

KIC 008447096

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})
008447096-01	OBS	No	1.236976	131.660714	46.3	8.521	7.3	5.0	0.53	3898	0.35	168.77
008447096-02	OBS	No	34.574835	162.047963	1667.4	3.462	17.5	11.5	0.53	3898	2.26	1.99
008447096-03	OBS	No	35.593520	151.979182	903.3	3.720	8.4	7.8	0.53	3898	1.68	1.91
008447096-04	OBS	No	60.504012	137.341364	1567.5	3.672	9.9	8.2	0.53	3898	4.05	0.94
008447096-05	OBS	No	35.671231	147.707007	937.9	3.461	8.0	7.5	0.53	3898	1.74	1.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008447096-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008447096-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008447096-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

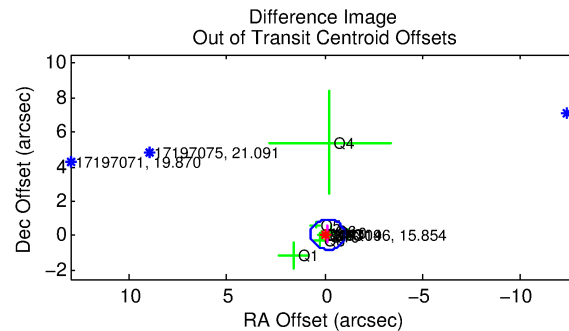
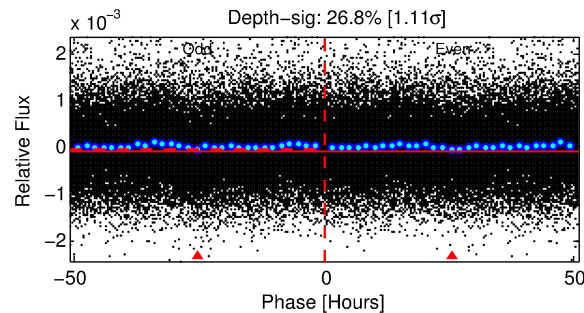
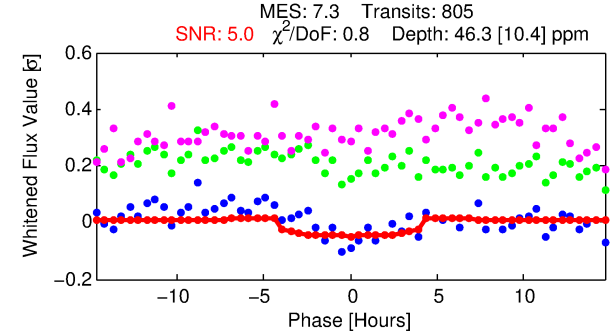
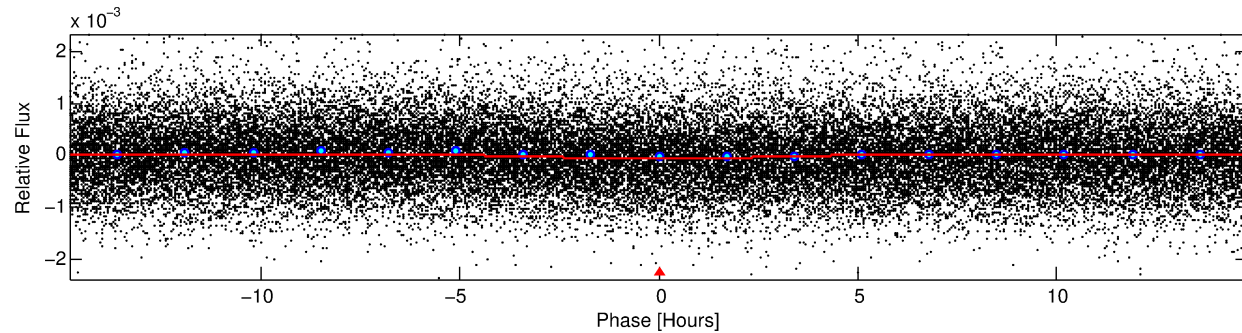
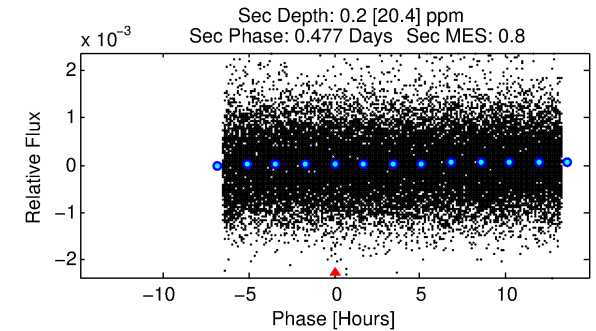
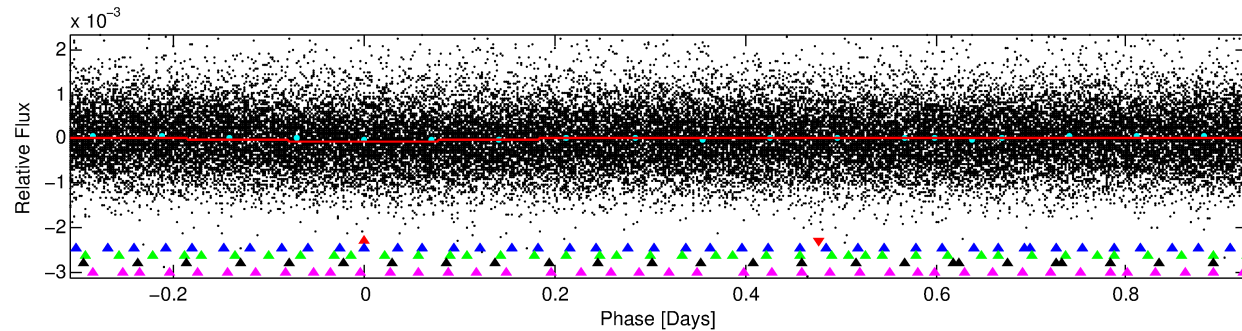
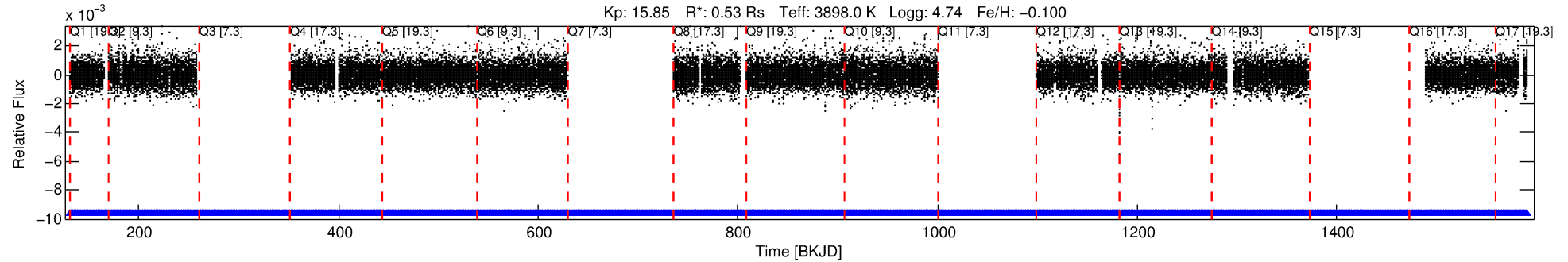
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008447096-01

No Significant Match Found

DV One-Page Summary

KIC: 8447096 Candidate: 1 of 5 Period: 1.237 d



DV Fit Results:

Period = 1.23698 [0.00004] d
Epoch = 131.6607 [0.0129] BKJD
Rp/R* = 0.0061 [0.0147]
a/R* = 1.28 [5.07]
b = 0.01 [790.21]
Seff = 168.77 [12.16]
Teq = 919 [17] K
Rp = 0.36 [0.85] Re
a = 0.0186 [0.0007] AU
Ag = 0.24 [30.57] [-0.02σ]
Teffp = 999 [31300] K [0.00σ]

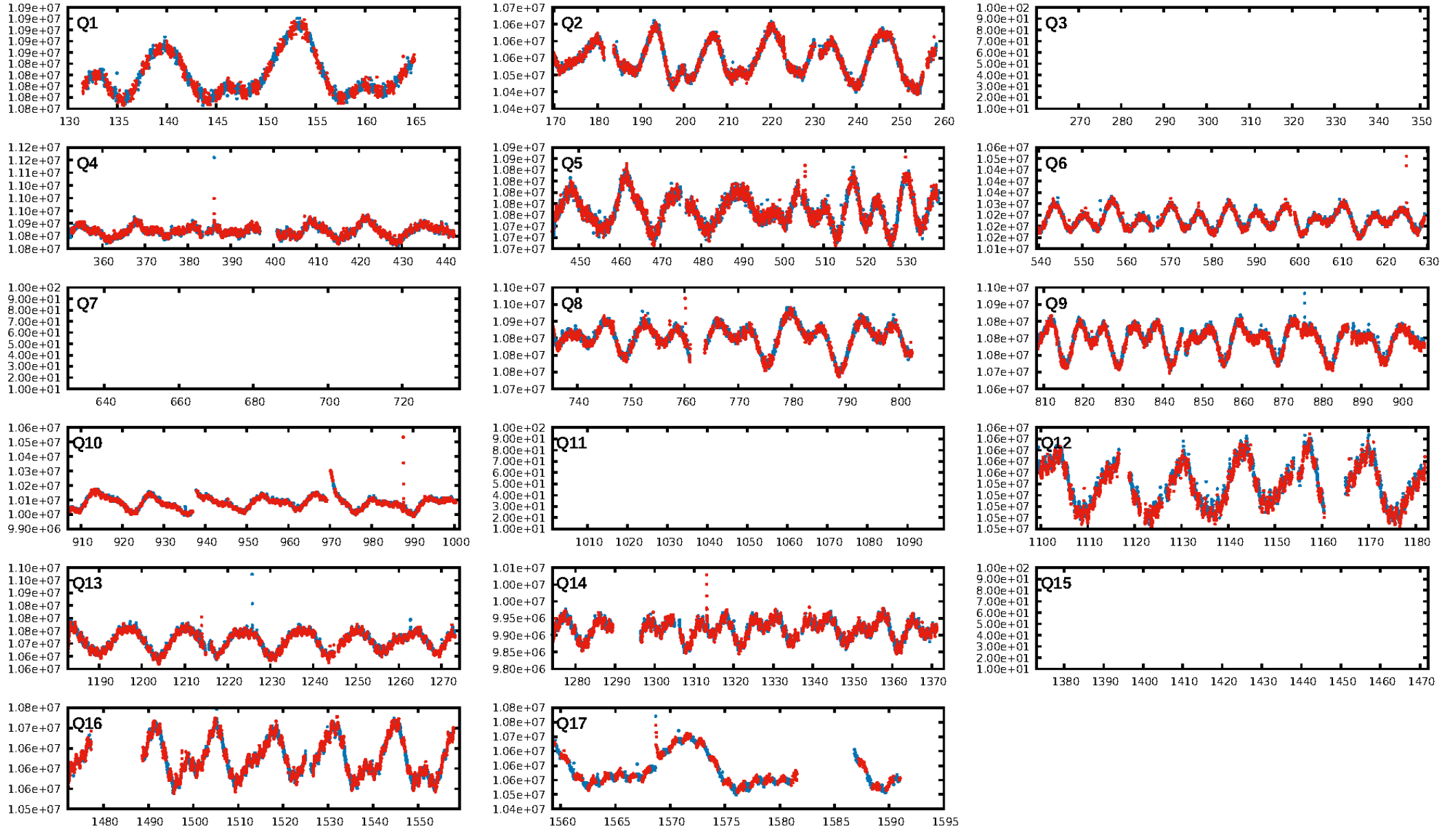
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [87.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.87e-09
RollingBand-fgt: 1.00 [755/755]
GhostDiagnostic-chr: 0.8631
Centroid-sig: 3.8%
Centroid-so: 3.300 arcsec [1.84σ]
OotOffset-rm: 0.167 arcsec [0.57σ]
KicOffset-rm: 0.077 arcsec [0.17σ]
OotOffset-st: 3/0/4/5 [12]
KicOffset-st: 3/0/4/5 [12]
DiffImageQuality-fgm: 0.75 [9/12]
DiffImageOverlap-fno: 1.00 [13/13]

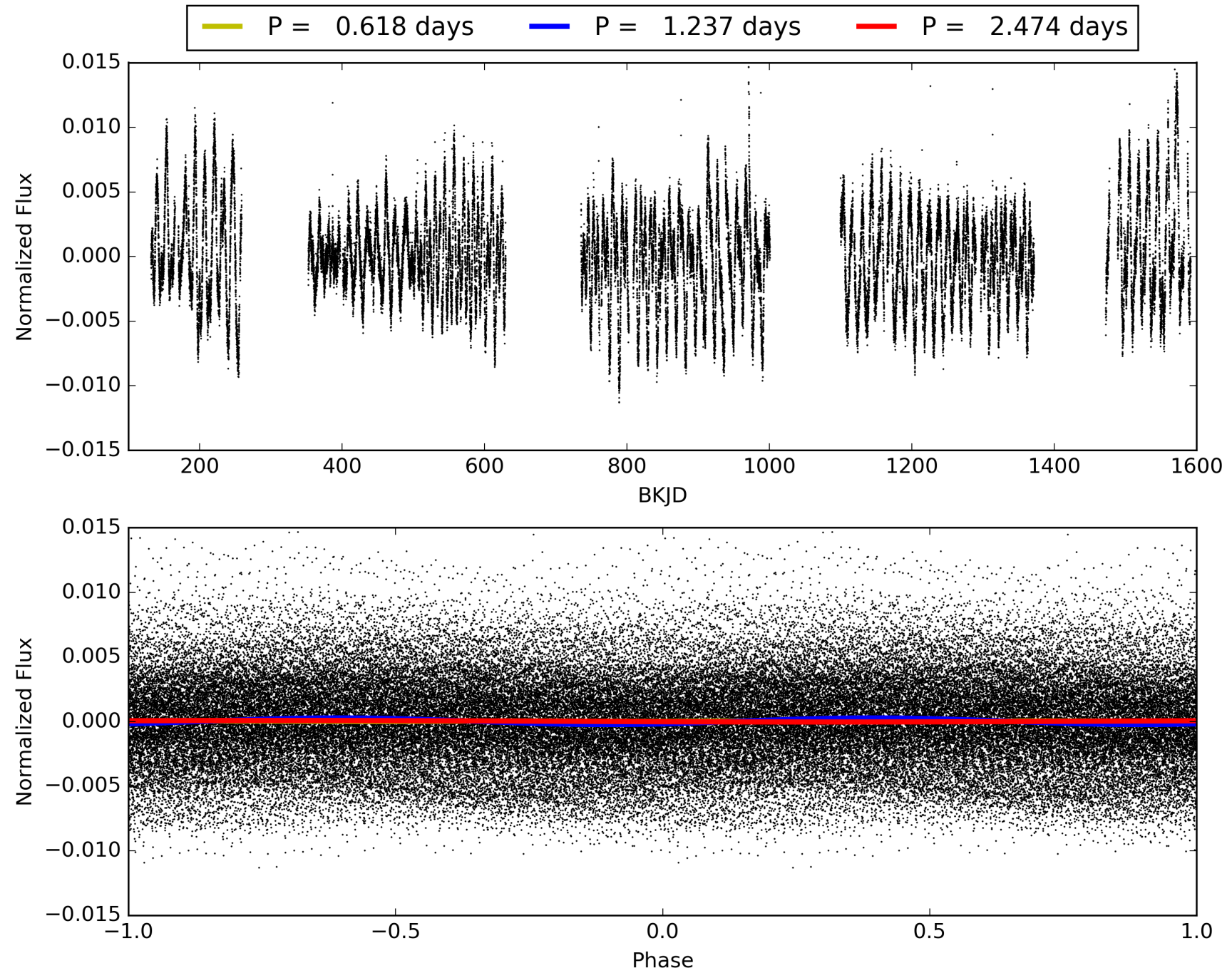
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:09:41 Z

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

TCE 008447096-01, PDC Light Curves

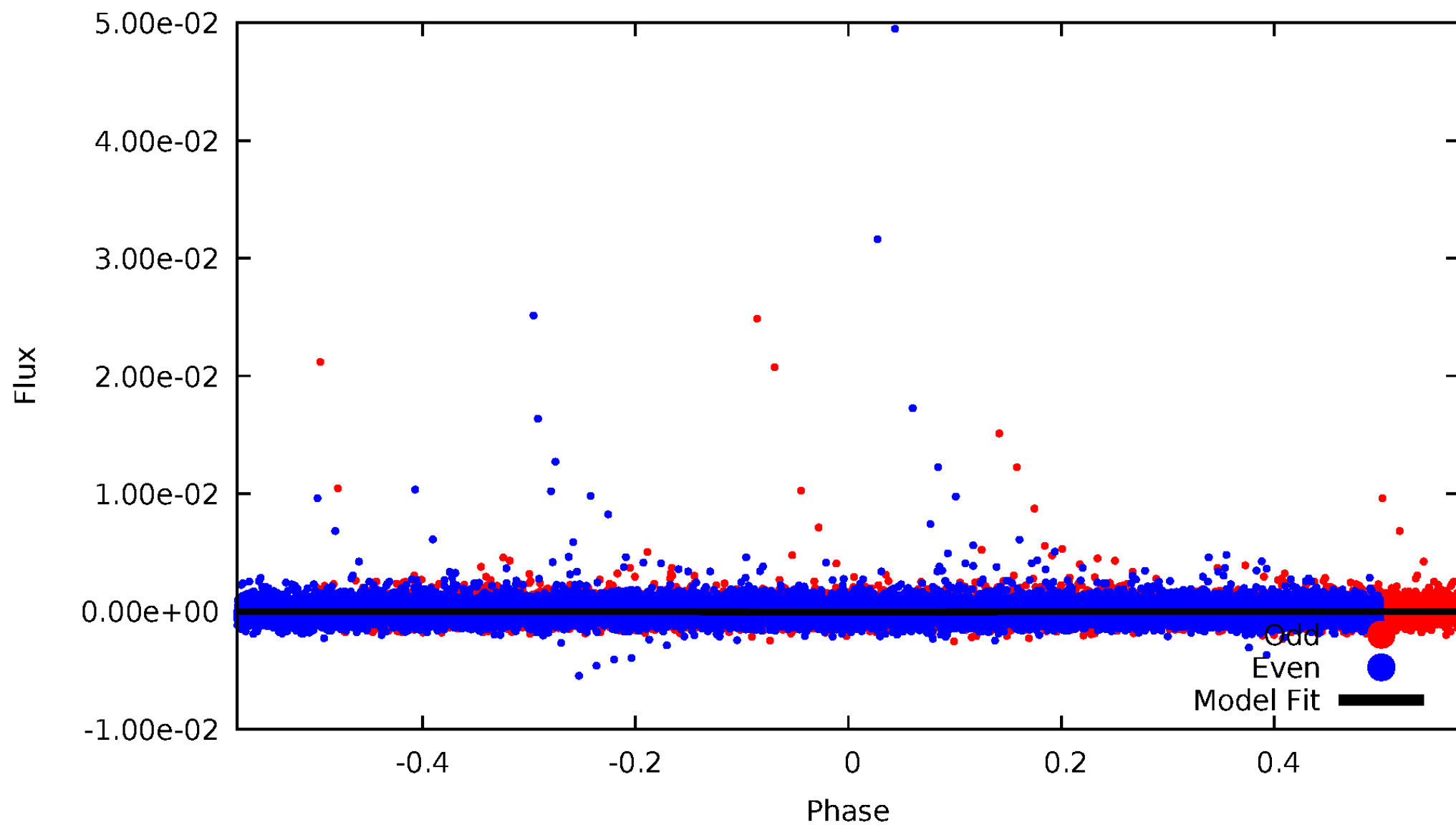


TCE 008447096-01



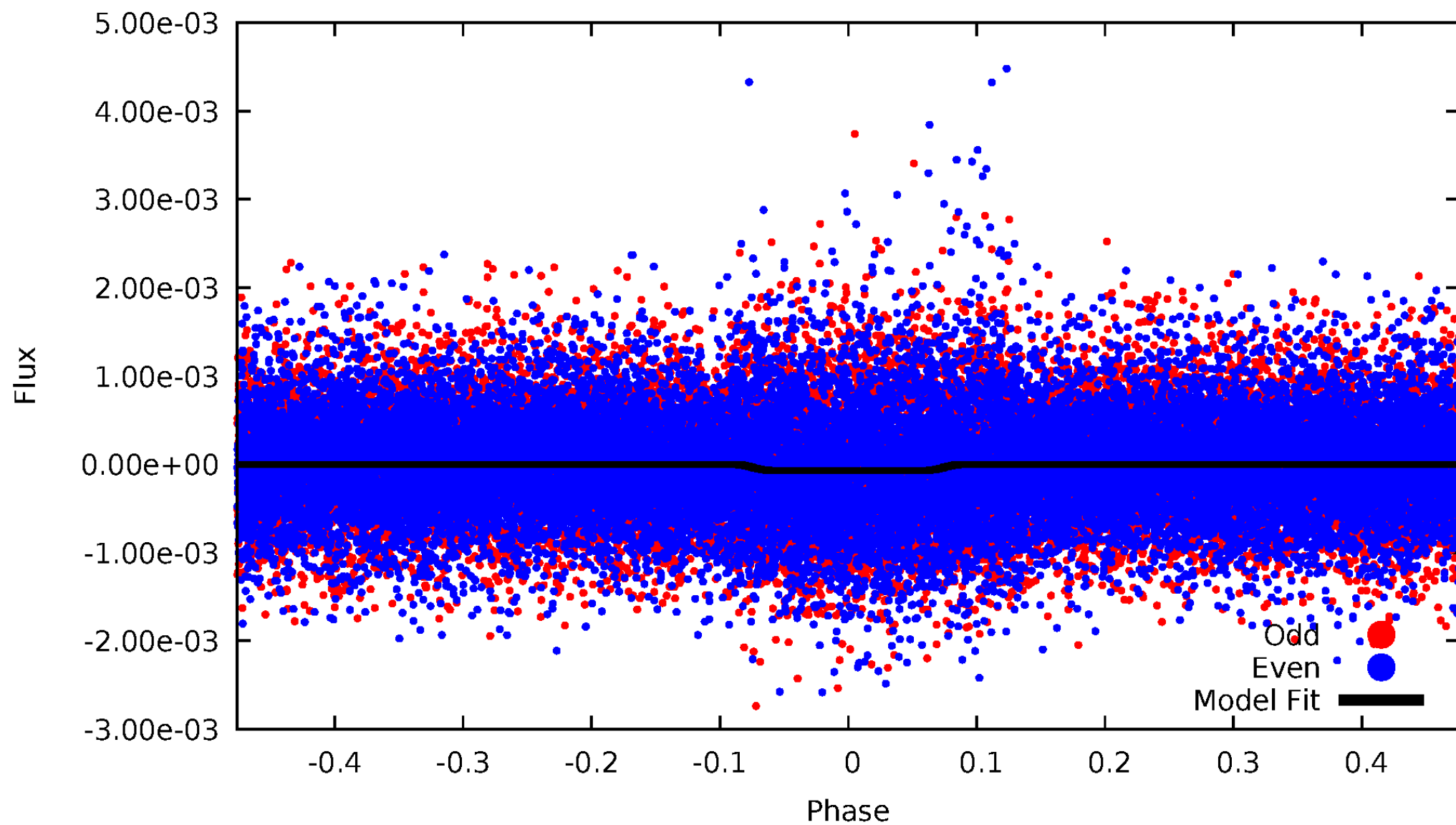
DV Odd/Even

TCE 008447096-01

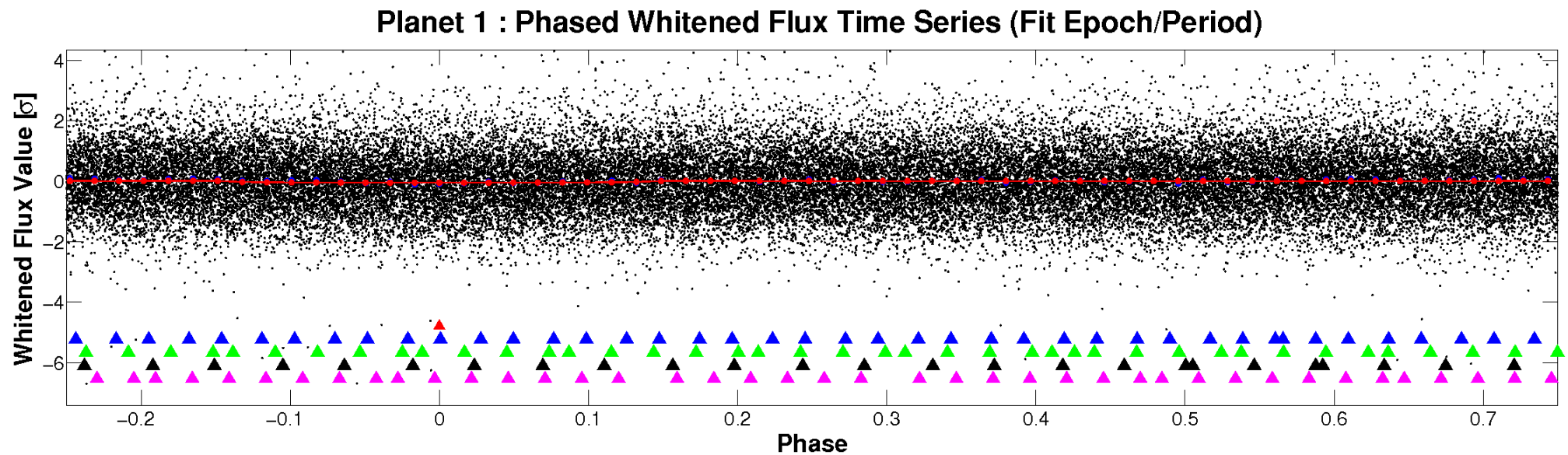
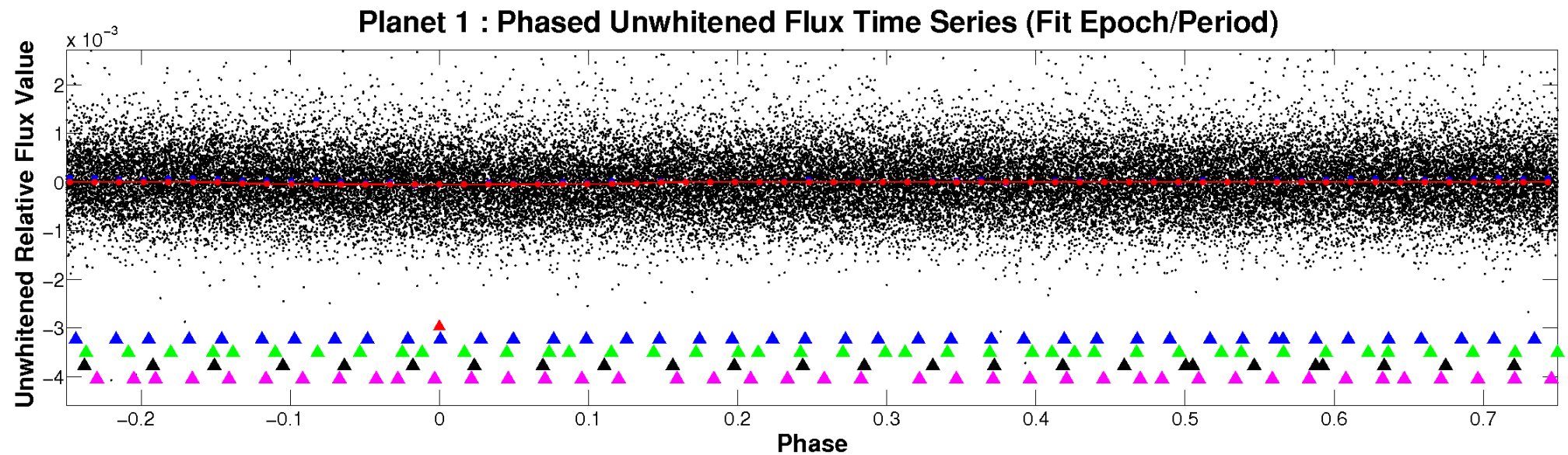


ALT Odd/Even

TCE 008447096-01

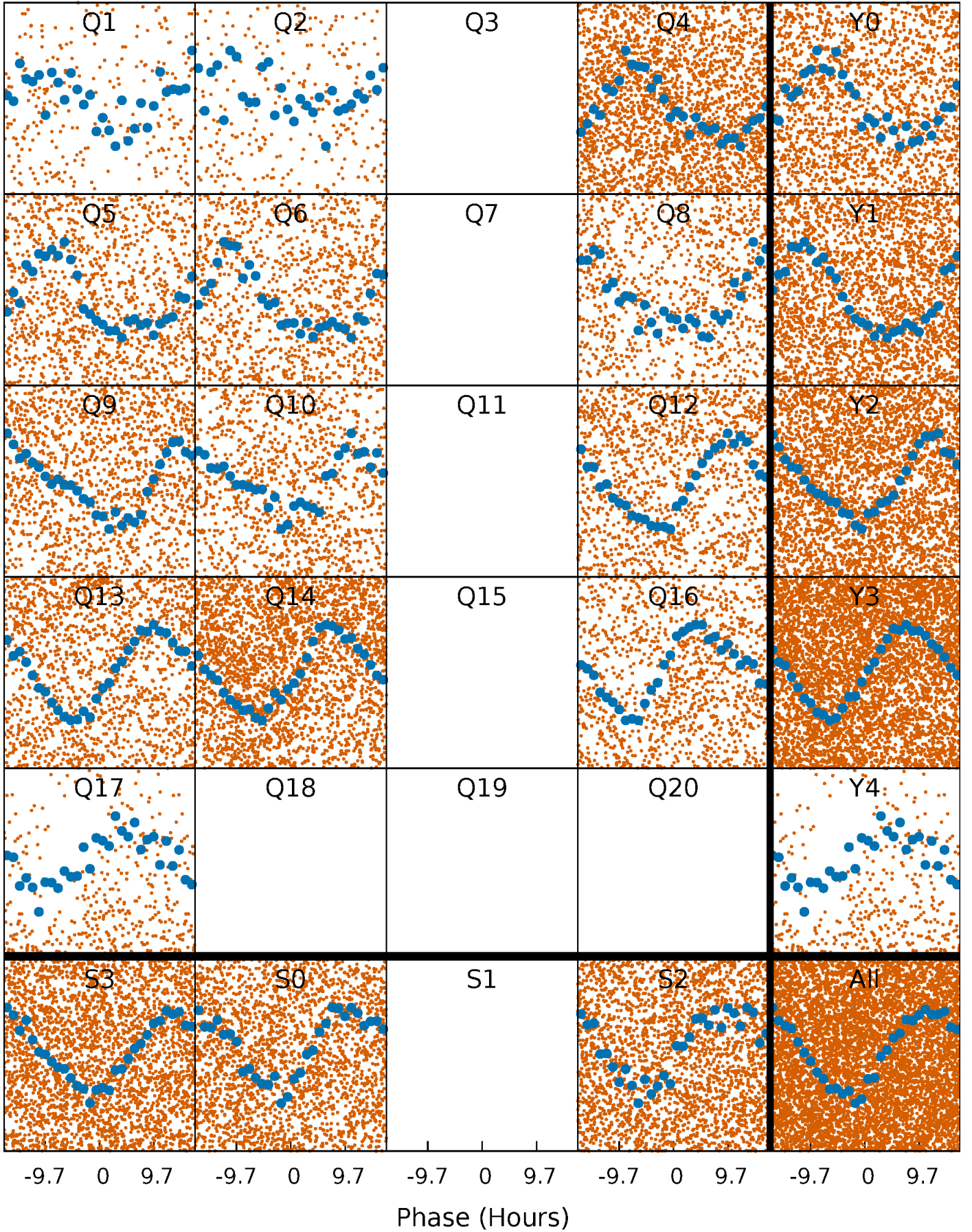


Non-Whitened Vs. Whitened Light Curve



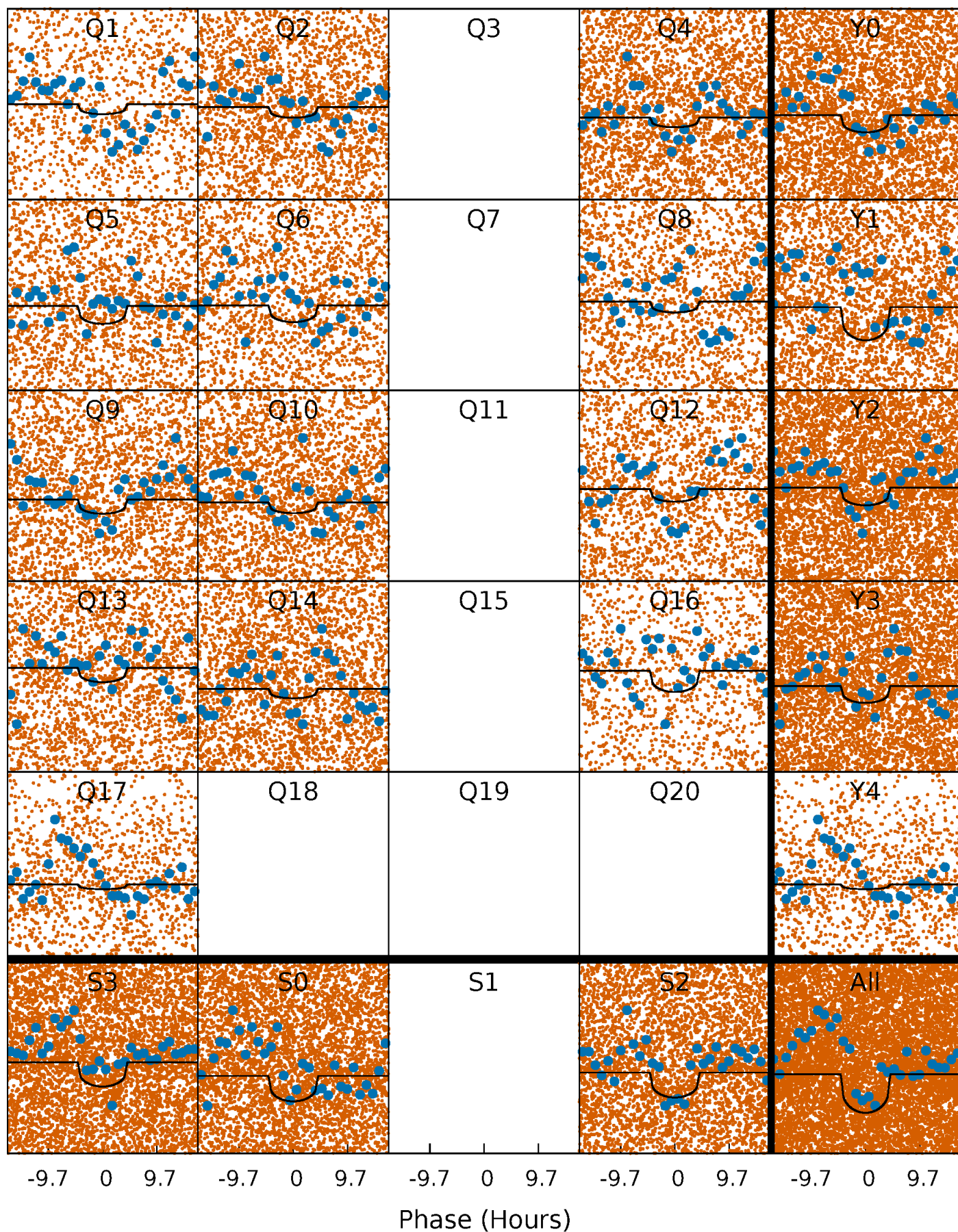
PDC Quarter-Phased Transit Curves

TCE 008447096-01 P= 1.236976 Days $T_0=131.660714$ (BKJD)



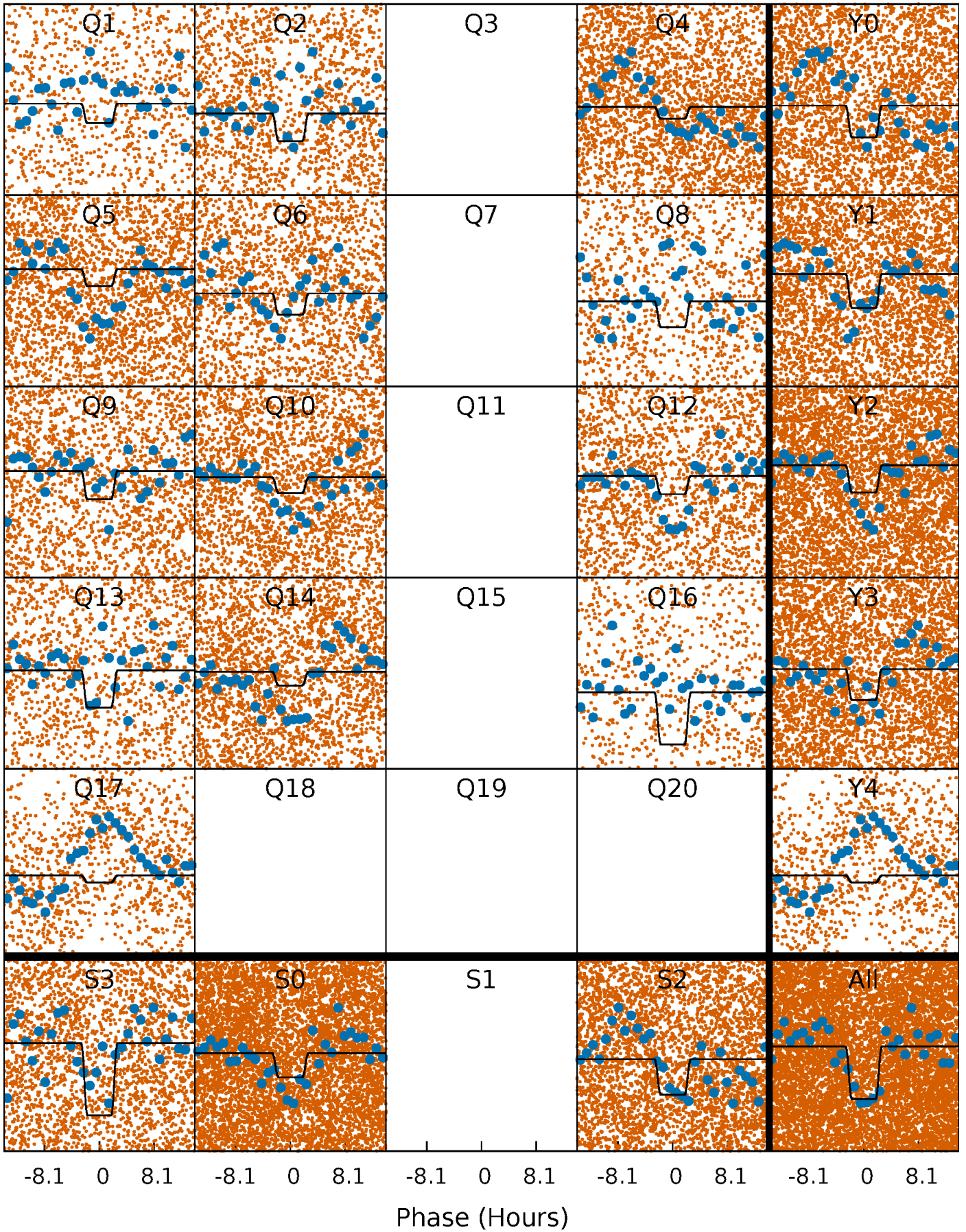
DV Quarter-Phased Transit Curves

TCE 008447096-01 P= 1.236976 Days $T_0=131.660714$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

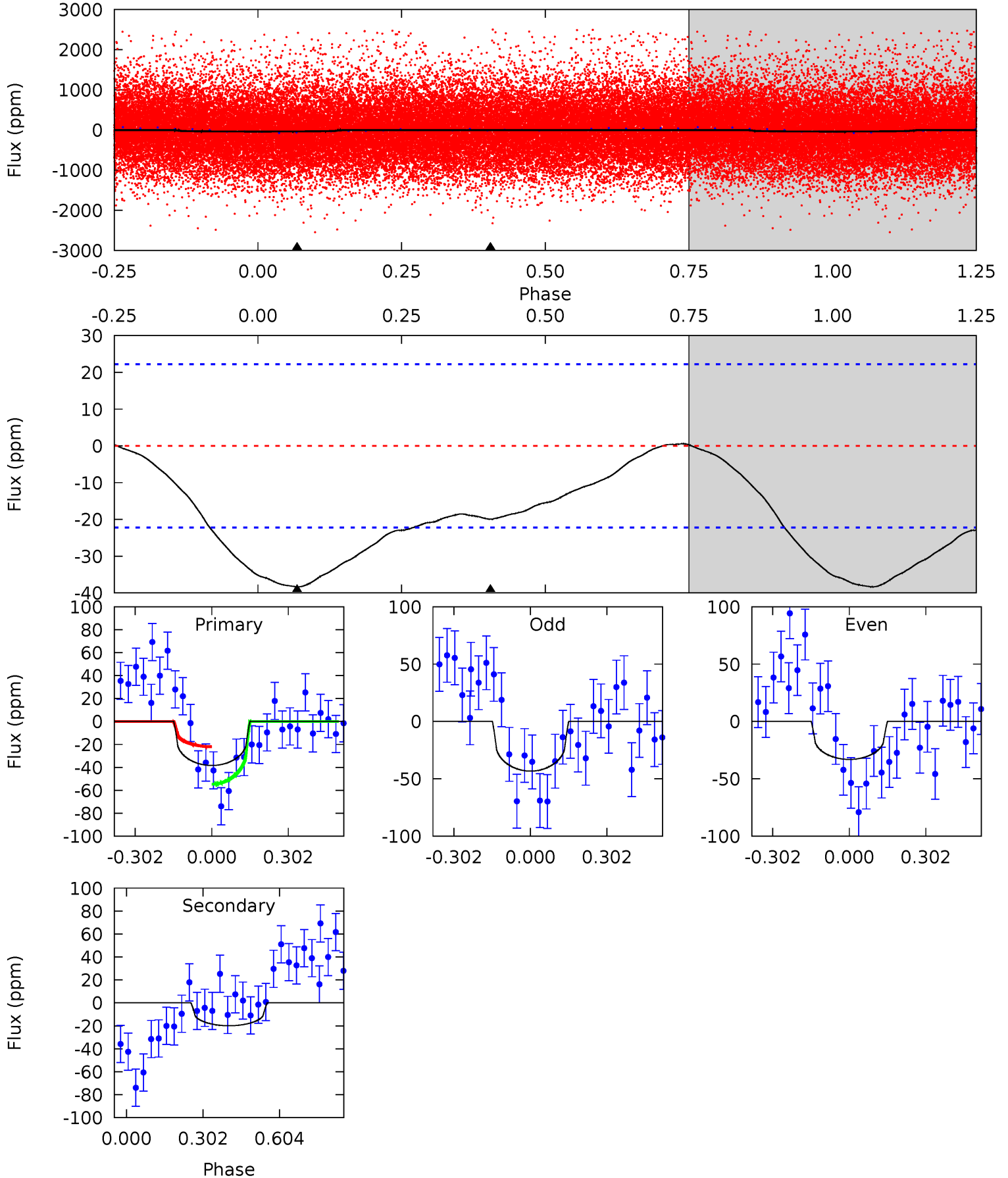
TCE 008447096-01 P= 1.236941 Days $T_0=131.671115$ (BKJD)



DV Model-Shift Uniqueness Test

008447096-01, P = 1.236976 Days, E = 130.423738 Days

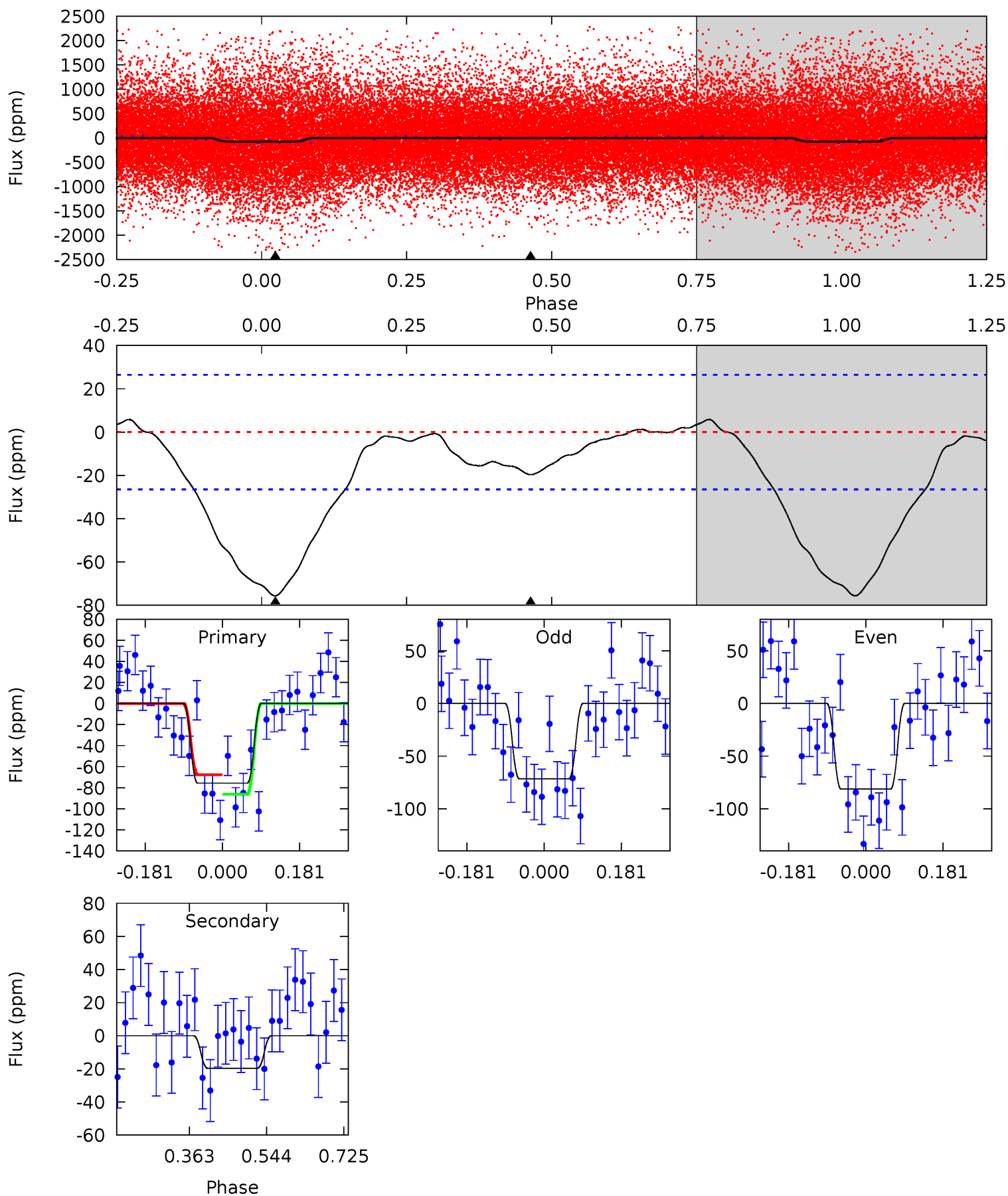
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.48	3.89	0	0	4.33	1.03	0.14	7.48	7.48	3.89	3.89	0.99	0.32	0.02	3.20



Alt Model-Shift Uniqueness Test

008447096-01, P = 1.236941 Days, E = 130.434174 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	3.29	0	0	4.44	1.34	0.52	12.7	12.7	3.29	3.29	0.82	0.55	0.07	1.56



Stellar Parameters For KIC 008447096

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3898^{+46}_{-50}	$4.735^{+0.017}_{-0.027}$	$-0.100^{+0.100}_{-0.100}$	$0.530^{+0.023}_{-0.021}$	$0.556^{+0.020}_{-0.027}$	$5.264^{+0.402}_{-0.550}$
	+1%/-1%	+0%/-1%	+100%/-100%	+4%/-4%	+4%/-5%	+8%/-10%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 008447096-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-20 ± 5	$0.70^{+0.72}_{-0.51}$	1287^{+19}_{-19}	2851^{+1497}_{-518}	$7.654^{+95.342}_{-5.941}$
Alt.	-20 ± 6	$0.78^{+0.70}_{-0.50}$	1287^{+19}_{-19}	2764^{+987}_{-481}	$6.005^{+39.659}_{-4.477}$

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

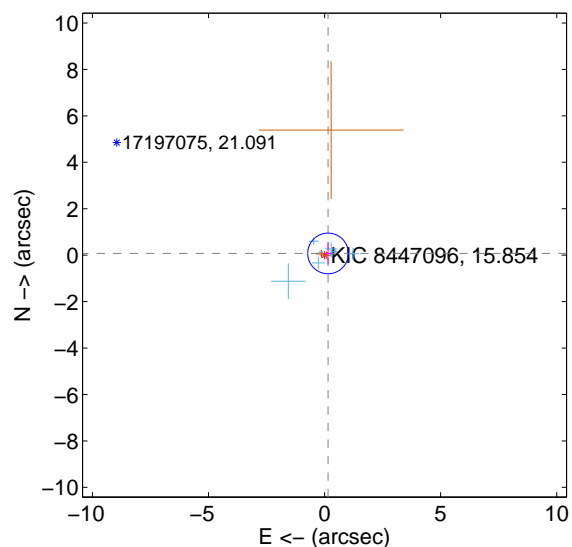
Supplemental centroid analysis for 008447096-01. Kepler magnitude: 15.85. Transit SNR 5.04

There are 9 quarters with good PRF difference image offsets

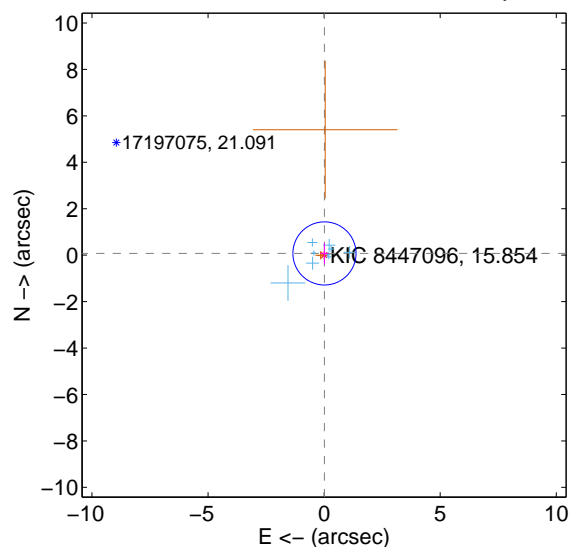
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.167 ± 0.292	0.57	-0.150 ± 0.184	0.075 ± 0.463
PRF-fit source offset from KIC position	0.077 ± 0.453	0.17	-0.015 ± 0.175	0.075 ± 0.452
photometric centroid source offset	3.30 ± 1.79	1.84	-2.96 ± 1.81	-1.45 ± 1.75

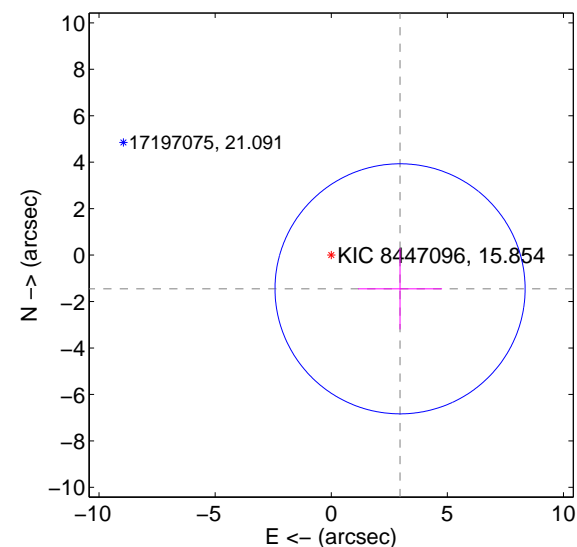
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

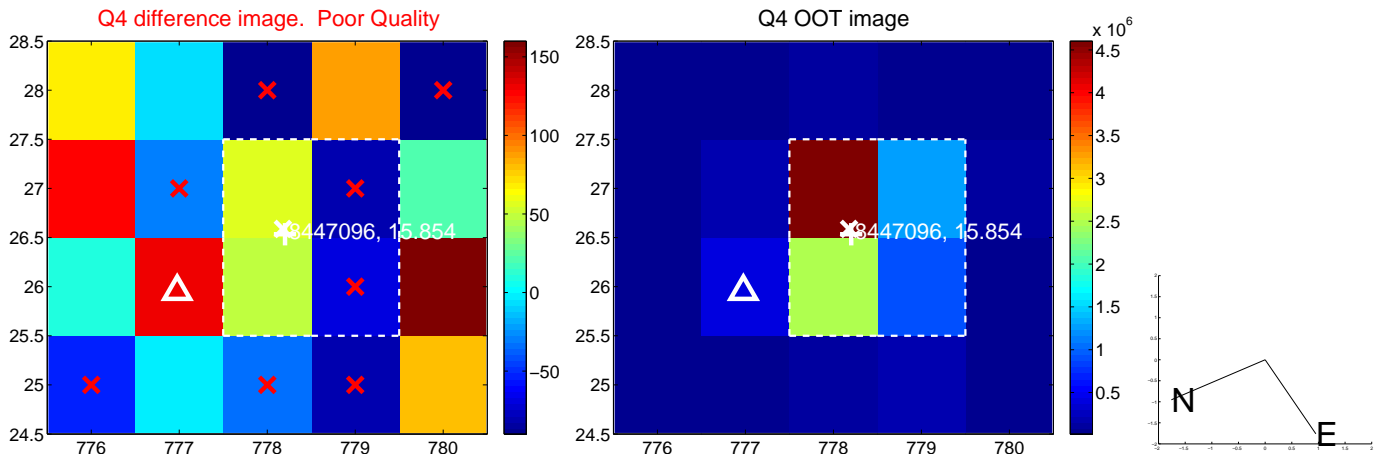
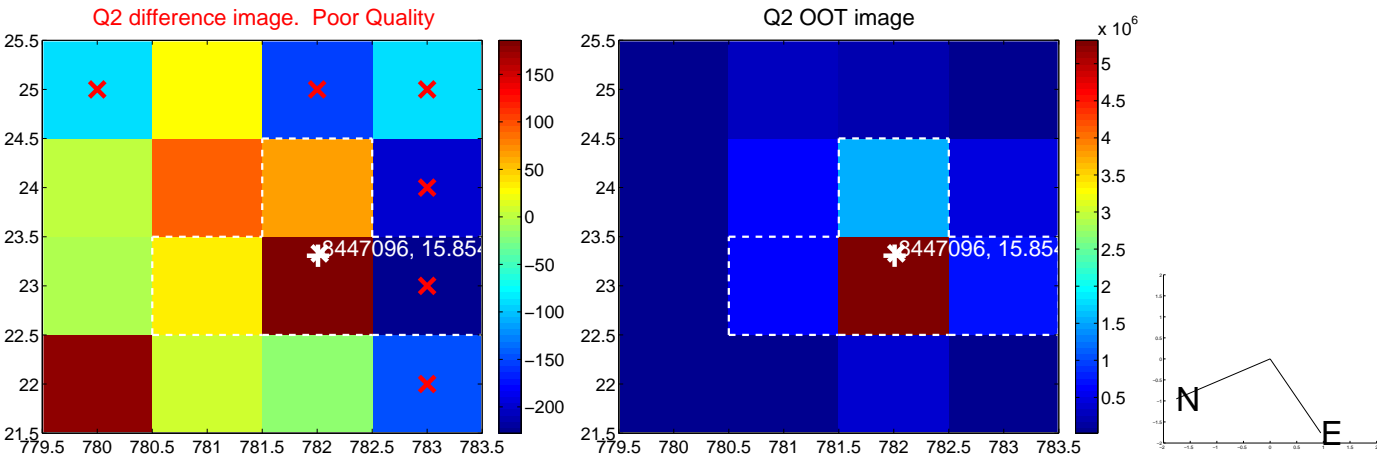
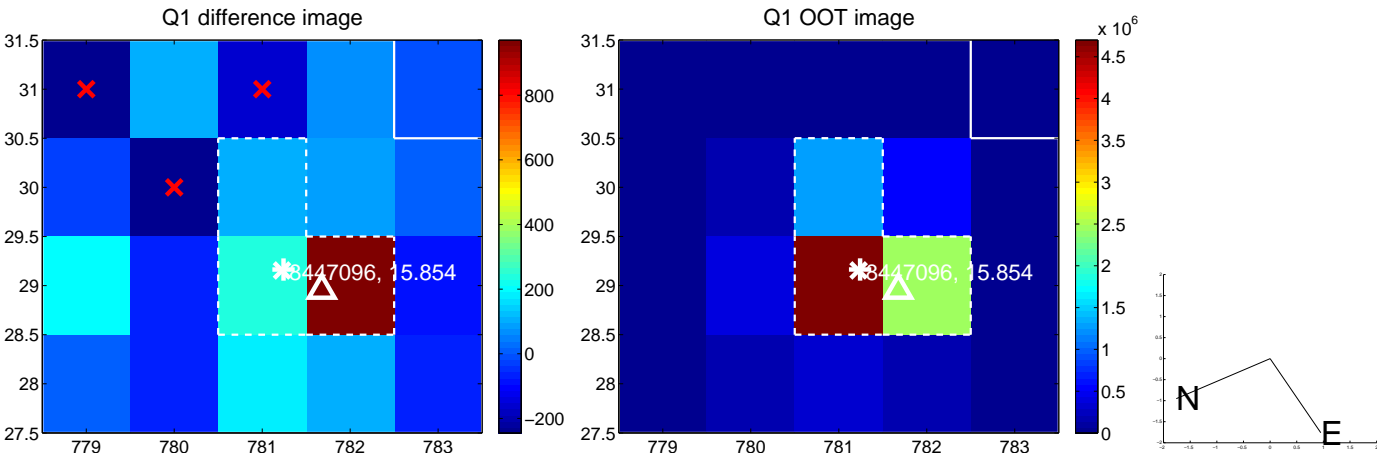


offset from photometric centroids

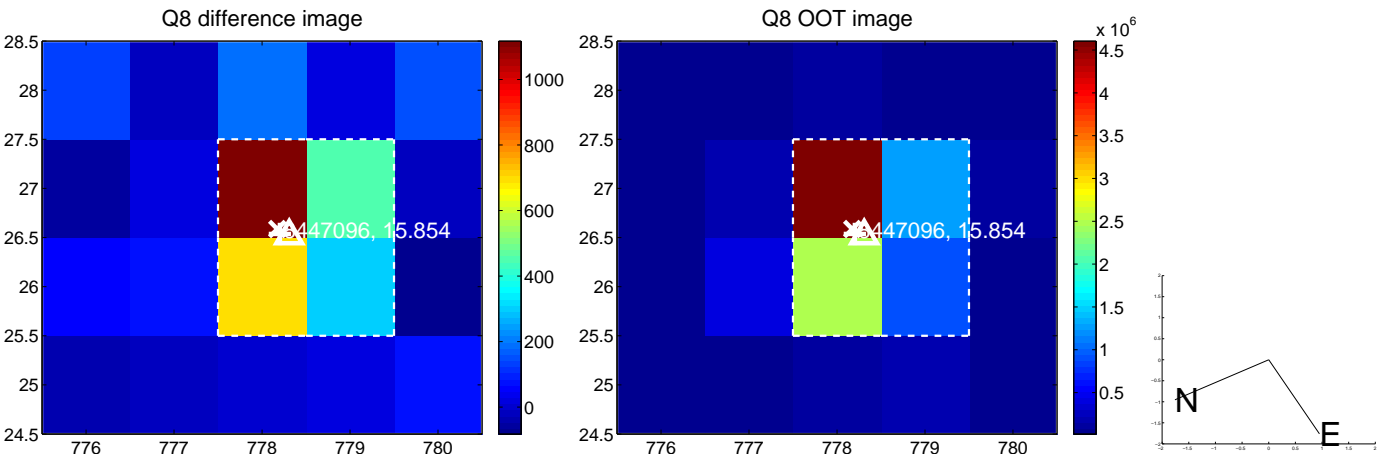
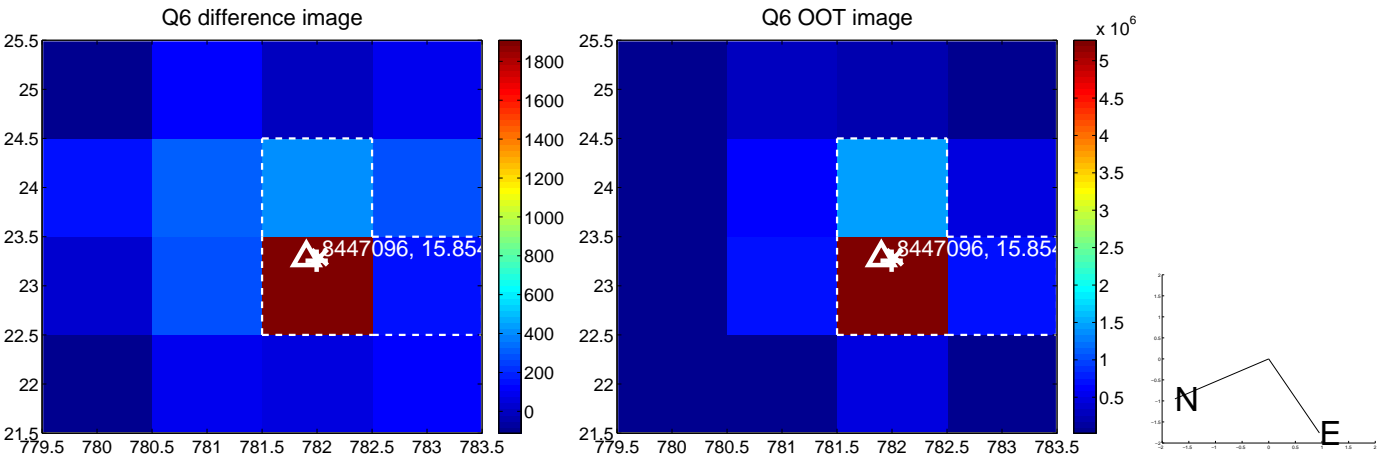
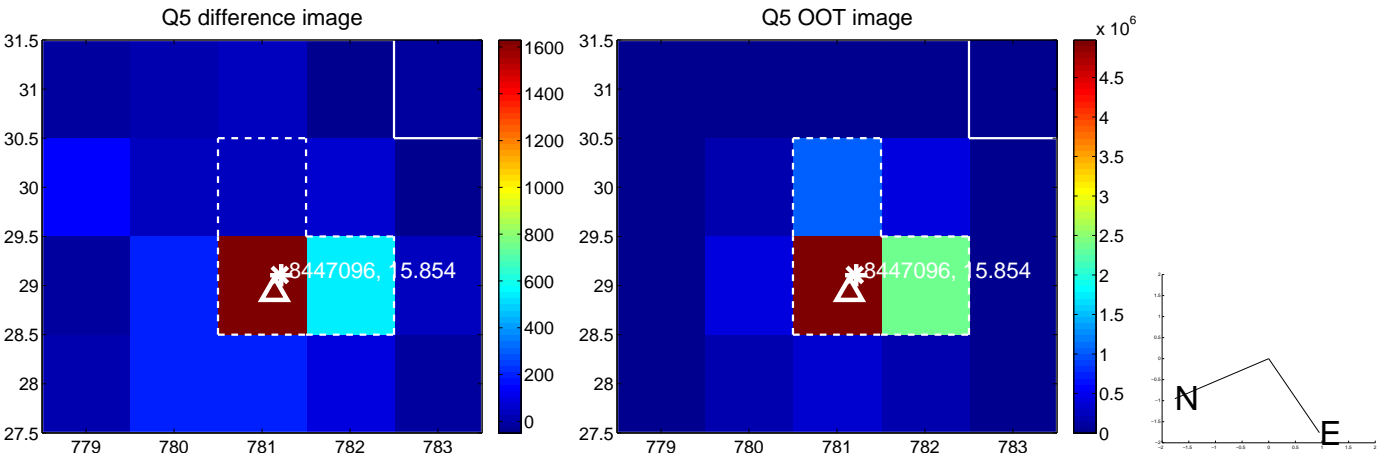


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

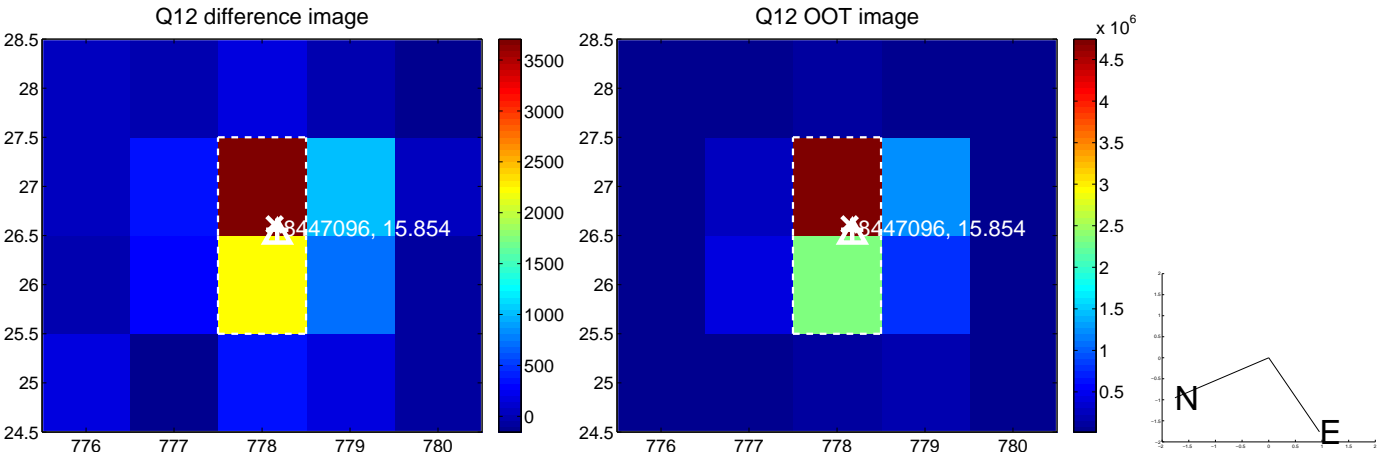
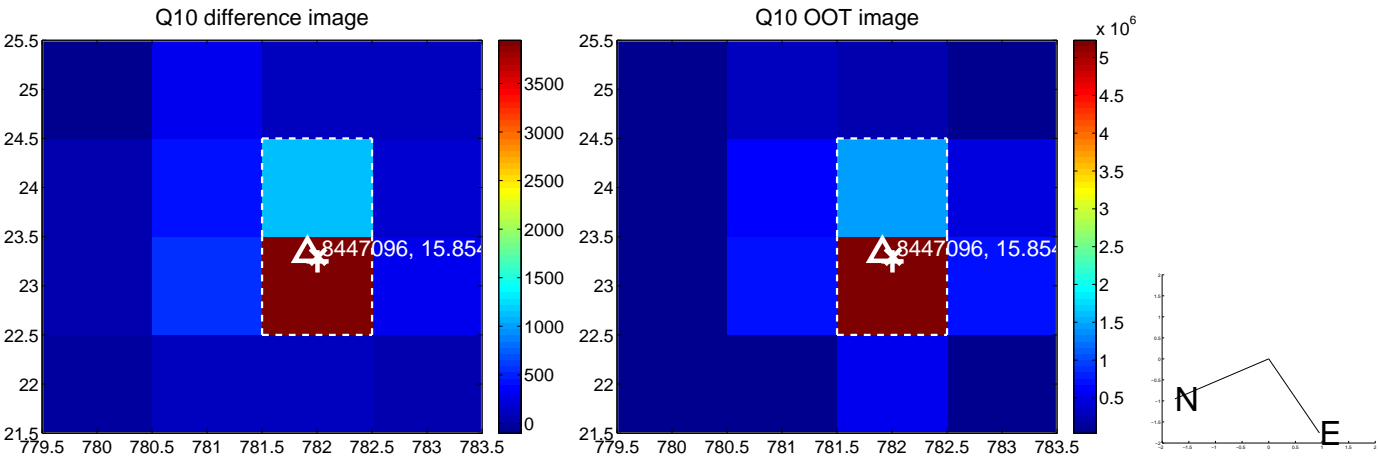
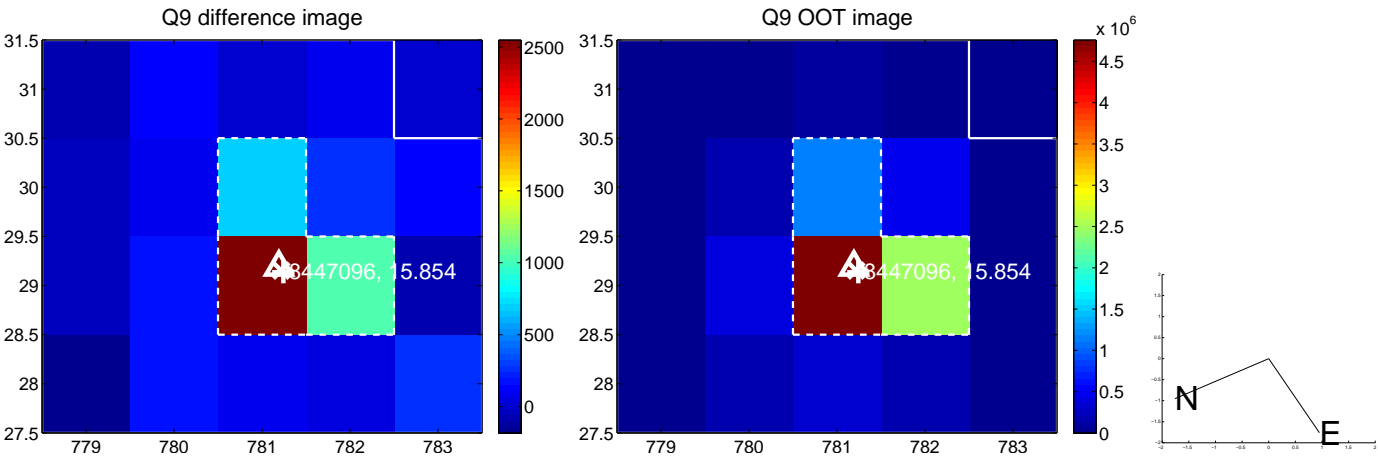
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



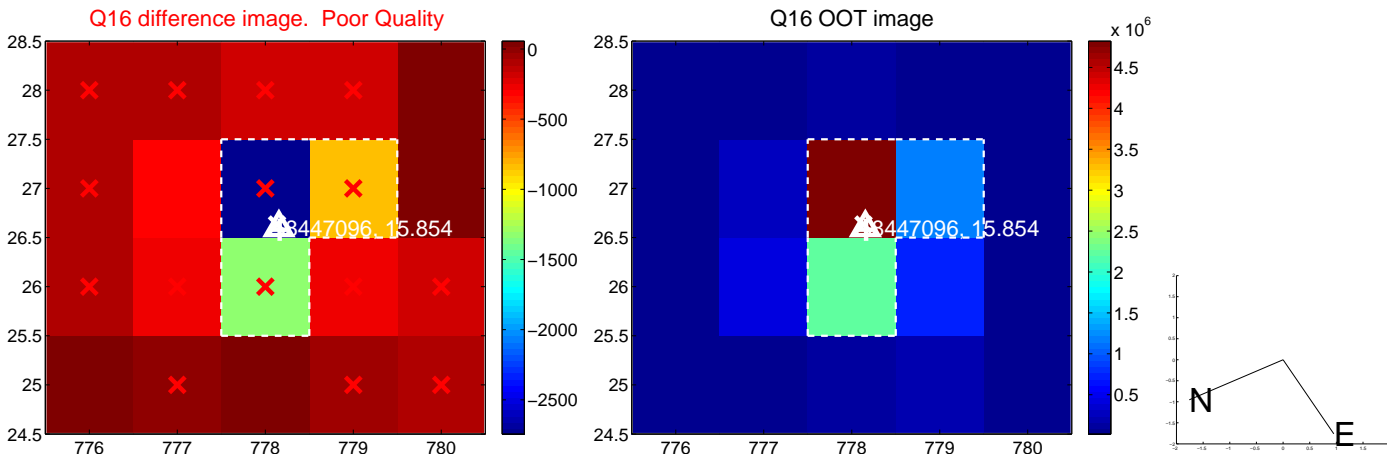
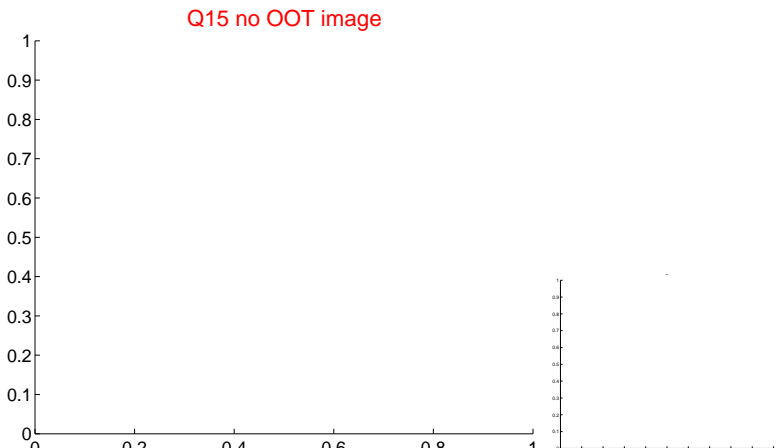
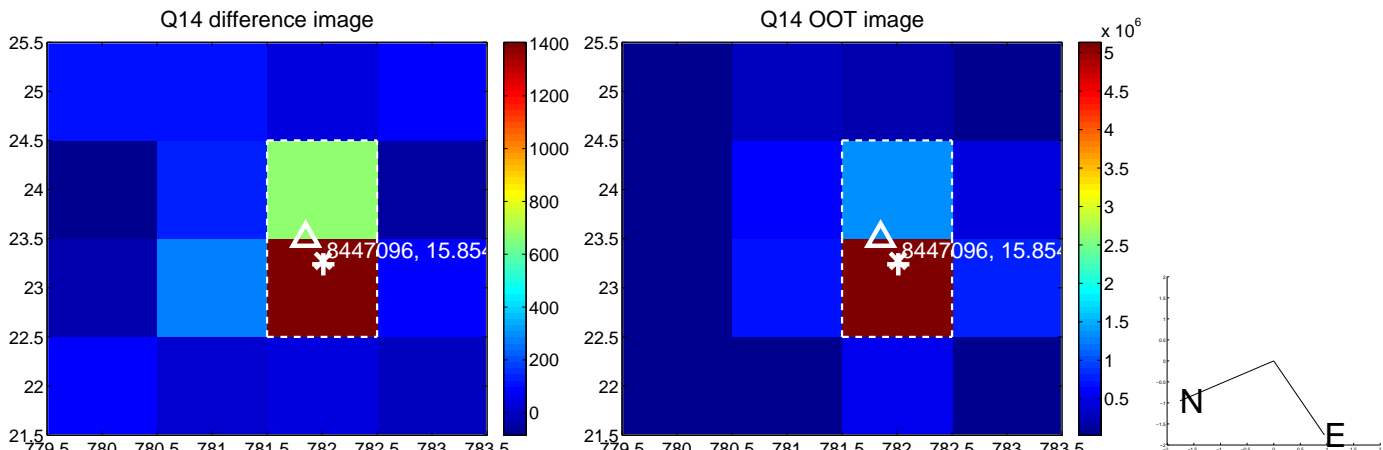
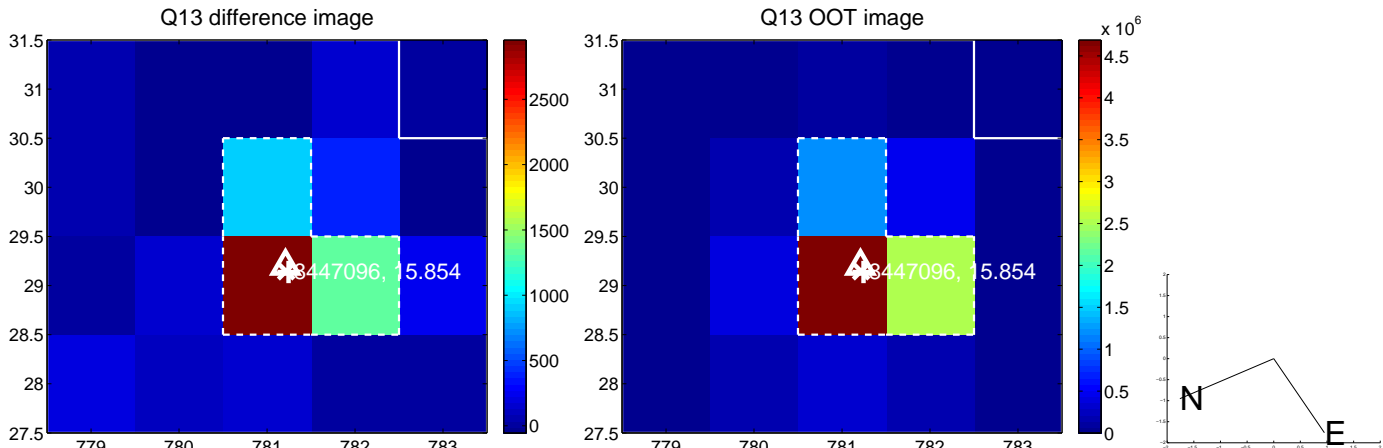
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



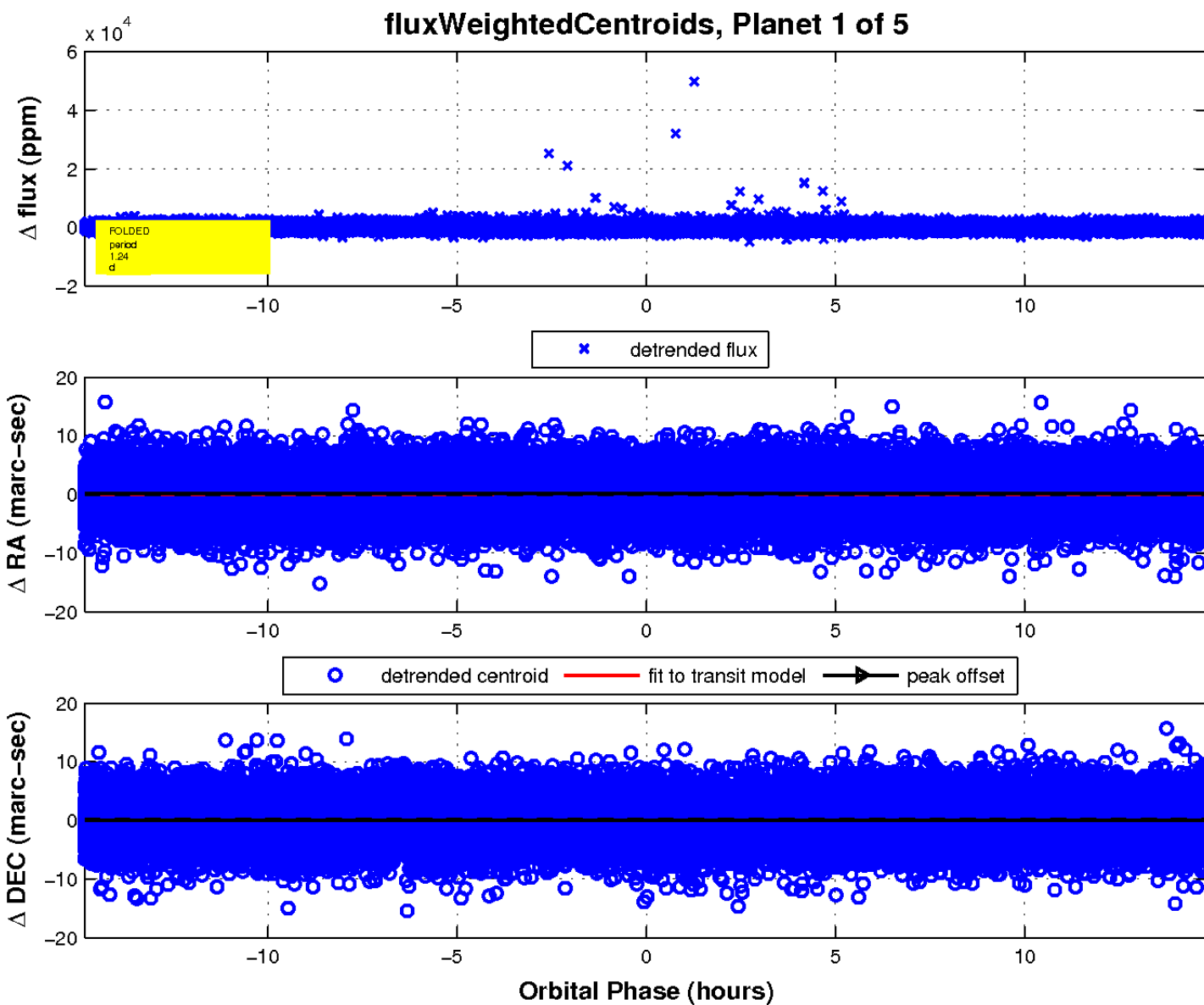
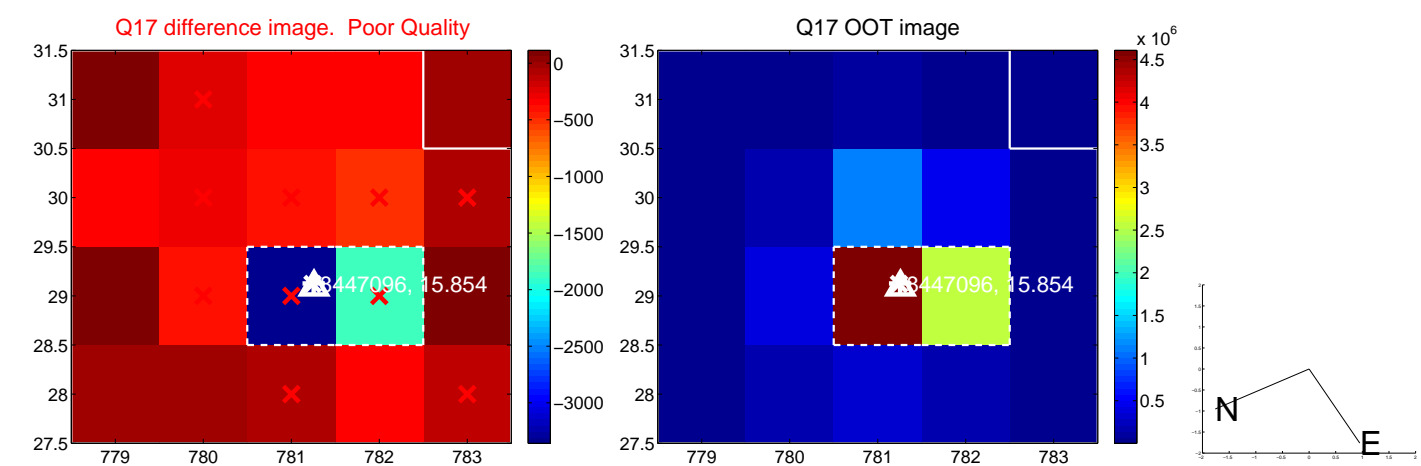
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



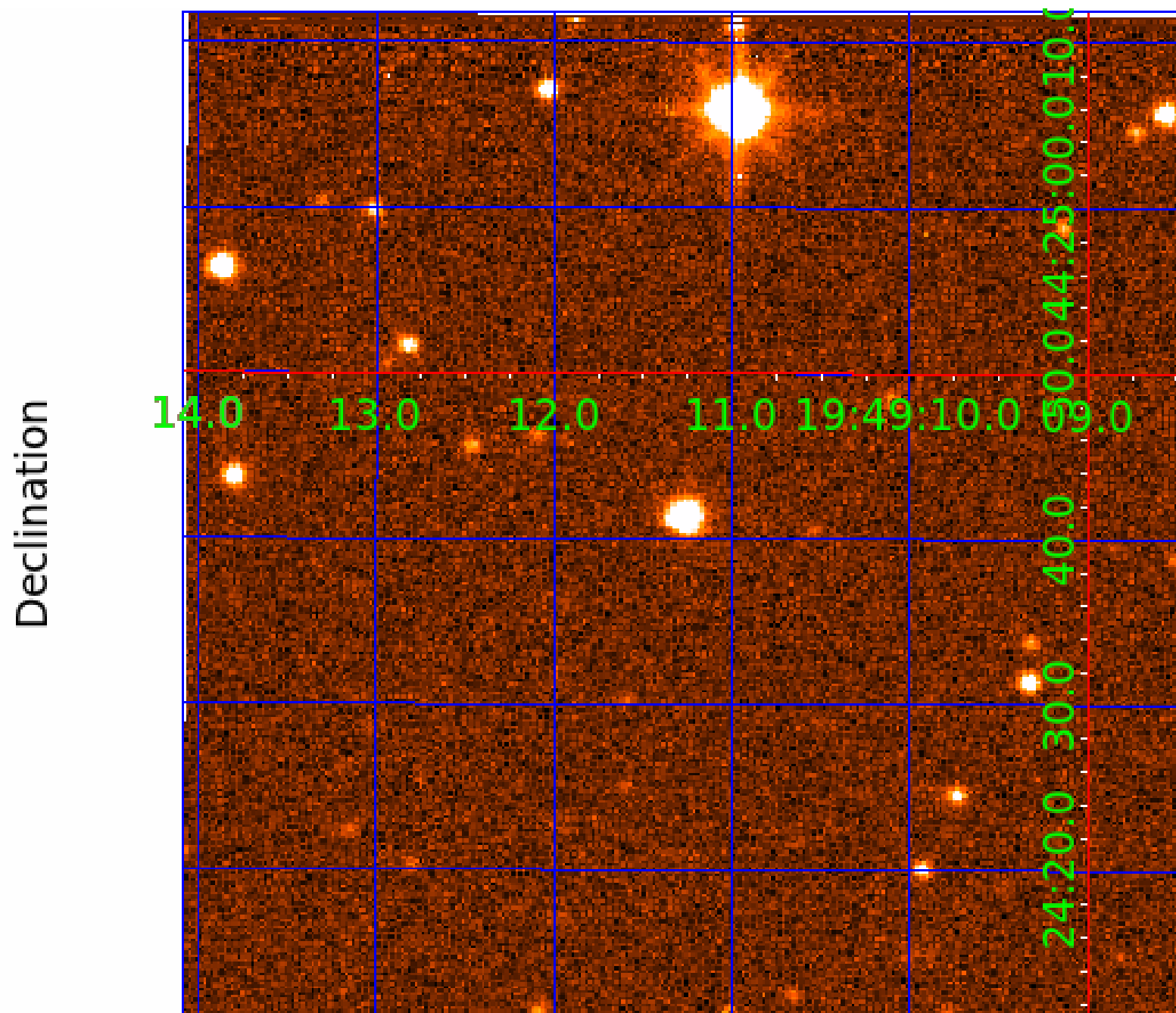
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image



KIC 008447096

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})
008447096-01	OBS	No	1.236976	131.660714	46.3	8.521	7.3	5.0	0.53	3898	0.35	168.77
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008447096-03	OBS	No	35.593520	151.979182	903.3	3.720	8.4	7.8	0.53	3898	1.68	1.91
008447096-04	OBS	No	60.504012	137.341364	1567.5	3.672	9.9	8.2	0.53	3898	4.05	0.94
008447096-05	OBS	No	35.671231	147.707007	937.9	3.461	8.0	7.5	0.53	3898	1.74	1.91

Robovetter Results

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008447096-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008447096-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

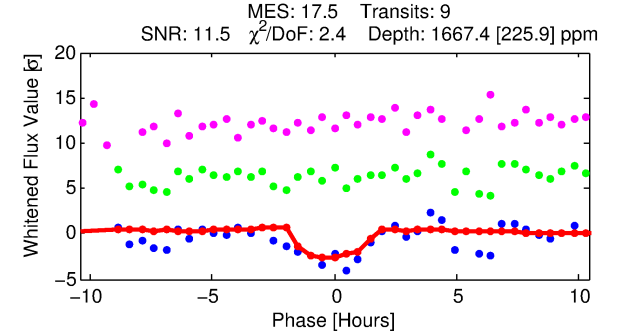
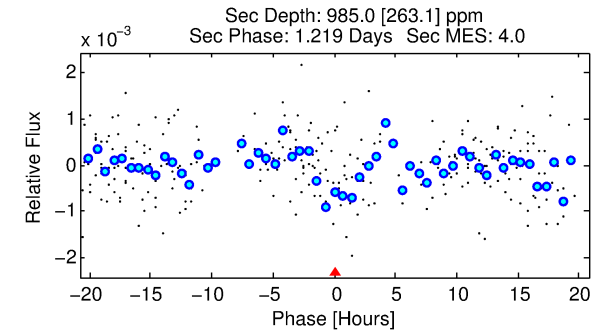
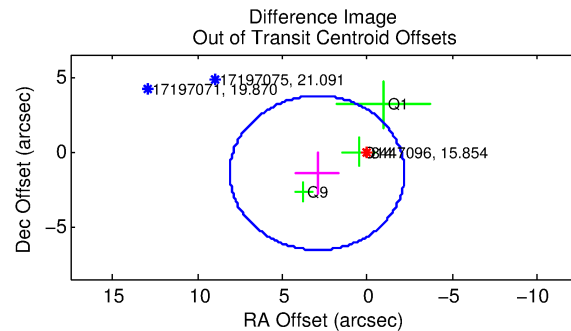
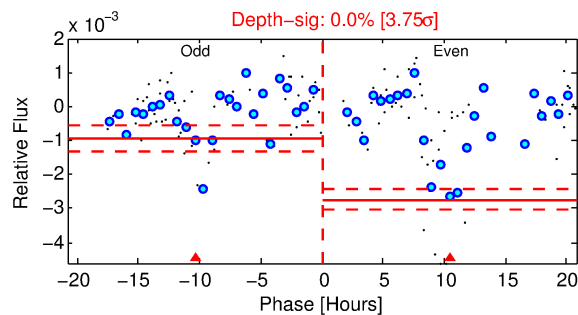
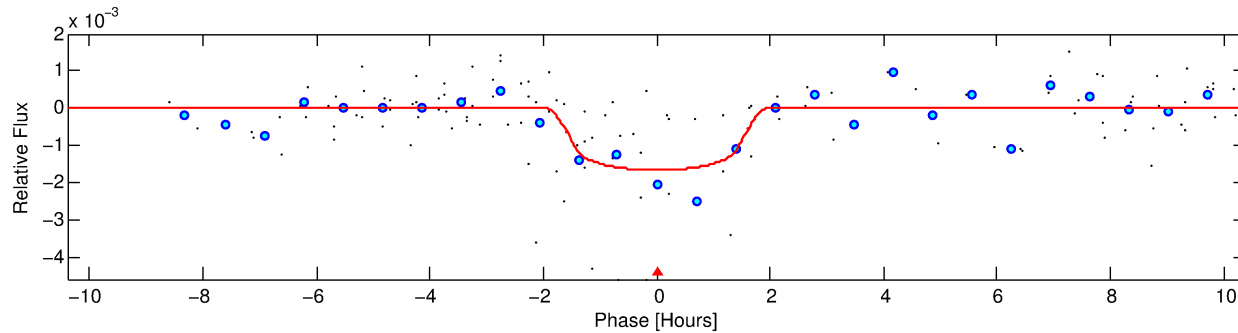
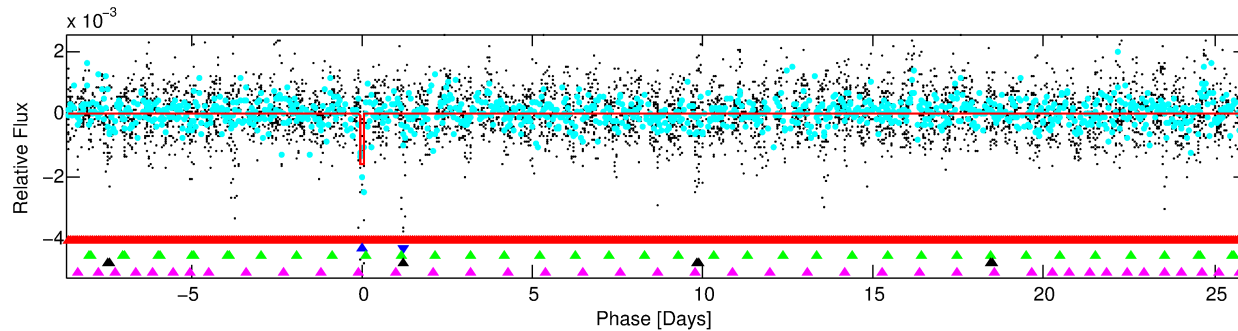
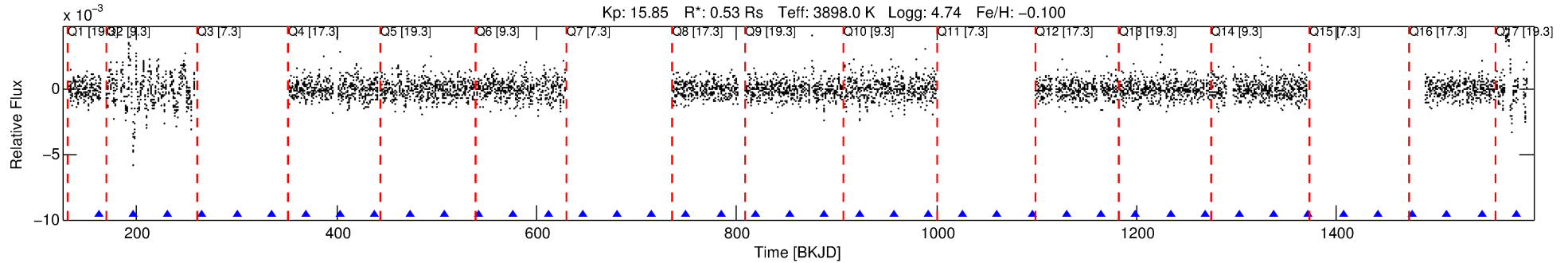
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008447096-02

No Significant Match Found

DV One-Page Summary

KIC: 8447096 Candidate: 2 of 5 Period: 34.575 d



DV Fit Results:

Period = 34.57483 [0.00040] d
Epoch = 162.0480 [0.0090] BKJD
Rp/R* = 0.0391 [0.0443]
a/R* = 63.31 [304.93]
b = 0.63 [4.73]
Seff = 1.99 [0.14]
Teq = 303 [5] K
Rp = 2.26 [2.56] Re
a = 0.1709 [0.0061] AU
Ag = 3090.01 [7046.68] [0.44 σ]
Teffp = 3491 [1990] K [1.60 σ]

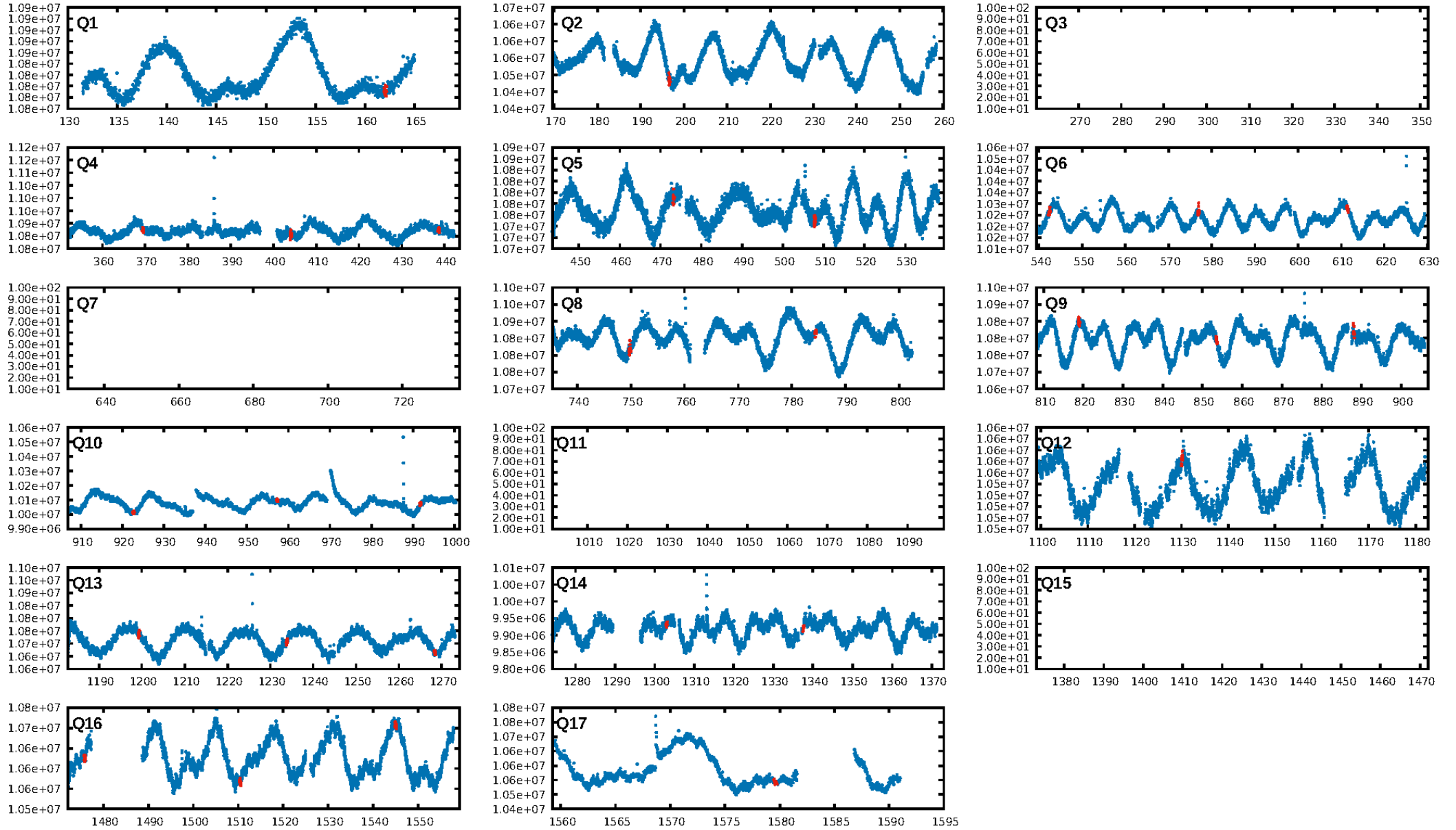
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [87.00 σ]
LongPeriod-sig: 100.0% [4.81 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 25.6%
Bootstrap-pfa: 7.21e-38
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -0.9734
Centroid-sig: 3.6%
Centroid-so: 0.716 arcsec [1.70 σ]
OotOffset-rm: 3.261 arcsec [1.90 σ]
KicOffset-rm: 3.345 arcsec [2.52 σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-st: 1/0/0/2 [3]
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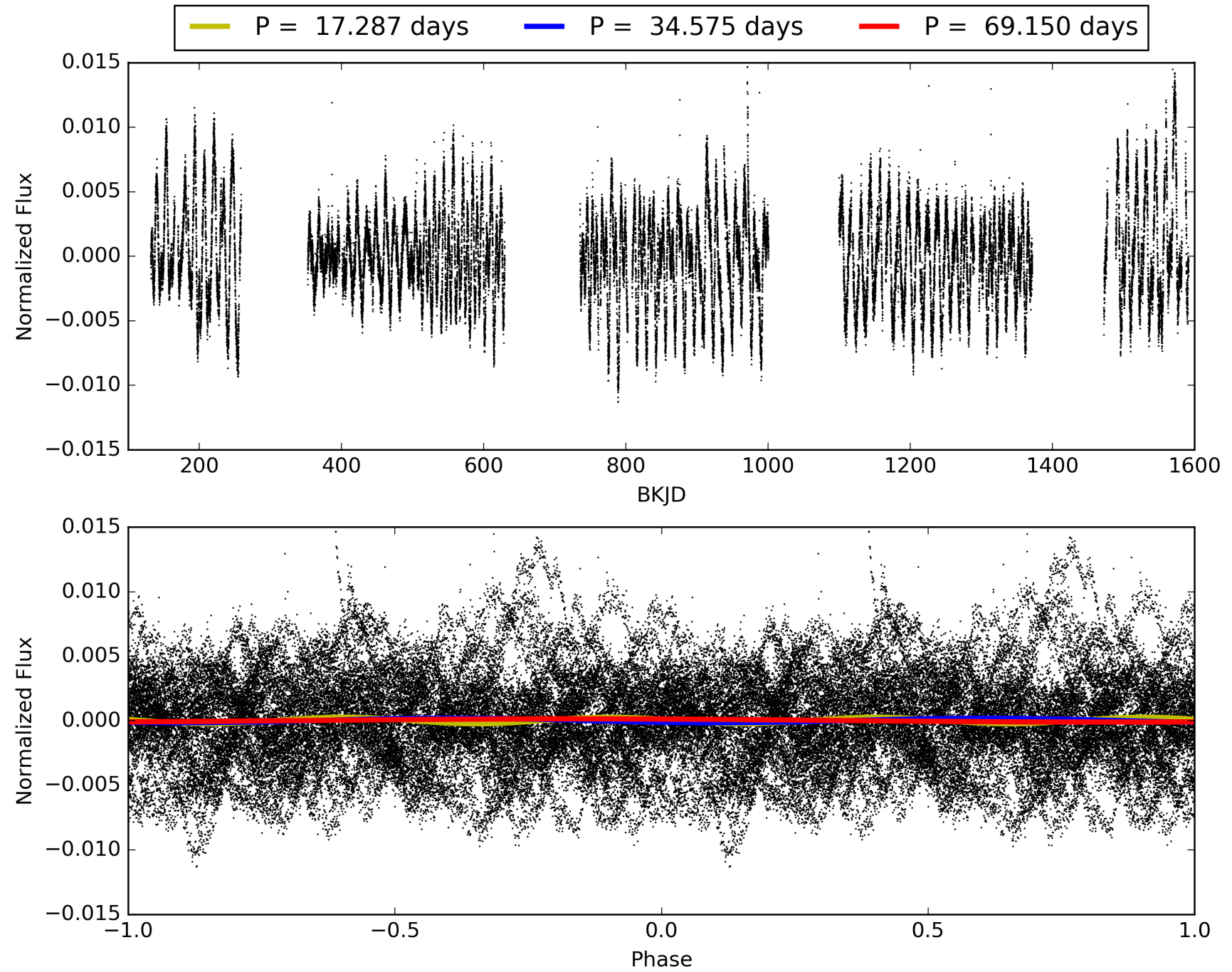
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:09:51 Z

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

TCE 008447096-02, PDC Light Curves

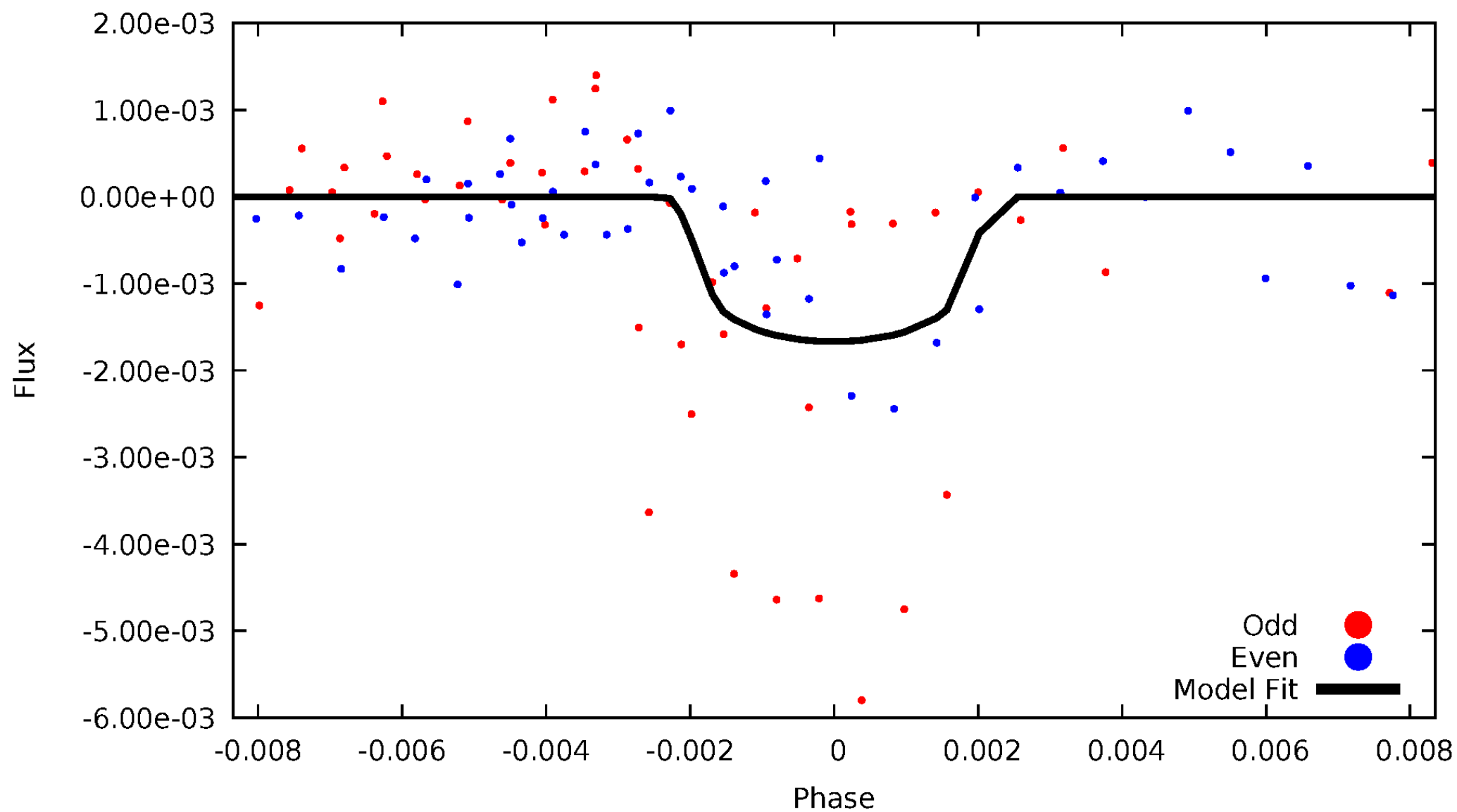


TCE 008447096-02



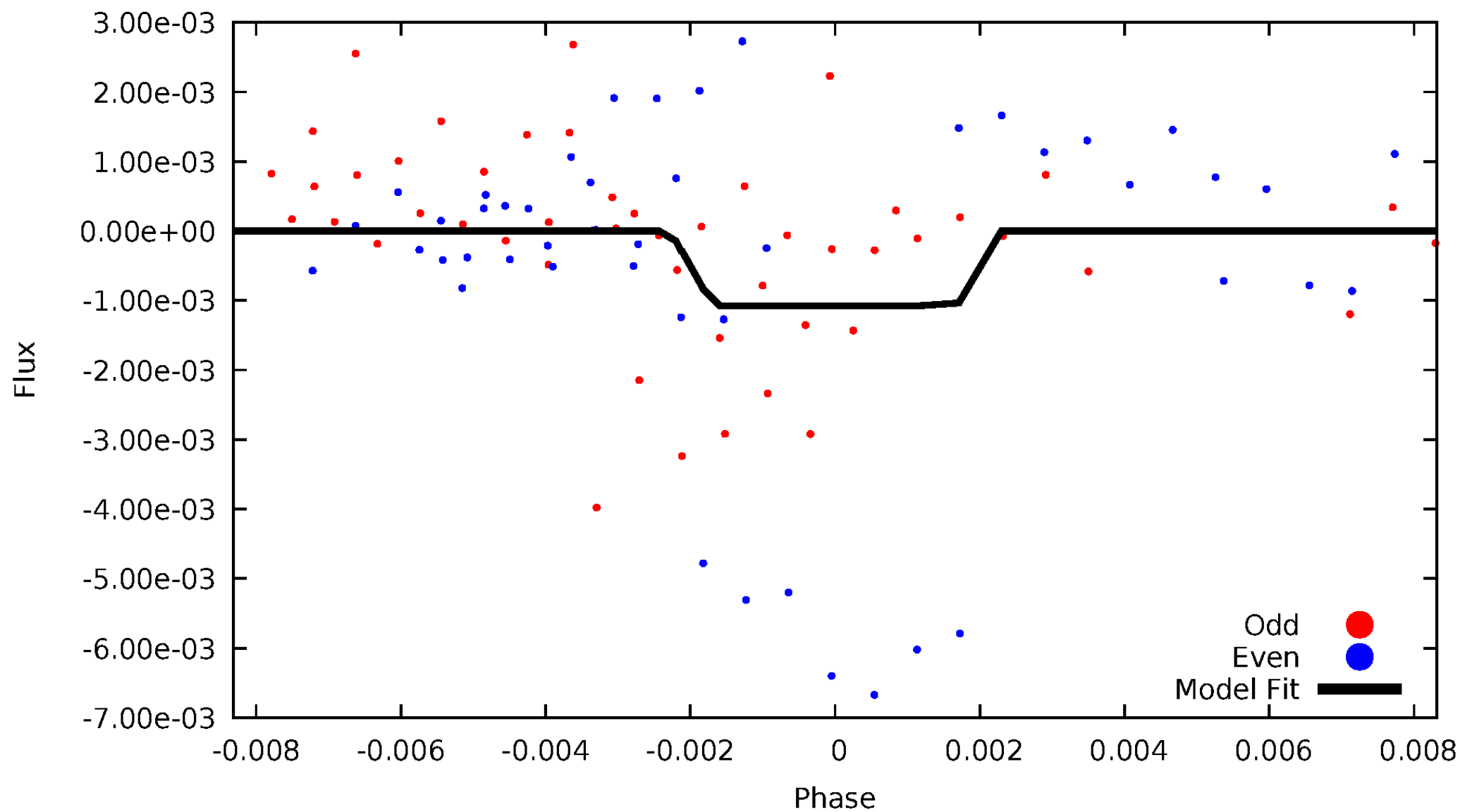
DV Odd/Even

TCE 008447096-02



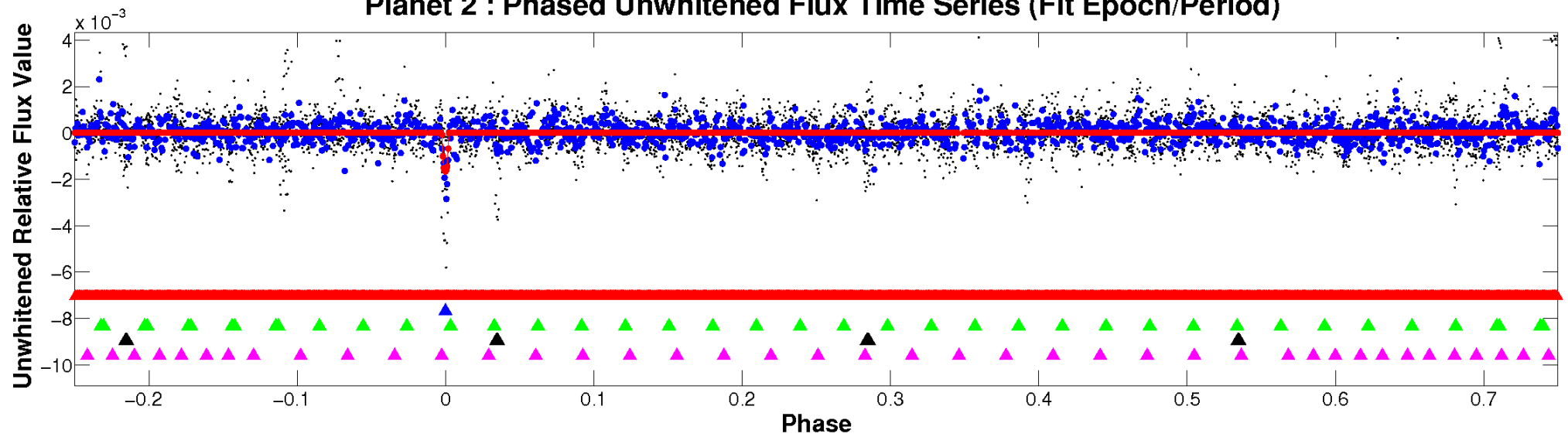
ALT Odd/Even

TCE 008447096-02

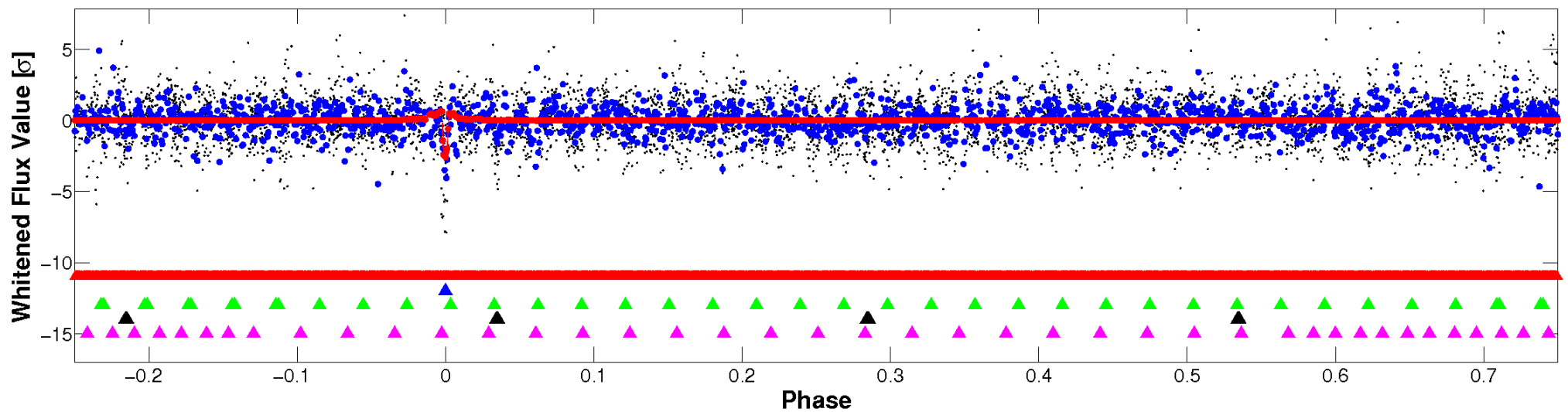


Non-Whitened Vs. Whitened Light Curve

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

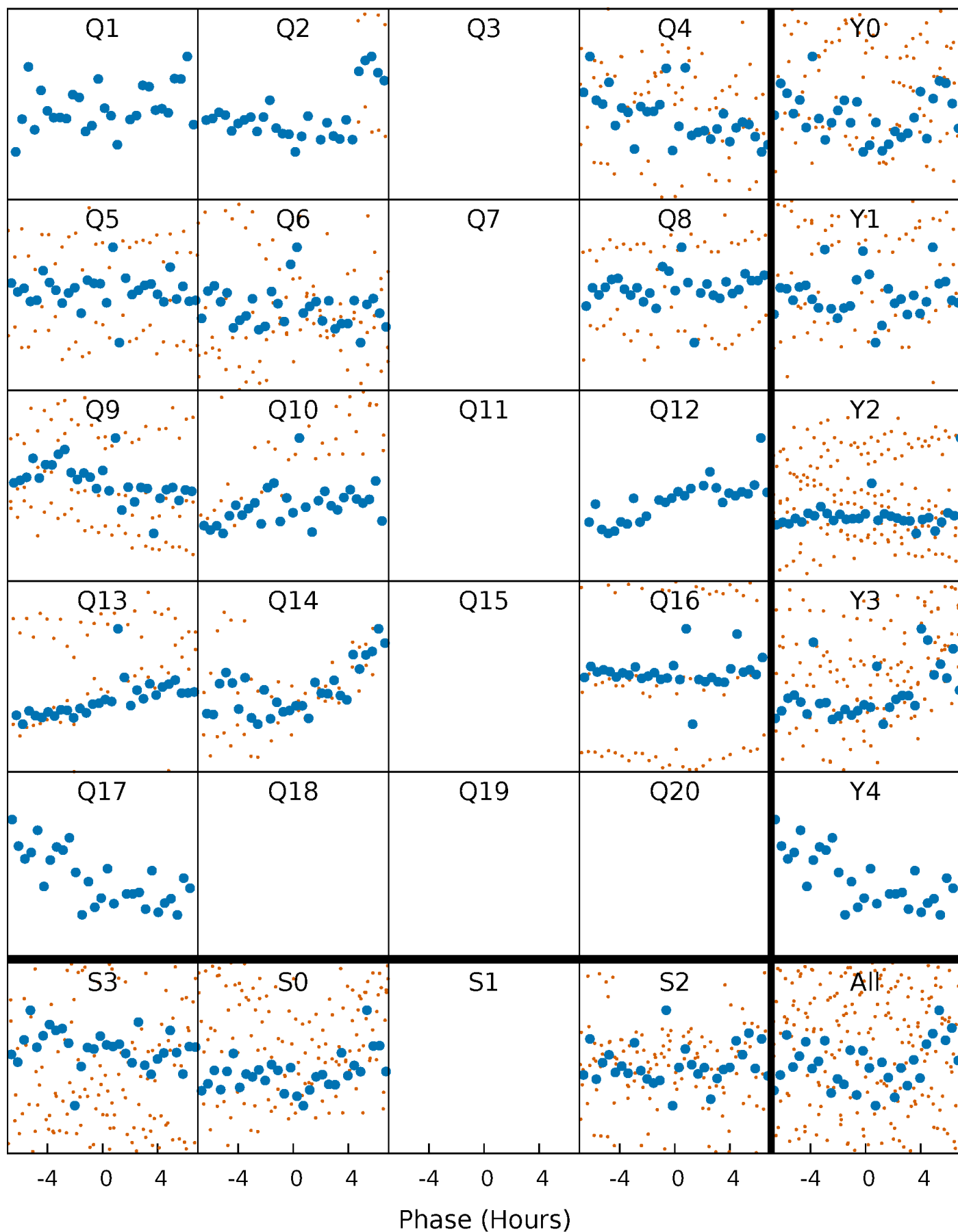


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



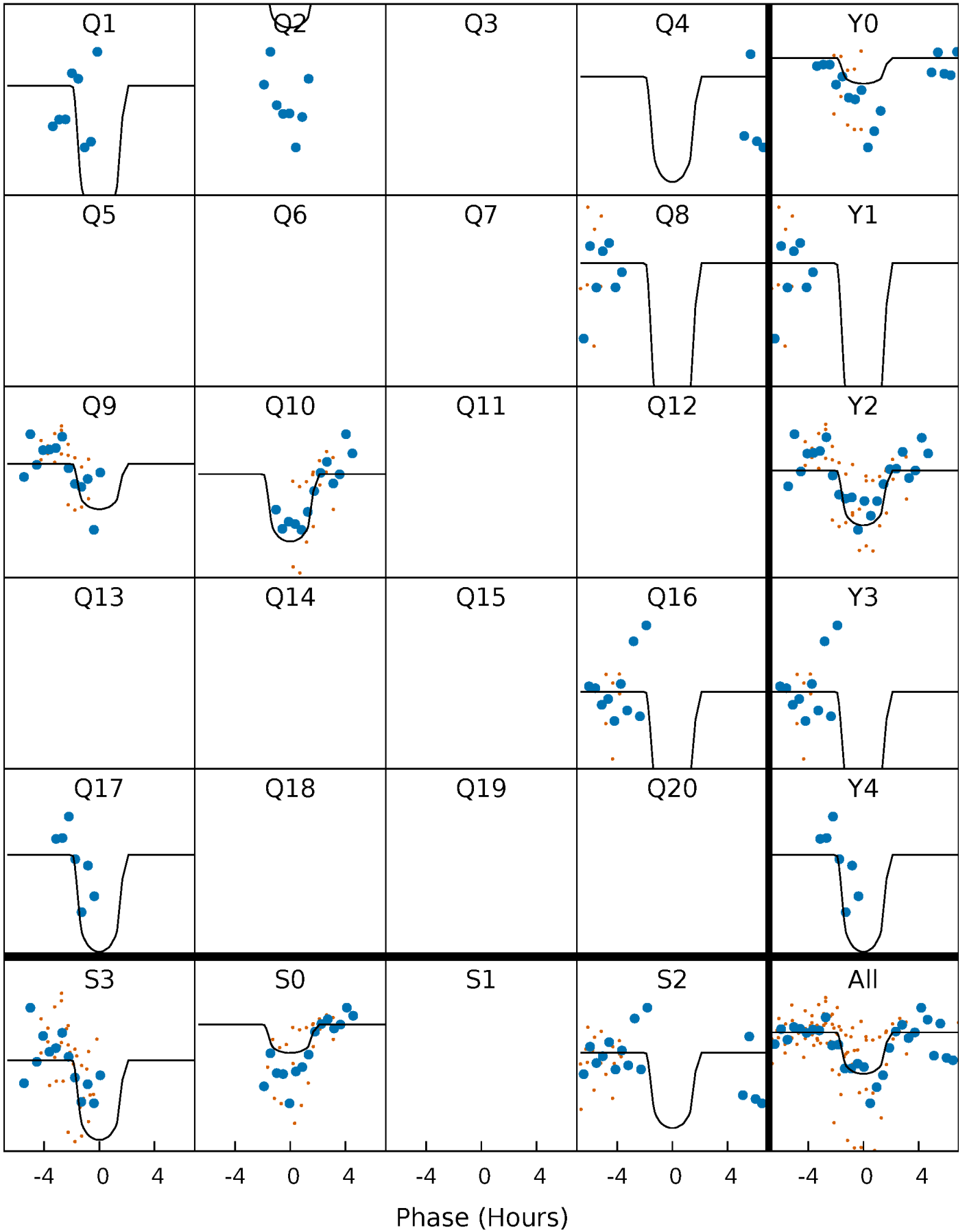
PDC Quarter-Phased Transit Curves

TCE 008447096-02 $P = 34.574835$ Days $T_0 = 162.047963$ (BKJD)



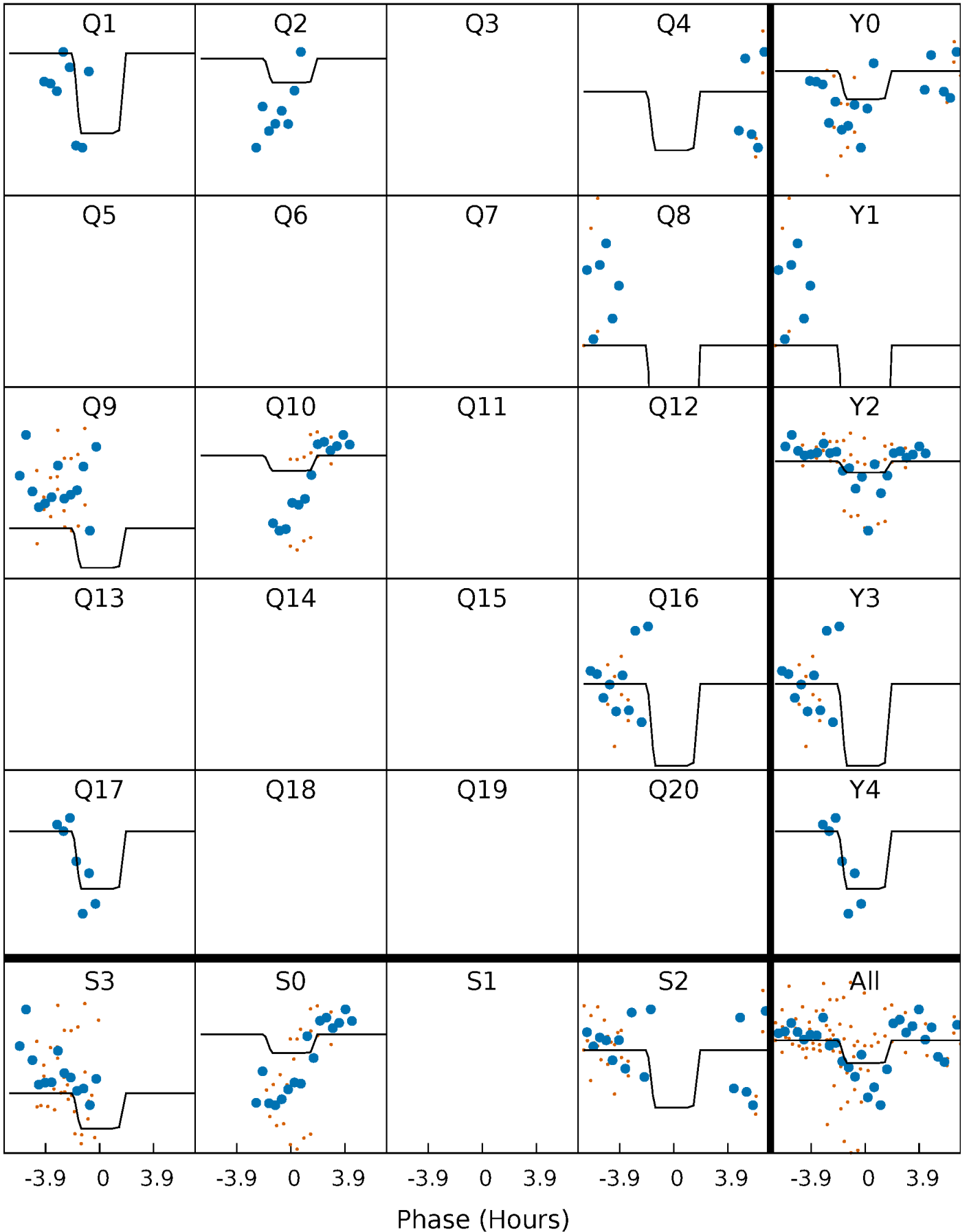
DV Quarter-Phased Transit Curves

TCE 008447096-02 $P = 34.574835$ Days $T_0 = 162.047963$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

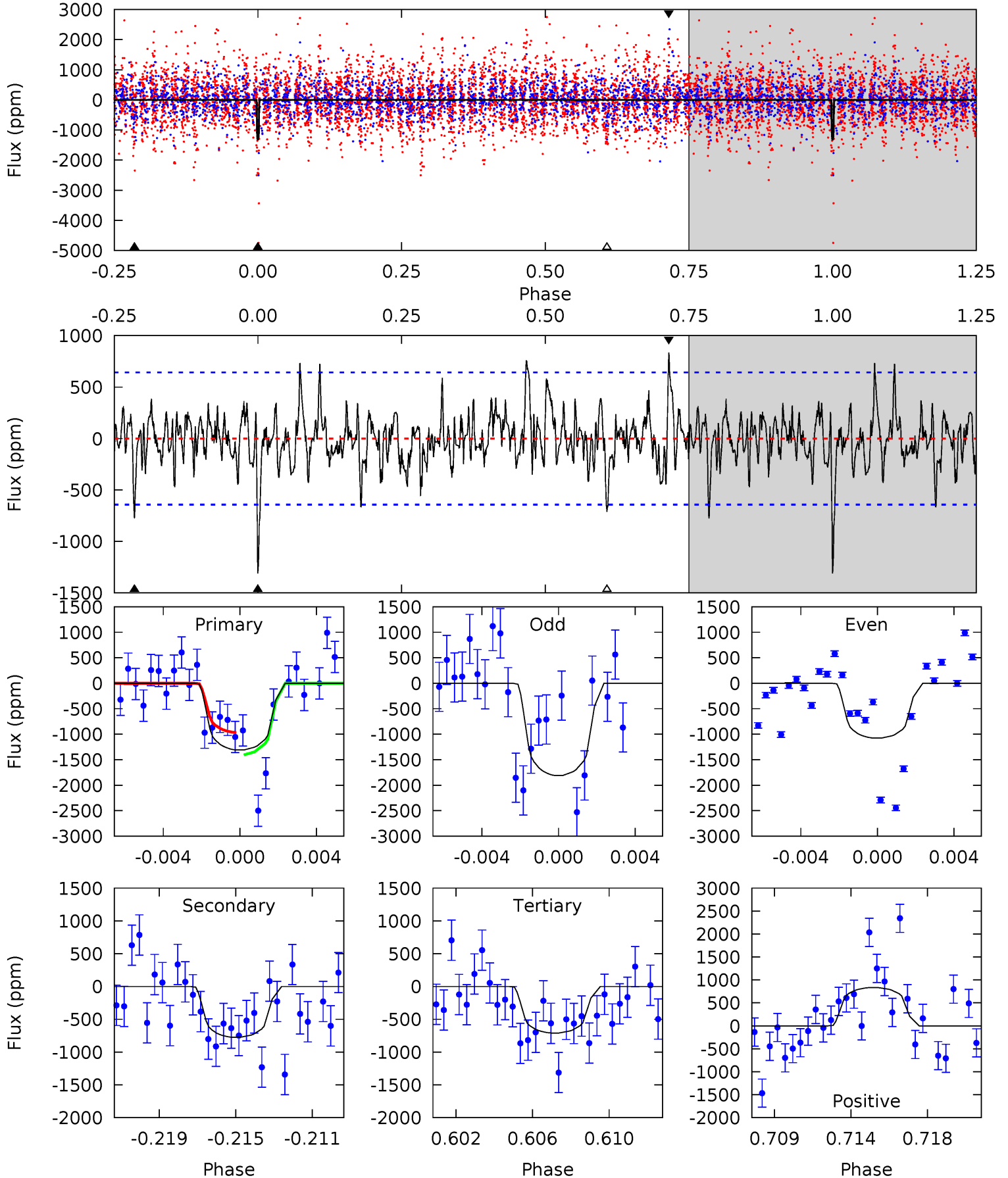
TCE 008447096-02 P= 34.574123 Days $T_0=162.073663$ (BKJD)



DV Model-Shift Uniqueness Test

008447096-02, P = 34.574835 Days, E = 127.473128 Days

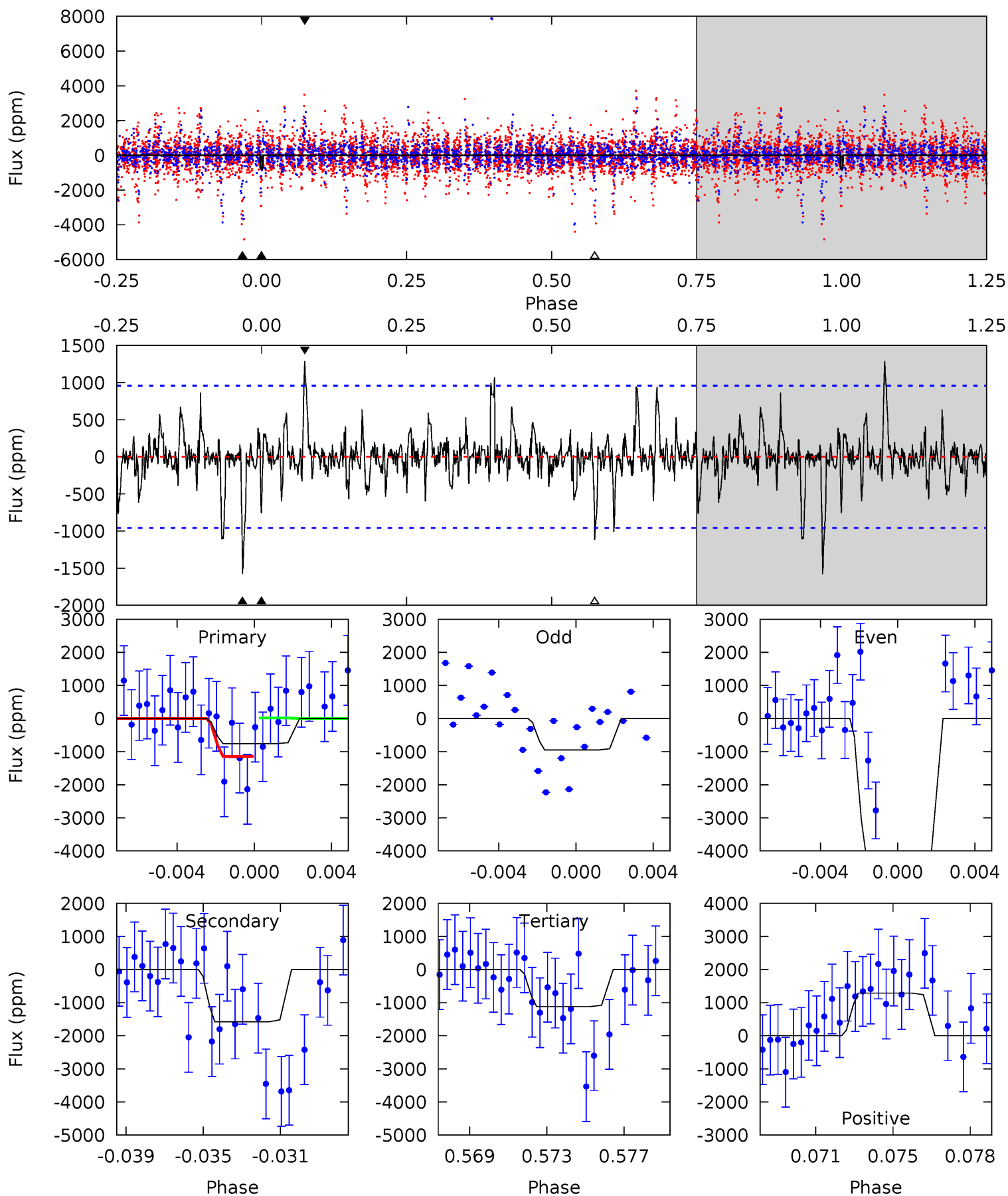
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	6.26	5.73	6.73	5.19	2.86	1.72	4.84	3.84	0.53	-0.47	2.99	2.03	0.39	1.65



Alt Model-Shift Uniqueness Test

008447096-02, P = 34.574123 Days, E = 127.499540 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.11	8.58	6.08	7.00	5.20	2.88	1.23	-1.97	-2.88	2.50	1.58	9.25	1.06	0.45	2.85



Stellar Parameters For KIC 008447096

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3898^{+46}_{-50}	$4.735^{+0.017}_{-0.027}$	$-0.100^{+0.100}_{-0.100}$	$0.530^{+0.023}_{-0.021}$	$0.556^{+0.020}_{-0.027}$	$5.264^{+0.402}_{-0.550}$
	+1%/-1%	+0%/-1%	+100%/-100%	+4%/-4%	+4%/-5%	+8%/-10%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 008447096-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-775 ± 124	$2.75^{+2.26}_{-1.65}$	424^{+6}_{-6}	3285^{+1223}_{-519}	1696^{+9019}_{-1216}
Alt.	-1581 ± 184	$2.79^{+2.16}_{-1.93}$	424^{+7}_{-7}	3690^{+2175}_{-631}	3376^{+30838}_{-2354}

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

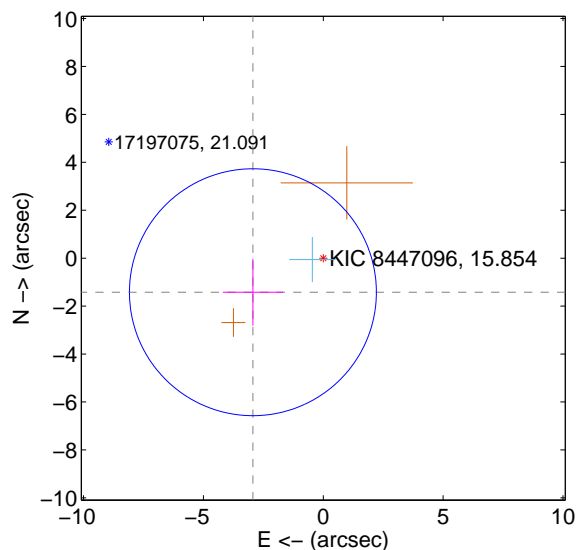
Supplemental centroid analysis for 008447096-02. Kepler magnitude: 15.85. Transit SNR 11.51

There are 1 quarters with good PRF difference image offsets

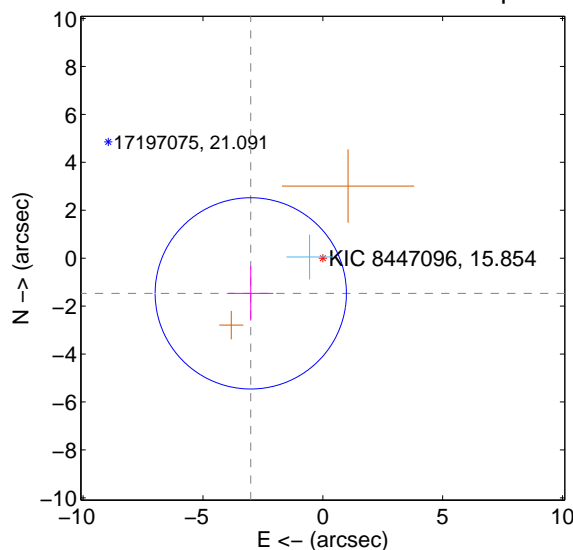
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.261 ± 1.717	1.90	2.935 ± 1.255	-1.421 ± 1.394
PRF-fit source offset from KIC position	3.345 ± 1.330	2.52	3.006 ± 0.941	-1.469 ± 1.133
photometric centroid source offset	0.72 ± 0.42	1.70	-0.52 ± 0.43	0.49 ± 0.41

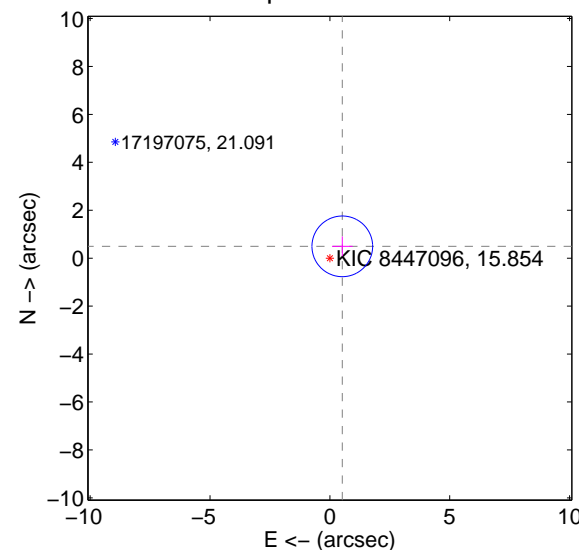
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

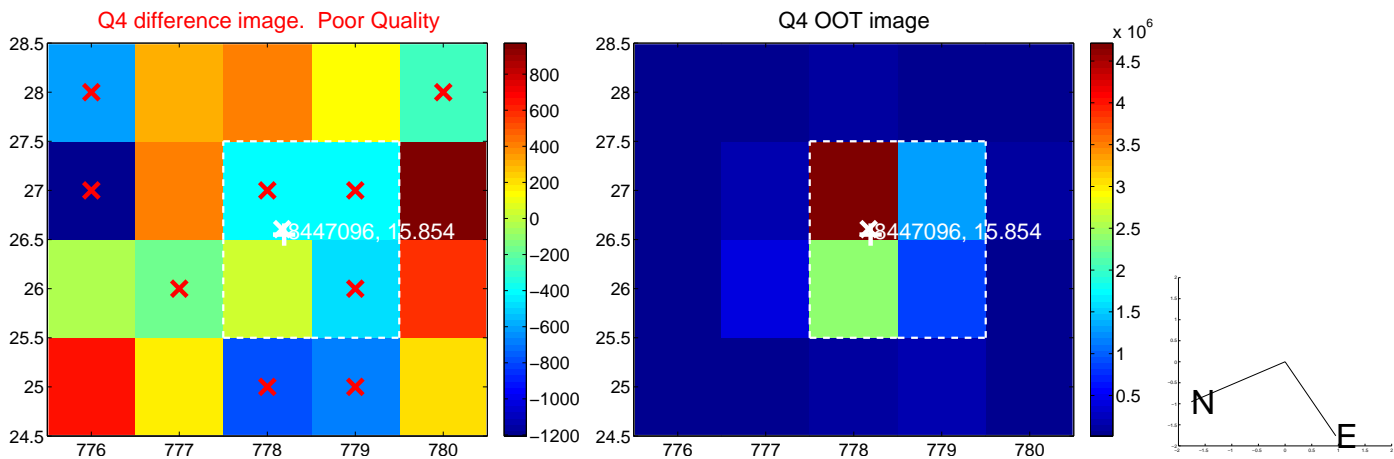
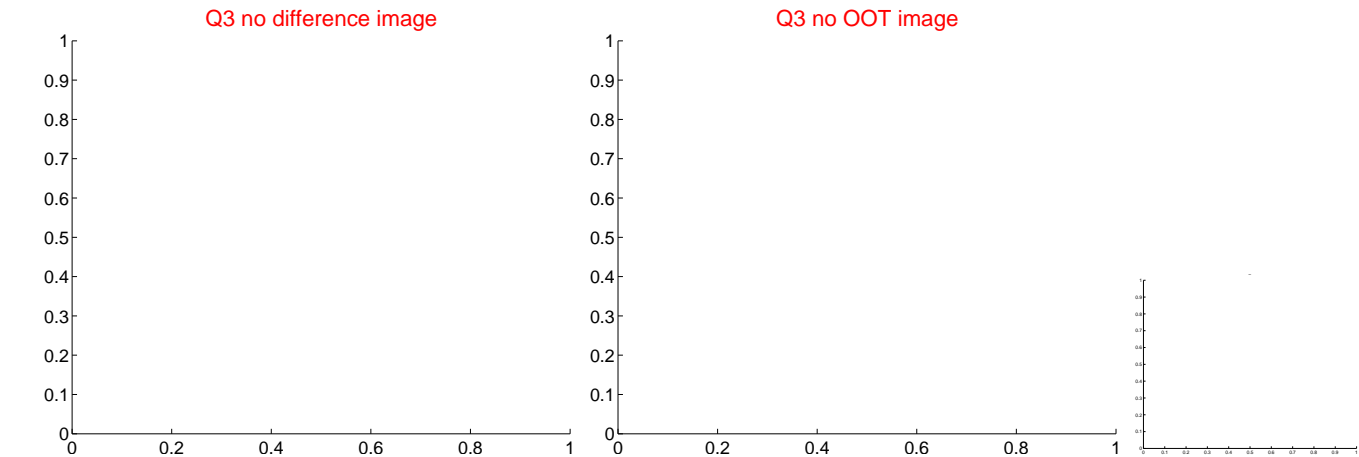
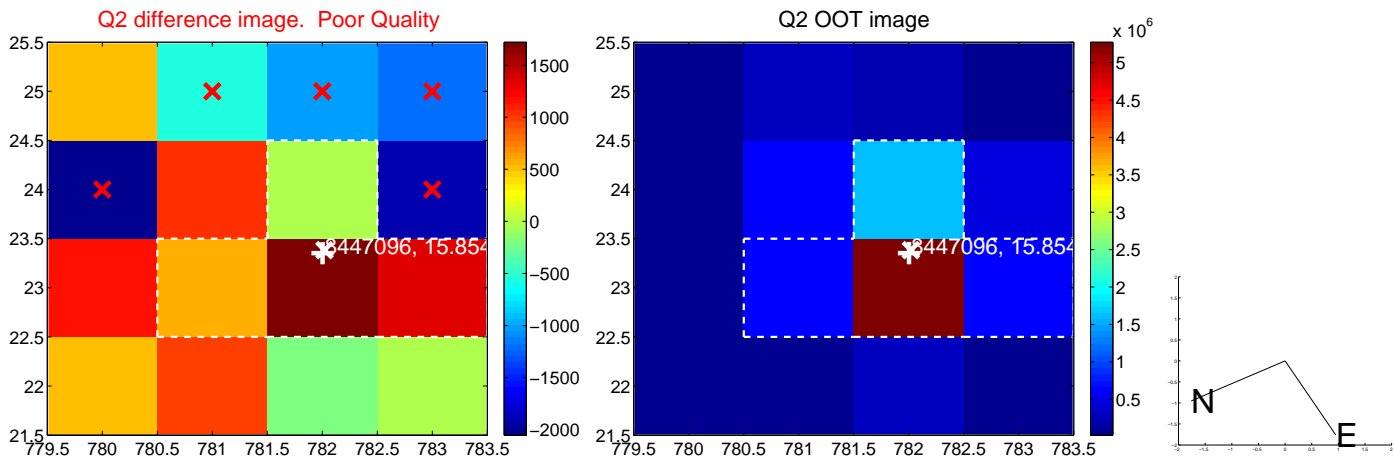
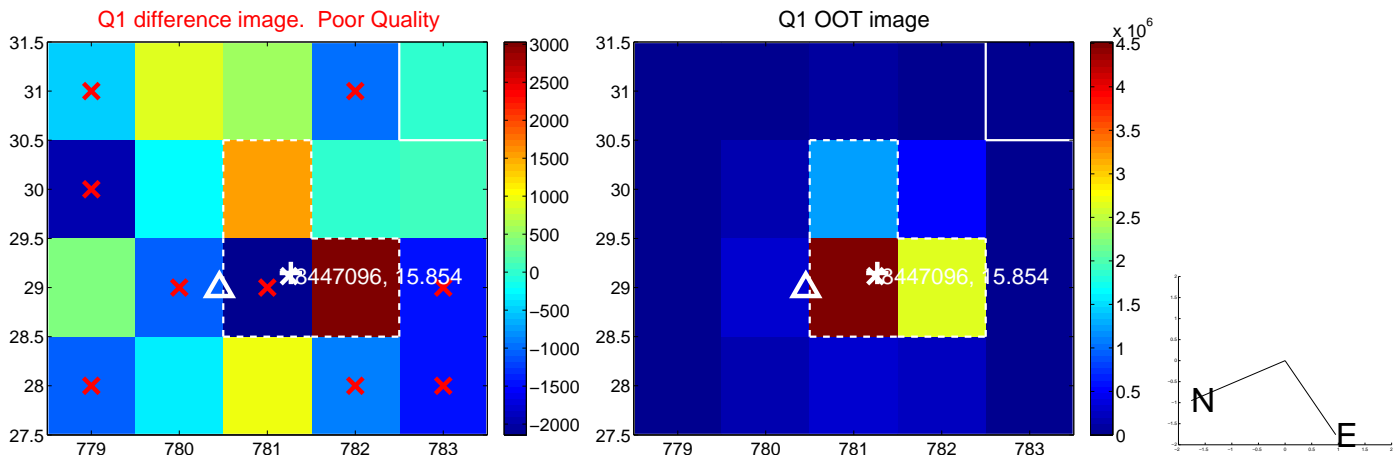


offset from photometric centroids

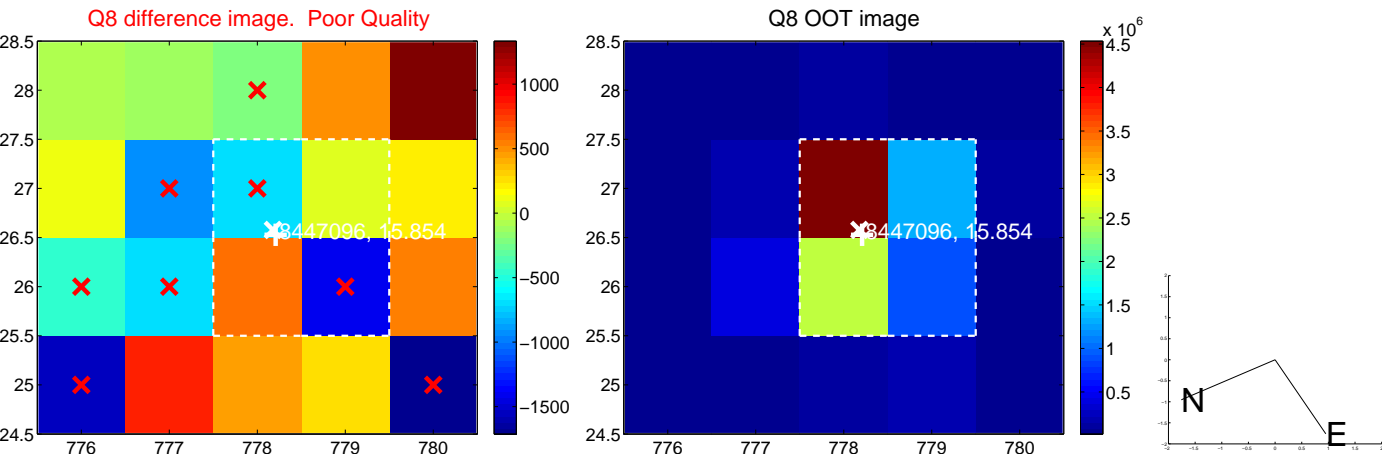
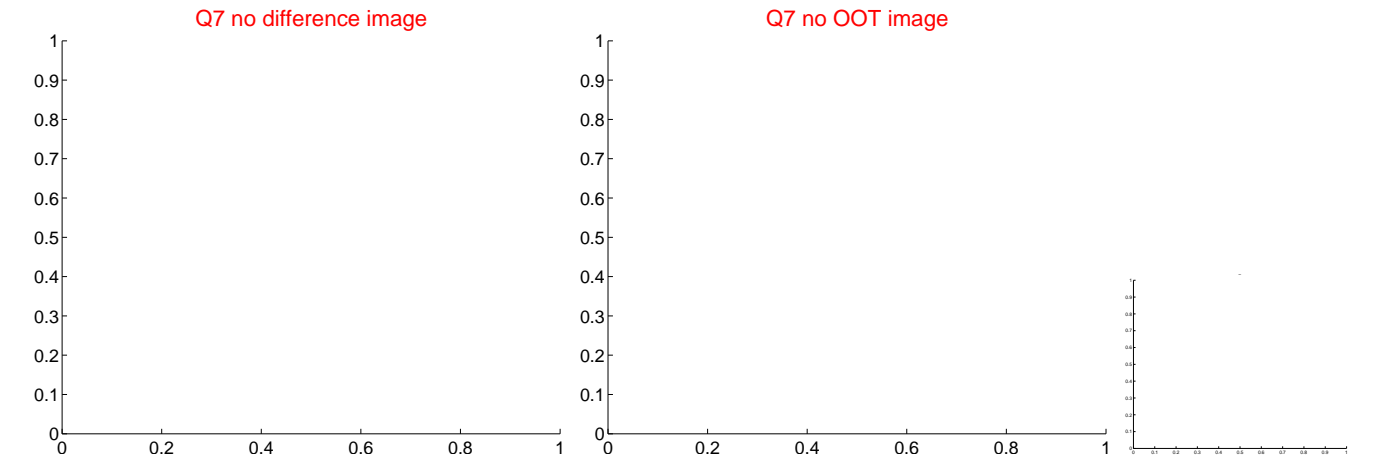
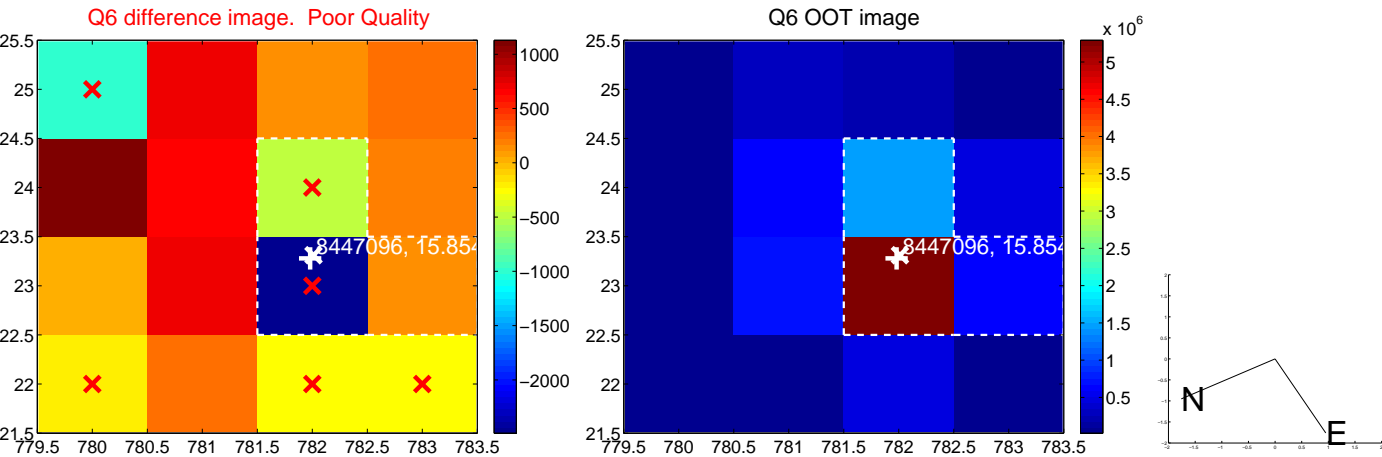
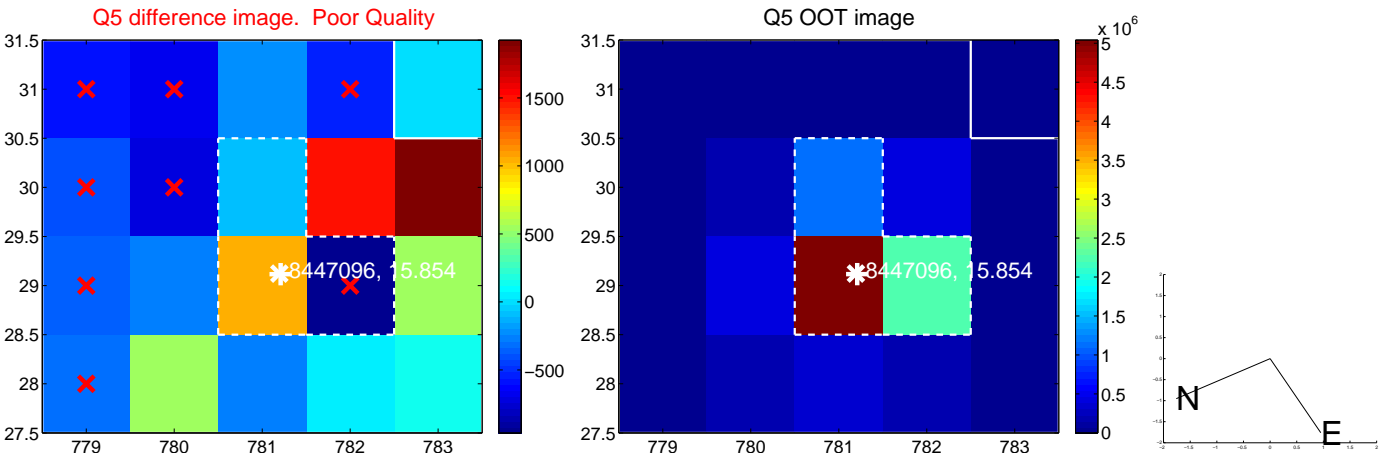


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

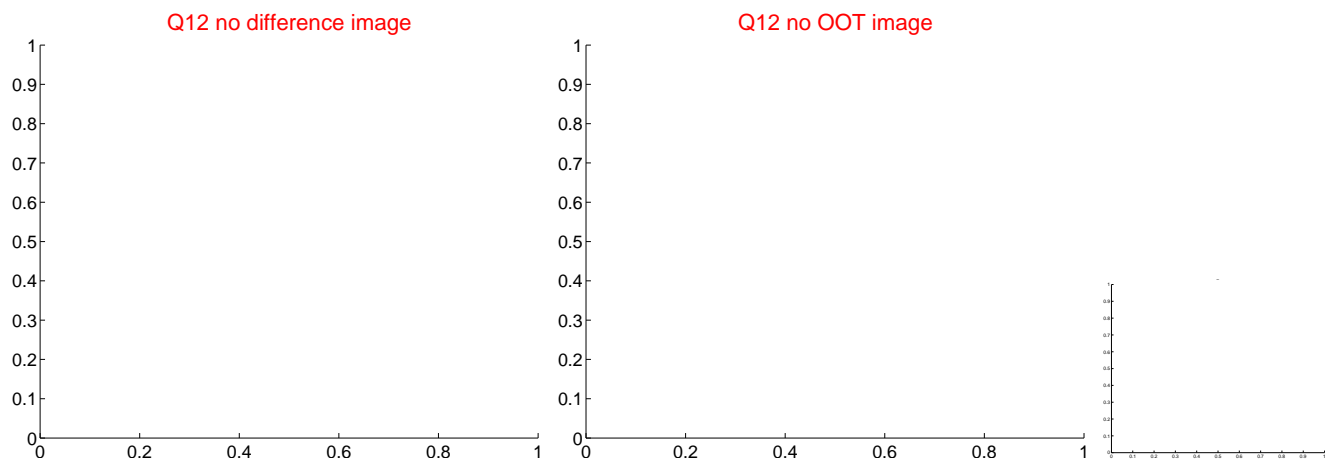
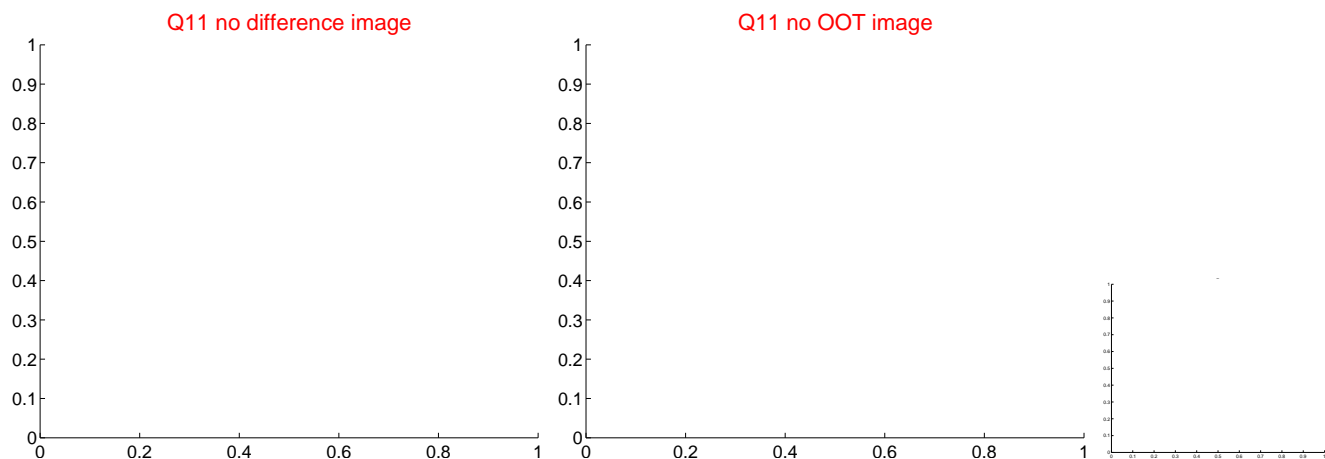
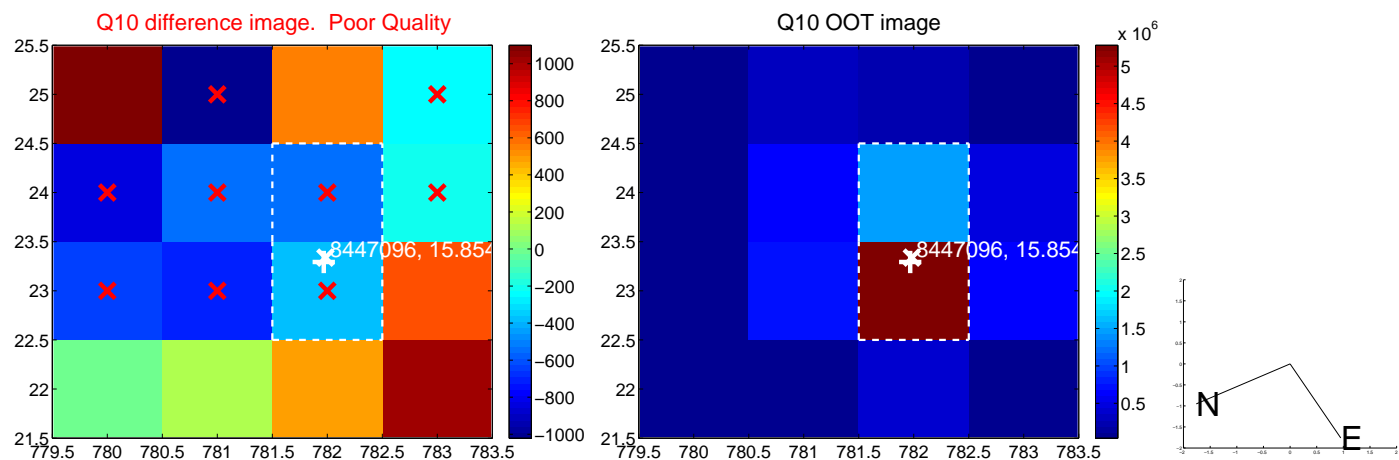
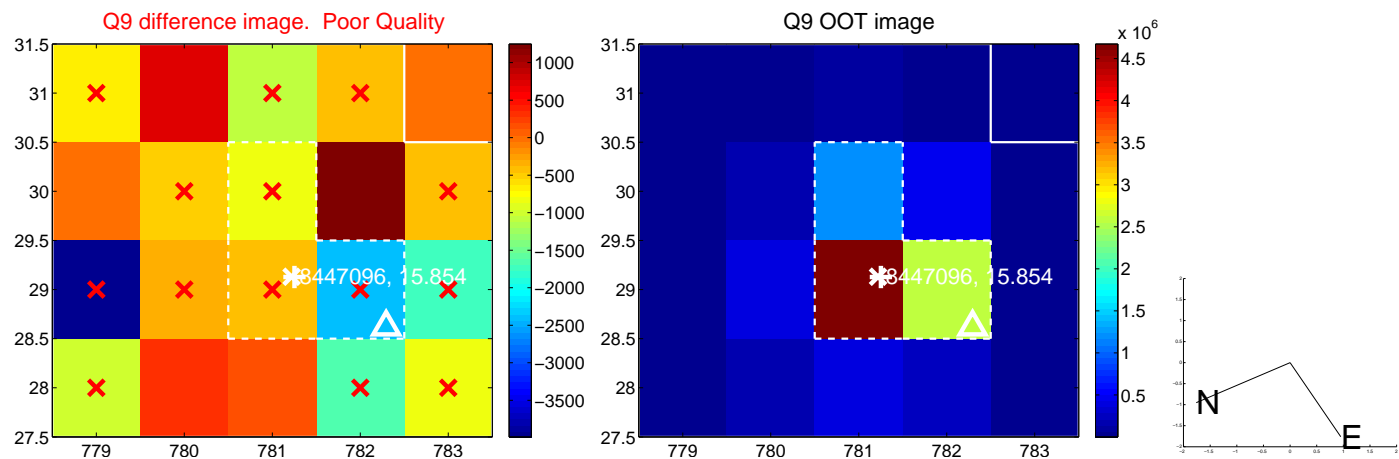
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



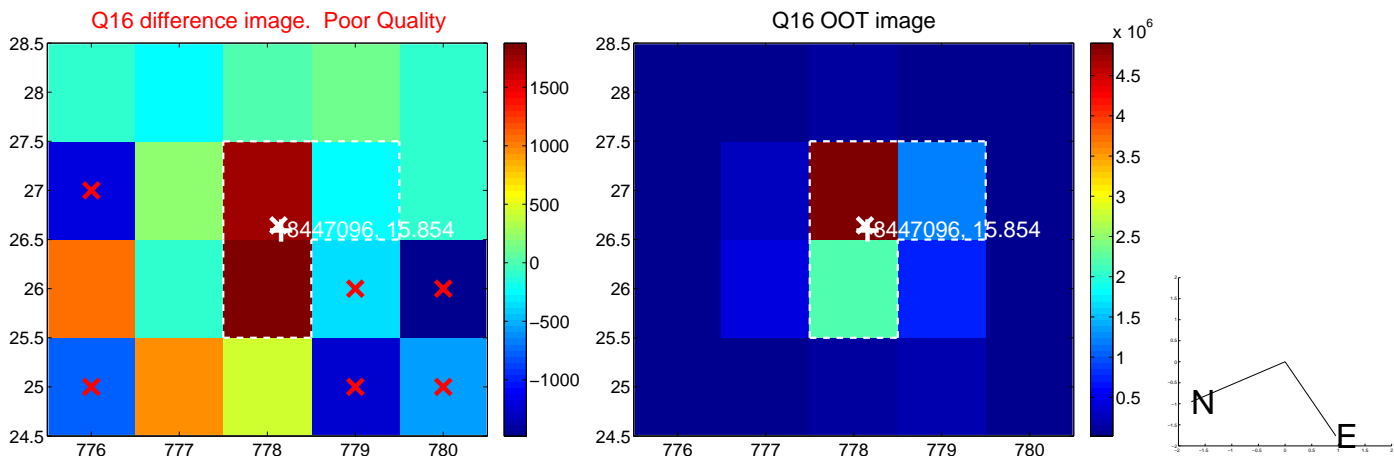
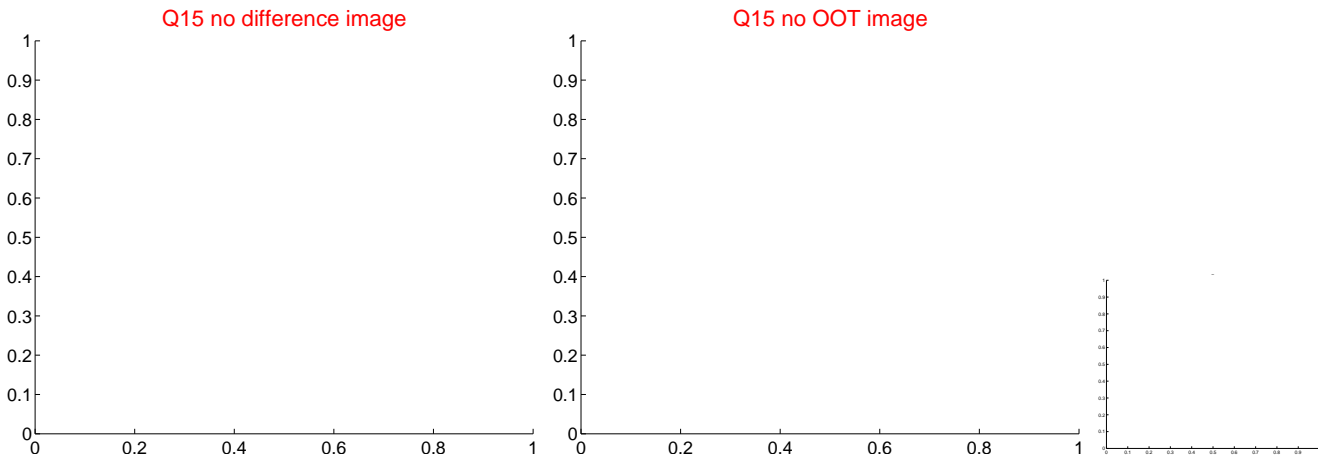
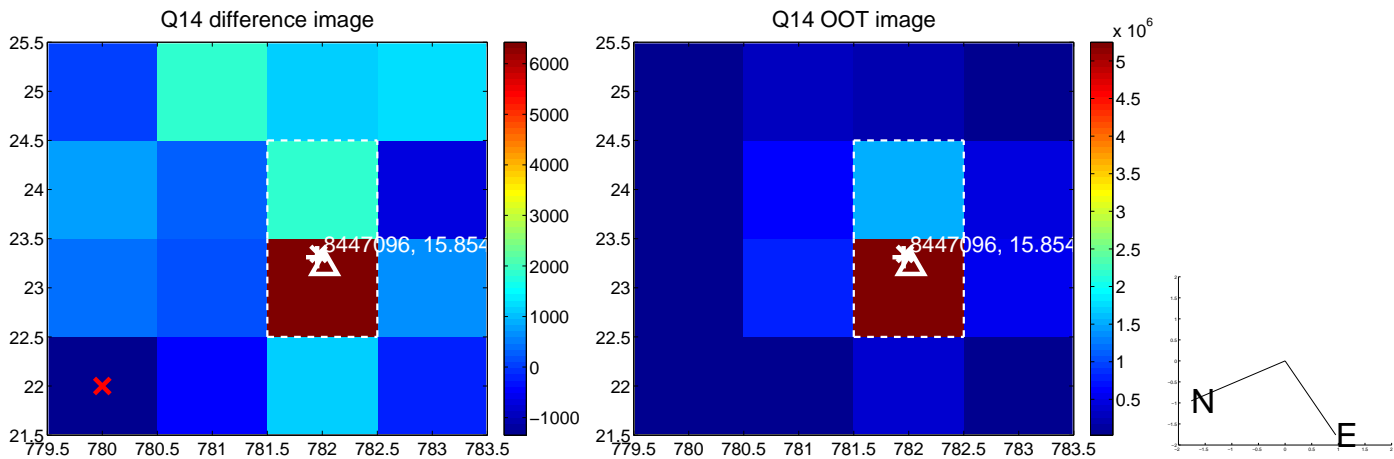
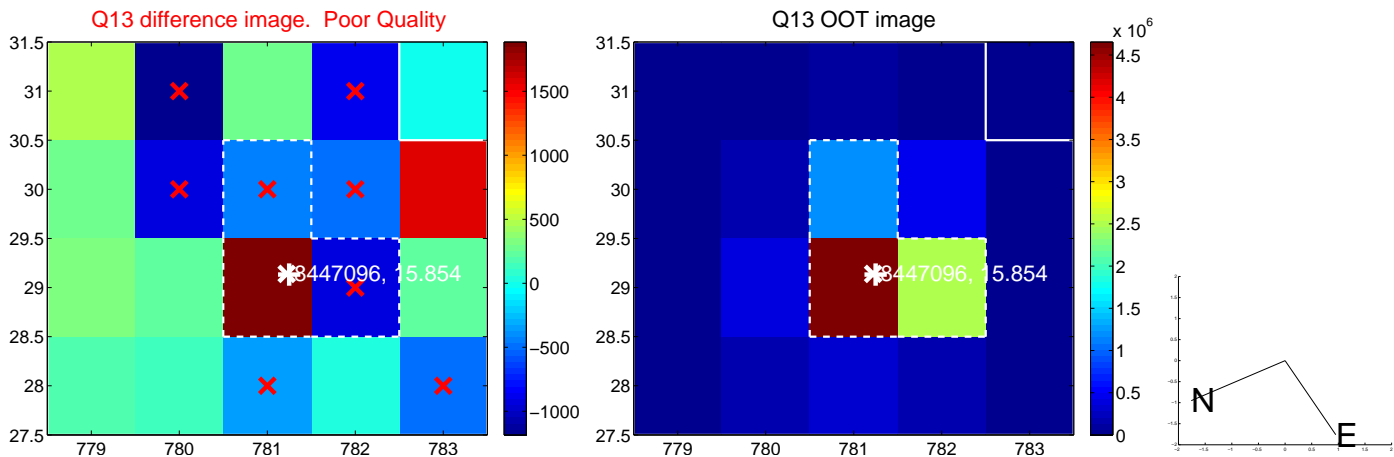
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



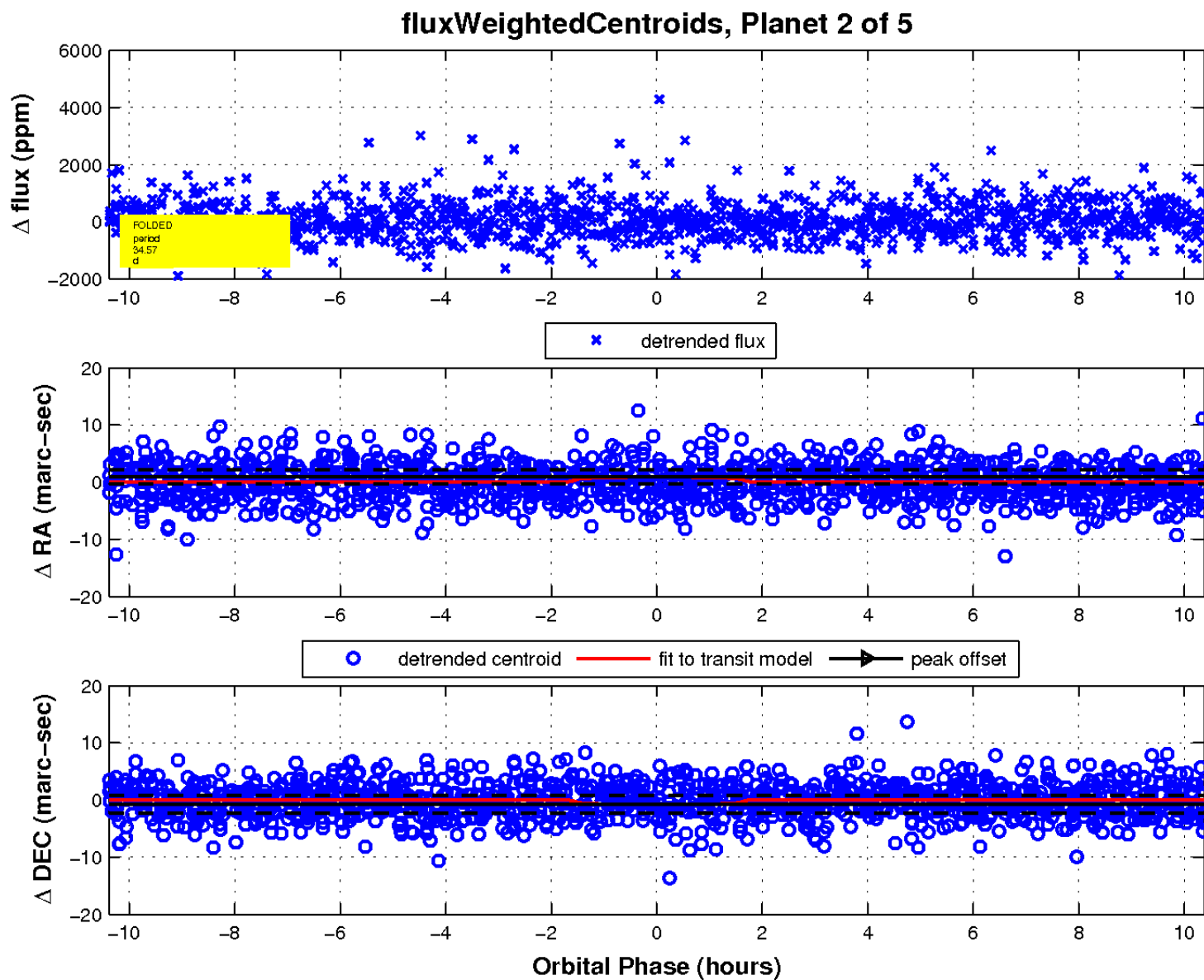
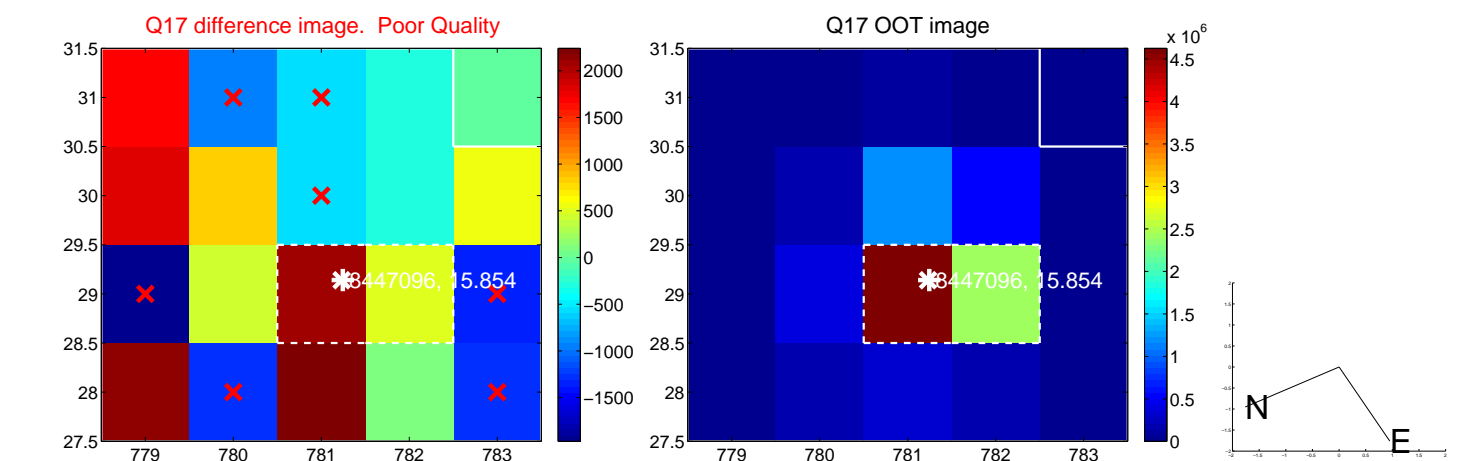
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

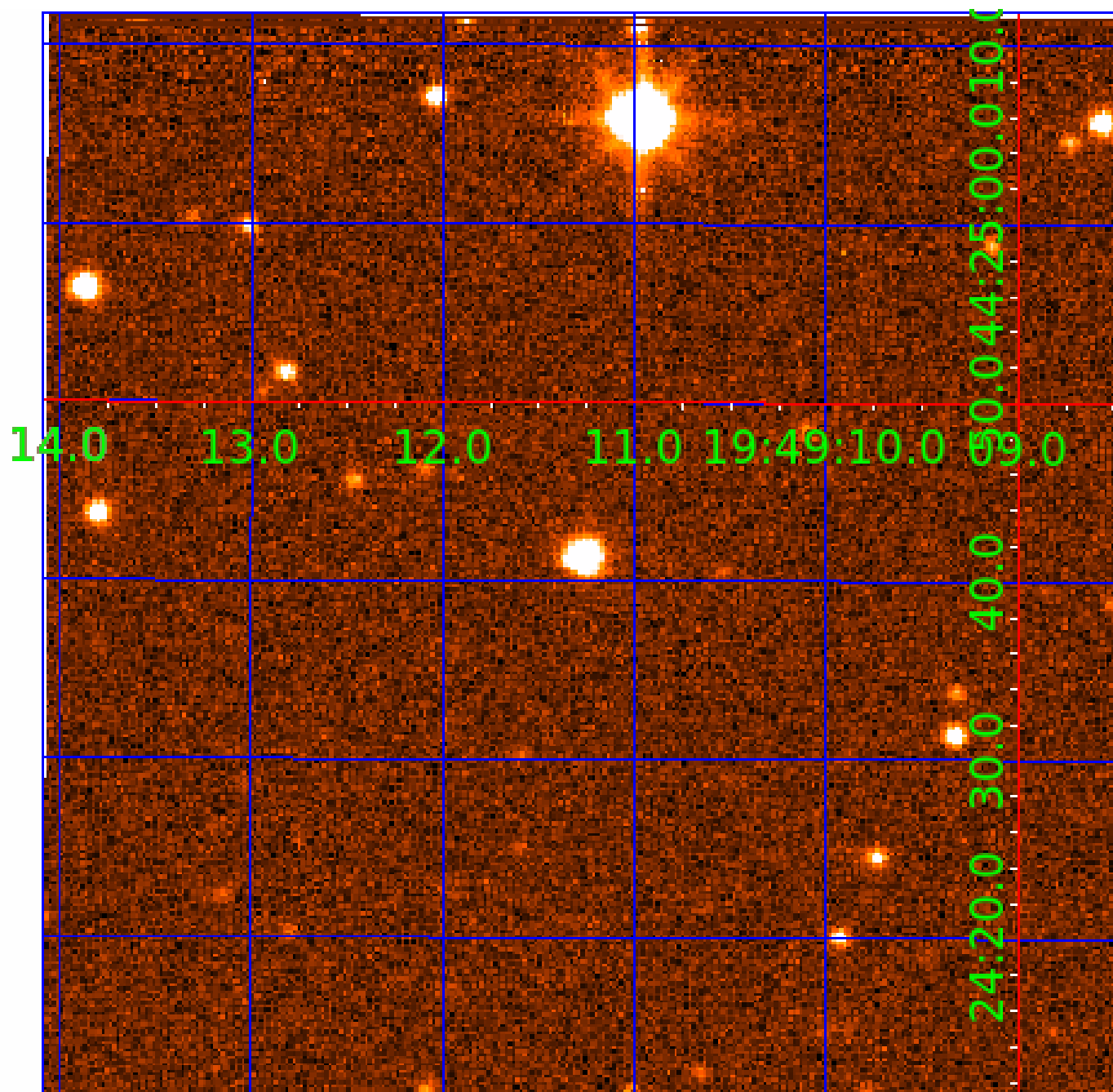


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008447096

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})
008447096-01	OBS	No	1.236976	131.660714	46.3	8.521	7.3	5.0	0.53	3898	0.35	168.77
008447096-02	OBS	No	34.574835	162.047963	1667.4	3.462	17.5	11.5	0.53	3898	2.26	1.99
008447096-03	OBS	No	35.593520	151.979182	903.3	3.720	8.4	7.8	0.53	3898	1.68	1.91
008447096-04	OBS	No	60.504012	137.341364	1567.5	3.672	9.9	8.2	0.53	3898	4.05	0.94
008447096-05	OBS	No	35.671231	147.707007	937.9	3.461	8.0	7.5	0.53	3898	1.74	1.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008447096-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008447096-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008447096-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

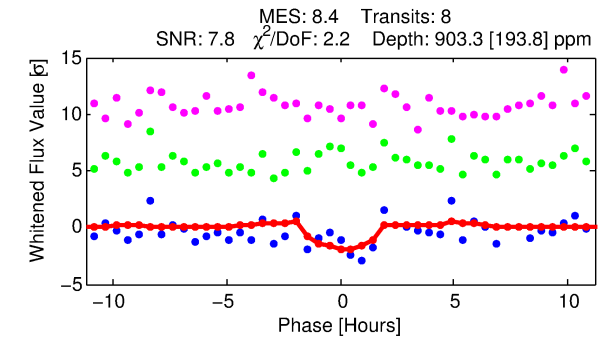
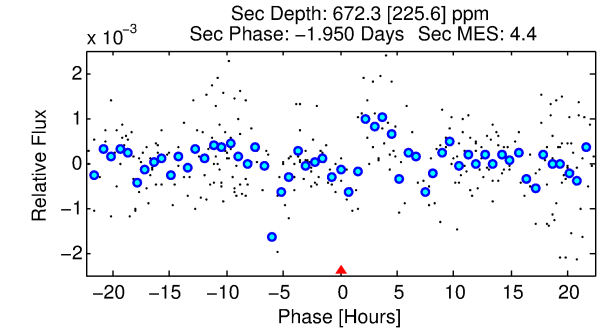
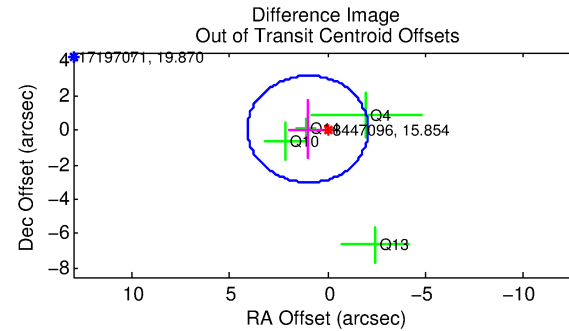
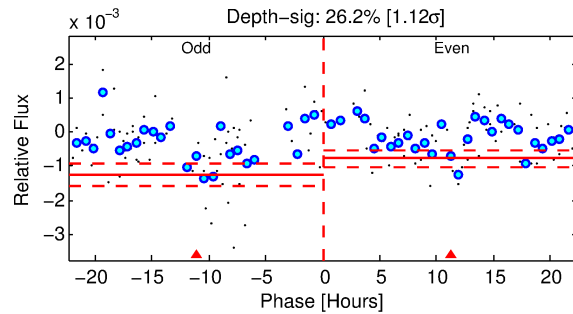
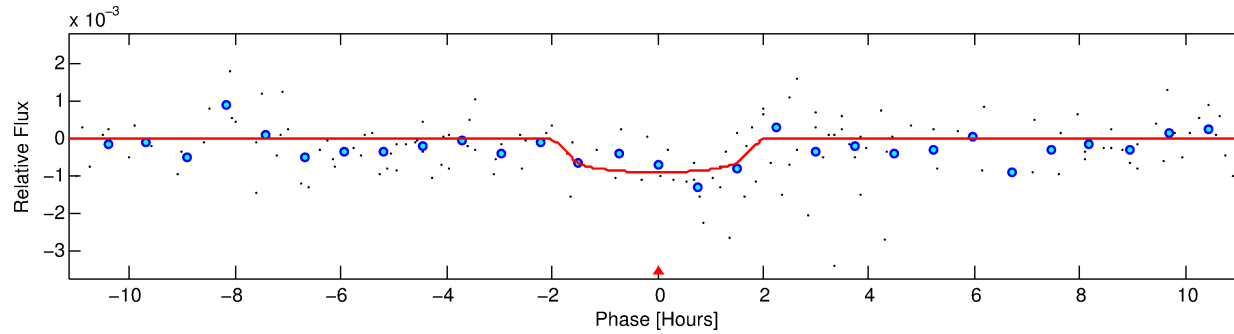
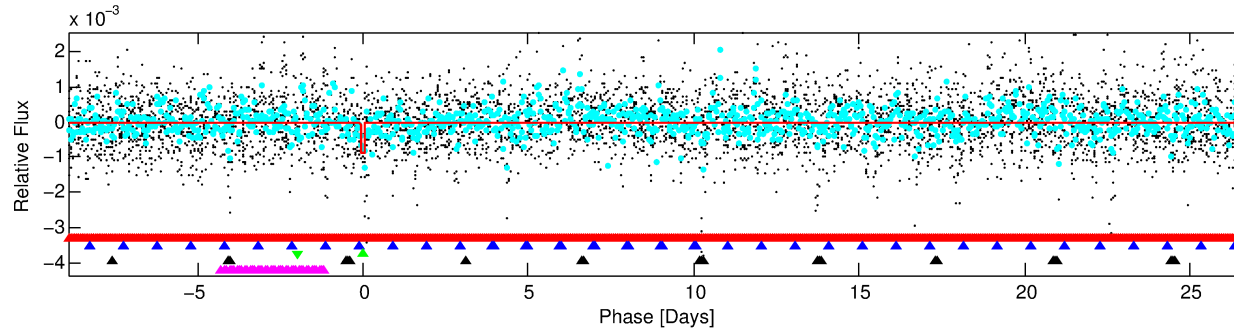
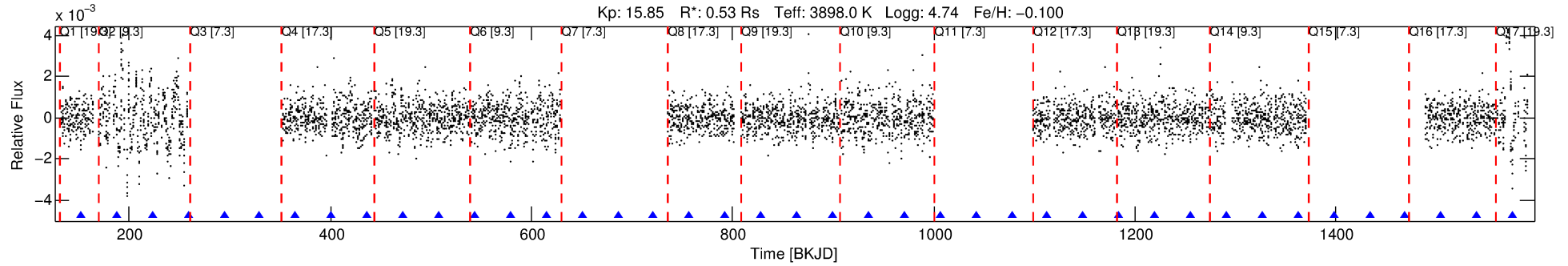
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008447096-03

No Significant Match Found

DV One-Page Summary

KIC: 8447096 Candidate: 3 of 5 Period: 35.594 d



DV Fit Results:

Period = 35.59352 [0.00070] d
Epoch = 151.9792 [0.0132] BKJD
Rp/R* = 0.0291 [0.0365]
a/R* = 57.19 [305.13]
b = 0.67 [4.46]
Seff = 1.91 [0.14]
Teq = 300 [5] K
Rp = 1.68 [2.11] Re
a = 0.1742 [0.0062] AU
Ag = 3959.74 [10026.69] [0.39 σ]
Teffp = 3679 [2329] K [1.45 σ]

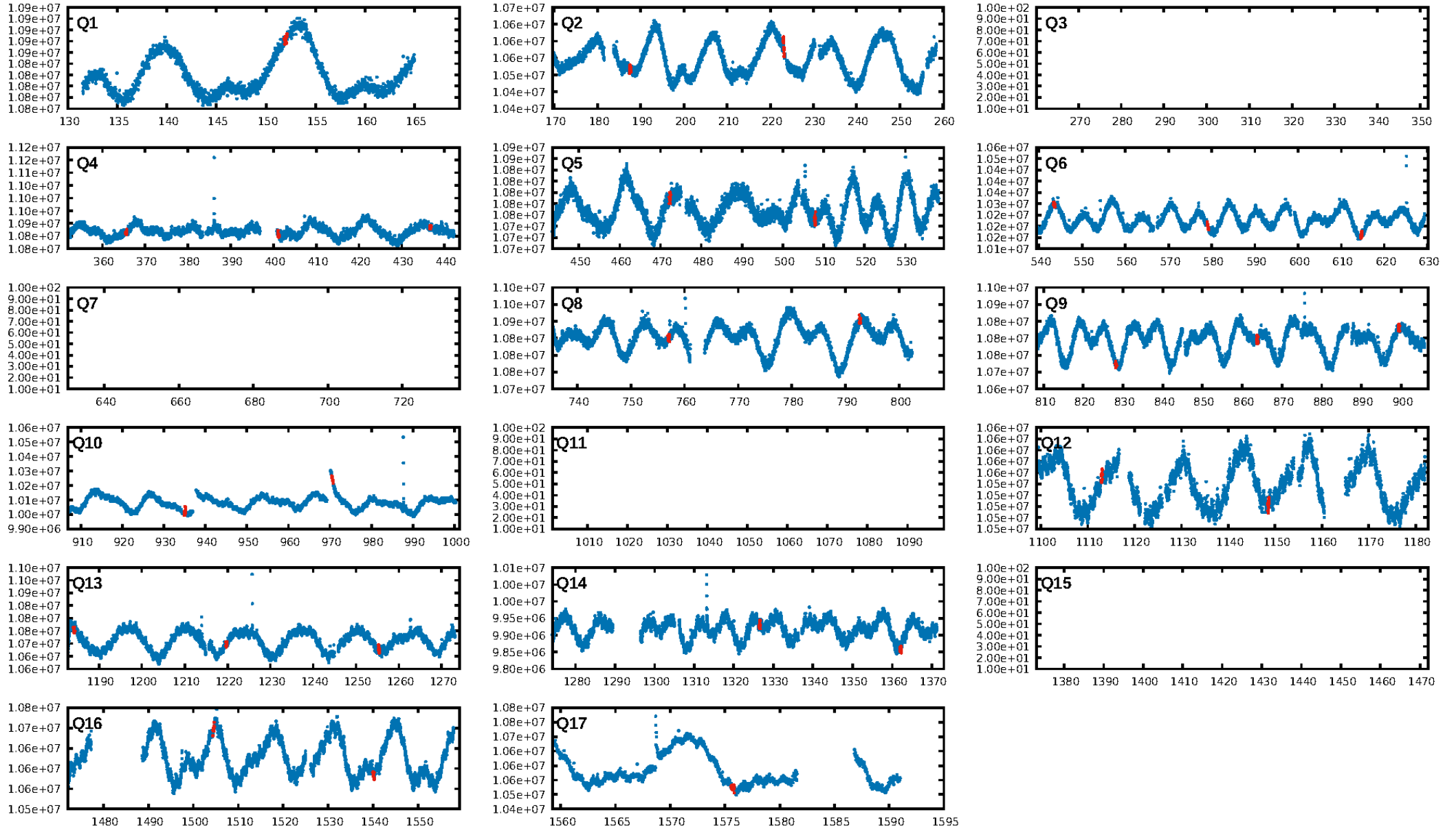
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.81 σ]
LongPeriod-sig: 28.6% [0.37 σ]
ModelChiSquare2-sig: 1.0%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 6.11e-10
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -0.5721
Centroid-sig: 2.4%
Centroid-so: 1.041 arcsec [1.46 σ]
OotOffset-rm: 0.998 arcsec [0.97 σ]
KicOffset-rm: 1.150 arcsec [1.07 σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-st: 2/0/1/1 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 0.23 [3/13]

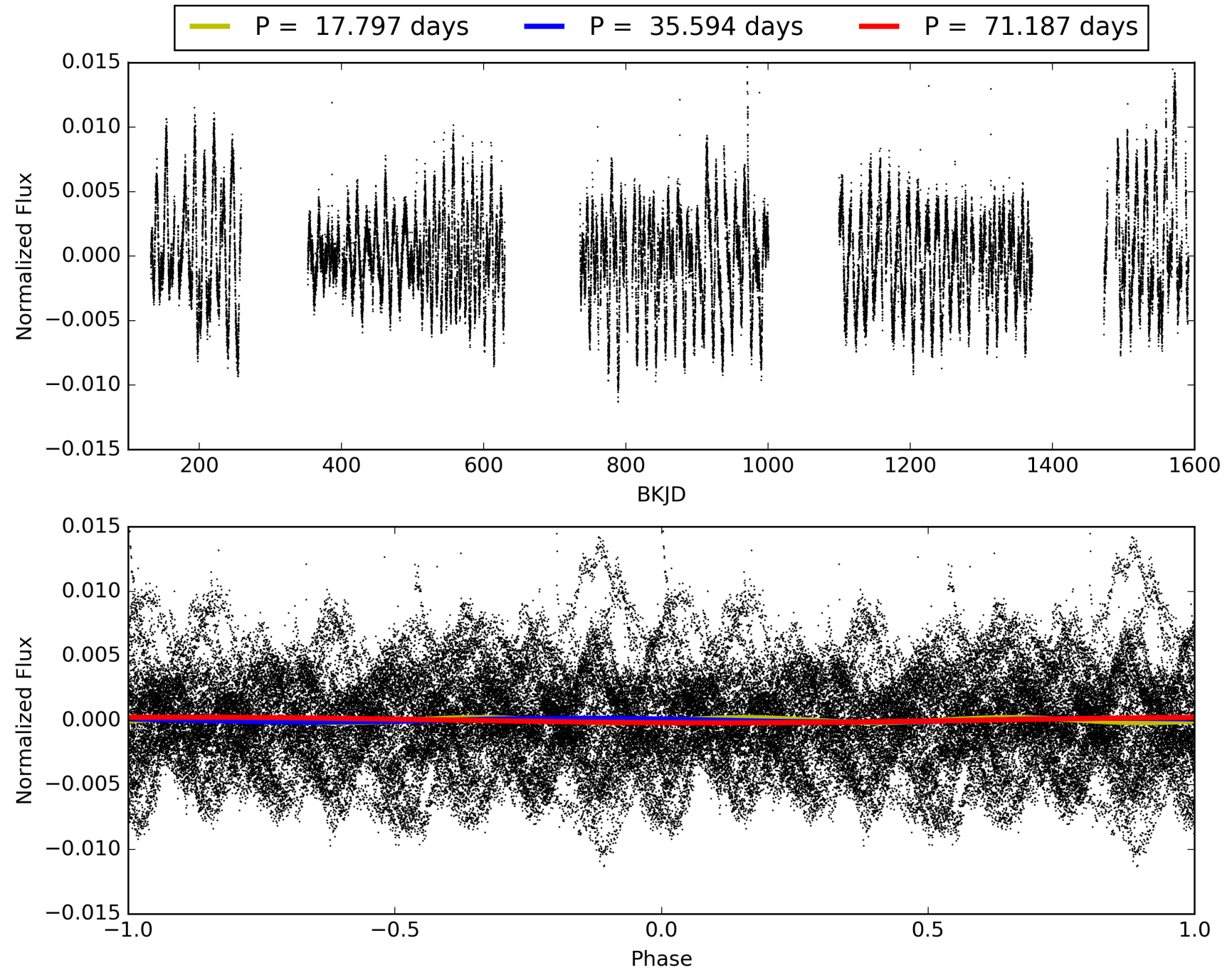
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:09:54 Z

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

TCE 008447096-03, PDC Light Curves

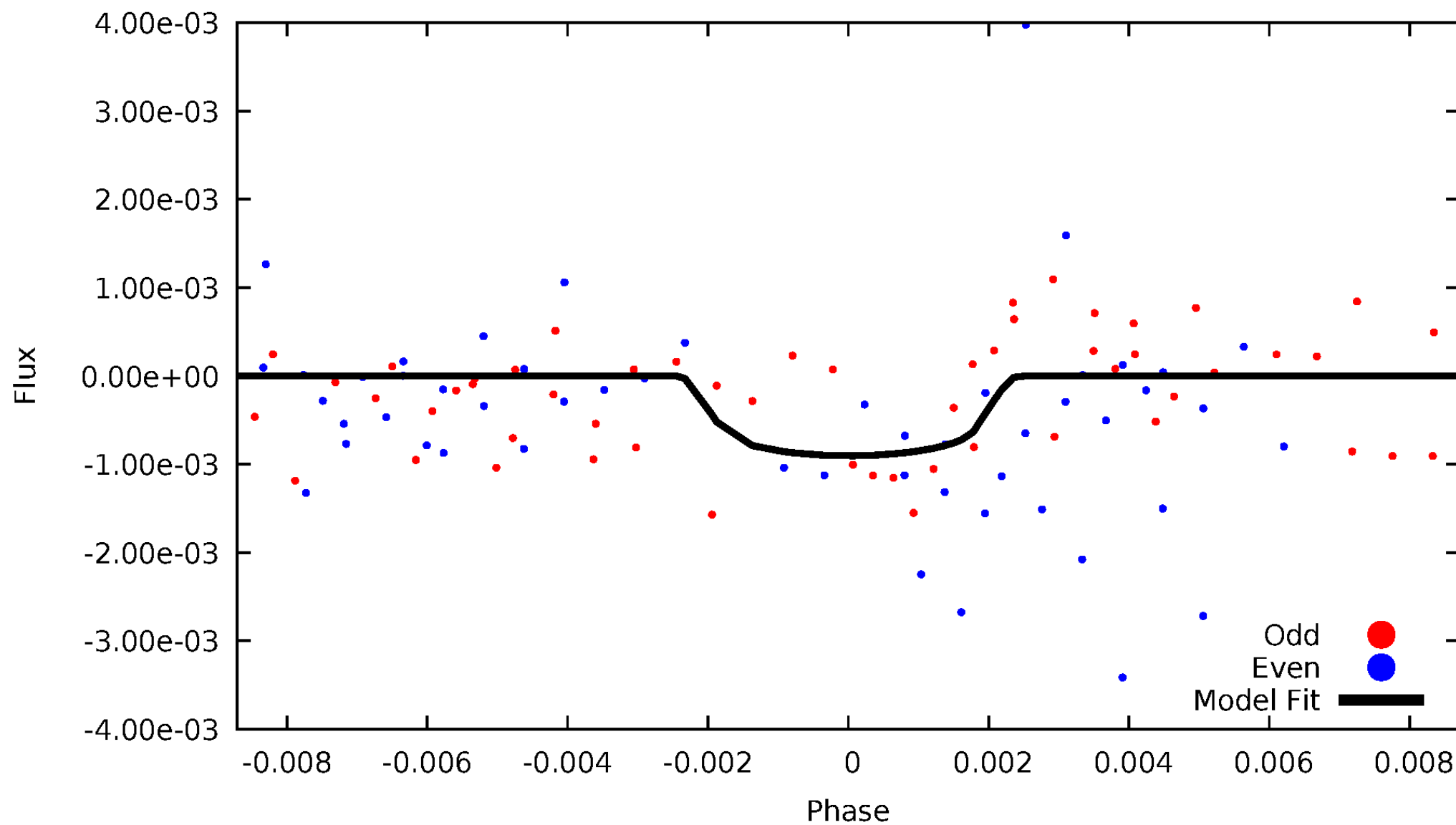


TCE 008447096-03



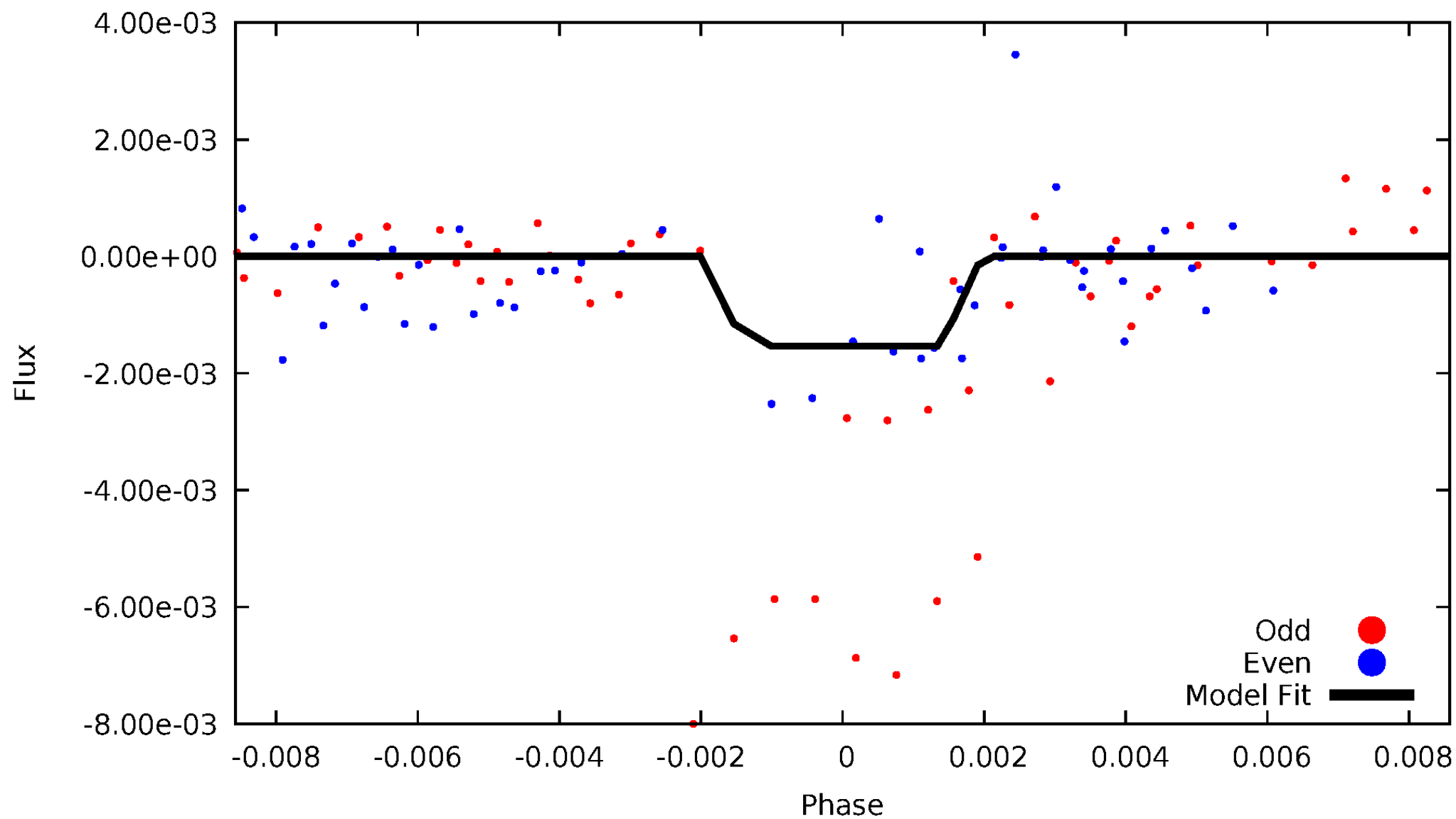
DV Odd/Even

TCE 008447096-03



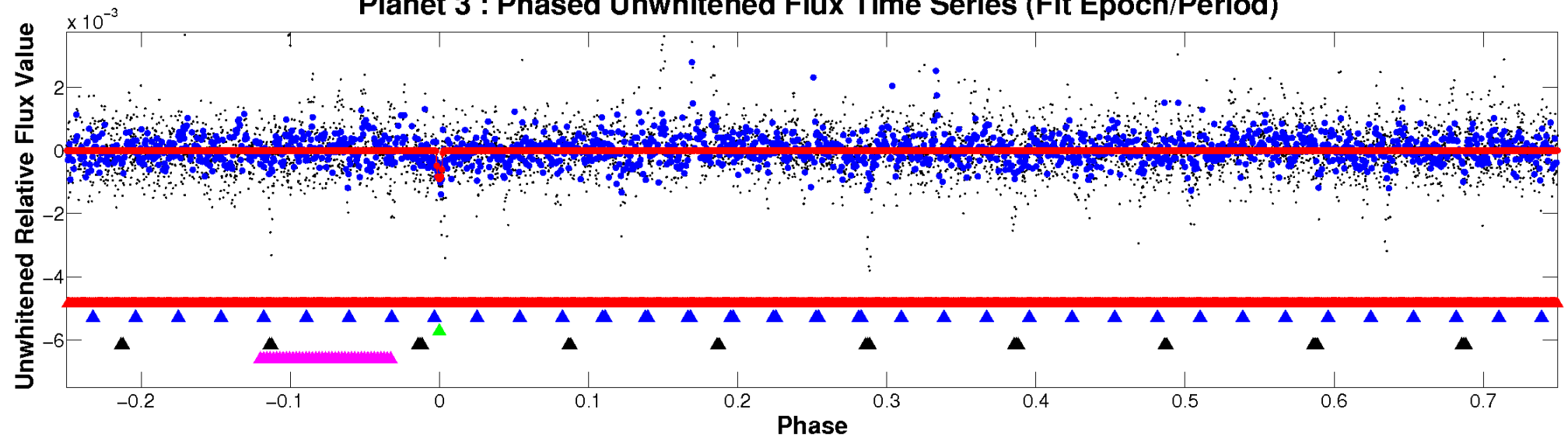
ALT Odd/Even

TCE 008447096-03

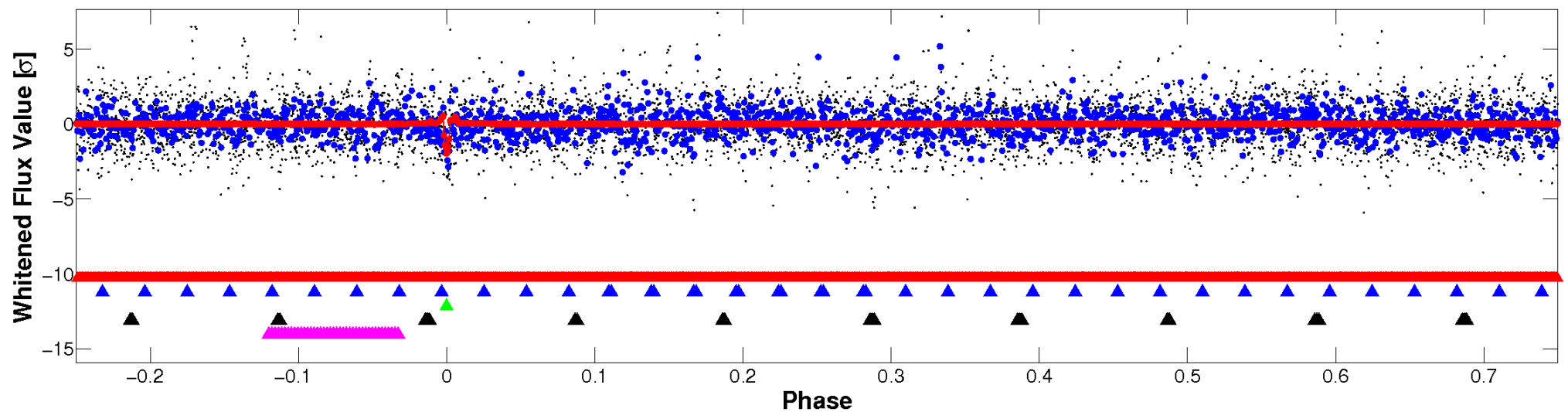


Non-Whitened Vs. Whitened Light Curve

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

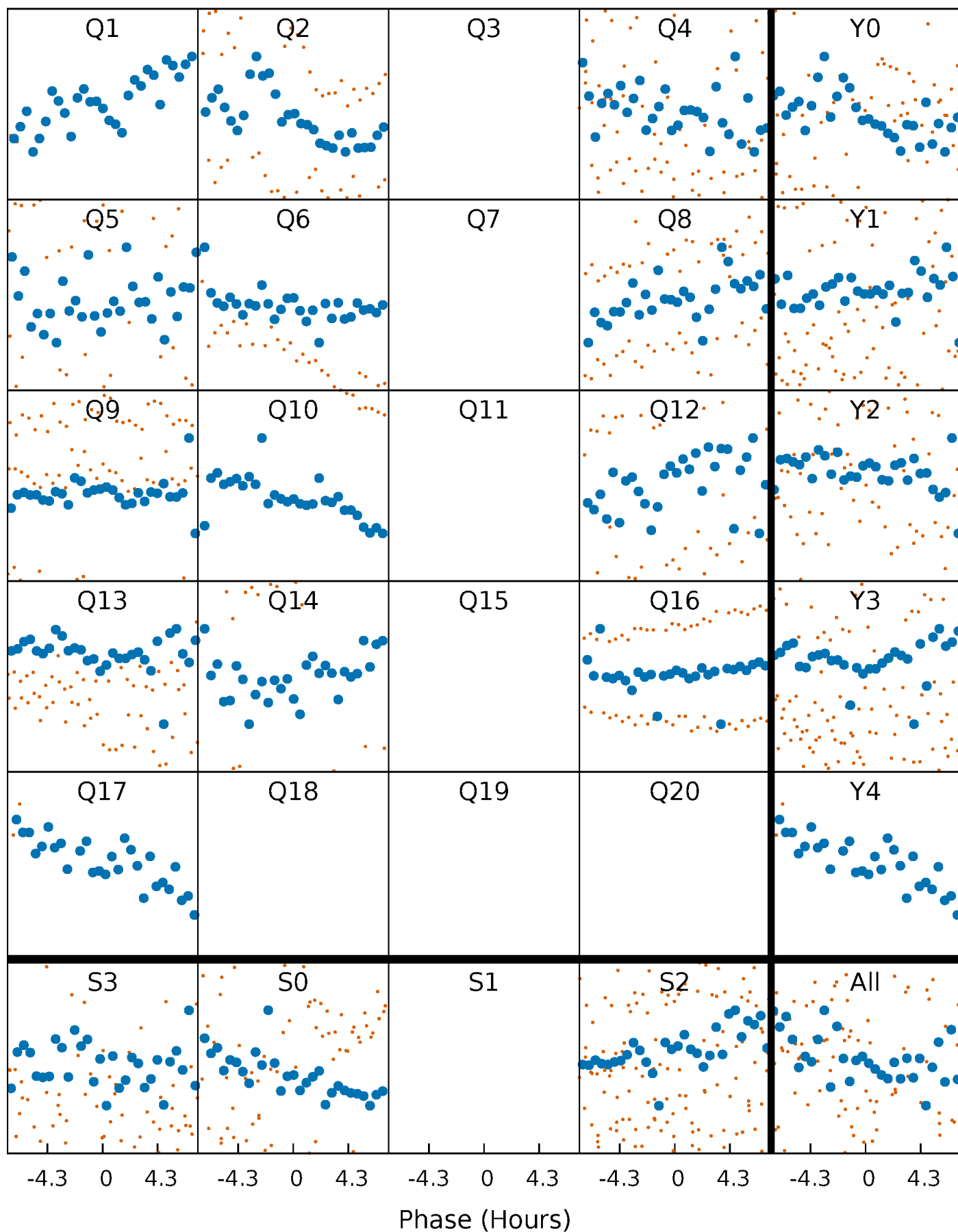


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



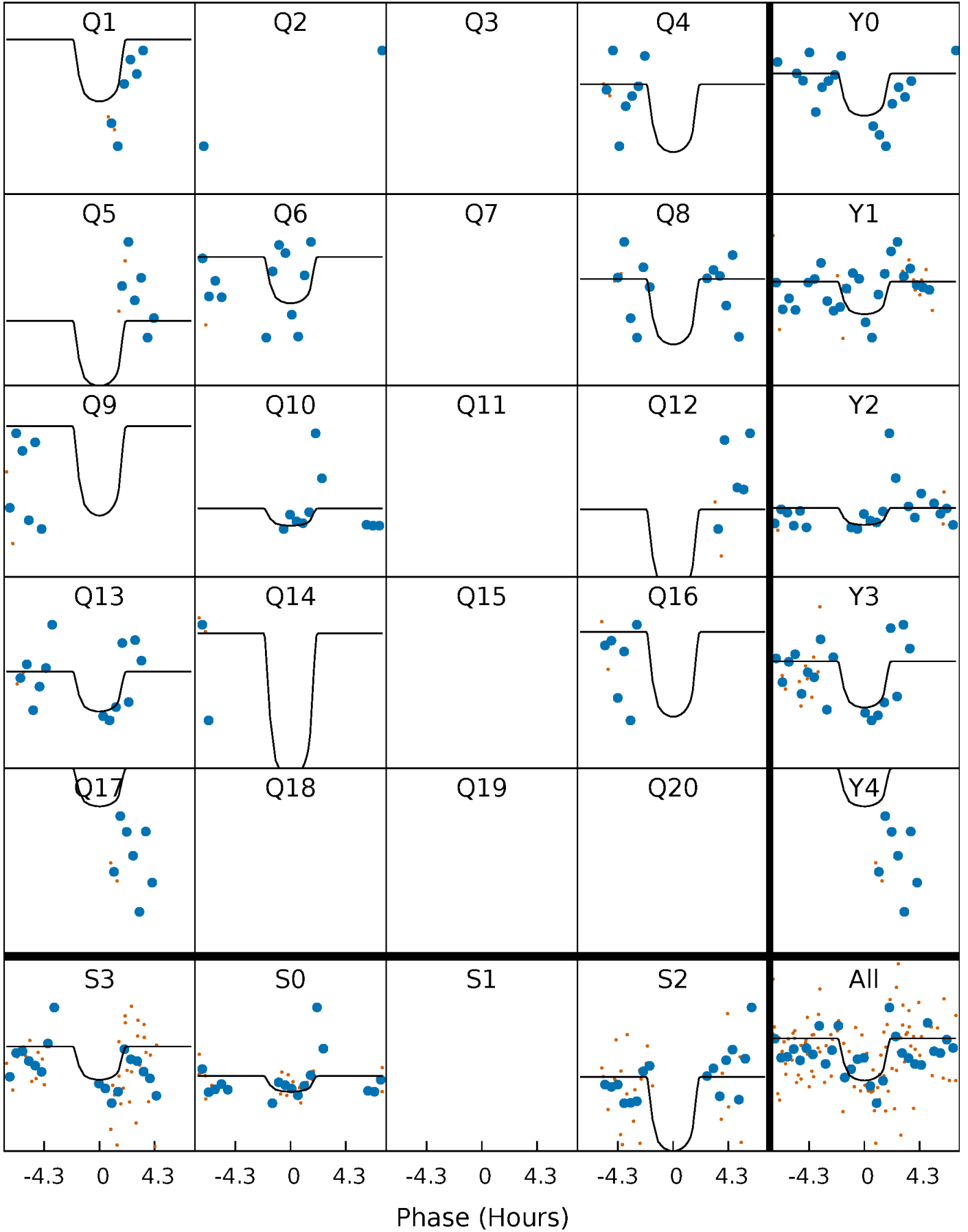
PDC Quarter-Phased Transit Curves

TCE 008447096-03 P= 35.593520 Days $T_0=151.979182$ (BKJD)



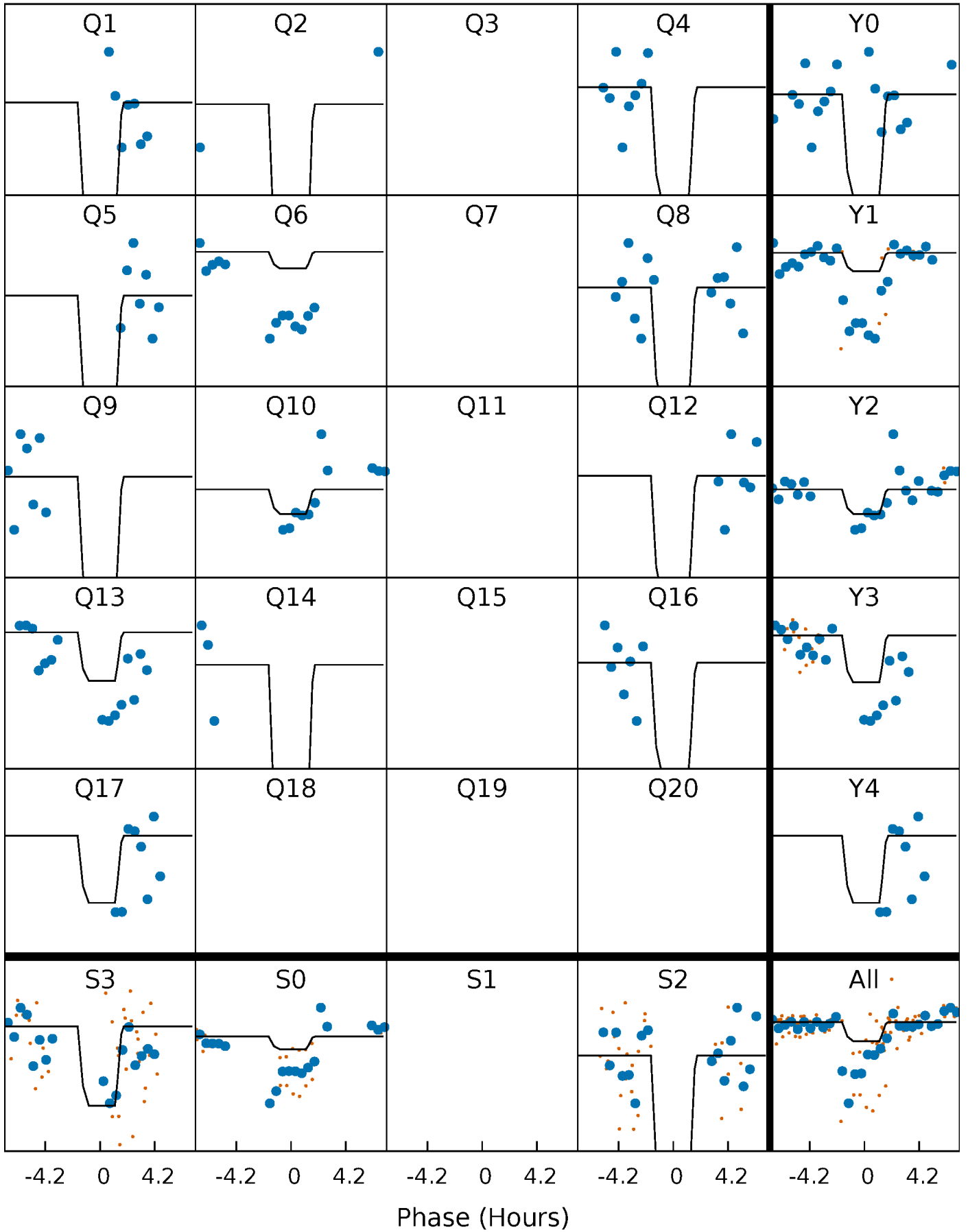
DV Quarter-Phased Transit Curves

TCE 008447096-03 P= 35.593520 Days $T_0=151.979182$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

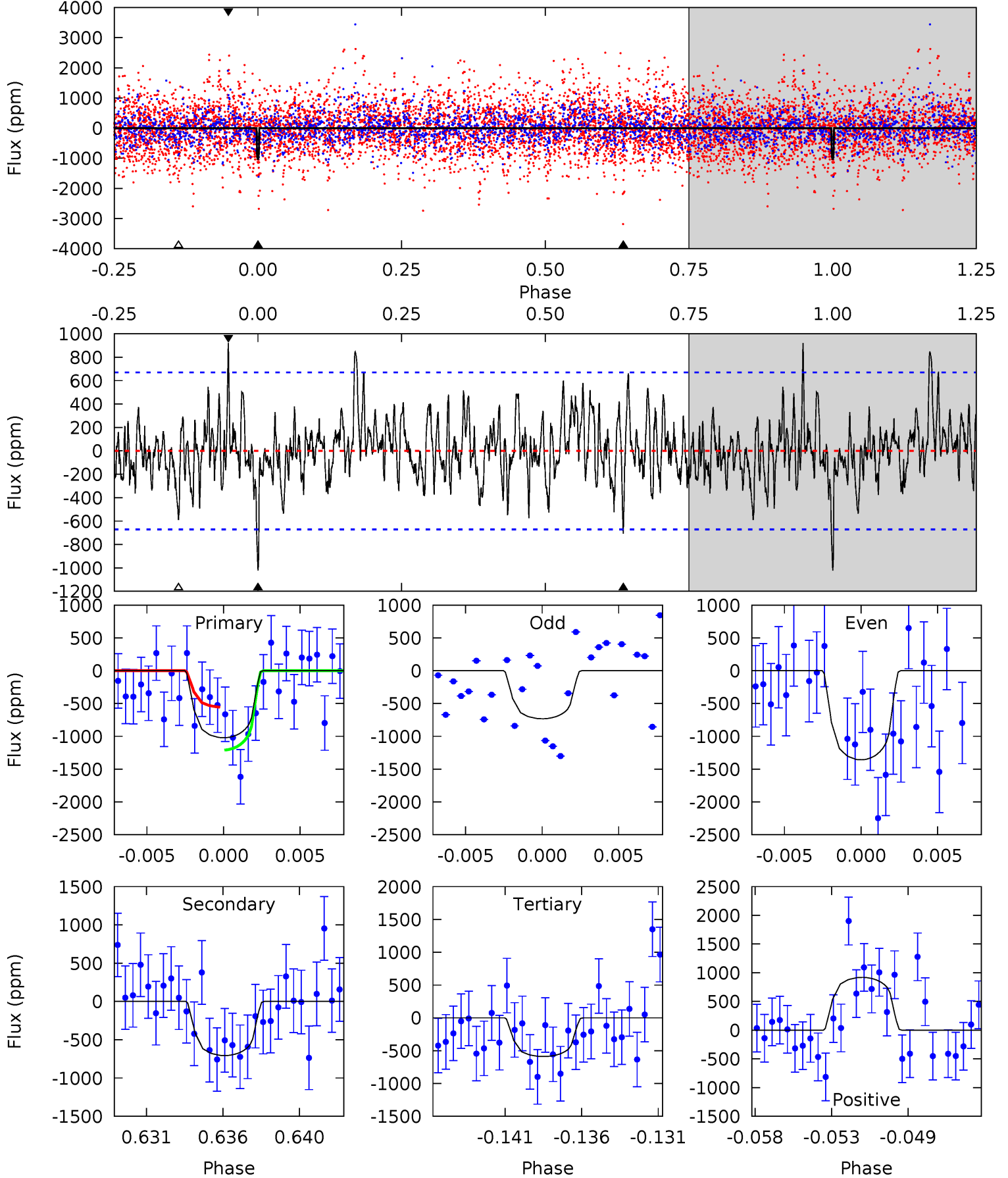
TCE 008447096-03 P= 35.593200 Days $T_0=151.989289$ (BKJD)



DV Model-Shift Uniqueness Test

008447096-03, P = 35.593520 Days, E = 116.385662 Days

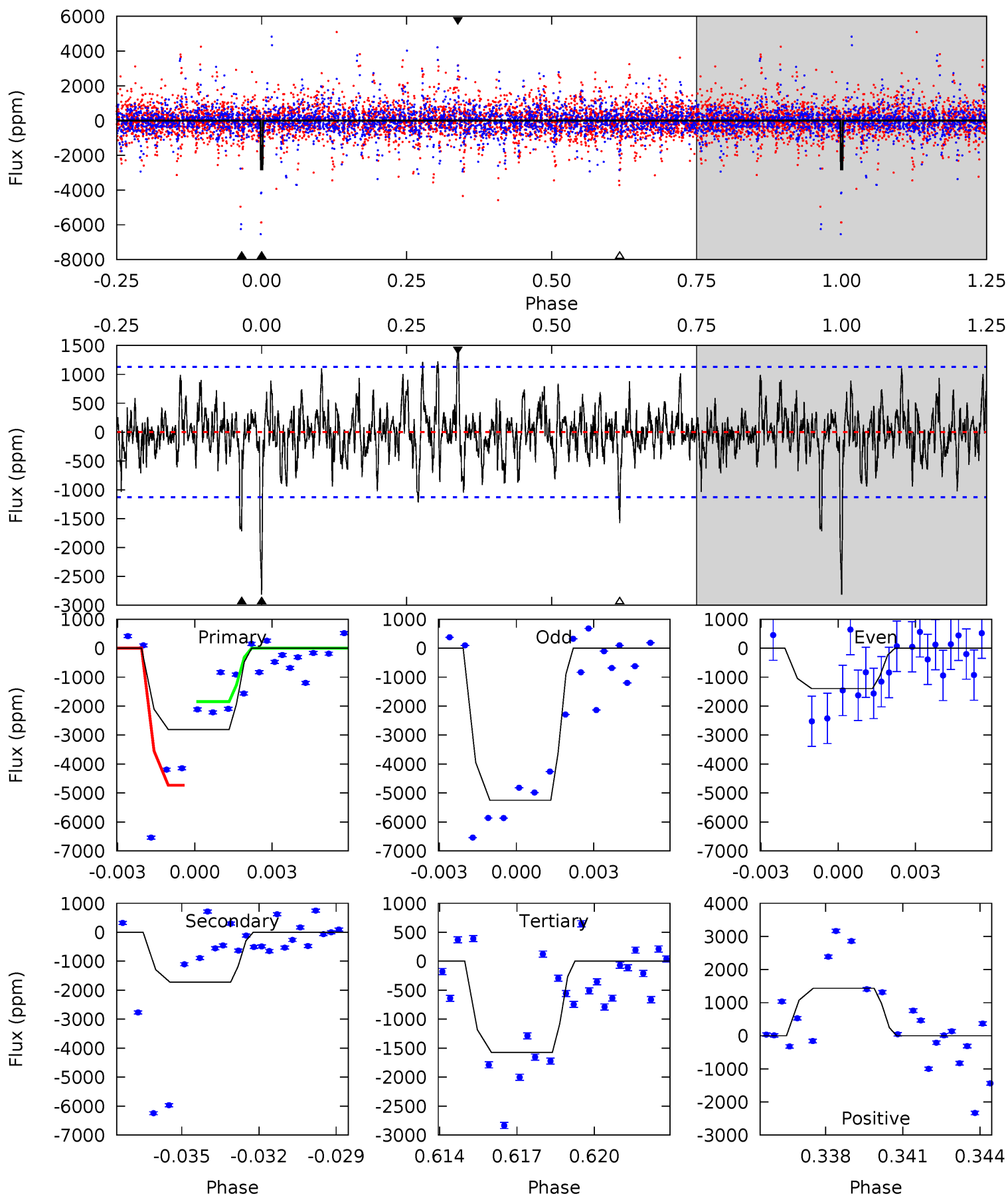
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.87	5.44	4.54	7.08	5.16	2.82	1.73	3.33	0.79	0.90	-1.64	2.31	1.17	0.47	2.17



Alt Model-Shift Uniqueness Test

008447096-03, P = 35.593200 Days, E = 116.396089 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	8.00	7.34	6.67	5.26	2.98	1.55	5.74	6.41	0.66	1.33	8.53	1.27	0.34	5.57



Stellar Parameters For KIC 008447096

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3898^{+46}_{-50}	$4.735^{+0.017}_{-0.027}$	$-0.100^{+0.100}_{-0.100}$	$0.530^{+0.023}_{-0.021}$	$0.556^{+0.020}_{-0.027}$	$5.264^{+0.402}_{-0.550}$
	+1%/-1%	+0%/-1%	+100%/-100%	+4%/-4%	+4%/-5%	+8%/-10%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 008447096-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-707 ± 130	$2.30^{+1.79}_{-1.42}$	420^{+6}_{-7}	3406^{+1389}_{-528}	2178^{+12566}_{-1484}
Alt.	-1718 ± 215	$2.72^{+1.90}_{-1.70}$	420^{+6}_{-6}	3745^{+1740}_{-597}	3912^{+23662}_{-2605}

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

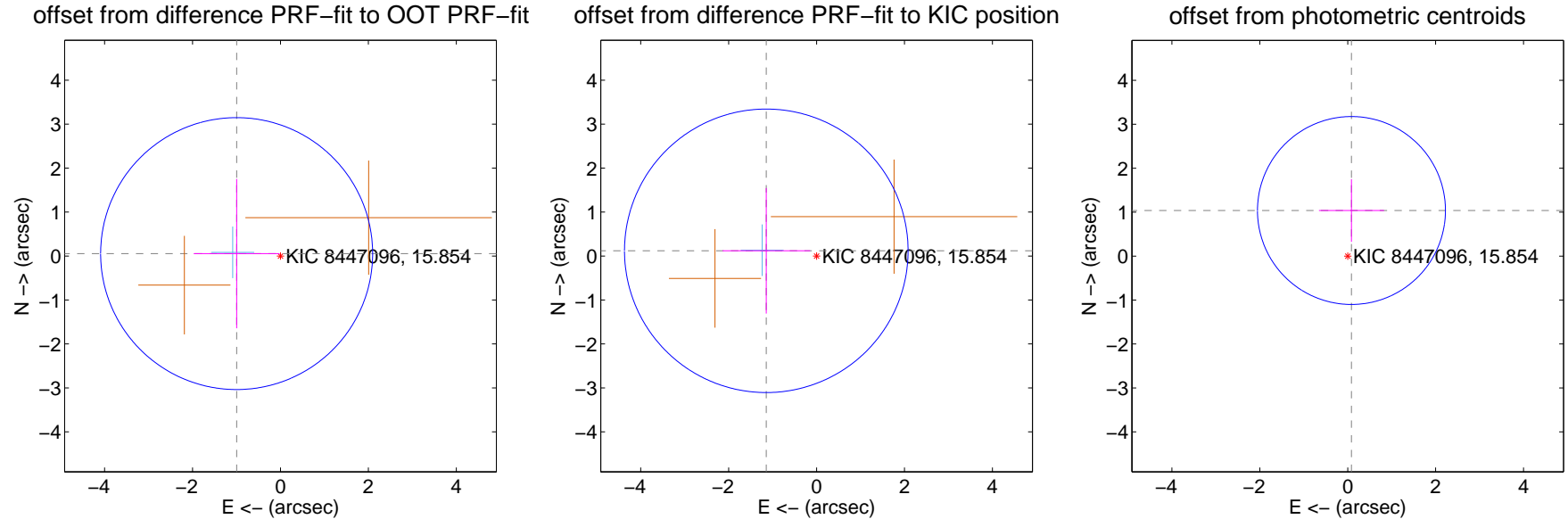
DV Centroid Data

Supplemental centroid analysis for 008447096-03. Kepler magnitude: 15.85. Transit SNR 7.84

There are 1 quarters with good PRF difference image offsets

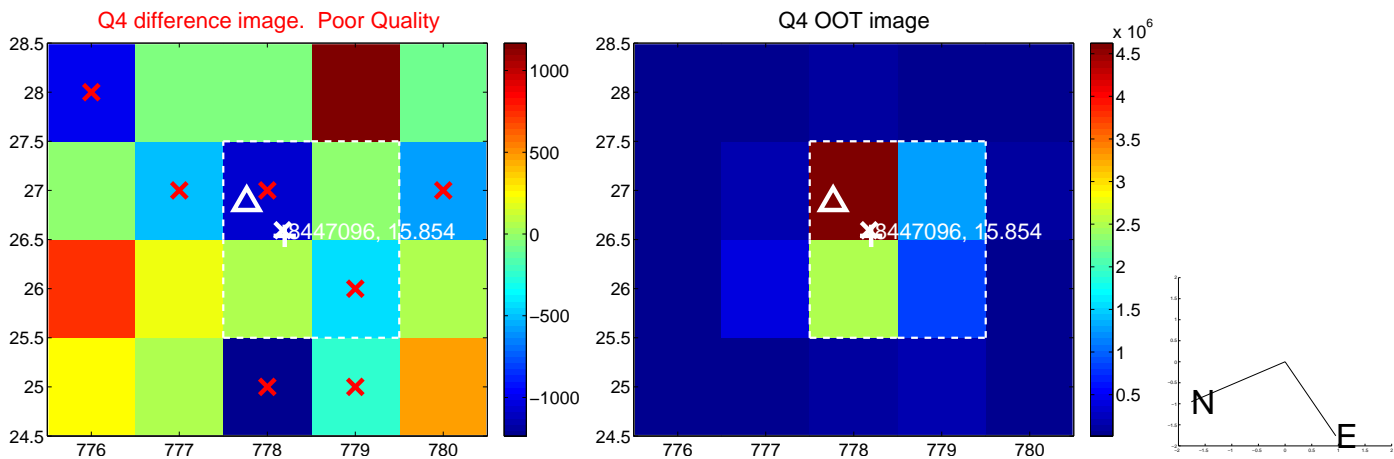
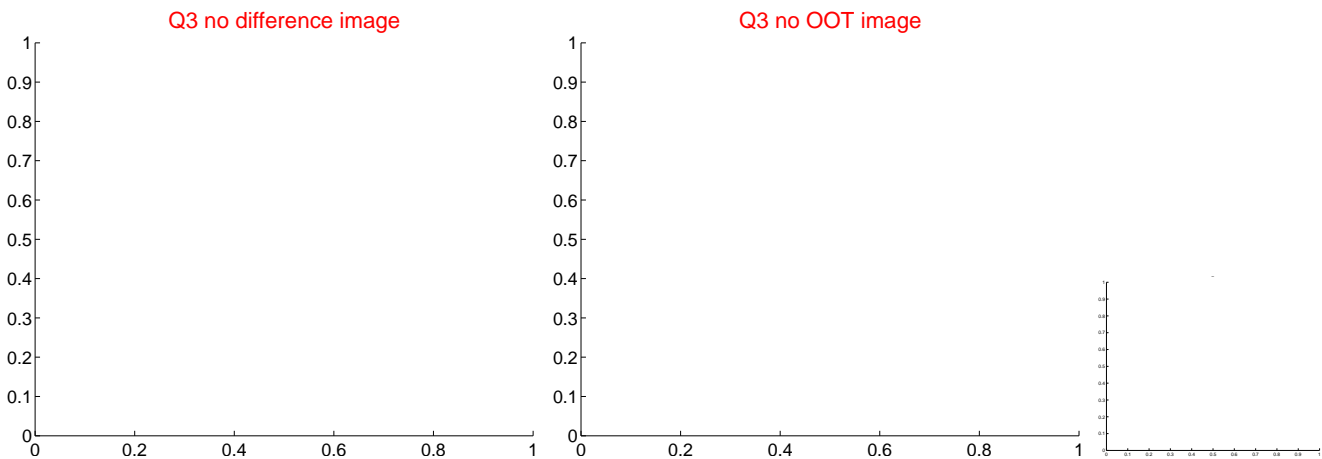
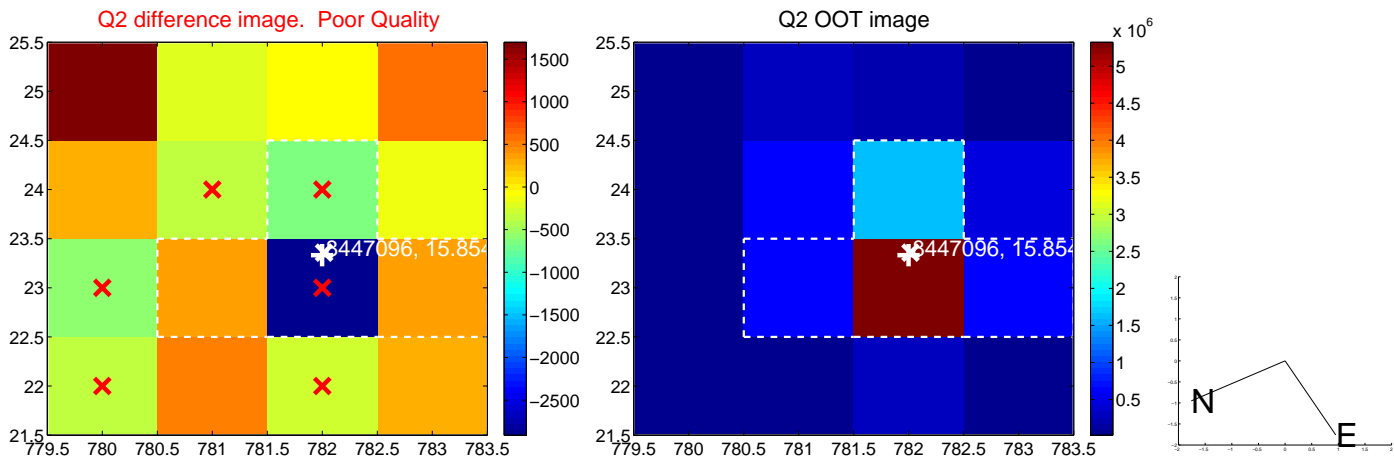
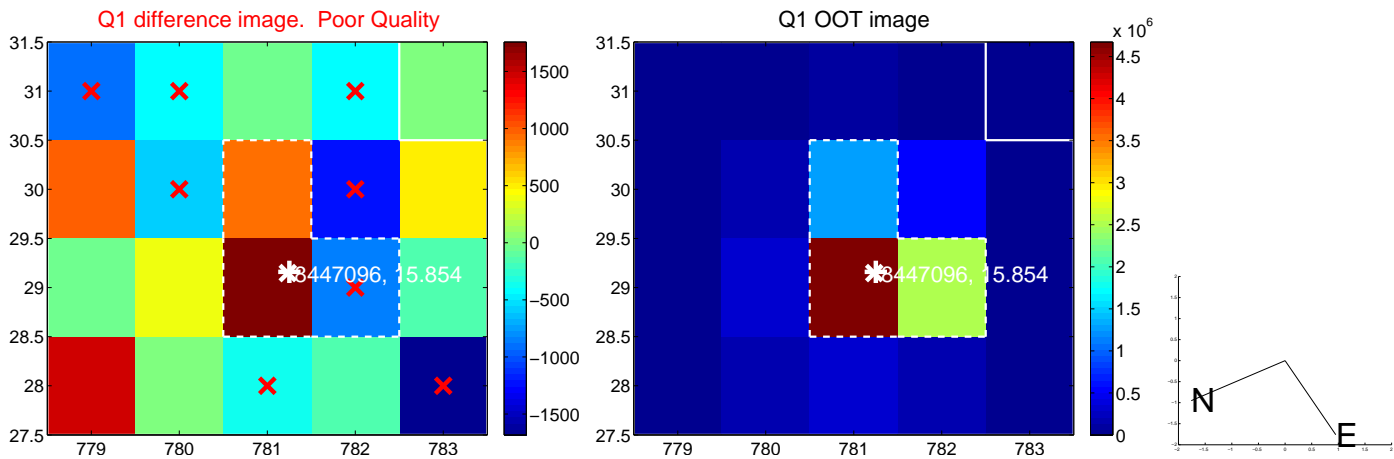
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.998 ± 1.031	0.97	0.996 ± 0.976	0.055 ± 1.699
PRF-fit source offset from KIC position	1.150 ± 1.075	1.07	1.143 ± 0.996	0.119 ± 1.427
photometric centroid source offset	1.04 ± 0.71	1.46	-0.09 ± 0.74	1.04 ± 0.71

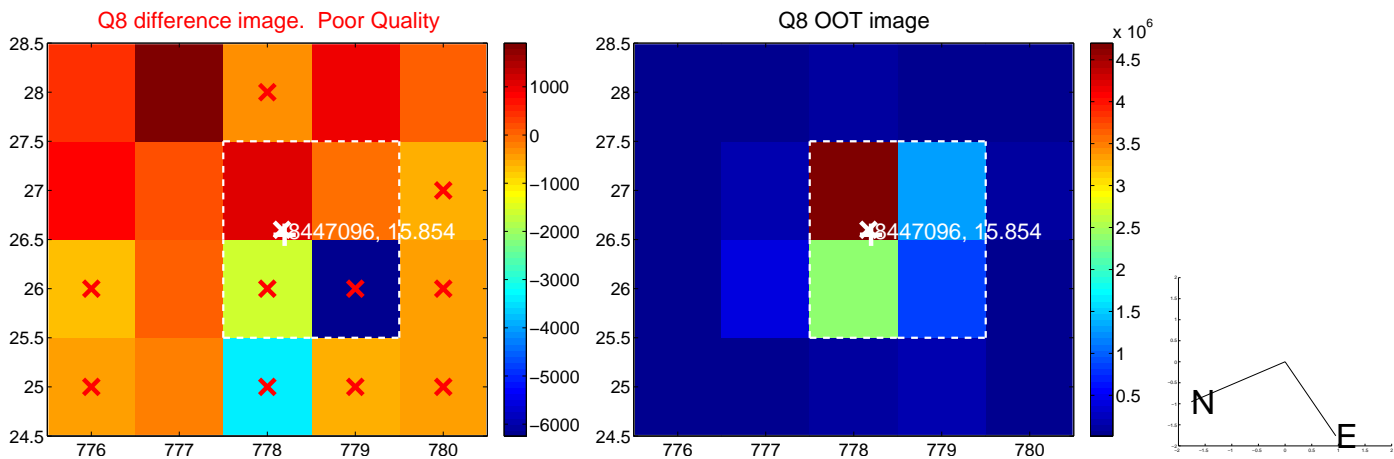
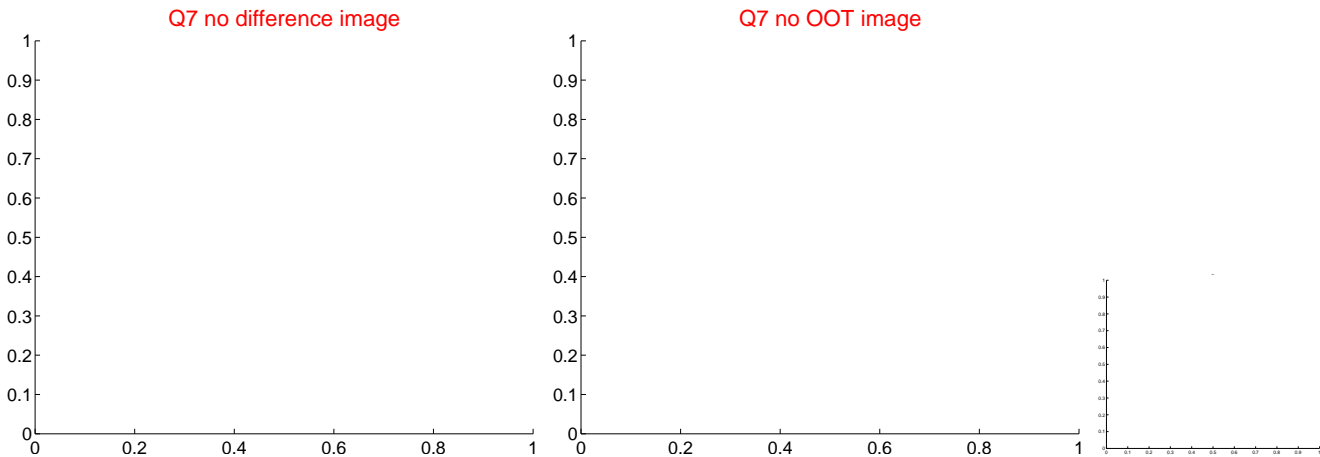
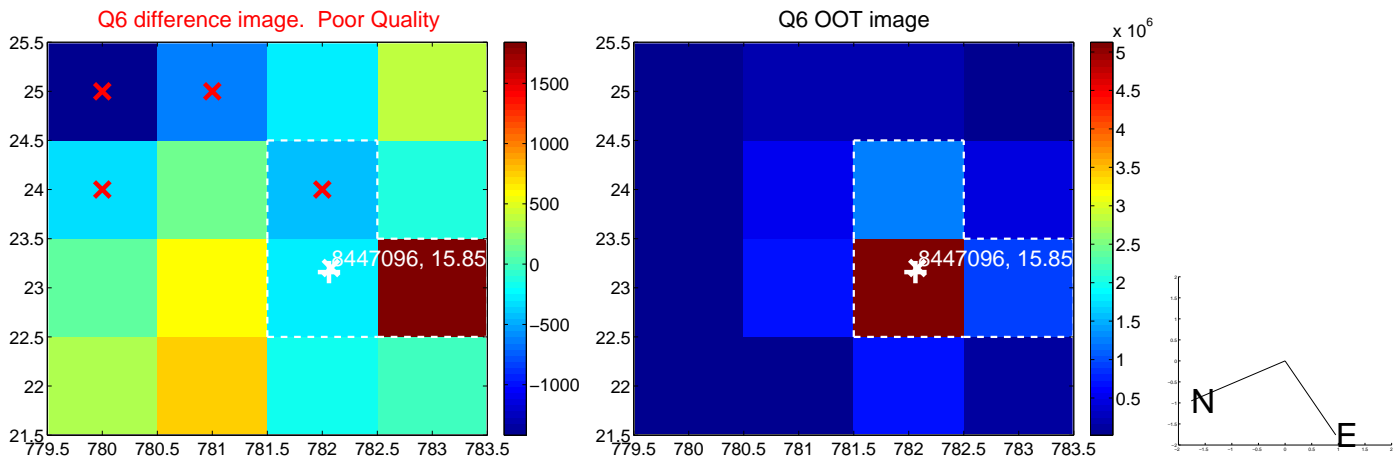
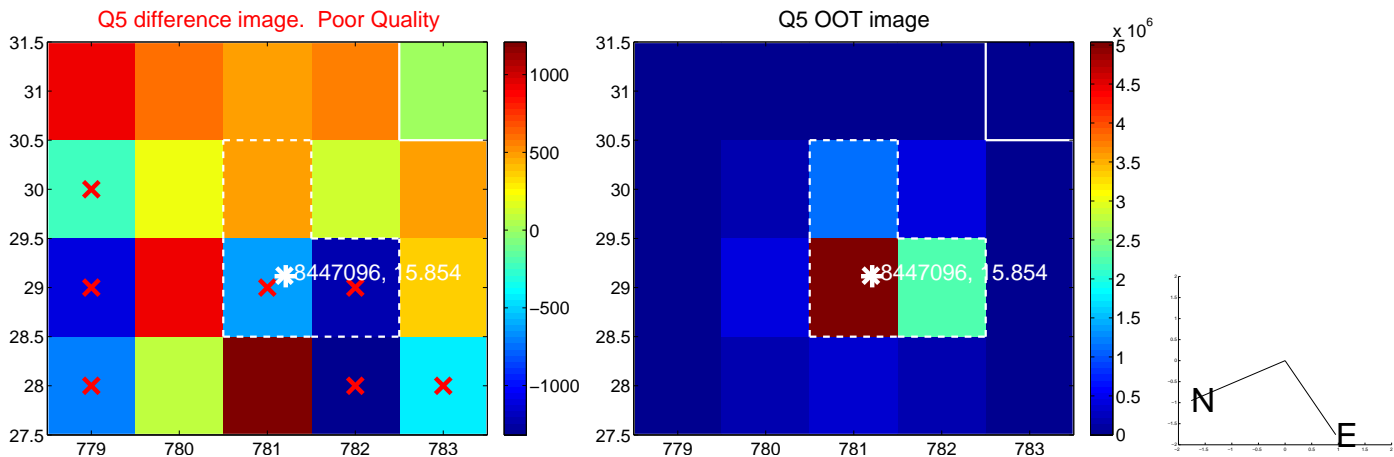


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

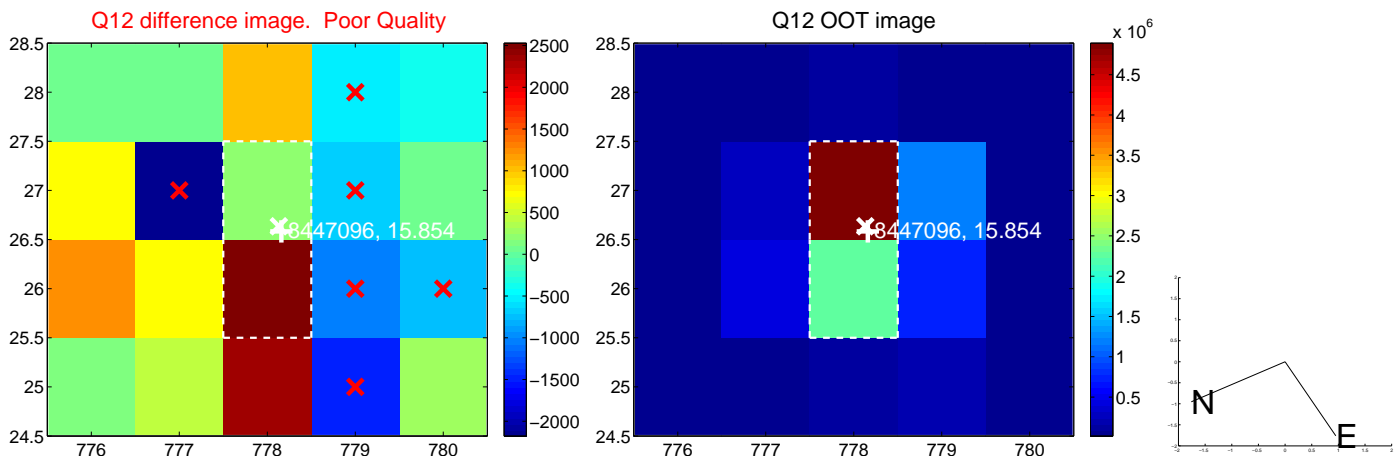
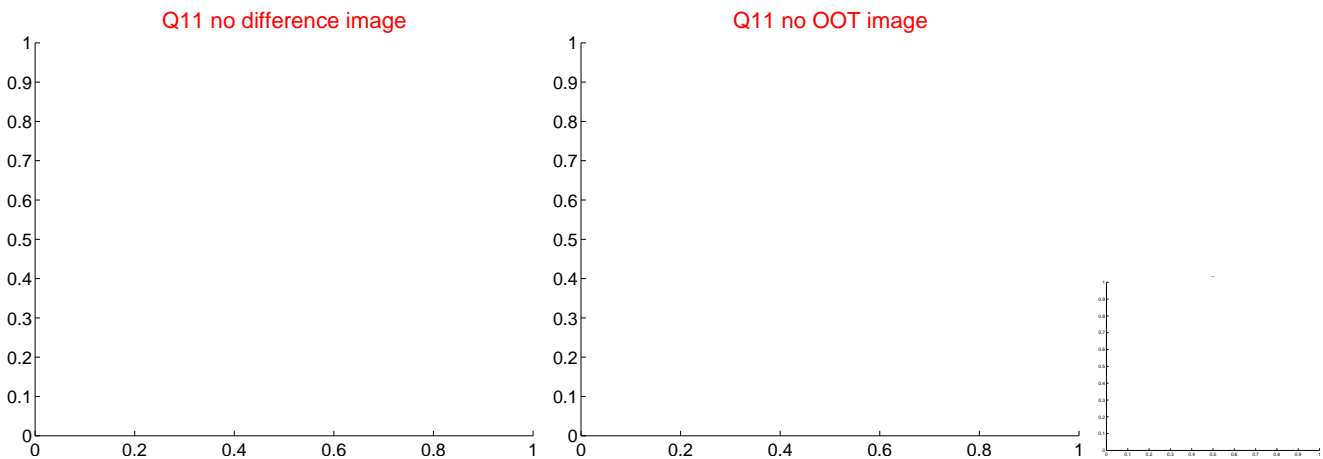
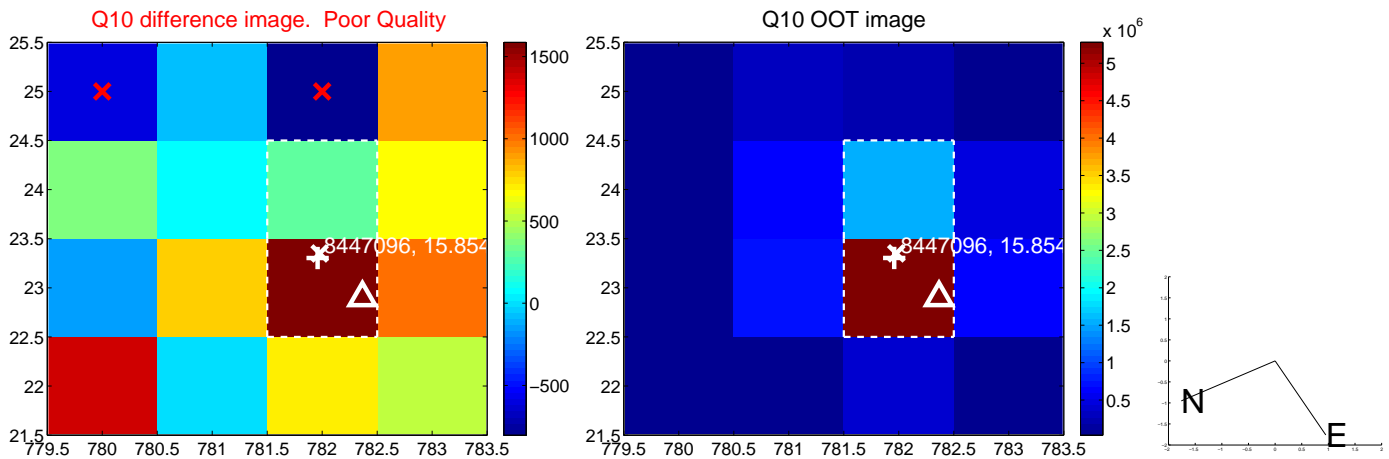
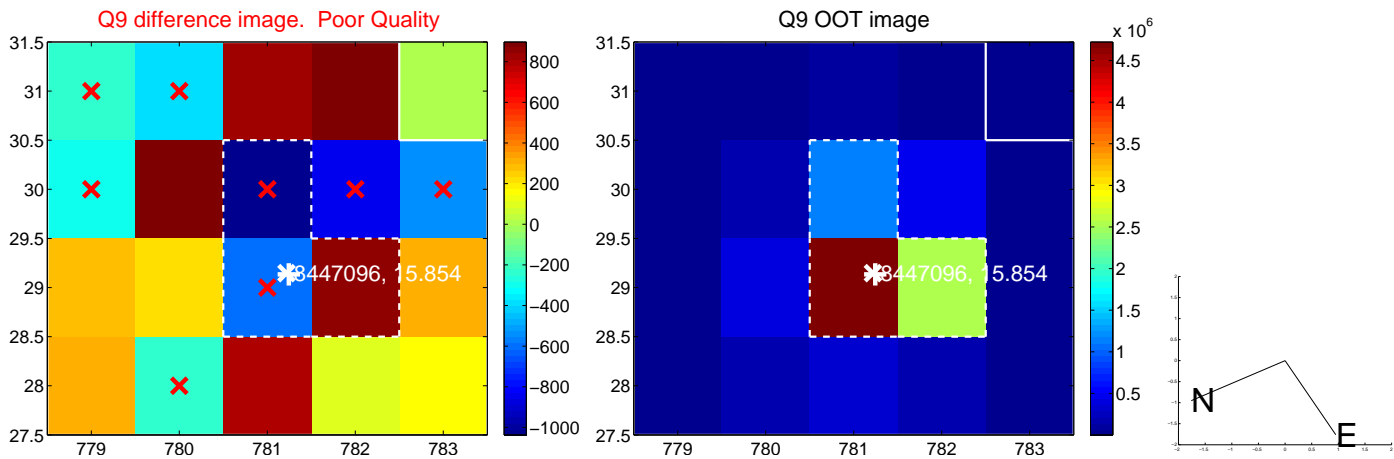
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



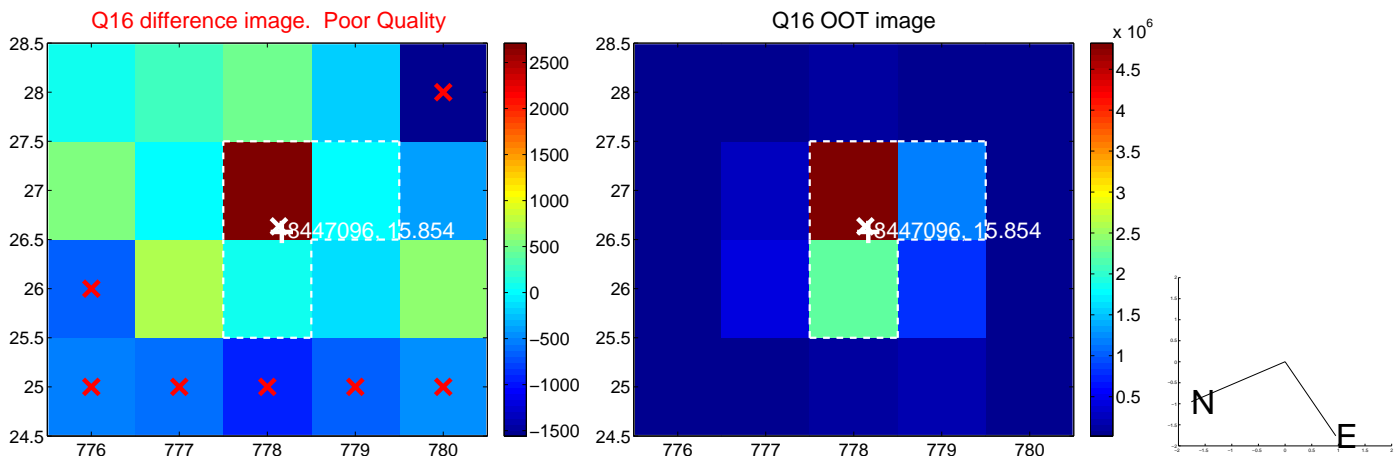
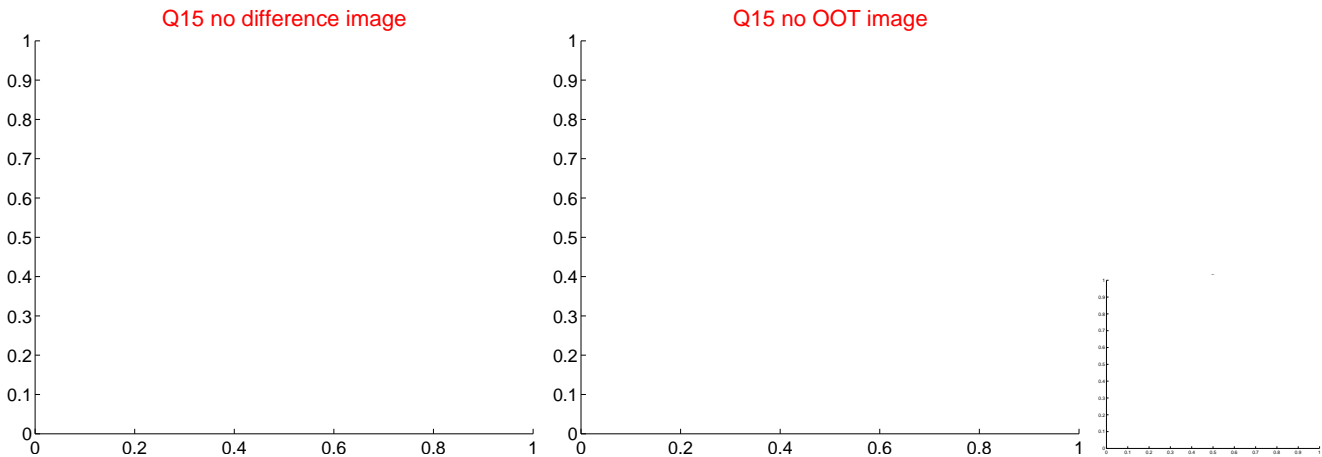
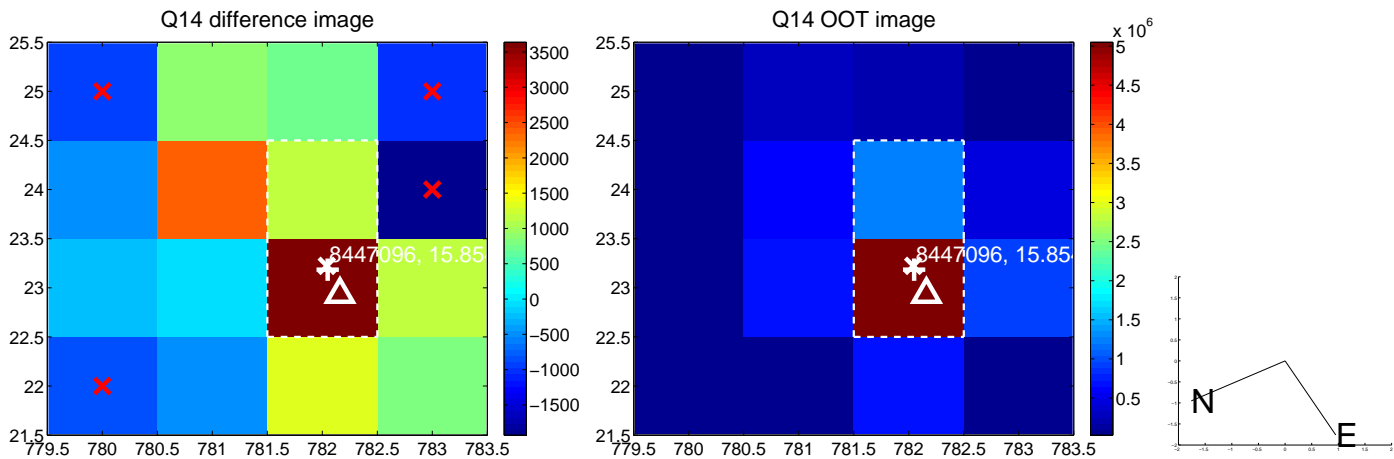
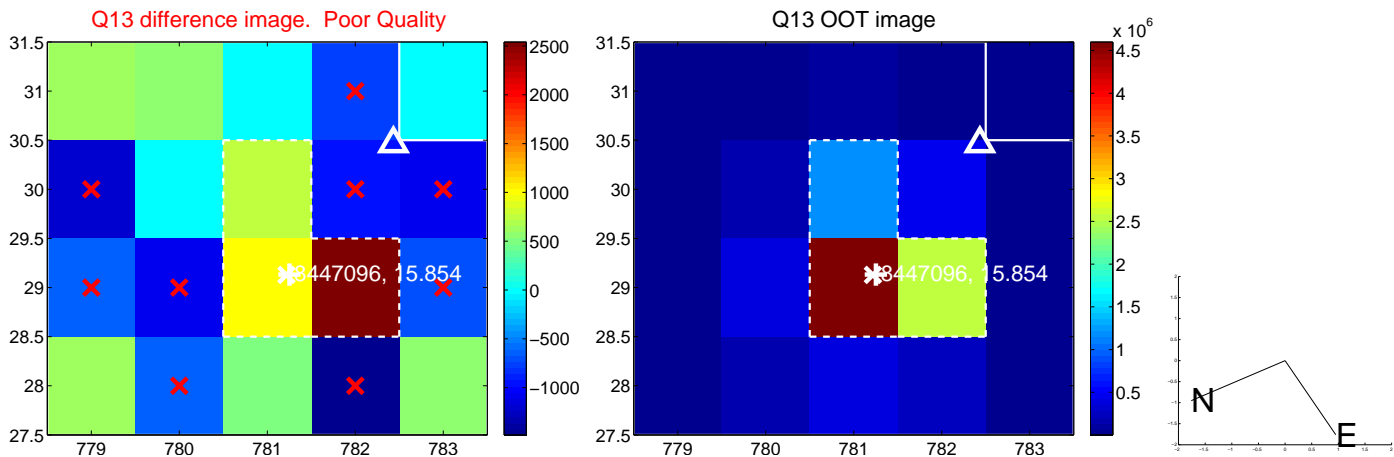
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



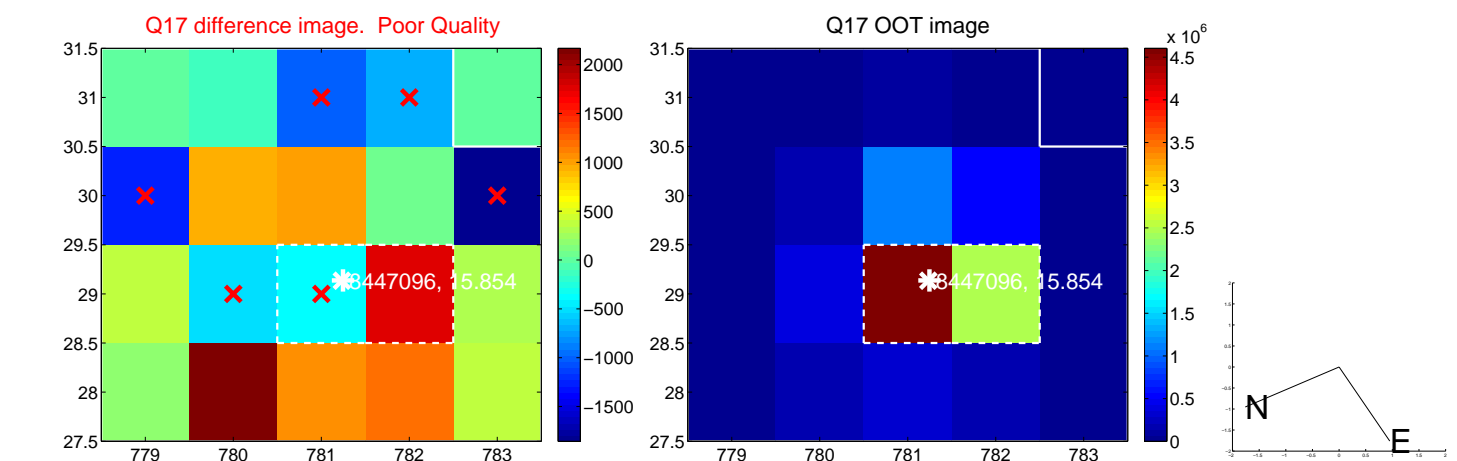
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



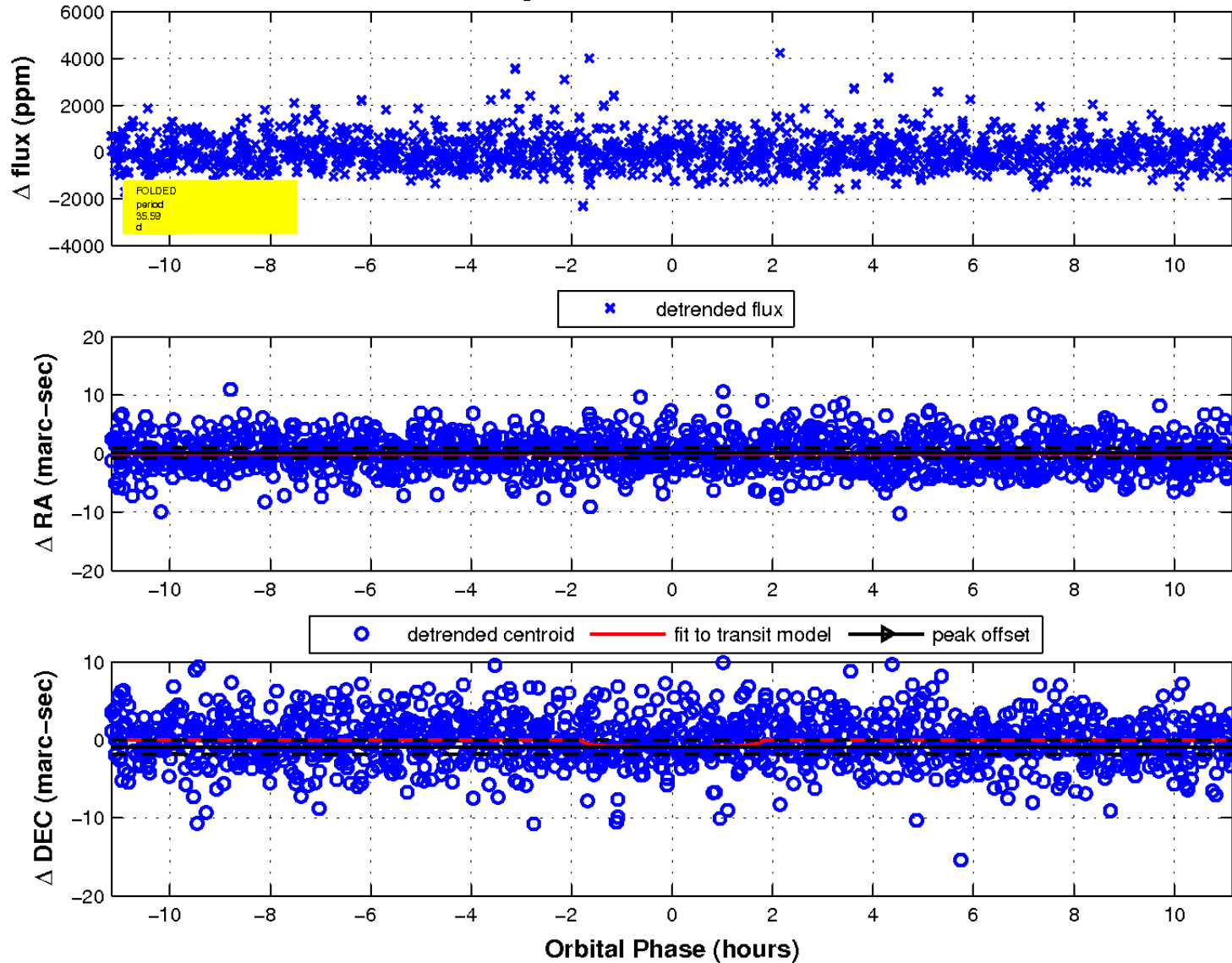
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



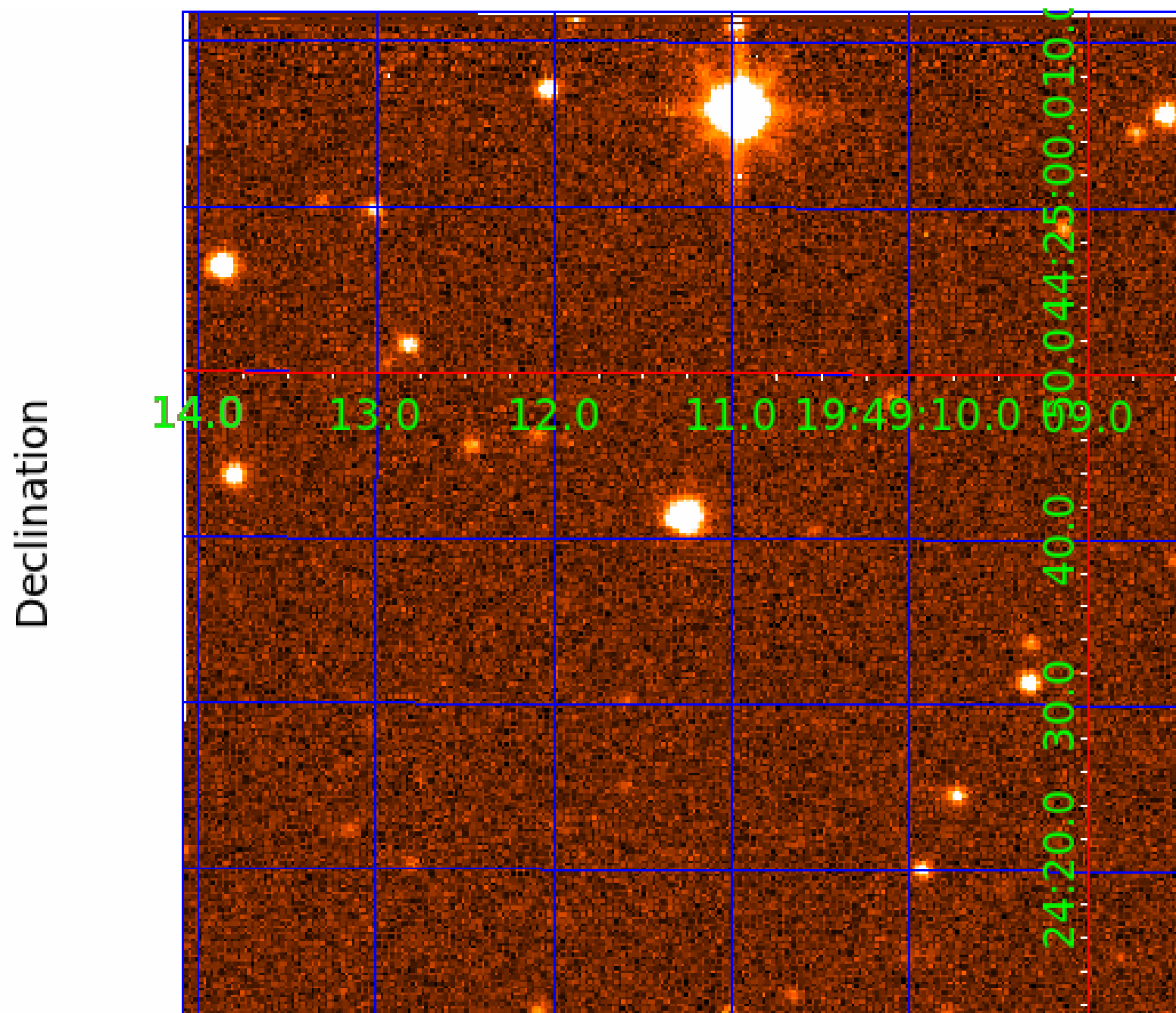
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 5



UKIRT Image



KIC 008447096

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})
008447096-01	OBS	No	1.236976	131.660714	46.3	8.521	7.3	5.0	0.53	3898	0.35	168.77
008447096-02	OBS	No	34.574835	162.047963	1667.4	3.462	17.5	11.5	0.53	3898	2.26	1.99
008447096-03	OBS	No	35.593520	151.979182	903.3	3.720	8.4	7.8	0.53	3898	1.68	1.91
008447096-04	OBS	No	60.504012	137.341364	1567.5	3.672	9.9	8.2	0.53	3898	4.05	0.94
008447096-05	OBS	No	35.671231	147.707007	937.9	3.461	8.0	7.5	0.53	3898	1.74	1.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008447096-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008447096-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008447096-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

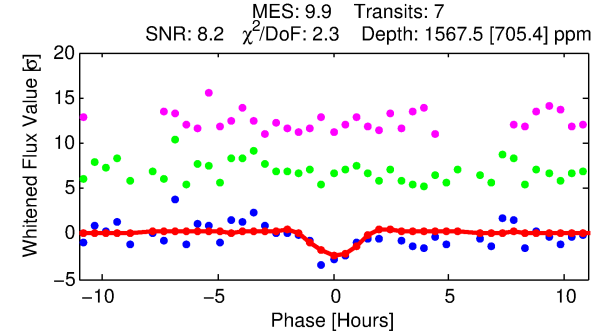
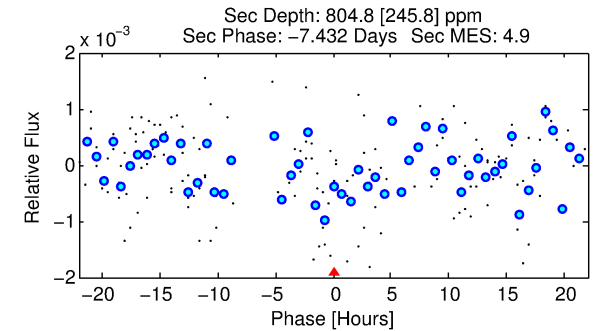
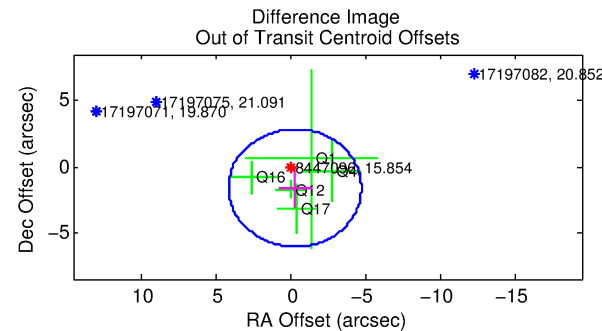
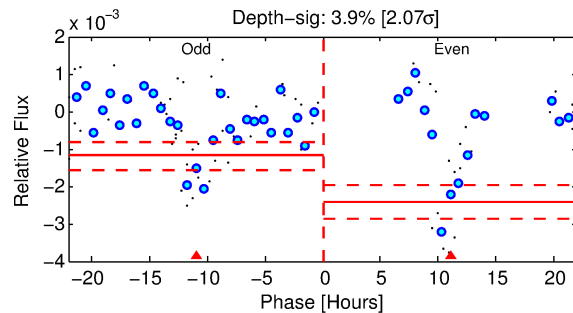
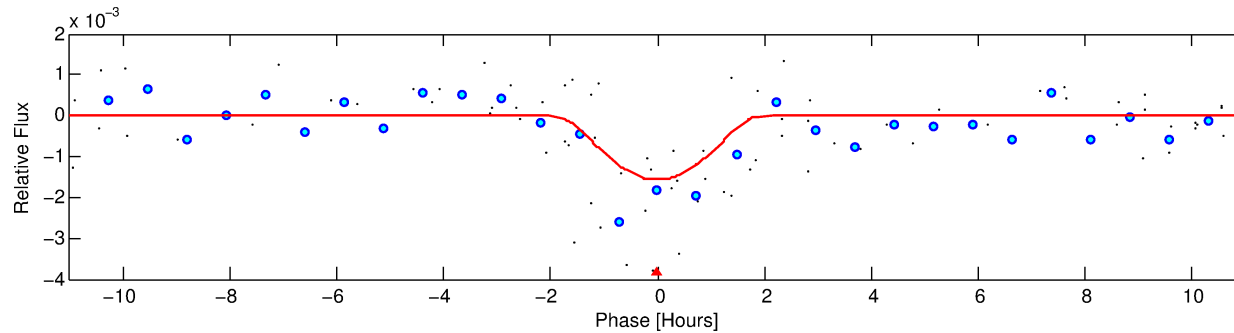
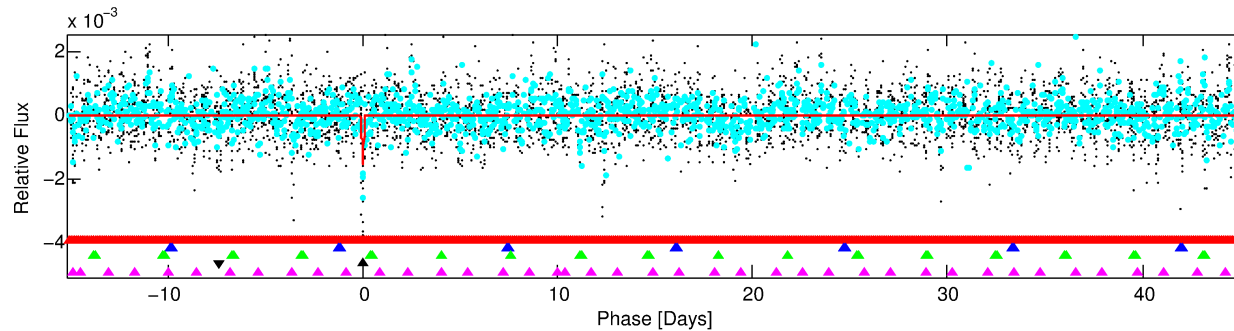
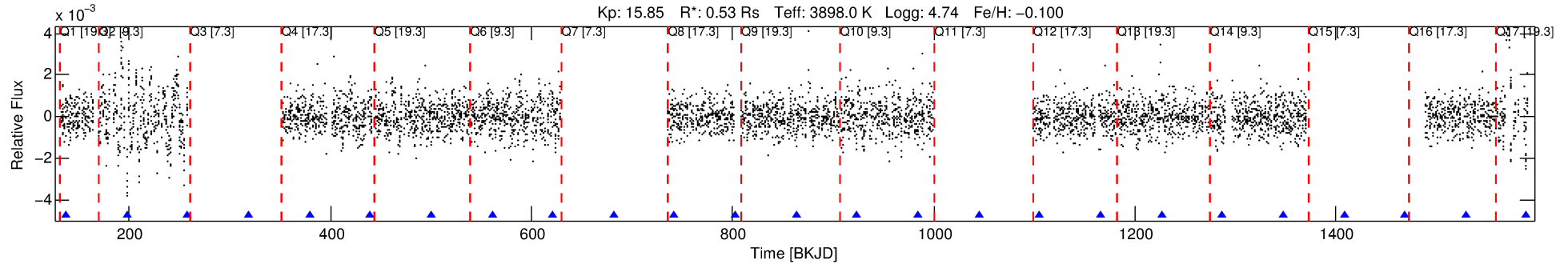
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008447096-04

No Significant Match Found

DV One-Page Summary

KIC: 8447096 Candidate: 4 of 5 Period: 60.504 d



DV Fit Results:

Period = 60.50401 [0.00073] d
Epoch = 137.3414 [0.0104] BKJD
Rp/R* = 0.0699 [0.4513]
a/R* = 48.48 [69.76]
b = 1.00 [0.66]
Seff = 0.94 [0.07]
Teq = 251 [5] K
Rp = 4.05 [26.10] Re
a = 0.2482 [0.0088] AU
Ag = 1666.04 [21502.34] [0.08 σ]
Teffp = 2482 [8010] K [0.28 σ]

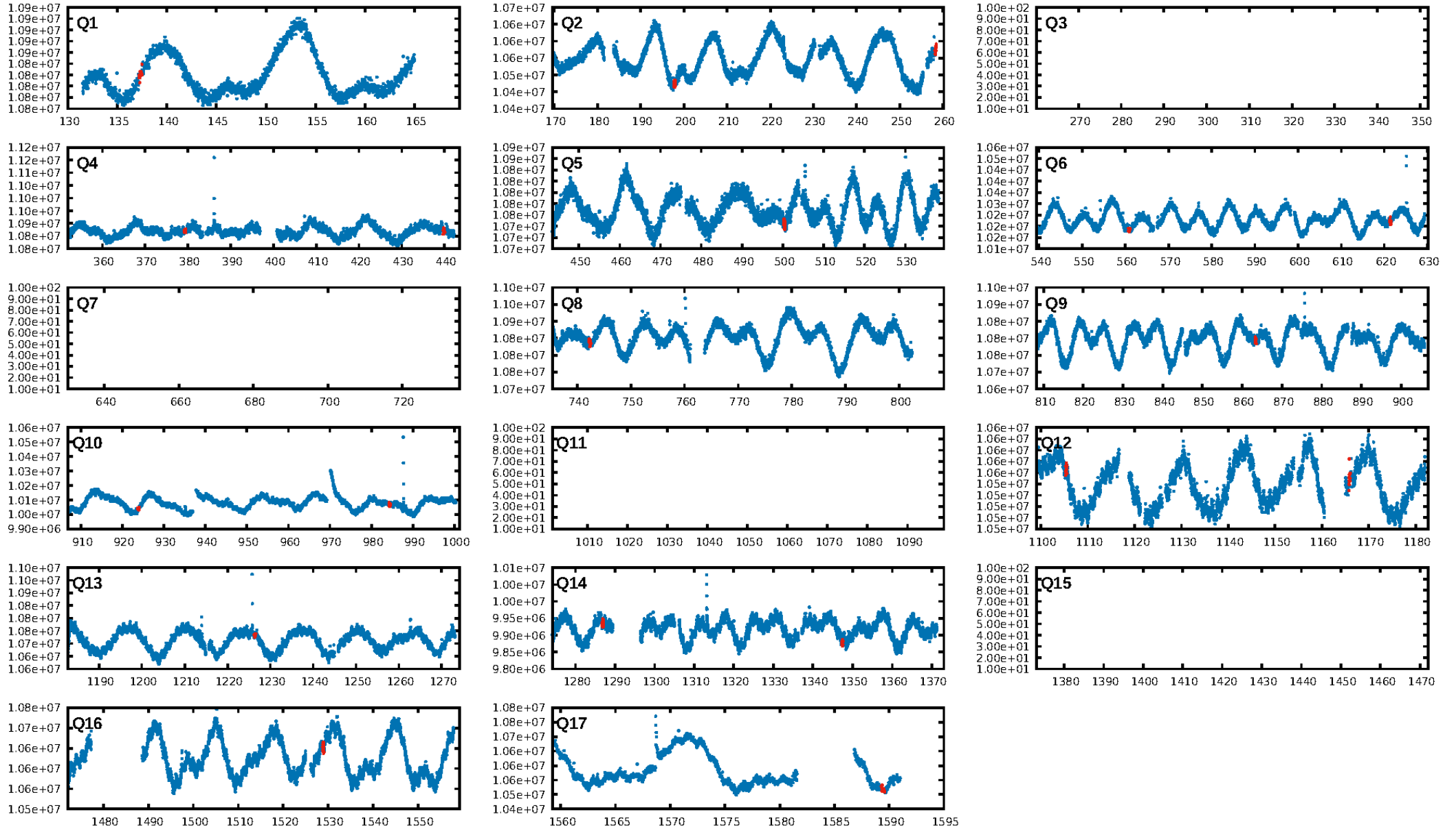
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [118.11 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 38.1%
Bootstrap-pfa: 6.56e-14
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.3043
Centroid-sig: 75.1%
Centroid-so: 0.364 arcsec [0.54 σ]
OotOffset-rm: 1.645 arcsec [1.11 σ]
OotOffset-st: 0/0/3/2 [5]
KicOffset-rm: 1.645 arcsec [1.10 σ]
KicOffset-st: 0/0/3/2 [5]
DiffImageQuality-fgm: 0.00 [0/5]
DiffImageOverlap-fno: 0.33 [4/12]

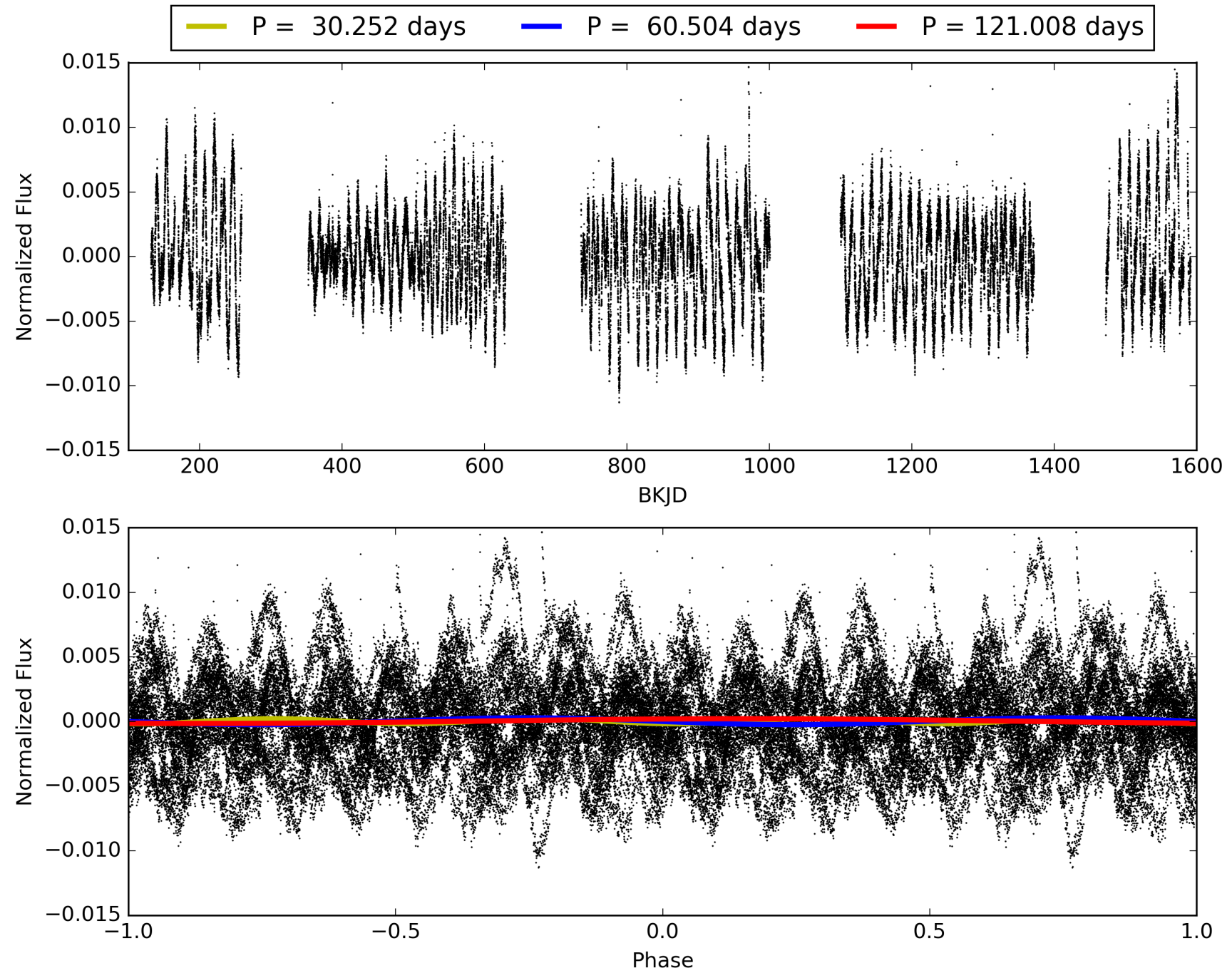
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:09:56 Z

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

TCE 008447096-04, PDC Light Curves

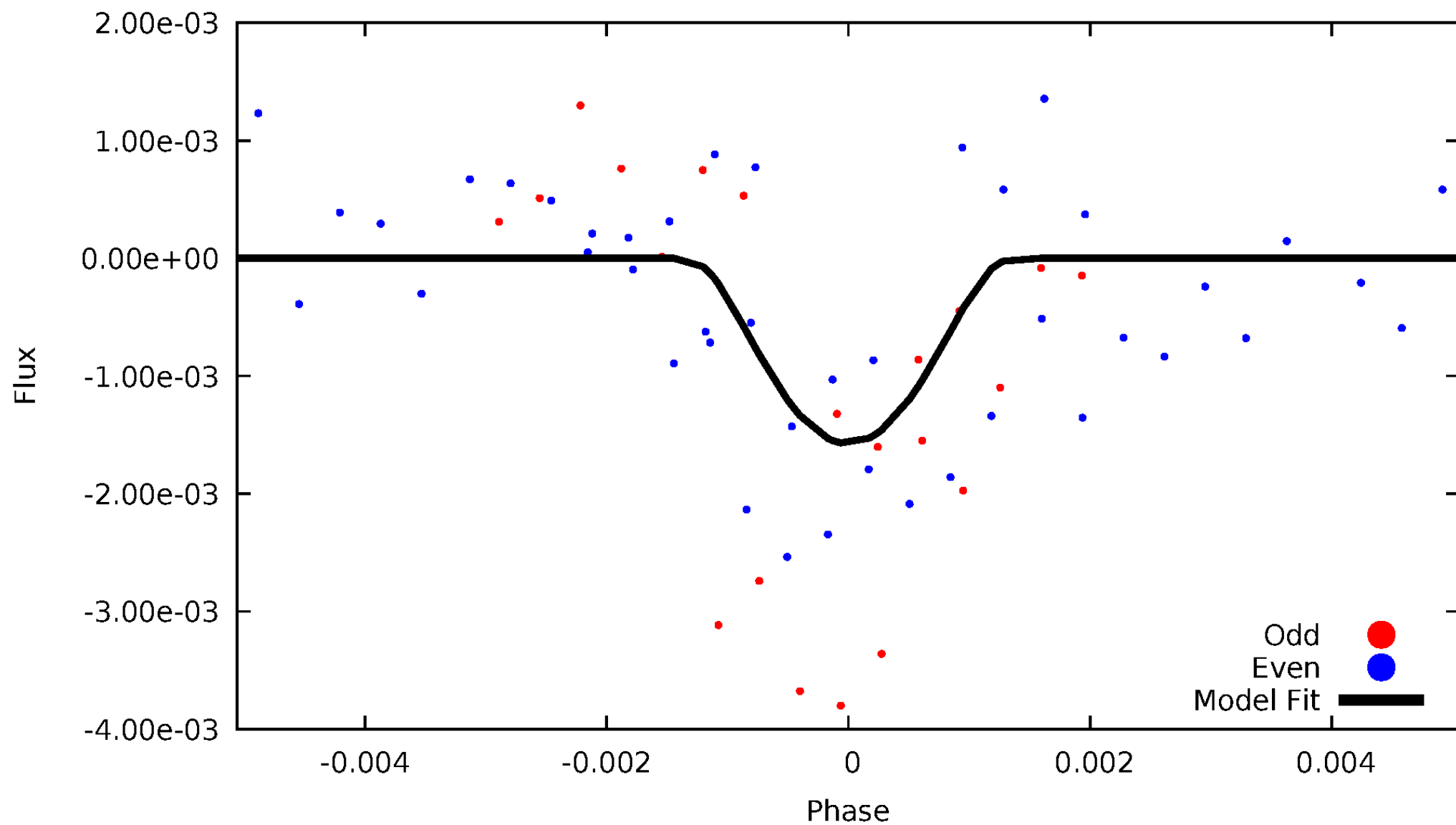


TCE 008447096-04



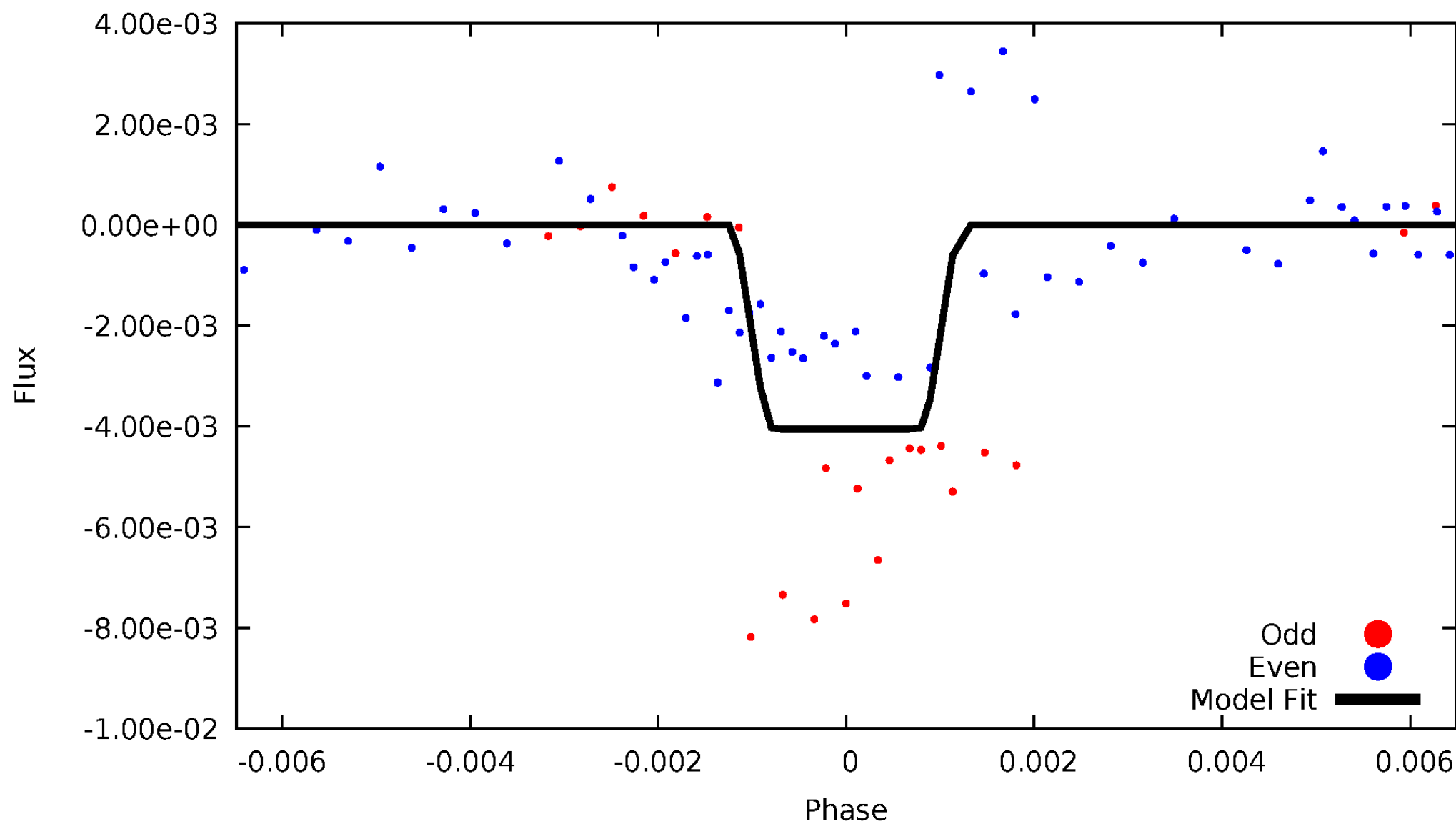
DV Odd/Even

TCE 008447096-04



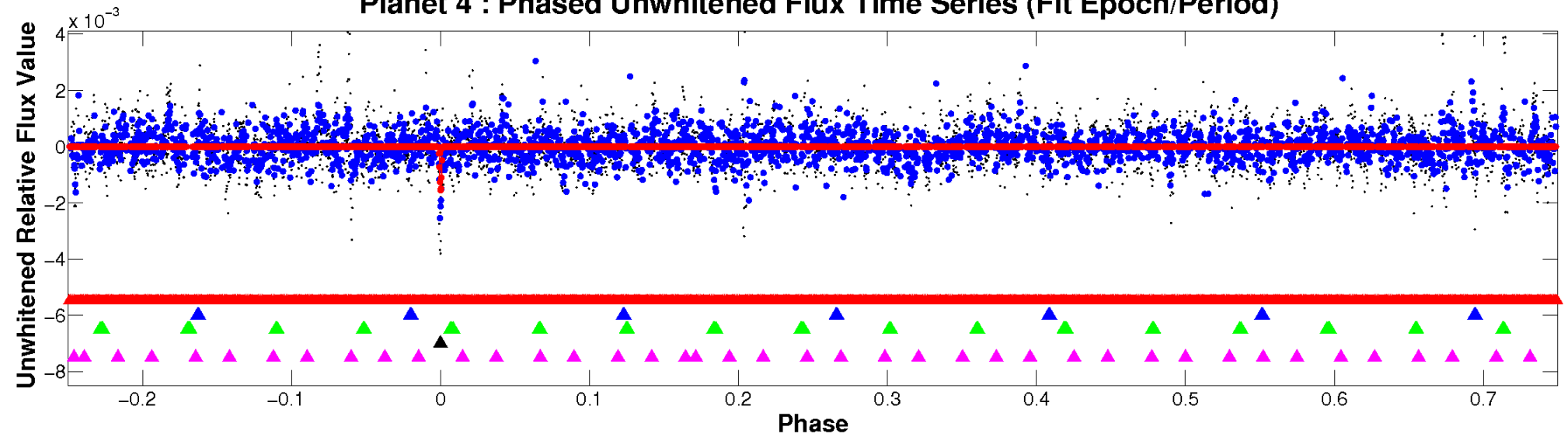
ALT Odd/Even

TCE 008447096-04

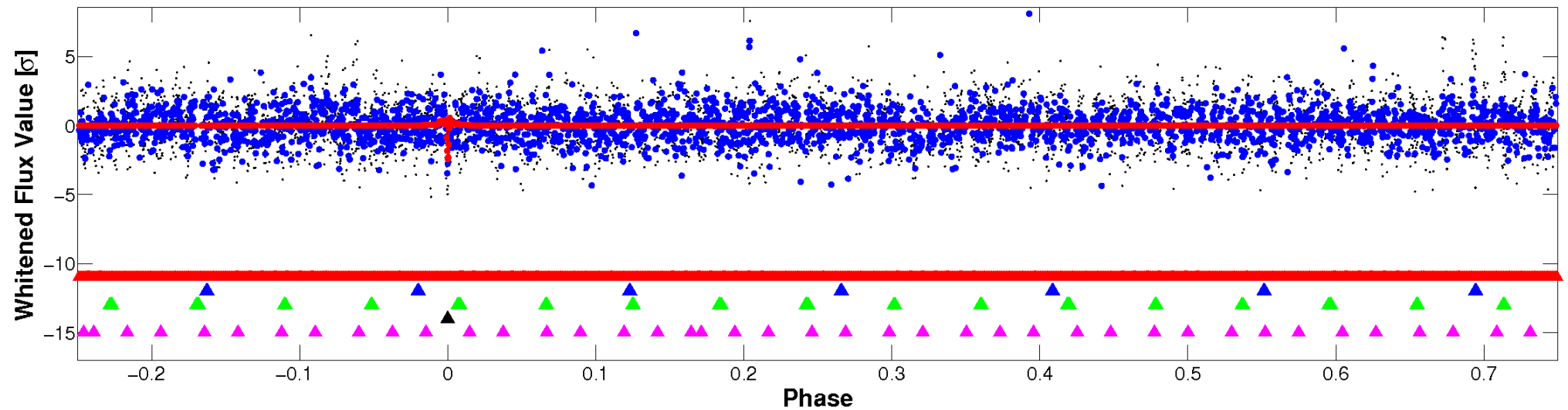


Non-Whitened Vs. Whitened Light Curve

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

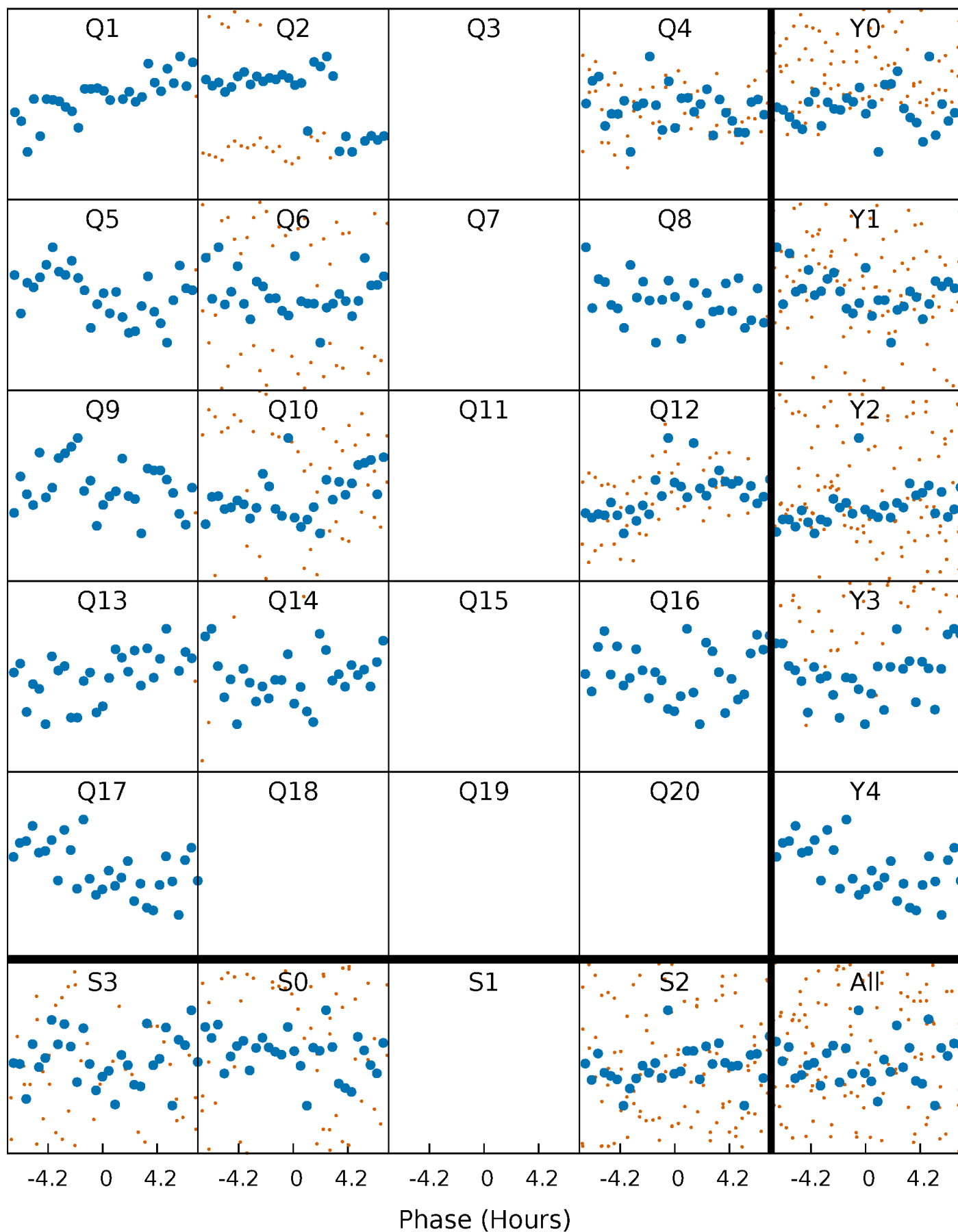


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



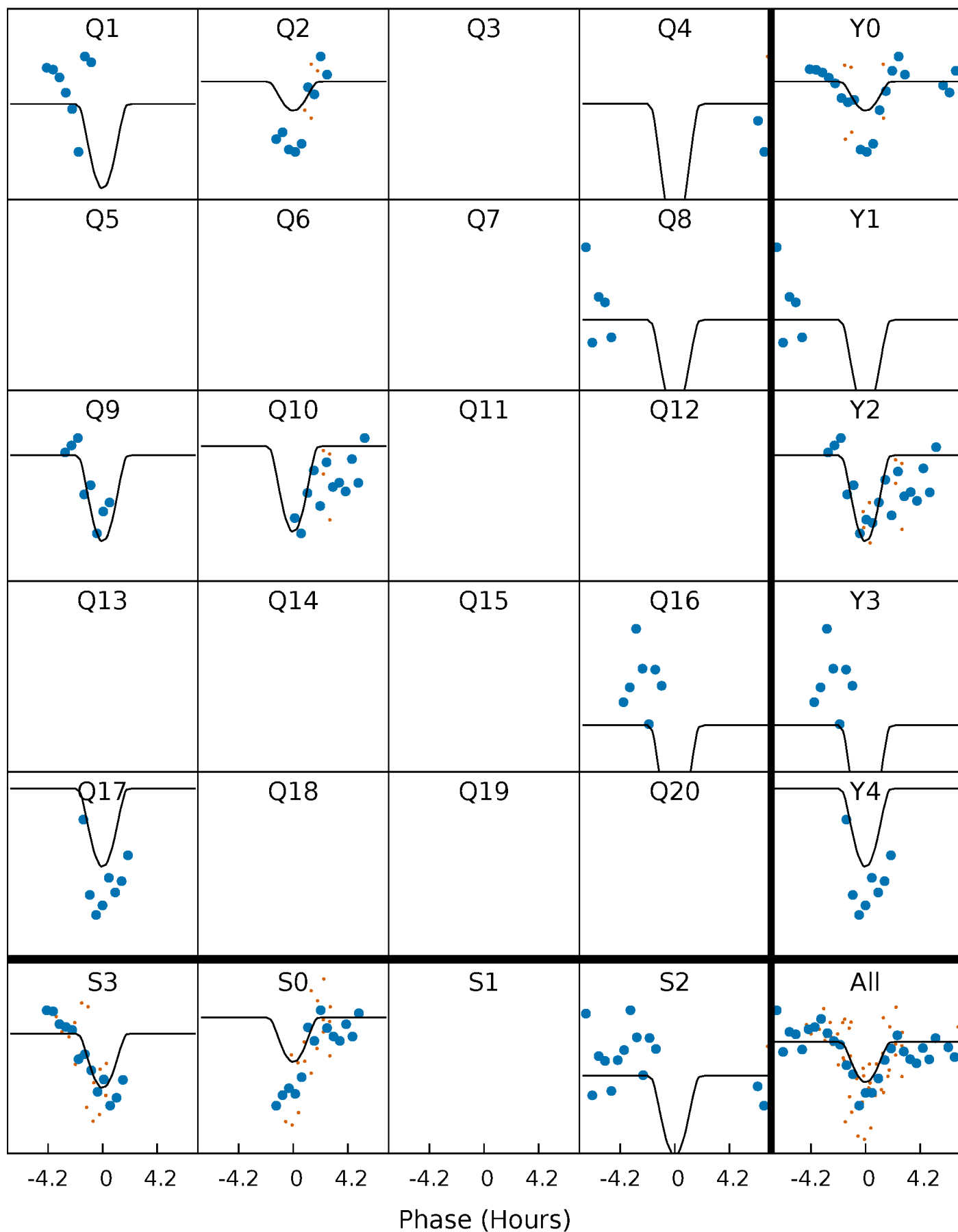
PDC Quarter-Phased Transit Curves

TCE 008447096-04 P= 60.504012 Days $T_0=137.341364$ (BKJD)



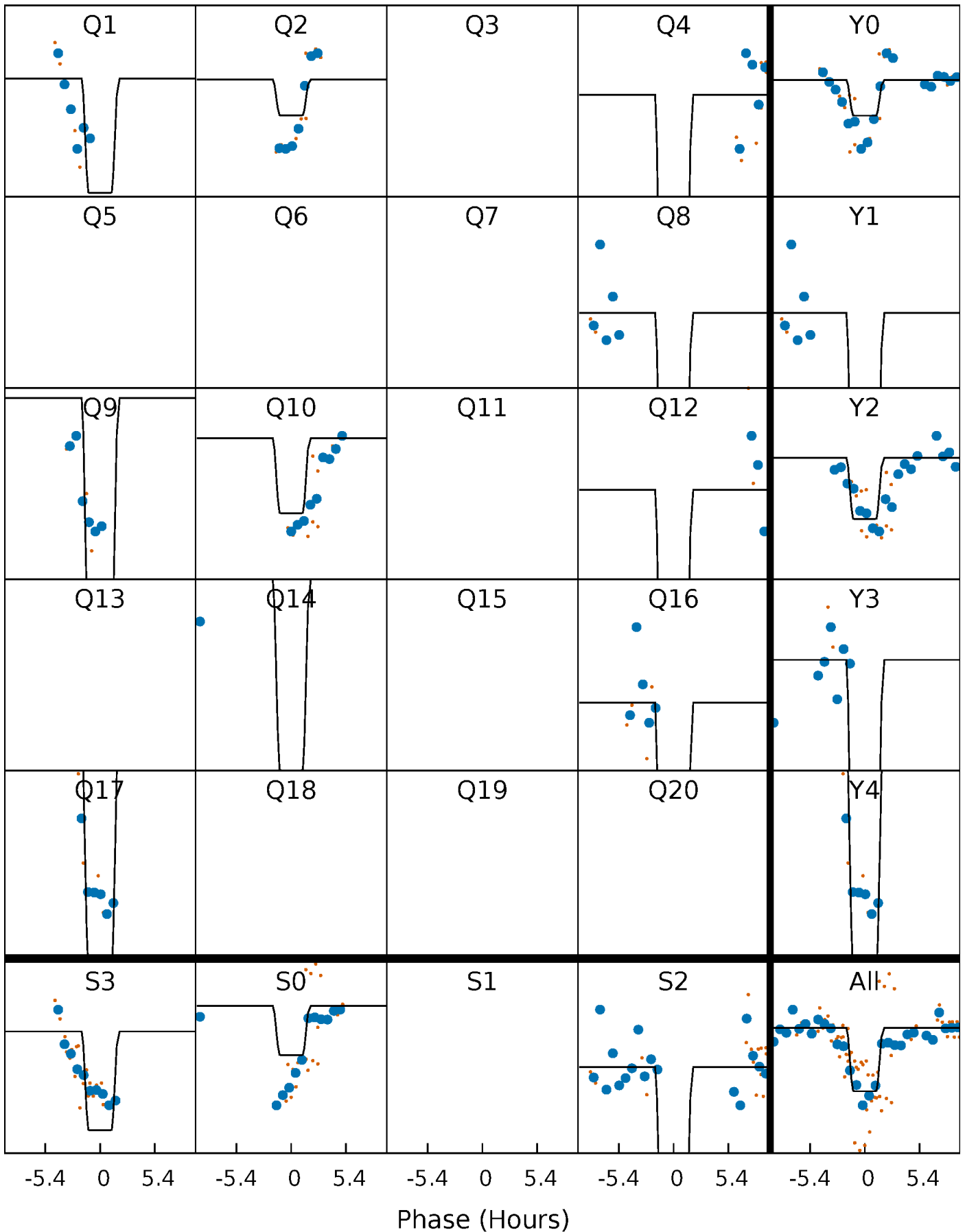
DV Quarter-Phased Transit Curves

TCE 008447096-04 P= 60.504012 Days $T_0=137.341364$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

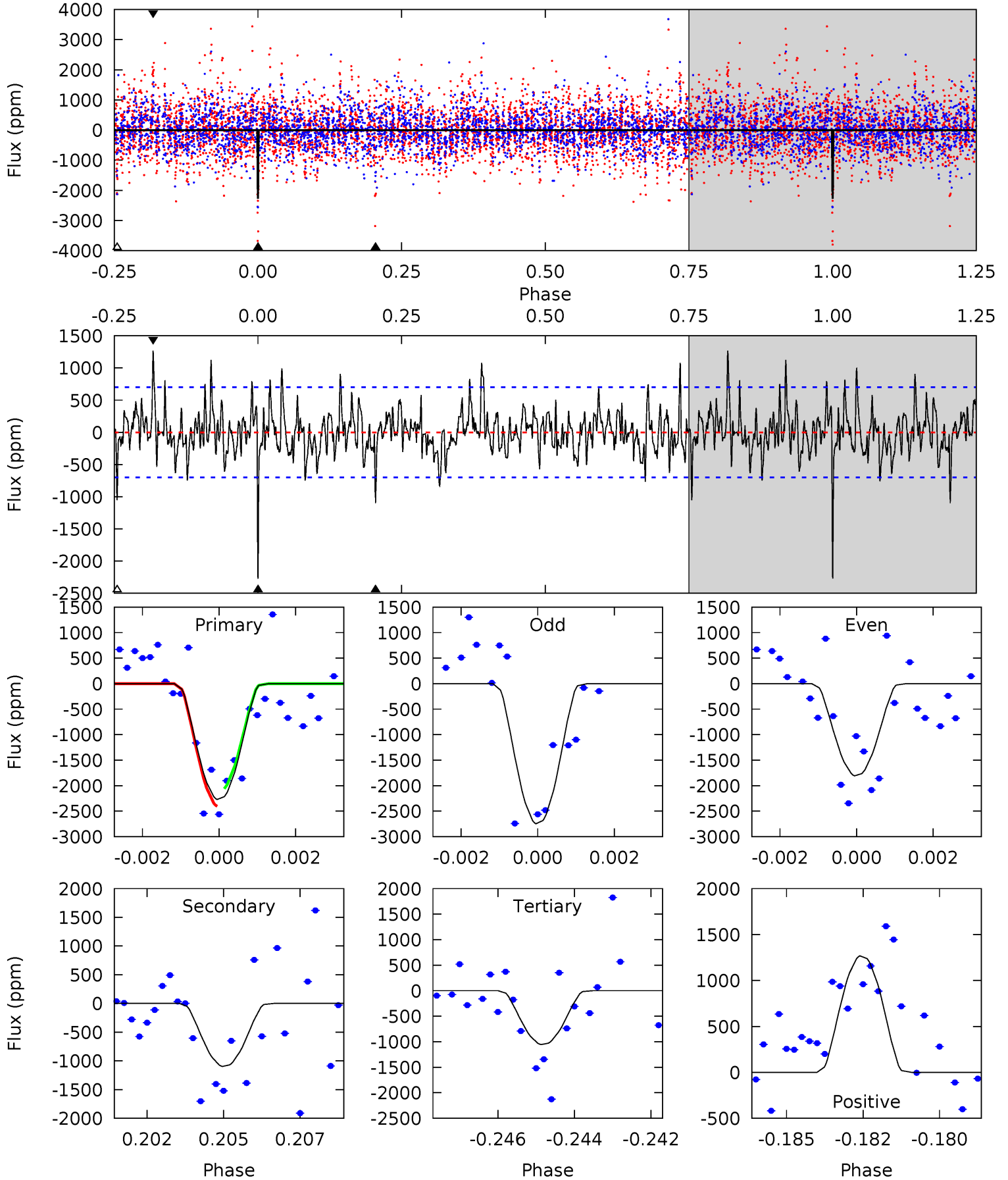
TCE 008447096-04 P= 60.504936 Days $T_0=137.336790$ (BKJD)



DV Model-Shift Uniqueness Test

008447096-04, P = 60.504012 Days, E = 76.837352 Days

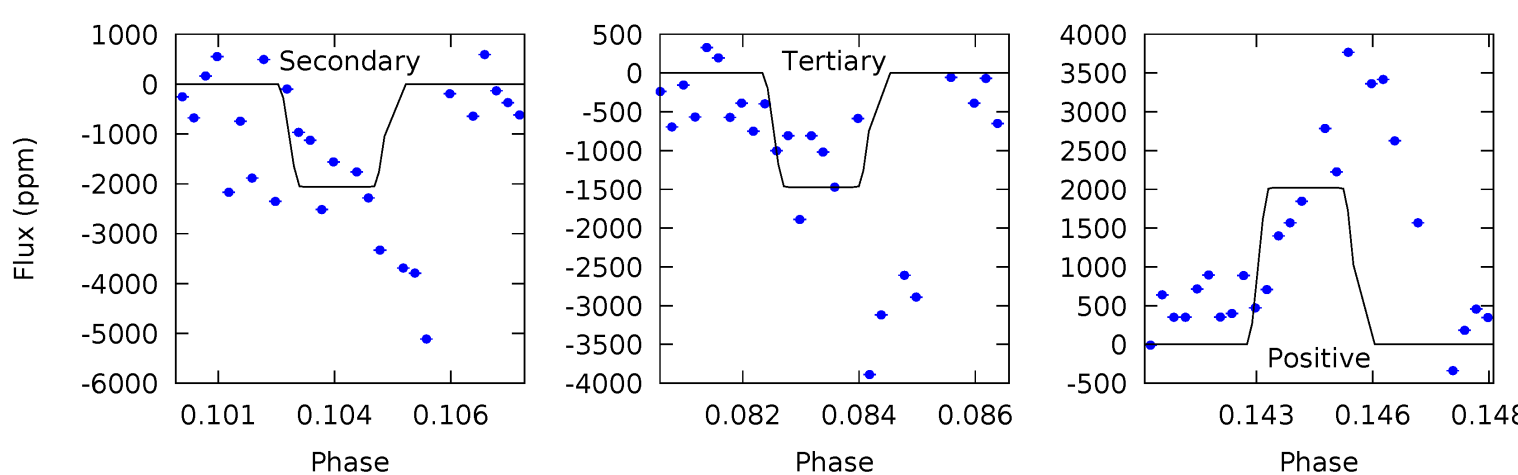
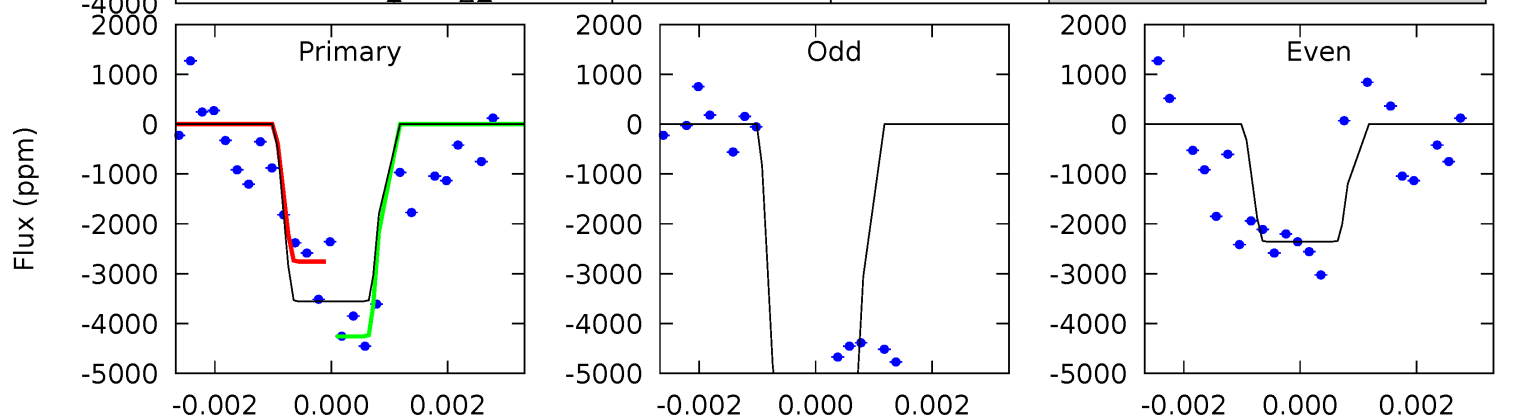
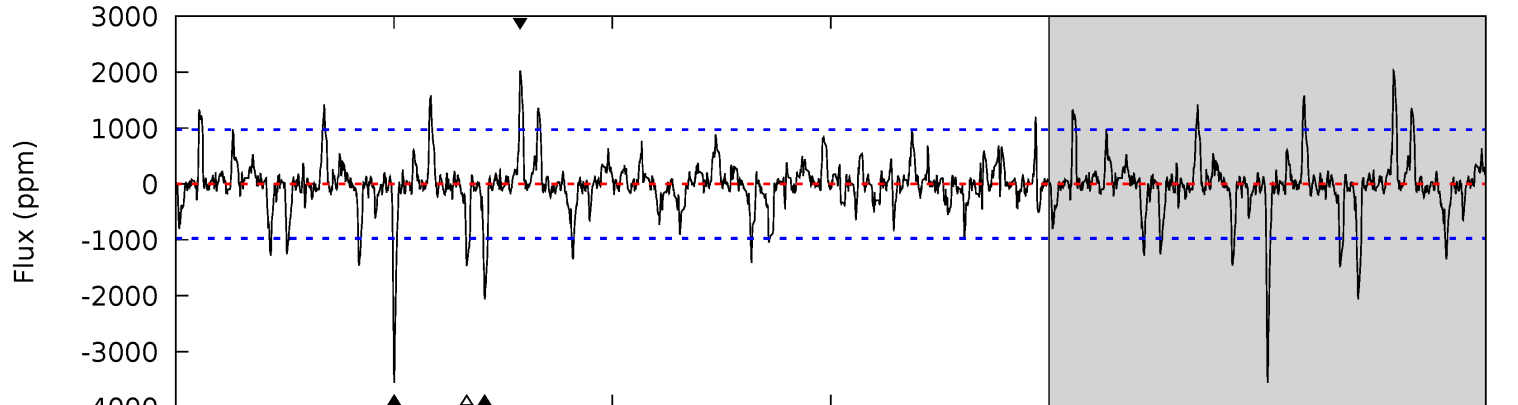
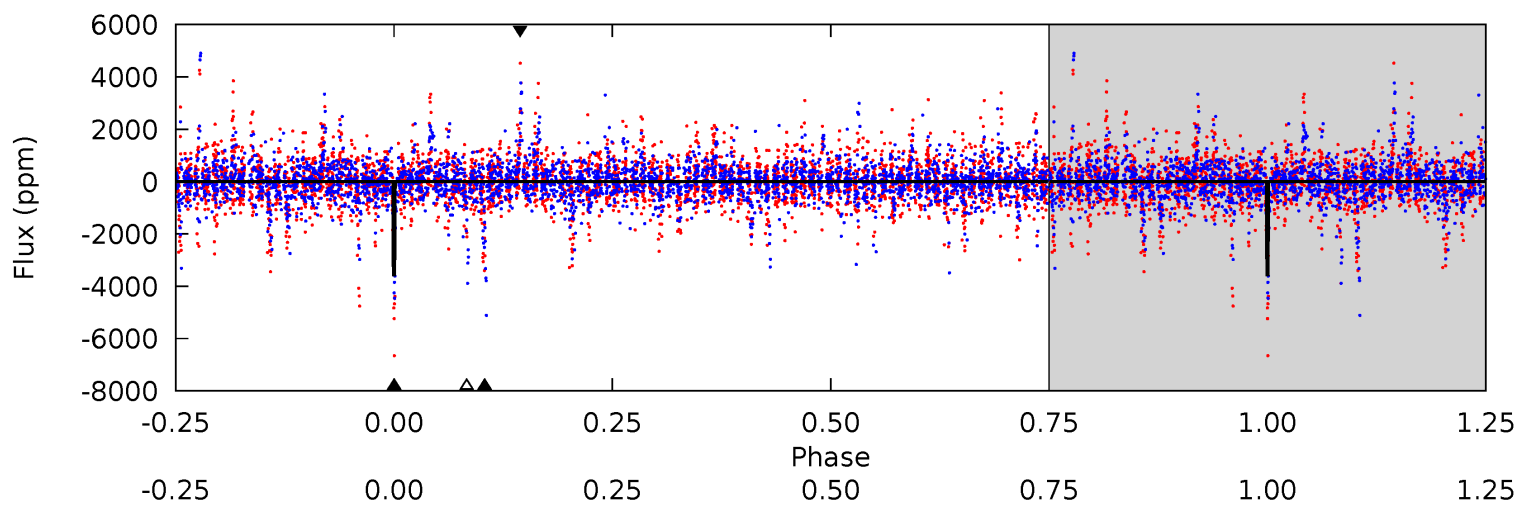
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	8.28	7.96	9.58	5.29	3.03	2.23	9.18	7.57	0.32	-1.29	3.35	0.27	0.36	1.31



Alt Model-Shift Uniqueness Test

008447096-04, P = 60.504936 Days, E = 76.831854 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	11.2	8.00	11.0	5.29	3.03	1.99	11.3	8.35	3.21	0.22	10.9	1.38	0.36	0



Stellar Parameters For KIC 008447096

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3898^{+46}_{-50}	$4.735^{+0.017}_{-0.027}$	$-0.100^{+0.100}_{-0.100}$	$0.530^{+0.023}_{-0.021}$	$0.556^{+0.020}_{-0.027}$	$5.264^{+0.402}_{-0.550}$
	+1%/-1%	+0%/-1%	+100%/-100%	+4%/-4%	+4%/-5%	+8%/-10%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 008447096-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1097 ± 132	$18.32^{+20.36}_{-12.93}$	352^{+6}_{-6}	2122^{+710}_{-300}	111^{+1104}_{-86}
Alt.	-2062 ± 184	$19.31^{+18.58}_{-12.88}$	352^{+5}_{-5}	2249^{+698}_{-303}	189^{+1540}_{-143}

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

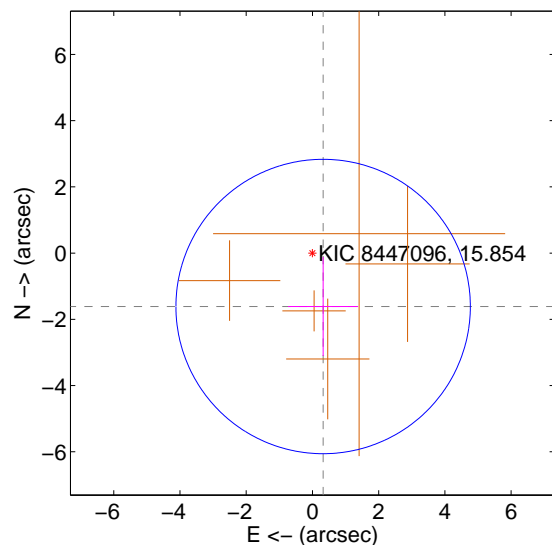
Supplemental centroid analysis for 008447096-04. Kepler magnitude: 15.85. Transit SNR 8.16

There are 0 quarters with good PRF difference image offsets

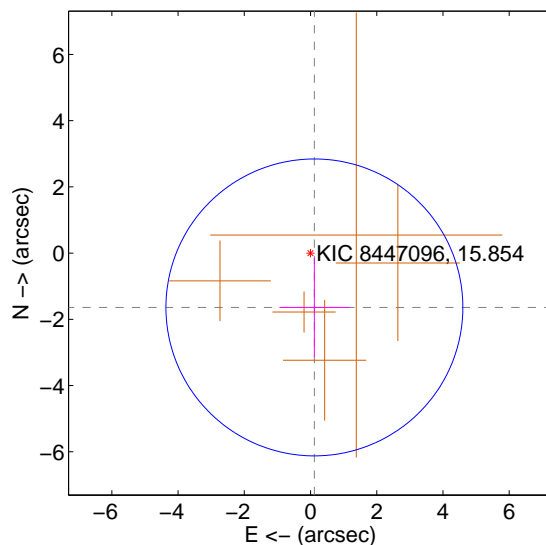
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.645 ± 1.482	1.11	-0.323 ± 1.057	-1.613 ± 1.497
PRF-fit source offset from KIC position	1.645 ± 1.495	1.10	-0.117 ± 1.057	-1.641 ± 1.497
photometric centroid source offset	0.36 ± 0.67	0.54	-0.35 ± 0.68	0.10 ± 0.65

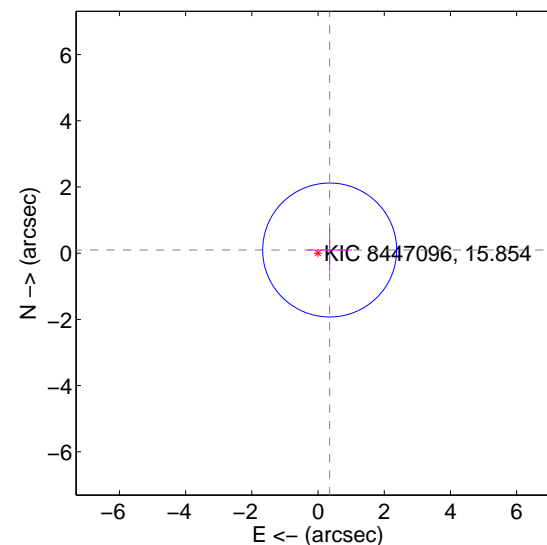
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

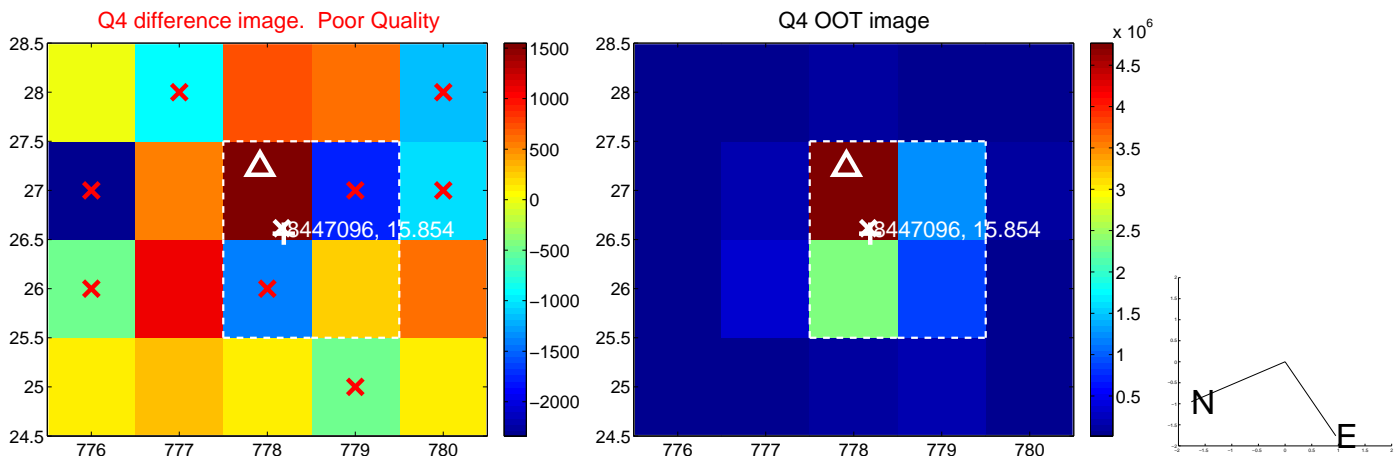
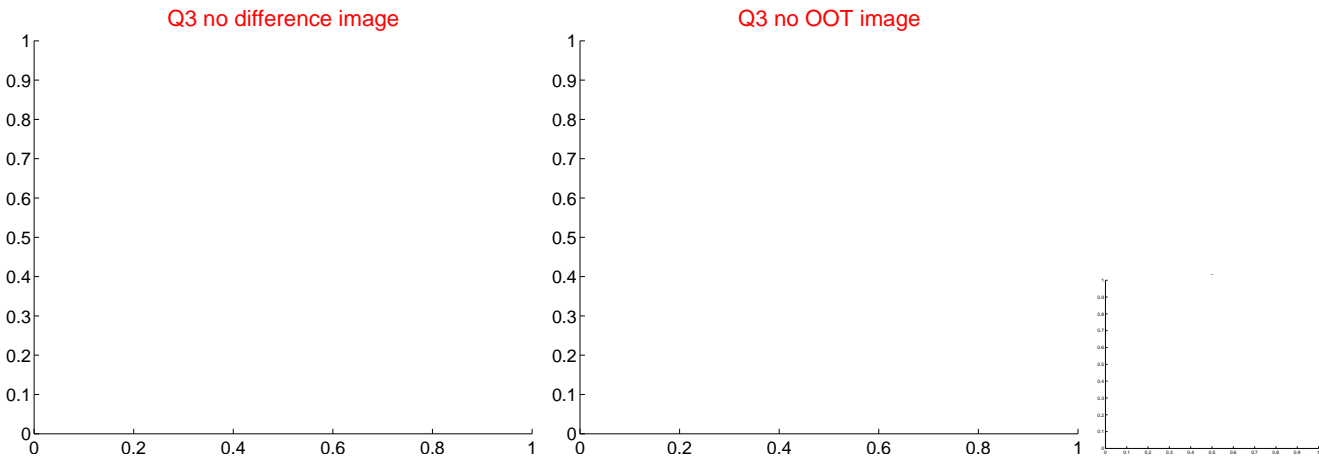
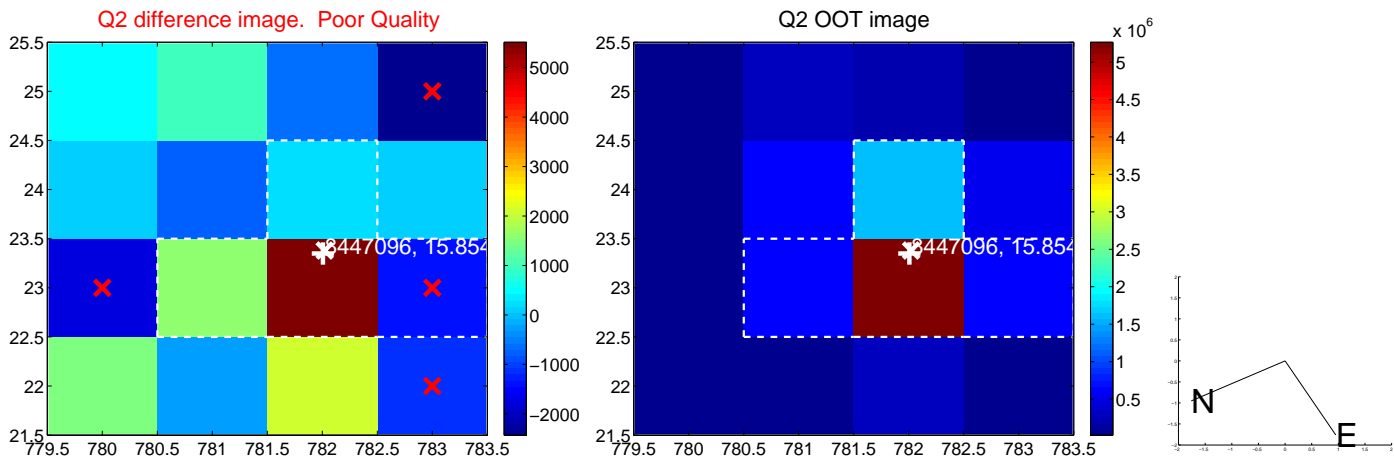
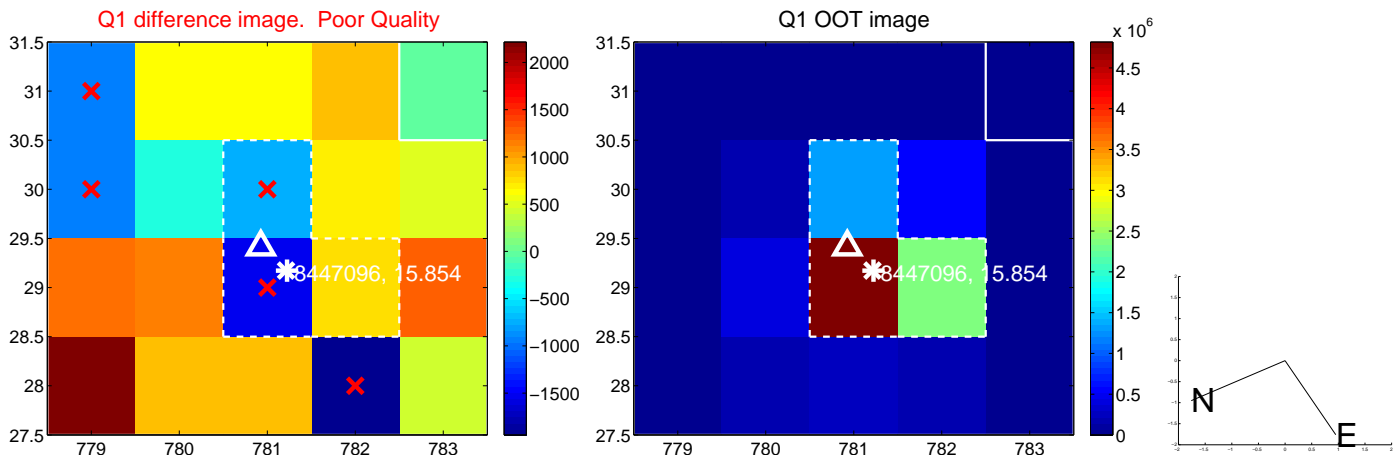


offset from photometric centroids

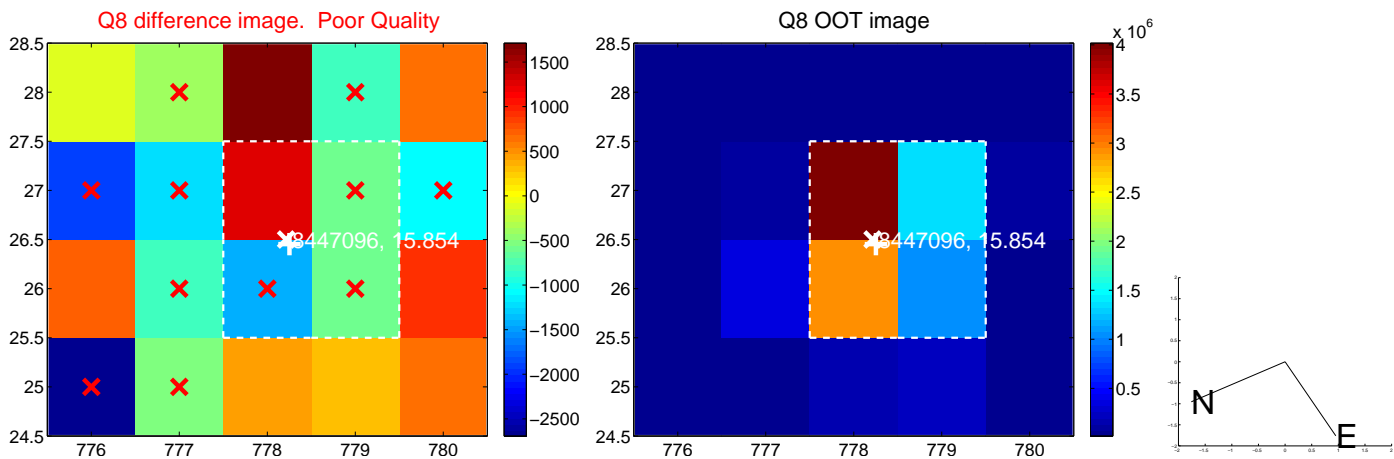
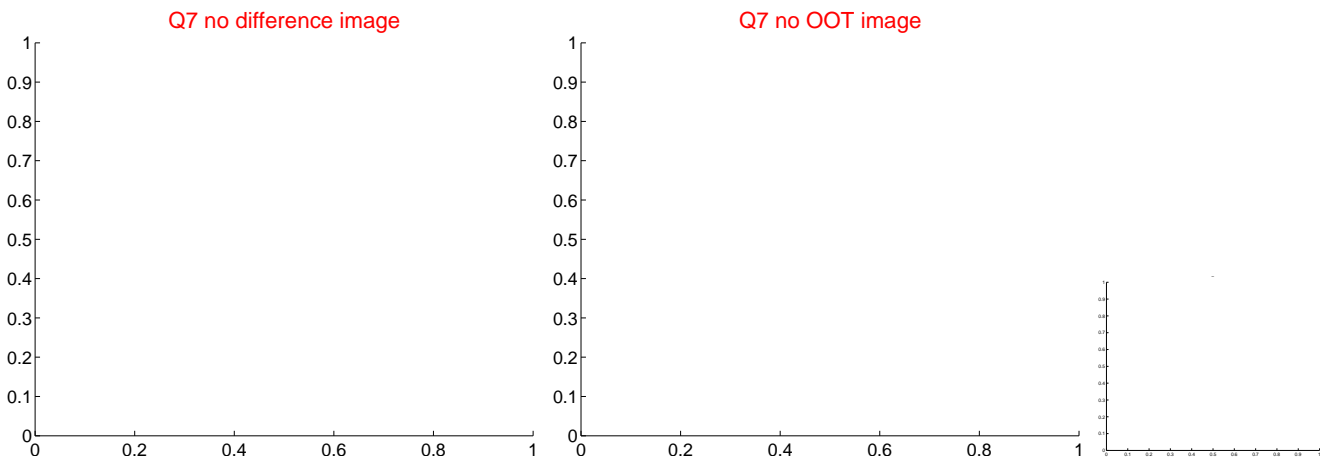
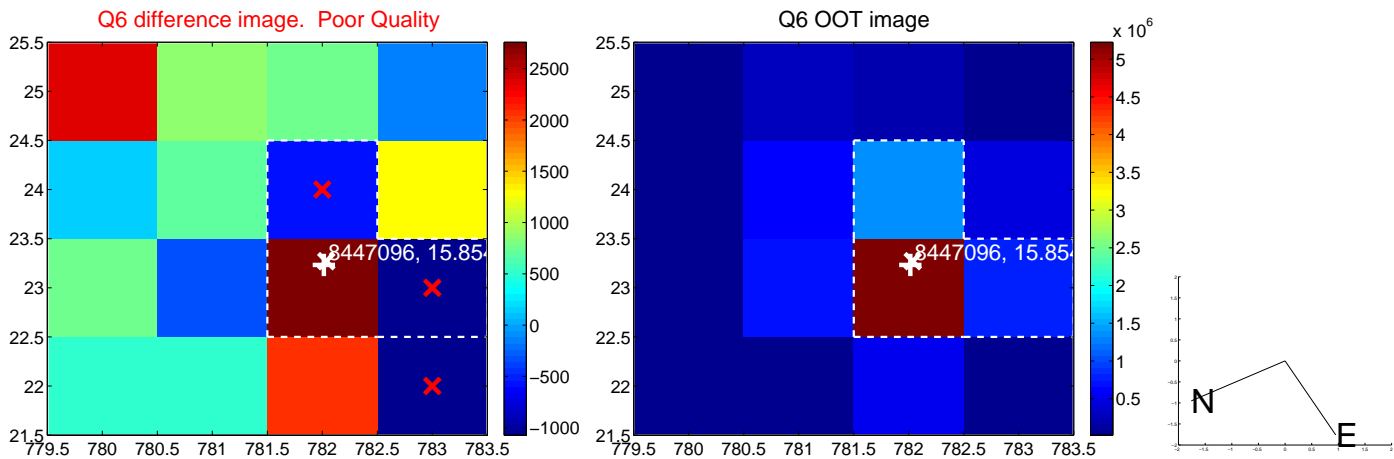
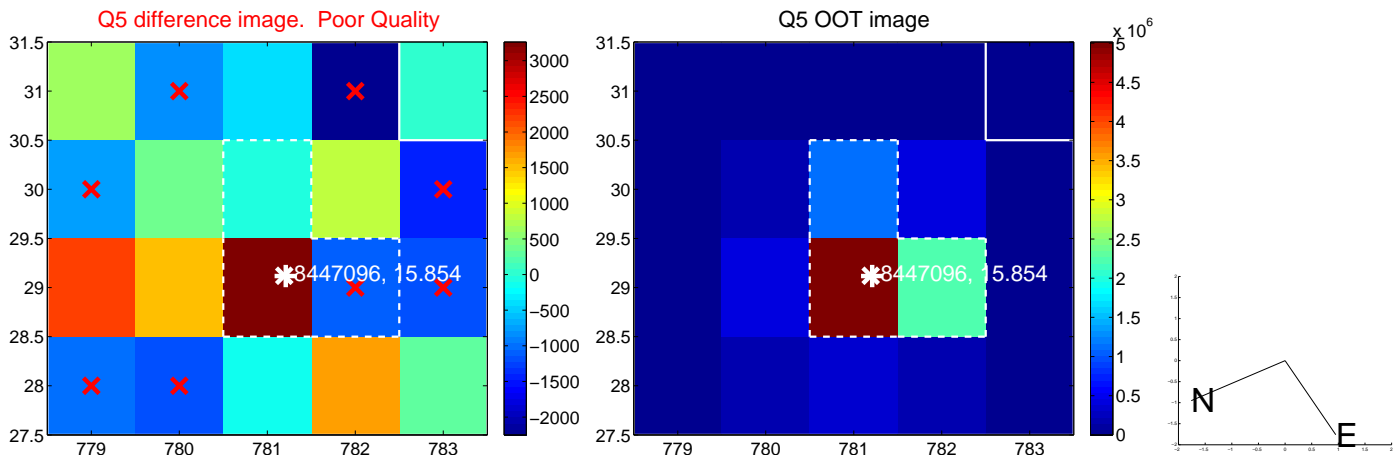


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

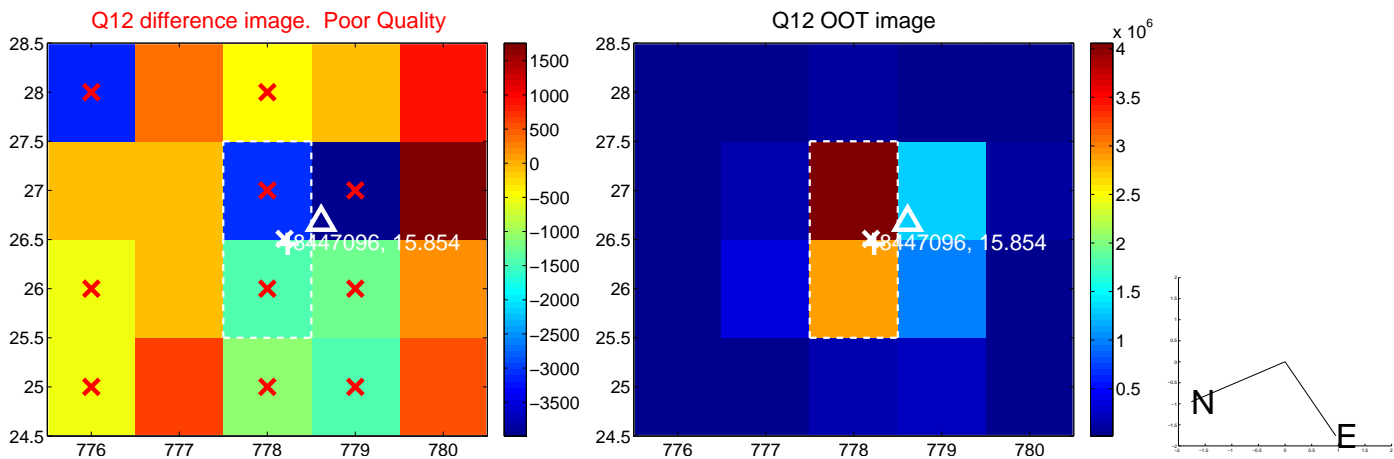
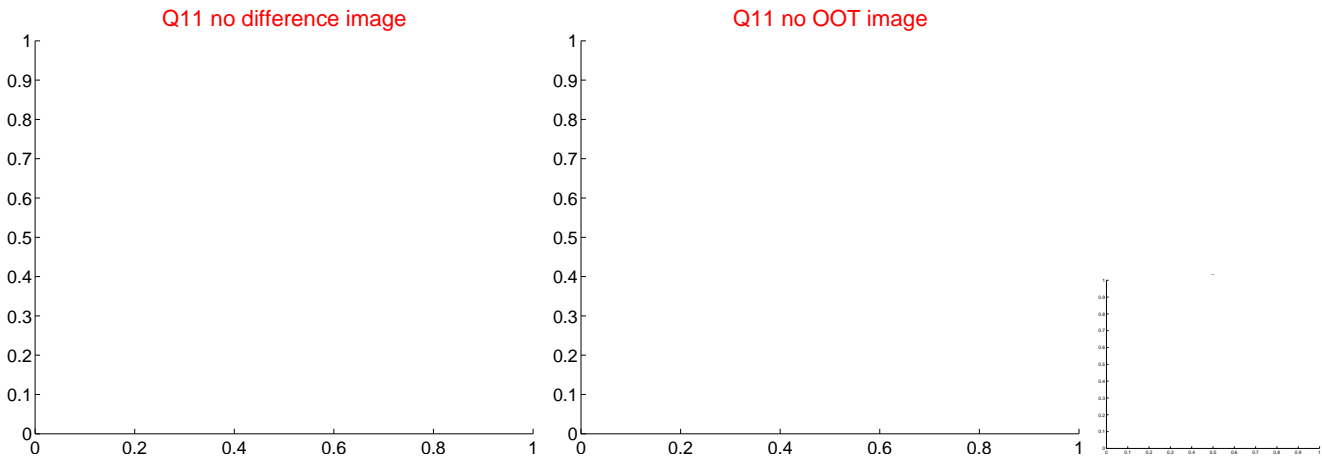
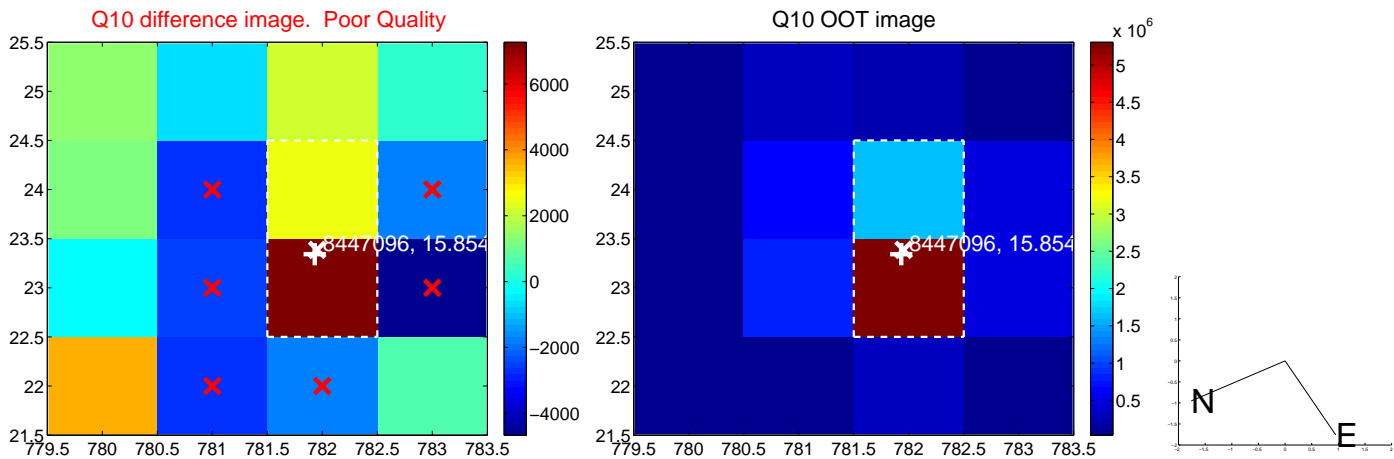
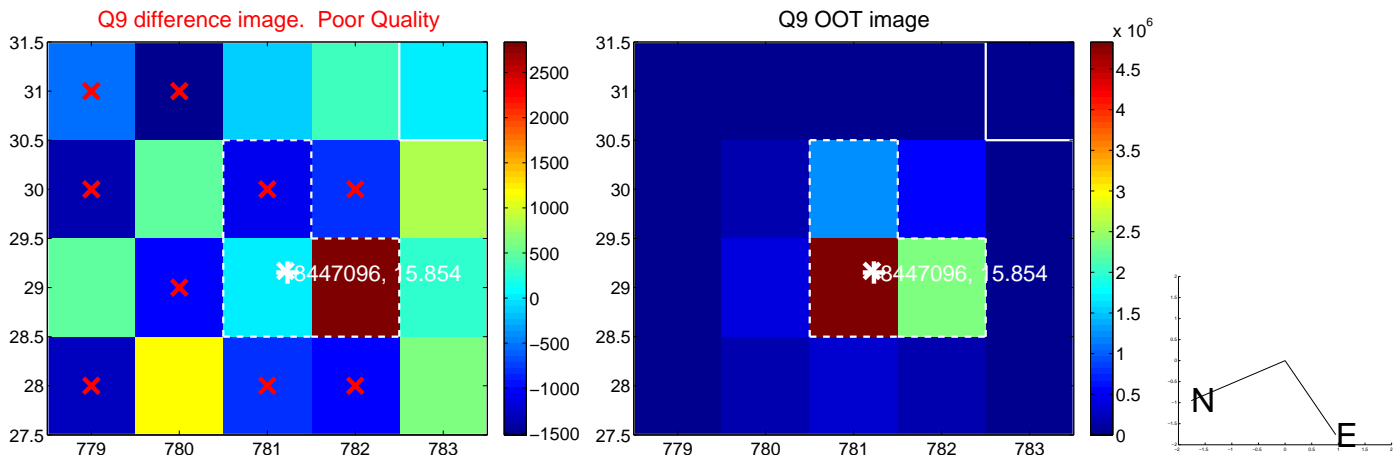
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



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

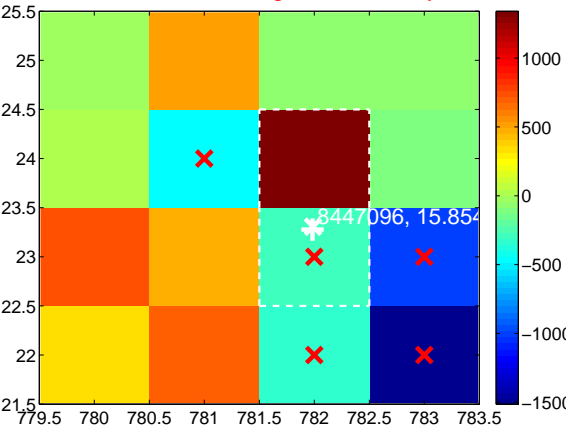
Q13 no difference image



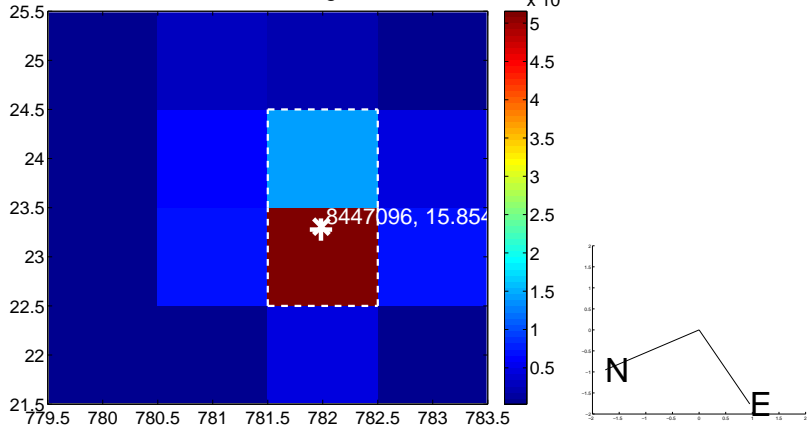
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



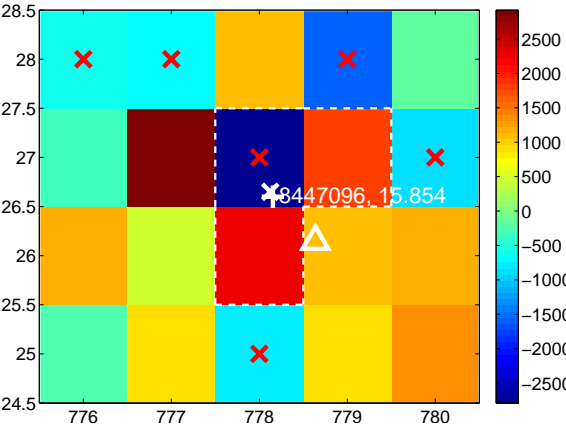
Q15 no difference image



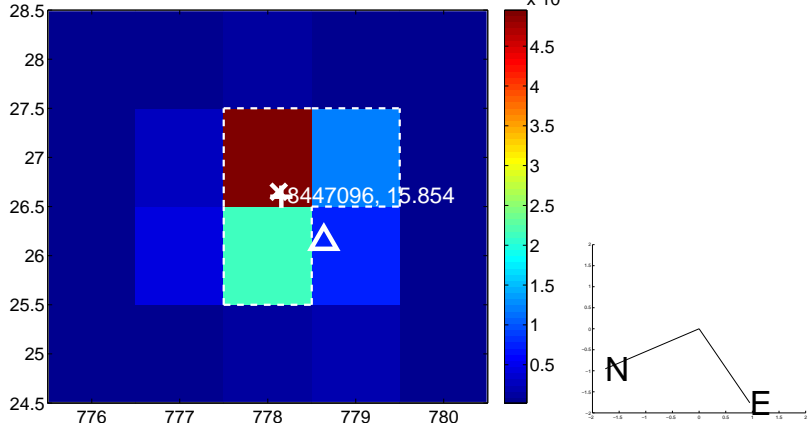
Q15 no OOT image



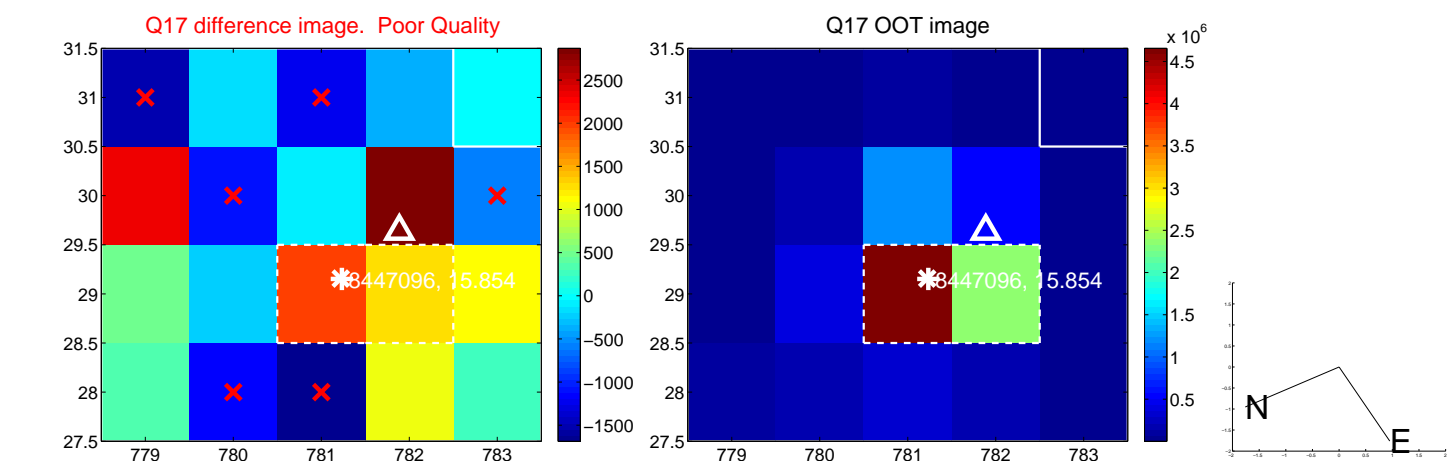
Q16 difference image. Poor Quality



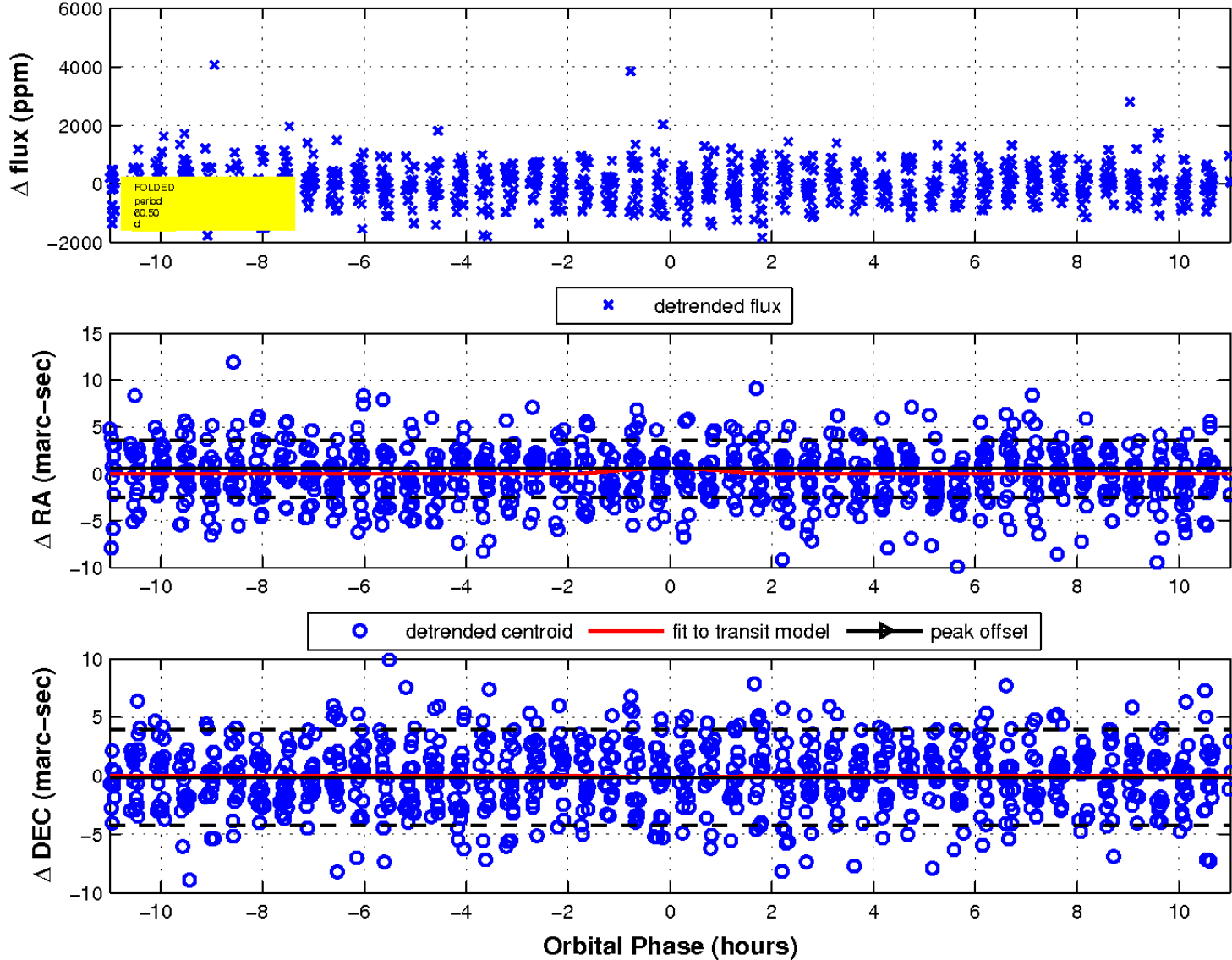
Q16 OOT image



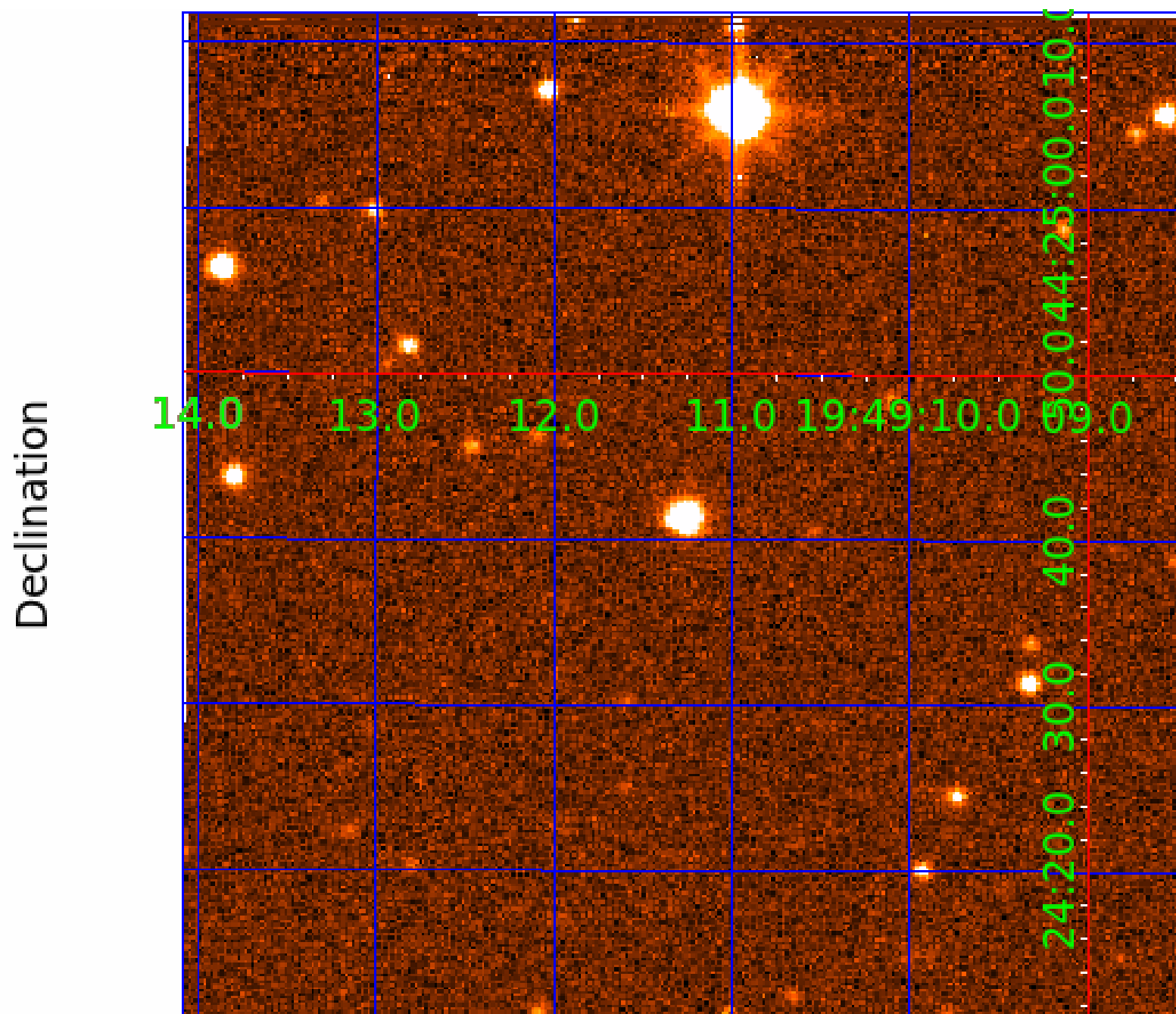
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 4 of 5



UKIRT Image



KIC 008447096

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})
008447096-01	OBS	No	1.236976	131.660714	46.3	8.521	7.3	5.0	0.53	3898	0.35	168.77
008447096-02	OBS	No	34.574835	162.047963	1667.4	3.462	17.5	11.5	0.53	3898	2.26	1.99
008447096-03	OBS	No	35.593520	151.979182	903.3	3.720	8.4	7.8	0.53	3898	1.68	1.91
008447096-04	OBS	No	60.504012	137.341364	1567.5	3.672	9.9	8.2	0.53	3898	4.05	0.94
008447096-05	OBS	No	35.671231	147.707007	937.9	3.461	8.0	7.5	0.53	3898	1.74	1.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008447096-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008447096-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008447096-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008447096-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

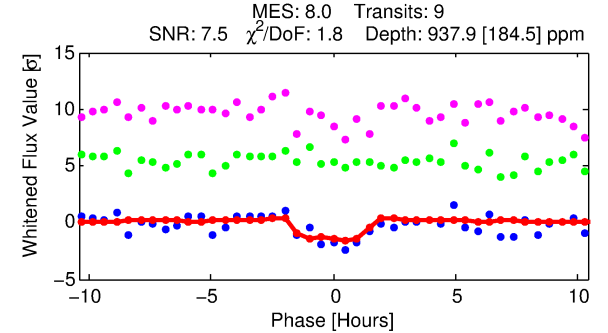
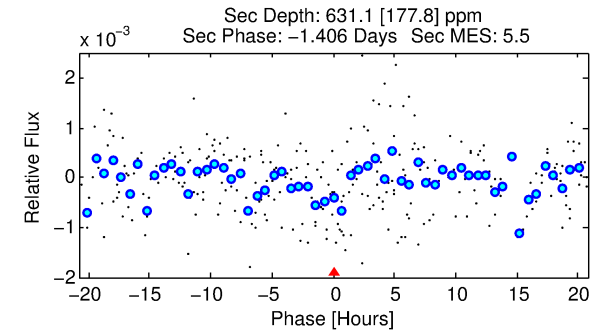
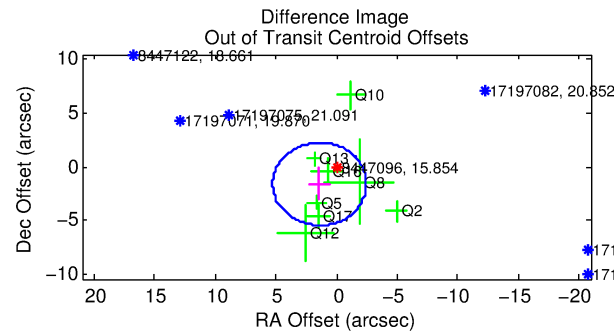
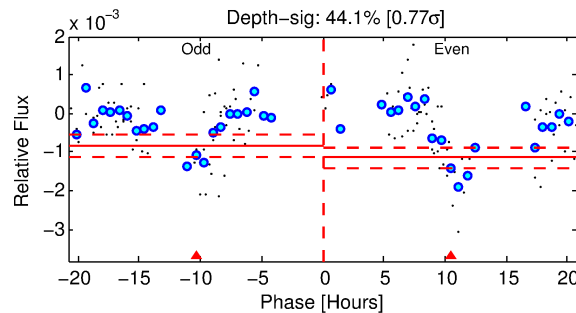
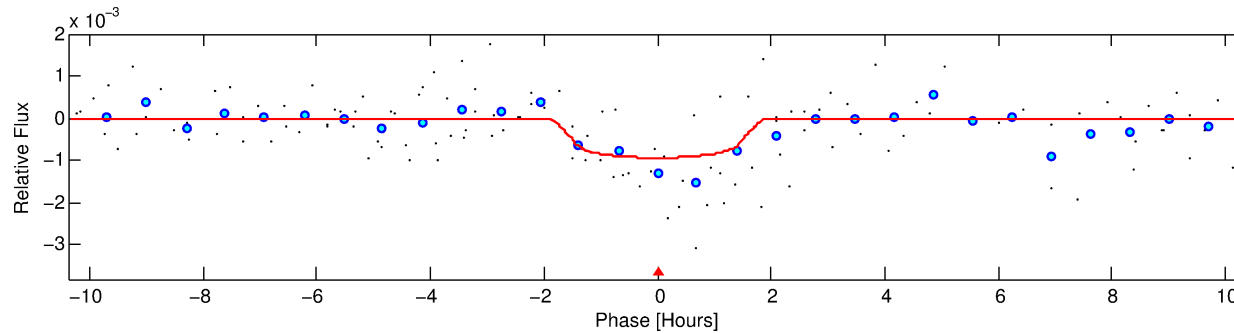
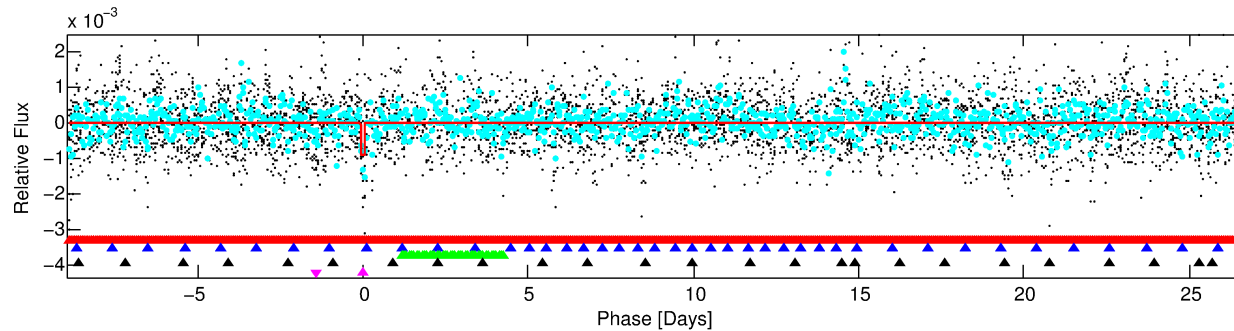
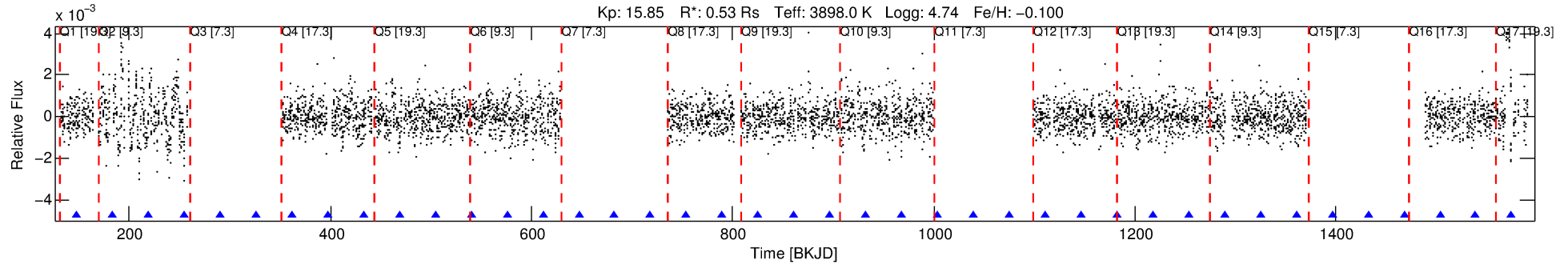
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008447096-05

No Significant Match Found

DV One-Page Summary

KIC: 8447096 Candidate: 5 of 5 Period: 35.671 d



DV Fit Results:

Period = 35.67123 [0.00060] d
Epoch = 147.7070 [0.0157] BKJD
Rp/R* = 0.0301 [0.0590]
a/R* = 58.71 [497.57]
b = 0.71 [5.96]
Seff = 1.91 [0.14]
Teq = 300 [5] K
Rp = 1.74 [3.42] Re
a = 0.1745 [0.0062] AU
Ag = 3498.31 [13782.27] [0.25 σ]
Teffp = 3564 [3510] K [0.93 σ]

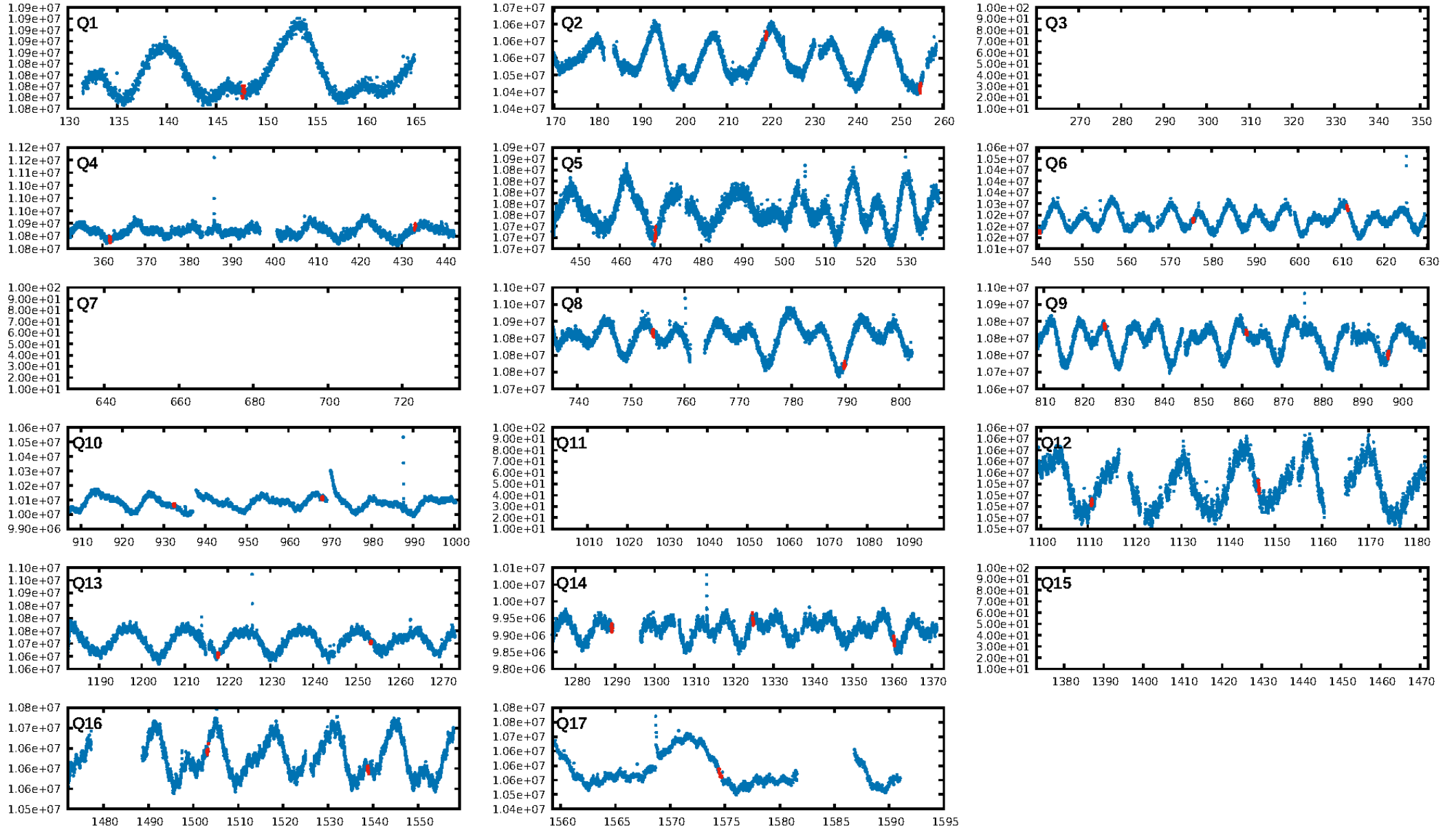
DV Diagnostic Results:

ShortPeriod-sig: 28.6% [0.37 σ]
LongPeriod-sig: 100.0% [118.11 σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 98.9%
Bootstrap-pfa: 3.82e-09
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 9.434
Centroid-sig: 31.3%
Centroid-so: 0.864 arcsec [1.12 σ]
OotOffset-rm: 2.143 arcsec [1.66 σ]
OotOffset-st: 2/0/3/3 [8]
KicOffset-rm: 2.216 arcsec [1.65 σ]
KicOffset-st: 2/0/3/3 [8]
DiffImageQuality-fgm: 0.12 [1/8]
DiffImageOverlap-fno: 0.38 [5/13]

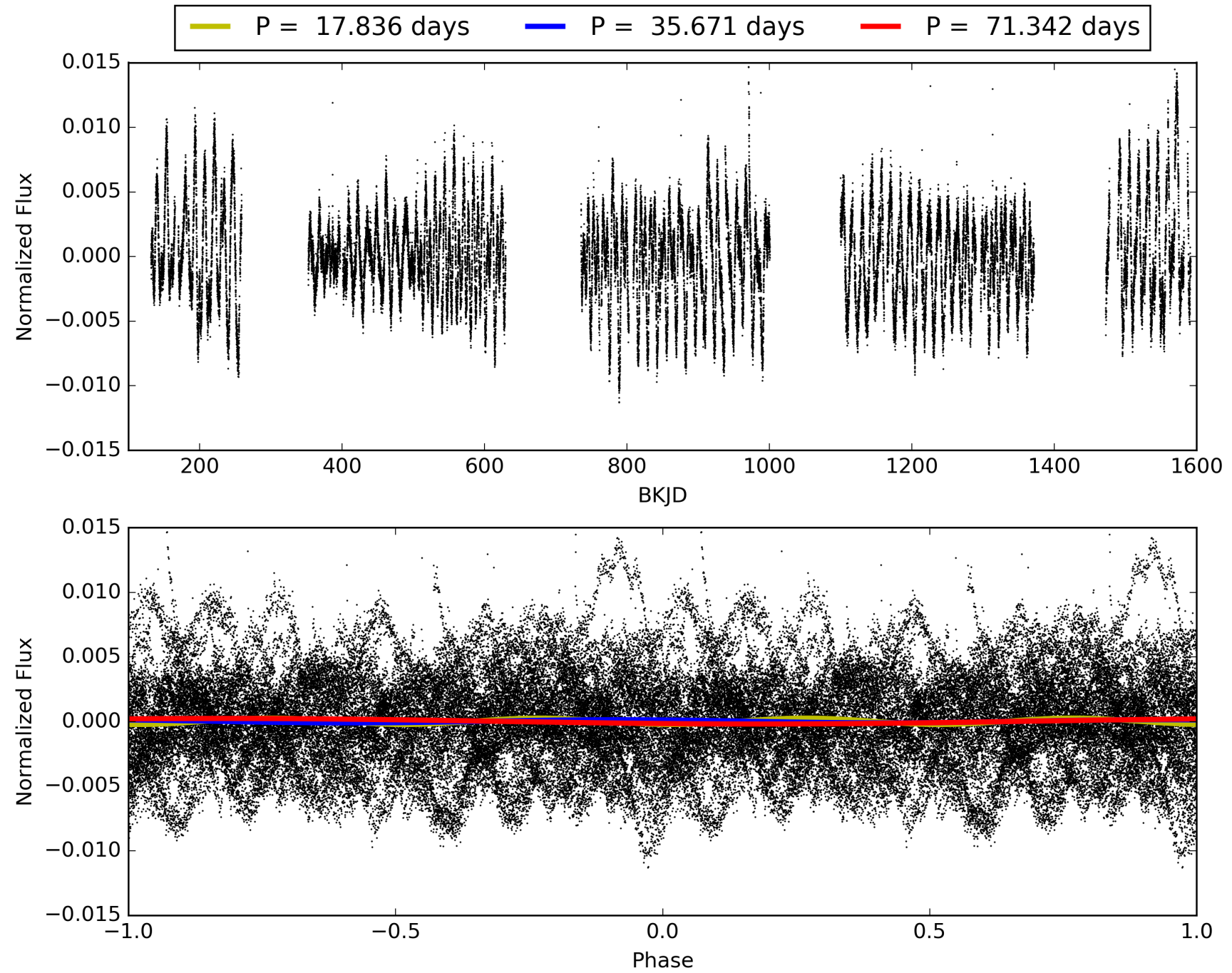
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:09:59 Z

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

TCE 008447096-05, PDC Light Curves

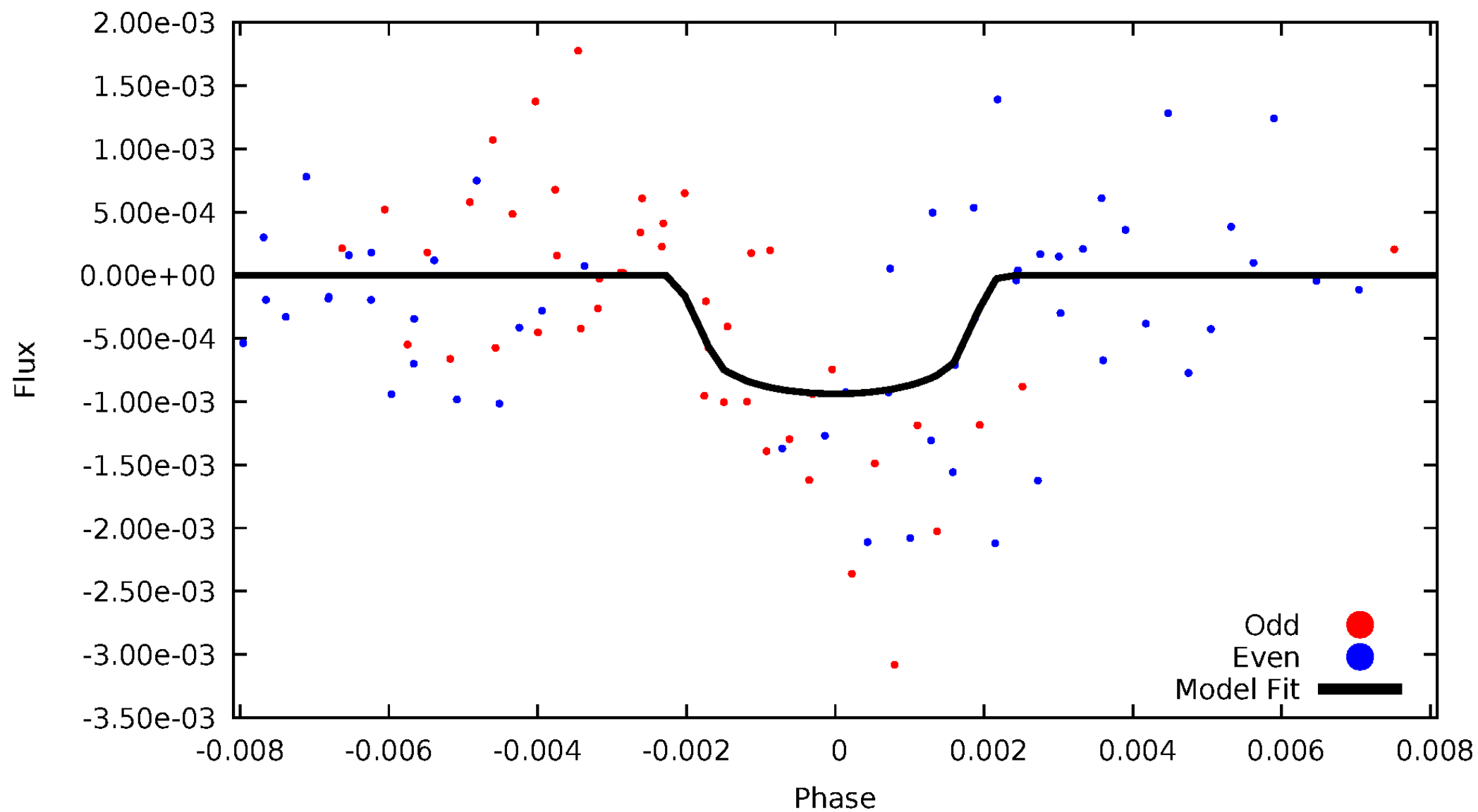


TCE 008447096-05



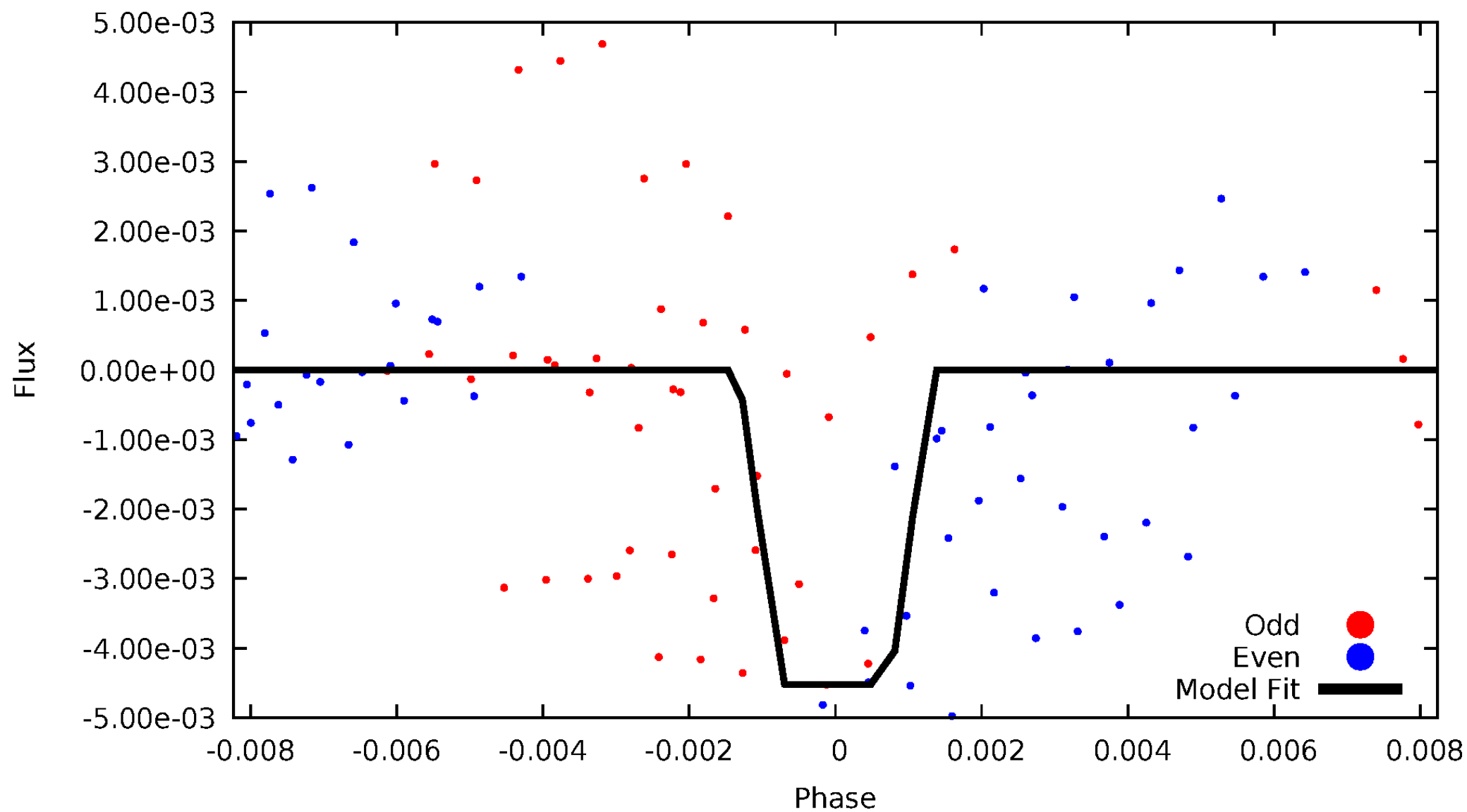
DV Odd/Even

TCE 008447096-05



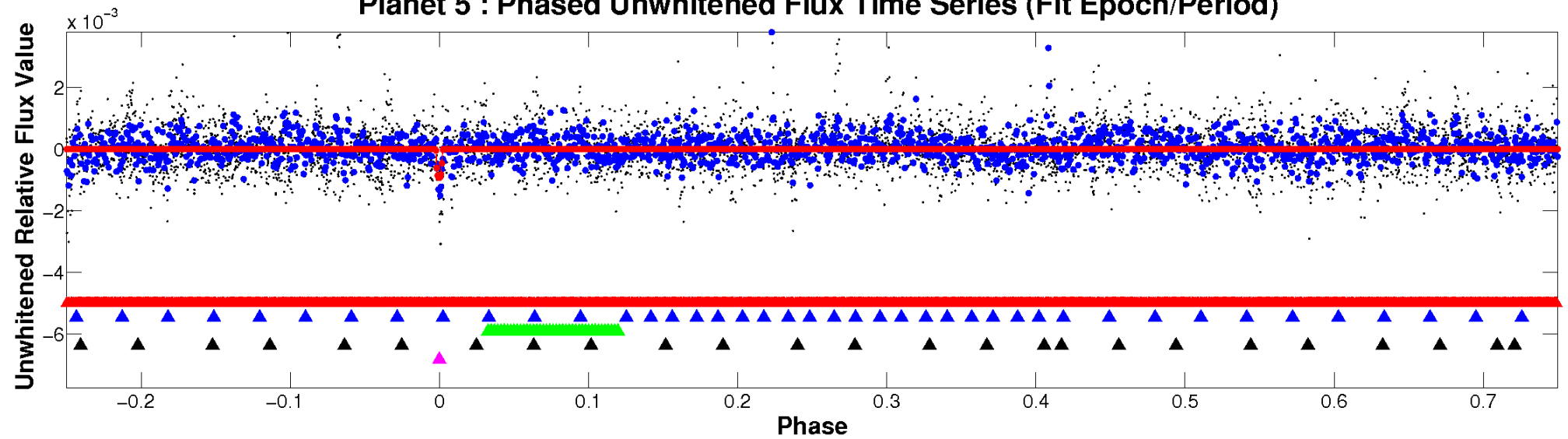
ALT Odd/Even

TCE 008447096-05

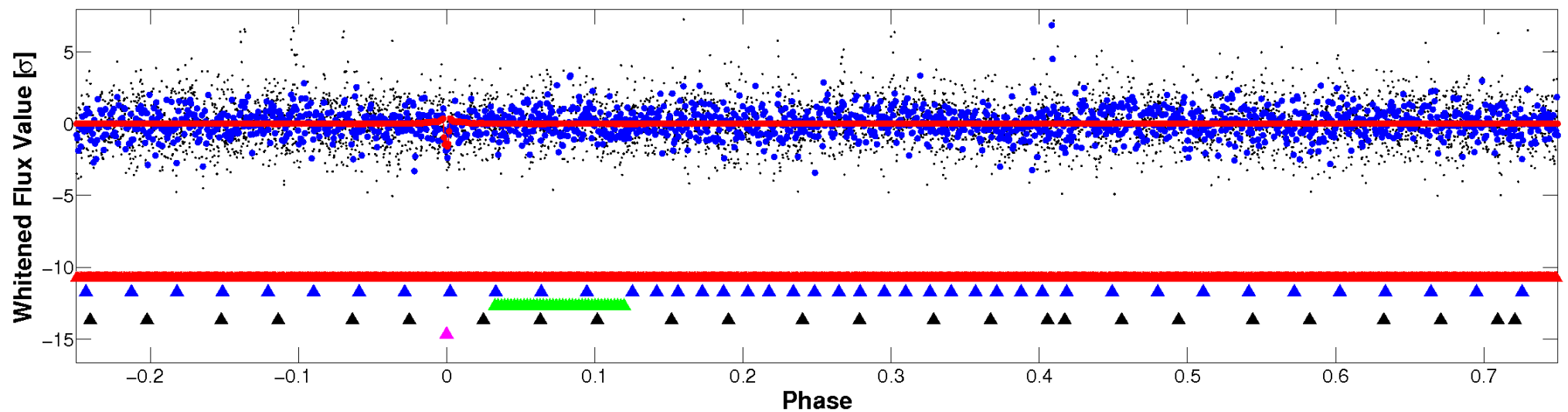


Non-Whitened Vs. Whitened Light Curve

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

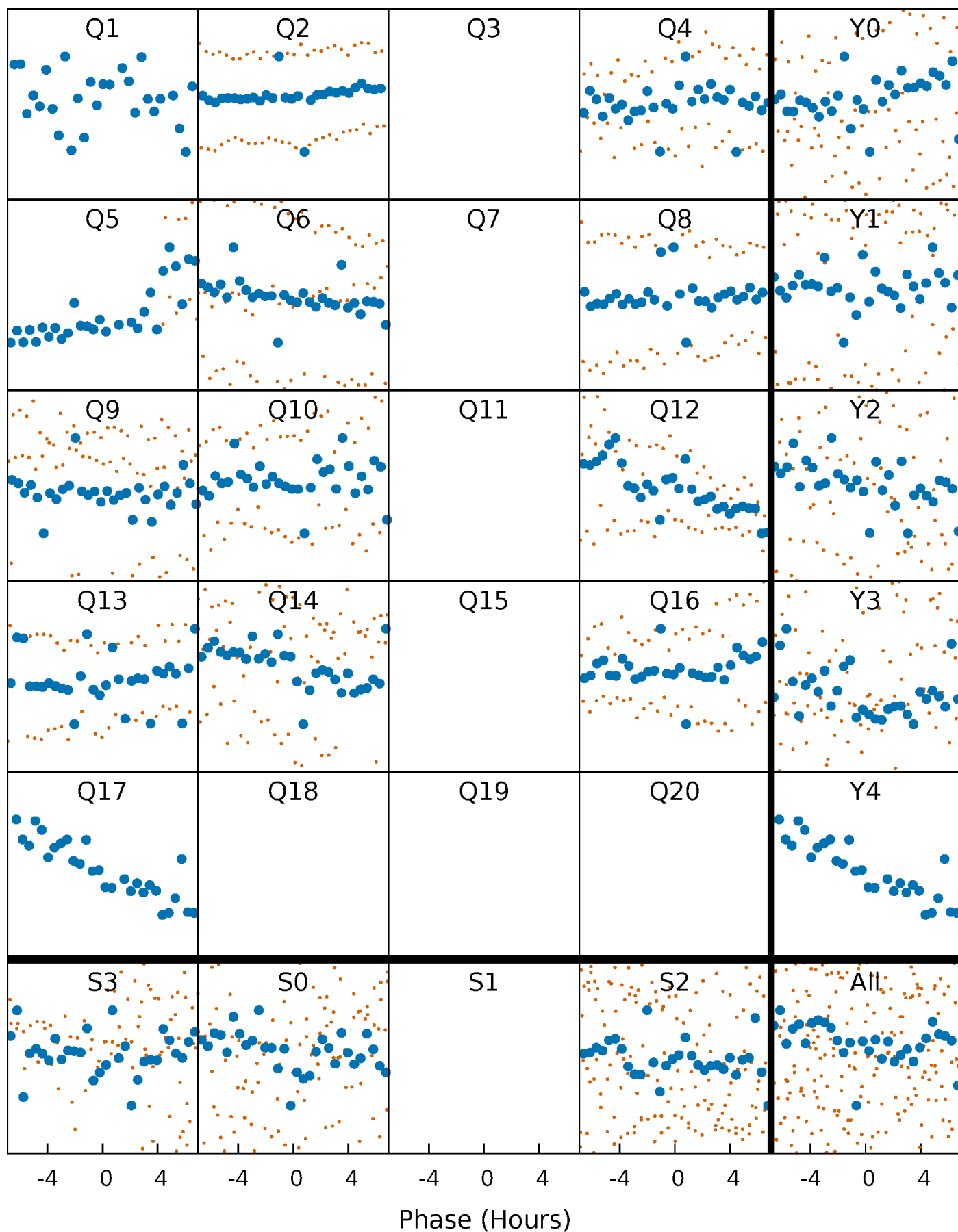


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



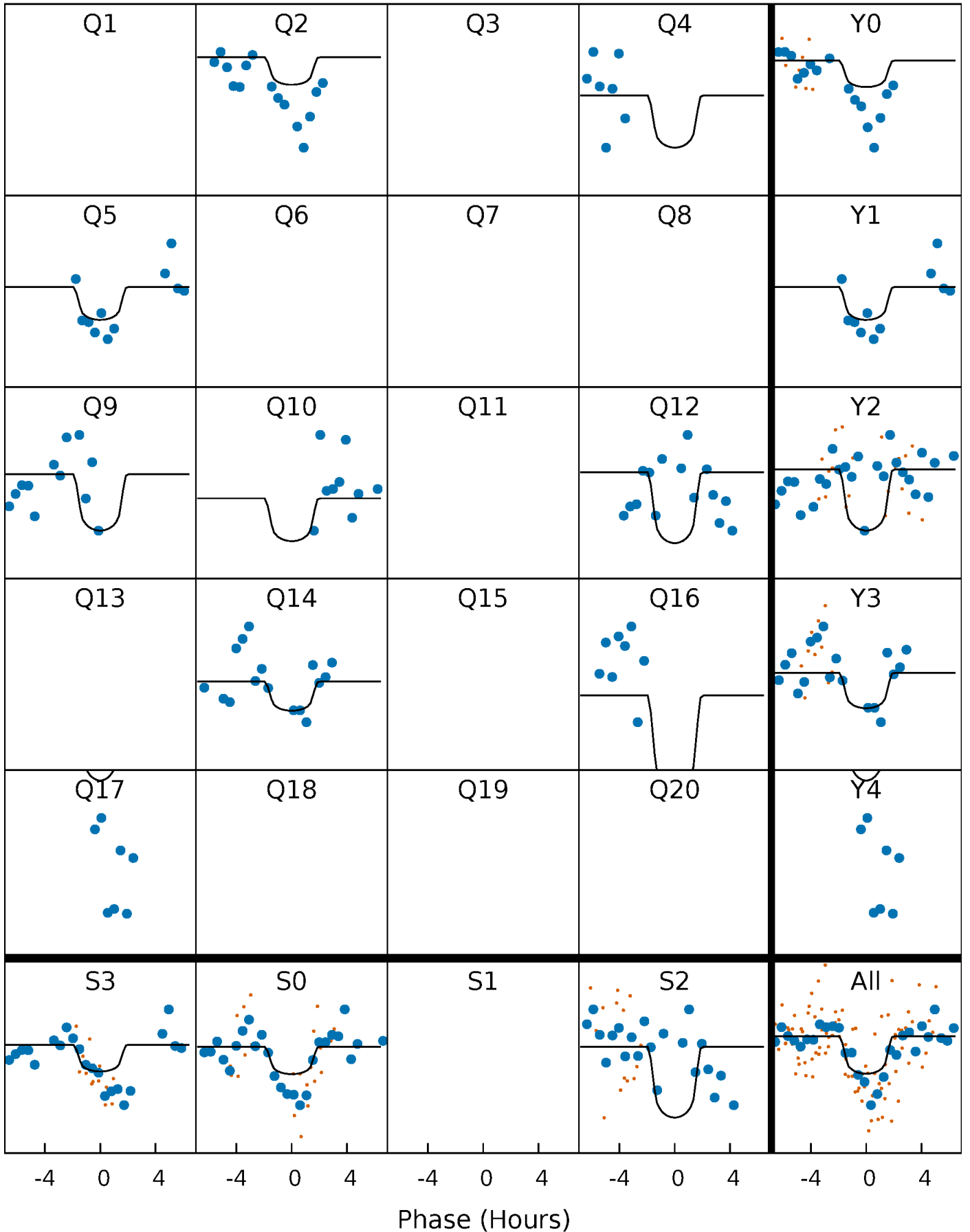
PDC Quarter-Phased Transit Curves

TCE 008447096-05 $P = 35.671231$ Days $T_0 = 147.707008$ (BKJD)



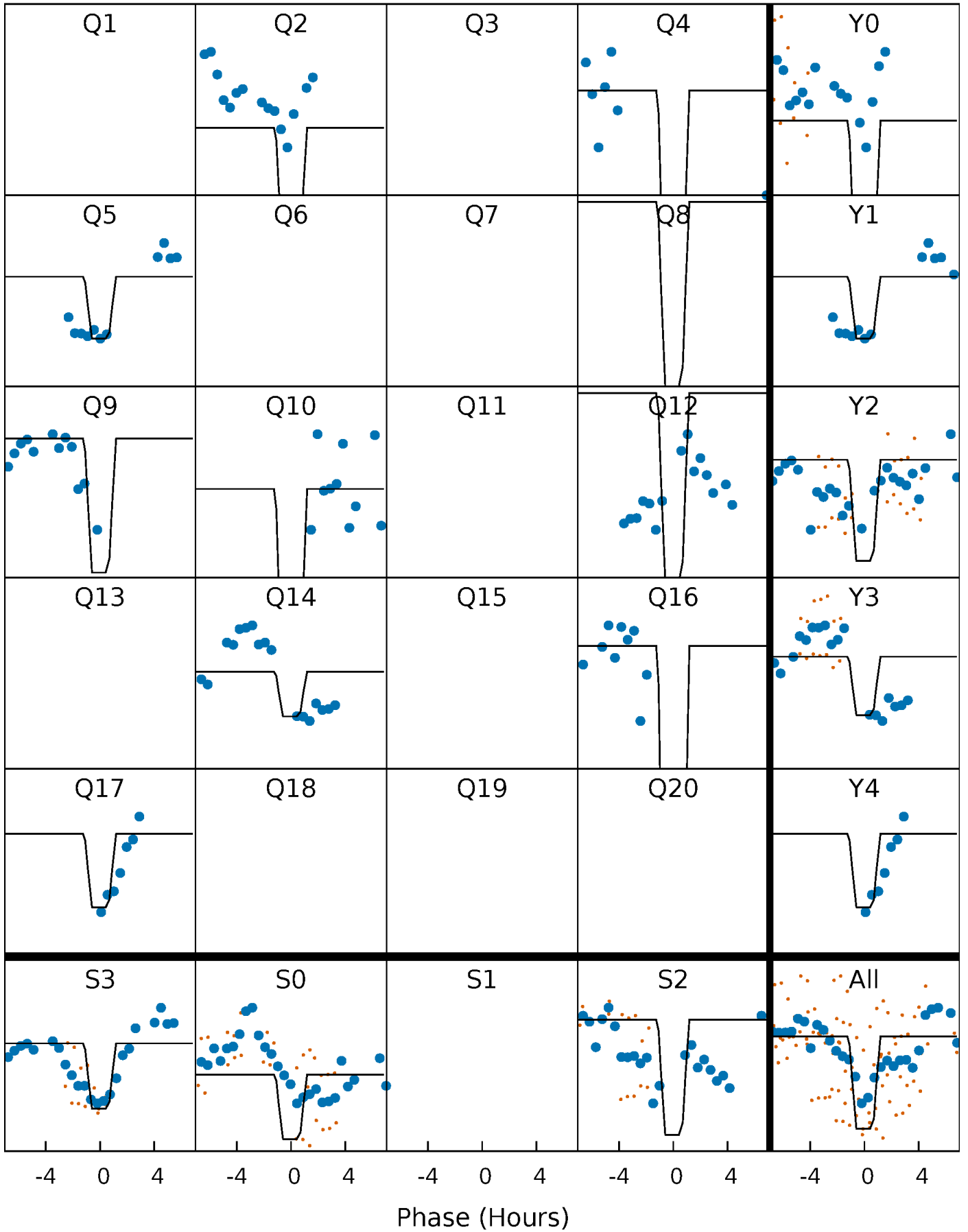
DV Quarter-Phased Transit Curves

TCE 008447096-05 P= 35.671231 Days $T_0=147.707008$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

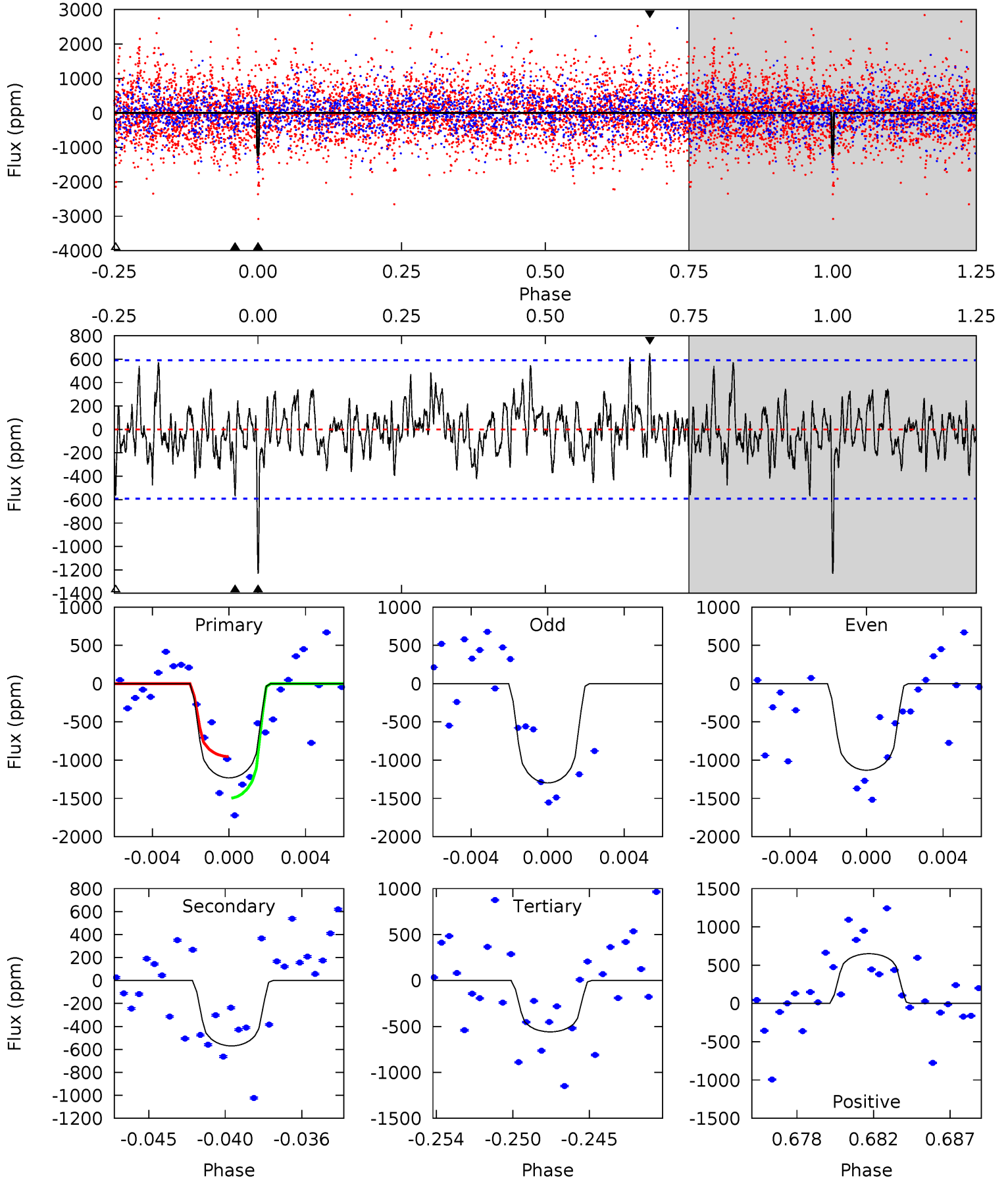
TCE 008447096-05 P= 35.669857 Days $T_0=147.742774$ (BKJD)



DV Model-Shift Uniqueness Test

008447096-05, P = 35.671231 Days, E = 112.035777 Days

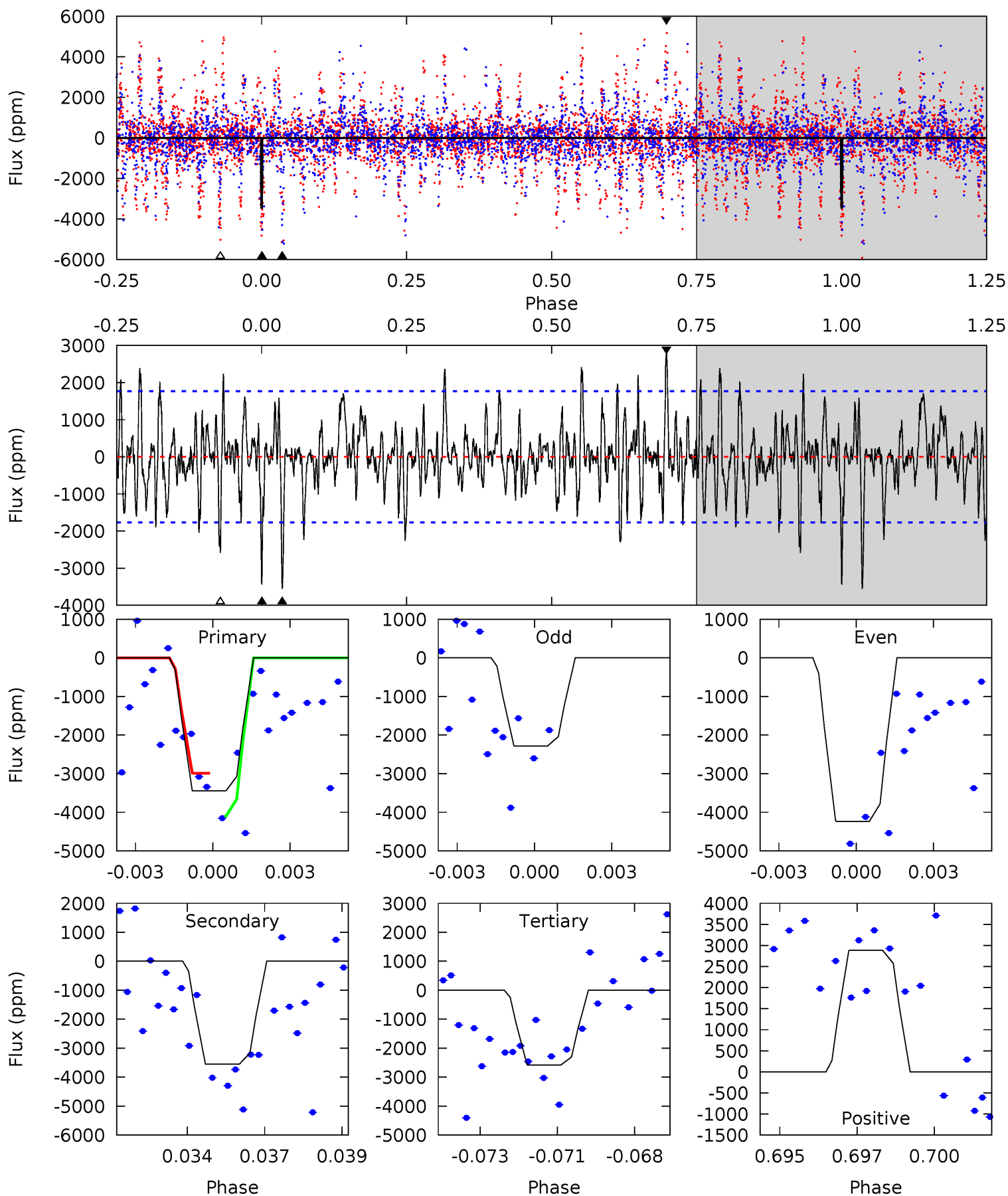
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	4.99	4.90	5.69	5.18	2.84	1.61	5.88	5.09	0.09	-0.70	0.70	0.98	0.35	2.38



Alt Model-Shift Uniqueness Test

008447096-05, P = 35.669857 Days, E = 112.072917 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	10.6	7.71	8.61	5.28	3.01	2.25	2.57	1.67	2.91	2.01	3.11	0.79	0.45	1.72



Stellar Parameters For KIC 008447096

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3898^{+46}_{-50}	$4.735^{+0.017}_{-0.027}$	$-0.100^{+0.100}_{-0.100}$	$0.530^{+0.023}_{-0.021}$	$0.556^{+0.020}_{-0.027}$	$5.264^{+0.402}_{-0.550}$
	+1%/-1%	+0%/-1%	+100%/-100%	+4%/-4%	+4%/-5%	+8%/-10%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 008447096-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-570 ± 114	$3.10^{+3.07}_{-1.98}$	420^{+7}_{-6}	3031^{+1211}_{-518}	1005^{+6938}_{-763}
Alt.	-3556 ± 335	$4.41^{+3.16}_{-2.61}$	420^{+6}_{-6}	3620^{+1370}_{-556}	3097^{+14279}_{-2055}

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 $A_{obs} \gg 1.0$

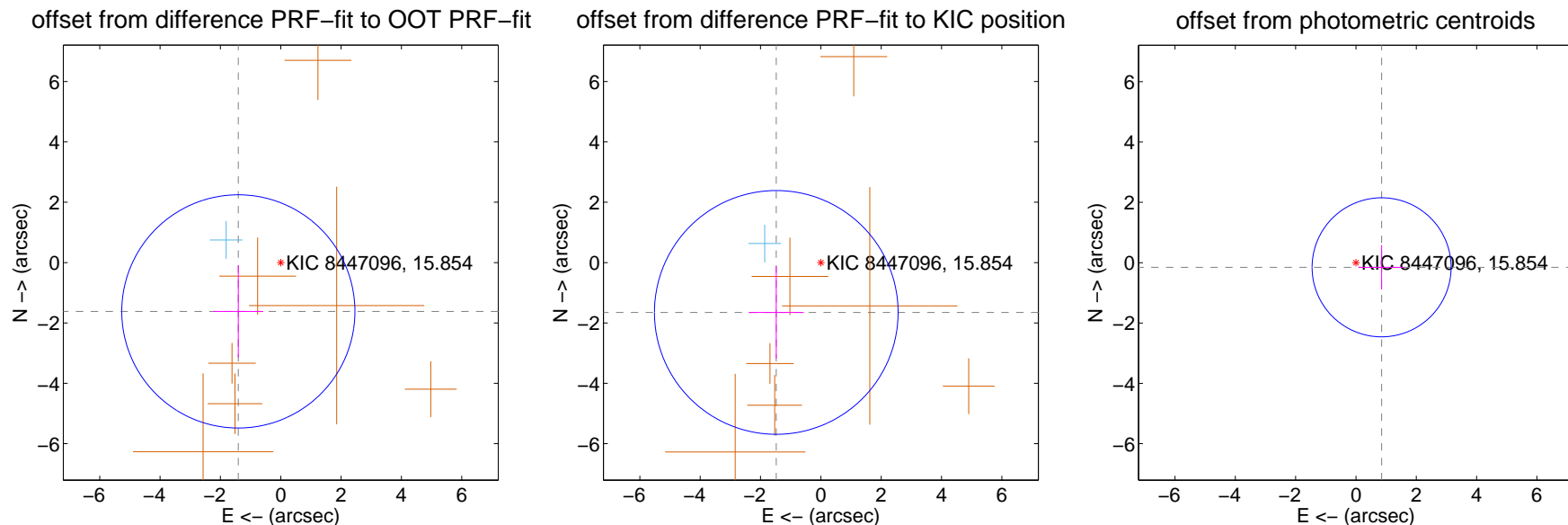
DV Centroid Data

Supplemental centroid analysis for 008447096-05. Kepler magnitude: 15.85. Transit SNR 7.53

There are 1 quarters with good PRF difference image offsets

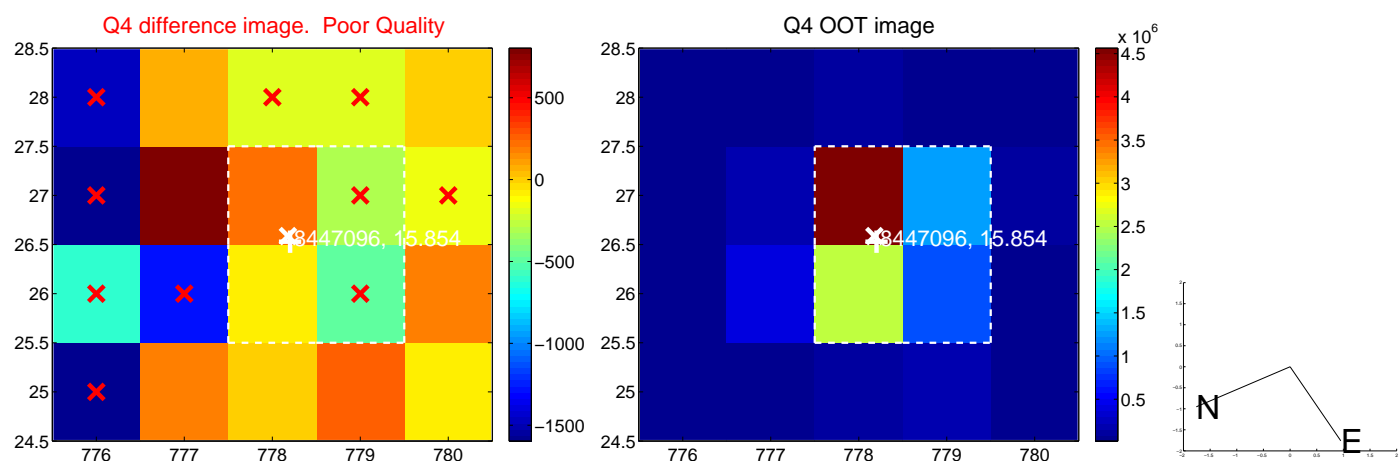
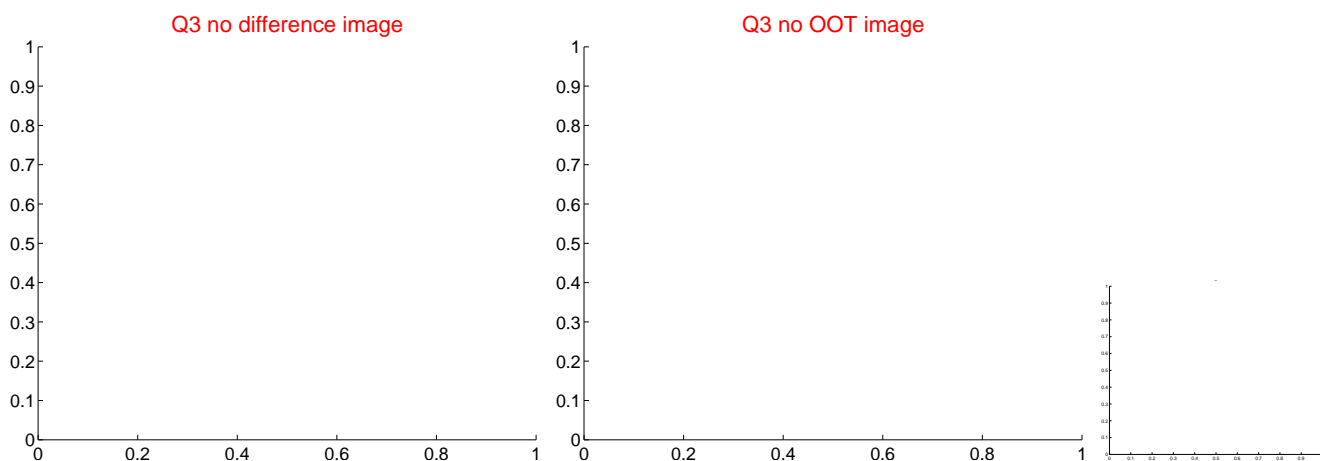
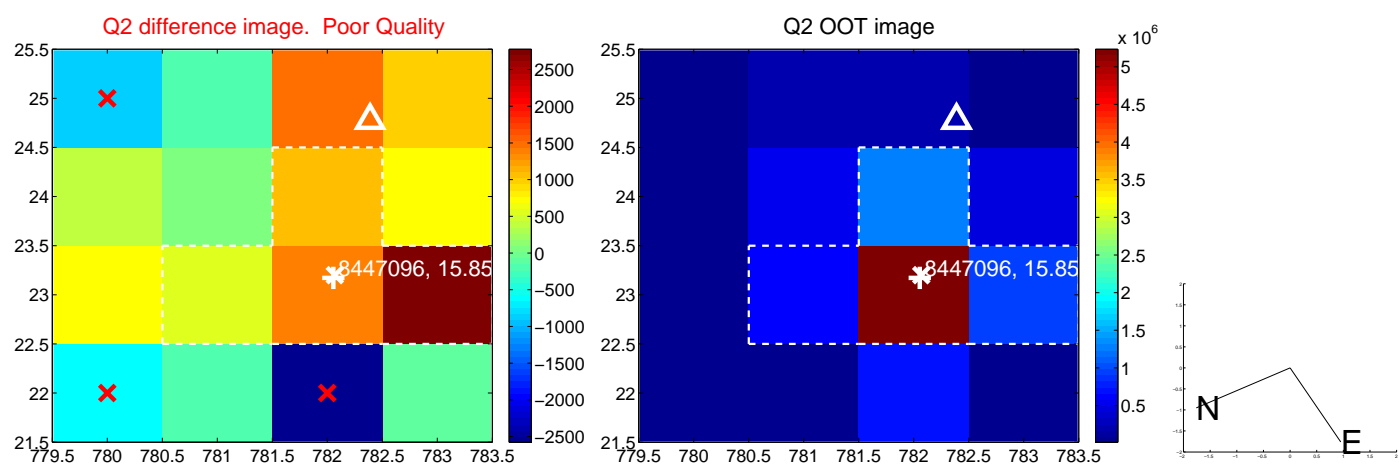
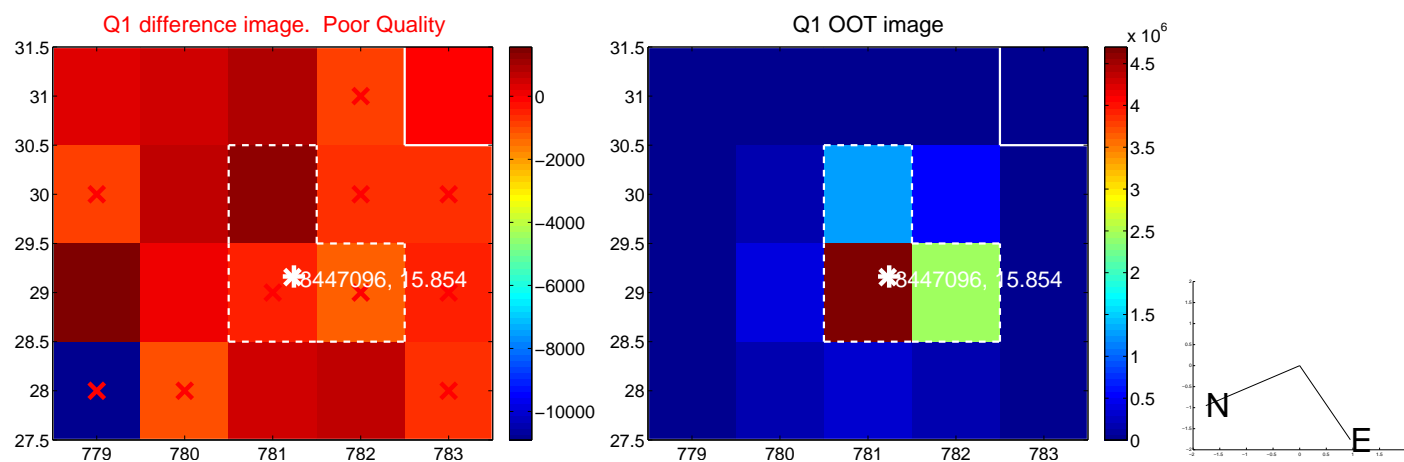
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.143 ± 1.288	1.66	1.406 ± 0.827	-1.618 ± 1.527
PRF-fit source offset from KIC position	2.216 ± 1.346	1.65	1.478 ± 0.915	-1.651 ± 1.530
photometric centroid source offset	0.86 ± 0.77	1.12	-0.85 ± 0.77	-0.15 ± 0.74

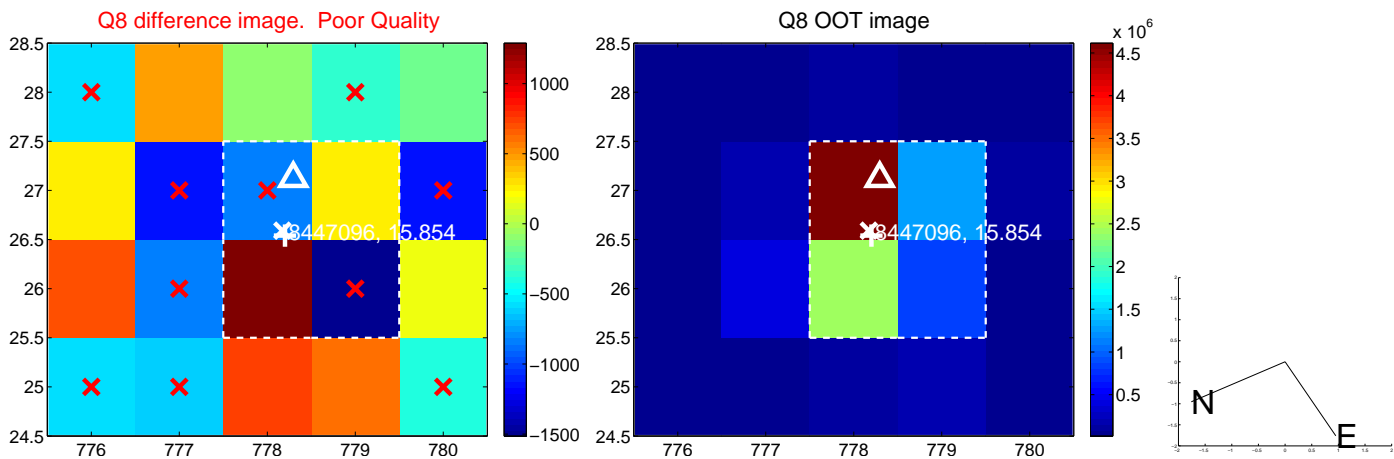
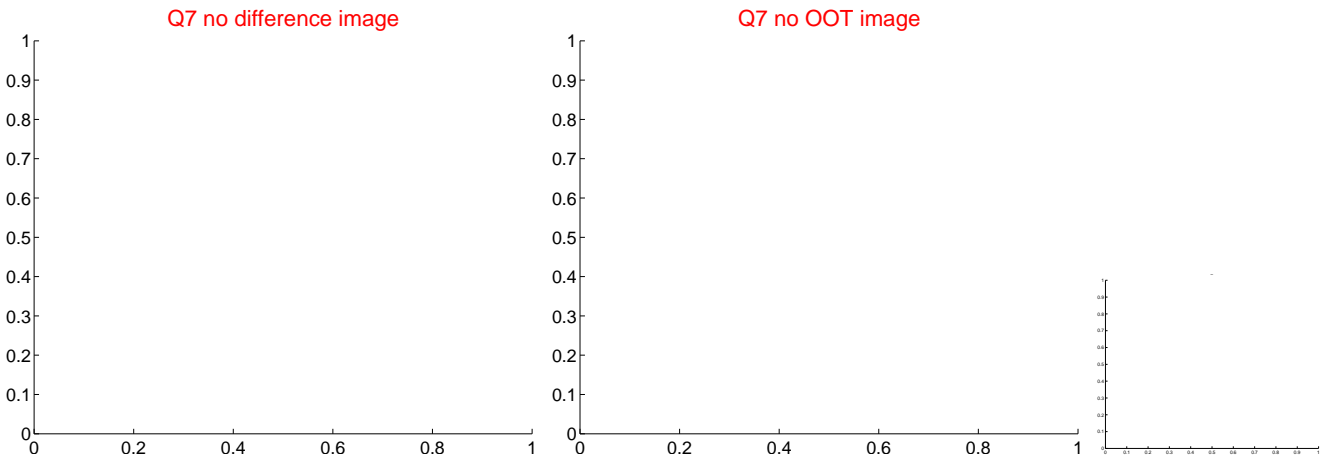
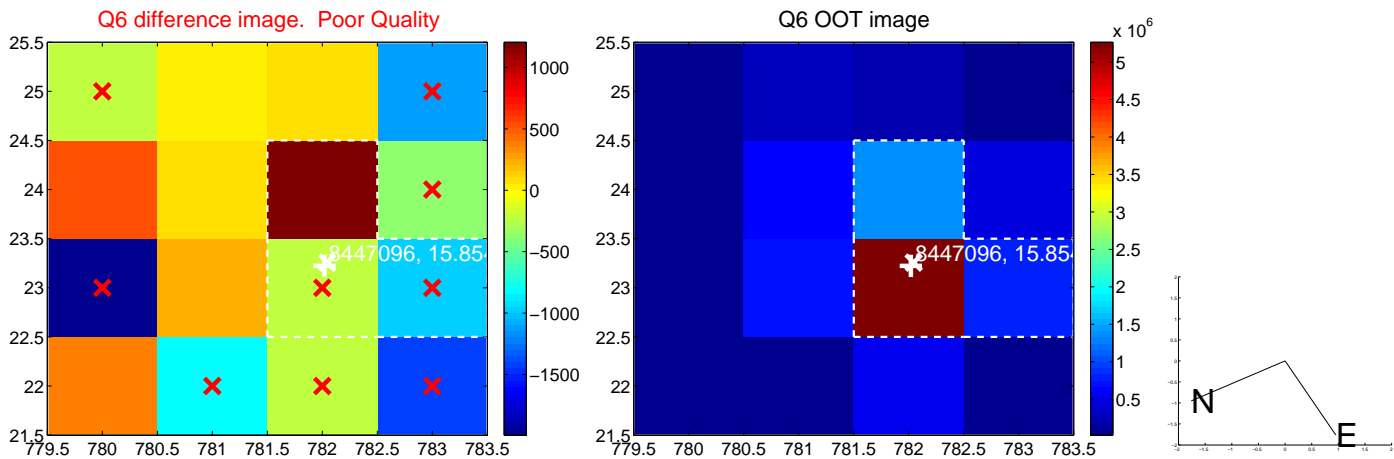
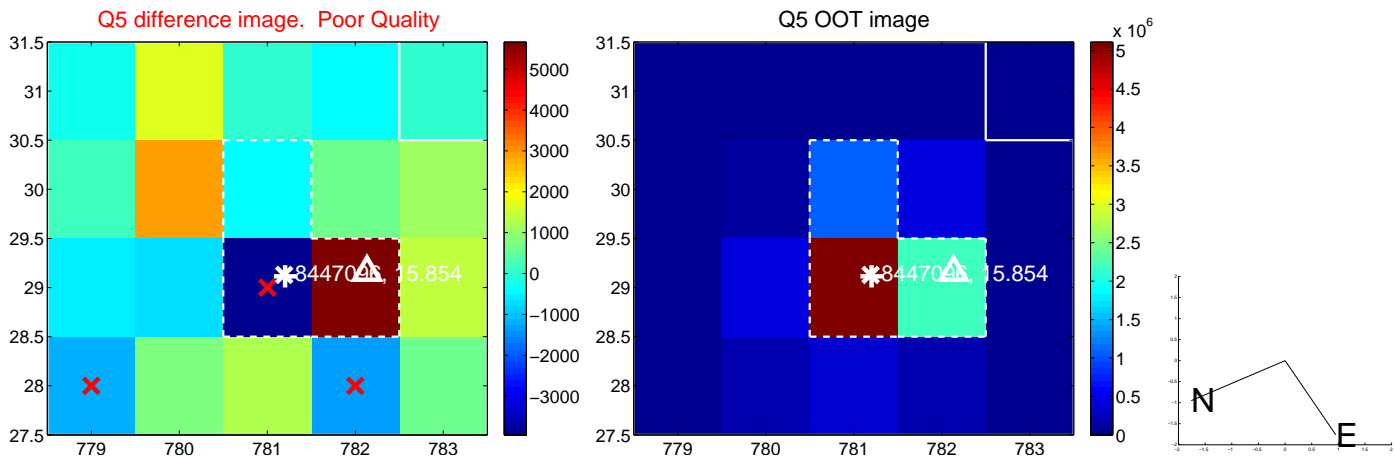


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

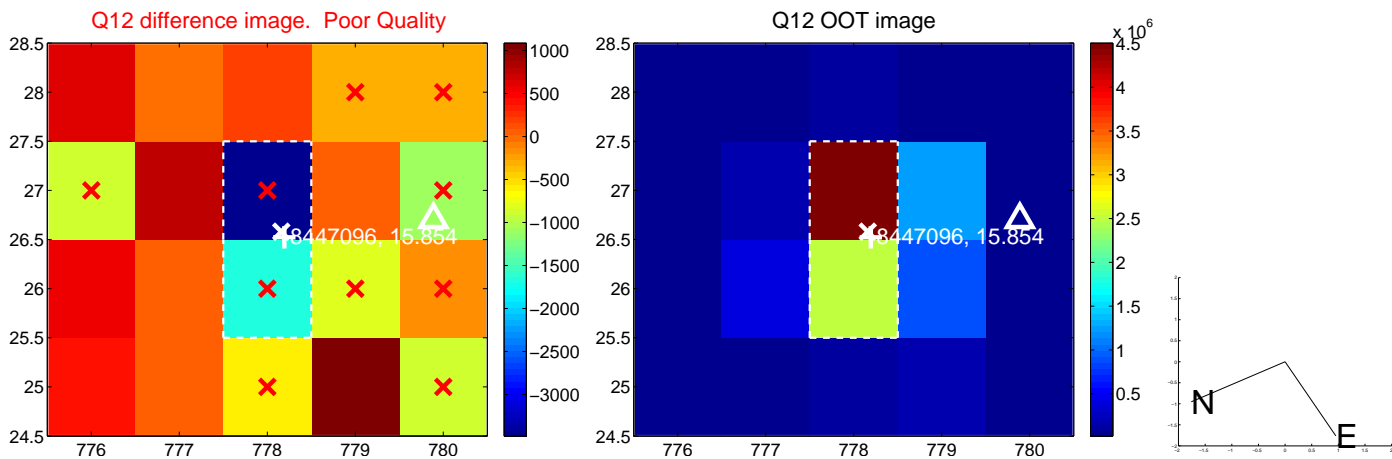
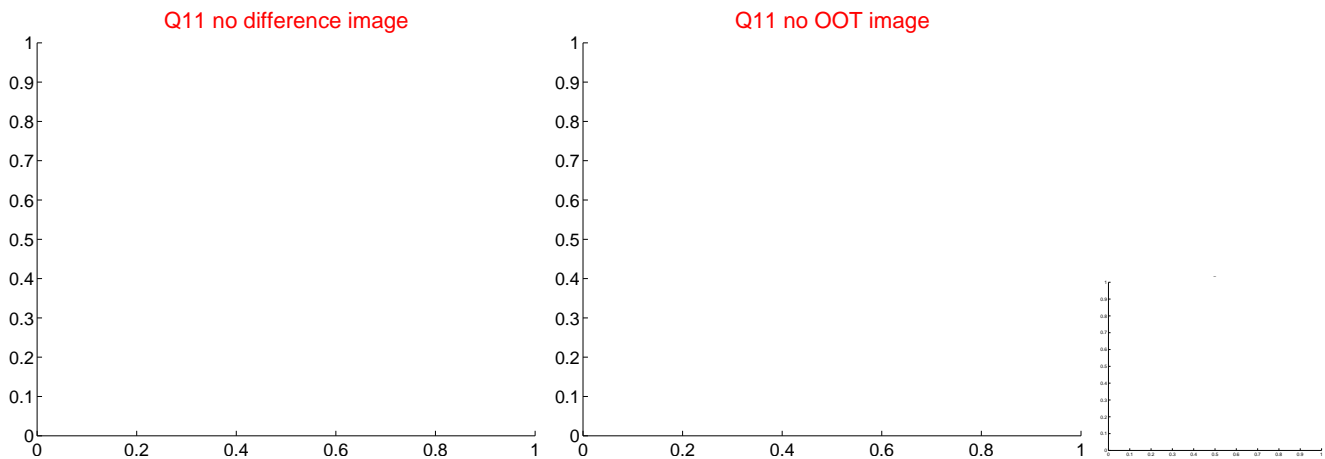
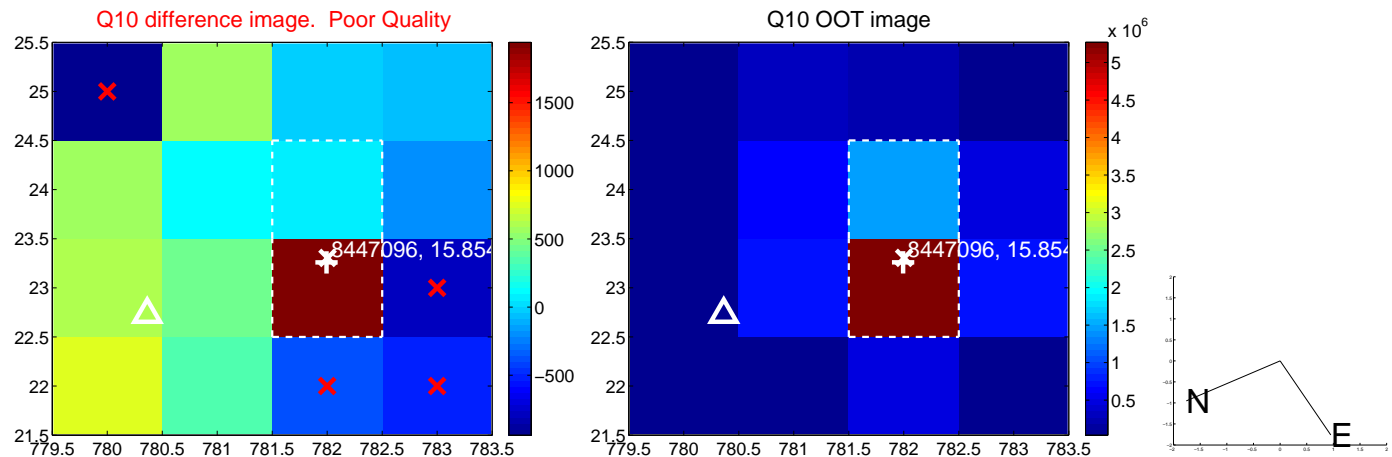
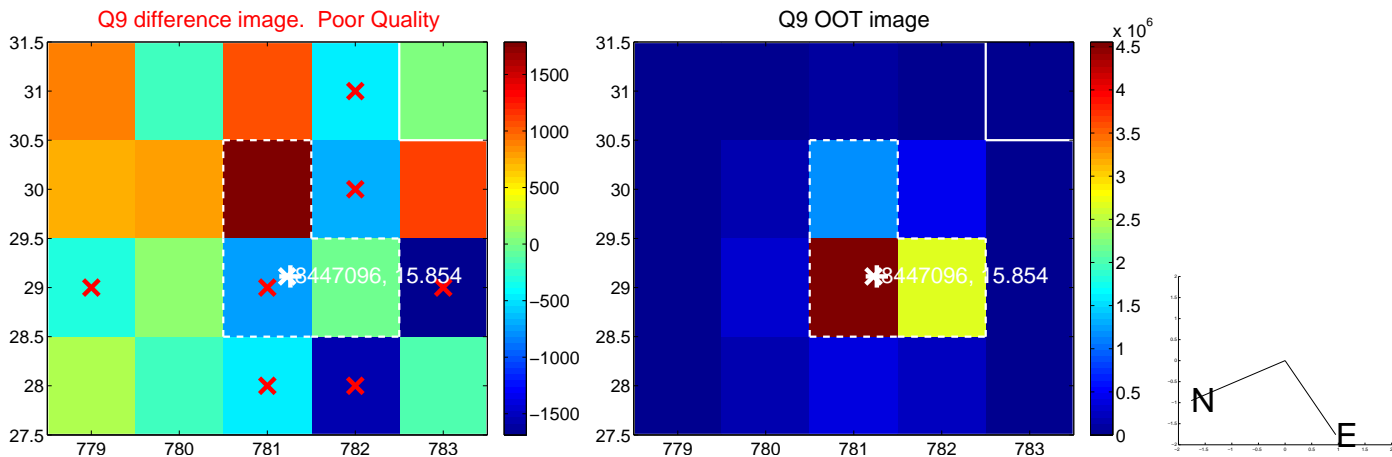
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



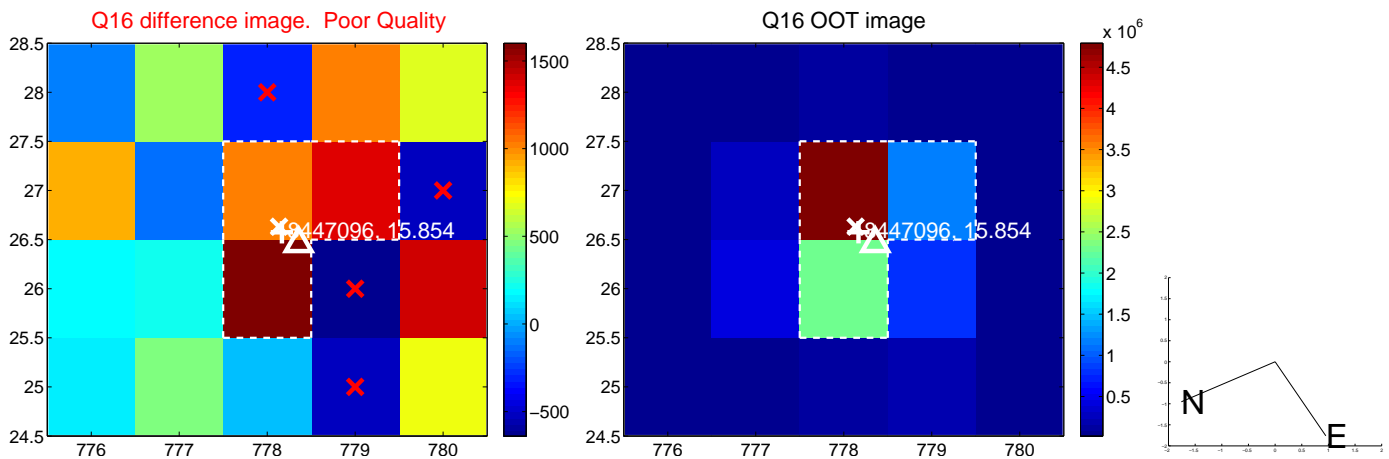
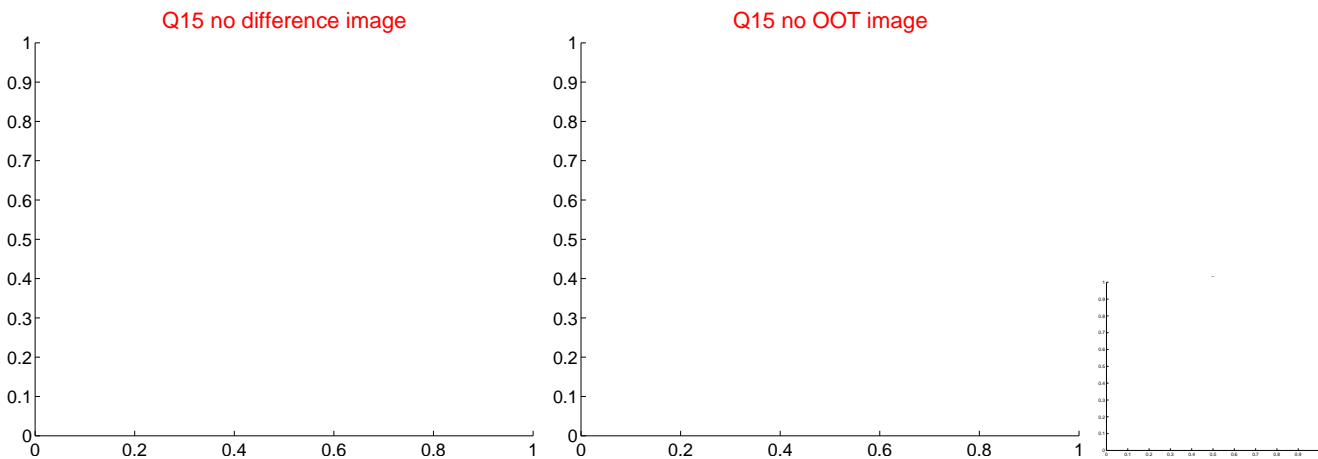
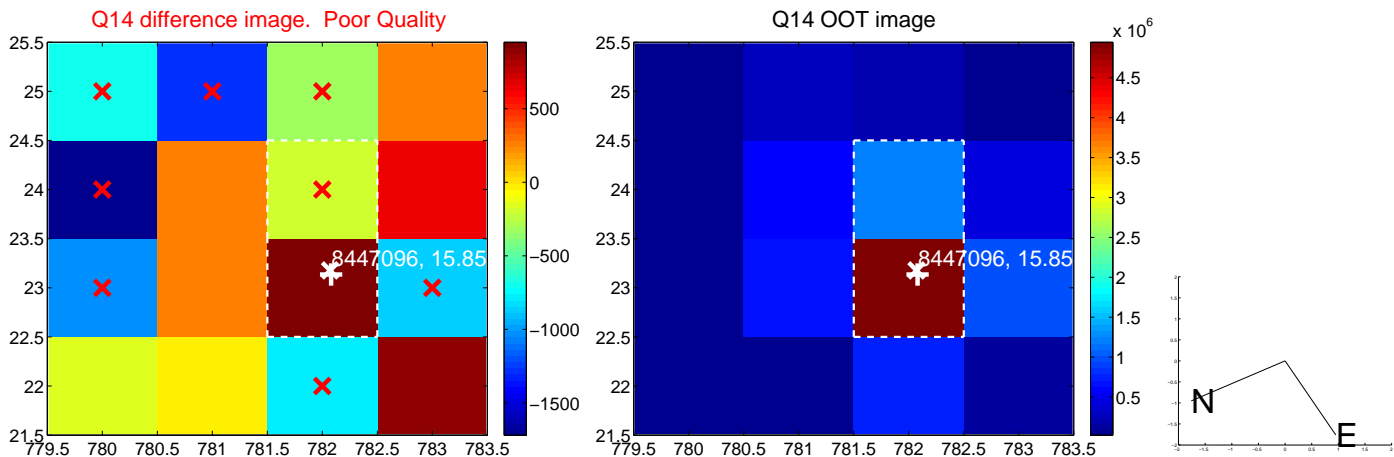
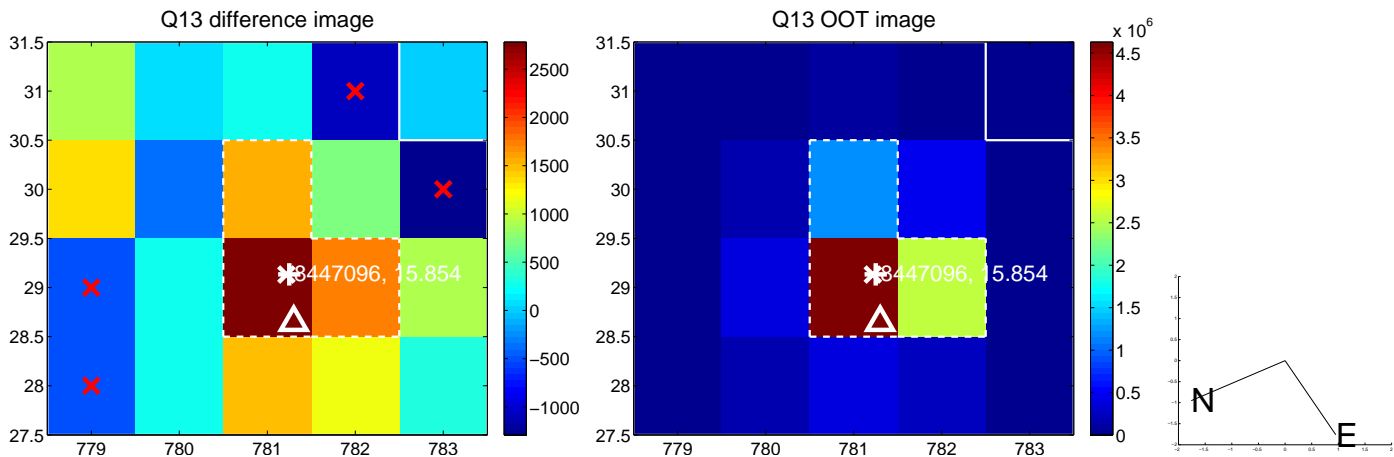
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



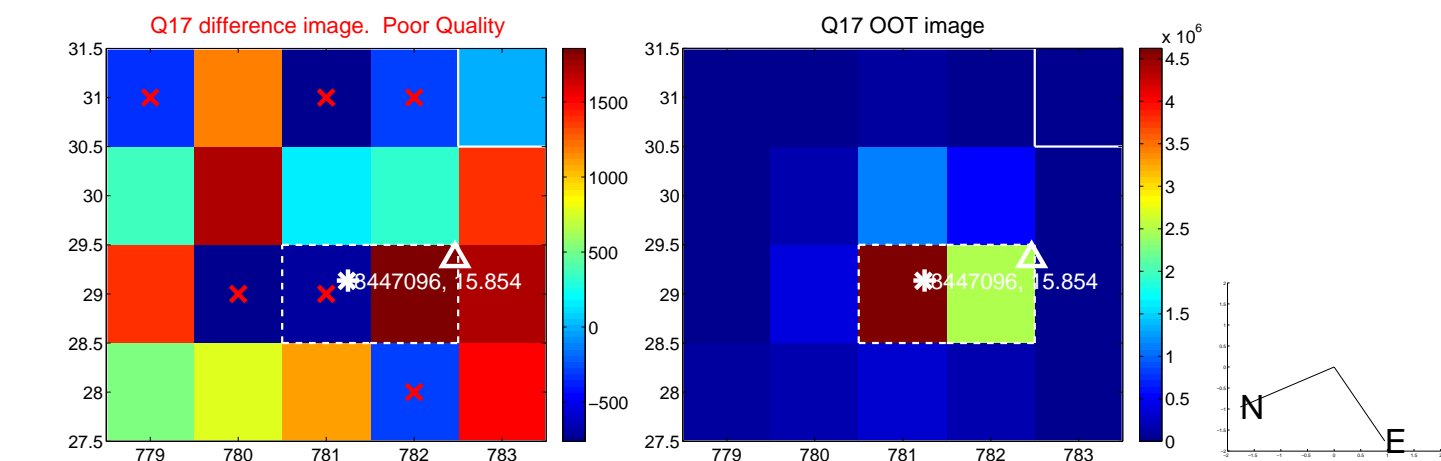
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



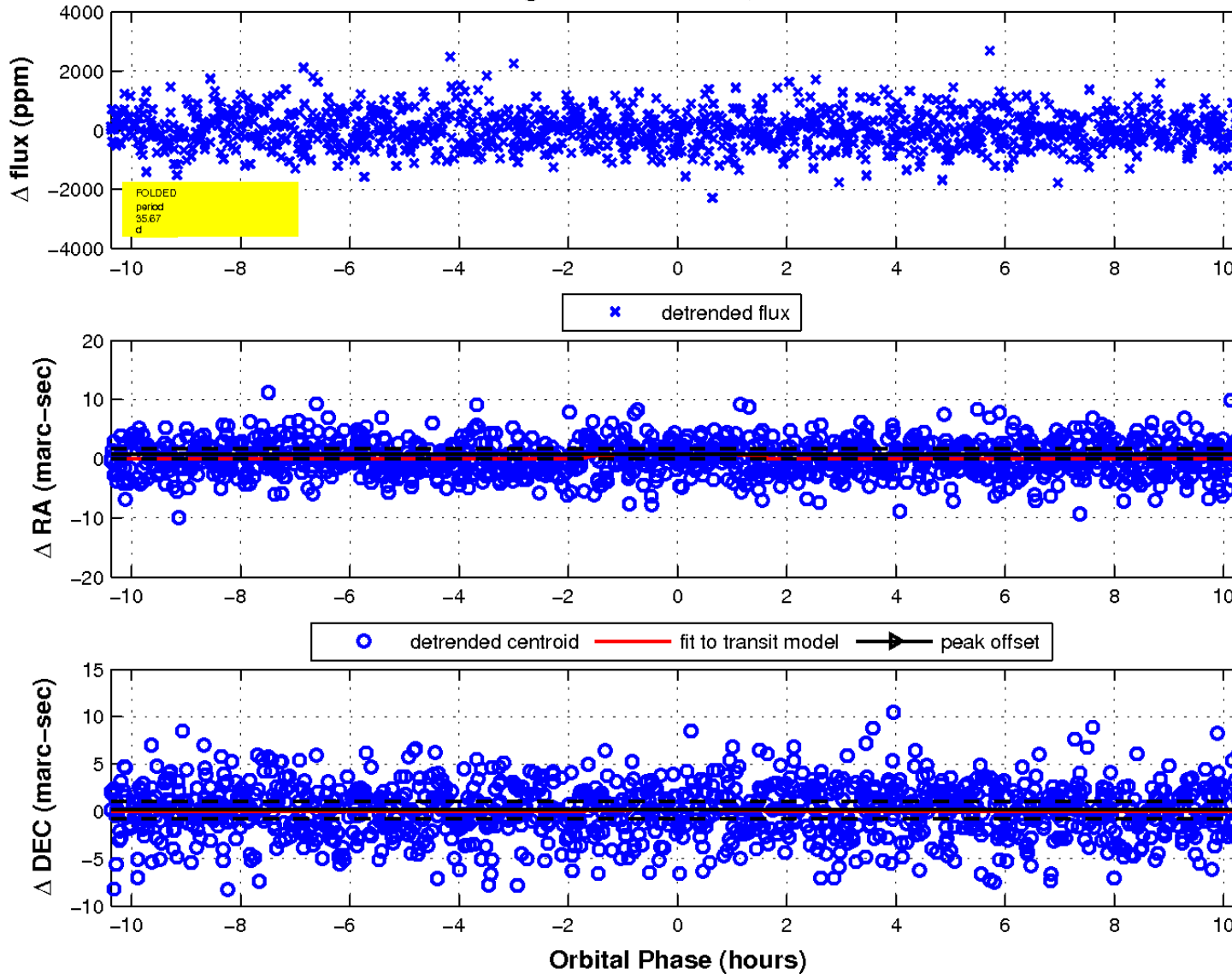
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 5 of 5



UKIRT Image

Declination

