

KIC 004380558

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})
004380558-01	OBS	No	0.705752	132.026192	56.5	4.106	10.6	10.1	1.03	6393	0.78	6300.88
004380558-02	OBS	No	408.561167	234.095850	876.0	4.892	10.2	8.9	1.03	6393	3.32	1.31
004380558-03	OBS	No	27.258147	155.685746	567.0	1.121	9.2	7.8	1.03	6393	2.71	48.26
004380558-04	OBS	No	86.241000	206.972418	675.6	3.128	8.9	7.7	1.03	6393	3.01	10.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004380558-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
004380558-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004380558-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
004380558-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

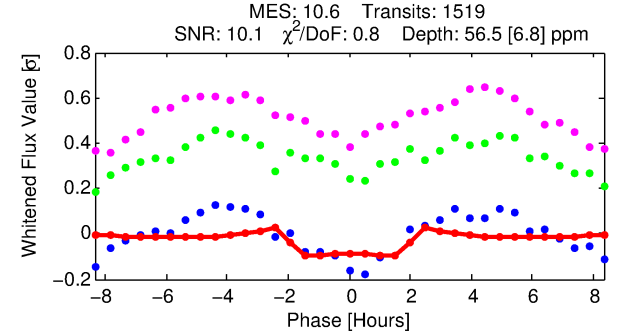
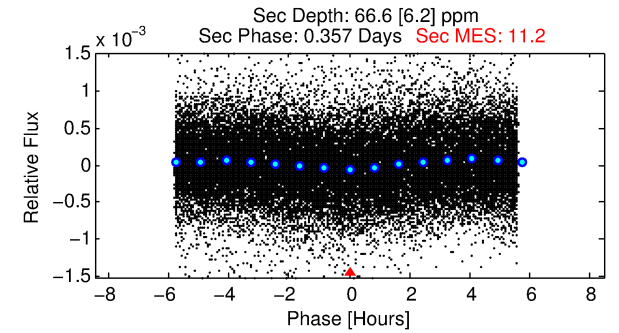
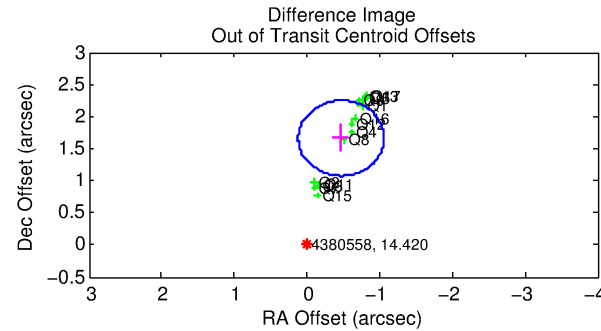
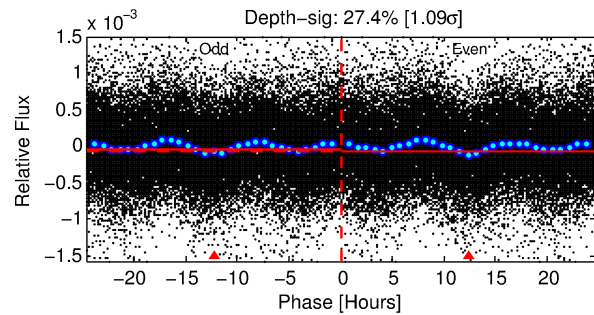
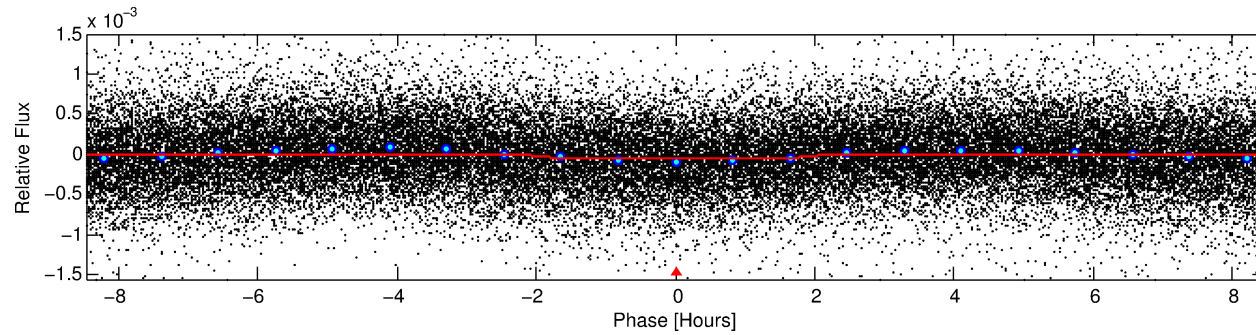
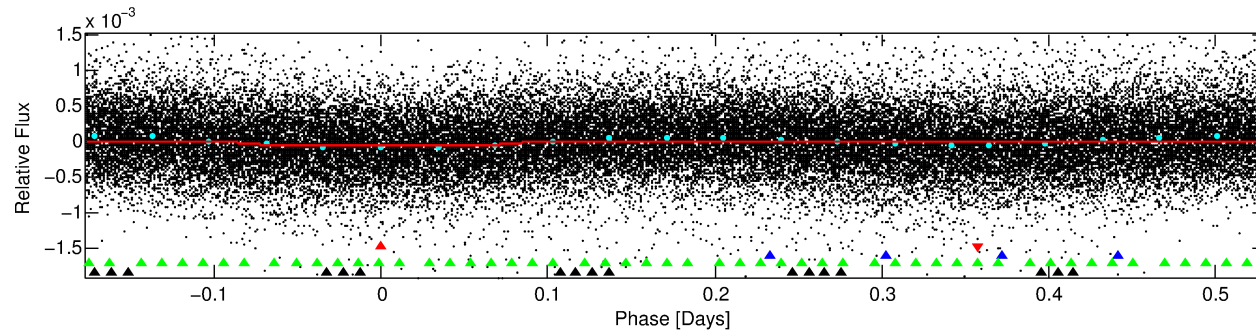
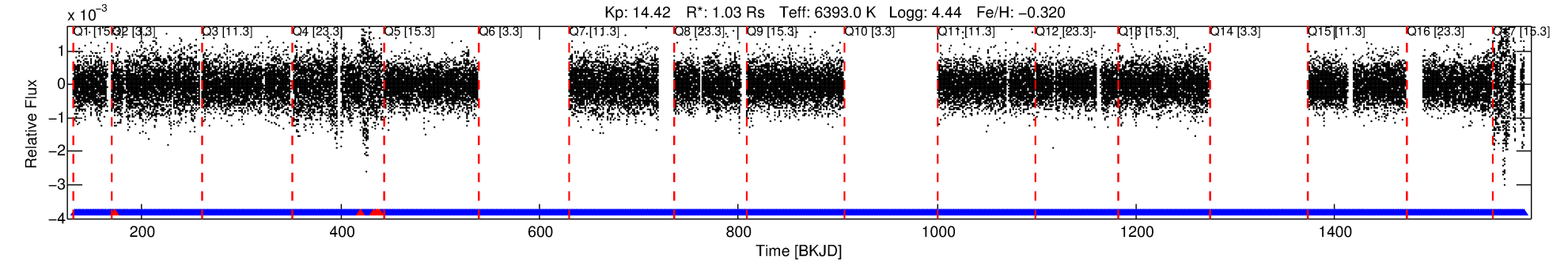
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004380558-01

No Significant Match Found

DV One-Page Summary

KIC: 4380558 Candidate: 1 of 4 Period: 0.706 d



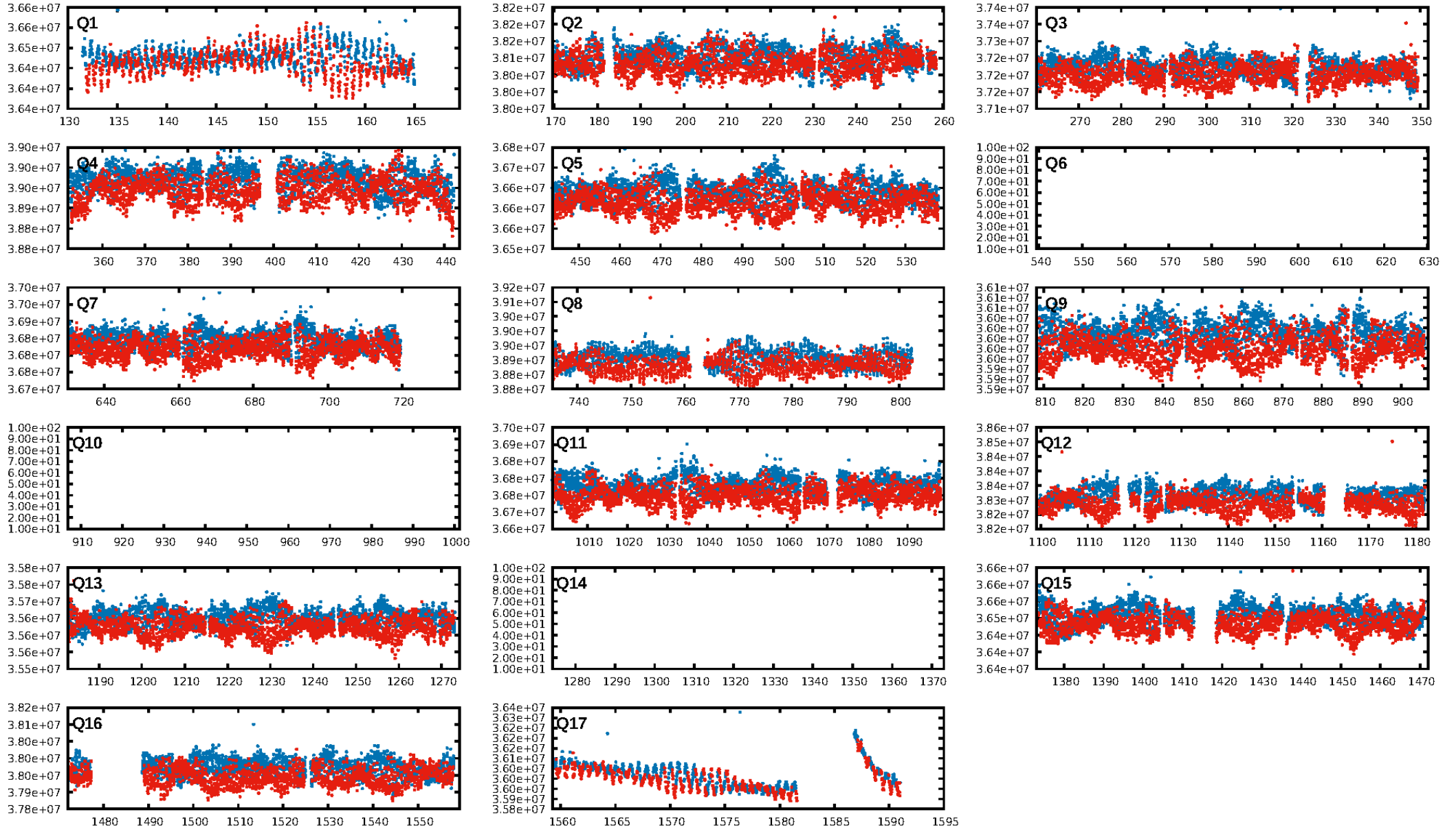
DV Fit Results:

Period = 0.70575 [0.00001] d
Epoch = 132.0262 [0.0030] BKJD
Rp/R* = 0.0069 [0.0055]
a/R* = 1.46 [3.26]
b = 0.01 [397.36]
Seff = 6300.88 [2593.23]
Teq = 2272 [234] K
Rp = 0.78 [0.67] Re
a = 0.0159 [0.0043] AU
Ag = 15.25 [25.08] [0.57 σ]
Teffp = 6941 [2784] K [1.67 σ]

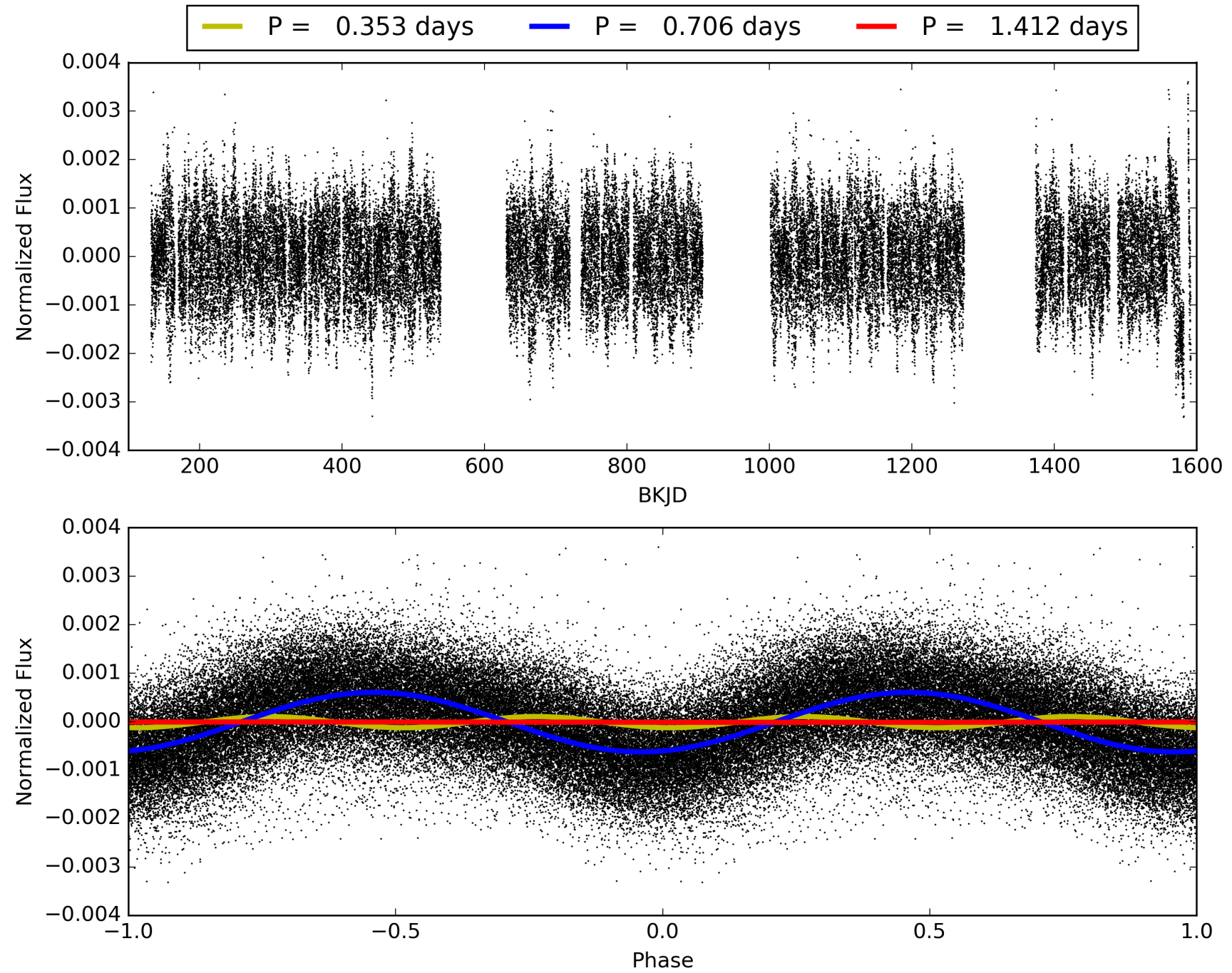
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [149.74 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.54e-12
RollingBand-fgt: 1.00 [1427/1434]
GhostDiagnostic-chr: 1.122
Centroid-sig: 0.0%
Centroid-so: 1.285 arcsec [1.98 σ]
OotOffset-rm: 1.726 arcsec [8.82 σ]
KicOffset-rm: 0.125 arcsec [1.79 σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004380558-01, PDC Light Curves

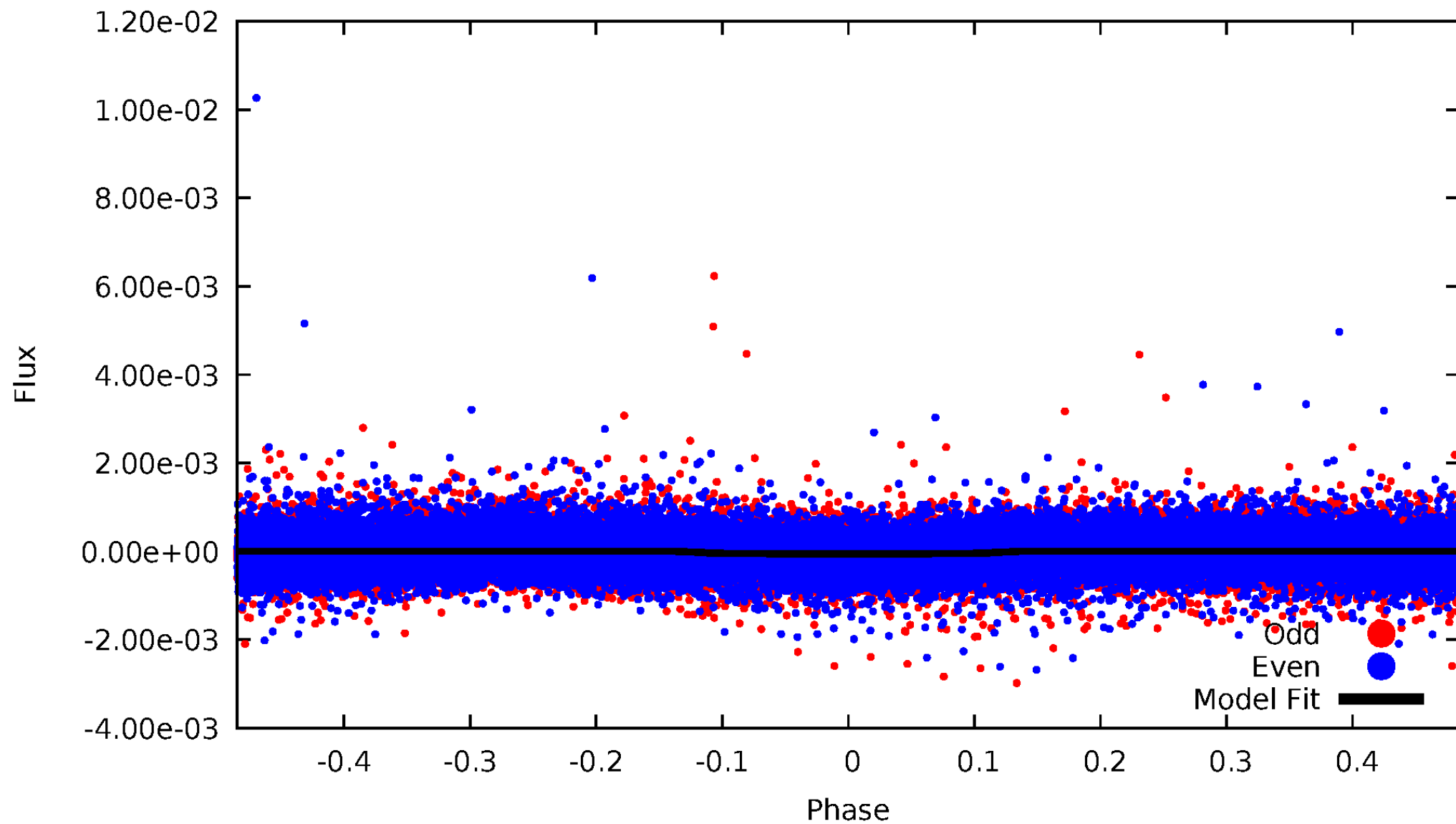


TCE 004380558-01



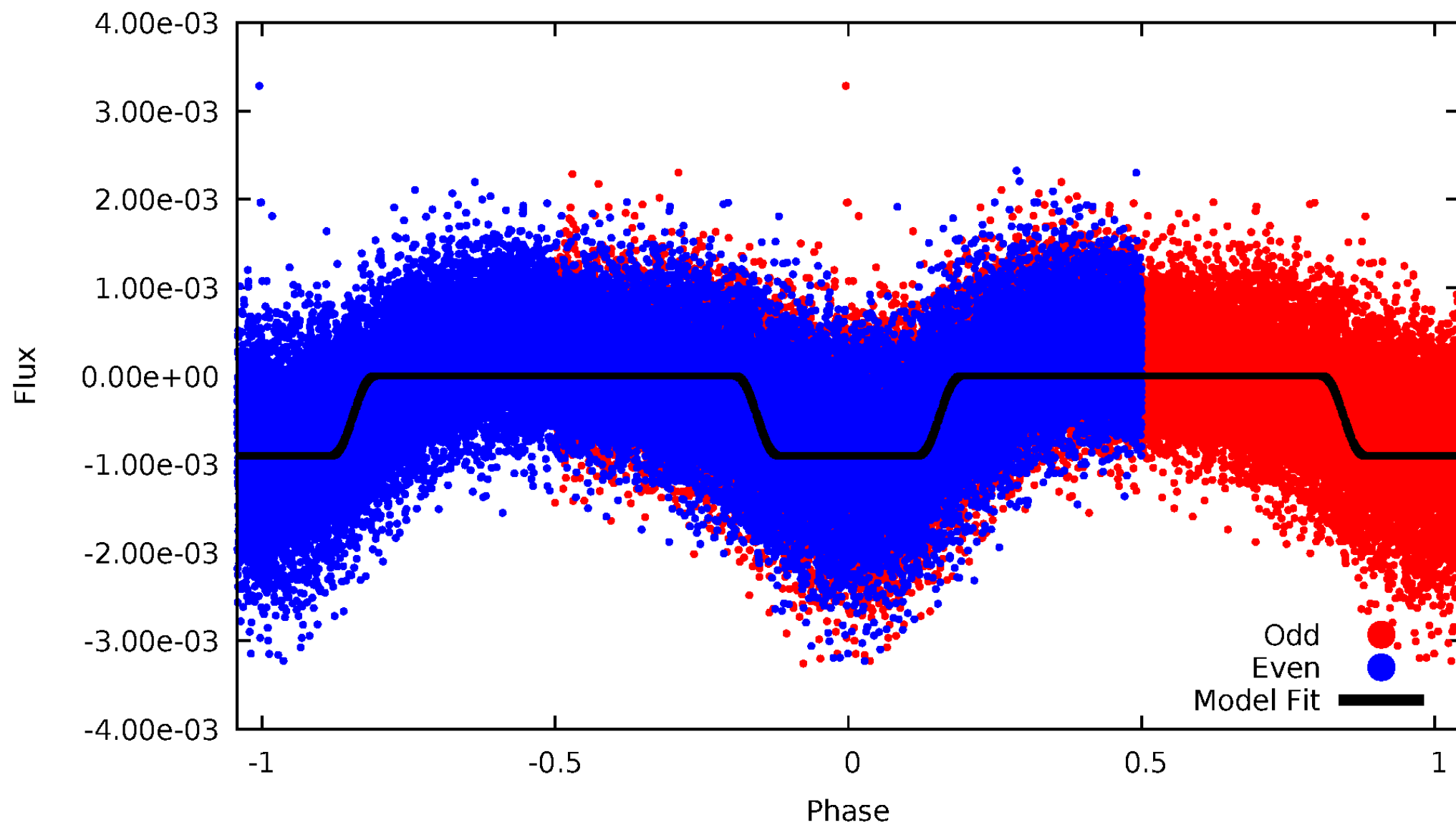
DV Odd/Even

TCE 004380558-01



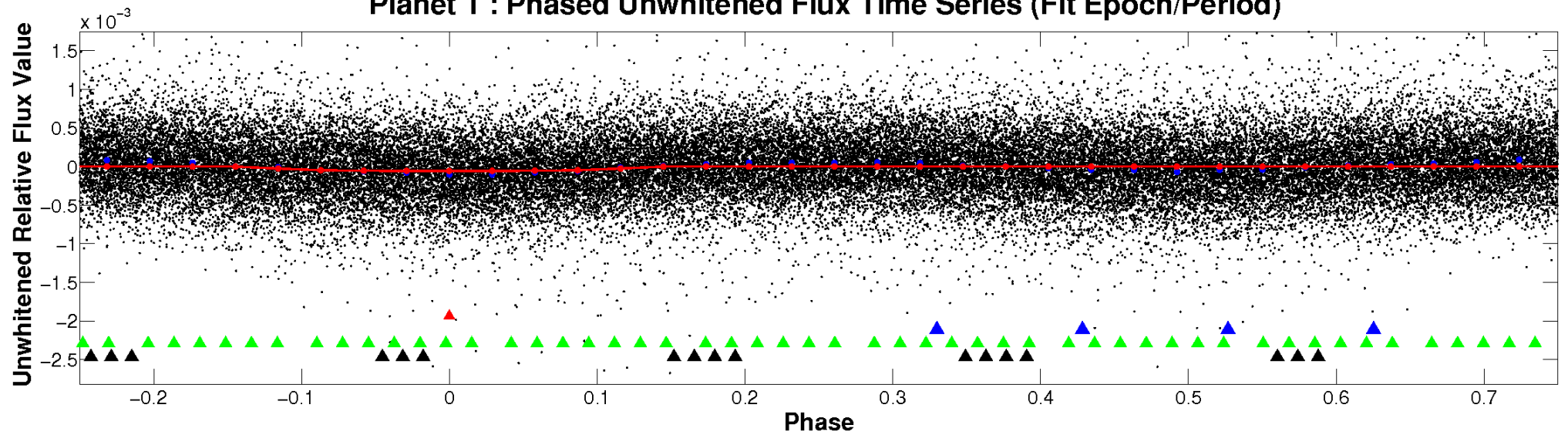
ALT Odd/Even

TCE 004380558-01

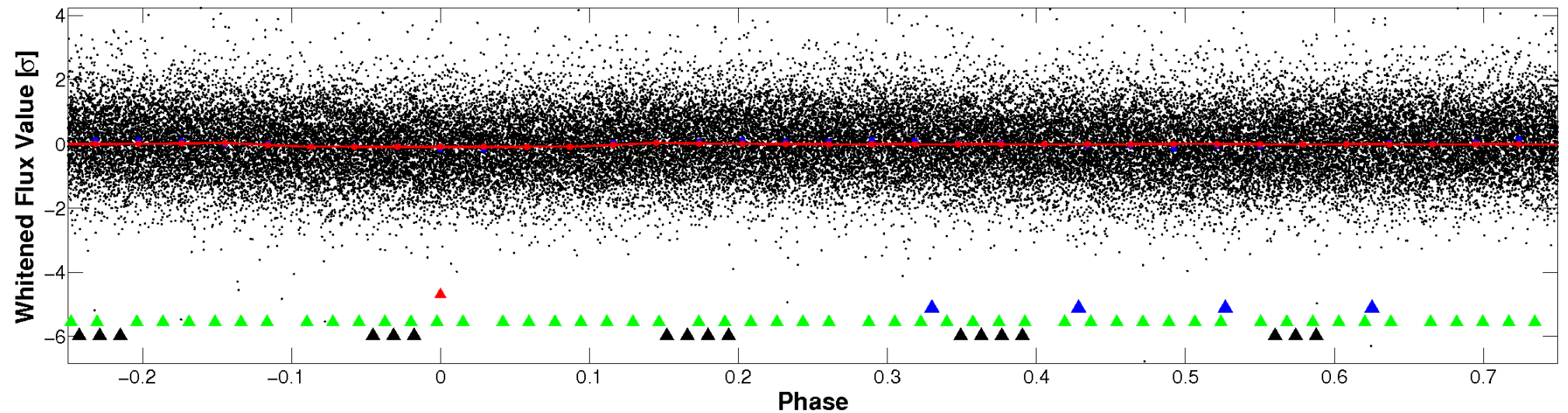


Non-Whitened Vs. Whitened Light Curve

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

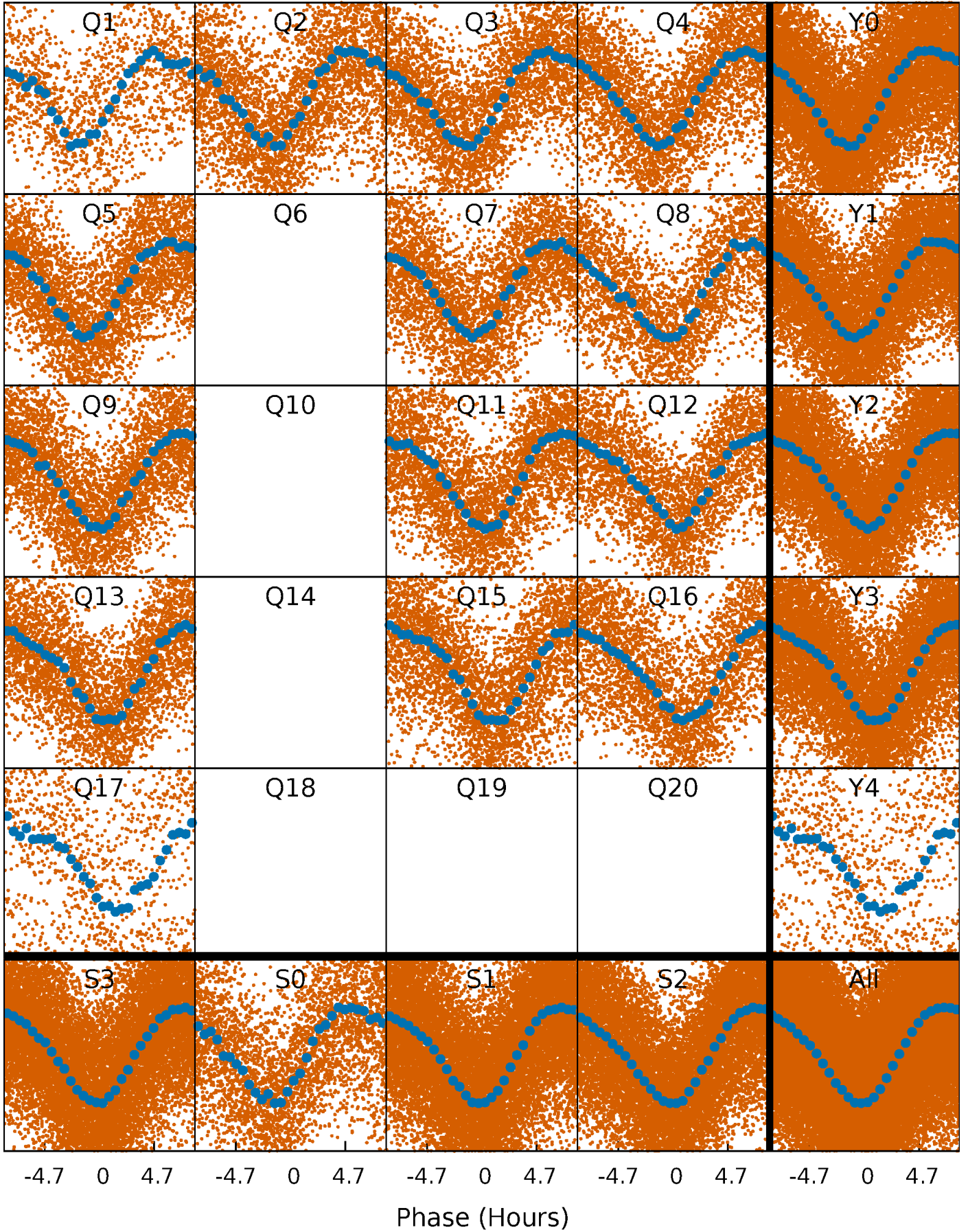


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



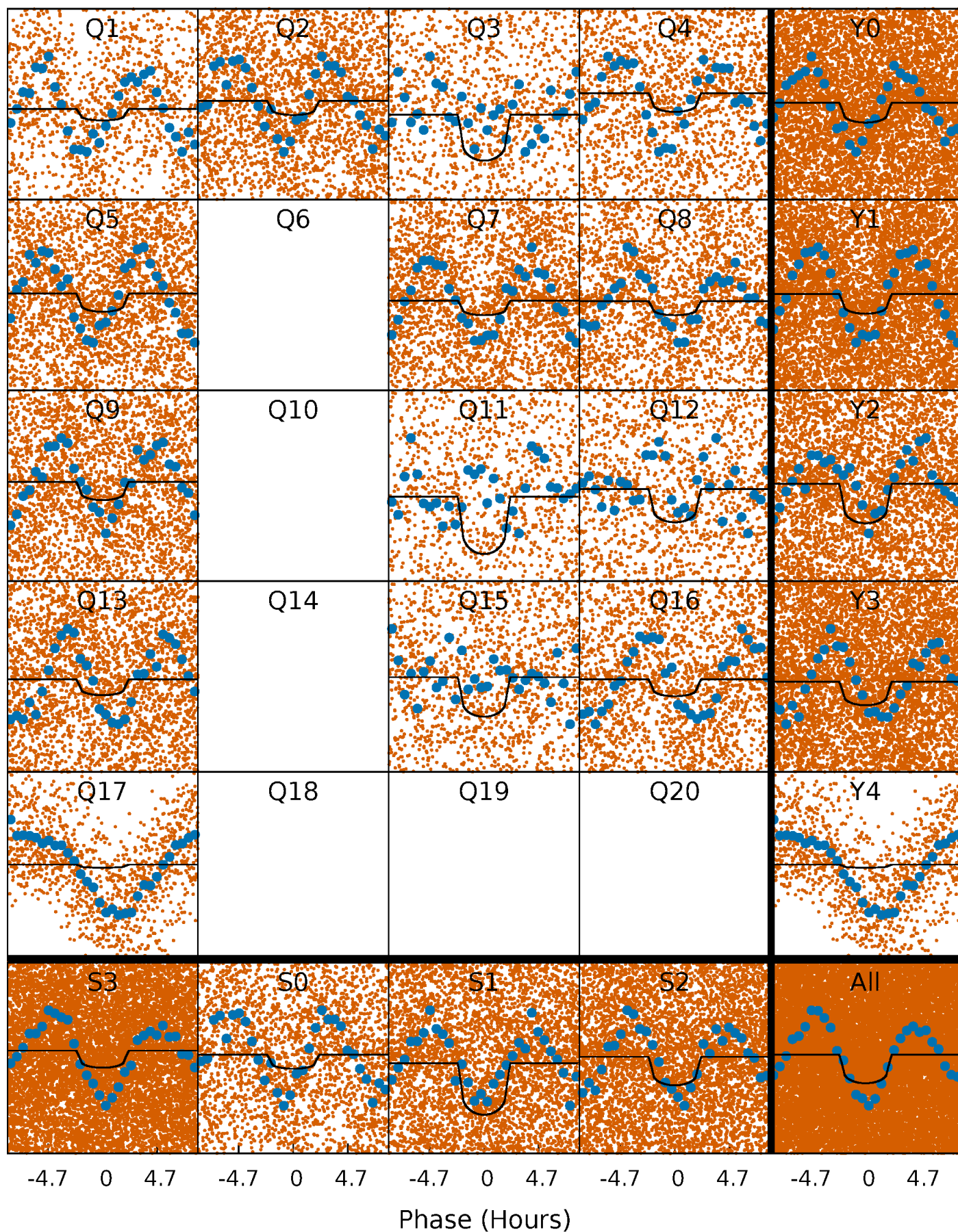
PDC Quarter-Phased Transit Curves

TCE 004380558-01 $P = 0.705752$ Days $T_0 = 132.026192$ (BKJD)



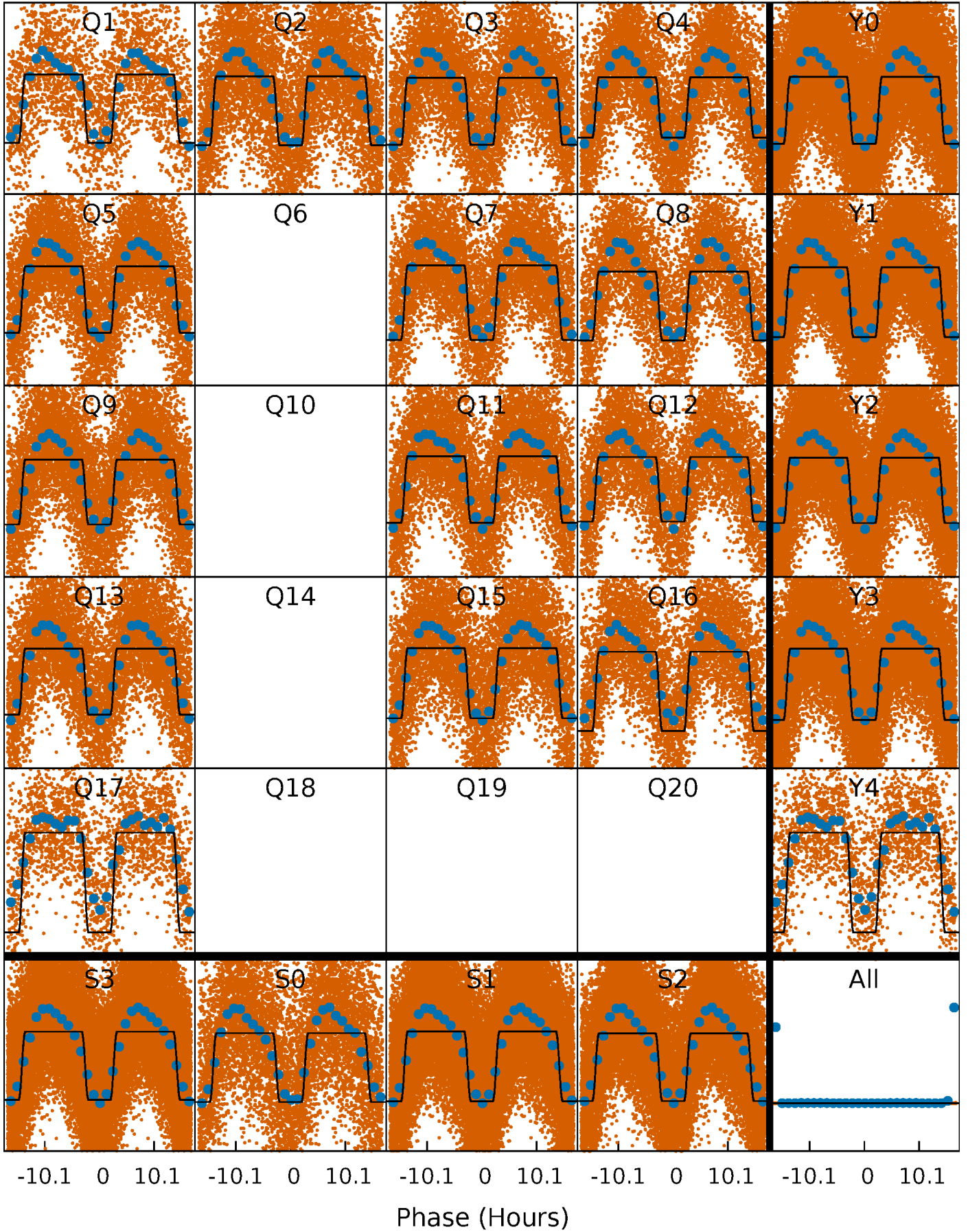
DV Quarter-Phased Transit Curves

TCE 004380558-01 P= 0.705752 Days $T_0=132.026192$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

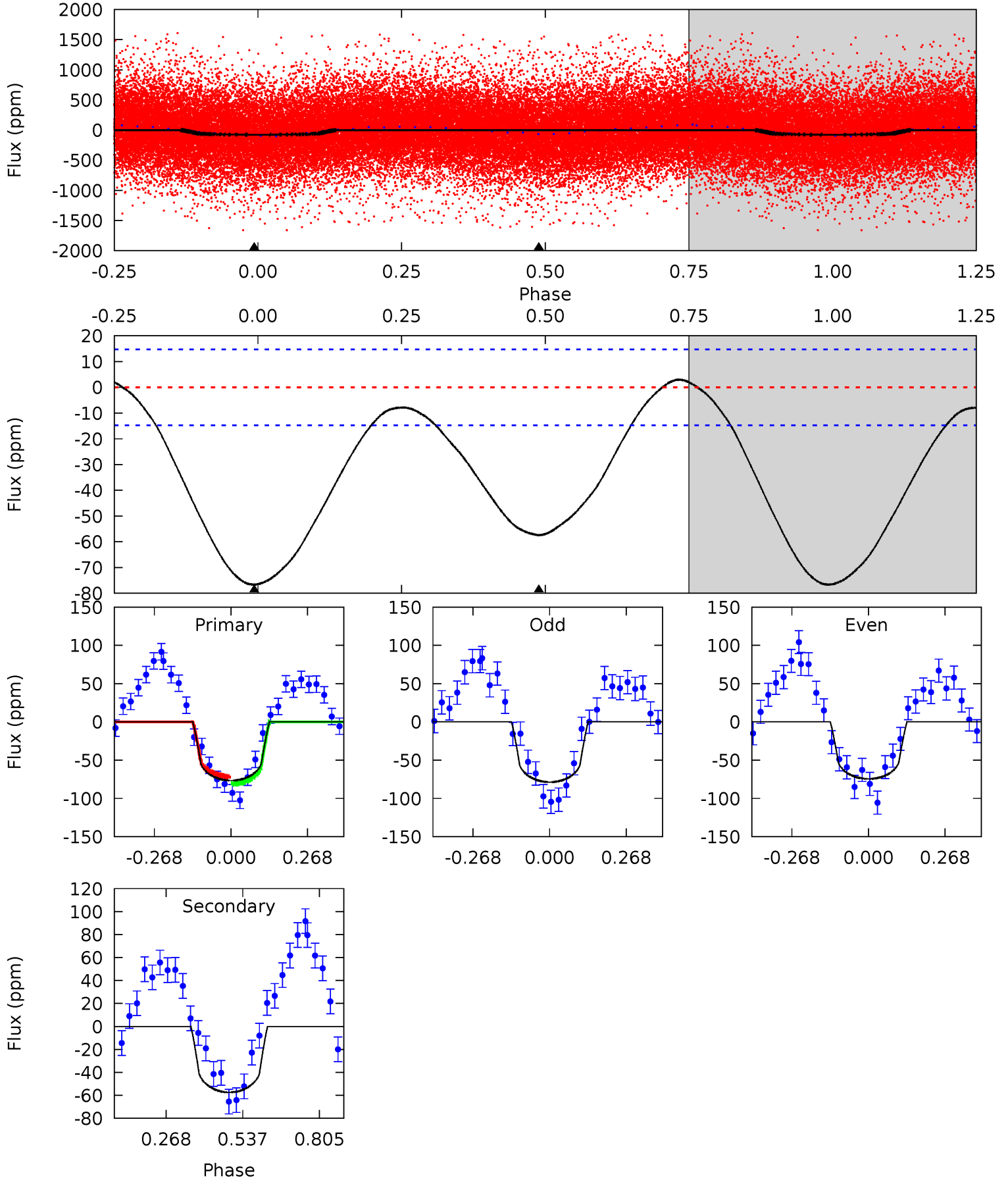
TCE 004380558-01 P= 0.705820 Days $T_0=131.943660$ (BKJD)



DV Model-Shift Uniqueness Test

004380558-01, P = 0.705752 Days, E = 131.320440 Days

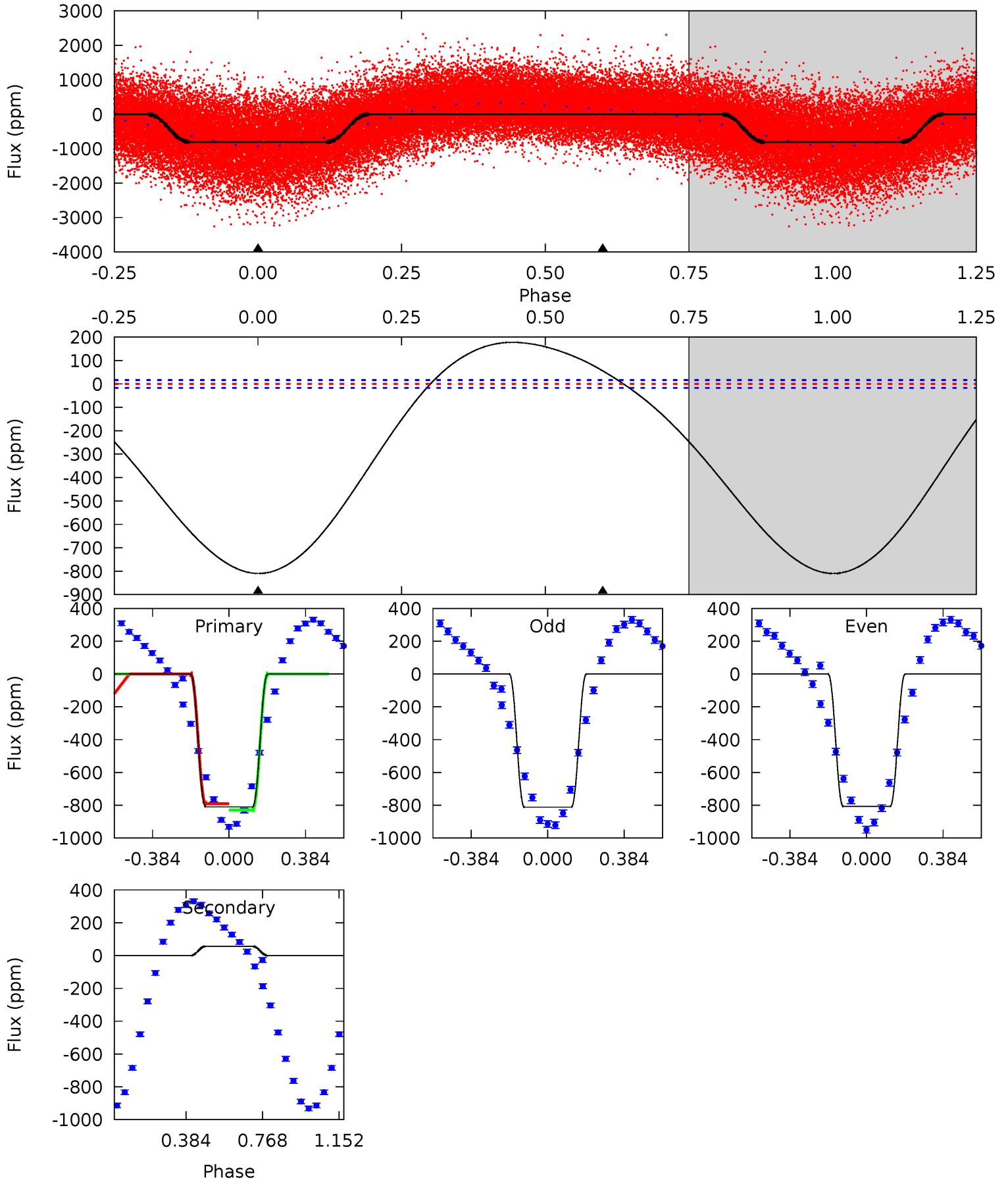
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.7	17.0	0	0	4.35	1.11	1.53	22.7	22.7	17.0	17.0	0.62	1.24	0.04	1.27



Alt Model-Shift Uniqueness Test

004380558-01, P = 0.705820 Days, E = 131.237840 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
202.1	-14.0	0	0	4.27	0.87	18.8	202.1	202.1	-14.0	-14.0	0.57	1.02	0.18	4.26



Stellar Parameters For KIC 004380558

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6393^{+177}_{-222}	$4.442^{+0.056}_{-0.210}$	$-0.320^{+0.250}_{-0.300}$	$1.030^{+0.332}_{-0.111}$	$1.067^{+0.156}_{-0.128}$	$1.377^{+0.408}_{-0.746}$
	+3%/-3%	+1%/-5%	+78%/-94%	+32%/-11%	+15%/-12%	+30%/-54%
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 004380558-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-57 ± 3	$0.88^{+0.64}_{-0.53}$	3240^{+242}_{-163}	6322^{+5219}_{-1347}	10^{+53}_{-7}
Alt.	56 ± 4	$3.52^{+0.85}_{-0.71}$	3233^{+228}_{-166}	-3893^{+186}_{-224}	$-0.621^{+0.222}_{-0.340}$

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

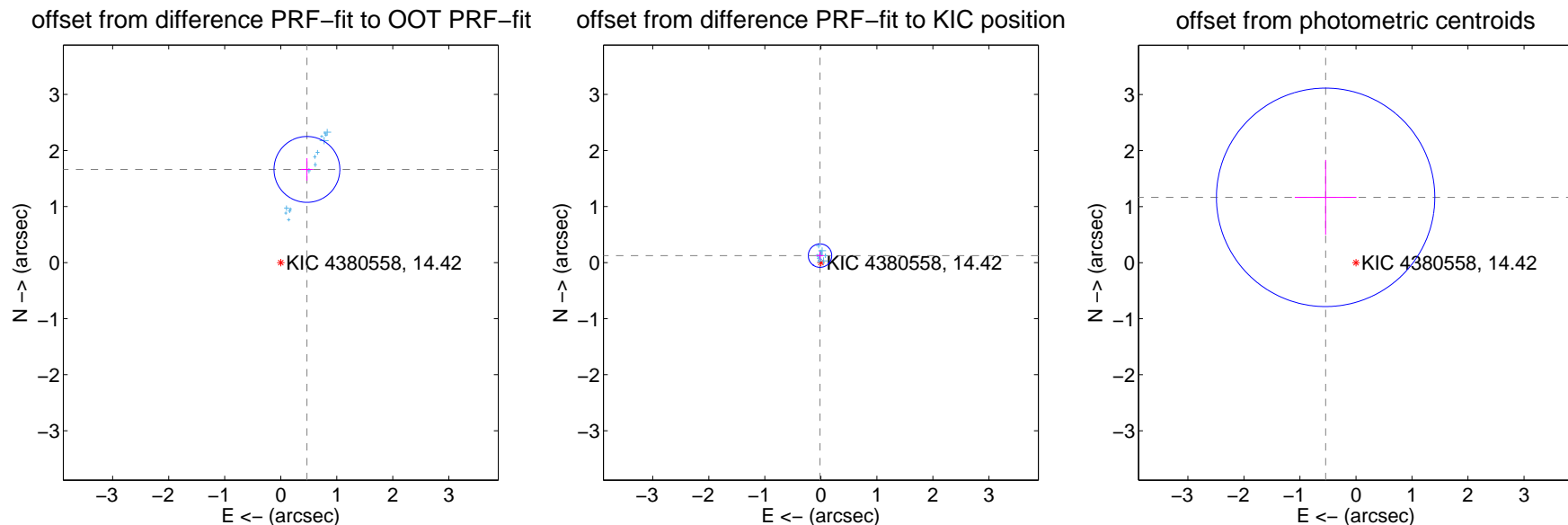
DV Centroid Data

Supplemental centroid analysis for 004380558-01. Kepler magnitude: 14.42. Transit SNR 10.15

There are 14 quarters with good PRF difference image offsets

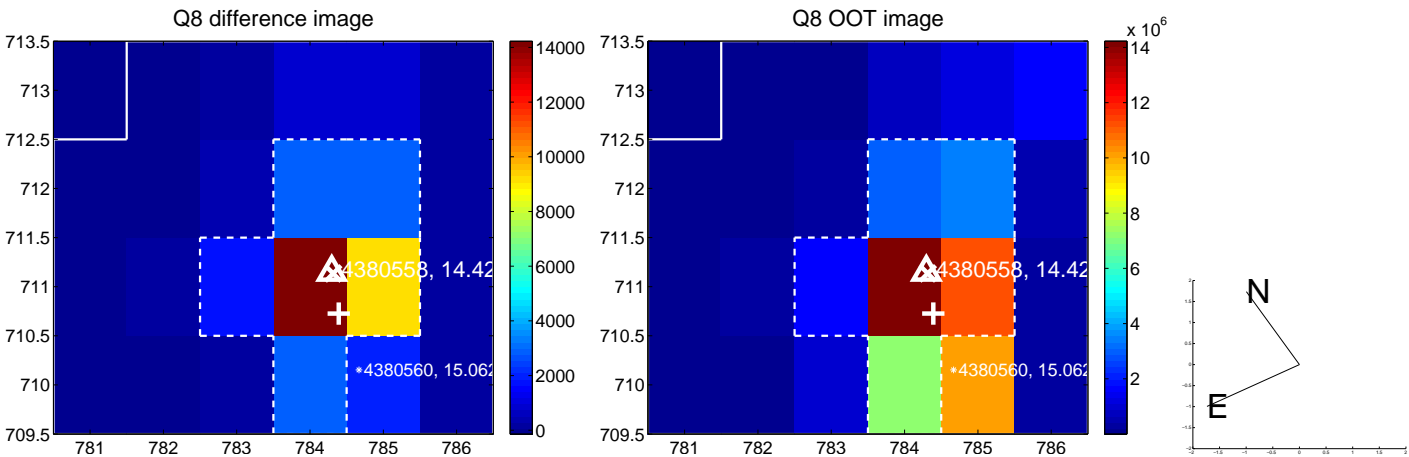
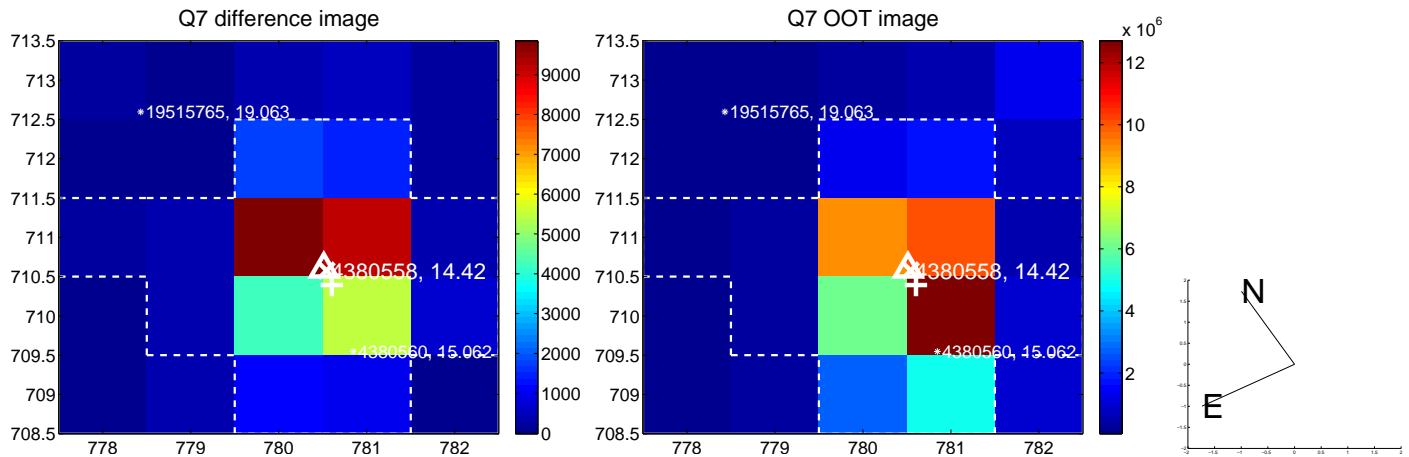
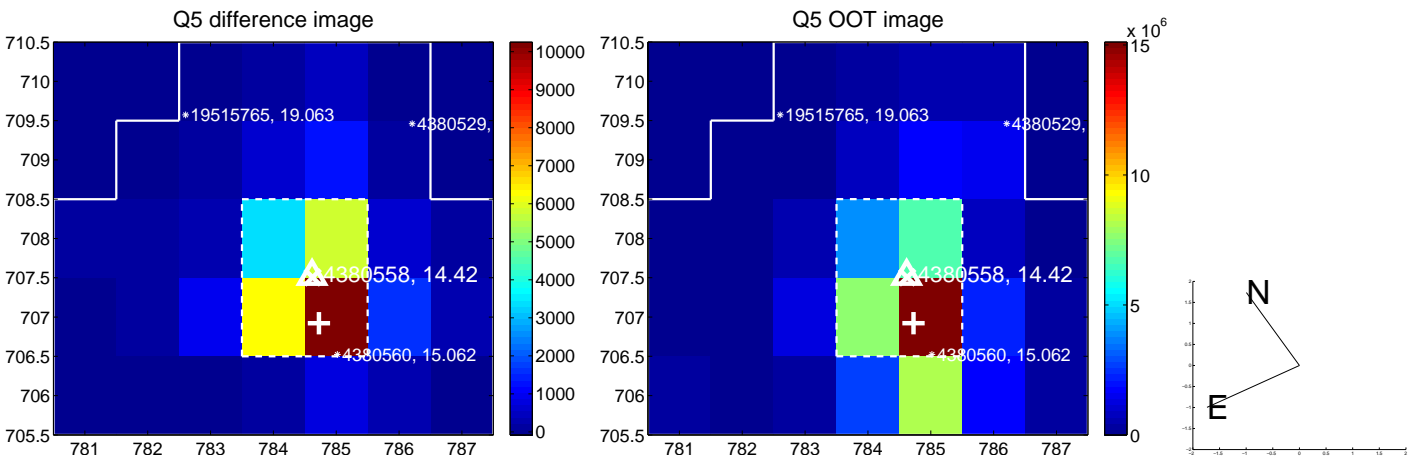
The OOT PRF centroid is offset from the target star catalog position by about 2.26 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.726 ± 0.196	8.82	-0.467 ± 0.107	1.662 ± 0.201
PRF-fit source offset from KIC position	0.125 ± 0.070	1.79	0.015 ± 0.067	0.124 ± 0.070
photometric centroid source offset	1.29 ± 0.65	1.98	0.54 ± 0.55	1.17 ± 0.67

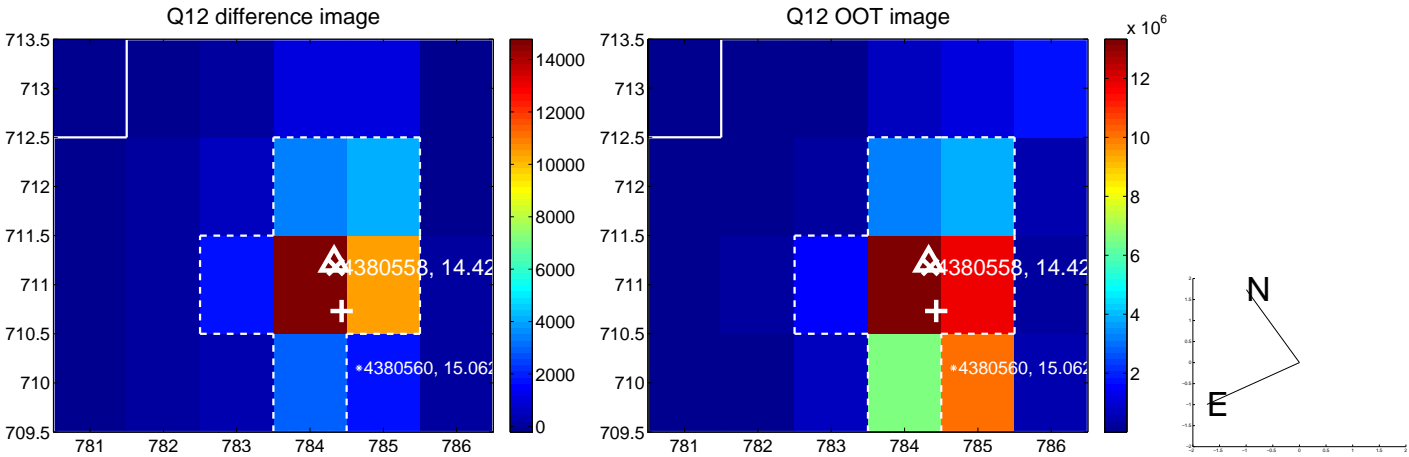
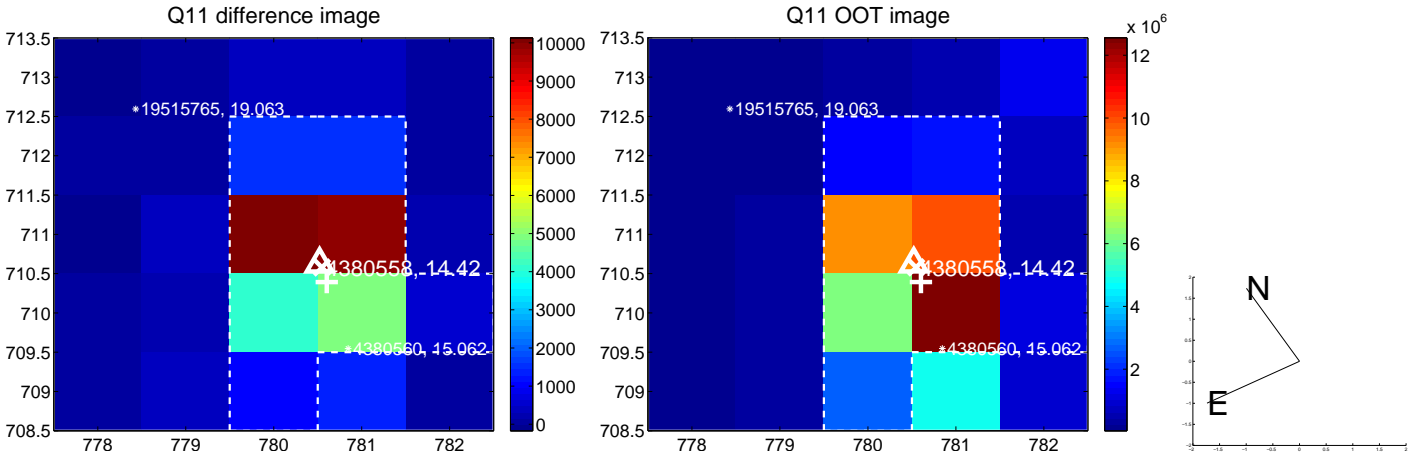
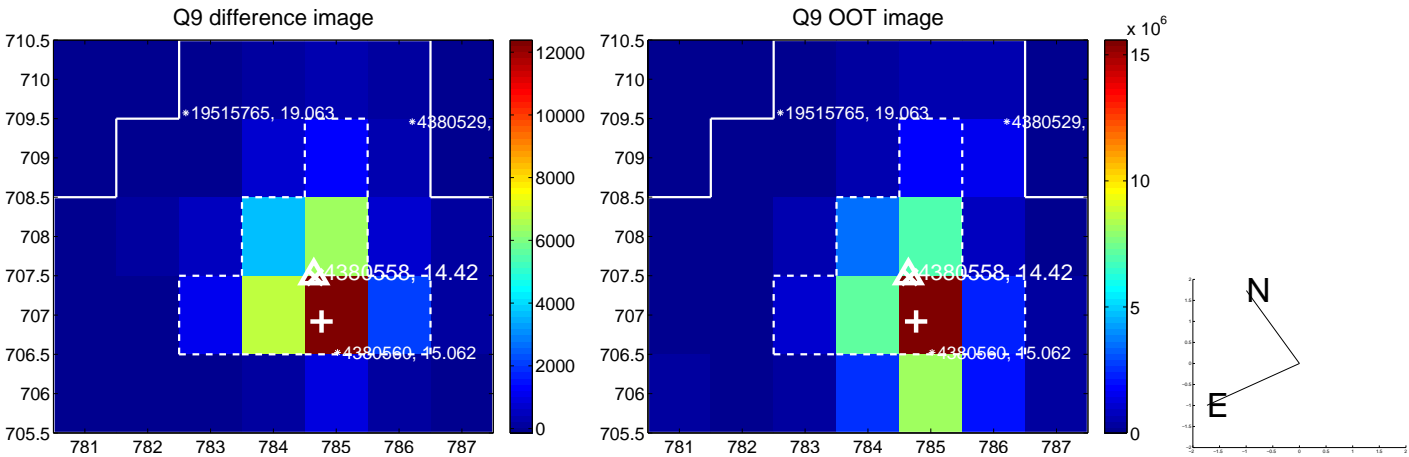


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

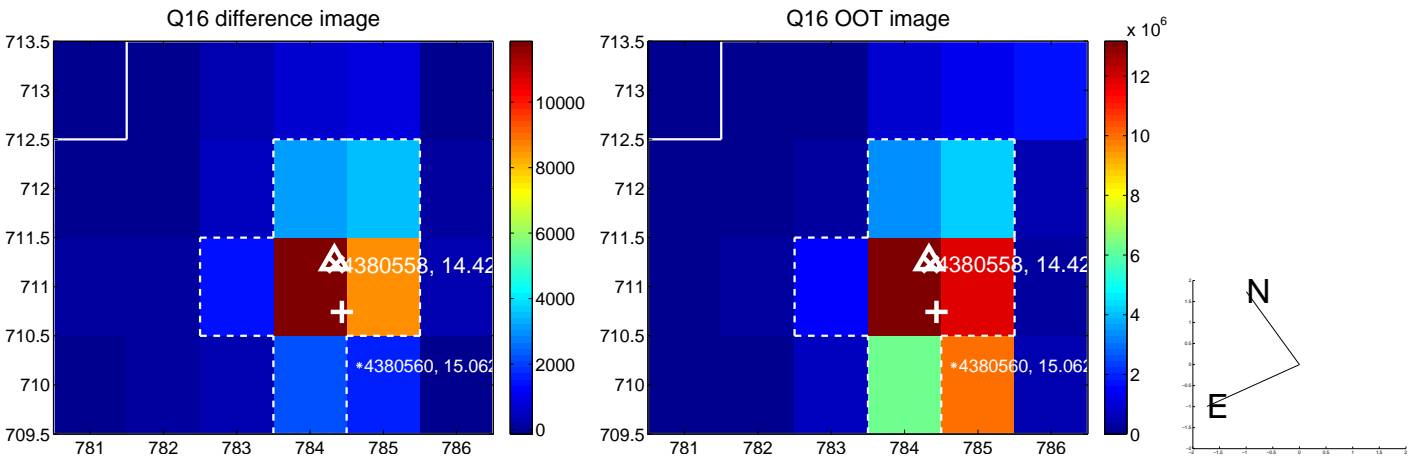
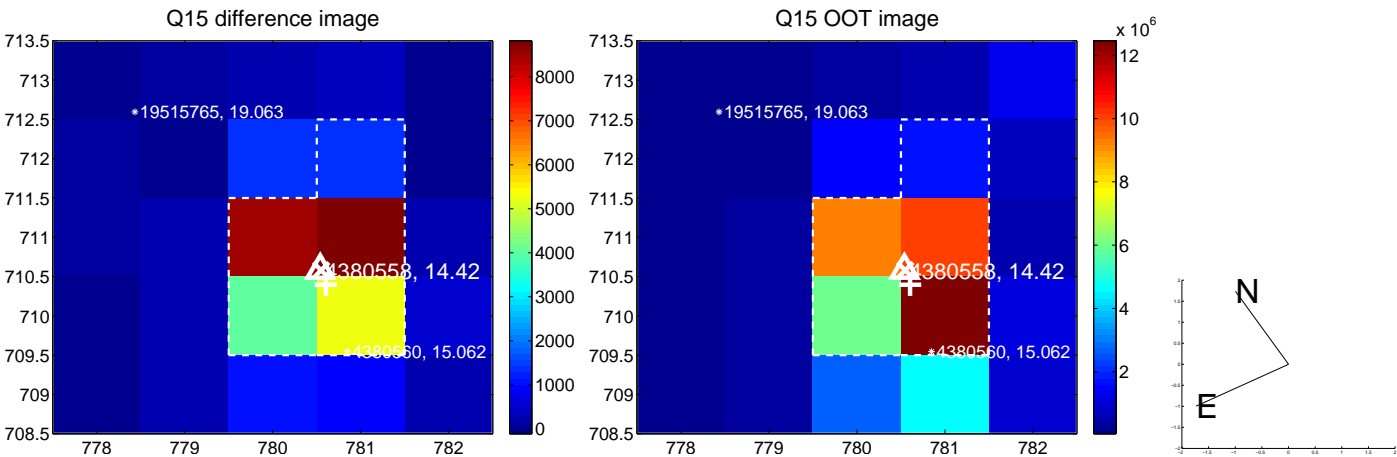
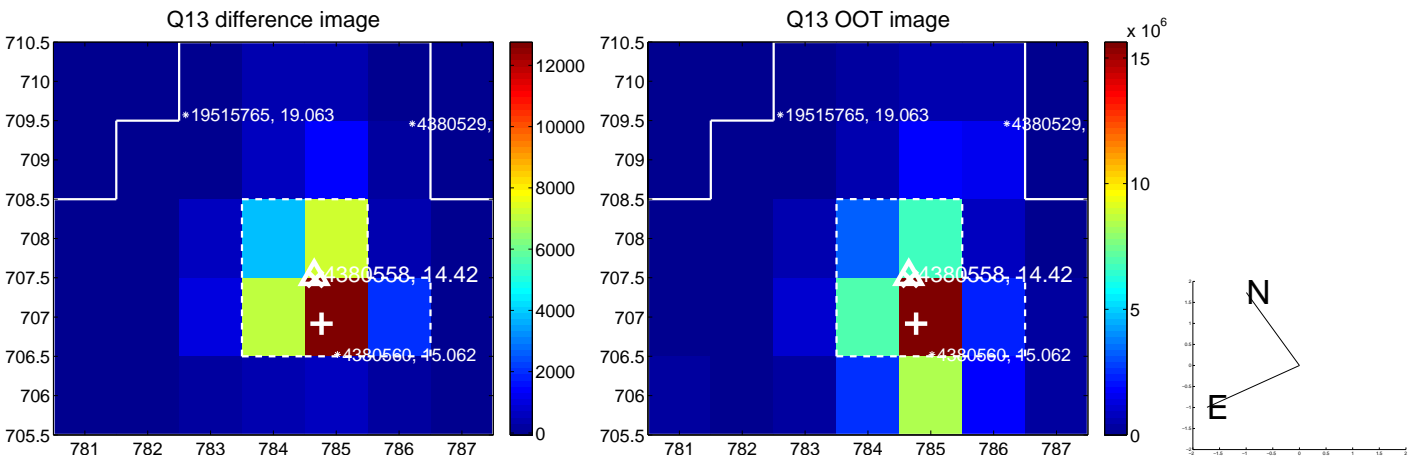
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



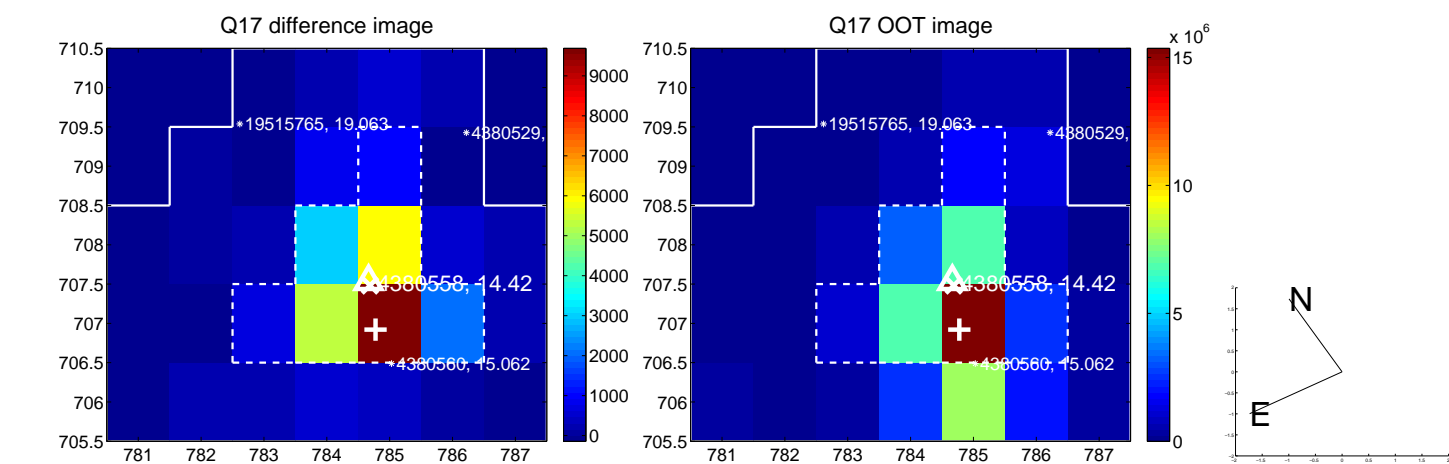
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



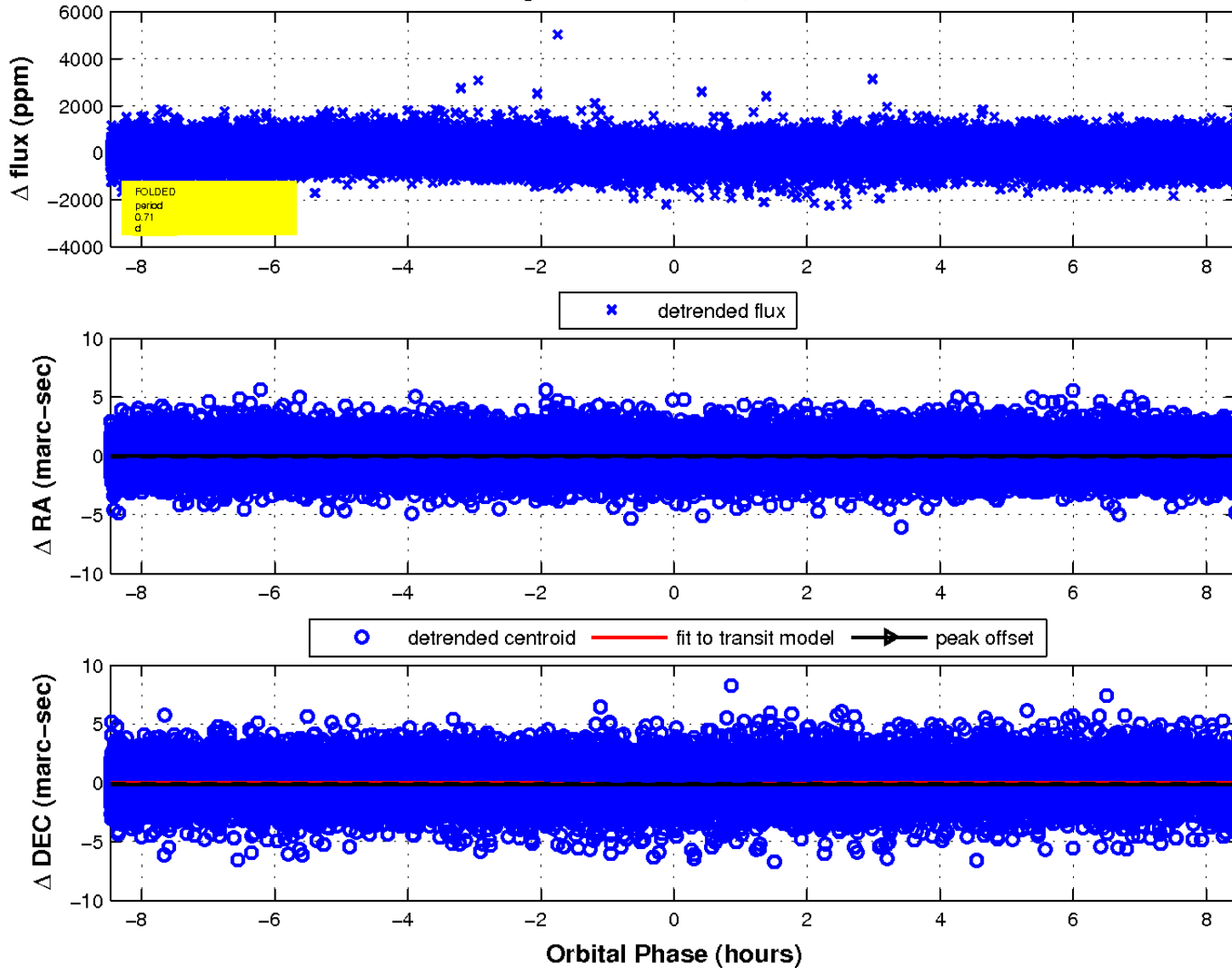
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



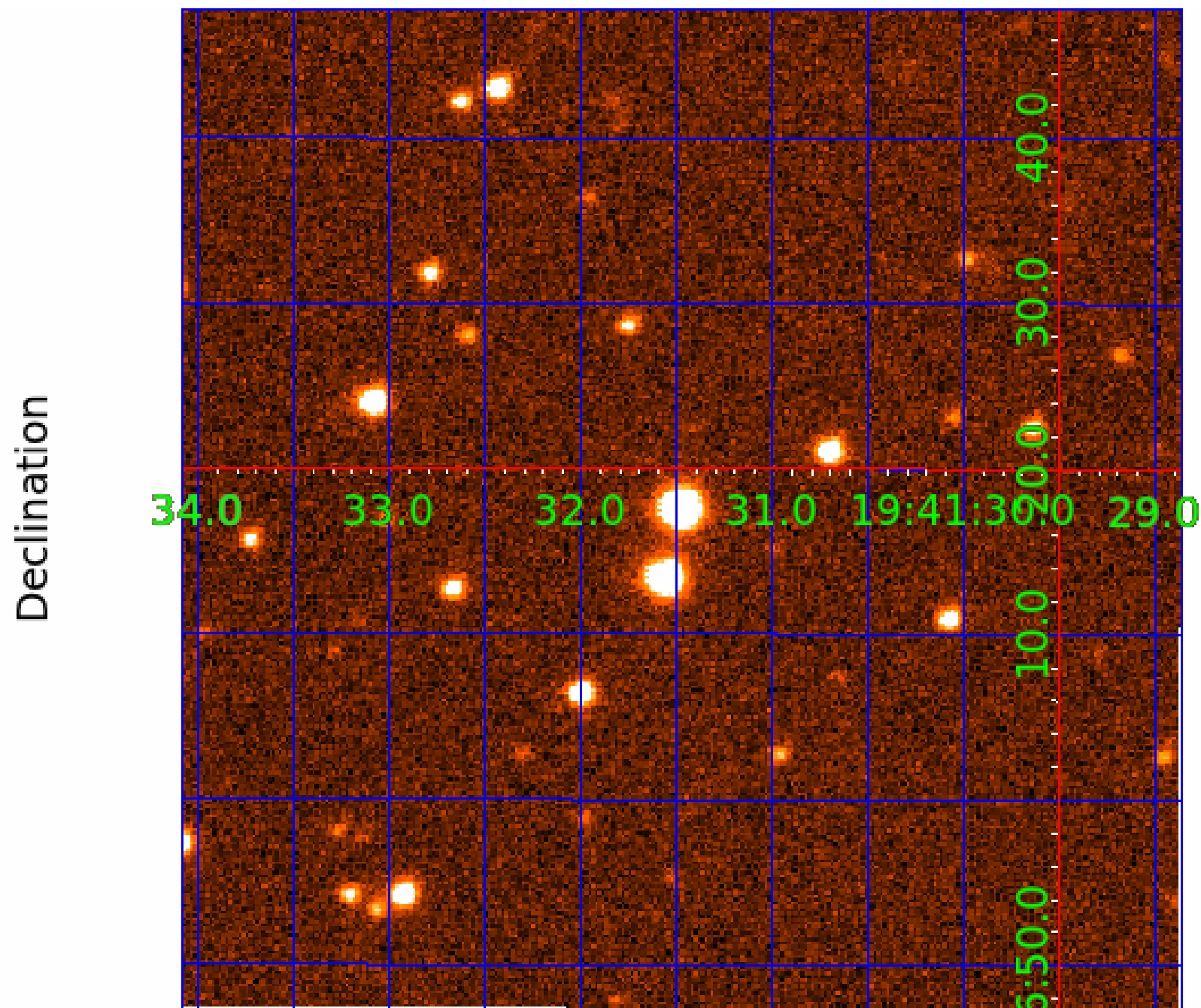
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 4



UKIRT Image



KIC 004380558

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})
004380558-01	OBS	No	0.705752	132.026192	56.5	4.106	10.6	10.1	1.03	6393	0.78	6300.88
004380558-02	OBS	No	408.561167	234.095850	876.0	4.892	10.2	8.9	1.03	6393	3.32	1.31
004380558-03	OBS	No	27.258147	155.685746	567.0	1.121	9.2	7.8	1.03	6393	2.71	48.26
004380558-04	OBS	No	86.241000	206.972418	675.6	3.128	8.9	7.7	1.03	6393	3.01	10.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004380558-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
004380558-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004380558-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
004380558-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

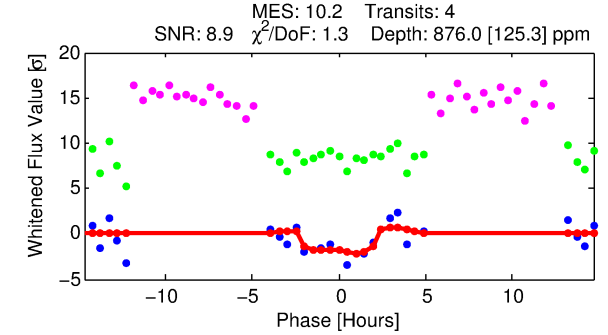
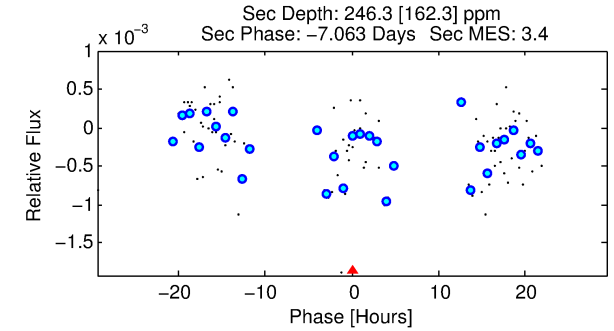
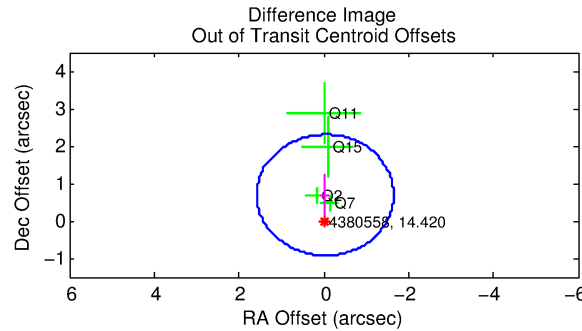
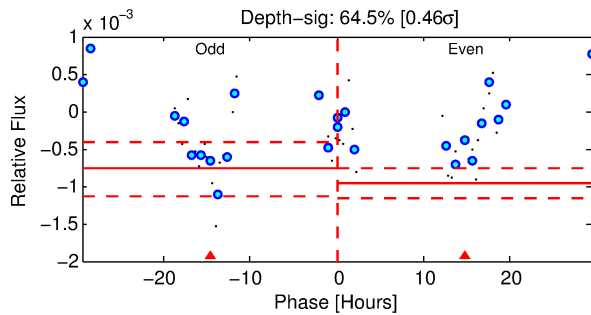
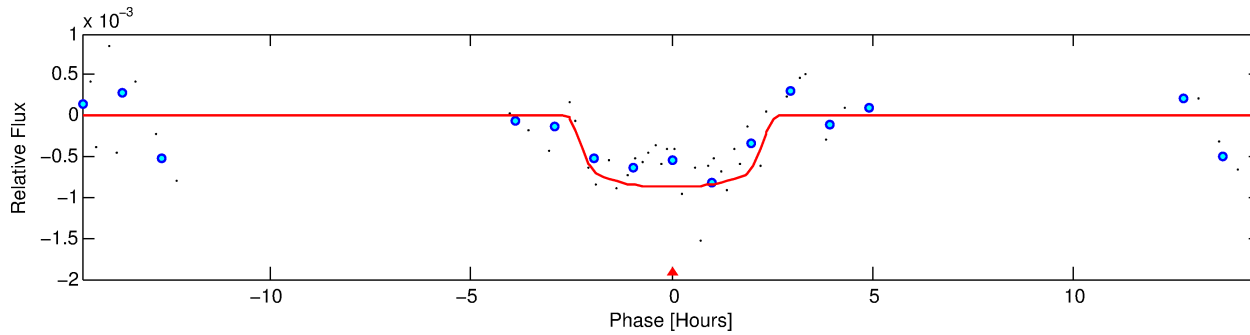
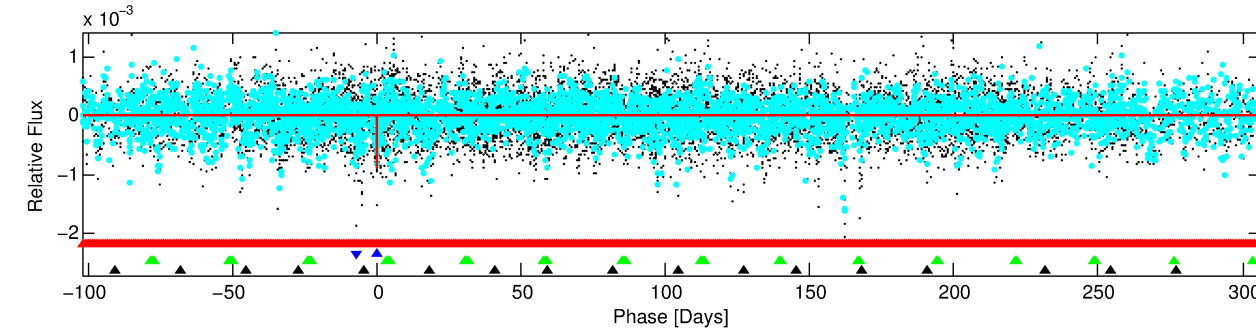
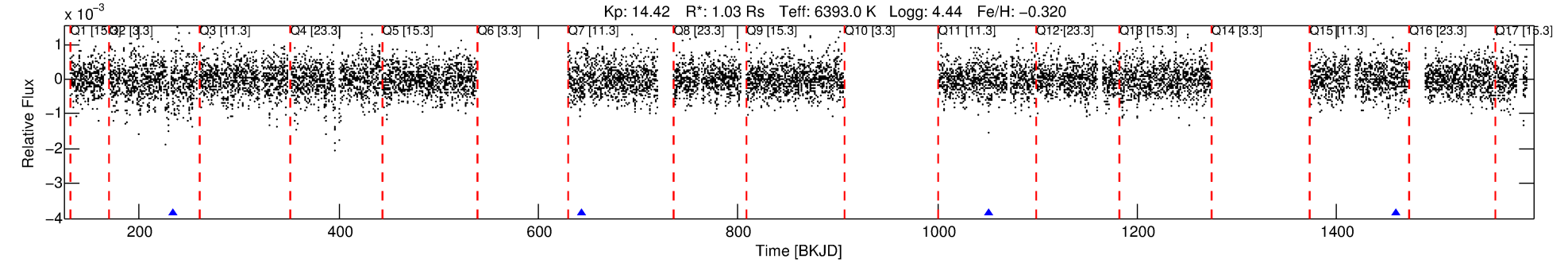
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004380558-02

No Significant Match Found

DV One-Page Summary

KIC: 4380558 Candidate: 2 of 4 Period: 408.561 d



DV Fit Results:

Period = 408.56117 [0.01283] d
Epoch = 234.0958 [0.0221] BKJD
Rp/R* = 0.0295 [0.0212]
a/R* = 444.57 [1722.81]
b = 0.76 [2.23]
Seff = 1.31 [0.54]
Teq = 273 [28] K
Rp = 3.32 [2.61] Re
a = 1.1026 [0.2962] AU
Ag = 14964.66 [24364.54] [0.61 σ]
Teffp = 4661 [1850] K [2.37 σ]

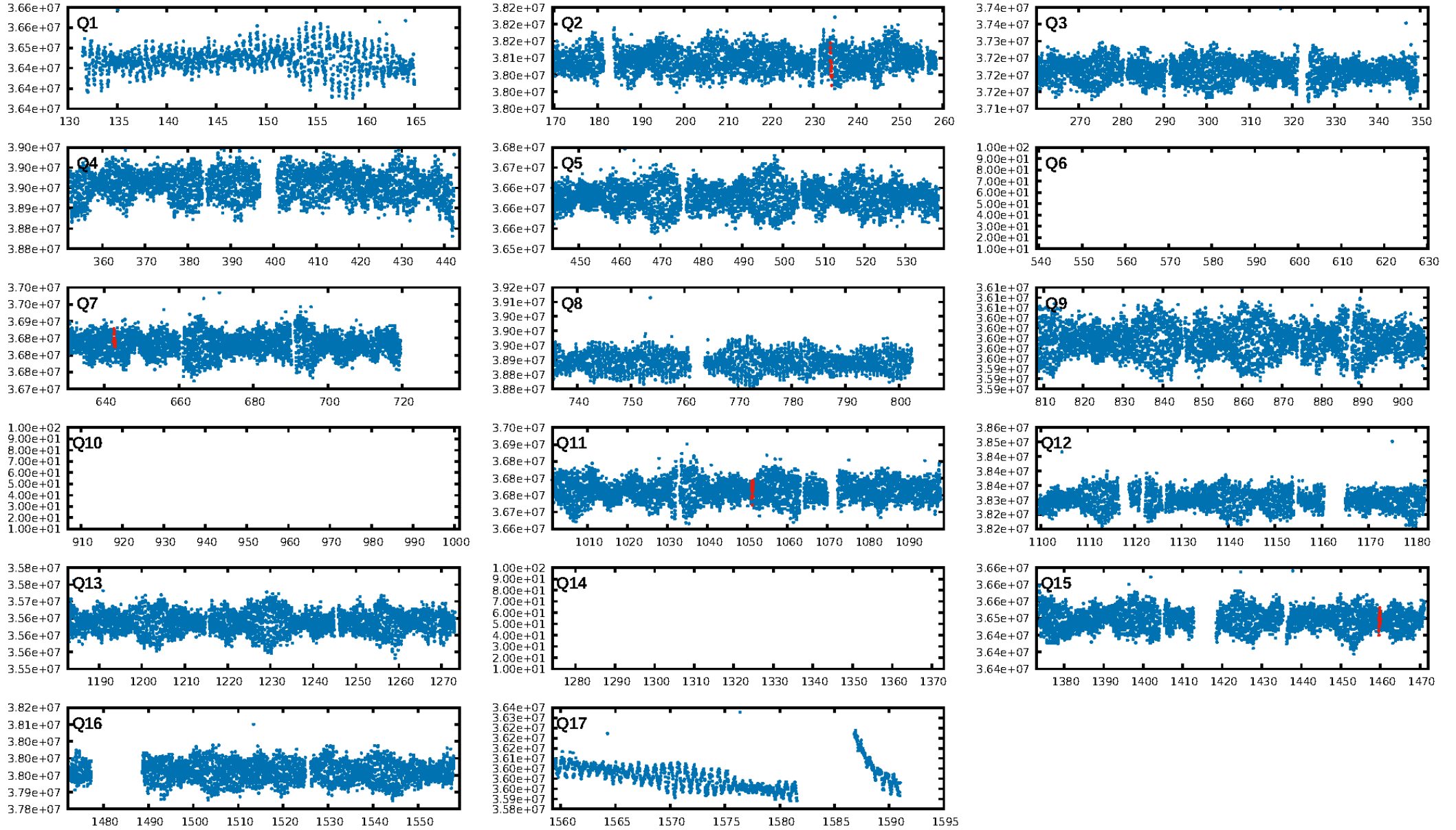
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1332.25 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 94.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.70e-14
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.1075
Centroid-sig: 48.4%
Centroid-so: 0.983 arcsec [1.10 σ]
OotOffset-rm: 0.689 arcsec [1.28 σ]
OotOffset-st: 1/3/0/0 [4]
KicOffset-rm: 0.115 arcsec [0.33 σ]
KicOffset-st: 1/3/0/0 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 0.00 [0/4]

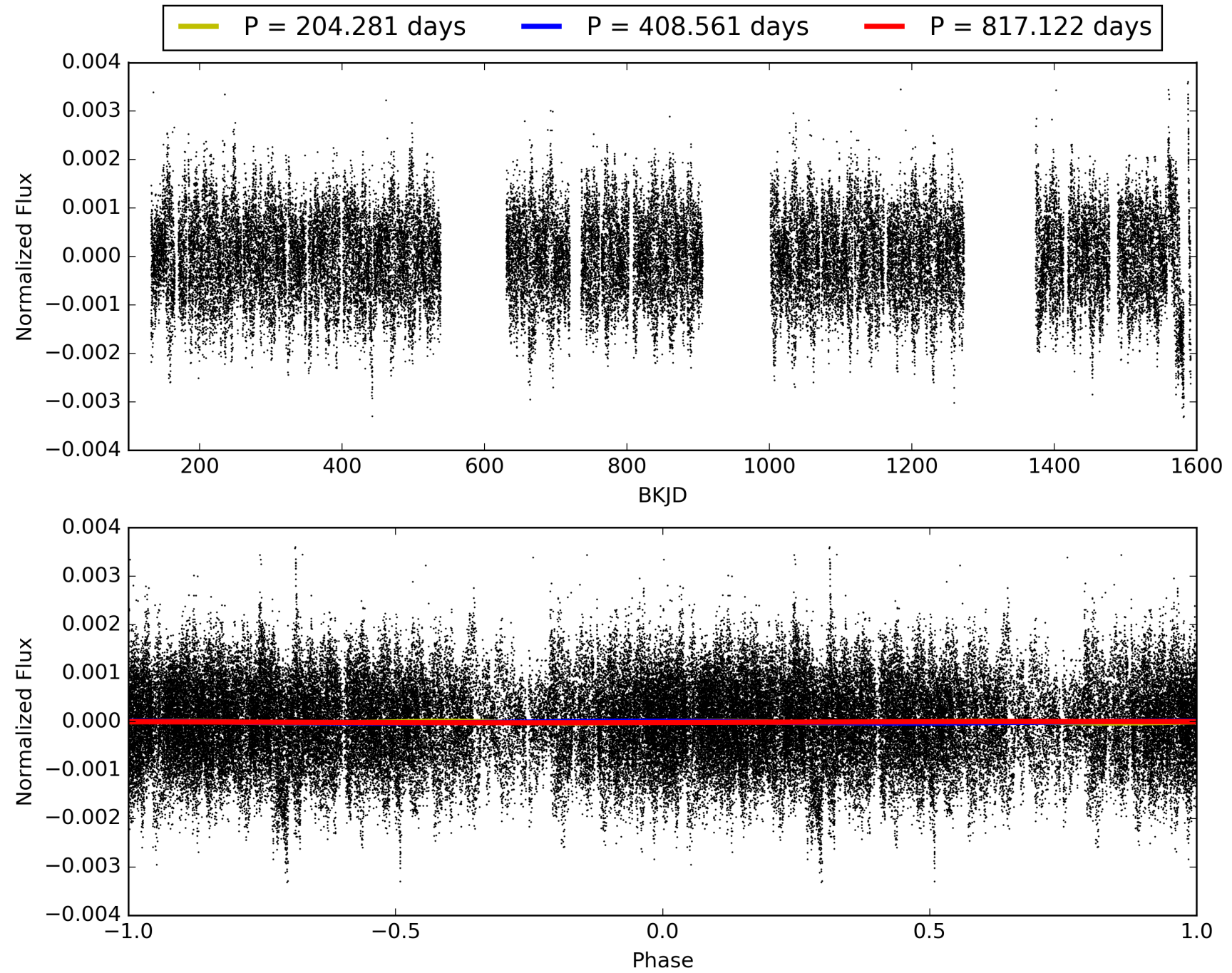
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:51:29 Z

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

TCE 004380558-02, PDC Light Curves

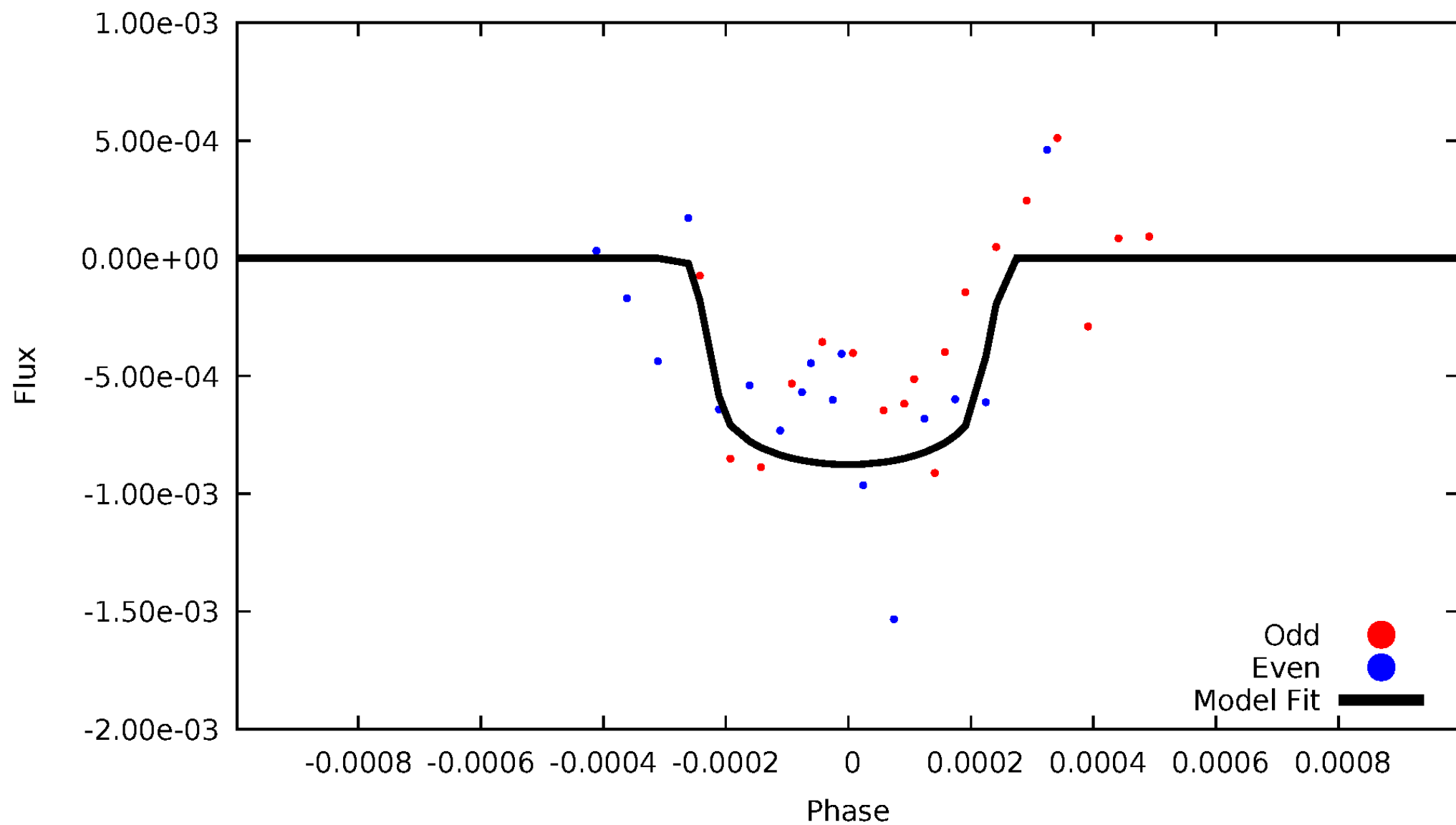


TCE 004380558-02



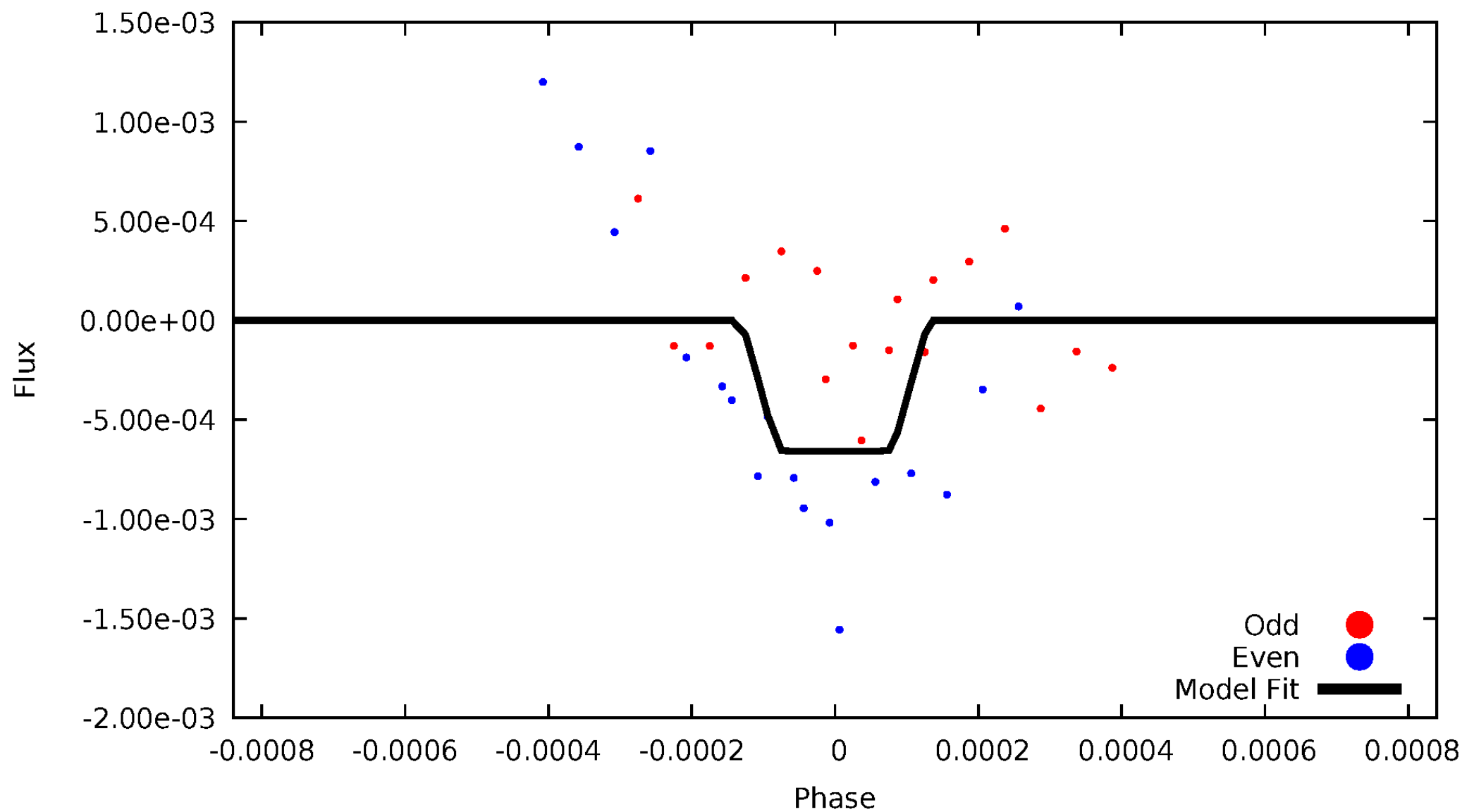
DV Odd/Even

TCE 004380558-02



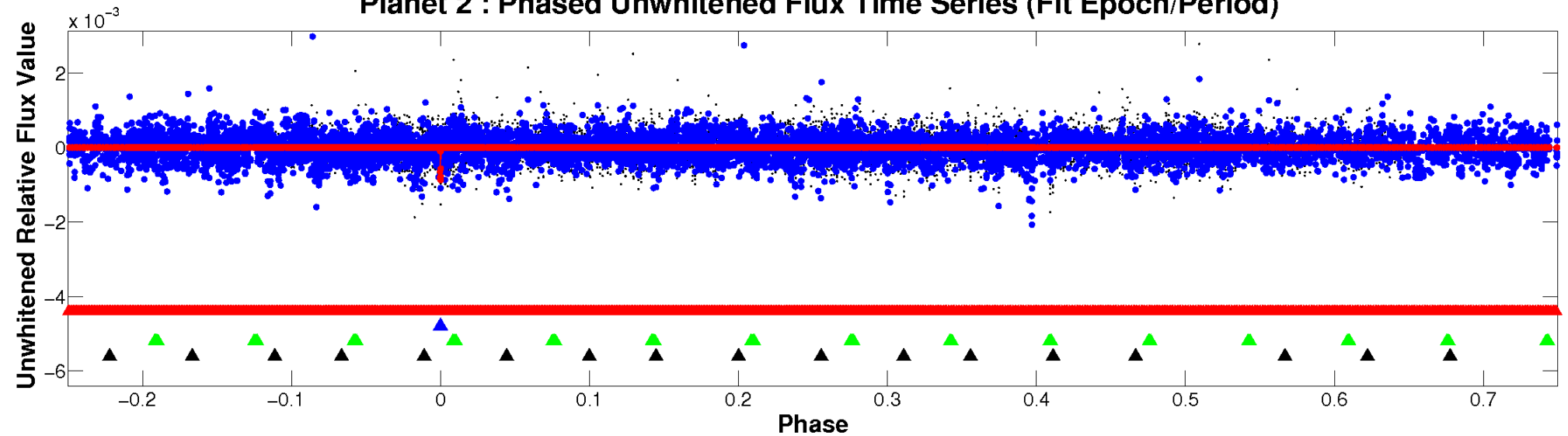
ALT Odd/Even

TCE 004380558-02

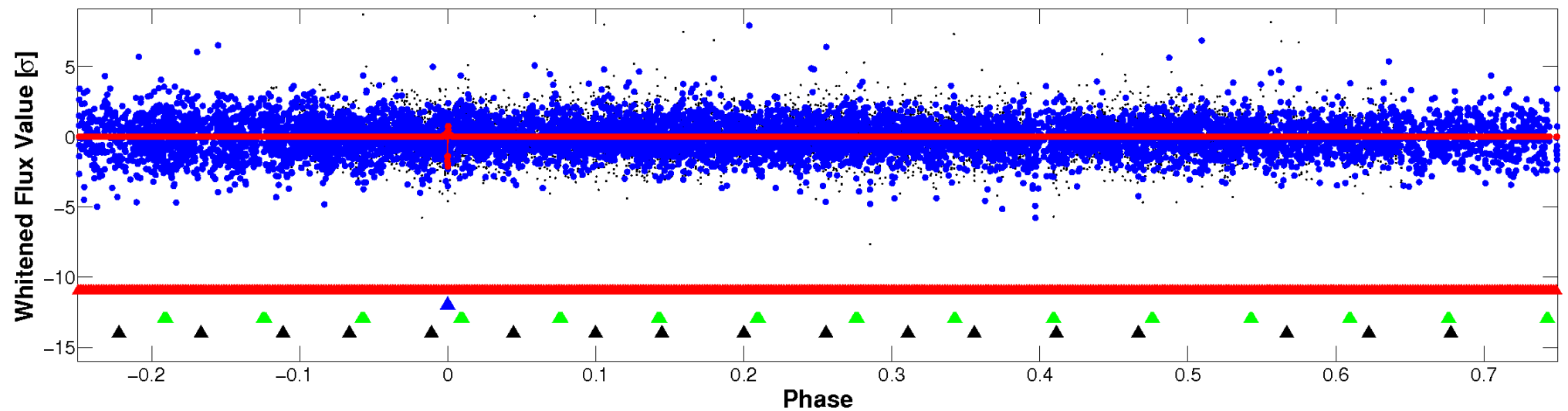


Non-Whitened Vs. Whitened Light Curve

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

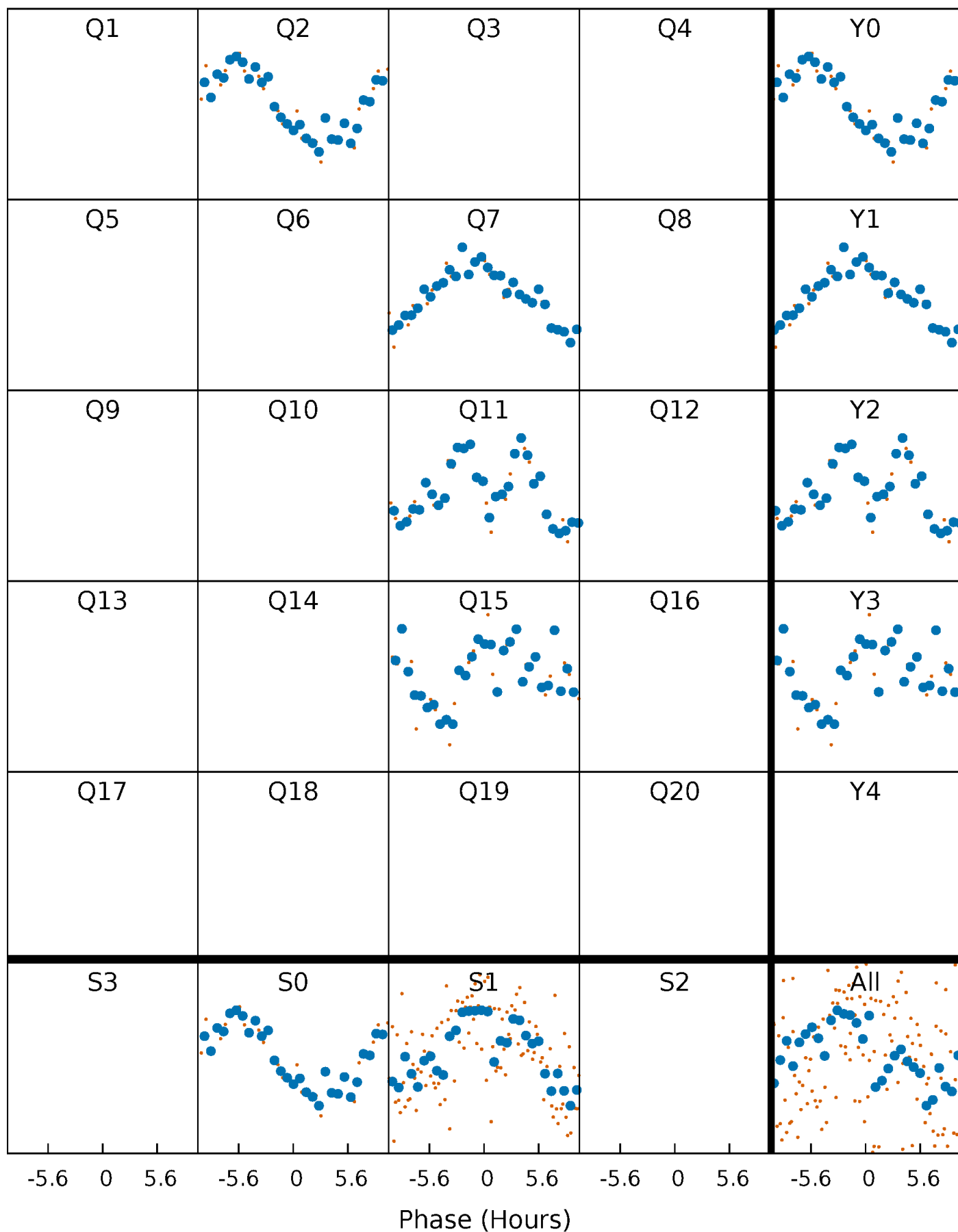


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



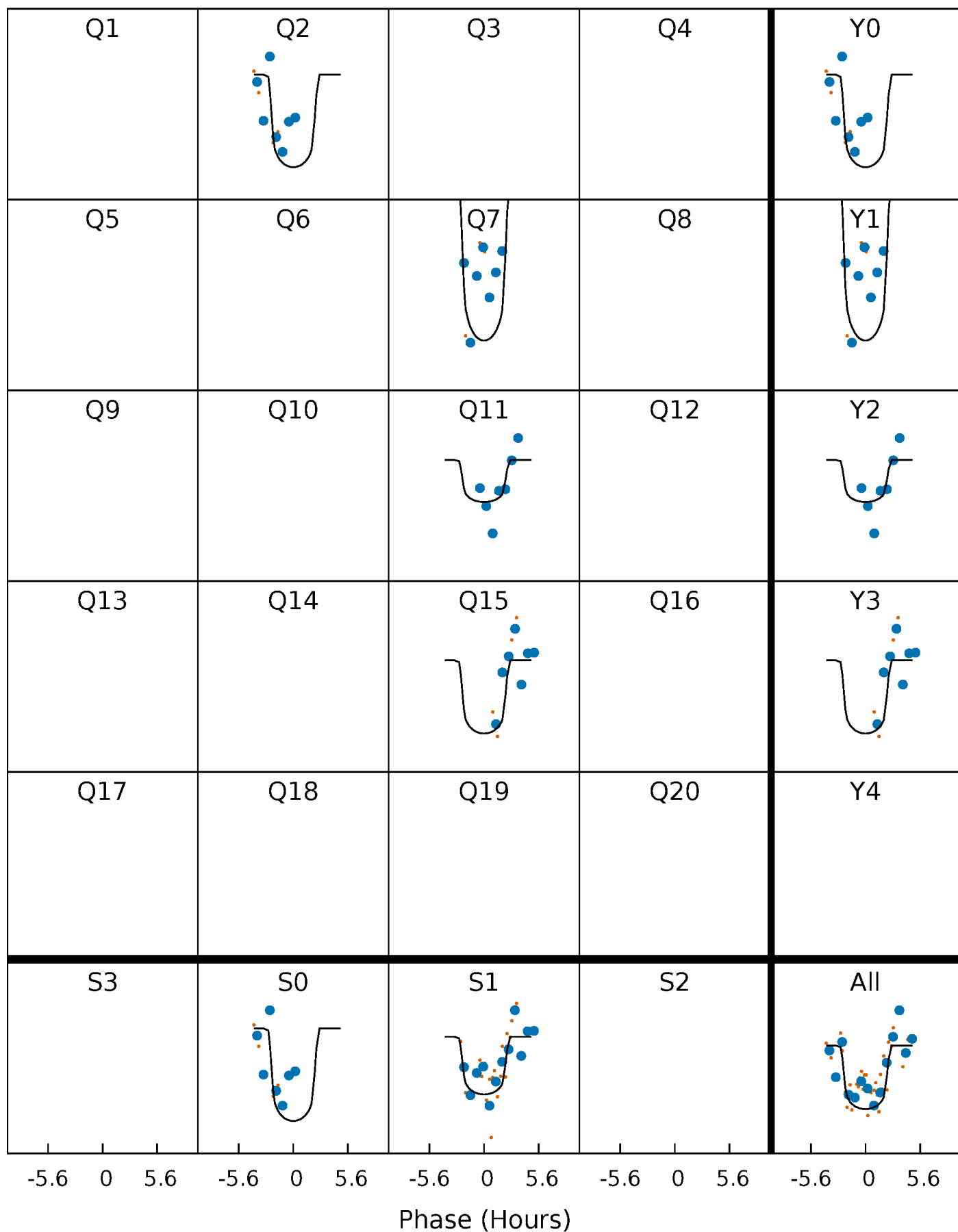
PDC Quarter-Phased Transit Curves

TCE 004380558-02 P=408.561167 Days $T_0=234.095850$ (BKJD)



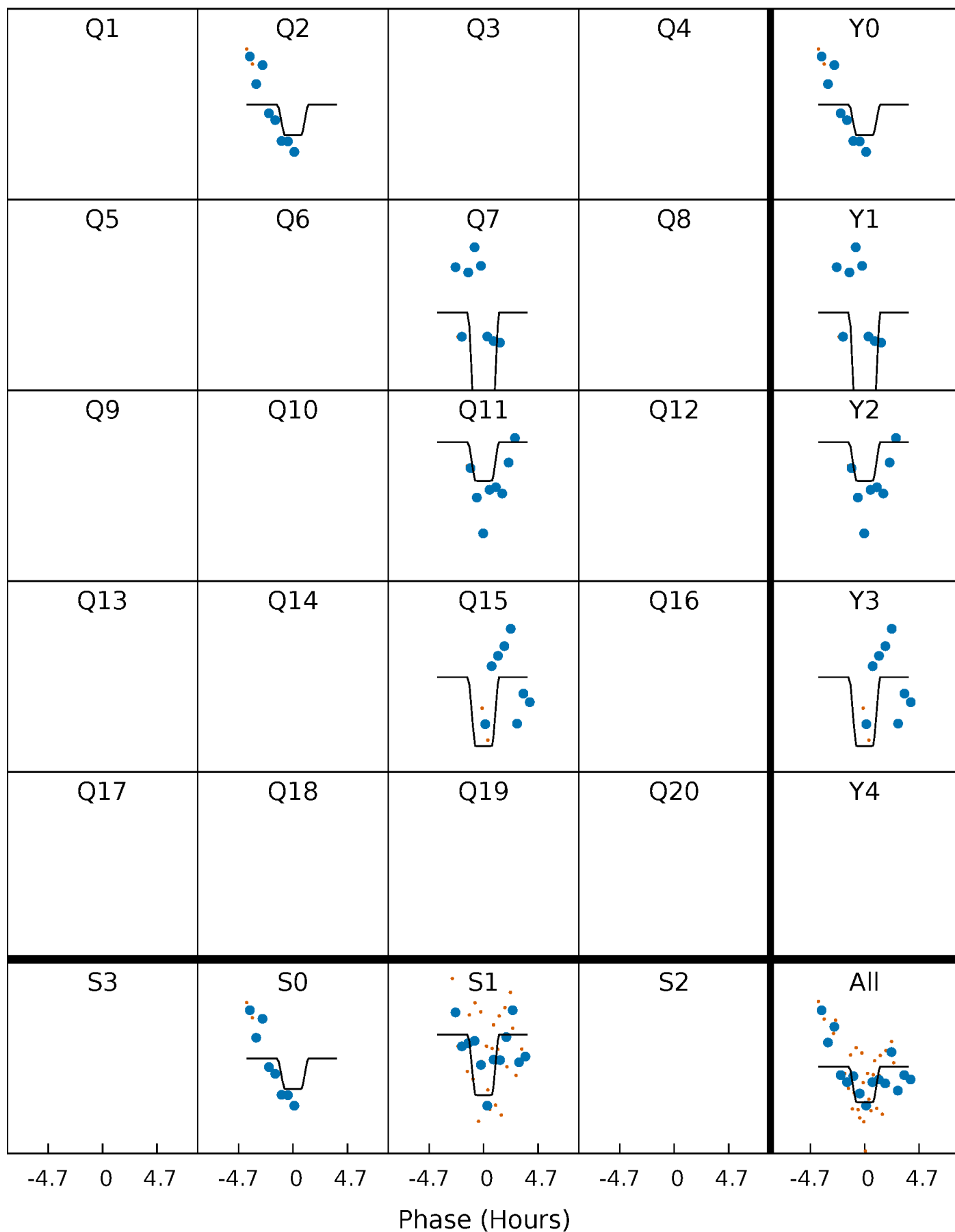
DV Quarter-Phased Transit Curves

TCE 004380558-02 P=408.561167 Days $T_0=234.095850$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

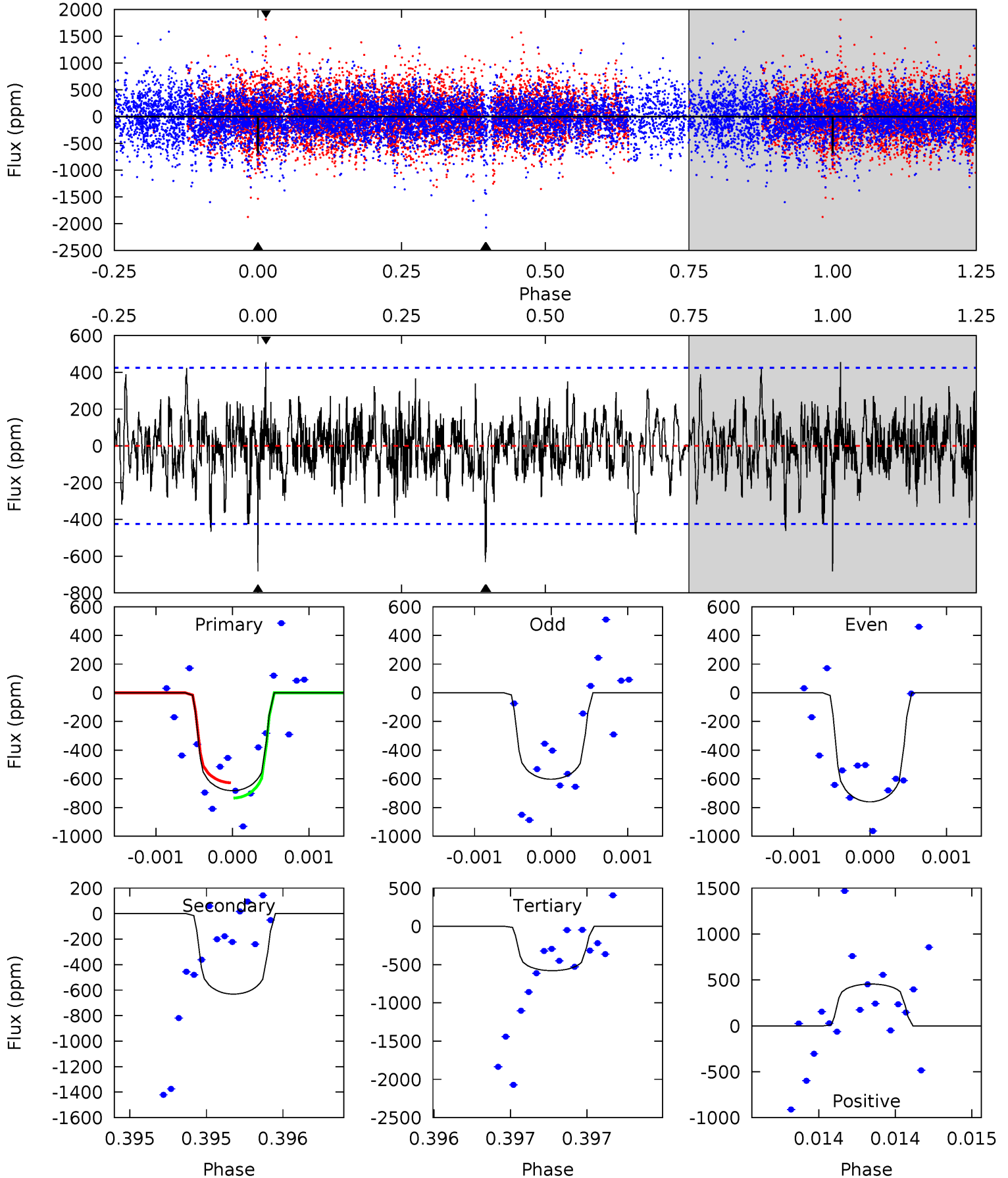
TCE 004380558-02 P=408.575843 Days $T_0=234.094368$ (BKJD)



DV Model-Shift Uniqueness Test

004380558-02, P = 408.561167 Days, E = 234.095850 Days

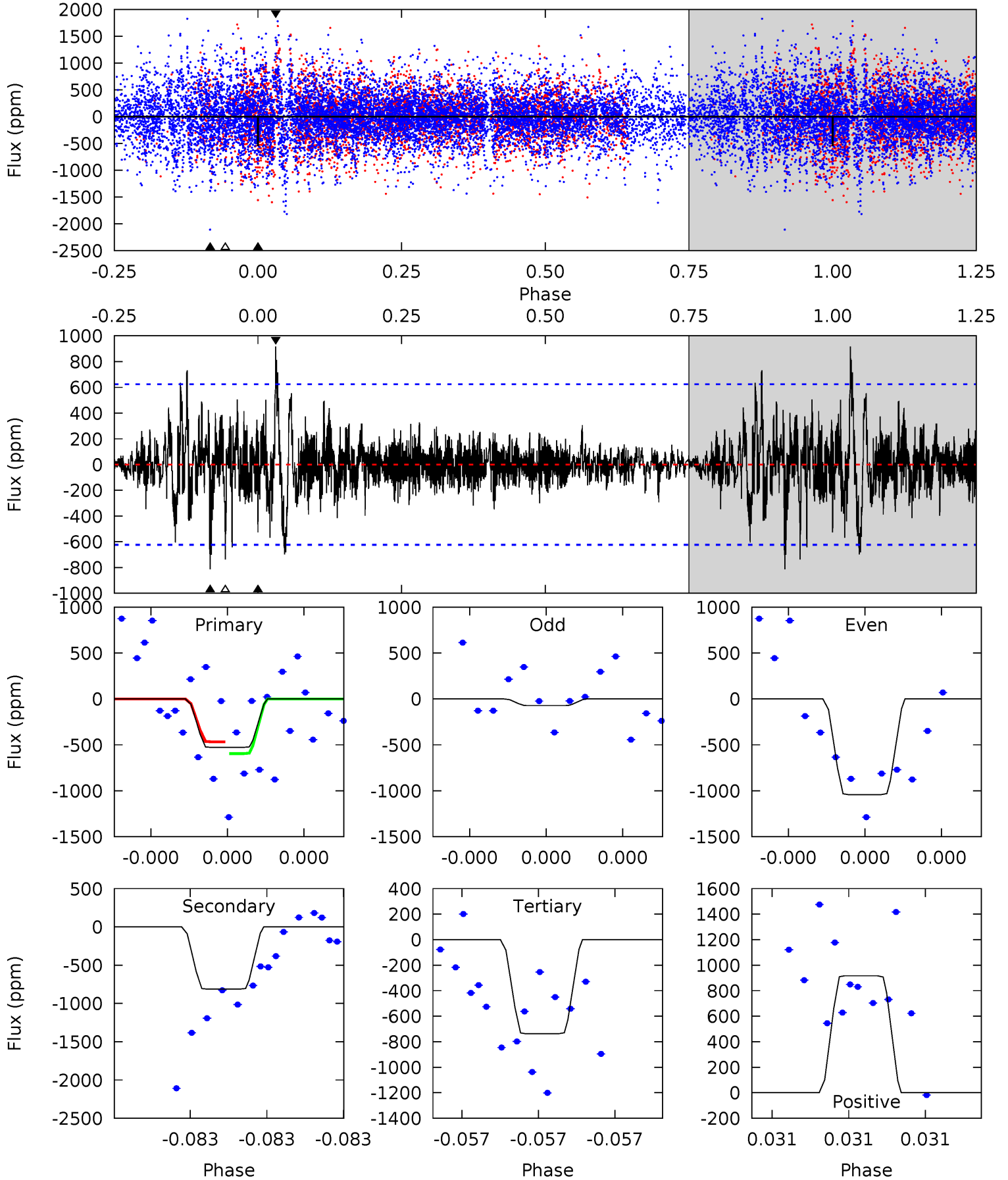
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.95	8.28	7.60	5.97	5.57	3.48	1.64	1.35	2.98	0.68	2.31	1.04	1.11	0.40	0.70



Alt Model-Shift Uniqueness Test

004380558-02, P = 408.575843 Days, E = 234.094368 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.81	7.41	6.72	8.36	5.68	3.65	1.44	-1.91	-3.55	0.69	-0.95	4.42	0.89	0.53	0.58



Stellar Parameters For KIC 004380558

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6393^{+177}_{-222}	$4.442^{+0.056}_{-0.210}$	$-0.320^{+0.250}_{-0.300}$	$1.030^{+0.332}_{-0.111}$	$1.067^{+0.156}_{-0.128}$	$1.377^{+0.408}_{-0.746}$
	+3%/-3%	+1%/-5%	+78%/-94%	+32%/-11%	+15%/-12%	+30%/-54%
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 004380558-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-631 ± 76	$3.65^{+2.34}_{-2.28}$	389^{+28}_{-21}	5792^{+4257}_{-1137}	$31767^{+178496}_{-20645}$
Alt.	-813 ± 110	$3.33^{+2.54}_{-2.11}$	389^{+31}_{-19}	6397^{+5836}_{-1439}	$47710^{+285405}_{-32117}$

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

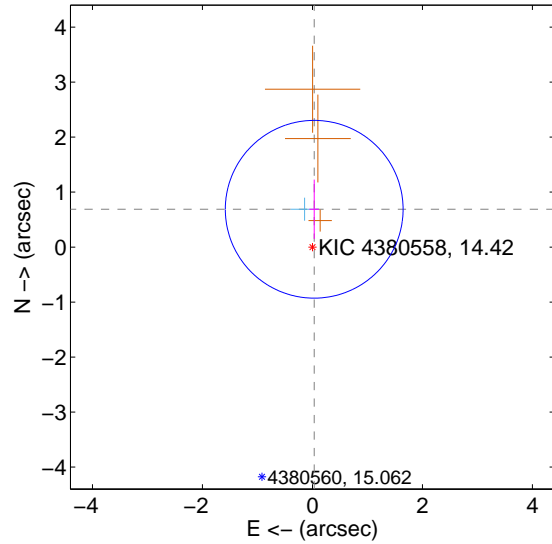
Supplemental centroid analysis for 004380558-02. Kepler magnitude: 14.42. Transit SNR 8.94

There are 1 quarters with good PRF difference image offsets

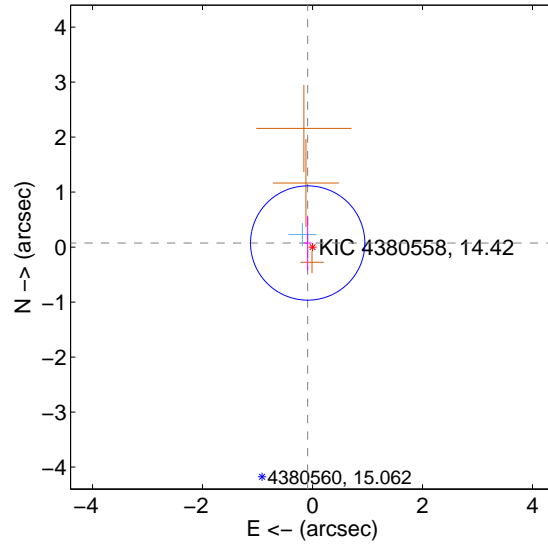
The direct PRF centroid is offset from the target star catalog position by about 0.84 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.689 ± 0.539	1.28	-0.032 ± 0.087	0.688 ± 0.539
PRF-fit source offset from KIC position	0.115 ± 0.346	0.33	0.088 ± 0.075	0.074 ± 0.496
photometric centroid source offset	0.98 ± 0.89	1.10	-0.51 ± 0.73	-0.84 ± 0.95

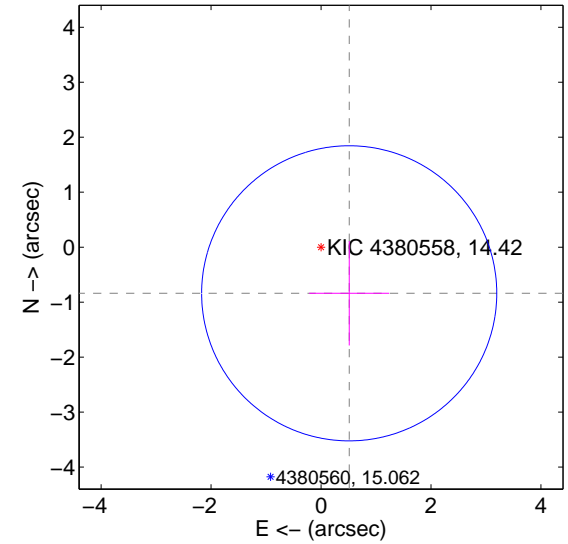
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

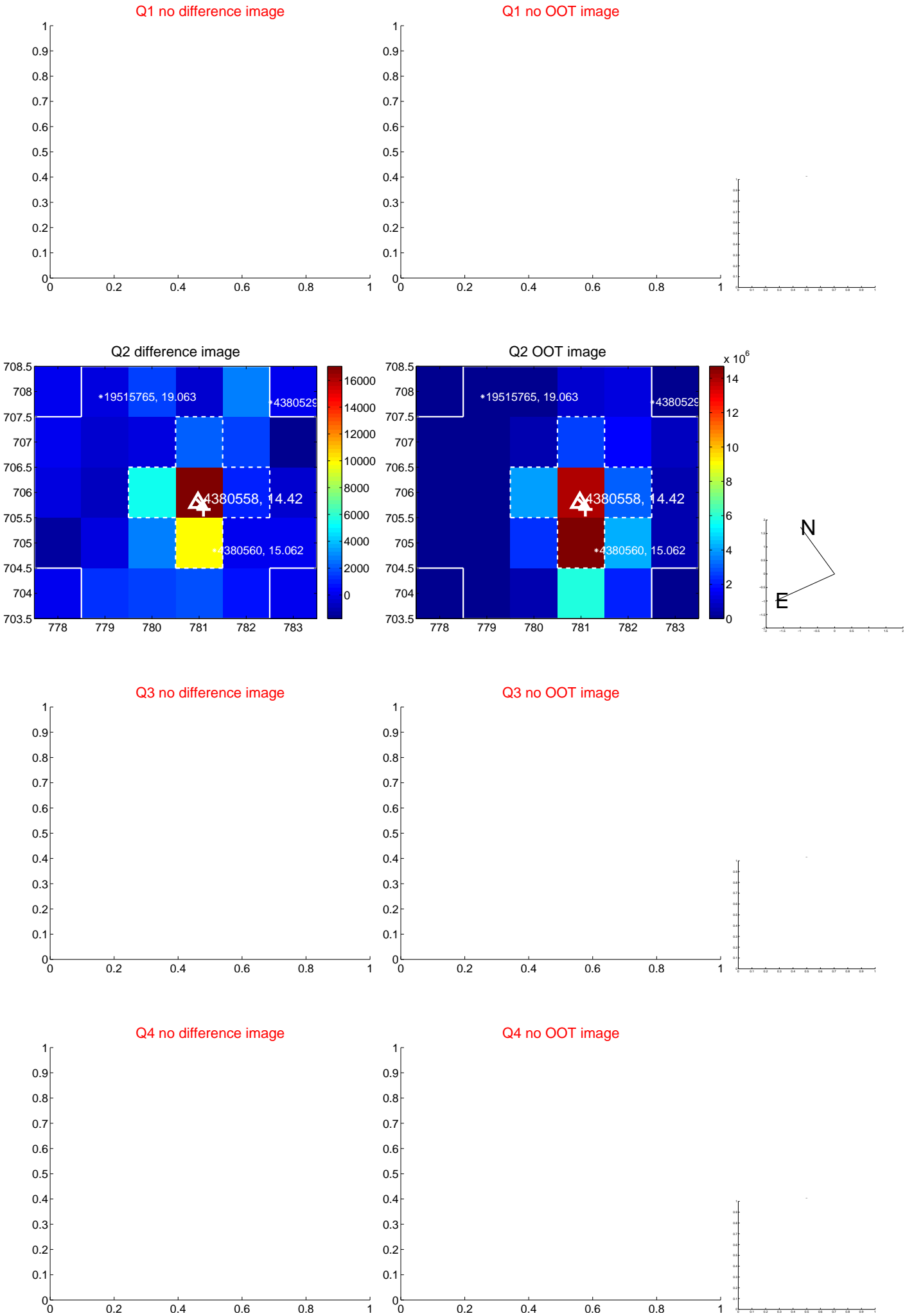


offset from photometric centroids



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

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



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

Q5 no difference image



Q5 no OOT image



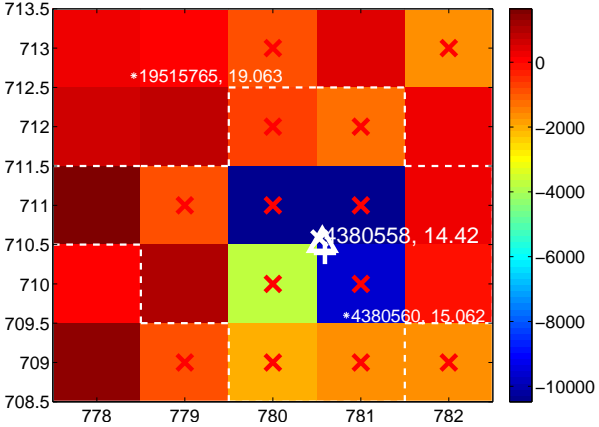
Q6 no difference image



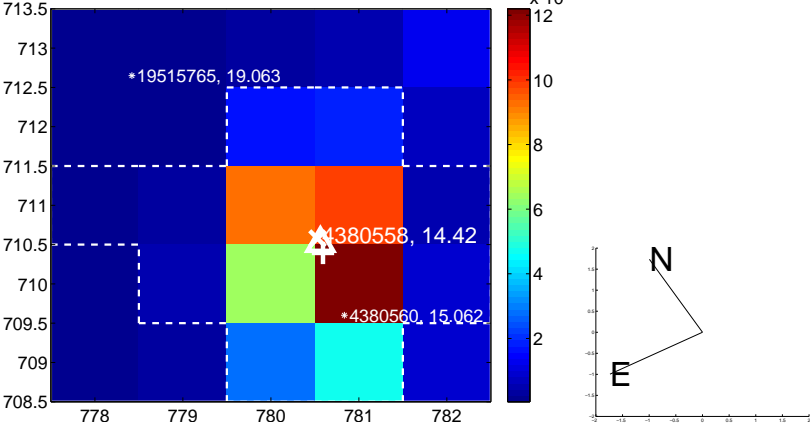
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



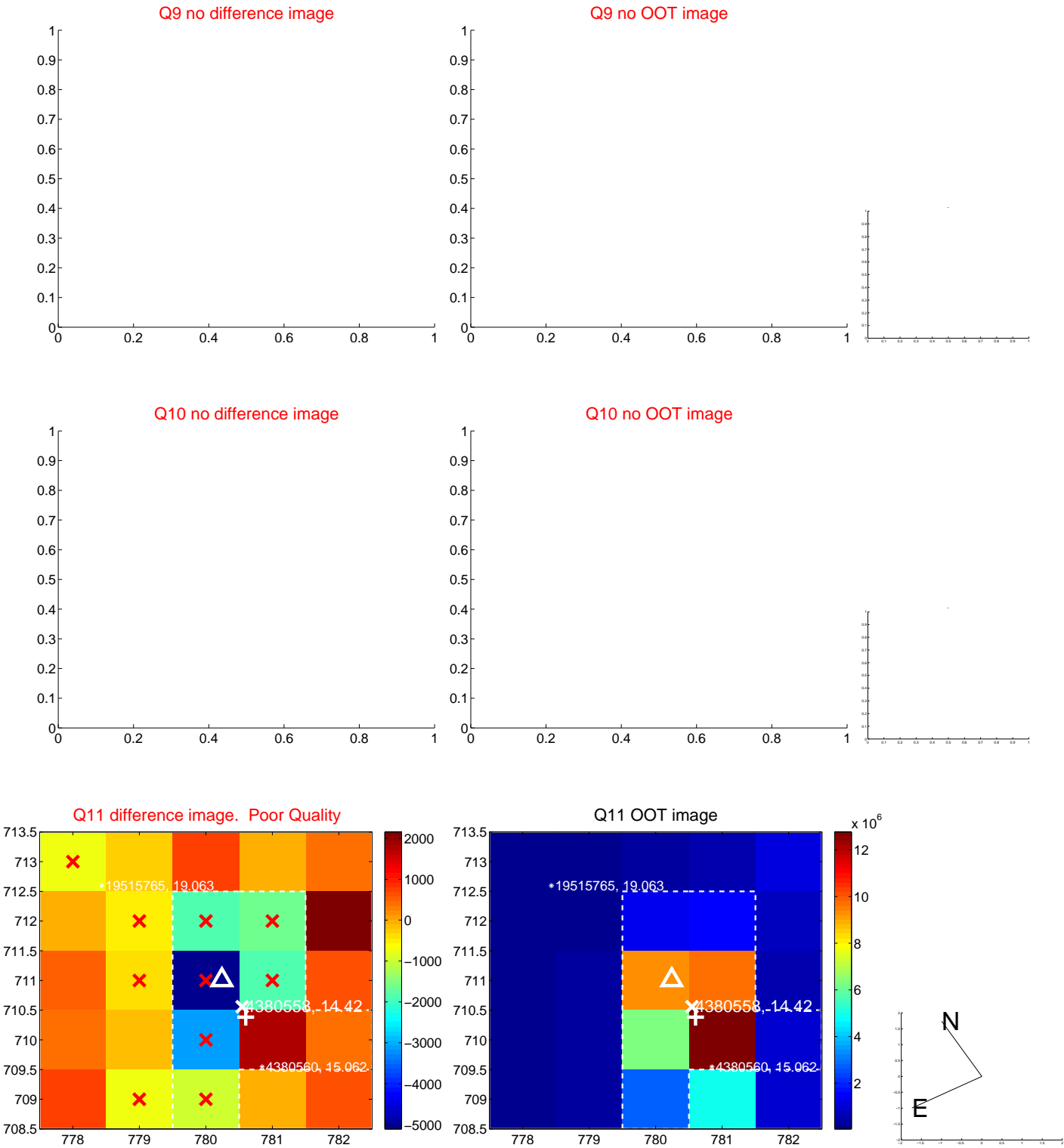
Q8 no difference image



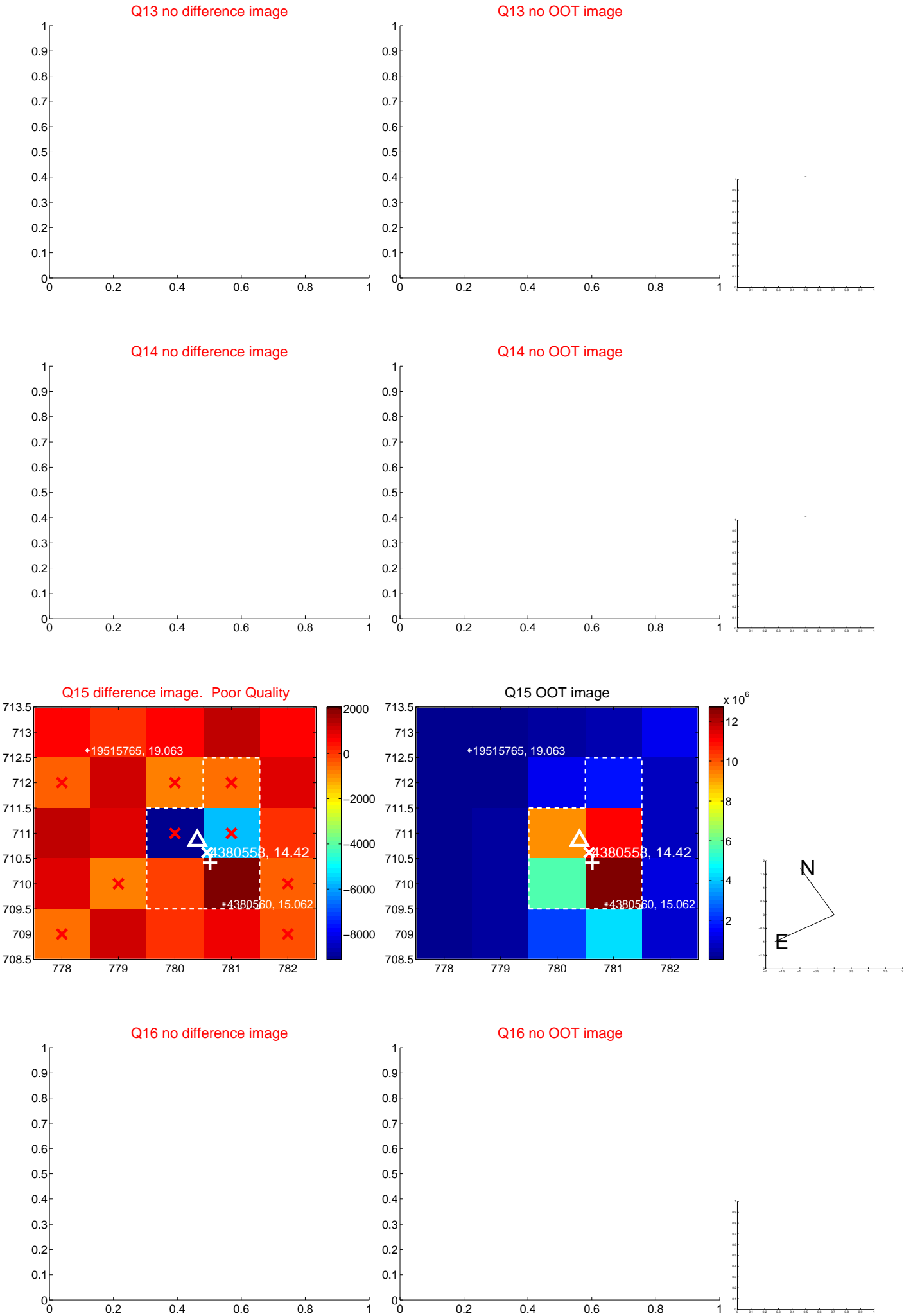
Q8 no OOT image



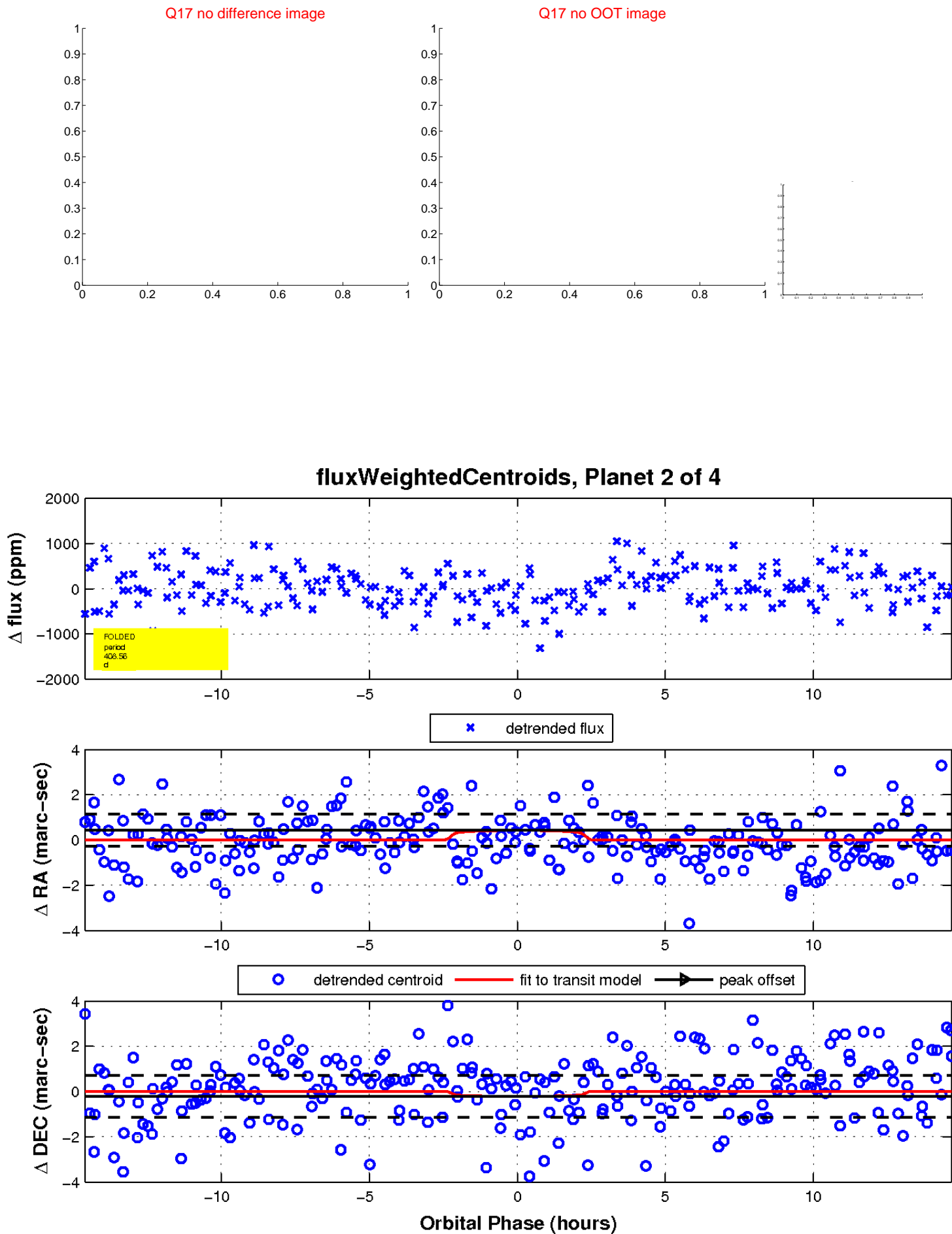
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



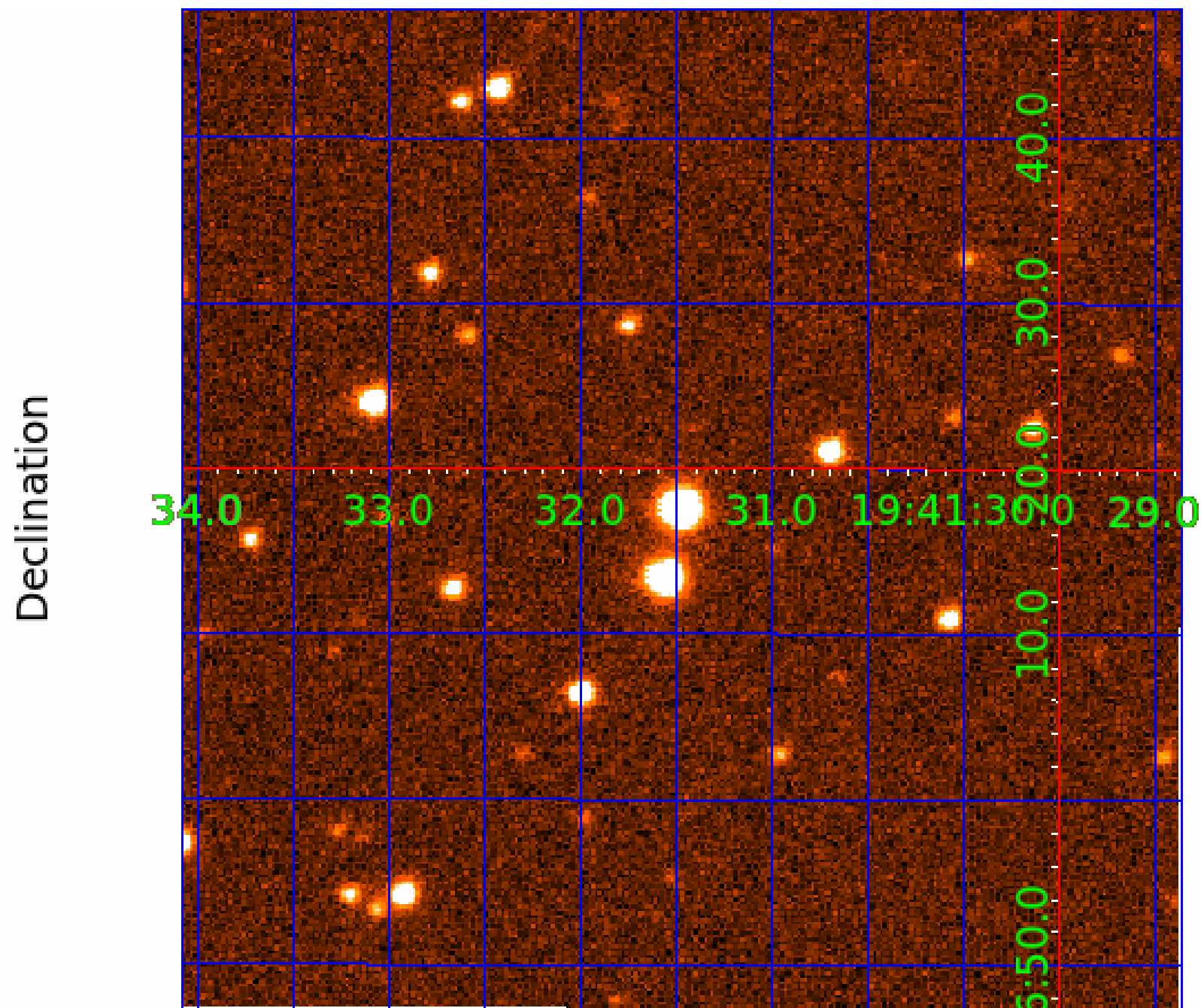
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004380558

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})
004380558-01	OBS	No	0.705752	132.026192	56.5	4.106	10.6	10.1	1.03	6393	0.78	6300.88
004380558-02	OBS	No	408.561167	234.095850	876.0	4.892	10.2	8.9	1.03	6393	3.32	1.31
004380558-03	OBS	No	27.258147	155.685746	567.0	1.121	9.2	7.8	1.03	6393	2.71	48.26
004380558-04	OBS	No	86.241000	206.972418	675.6	3.128	8.9	7.7	1.03	6393	3.01	10.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004380558-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
004380558-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004380558-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
004380558-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

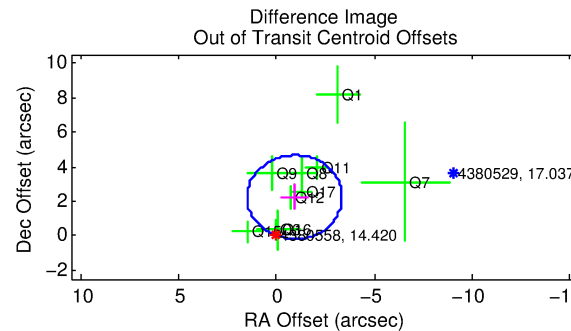
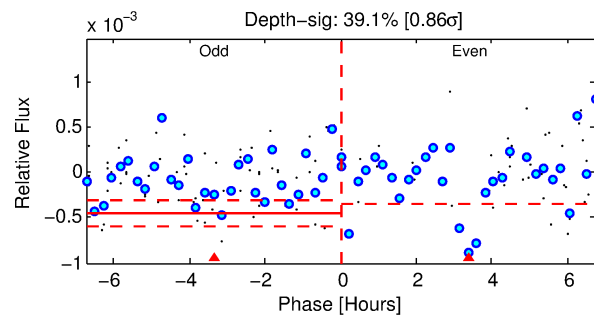
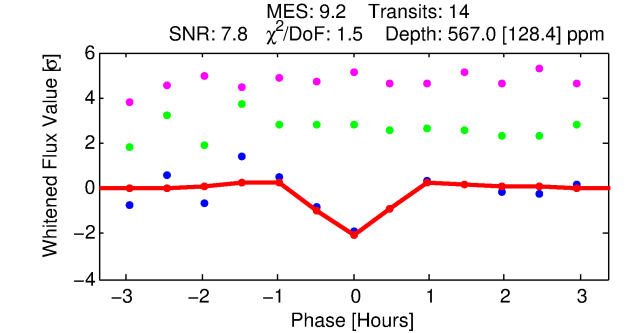
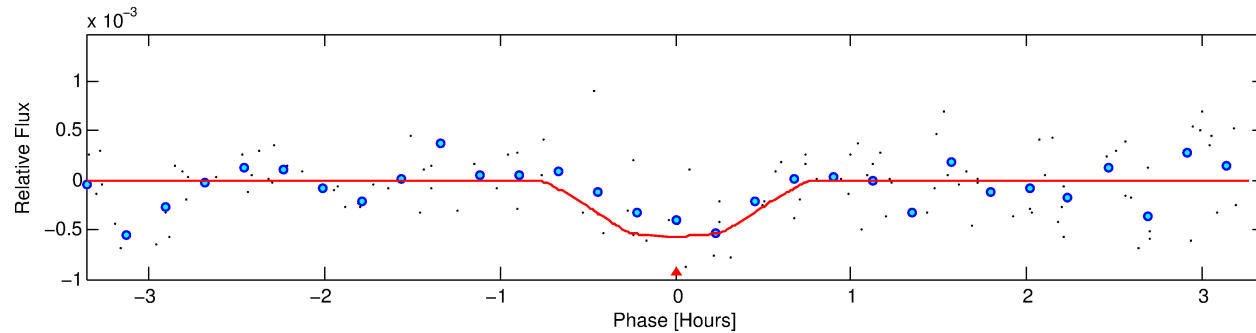
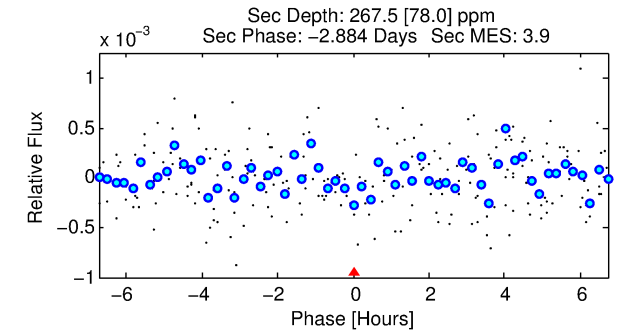
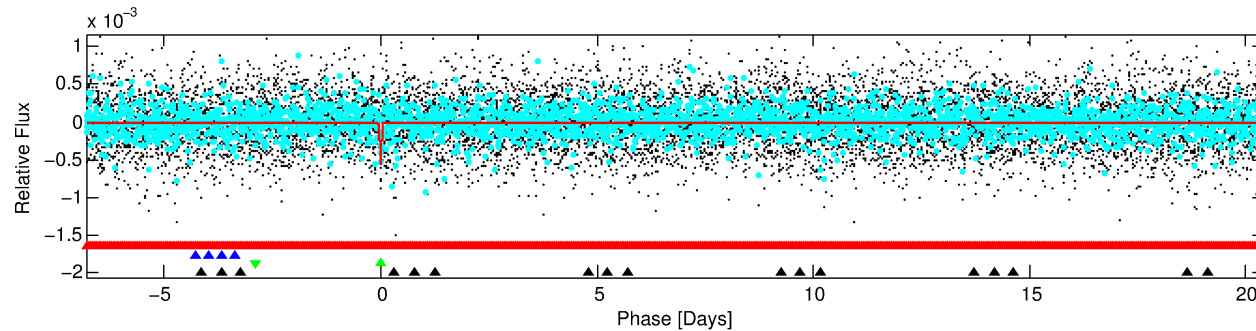
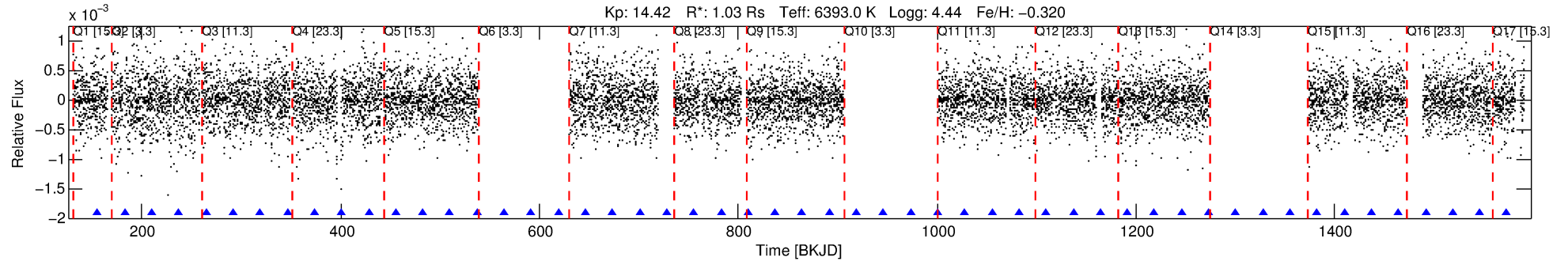
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004380558-03

No Significant Match Found

DV One-Page Summary

KIC: 4380558 Candidate: 3 of 4 Period: 27.258 d



DV Fit Results:

Period = 27.25815 [0.00018] d
Epoch = 155.6857 [0.0046] BKJD
Rp/R* = 0.0241 [0.0431]
a/R* = 121.70 [1165.22]
b = 0.79 [4.68]
Seff = 48.26 [19.86]
Teff = 672 [69] K
Rp = 2.71 [4.92] Re
a = 0.1814 [0.0487] AU
Ag = 657.45 [2368.47] [0.28 σ]
Teffp = 5262 [4715] K [0.97 σ]

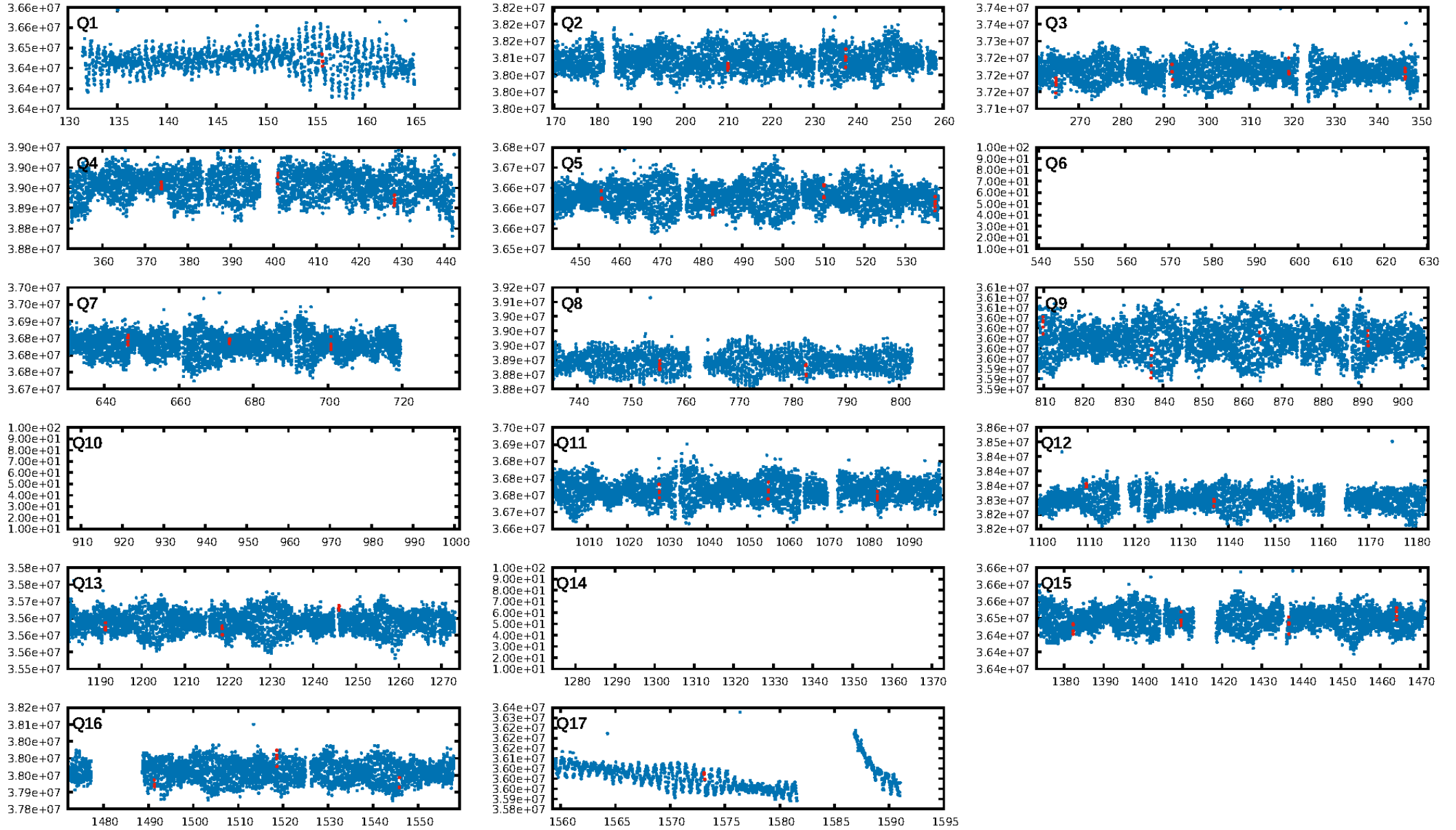
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [149.74 σ]
LongPeriod-sig: 100.0% [426.01 σ]
ModelChiSquare2-sig: 2.3%
ModelChiSquareGof-sig: 96.5%
Bootstrap-pfa: 2.90e-11
RollingBand-fgt: 1.00 [13/13]
GhostDiagnostic-chr: 2.56
Centroid-sig: 2.8%
Centroid-so: 0.363 arcsec [0.54 σ]
OotOffset-rm: 2.419 arcsec [2.99 σ]
KicOffset-rm: 0.805 arcsec [0.97 σ]
OotOffset-st: 0/4/3/3 [10]
KicOffset-st: 0/4/3/3 [10]
DiffImageQuality-fgm: 0.40 [4/10]
DiffImageOverlap-fno: 0.36 [5/14]

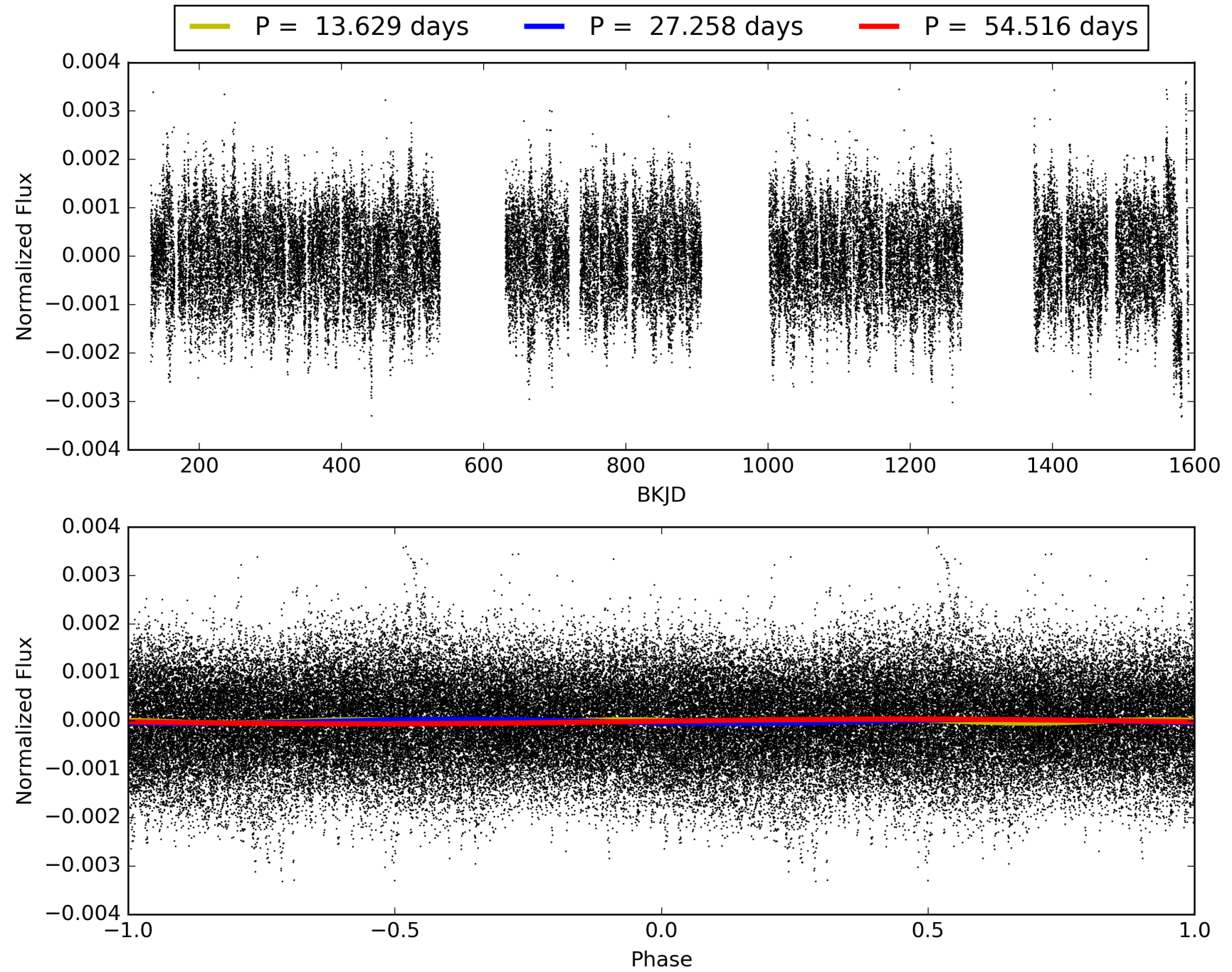
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:51:33 Z

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

TCE 004380558-03, PDC Light Curves

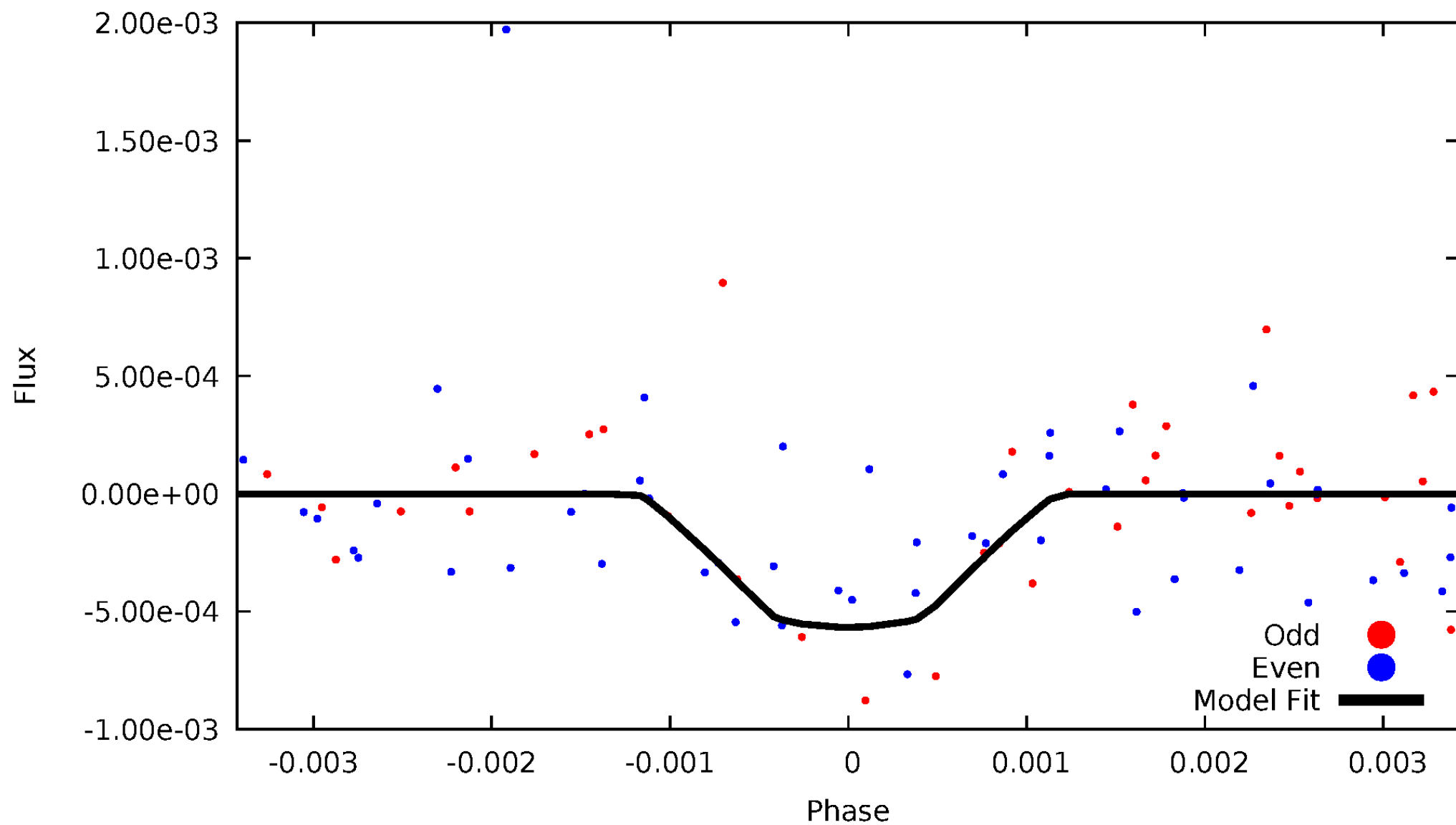


TCE 004380558-03



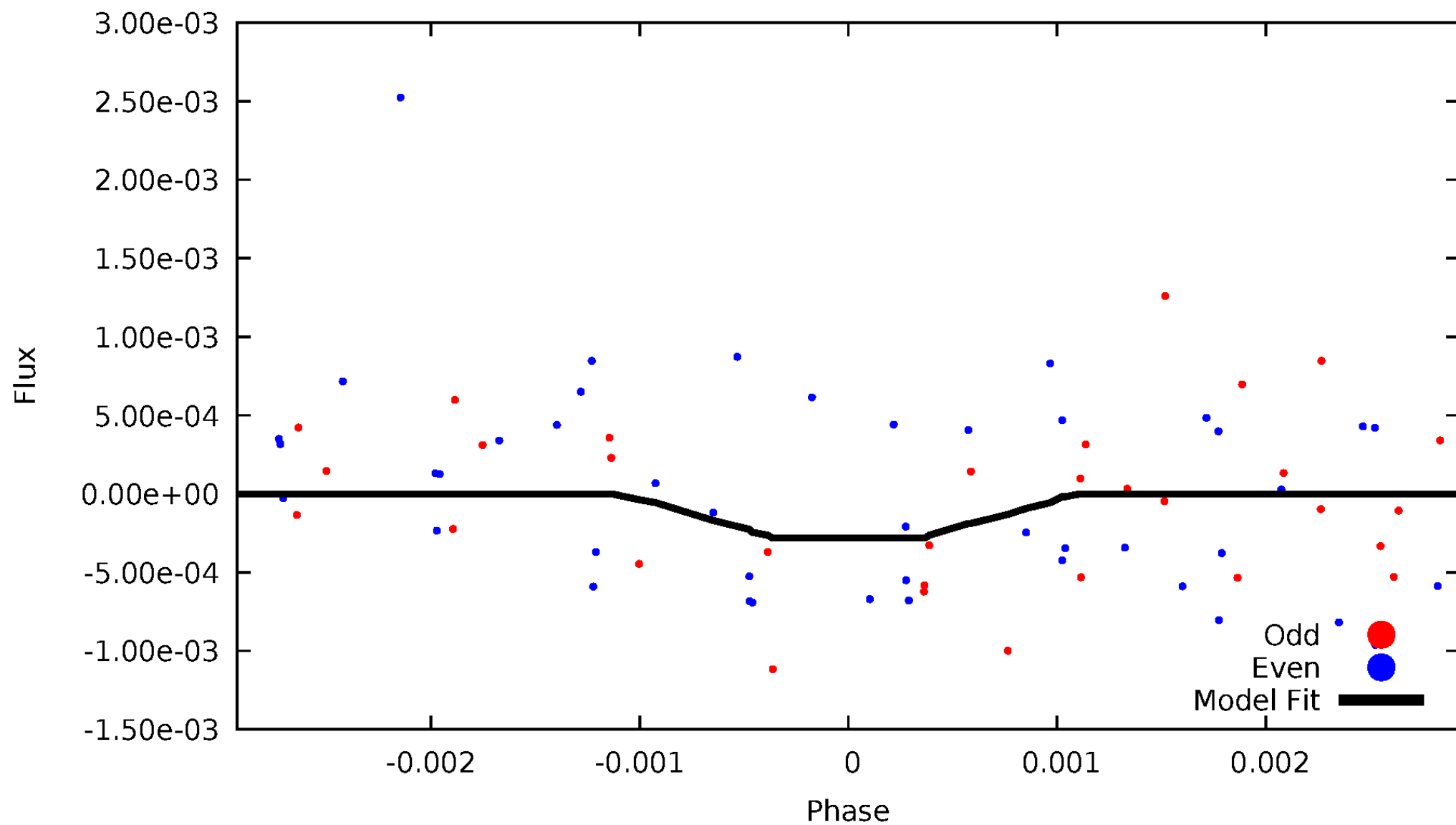
DV Odd/Even

TCE 004380558-03



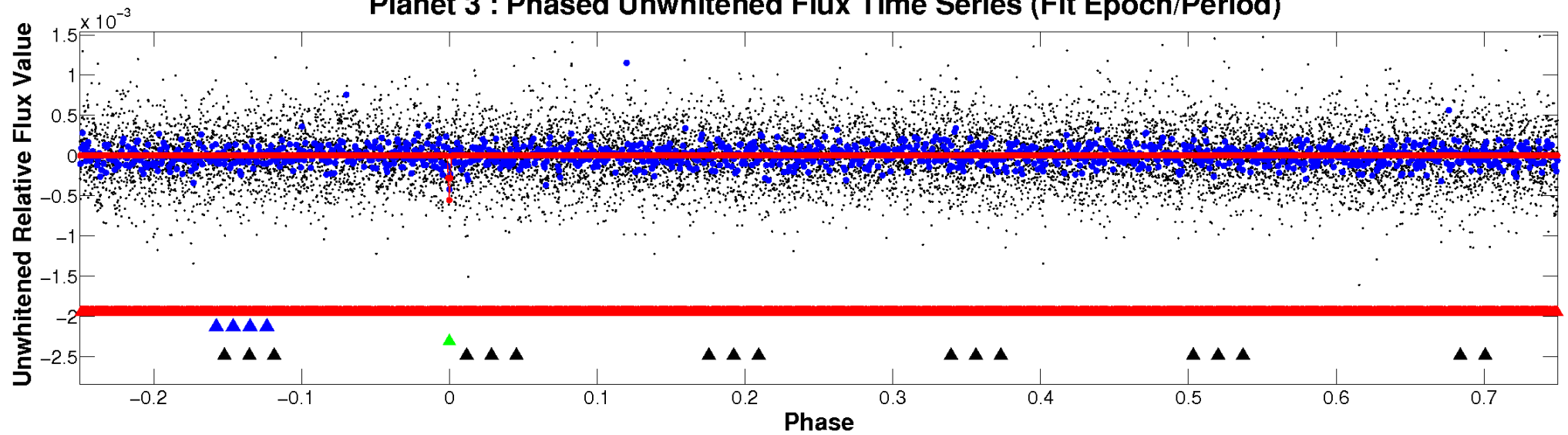
ALT Odd/Even

TCE 004380558-03

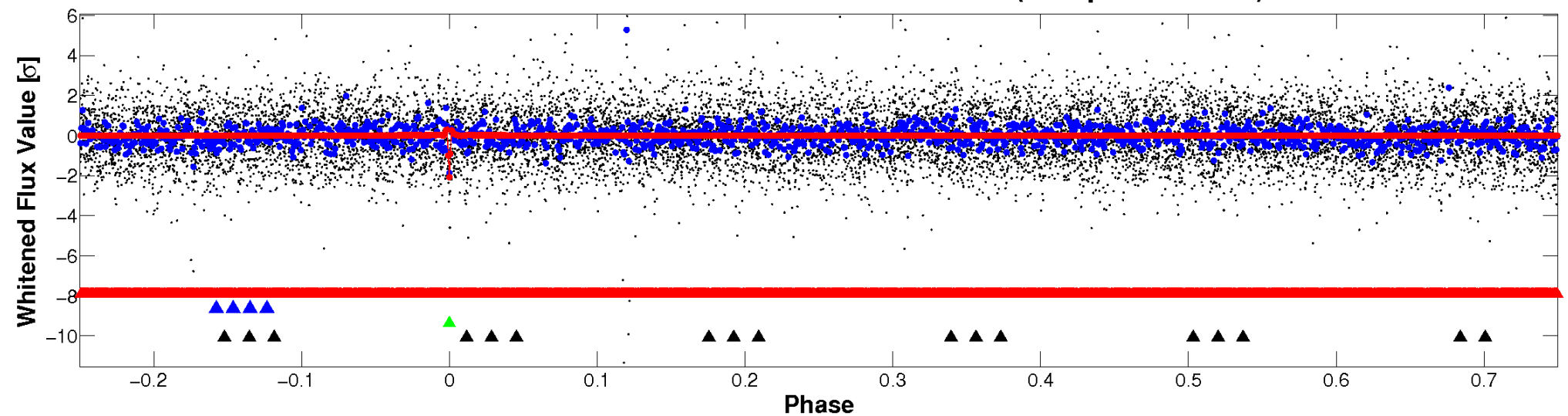


Non-Whitened Vs. Whitened Light Curve

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

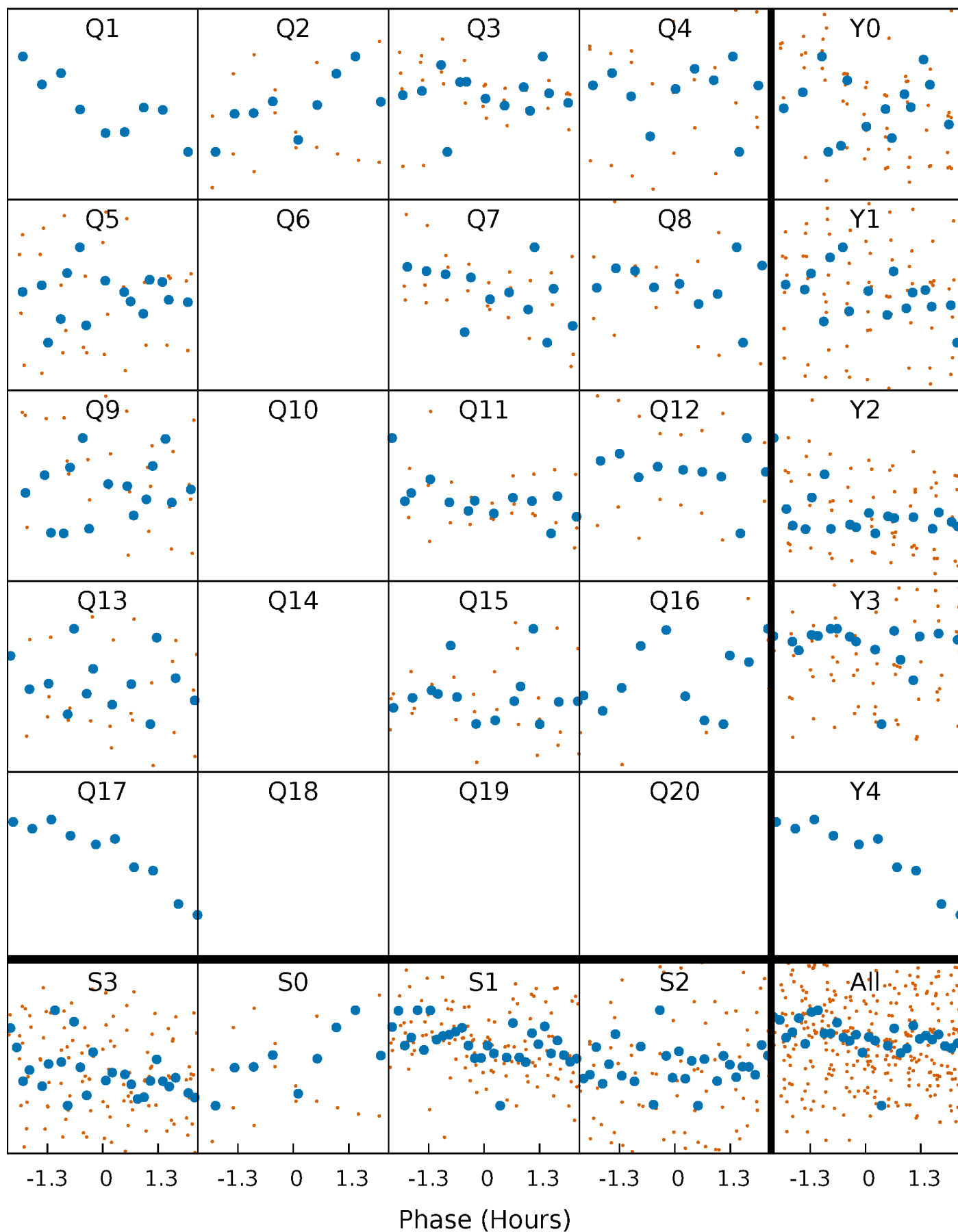


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



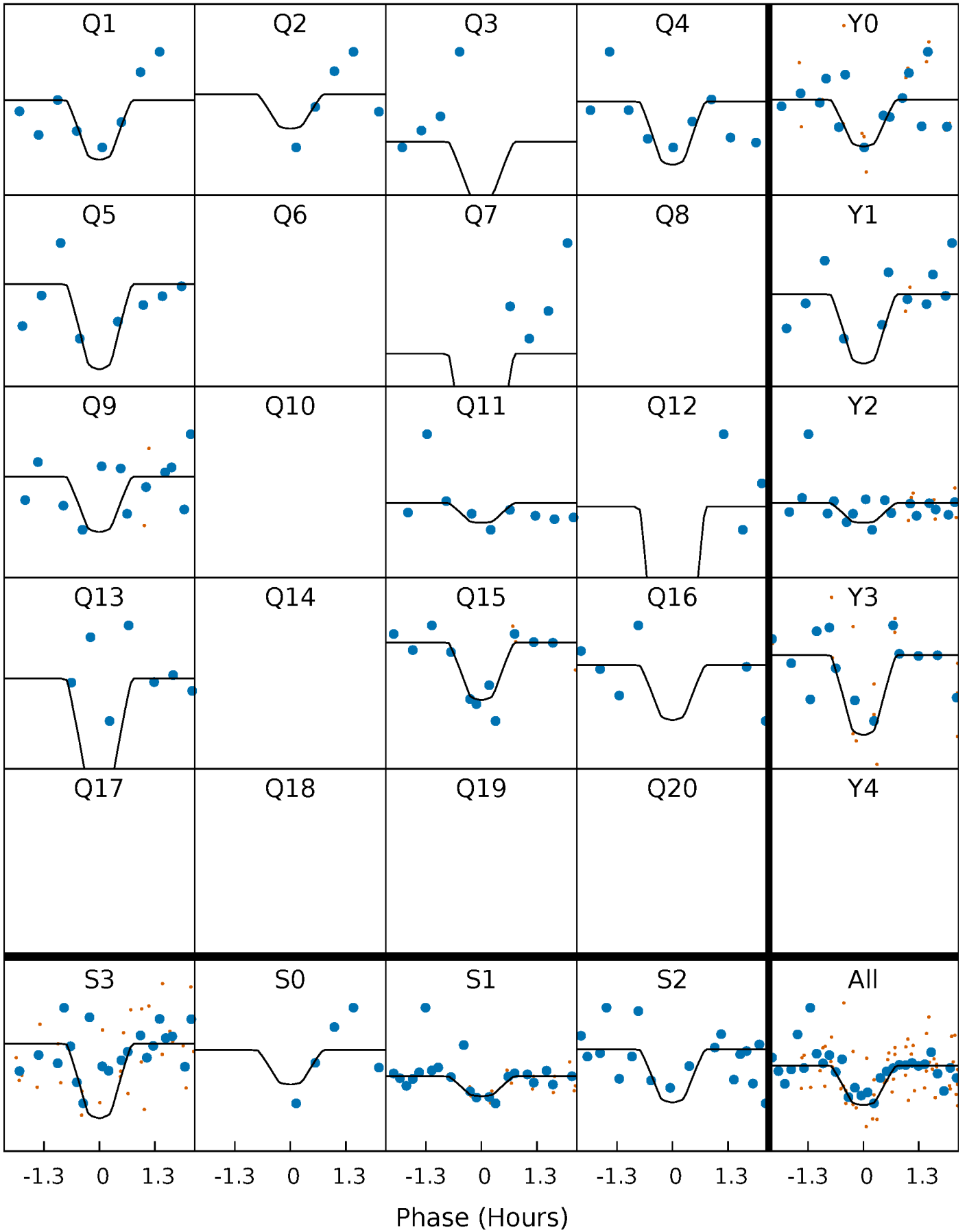
PDC Quarter-Phased Transit Curves

TCE 004380558-03 P= 27.258147 Days $T_0=155.685746$ (BKJD)



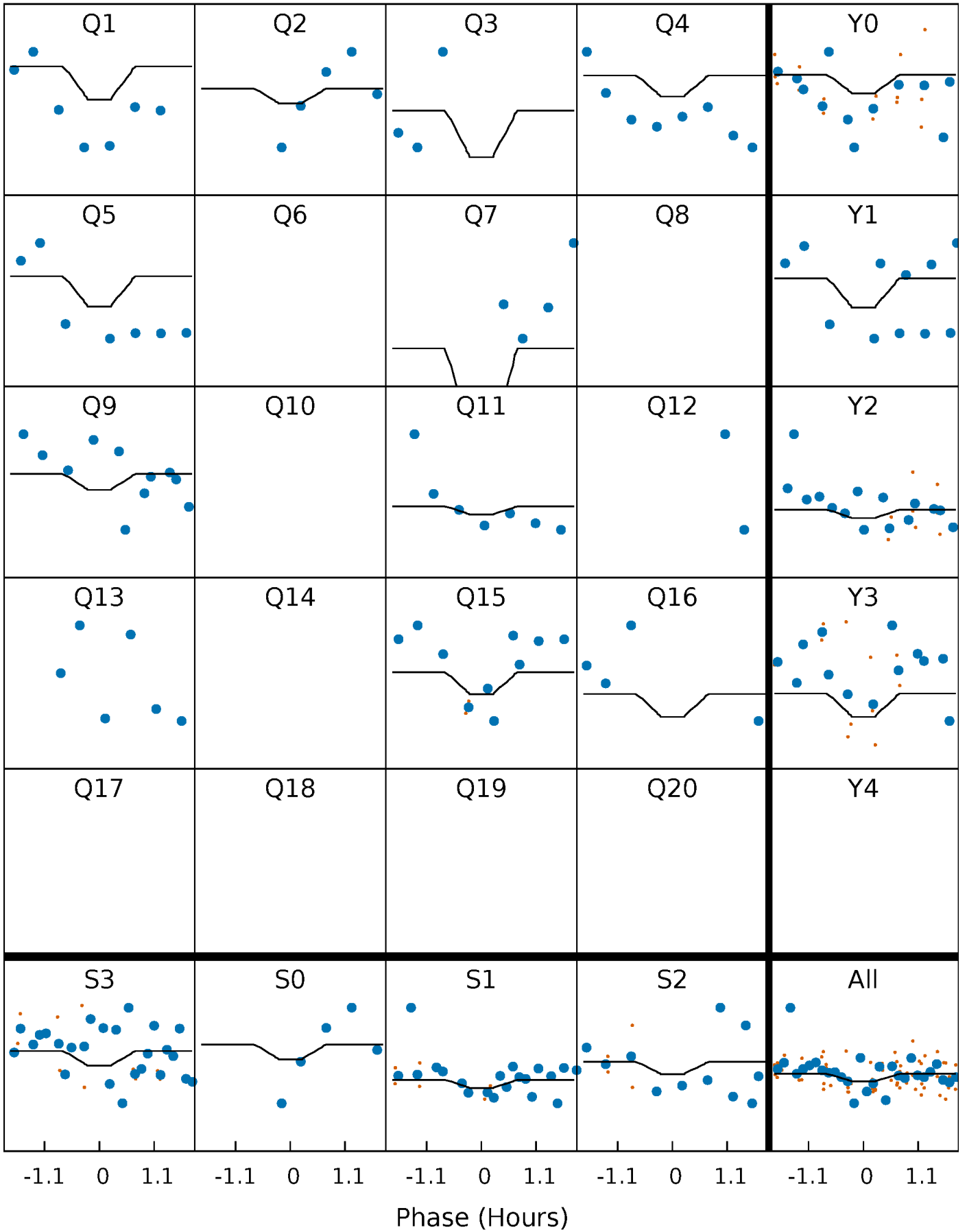
DV Quarter-Phased Transit Curves

TCE 004380558-03 P= 27.258147 Days $T_0=155.685746$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

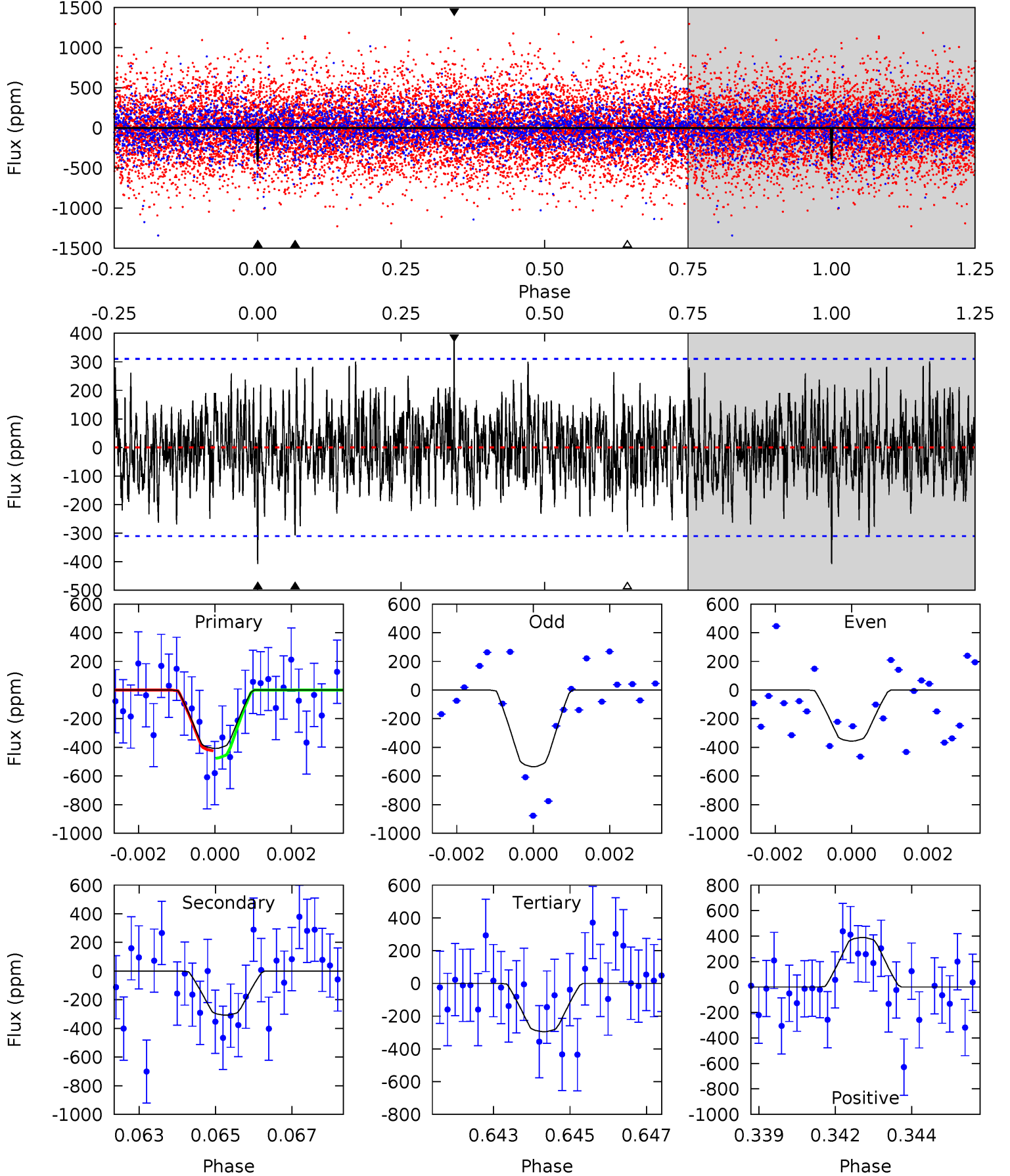
TCE 004380558-03 P= 27.257932 Days $T_0=155.698850$ (BKJD)



DV Model-Shift Uniqueness Test

004380558-03, P = 27.258147 Days, E = 128.427599 Days

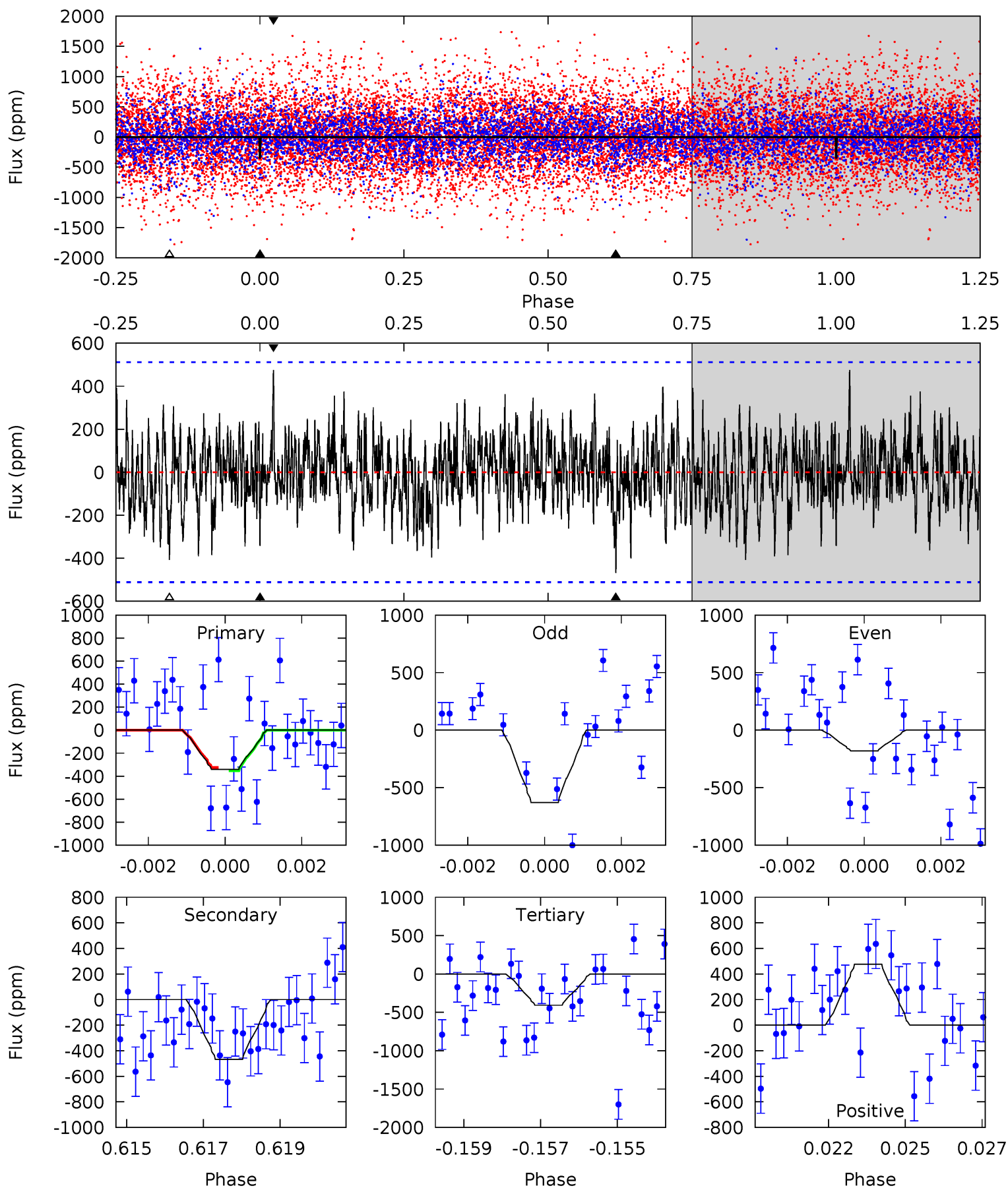
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.96	5.24	5.04	6.64	5.29	3.03	1.65	1.92	0.32	0.21	-1.40	1.45	0.95	0.49	0.43



Alt Model-Shift Uniqueness Test

004380558-03, P = 27.257932 Days, E = 128.440918 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.56	4.86	4.24	4.95	5.32	3.08	1.37	-0.68	-1.39	0.62	-0.08	2.15	0.52	0.50	0.14



Stellar Parameters For KIC 004380558

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6393^{+177}_{-222}	$4.442^{+0.056}_{-0.210}$	$-0.320^{+0.250}_{-0.300}$	$1.030^{+0.332}_{-0.111}$	$1.067^{+0.156}_{-0.128}$	$1.377^{+0.408}_{-0.746}$
	+3%/-3%	+1%/-5%	+78%/-94%	+32%/-11%	+15%/-12%	+30%/-54%
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 004380558-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-307 ± 59	$4.87^{+4.69}_{-3.32}$	961^{+70}_{-48}	4382^{+3102}_{-871}	229^{+1992}_{-170}
Alt.	-467 ± 96	$4.57^{+4.27}_{-3.05}$	961^{+75}_{-50}	4890^{+3472}_{-1055}	388^{+3174}_{-284}

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

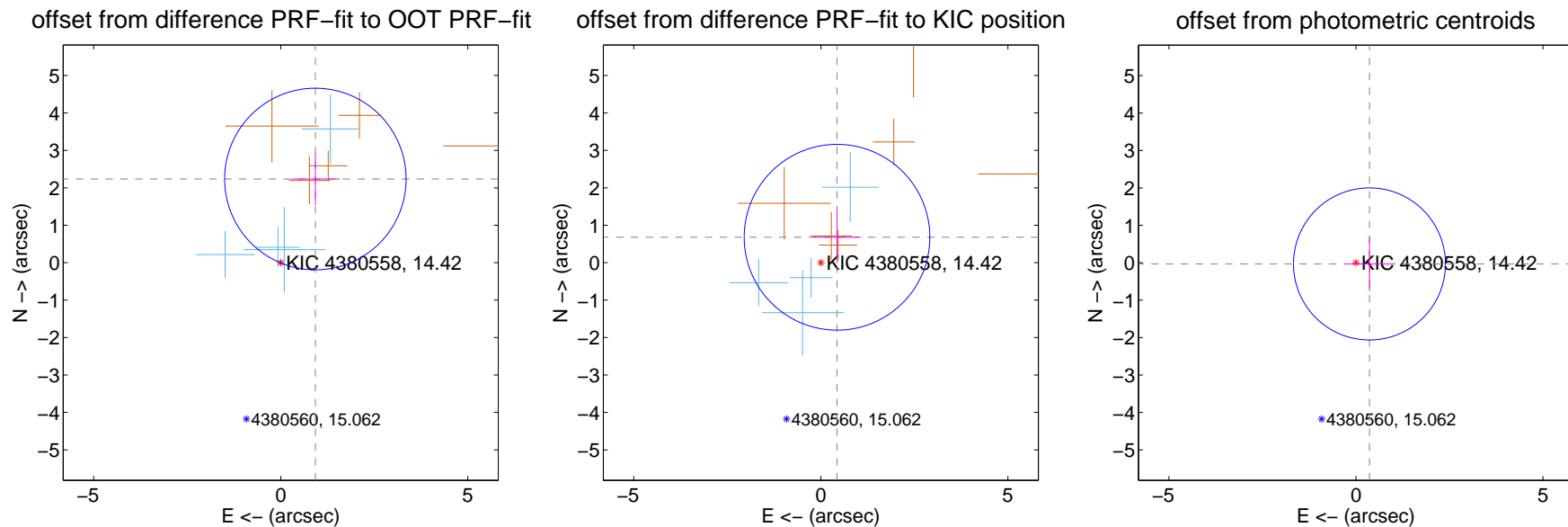
DV Centroid Data

Supplemental centroid analysis for 004380558-03. Kepler magnitude: 14.42. Transit SNR 7.75

There are 4 quarters with good PRF difference image offsets

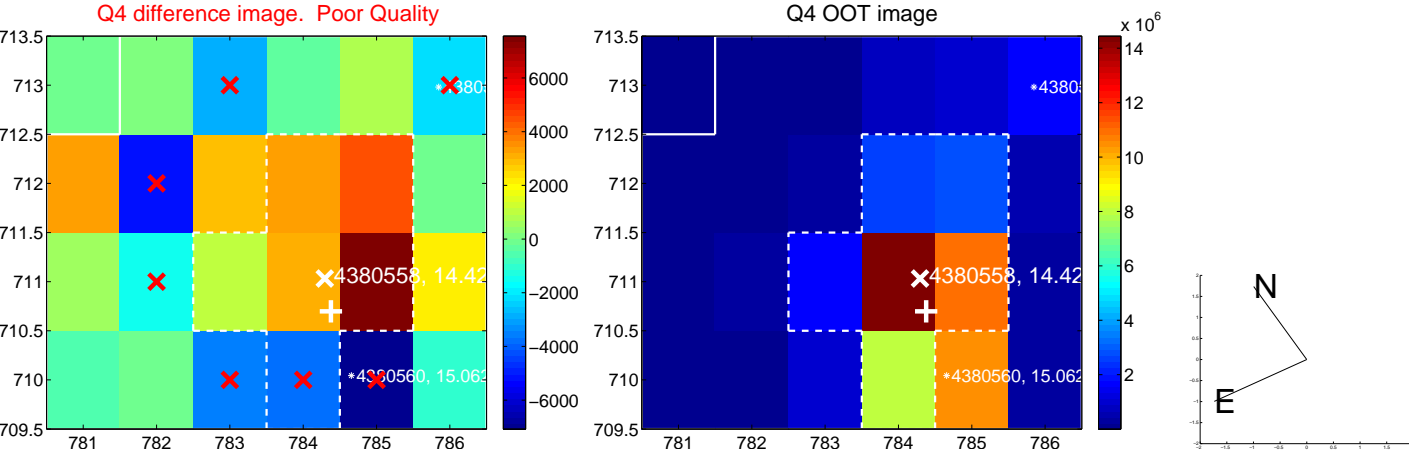
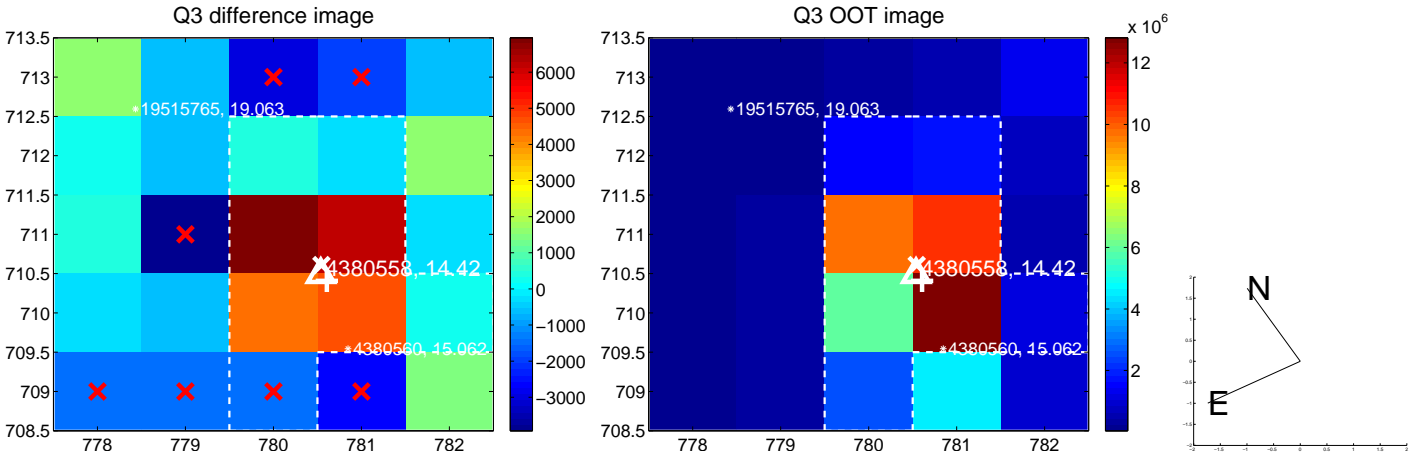
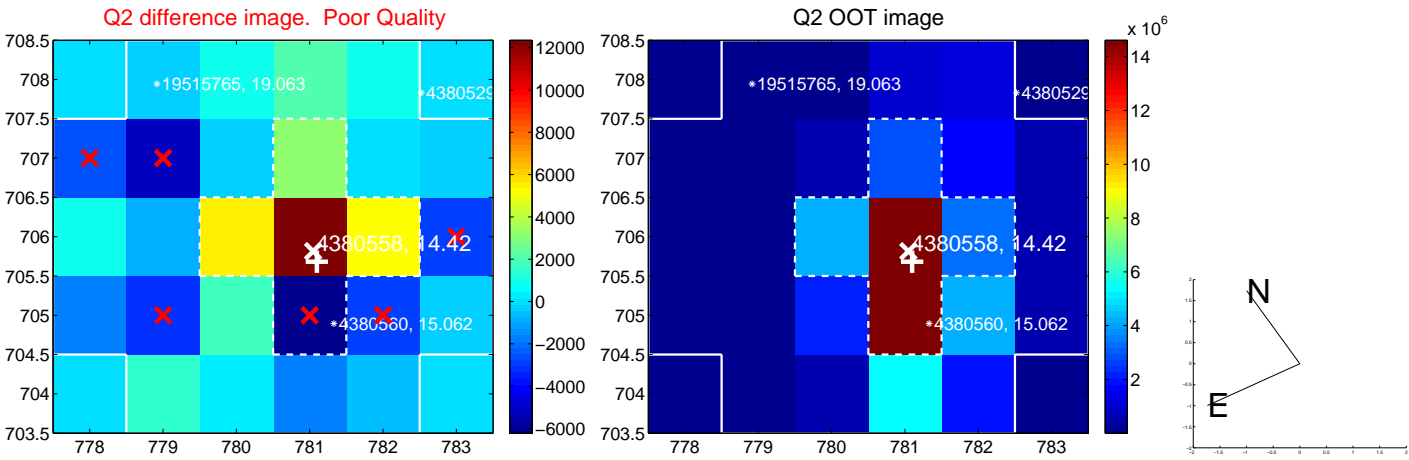
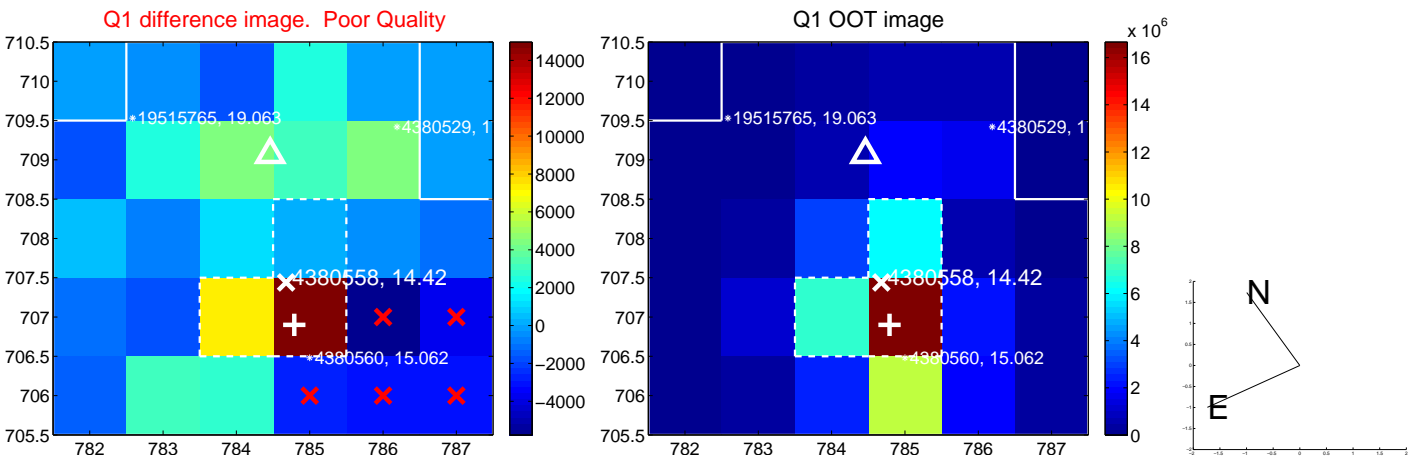
The OOT PRF centroid is offset from the target star catalog position by about 2.27 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.419 ± 0.808	2.99	-0.925 ± 0.644	2.235 ± 0.700
PRF-fit source offset from KIC position	0.805 ± 0.827	0.97	-0.432 ± 0.616	0.680 ± 0.698
photometric centroid source offset	0.36 ± 0.68	0.54	-0.36 ± 0.68	-0.03 ± 0.72

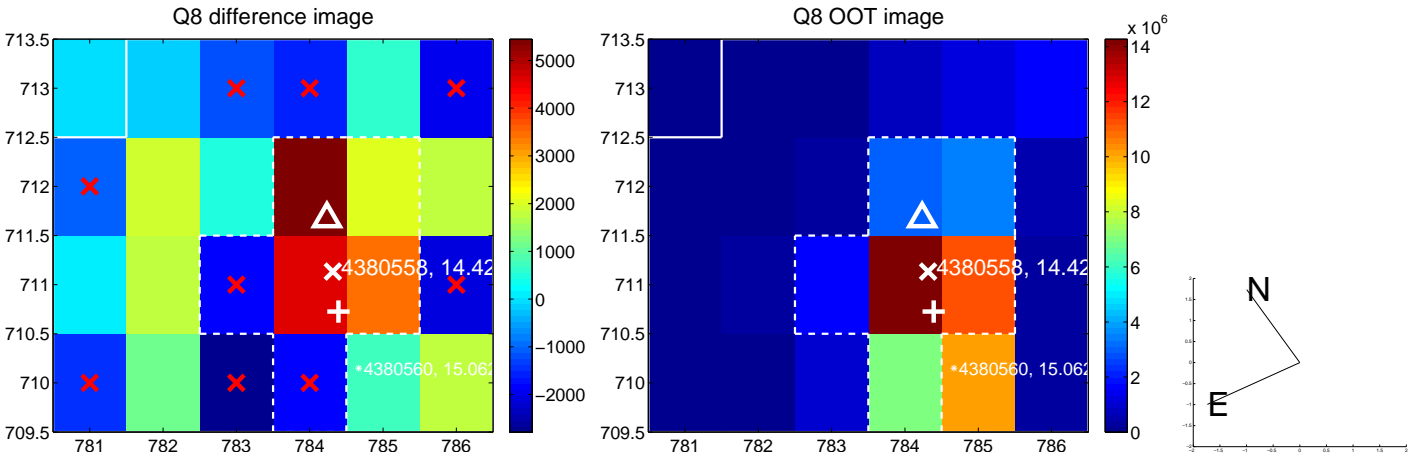
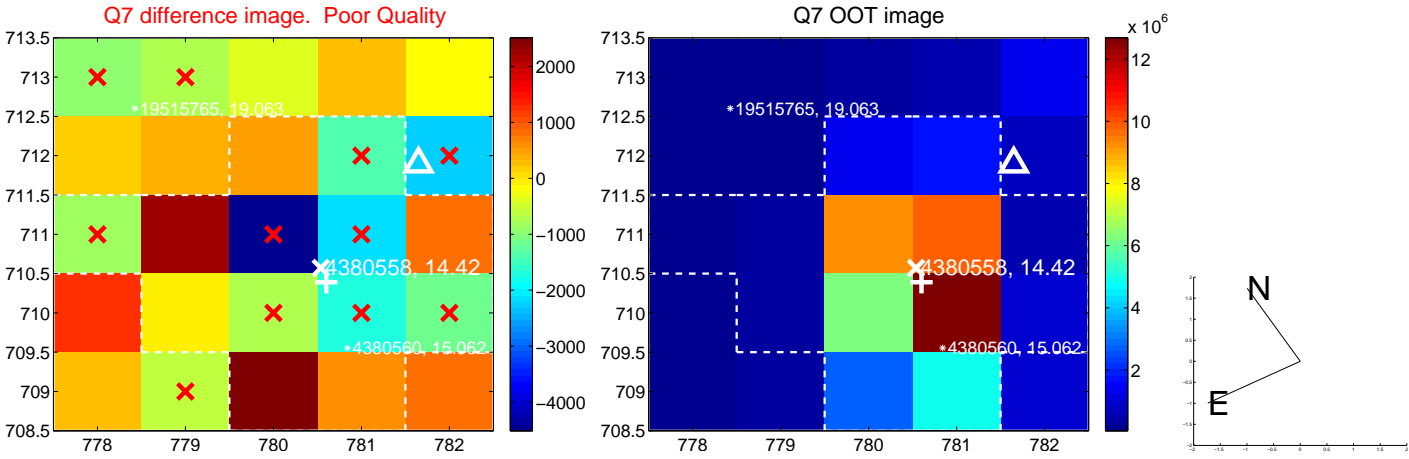
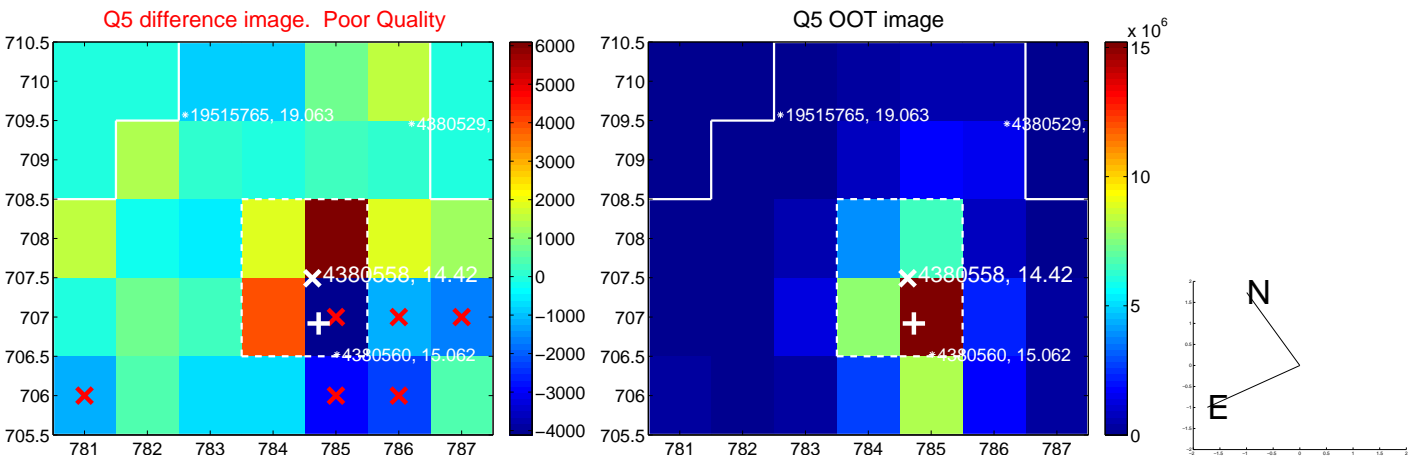


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

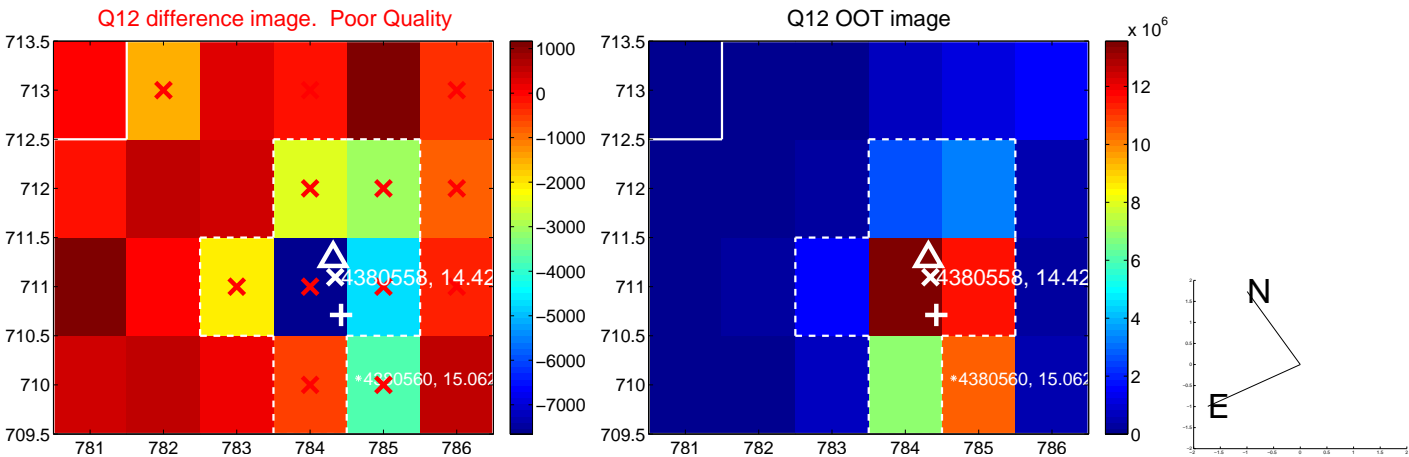
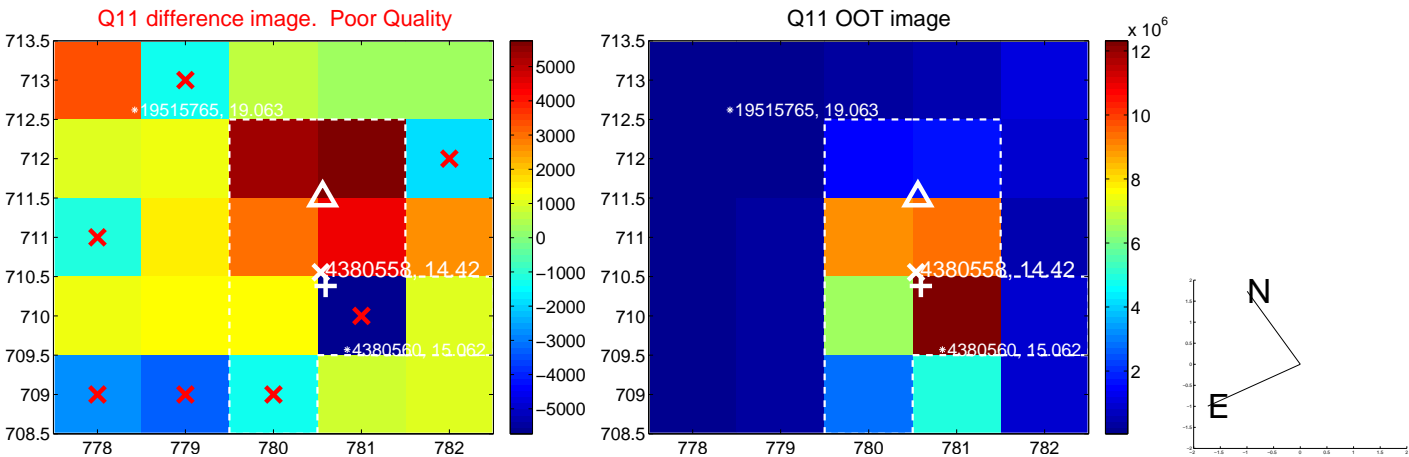
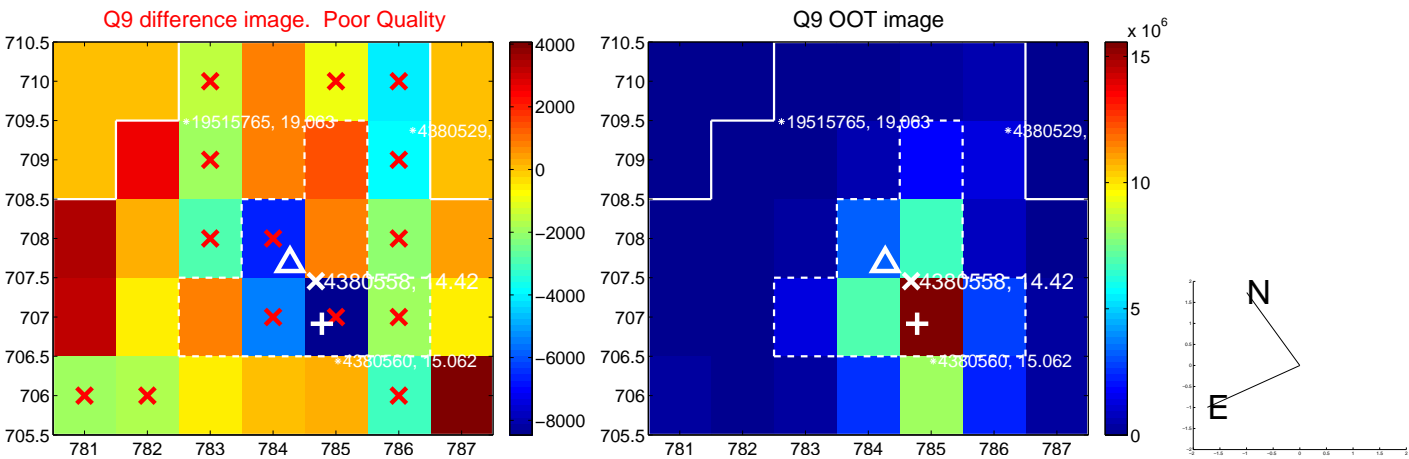
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



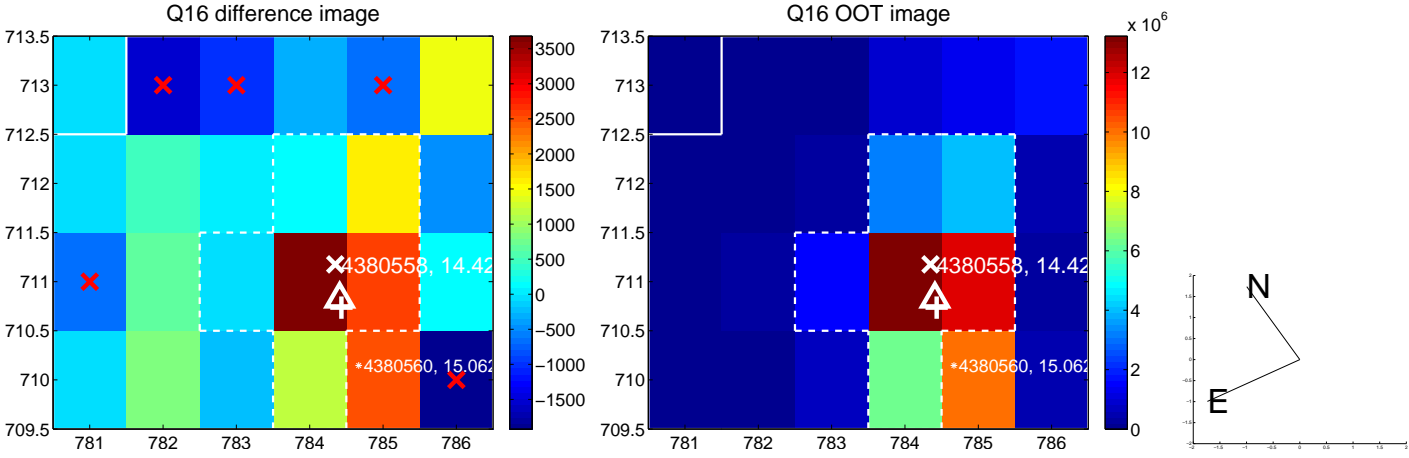
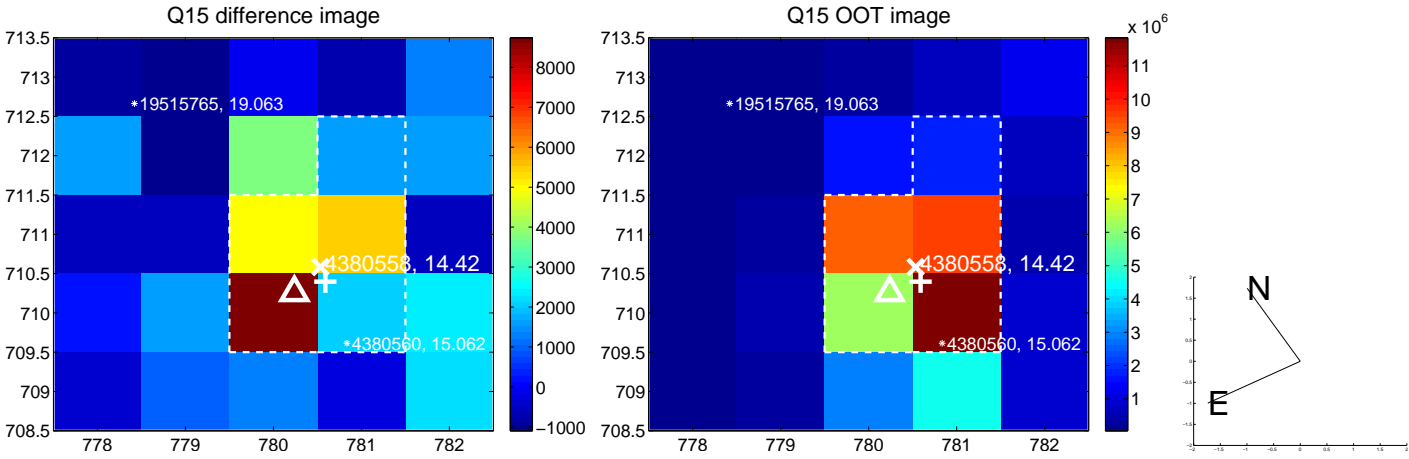
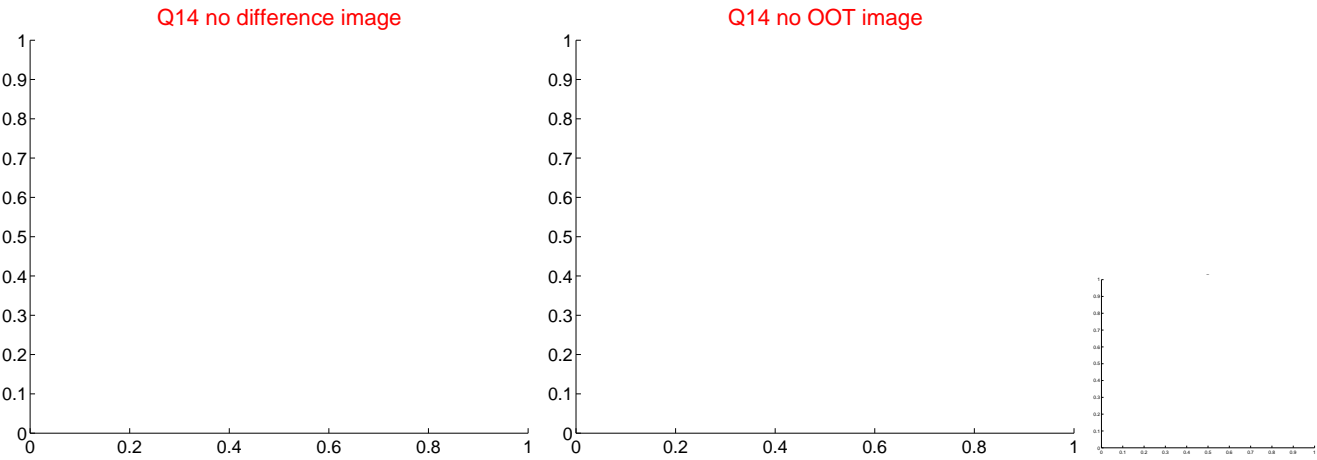
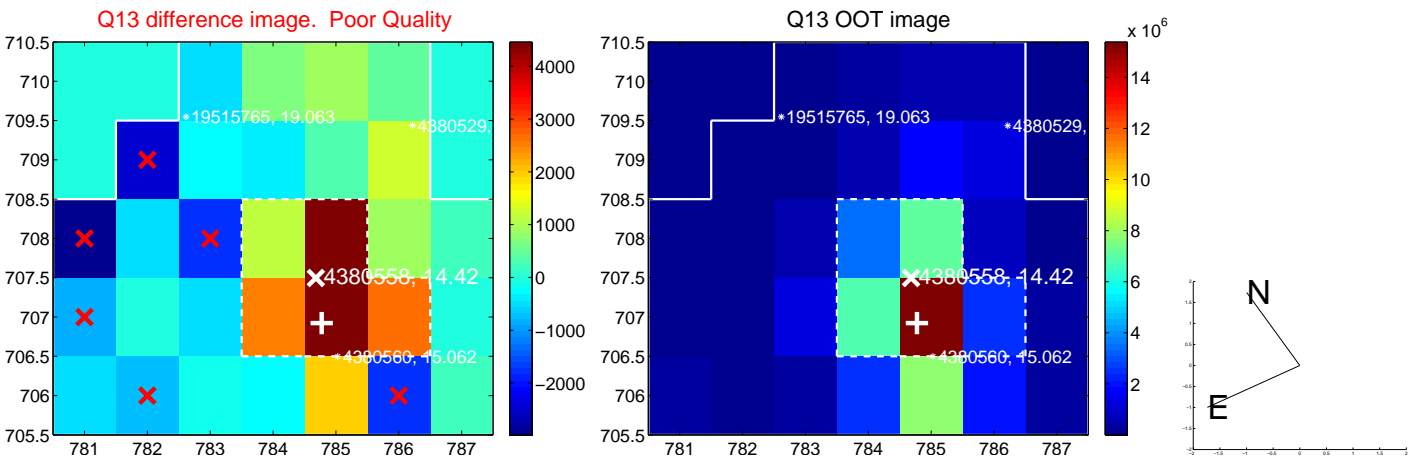
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



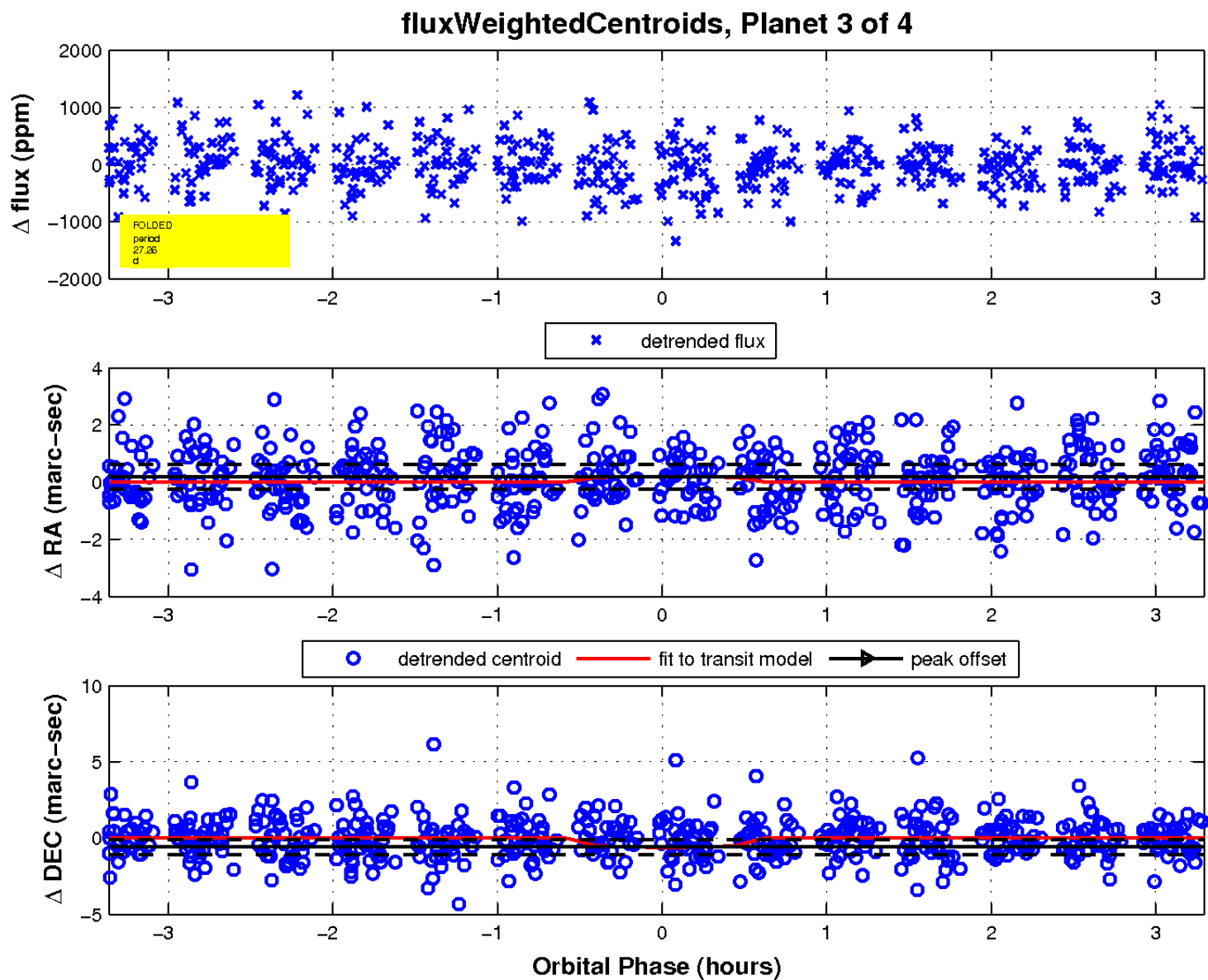
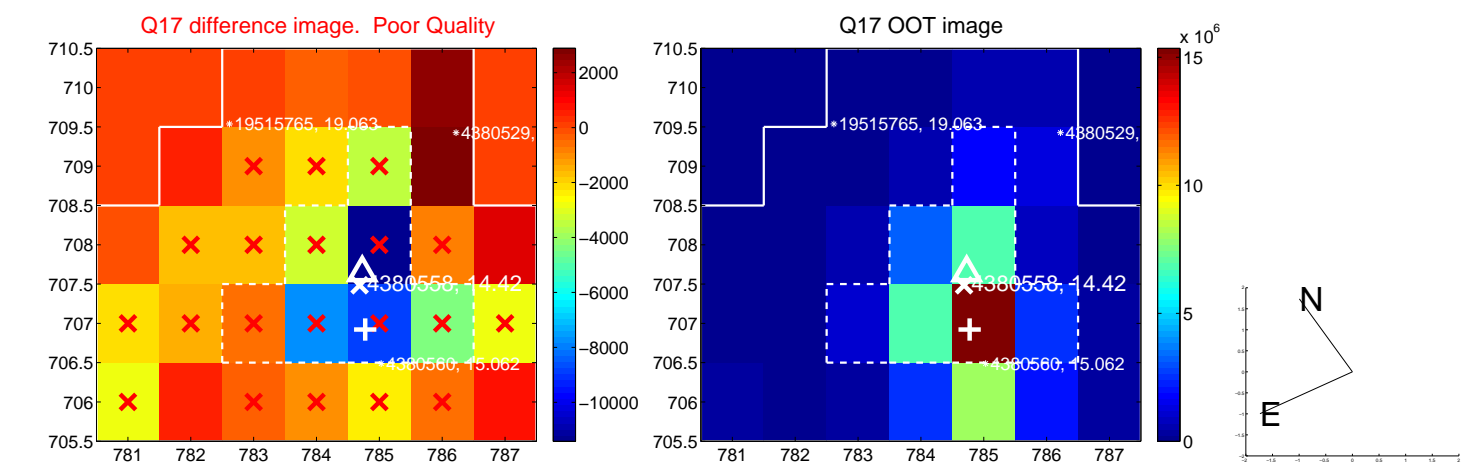
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



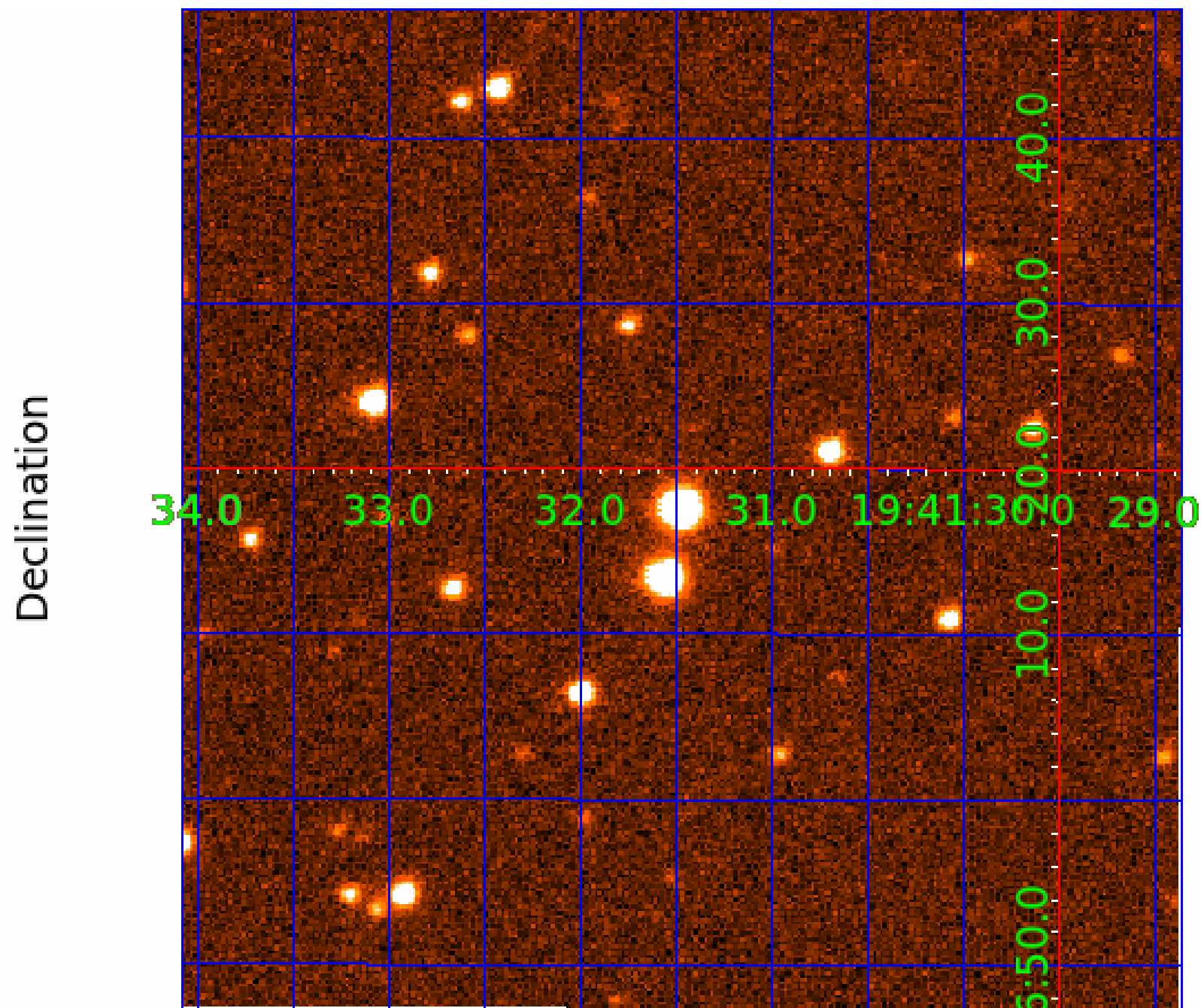
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004380558

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})
004380558-01	OBS	No	0.705752	132.026192	56.5	4.106	10.6	10.1	1.03	6393	0.78	6300.88
004380558-02	OBS	No	408.561167	234.095850	876.0	4.892	10.2	8.9	1.03	6393	3.32	1.31
004380558-03	OBS	No	27.258147	155.685746	567.0	1.121	9.2	7.8	1.03	6393	2.71	48.26
004380558-04	OBS	No	86.241000	206.972418	675.6	3.128	8.9	7.7	1.03	6393	3.01	10.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004380558-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
004380558-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004380558-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
004380558-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

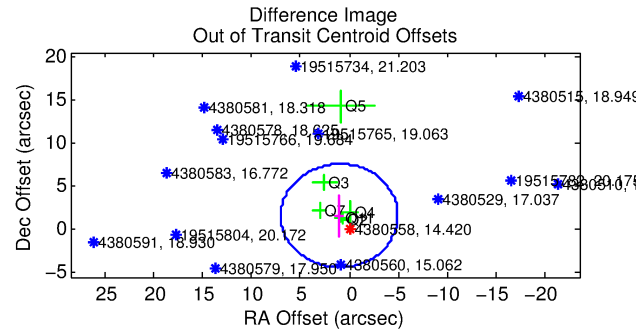
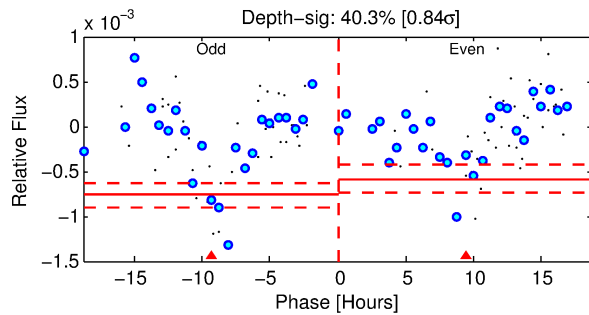
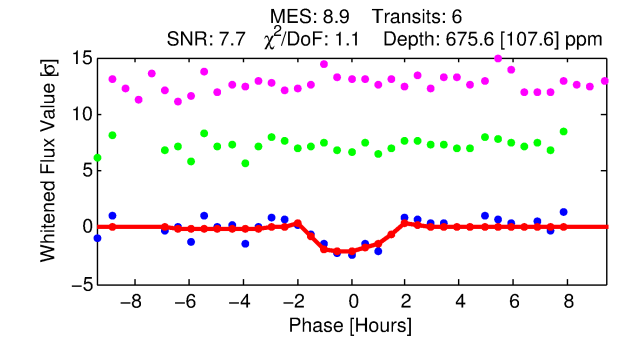
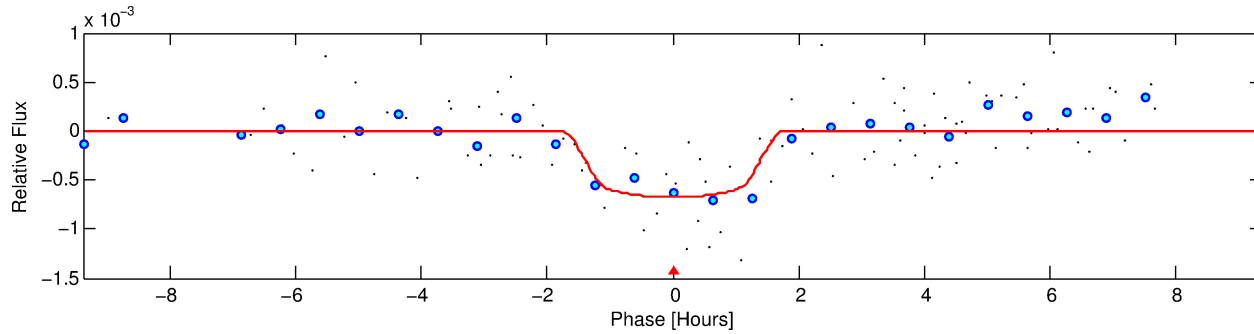
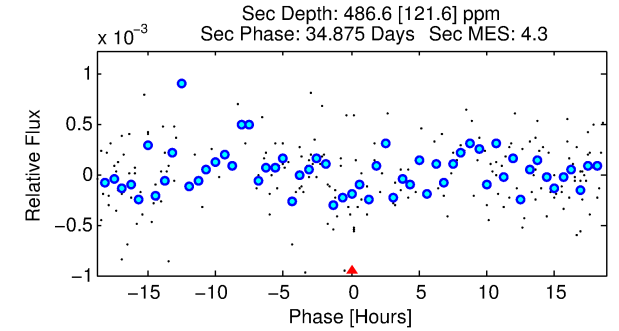
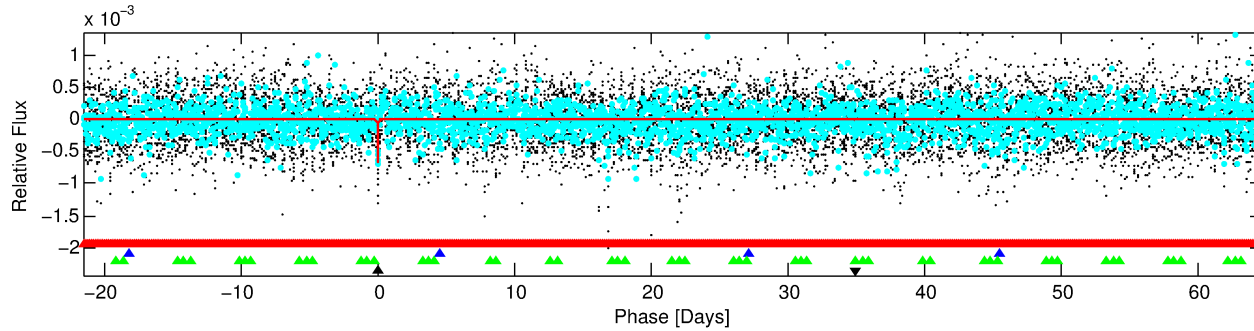
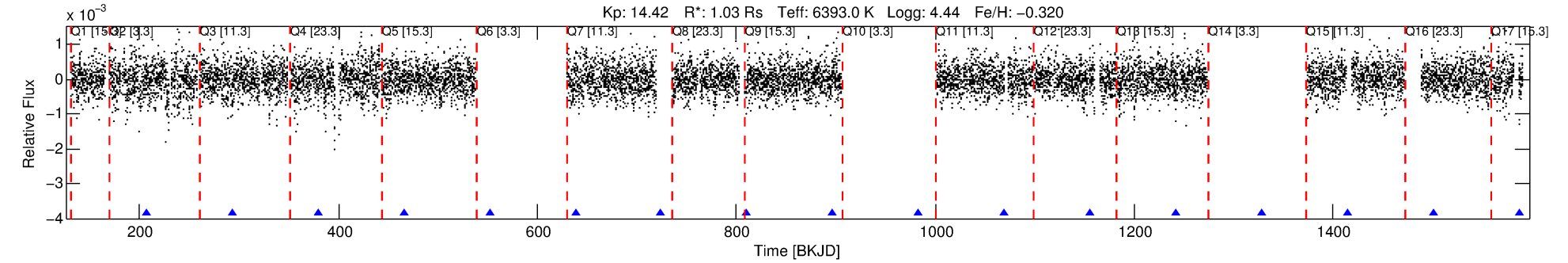
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004380558-04

No Significant Match Found

DV One-Page Summary

KIC: 4380558 Candidate: 4 of 4 Period: 86.241 d



DV Fit Results:

Period = 86.24100 [0.00127] d
Epoch = 206.9724 [0.0122] BKJD
Rp/R* = 0.0268 [0.0186]
a/R* = 124.49 [467.82]
b = 0.84 [1.33]
Seff = 10.39 [4.28]
Teq = 458 [47] K
Rp = 3.01 [2.31] Re
a = 0.3909 [0.1050] AU
Ag = 4506.50 [6599.76] [0.68 σ]
Teffp = 5799 [2058] K [2.60 σ]

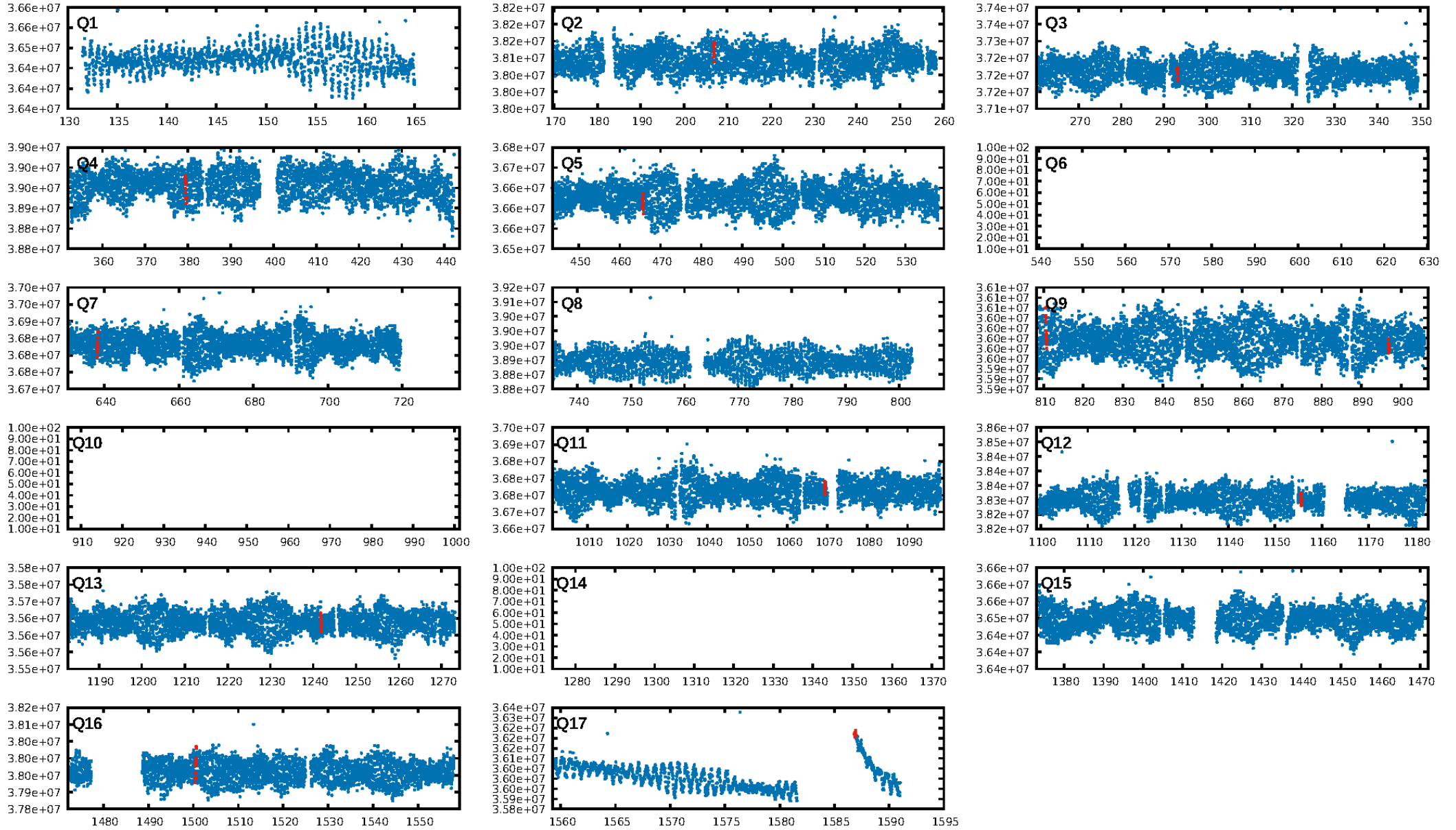
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [426.01 σ]
LongPeriod-sig: 100.0% [1332.25 σ]
ModelChiSquare2-sig: 20.6%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.43e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 7.137
Centroid-sig: 95.0%
Centroid-so: 1.113 arcsec [1.49 σ]
OotOffset-rm: 1.901 arcsec [0.95 σ]
KicOffset-rm: 1.447 arcsec [1.24 σ]
OotOffset-st: 1/3/1/1 [6]
KicOffset-st: 1/3/1/1 [6]
DiffImageQuality-fgm: 0.00 [0/6]
DiffImageOverlap-fno: 0.00 [0/9]

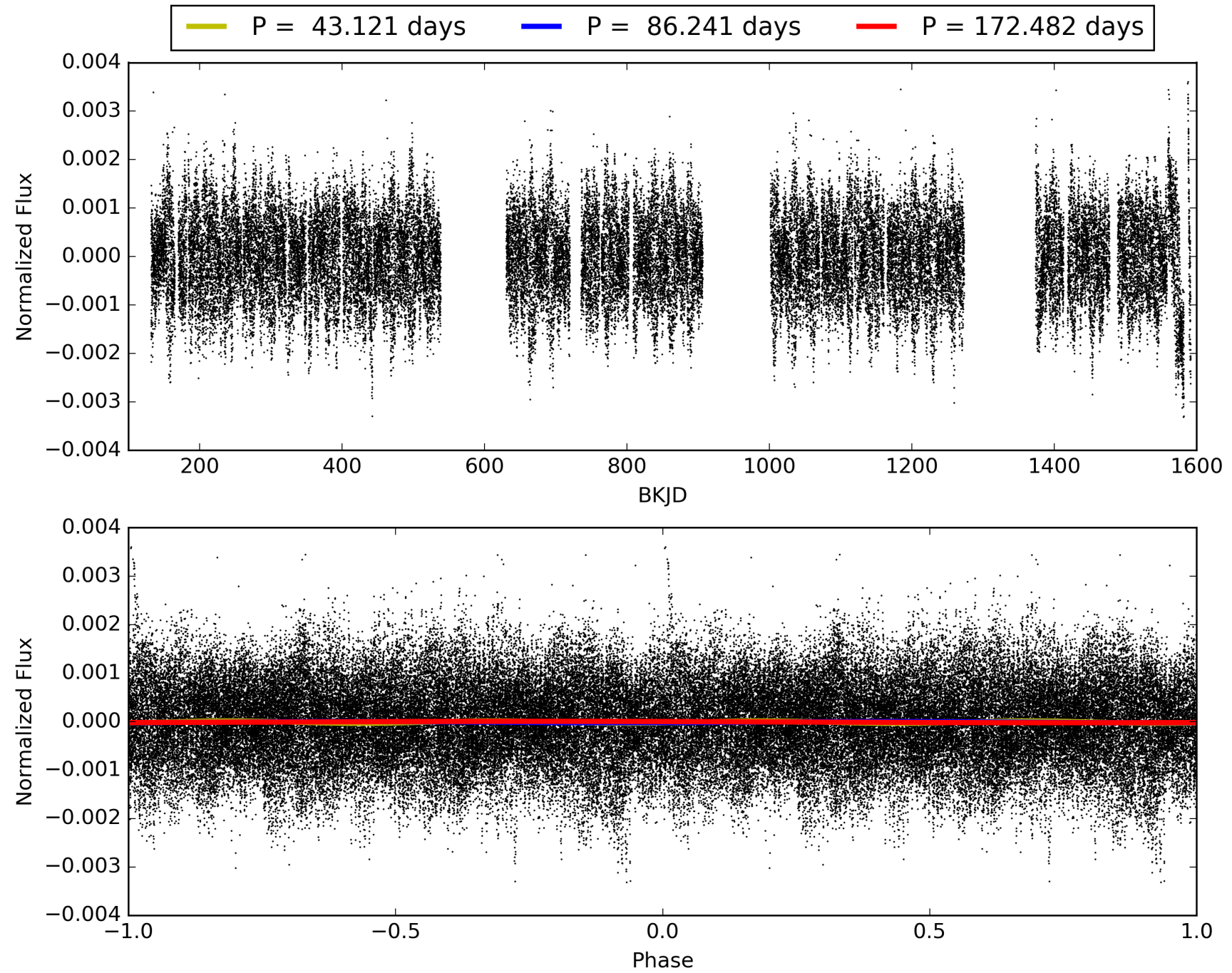
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:51:37 Z

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

TCE 004380558-04, PDC Light Curves

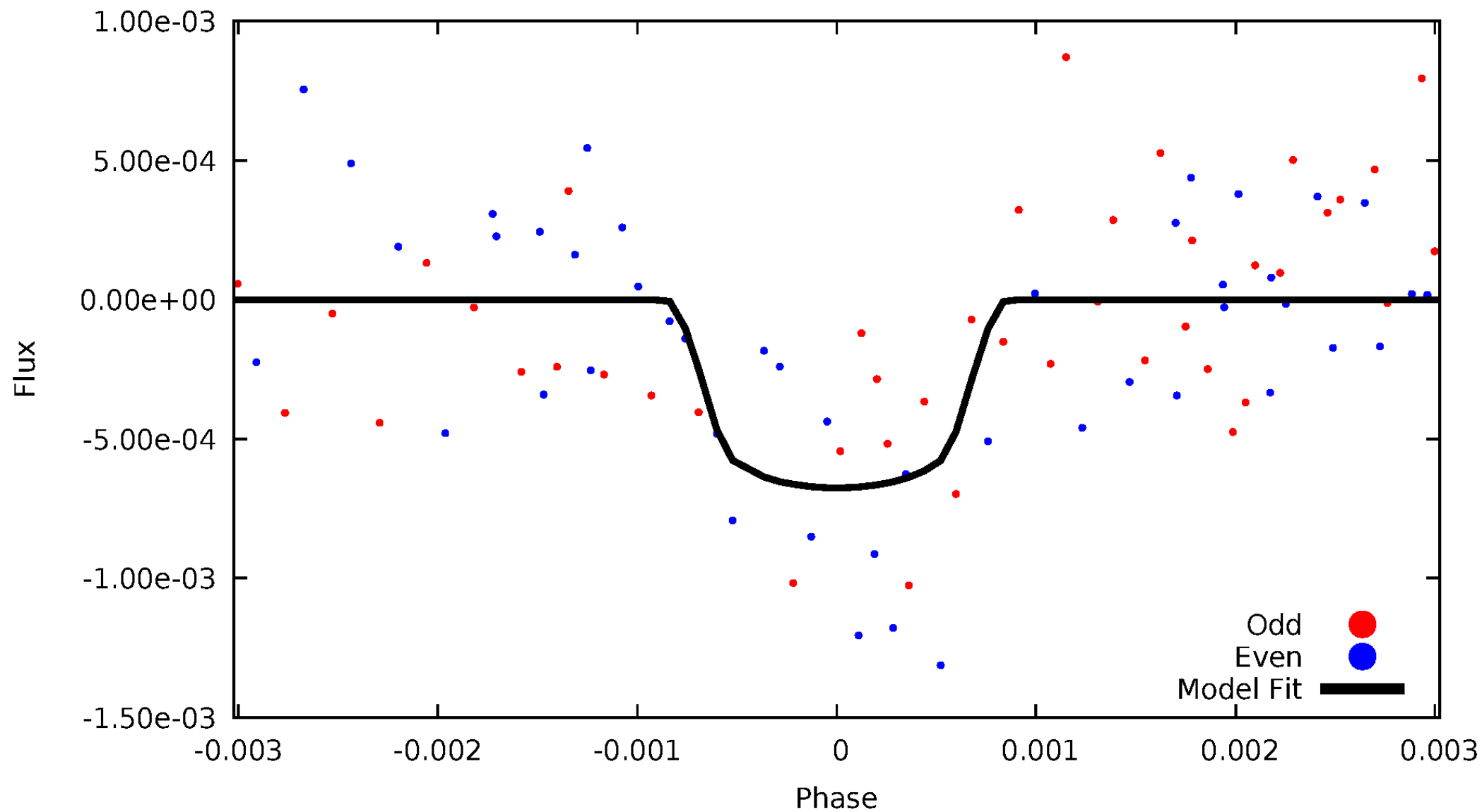


TCE 004380558-04



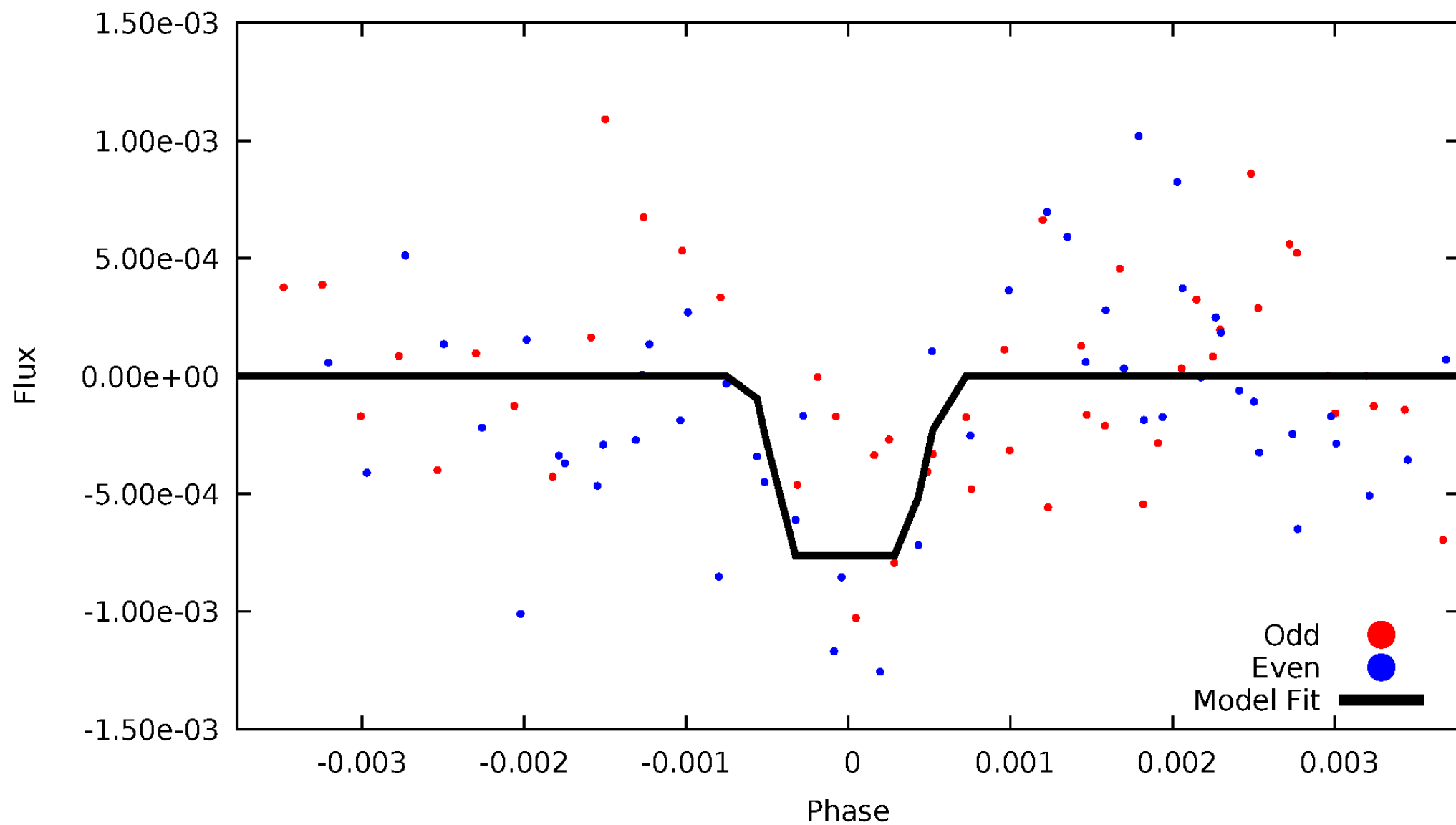
DV Odd/Even

TCE 004380558-04



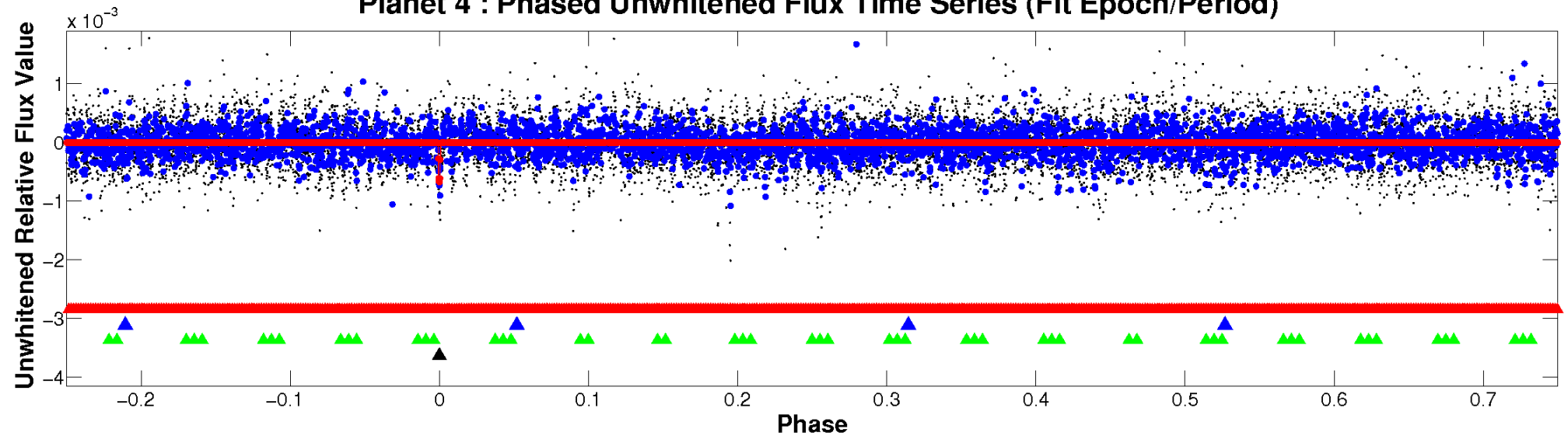
ALT Odd/Even

TCE 004380558-04

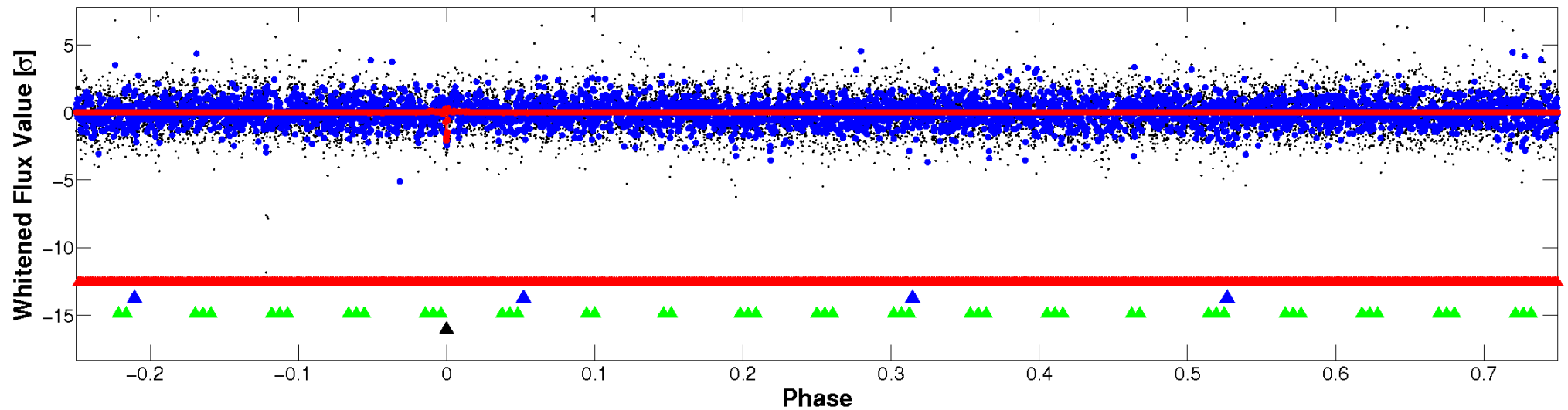


Non-Whitened Vs. Whitened Light Curve

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

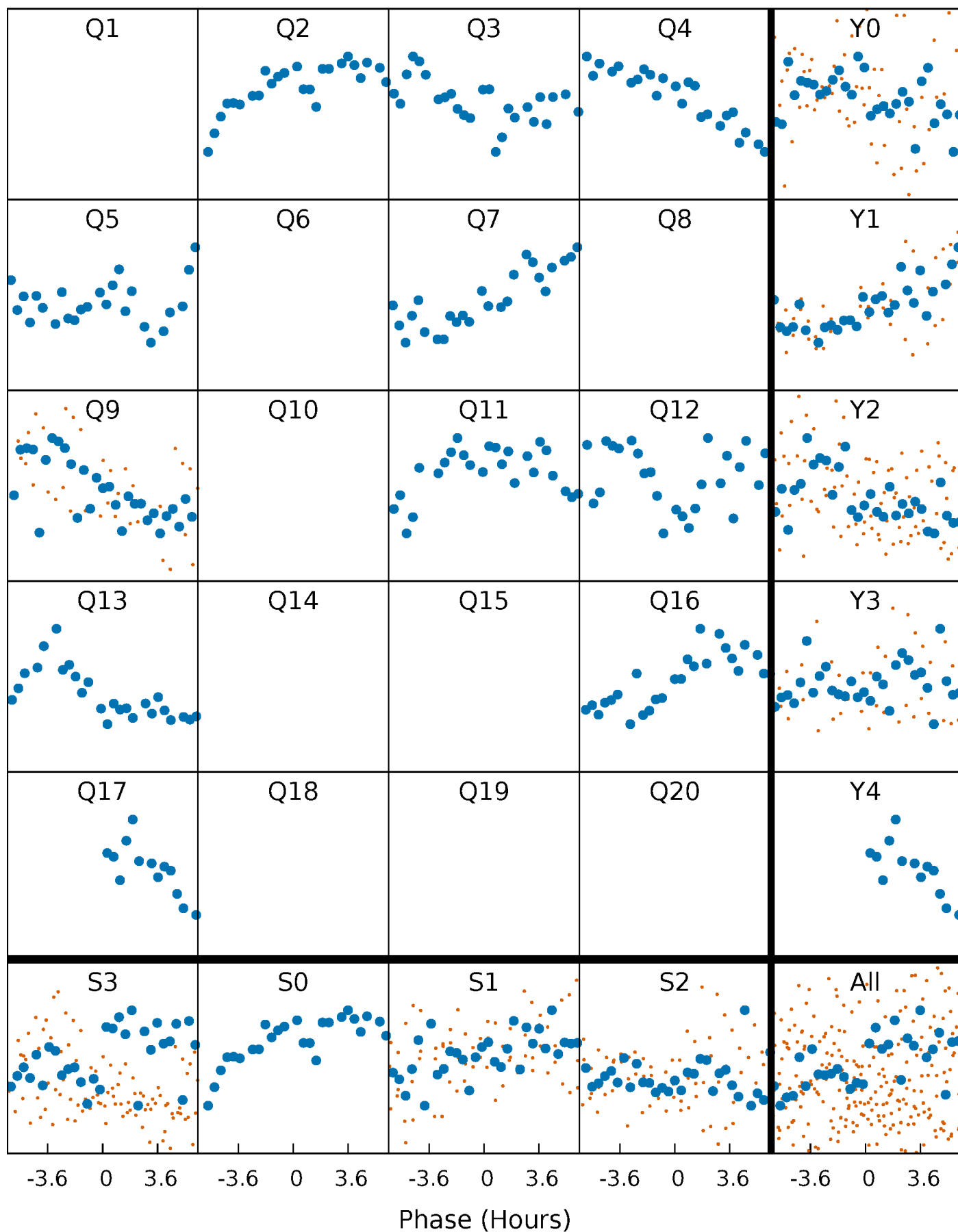


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



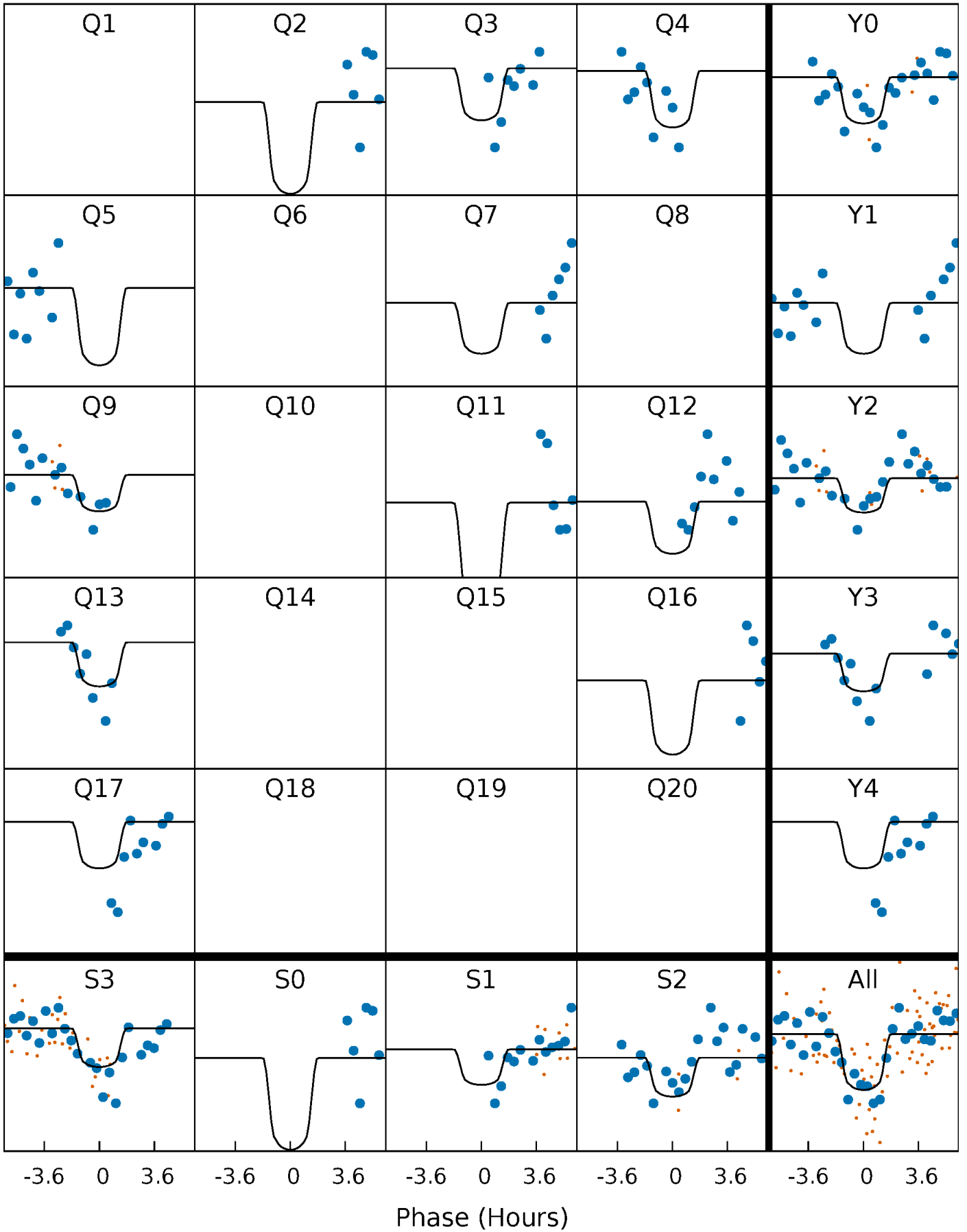
PDC Quarter-Phased Transit Curves

TCE 004380558-04 P= 86.241000 Days $T_0=206.972418$ (BKJD)



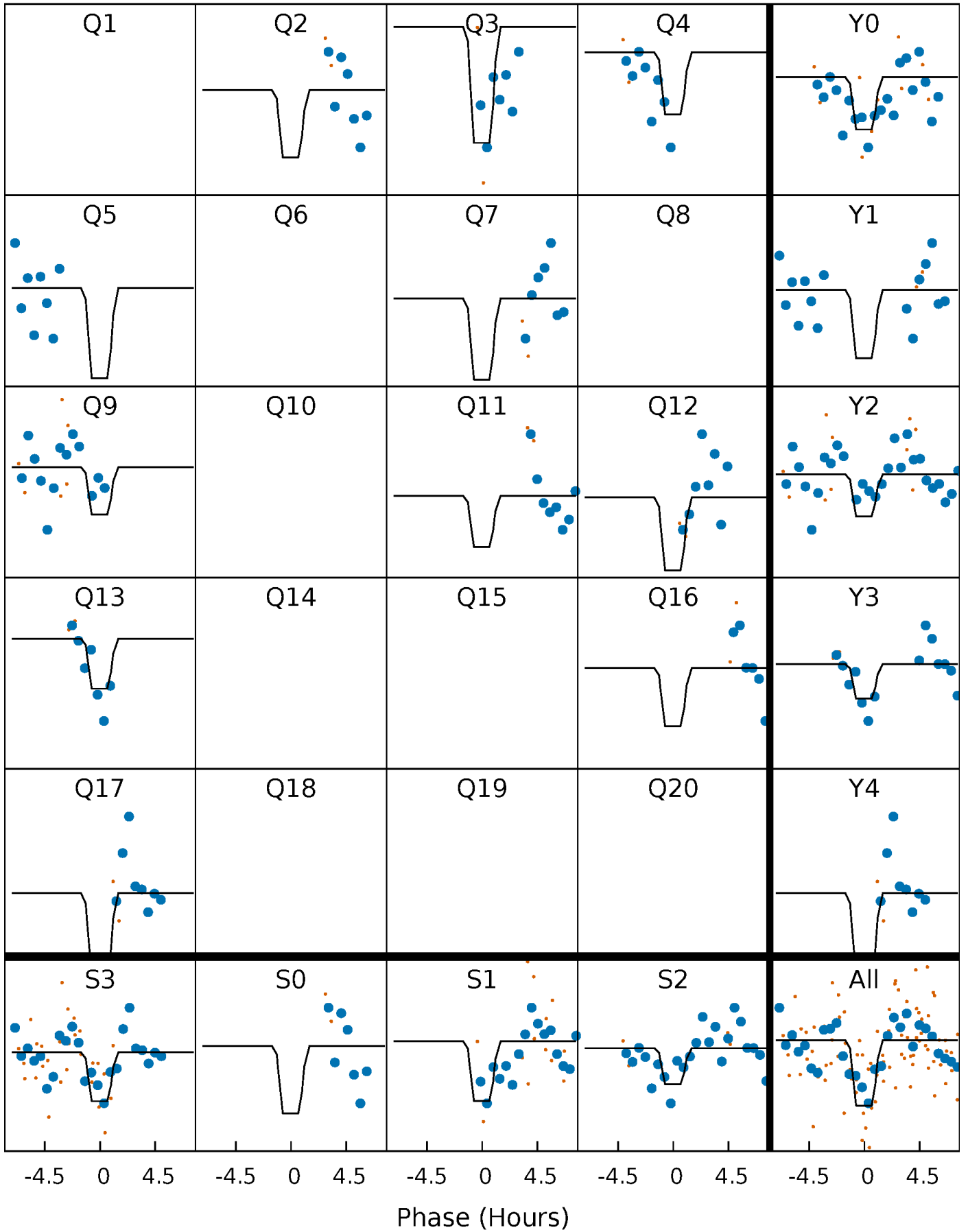
DV Quarter-Phased Transit Curves

TCE 004380558-04 P= 86.241000 Days $T_0=206.972418$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

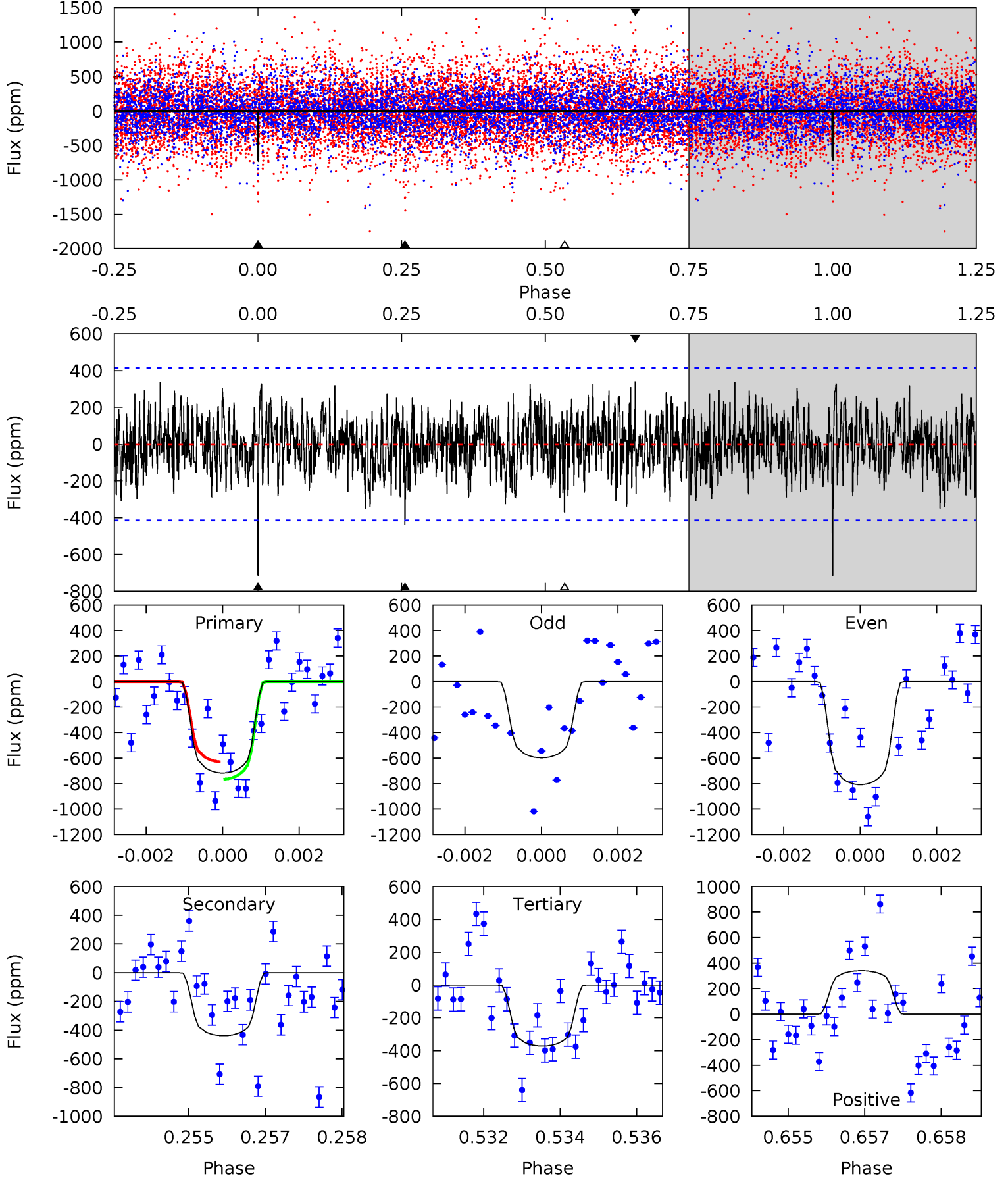
TCE 004380558-04 P= 86.237864 Days $T_0=207.002618$ (BKJD)



DV Model-Shift Uniqueness Test

004380558-04, P = 86.241000 Days, E = 120.731418 Days

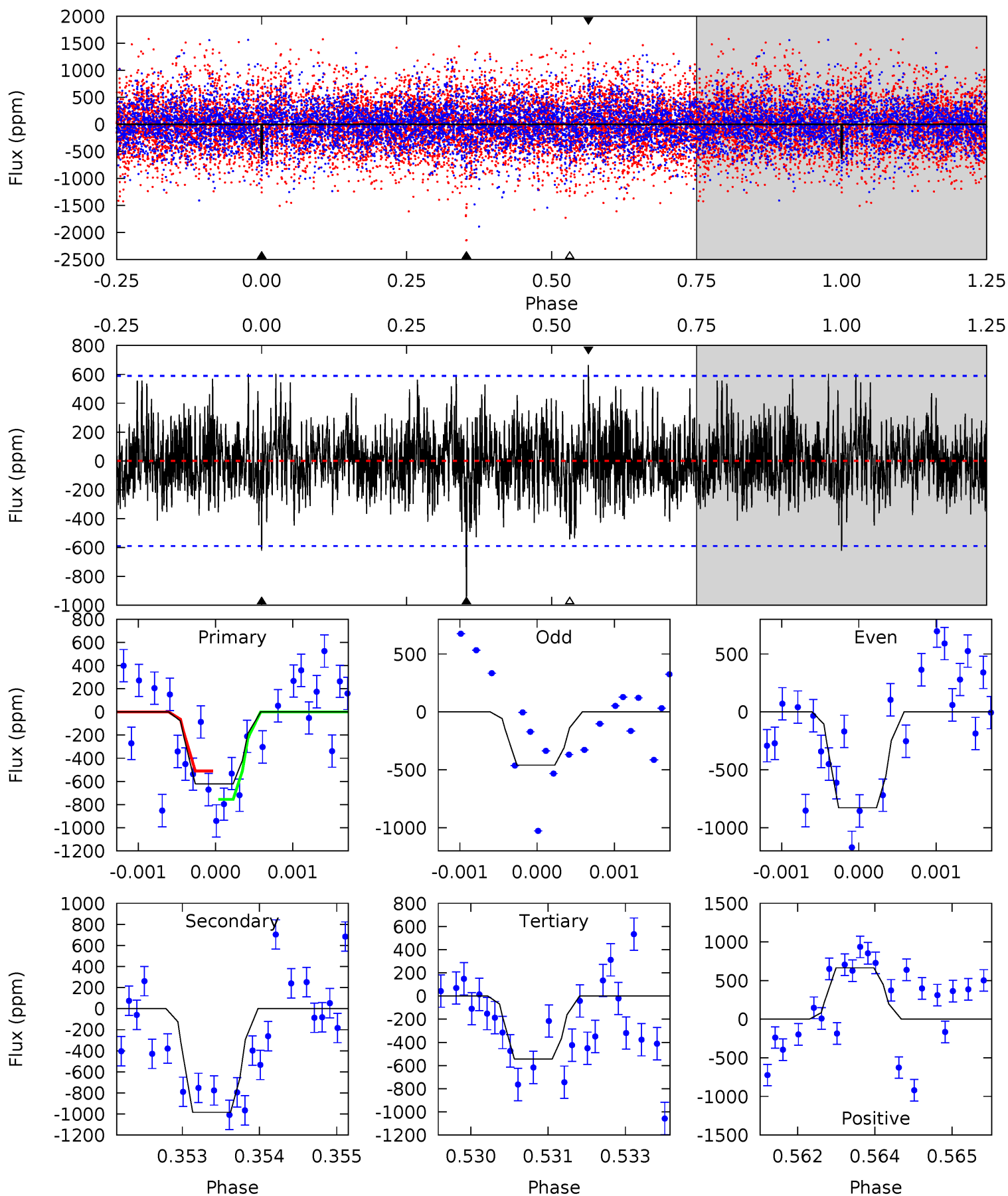
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.28	5.68	4.82	4.42	5.37	3.16	1.54	4.46	4.86	0.86	1.26	1.36	1.07	0.32	0.85



Alt Model-Shift Uniqueness Test

004380558-04, P = 86.237864 Days, E = 120.764754 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.71	9.04	4.99	6.11	5.41	3.23	1.66	0.71	-0.40	4.05	2.94	1.68	0.98	0.40	1.12



Stellar Parameters For KIC 004380558

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6393^{+177}_{-222}	$4.442^{+0.056}_{-0.210}$	$-0.320^{+0.250}_{-0.300}$	$1.030^{+0.332}_{-0.111}$	$1.067^{+0.156}_{-0.128}$	$1.377^{+0.408}_{-0.746}$
	+3%/-3%	+1%/-5%	+78%/-94%	+32%/-11%	+15%/-12%	+30%/-54%
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 004380558-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-439 ± 77	$3.37^{+2.31}_{-1.99}$	652^{+48}_{-32}	5490^{+3364}_{-1086}	3148^{+13907}_{-2078}
Alt.	-984 ± 109	$3.49^{+2.13}_{-1.89}$	655^{+48}_{-36}	6616^{+4358}_{-1401}	6816^{+25792}_{-4280}

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

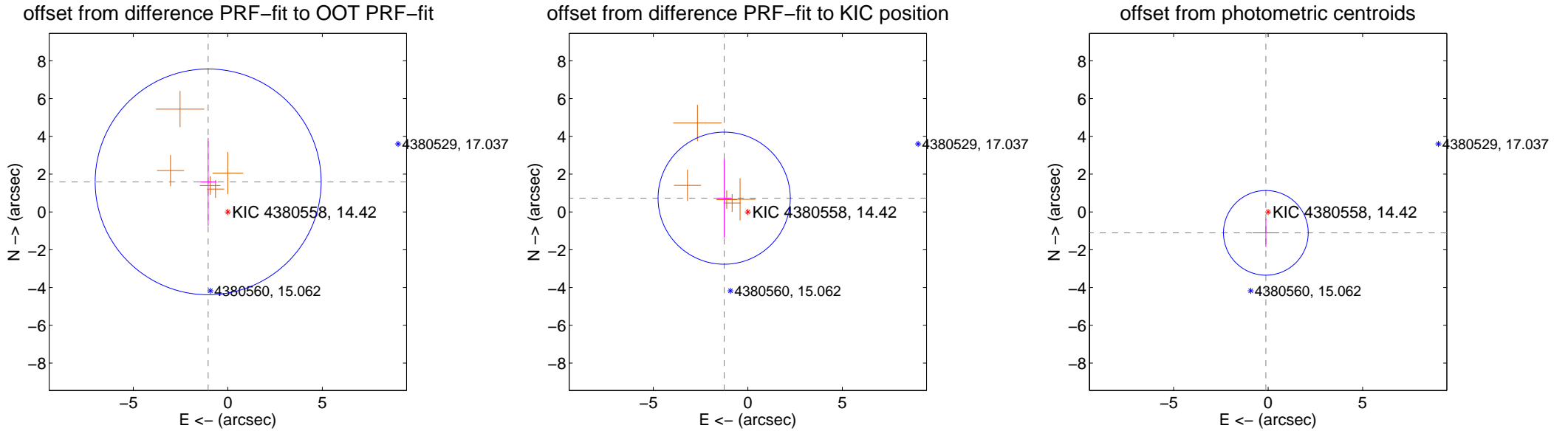
DV Centroid Data

Supplemental centroid analysis for 004380558-04. Kepler magnitude: 14.42. Transit SNR 7.70

There are 0 quarters with good PRF difference image offsets

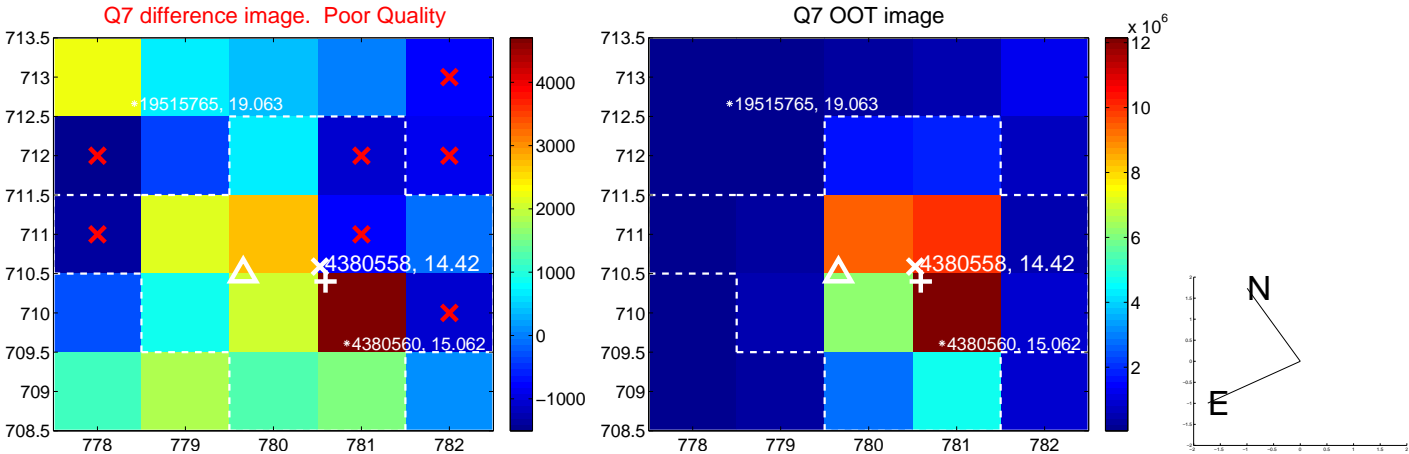
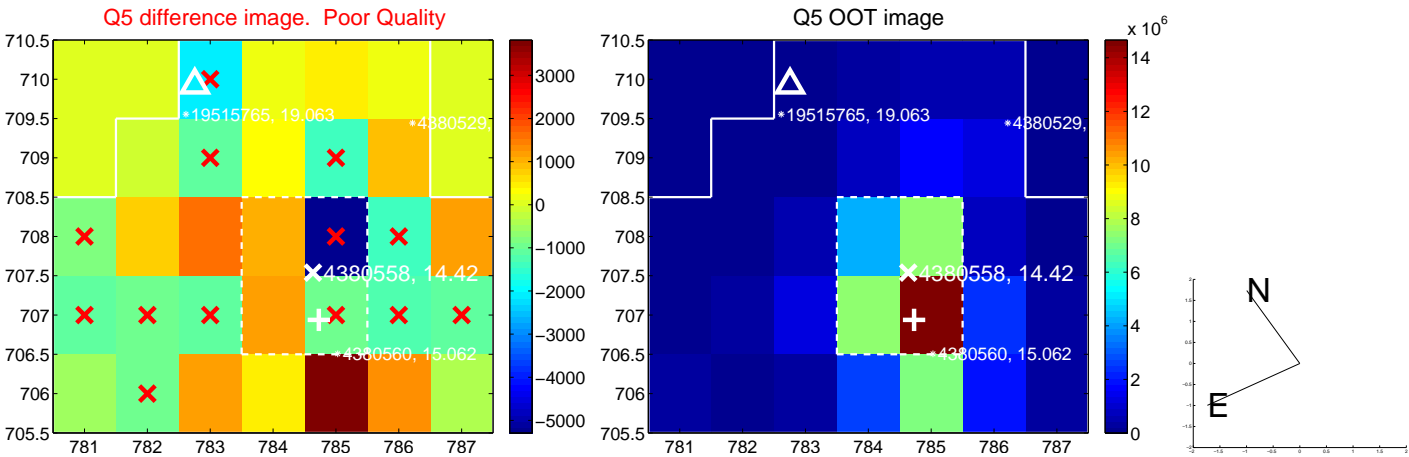
The direct PRF centroid is offset from the target star catalog position by about 0.77 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.901 ± 1.992	0.95	1.039 ± 0.447	1.592 ± 2.328
PRF-fit source offset from KIC position	1.447 ± 1.165	1.24	1.250 ± 0.391	0.728 ± 2.088
photometric centroid source offset	1.11 ± 0.75	1.49	0.12 ± 0.70	-1.11 ± 0.75

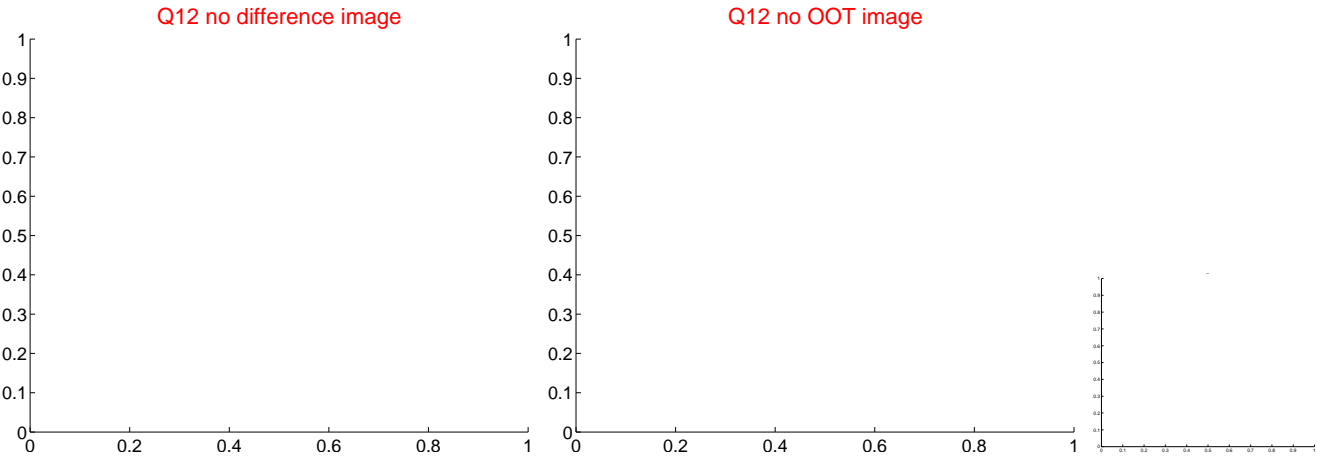
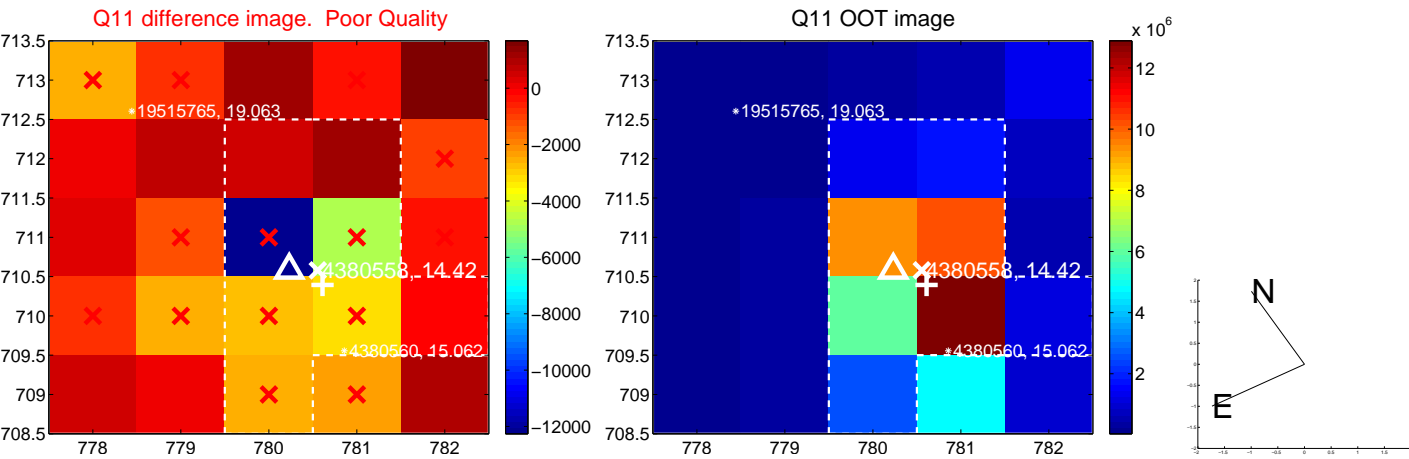
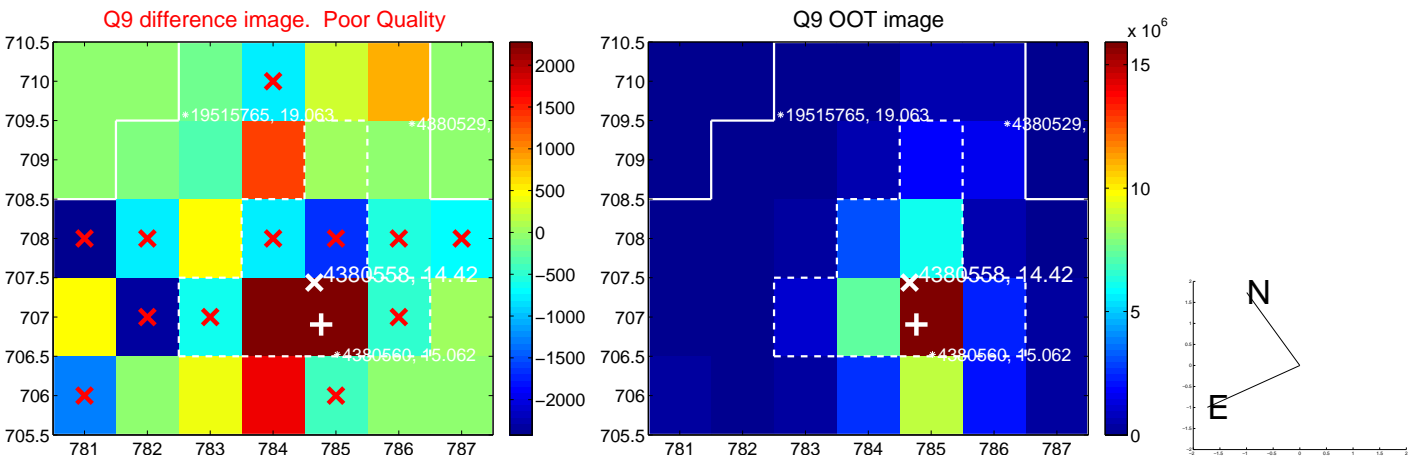


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

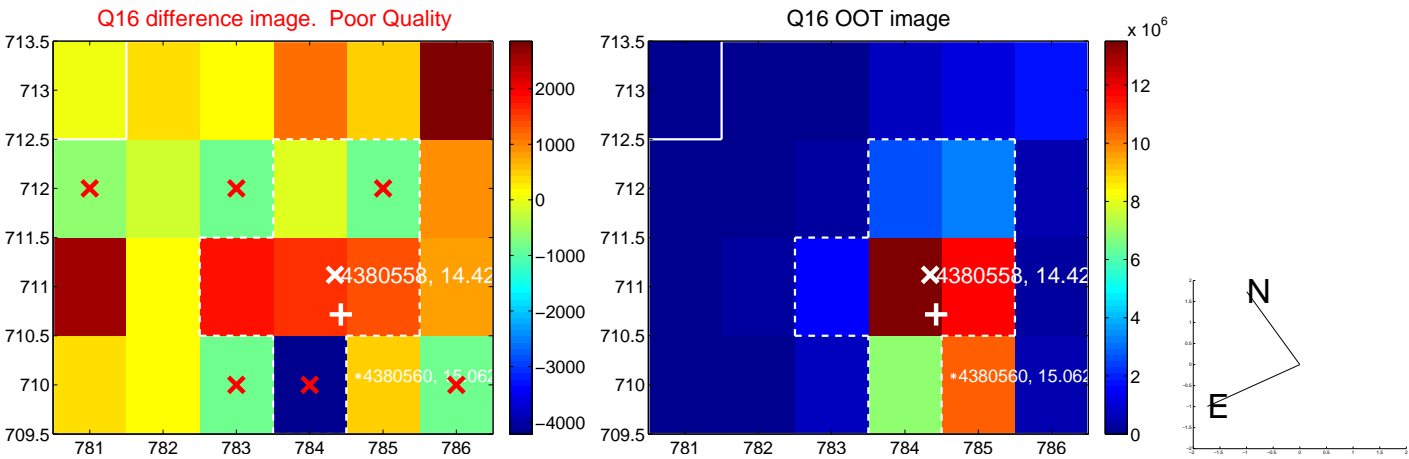
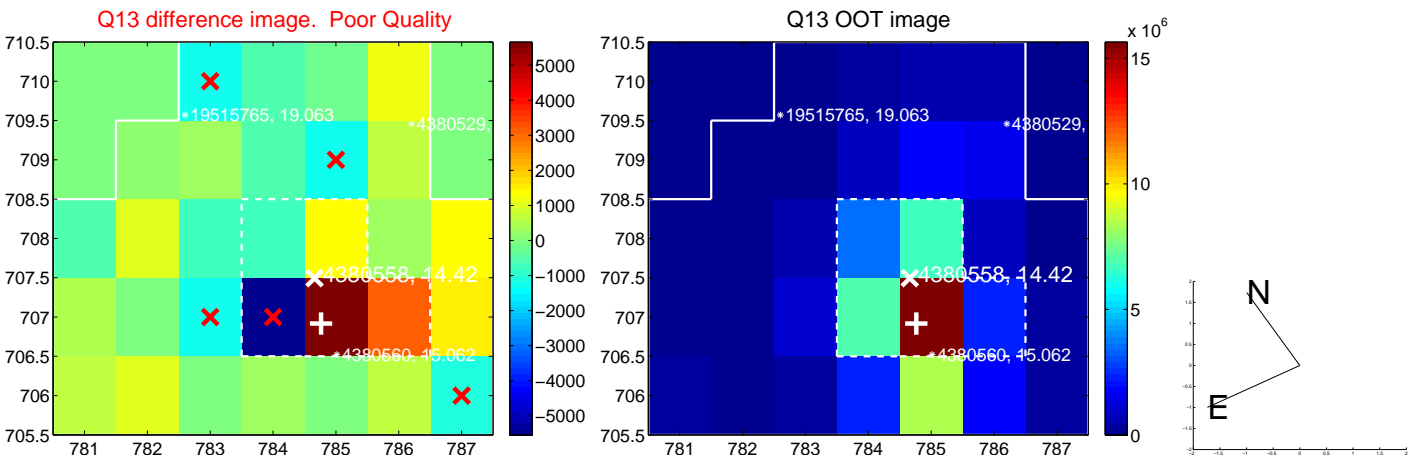
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



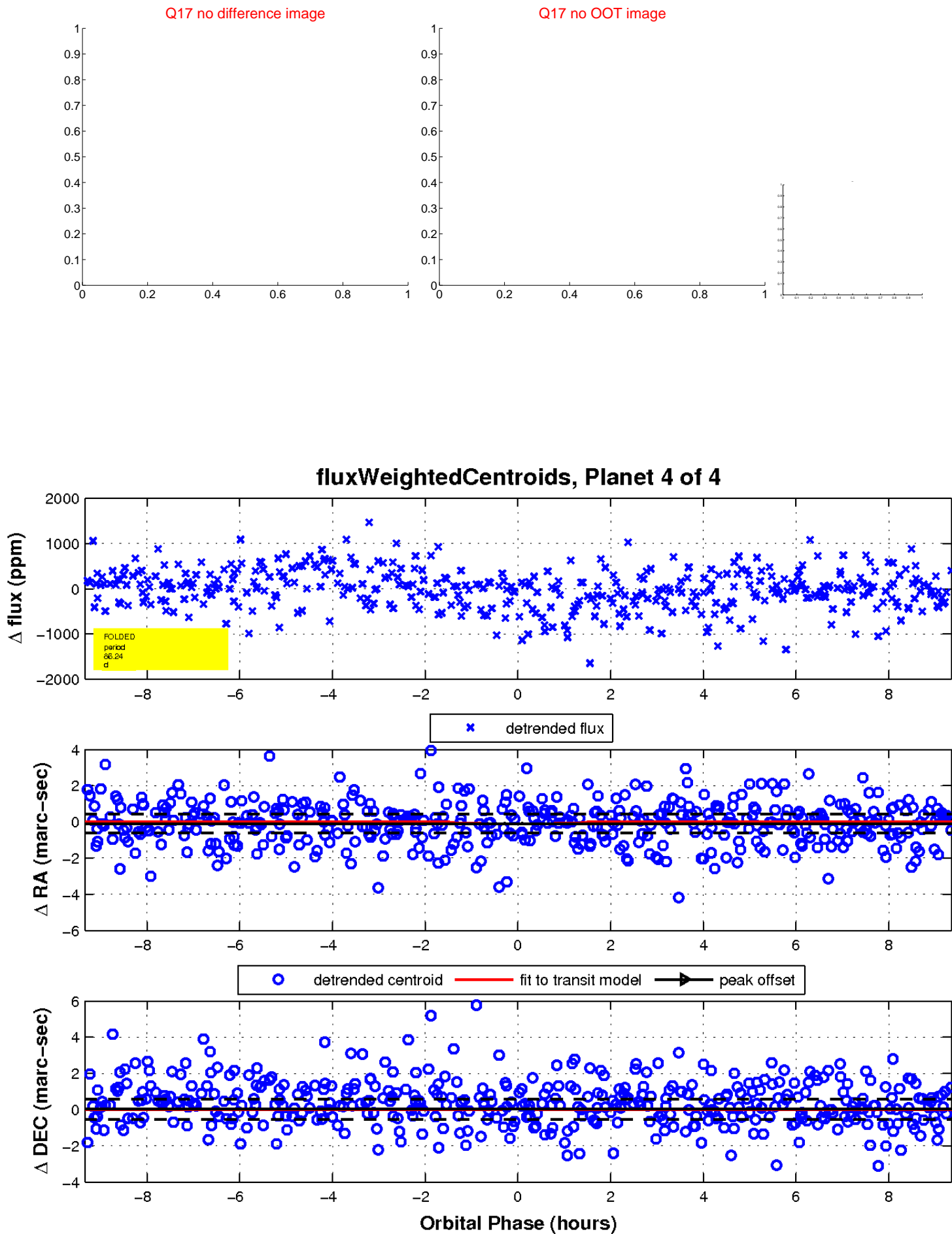
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

