

KIC 009467345

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})
009467345-01	OBS	No	4.415246	131.645559	69.0	11.744	12.3	15.1	2.58	6781	4.25	3266.58
009467345-02	OBS	No	2.207682	132.429638	0.0	10.018	10.2	0.0	2.58	6781	0.02	8230.97
009467345-03	OBS	No	78.152078	184.897456	178.3	9.752	14.0	9.1	2.58	6781	4.33	70.81
009467345-04	OBS	No	100.652567	218.951909	119.3	8.103	11.0	6.7	2.58	6781	3.15	50.54
009467345-06	OBS	No	51.400675	137.099853	132.6	4.334	10.5	10.5	2.58	6781	3.36	123.81
009467345-07	OBS	No	58.626862	170.839840	143.2	5.867	10.1	9.6	2.58	6781	3.12	103.89
009467345-08	OBS	No	148.852894	157.736395	0.1	12.958	10.4	0.0	2.58	6781	0.08	29.99
009467345-09	OBS	No	58.571174	176.260499	142.3	3.187	10.7	9.5	2.58	6781	3.55	104.02
009467345-10	OBS	No	104.022117	197.315739	97.6	10.990	9.3	5.5	2.58	6781	2.80	48.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009467345-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
009467345-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_SATURATED
009467345-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009467345-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

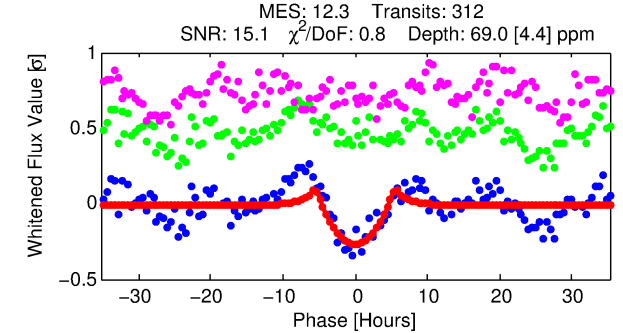
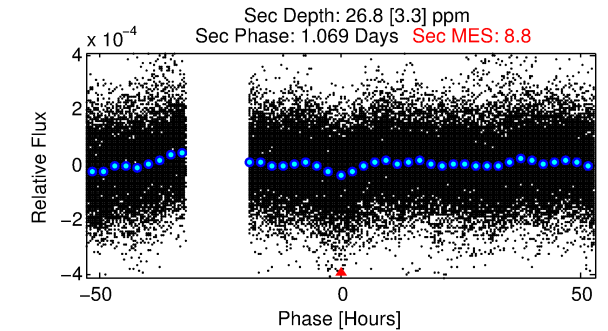
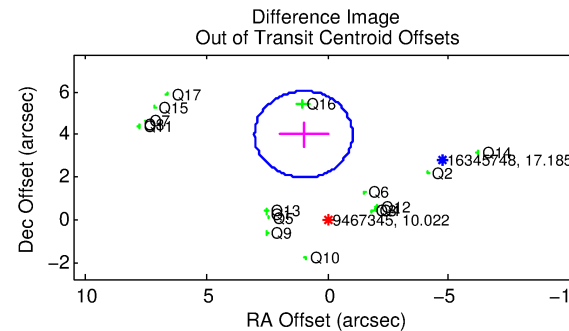
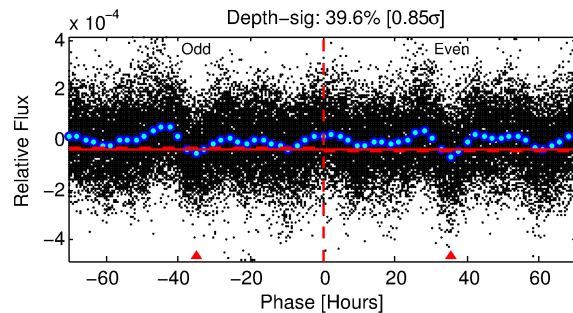
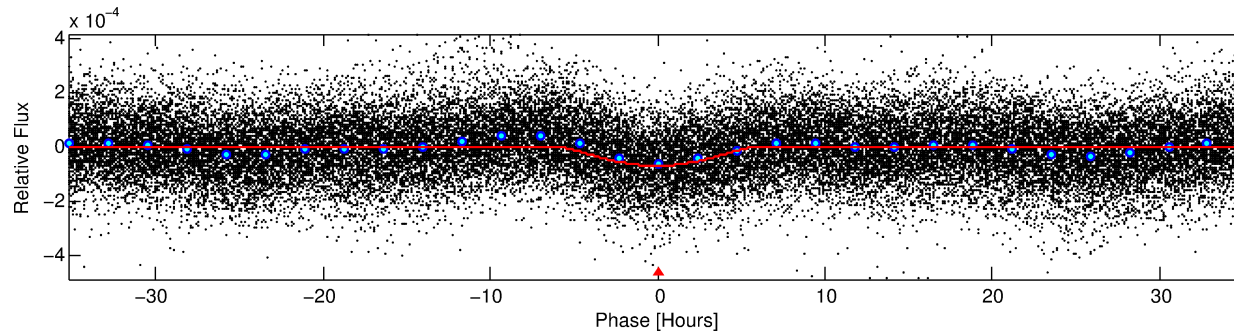
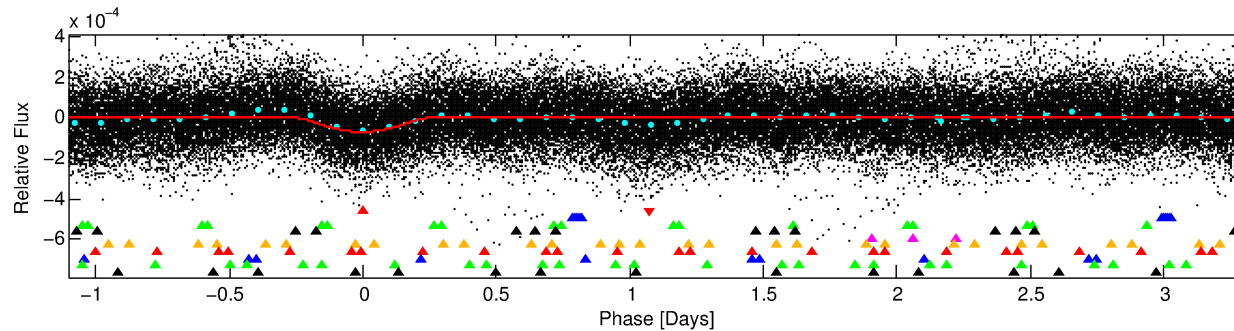
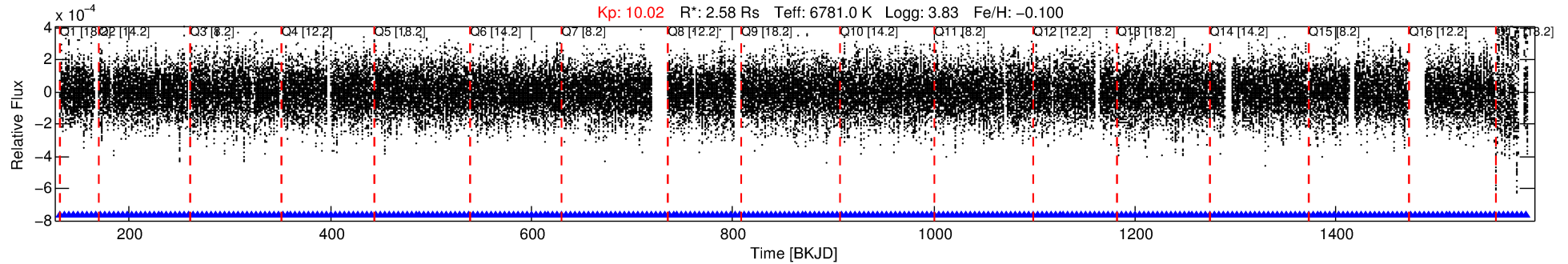
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009467345-01

No Significant Match Found

DV One-Page Summary

KIC: 9467345 Candidate: 1 of 10 Period: 4.415 d



DV Fit Results:

Period = 4.41525 [0.00007] d
Epoch = 131.6456 [0.0119] BKJD
Rp/R* = 0.0151 [0.0124]
a/R* = 1.13 [0.04]
b = 1.00 [0.02]
Seff = 3266.58 [1597.18]
Teq = 1928 [236] K
Rp = 4.25 [3.77] Re
a = 0.0620 [0.0191] AU
Ag = 3.13 [5.37] [0.40 σ]
Teff = 3966 [1635] K [1.23 σ]

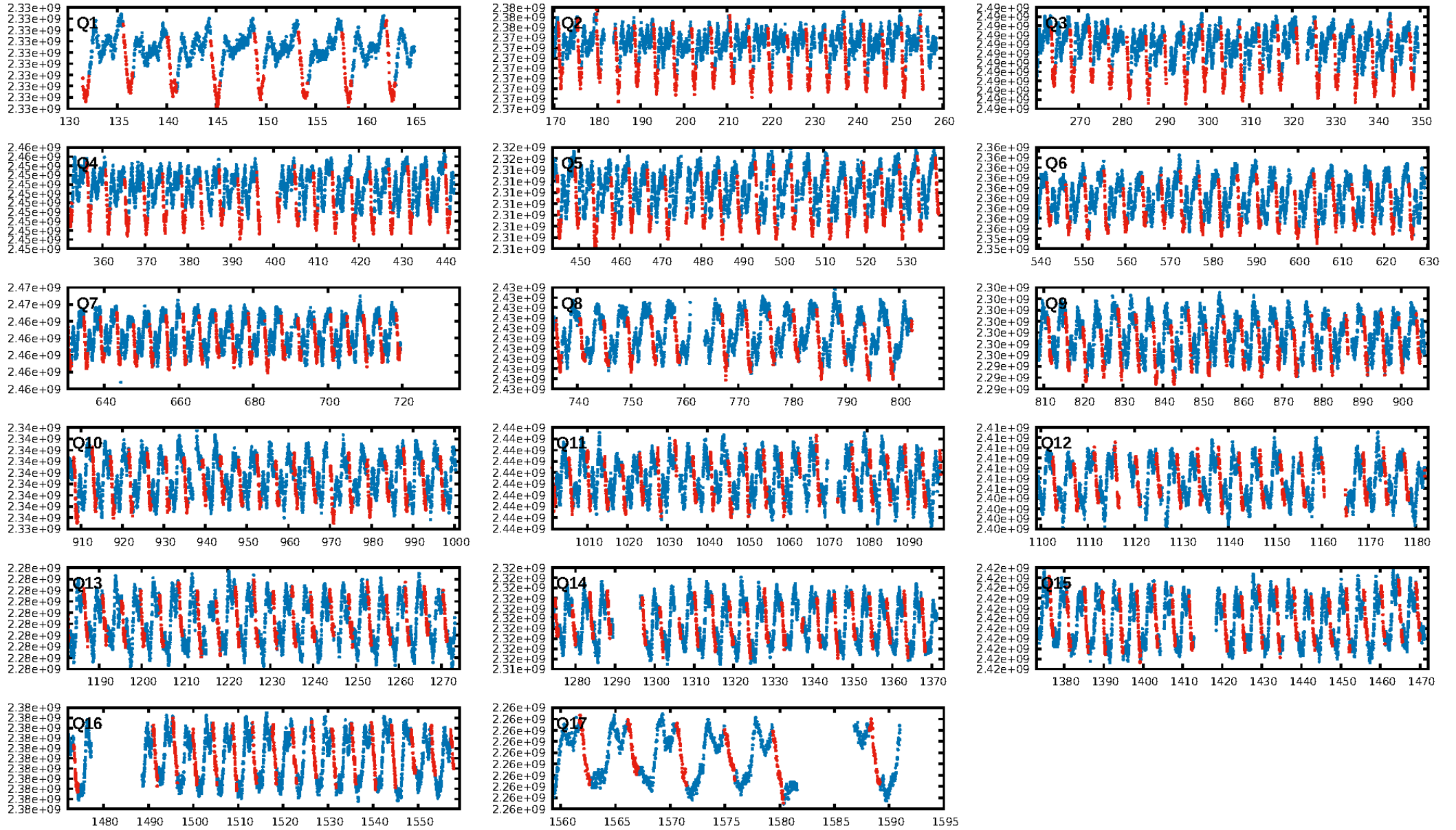
DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.43 σ]
LongPeriod-sig: 100.0% [90.08 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [298/298]
GhostDiagnostic-chr: N/A
Centroid-sig: 24.5%
Centroid-so: 0.138 arcsec [0.47 σ]
OotOffset-rm: 4.132 arcsec [6.13 σ]
KicOffset-rm: 4.773 arcsec [5.14 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 0.00 [0/17]

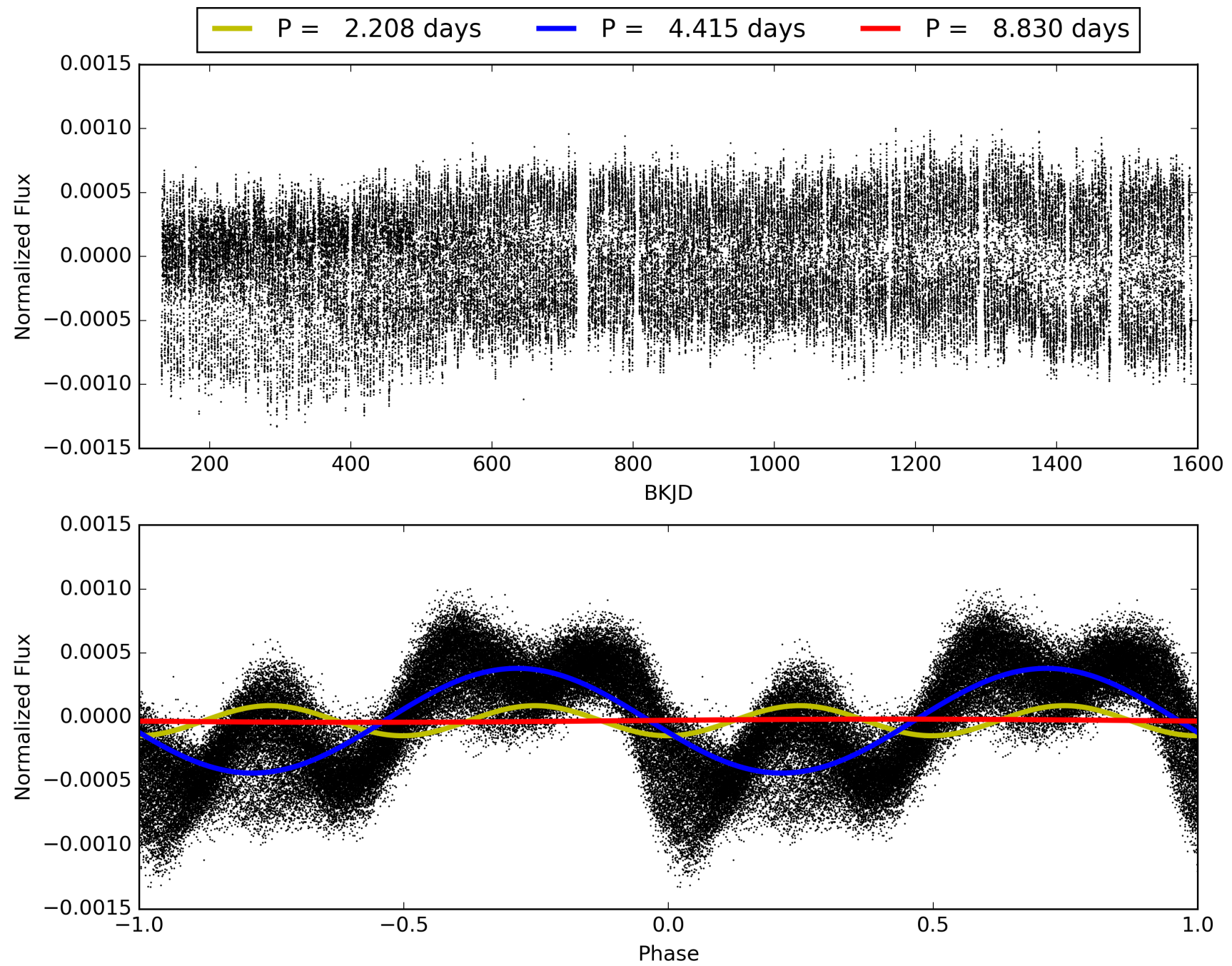
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:46:42 Z

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

TCE 009467345-01, PDC Light Curves

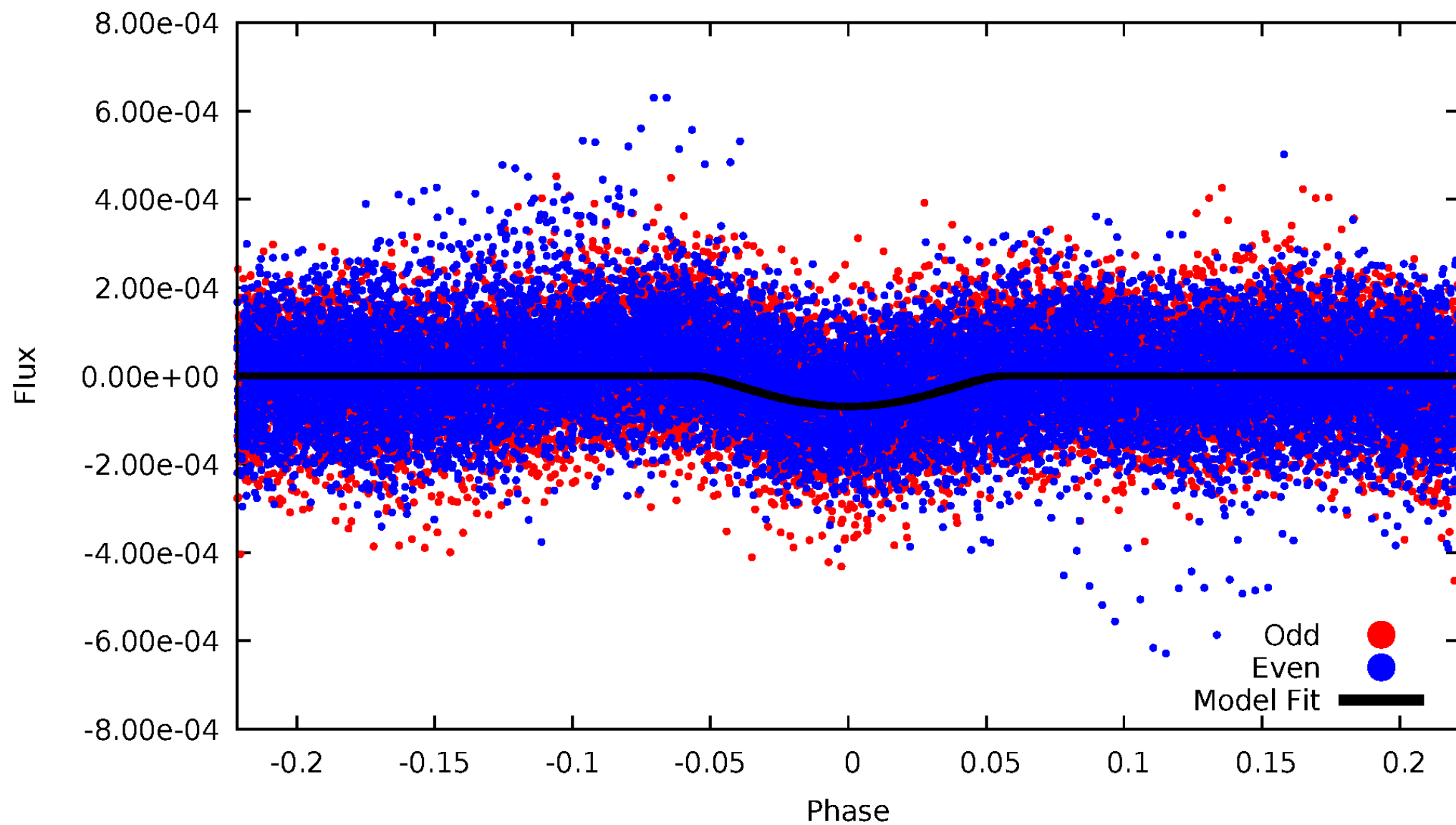


TCE 009467345-01



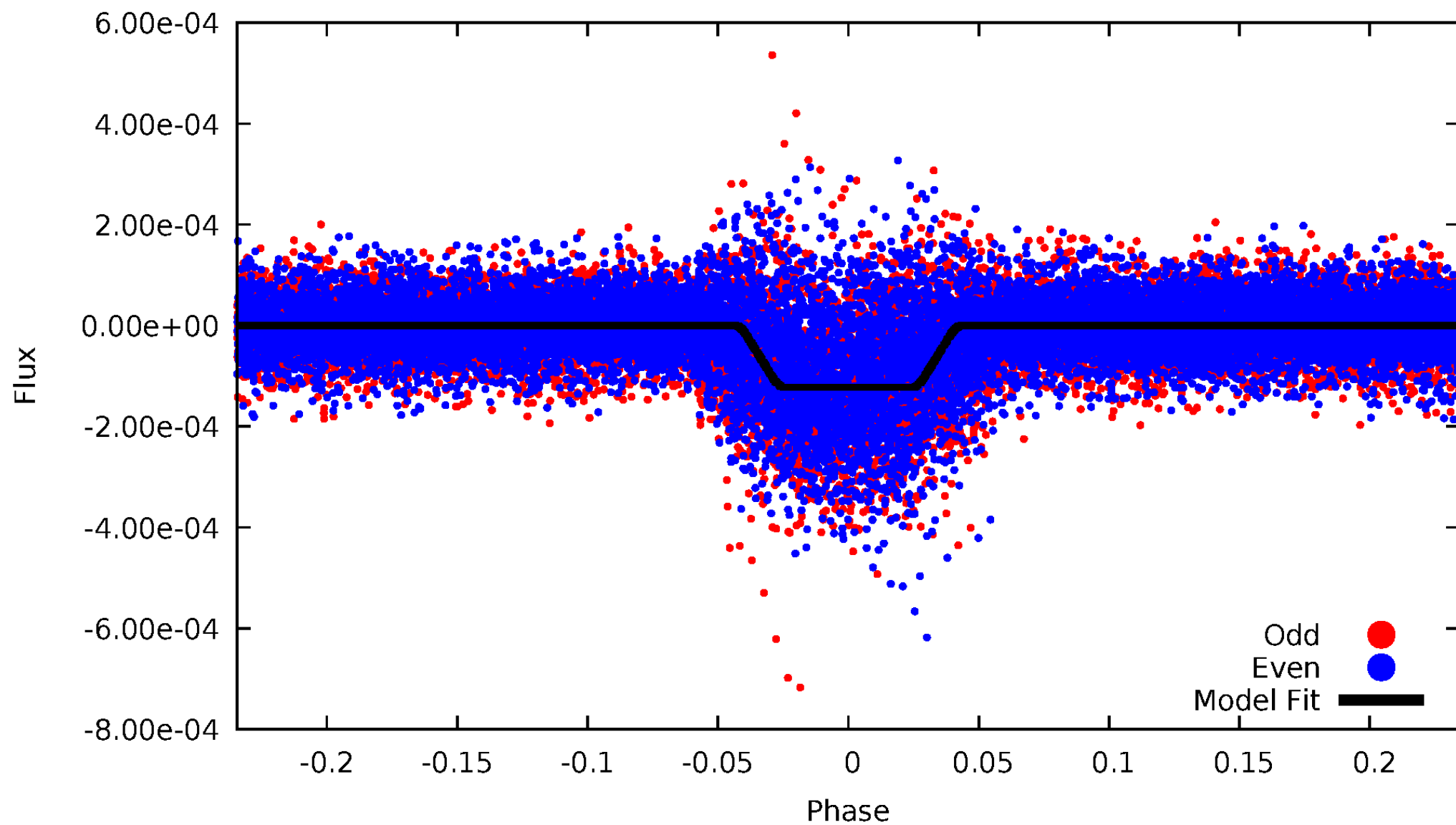
DV Odd/Even

TCE 009467345-01



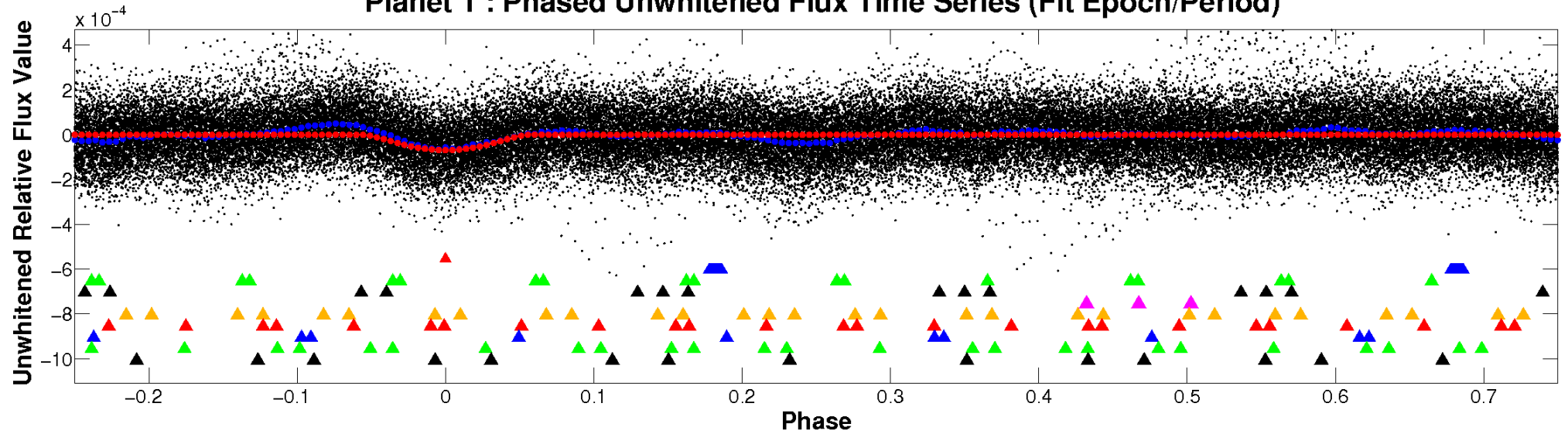
ALT Odd/Even

TCE 009467345-01

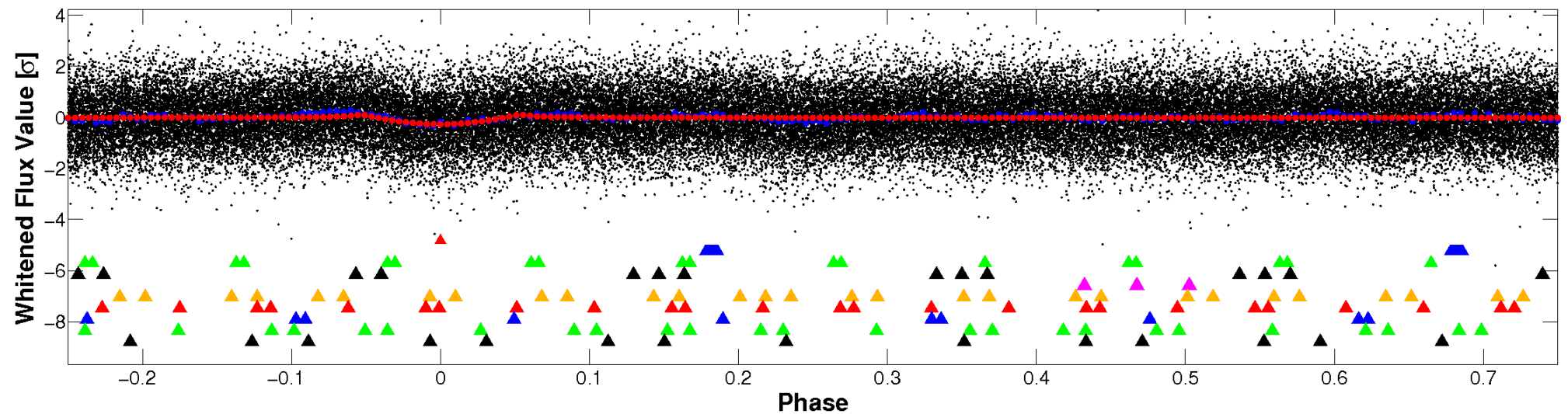


Non-Whitened Vs. Whitened Light Curve

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

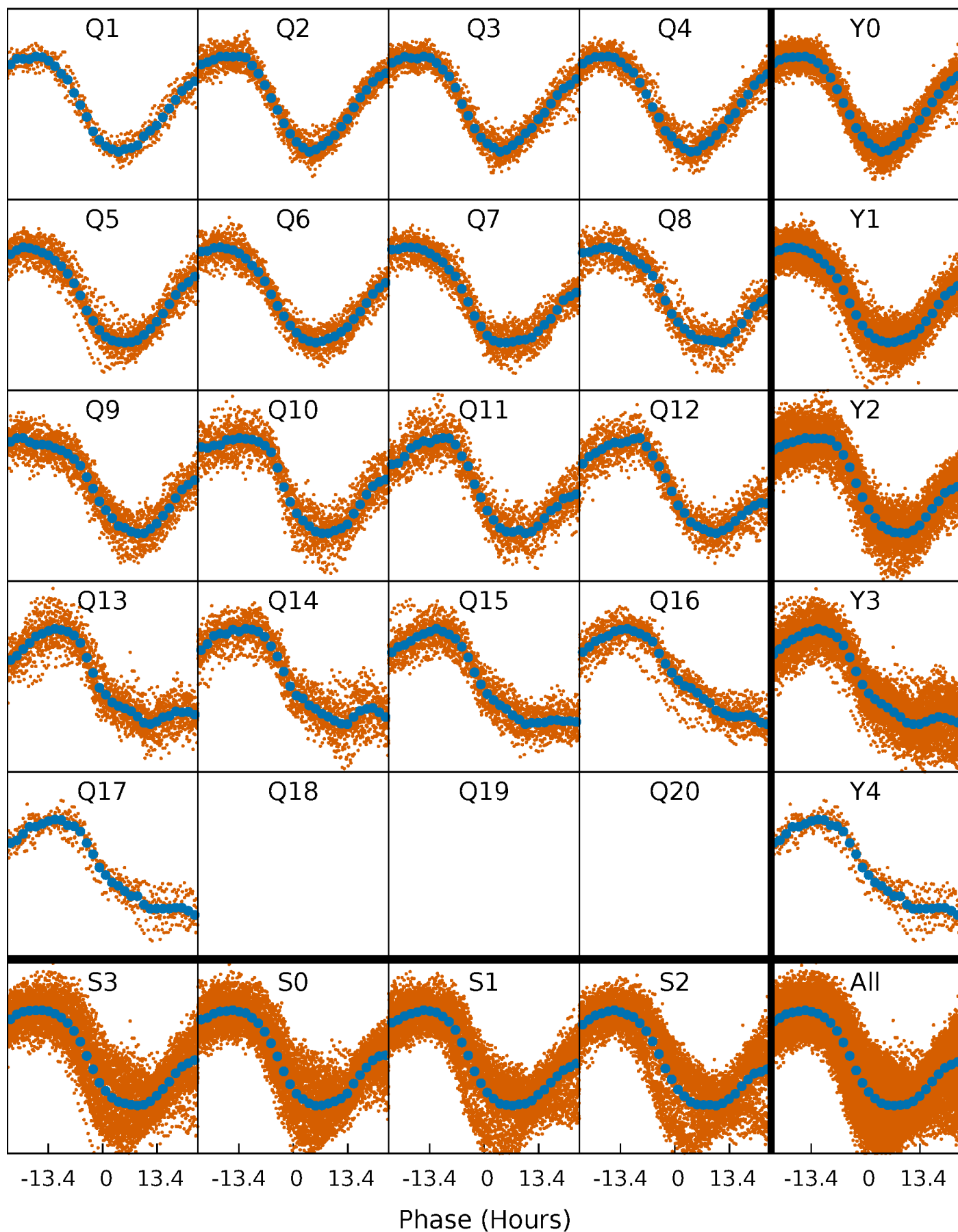


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



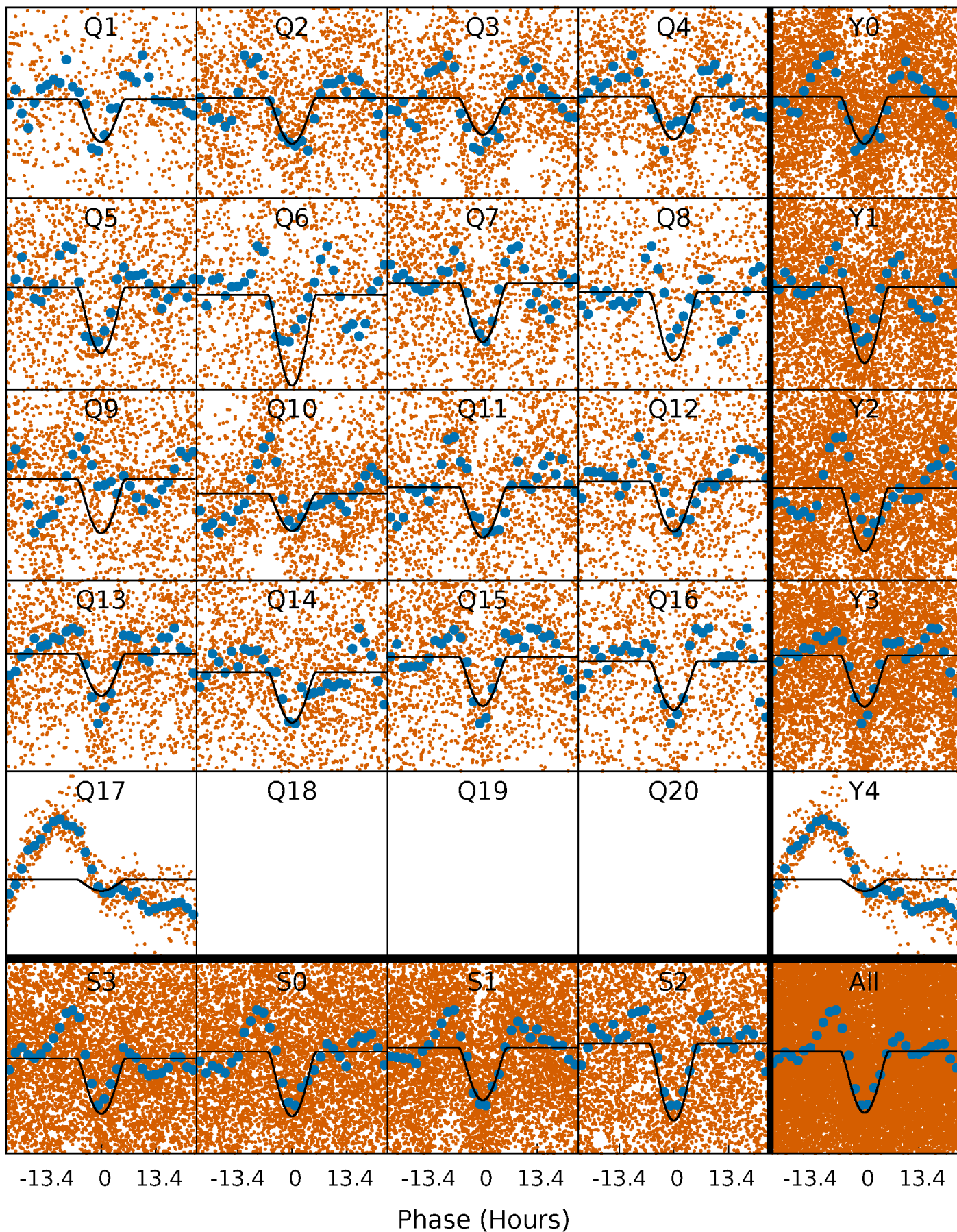
PDC Quarter-Phased Transit Curves

TCE 009467345-01 P= 4.415246 Days $T_0=131.645559$ (BKJD)



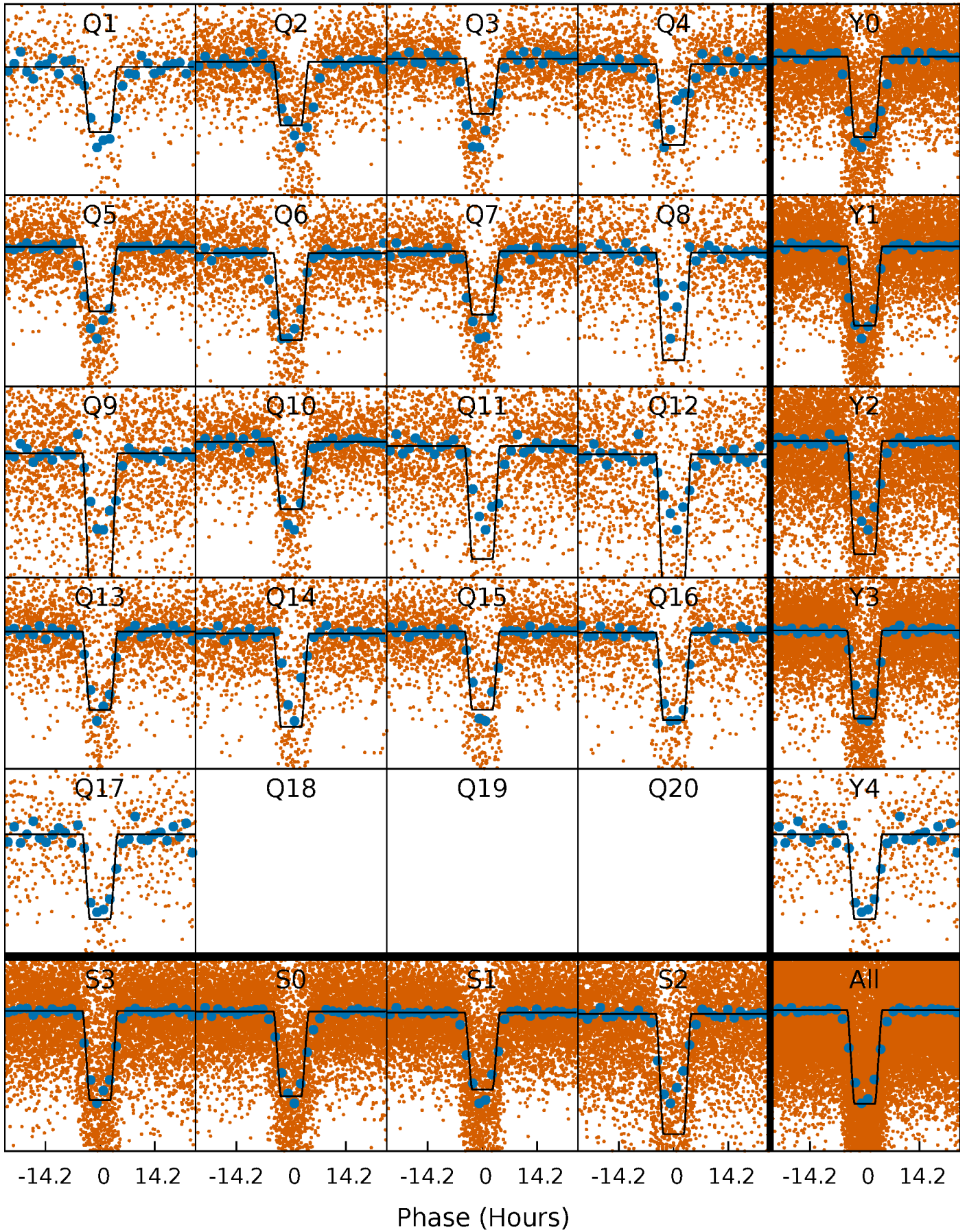
DV Quarter-Phased Transit Curves

TCE 009467345-01 P= 4.415246 Days $T_0=131.645559$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

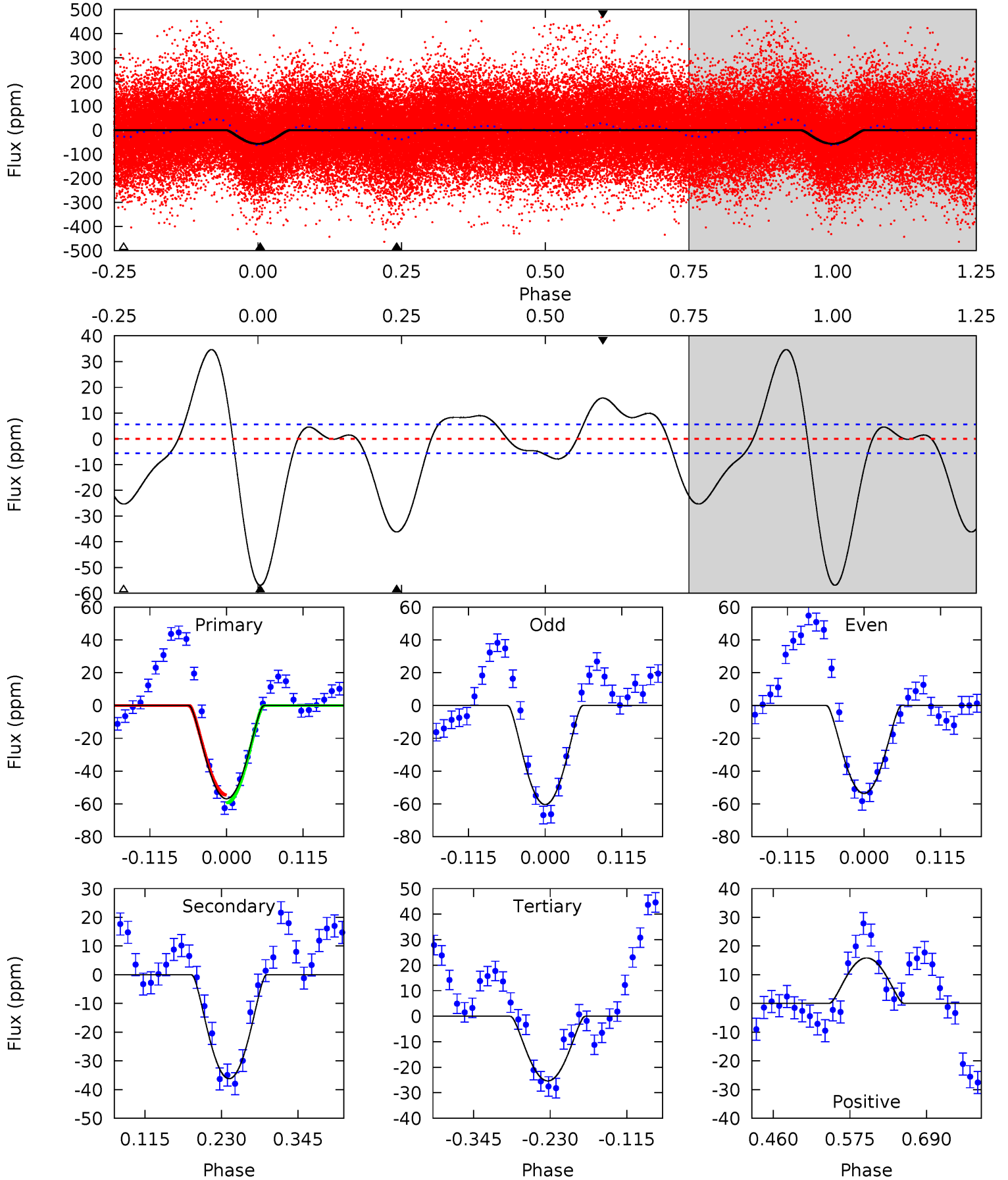
TCE 009467345-01 P= 4.415276 Days $T_0=131.621405$ (BKJD)



DV Model-Shift Uniqueness Test

009467345-01, P = 4.415246 Days, E = 127.230313 Days

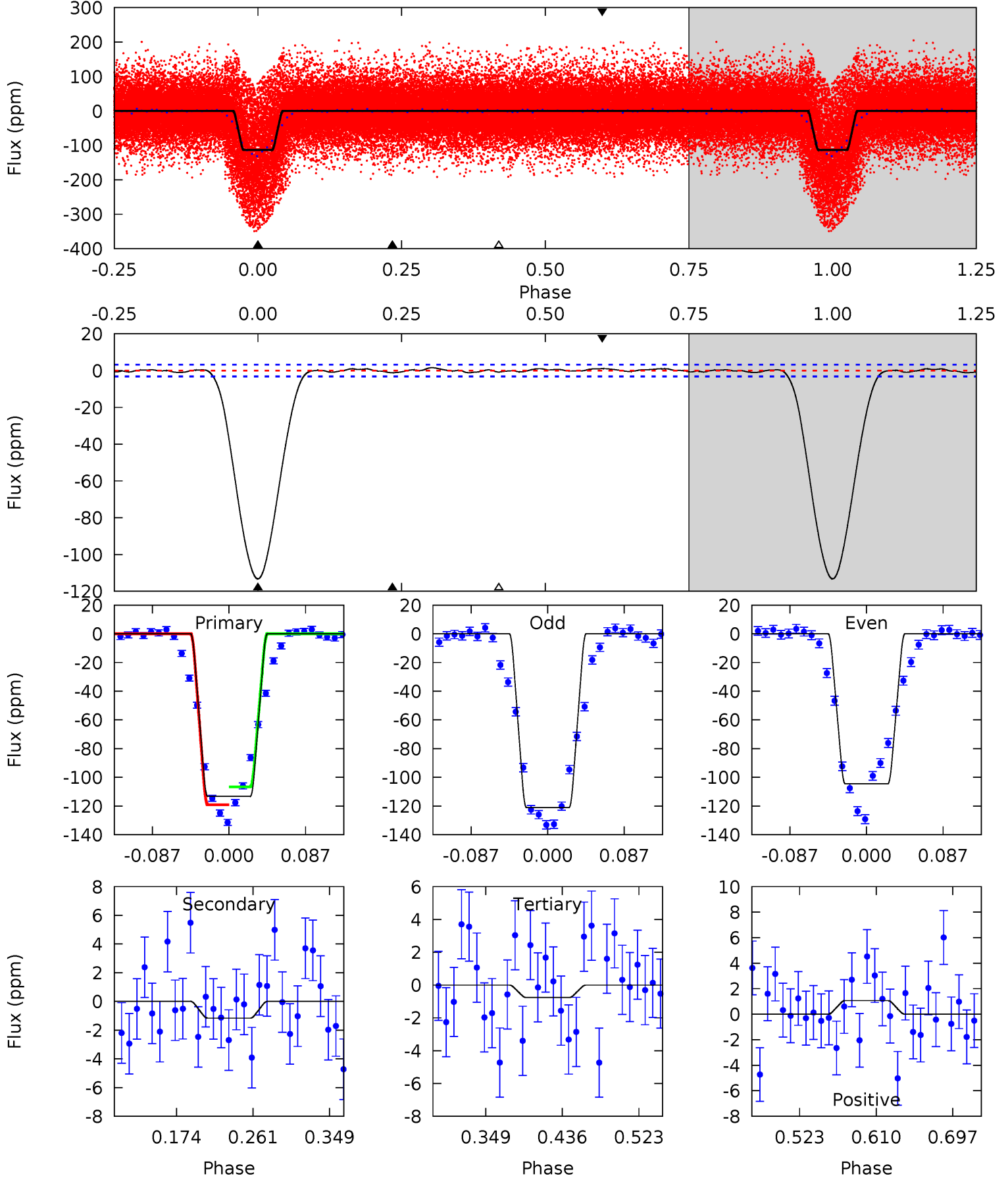
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.9	29.2	20.4	12.8	4.54	1.58	8.96	25.4	33.1	8.76	16.4	2.74	1.11	0.38	1.95



Alt Model-Shift Uniqueness Test

009467345-01, P = 4.415276 Days, E = 127.206129 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
162.3	1.67	1.09	1.53	4.59	1.71	0.80	161.2	160.7	0.57	0.14	11.8	1.00	0.01	0



Stellar Parameters For KIC 009467345

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6781^{+170}_{-187}	$3.829^{+0.273}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.576^{+0.471}_{-0.875}$	$1.631^{+0.180}_{-0.335}$	$0.135^{+0.242}_{-0.048}$
	+3%/-3%	+7%/-3%	+300%/-250%	+18%/-34%	+11%/-21%	+180%/-36%
Source	PHO1	FLK73	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 009467345-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-36 ± 1	$4.63^{+3.38}_{-2.58}$	2664^{+165}_{-226}	4127^{+1744}_{-735}	$3.504^{+14.214}_{-2.307}$
Alt.	-1 ± 1	$3.76^{+2.94}_{-2.23}$	2657^{+159}_{-208}	-2591^{+5806}_{-273}	$0.156^{+0.830}_{-0.121}$

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 $A_{obs} \gg 1.0$

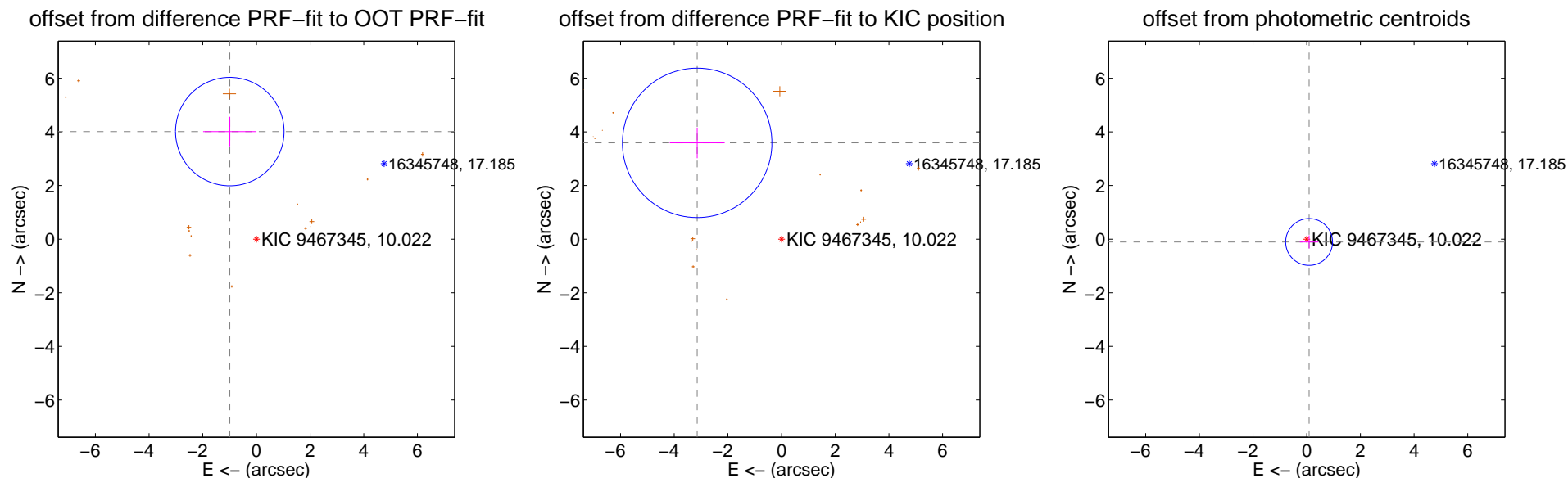
DV Centroid Data

Supplemental centroid analysis for 009467345-01. **Kepler magnitude: 10.02.** Transit SNR 15.11

There are 0 quarters with good PRF difference image offsets

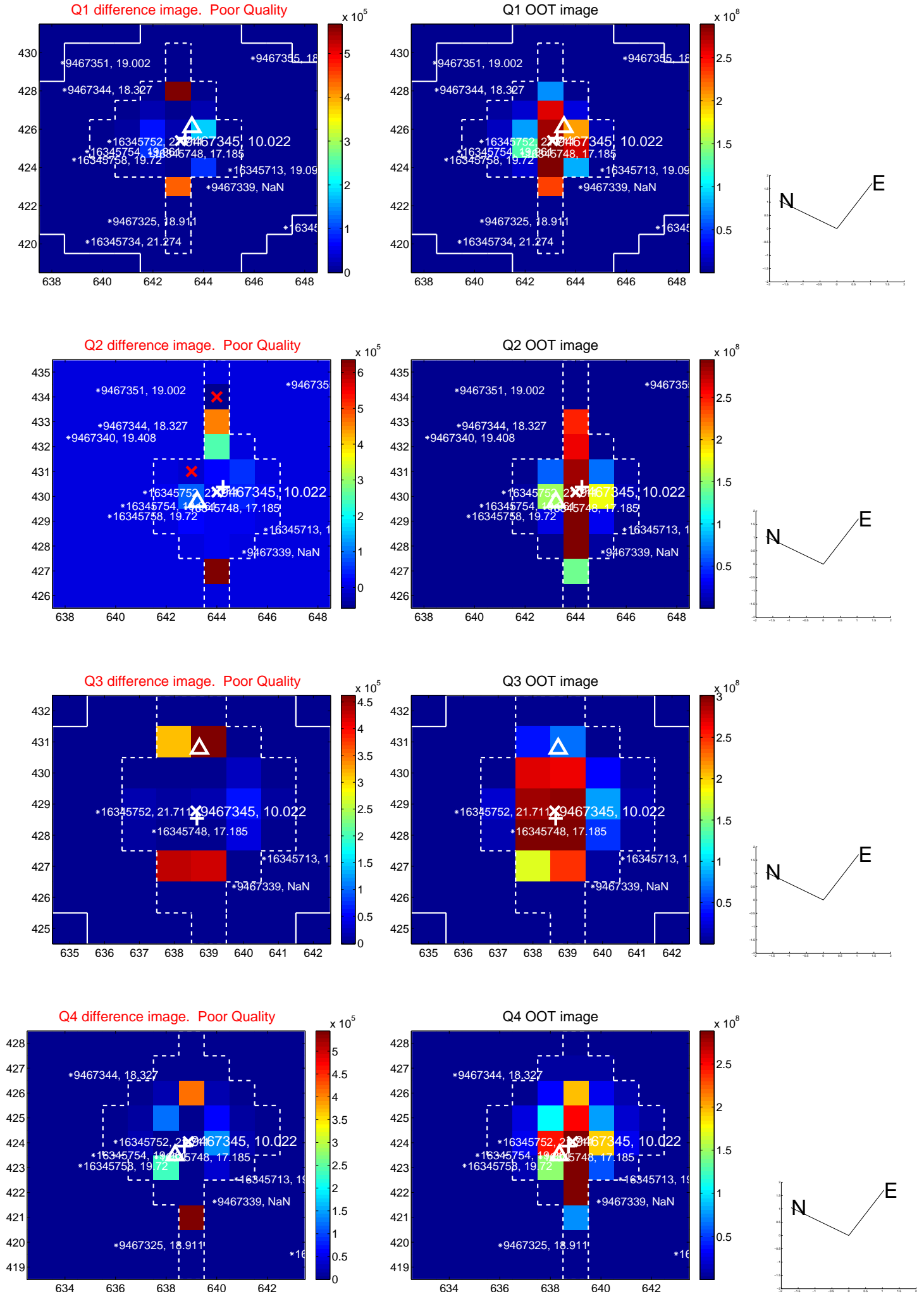
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.132 \pm 0.674	6.13	0.992 \pm 0.994	4.012 \pm 0.550
PRF-fit source offset from KIC position	4.773 \pm 0.928	5.14	3.145 \pm 1.024	3.590 \pm 0.571
photometric centroid source offset	0.14 \pm 0.29	0.47	-0.09 \pm 0.34	-0.11 \pm 0.25

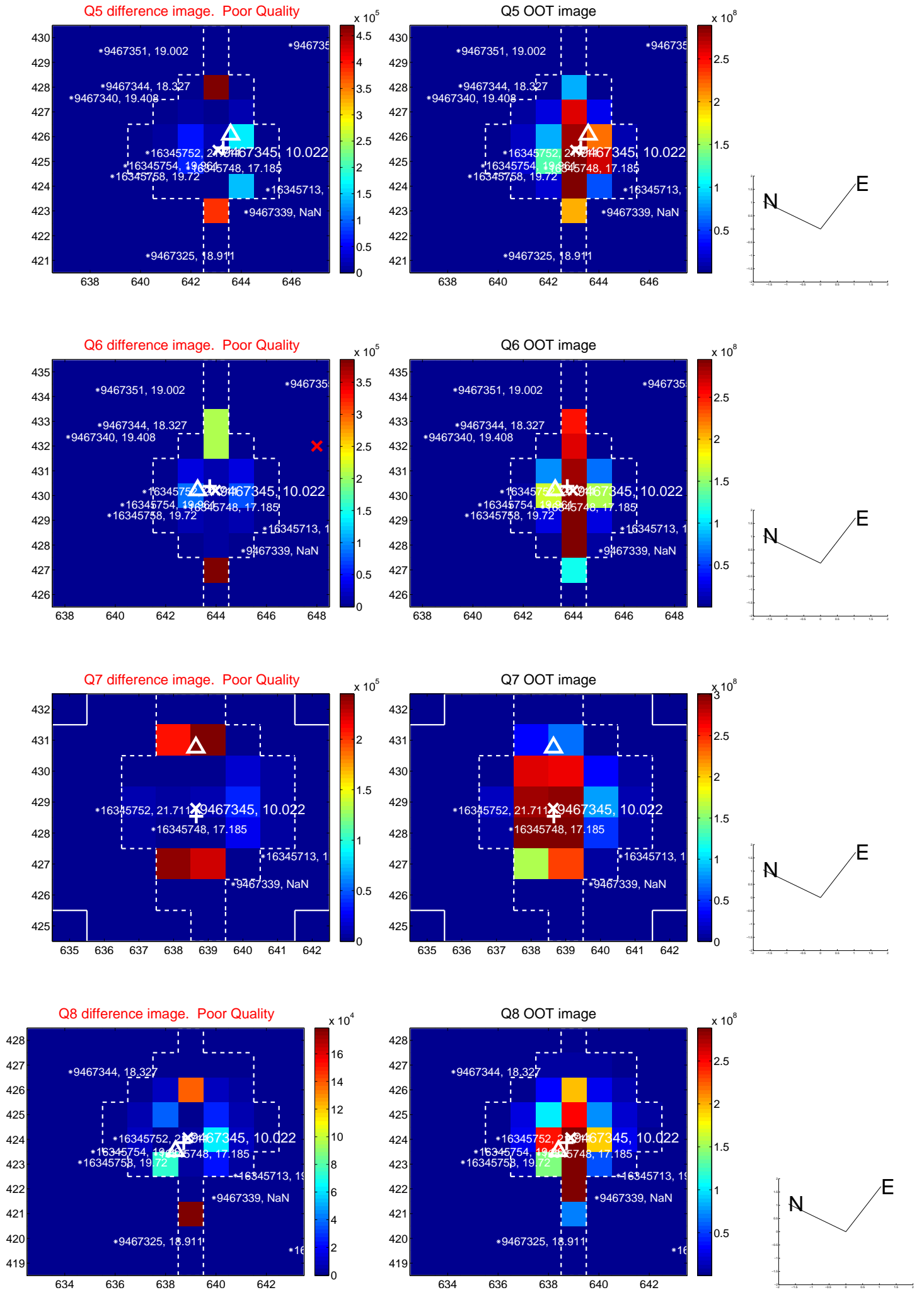


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

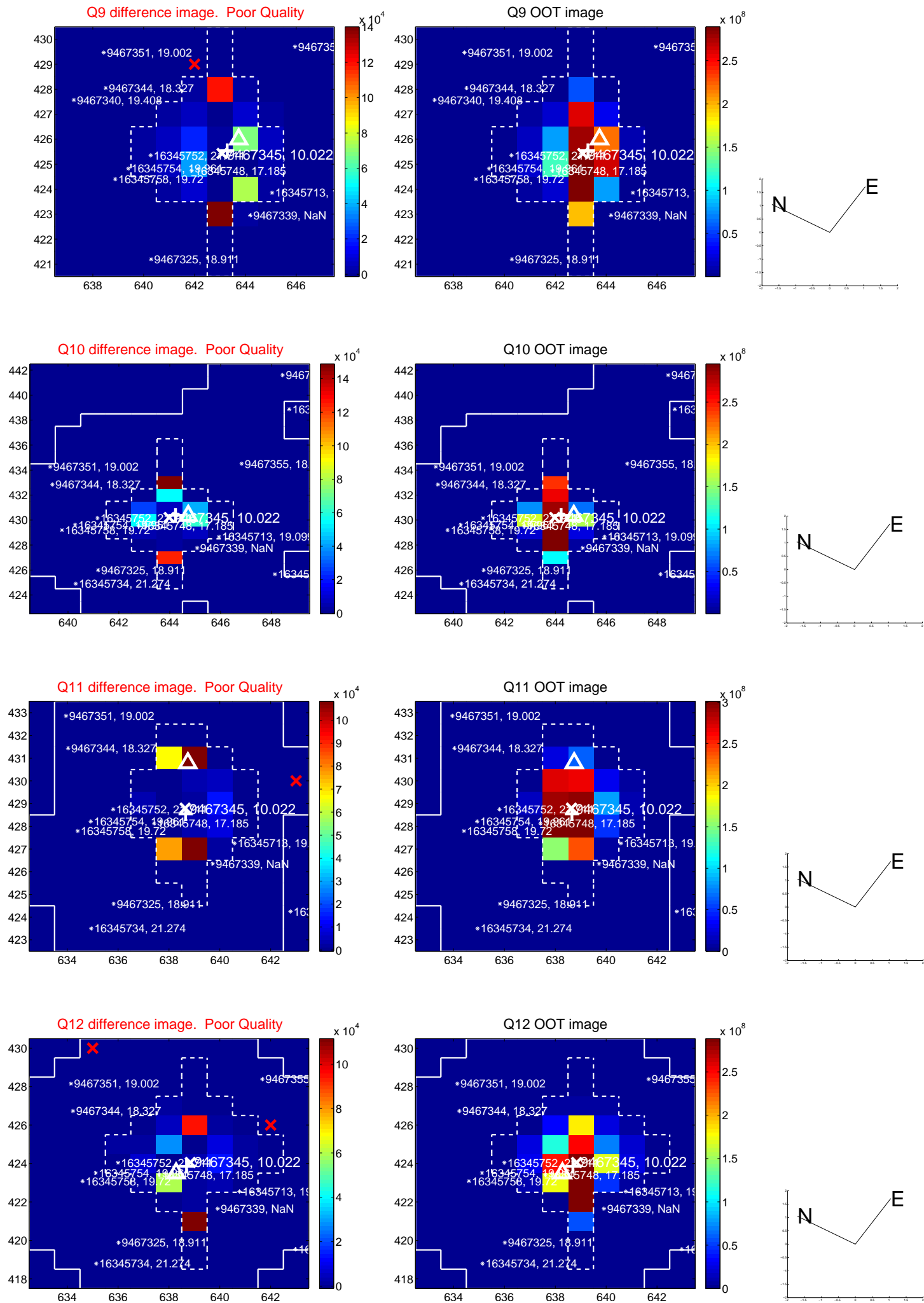
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



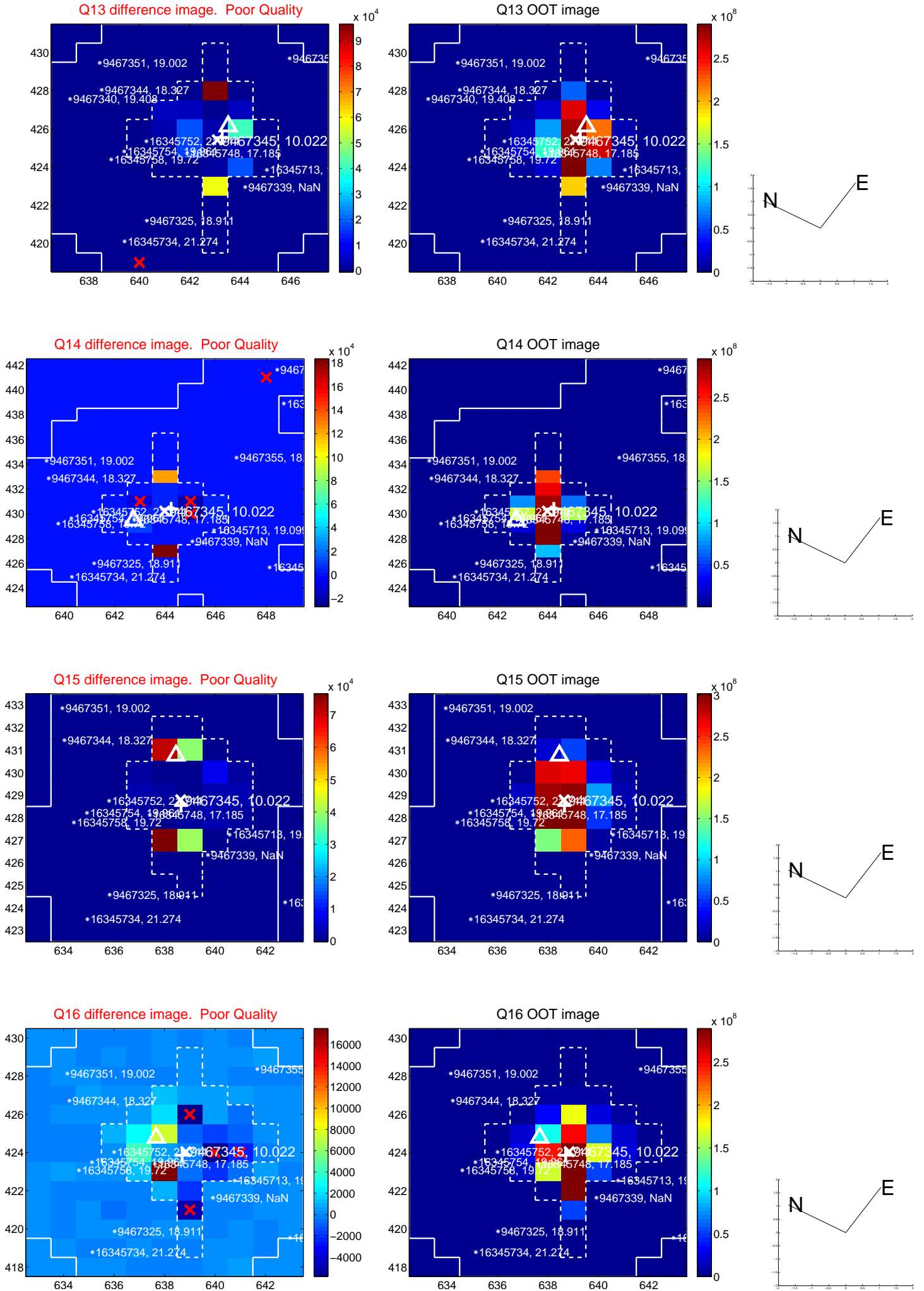
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



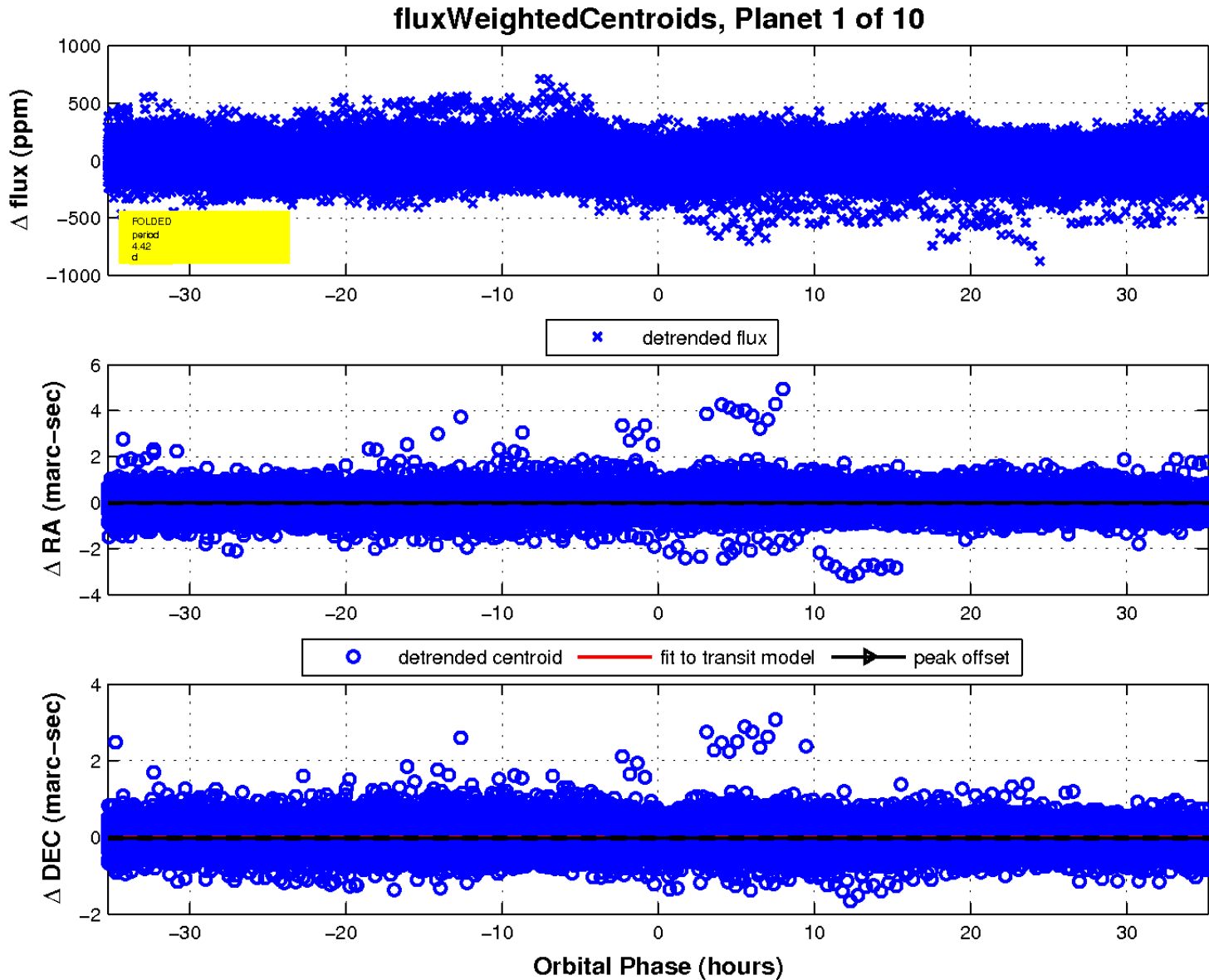
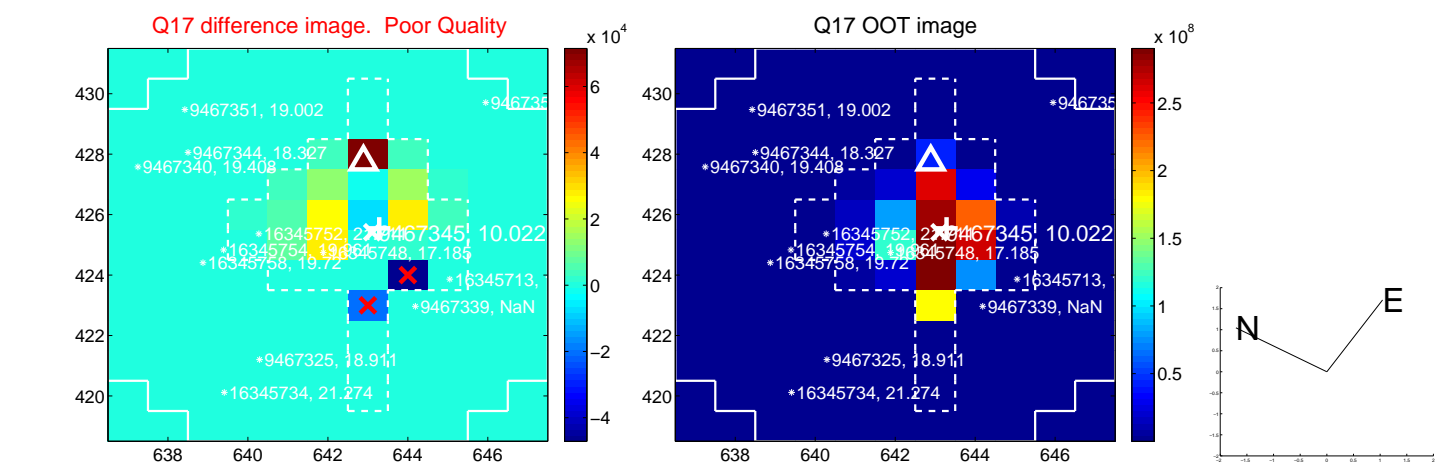
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



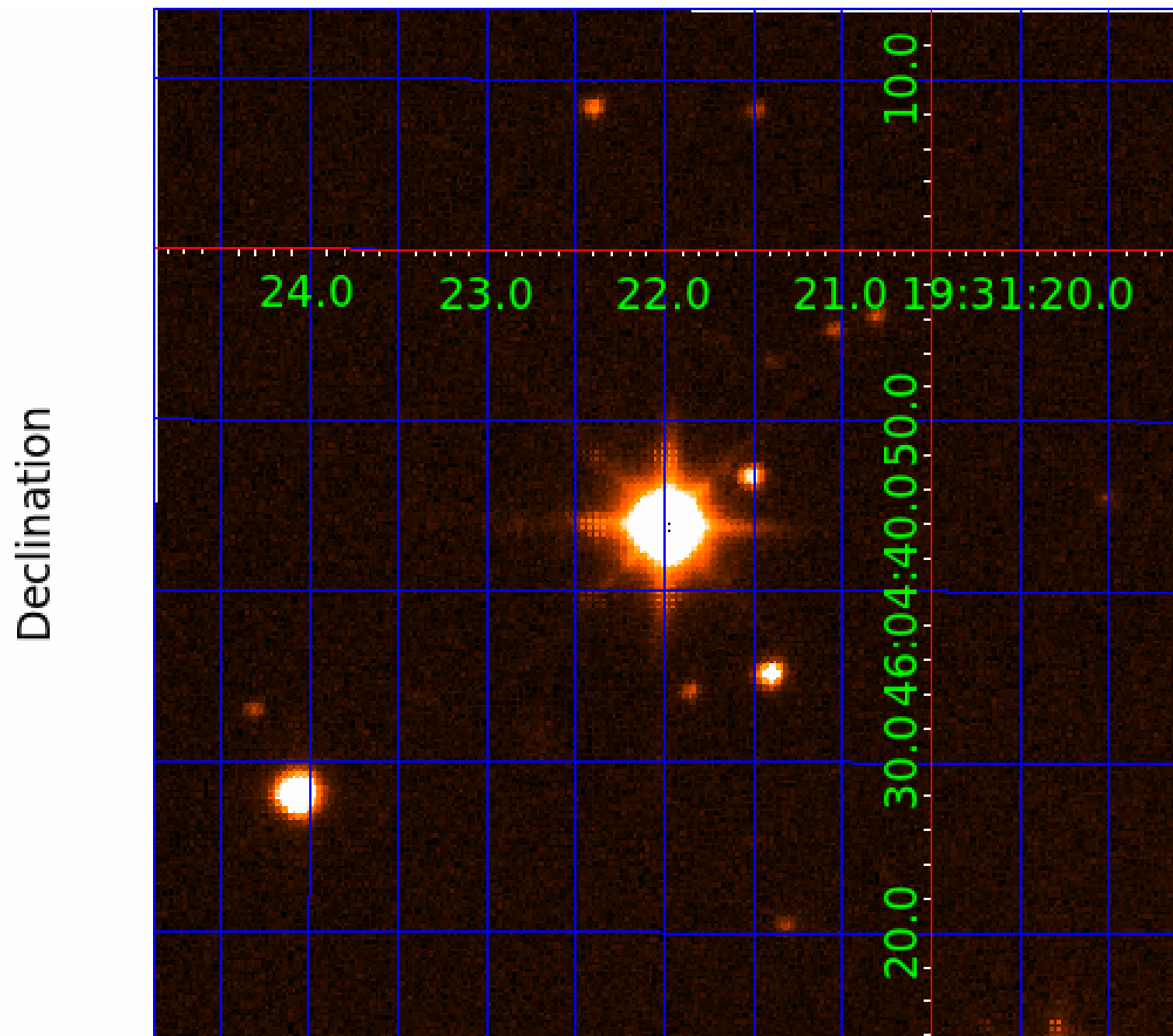
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009467345

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})
009467345-01	OBS	No	4.415246	131.645559	69.0	11.744	12.3	15.1	2.58	6781	4.25	3266.58
009467345-02	OBS	No	2.207682	132.429638	0.0	10.018	10.2	0.0	2.58	6781	0.02	8230.97
009467345-03	OBS	No	78.152078	184.897456	178.3	9.752	14.0	9.1	2.58	6781	4.33	70.81
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009467345-08	OBS	No	148.852894	157.736395	0.1	12.958	10.4	0.0	2.58	6781	0.08	29.99
009467345-09	OBS	No	58.571174	176.260499	142.3	3.187	10.7	9.5	2.58	6781	3.55	104.02
009467345-10	OBS	No	104.022117	197.315739	97.6	10.990	9.3	5.5	2.58	6781	2.80	48.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009467345-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
009467345-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_SATURATED
009467345-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009467345-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

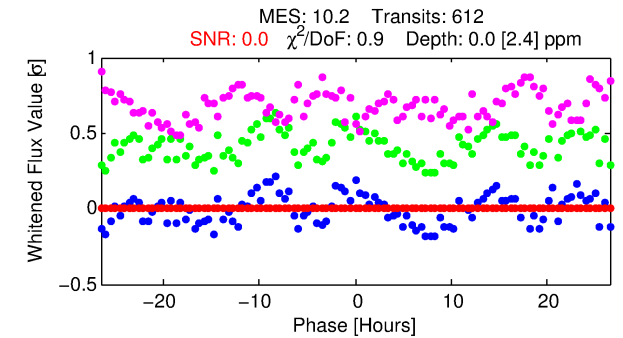
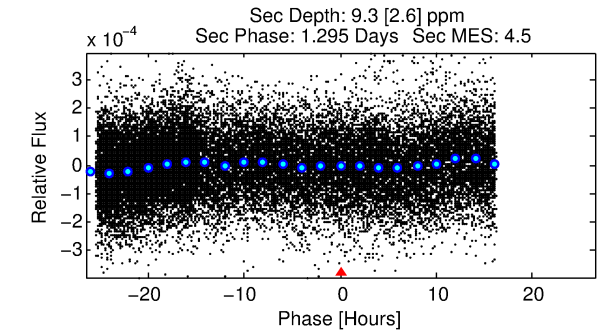
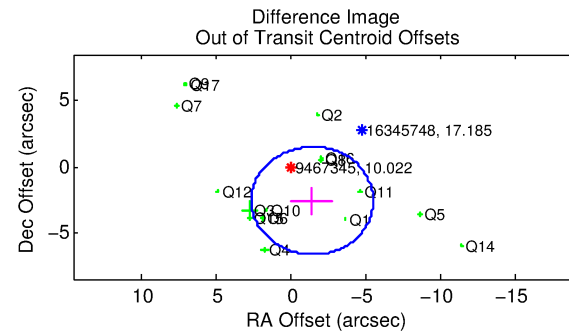
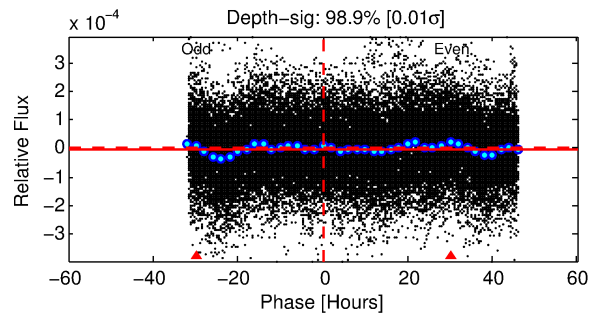
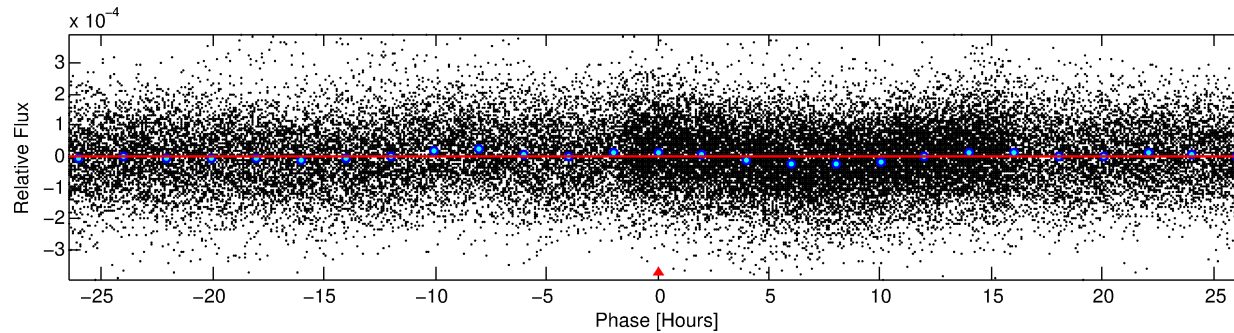
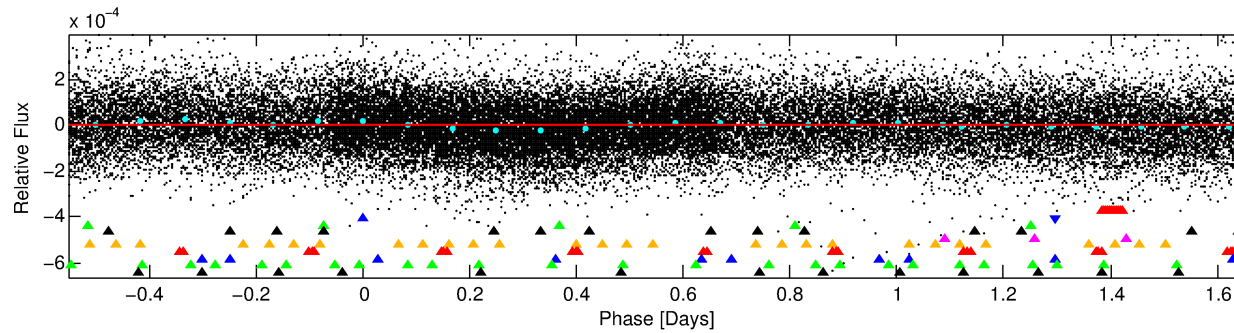
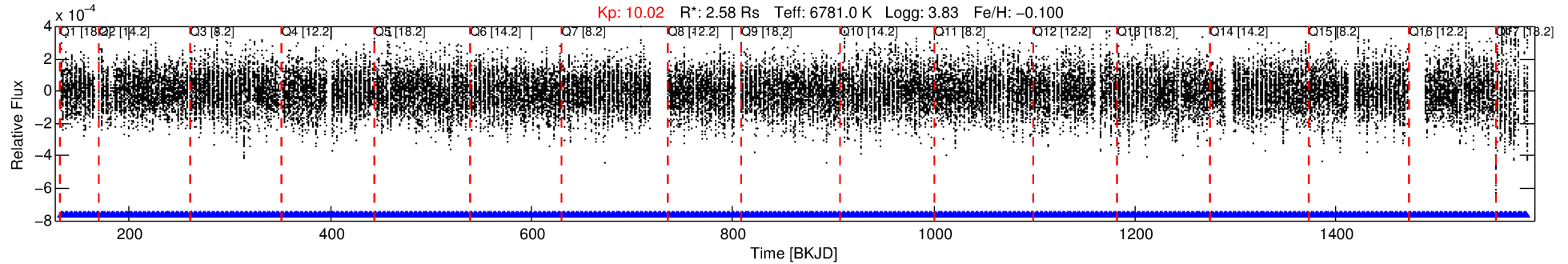
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009467345-02

No Significant Match Found

DV One-Page Summary

KIC: 9467345 Candidate: 2 of 10 Period: 2.208 d



DV Fit Results:

Period = 2.20768 [0.12278] d
Epoch = 132.4296 [24.3294] BKJD
Rp/R* = 0.0001 [0.0231]
a/R* = 1.20 [18.77]
b = 0.90 [18.46]
Seff = 8230.97 [4070.51]
Teq = 2429 [300] K
Rp = 0.02 [6.50] Re
a = 0.0391 [0.0121] AU
Ag = 28441.31 [22290590.13] [0.00 σ]
Teffp = 48766 [9555254] K [0.00 σ]

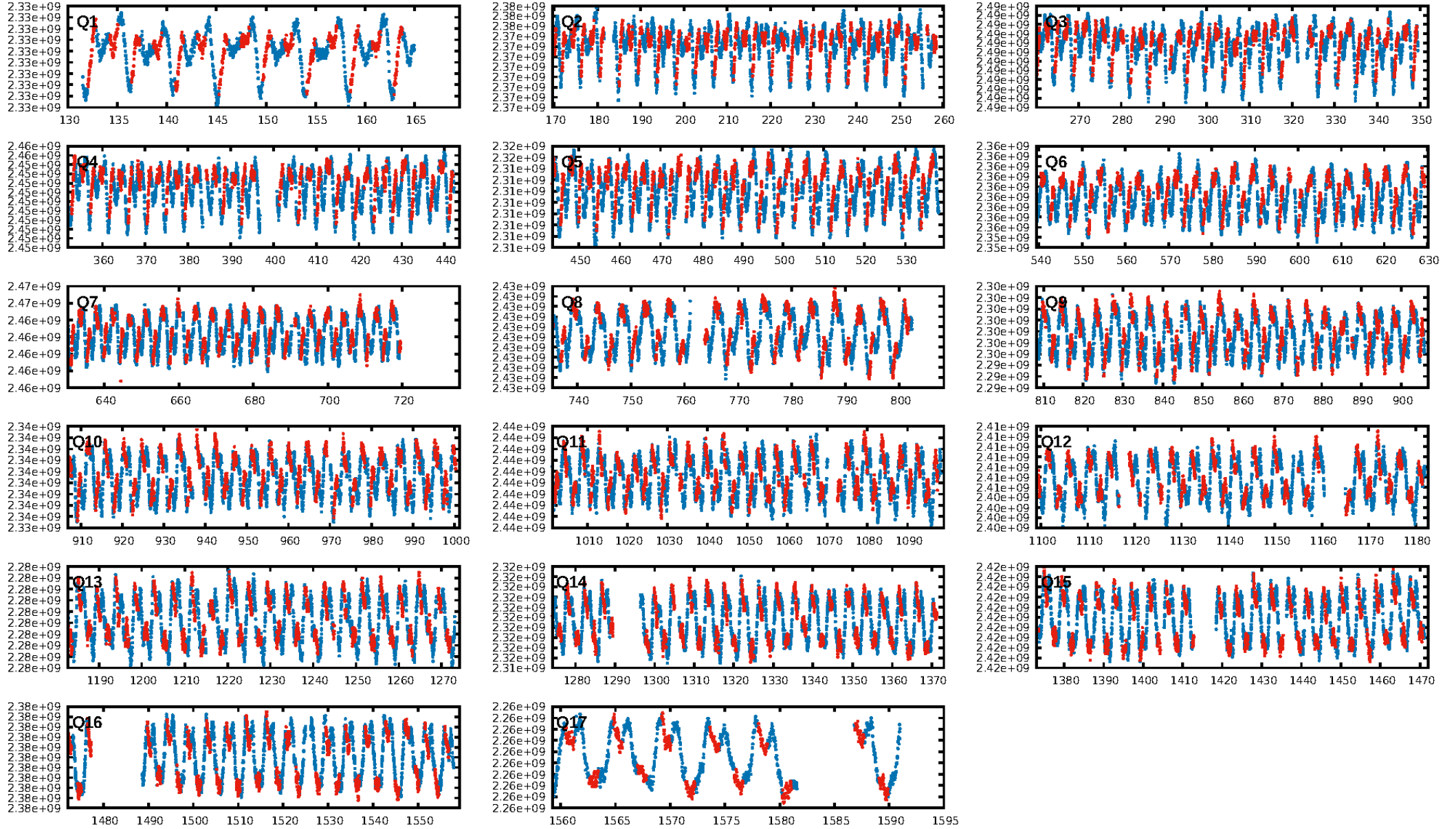
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.9% [3.43 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [585/585]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 2.972 arcsec [2.19 σ]
KicOffset-rm: 2.909 arcsec [2.25 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.12 [2/16]
DiffImageOverlap-fno: 1.00 [17/17]

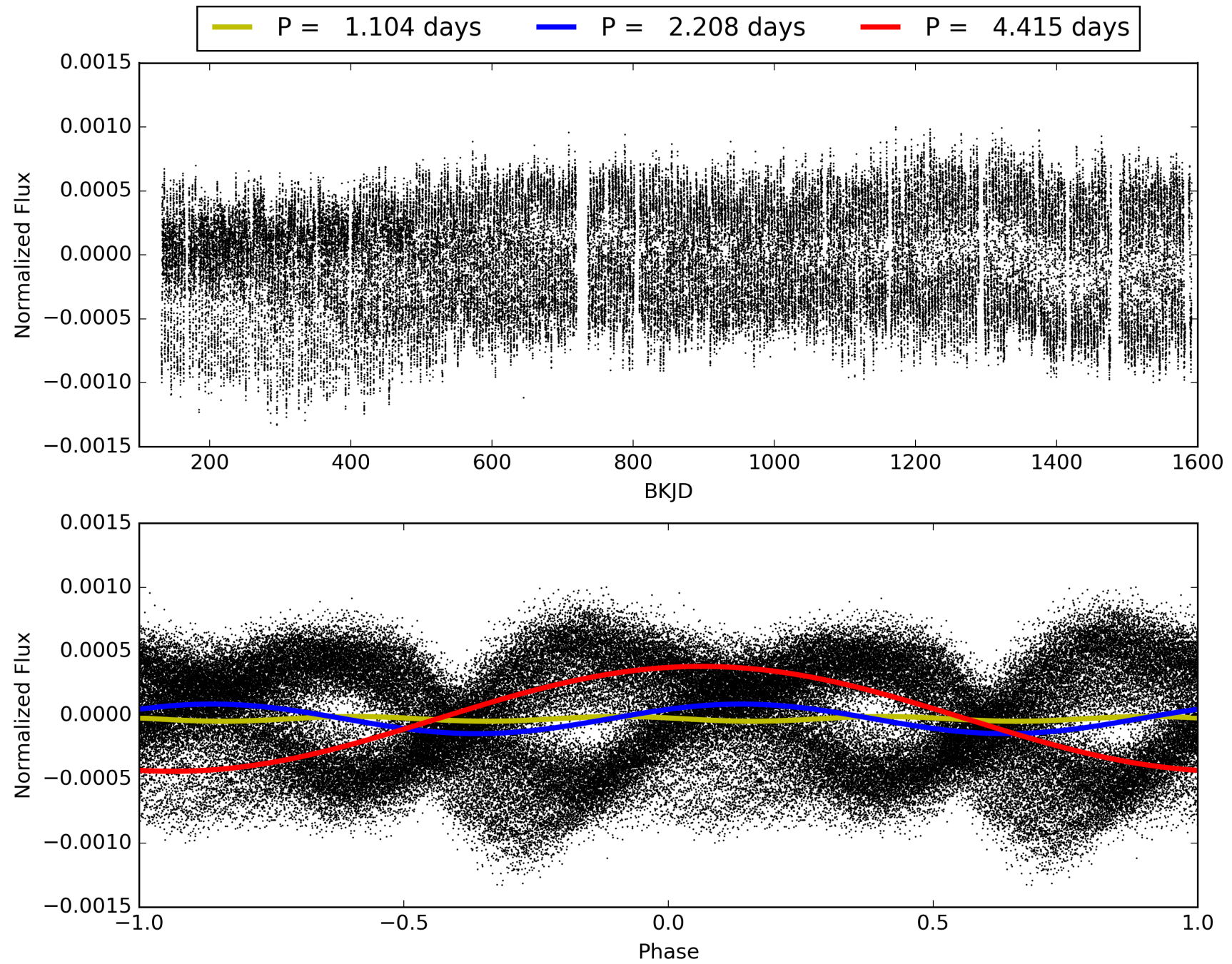
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:46:54 Z

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

TCE 009467345-02, PDC Light Curves

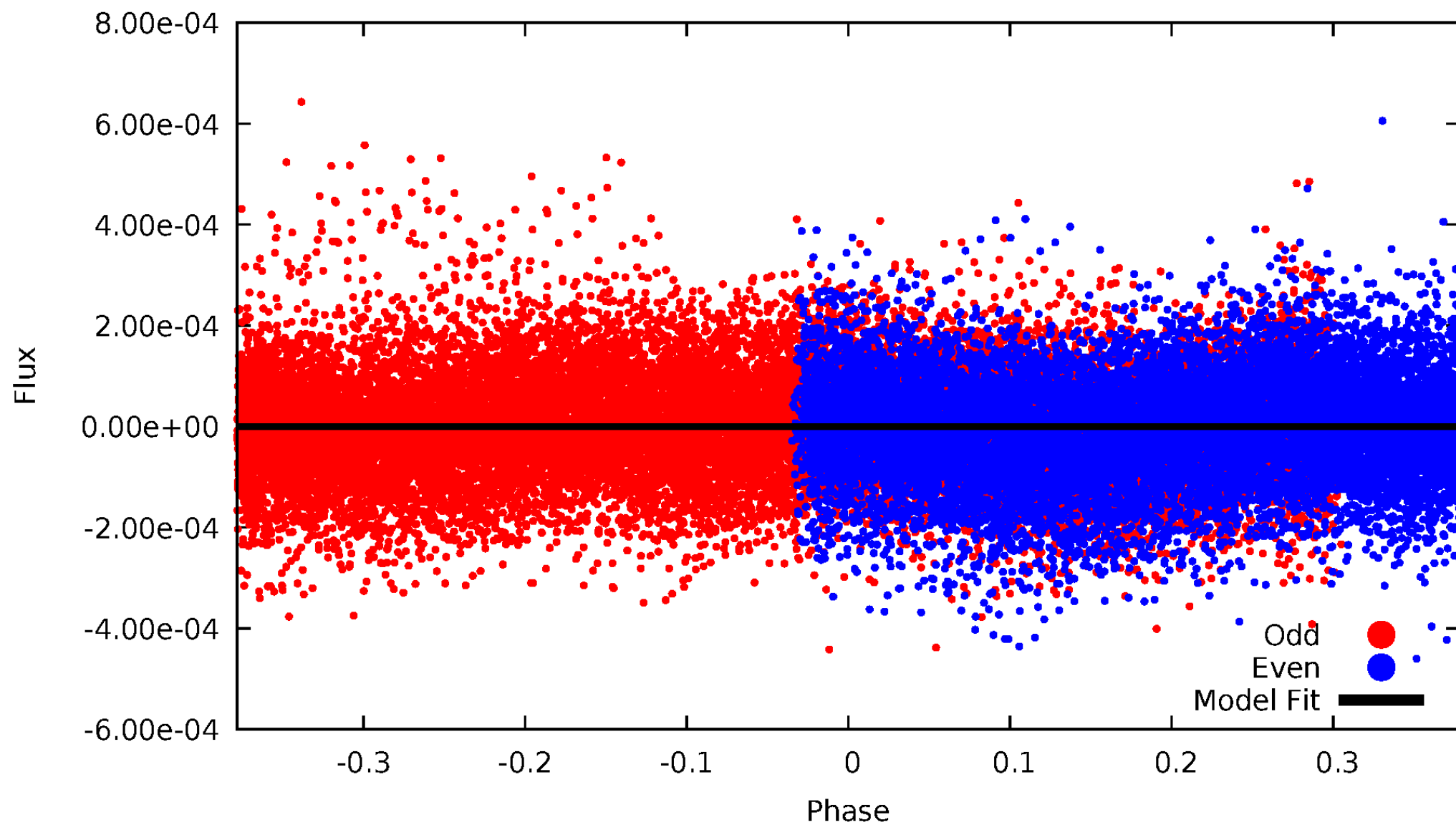


TCE 009467345-02



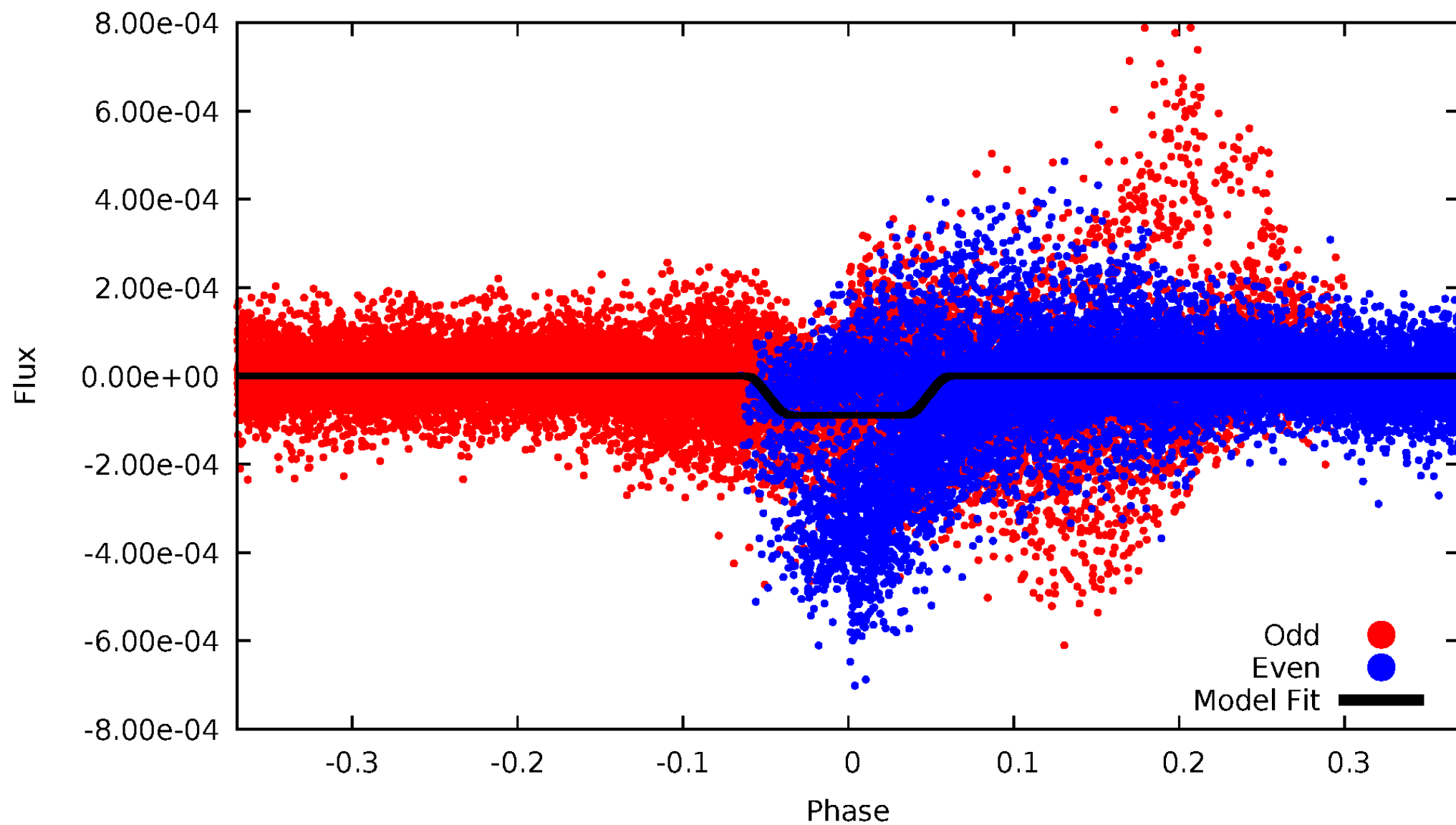
DV Odd/Even

TCE 009467345-02



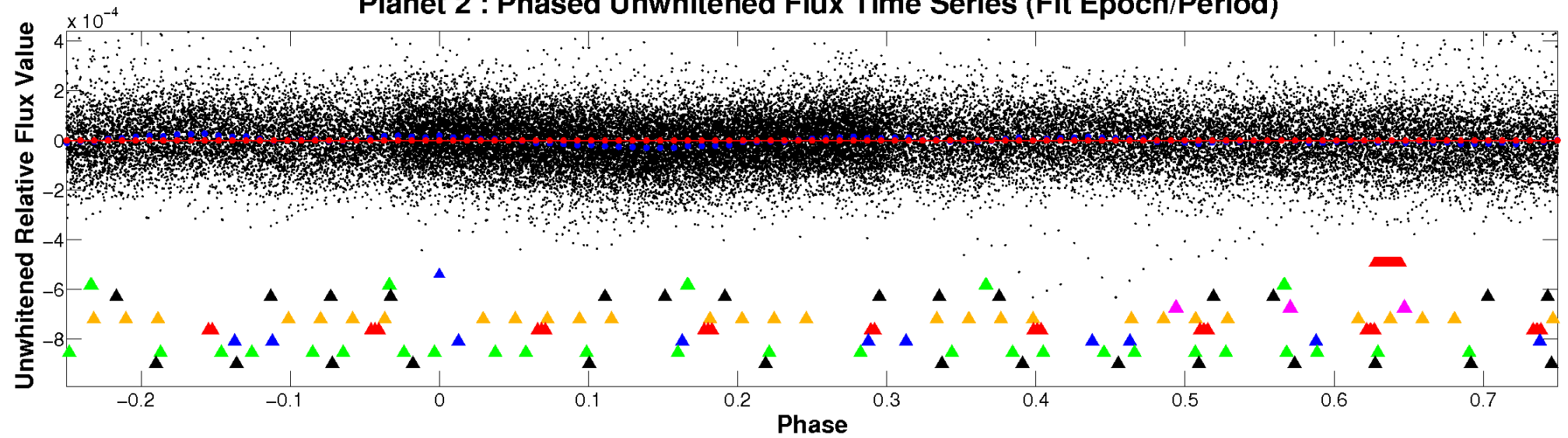
ALT Odd/Even

TCE 009467345-02

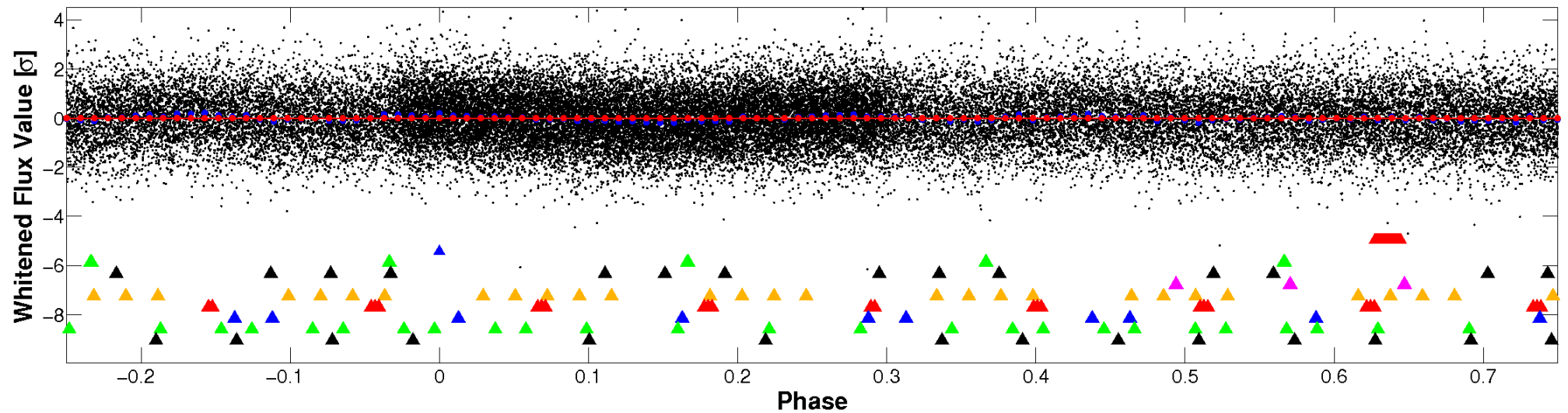


Non-Whitened Vs. Whitened Light Curve

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

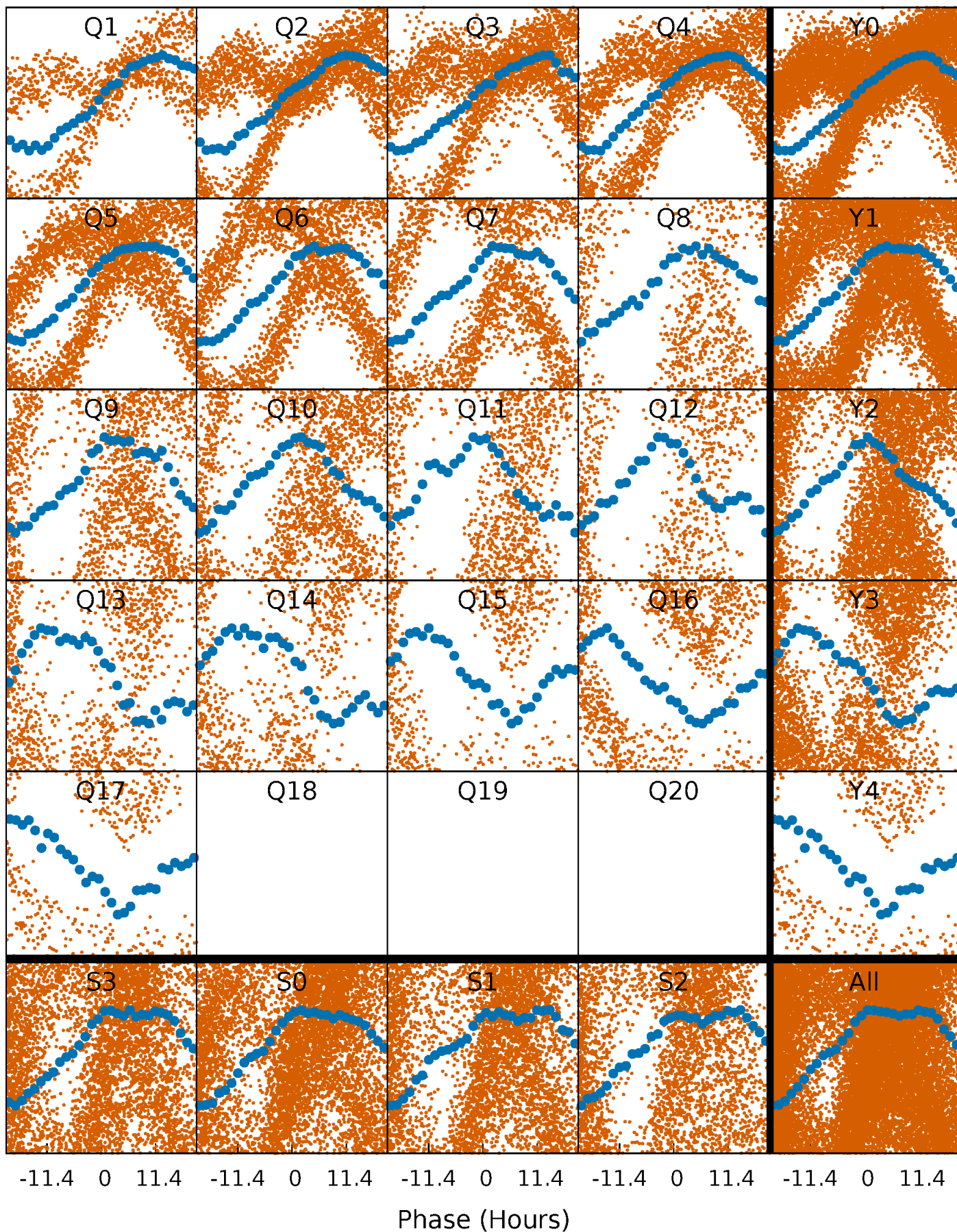


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



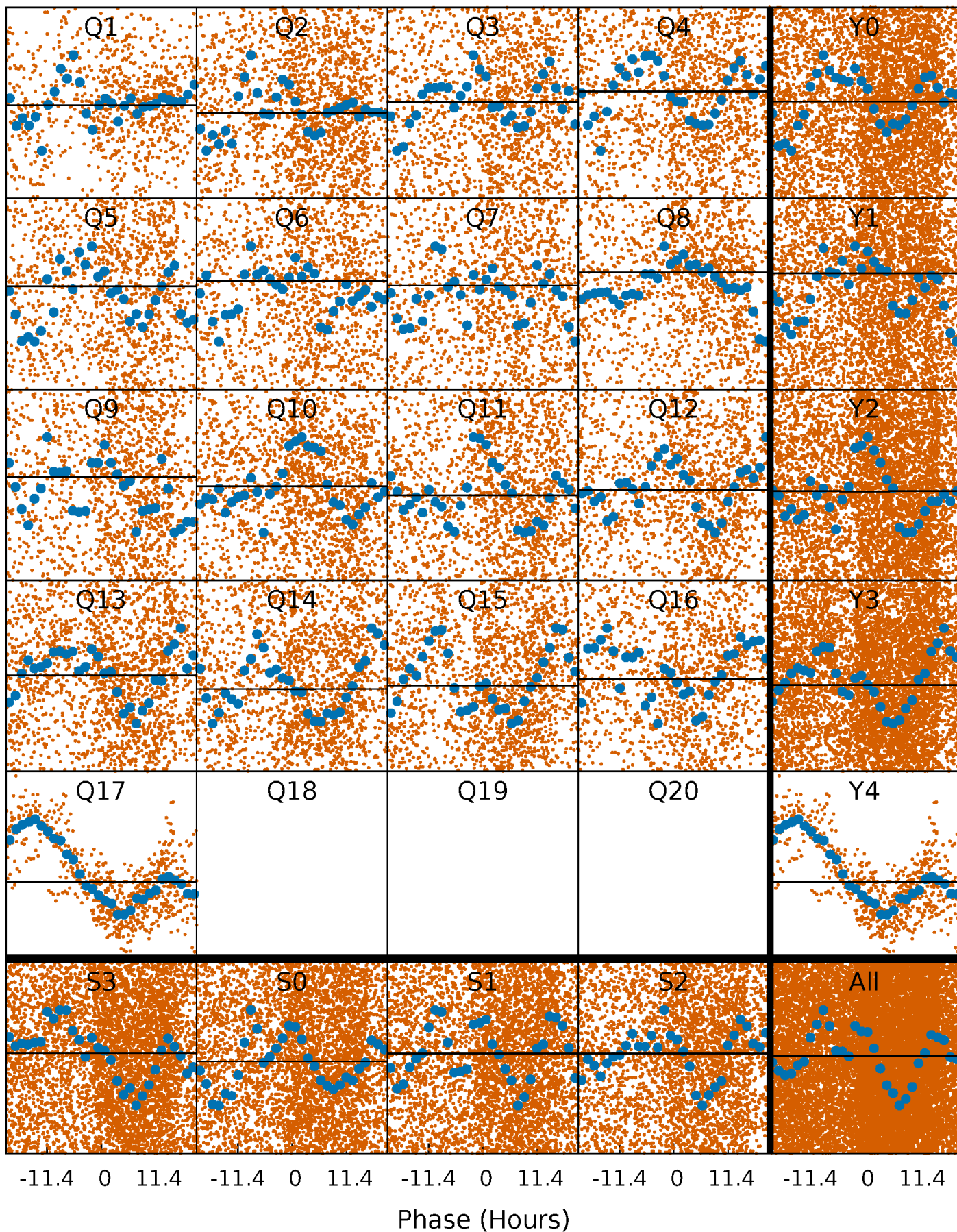
PDC Quarter-Phased Transit Curves

TCE 009467345-02 P= 2.207682 Days $T_0=132.429638$ (BKJD)



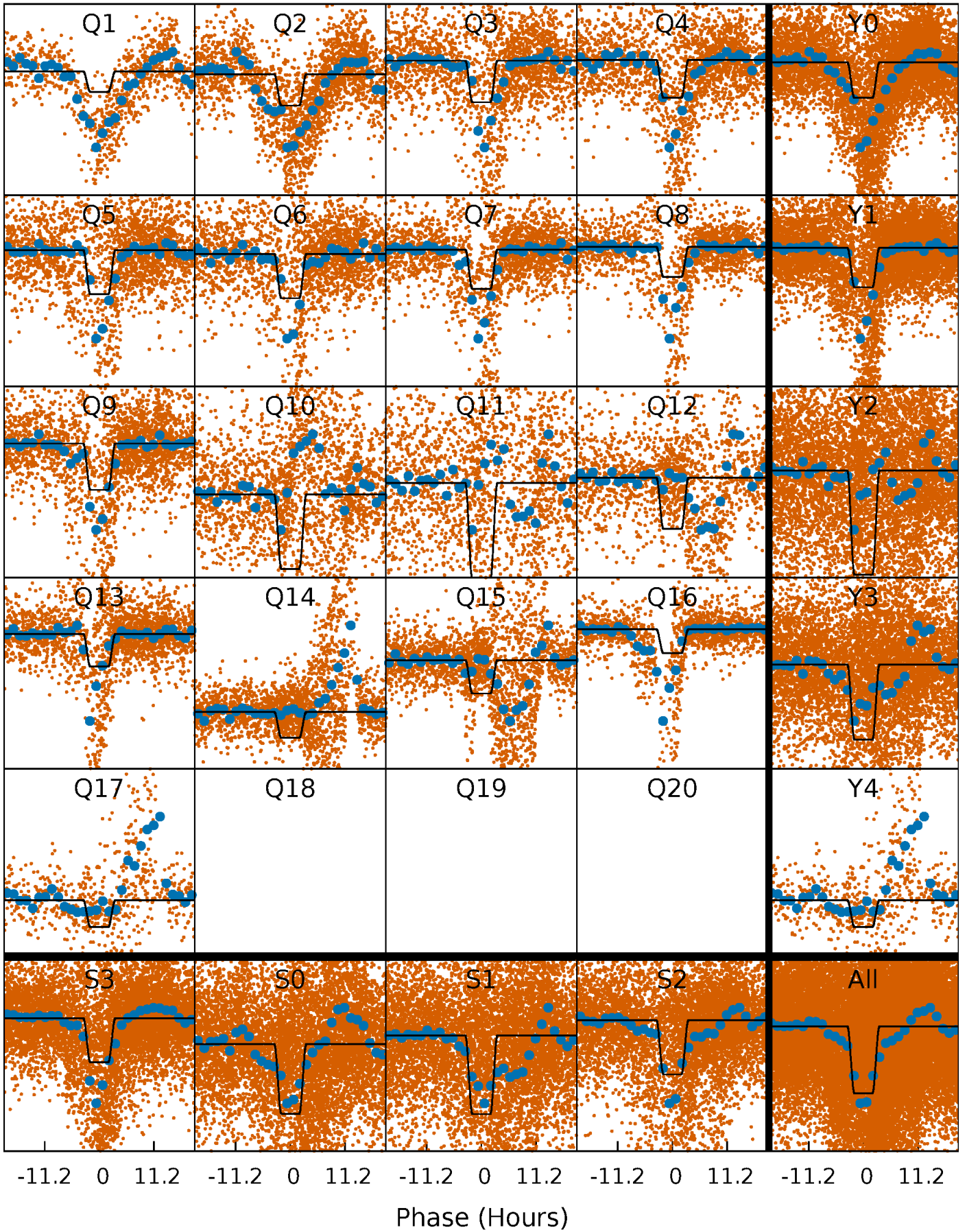
DV Quarter-Phased Transit Curves

TCE 009467345-02 P= 2.207682 Days $T_0=132.429638$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

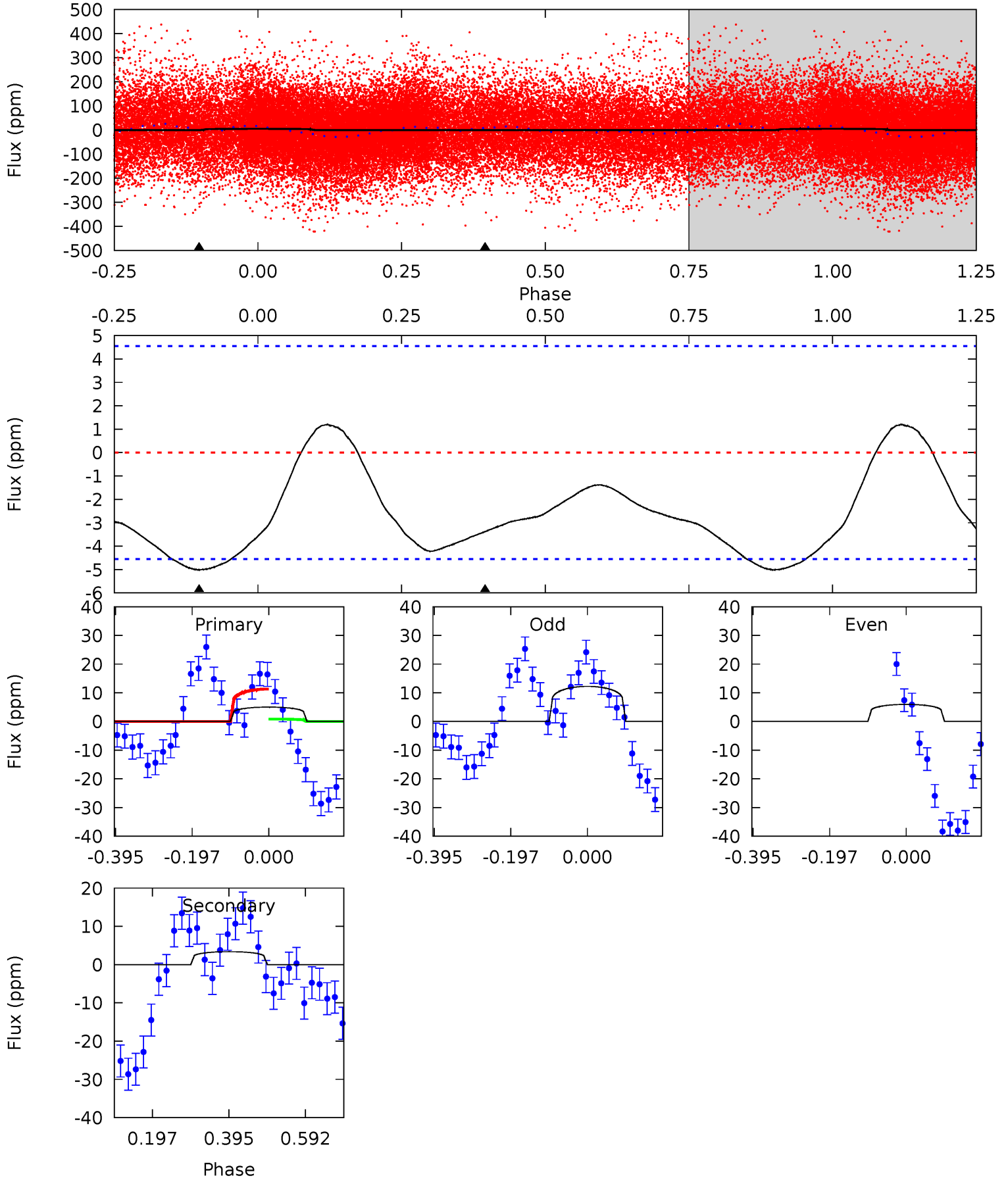
TCE 009467345-02 P= 2.207774 Days $T_0=132.440399$ (BKJD)



DV Model-Shift Uniqueness Test

009467345-02, P = 2.207682 Days, E = 130.221956 Days

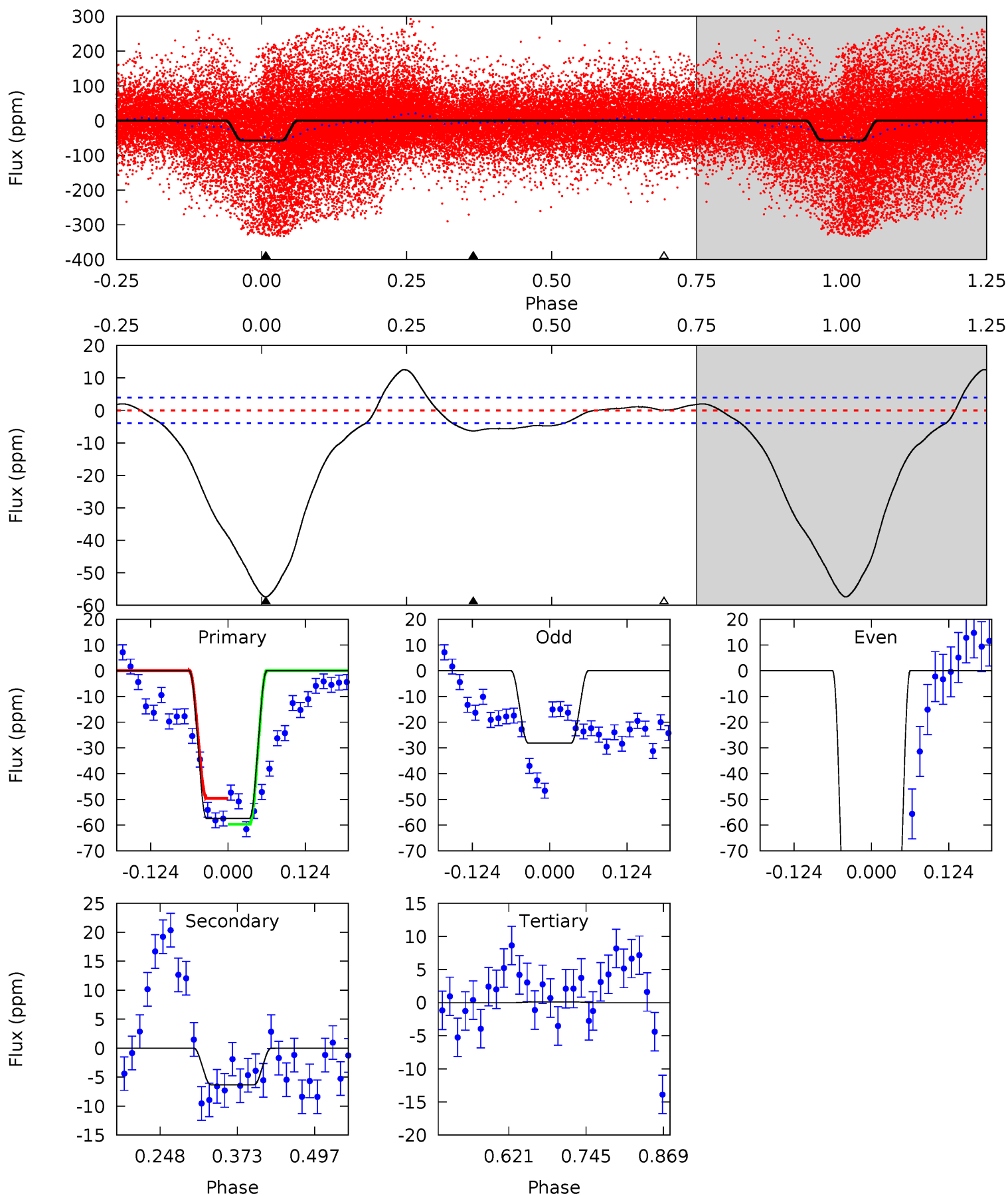
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.87	3.28	0	0	4.42	1.29	1.31	4.87	4.87	3.28	3.28	3.03	0.69	0.19	5.02



Alt Model-Shift Uniqueness Test

009467345-02, P = 2.207774 Days, E = 130.232625 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
66.1	7.27	-0.11	0	4.52	1.54	6.11	66.2	66.1	7.38	7.27	66.3	2.56	0.18	5.83



Stellar Parameters For KIC 009467345

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6781^{+170}_{-187}	$3.829^{+0.273}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.576^{+0.471}_{-0.875}$	$1.631^{+0.180}_{-0.335}$	$0.135^{+0.242}_{-0.048}$
	+3%/-3%	+7%/-3%	+300%/-250%	+18%/-34%	+11%/-21%	+180%/-36%
Source	PHO1	FLK73	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 009467345-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3 ± 1	$4.10^{+4.70}_{-2.78}$	3341^{+225}_{-279}	-2882^{+7041}_{-382}	$0.165^{+1.363}_{-0.130}$
Alt.	-6 ± 1	$5.13^{+5.43}_{-3.35}$	3354^{+235}_{-271}	-2781^{+6942}_{-457}	$0.190^{+1.422}_{-0.143}$

T_{max} = Theoretical Maximum Planetary Temperature

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

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

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

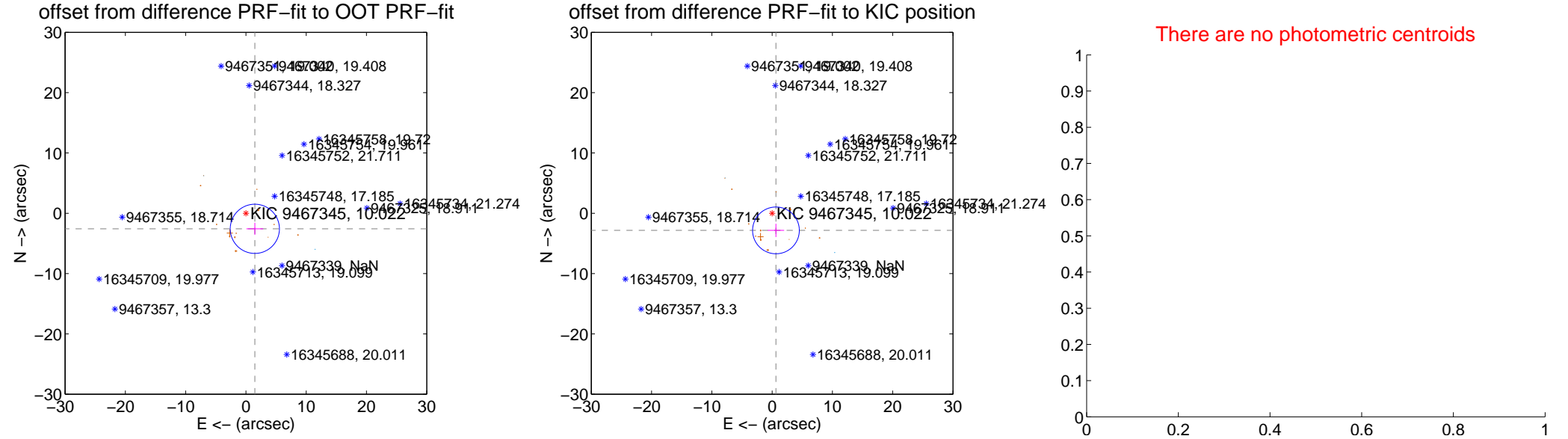
DV Centroid Data

Supplemental centroid analysis for 009467345-02. **Kepler magnitude: 10.02.** Transit SNR 0.00

There are 2 quarters with good PRF difference image offsets

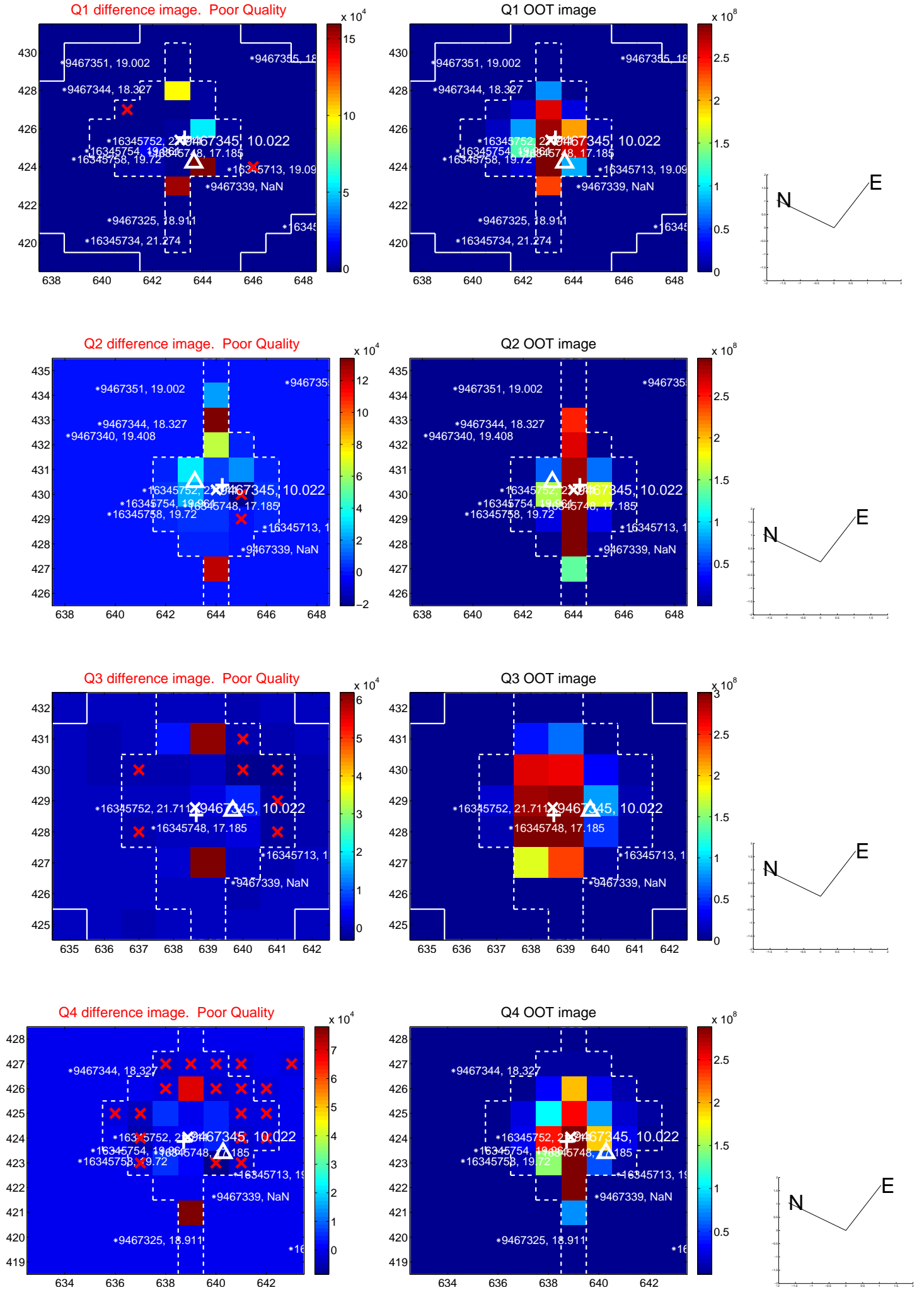
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.972 ± 1.360	2.19	-1.480 ± 1.387	-2.578 ± 0.993
PRF-fit source offset from KIC position	2.909 ± 1.292	2.25	-0.635 ± 1.354	-2.839 ± 1.103
photometric centroid source offset	—	—	—	—

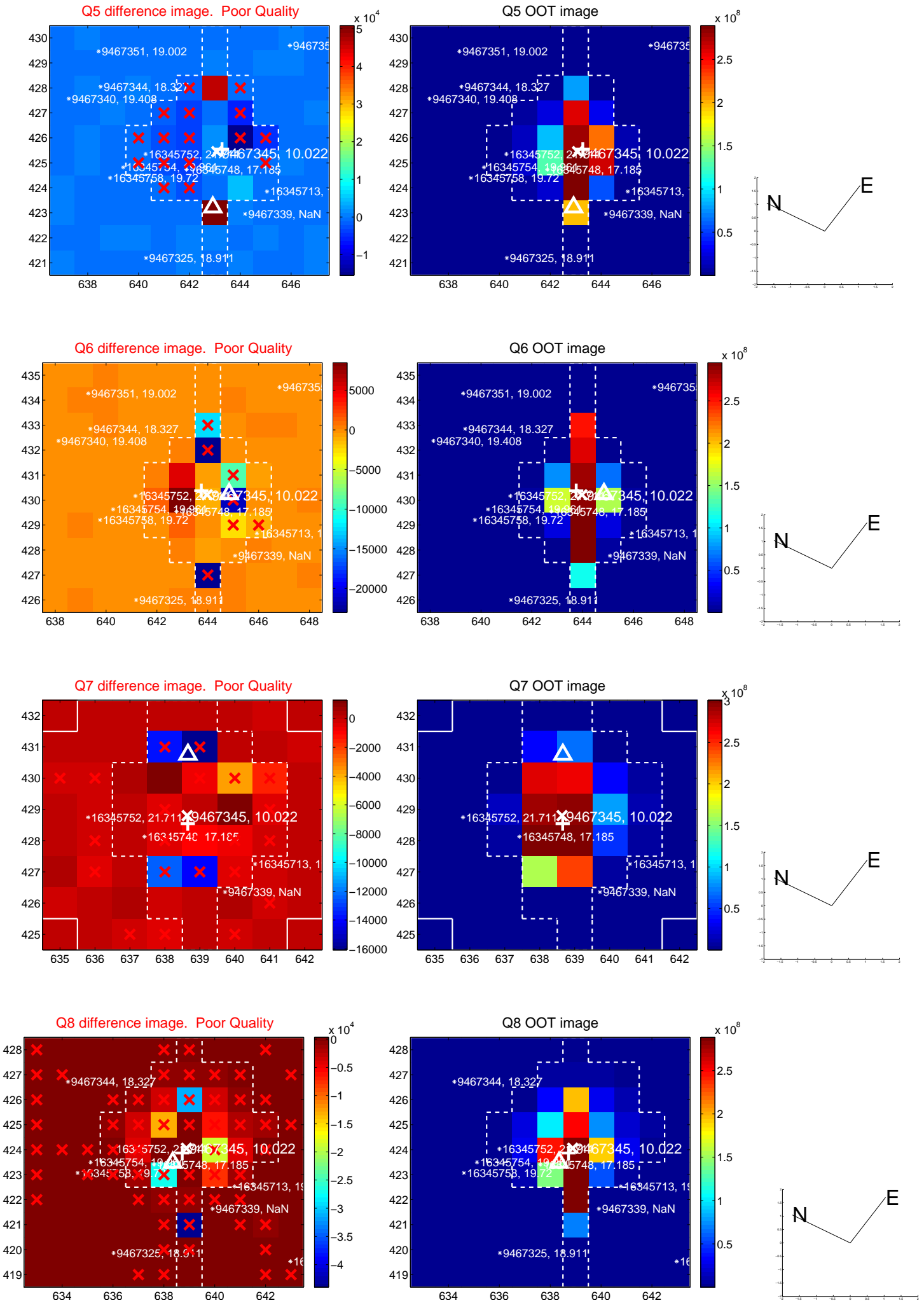


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

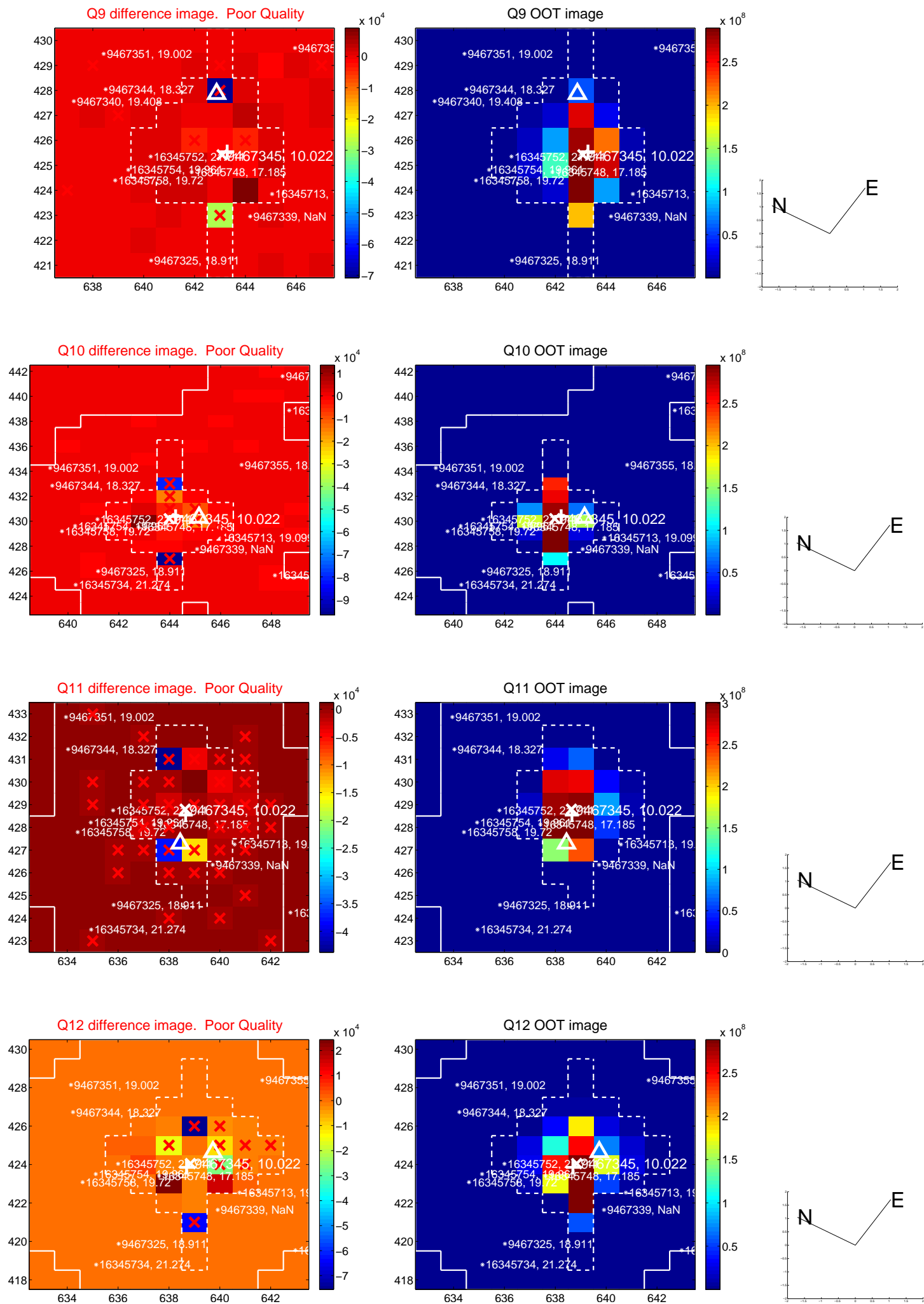
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



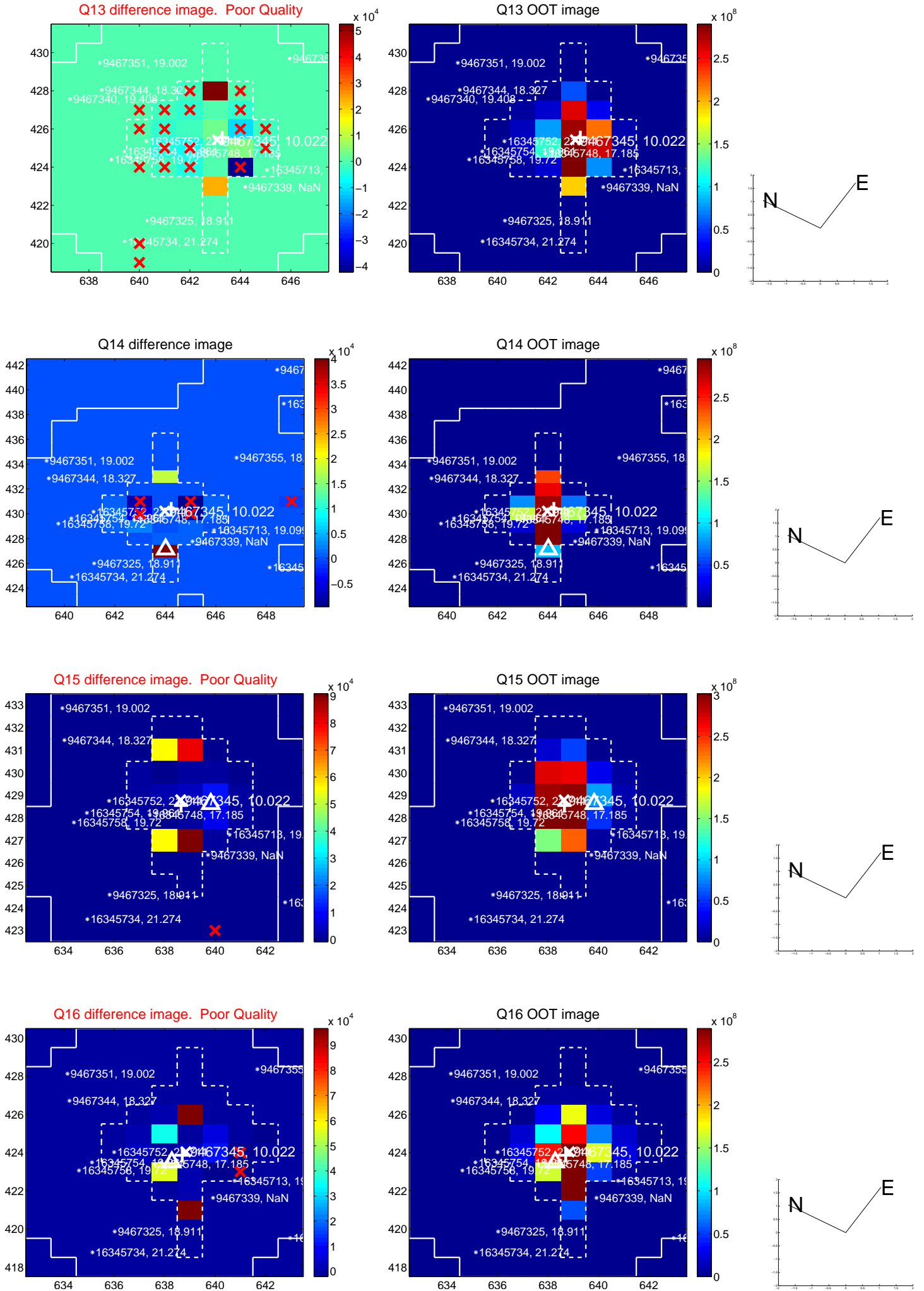
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



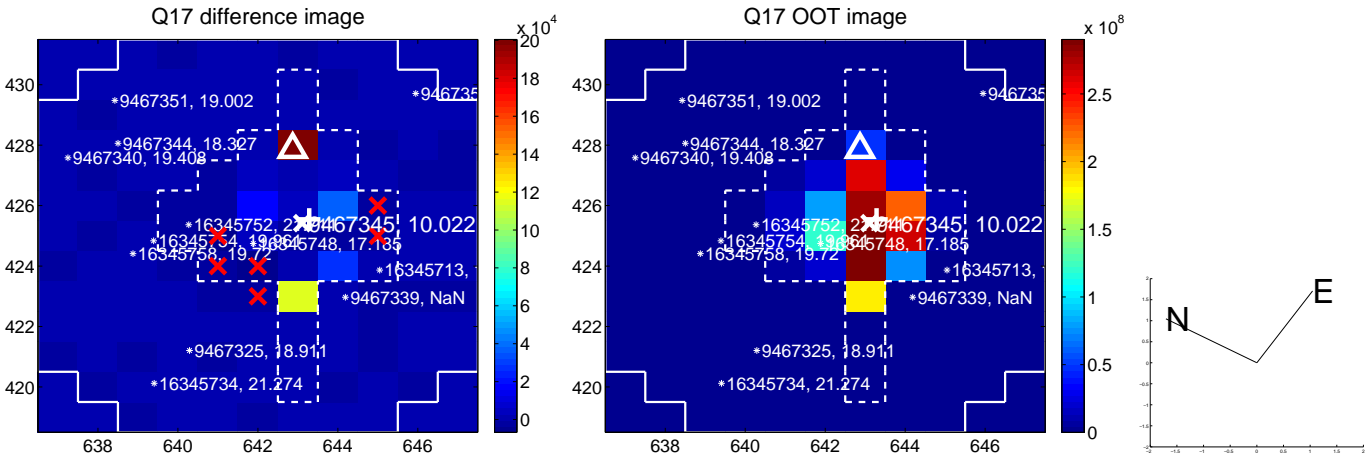
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



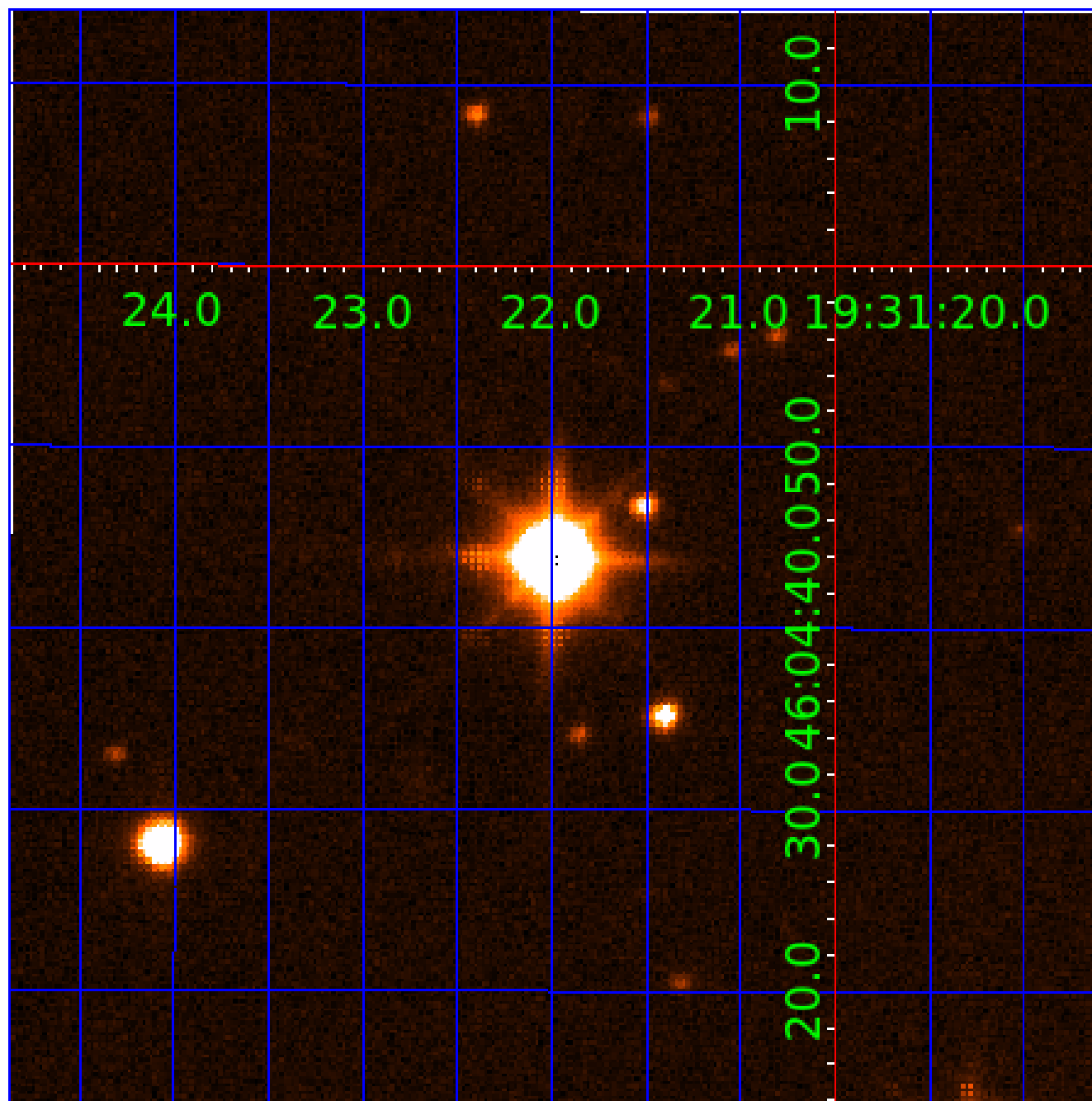
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 009467345

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})
009467345-01	OBS	No	4.415246	131.645559	69.0	11.744	12.3	15.1	2.58	6781	4.25	3266.58
009467345-02	OBS	No	2.207682	132.429638	0.0	10.018	10.2	0.0	2.58	6781	0.02	8230.97
009467345-03	OBS	No	78.152078	184.897456	178.3	9.752	14.0	9.1	2.58	6781	4.33	70.81
009467345-04	OBS	No	100.652567	218.951909	119.3	8.103	11.0	6.7	2.58	6781	3.15	50.54
009467345-06	OBS	No	51.400675	137.099853	132.6	4.334	10.5	10.5	2.58	6781	3.36	123.81
009467345-07	OBS	No	58.626862	170.839840	143.2	5.867	10.1	9.6	2.58	6781	3.12	103.89
009467345-08	OBS	No	148.852894	157.736395	0.1	12.958	10.4	0.0	2.58	6781	0.08	29.99
009467345-09	OBS	No	58.571174	176.260499	142.3	3.187	10.7	9.5	2.58	6781	3.55	104.02
009467345-10	OBS	No	104.022117	197.315739	97.6	10.990	9.3	5.5	2.58	6781	2.80	48.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009467345-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
009467345-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_SATURATED
009467345-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009467345-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

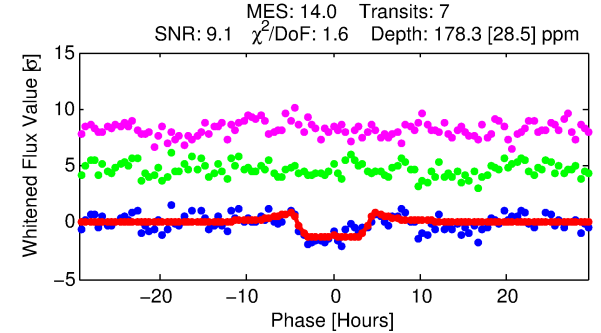
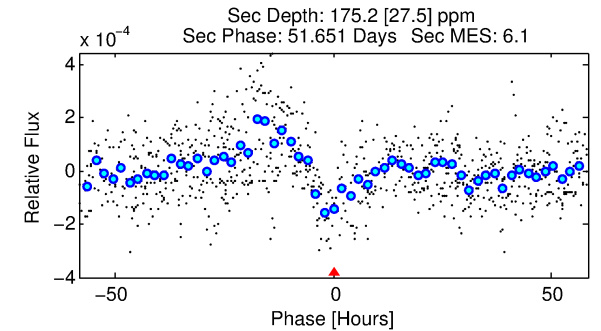
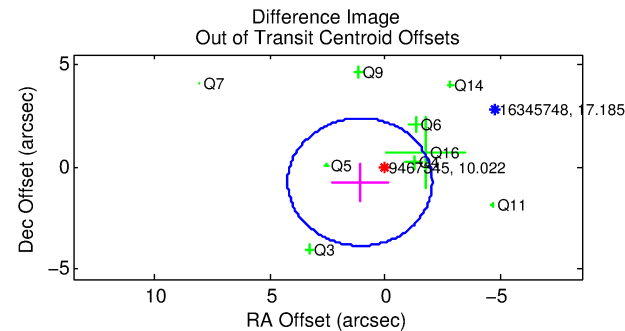
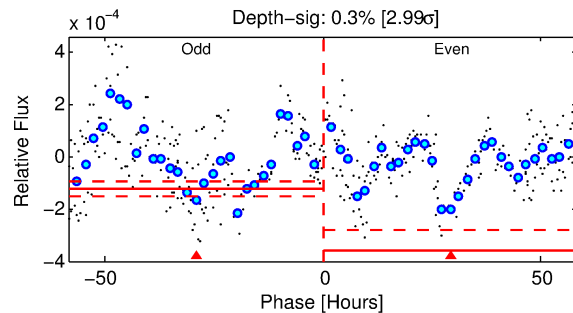
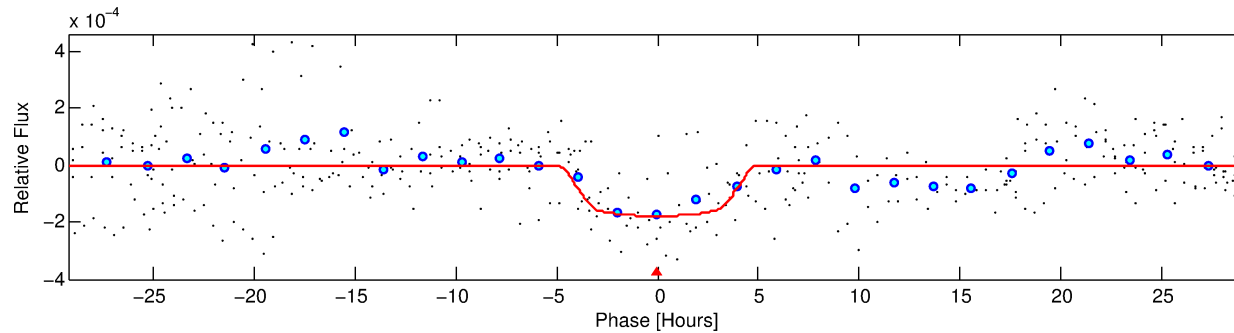
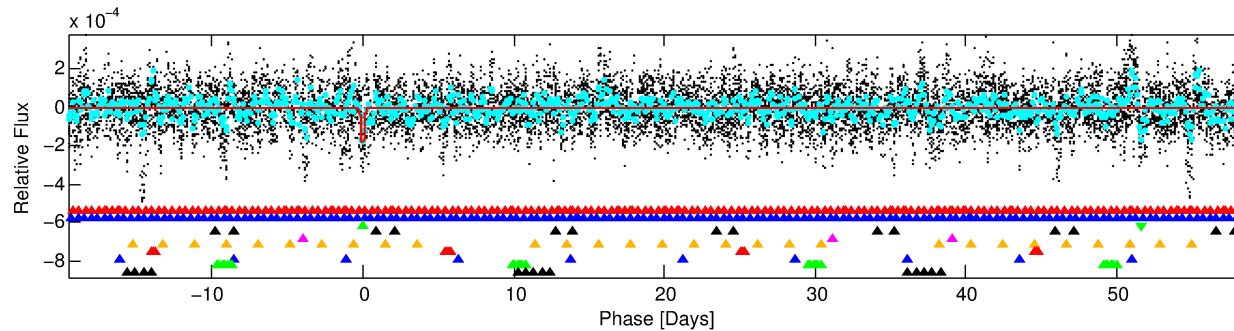
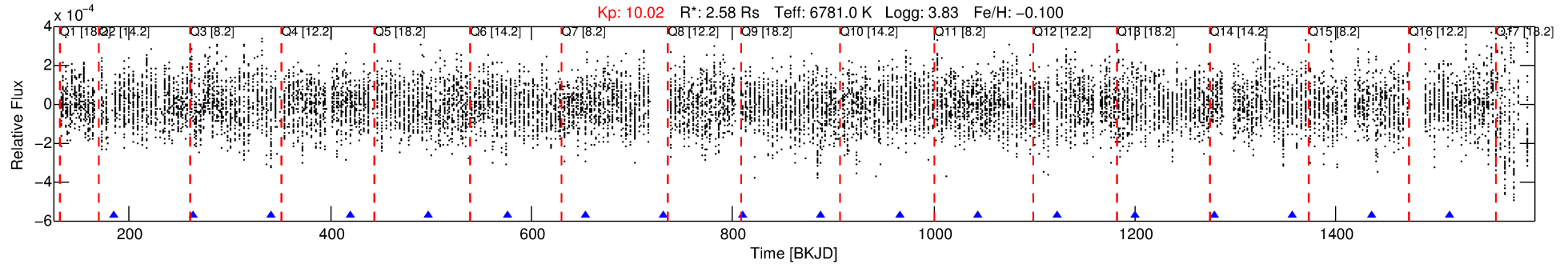
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009467345-03

No Significant Match Found

DV One-Page Summary

KIC: 9467345 Candidate: 3 of 10 Period: 78.152 d



DV Fit Results:

Period = 78.15208 [0.00171] d
Epoch = 184.8975 [0.0162] BKJD
 $R_p/R^* = 0.0154$ [0.0015]
 $a/R^* = 19.55$ [4.71]
 $b = 0.96$ [0.02]
 $\text{Seff} = 70.81$ [34.62]
 $T_{\text{eq}} = 740$ [90] K
 $R_p = 4.33$ [1.53] R_{e}
 $a = 0.4213$ [0.1300] AU
 $A_g = 912.05$ [490.48] [1.86 σ]
 $T_{\text{eff}} = 6285$ [429] K [12.65 σ]

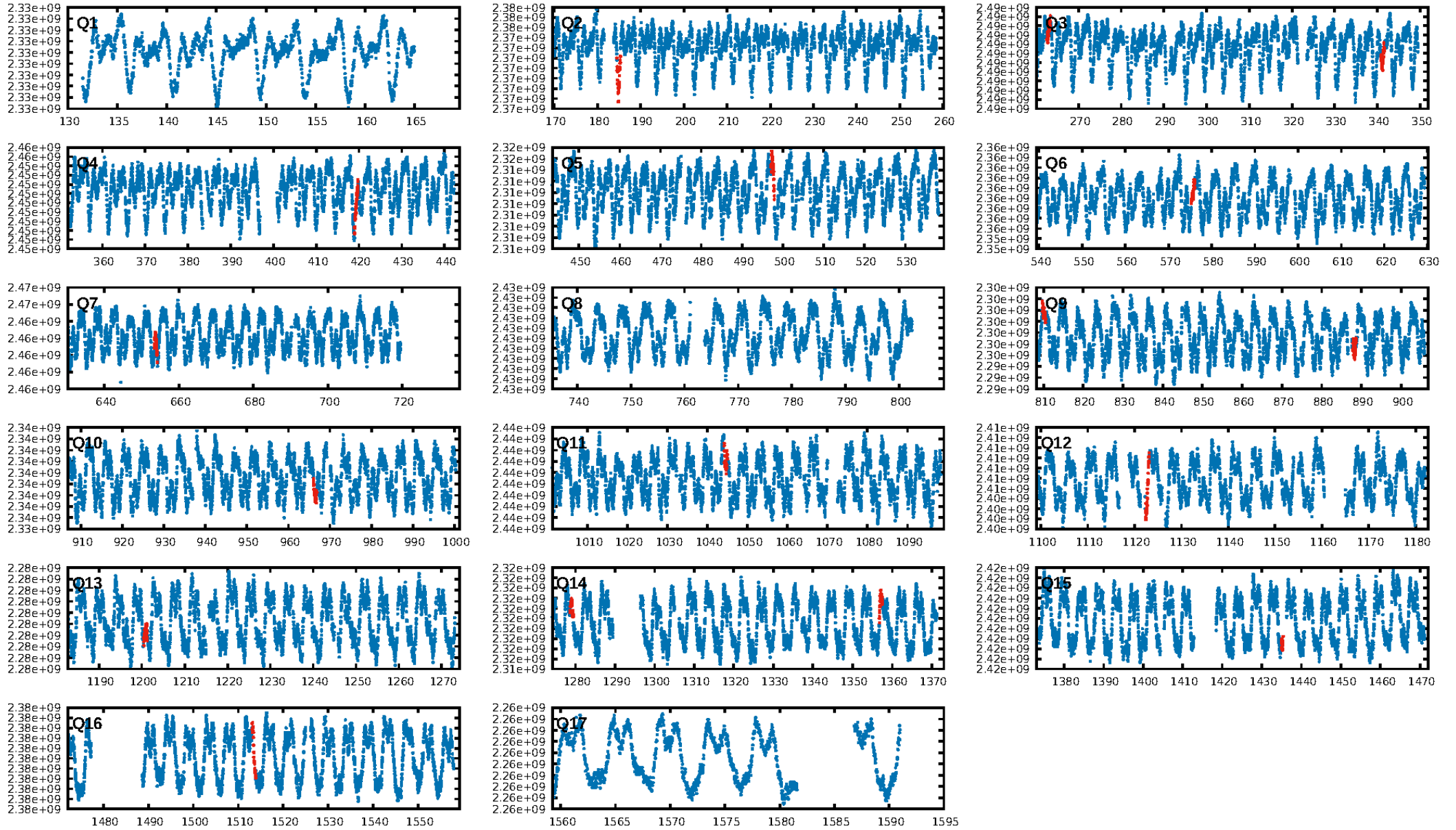
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [41.18 σ]
LongPeriod-sig: 100.0% [42.59 σ]
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: N/A
Centroid-sig: 77.2%
Centroid-so: 0.604 arcsec [1.45 σ]
OotOffset-rm: 1.327 arcsec [1.27 σ]
OotOffset-st: 2/3/2/2 [9]
KicOffset-rm: 2.044 arcsec [1.88 σ]
KicOffset-st: 2/3/2/2 [9]
DiffImageQuality-fgm: 0.11 [1/9]
DiffImageOverlap-fno: 0.11 [1/9]

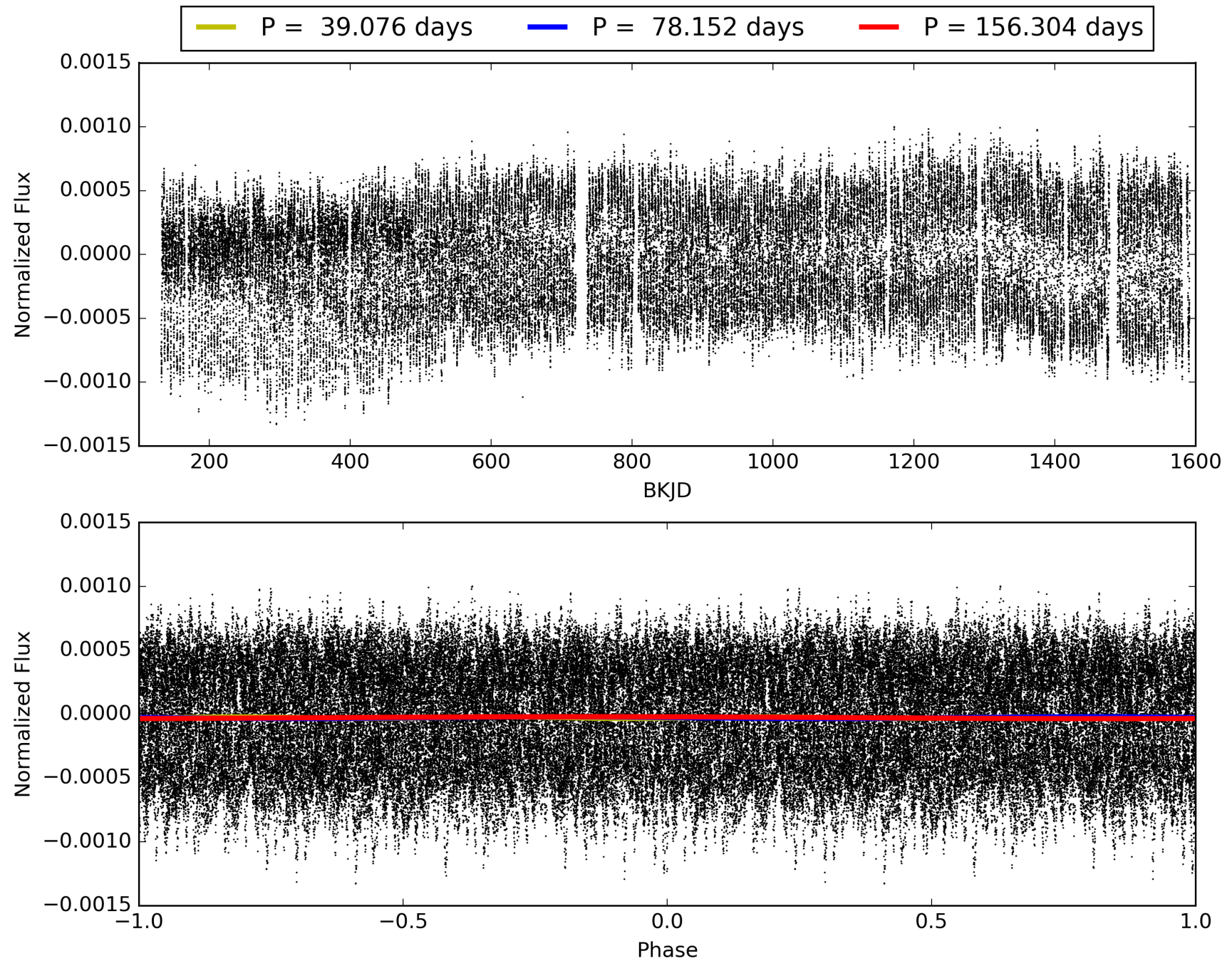
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:47:02 Z

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

TCE 009467345-03, PDC Light Curves

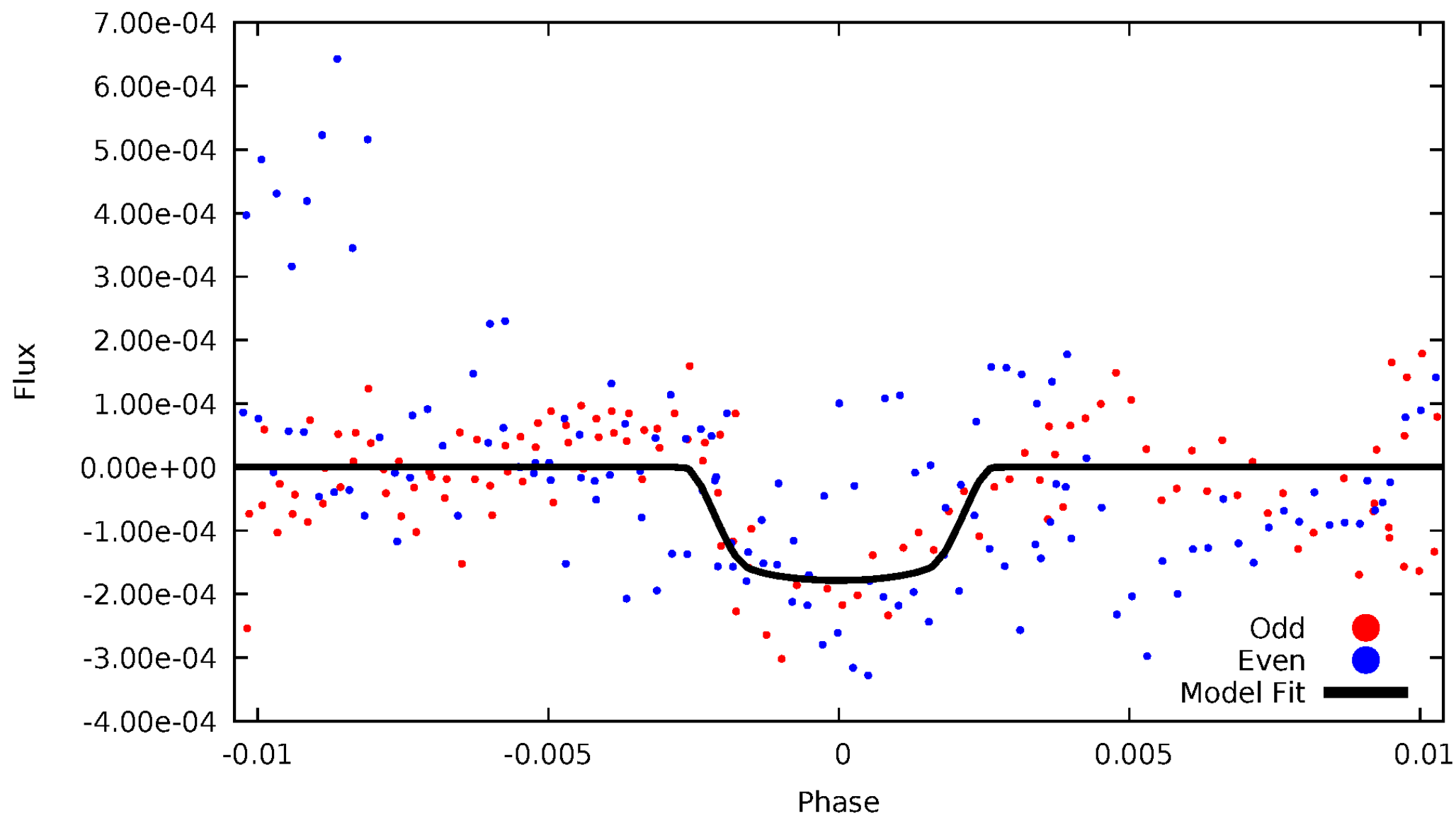


TCE 009467345-03



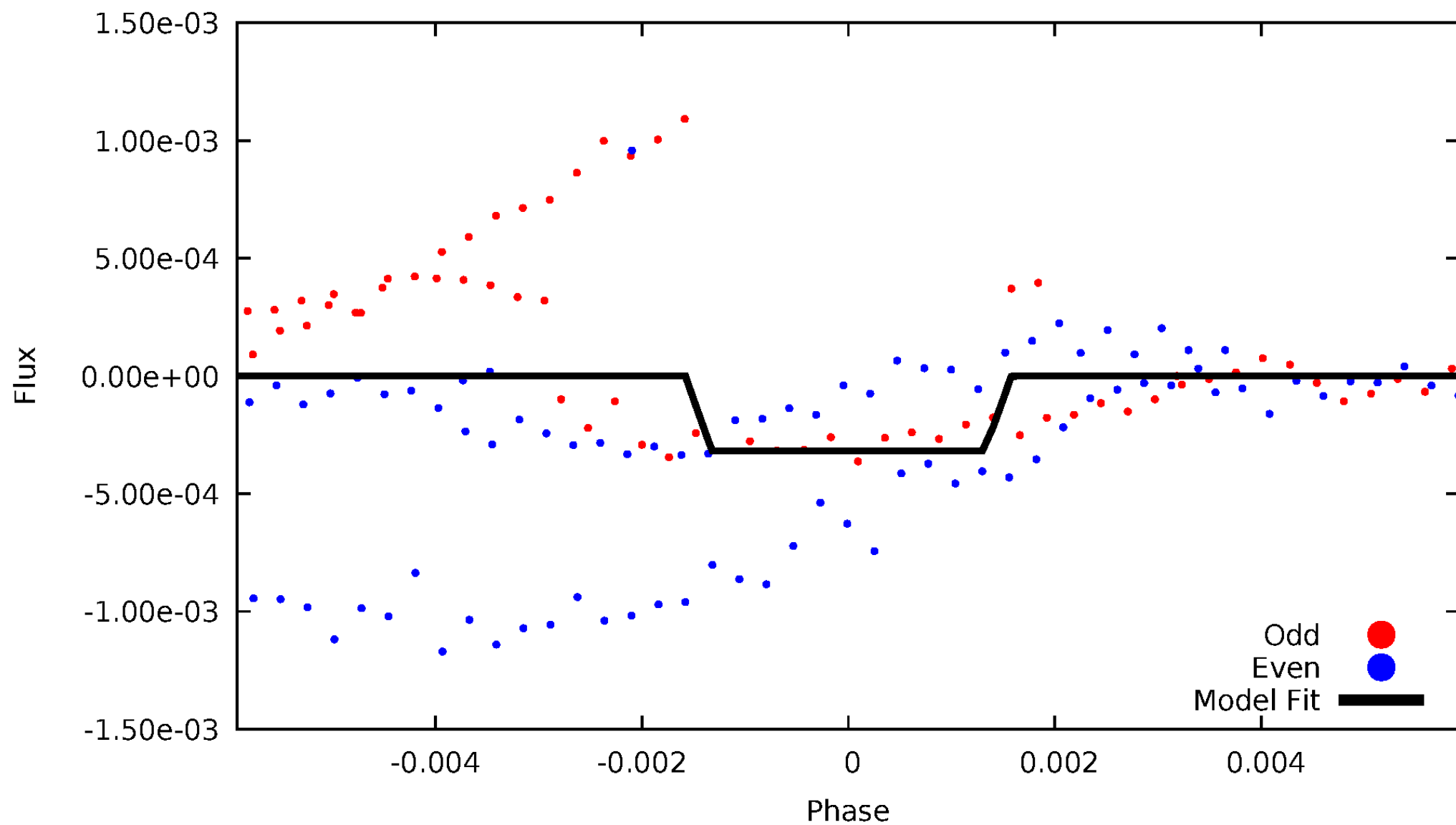
DV Odd/Even

TCE 009467345-03

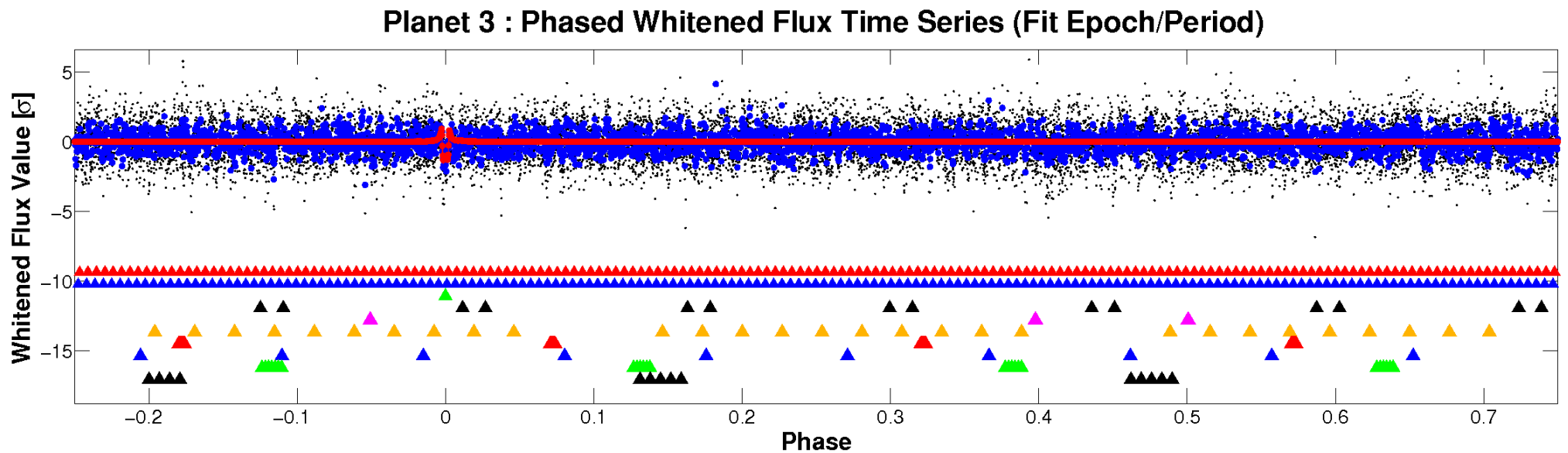
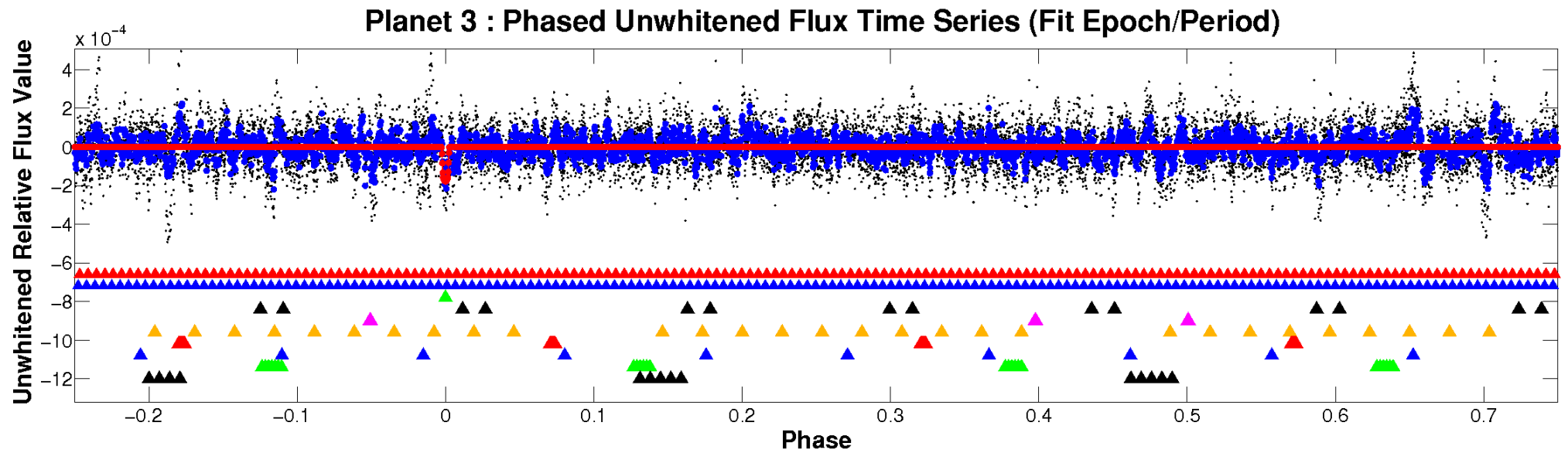


ALT Odd/Even

TCE 009467345-03

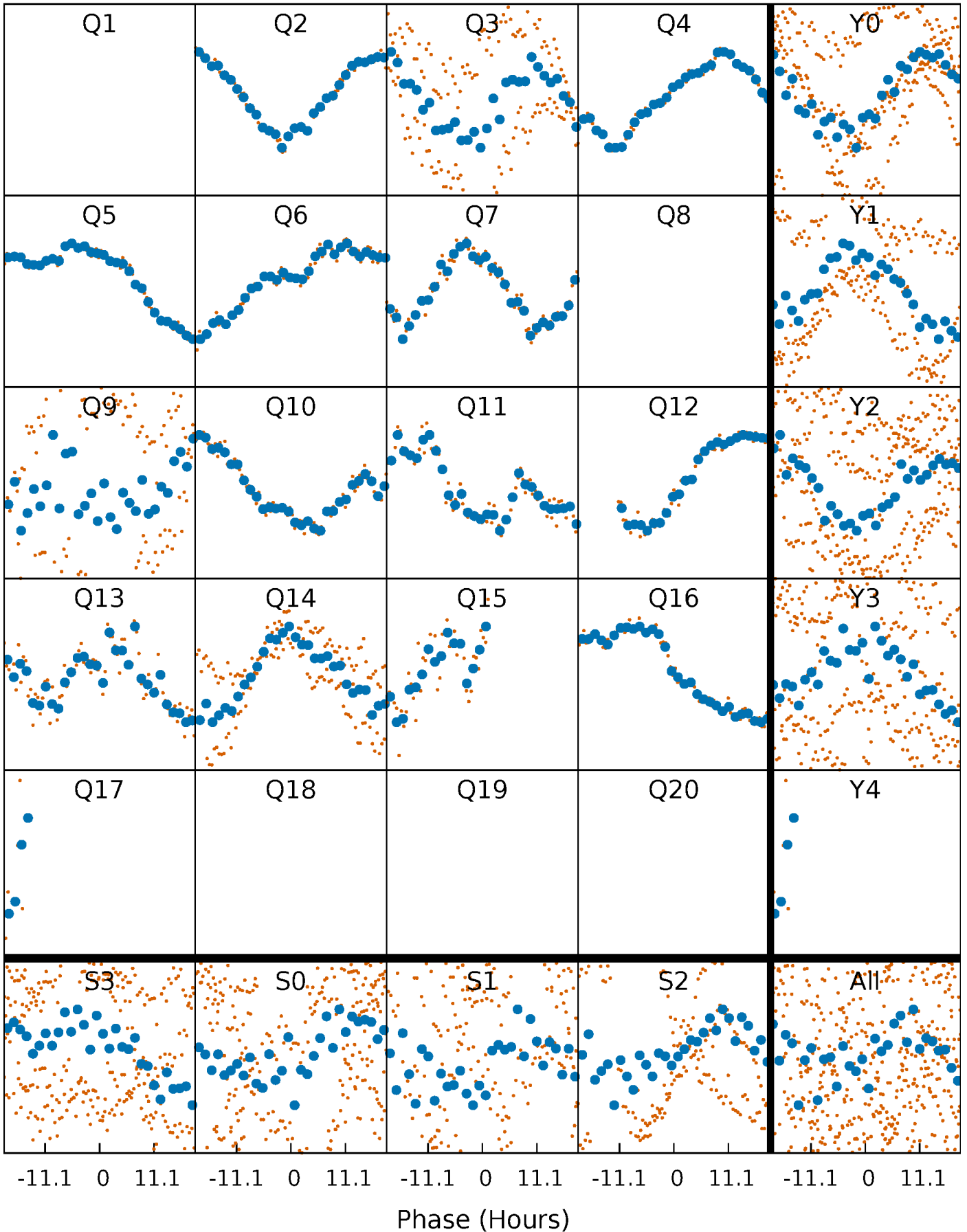


Non-Whitened Vs. Whitened Light Curve



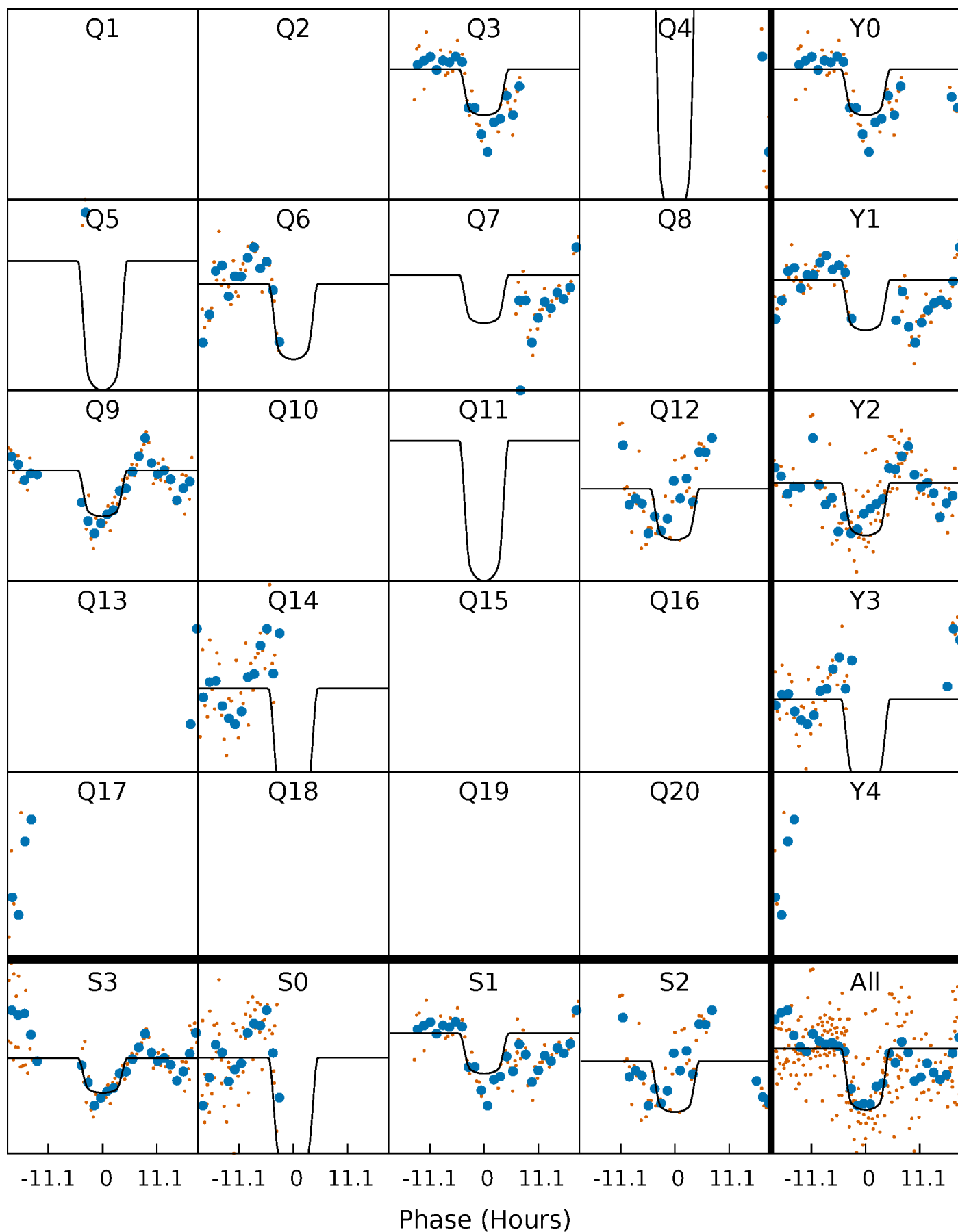
PDC Quarter-Phased Transit Curves

TCE 009467345-03 $P = 78.152078$ Days $T_0 = 184.897456$ (BKJD)



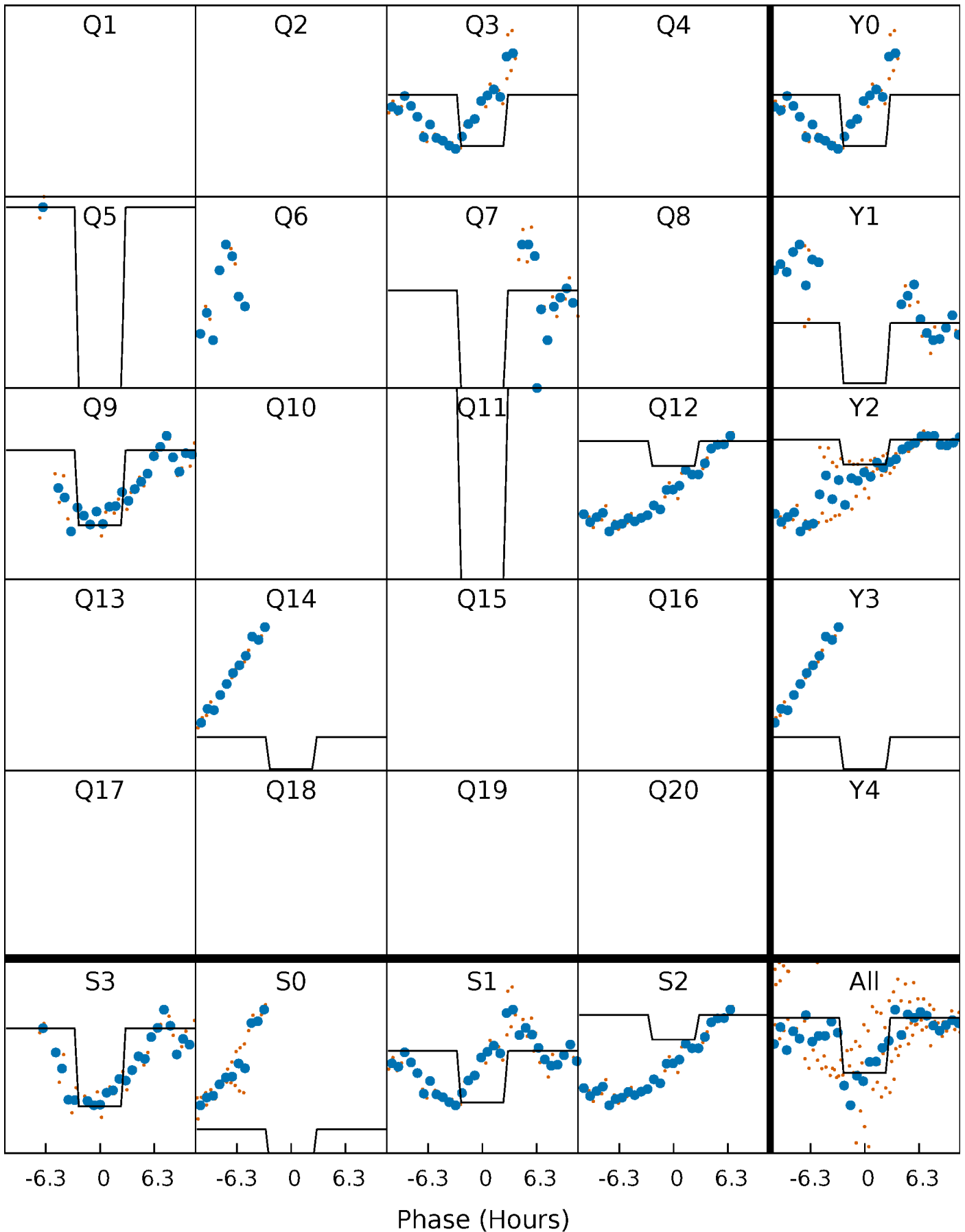
DV Quarter-Phased Transit Curves

TCE 009467345-03 P= 78.152078 Days $T_0=184.897456$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

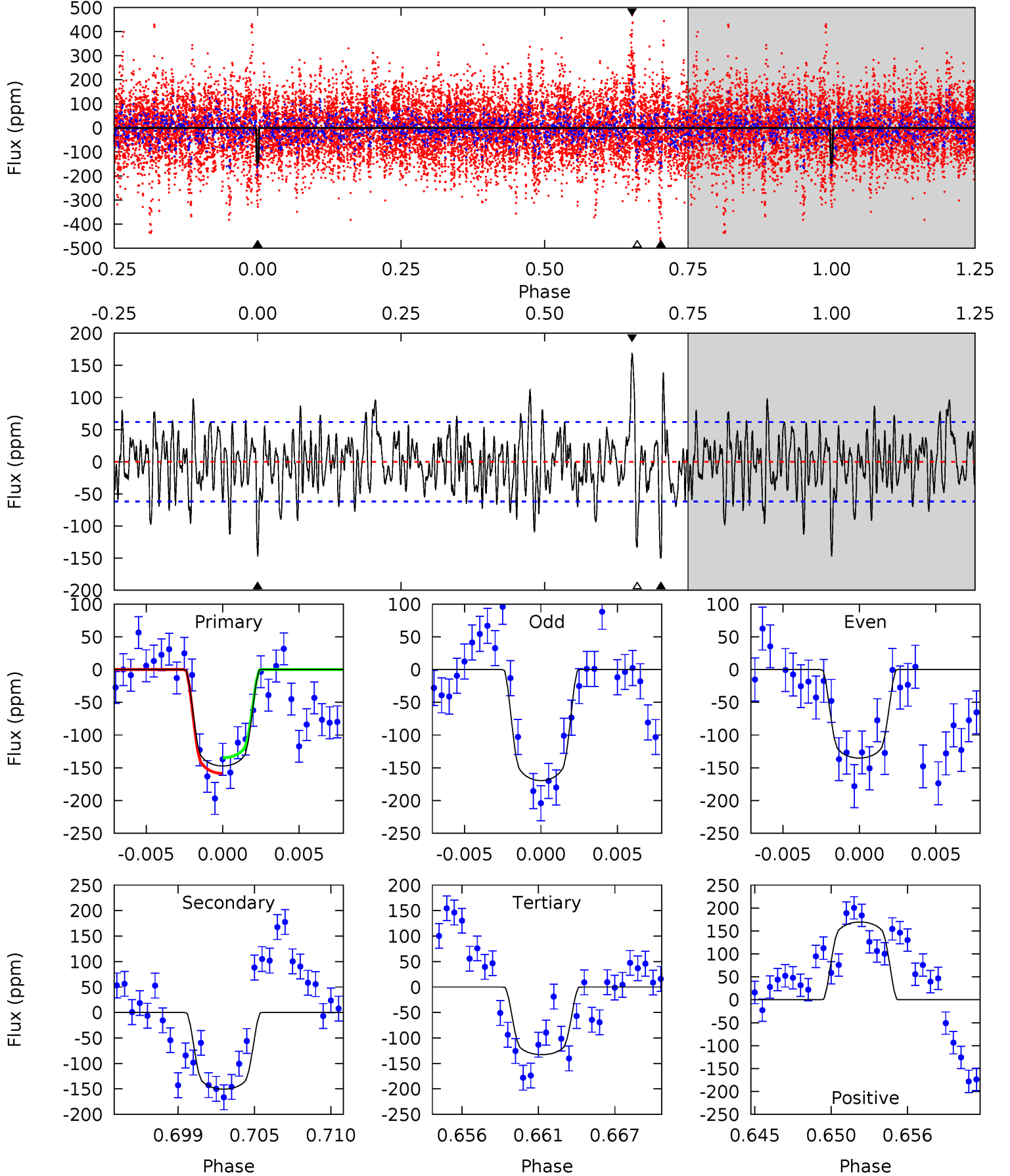
TCE 009467345-03 P= 78.139714 Days $T_0=185.067613$ (BKJD)



DV Model-Shift Uniqueness Test

009467345-03, P = 78.152078 Days, E = 106.745378 Days

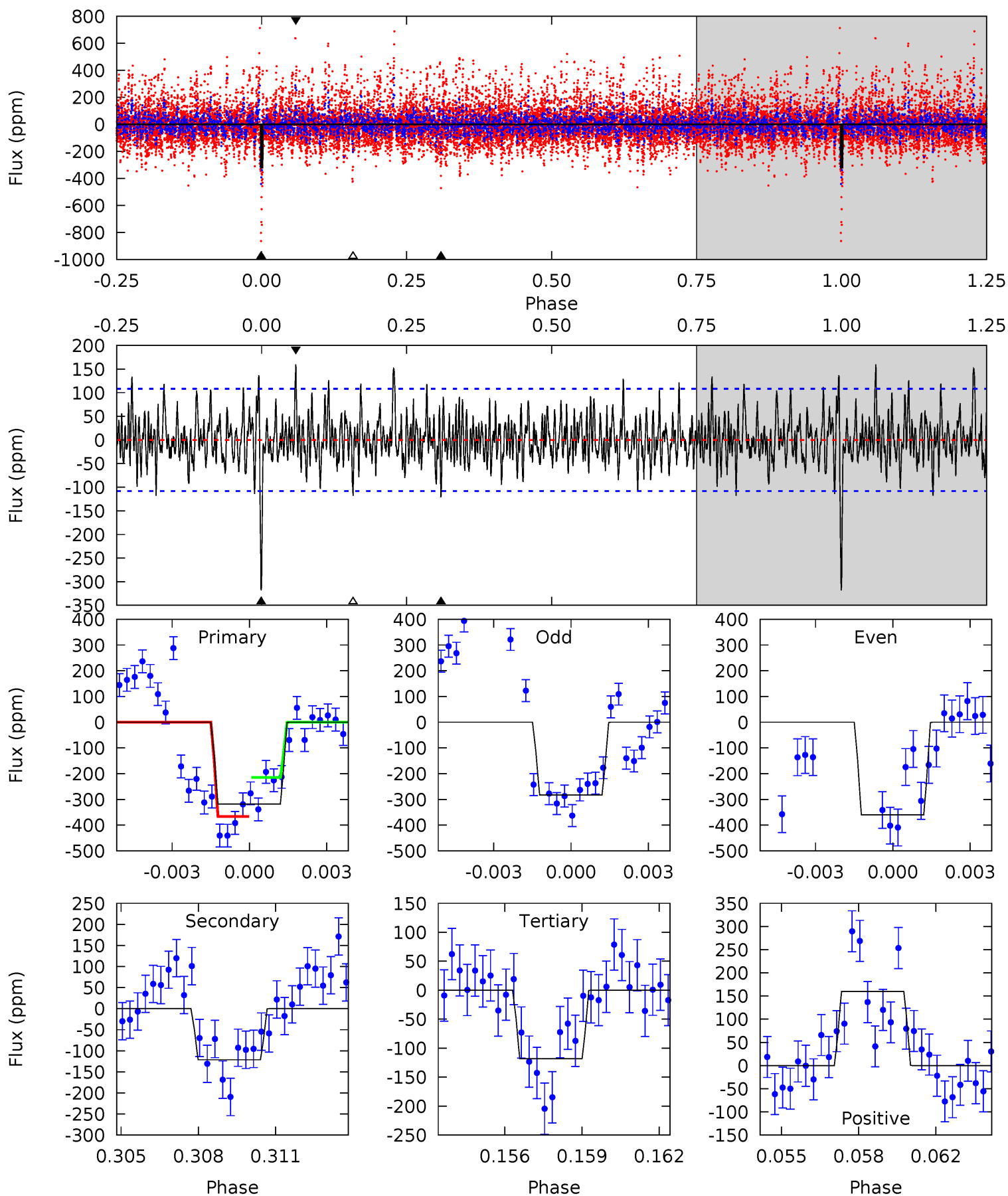
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	12.5	11.0	14.1	5.14	2.78	3.22	1.20	-1.85	1.47	-1.58	1.37	0.62	0.53	1.00



Alt Model-Shift Uniqueness Test

009467345-03, P = 78.139714 Days, E = 106.927899 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.4	5.87	5.73	7.73	5.24	2.94	1.93	9.67	7.67	0.14	-1.86	1.69	1.17	0.33	3.57



Stellar Parameters For KIC 009467345

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6781^{+170}_{-187}	$3.829^{+0.273}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.576^{+0.471}_{-0.875}$	$1.631^{+0.180}_{-0.335}$	$0.135^{+0.242}_{-0.048}$
	+3%/-3%	+7%/-3%	+300%/-250%	+18%/-34%	+11%/-21%	+180%/-36%
Source	PHO1	FLK73	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 009467345-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-151 ± 12	$4.19^{+0.70}_{-0.73}$	1025^{+56}_{-84}	6030^{+367}_{-326}	836^{+372}_{-233}
Alt.	-121 ± 21	$4.82^{+0.77}_{-0.89}$	1019^{+62}_{-94}	5357^{+331}_{-321}	509^{+251}_{-144}

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

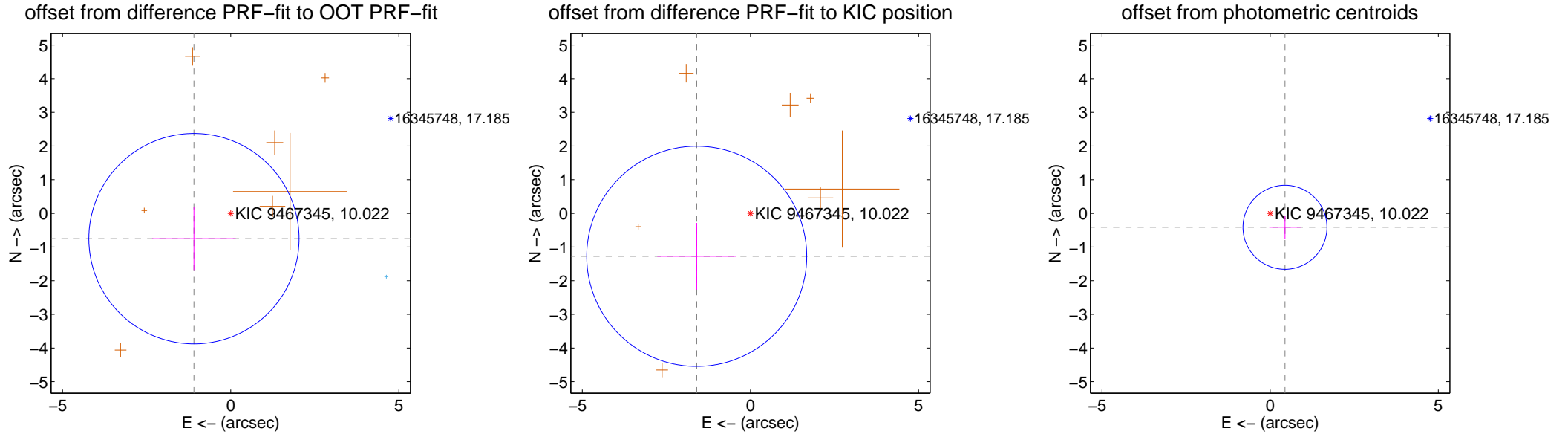
DV Centroid Data

Supplemental centroid analysis for 009467345-03. **Kepler magnitude: 10.02.** Transit SNR 9.14

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.97 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.327 ± 1.042	1.27	1.093 ± 1.244	-0.753 ± 0.930
PRF-fit source offset from KIC position	2.044 ± 1.090	1.88	1.597 ± 1.172	-1.275 ± 0.992
photometric centroid source offset	0.60 ± 0.42	1.45	-0.44 ± 0.47	-0.41 ± 0.35



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



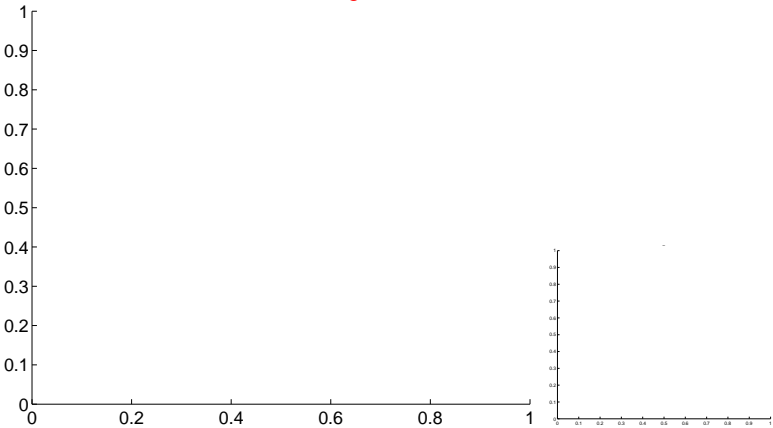
Q1 no OOT image



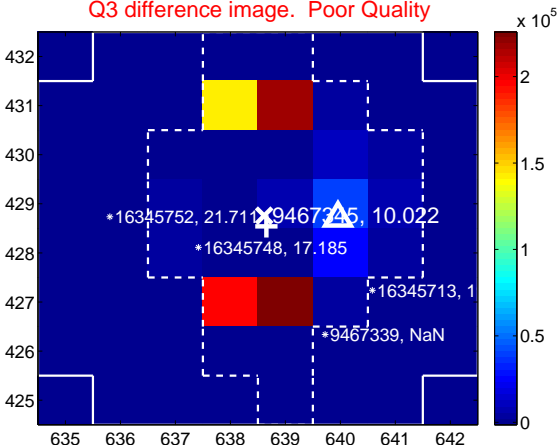
Q2 no difference image



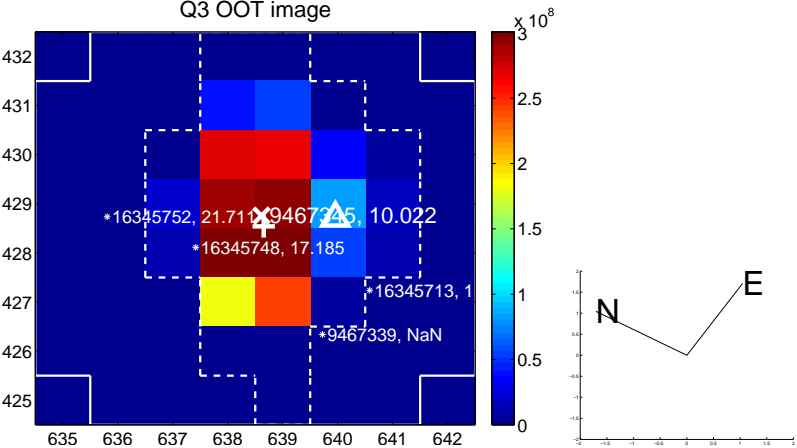
Q2 no OOT image



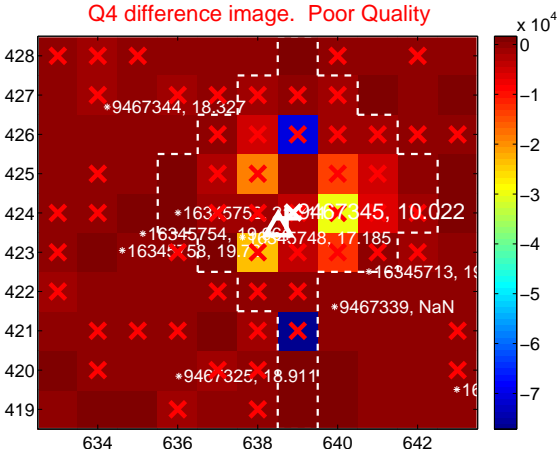
Q3 difference image. Poor Quality



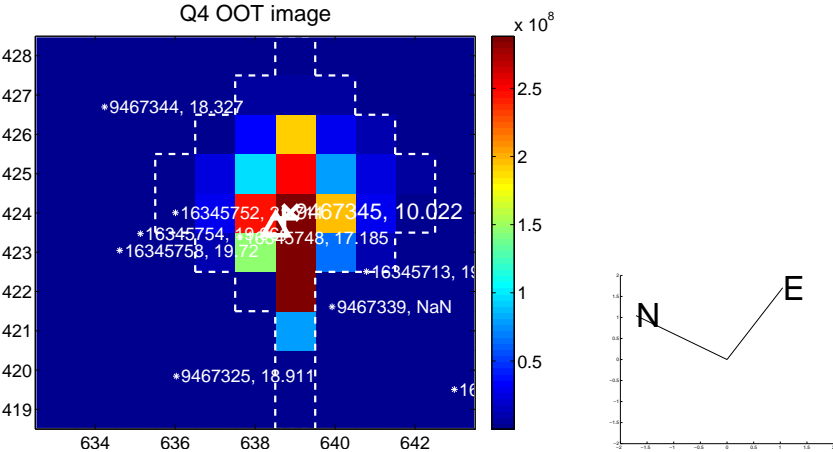
Q3 OOT image



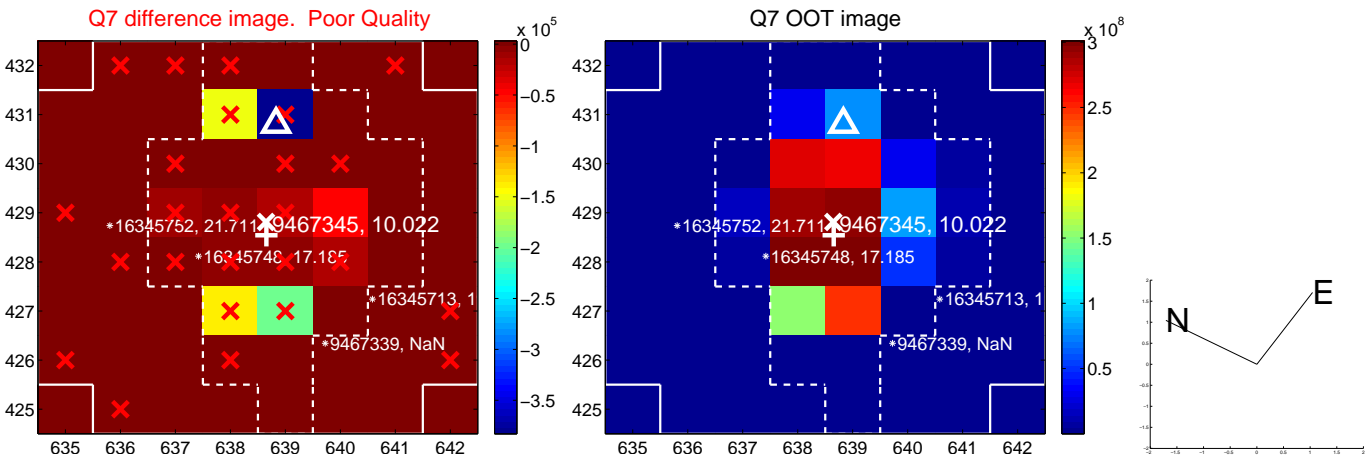
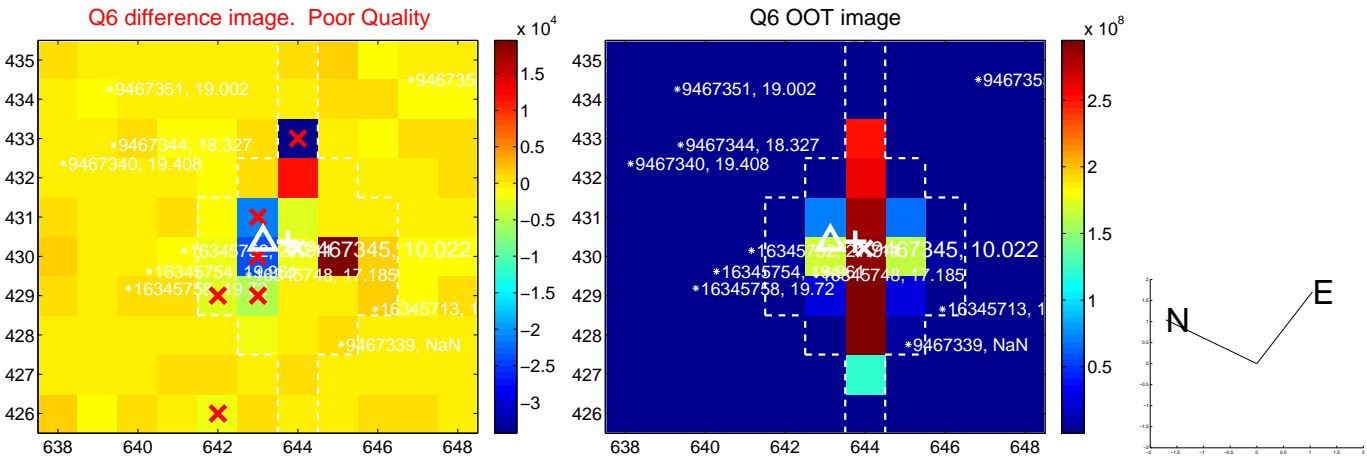
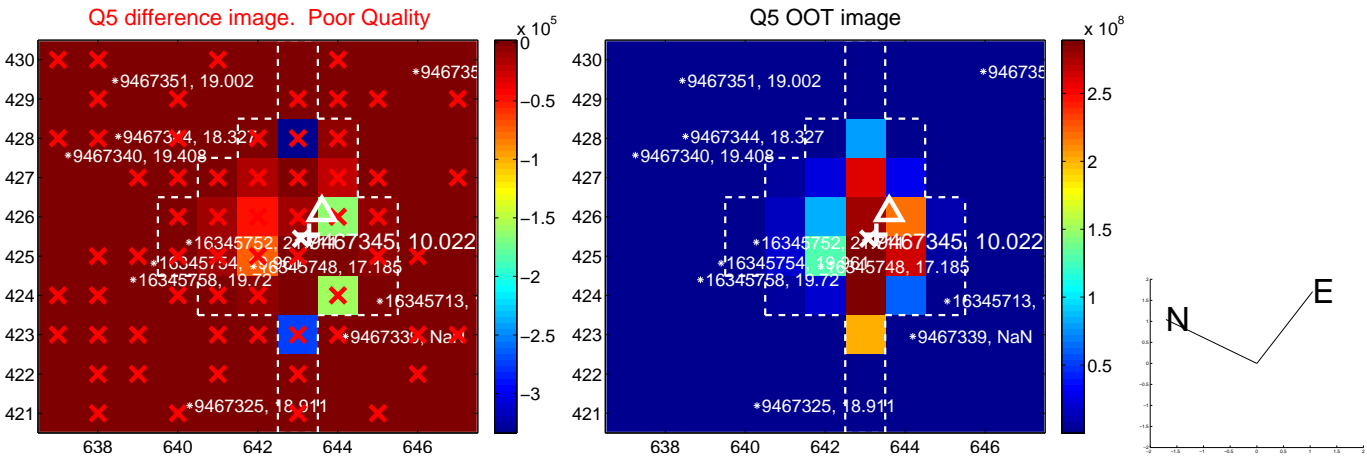
Q4 difference image. Poor Quality



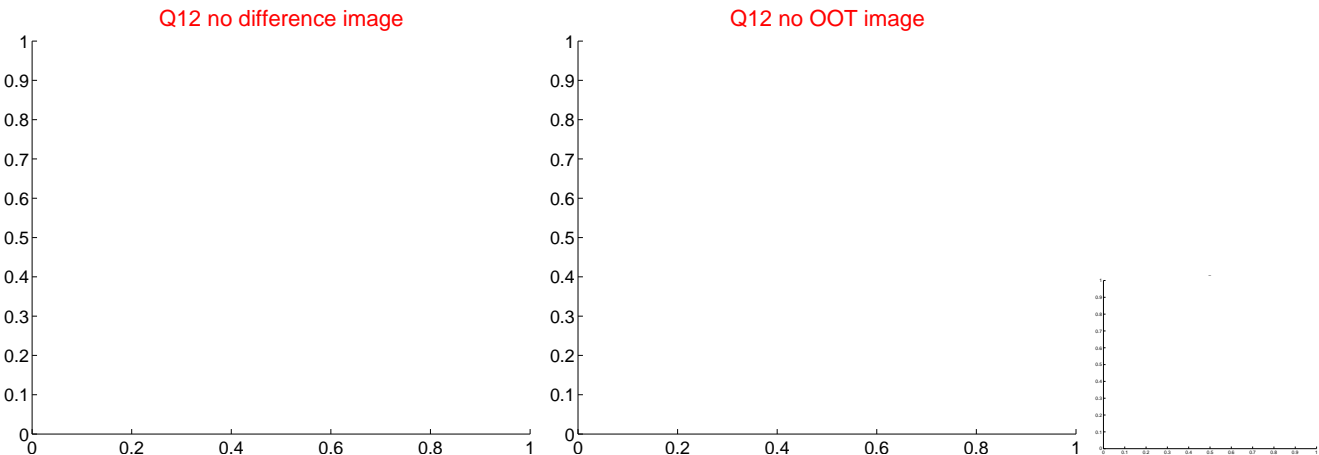
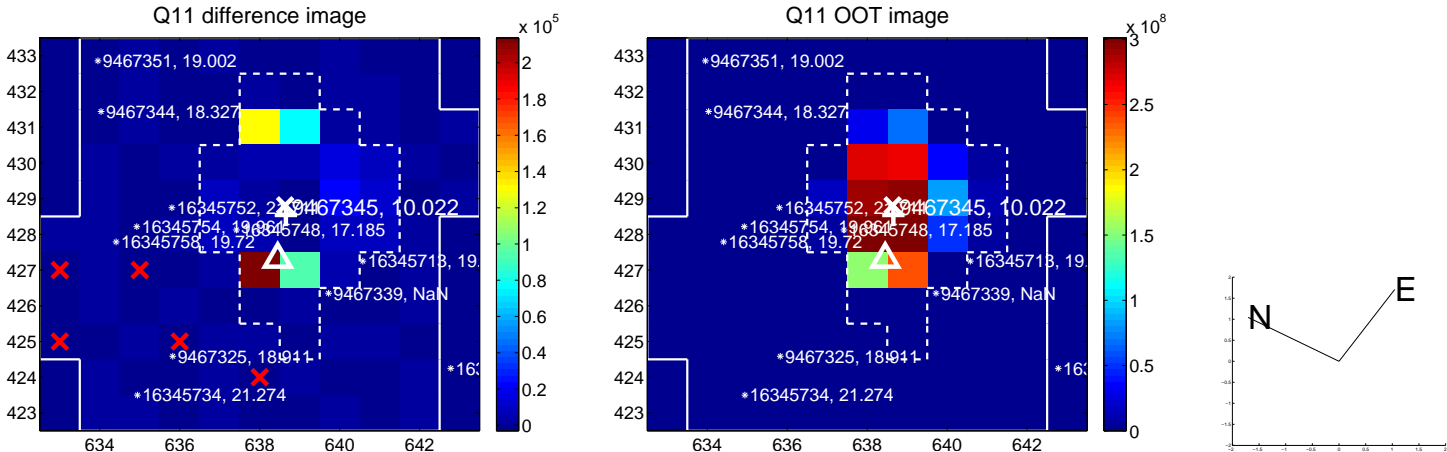
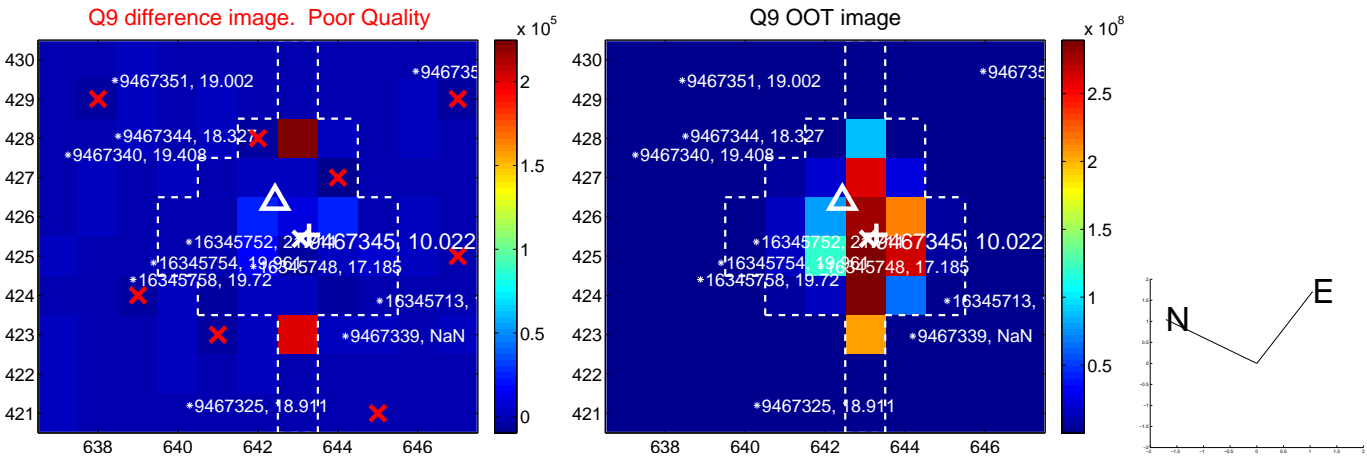
Q4 OOT image



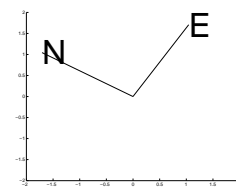
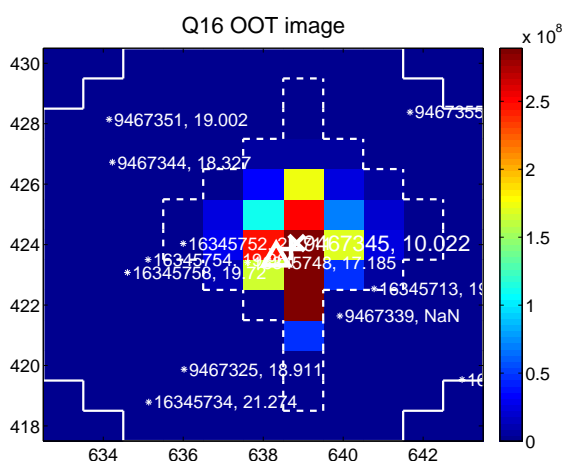
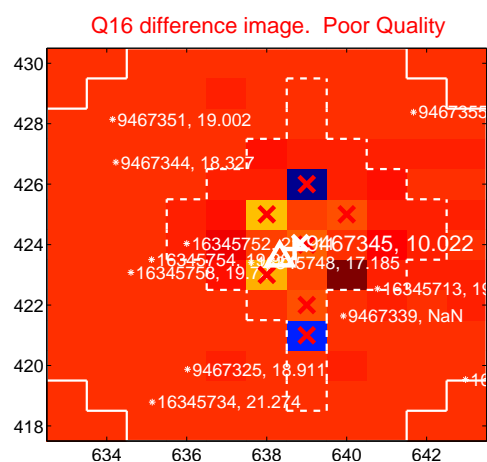
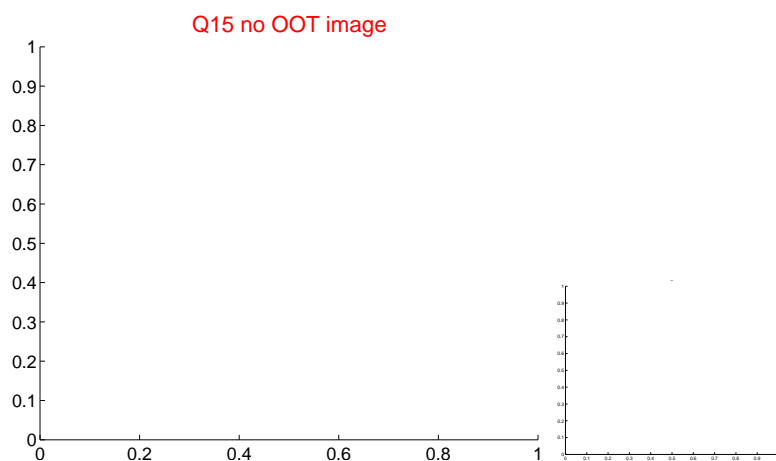
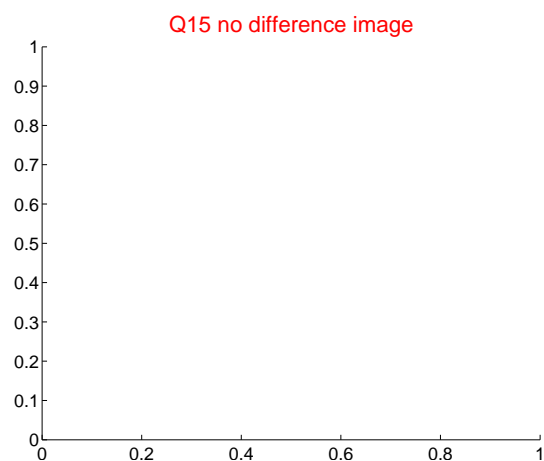
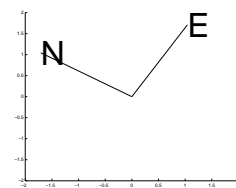
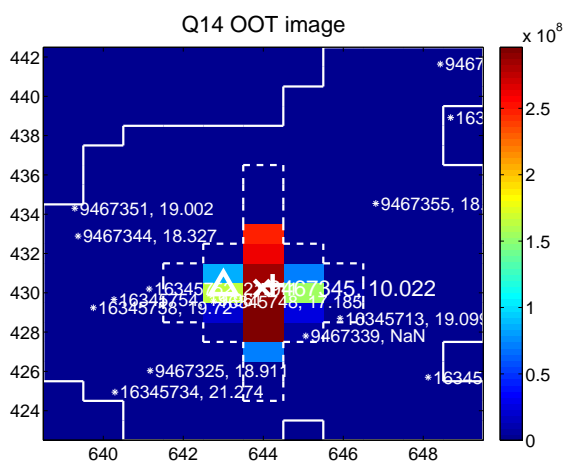
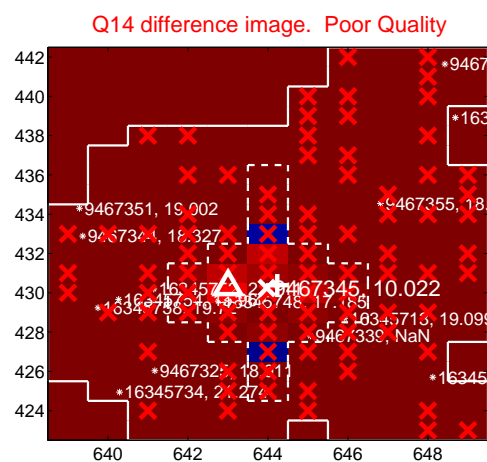
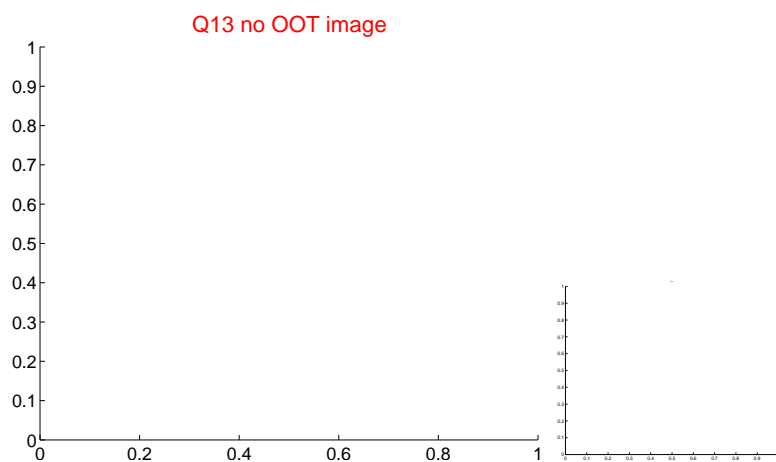
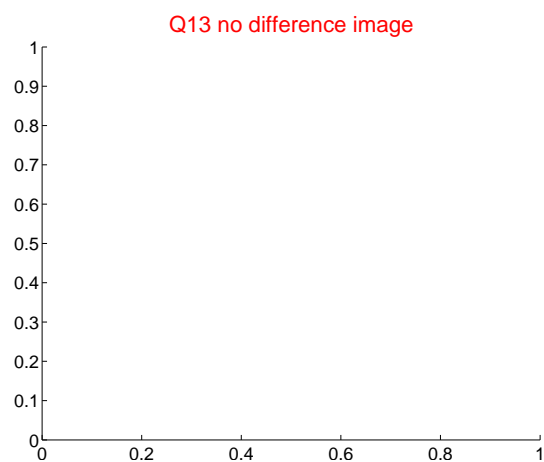
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



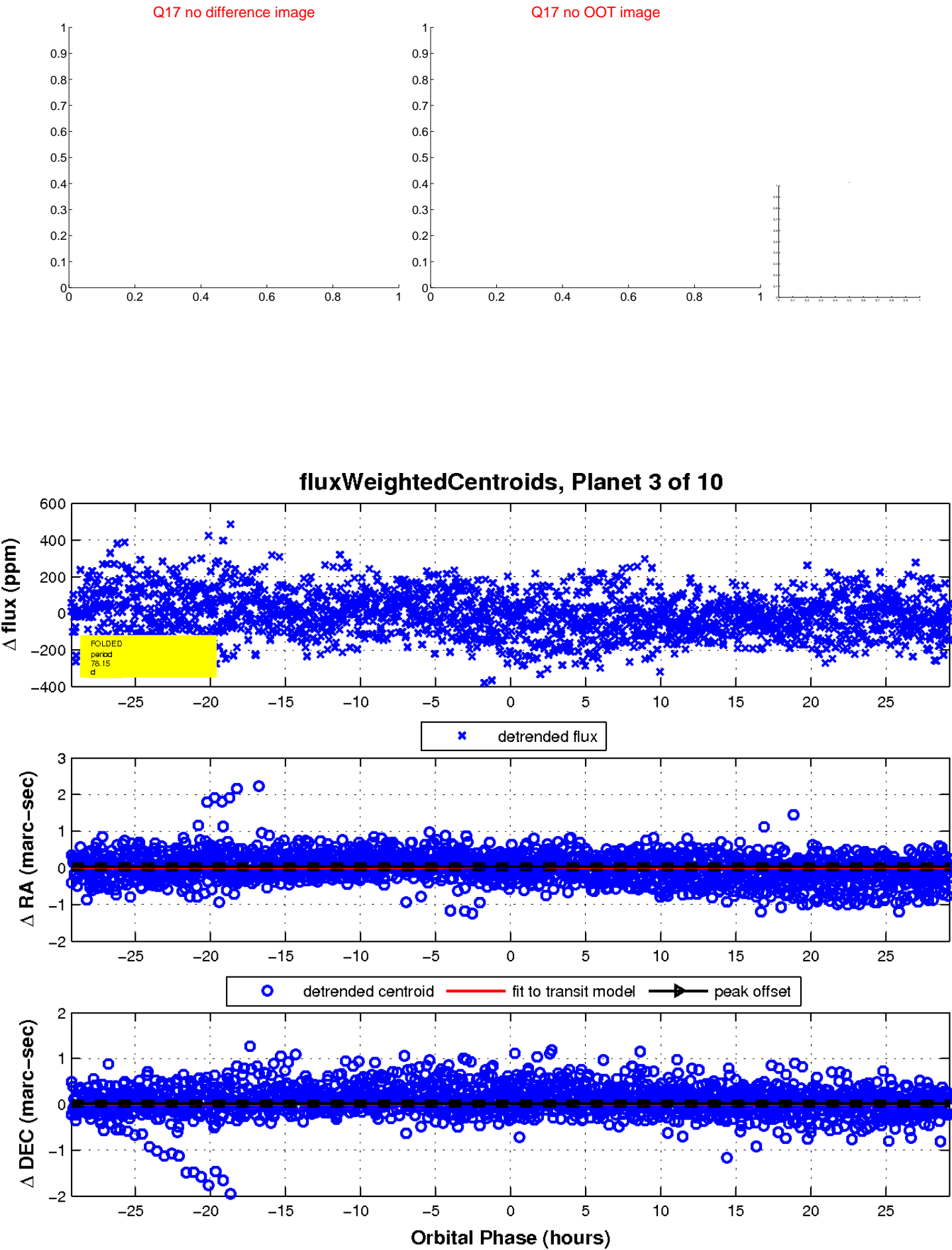
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

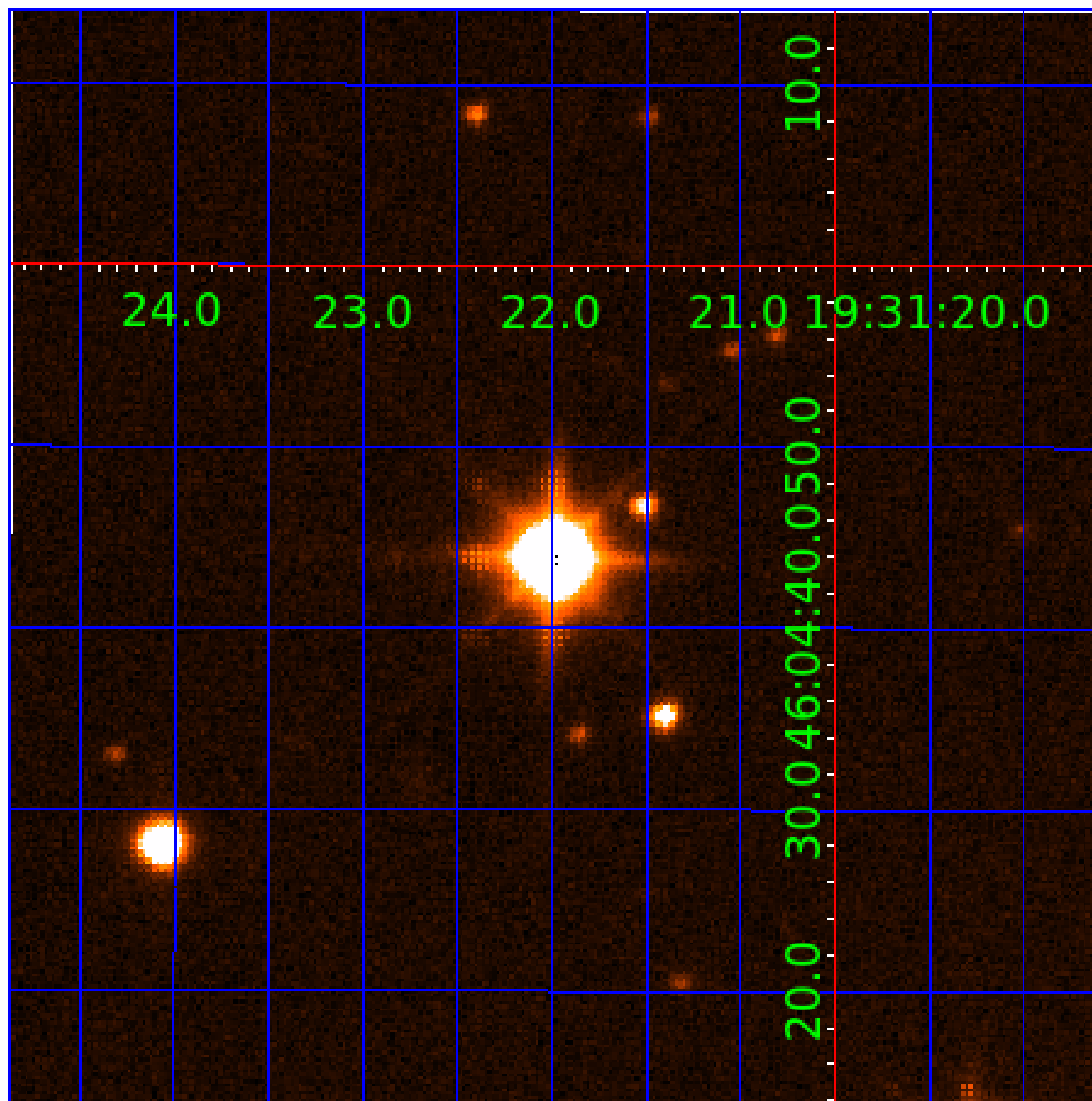


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009467345

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})
009467345-01	OBS	No	4.415246	131.645559	69.0	11.744	12.3	15.1	2.58	6781	4.25	3266.58
009467345-02	OBS	No	2.207682	132.429638	0.0	10.018	10.2	0.0	2.58	6781	0.02	8230.97
009467345-03	OBS	No	78.152078	184.897456	178.3	9.752	14.0	9.1	2.58	6781	4.33	70.81
009467345-04	OBS	No	100.652567	218.951909	119.3	8.103	11.0	6.7	2.58	6781	3.15	50.54
009467345-06	OBS	No	51.400675	137.099853	132.6	4.334	10.5	10.5	2.58	6781	3.36	123.81
009467345-07	OBS	No	58.626862	170.839840	143.2	5.867	10.1	9.6	2.58	6781	3.12	103.89
009467345-08	OBS	No	148.852894	157.736395	0.1	12.958	10.4	0.0	2.58	6781	0.08	29.99
009467345-09	OBS	No	58.571174	176.260499	142.3	3.187	10.7	9.5	2.58	6781	3.55	104.02
009467345-10	OBS	No	104.022117	197.315739	97.6	10.990	9.3	5.5	2.58	6781	2.80	48.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009467345-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
009467345-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_SATURATED
009467345-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009467345-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

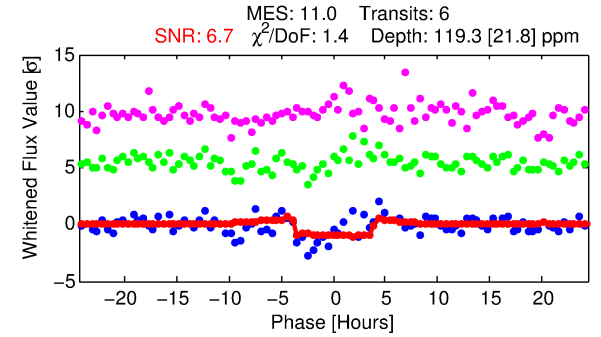
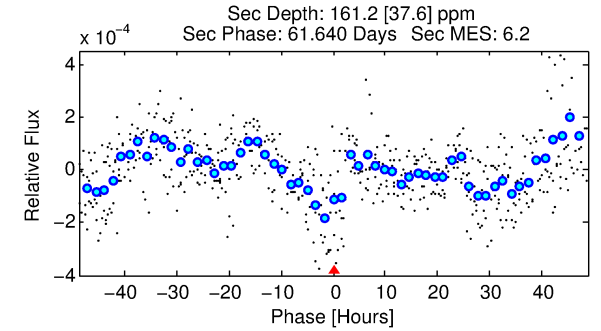
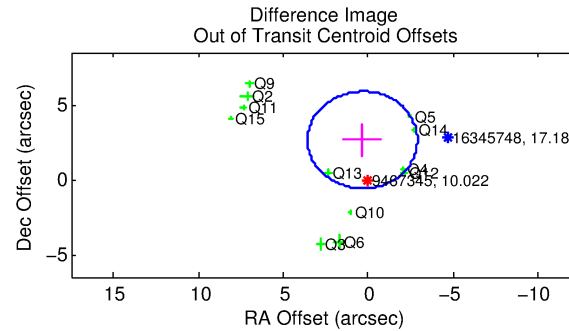
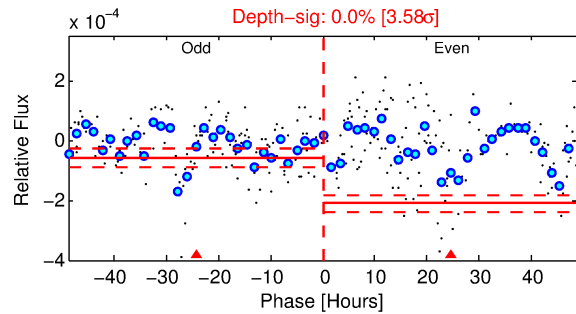
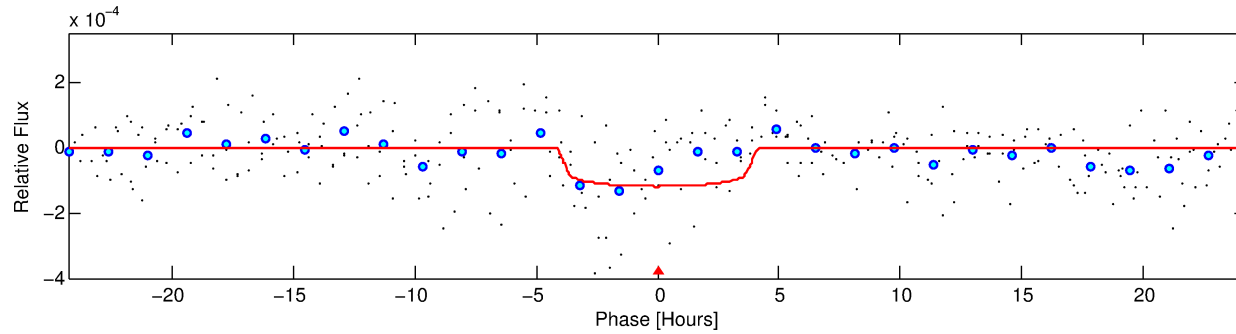
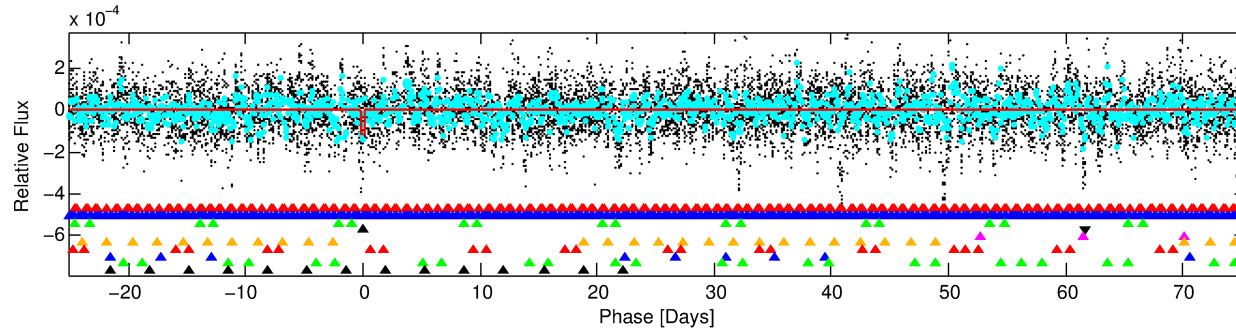
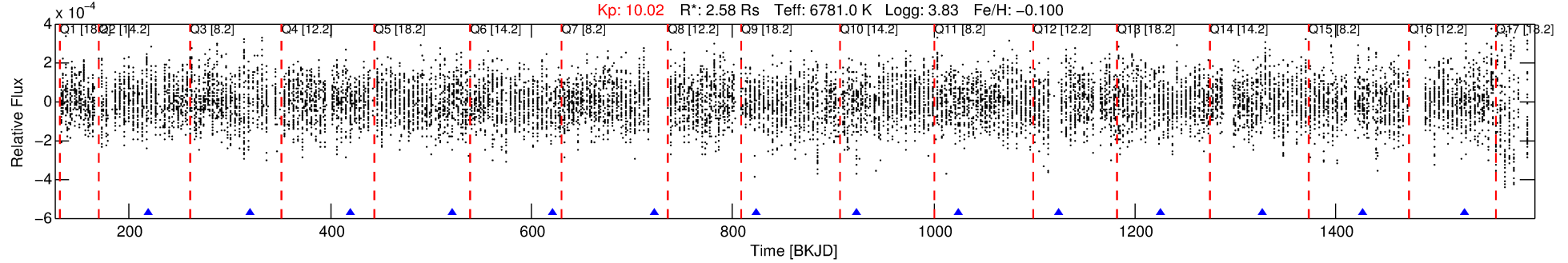
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009467345-04

No Significant Match Found

DV One-Page Summary

KIC: 9467345 Candidate: 4 of 10 Period: 100.653 d



DV Fit Results:

Period = 100.65257 [0.00175] d
Epoch = 218.9519 [0.0109] BKJD
Rp/R* = 0.0112 [0.0052]
a/R* = 54.30 [142.62]
b = 0.83 [0.98]
Seff = 50.54 [24.71]
Teq = 680 [83] K
Rp = 3.15 [1.80] Re
a = 0.4987 [0.1539] AU
Ag = 2225.41 [2369.76] [0.94 σ]
Teffp = 7220 [1730] K [3.77 σ]

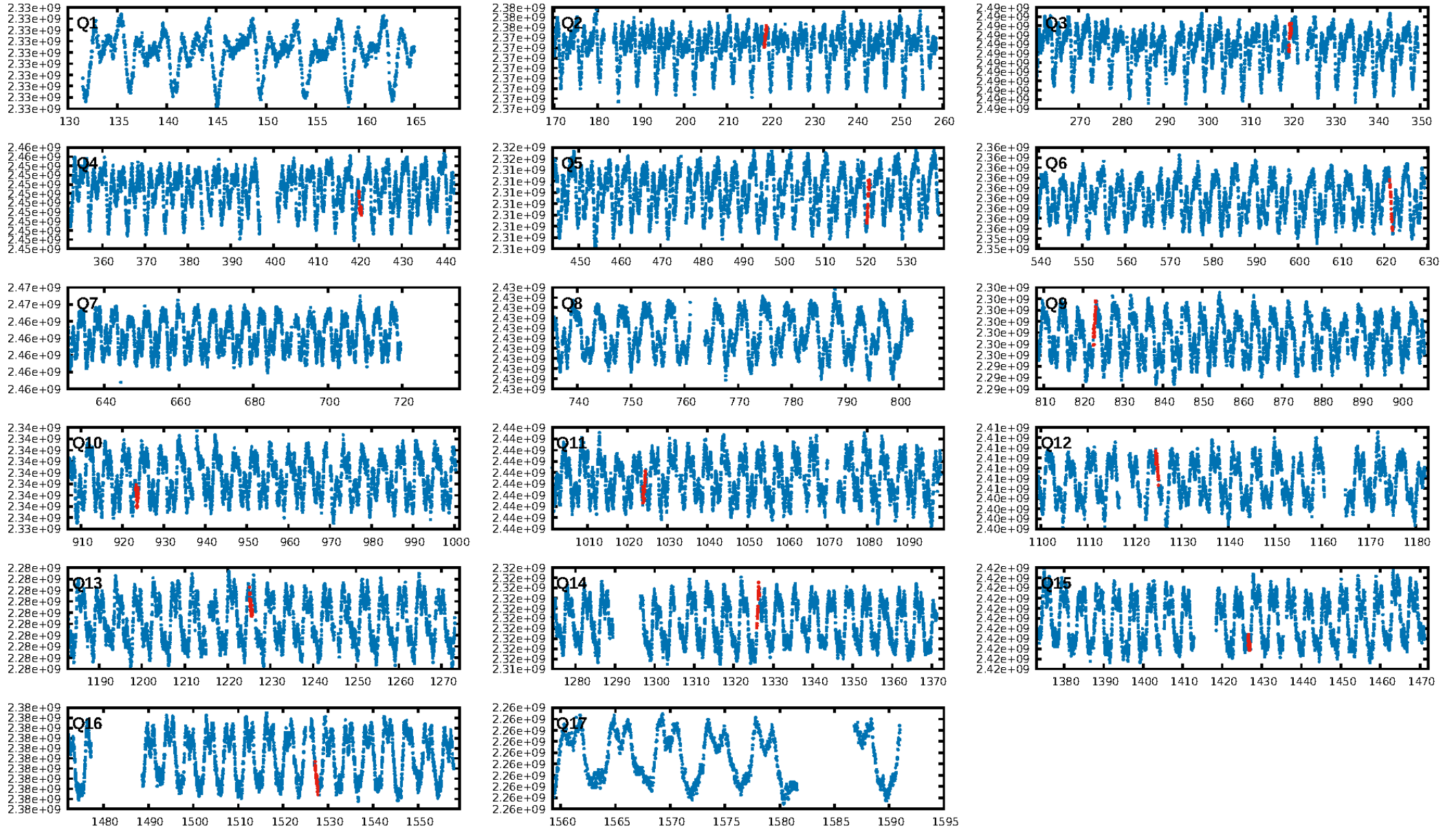
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.59 σ]
LongPeriod-sig: 100.0% [5.92 σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: N/A
Centroid-sig: 84.9%
Centroid-so: 0.682 arcsec [0.96 σ]
OotOffset-rm: 2.665 arcsec [2.47 σ]
OotOffset-st: 4/3/2/3 [12]
KicOffset-rm: 2.578 arcsec [2.24 σ]
KicOffset-st: 4/3/2/3 [12]
DiffImageQuality-fgm: 0.00 [0/12]
DiffImageOverlap-fno: 0.00 [0/12]

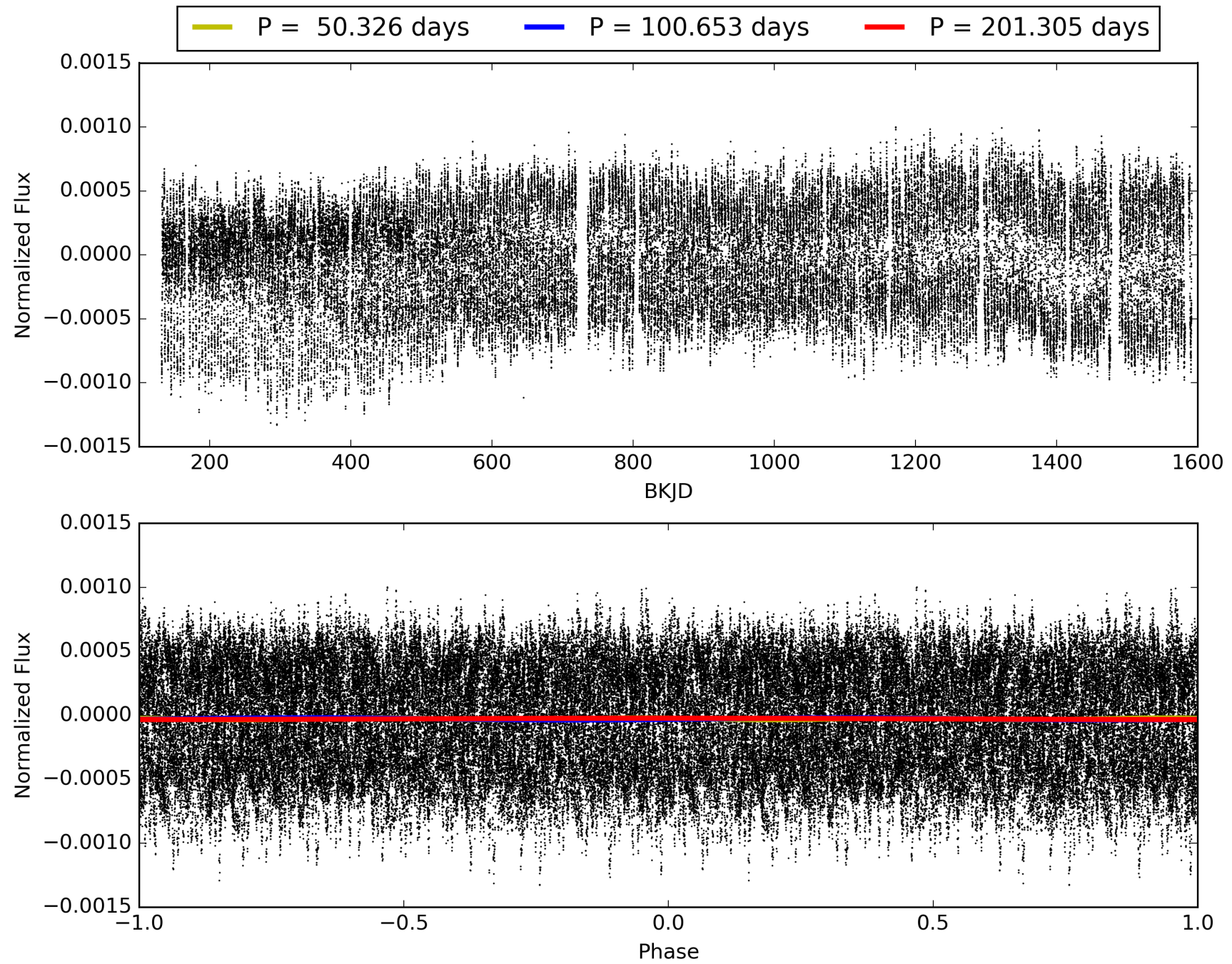
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:47:05 Z

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

TCE 009467345-04, PDC Light Curves

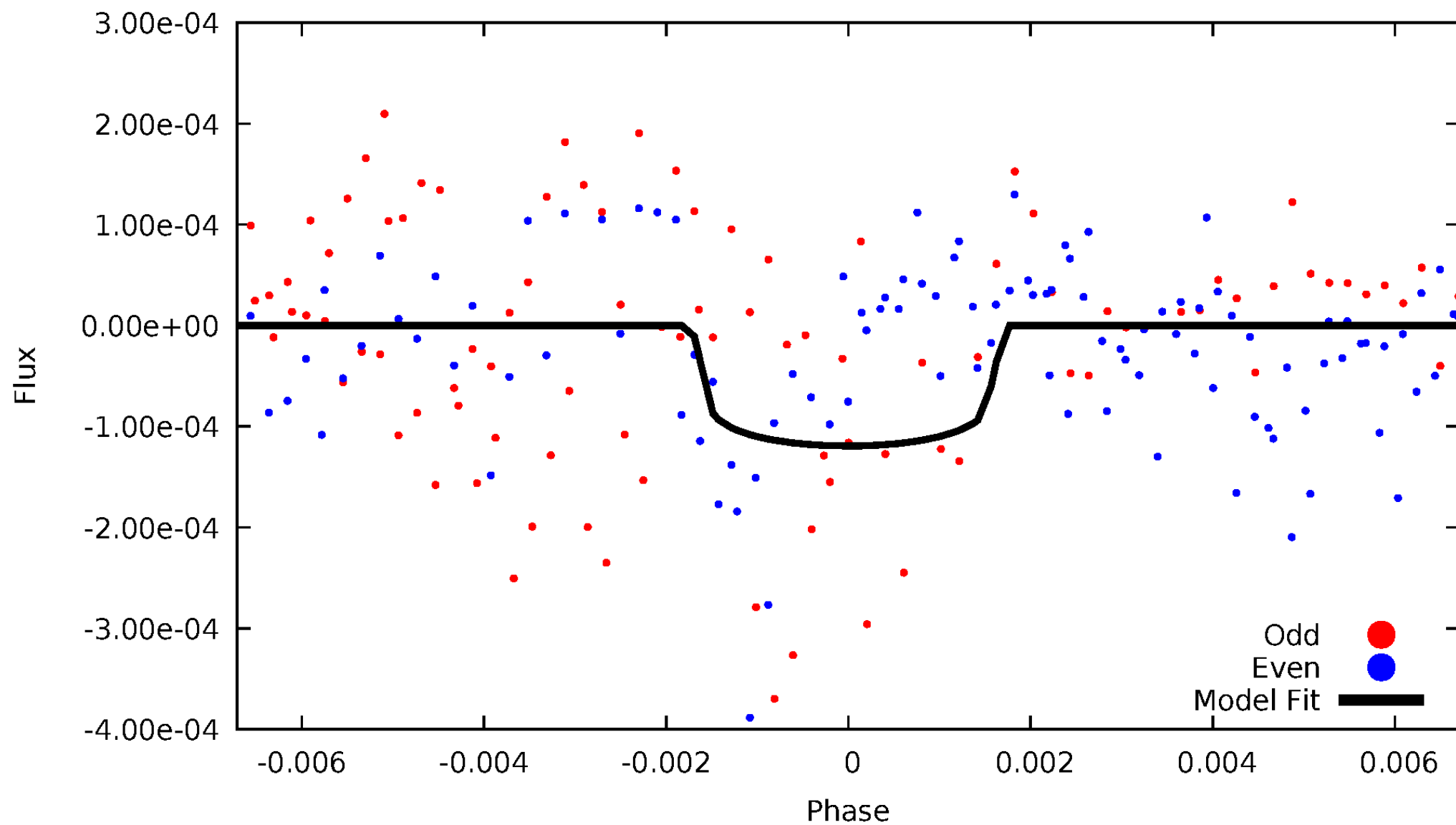


TCE 009467345-04



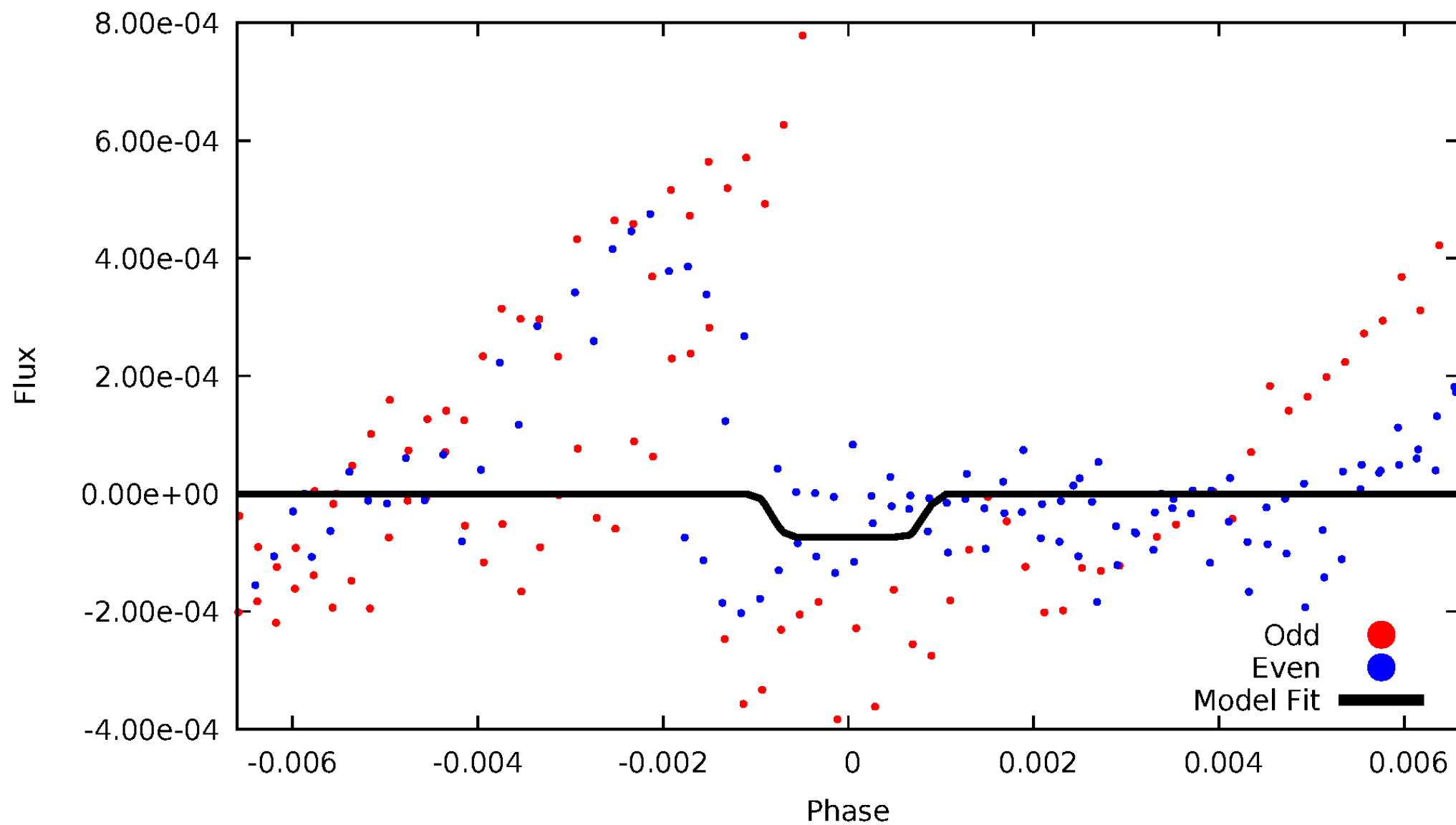
DV Odd/Even

TCE 009467345-04



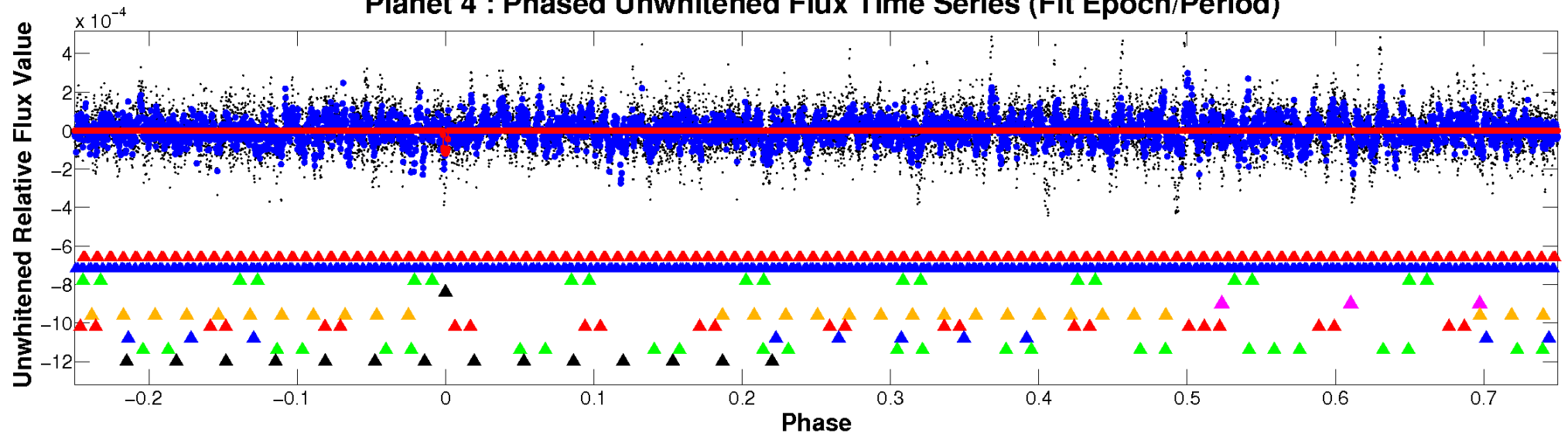
ALT Odd/Even

TCE 009467345-04

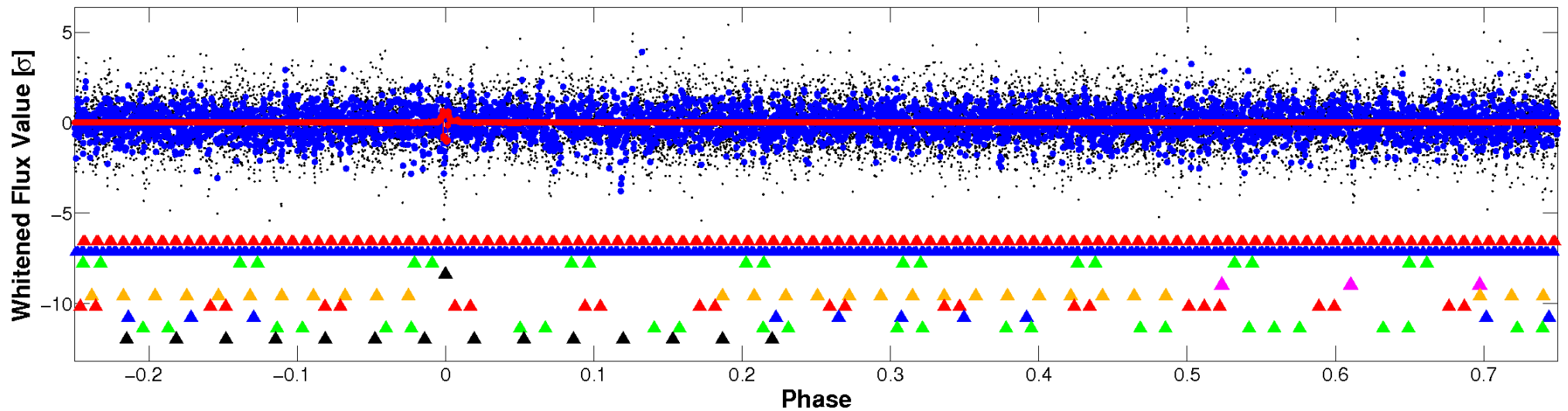


Non-Whitened Vs. Whitened Light Curve

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

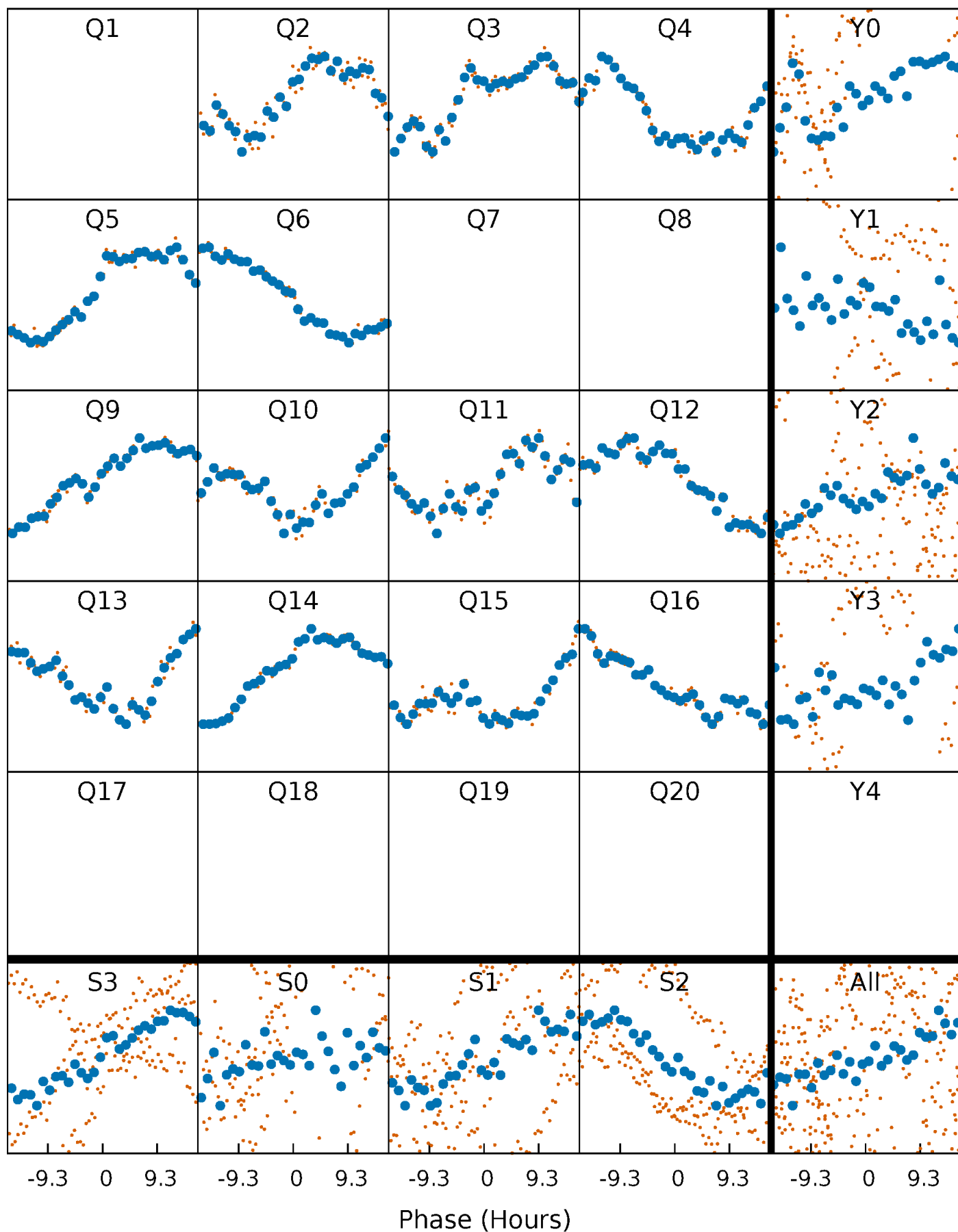


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



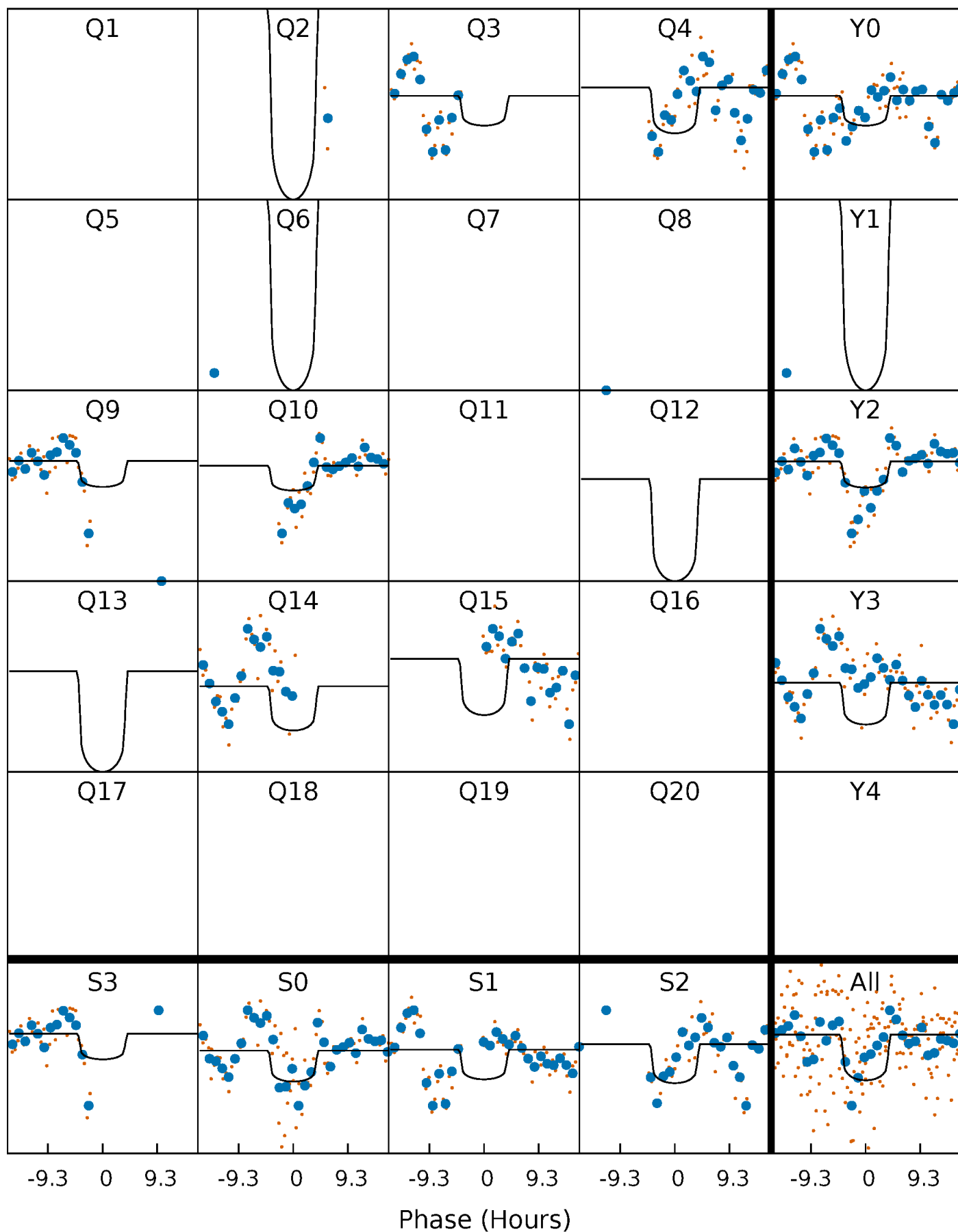
PDC Quarter-Phased Transit Curves

TCE 009467345-04 $P=100.652567$ Days $T_0=218.951909$ (BKJD)



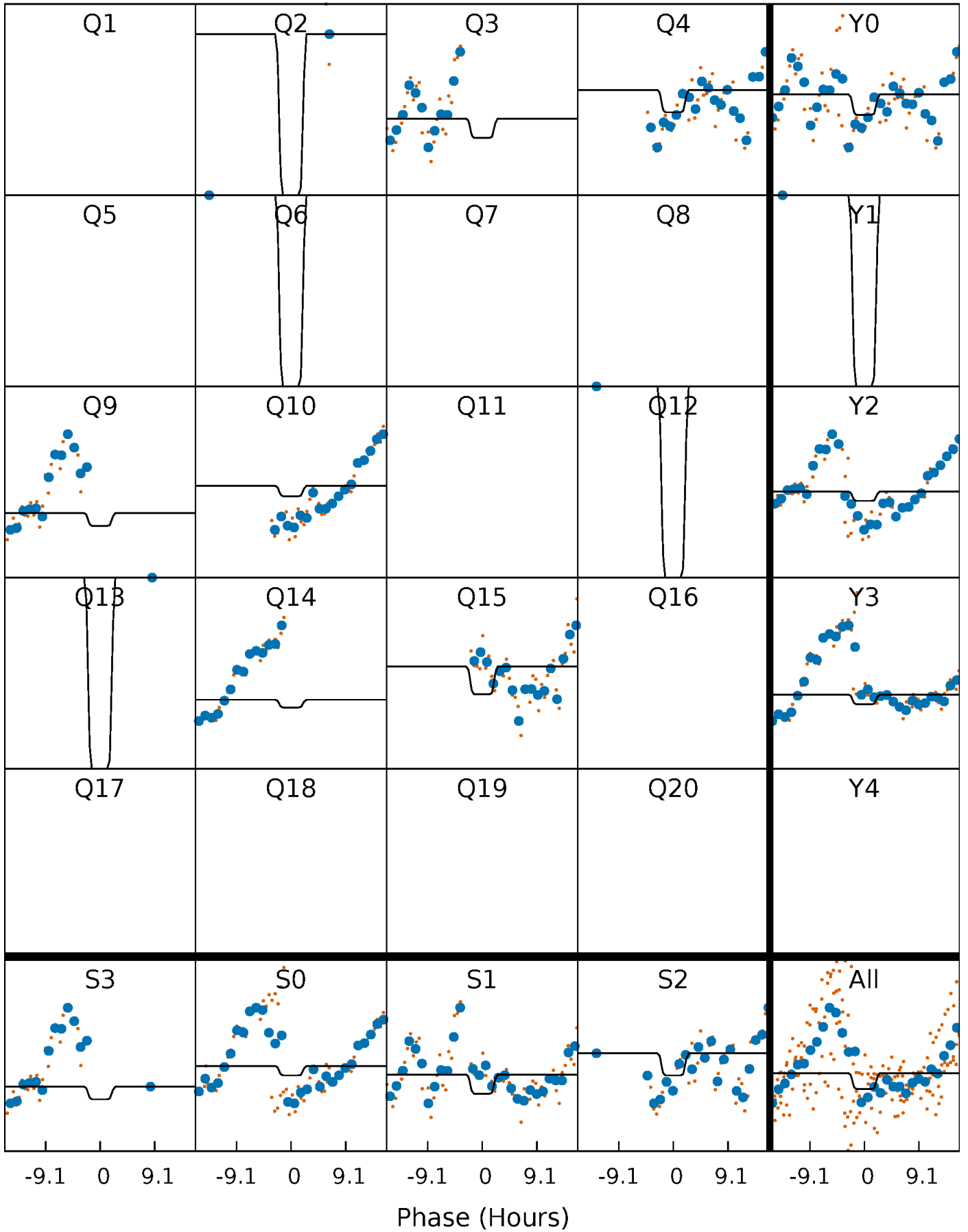
DV Quarter-Phased Transit Curves

TCE 009467345-04 P=100.652567 Days $T_0=218.951909$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

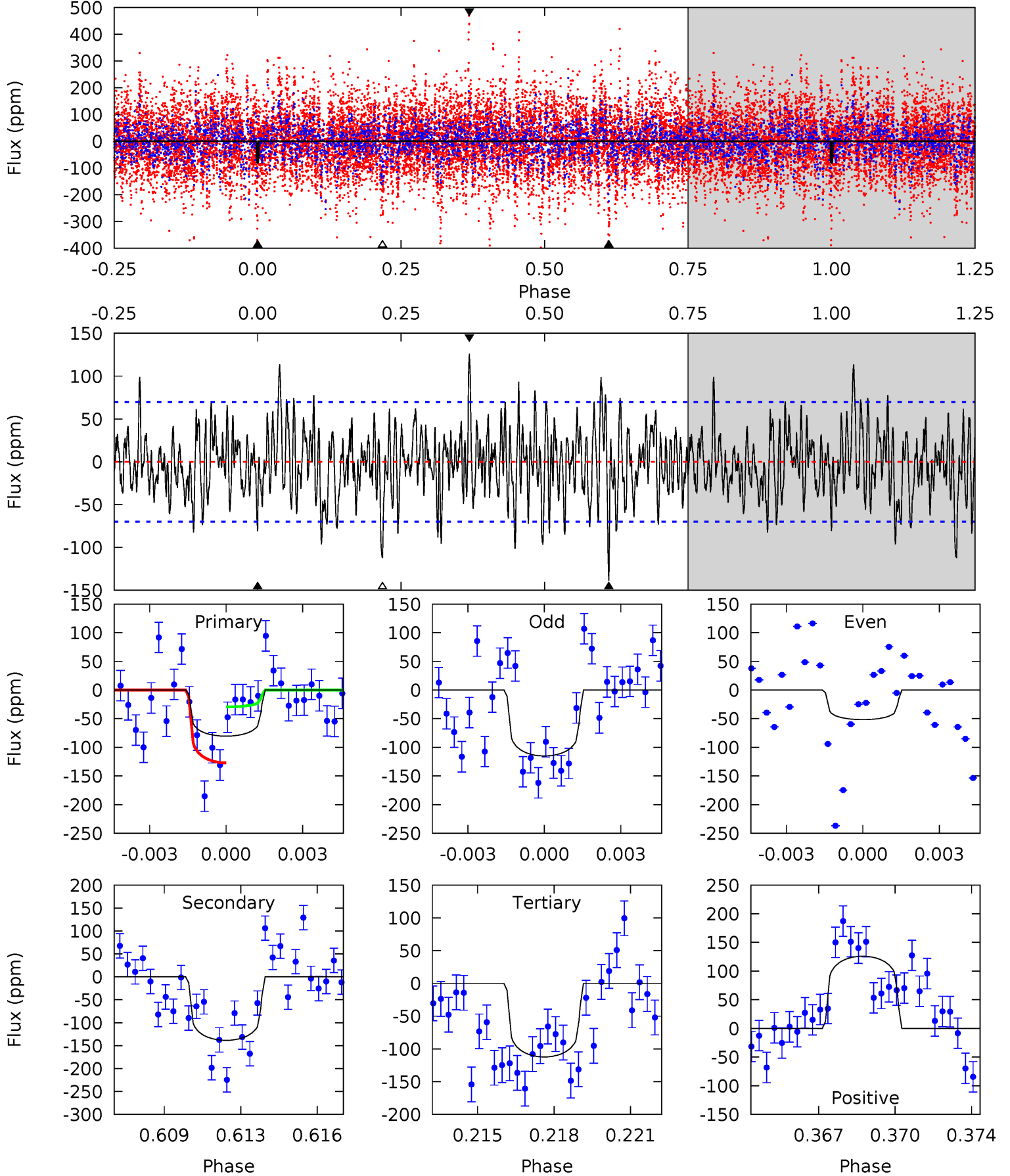
TCE 009467345-04 P=100.660360 Days $T_0=218.929855$ (BKJD)



DV Model-Shift Uniqueness Test

009467345-04, P = 100.652567 Days, E = 118.299342 Days

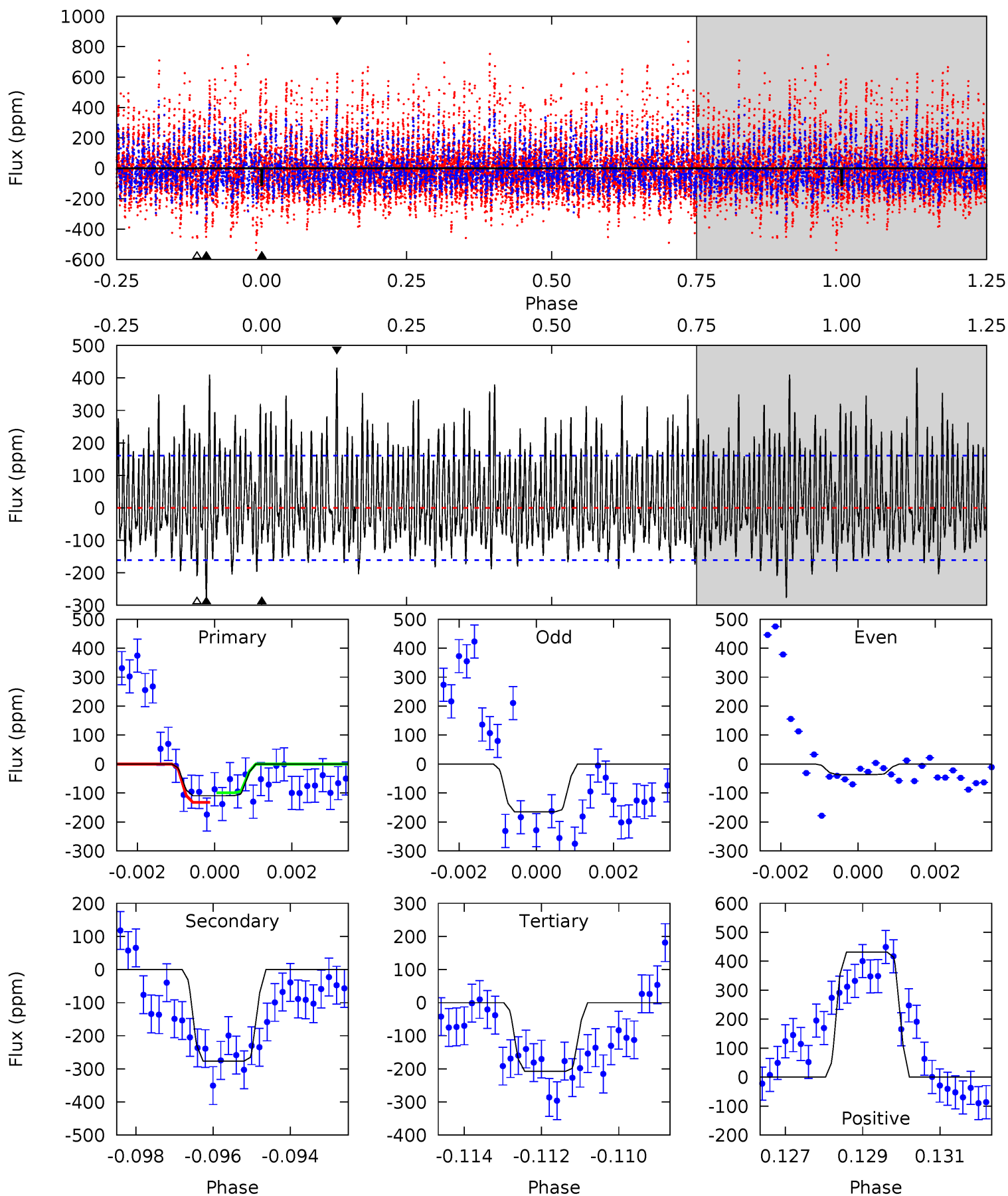
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.02	10.4	8.40	9.42	5.23	2.92	2.62	-2.38	-3.40	1.96	0.94	2.26	1.66	0.48	3.65



Alt Model-Shift Uniqueness Test

009467345-04, P = 100.660360 Days, E = 118.269495 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.63	9.17	6.88	14.3	5.33	3.09	3.96	-3.25	-10.7	2.30	-5.12	1.99	-3.04	0.61	0.54



Stellar Parameters For KIC 009467345

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6781^{+170}_{-187}	$3.829^{+0.273}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.576^{+0.471}_{-0.875}$	$1.631^{+0.180}_{-0.335}$	$0.135^{+0.242}_{-0.048}$
	+3%/-3%	+7%/-3%	+300%/-250%	+18%/-34%	+11%/-21%	+180%/-36%
Source	PHO1	FLK73	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 009467345-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-138 ± 13	$3.10^{+1.49}_{-1.44}$	944^{+55}_{-76}	6909^{+2950}_{-1215}	1947^{+4823}_{-1068}
Alt.	-277 ± 30	$2.45^{+1.41}_{-1.27}$	937^{+61}_{-75}	9696^{+8848}_{-2305}	6150^{+20496}_{-3682}

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 $A_{obs} \gg 1.0$

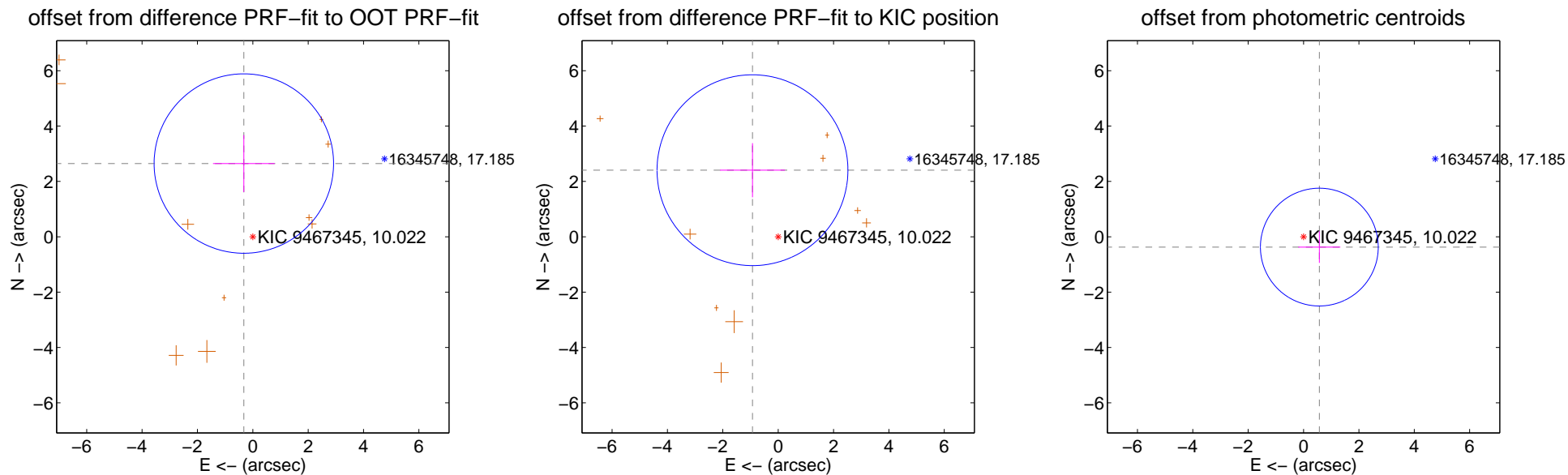
DV Centroid Data

Supplemental centroid analysis for 009467345-04. **Kepler magnitude: 10.02.** Transit SNR 6.65

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.665 ± 1.080	2.47	0.324 ± 1.113	2.646 ± 1.030
PRF-fit source offset from KIC position	2.578 ± 1.149	2.24	0.928 ± 1.175	2.405 ± 0.977
photometric centroid source offset	0.68 ± 0.71	0.96	-0.57 ± 0.76	-0.37 ± 0.57



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.

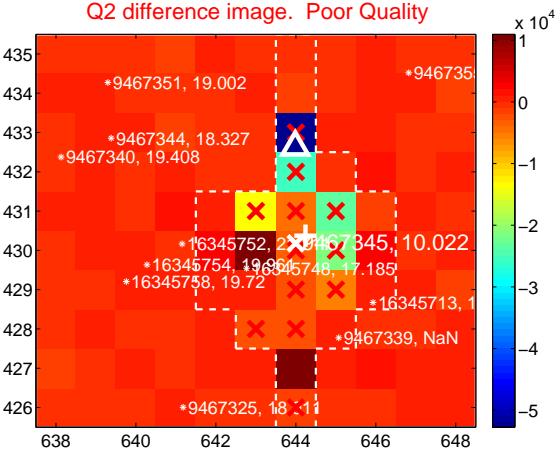
Q1 no difference image



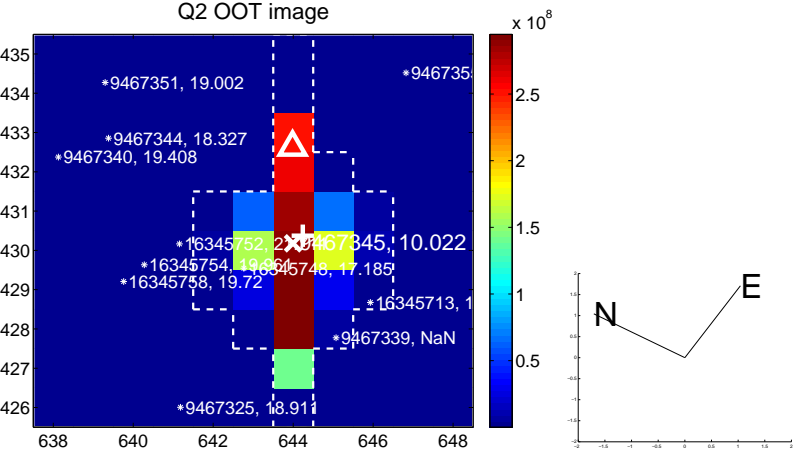
Q1 no OOT image



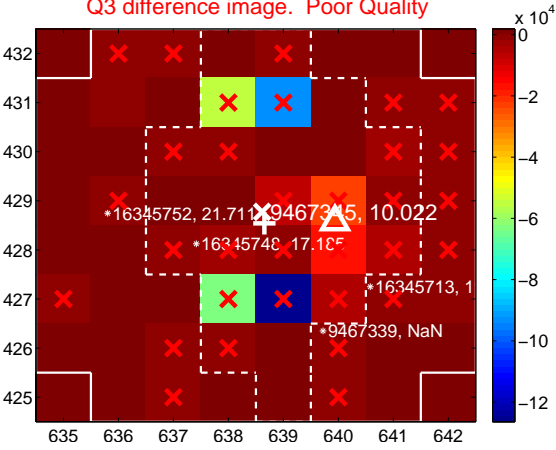
Q2 difference image. Poor Quality



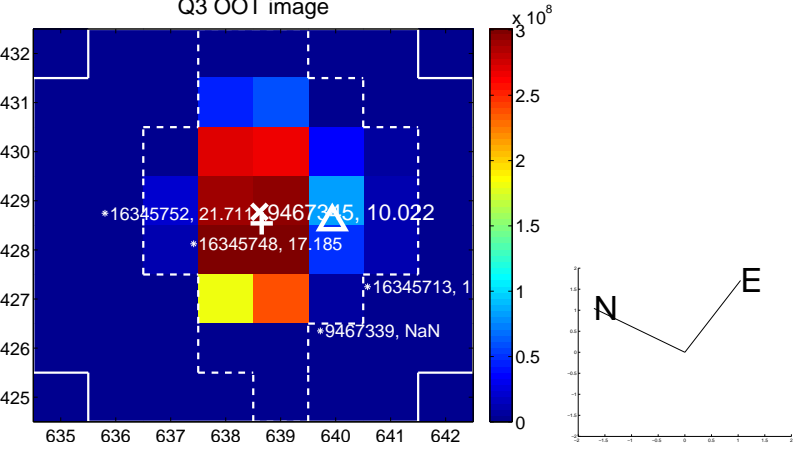
Q2 OOT image



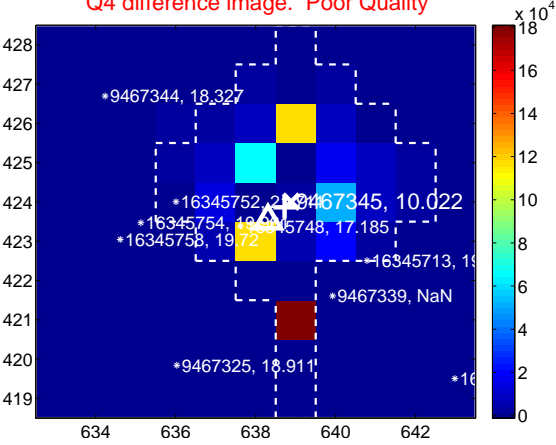
Q3 difference image. Poor Quality



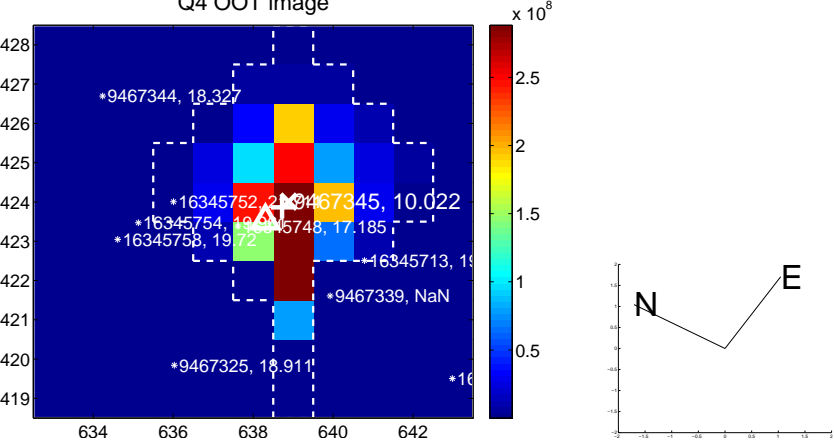
Q3 OOT image



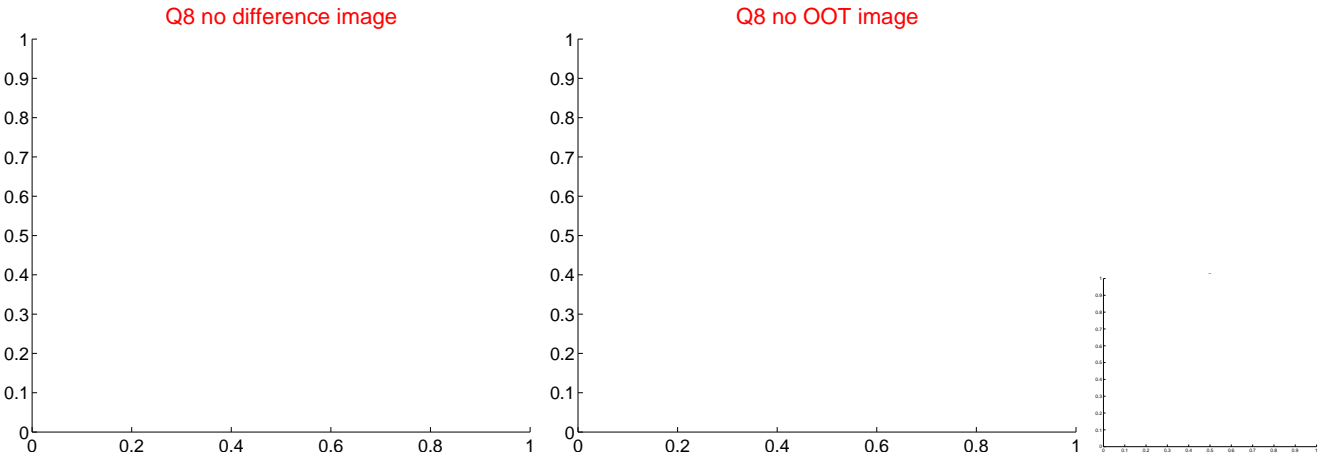
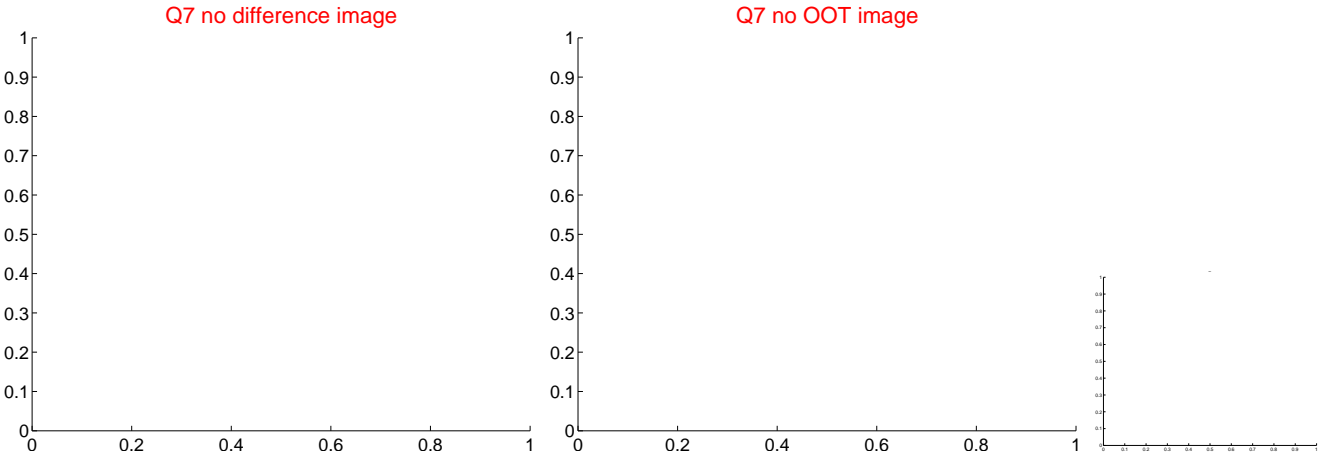
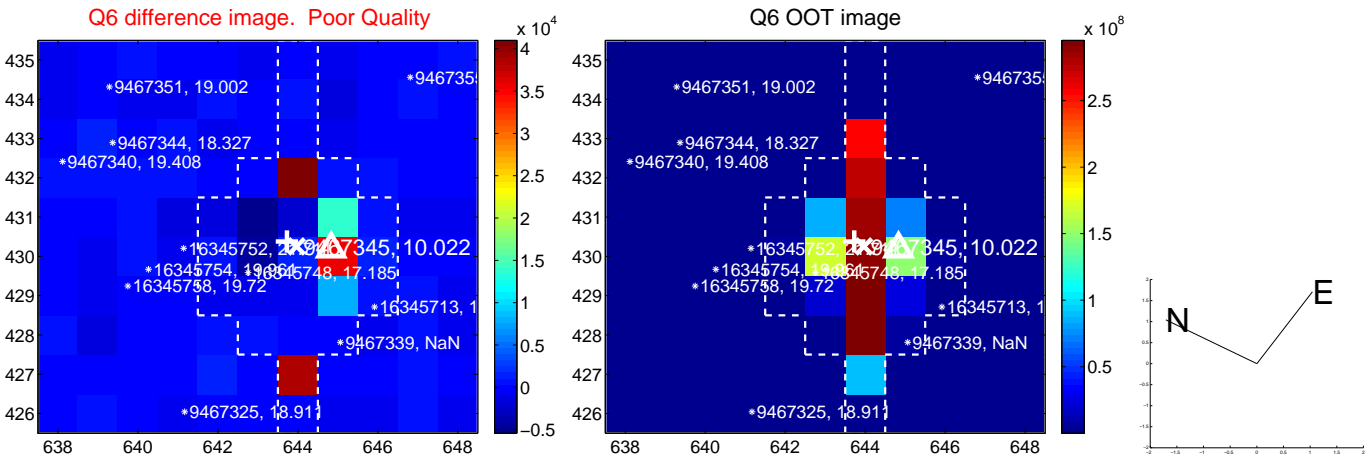
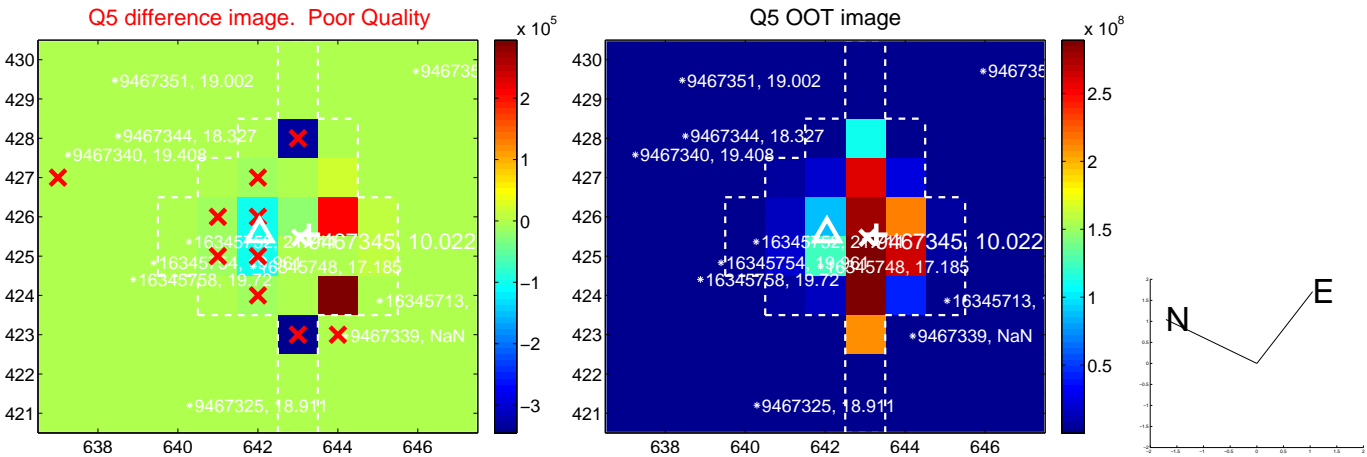
Q4 difference image. Poor Quality



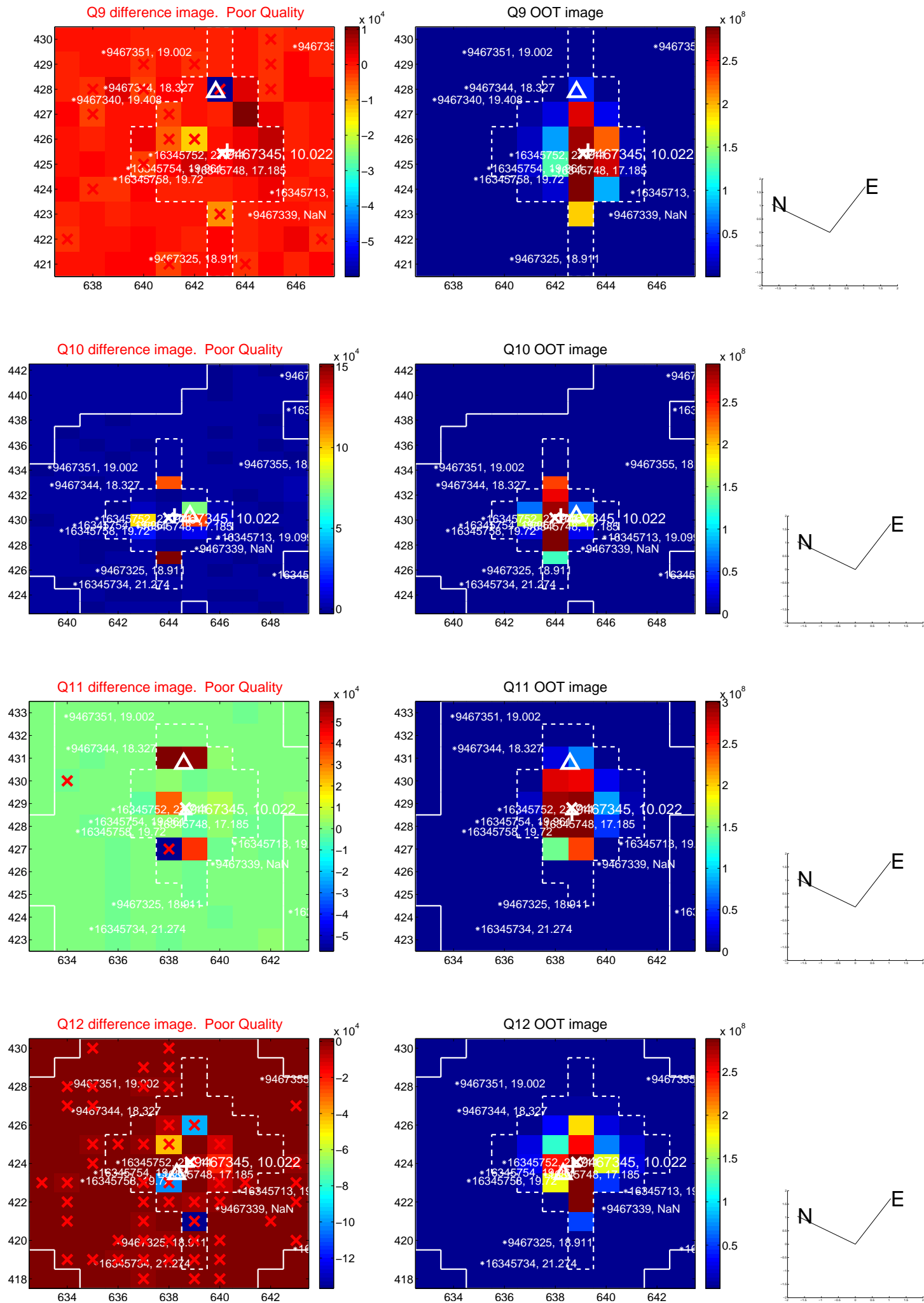
Q4 OOT image



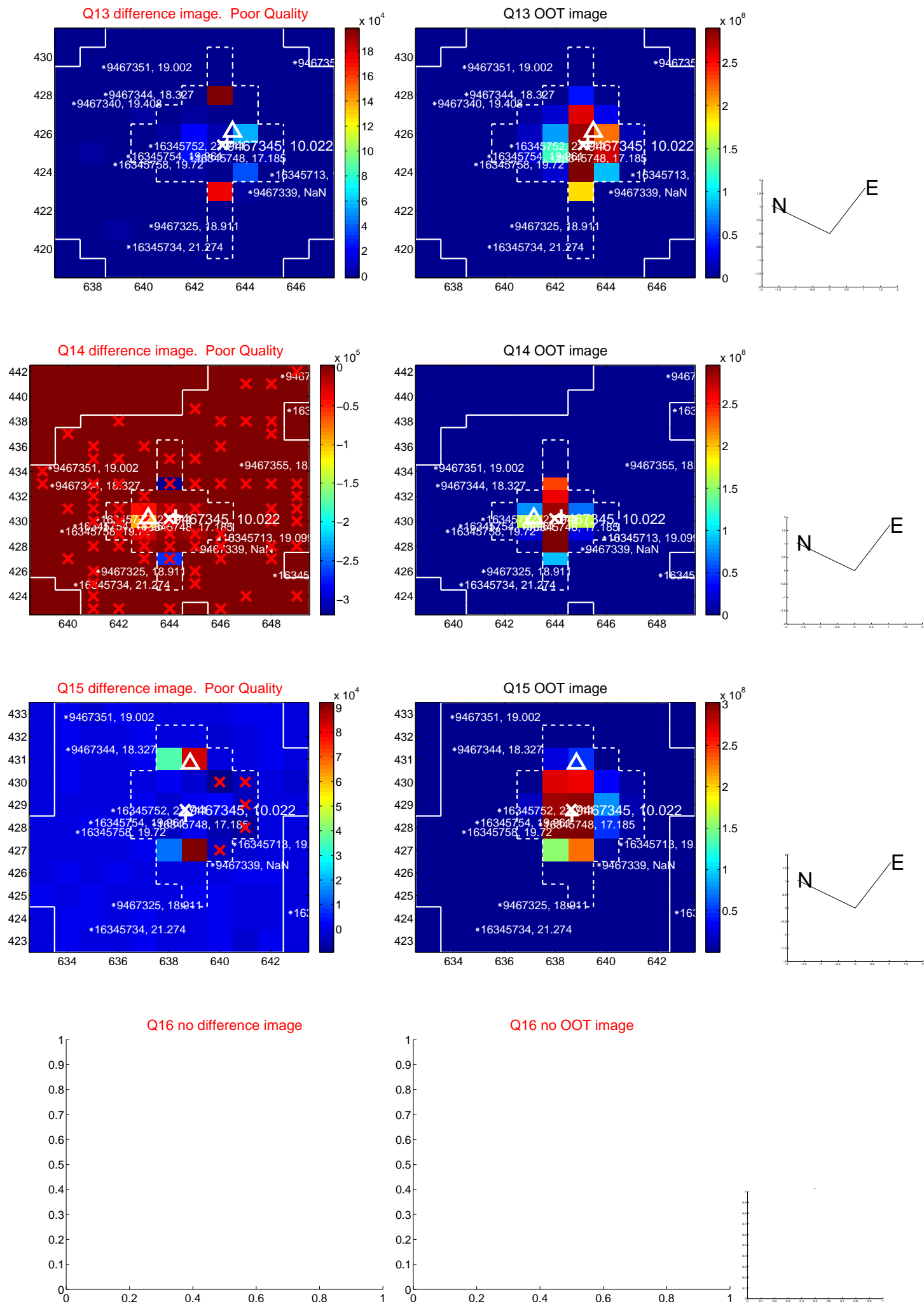
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



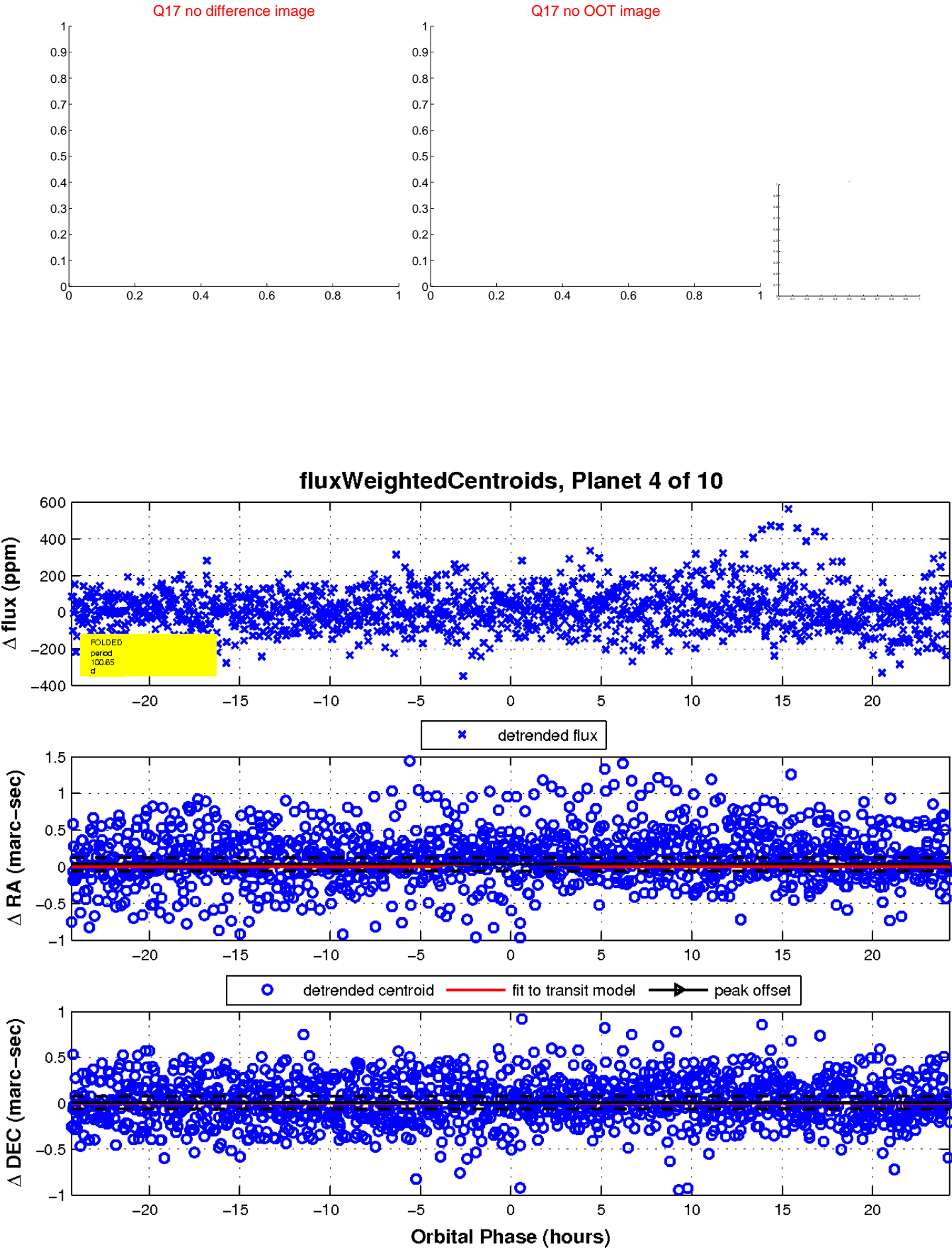
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

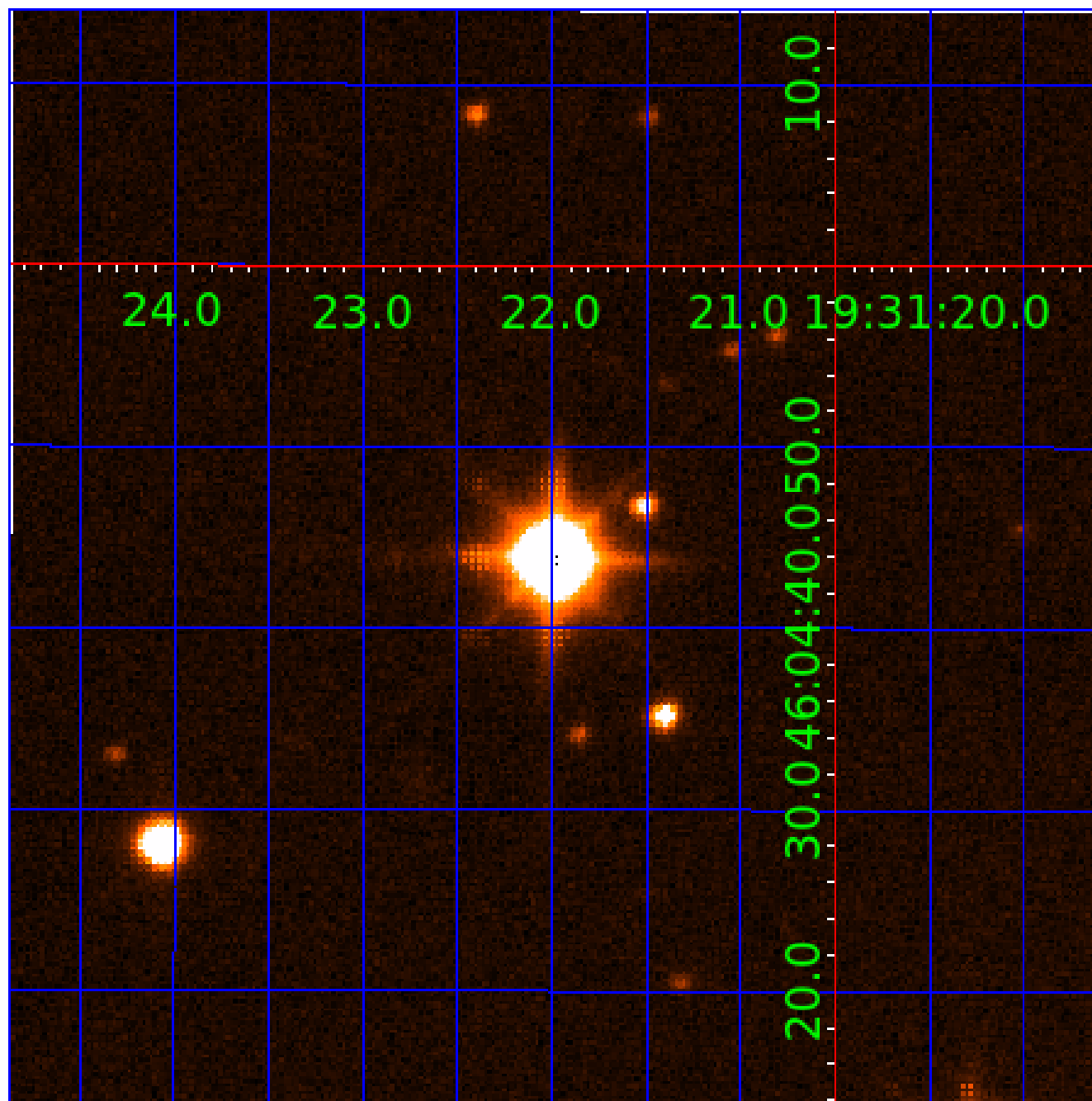


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009467345

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})
009467345-01	OBS	No	4.415246	131.645559	69.0	11.744	12.3	15.1	2.58	6781	4.25	3266.58
009467345-02	OBS	No	2.207682	132.429638	0.0	10.018	10.2	0.0	2.58	6781	0.02	8230.97
009467345-03	OBS	No	78.152078	184.897456	178.3	9.752	14.0	9.1	2.58	6781	4.33	70.81
009467345-04	OBS	No	100.652567	218.951909	119.3	8.103	11.0	6.7	2.58	6781	3.15	50.54
009467345-06	OBS	No	51.400675	137.099853	132.6	4.334	10.5	10.5	2.58	6781	3.36	123.81
009467345-07	OBS	No	58.626862	170.839840	143.2	5.867	10.1	9.6	2.58	6781	3.12	103.89
009467345-08	OBS	No	148.852894	157.736395	0.1	12.958	10.4	0.0	2.58	6781	0.08	29.99
009467345-09	OBS	No	58.571174	176.260499	142.3	3.187	10.7	9.5	2.58	6781	3.55	104.02
009467345-10	OBS	No	104.022117	197.315739	97.6	10.990	9.3	5.5	2.58	6781	2.80	48.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009467345-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
009467345-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_SATURATED
009467345-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009467345-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

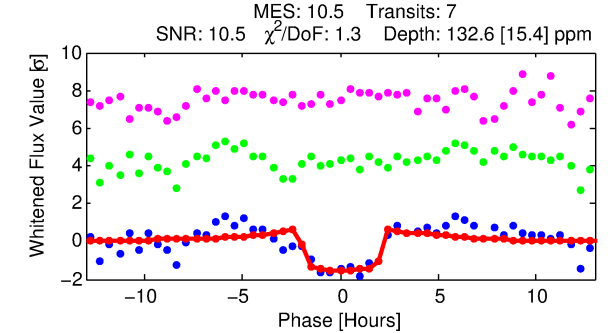
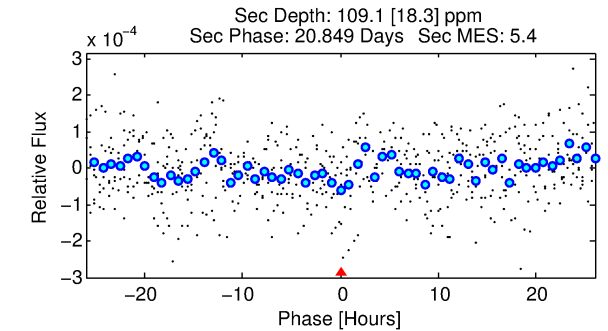
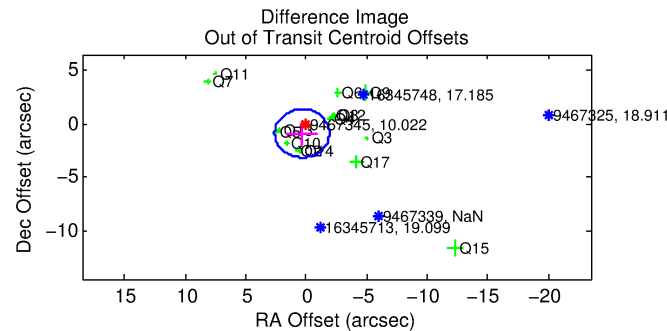
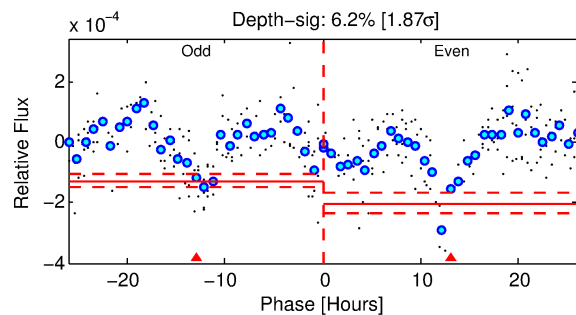
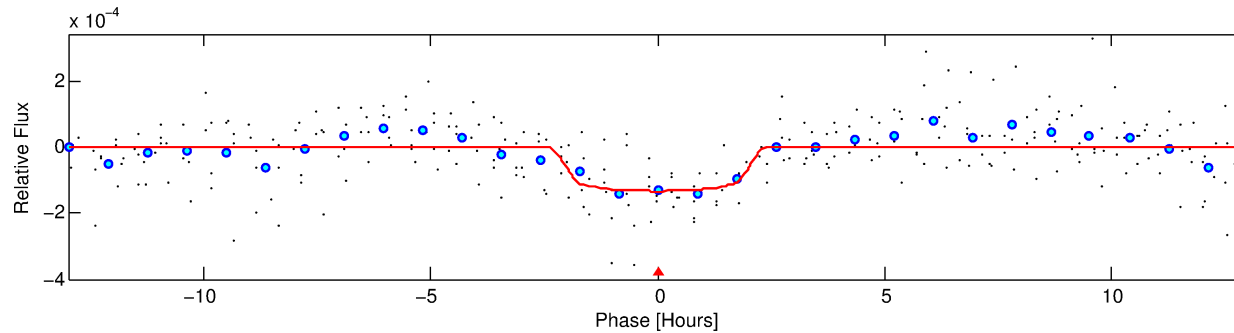
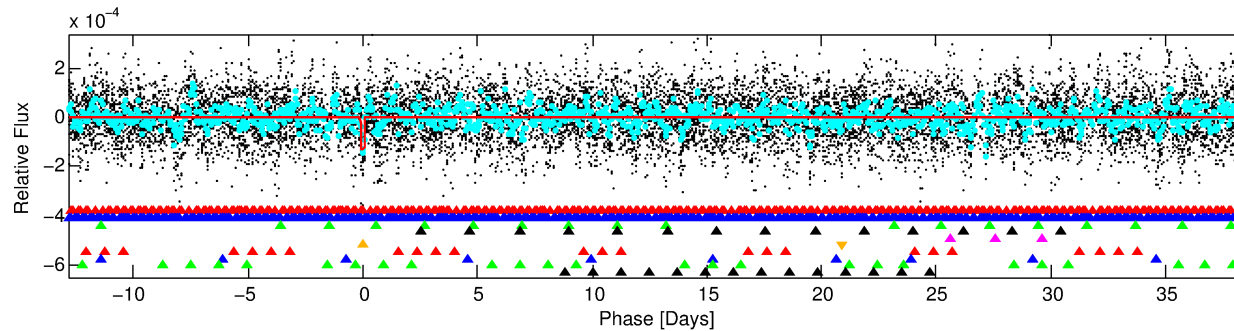
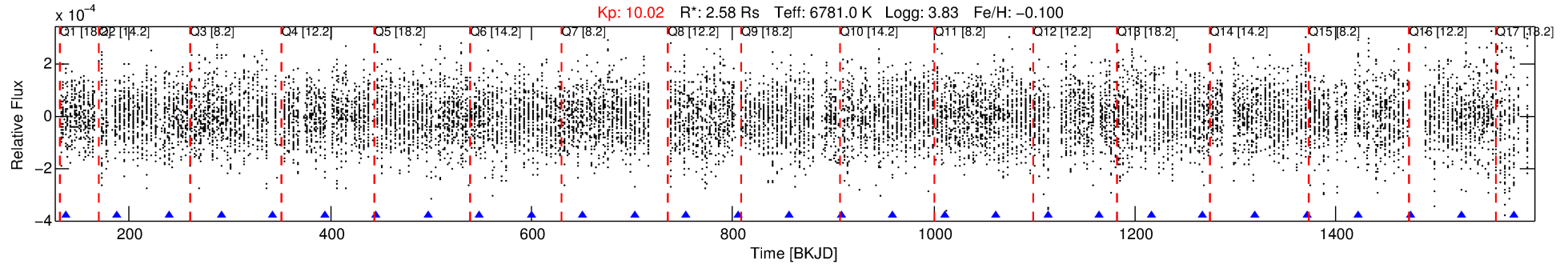
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009467345-06

No Significant Match Found

DV One-Page Summary

KIC: 9467345 Candidate: 6 of 10 Period: 51.401 d



DV Fit Results:

Period = 51.40067 [0.00048] d
Epoch = 137.0999 [0.0077] BKJD
Rp/R* = 0.0120 [0.0043]
a/R* = 48.46 [100.92]
b = 0.86 [0.64]
Seff = 123.81 [60.53]
Teq = 851 [104] K
Rp = 3.36 [1.67] Re
a = 0.3186 [0.0983] AU
Ag = 538.94 [476.46] [1.13 σ]
Teffp = 6336 [1193] K [4.58 σ]

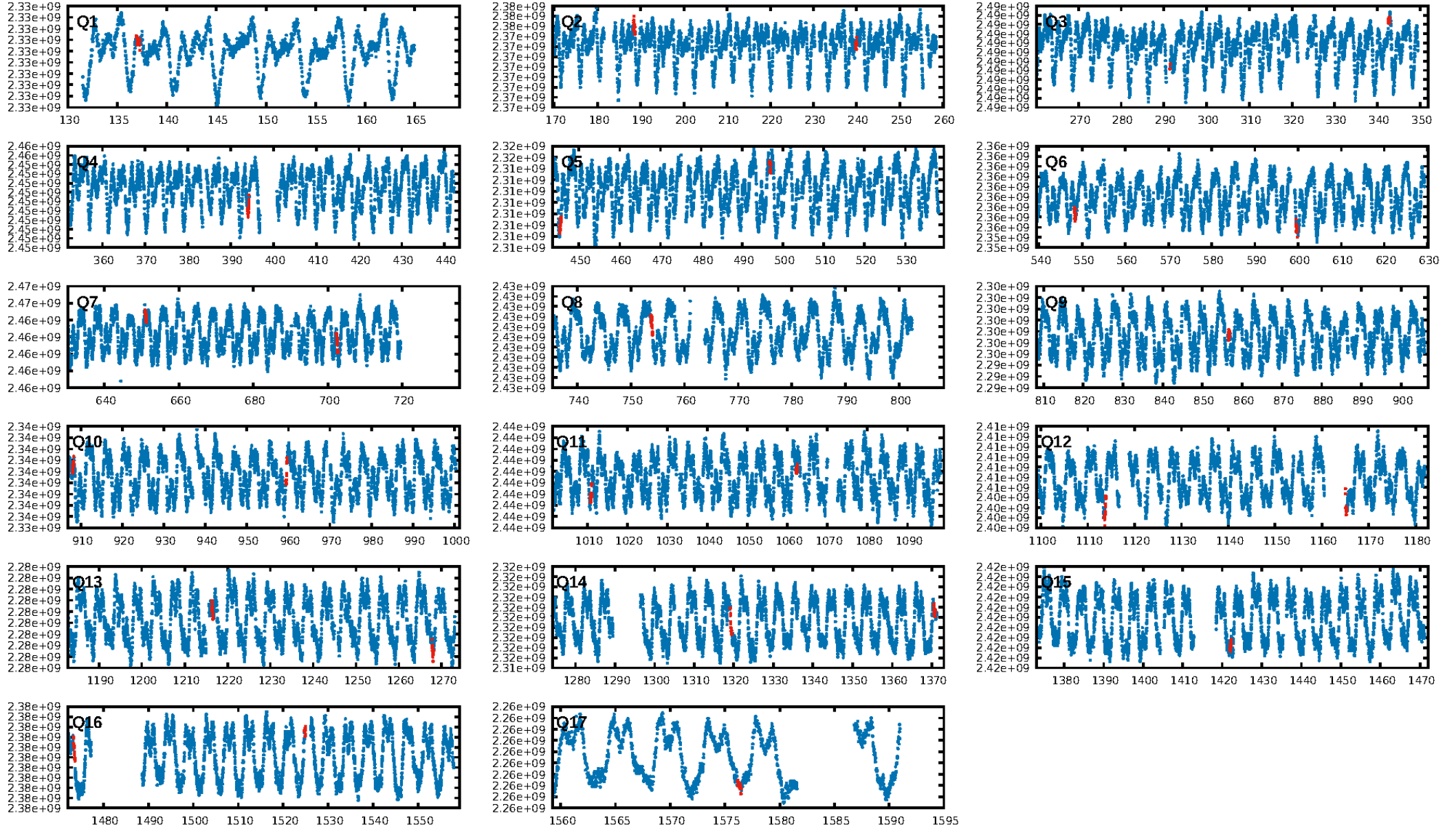
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [90.08 σ]
LongPeriod-sig: 100.0% [31.99 σ]
ModelChiSquare2-sig: 29.7%
ModelChiSquareGof-sig: 96.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: N/A
Centroid-sig: 63.9%
Centroid-so: 0.676 arcsec [1.50 σ]
OotOffset-rm: 0.963 arcsec [1.28 σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-rm: 1.761 arcsec [2.38 σ]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 0.20 [3/15]
DiffImageOverlap-fno: 0.31 [5/16]

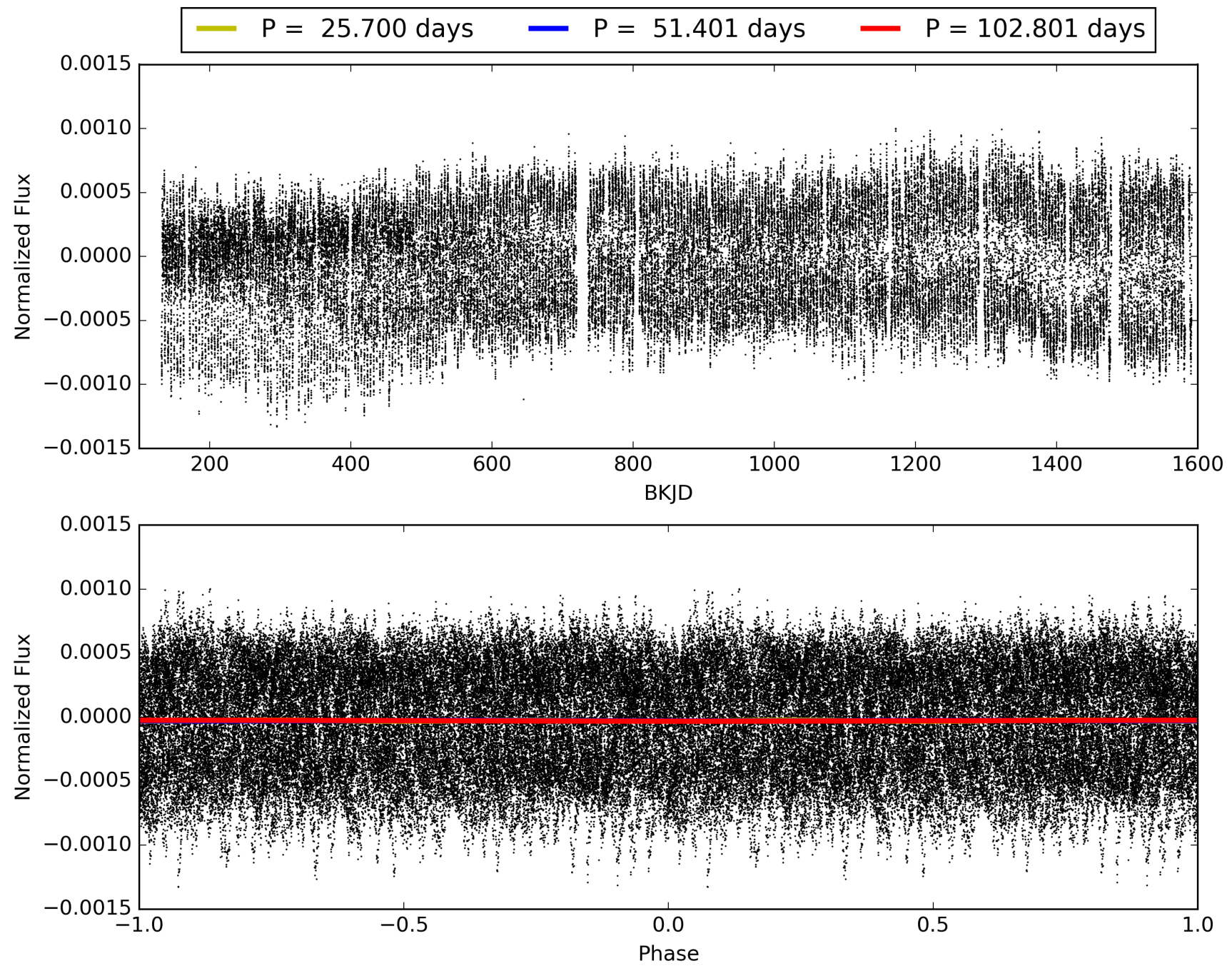
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:47:13 Z

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

TCE 009467345-06, PDC Light Curves

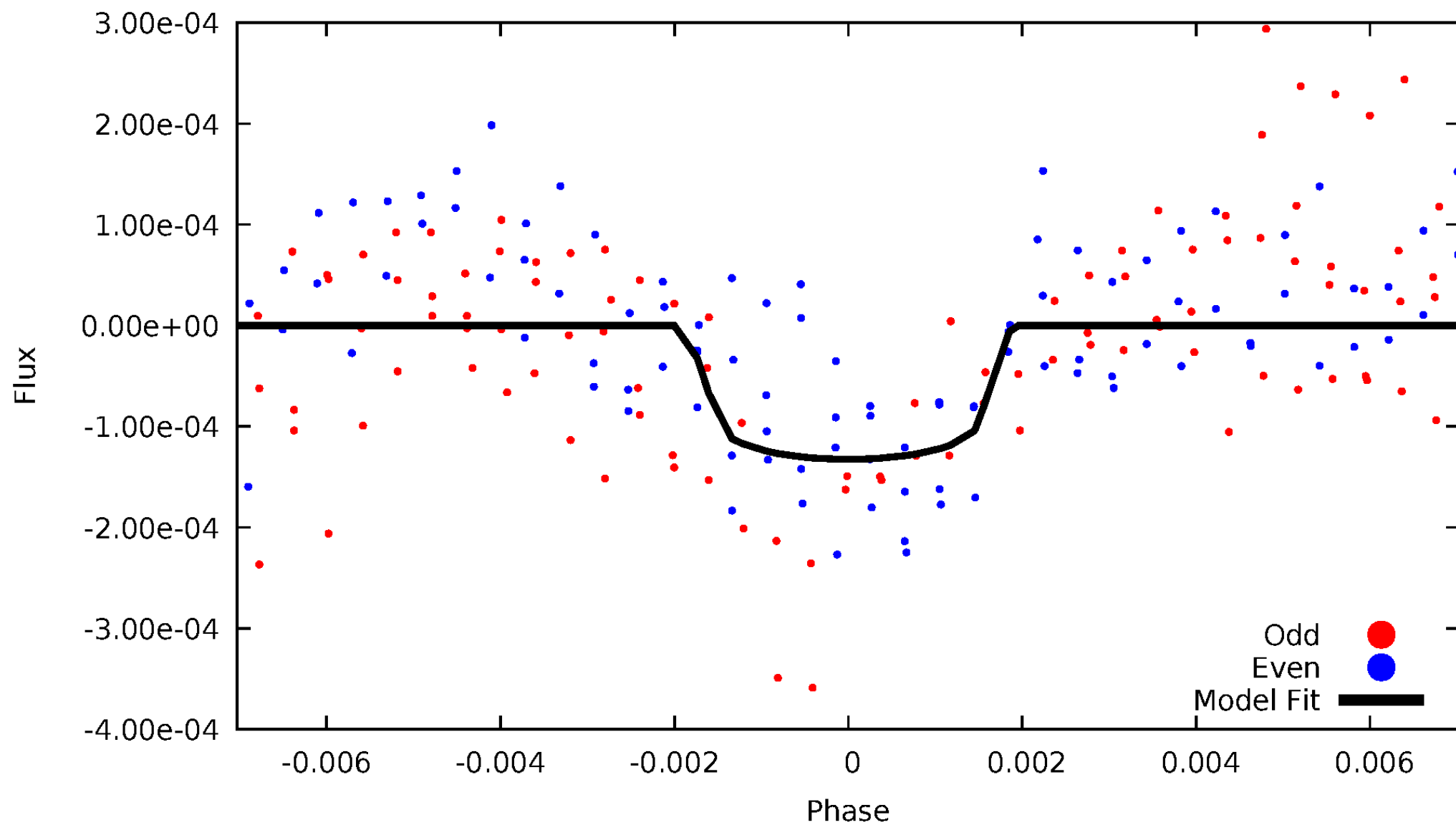


TCE 009467345-06



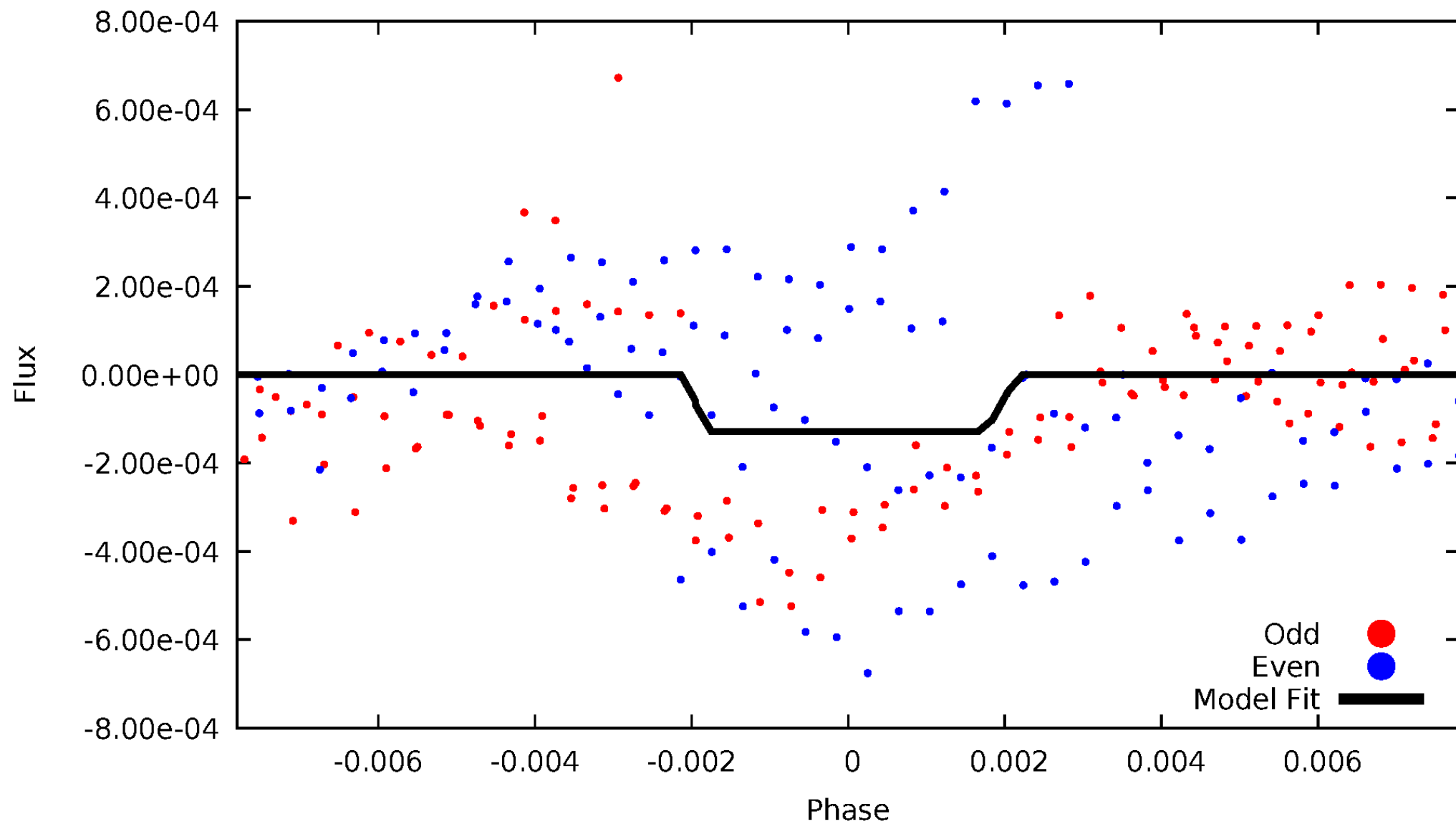
DV Odd/Even

TCE 009467345-06



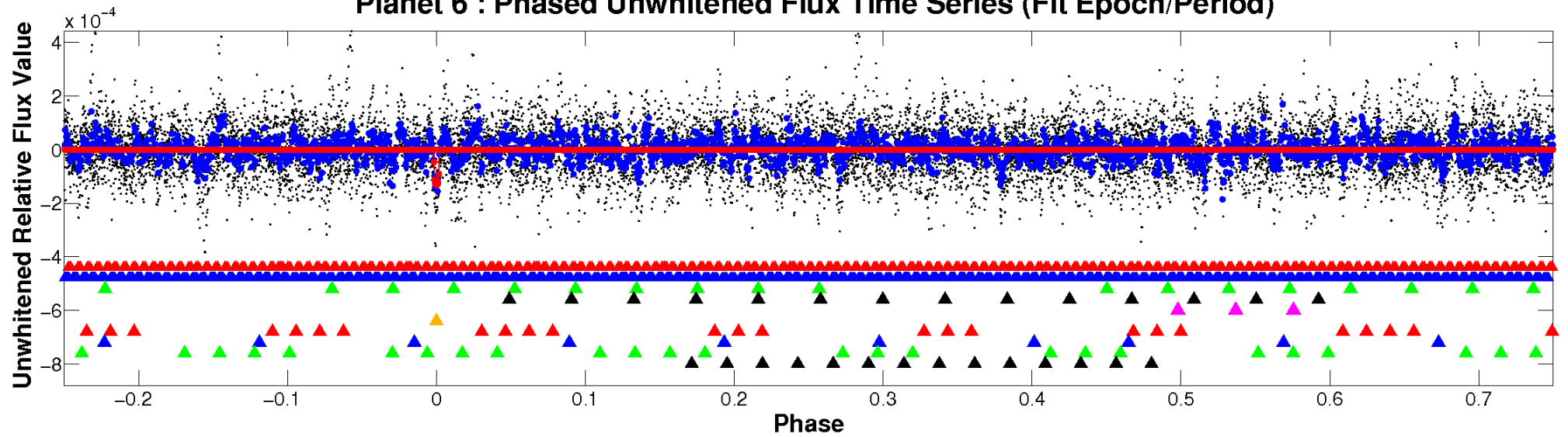
ALT Odd/Even

TCE 009467345-06

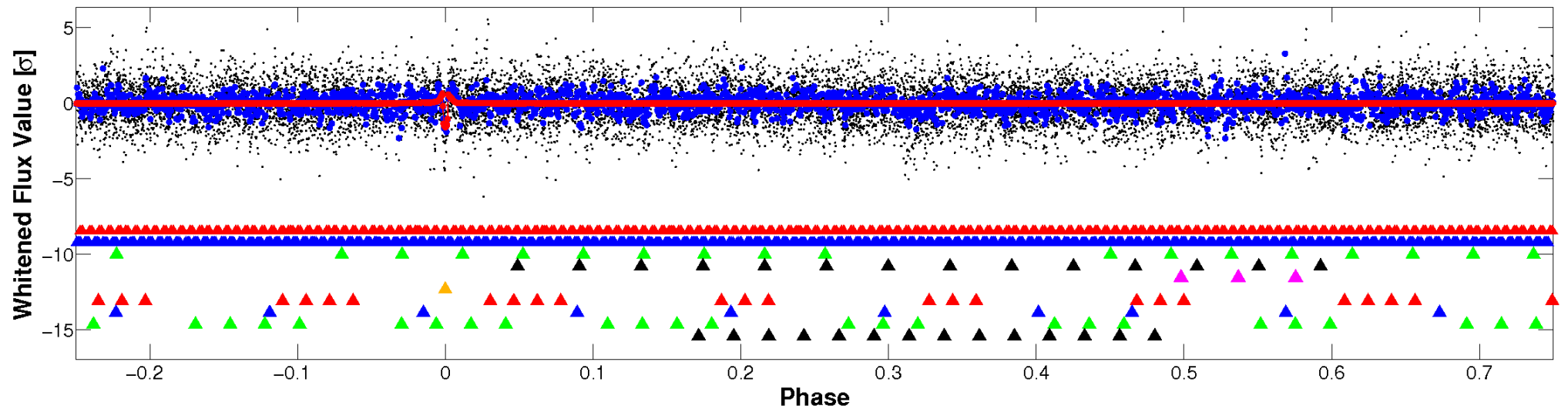


Non-Whitened Vs. Whitened Light Curve

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

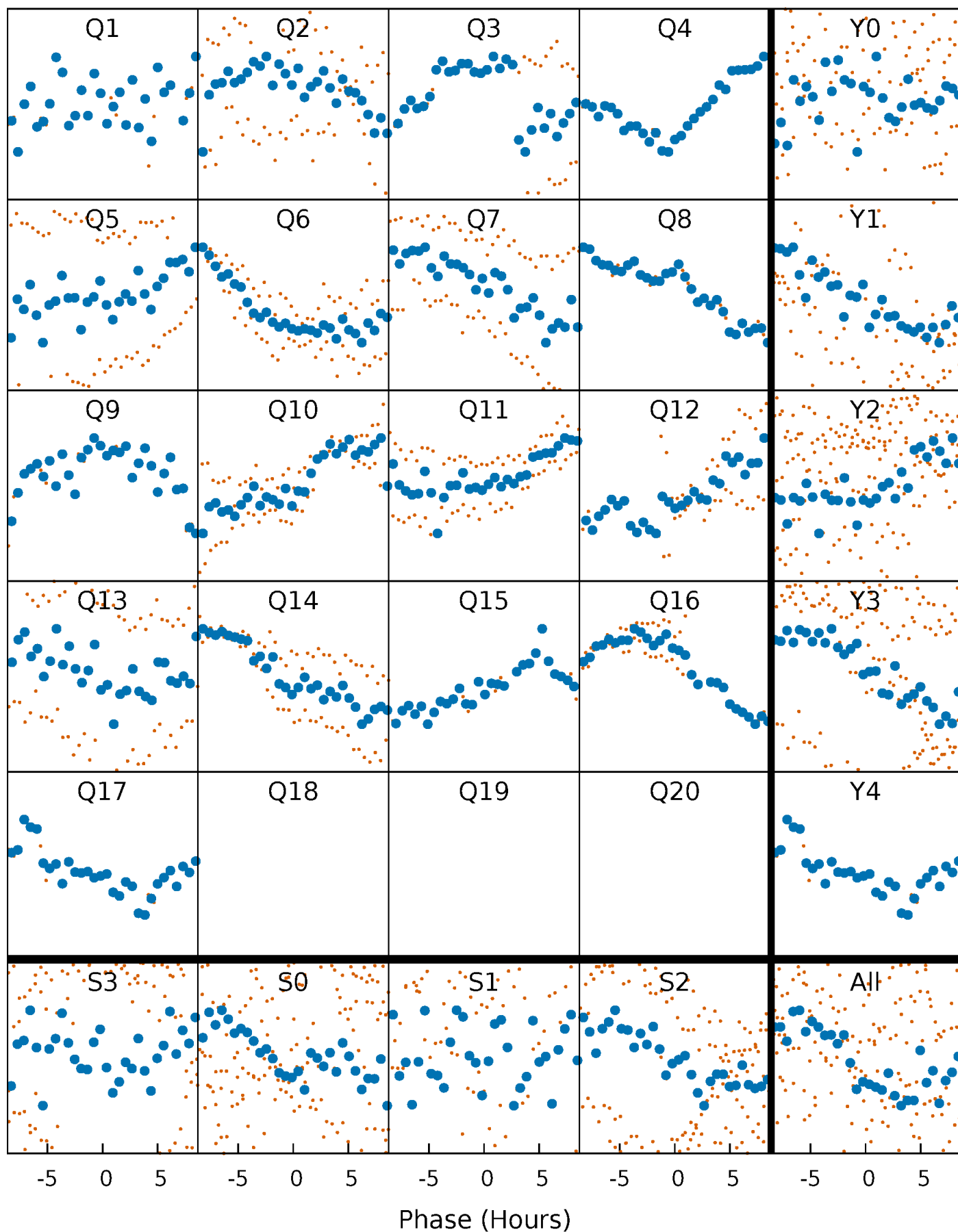


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



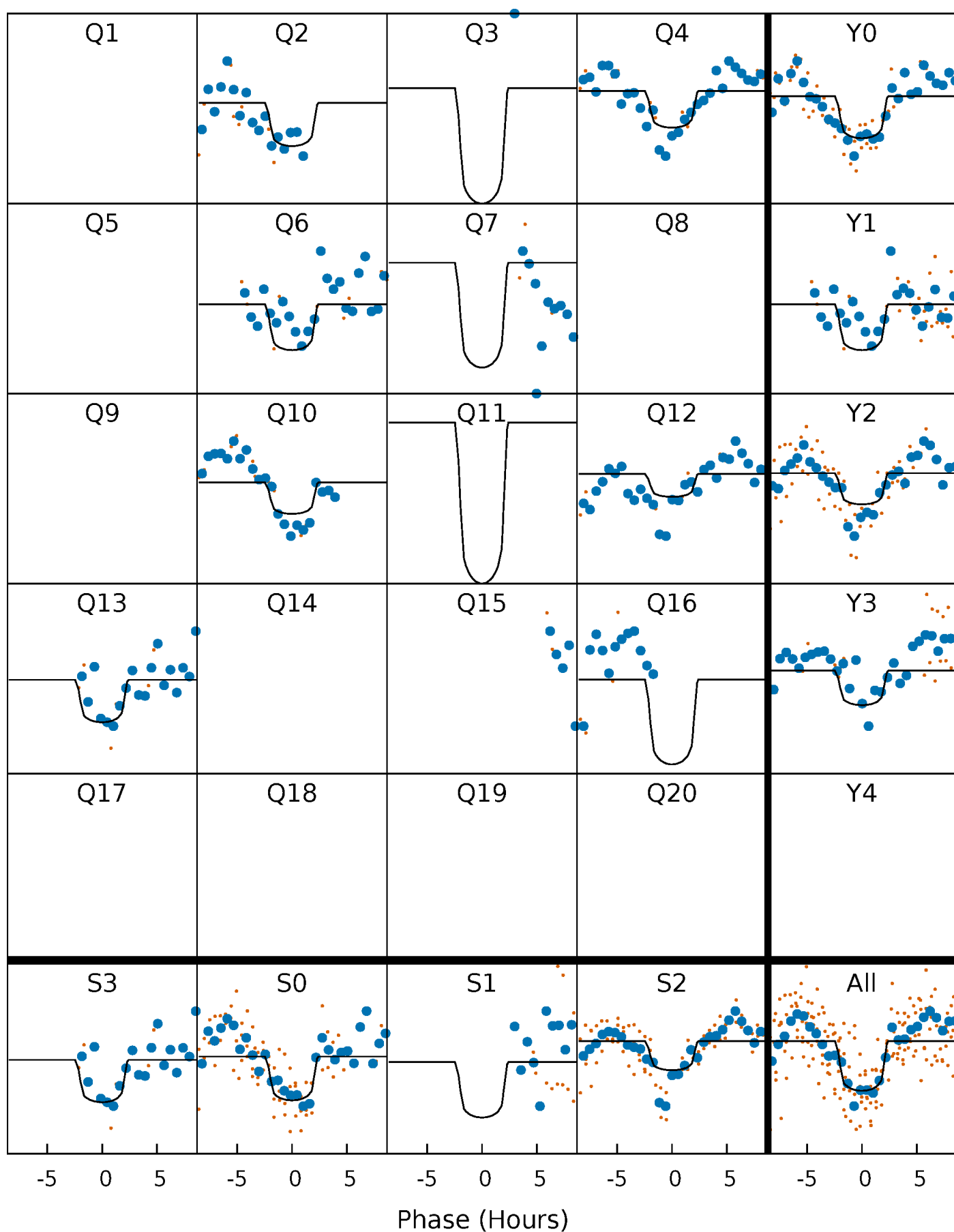
PDC Quarter-Phased Transit Curves

TCE 009467345-06 P= 51.400675 Days $T_0=137.099853$ (BKJD)



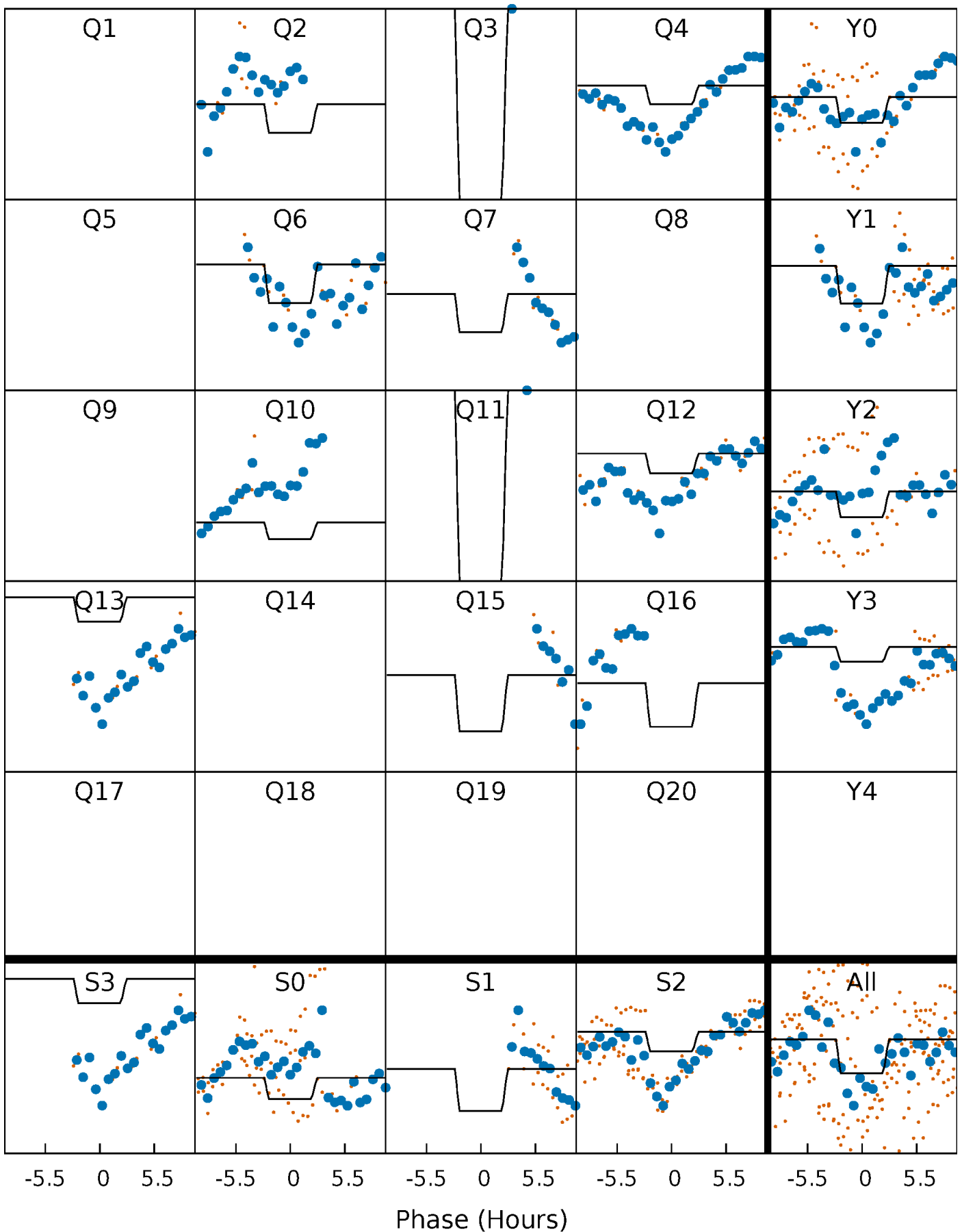
DV Quarter-Phased Transit Curves

TCE 009467345-06 P= 51.400675 Days $T_0=137.099853$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

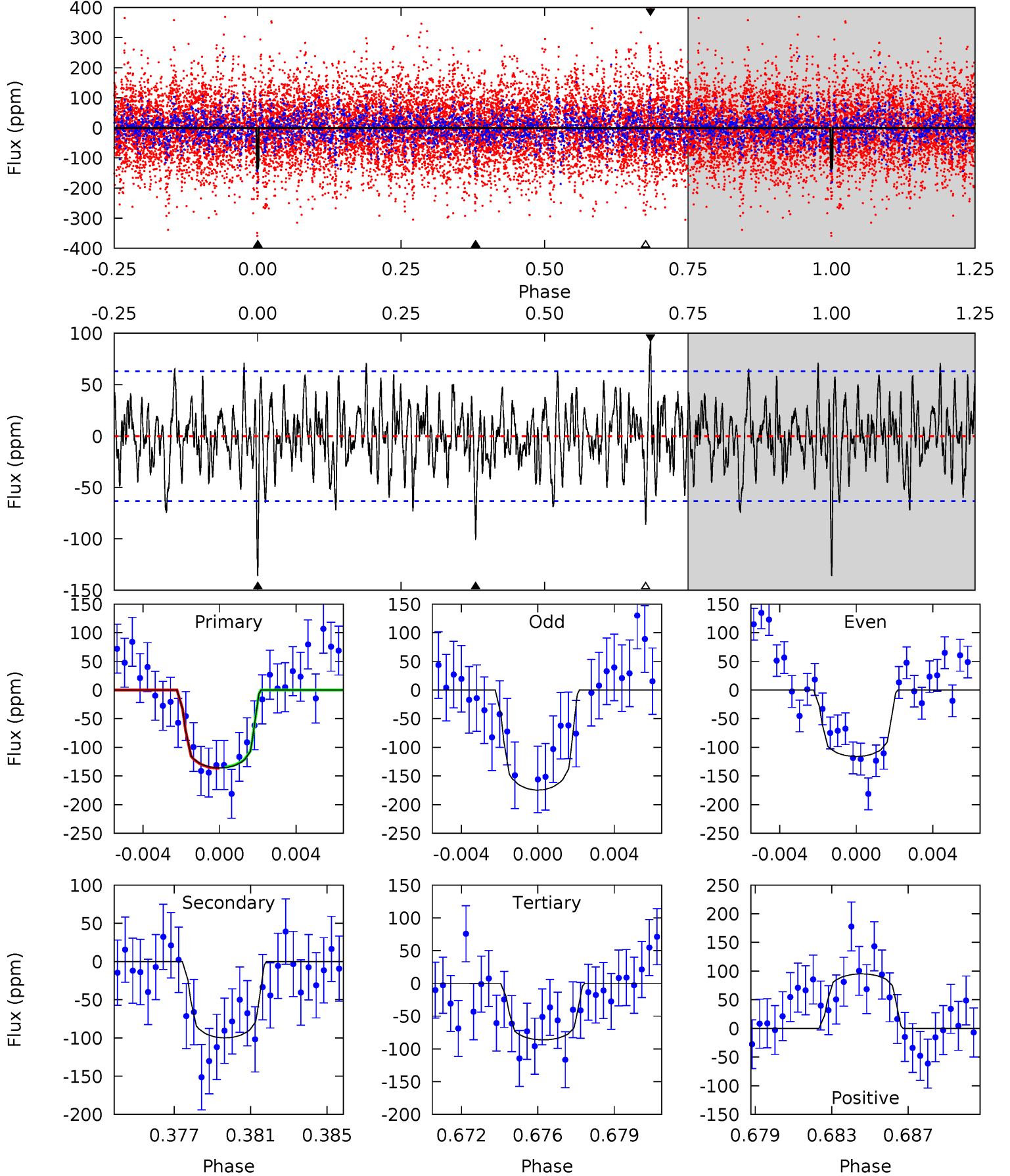
TCE 009467345-06 P= 51.402104 Days $T_0=137.089016$ (BKJD)



DV Model-Shift Uniqueness Test

009467345-06, P = 51.400675 Days, E = 85.699178 Days

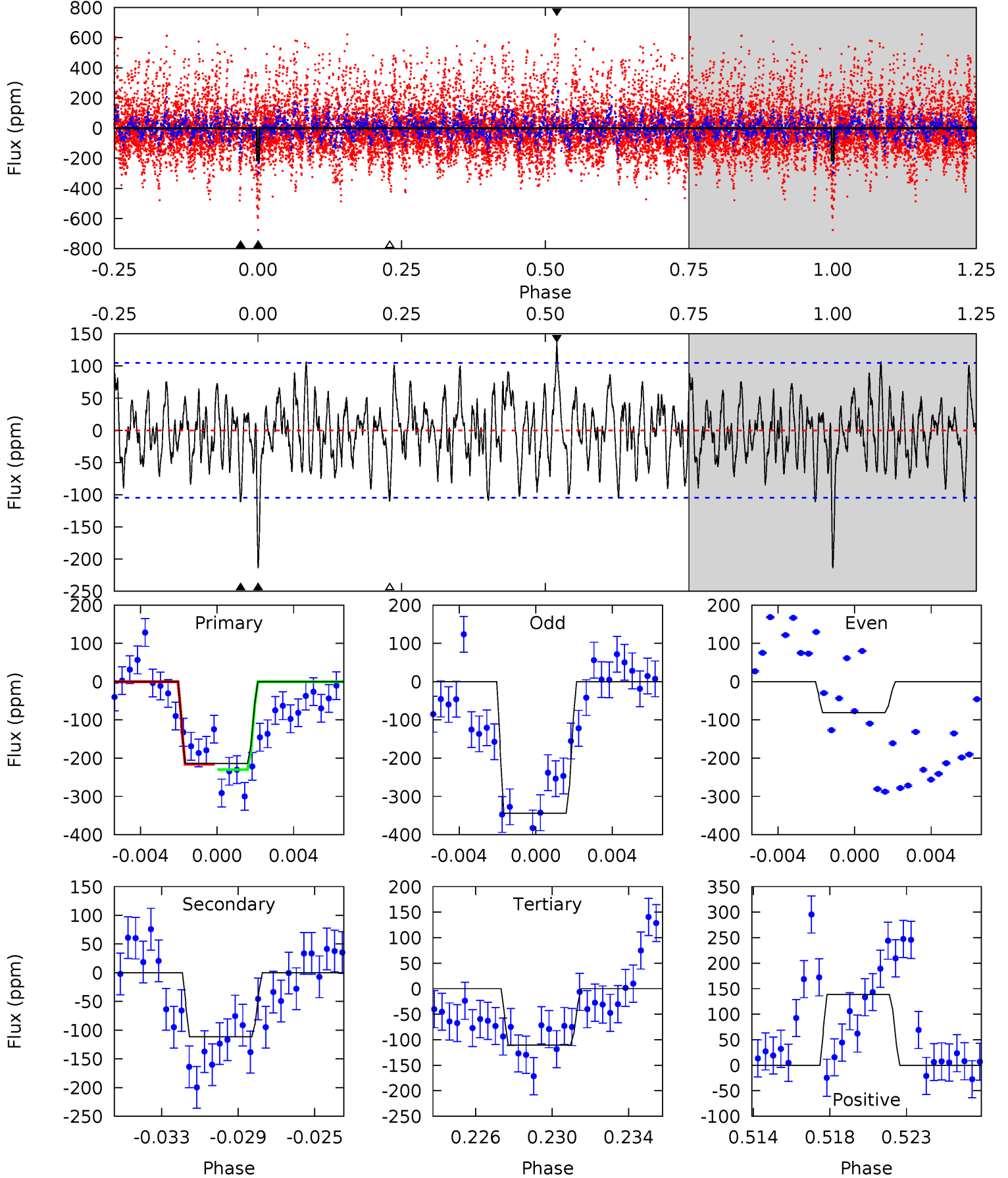
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	8.26	7.13	7.87	5.22	2.91	2.13	4.11	3.38	1.13	0.39	2.32	0.92	0.41	0.08



Alt Model-Shift Uniqueness Test

009467345-06, P = 51.402104 Days, E = 85.686912 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	5.51	5.47	6.86	5.19	2.86	1.99	5.14	3.75	0.04	-1.35	6.02	0.61	0.39	0.35



Stellar Parameters For KIC 009467345

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6781^{+170}_{-187}	$3.829^{+0.273}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.576^{+0.471}_{-0.875}$	$1.631^{+0.180}_{-0.335}$	$0.135^{+0.242}_{-0.048}$
	+3%/-3%	+7%/-3%	+300%/-250%	+18%/-34%	+11%/-21%	+180%/-36%
Source	PHO1	FLK73	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 009467345-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-100 ± 12	$3.13^{+1.30}_{-1.16}$	1175^{+72}_{-95}	6225^{+1720}_{-907}	555^{+857}_{-279}
Alt.	-111 ± 20	$3.05^{+1.34}_{-1.16}$	1170^{+72}_{-99}	6421^{+1975}_{-944}	649^{+1071}_{-331}

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

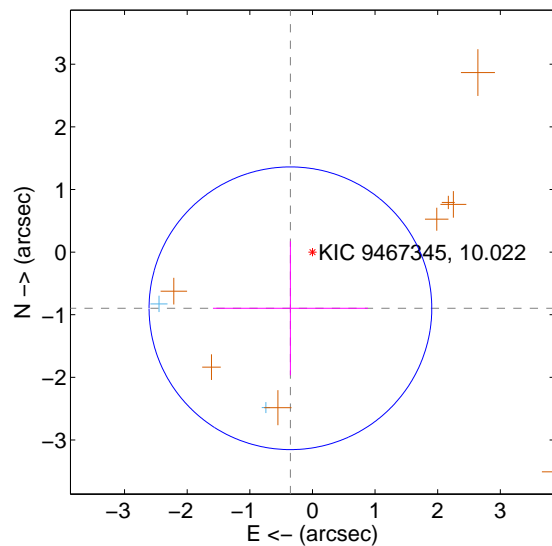
Supplemental centroid analysis for 009467345-06. **Kepler magnitude: 10.02.** Transit SNR 10.53

There are 3 quarters with good PRF difference image offsets

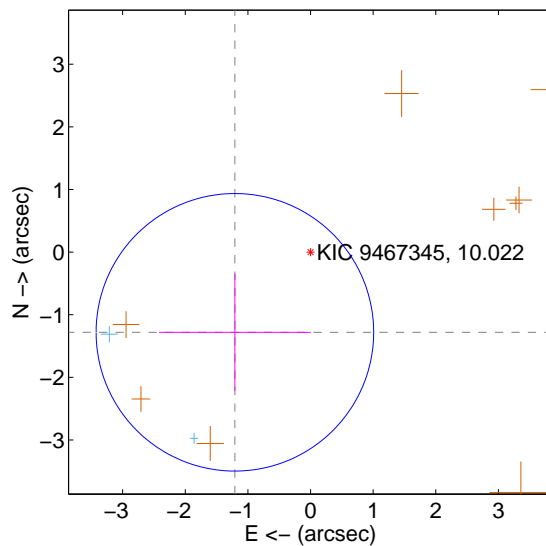
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.963 ± 0.752	1.28	0.351 ± 1.237	-0.897 ± 1.070
PRF-fit source offset from KIC position	1.761 ± 0.739	2.38	1.208 ± 1.213	-1.281 ± 0.936
photometric centroid source offset	0.68 ± 0.45	1.50	-0.50 ± 0.50	-0.46 ± 0.38

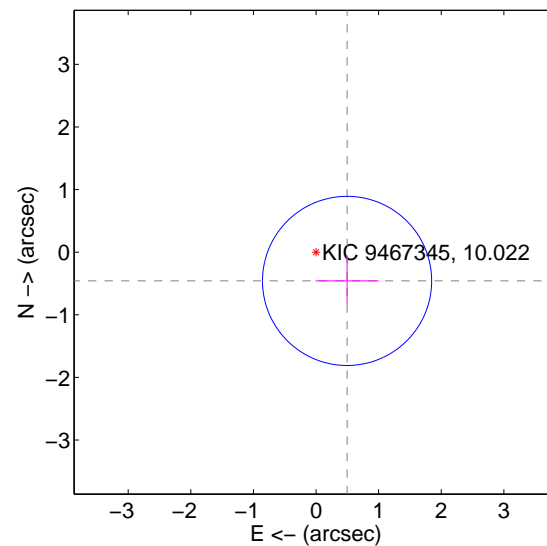
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

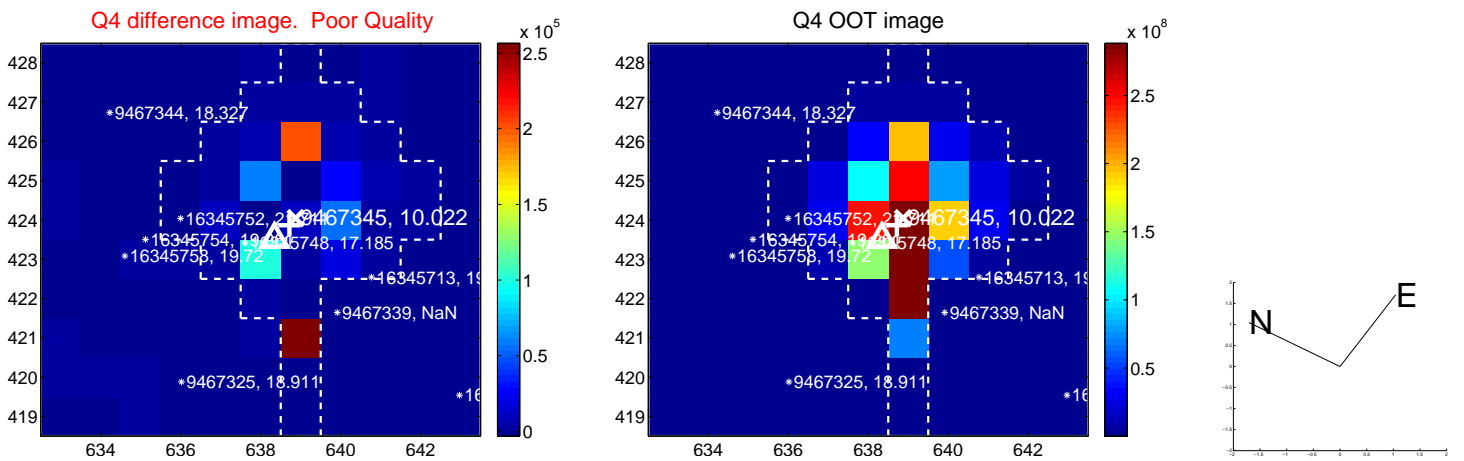
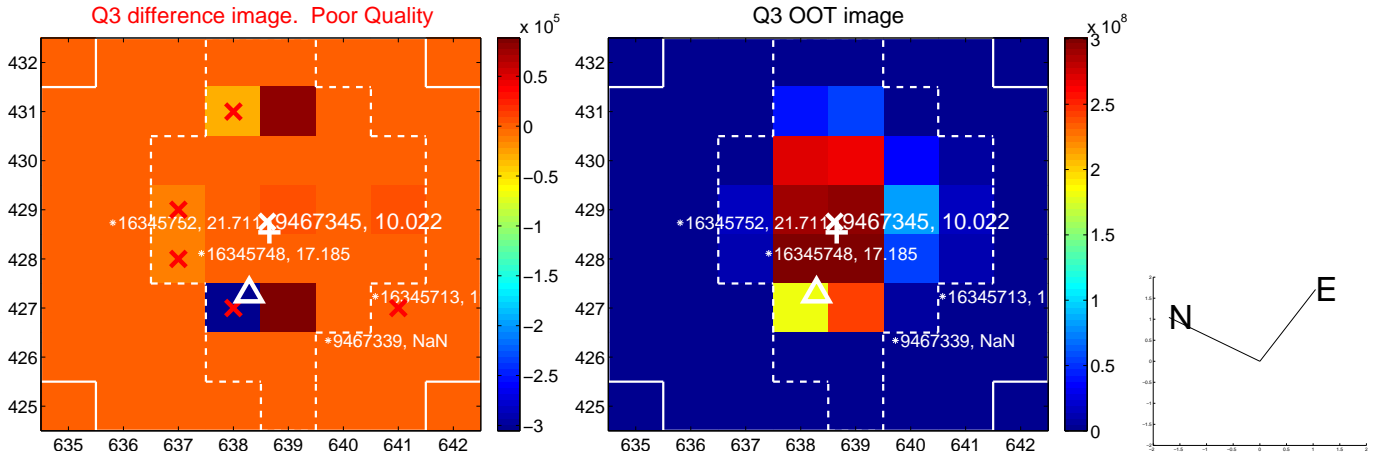
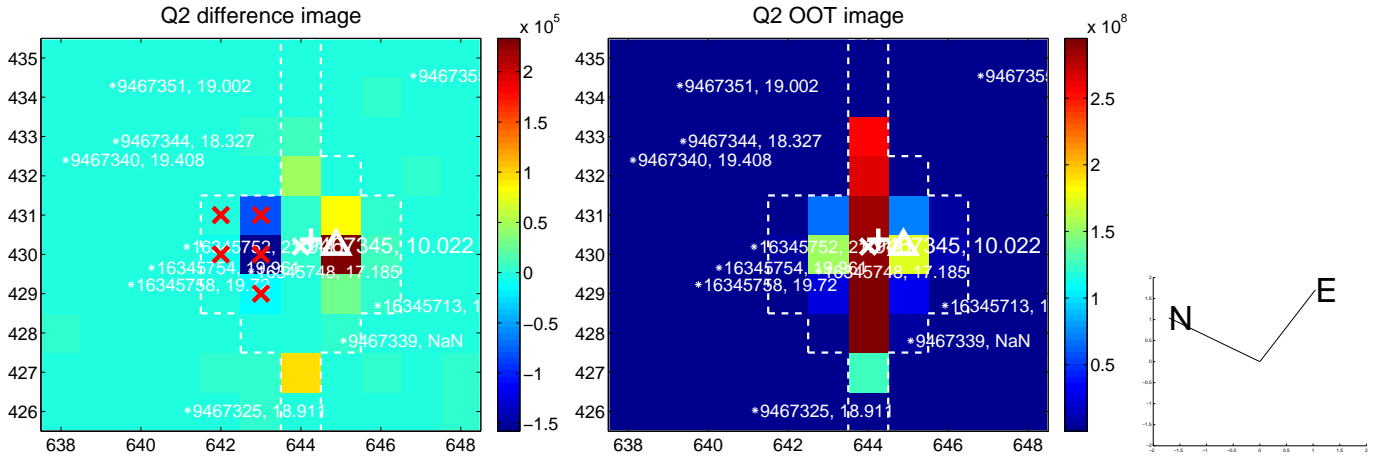
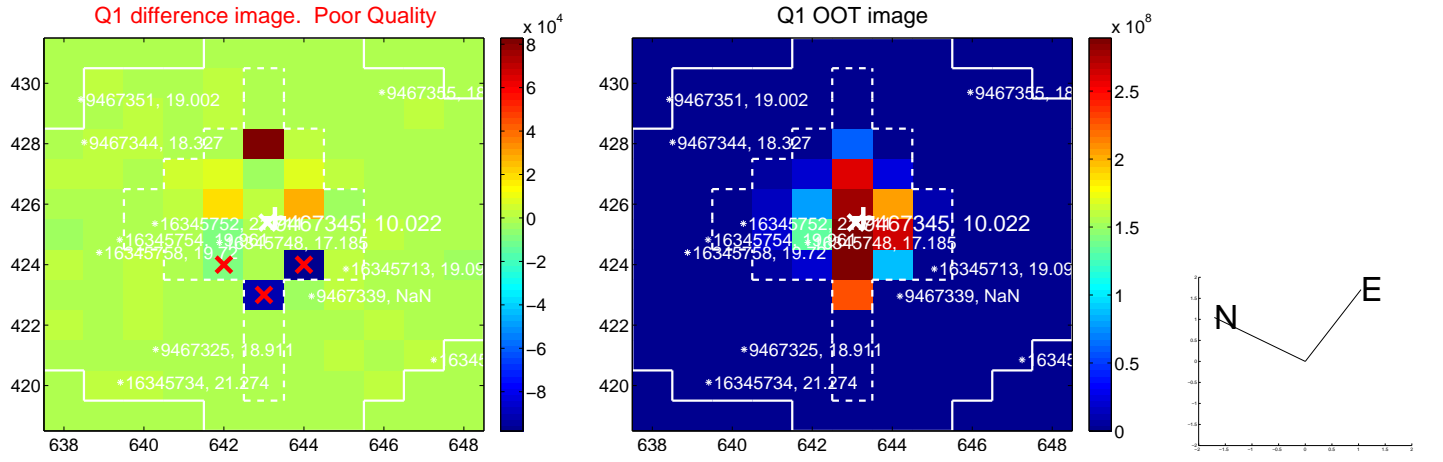


offset from photometric centroids

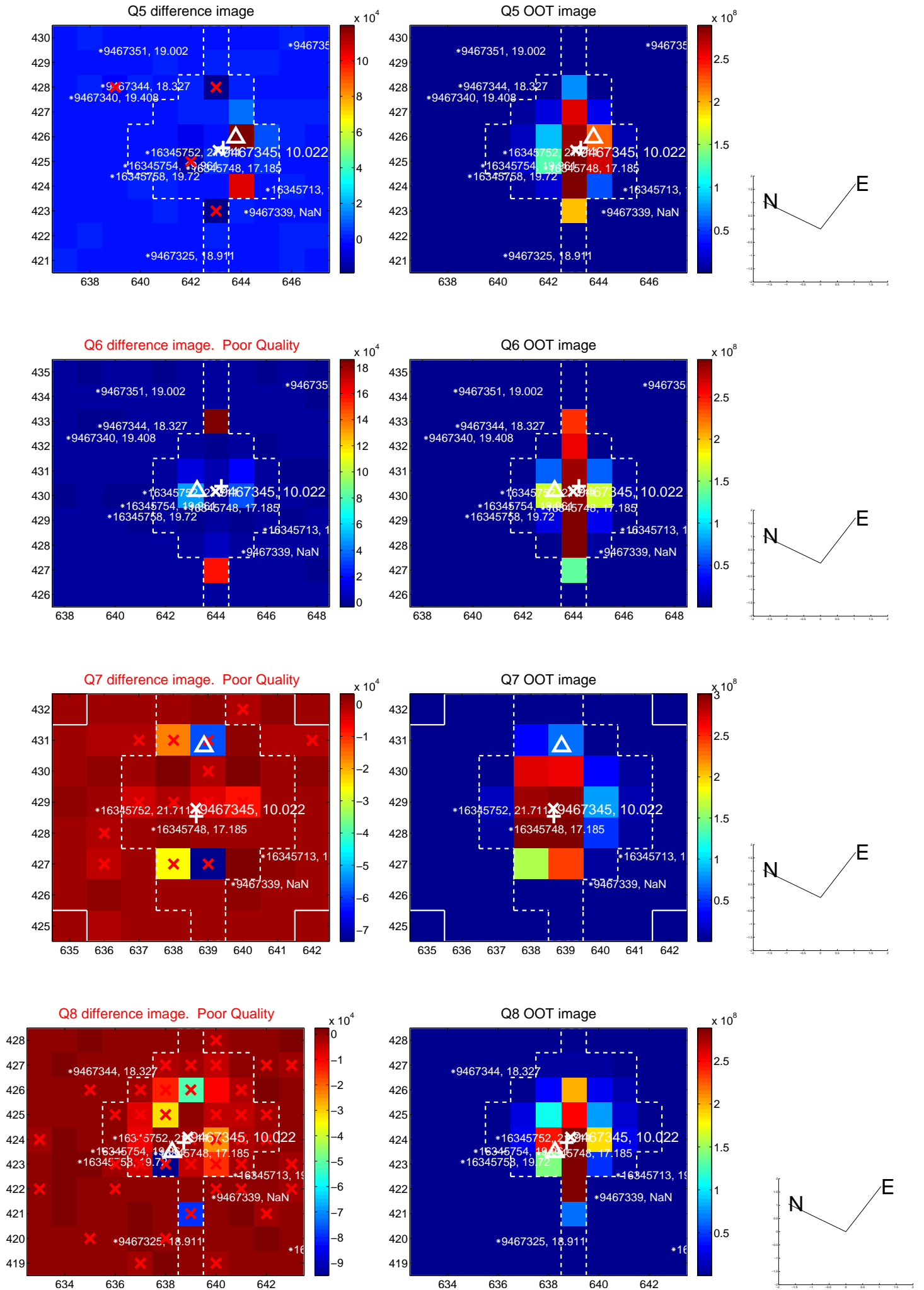


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

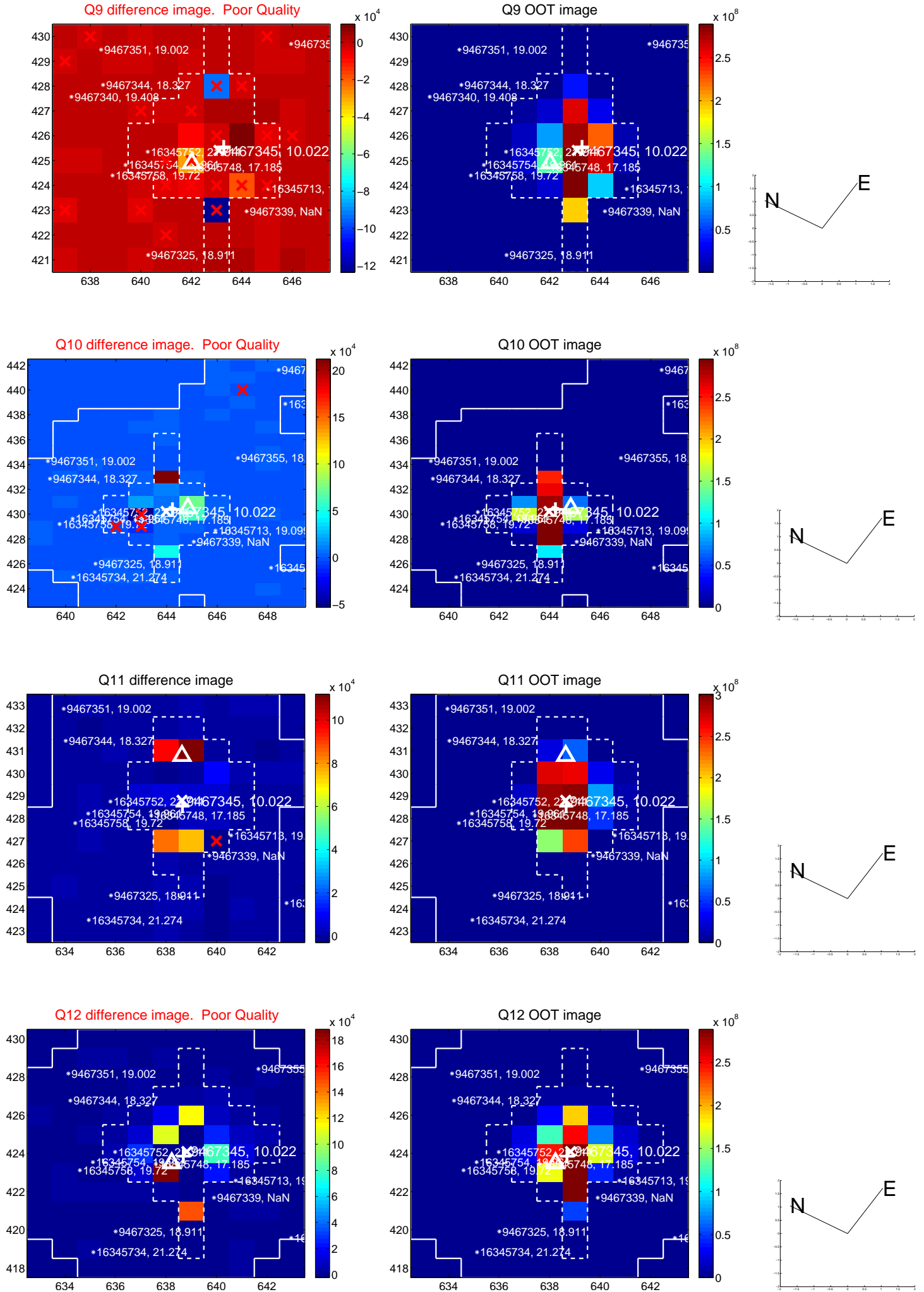
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



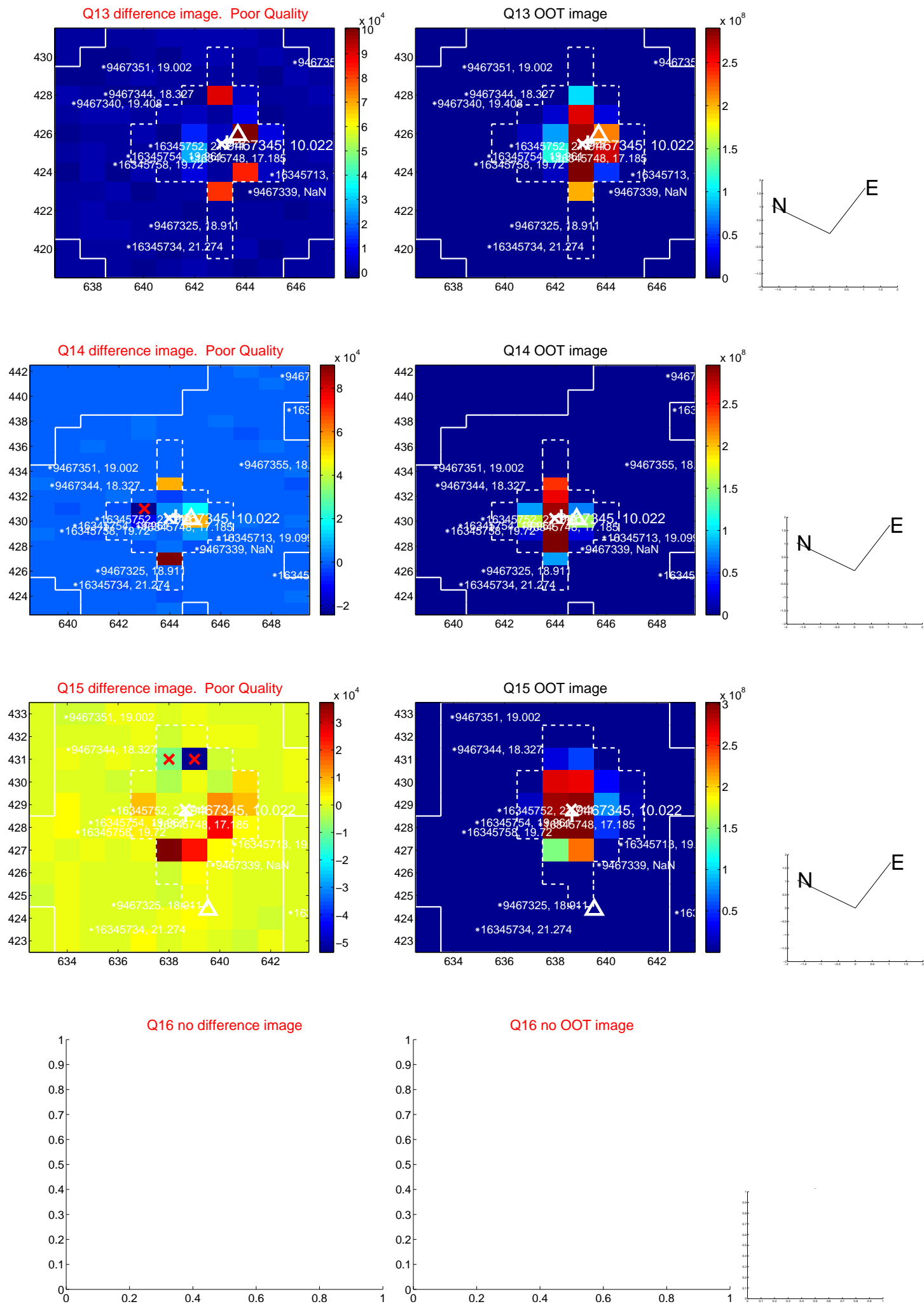
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



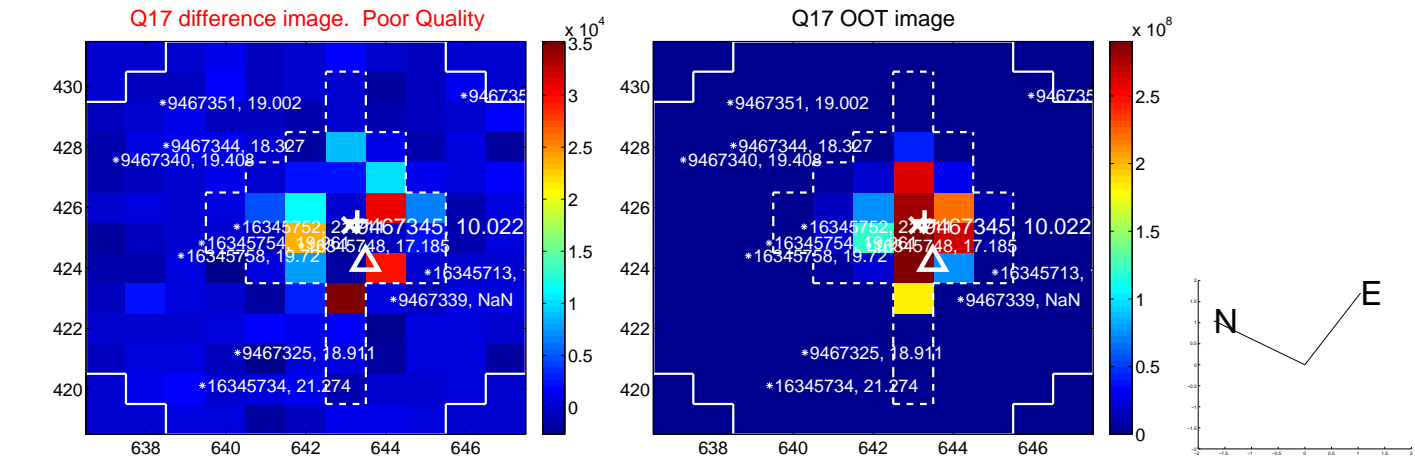
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



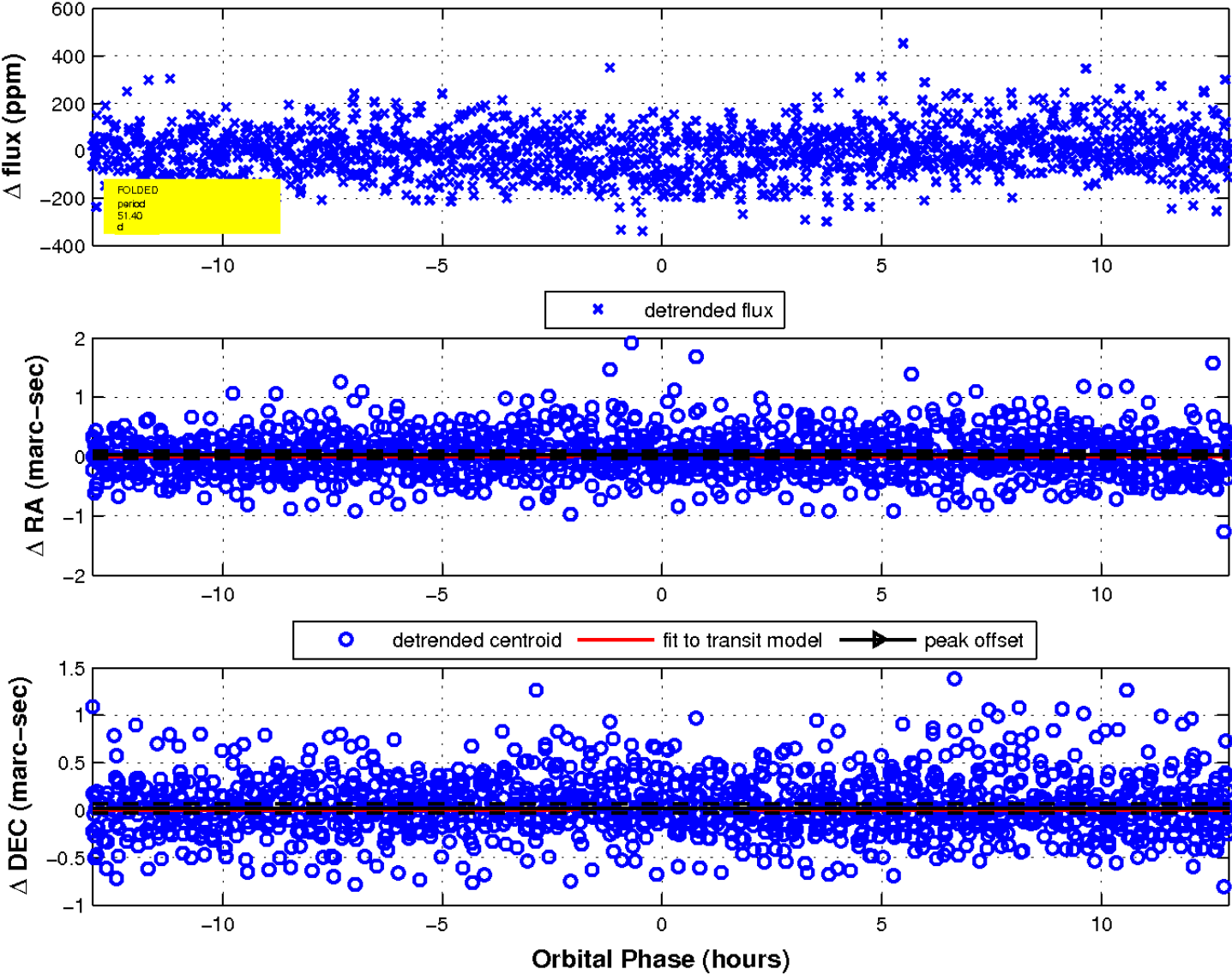
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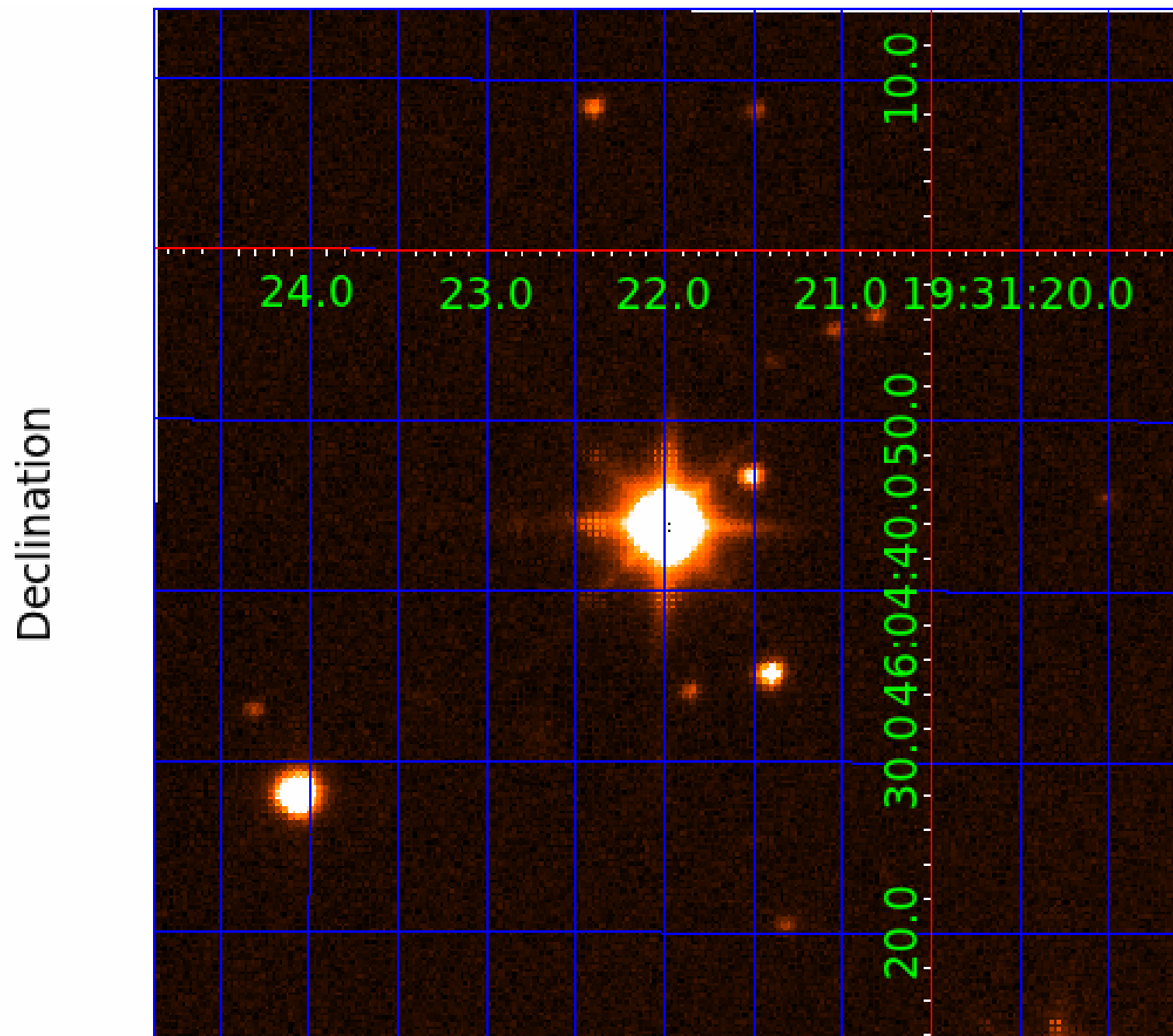
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fluxWeightedCentroids, Planet 6 of 10



UKIRT Image



KIC 009467345

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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009467345-03	OBS	No	78.152078	184.897456	178.3	9.752	14.0	9.1	2.58	6781	4.33	70.81
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009467345-07	OBS	No	58.626862	170.839840	143.2	5.867	10.1	9.6	2.58	6781	3.12	103.89
009467345-08	OBS	No	148.852894	157.736395	0.1	12.958	10.4	0.0	2.58	6781	0.08	29.99
009467345-09	OBS	No	58.571174	176.260499	142.3	3.187	10.7	9.5	2.58	6781	3.55	104.02
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009467345-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_SATURATED
009467345-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009467345-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

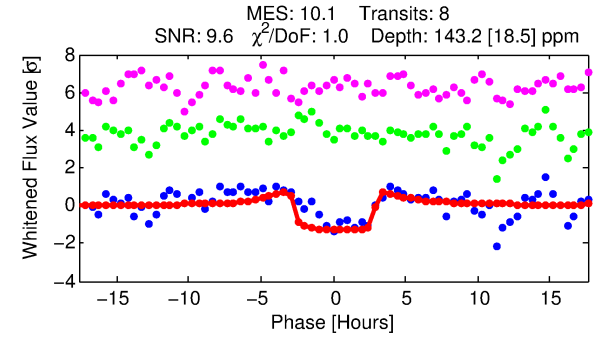
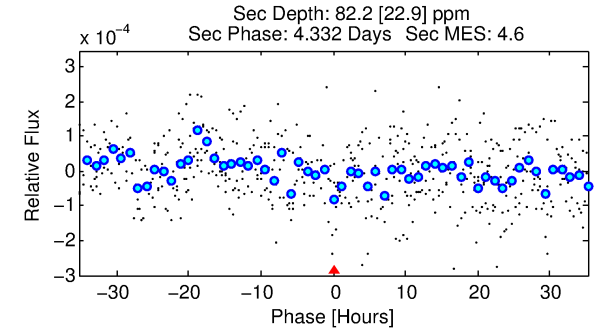
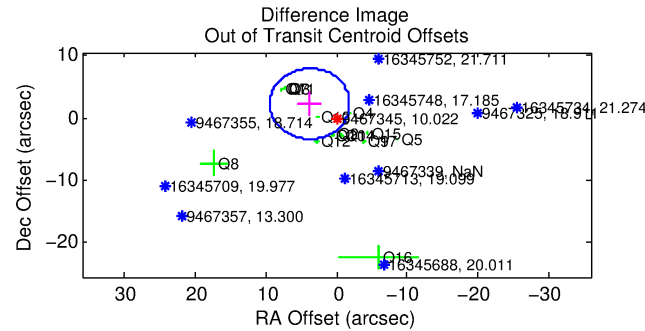
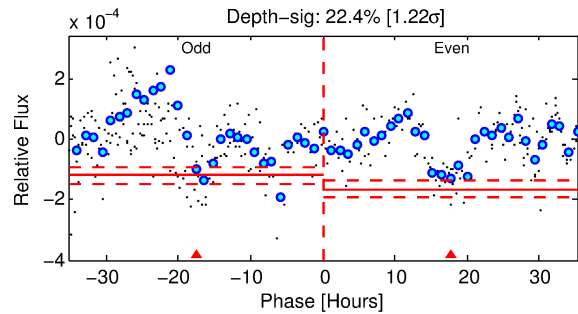
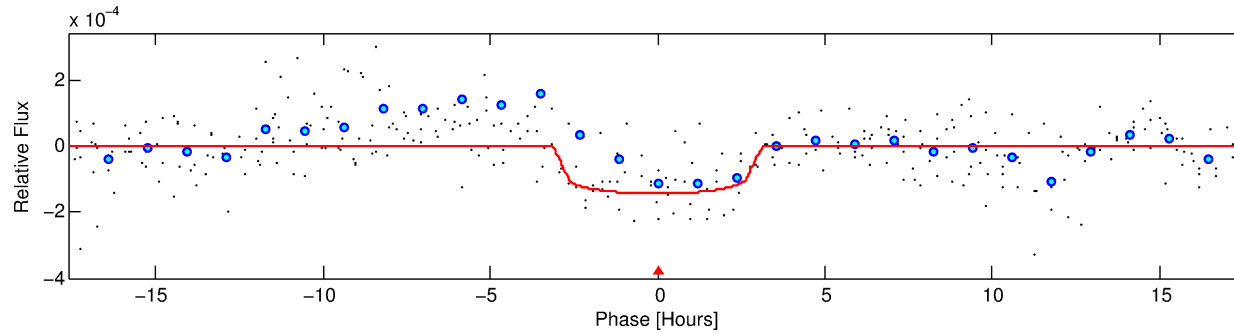
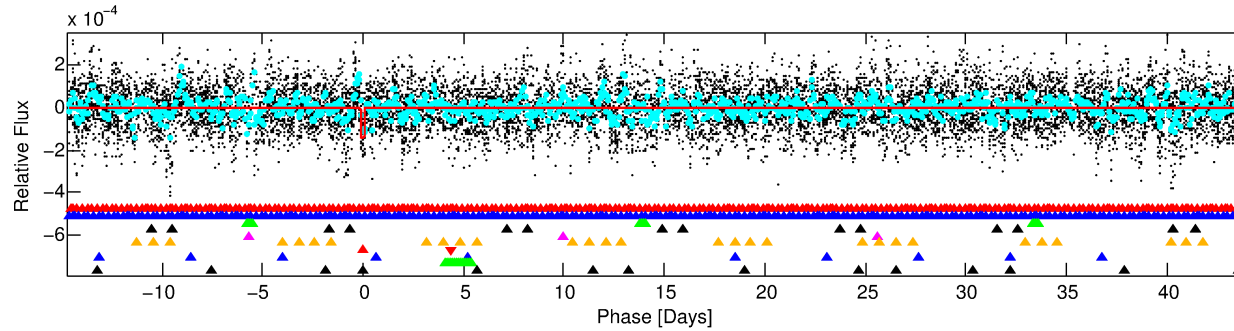
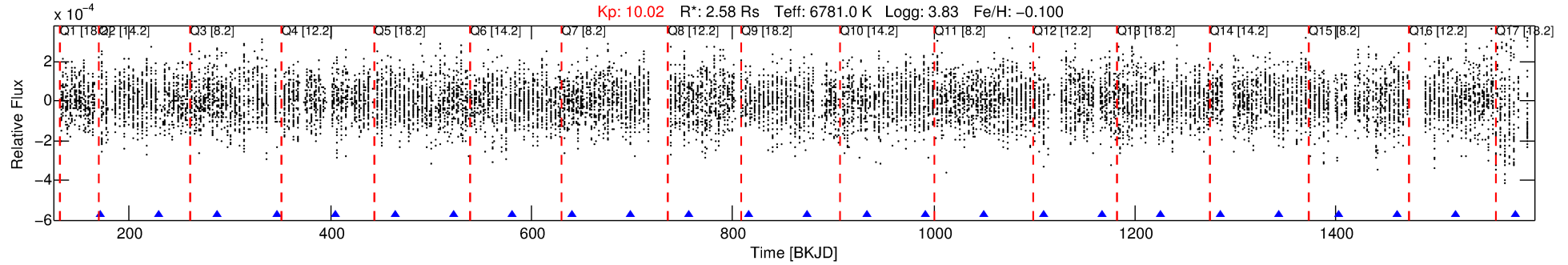
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009467345-07

No Significant Match Found

DV One-Page Summary

KIC: 9467345 Candidate: 7 of 10 Period: 58.627 d



DV Fit Results:

Period = 58.62686 [0.00061] d
Epoch = 170.8398 [0.0084] BKJD
Rp/R* = 0.0111 [0.0108]
a/R* = 74.84 [402.44]
b = 0.25 [20.51]
Seff = 103.89 [50.80]
Teq = 814 [100] K
Rp = 3.12 [3.23] Re
a = 0.3479 [0.1073] AU
Ag = 560.18 [1135.69] [0.49 σ]
Teffp = 6123 [3021] K [1.76 σ]

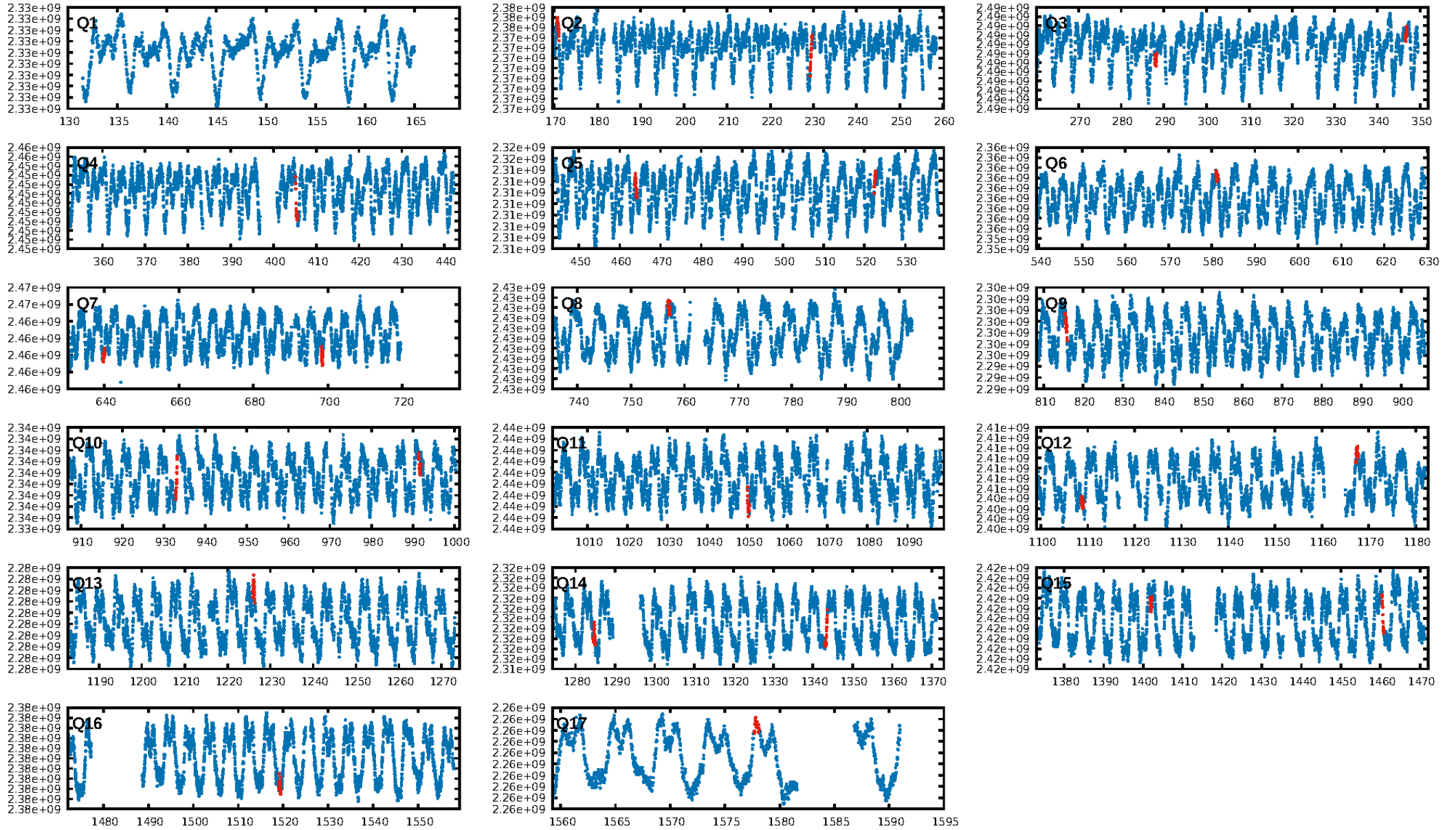
DV Diagnostic Results:

ShortPeriod-sig: 15.9% [0.20 σ]
LongPeriod-sig: 100.0% [41.18 σ]
ModelChiSquare2-sig: 9.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: N/A
Centroid-sig: 34.1%
Centroid-so: 0.088 arcsec [0.20 σ]
OotOffset-rm: 4.429 arcsec [2.35 σ]
KicOffset-rm: 3.929 arcsec [2.19 σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.13 [2/15]
DiffImageOverlap-fno: 0.25 [4/16]

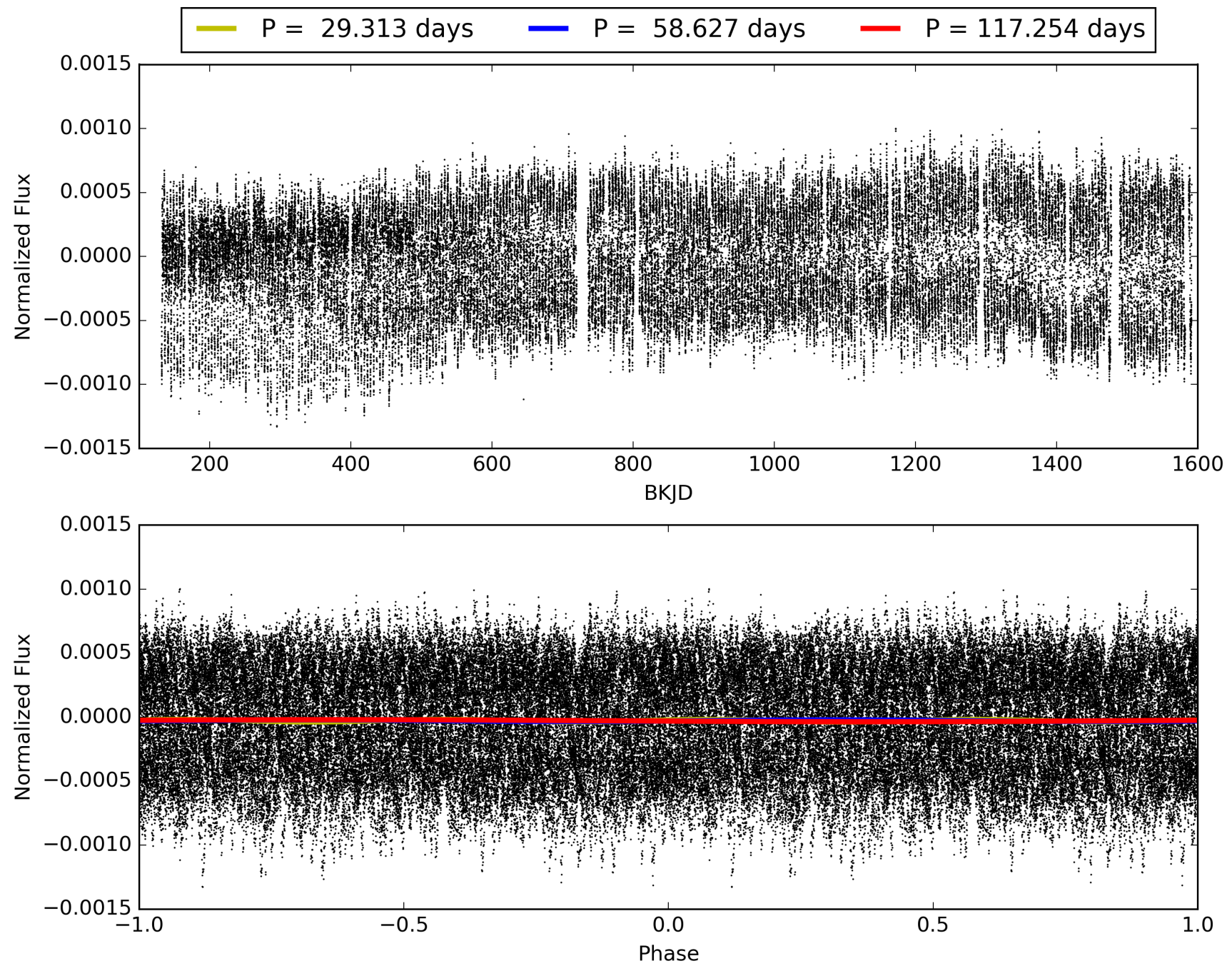
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:47:17 Z

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

TCE 009467345-07, PDC Light Curves

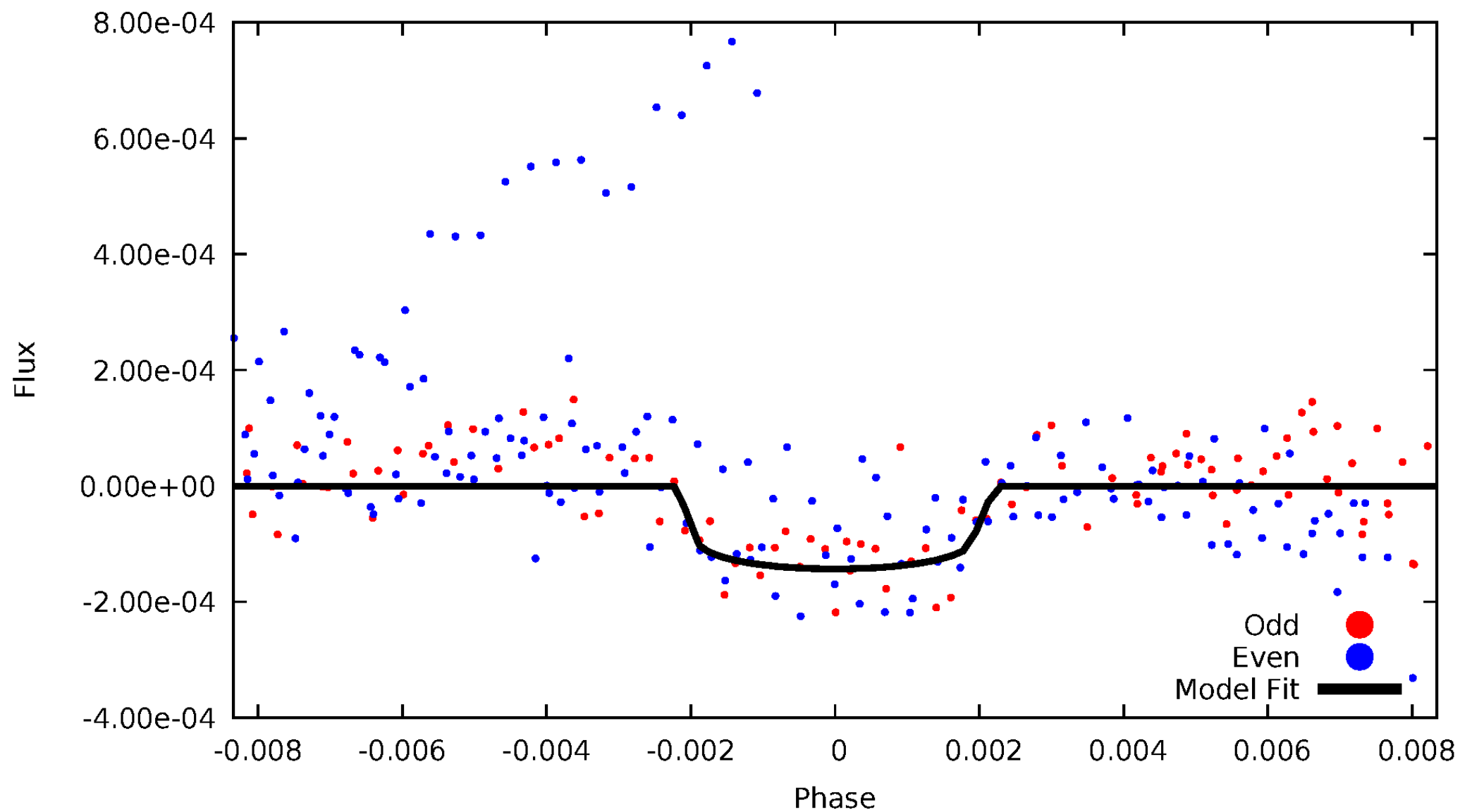


TCE 009467345-07



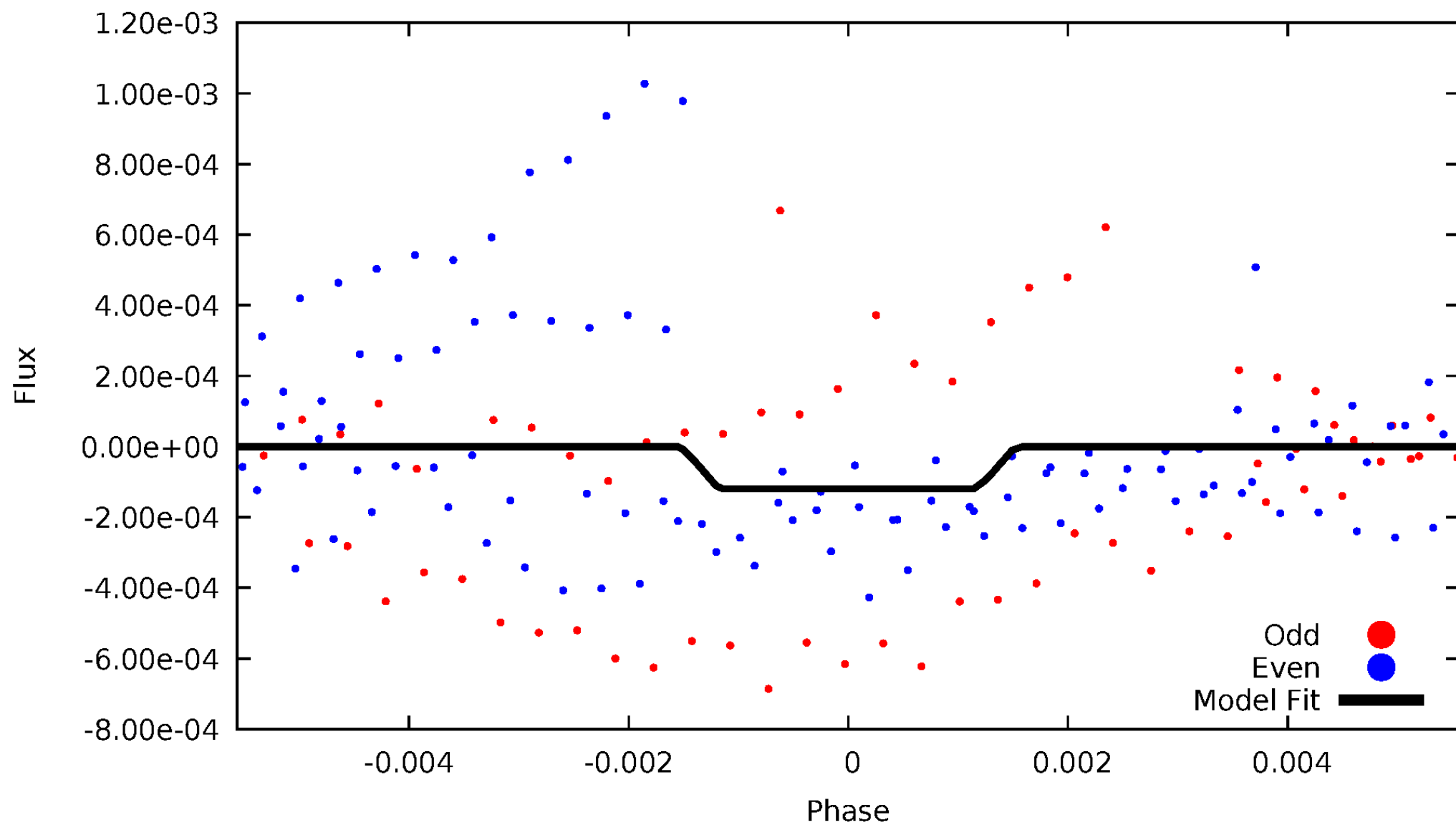
DV Odd/Even

TCE 009467345-07



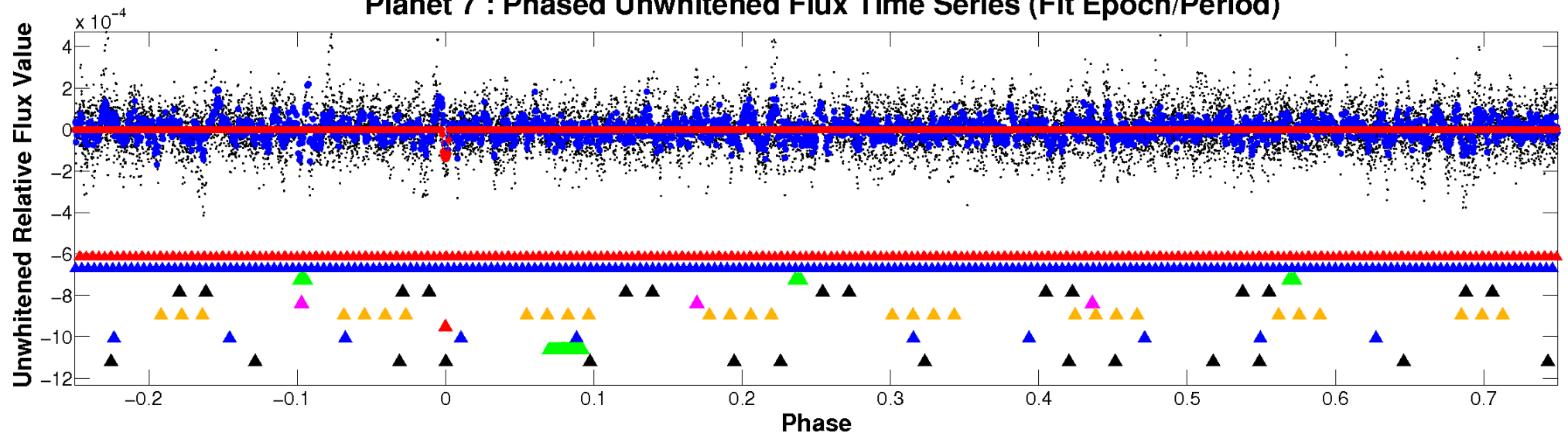
ALT Odd/Even

TCE 009467345-07

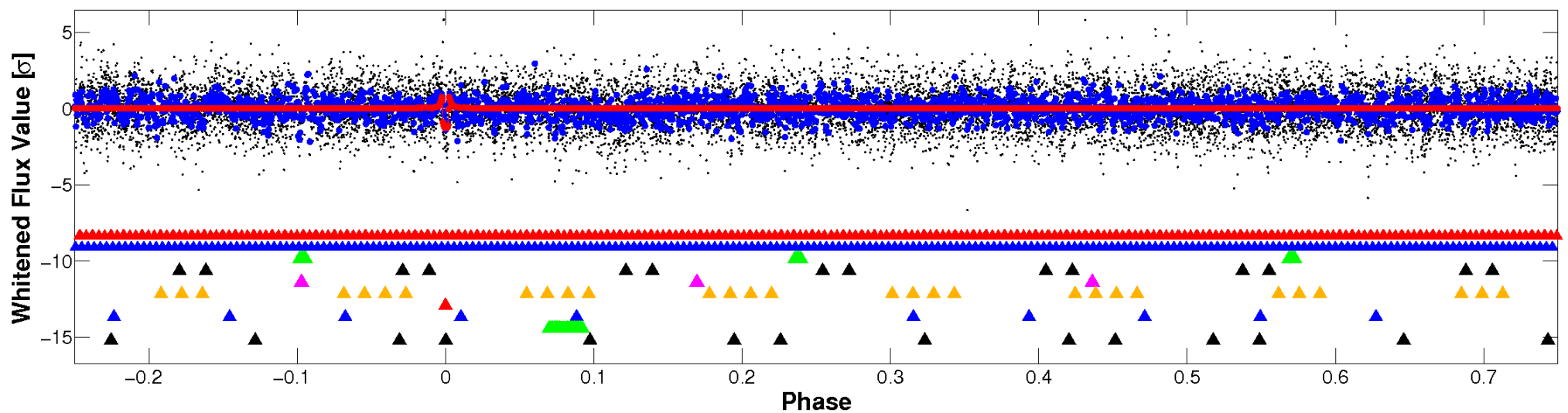


Non-Whitened Vs. Whitened Light Curve

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

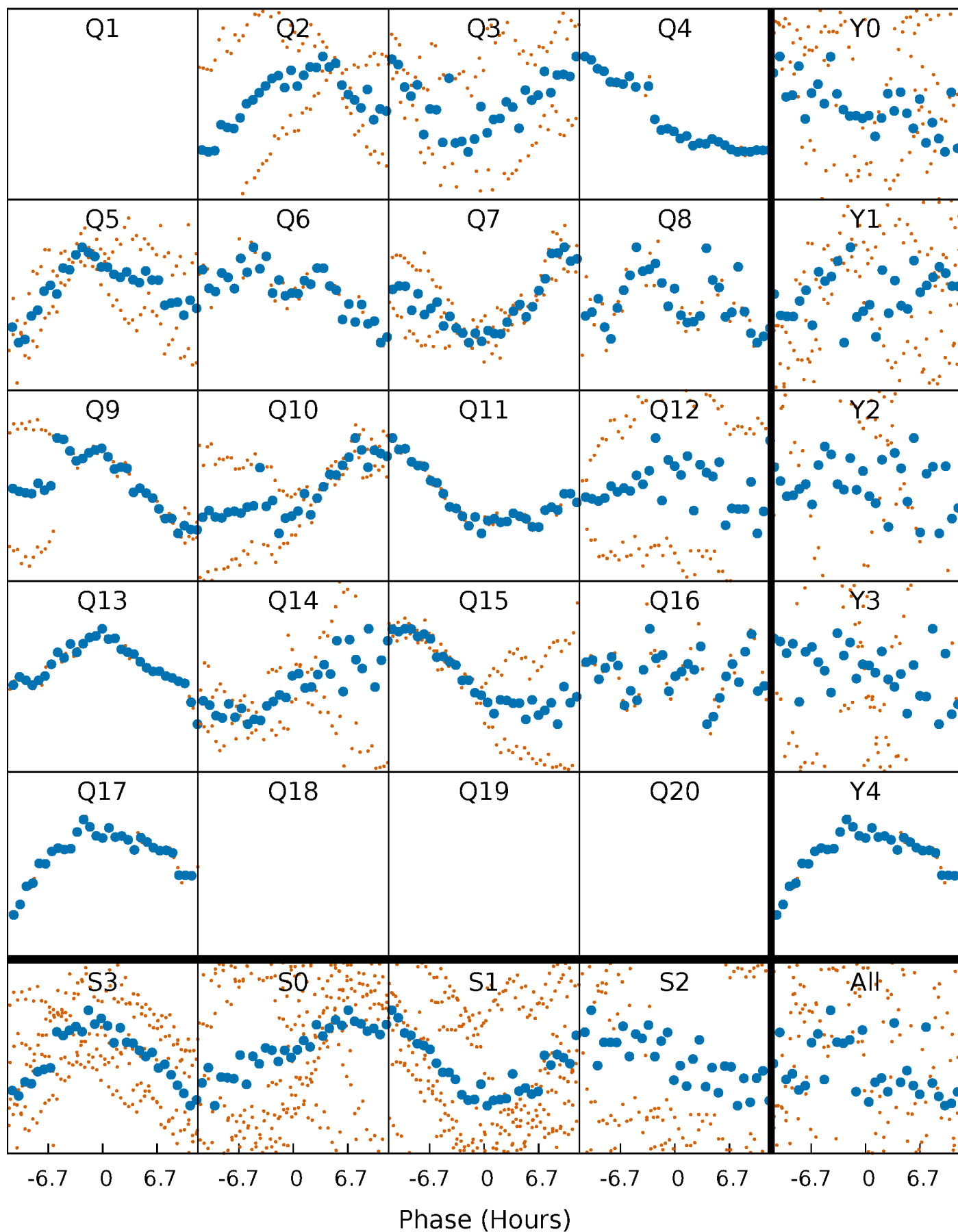


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



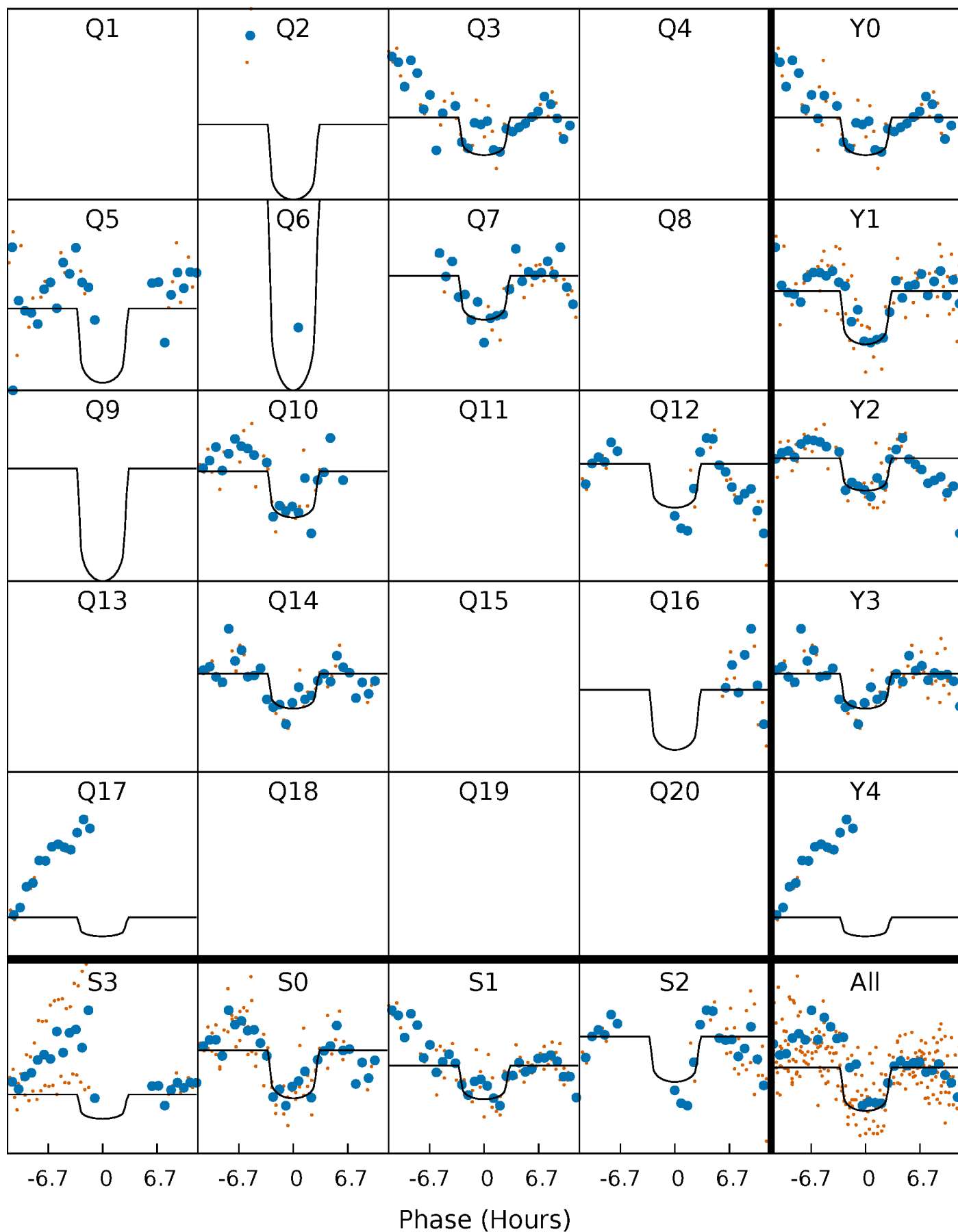
PDC Quarter-Phased Transit Curves

TCE 009467345-07 P= 58.626862 Days $T_0=170.839840$ (BKJD)



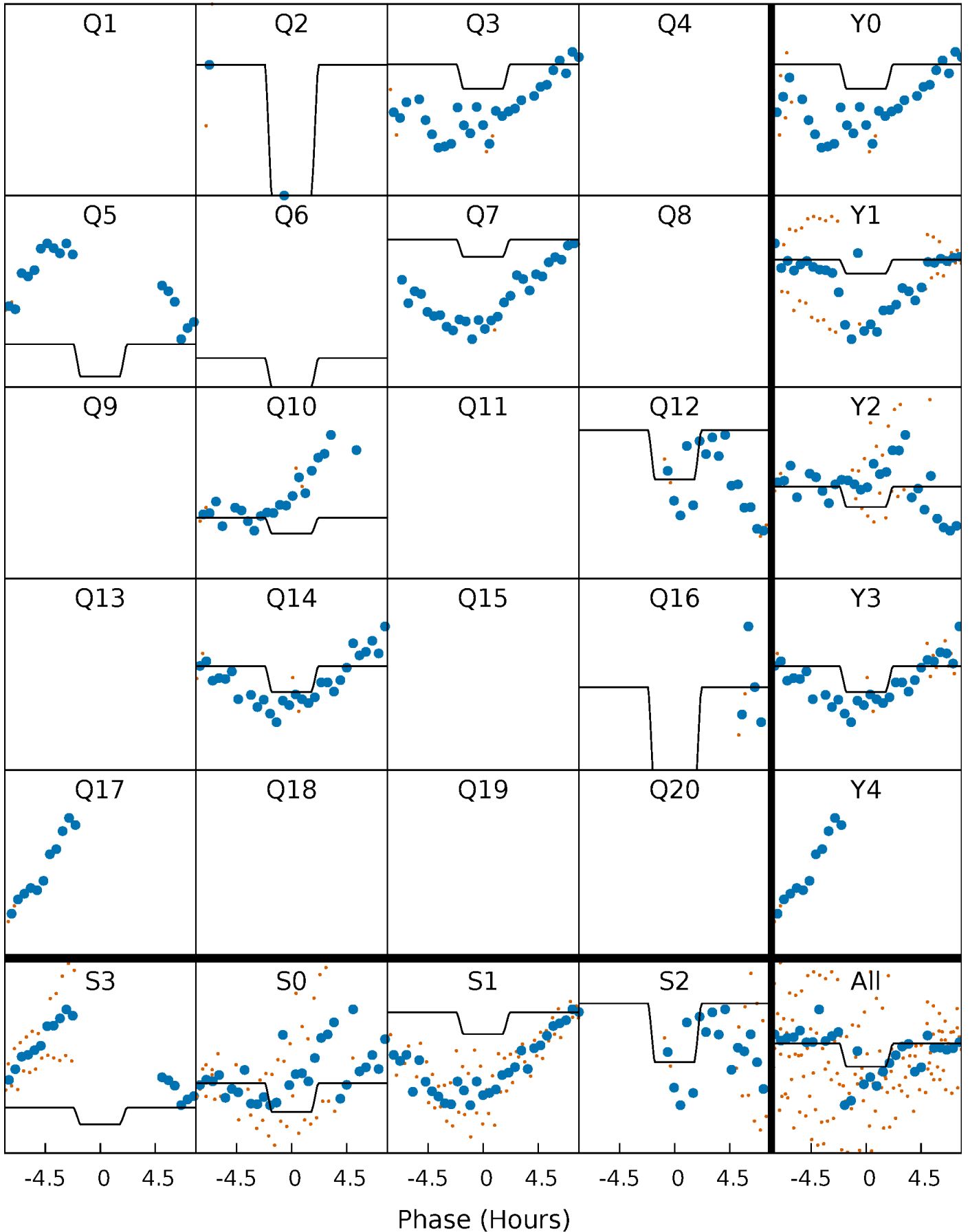
DV Quarter-Phased Transit Curves

TCE 009467345-07 $P = 58.626862$ Days $T_0 = 170.839840$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

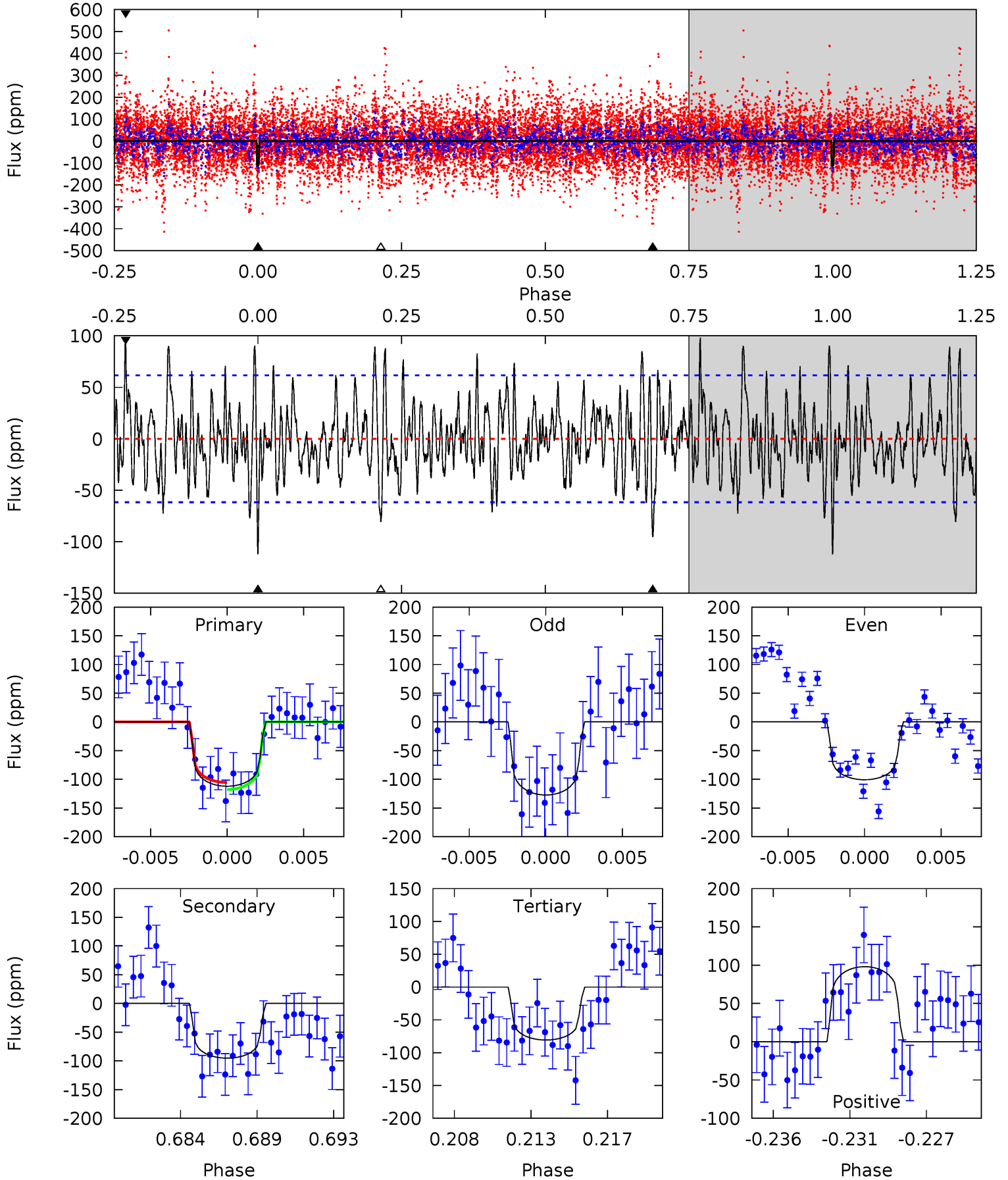
TCE 009467345-07 $P = 58.625640$ Days $T_0 = 170.894130$ (BKJD)



DV Model-Shift Uniqueness Test

009467345-07, P = 58.626862 Days, E = 112.212978 Days

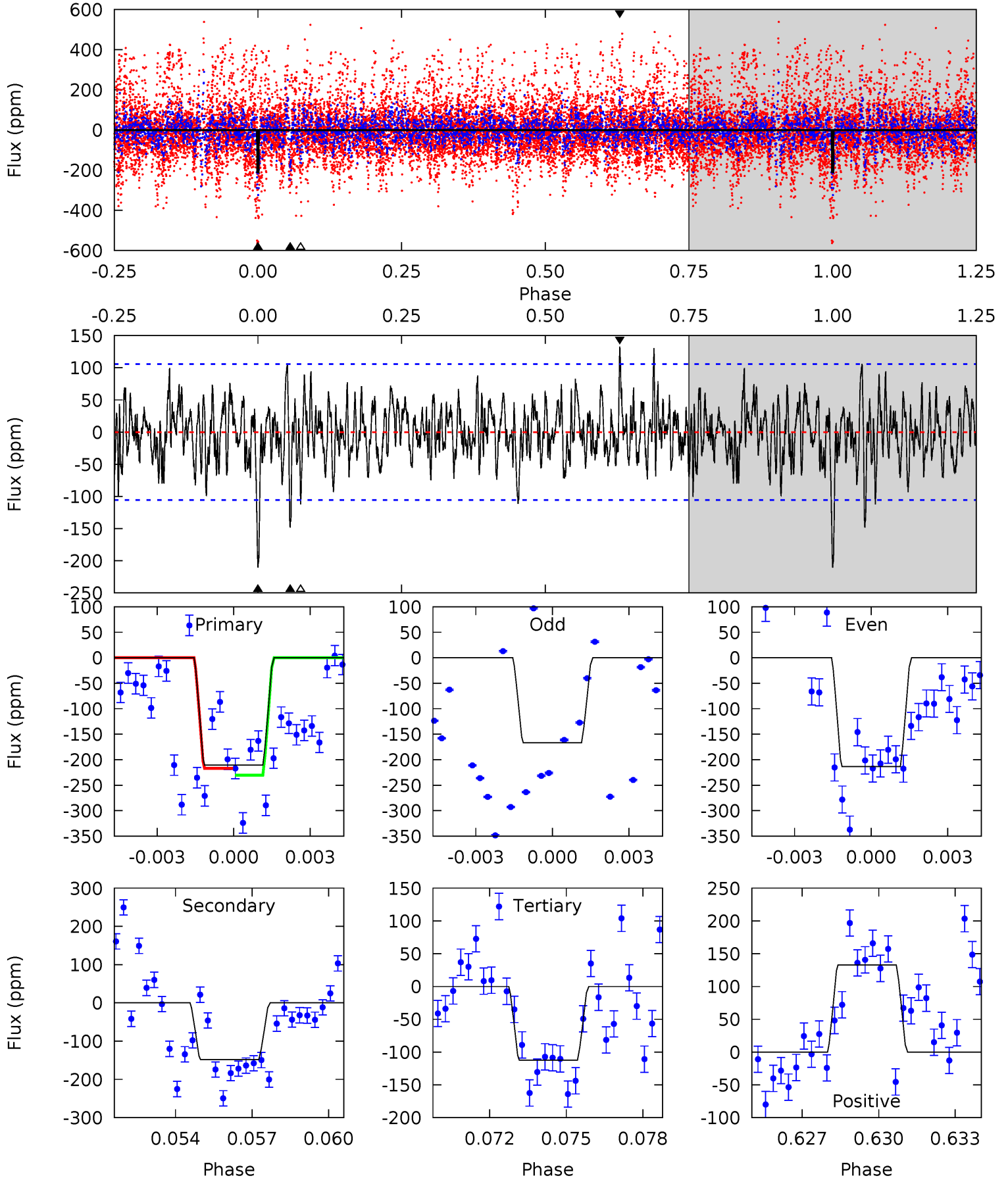
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.41	8.00	6.78	8.23	5.18	2.84	2.53	2.63	1.18	1.22	-0.23	1.11	-0.32	0.47	0.51



Alt Model-Shift Uniqueness Test

009467345-07, P = 58.625640 Days, E = 112.268490 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	7.37	5.58	6.60	5.25	2.97	1.79	4.89	3.86	1.79	0.76	1.15	1.14	0.39	0.34



Stellar Parameters For KIC 009467345

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6781^{+170}_{-187}	$3.829^{+0.273}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.576^{+0.471}_{-0.875}$	$1.631^{+0.180}_{-0.335}$	$0.135^{+0.242}_{-0.048}$
	+3%/-3%	+7%/-3%	+300%/-250%	+18%/-34%	+11%/-21%	+180%/-36%
Source	PHO1	FLK73	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 009467345-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-95 ± 12	$3.69^{+2.67}_{-2.21}$	1125^{+72}_{-91}	5721^{+3806}_{-1169}	474^{+2291}_{-315}
Alt.	-148 ± 20	$3.36^{+2.88}_{-2.08}$	1127^{+69}_{-90}	6674^{+6052}_{-1625}	855^{+5355}_{-601}

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

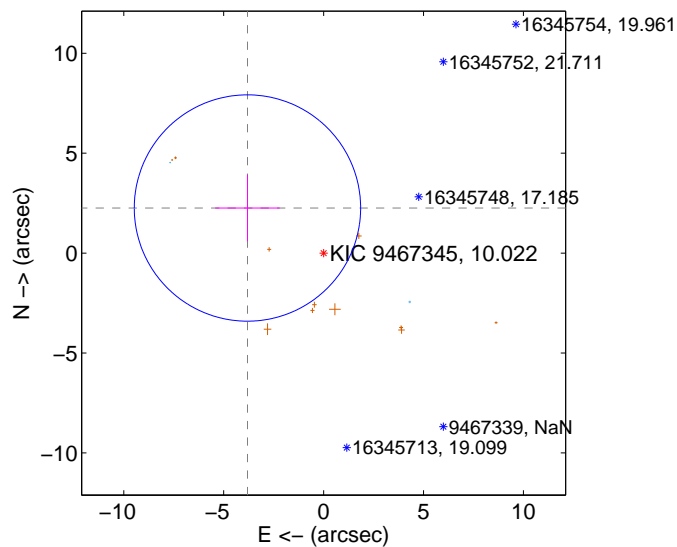
Supplemental centroid analysis for 009467345-07. **Kepler magnitude: 10.02.** Transit SNR 9.61

There are 2 quarters with good PRF difference image offsets

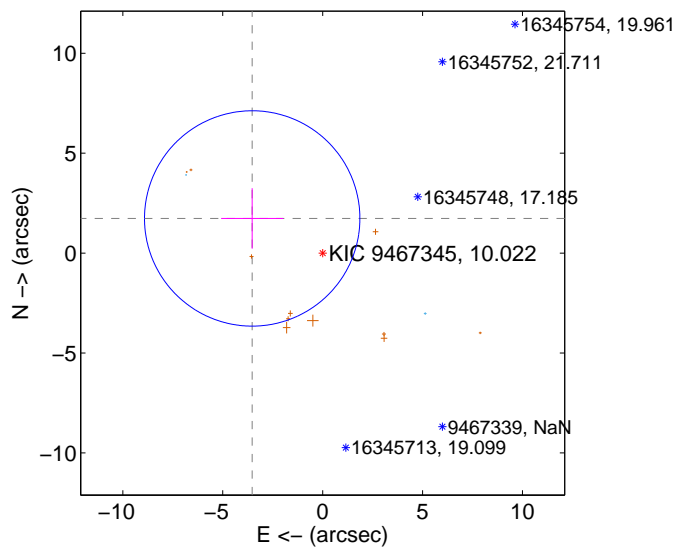
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.429 ± 1.888	2.35	3.811 ± 1.612	2.256 ± 1.661
PRF-fit source offset from KIC position	3.929 ± 1.796	2.19	3.526 ± 1.557	1.734 ± 1.514
photometric centroid source offset	0.09 ± 0.44	0.20	-0.07 ± 0.47	-0.05 ± 0.35

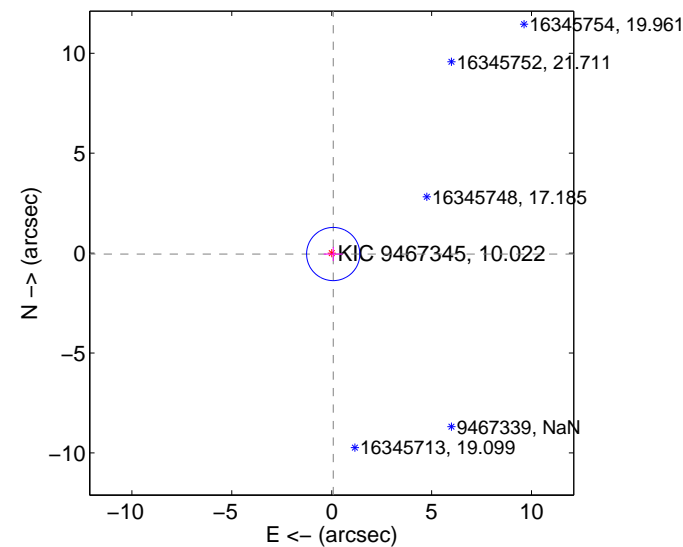
offset from difference PRF-fit to OOT PRF-fit



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.

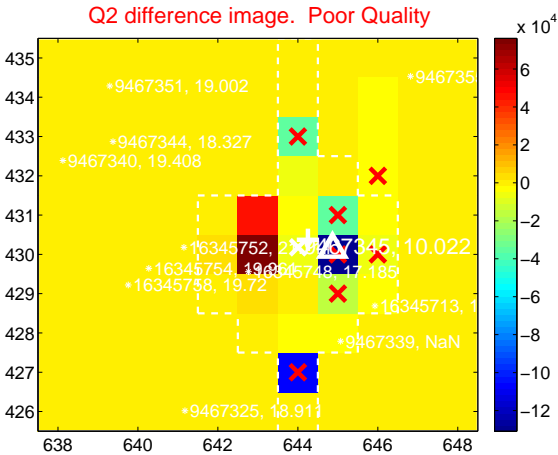
Q1 no difference image



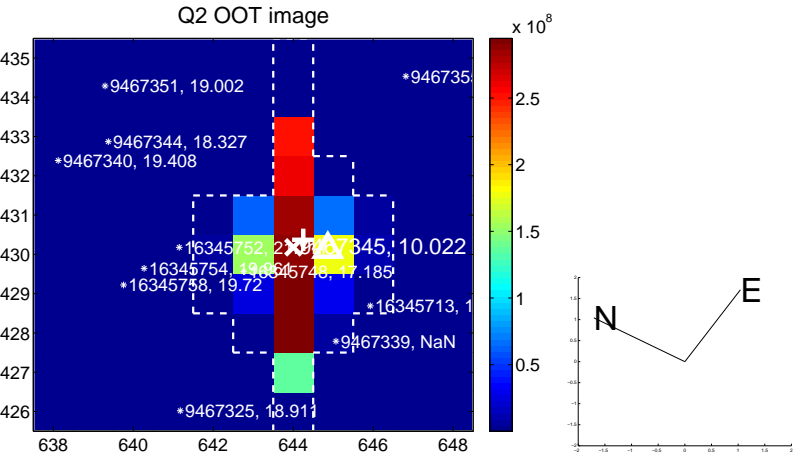
Q1 no OOT image



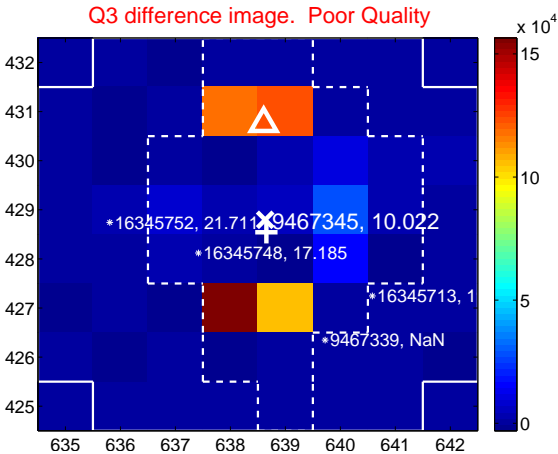
Q2 difference image. Poor Quality



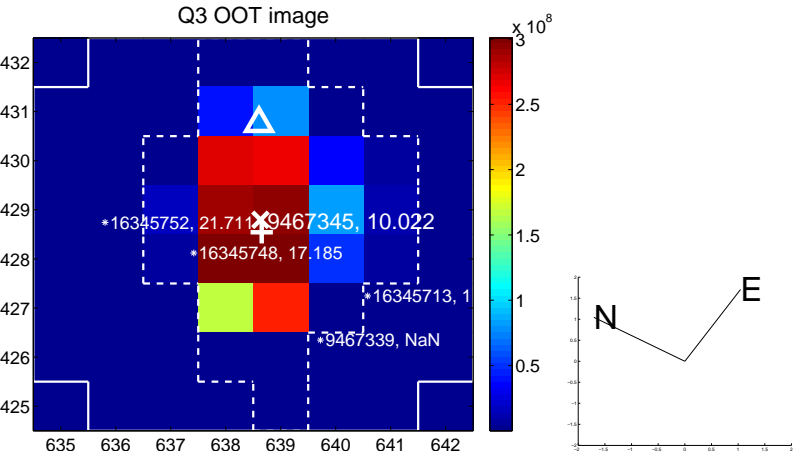
Q2 OOT image



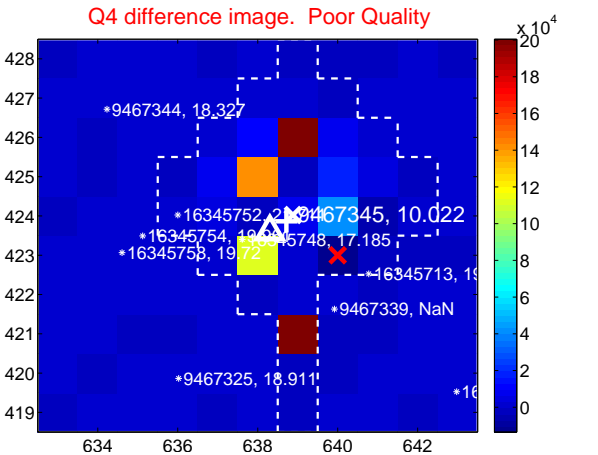
Q3 difference image. Poor Quality



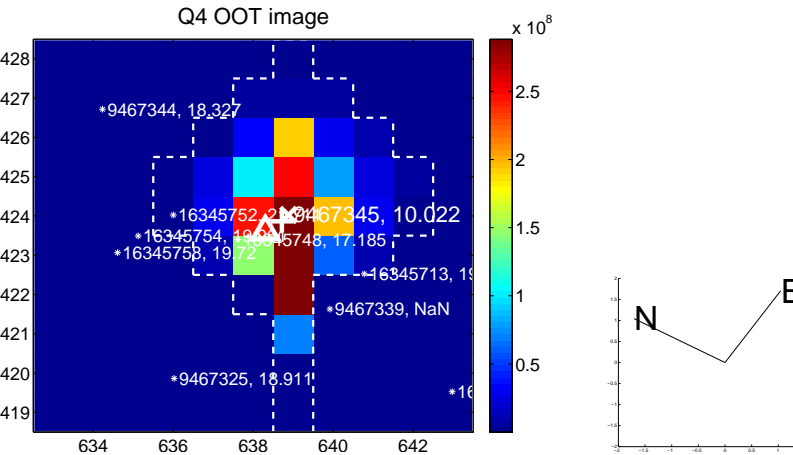
Q3 OOT image



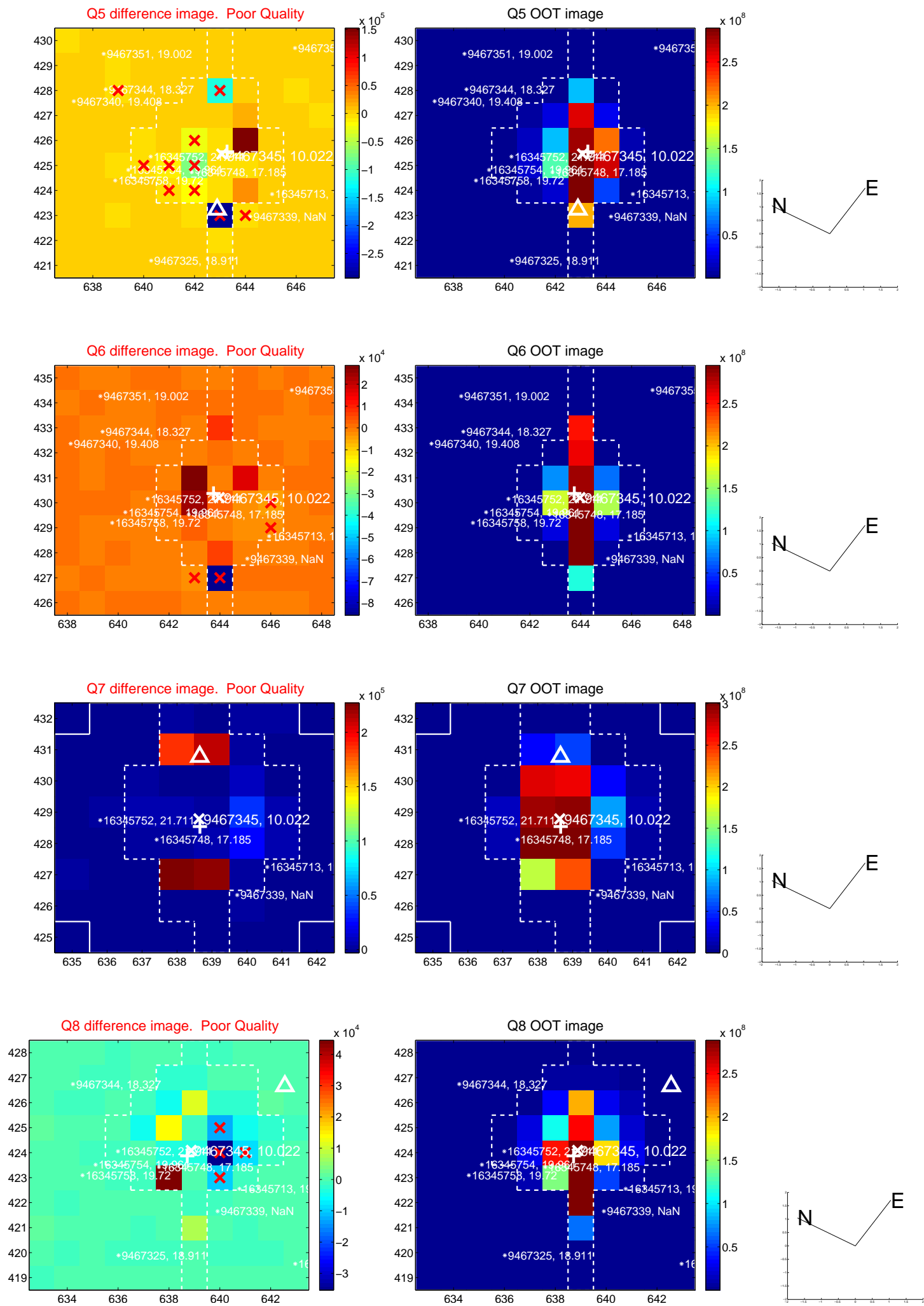
Q4 difference image. Poor Quality



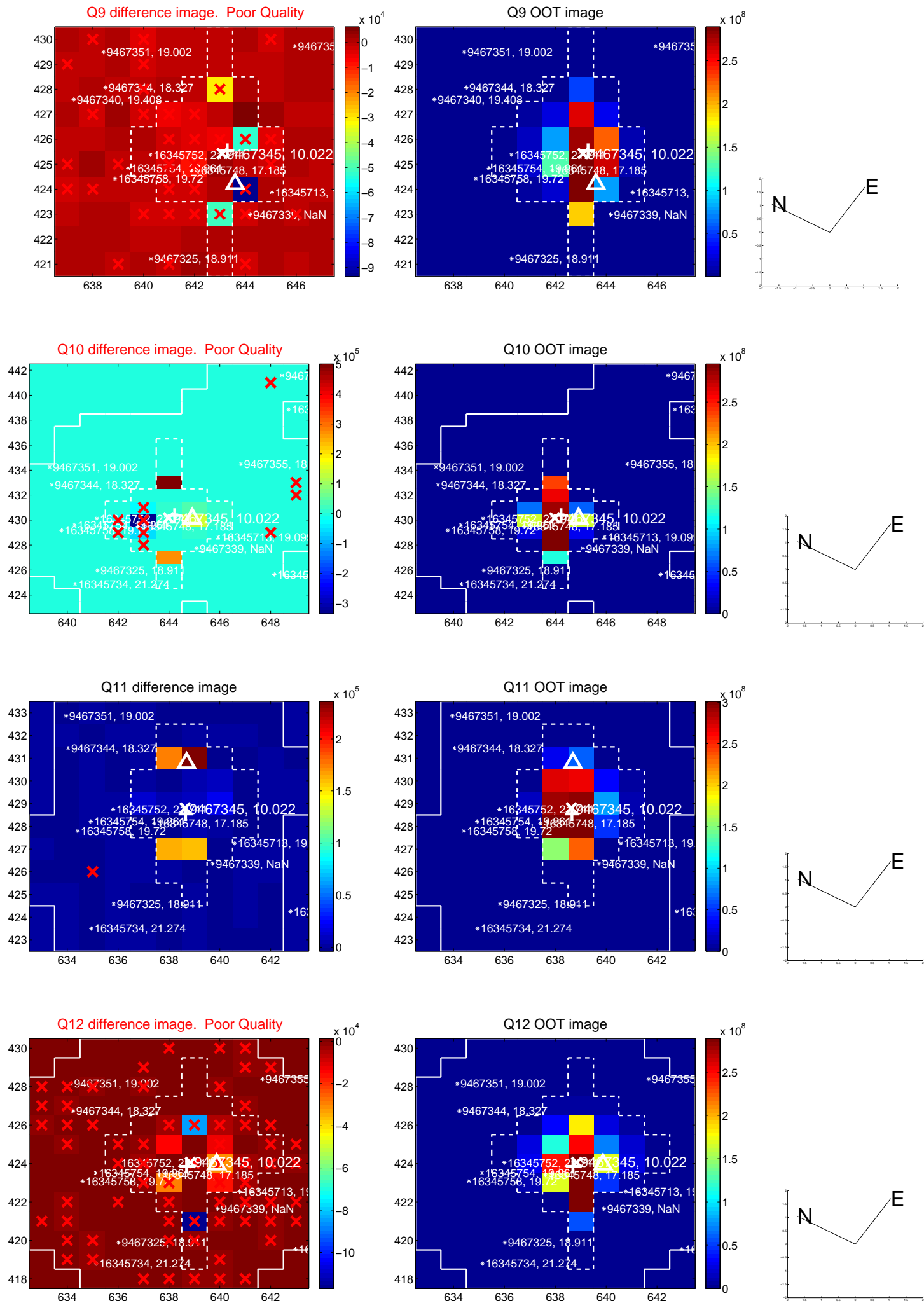
Q4 OOT image



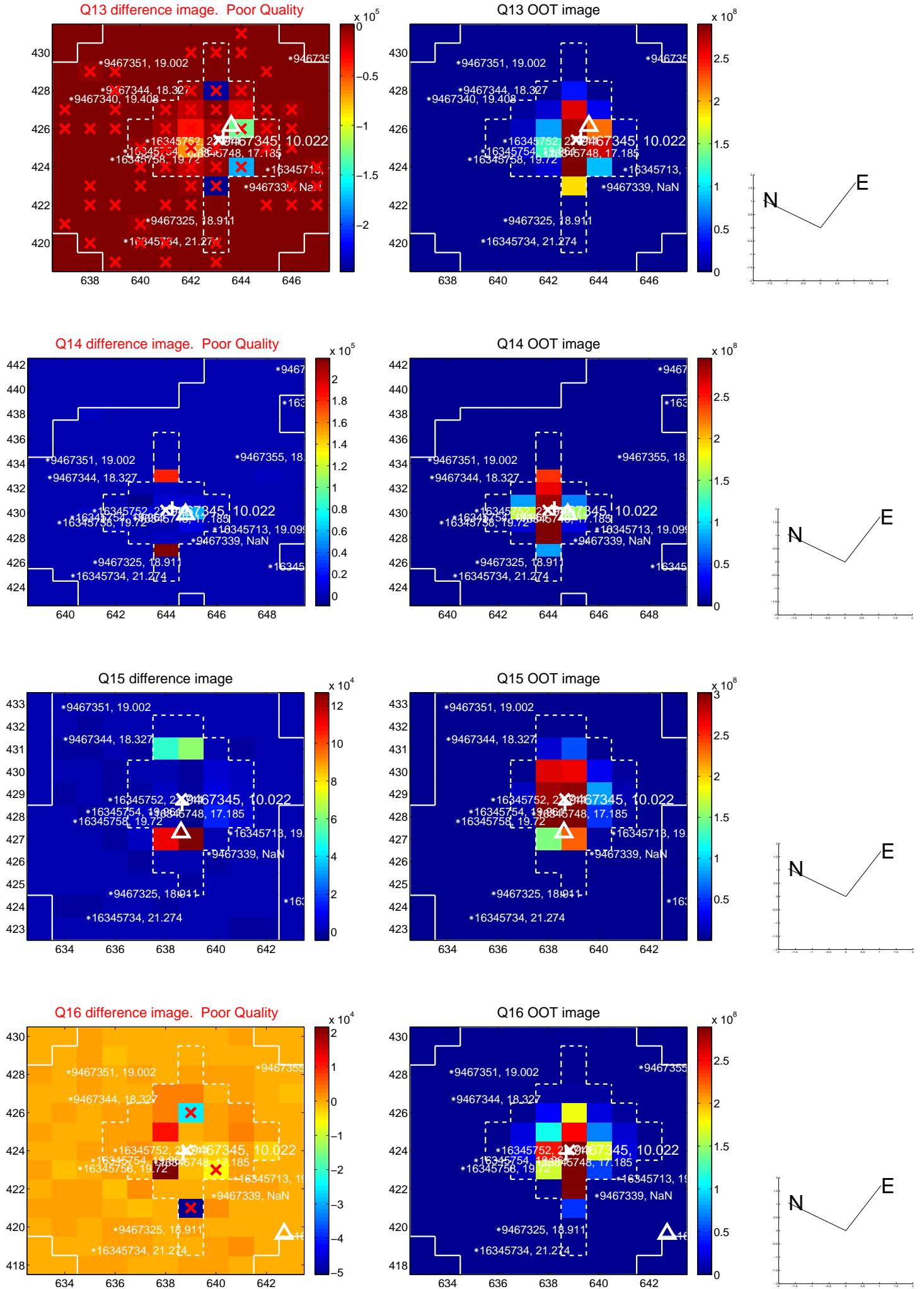
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



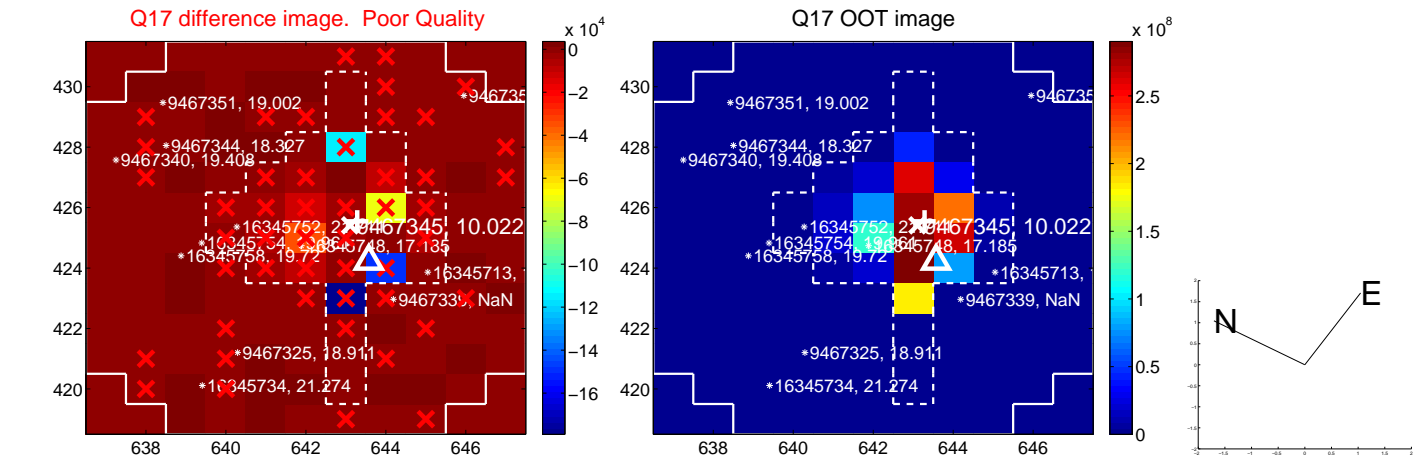
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



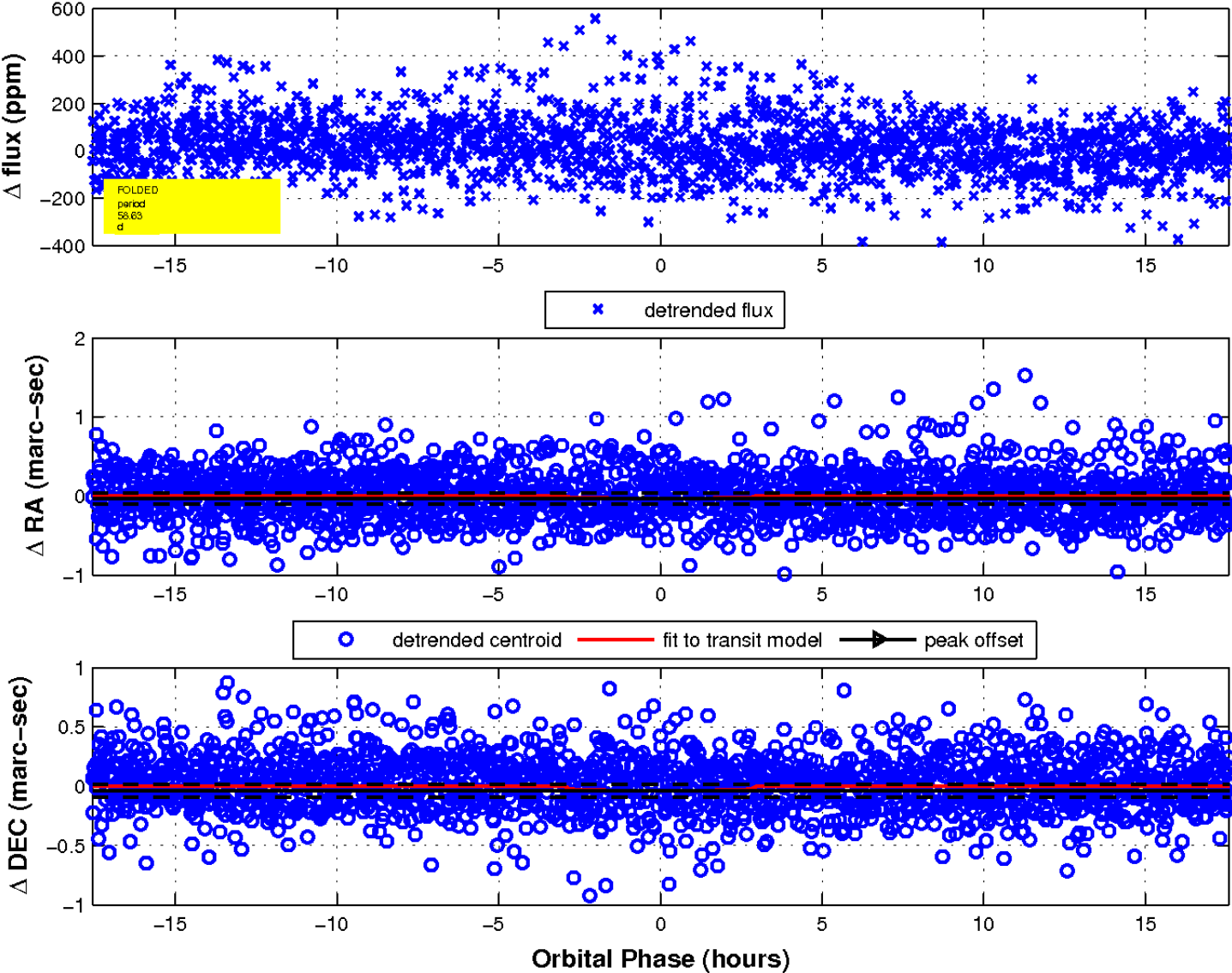
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



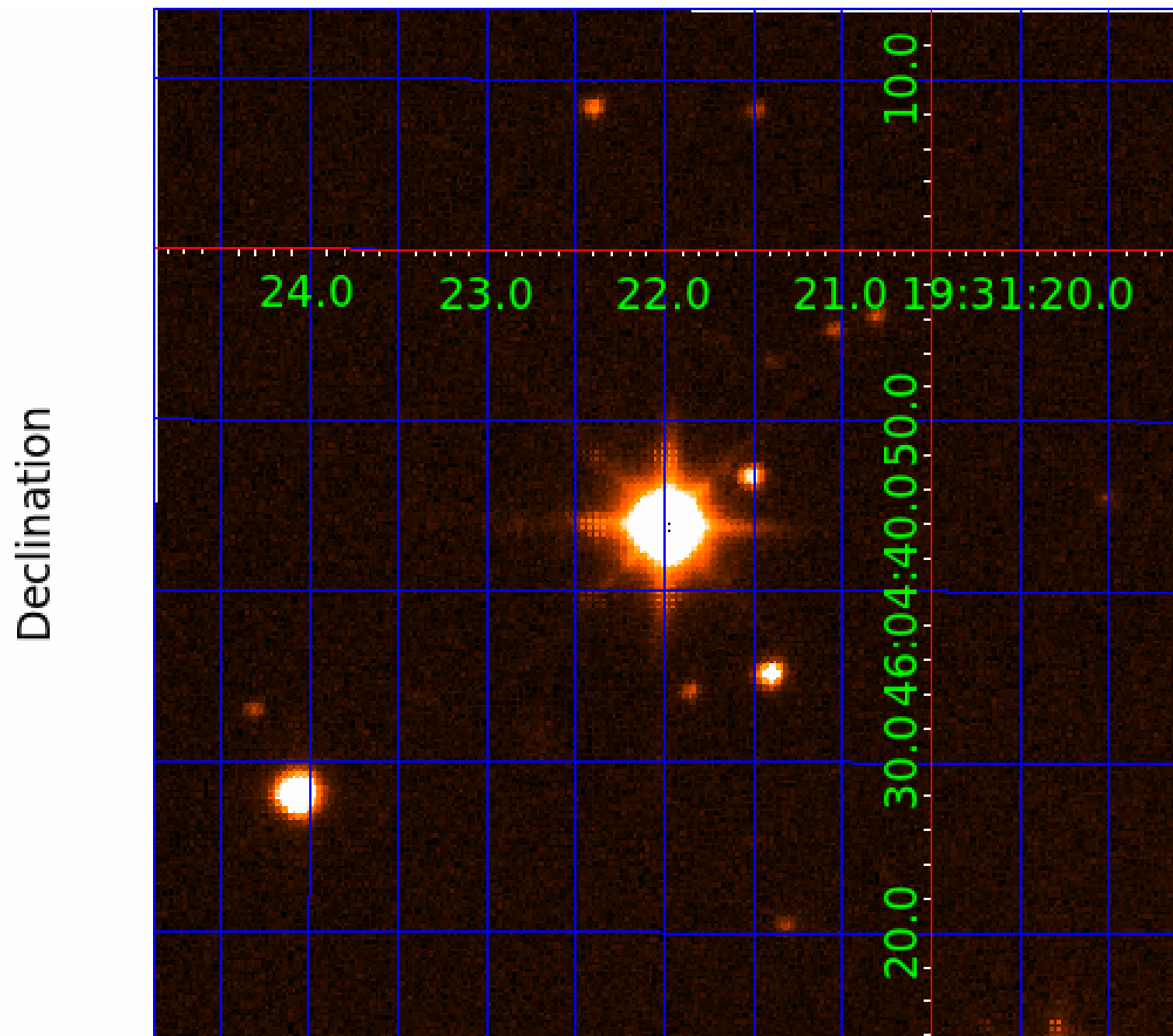
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 7 of 10



UKIRT Image



KIC 009467345

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})
009467345-01	OBS	No	4.415246	131.645559	69.0	11.744	12.3	15.1	2.58	6781	4.25	3266.58
009467345-02	OBS	No	2.207682	132.429638	0.0	10.018	10.2	0.0	2.58	6781	0.02	8230.97
009467345-03	OBS	No	78.152078	184.897456	178.3	9.752	14.0	9.1	2.58	6781	4.33	70.81
009467345-04	OBS	No	100.652567	218.951909	119.3	8.103	11.0	6.7	2.58	6781	3.15	50.54
009467345-06	OBS	No	51.400675	137.099853	132.6	4.334	10.5	10.5	2.58	6781	3.36	123.81
009467345-07	OBS	No	58.626862	170.839840	143.2	5.867	10.1	9.6	2.58	6781	3.12	103.89
009467345-08	OBS	No	148.852894	157.736395	0.1	12.958	10.4	0.0	2.58	6781	0.08	29.99
009467345-09	OBS	No	58.571174	176.260499	142.3	3.187	10.7	9.5	2.58	6781	3.55	104.02
009467345-10	OBS	No	104.022117	197.315739	97.6	10.990	9.3	5.5	2.58	6781	2.80	48.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009467345-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
009467345-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_SATURATED
009467345-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009467345-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

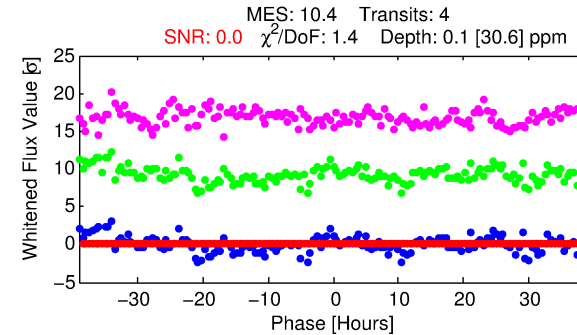
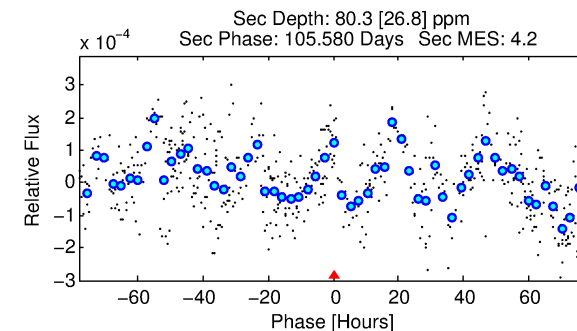
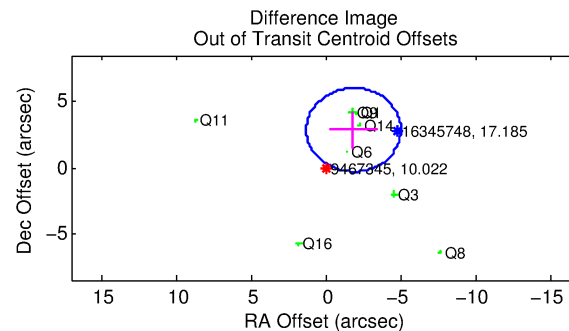
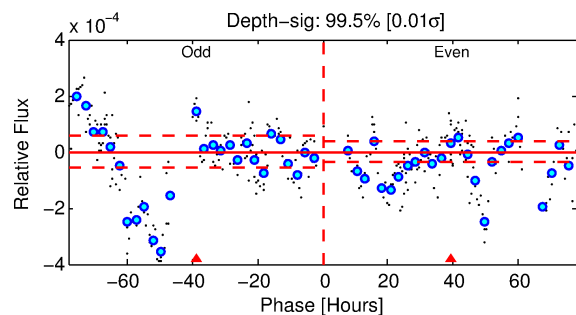
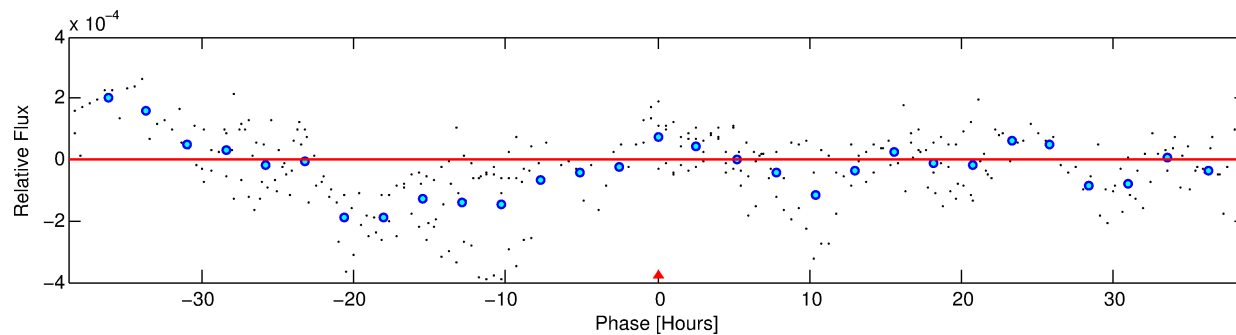
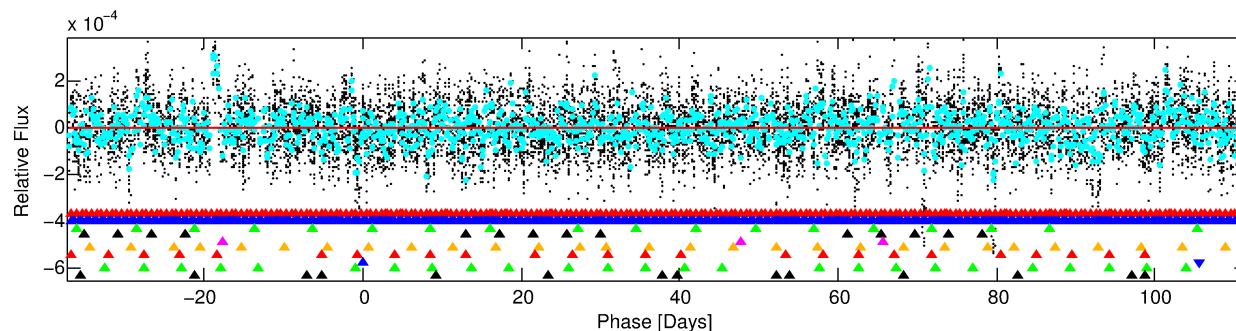
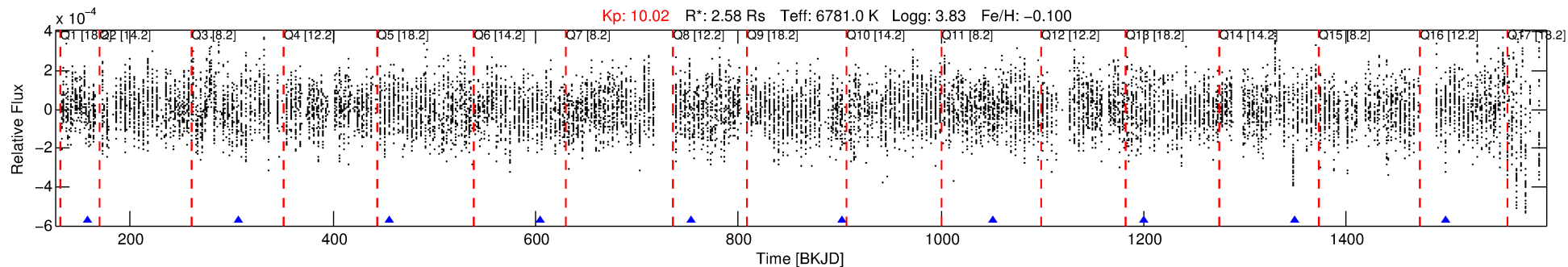
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009467345-08

No Significant Match Found

DV One-Page Summary

KIC: 9467345 Candidate: 8 of 10 Period: 148.853 d



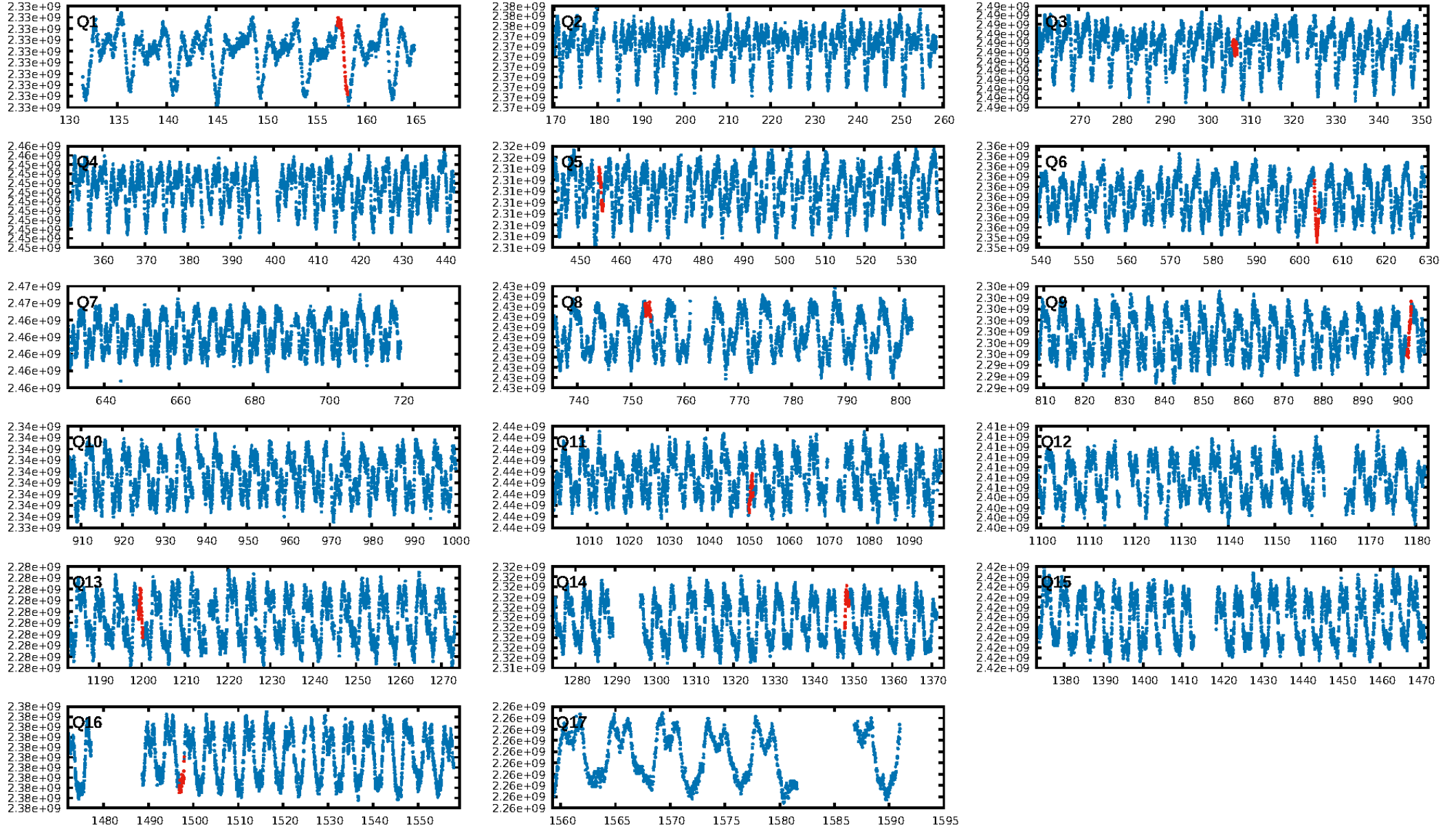
DV Fit Results:

Period = 148.85289 [13.10947] d
Epoch = 157.7364 [87.2595] BKJD
 $R_p/R^* = 0.0003$ [0.0627]
 $a/R^* = 37.39$ [3188.14]
 $b = 0.91$ [27.63]
 $\text{Seff} = 29.99$ [15.08]
 $T_{\text{eq}} = 597$ [75] K
 $R_p = 0.08$ [17.62] R_e
 $a = 0.6474$ [0.2033] AU
 $A_g = 2920212.14$ [1292880666.87] [0.0001]
 $T_{\text{eff}} = 38140$ [4221314] K [0.01 σ]

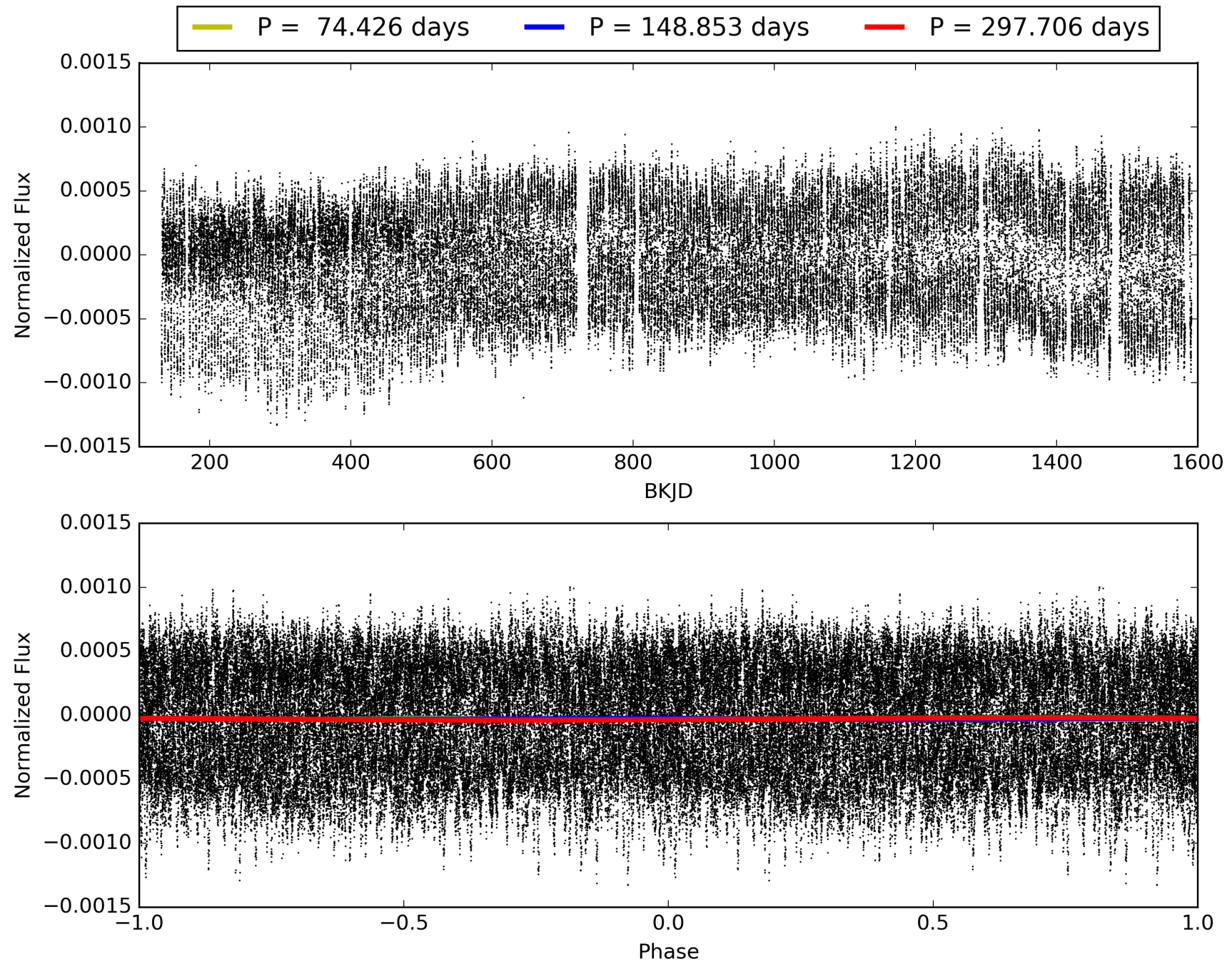
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [63.32 σ]
LongPeriod-sig: 100.0% [415.93 σ]
ModelChiSquare2-sig: 28.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OptOffset-rm: 3.414 arcsec [3.24 σ]
KicOffset-rm: 3.080 arcsec [2.60 σ]
OotOffset-st: 2/2/2/2 [8]
KicOffset-st: 2/2/2/2 [8]
DiffImageQuality-fgm: 0.12 [1/8]
DiffImageOverlap-fno: 0.00 [0/9]

TCE 009467345-08, PDC Light Curves

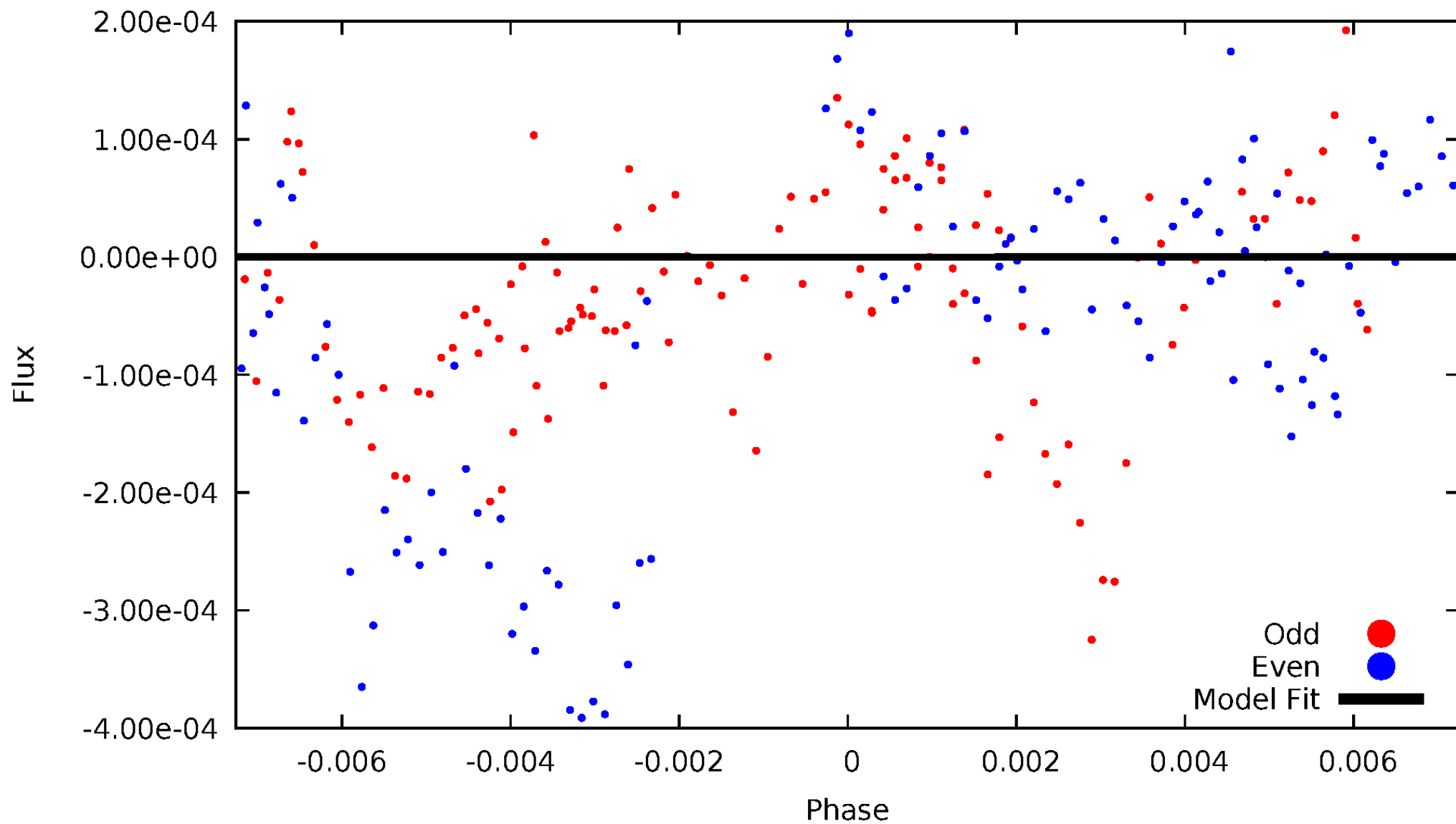


TCE 009467345-08



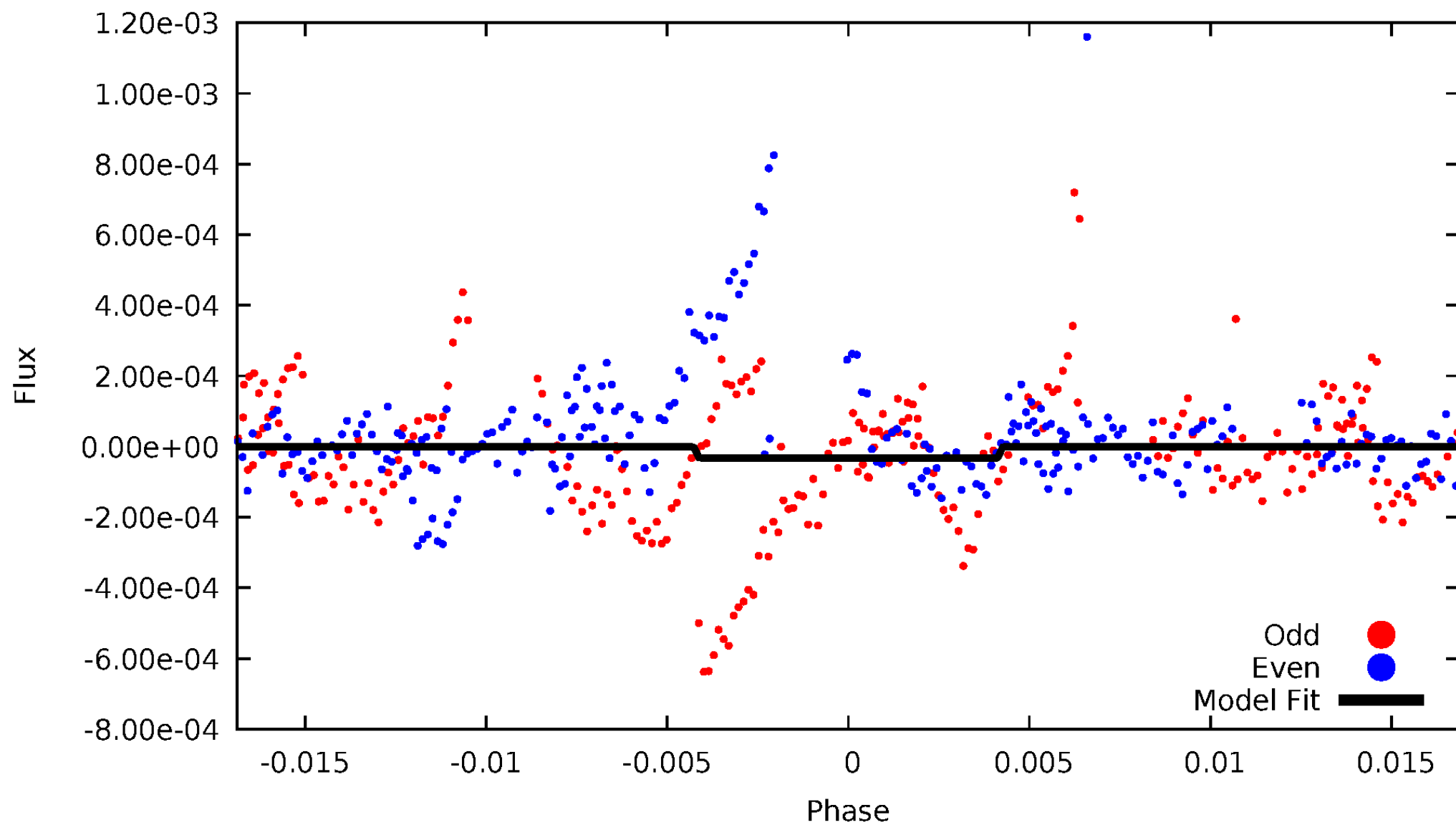
DV Odd/Even

TCE 009467345-08



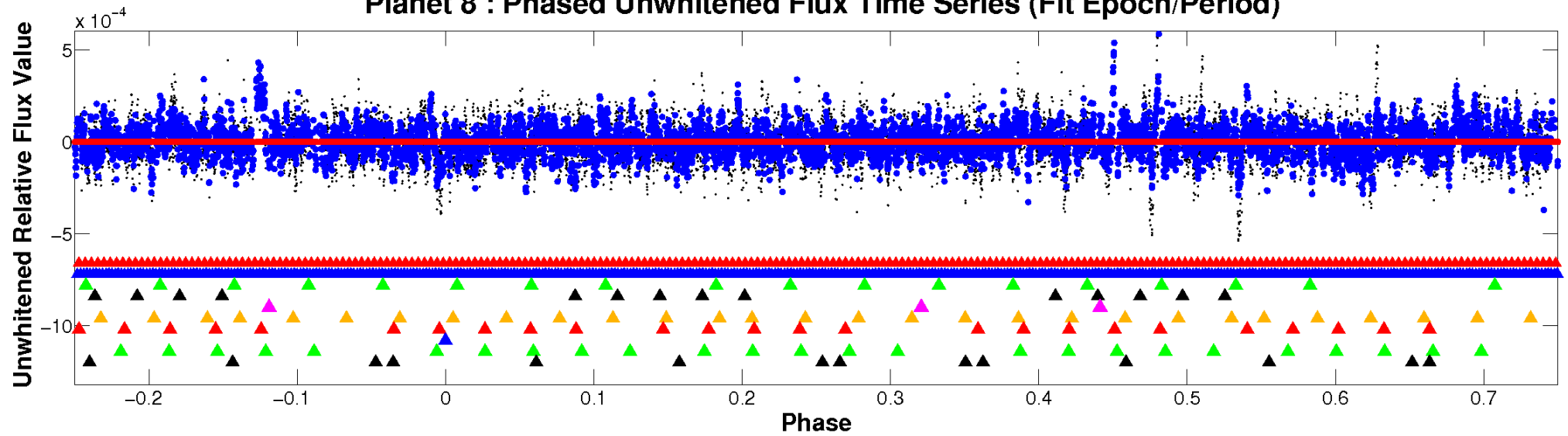
ALT Odd/Even

TCE 009467345-08

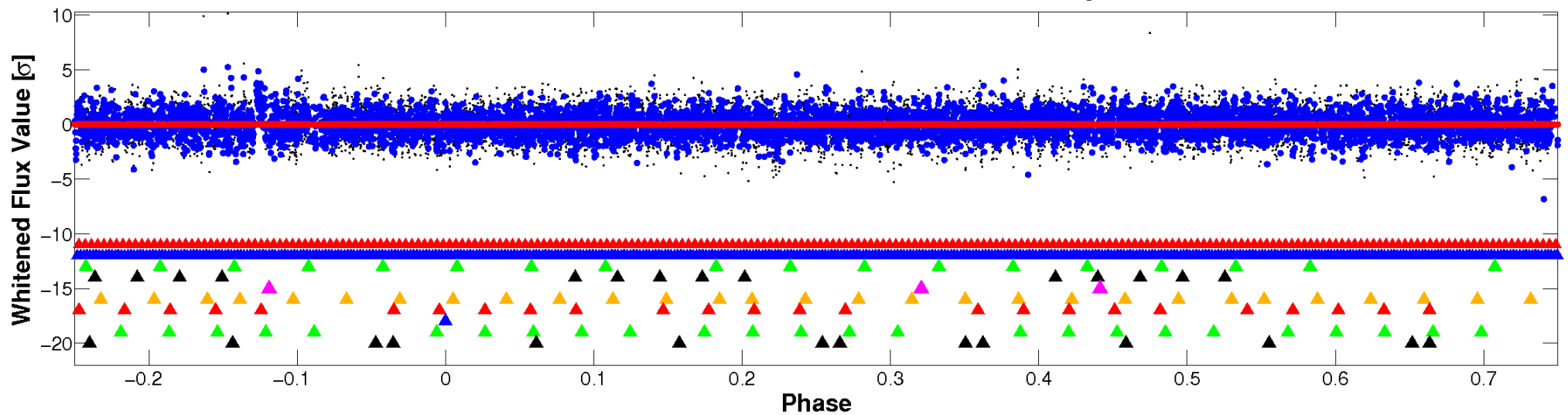


Non-Whitened Vs. Whitened Light Curve

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

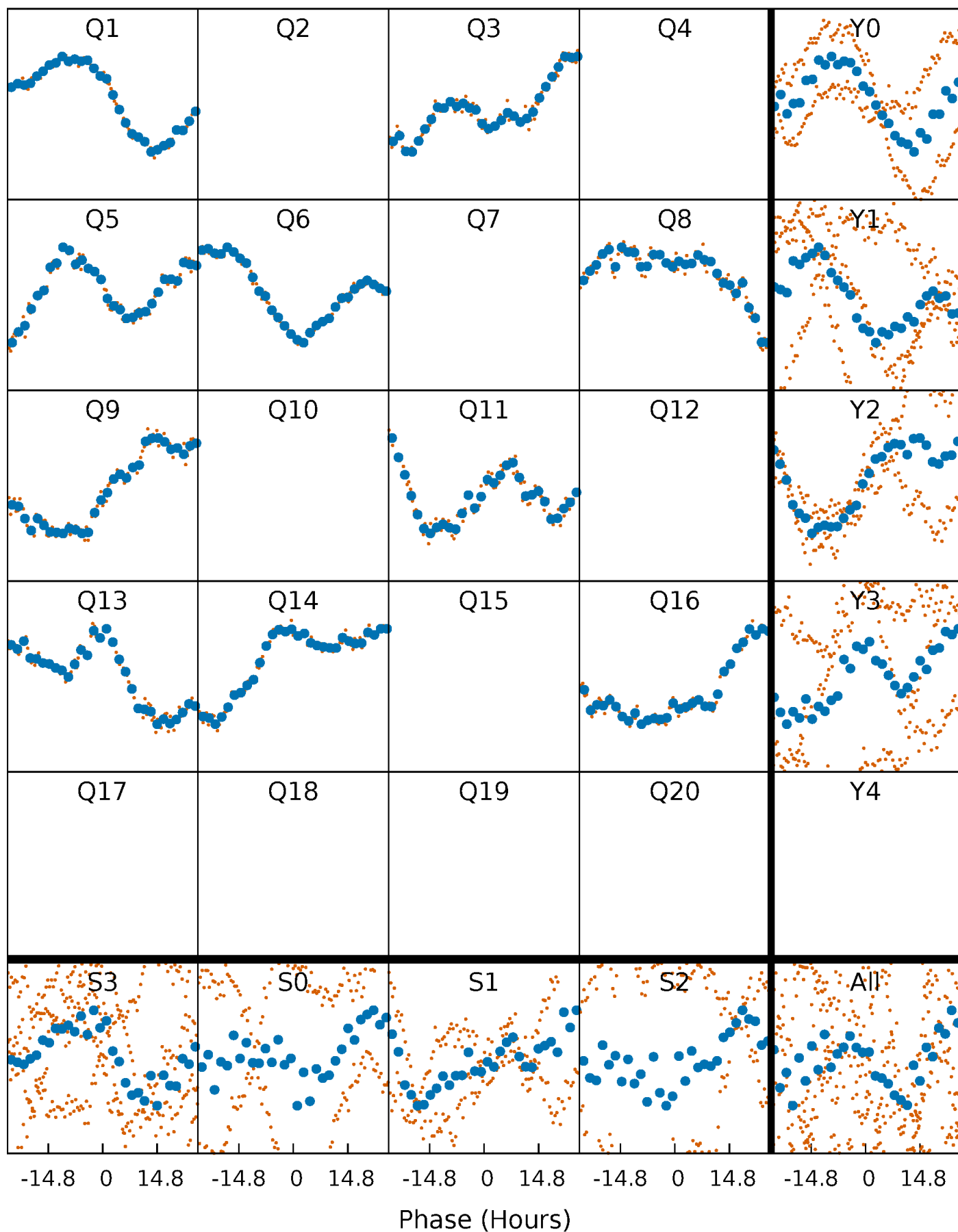


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



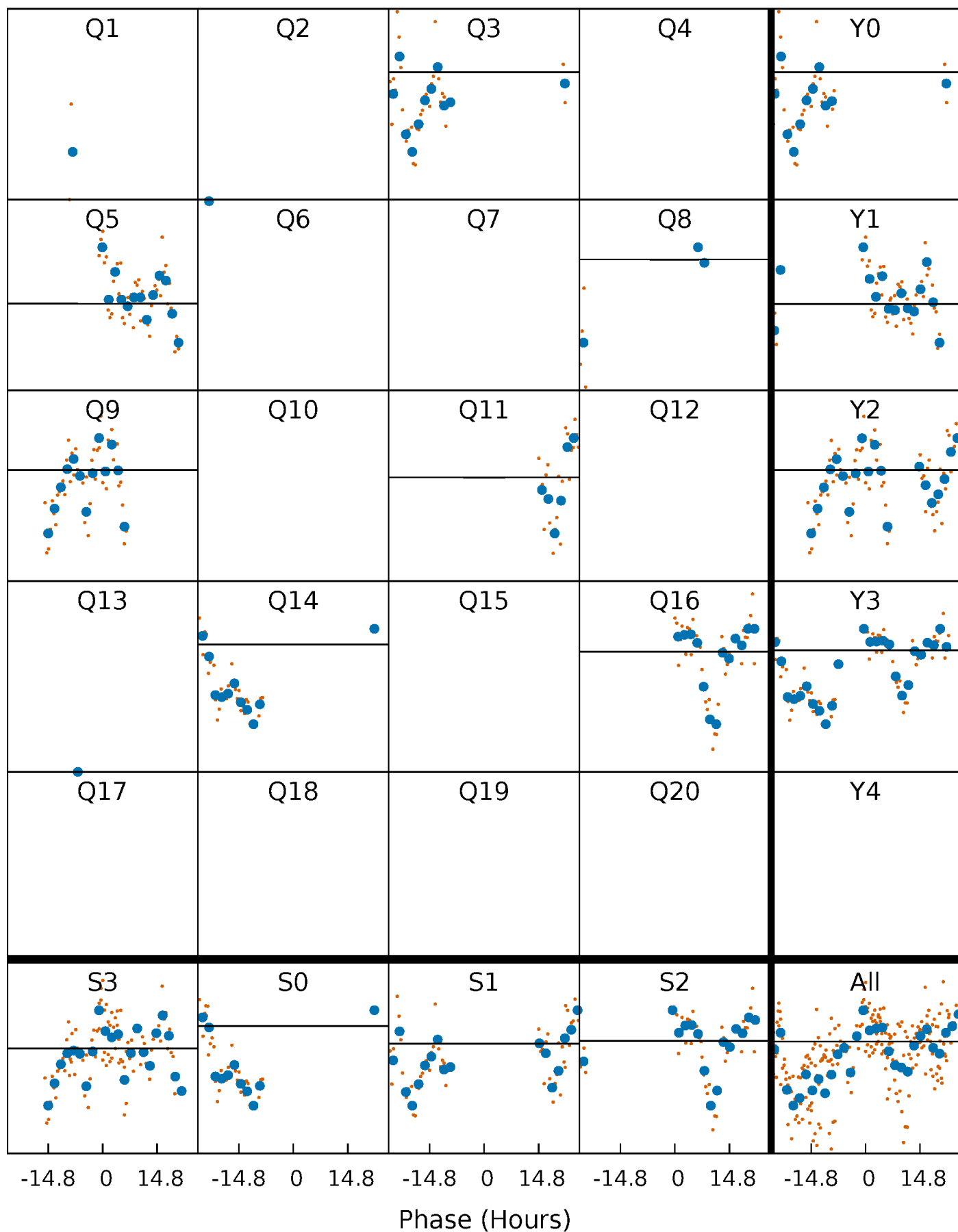
PDC Quarter-Phased Transit Curves

TCE 009467345-08 P=148.852894 Days $T_0=157.736395$ (BKJD)



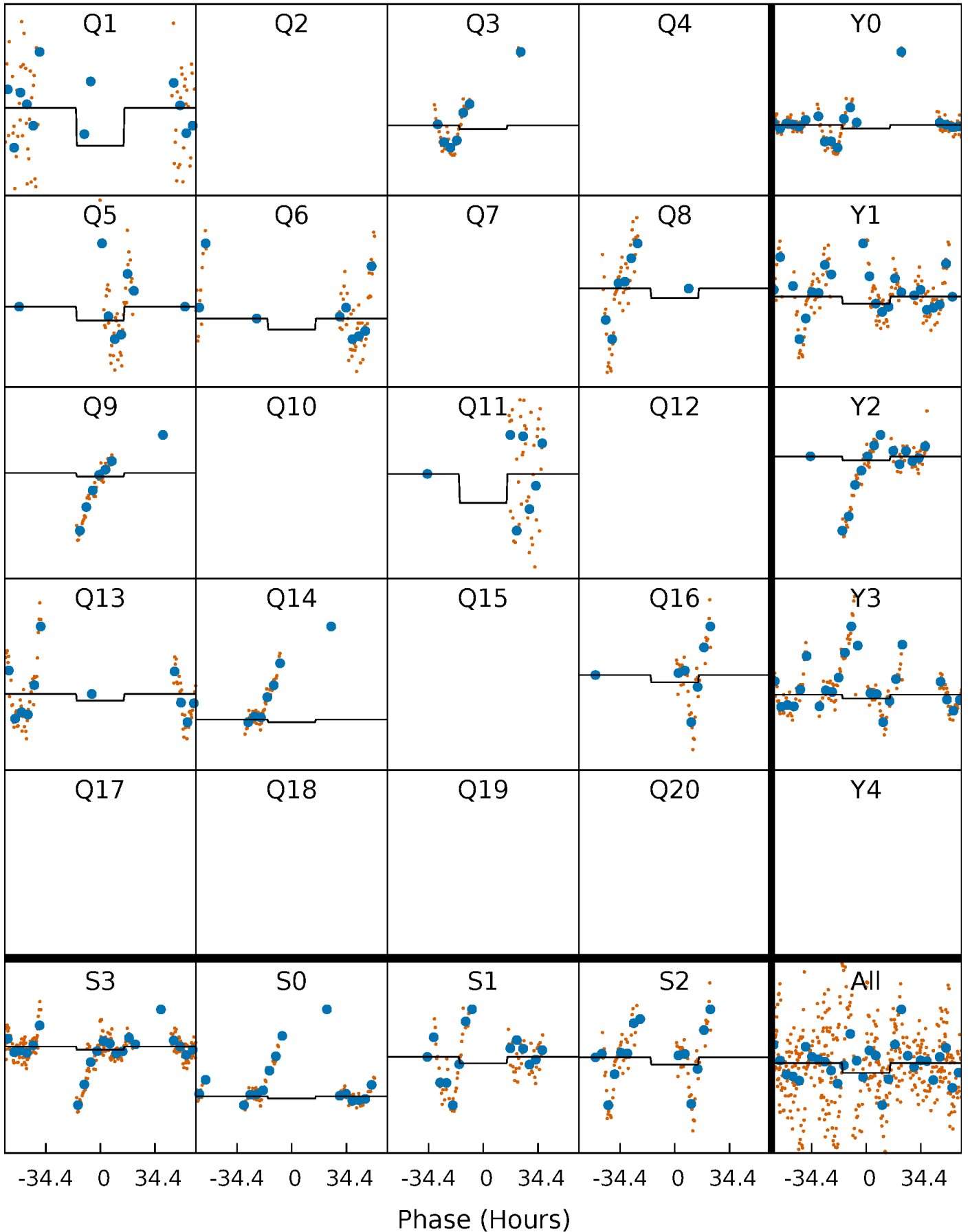
DV Quarter-Phased Transit Curves

TCE 009467345-08 $P=148.852894$ Days $T_0=157.736395$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

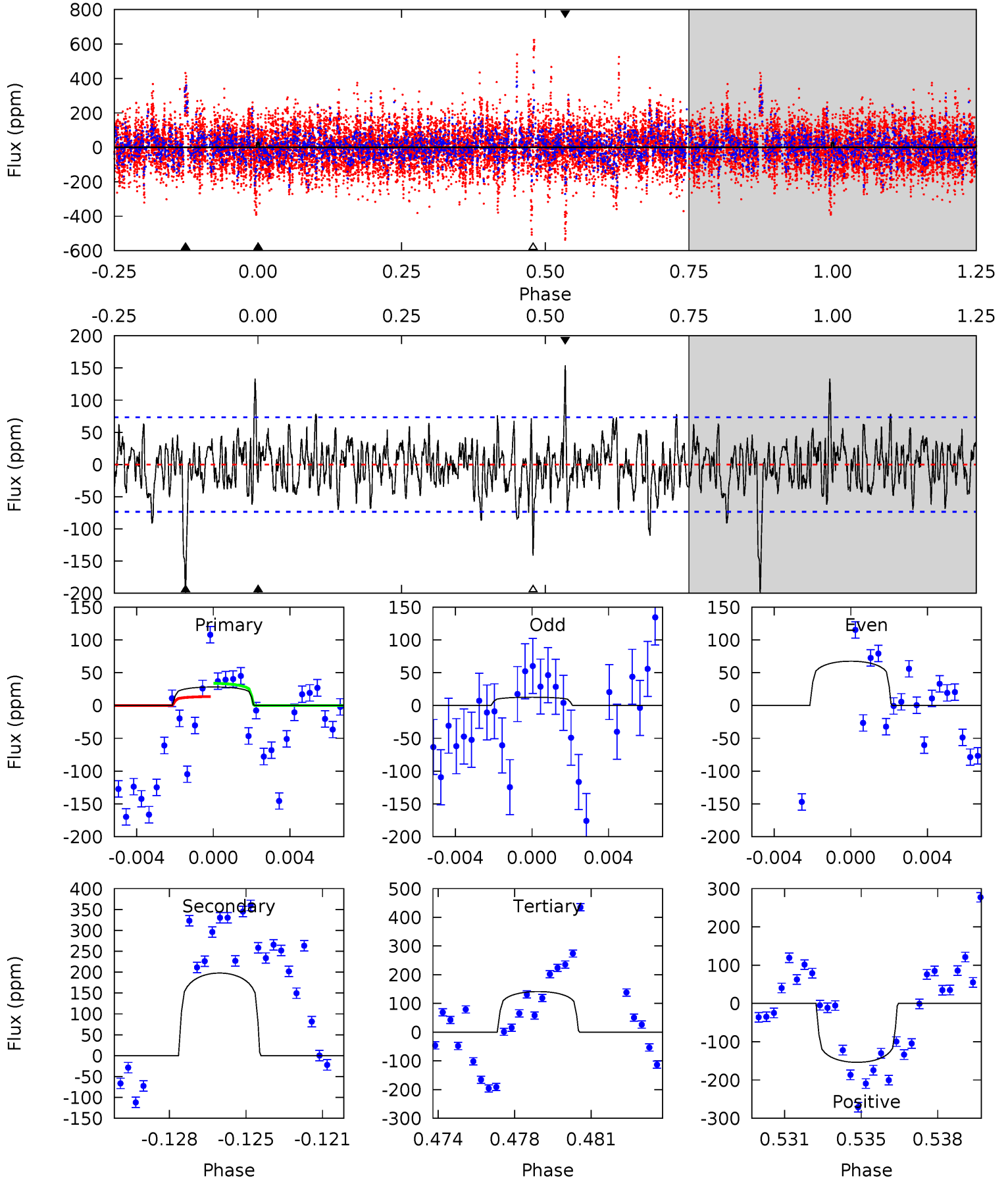
TCE 009467345-08 P=148.851673 Days $T_0=157.705084$ (BKJD)



DV Model-Shift Uniqueness Test

009467345-08, P = 148.852894 Days, E = 8.883501 Days

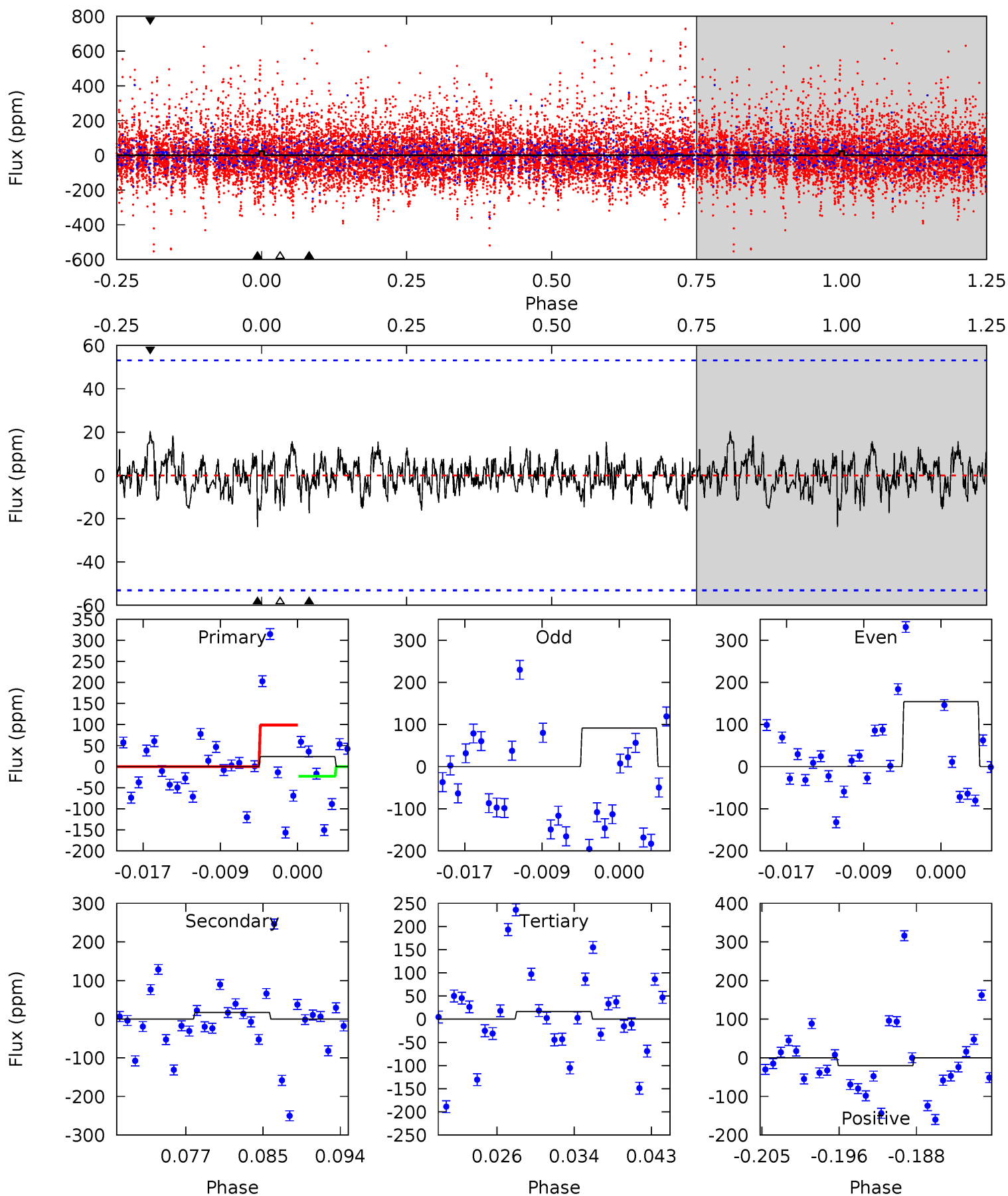
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.01	14.0	10.0	10.9	5.22	2.91	2.29	-8.04	-8.92	4.00	3.13	1.82	0.68	0.44	0.62



Alt Model-Shift Uniqueness Test

009467345-08, P = 148.851673 Days, E = 8.853411 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.27	1.66	1.55	1.90	5.06	2.63	0.56	0.71	0.36	0.11	-0.24	2.95	0	0.46	3.57



Stellar Parameters For KIC 009467345

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6781^{+170}_{-187}	$3.829^{+0.273}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.576^{+0.471}_{-0.875}$	$1.631^{+0.180}_{-0.335}$	$0.135^{+0.242}_{-0.048}$
	+3%/-3%	+7%/-3%	+300%/-250%	+18%/-34%	+11%/-21%	+180%/-36%
Source	PHO1	FLK73	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 009467345-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-198 ± 14	$11.33^{+11.90}_{-8.02}$	825^{+62}_{-71}	4166^{+3090}_{-885}	352^{+3711}_{-267}
Alt.	-17 ± 10	$11.44^{+13.53}_{-7.94}$	819^{+60}_{-72}	2768^{+1267}_{-585}	26^{+265}_{-22}

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

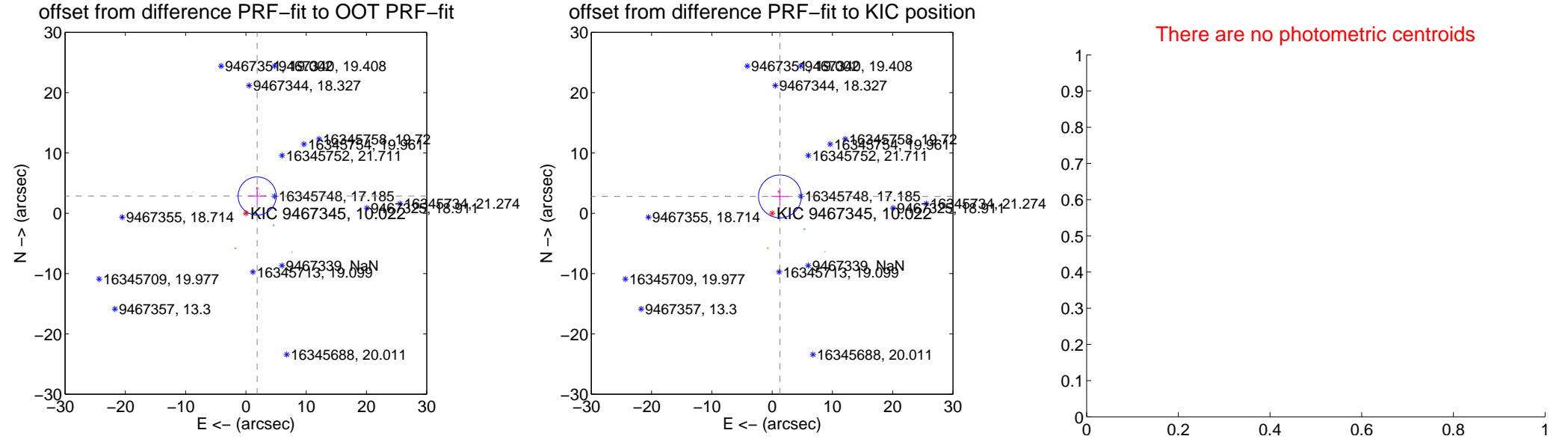
DV Centroid Data

Supplemental centroid analysis for 009467345-08. **Kepler magnitude: 10.02**. Transit SNR 0.00

There are 1 quarters with good PRF difference image offsets

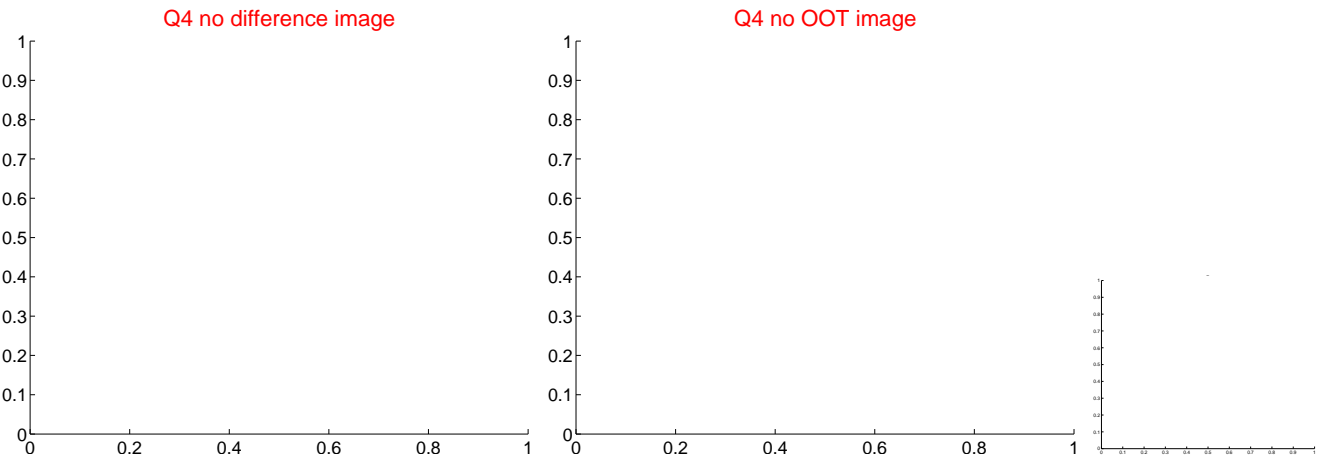
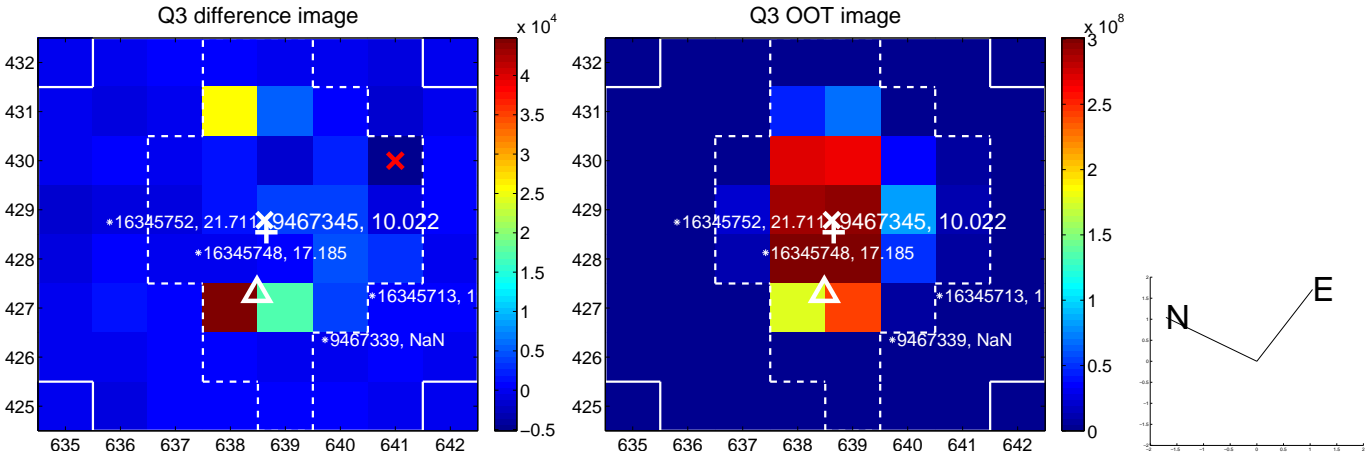
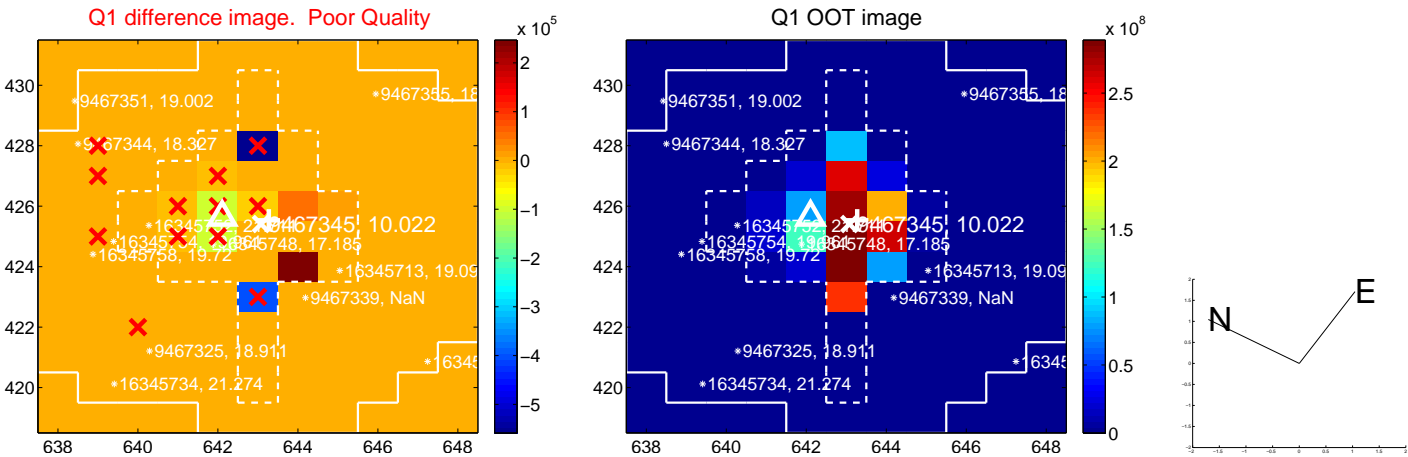
The direct PRF centroid is offset from the target star catalog position by about 1.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.414 \pm 1.053	3.24	-1.867 \pm 1.567	2.859 \pm 1.314
PRF-fit source offset from KIC position	3.080 \pm 1.185	2.60	-1.297 \pm 1.442	2.794 \pm 1.407
photometric centroid source offset	—	—	—	—

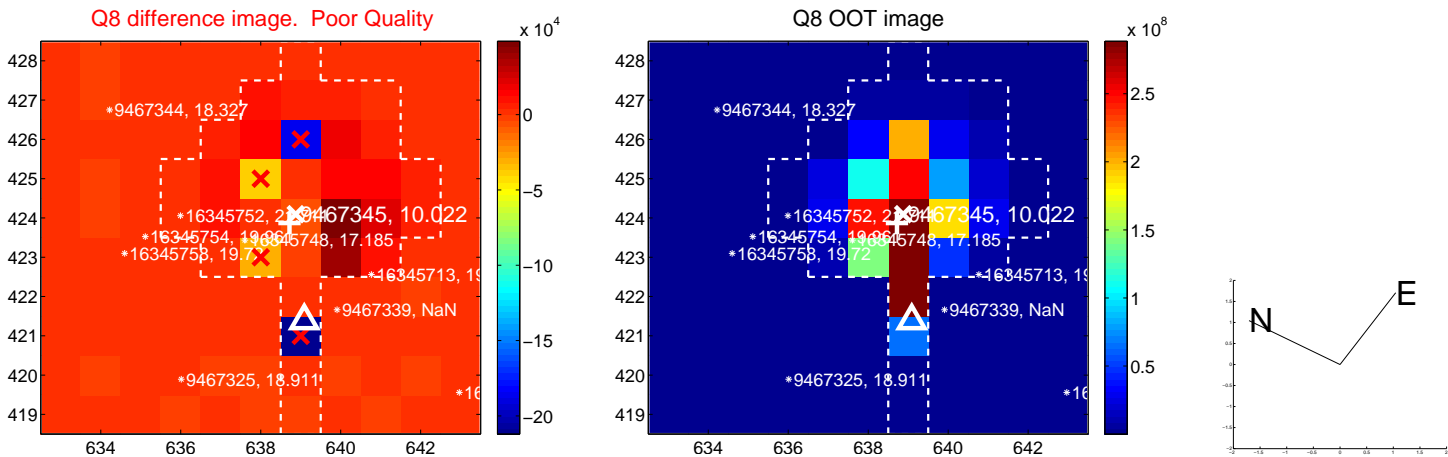
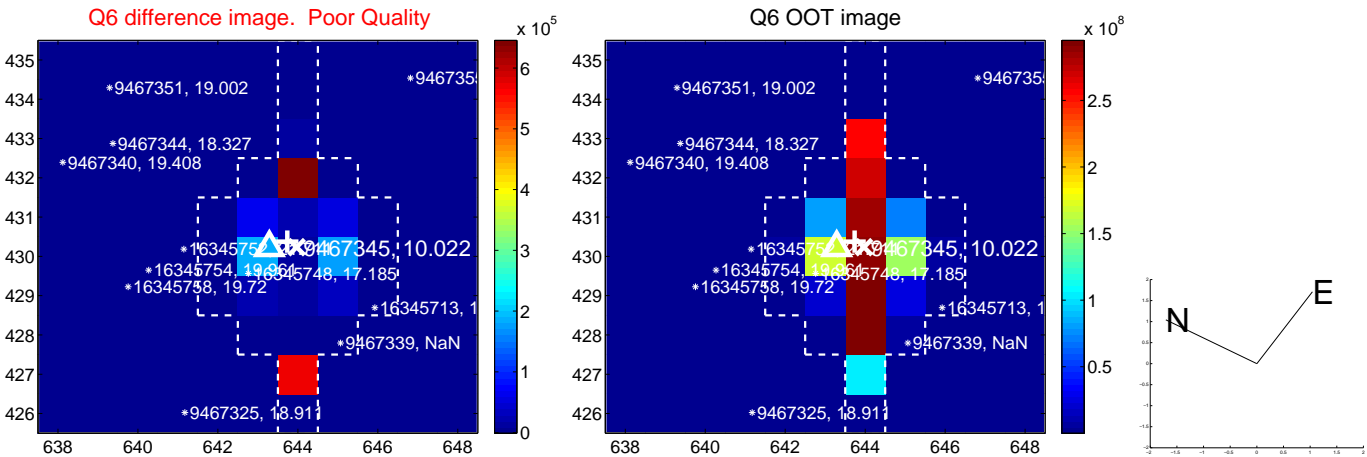
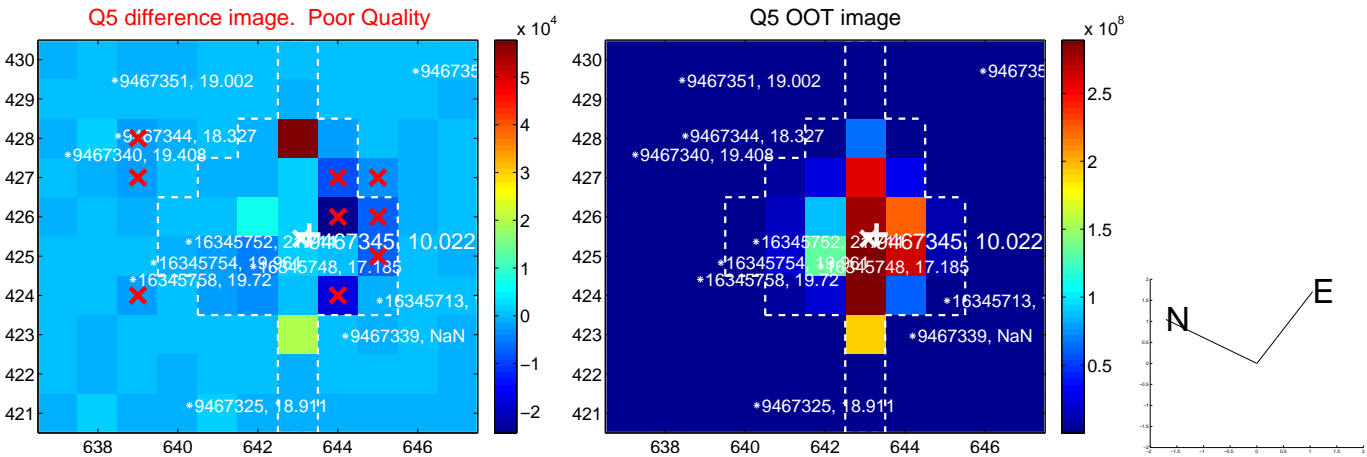


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

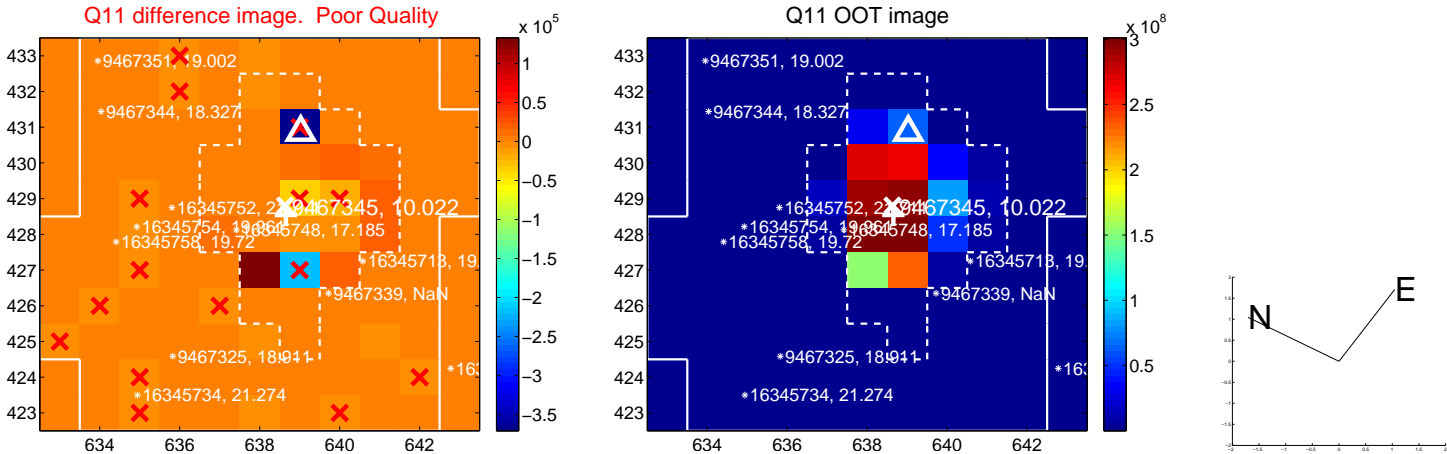
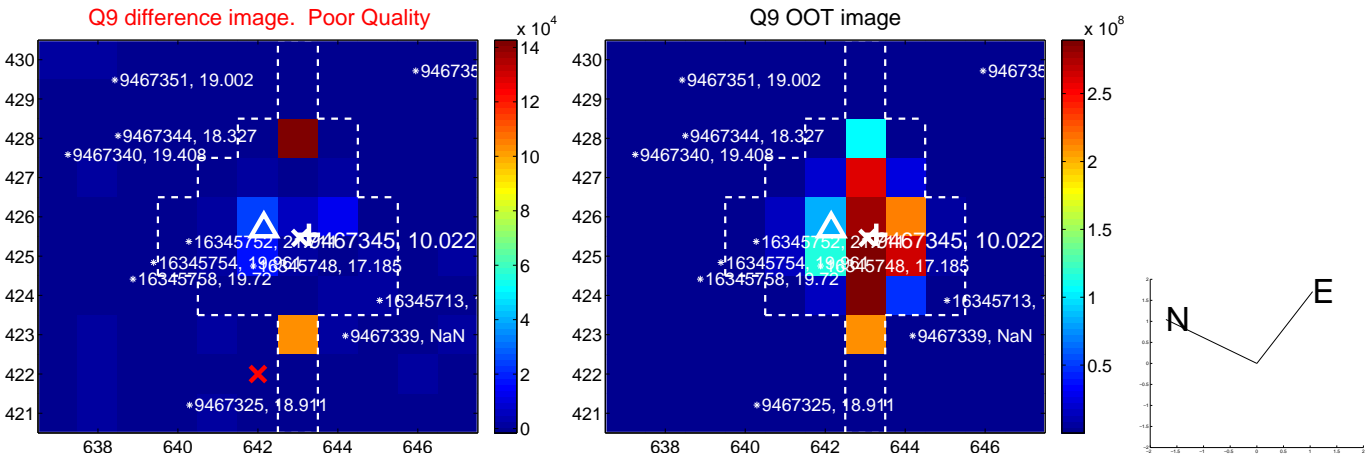
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



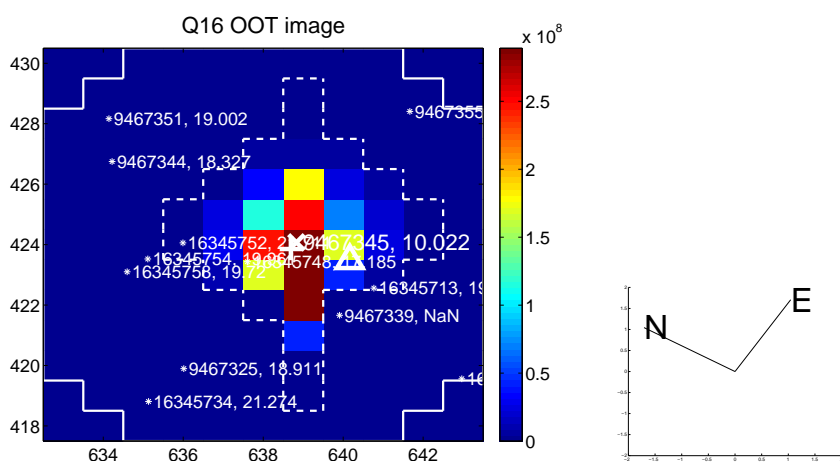
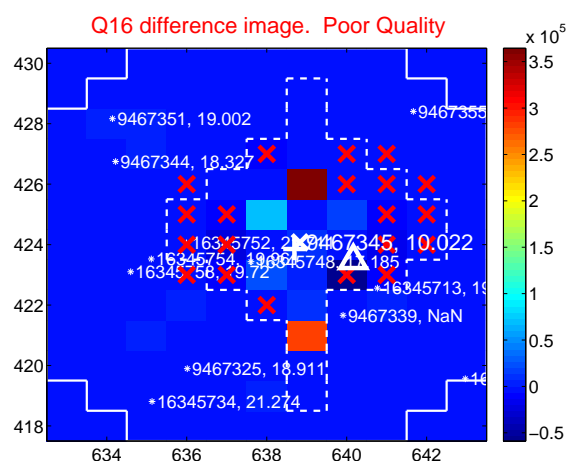
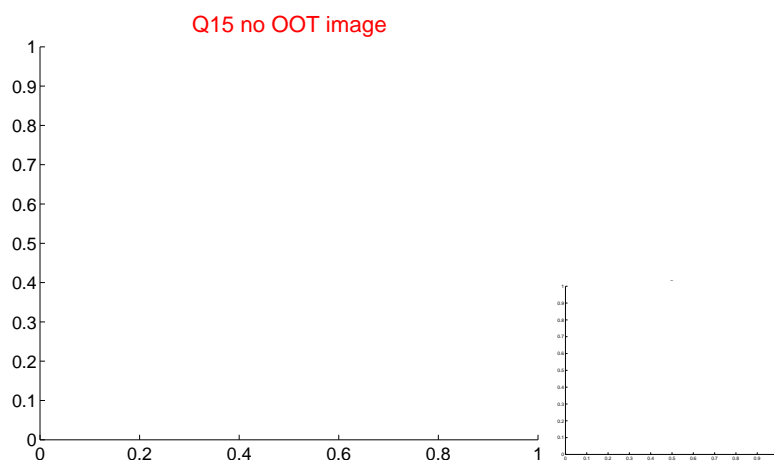
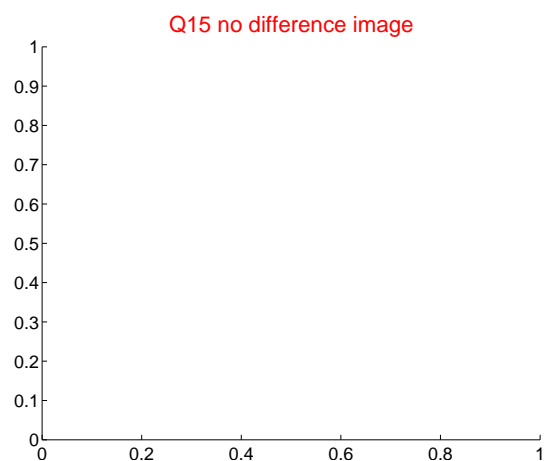
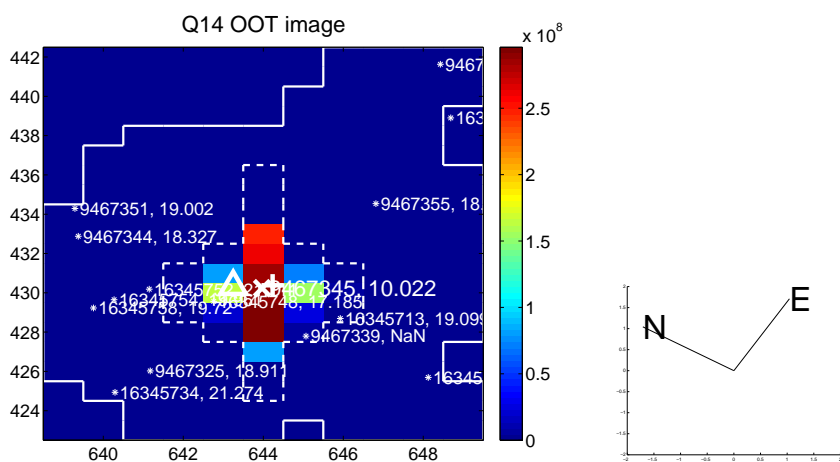
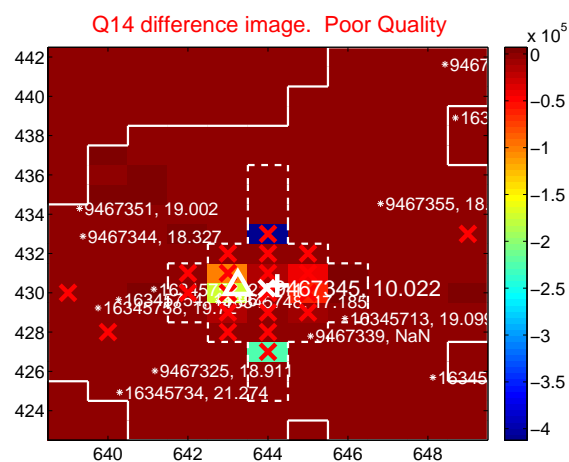
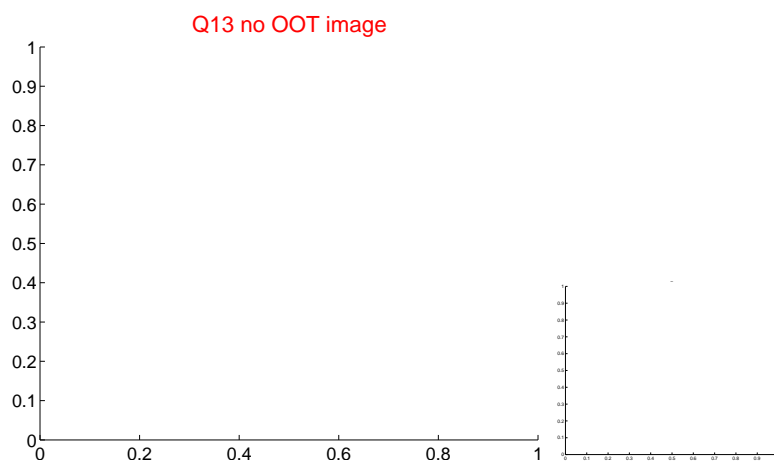
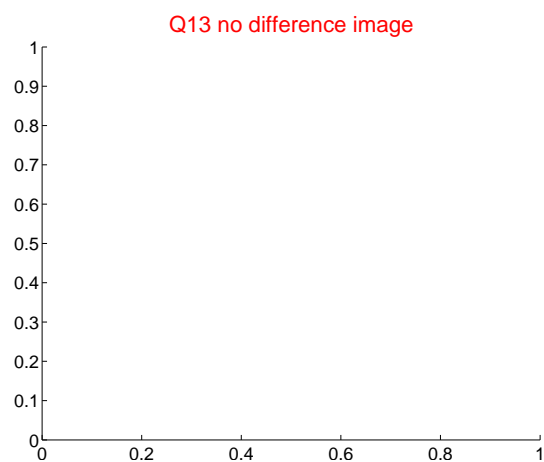
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

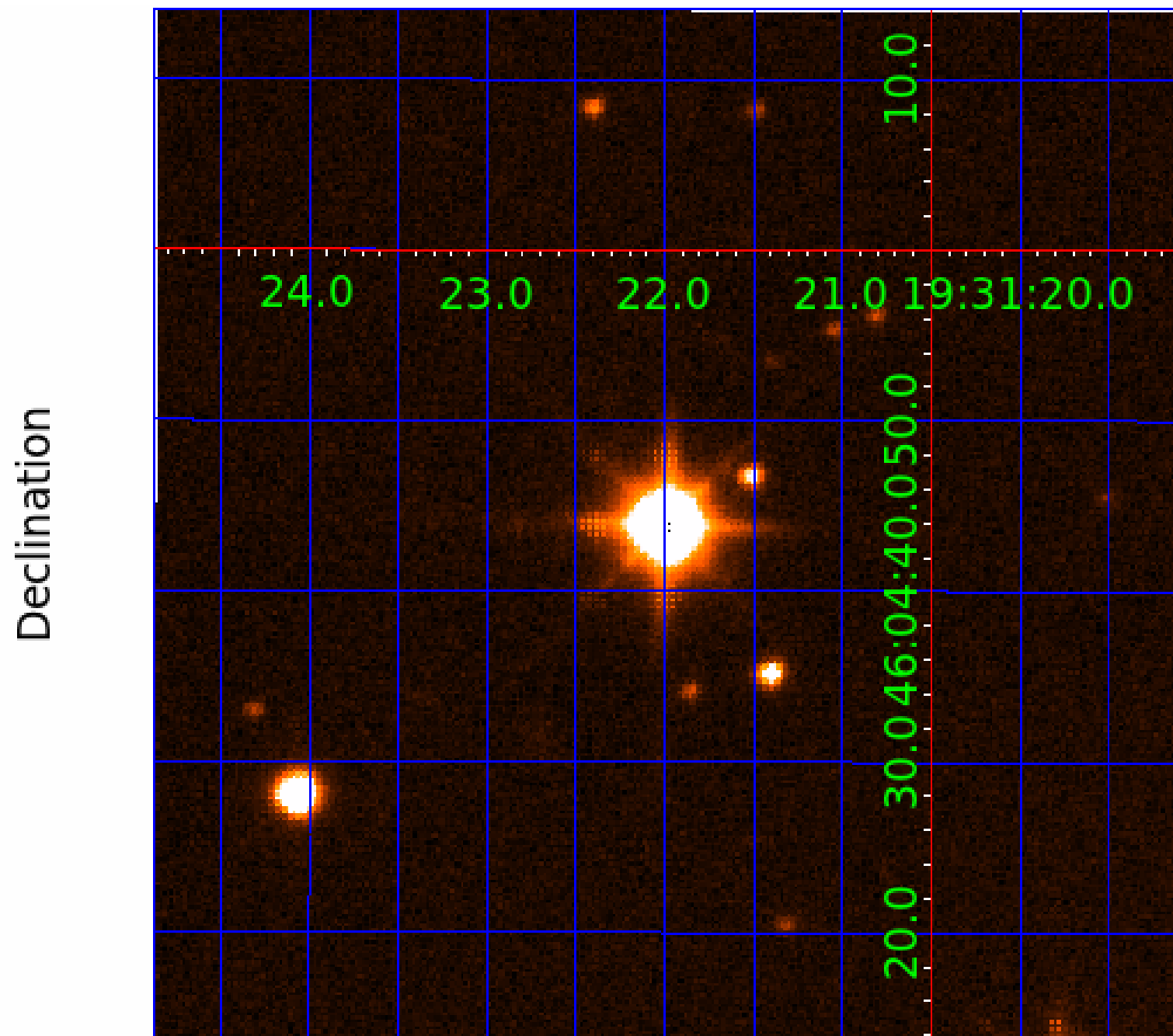


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image



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})
009467345-01	OBS	No	4.415246	131.645559	69.0	11.744	12.3	15.1	2.58	6781	4.25	3266.58
009467345-02	OBS	No	2.207682	132.429638	0.0	10.018	10.2	0.0	2.58	6781	0.02	8230.97
009467345-03	OBS	No	78.152078	184.897456	178.3	9.752	14.0	9.1	2.58	6781	4.33	70.81
009467345-04	OBS	No	100.652567	218.951909	119.3	8.103	11.0	6.7	2.58	6781	3.15	50.54
009467345-06	OBS	No	51.400675	137.099853	132.6	4.334	10.5	10.5	2.58	6781	3.36	123.81
009467345-07	OBS	No	58.626862	170.839840	143.2	5.867	10.1	9.6	2.58	6781	3.12	103.89
009467345-08	OBS	No	148.852894	157.736395	0.1	12.958	10.4	0.0	2.58	6781	0.08	29.99
009467345-09	OBS	No	58.571174	176.260499	142.3	3.187	10.7	9.5	2.58	6781	3.55	104.02
009467345-10	OBS	No	104.022117	197.315739	97.6	10.990	9.3	5.5	2.58	6781	2.80	48.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009467345-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
009467345-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_SATURATED
009467345-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009467345-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

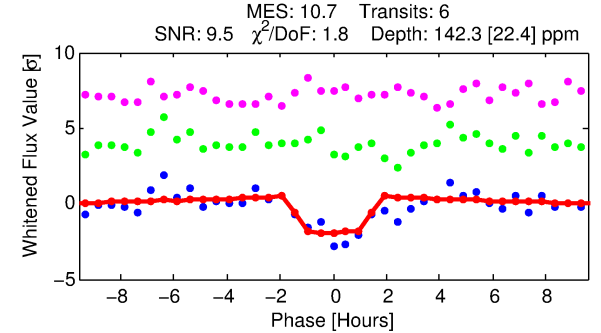
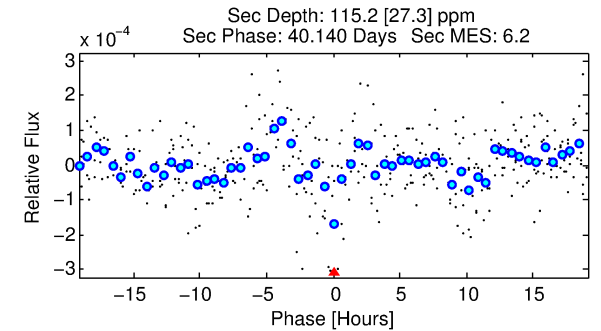
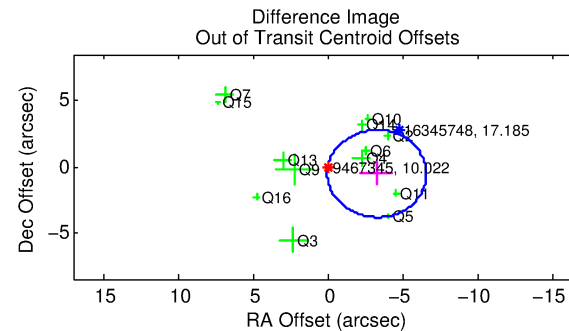
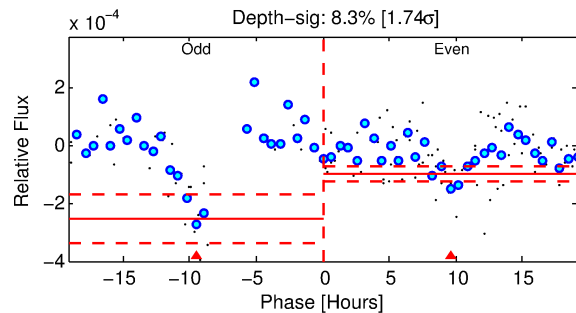
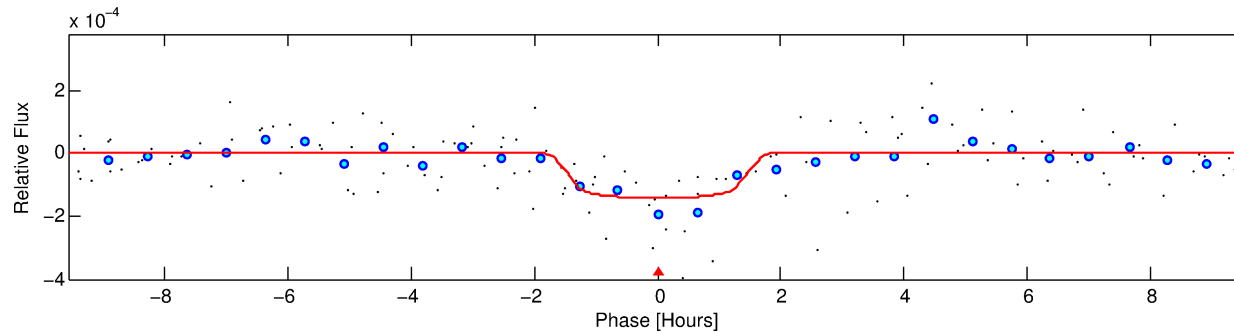
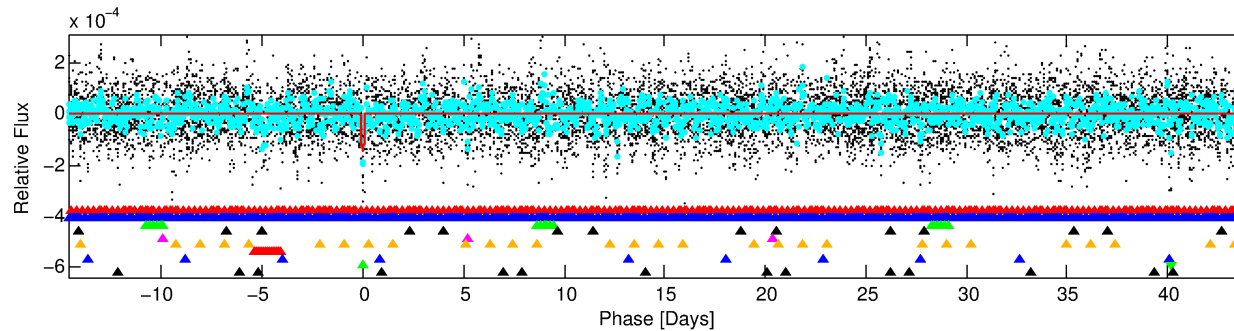
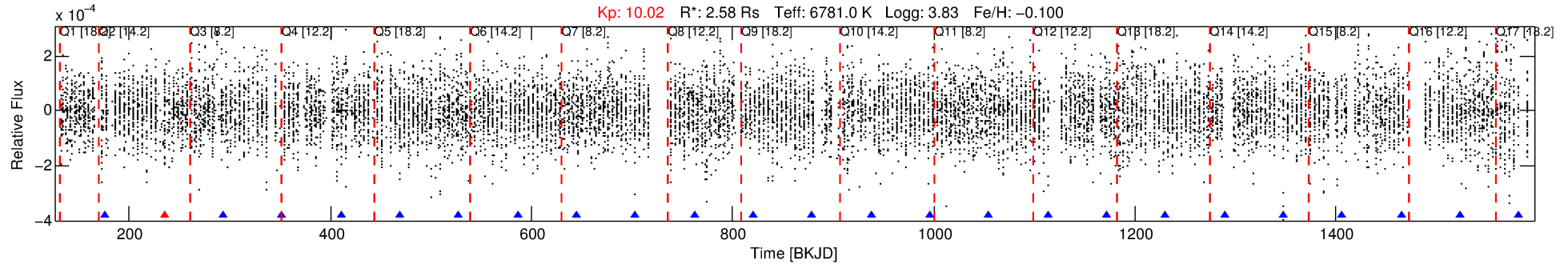
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009467345-09

No Significant Match Found

DV One-Page Summary

KIC: 9467345 Candidate: 9 of 10 Period: 58.571 d



DV Fit Results:

Period = 58.57117 [0.00095] d
Epoch = 176.2605 [0.0091] BKJD
Rp/R* = 0.0126 [0.0129]
a/R* = 68.14 [423.07]
b = 0.89 [1.47]
Seff = 104.02 [50.86]
Teq = 814 [100] K
Rp = 3.55 [3.83] Re
a = 0.3476 [0.1073] AU
Ag = 608.08 [1286.49] [0.47 σ]
Teffp = 6252 [3227] K [1.68 σ]

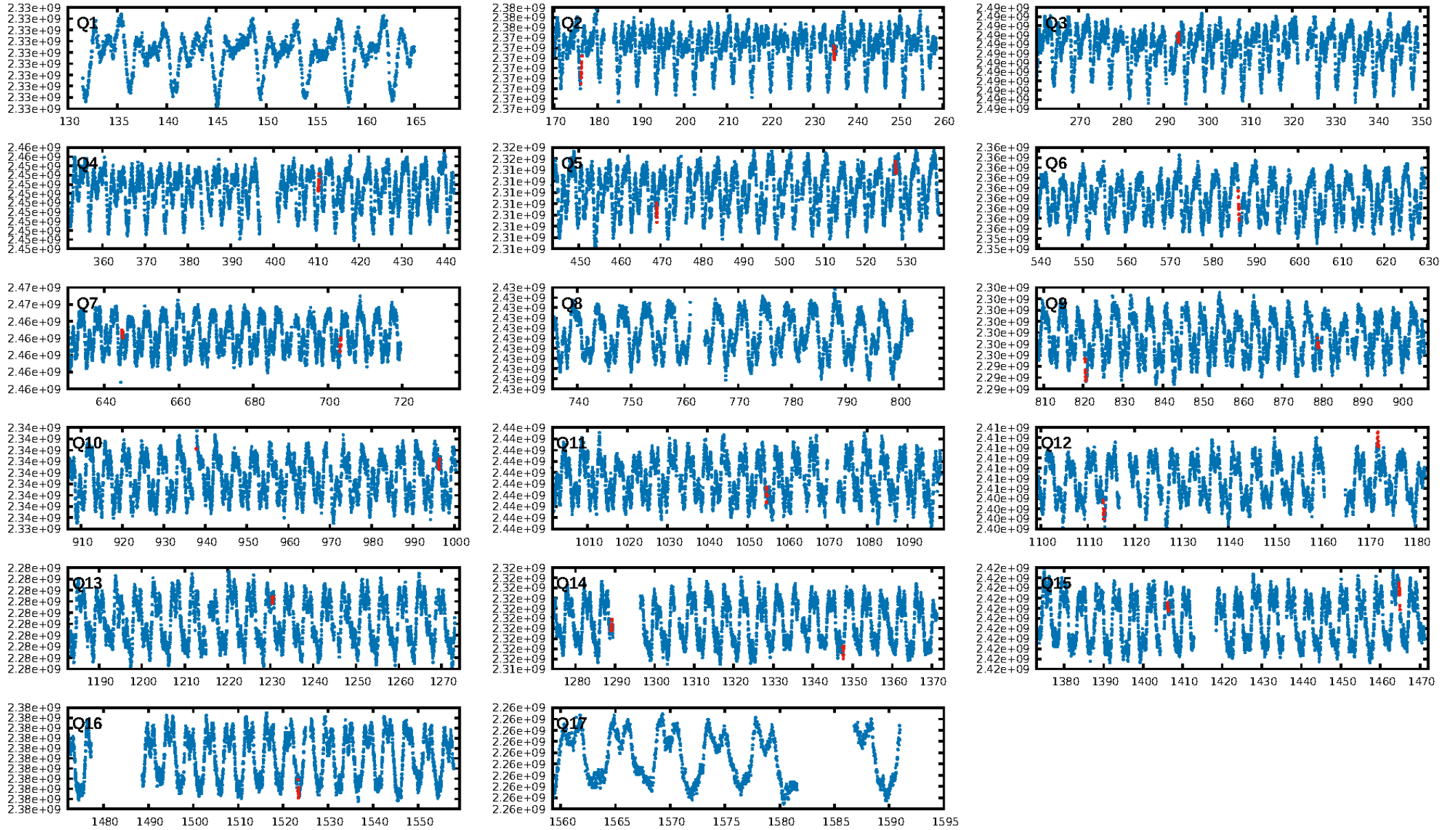
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [31.99 σ]
LongPeriod-sig: 15.9% [0.20 σ]
ModelChiSquare2-sig: 9.0%
ModelChiSquareGof-sig: 78.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.83 [5/6]
GhostDiagnostic-chr: N/A
Centroid-sig: 27.8%
Centroid-so: 0.103 arcsec [0.19 σ]
OotOffset-rm: 3.327 arcsec [3.02 σ]
KicOffset-rm: 2.692 arcsec [2.34 σ]
OotOffset-st: 4/4/2/3 [13]
KicOffset-st: 4/4/2/3 [13]
DiffImageQuality-fgm: 0.00 [0/13]
DiffImageOverlap-fno: 0.38 [5/13]

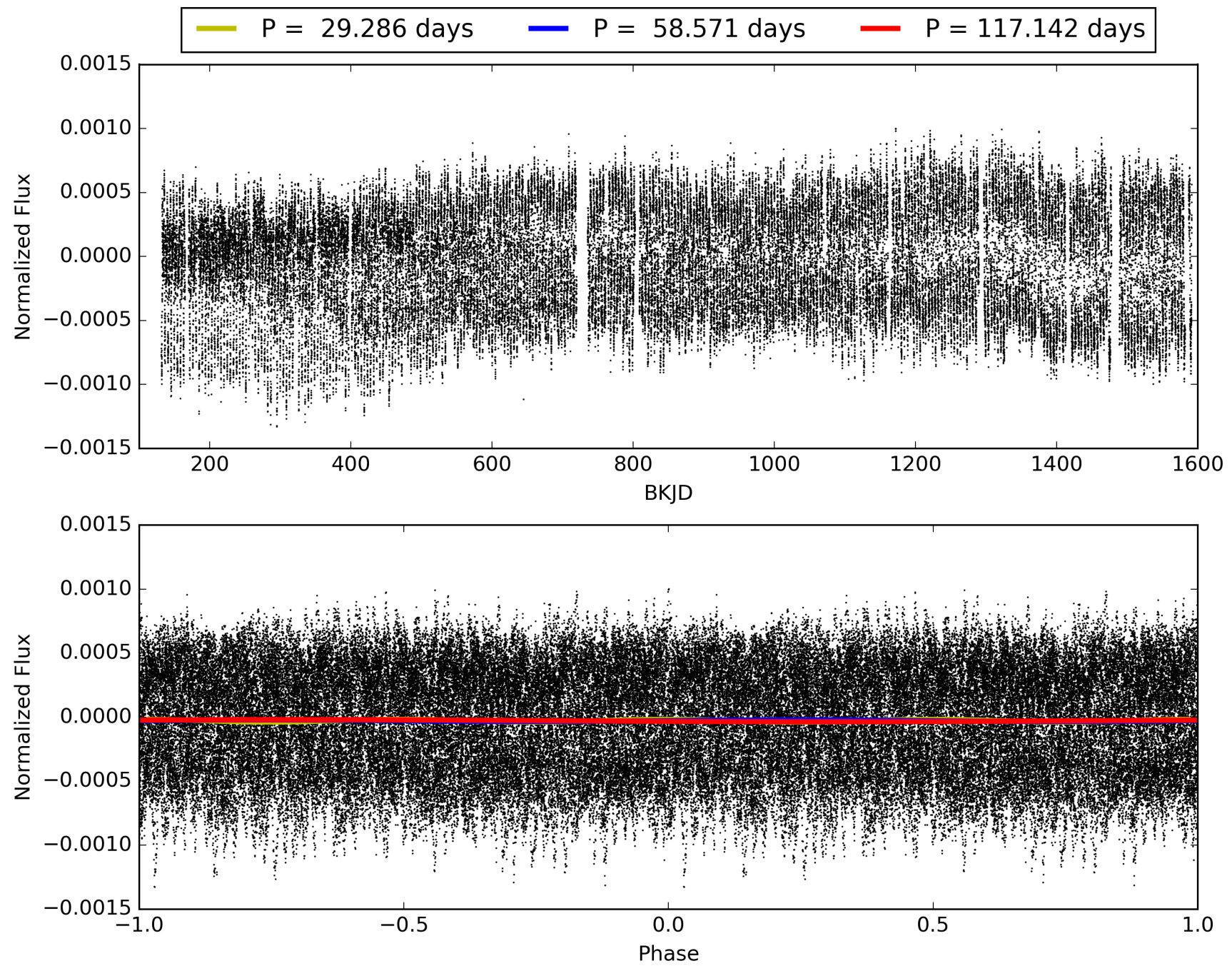
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:47:24 Z

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

TCE 009467345-09, PDC Light Curves

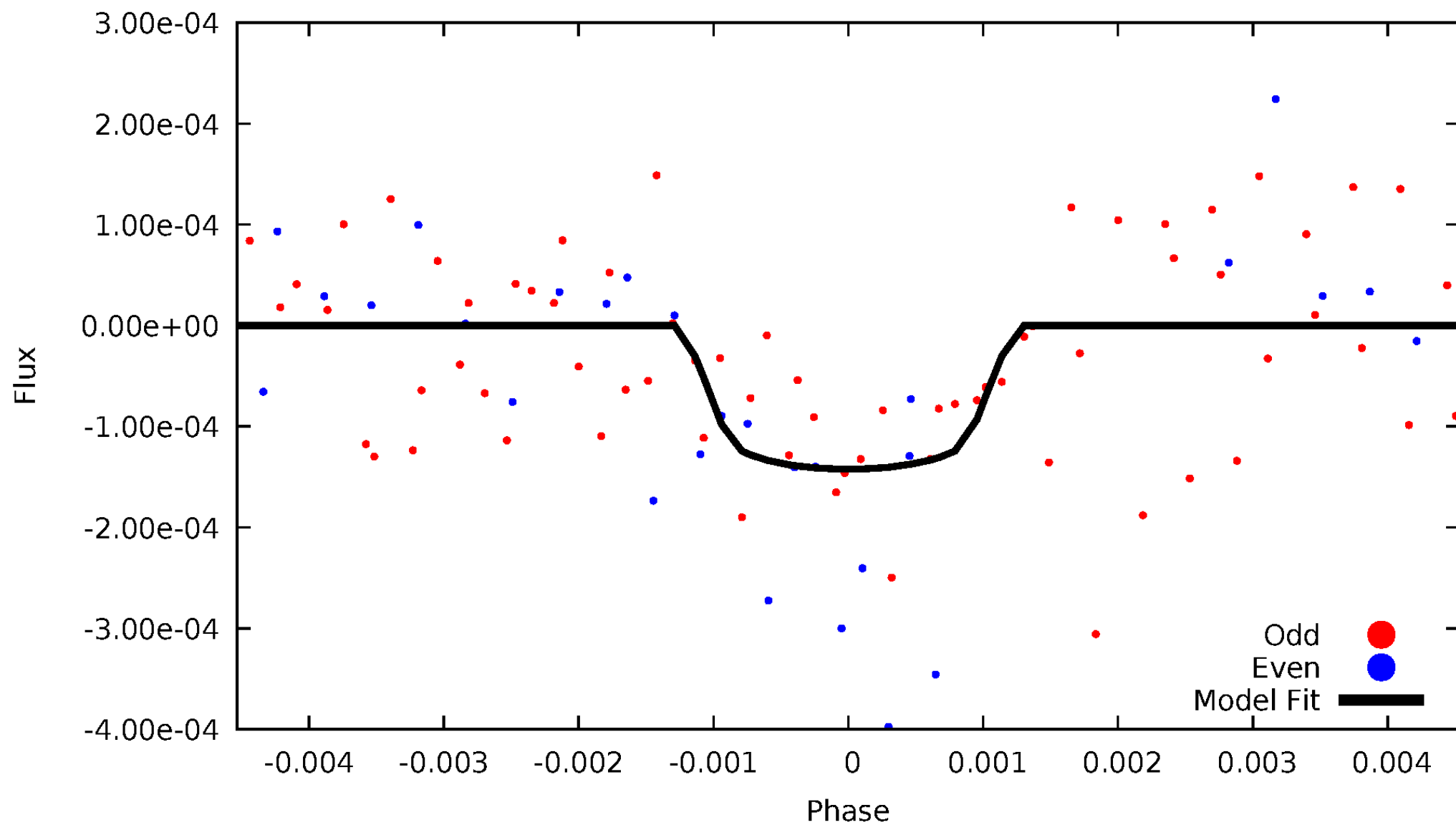


TCE 009467345-09



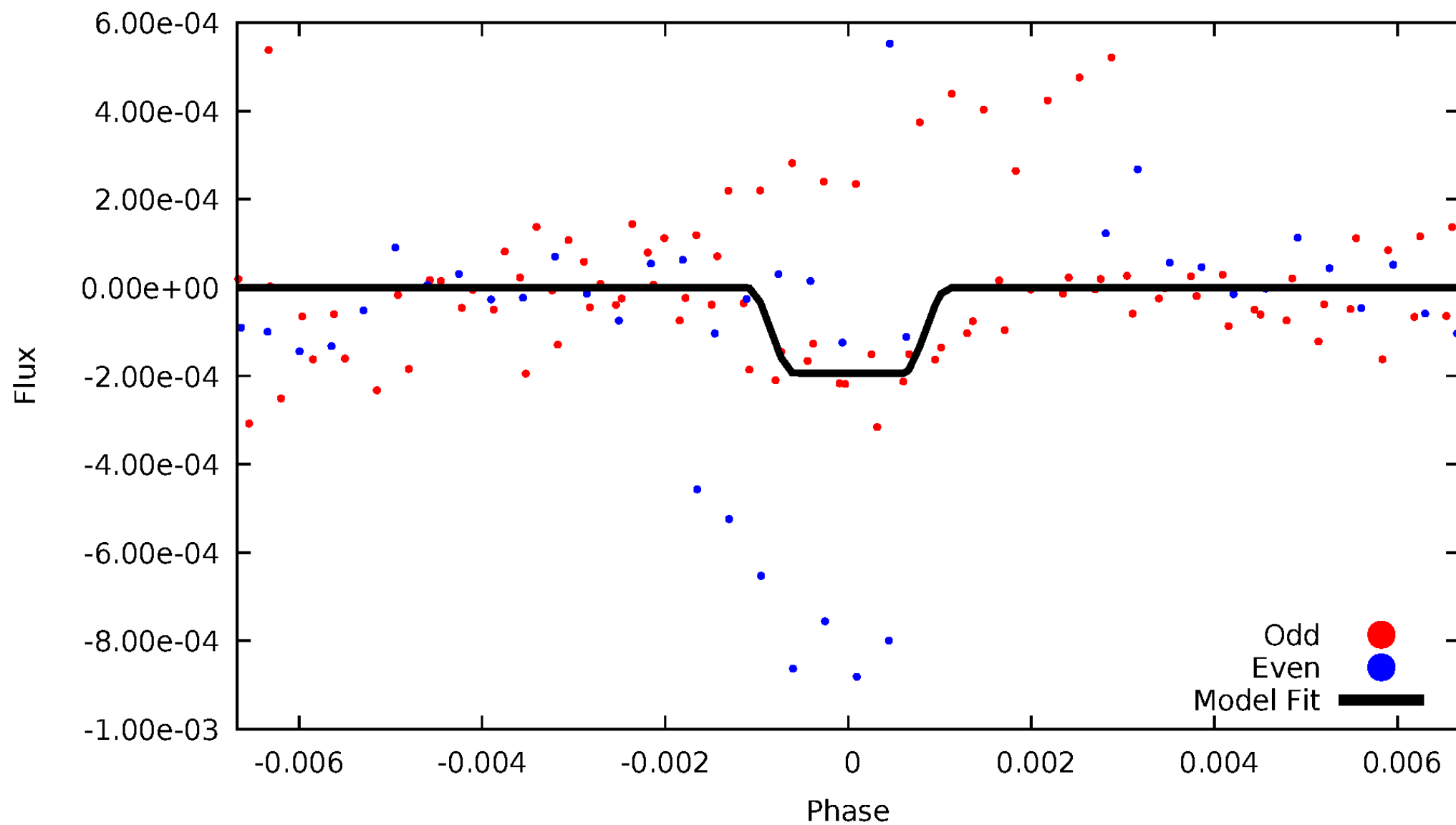
DV Odd/Even

TCE 009467345-09



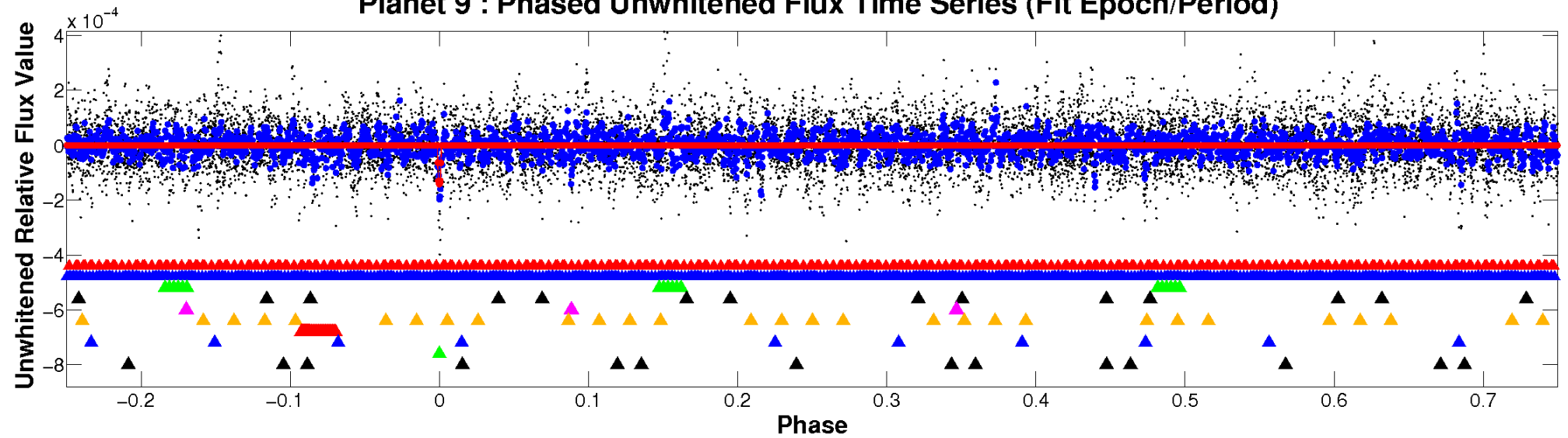
ALT Odd/Even

TCE 009467345-09

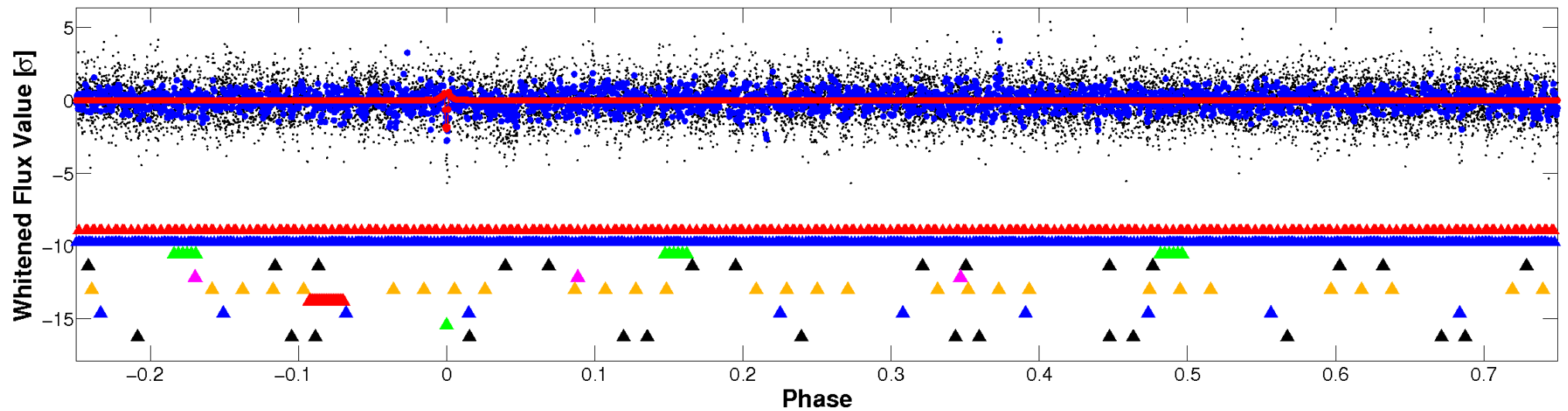


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

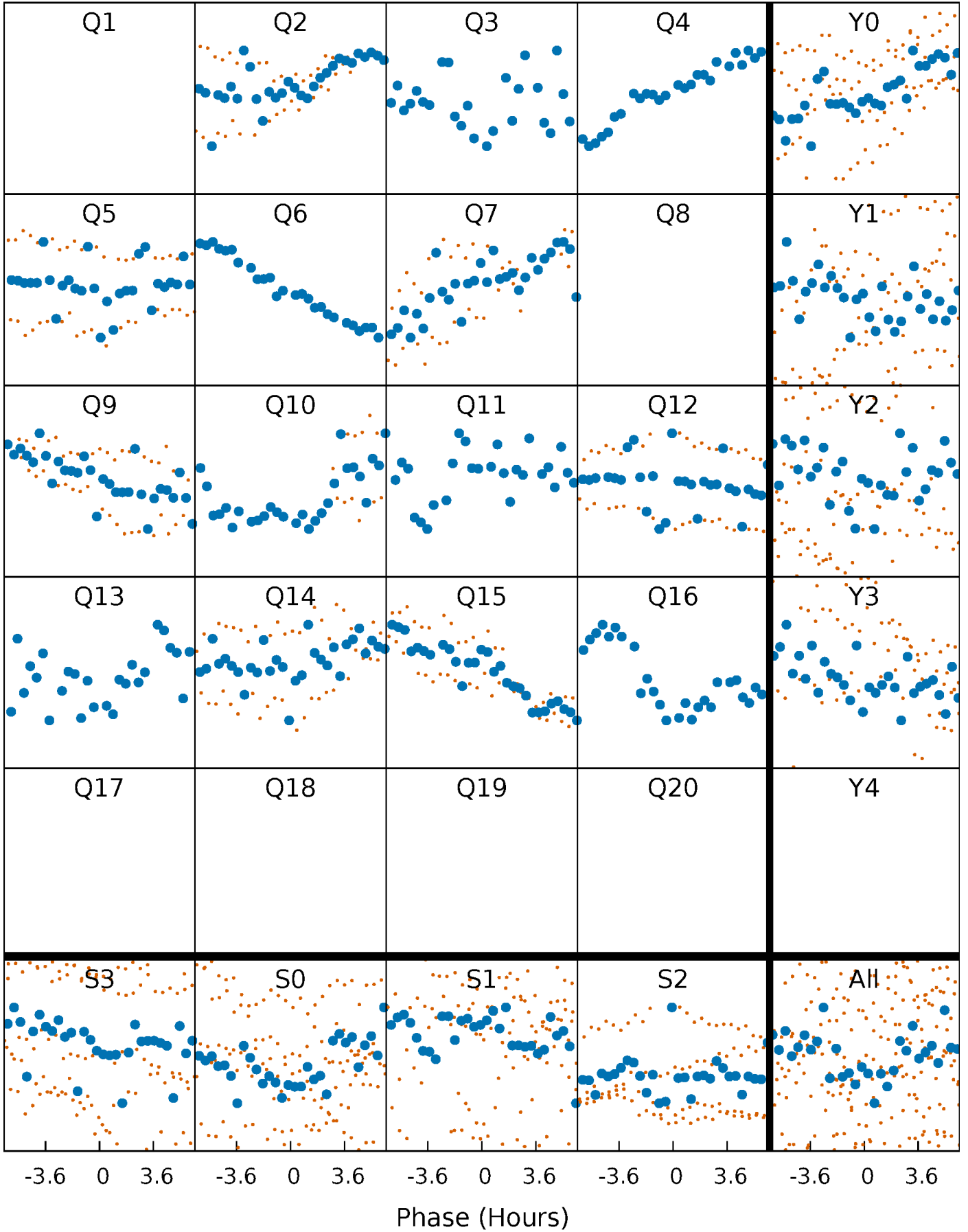


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



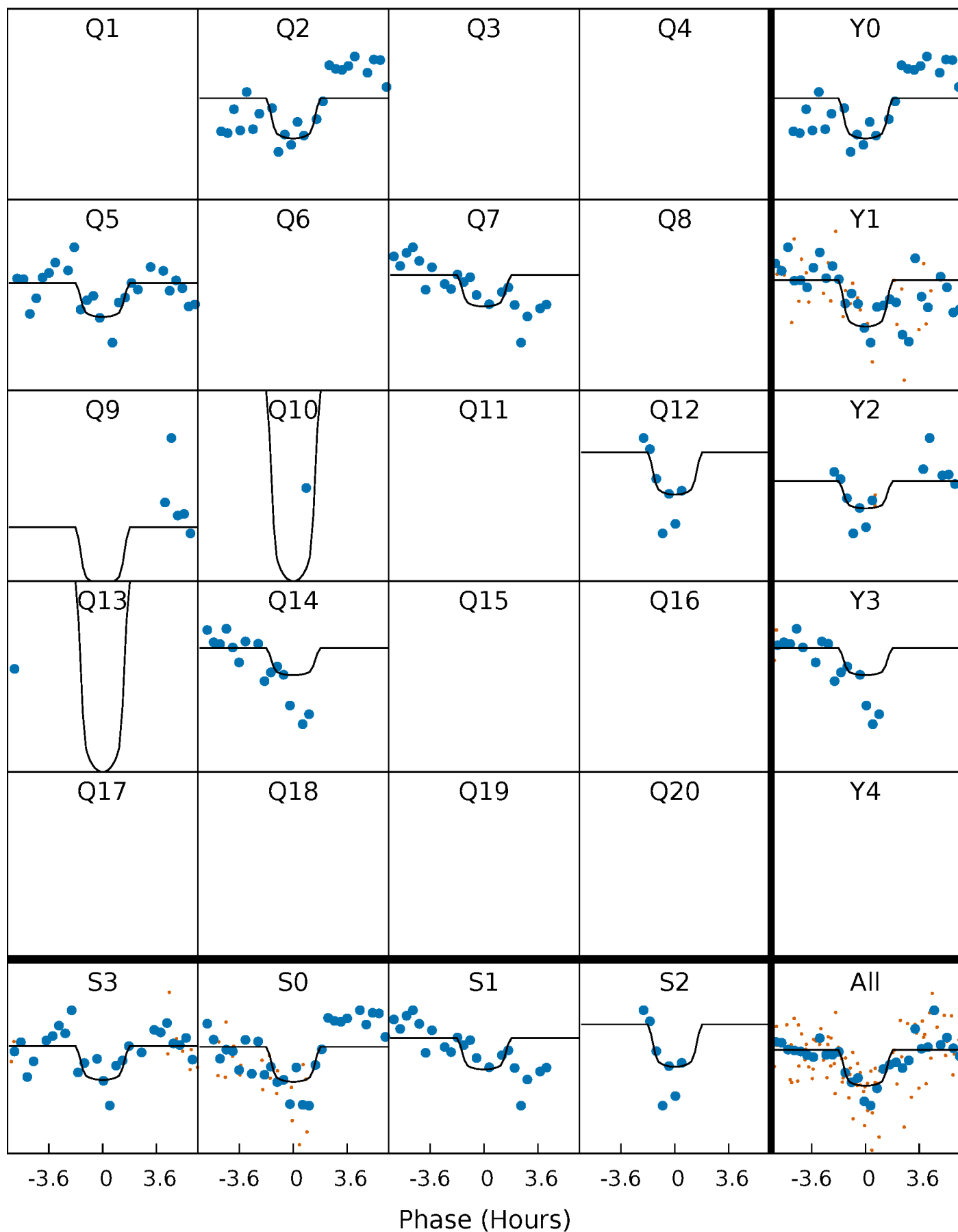
PDC Quarter-Phased Transit Curves

TCE 009467345-09 P= 58.571174 Days $T_0=176.260499$ (BKJD)



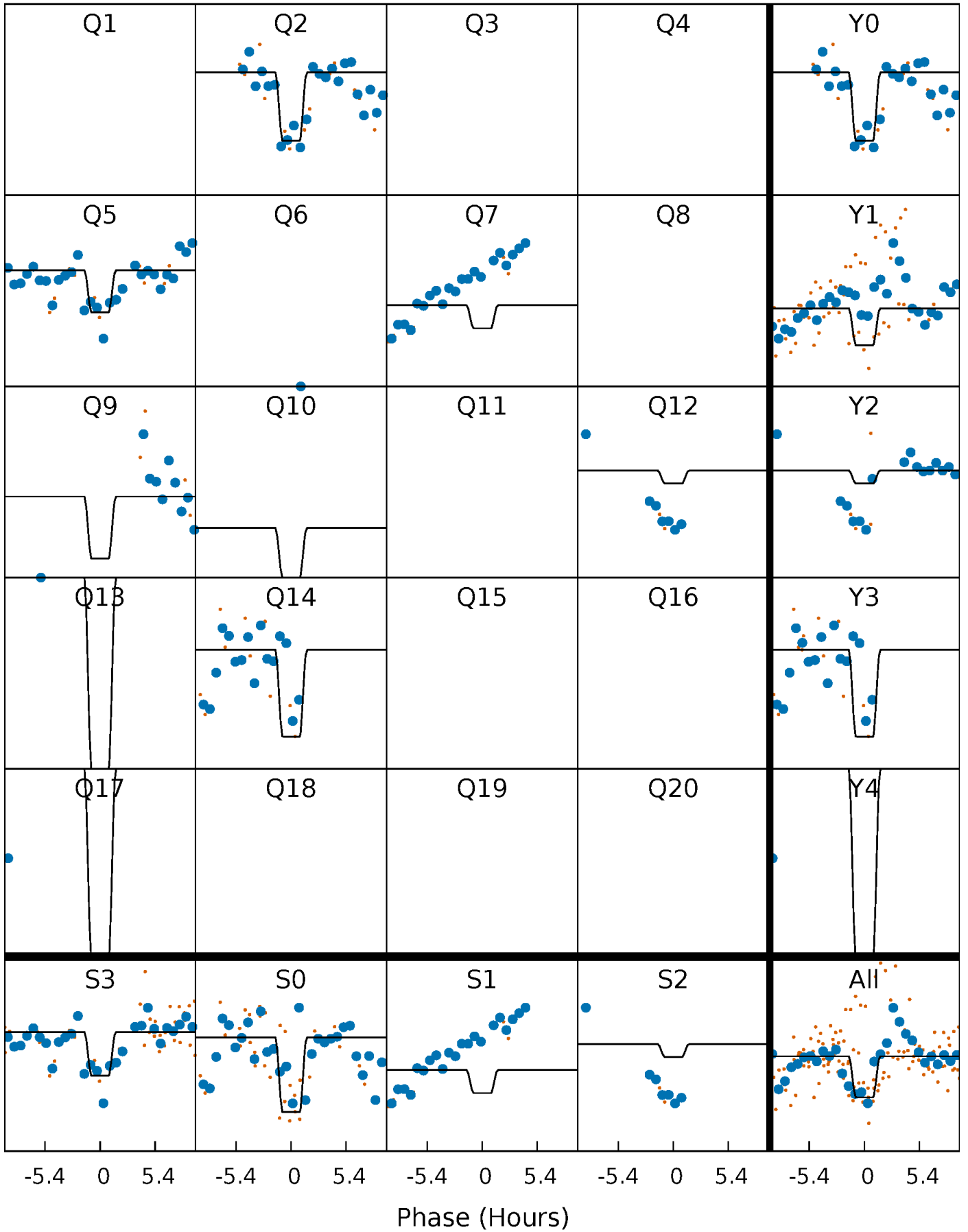
DV Quarter-Phased Transit Curves

TCE 009467345-09 P= 58.571174 Days $T_0=176.260499$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

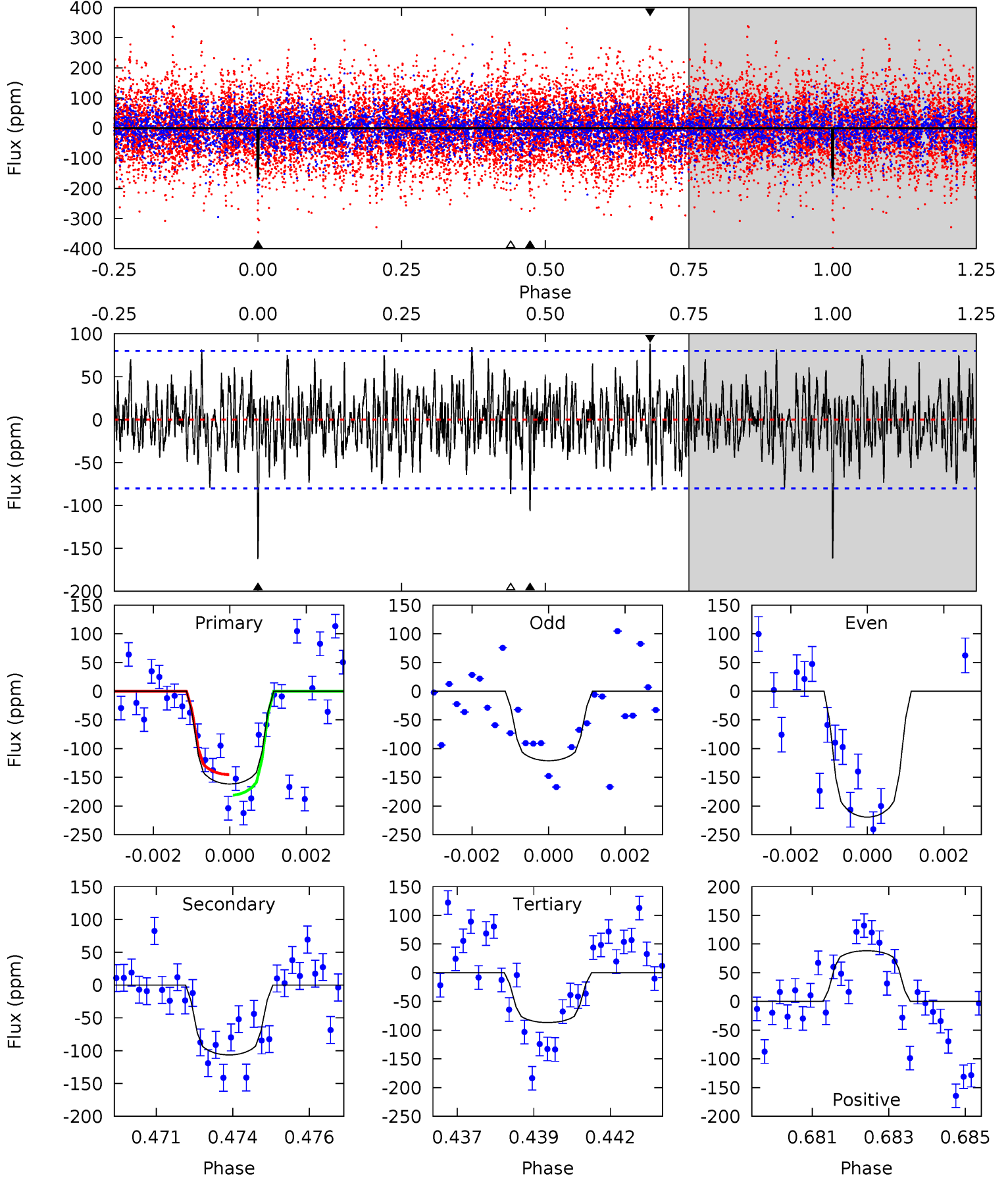
TCE 009467345-09 $P = 58.571198$ Days $T_0 = 176.260824$ (BKJD)



DV Model-Shift Uniqueness Test

009467345-09, P = 58.571174 Days, E = 117.689325 Days

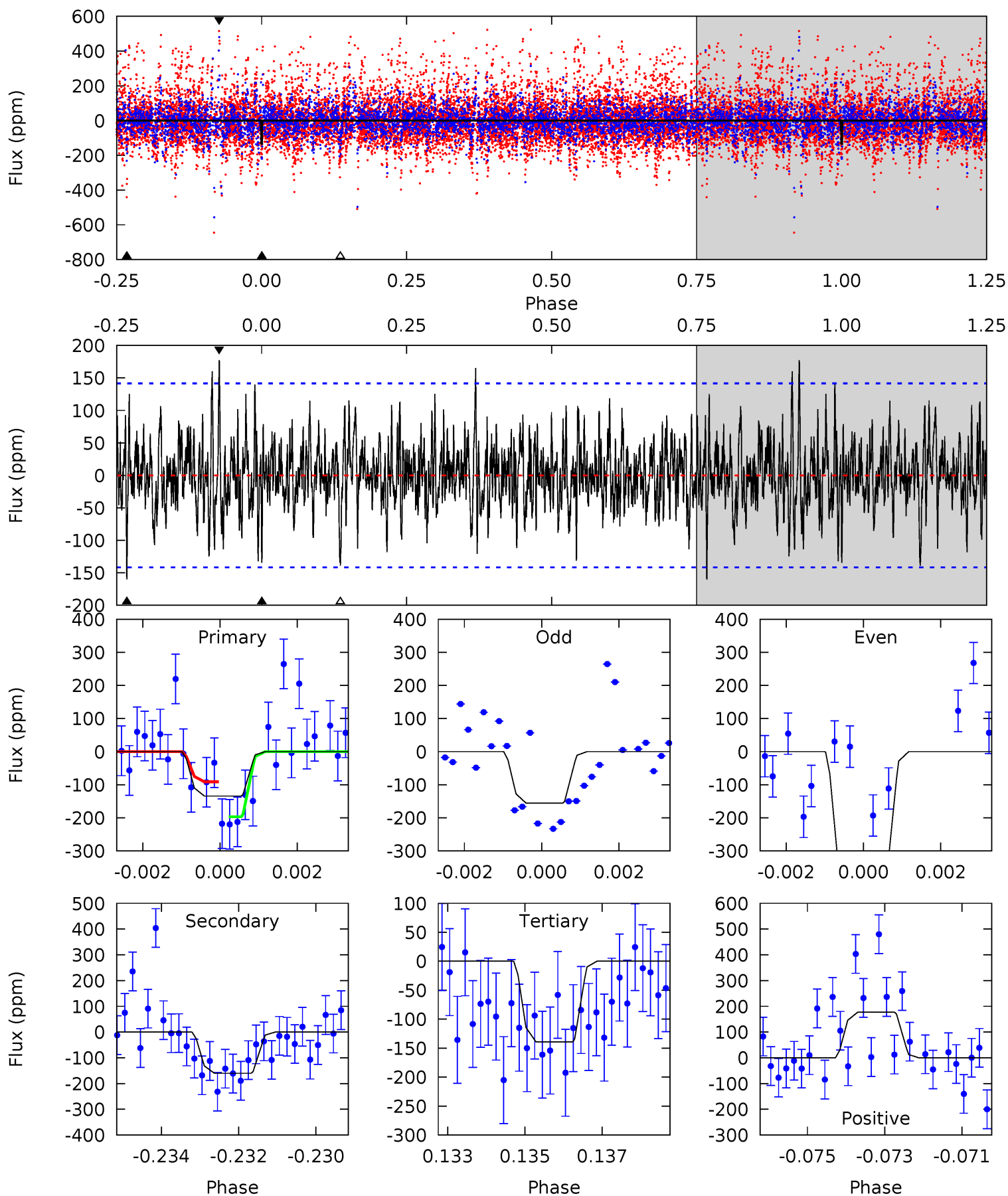
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	7.06	5.75	5.86	5.30	3.05	1.81	4.97	4.86	1.31	1.20	3.15	1.15	0.35	1.18



Alt Model-Shift Uniqueness Test

009467345-09, P = 58.571198 Days, E = 117.689626 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.03	6.00	5.22	6.65	5.31	3.06	1.56	-0.19	-1.61	0.78	-0.65	4.83	1.02	0.53	2.00



Stellar Parameters For KIC 009467345

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6781^{+170}_{-187}	$3.829^{+0.273}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.576^{+0.471}_{-0.875}$	$1.631^{+0.180}_{-0.335}$	$0.135^{+0.242}_{-0.048}$
	+3%/-3%	+7%/-3%	+300%/-250%	+18%/-34%	+11%/-21%	+180%/-36%
Source	PHO1	FLK73	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 009467345-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-106 ± 15	$4.13^{+3.21}_{-2.60}$	1118^{+72}_{-94}	5533^{+3816}_{-1185}	413^{+2423}_{-286}
Alt.	-160 ± 27	$4.08^{+3.20}_{-2.42}$	1120^{+69}_{-95}	6058^{+4335}_{-1362}	631^{+3058}_{-440}

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 $A_{obs} \gg 1.0$

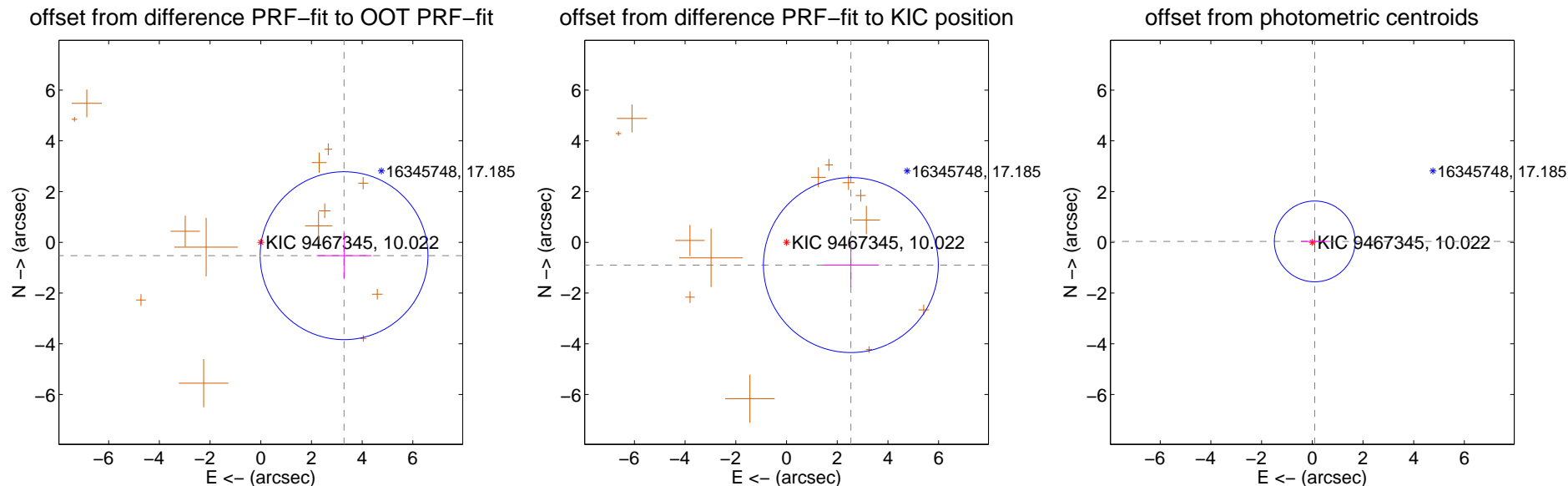
DV Centroid Data

Supplemental centroid analysis for 009467345-09. **Kepler magnitude: 10.02.** Transit SNR 9.55

There are 0 quarters with good PRF difference image offsets

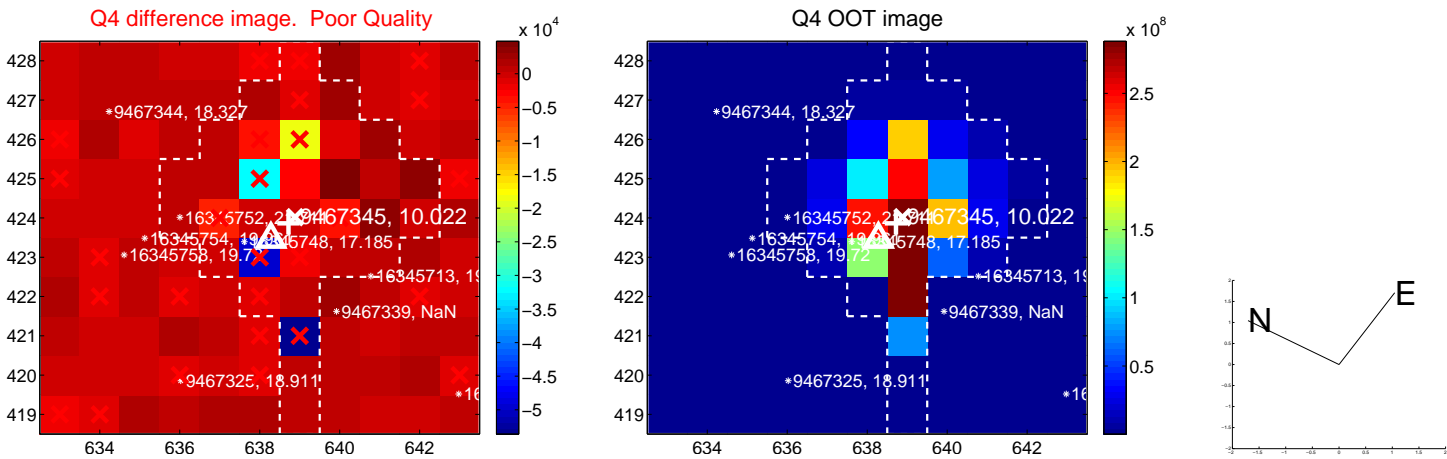
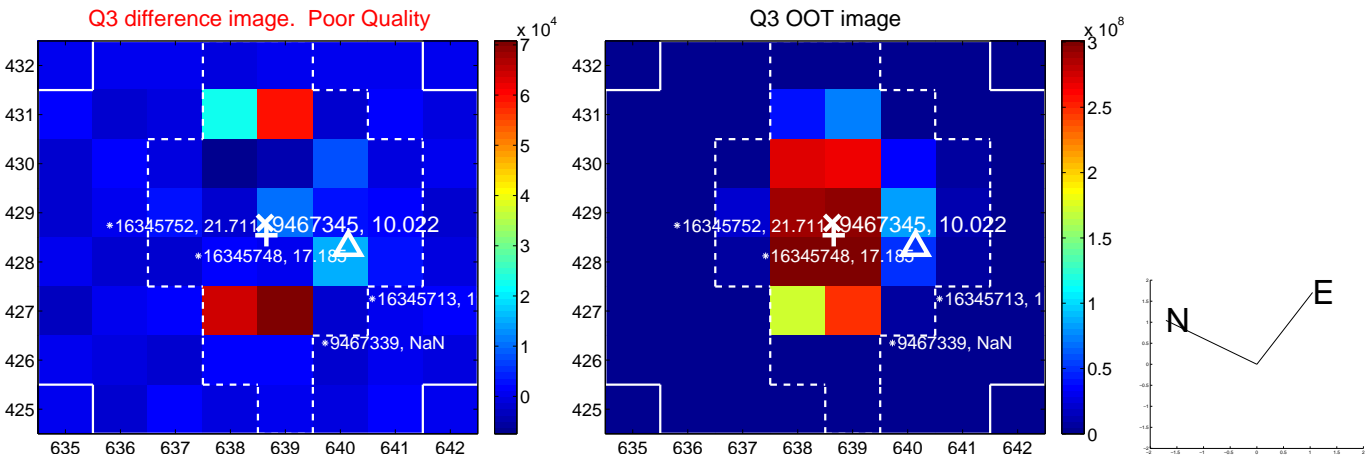
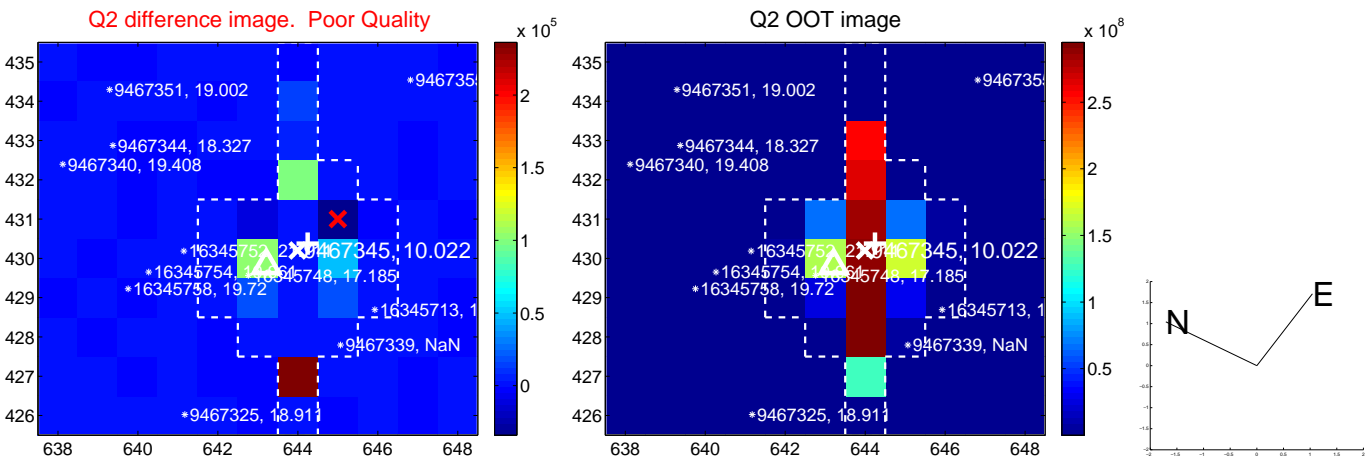
The direct PRF centroid is offset from the target star catalog position by about 0.93 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.327 ± 1.103	3.02	-3.285 ± 1.084	-0.527 ± 0.886
PRF-fit source offset from KIC position	2.692 ± 1.150	2.34	-2.538 ± 1.105	-0.897 ± 0.870
photometric centroid source offset	0.10 ± 0.53	0.19	-0.10 ± 0.54	0.04 ± 0.43

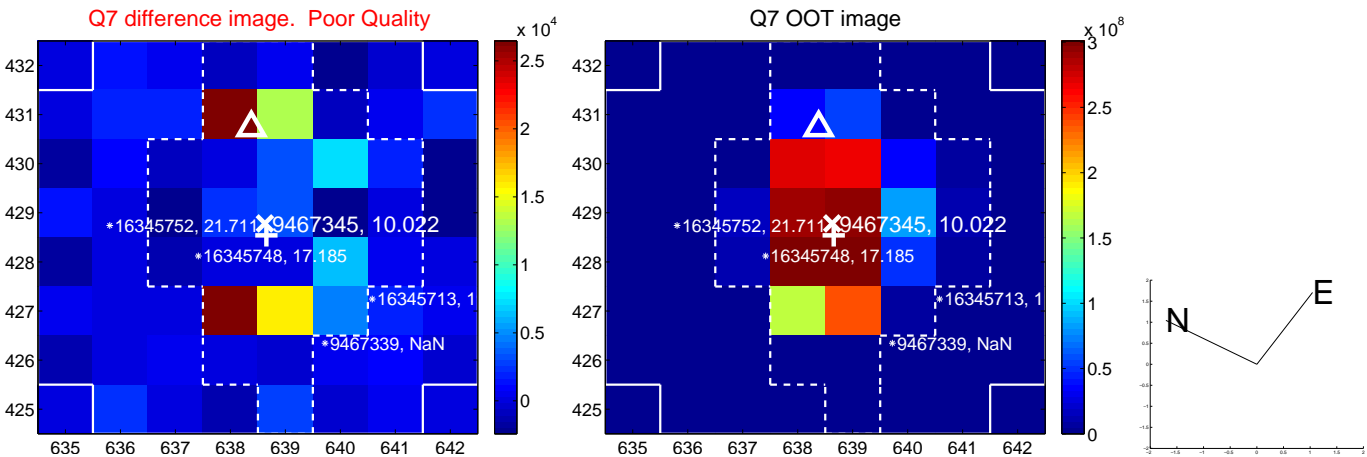
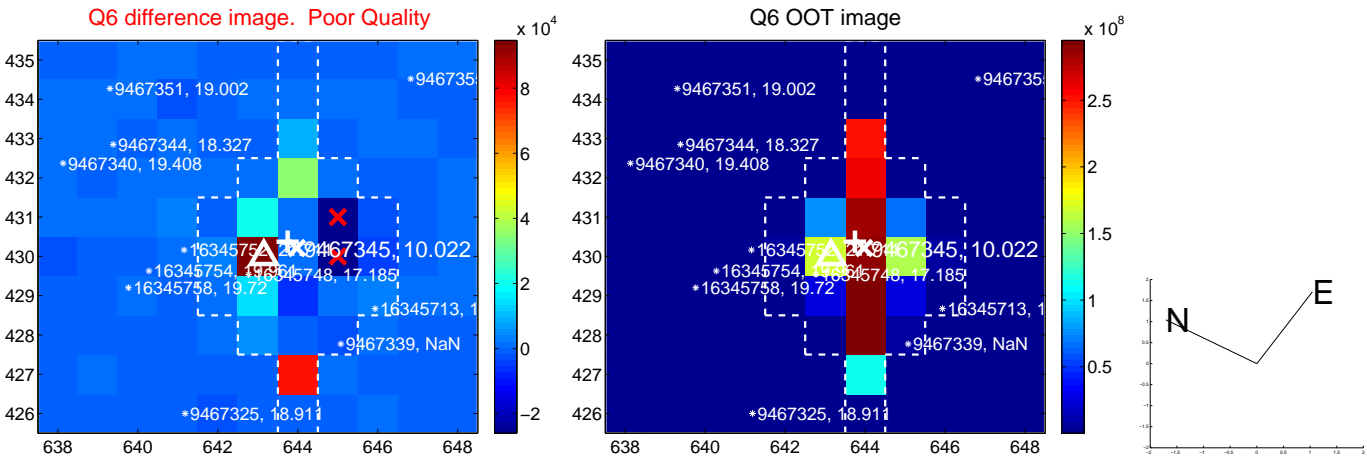
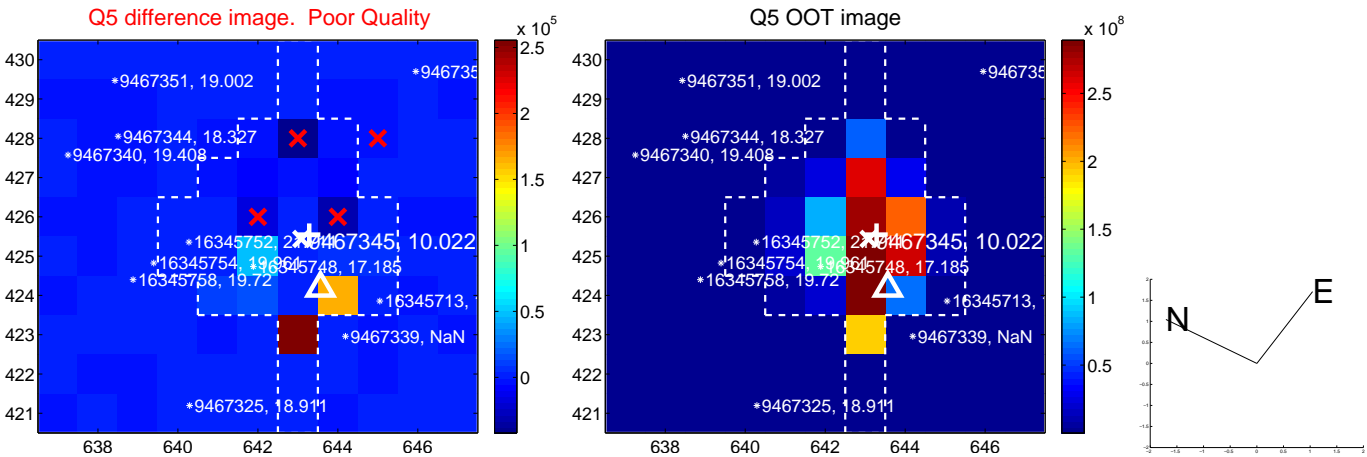


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

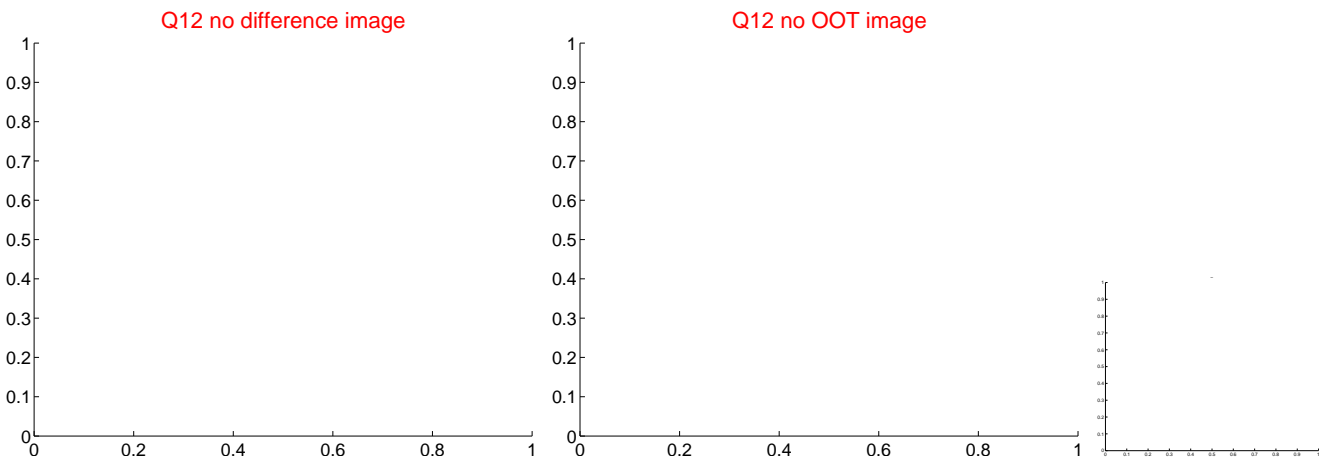
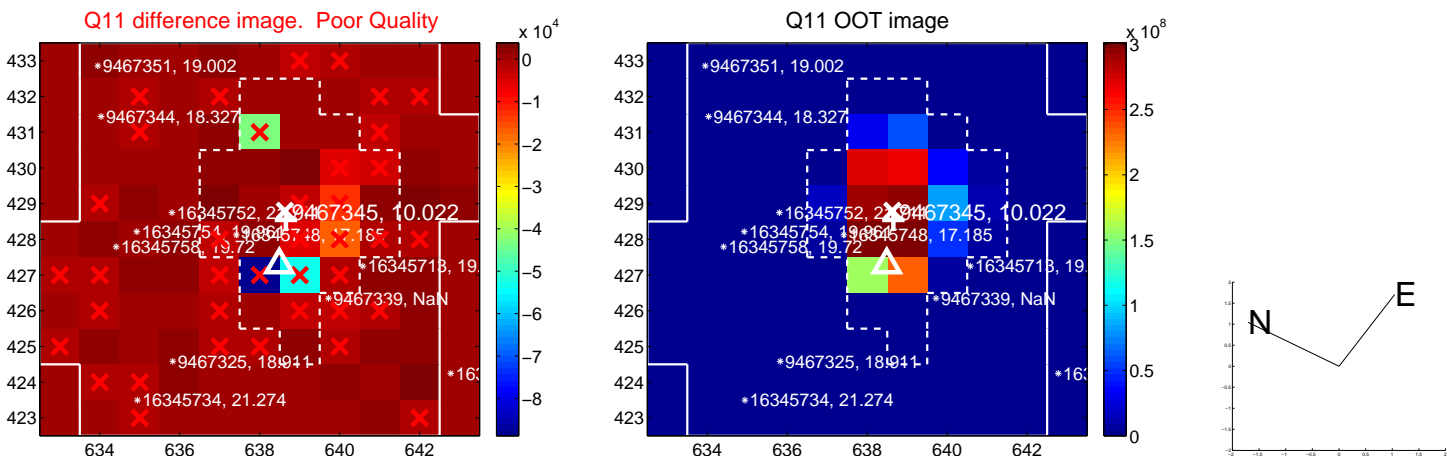
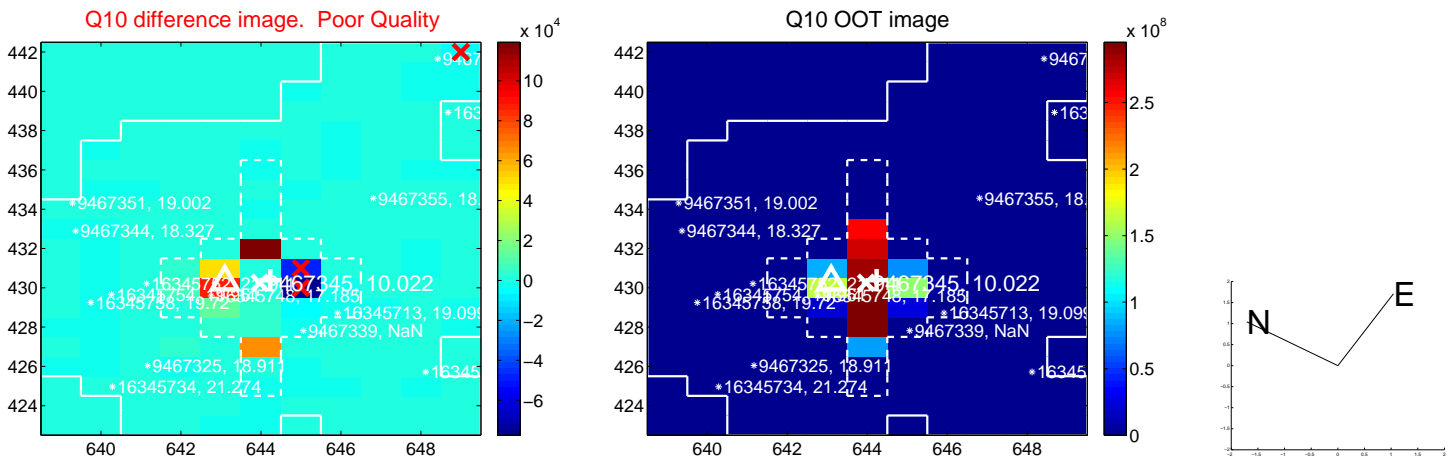
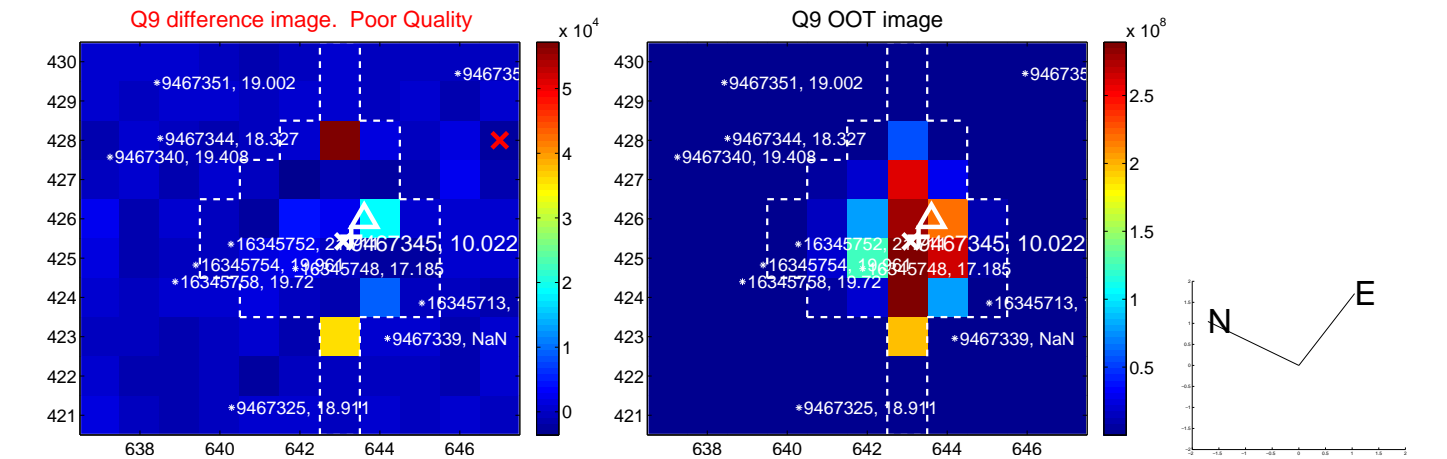
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



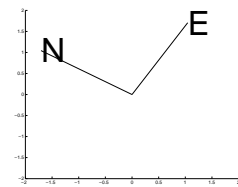
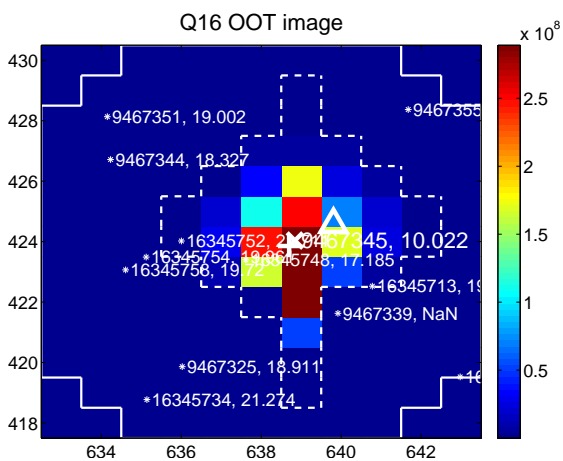
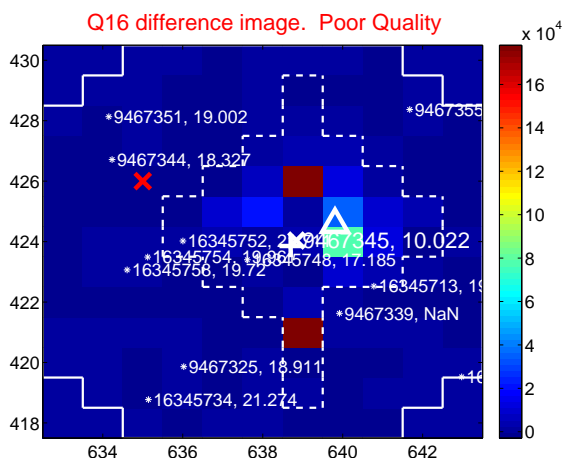
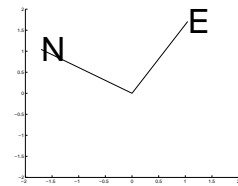
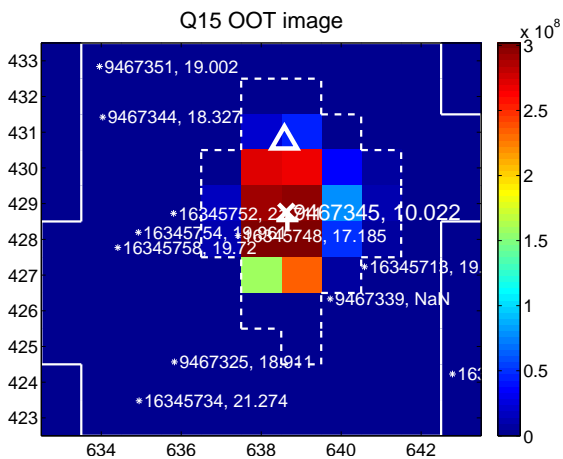
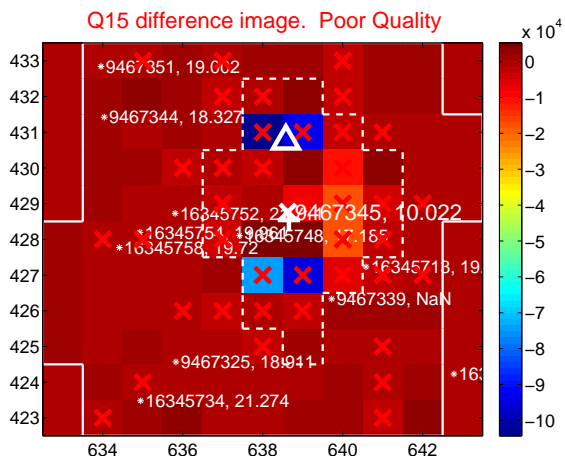
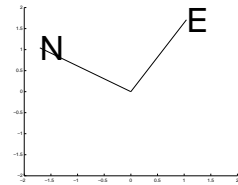
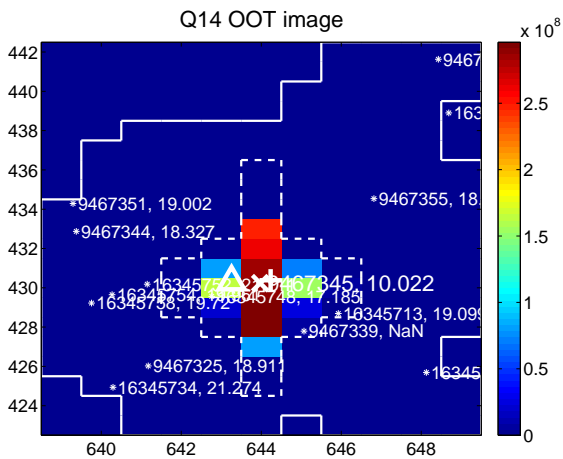
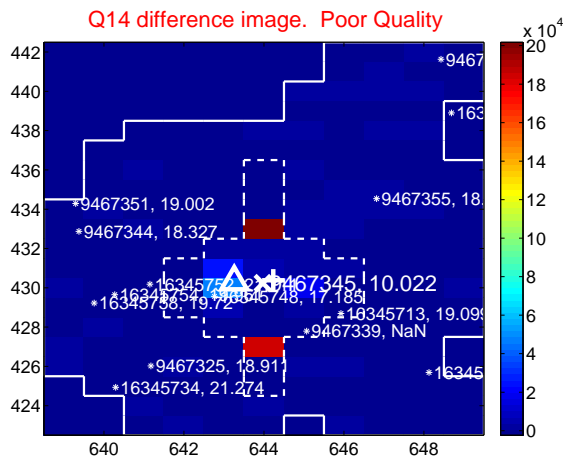
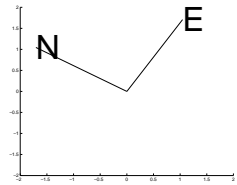
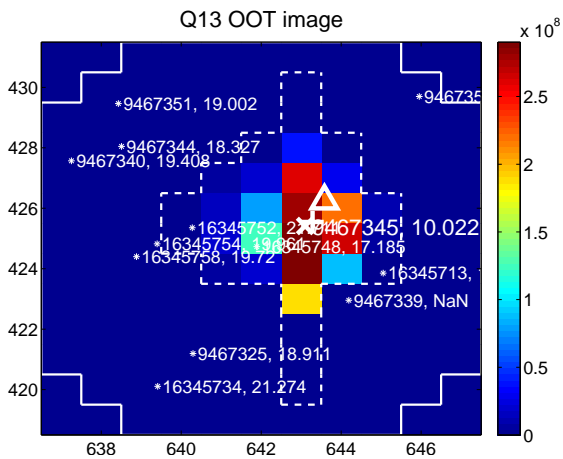
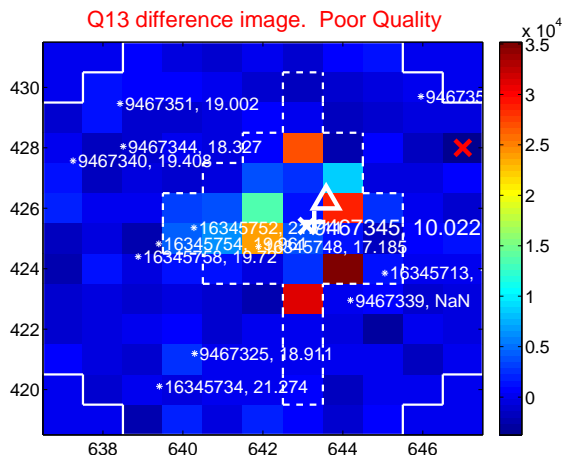
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



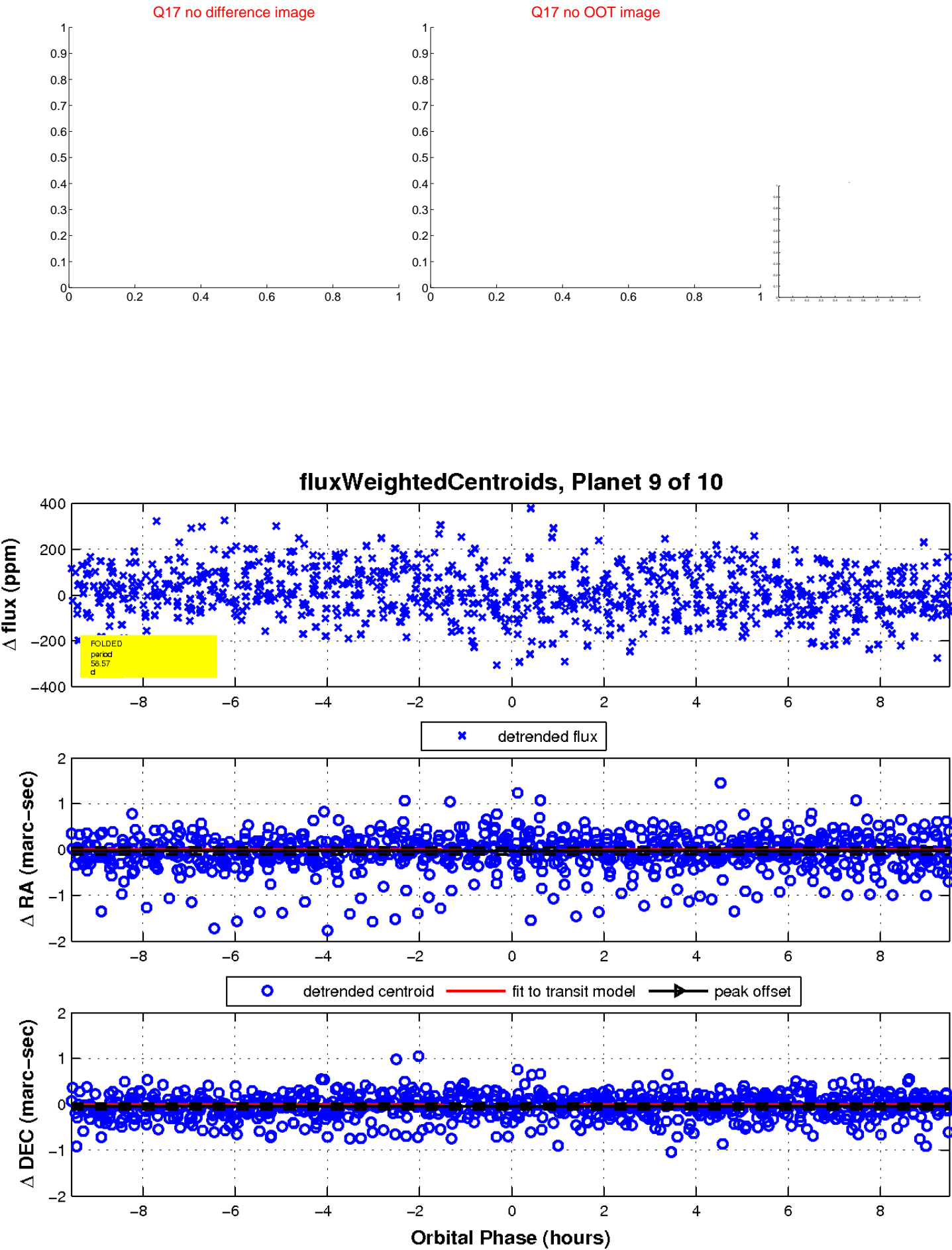
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

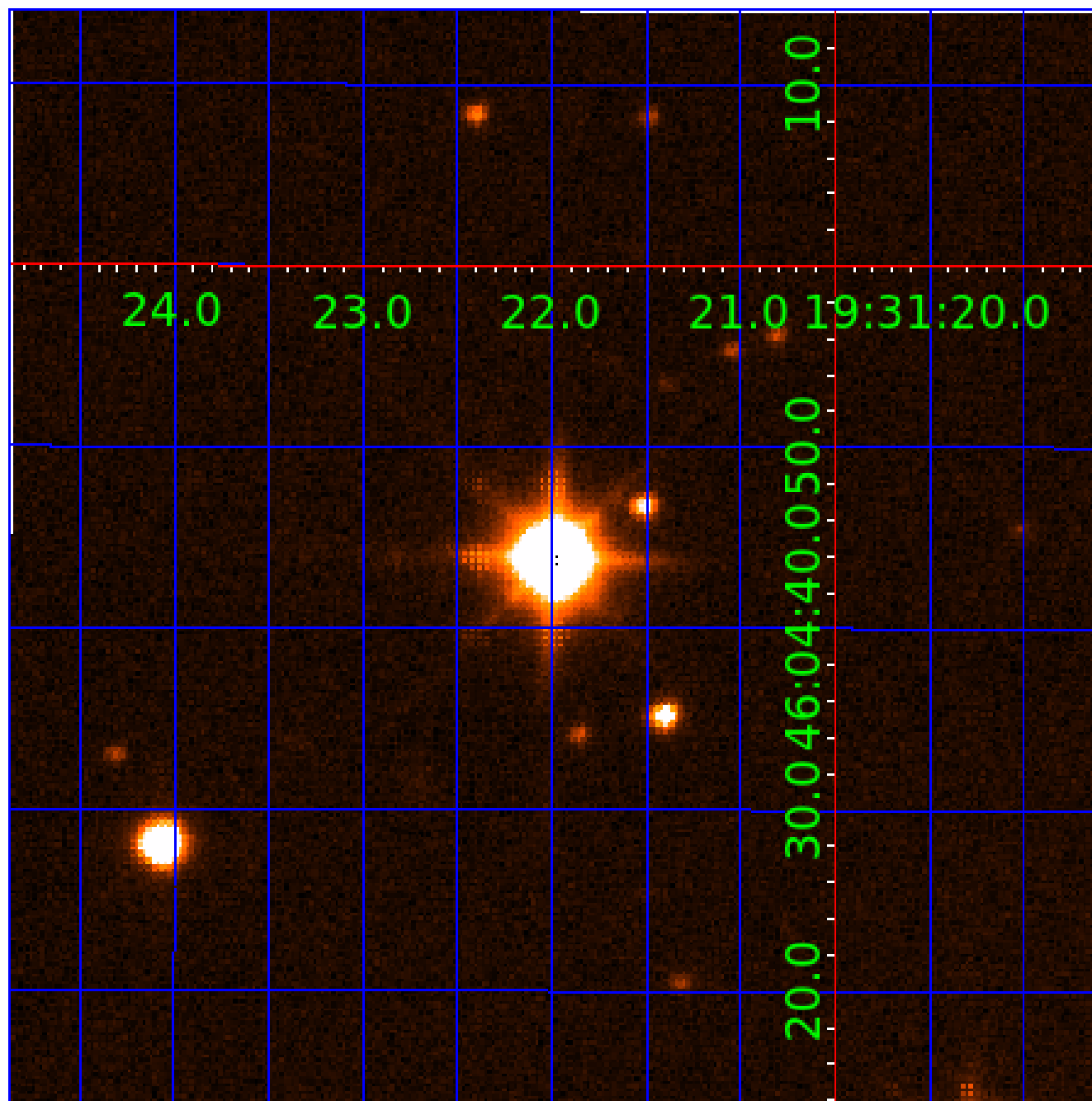


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009467345

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})
009467345-01	OBS	No	4.415246	131.645559	69.0	11.744	12.3	15.1	2.58	6781	4.25	3266.58
009467345-02	OBS	No	2.207682	132.429638	0.0	10.018	10.2	0.0	2.58	6781	0.02	8230.97
009467345-03	OBS	No	78.152078	184.897456	178.3	9.752	14.0	9.1	2.58	6781	4.33	70.81
009467345-04	OBS	No	100.652567	218.951909	119.3	8.103	11.0	6.7	2.58	6781	3.15	50.54
009467345-06	OBS	No	51.400675	137.099853	132.6	4.334	10.5	10.5	2.58	6781	3.36	123.81
009467345-07	OBS	No	58.626862	170.839840	143.2	5.867	10.1	9.6	2.58	6781	3.12	103.89
009467345-08	OBS	No	148.852894	157.736395	0.1	12.958	10.4	0.0	2.58	6781	0.08	29.99
009467345-09	OBS	No	58.571174	176.260499	142.3	3.187	10.7	9.5	2.58	6781	3.55	104.02
009467345-10	OBS	No	104.022117	197.315739	97.6	10.990	9.3	5.5	2.58	6781	2.80	48.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009467345-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
009467345-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—CENT_SATURATED
009467345-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009467345-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009467345-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009467345-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

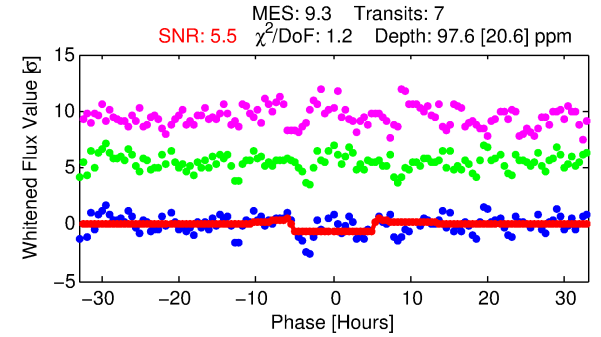
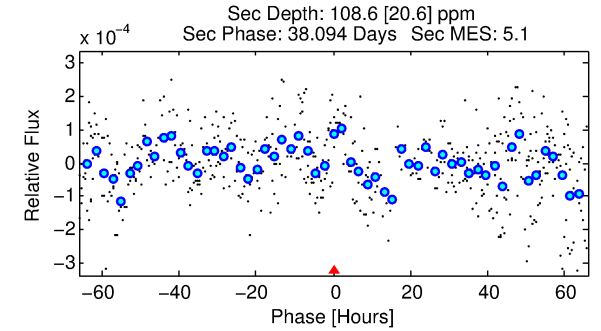
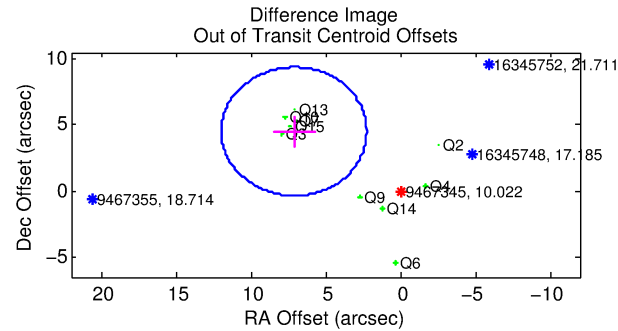
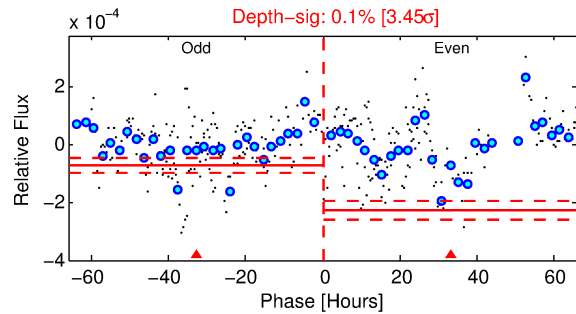
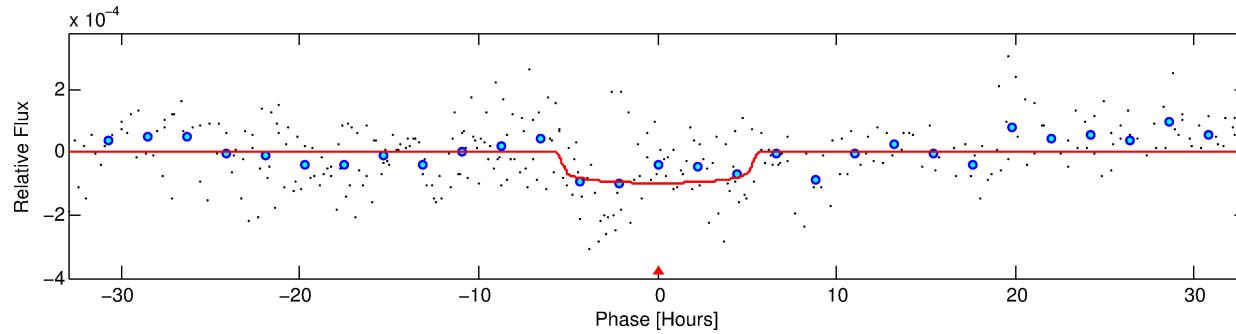
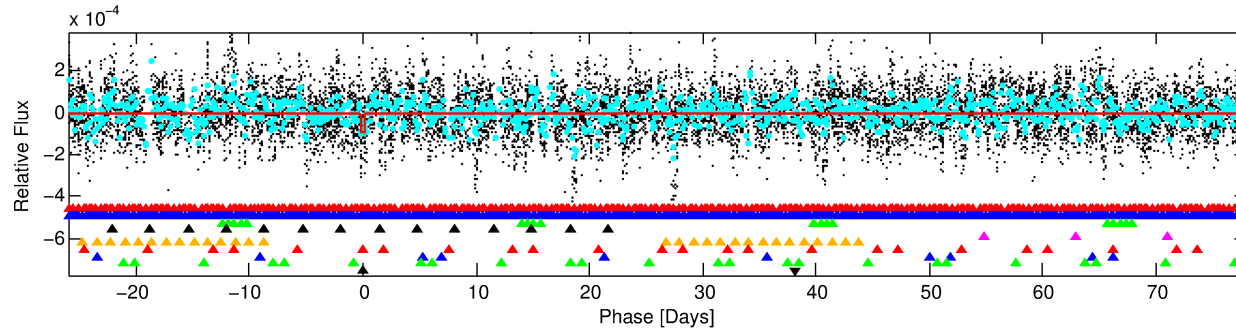
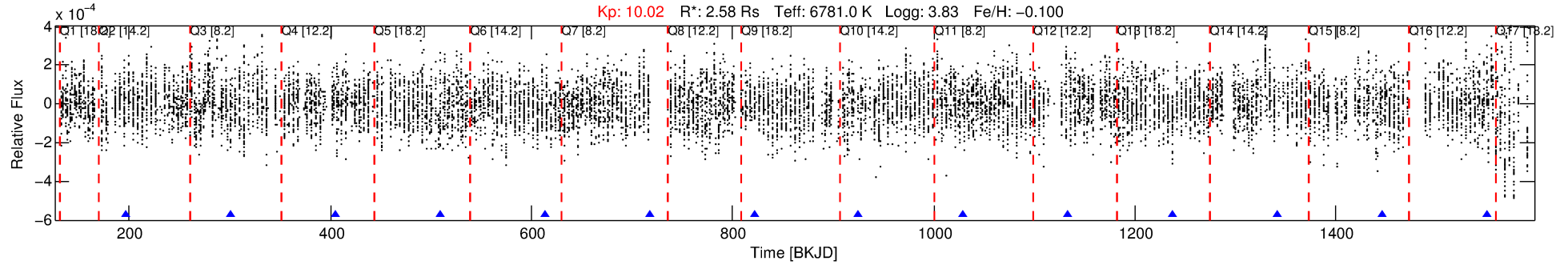
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009467345-10

No Significant Match Found

DV One-Page Summary

KIC: 9467345 Candidate: 10 of 10 Period: 104.022 d



DV Fit Results:

Period = 104.02212 [0.00196] d
Epoch = 197.3157 [0.0140] BKJD
Rp/R* = 0.0100 [0.0036]
a/R* = 45.07 [88.66]
b = 0.79 [0.92]
Seff = 48.37 [23.65]
Teq = 672 [82] K
Rp = 2.80 [1.39] Re
a = 0.5098 [0.1573] AU
Ag = 1976.94 [1757.22] [1.12 σ]
Teffp = 6933 [1315] K [4.75 σ]

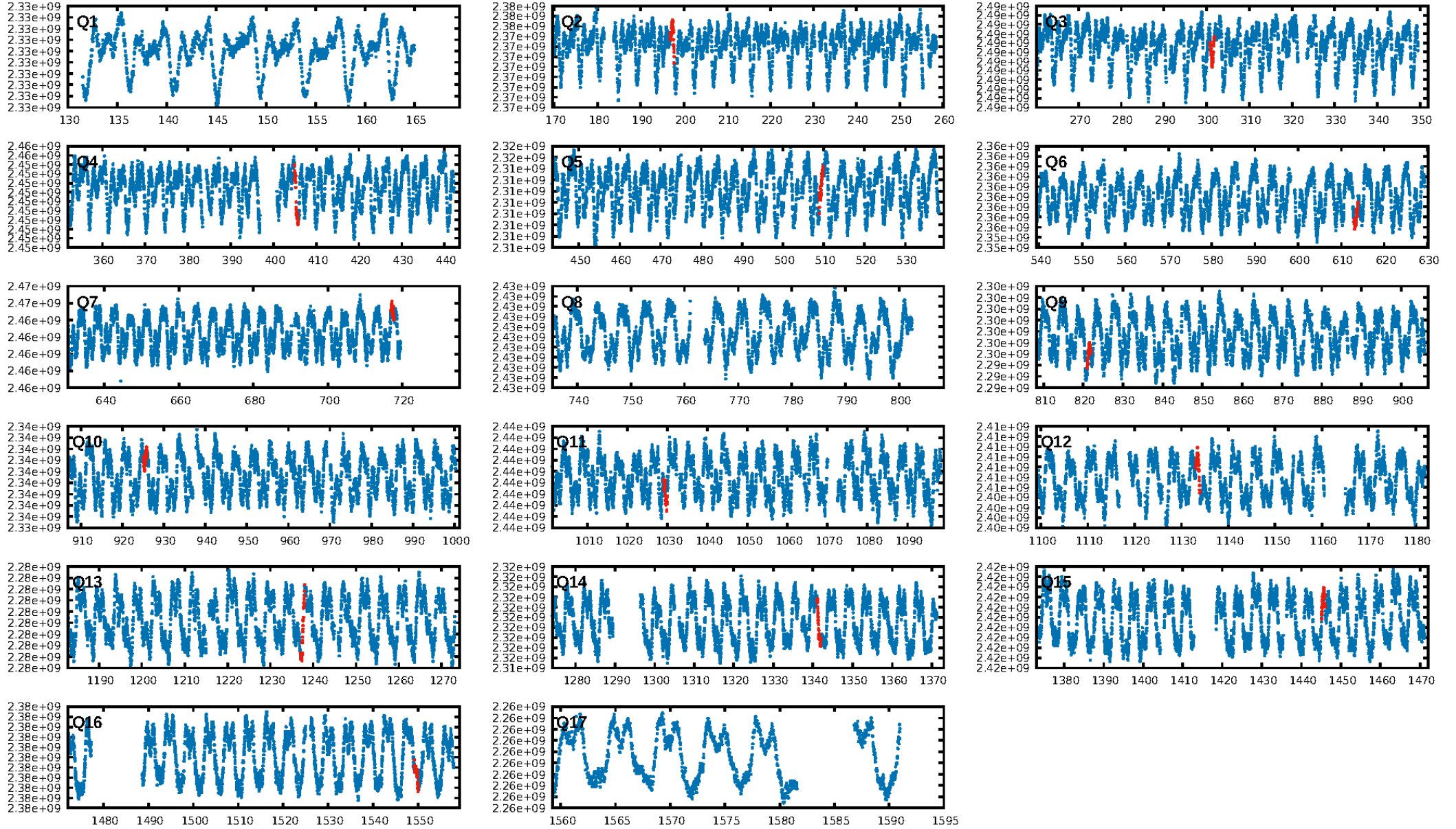
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.92 σ]
LongPeriod-sig: 100.0% [63.32 σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: N/A
Centroid-sig: 52.9%
Centroid-so: 1.070 arcsec [1.23 σ]
OotOffset-rm: 8.418 arcsec [5.19 σ]
KicOffset-rm: 7.785 arcsec [5.64 σ]
OotOffset-st: 4/3/1/2 [10]
KicOffset-st: 4/3/1/2 [10]
DiffImageQuality-fgm: 0.20 [2/10]
DiffImageOverlap-fno: 0.09 [1/11]

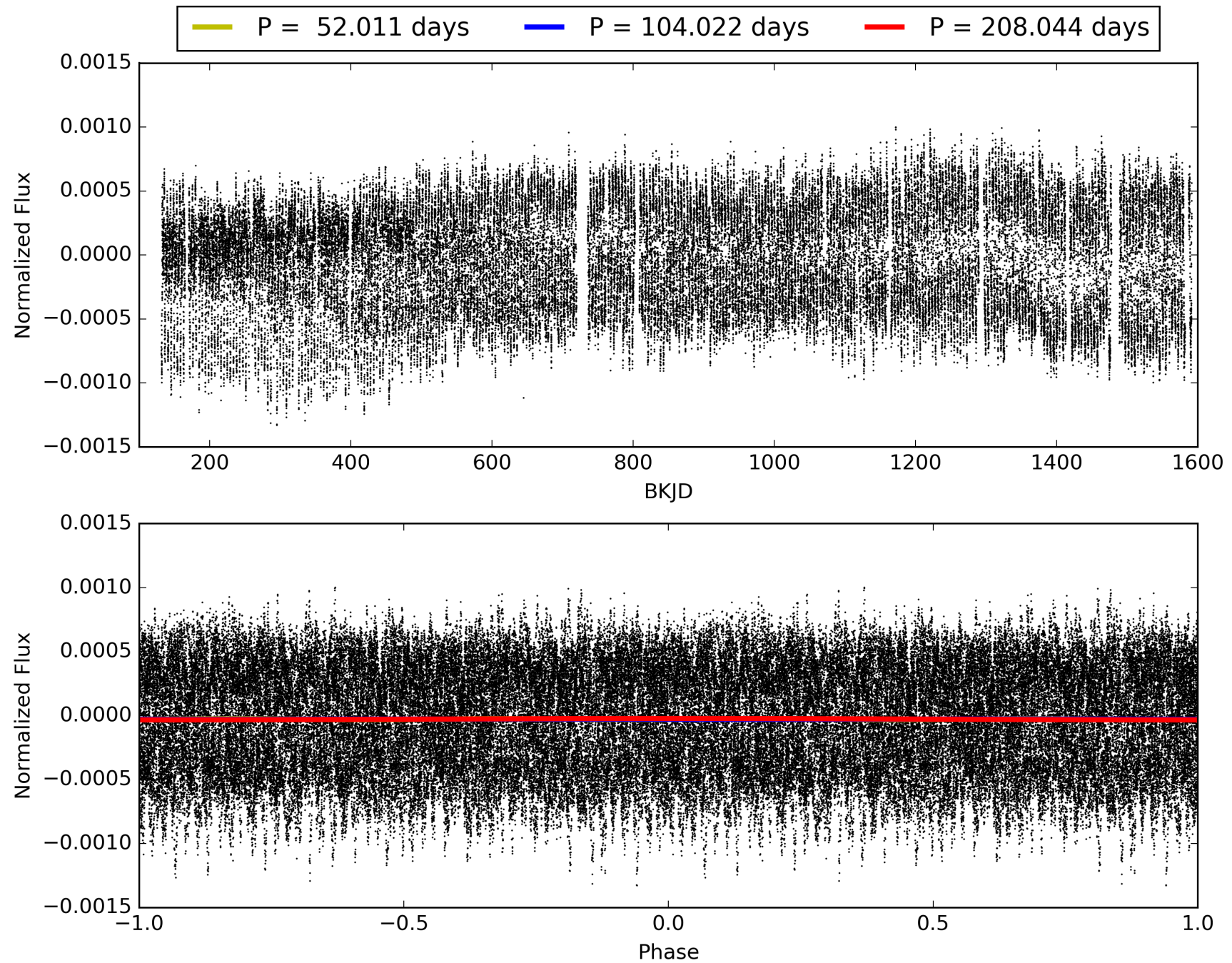
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:47:28 Z

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

TCE 009467345-10, PDC Light Curves

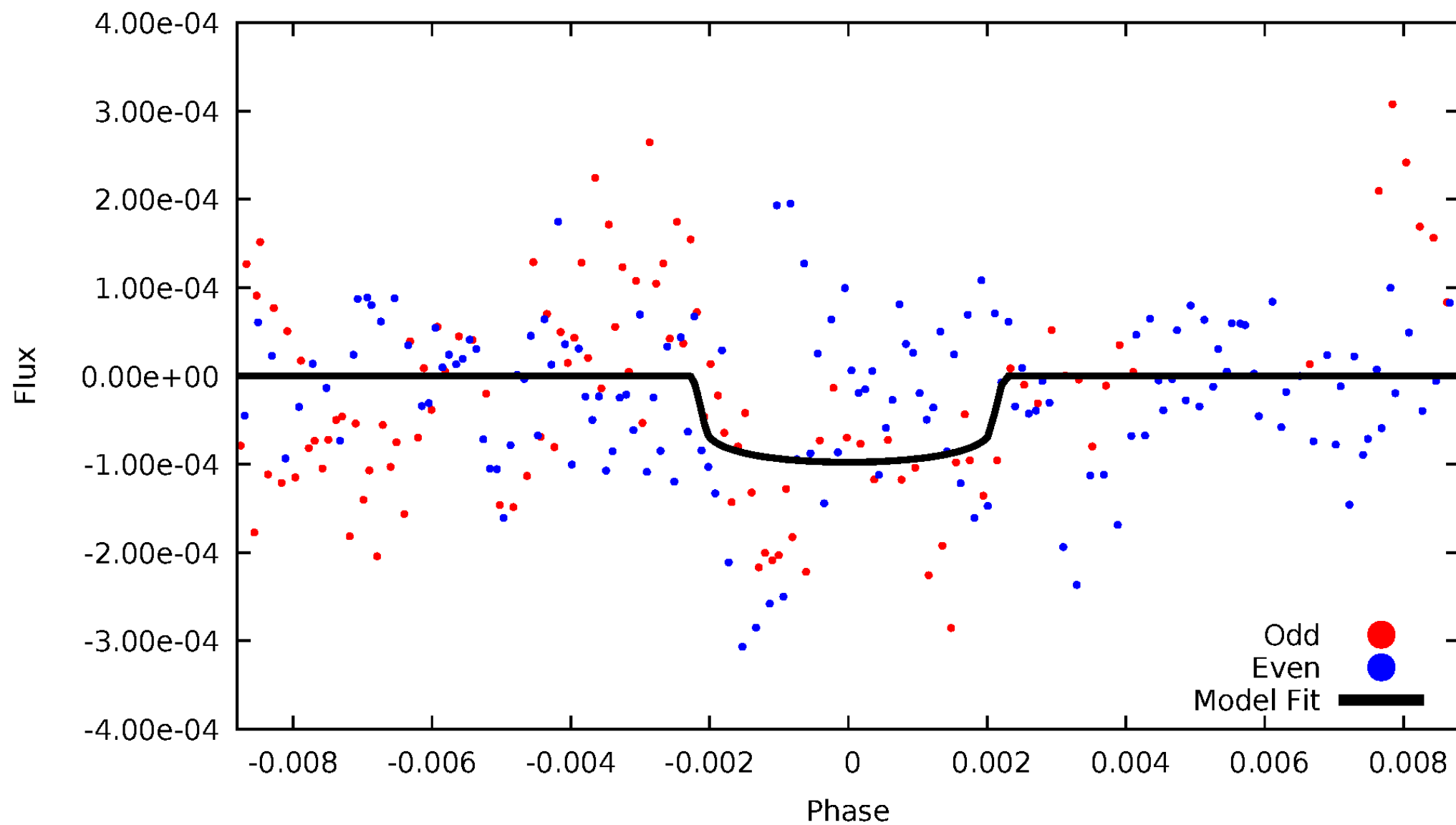


TCE 009467345-10



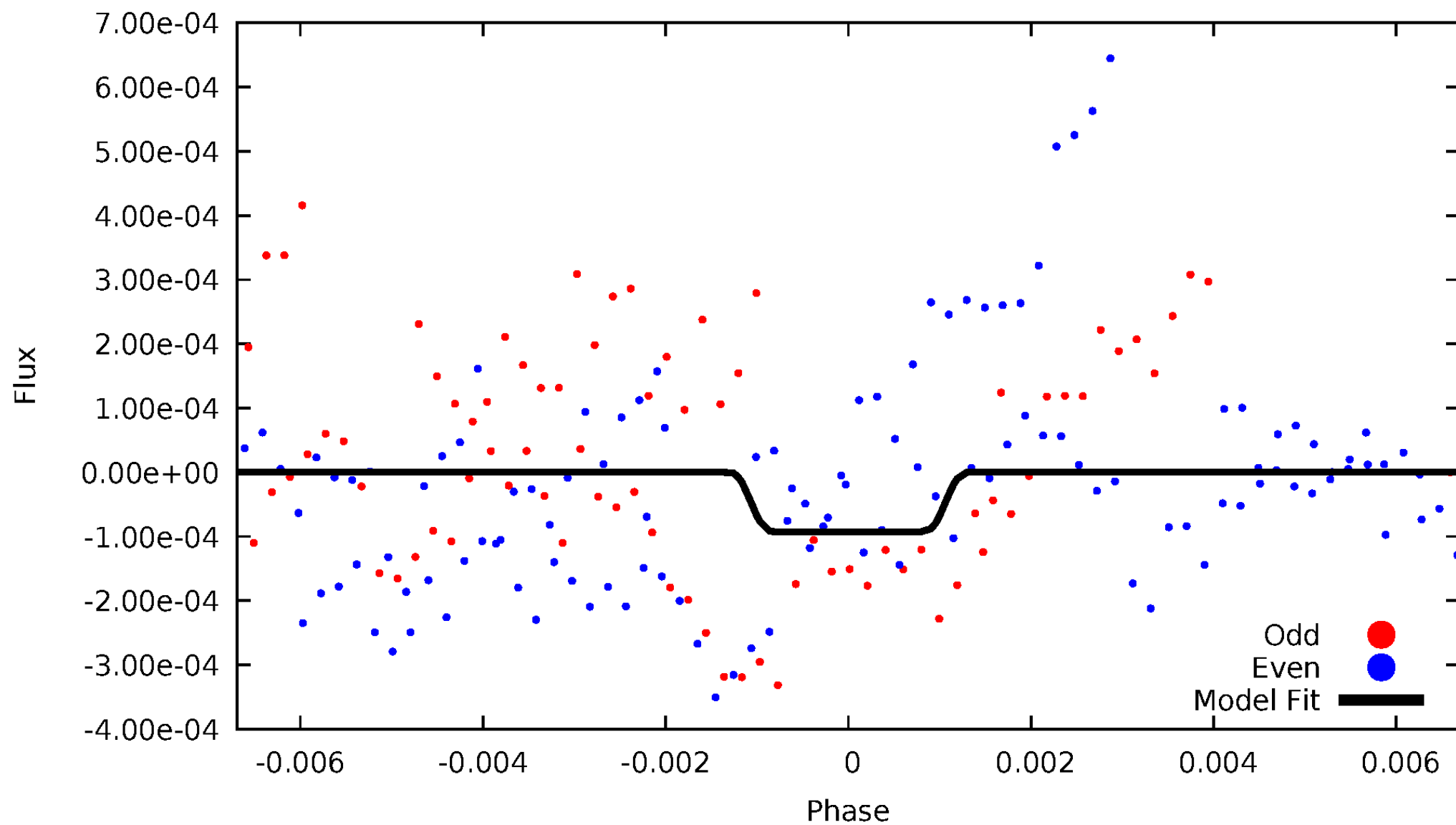
DV Odd/Even

TCE 009467345-10



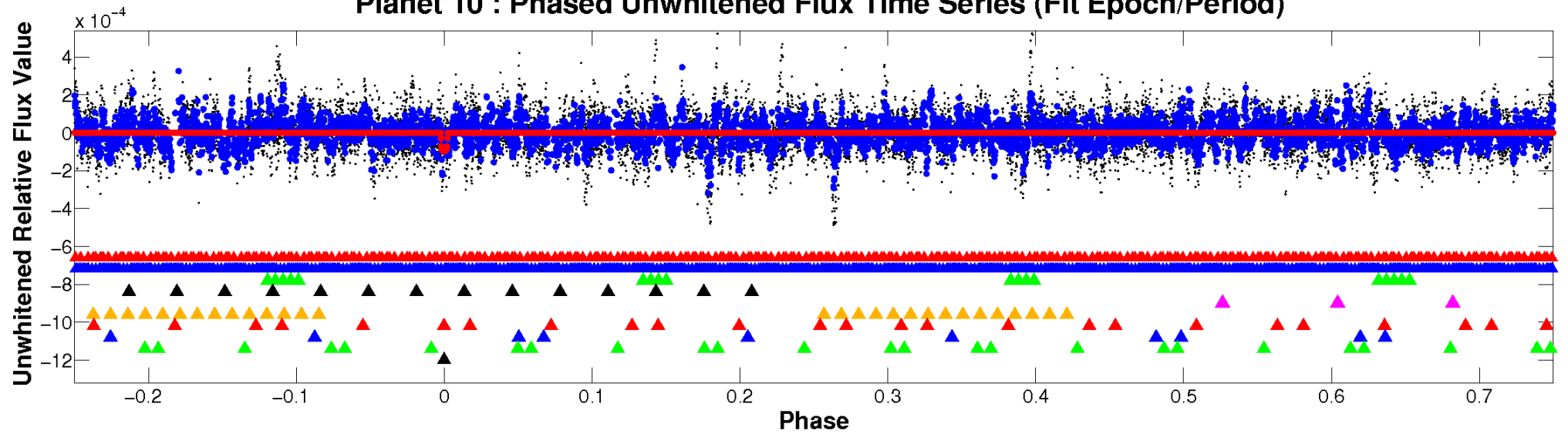
ALT Odd/Even

TCE 009467345-10

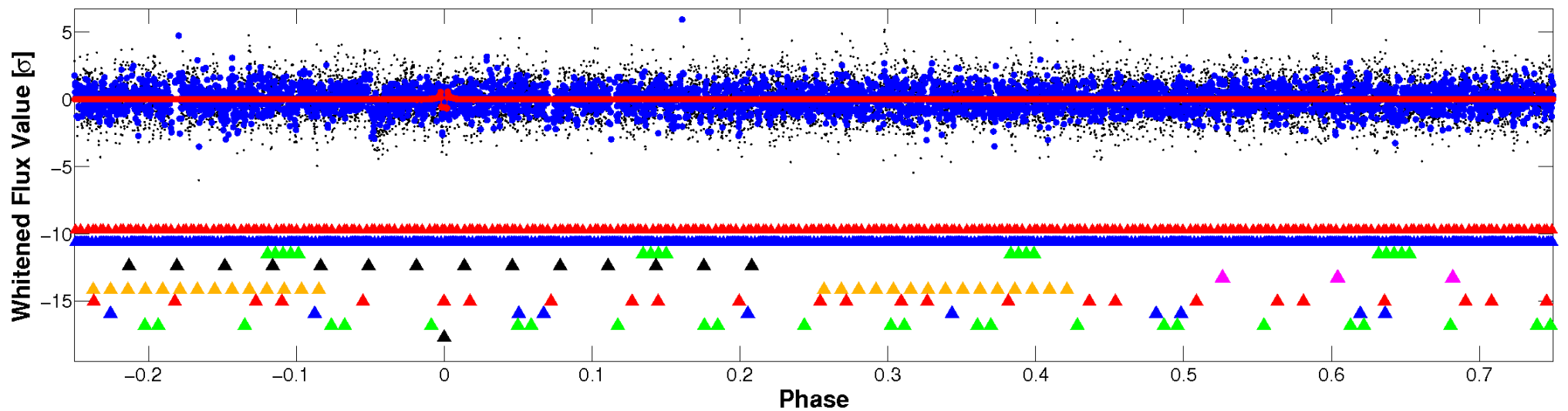


Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

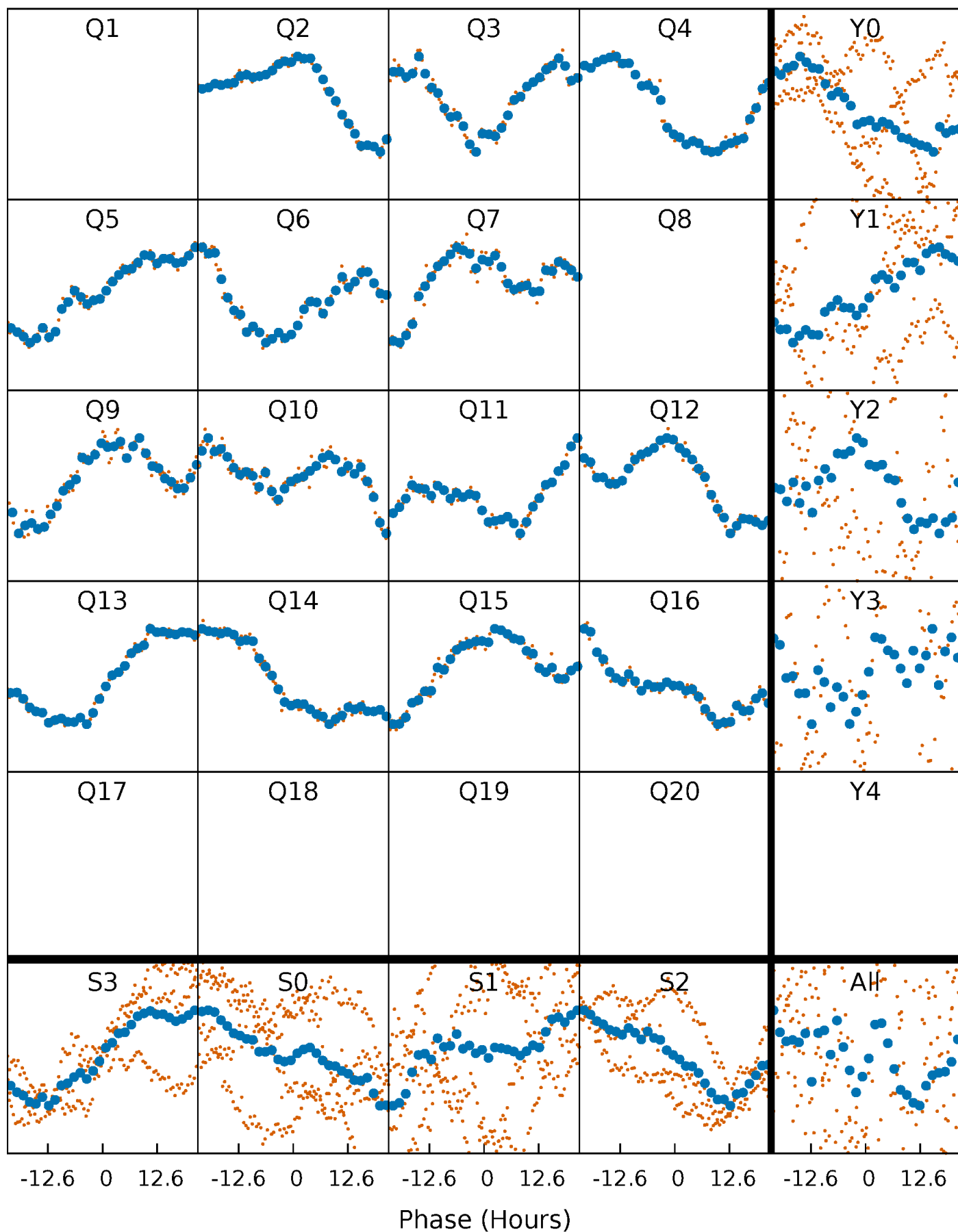


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



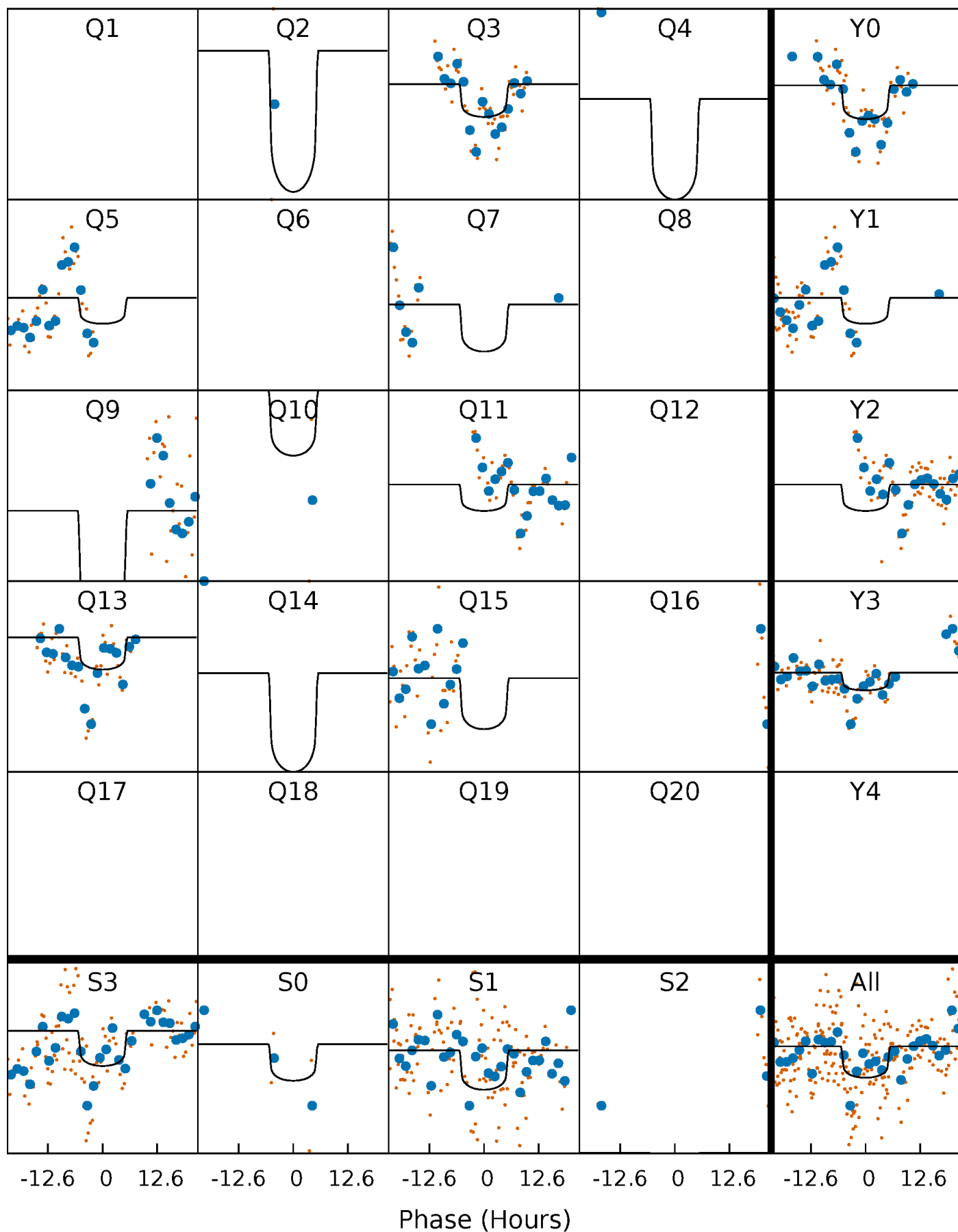
PDC Quarter-Phased Transit Curves

TCE 009467345-10 P=104.022117 Days $T_0=197.315740$ (BKJD)



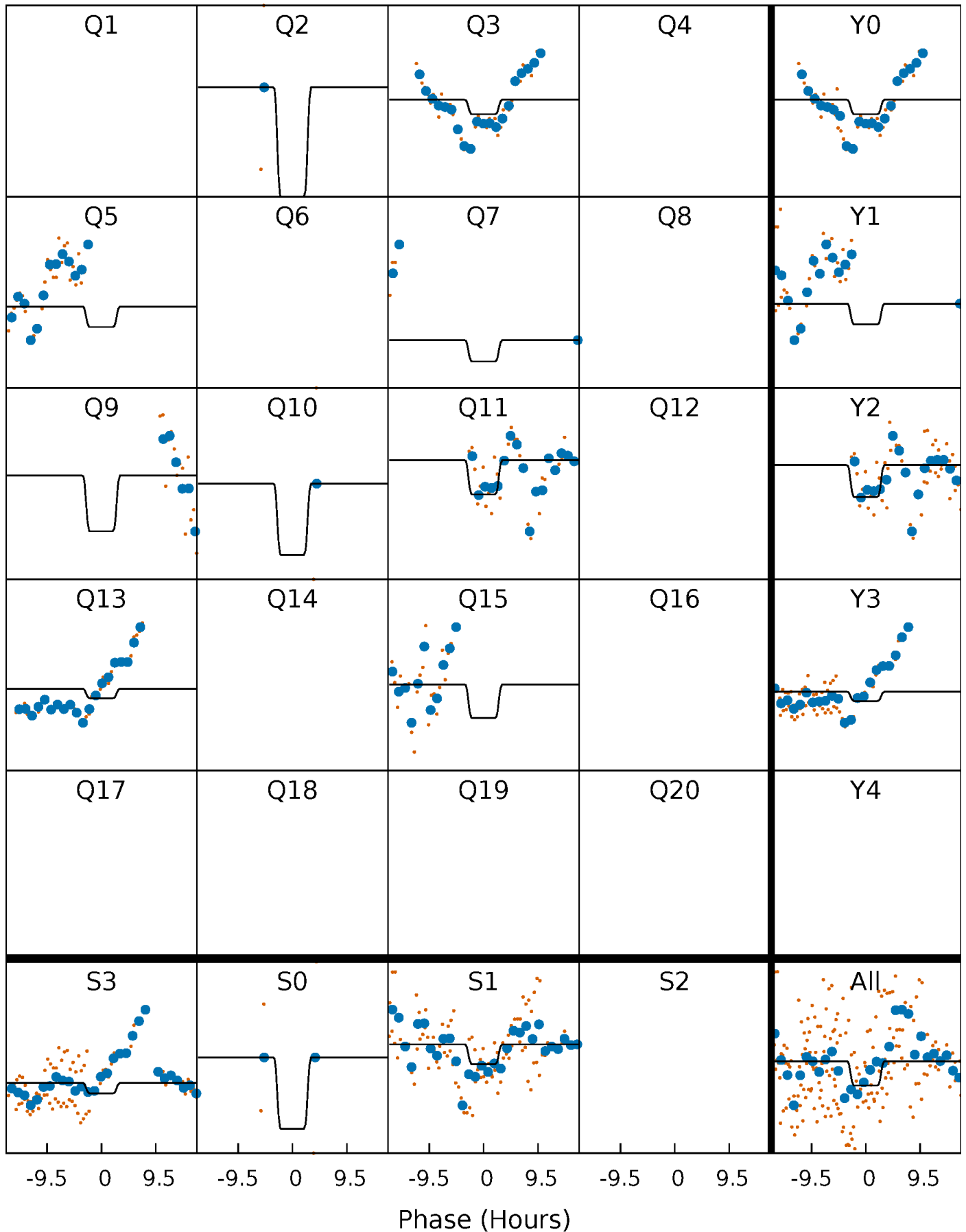
DV Quarter-Phased Transit Curves

TCE 009467345-10 P=104.022117 Days $T_0=197.315740$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

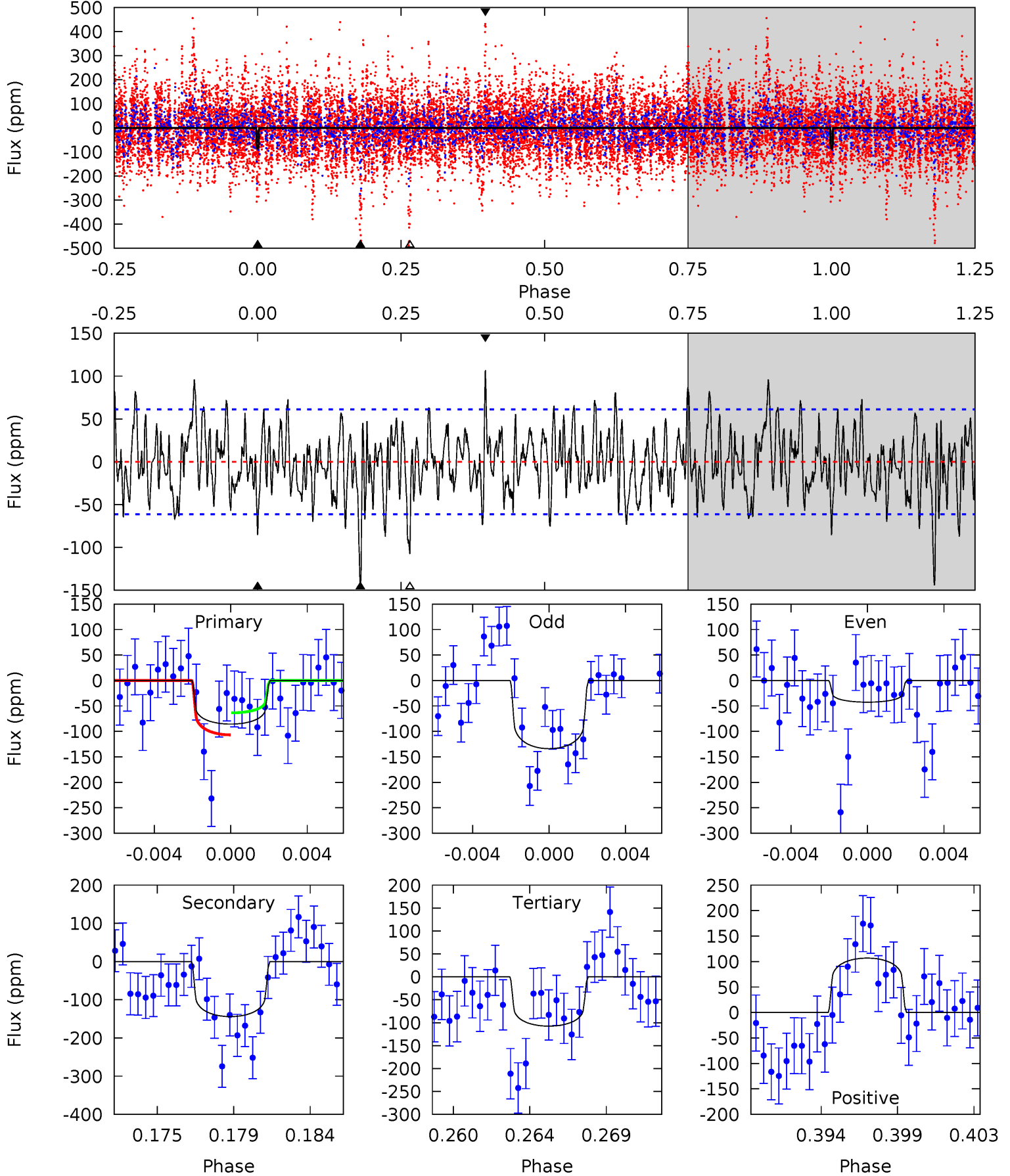
TCE 009467345-10 P=104.019392 Days $T_0=197.335422$ (BKJD)



DV Model-Shift Uniqueness Test

009467345-10, $P = 104.022117$ Days, $E = 93.293623$ Days

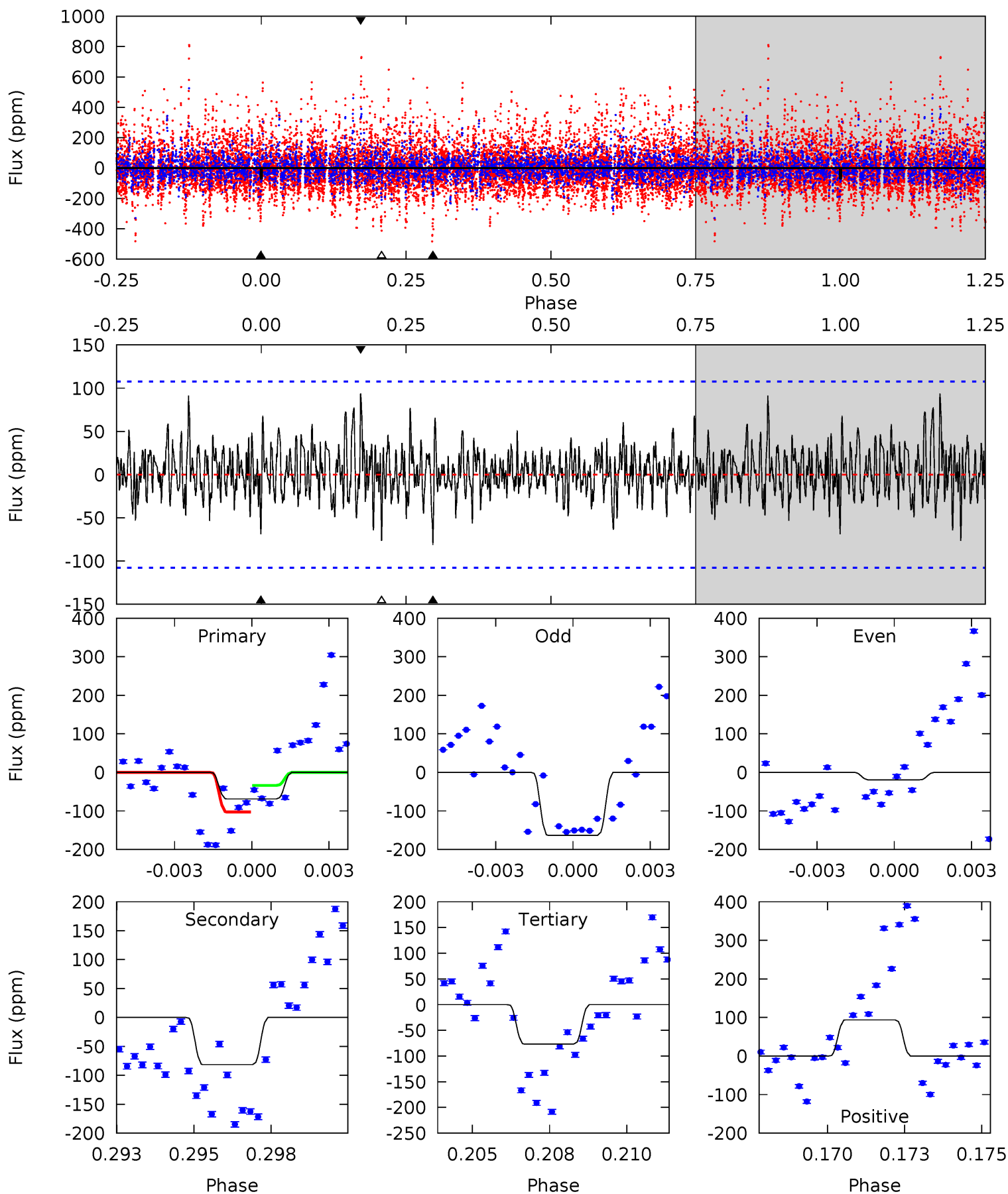
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.25	12.2	9.10	9.04	5.18	2.84	2.71	-1.85	-1.79	3.10	3.16	3.71	0.74	0.43	1.83



Alt Model-Shift Uniqueness Test

009467345-10, P = 104.019392 Days, E = 93.316030 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.38	4.00	3.76	4.60	5.29	3.02	1.10	-0.38	-1.22	0.24	-0.61	3.23	-2.34	0.54	1.70



Stellar Parameters For KIC 009467345

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6781^{+170}_{-187}	$3.829^{+0.273}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.576^{+0.471}_{-0.875}$	$1.631^{+0.180}_{-0.335}$	$0.135^{+0.242}_{-0.048}$
	+3%/-3%	+7%/-3%	+300%/-250%	+18%/-34%	+11%/-21%	+180%/-36%
Source	PHO1	FLK73	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 009467345-10 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-144 ± 12	$2.62^{+1.10}_{-0.97}$	930^{+58}_{-75}	7524^{+2640}_{-1182}	2921^{+4121}_{-1495}
Alt.	-81 ± 20	$2.54^{+1.01}_{-1.00}$	928^{+56}_{-81}	6574^{+1998}_{-1061}	1765^{+2911}_{-916}

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

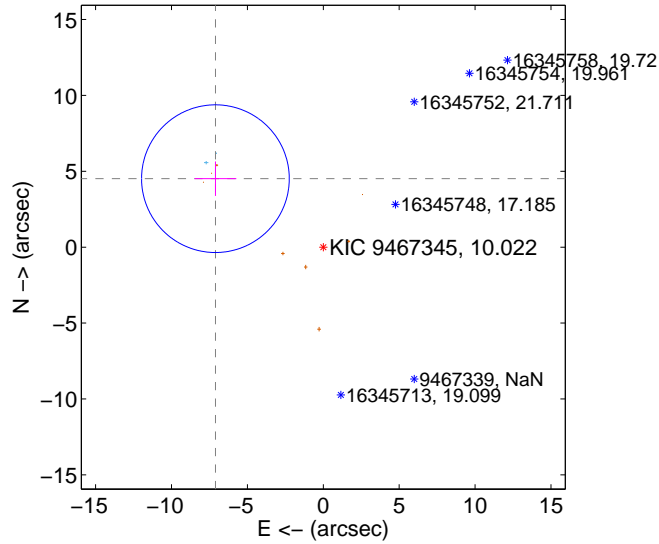
Supplemental centroid analysis for 009467345-10. **Kepler magnitude: 10.02.** Transit SNR 5.49

There are 2 quarters with good PRF difference image offsets

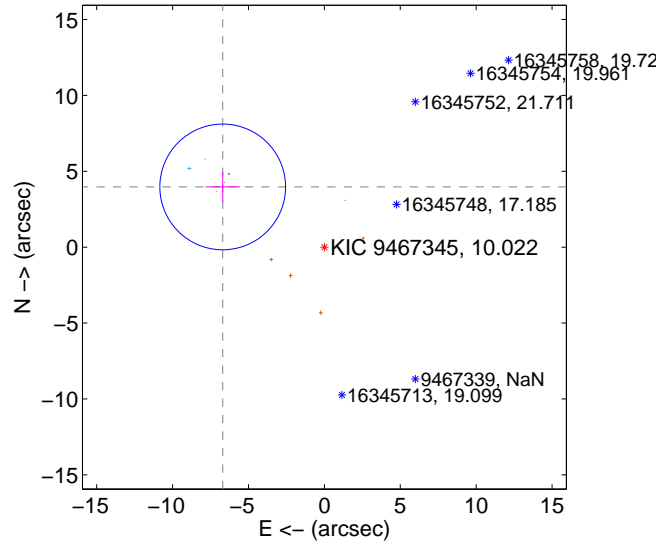
The direct PRF centroid is offset from the target star catalog position by about 0.98 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.418 ± 1.622	5.19	7.106 ± 1.378	4.513 ± 1.134
PRF-fit source offset from KIC position	7.785 ± 1.380	5.64	6.698 ± 1.147	3.969 ± 1.002
photometric centroid source offset	1.07 ± 0.87	1.23	-0.99 ± 0.90	-0.41 ± 0.66

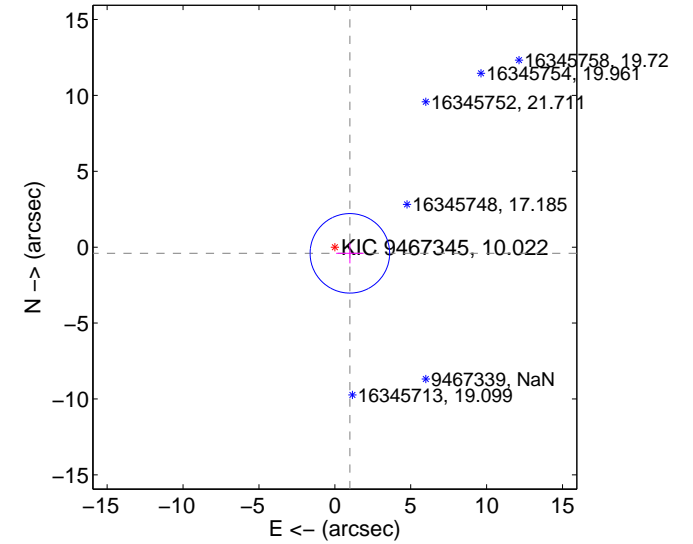
offset from difference PRF-fit to OOT PRF-fit



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.

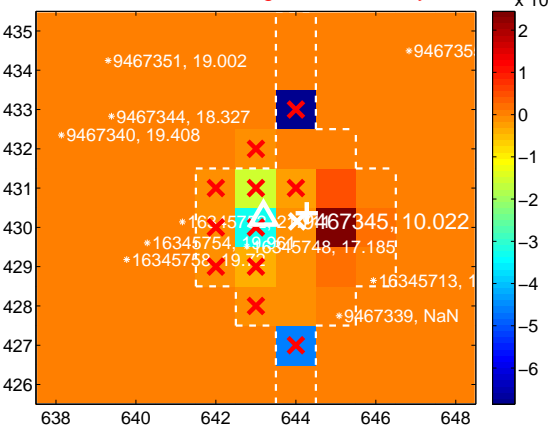
Q1 no difference image



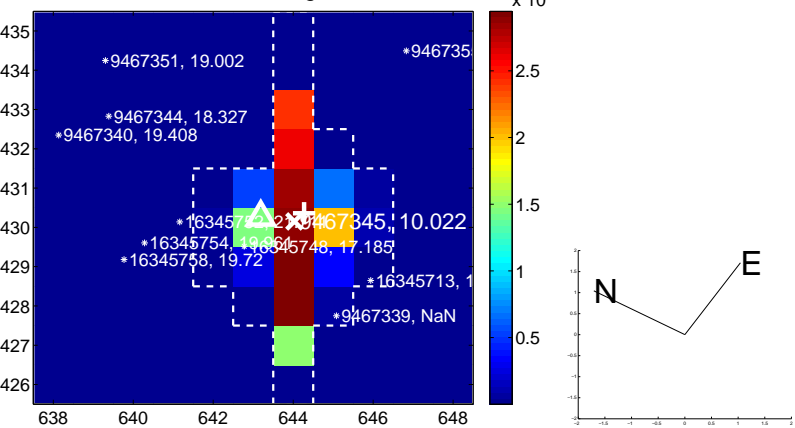
Q1 no OOT image



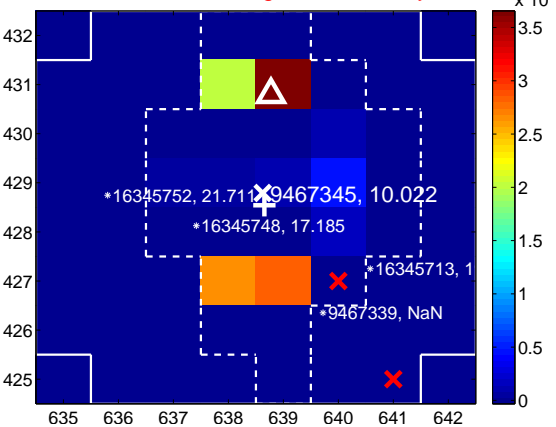
Q2 difference image. Poor Quality



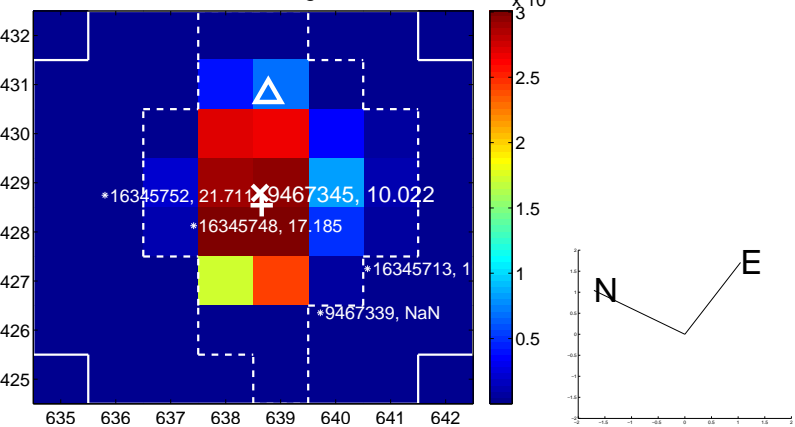
Q2 OOT image



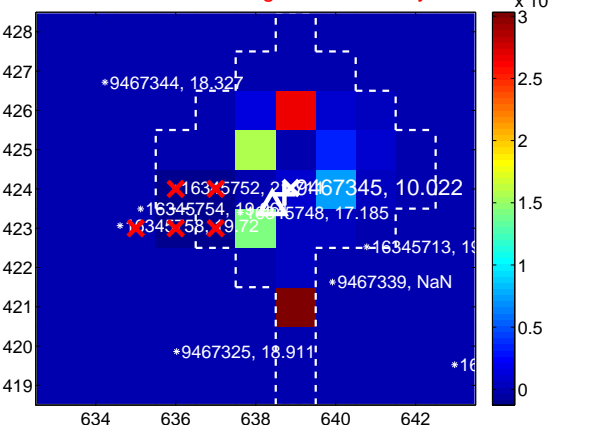
Q3 difference image. Poor Quality



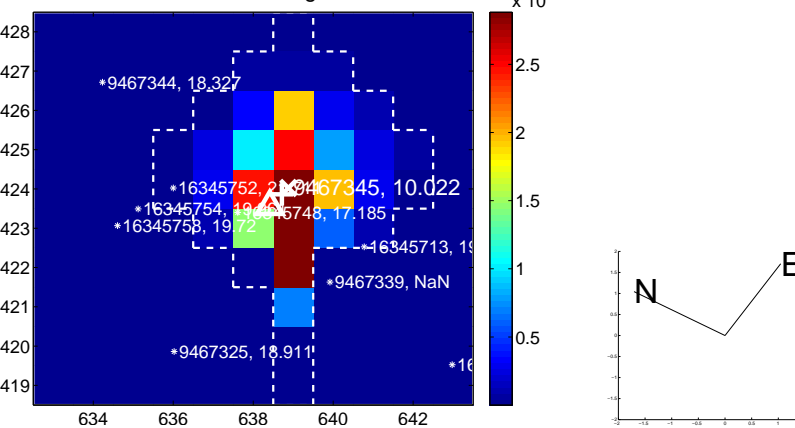
Q3 OOT image



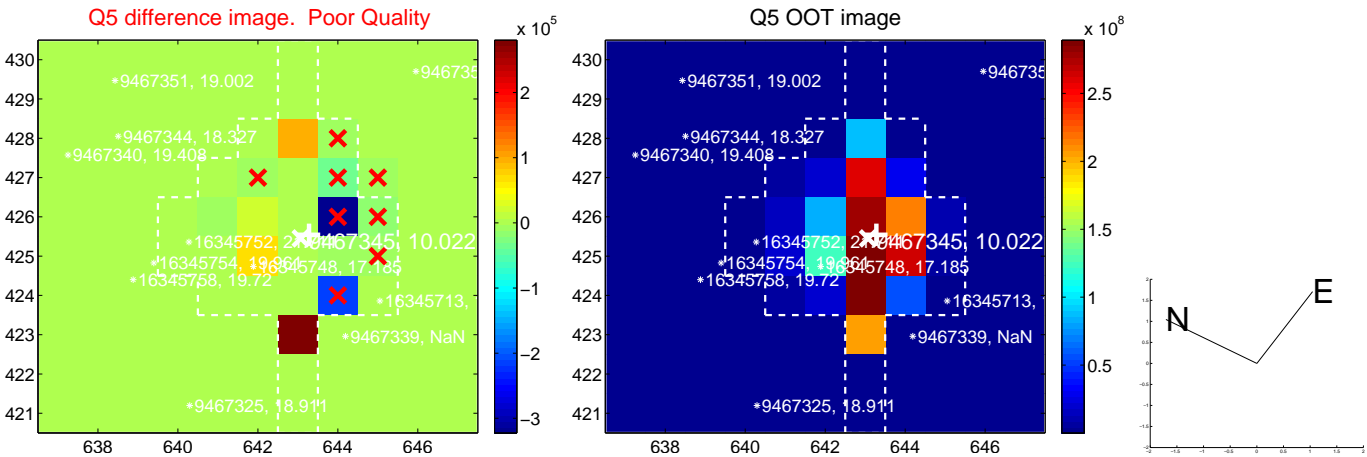
Q4 difference image. Poor Quality



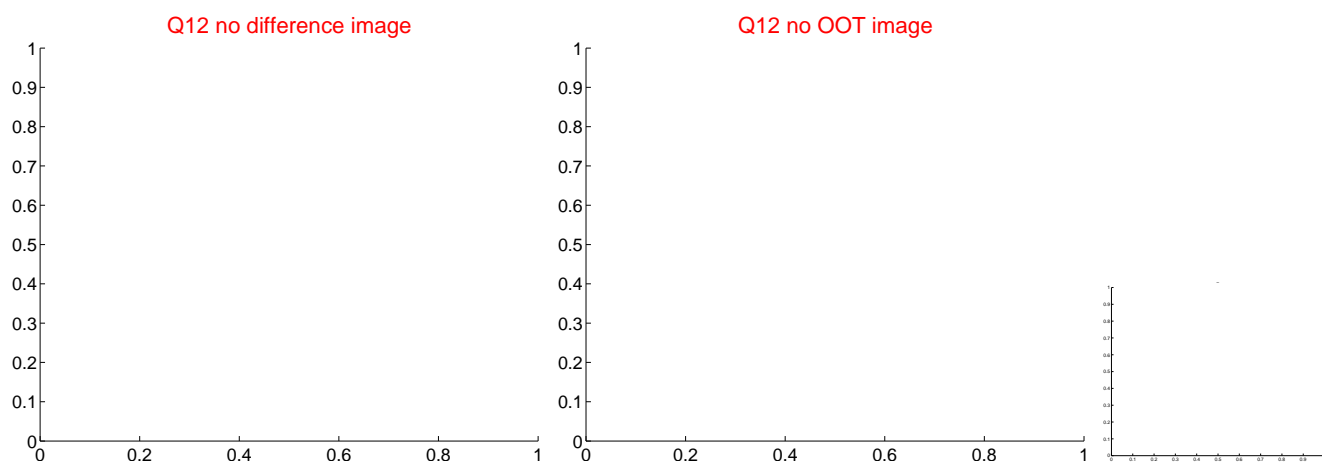
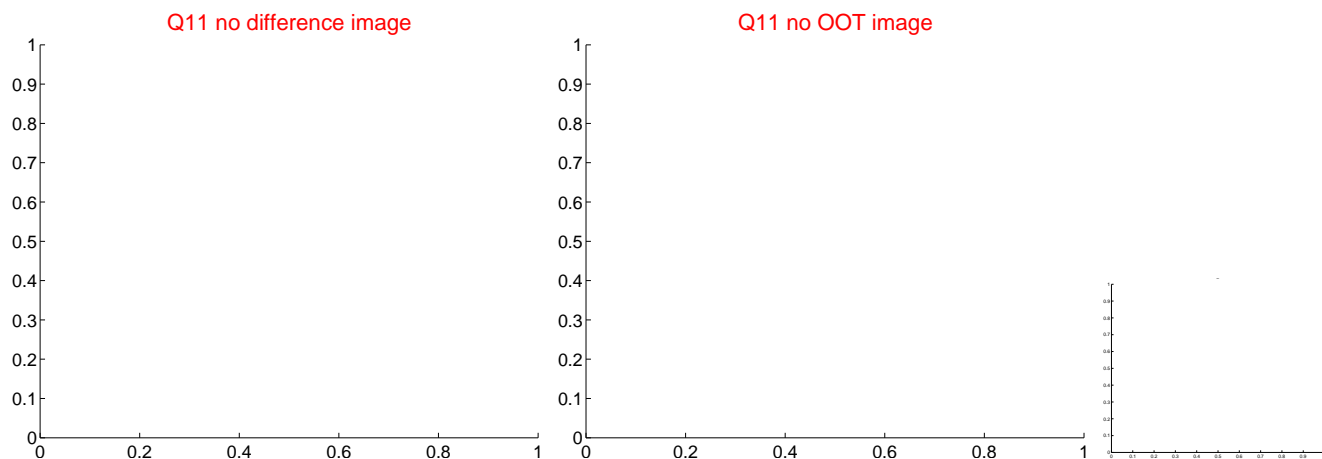
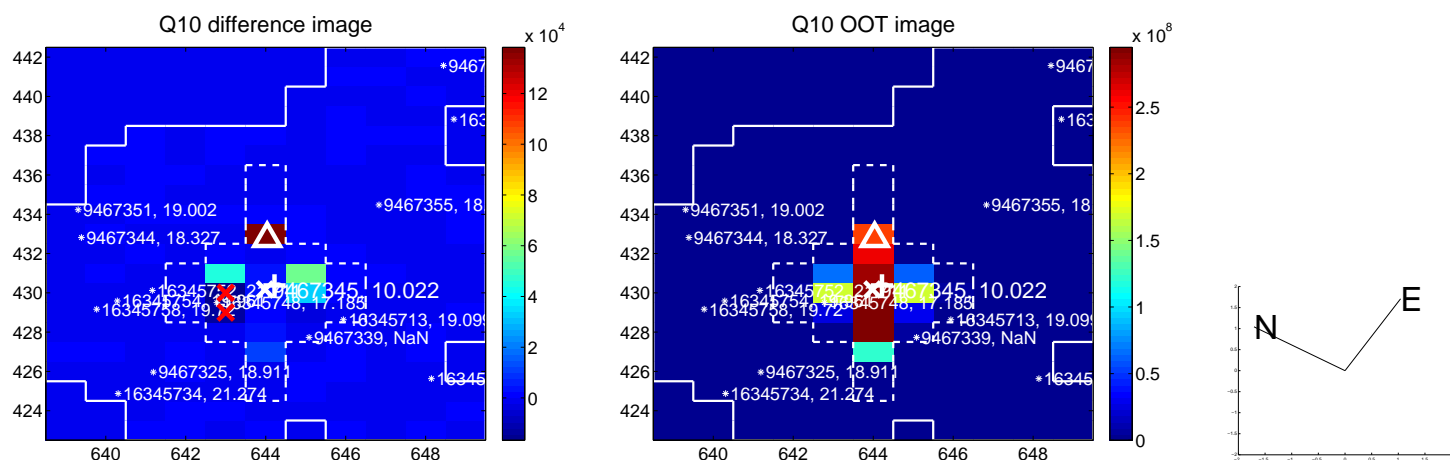
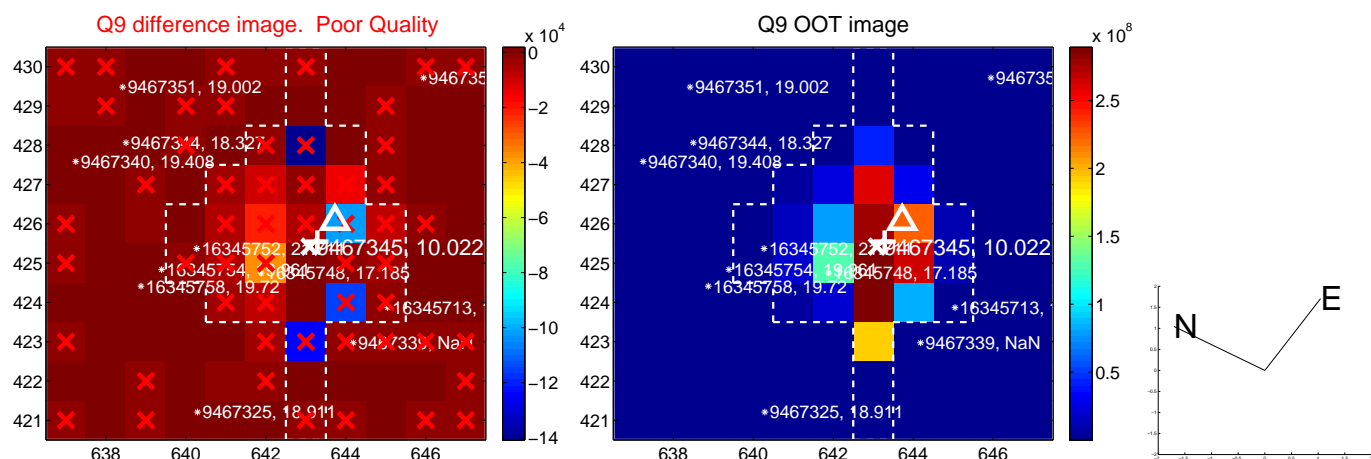
Q4 OOT image



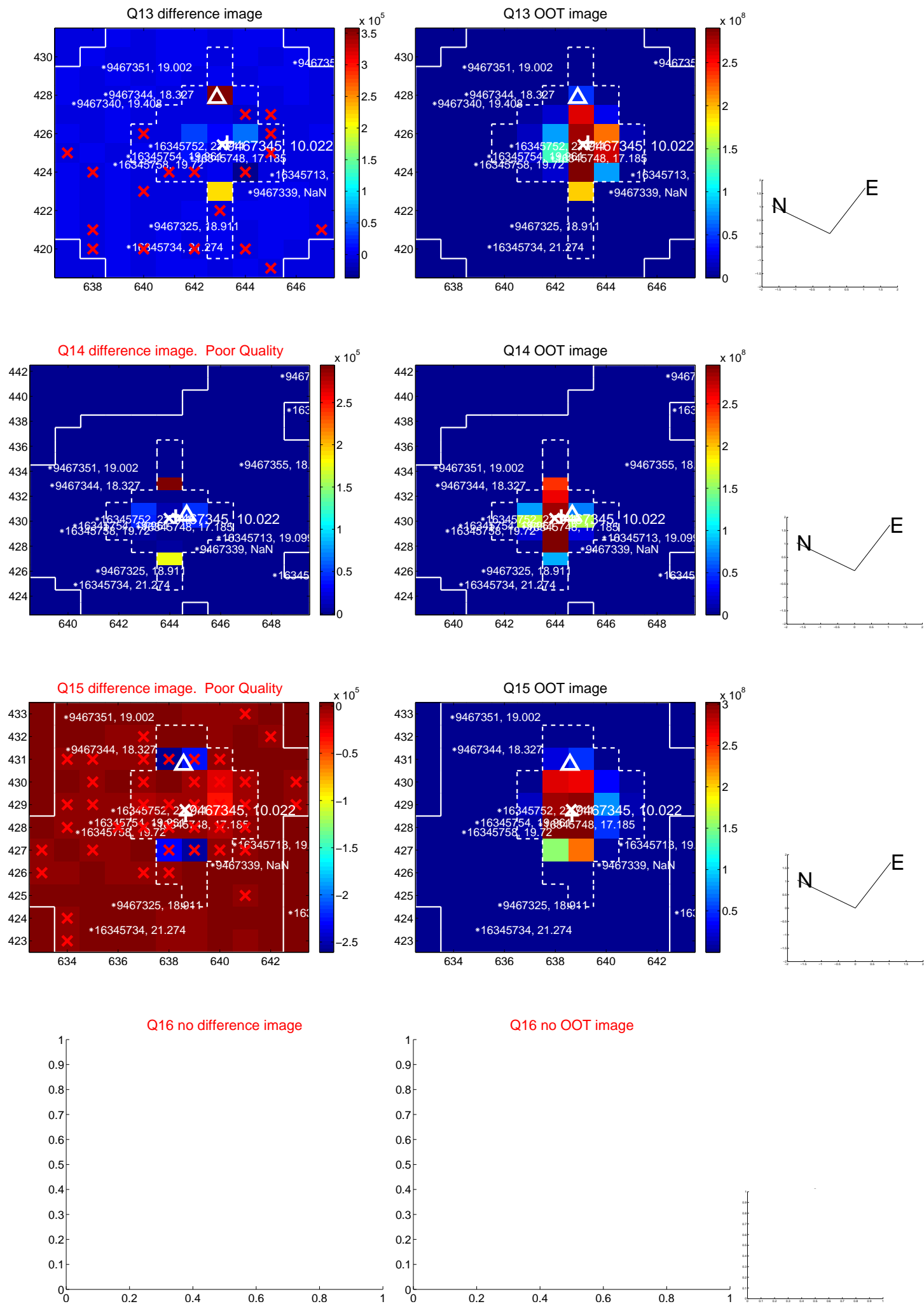
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



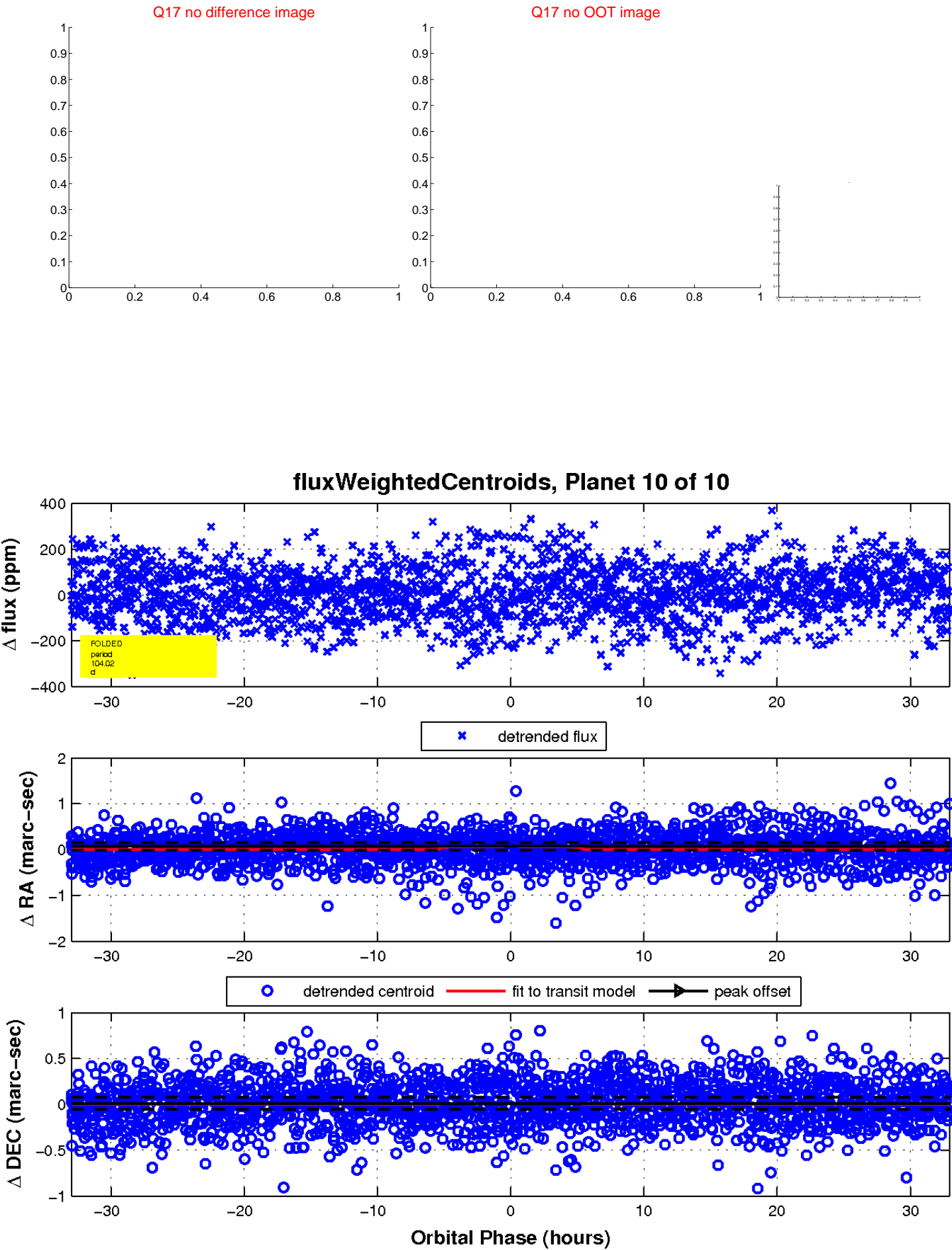
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

