

KIC 004641555

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})
004641555-01	OBS	No	0.961134	131.621322	28.2	1.913	10.8	11.5	1.58	7175	0.97	12702.08
004641555-02	OBS	No	0.961097	132.115710	21.4	2.326	9.1	9.1	1.58	7175	0.88	12702.74

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004641555-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004641555-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

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

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

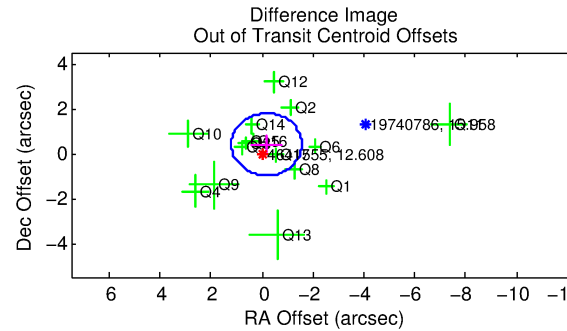
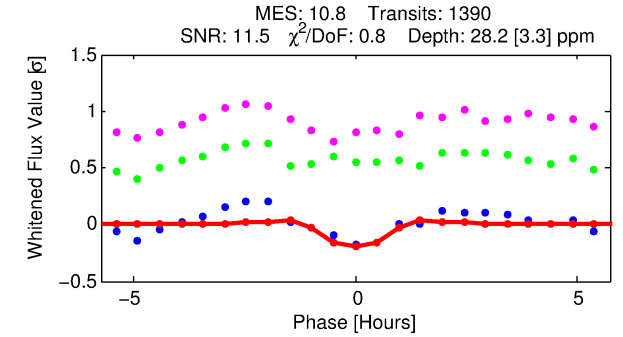
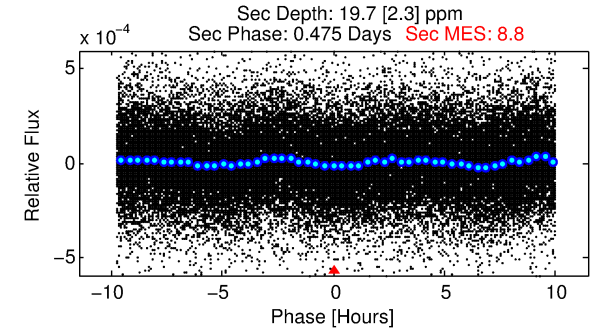
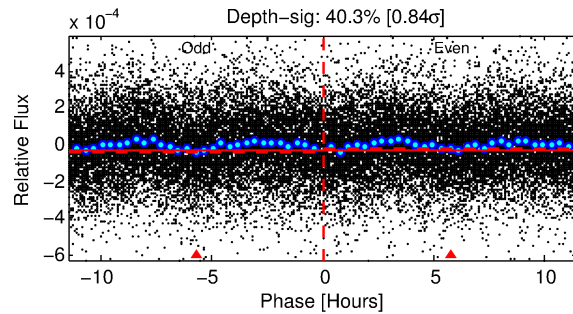
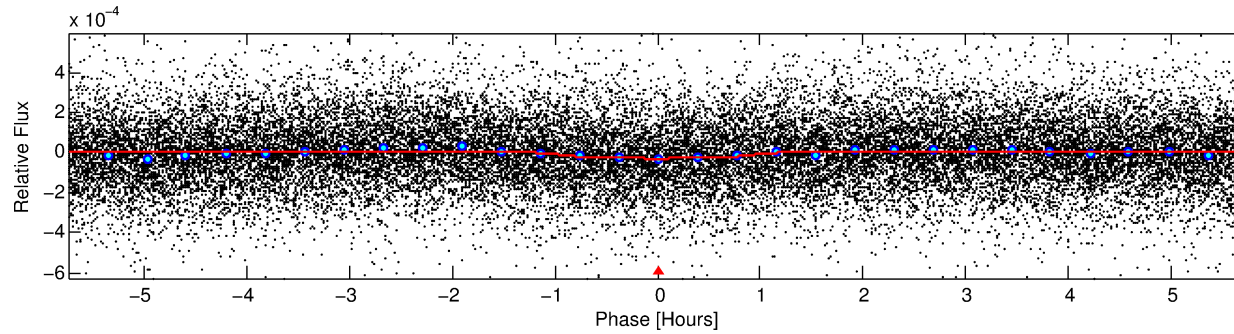
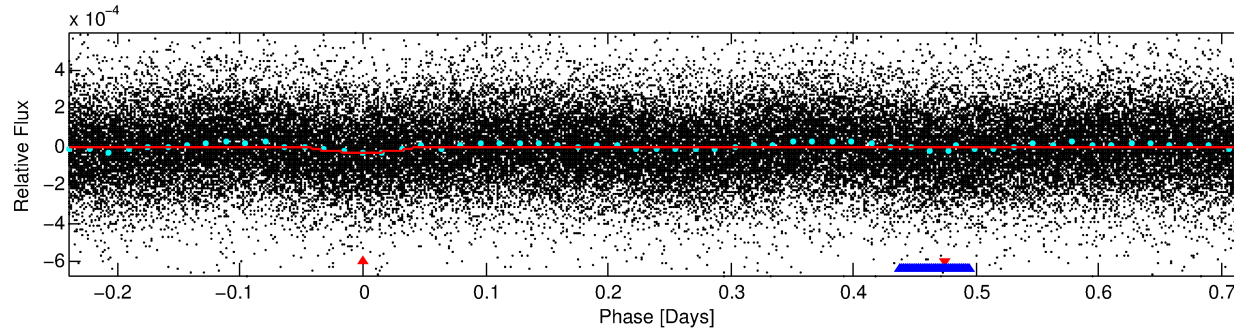
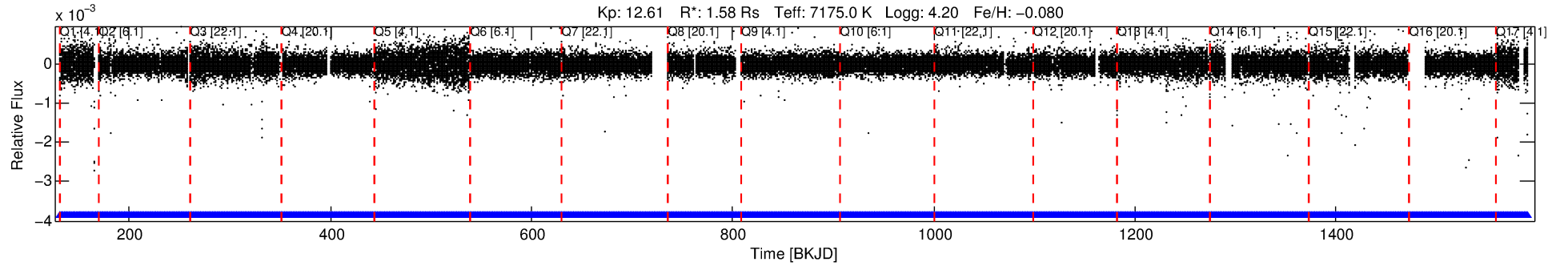
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004641555-01

No Significant Match Found

DV One-Page Summary

KIC: 4641555 Candidate: 1 of 2 Period: 0.961 d



DV Fit Results:

Period = 0.96113 [0.00001] d
Epoch = 131.6213 [0.0022] BKJD
Rp/R* = 0.0057 [0.0020]
a/R* = 1.95 [3.20]
b = 0.90 [0.47]
Seff = 12702.08 [5114.29]
Teq = 2707 [272] K
Rp = 0.97 [0.47] Re
a = 0.0216 [0.0058] AU
Ag = 5.33 [4.32] [1.00σ]
Teffp = 6361 [1168] K [3.05σ]

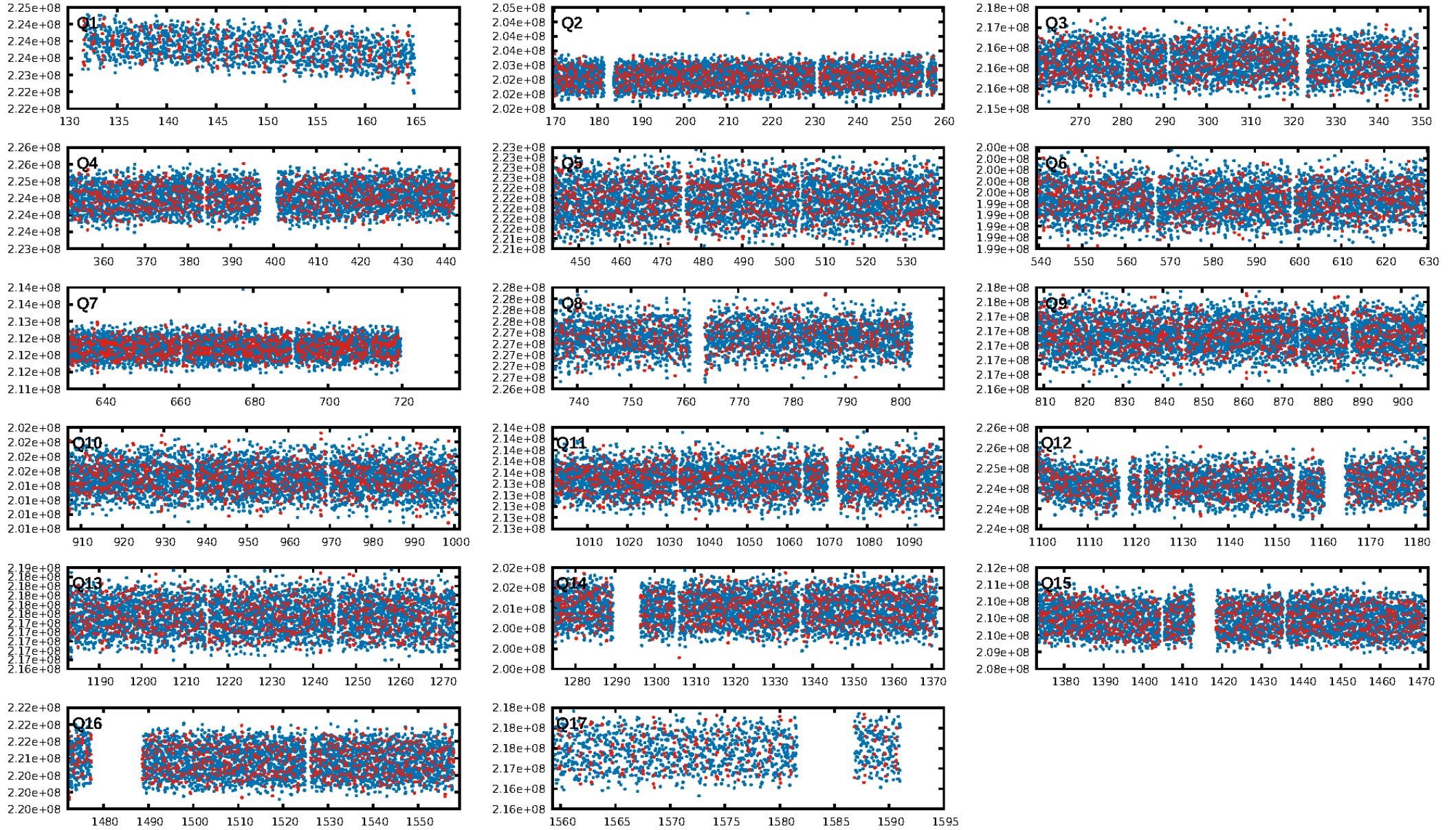
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.38e-26
RollingBand-fgt: 1.00 [1328/1328]
GhostDiagnostic-chr: 1.593
Centroid-sig: 16.8%
Centroid-so: 0.614 arcsec [1.01σ]
OotOffset-rm: 0.436 arcsec [0.95σ]
KicOffset-rm: 0.561 arcsec [1.19σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 1.00 [17/17]

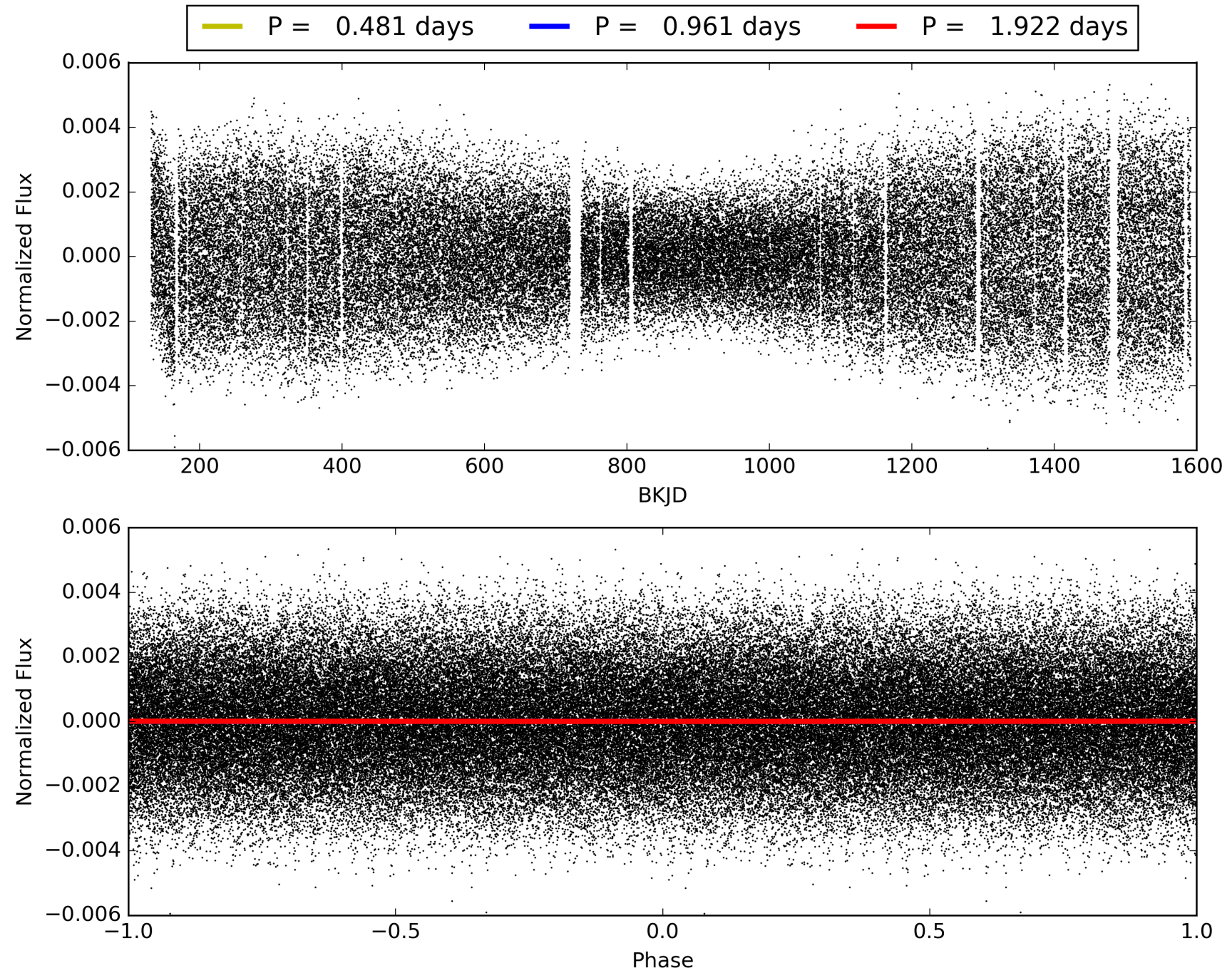
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:20:10 Z

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

TCE 004641555-01, PDC Light Curves

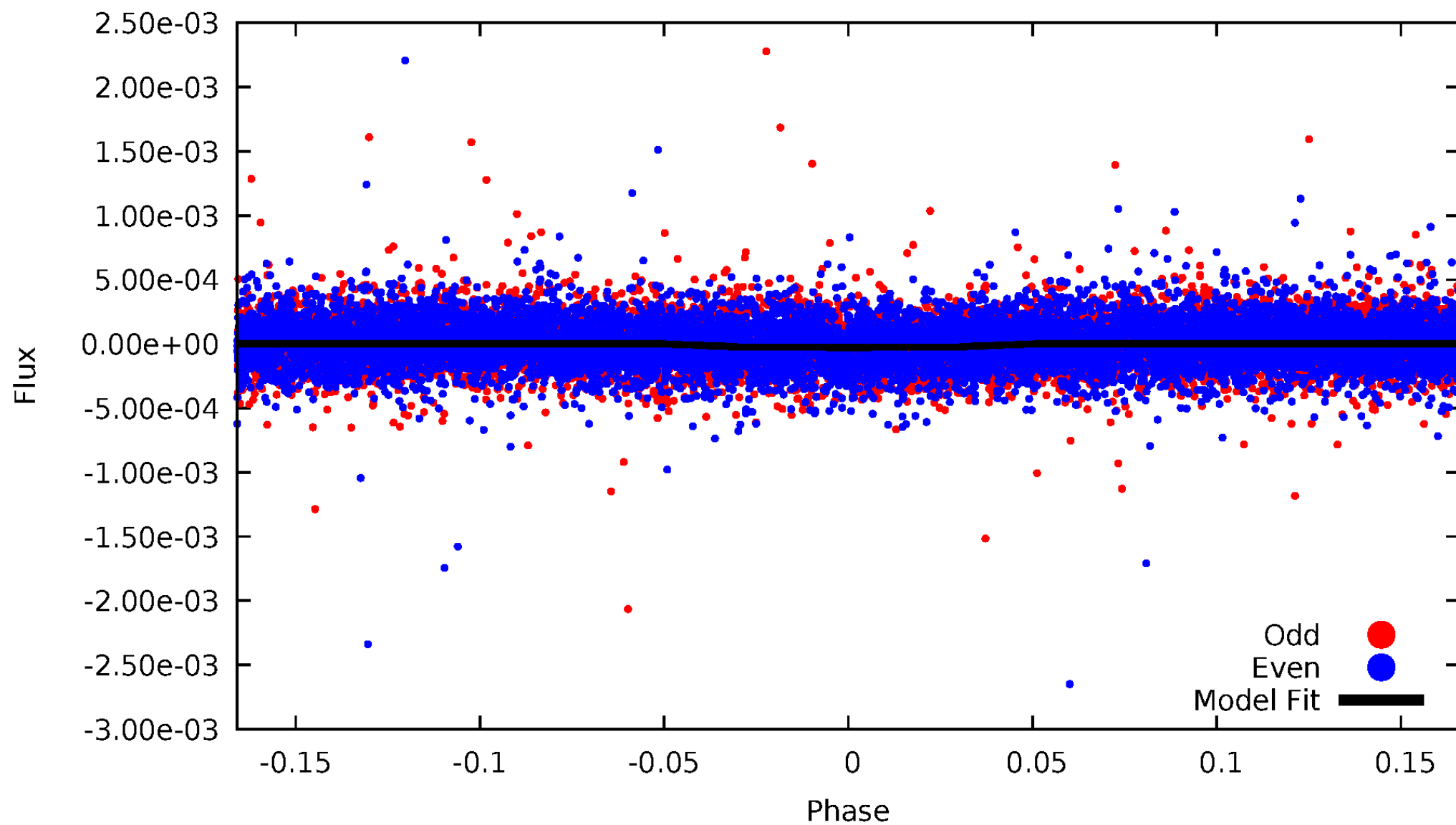


TCE 004641555-01



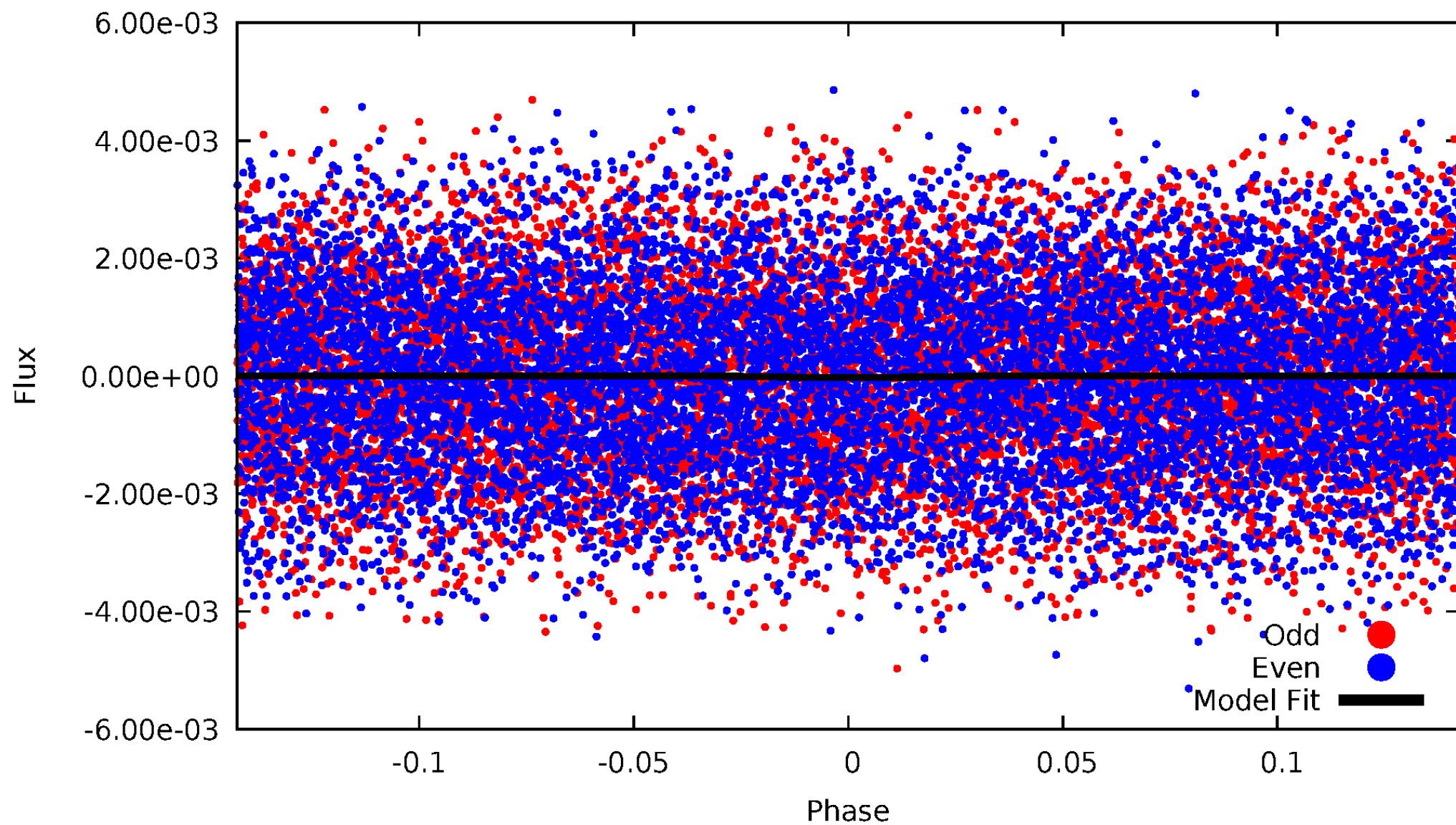
DV Odd/Even

TCE 004641555-01



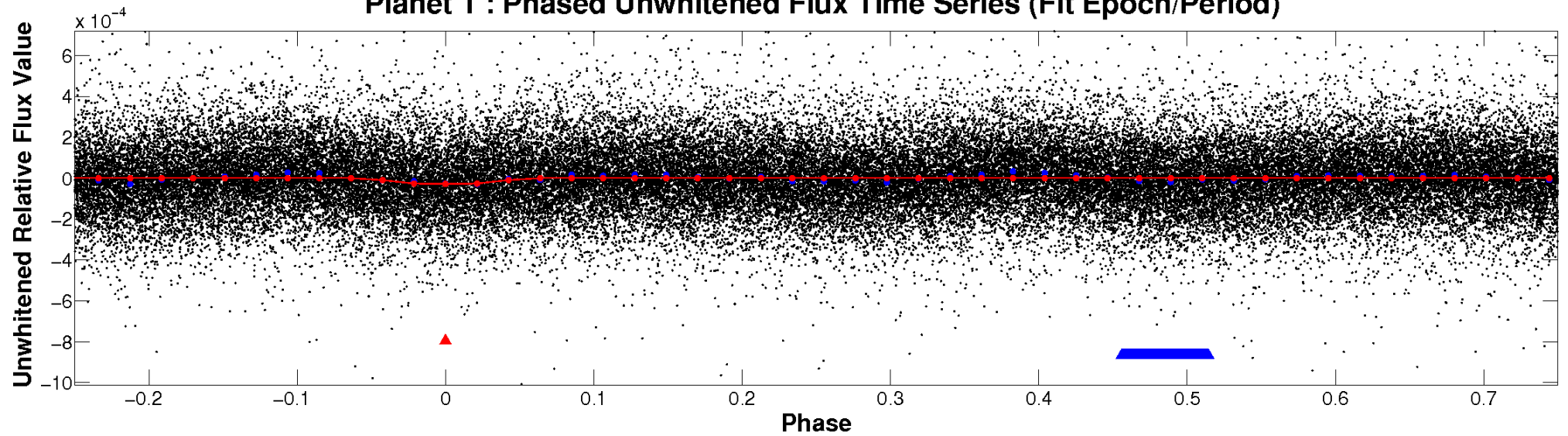
ALT Odd/Even

TCE 004641555-01

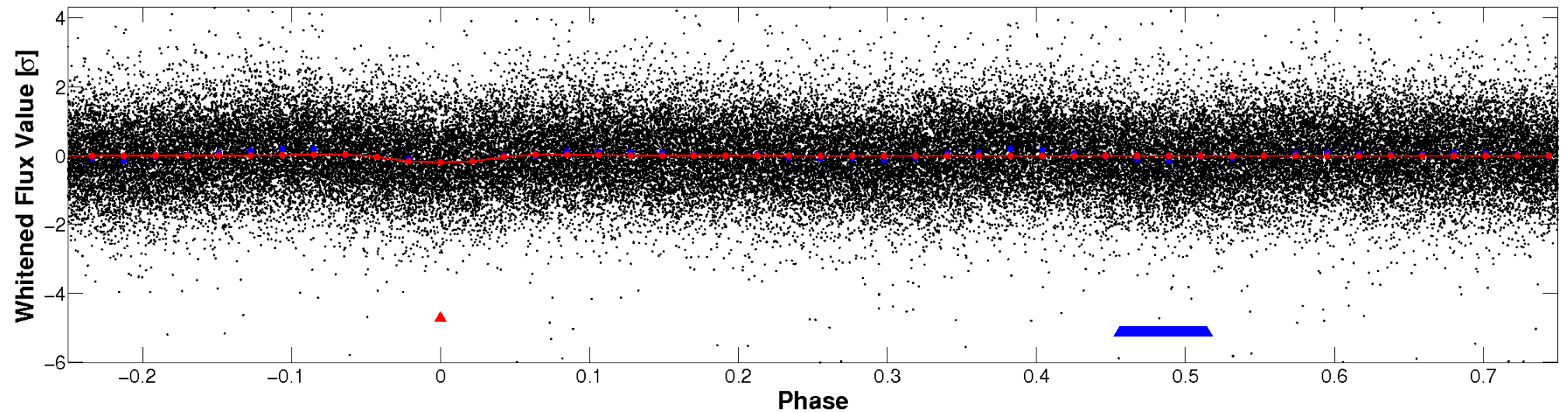


Non-Whitened Vs. Whitened Light Curve

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

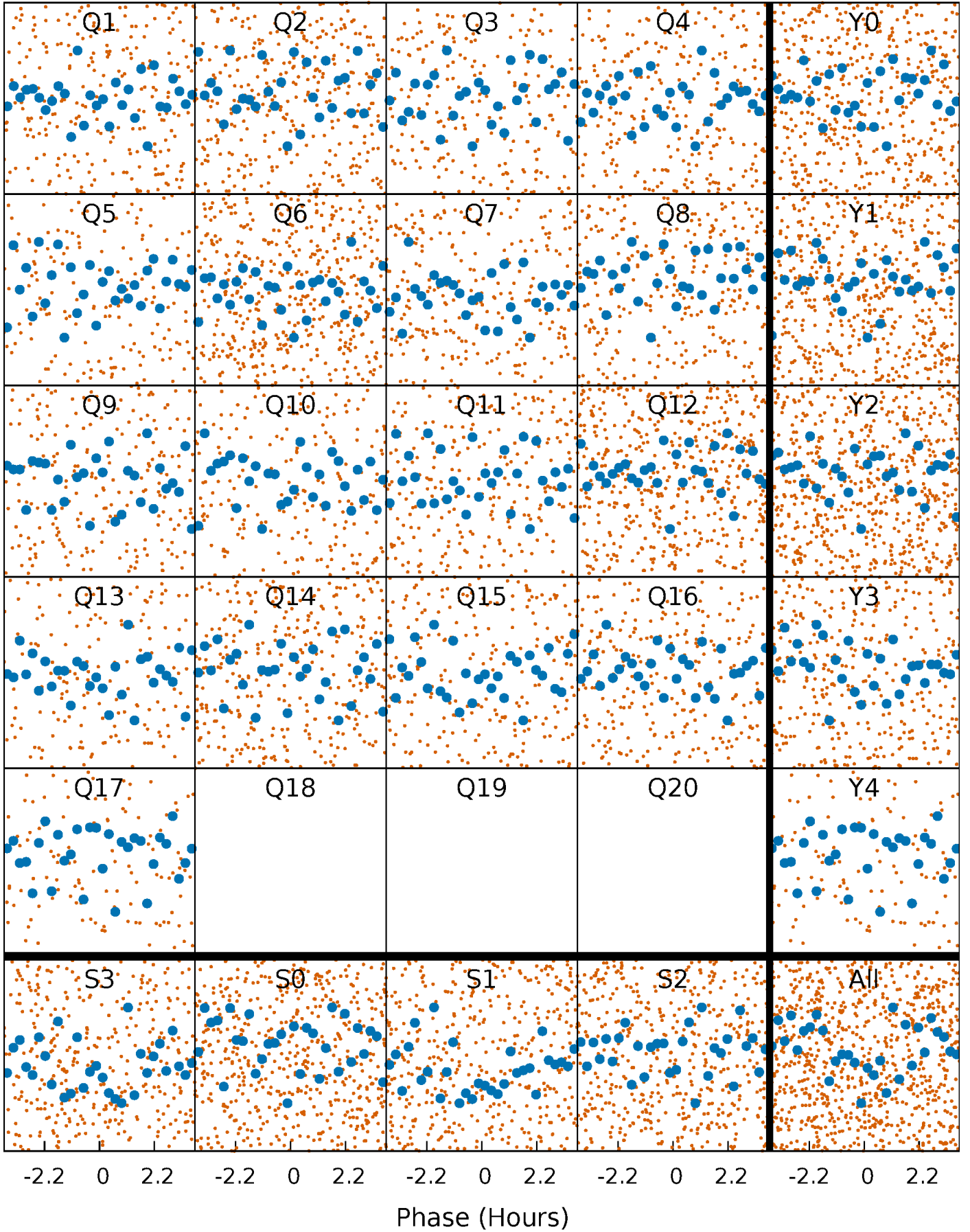


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



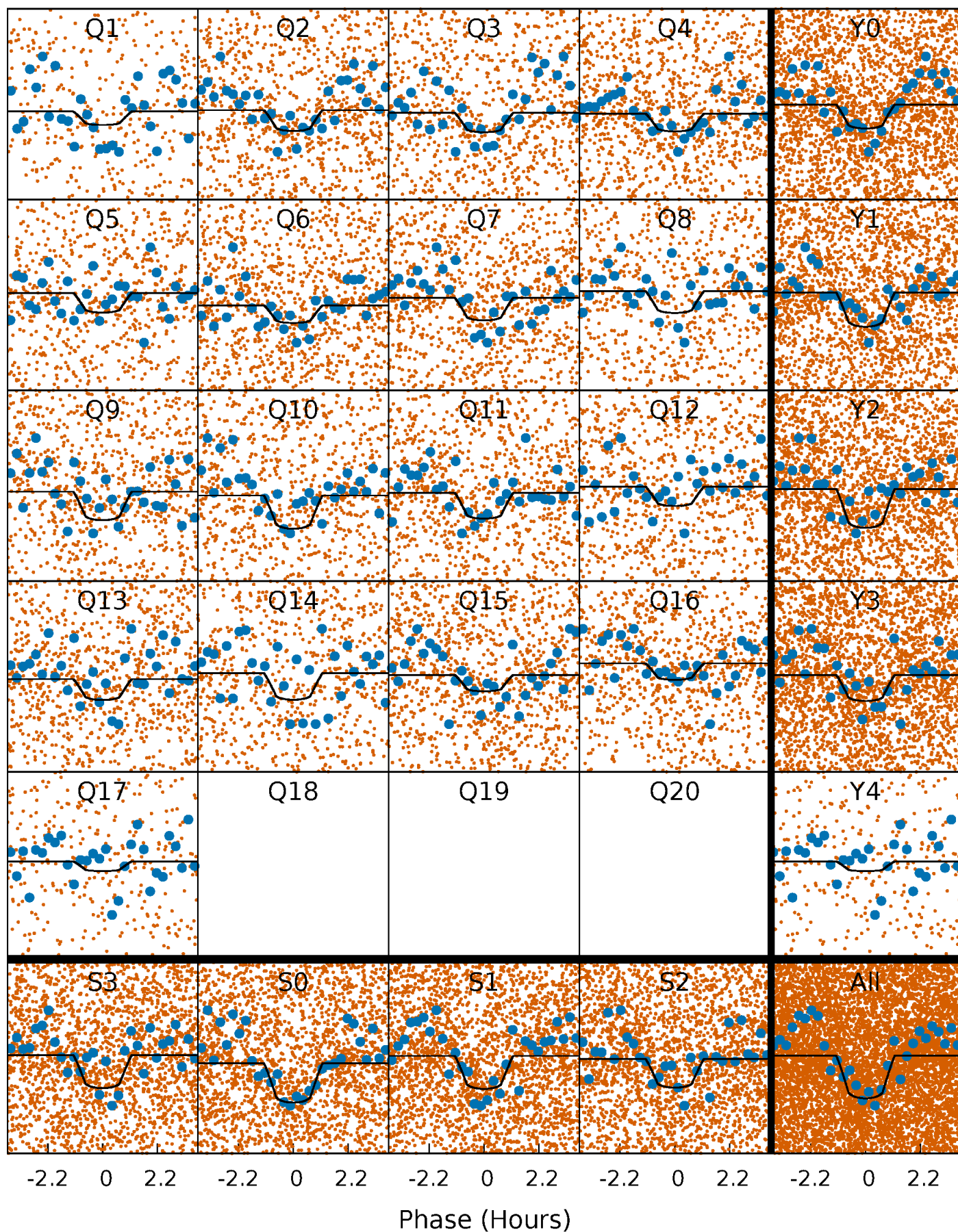
PDC Quarter-Phased Transit Curves

TCE 004641555-01 P= 0.961134 Days $T_0=131.621322$ (BKJD)



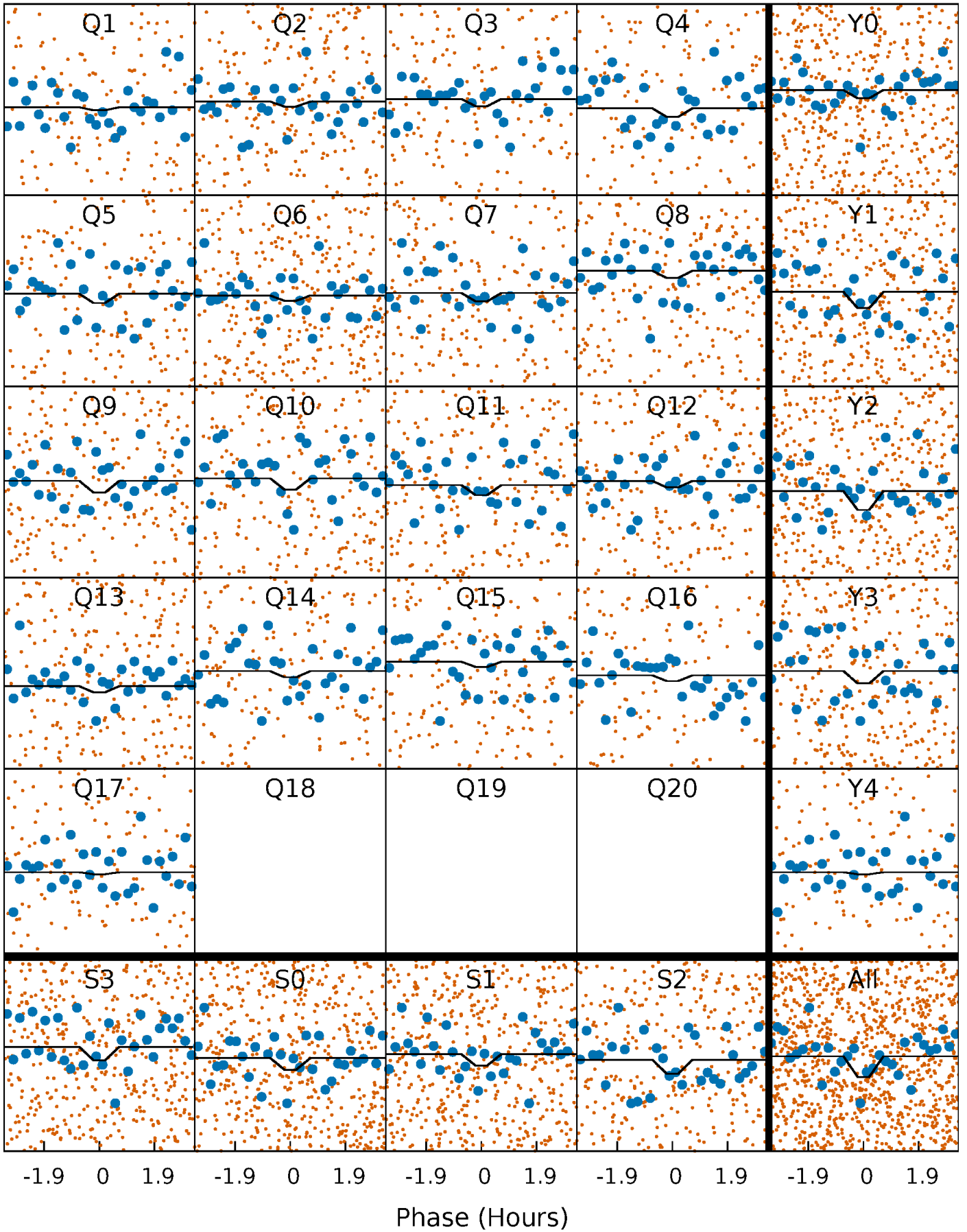
DV Quarter-Phased Transit Curves

TCE 004641555-01 P= 0.961134 Days $T_0=131.621322$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

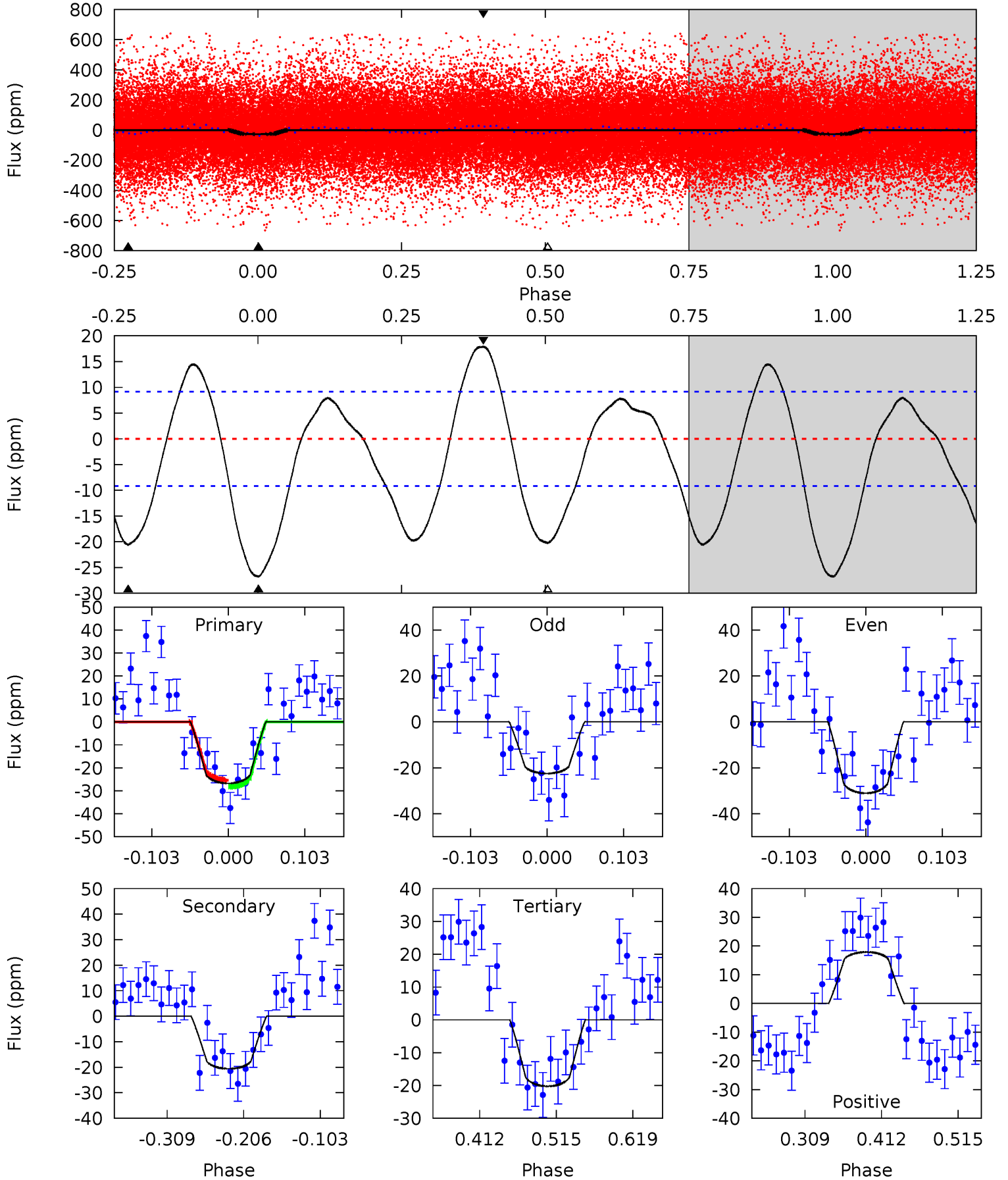
TCE 004641555-01 P= 0.961139 Days $T_0=131.612552$ (BKJD)



DV Model-Shift Uniqueness Test

004641555-01, P = 0.961134 Days, E = 130.660188 Days

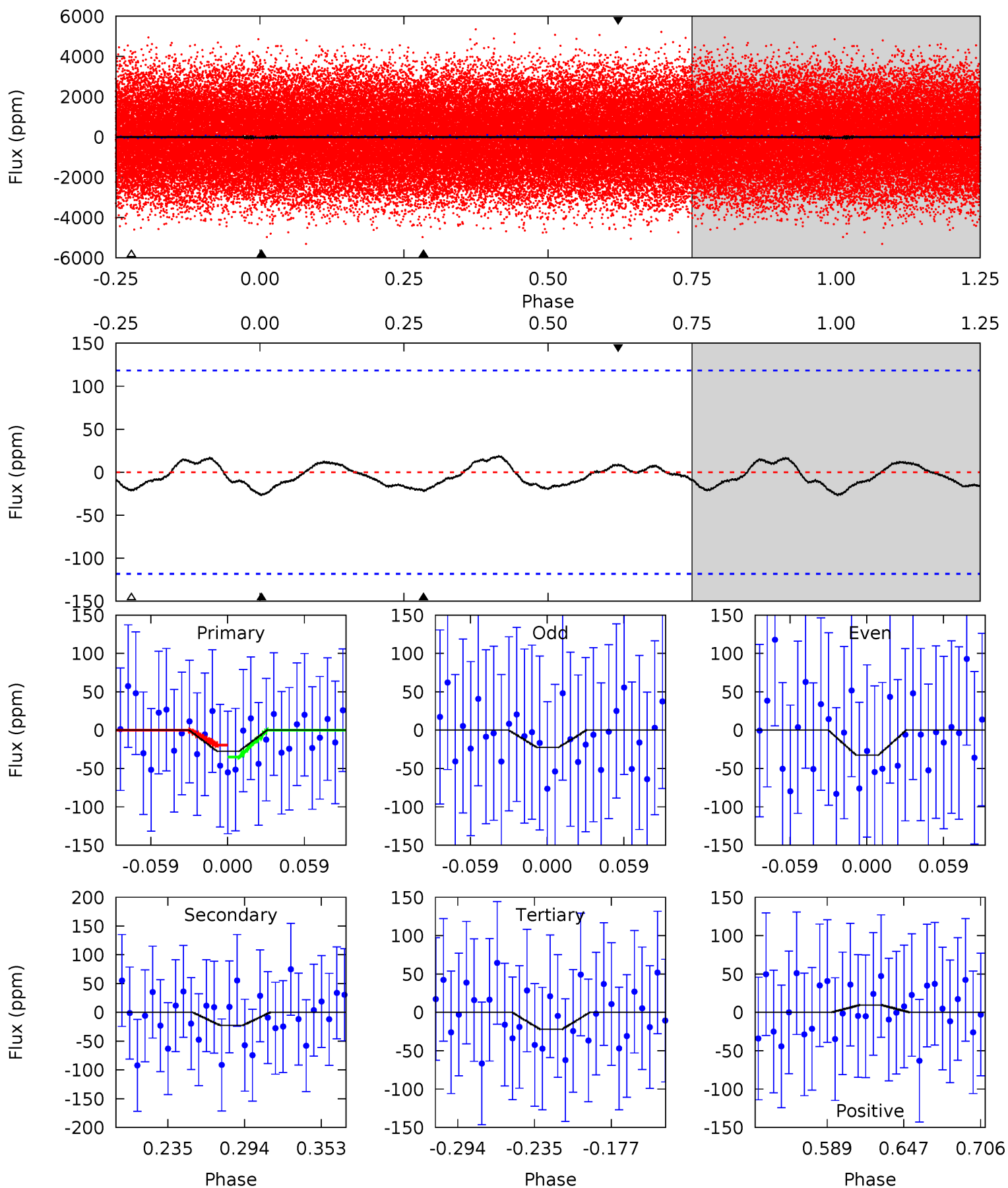
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	10.2	10.1	8.90	4.56	1.63	5.49	3.24	4.40	0.17	1.33	2.14	0.96	0.40	0.68



Alt Model-Shift Uniqueness Test

004641555-01, P = 0.961139 Days, E = 130.651413 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.08	0.90	0.87	0.37	4.67	1.89	0.41	0.22	0.71	0.03	0.53	0.20	0.64	0.41	0.31



Stellar Parameters For KIC 004641555

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7175^{+200}_{-275}	$4.203^{+0.105}_{-0.195}$	$-0.080^{+0.250}_{-0.400}$	$1.578^{+0.524}_{-0.282}$	$1.452^{+0.209}_{-0.232}$	$0.521^{+0.270}_{-0.266}$
	+3%/-4%	+2%/-5%	+312%/-500%	+33%/-18%	+14%/-16%	+52%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004641555-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-21 ± 2	$1.01^{+0.42}_{-0.38}$	3829^{+286}_{-214}	6244^{+1867}_{-953}	$5.116^{+7.834}_{-2.546}$
Alt.	-23 ± 25	$0.90^{+0.39}_{-0.37}$	3829^{+293}_{-221}	6506^{+3397}_{-11193}	$5.841^{+17.689}_{-6.837}$

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

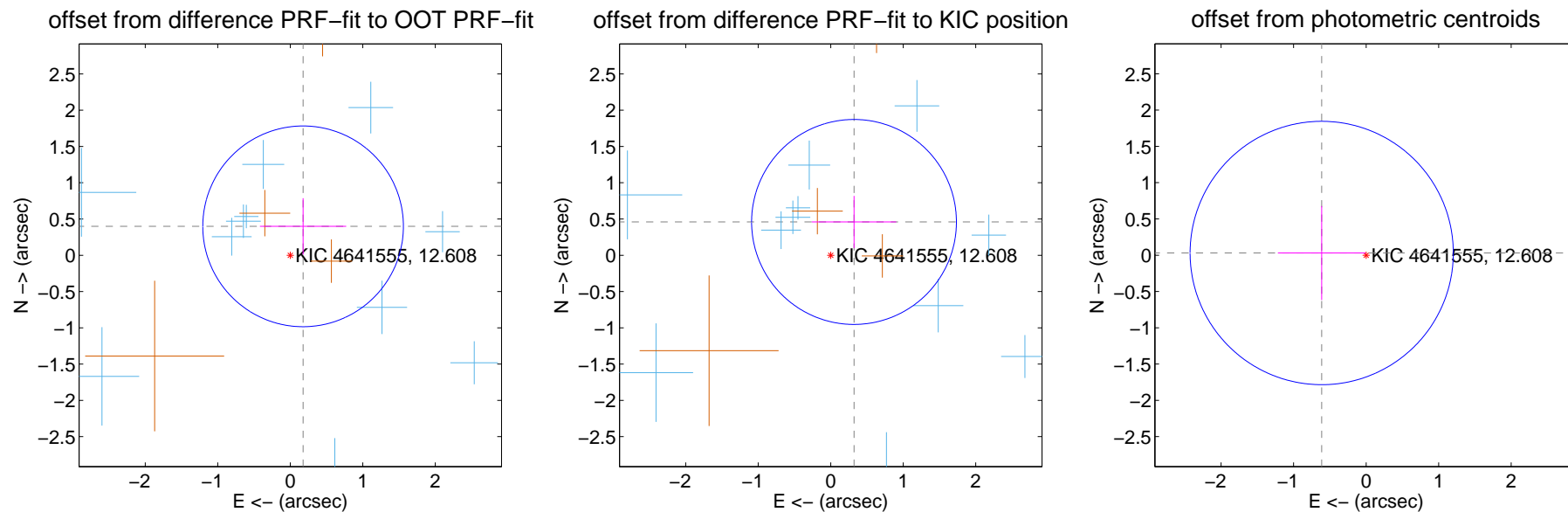
DV Centroid Data

Supplemental centroid analysis for 004641555-01. Kepler magnitude: 12.61. Transit SNR 11.54

There are 11 quarters with good PRF difference image offsets

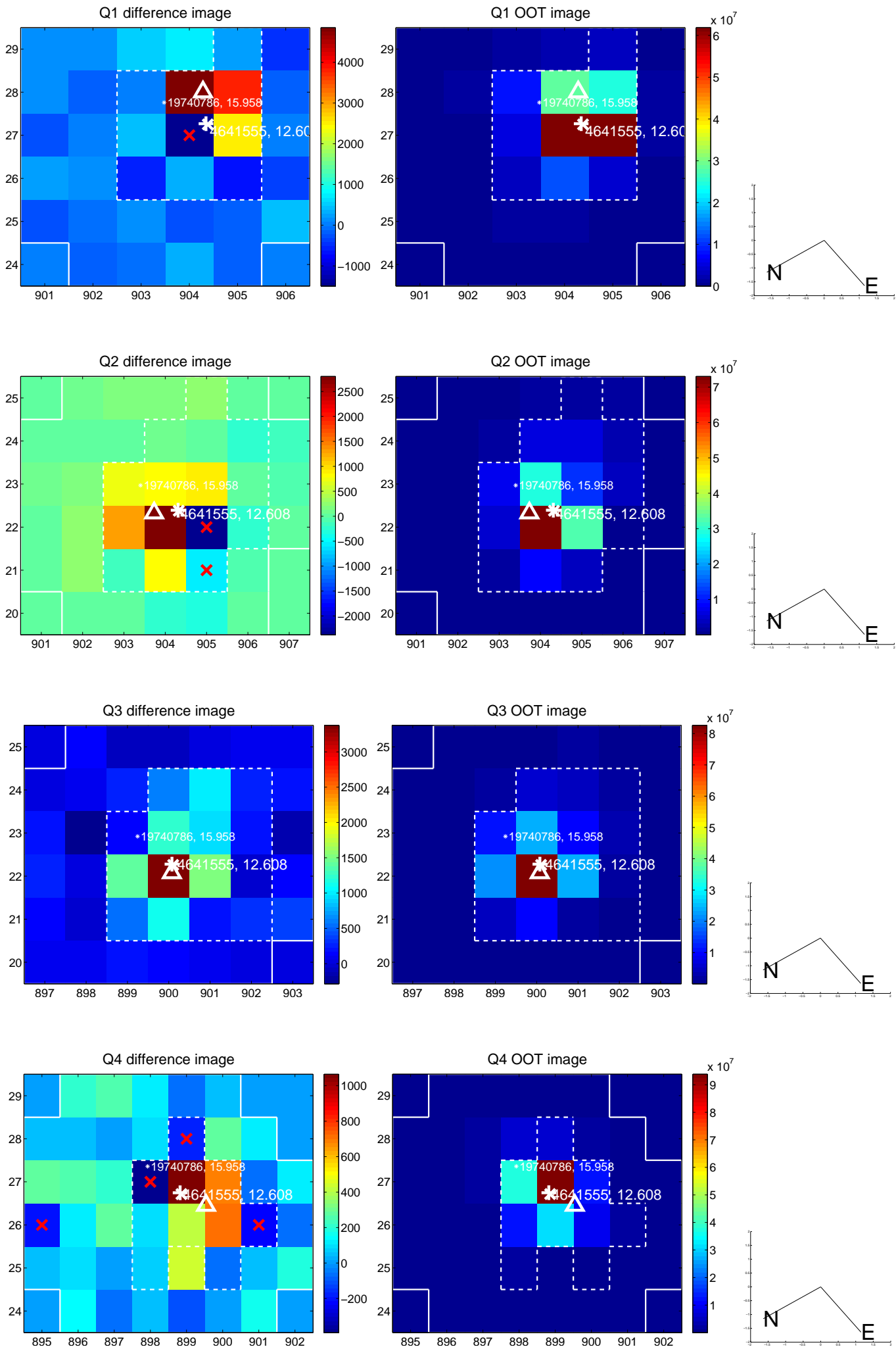
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.436 ± 0.461	0.95	-0.177 ± 0.595	0.399 ± 0.388
PRF-fit source offset from KIC position	0.561 ± 0.471	1.19	-0.321 ± 0.582	0.459 ± 0.359
photometric centroid source offset	0.61 ± 0.61	1.01	0.61 ± 0.60	0.03 ± 0.65

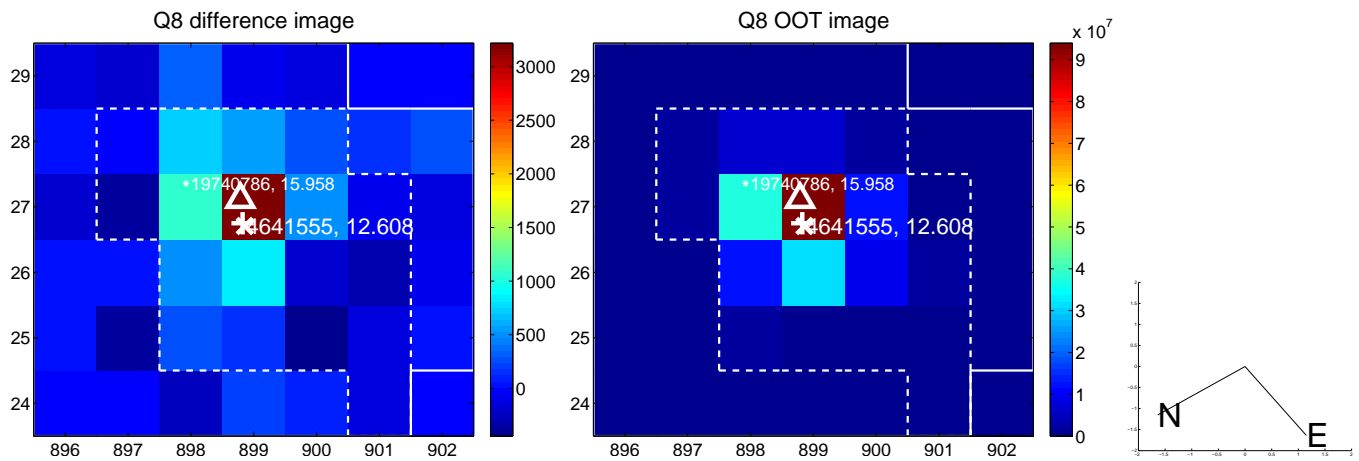
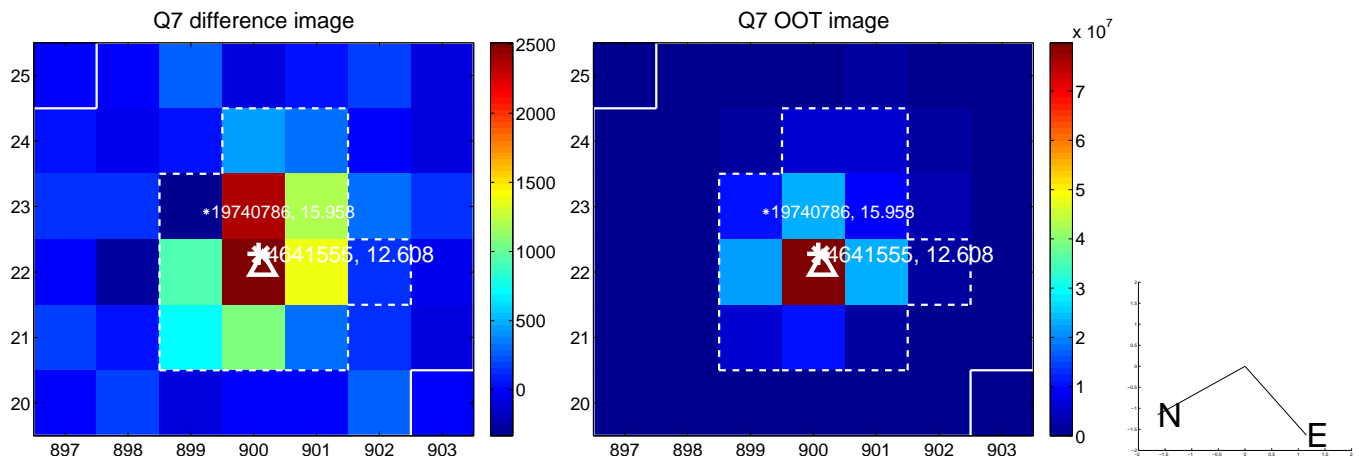
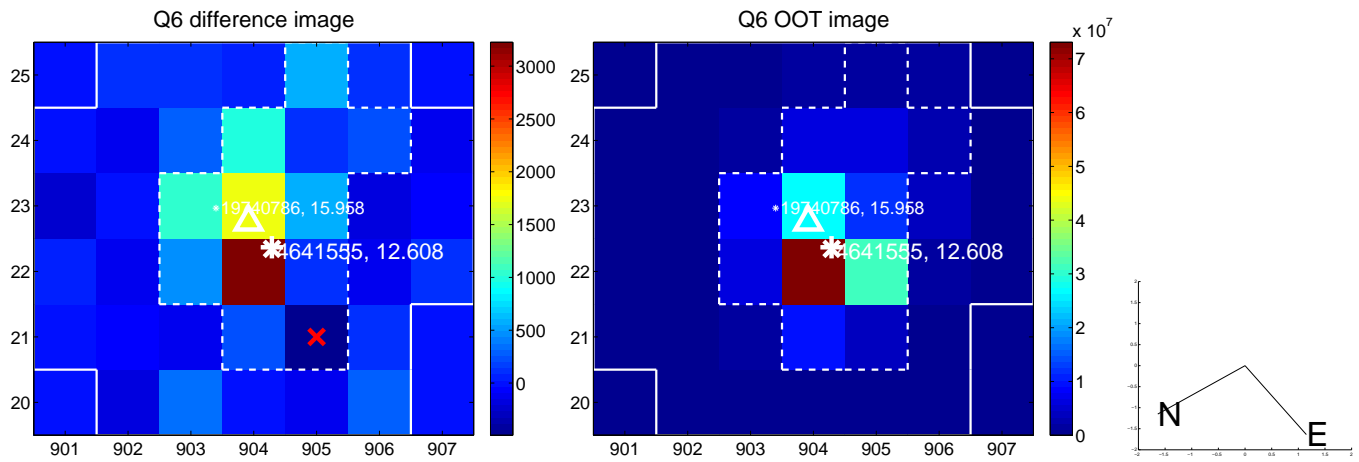
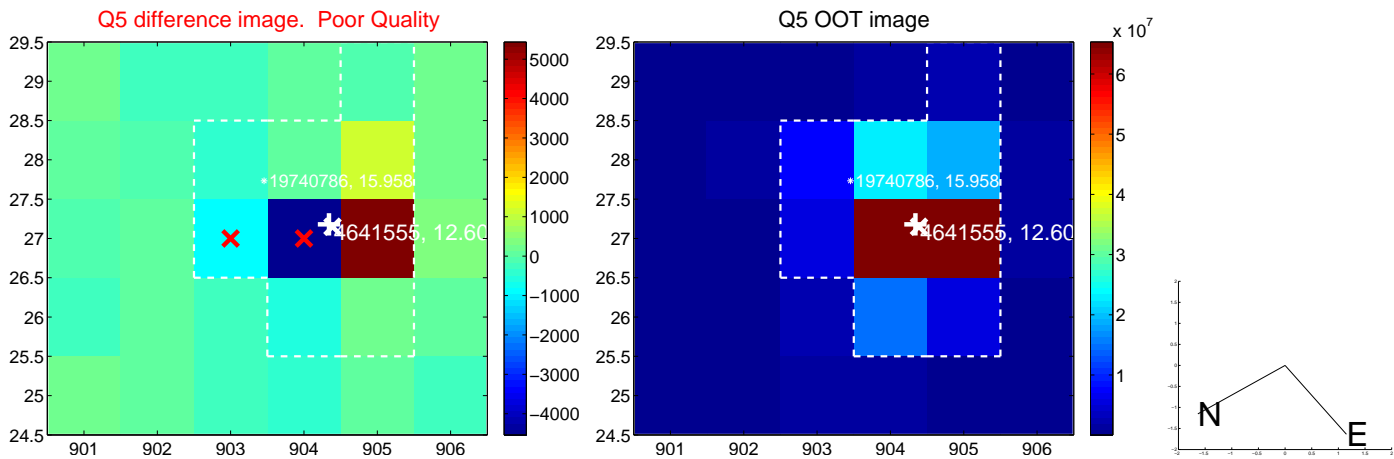


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

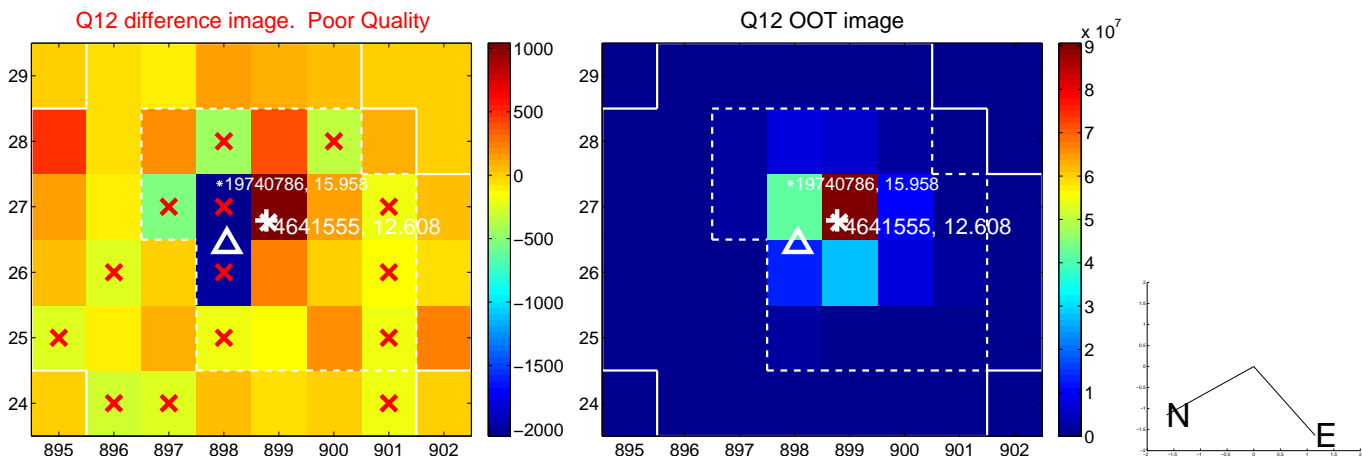
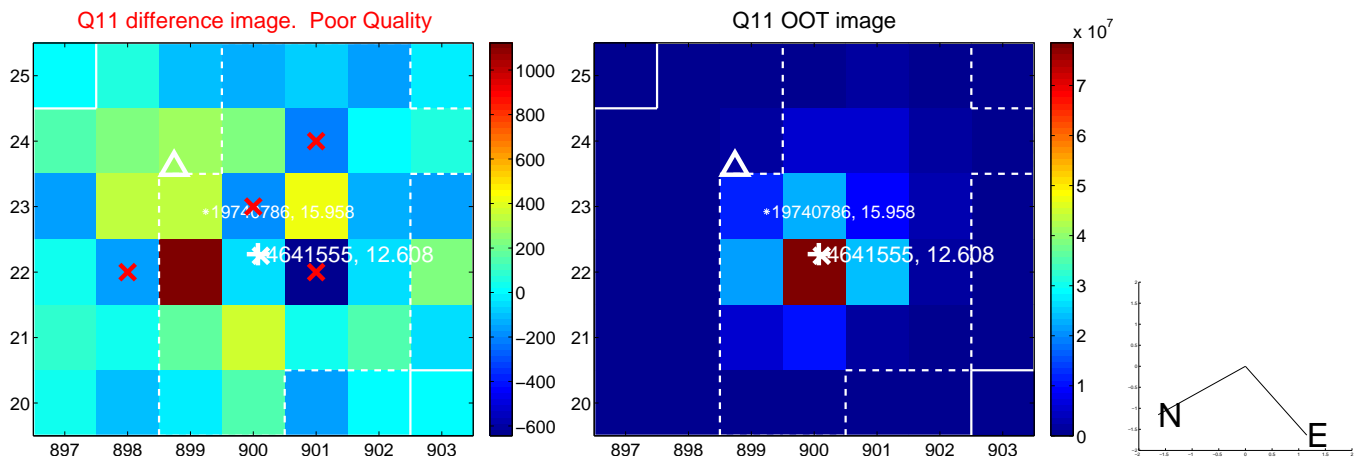
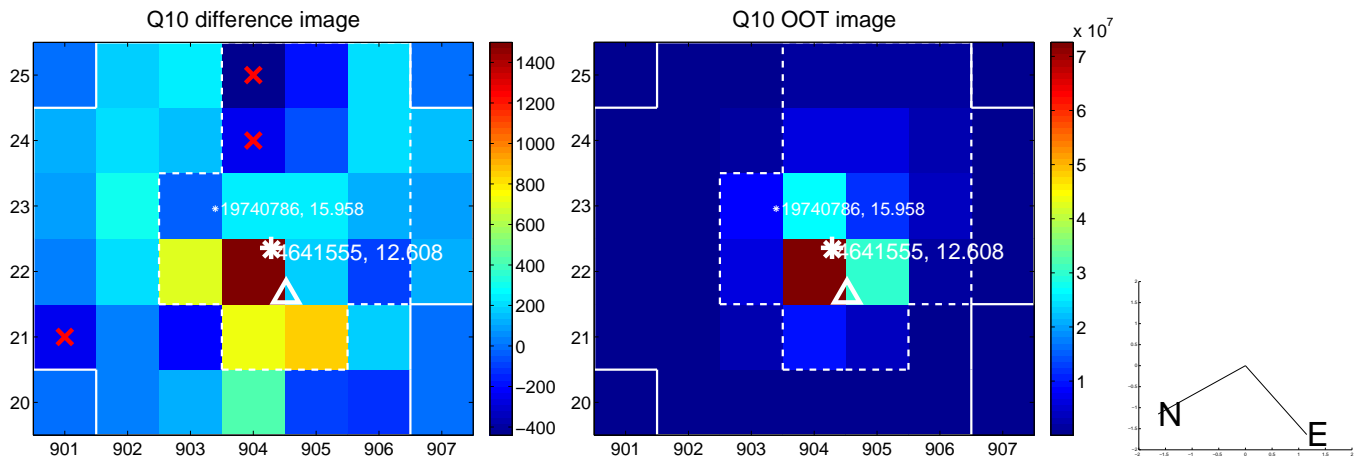
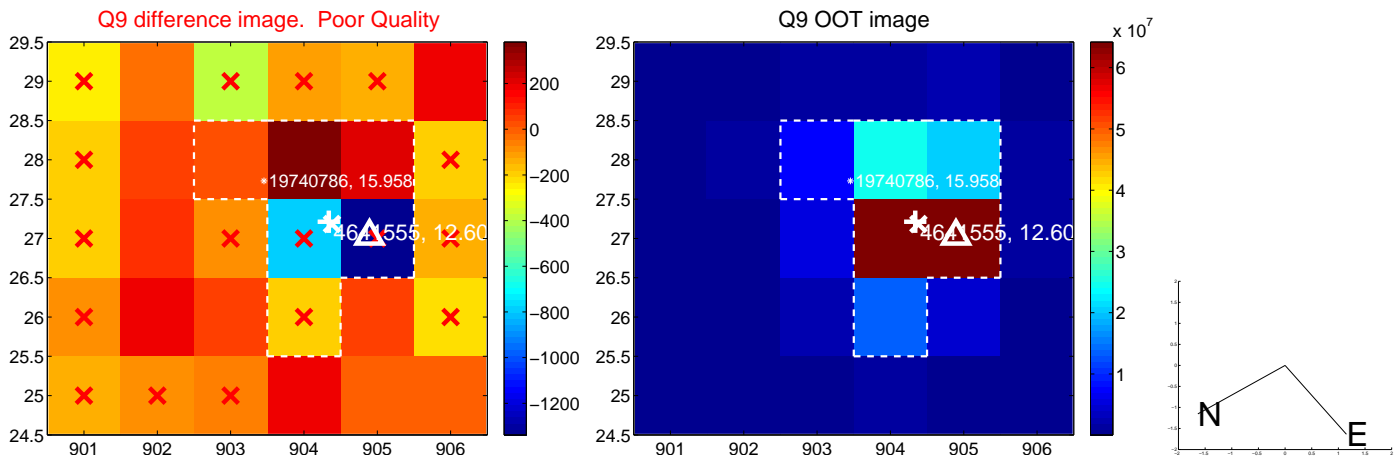
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



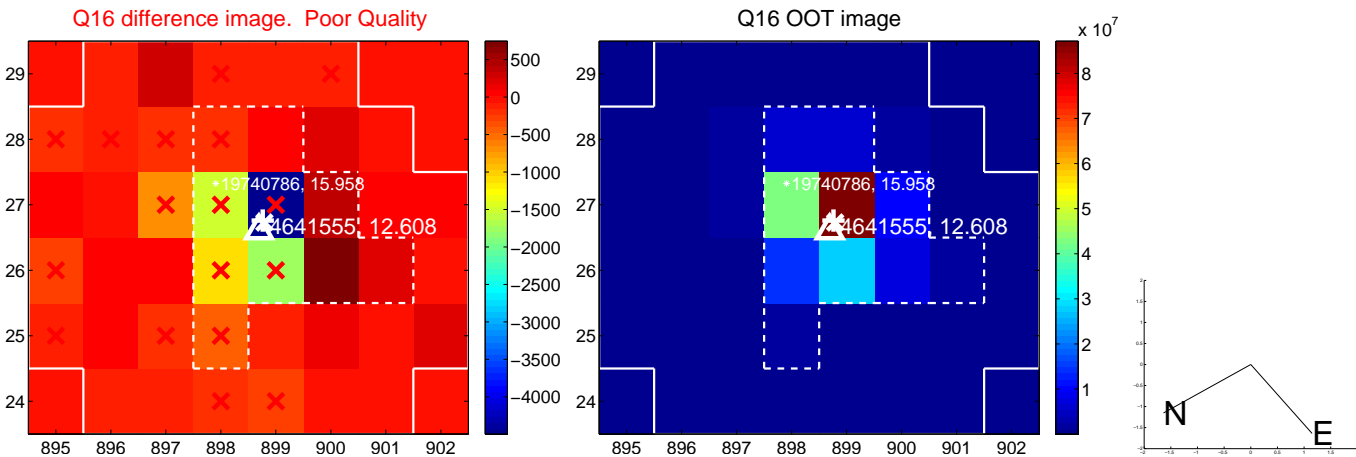
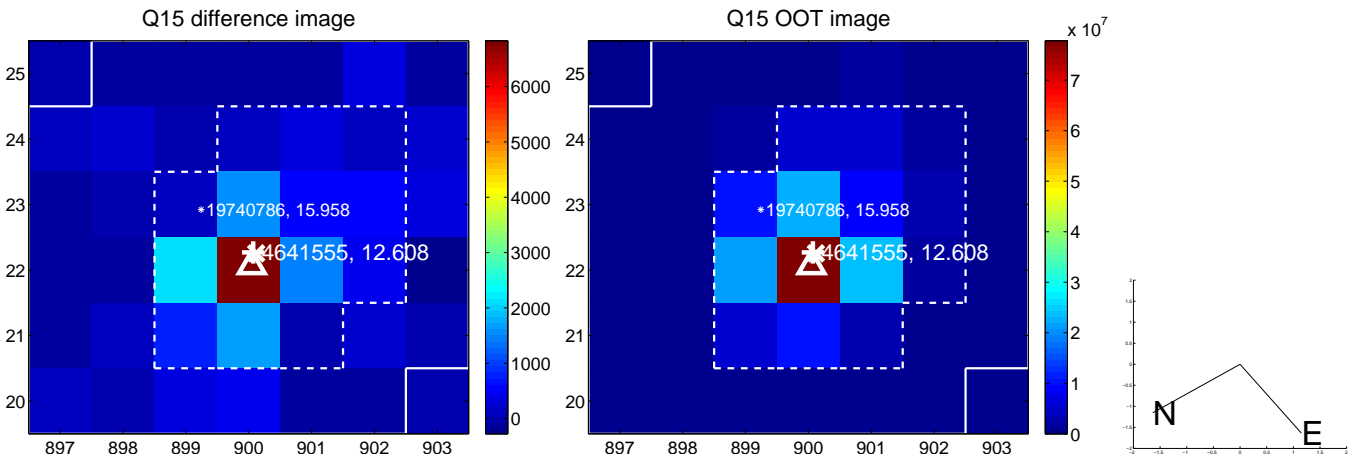
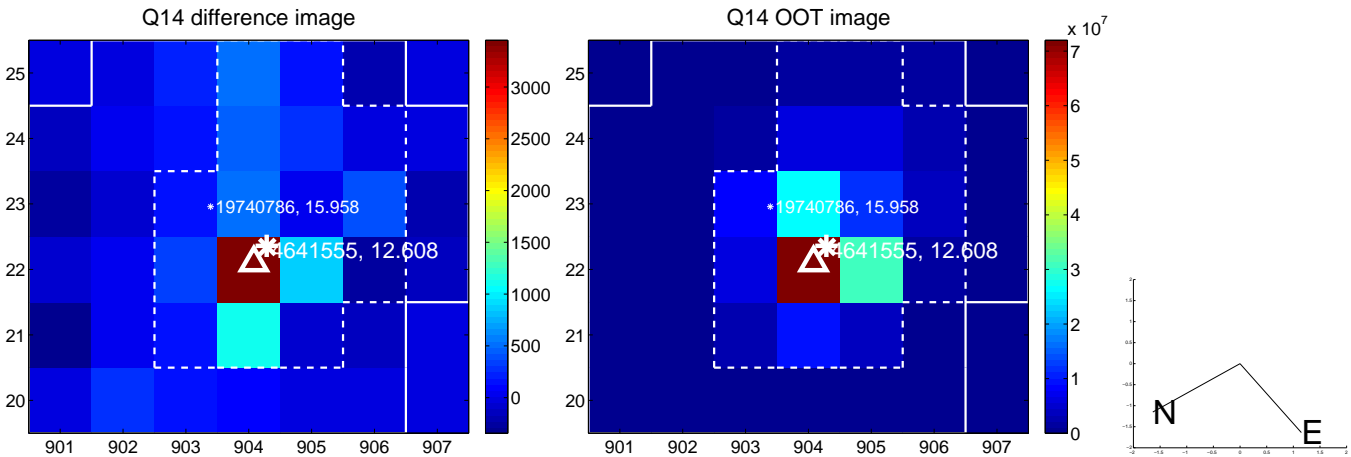
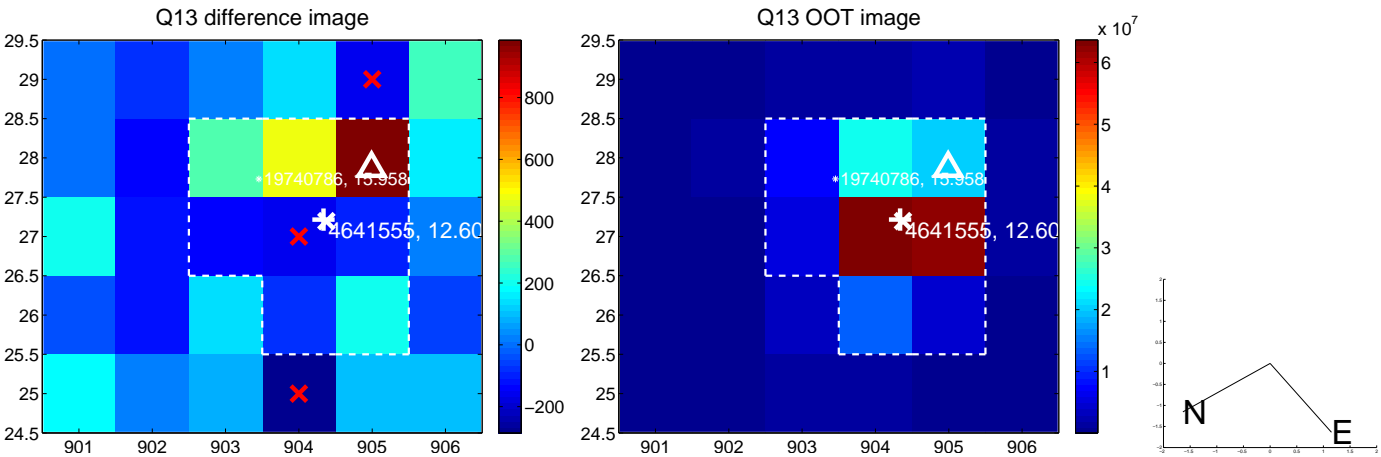
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



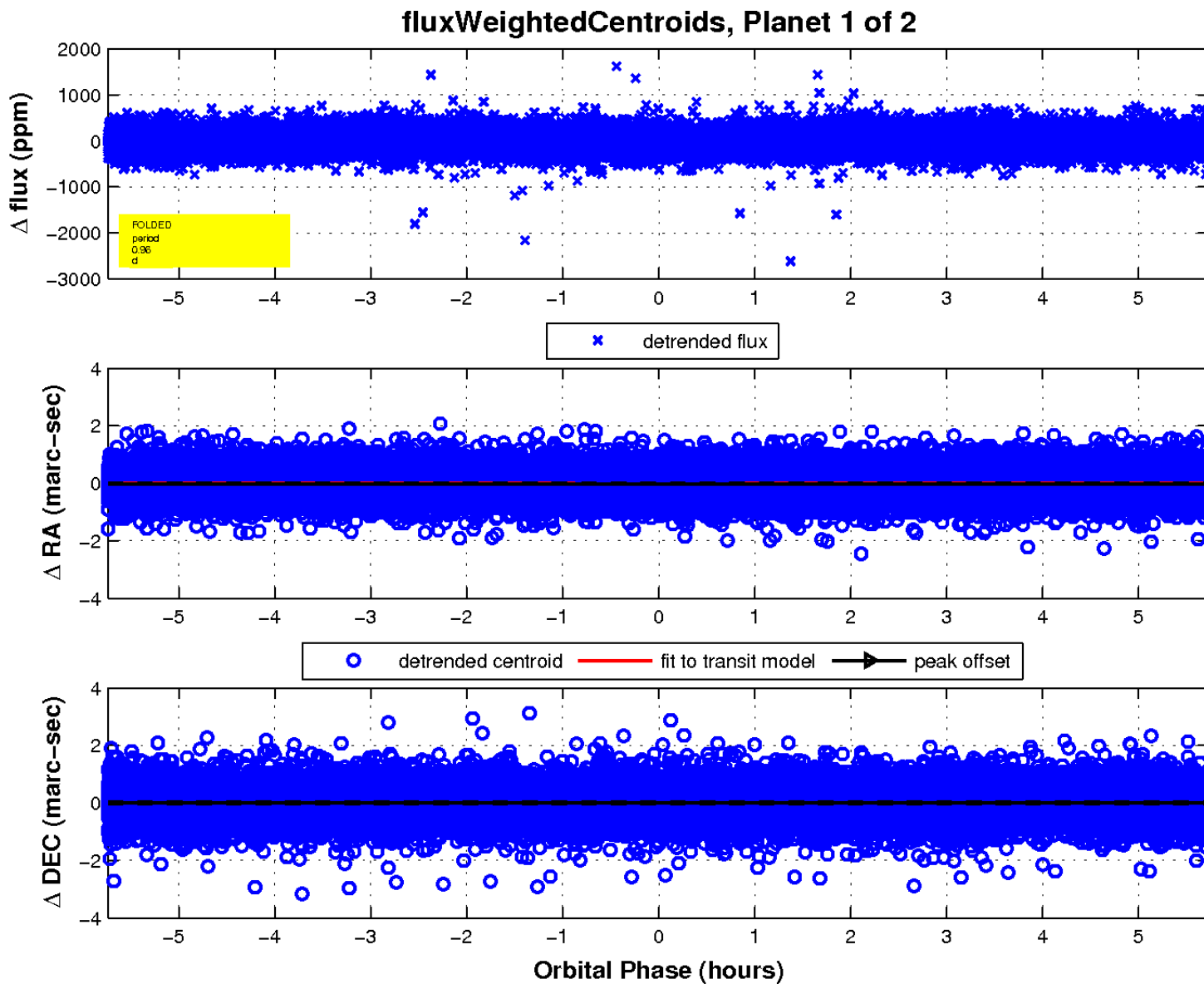
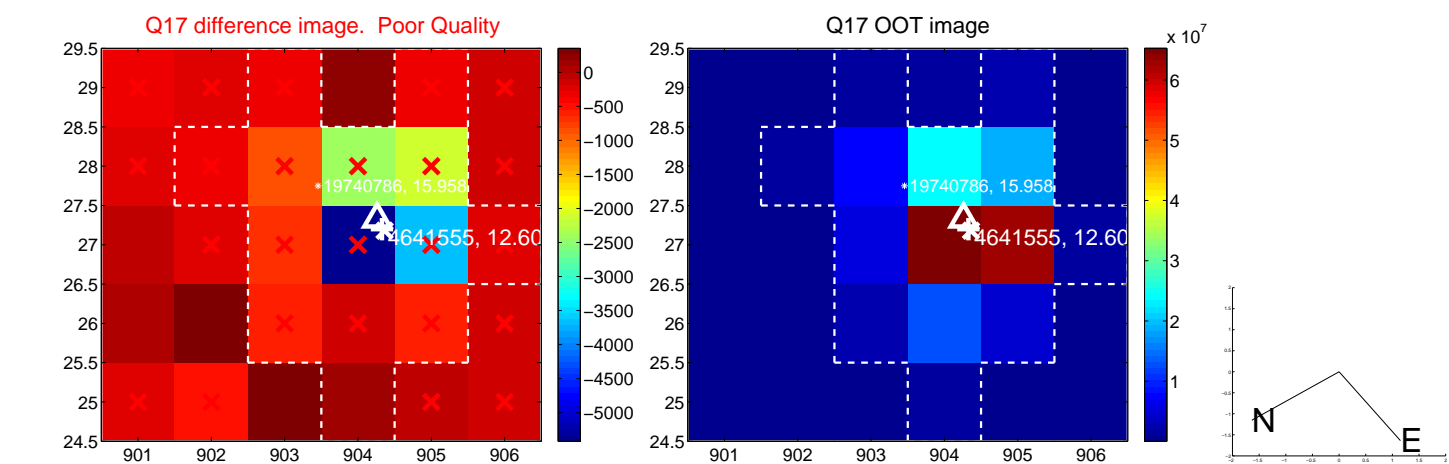
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

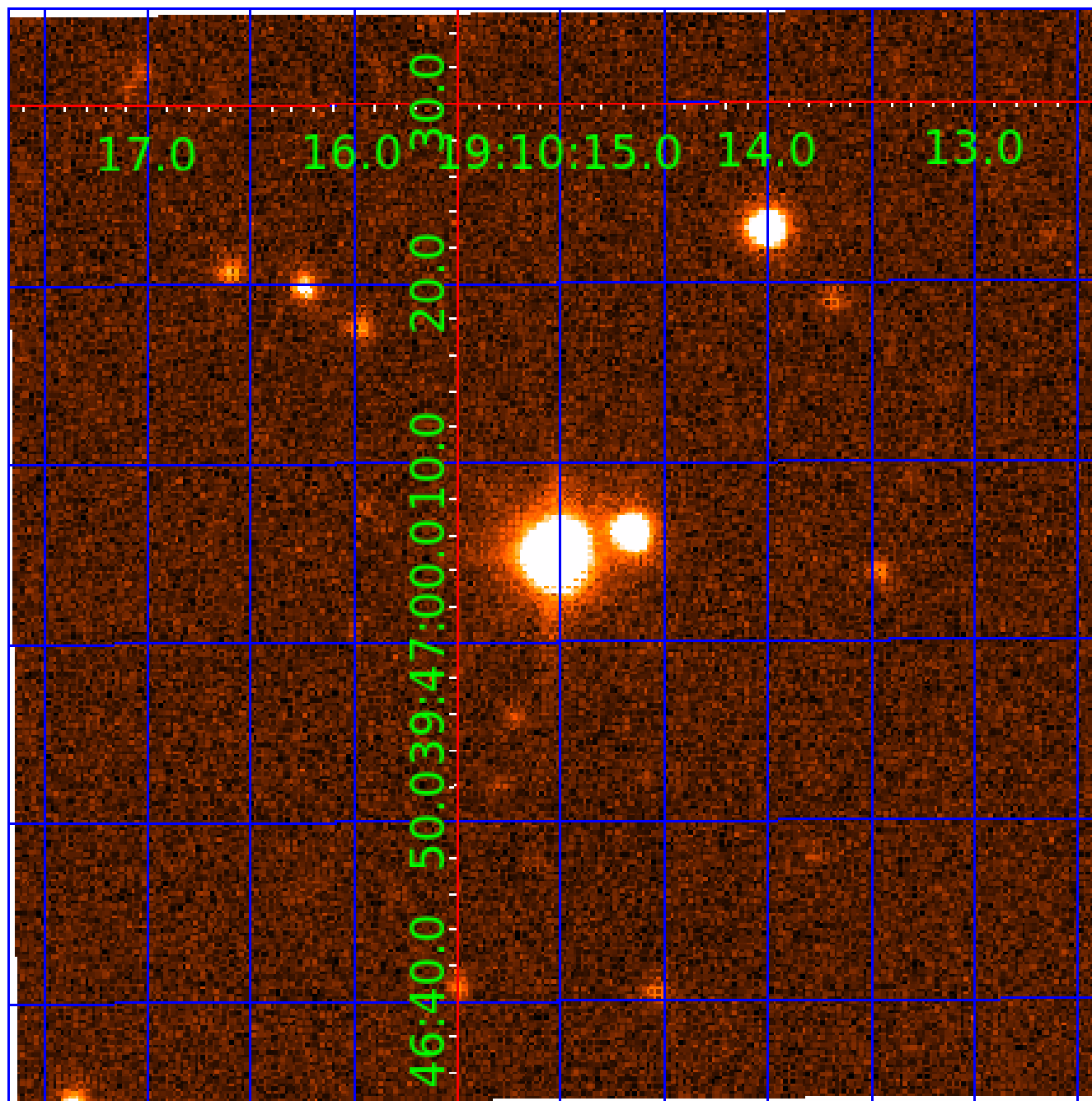


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004641555

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})
004641555-01	OBS	No	0.961134	131.621322	28.2	1.913	10.8	11.5	1.58	7175	0.97	12702.08
004641555-02	OBS	No	0.961097	132.115710	21.4	2.326	9.1	9.1	1.58	7175	0.88	12702.74

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004641555-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004641555-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

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

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

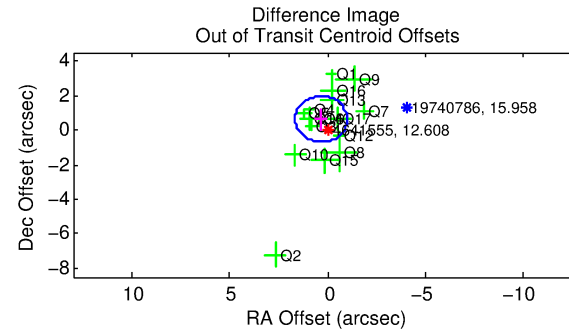
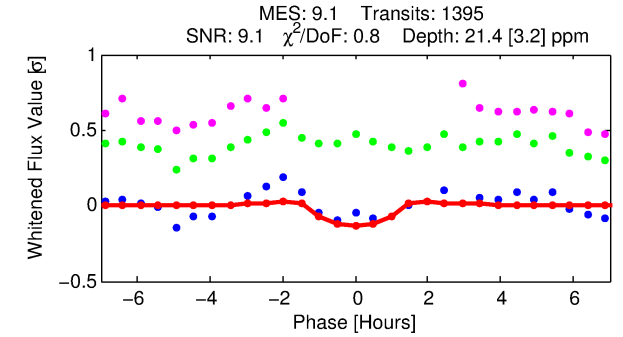
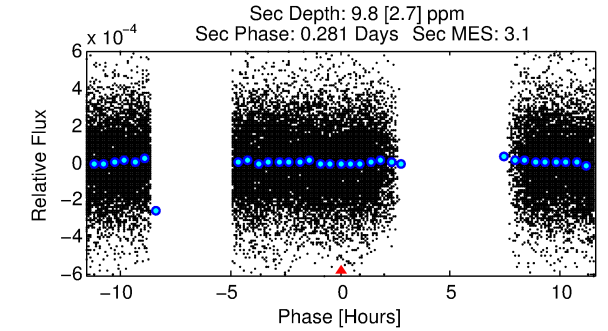
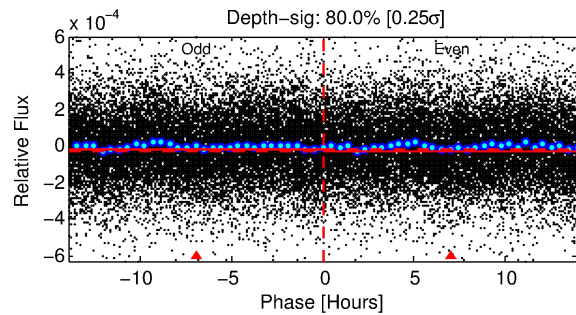
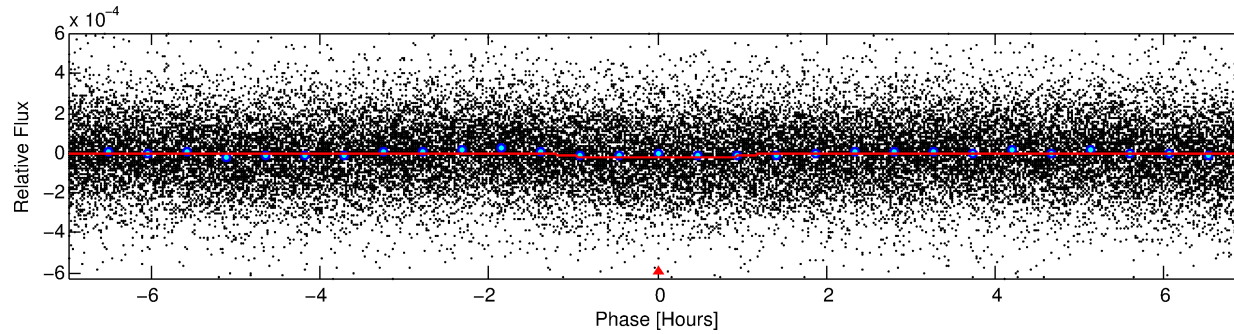
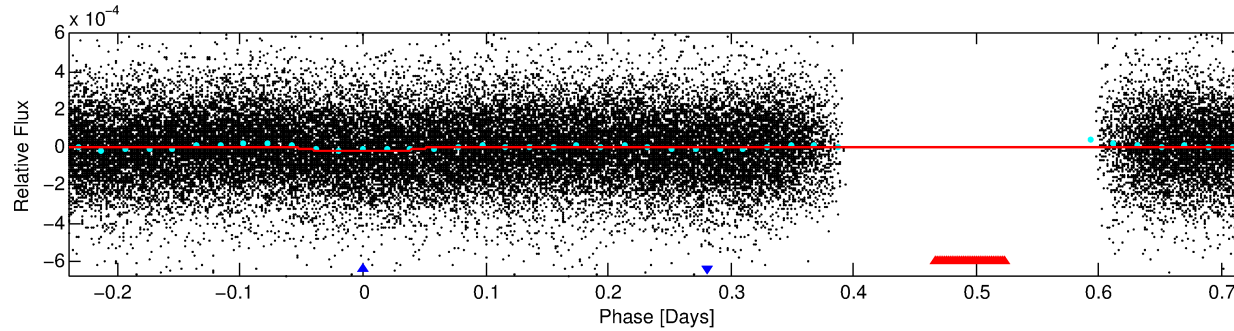
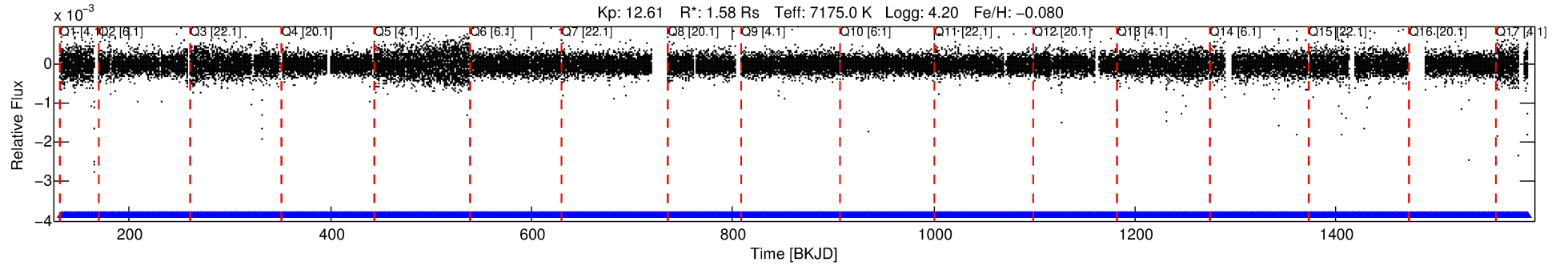
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004641555-02

No Significant Match Found

DV One-Page Summary

KIC: 4641555 Candidate: 2 of 2 Period: 0.961 d



DV Fit Results:

Period = 0.96110 [0.00001] d
Epoch = 132.1157 [0.0032] BKJD
Rp/R* = 0.0051 [0.0021]
a/R* = 1.50 [2.25]
b = 0.94 [0.36]
Seff = 12702.74 [5114.55]
Teff = 2707 [272] K
Rp = 0.87 [0.47] Re
a = 0.0216 [0.0058] AU
Ag = 3.28 [3.14] [0.73 σ]
Teffp = 5634 [1260] K [2.27 σ]

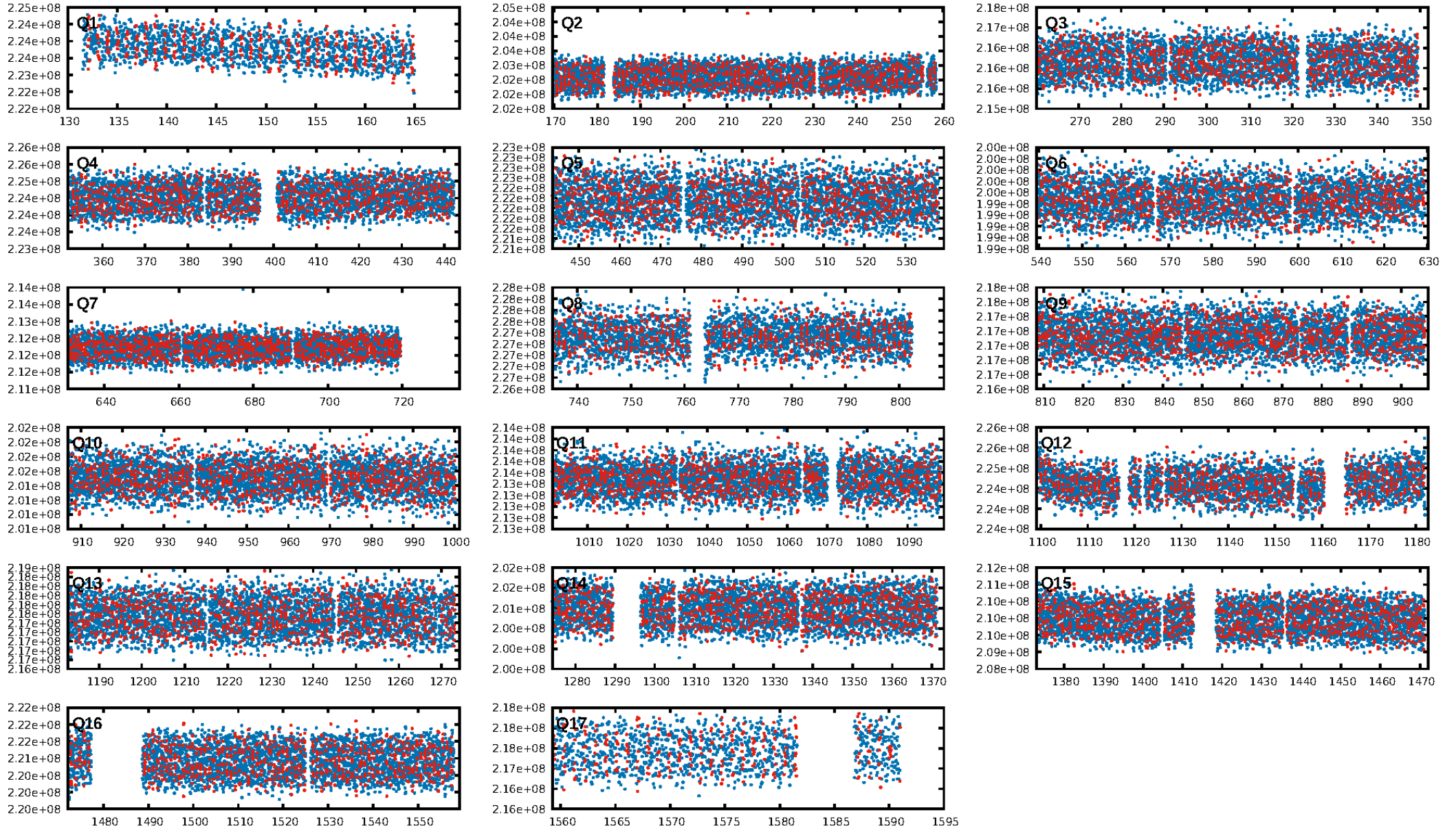
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.16e-18
RollingBand-fgt: 1.00 [1331/1331]
GhostDiagnostic-chr: 1.472
Centroid-sig: 0.6%
Centroid-so: 1.374 arcsec [1.83 σ]
OotOffset-rm: 0.716 arcsec [1.61 σ]
KicOffset-rm: 0.699 arcsec [1.28 σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 0.50 [8/16]
DiffImageOverlap-fno: 1.00 [17/17]

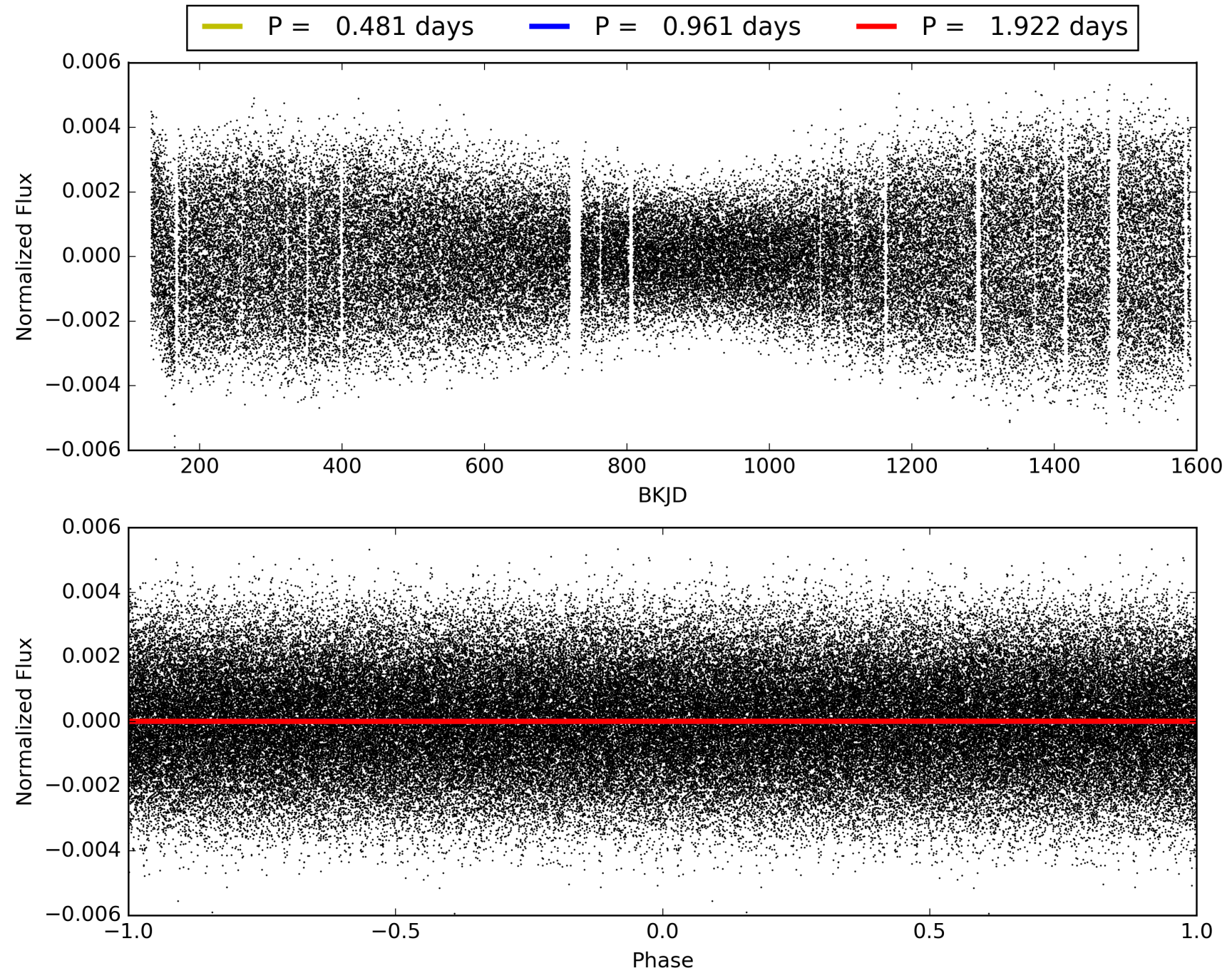
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:20:34 Z

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

TCE 004641555-02, PDC Light Curves

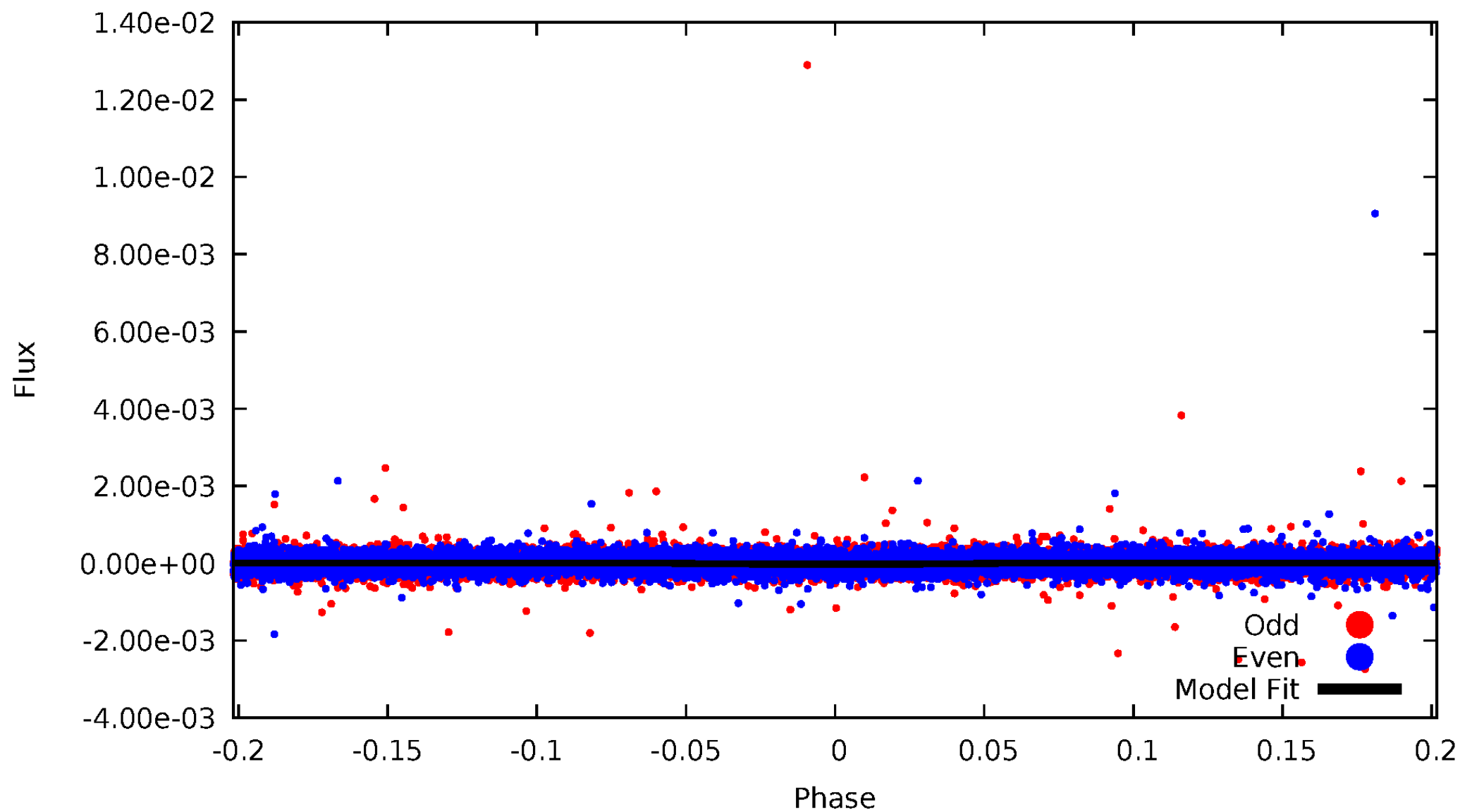


TCE 004641555-02



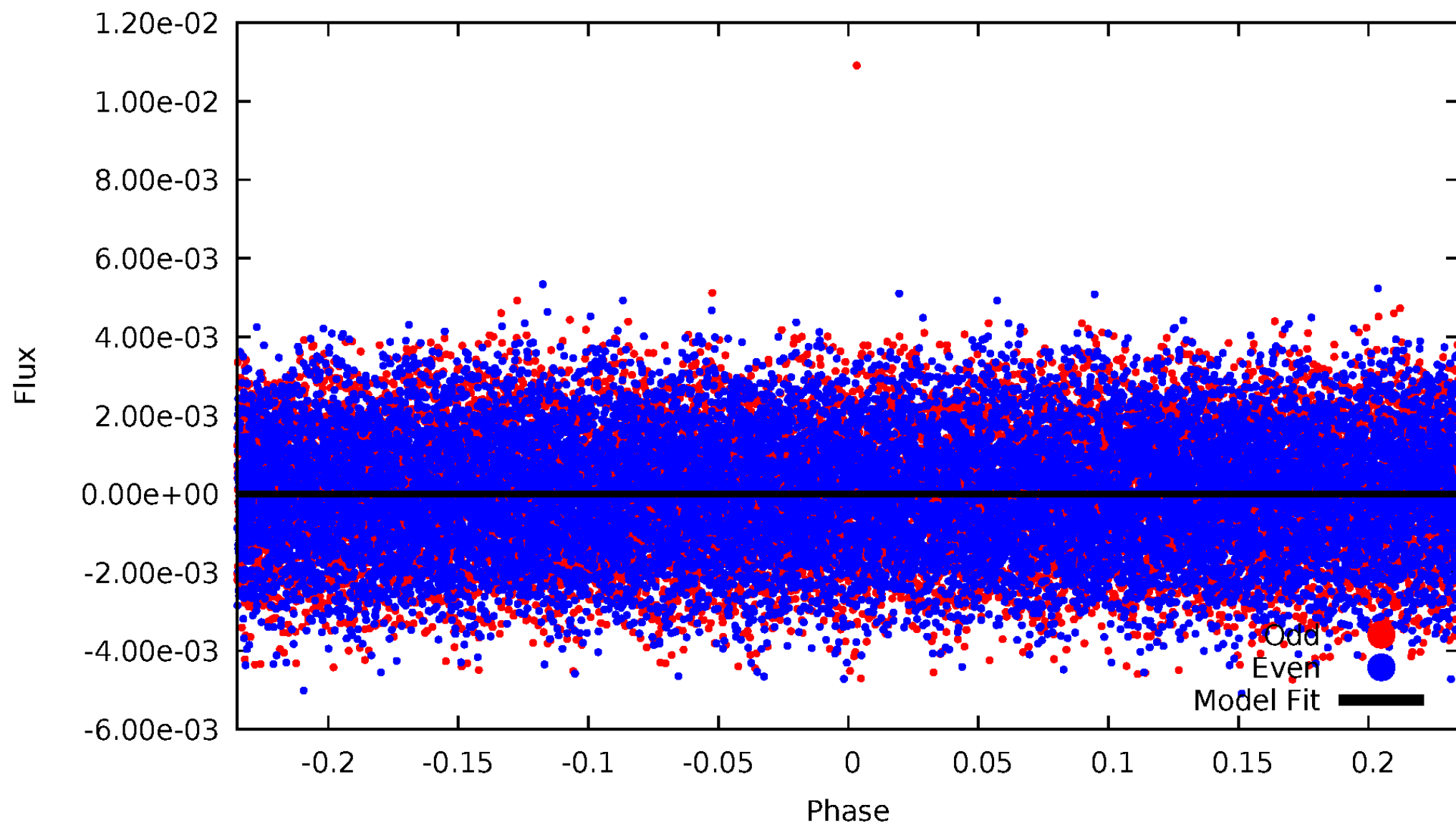
DV Odd/Even

TCE 004641555-02



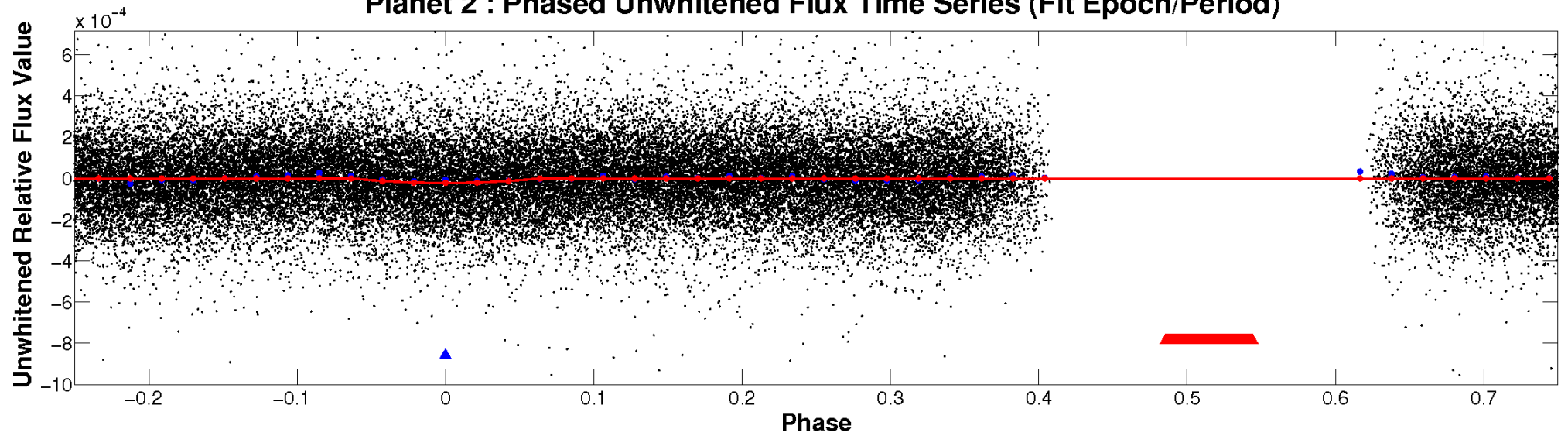
ALT Odd/Even

TCE 004641555-02

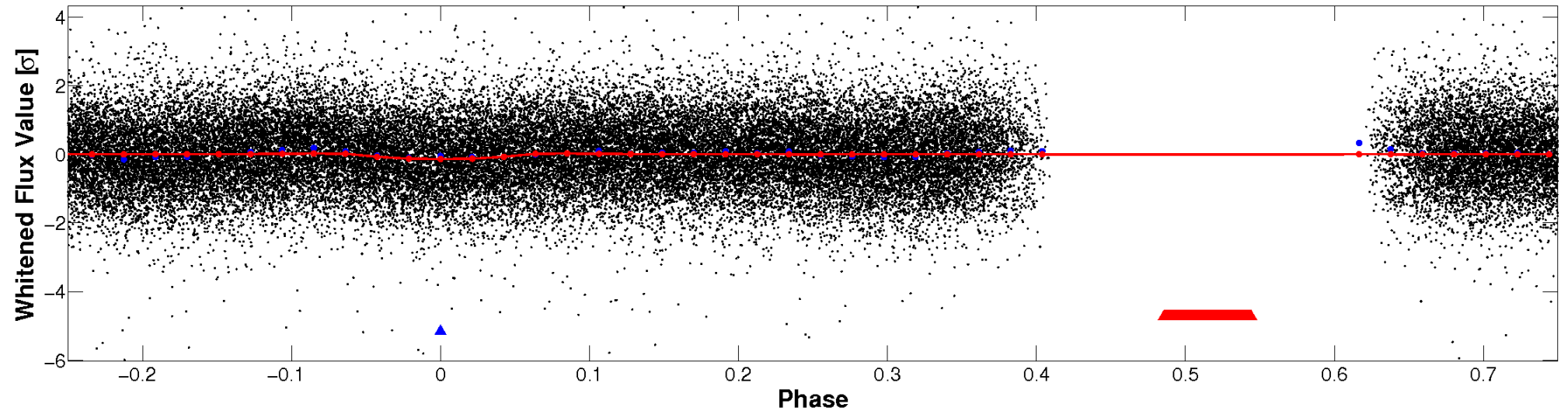


Non-Whitened Vs. Whitened Light Curve

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

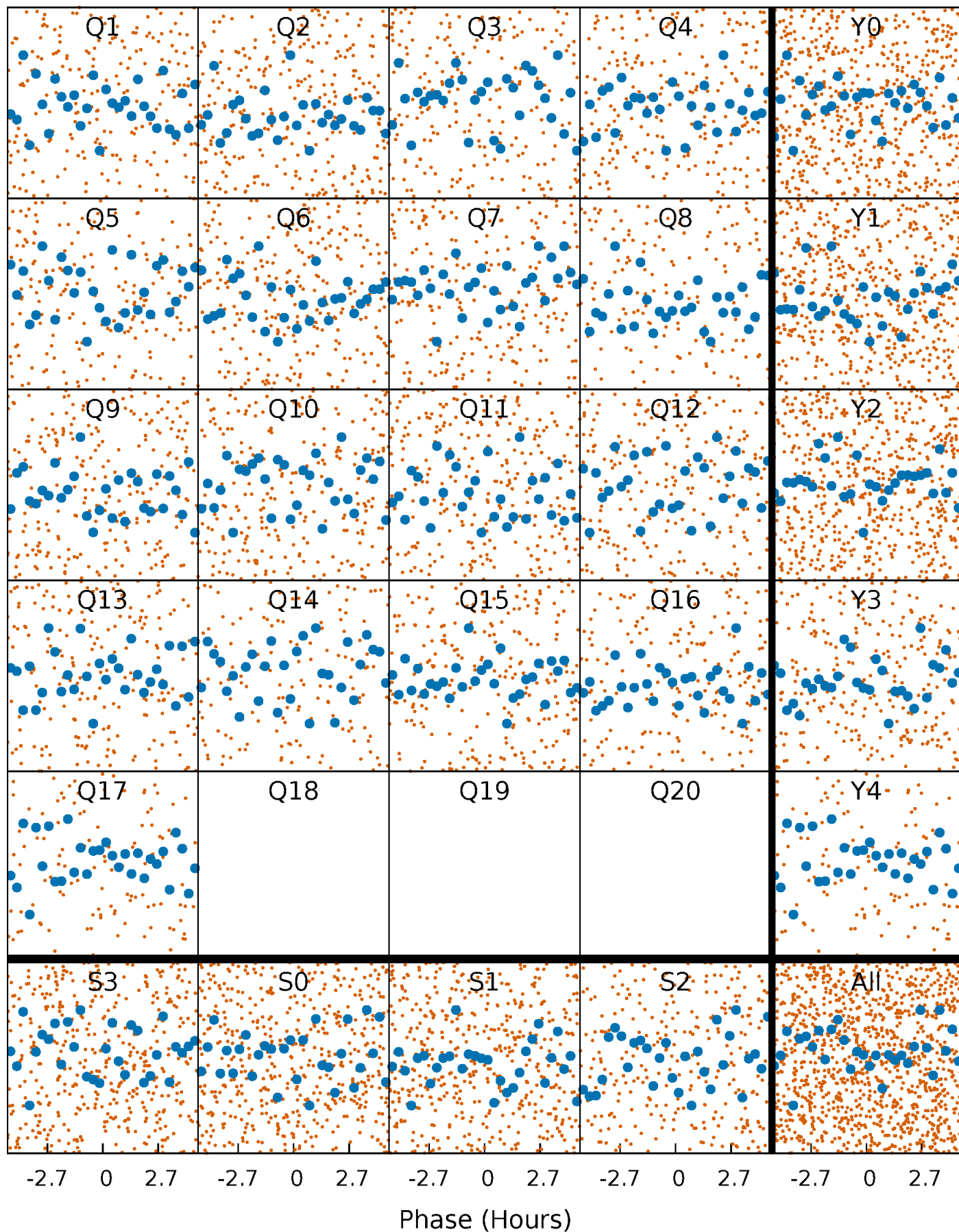


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



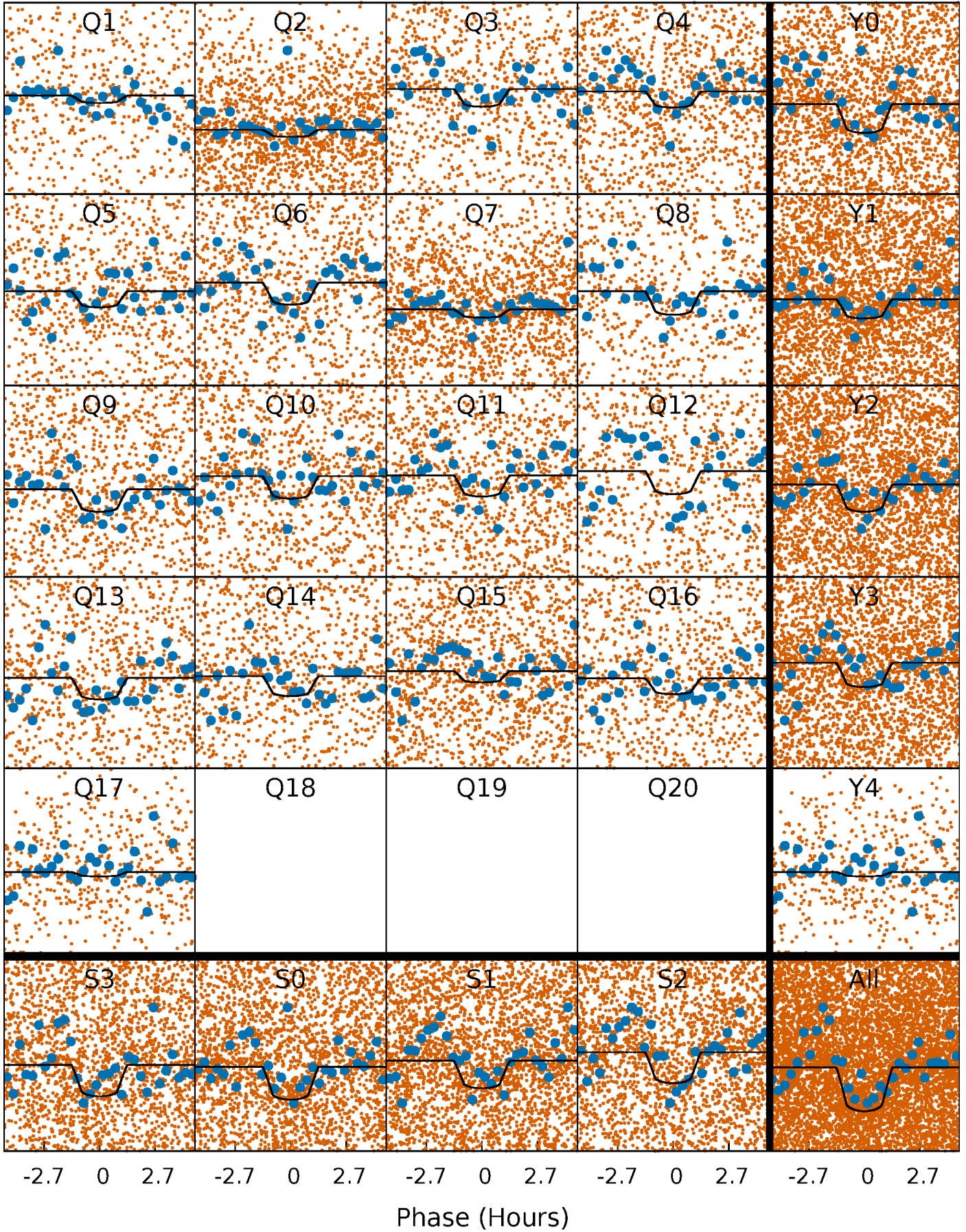
PDC Quarter-Phased Transit Curves

TCE 004641555-02 P= 0.961097 Days $T_0=132.115710$ (BKJD)



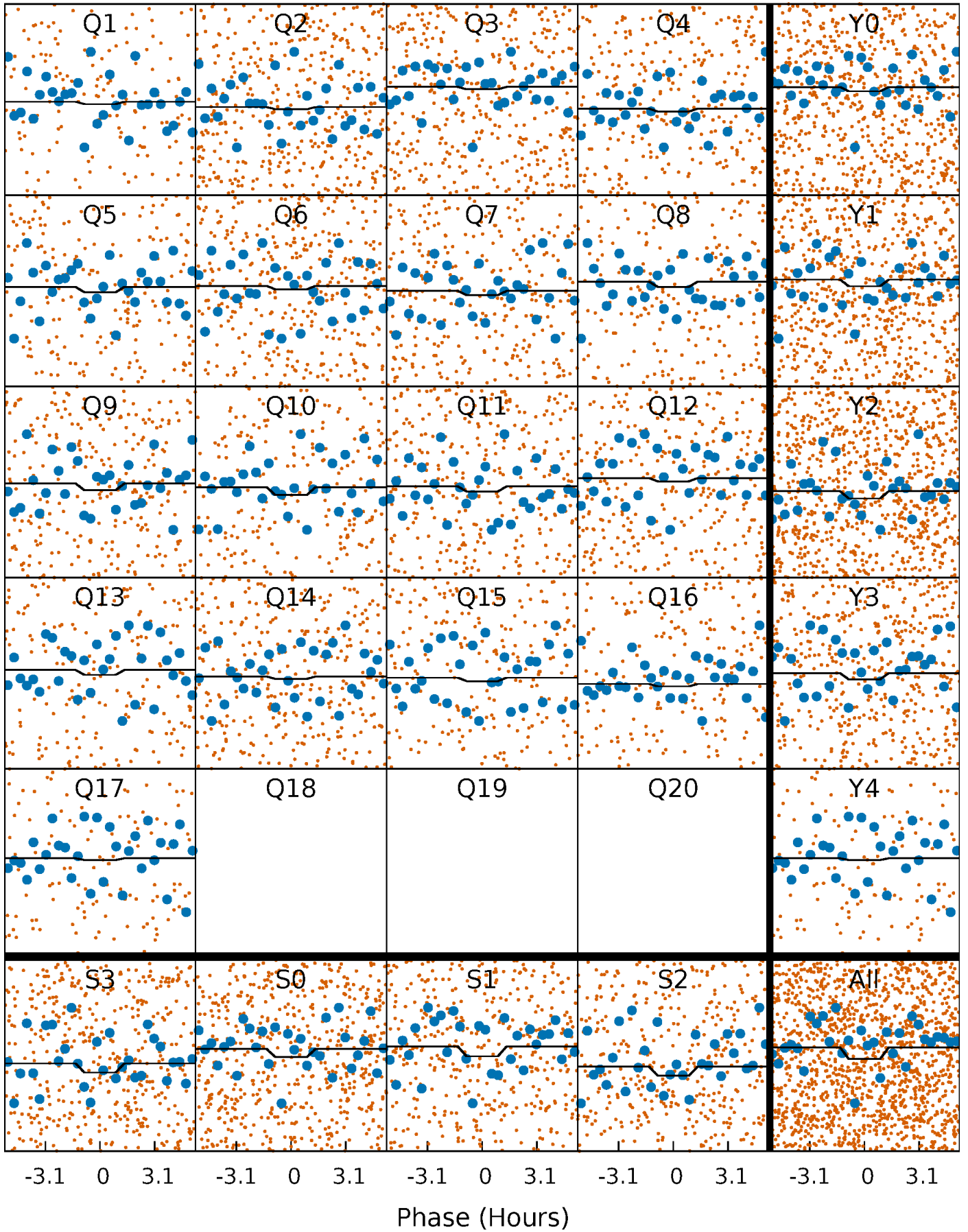
DV Quarter-Phased Transit Curves

TCE 004641555-02 P= 0.961097 Days $T_0=132.115710$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

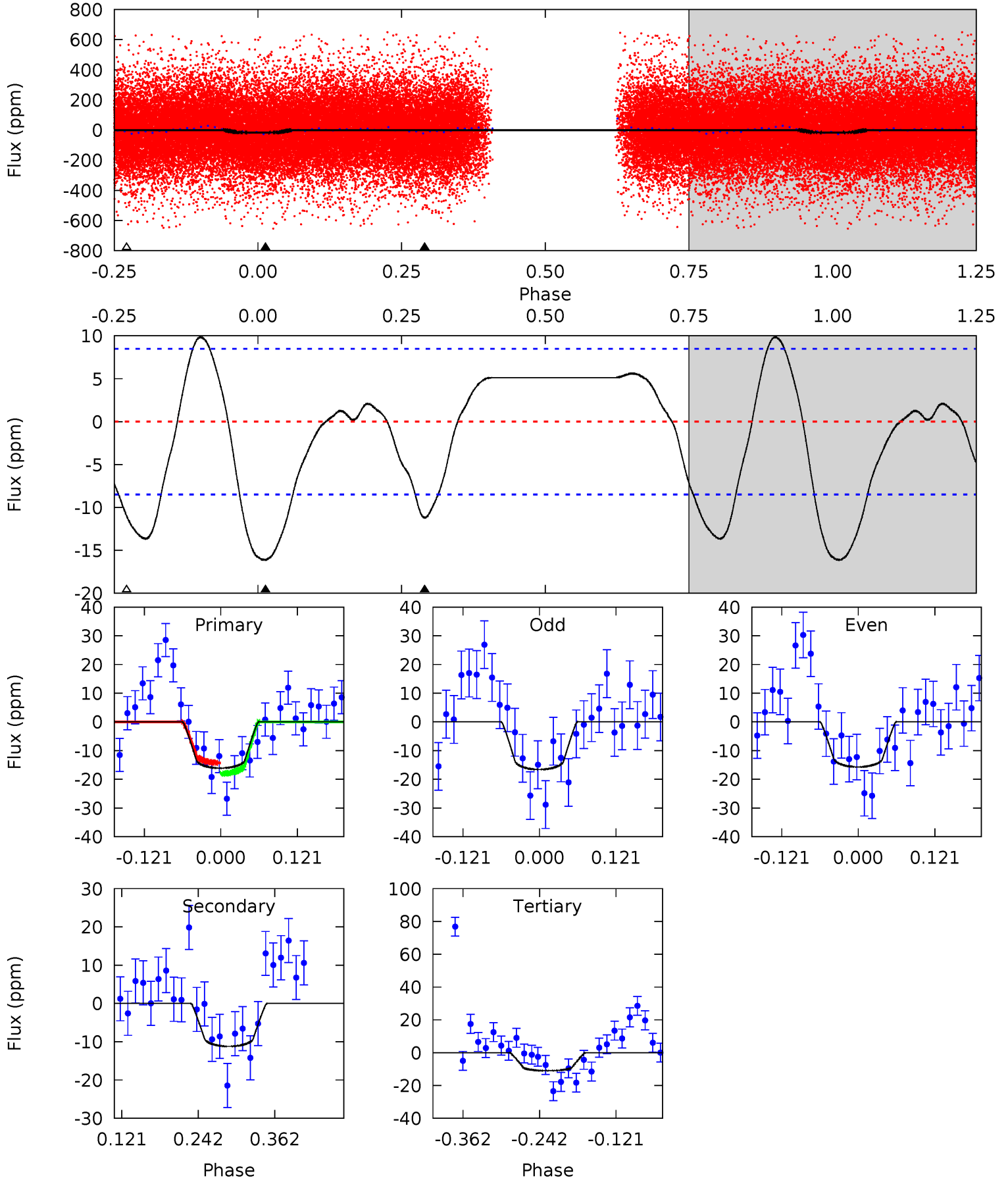
TCE 004641555-02 P= 0.961128 Days $T_0=132.100903$ (BKJD)



DV Model-Shift Uniqueness Test

004641555-02, P = 0.961097 Days, E = 131.154613 Days

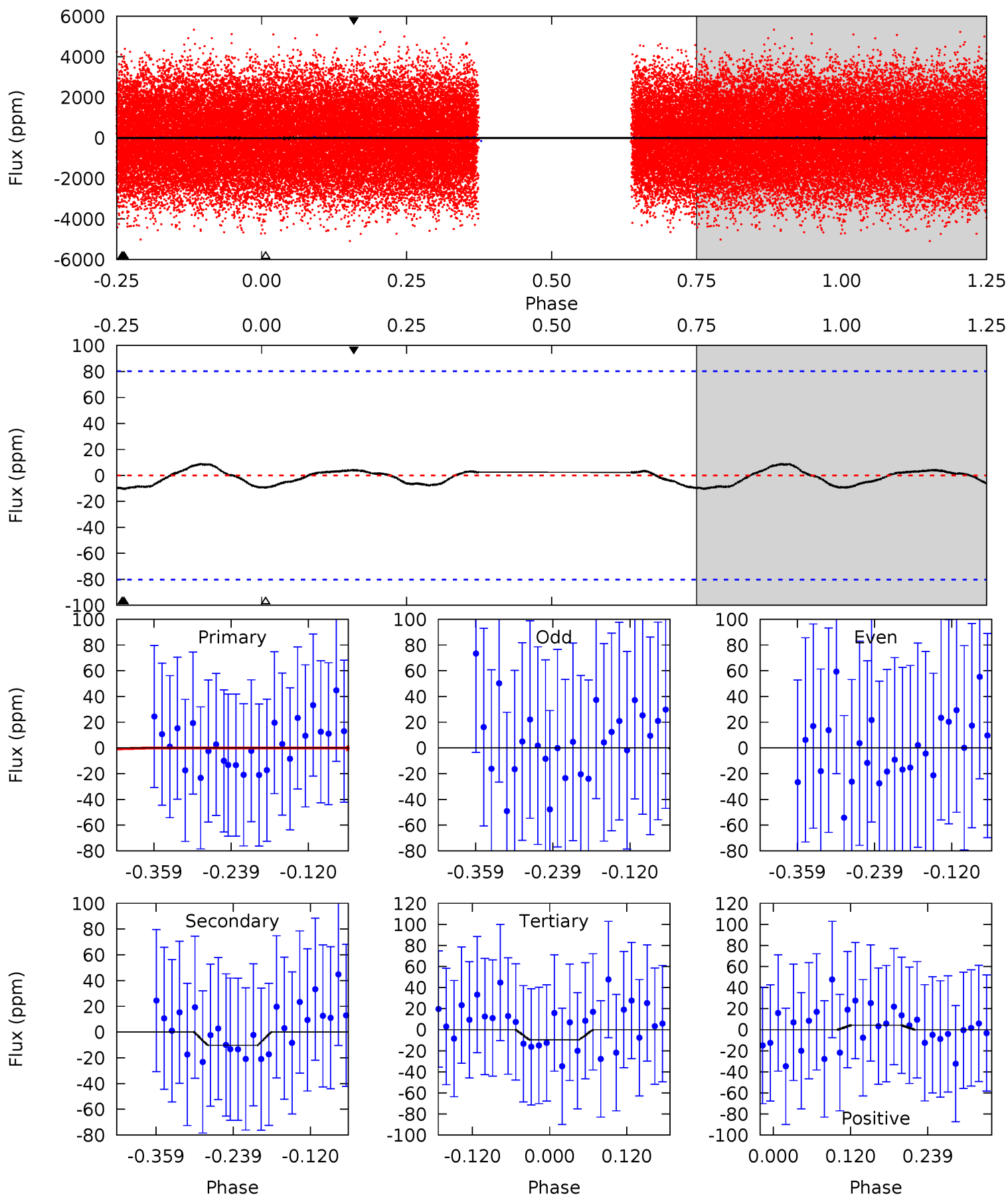
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.61	5.98	5.87	0	4.53	1.55	3.62	2.74	8.61	0.11	5.98	0.24	0.78	0.38	1.01



Alt Model-Shift Uniqueness Test

004641555-02, P = 0.961128 Days, E = 131.139775 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.59	0.58	0.54	0.24	4.53	1.56	0.28	0.05	0.35	0.04	0.34	0.21	0.96	0.46	0.11



Stellar Parameters For KIC 004641555

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7175^{+200}_{-275}	$4.203^{+0.105}_{-0.195}$	$-0.080^{+0.250}_{-0.400}$	$1.578^{+0.524}_{-0.282}$	$1.452^{+0.209}_{-0.232}$	$0.521^{+0.270}_{-0.266}$
	+3%/-4%	+2%/-5%	+312%/-500%	+33%/-18%	+14%/-16%	+52%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004641555-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-11 ± 2	$0.91^{+0.40}_{-0.37}$	3825^{+293}_{-240}	5562^{+1882}_{-851}	$3.301^{+6.576}_{-1.694}$
Alt.	-10 ± 18	$0.62^{+0.41}_{-0.32}$	3811^{+287}_{-214}	6373^{+4905}_{-12427}	$5.512^{+26.627}_{-9.771}$

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 $A_{obs} \gg 1.0$

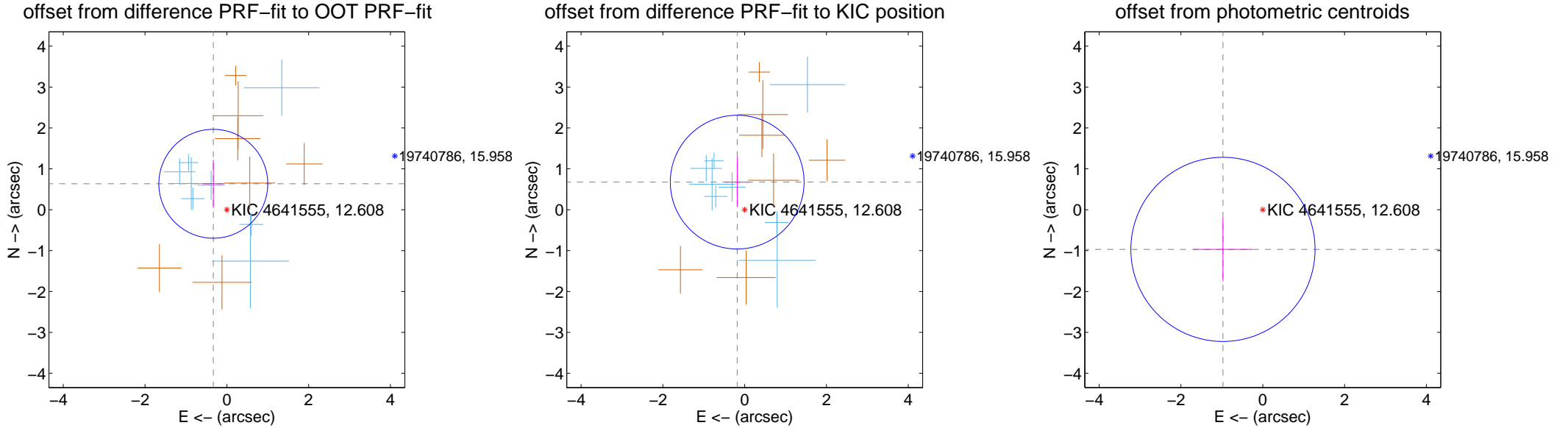
DV Centroid Data

Supplemental centroid analysis for 004641555-02. Kepler magnitude: 12.61. Transit SNR 9.09

There are 8 quarters with good PRF difference image offsets

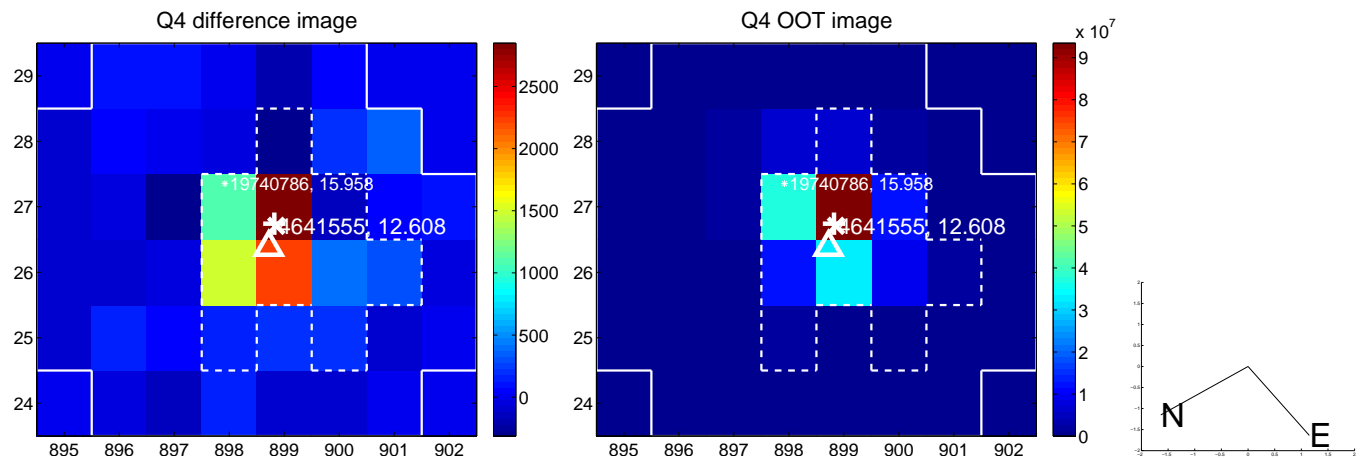
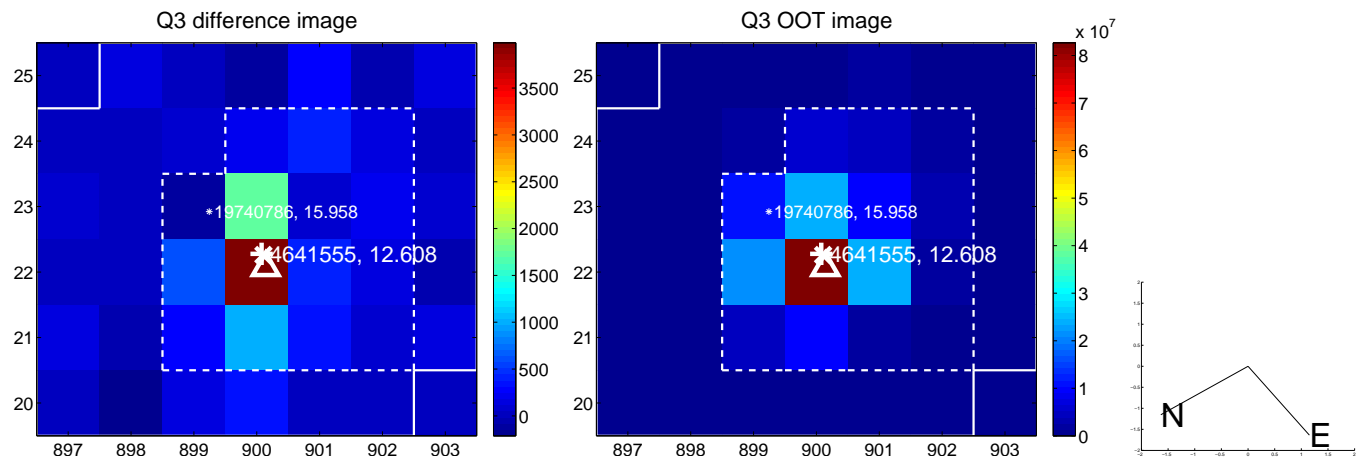
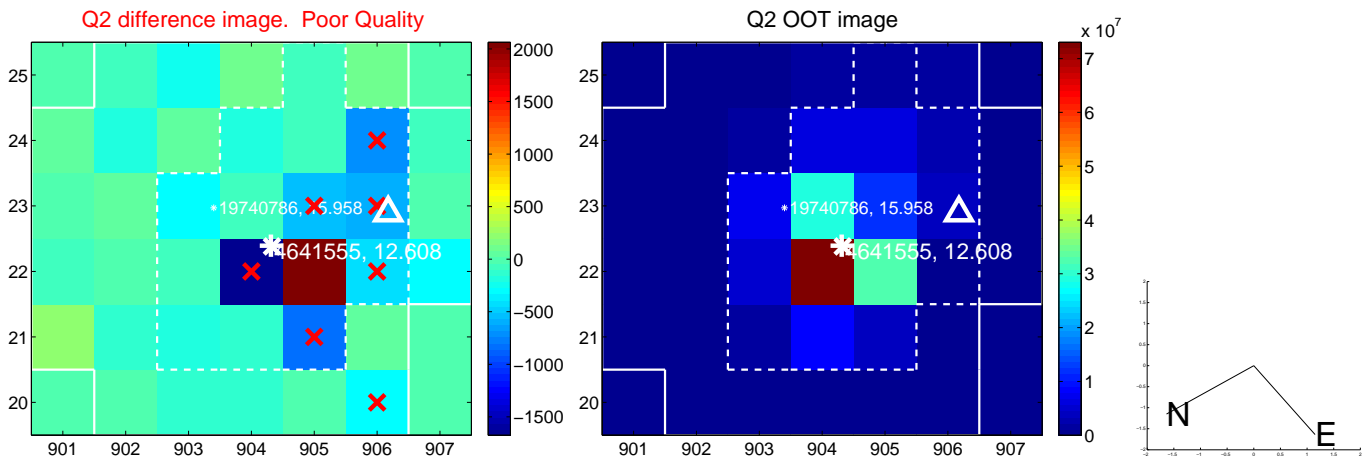
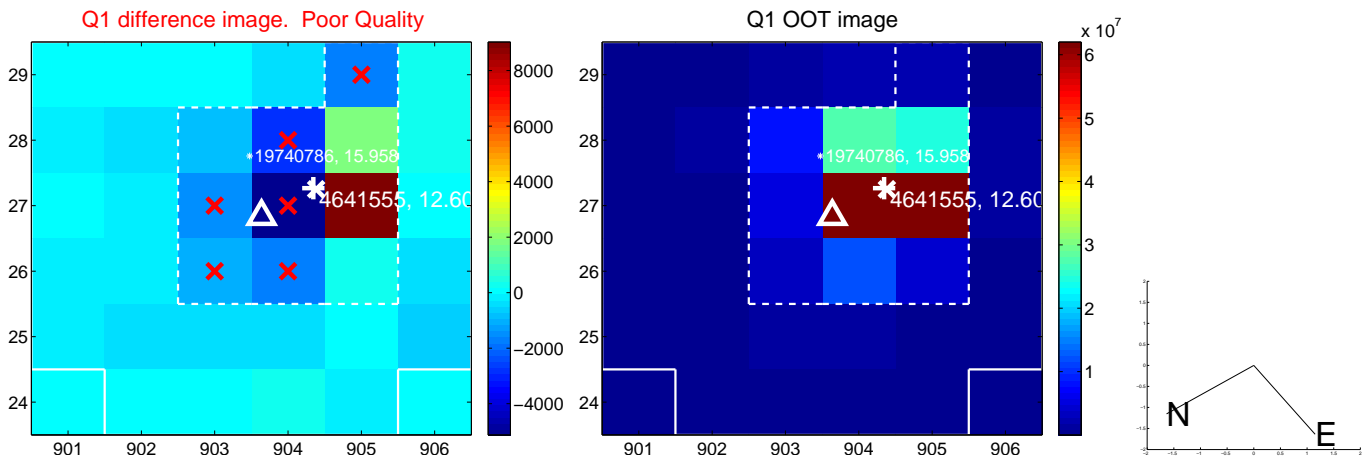
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.716 ± 0.444	1.61	0.331 ± 0.279	0.635 ± 0.587
PRF-fit source offset from KIC position	0.699 ± 0.545	1.28	0.183 ± 0.290	0.675 ± 0.609
photometric centroid source offset	1.37 ± 0.75	1.83	0.97 ± 0.72	-0.97 ± 0.78

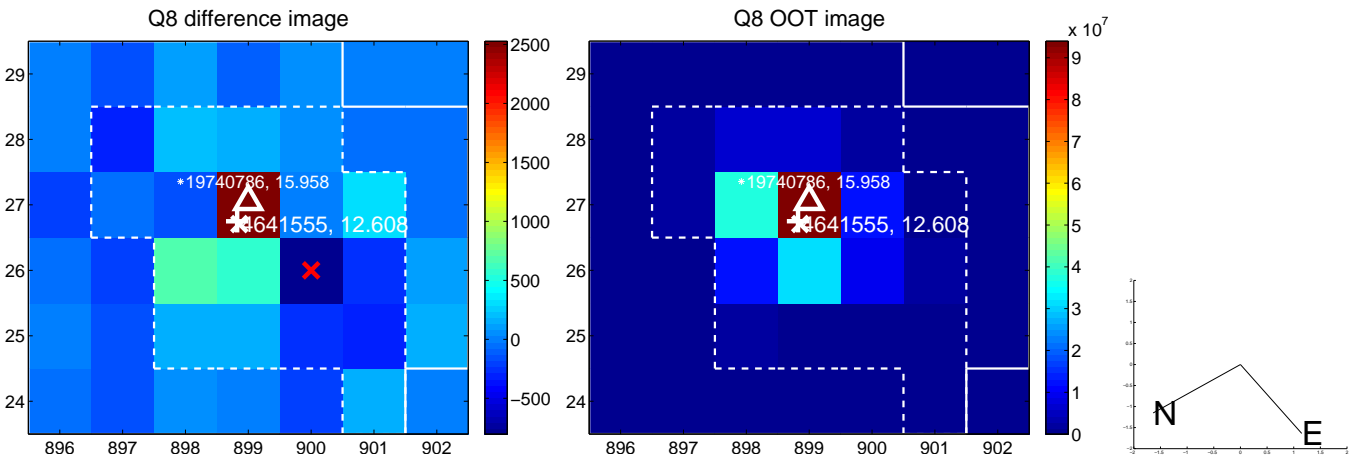
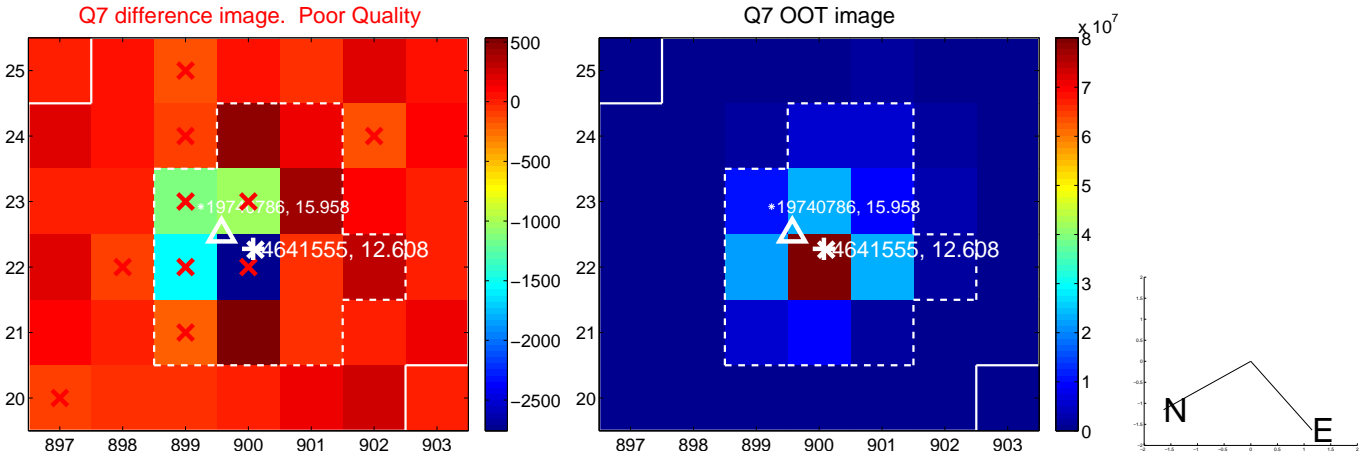
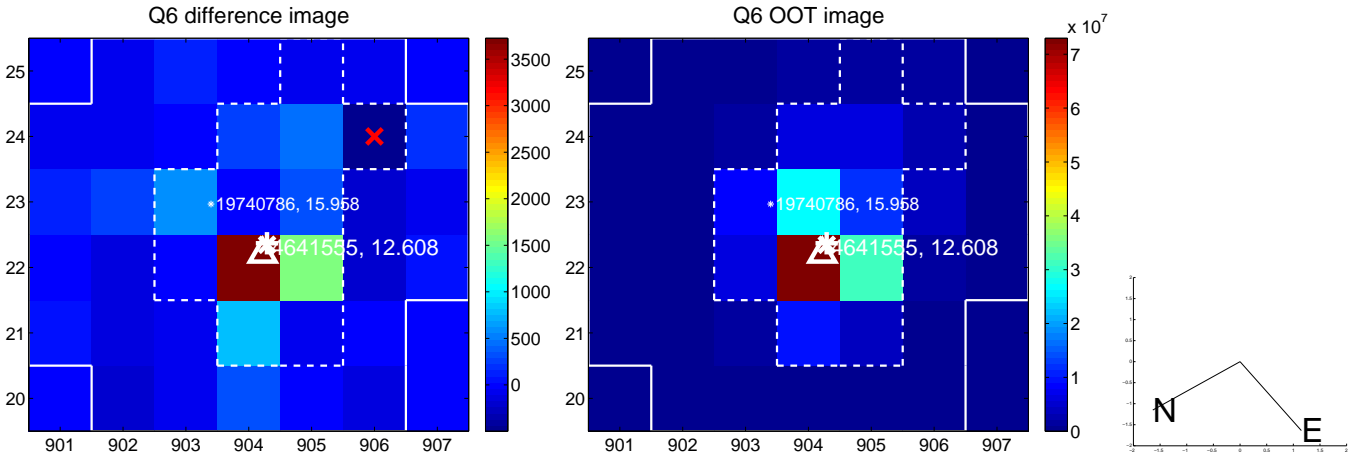
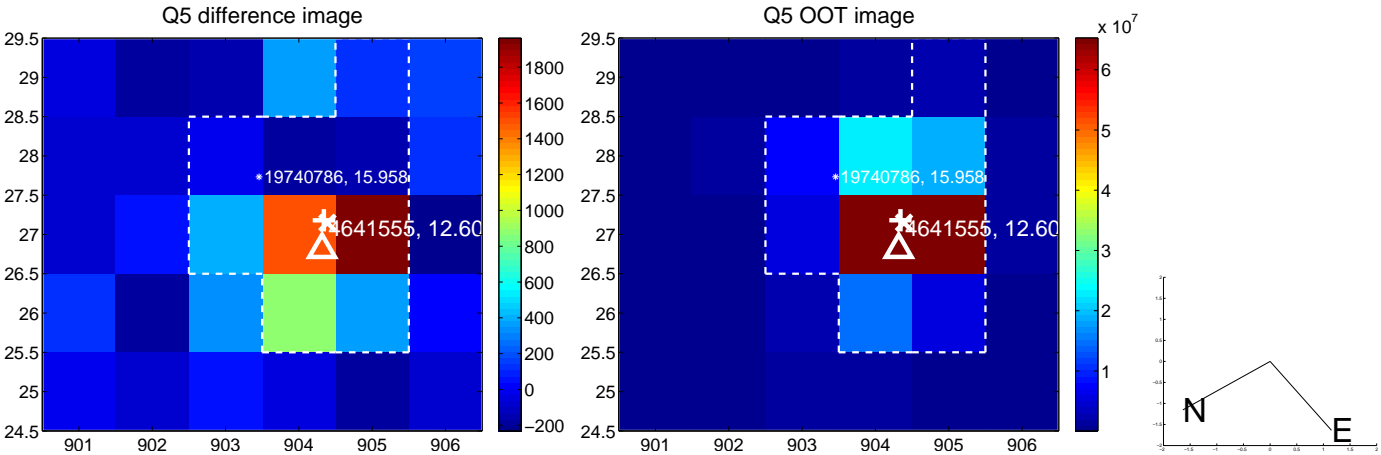


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

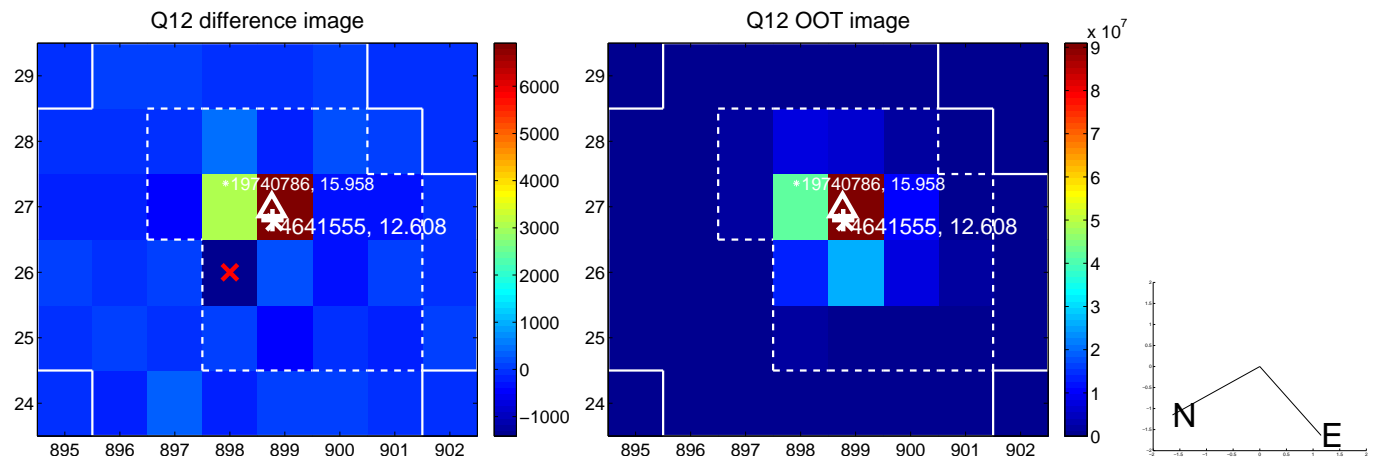
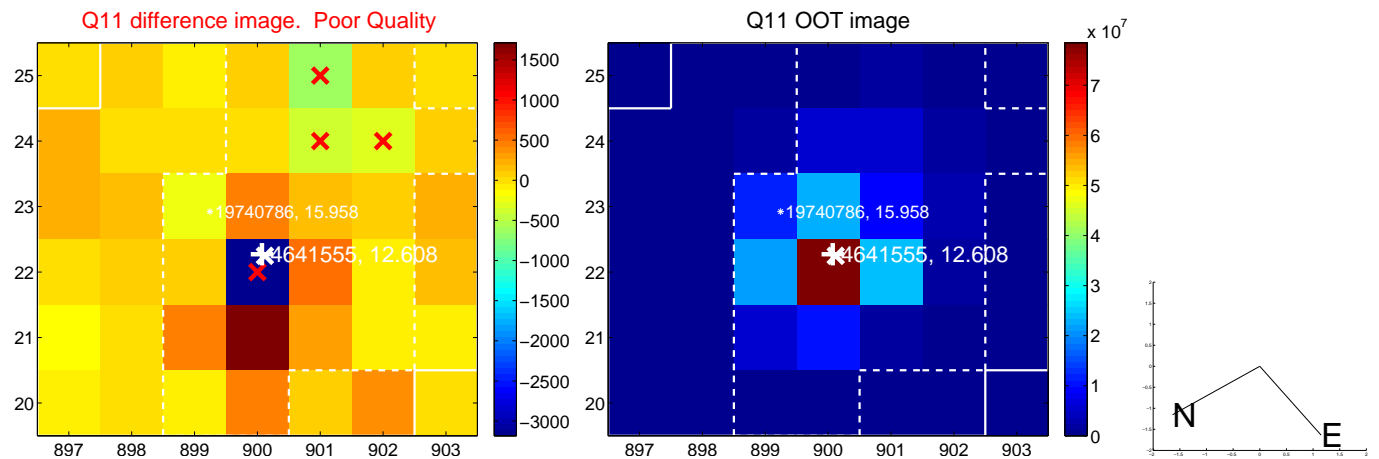
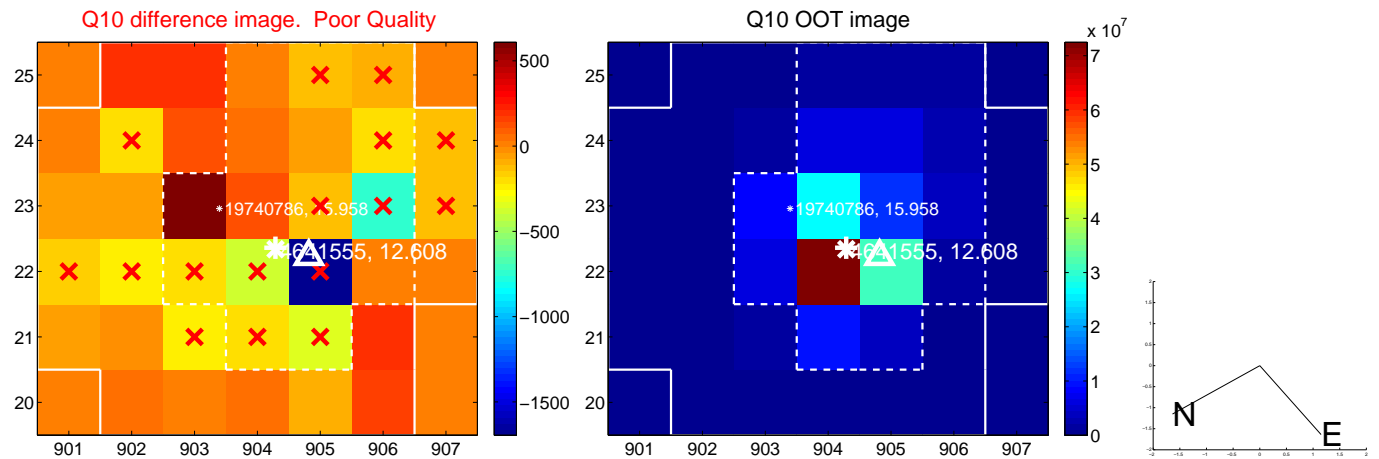
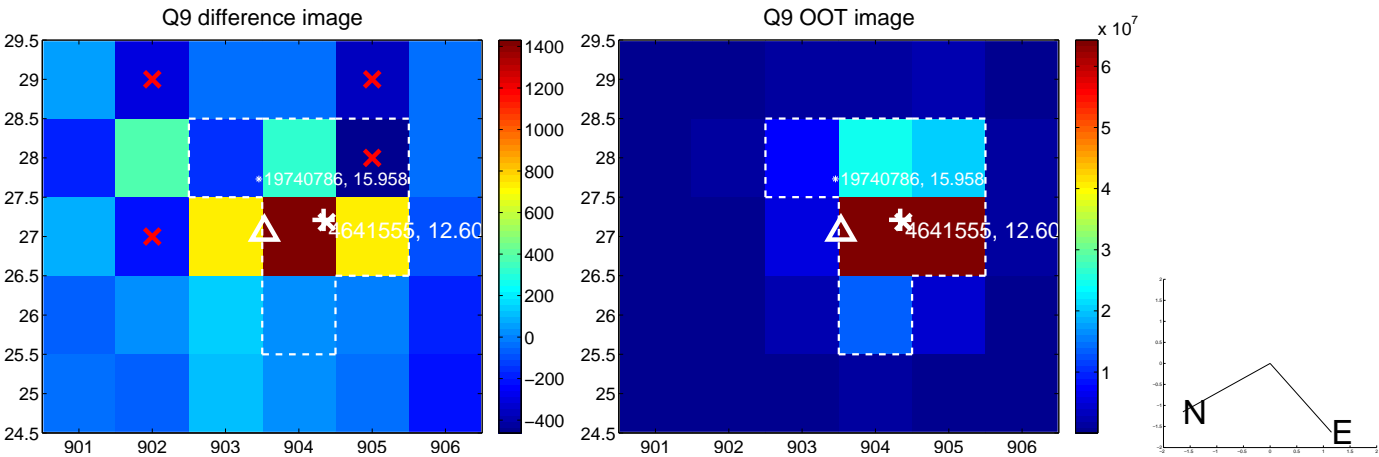
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



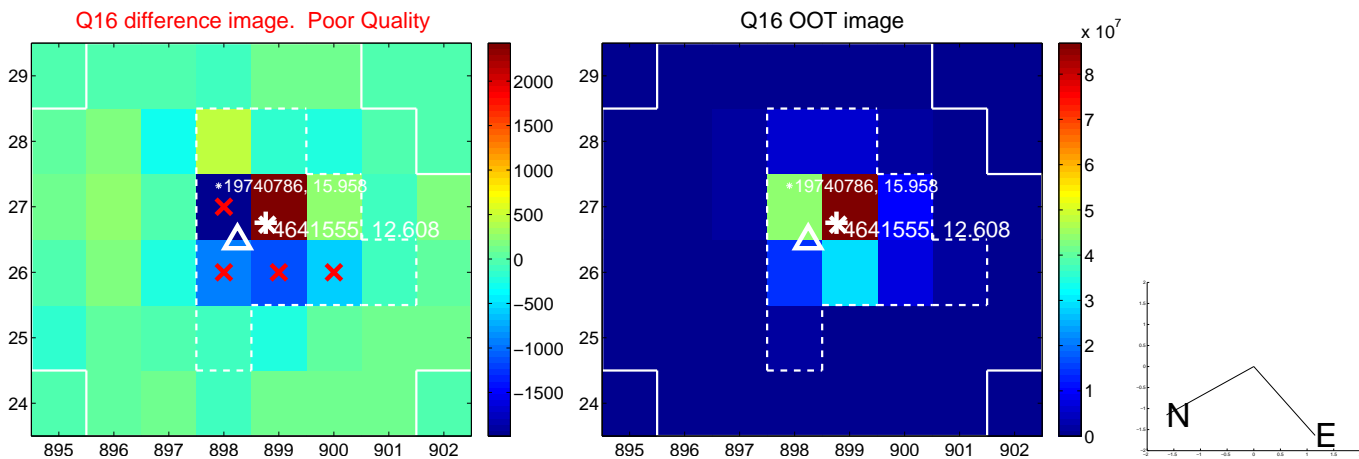
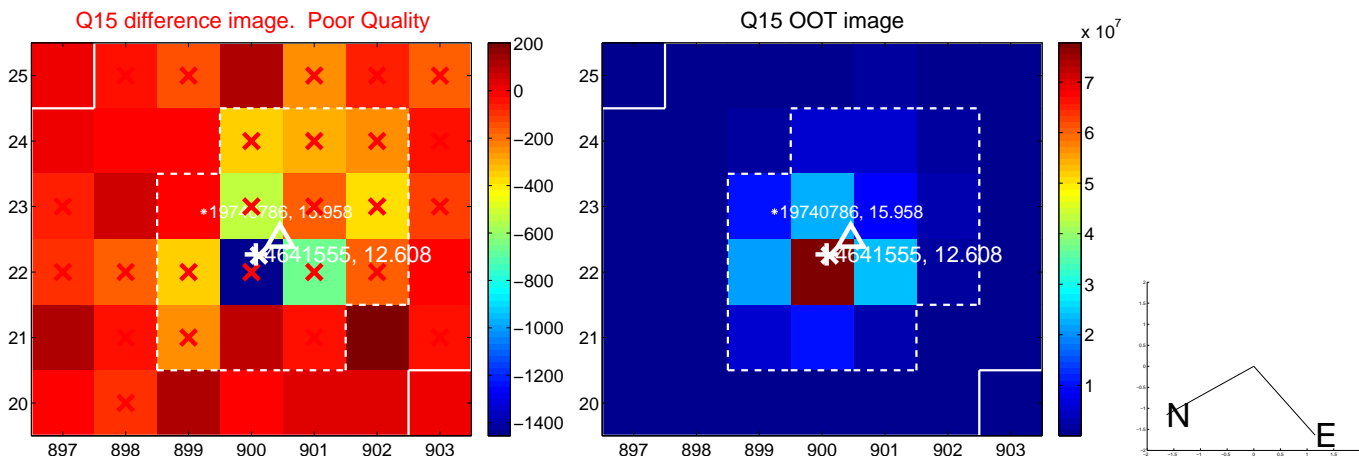
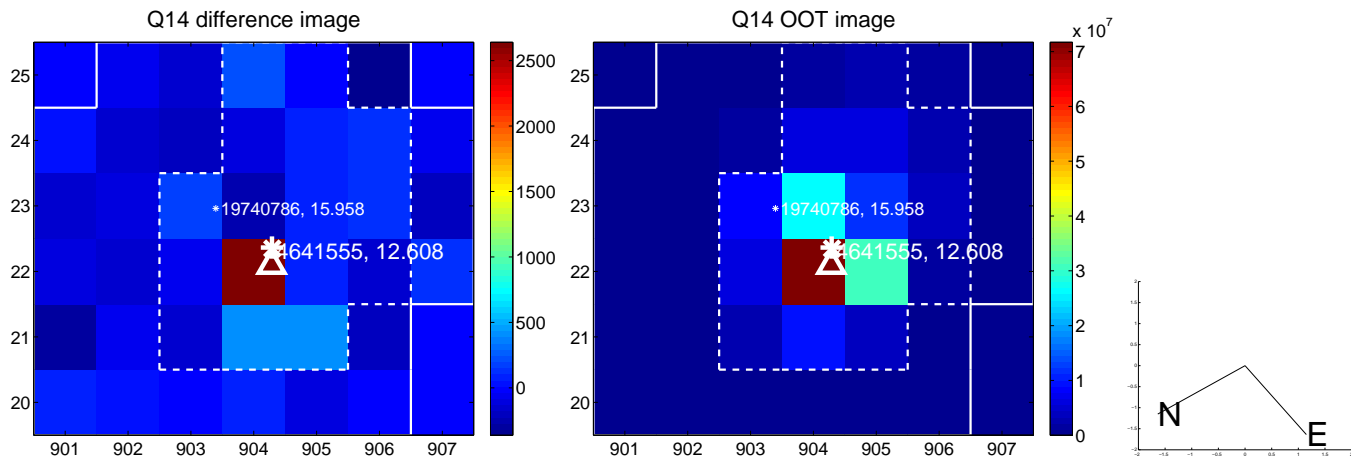
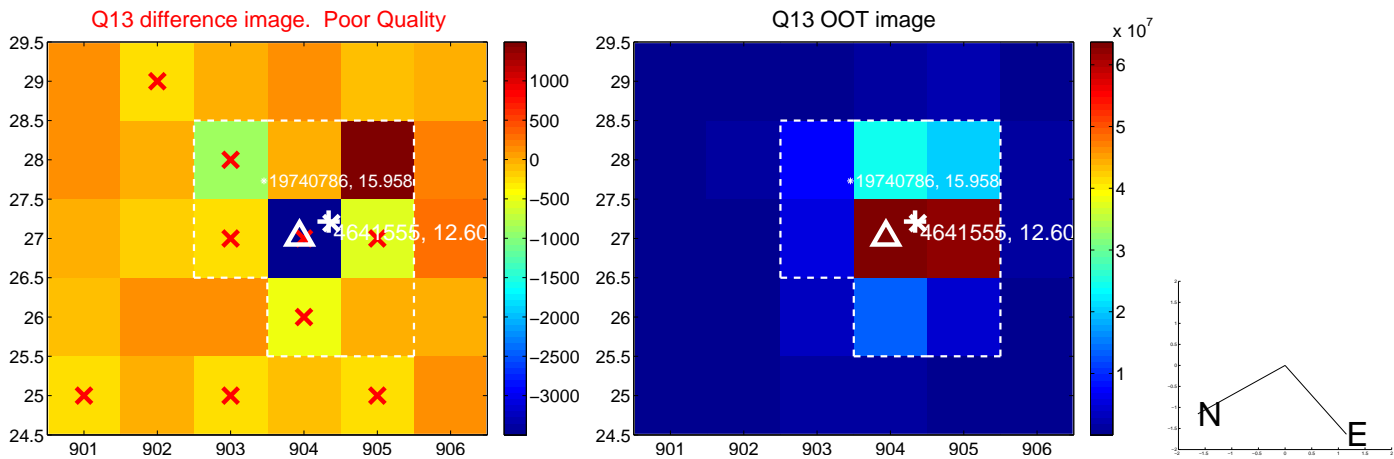
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



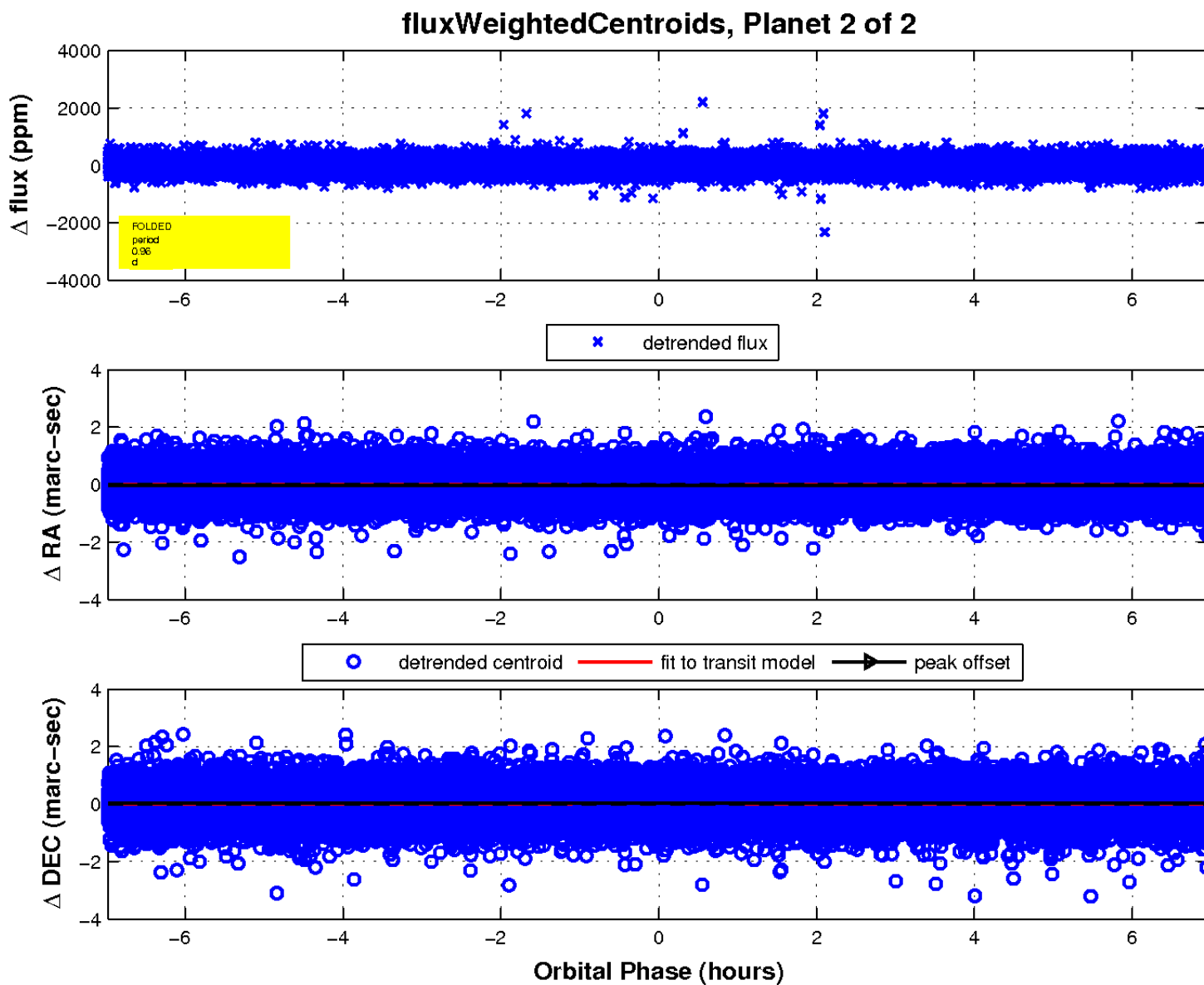
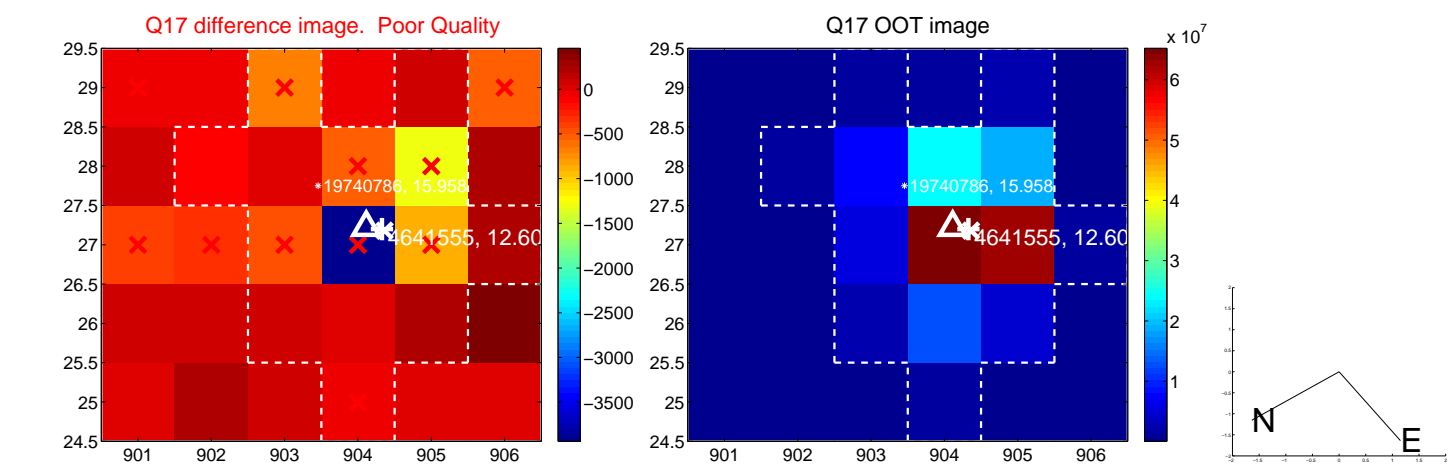
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

