

KIC 004456107

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})
004456107-01	OBS	No	0.987738	132.356276	15.3	5.113	11.3	3.7	1.91	7254	0.89	17413.50
004456107-02	OBS	No	0.988024	132.313877	159.1	3.649	9.1	11.9	1.91	7254	2.54	17406.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004456107-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
004456107-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—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.

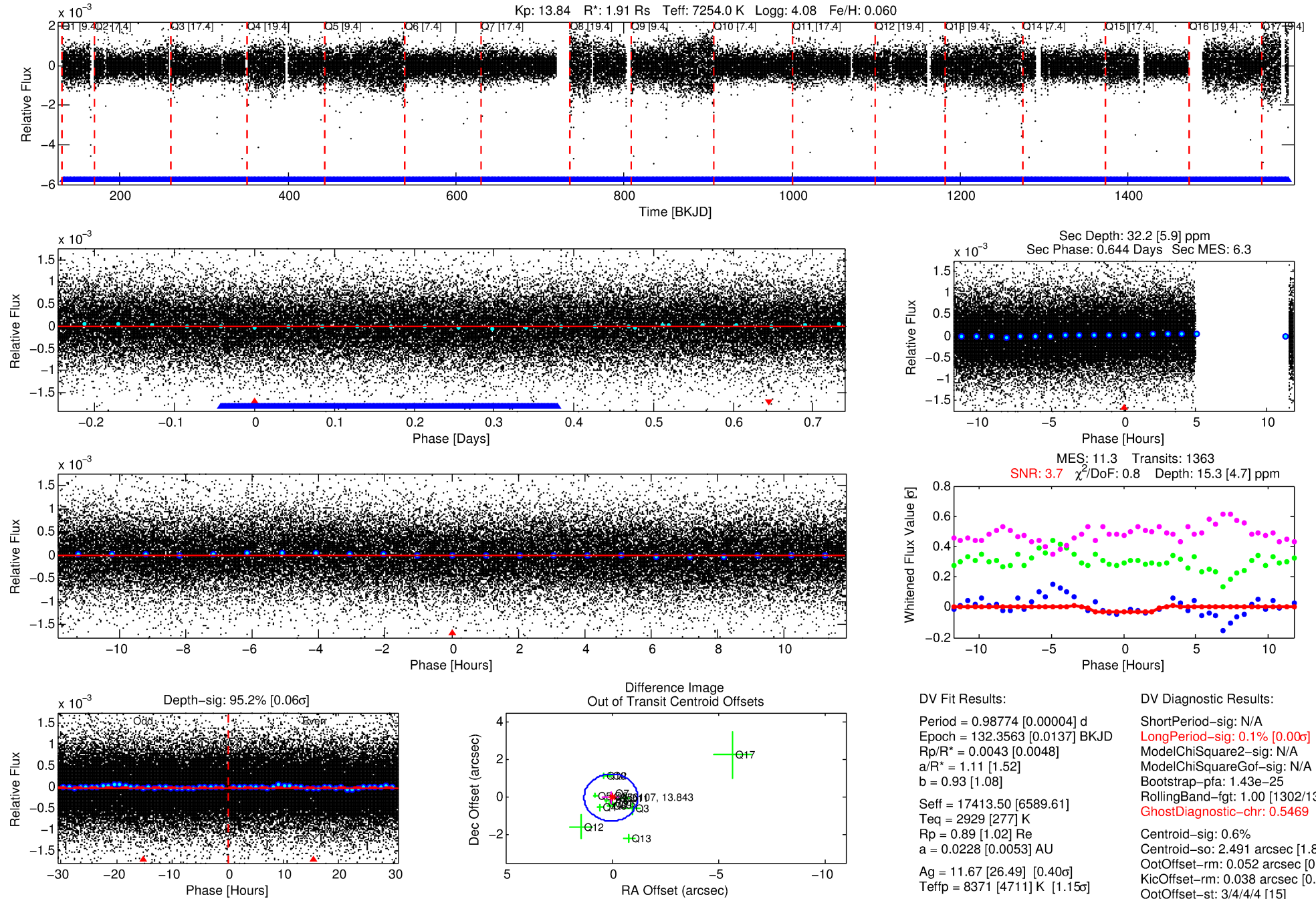
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004456107-01

No Significant Match Found

DV One-Page Summary

KIC: 4456107 Candidate: 1 of 2 Period: 0.988 d



DV Fit Results:

Period = 0.98774 [0.00004] d
Epoch = 132.3563 [0.0137] BKJD
Rp/R* = 0.0043 [0.0048]
a/R* = 1.11 [1.52]
b = 0.93 [1.08]
Seff = 17413.50 [6589.61]
Teff = 2929 [277] K
Rp = 0.89 [1.02] Re
a = 0.0228 [0.0053] AU
Ag = 11.67 [26.49] [0.40 σ]
Teffp = 8371 [4711] K [1.15 σ]

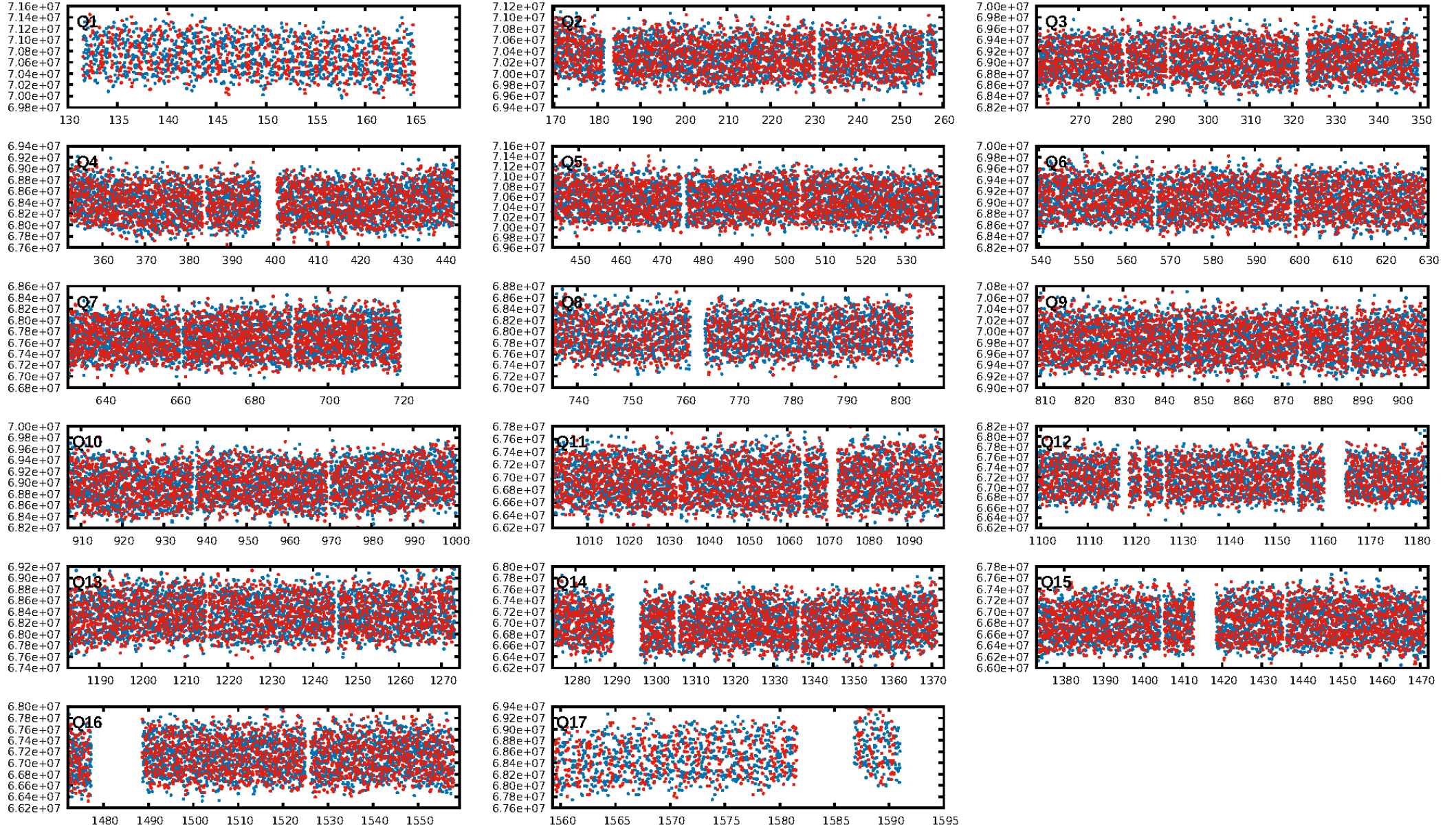
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.43e-25
RollingBand-fgt: 1.00 [1302/1302]
GhostDiagnostic-chr: 0.5469
Centroid-sig: 0.6%
Centroid-so: 2.491 arcsec [1.80 σ]
OotOffset-rm: 0.052 arcsec [0.12 σ]
KicOffset-rm: 0.038 arcsec [0.14 σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.87 [13/15]
DiffImageOverlap-fno: 0.00 [0/17]

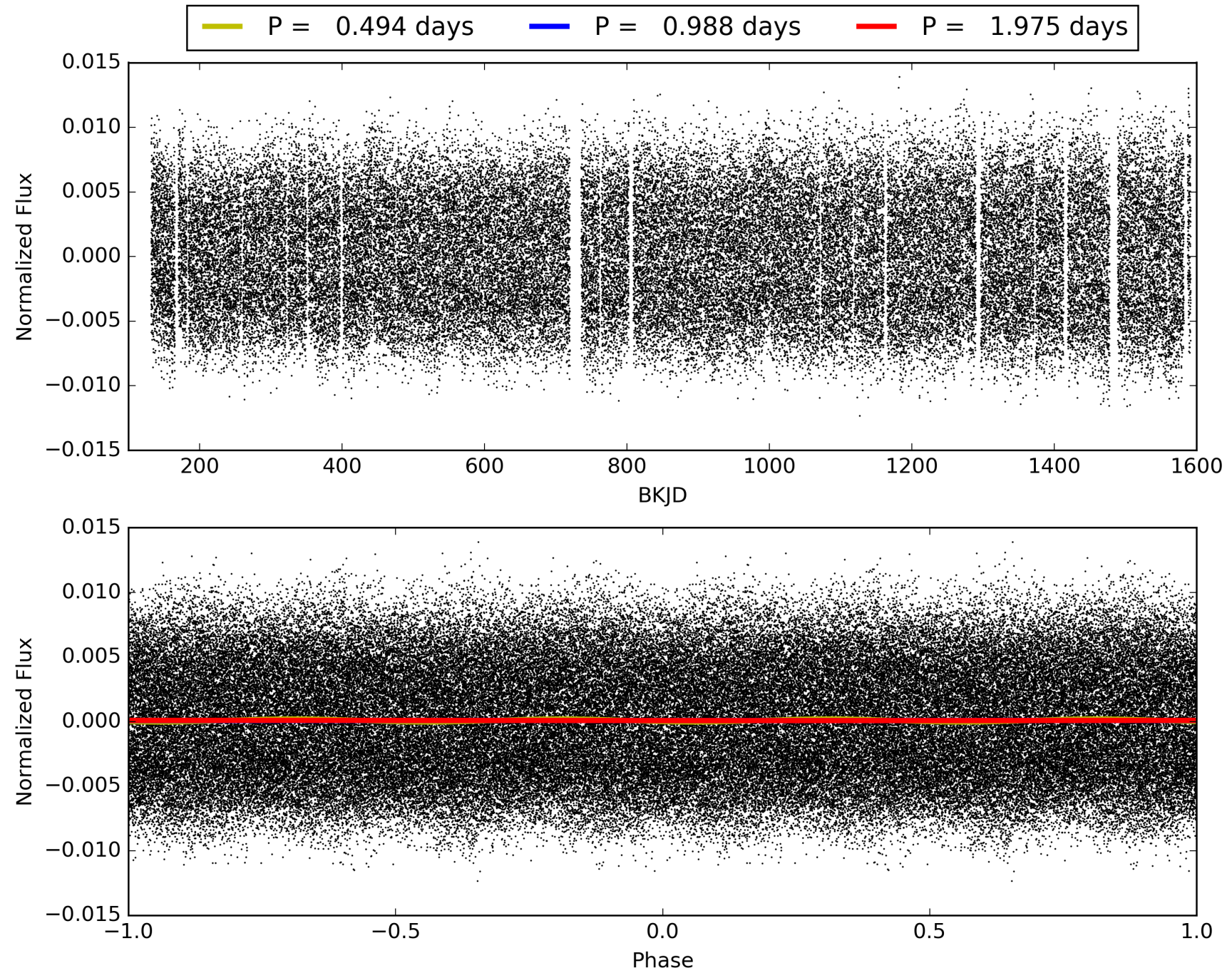
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:59:16 Z

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

TCE 004456107-01, PDC Light Curves

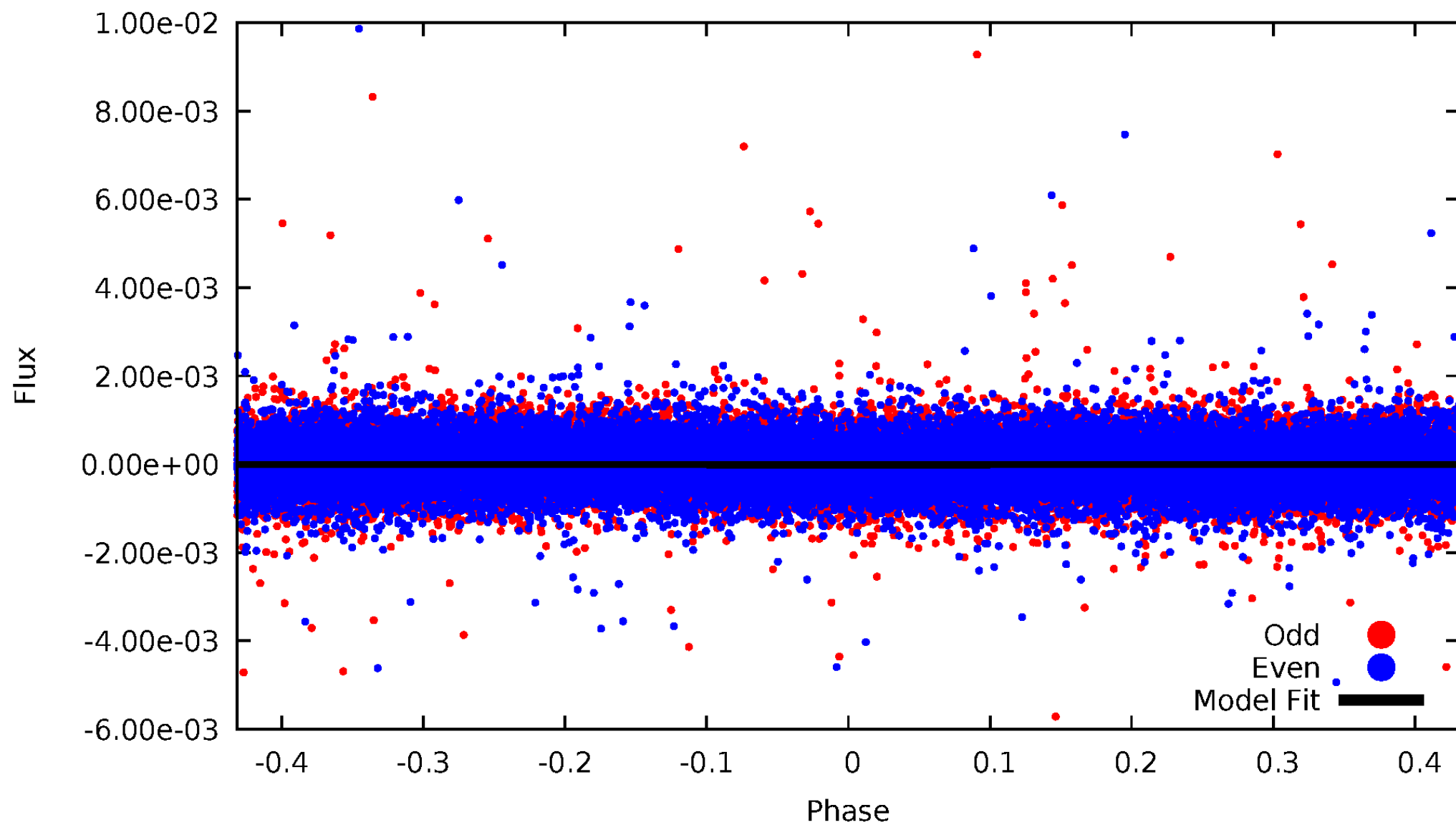


TCE 004456107-01



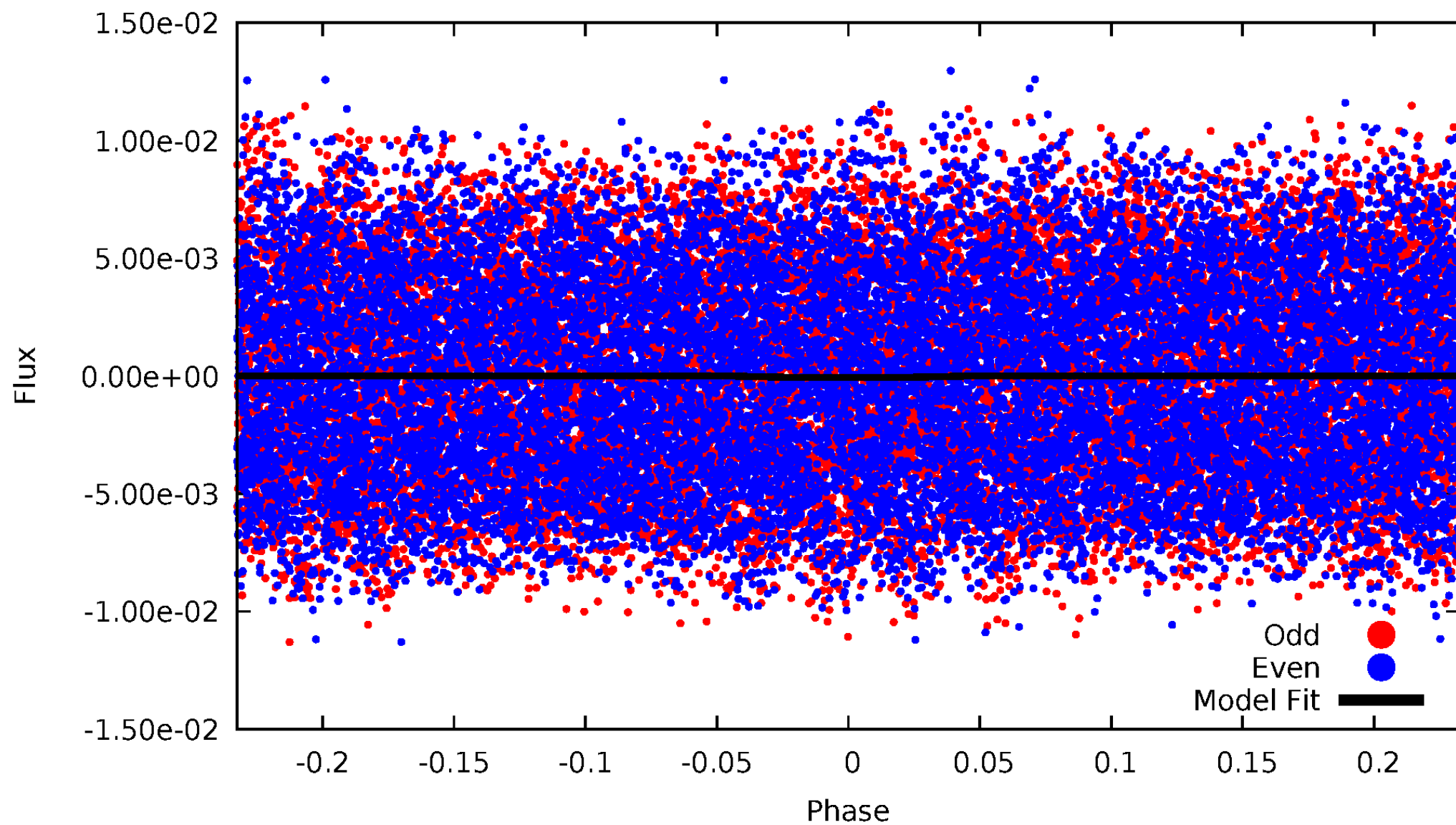
DV Odd/Even

TCE 004456107-01



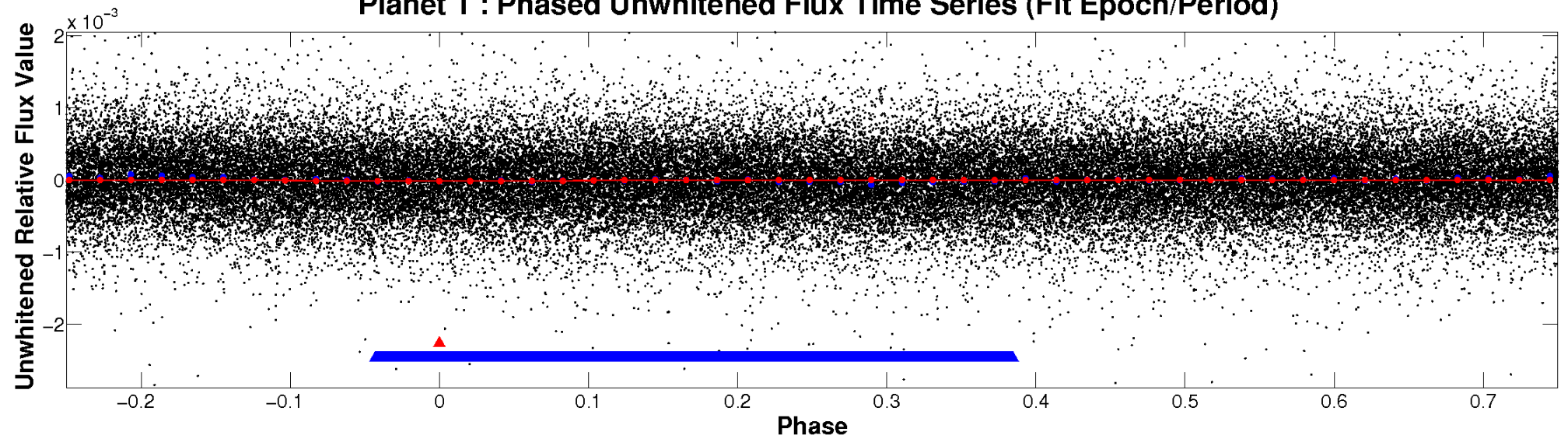
ALT Odd/Even

TCE 004456107-01

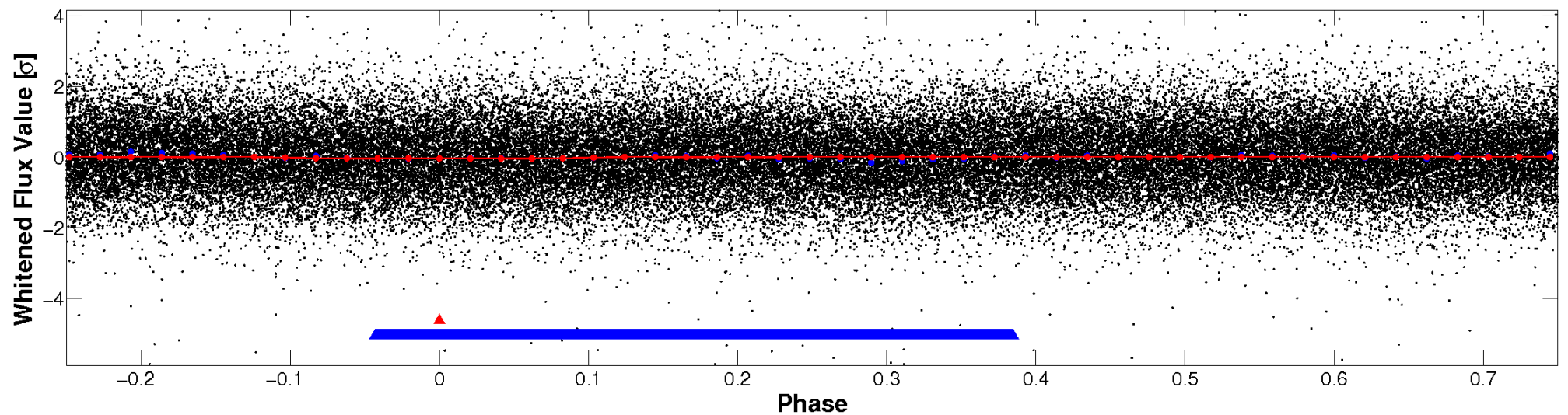


Non-Whitened Vs. Whitened Light Curve

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

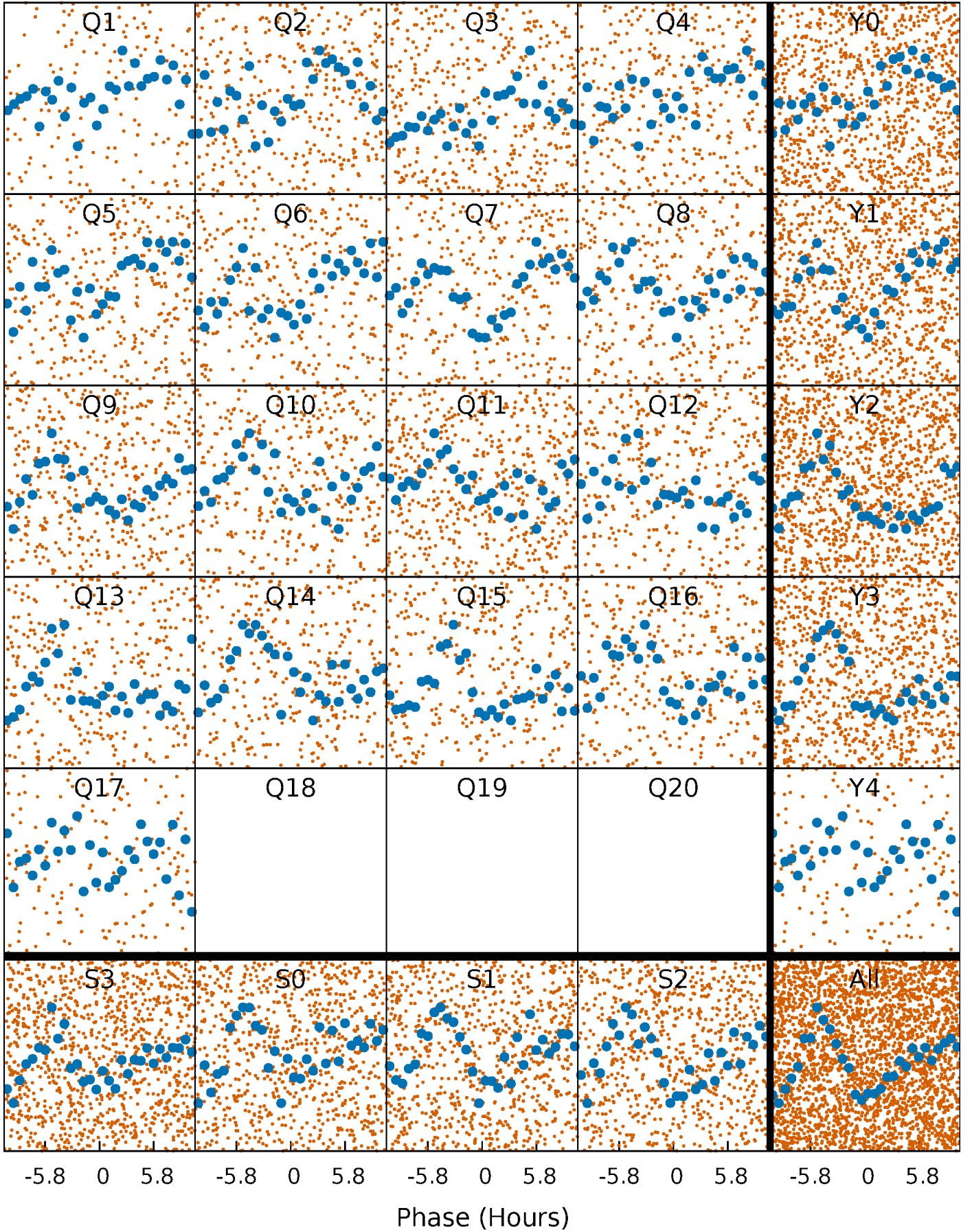


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



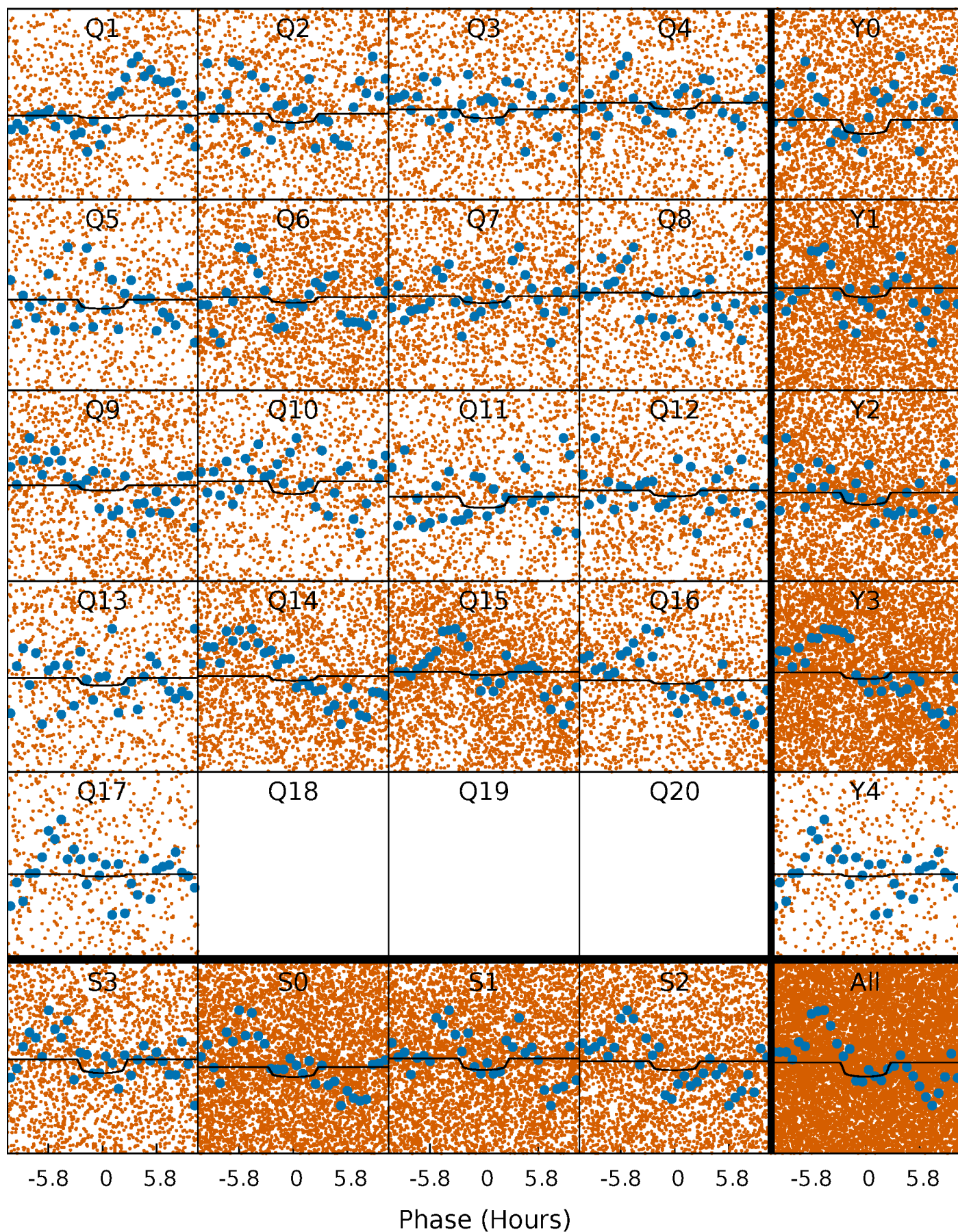
PDC Quarter-Phased Transit Curves

TCE 004456107-01 P= 0.987738 Days $T_0=132.356276$ (BKJD)



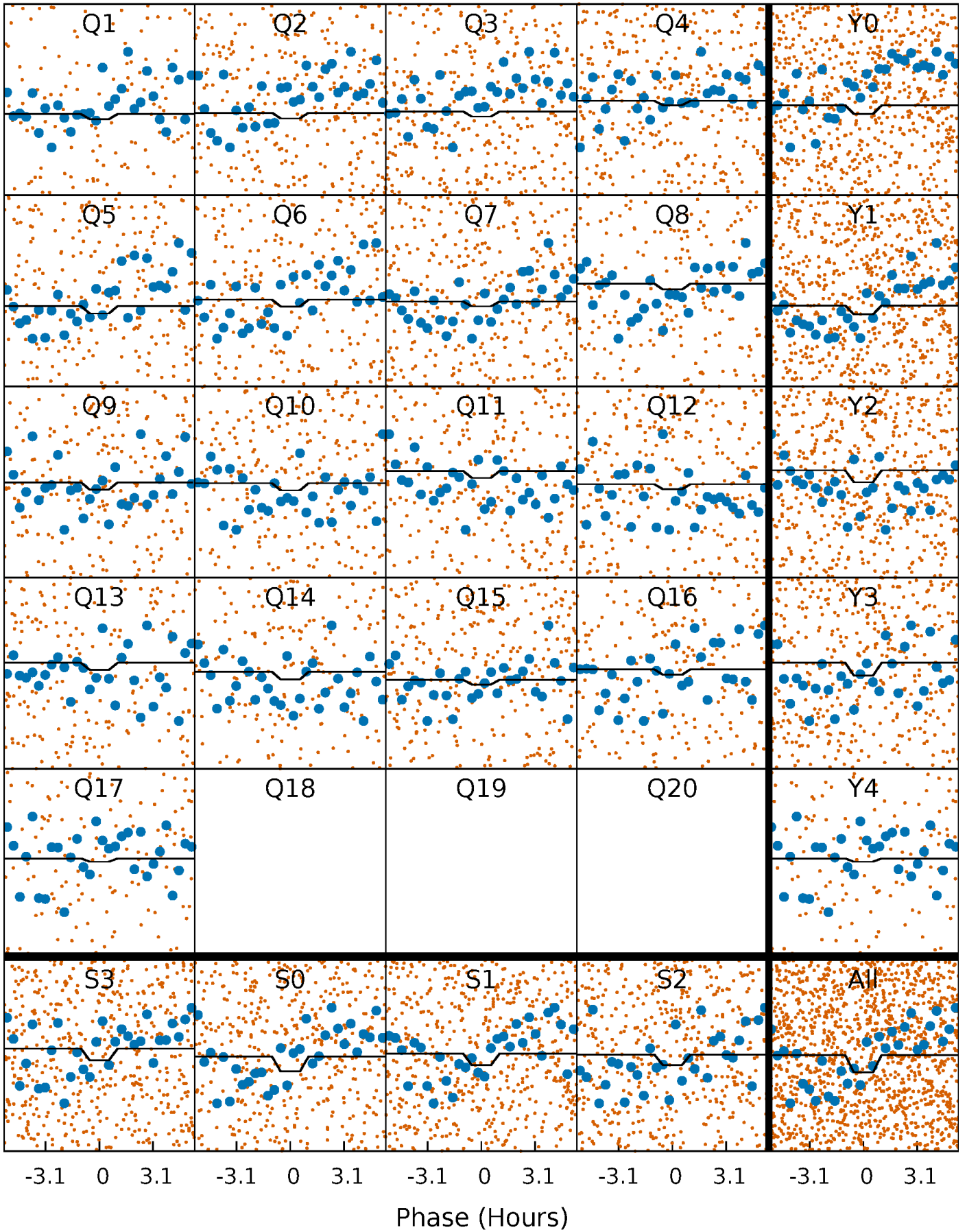
DV Quarter-Phased Transit Curves

TCE 004456107-01 P= 0.987738 Days $T_0=132.356276$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

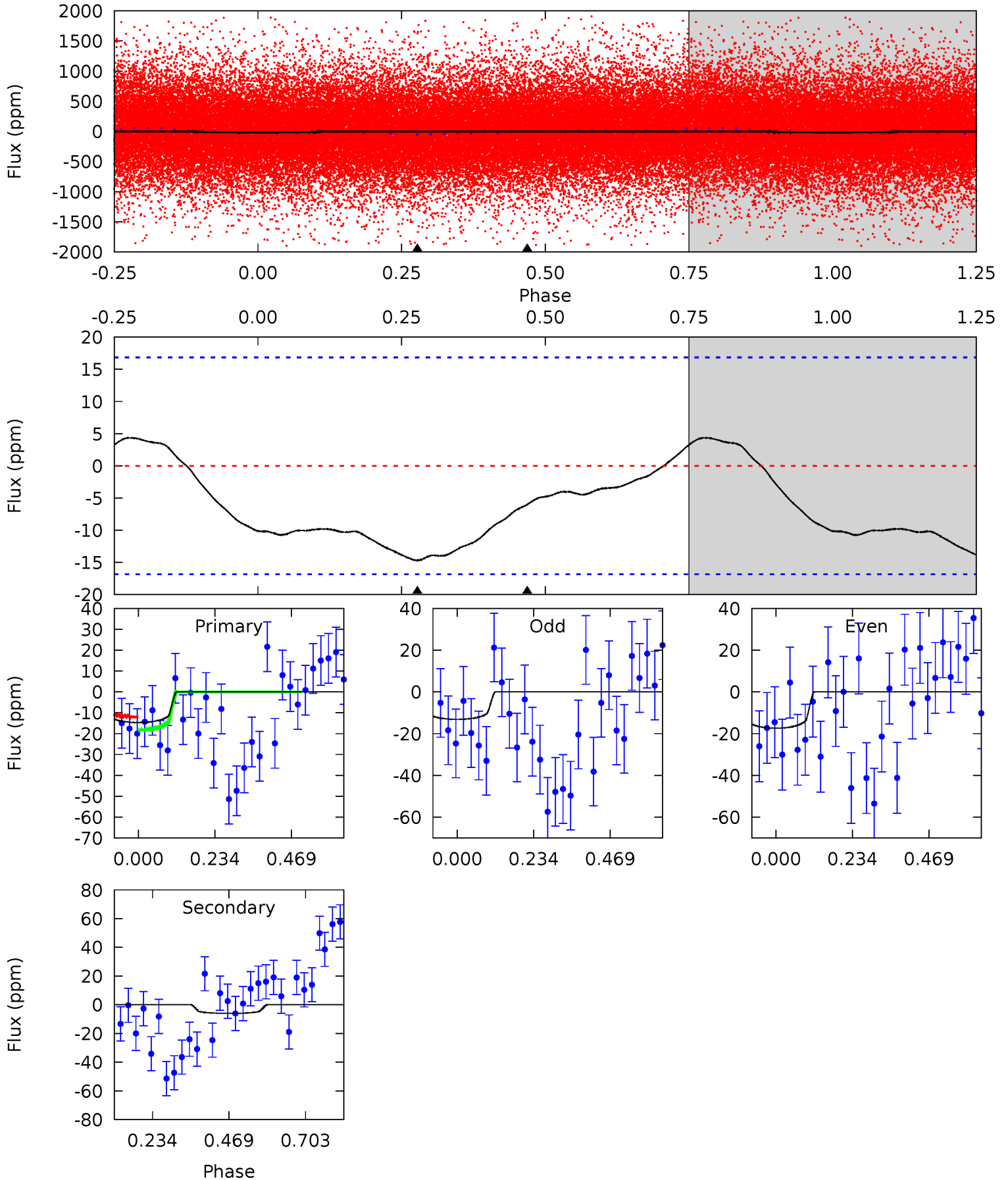
TCE 004456107-01 P= 0.987827 Days $T_0=132.394782$ (BKJD)



DV Model-Shift Uniqueness Test

004456107-01, P = 0.987738 Days, E = 131.368538 Days

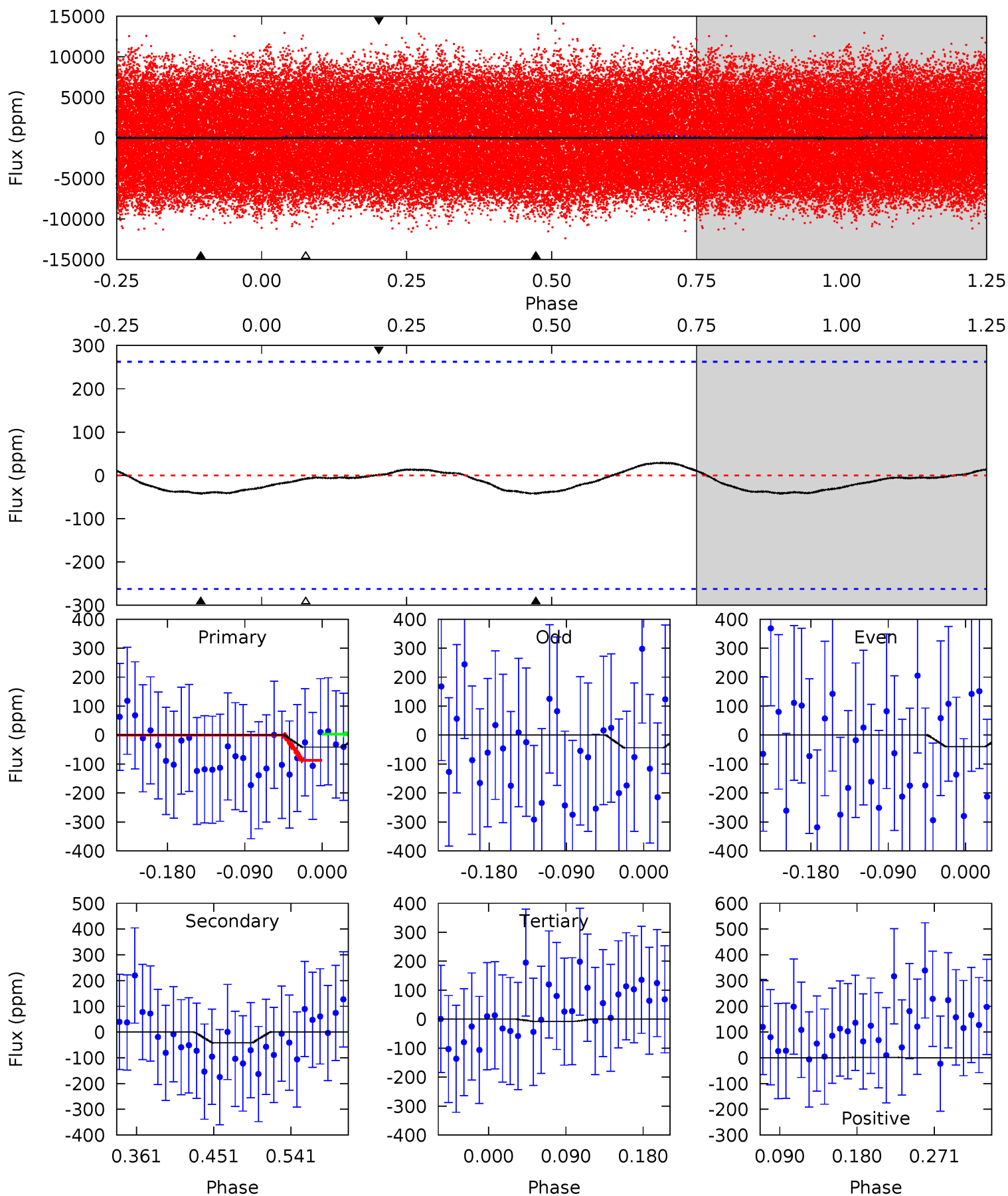
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.82	1.56	0	0	4.38	1.19	1.43	3.82	3.82	1.56	1.56	0.56	1.26	0.23	0.80



Alt Model-Shift Uniqueness Test

004456107-01, P = 0.987827 Days, E = 131.406955 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.73	0.73	0.14	0.02	4.59	1.69	0.26	0.59	0.70	0.59	0.70	0.04	0.61	0.41	0.73



Stellar Parameters For KIC 004456107

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7254^{+228}_{-314}	$4.085^{+0.149}_{-0.182}$	$0.060^{+0.200}_{-0.350}$	$1.909^{+0.537}_{-0.439}$	$1.617^{+0.204}_{-0.272}$	$0.327^{+0.246}_{-0.163}$
	+3%/-4%	+4%/-4%	+333%/-583%	+28%/-23%	+13%/-17%	+75%/-50%
Source	KIC0	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 004456107-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-6 ± 4	$1.20^{+0.92}_{-0.78}$	4107^{+334}_{-296}	4378^{+3167}_{-7459}	$1.022^{+7.111}_{-0.799}$
Alt.	-42 ± 57	$1.62^{+0.99}_{-0.93}$	4098^{+342}_{-280}	5945^{+4859}_{-11203}	$3.354^{+18.754}_{-4.797}$

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 $A_{obs} \gg 1.0$

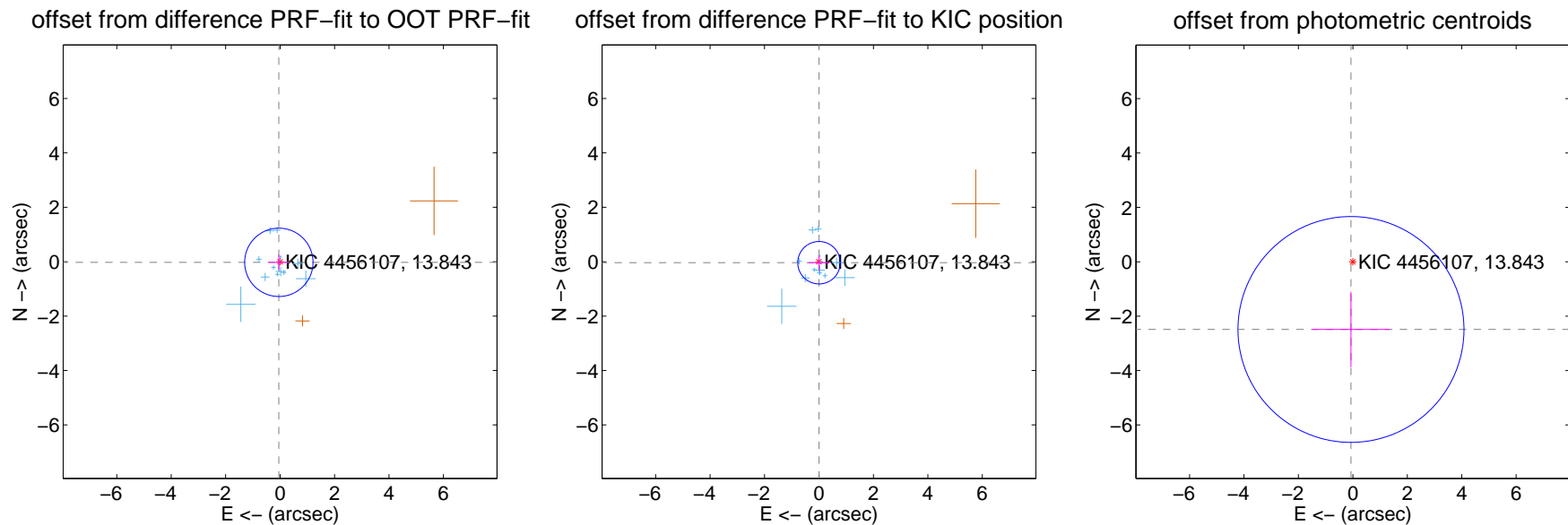
DV Centroid Data

Supplemental centroid analysis for 004456107-01. Kepler magnitude: 13.84. Transit SNR 3.67

There are 13 quarters with good PRF difference image offsets

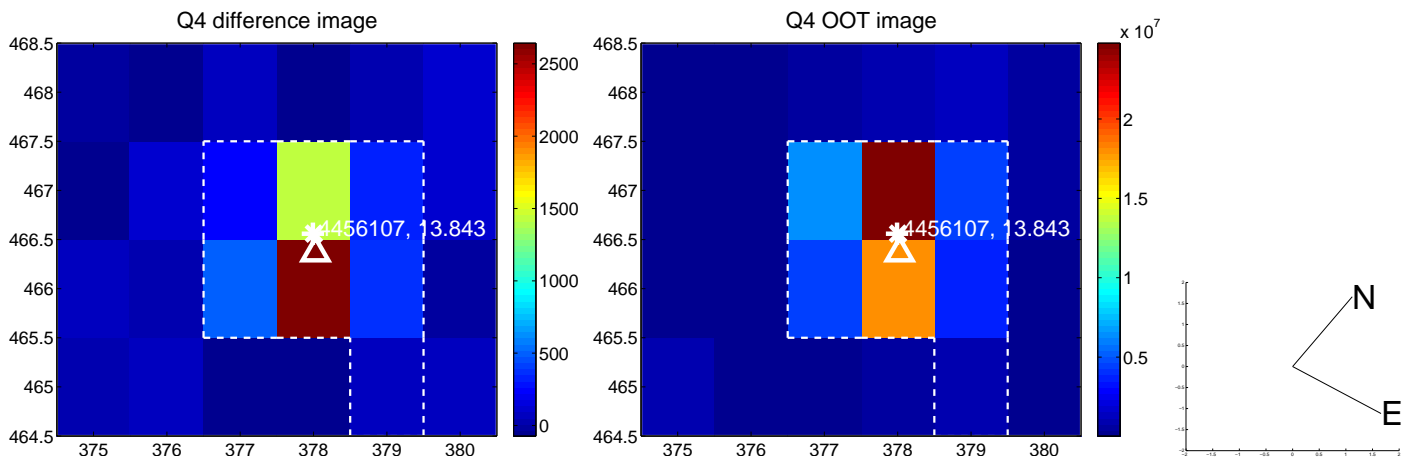
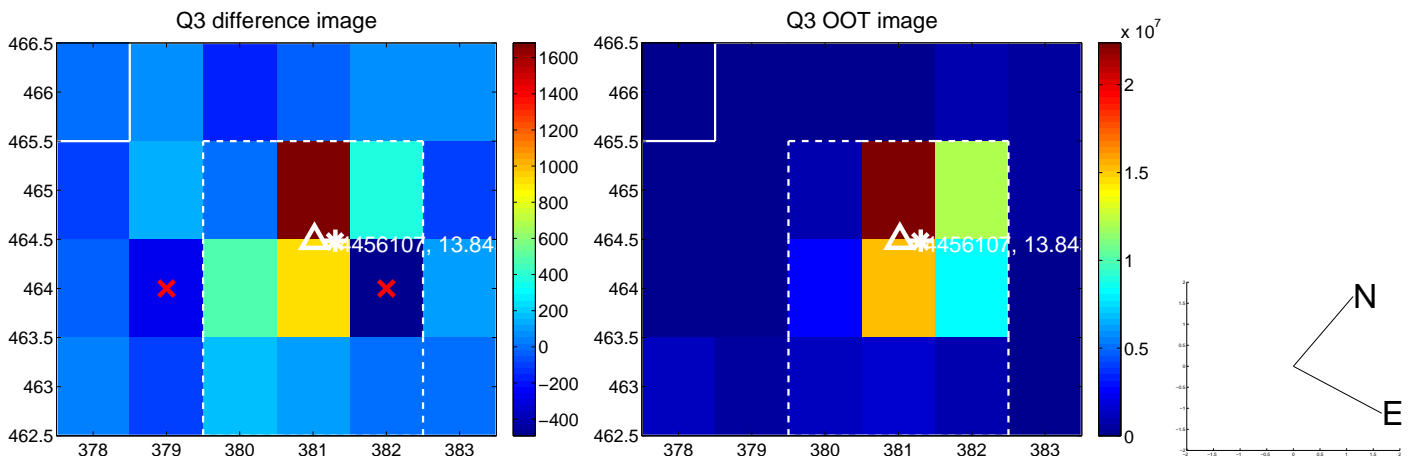
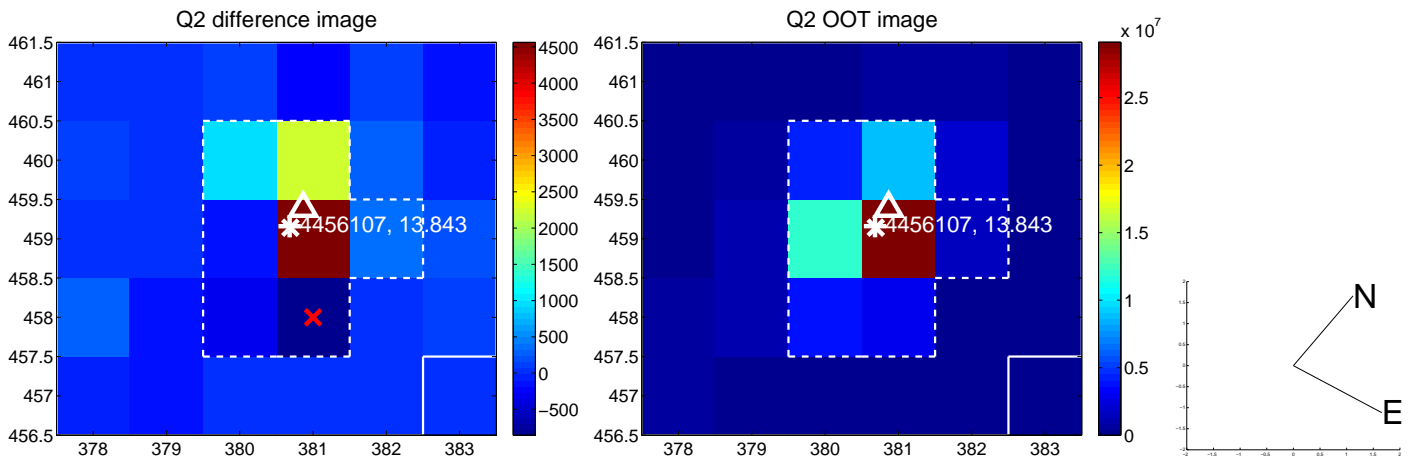
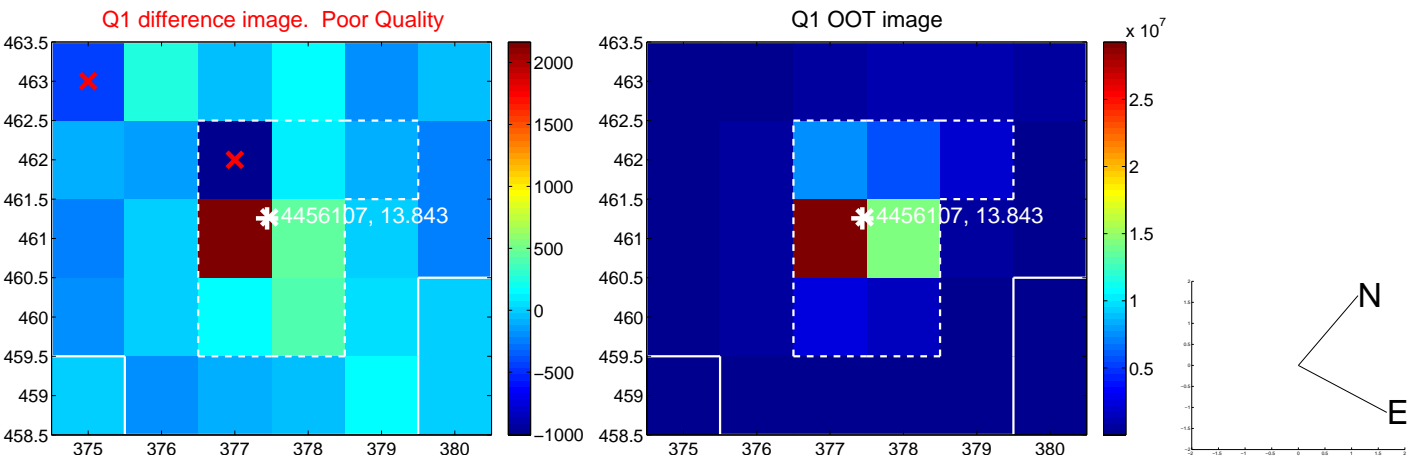
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.052 ± 0.419	0.12	0.046 ± 0.381	-0.023 ± 0.279
PRF-fit source offset from KIC position	0.038 ± 0.260	0.14	-0.001 ± 0.393	-0.038 ± 0.267
photometric centroid source offset	2.49 ± 1.38	1.80	0.07 ± 1.42	-2.49 ± 1.38

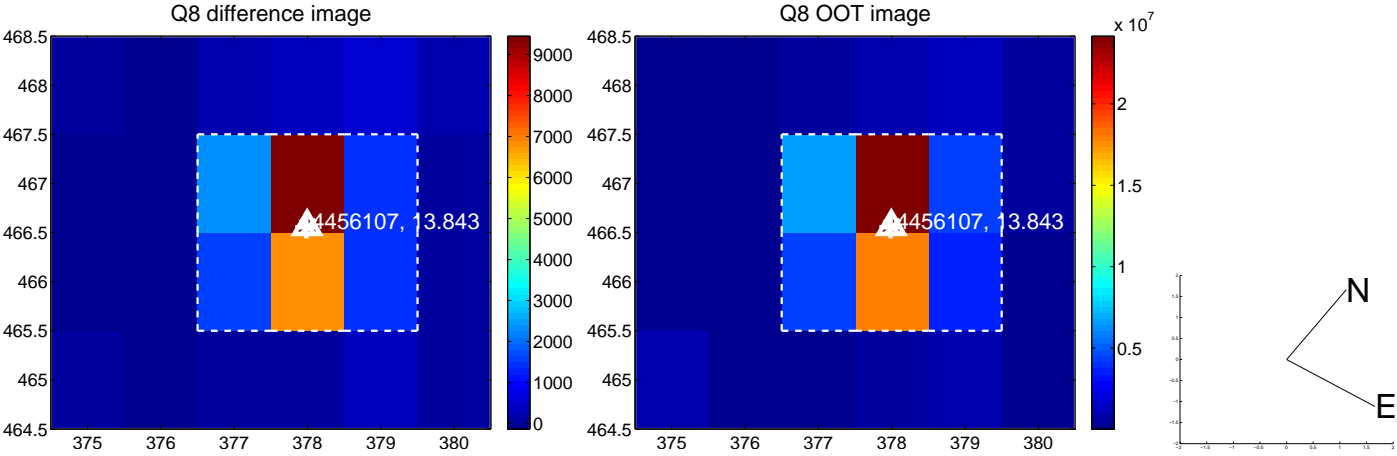
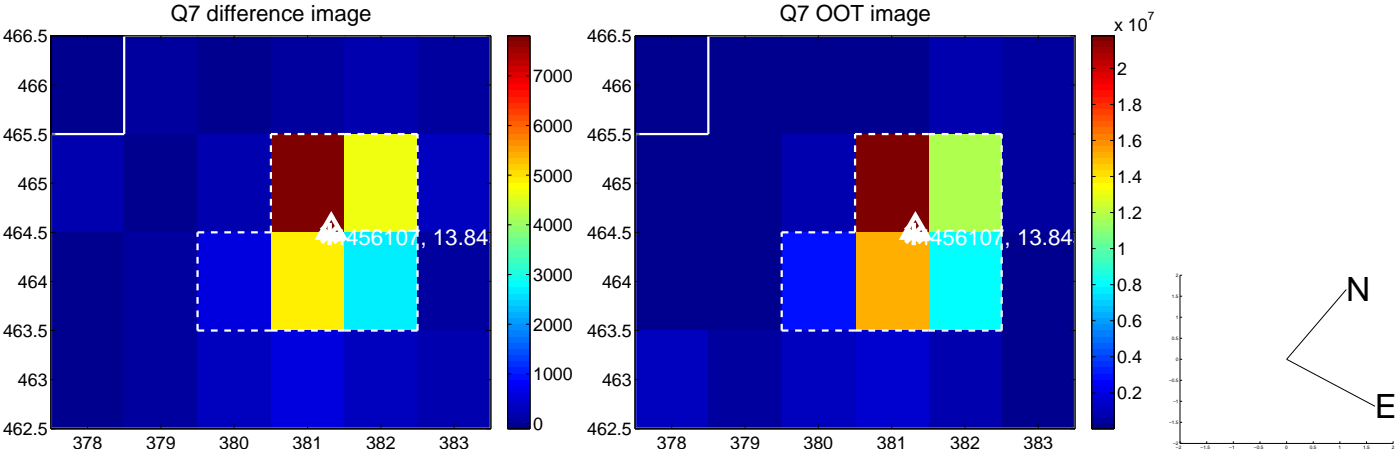
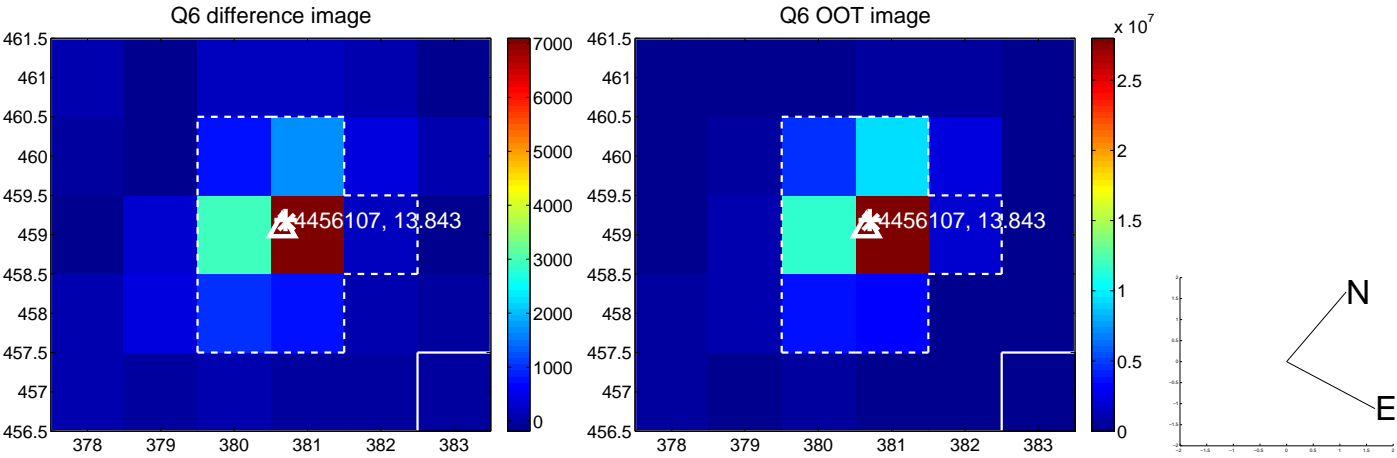
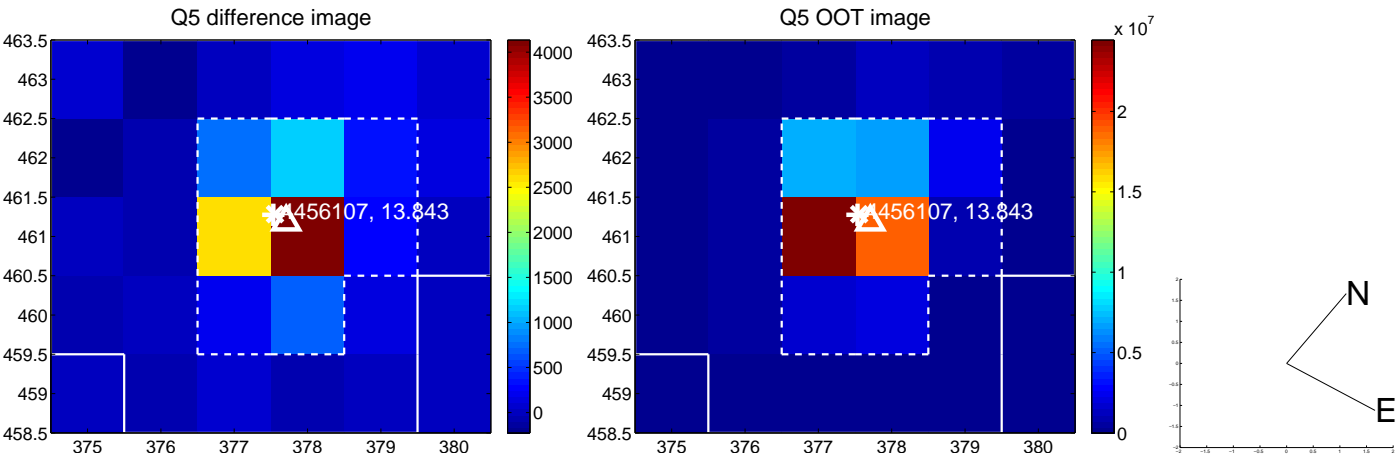


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

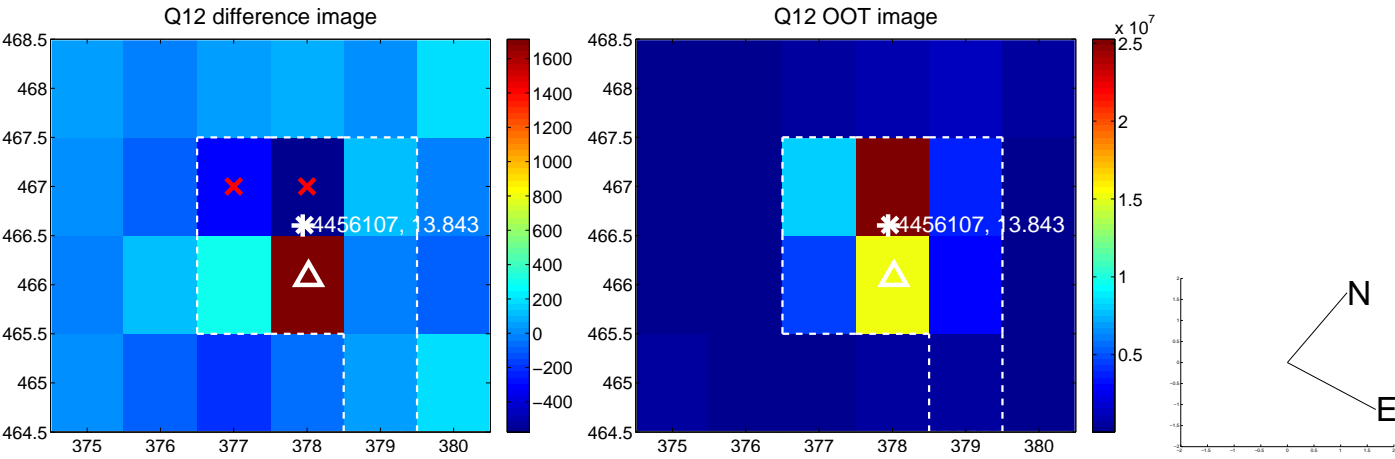
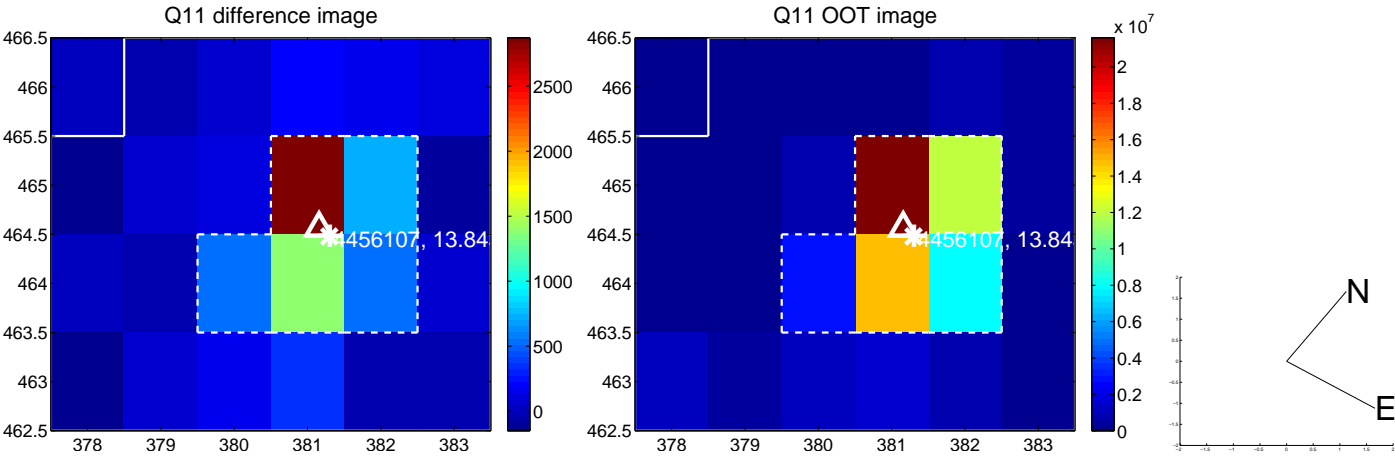
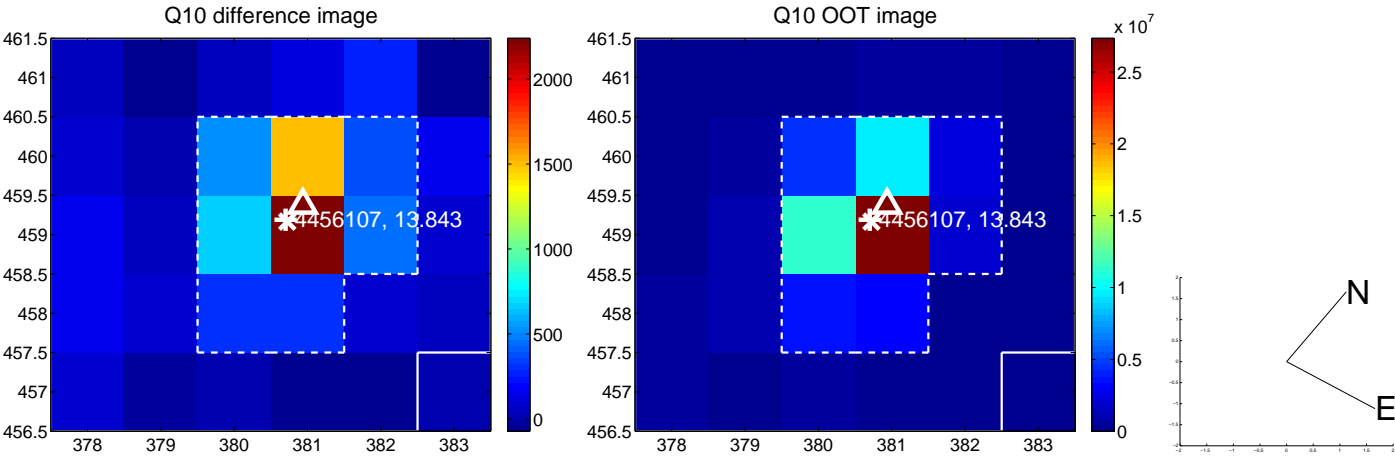
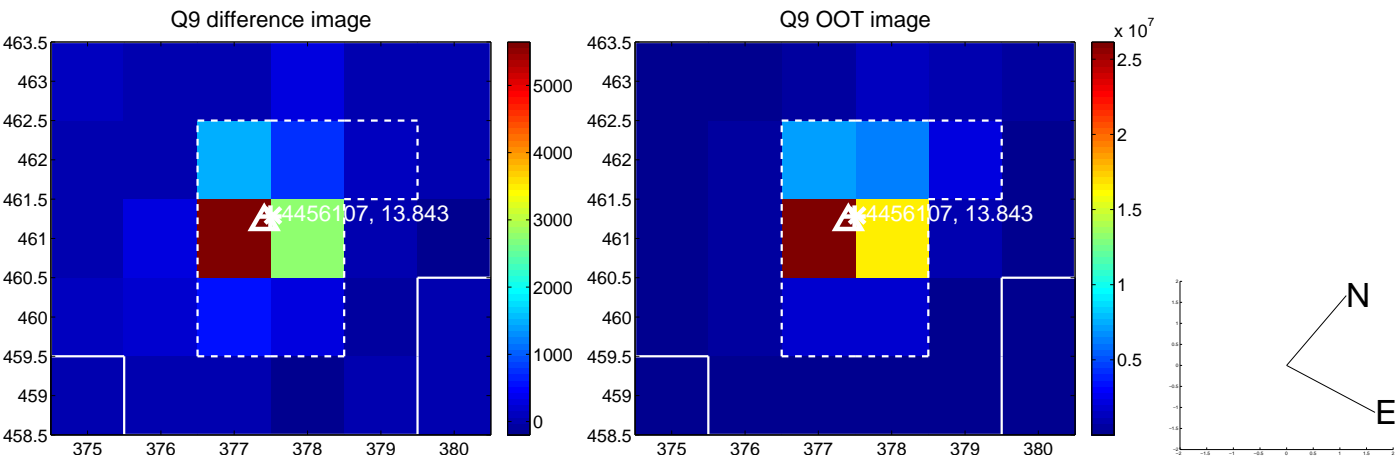
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



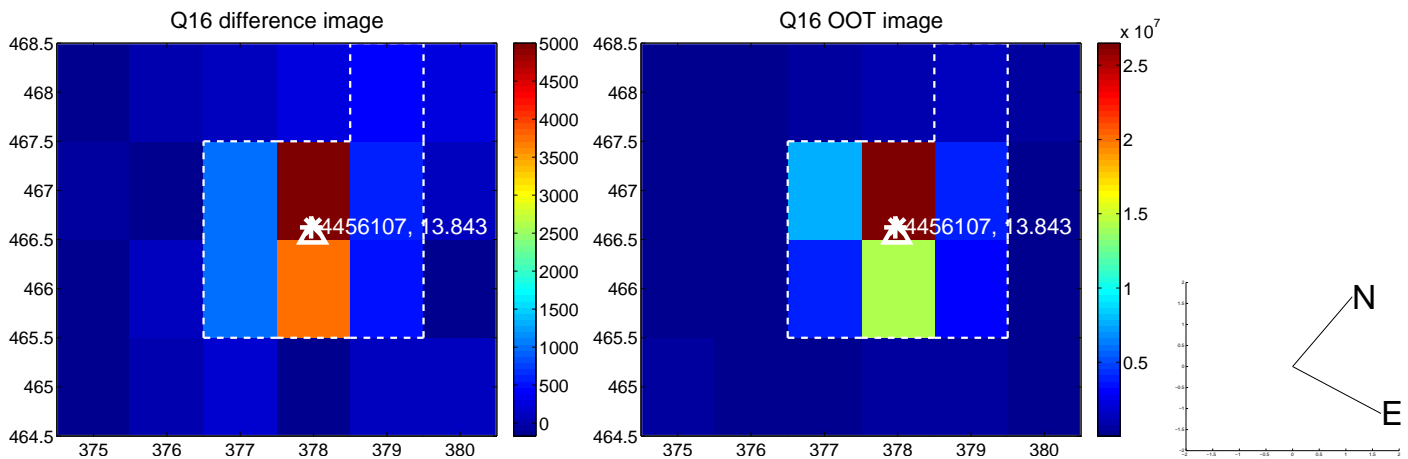
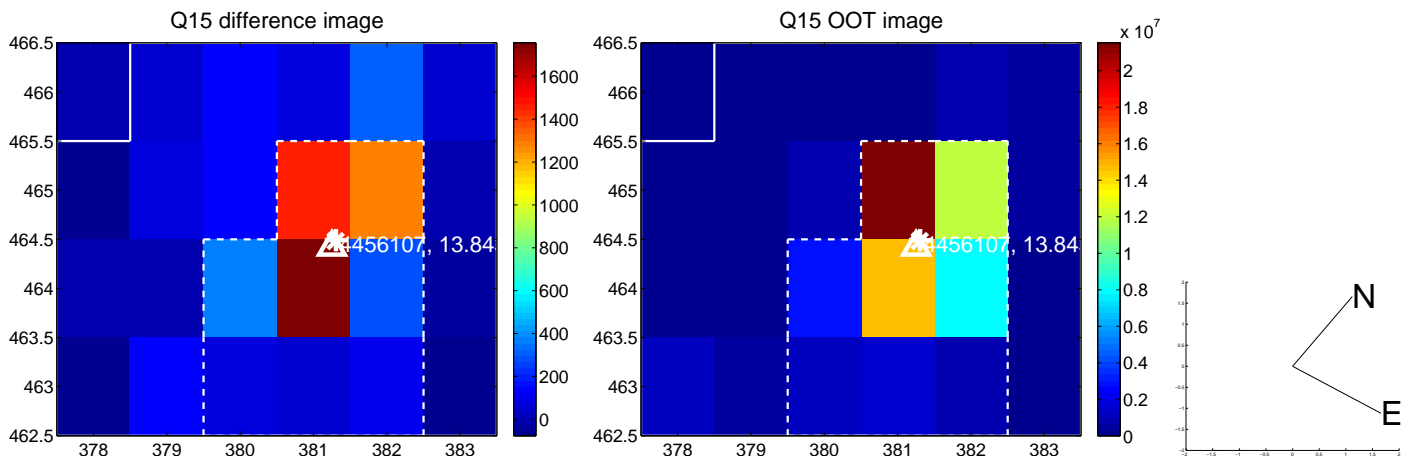
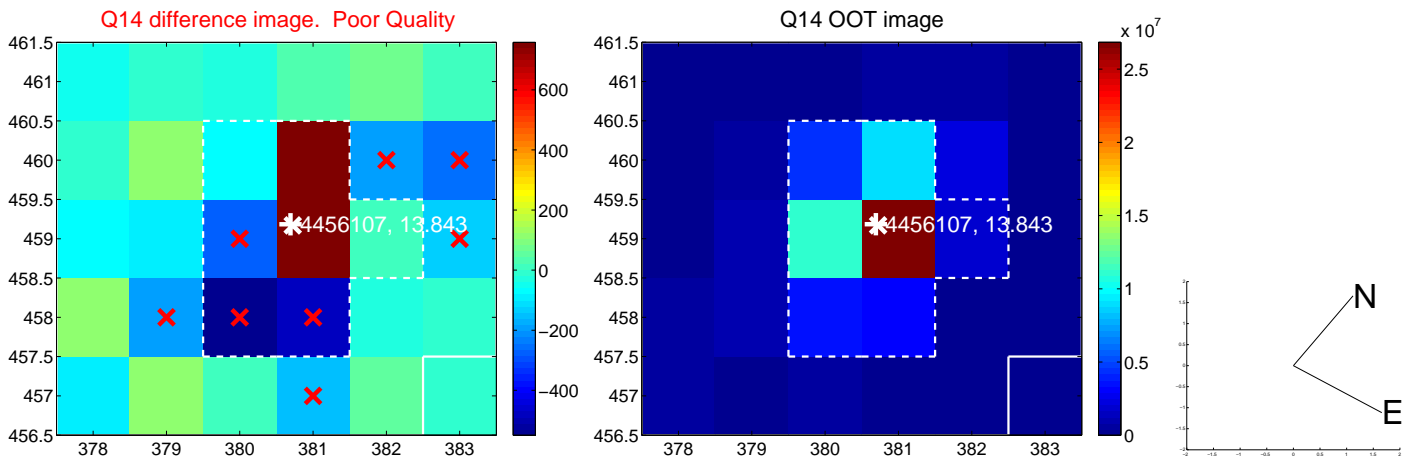
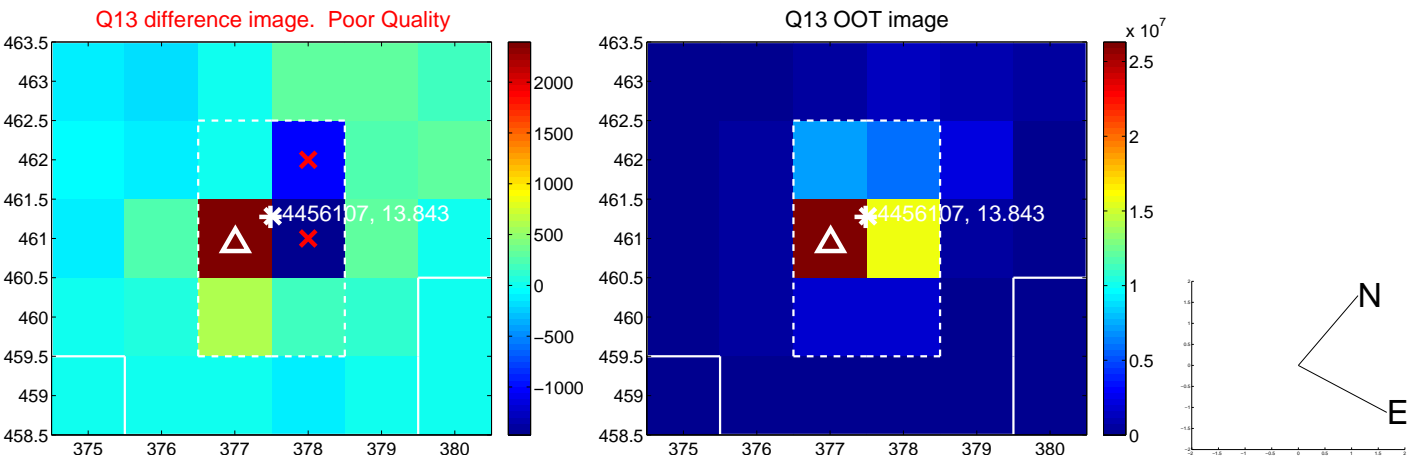
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



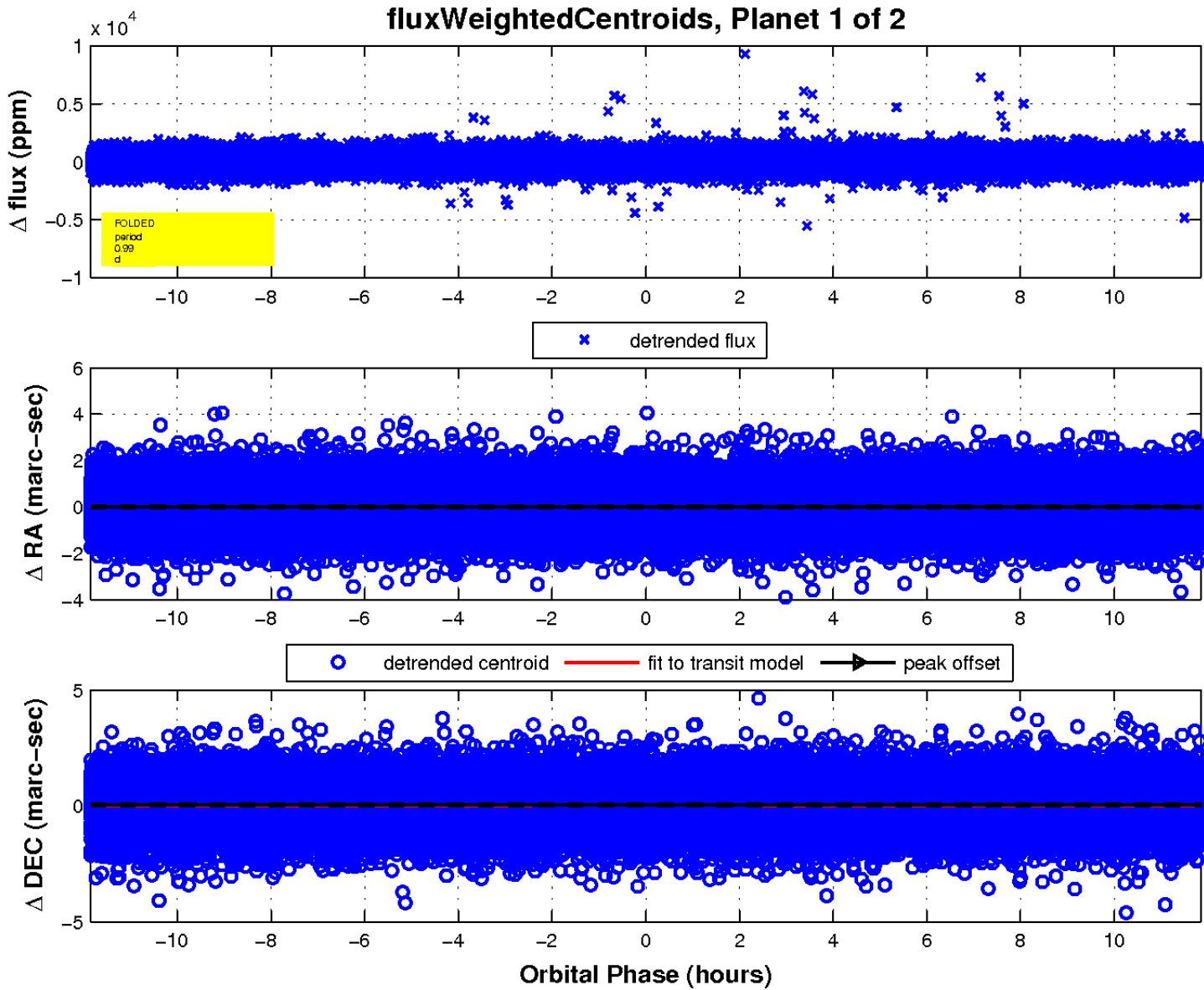
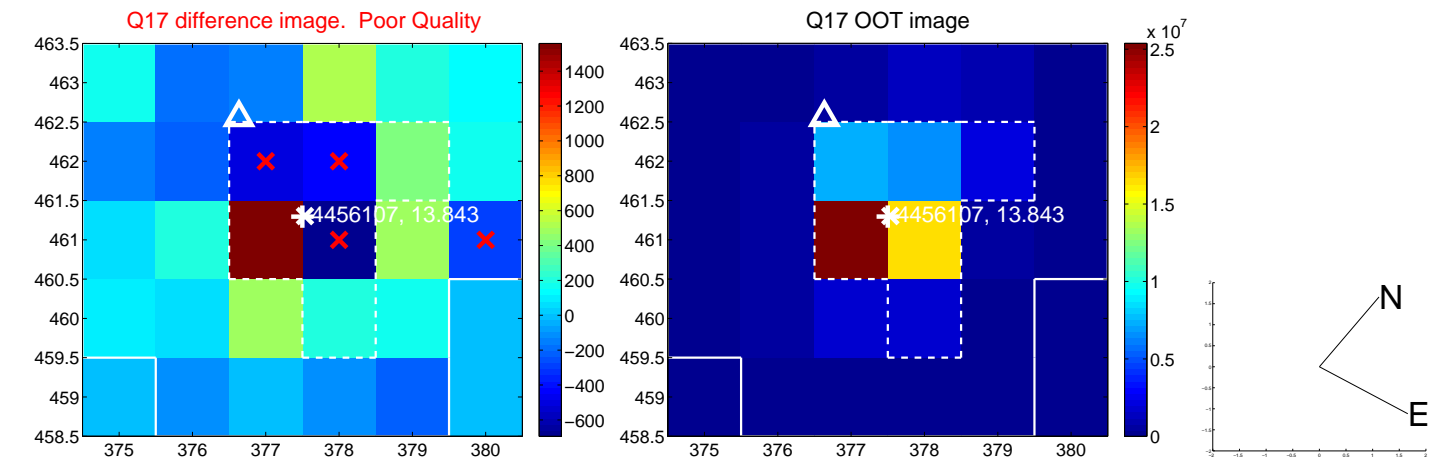
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



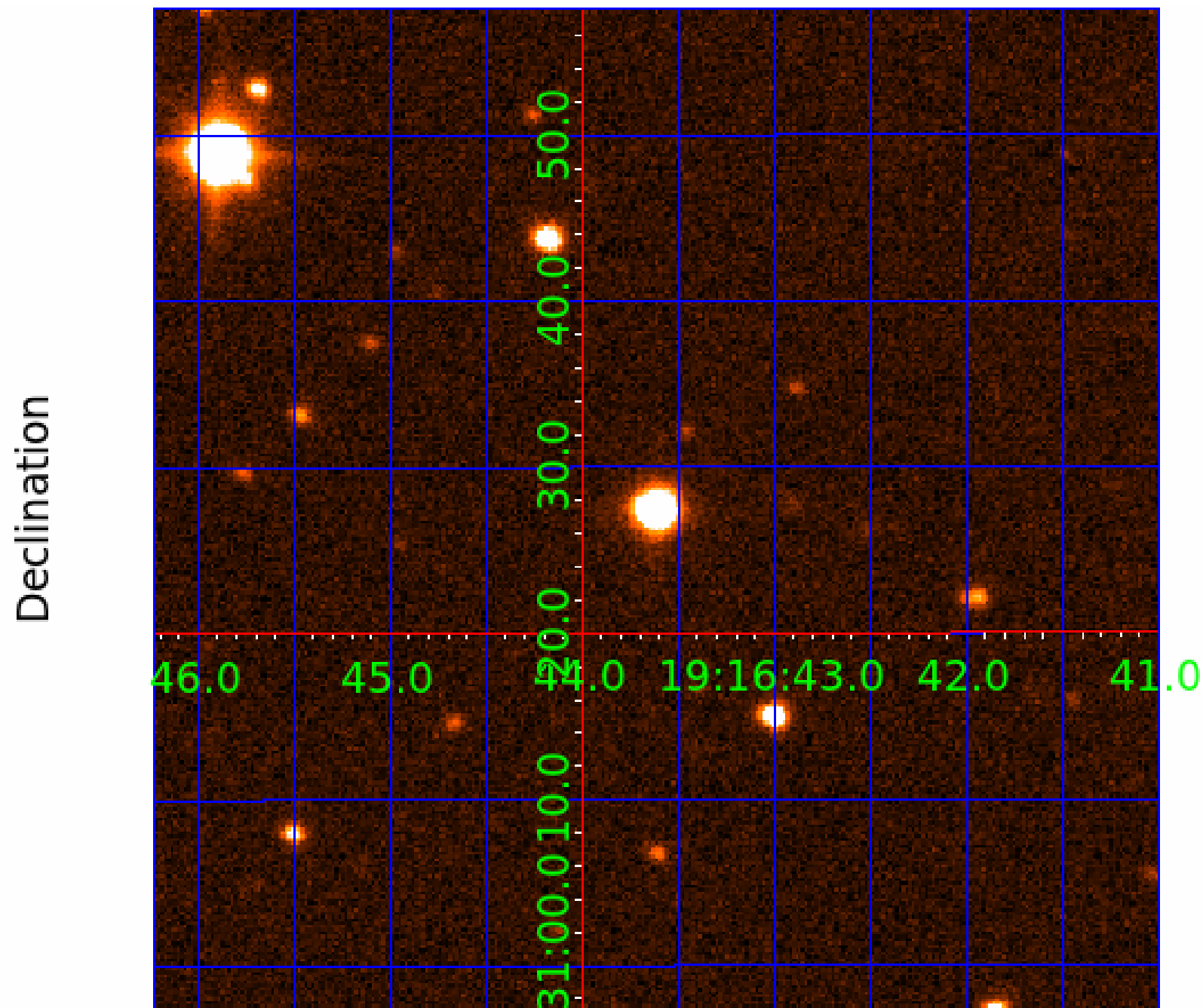
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004456107

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})
004456107-01	OBS	No	0.987738	132.356276	15.3	5.113	11.3	3.7	1.91	7254	0.89	17413.50
004456107-02	OBS	No	0.988024	132.313877	159.1	3.649	9.1	11.9	1.91	7254	2.54	17406.78

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004456107-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
004456107-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—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.

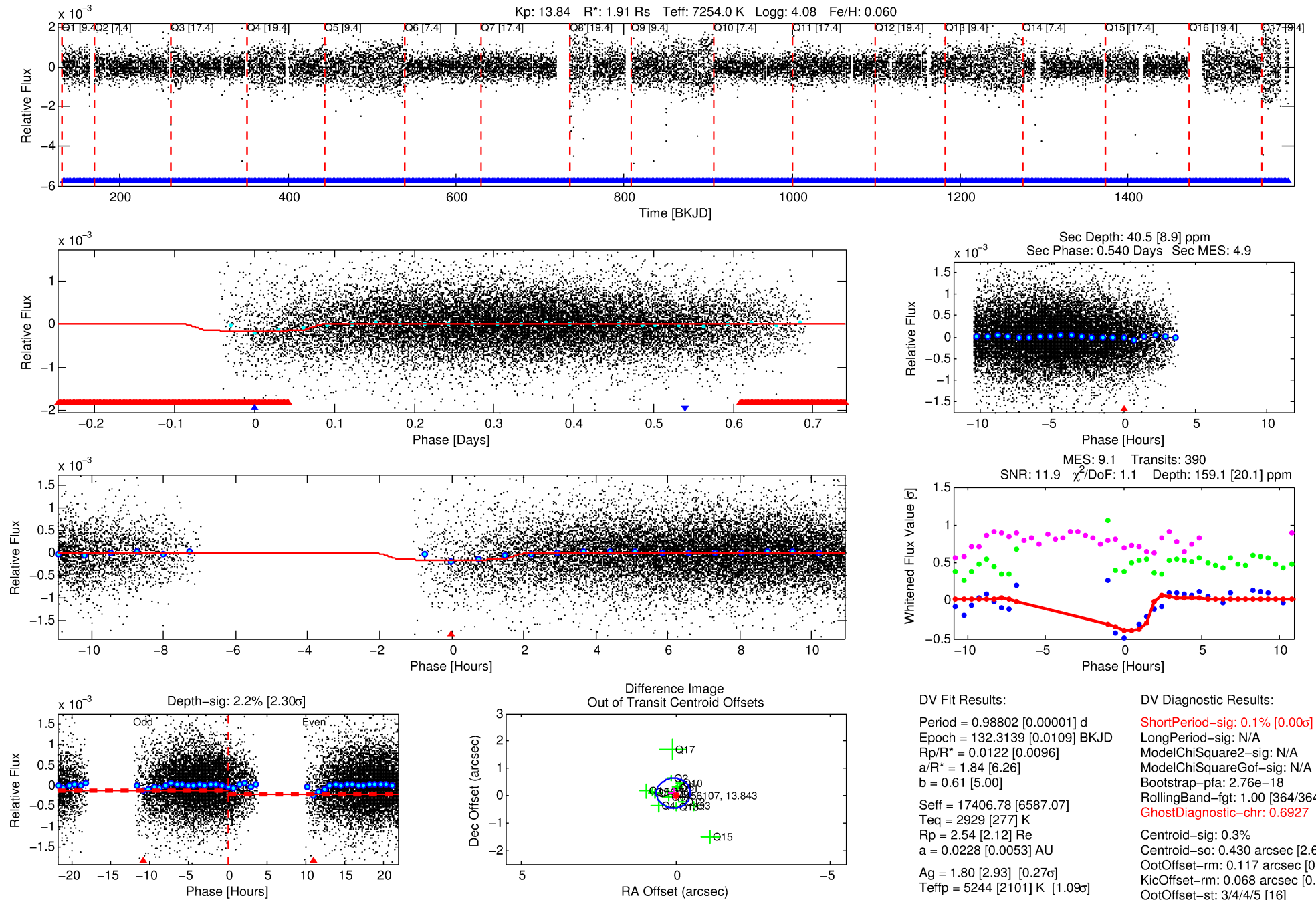
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004456107-02

No Significant Match Found

DV One-Page Summary

KIC: 4456107 Candidate: 2 of 2 Period: 0.988 d



DV Fit Results:

Period = 0.98802 [0.00001] d
Epoch = 132.3139 [0.0109] BKJD
Rp/R* = 0.0122 [0.0096]
a/R* = 1.84 [6.26]
b = 0.61 [5.00]
Seff = 17406.78 [6587.07]
Teff = 2929 [277] K
Rp = 2.54 [2.12] Re
a = 0.0228 [0.0053] AU
Ag = 1.80 [2.93] [0.27 σ]
Teffp = 5244 [2101] K [1.09 σ]

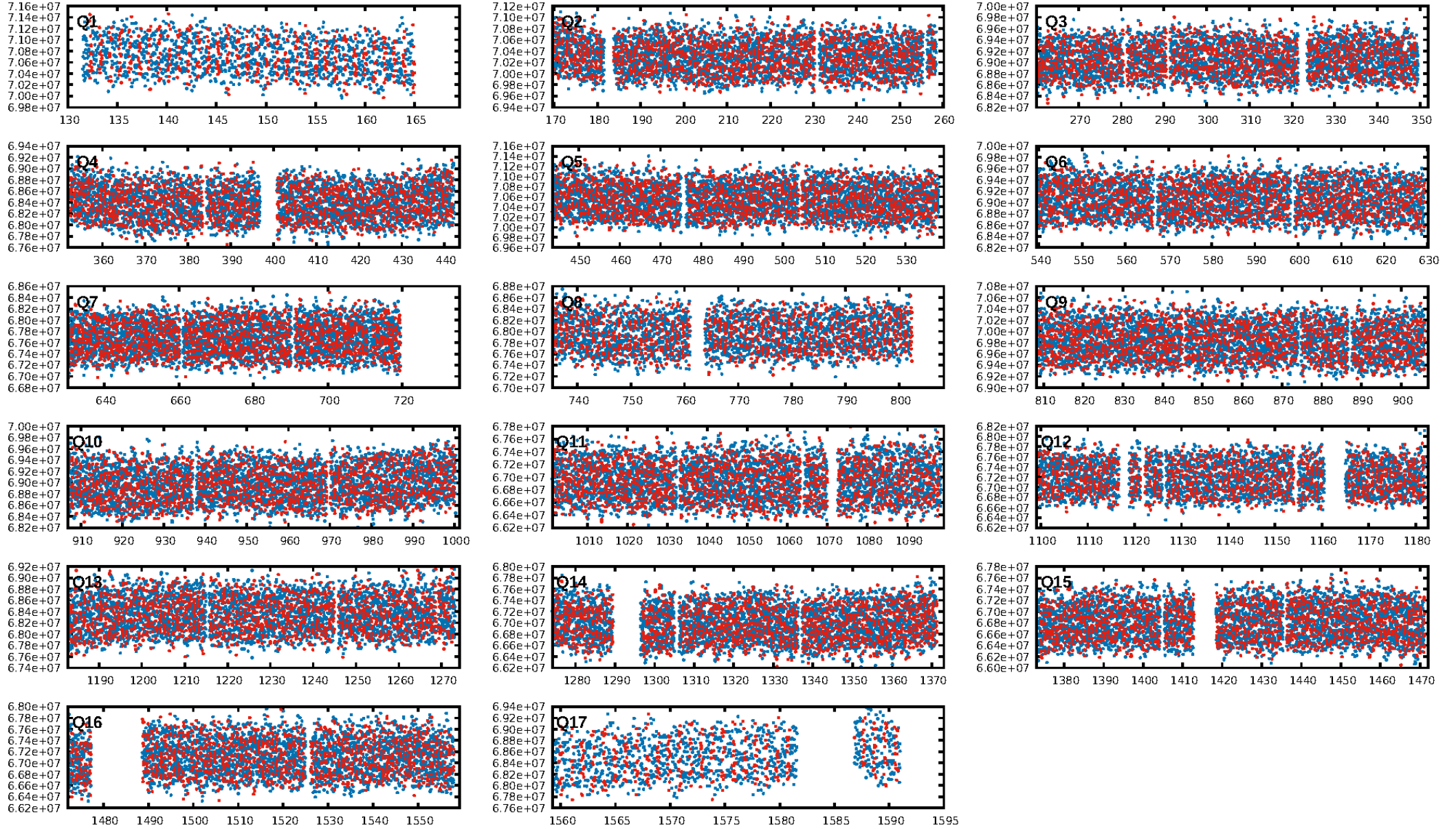
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.76e-18
RollingBand-fgt: 1.00 [364/364]
GhostDiagnostic-chr: 0.6927
Centroid-sig: 0.3%
Centroid-so: 0.430 arcsec [2.68 σ]
OotOffset-rm: 0.117 arcsec [0.65 σ]
KicOffset-rm: 0.068 arcsec [0.38 σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 0.00 [0/17]

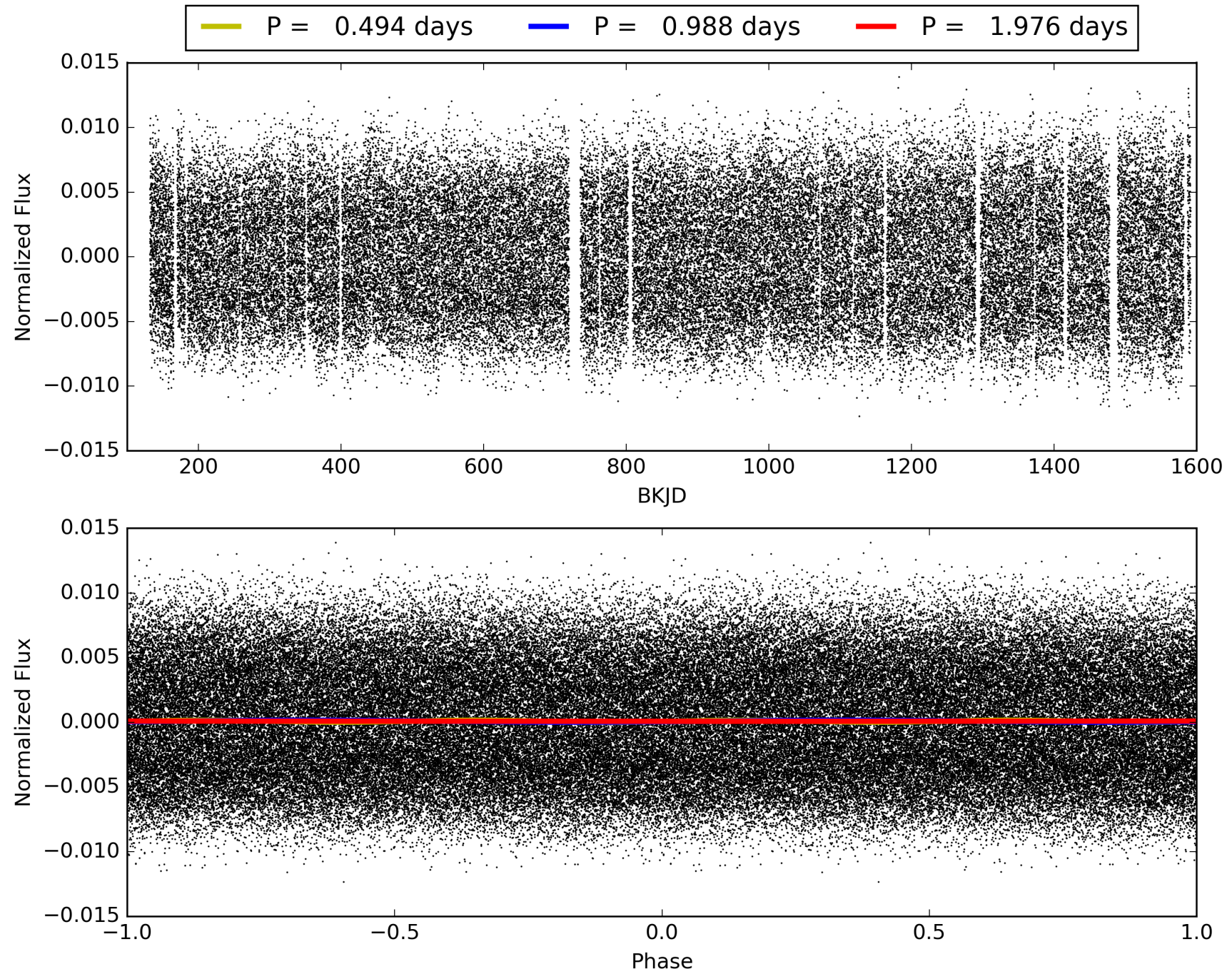
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:59:29 Z

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

TCE 004456107-02, PDC Light Curves

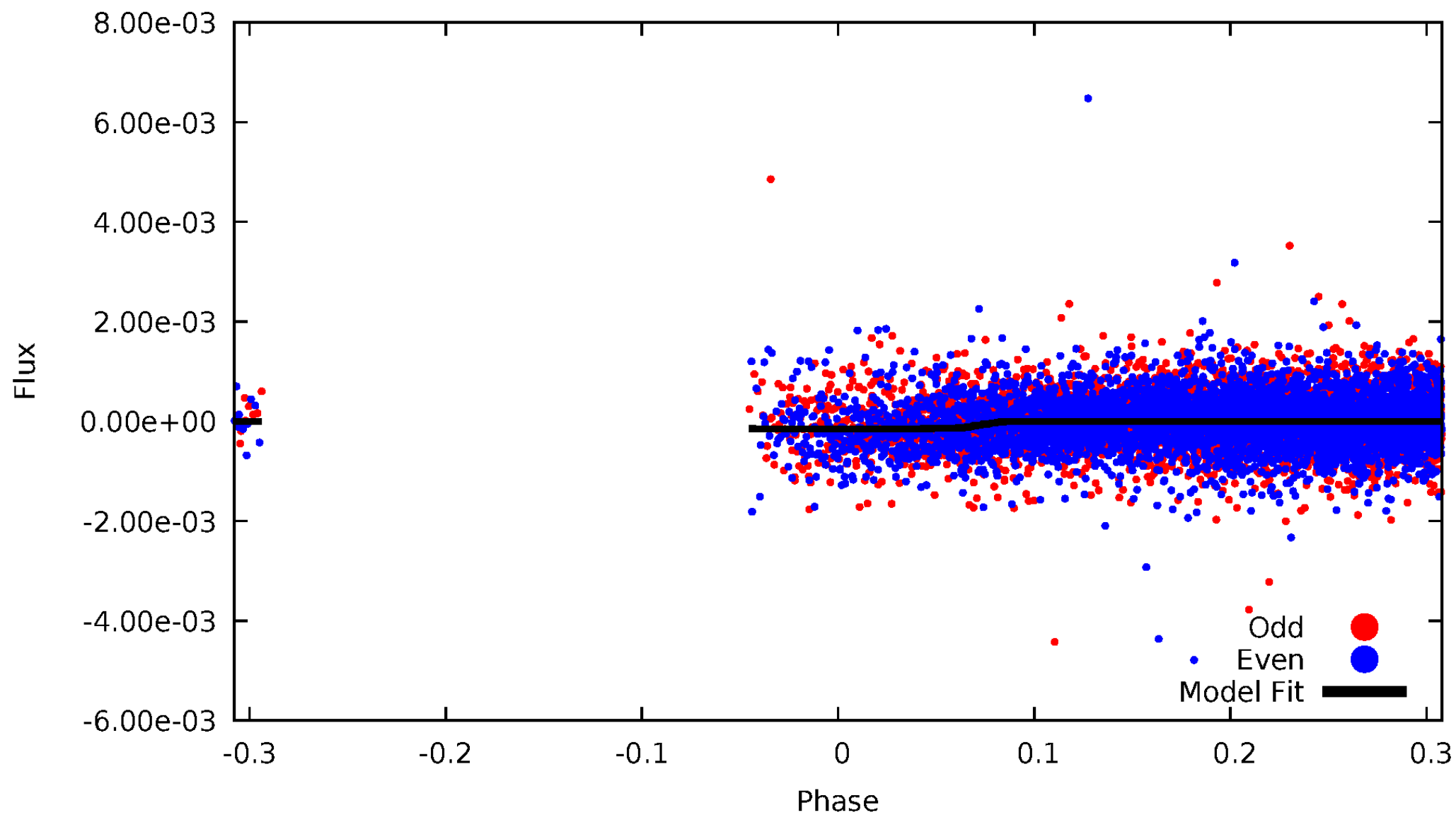


TCE 004456107-02



DV Odd/Even

TCE 004456107-02

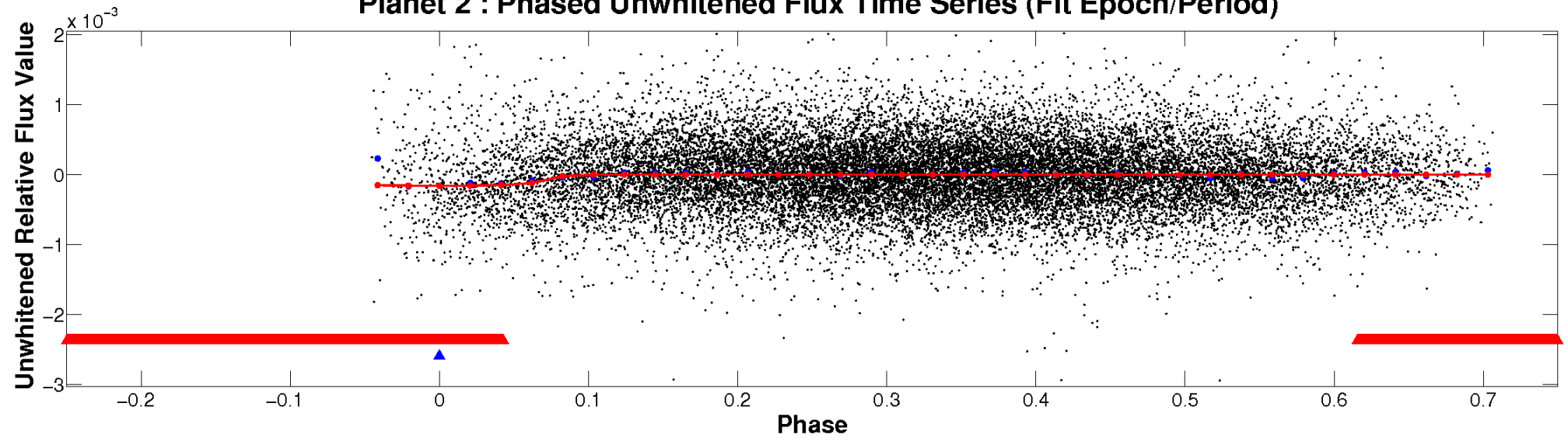


ALT Odd/Even

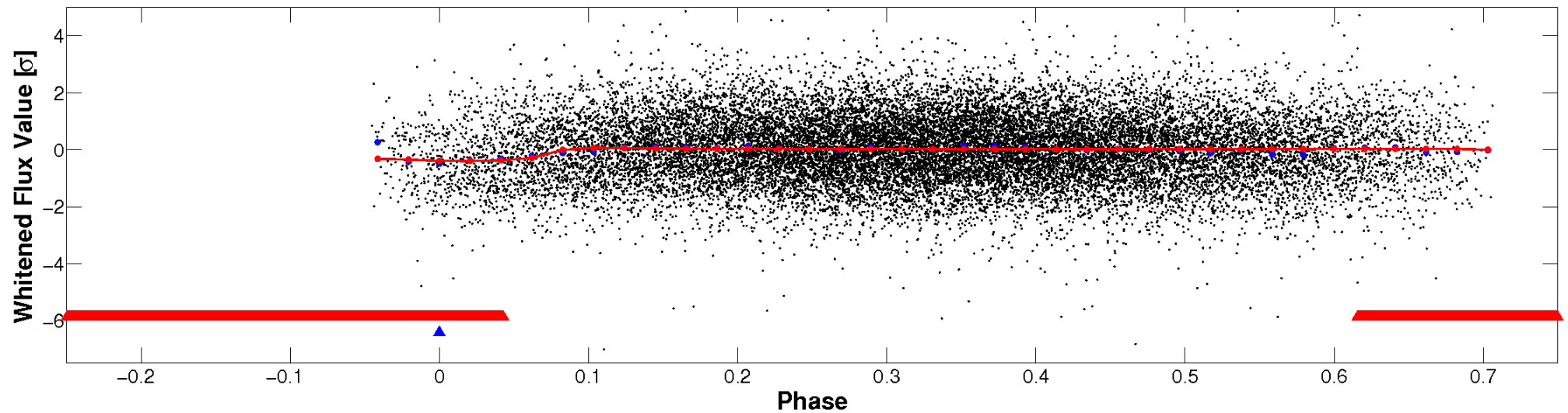
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

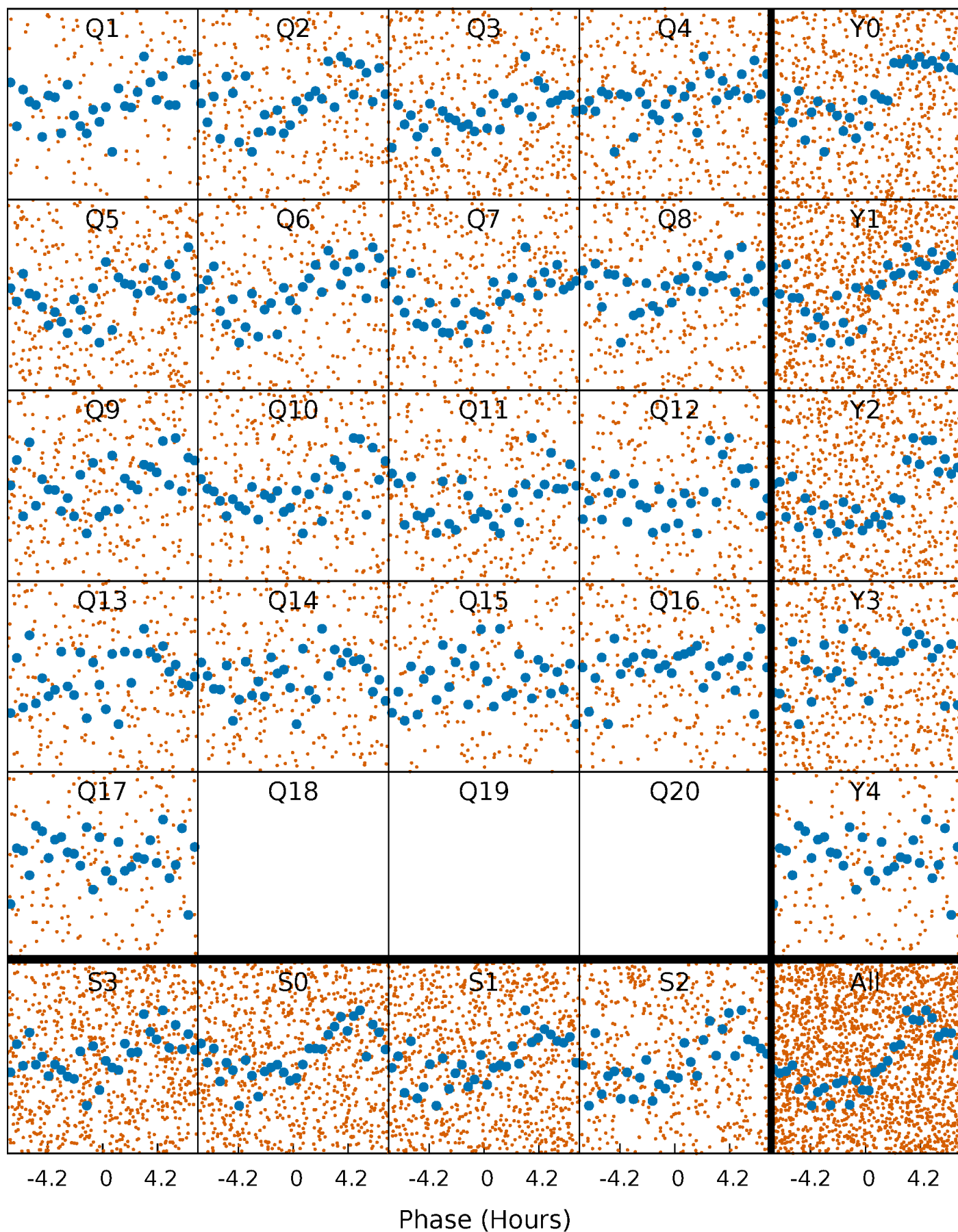


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



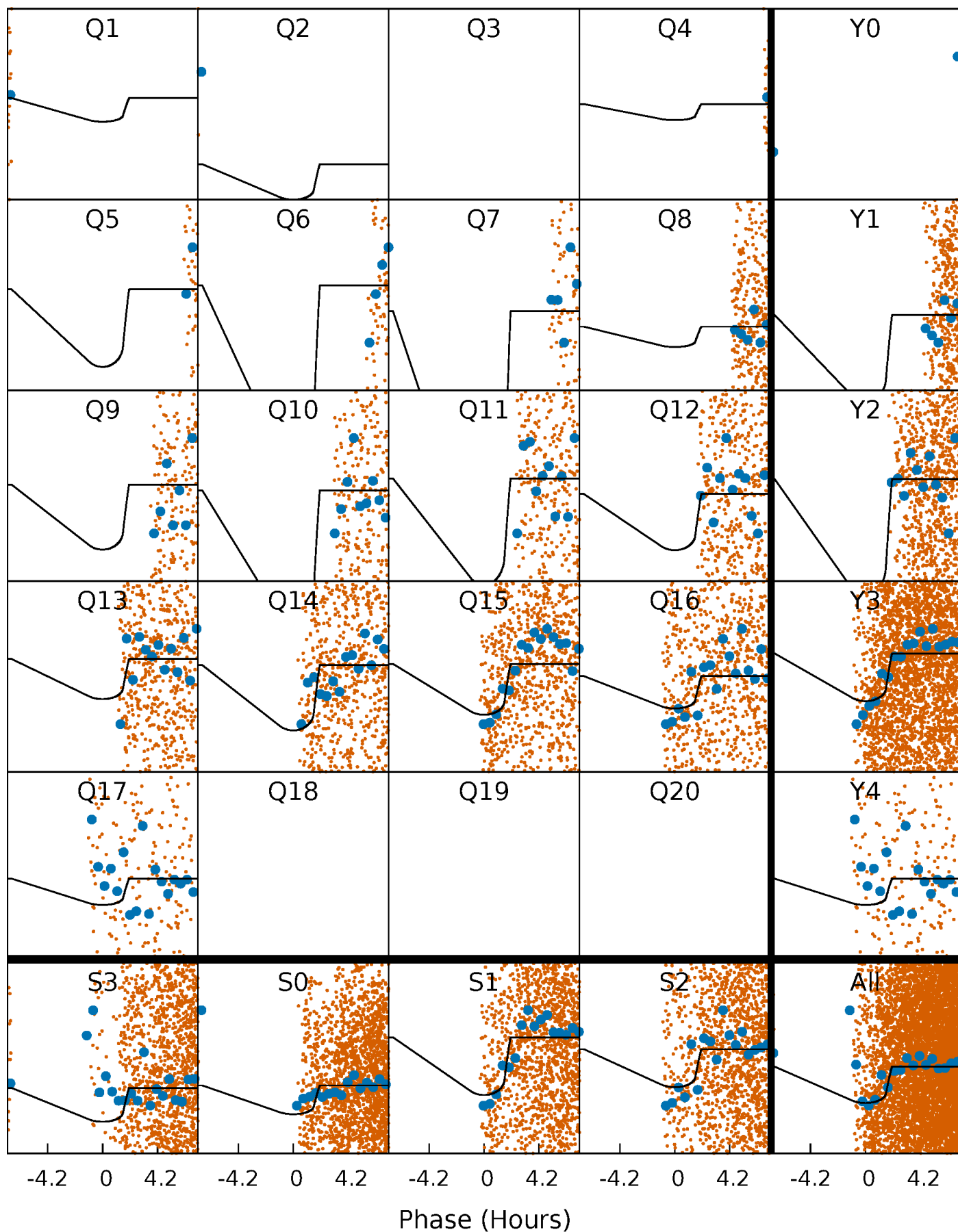
PDC Quarter-Phased Transit Curves

TCE 004456107-02 P= 0.988024 Days $T_0=132.313877$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004456107-02 P= 0.988024 Days $T_0=132.313877$ (BKJD)

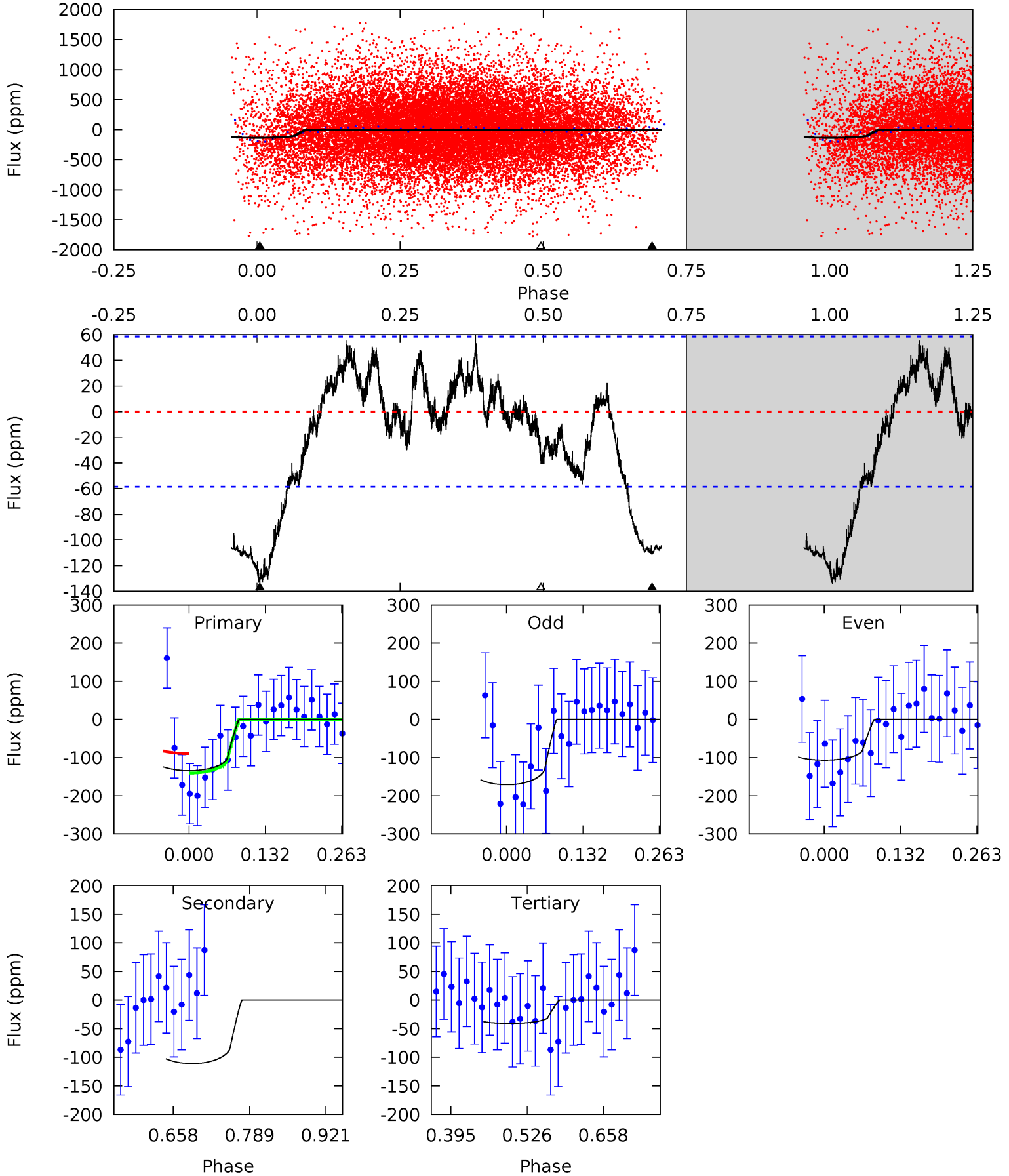


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004456107-02, P = 0.988024 Days, E = 131.325853 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	8.55	3.15	0	4.51	1.51	1.69	7.20	10.3	5.40	8.55	2.50	0.92	0.31	1.35



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004456107

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7254^{+228}_{-314}	$4.085^{+0.149}_{-0.182}$	$0.060^{+0.200}_{-0.350}$	$1.909^{+0.537}_{-0.439}$	$1.617^{+0.204}_{-0.272}$	$0.327^{+0.246}_{-0.163}$
	+3%/-4%	+4%/-4%	+333%/-583%	+28%/-23%	+13%/-17%	+75%/-50%
Source	KIC0	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 004456107-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-111±13	$2.72^{+2.00}_{-1.61}$	4104^{+329}_{-276}	6369^{+4764}_{-1608}	$4.237^{+20.698}_{-2.846}$
Alt.	N/A	N/A	N/A	N/A	N/A

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 $A_{obs} \gg 1.0$

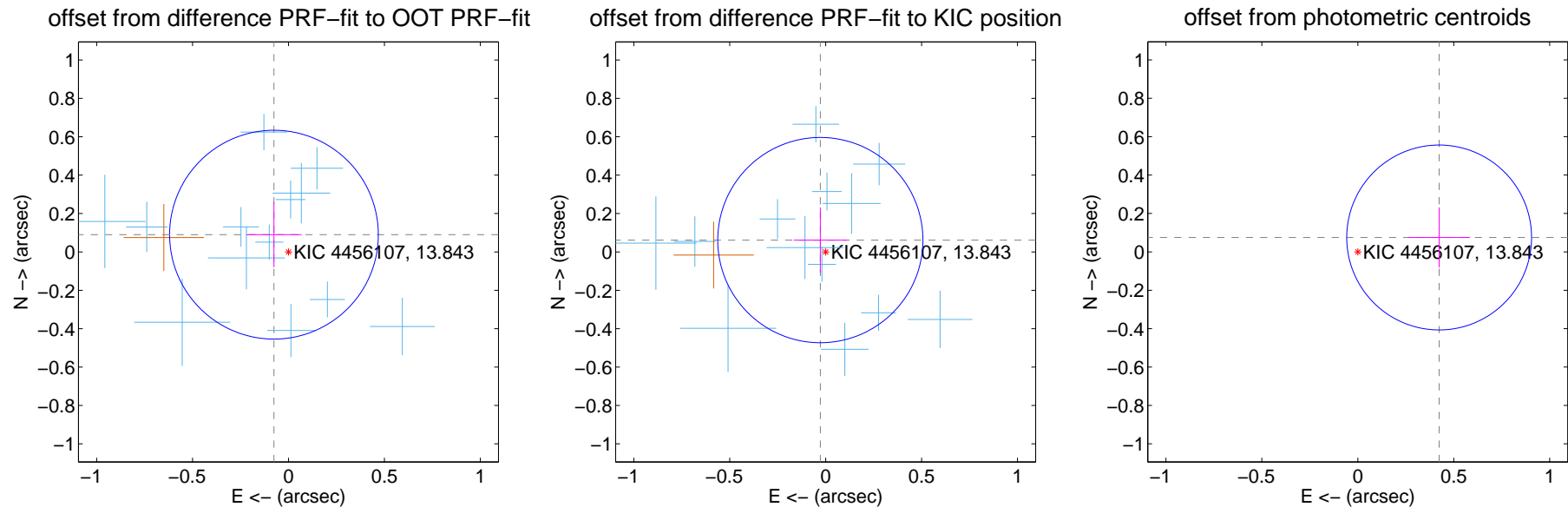
DV Centroid Data

Supplemental centroid analysis for 004456107-02. Kepler magnitude: 13.84. Transit SNR 11.88

There are 14 quarters with good PRF difference image offsets

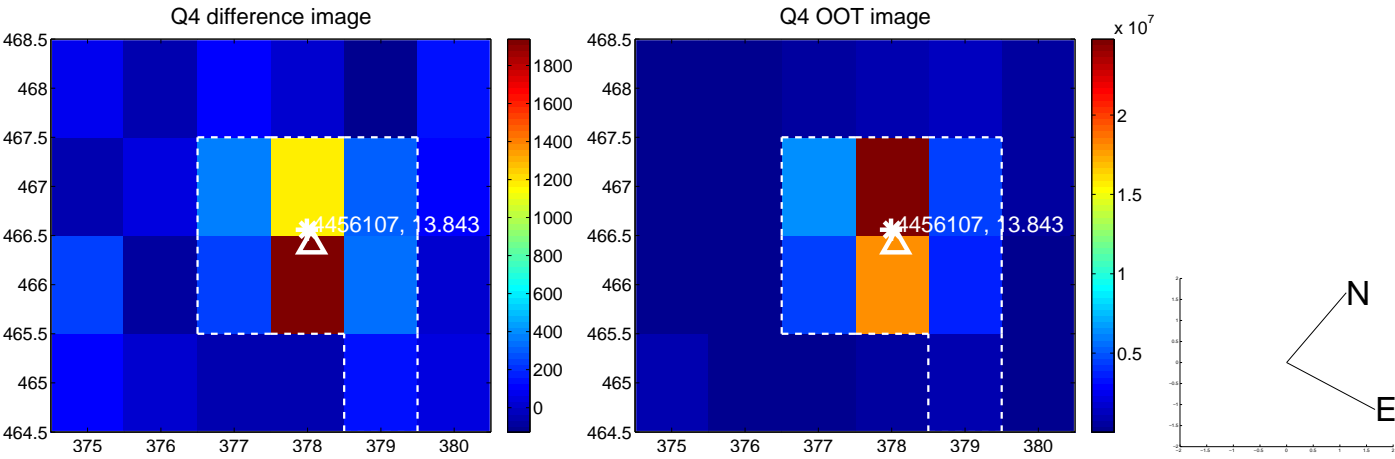
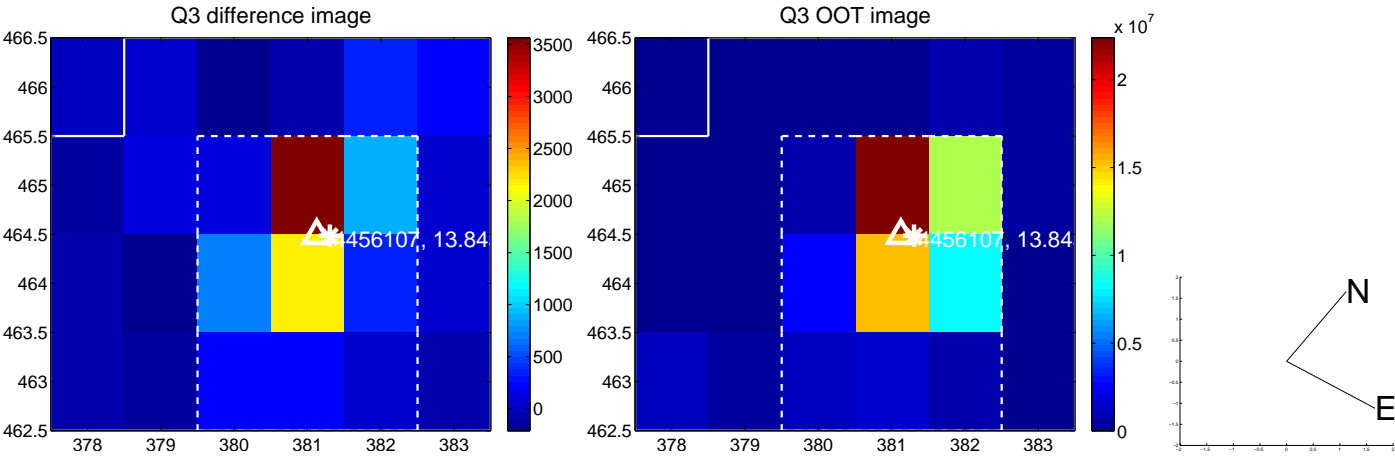
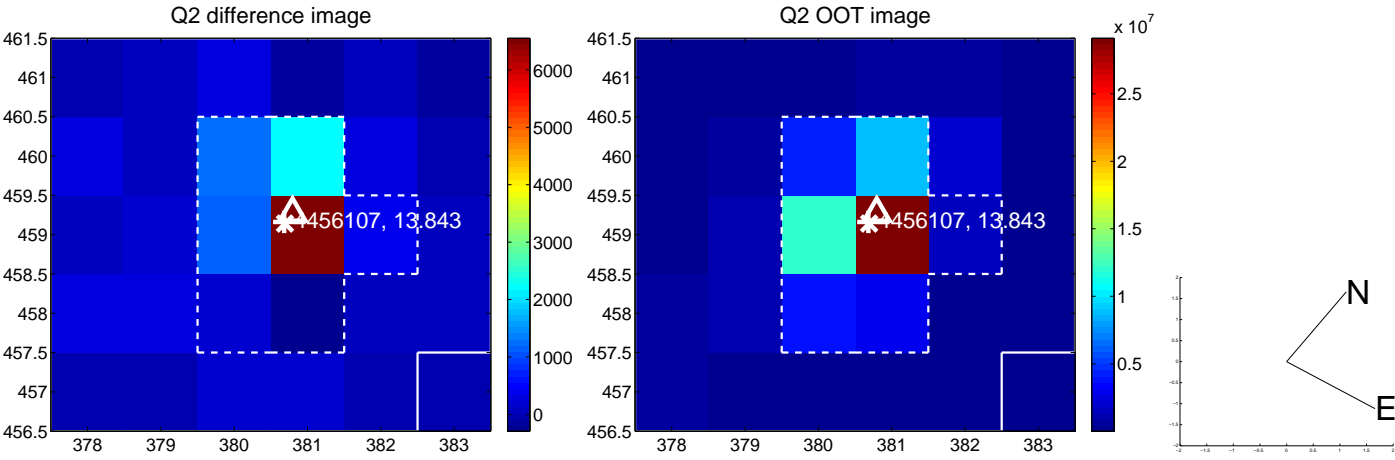
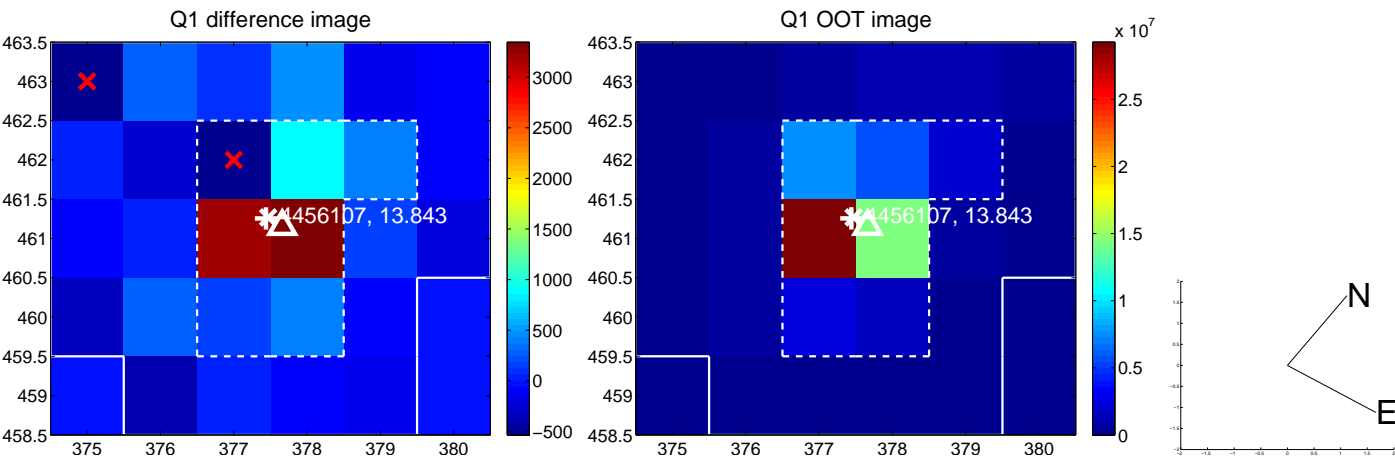
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.117 ± 0.181	0.65	0.076 ± 0.144	0.090 ± 0.170
PRF-fit source offset from KIC position	0.068 ± 0.178	0.38	0.028 ± 0.138	0.062 ± 0.170
photometric centroid source offset	0.43 ± 0.16	2.68	-0.42 ± 0.16	0.07 ± 0.16

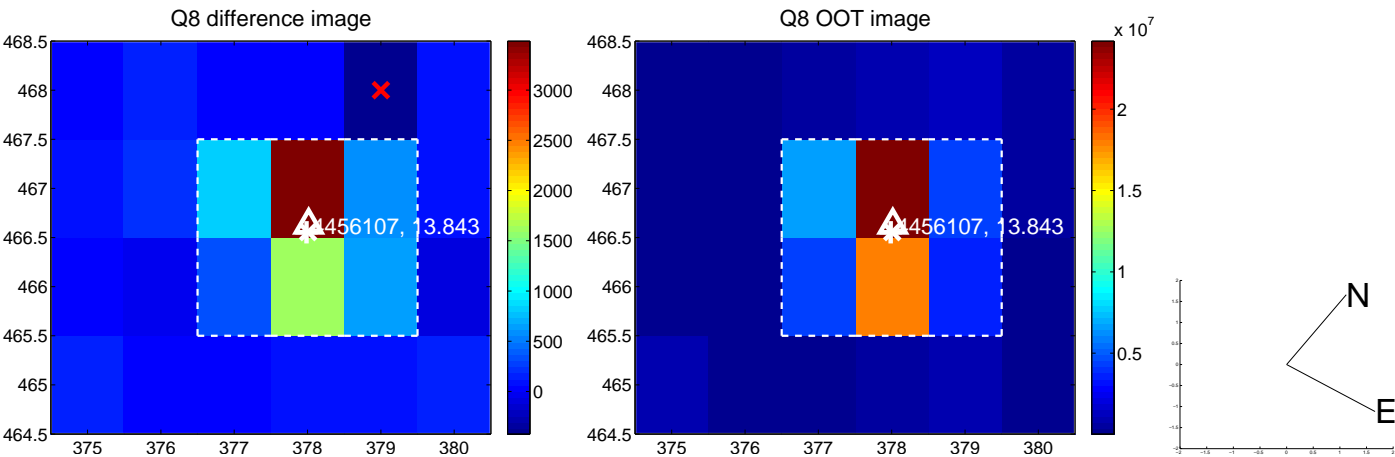
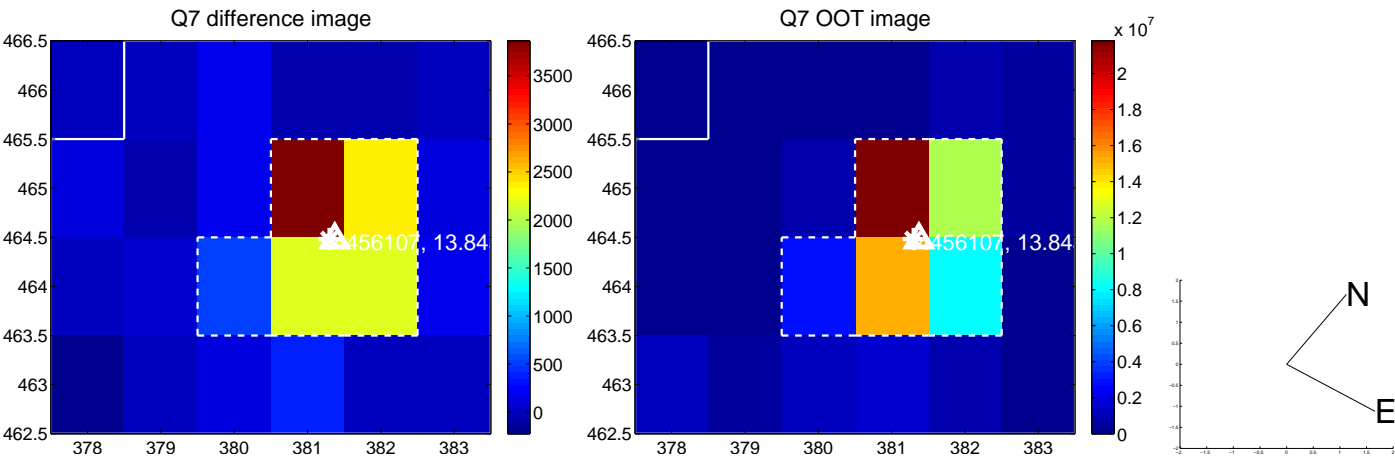
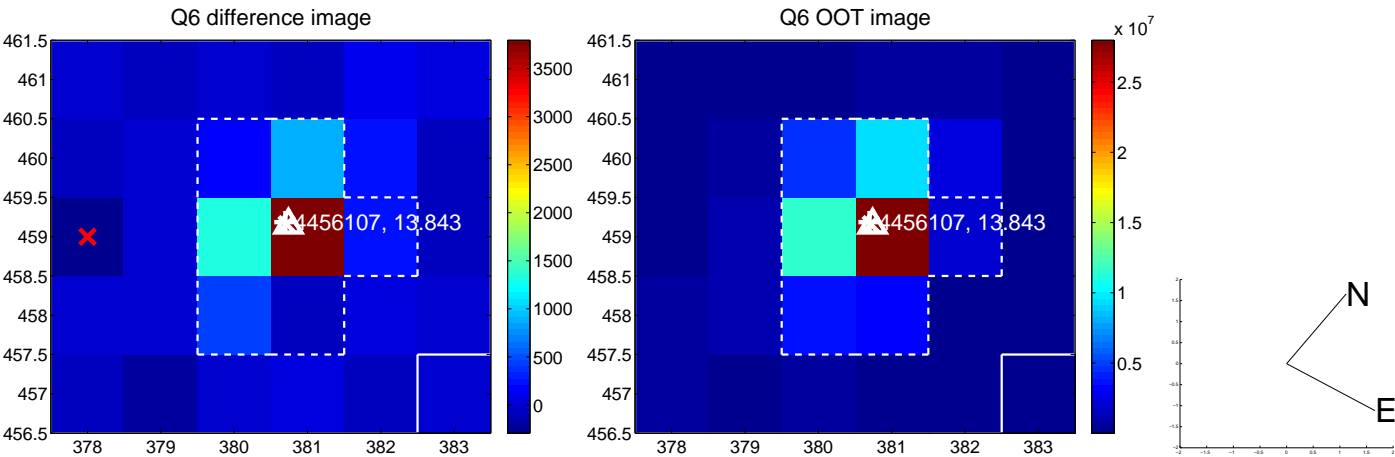
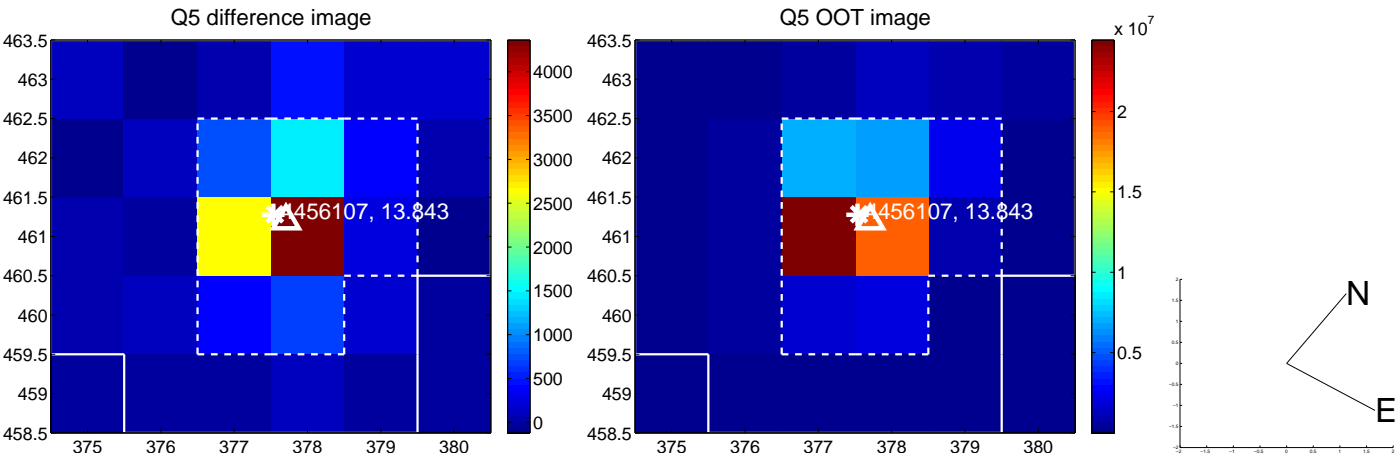


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

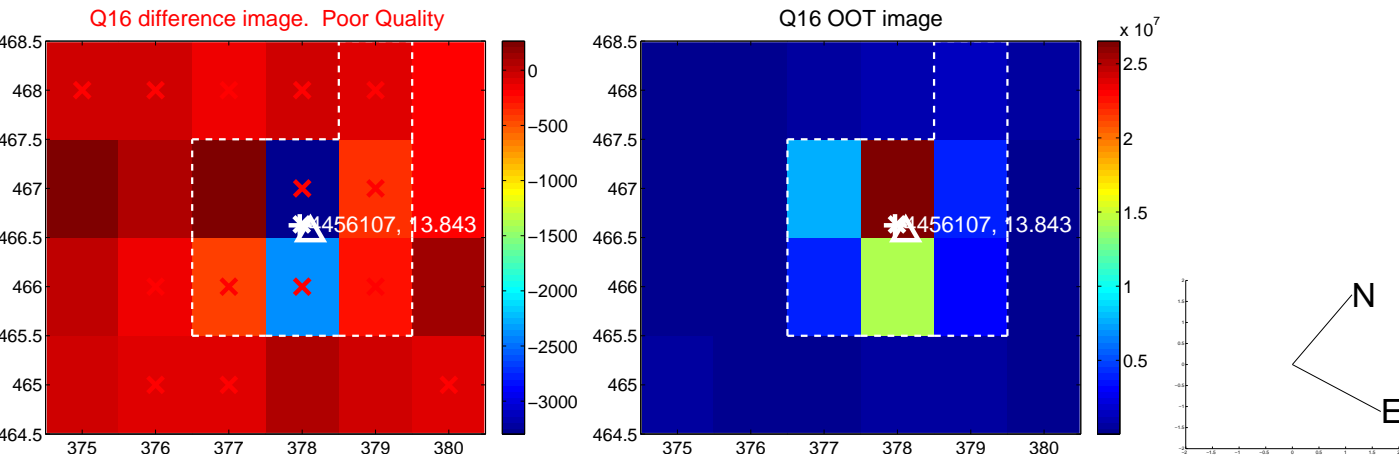
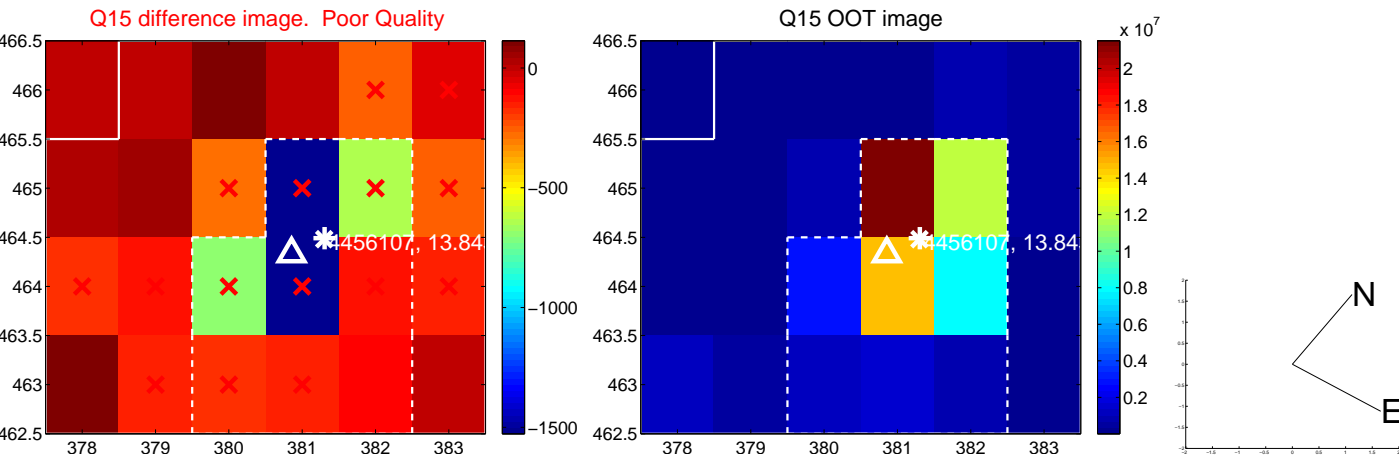
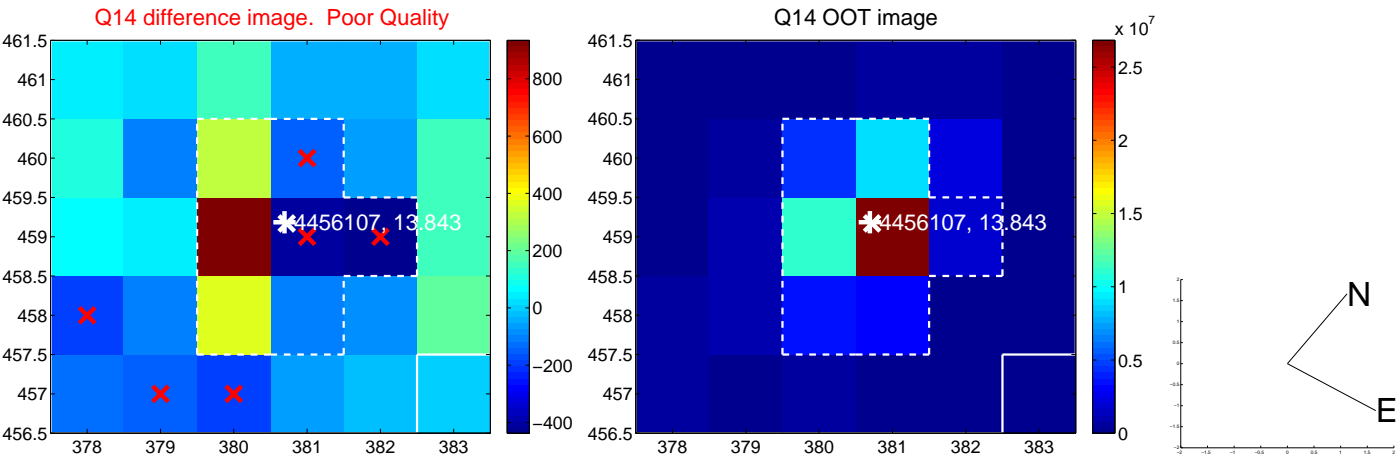
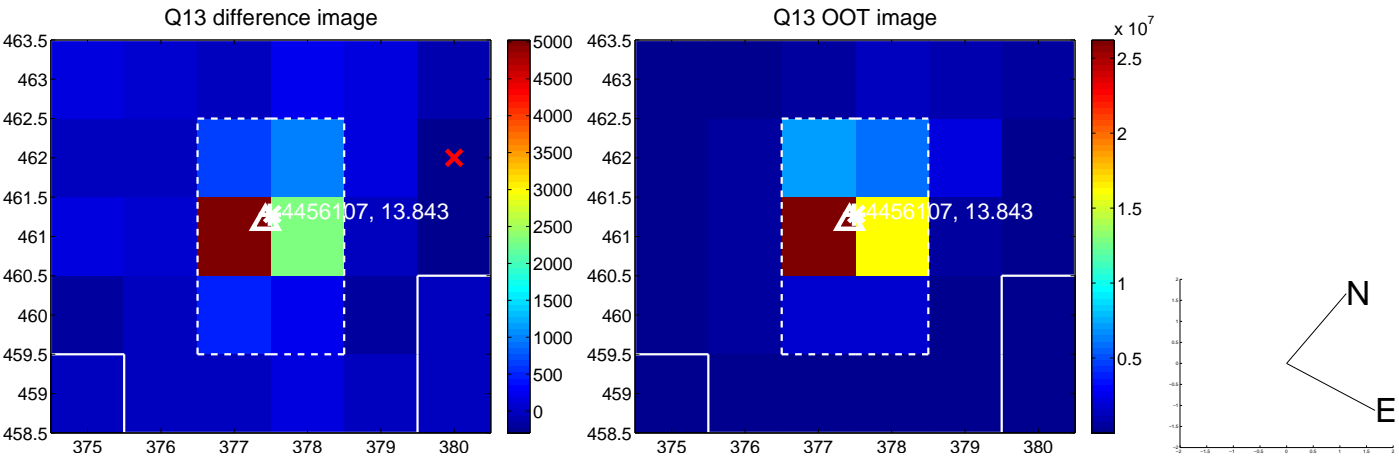
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



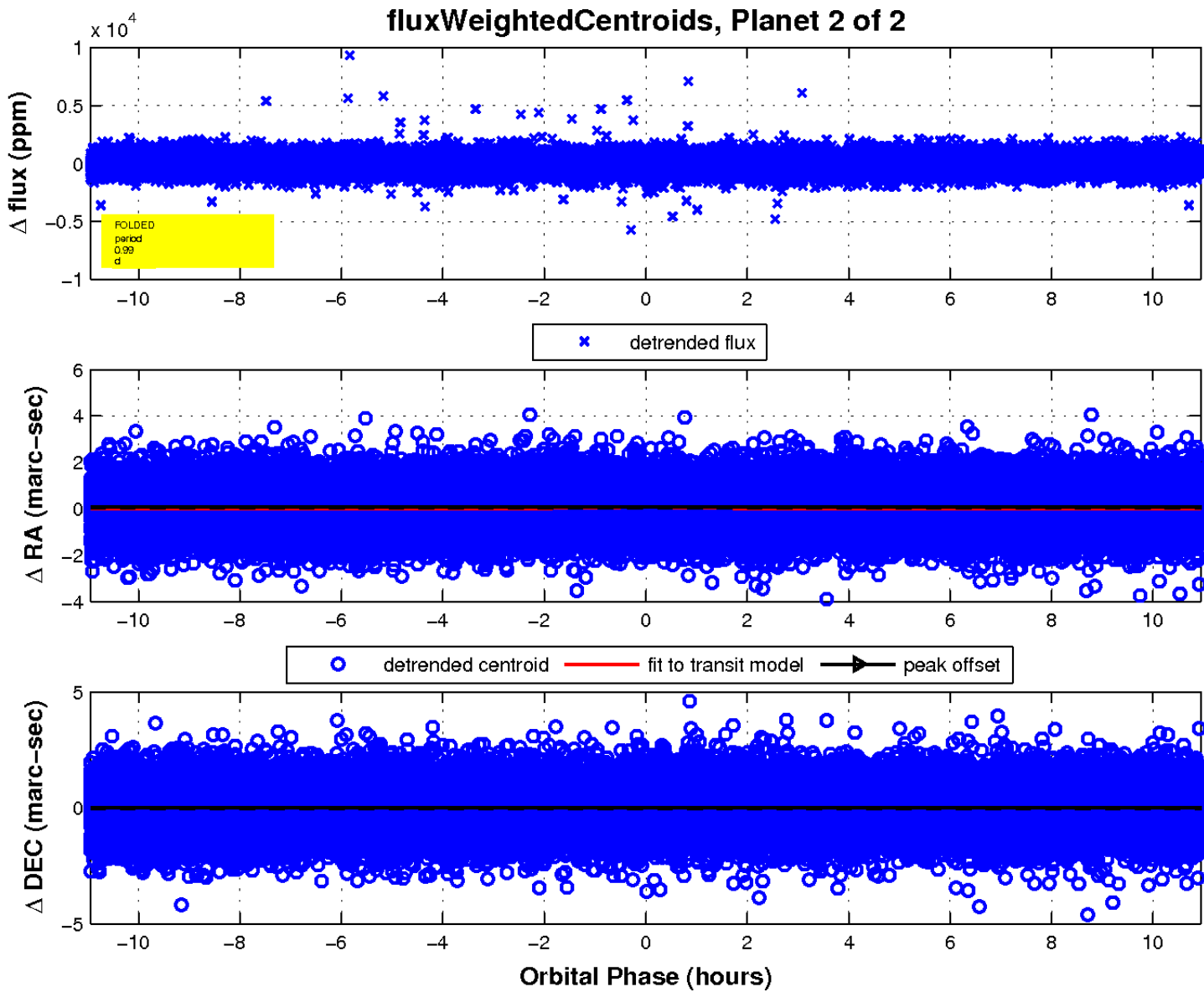
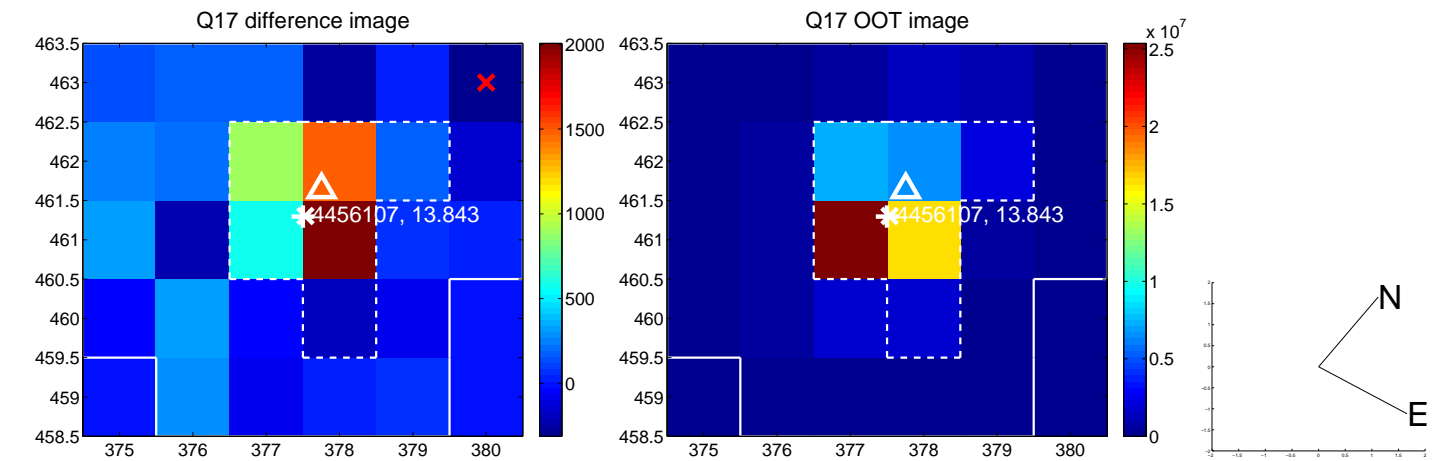
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

