

KIC 004951447

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})
004951447-01	OBS	No	0.699656	132.026349	12.4	4.634	8.7	4.5	1.43	6517	0.52	12433.52
004951447-02	OBS	No	577.241449	336.360194	456.0	18.942	8.2	7.1	1.43	6517	3.59	1.61
004951447-03	OBS	No	39.121997	160.621638	392.3	1.485	9.3	8.7	1.43	6517	2.88	58.15
004951447-04	OBS	No	45.444298	157.556159	229.7	2.922	9.6	6.1	1.43	6517	2.46	47.62
004951447-05	OBS	No	51.591981	166.315444	419.6	2.540	8.7	8.3	1.43	6517	5.66	40.21
004951447-06	OBS	No	28.815116	155.728361	392.0	1.741	8.9	10.7	1.43	6517	3.31	87.42
004951447-07	OBS	No	98.000565	190.276053	451.2	2.587	7.8	9.1	1.43	6517	3.49	17.09
004951447-08	OBS	No	72.310280	147.611048	548.0	1.647	8.3	10.1	1.43	6517	3.59	25.64

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004951447-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
004951447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004951447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004951447-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
004951447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004951447-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

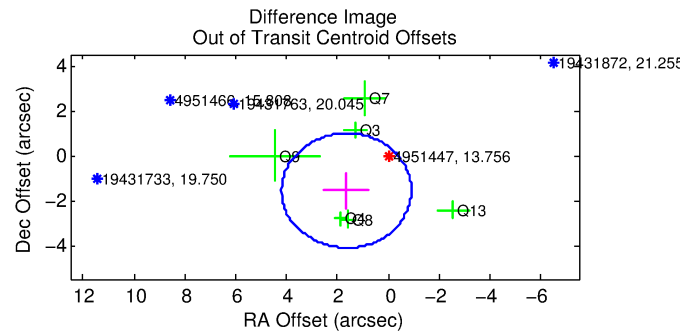
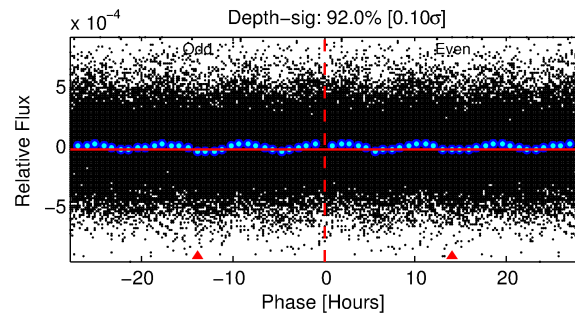
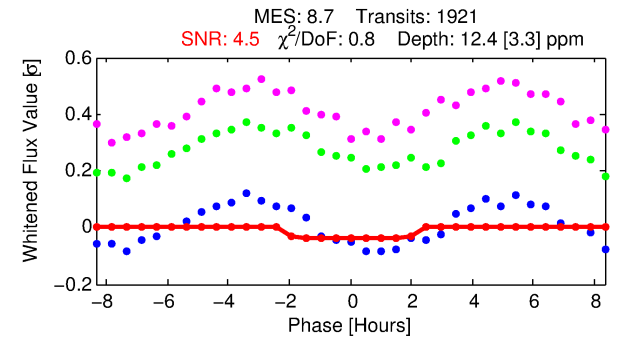
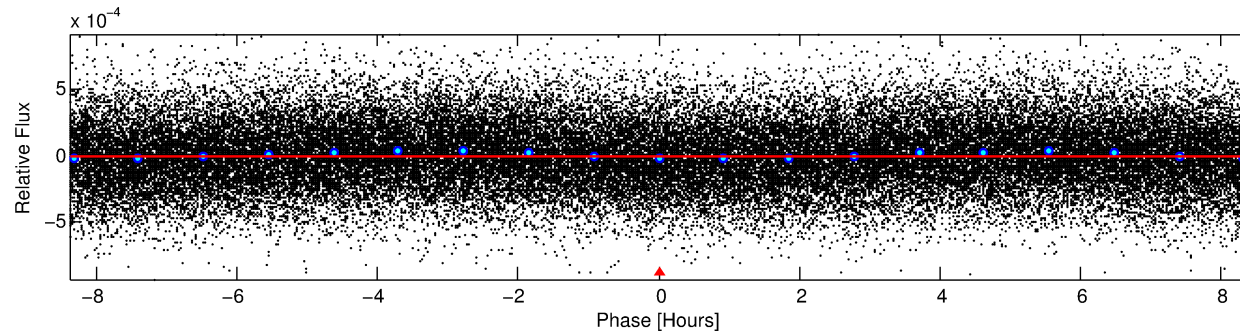
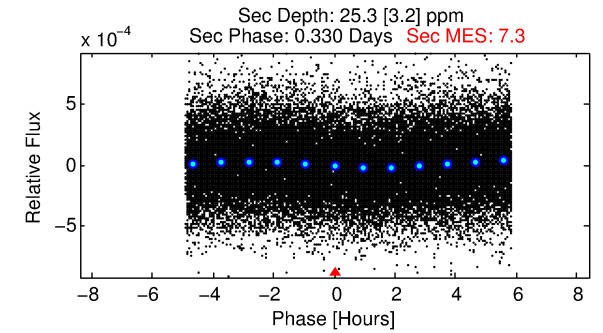
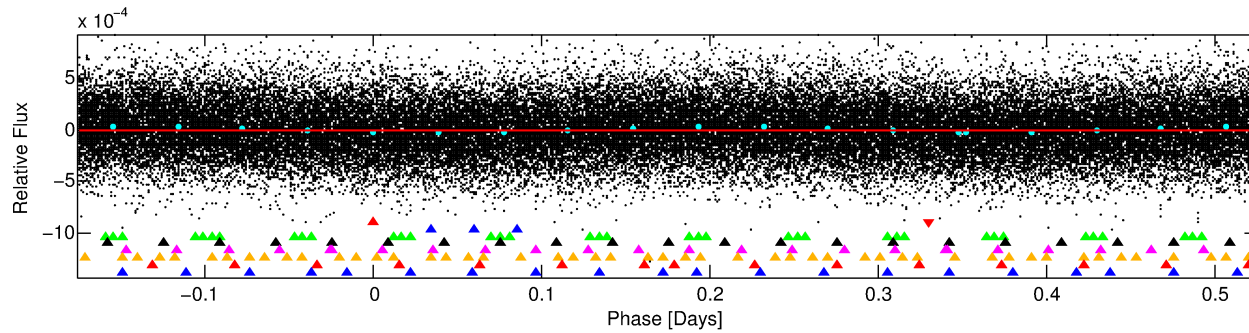
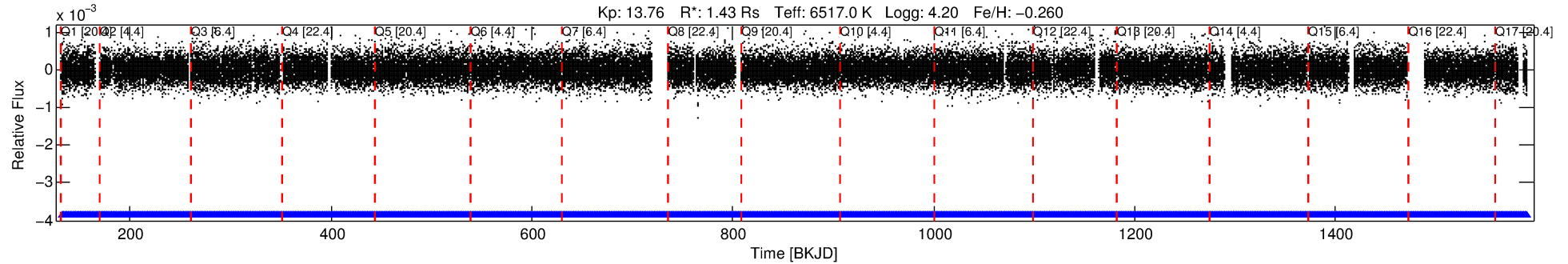
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004951447-01

No Significant Match Found

DV One-Page Summary

KIC: 4951447 Candidate: 1 of 8 Period: 0.700 d



DV Fit Results:

Period = 0.69966 [0.00002] d
Epoch = 132.0263 [0.0090] BKJD
Rp/R* = 0.0033 [0.0039]
a/R* = 1.26 [3.04]
b = 0.43 [12.26]
Seff = 12433.52 [4461.76]
Teq = 2693 [242] K
Rp = 0.52 [0.63] Re
a = 0.0163 [0.0038] AU
Ag = 13.81 [33.04] [0.39σ]
Teffp = 8026 [4760] K [1.12σ]

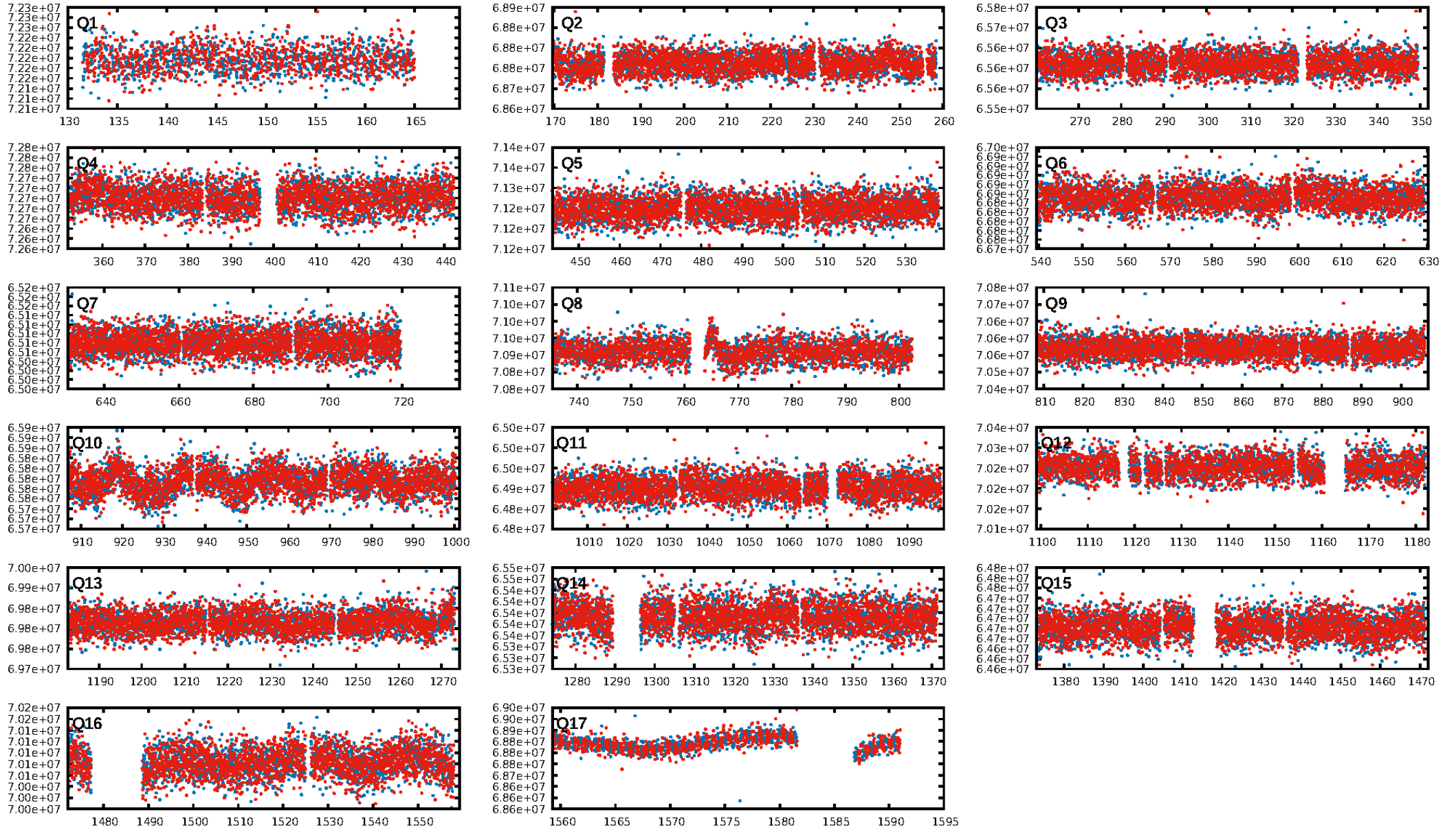
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [136.31σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.76e-08
RollingBand-fgt: 1.00 [1835/1835]
GhostDiagnostic-chr: 12.49
Centroid-sig: 2.8%
Centroid-so: 2.946 arcsec [1.53σ]
OotOffset-rm: 2.270 arcsec [2.67σ]
KicOffset-rm: 2.318 arcsec [2.34σ]
OotOffset-st: 0/2/2/2 [6]
KicOffset-st: 0/2/2/2 [6]
DiffImageQuality-fgm: 0.50 [3/6]
DiffImageOverlap-fno: 1.00 [17/17]

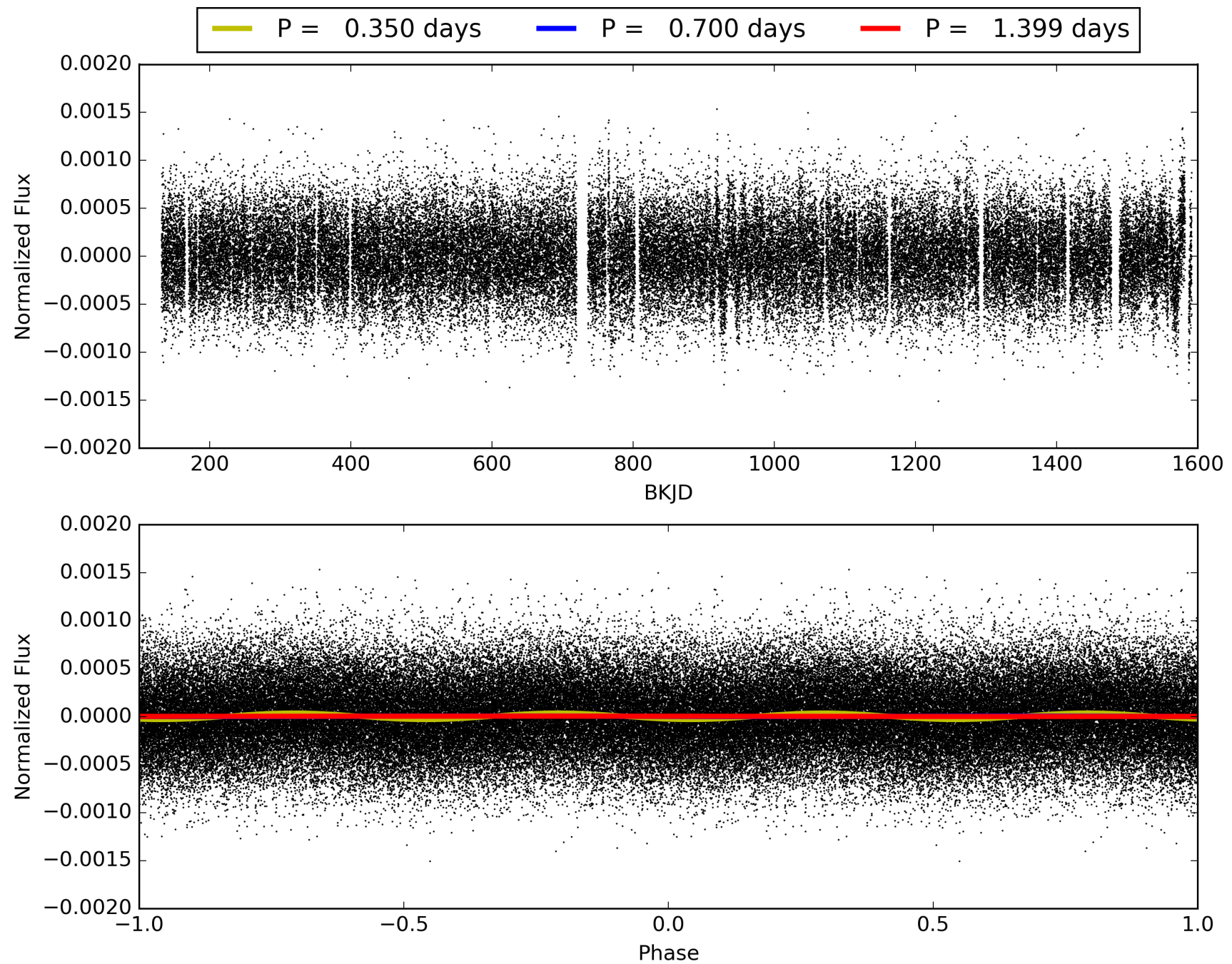
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004951447-01, PDC Light Curves

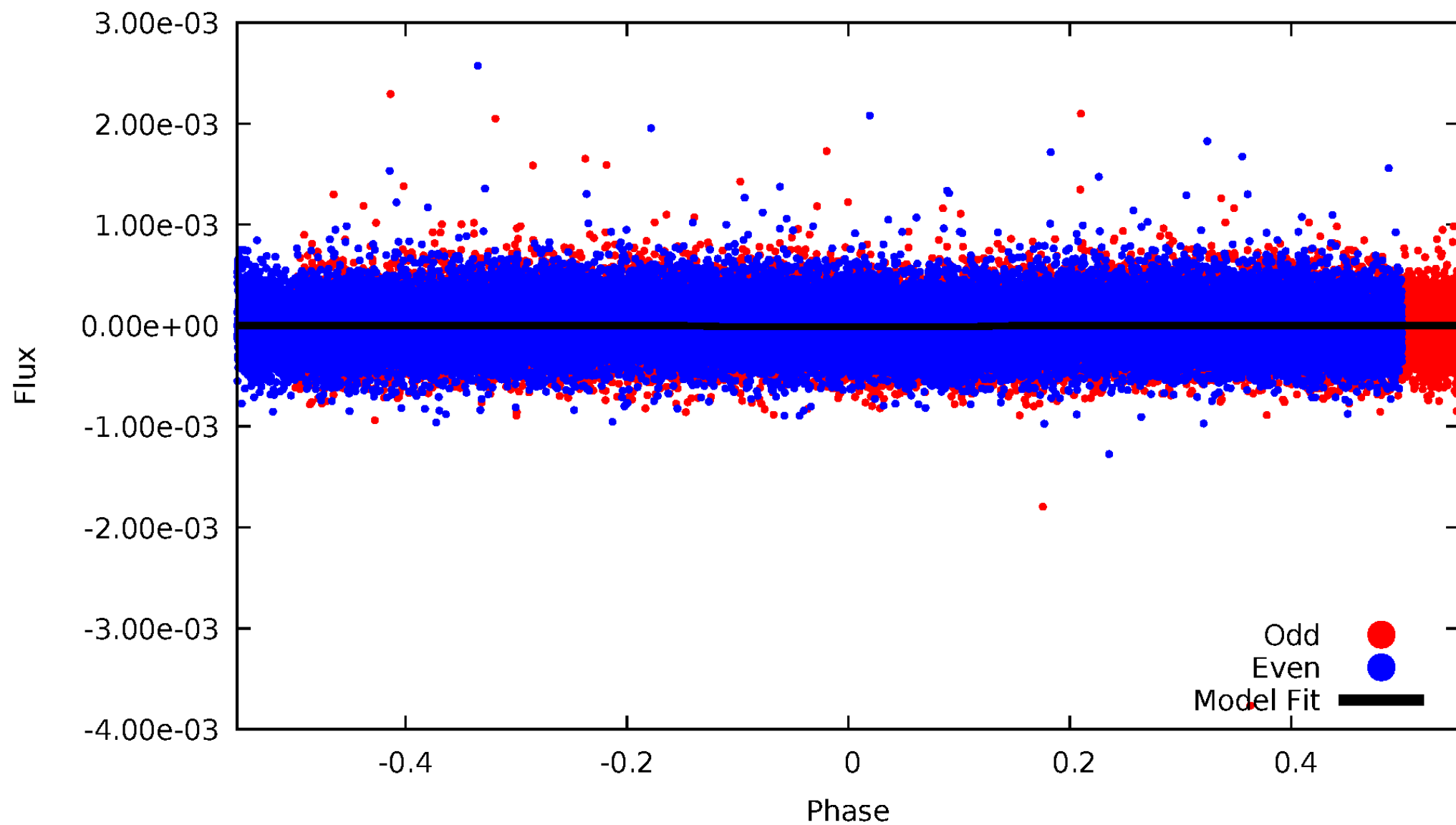


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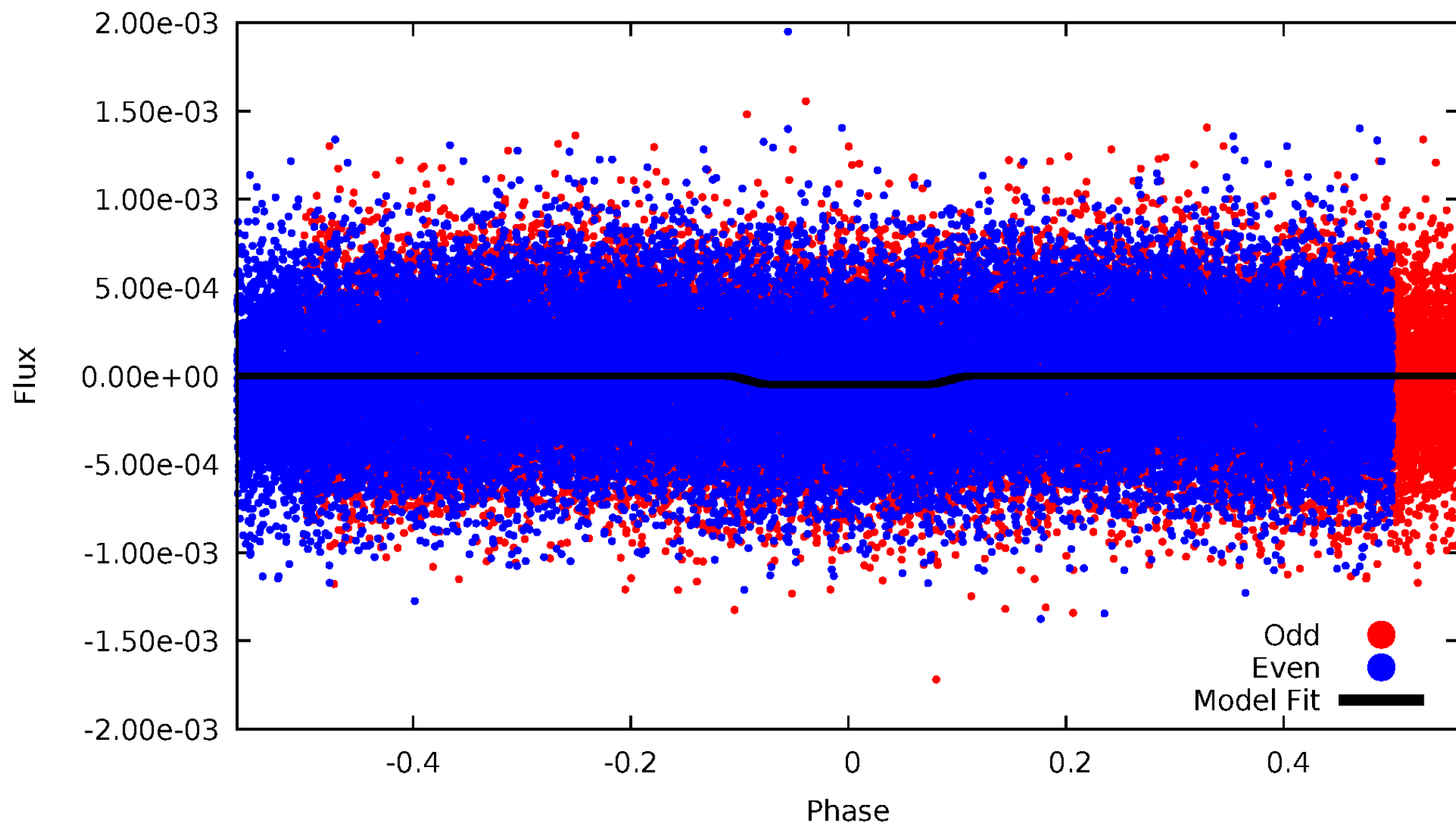
DV Odd/Even

TCE 004951447-01

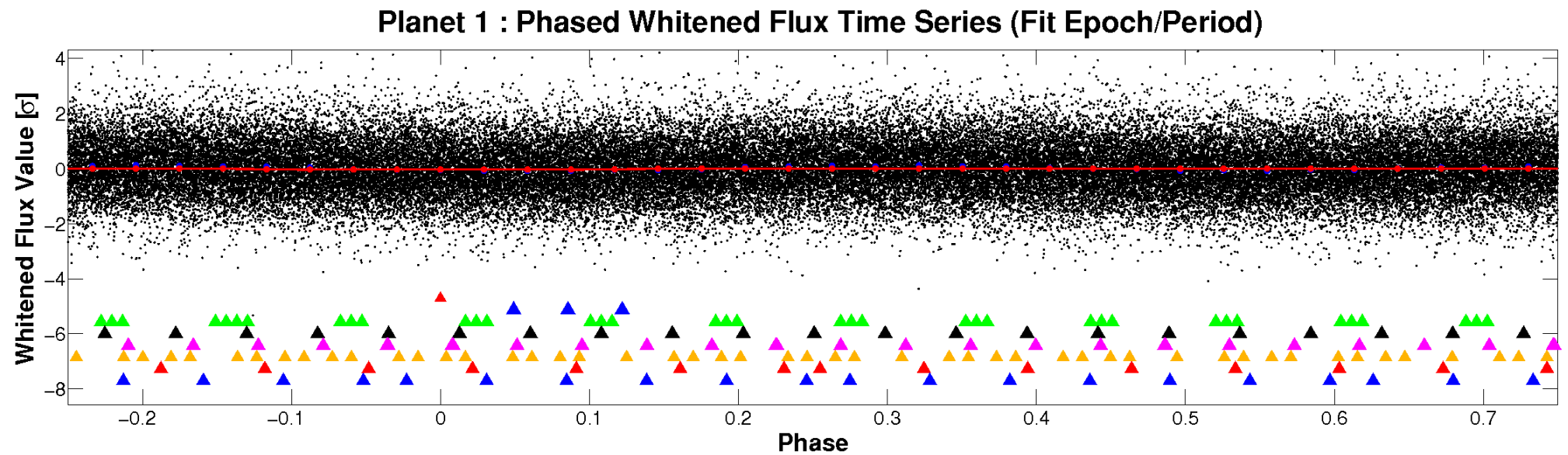
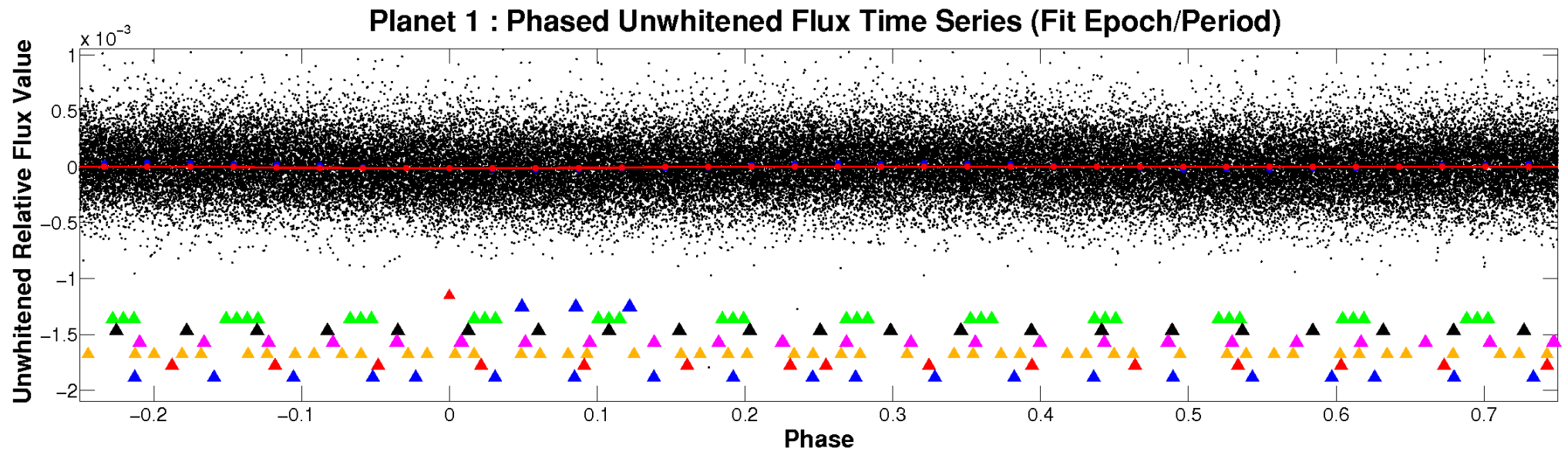


ALT Odd/Even

TCE 004951447-01

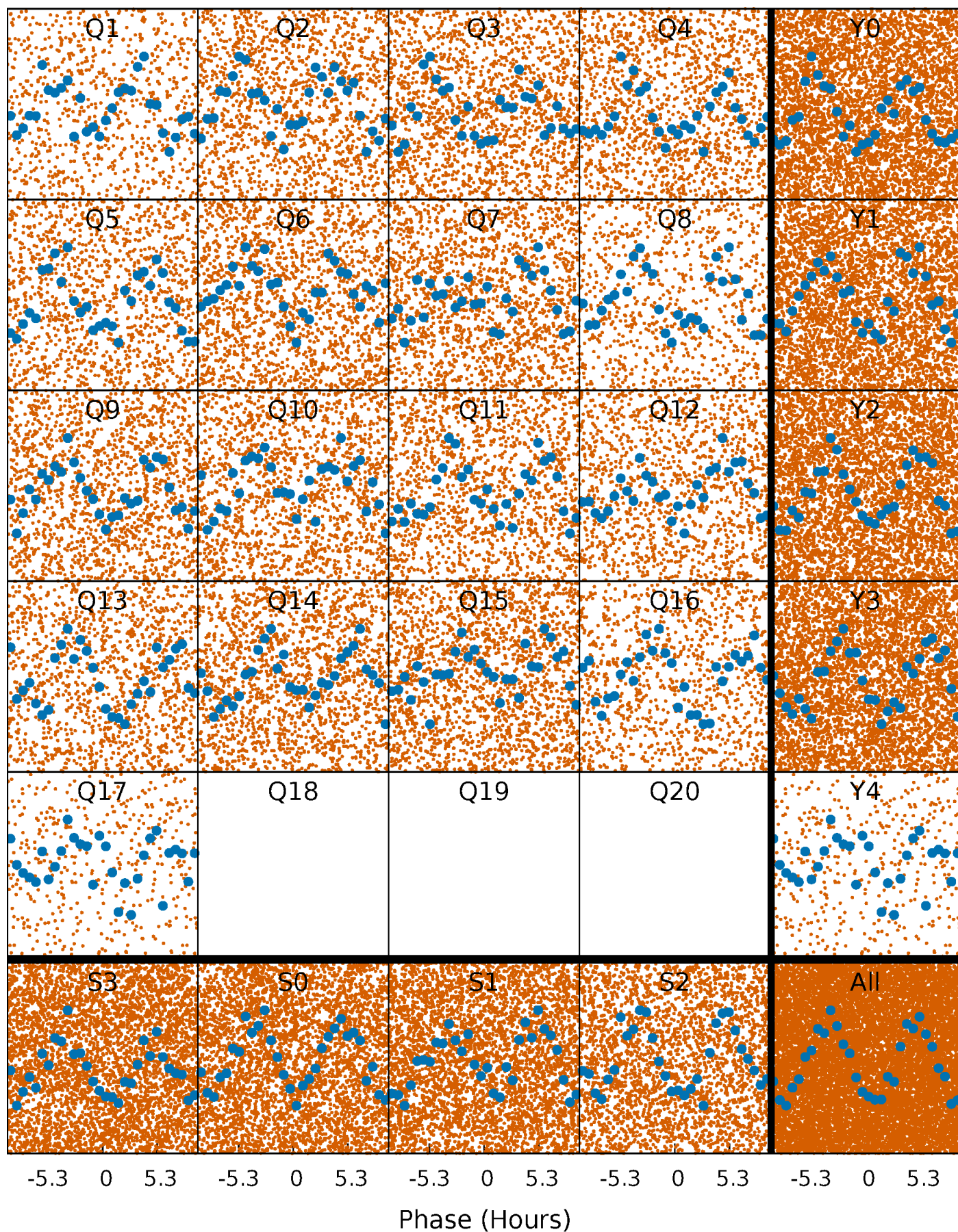


Non-Whitened Vs. Whitened Light Curve



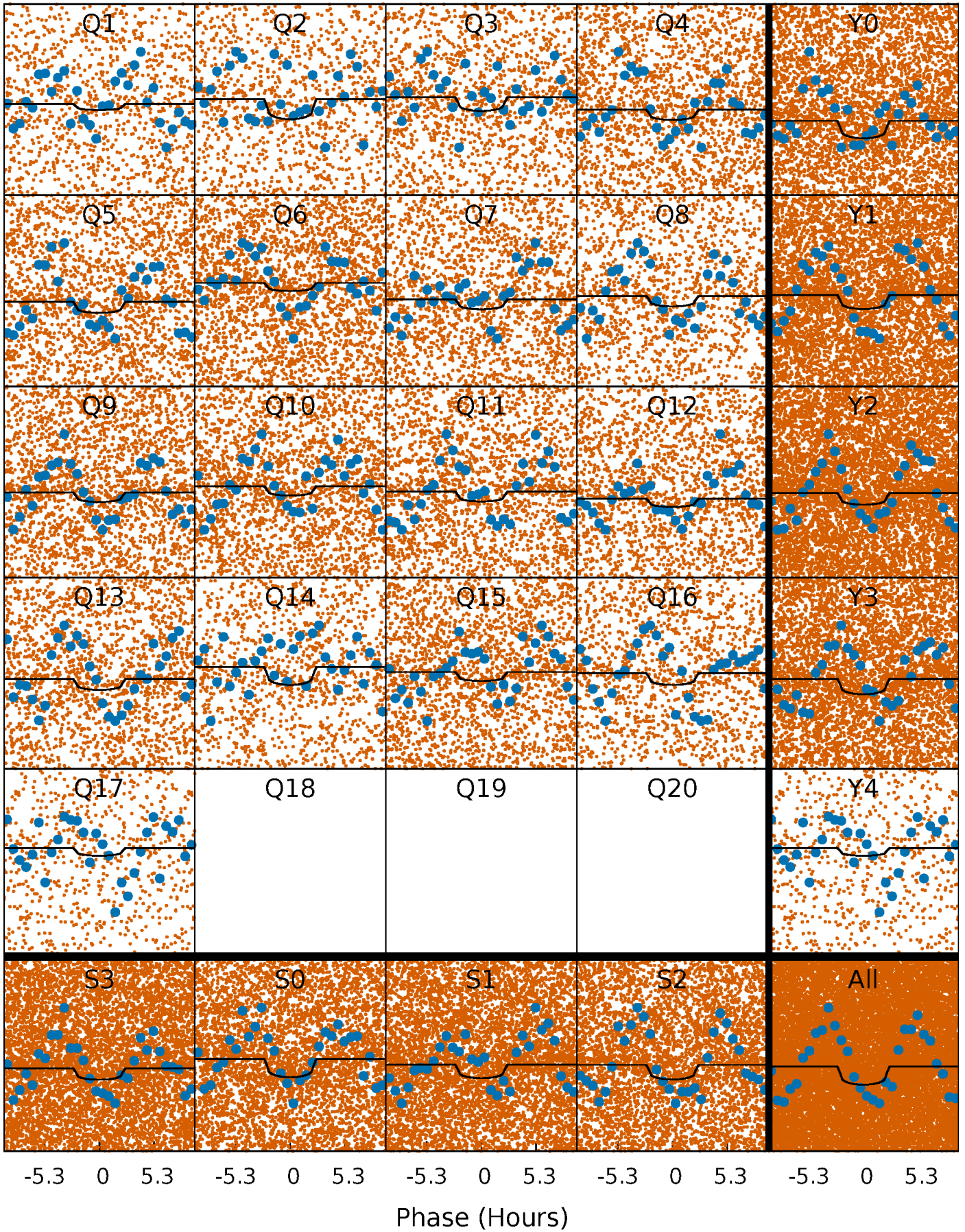
PDC Quarter-Phased Transit Curves

TCE 004951447-01 P= 0.699656 Days $T_0=132.026349$ (BKJD)



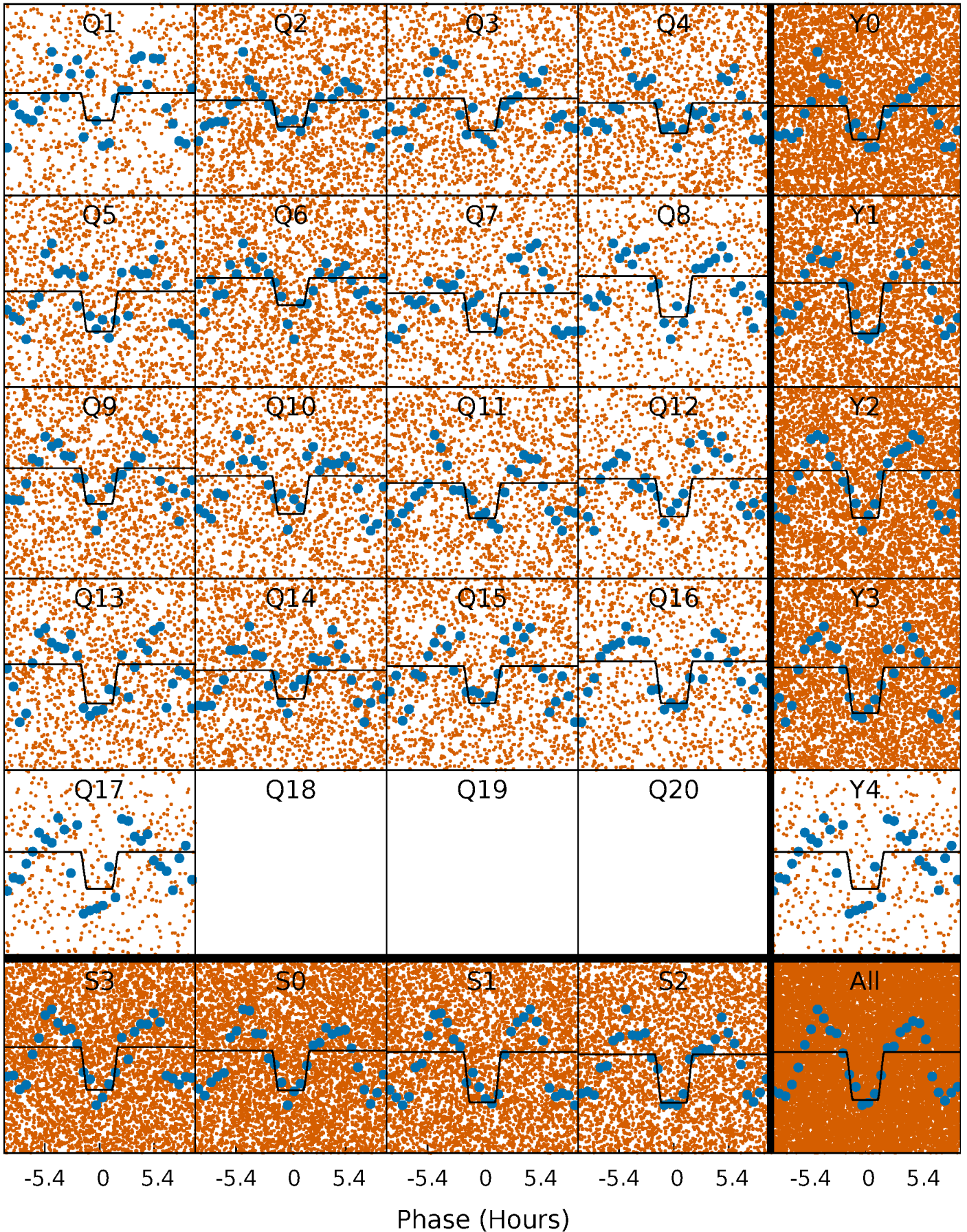
DV Quarter-Phased Transit Curves

TCE 004951447-01 P= 0.699656 Days $T_0=132.026349$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

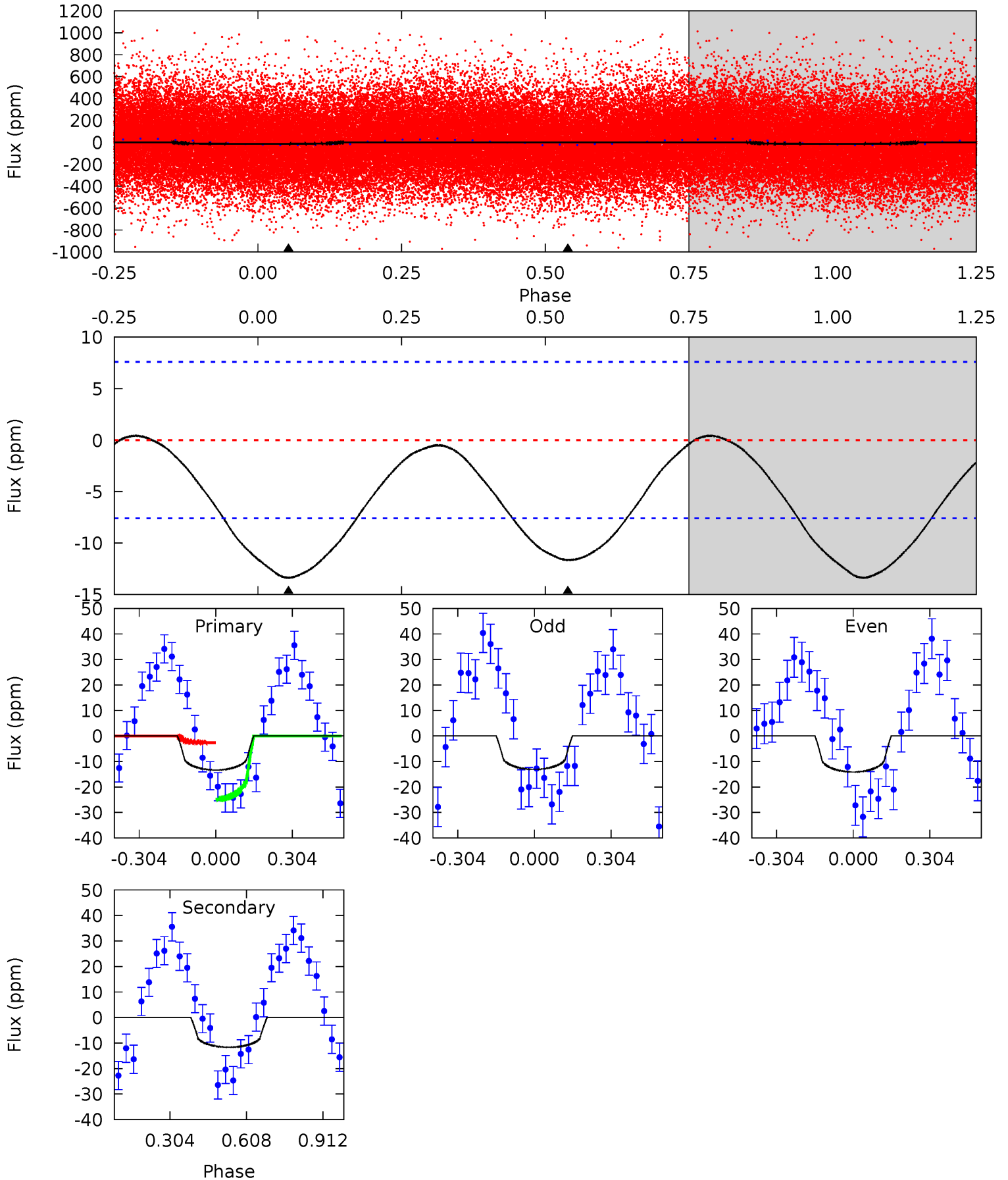
TCE 004951447-01 P= 0.699733 Days $T_0=131.977190$ (BKJD)



DV Model-Shift Uniqueness Test

004951447-01, P = 0.699656 Days, E = 131.326693 Days

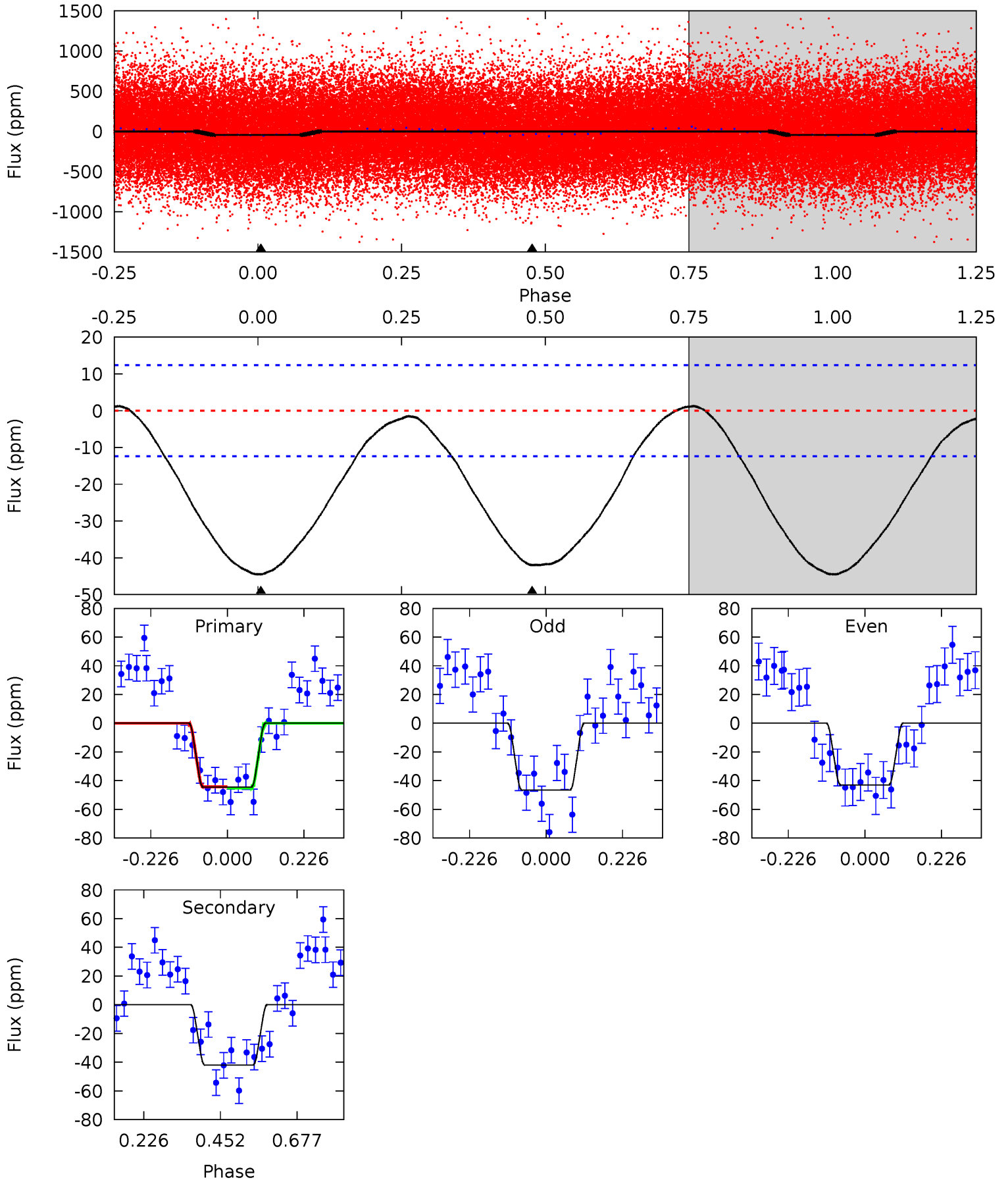
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.62	6.64	0	0	4.33	1.03	0.28	7.62	7.62	6.64	6.64	0.29	0.80	0.03	6.48



Alt Model-Shift Uniqueness Test

004951447-01, P = 0.699733 Days, E = 131.277457 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	14.9	0	0	4.39	1.21	0.53	15.8	15.8	14.9	14.9	0.62	1.04	0.03	0.16



Stellar Parameters For KIC 004951447

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6517^{+175}_{-214}	$4.199^{+0.180}_{-0.180}$	$-0.260^{+0.250}_{-0.300}$	$1.429^{+0.402}_{-0.329}$	$1.183^{+0.188}_{-0.169}$	$0.571^{+0.532}_{-0.276}$
	+3%/-3%	+4%/-4%	+96%/-115%	+28%/-23%	+16%/-14%	+93%/-48%
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 004951447-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-12 ± 2	$0.66^{+0.56}_{-0.44}$	3760^{+273}_{-242}	5736^{+5846}_{-1525}	$3.861^{+29.662}_{-2.702}$
Alt.	-42 ± 3	$1.11^{+0.66}_{-0.57}$	3754^{+298}_{-256}	6083^{+3147}_{-1213}	$4.769^{+15.677}_{-2.798}$

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

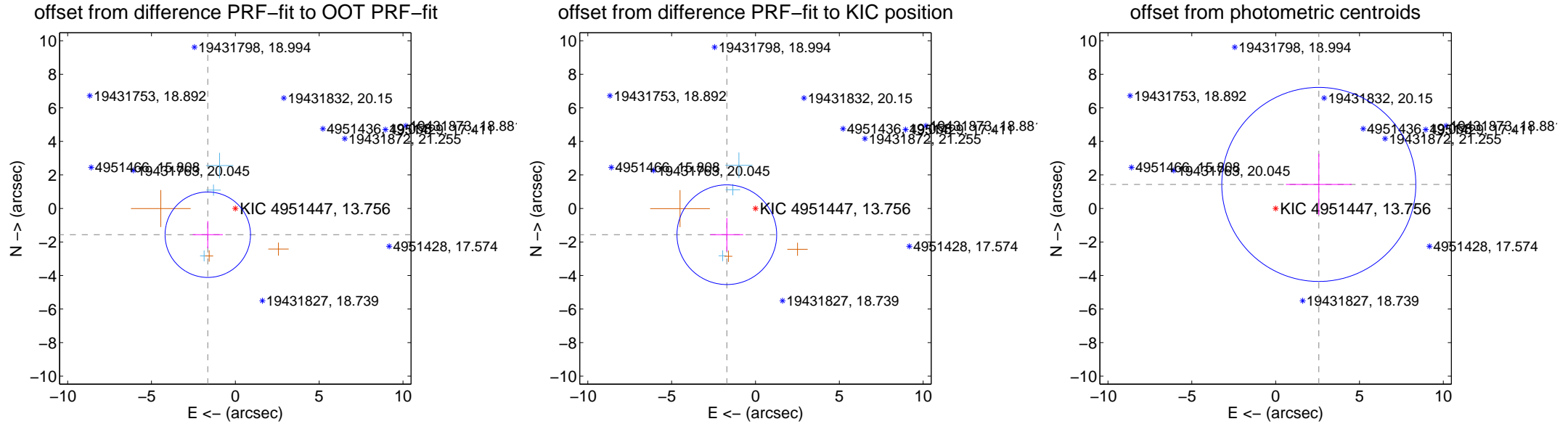
DV Centroid Data

Supplemental centroid analysis for 004951447-01. Kepler magnitude: 13.76. Transit SNR 4.54

There are 3 quarters with good PRF difference image offsets

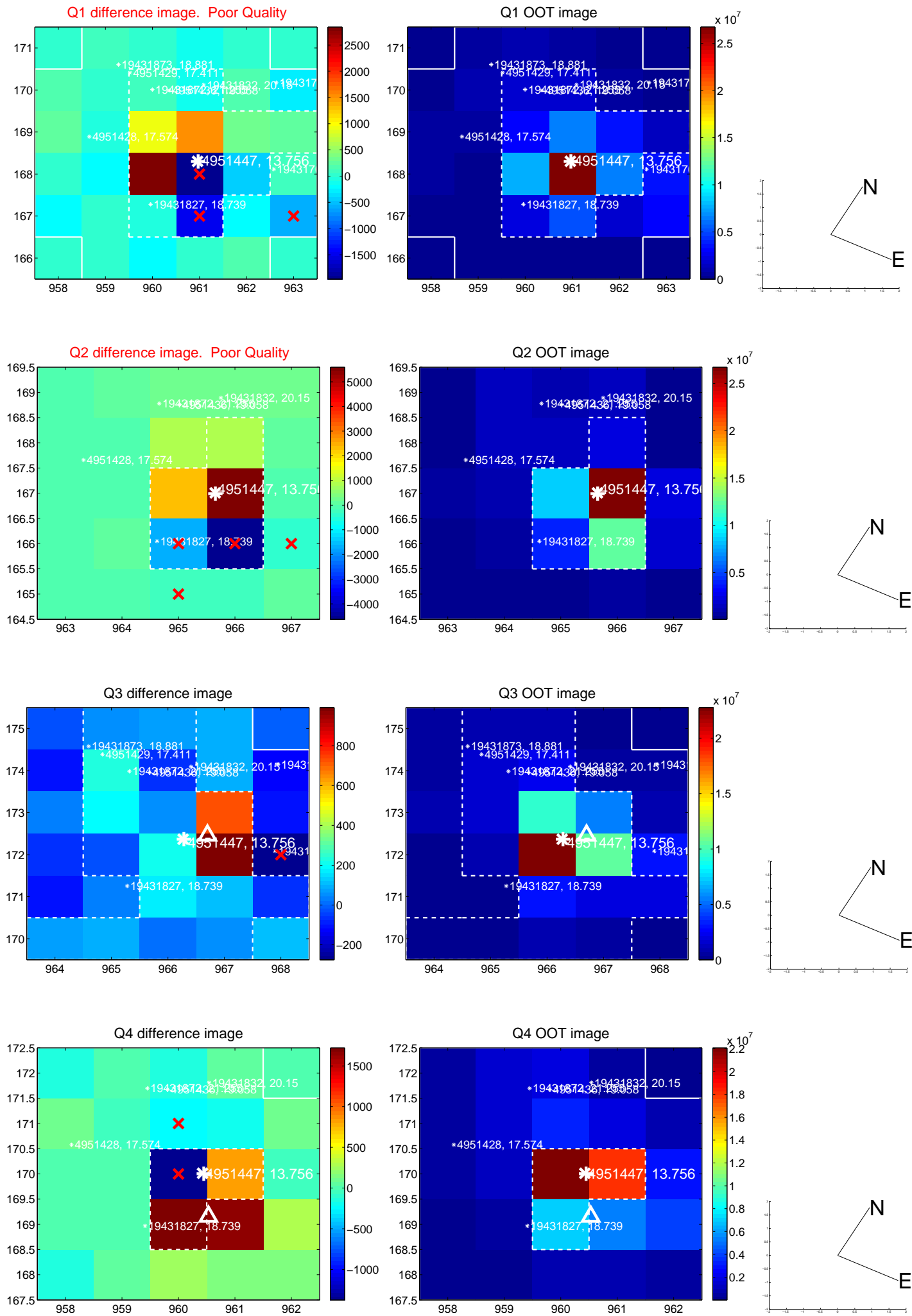
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.270 ± 0.849	2.67	1.644 ± 0.899	-1.566 ± 0.814
PRF-fit source offset from KIC position	2.318 ± 0.991	2.34	1.709 ± 0.980	-1.566 ± 0.995
photometric centroid source offset	2.95 ± 1.93	1.53	-2.57 ± 1.96	1.43 ± 1.82

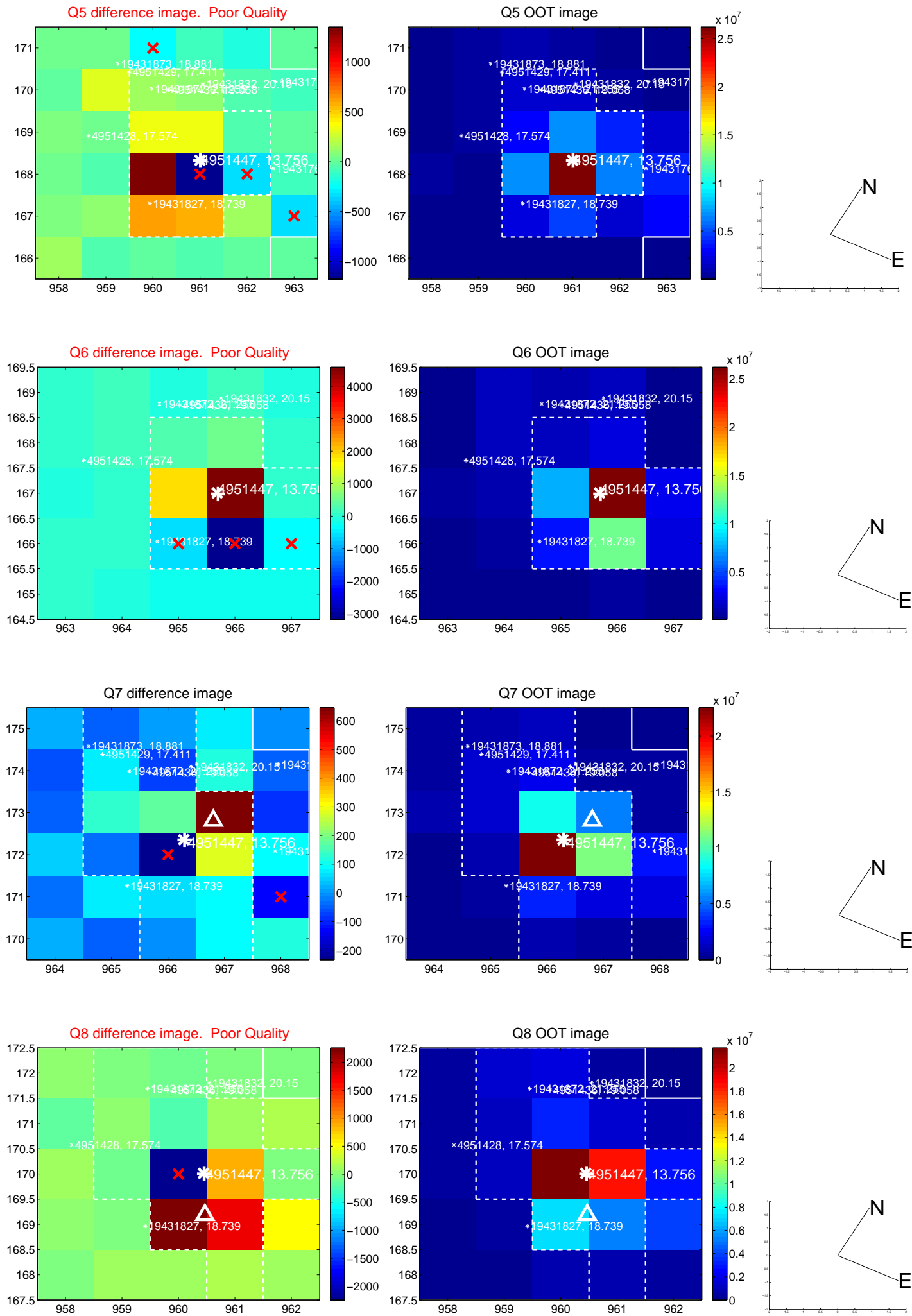


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

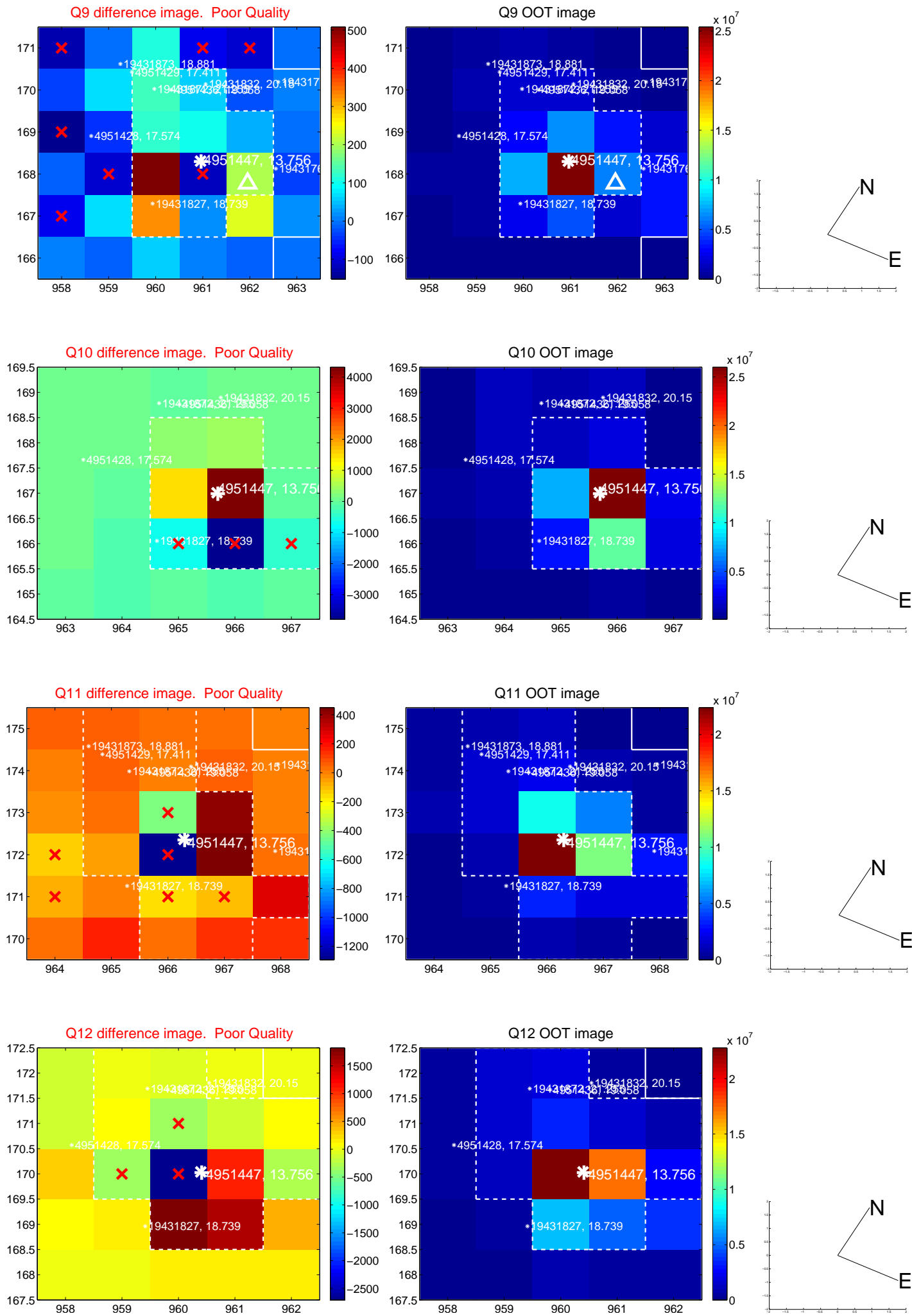
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



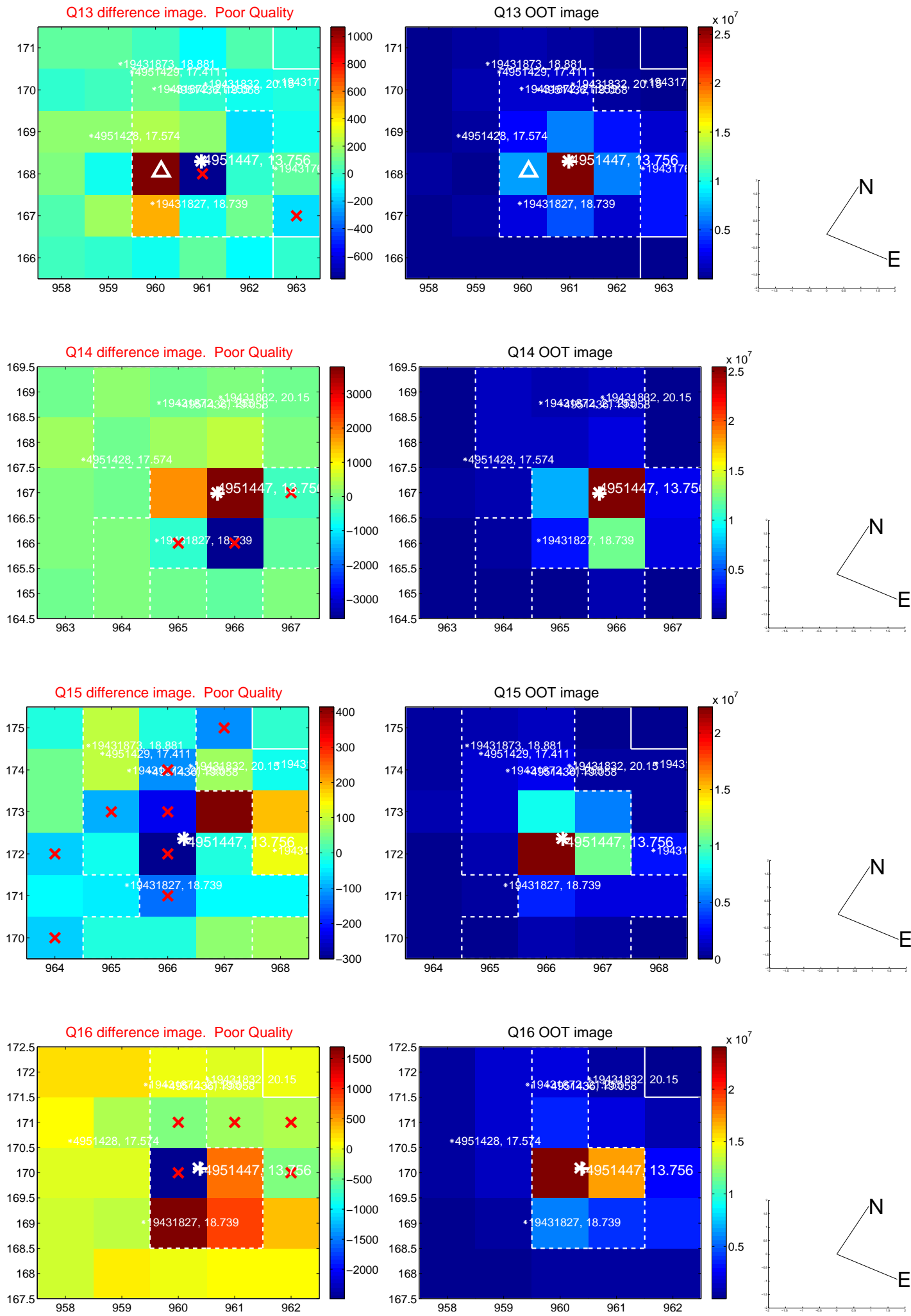
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



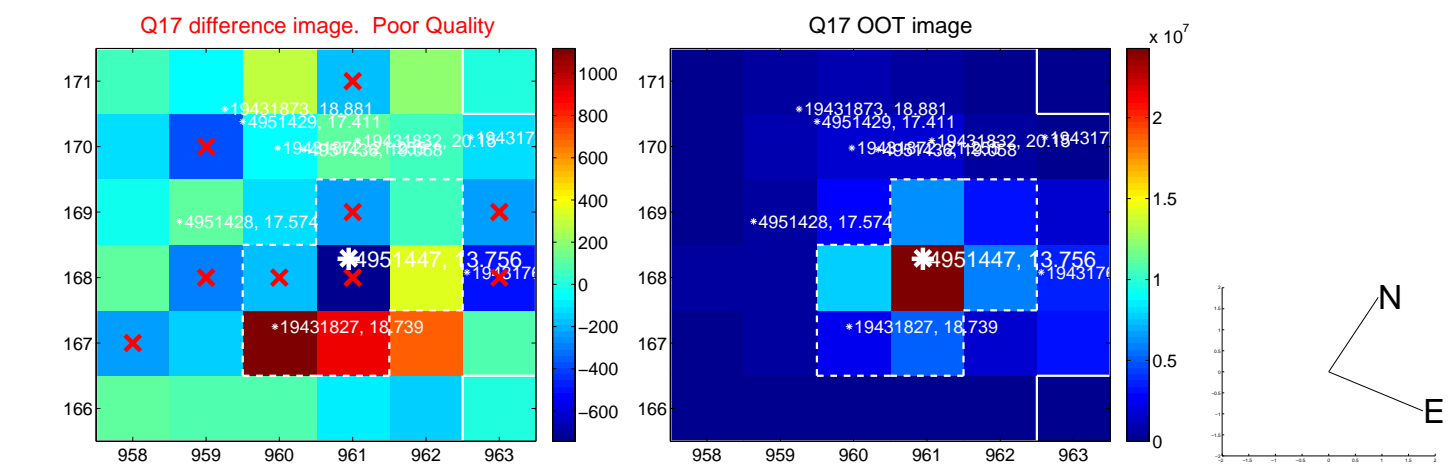
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



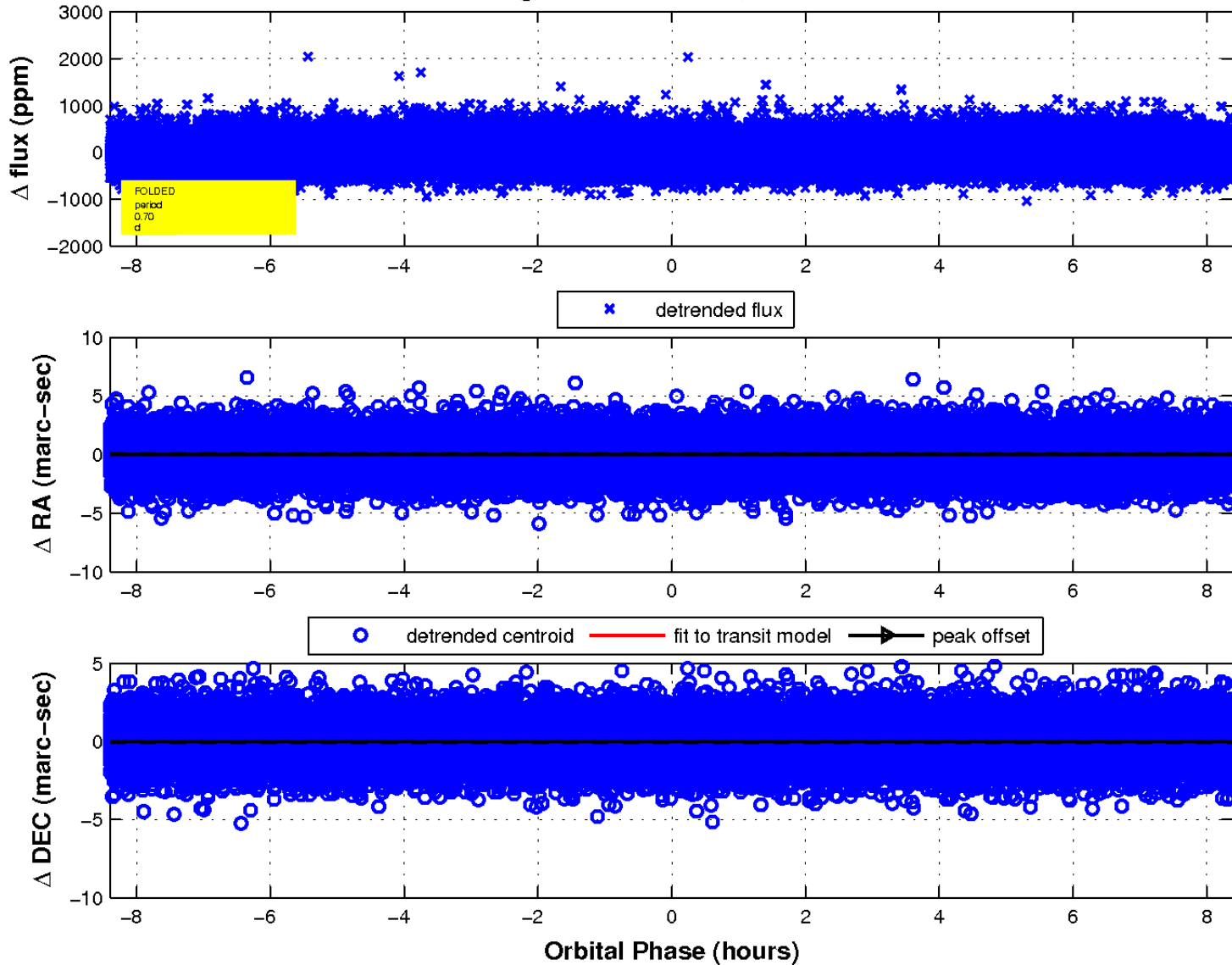
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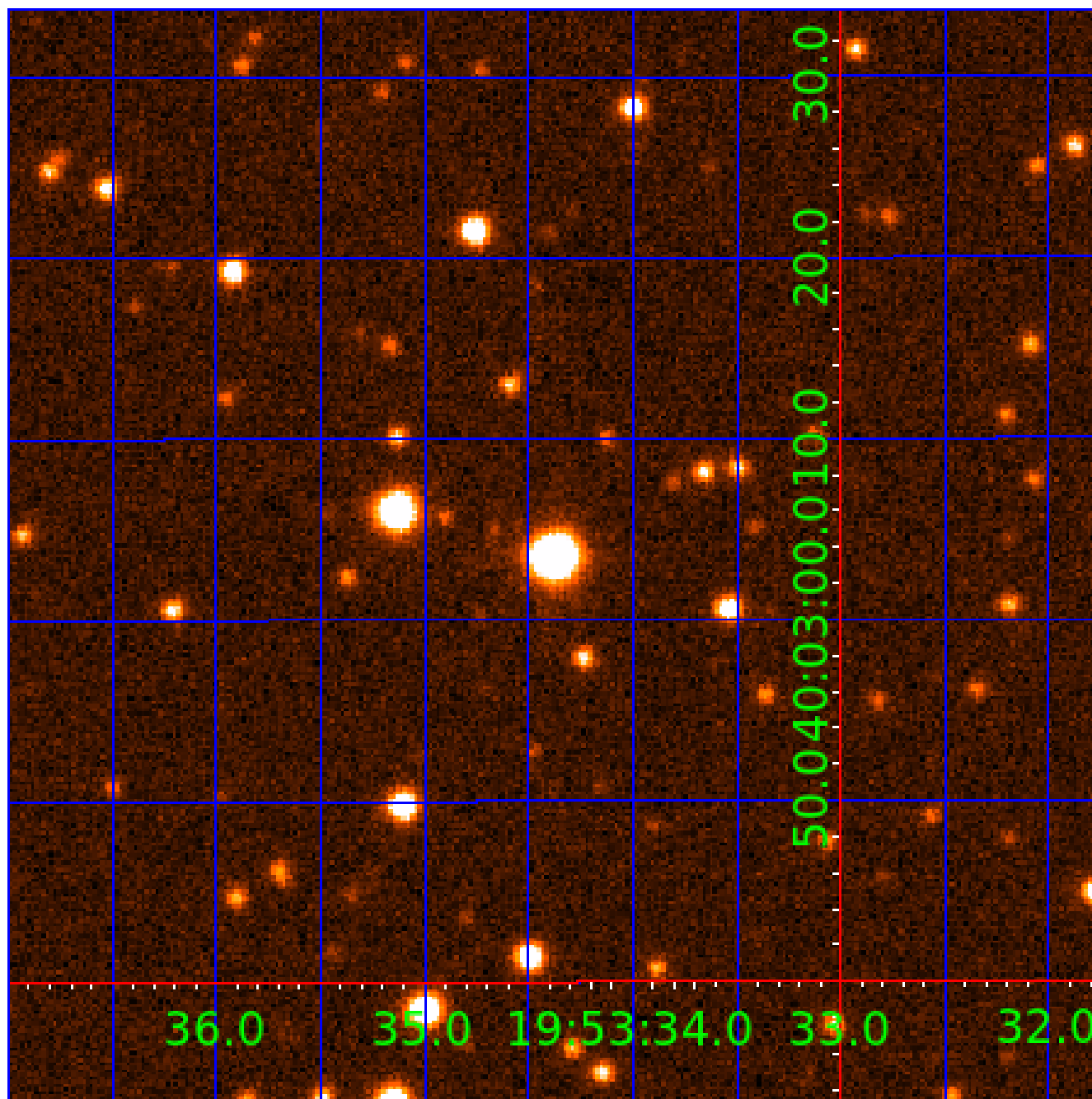


fluxWeightedCentroids, Planet 1 of 8



UKIRT Image

Declination



KIC 004951447

Q1-17 DR25 TCE Parameters

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

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004951447-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
004951447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004951447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004951447-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
004951447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004951447-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

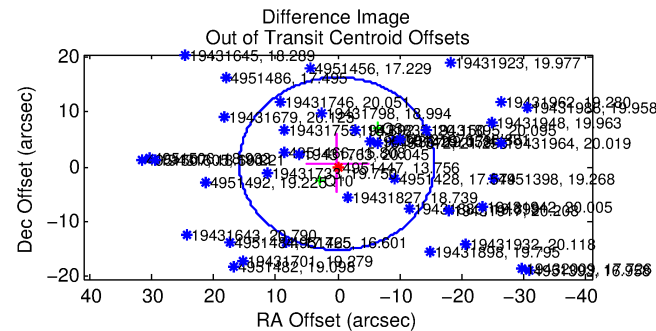
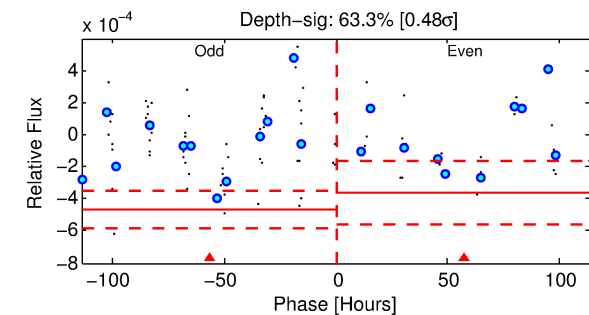
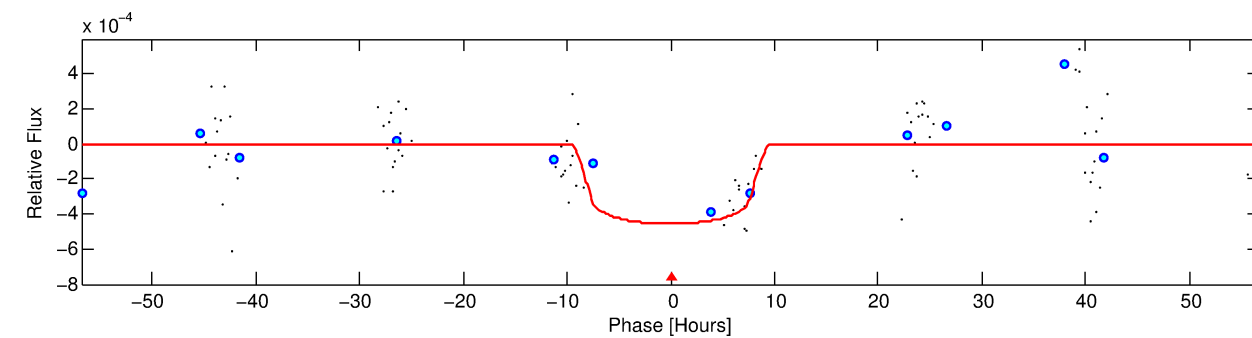
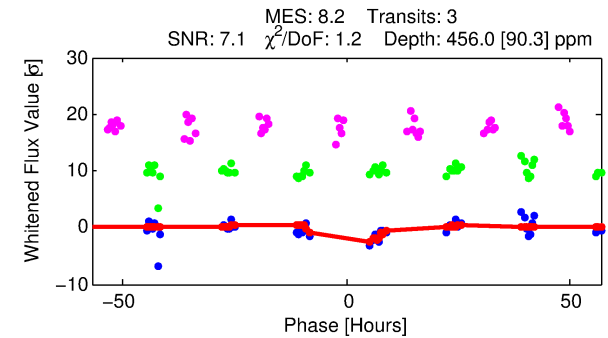
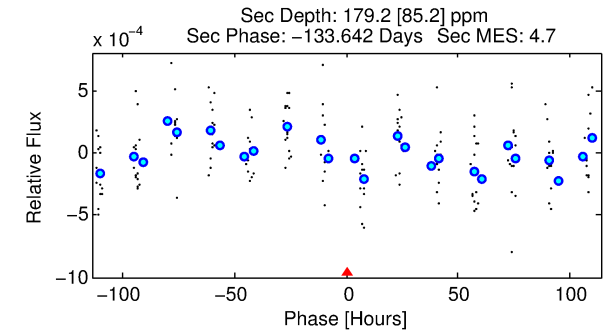
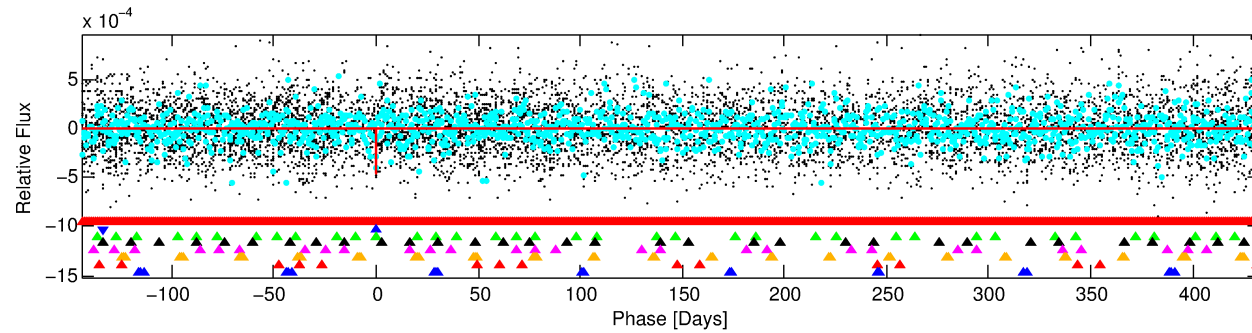
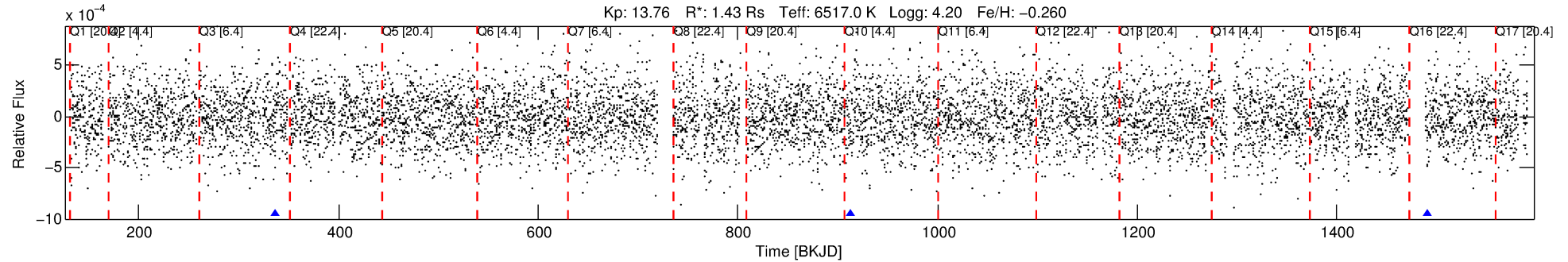
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004951447-02

No Significant Match Found

DV One-Page Summary

KIC: 4951447 Candidate: 2 of 8 Period: 577.241 d



DV Fit Results:

Period = 577.24145 [0.03898] d
Epoch = 336.3602 [0.0194] BKJD
Rp/R* = 0.0230 [0.0033]
a/R* = 109.31 [61.12]
b = 0.91 [0.11]
Seff = 1.61 [0.58]
Teq = 287 [26] K
Rp = 3.59 [1.13] Re
a = 1.4331 [0.3338] AU
Ag = 15718.66 [10156.93] [1.55 σ]
Teff = 4970 [706] K [6.62 σ]

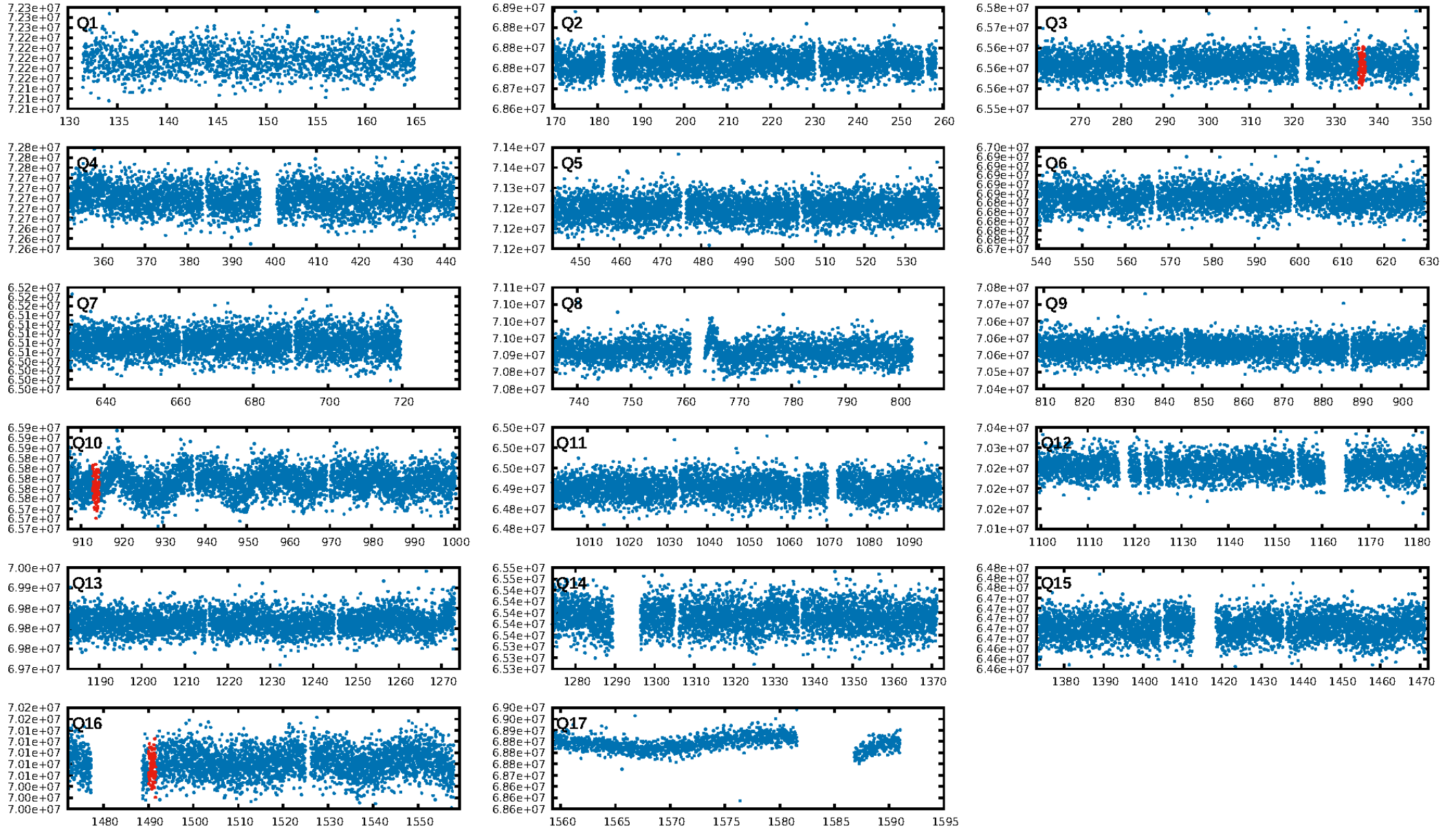
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [601.63 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 88.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.01e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.9887
Centroid-sig: 4.4%
Centroid-so: 1.202 arcsec [1.24 σ]
OotOffset-rm: 0.573 arcsec [0.11 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-rm: 0.536 arcsec [0.10 σ]
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DiffImageOverlap-fno: 0.00 [0/2]

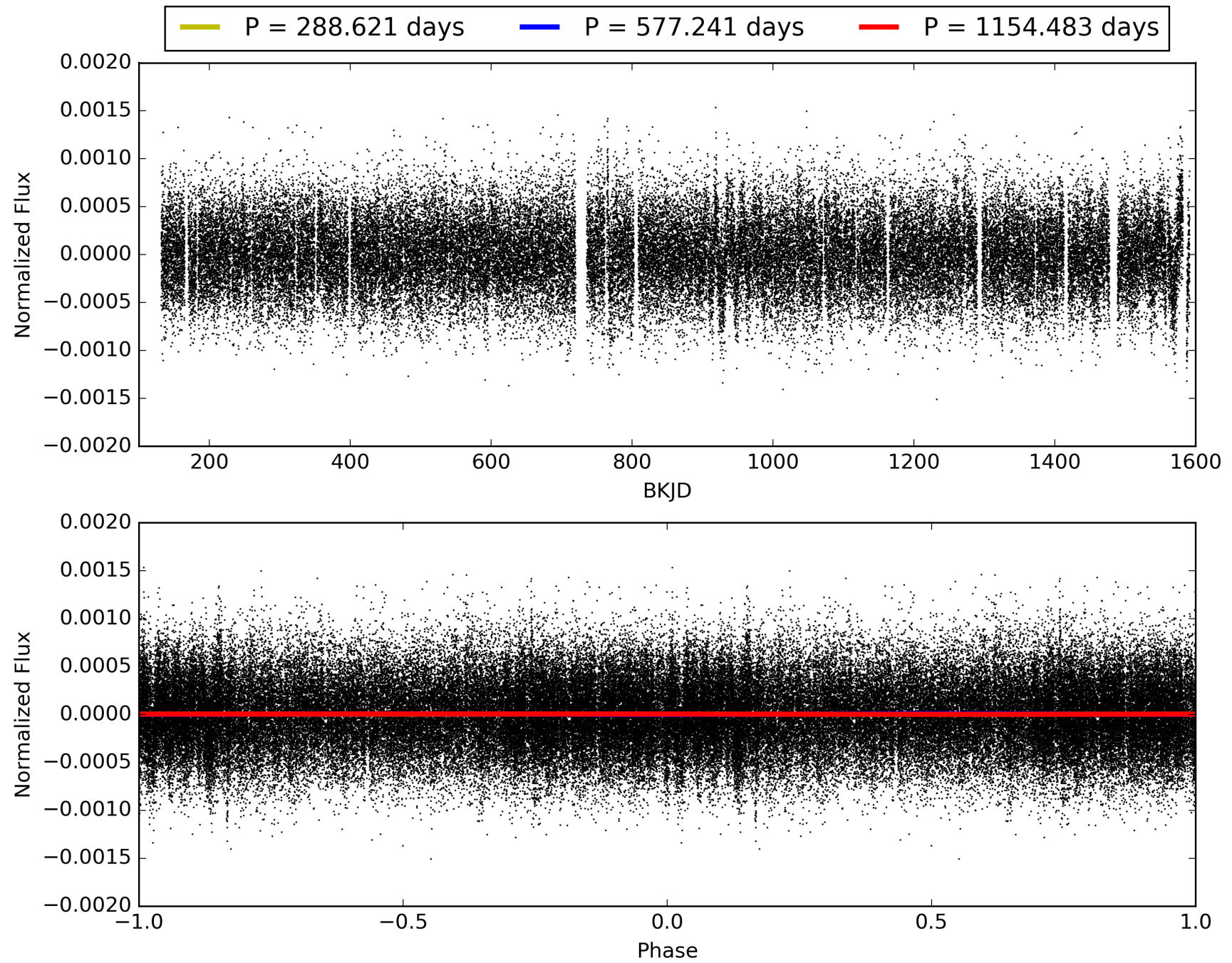
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TCE 004951447-02, PDC Light Curves

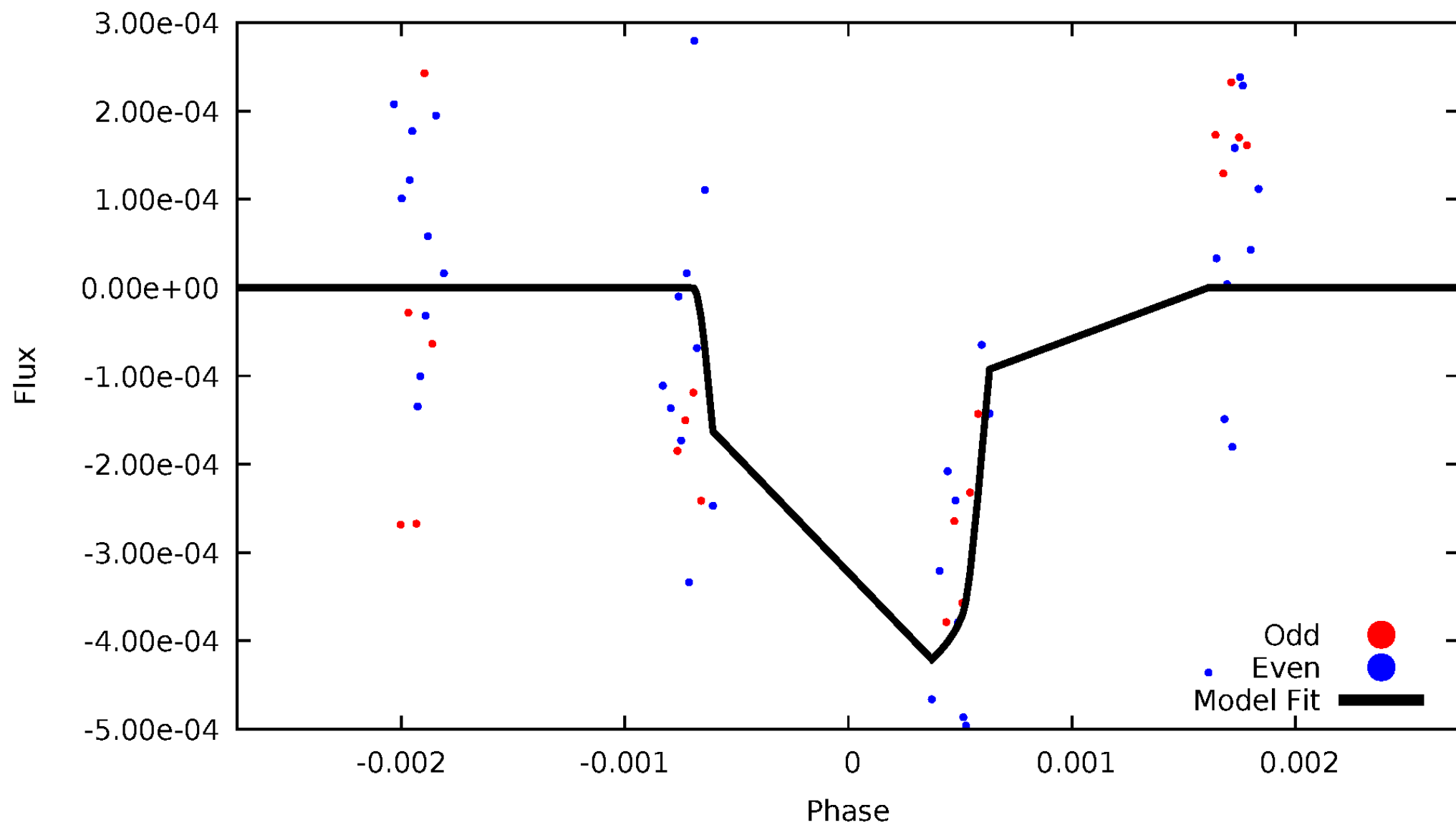


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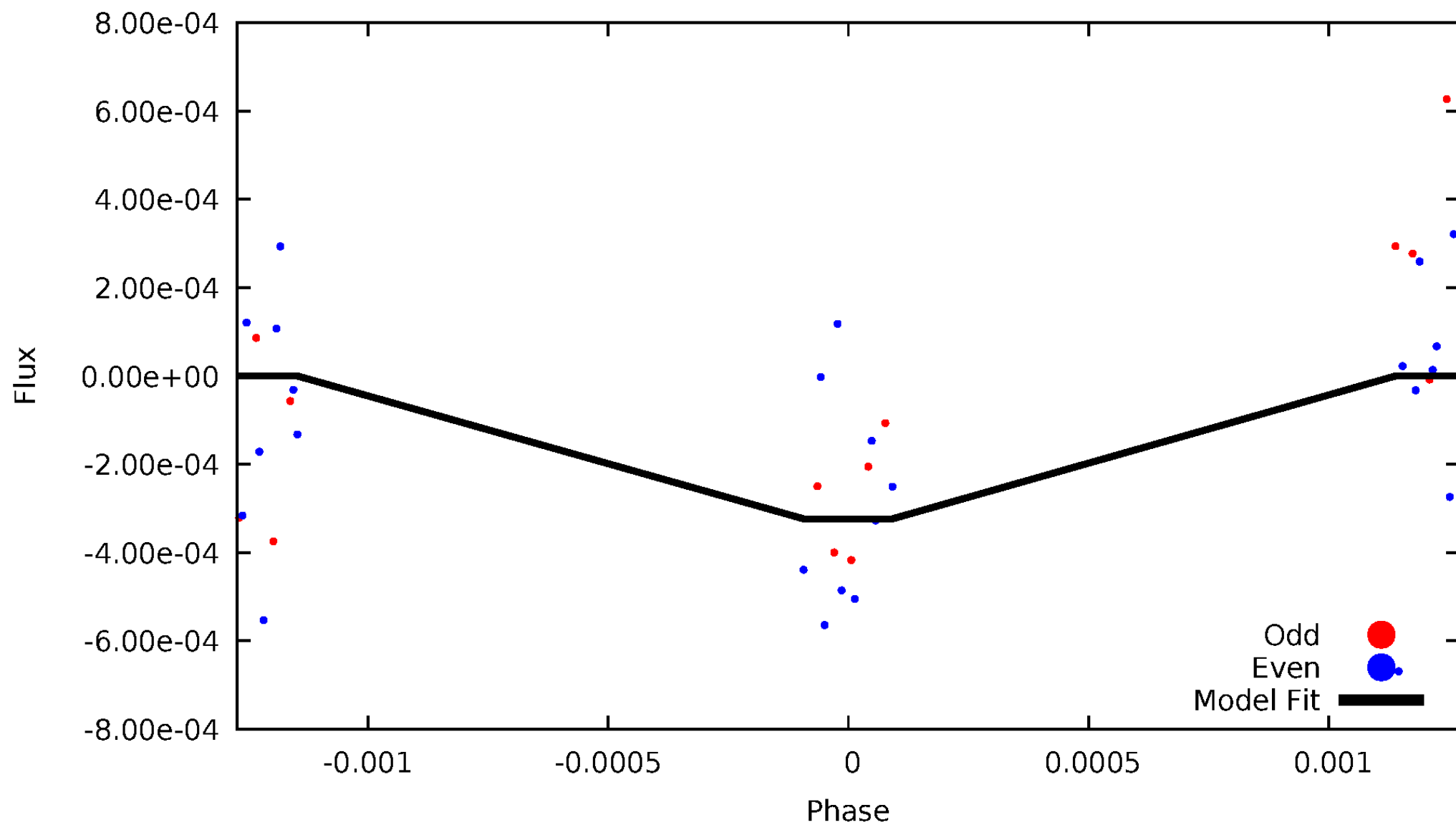
DV Odd/Even

TCE 004951447-02



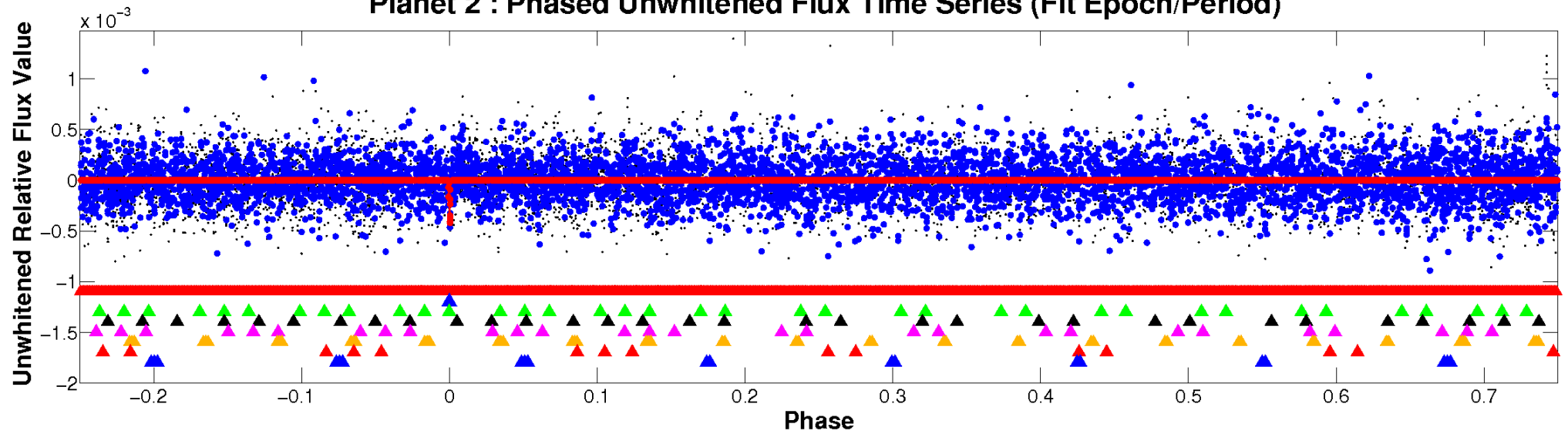
ALT Odd/Even

TCE 004951447-02

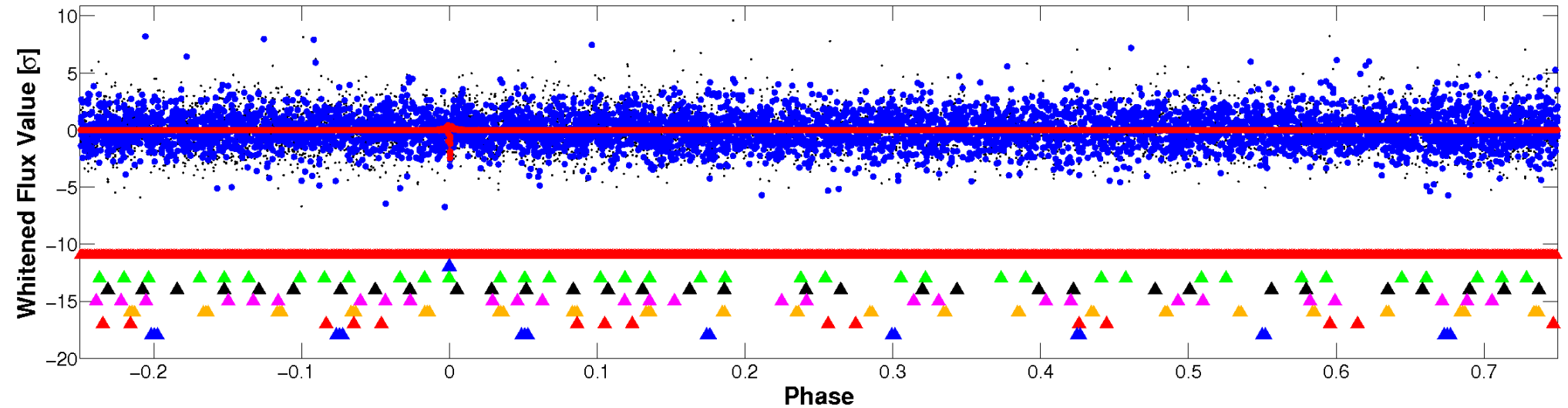


Non-Whitened Vs. Whitened Light Curve

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

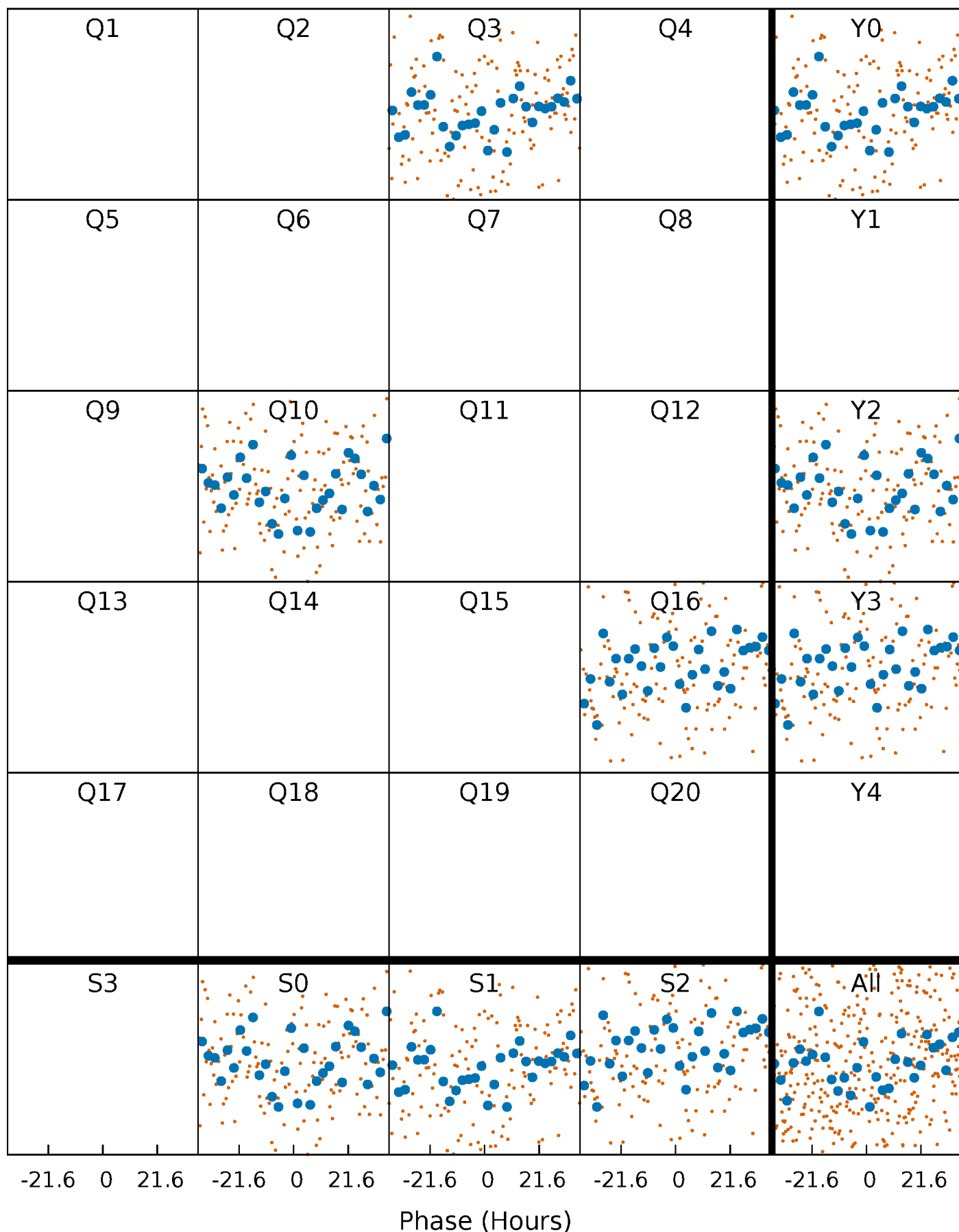


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



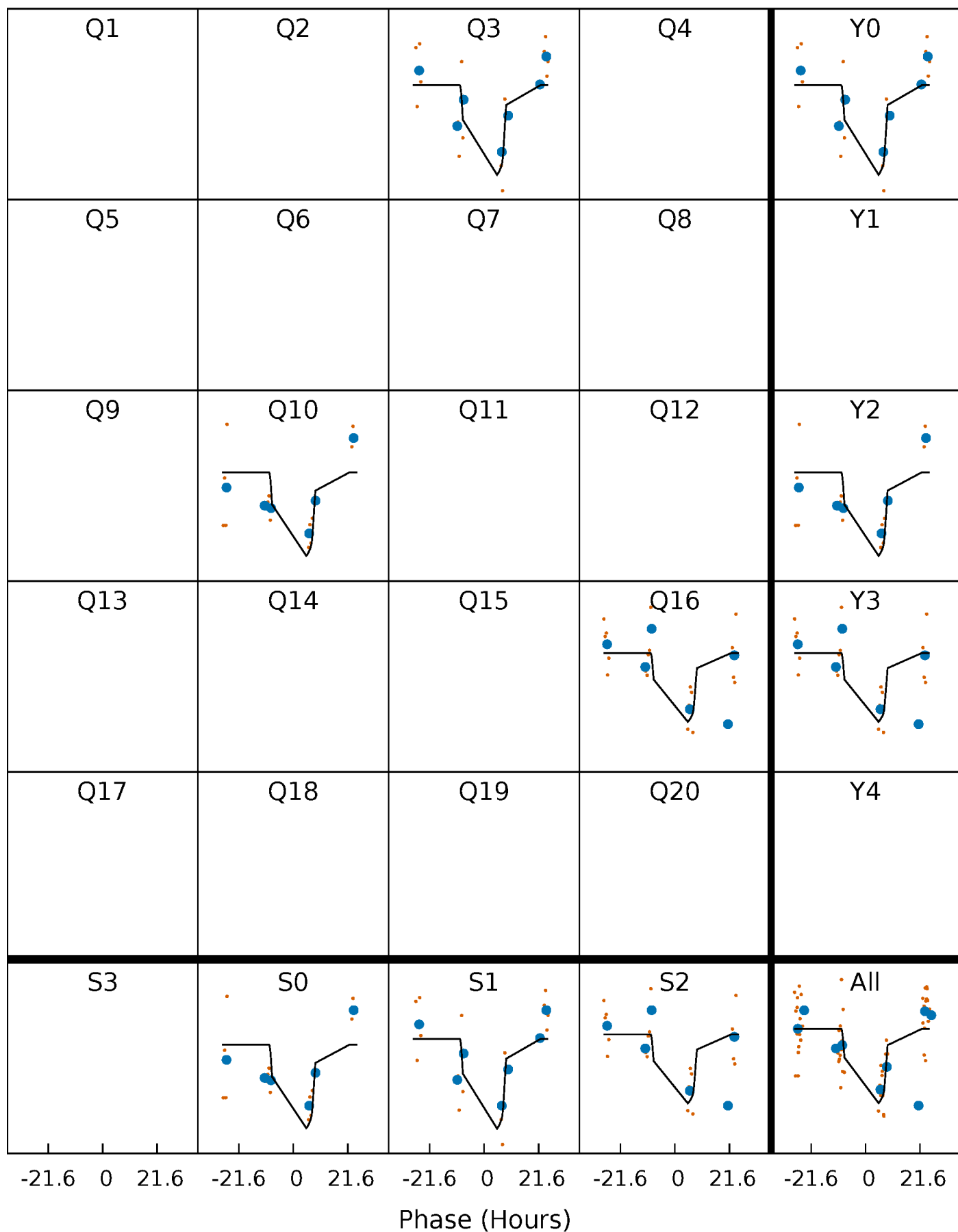
PDC Quarter-Phased Transit Curves

TCE 004951447-02 $P=577.241449$ Days $T_0=336.360194$ (BKJD)



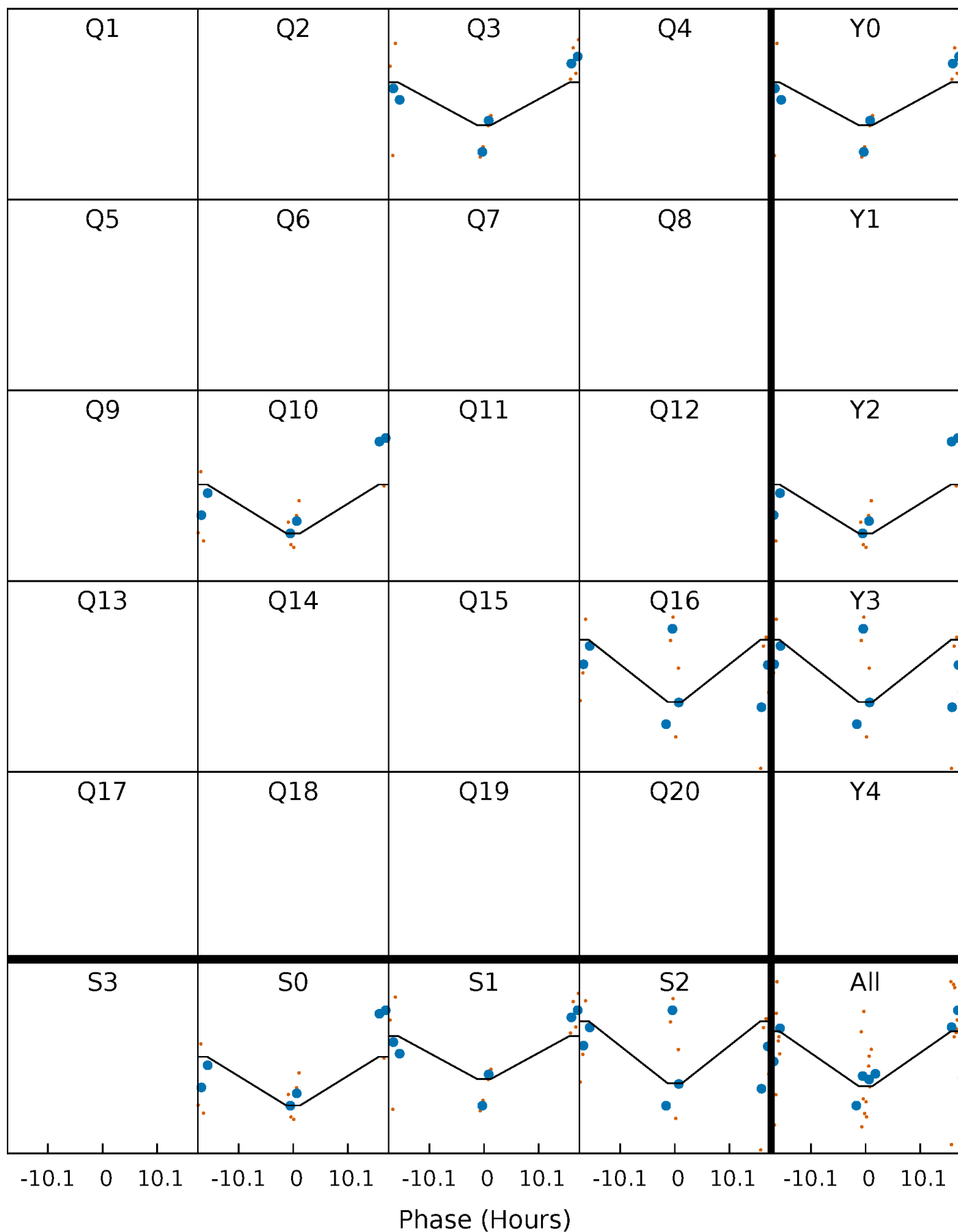
DV Quarter-Phased Transit Curves

TCE 004951447-02 P=577.241449 Days $T_0=336.360194$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

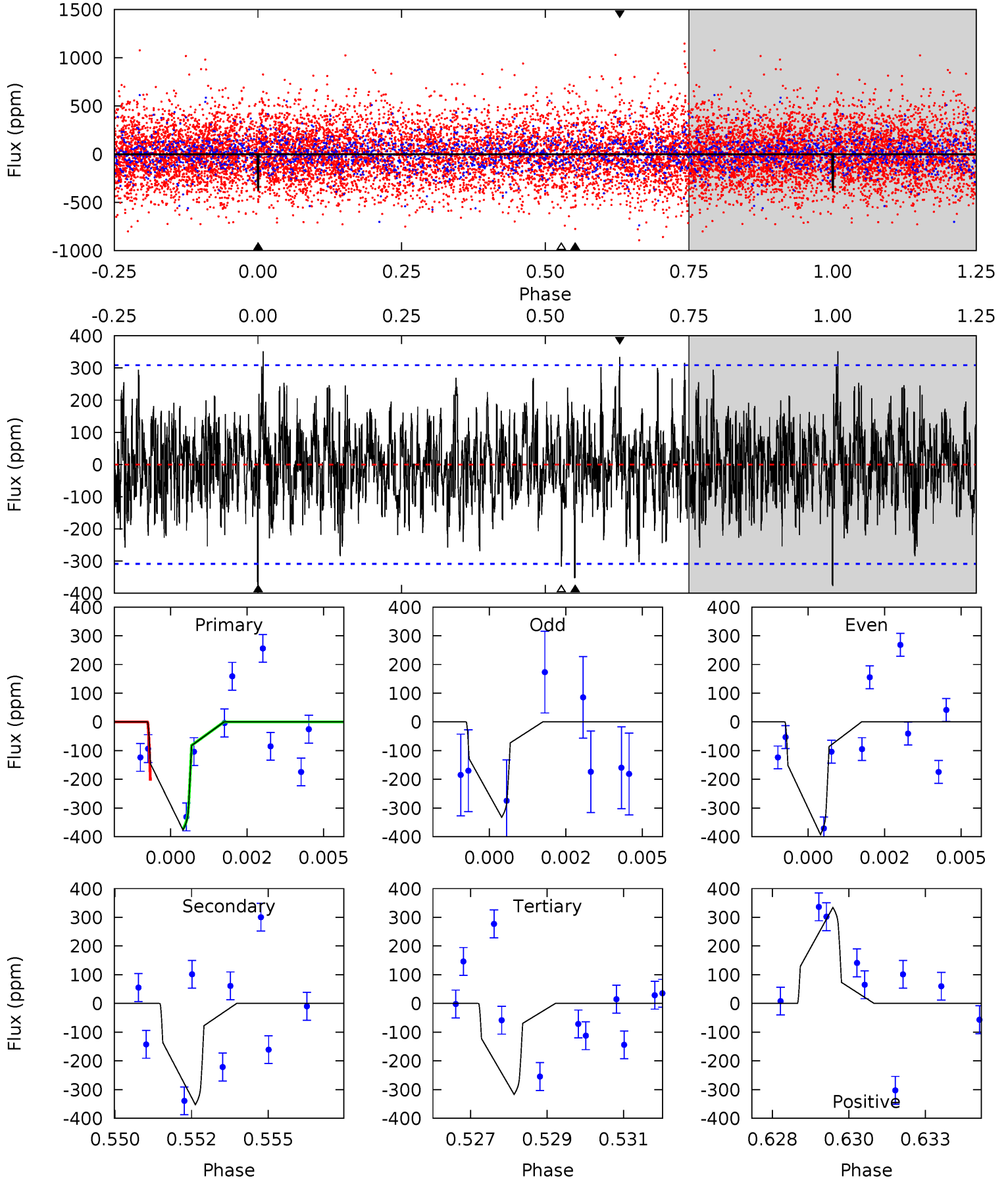
TCE 004951447-02 P=577.220163 Days $T_0=336.672099$ (BKJD)



DV Model-Shift Uniqueness Test

004951447-02, $P = 577.241449$ Days, $E = 336.360194$ Days

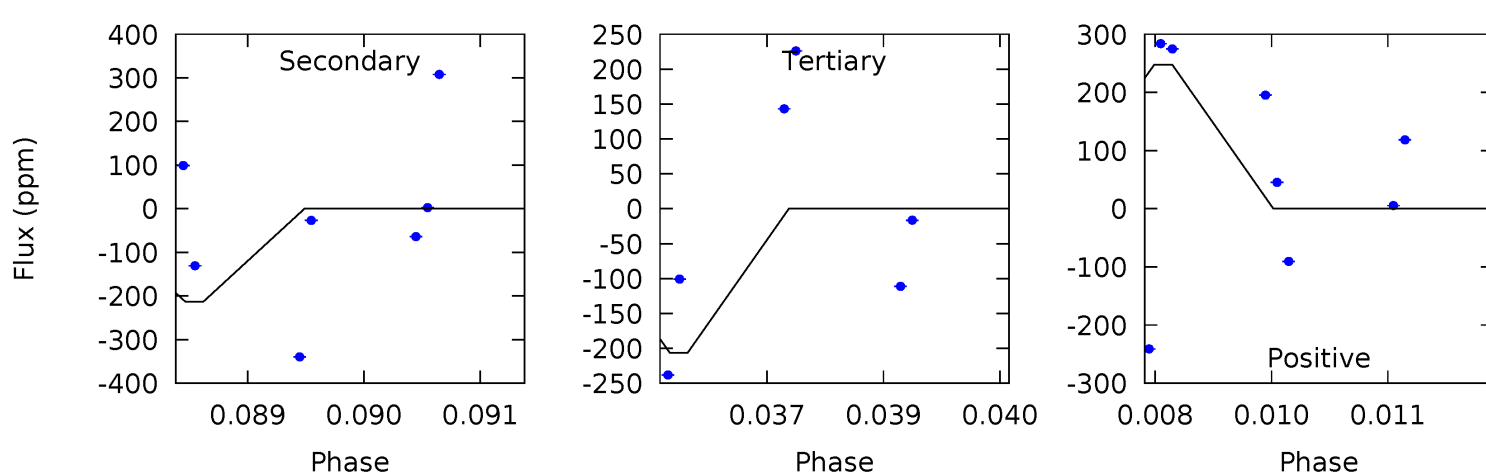
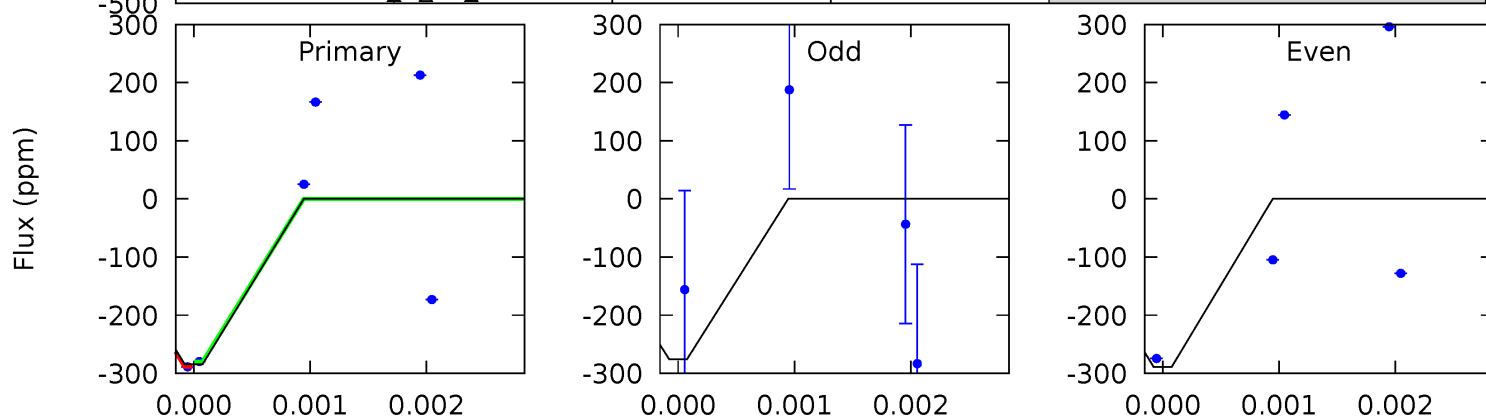
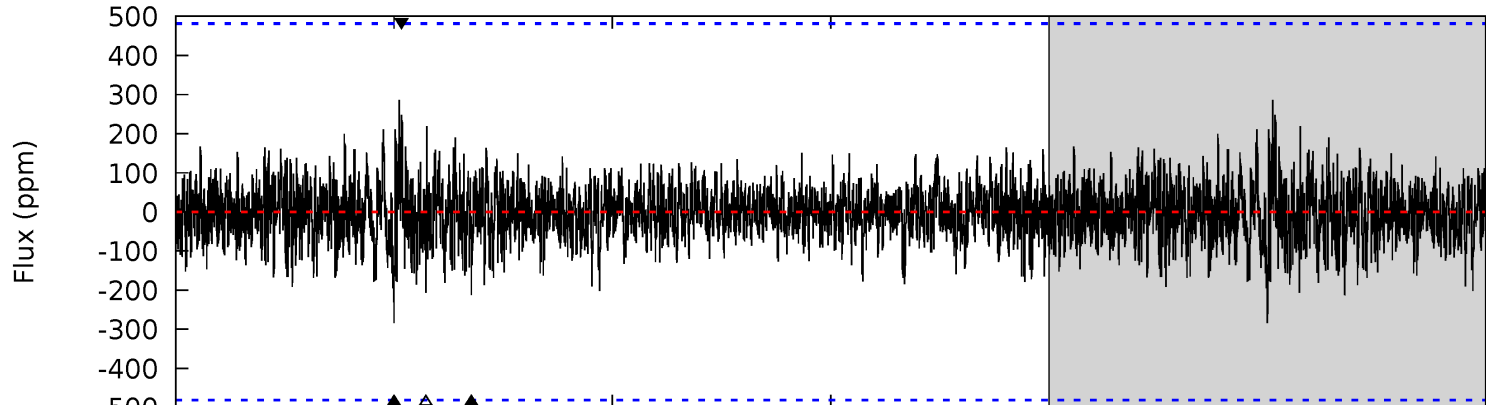
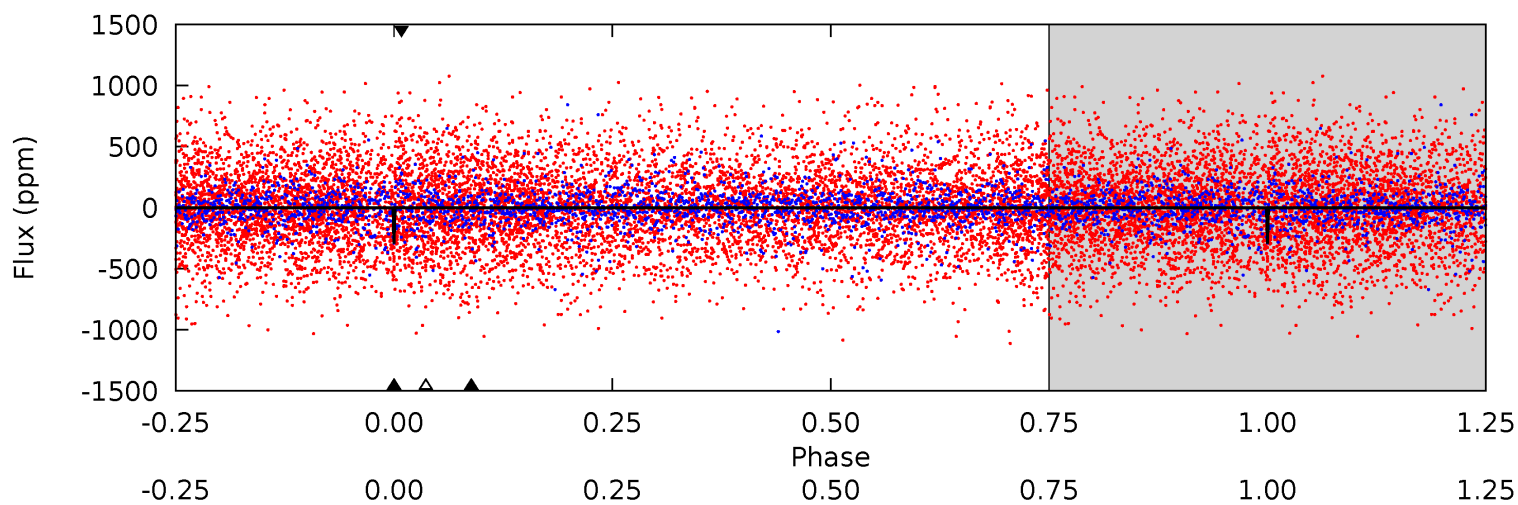
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.47	6.06	5.44	5.74	5.30	3.05	1.67	1.03	0.73	0.62	0.31	0.48	1.07	0.48	1.20



Alt Model-Shift Uniqueness Test

004951447-02, P = 577.220163 Days, E = 336.672099 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.20	2.40	2.32	2.79	5.42	3.24	0.67	0.88	0.41	0.08	-0.39	0.07	1.06	0.50	0.05



Stellar Parameters For KIC 004951447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6517^{+175}_{-214}	$4.199^{+0.180}_{-0.180}$	$-0.260^{+0.250}_{-0.300}$	$1.429^{+0.402}_{-0.329}$	$1.183^{+0.188}_{-0.169}$	$0.571^{+0.532}_{-0.276}$
	+3%/-3%	+4%/-4%	+96%/-115%	+28%/-23%	+16%/-14%	+93%/-48%
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 004951447-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-353 ± 58	$3.58^{+0.78}_{-0.65}$	401^{+30}_{-27}	5875^{+550}_{-443}	30809^{+17114}_{-10593}
Alt.	-213 ± 89	$2.80^{+0.73}_{-0.63}$	400^{+30}_{-27}	5842^{+866}_{-814}	30130^{+26268}_{-15369}

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

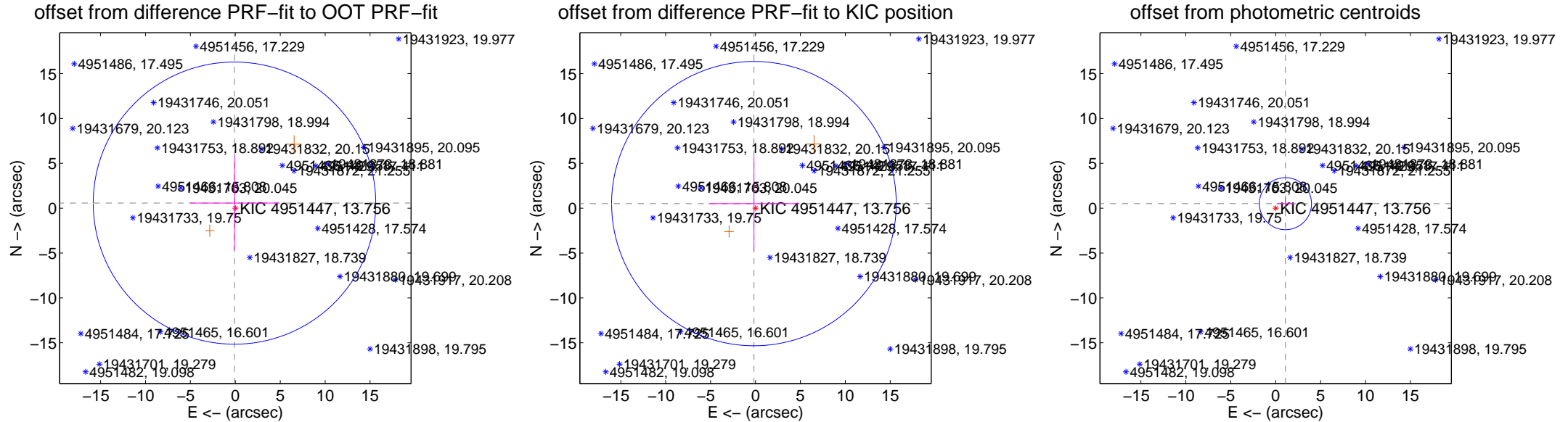
DV Centroid Data

Supplemental centroid analysis for 004951447-02. Kepler magnitude: 13.76. Transit SNR 7.15

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.573 ± 5.243	0.11	0.095 ± 4.994	0.565 ± 5.250
PRF-fit source offset from KIC position	0.536 ± 5.283	0.10	0.173 ± 5.031	0.508 ± 5.311
photometric centroid source offset	1.20 ± 0.97	1.24	-1.09 ± 0.98	0.50 ± 0.89



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.

Q1 no difference image



Q1 no OOT image



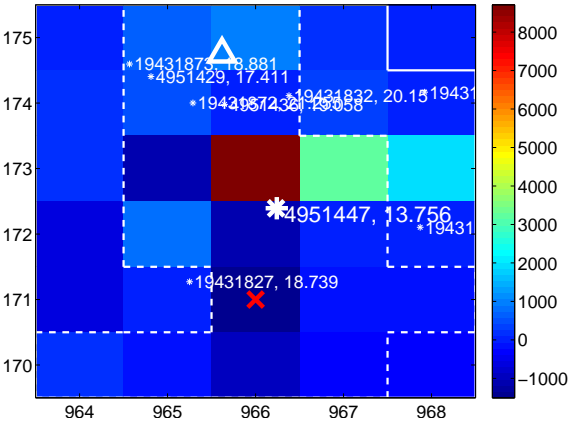
Q2 no difference image



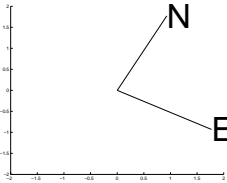
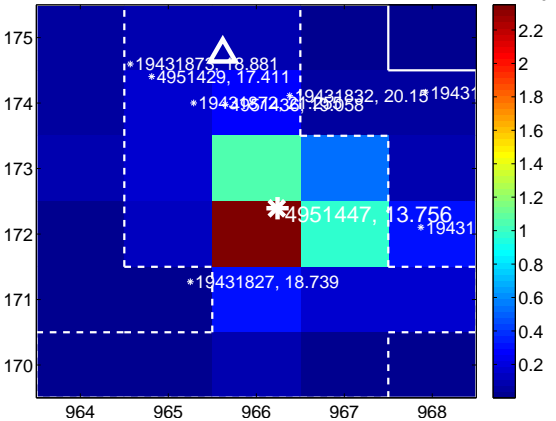
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



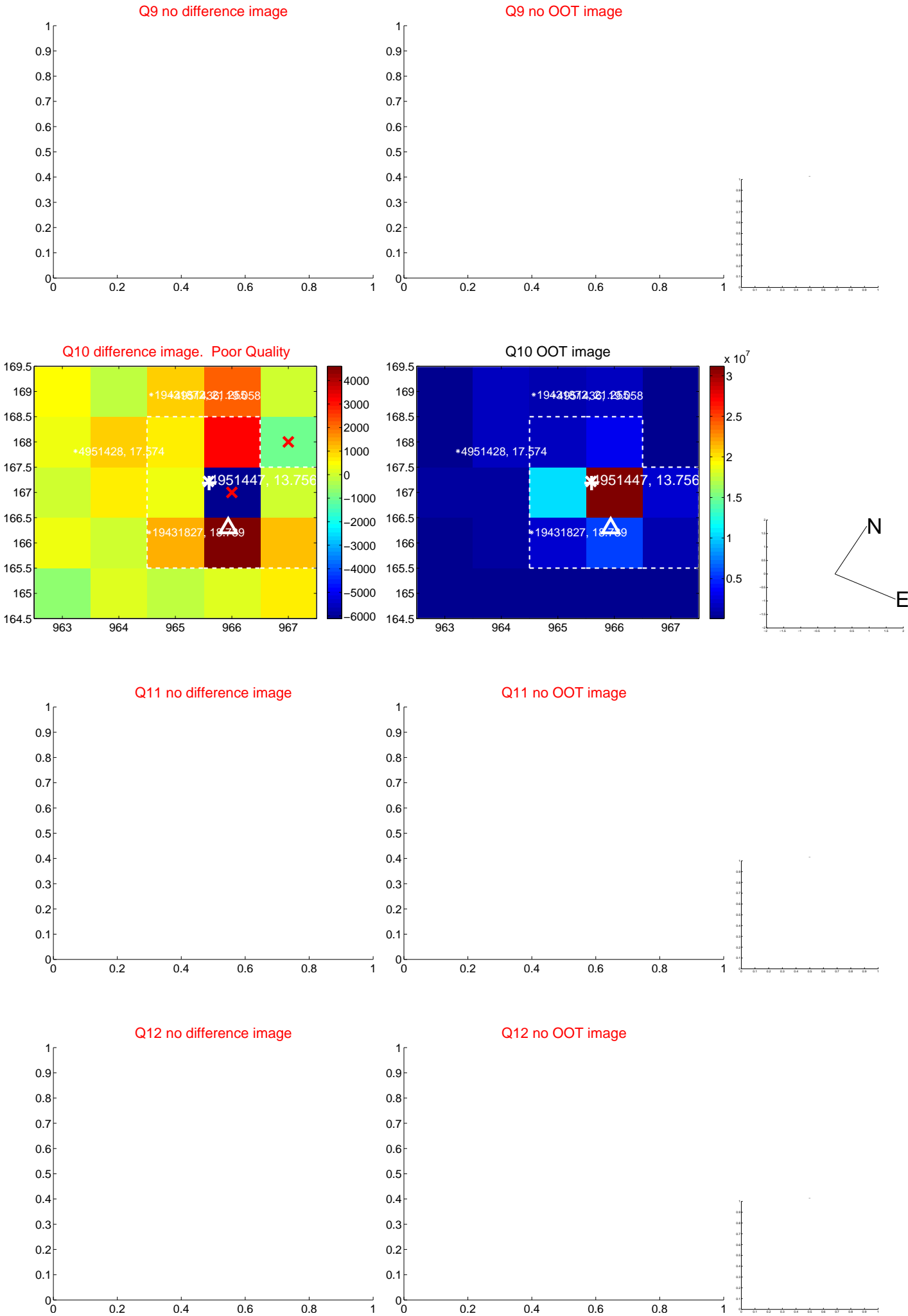
Q4 no OOT image



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



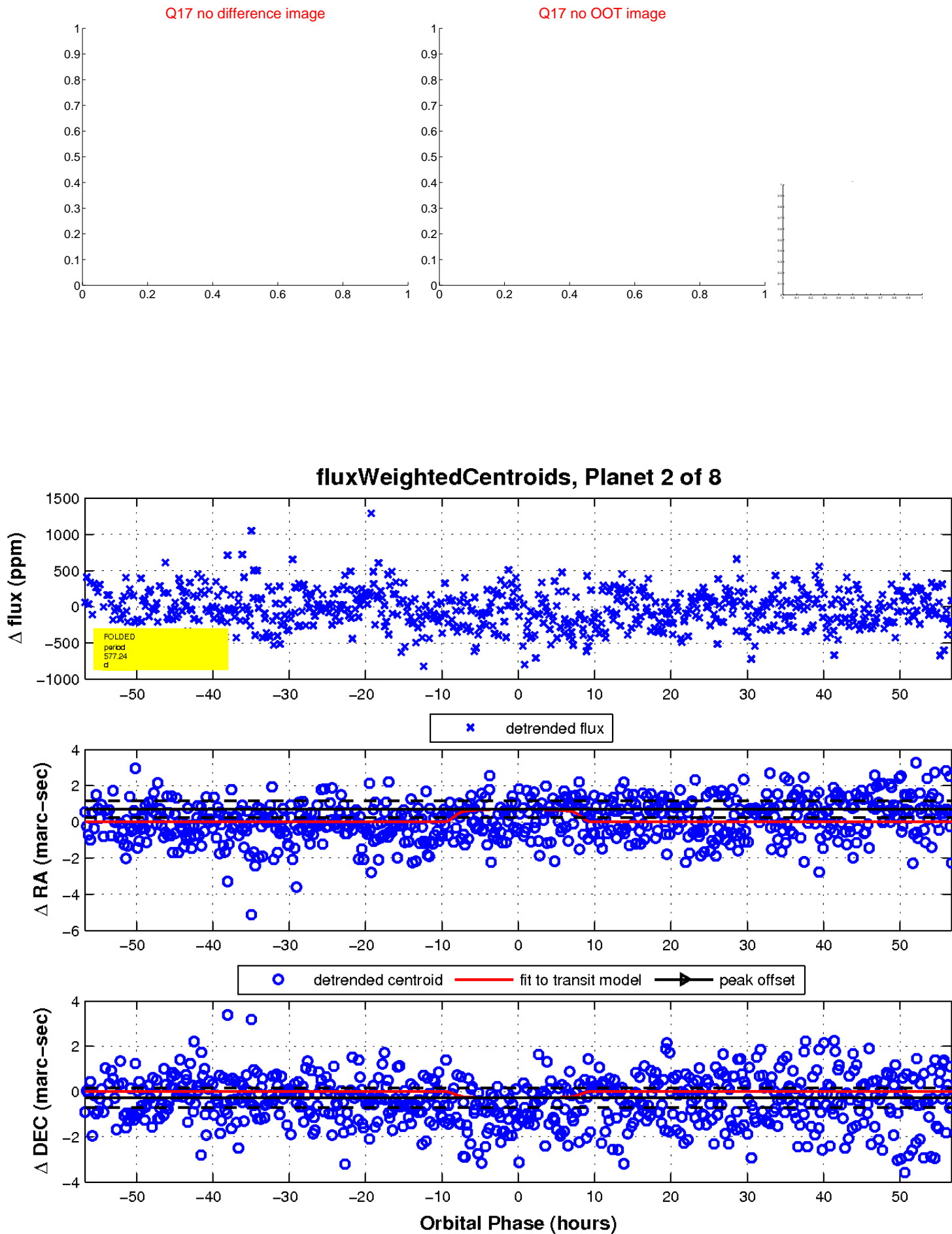
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

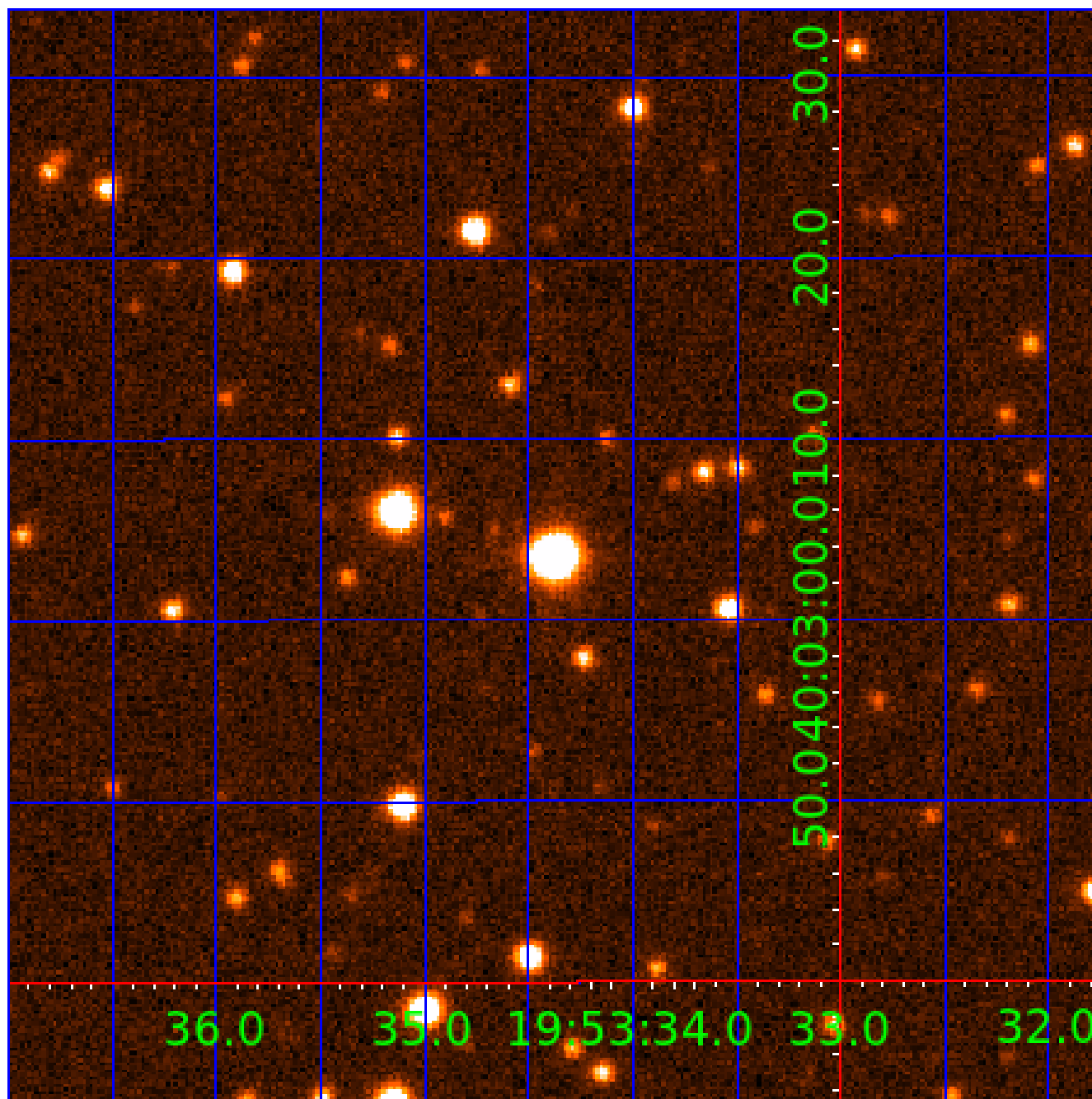


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004951447

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})
004951447-01	OBS	No	0.699656	132.026349	12.4	4.634	8.7	4.5	1.43	6517	0.52	12433.52
004951447-02	OBS	No	577.241449	336.360194	456.0	18.942	8.2	7.1	1.43	6517	3.59	1.61
004951447-03	OBS	No	39.121997	160.621638	392.3	1.485	9.3	8.7	1.43	6517	2.88	58.15
004951447-04	OBS	No	45.444298	157.556159	229.7	2.922	9.6	6.1	1.43	6517	2.46	47.62
004951447-05	OBS	No	51.591981	166.315444	419.6	2.540	8.7	8.3	1.43	6517	5.66	40.21
004951447-06	OBS	No	28.815116	155.728361	392.0	1.741	8.9	10.7	1.43	6517	3.31	87.42
004951447-07	OBS	No	98.000565	190.276053	451.2	2.587	7.8	9.1	1.43	6517	3.49	17.09
004951447-08	OBS	No	72.310280	147.611048	548.0	1.647	8.3	10.1	1.43	6517	3.59	25.64

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004951447-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
004951447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004951447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004951447-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
004951447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004951447-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

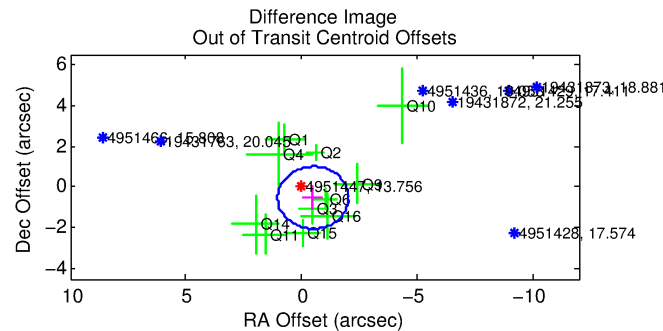
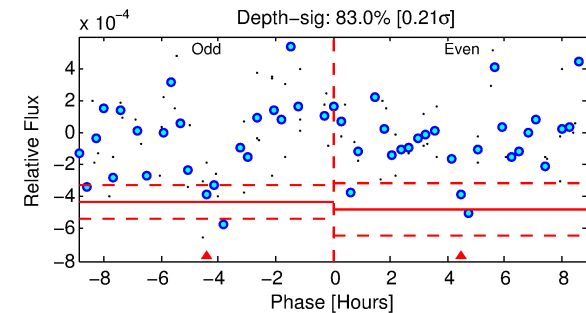
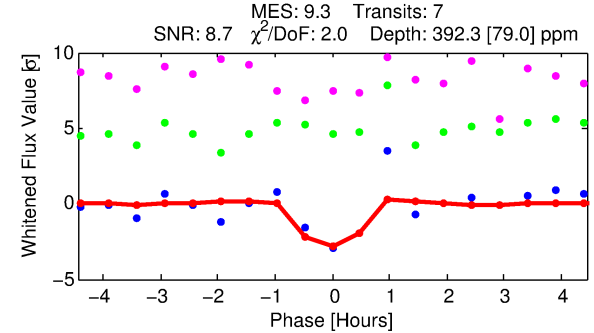
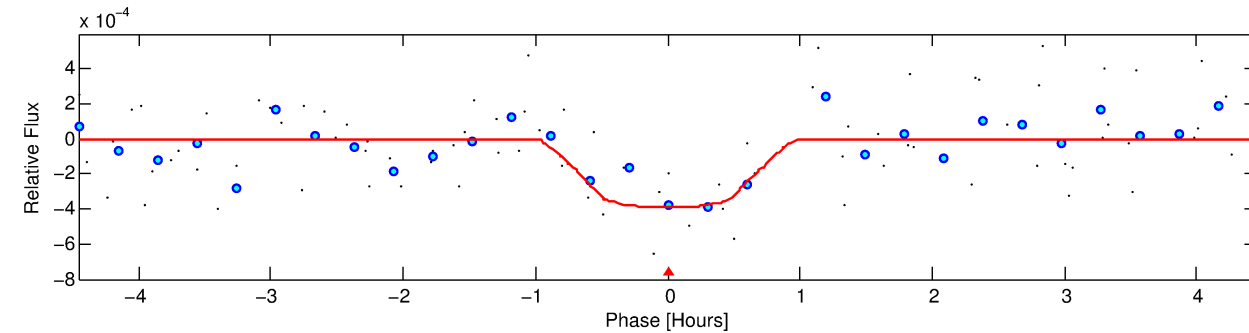
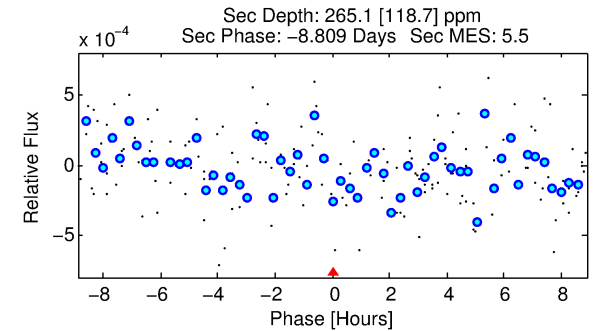
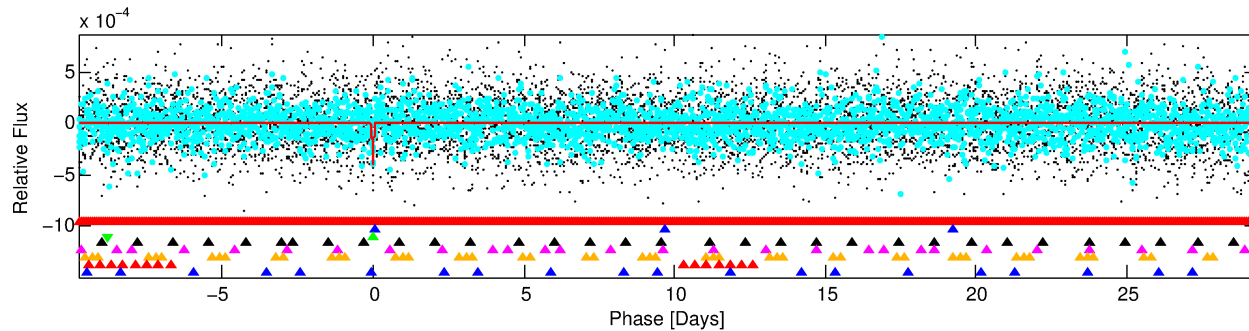
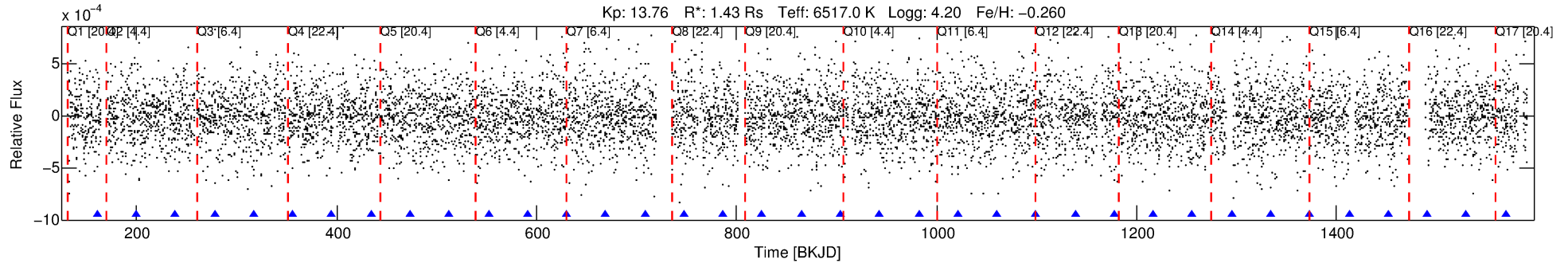
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004951447-03

No Significant Match Found

DV One-Page Summary

KIC: 4951447 Candidate: 3 of 8 Period: 39.122 d



DV Fit Results:

Period = 39.12200 [0.00052] d
Epoch = 160.6216 [0.0082] BKJD
Rp/R* = 0.0185 [0.0329]
a/R* = 197.27 [1845.11]
b = 0.28 [31.77]
Seff = 58.15 [20.87]
Teq = 704 [63] K
Rp = 2.88 [5.20] Re
a = 0.2382 [0.0555] AU
Ag = 999.70 [3612.37] [0.28 σ]
Teffp = 6122 [5510] K [0.98 σ]

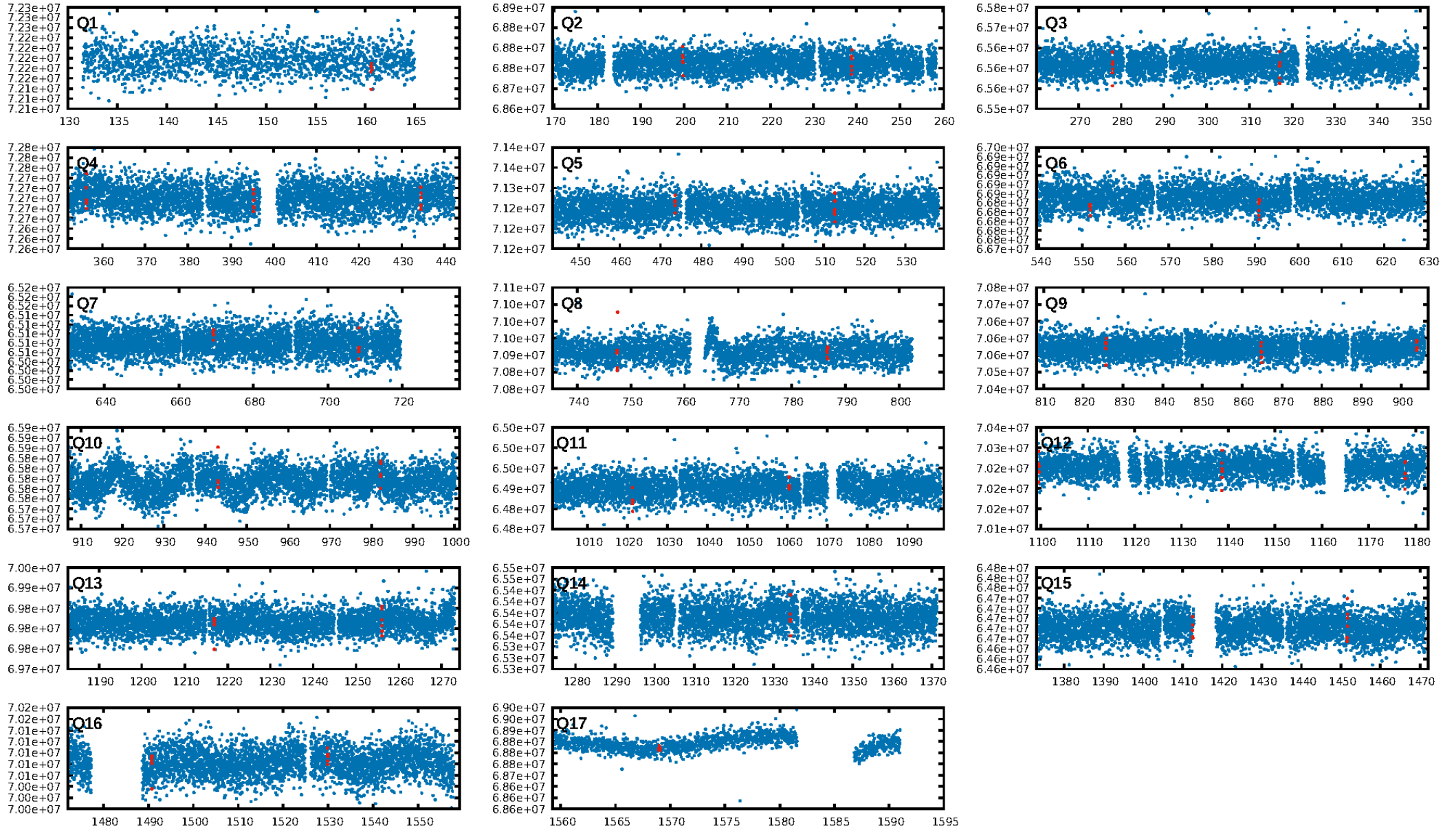
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [108.08 σ]
LongPeriod-sig: 100.0% [46.30 σ]
ModelChiSquare2-sig: 47.7%
ModelChiSquareGof-sig: 87.0%
Bootstrap-pfa: 3.95e-09
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -6.034
Centroid-sig: 28.3%
Centroid-so: 0.521 arcsec [0.66 σ]
OotOffset-rm: 0.719 arcsec [1.41 σ]
KicOffset-rm: 0.674 arcsec [1.30 σ]
OotOffset-st: 4/3/2/2 [11]
KicOffset-st: 4/3/2/2 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 0.12 [2/17]

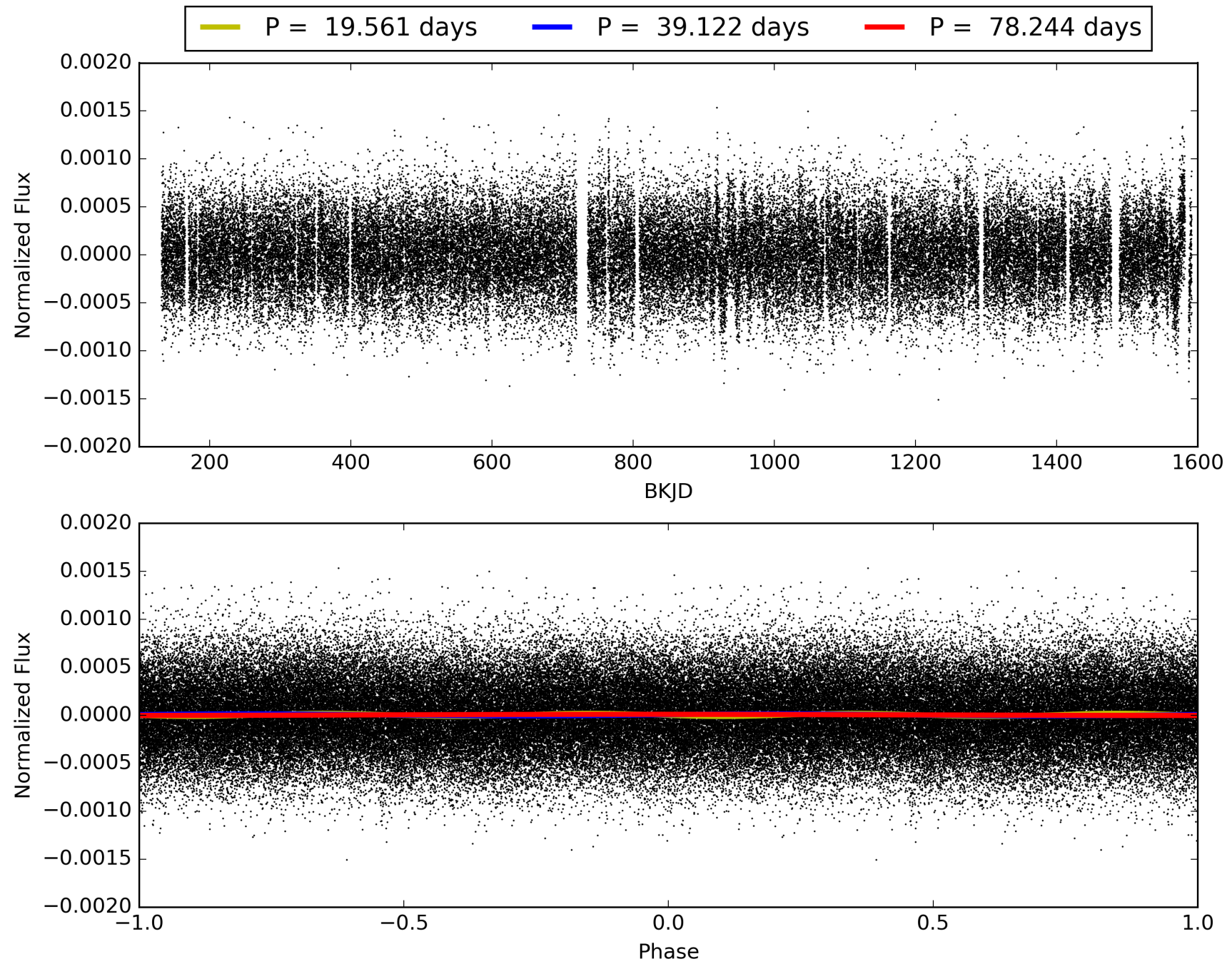
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:54:03 Z

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

TCE 004951447-03, PDC Light Curves

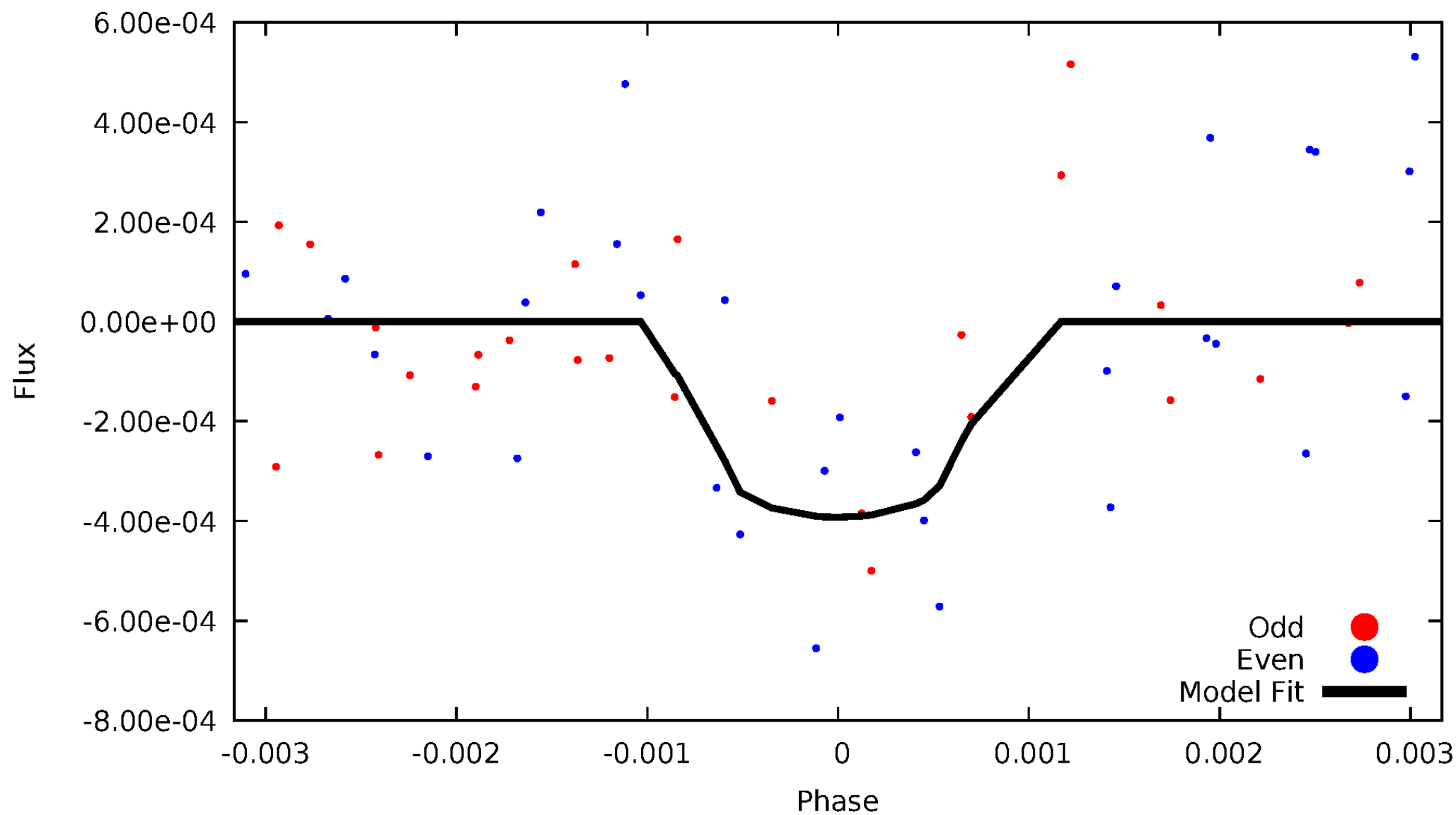


TCE 004951447-03



DV Odd/Even

TCE 004951447-03

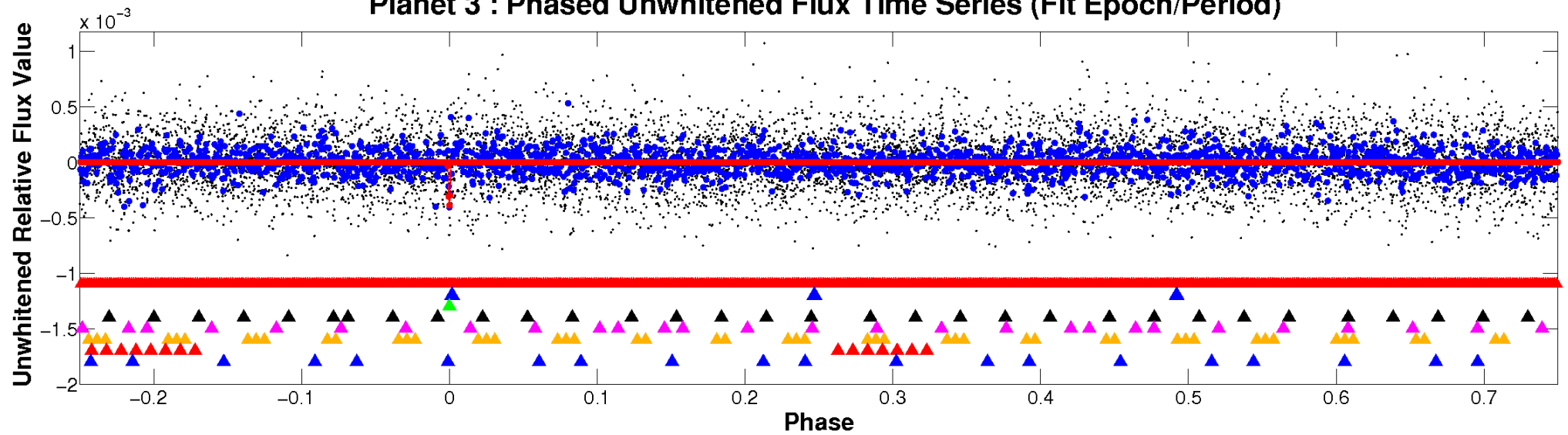


ALT Odd/Even

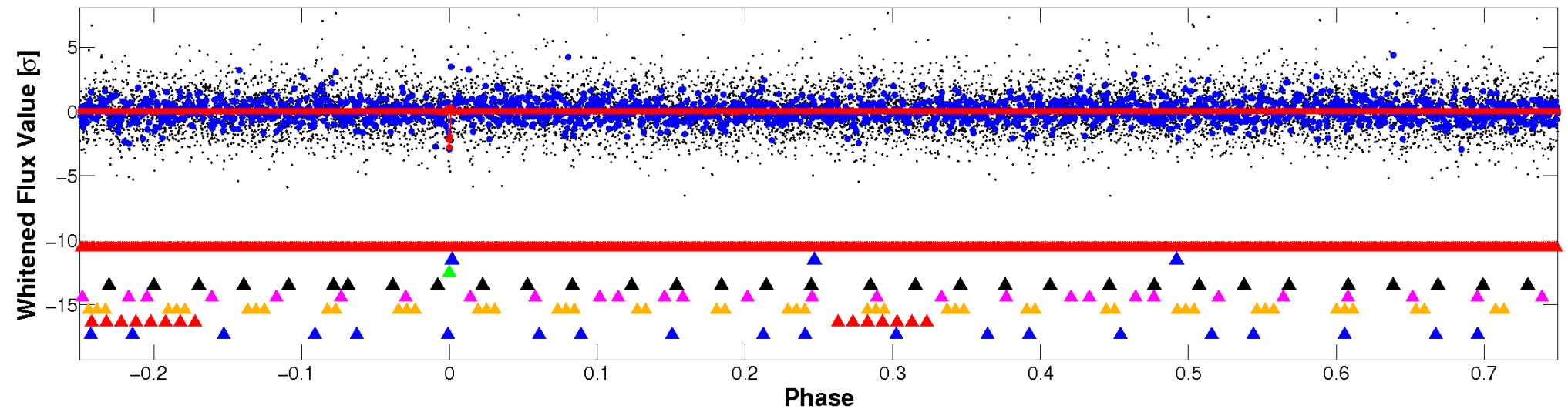
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

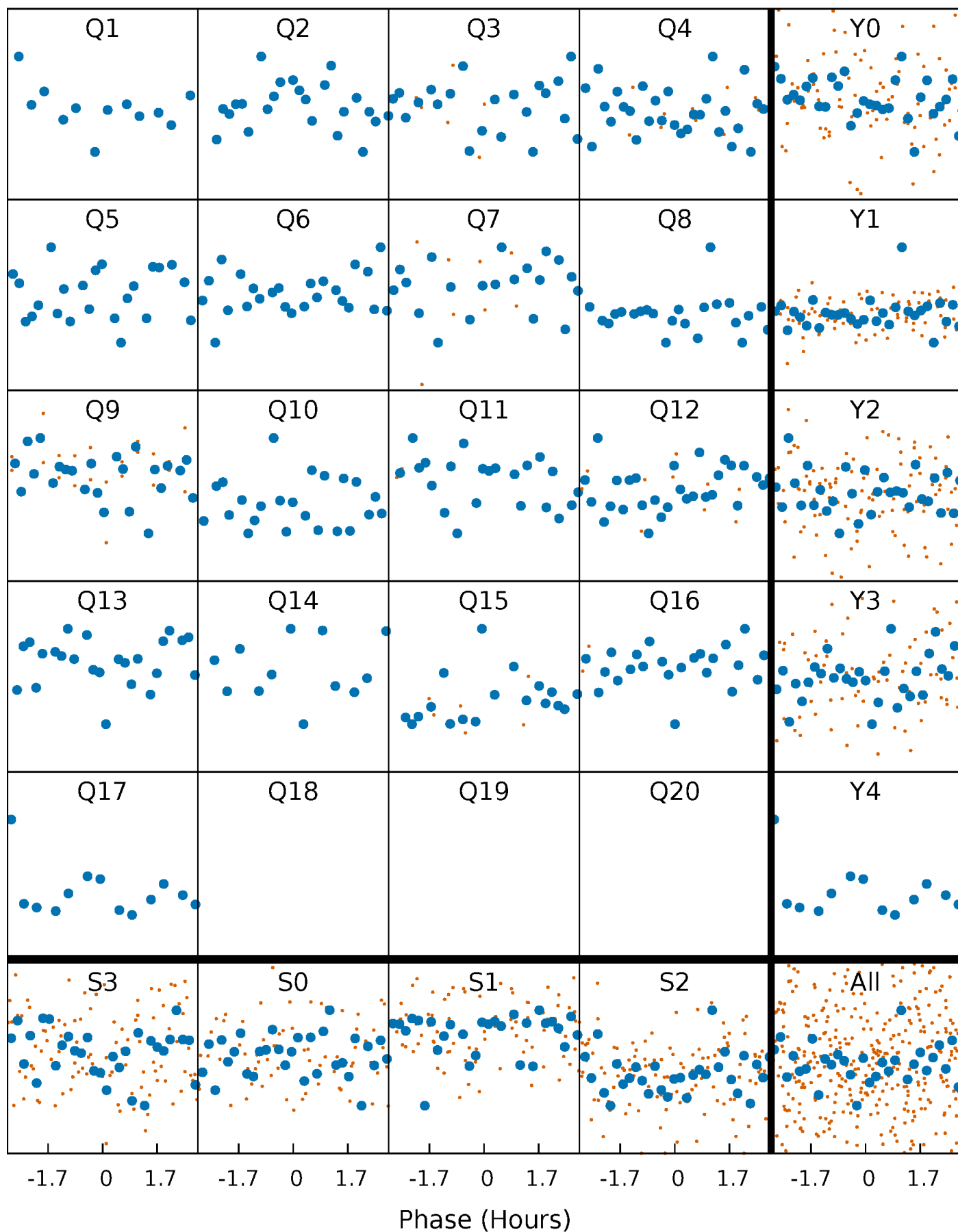


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



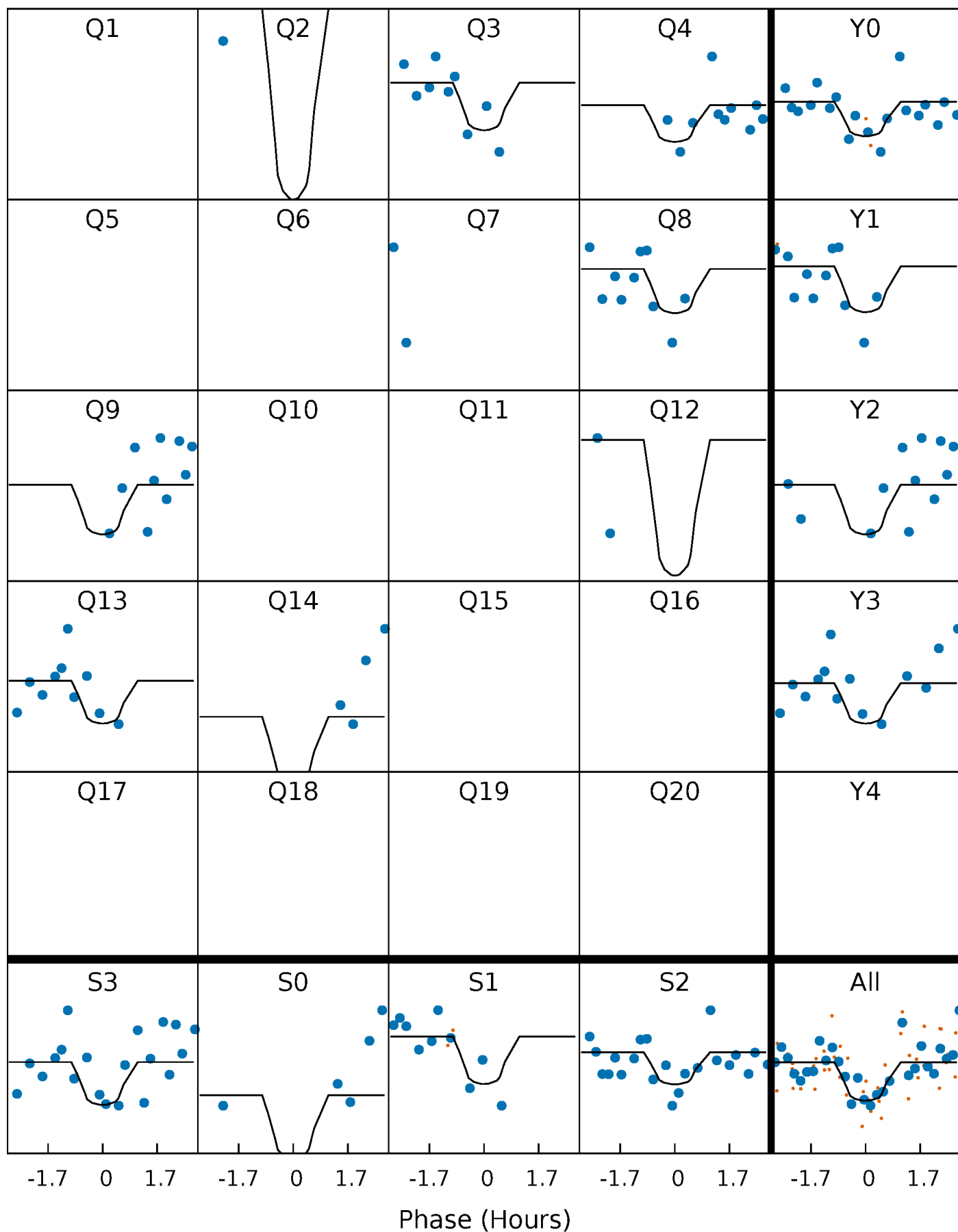
PDC Quarter-Phased Transit Curves

TCE 004951447-03 P= 39.121997 Days $T_0=160.621638$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004951447-03 P= 39.121997 Days $T_0=160.621638$ (BKJD)

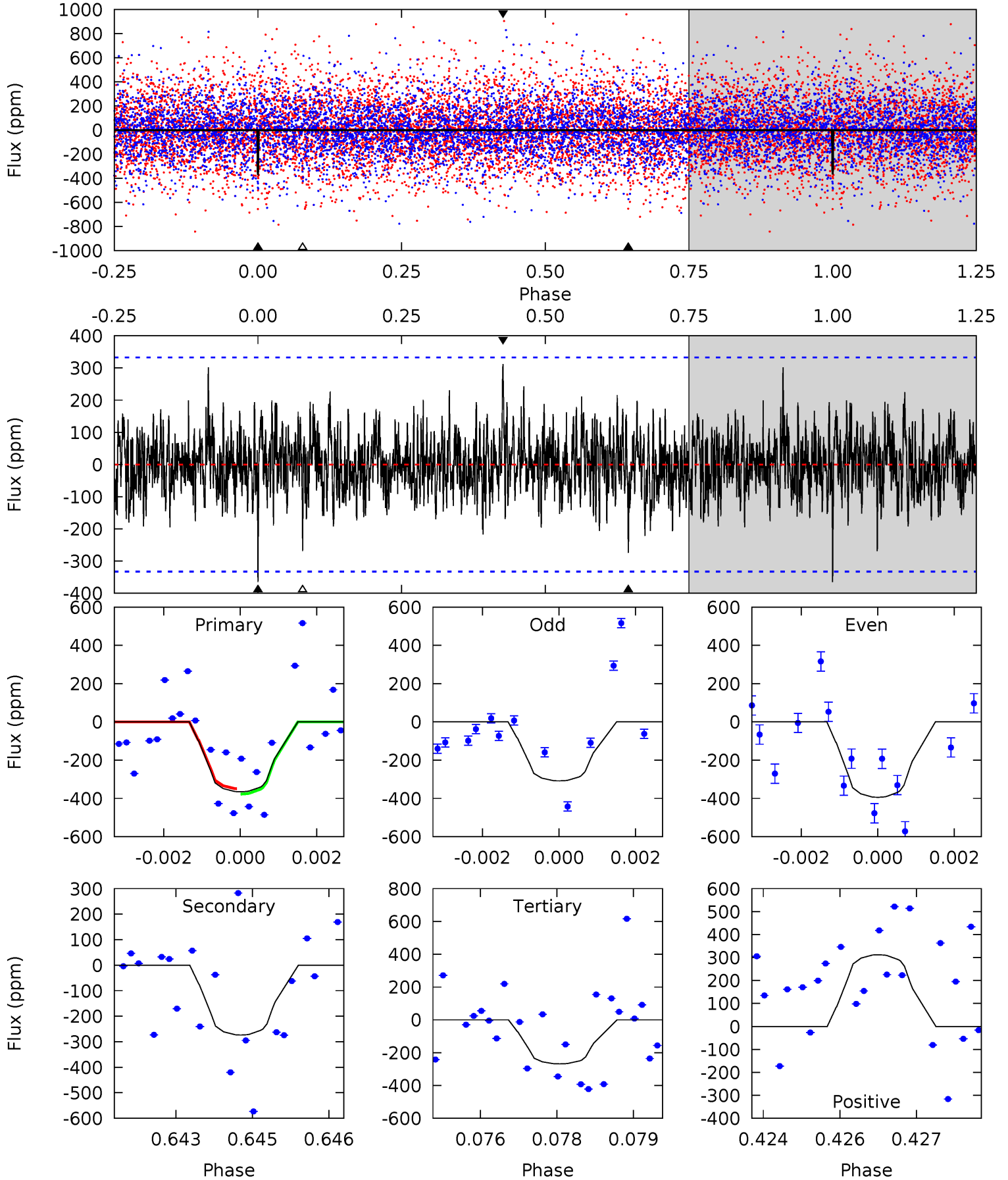


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004951447-03, P = 39.121997 Days, E = 121.499641 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.90	4.42	4.34	5.04	5.37	3.16	1.25	1.57	0.86	0.09	-0.62	0.67	1.06	0.46	0.23



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004951447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6517^{+175}_{-214}	$4.199^{+0.180}_{-0.180}$	$-0.260^{+0.250}_{-0.300}$	$1.429^{+0.402}_{-0.329}$	$1.183^{+0.188}_{-0.169}$	$0.571^{+0.532}_{-0.276}$
	+3%/-3%	+4%/-4%	+96%/-115%	+28%/-23%	+16%/-14%	+93%/-48%
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 004951447-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-274 ± 62	$4.79^{+4.49}_{-3.27}$	981^{+71}_{-66}	4817^{+3953}_{-1030}	363^{+3403}_{-268}
Alt.	N/A	N/A	N/A	N/A	N/A

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

DV Centroid Data

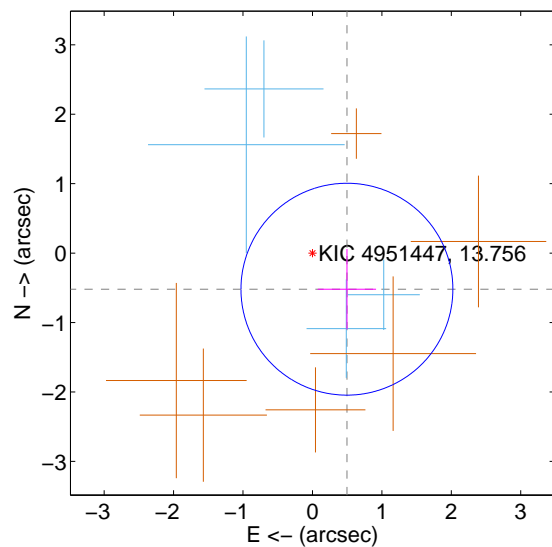
Supplemental centroid analysis for 004951447-03. Kepler magnitude: 13.76. Transit SNR 8.73

There are 4 quarters with good PRF difference image offsets

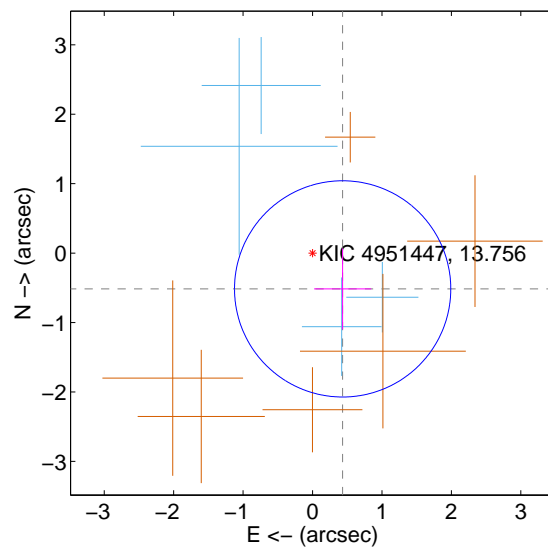
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.719 ± 0.509	1.41	-0.497 ± 0.420	-0.520 ± 0.578
PRF-fit source offset from KIC position	0.674 ± 0.519	1.30	-0.434 ± 0.411	-0.516 ± 0.584
photometric centroid source offset	0.52 ± 0.79	0.66	-0.50 ± 0.80	-0.13 ± 0.73

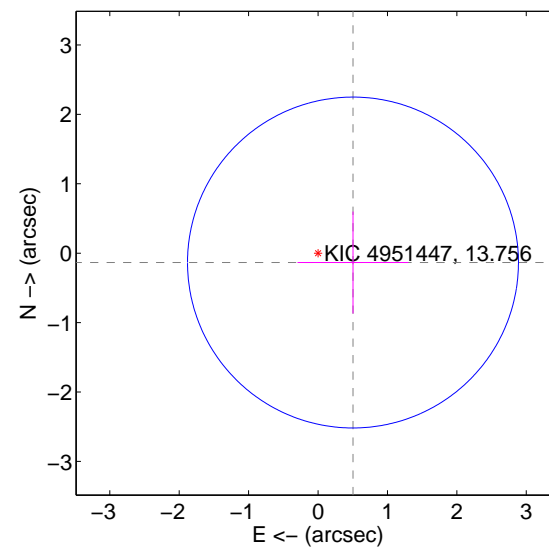
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

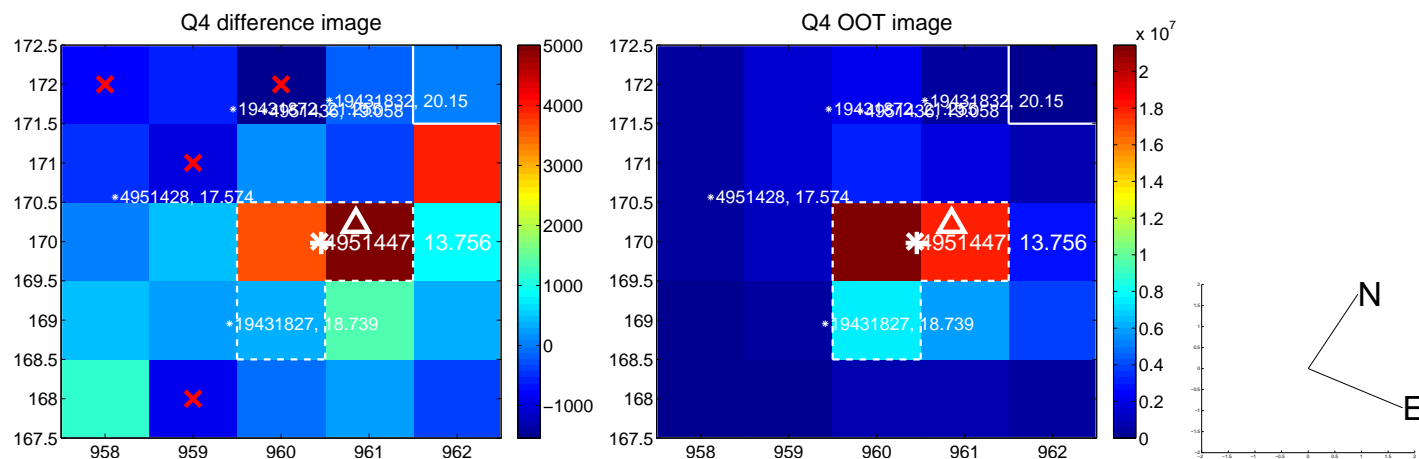
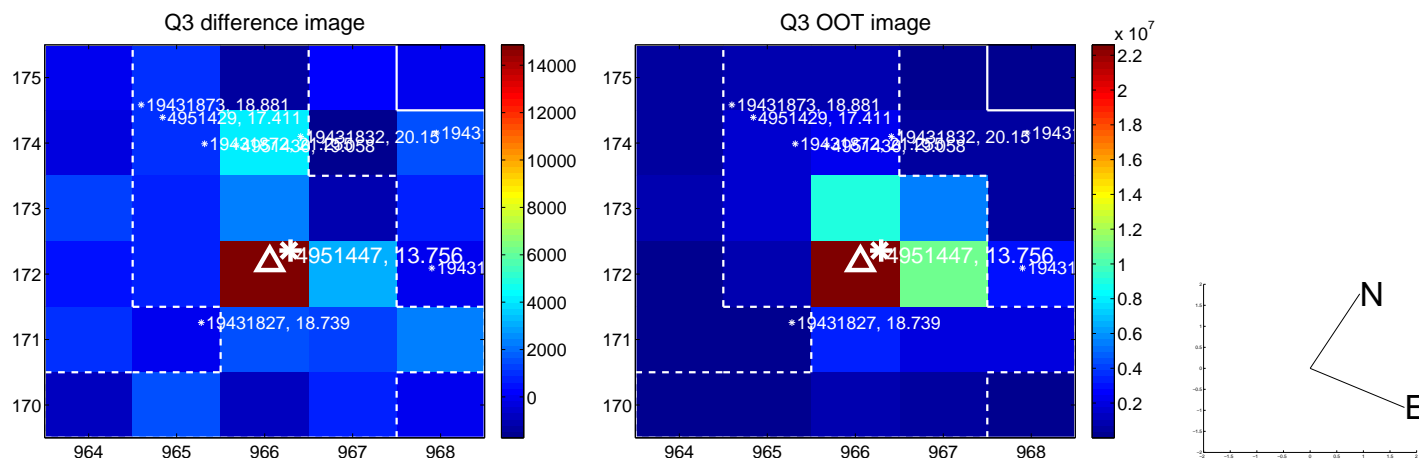
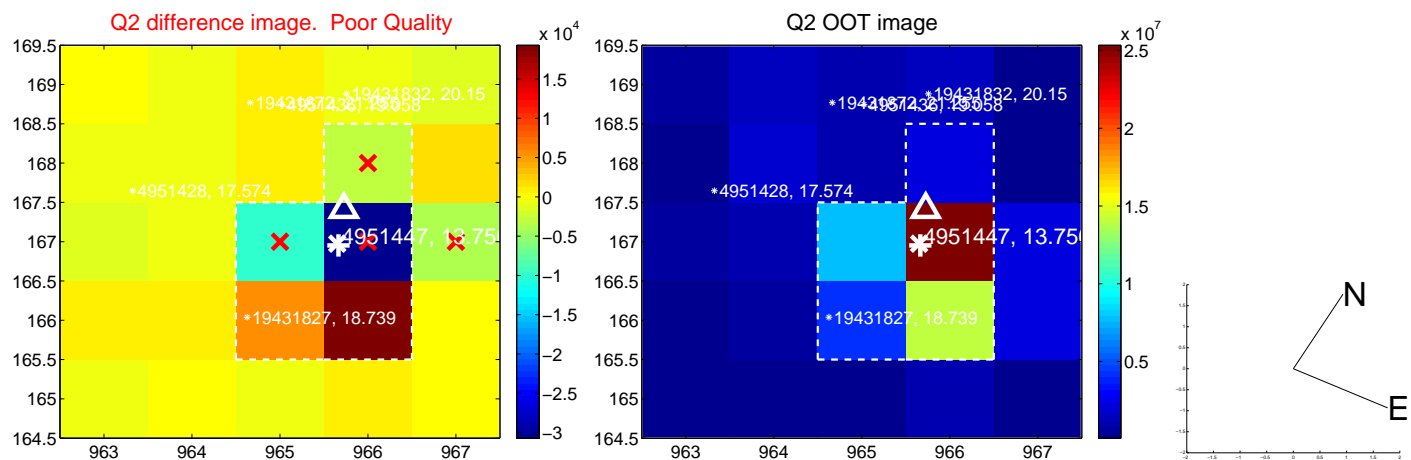
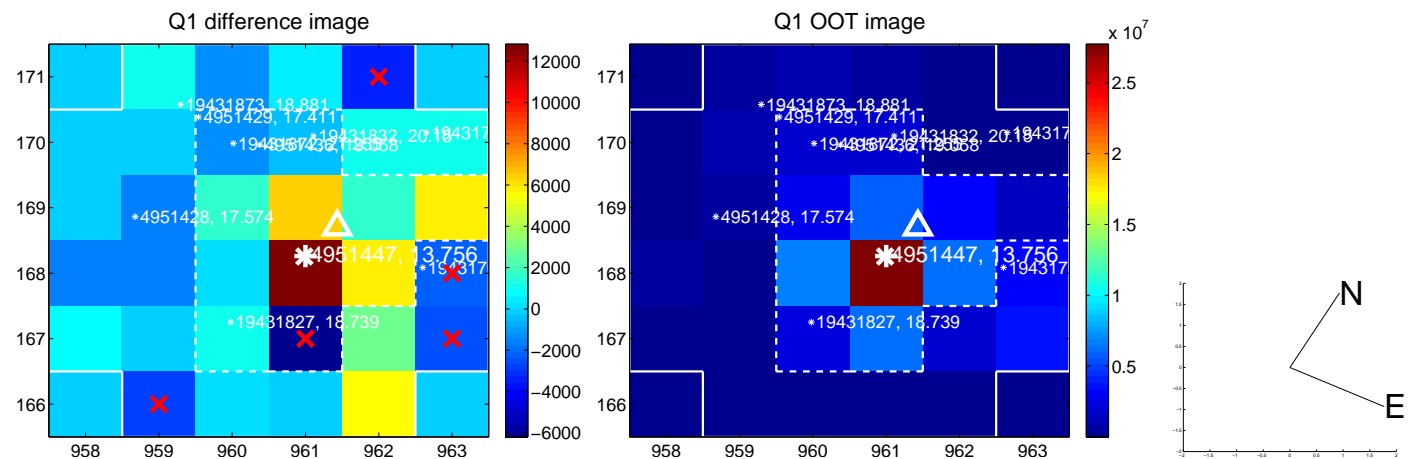


offset from photometric centroids

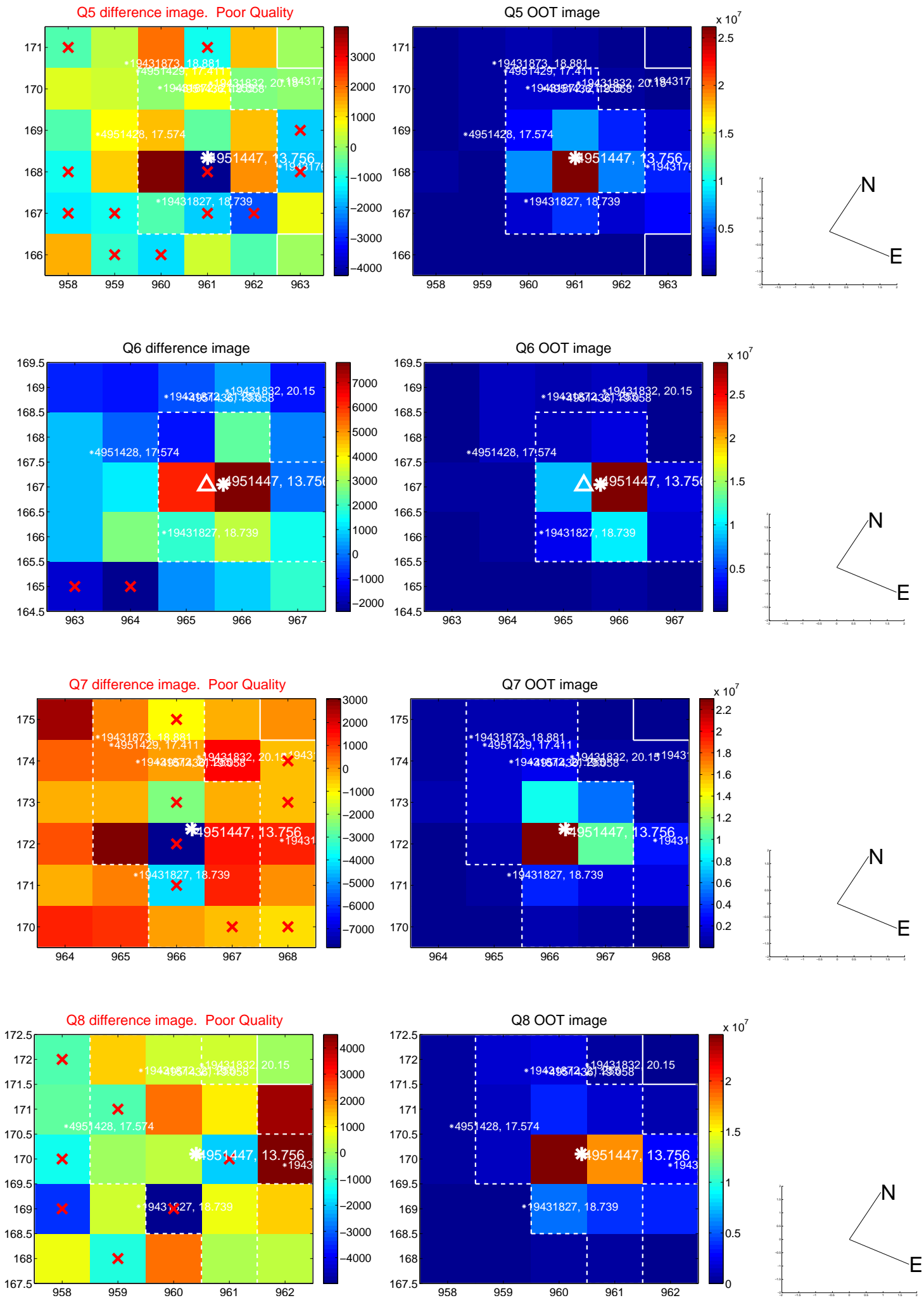


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

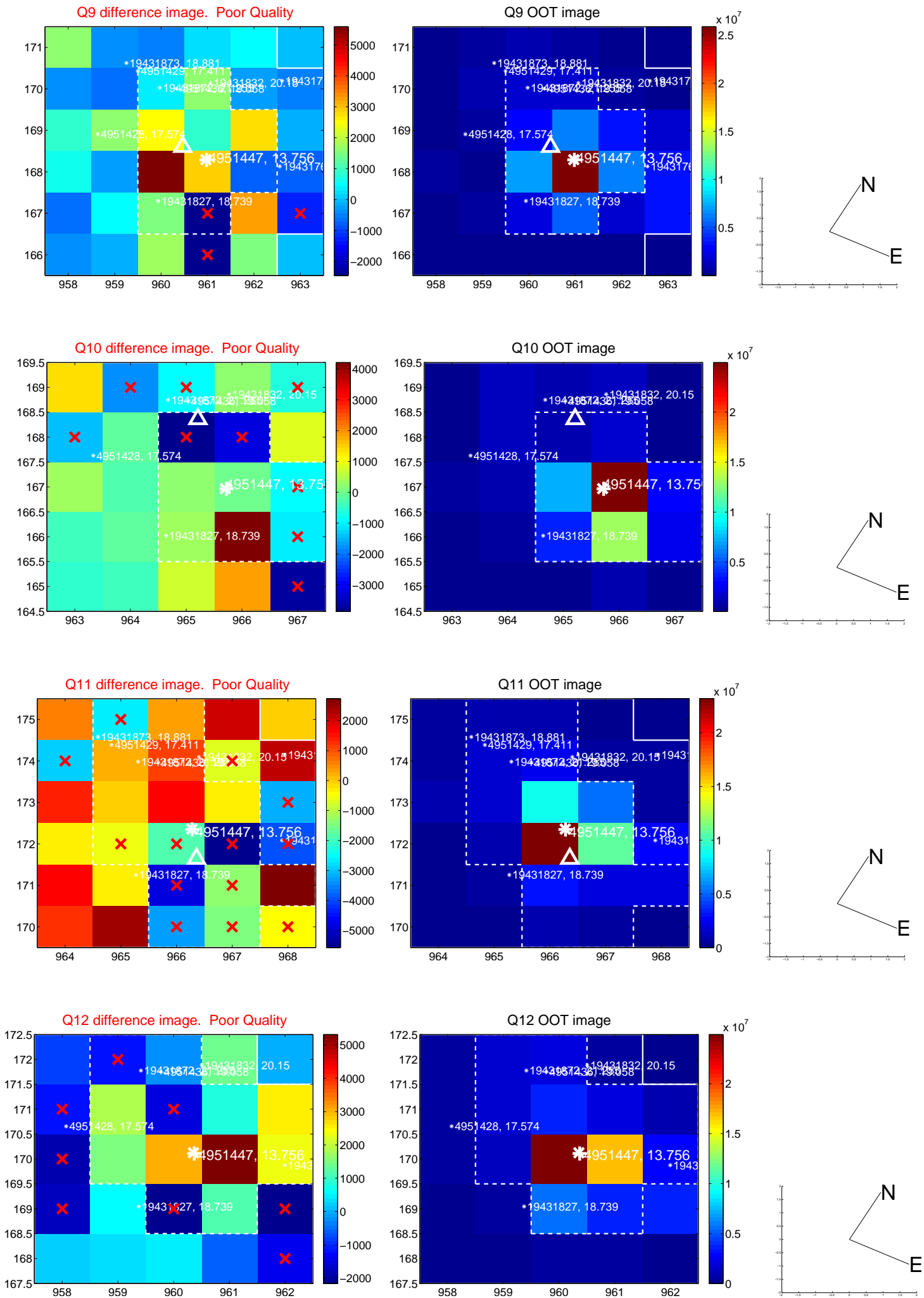
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



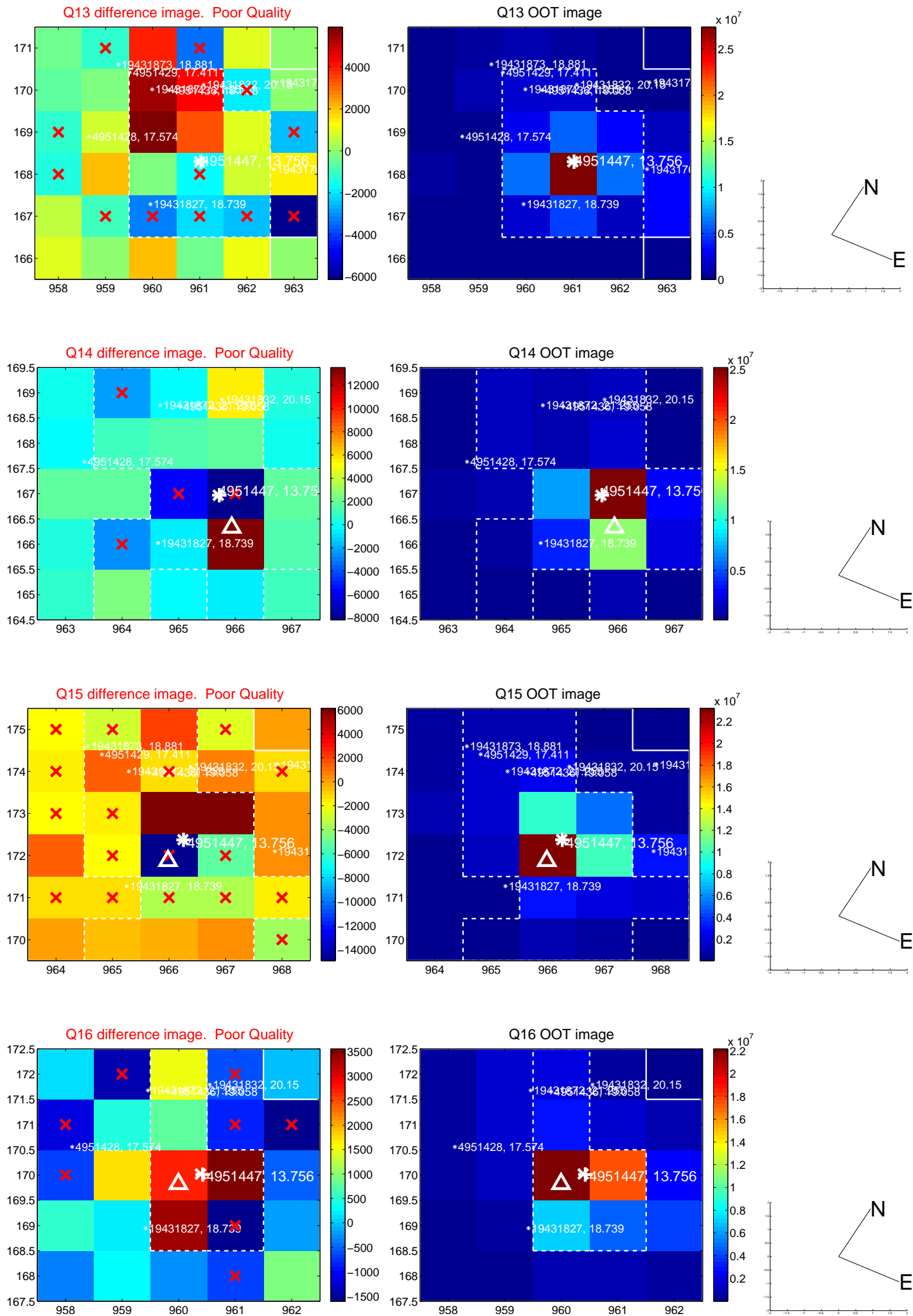
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



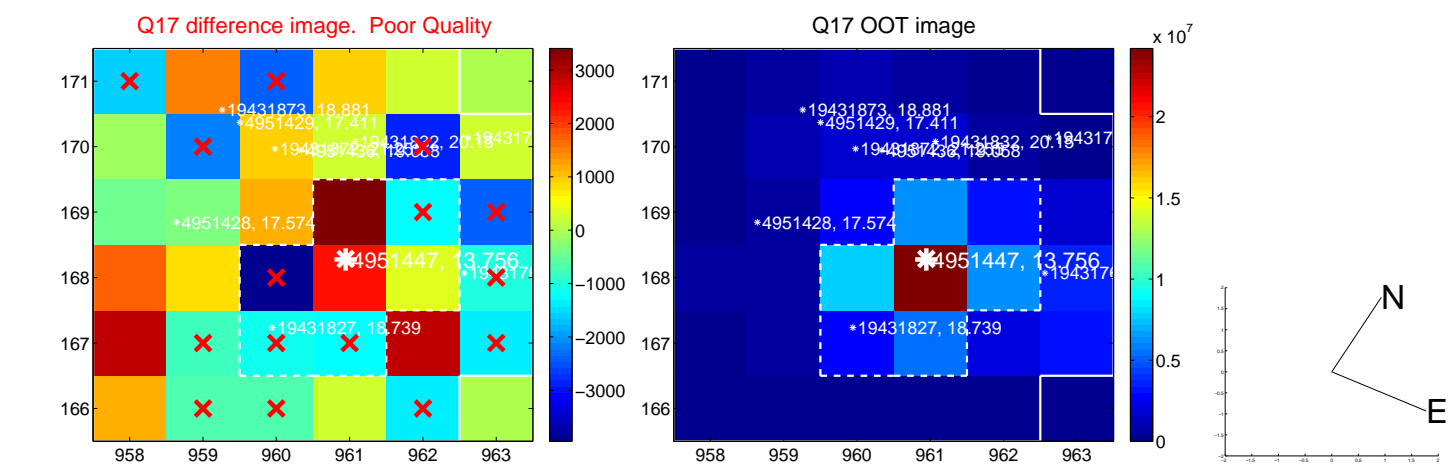
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



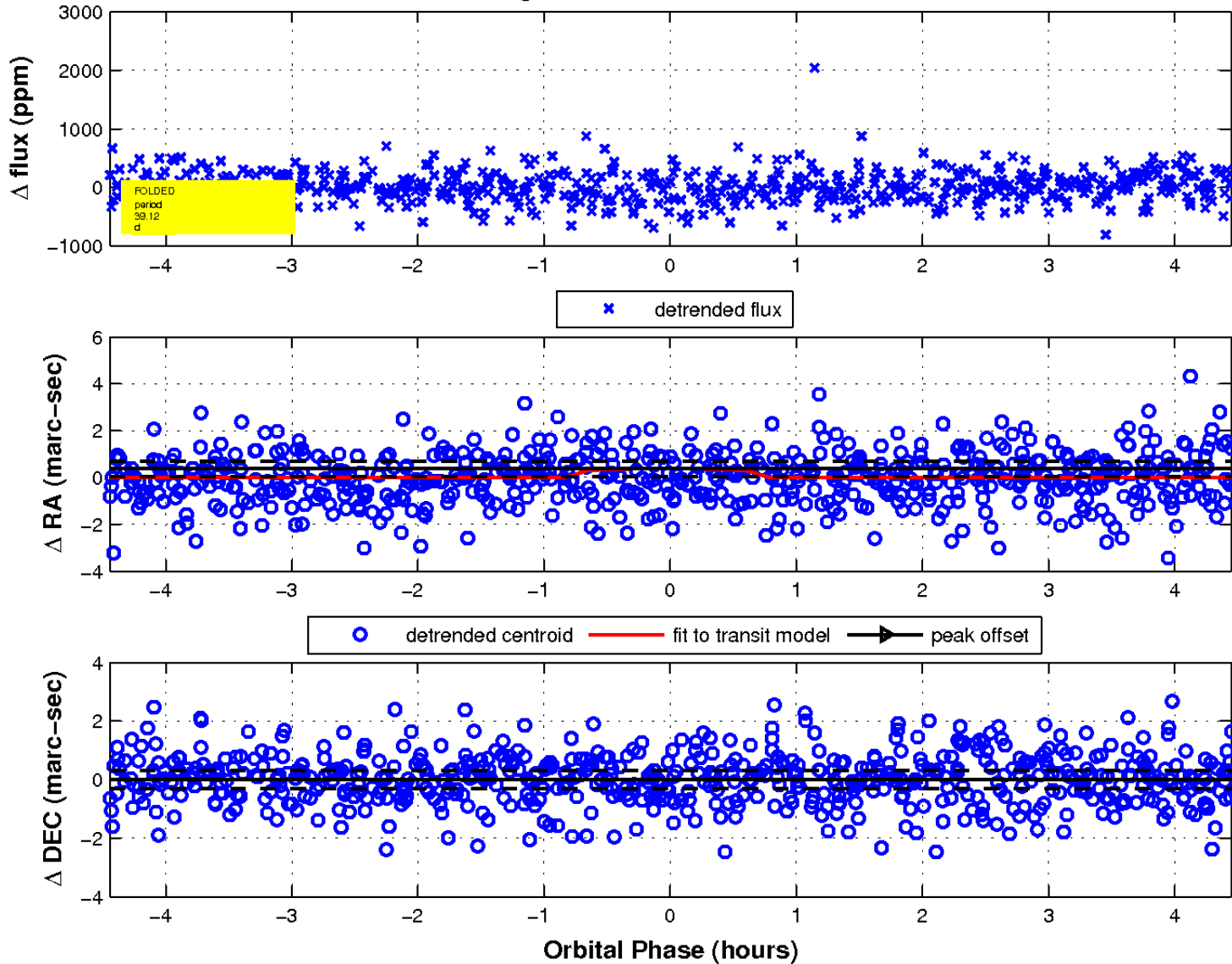
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

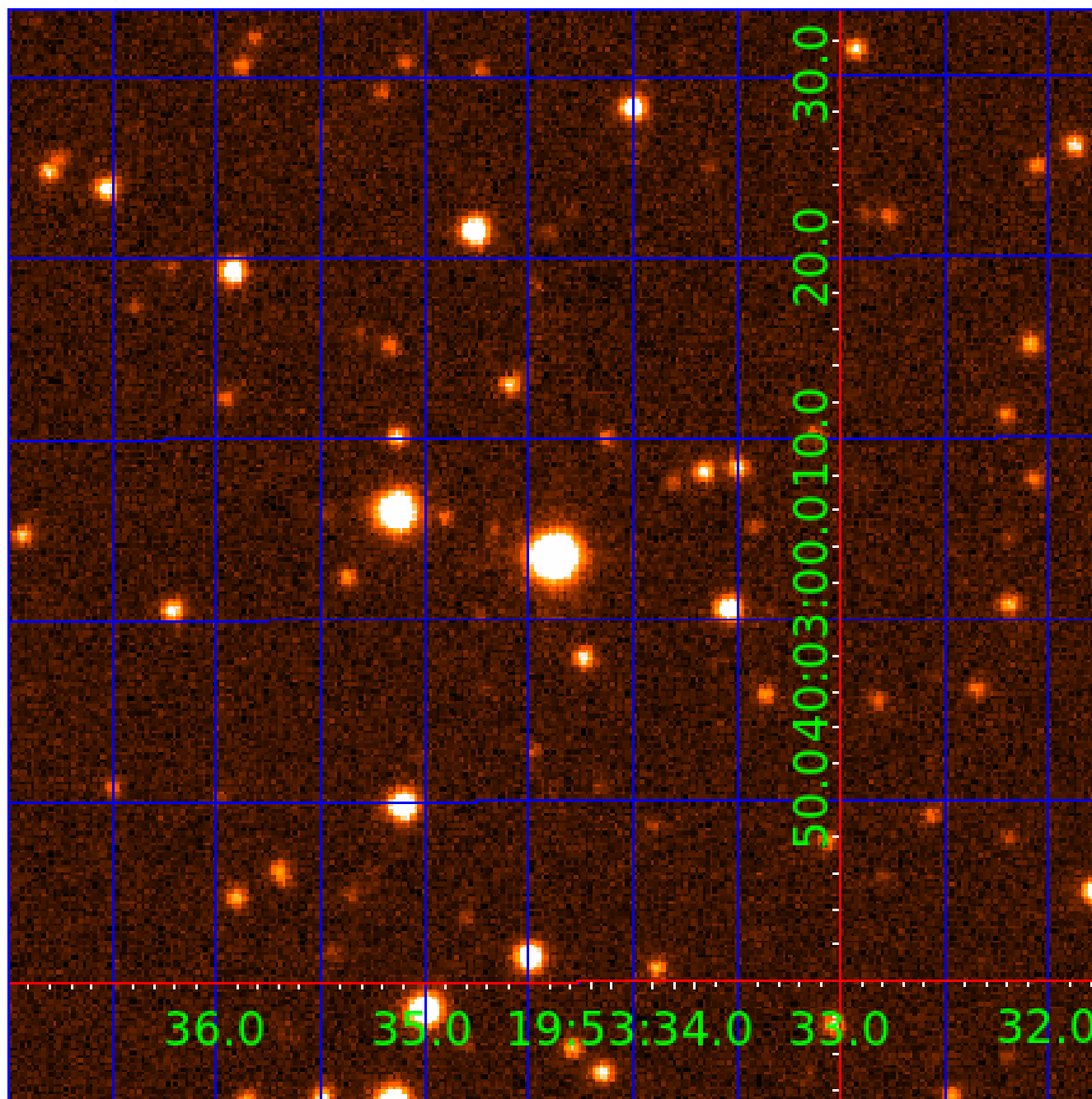


fluxWeightedCentroids, Planet 3 of 8



UKIRT Image

Declination



KIC 004951447

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})
004951447-01	OBS	No	0.699656	132.026349	12.4	4.634	8.7	4.5	1.43	6517	0.52	12433.52
004951447-02	OBS	No	577.241449	336.360194	456.0	18.942	8.2	7.1	1.43	6517	3.59	1.61
004951447-03	OBS	No	39.121997	160.621638	392.3	1.485	9.3	8.7	1.43	6517	2.88	58.15
004951447-04	OBS	No	45.444298	157.556159	229.7	2.922	9.6	6.1	1.43	6517	2.46	47.62
004951447-05	OBS	No	51.591981	166.315444	419.6	2.540	8.7	8.3	1.43	6517	5.66	40.21
004951447-06	OBS	No	28.815116	155.728361	392.0	1.741	8.9	10.7	1.43	6517	3.31	87.42
004951447-07	OBS	No	98.000565	190.276053	451.2	2.587	7.8	9.1	1.43	6517	3.49	17.09
004951447-08	OBS	No	72.310280	147.611048	548.0	1.647	8.3	10.1	1.43	6517	3.59	25.64

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004951447-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
004951447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004951447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004951447-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
004951447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004951447-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

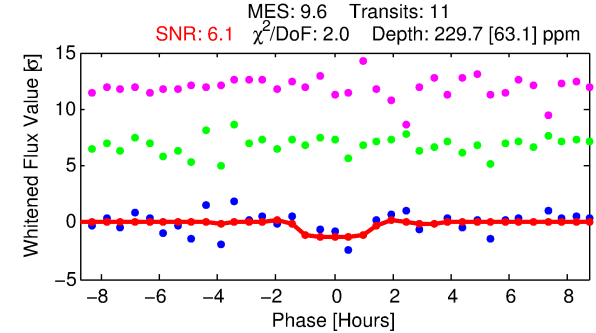
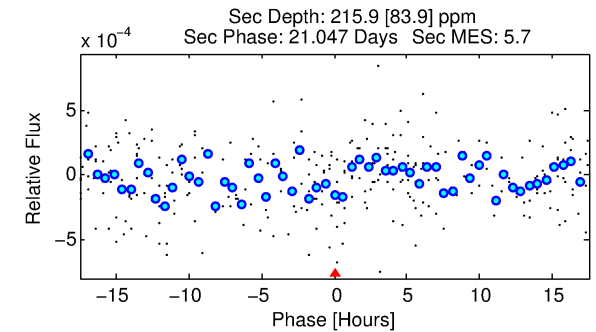
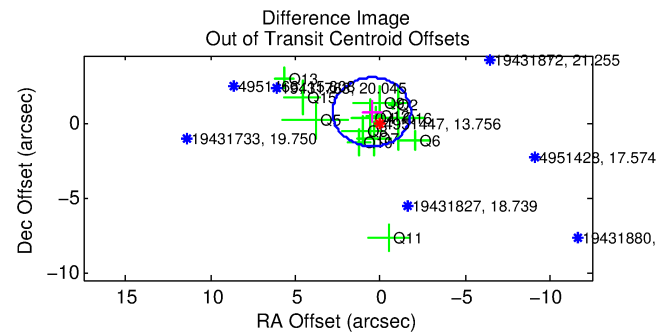
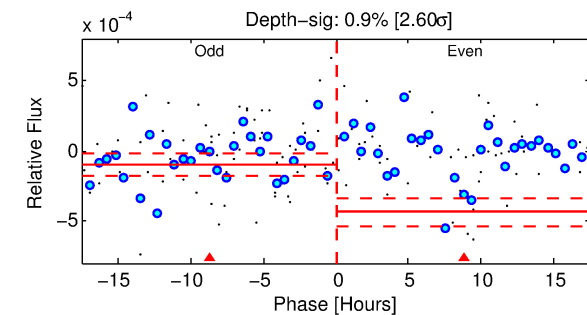
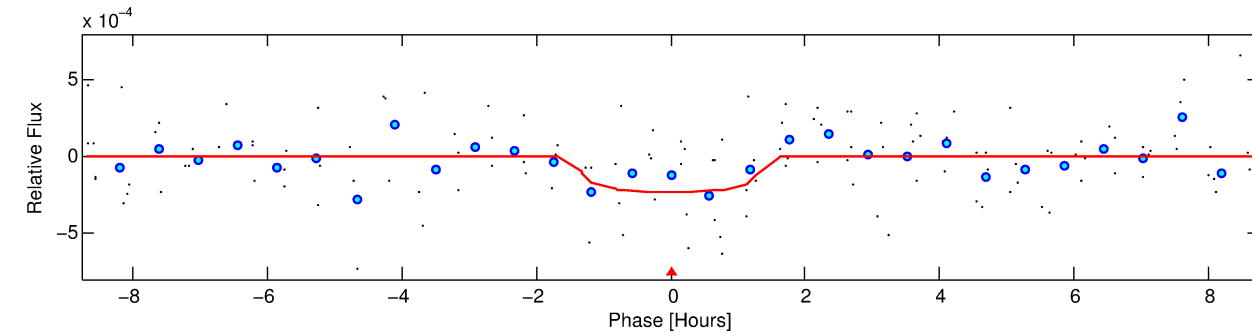
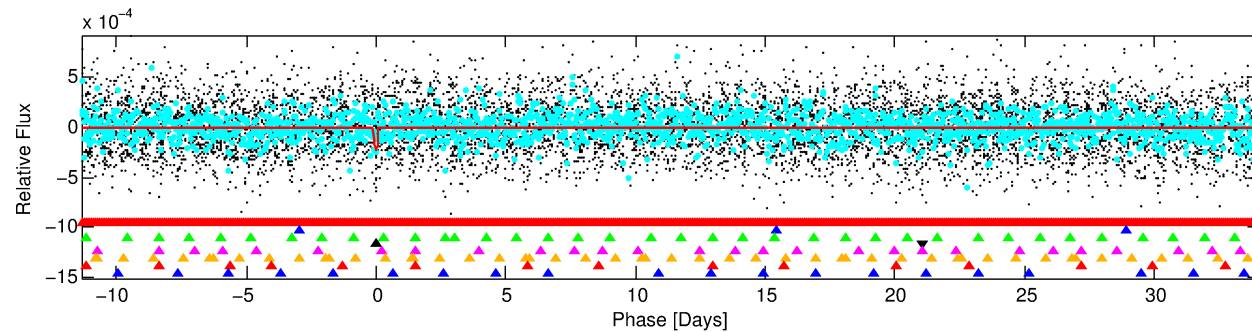
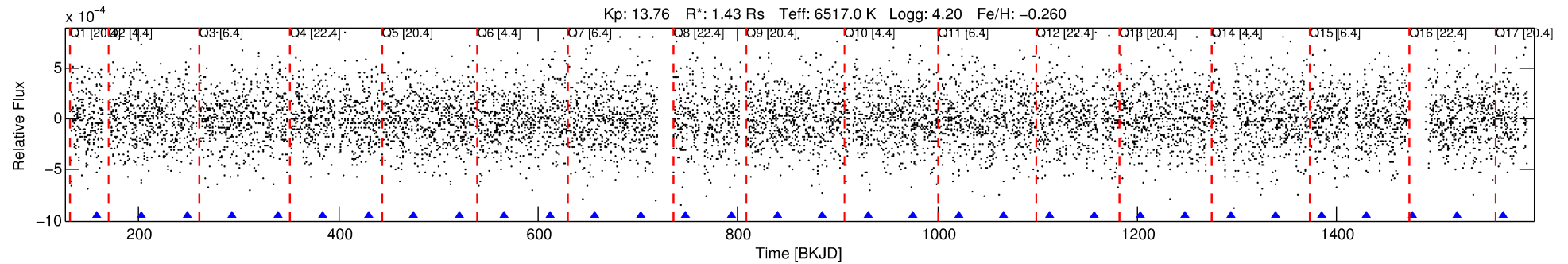
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004951447-04

No Significant Match Found

DV One-Page Summary

KIC: 4951447 Candidate: 4 of 8 Period: 45.444 d



DV Fit Results:

Period = 45.44430 [0.00109] d
Epoch = 157.5562 [0.0166] BKJD
Rp/R* = 0.0158 [0.0208]
a/R* = 64.97 [485.30]
b = 0.86 [2.33]
Seff = 47.62 [17.09]
Teq = 670 [60] K
Rp = 2.46 [3.31] Re
a = 0.2633 [0.0613] AU
Ag = 1361.99 [3654.39] [0.37 σ]
Teffp = 6292 [4193] K [1.34 σ]

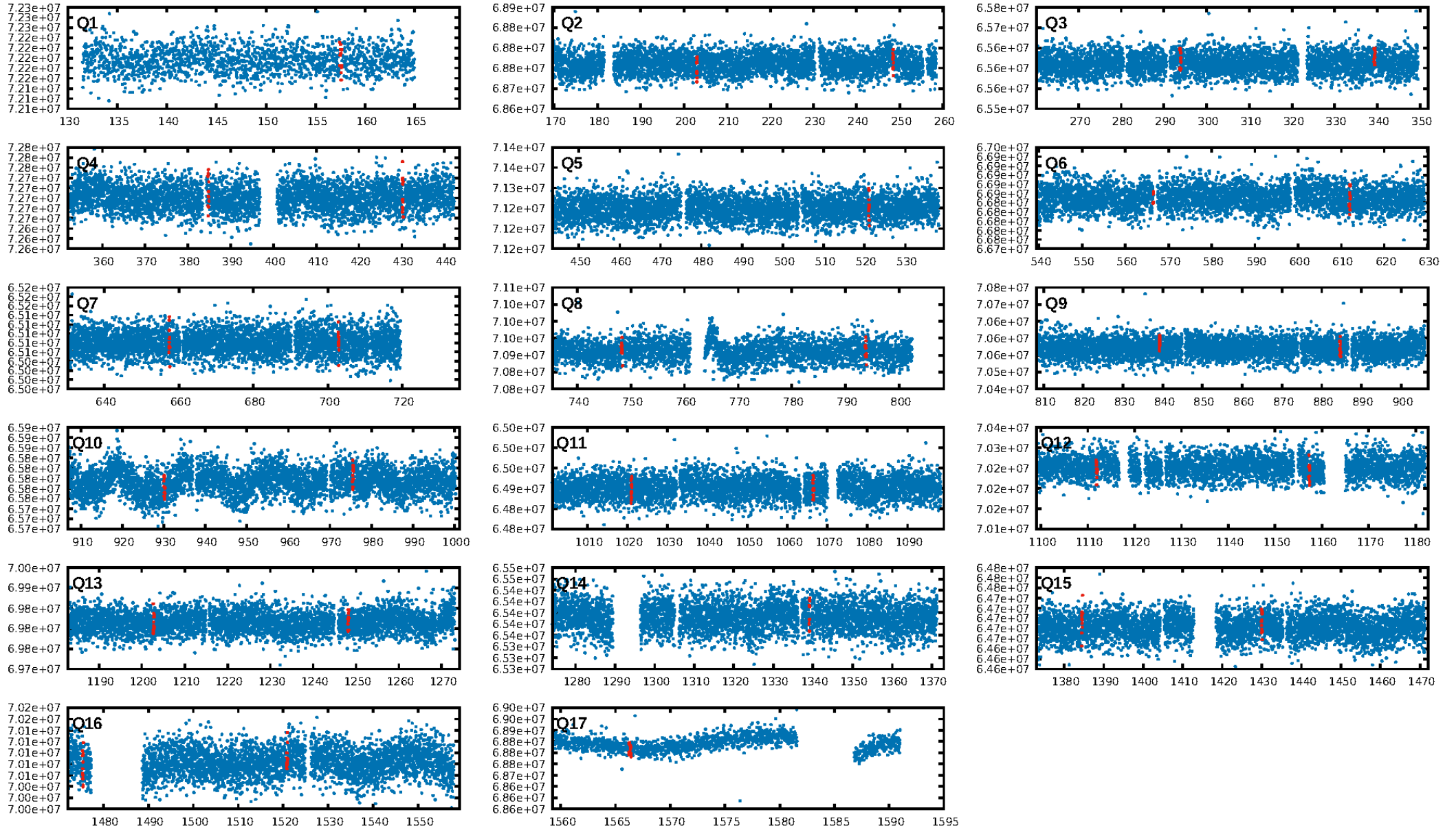
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [46.30 σ]
LongPeriod-sig: 100.0% [38.11 σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 82.7%
Bootstrap-pfa: 1.48e-09
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 1.066
Centroid-sig: 40.9%
Centroid-so: 1.222 arcsec [1.13 σ]
OotOffset-rm: 0.867 arcsec [1.13 σ]
KicOffset-rm: 0.931 arcsec [1.21 σ]
OotOffset-st: 3/3/4/3 [13]
KicOffset-st: 3/3/4/3 [13]
DiffImageQuality-fgm: 0.15 [2/13]
DiffImageOverlap-fno: 0.00 [0/17]

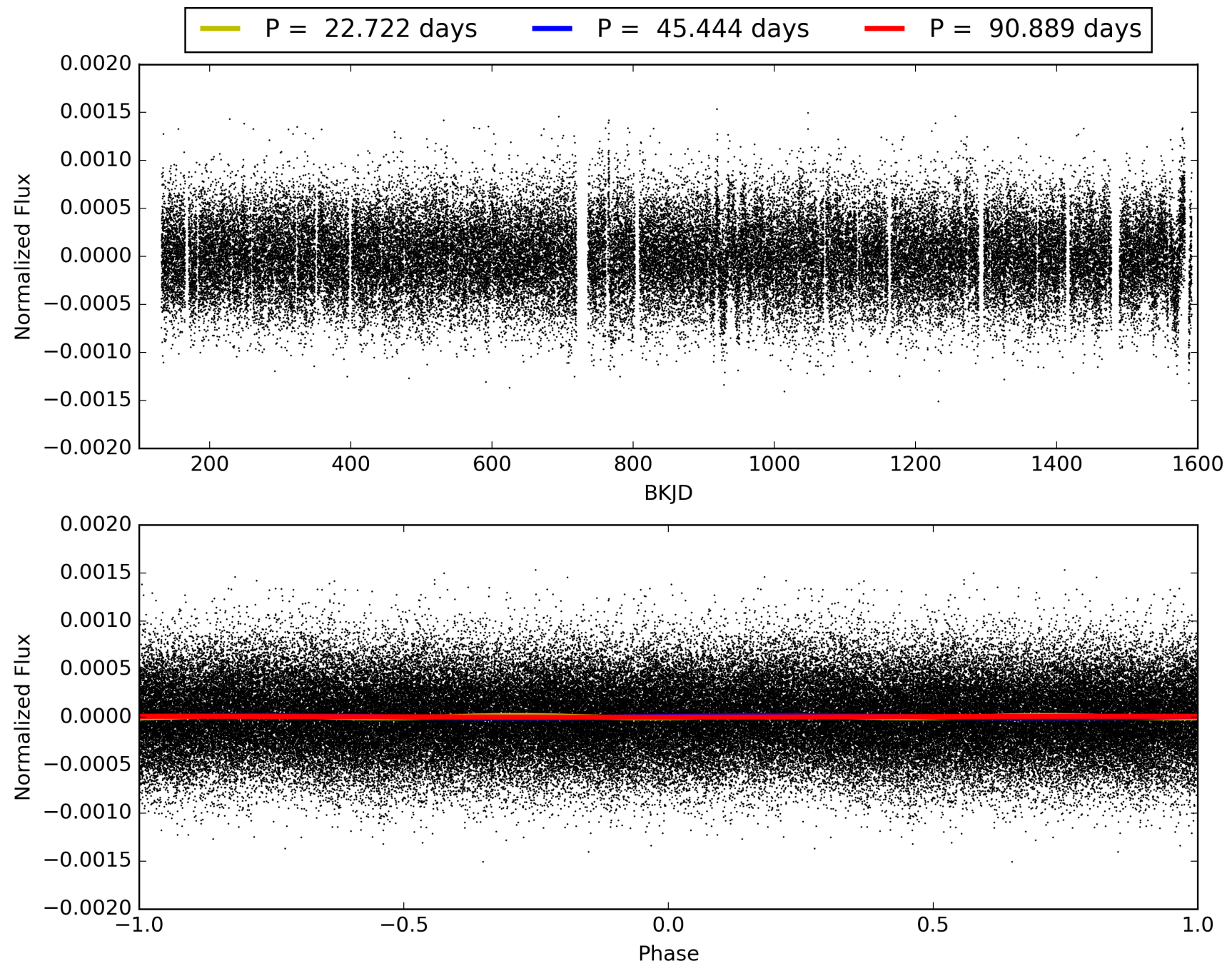
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:54:11 Z

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

TCE 004951447-04, PDC Light Curves

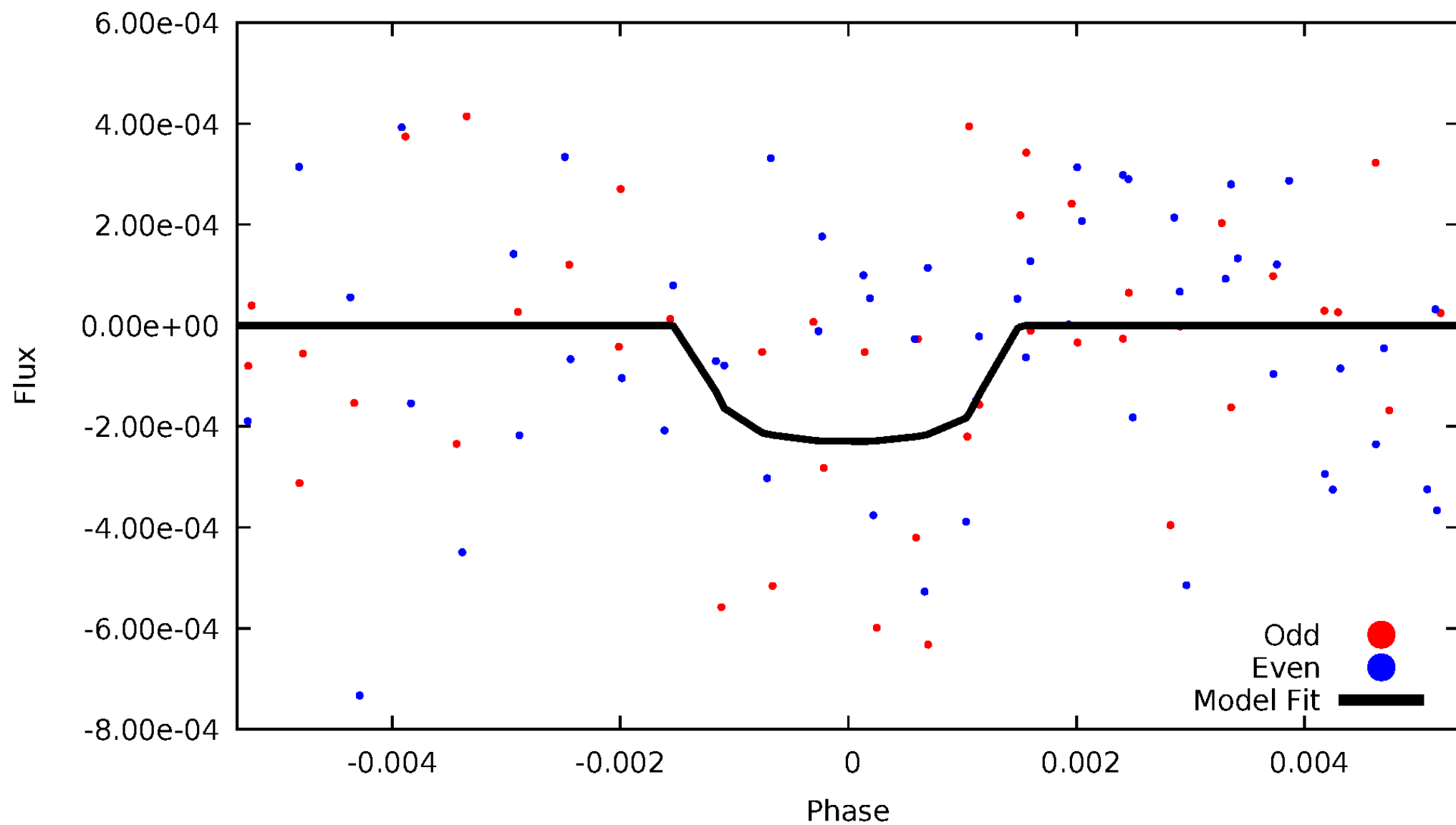


TCE 004951447-04



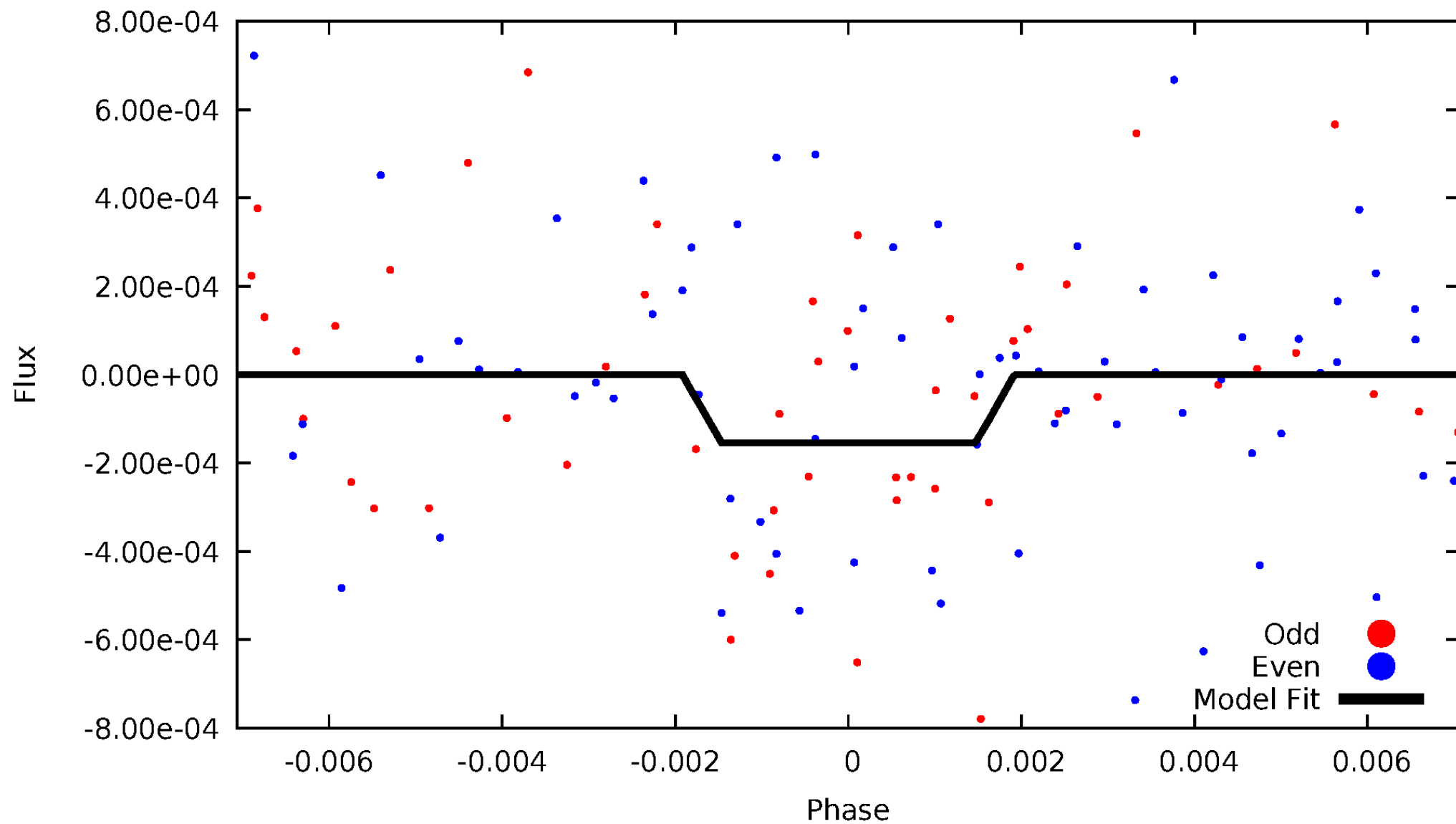
DV Odd/Even

TCE 004951447-04



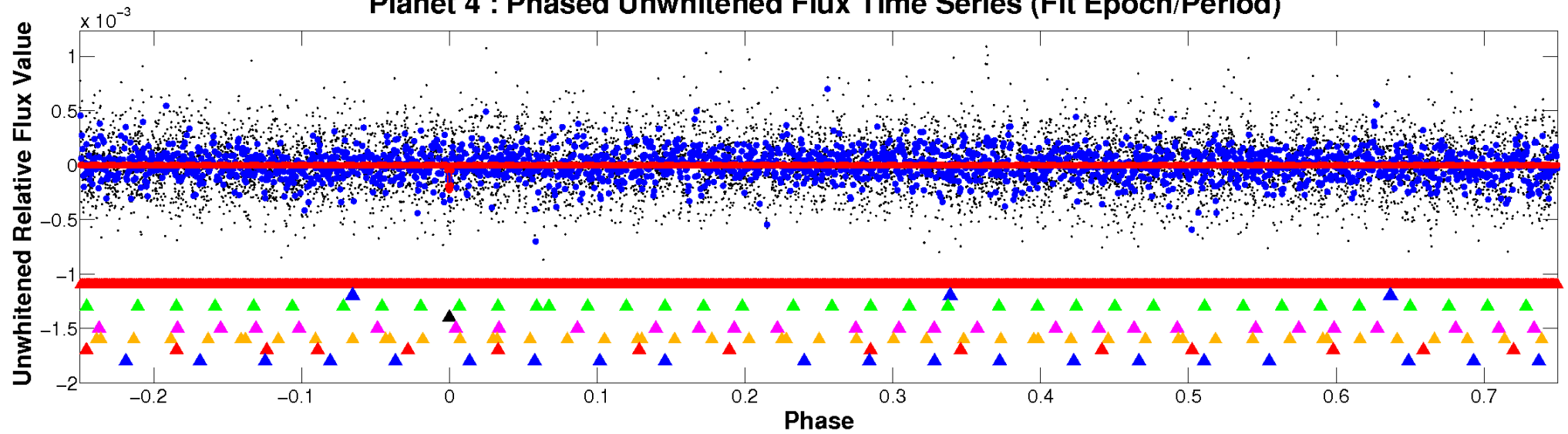
ALT Odd/Even

TCE 004951447-04

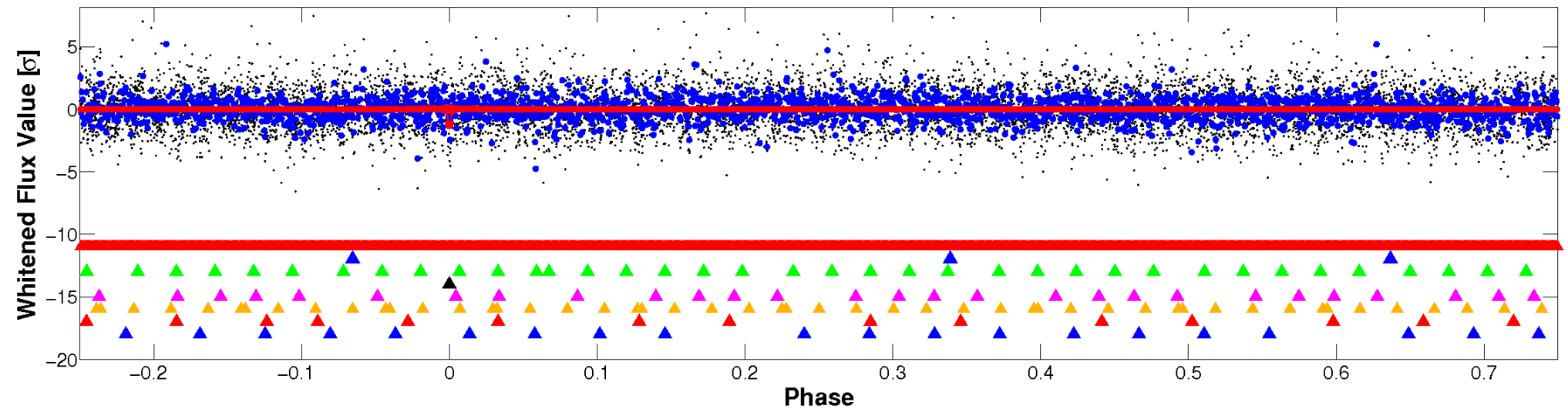


Non-Whitened Vs. Whitened Light Curve

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

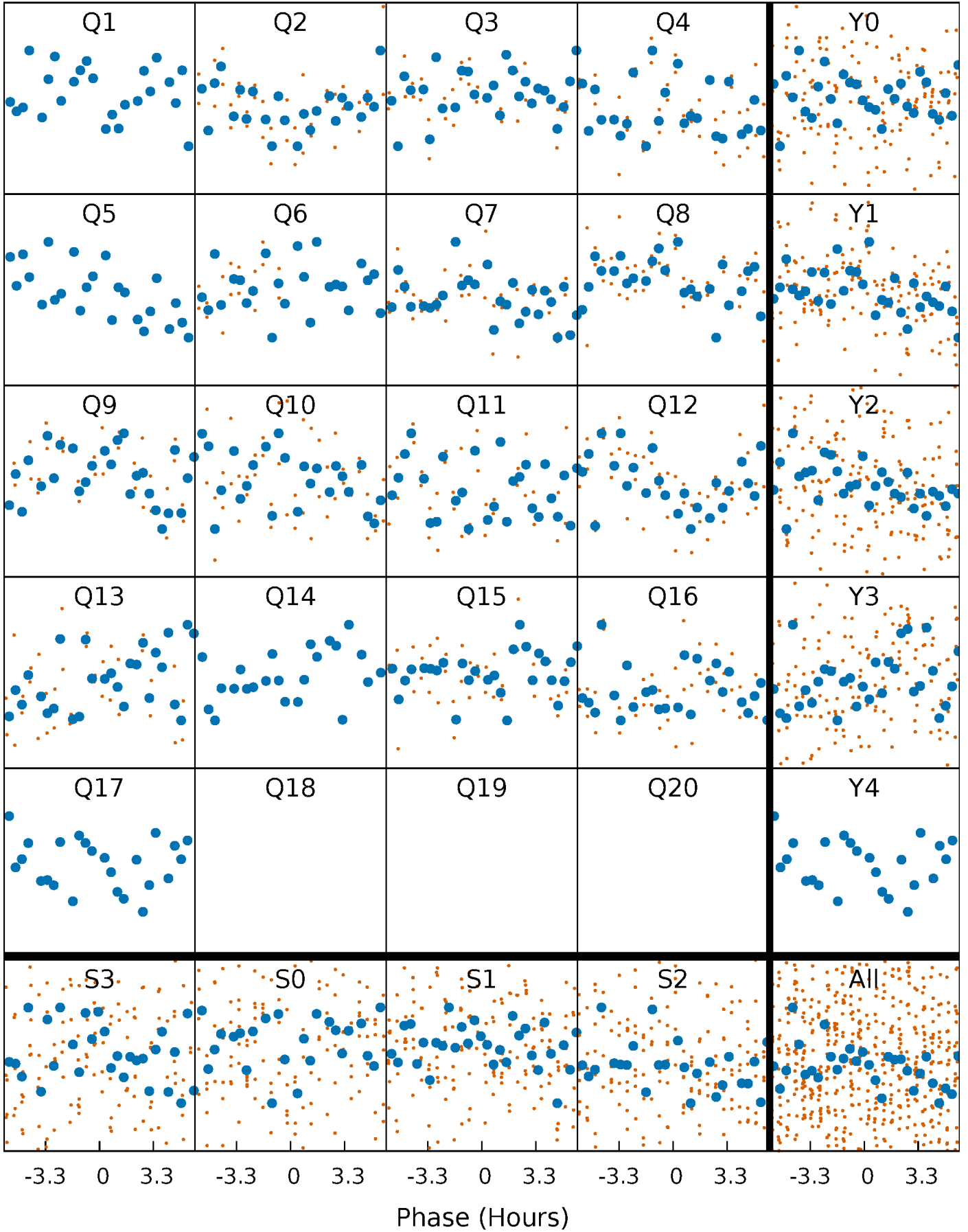


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



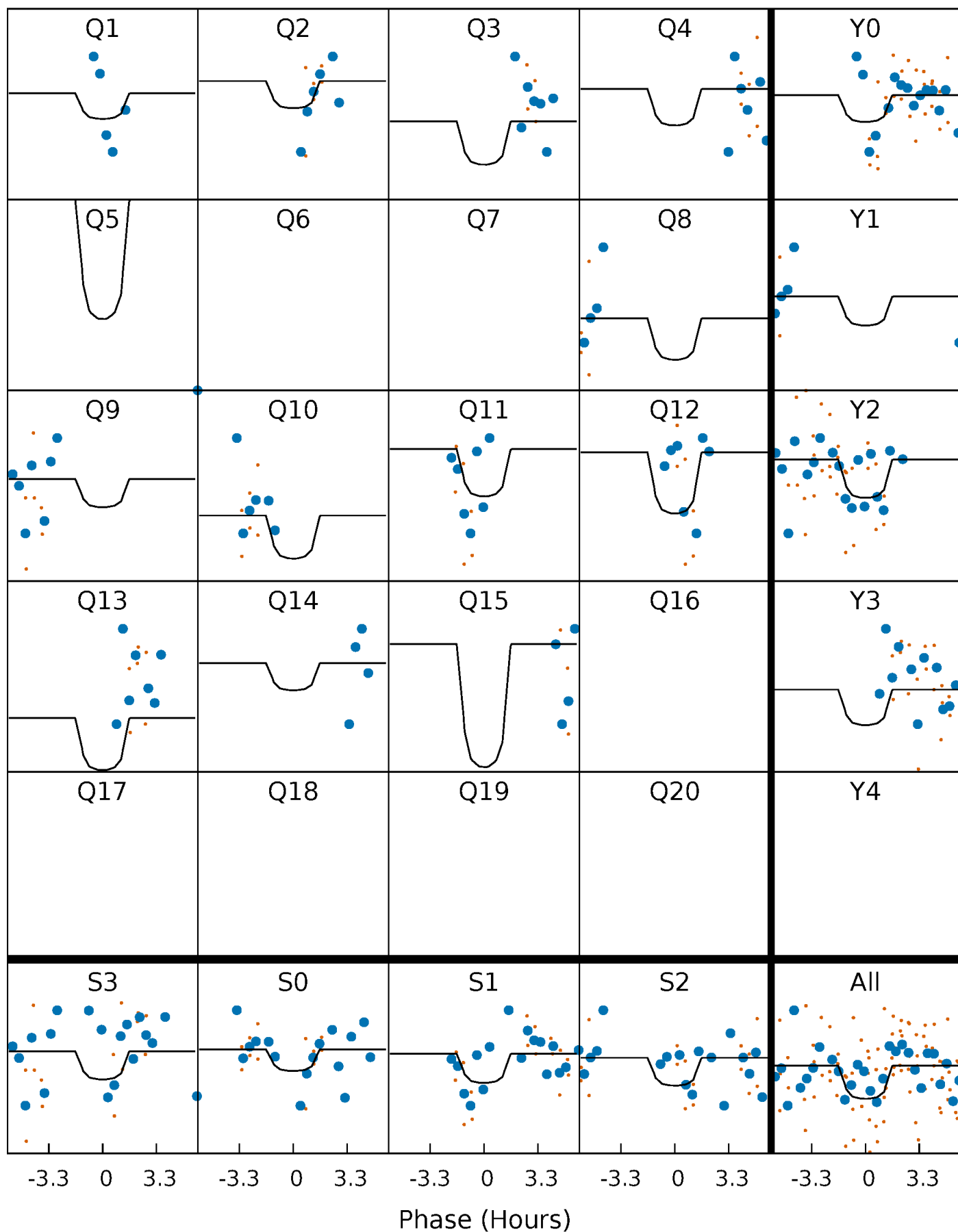
PDC Quarter-Phased Transit Curves

TCE 004951447-04 P= 45.444298 Days $T_0=157.556159$ (BKJD)



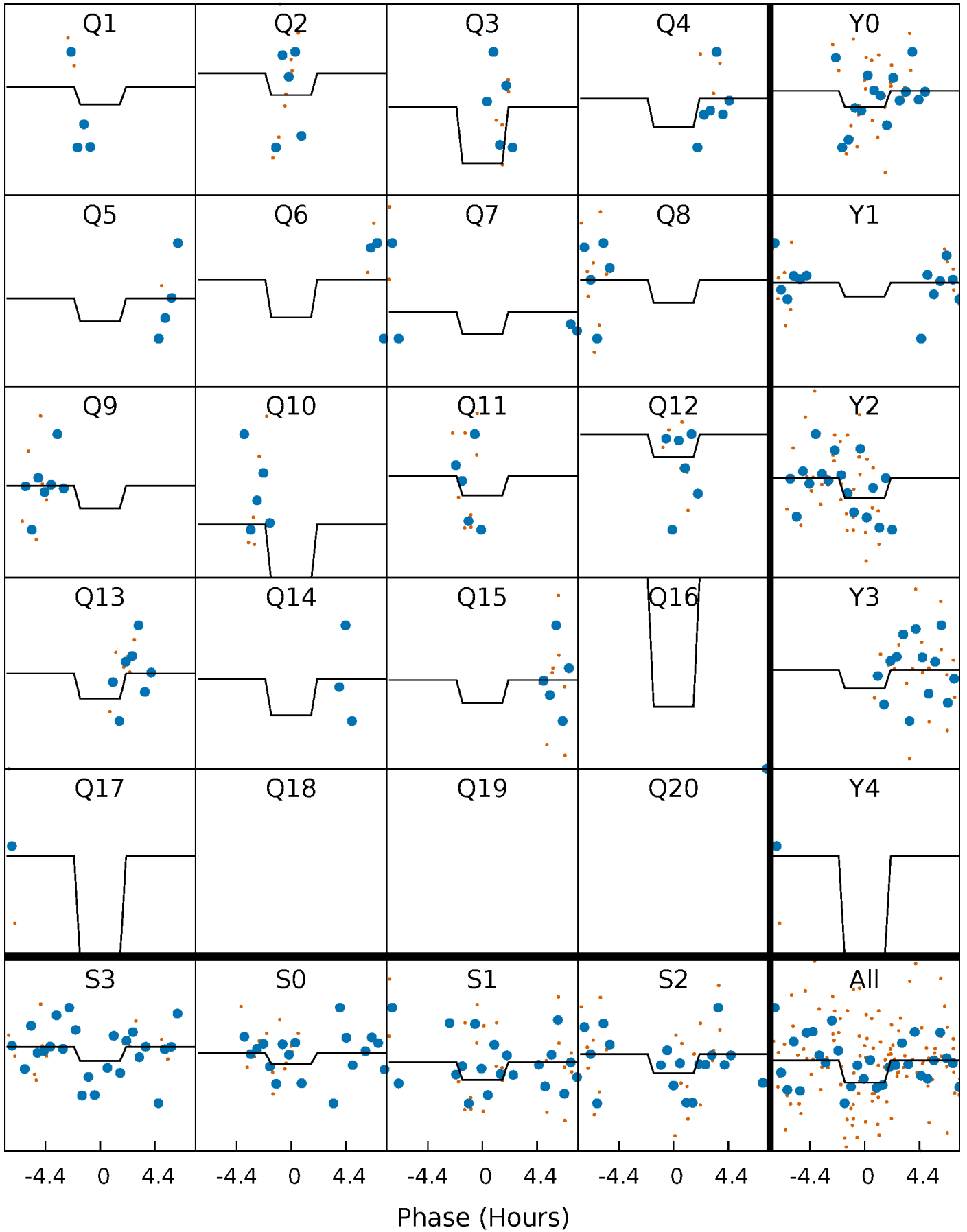
DV Quarter-Phased Transit Curves

TCE 004951447-04 $P = 45.444298$ Days $T_0 = 157.556159$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

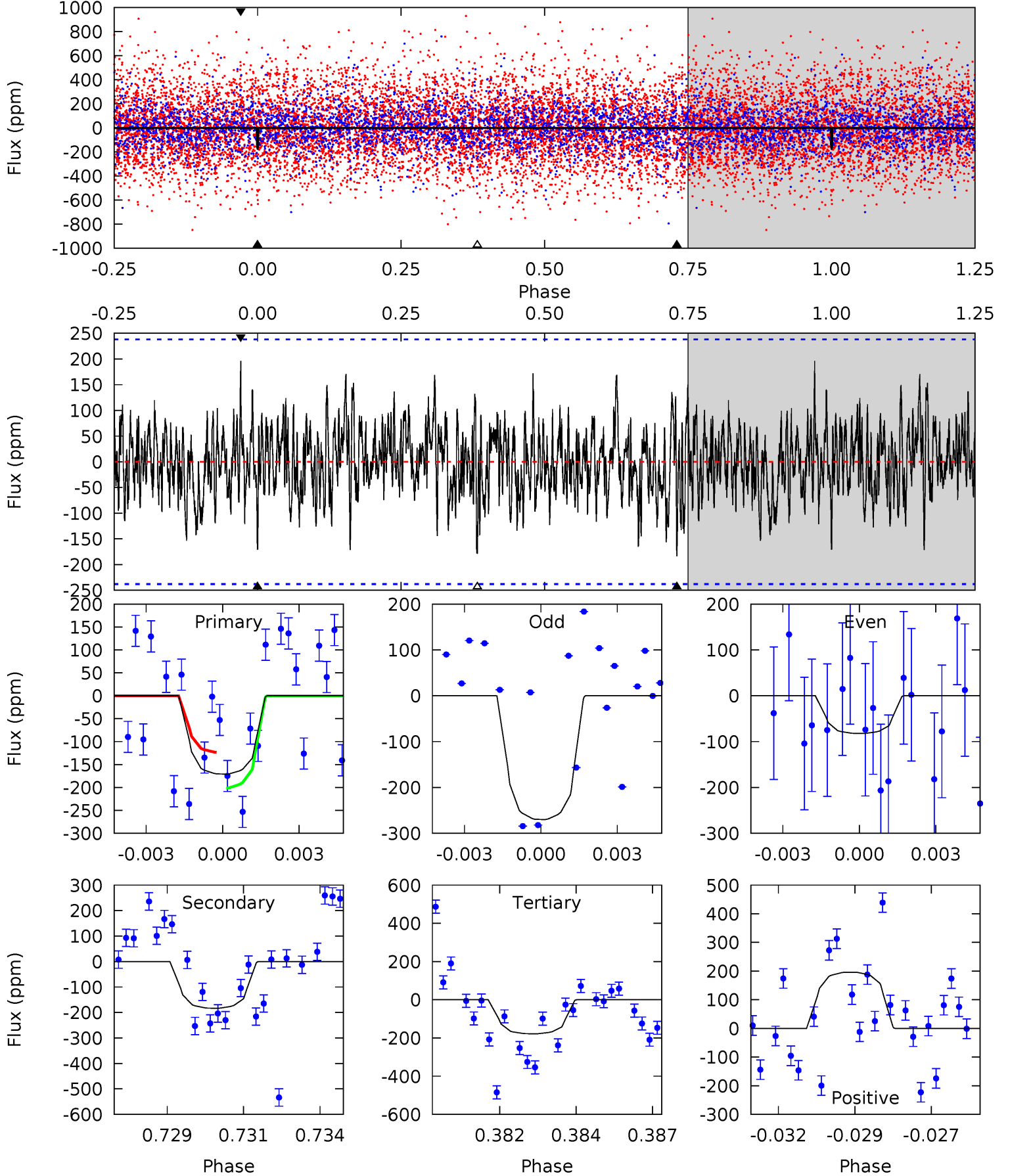
TCE 004951447-04 $P = 45.440742$ Days $T_0 = 157.632721$ (BKJD)



DV Model-Shift Uniqueness Test

004951447-04, $P = 45.444298$ Days, $E = 112.111861$ Days

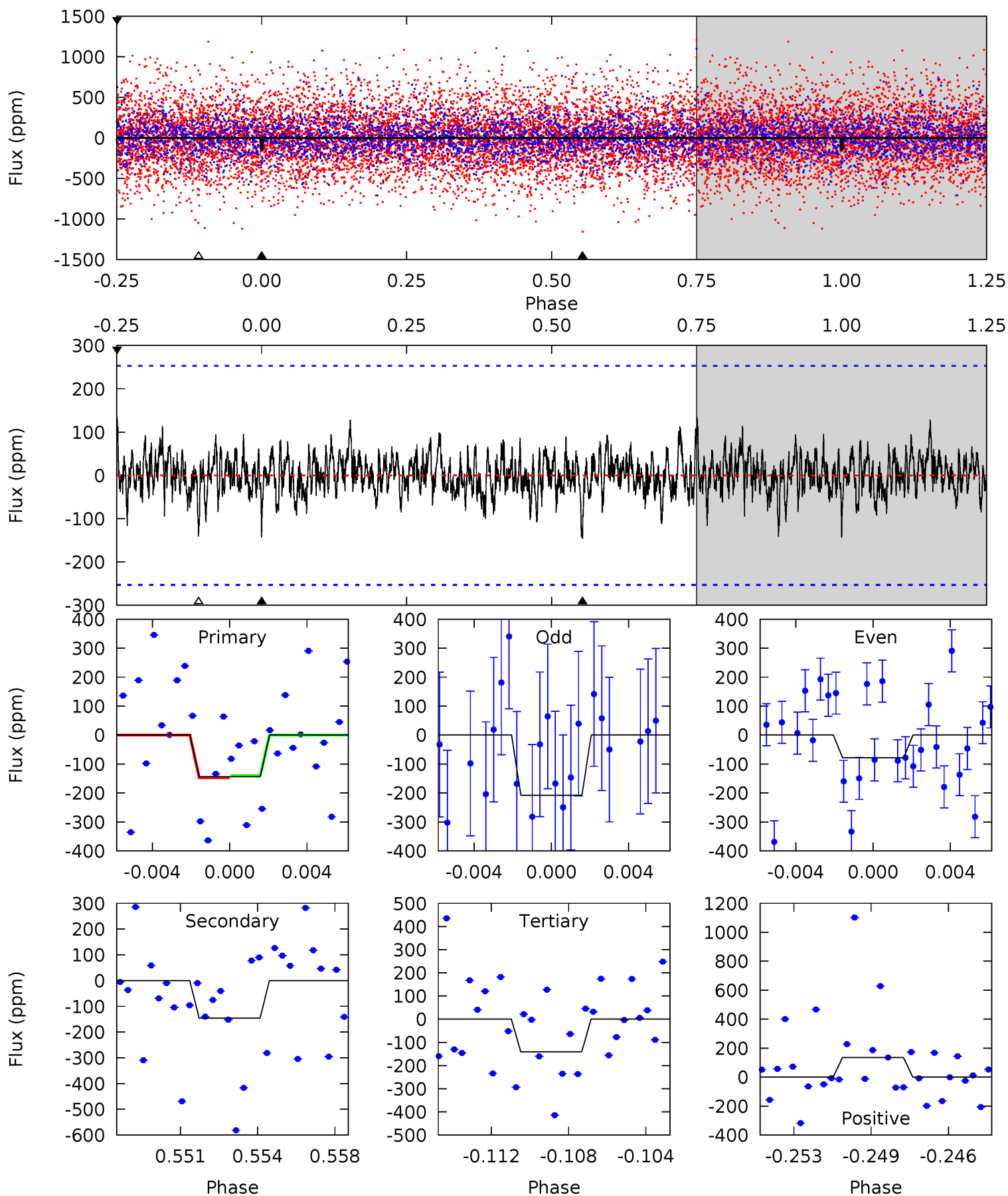
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.79	4.07	3.95	4.35	5.27	3.00	1.30	-0.16	-0.56	0.12	-0.29	2.07	1.37	0.52	0.83



Alt Model-Shift Uniqueness Test

004951447-04, P = 45.440742 Days, E = 112.191979 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.96	3.01	2.90	2.78	5.21	2.90	0.78	0.06	0.17	0.10	0.22	1.34	1.10	0.48	0.08



Stellar Parameters For KIC 004951447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6517^{+175}_{-214}	$4.199^{+0.180}_{-0.180}$	$-0.260^{+0.250}_{-0.300}$	$1.429^{+0.402}_{-0.329}$	$1.183^{+0.188}_{-0.169}$	$0.571^{+0.532}_{-0.276}$
	+3%/-3%	+4%/-4%	+96%/-115%	+28%/-23%	+16%/-14%	+93%/-48%
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 004951447-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-183 ± 45	$3.39^{+3.07}_{-2.24}$	935^{+71}_{-66}	5148^{+3703}_{-1109}	614^{+4228}_{-452}
Alt.	-146 ± 49	$3.10^{+3.02}_{-2.05}$	933^{+73}_{-63}	5100^{+4068}_{-1183}	571^{+4185}_{-433}

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 $A_{obs} \gg 1.0$

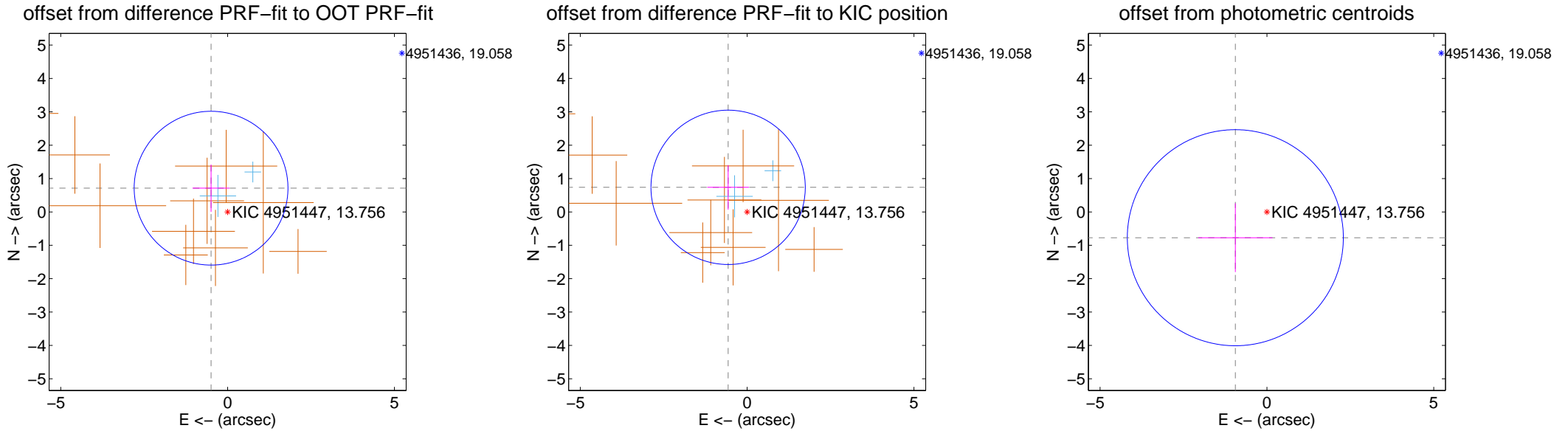
DV Centroid Data

Supplemental centroid analysis for 004951447-04. Kepler magnitude: 13.76. Transit SNR 6.14

There are 2 quarters with good PRF difference image offsets

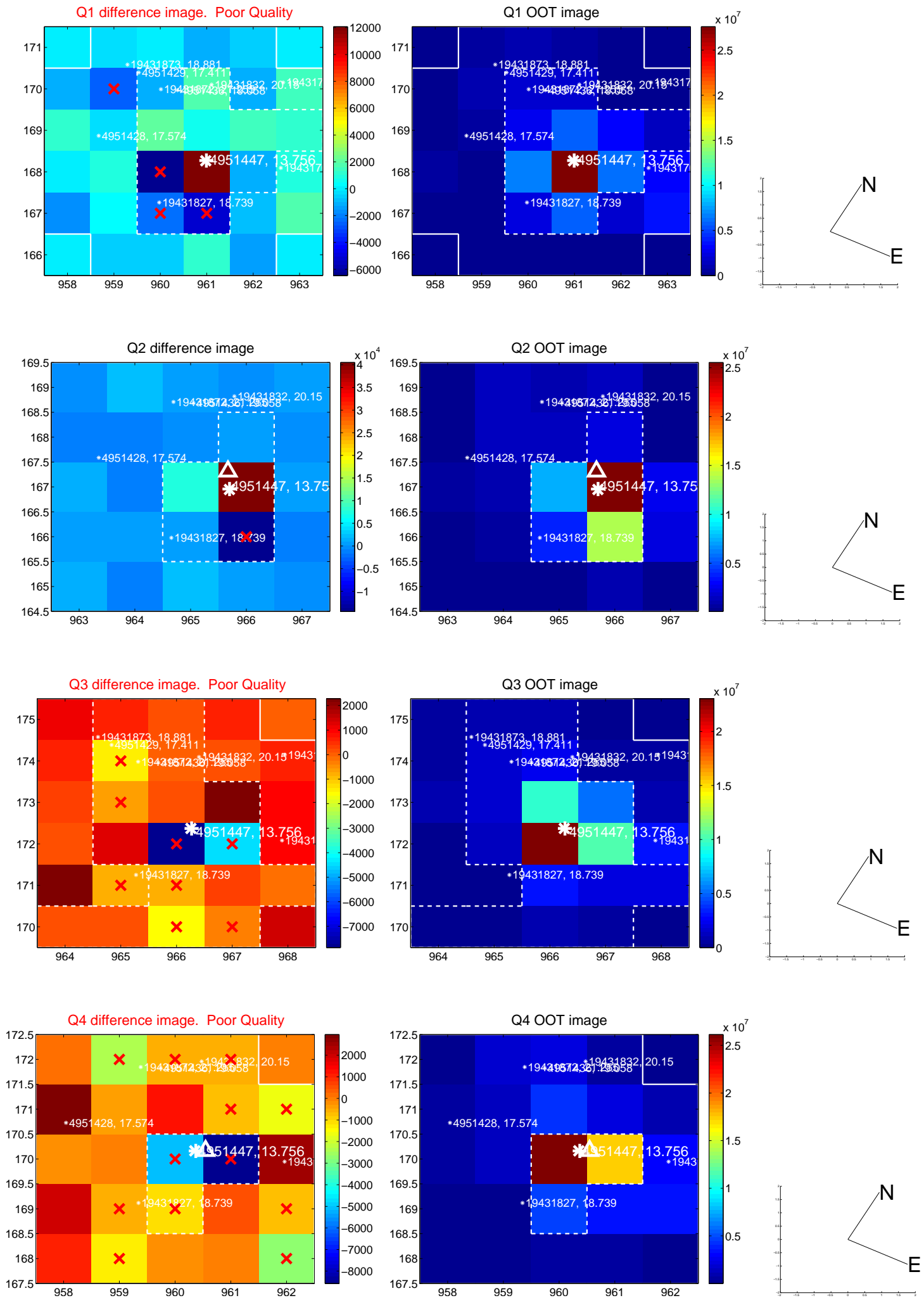
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.867 ± 0.768	1.13	0.495 ± 0.556	0.712 ± 0.707
PRF-fit source offset from KIC position	0.931 ± 0.771	1.21	0.569 ± 0.624	0.737 ± 0.666
photometric centroid source offset	1.22 ± 1.08	1.13	0.95 ± 1.11	-0.77 ± 1.03

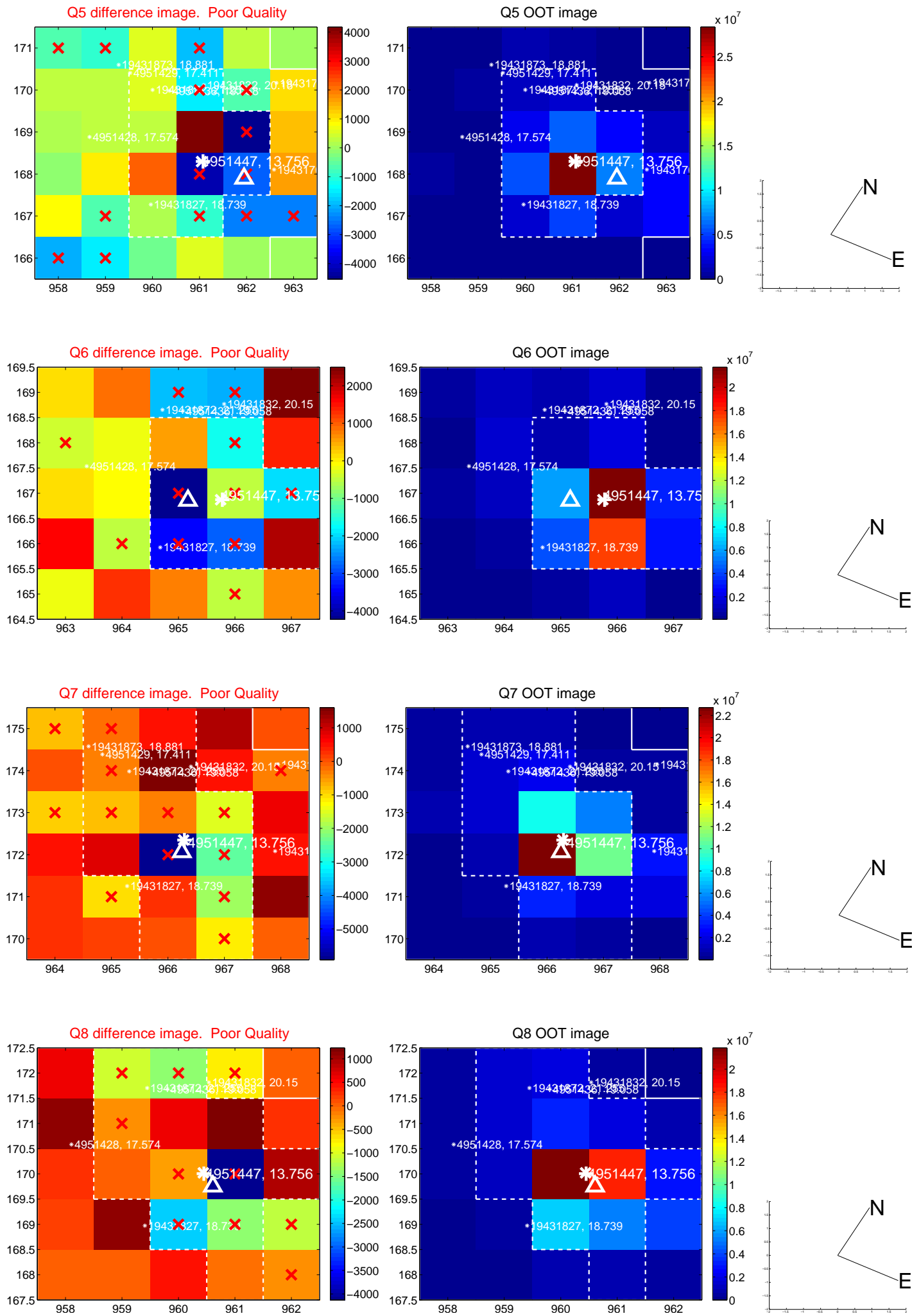


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

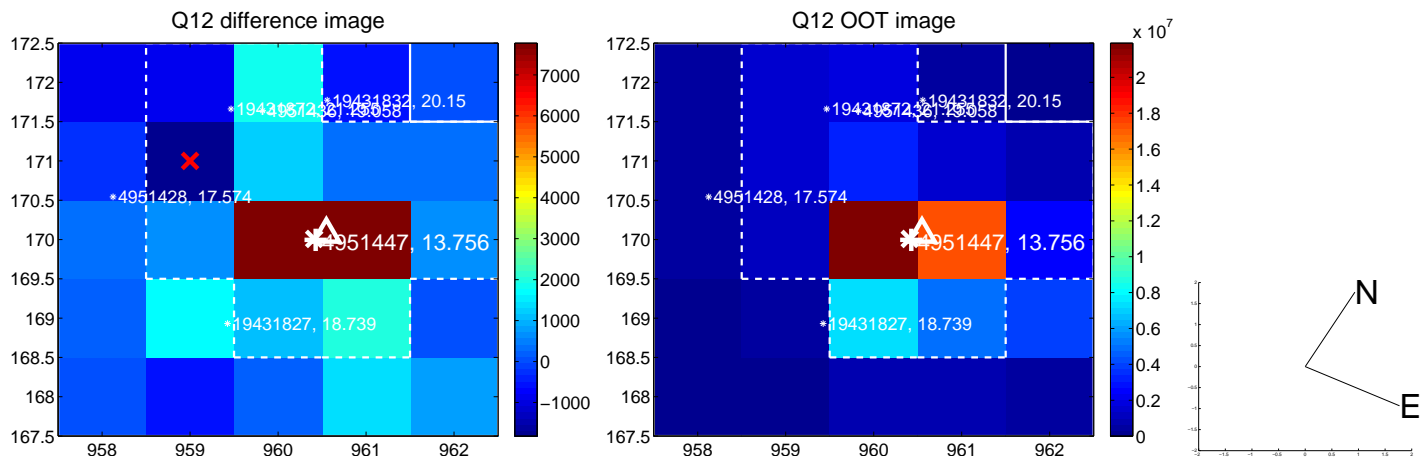
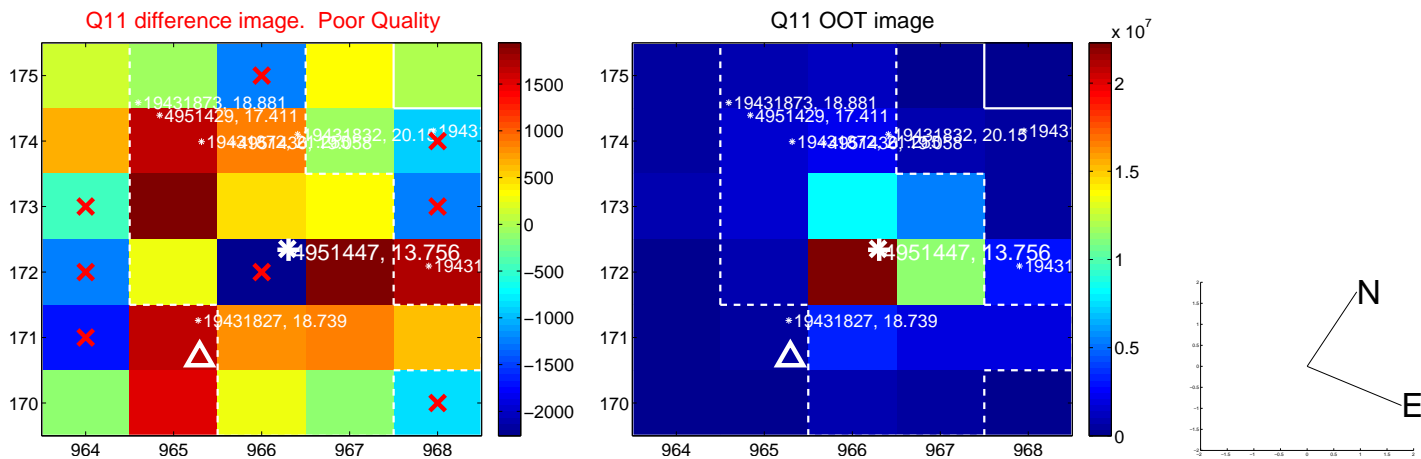
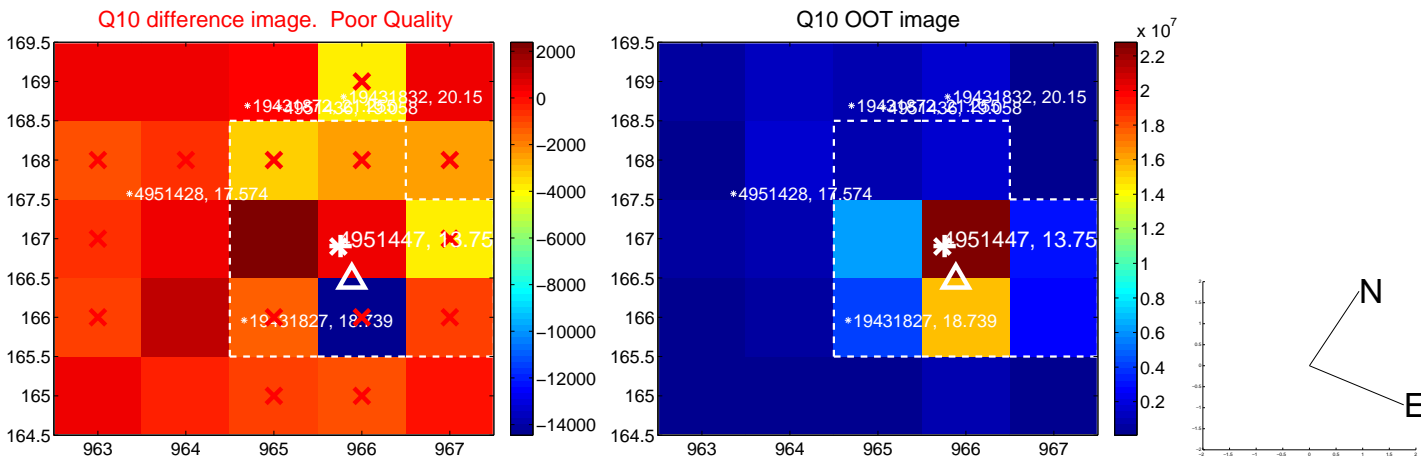
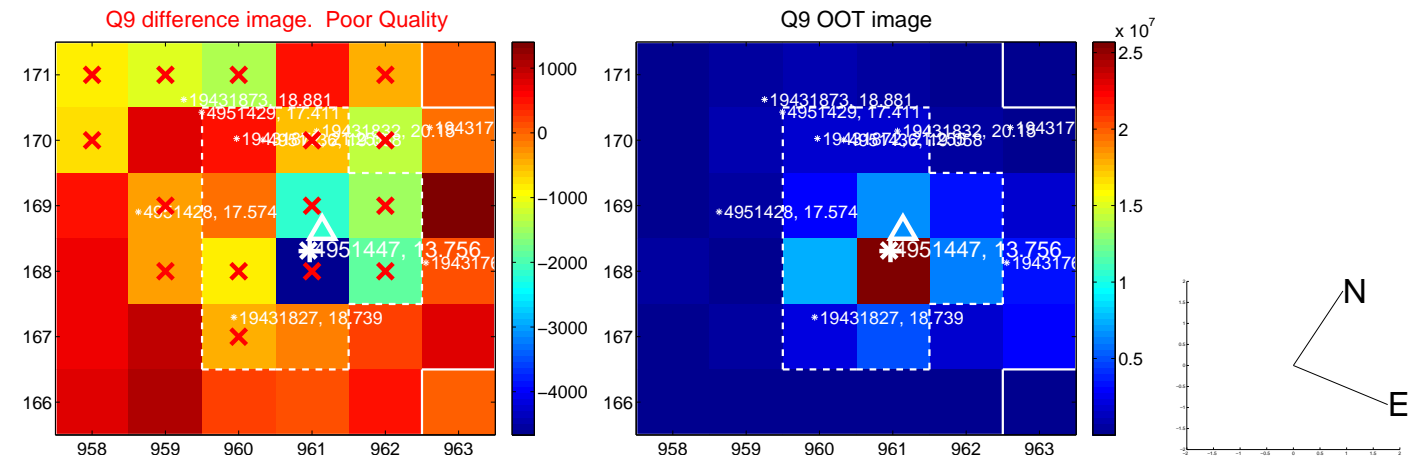
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



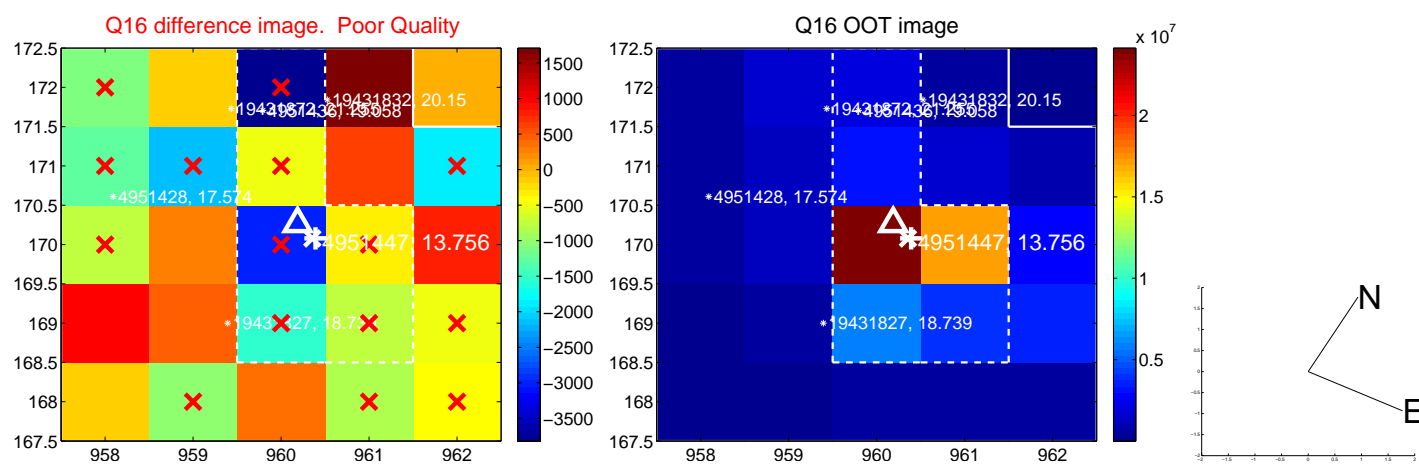
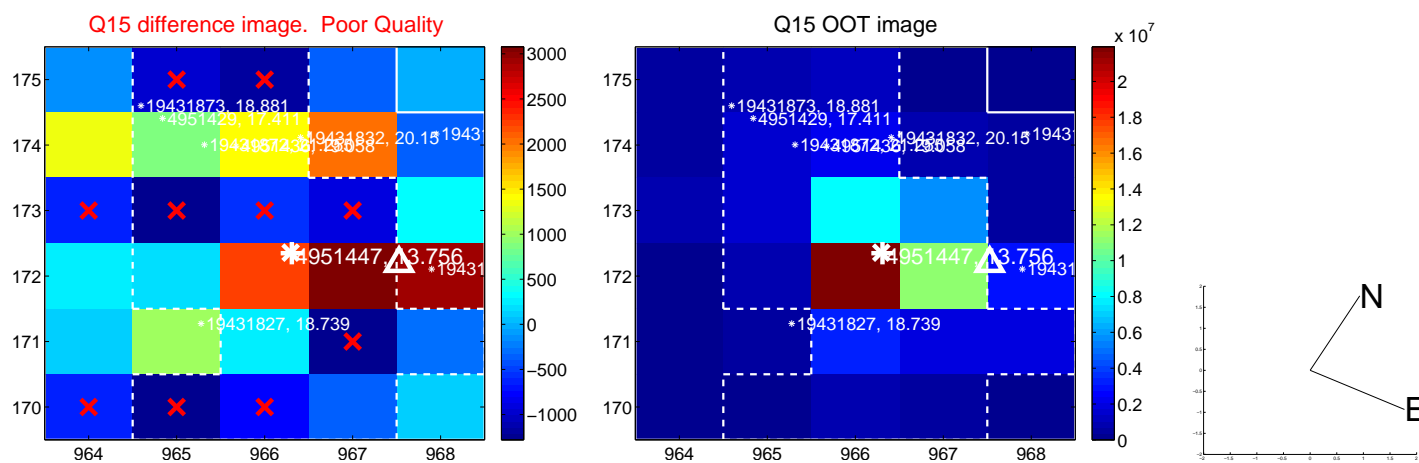
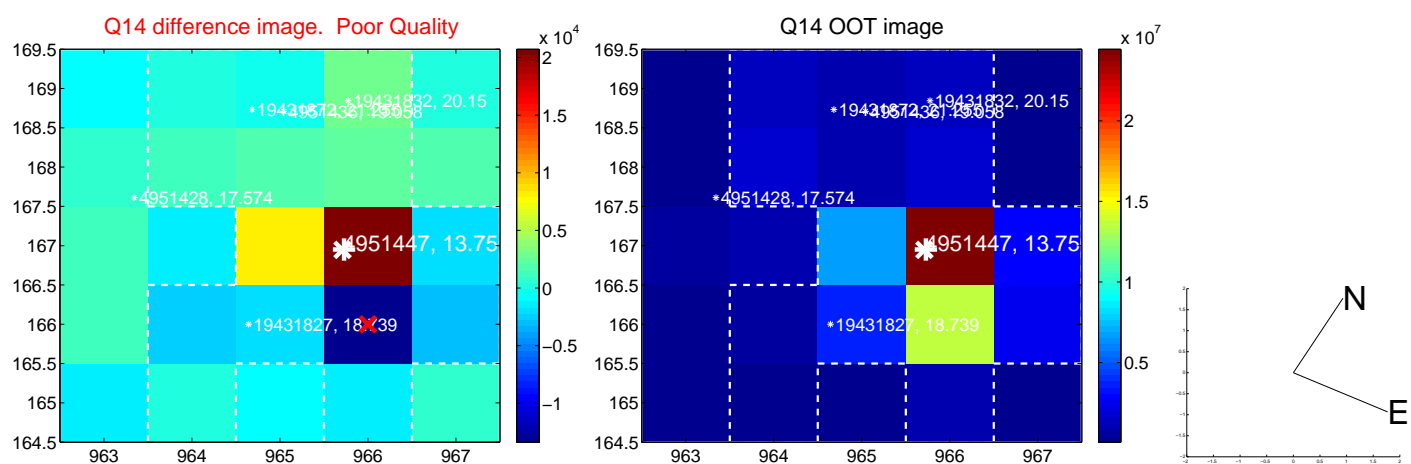
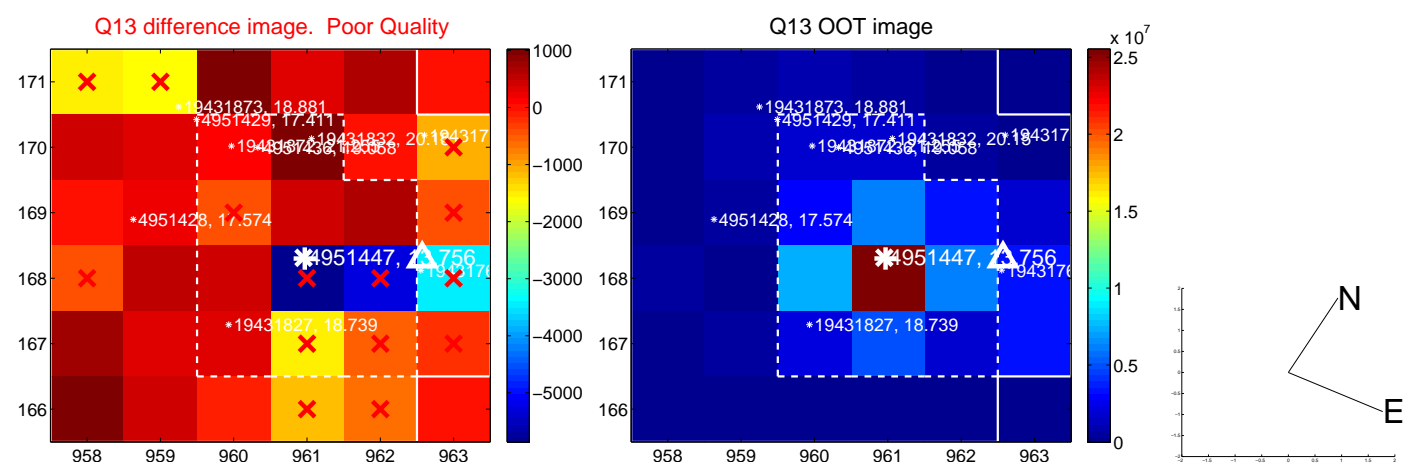
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



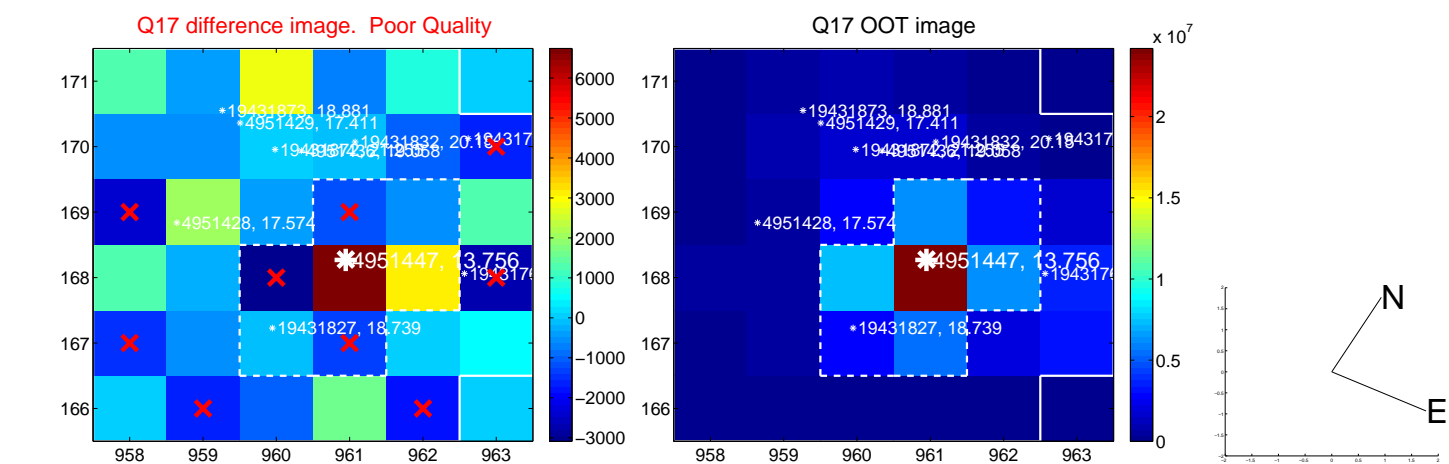
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



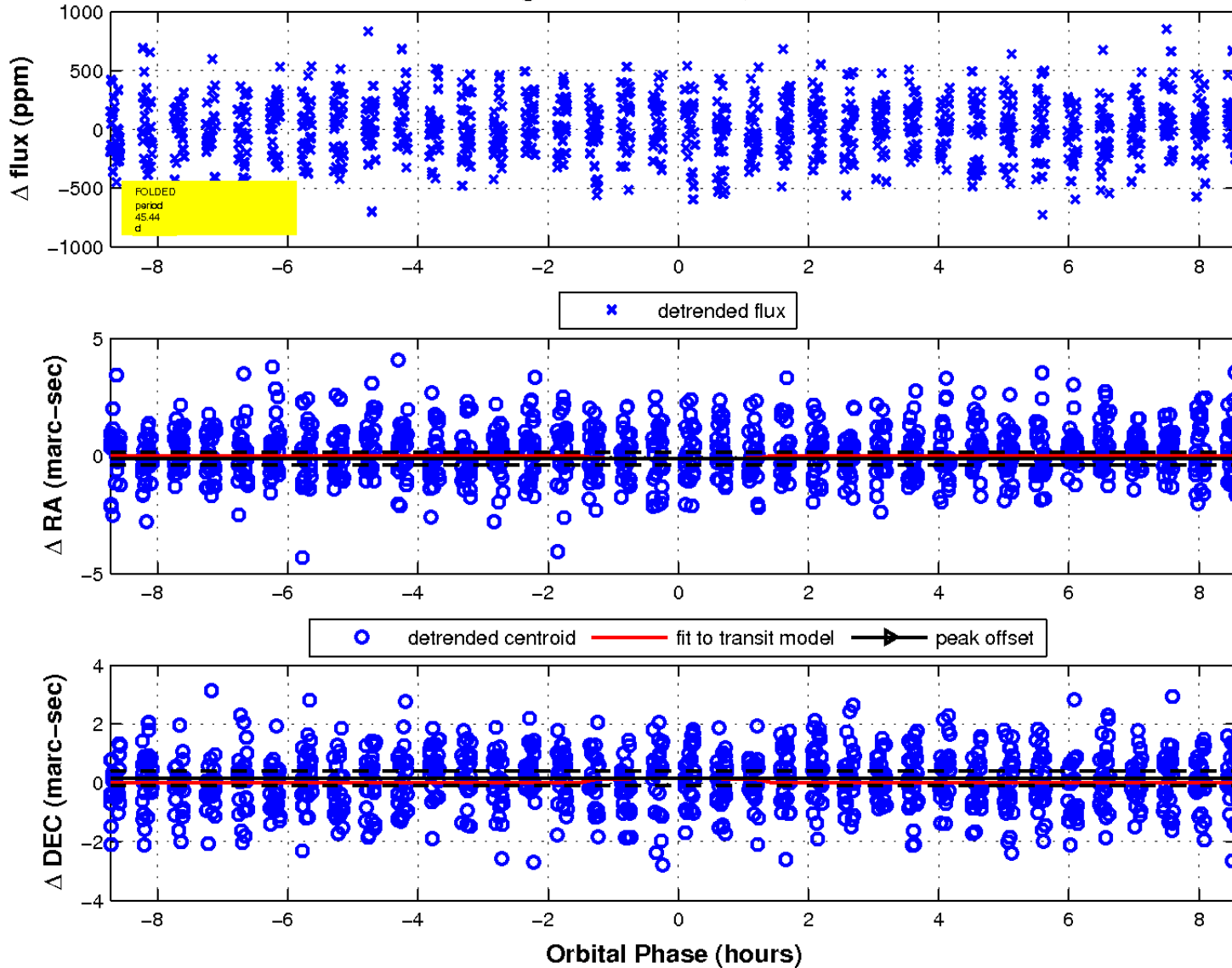
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

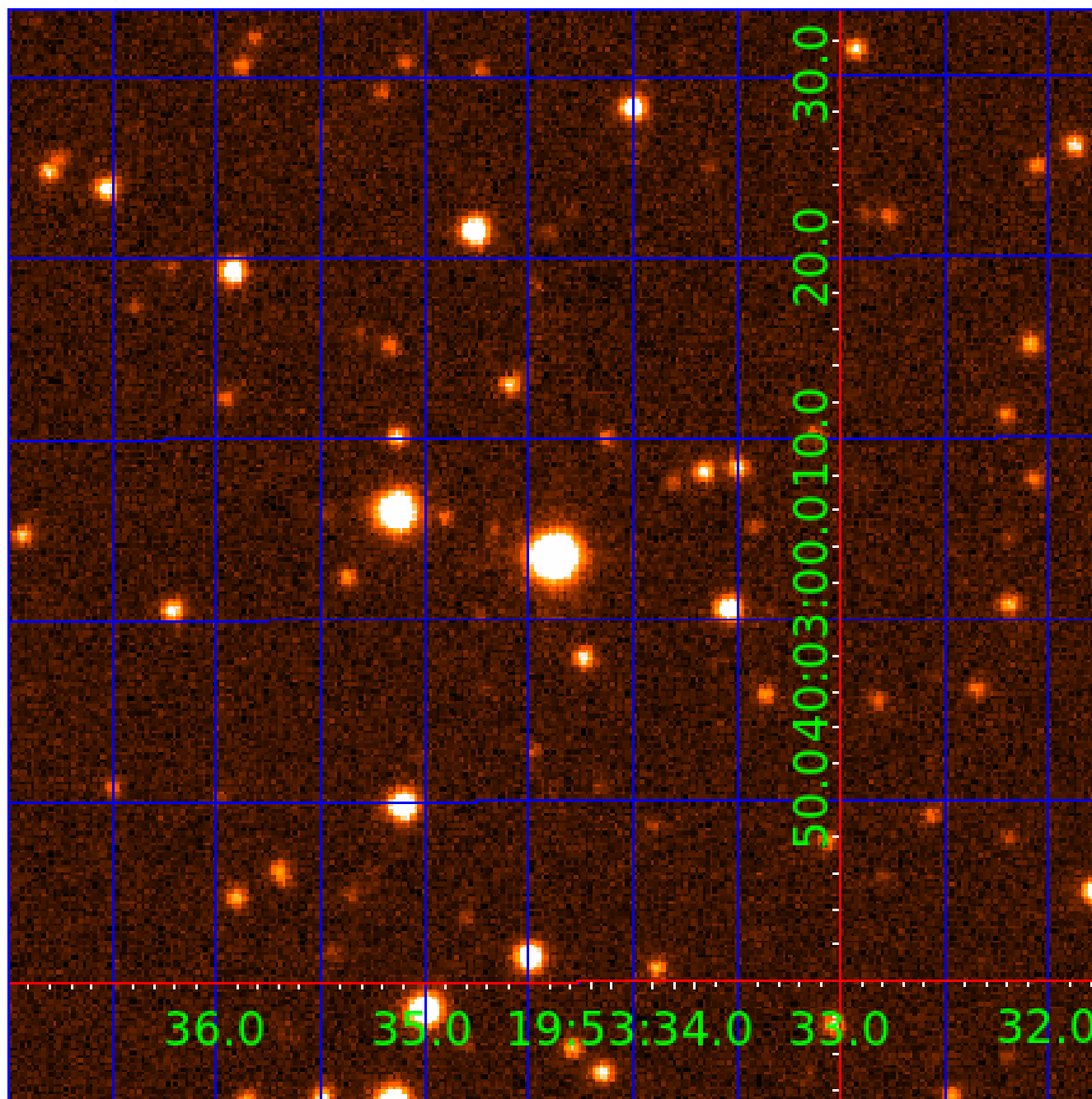


fluxWeightedCentroids, Planet 4 of 8



UKIRT Image

Declination



KIC 004951447

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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004951447-07	OBS	No	98.000565	190.276053	451.2	2.587	7.8	9.1	1.43	6517	3.49	17.09
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004951447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004951447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004951447-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
004951447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004951447-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

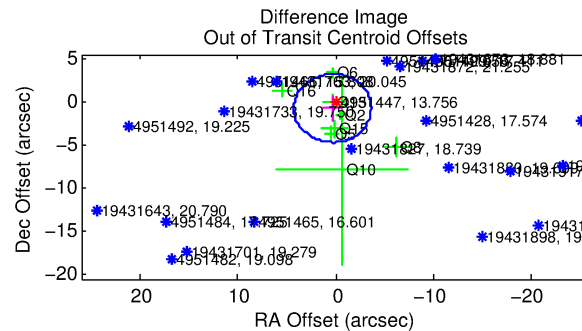
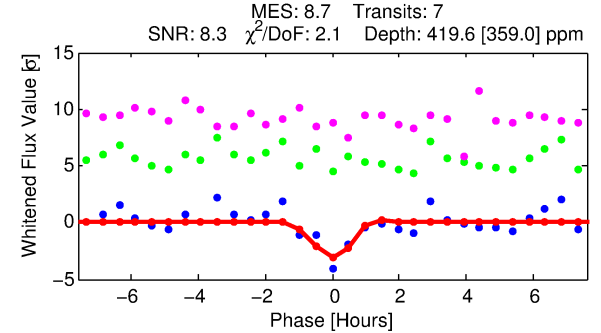
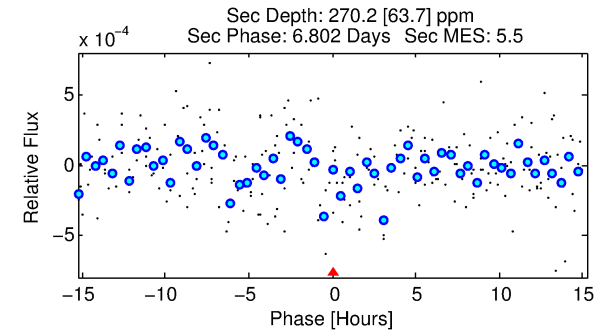
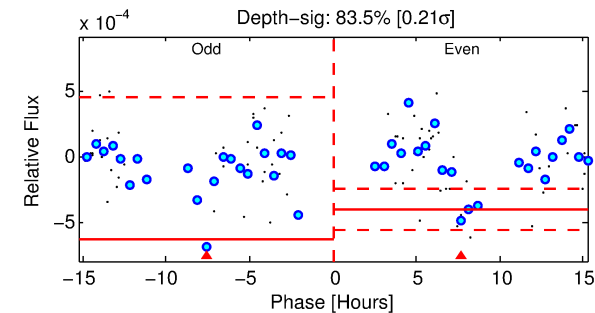
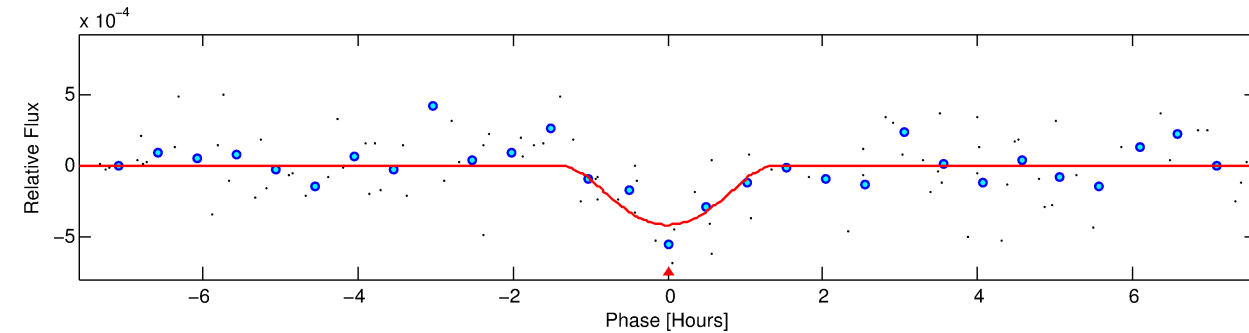
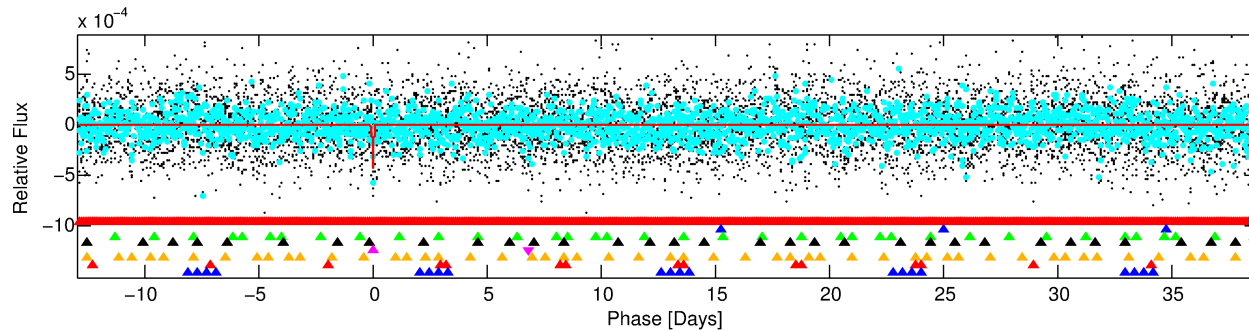
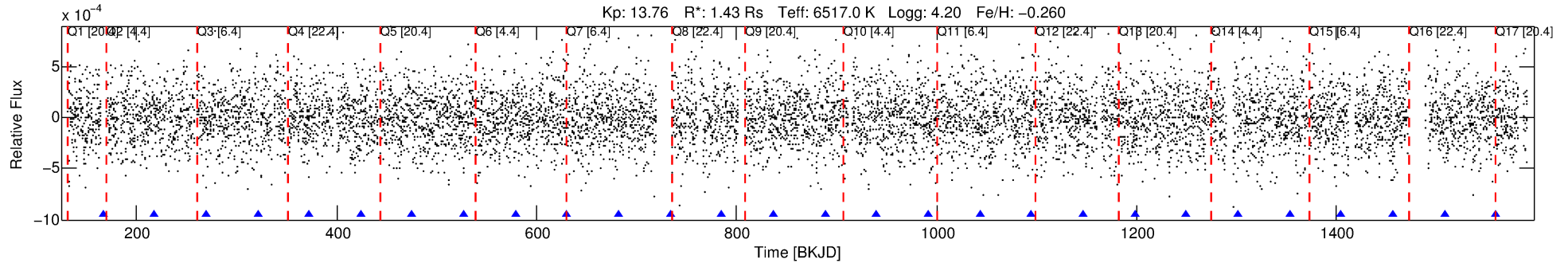
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004951447-05

No Significant Match Found

DV One-Page Summary

KIC: 4951447 Candidate: 5 of 8 Period: 51.592 d



DV Fit Results:

Period = 51.59198 [0.00071] d
Epoch = 166.3154 [0.0114] BKJD
Rp/R* = 0.0363 [0.3175]
a/R* = 42.41 [95.19]
b = 1.00 [0.48]
Seff = 40.21 [14.43]
Teq = 642 [58] K
Rp = 5.66 [49.53] Re
a = 0.2865 [0.0667] AU
Ag = 380.49 [6655.46] [0.06σ]
Teffp = 4385 [19171] K [0.20σ]

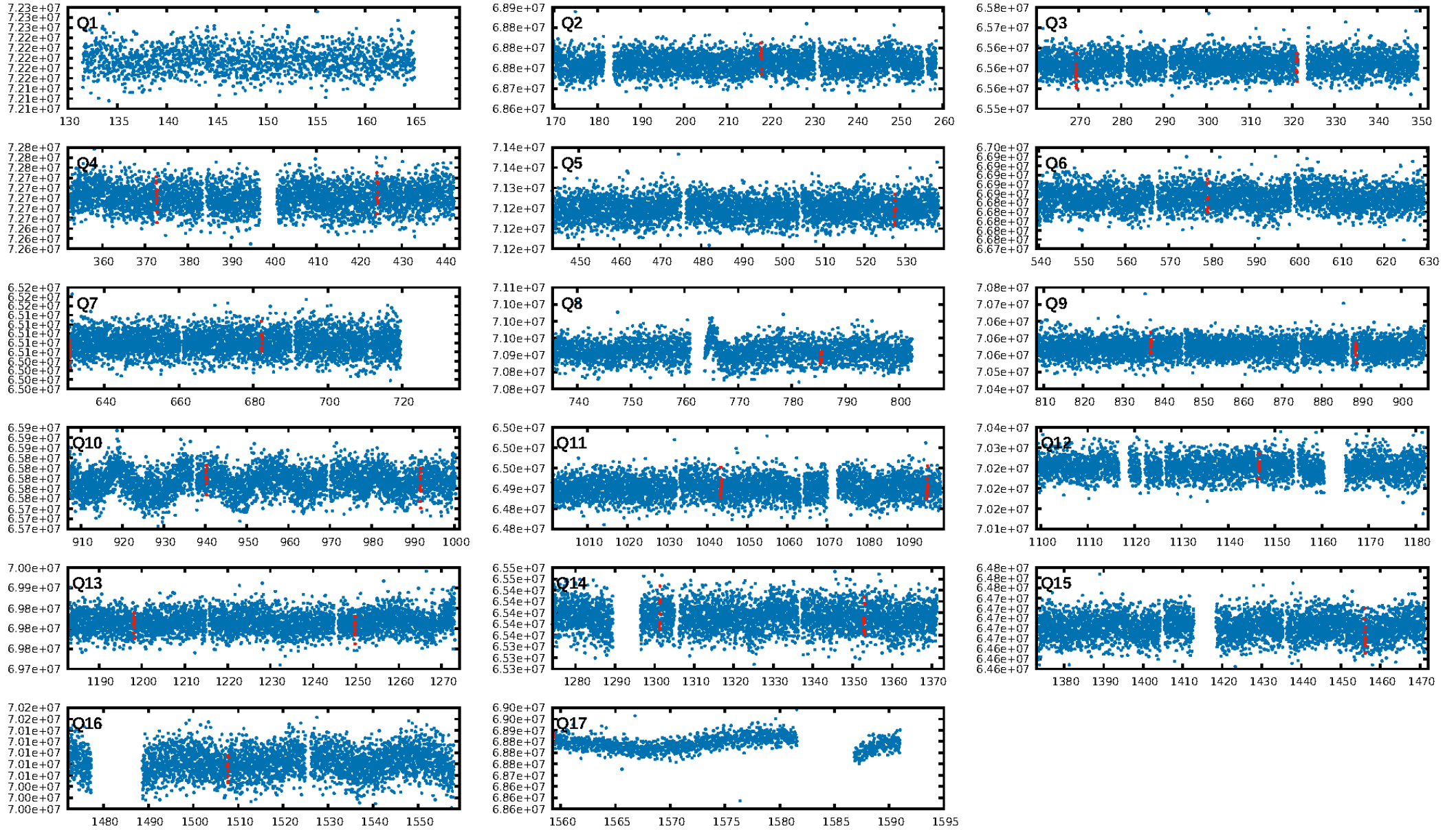
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [38.11σ]
LongPeriod-sig: 100.0% [164.24σ]
ModelChiSquare2-sig: 10.9%
ModelChiSquareGof-sig: 93.6%
Bootstrap-pfa: 2.76e-08
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -0.5316
Centroid-sig: 31.5%
Centroid-so: 1.234 arcsec [1.35σ]
OotOffset-rm: 0.798 arcsec [0.61σ]
KicOffset-rm: 0.808 arcsec [0.63σ]
OotOffset-st: 3/1/2/2 [8]
KicOffset-st: 3/1/2/2 [8]
DiffImageQuality-fgm: 0.12 [1/8]
DiffImageOverlap-fno: 0.00 [0/15]

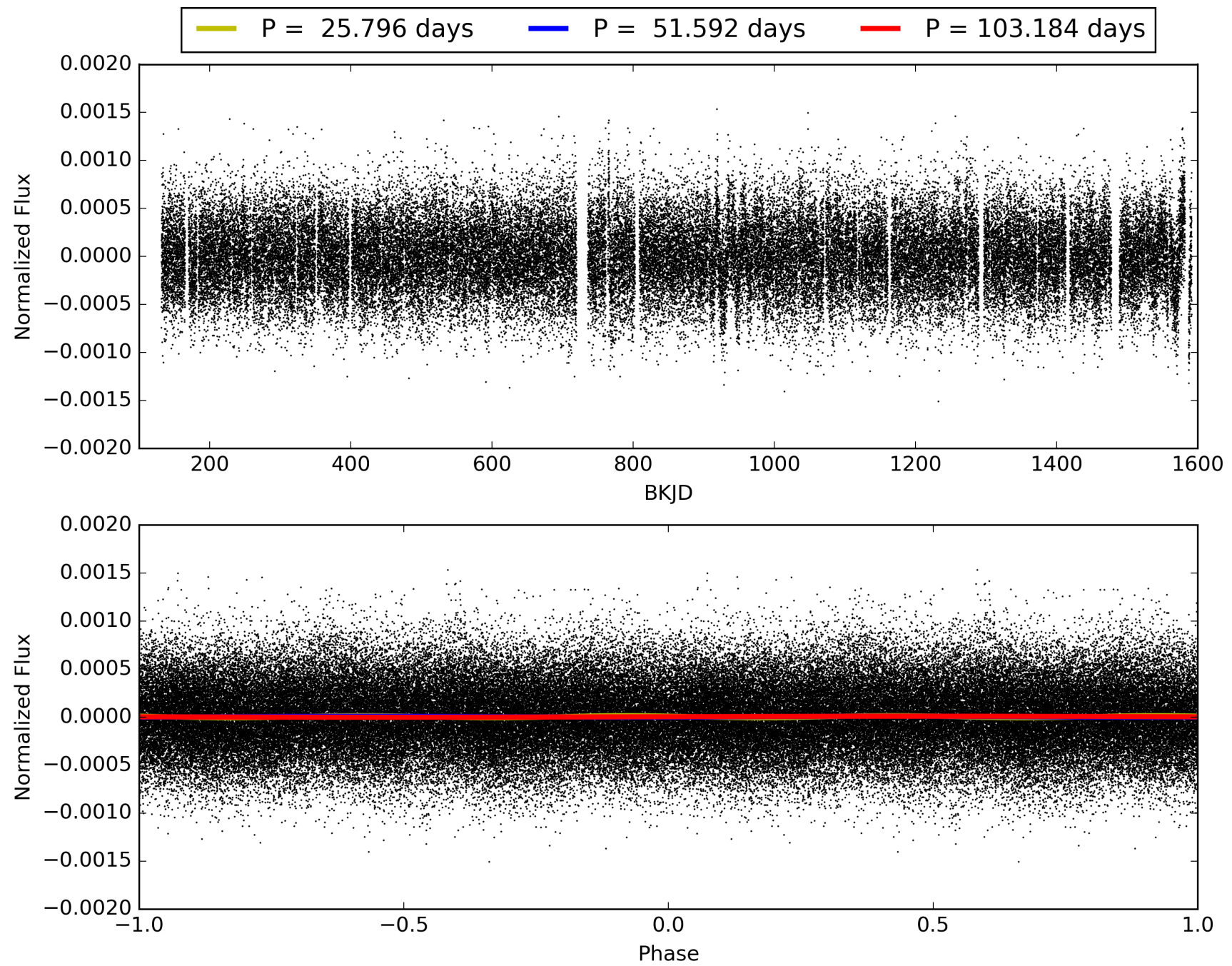
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:54:19 Z

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

TCE 004951447-05, PDC Light Curves

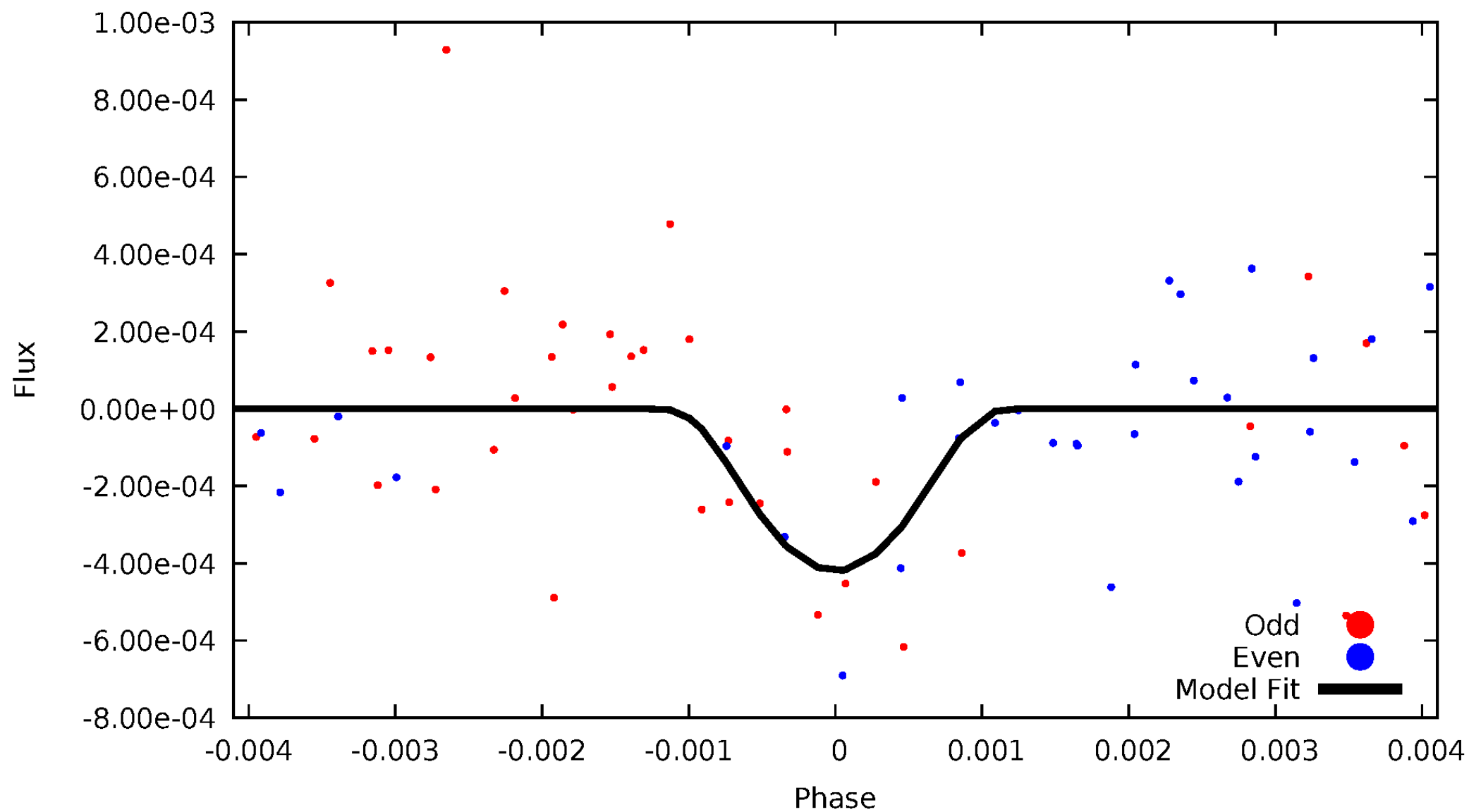


TCE 004951447-05



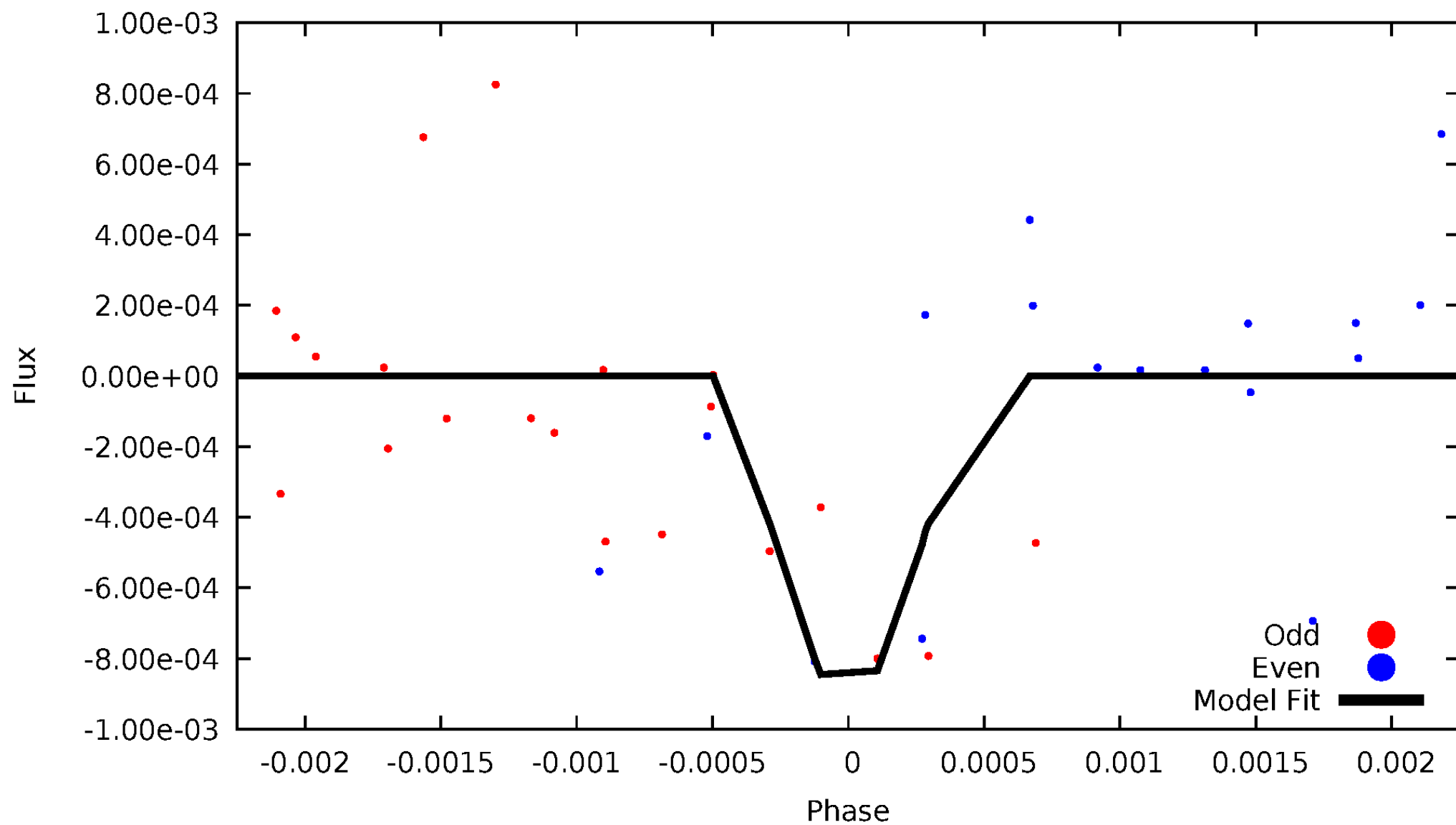
DV Odd/Even

TCE 004951447-05



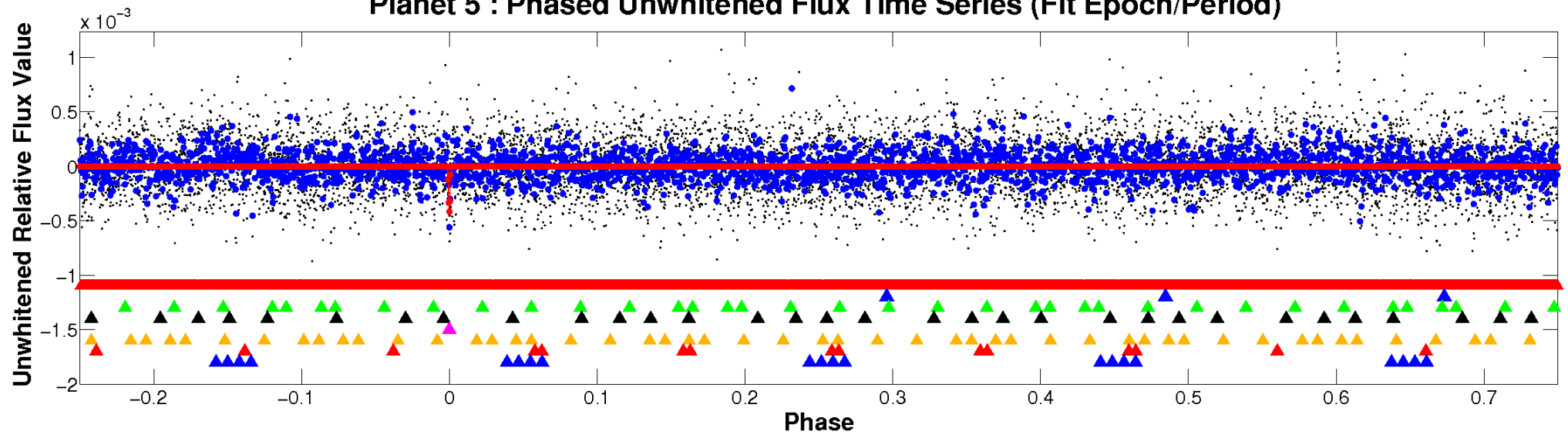
ALT Odd/Even

TCE 004951447-05

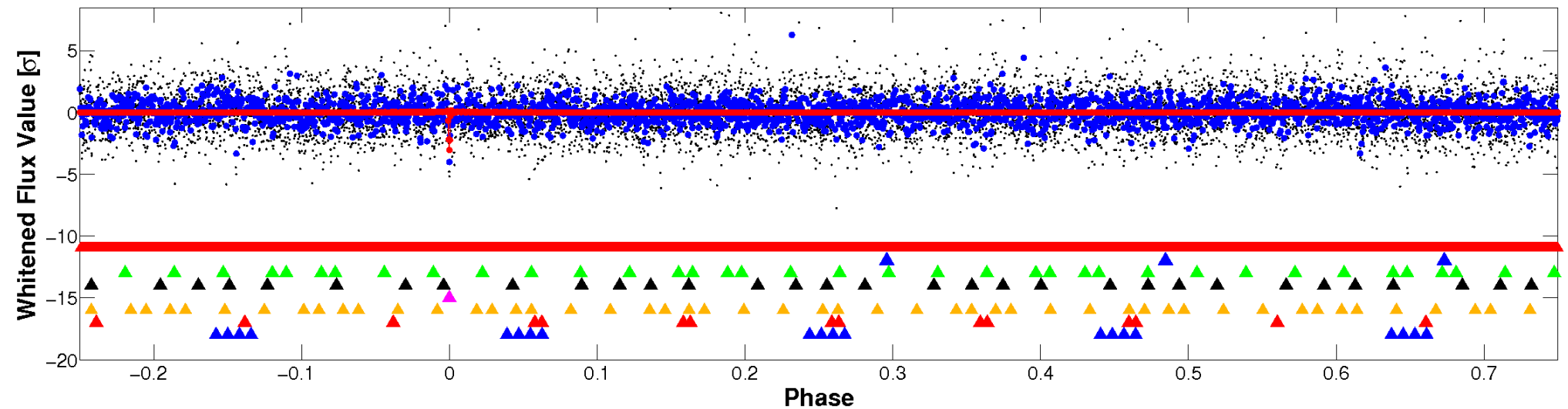


Non-Whitened Vs. Whitened Light Curve

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

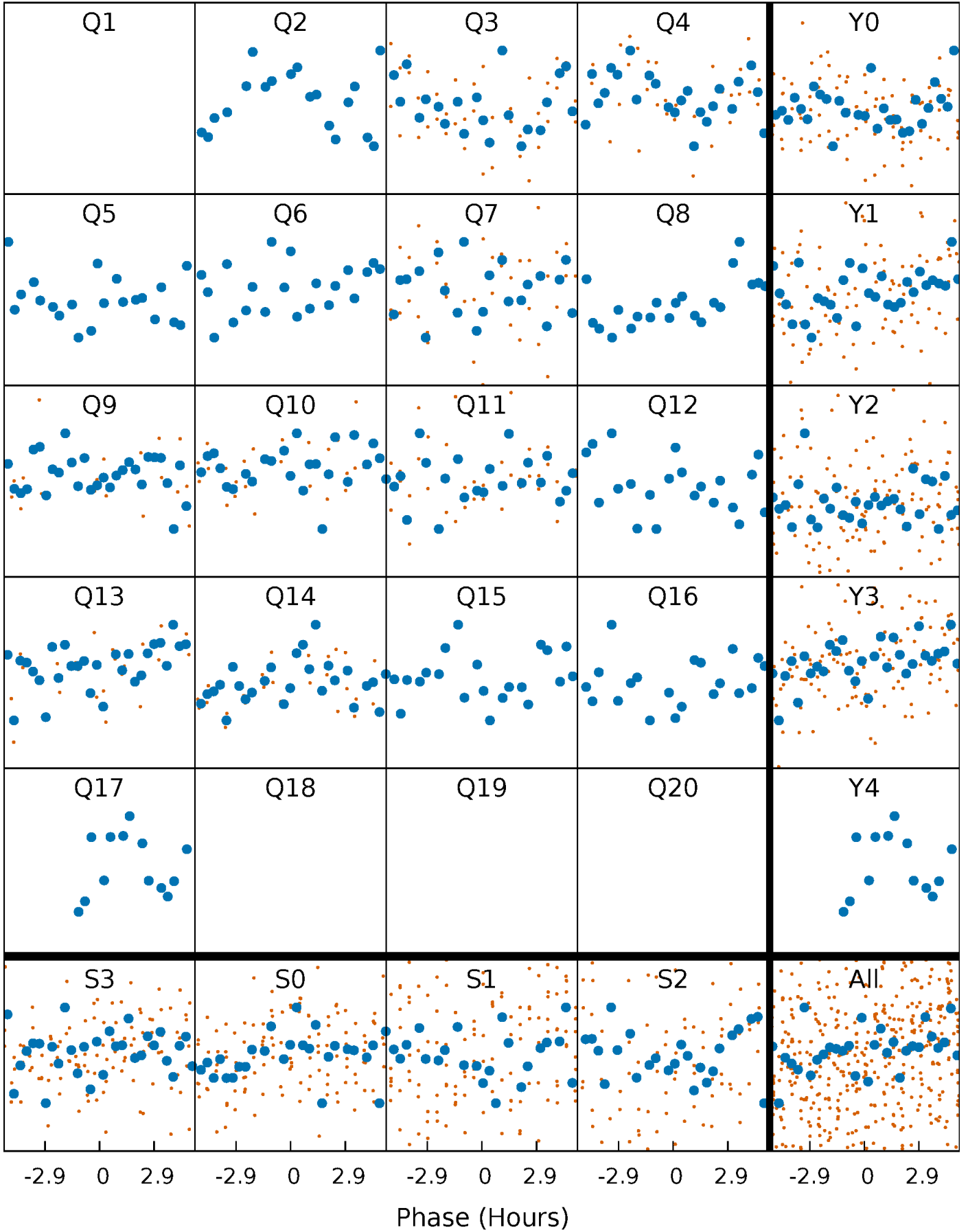


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



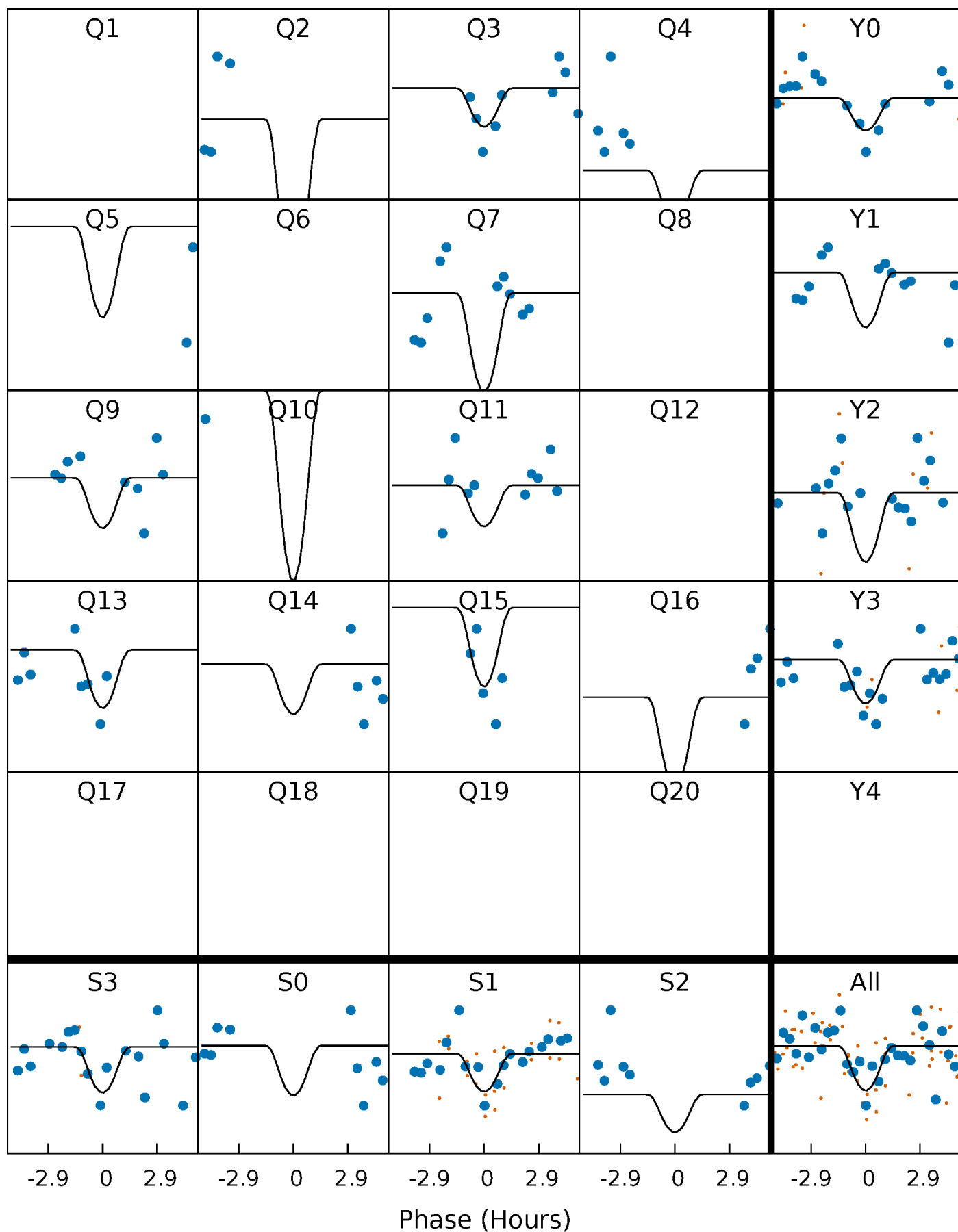
PDC Quarter-Phased Transit Curves

TCE 004951447-05 P= 51.591981 Days $T_0=166.315443$ (BKJD)



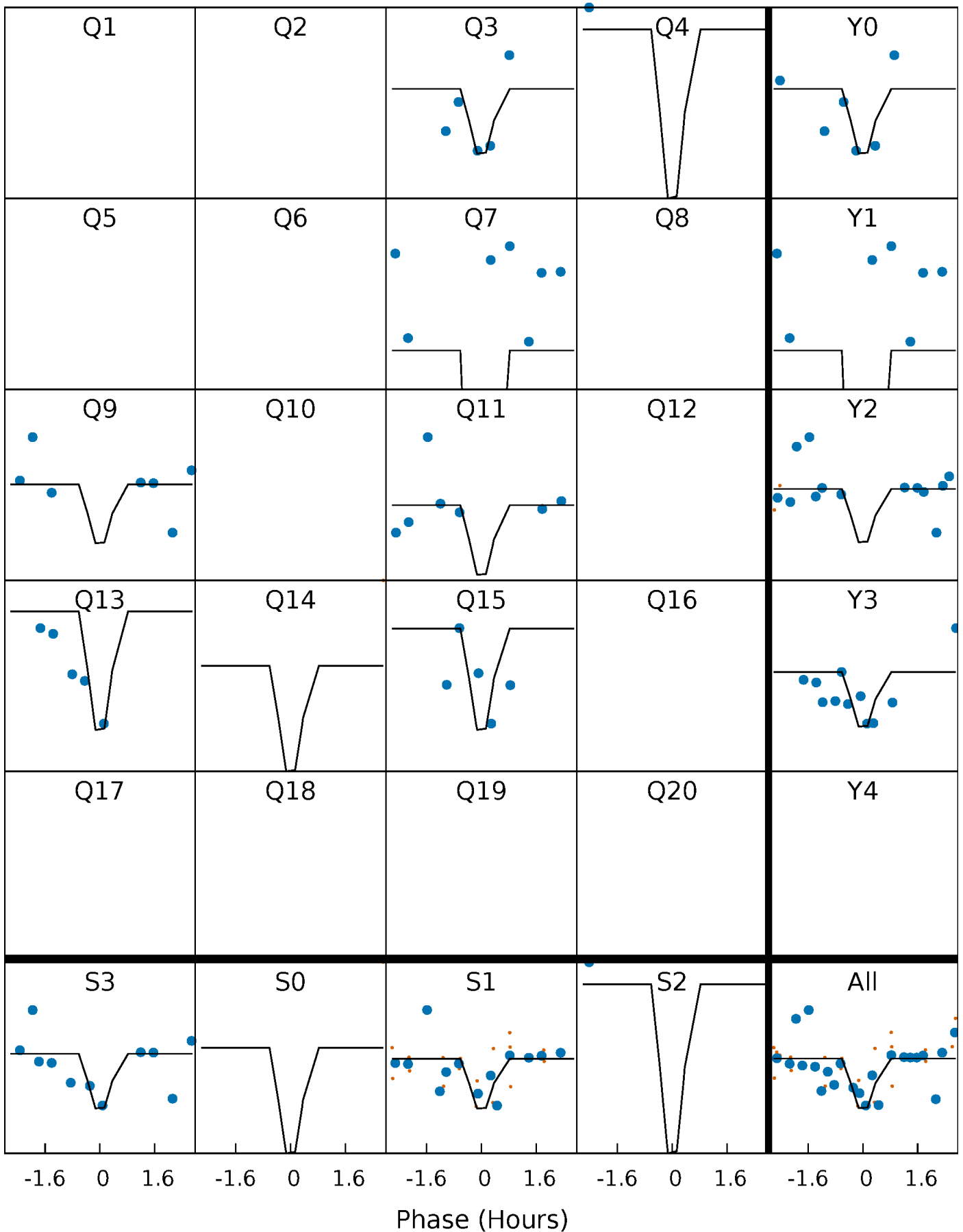
DV Quarter-Phased Transit Curves

TCE 004951447-05 P= 51.591981 Days $T_0=166.315443$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

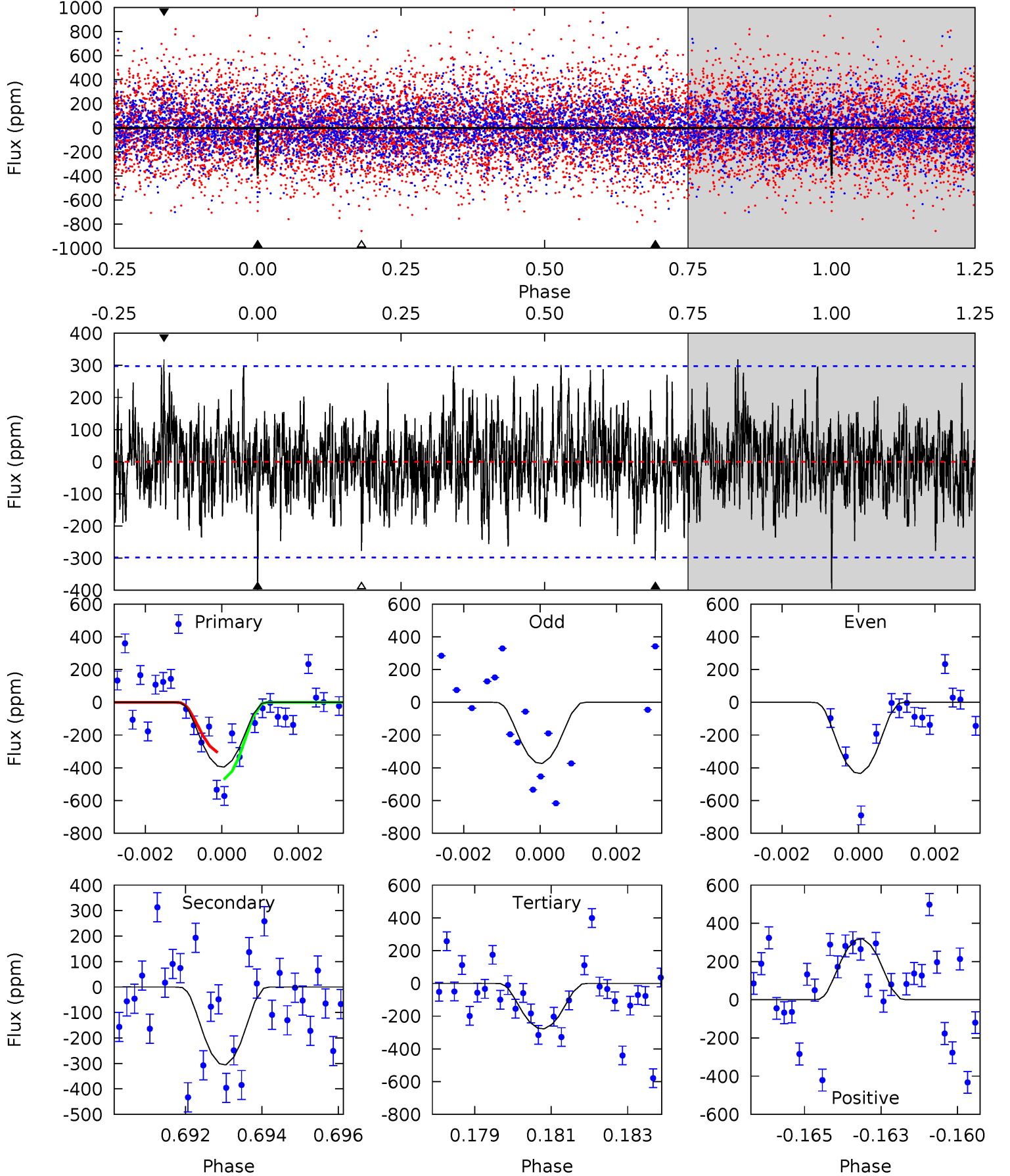
TCE 004951447-05 P= 51.591972 Days $T_0=166.324433$ (BKJD)



DV Model-Shift Uniqueness Test

004951447-05, $P = 51.591981$ Days, $E = 114.723462$ Days

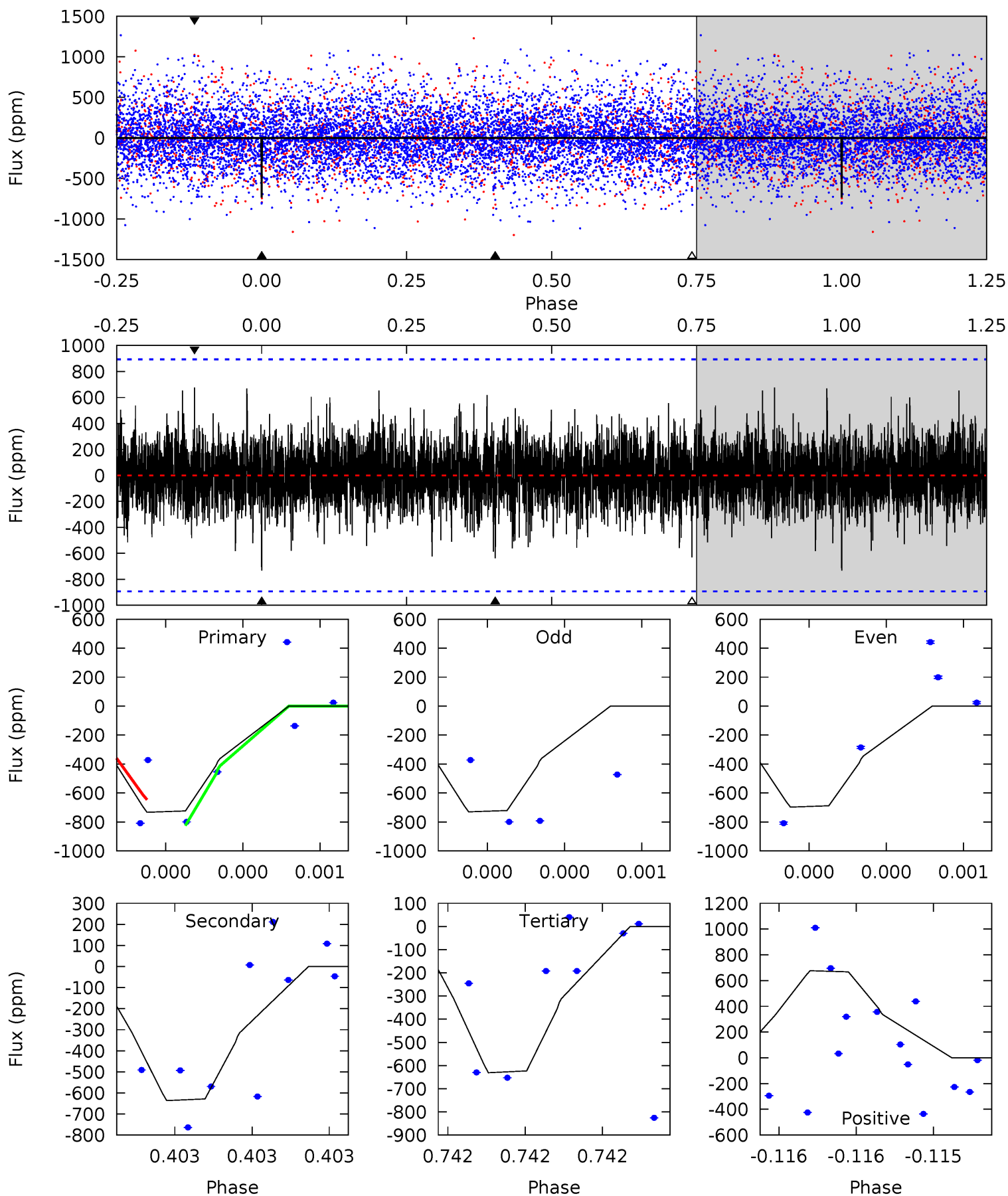
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.07	5.46	4.96	5.69	5.32	3.08	1.63	2.11	1.37	0.50	-0.23	0.54	0.70	0.45	1.46



Alt Model-Shift Uniqueness Test

004951447-05, P = 51.591972 Days, E = 114.732461 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.60	4.00	3.96	4.24	5.60	3.53	1.08	0.64	0.36	0.03	-0.25	0.10	0.96	0.48	0.49



Stellar Parameters For KIC 004951447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6517^{+175}_{-214}	$4.199^{+0.180}_{-0.180}$	$-0.260^{+0.250}_{-0.300}$	$1.429^{+0.402}_{-0.329}$	$1.183^{+0.188}_{-0.169}$	$0.571^{+0.532}_{-0.276}$
	+3%/-3%	+4%/-4%	+96%/-115%	+28%/-23%	+16%/-14%	+93%/-48%
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 004951447-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-306 ± 56	$37.56^{+38.03}_{-26.61}$	901^{+66}_{-59}	2576^{+1083}_{-423}	$9.711^{+103.594}_{-7.318}$
Alt.	-637 ± 159	$33.66^{+37.22}_{-23.14}$	897^{+61}_{-64}	2886^{+1314}_{-483}	24^{+207}_{-19}

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

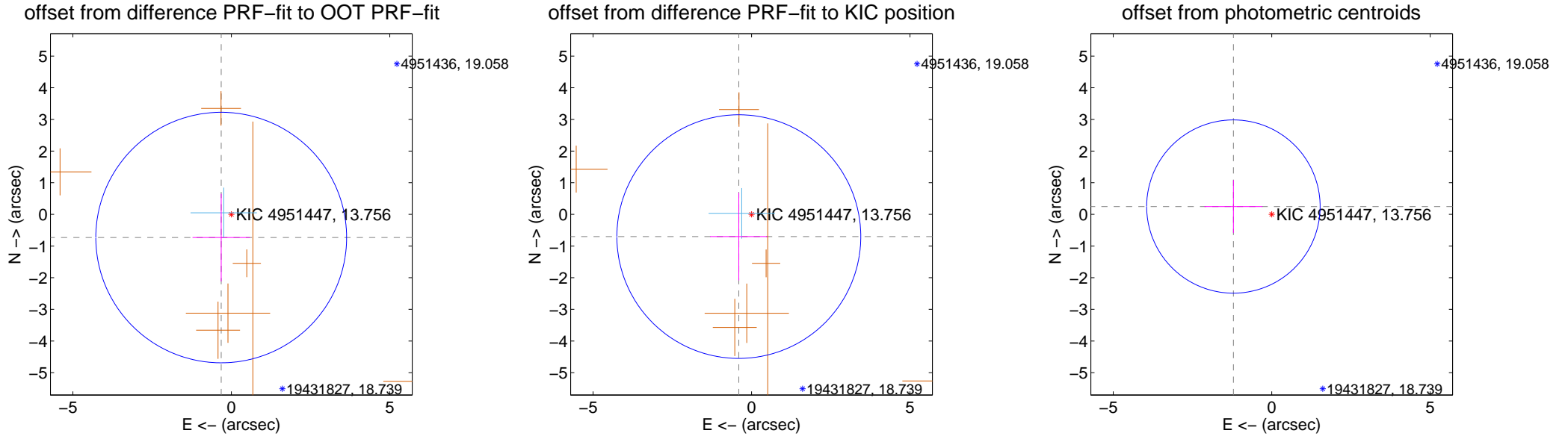
DV Centroid Data

Supplemental centroid analysis for 004951447-05. Kepler magnitude: 13.76. Transit SNR 8.32

There are 1 quarters with good PRF difference image offsets

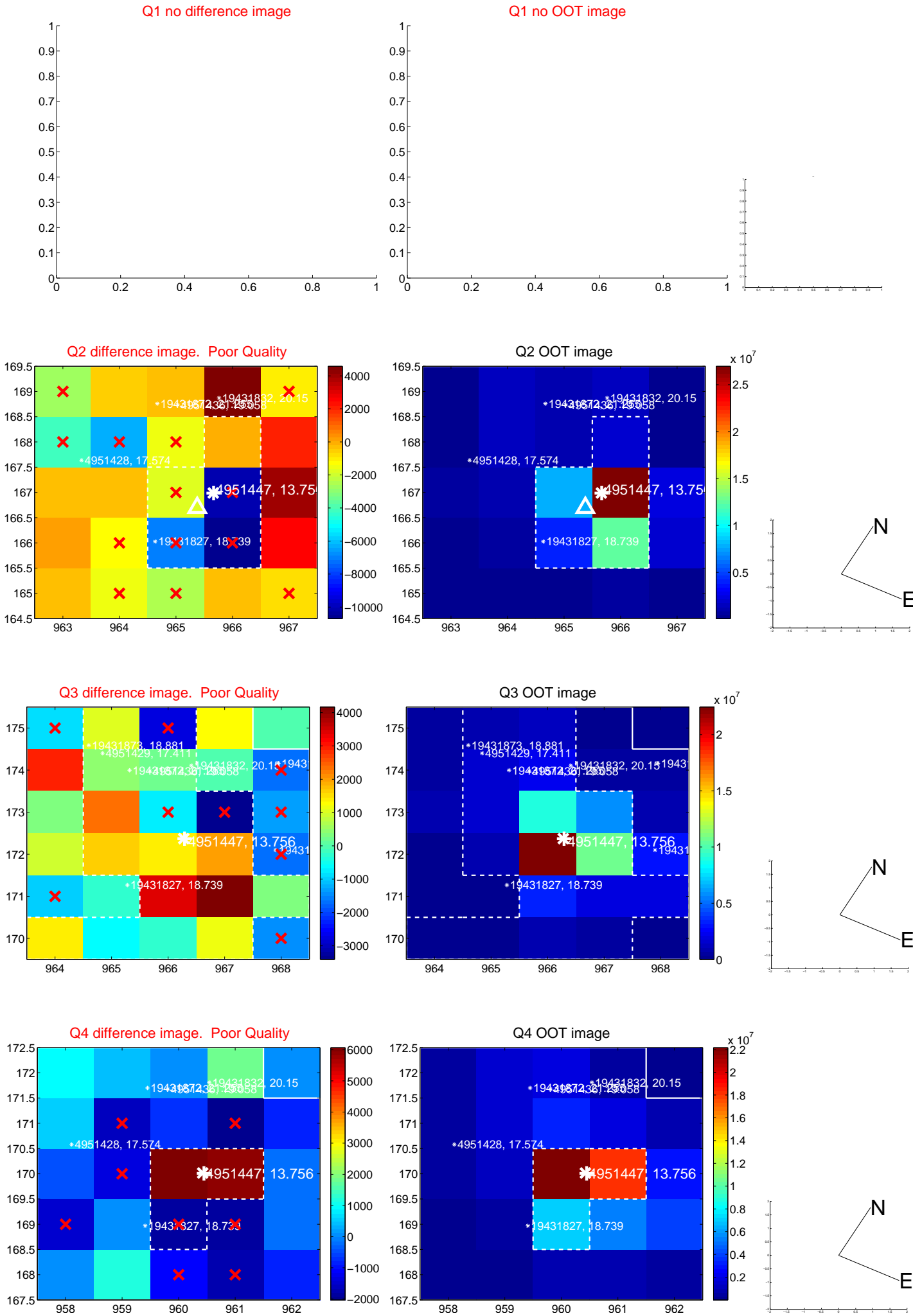
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.798 ± 1.319	0.61	0.320 ± 0.906	-0.731 ± 1.384
PRF-fit source offset from KIC position	0.808 ± 1.283	0.63	0.401 ± 0.906	-0.701 ± 1.384
photometric centroid source offset	1.23 ± 0.91	1.35	1.21 ± 0.92	0.25 ± 0.83

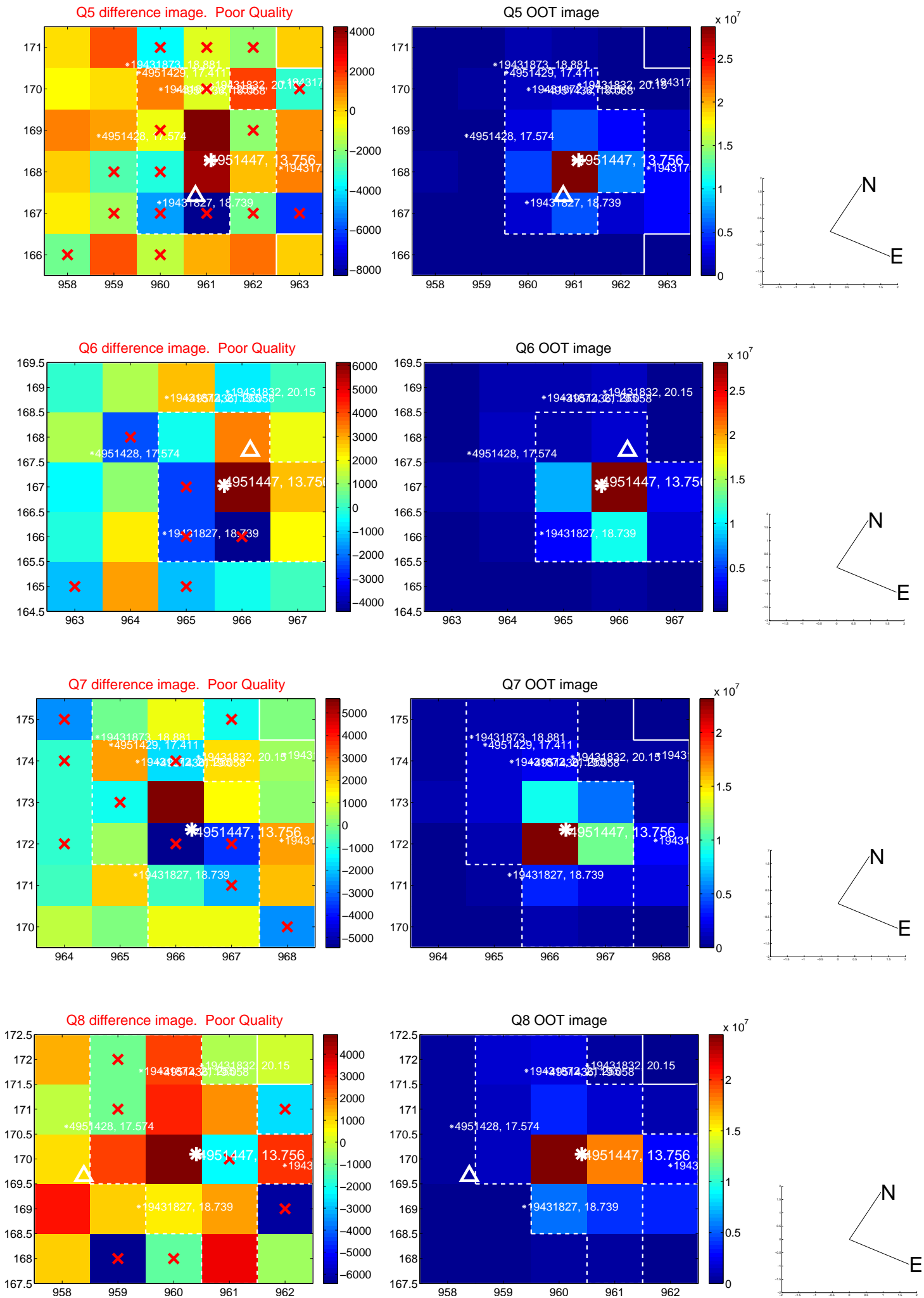


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

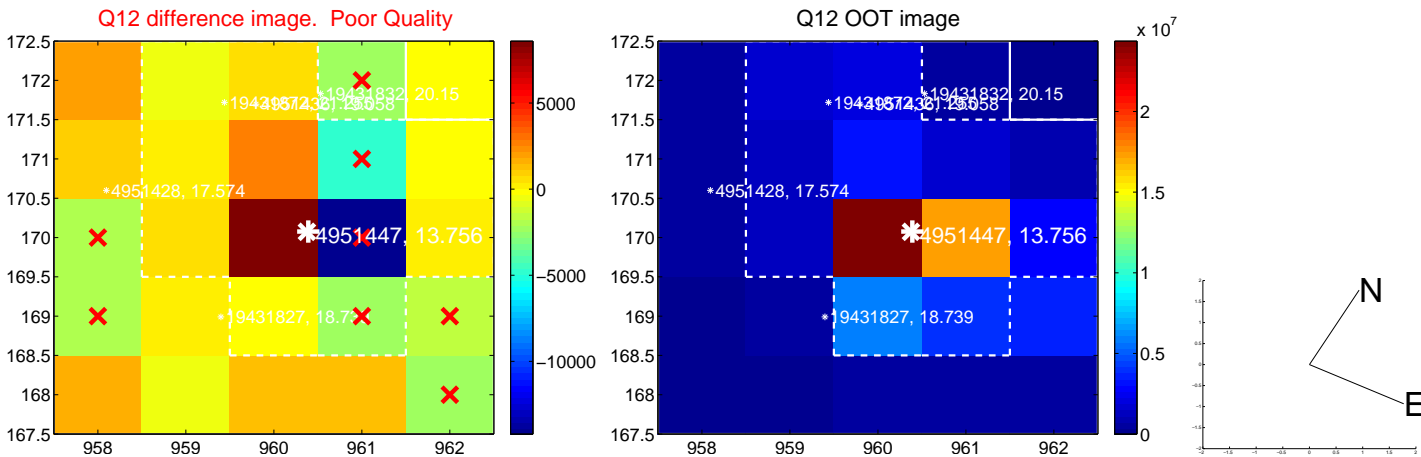
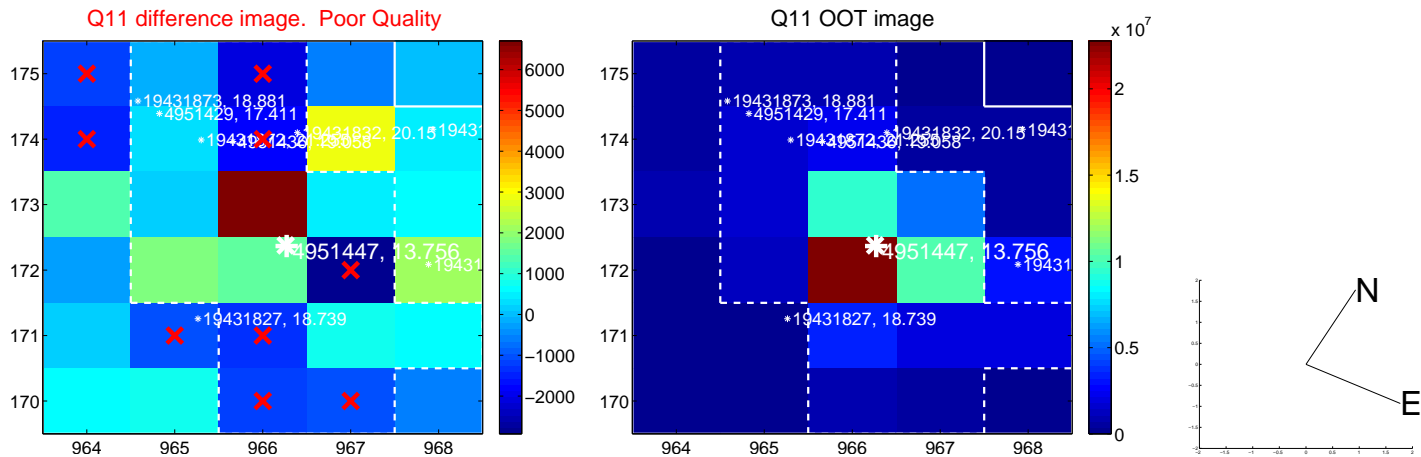
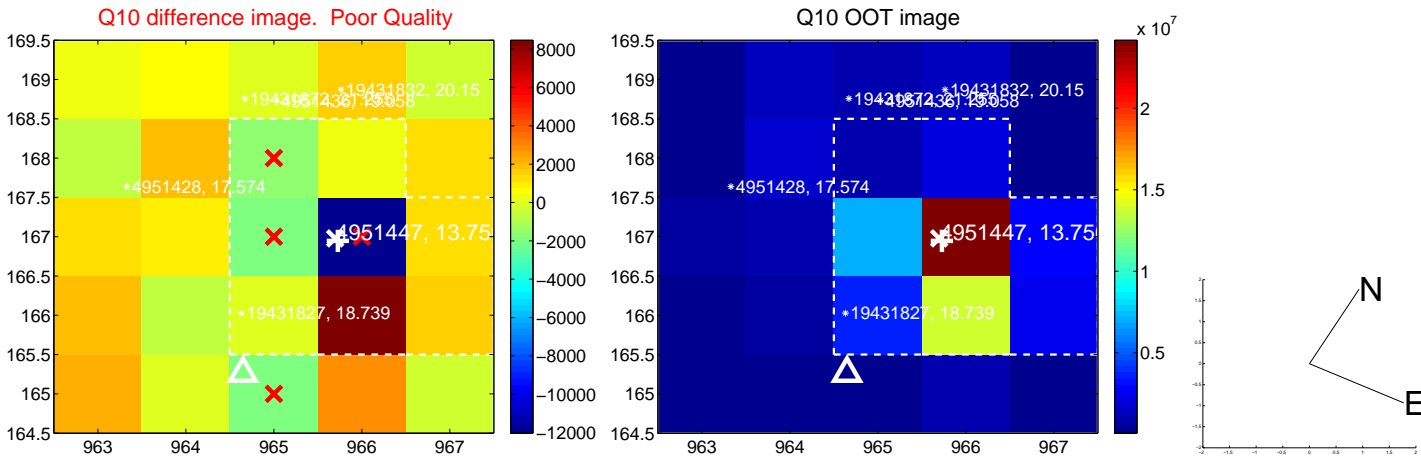
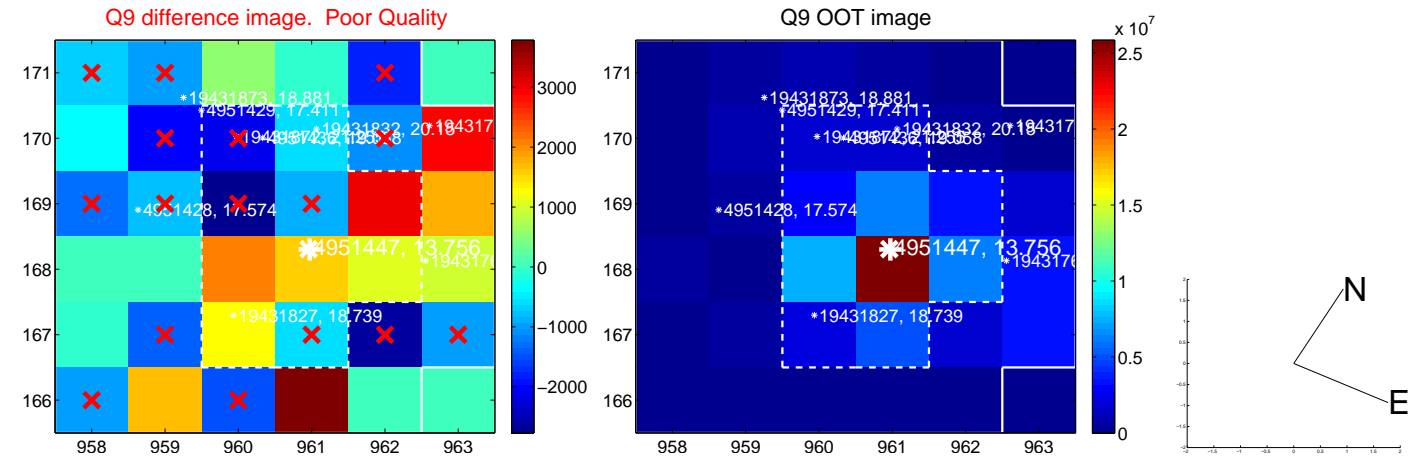
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



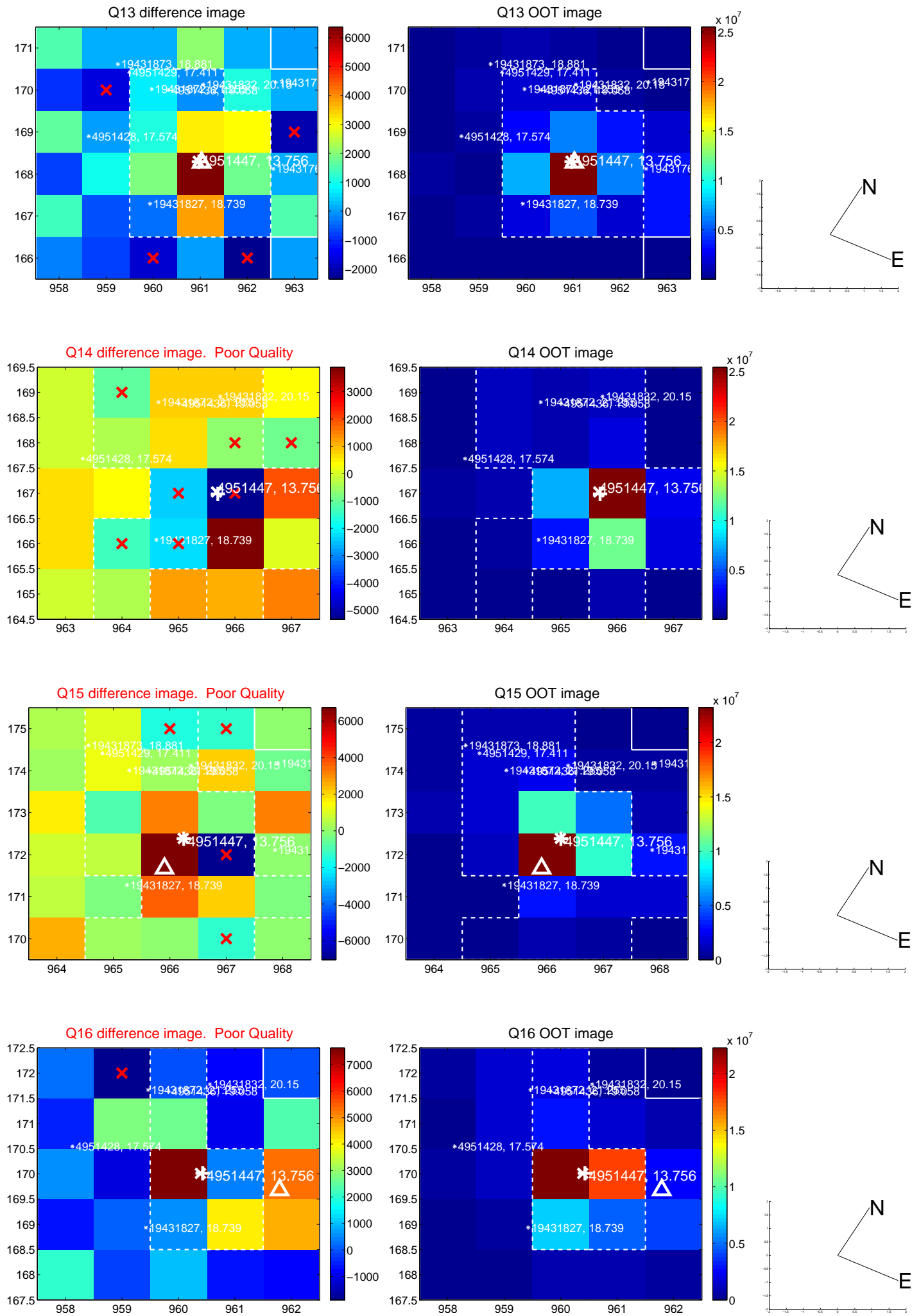
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



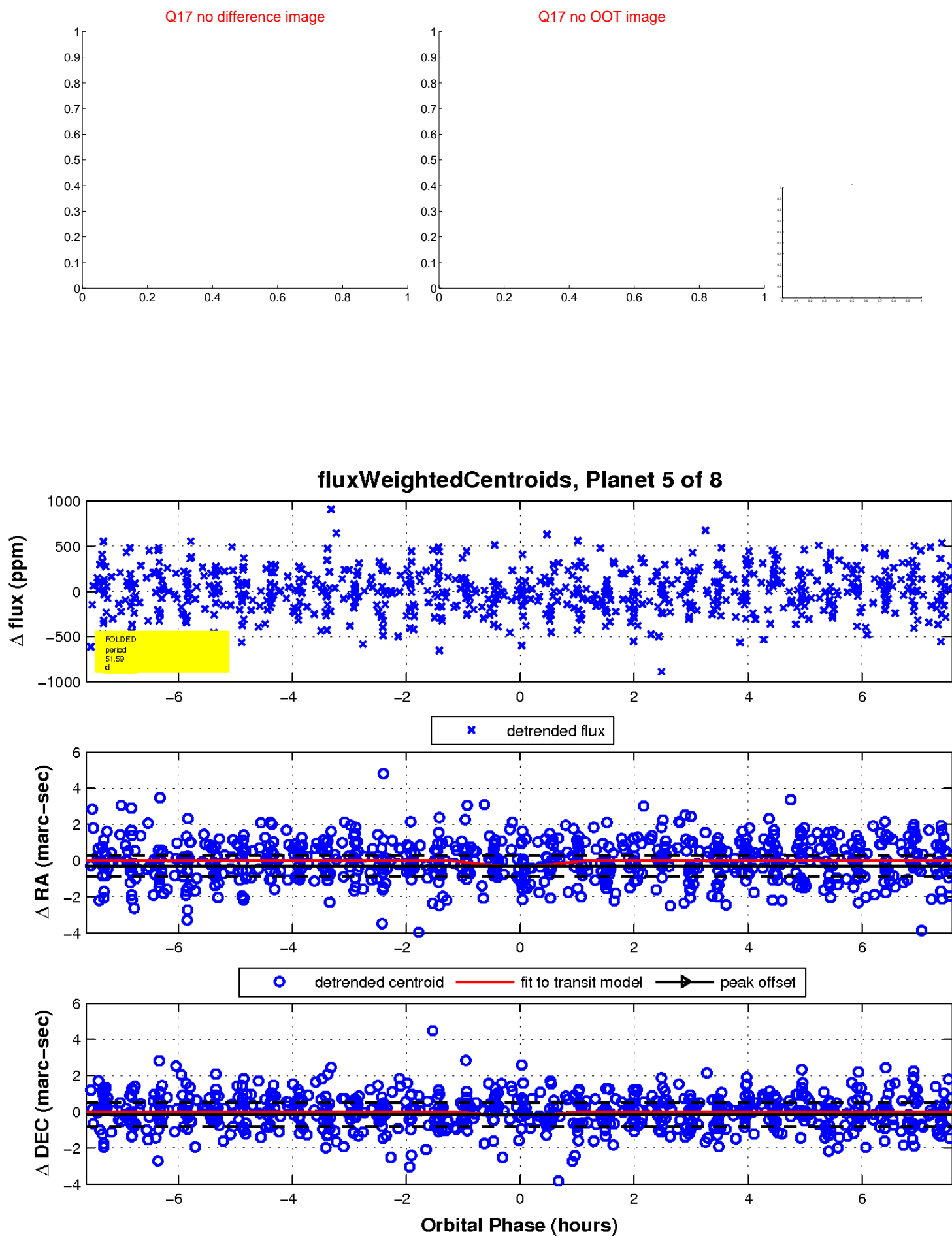
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

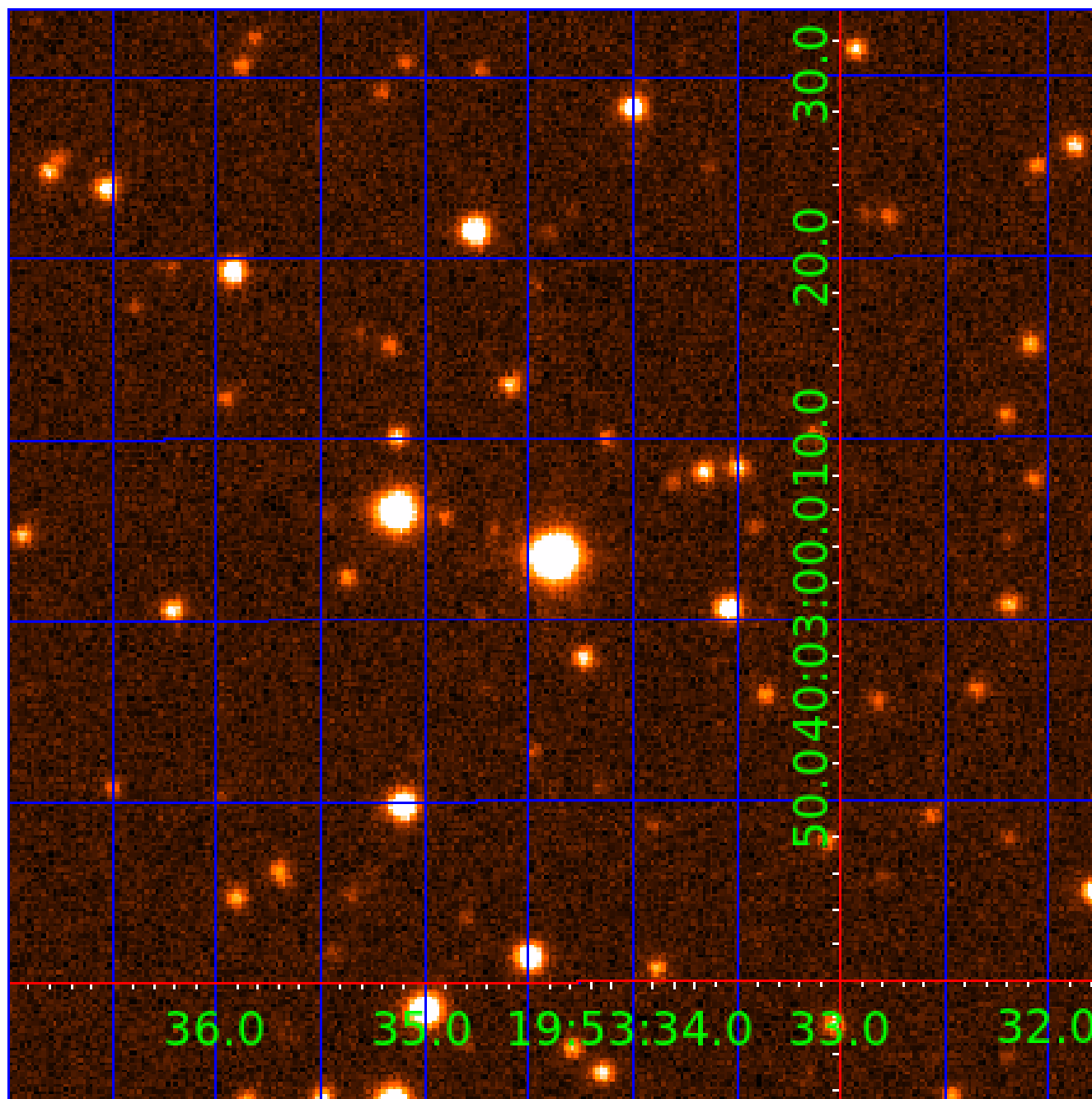


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004951447

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})
004951447-01	OBS	No	0.699656	132.026349	12.4	4.634	8.7	4.5	1.43	6517	0.52	12433.52
004951447-02	OBS	No	577.241449	336.360194	456.0	18.942	8.2	7.1	1.43	6517	3.59	1.61
004951447-03	OBS	No	39.121997	160.621638	392.3	1.485	9.3	8.7	1.43	6517	2.88	58.15
004951447-04	OBS	No	45.444298	157.556159	229.7	2.922	9.6	6.1	1.43	6517	2.46	47.62
004951447-05	OBS	No	51.591981	166.315444	419.6	2.540	8.7	8.3	1.43	6517	5.66	40.21
004951447-06	OBS	No	28.815116	155.728361	392.0	1.741	8.9	10.7	1.43	6517	3.31	87.42
004951447-07	OBS	No	98.000565	190.276053	451.2	2.587	7.8	9.1	1.43	6517	3.49	17.09
004951447-08	OBS	No	72.310280	147.611048	548.0	1.647	8.3	10.1	1.43	6517	3.59	25.64

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004951447-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
004951447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004951447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004951447-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
004951447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004951447-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

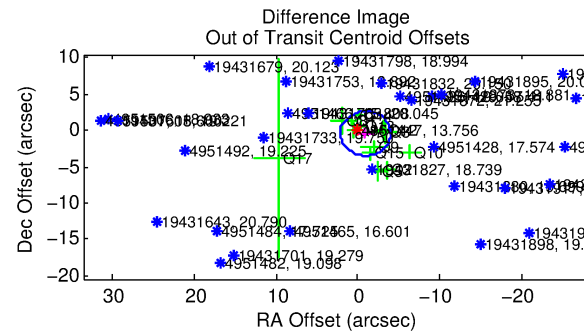
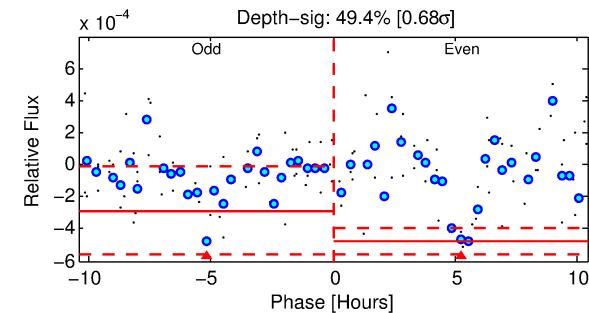
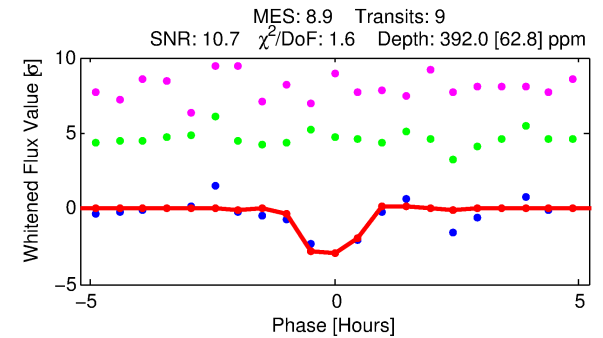
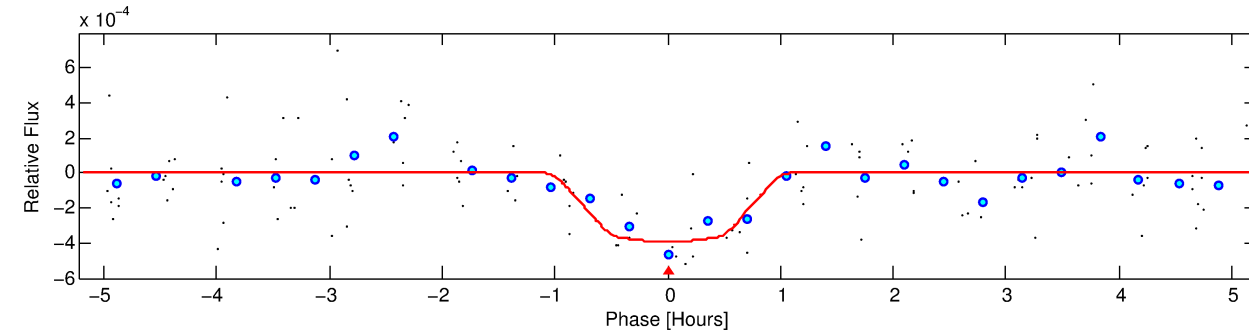
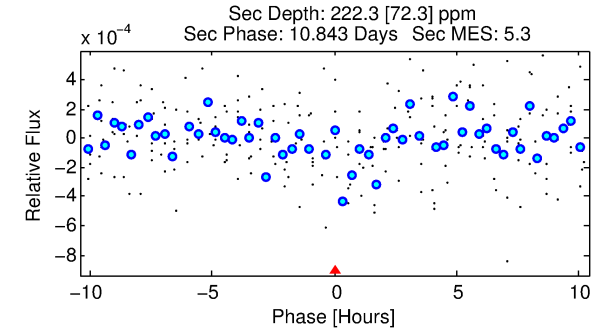
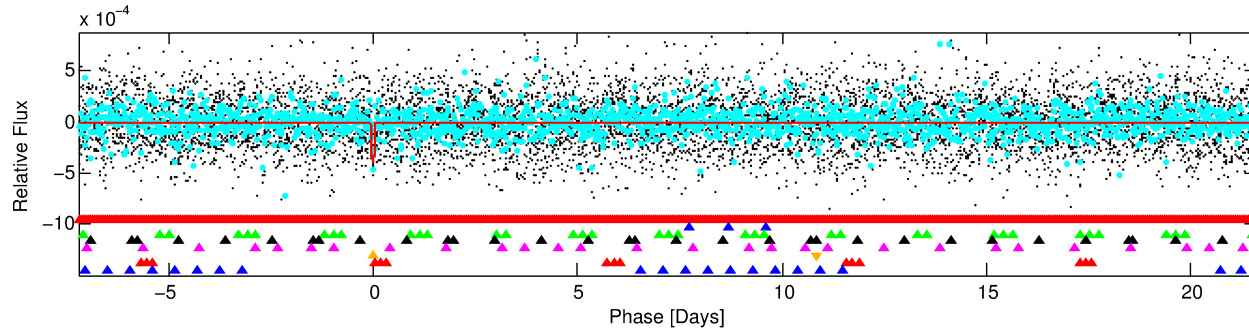
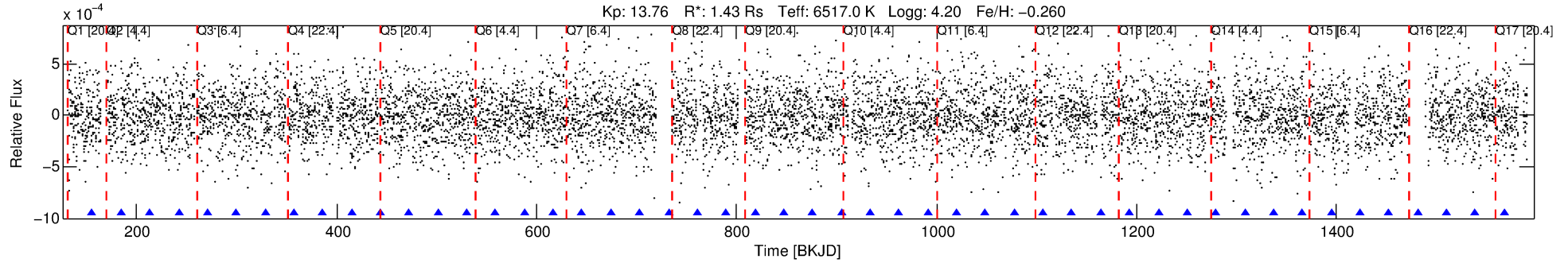
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004951447-06

No Significant Match Found

DV One-Page Summary

KIC: 4951447 Candidate: 6 of 8 Period: 28.815 d



DV Fit Results:

Period = 28.81512 [0.00026] d
Epoch = 155.7284 [0.0063] BKJD
Rp/R* = 0.0213 [0.0159]
a/R* = 60.67 [257.06]
b = 0.90 [0.89]
Seff = 87.42 [31.37]
Teq = 780 [70] K
Rp = 3.32 [2.65] Re
a = 0.1943 [0.0453] AU
Ag = 419.99 [659.43] [0.64 σ]
Teffp = 5457 [2101] K [2.23 σ]

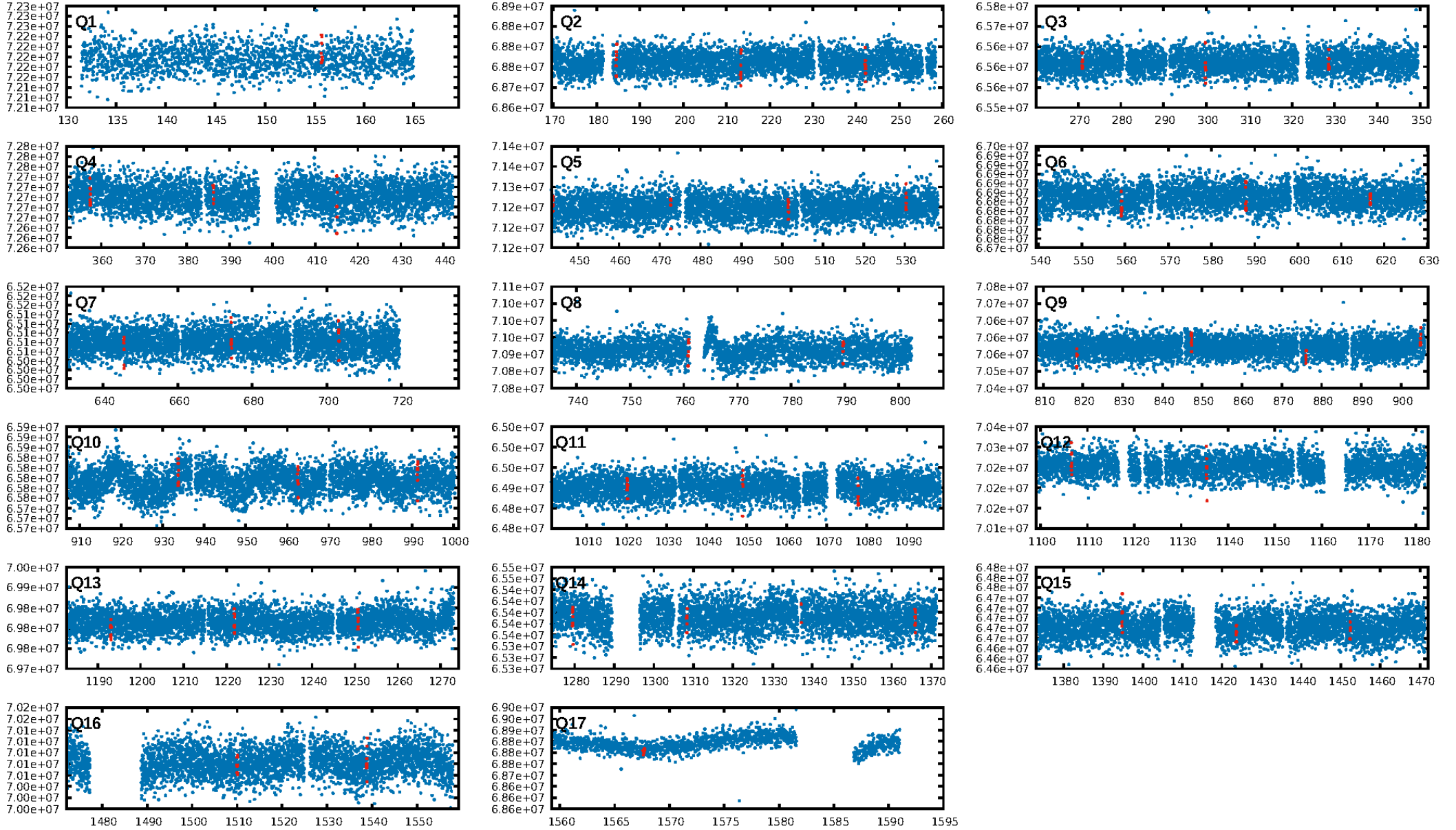
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [136.31 σ]
LongPeriod-sig: 100.0% [108.08 σ]
ModelChiSquare2-sig: 5.0%
ModelChiSquareGof-sig: 99.0%
Bootstrap-pfa: 3.15e-08
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: -0.846
Centroid-sig: 15.7%
Centroid-so: 0.924 arcsec [1.45 σ]
OotOffset-rm: 0.967 arcsec [0.95 σ]
KicOffset-rm: 0.905 arcsec [1.00 σ]
OotOffset-st: 3/2/3/5 [13]
KicOffset-st: 3/2/3/5 [13]
DiffImageQuality-fgm: 0.15 [2/13]
DiffImageOverlap-fno: 0.00 [0/17]

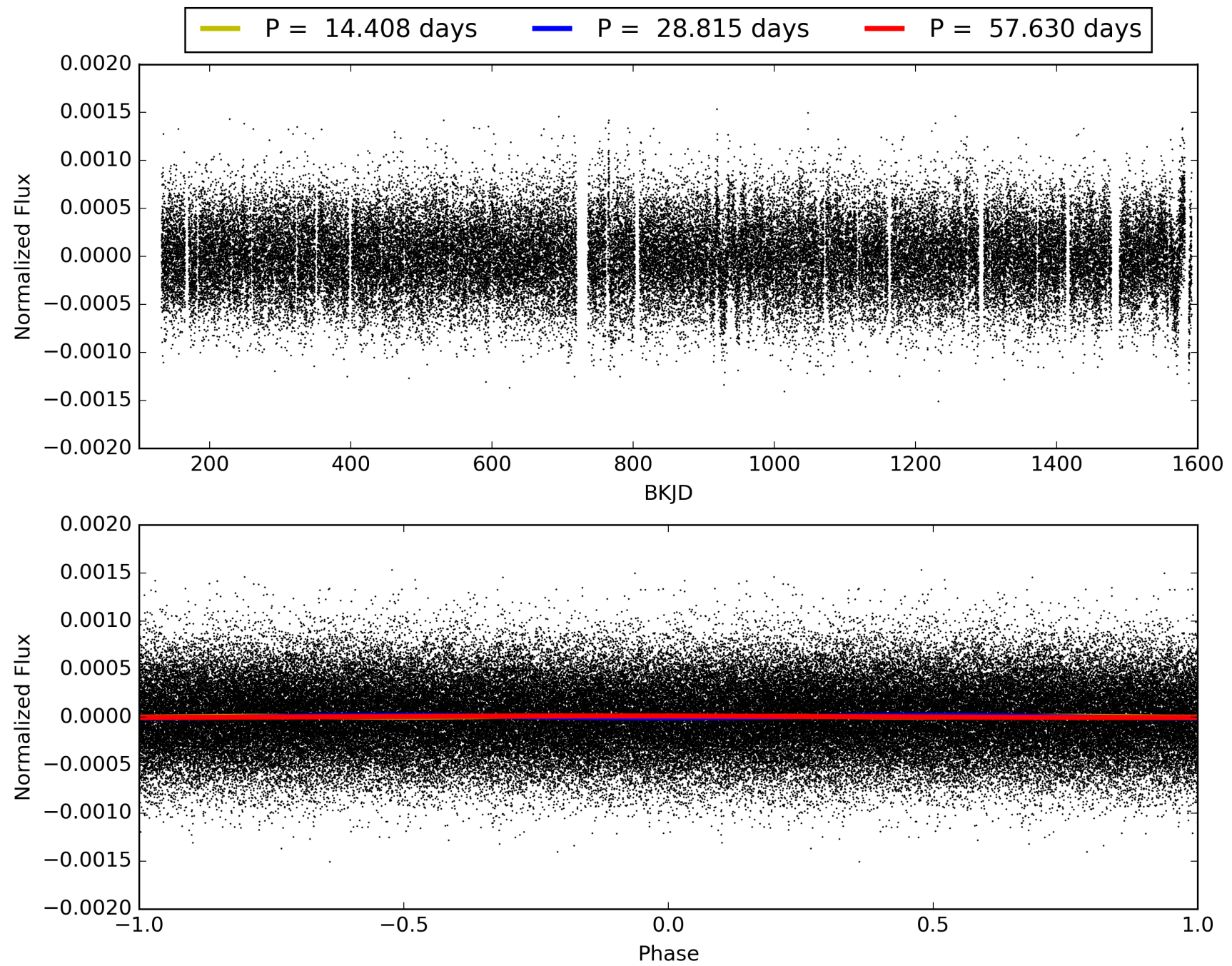
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:54:27 Z

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

TCE 004951447-06, PDC Light Curves

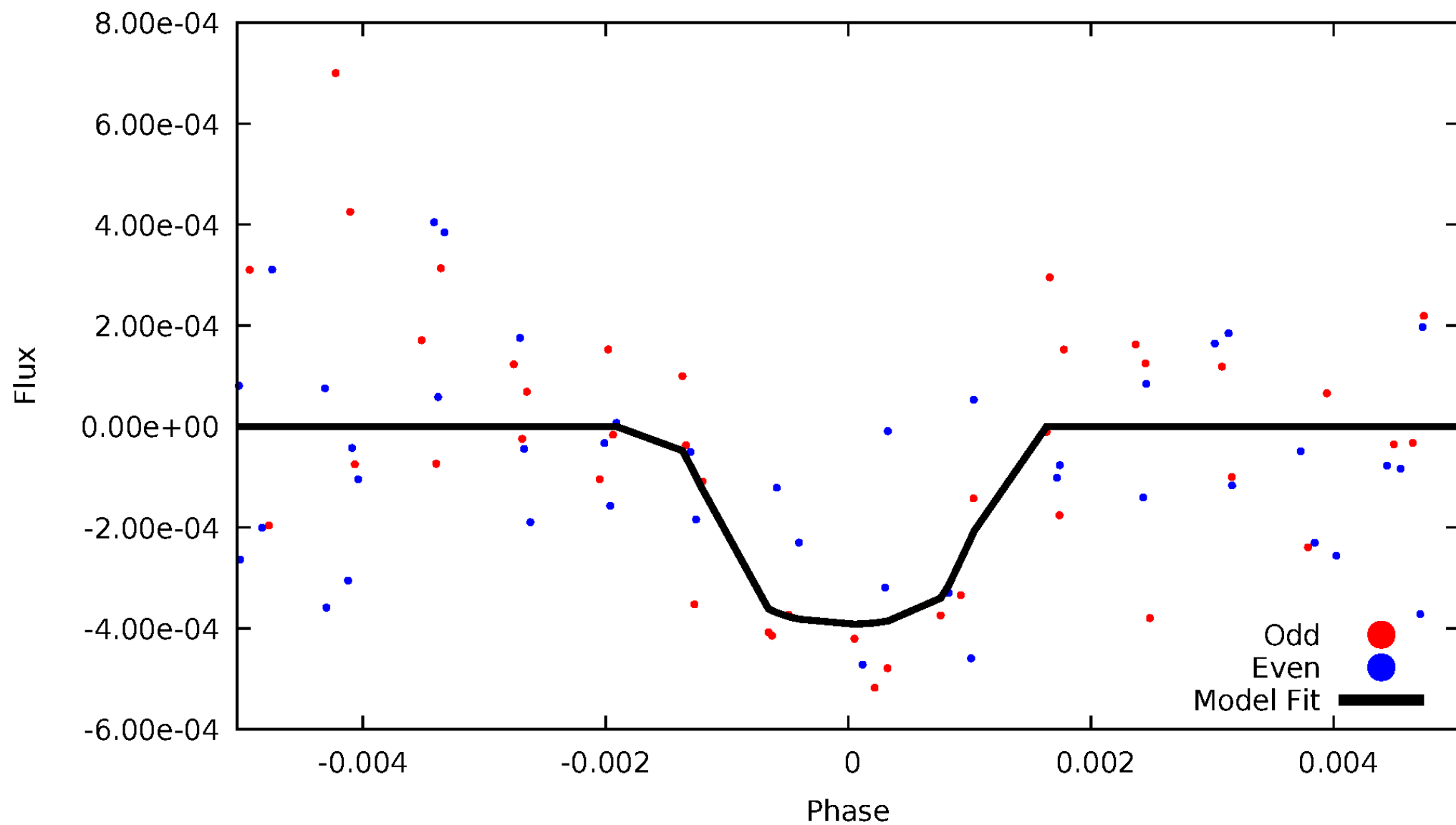


TCE 004951447-06



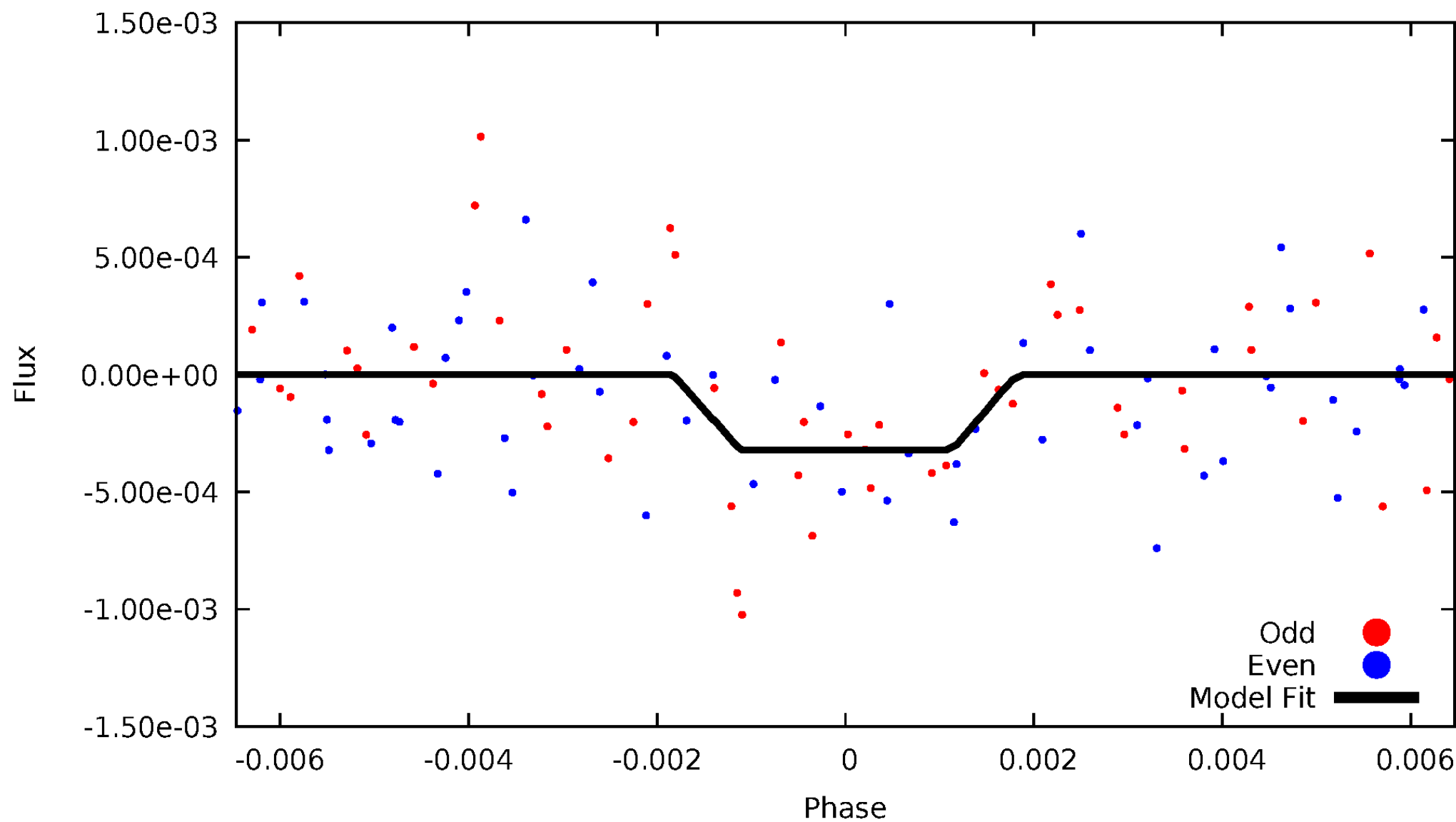
DV Odd/Even

TCE 004951447-06



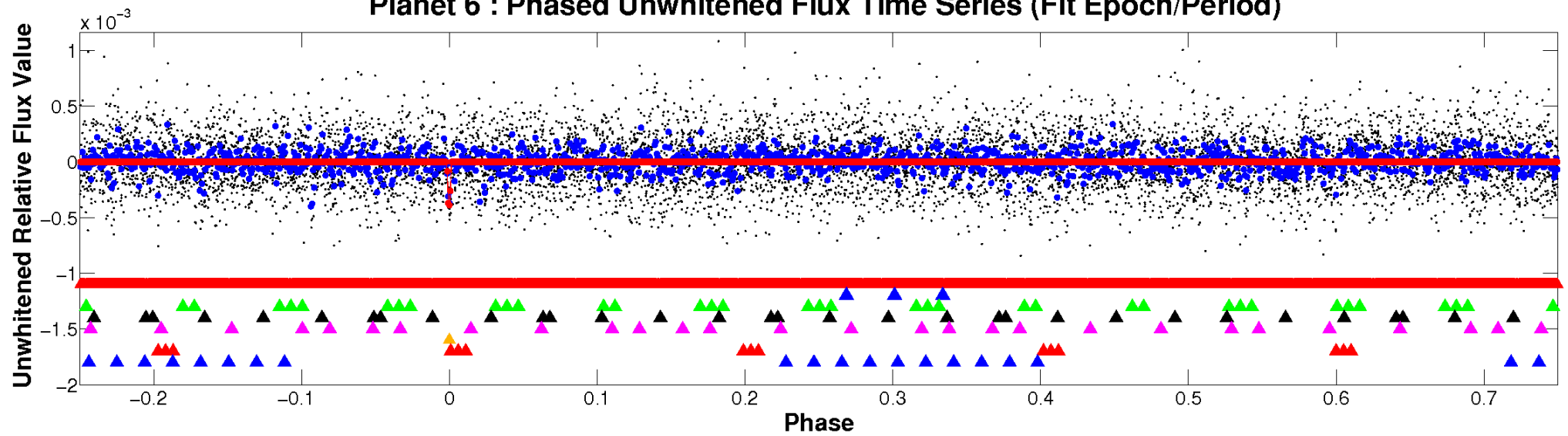
ALT Odd/Even

TCE 004951447-06

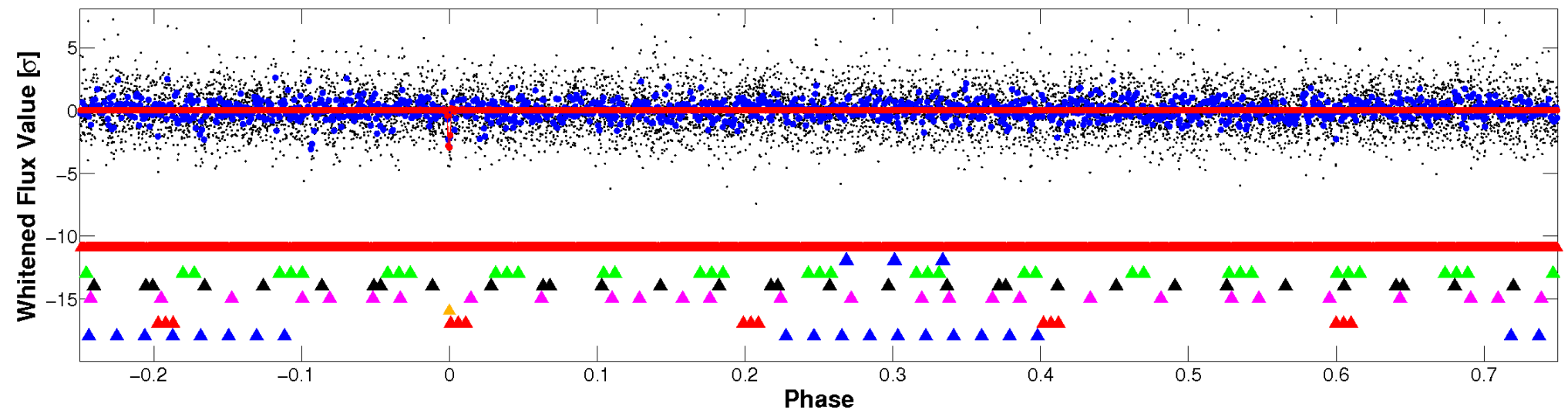


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

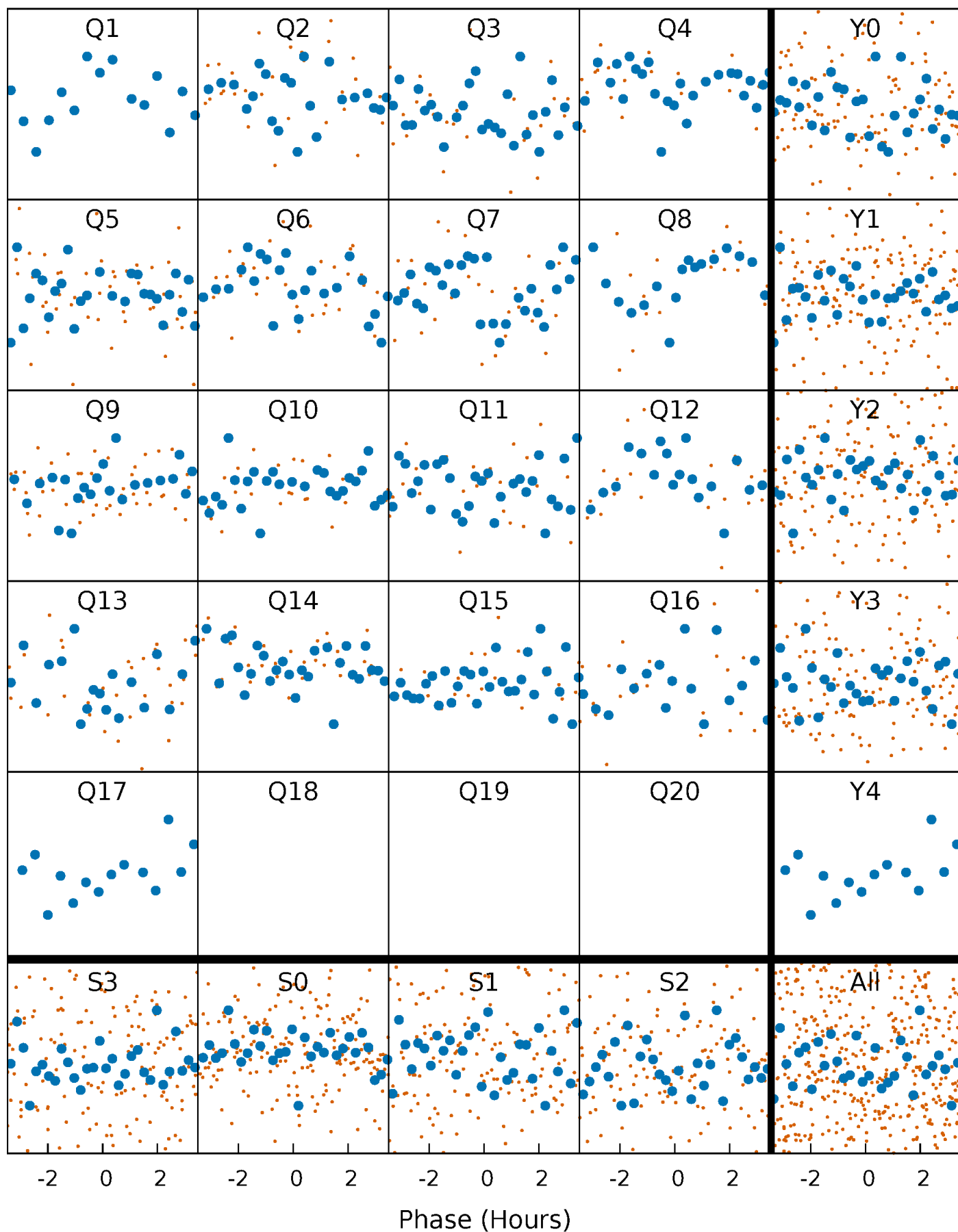


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



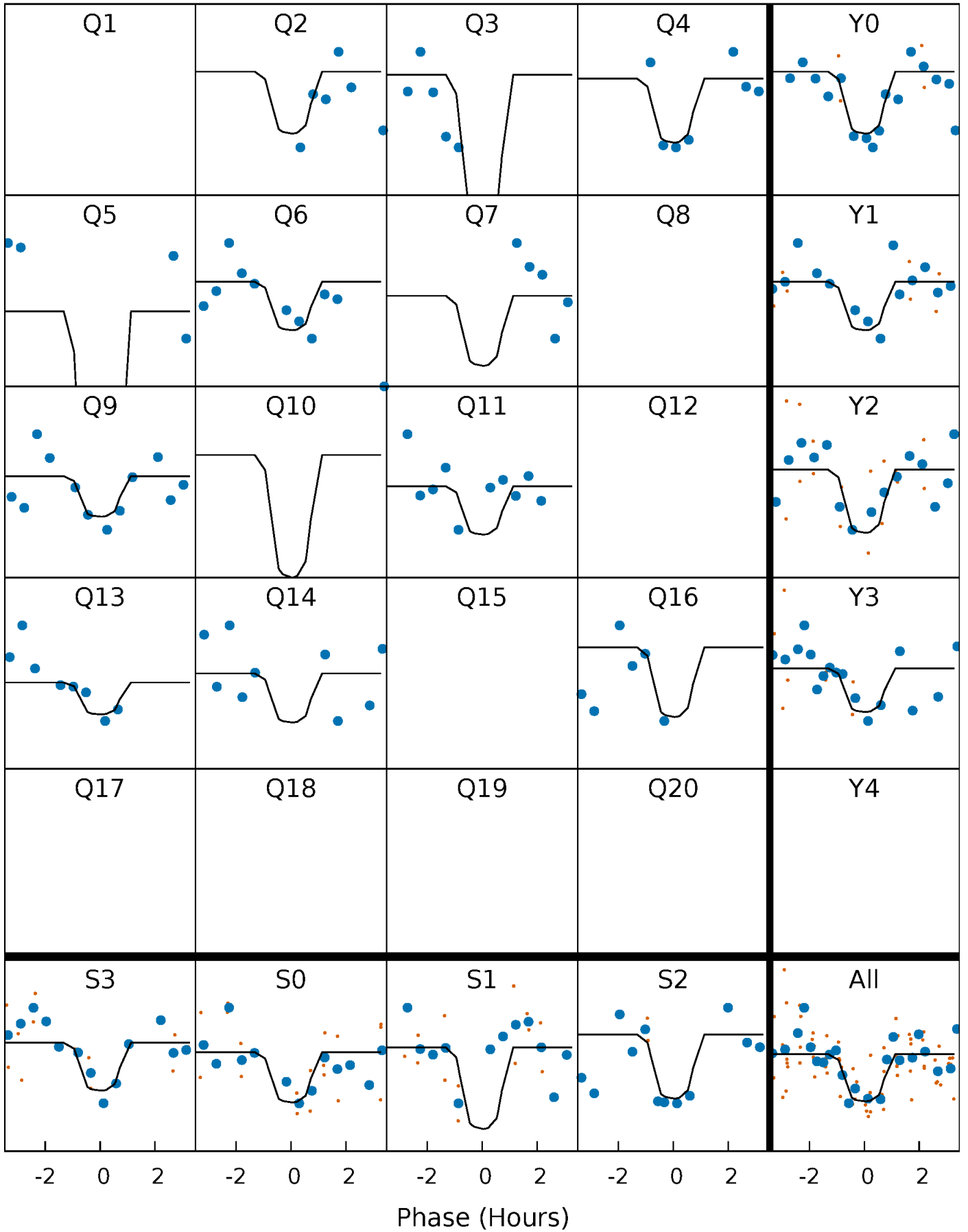
PDC Quarter-Phased Transit Curves

TCE 004951447-06 P= 28.815116 Days $T_0=155.728361$ (BKJD)



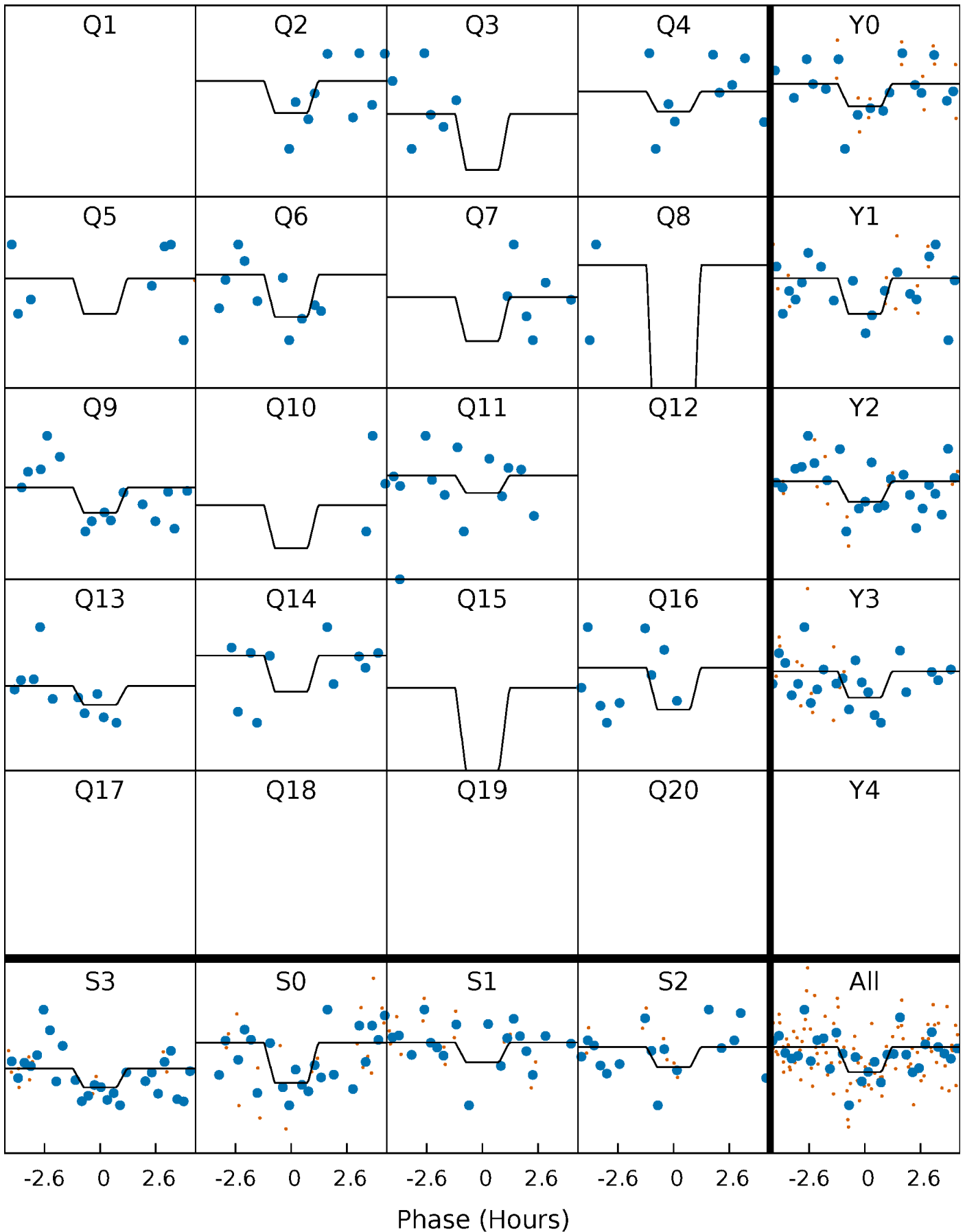
DV Quarter-Phased Transit Curves

TCE 004951447-06 P= 28.815116 Days $T_0=155.728361$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

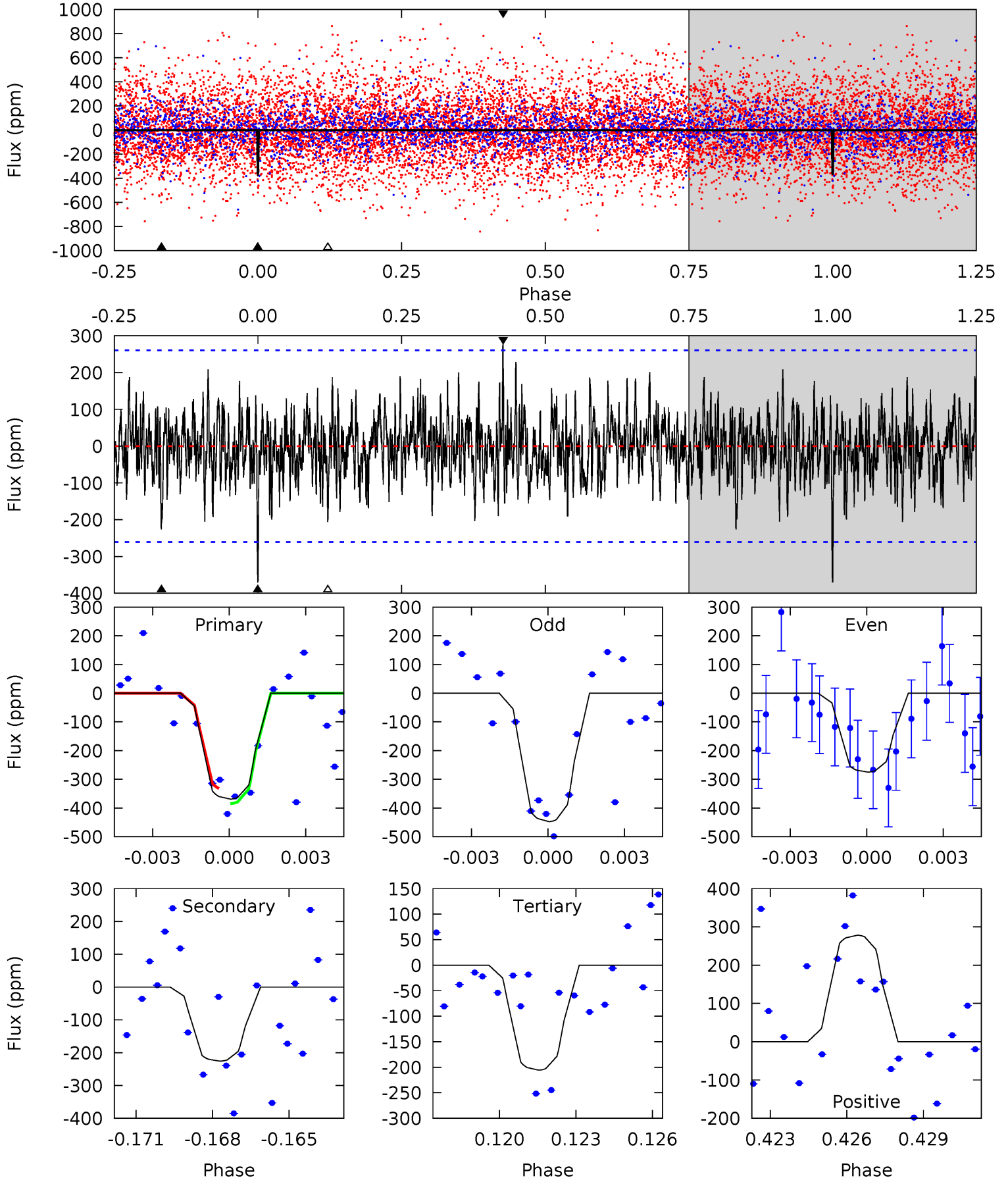
TCE 004951447-06 P= 28.814246 Days $T_0=155.750351$ (BKJD)



DV Model-Shift Uniqueness Test

004951447-06, P = 28.815116 Days, E = 126.913245 Days

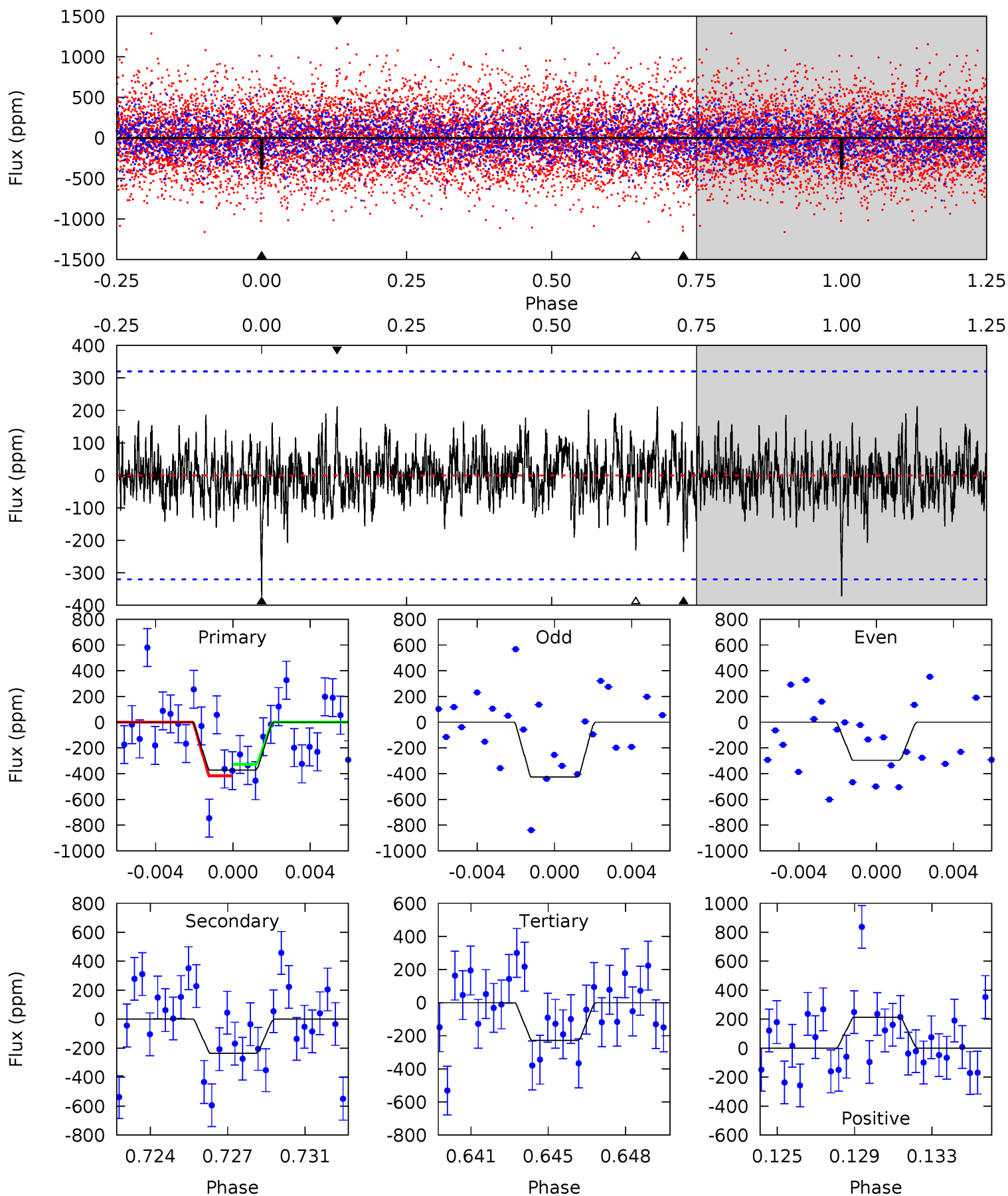
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.44	4.55	4.14	5.61	5.25	2.97	1.40	3.29	1.83	0.40	-1.06	1.75	0.82	0.43	0.53



Alt Model-Shift Uniqueness Test

004951447-06, P = 28.814246 Days, E = 126.936105 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.06	3.83	3.72	3.47	5.22	2.91	1.04	2.34	2.59	0.11	0.36	1.06	0.94	0.36	0.72



Stellar Parameters For KIC 004951447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6517^{+175}_{-214}	$4.199^{+0.180}_{-0.180}$	$-0.260^{+0.250}_{-0.300}$	$1.429^{+0.402}_{-0.329}$	$1.183^{+0.188}_{-0.169}$	$0.571^{+0.532}_{-0.276}$
	+3%/-3%	+4%/-4%	+96%/-115%	+28%/-23%	+16%/-14%	+93%/-48%
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 004951447-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-226 ± 50	$3.61^{+2.66}_{-2.17}$	1091^{+85}_{-74}	5296^{+3537}_{-1064}	344^{+1866}_{-229}
Alt.	-235 ± 61	$3.16^{+2.63}_{-1.89}$	1087^{+85}_{-69}	5633^{+3826}_{-1244}	484^{+2566}_{-341}

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 $A_{obs} \gg 1.0$

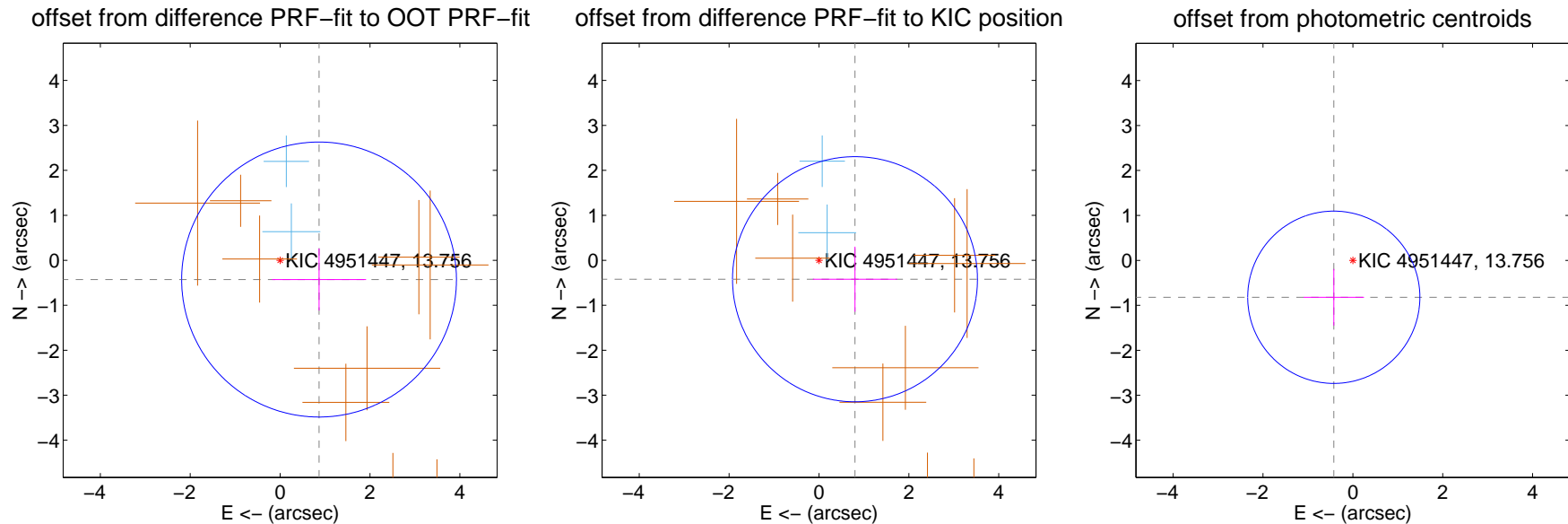
DV Centroid Data

Supplemental centroid analysis for 004951447-06. Kepler magnitude: 13.76. Transit SNR 10.69

There are 2 quarters with good PRF difference image offsets

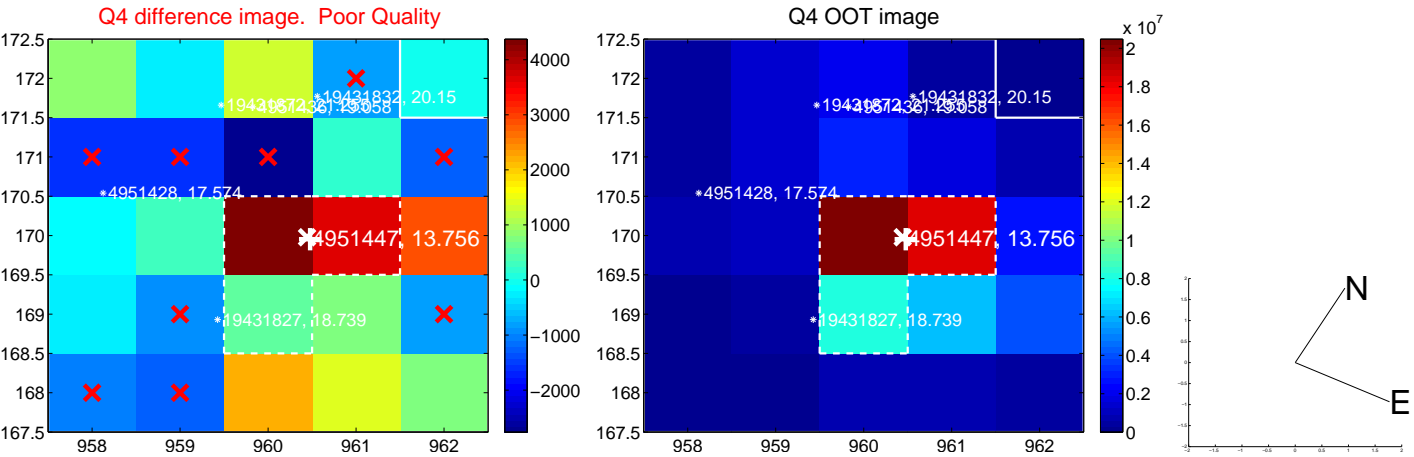
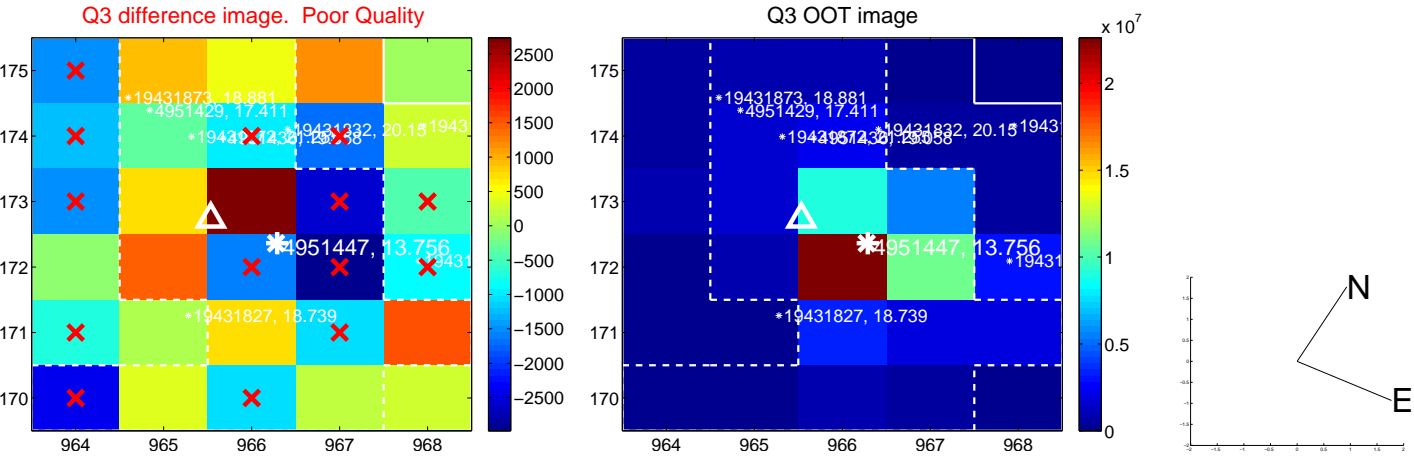
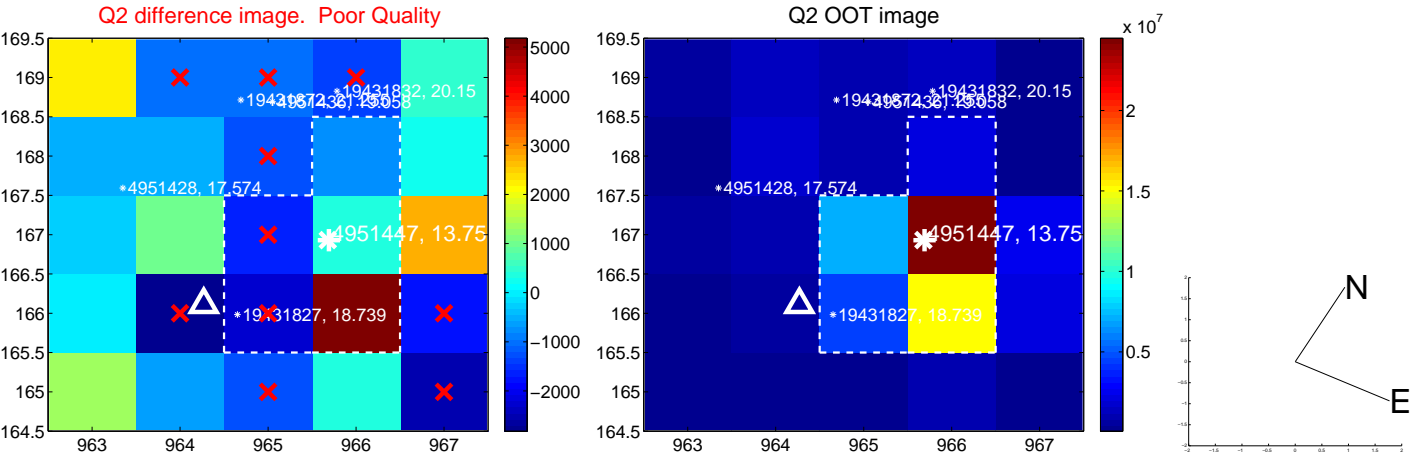
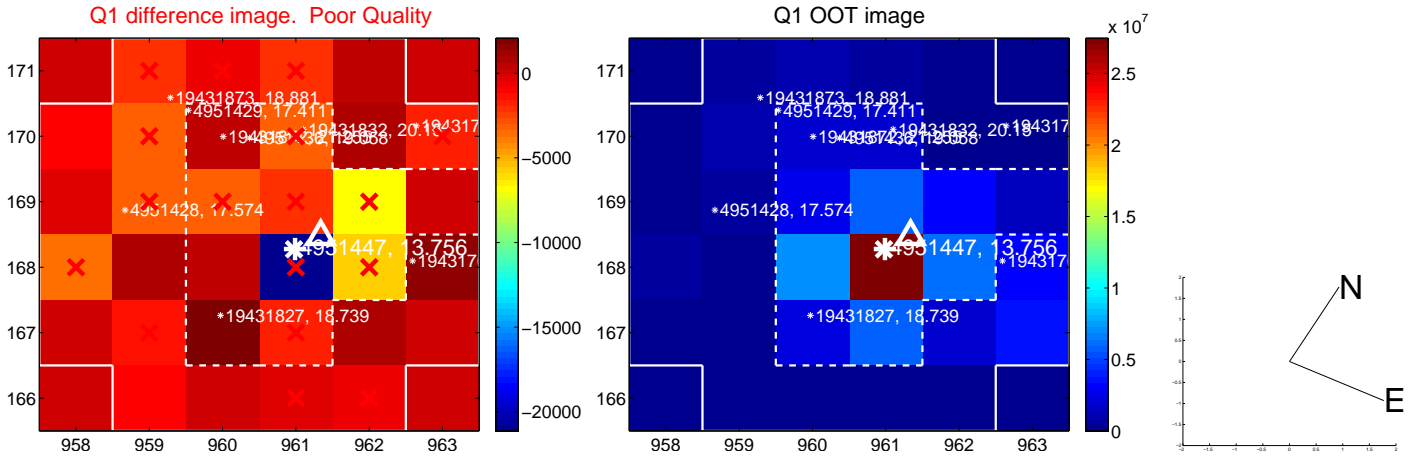
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.967 ± 1.019	0.95	-0.867 ± 1.047	-0.428 ± 0.689
PRF-fit source offset from KIC position	0.905 ± 0.909	1.00	-0.801 ± 0.937	-0.421 ± 0.723
photometric centroid source offset	0.92 ± 0.64	1.45	0.42 ± 0.67	-0.82 ± 0.63

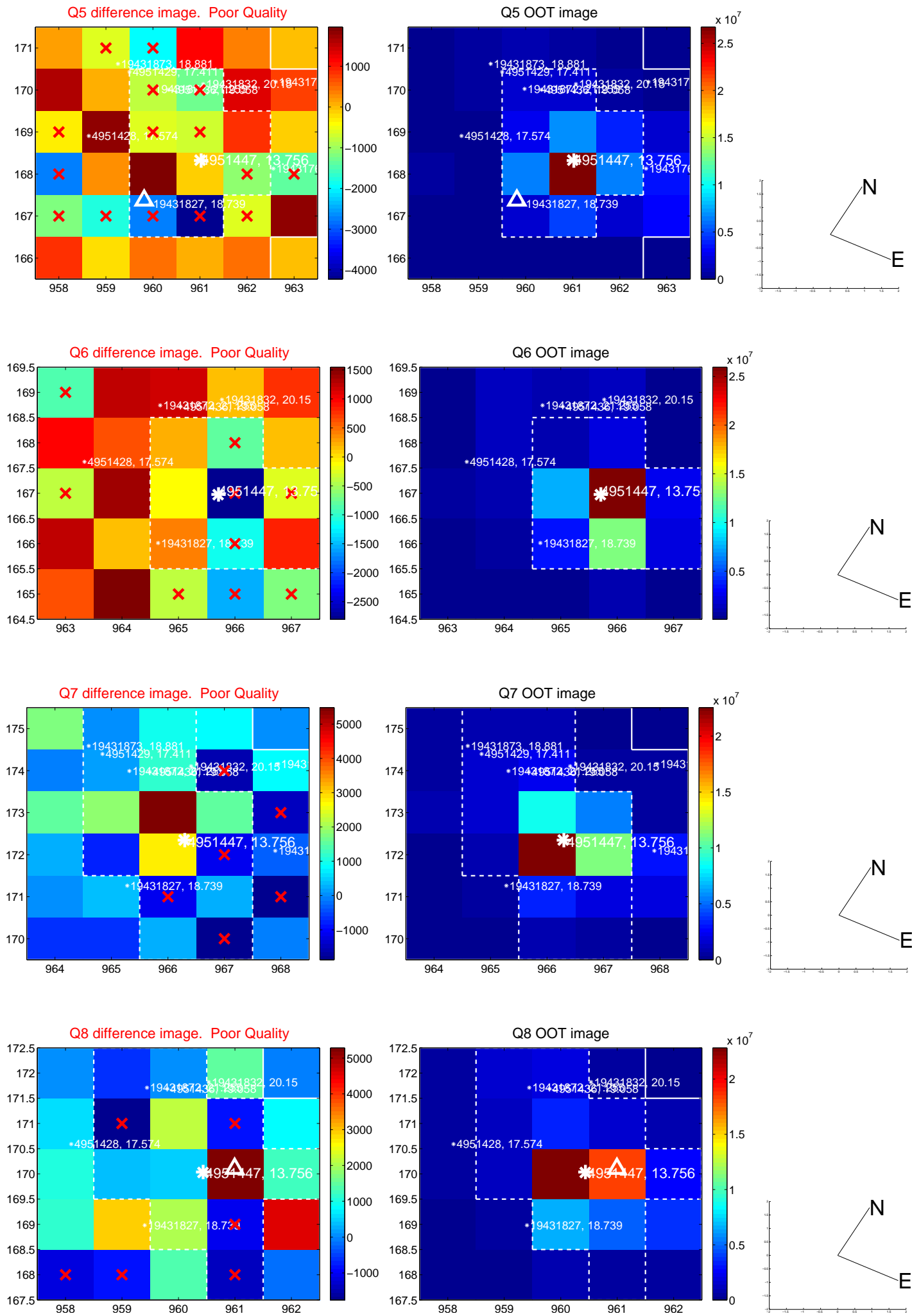


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

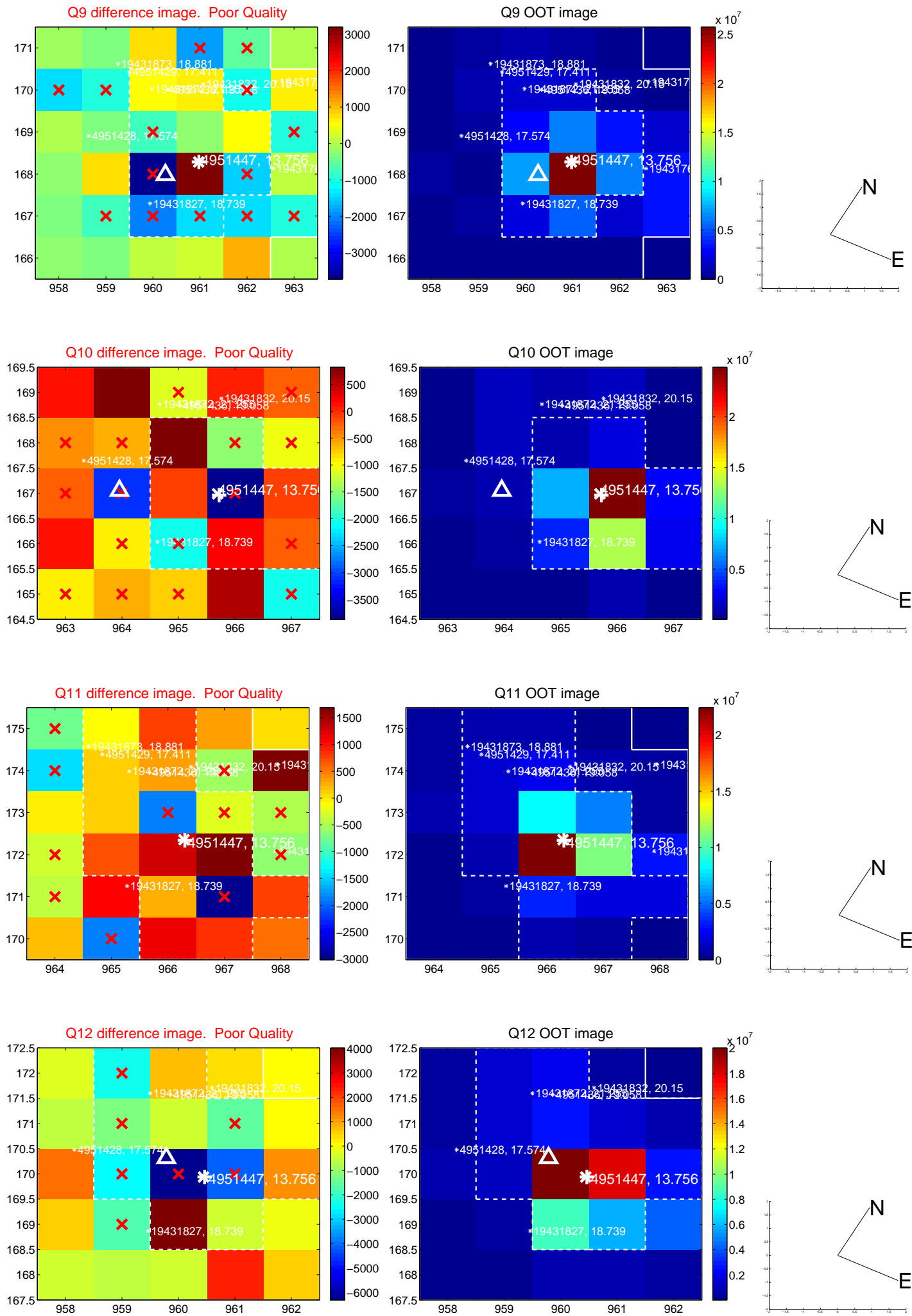
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



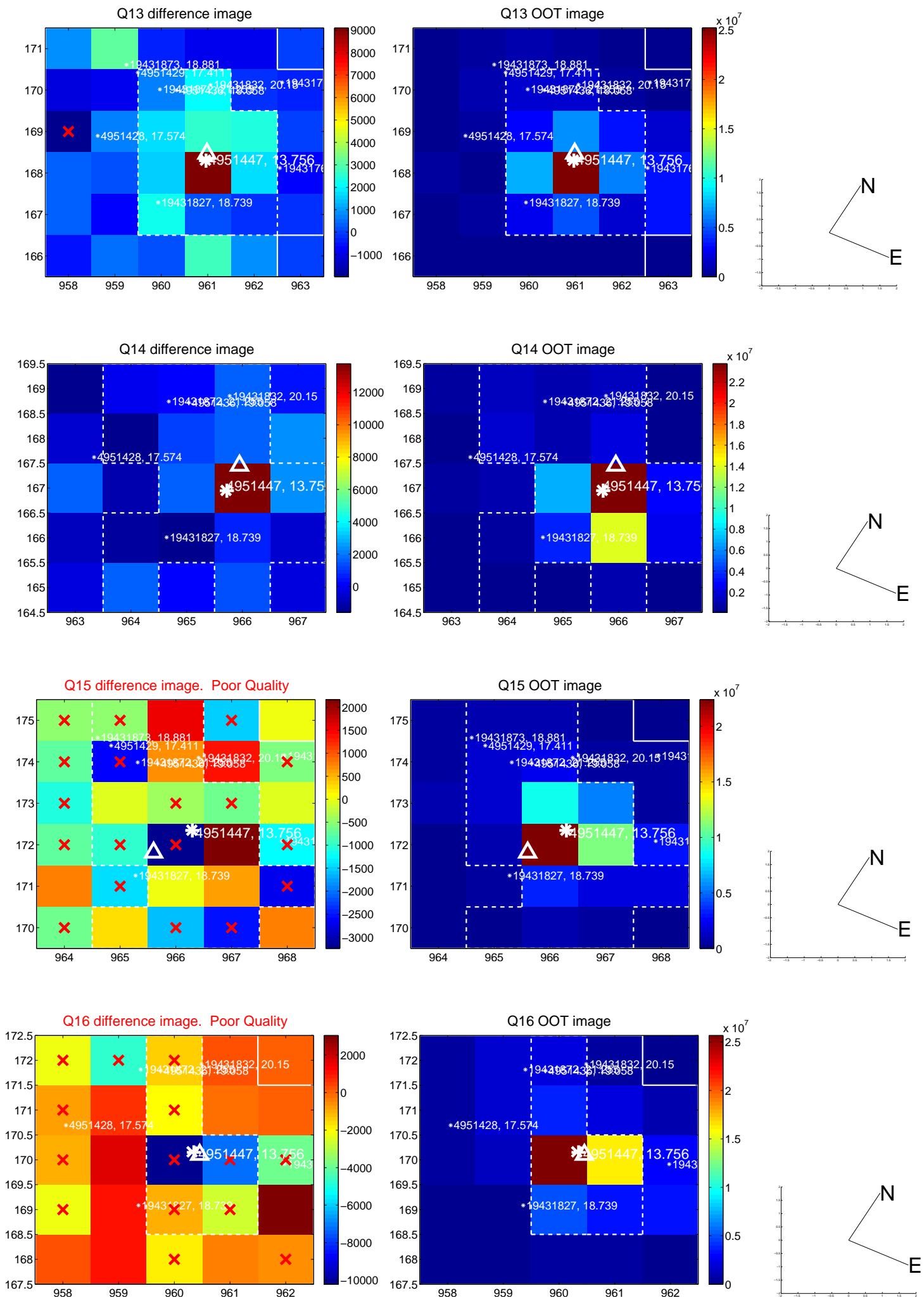
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



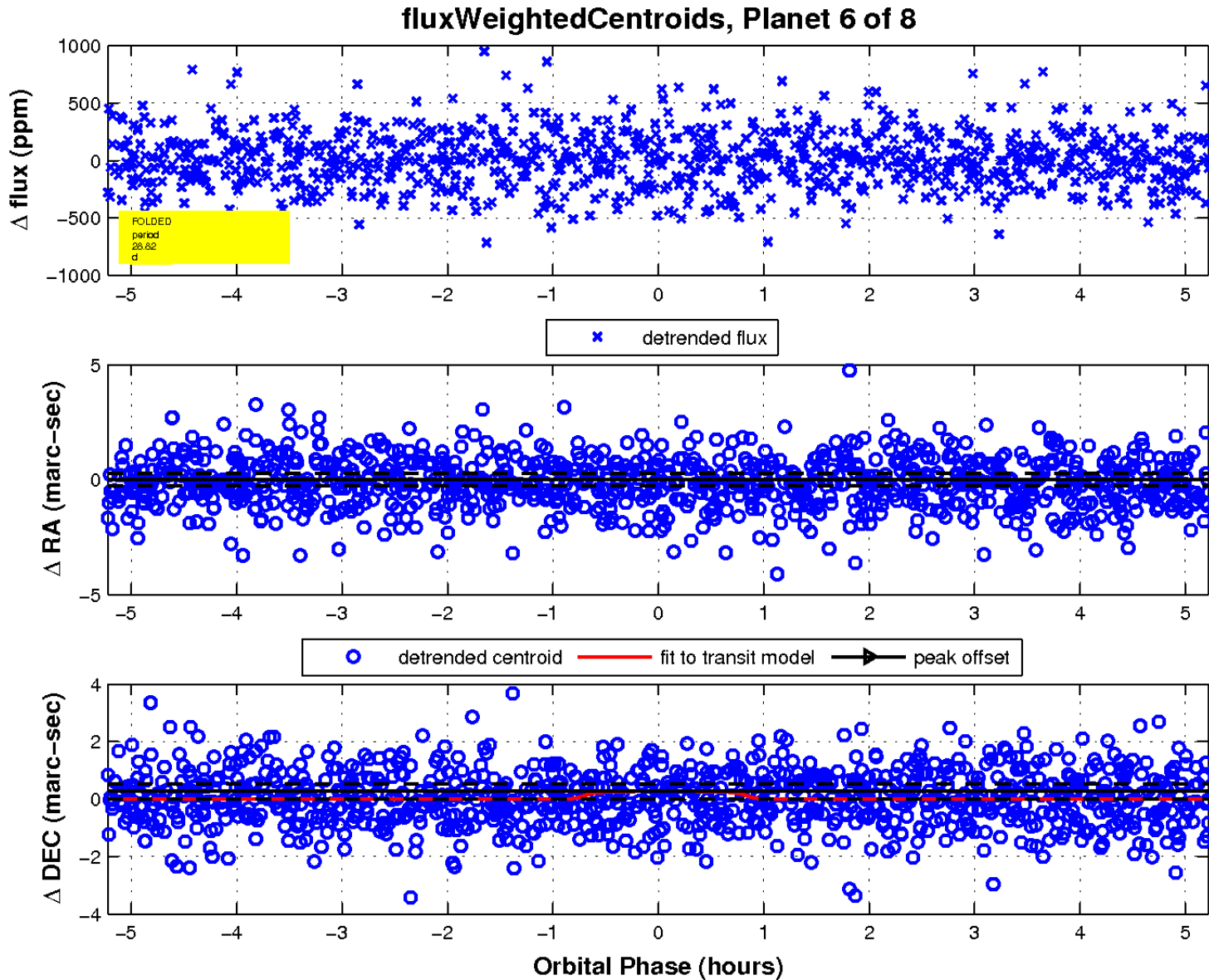
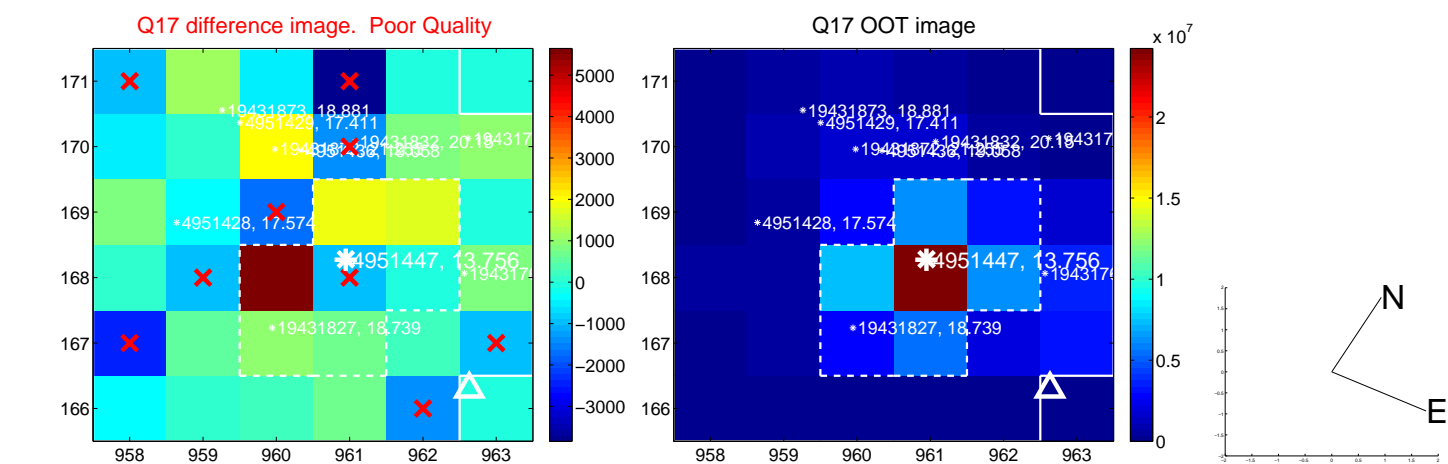
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

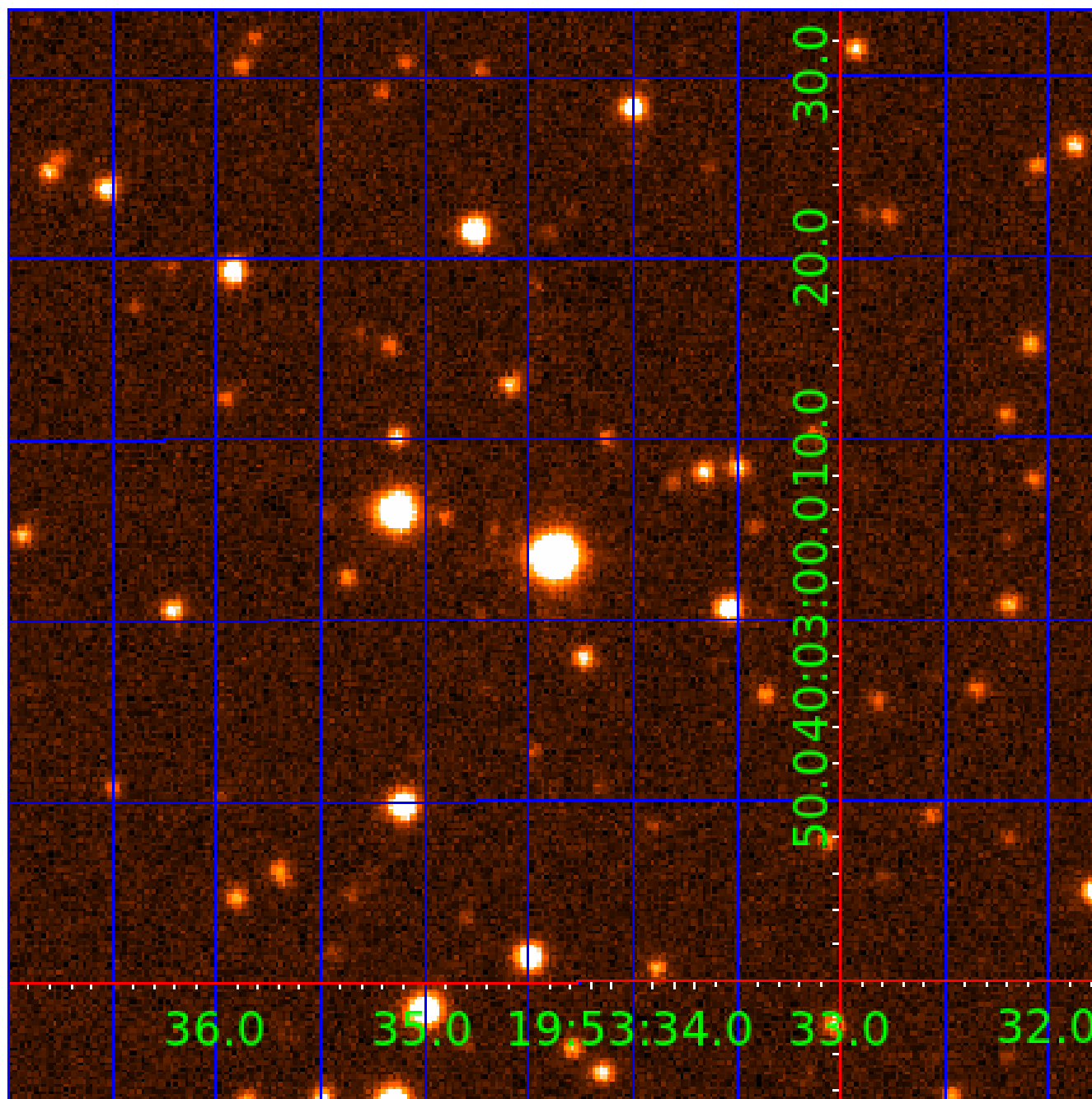


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004951447

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})
004951447-01	OBS	No	0.699656	132.026349	12.4	4.634	8.7	4.5	1.43	6517	0.52	12433.52
004951447-02	OBS	No	577.241449	336.360194	456.0	18.942	8.2	7.1	1.43	6517	3.59	1.61
004951447-03	OBS	No	39.121997	160.621638	392.3	1.485	9.3	8.7	1.43	6517	2.88	58.15
004951447-04	OBS	No	45.444298	157.556159	229.7	2.922	9.6	6.1	1.43	6517	2.46	47.62
004951447-05	OBS	No	51.591981	166.315444	419.6	2.540	8.7	8.3	1.43	6517	5.66	40.21
004951447-06	OBS	No	28.815116	155.728361	392.0	1.741	8.9	10.7	1.43	6517	3.31	87.42
004951447-07	OBS	No	98.000565	190.276053	451.2	2.587	7.8	9.1	1.43	6517	3.49	17.09
004951447-08	OBS	No	72.310280	147.611048	548.0	1.647	8.3	10.1	1.43	6517	3.59	25.64

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004951447-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
004951447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004951447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004951447-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
004951447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004951447-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

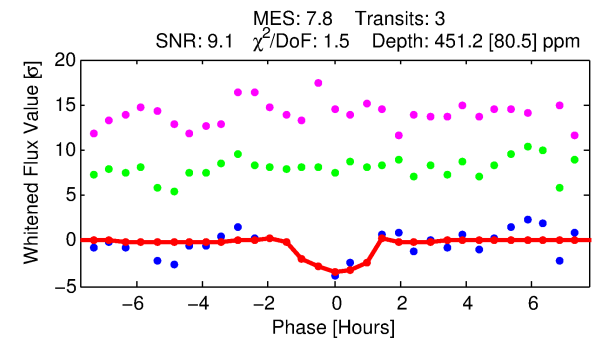
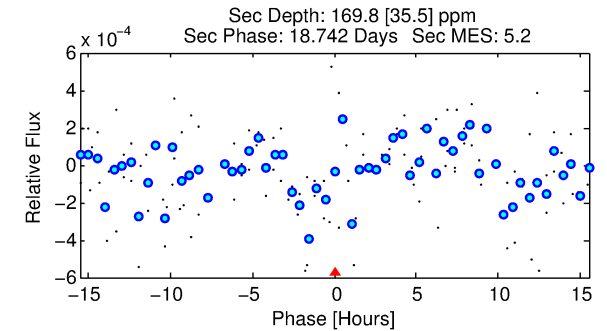
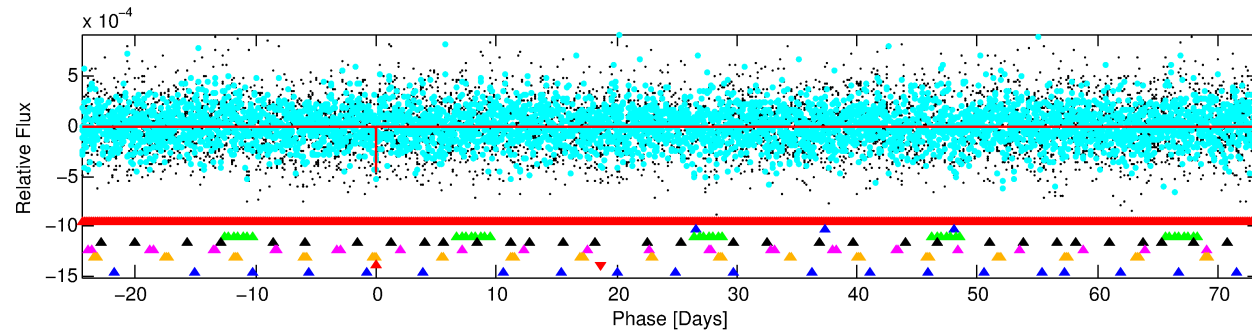
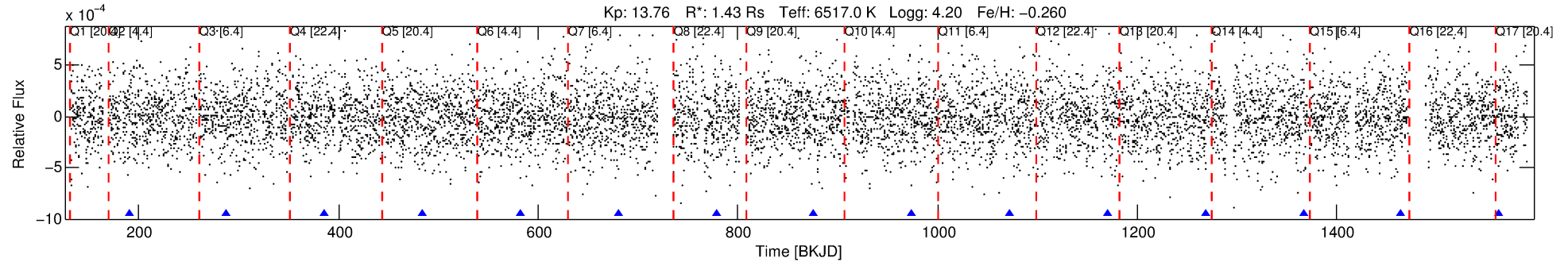
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004951447-07

No Significant Match Found

DV One-Page Summary

KIC: 4951447 Candidate: 7 of 8 Period: 98.001 d

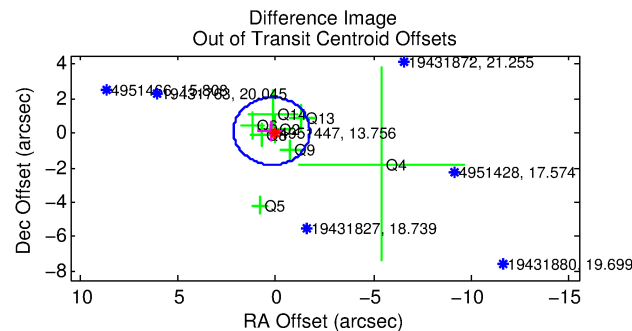
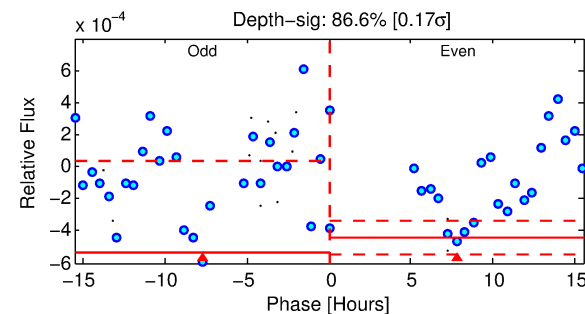
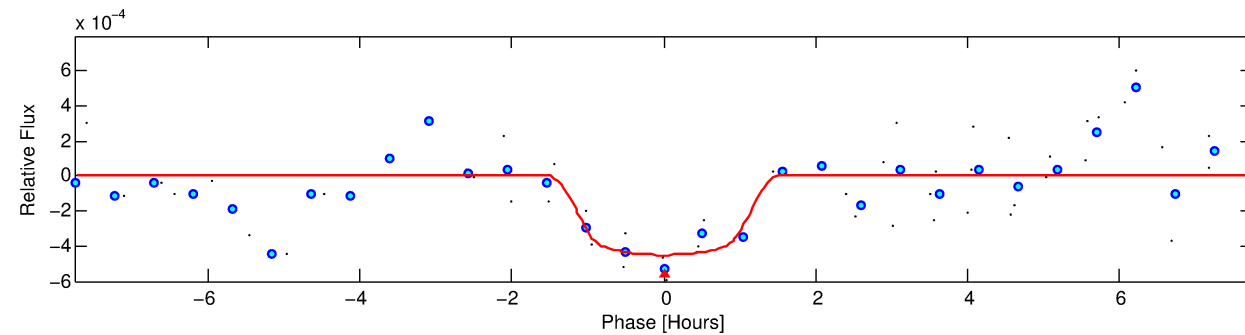


DV Fit Results:

Period = 98.00056 [0.00973] d
Epoch = 190.2761 [0.0383] BKJD
Rp/R* = 0.0224 [0.0211]
a/R* = 151.90 [838.34]
b = 0.88 [1.43]
Seff = 17.09 [6.13]
Teq = 518 [47] K
Rp = 3.49 [3.44] Re
a = 0.4394 [0.1024] AU
Ag = 1481.50 [2856.76] [0.52σ]
Teffp = 4973 [2367] K [1.88σ]

DV Diagnostic Results:

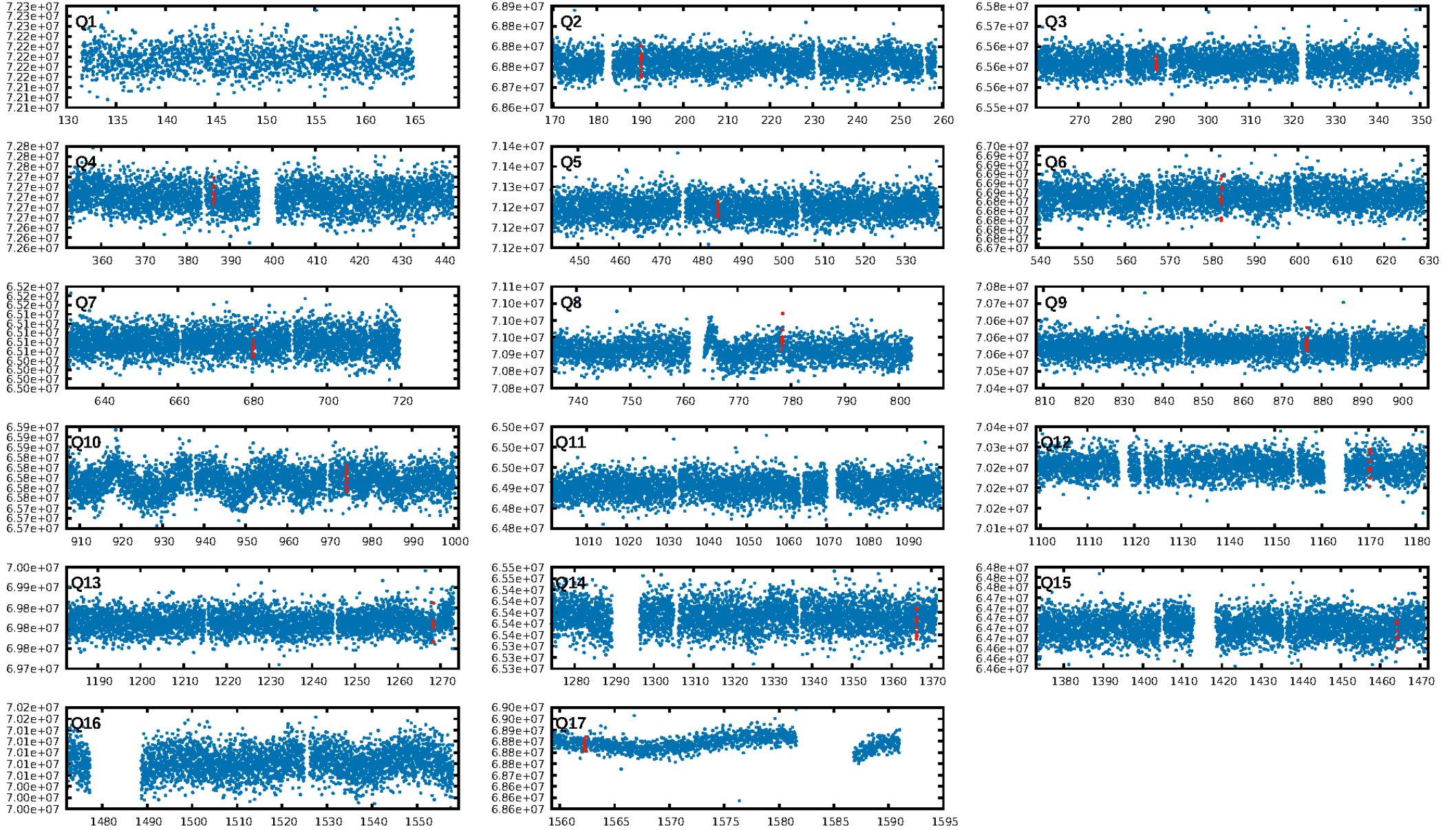
ShortPeriod-sig: 100.0% [201.02σ]
LongPeriod-sig: 100.0% [601.63σ]
ModelChiSquare2-sig: 82.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.63e-07
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.6814
Centroid-sig: 44.4%
Centroid-so: 0.952 arcsec [1.09σ]
OotOffset-rm: 0.239 arcsec [0.37σ]
OotOffset-st: 3/0/2/3 [8]
KicOffset-rm: 0.291 arcsec [0.40σ]
KicOffset-st: 3/0/2/3 [8]
DiffImageQuality-fgm: 0.25 [2/8]
DiffImageOverlap-fno: 0.00 [0/14]



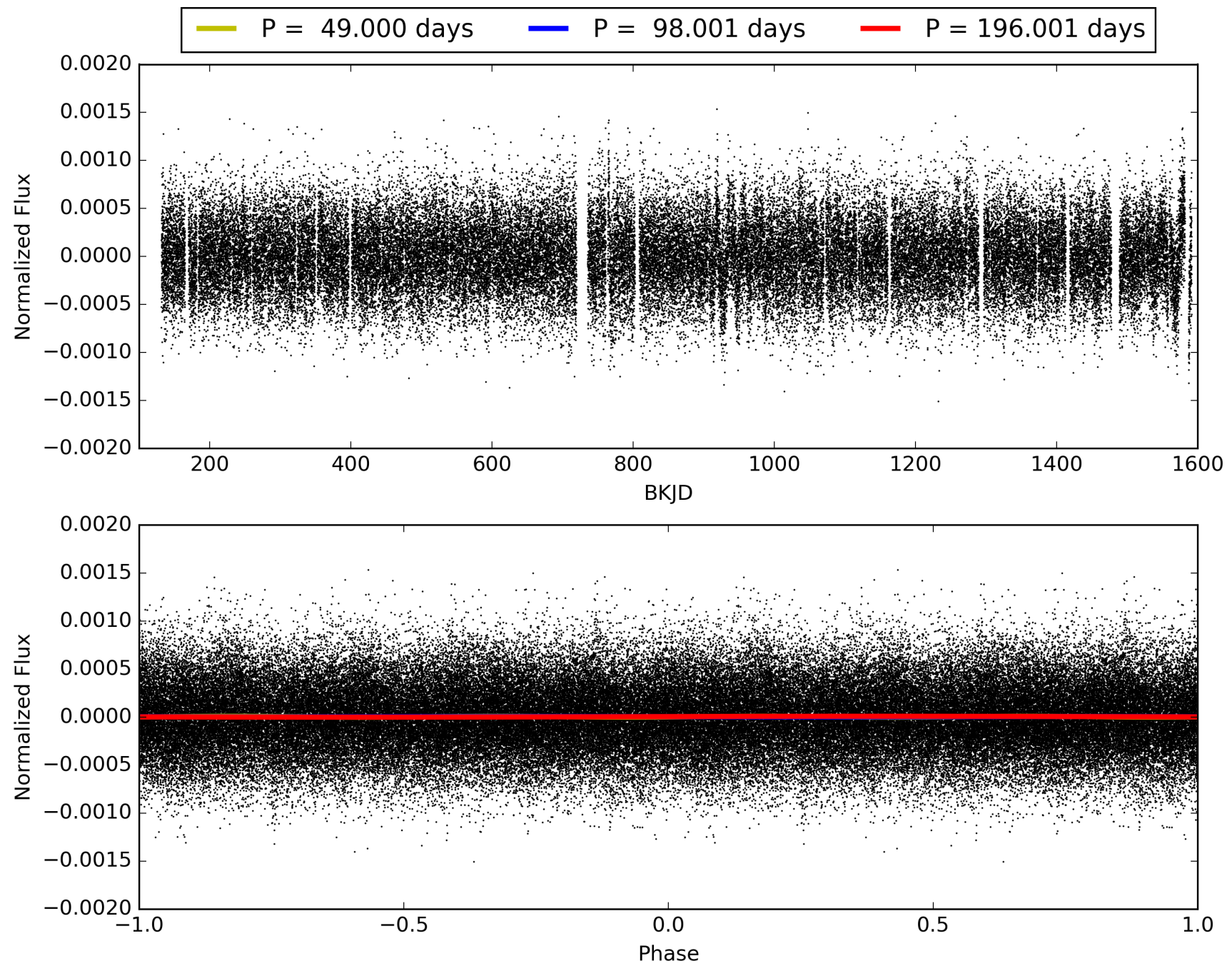
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:54:34 Z

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

TCE 004951447-07, PDC Light Curves

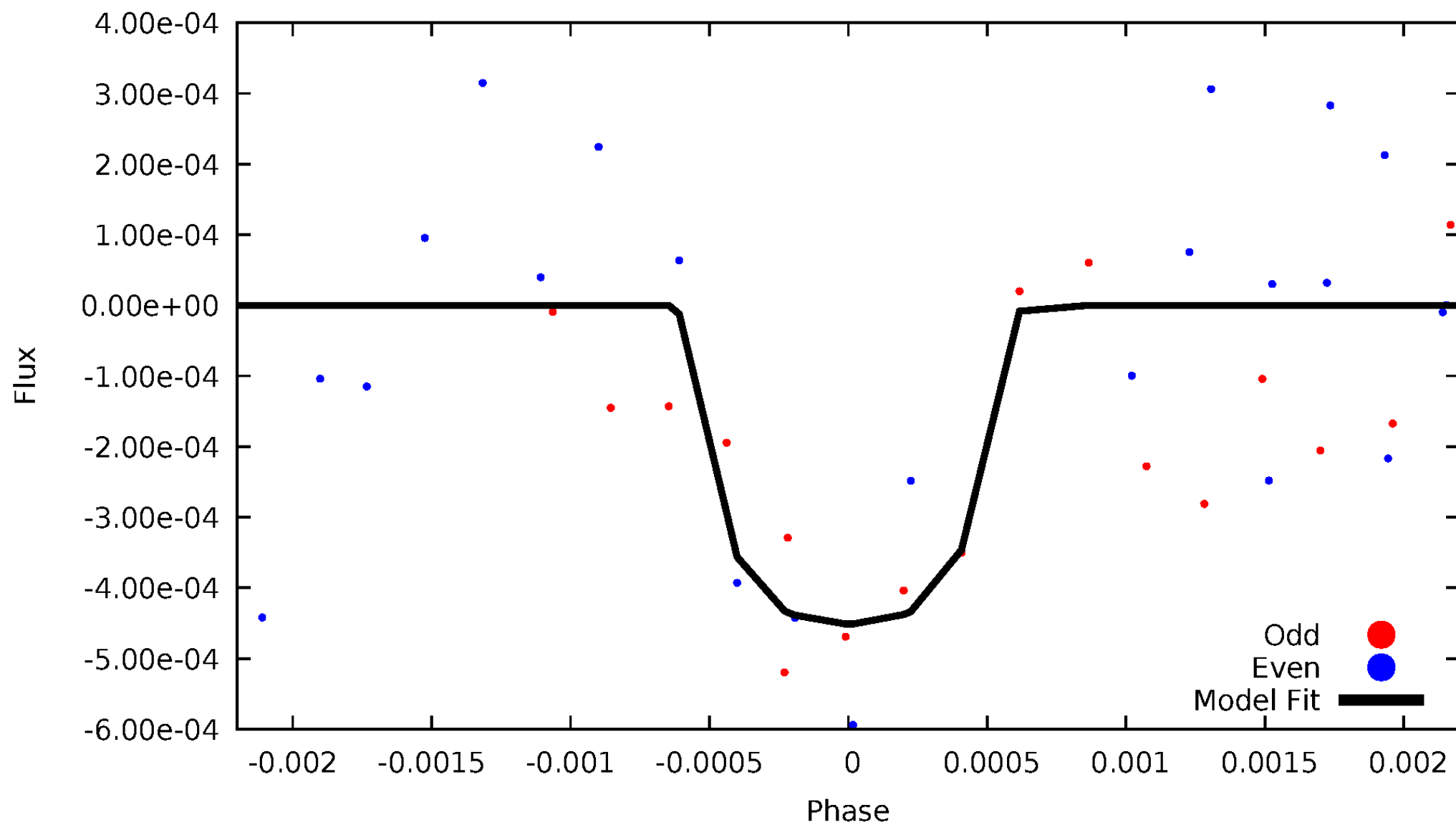


TCE 004951447-07



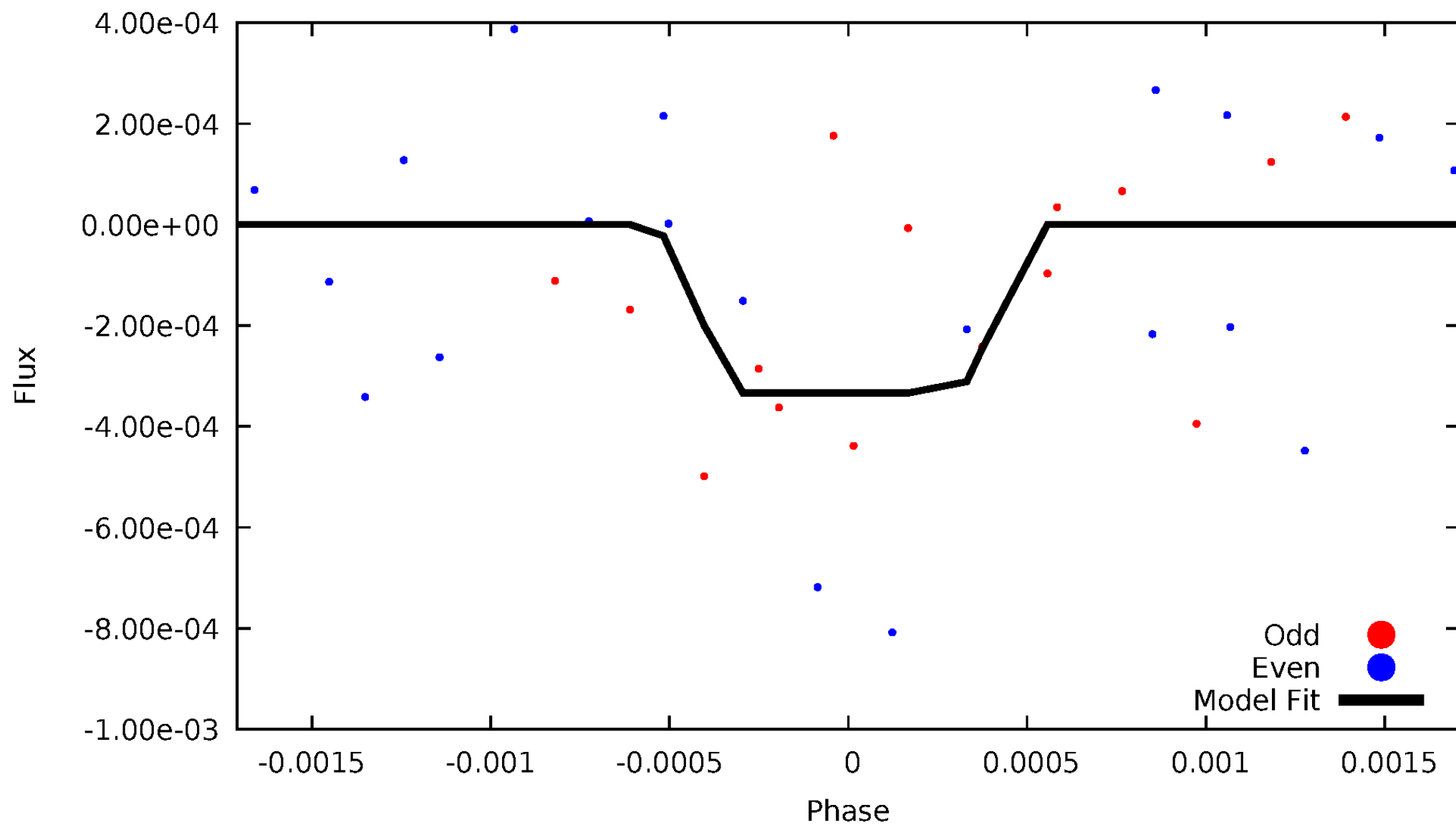
DV Odd/Even

TCE 004951447-07



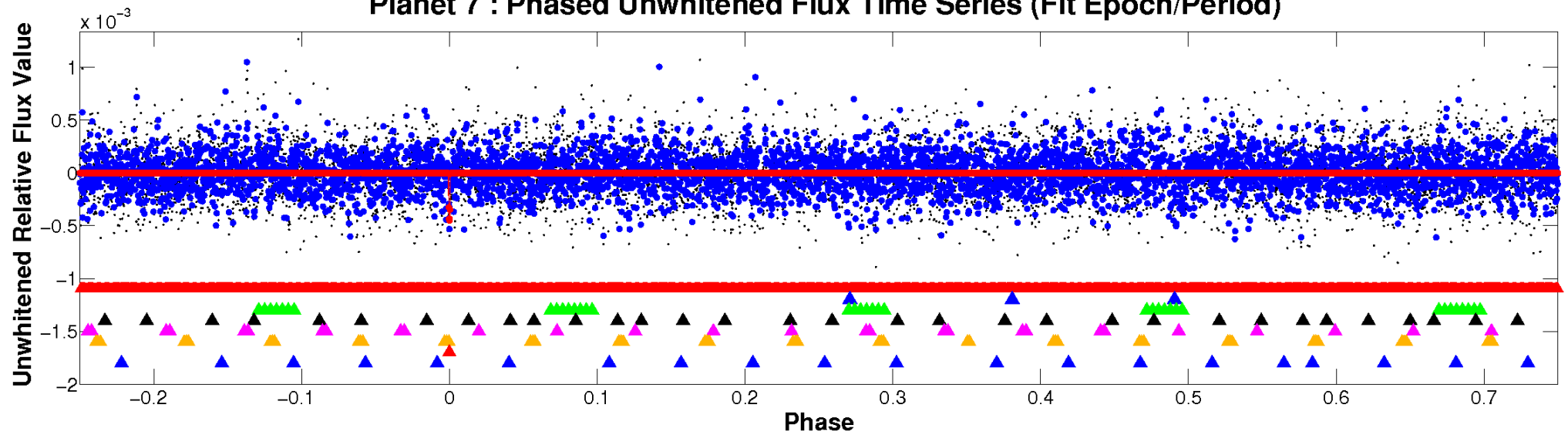
ALT Odd/Even

TCE 004951447-07

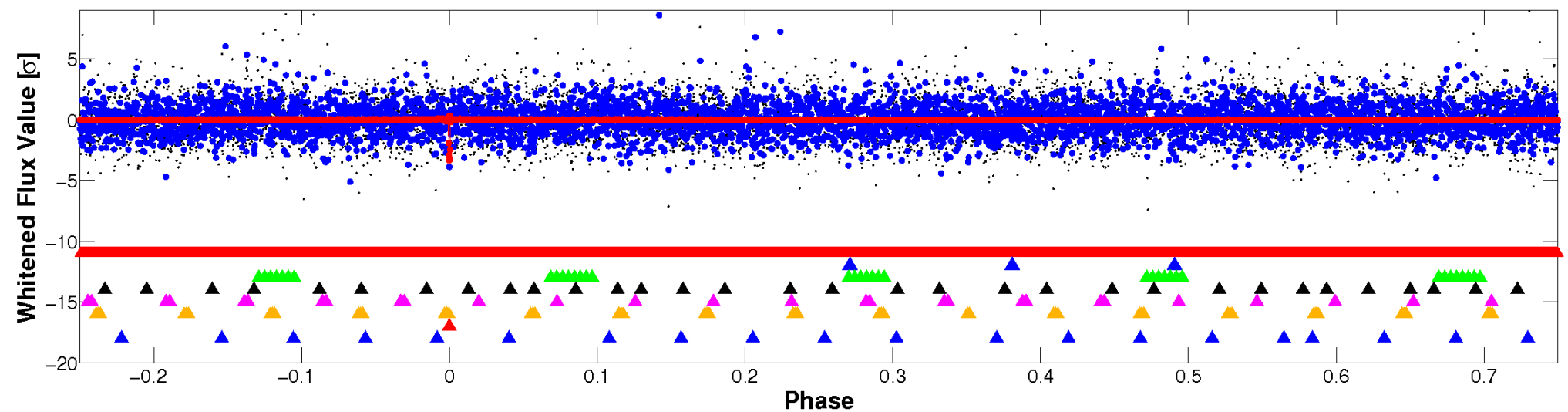


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

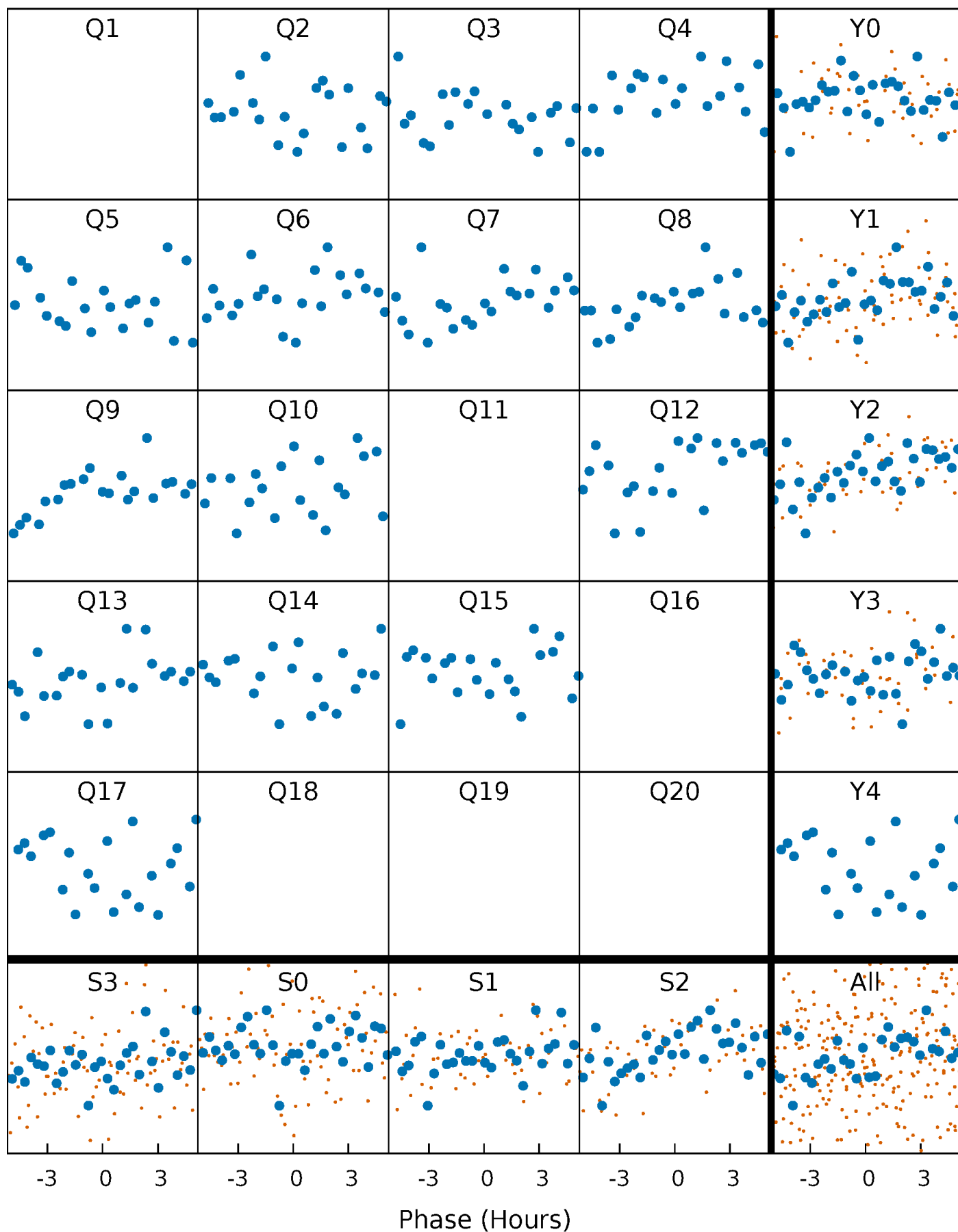


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



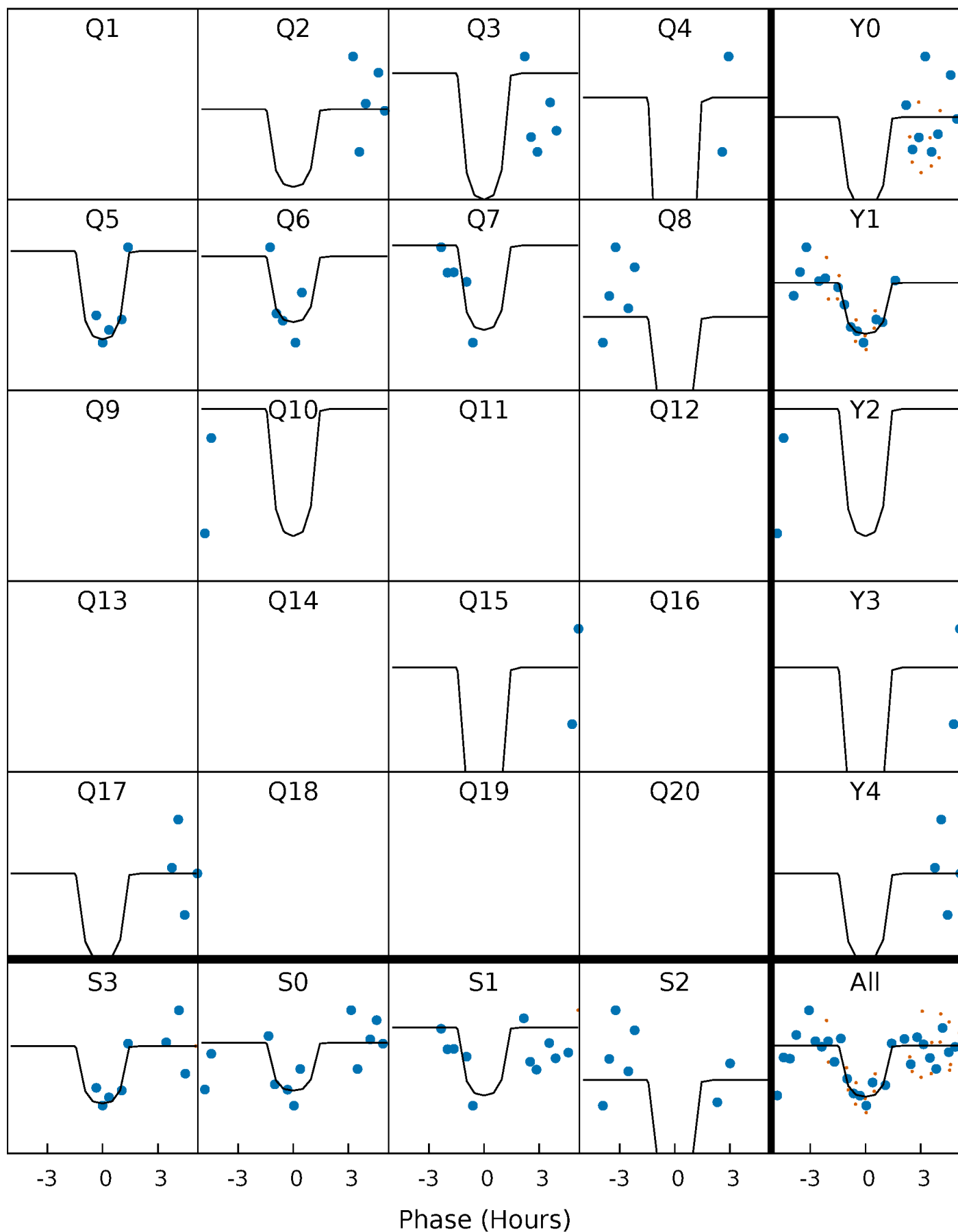
PDC Quarter-Phased Transit Curves

TCE 004951447-07 P= 98.000565 Days $T_0=190.276053$ (BKJD)



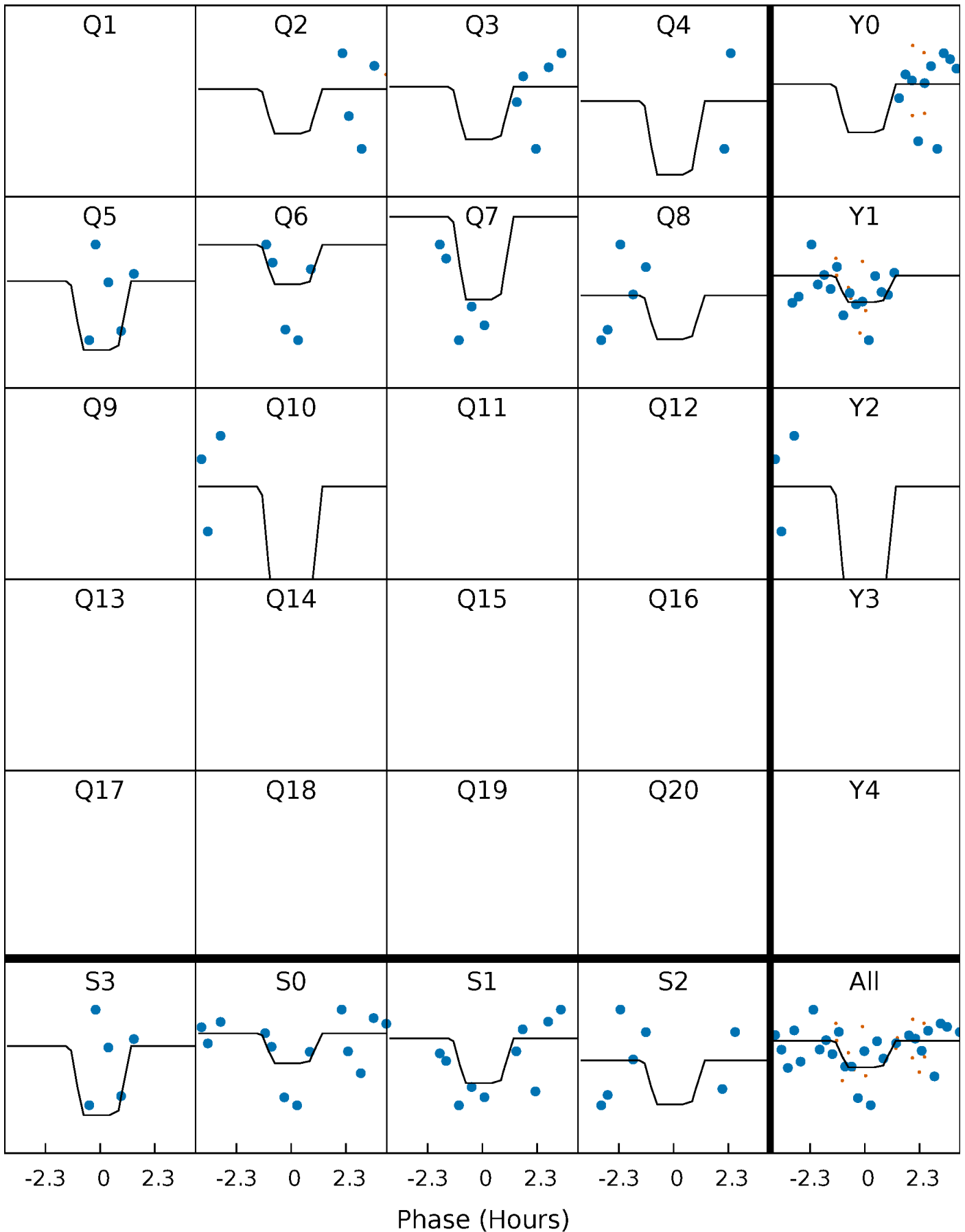
DV Quarter-Phased Transit Curves

TCE 004951447-07 P= 98.000565 Days $T_0=190.276053$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

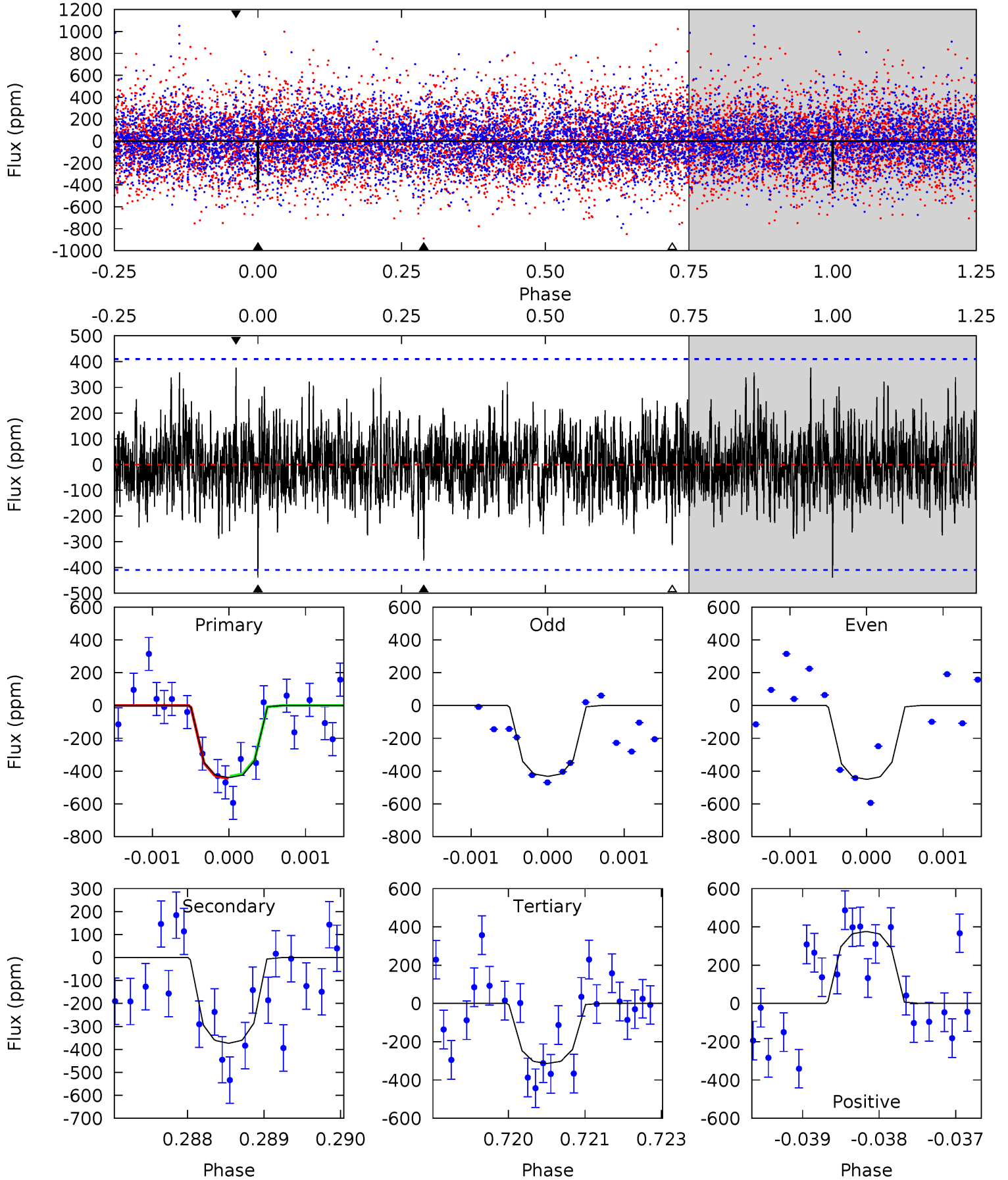
TCE 004951447-07 $P = 97.987026$ Days $T_0 = 190.319814$ (BKJD)



DV Model-Shift Uniqueness Test

004951447-07, P = 98.000565 Days, E = 92.275488 Days

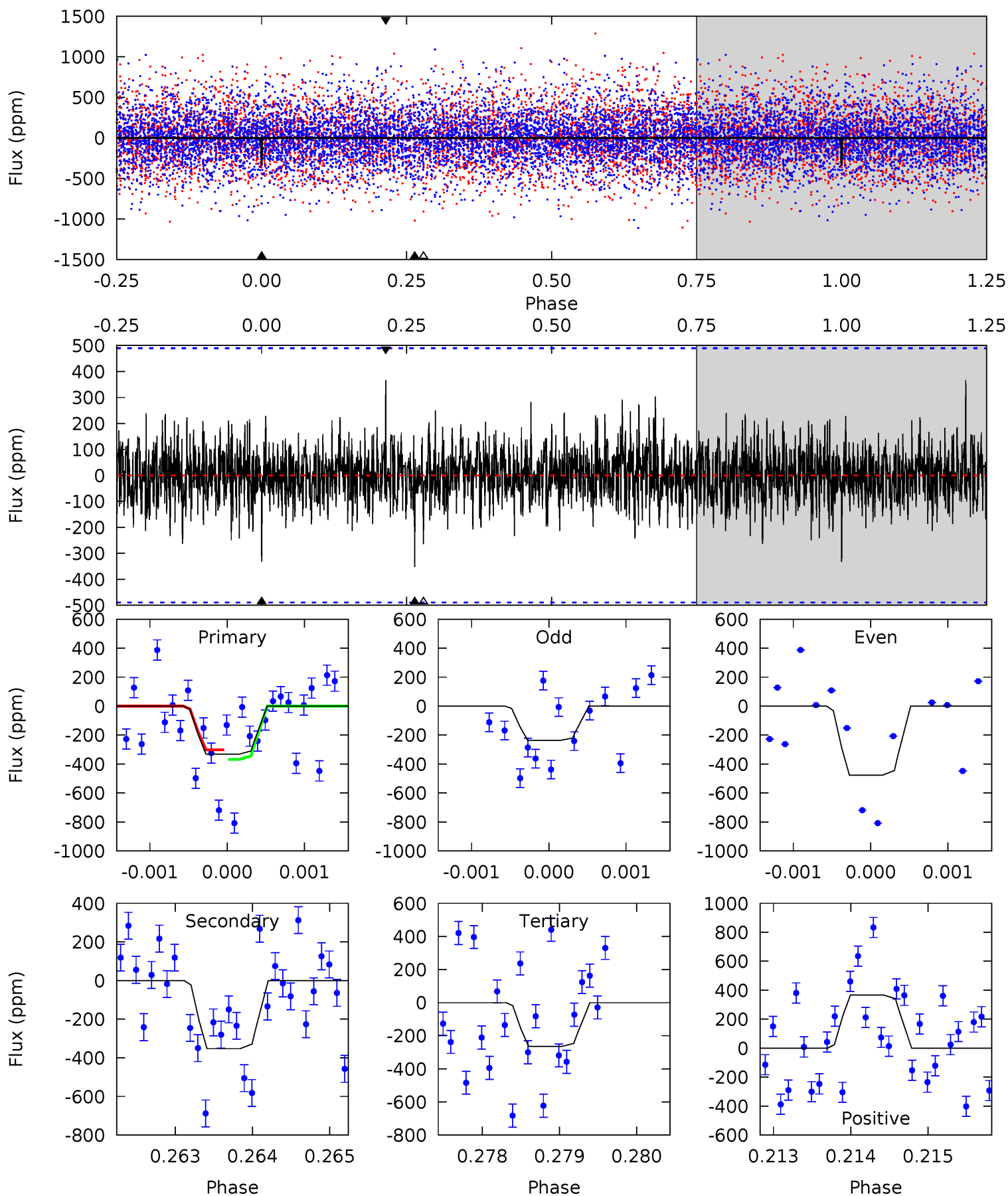
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.81	4.93	4.14	4.97	5.42	3.23	1.27	1.67	0.84	0.79	-0.04	0.13	0.99	0.46	0.08



Alt Model-Shift Uniqueness Test

004951447-07, P = 97.987026 Days, E = 92.332788 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.69	3.92	2.94	4.07	5.44	3.27	0.89	0.75	-0.38	0.98	-0.16	1.32	0.74	0.51	0.36



Stellar Parameters For KIC 004951447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6517^{+175}_{-214}	$4.199^{+0.180}_{-0.180}$	$-0.260^{+0.250}_{-0.300}$	$1.429^{+0.402}_{-0.329}$	$1.183^{+0.188}_{-0.169}$	$0.571^{+0.532}_{-0.276}$
	+3%/-3%	+4%/-4%	+96%/-115%	+28%/-23%	+16%/-14%	+93%/-48%
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 004951447-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-373 ± 76	$3.99^{+3.33}_{-2.38}$	728^{+55}_{-49}	5620^{+4126}_{-1203}	2496^{+13201}_{-1776}
Alt.	-352 ± 90	$3.74^{+2.70}_{-2.37}$	725^{+53}_{-53}	5793^{+4622}_{-1261}	2681^{+16130}_{-1810}

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 $A_{obs} \gg 1.0$

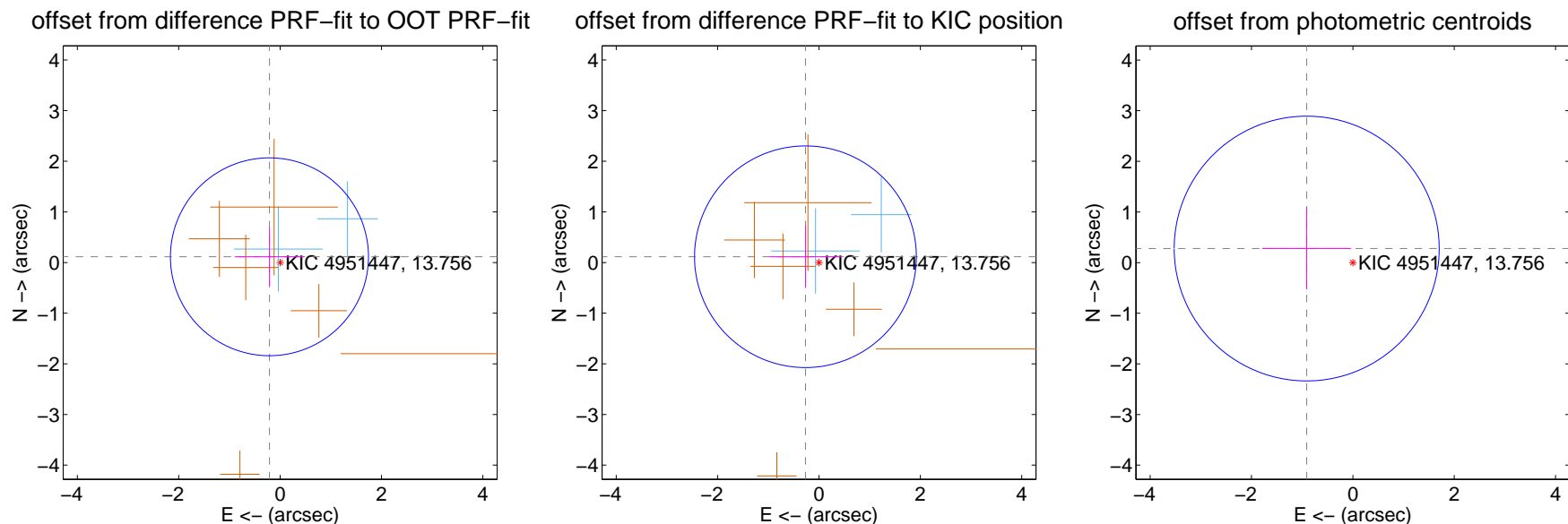
DV Centroid Data

Supplemental centroid analysis for 004951447-07. Kepler magnitude: 13.76. Transit SNR 9.08

There are 2 quarters with good PRF difference image offsets

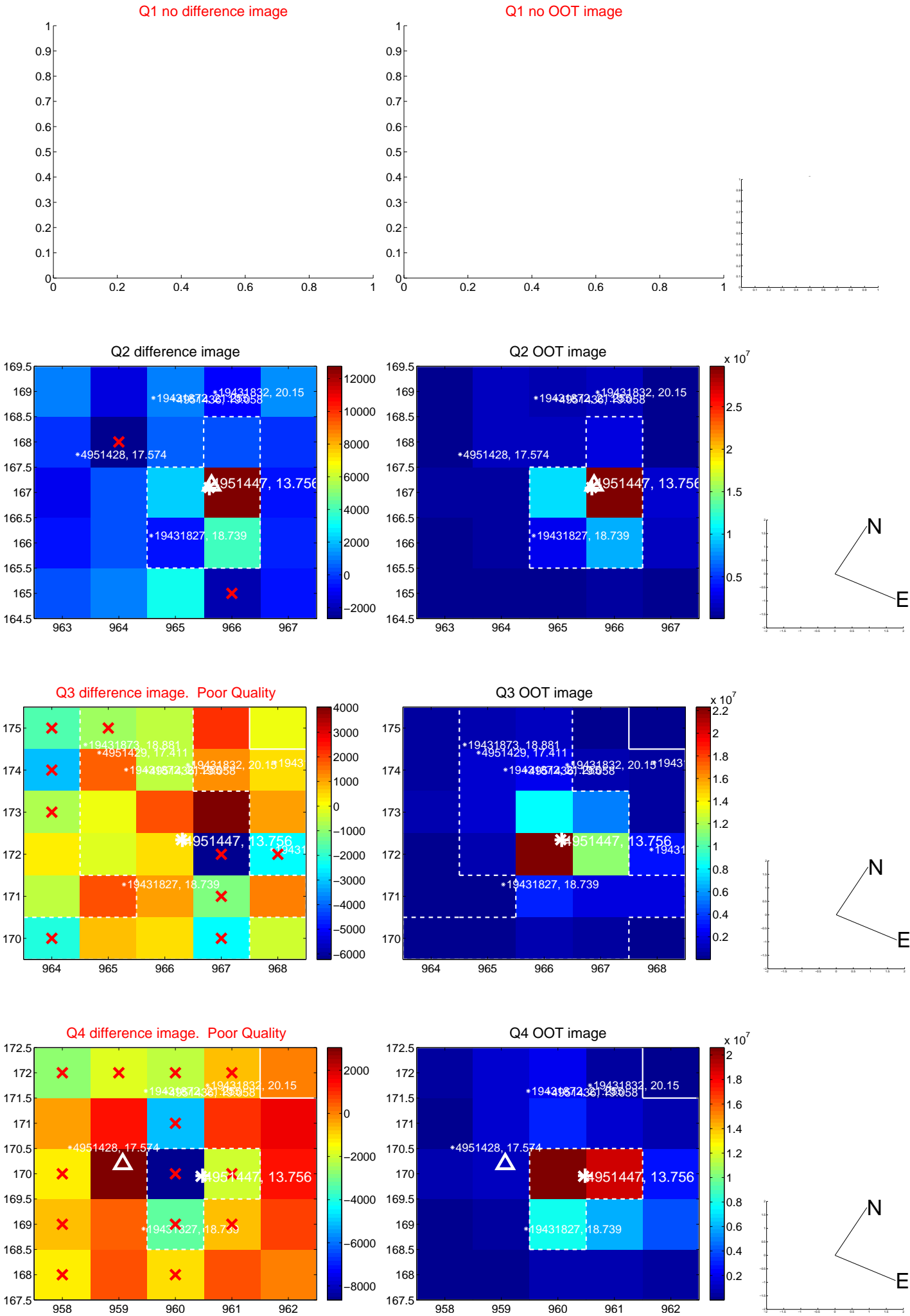
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.239 ± 0.651	0.37	0.210 ± 0.684	0.114 ± 0.579
PRF-fit source offset from KIC position	0.291 ± 0.729	0.40	0.267 ± 0.713	0.114 ± 0.613
photometric centroid source offset	0.95 ± 0.87	1.09	0.91 ± 0.88	0.28 ± 0.80

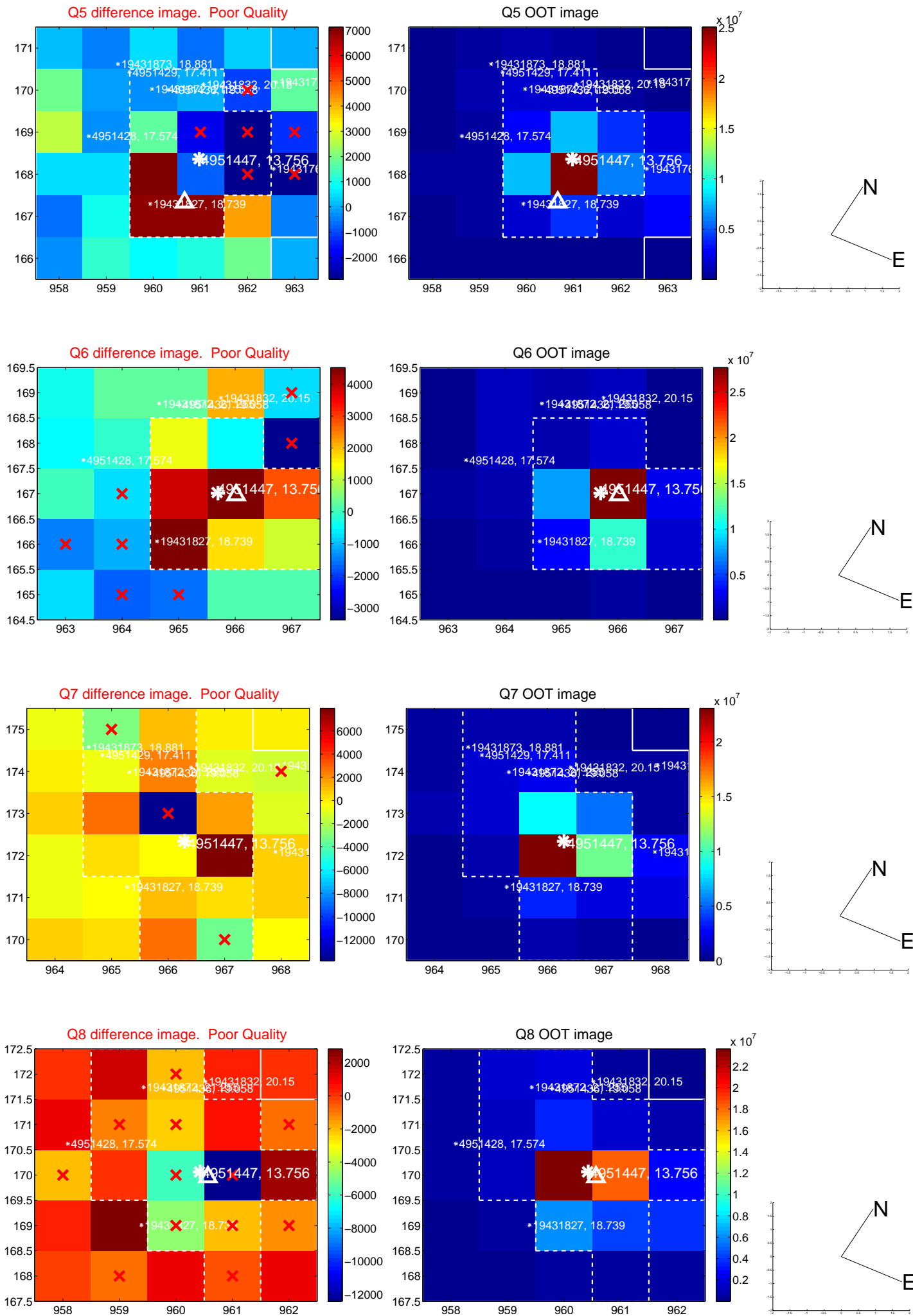


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

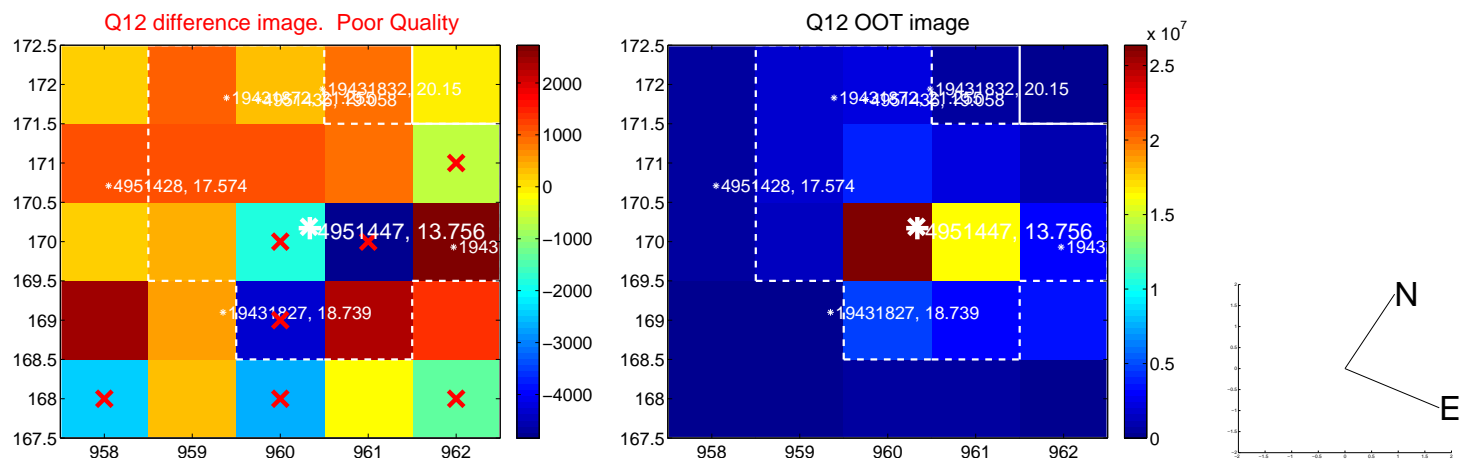
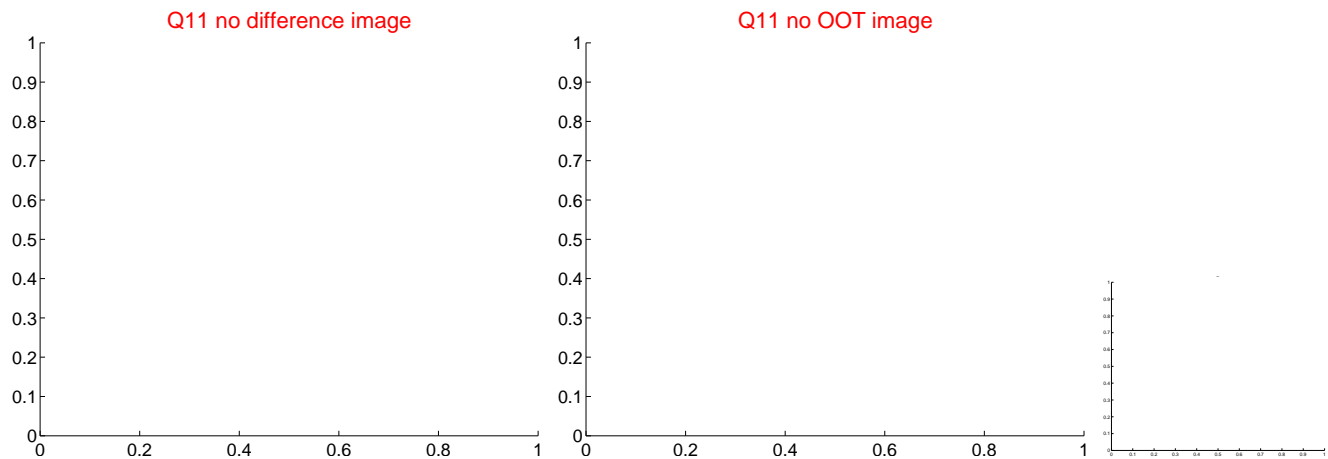
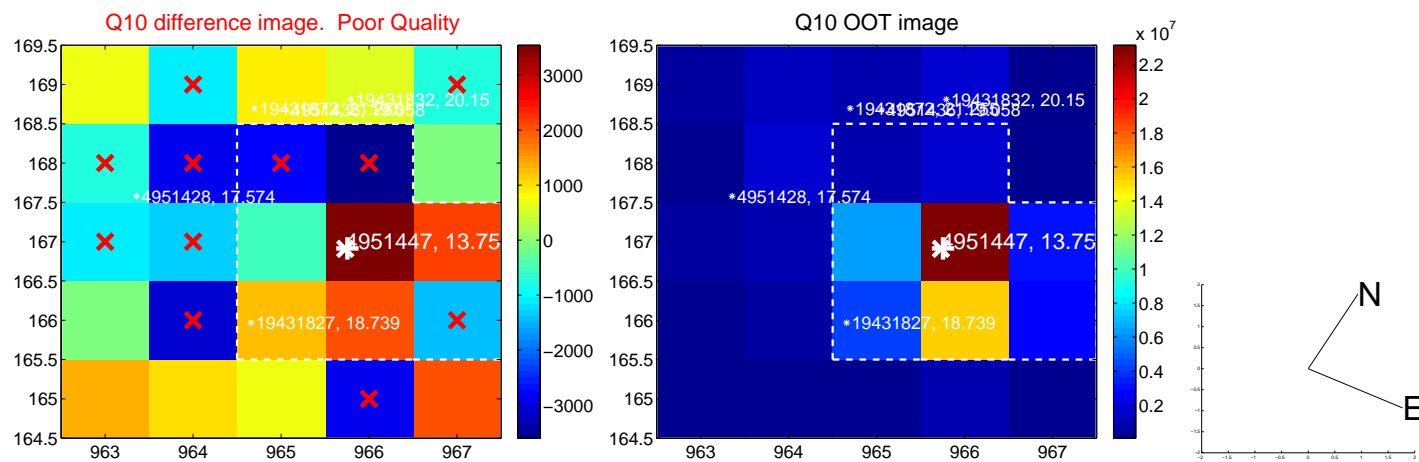
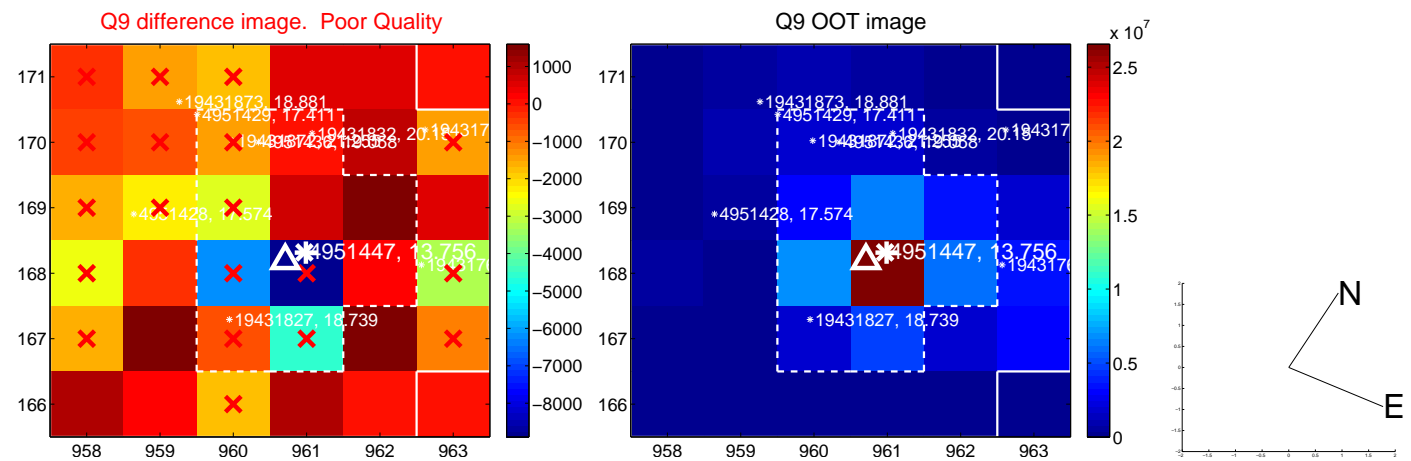
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



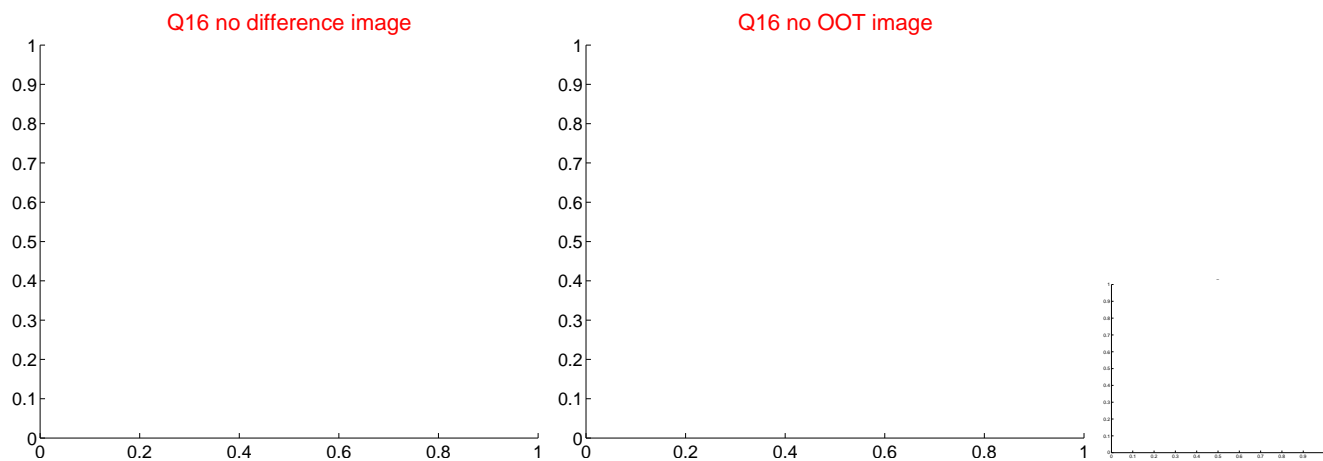
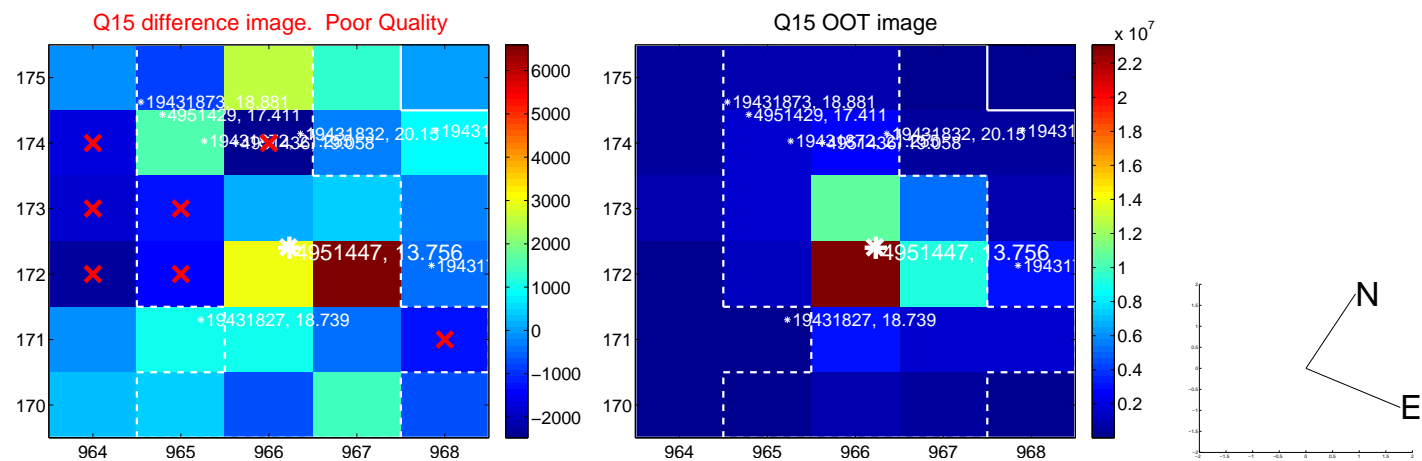
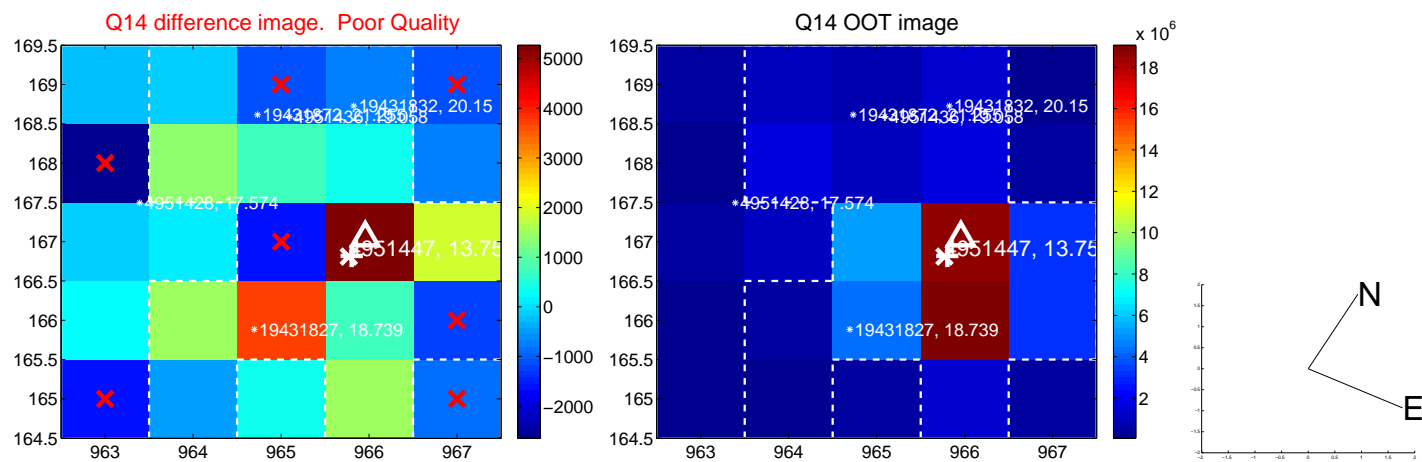
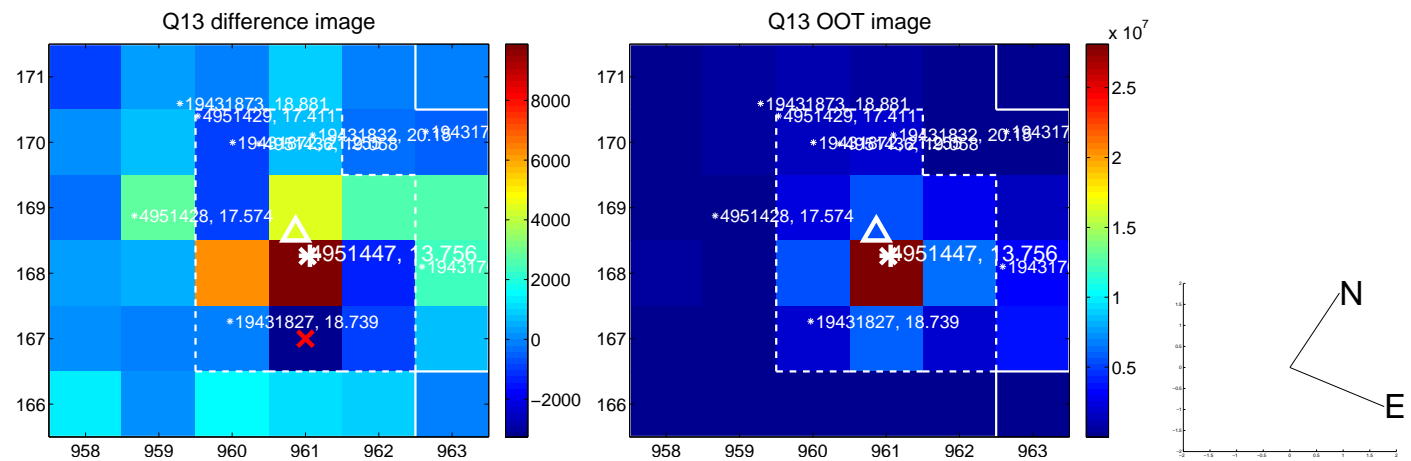
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

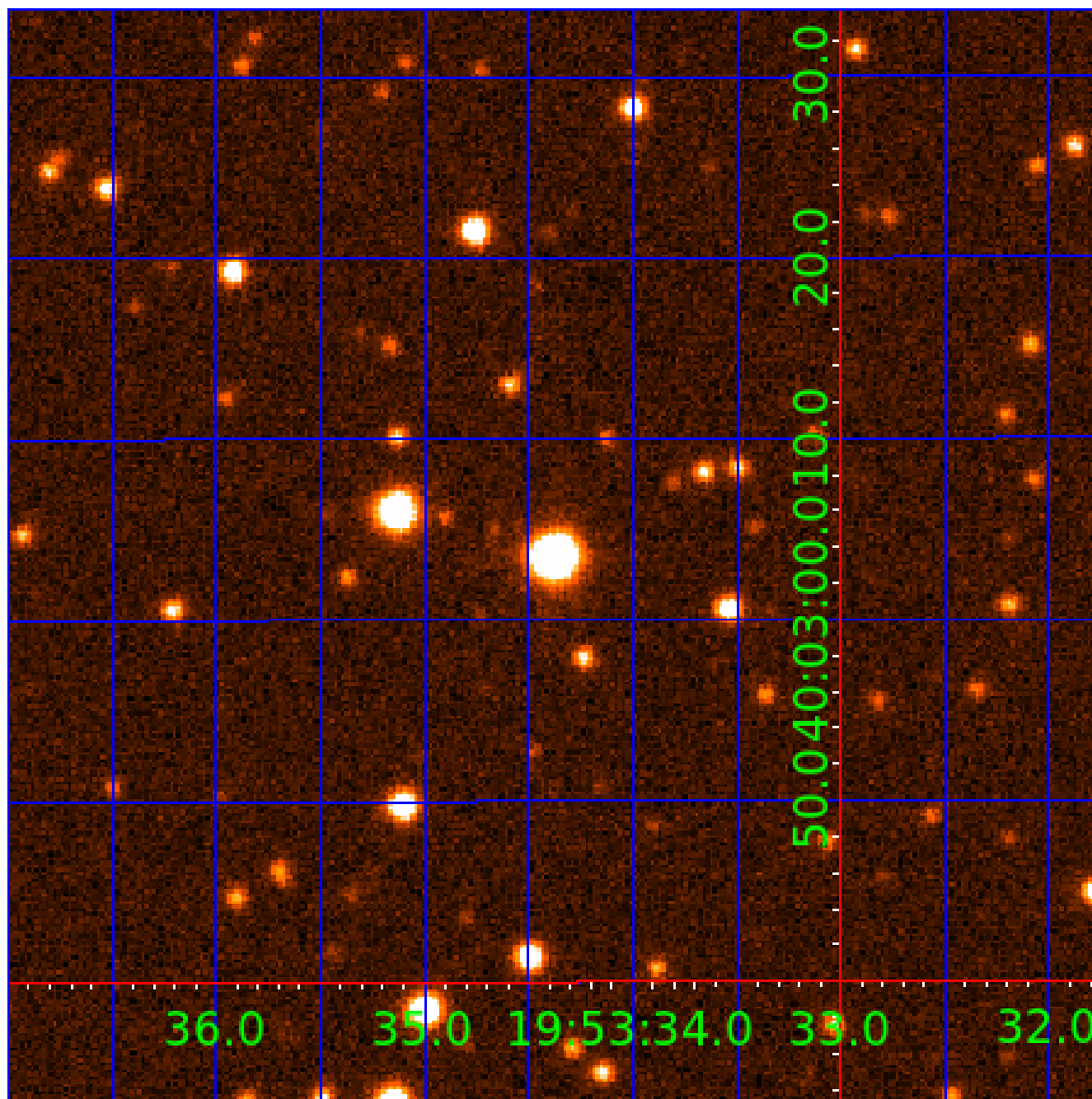


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004951447

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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004951447-07	OBS	No	98.000565	190.276053	451.2	2.587	7.8	9.1	1.43	6517	3.49	17.09
004951447-08	OBS	No	72.310280	147.611048	548.0	1.647	8.3	10.1	1.43	6517	3.59	25.64

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004951447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
004951447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004951447-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004951447-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
004951447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
004951447-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—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.

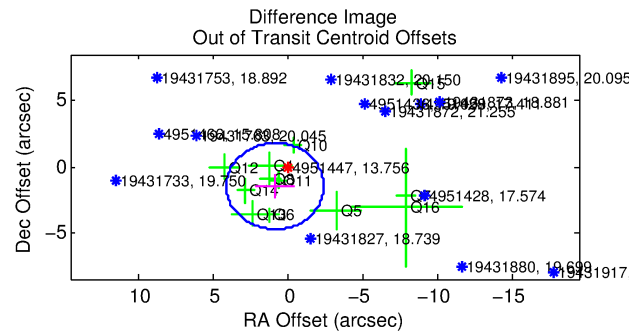
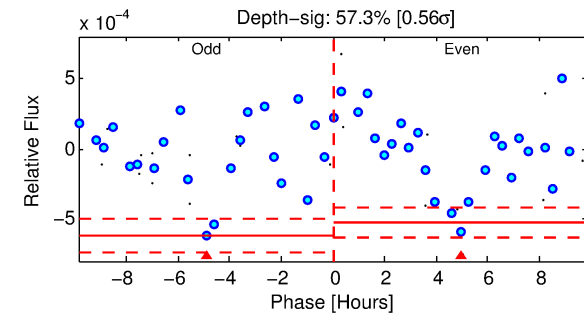
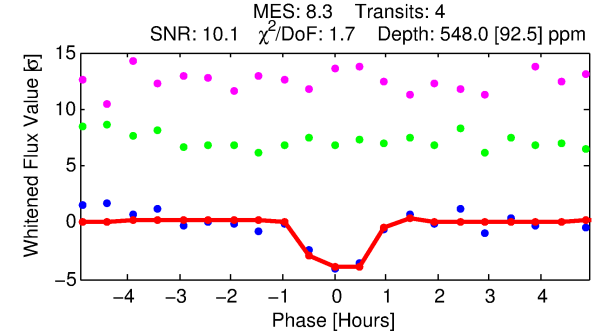
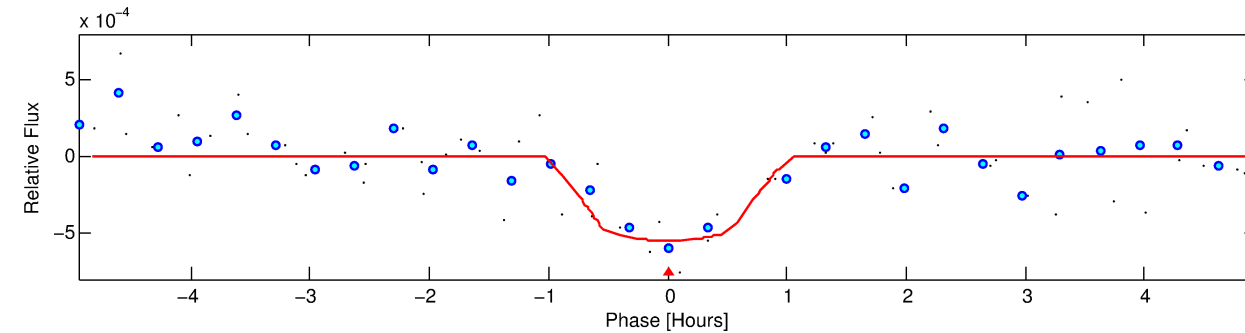
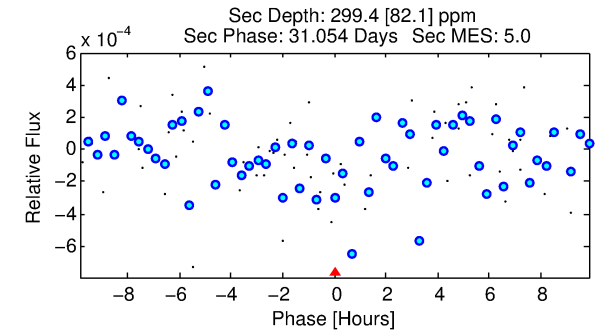
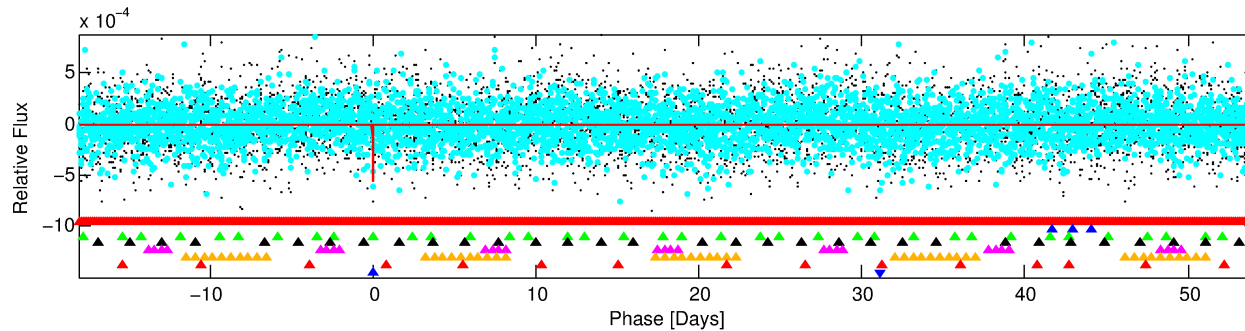
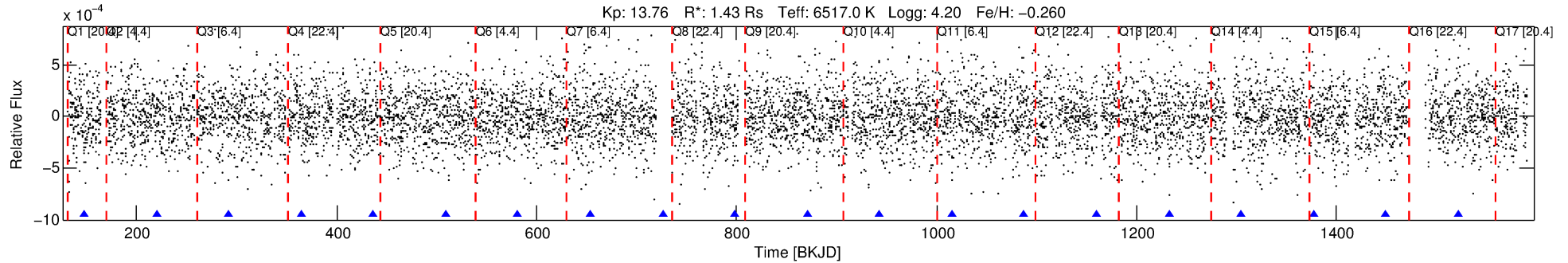
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004951447-08

No Significant Match Found

DV One-Page Summary

KIC: 4951447 Candidate: 8 of 8 Period: 72.310 d



DV Fit Results:

Period = 72.31028 [0.00104] d
Epoch = 147.6110 [0.0147] BKJD
Rp/R* = 0.0230 [0.2175]
a/R* = 250.14 [12919.99]
b = 0.70 [38.20]
Seff = 25.64 [9.20]
Teq = 574 [51] K
Rp = 3.59 [33.92] Re
a = 0.3588 [0.0836] AU
Ag = 1643.44 [31037.30] [0.05σ]
Teffp = 5648 [26664] K [0.19σ]

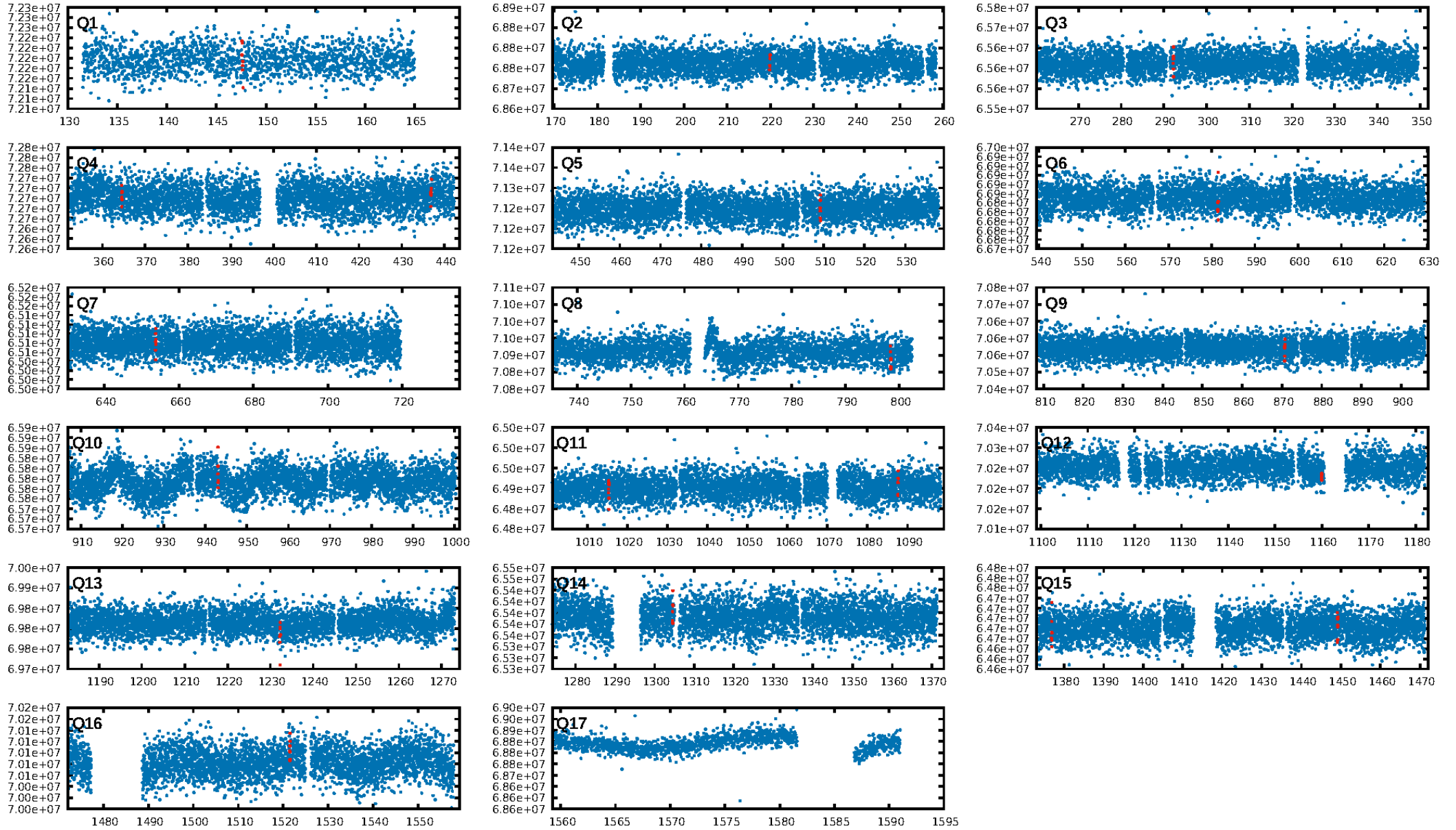
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [164.24σ]
LongPeriod-sig: 100.0% [201.02σ]
ModelChiSquare2-sig: 41.4%
ModelChiSquareGof-sig: 98.1%
Bootstrap-pfa: 2.31e-07
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.229
Centroid-sig: 40.7%
Centroid-so: 0.176 arcsec [0.25σ]
OotOffset-rm: 1.690 arcsec [1.55σ]
KicOffset-rm: 1.741 arcsec [1.70σ]
OotOffset-st: 3/3/3/3 [12]
KicOffset-st: 3/3/3/3 [12]
DiffImageQuality-fgm: 0.17 [2/12]
DiffImageOverlap-fno: 0.07 [1/15]

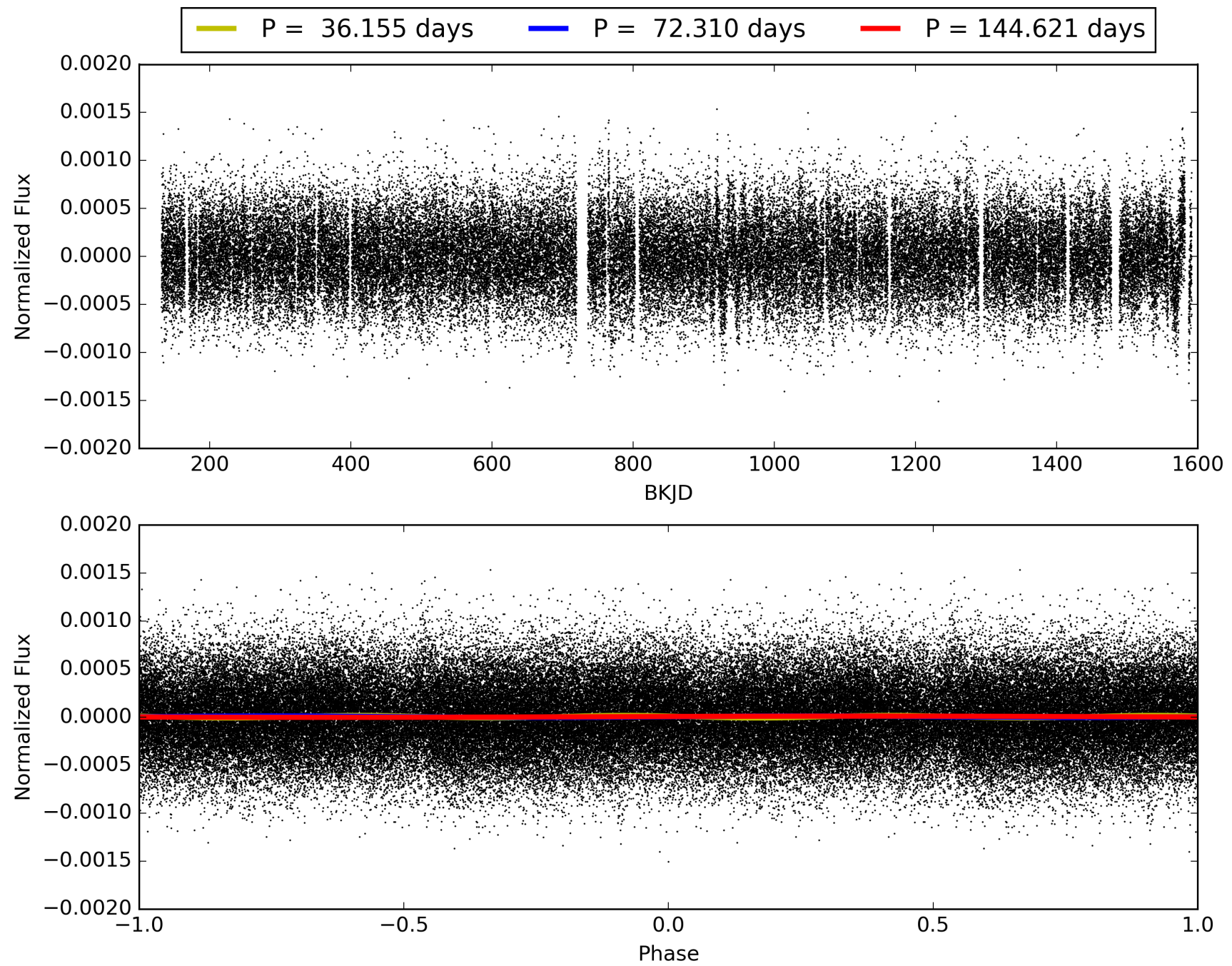
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:54:41 Z

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

TCE 004951447-08, PDC Light Curves

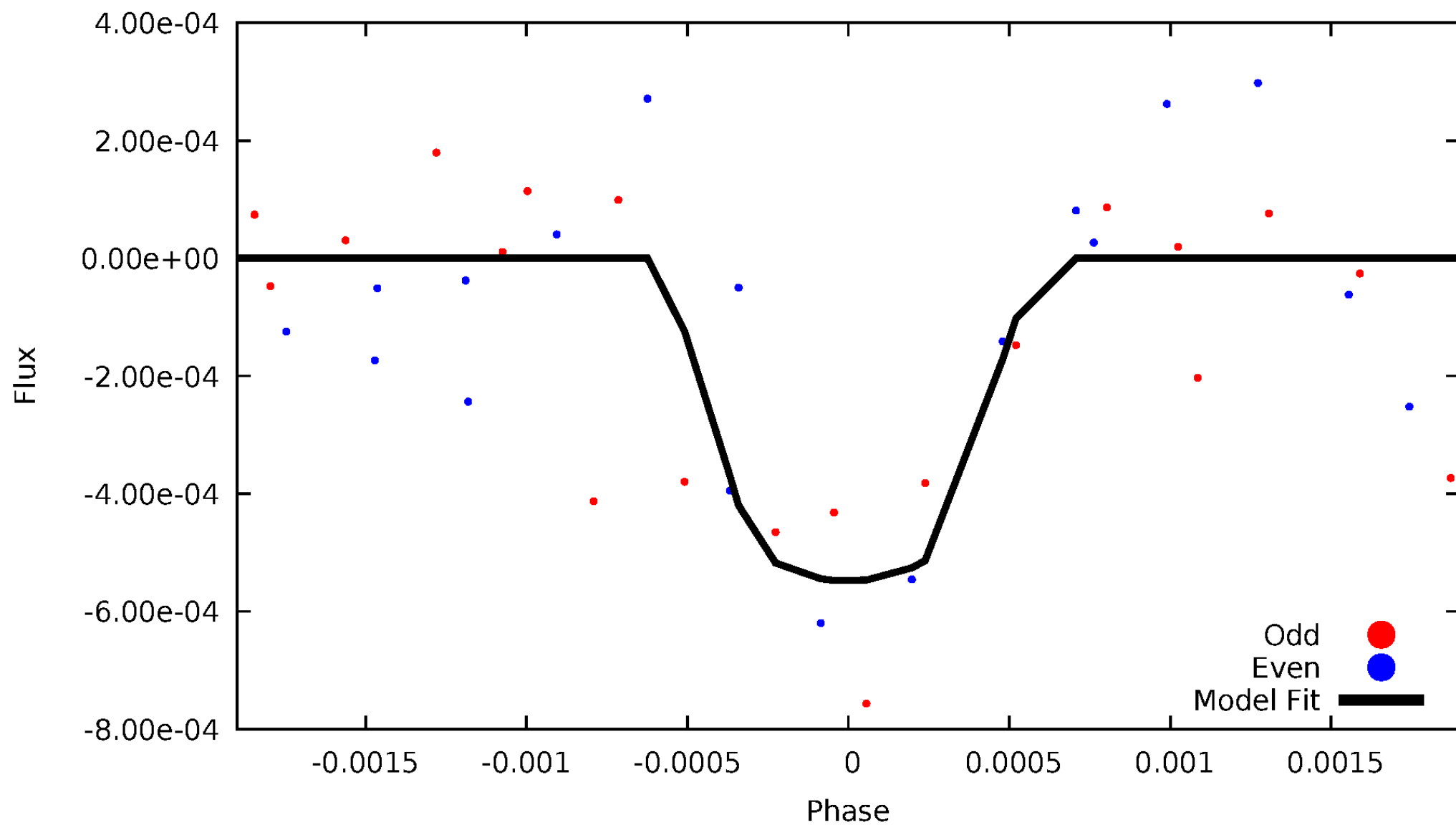


TCE 004951447-08



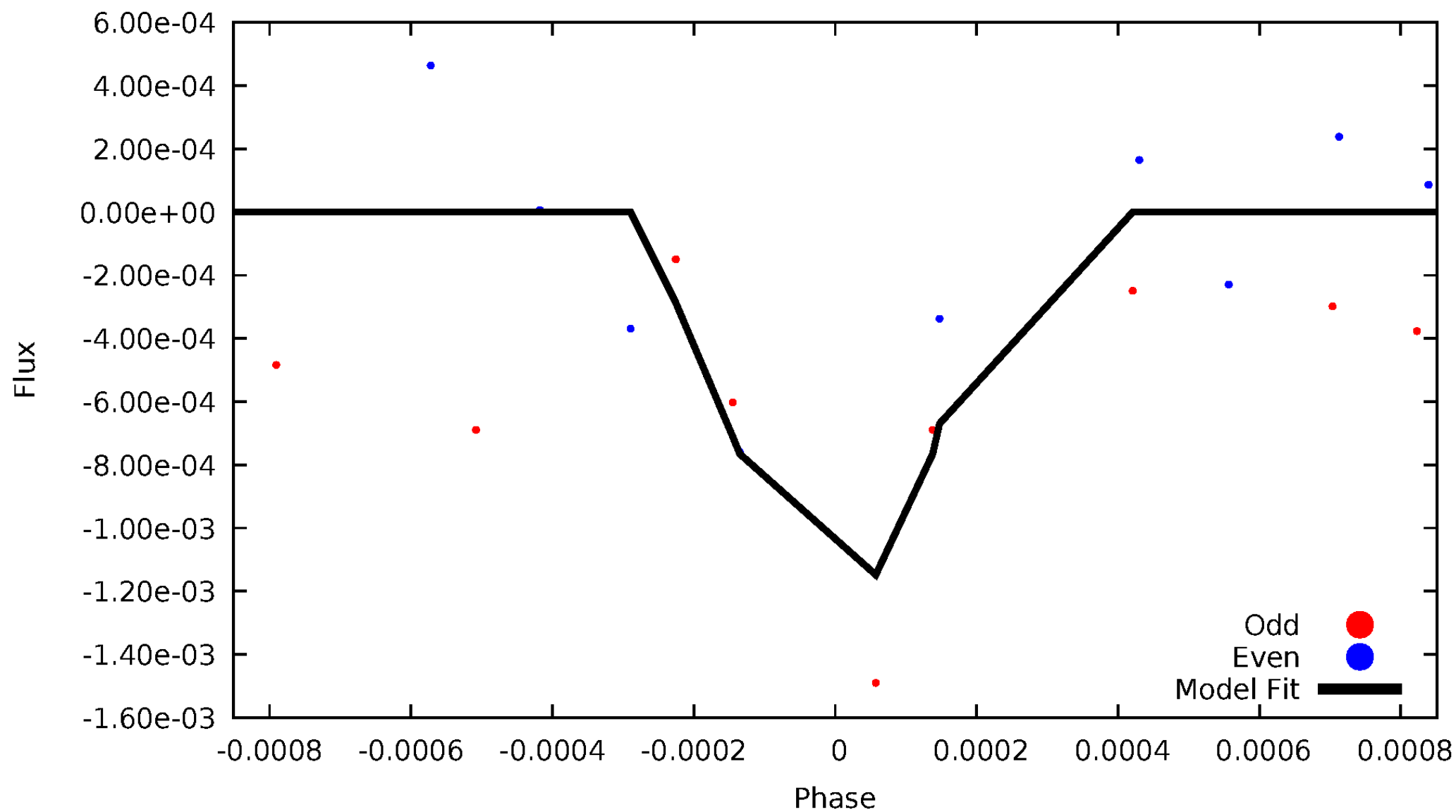
DV Odd/Even

TCE 004951447-08



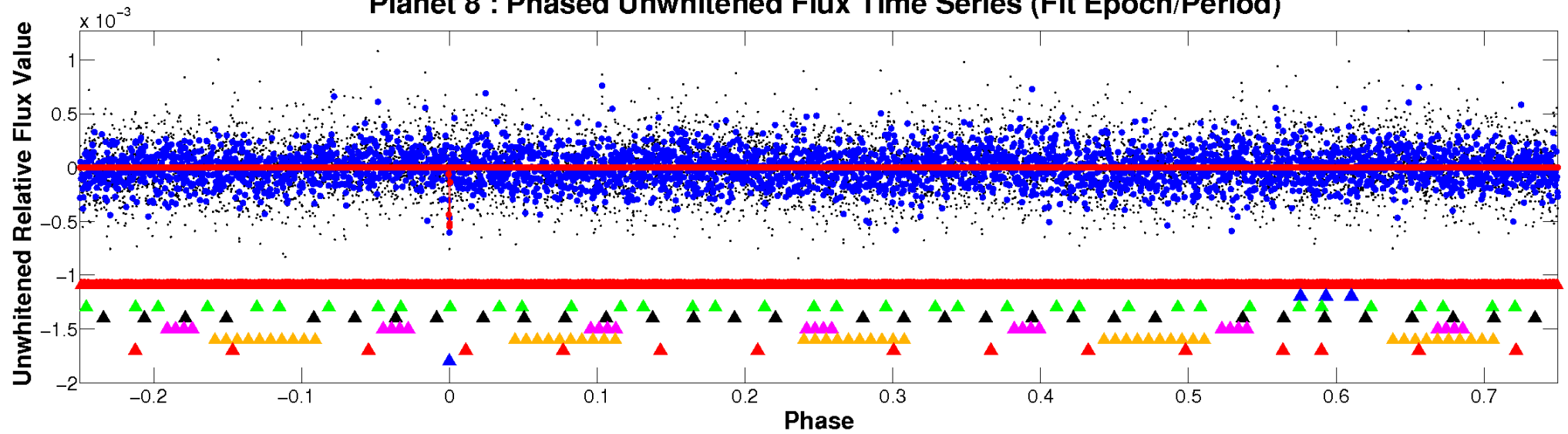
ALT Odd/Even

TCE 004951447-08

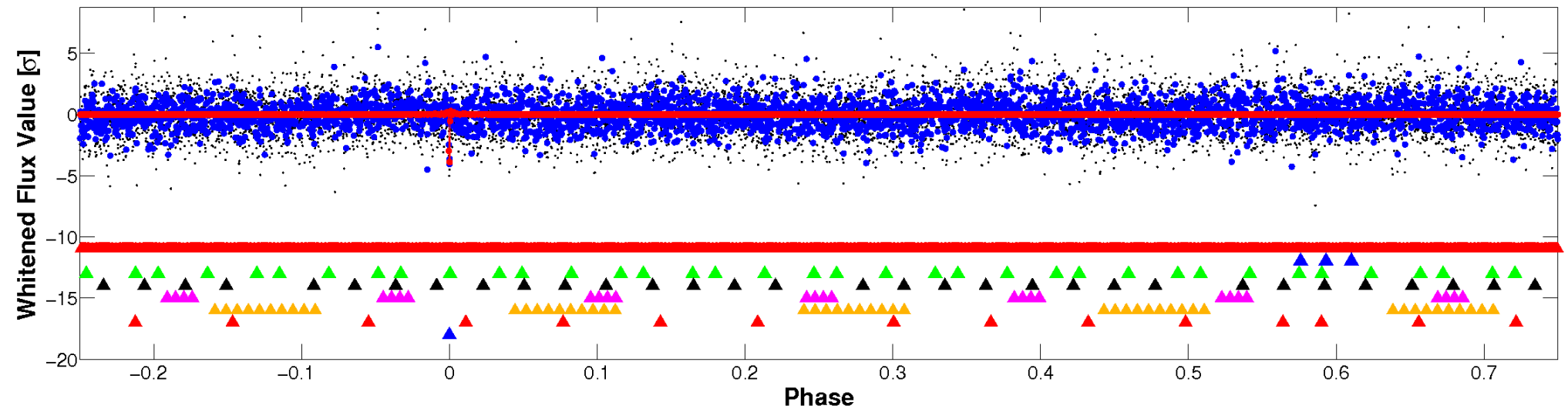


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

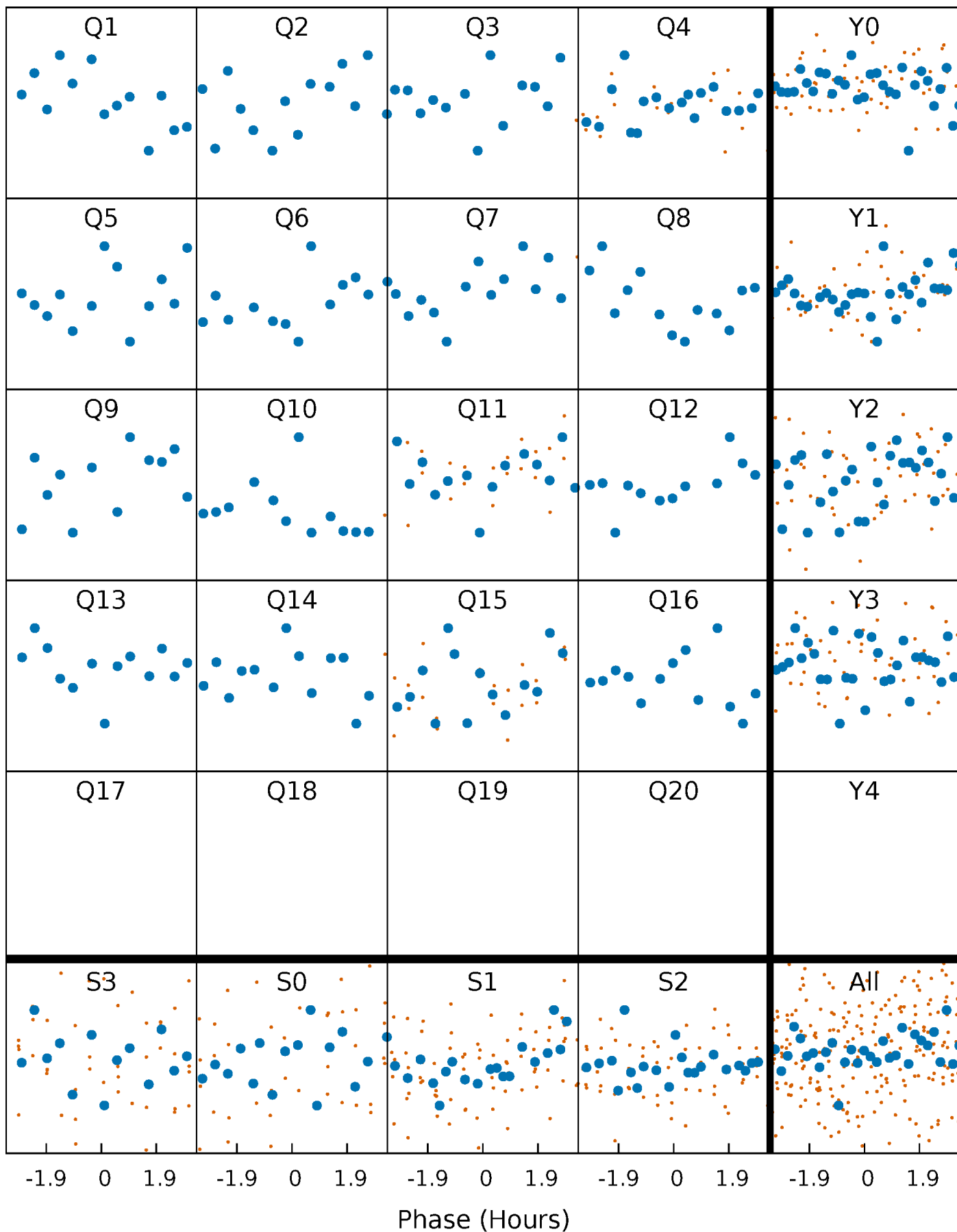


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



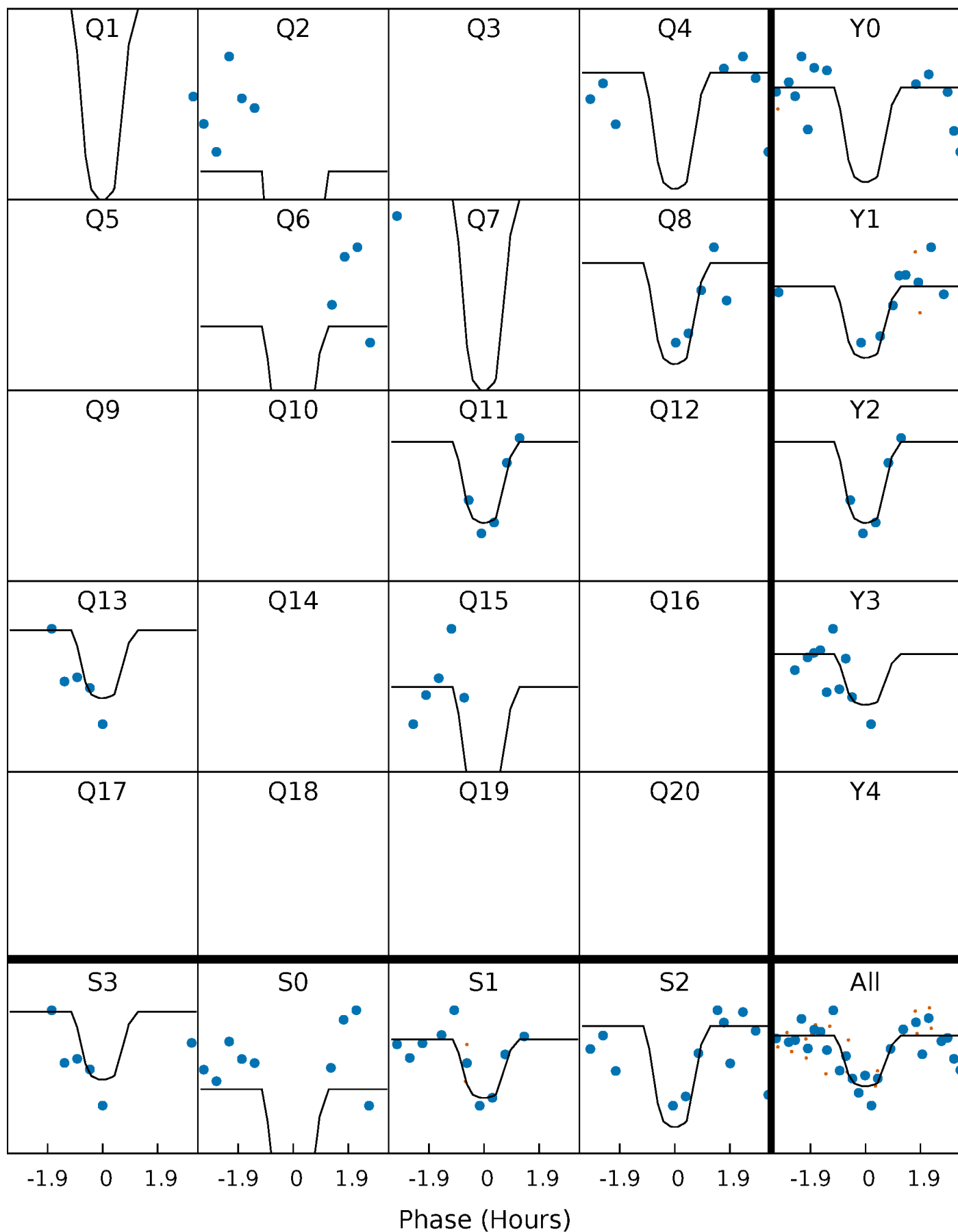
PDC Quarter-Phased Transit Curves

TCE 004951447-08 P= 72.310280 Days $T_0=147.611048$ (BKJD)



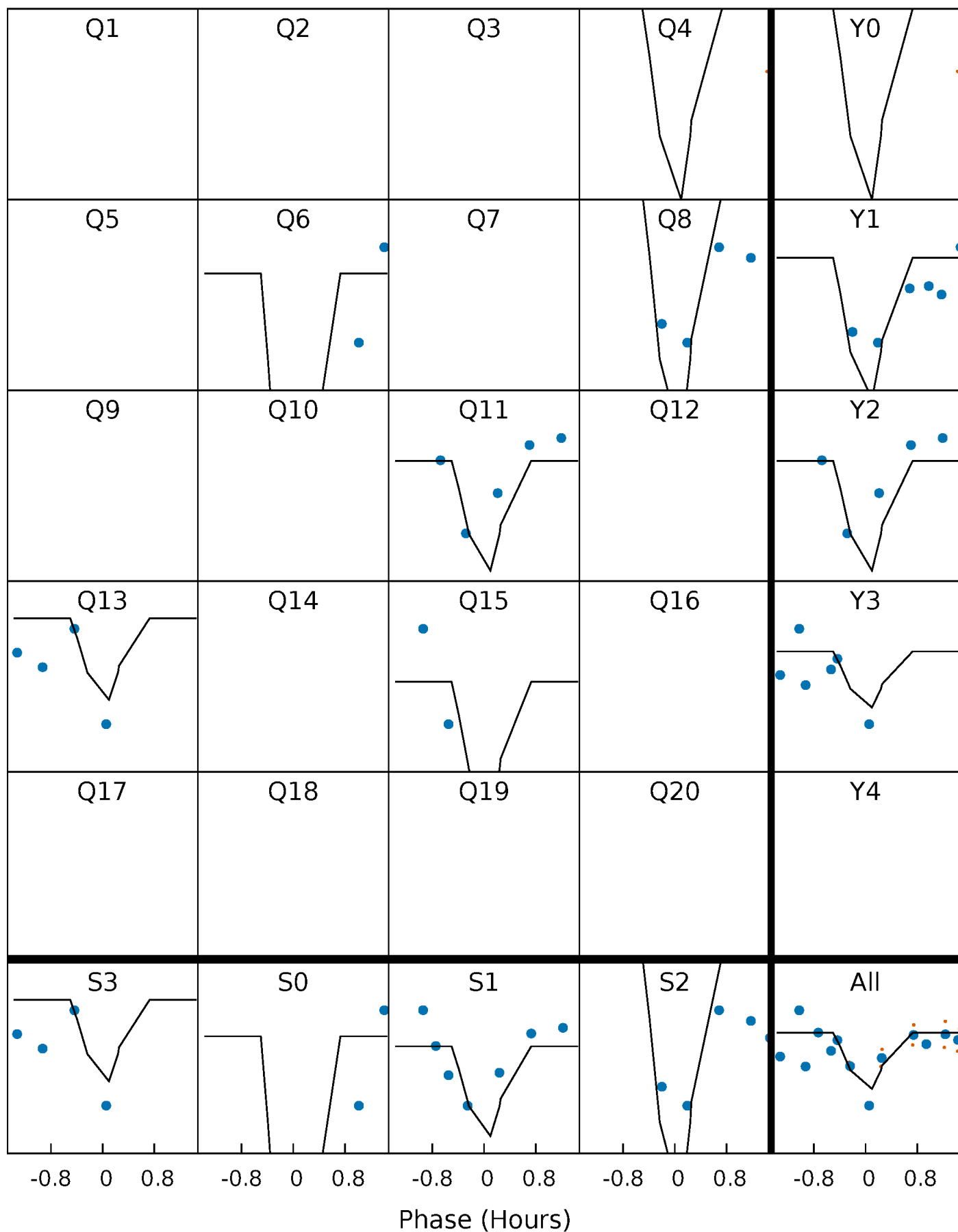
DV Quarter-Phased Transit Curves

TCE 004951447-08 P= 72.310280 Days $T_0=147.611048$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

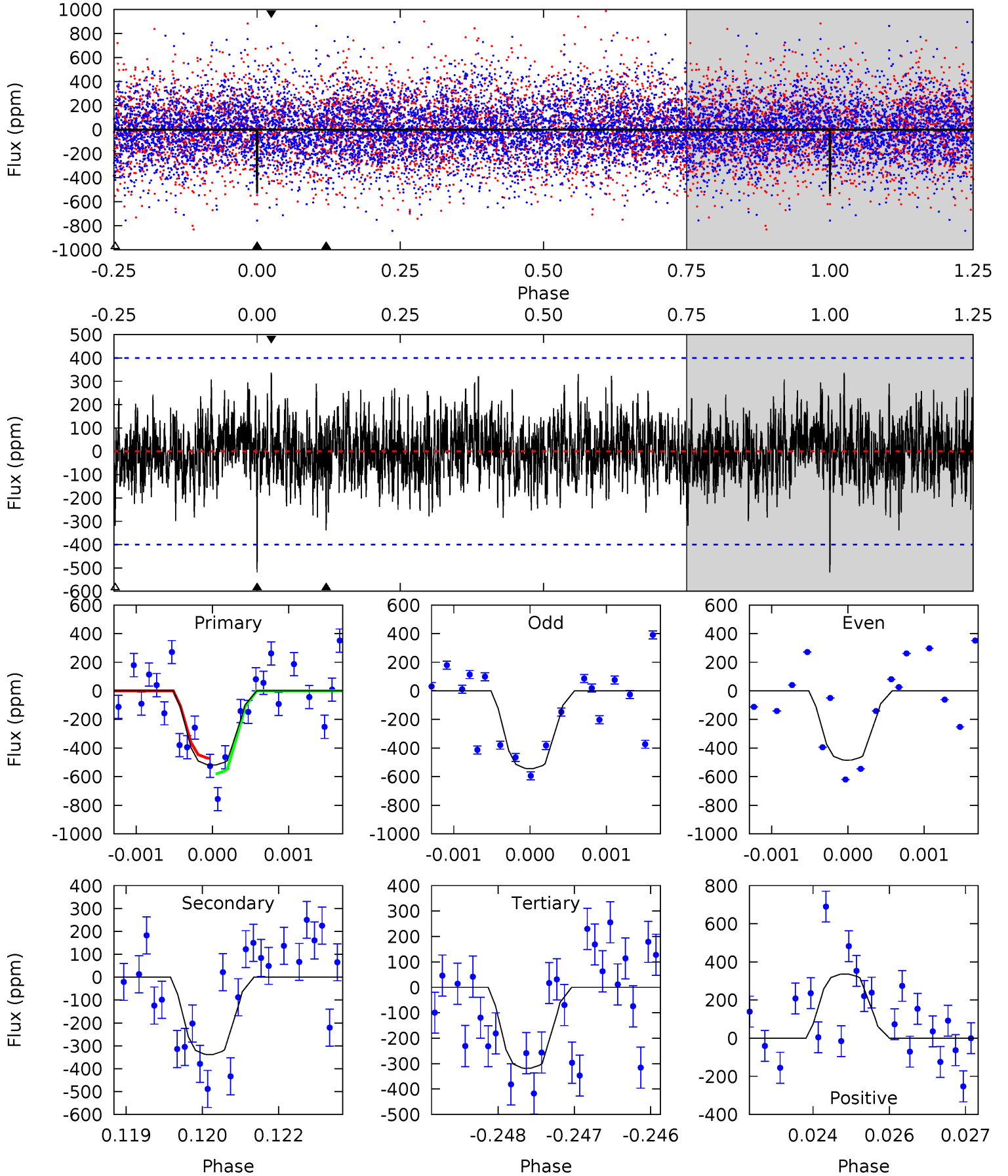
TCE 004951447-08 $P = 72.309059$ Days $T_0 = 147.629290$ (BKJD)



DV Model-Shift Uniqueness Test

004951447-08, P = 72.310280 Days, E = 75.300768 Days

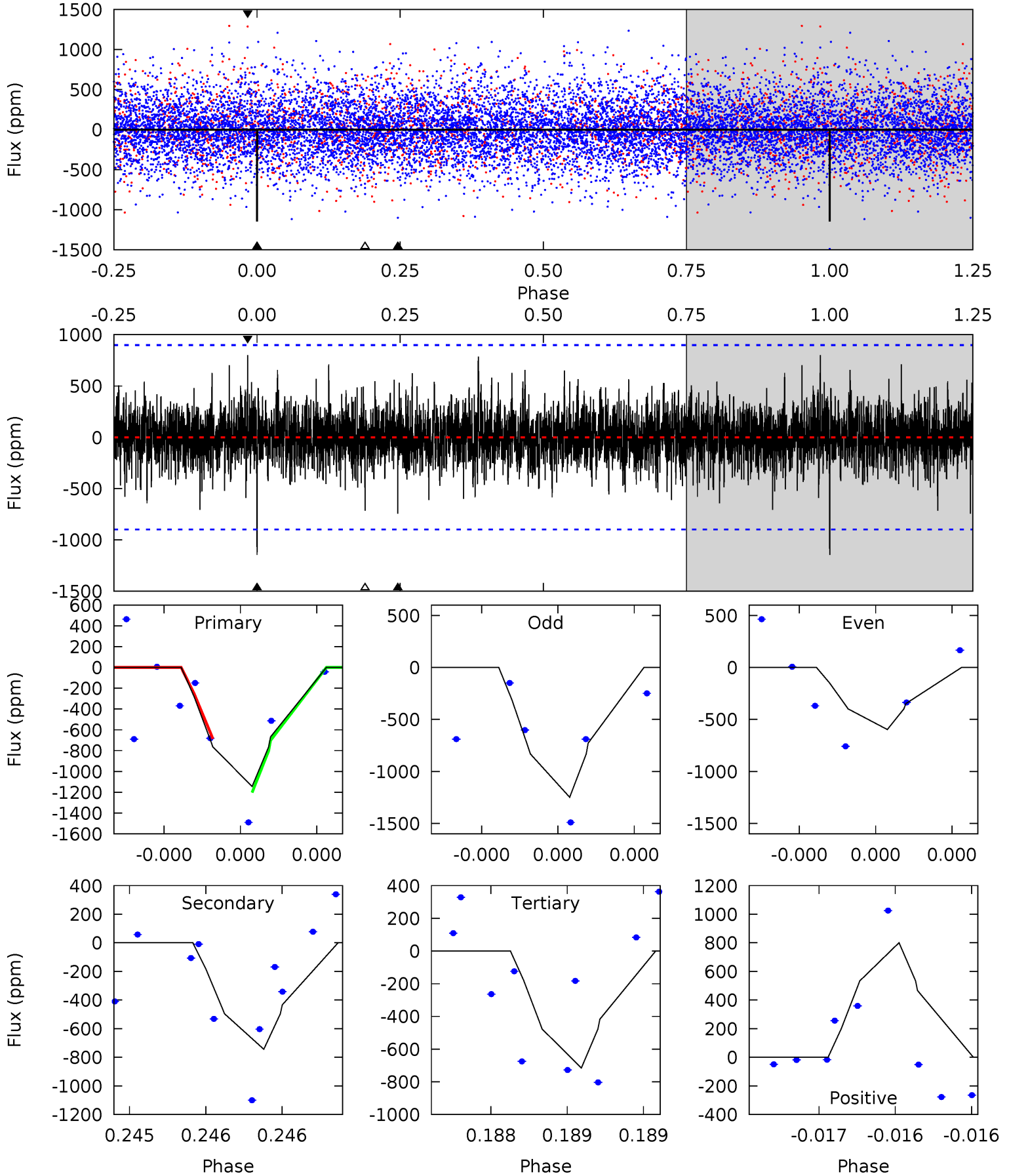
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.03	4.58	4.31	4.55	5.42	3.24	1.33	2.72	2.47	0.26	0.02	0.42	0.95	0.39	0.75



Alt Model-Shift Uniqueness Test

004951447-08, P = 72.309059 Days, E = 75.320231 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.17	4.66	4.48	5.01	5.62	3.56	1.17	2.69	2.15	0.18	-0.36	1.79	1.11	0.41	1.62



Stellar Parameters For KIC 004951447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6517^{+175}_{-214}	$4.199^{+0.180}_{-0.180}$	$-0.260^{+0.250}_{-0.300}$	$1.429^{+0.402}_{-0.329}$	$1.183^{+0.188}_{-0.169}$	$0.571^{+0.532}_{-0.276}$
	+3%/-3%	+4%/-4%	+96%/-115%	+28%/-23%	+16%/-14%	+93%/-48%
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 004951447-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-338 ± 74	$23.82^{+27.58}_{-15.68}$	805^{+58}_{-57}	2930^{+1278}_{-537}	40^{+334}_{-31}
Alt.	-744 ± 160	$26.30^{+26.11}_{-18.44}$	801^{+60}_{-56}	3202^{+1667}_{-558}	76^{+782}_{-57}

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

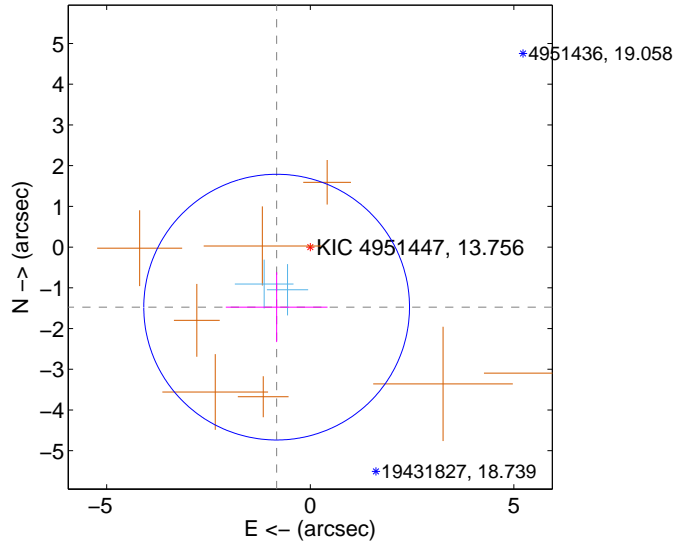
Supplemental centroid analysis for 004951447-08. Kepler magnitude: 13.76. Transit SNR 10.09

There are 2 quarters with good PRF difference image offsets

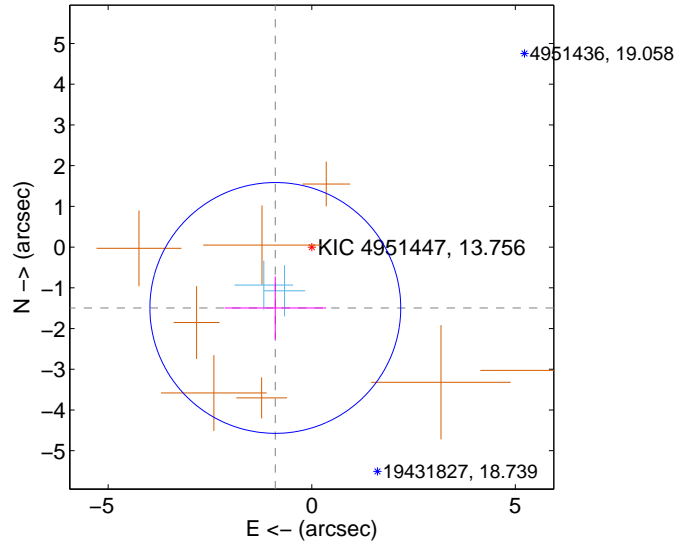
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.690 ± 1.088	1.55	0.826 ± 1.248	-1.474 ± 0.858
PRF-fit source offset from KIC position	1.741 ± 1.027	1.70	0.895 ± 1.246	-1.494 ± 0.773
photometric centroid source offset	0.18 ± 0.71	0.25	-0.11 ± 0.75	0.14 ± 0.69

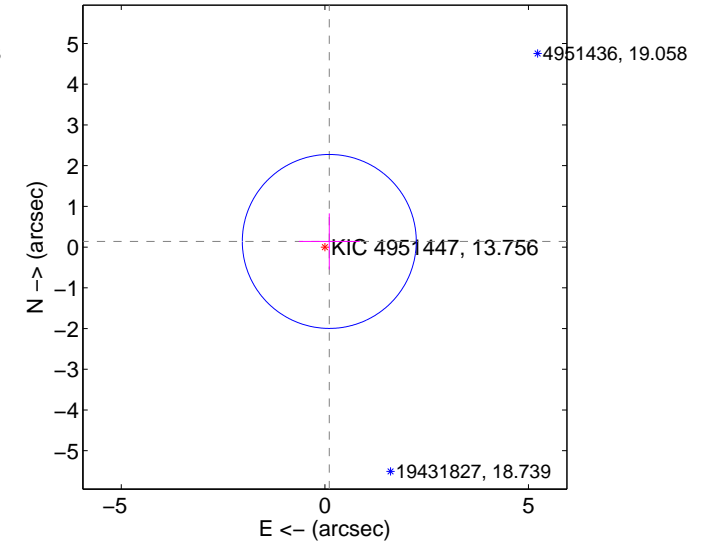
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

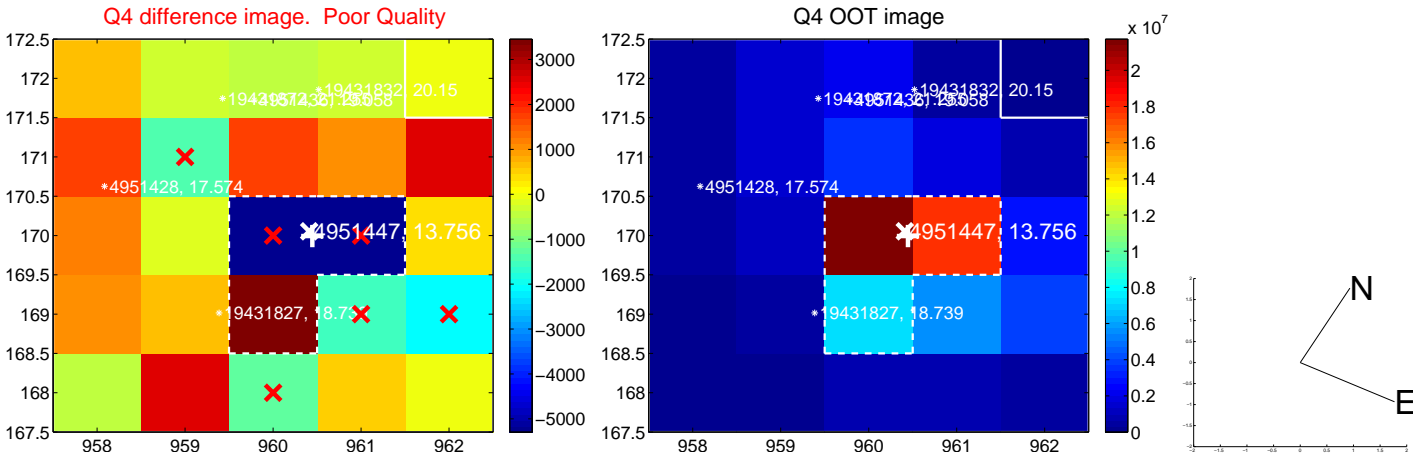
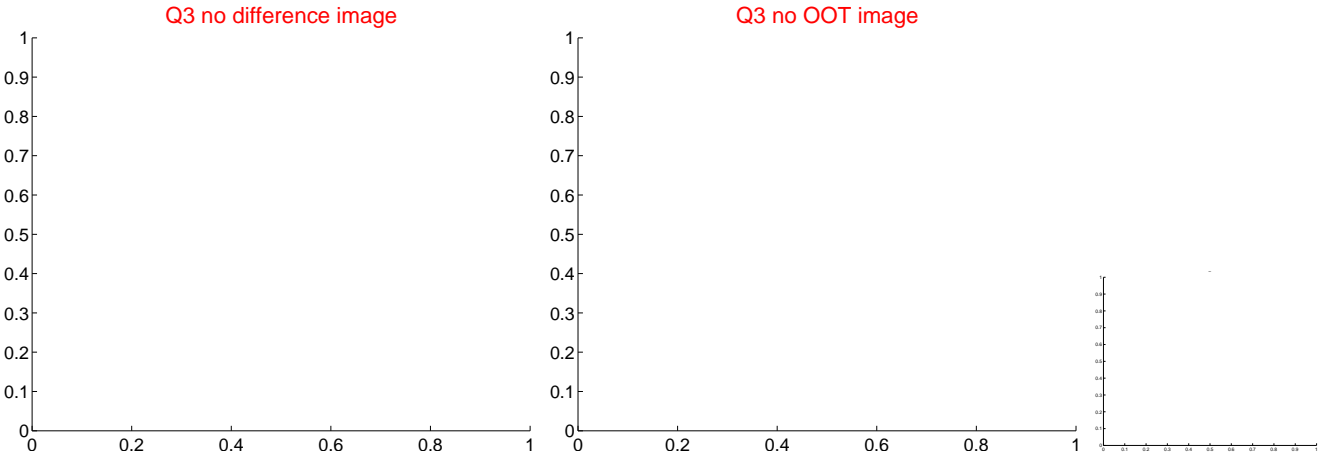
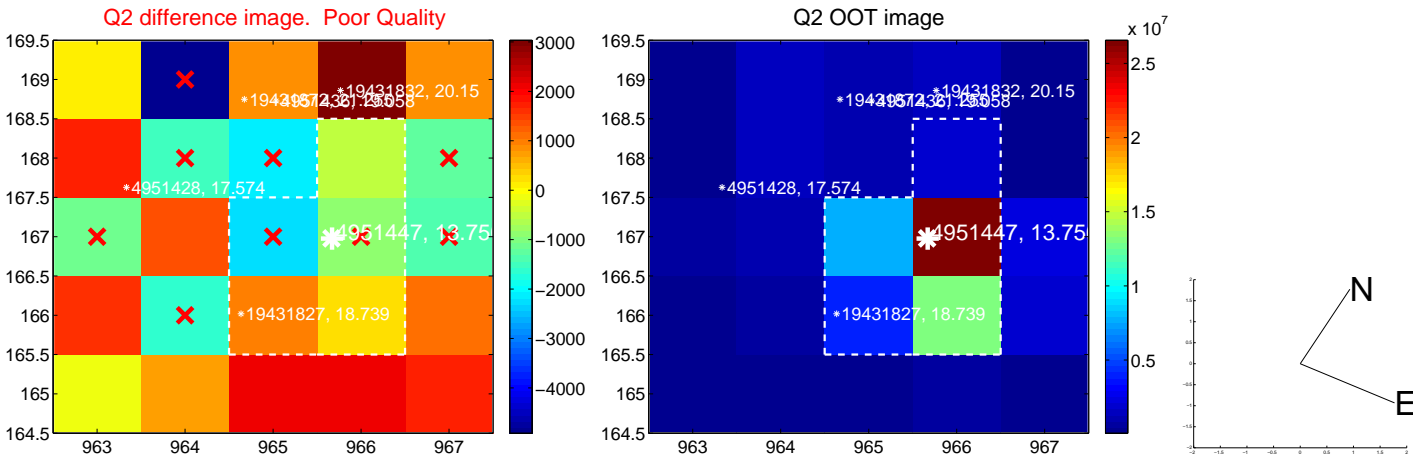
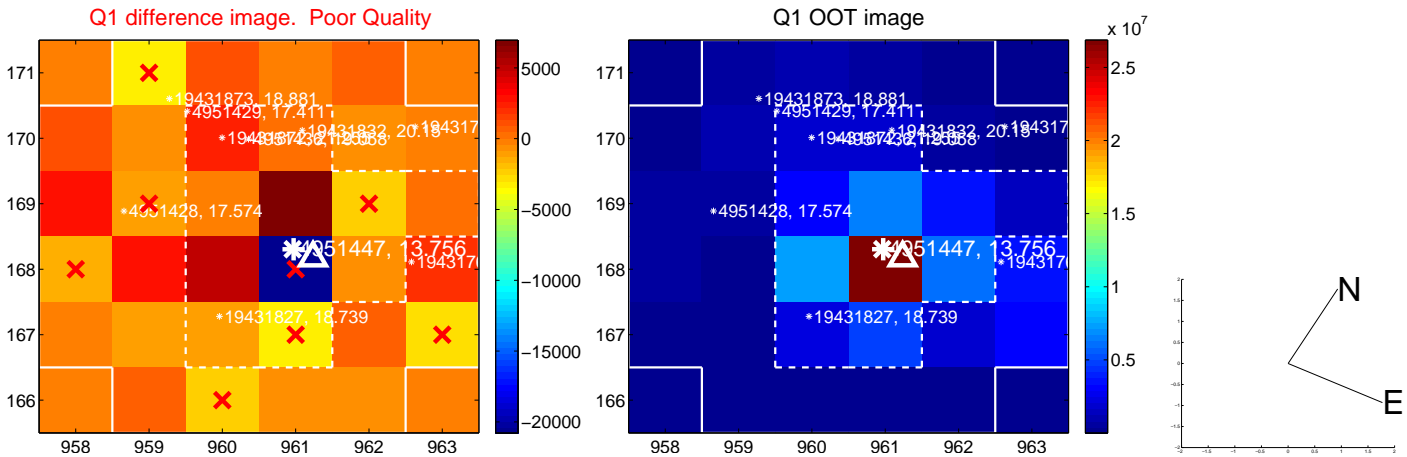


offset from photometric centroids

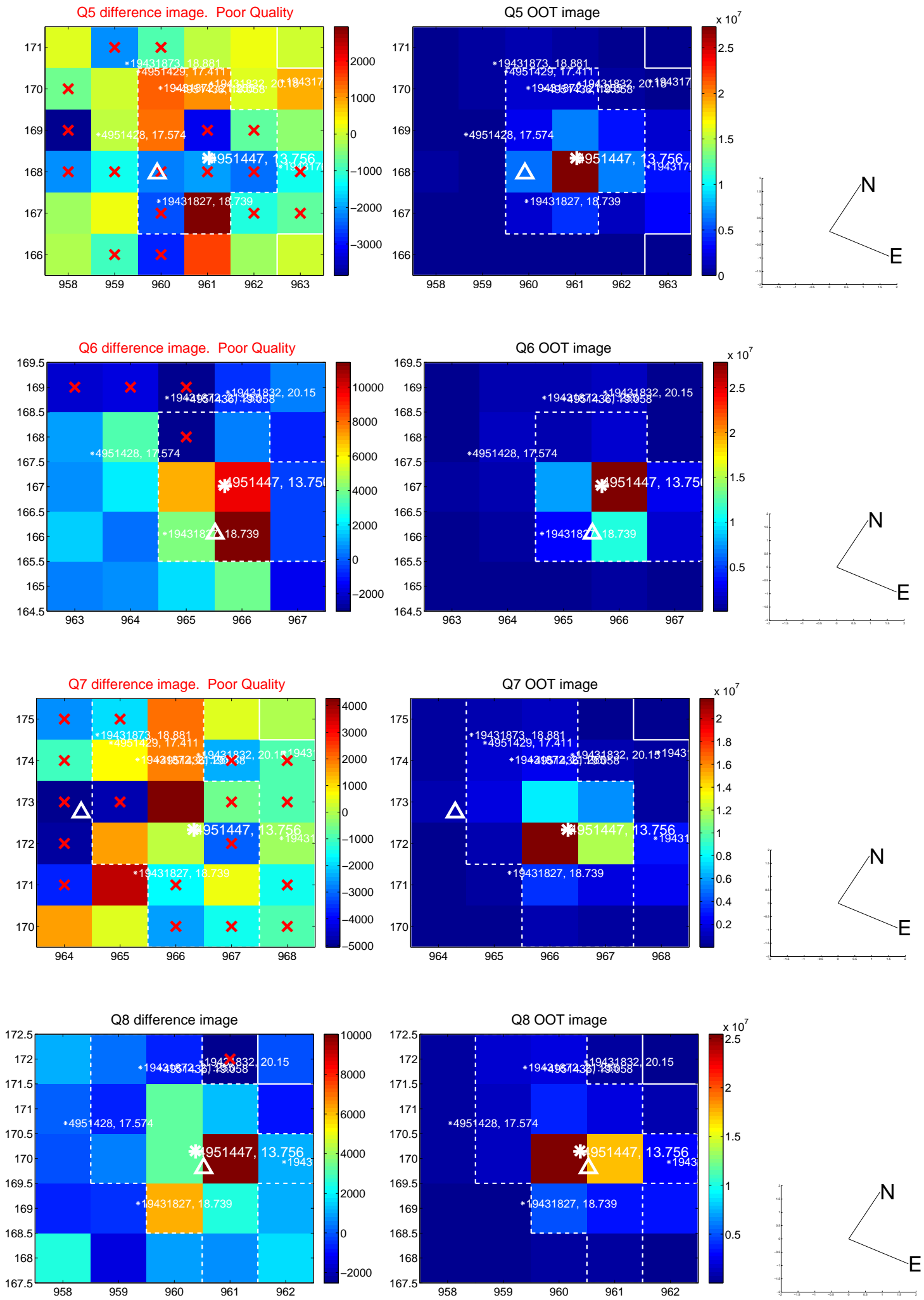


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

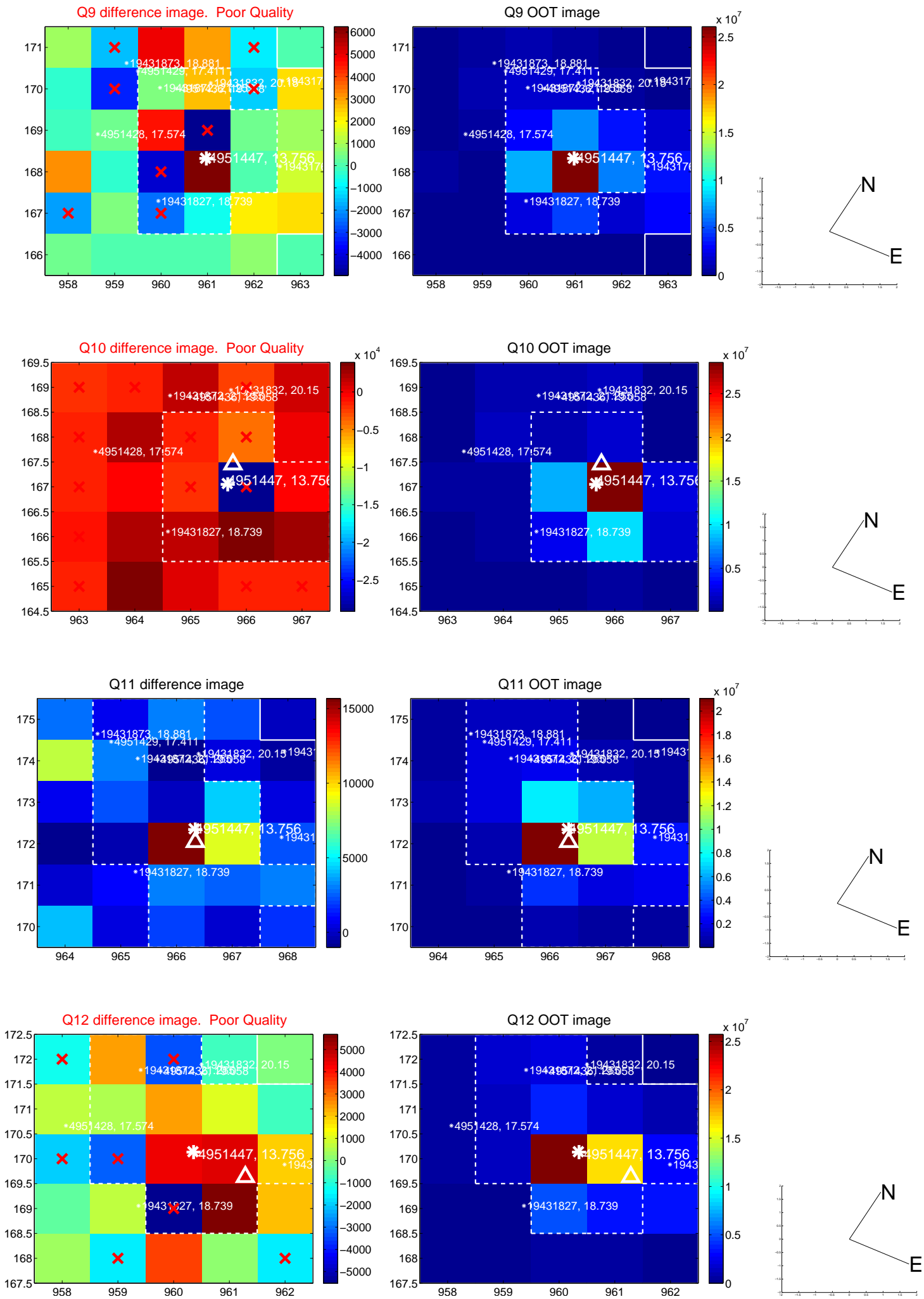
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



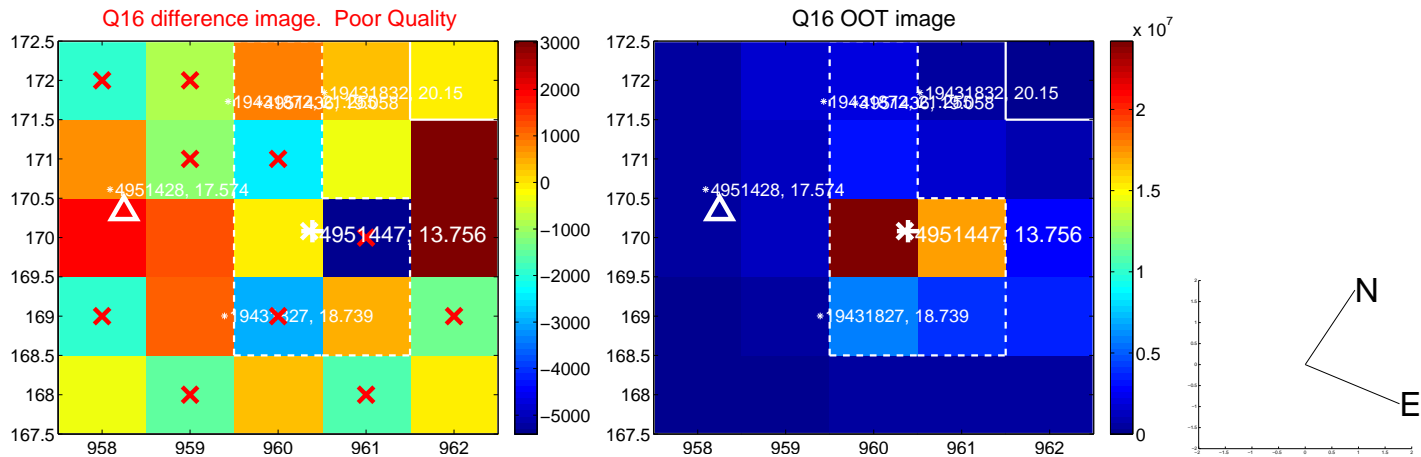
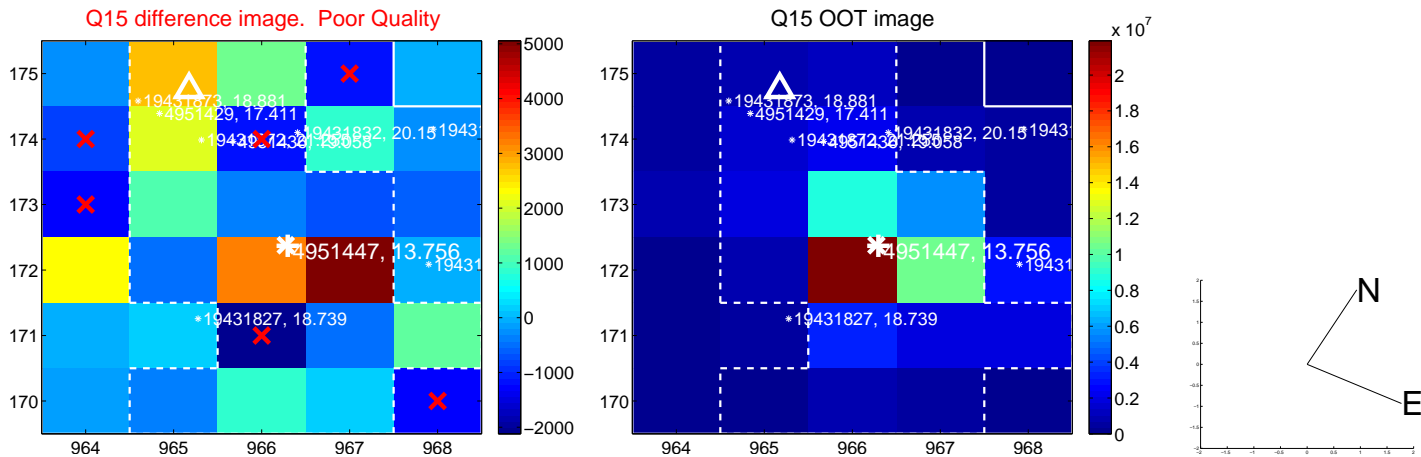
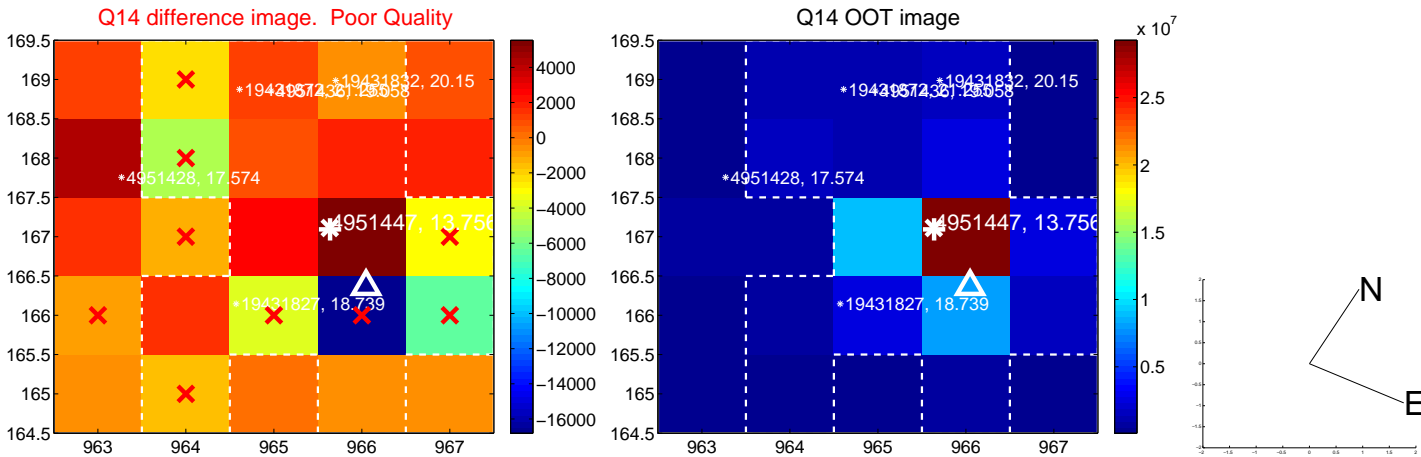
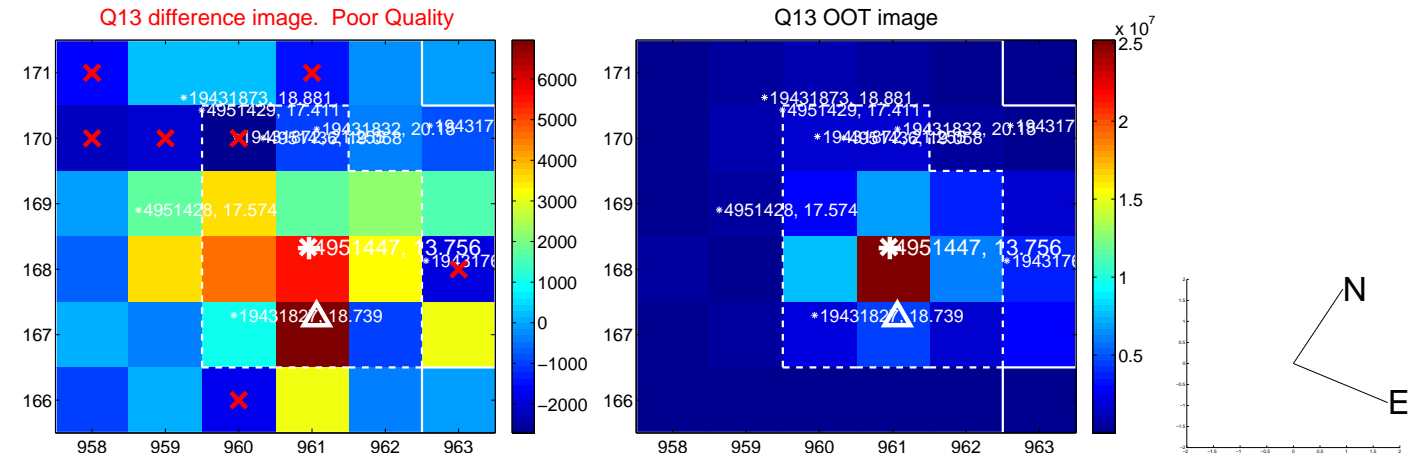
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



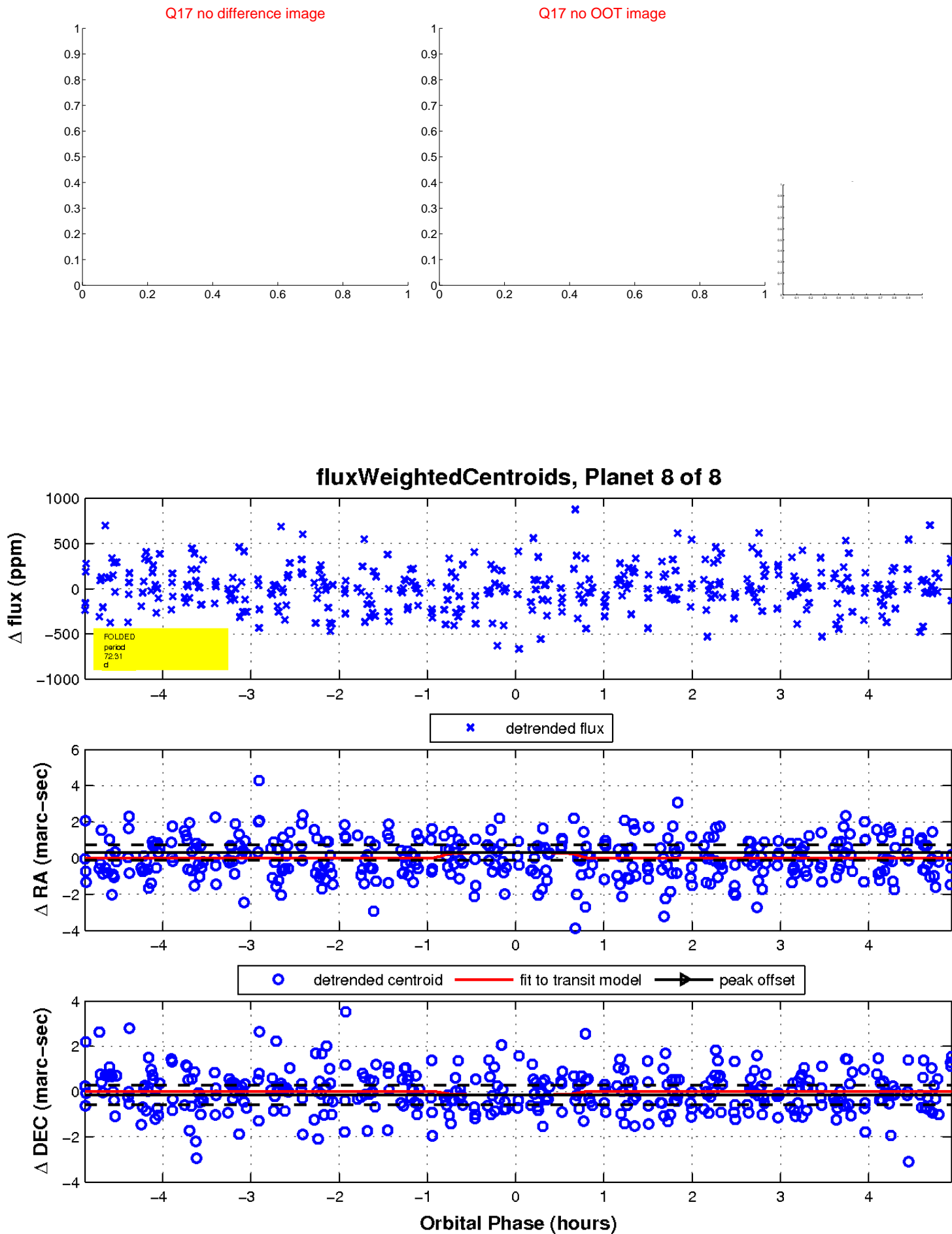
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

