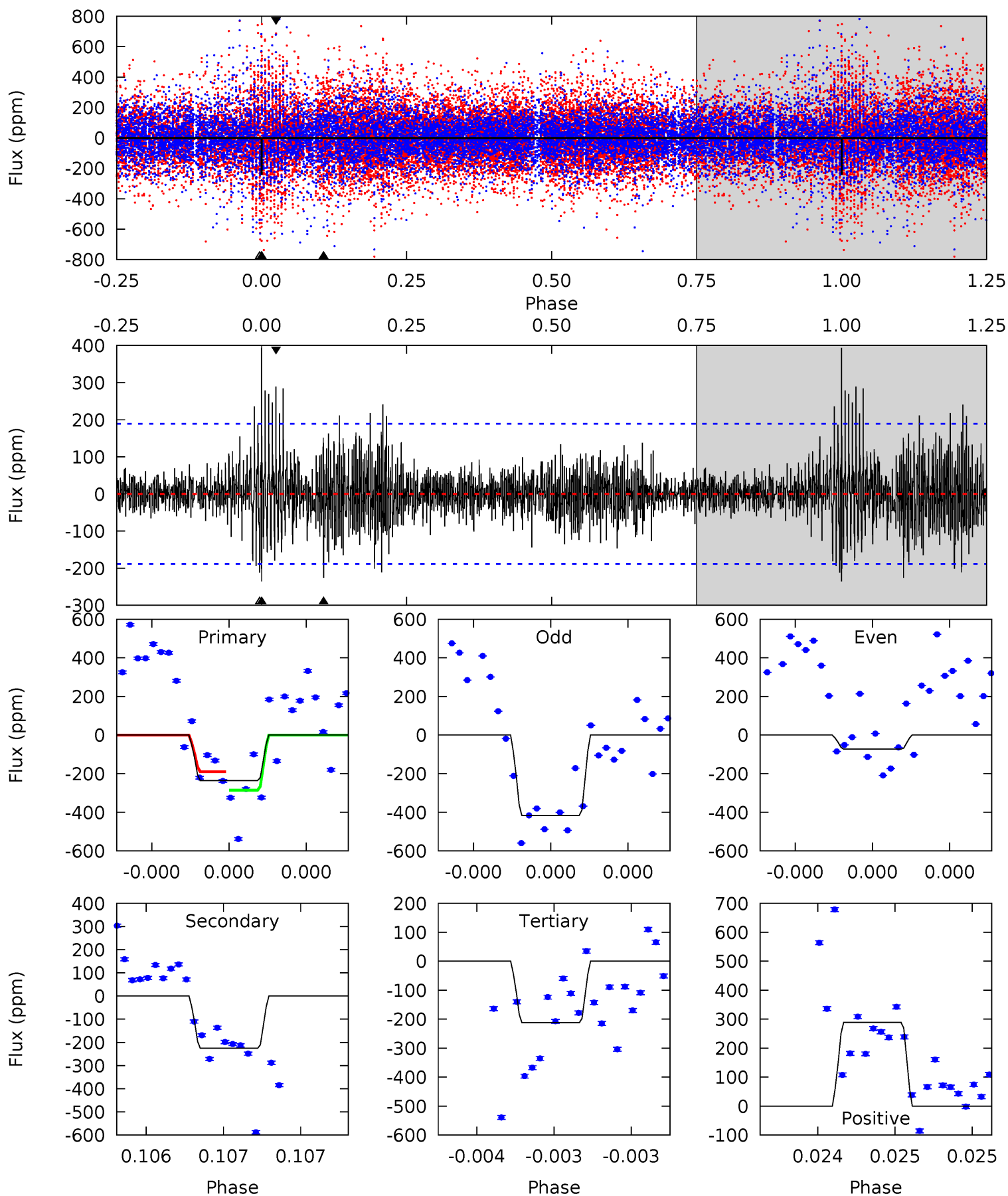
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	7.44	6.65	7.20	5.63	3.56	1.88	3.43	2.89	0.79	0.24	0.72	1.11	0.42	0.19



Alt Model-Shift Uniqueness Test

002167600-04, P = 541.216892 Days, E = 141.784546 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.03	6.73	6.32	8.61	5.64	3.58	1.57	0.70	-1.58	0.41	-1.88	4.97	0.48	0.63	1.44



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-239 ± 32	$9.12^{+4.39}_{-4.22}$	646^{+40}_{-60}	5618^{+2151}_{-897}	3977^{+10521}_{-2224}
Alt.	-226 ± 34	$8.45^{+4.93}_{-4.52}$	651^{+36}_{-63}	5699^{+2634}_{-963}	4325^{+15574}_{-2576}

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

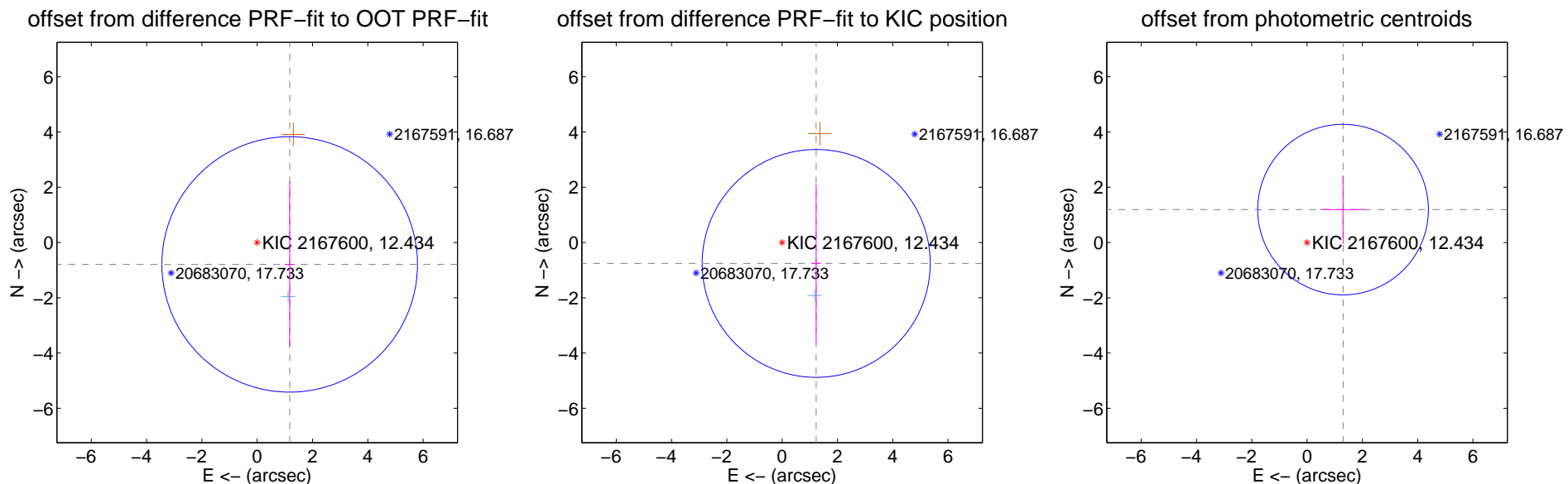
DV Centroid Data

Supplemental centroid analysis for 002167600-04. Kepler magnitude: 12.43. Transit SNR 8.29

There are 1 quarters with good PRF difference image offsets

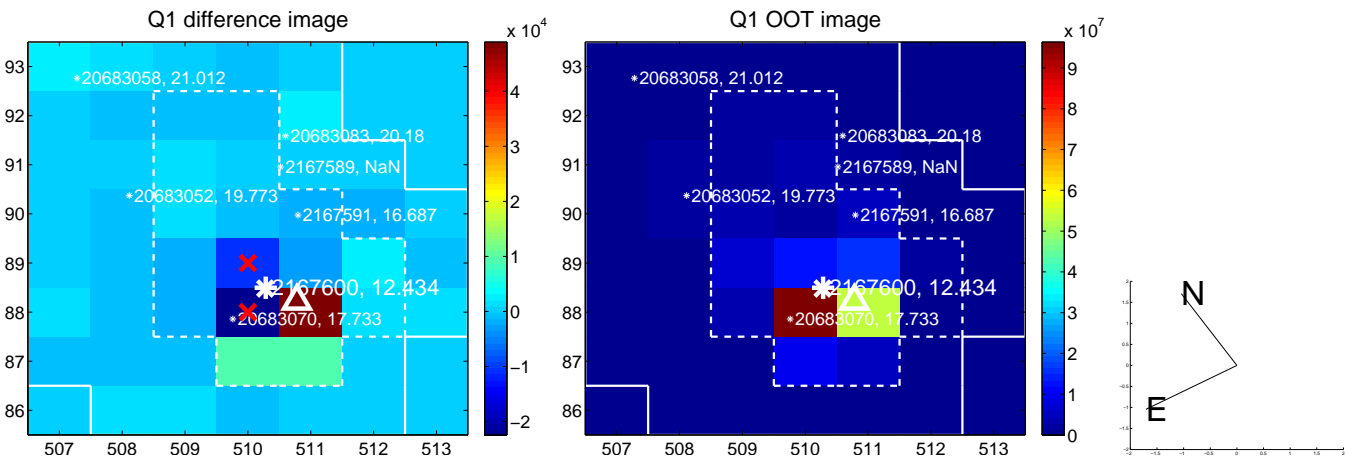
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.417 ± 1.541	0.92	-1.174 ± 0.185	-0.793 ± 2.993
PRF-fit source offset from KIC position	1.445 ± 1.375	1.05	-1.231 ± 0.175	-0.757 ± 2.876
photometric centroid source offset	1.76 ± 1.03	1.71	-1.30 ± 0.81	1.19 ± 1.24



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.

Q5 no difference image



Q5 no OOT image



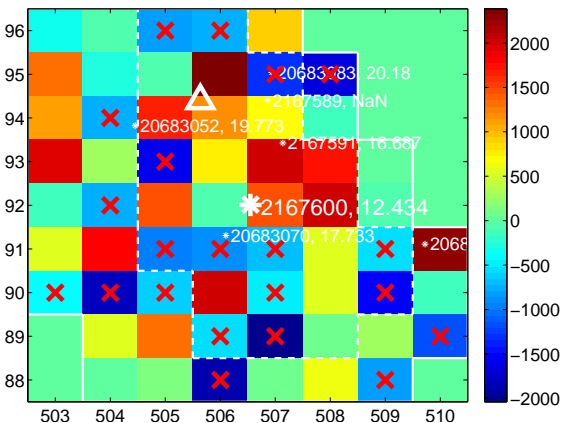
Q6 no difference image



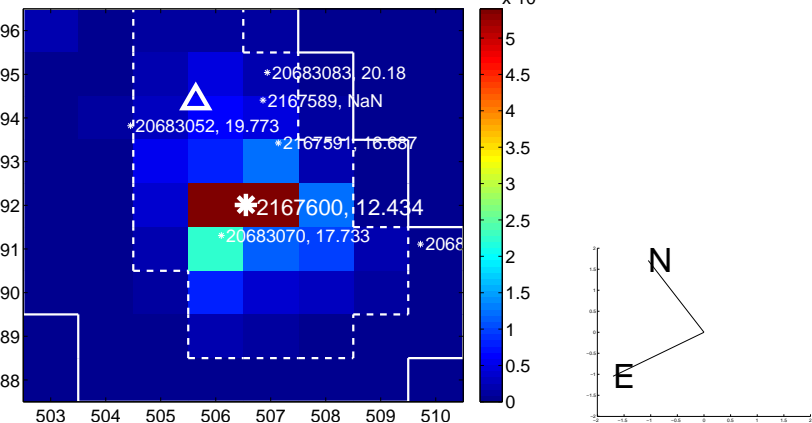
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



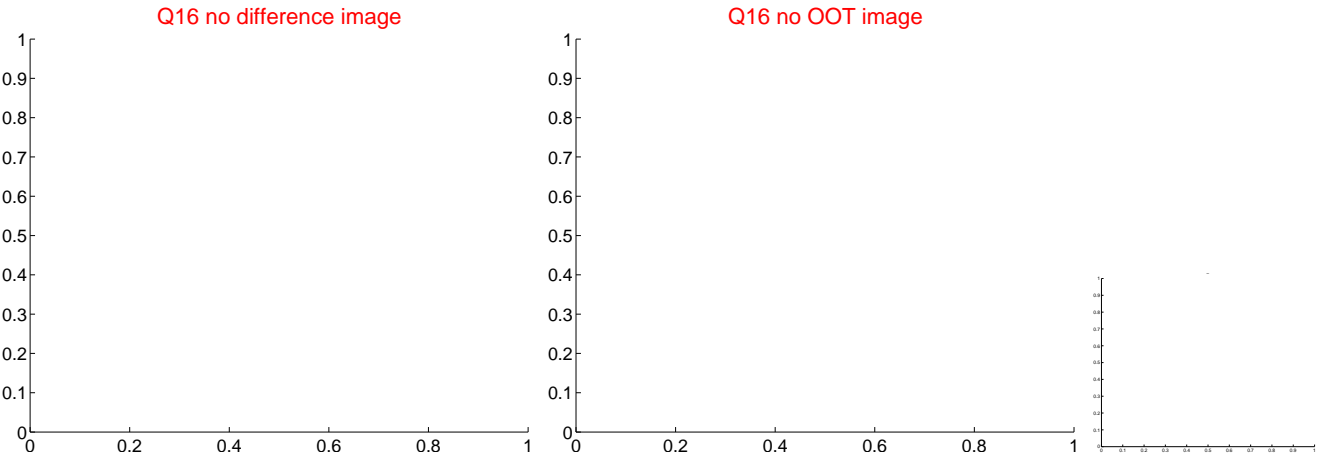
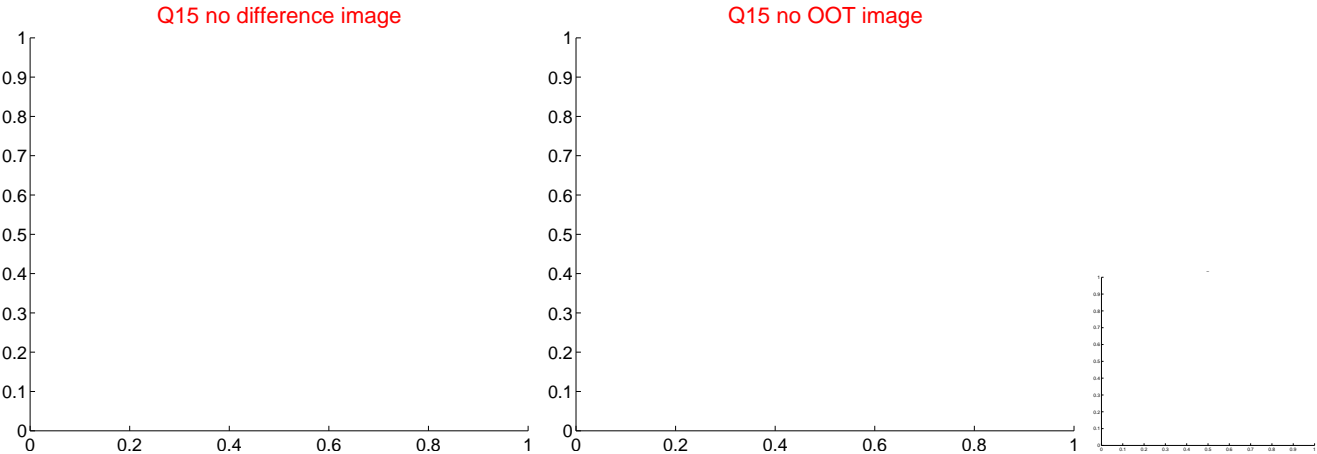
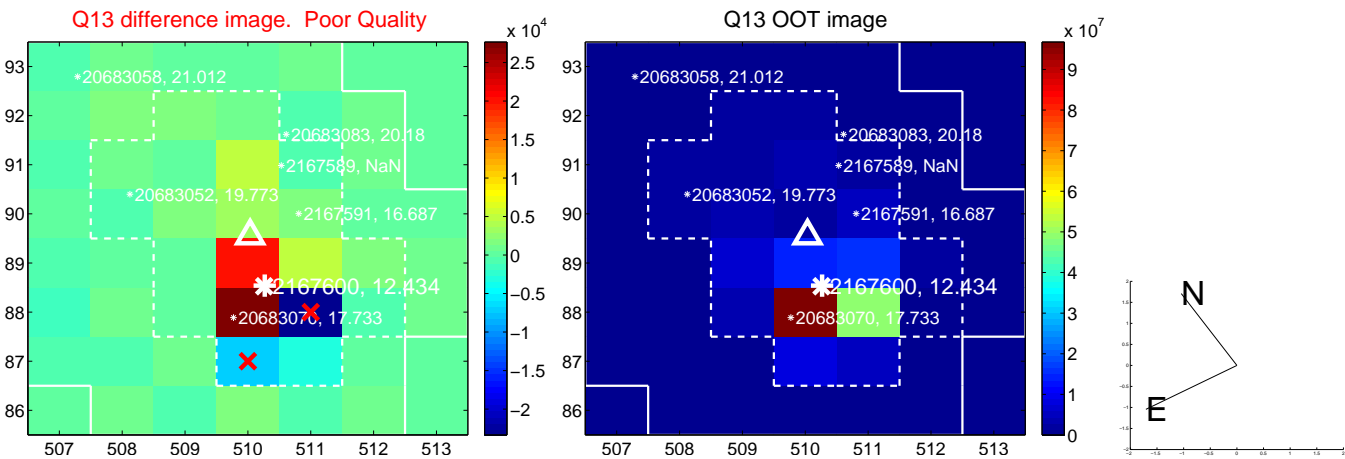
Q8 no OOT image



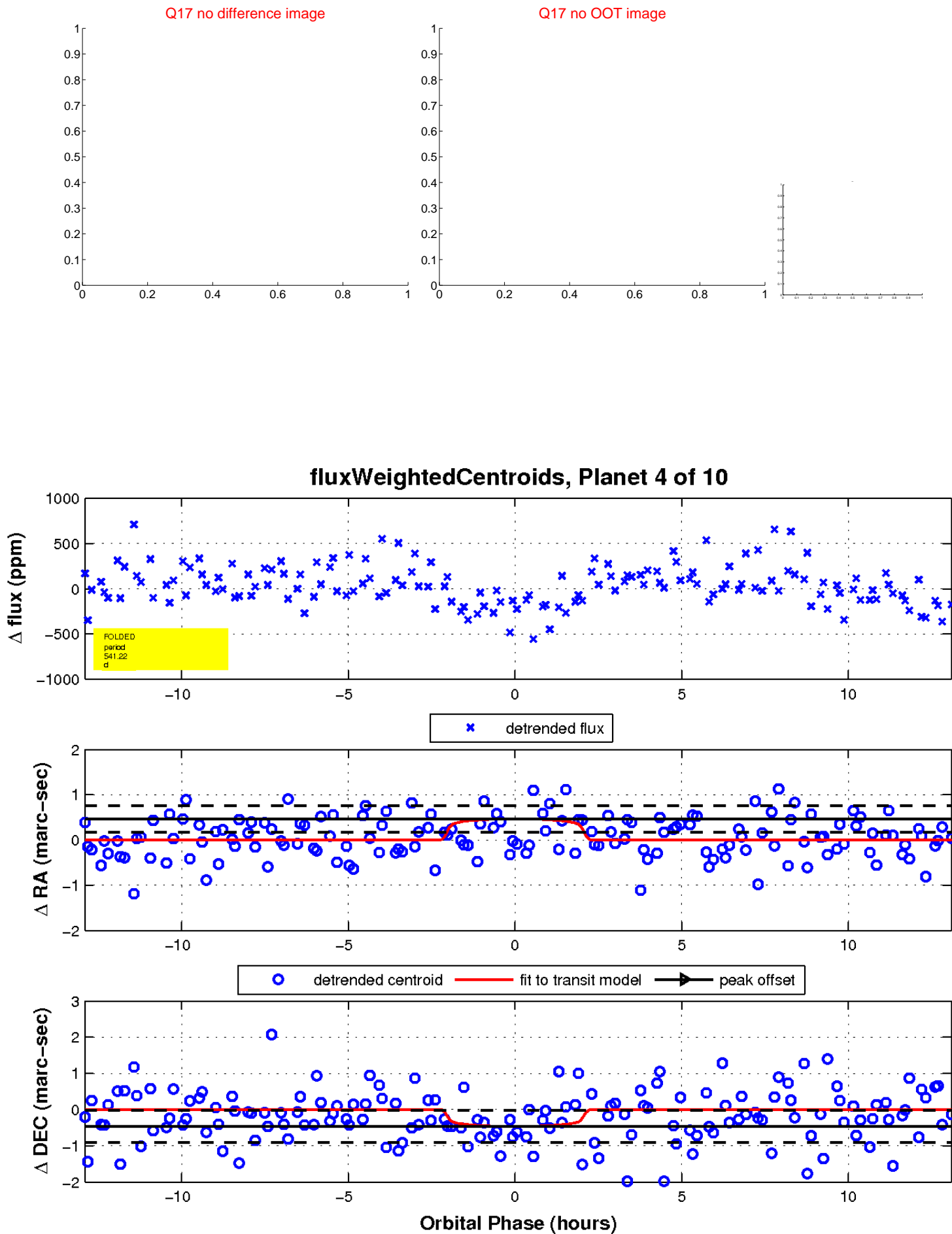
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

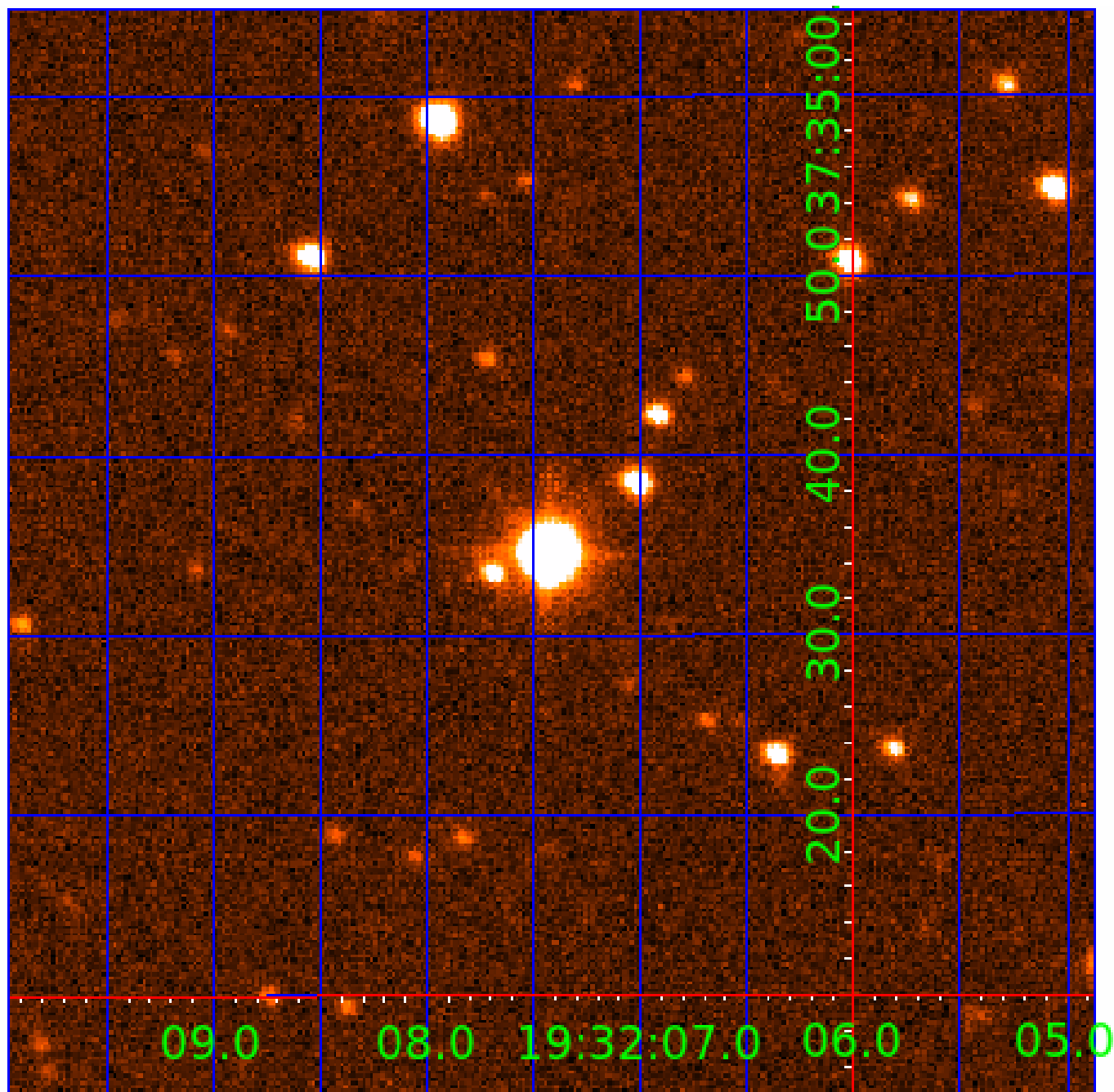


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

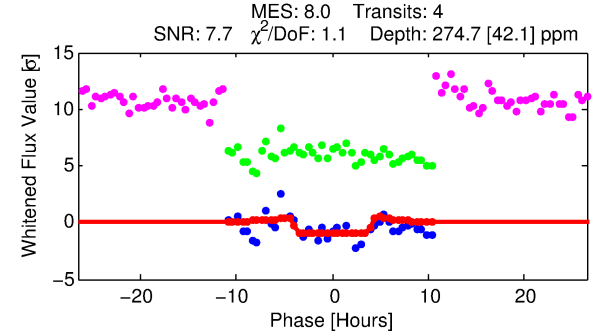
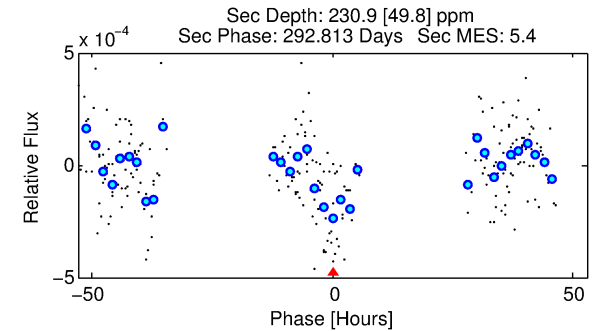
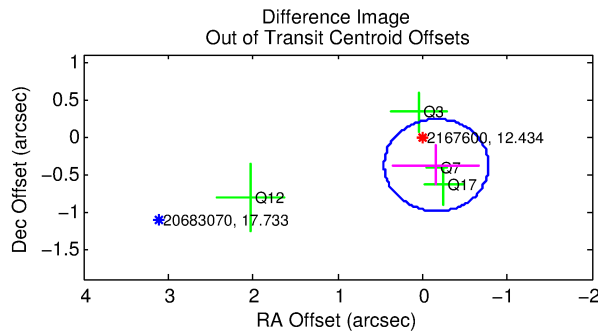
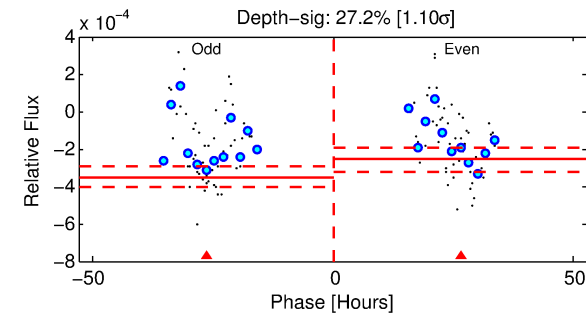
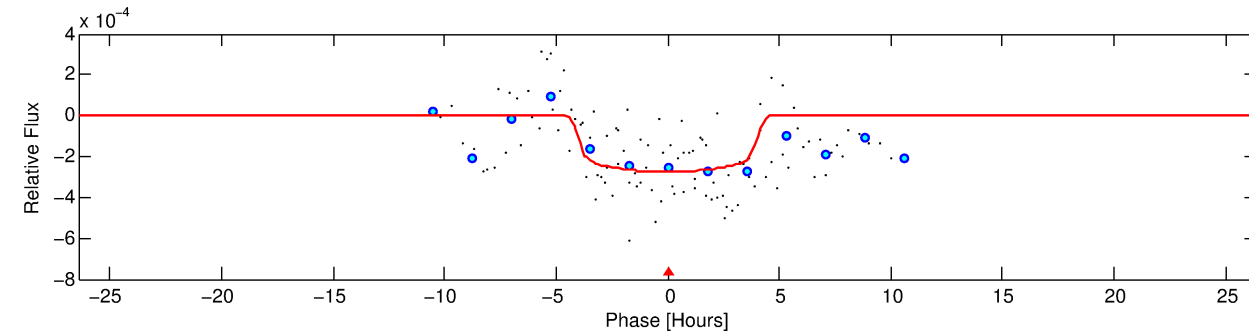
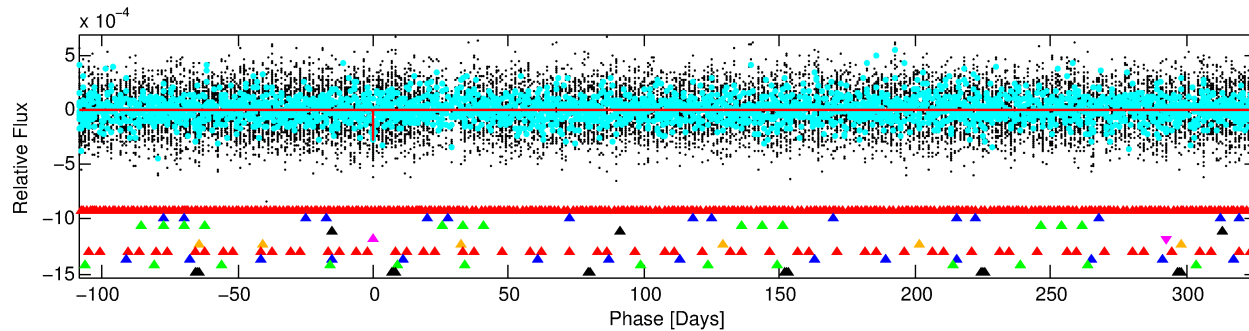
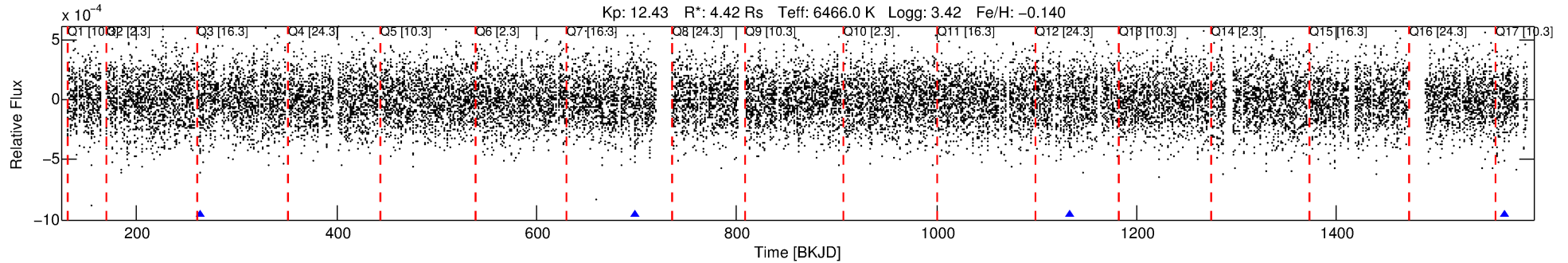
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-05

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 5 of 10 Period: 434.814 d



DV Fit Results:

Period = 434.81363 [0.01072] d
Epoch = 263.4032 [0.0188] BKJD
Rp/R* = 0.0176 [0.0029]
a/R* = 187.03 [149.63]
b = 0.89 [0.19]
Seff = 15.88 [10.31]
Teq = 509 [83] K
Rp = 8.47 [3.79] Re
a = 1.3863 [0.5539] AU
Ag = 3402.95 [2564.60] [1.33 σ]
Teffp = 6011 [620] K [8.79 σ]

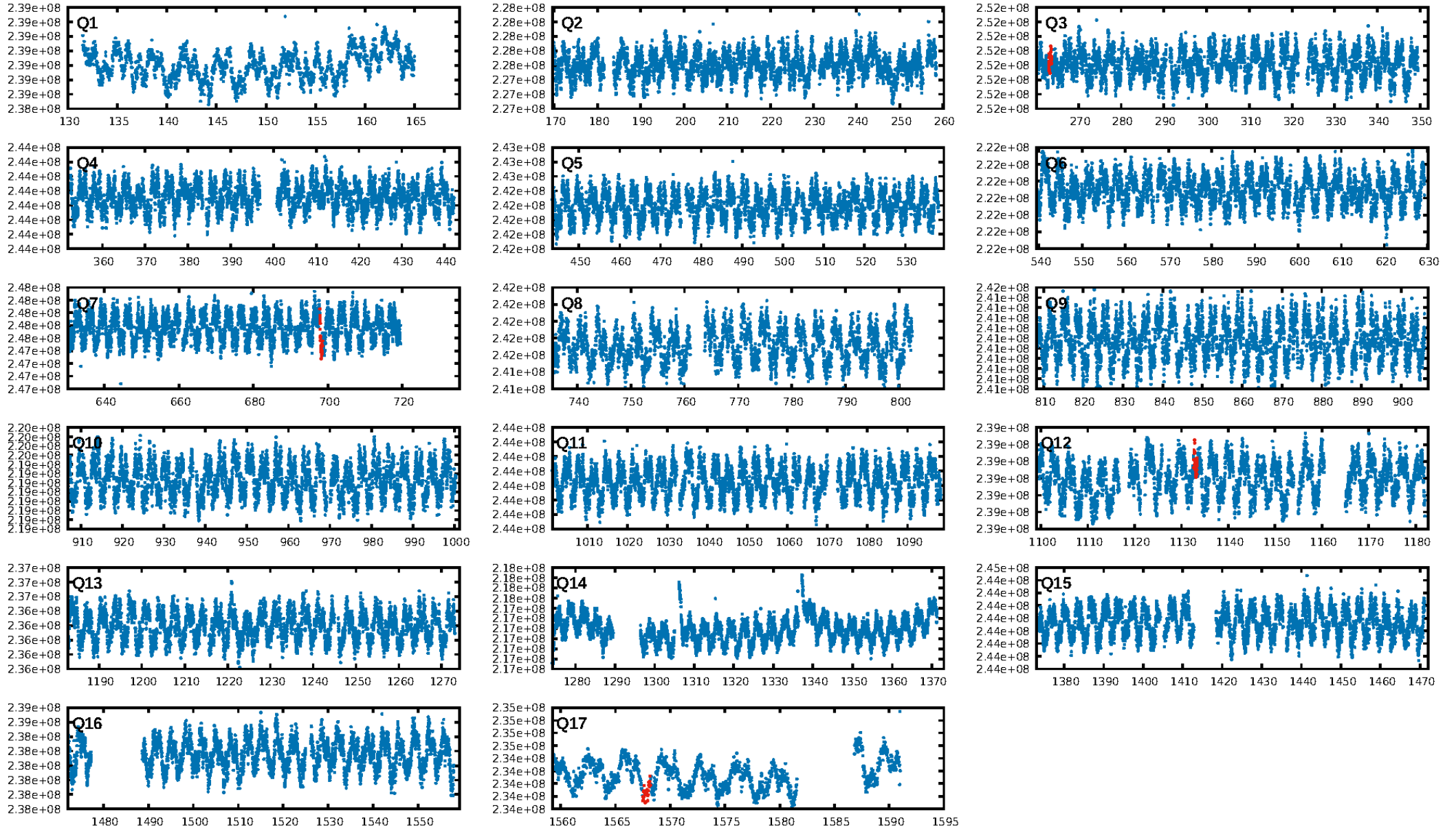
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [434.67 σ]
LongPeriod-sig: 100.0% [259.53 σ]
ModelChiSquare2-sig: 34.1%
ModelChiSquareGof-sig: 97.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.489
Centroid-sig: 42.8%
Centroid-so: 0.621 arcsec [0.64 σ]
OotOffset-rm: 0.414 arcsec [2.02 σ]
KicOffset-rm: 0.460 arcsec [1.73 σ]
OotOffset-st: 0/2/1/1 [4]
KicOffset-st: 0/2/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/4]

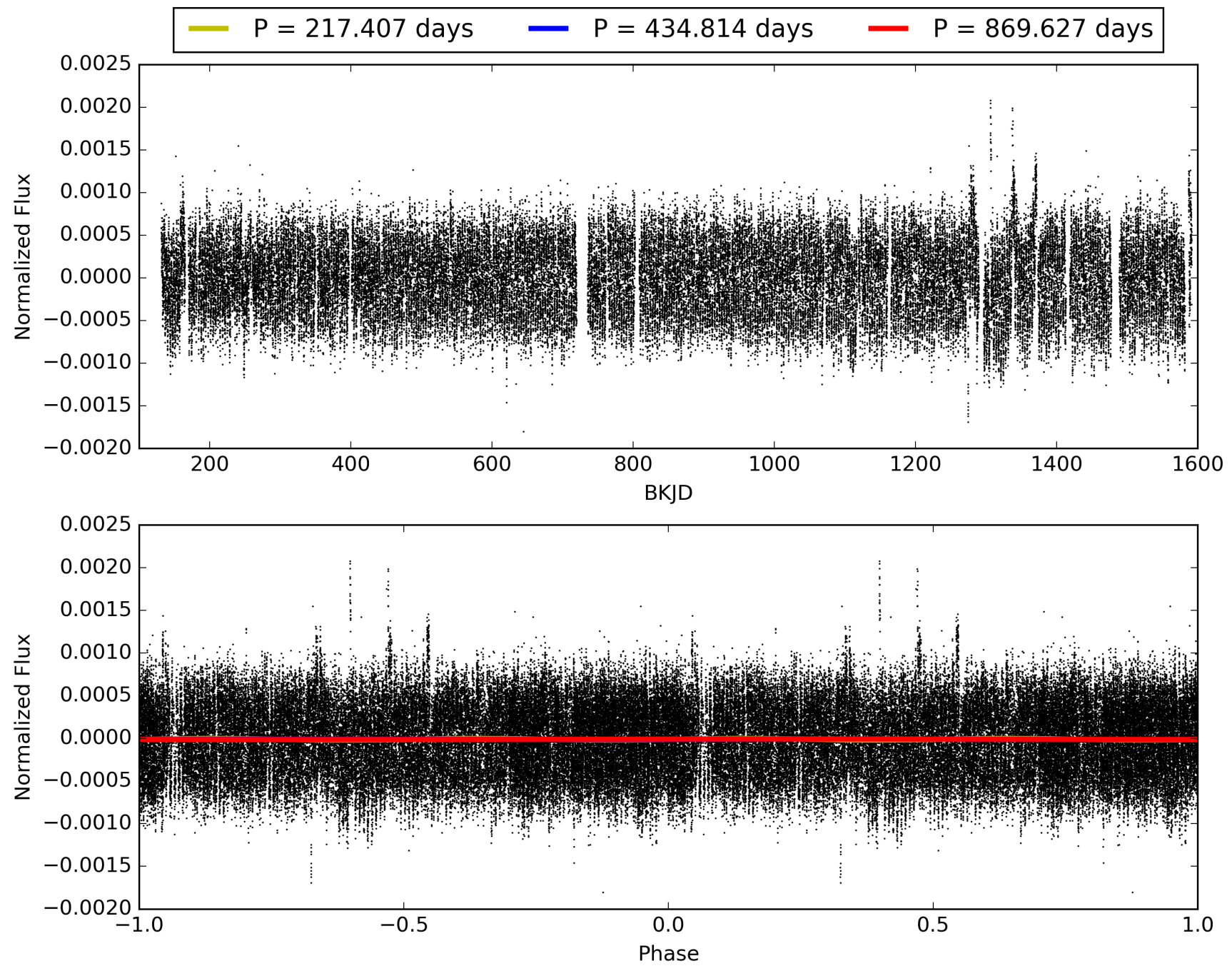
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:24:28 Z

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

TCE 002167600-05, PDC Light Curves

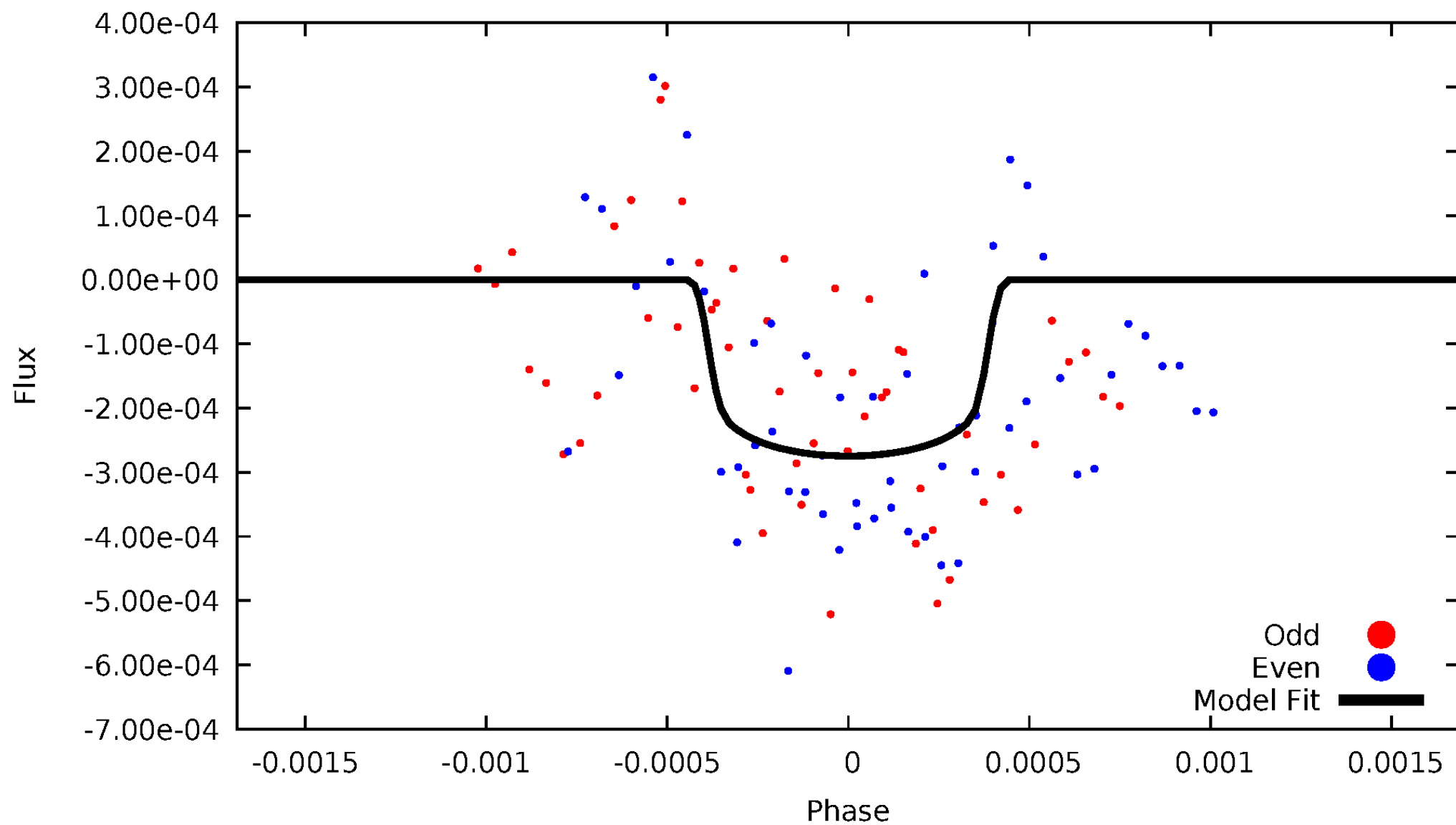


TCE 002167600-05



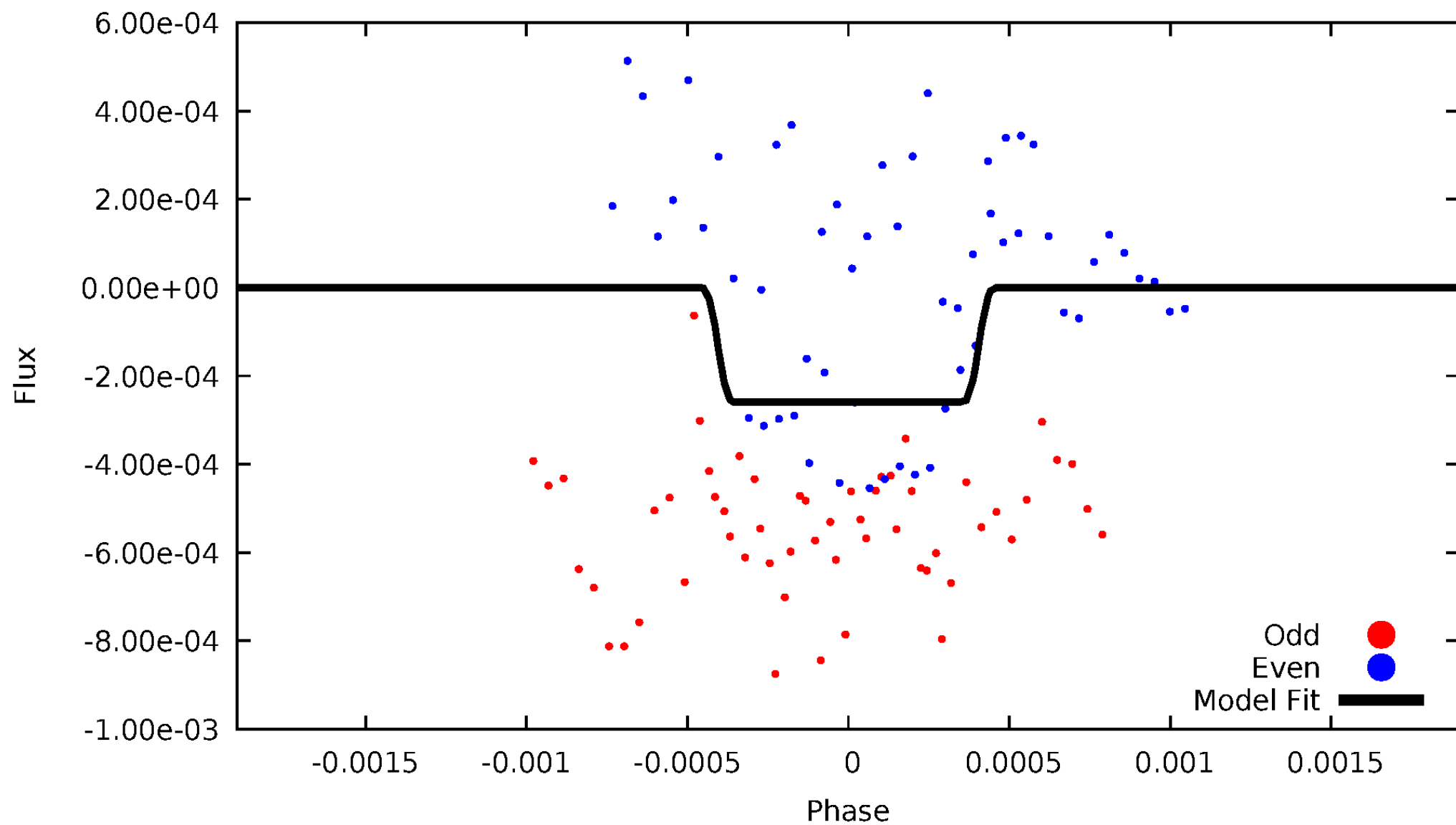
DV Odd/Even

TCE 002167600-05



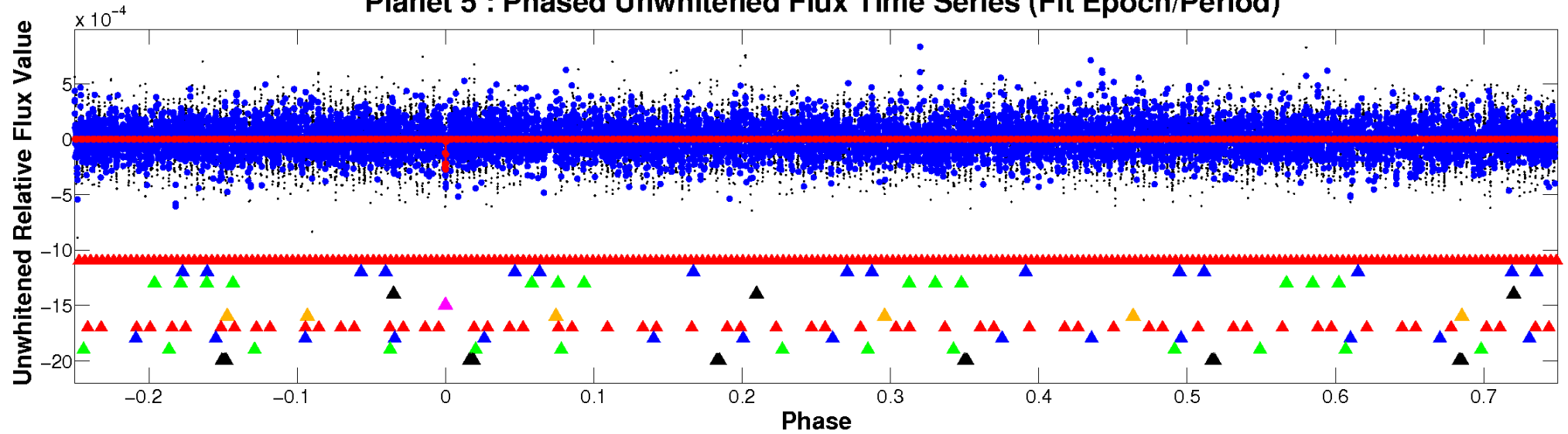
ALT Odd/Even

TCE 002167600-05

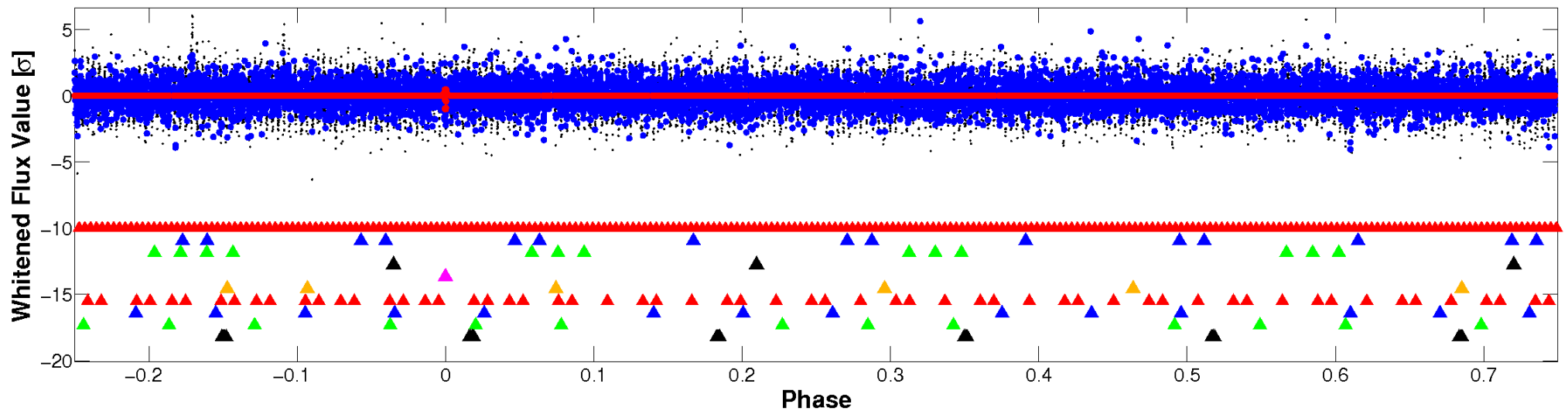


Non-Whitened Vs. Whitened Light Curve

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

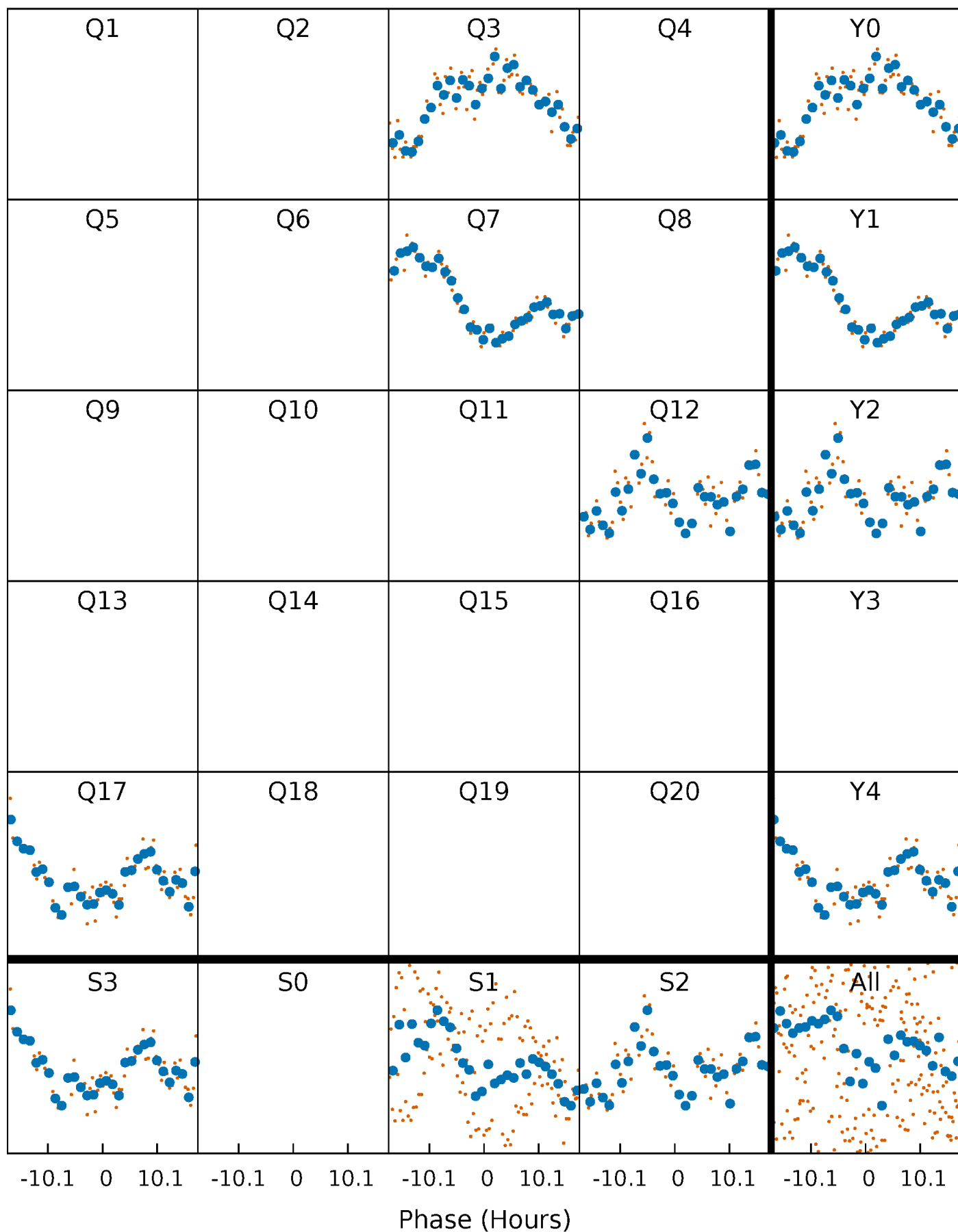


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



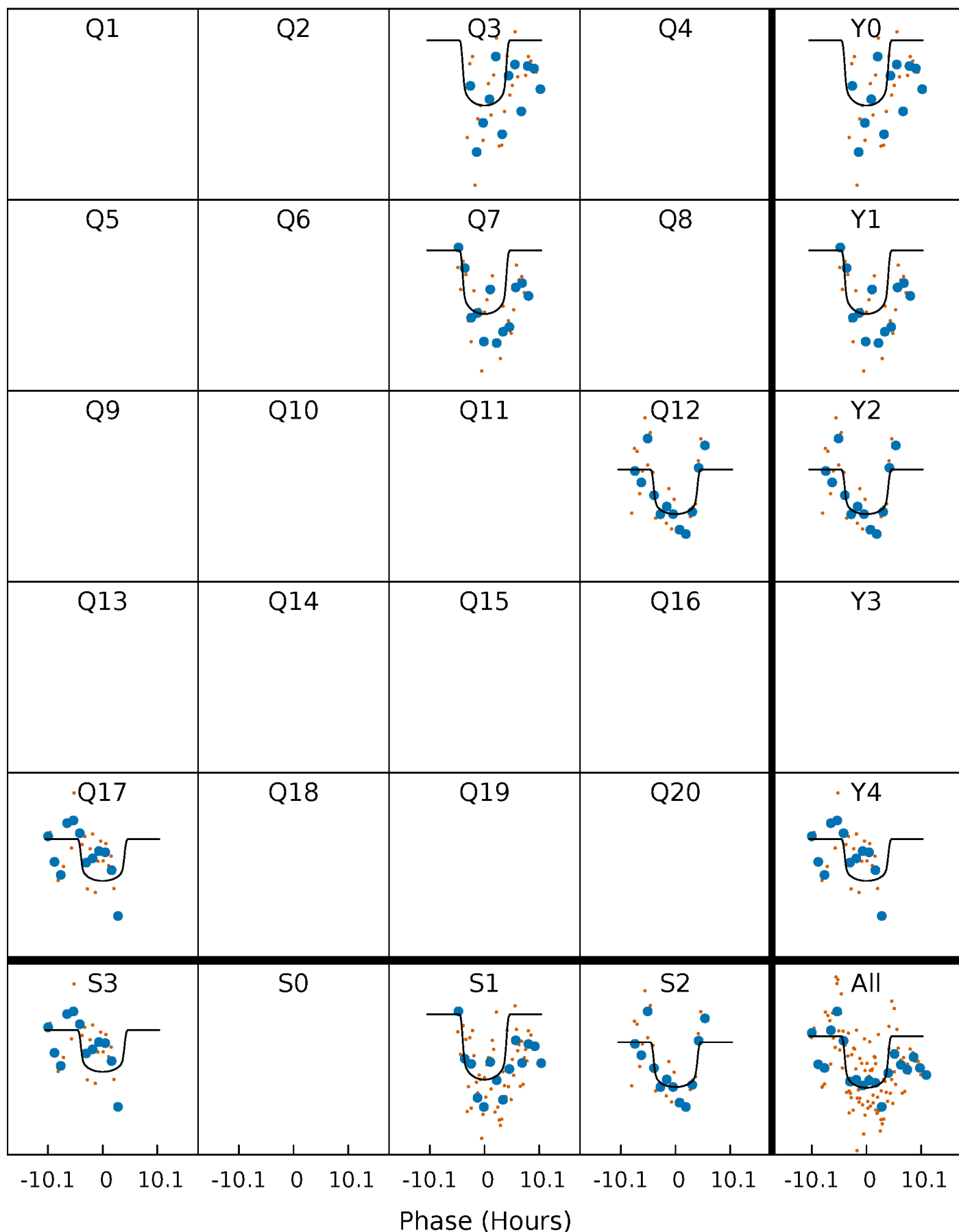
PDC Quarter-Phased Transit Curves

TCE 002167600-05 $P=434.813625$ Days $T_0=263.403243$ (BKJD)



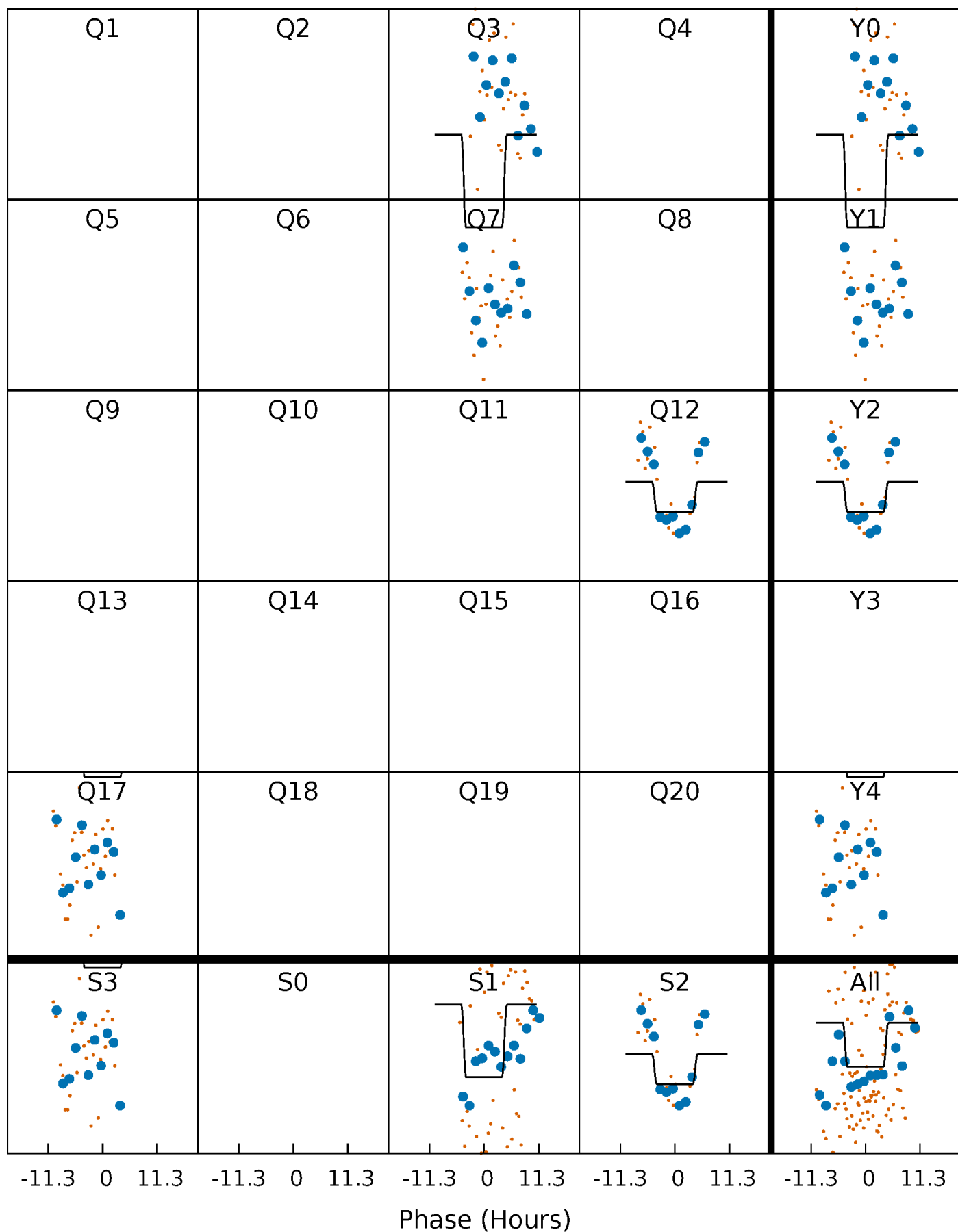
DV Quarter-Phased Transit Curves

TCE 002167600-05 $P=434.813625$ Days $T_0=263.403243$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

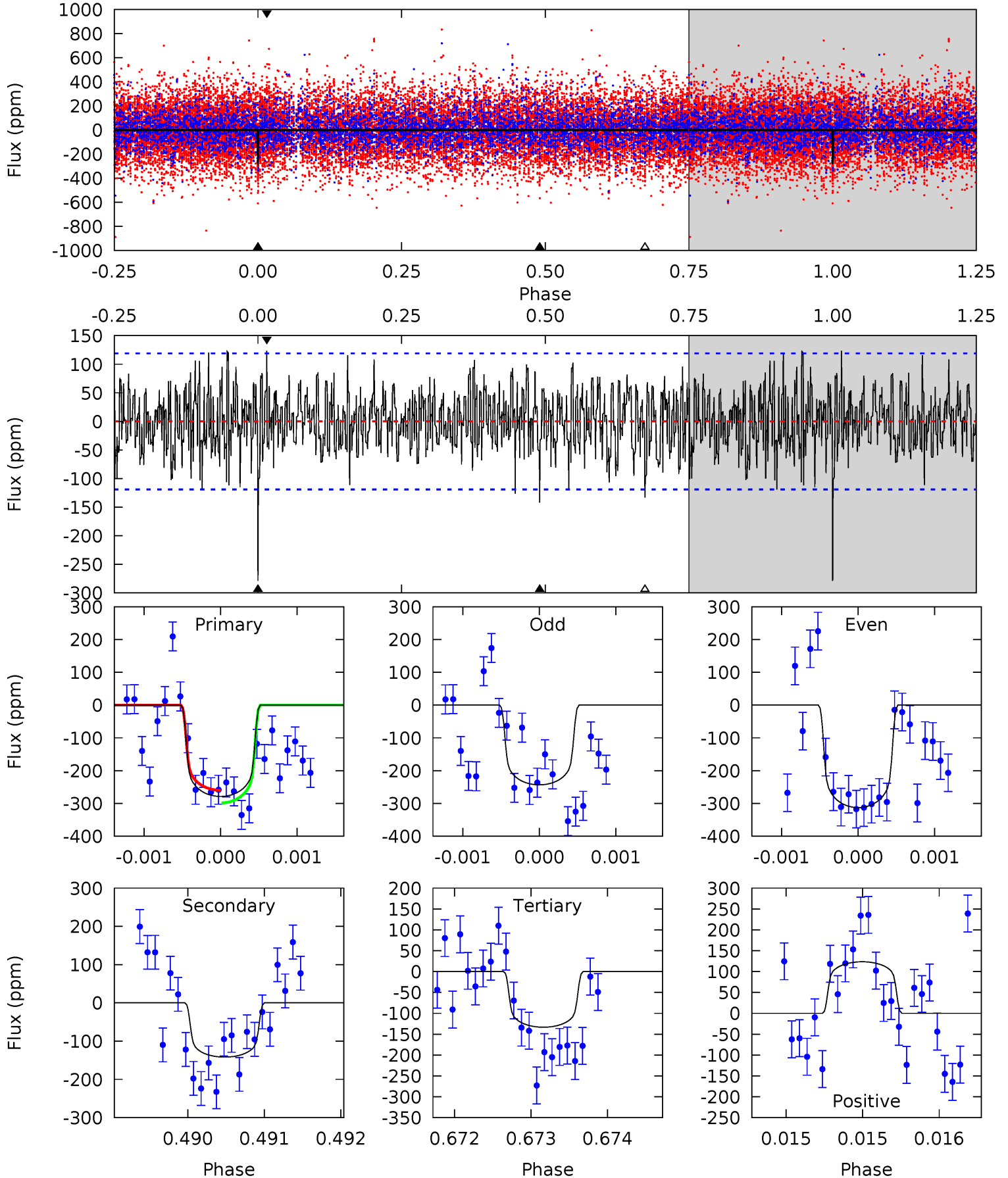
TCE 002167600-05 $P=434.812534$ Days $T_0=263.387228$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-05, P = 434.813625 Days, E = 263.403243 Days

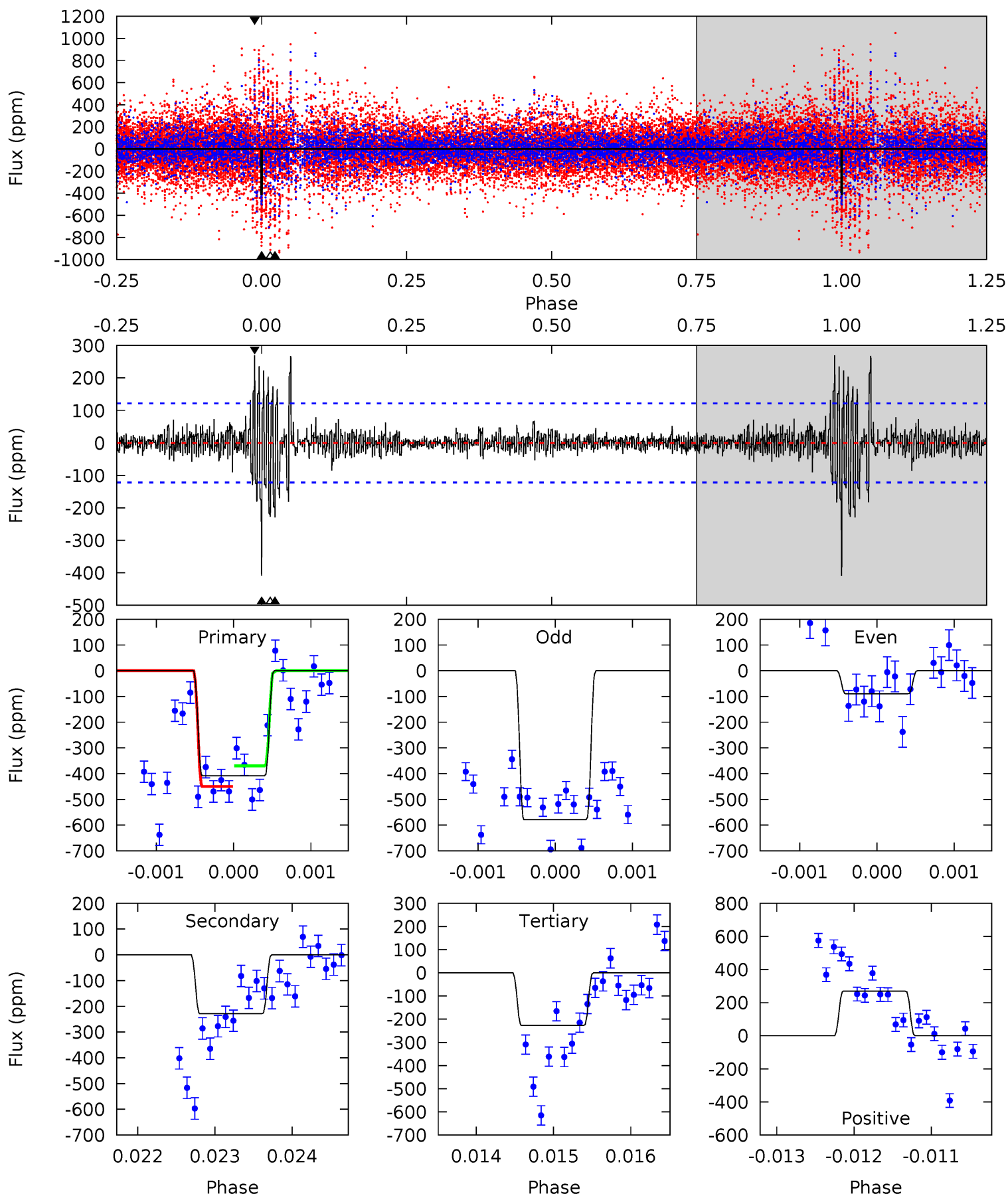
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	6.53	6.14	5.69	5.48	3.33	1.93	6.70	7.16	0.39	0.84	1.60	0.89	0.31	0.90



Alt Model-Shift Uniqueness Test

002167600-05, P = 434.812534 Days, E = 263.387228 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.4	10.3	10.2	12.1	5.48	3.33	1.70	8.17	6.29	0.09	-1.79	11.4	0.77	0.40	1.79



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-142 ± 22	$7.91^{+1.96}_{-1.86}$	702^{+41}_{-70}	5354^{+500}_{-432}	2301^{+1609}_{-833}
Alt.	-229 ± 22	$7.27^{+1.86}_{-1.94}$	701^{+40}_{-76}	6244^{+750}_{-560}	4506^{+3703}_{-1662}

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

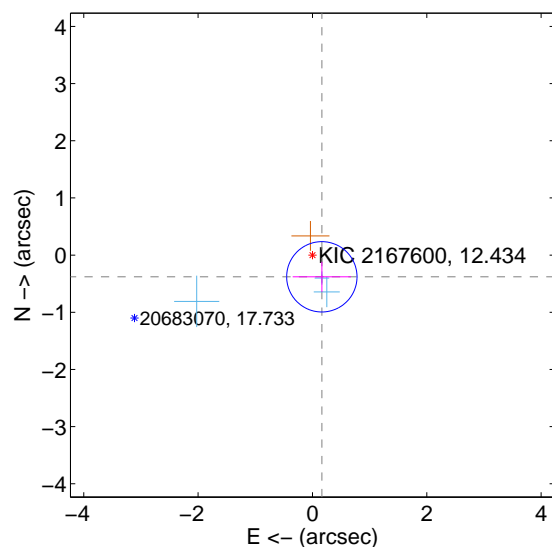
Supplemental centroid analysis for 002167600-05. Kepler magnitude: 12.43. Transit SNR 7.71

There are 3 quarters with good PRF difference image offsets

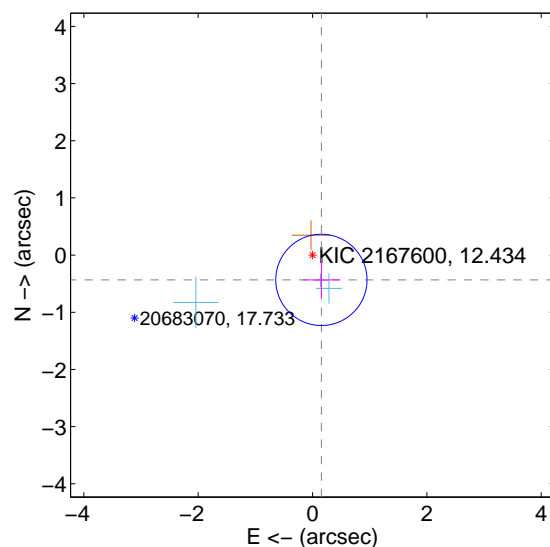
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.414 ± 0.205	2.02	-0.164 ± 0.511	-0.380 ± 0.262
PRF-fit source offset from KIC position	0.460 ± 0.266	1.73	-0.155 ± 0.320	-0.433 ± 0.317
photometric centroid source offset	0.62 ± 0.97	0.64	-0.29 ± 0.71	0.55 ± 1.03

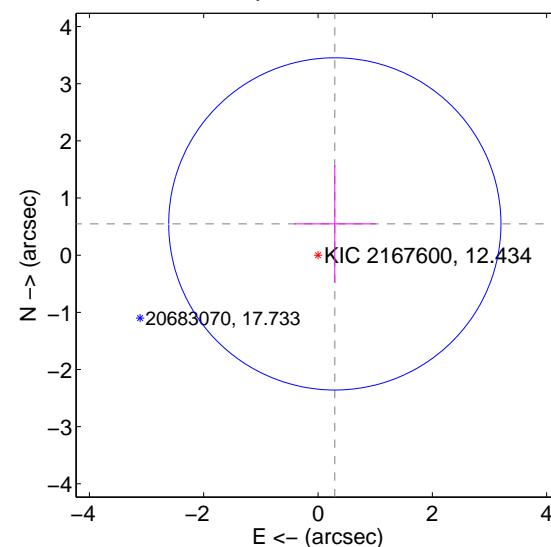
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

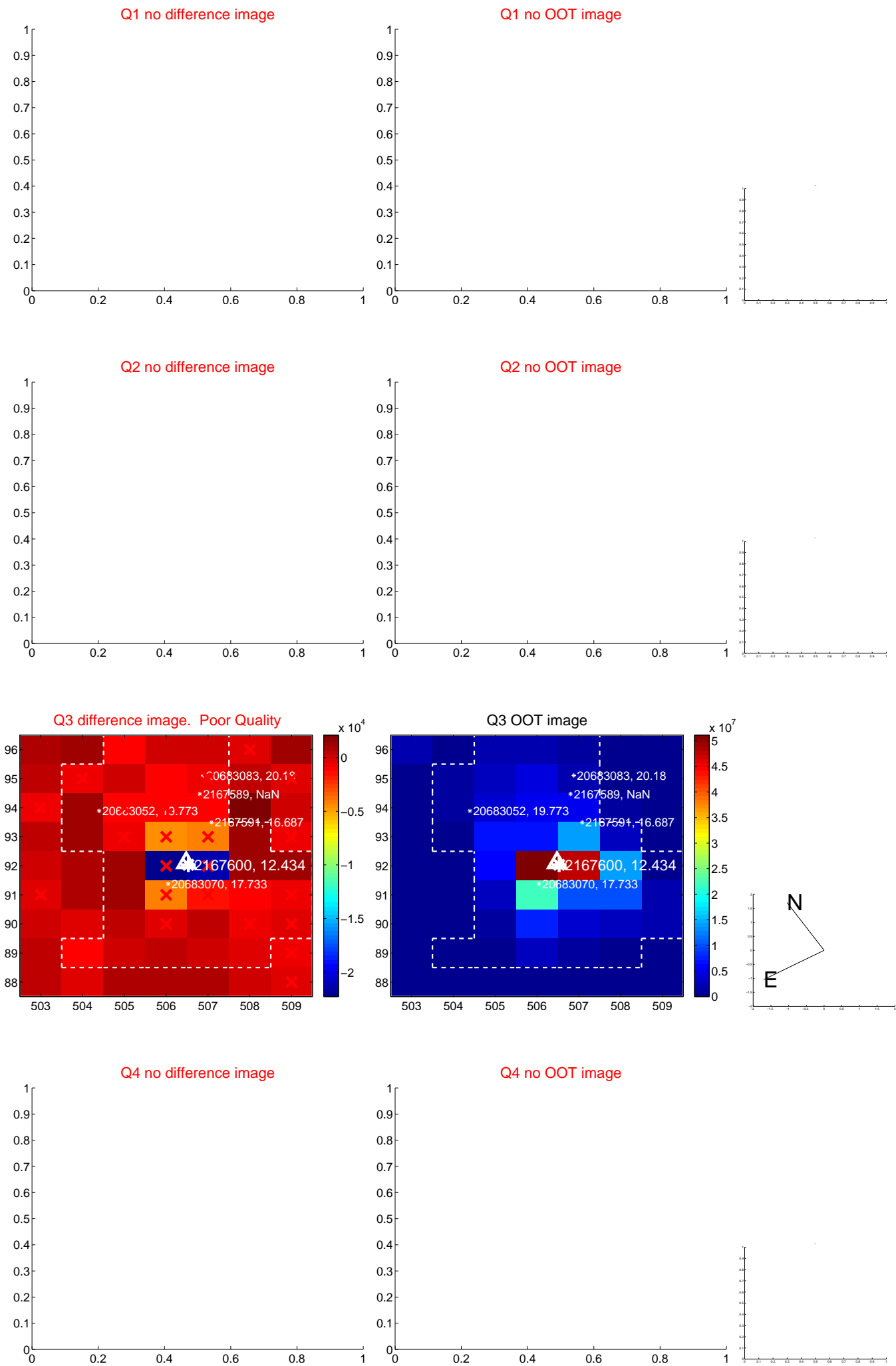


offset from photometric centroids

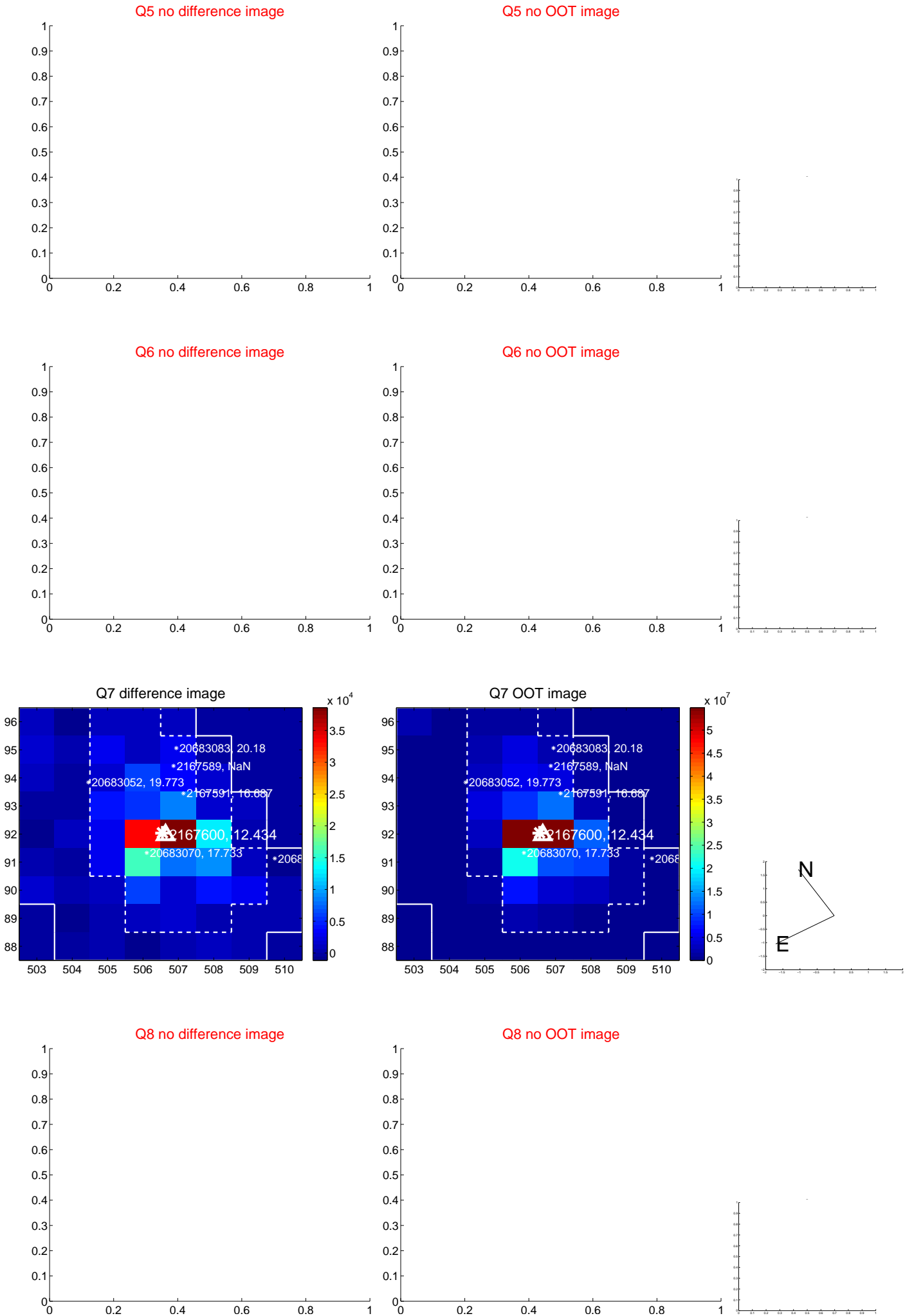


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

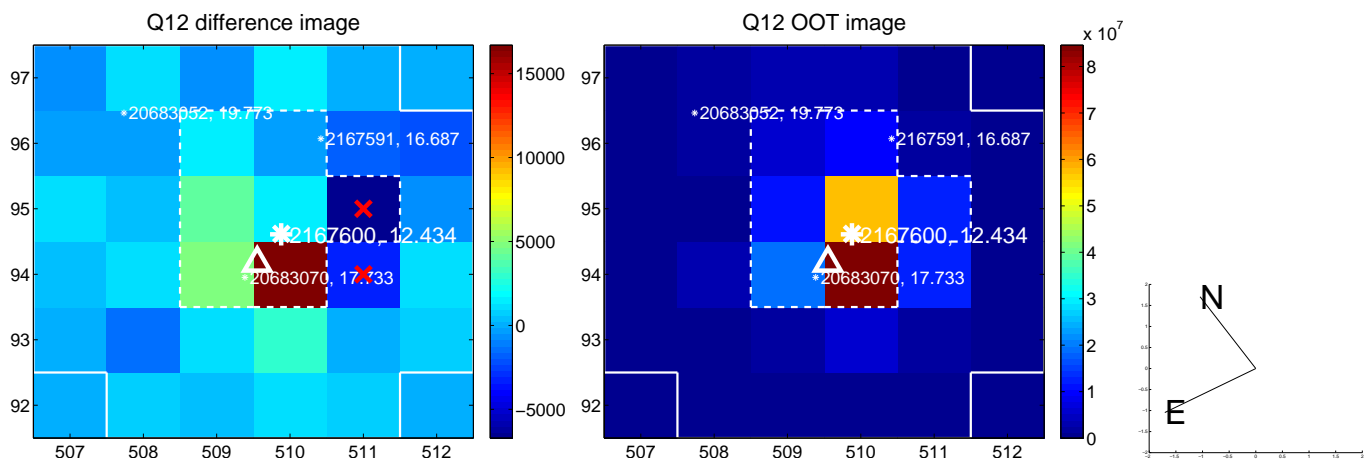
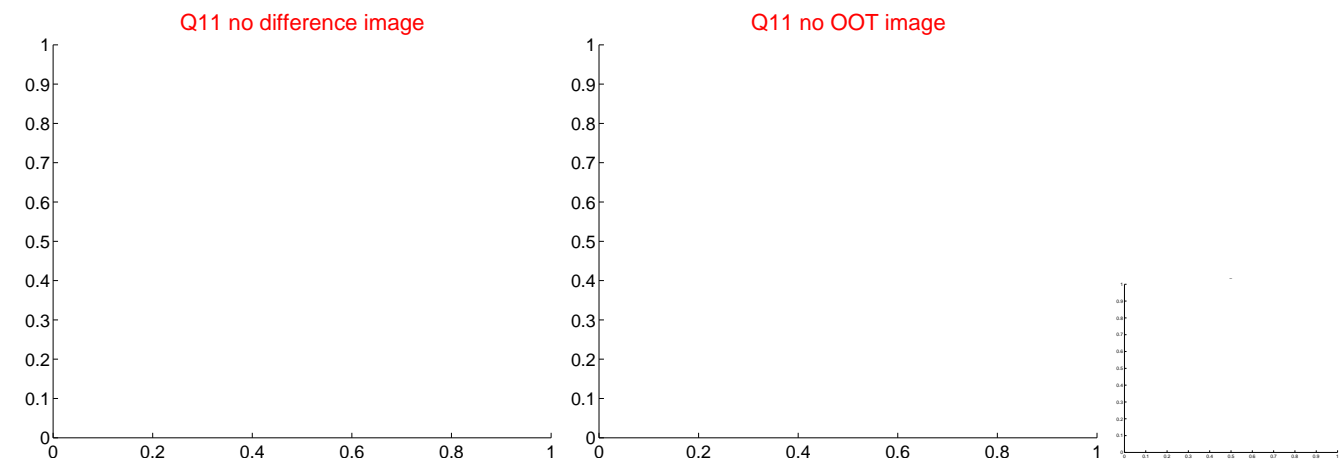
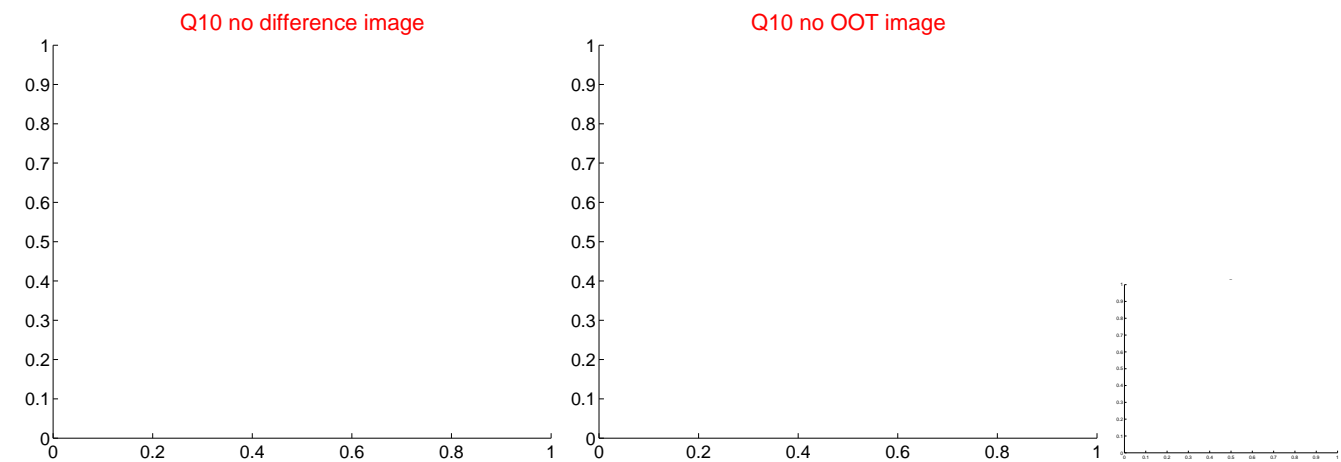
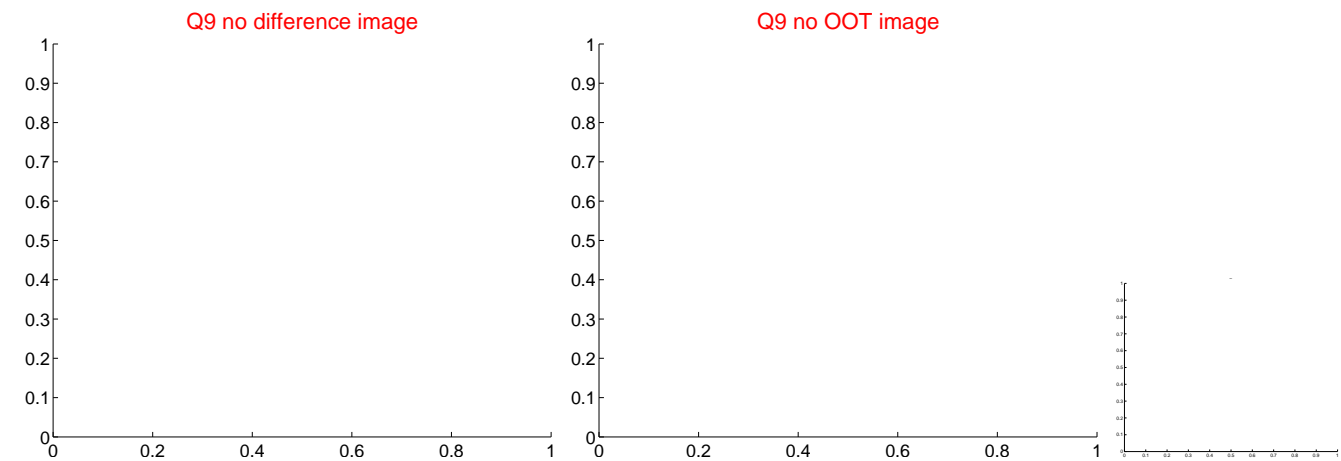
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



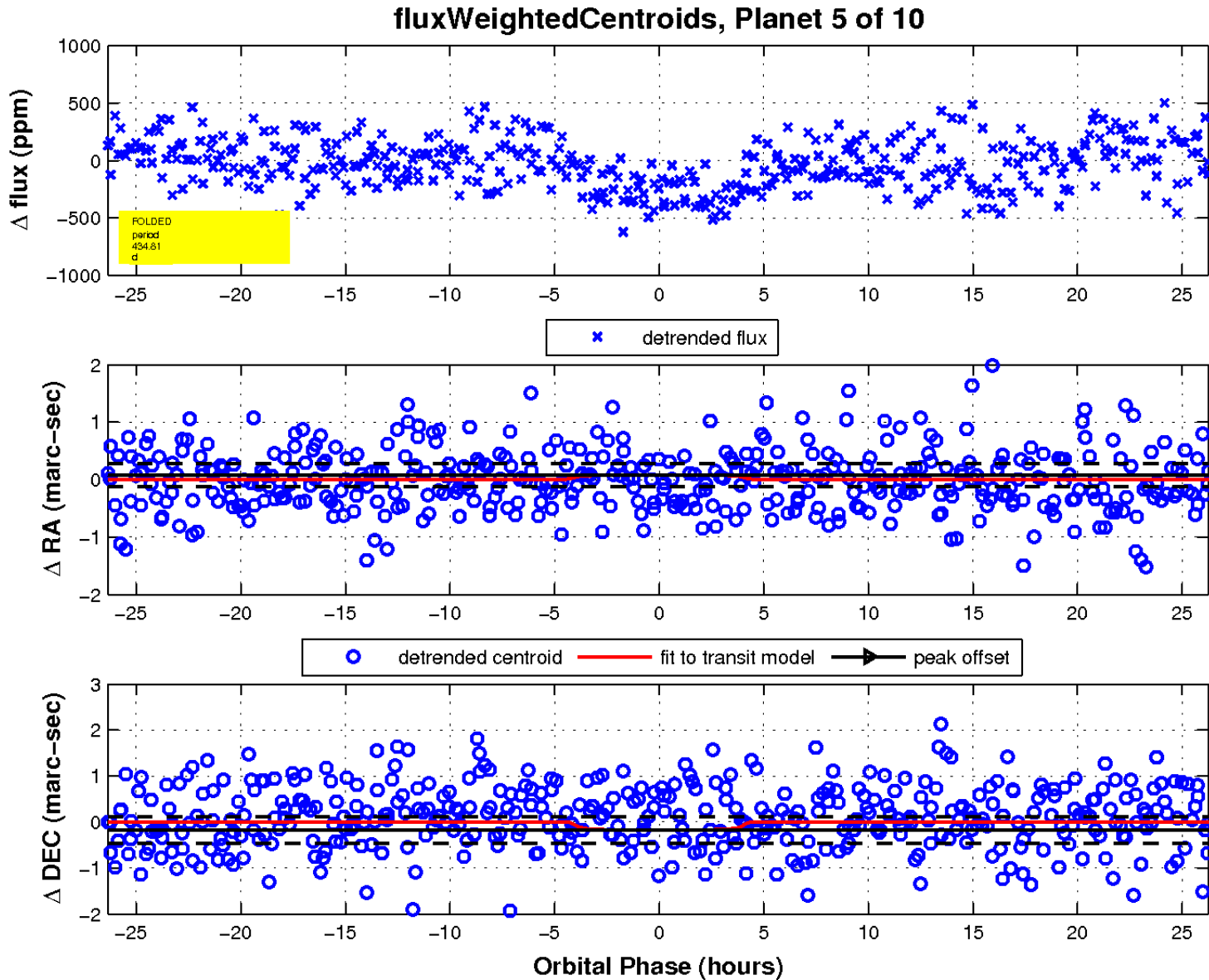
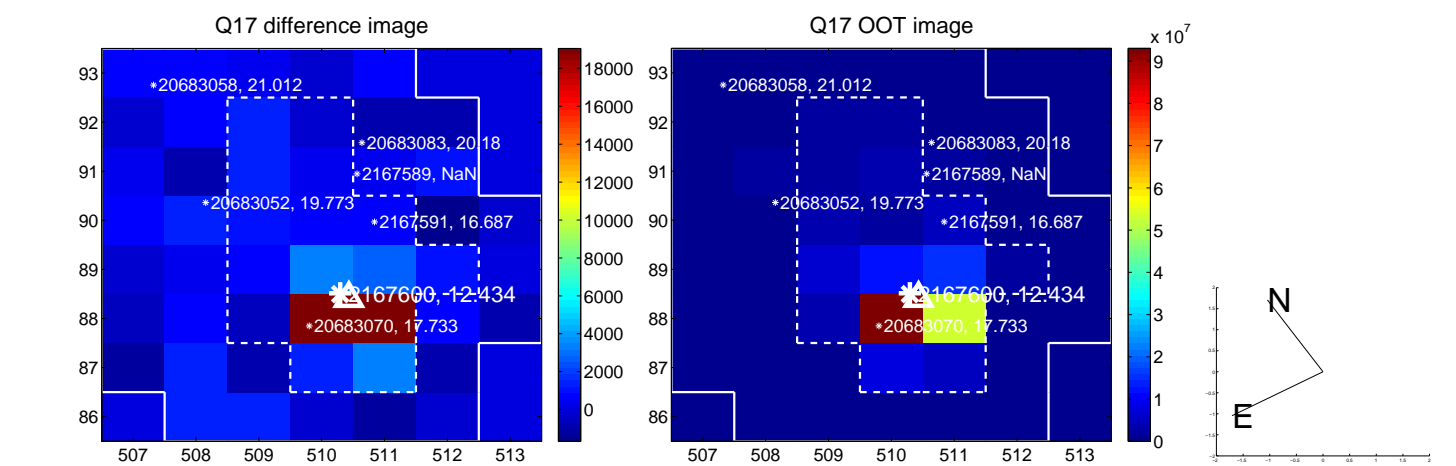
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

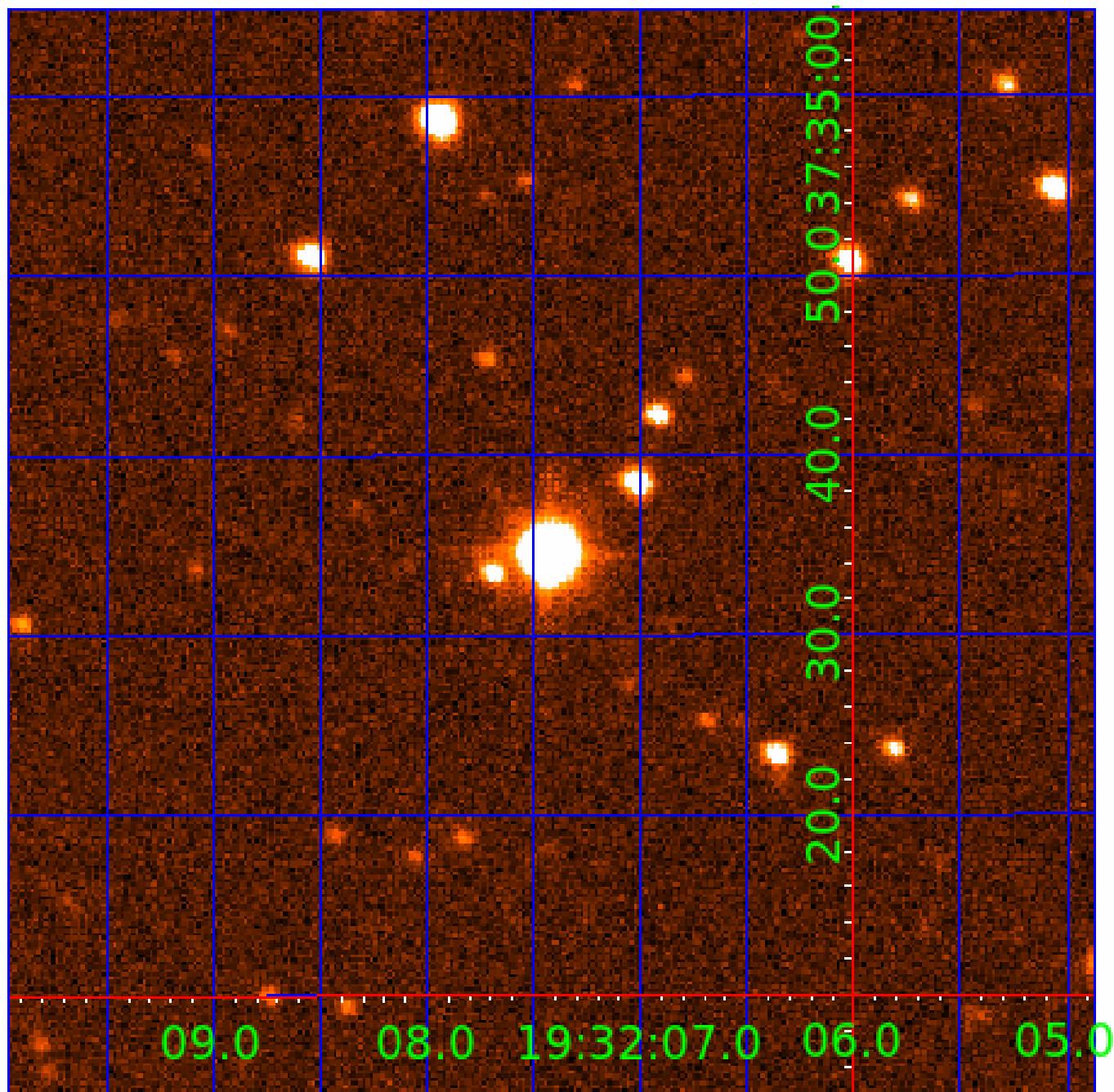


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

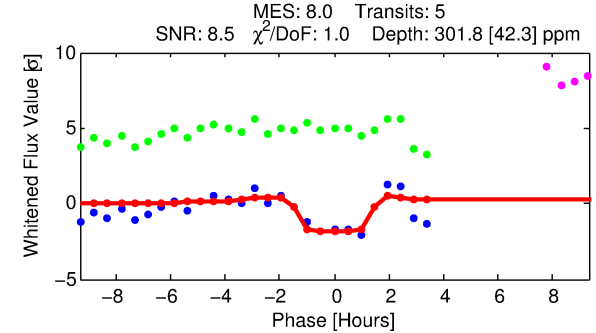
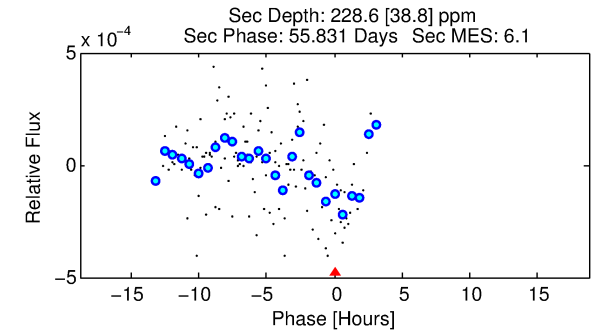
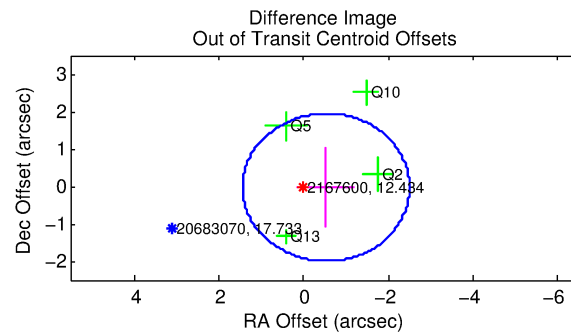
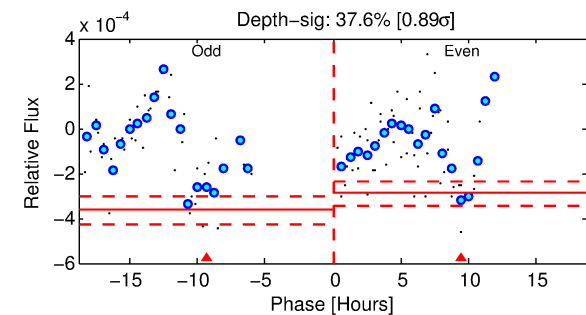
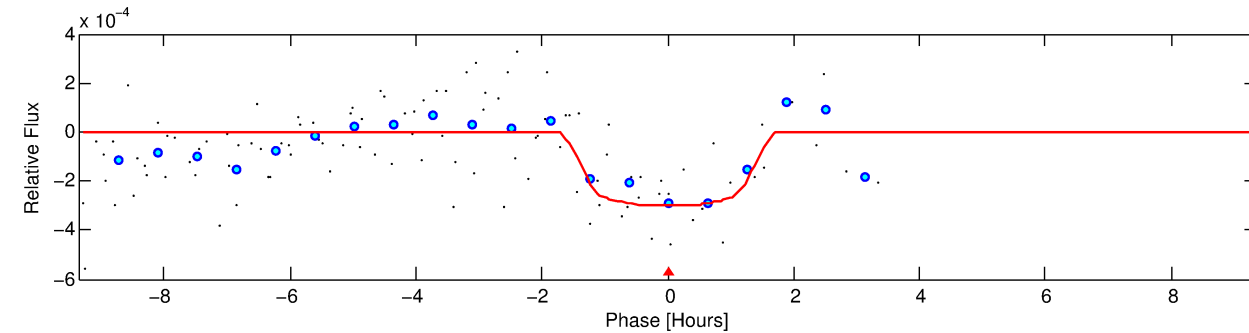
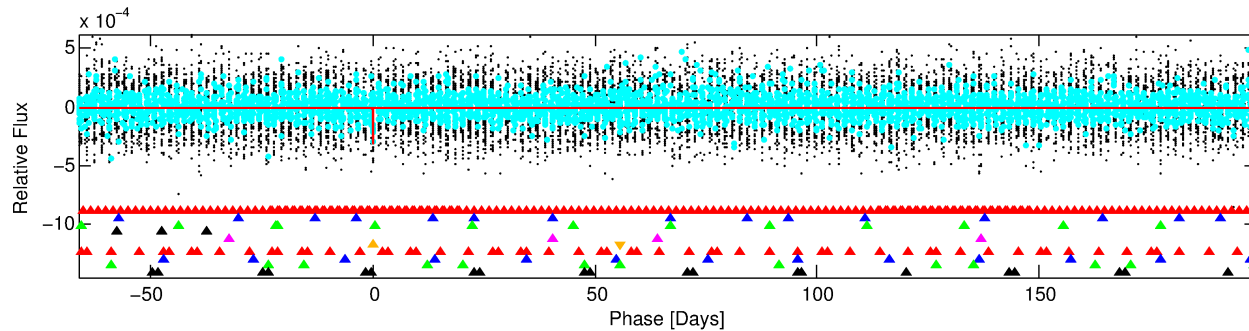
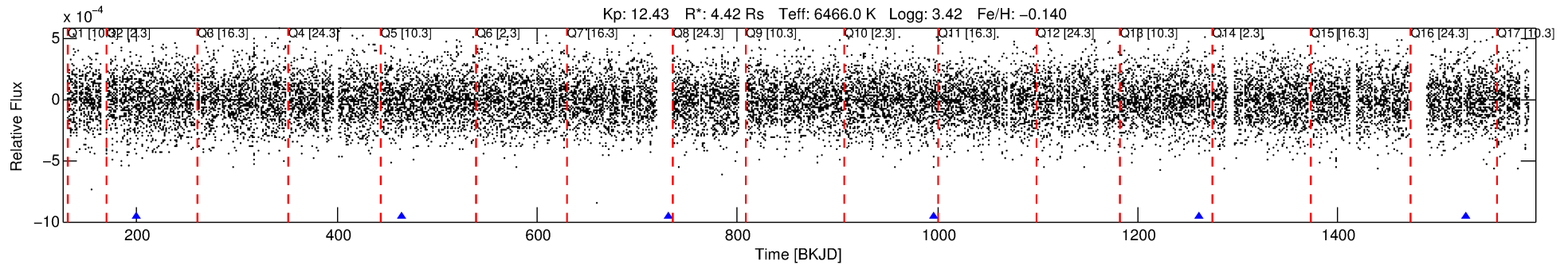
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-06

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 6 of 10 Period: 265.587 d



DV Fit Results:

Period = 265.58686 [0.00277] d
Epoch = 199.4198 [0.0066] BKJD
Rp/R* = 0.0186 [0.0087]
a/R* = 311.41 [813.29]
b = 0.90 [0.57]
Seff = 30.65 [19.90]
Teq = 600 [97] K
Rp = 8.96 [5.61] Re
a = 0.9980 [0.3987] AU
Ag = 1561.13 [1792.46] [0.87 σ]
Teffp = 5831 [1399] K [3.73 σ]

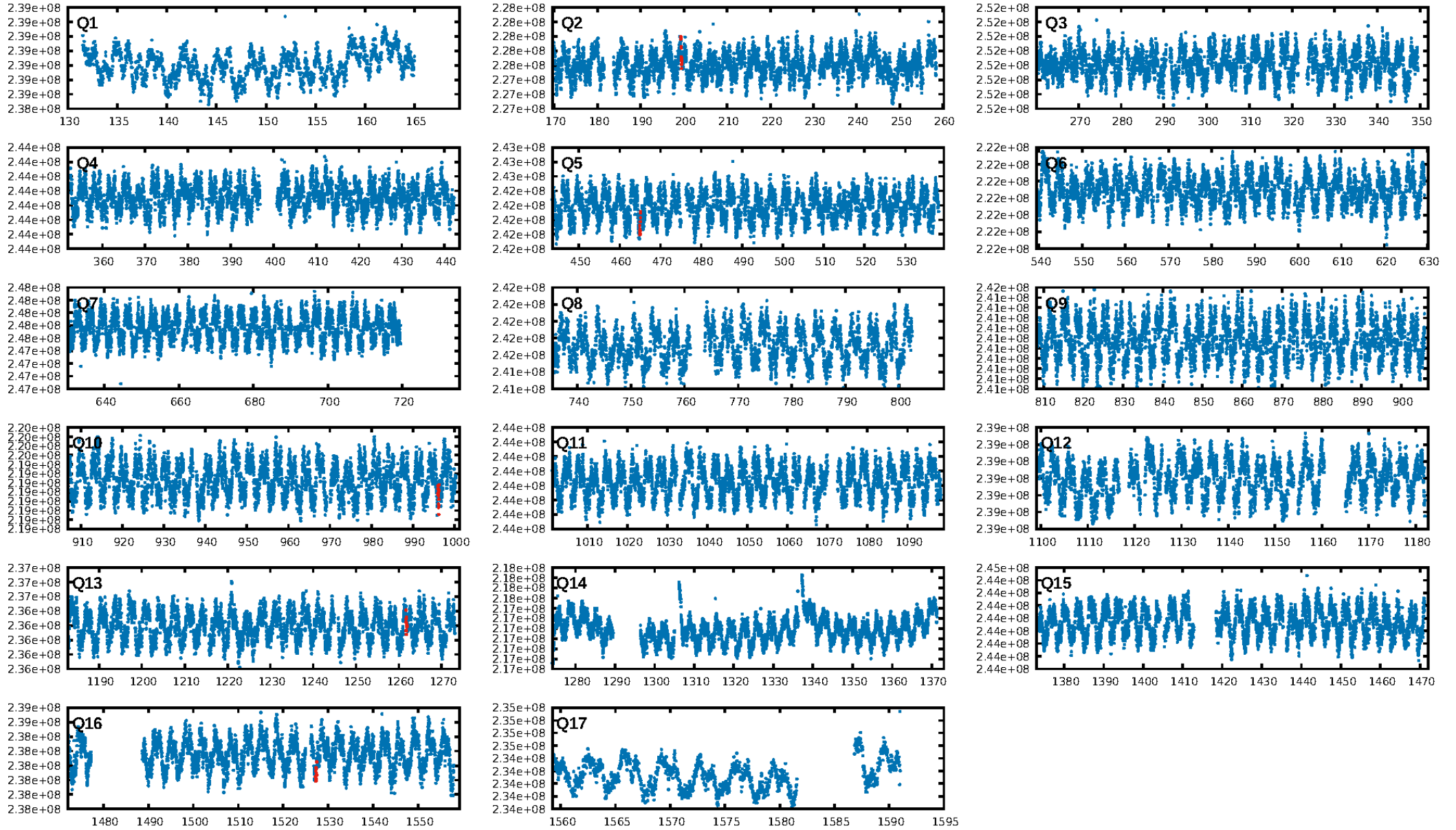
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [752.13 σ]
LongPeriod-sig: 100.0% [434.67 σ]
ModelChiSquare2-sig: 87.7%
ModelChiSquareGof-sig: 98.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 61.63
Centroid-sig: 1.1%
Centroid-so: 2.299 arcsec [2.26 σ]
OotOffset-rm: 0.532 arcsec [0.81 σ]
OotOffset-st: 2/0/0/2 [4]
KicOffset-rm: 0.592 arcsec [0.89 σ]
KicOffset-st: 2/0/0/2 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 0.75 [3/4]

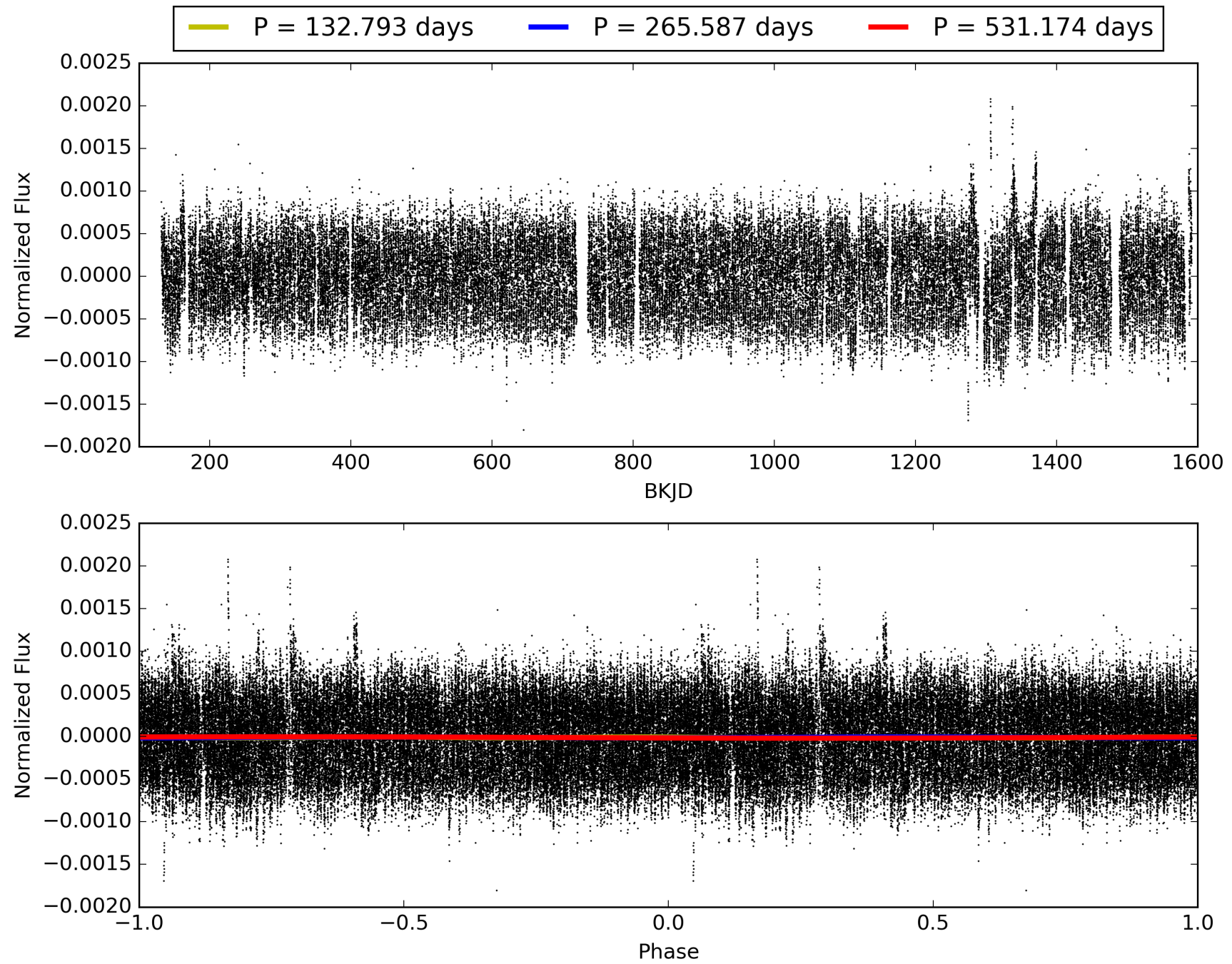
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:24:35 Z

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

TCE 002167600-06, PDC Light Curves

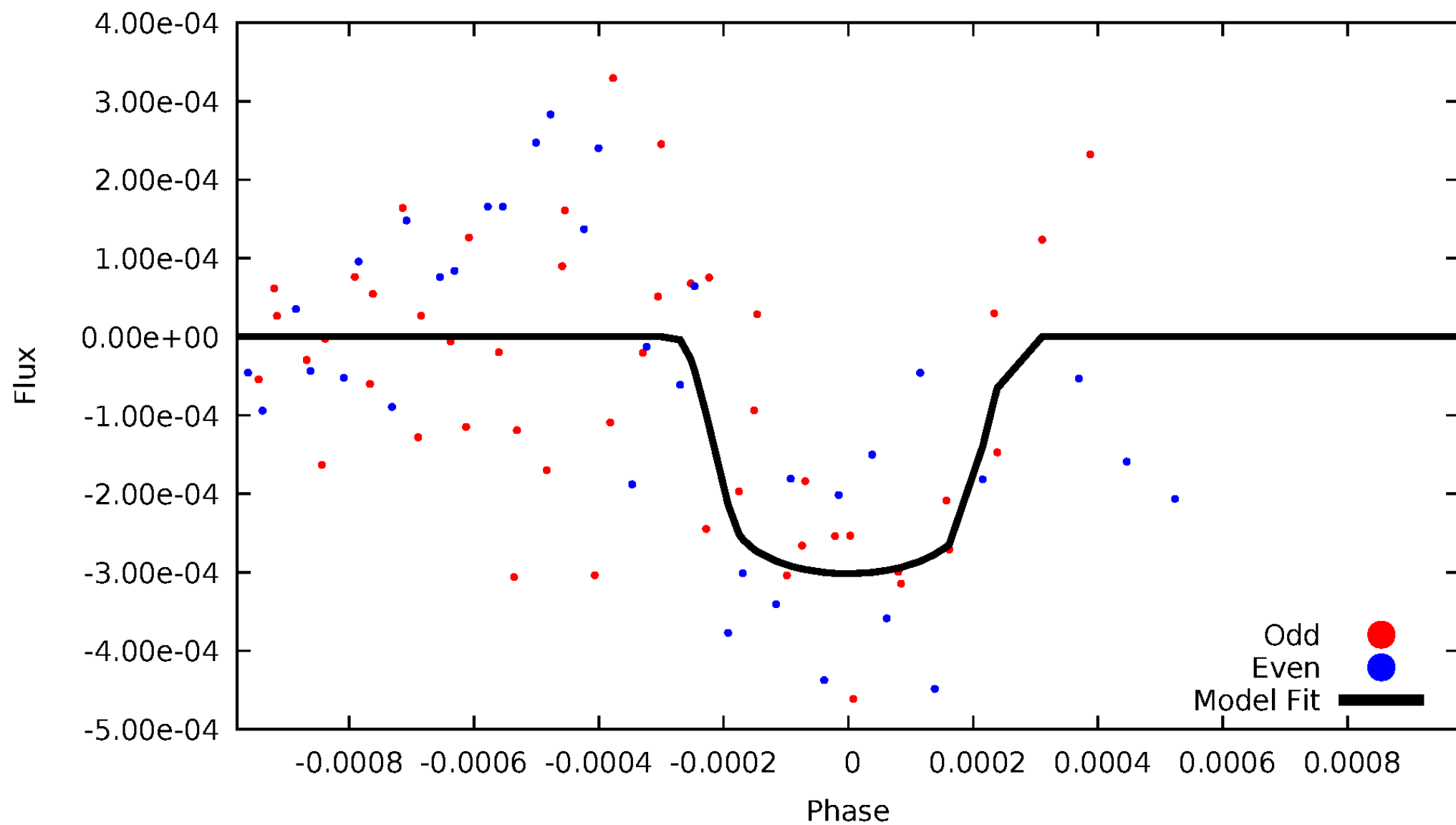


TCE 002167600-06



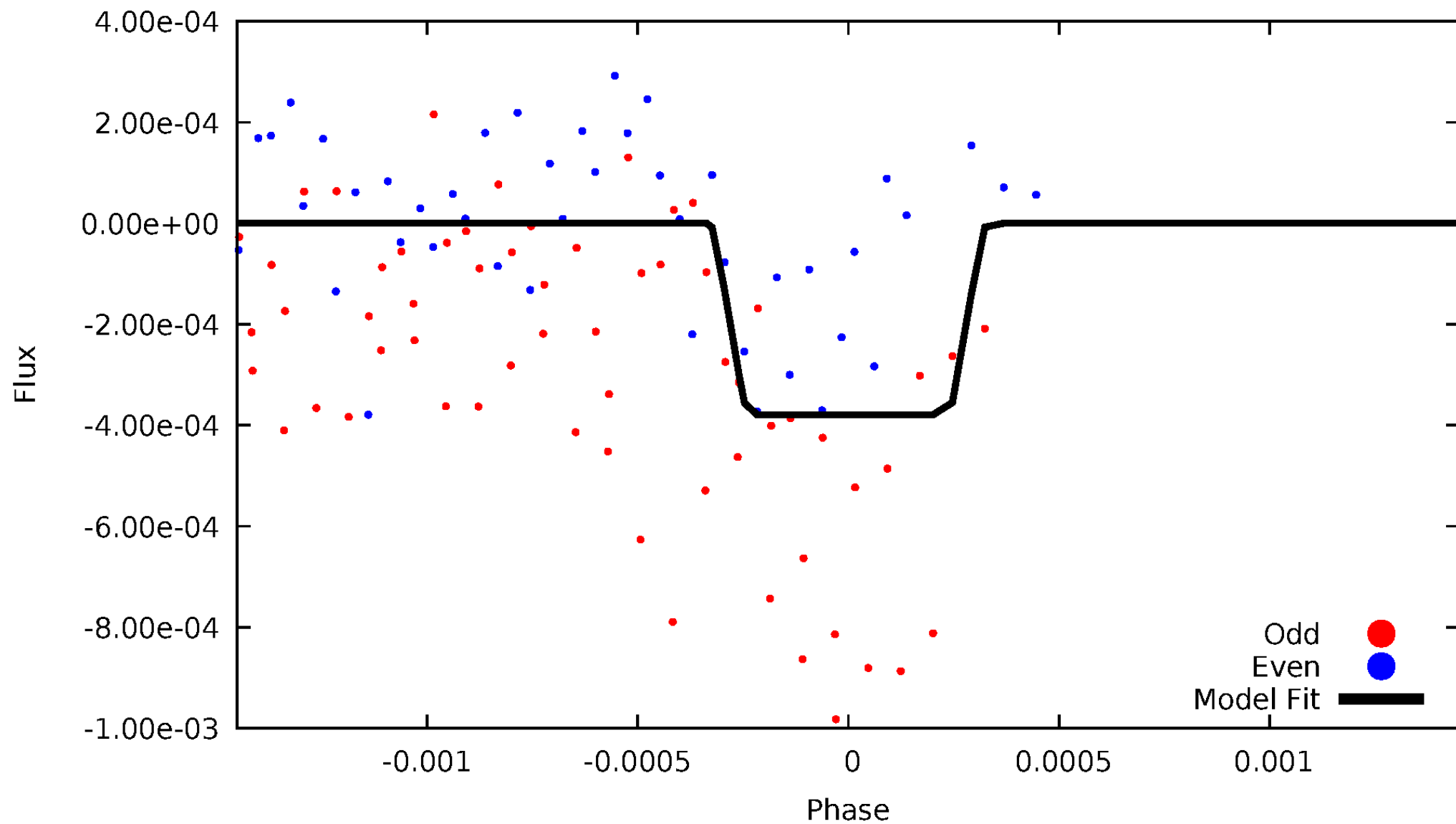
DV Odd/Even

TCE 002167600-06



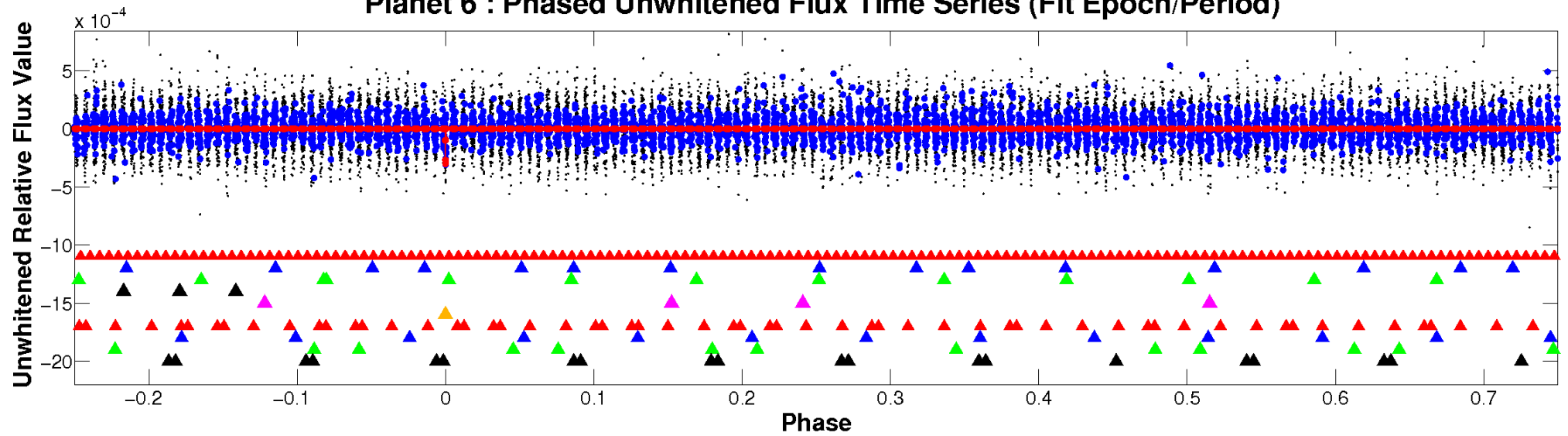
ALT Odd/Even

TCE 002167600-06

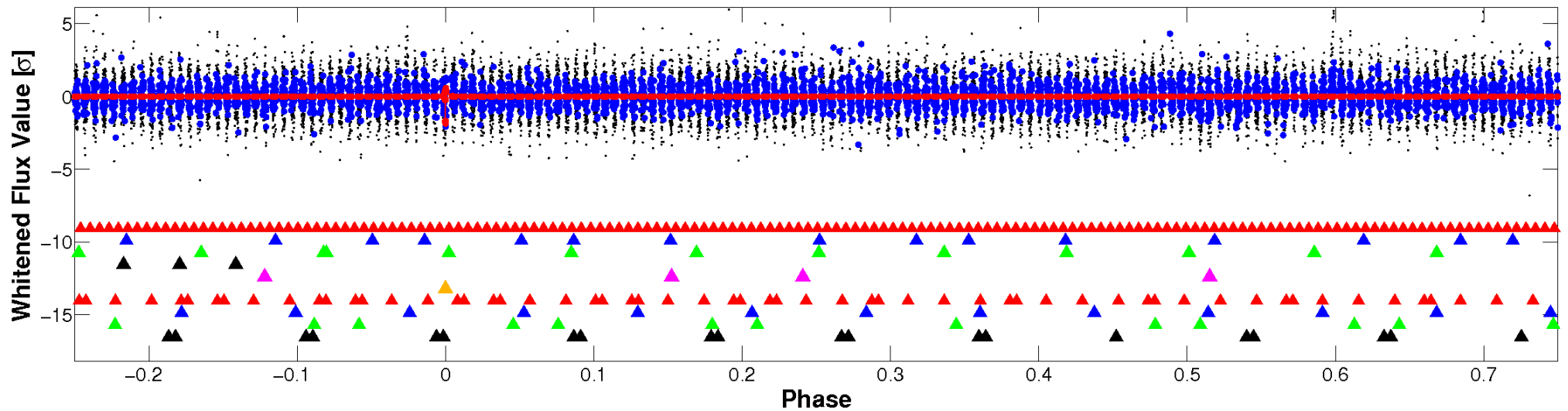


Non-Whitened Vs. Whitened Light Curve

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

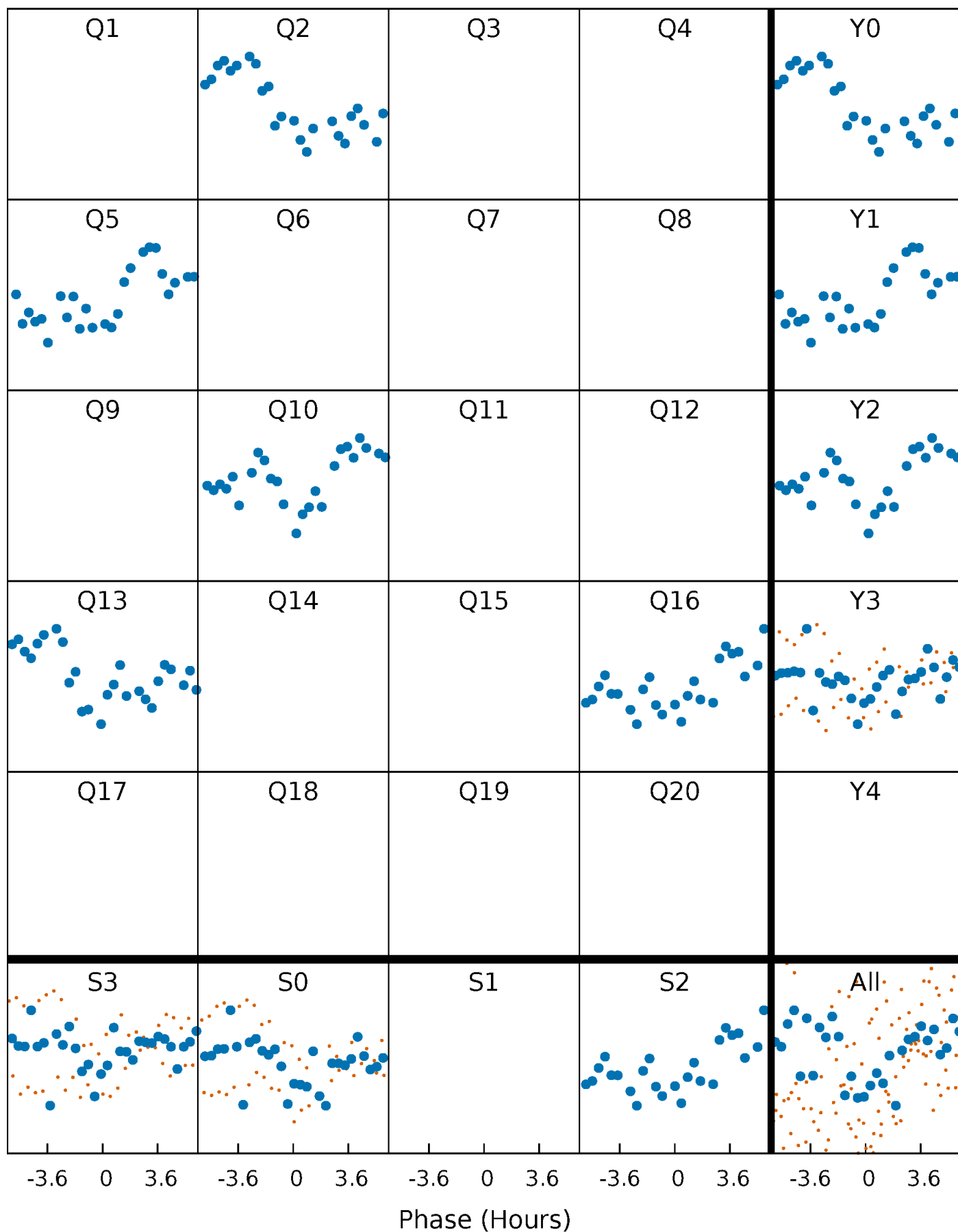


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



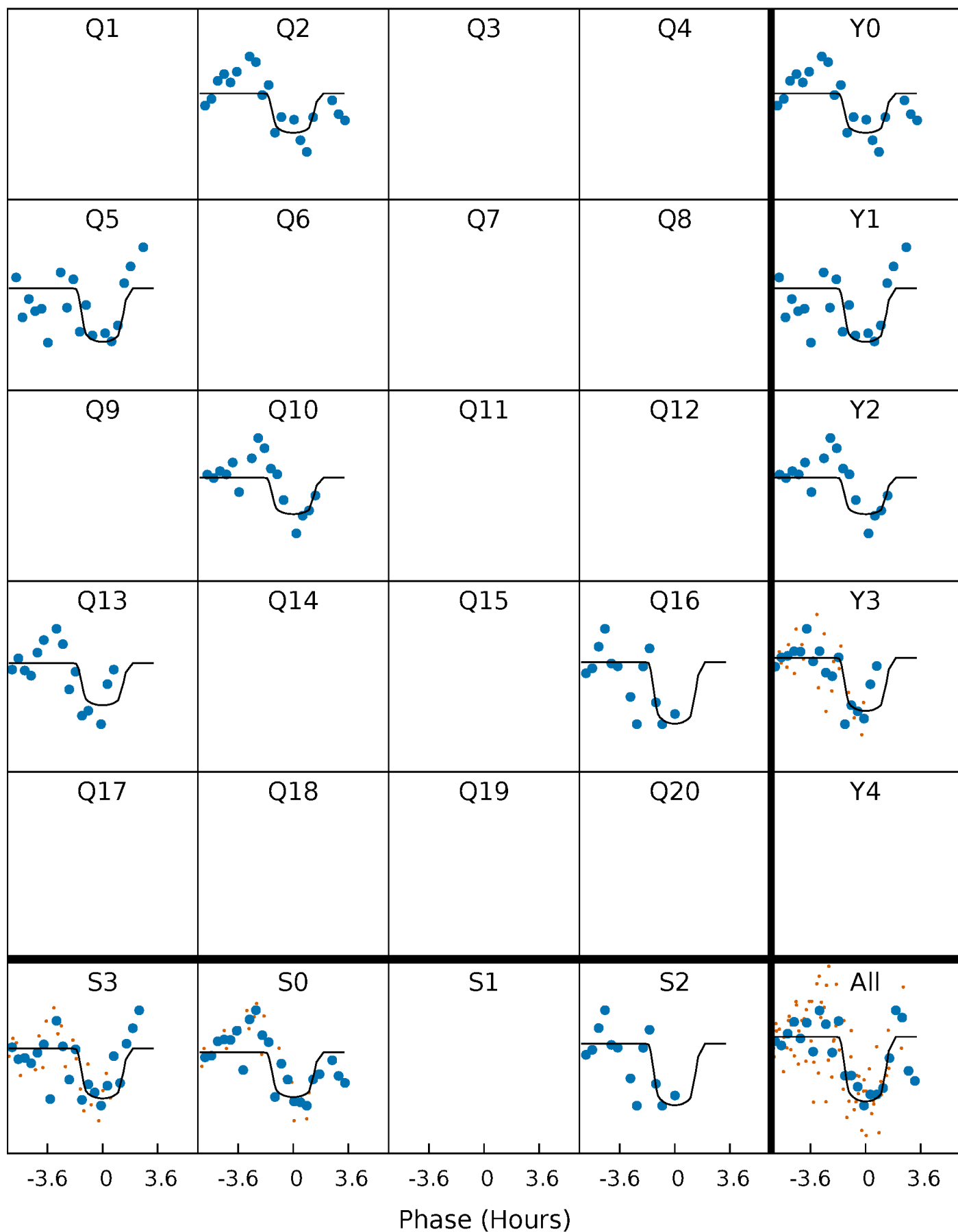
PDC Quarter-Phased Transit Curves

TCE 002167600-06 P=265.586864 Days $T_0=199.419767$ (BKJD)



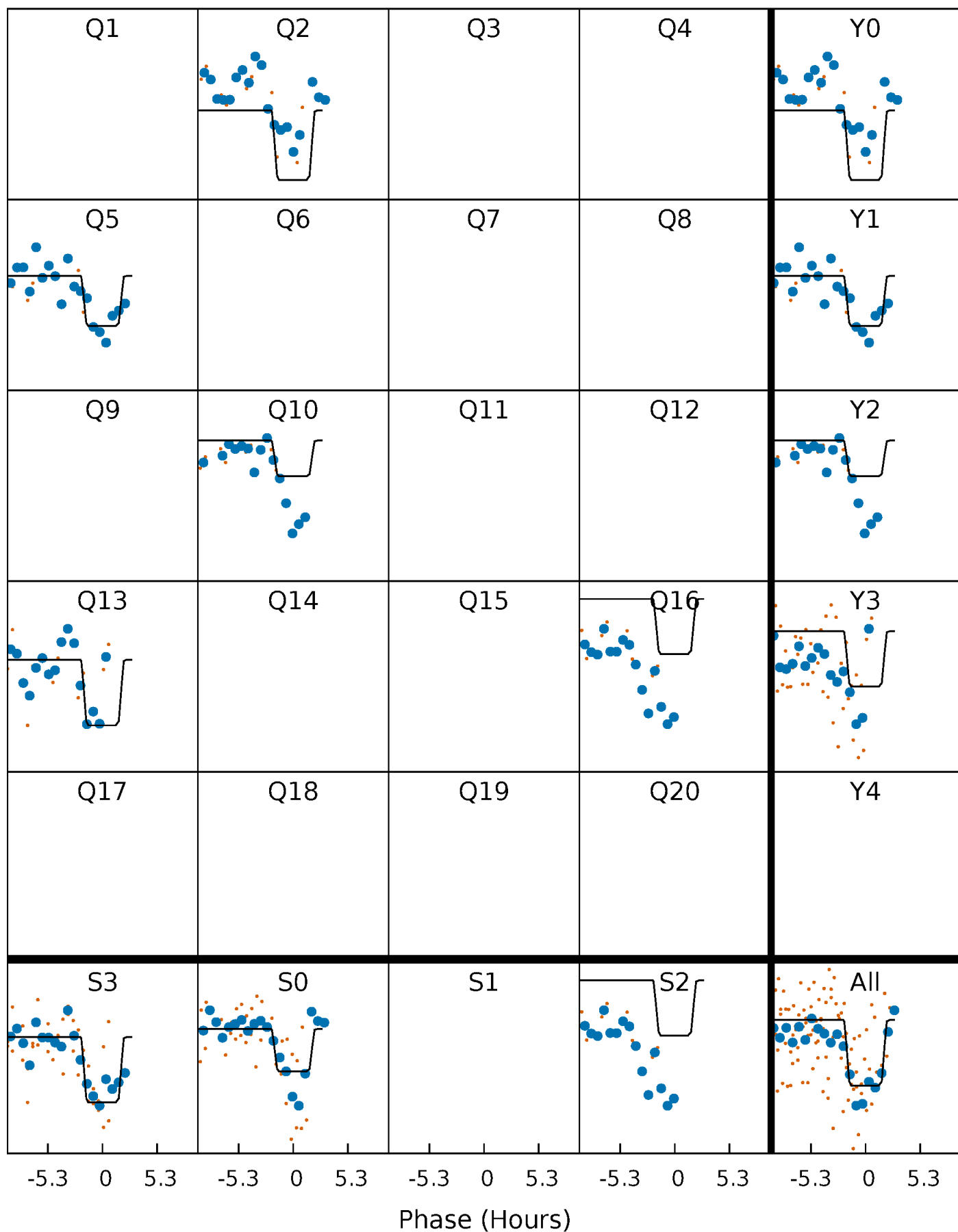
DV Quarter-Phased Transit Curves

TCE 002167600-06 P=265.586864 Days $T_0=199.419767$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

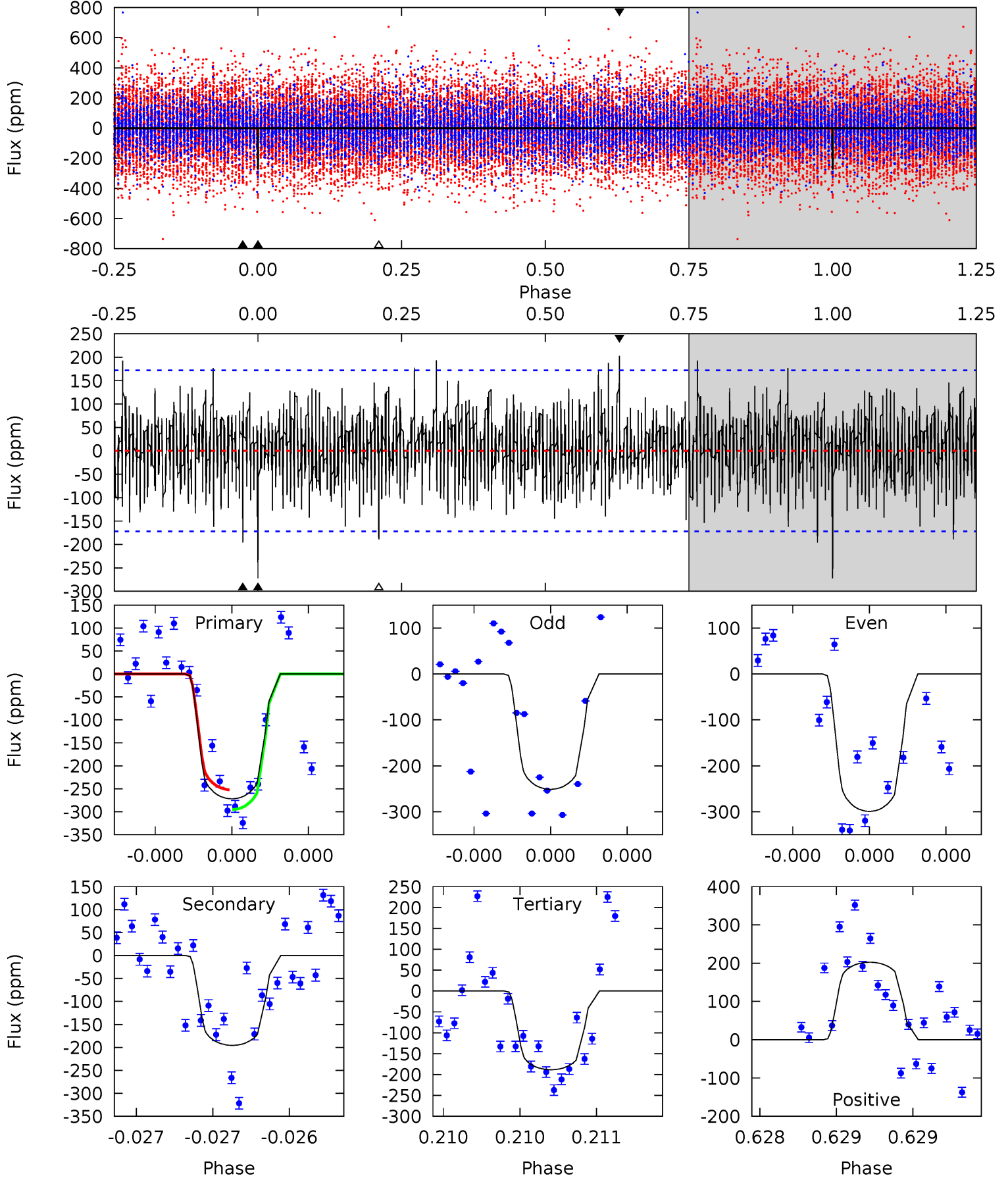
TCE 002167600-06 P=265.583308 Days $T_0=199.440293$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-06, P = 265.586864 Days, E = 199.419767 Days

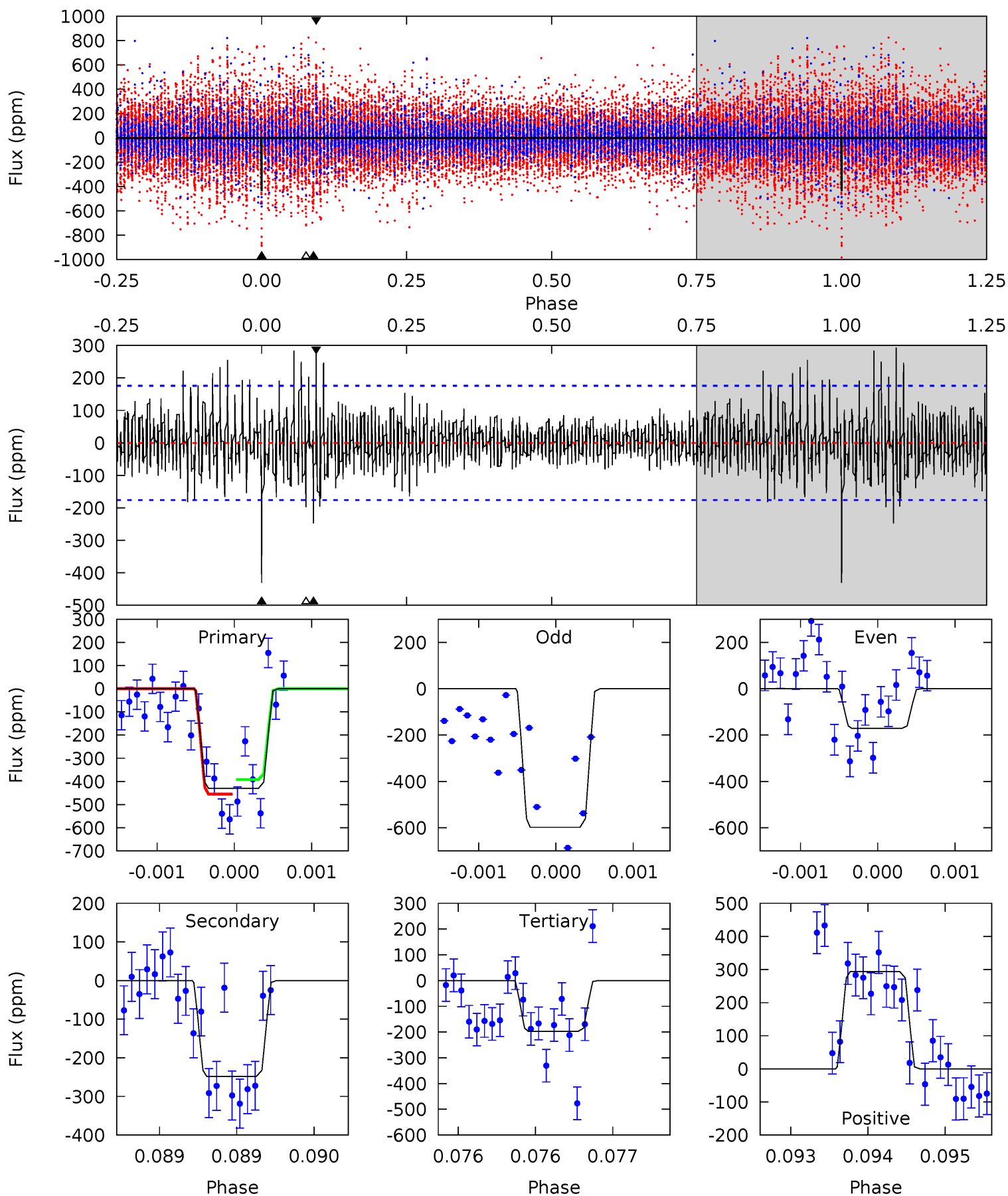
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.81	6.34	6.11	6.56	5.58	3.49	1.73	2.70	2.24	0.23	-0.23	0.77	1.01	0.43	0.69



Alt Model-Shift Uniqueness Test

002167600-06, P = 265.583308 Days, E = 199.440293 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	7.79	6.20	9.21	5.53	3.41	1.71	7.32	4.30	1.58	-1.43	6.58	1.19	0.41	0.95



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-196 ± 31	$8.22^{+4.52}_{-3.82}$	816^{+55}_{-78}	5499^{+2156}_{-809}	1542^{+4067}_{-913}
Alt.	-248 ± 32	$8.35^{+4.76}_{-3.95}$	829^{+42}_{-87}	5859^{+2056}_{-964}	1817^{+4747}_{-1037}

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

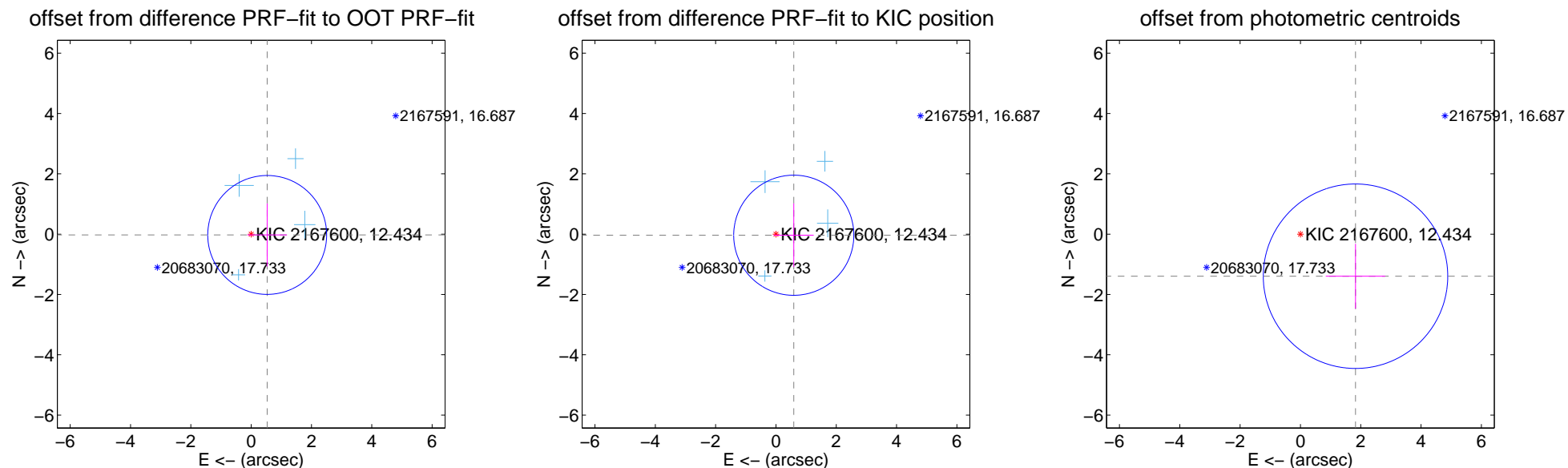
DV Centroid Data

Supplemental centroid analysis for 002167600-06. Kepler magnitude: 12.43. Transit SNR 8.47

There are 4 quarters with good PRF difference image offsets

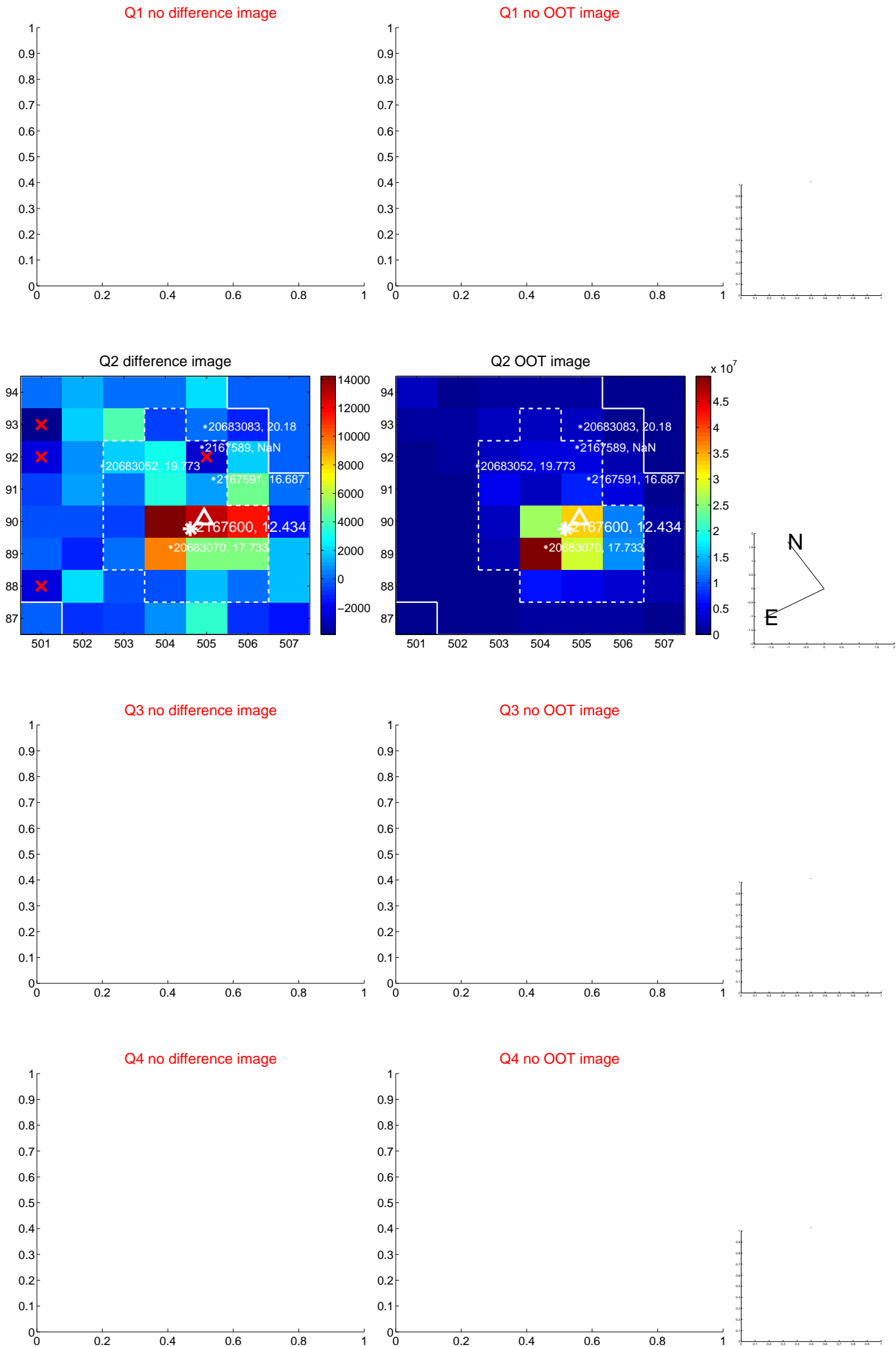
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.532 ± 0.657	0.81	-0.531 ± 0.656	-0.026 ± 1.045
PRF-fit source offset from KIC position	0.592 ± 0.664	0.89	-0.591 ± 0.662	-0.036 ± 1.057
photometric centroid source offset	2.30 ± 1.02	2.26	-1.83 ± 0.99	-1.40 ± 1.08

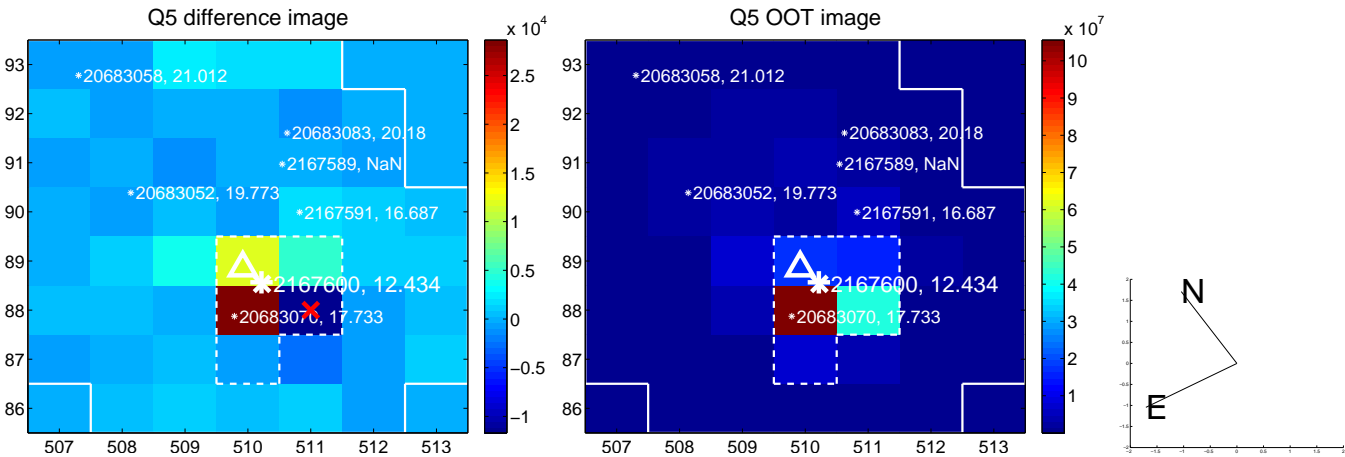


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

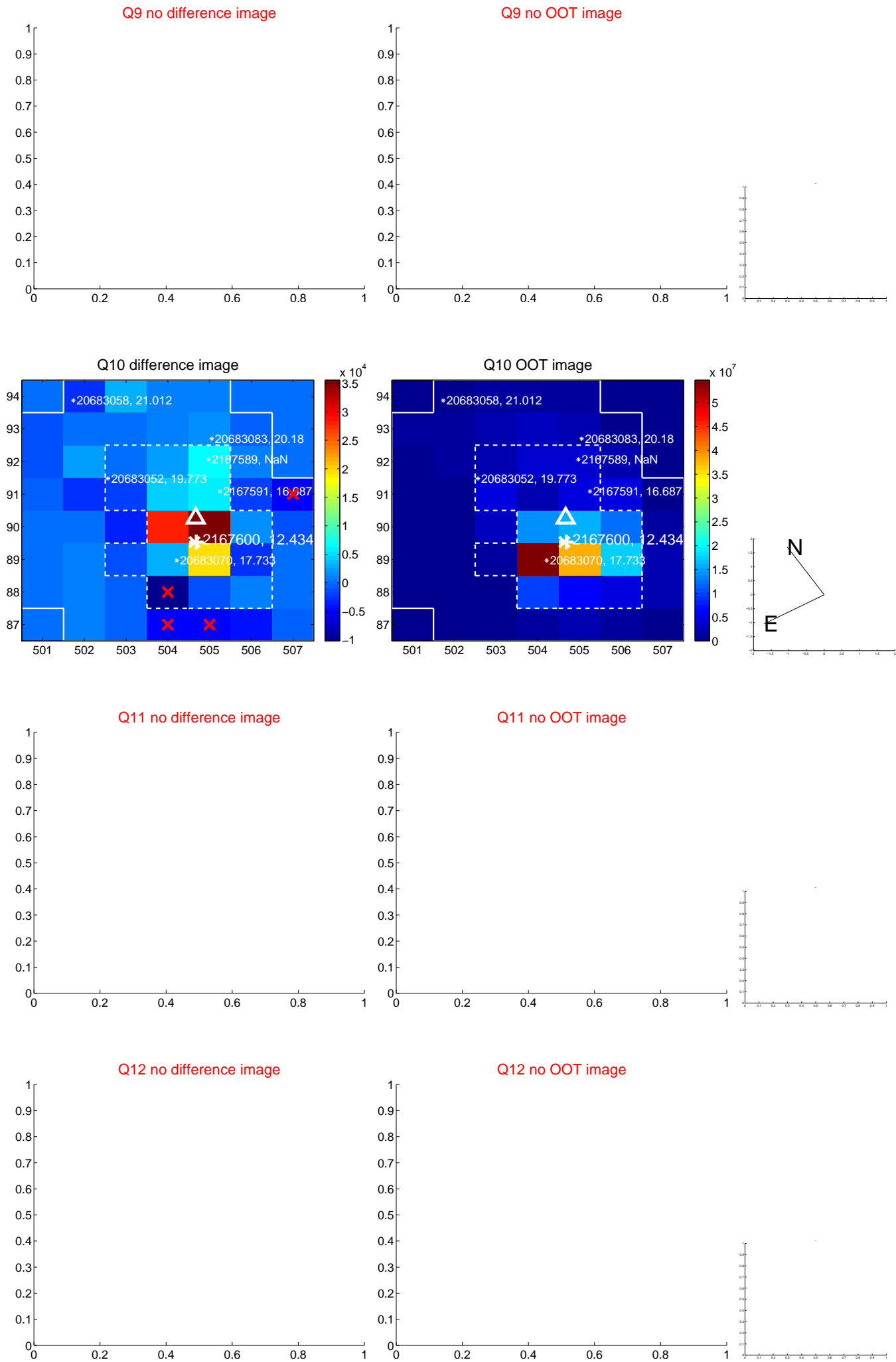
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



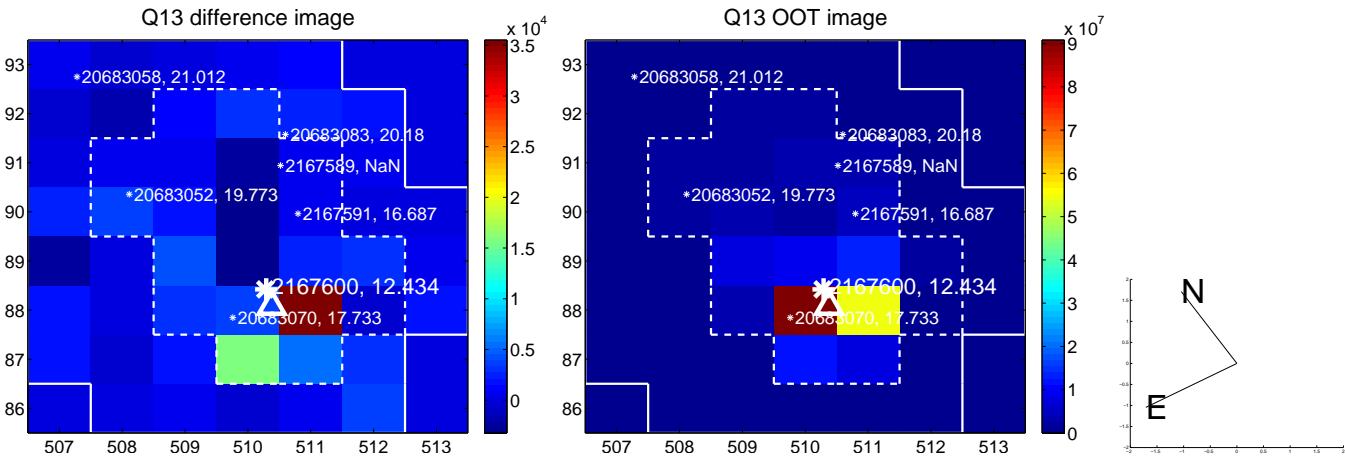
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



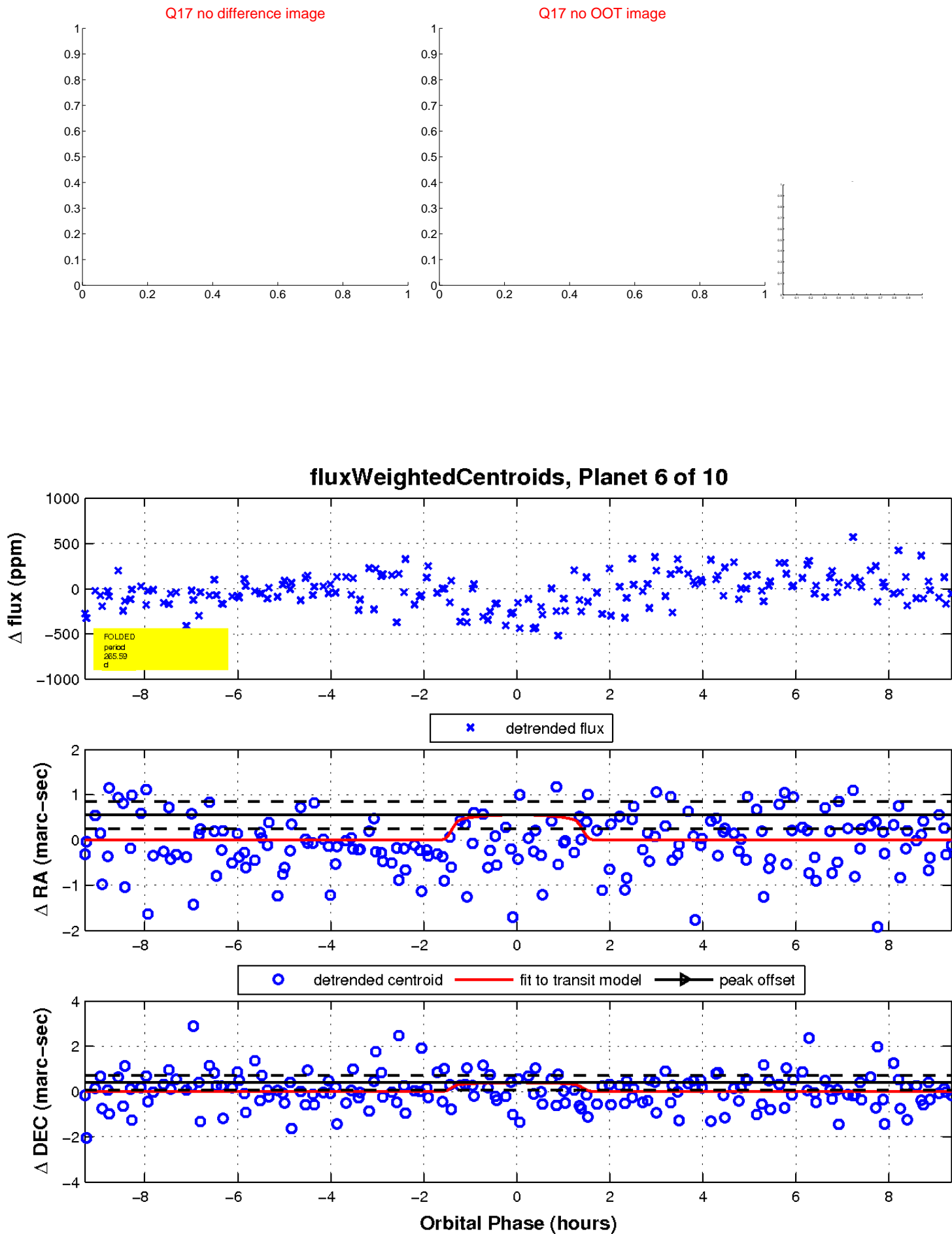
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

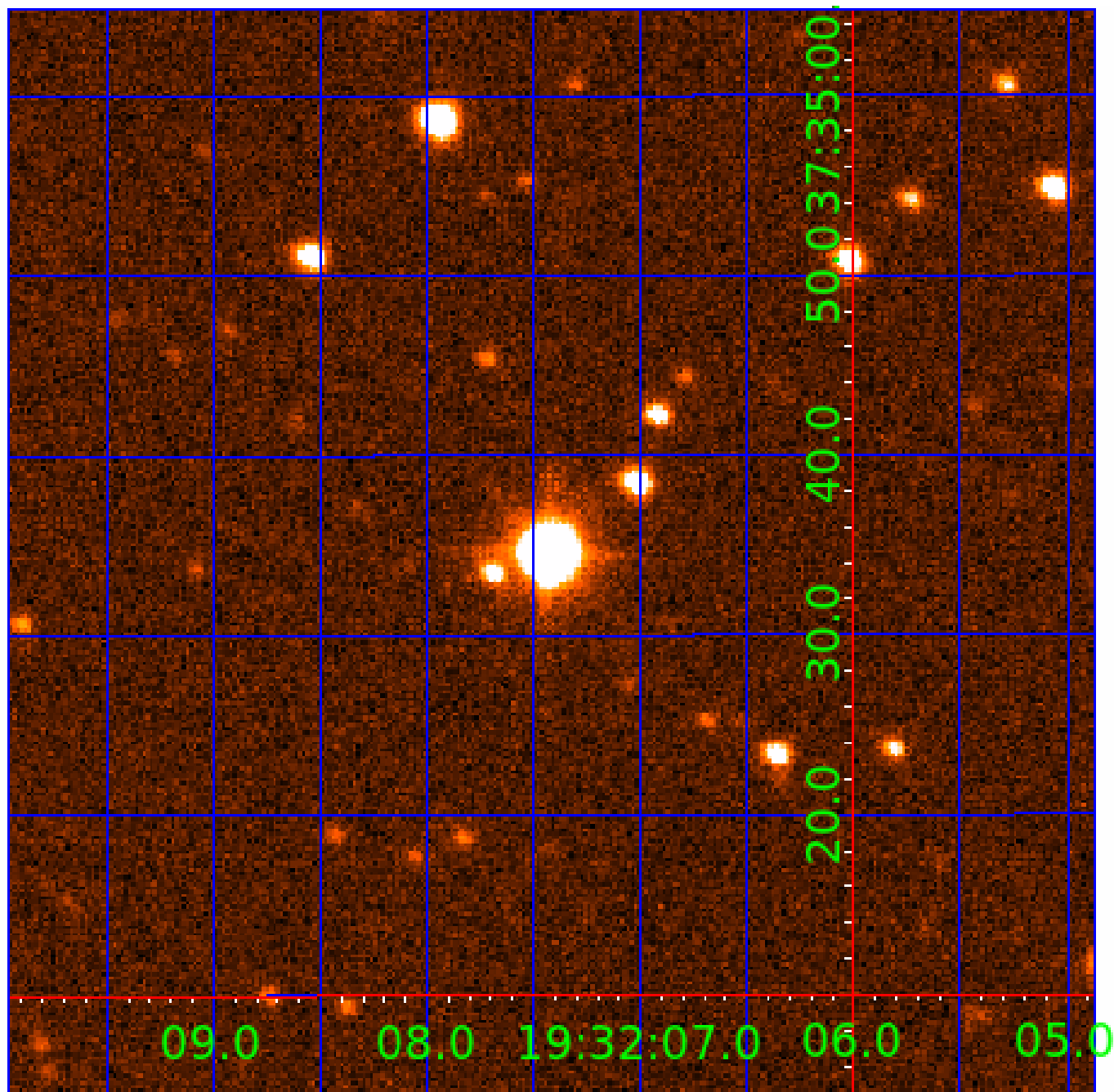


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

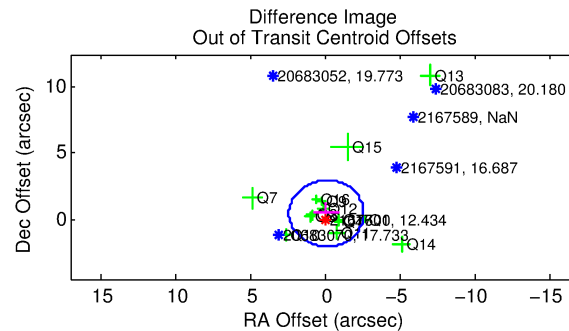
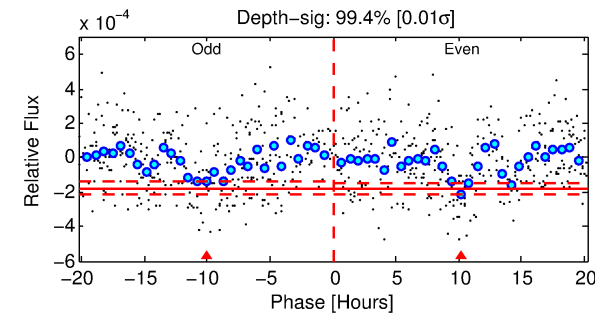
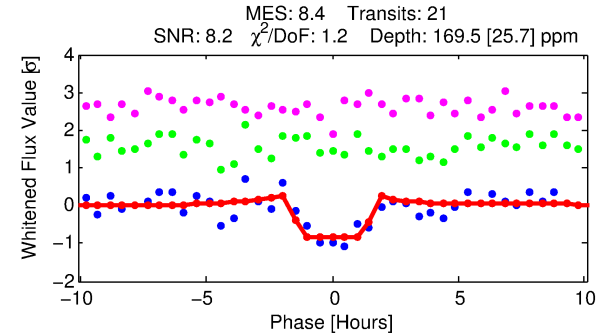
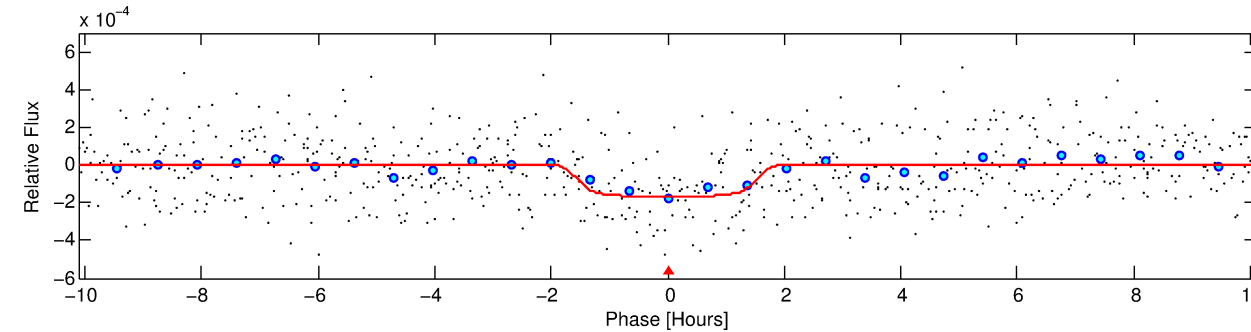
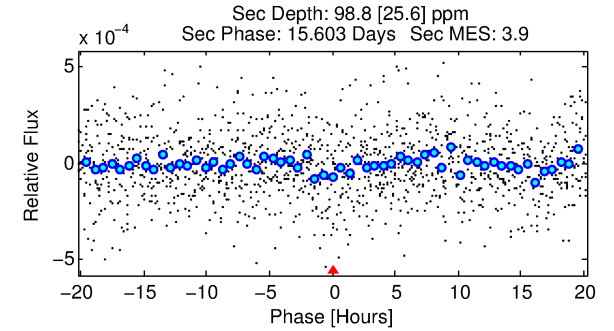
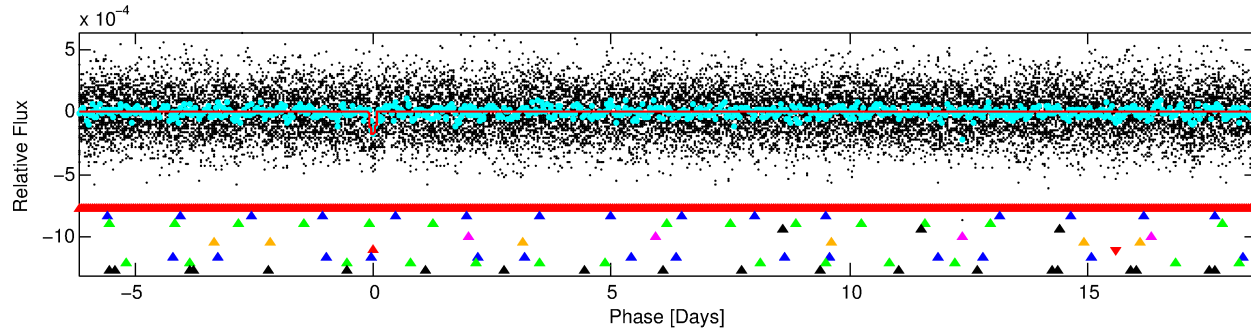
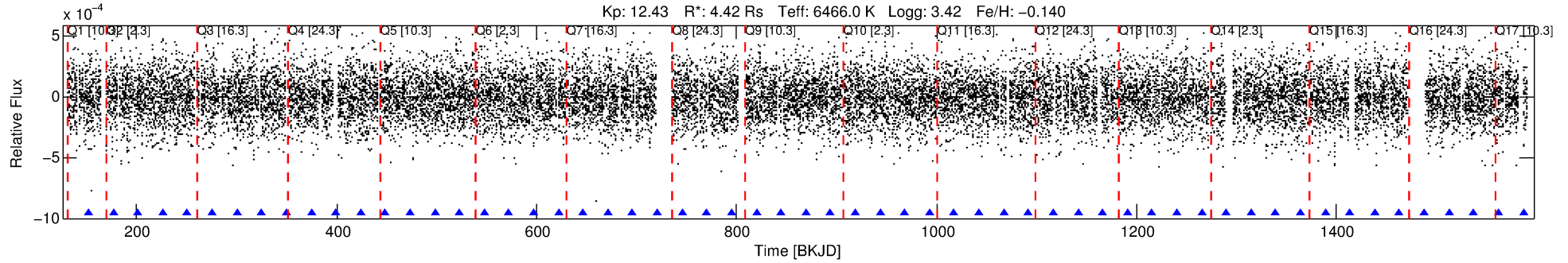
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-07

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 7 of 10 Period: 24.733 d



DV Fit Results:

Period = 24.73340 [0.00025] d
Epoch = 152.0928 [0.0084] BKJD
Rp/R* = 0.0139 [0.0066]
a/R* = 26.71 [70.49]
b = 0.89 [0.59]
Seff = 726.13 [471.34]
Teq = 1324 [215] K
Rp = 6.69 [4.20] Re
a = 0.2050 [0.0819] AU
Ag = 51.06 [59.70] [0.84σ]
Teffp = 5471 [1347] K [3.04σ]

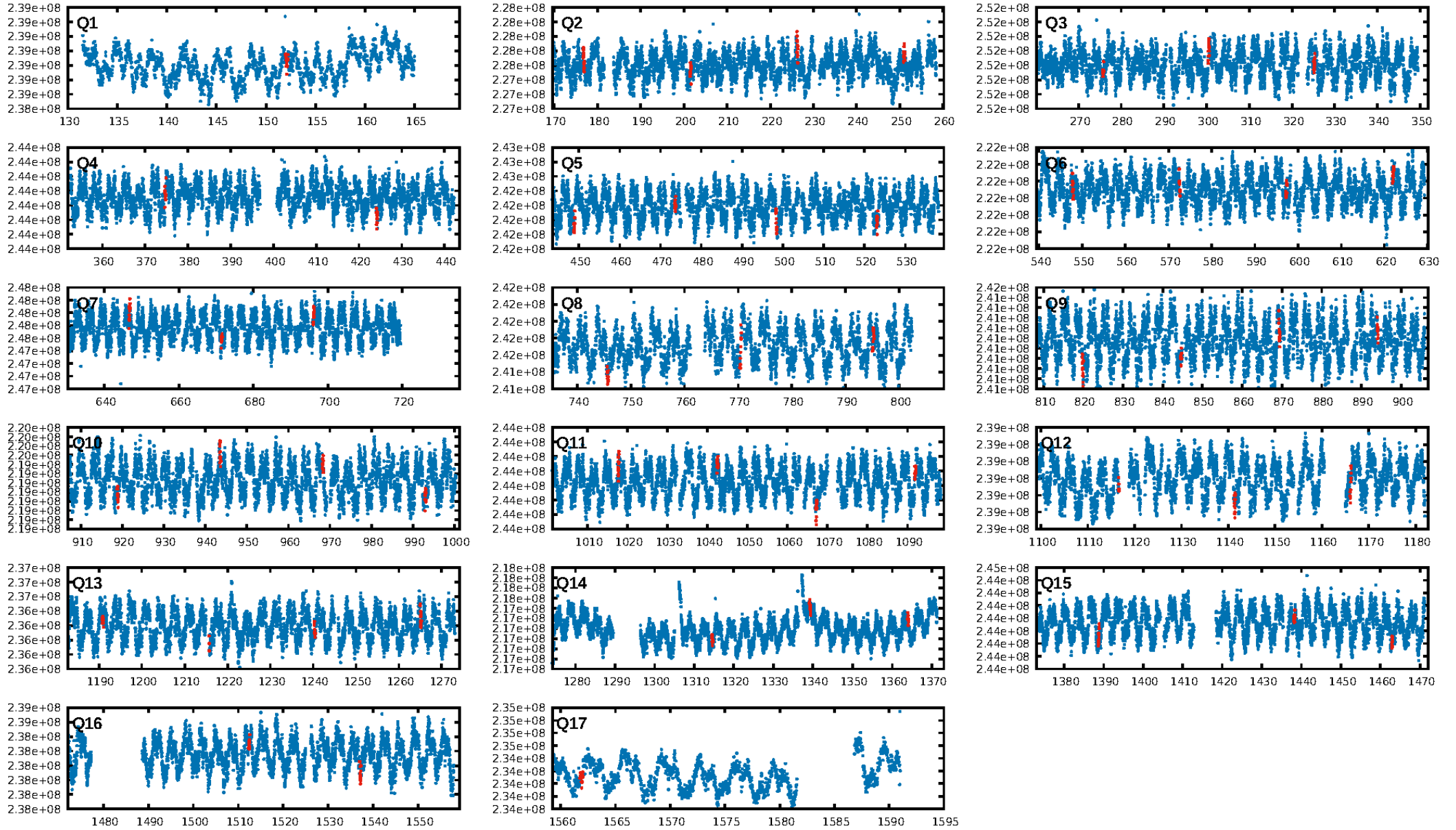
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [59.04σ]
LongPeriod-sig: 100.0% [263.92σ]
ModelChiSquare2-sig: 31.8%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [20/20]
GhostDiagnostic-chr: -0.7102
Centroid-sig: 11.0%
Centroid-so: 0.655 arcsec [1.24σ]
OotOffset-rm: 0.475 arcsec [0.57σ]
KicOffset-rm: 0.472 arcsec [0.48σ]
OotOffset-st: 2/4/4/4 [14]
KicOffset-st: 2/4/4/4 [14]
DiffImageQuality-fgm: 0.57 [8/14]
DiffImageOverlap-fno: 0.94 [16/17]

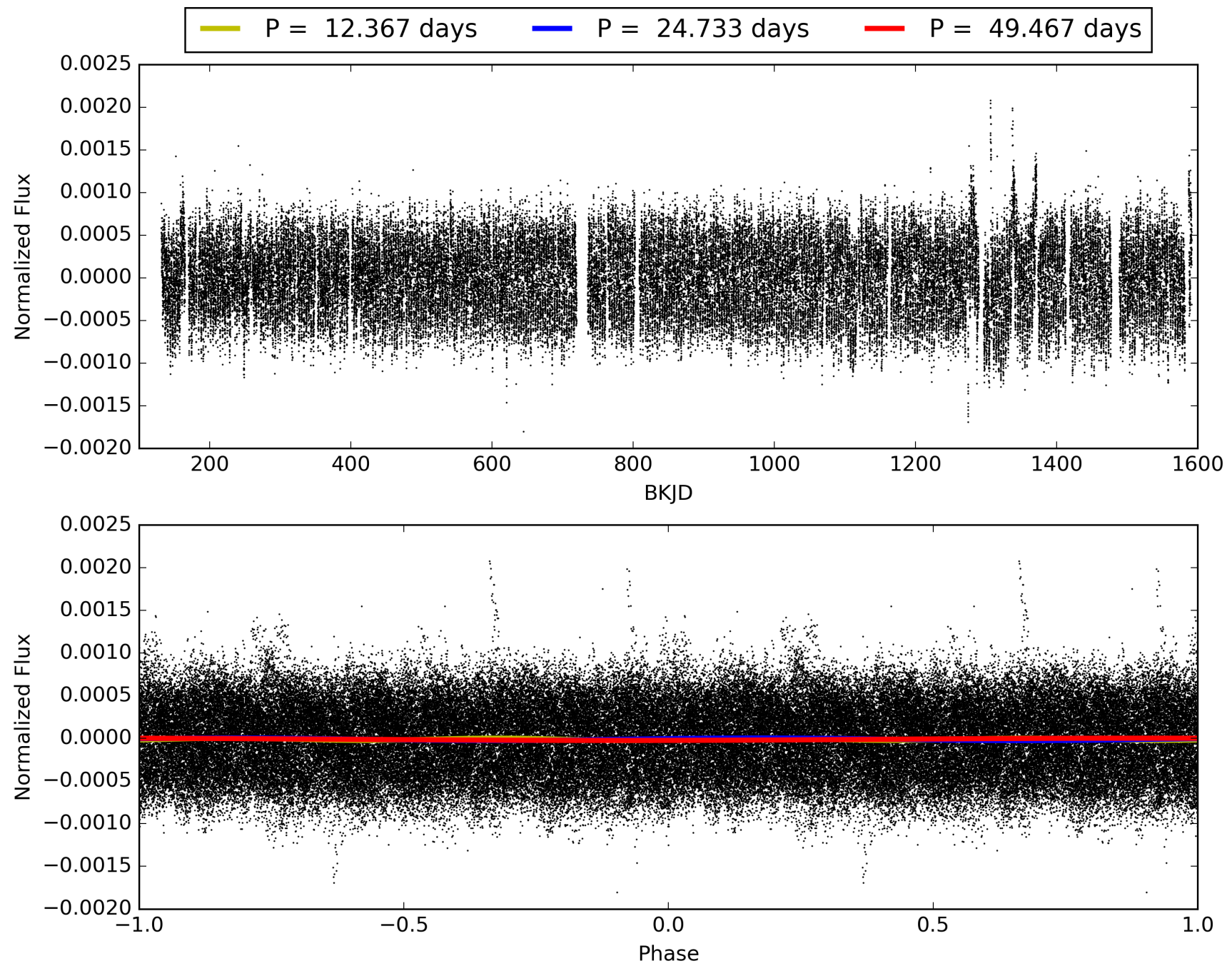
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:24:39 Z

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

TCE 002167600-07, PDC Light Curves

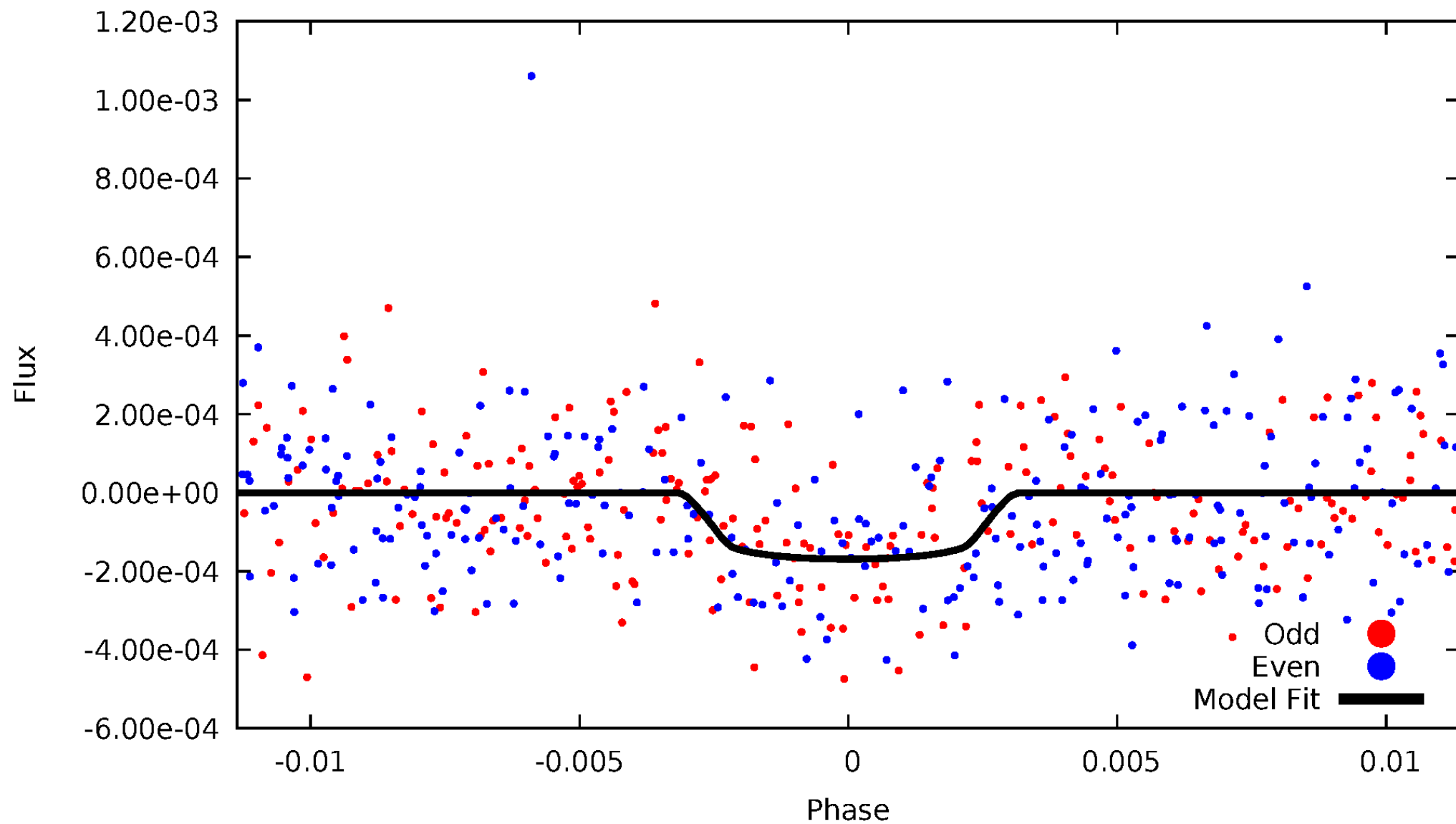


TCE 002167600-07



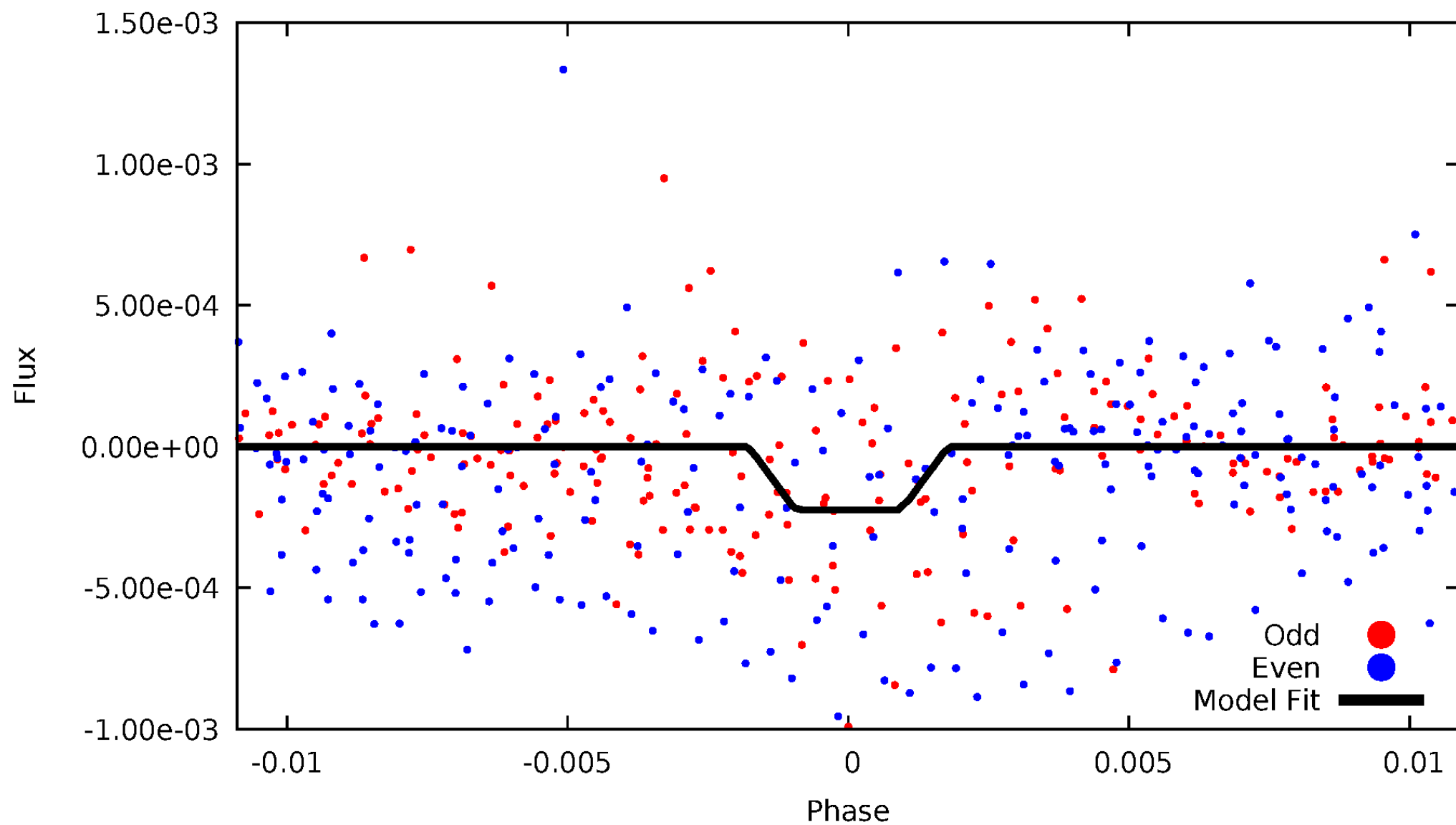
DV Odd/Even

TCE 002167600-07



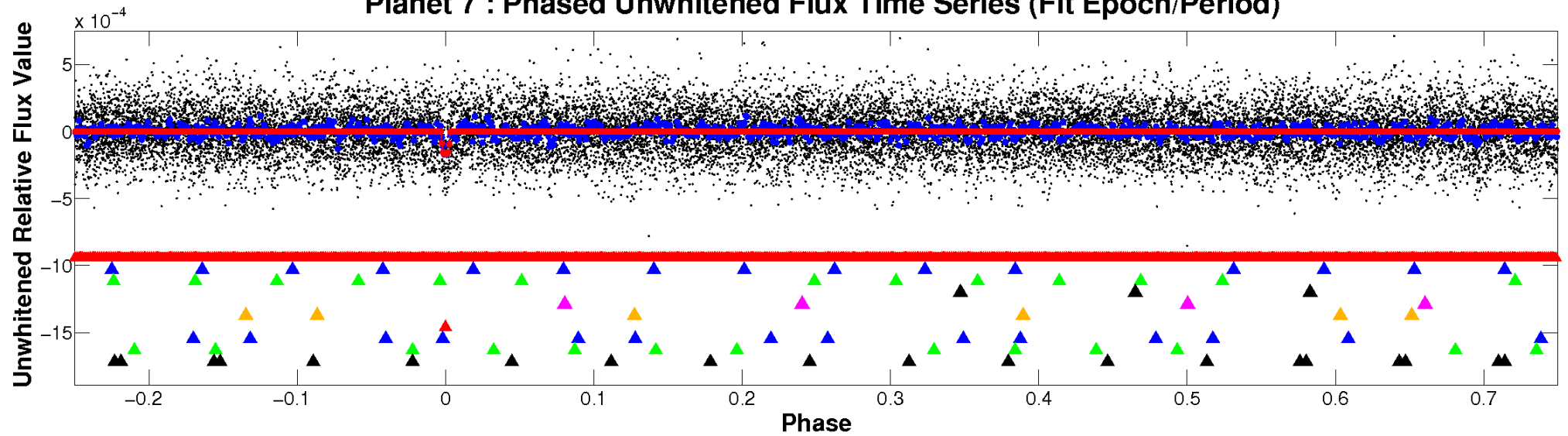
ALT Odd/Even

TCE 002167600-07

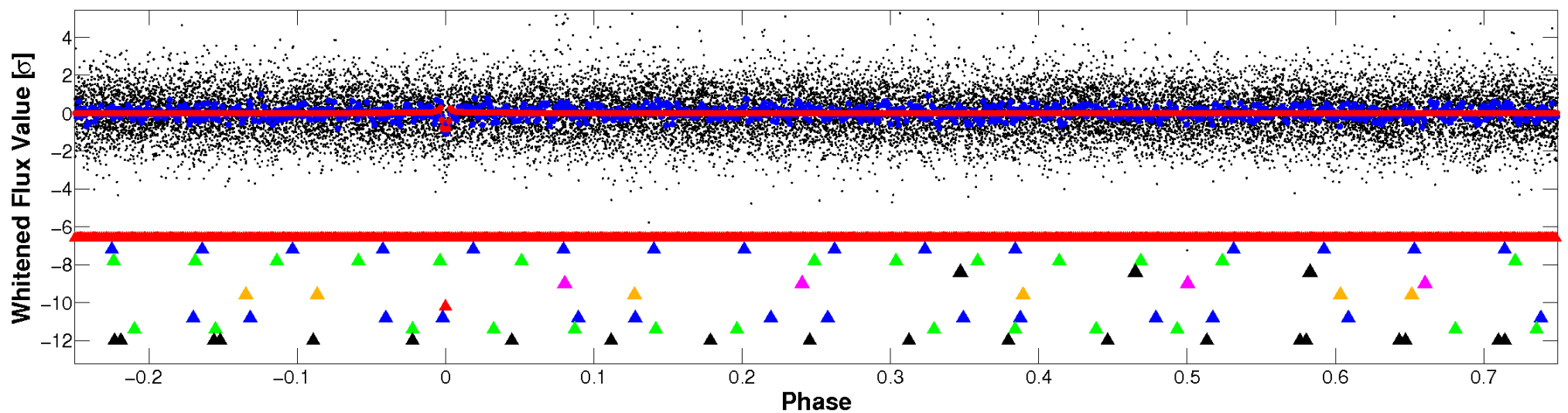


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

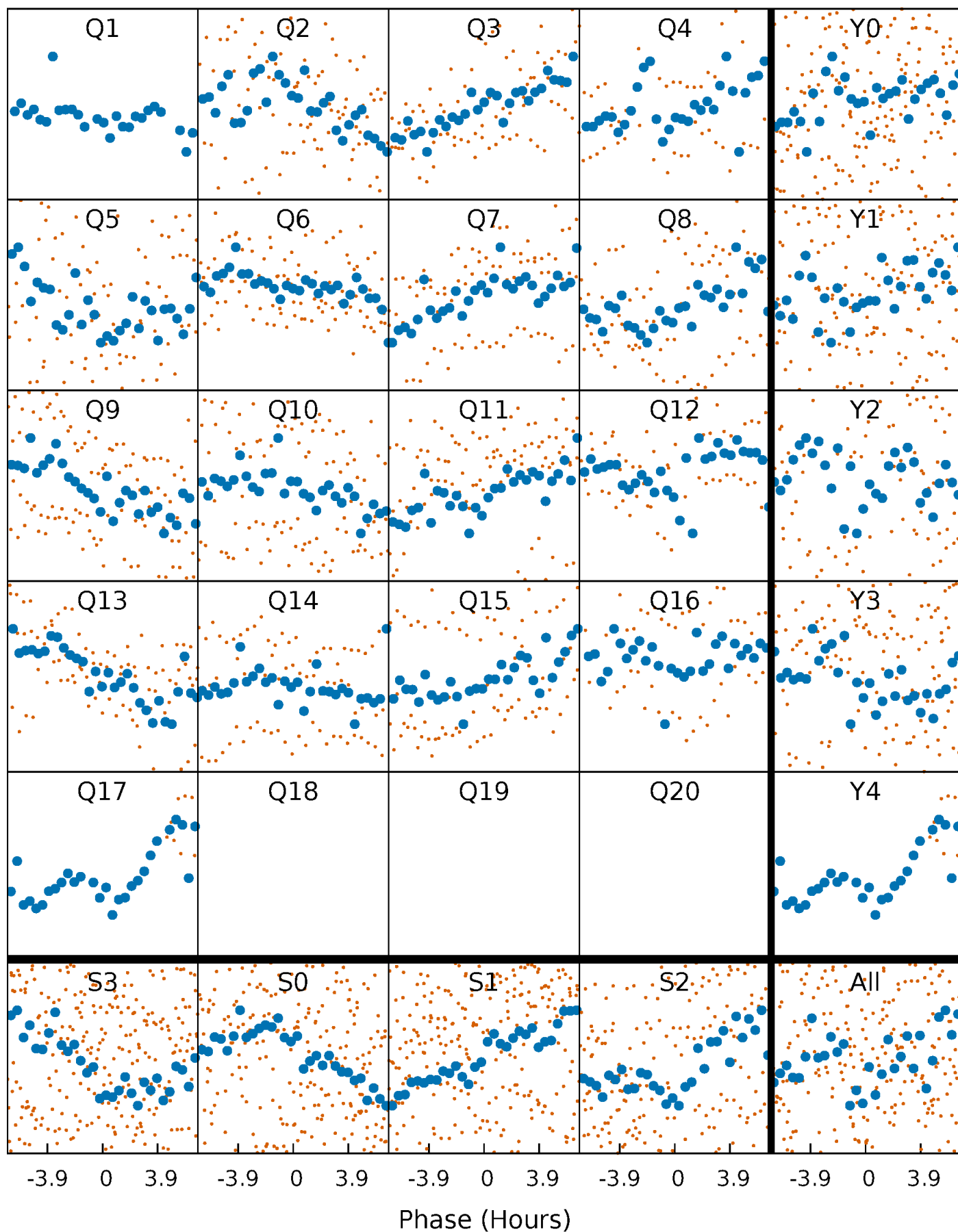


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



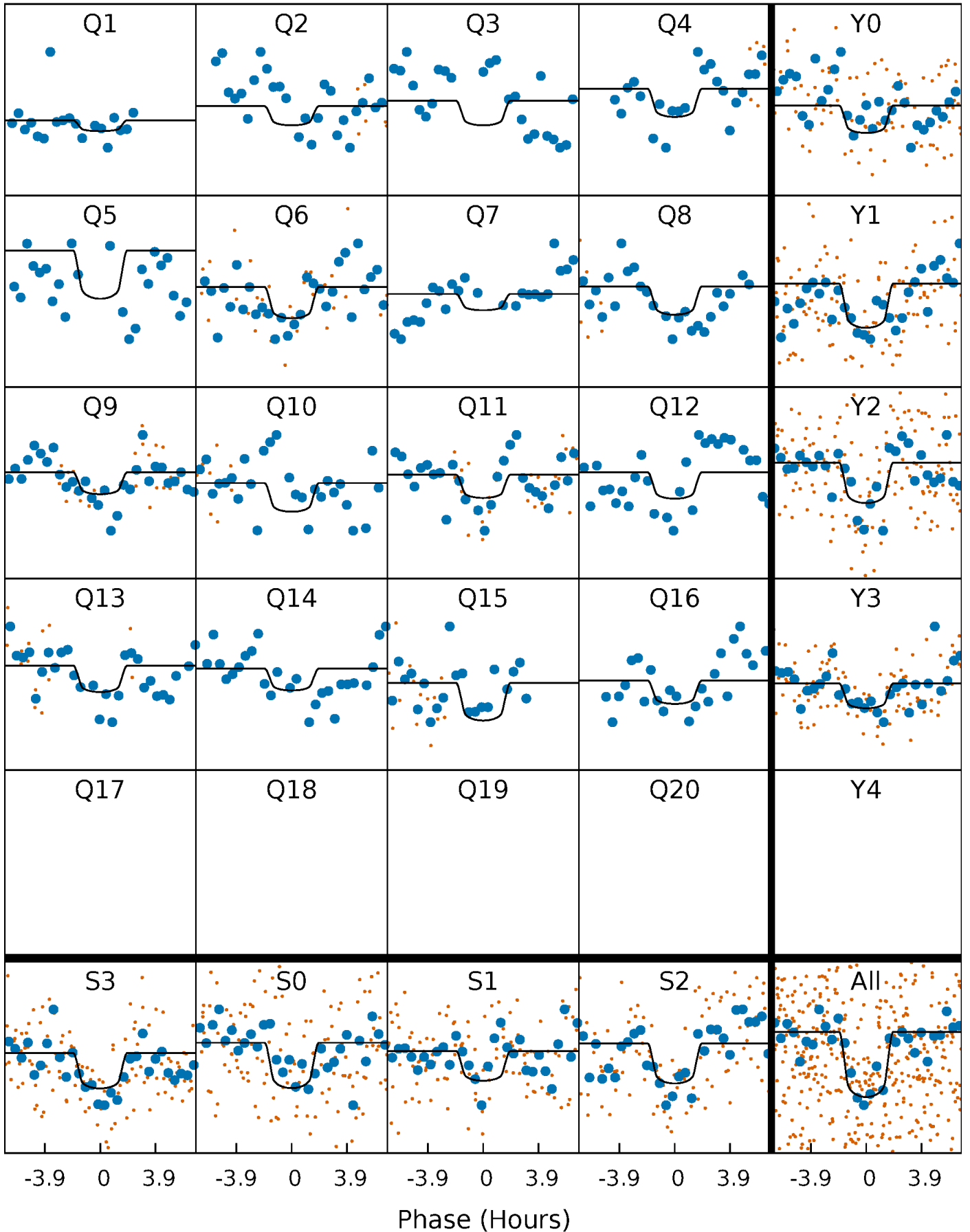
PDC Quarter-Phased Transit Curves

TCE 002167600-07 P= 24.733399 Days $T_0=152.092825$ (BKJD)



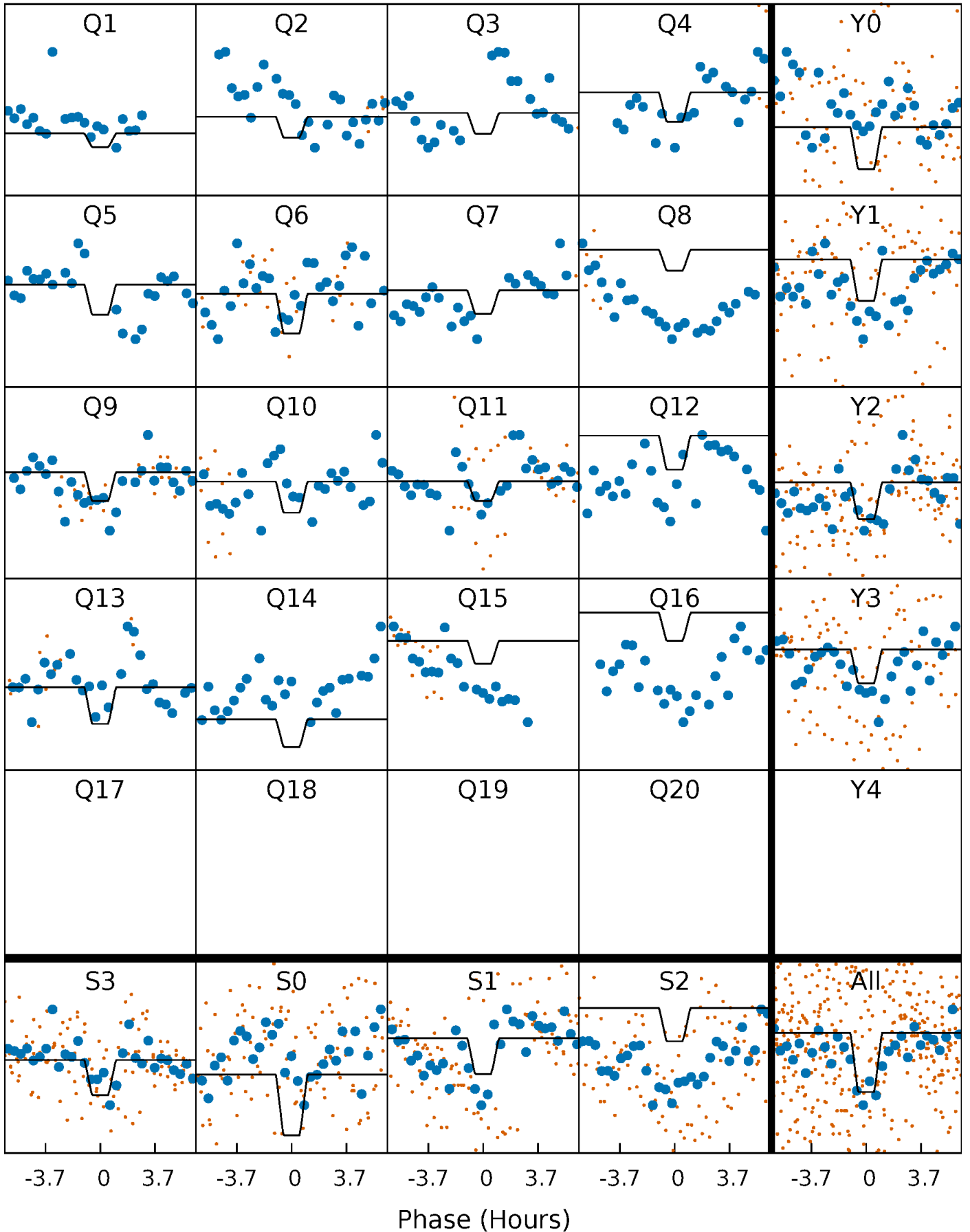
DV Quarter-Phased Transit Curves

TCE 002167600-07 P= 24.733399 Days $T_0=152.092825$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

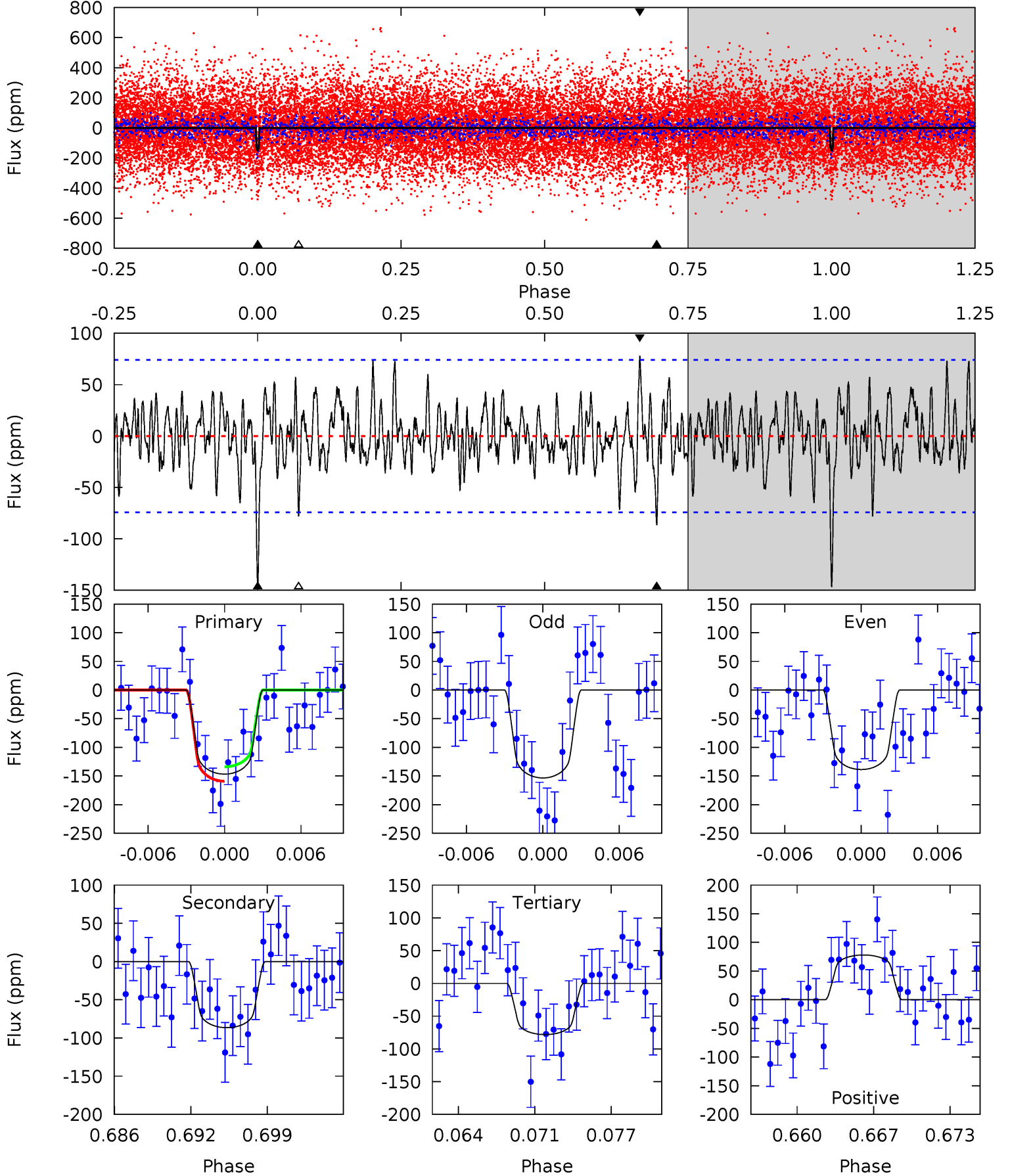
TCE 002167600-07 $P = 24.733890$ Days $T_0 = 152.072701$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-07, P = 24.733399 Days, E = 127.359426 Days

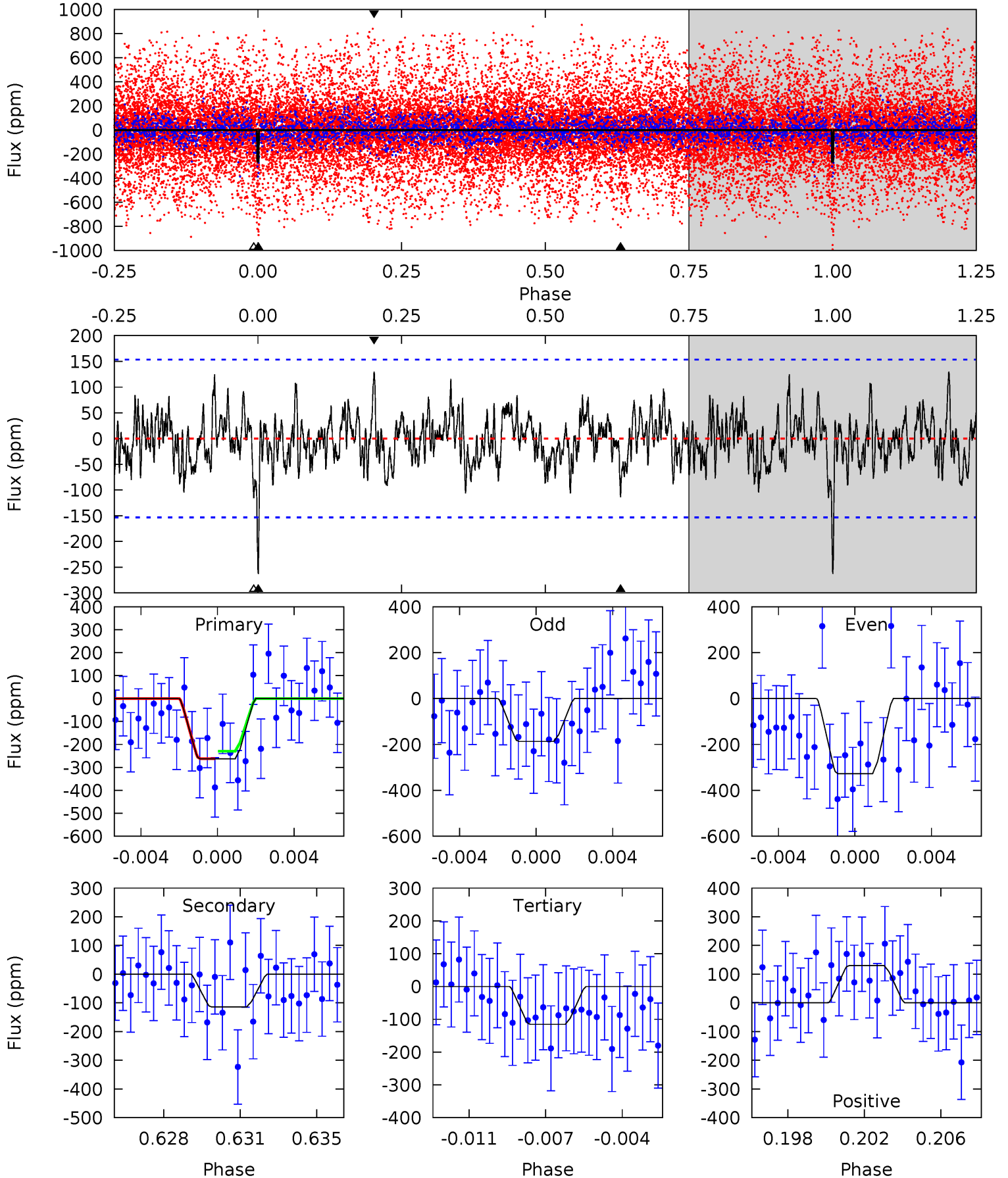
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	5.97	5.39	5.38	5.11	2.73	1.61	4.73	4.74	0.58	0.59	0.51	0.77	0.35	0.87



Alt Model-Shift Uniqueness Test

002167600-07, P = 24.733890 Days, E = 127.338811 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.94	3.88	3.93	4.41	5.22	2.91	1.36	5.01	4.53	-0.05	-0.54	2.35	0.96	0.33	0.55



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-87 ± 14	$6.22^{+3.31}_{-2.96}$	1810^{+110}_{-183}	5233^{+2042}_{-764}	50^{+144}_{-29}
Alt.	-114 ± 29	$6.49^{+3.46}_{-2.95}$	1817^{+110}_{-189}	5443^{+1862}_{-853}	59^{+146}_{-33}

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

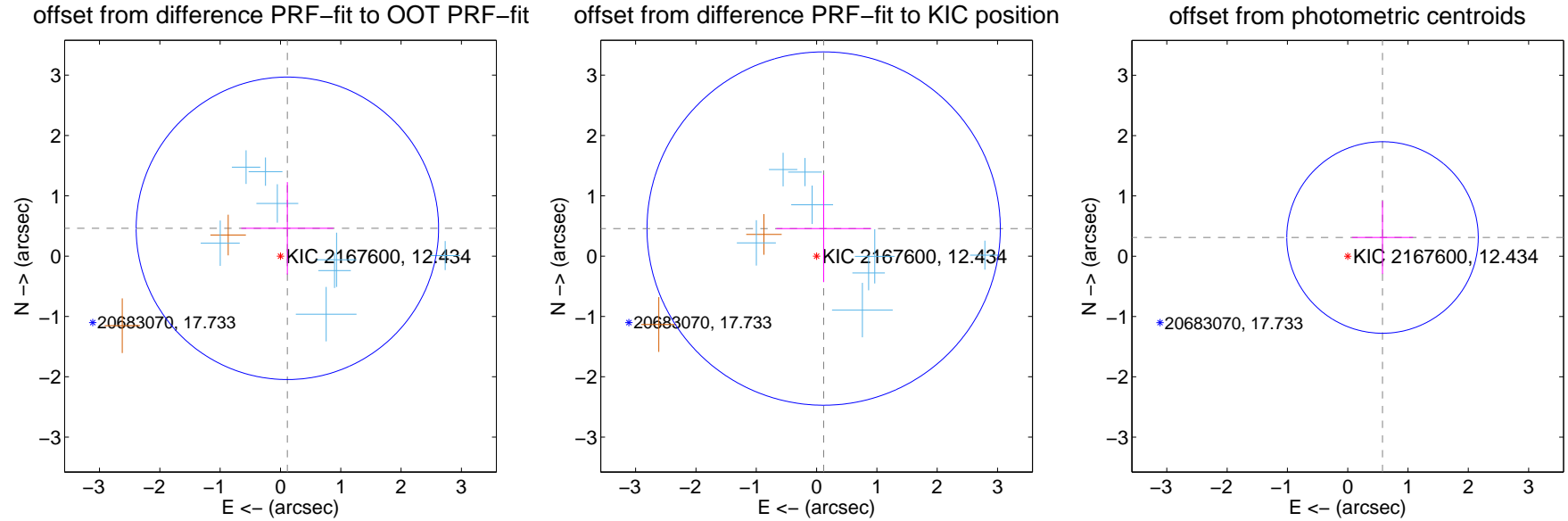
DV Centroid Data

Supplemental centroid analysis for 002167600-07. Kepler magnitude: 12.43. Transit SNR 8.25

There are 8 quarters with good PRF difference image offsets

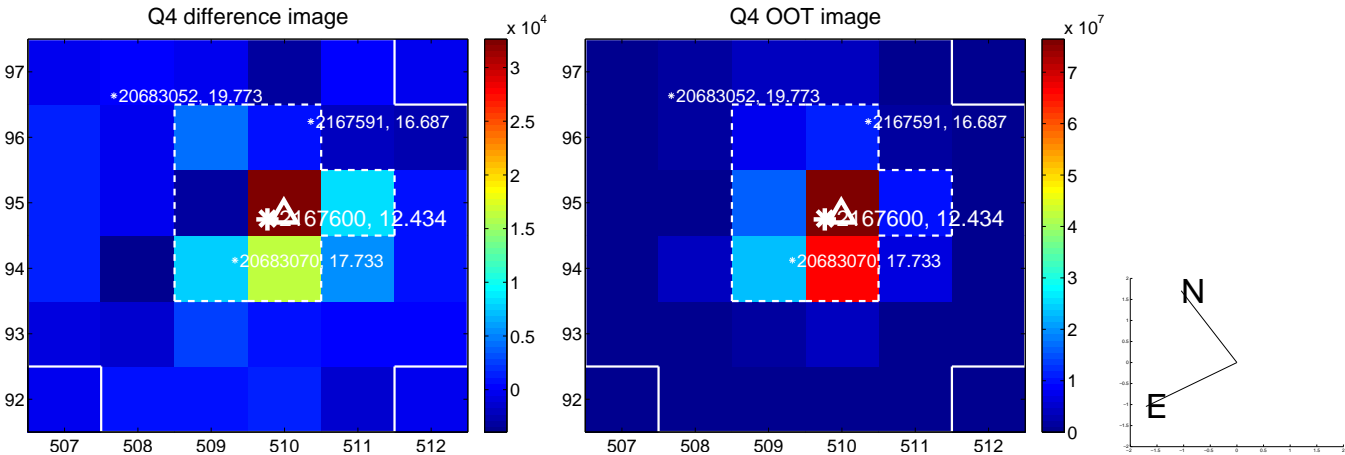
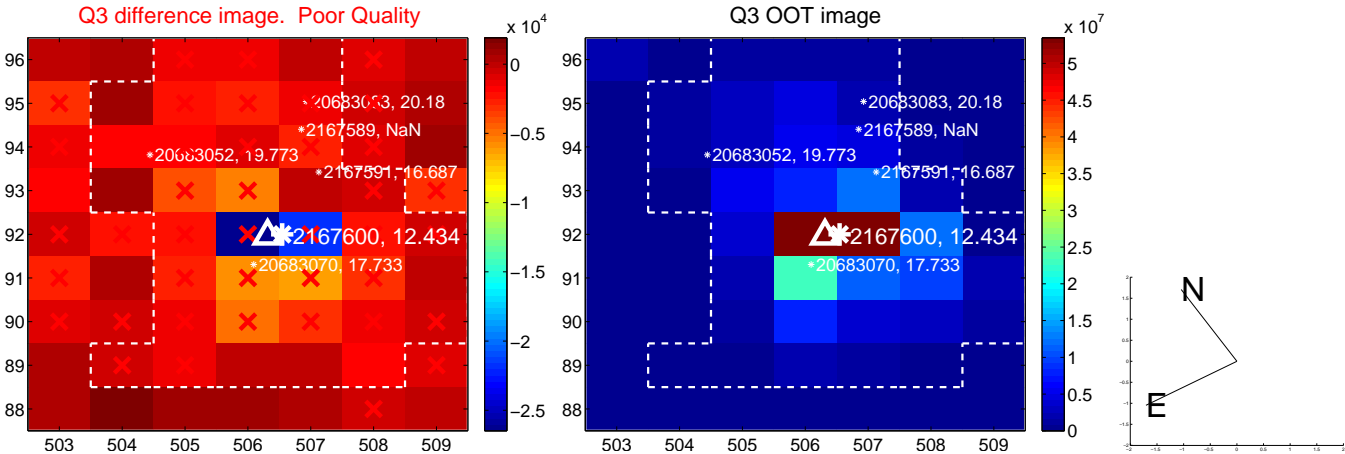
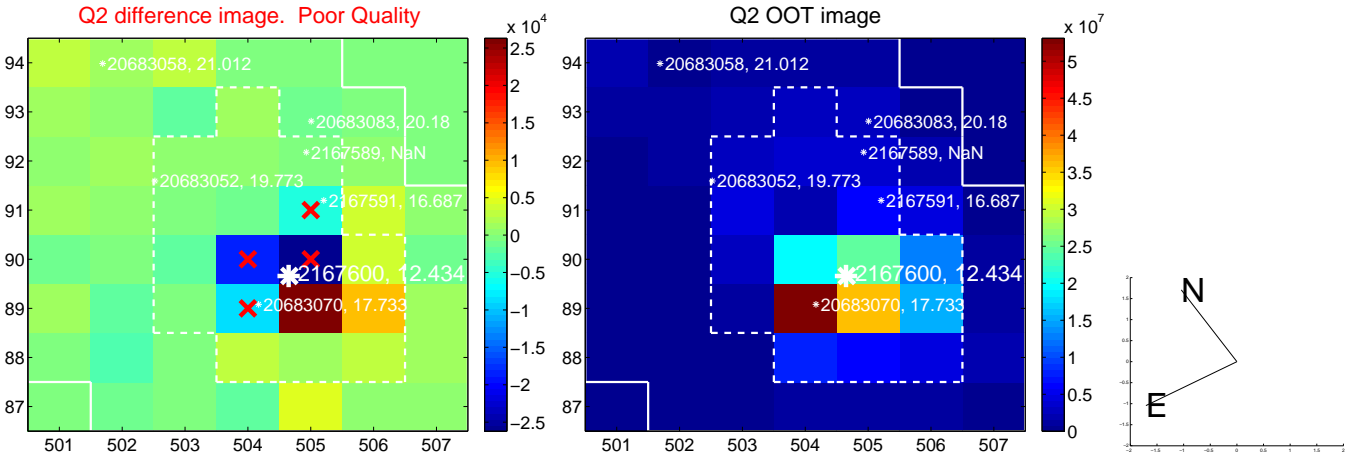
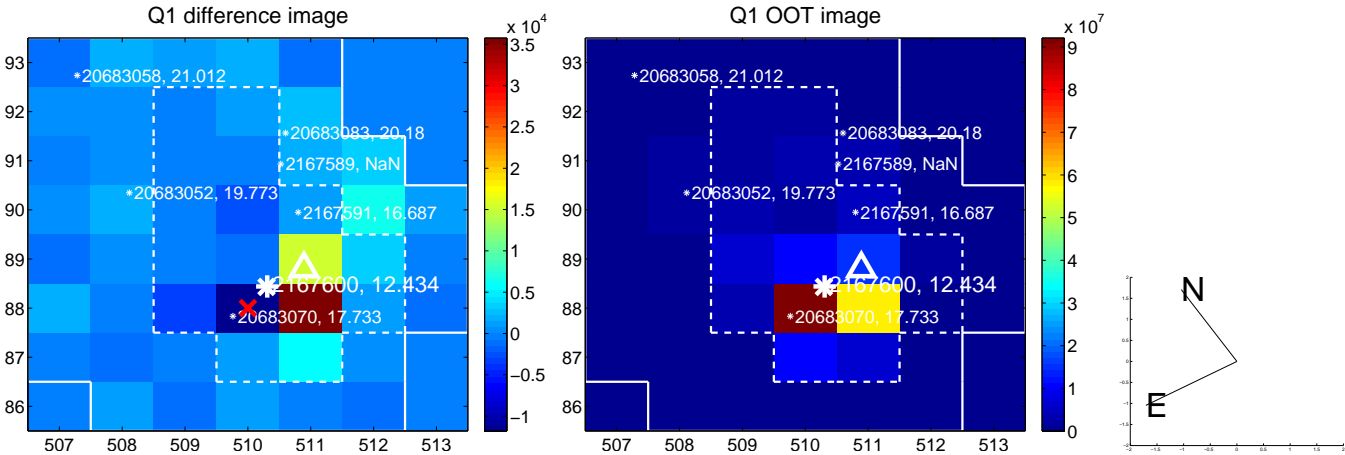
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.475 ± 0.836	0.57	-0.115 ± 0.764	0.461 ± 0.765
PRF-fit source offset from KIC position	0.472 ± 0.976	0.48	-0.117 ± 0.786	0.457 ± 0.889
photometric centroid source offset	0.66 ± 0.53	1.24	-0.58 ± 0.51	0.31 ± 0.60

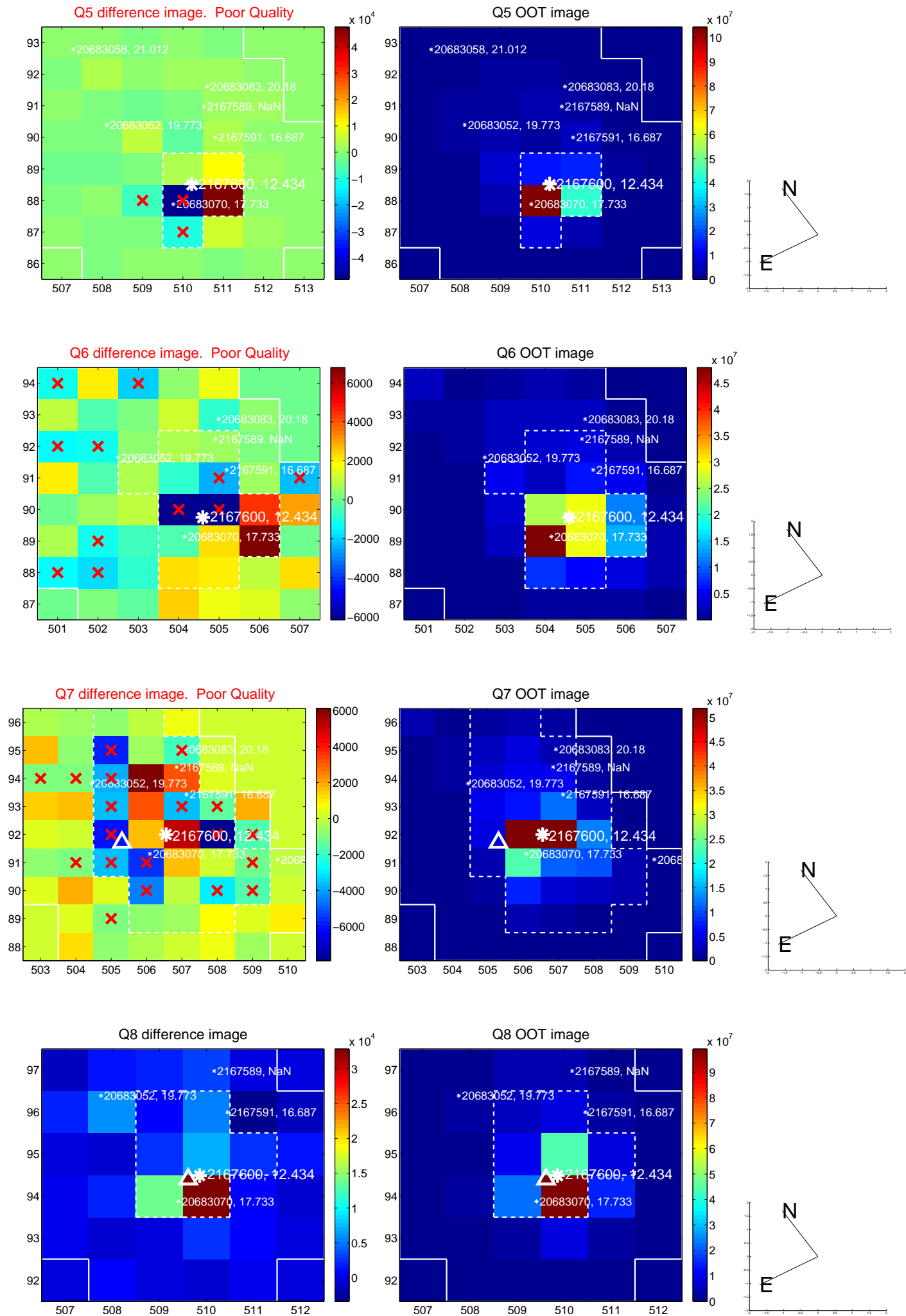


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

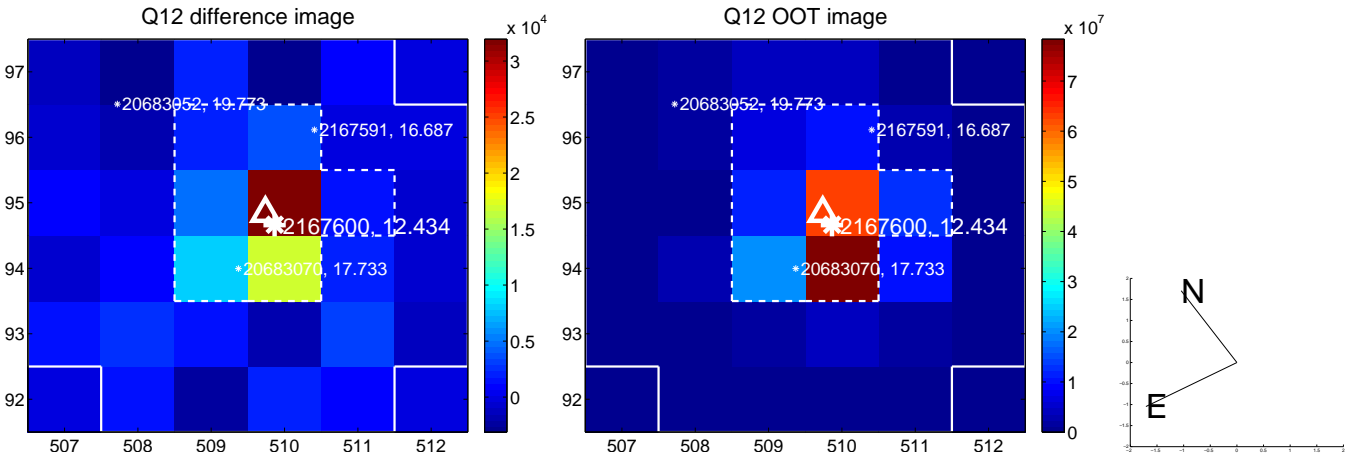
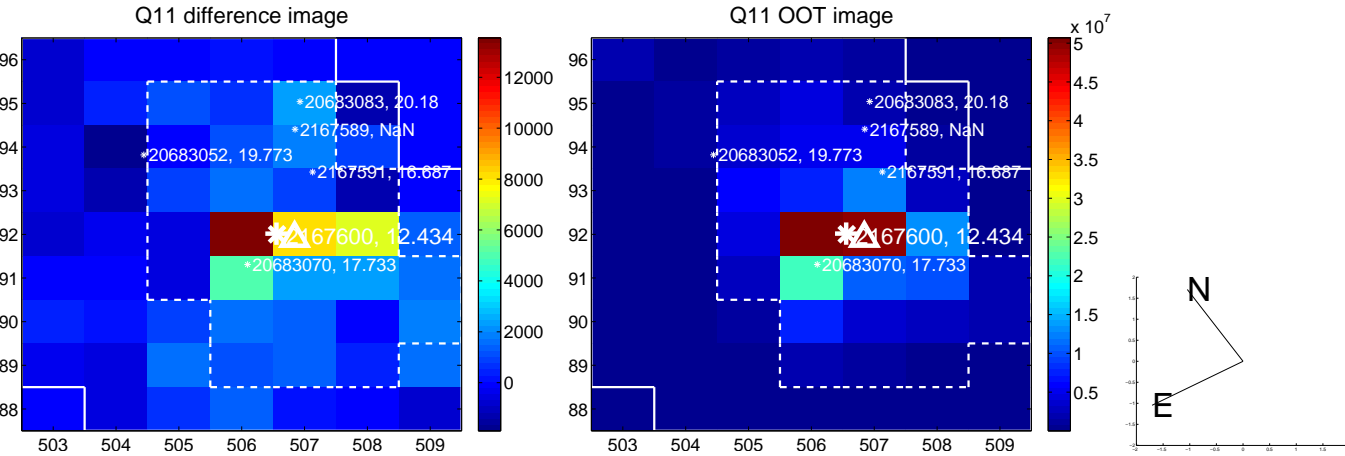
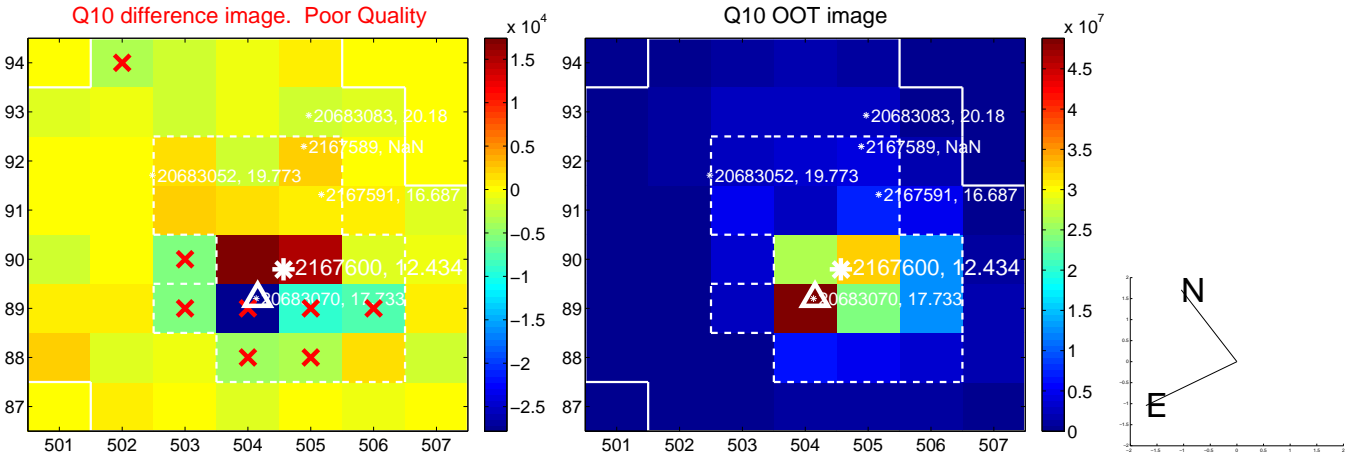
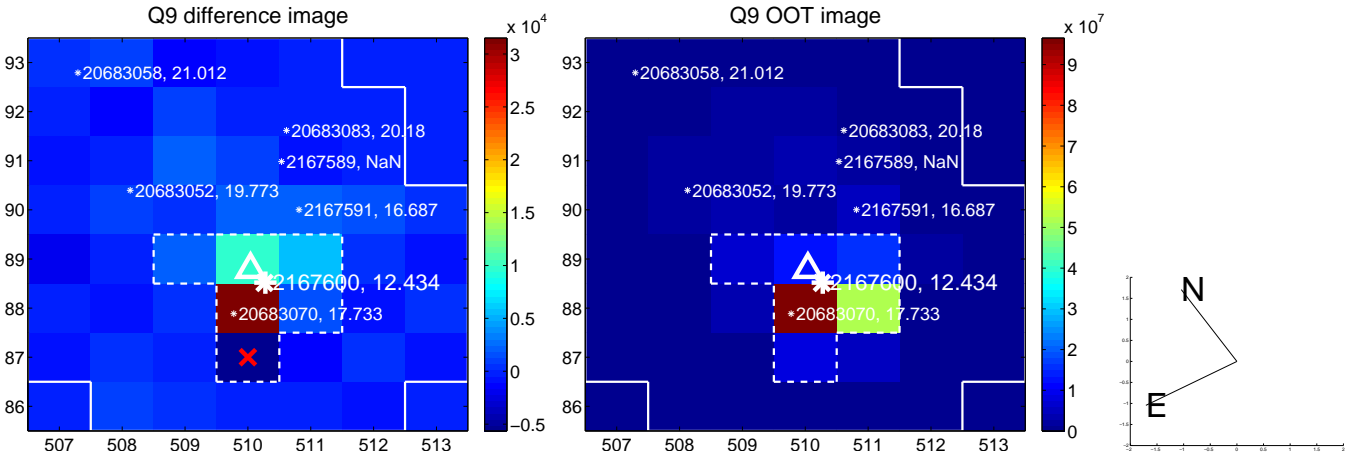
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



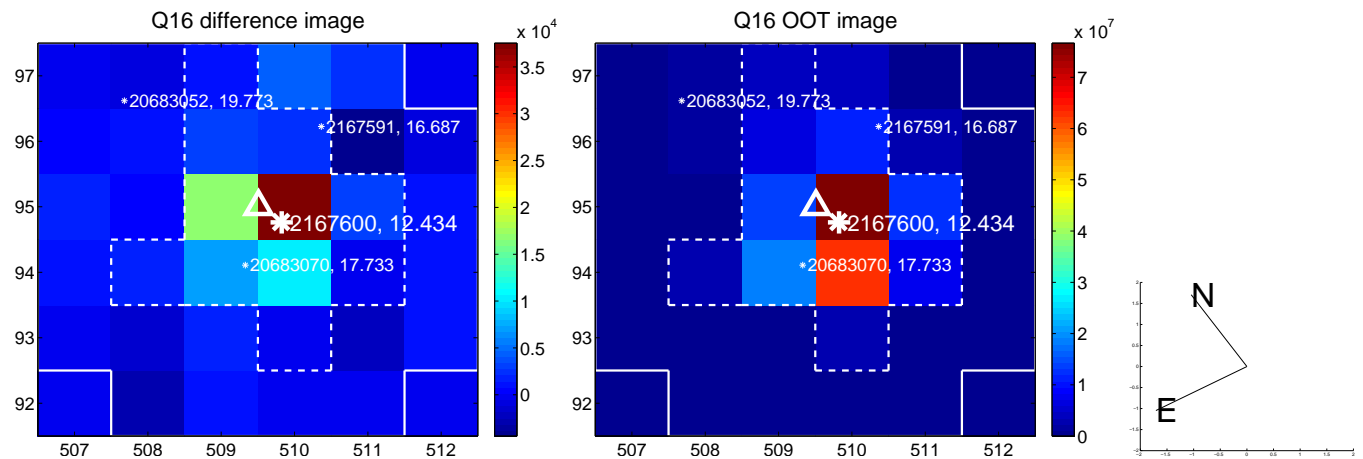
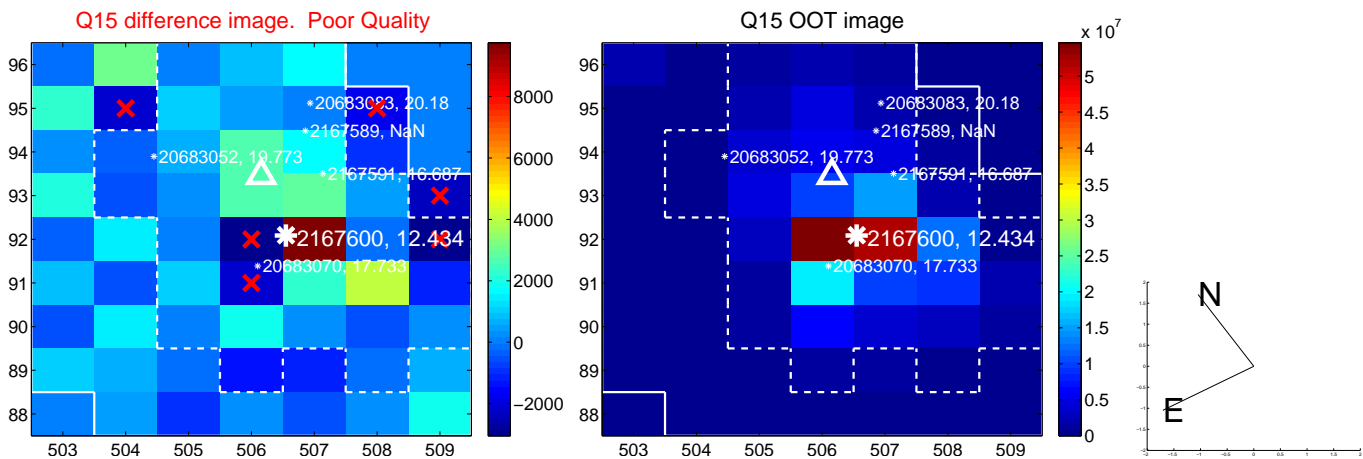
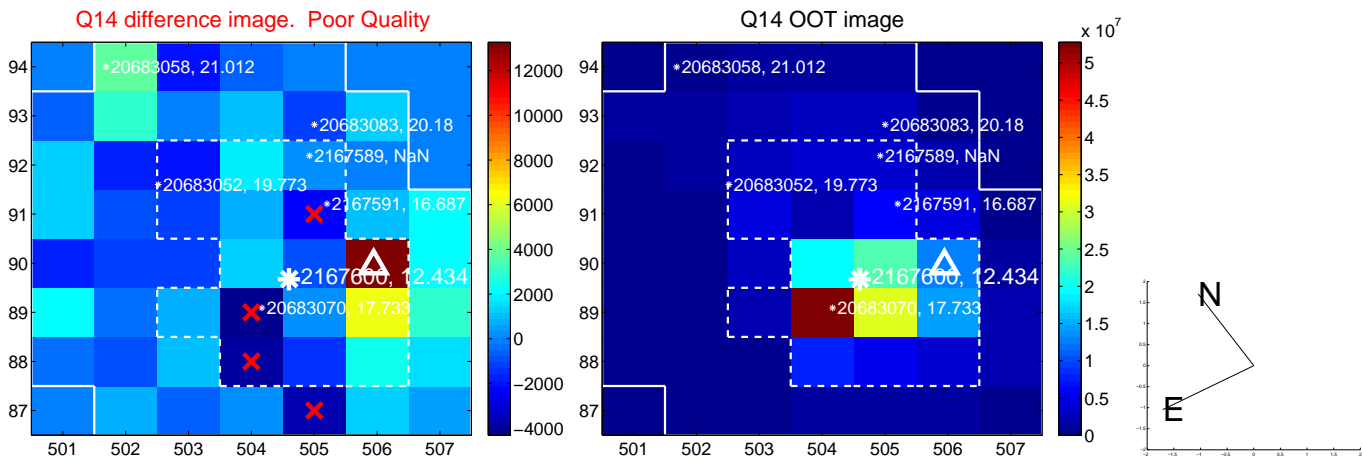
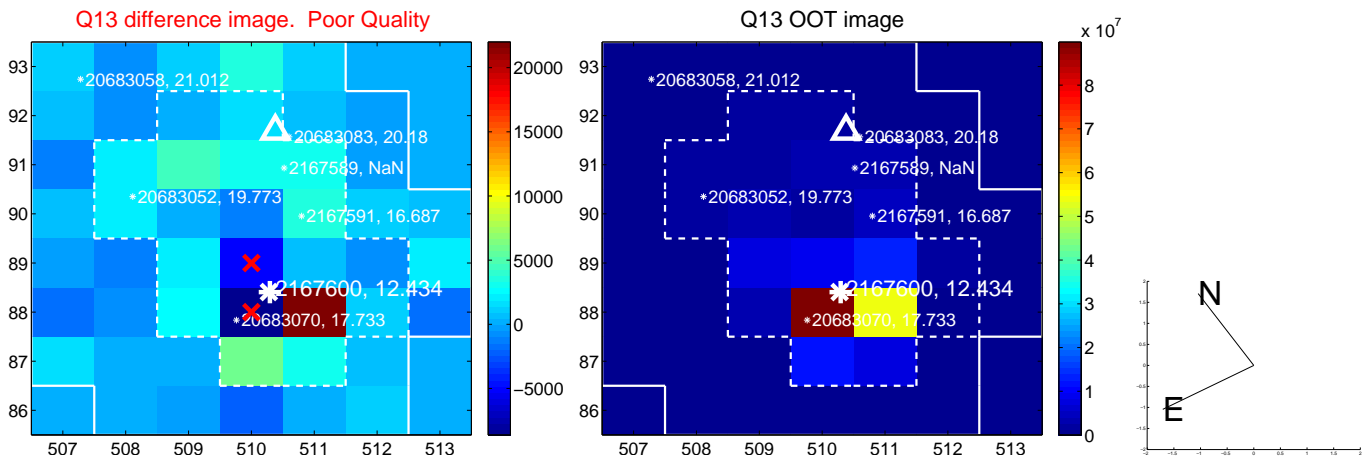
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



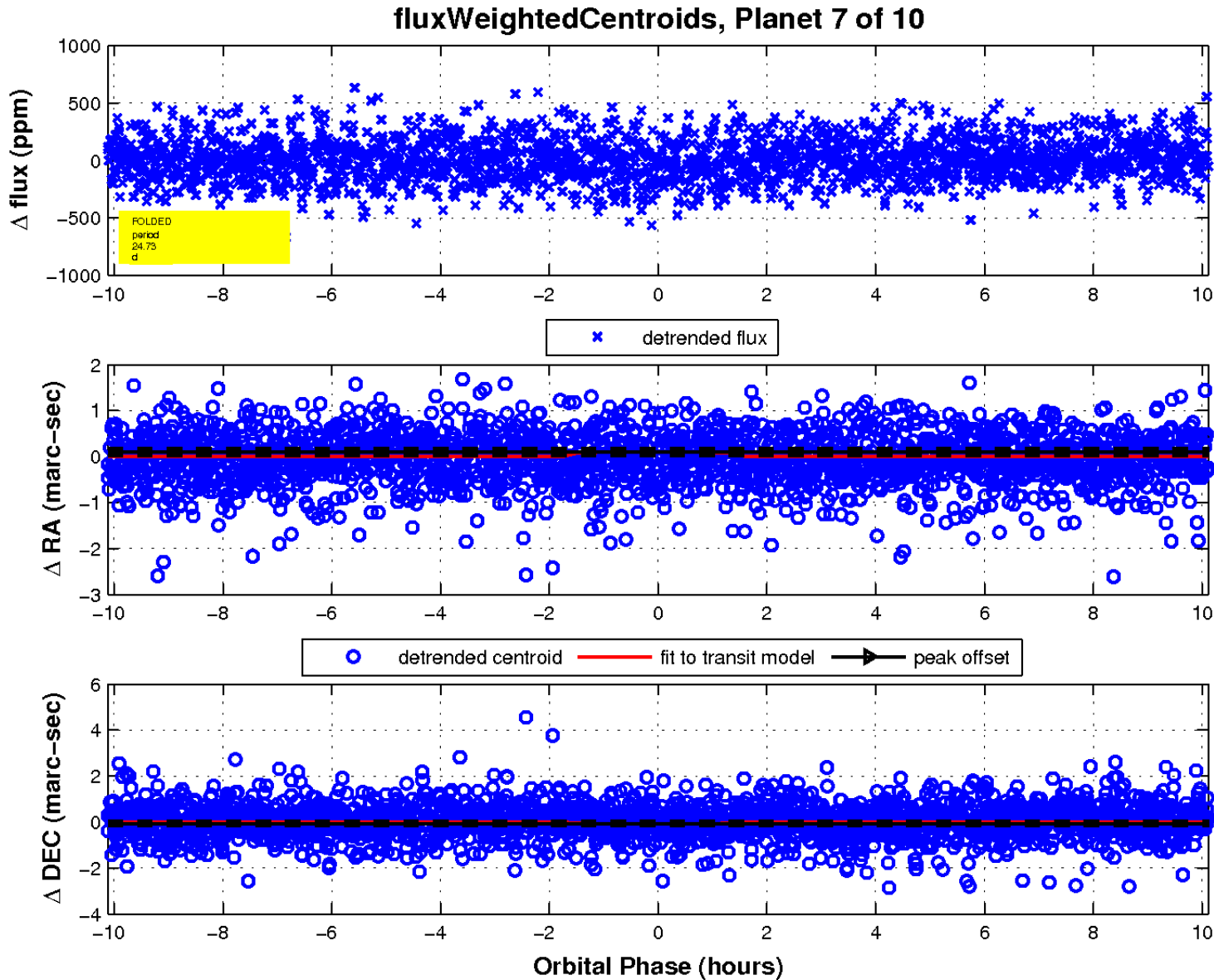
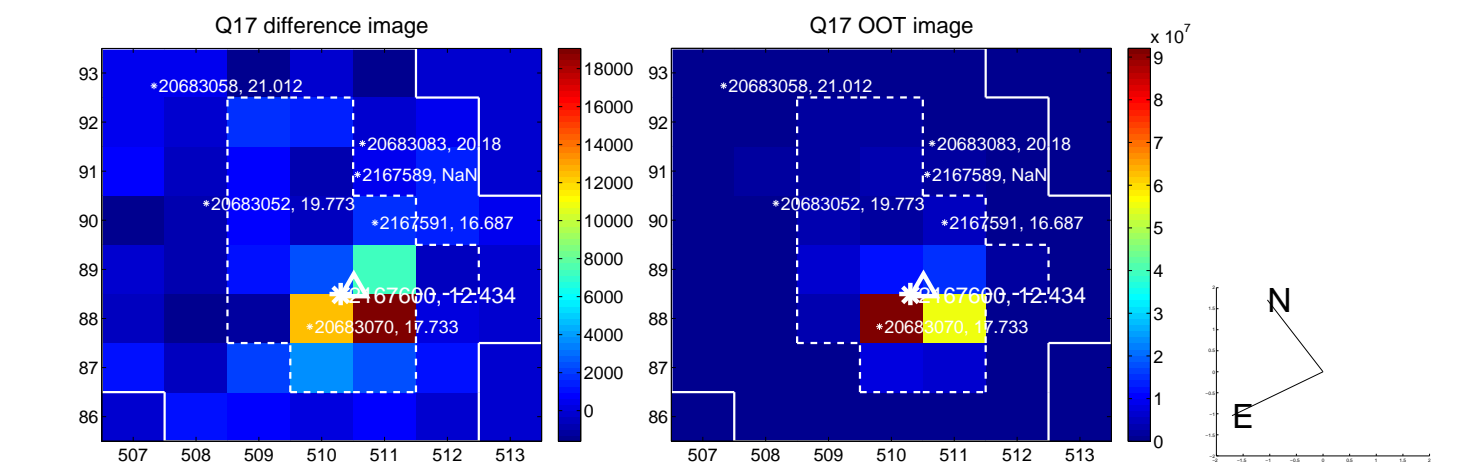
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

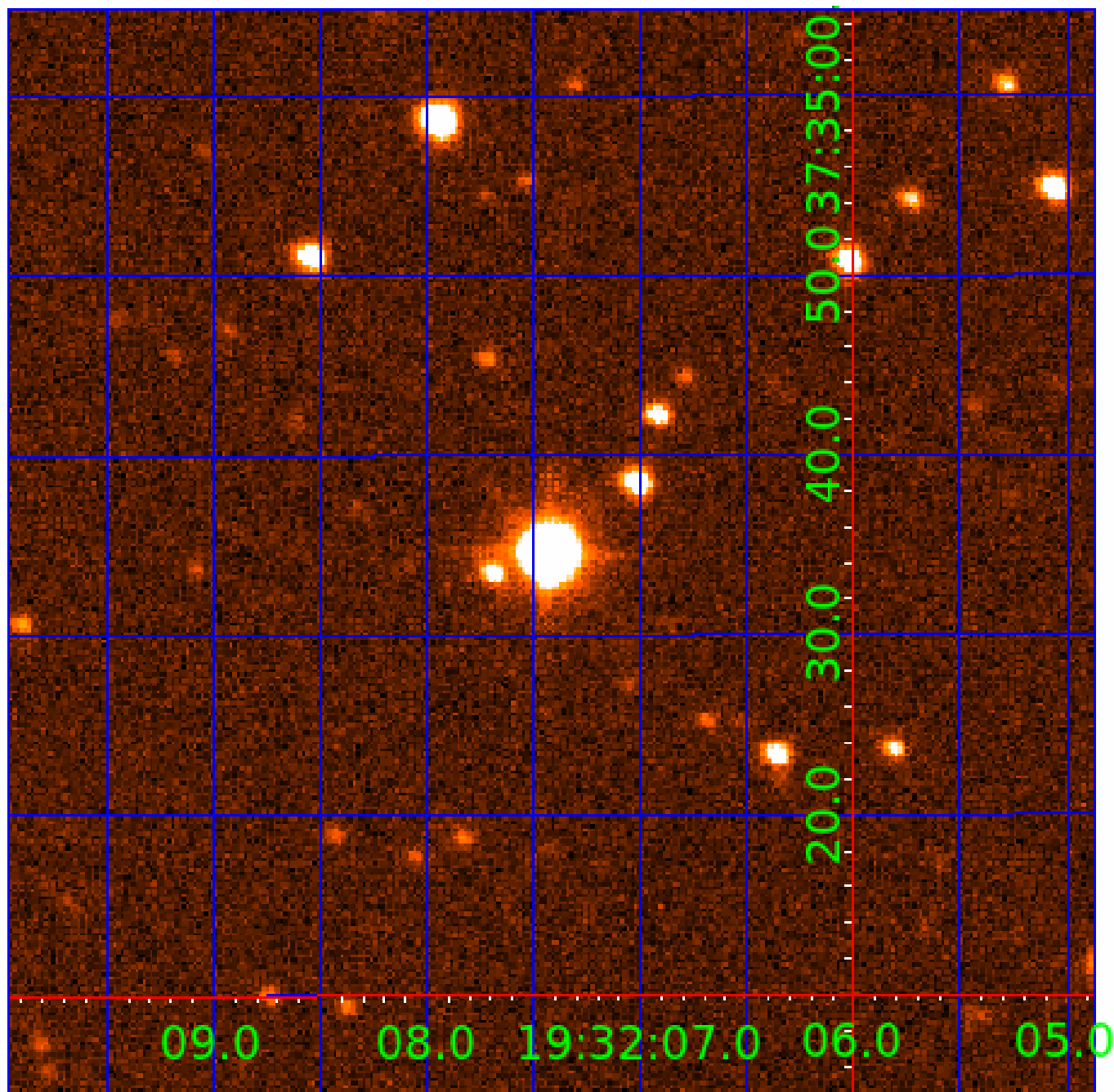


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

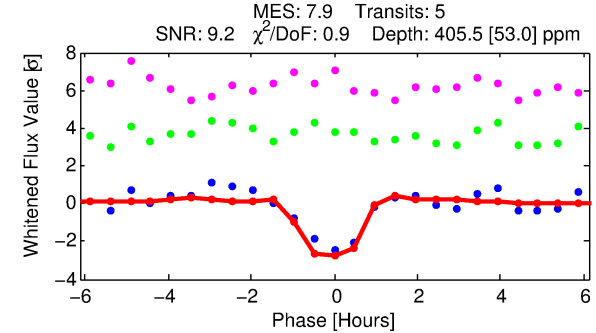
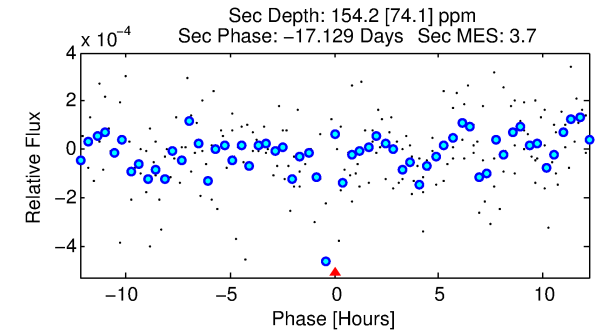
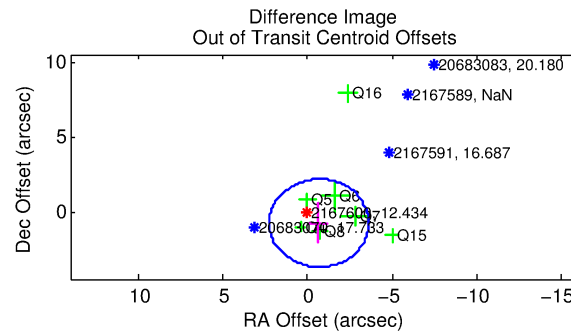
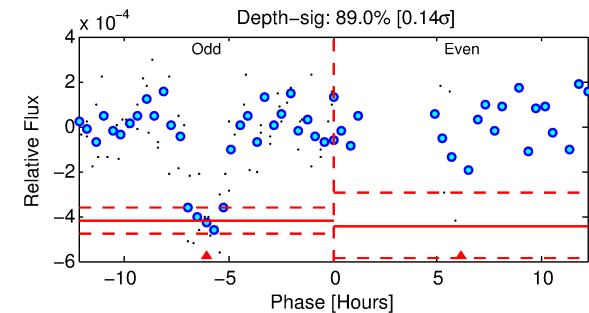
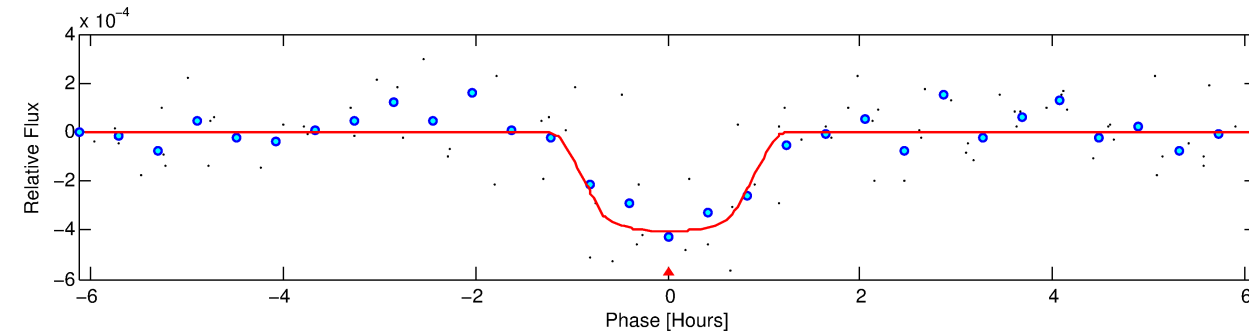
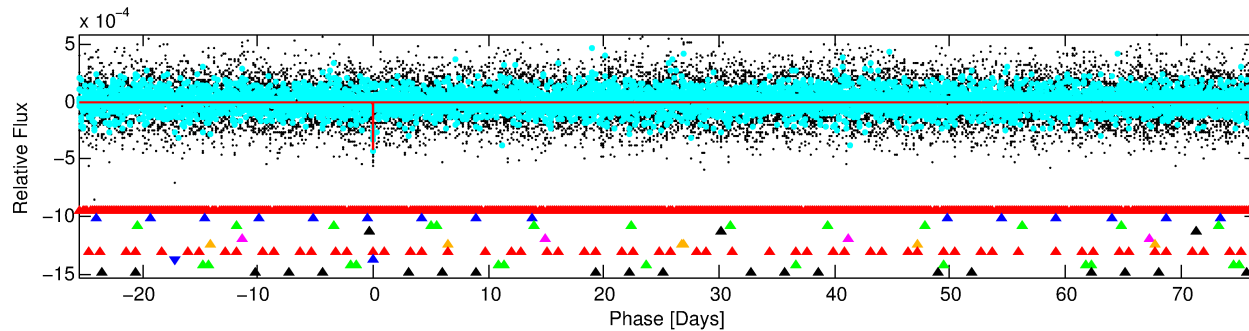
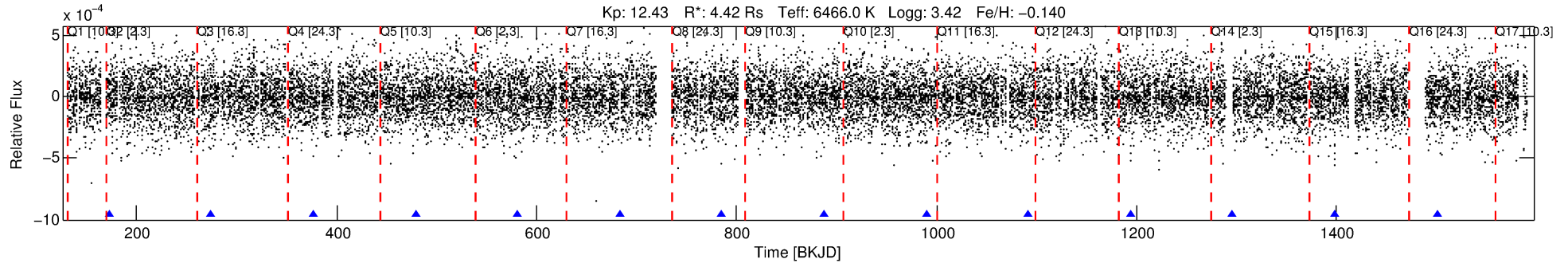
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-08

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 8 of 10 Period: 102.144 d



DV Fit Results:

Period = 102.14396 [0.00082] d
Epoch = 172.6208 [0.0067] BKJD
Rp/R* = 0.0216 [0.0090]
a/R* = 184.28 [422.19]
b = 0.90 [0.49]
Seff = 109.59 [71.14]
Teq = 825 [134] K
Rp = 10.41 [6.11] Re
a = 0.5278 [0.2109] AU
Ag = 218.08 [251.44] [0.86 σ]
Teffp = 4902 [1183] K [3.42 σ]

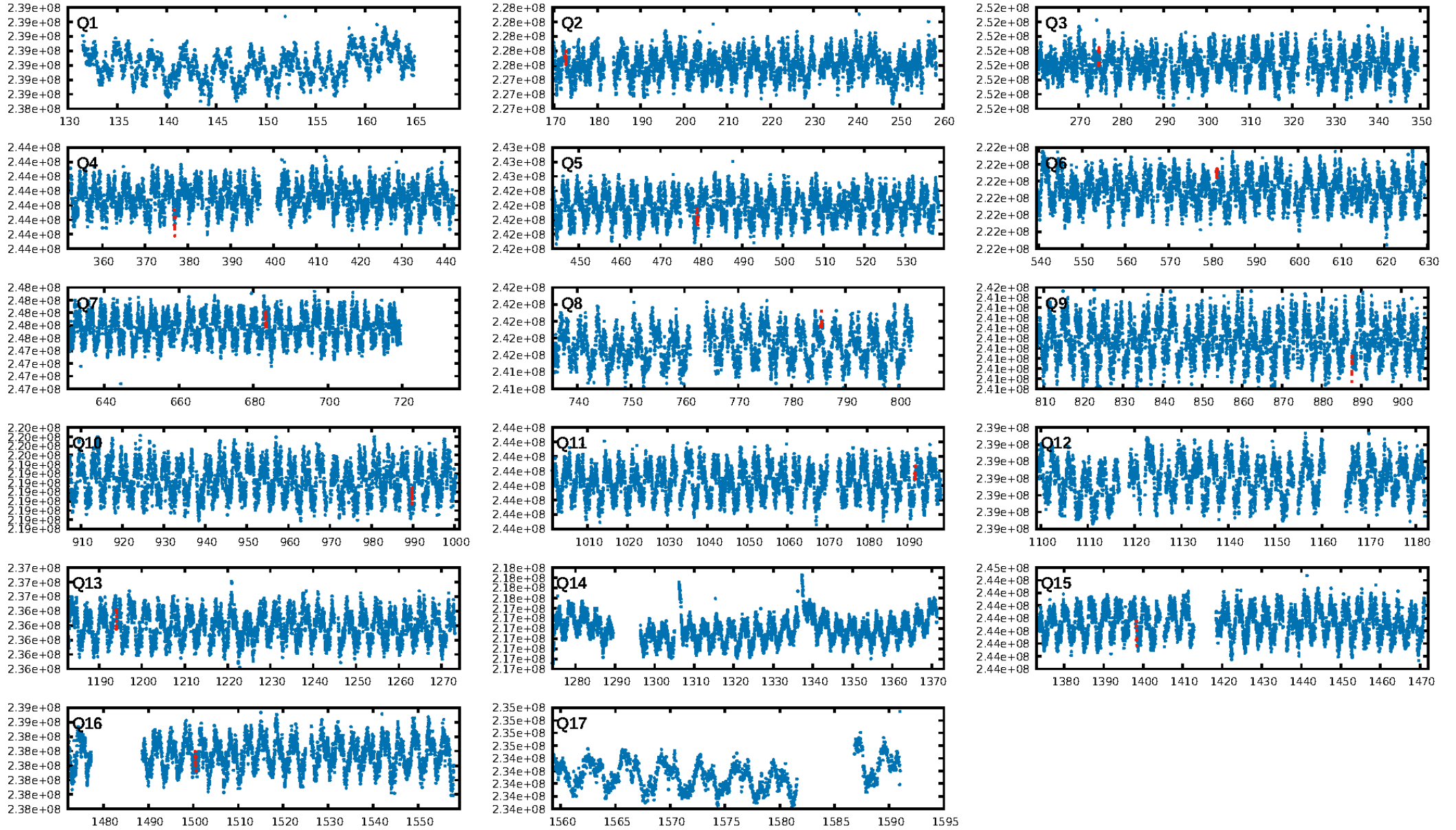
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.11 σ]
LongPeriod-sig: 100.0% [39.46 σ]
ModelChiSquare2-sig: 32.8%
ModelChiSquareGoF-sig: 99.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.6103
Centroid-sig: 67.4%
Centroid-so: 0.300 arcsec [0.57 σ]
OotOffset-rm: 1.013 arcsec [1.04 σ]
KicOffset-rm: 1.006 arcsec [1.10 σ]
OotOffset-st: 1/2/3/1 [7]
KicOffset-st: 1/2/3/1 [7]
DiffImageQuality-fgm: 0.29 [2/7]
DiffImageOverlap-fno: 0.27 [3/11]

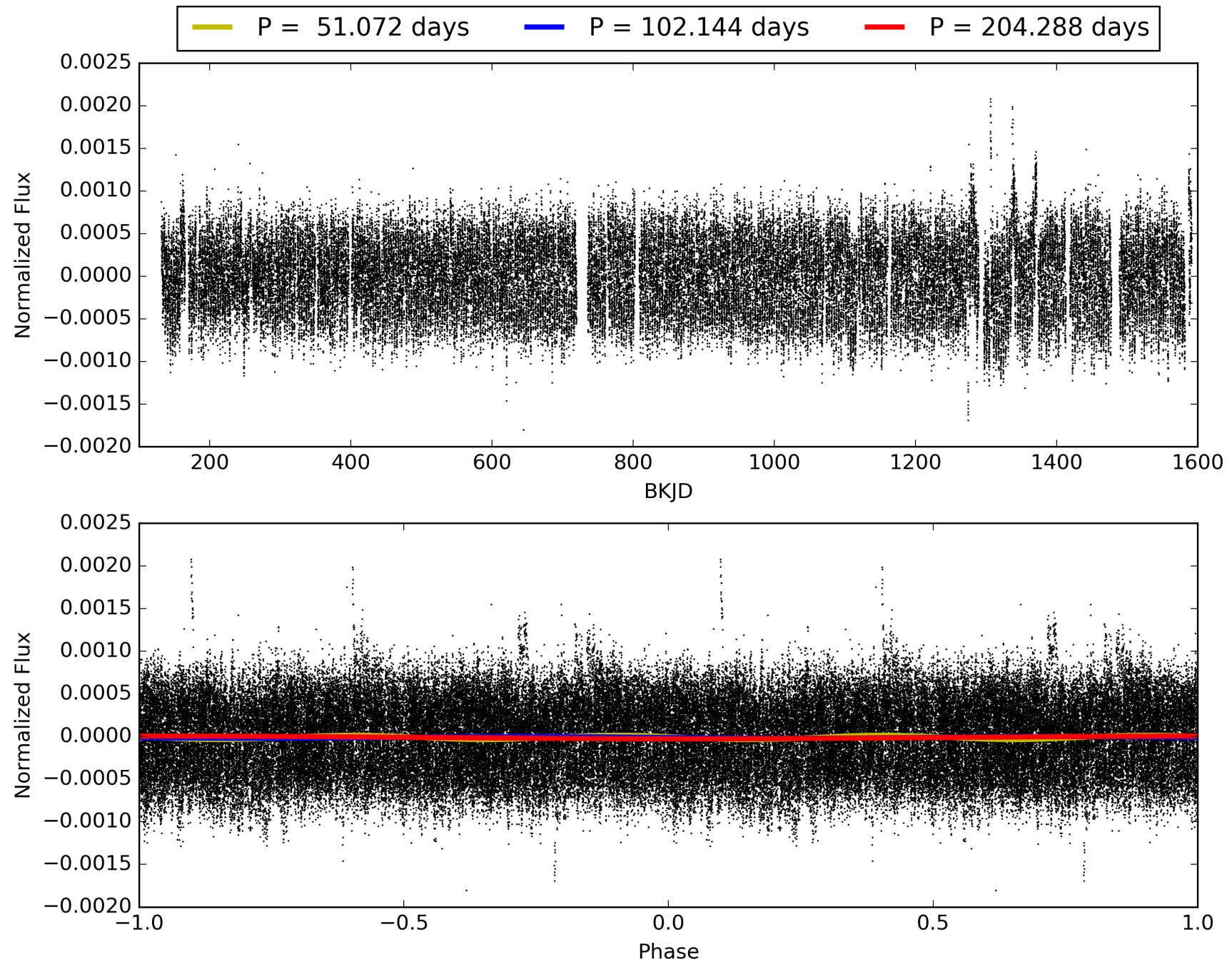
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:24:45 Z

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

TCE 002167600-08, PDC Light Curves

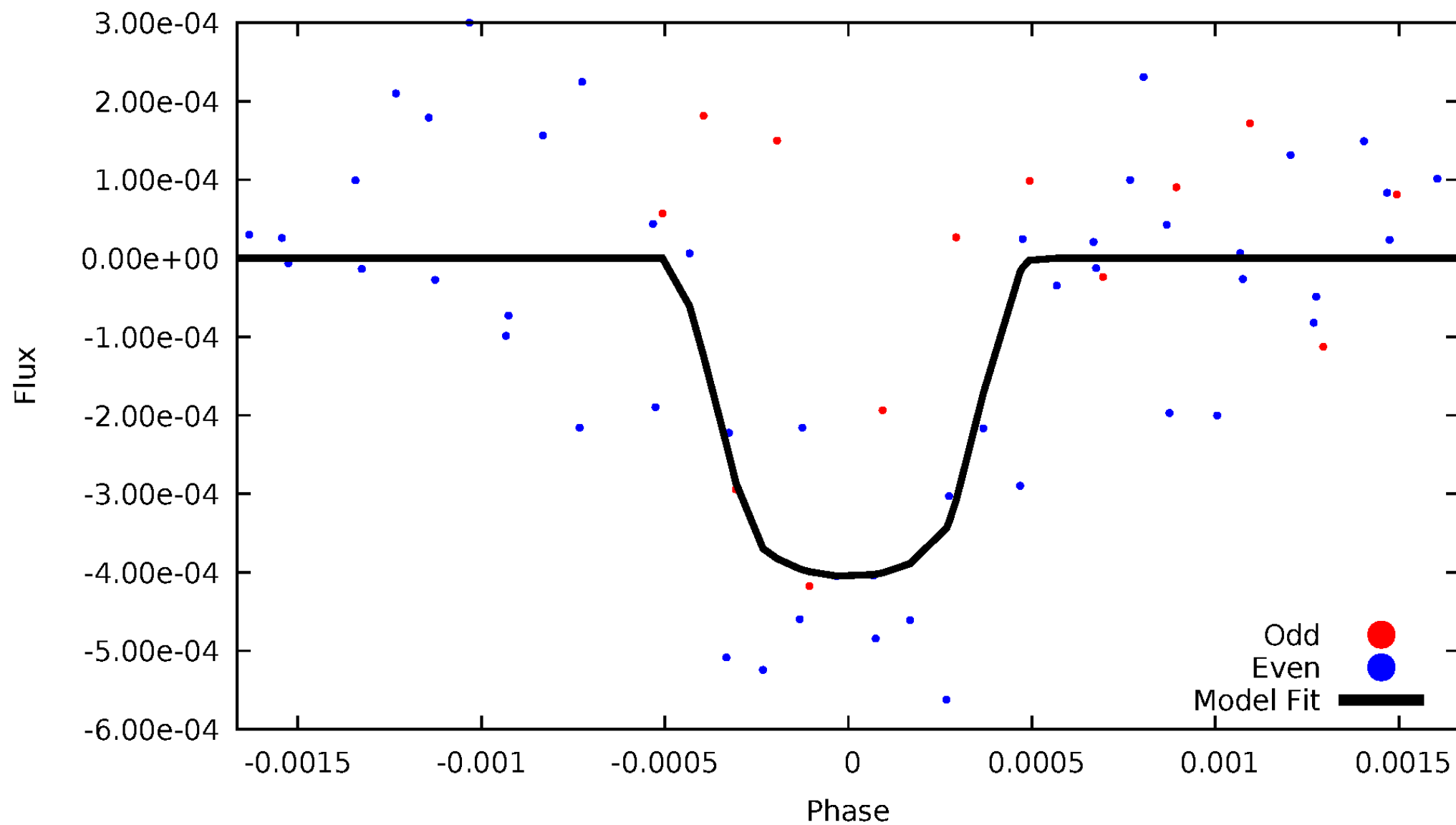


TCE 002167600-08



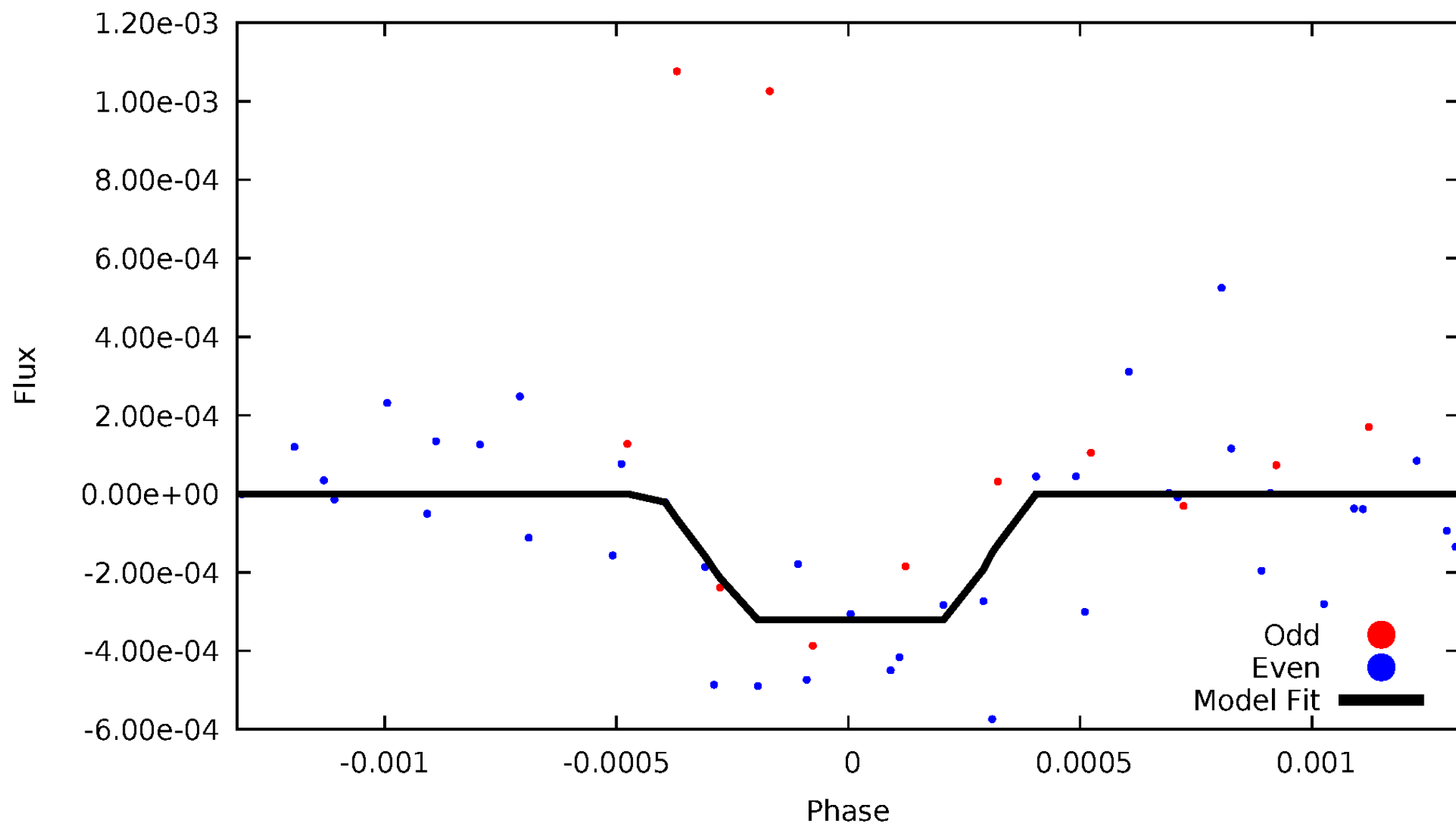
DV Odd/Even

TCE 002167600-08



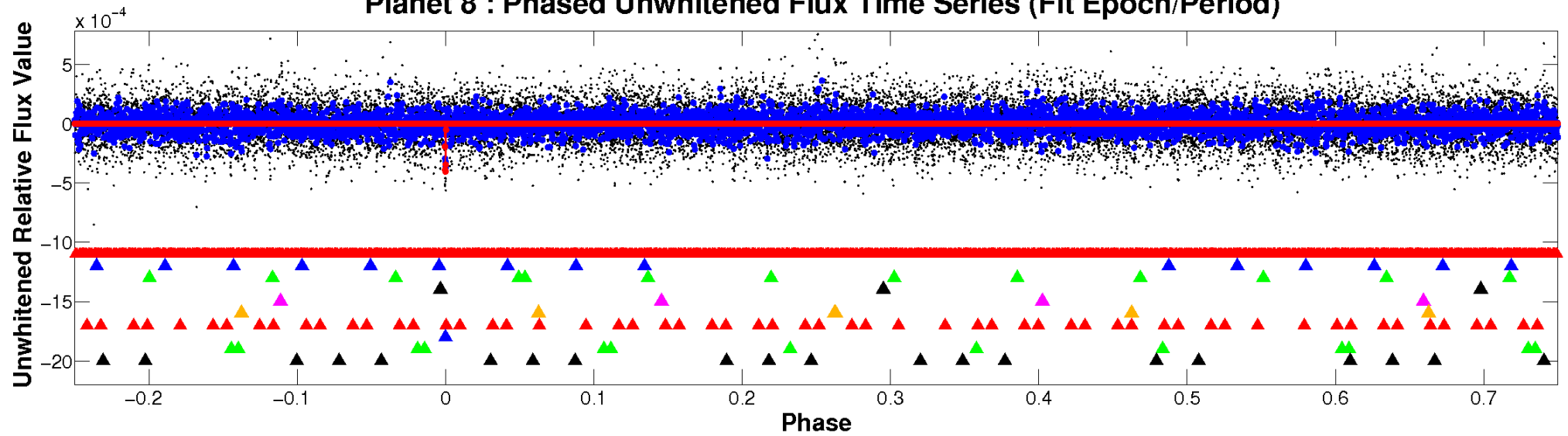
ALT Odd/Even

TCE 002167600-08

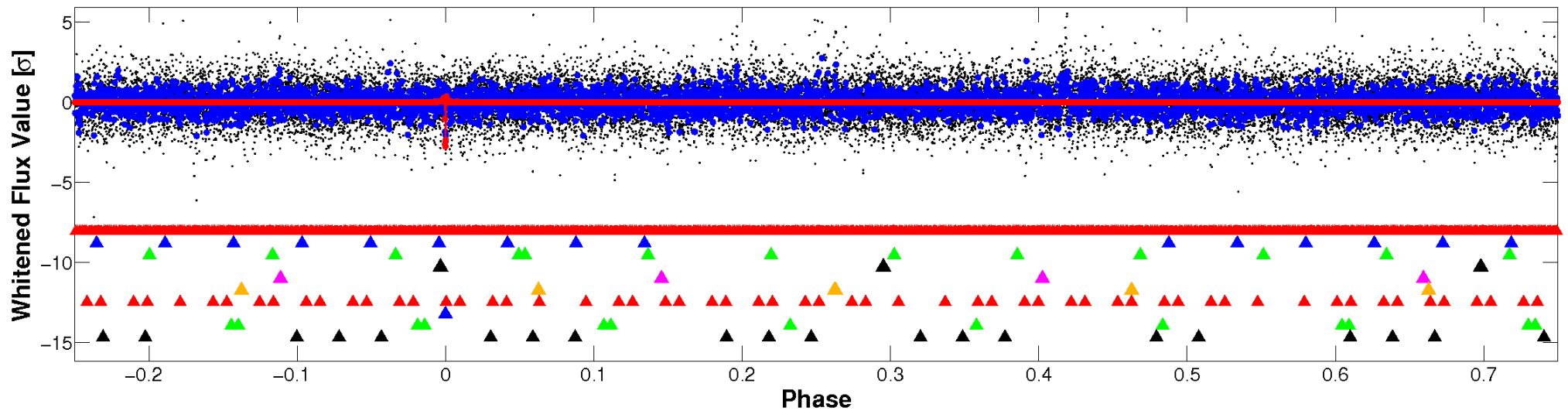


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

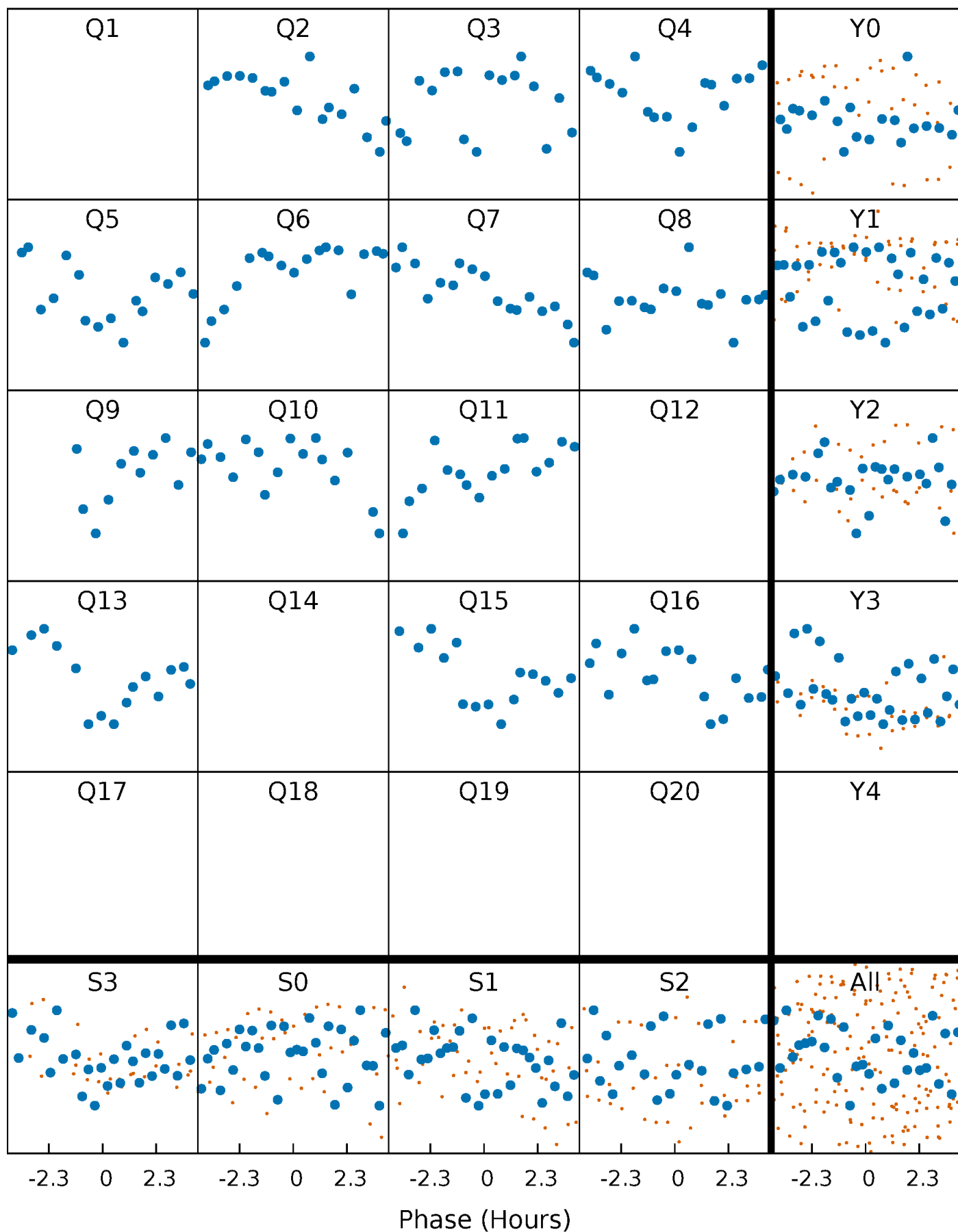


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



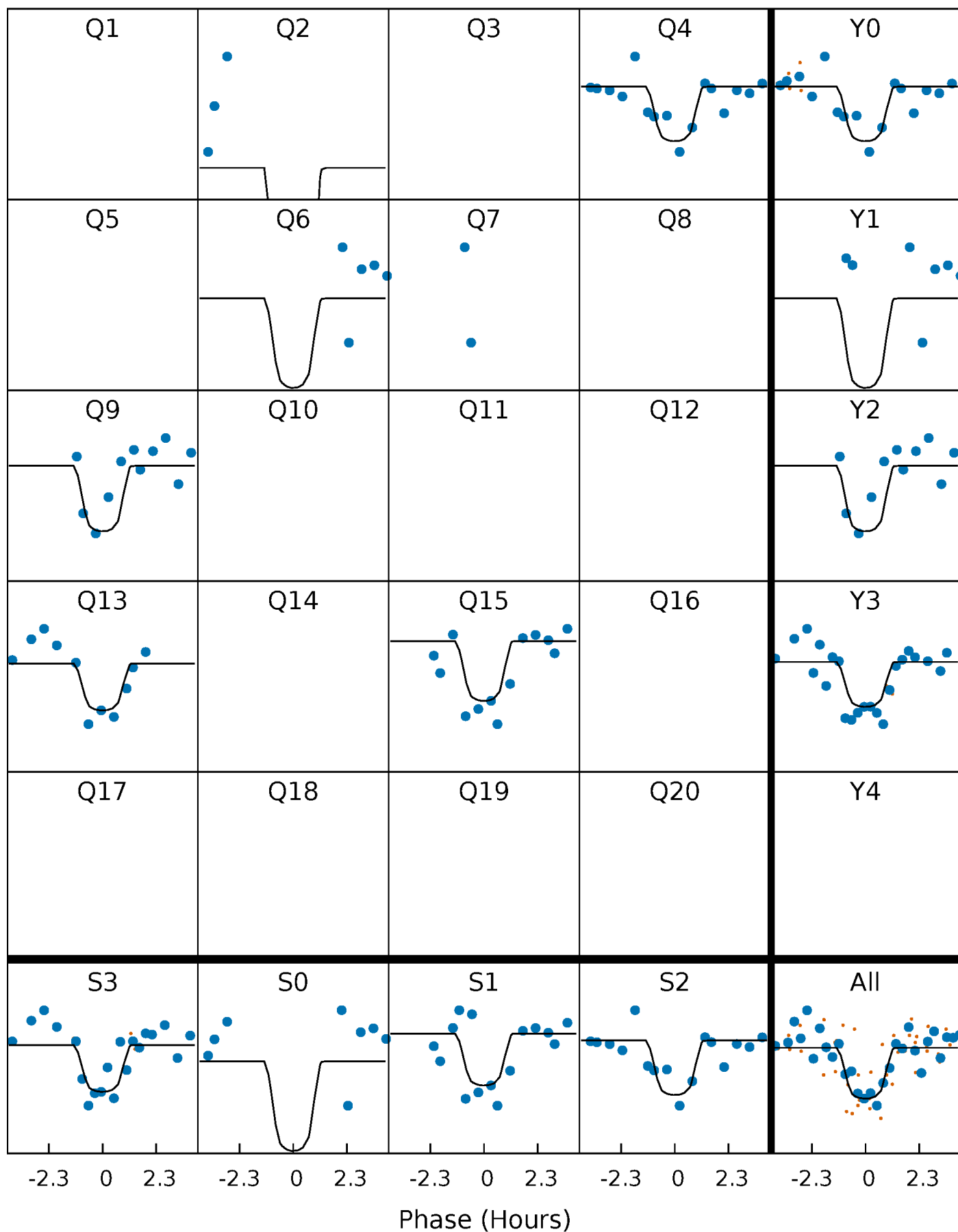
PDC Quarter-Phased Transit Curves

TCE 002167600-08 P=102.143958 Days $T_0=172.620821$ (BKJD)



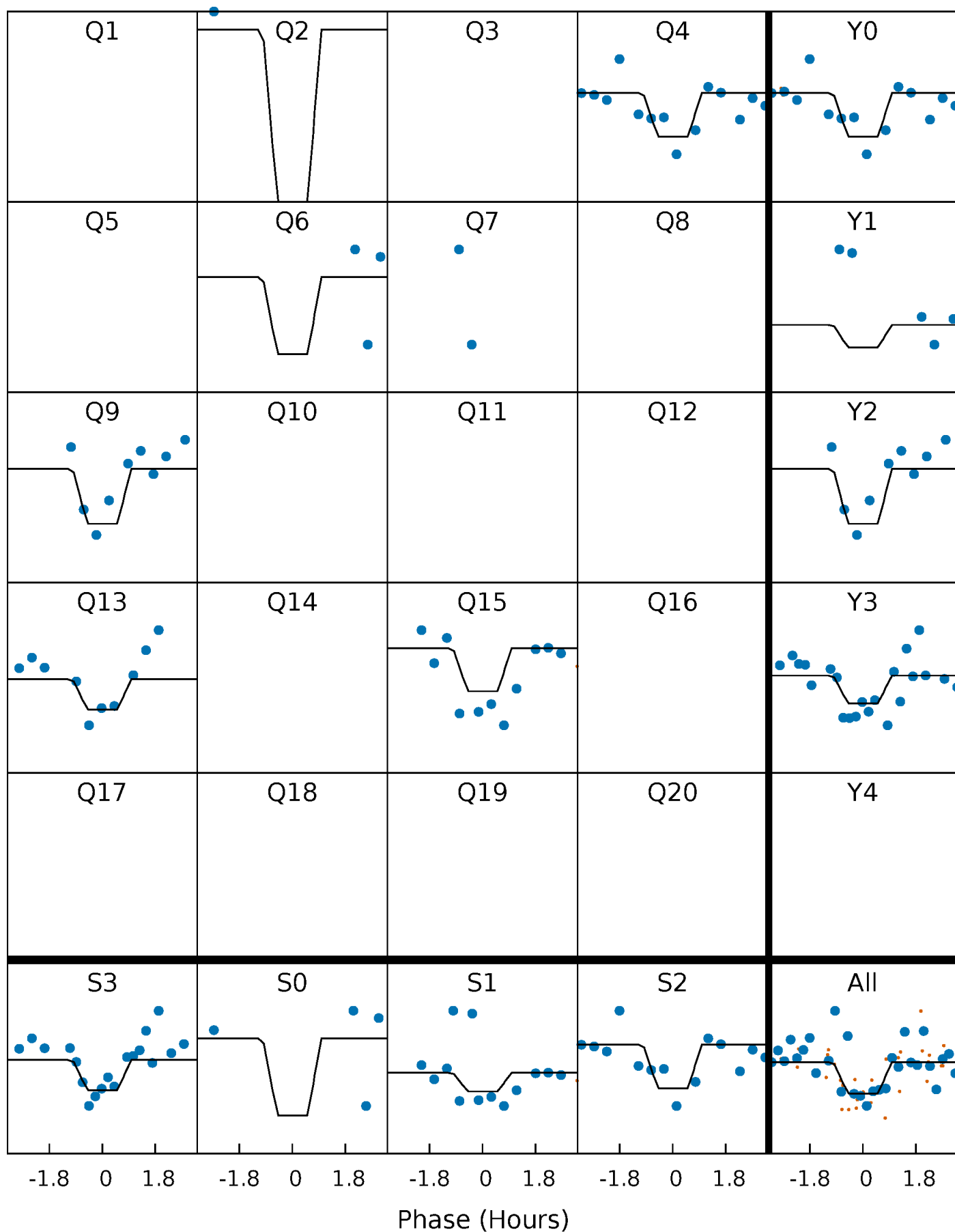
DV Quarter-Phased Transit Curves

TCE 002167600-08 $P=102.143958$ Days $T_0=172.620821$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

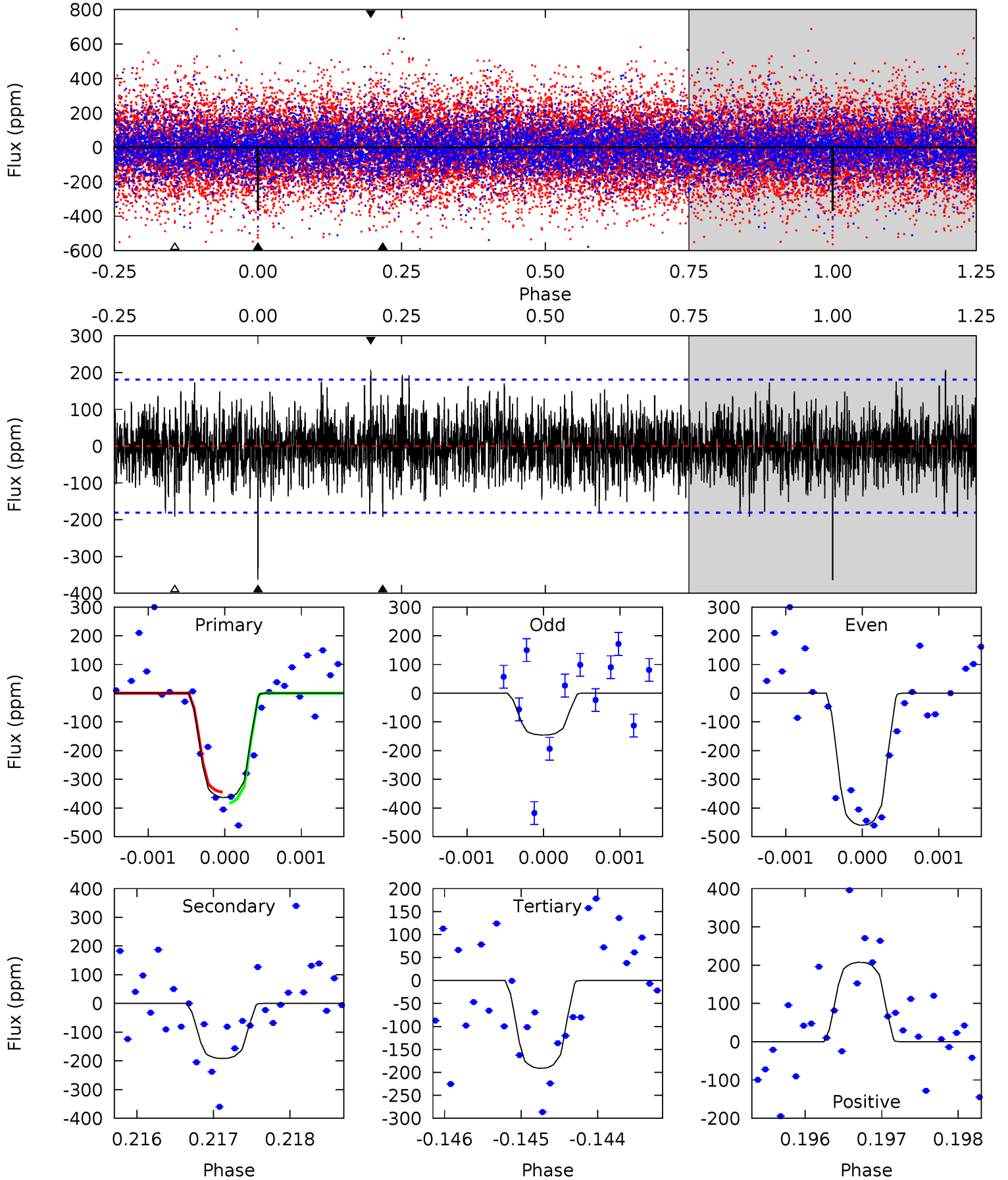
TCE 002167600-08 P=102.143693 Days $T_0=172.619652$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-08, $P = 102.143958$ Days, $E = 70.476863$ Days

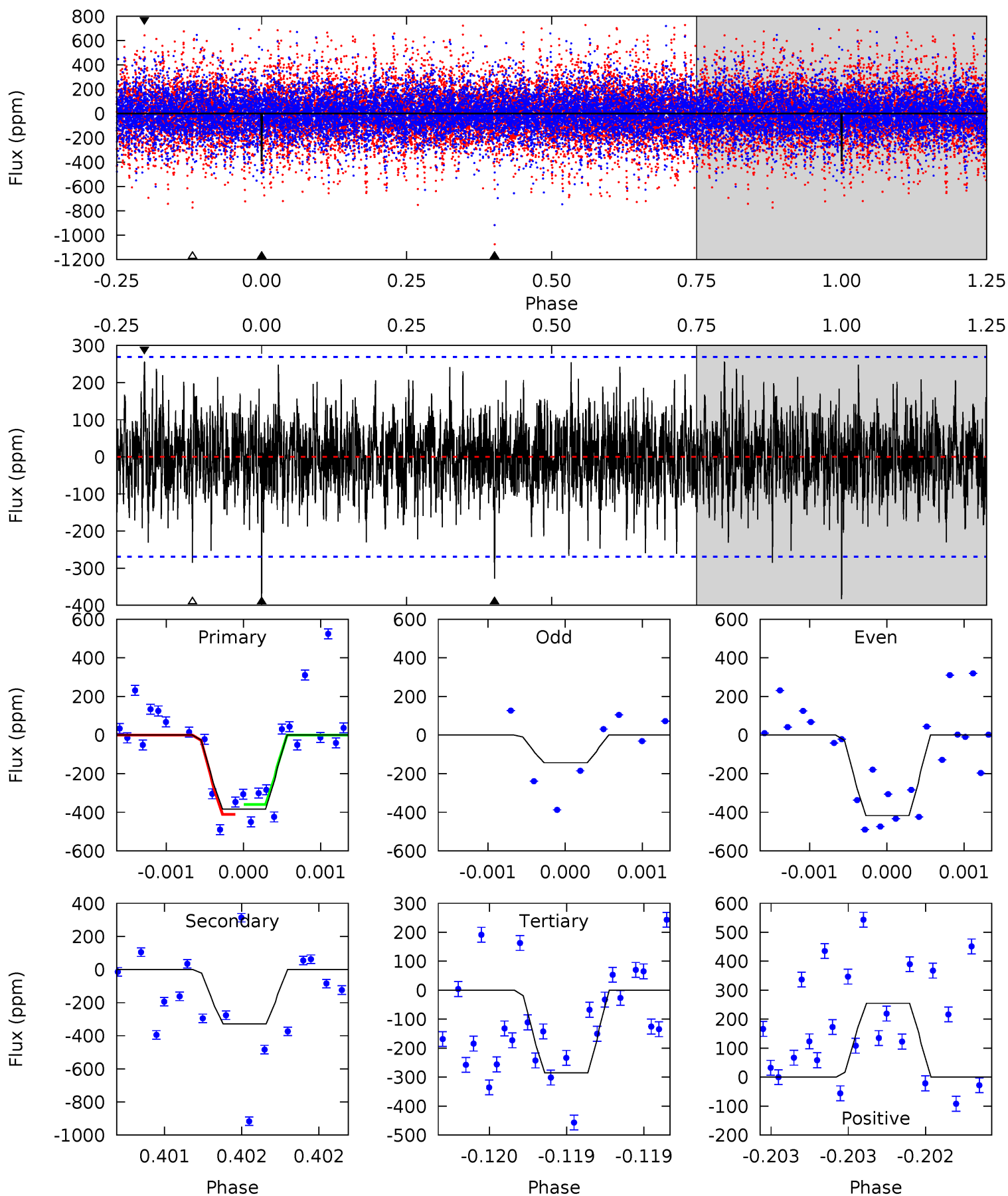
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	5.76	5.75	6.24	5.44	3.27	1.67	5.18	4.69	0.01	-0.47	4.41	0.81	0.36	0.57



Alt Model-Shift Uniqueness Test

002167600-08, P = 102.143693 Days, E = 70.475959 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.85	6.72	5.85	5.22	5.51	3.38	1.52	2.01	2.63	0.87	1.50	2.71	0.20	0.40	0.53



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-192 ± 33	$9.83^{+4.10}_{-4.23}$	1129^{+68}_{-126}	5134^{+1402}_{-636}	301^{+616}_{-155}
Alt.	-328 ± 49	$7.92^{+4.34}_{-4.04}$	1127^{+70}_{-118}	6413^{+3365}_{-1141}	762^{+2406}_{-442}

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 $A_{obs} \gg 1.0$

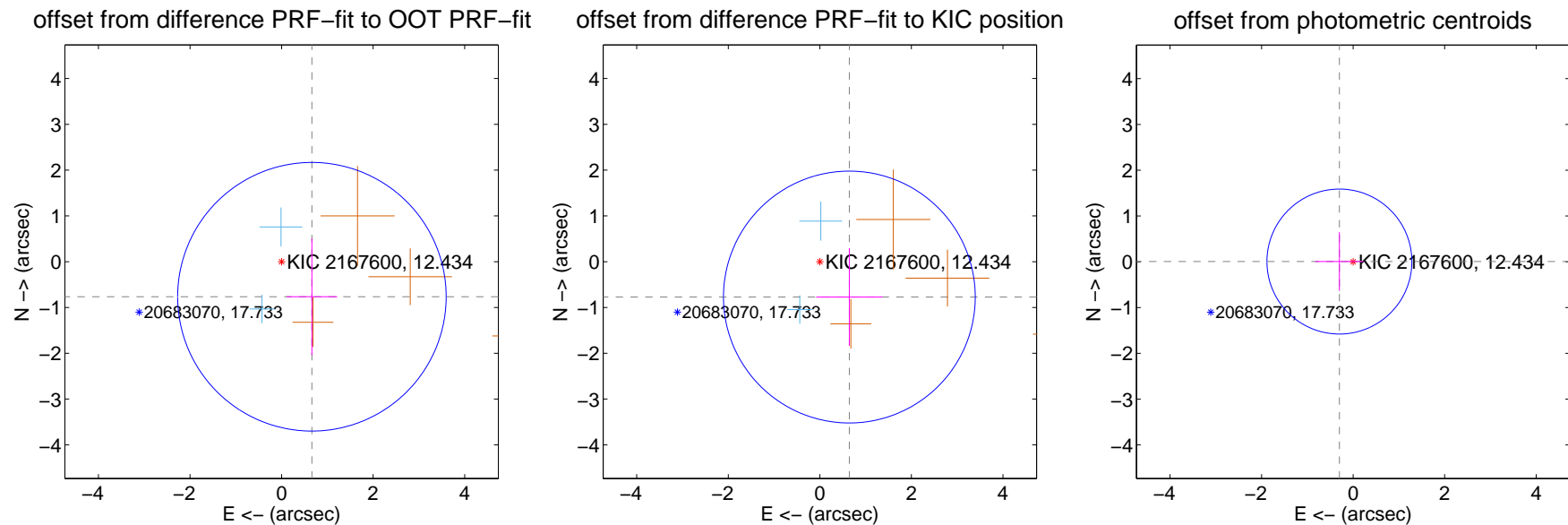
DV Centroid Data

Supplemental centroid analysis for 002167600-08. Kepler magnitude: 12.43. Transit SNR 9.23

There are 2 quarters with good PRF difference image offsets

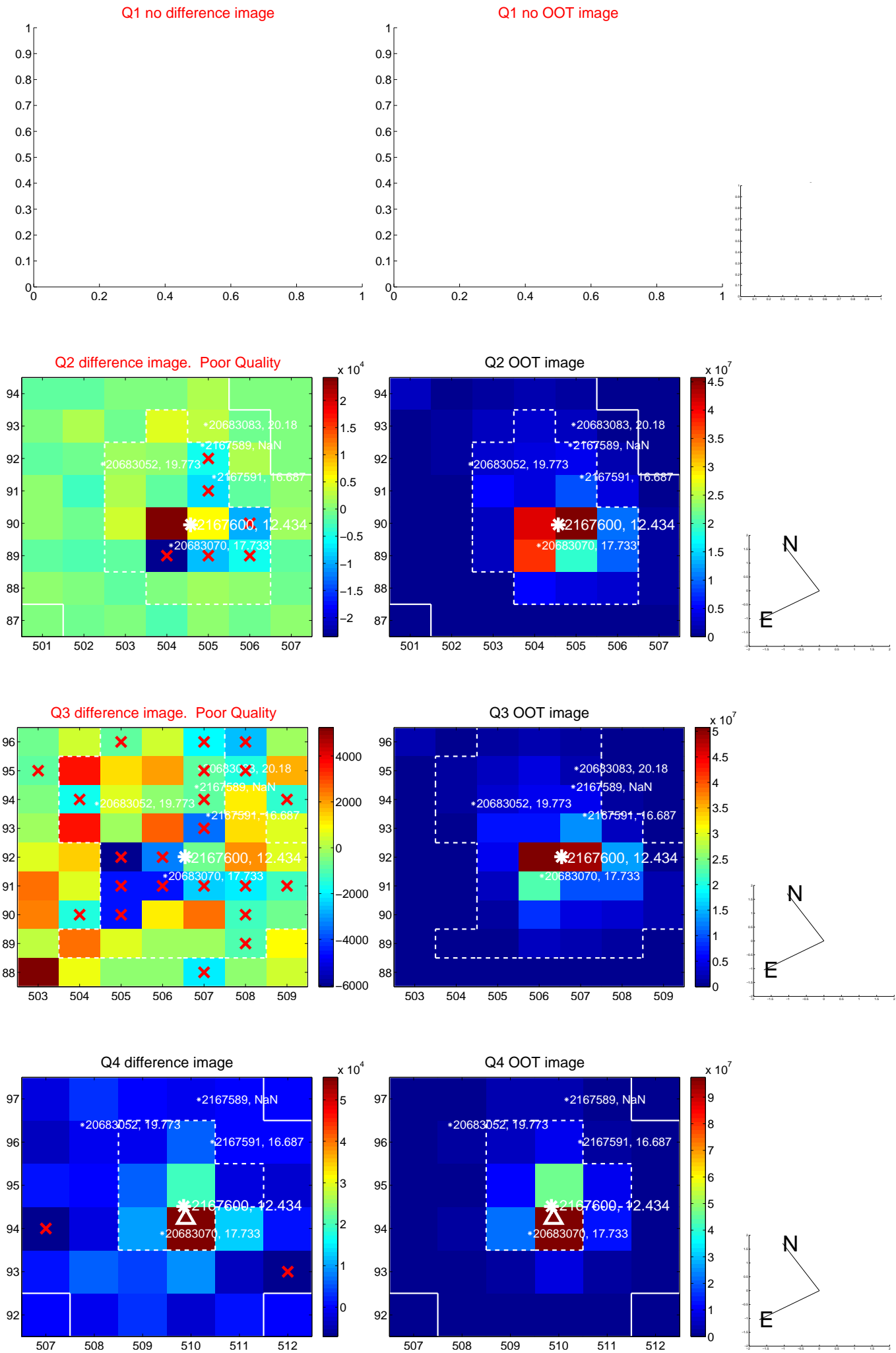
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.013 ± 0.978	1.04	-0.663 ± 0.552	-0.766 ± 1.273
PRF-fit source offset from KIC position	1.006 ± 0.917	1.10	-0.645 ± 0.725	-0.772 ± 1.068
photometric centroid source offset	0.30 ± 0.53	0.57	0.30 ± 0.53	0.00 ± 0.64

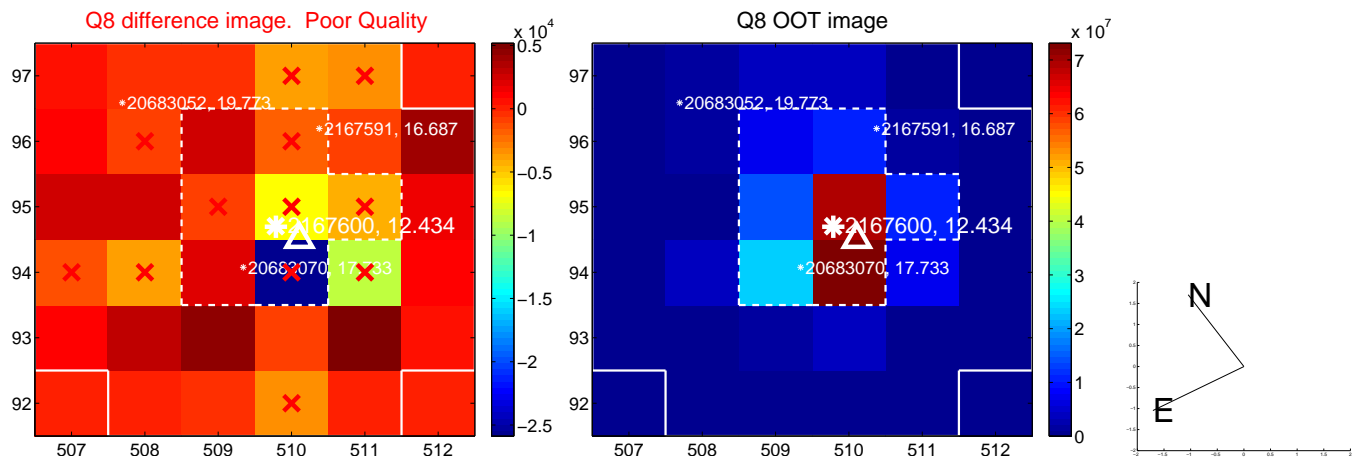
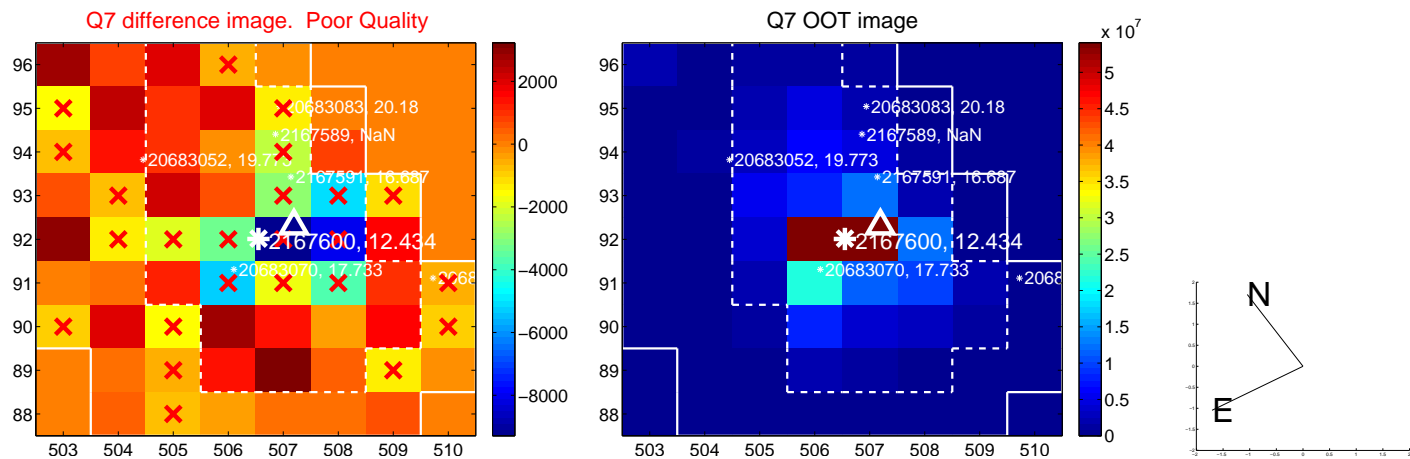
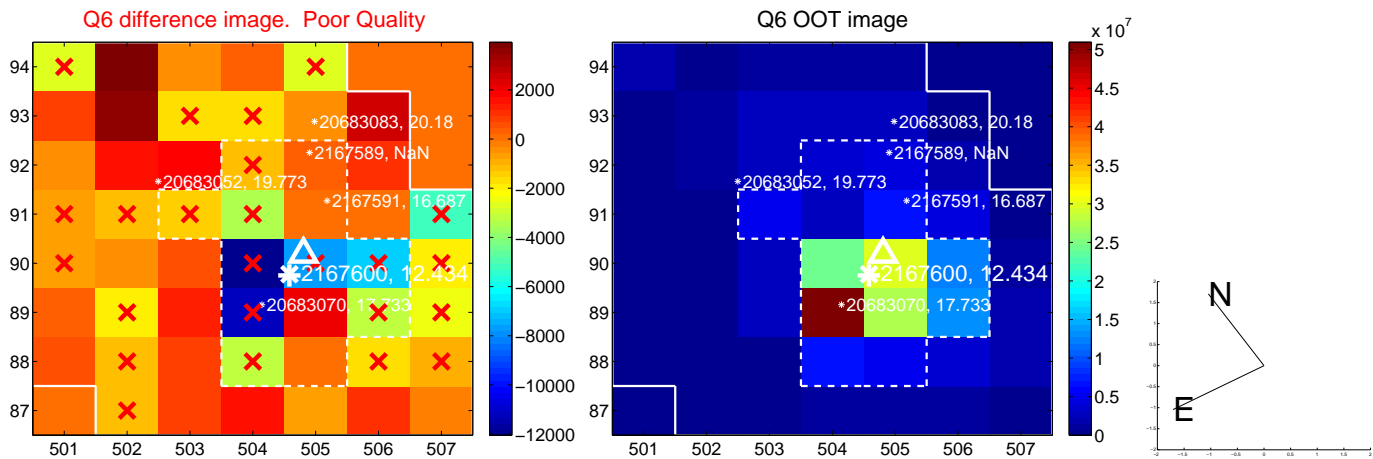
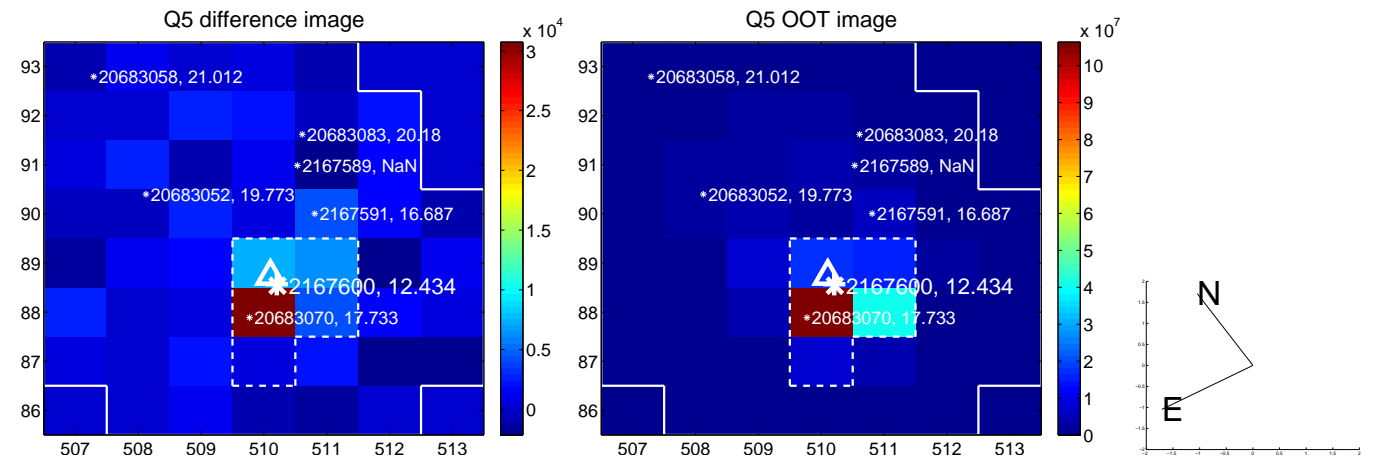


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

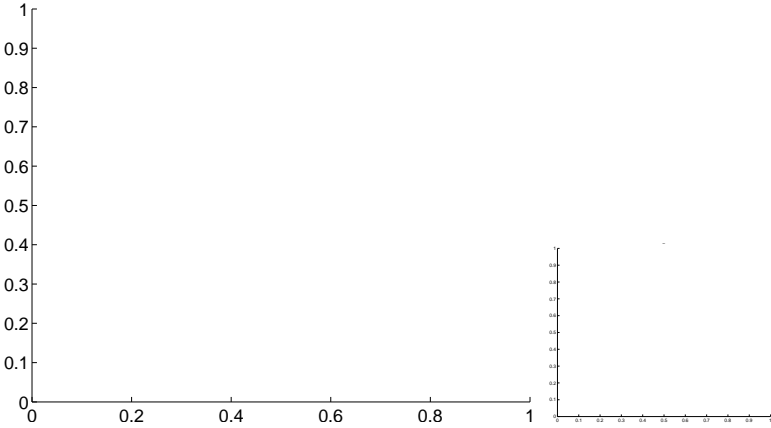


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

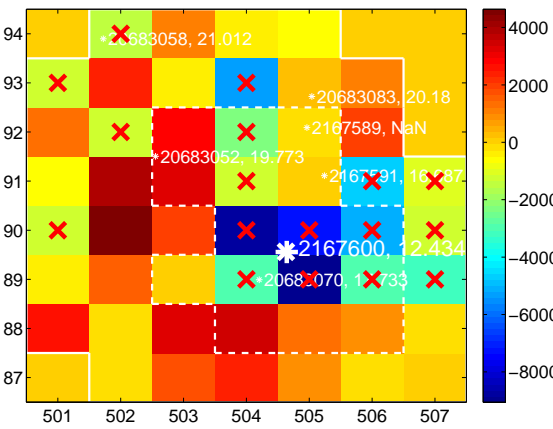
Q9 no difference image



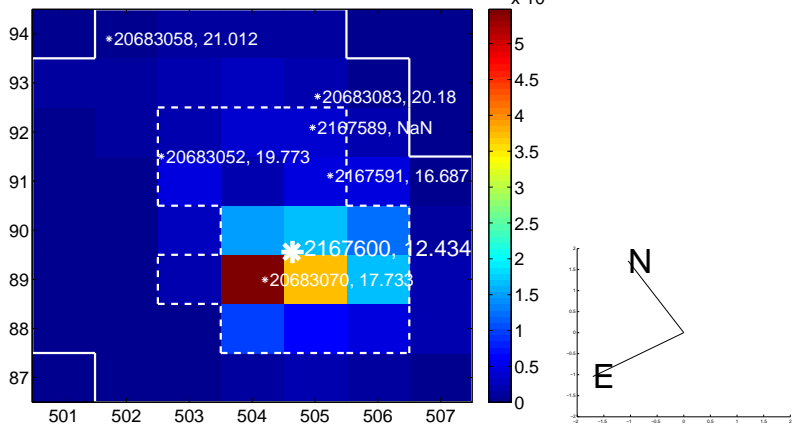
Q9 no OOT image



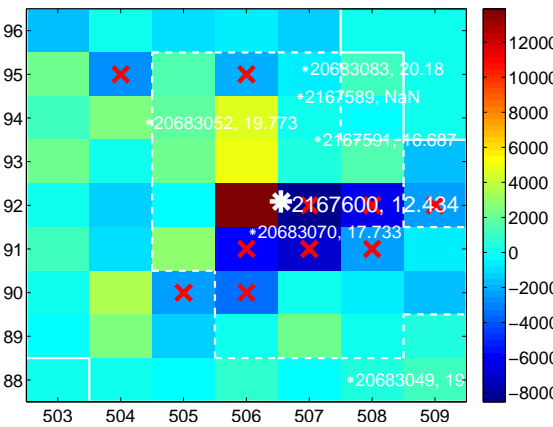
Q10 difference image. Poor Quality



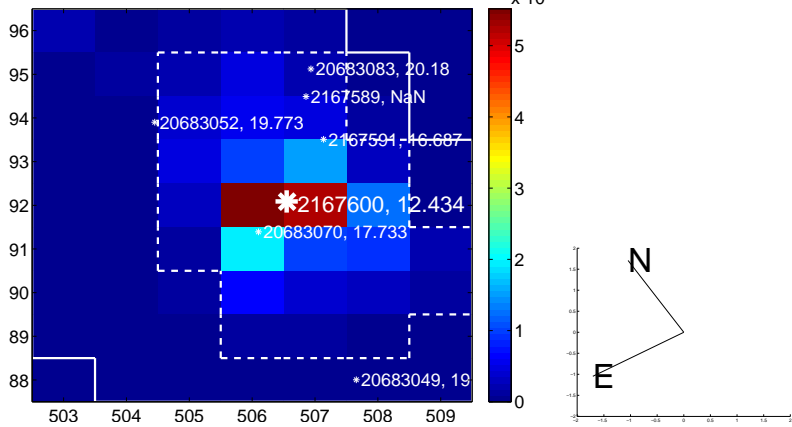
Q10 OOT image



Q11 difference image. Poor Quality



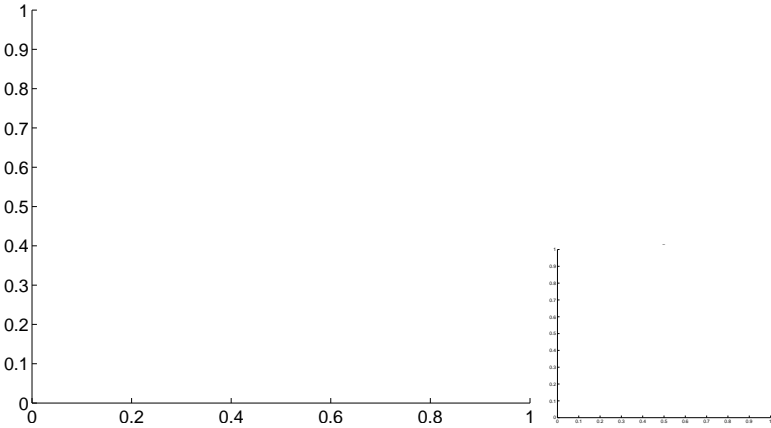
Q11 OOT image



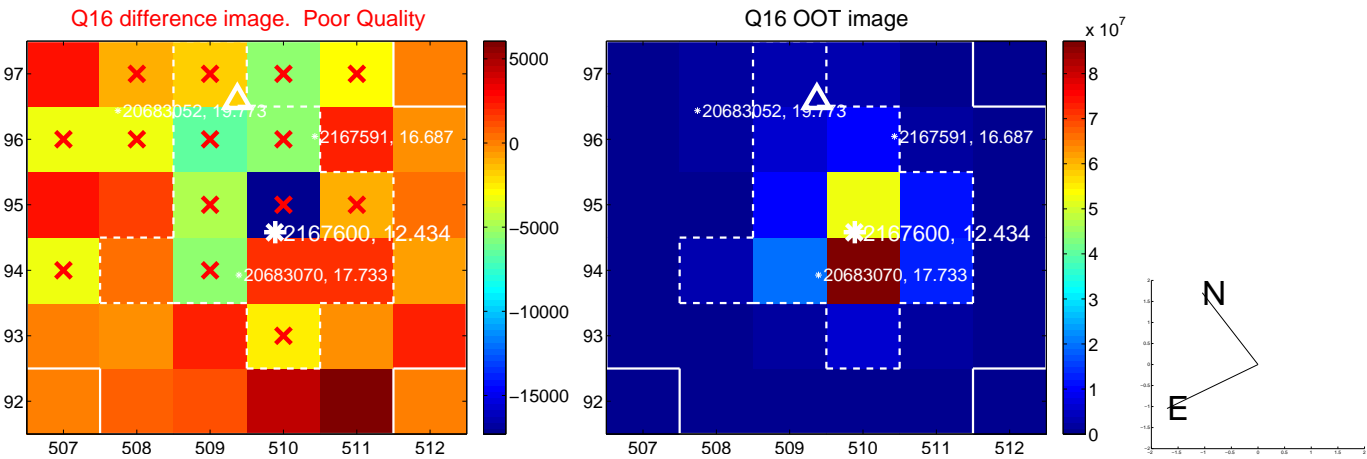
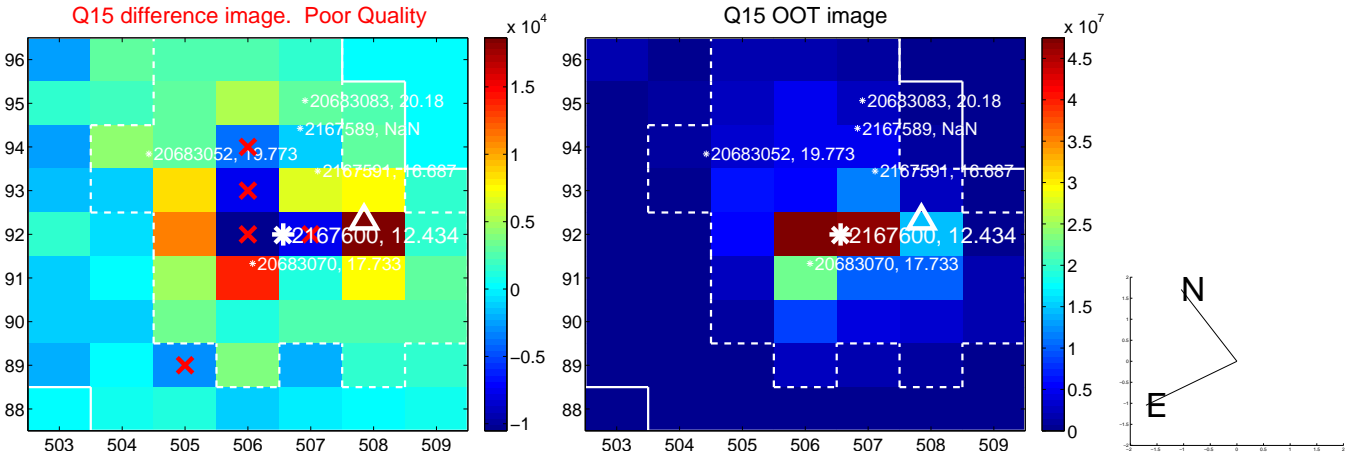
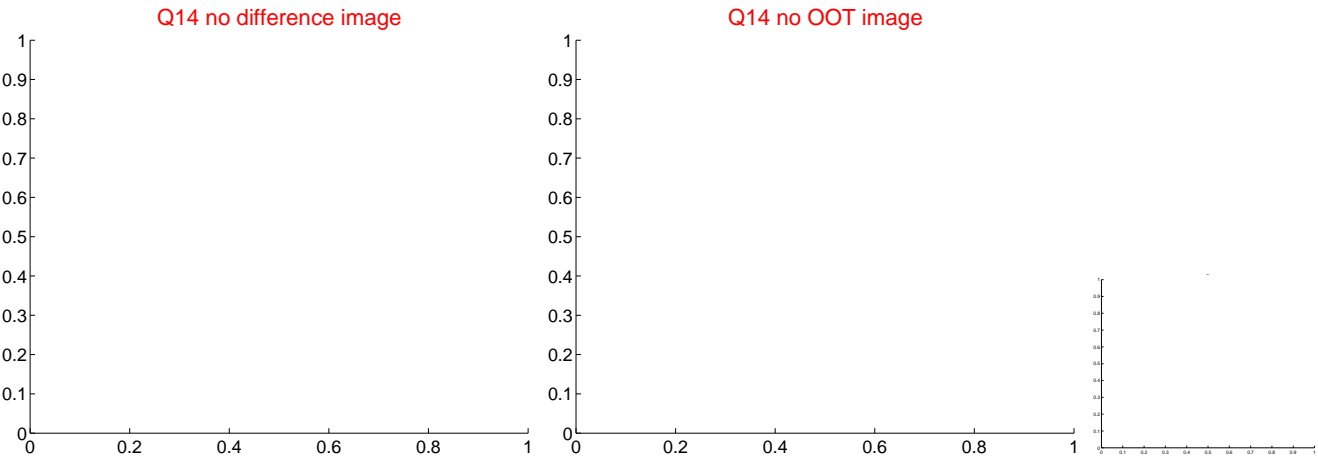
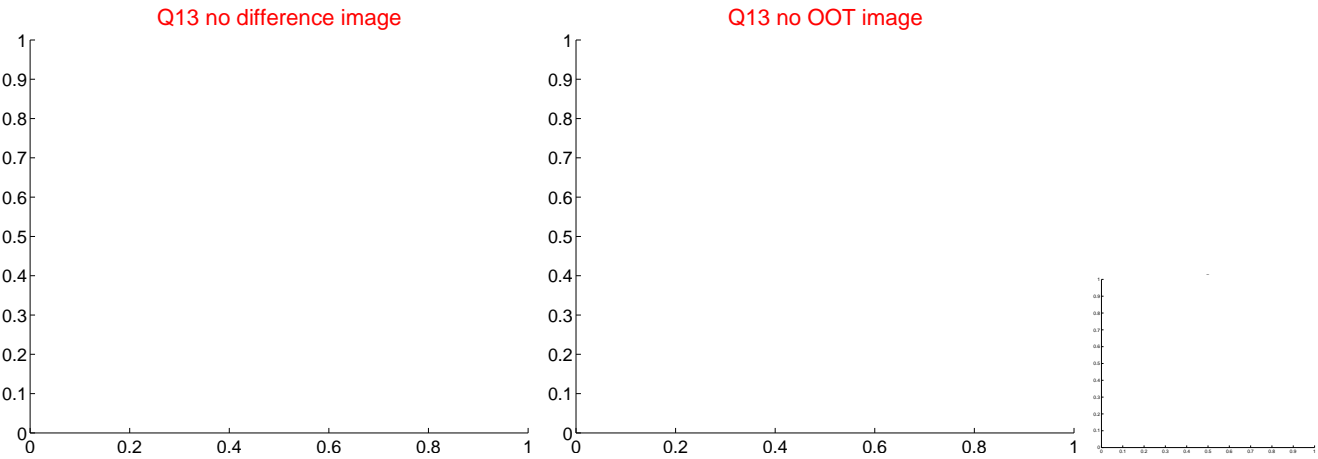
Q12 no difference image



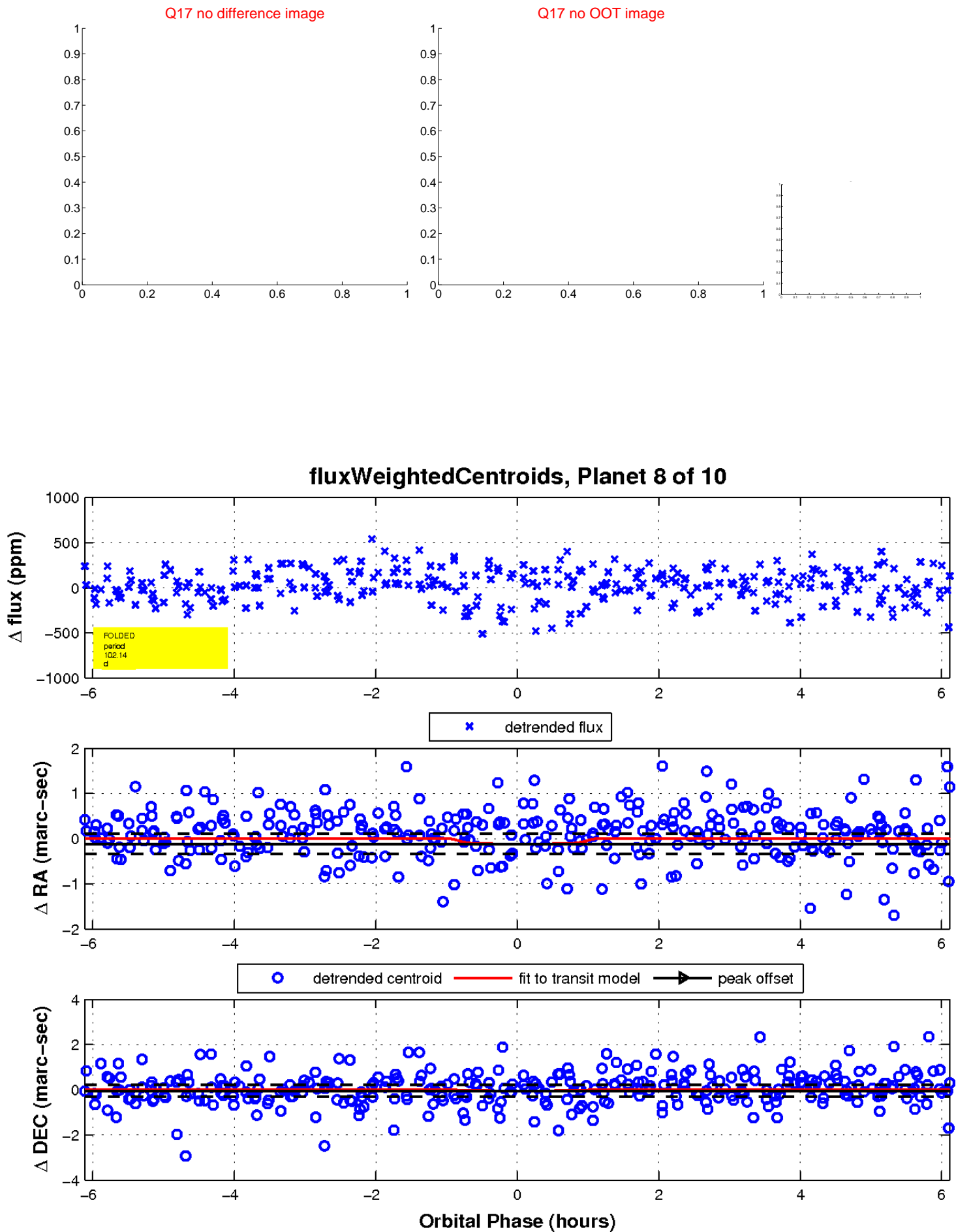
Q12 no OOT image



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

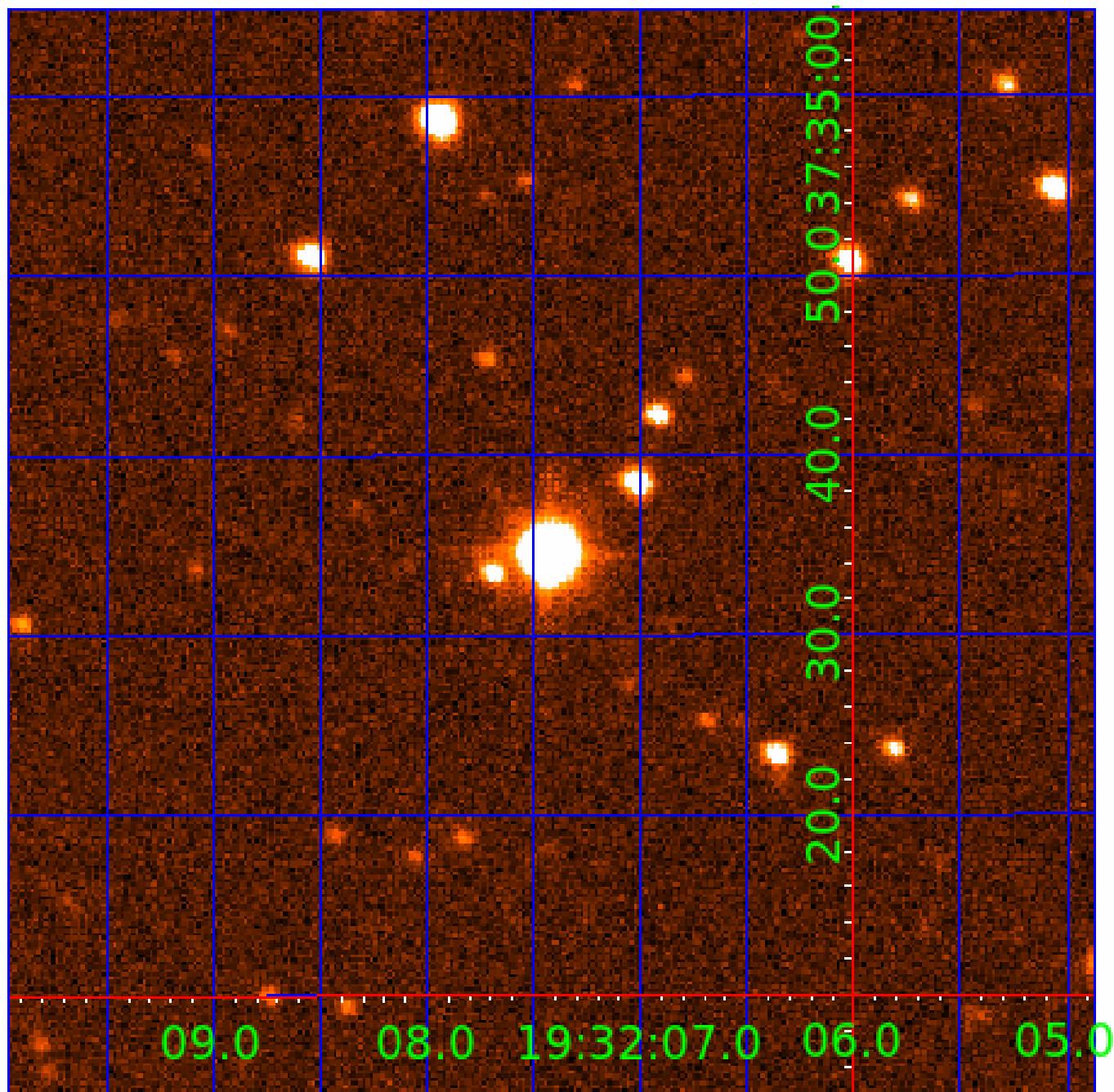


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

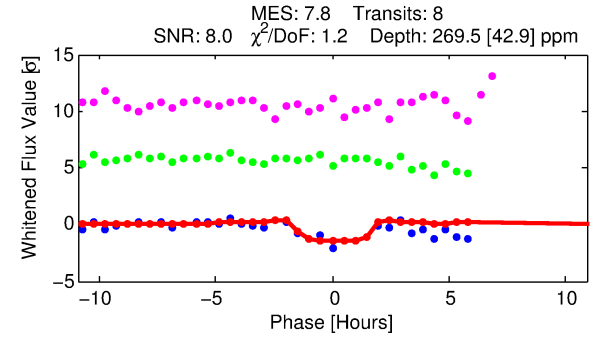
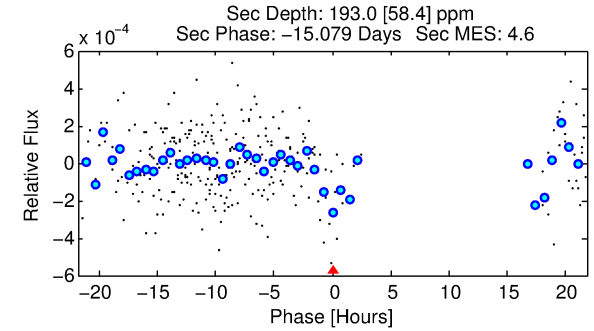
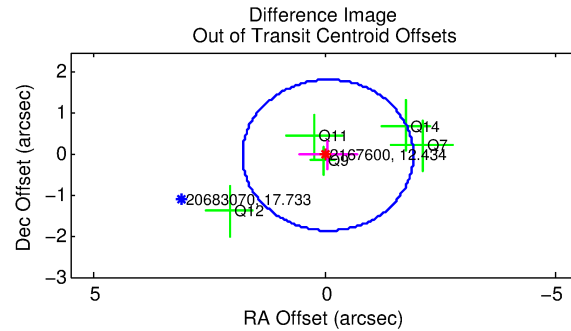
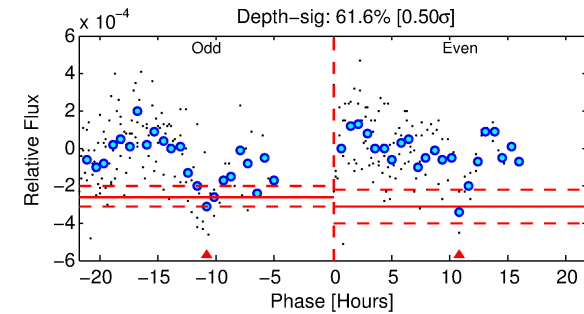
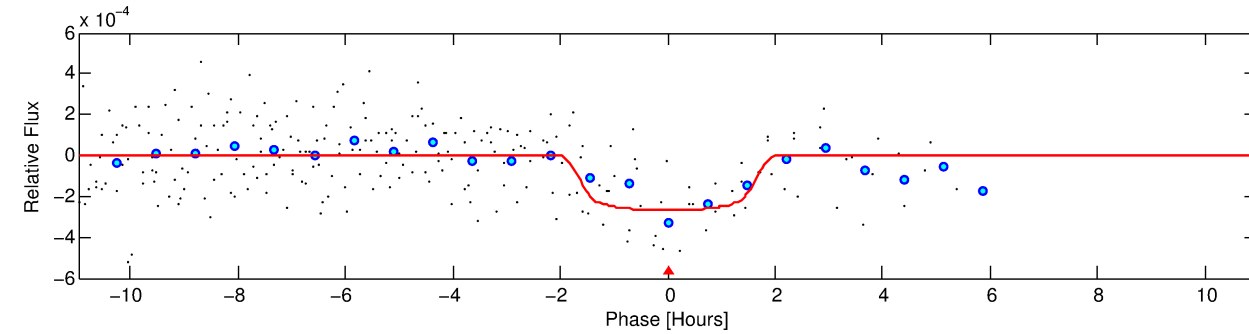
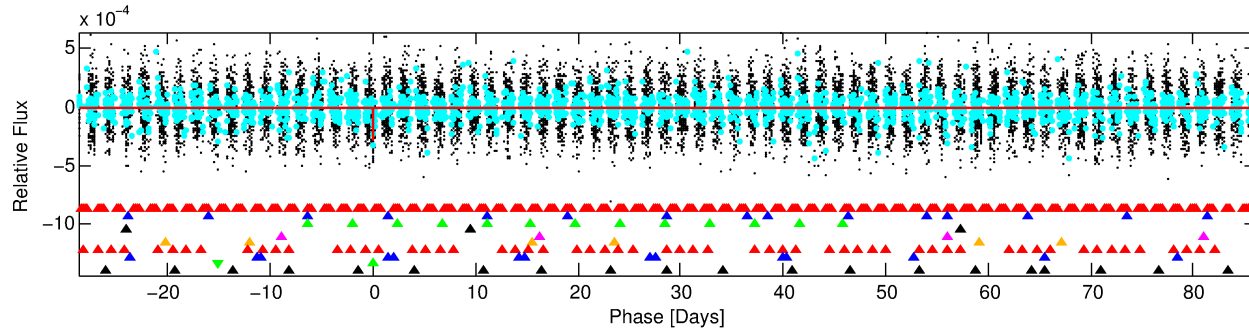
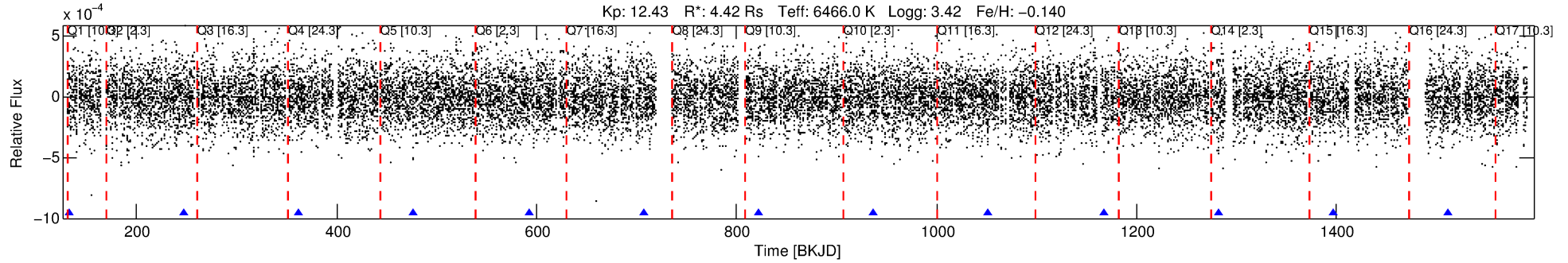
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-09

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 9 of 10 Period: 114.972 d



DV Fit Results:

Period = 114.97184 [0.00234] d
Epoch = 132.2187 [0.0228] BKJD
Rp/R* = 0.0176 [0.0061]
a/R* = 113.32 [211.87]
b = 0.90 [0.39]
Seff = 93.60 [60.76]
Teff = 793 [129] K
Rp = 8.48 [4.57] Re
a = 0.5711 [0.2282] AU
Ag = 481.70 [475.85] [1.01 σ]
Teffp = 5745 [1092] K [4.50 σ]

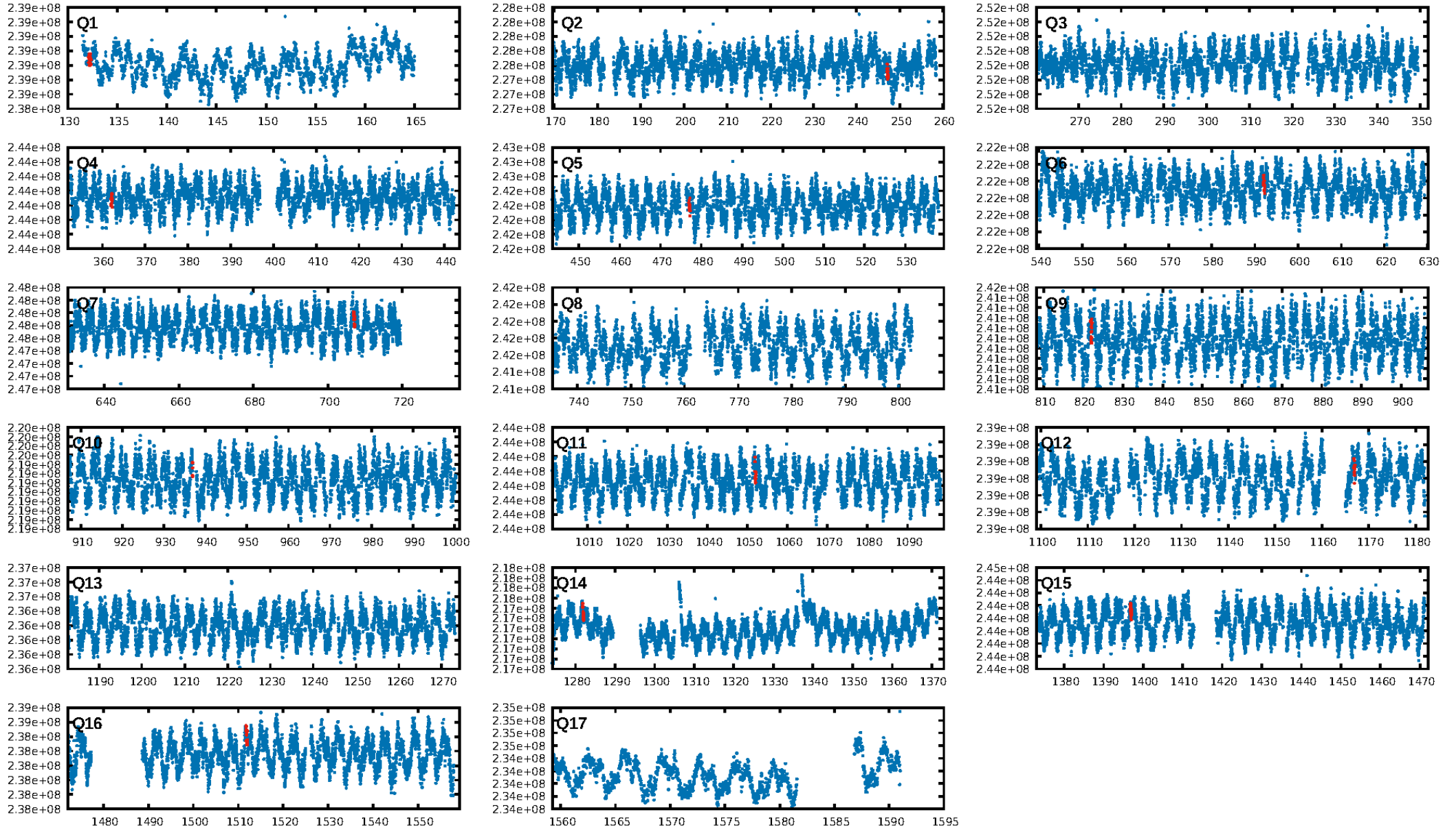
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.46 σ]
LongPeriod-sig: 100.0% [752.13 σ]
ModelChiSquare2-sig: 5.5%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: -0.2583
Centroid-sig: 35.8%
Centroid-so: 0.629 arcsec [0.99 σ]
OotOffset-rm: 0.072 arcsec [0.12 σ]
OotOffset-st: 1/2/1/1 [5]
KicOffset-rm: 0.097 arcsec [0.14 σ]
KicOffset-st: 1/2/1/1 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 0.40 [4/10]

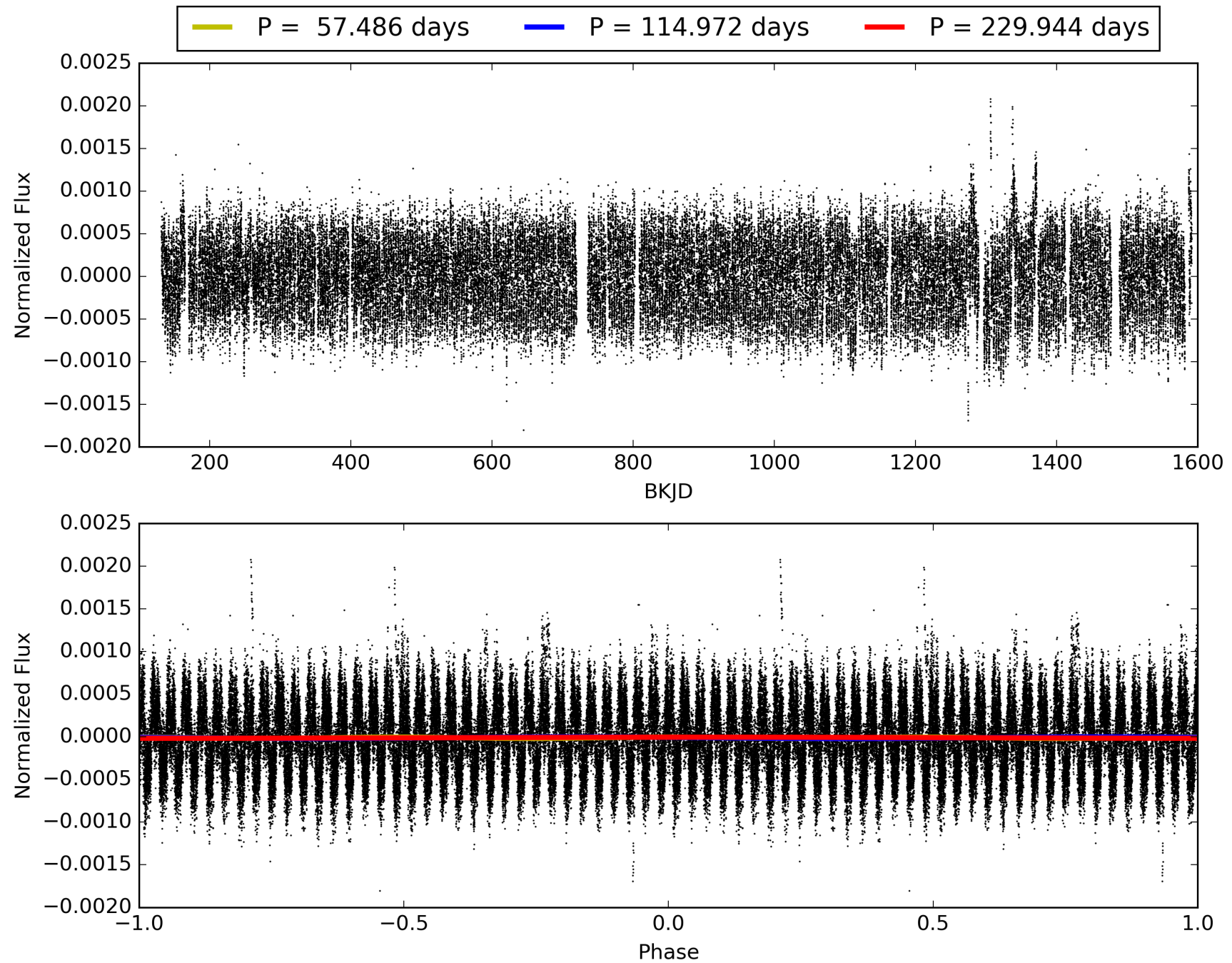
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:24:50 Z

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

TCE 002167600-09, PDC Light Curves

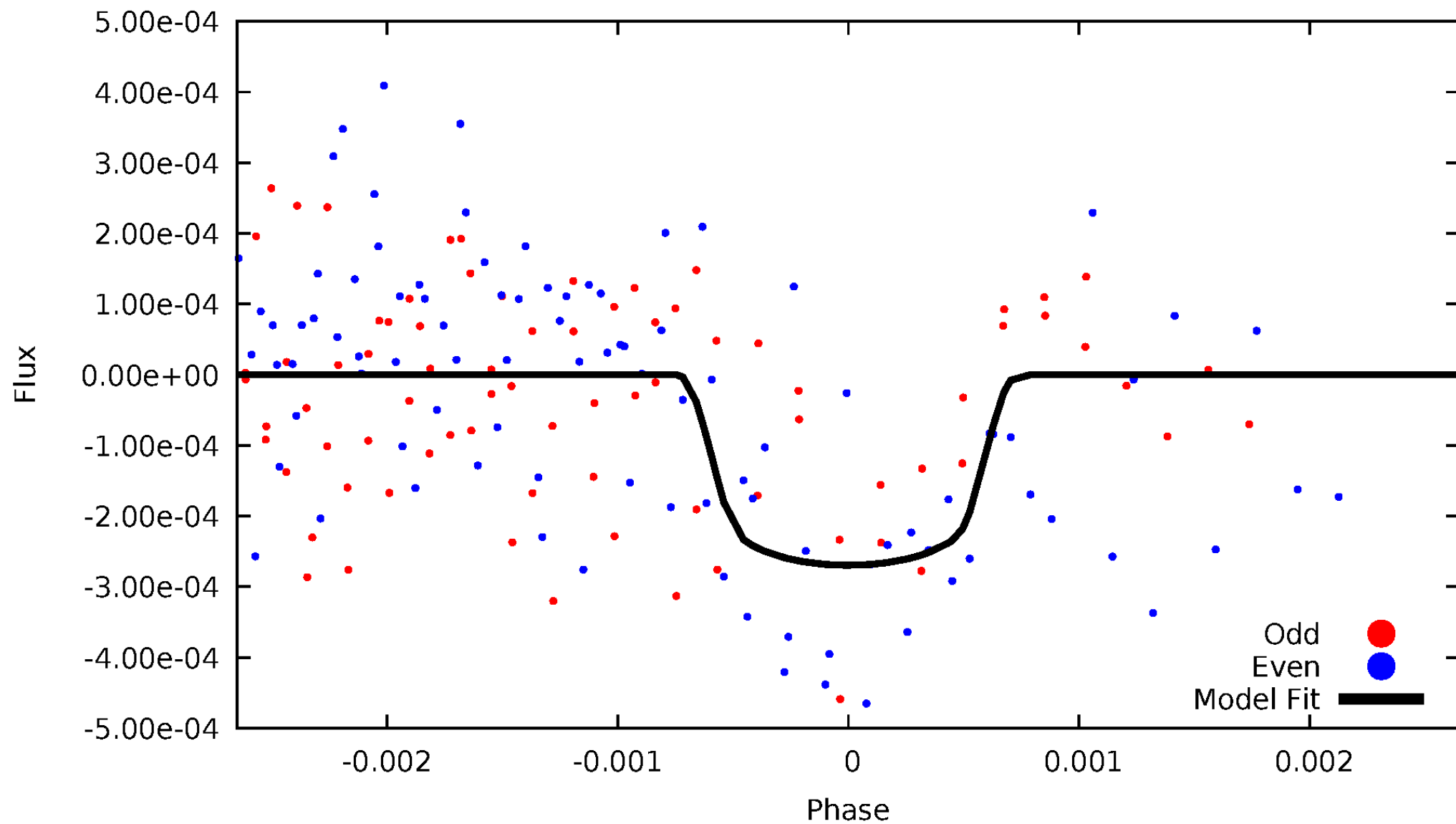


TCE 002167600-09



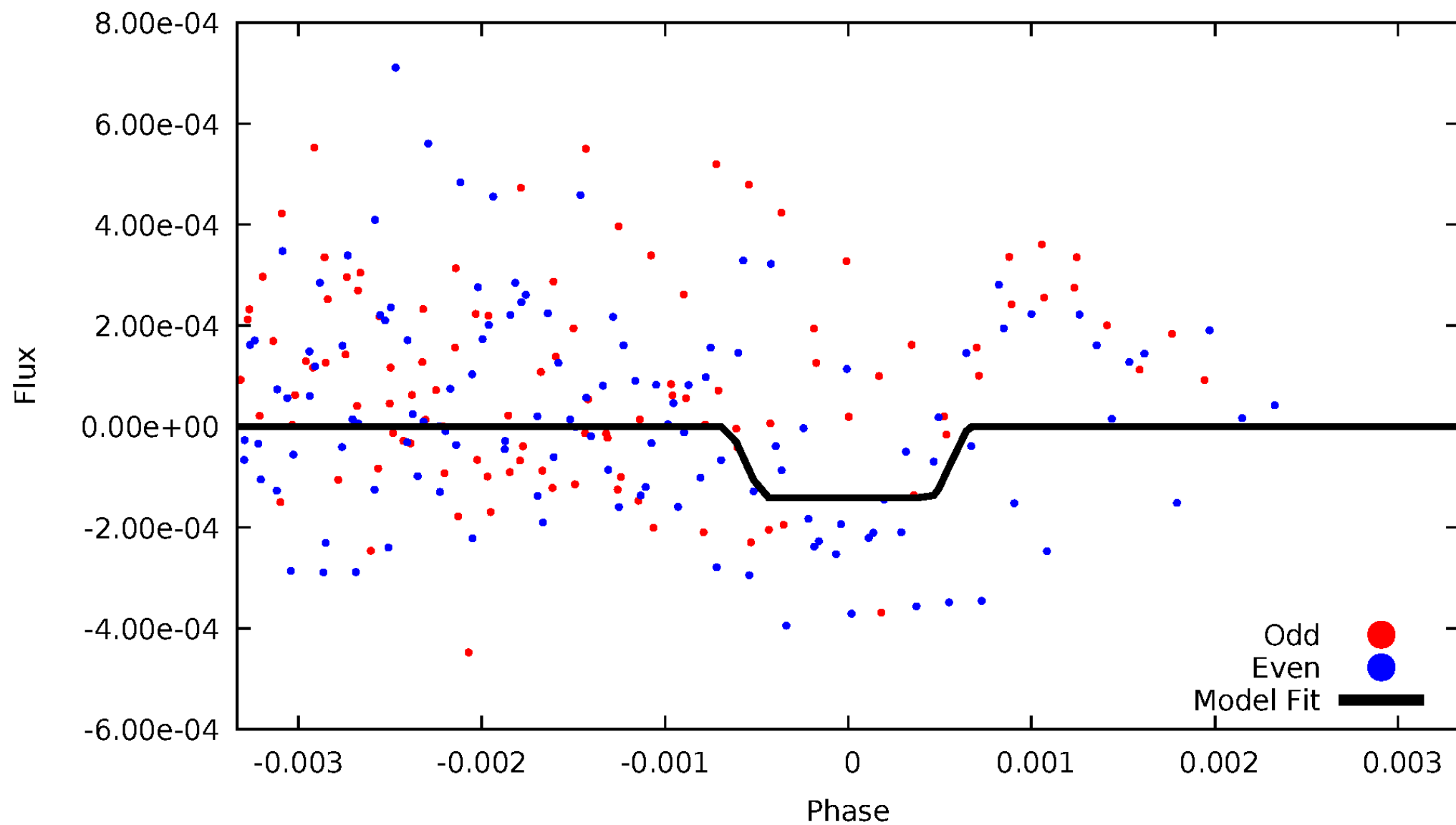
DV Odd/Even

TCE 002167600-09



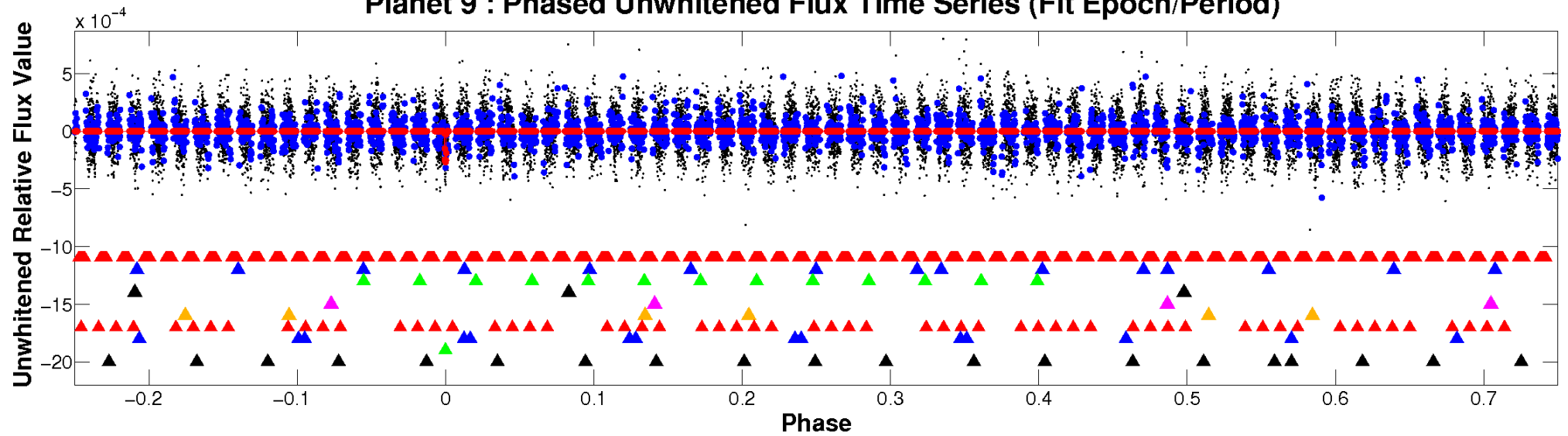
ALT Odd/Even

TCE 002167600-09

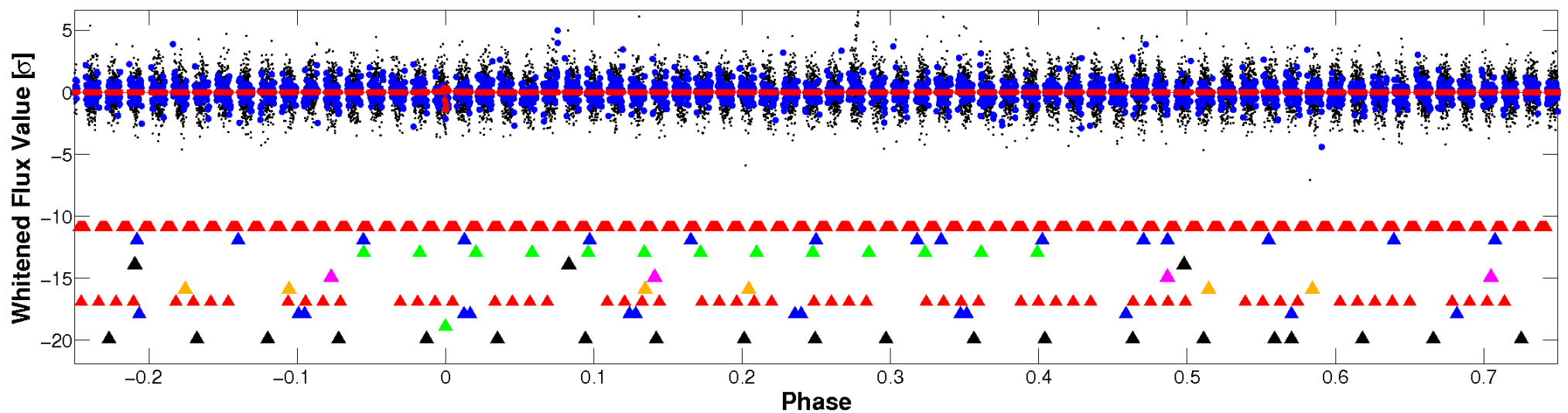


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

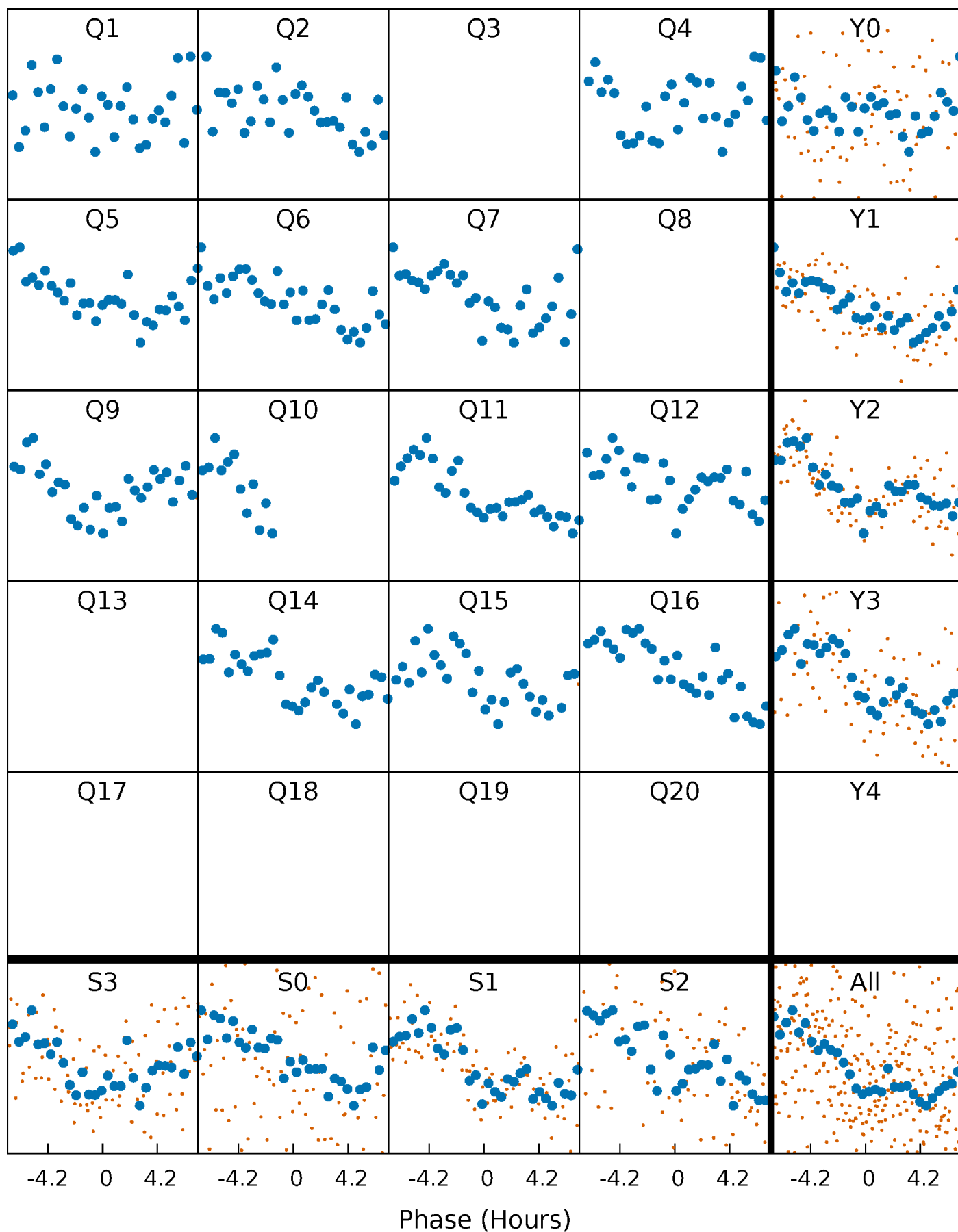


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



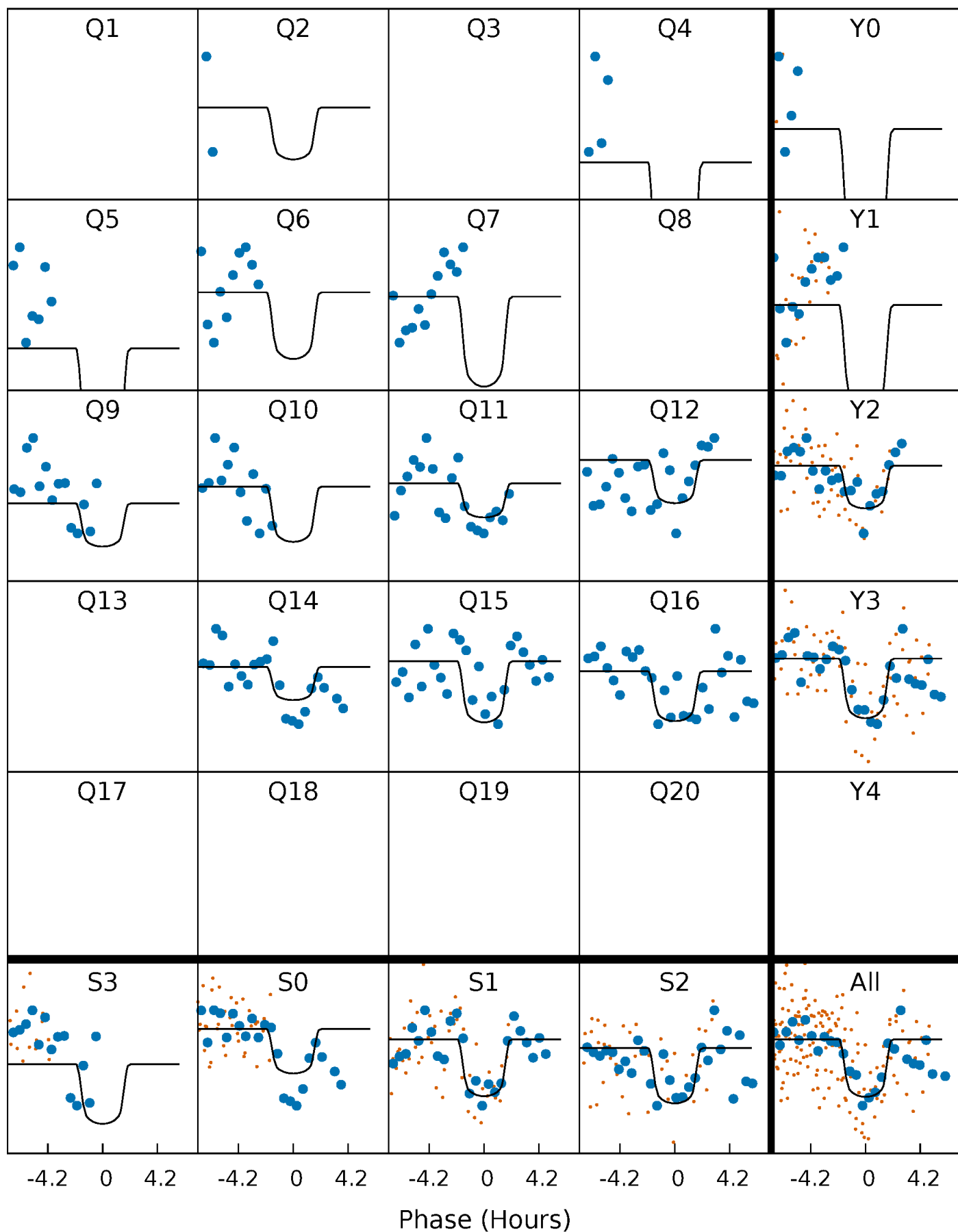
PDC Quarter-Phased Transit Curves

TCE 002167600-09 P=114.971838 Days $T_0=132.218749$ (BKJD)



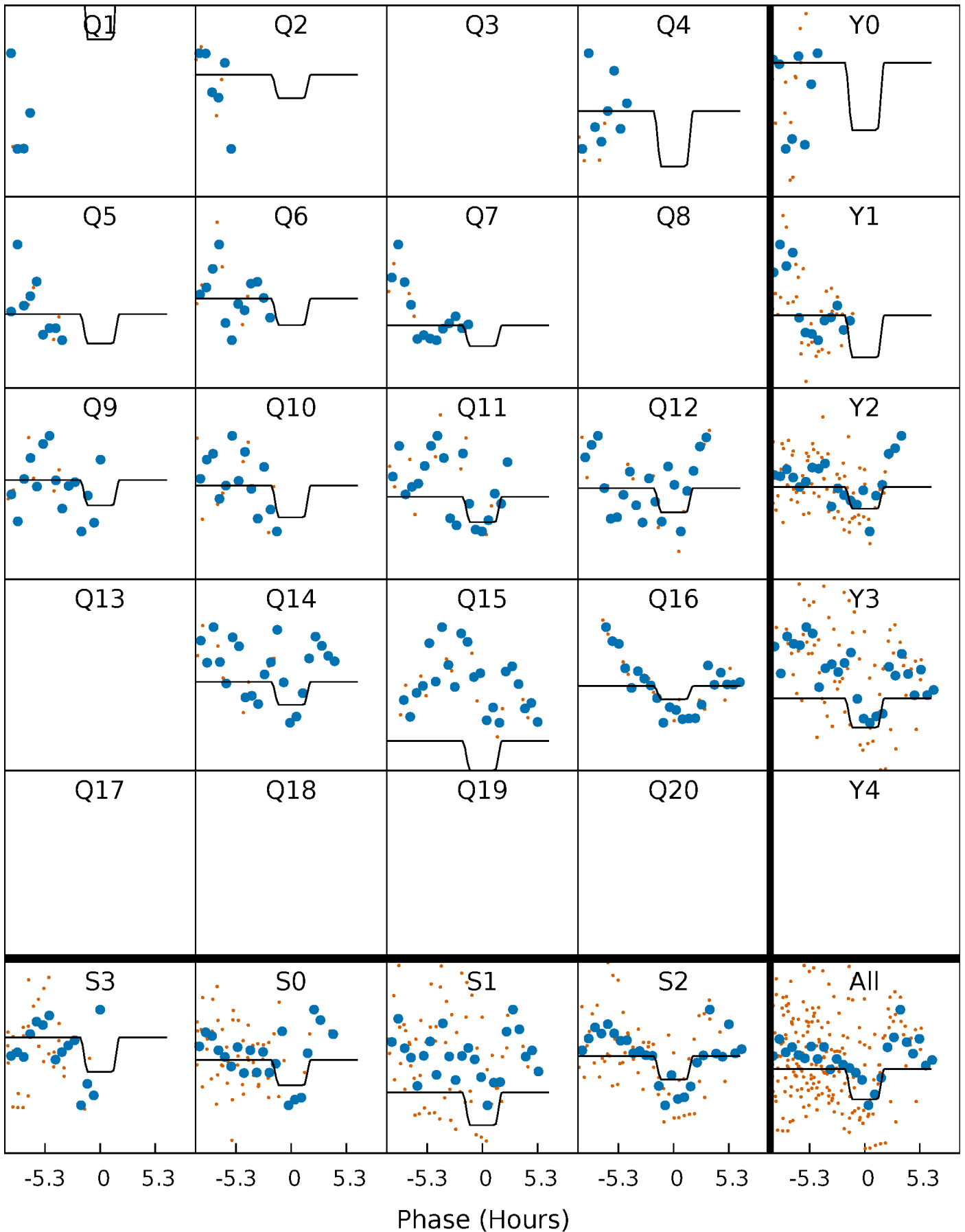
DV Quarter-Phased Transit Curves

TCE 002167600-09 P=114.971838 Days $T_0=132.218749$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

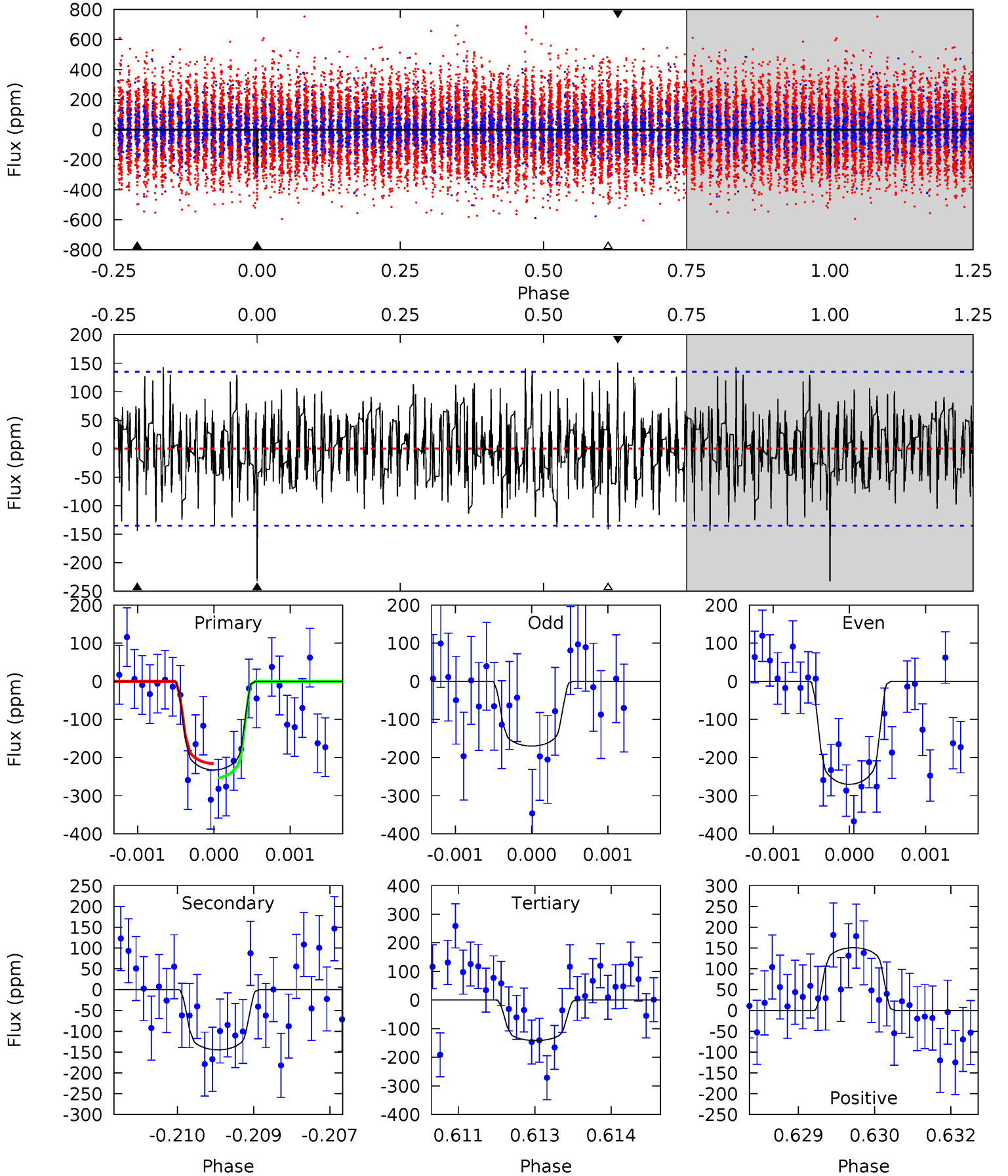
TCE 002167600-09 $P=114.972358$ Days $T_0=132.189336$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-09, P = 114.971838 Days, E = 17.246911 Days

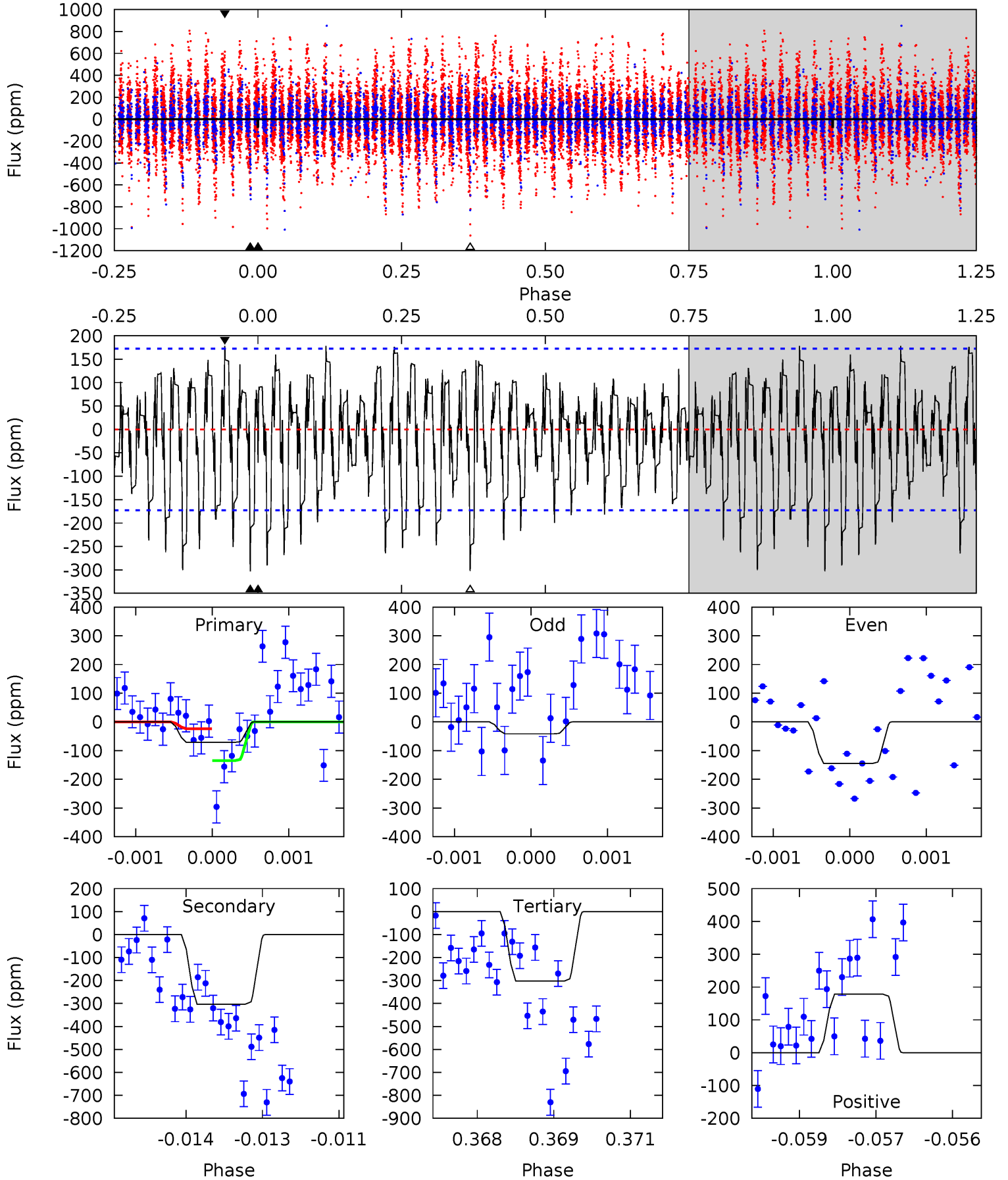
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.29	5.78	5.66	6.03	5.39	3.18	1.83	3.63	3.26	0.12	-0.25	1.97	1.06	0.39	0.76



Alt Model-Shift Uniqueness Test

002167600-09, P = 114.972358 Days, E = 17.216978 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.24	9.49	9.48	5.58	5.41	3.22	2.24	-7.25	-3.35	0.01	3.91	1.54	0.78	0.37	1.74



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-09 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-145 ± 25	$7.54^{+3.16}_{-2.82}$	1089^{+64}_{-117}	5414^{+1292}_{-662}	441^{+676}_{-225}
Alt.	-303 ± 32	$5.44^{+2.91}_{-2.53}$	1084^{+68}_{-102}	7861^{+4166}_{-1677}	1799^{+4482}_{-1025}

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

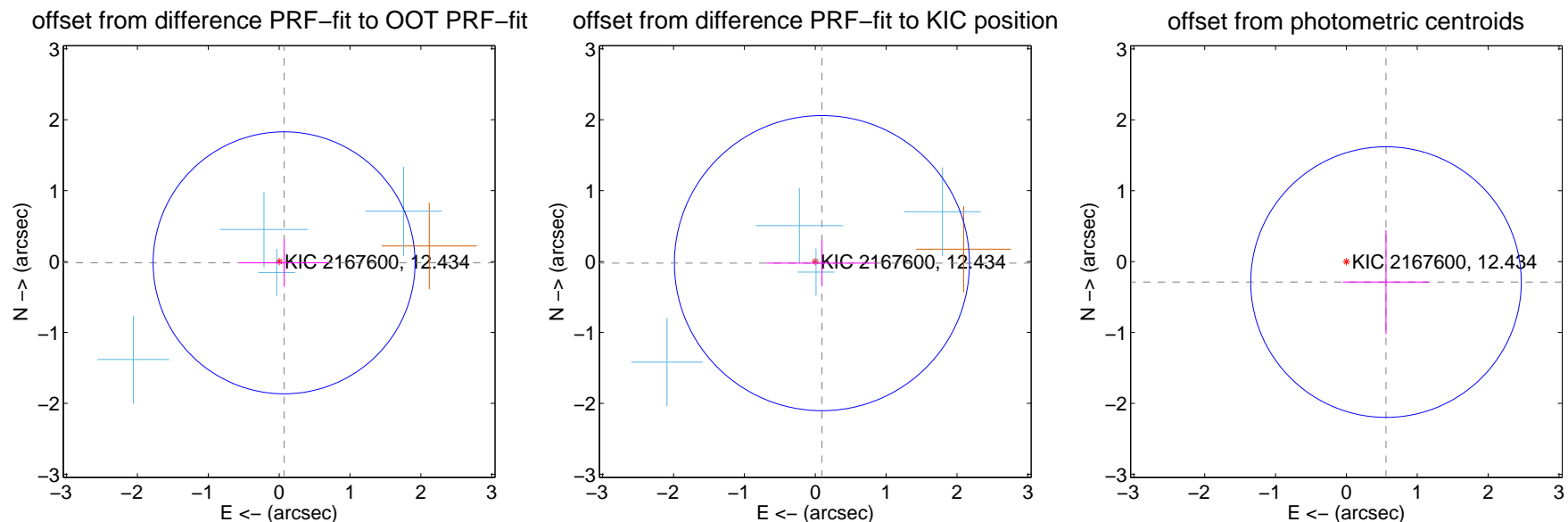
DV Centroid Data

Supplemental centroid analysis for 002167600-09. Kepler magnitude: 12.43. Transit SNR 8.02

There are 4 quarters with good PRF difference image offsets

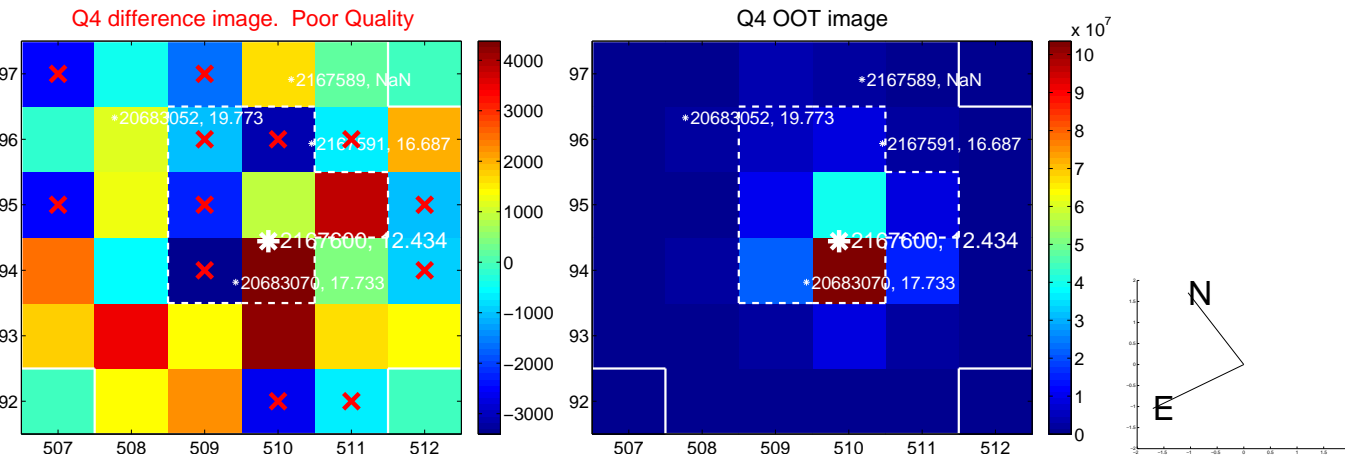
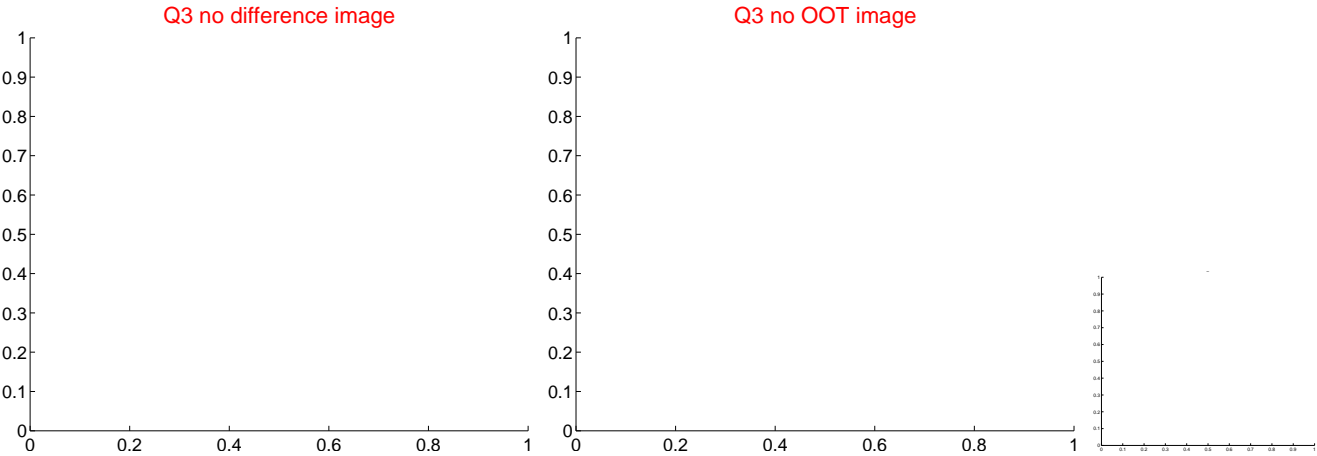
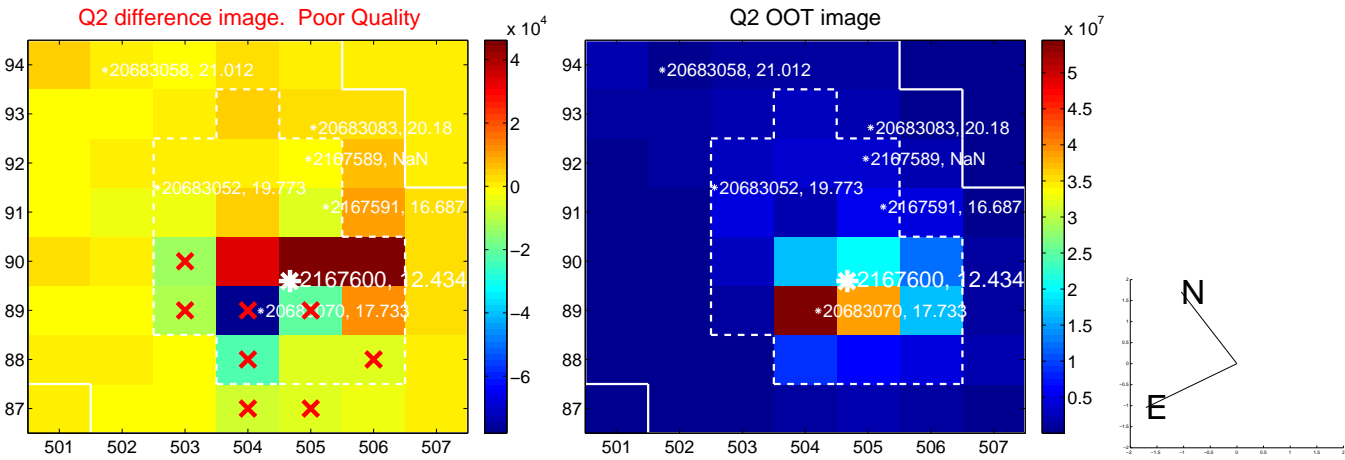
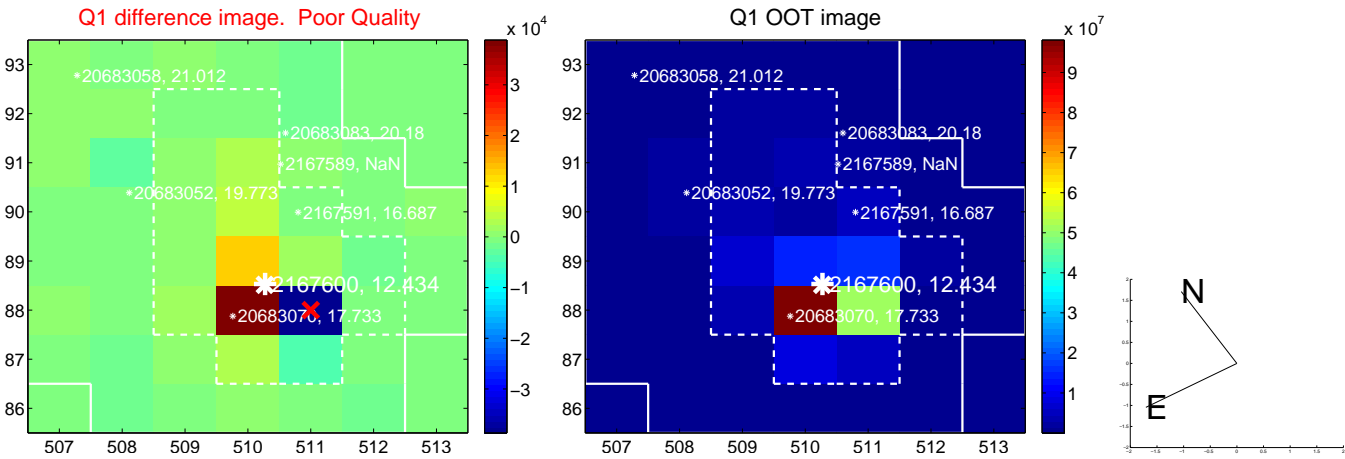
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.072 ± 0.616	0.12	-0.070 ± 0.630	-0.018 ± 0.338
PRF-fit source offset from KIC position	0.097 ± 0.694	0.14	-0.094 ± 0.779	-0.022 ± 0.324
photometric centroid source offset	0.63 ± 0.64	0.99	-0.56 ± 0.61	-0.29 ± 0.73

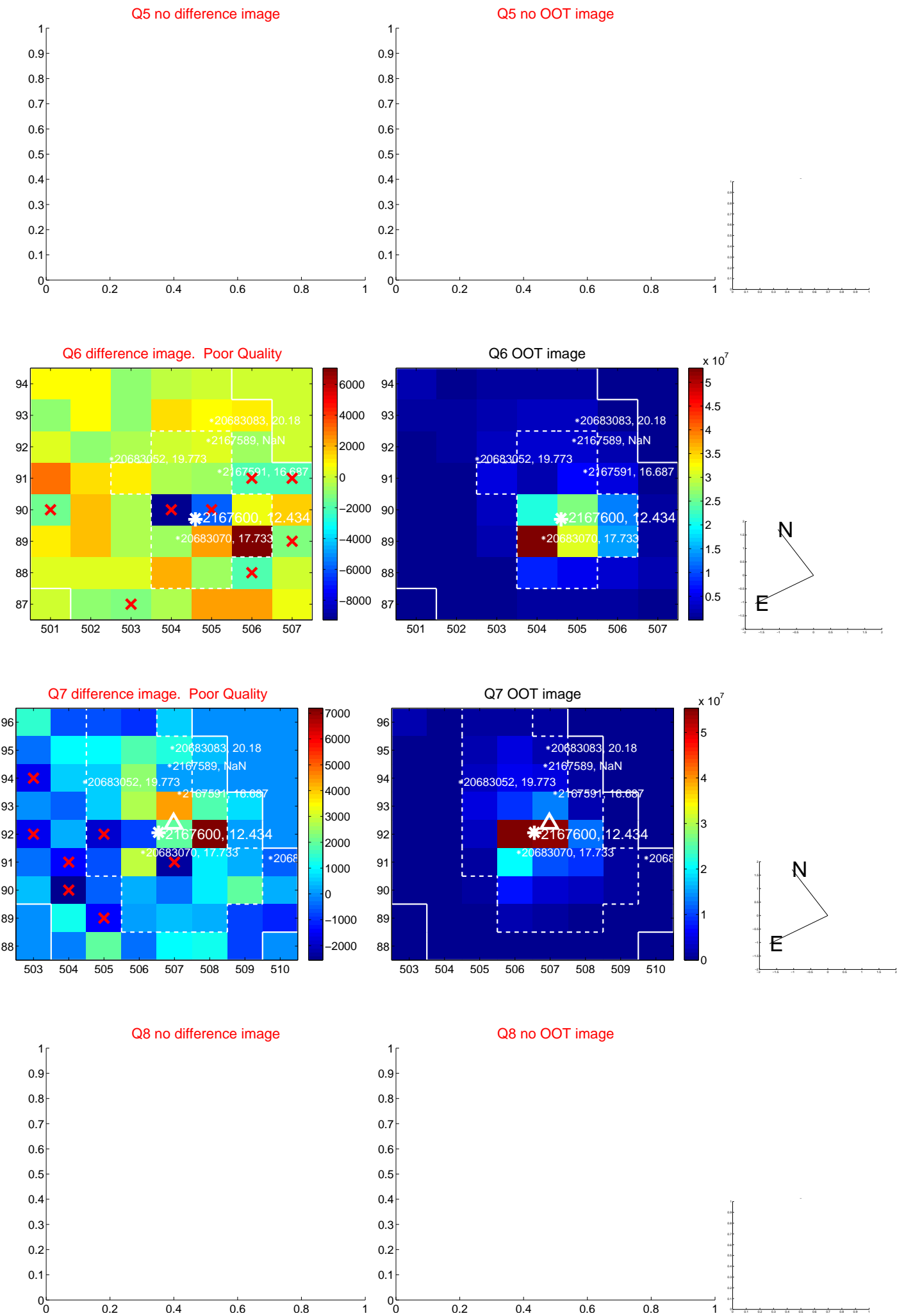


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

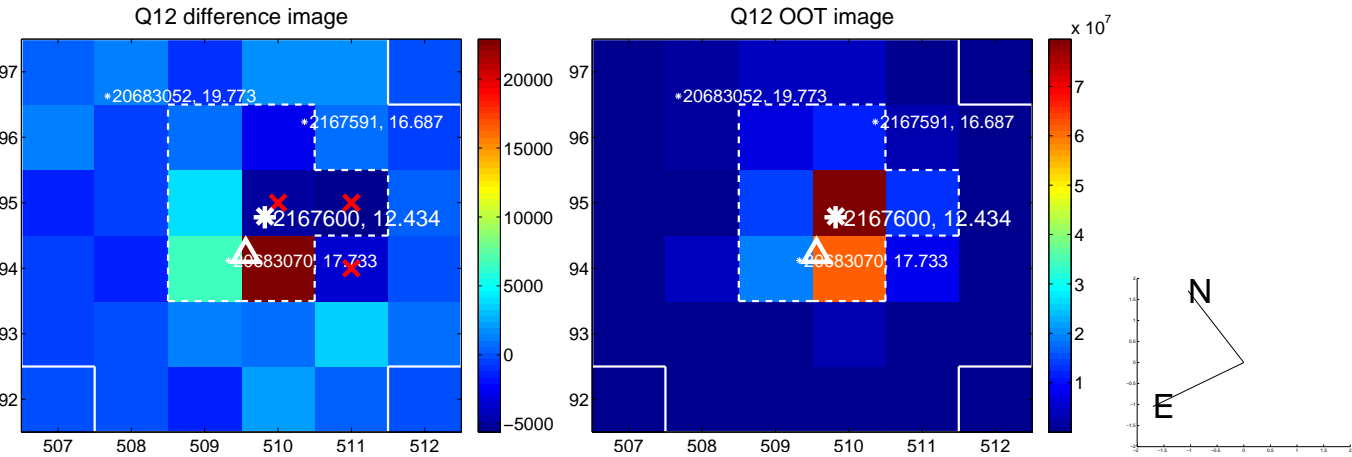
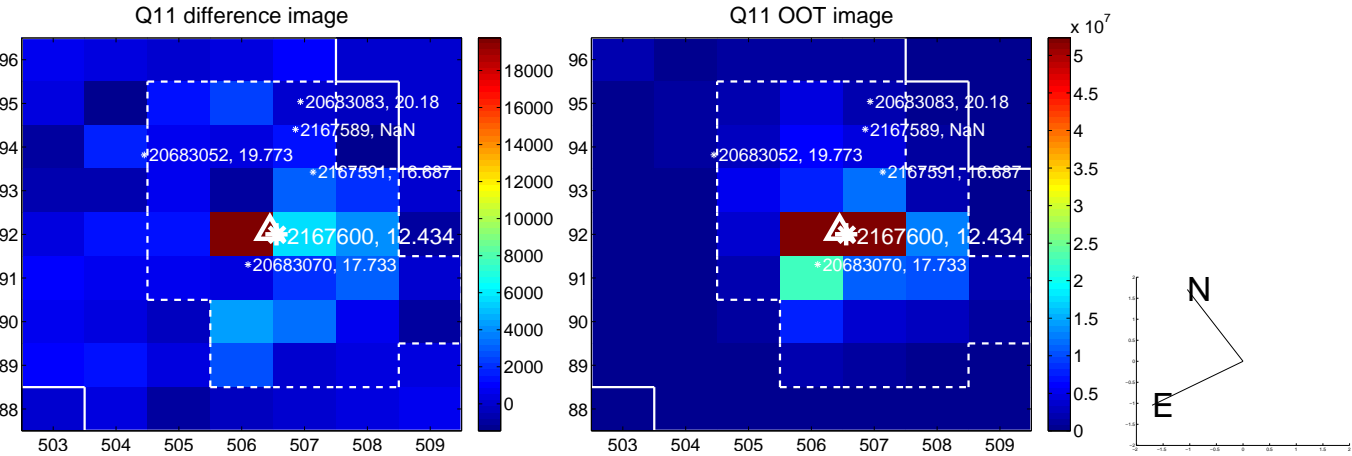
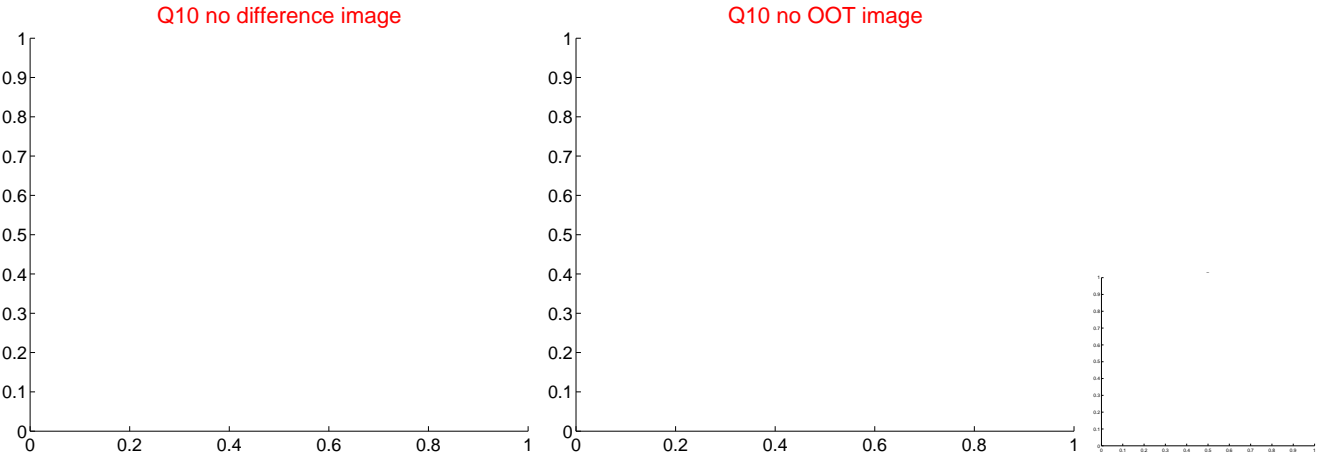
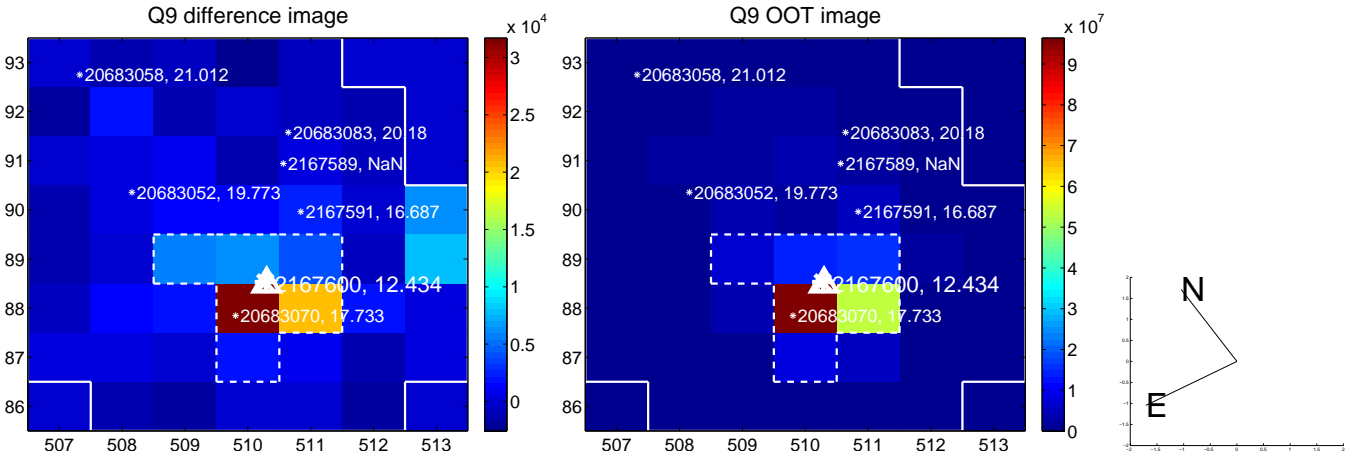
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



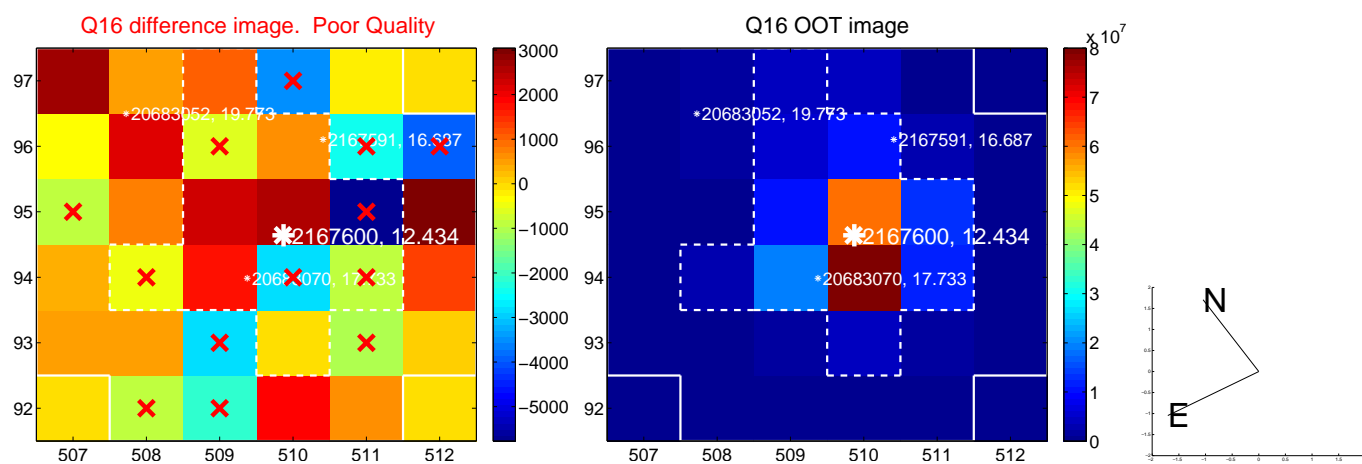
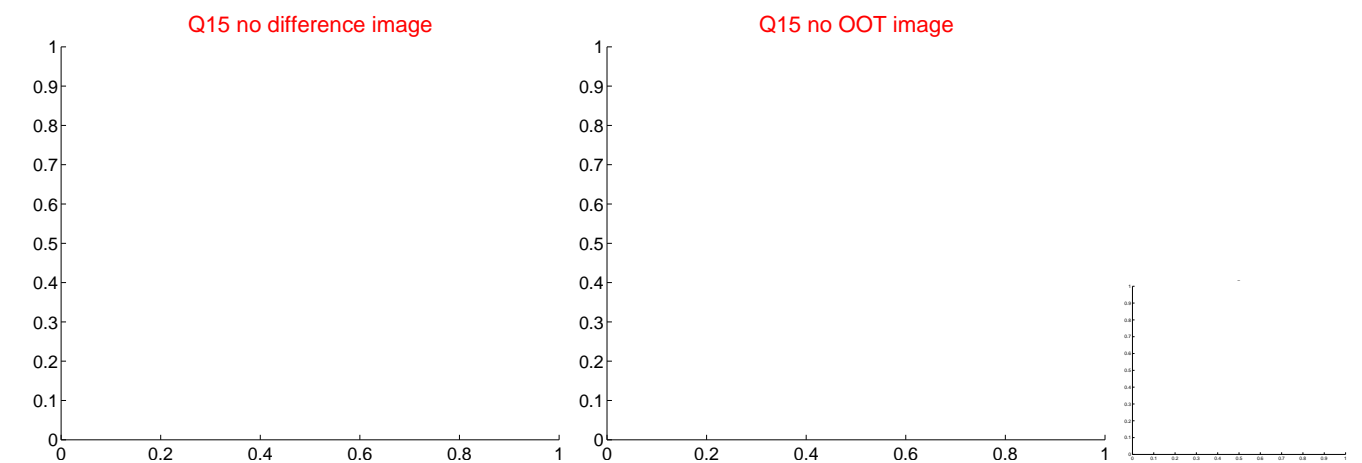
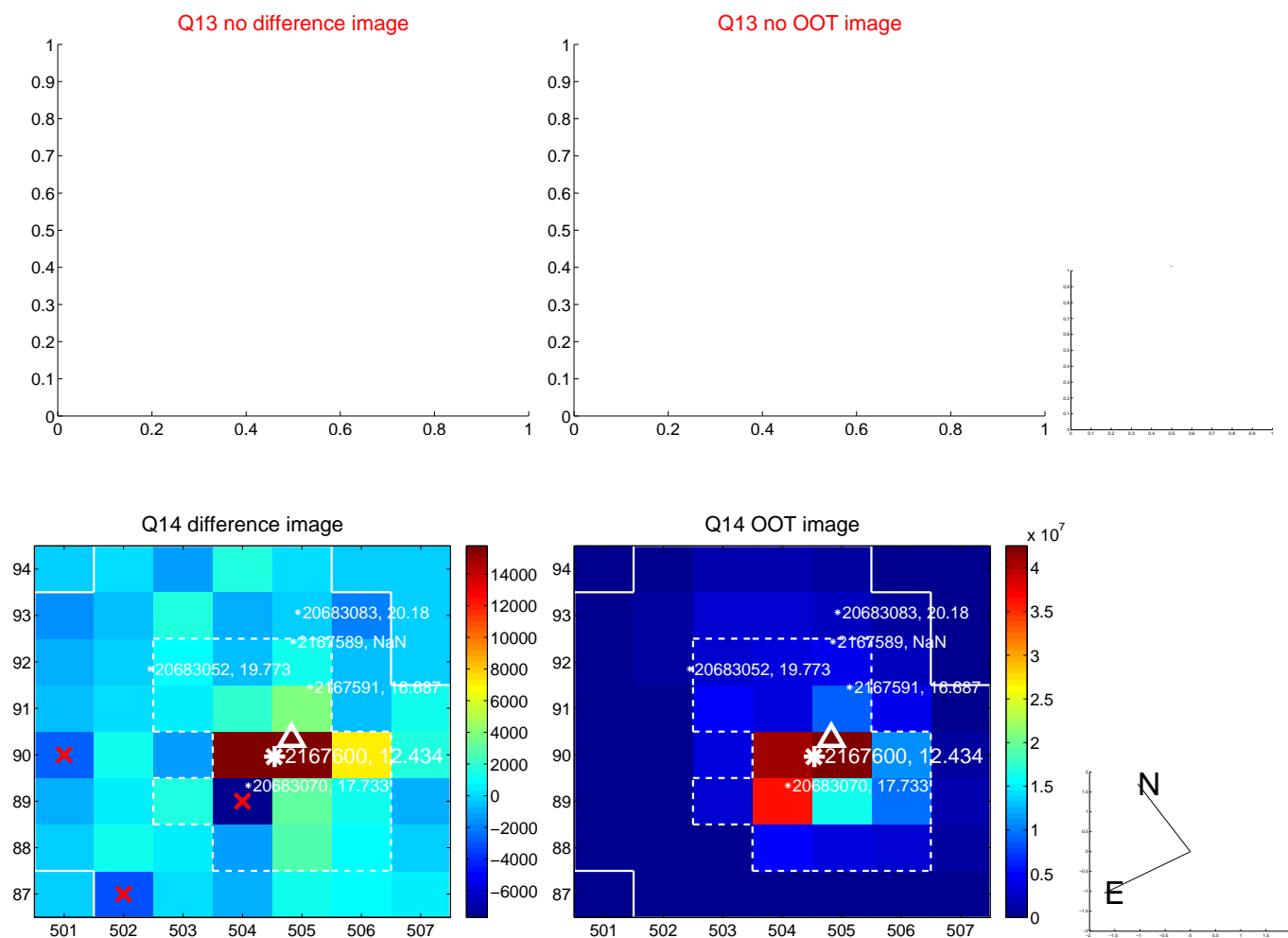
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



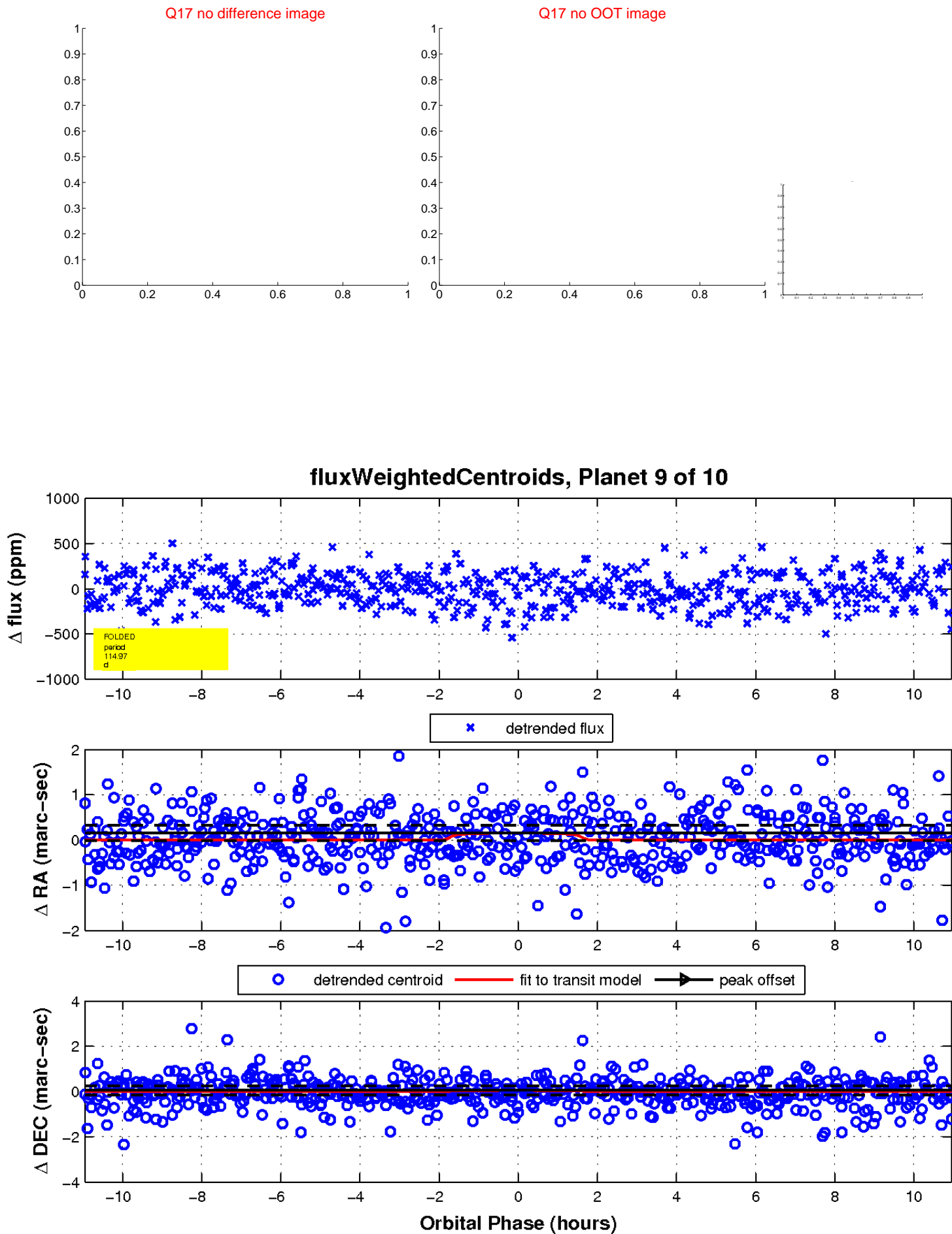
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

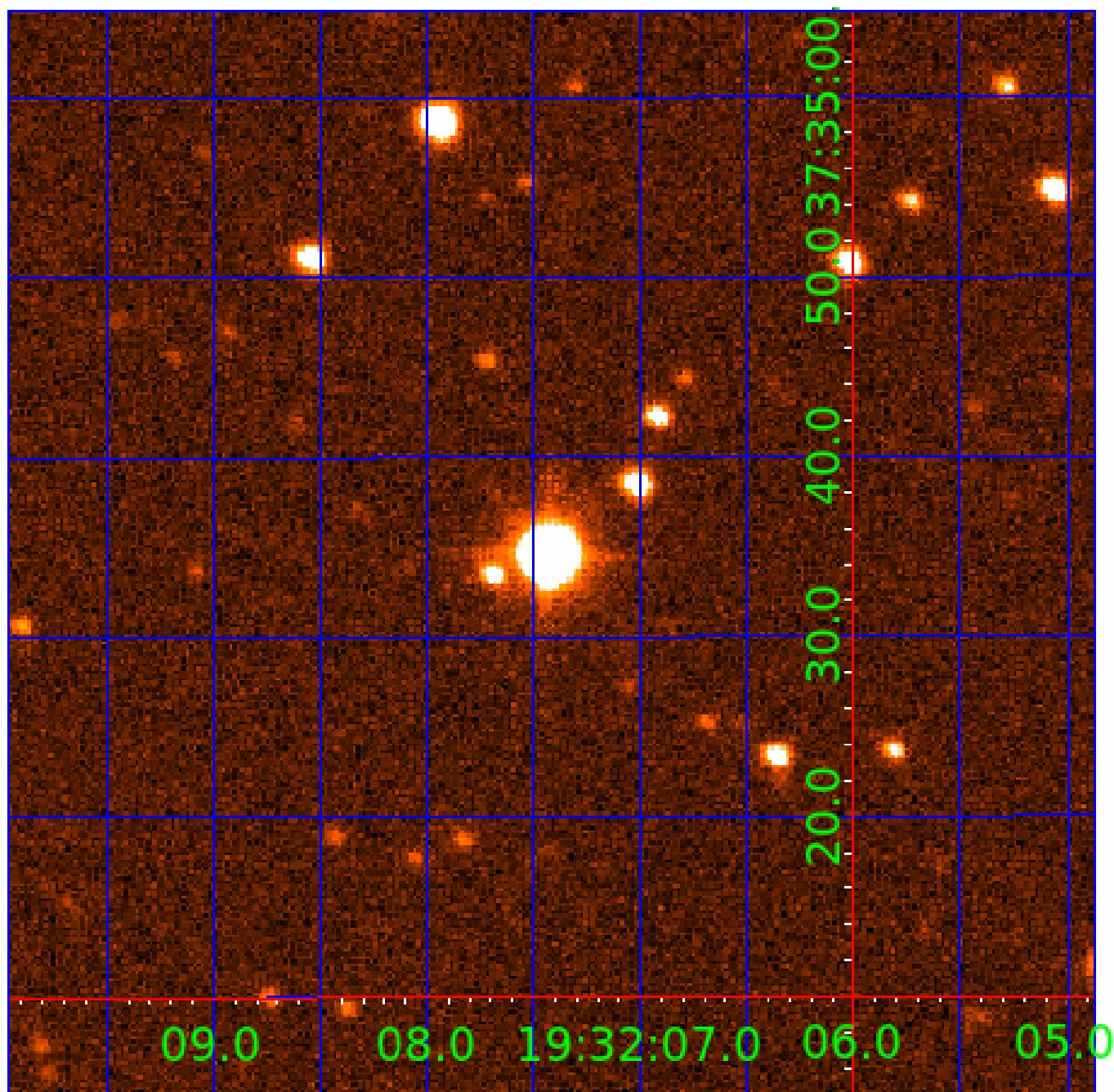


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002167600

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})
002167600-01	OBS	No	1.691463	132.467761	34.0	8.739	10.7	9.5	4.42	6466	3.50	25964.15
002167600-02	OBS	No	97.427044	186.328120	321.9	4.230	9.1	9.1	4.42	6466	14.53	116.72
002167600-03	OBS	No	110.619981	178.095141	308.1	4.734	8.8	9.3	4.42	6466	9.02	98.54
002167600-04	OBS	No	541.219579	141.777664	358.6	4.388	8.3	8.3	4.42	6466	9.34	11.86
002167600-05	OBS	No	434.813625	263.403243	274.7	8.807	8.0	7.7	4.42	6466	8.47	15.88
002167600-06	OBS	No	265.586864	199.419767	301.8	3.120	8.0	8.5	4.42	6466	8.96	30.65
002167600-07	OBS	No	24.733399	152.092825	169.5	3.373	8.4	8.2	4.42	6466	6.69	726.13
002167600-08	OBS	No	102.143958	172.620821	405.5	2.041	7.9	9.2	4.42	6466	10.41	109.59
002167600-09	OBS	No	114.971838	132.218749	269.5	3.655	7.8	8.0	4.42	6466	8.48	93.60
002167600-10	OBS	No	72.544303	197.803387	215.4	2.743	7.3	7.6	4.42	6466	6.93	172.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002167600-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
002167600-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002167600-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002167600-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002167600-08	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
002167600-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002167600-10	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

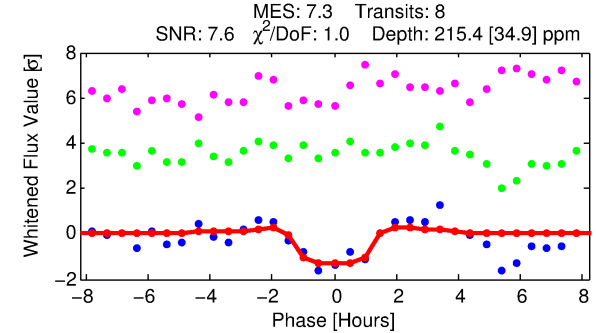
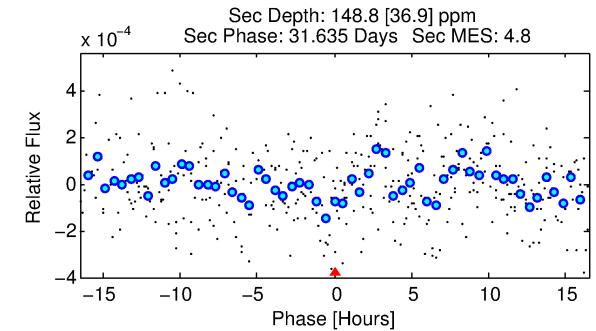
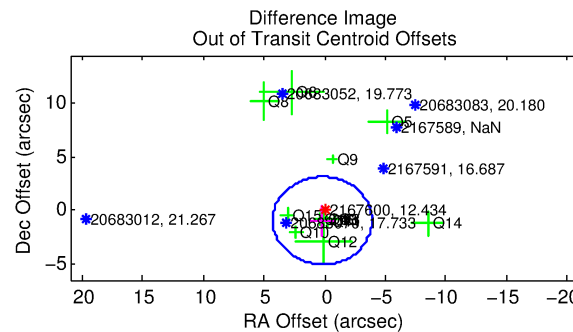
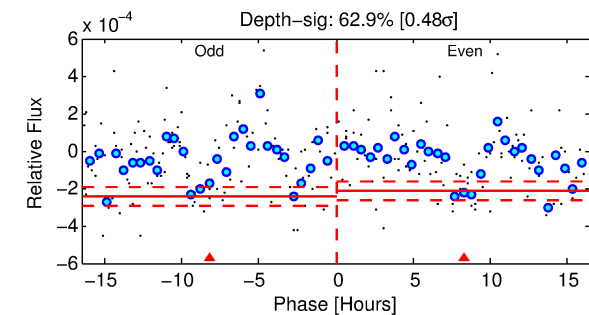
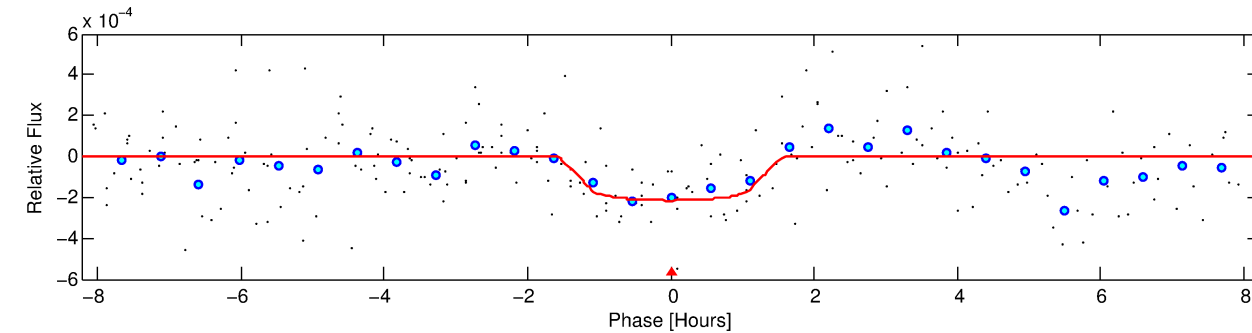
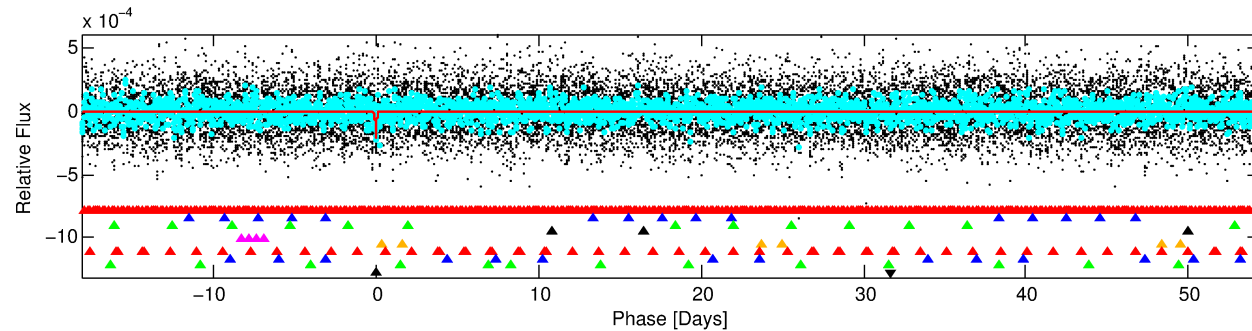
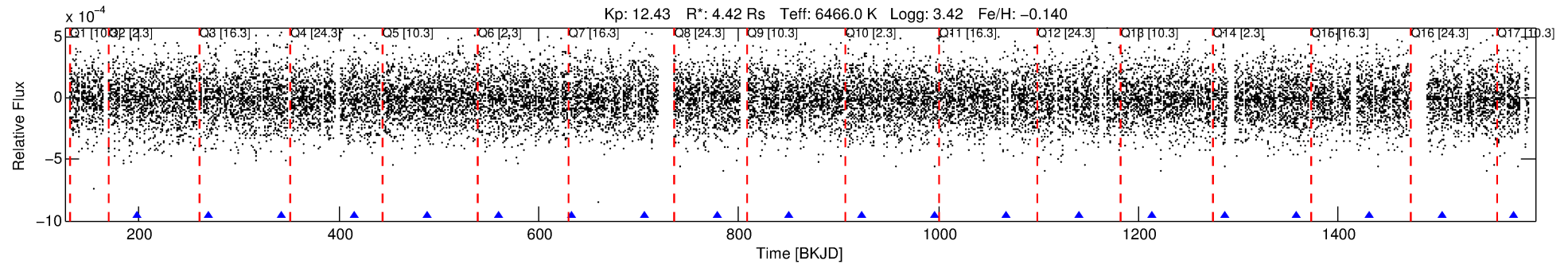
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002167600-10

No Significant Match Found

DV One-Page Summary

KIC: 2167600 Candidate: 10 of 10 Period: 72.544 d



DV Fit Results:

Period = 72.54430 [0.00074] d
Epoch = 197.8034 [0.0093] BKJD
Rp/R* = 0.0144 [0.0202]
a/R* = 149.40 [1158.66]
b = 0.69 [5.83]
Seff = 172.95 [112.26]
Teq = 925 [150] K
Rp = 6.93 [10.15] Re
a = 0.4201 [0.1679] AU
Ag = 300.67 [869.05] [0.34 σ]
Teffp = 5953 [4198] K [1.20 σ]

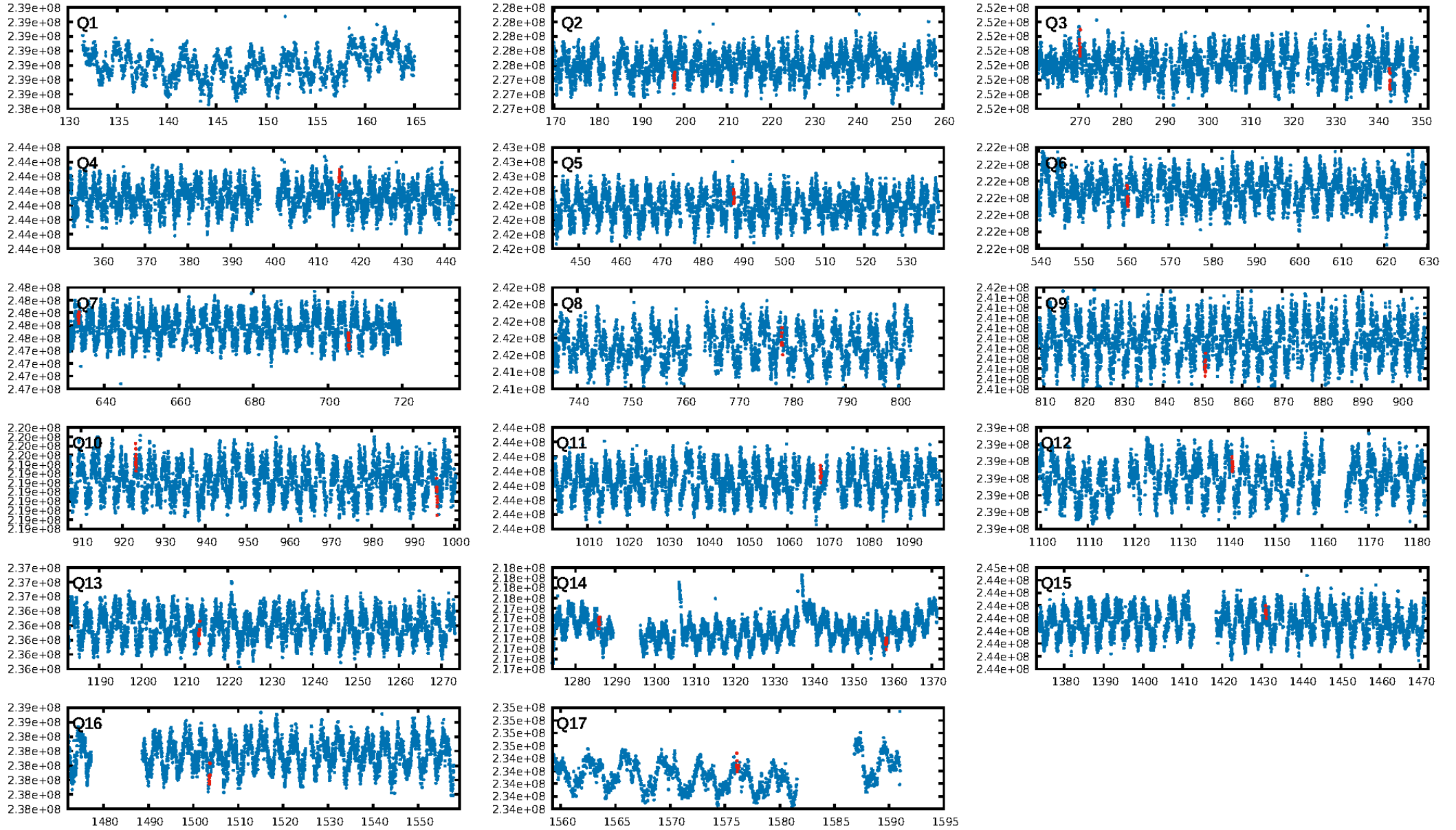
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [263.92 σ]
LongPeriod-sig: 100.0% [118.47 σ]
ModelChiSquare2-sig: 80.6%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 1.835
Centroid-sig: 19.8%
Centroid-so: 0.657 arcsec [0.75 σ]
OotOffset-rm: 0.970 arcsec [0.71 σ]
KicOffset-rm: 0.964 arcsec [0.73 σ]
OotOffset-st: 3/3/4/3 [13]
KicOffset-st: 3/3/4/3 [13]
DiffImageQuality-fgm: 0.23 [3/13]
DiffImageOverlap-fno: 0.50 [8/16]

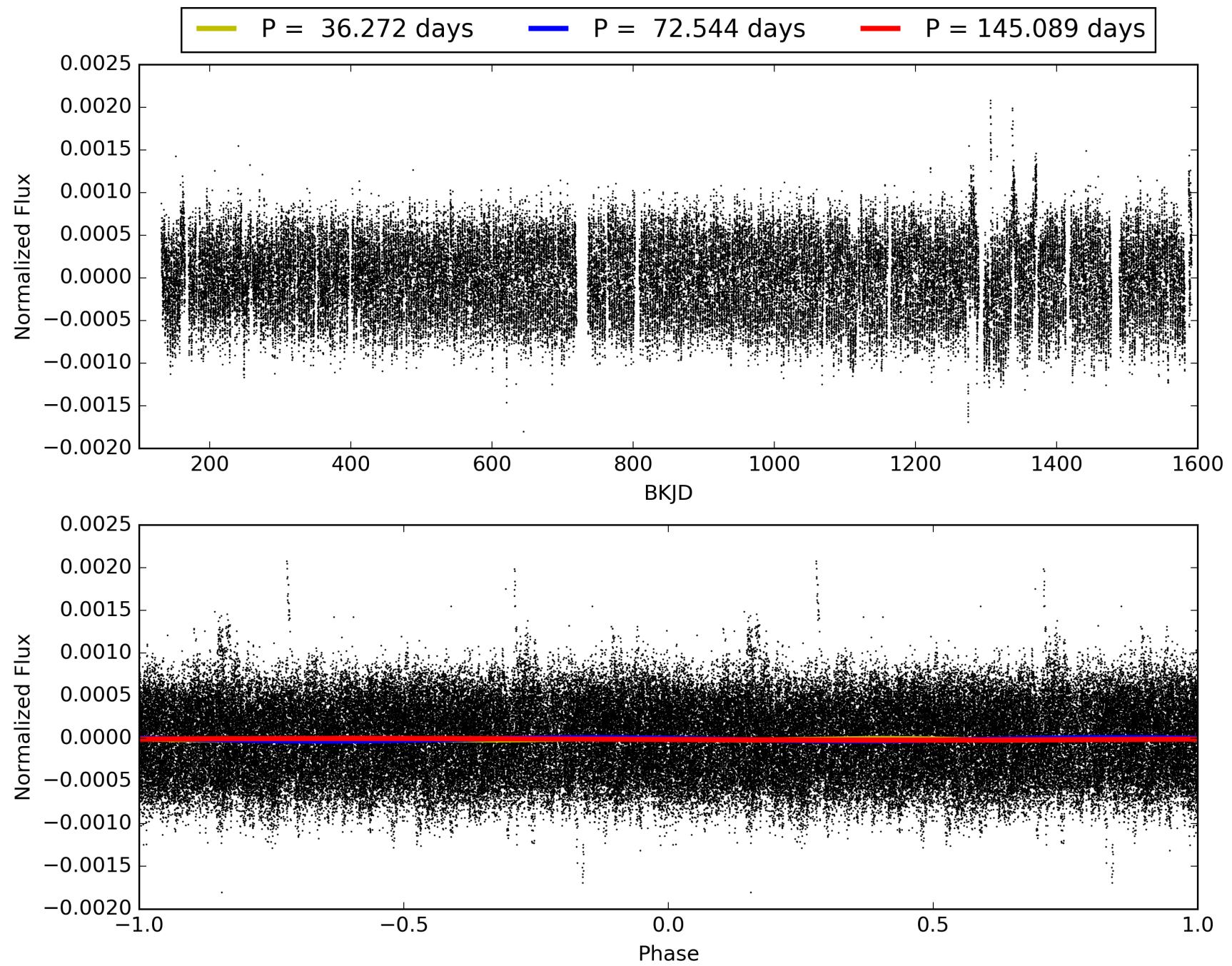
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:24:55 Z

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

TCE 002167600-10, PDC Light Curves

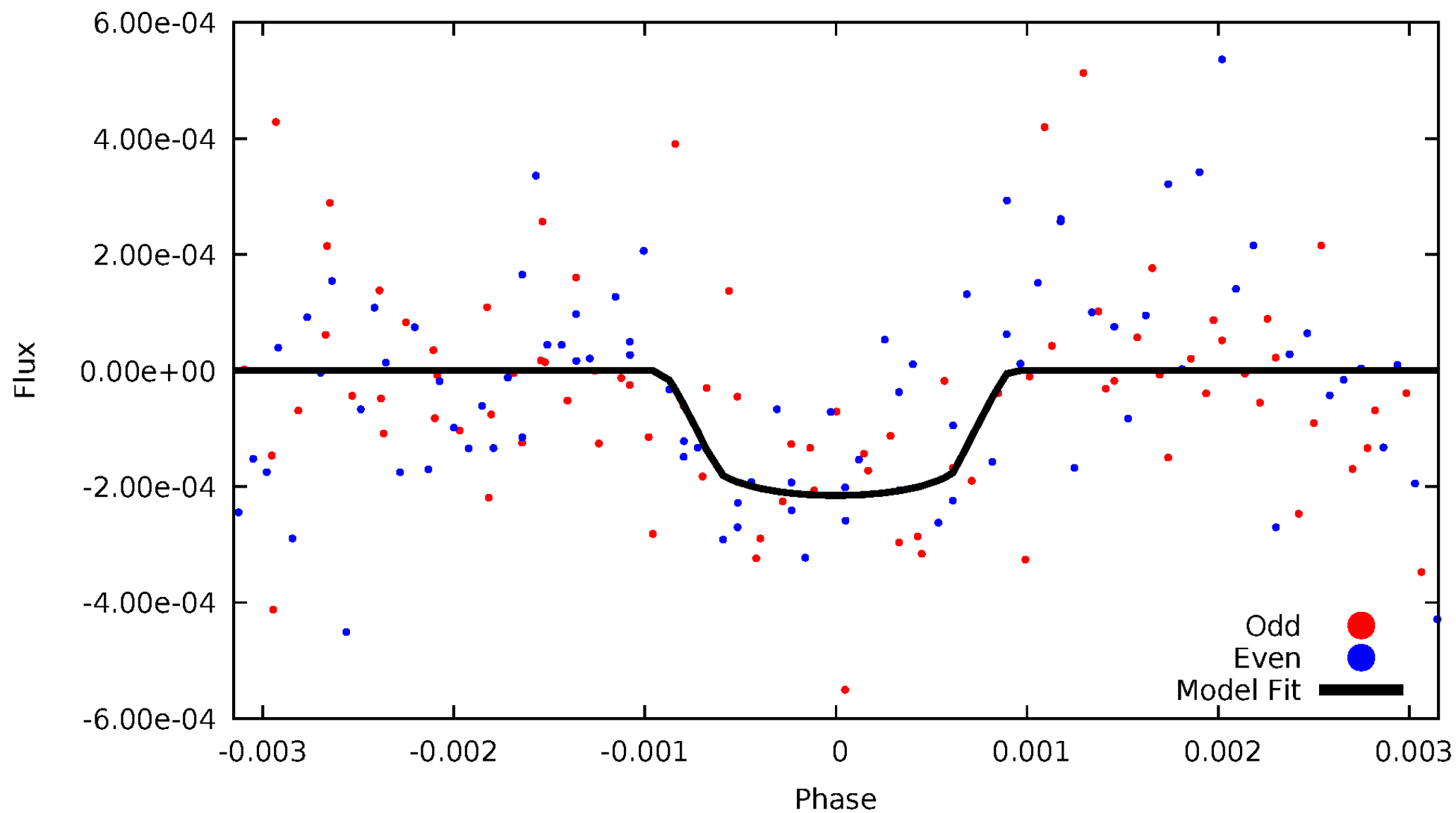


TCE 002167600-10



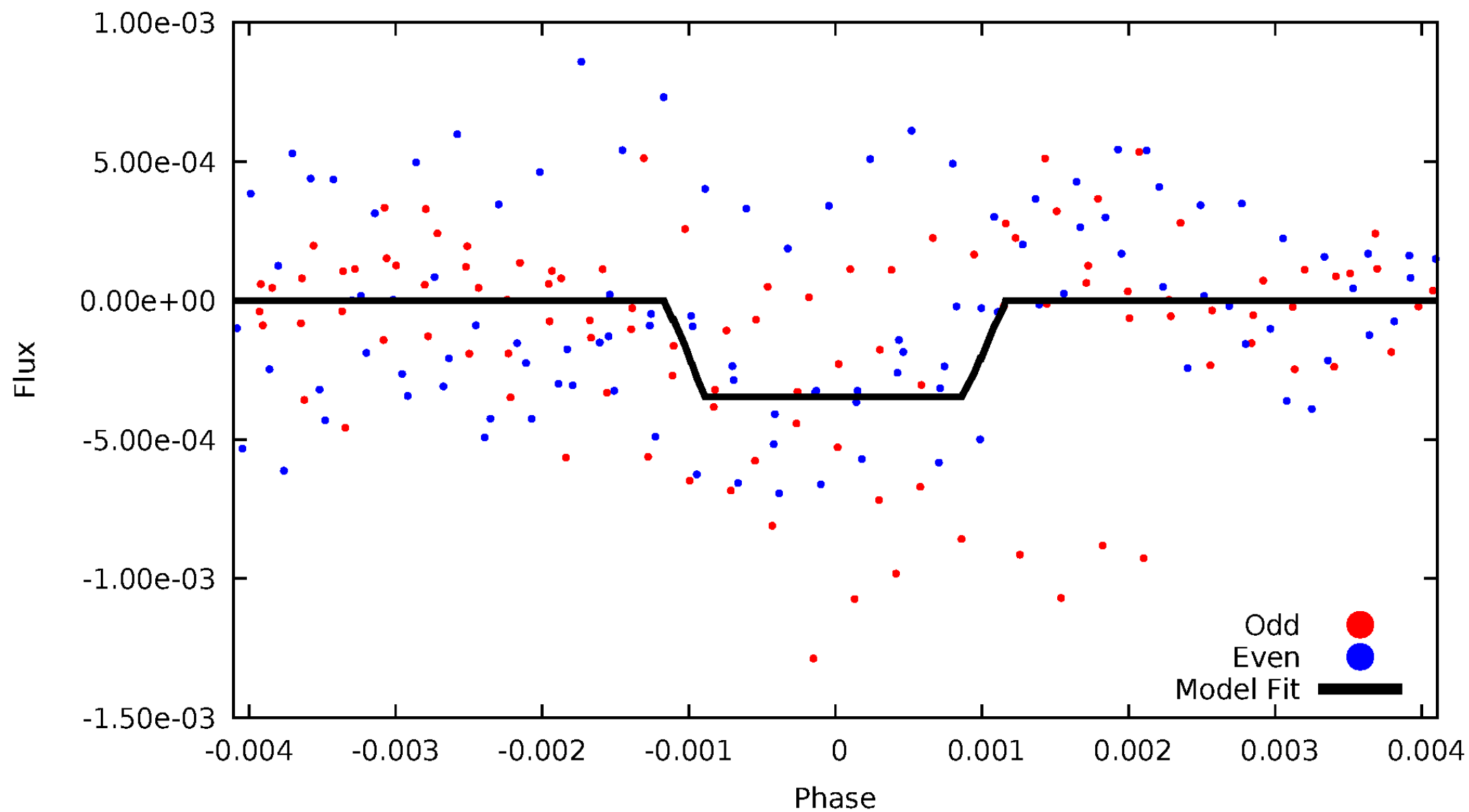
DV Odd/Even

TCE 002167600-10



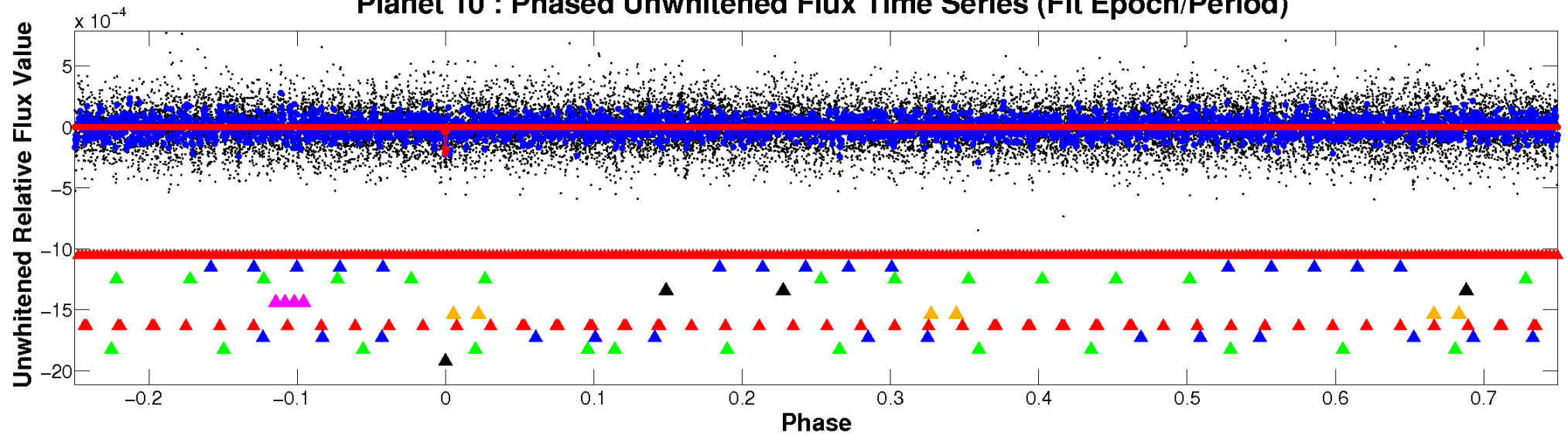
ALT Odd/Even

TCE 002167600-10

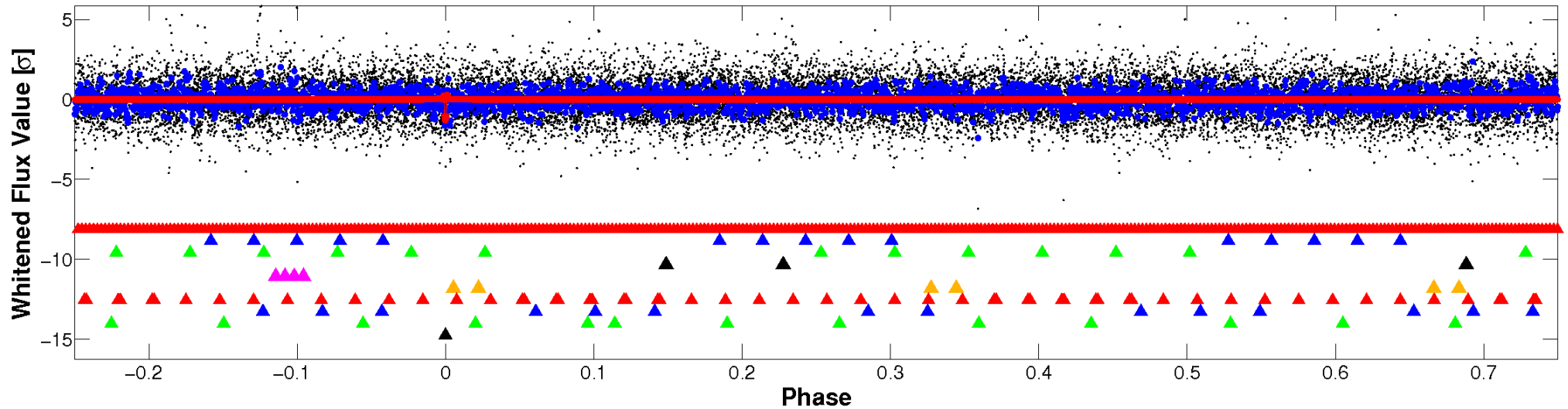


Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

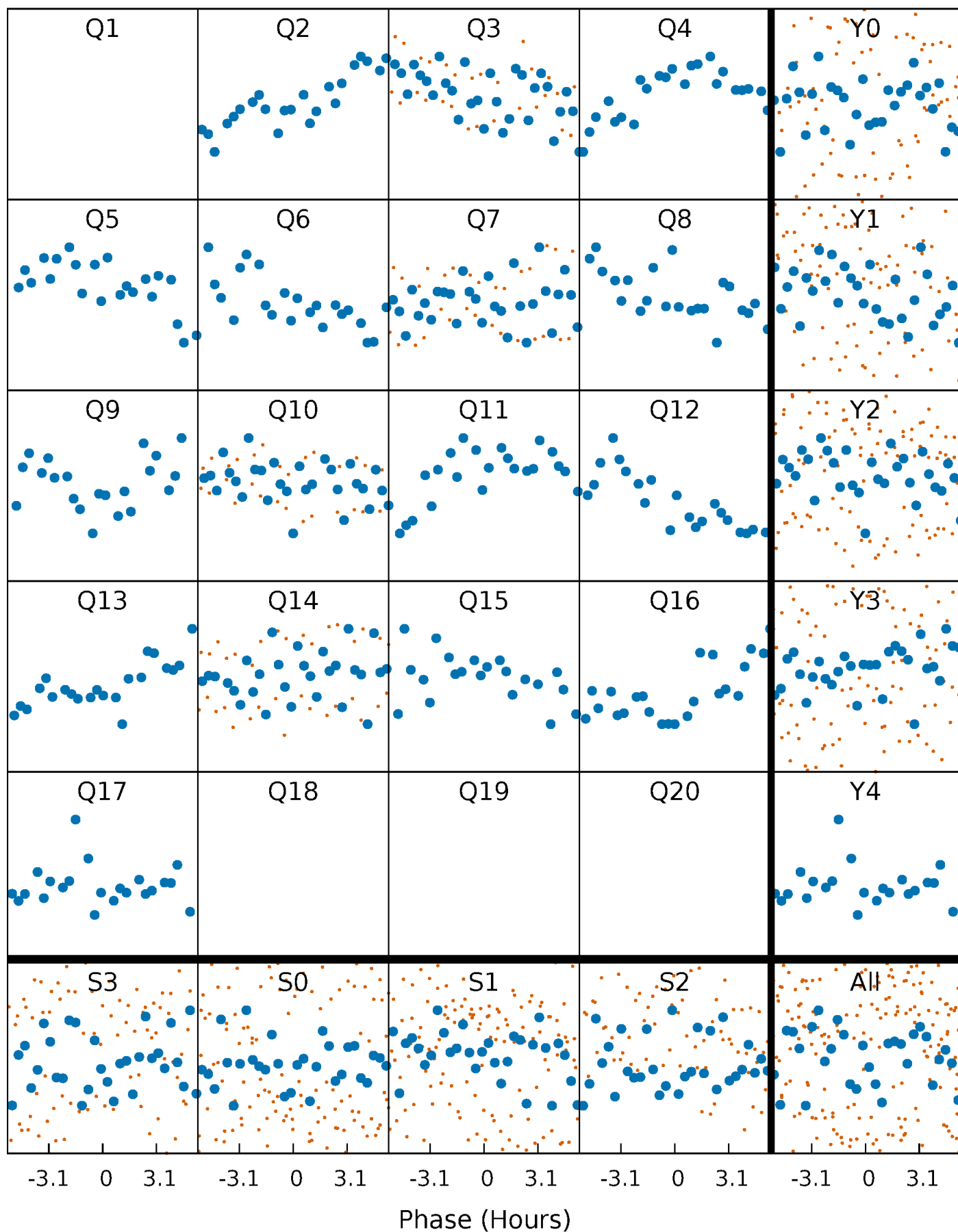


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



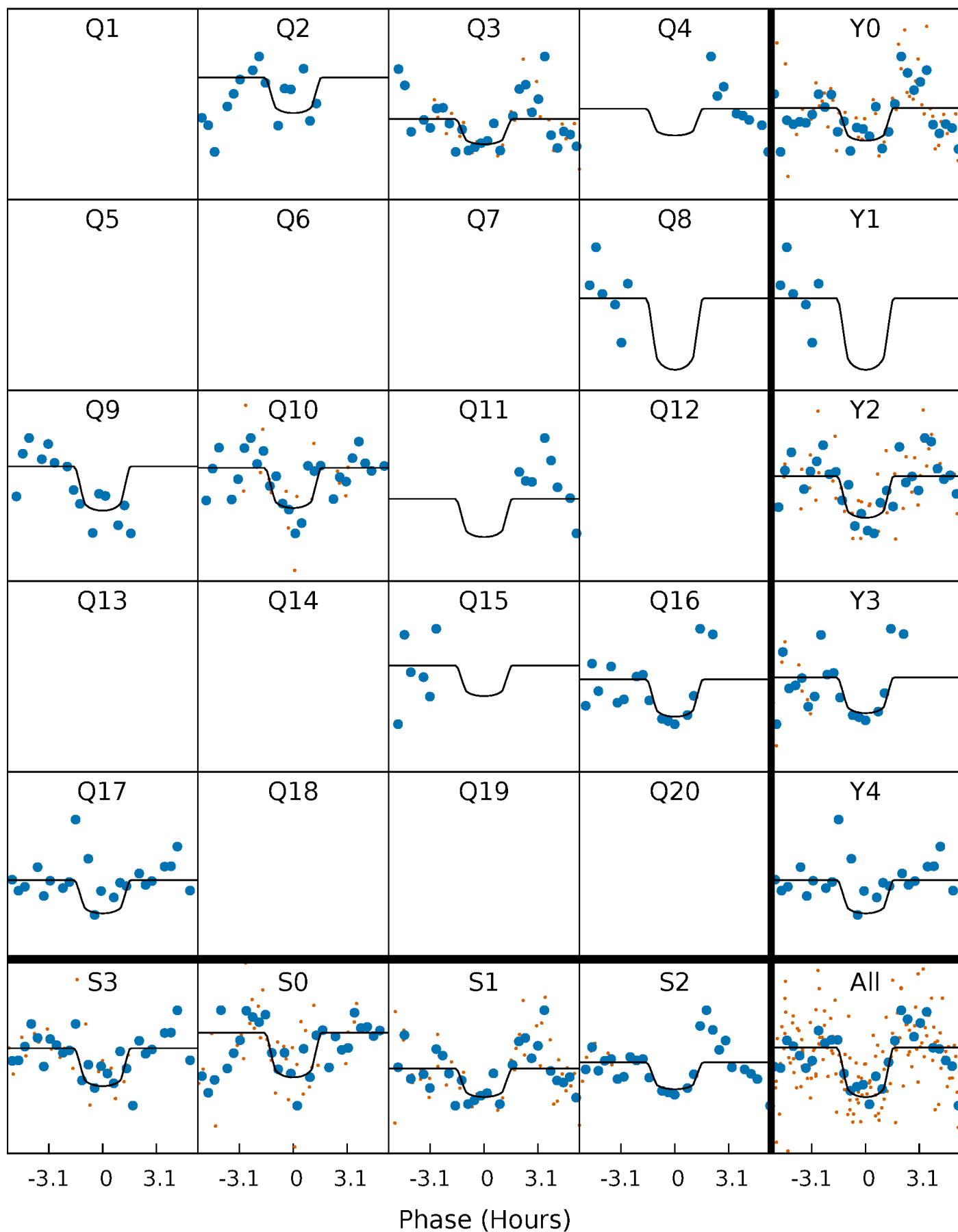
PDC Quarter-Phased Transit Curves

TCE 002167600-10 P= 72.544303 Days $T_0=197.803387$ (BKJD)



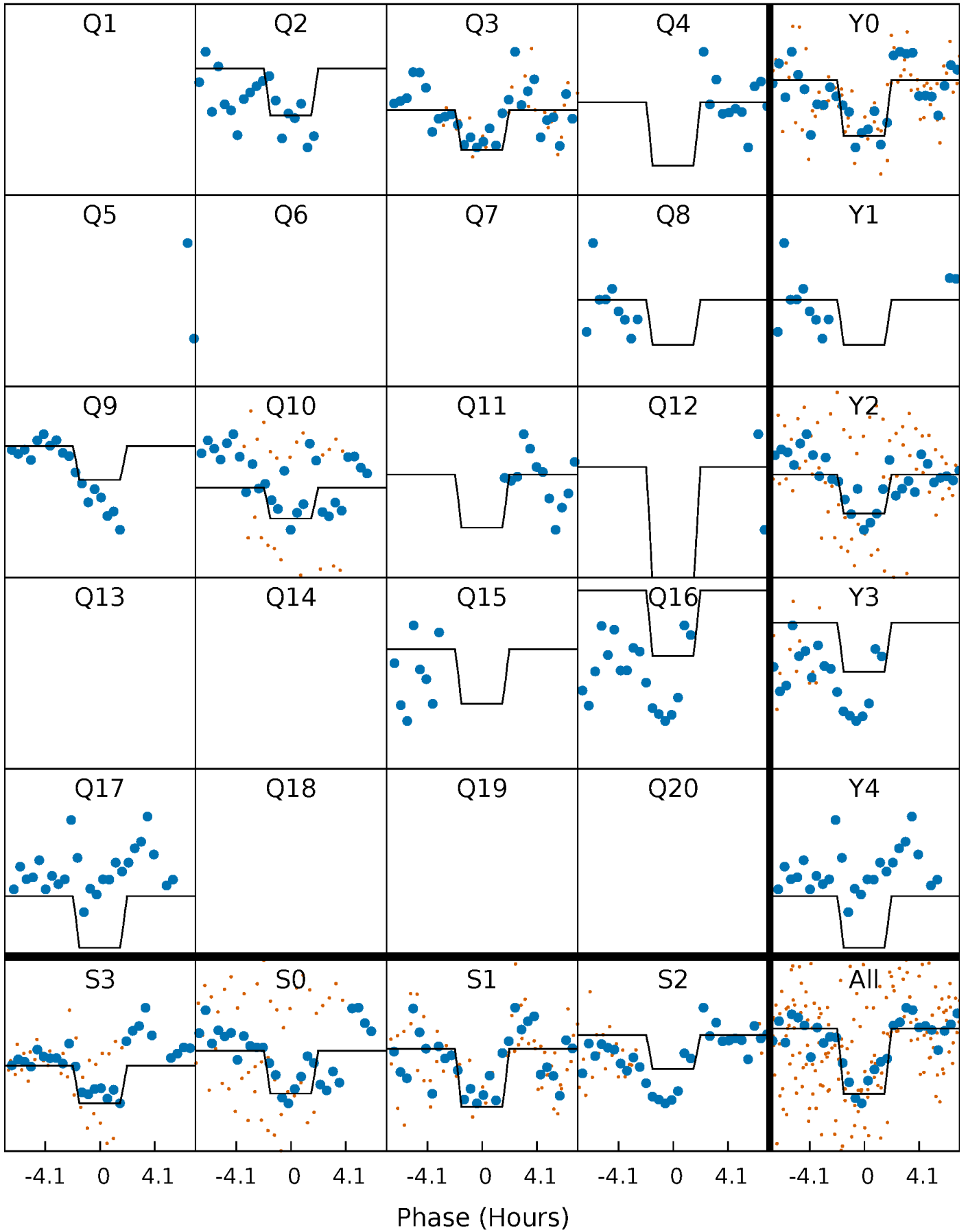
DV Quarter-Phased Transit Curves

TCE 002167600-10 P= 72.544303 Days $T_0=197.803387$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

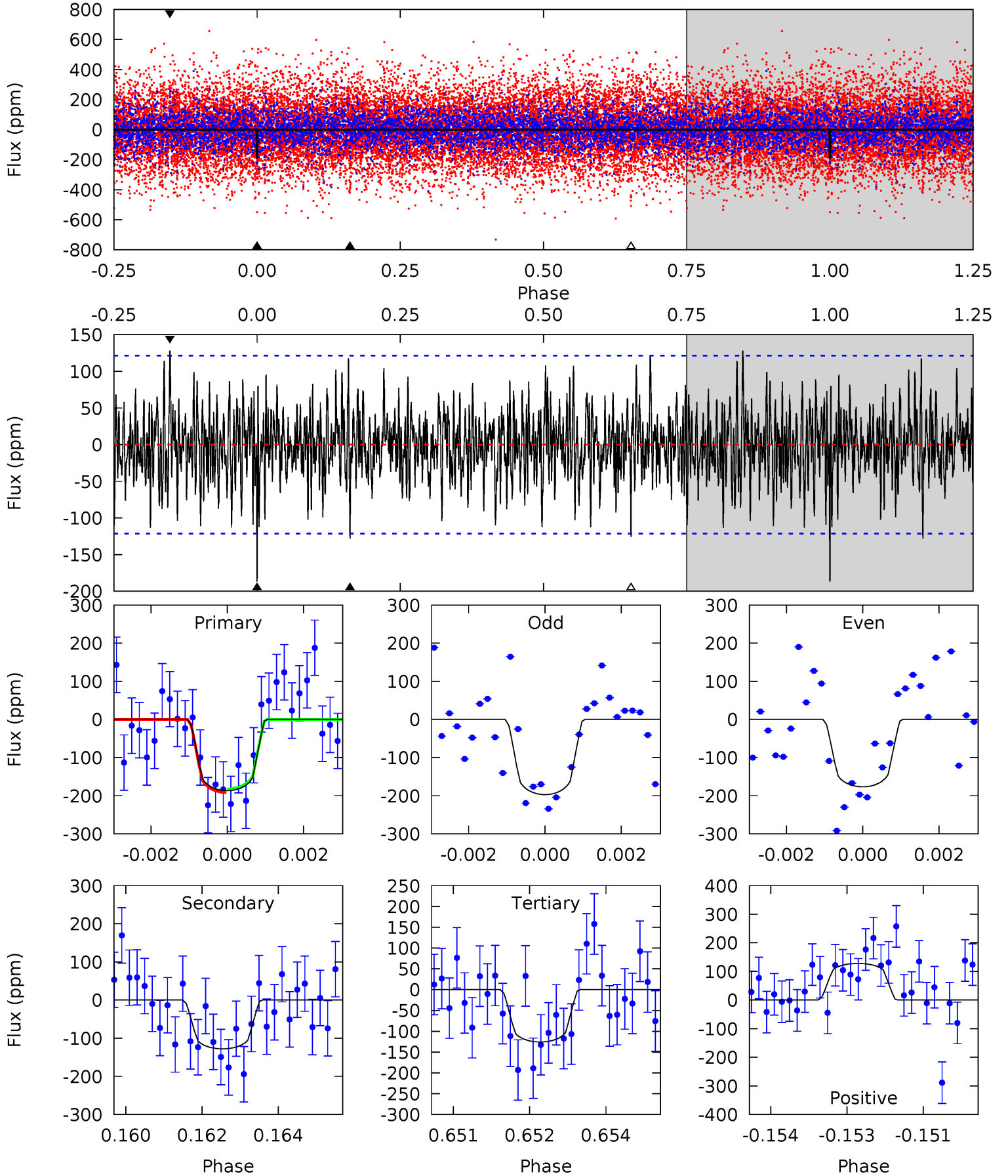
TCE 002167600-10 P= 72.546728 Days $T_0=197.791044$ (BKJD)



DV Model-Shift Uniqueness Test

002167600-10, $P = 72.544303$ Days, $E = 125.259084$ Days

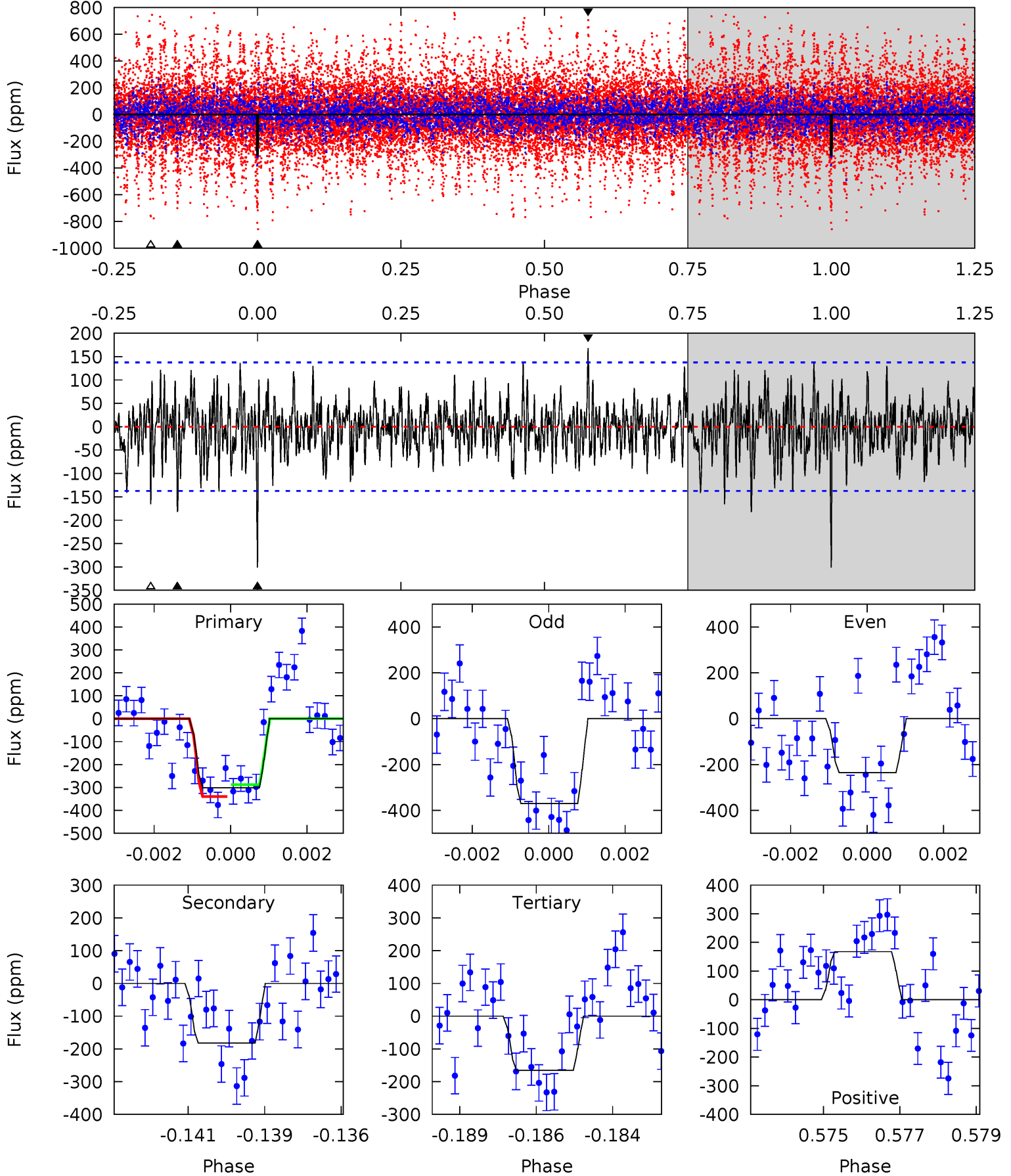
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.23	5.63	5.54	5.64	5.34	3.12	1.73	2.69	2.59	0.09	-0.01	0.45	0.88	0.41	0.21



Alt Model-Shift Uniqueness Test

002167600-10, P = 72.546728 Days, E = 125.244316 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	7.04	6.38	6.48	5.30	3.05	1.69	5.24	5.15	0.66	0.56	2.68	1.02	0.36	0



Stellar Parameters For KIC 002167600

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6466^{+157}_{-176}	$3.422^{+0.376}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.415^{+0.610}_{-1.830}$	$1.881^{+0.109}_{-0.436}$	$0.031^{+0.096}_{-0.009}$
	+2%/-3%	+11%/-3%	+250%/-214%	+14%/-41%	+6%/-23%	+314%/-30%
Source	PHO1	FLK73	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 002167600-10 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-128 ± 23	$9.19^{+7.95}_{-6.39}$	1269^{+74}_{-143}	4864^{+4054}_{-997}	146^{+1359}_{-106}
Alt.	-182 ± 26	$10.13^{+9.09}_{-6.80}$	1271^{+74}_{-122}	5038^{+3806}_{-1067}	169^{+1407}_{-123}

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 $A_{obs} \gg 1.0$

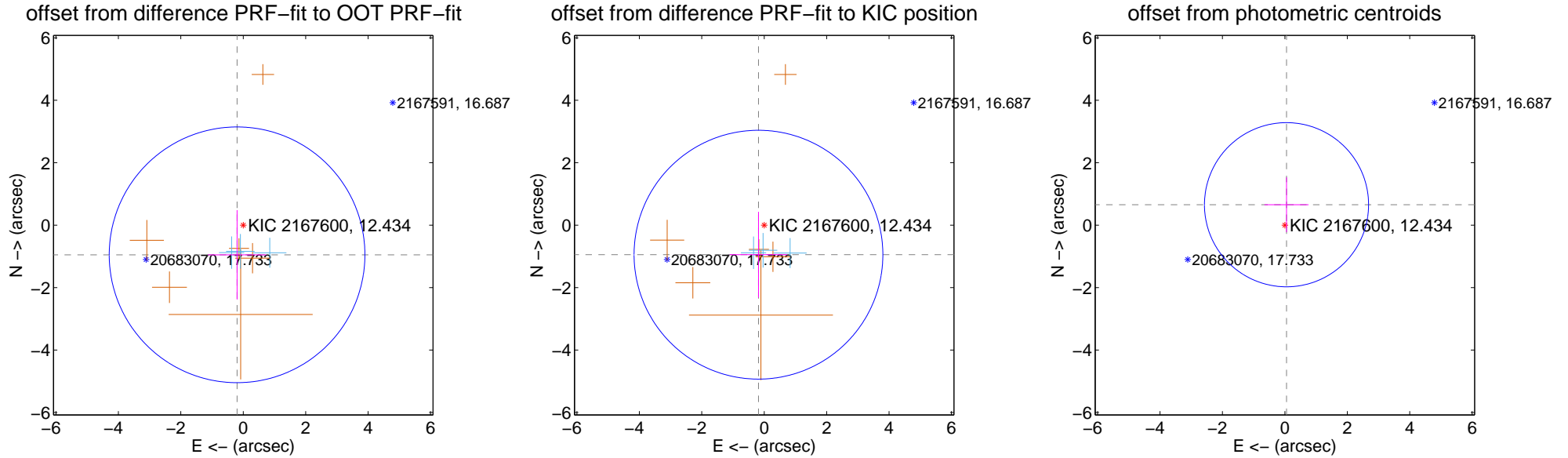
DV Centroid Data

Supplemental centroid analysis for 002167600-10. Kepler magnitude: 12.43. Transit SNR 7.61

There are 3 quarters with good PRF difference image offsets

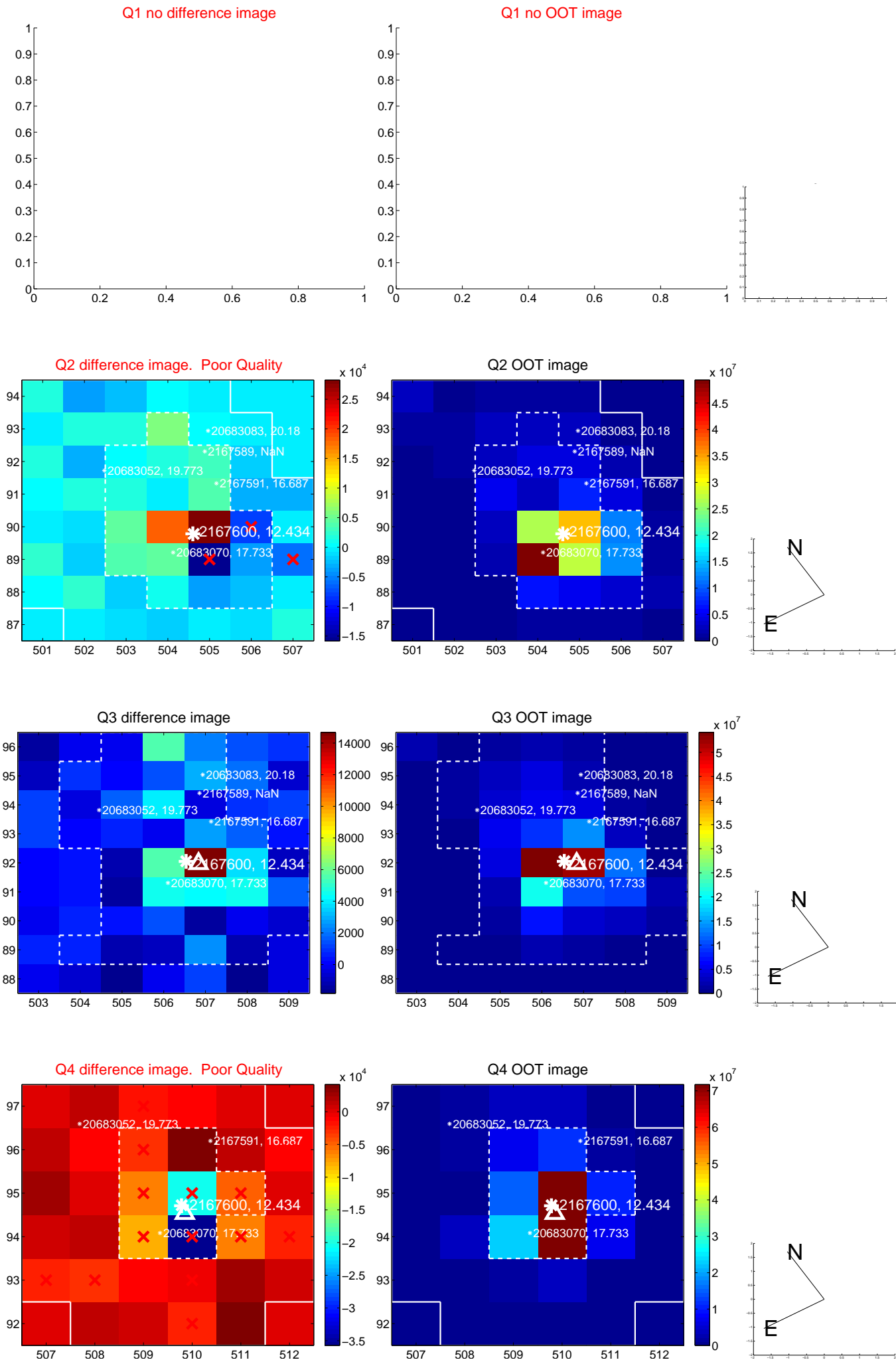
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.970 ± 1.365	0.71	0.198 ± 0.933	-0.950 ± 1.431
PRF-fit source offset from KIC position	0.964 ± 1.329	0.73	0.184 ± 0.922	-0.946 ± 1.372
photometric centroid source offset	0.66 ± 0.88	0.75	-0.05 ± 0.71	0.65 ± 0.88

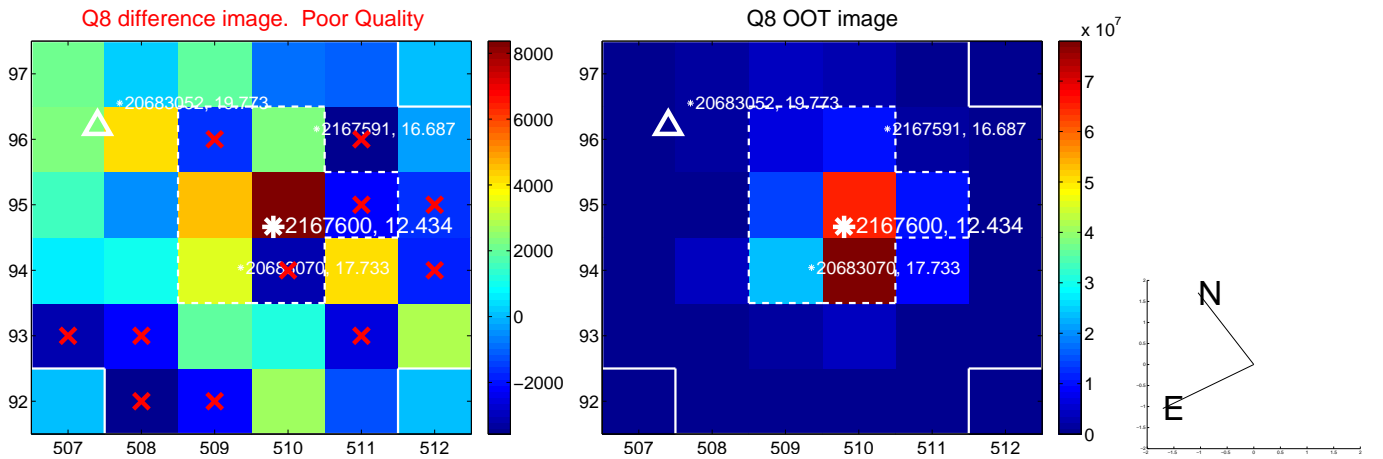
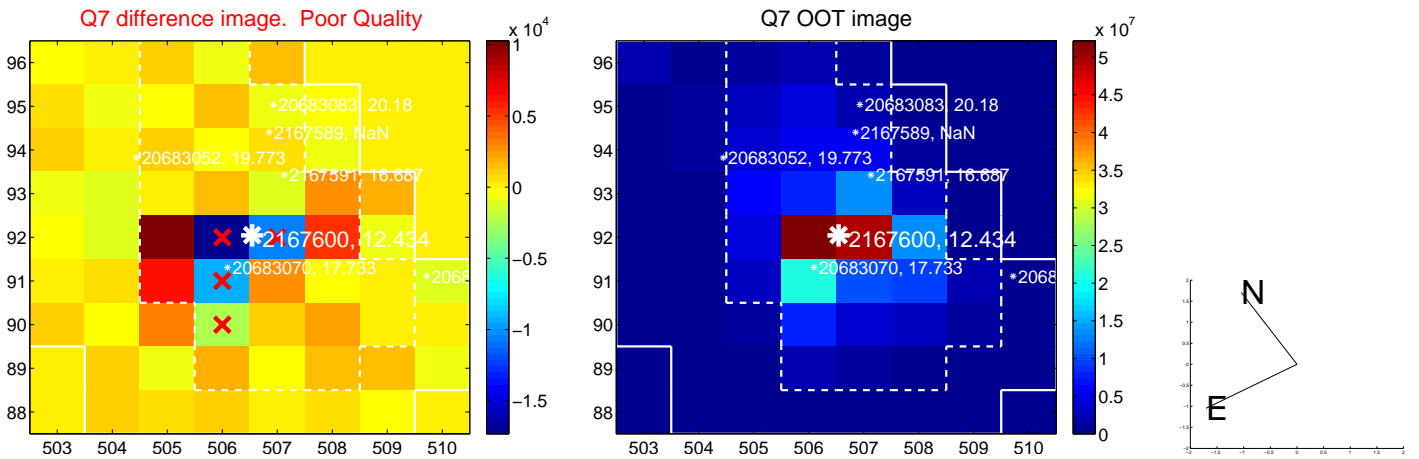
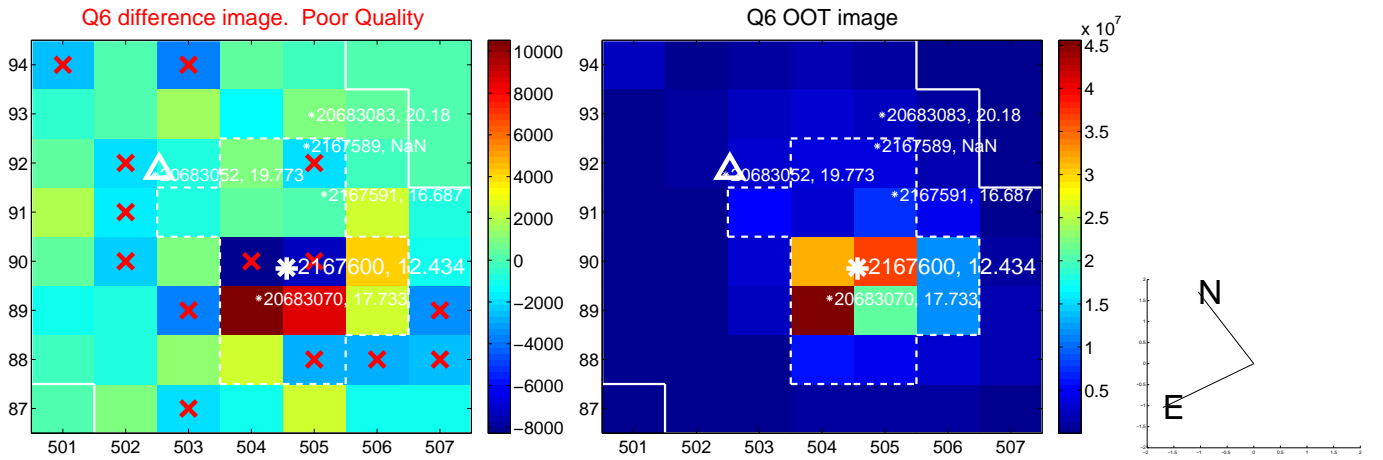
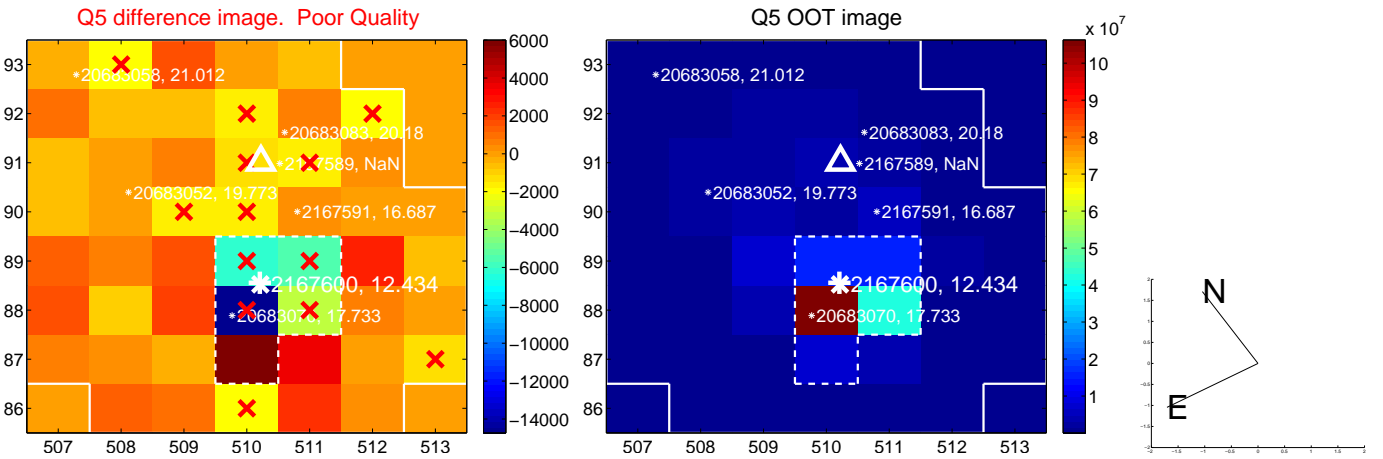


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

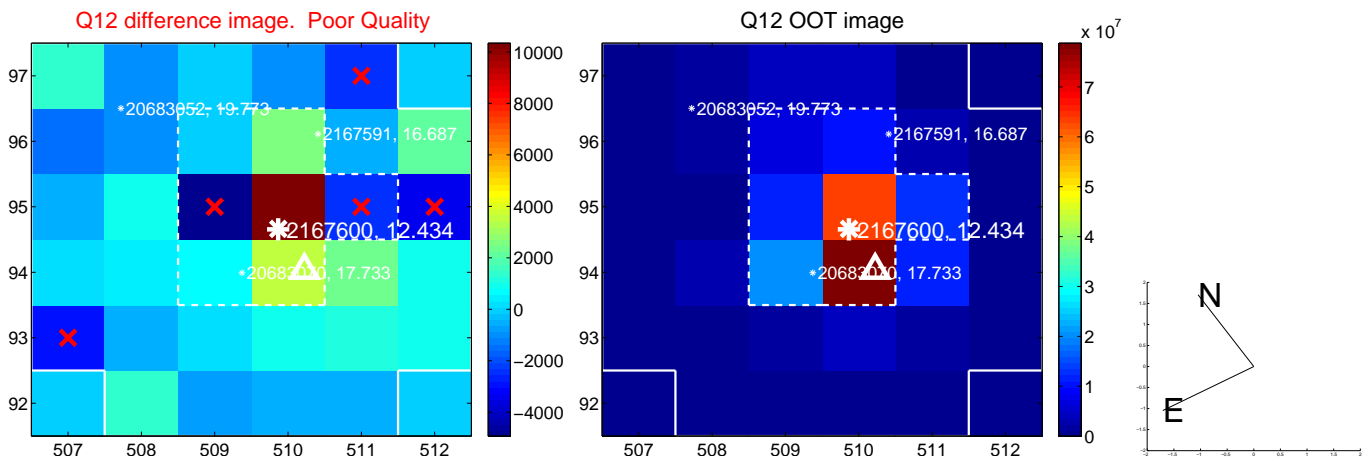
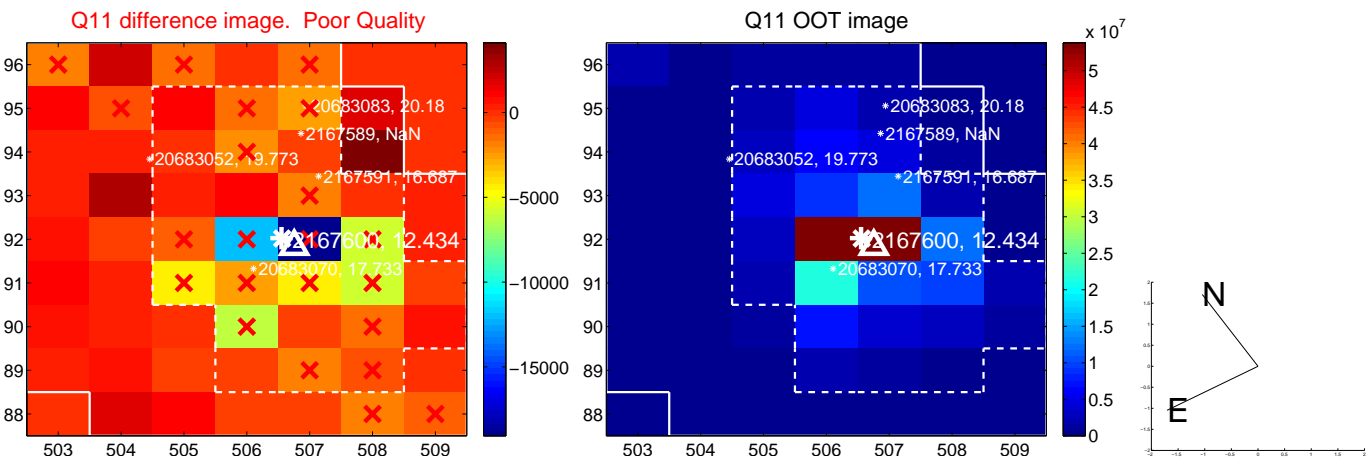
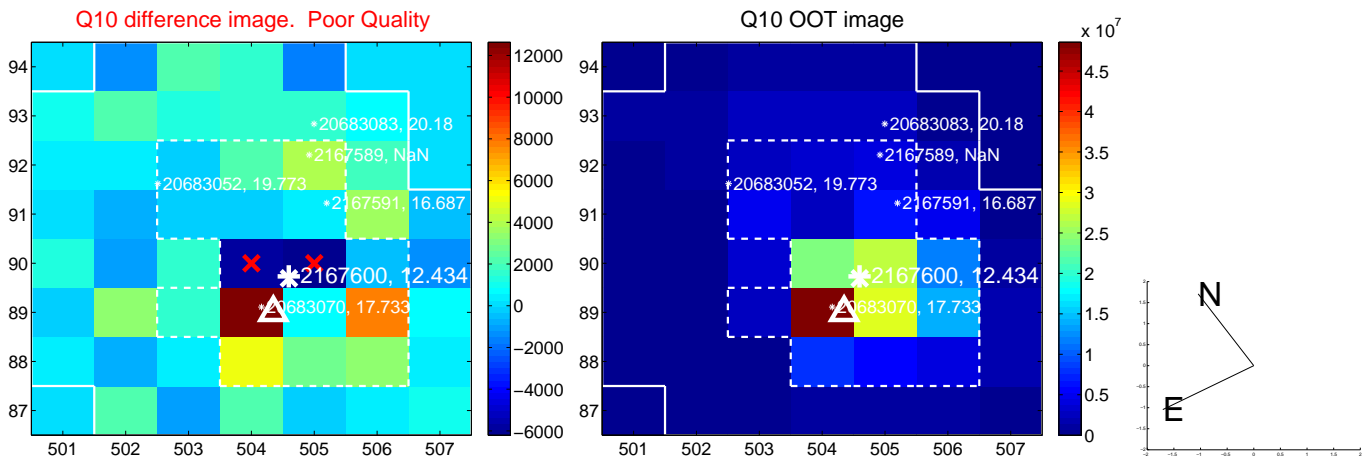
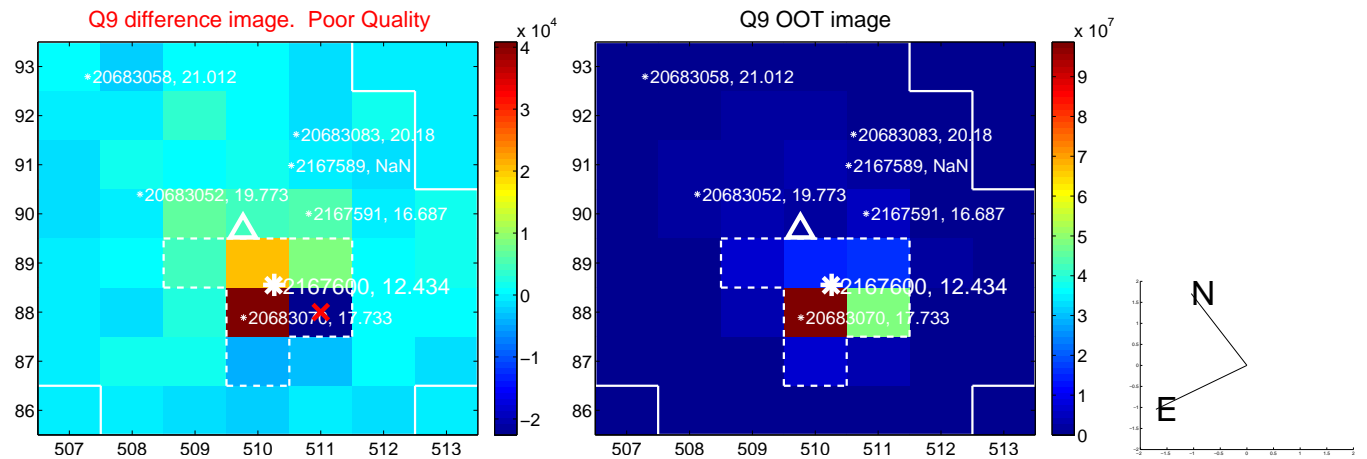
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



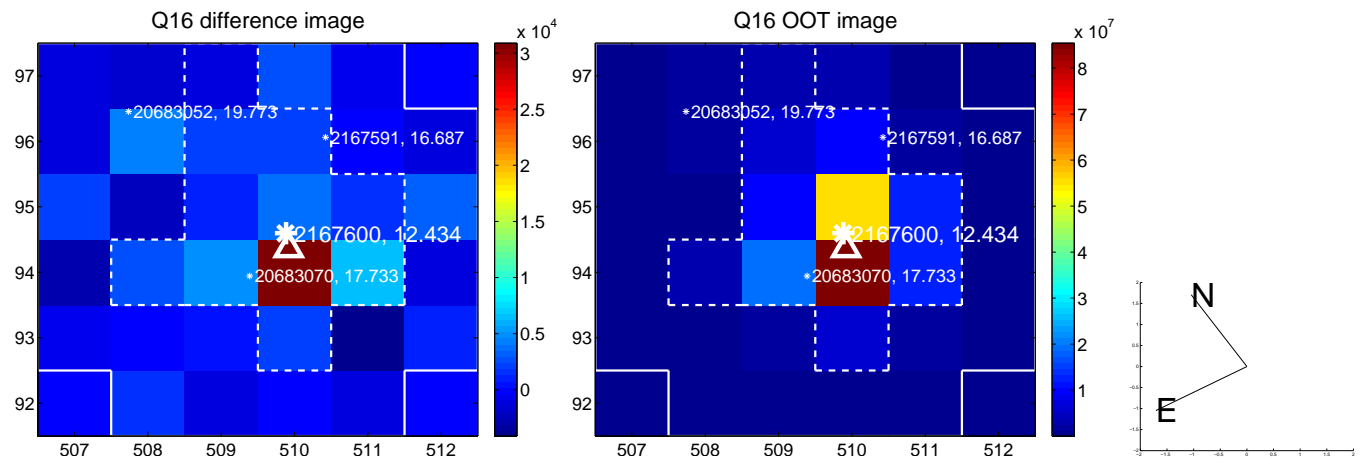
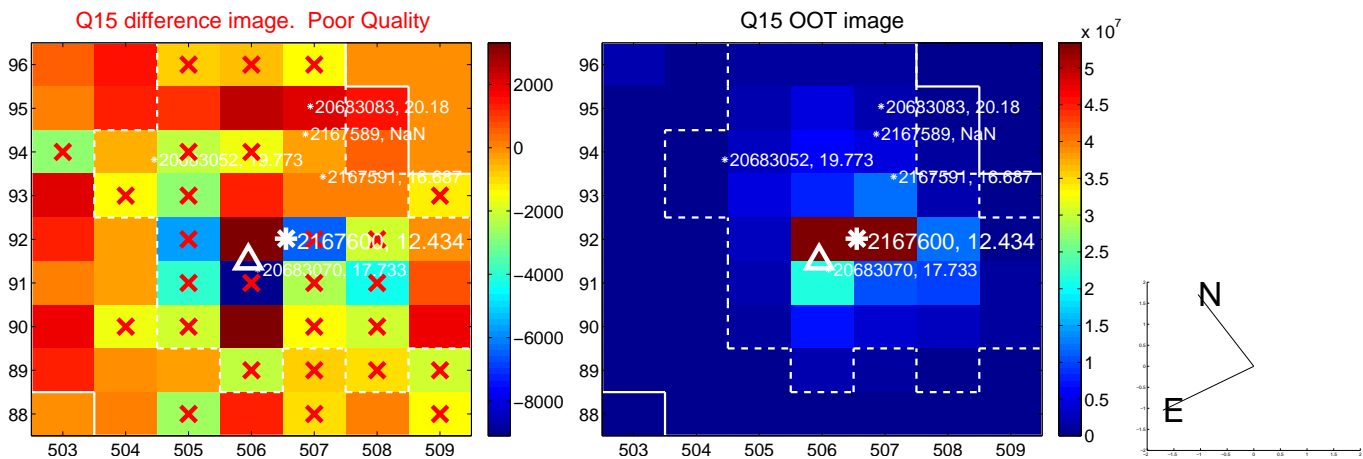
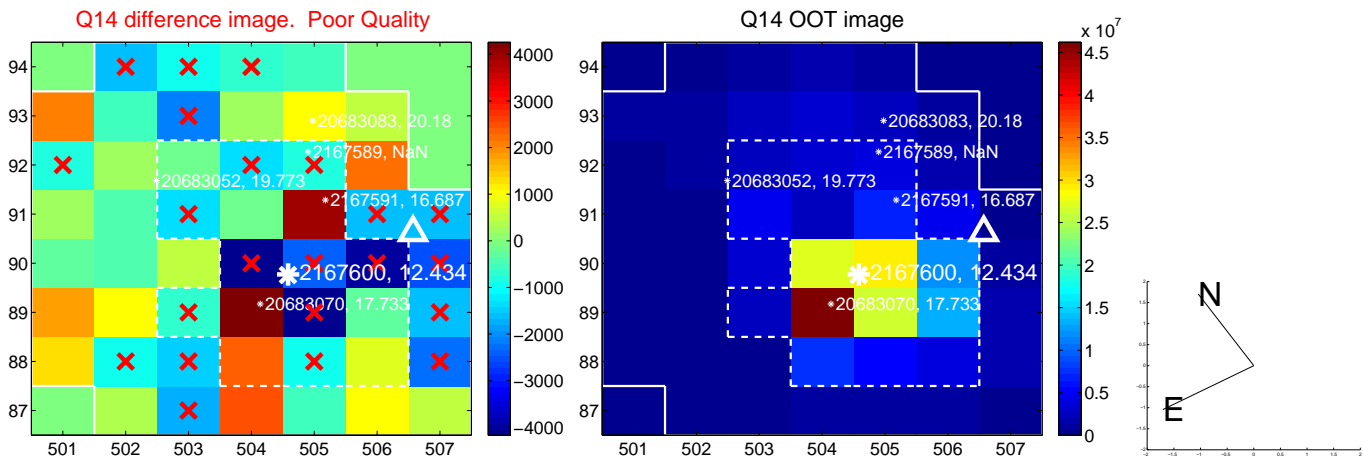
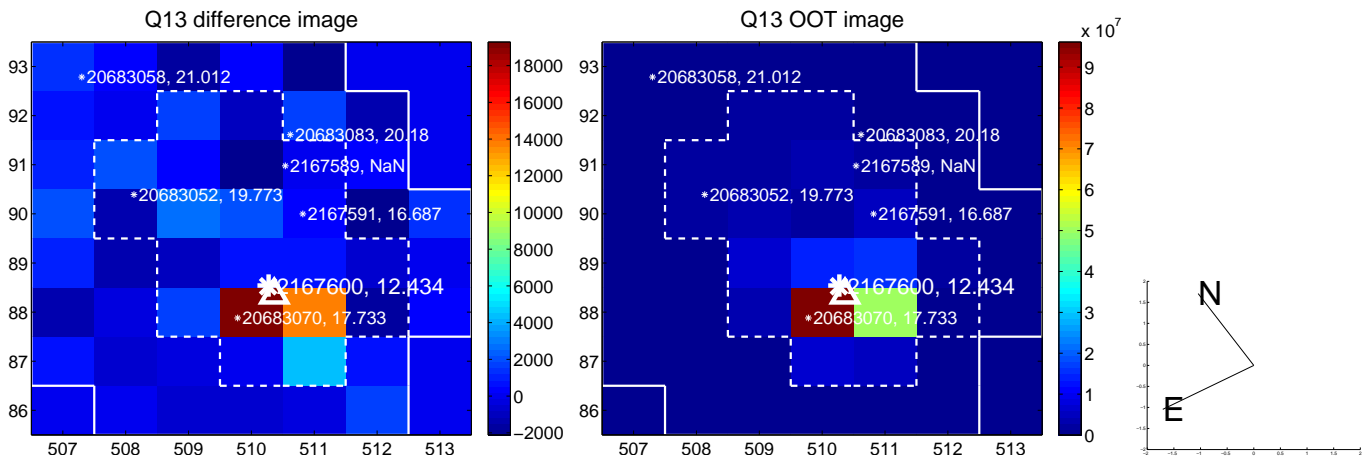
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



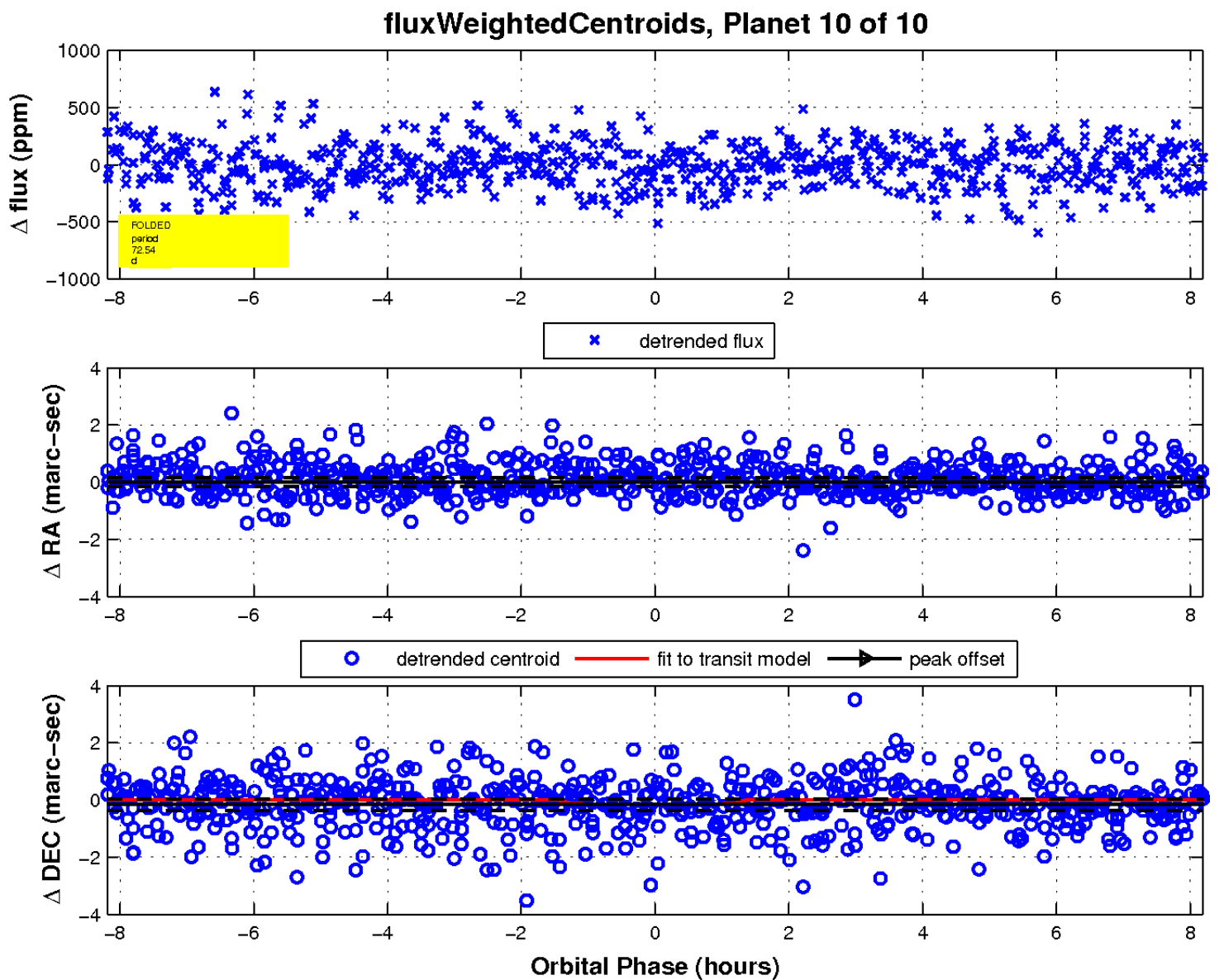
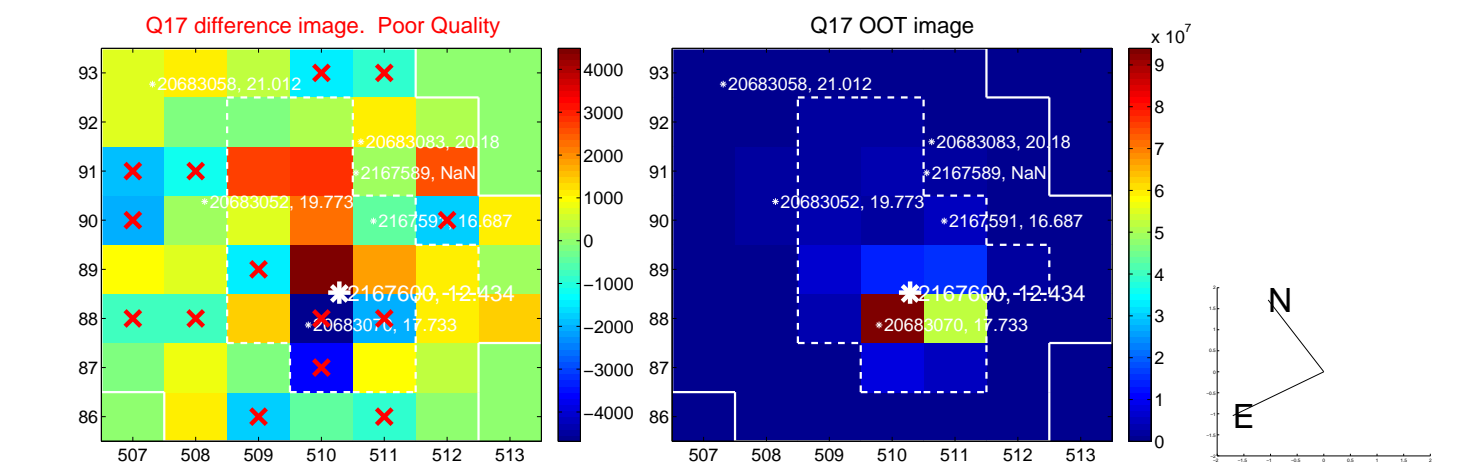
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

