

KIC 009158038

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})
009158038-01	OBS	No	0.757073	131.595488	58.0	5.227	10.2	15.2	0.66	5126	0.57	1255.00
009158038-02	OBS	No	45.258253	154.105801	1214.6	3.172	13.1	9.5	0.66	5126	2.36	5.37
009158038-03	OBS	No	40.792044	159.519550	19.5	0.751	12.3	0.1	0.66	5126	0.30	6.17
009158038-05	OBS	No	45.260601	153.308988	1569.6	1.880	11.4	10.4	0.66	5126	2.93	5.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009158038-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
009158038-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009158038-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009158038-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

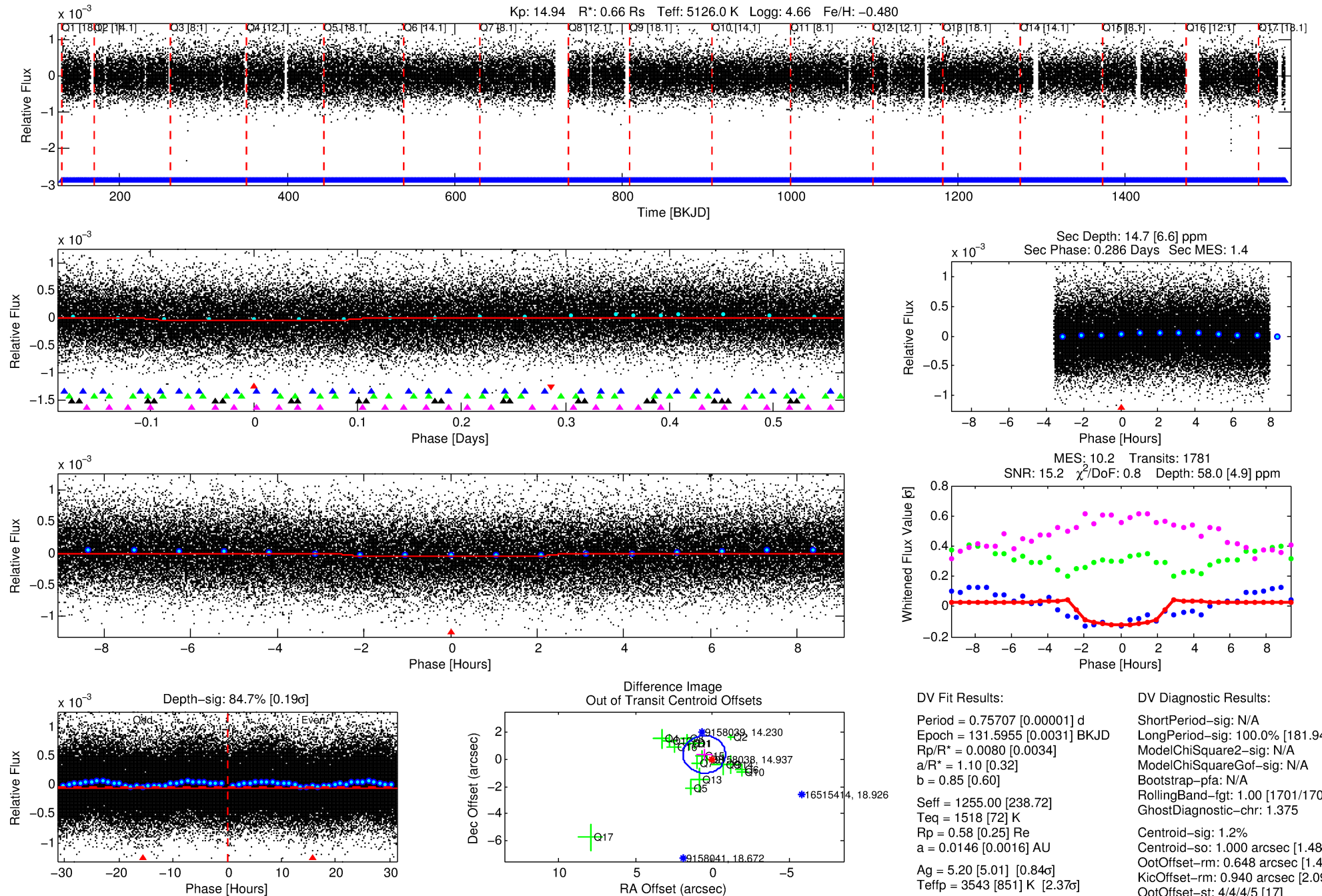
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009158038-01

No Significant Match Found

DV One-Page Summary

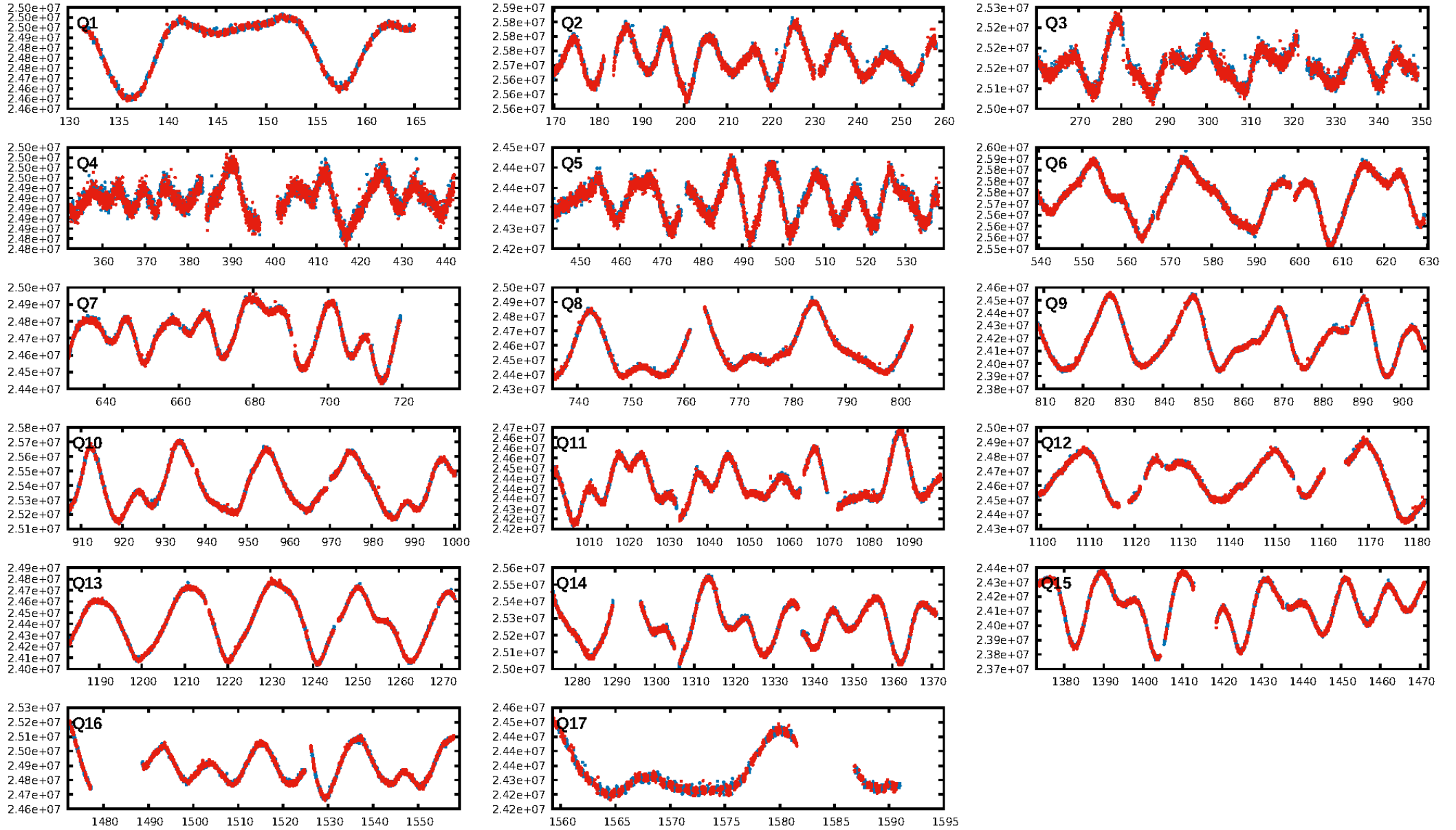
KIC: 9158038 Candidate: 1 of 5 Period: 0.757 d



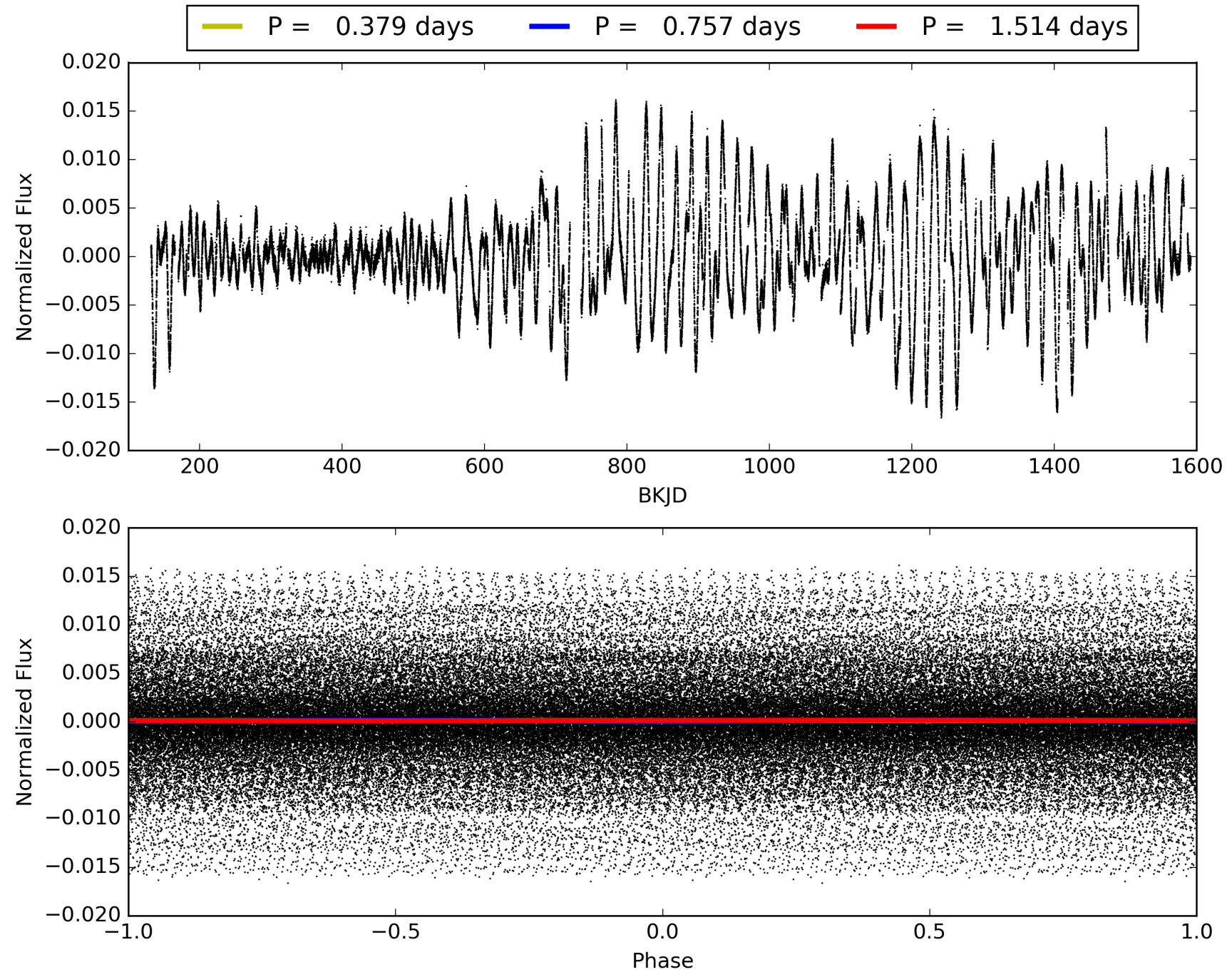
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:26:56 Z

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

TCE 009158038-01, PDC Light Curves

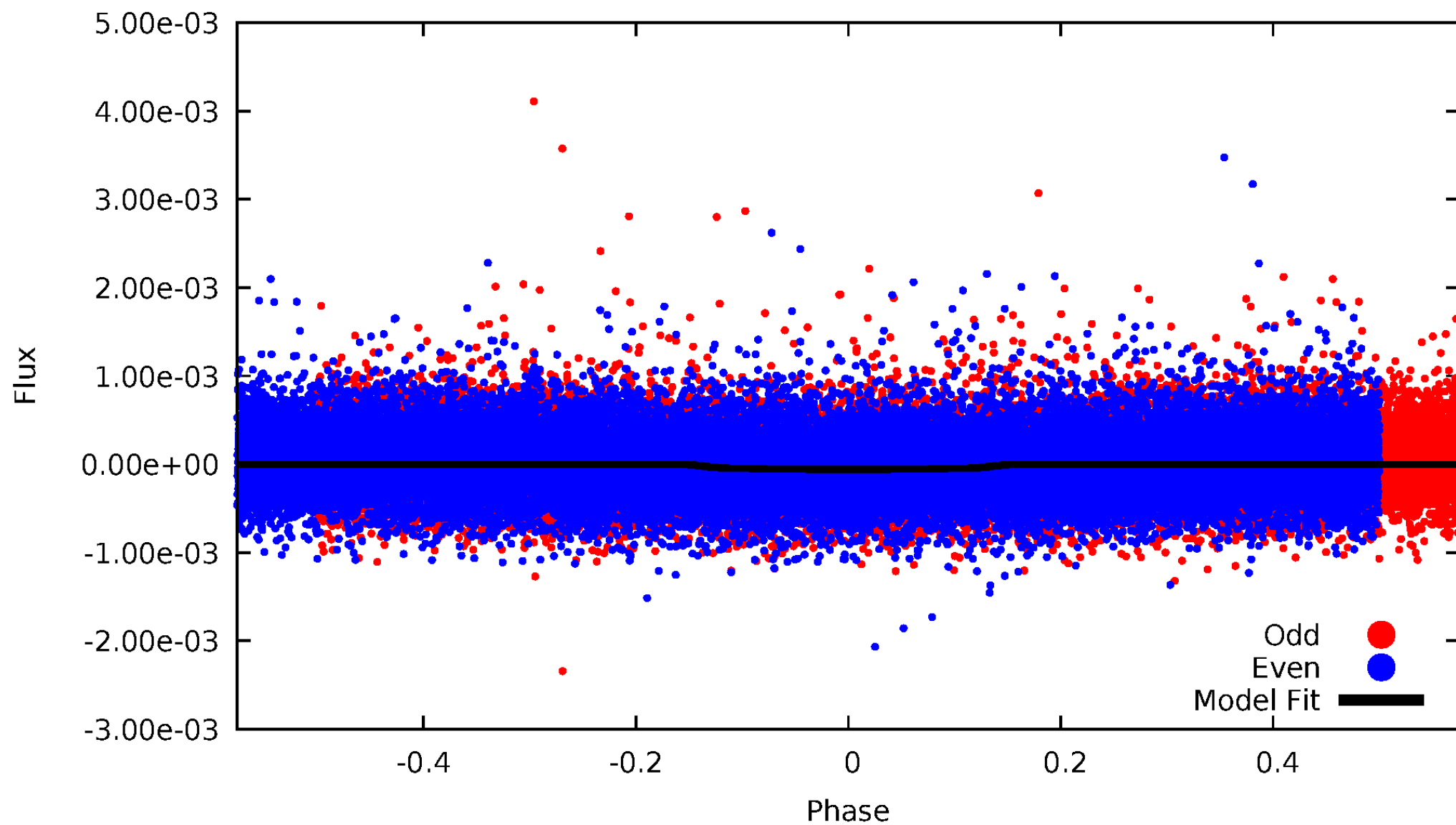


TCE 009158038-01



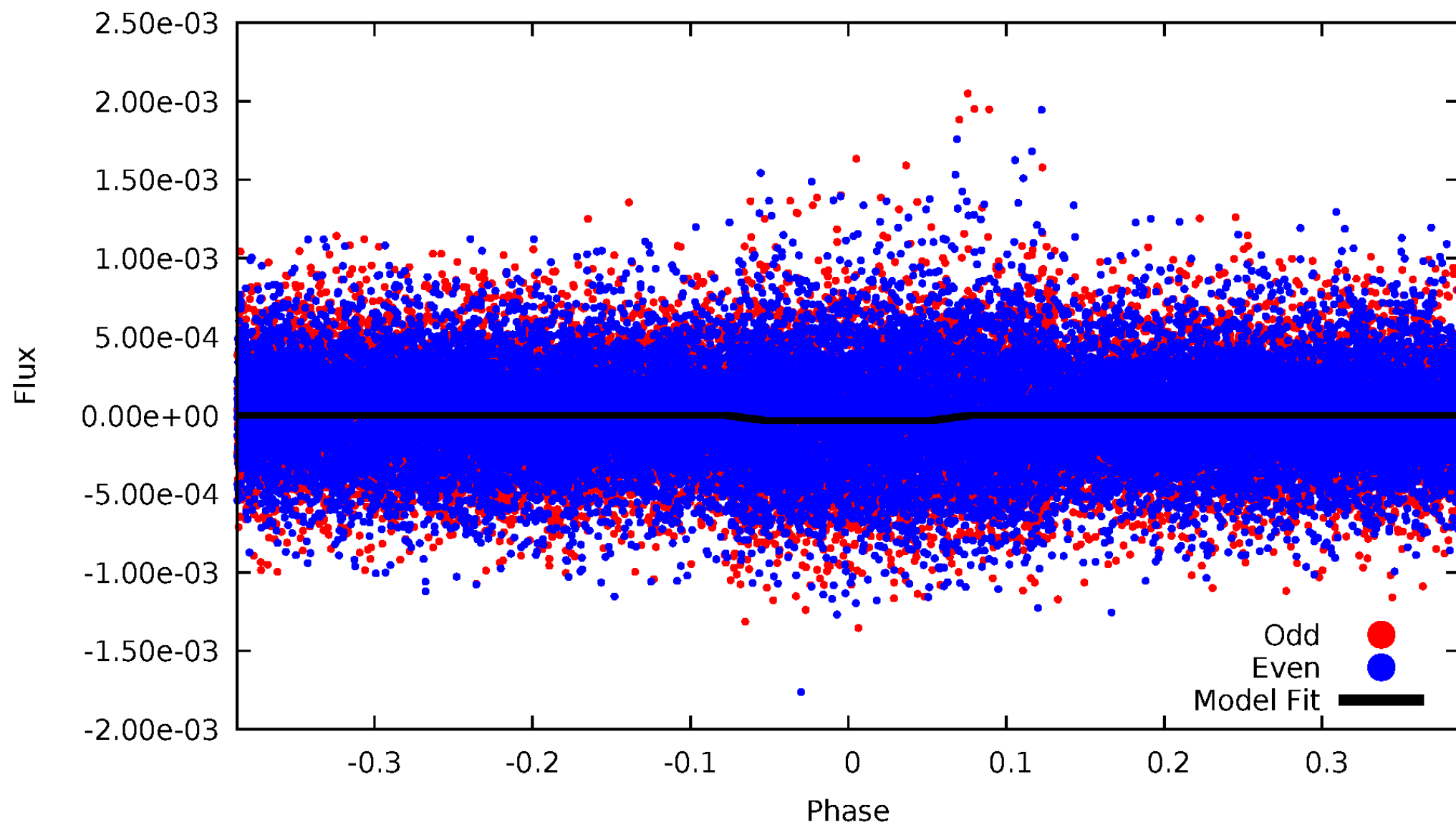
DV Odd/Even

TCE 009158038-01



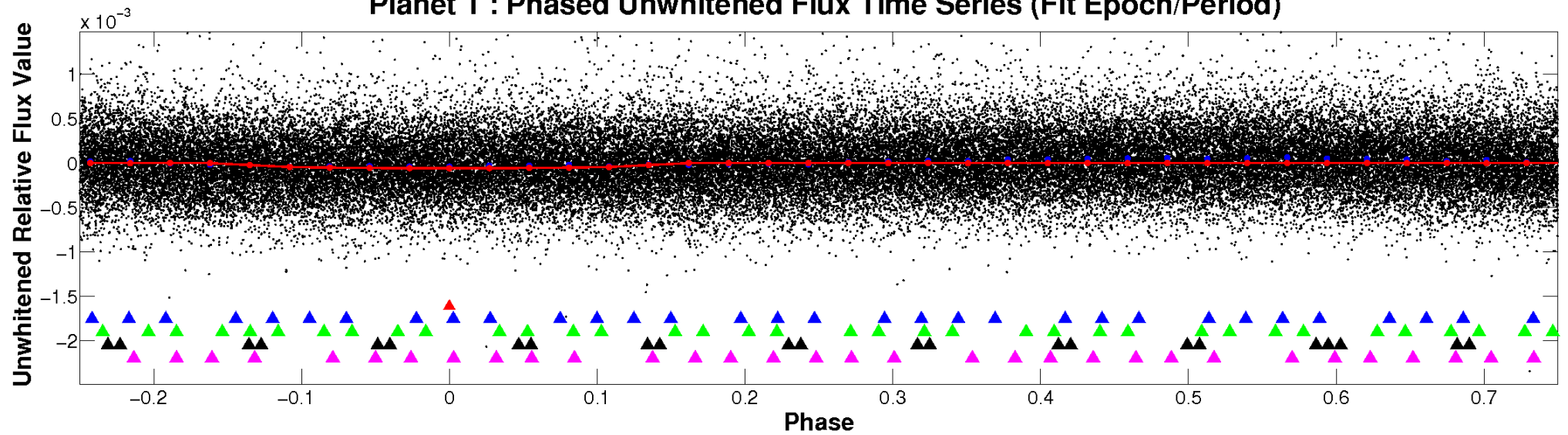
ALT Odd/Even

TCE 009158038-01

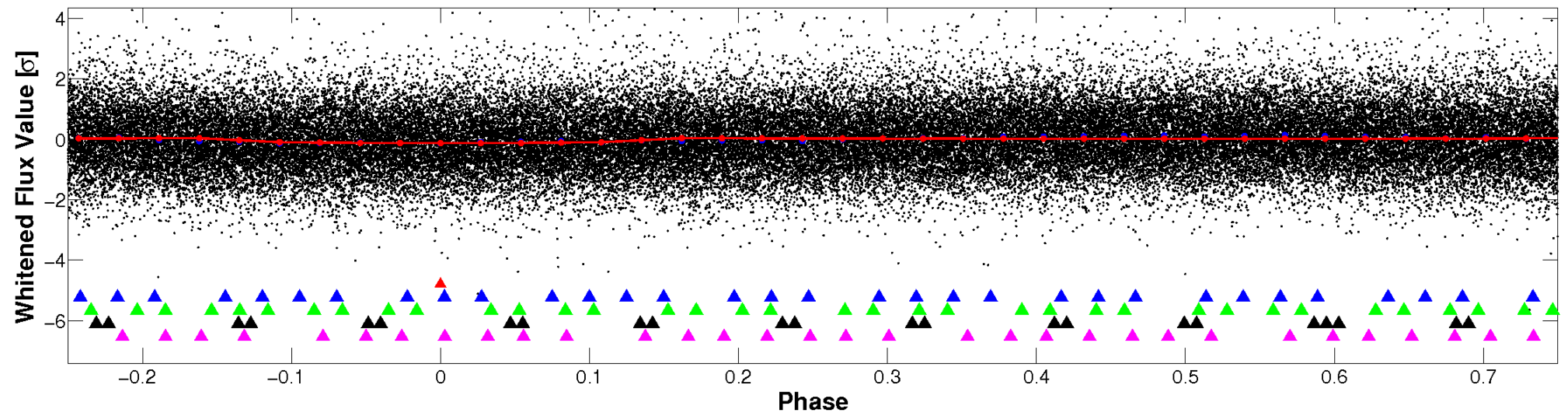


Non-Whitened Vs. Whitened Light Curve

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

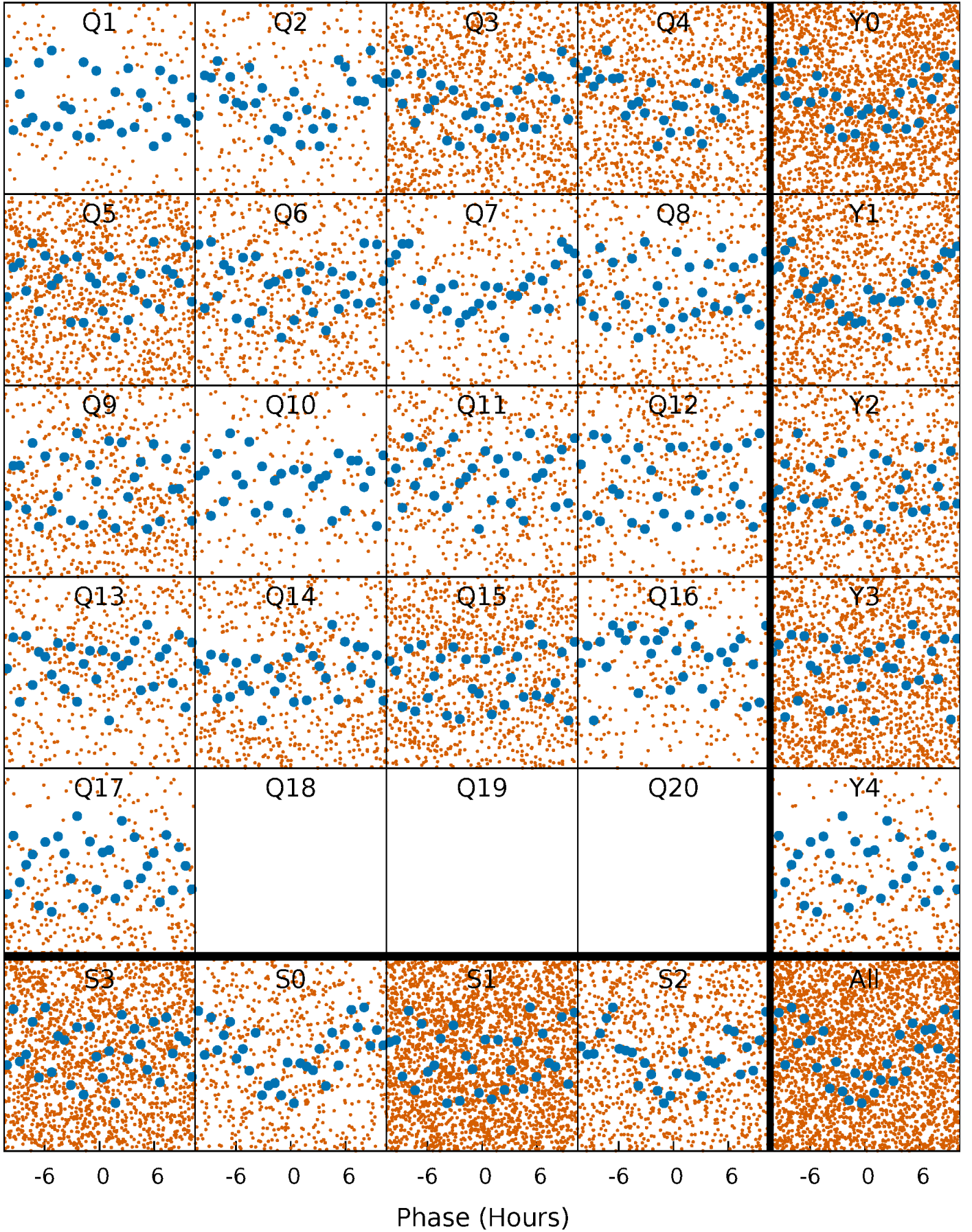


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



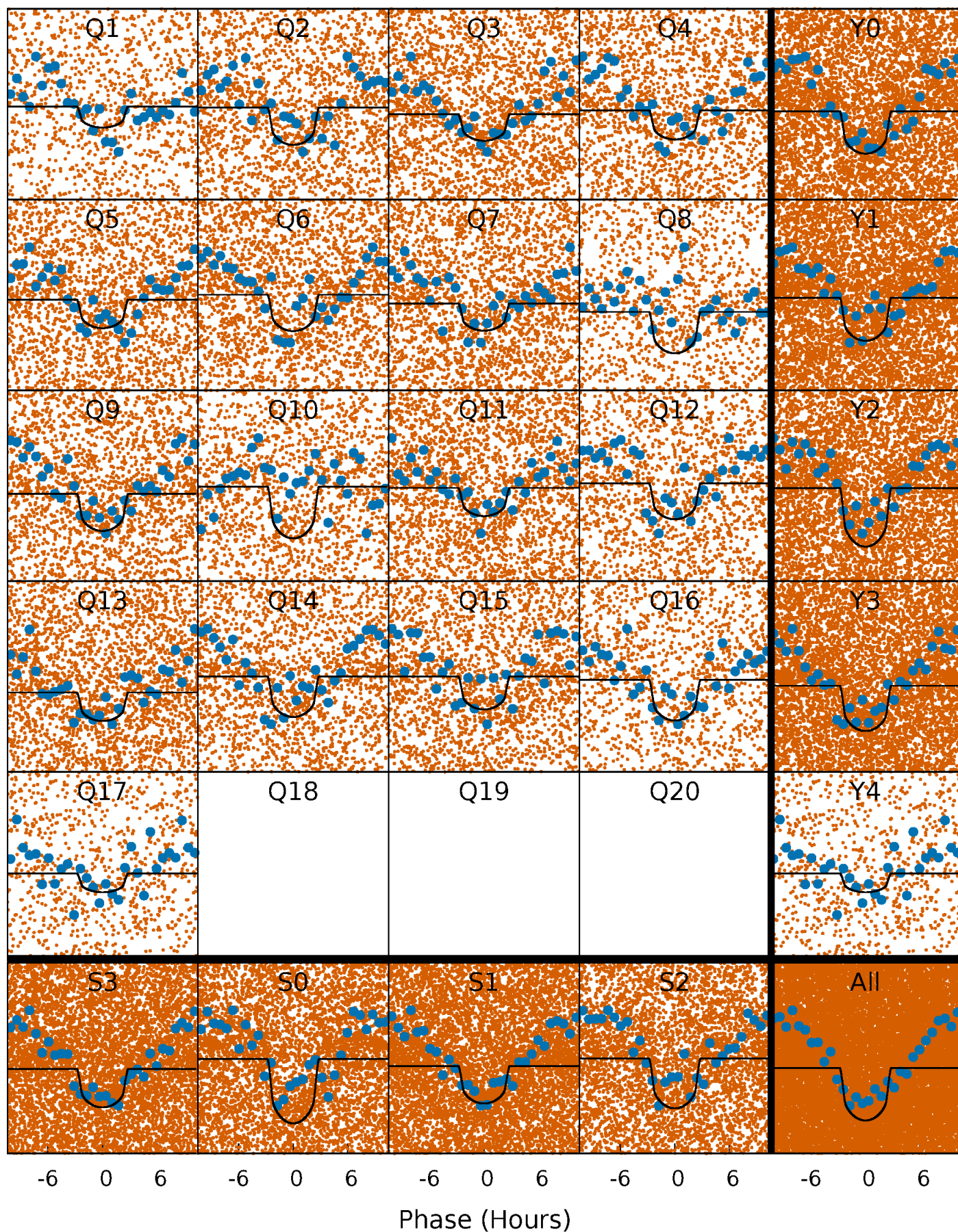
PDC Quarter-Phased Transit Curves

TCE 009158038-01 P= 0.757073 Days $T_0=131.595488$ (BKJD)



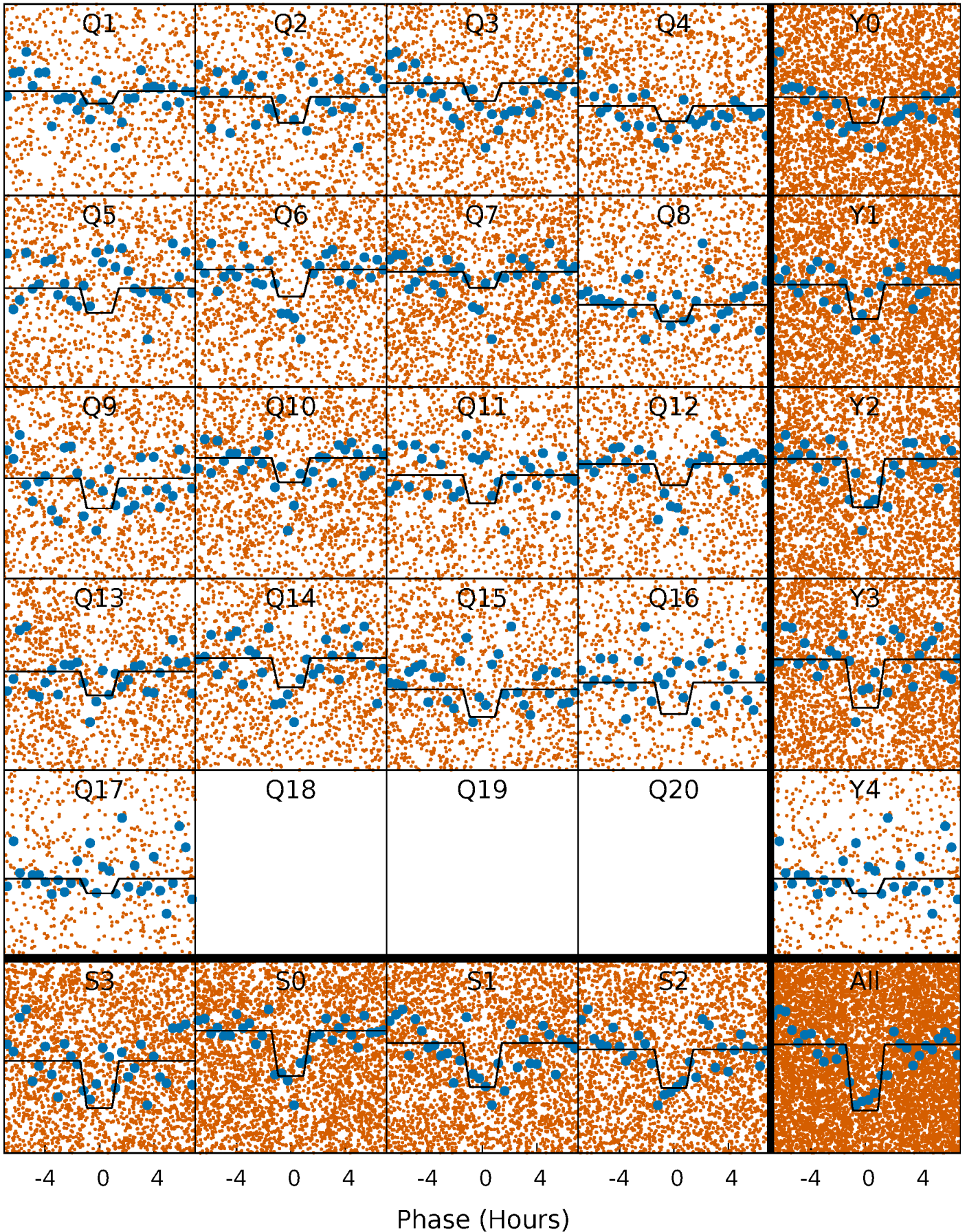
DV Quarter-Phased Transit Curves

TCE 009158038-01 P= 0.757073 Days $T_0=131.595488$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

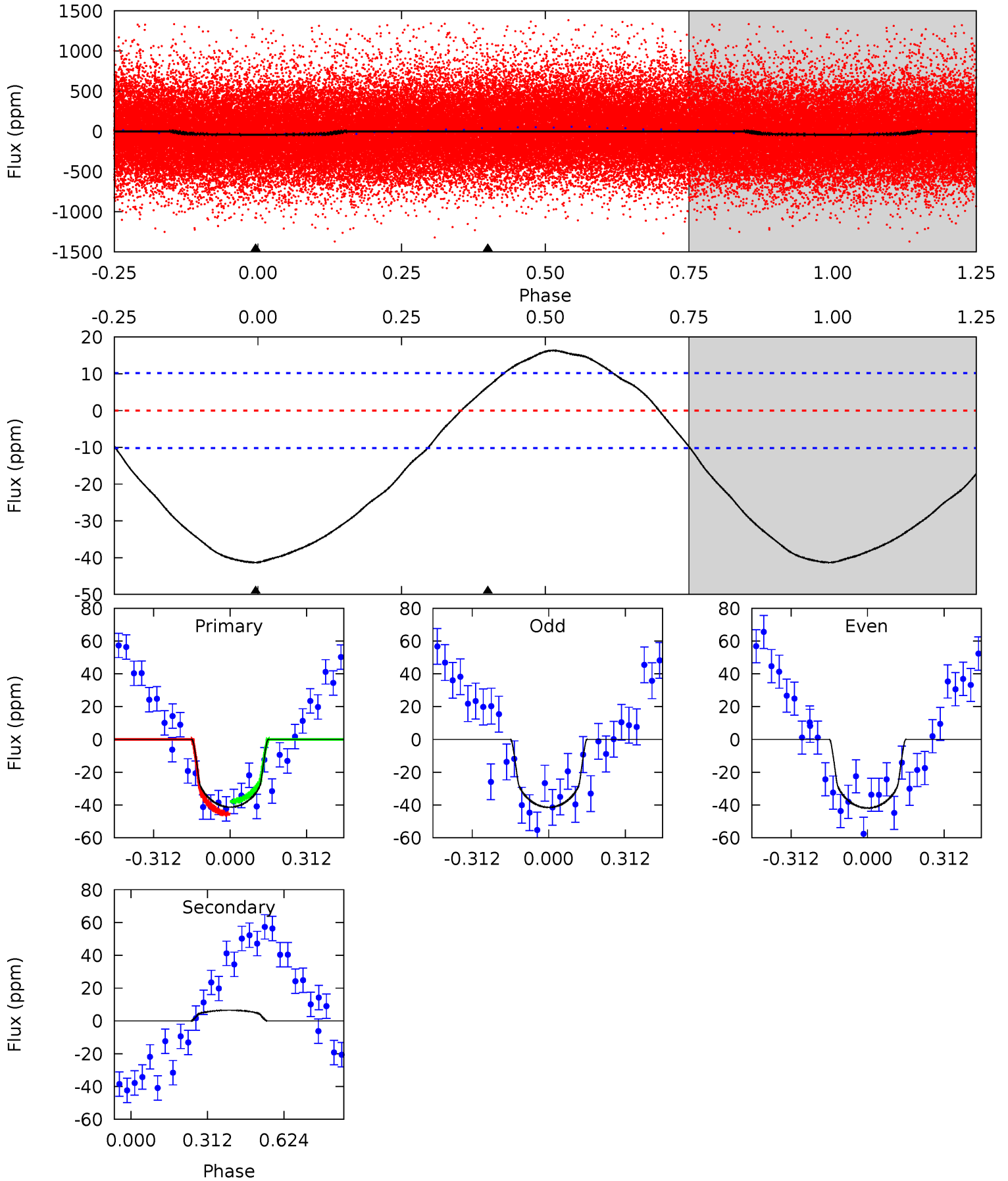
TCE 009158038-01 P= 0.757007 Days $T_0=131.592700$ (BKJD)



DV Model-Shift Uniqueness Test

009158038-01, P = 0.757073 Days, E = 130.838415 Days

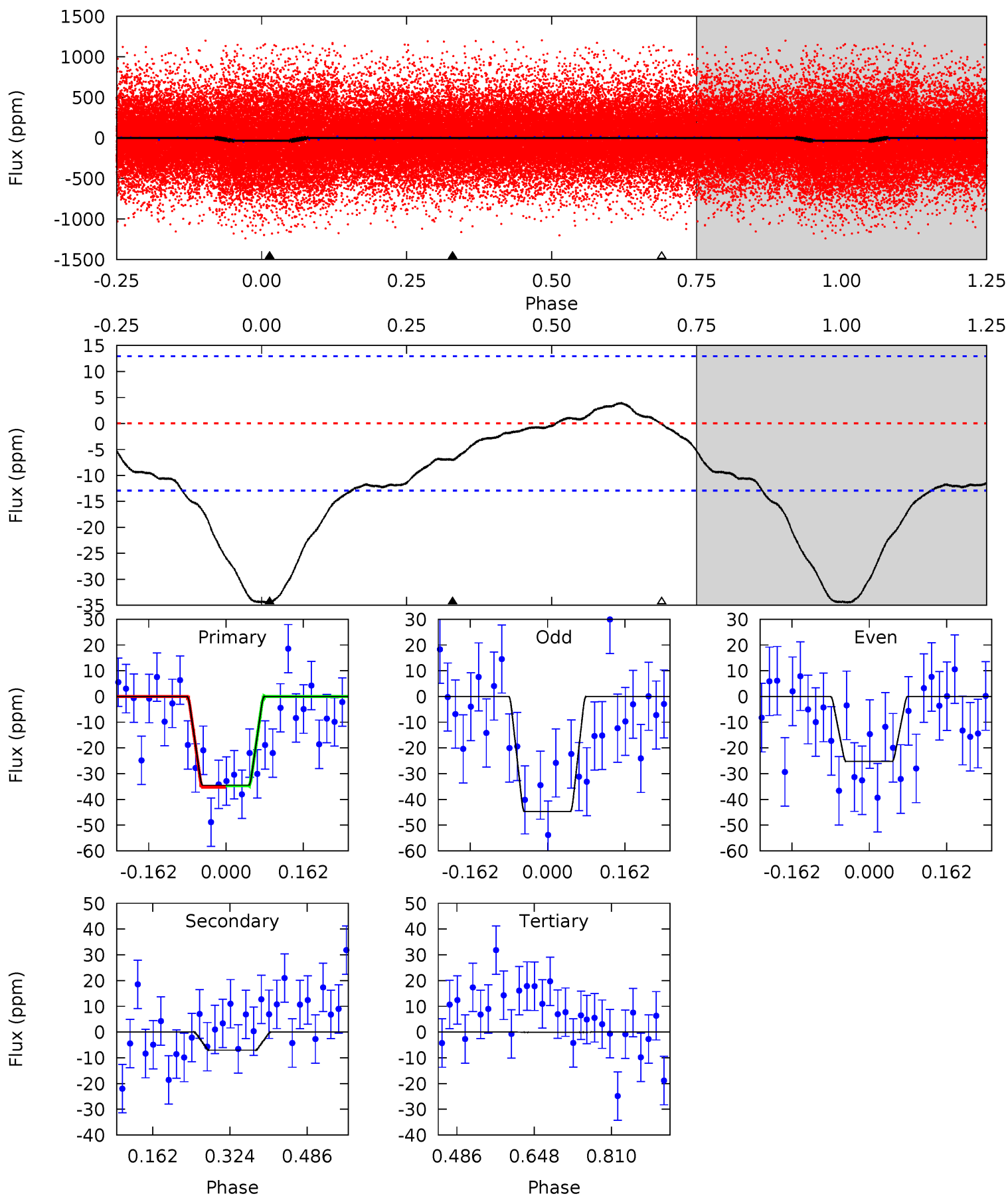
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.5	-2.76	0	0	4.32	1.01	2.20	17.5	17.5	-2.76	-2.76	0.09	1.05	0.28	1.61



Alt Model-Shift Uniqueness Test

009158038-01, P = 0.757007 Days, E = 130.835693 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	2.42	0.04	0	4.46	1.40	1.71	11.9	11.9	2.39	2.42	3.35	0.82	0.10	0.10



Stellar Parameters For KIC 009158038

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5126^{+138}_{-154}	$4.662^{+0.028}_{-0.077}$	$-0.480^{+0.300}_{-0.300}$	$0.658^{+0.087}_{-0.047}$	$0.728^{+0.069}_{-0.069}$	$3.595^{+0.506}_{-0.952}$
	+3%/-3%	+1%/-2%	+62%/-62%	+13%/-7%	+9%/-9%	+14%/-26%
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 009158038-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	7 ± 2	$0.58^{+0.23}_{-0.24}$	2139^{+77}_{-74}	-3447^{+348}_{-640}	$-2.253^{+1.295}_{-4.079}$
Alt.	-7 ± 3	$0.44^{+0.24}_{-0.22}$	2142^{+74}_{-80}	3653^{+1119}_{-589}	$3.886^{+11.398}_{-2.432}$

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 $A_{obs} \gg 1.0$

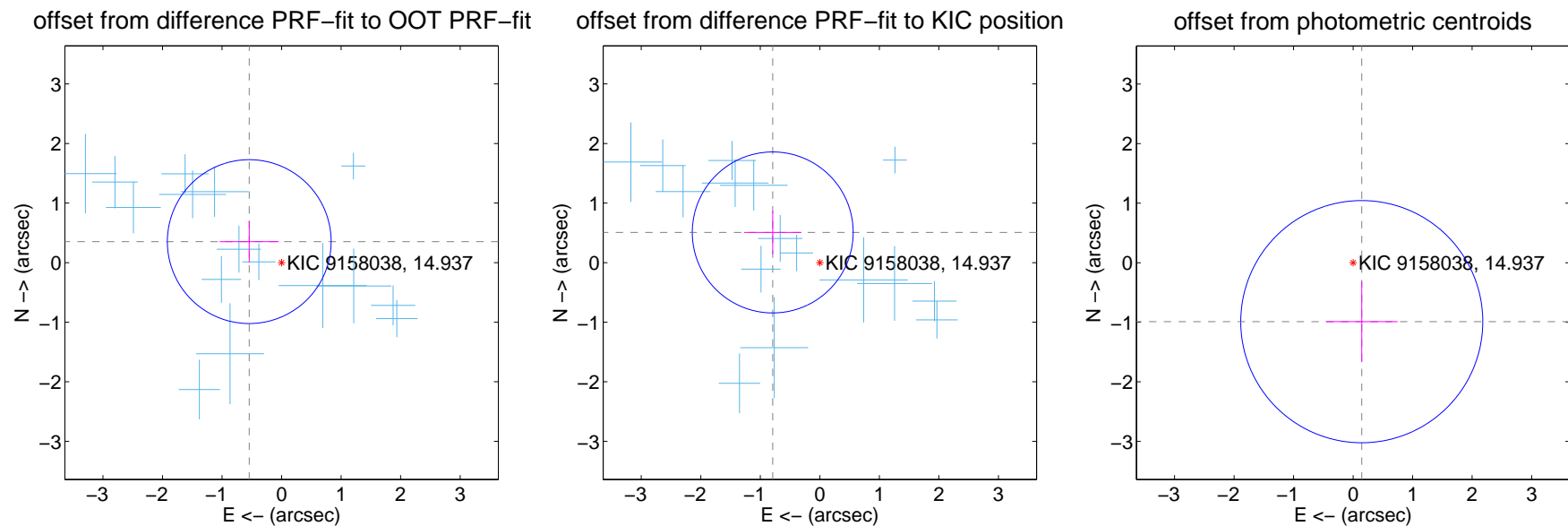
DV Centroid Data

Supplemental centroid analysis for 009158038-01. Kepler magnitude: 14.94. Transit SNR 15.21

There are 16 quarters with good PRF difference image offsets

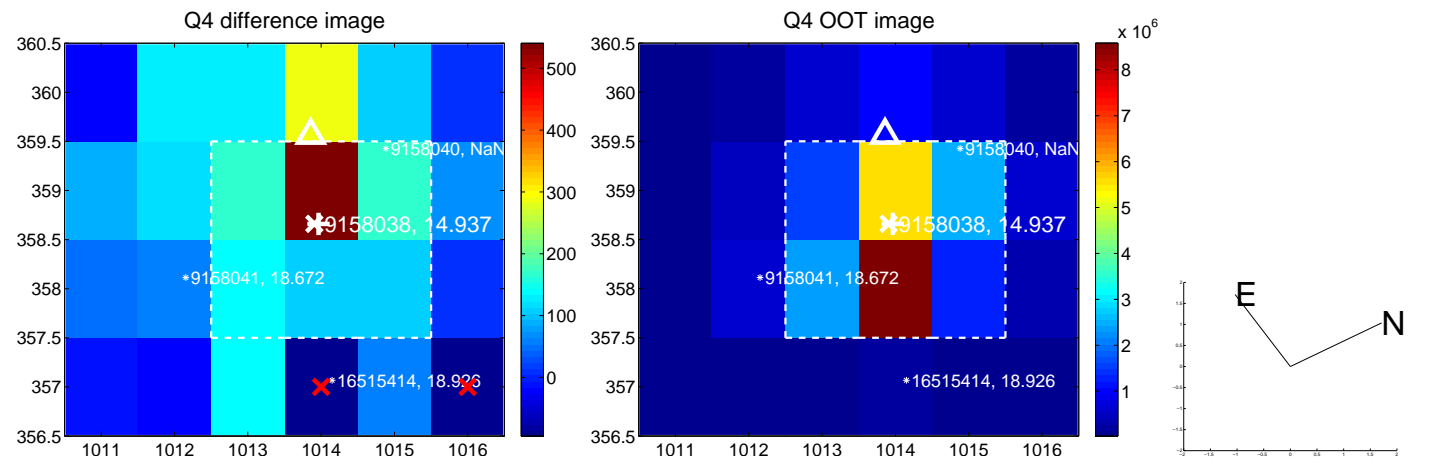
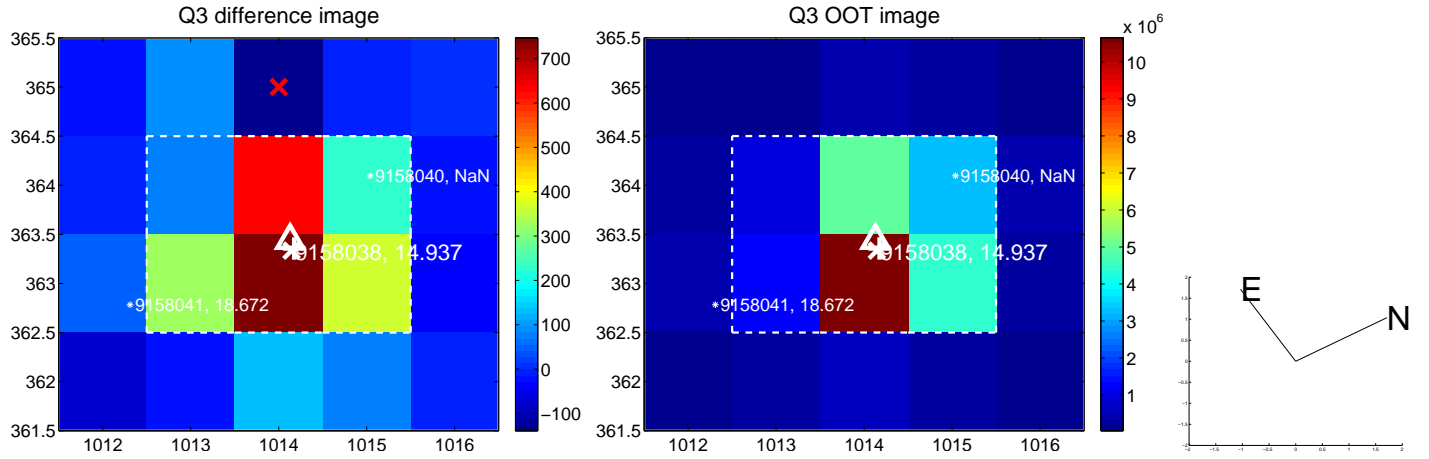
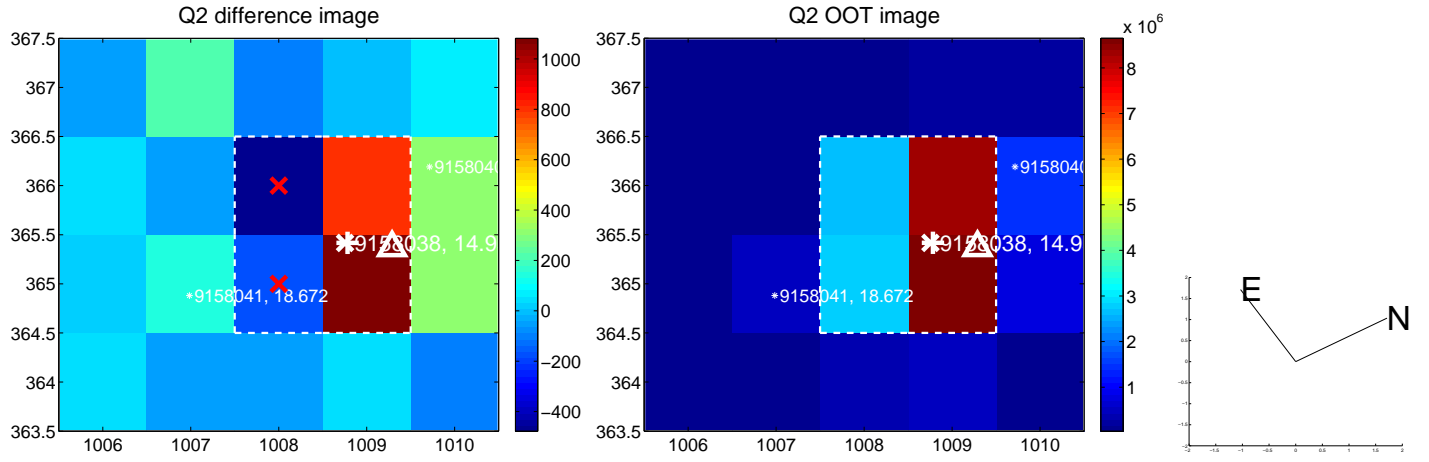
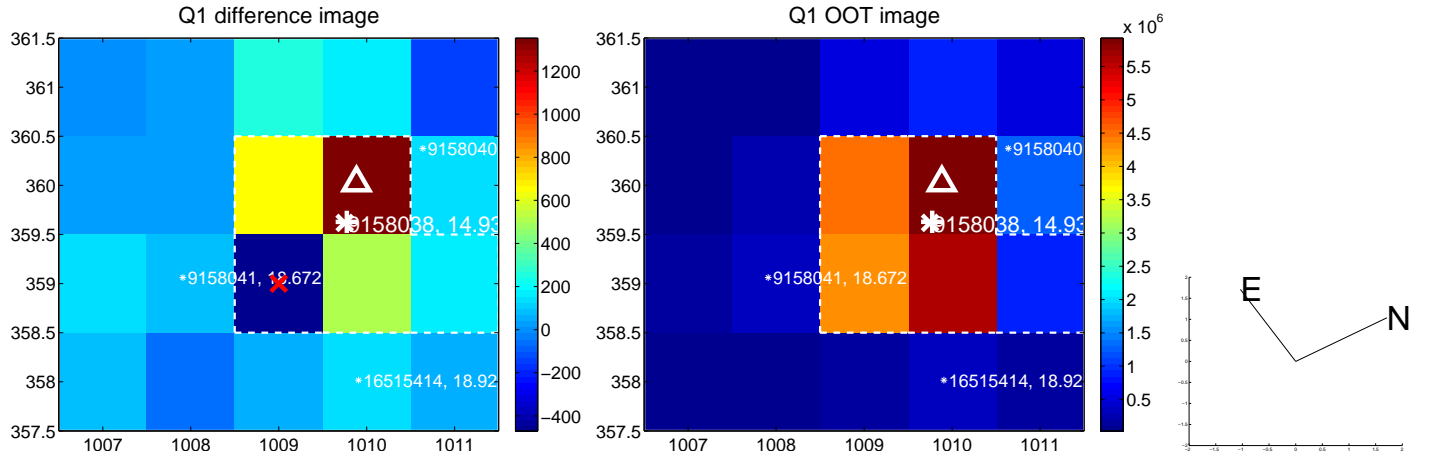
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.648 ± 0.458	1.41	0.543 ± 0.498	0.353 ± 0.349
PRF-fit source offset from KIC position	0.940 ± 0.450	2.09	0.791 ± 0.482	0.507 ± 0.363
photometric centroid source offset	1.00 ± 0.68	1.48	-0.15 ± 0.60	-0.99 ± 0.68

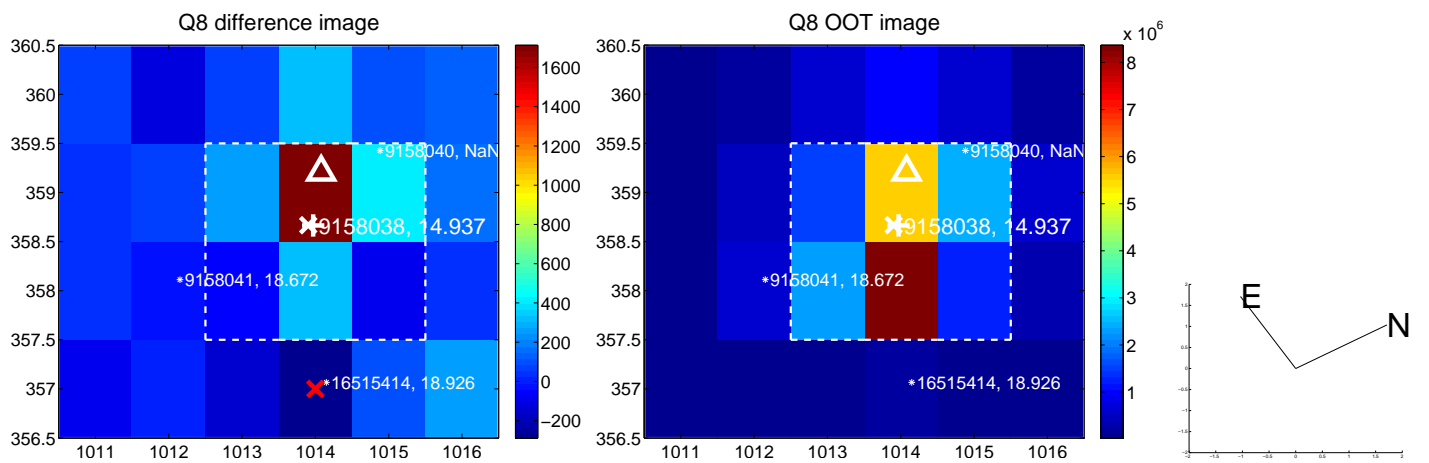
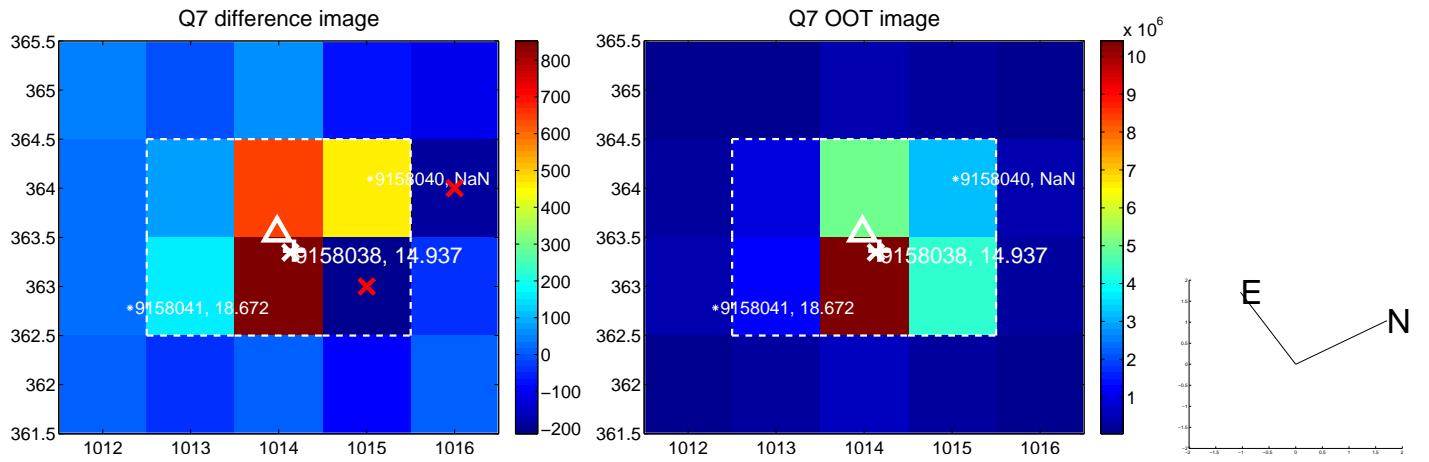
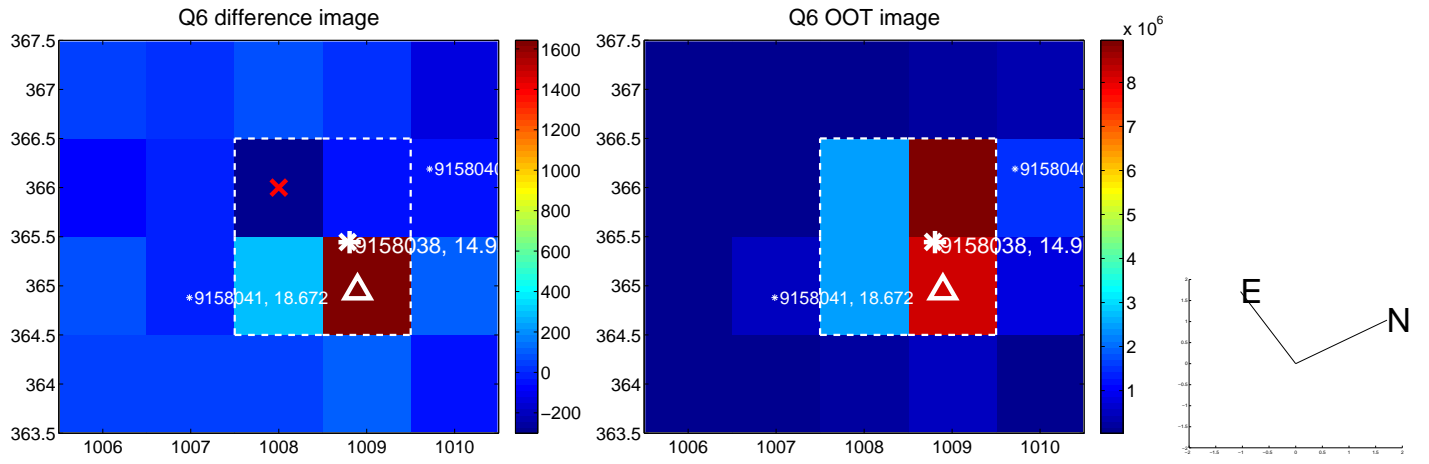
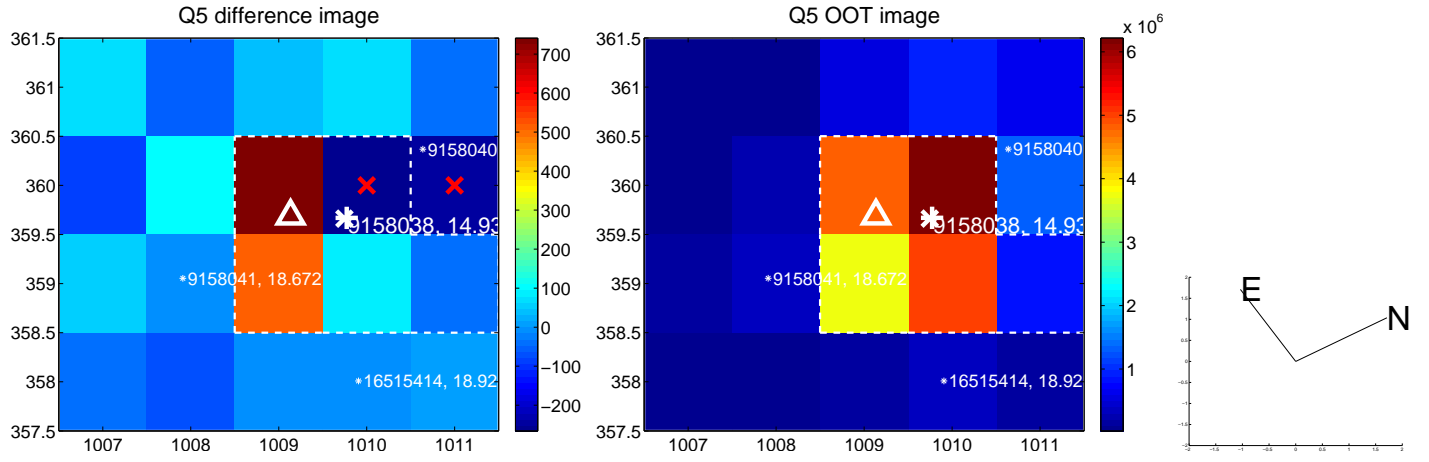


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

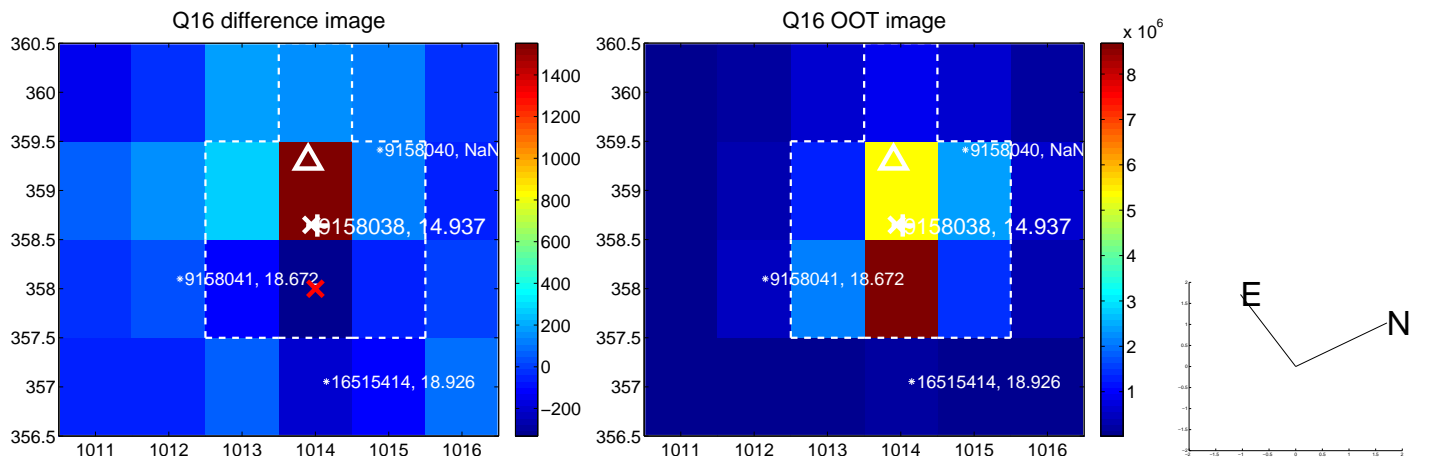
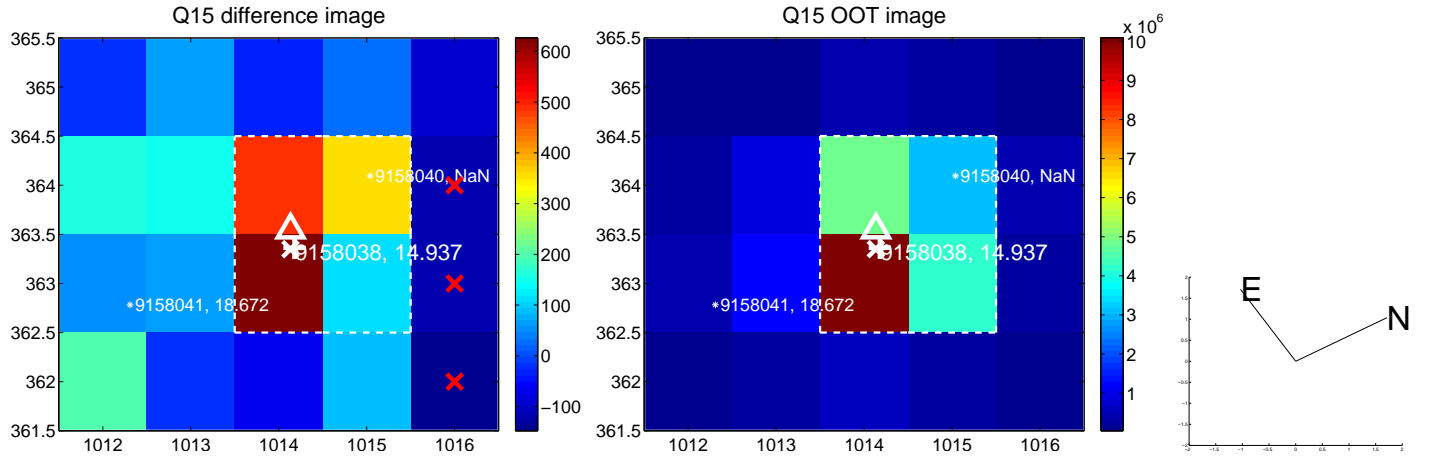
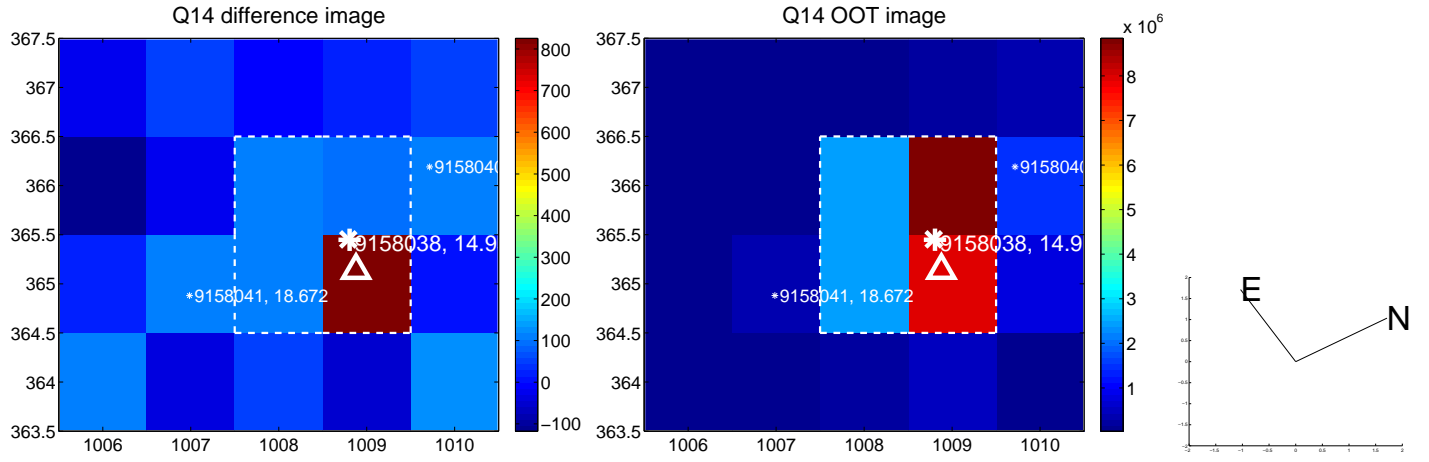
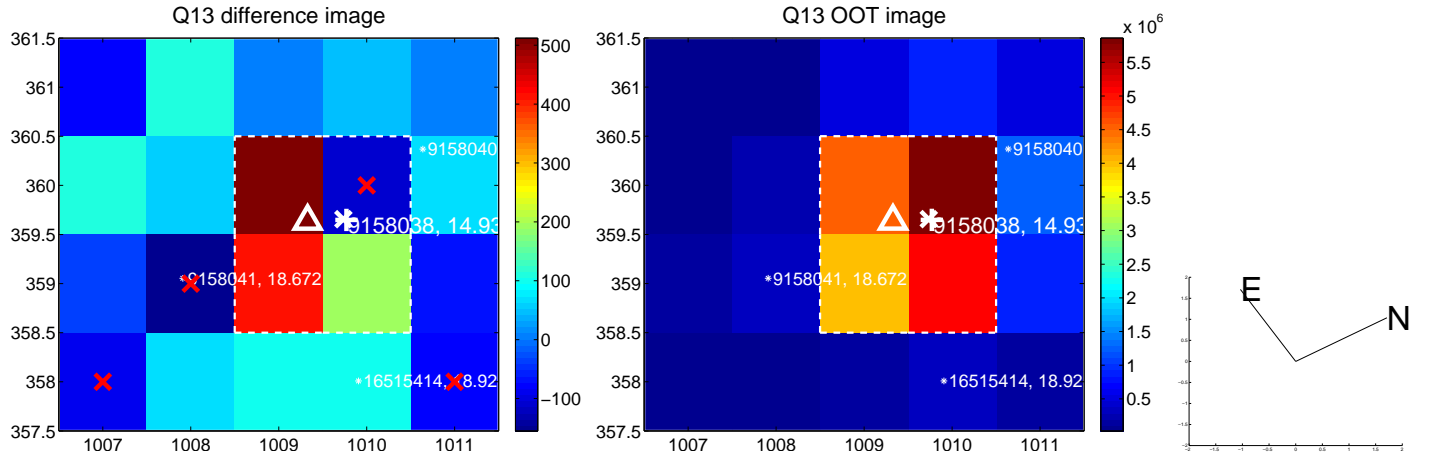
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

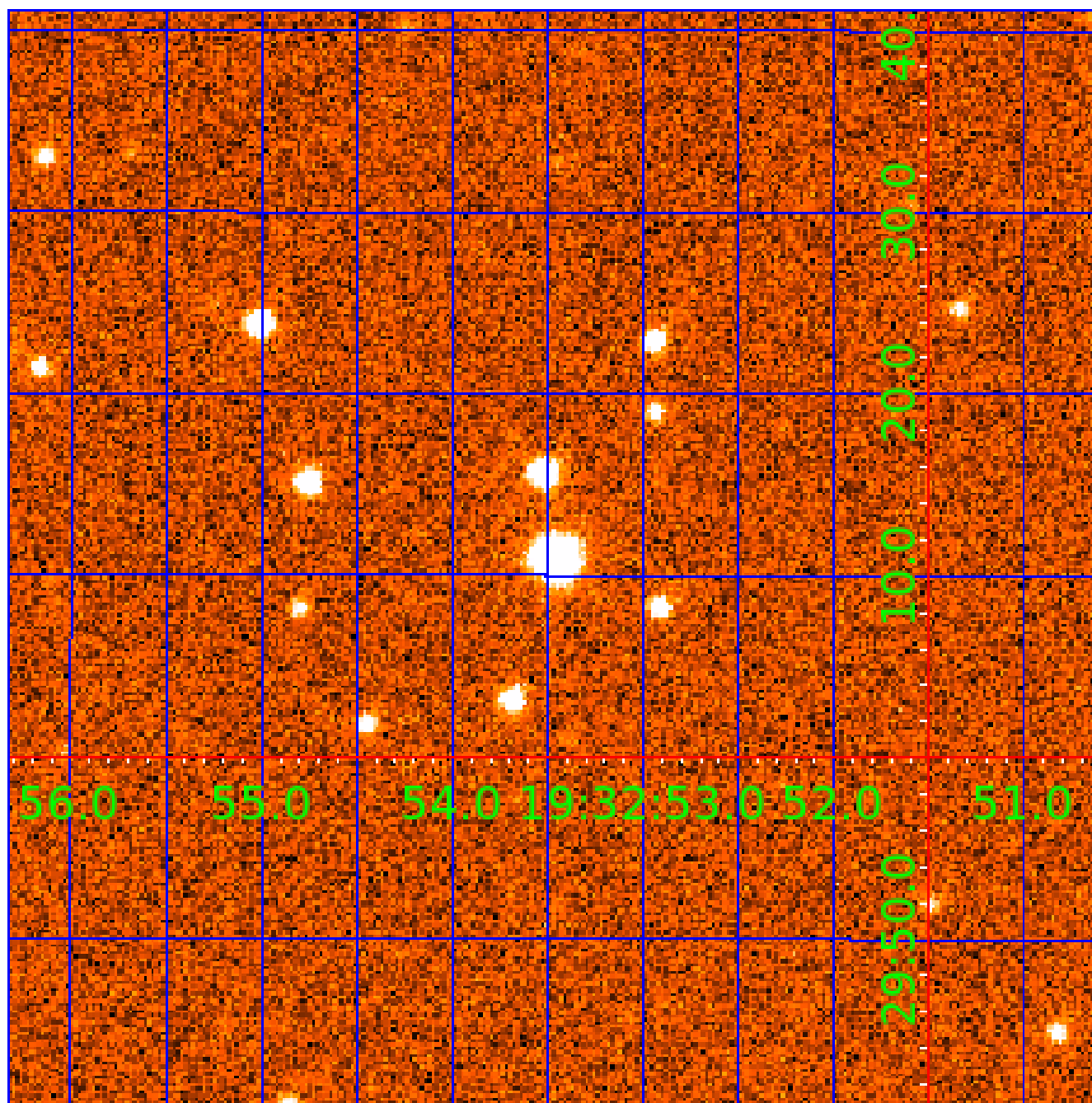


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009158038

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009158038-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009158038-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009158038-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

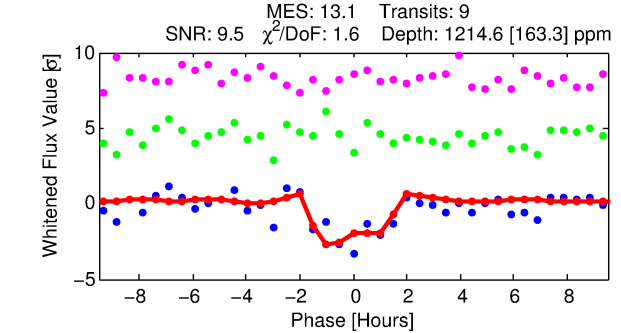
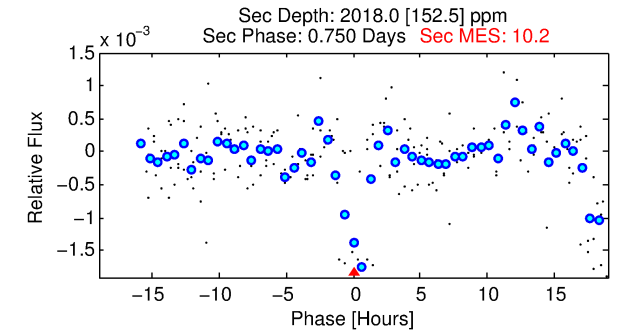
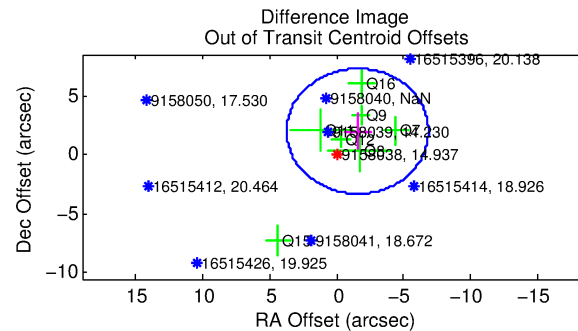
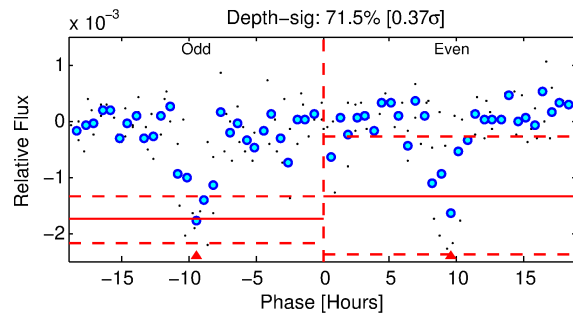
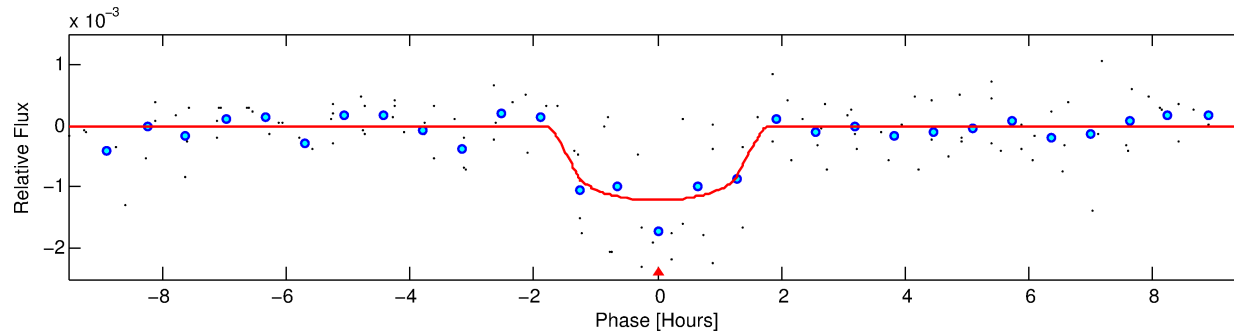
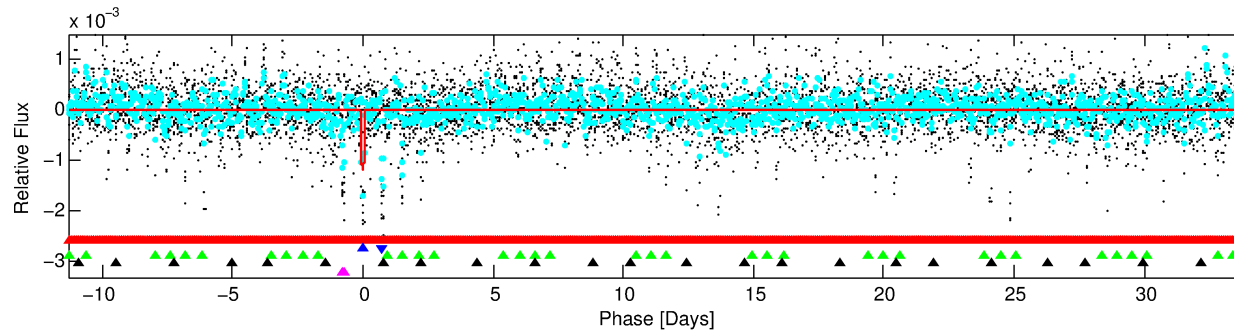
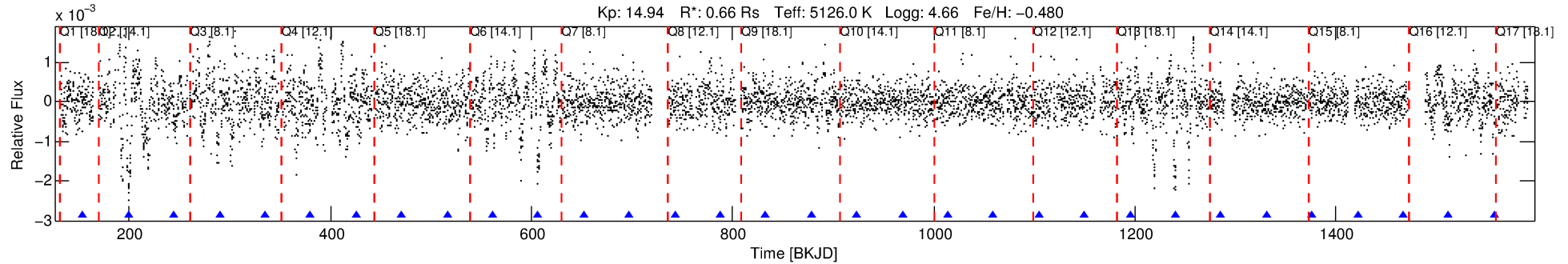
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009158038-02

No Significant Match Found

DV One-Page Summary

KIC: 9158038 Candidate: 2 of 5 Period: 45.258 d



DV Fit Results:

Period = 45.25825 [0.00035] d
Epoch = 154.1058 [0.0079] BKJD
Rp/R* = 0.0329 [0.0653]
a/R* = 93.49 [700.54]
b = 0.58 [8.84]
Seff = 5.37 [1.02]
Teq = 388 [18] K
Rp = 2.36 [4.70] Re
a = 0.2233 [0.0237] AU
Ag = 9921.50 [39442.53] [0.25 σ]
Teffp = 5989 [5951] K [0.94 σ]

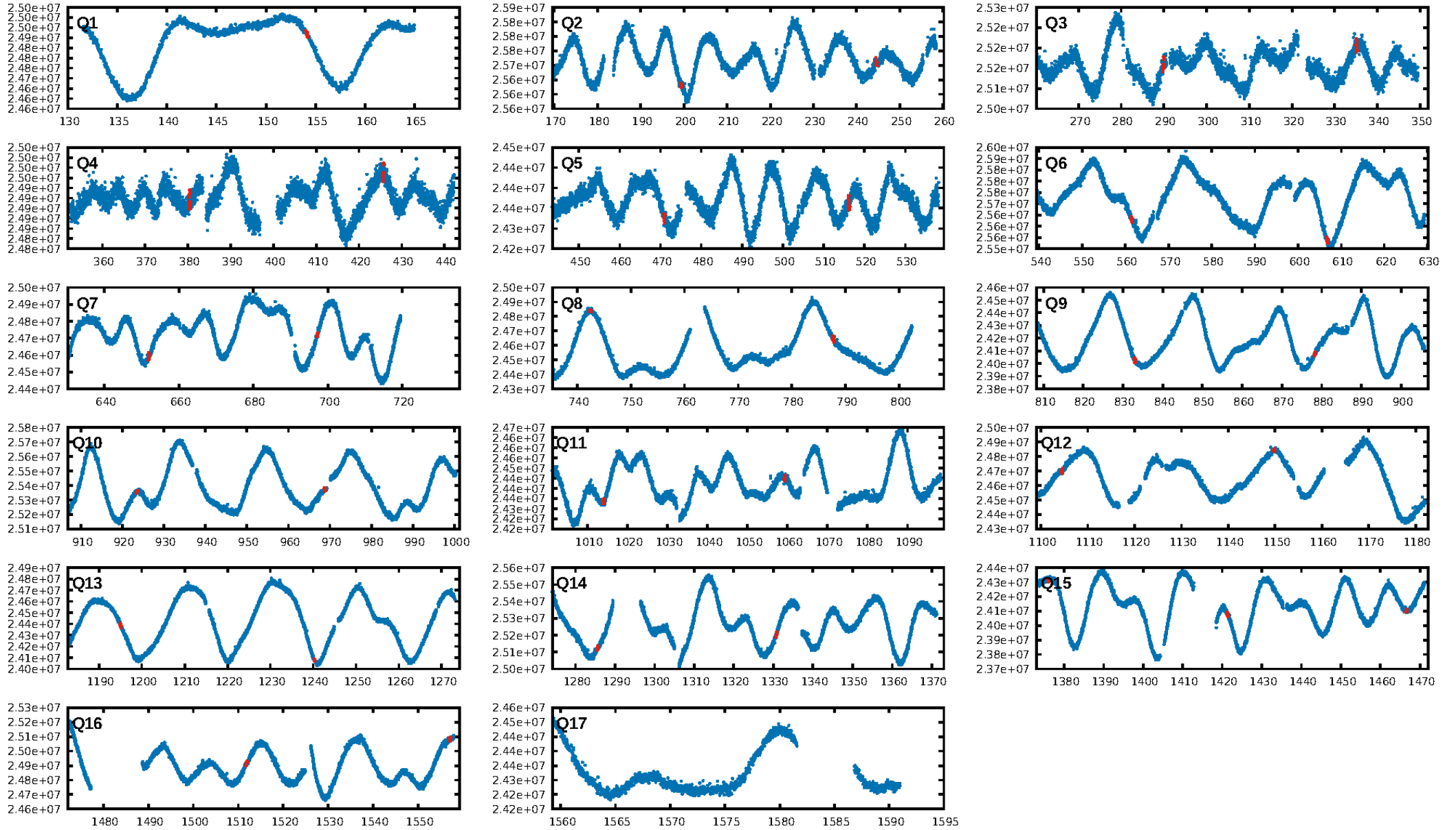
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [32.88 σ]
LongPeriod-sig: 1.2% [0.02 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 0.3567
Centroid-sig: 53.8%
Centroid-so: 0.238 arcsec [0.76 σ]
OotOffset-rm: 2.542 arcsec [1.44 σ]
KicOffset-rm: 2.797 arcsec [1.83 σ]
OotOffset-st: 0/3/3/1 [7]
KicOffset-st: 0/3/3/1 [7]
DiffImageQuality-fgm: 0.00 [0/7]
DiffImageOverlap-fno: 0.00 [0/16]

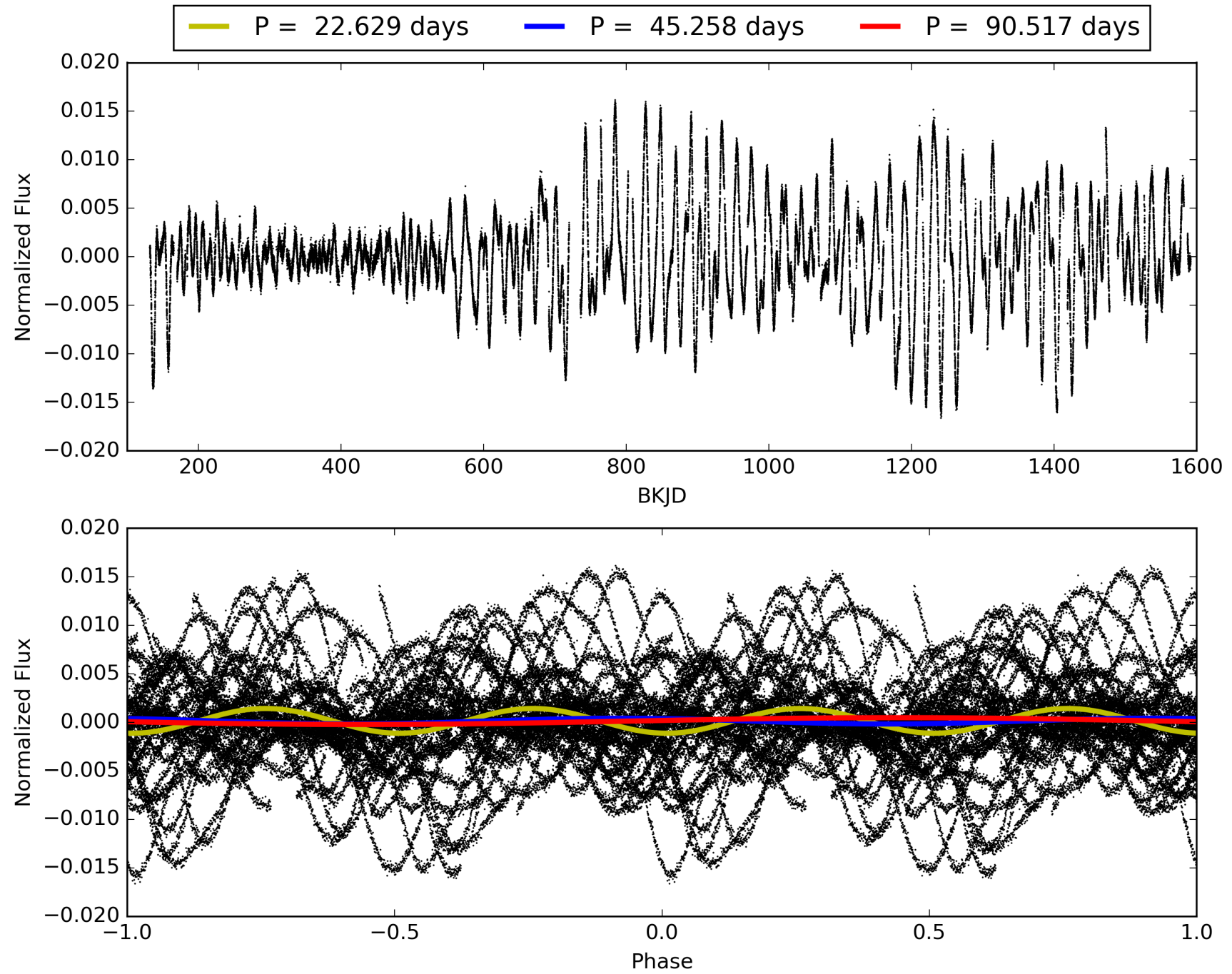
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:27:07 Z

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

TCE 009158038-02, PDC Light Curves

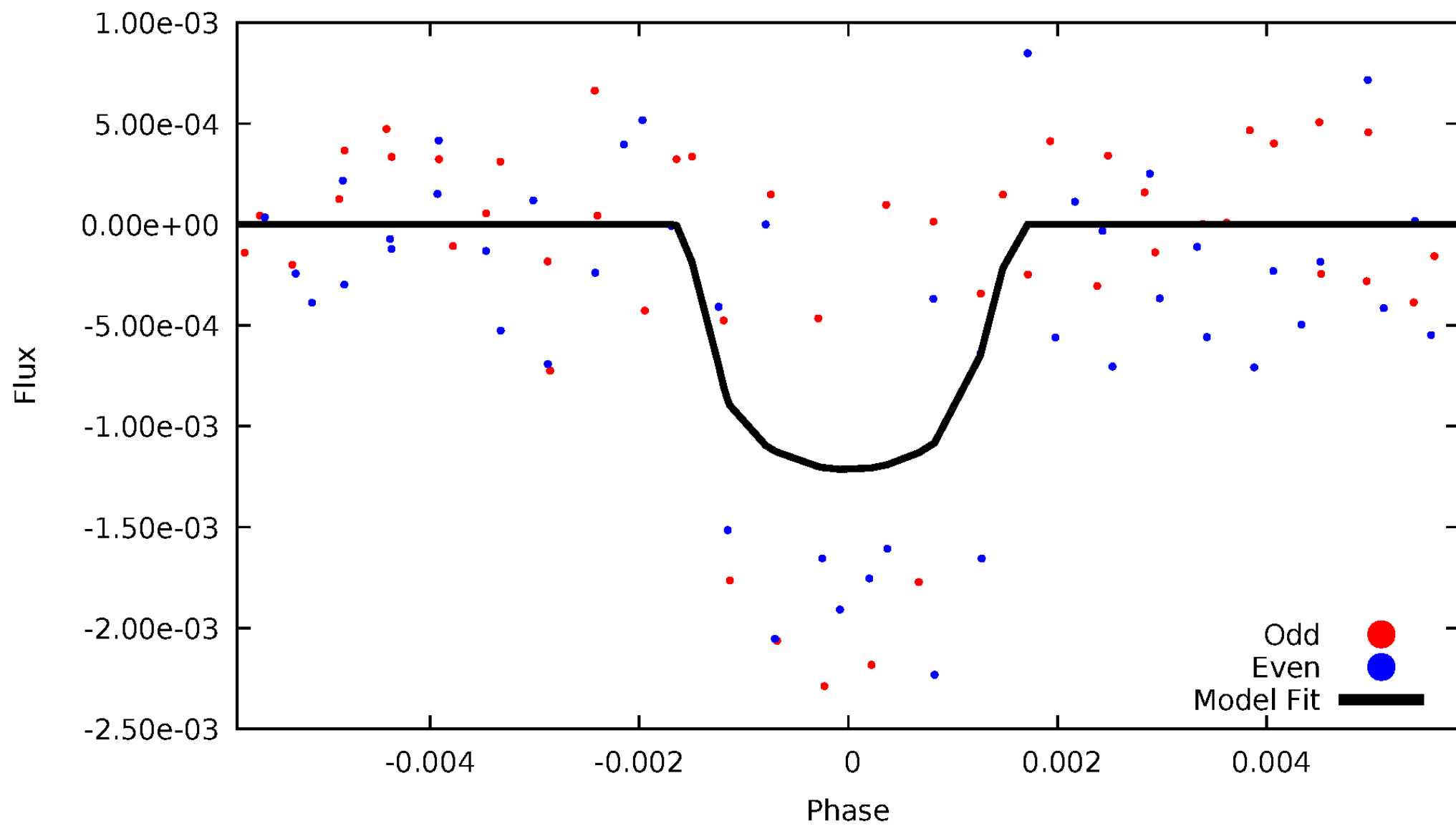


TCE 009158038-02



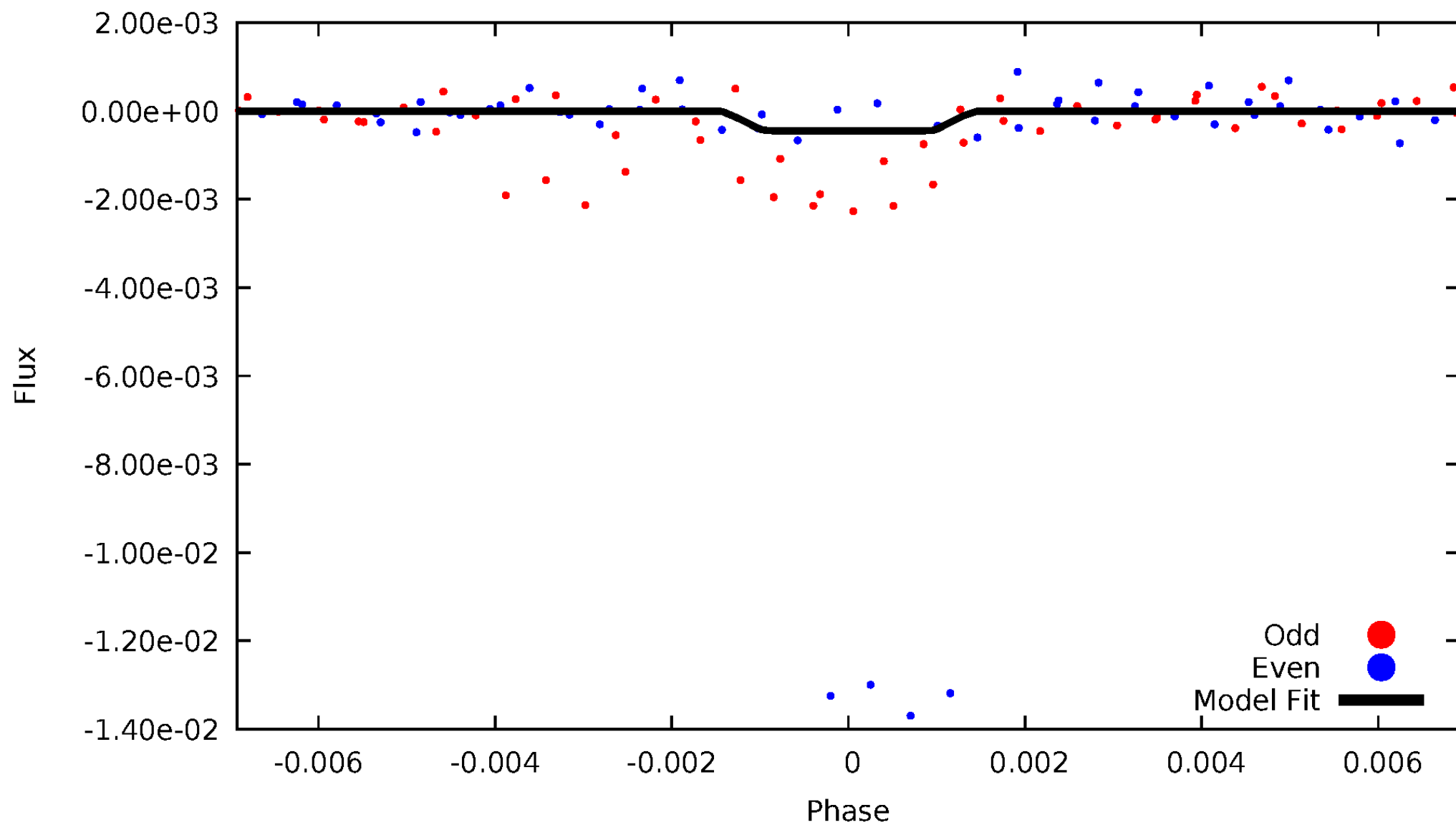
DV Odd/Even

TCE 009158038-02



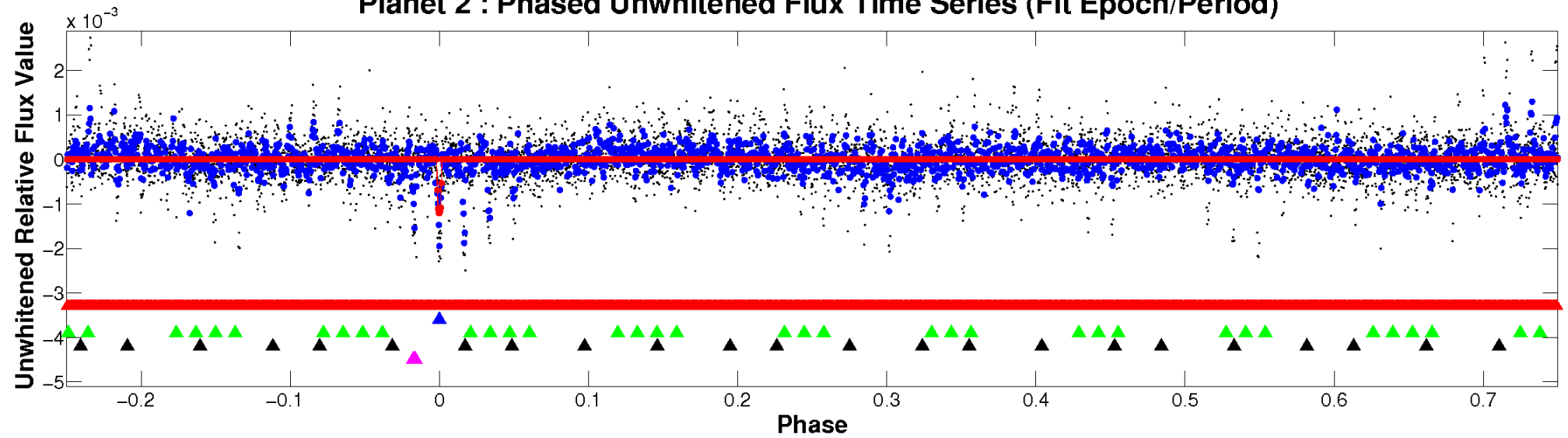
ALT Odd/Even

TCE 009158038-02

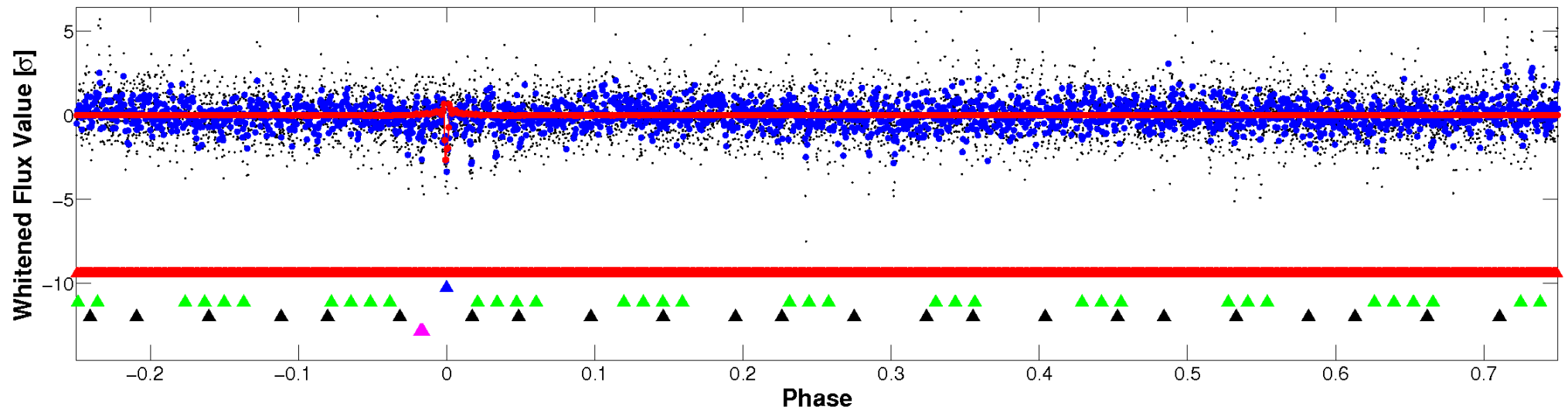


Non-Whitened Vs. Whitened Light Curve

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

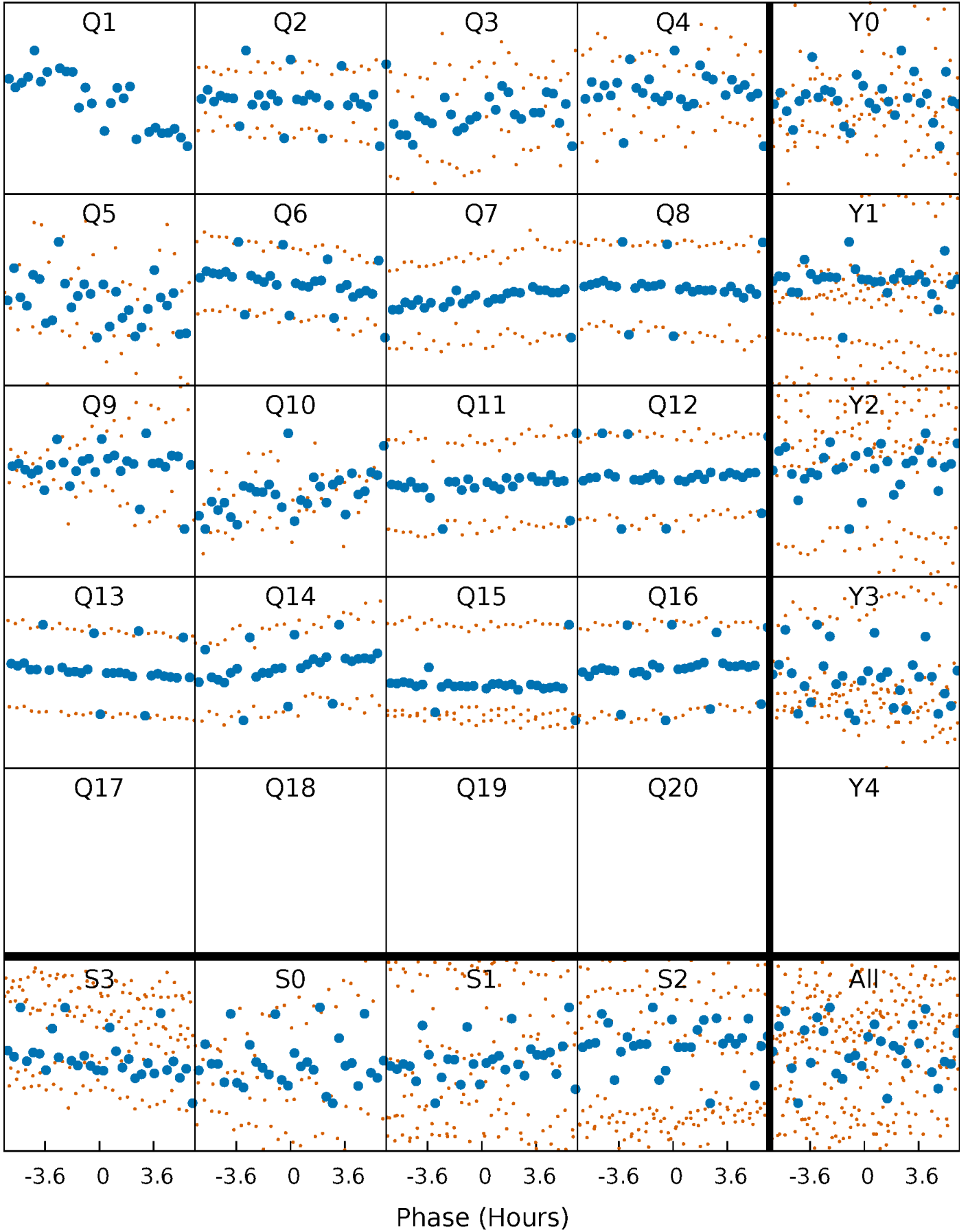


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



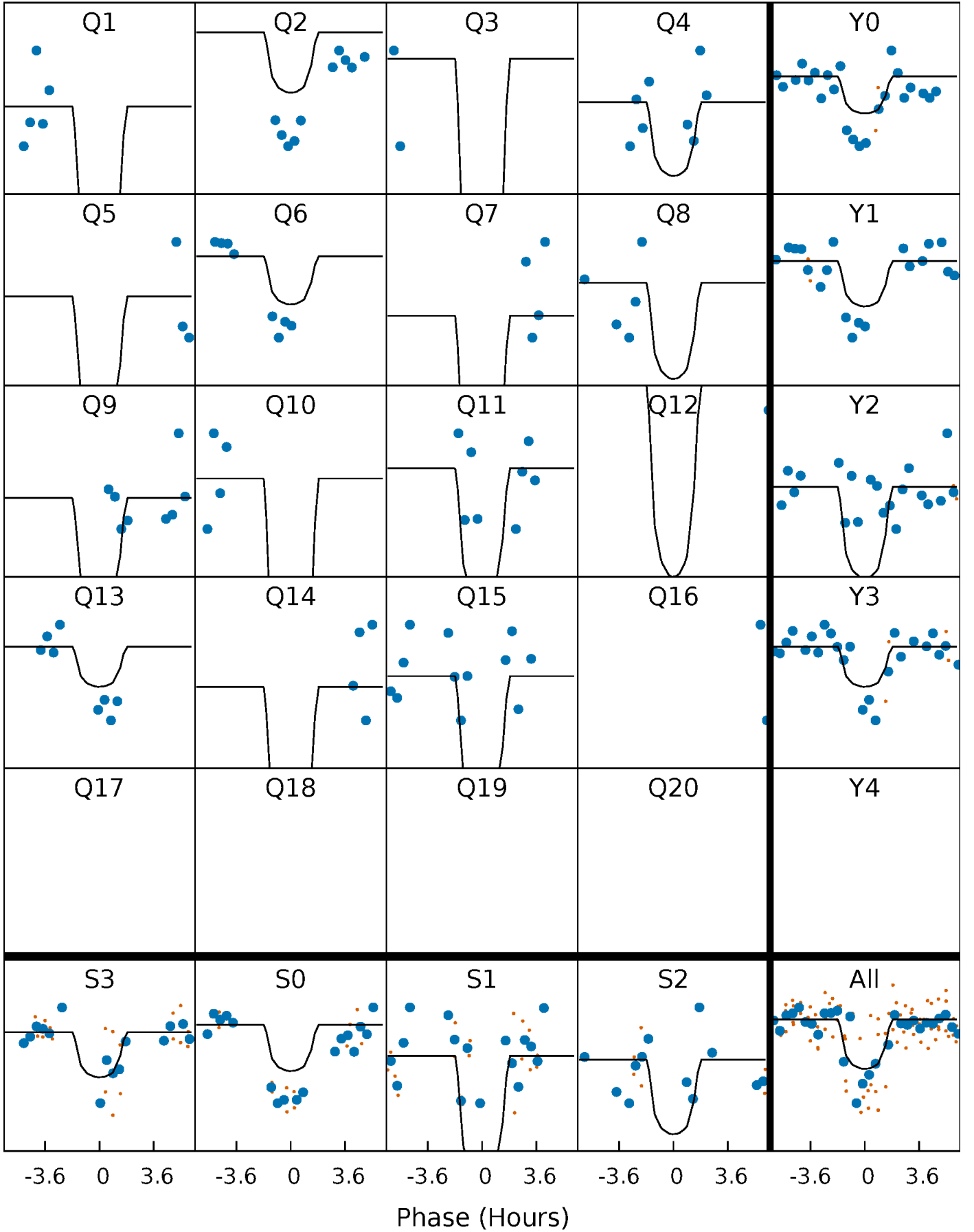
PDC Quarter-Phased Transit Curves

TCE 009158038-02 P= 45.258253 Days $T_0=154.105801$ (BKJD)



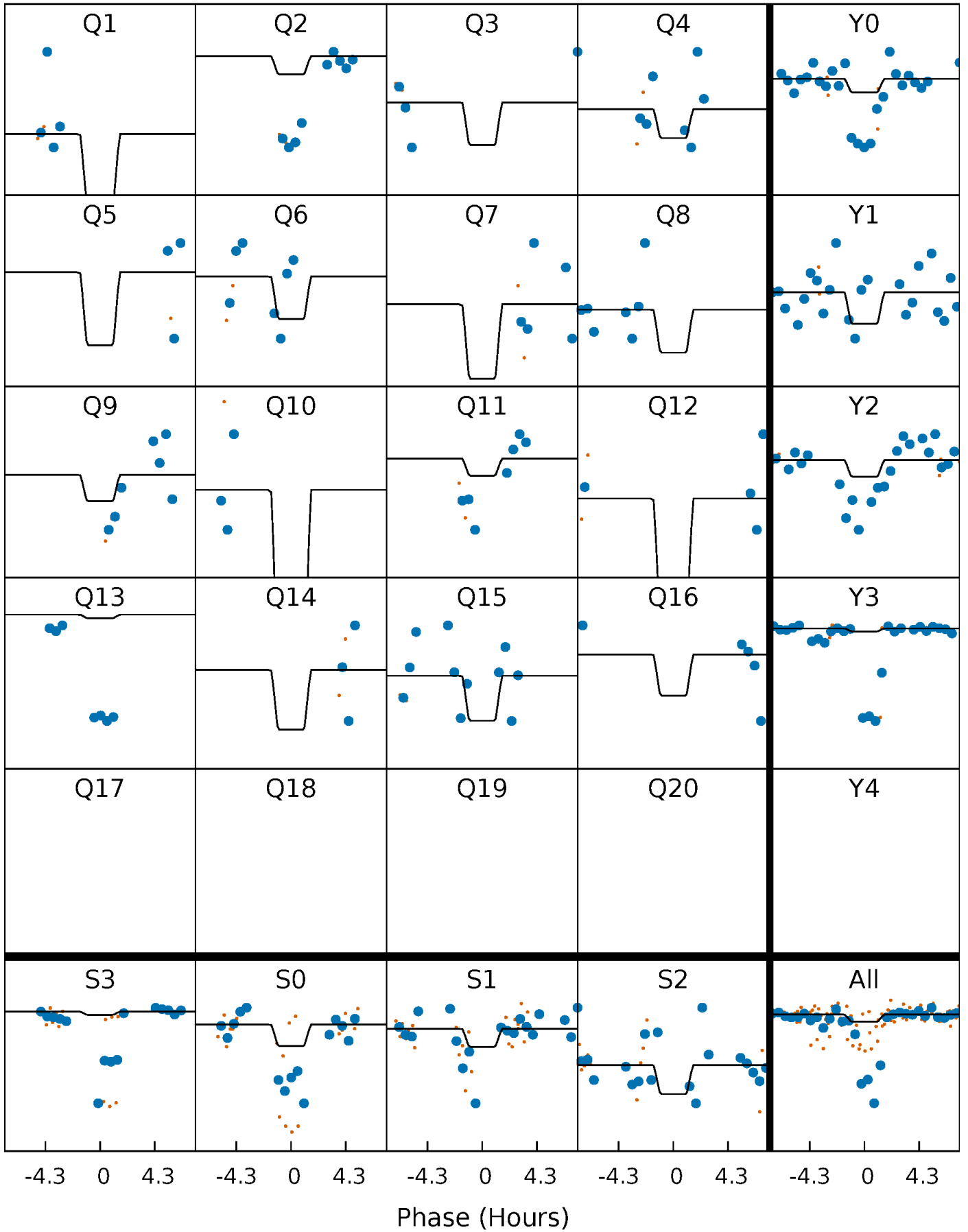
DV Quarter-Phased Transit Curves

TCE 009158038-02 P= 45.258253 Days $T_0=154.105801$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

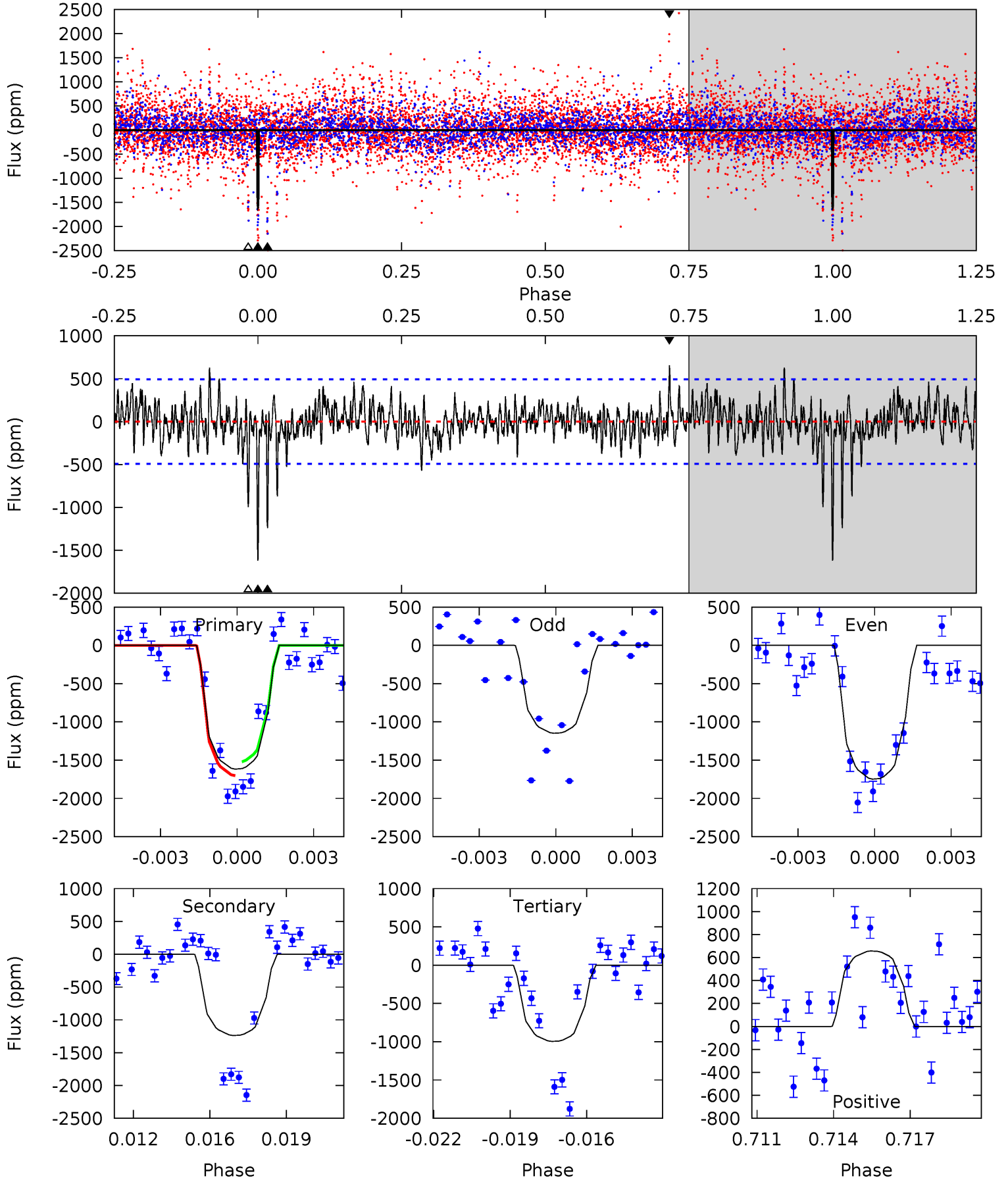
TCE 009158038-02 P= 45.259054 Days $T_0=154.091998$ (BKJD)



DV Model-Shift Uniqueness Test

009158038-02, P = 45.258253 Days, E = 108.847548 Days

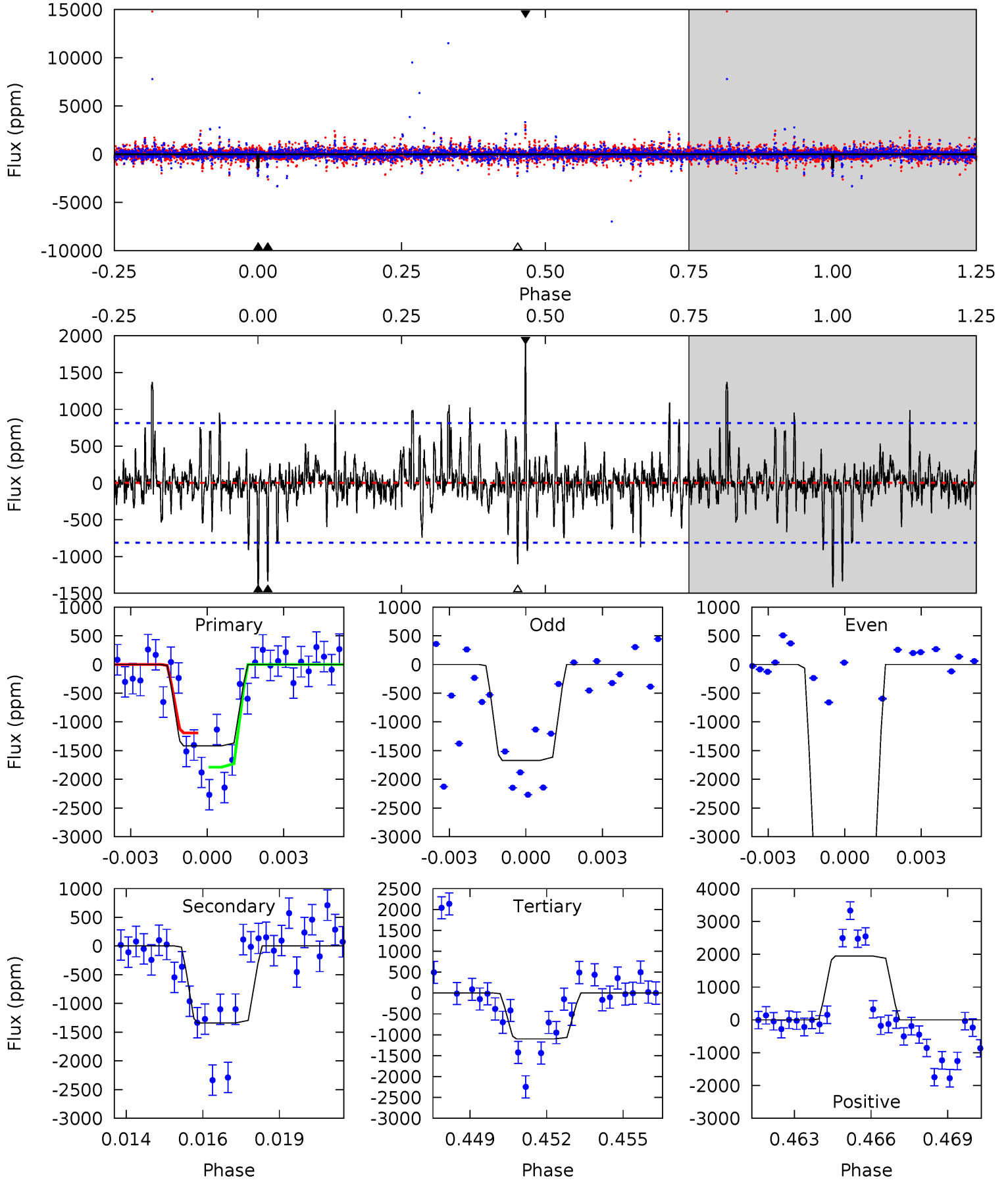
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.2	13.2	10.6	7.00	5.25	2.96	1.84	6.62	10.2	2.58	6.20	3.17	1.70	0.29	0.98



Alt Model-Shift Uniqueness Test

009158038-02, P = 45.259054 Days, E = 108.832944 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.20	8.69	7.13	12.6	5.27	3.00	1.57	2.06	-3.41	1.56	-3.92	3.77	2.42	0.58	0



Stellar Parameters For KIC 009158038

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5126^{+138}_{-154}	$4.662^{+0.028}_{-0.077}$	$-0.480^{+0.300}_{-0.300}$	$0.658^{+0.087}_{-0.047}$	$0.728^{+0.069}_{-0.069}$	$3.595^{+0.506}_{-0.952}$
	+3%/-3%	+1%/-2%	+62%/-62%	+13%/-7%	+9%/-9%	+14%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

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 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009158038-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1239 ± 94	$4.26^{+3.98}_{-2.80}$	548^{+20}_{-19}	4204^{+2555}_{-860}	1925^{+14294}_{-1424}
Alt.	-1340 ± 154	$4.08^{+3.42}_{-2.86}$	547^{+20}_{-19}	4352^{+3411}_{-880}	2247^{+21589}_{-1625}

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

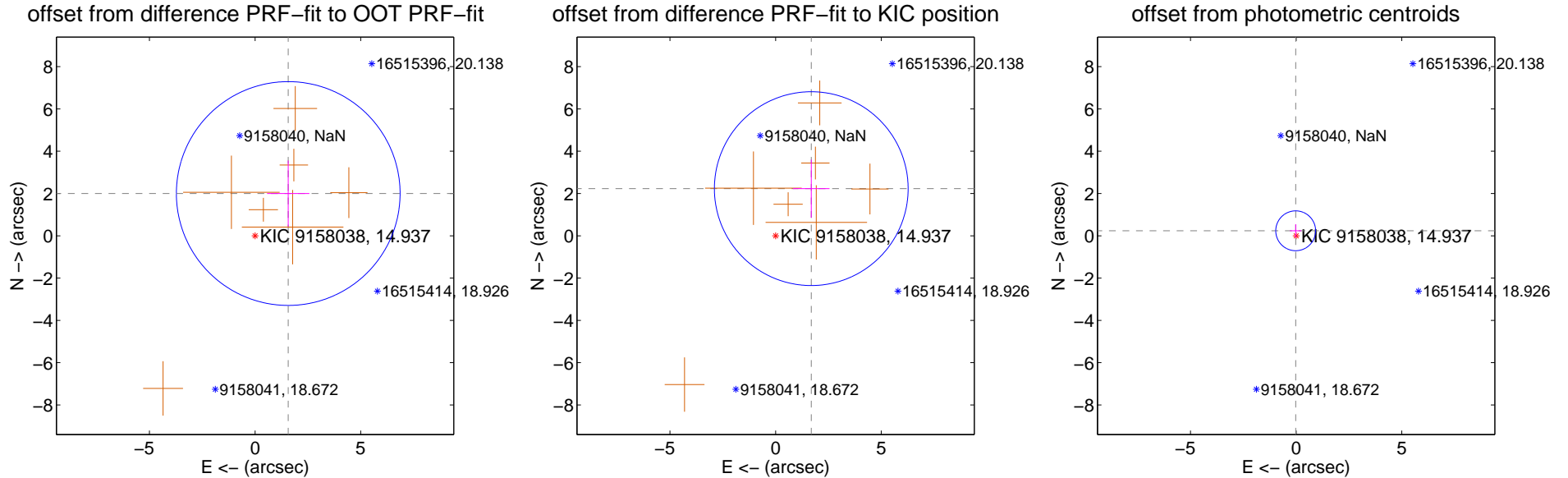
DV Centroid Data

Supplemental centroid analysis for 009158038-02. Kepler magnitude: 14.94. Transit SNR 9.50

There are 0 quarters with good PRF difference image offsets

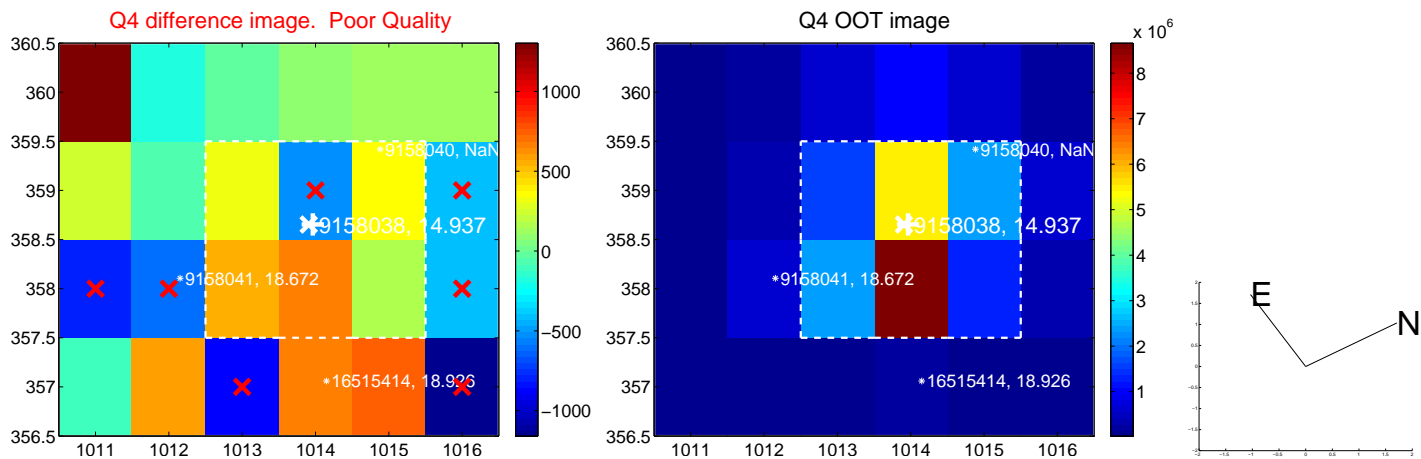
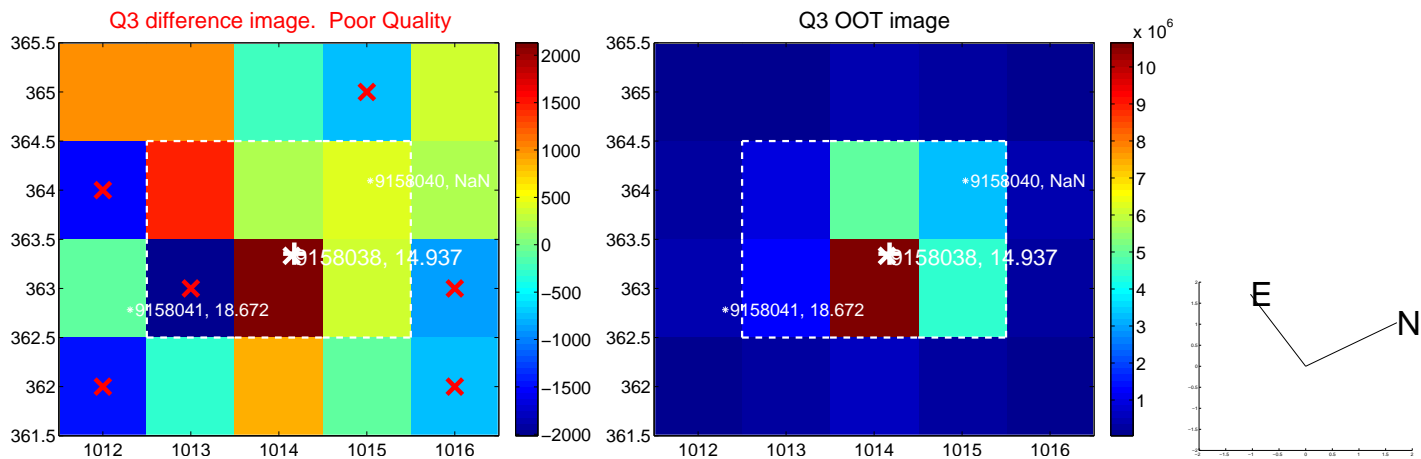
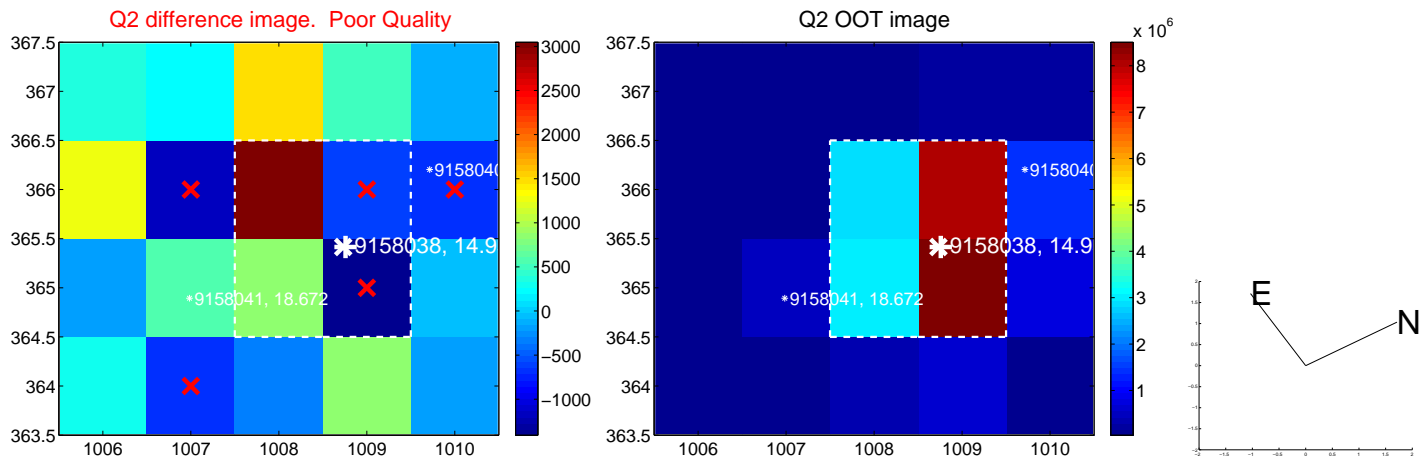
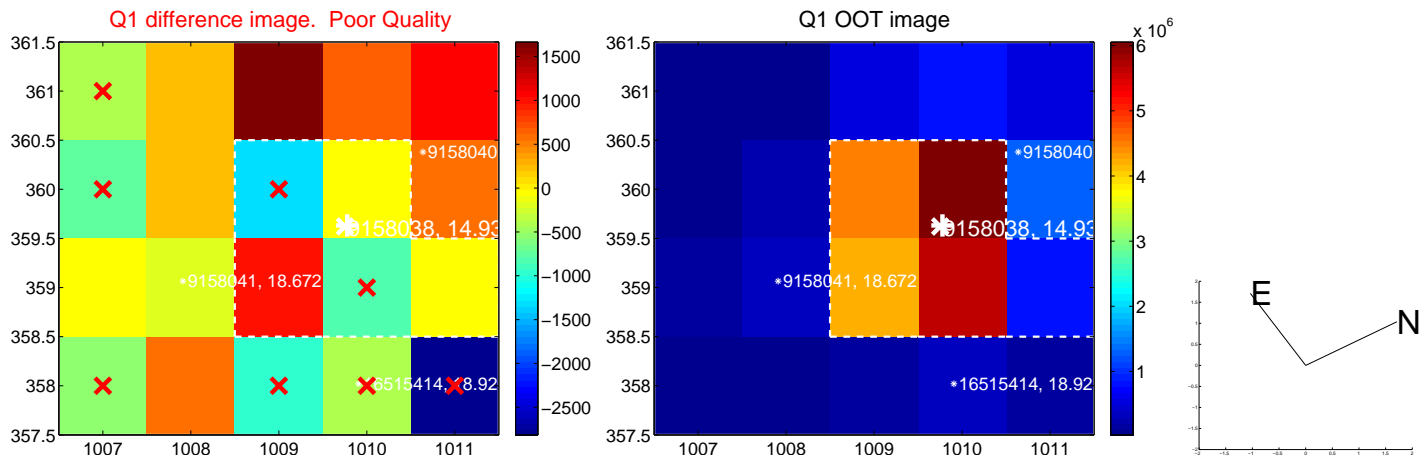
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.542 ± 1.764	1.44	-1.569 ± 1.001	1.999 ± 1.561
PRF-fit source offset from KIC position	2.797 ± 1.528	1.83	-1.687 ± 0.865	2.230 ± 1.372
photometric centroid source offset	0.24 ± 0.31	0.76	0.02 ± 0.27	0.24 ± 0.31

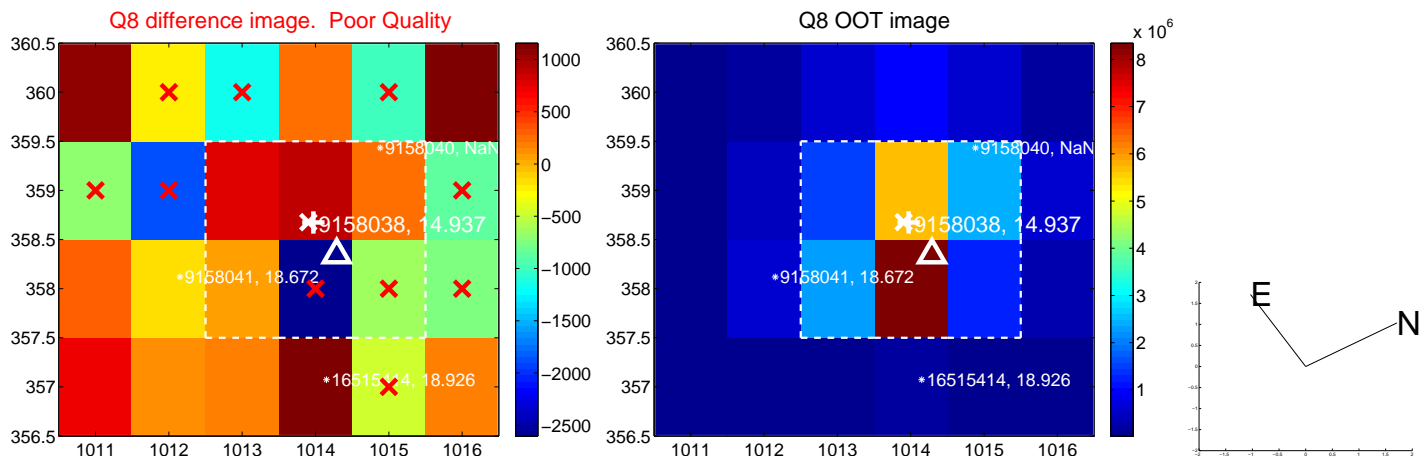
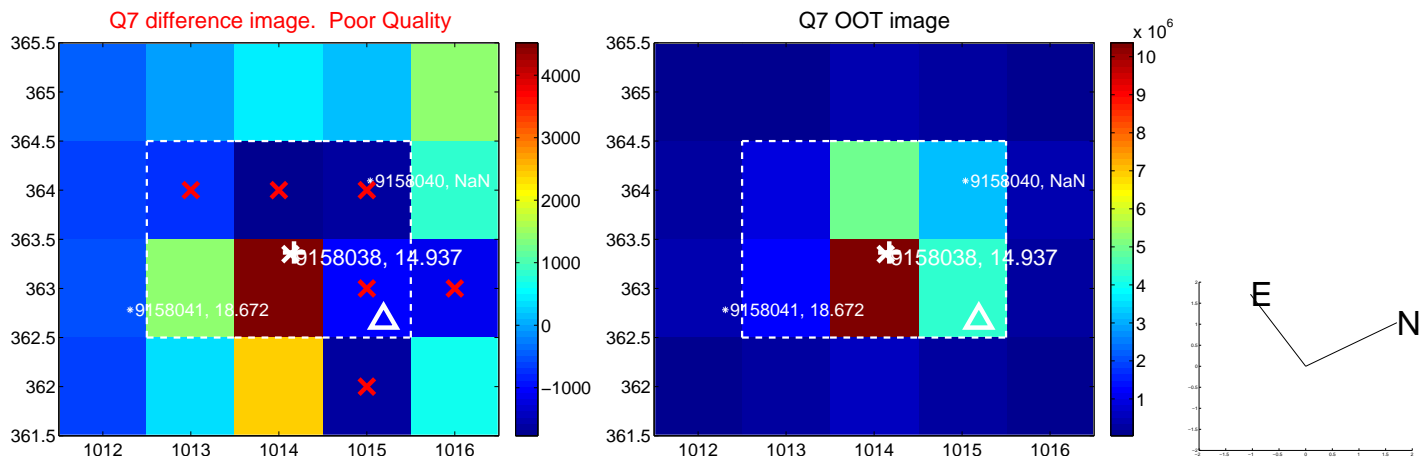
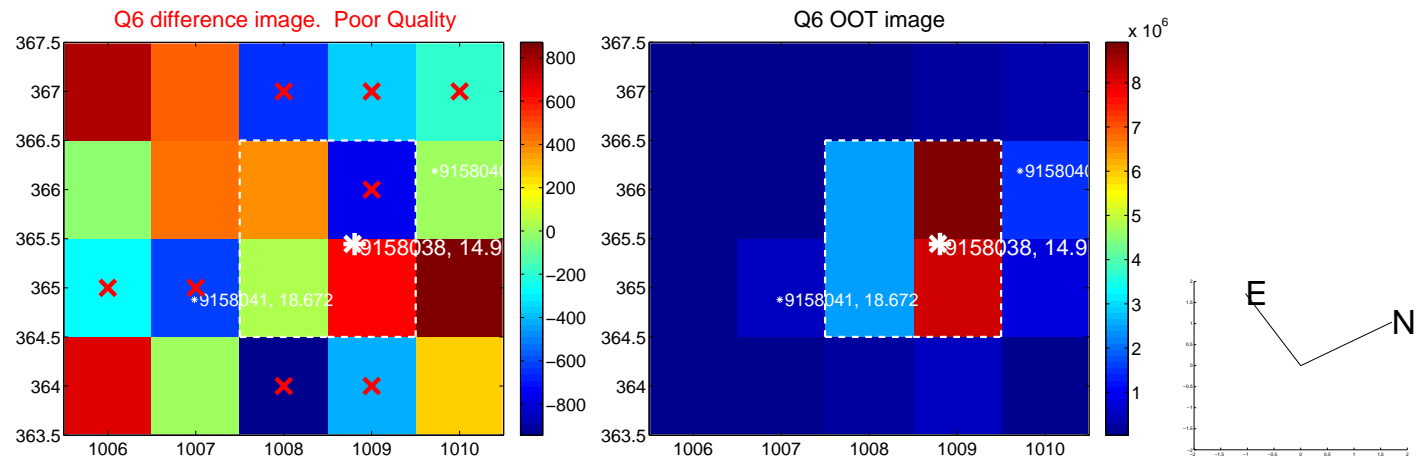
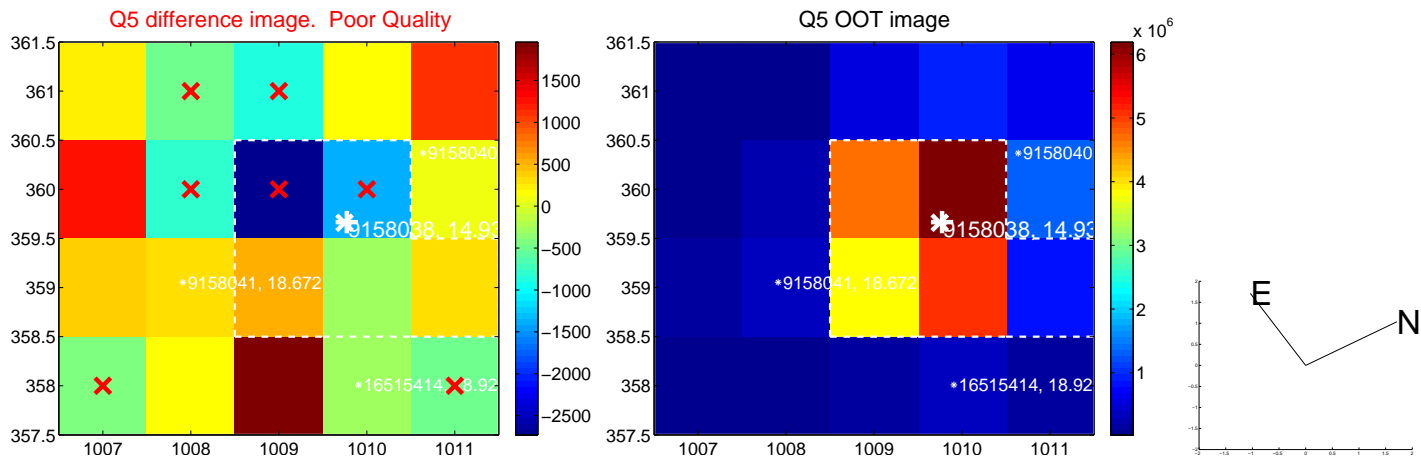


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

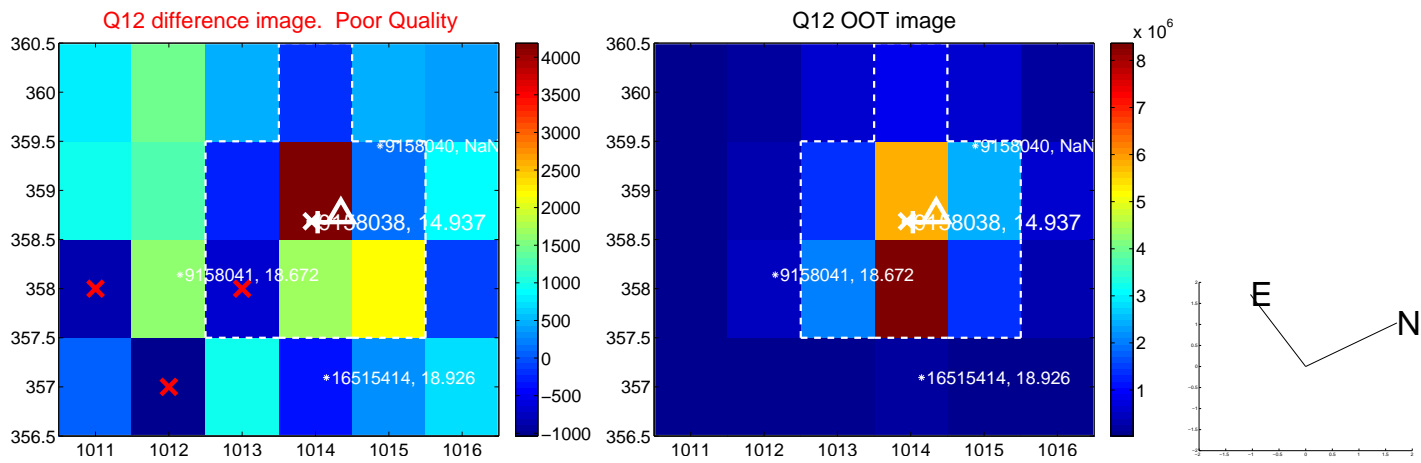
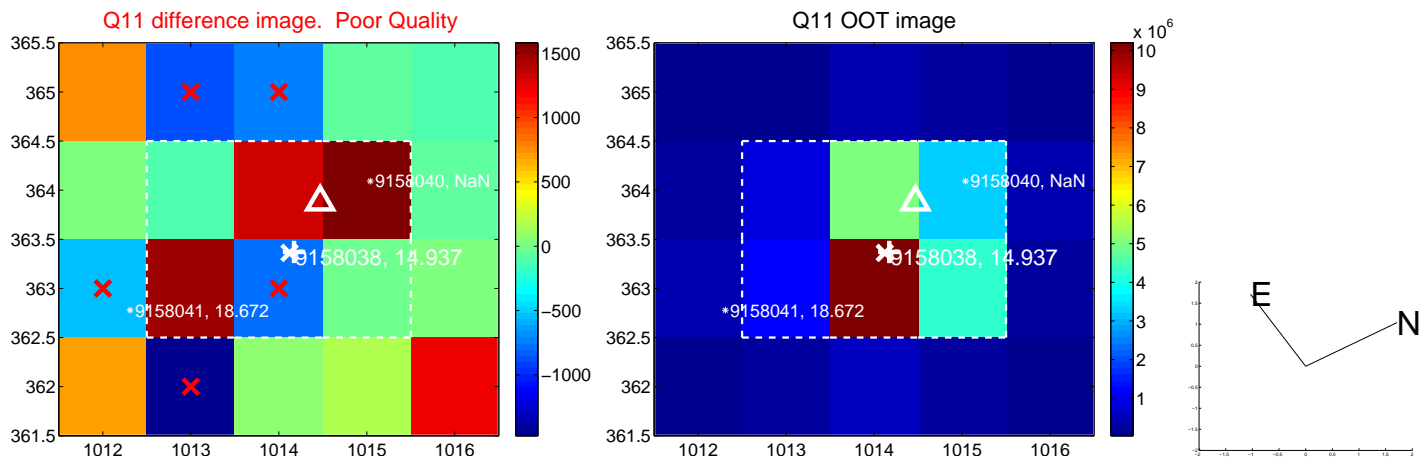
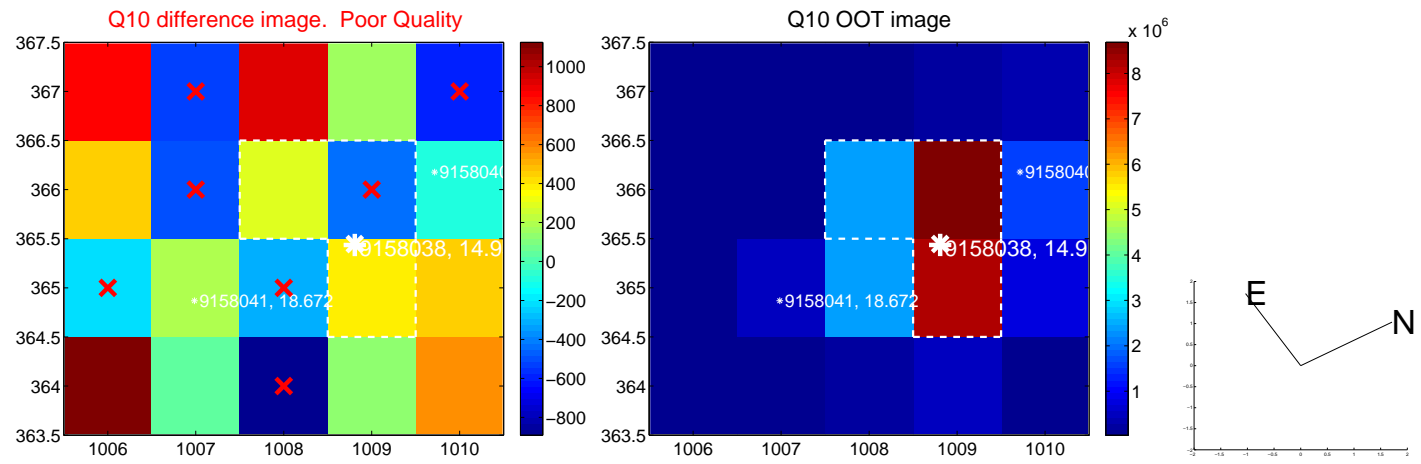
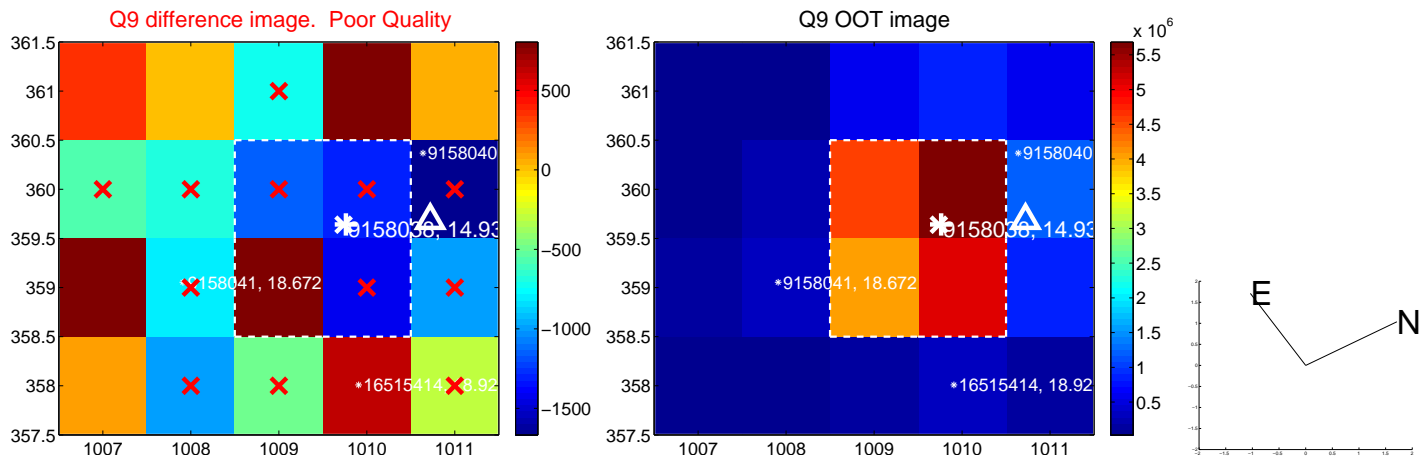
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



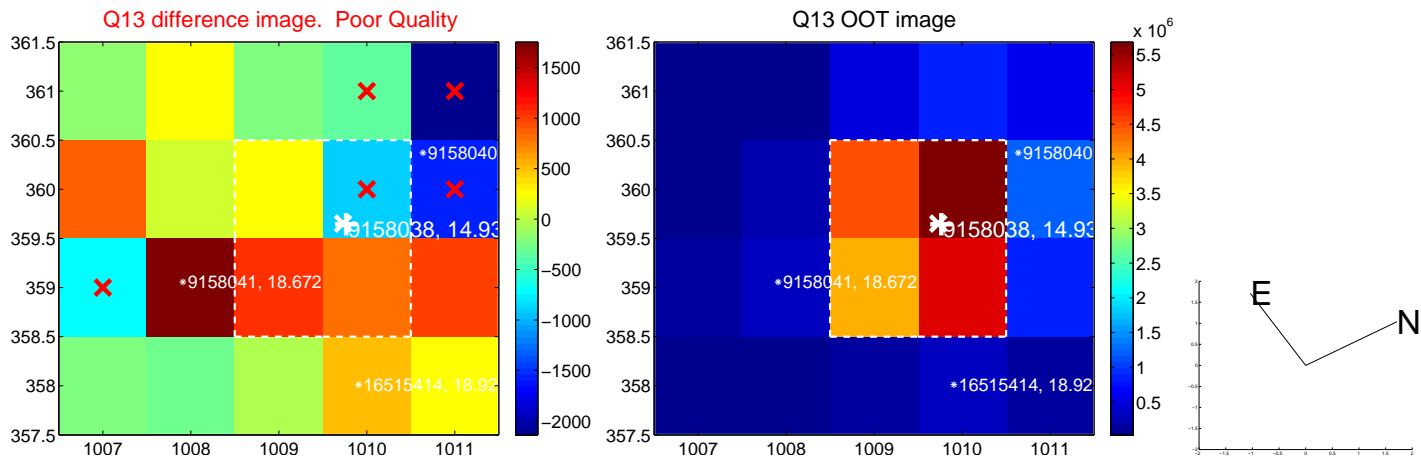
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



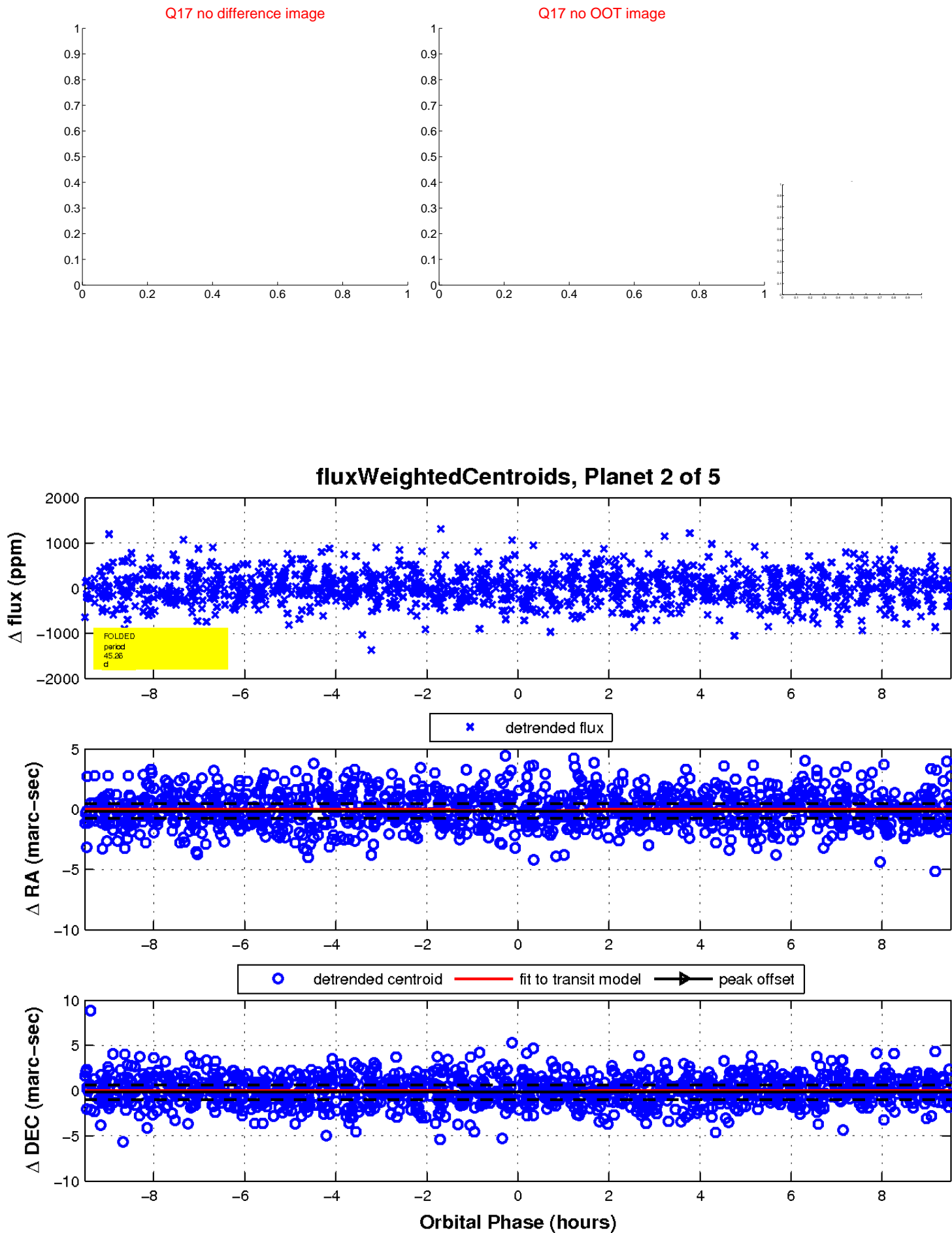
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

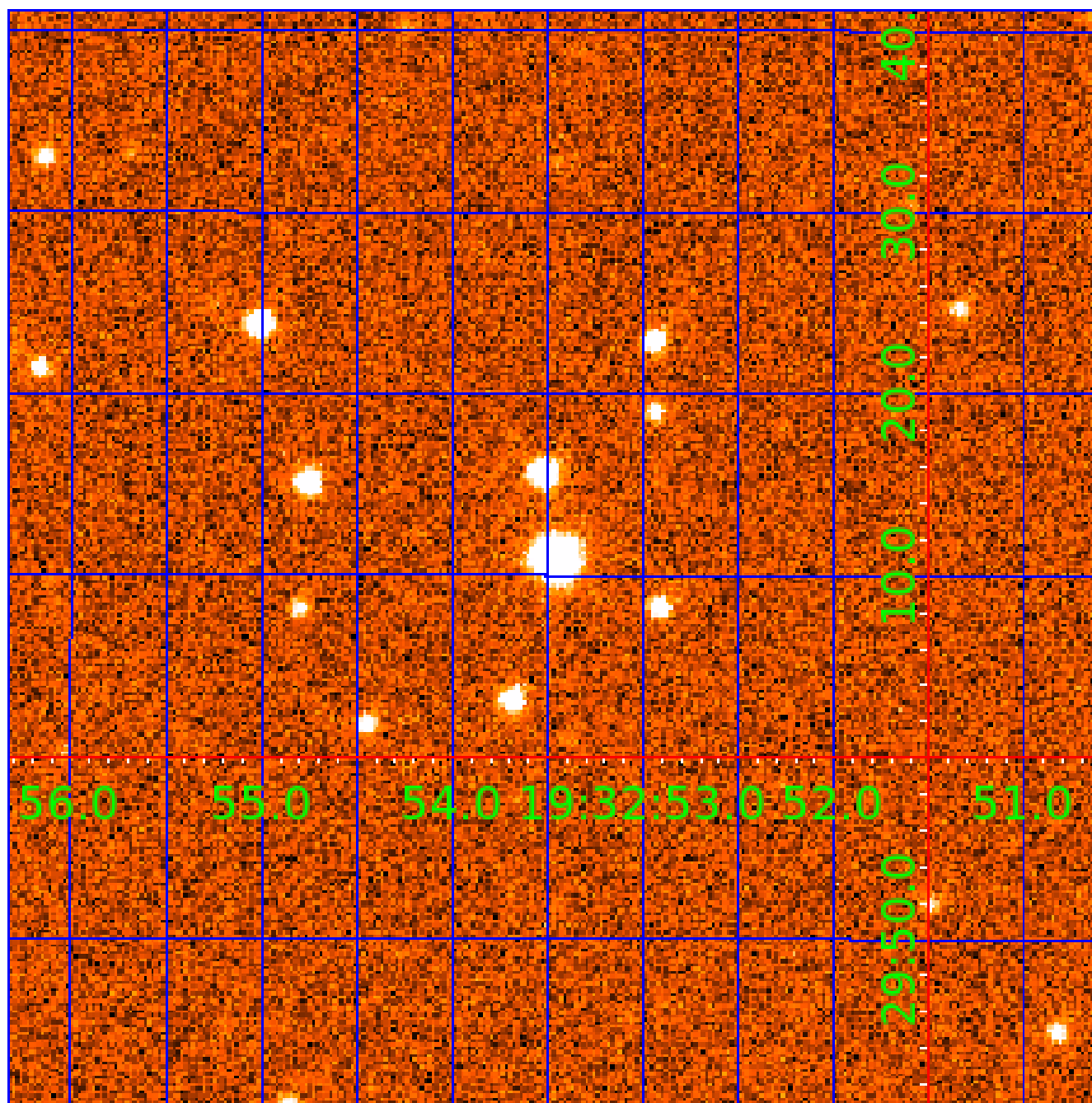


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009158038

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})
009158038-01	OBS	No	0.757073	131.595488	58.0	5.227	10.2	15.2	0.66	5126	0.57	1255.00
009158038-02	OBS	No	45.258253	154.105801	1214.6	3.172	13.1	9.5	0.66	5126	2.36	5.37
009158038-03	OBS	No	40.792044	159.519550	19.5	0.751	12.3	0.1	0.66	5126	0.30	6.17
009158038-05	OBS	No	45.260601	153.308988	1569.6	1.880	11.4	10.4	0.66	5126	2.93	5.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009158038-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
009158038-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009158038-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009158038-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

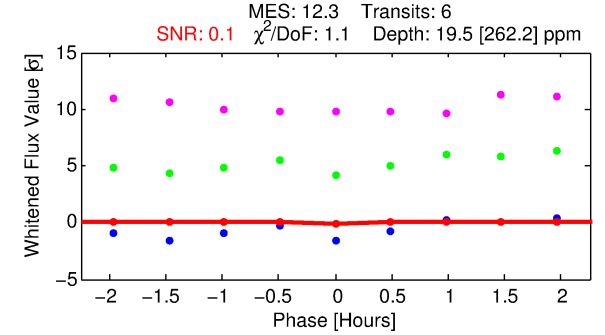
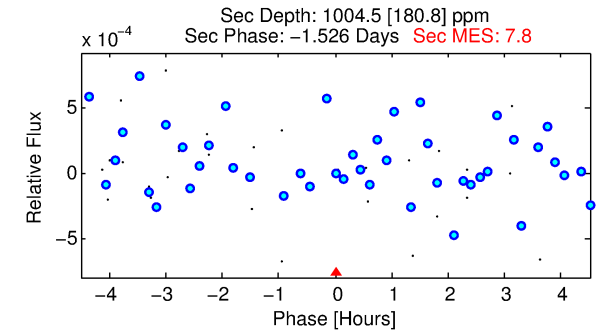
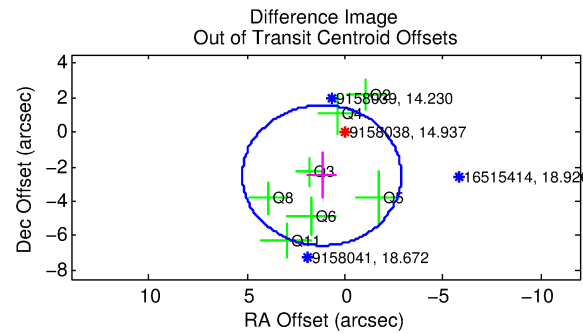
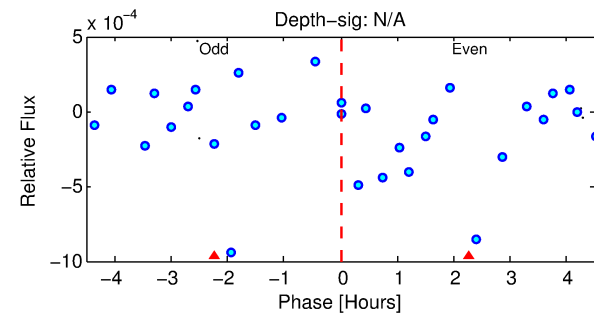
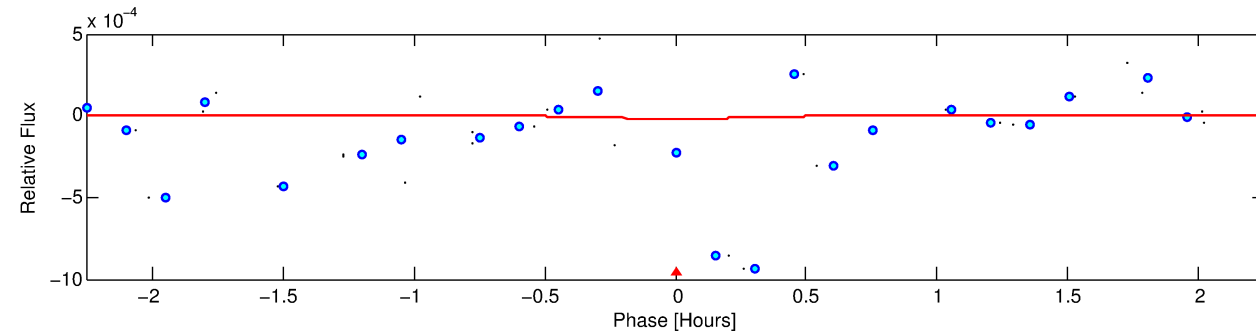
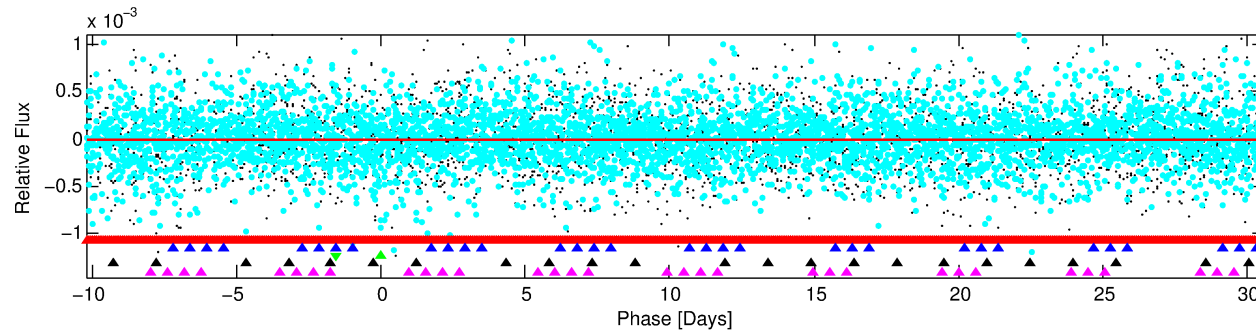
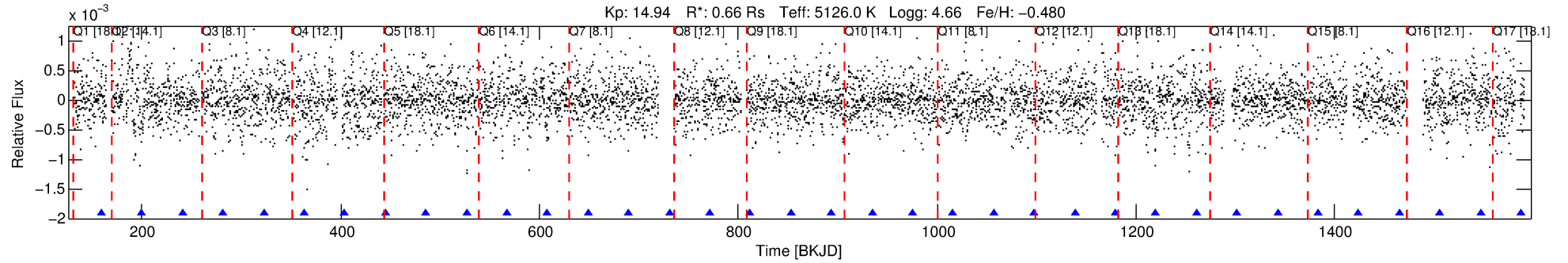
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009158038-03

No Significant Match Found

DV One-Page Summary

KIC: 9158038 Candidate: 3 of 5 Period: 40.792 d



DV Fit Results:

Period = 40.79204 [0.02176] d
Epoch = 159.5196 [0.3862] BKJD
Rp/R* = 0.0042 [1.1409]
a/R* = 355.76 [348837.18]
b = 0.52 [1434.06]
Seff = 6.17 [1.17]
Teq = 402 [19] K
Rp = 0.30 [81.92] Re
a = 0.2084 [0.0221] AU
Ag = 263539.76 [143077211.01] [0.006]
Teffp = 14076 [1910545] K [0.016]

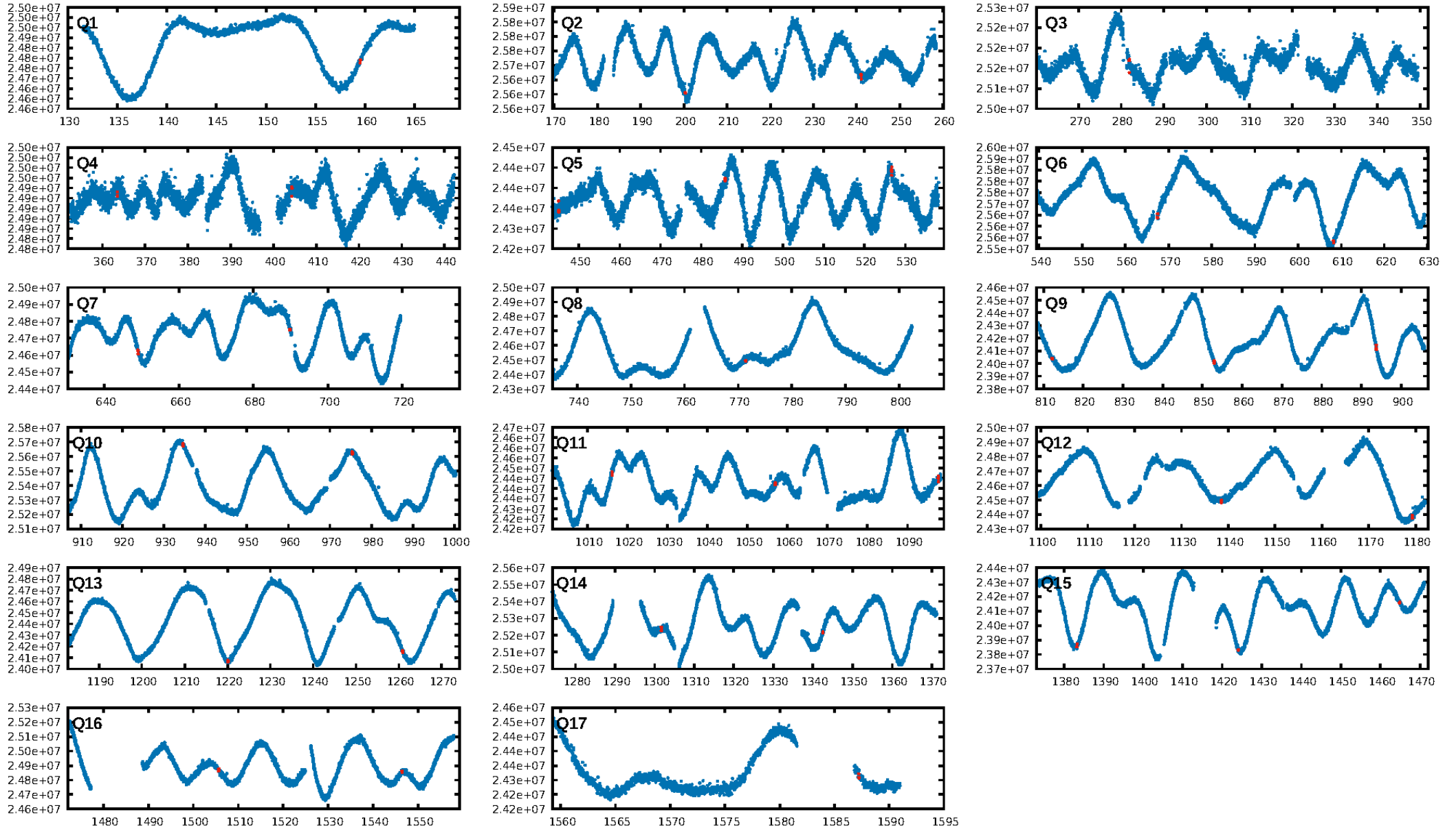
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [181.94]
LongPeriod-sig: 100.0% [32.88]
ModelChiSquare2-sig: 43.4%
ModelChiSquareGof-sig: 98.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 1.206
Centroid-sig: 18.0%
Centroid-so: 45.808 arcsec [1.28]
OptOffset-rm: 2.772 arcsec [2.05]
KicOffset-rm: 2.591 arcsec [2.03]
OptOffset-st: 2/2/2/1 [7]
KicOffset-st: 2/2/2/1 [7]
DiffImageQuality-fgm: 0.00 [0/7]
DiffImageOverlap-fno: 0.21 [3/14]

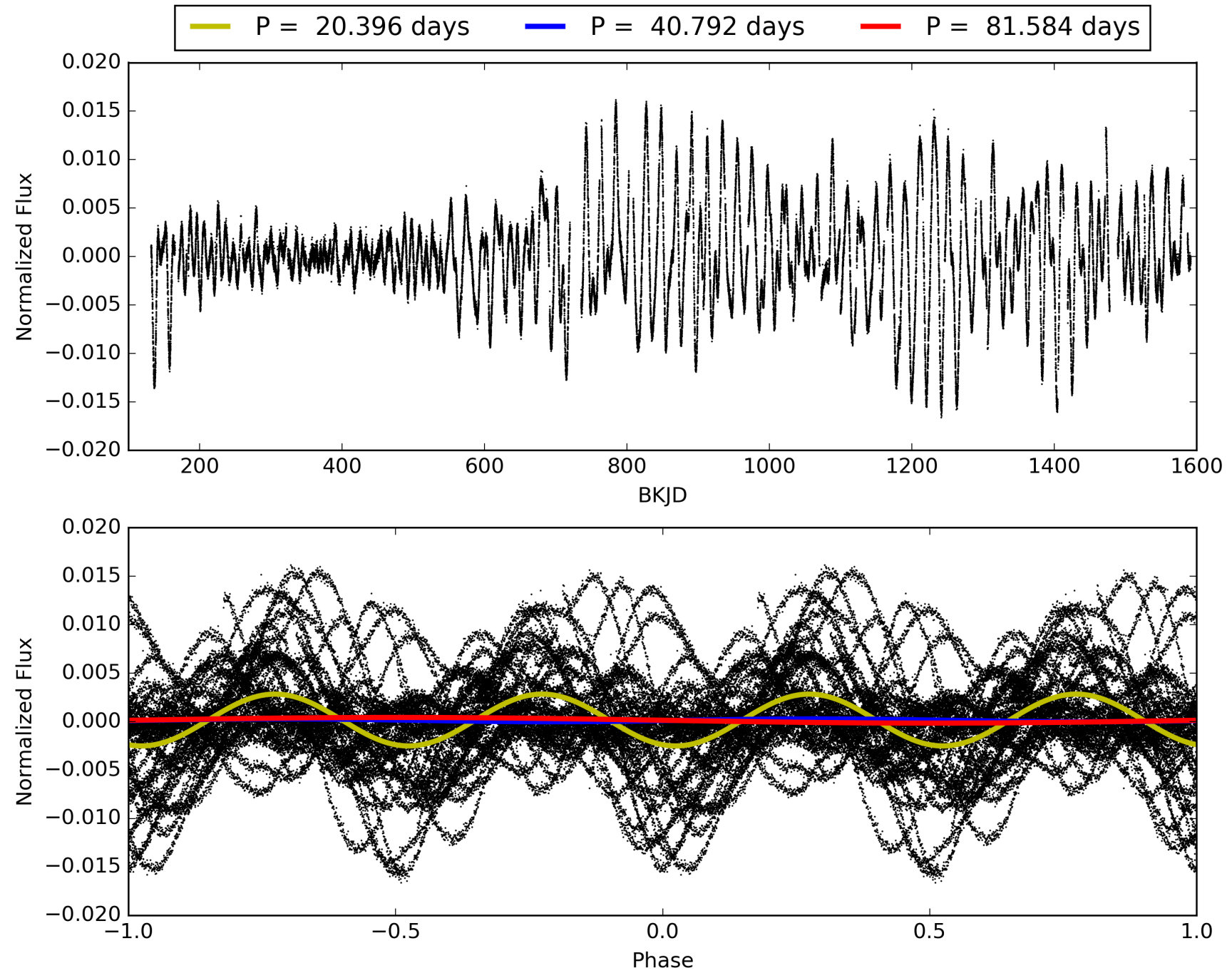
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:27:11 Z

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

TCE 009158038-03, PDC Light Curves

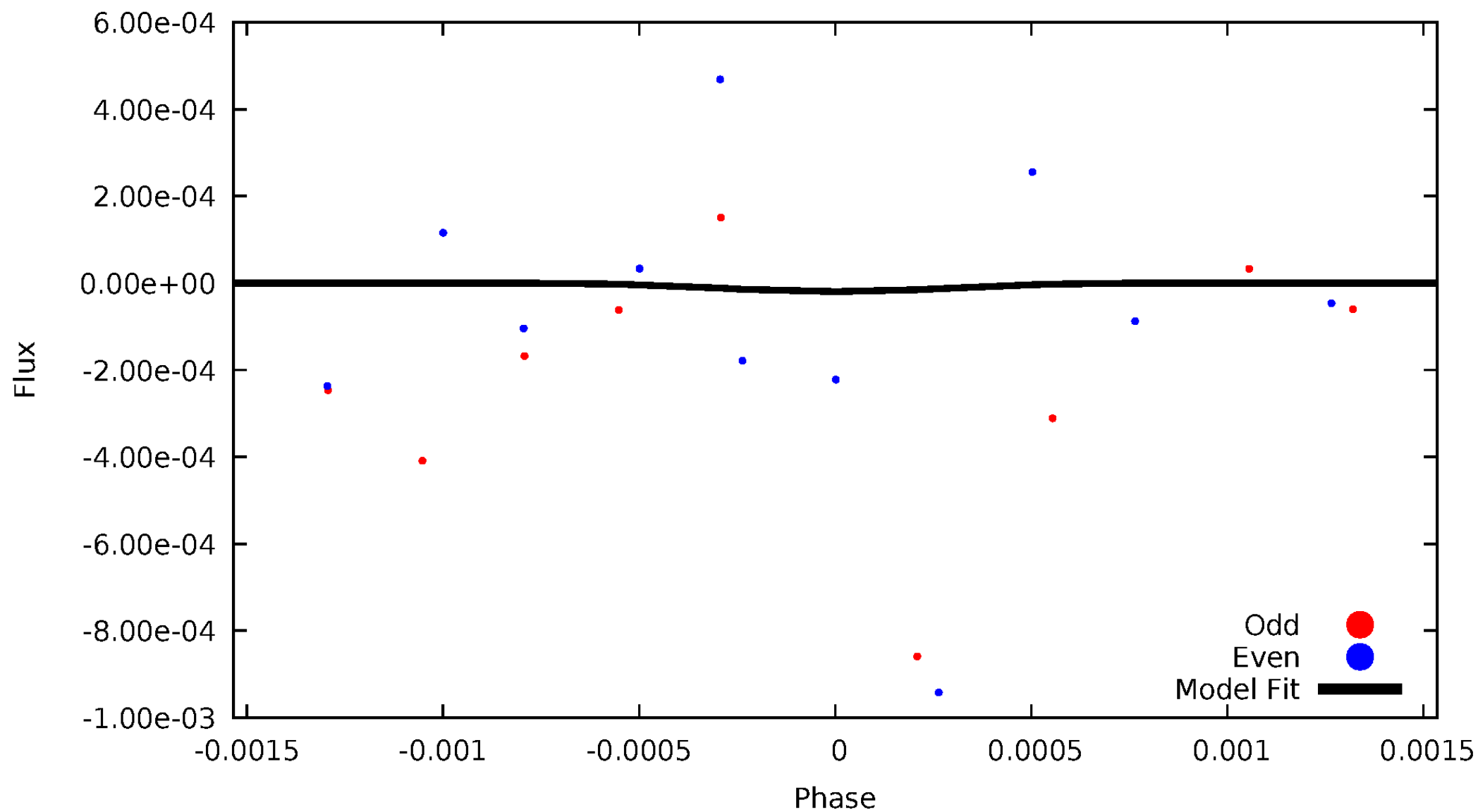


TCE 009158038-03



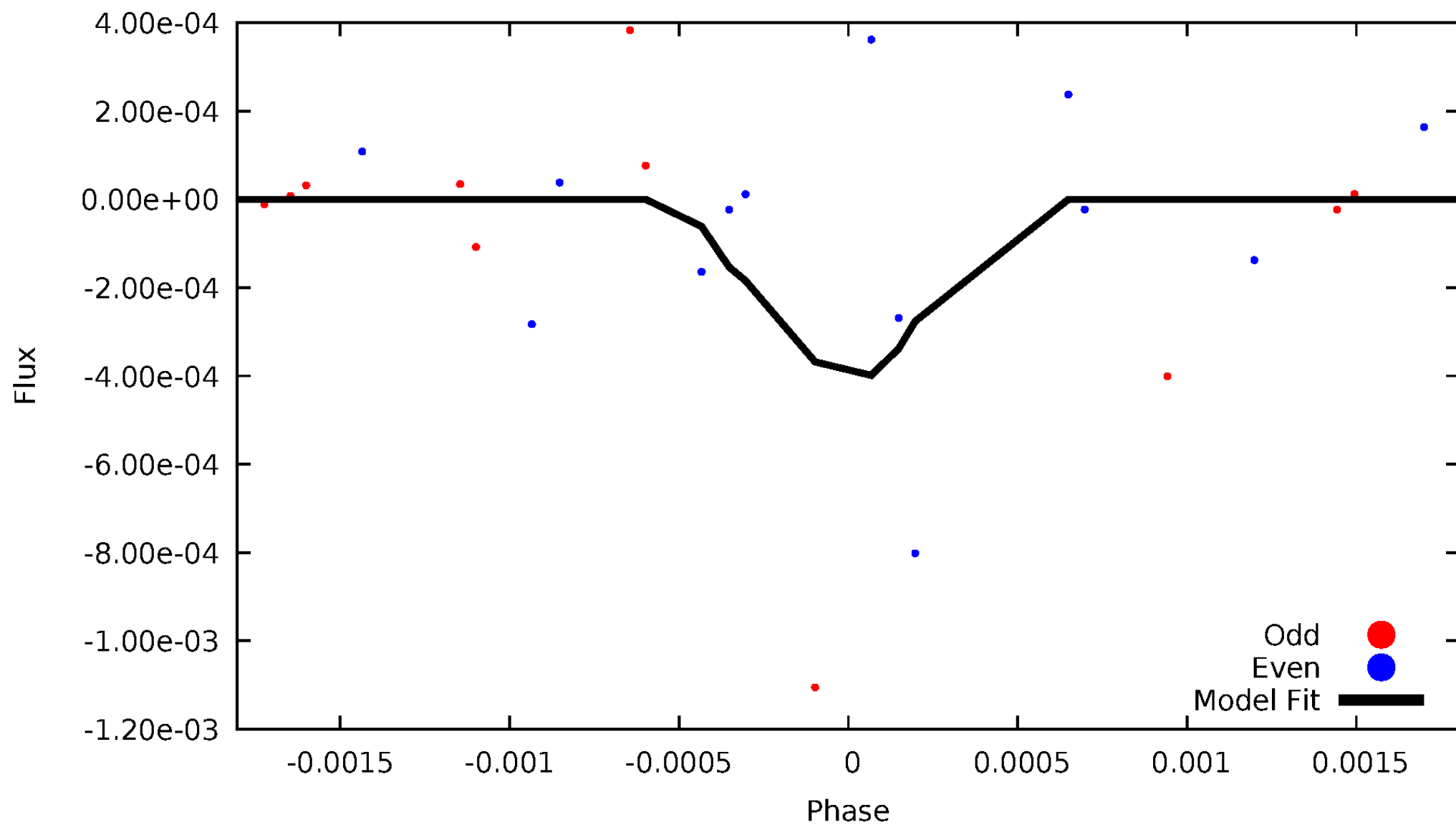
DV Odd/Even

TCE 009158038-03



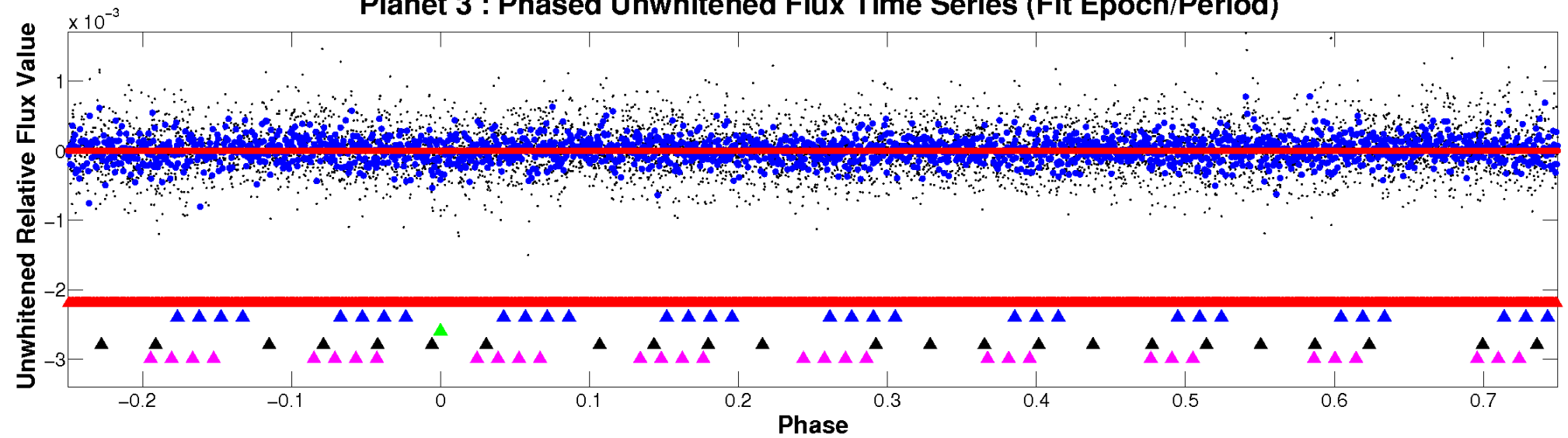
ALT Odd/Even

TCE 009158038-03

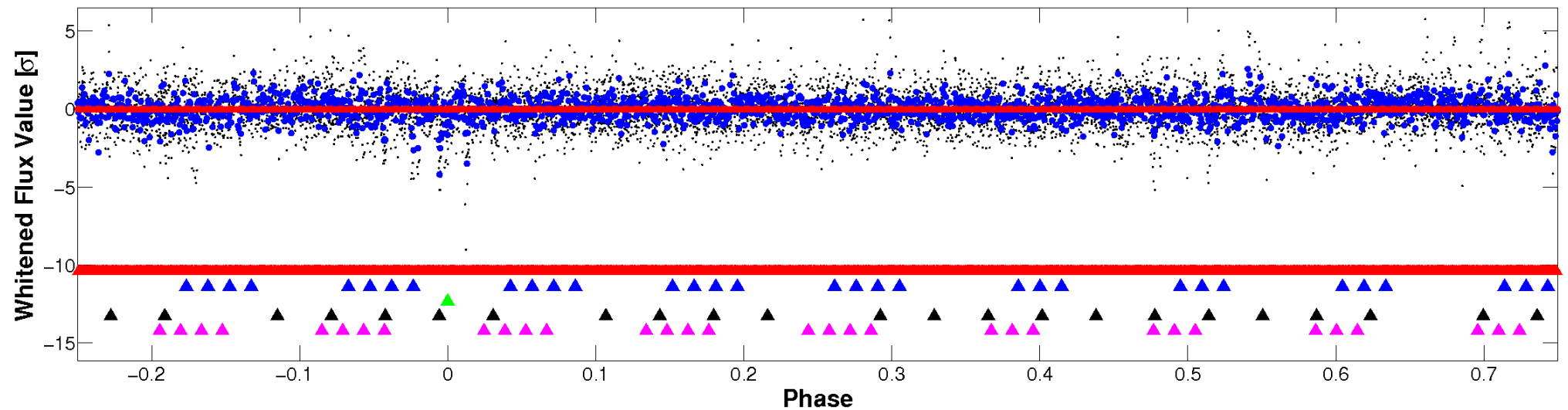


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

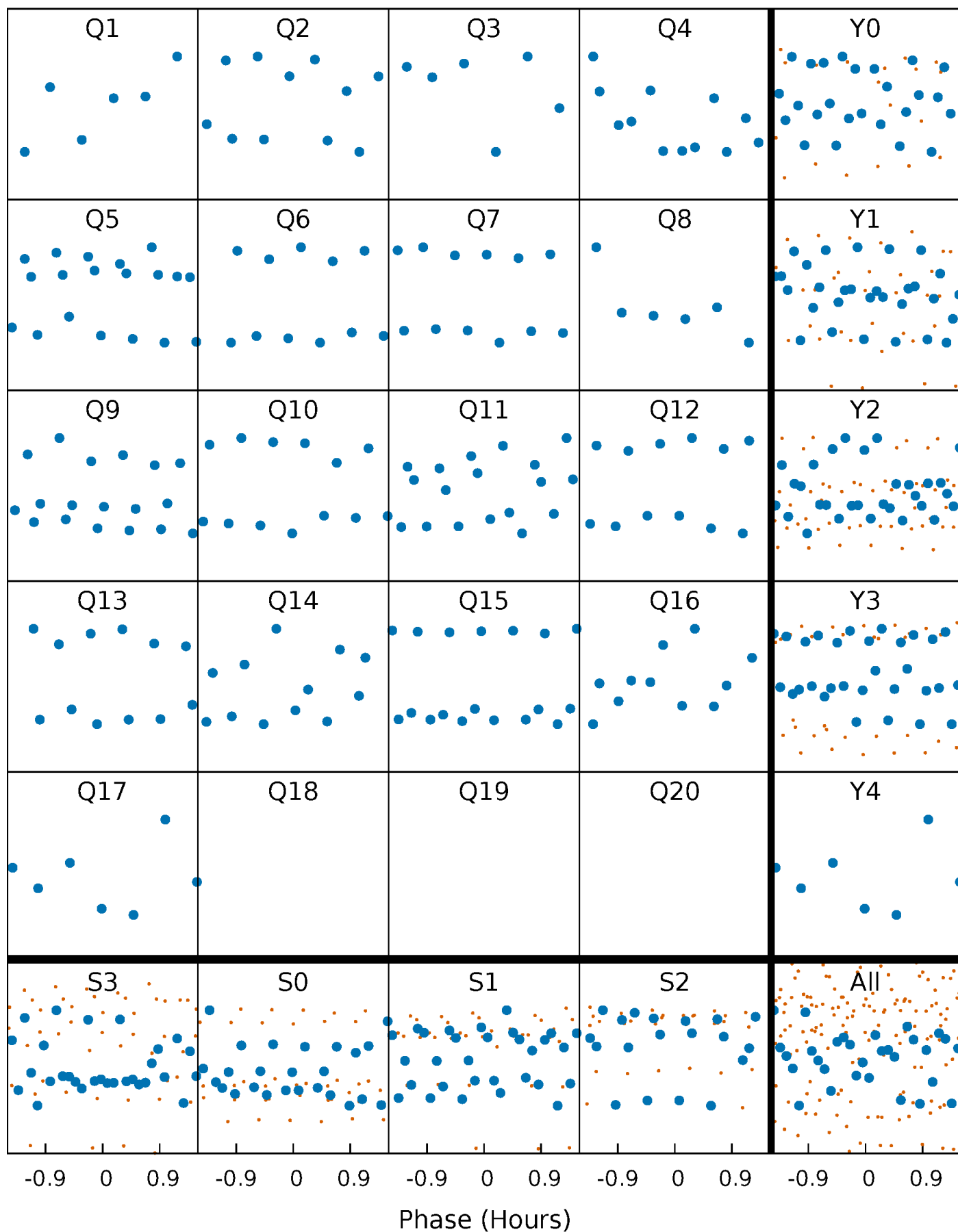


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



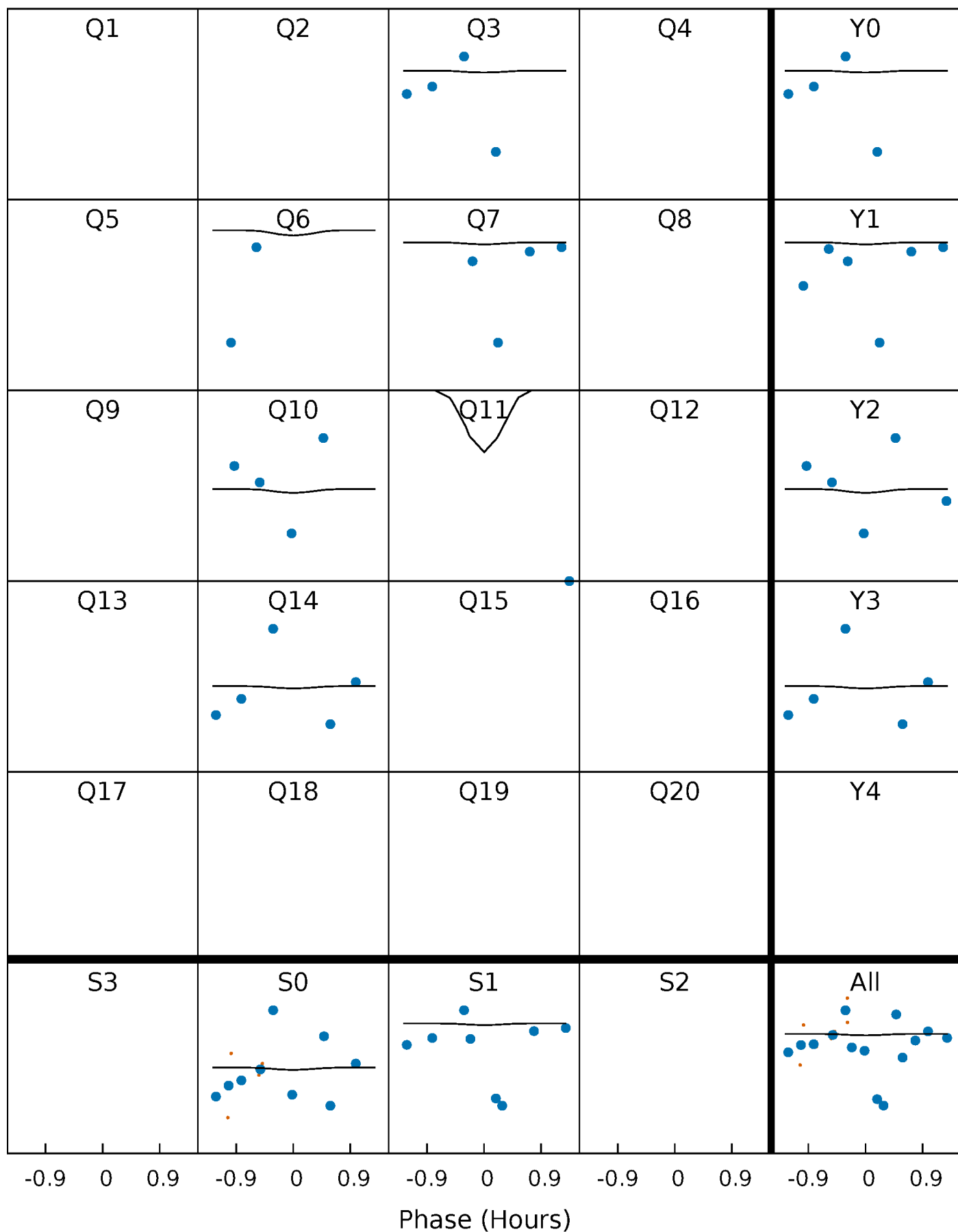
PDC Quarter-Phased Transit Curves

TCE 009158038-03 $P = 40.792044$ Days $T_0 = 159.519551$ (BKJD)



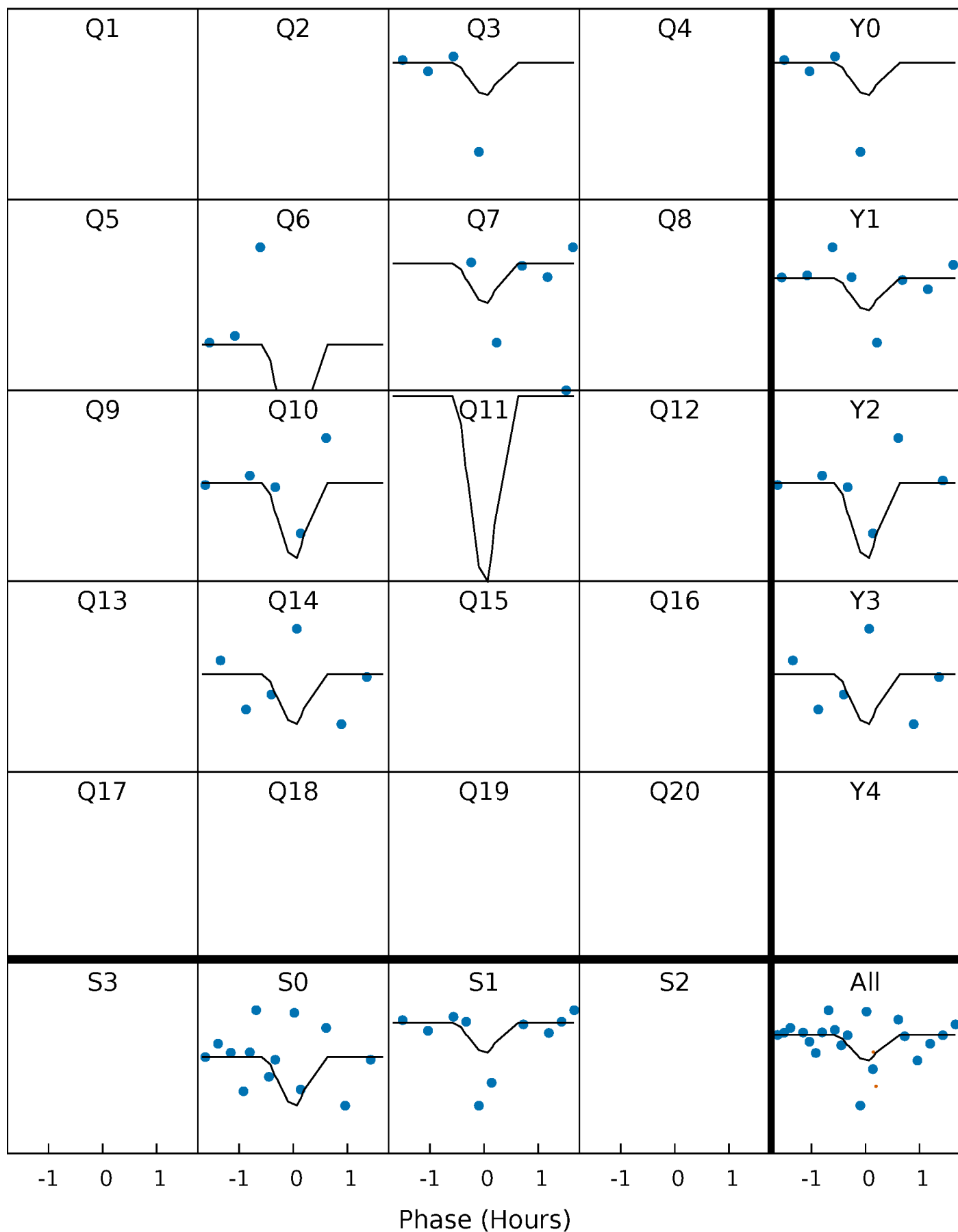
DV Quarter-Phased Transit Curves

TCE 009158038-03 P= 40.792044 Days $T_0=159.519551$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

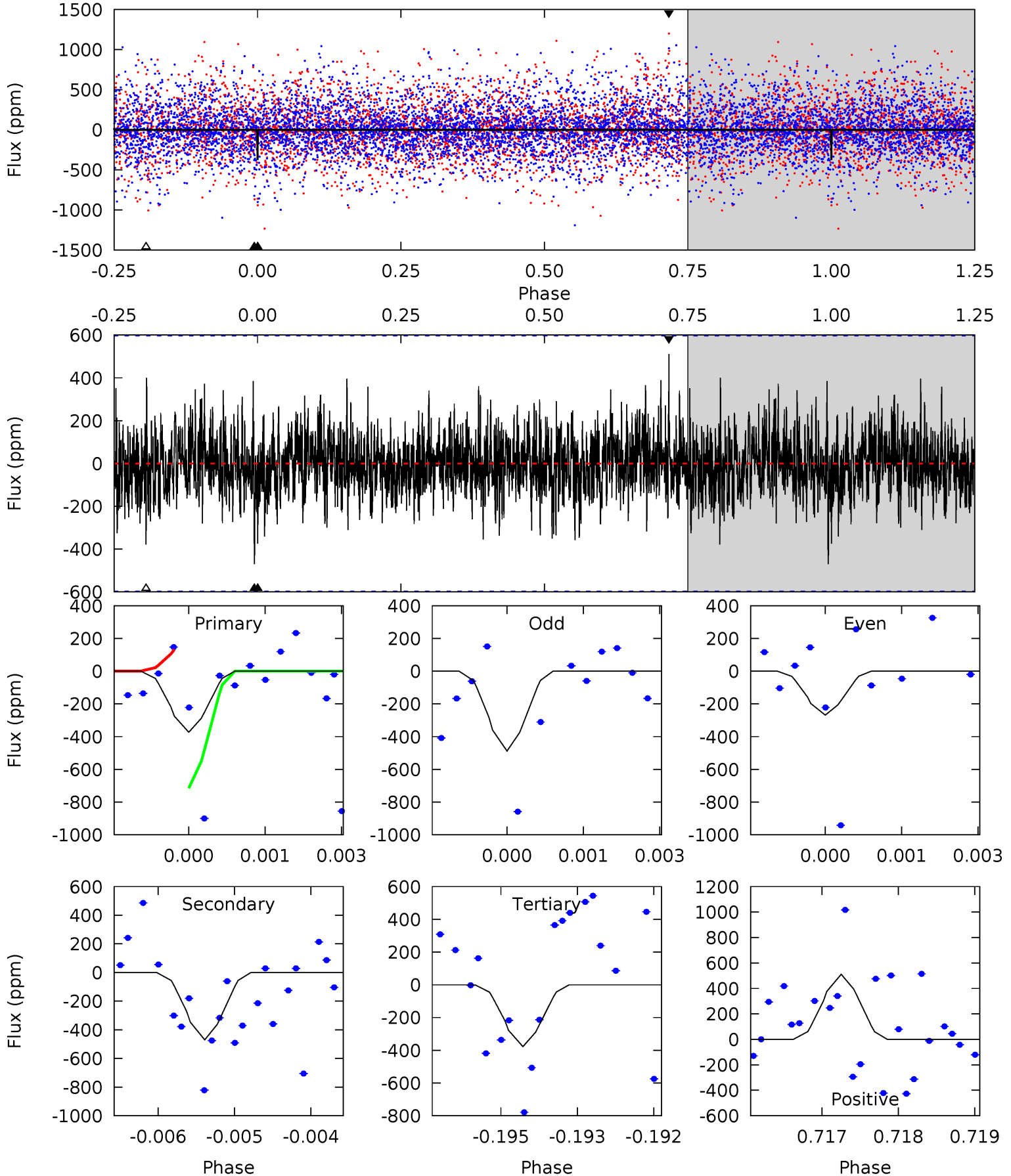
TCE 009158038-03 P= 40.790953 Days $T_0=159.535349$ (BKJD)



DV Model-Shift Uniqueness Test

009158038-03, P = 40.792044 Days, E = 118.727507 Days

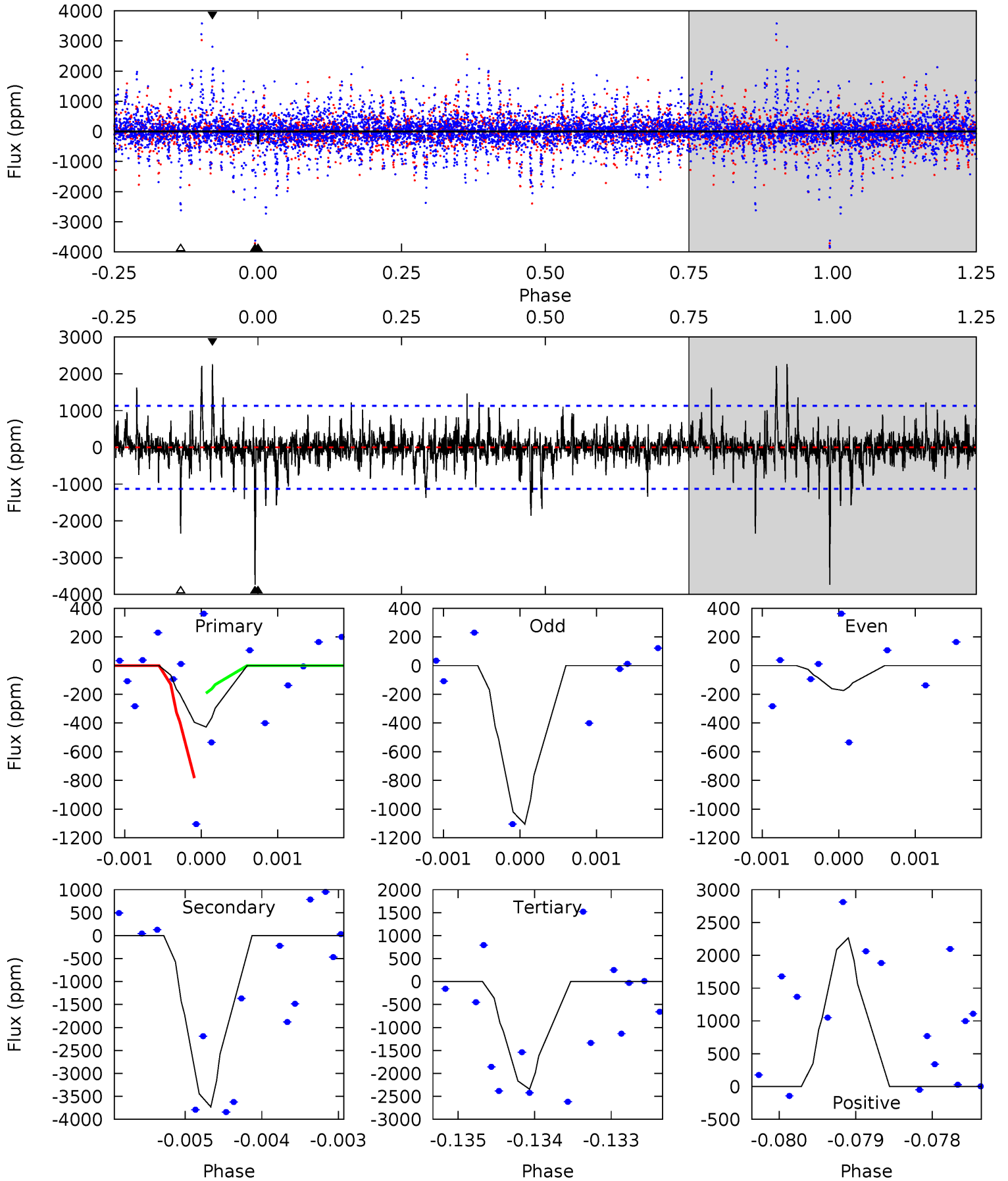
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.37	4.25	3.41	4.62	5.41	3.22	1.05	-0.04	-1.25	0.84	-0.37	0.96	0.84	0.52	2.57



Alt Model-Shift Uniqueness Test

009158038-03, P = 40.790953 Days, E = 118.744396 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.06	18.0	11.3	10.9	5.44	3.27	1.64	-9.24	-8.85	6.68	7.07	1.45	0.90	0.38	1.47



Stellar Parameters For KIC 009158038

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5126^{+138}_{-154}	$4.662^{+0.028}_{-0.077}$	$-0.480^{+0.300}_{-0.300}$	$0.658^{+0.087}_{-0.047}$	$0.728^{+0.069}_{-0.069}$	$3.595^{+0.506}_{-0.952}$
	+3%/-3%	+1%/-2%	+62%/-62%	+13%/-7%	+9%/-9%	+14%/-26%
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 009158038-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-470 ± 111	$53.71^{+59.80}_{-37.81}$	566^{+19}_{-21}	1868^{+587}_{-294}	$3.661^{+37.101}_{-2.848}$
Alt.	-3730 ± 207	$58.45^{+64.01}_{-40.44}$	567^{+21}_{-20}	2305^{+814}_{-334}	26^{+247}_{-20}

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 $A_{obs} \gg 1.0$

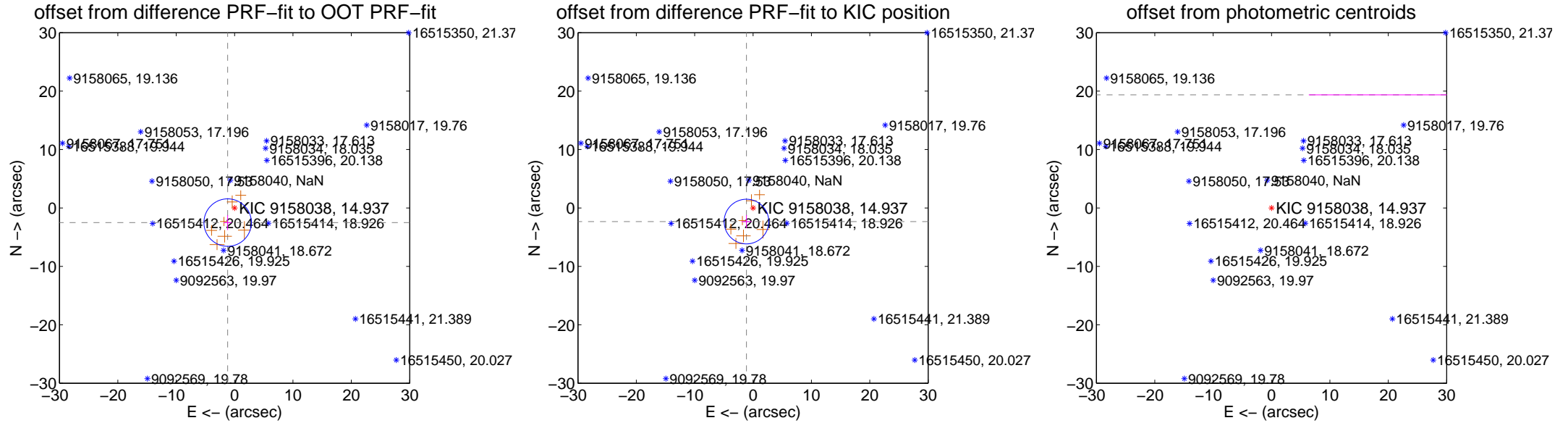
DV Centroid Data

Supplemental centroid analysis for 009158038-03. Kepler magnitude: 14.94. Transit SNR 0.07

There are 0 quarters with good PRF difference image offsets

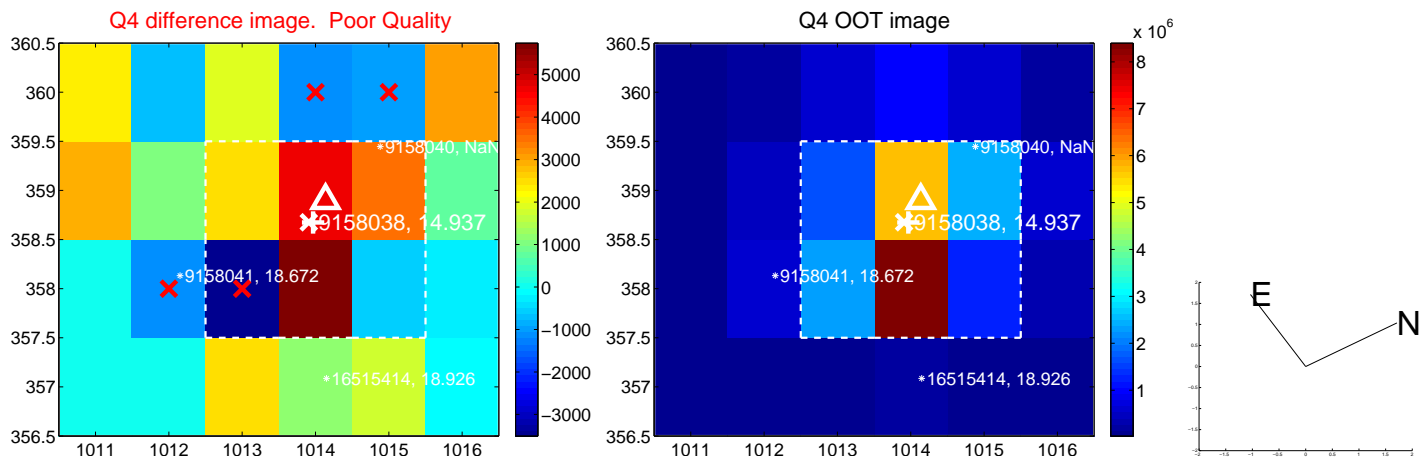
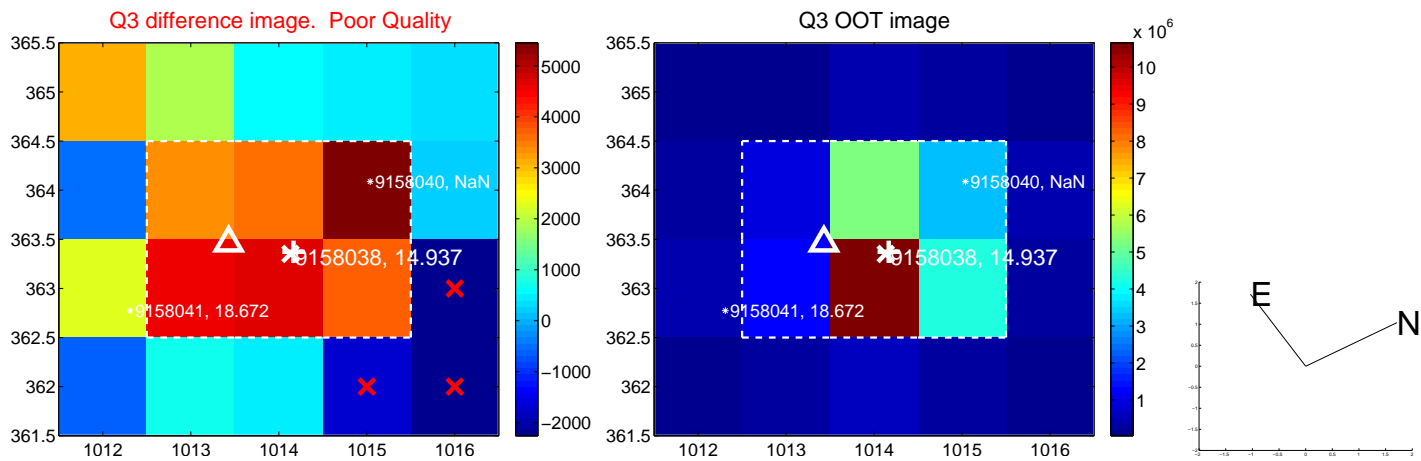
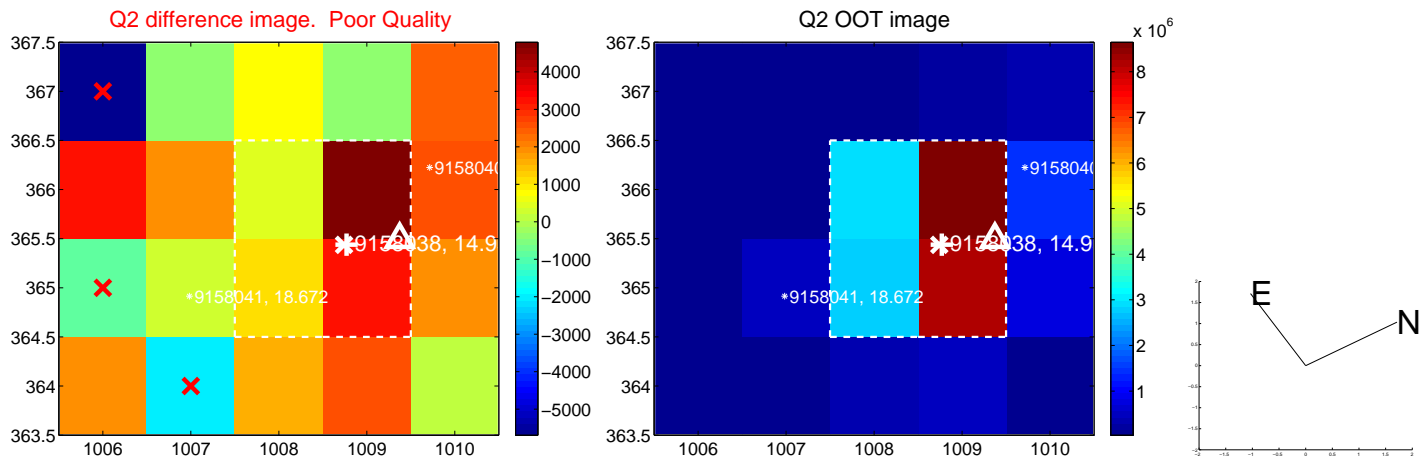
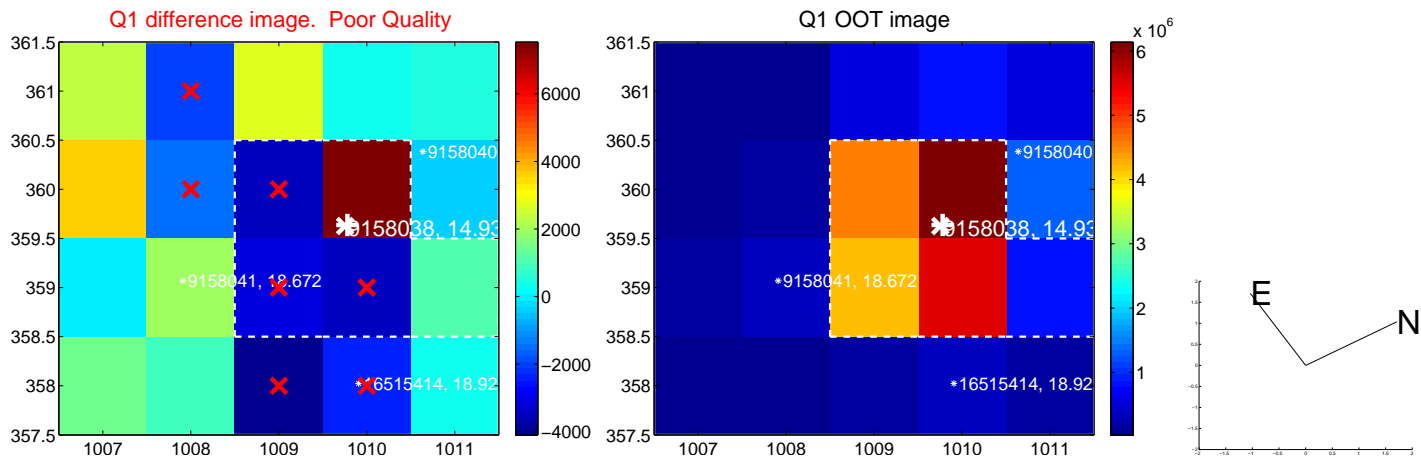
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.772 ± 1.354	2.05	1.186 ± 0.682	-2.505 ± 1.277
PRF-fit source offset from KIC position	2.591 ± 1.274	2.03	1.132 ± 0.849	-2.330 ± 1.117
photometric centroid source offset	45.80 ± 35.84	1.28	-41.51 ± 35.13	19.36 ± 38.90

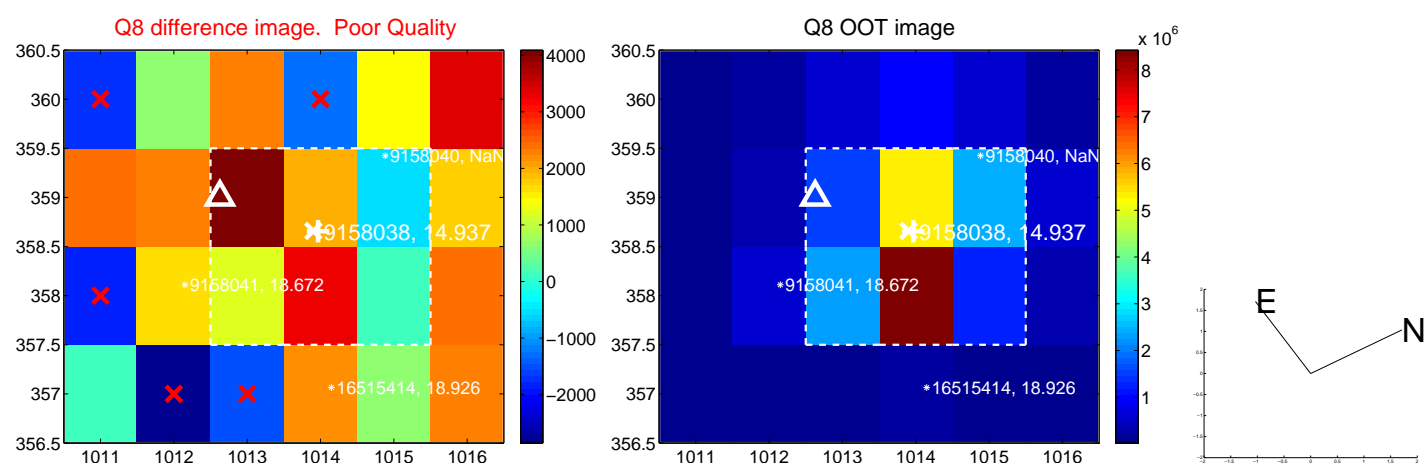
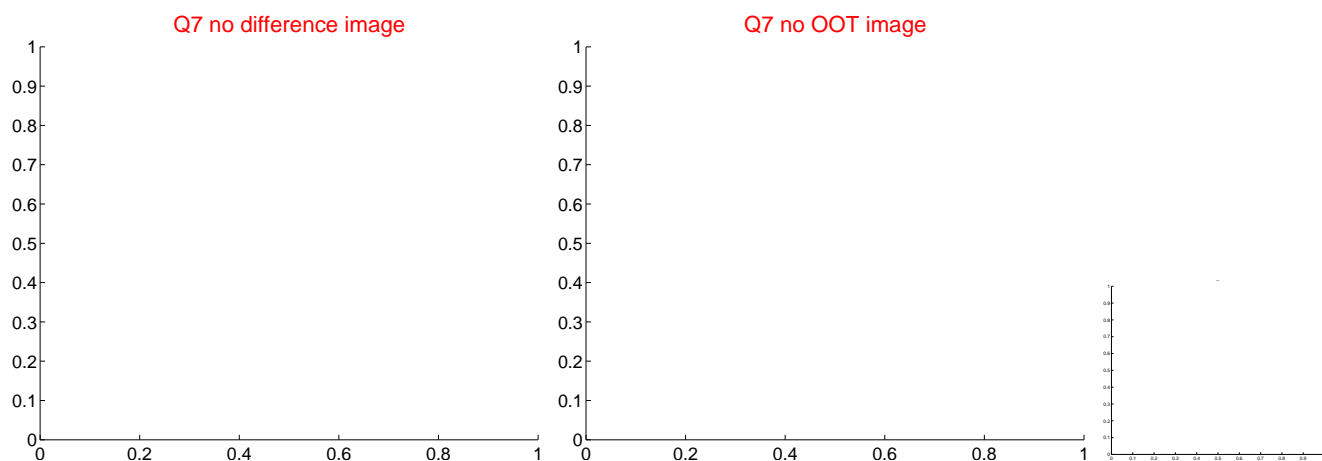
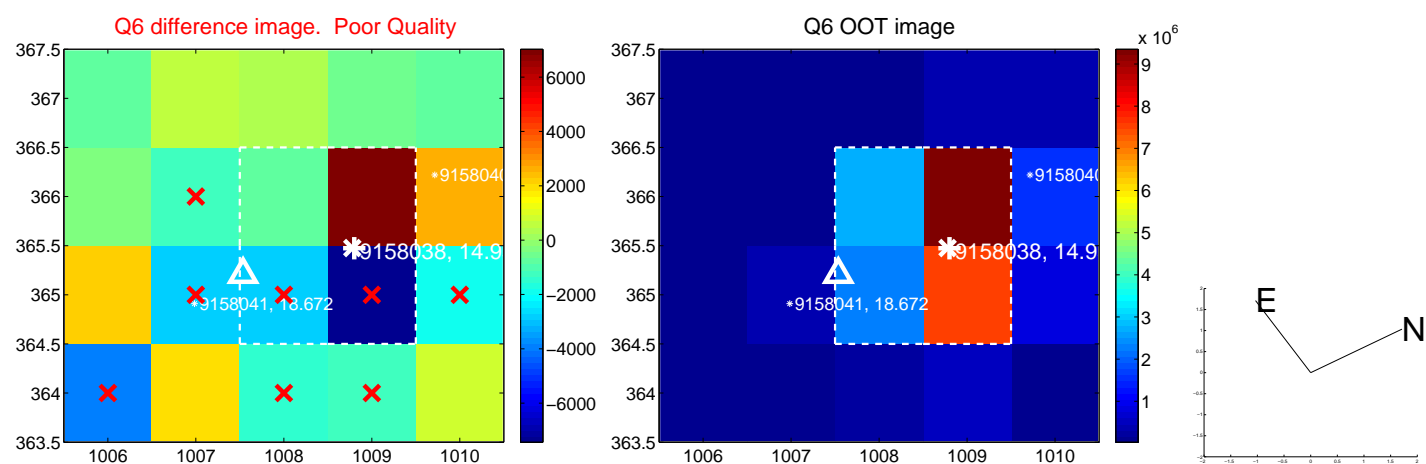
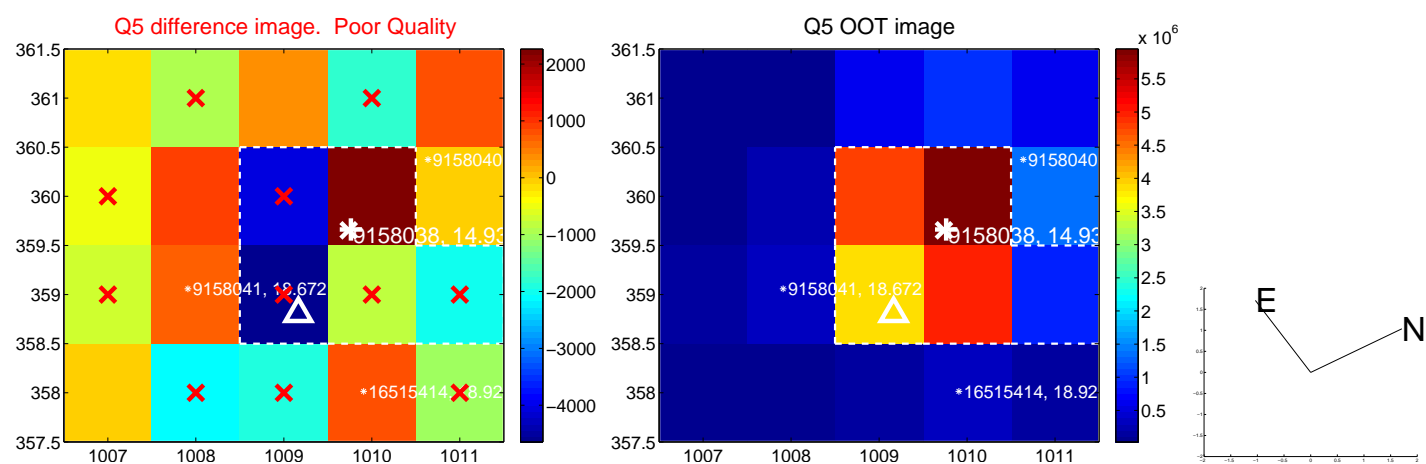


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

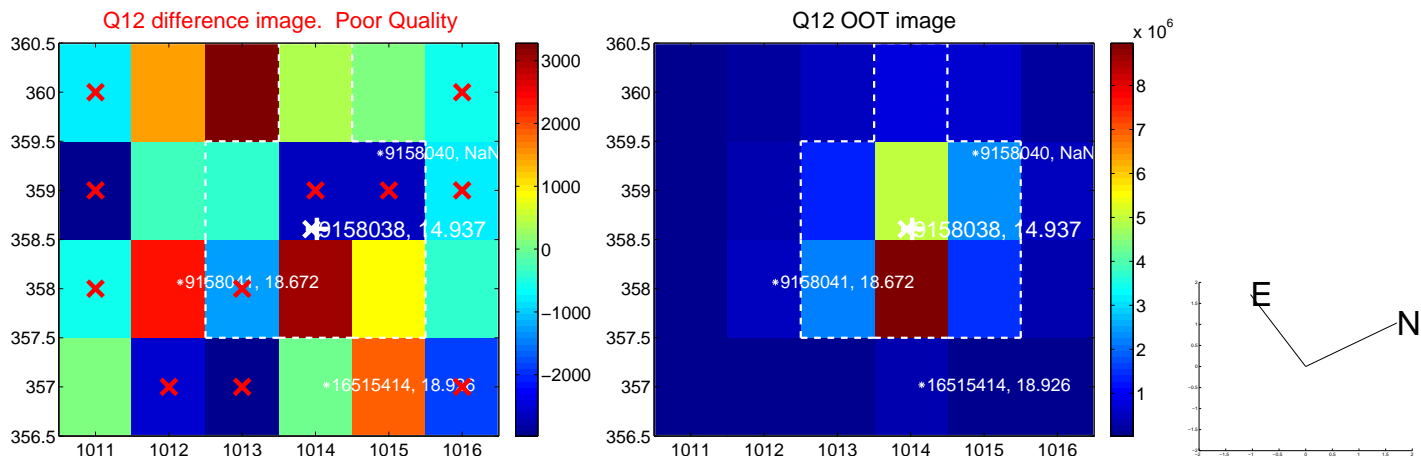
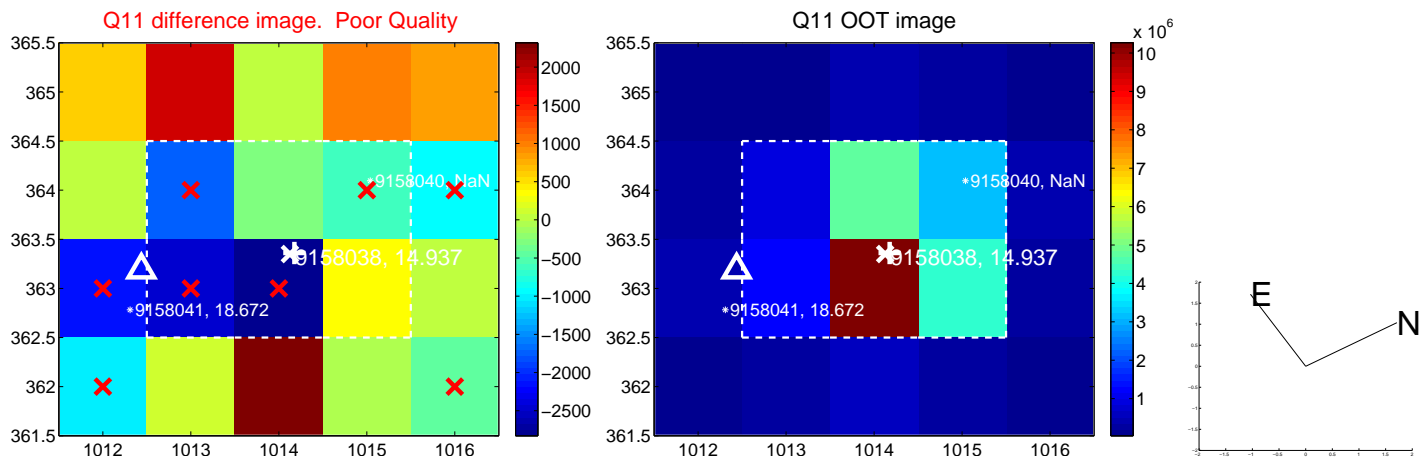
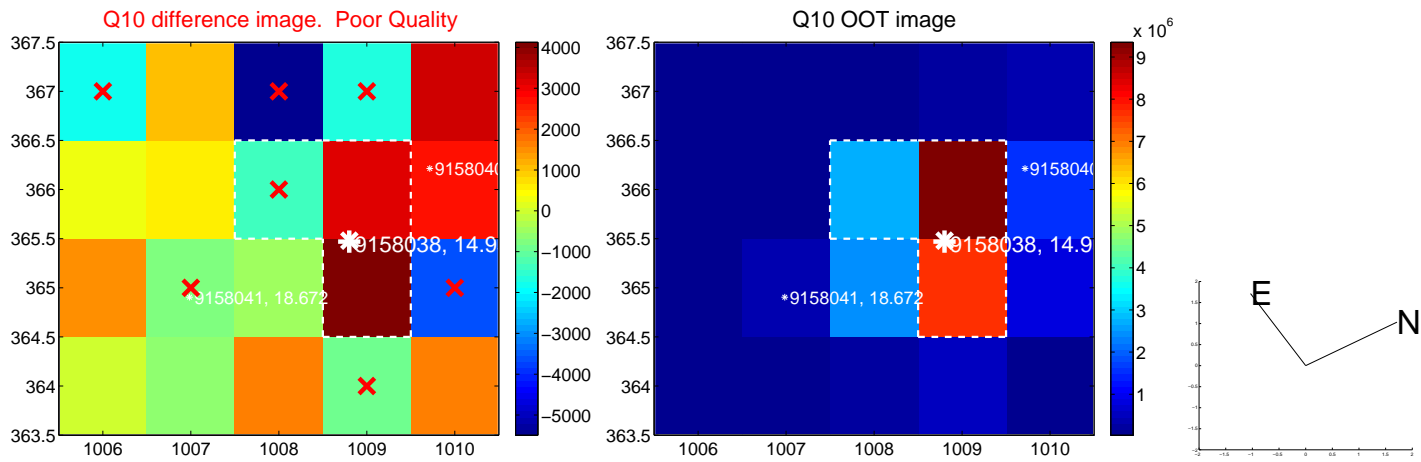
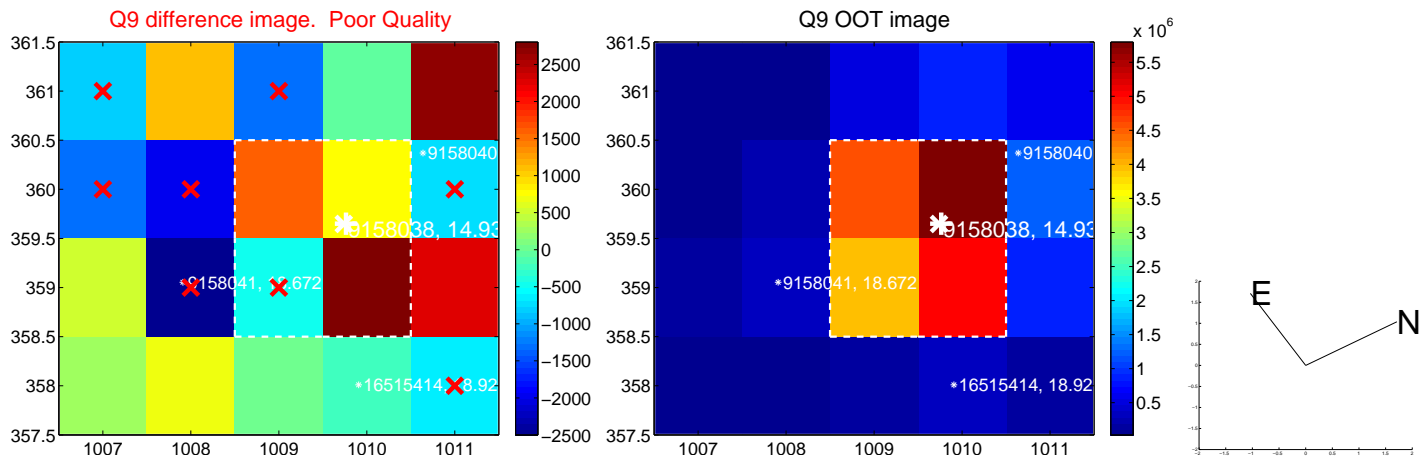
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



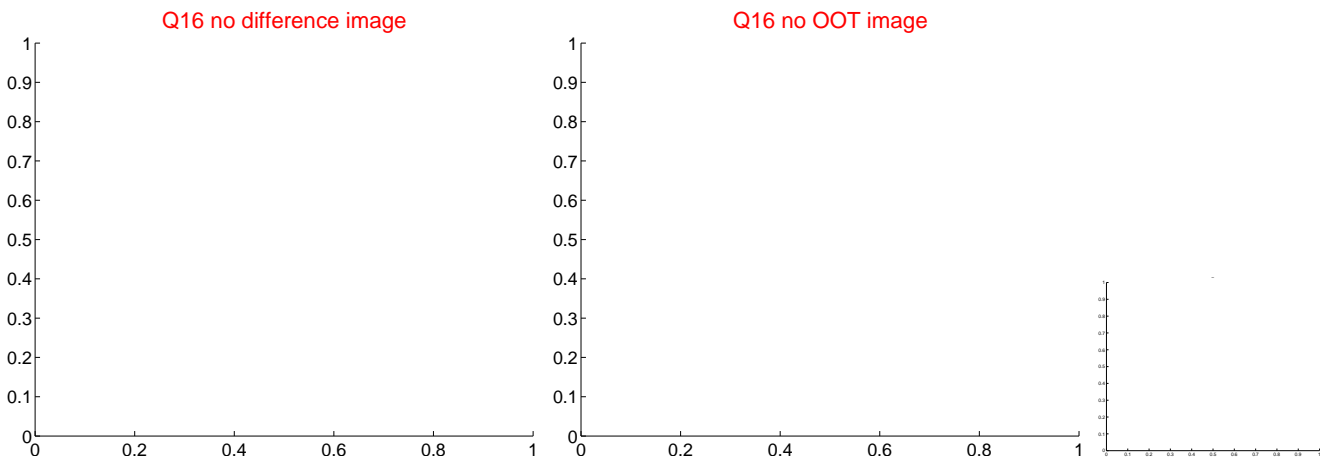
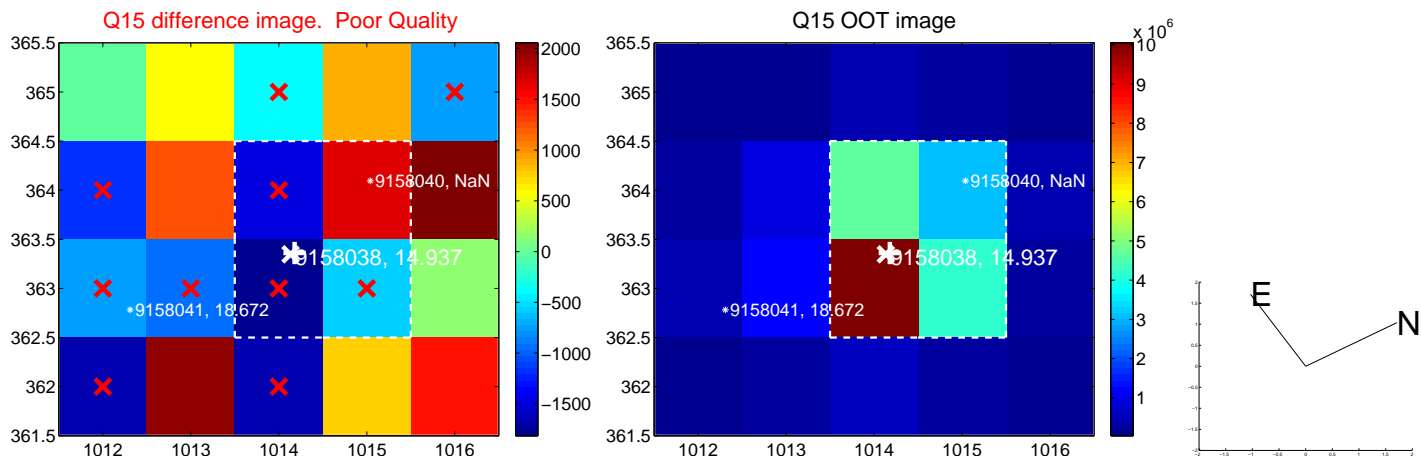
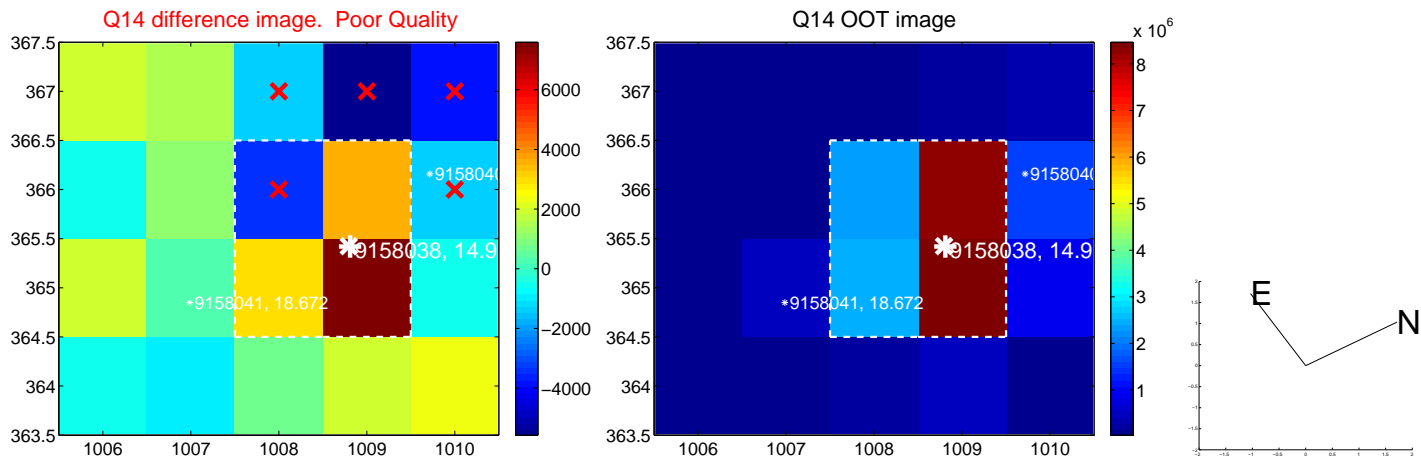
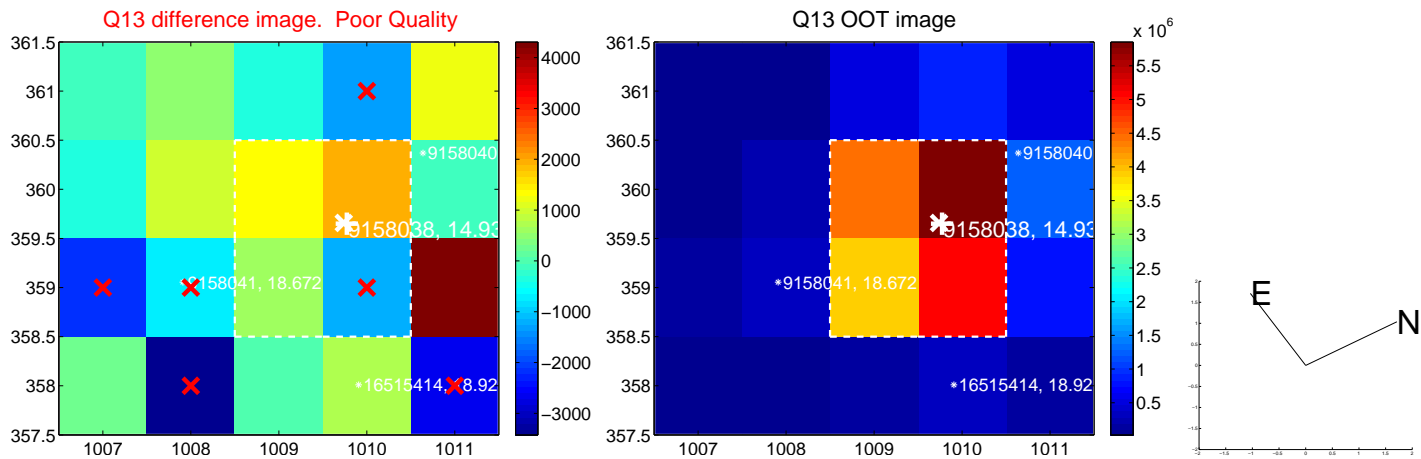
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



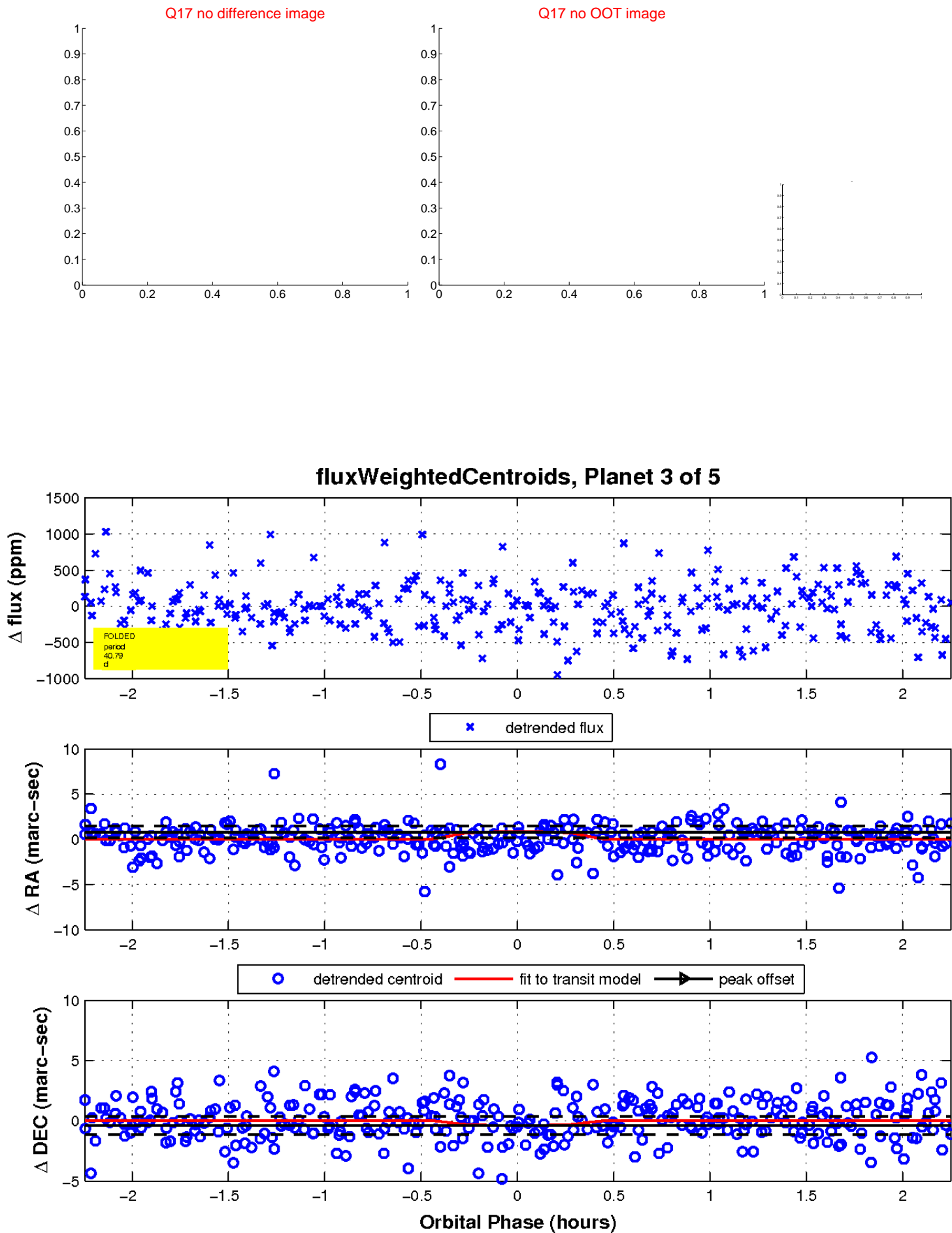
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



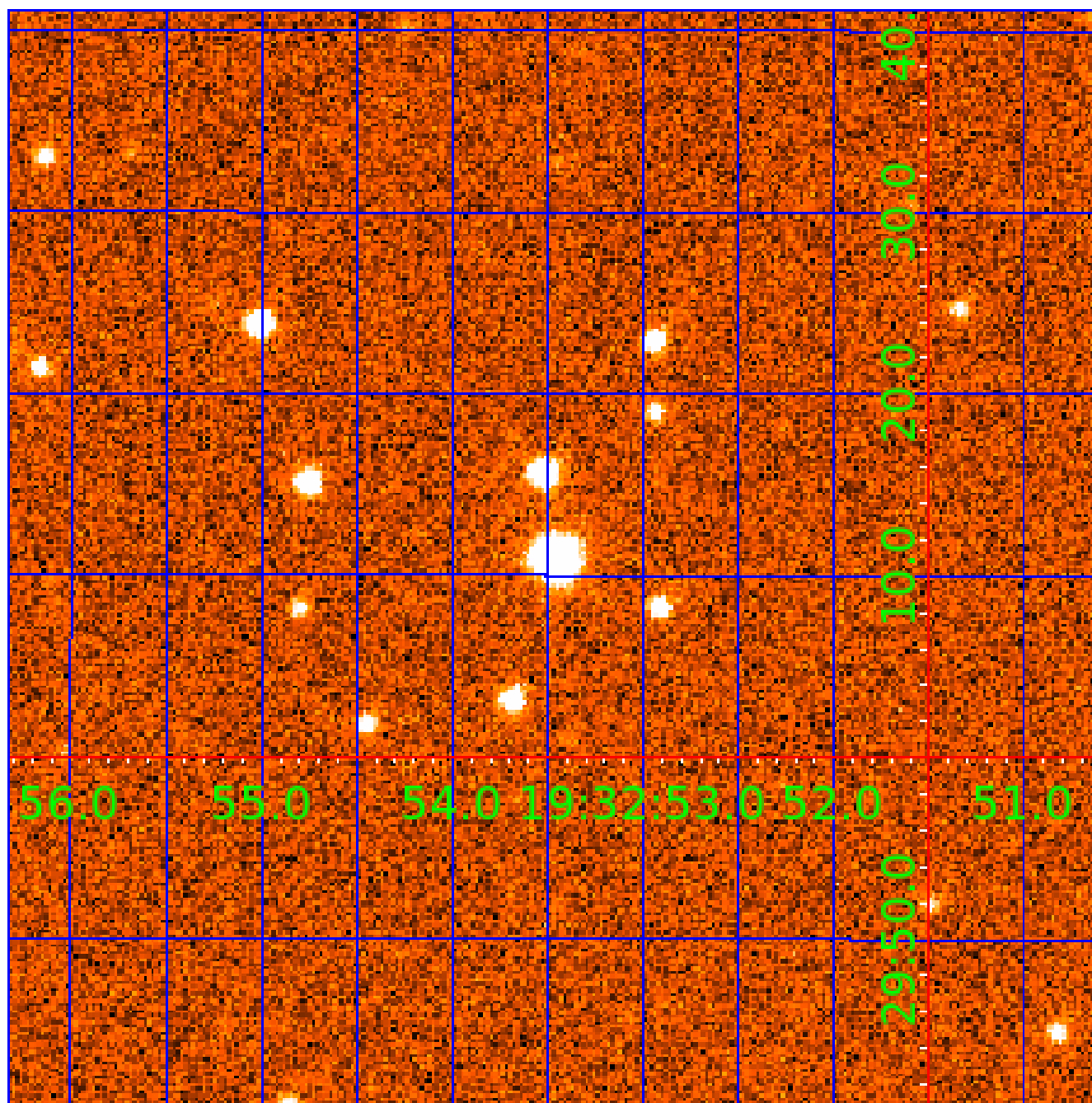
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009158038

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})
009158038-01	OBS	No	0.757073	131.595488	58.0	5.227	10.2	15.2	0.66	5126	0.57	1255.00
009158038-02	OBS	No	45.258253	154.105801	1214.6	3.172	13.1	9.5	0.66	5126	2.36	5.37
009158038-03	OBS	No	40.792044	159.519550	19.5	0.751	12.3	0.1	0.66	5126	0.30	6.17
009158038-05	OBS	No	45.260601	153.308988	1569.6	1.880	11.4	10.4	0.66	5126	2.93	5.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009158038-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
009158038-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009158038-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009158038-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

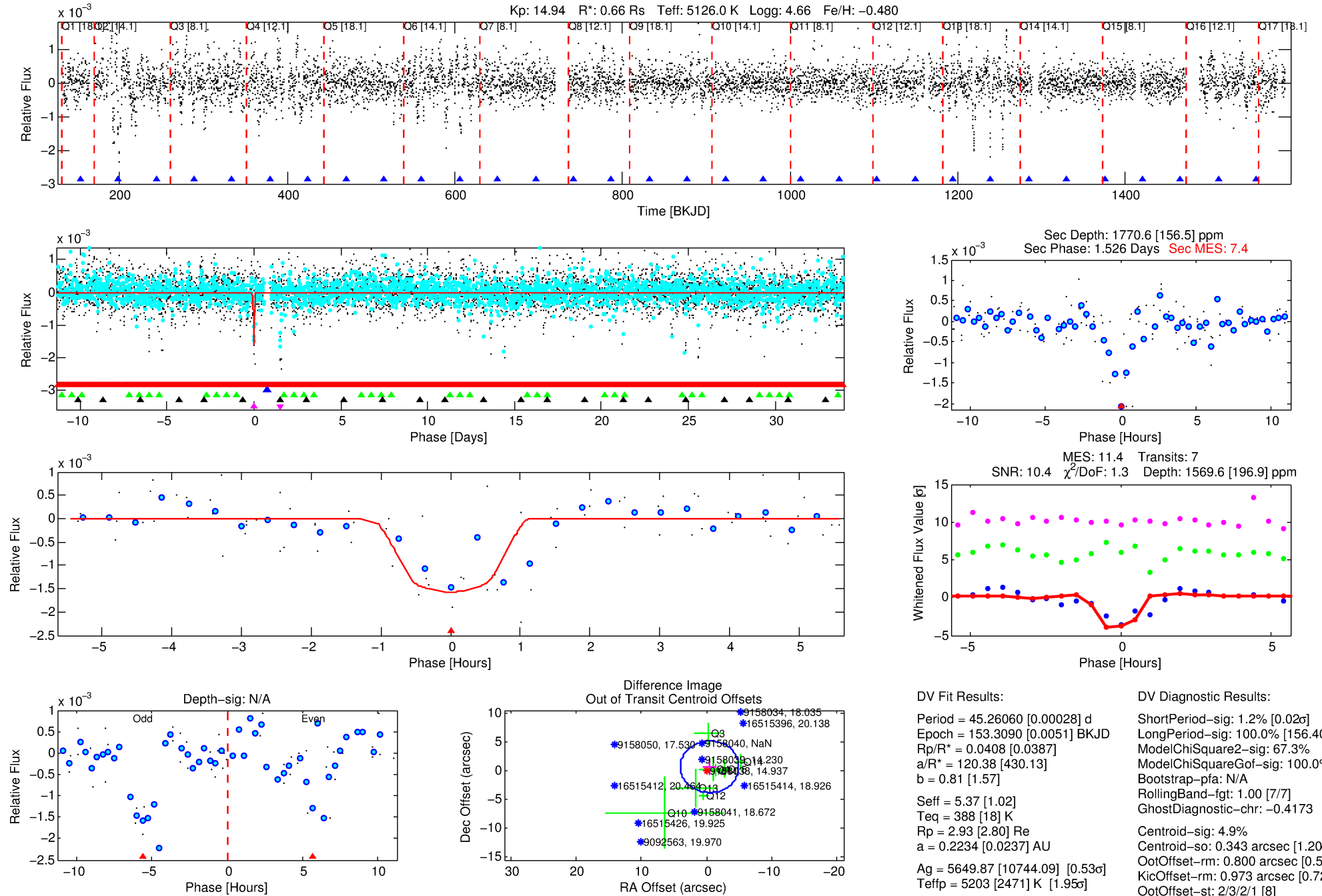
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009158038-05

No Significant Match Found

DV One-Page Summary

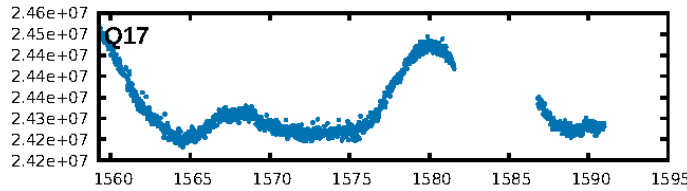
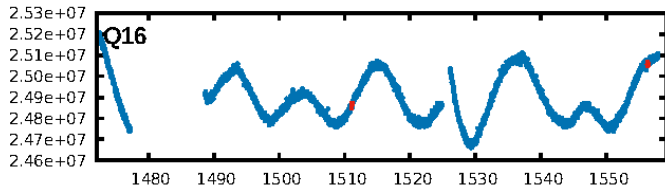
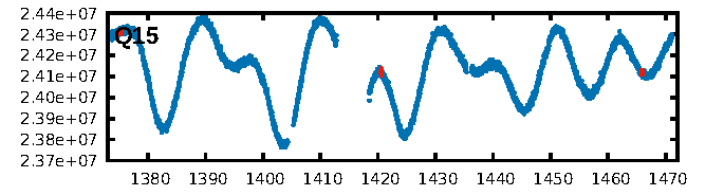
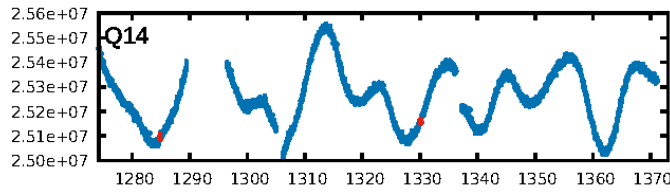
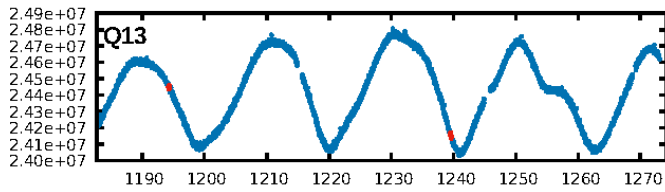
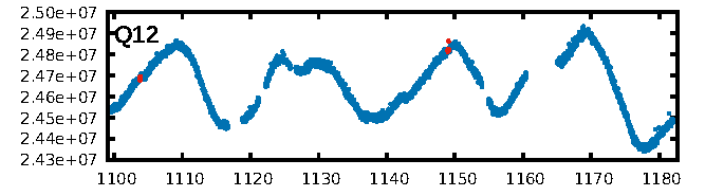
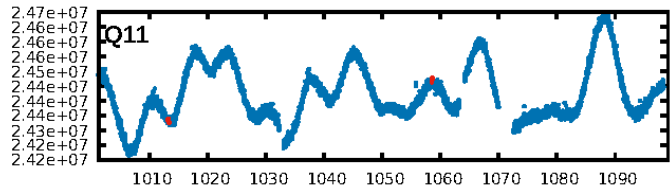
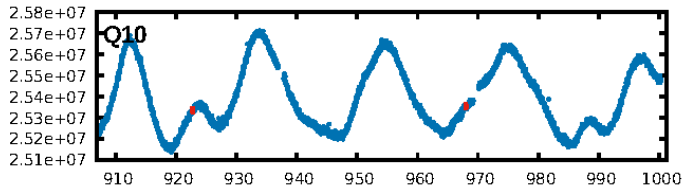
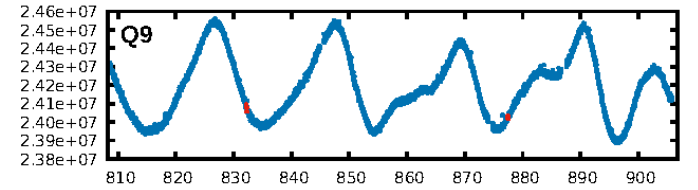
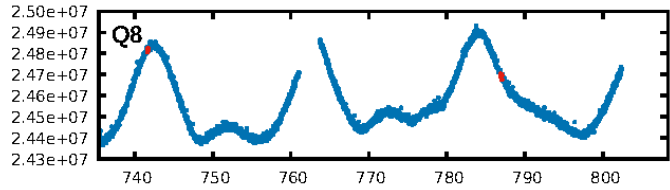
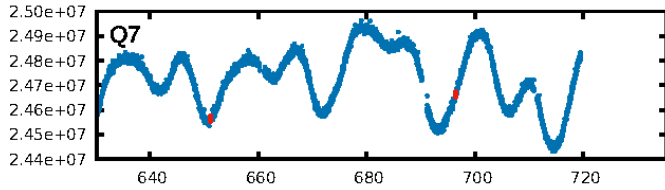
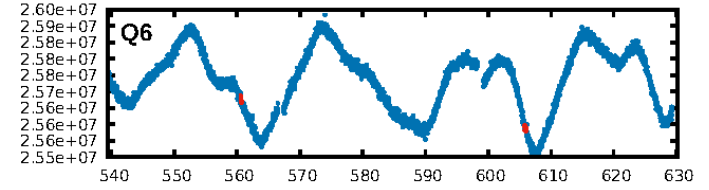
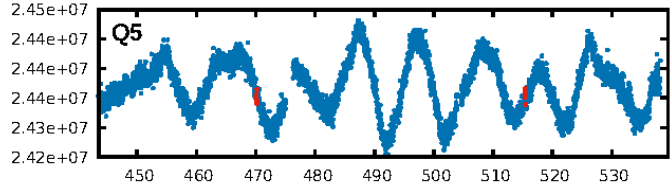
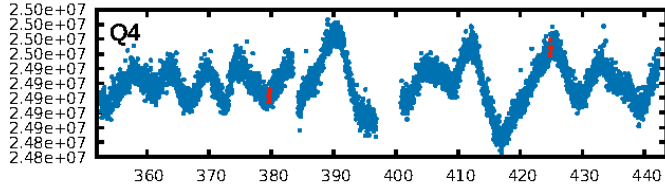
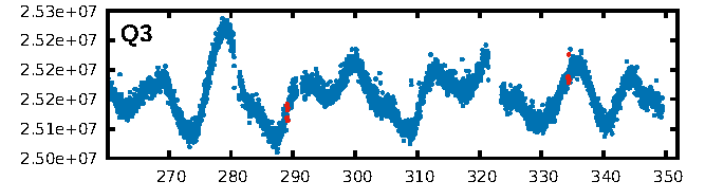
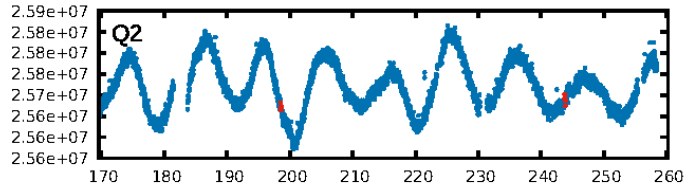
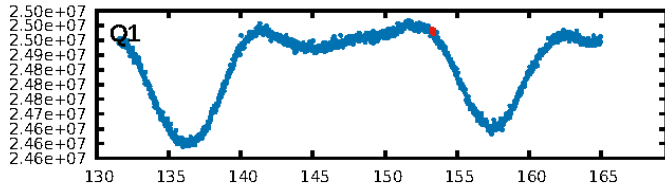
KIC: 9158038 Candidate: 5 of 5 Period: 45.261 d



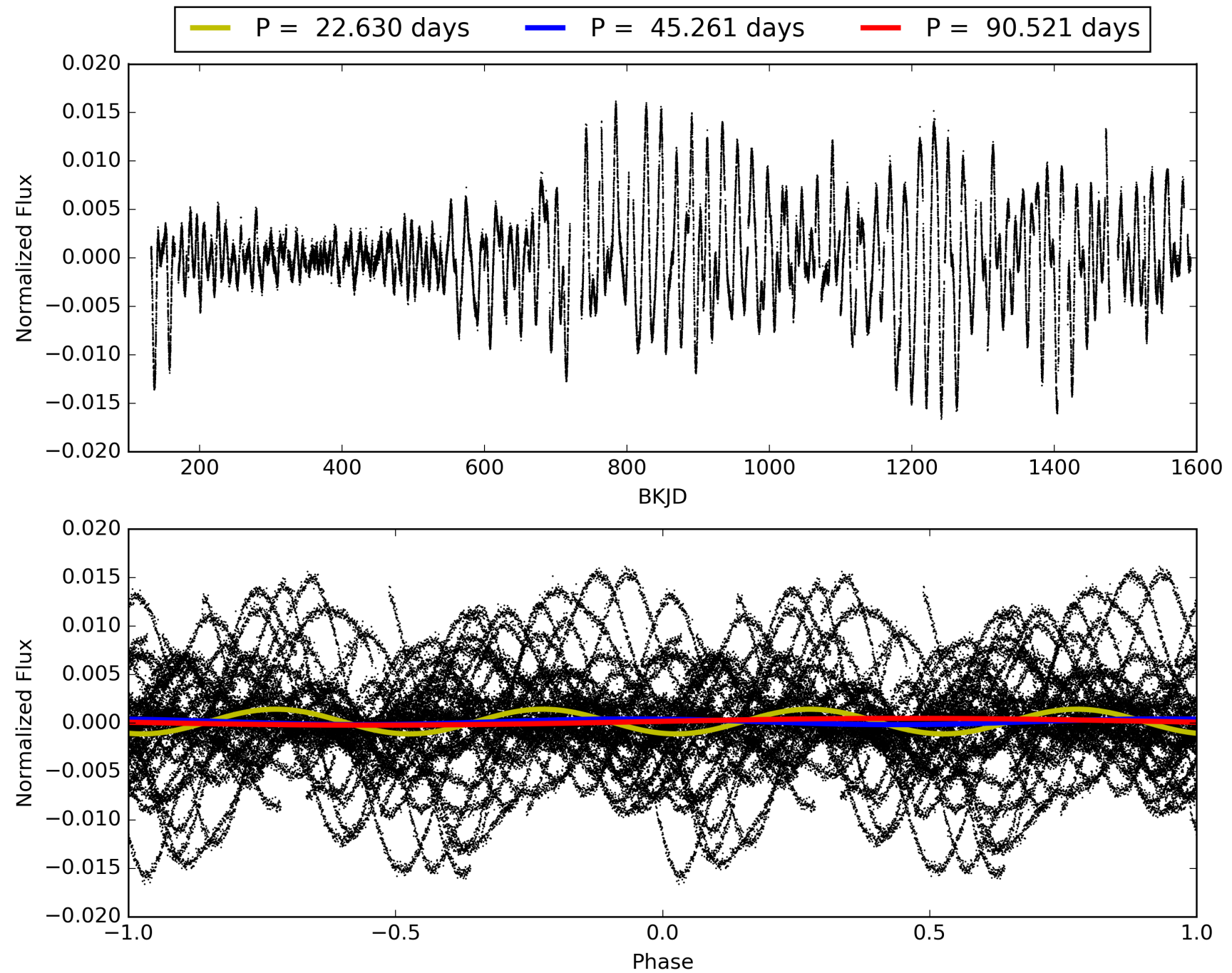
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:27:18 Z

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

TCE 009158038-05, PDC Light Curves

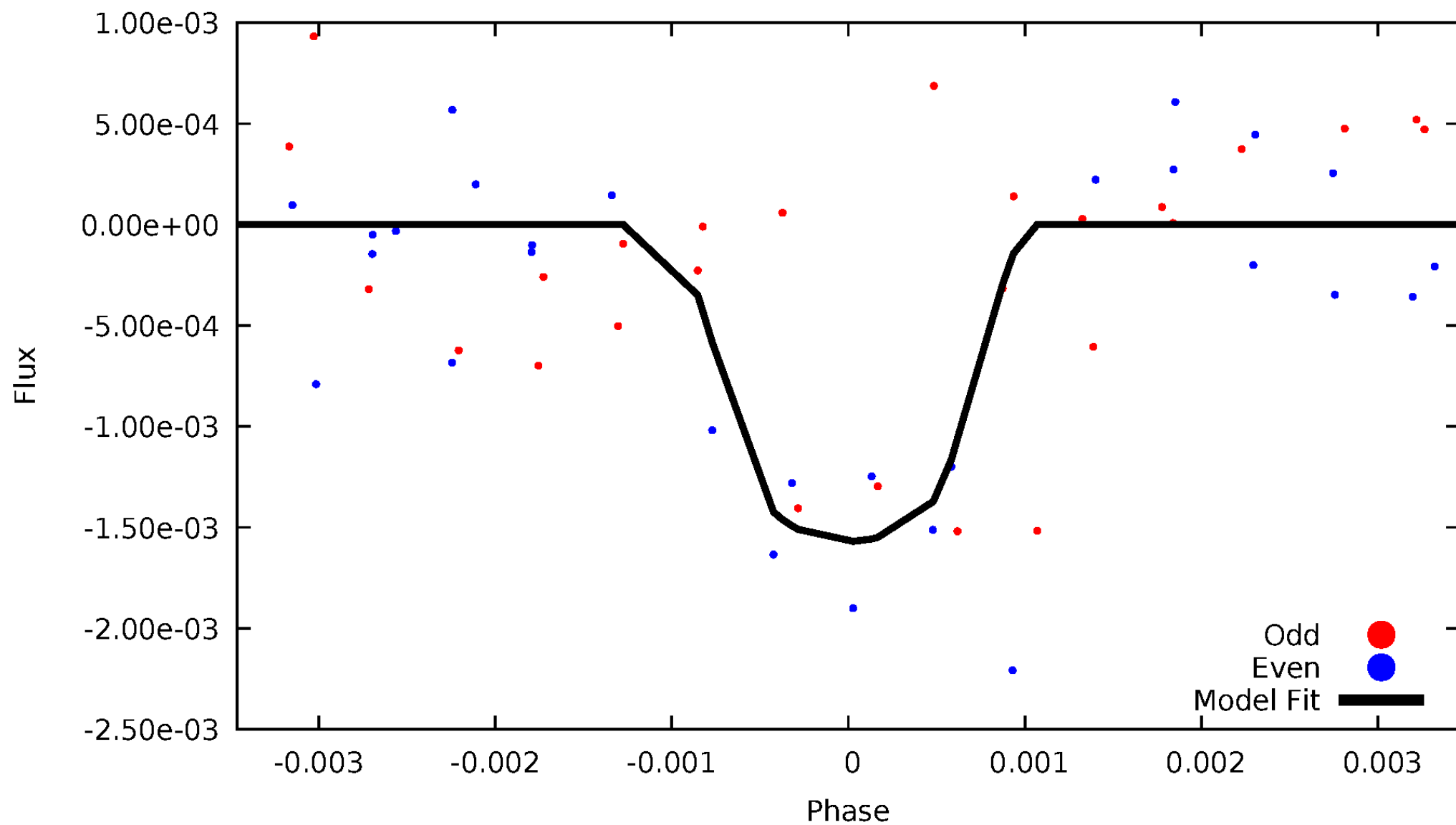


TCE 009158038-05



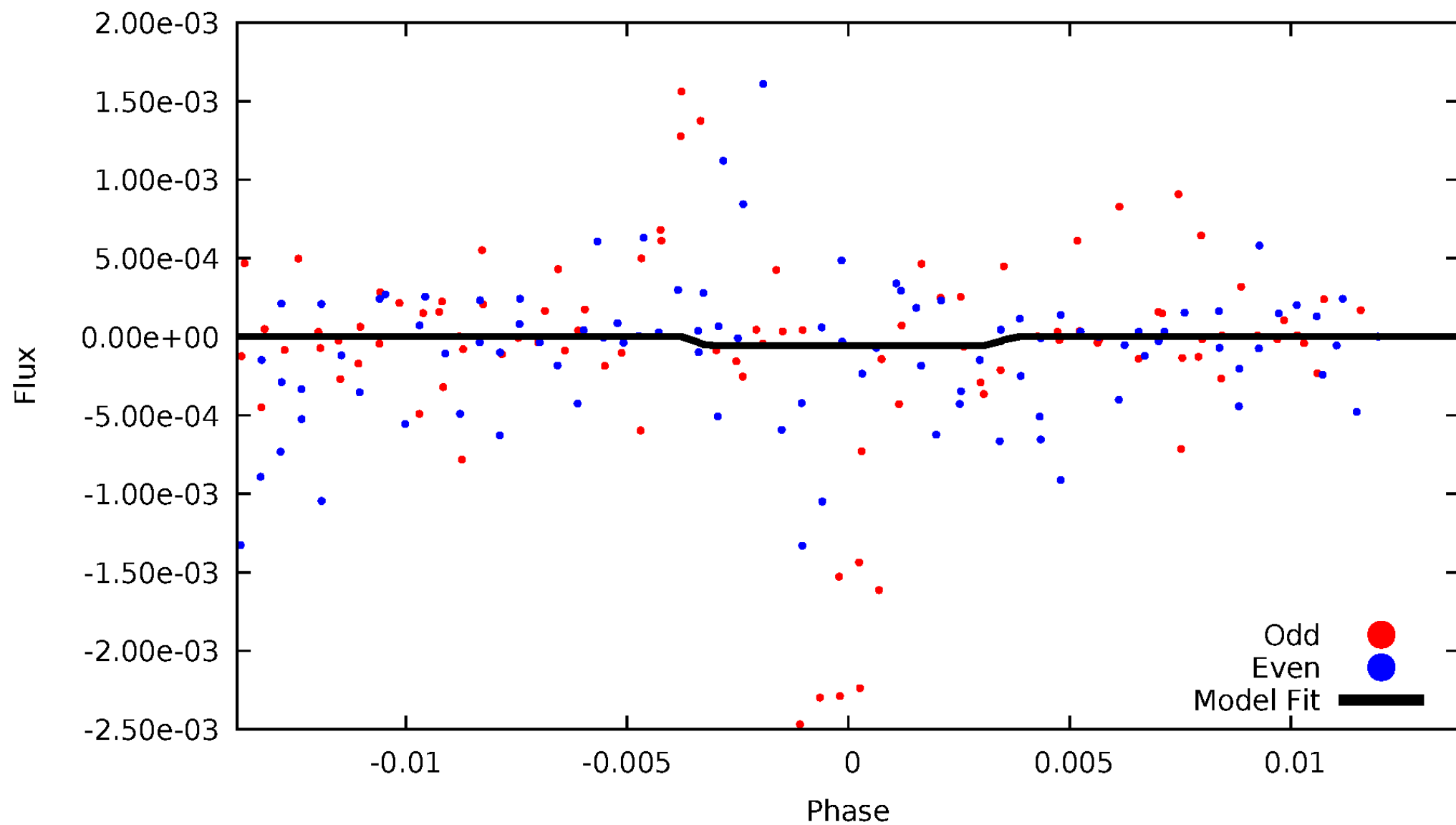
DV Odd/Even

TCE 009158038-05



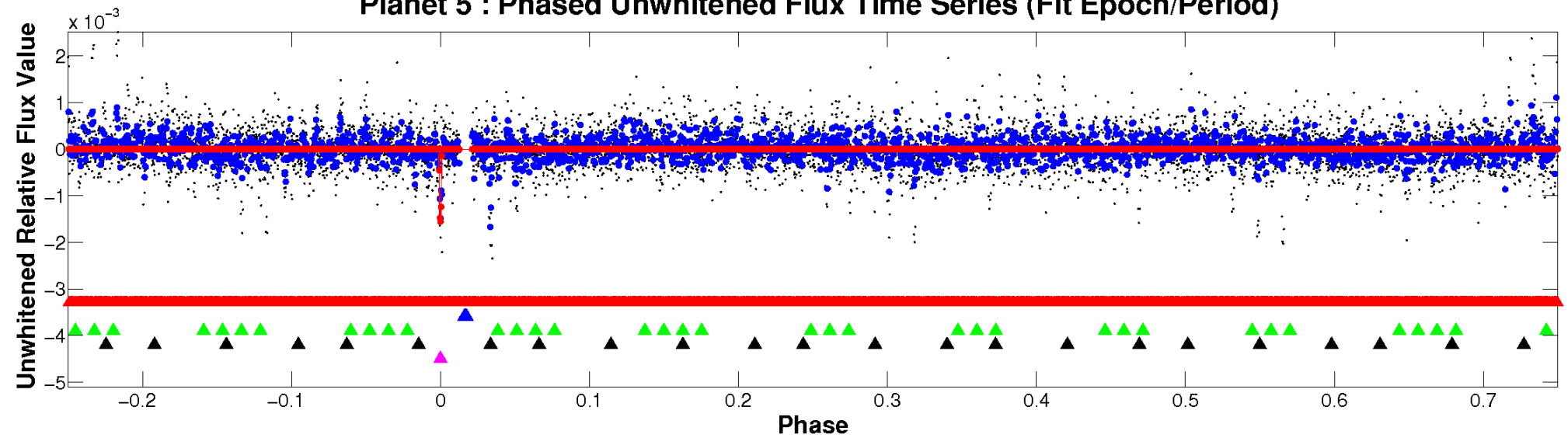
ALT Odd/Even

TCE 009158038-05

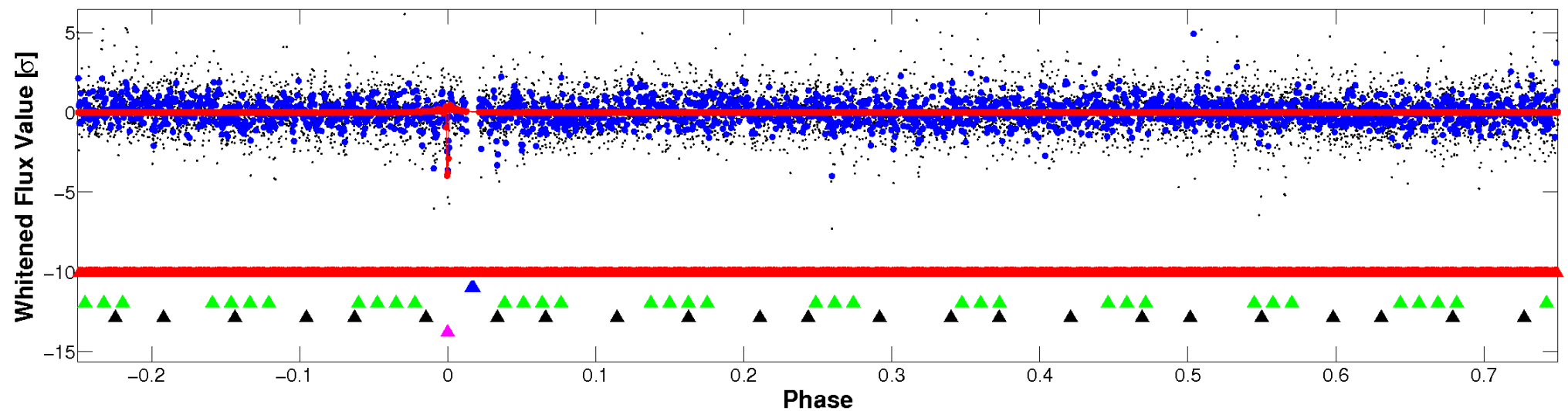


Non-Whitened Vs. Whitened Light Curve

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

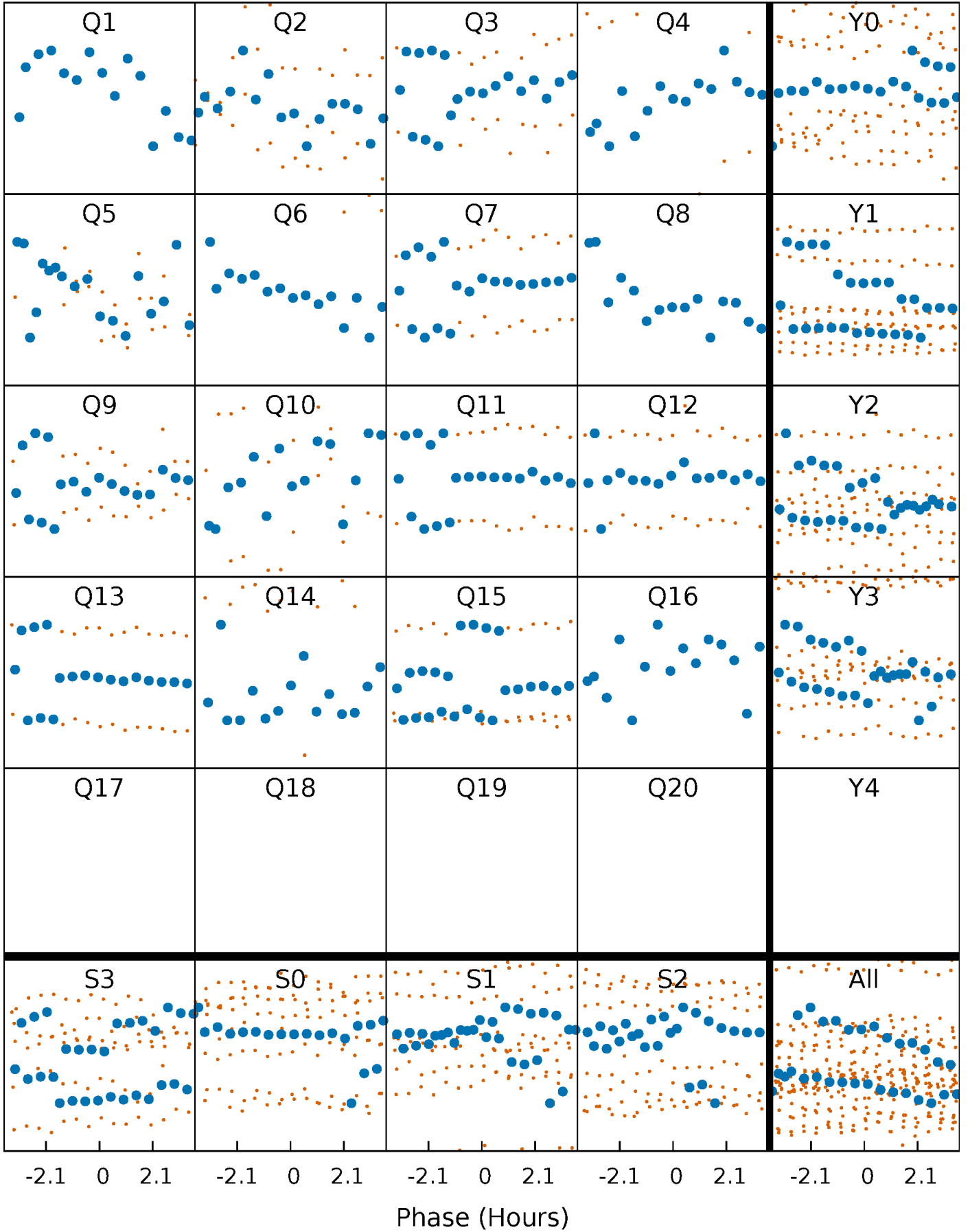


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



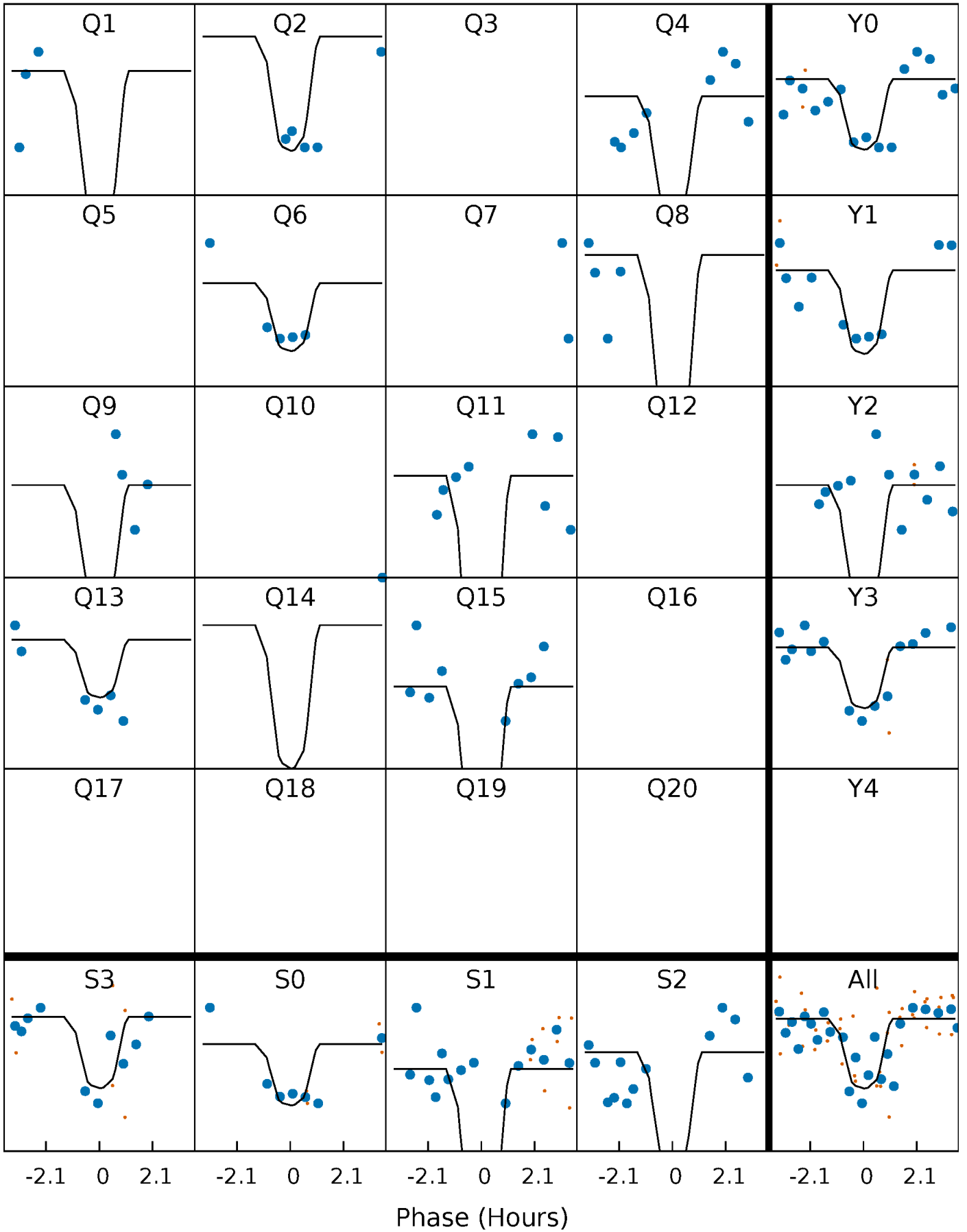
PDC Quarter-Phased Transit Curves

TCE 009158038-05 $P = 45.260601$ Days $T_0 = 153.308988$ (BKJD)



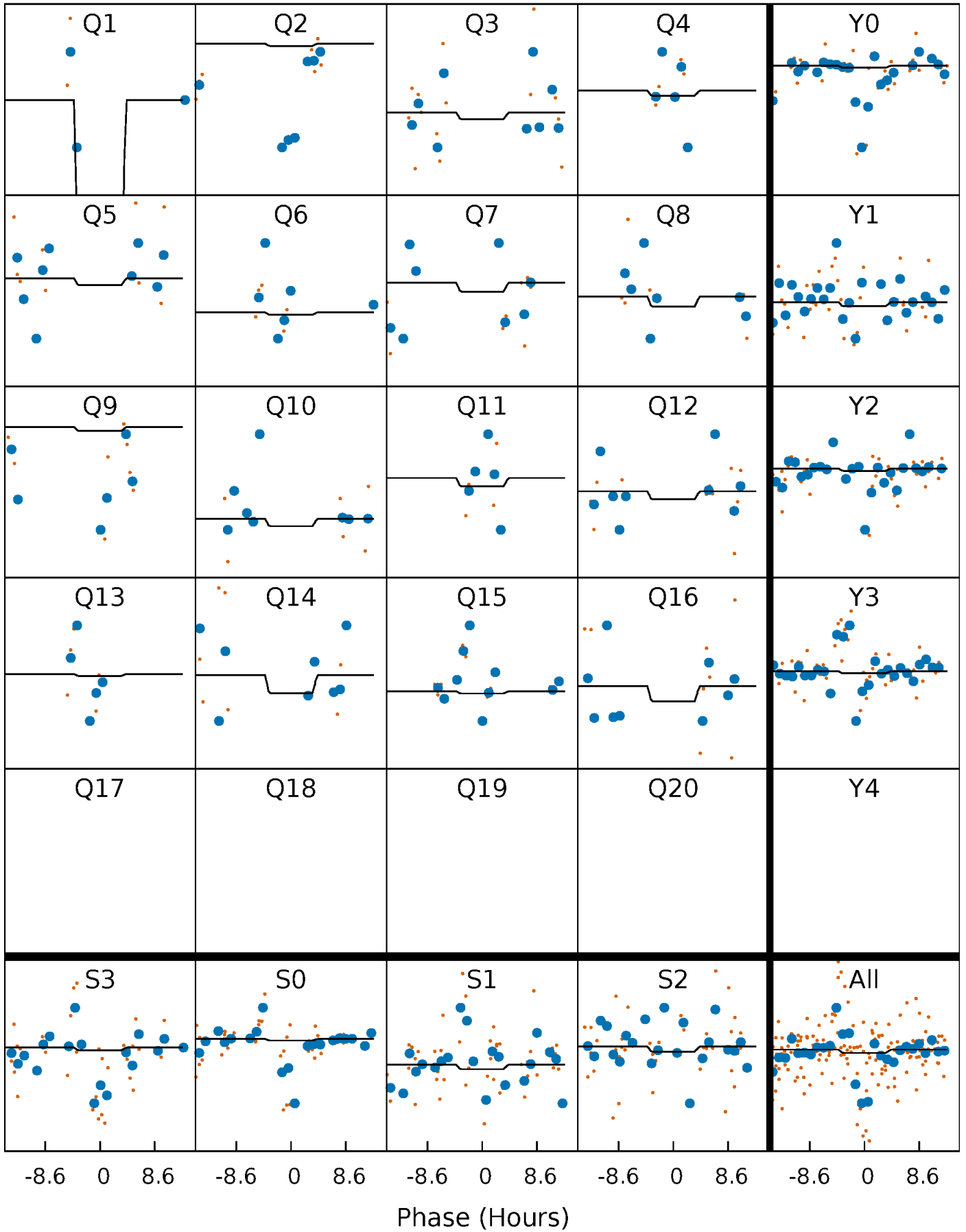
DV Quarter-Phased Transit Curves

TCE 009158038-05 P= 45.260601 Days $T_0=153.308988$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

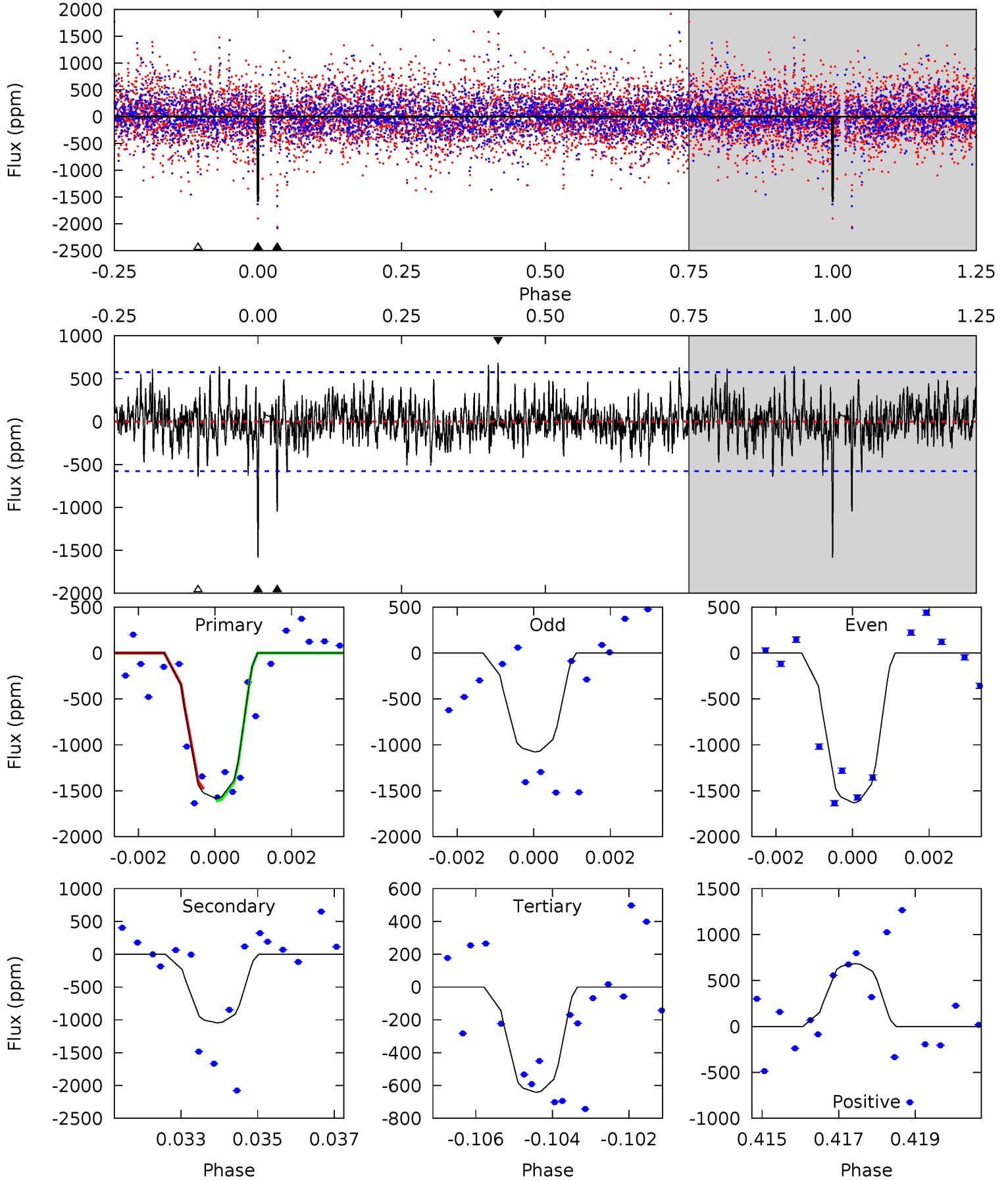
TCE 009158038-05 $P = 45.260222$ Days $T_0 = 153.346038$ (BKJD)



DV Model-Shift Uniqueness Test

009158038-05, P = 45.260601 Days, E = 108.048387 Days

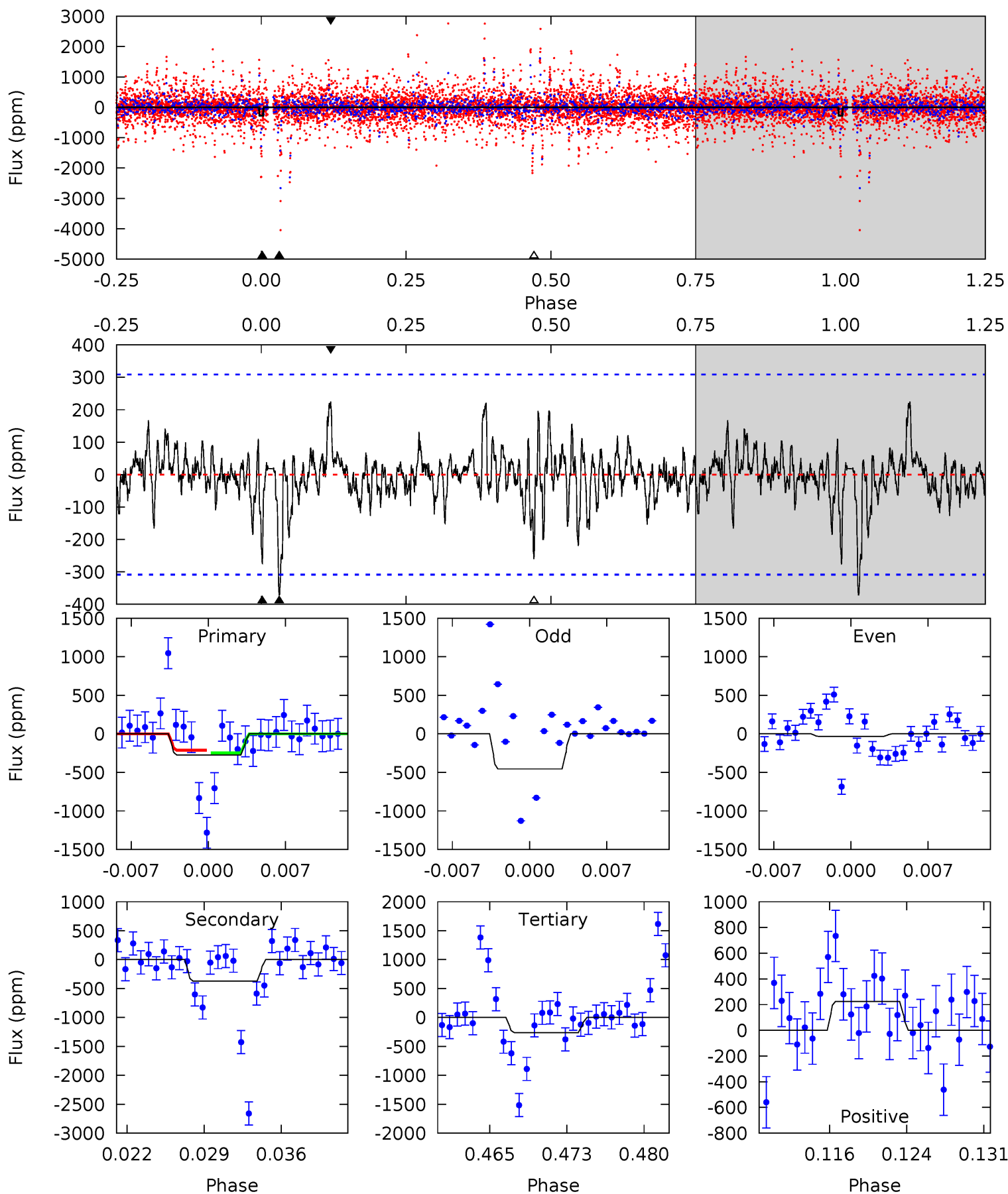
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.7	9.67	5.93	6.33	5.33	3.10	1.65	8.72	8.33	3.74	3.35	2.55	0.56	0.30	0.60



Alt Model-Shift Uniqueness Test

009158038-05, P = 45.260222 Days, E = 108.085816 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.54	6.14	4.30	3.71	5.09	2.68	1.05	0.24	0.83	1.84	2.43	3.10	3.32	0.38	0.30



Stellar Parameters For KIC 009158038

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5126^{+138}_{-154}	$4.662^{+0.028}_{-0.077}$	$-0.480^{+0.300}_{-0.300}$	$0.658^{+0.087}_{-0.047}$	$0.728^{+0.069}_{-0.069}$	$3.595^{+0.506}_{-0.952}$
	+3%/-3%	+1%/-2%	+62%/-62%	+13%/-7%	+9%/-9%	+14%/-26%
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 009158038-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1046 ± 108	$3.38^{+2.93}_{-2.10}$	548^{+20}_{-20}	4397^{+2459}_{-845}	2481^{+14915}_{-1769}
Alt.	-373 ± 61	$2.16^{+2.34}_{-1.45}$	548^{+20}_{-20}	4340^{+3021}_{-959}	2223^{+19382}_{-1714}

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

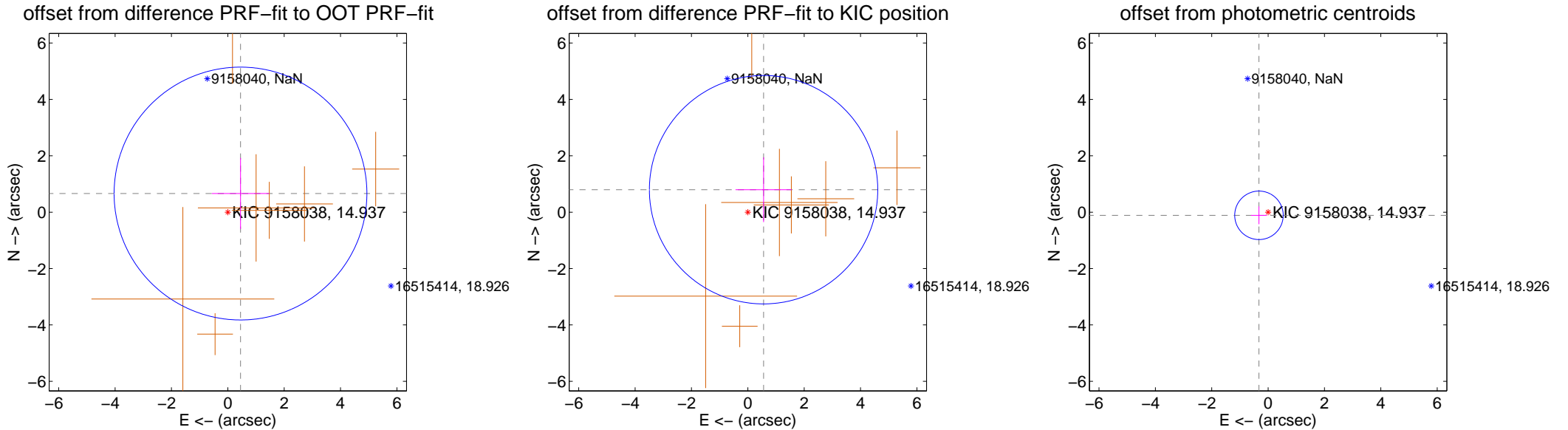
DV Centroid Data

Supplemental centroid analysis for 009158038-05. Kepler magnitude: 14.94. Transit SNR 10.44

There are 0 quarters with good PRF difference image offsets

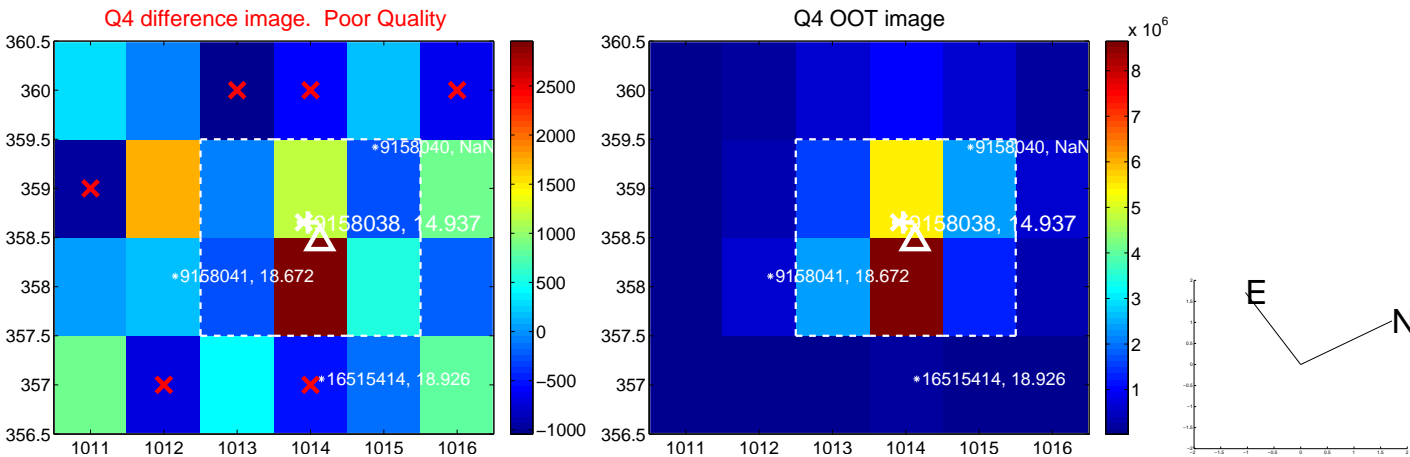
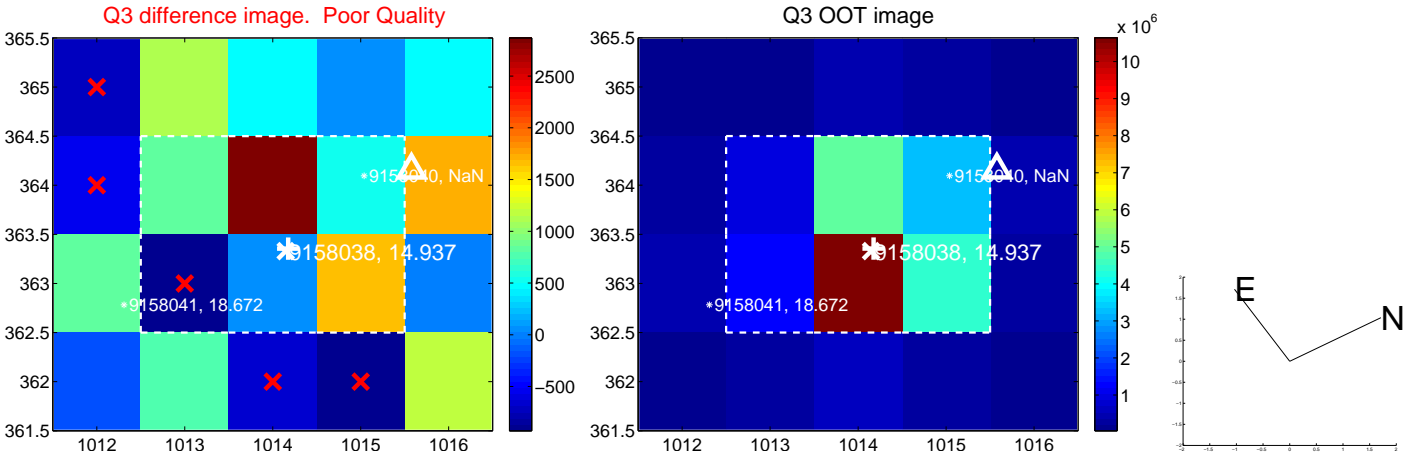
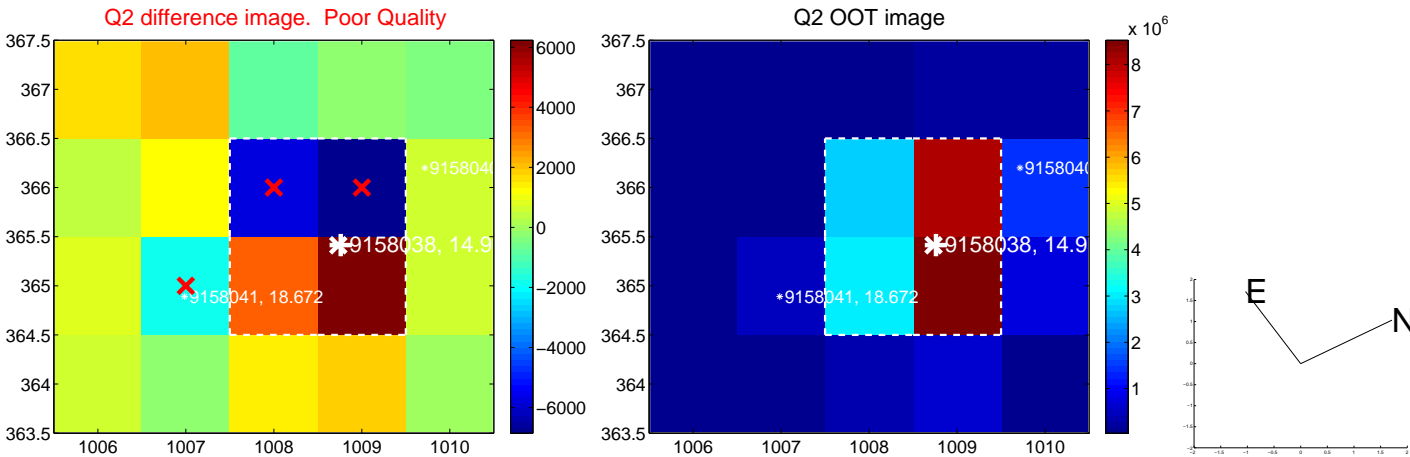
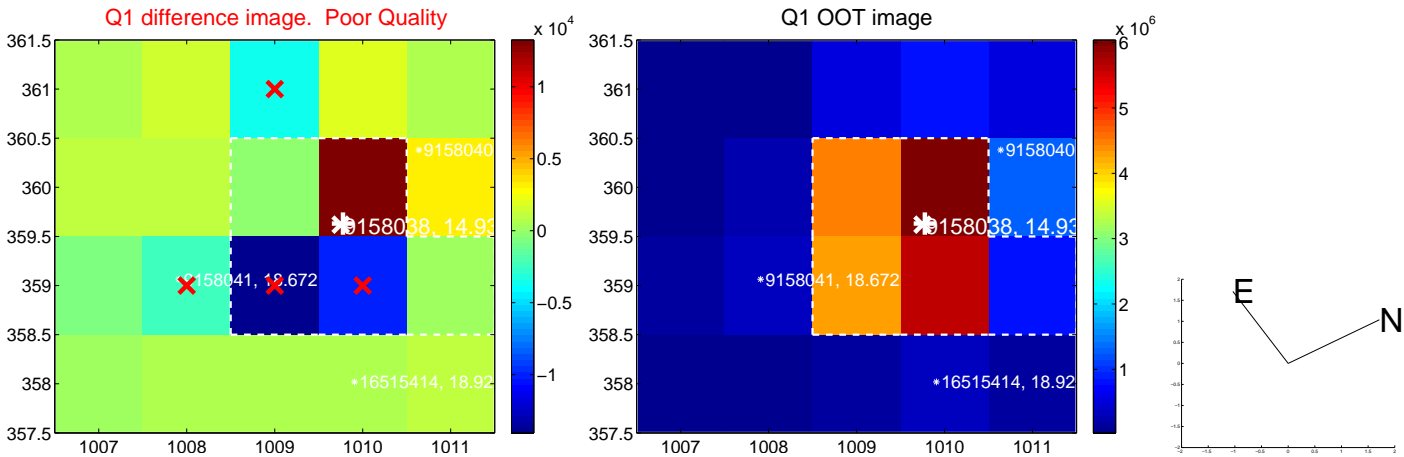
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.800 ± 1.495	0.53	-0.450 ± 1.017	0.661 ± 1.261
PRF-fit source offset from KIC position	0.973 ± 1.350	0.72	-0.559 ± 0.995	0.797 ± 1.148
photometric centroid source offset	0.34 ± 0.29	1.20	0.32 ± 0.28	-0.11 ± 0.32

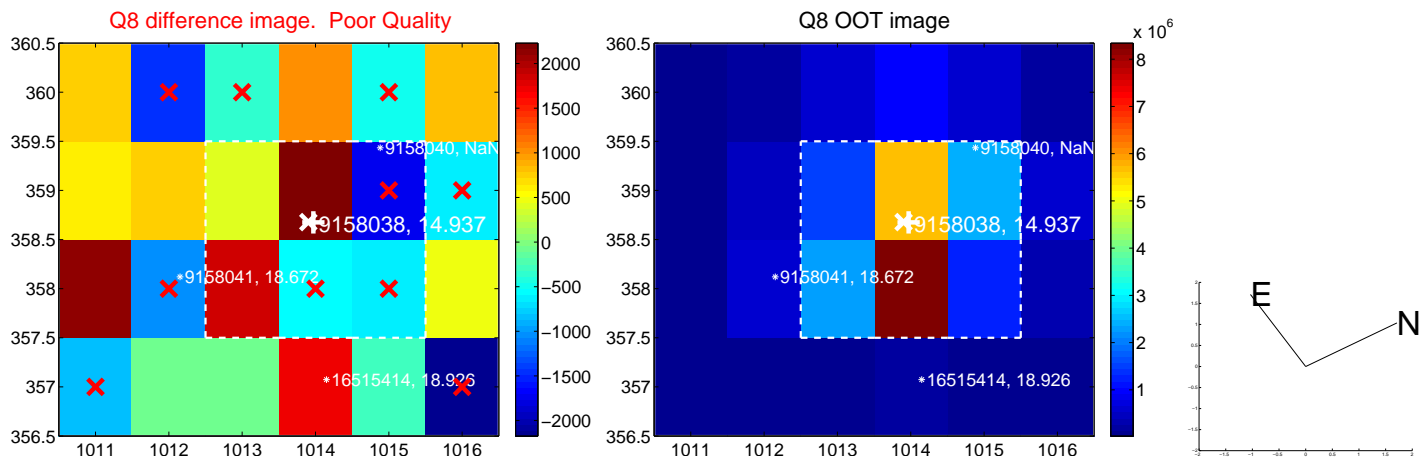
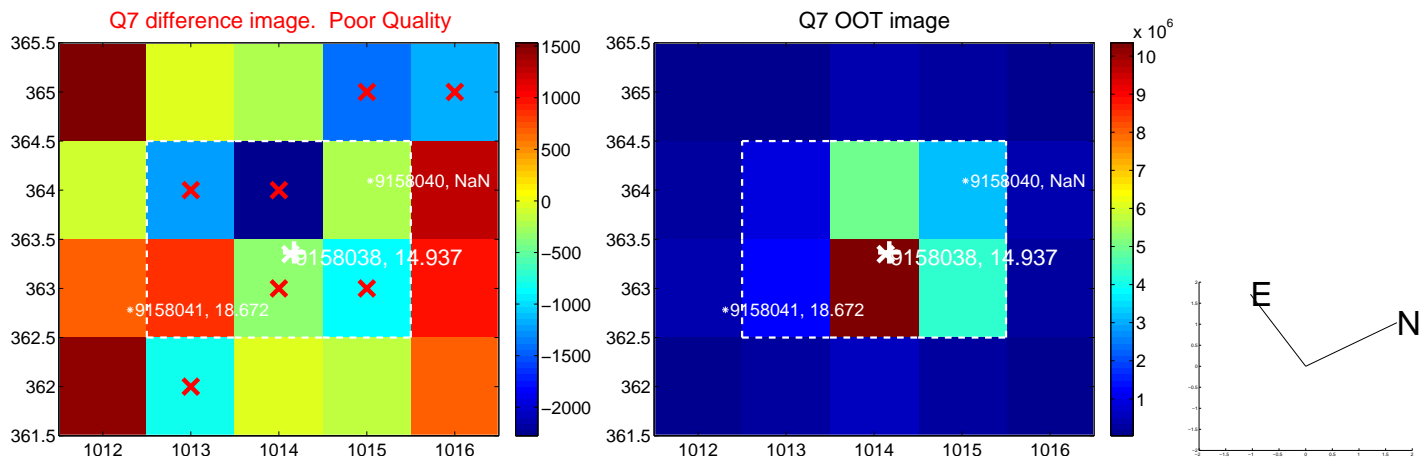
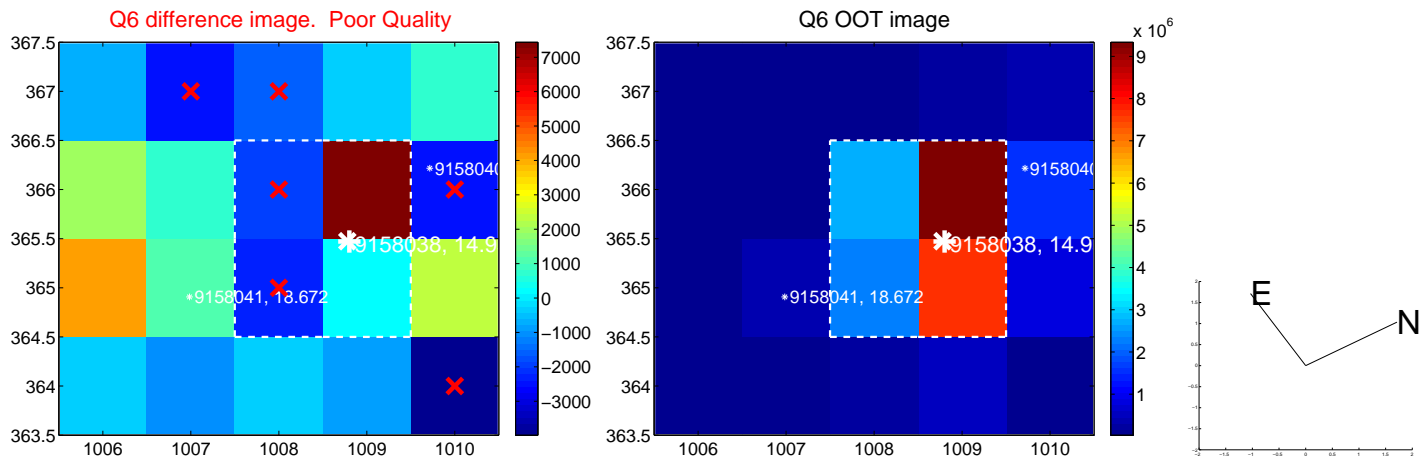
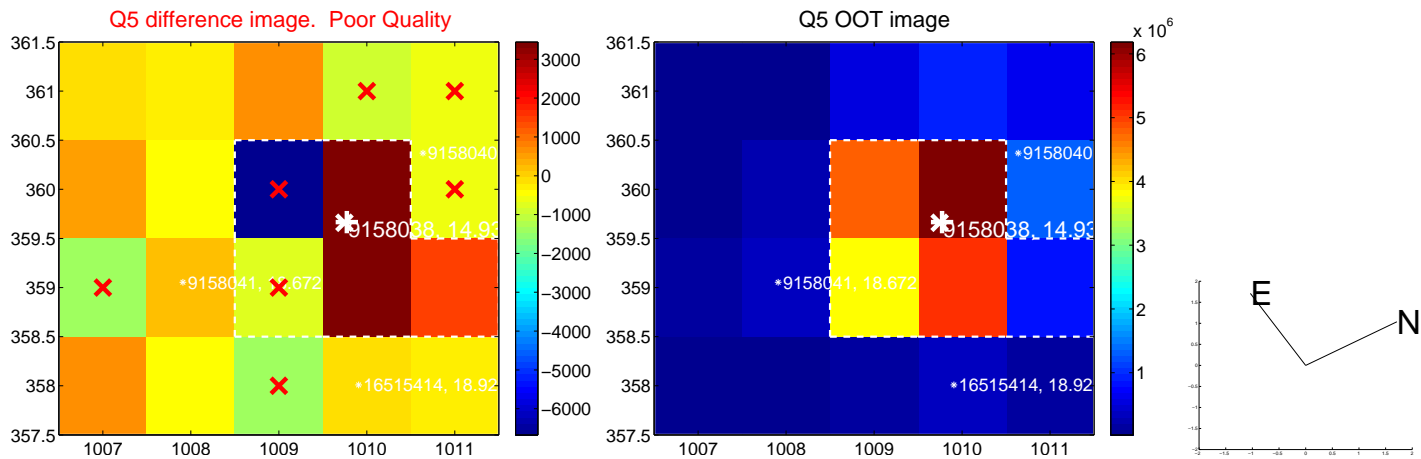


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

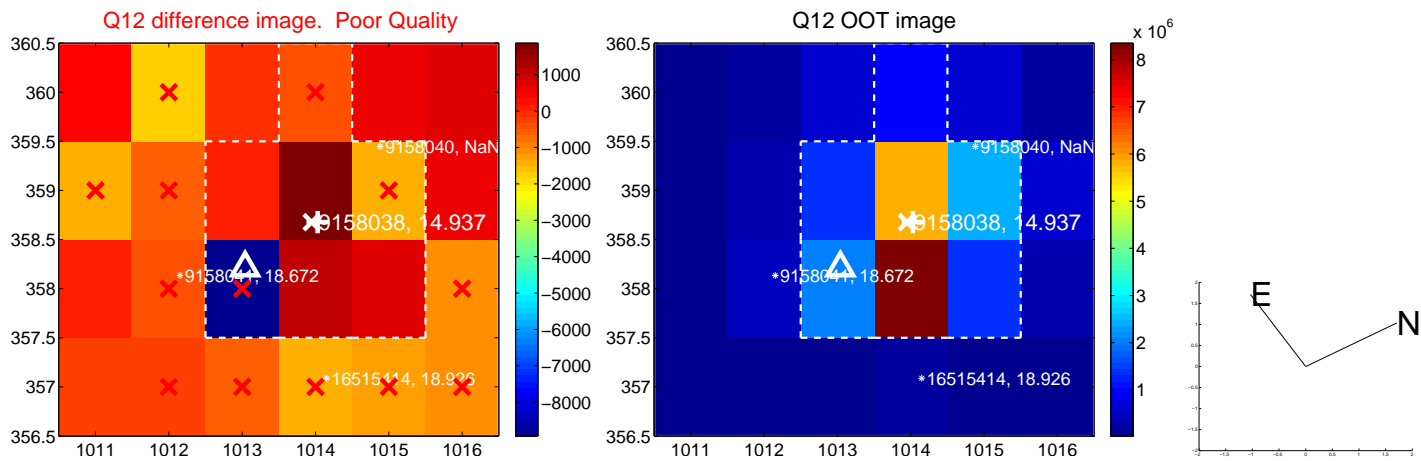
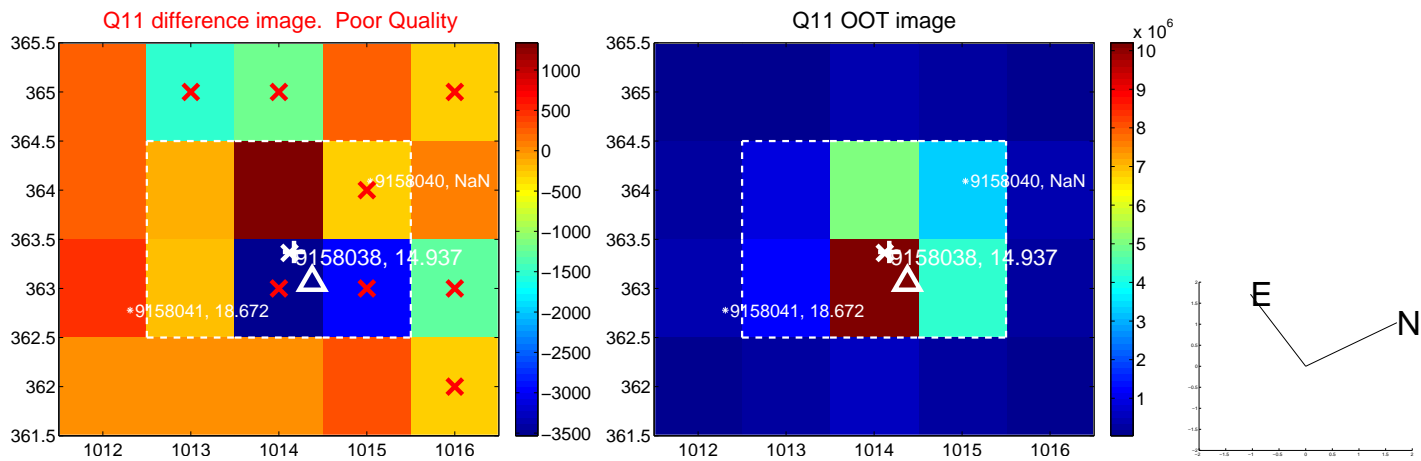
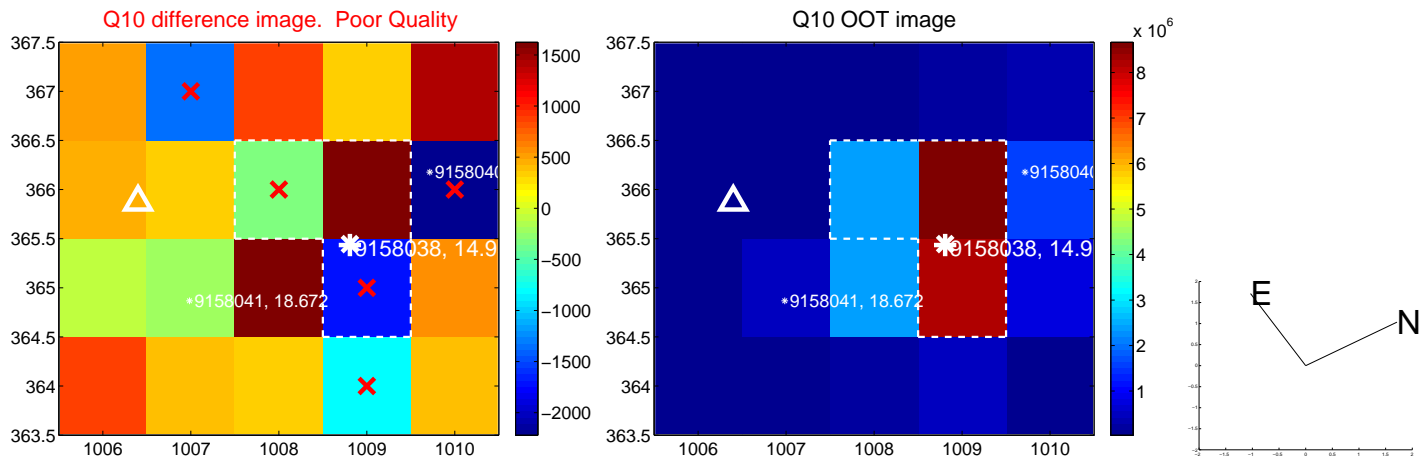
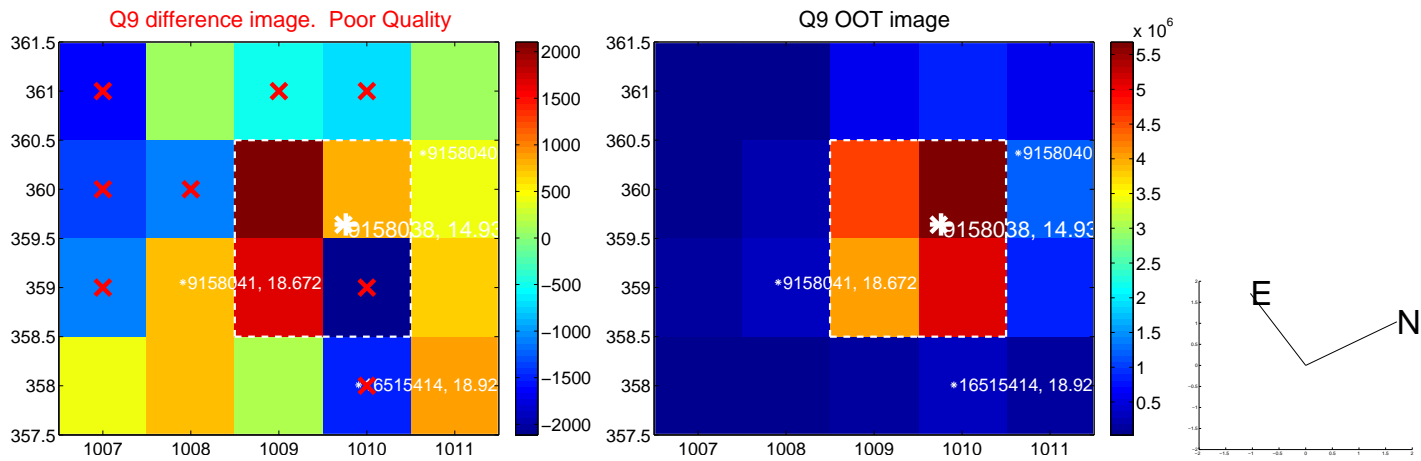
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



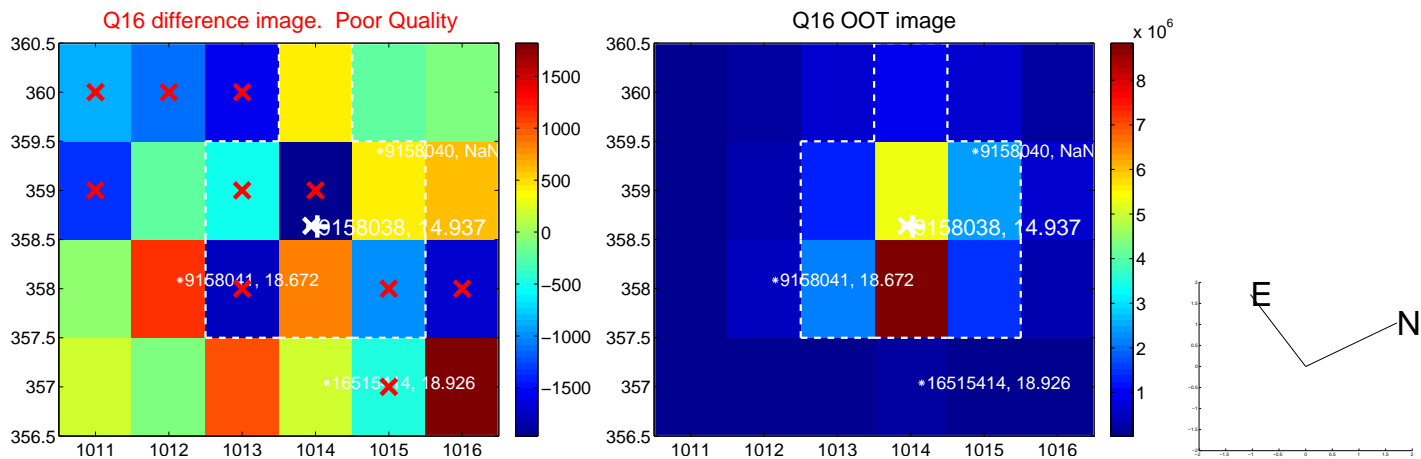
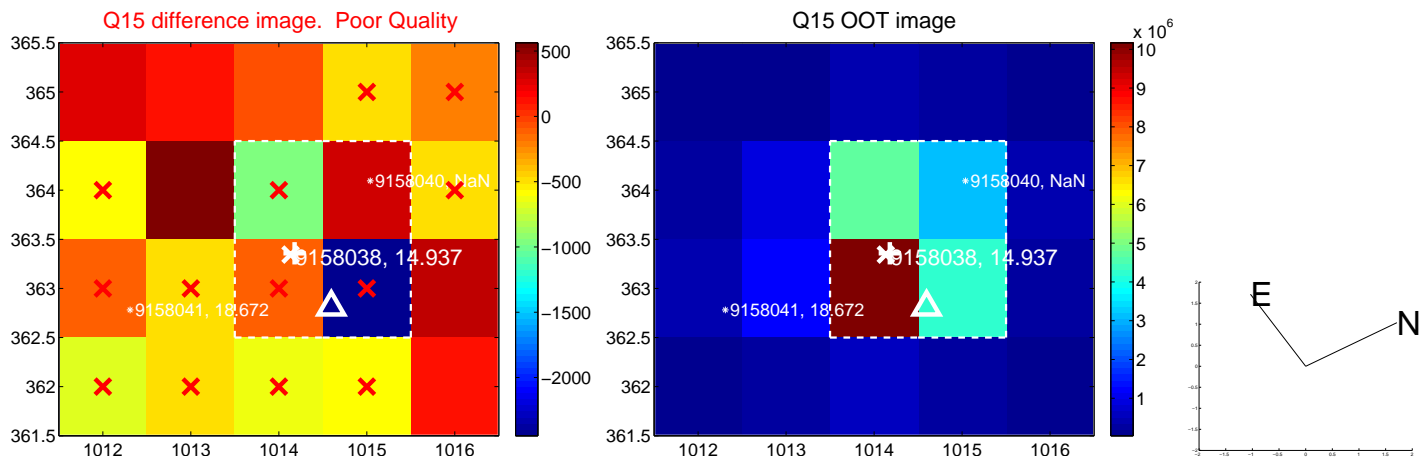
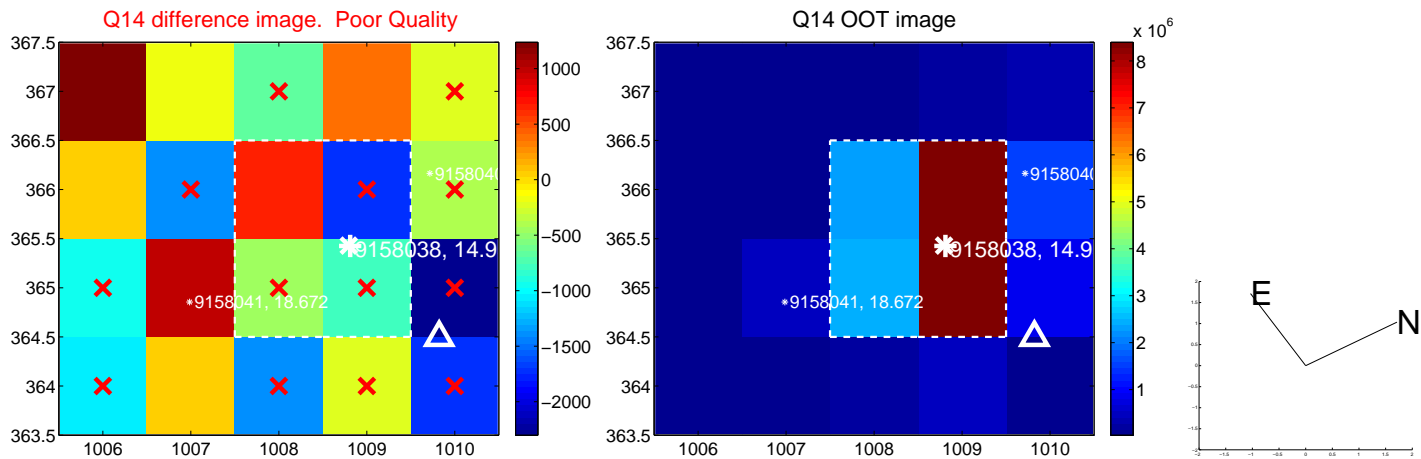
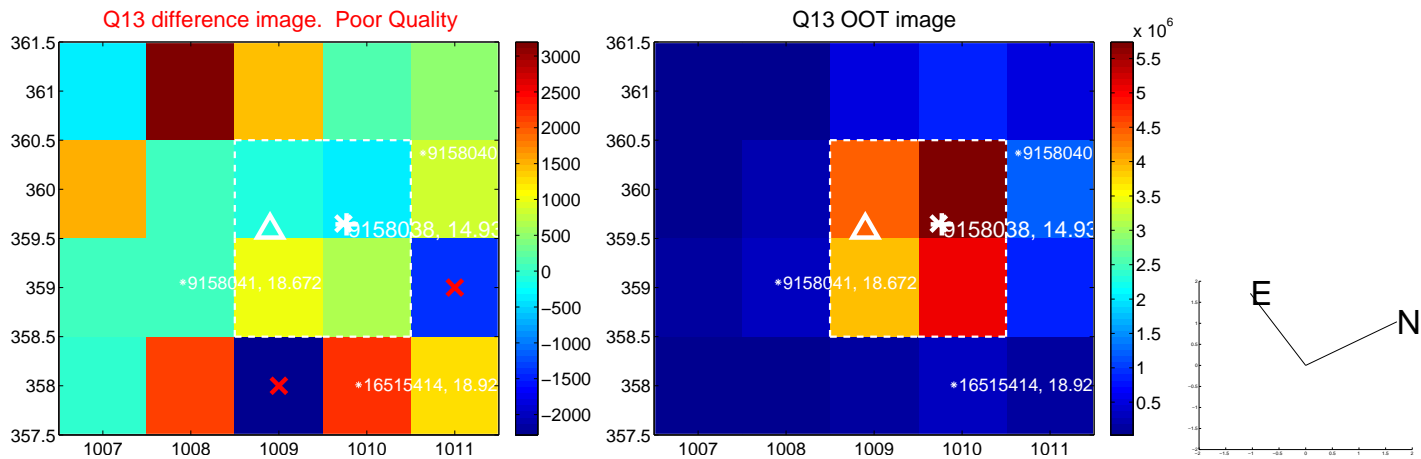
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



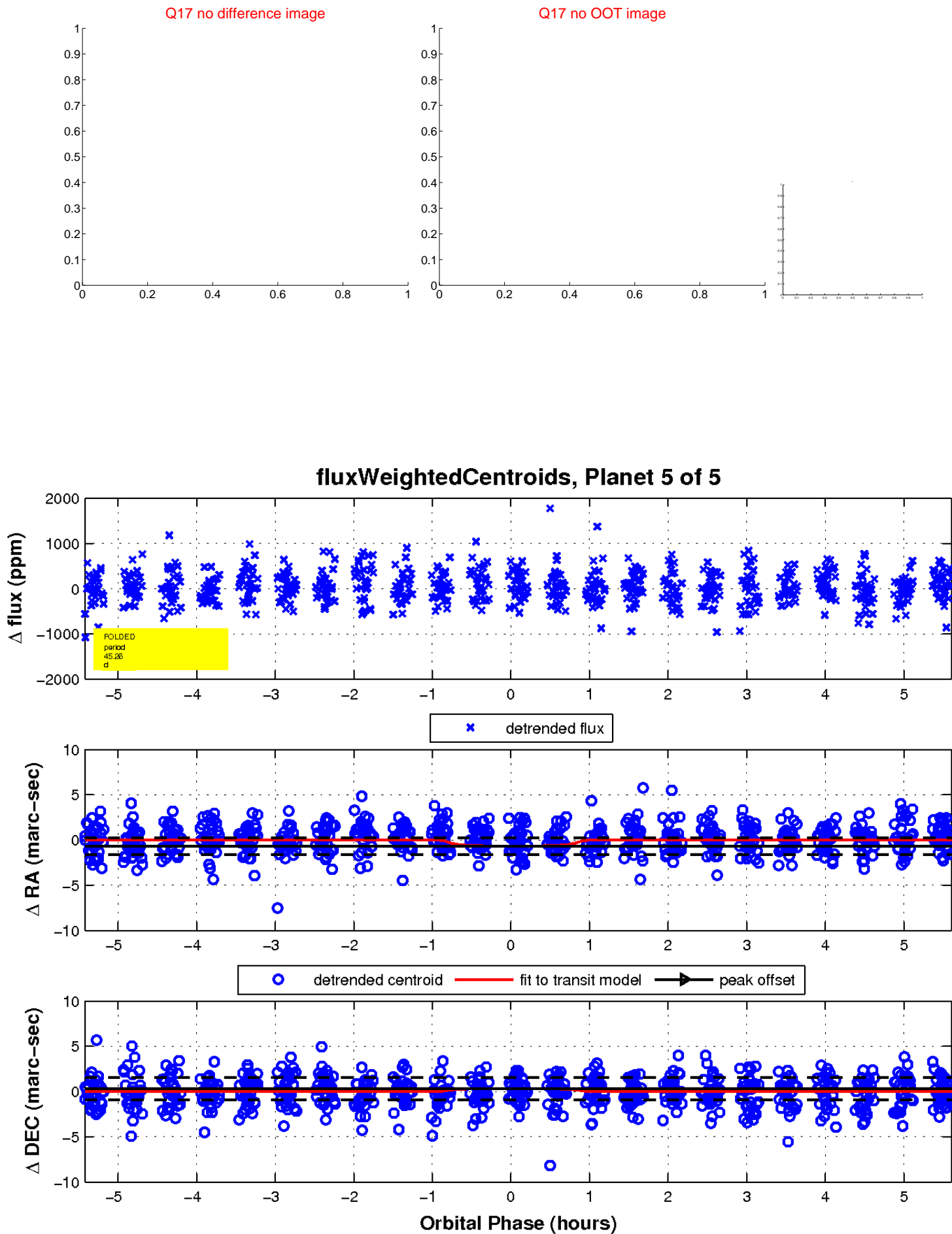
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

