

KIC 006307521

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})
006307521-01	OBS	1126.01	29.744936	157.388555	744.2	22.421	34.9	37.7	1.00	5334	3.49	22.79
006307521-02	OBS	1126.02	237.961816	350.845315	766.6	22.698	11.0	12.0	1.00	5334	4.09	1.42

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006307521-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
006307521-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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 006307521-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
006307521-01	6307521	006307537-pri	6307537	1:1	19.3	2	4	11.75	15.26	240.19	Direct-PRF	0	0.35	0.32

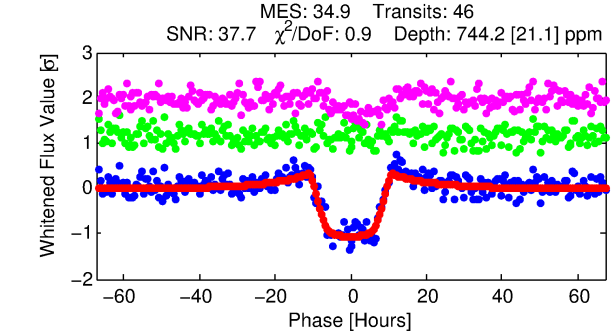
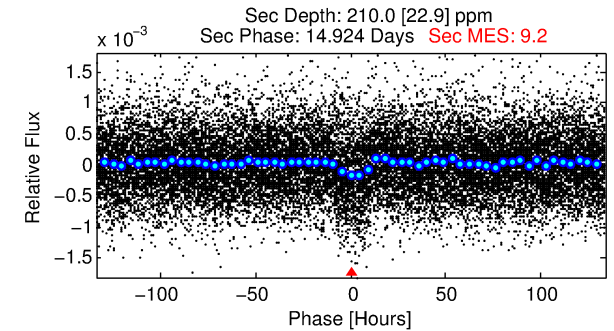
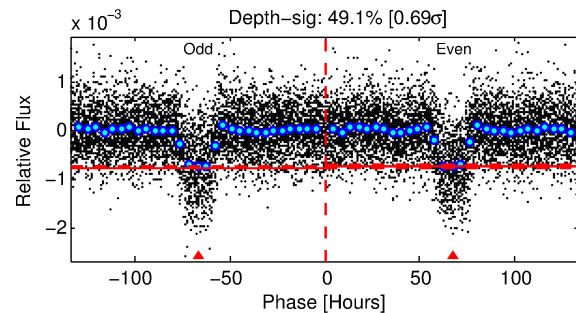
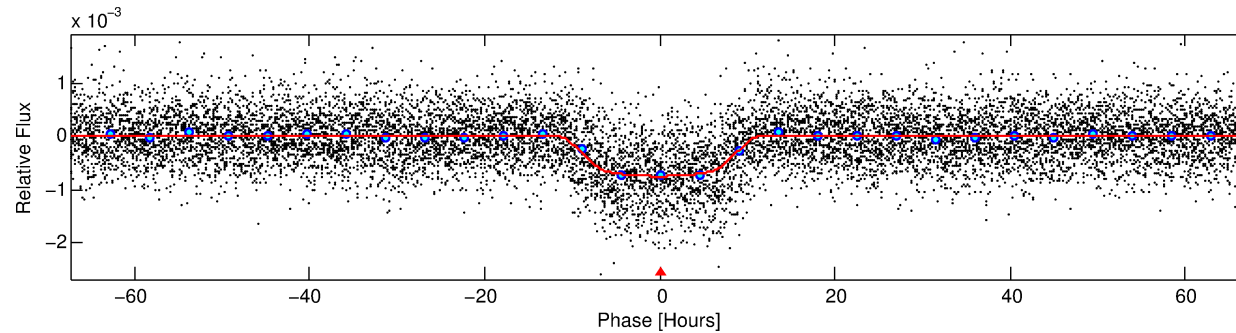
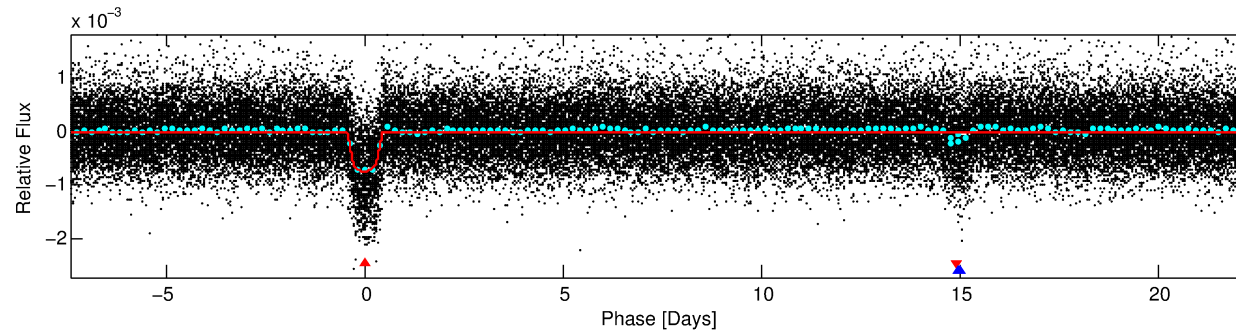
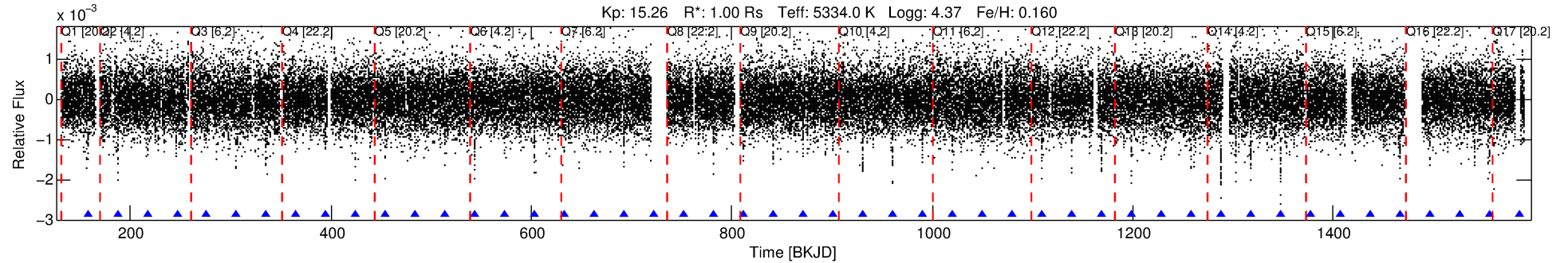
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 6307521 Candidate: 1 of 2 Period: 29.745 d

KOI: K01126.01 Corr: 0.994

Kp: 15.26 R*: 1.00 Rs Teff: 5334.0 K Logg: 4.37 Fe/H: 0.160



DV Fit Results:

Period = 29.74494 [0.00041] d
Epoch = 157.3886 [0.0106] BKJD
Rp/R* = 0.0319 [0.0007]
a/R* = 4.44 [0.26]
b = 0.94 [0.01]
Seff = 22.79 [5.11]
Teq = 557 [31] K
Rp = 3.49 [0.50] Re
a = 0.1791 [0.0242] AU
Ag = 304.09 [74.92] [4.05σ]
Teff = 3597 [119] K [24.69σ]

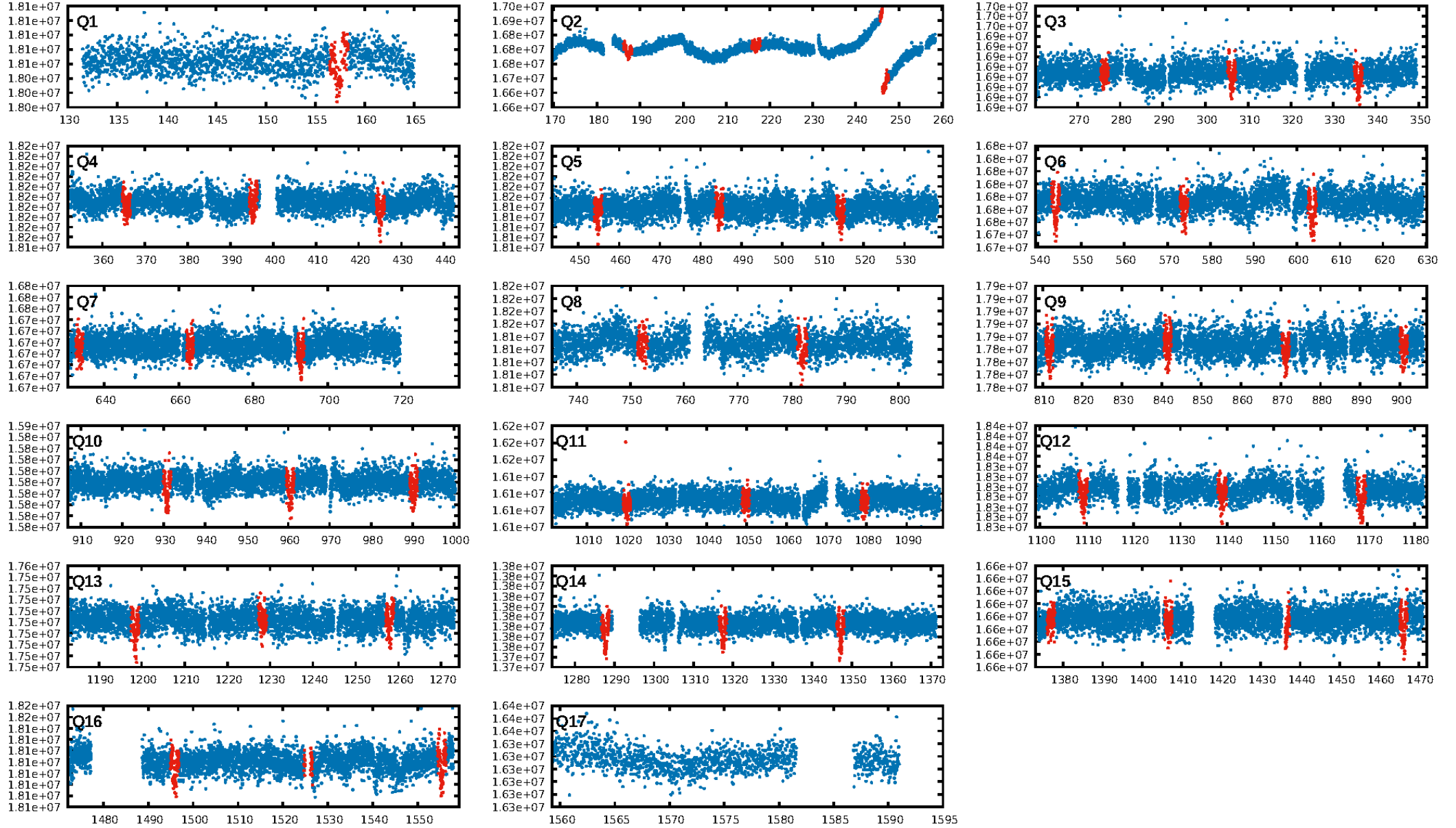
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [156.63σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: 6.04e-178
RollingBand-fgt: 1.00 [45/45]
GhostDiagnostic-chr: -0.279
Centroid-sig: 0.0%
Centroid-so: 28.970 arcsec [66.23σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [15/15]

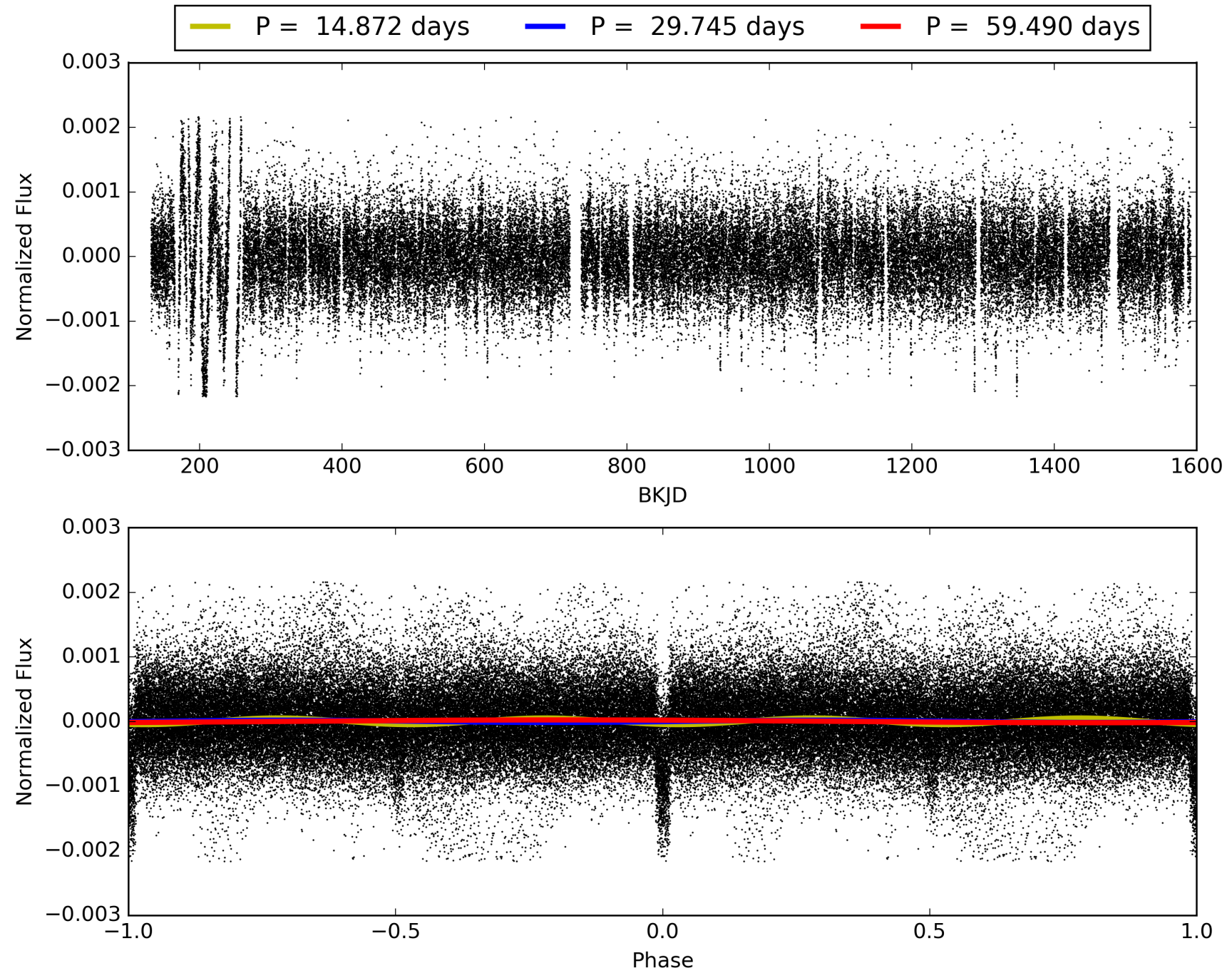
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:35:15 Z

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

TCE 006307521-01, PDC Light Curves

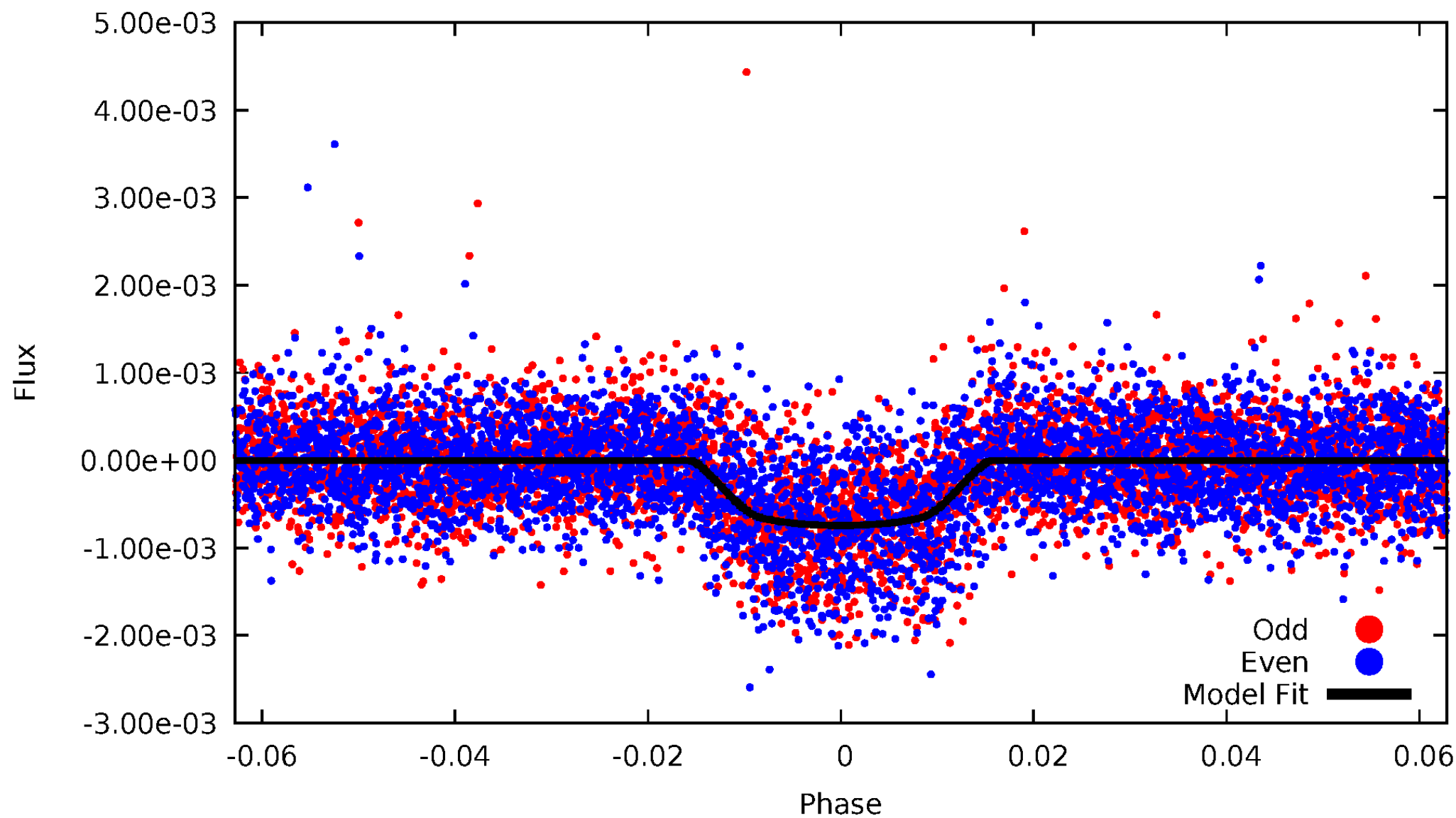


TCE 006307521-01



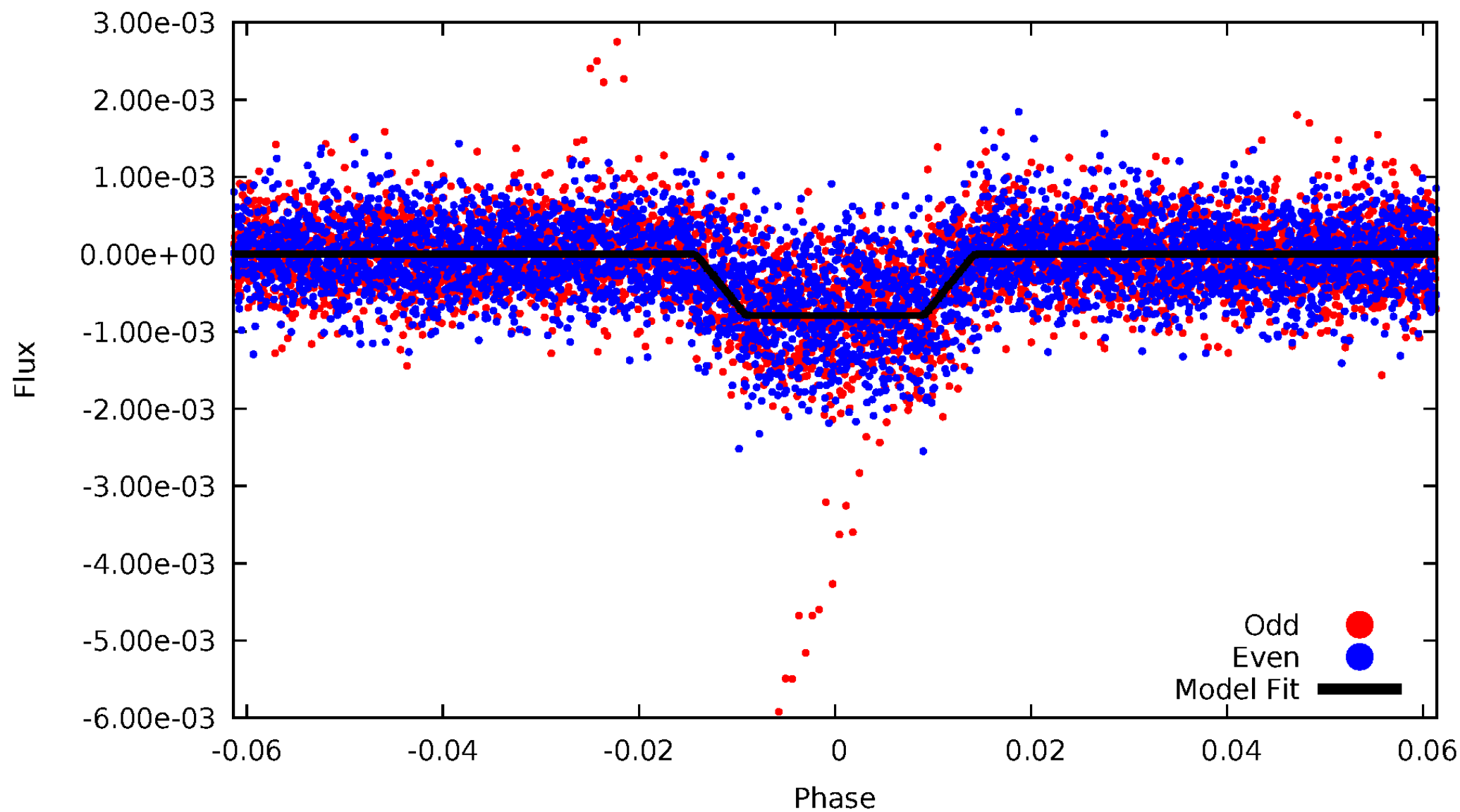
DV Odd/Even

TCE 006307521-01



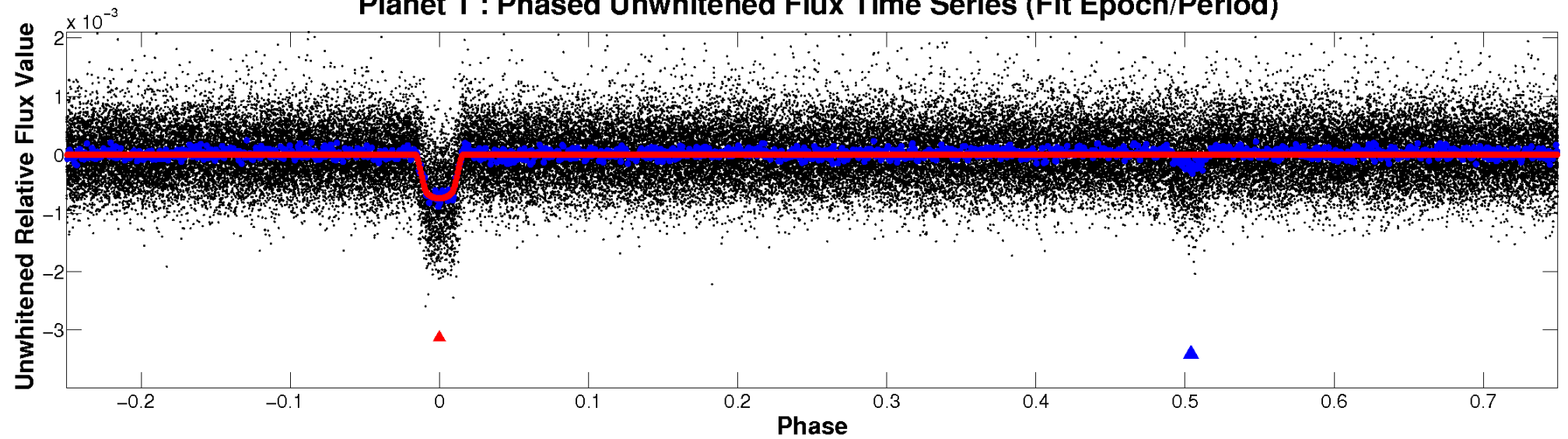
ALT Odd/Even

TCE 006307521-01

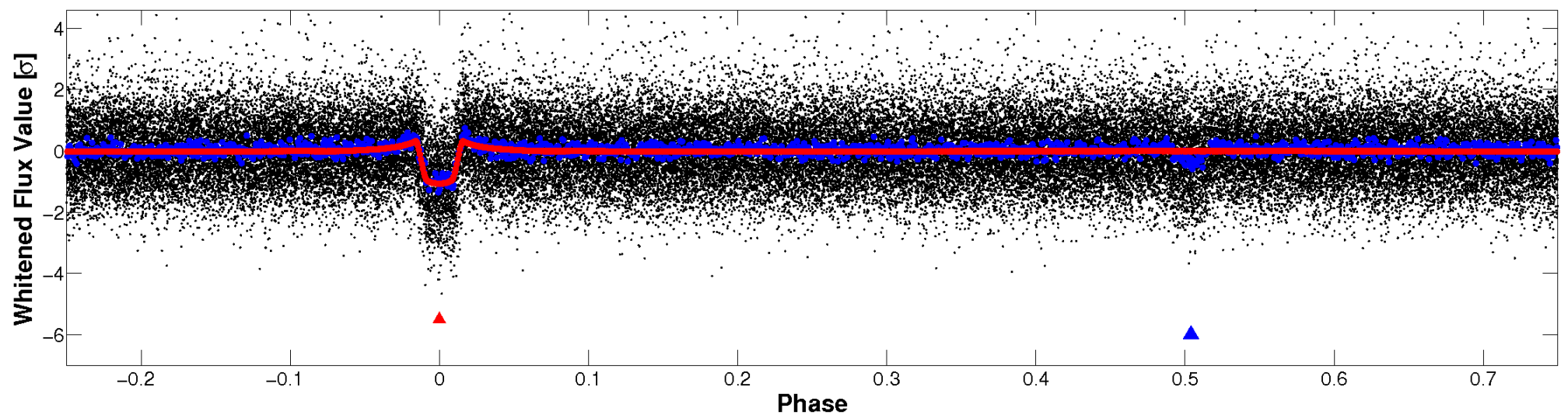


Non-Whitened Vs. Whitened Light Curve

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

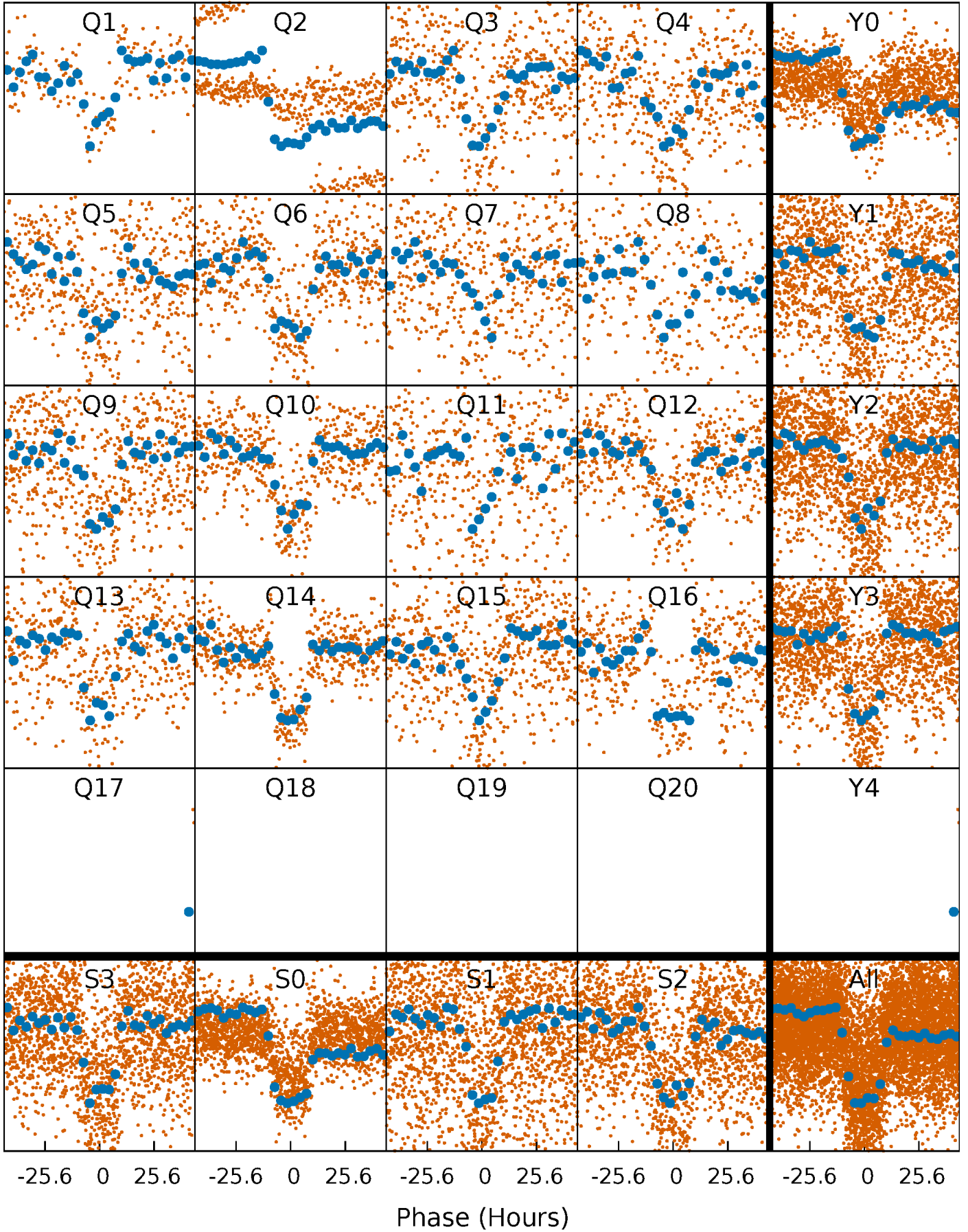


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



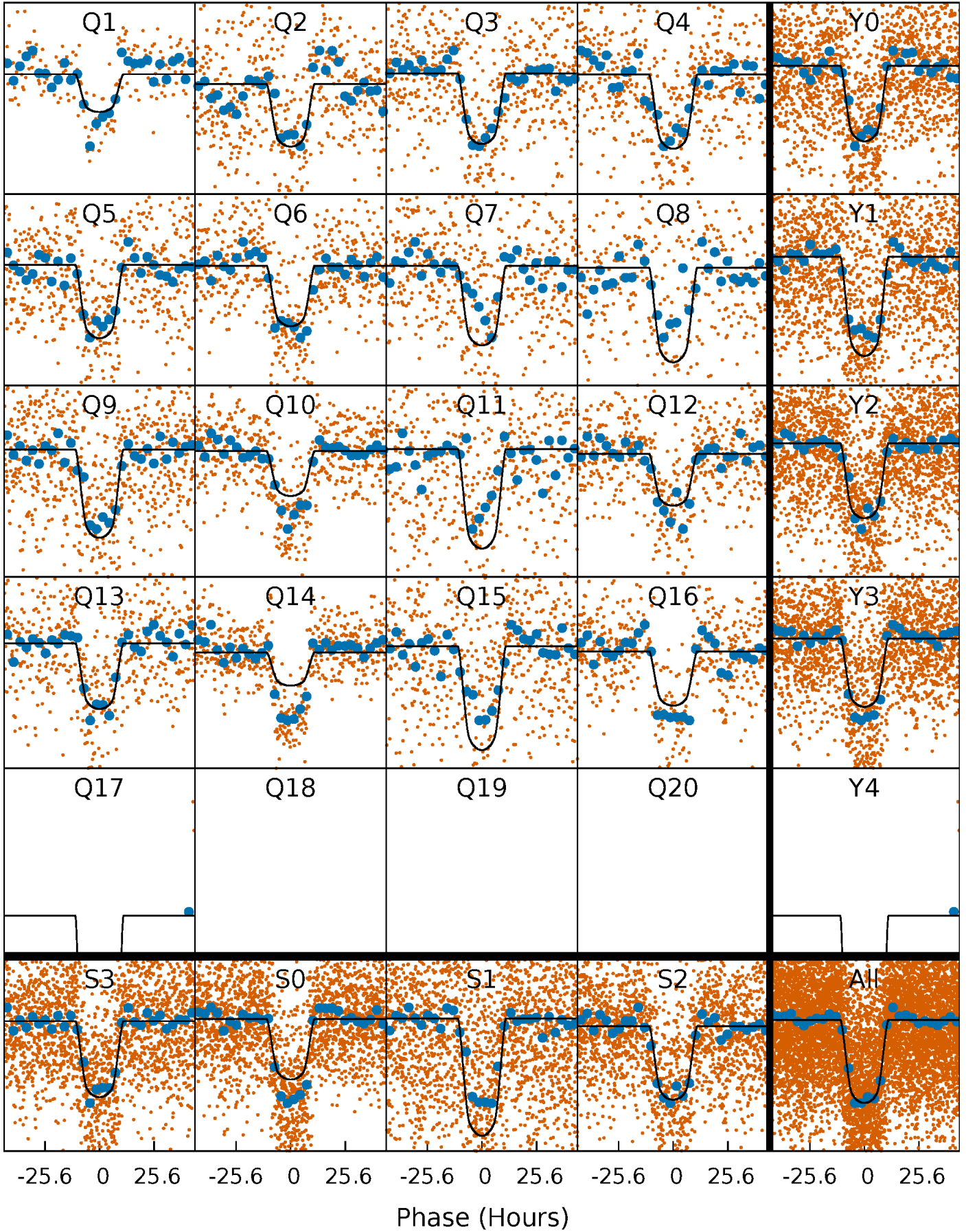
PDC Quarter-Phased Transit Curves

TCE 006307521-01 P= 29.744936 Days $T_0=157.388555$ (BKJD)



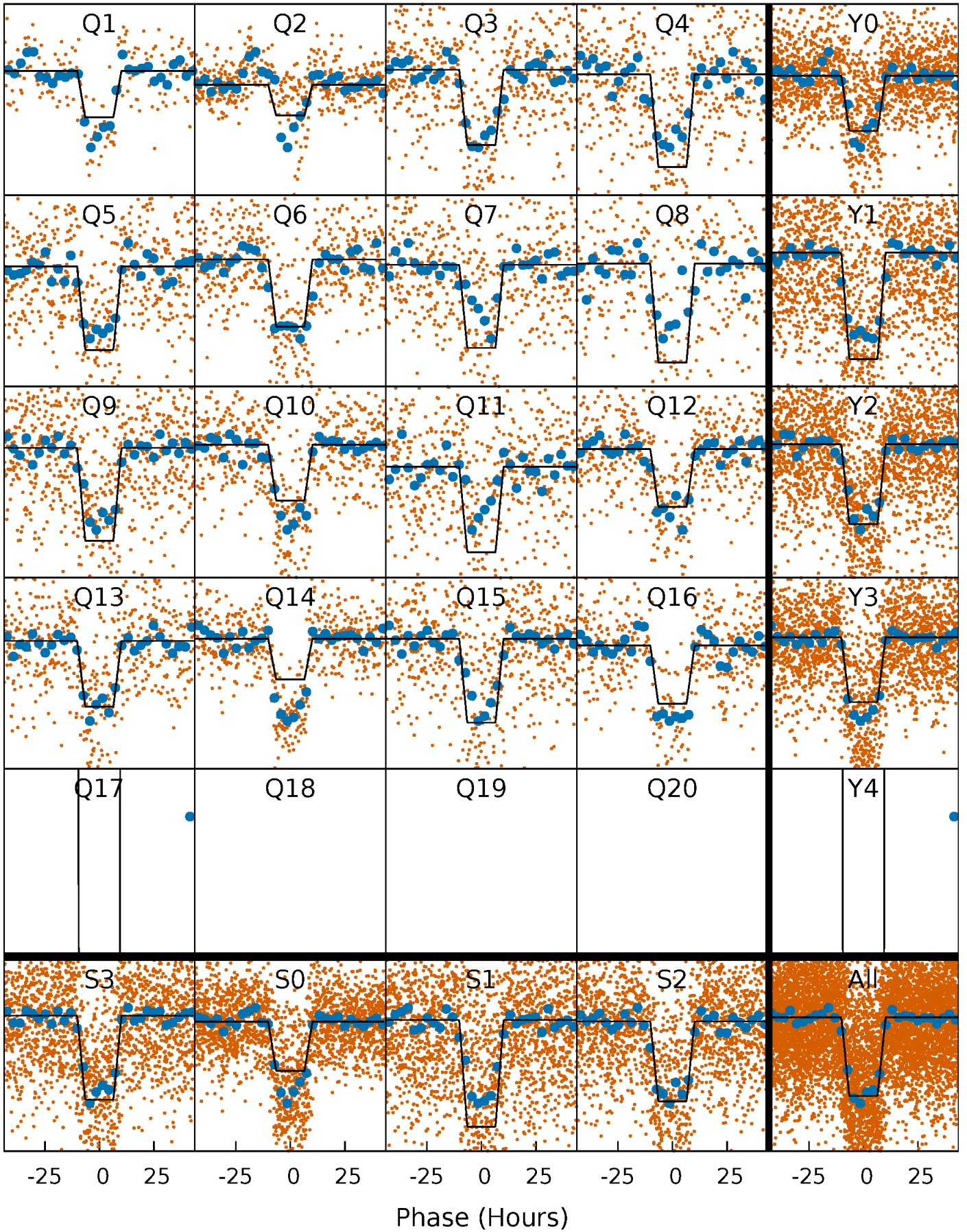
DV Quarter-Phased Transit Curves

TCE 006307521-01 P= 29.744936 Days $T_0=157.388555$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

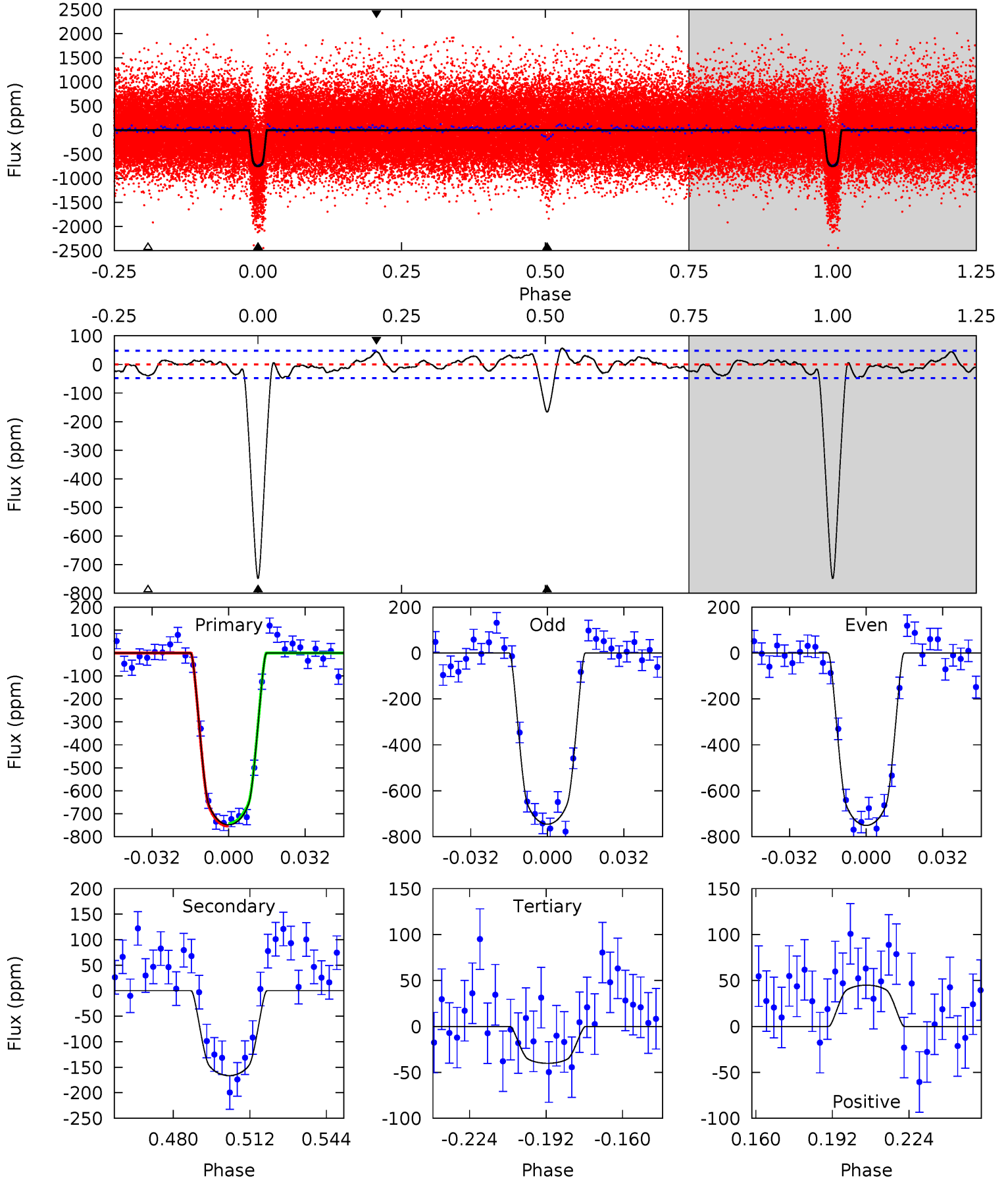
TCE 006307521-01 P= 29.745196 Days $T_0=157.388577$ (BKJD)



DV Model-Shift Uniqueness Test

006307521-01, P = 29.744936 Days, E = 127.643619 Days

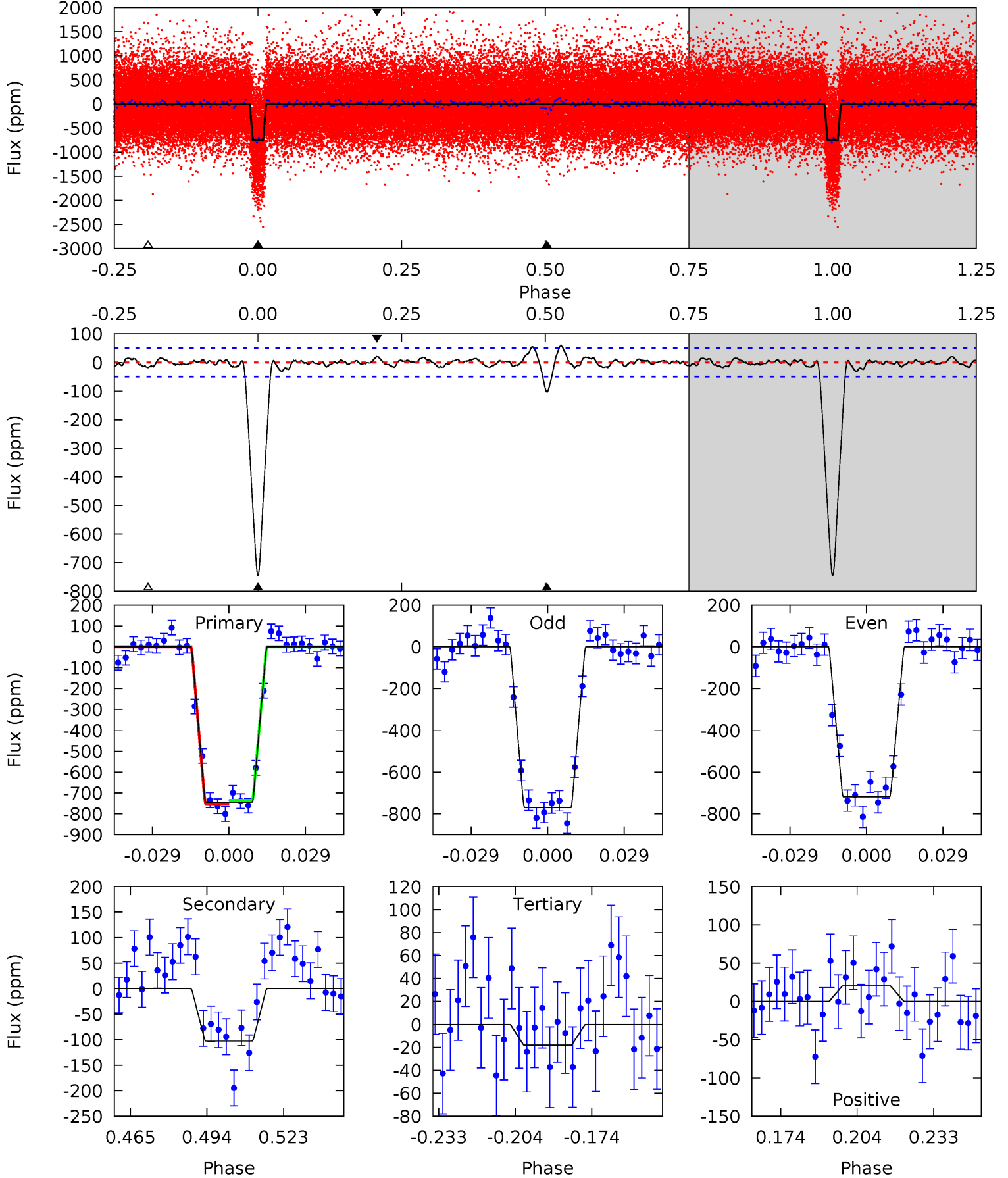
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
74.8	16.6	4.02	4.49	4.80	2.14	1.88	70.8	70.3	12.6	12.1	0.27	1.06	0.07	0.51



Alt Model-Shift Uniqueness Test

006307521-01, P = 29.745196 Days, E = 127.643381 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
72.7	10.0	1.77	2.01	4.82	2.18	0.99	70.9	70.7	8.25	8.01	2.54	1.07	0.07	0.83



Stellar Parameters For KIC 006307521

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5334^{+80}_{-80}	$4.372^{+0.127}_{-0.104}$	$0.160^{+0.150}_{-0.100}$	$1.004^{+0.141}_{-0.141}$	$0.865^{+0.064}_{-0.032}$	$1.204^{+0.645}_{-0.356}$
	+1%/-1%	+3%/-2%	+94%/-62%	+14%/-14%	+7%/-4%	+54%/-30%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006307521-01 / KOI 1126.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-166 ± 10	$3.50^{+0.31}_{-0.28}$	778^{+31}_{-33}	3761^{+62}_{-63}	240^{+50}_{-38}
Alt.	-103 ± 10	$3.09^{+0.28}_{-0.25}$	777^{+33}_{-31}	3609^{+84}_{-77}	191^{+40}_{-33}

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

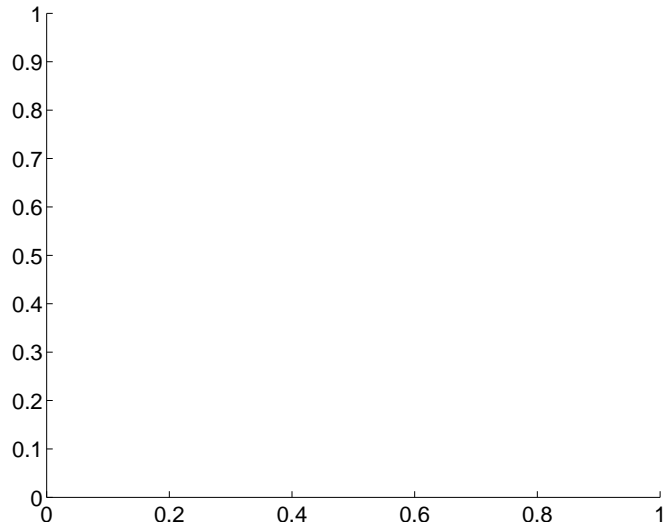
Supplemental centroid analysis for 006307521-01. Kepler magnitude: 15.26. Transit SNR 37.74

There are 0 quarters with good PRF difference image offsets

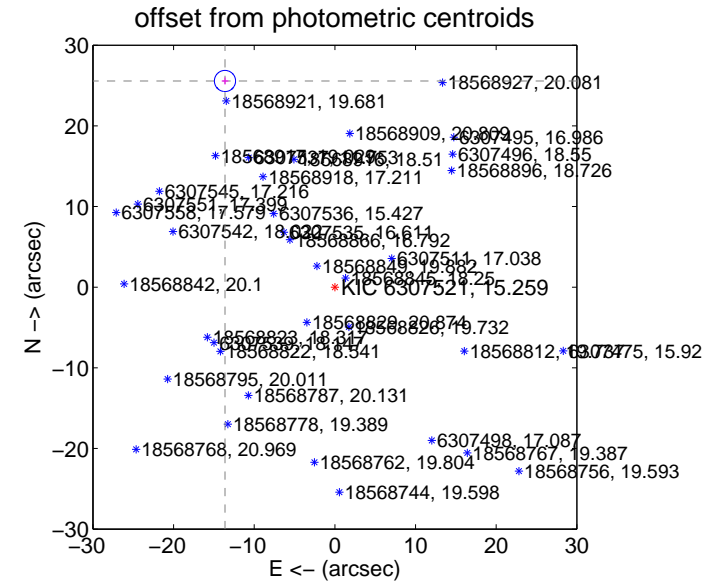
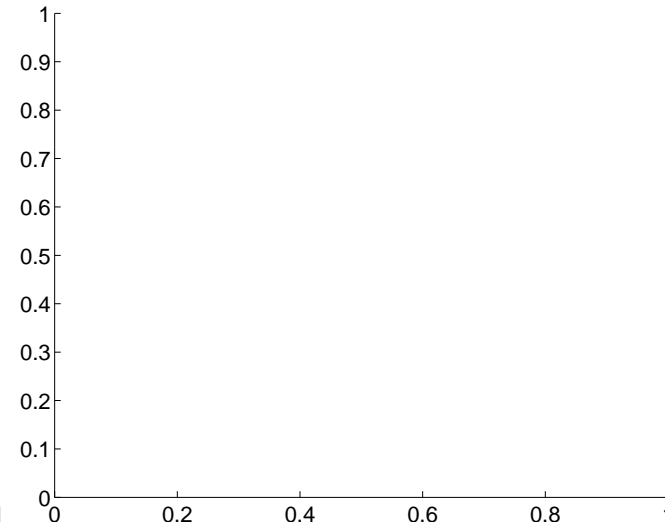
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	28.97 ± 0.44	66.23	13.63 ± 0.41	25.57 ± 0.44

There is no PRF-fit offset from OOT-fit

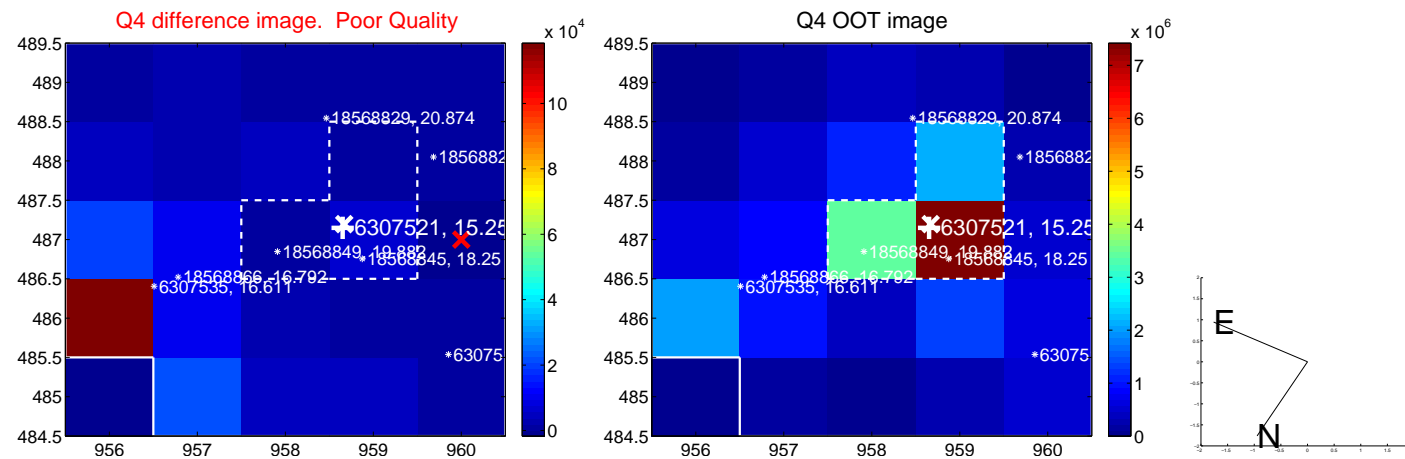
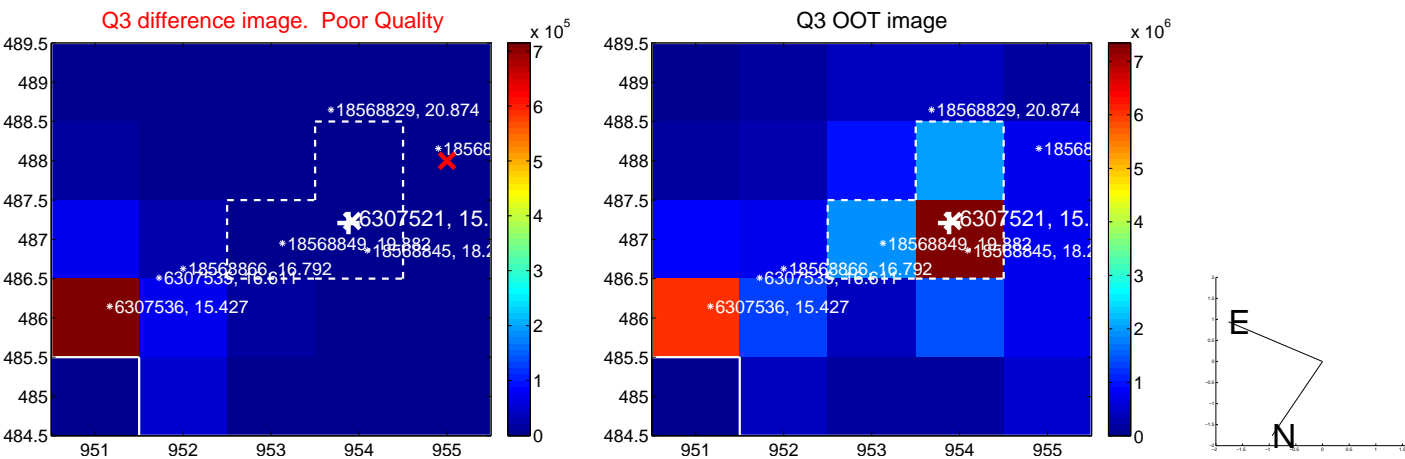
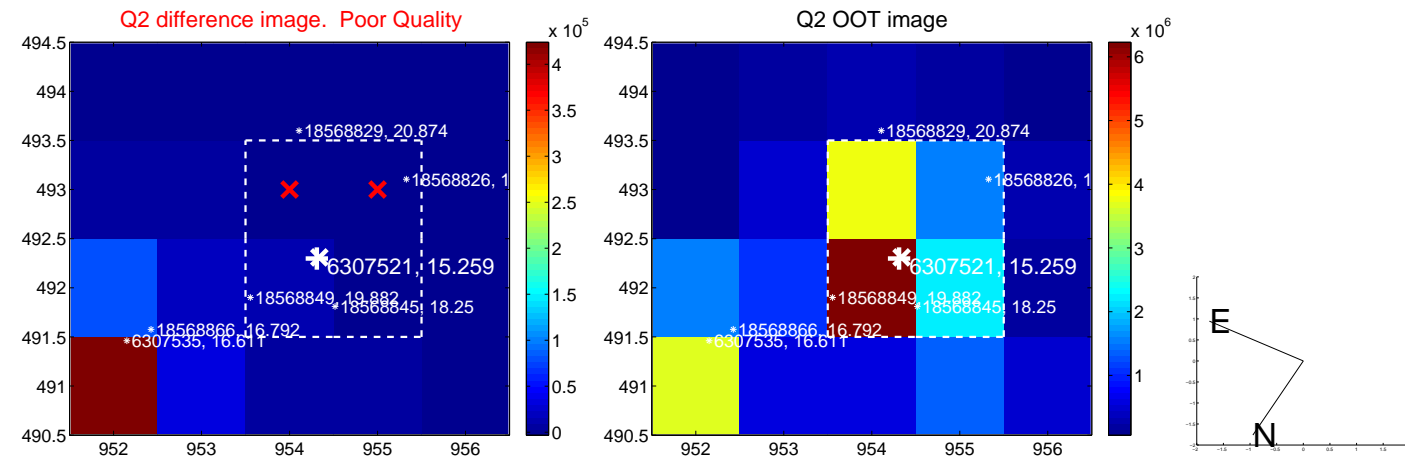
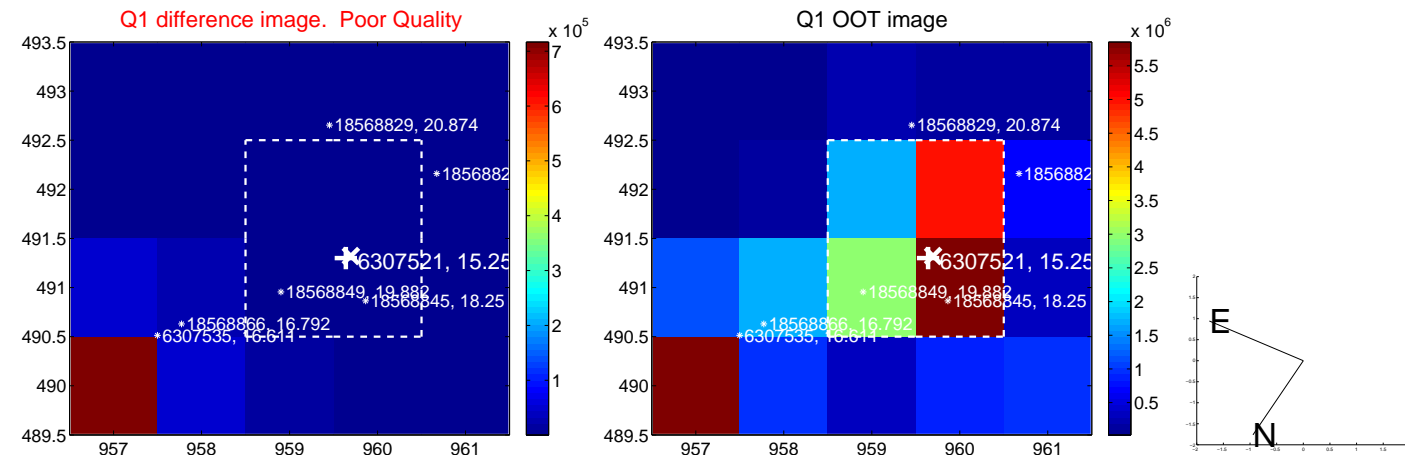


There is no PRF-fit offset from KIC

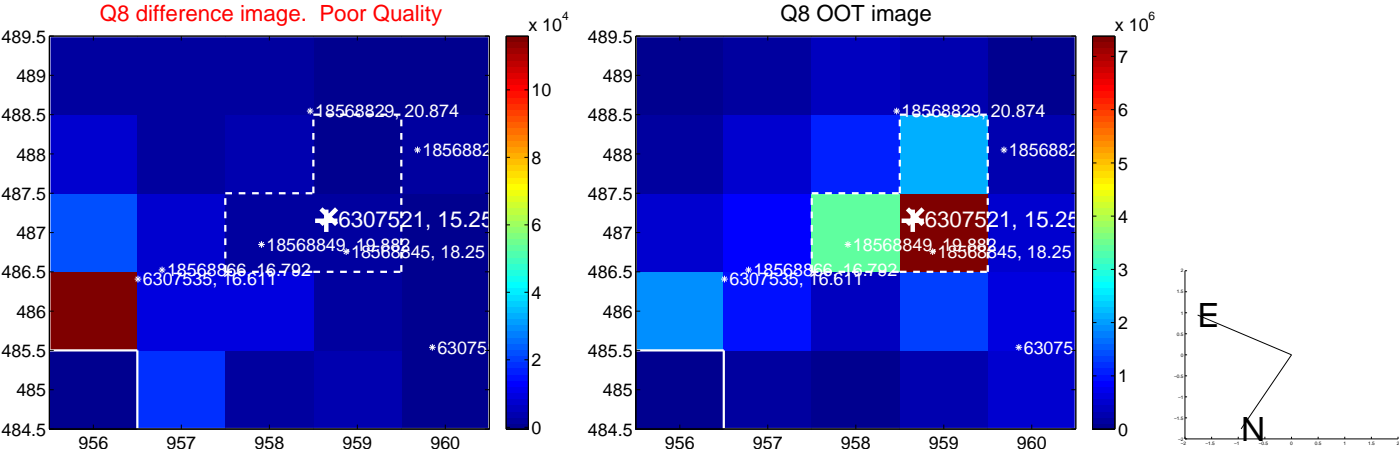
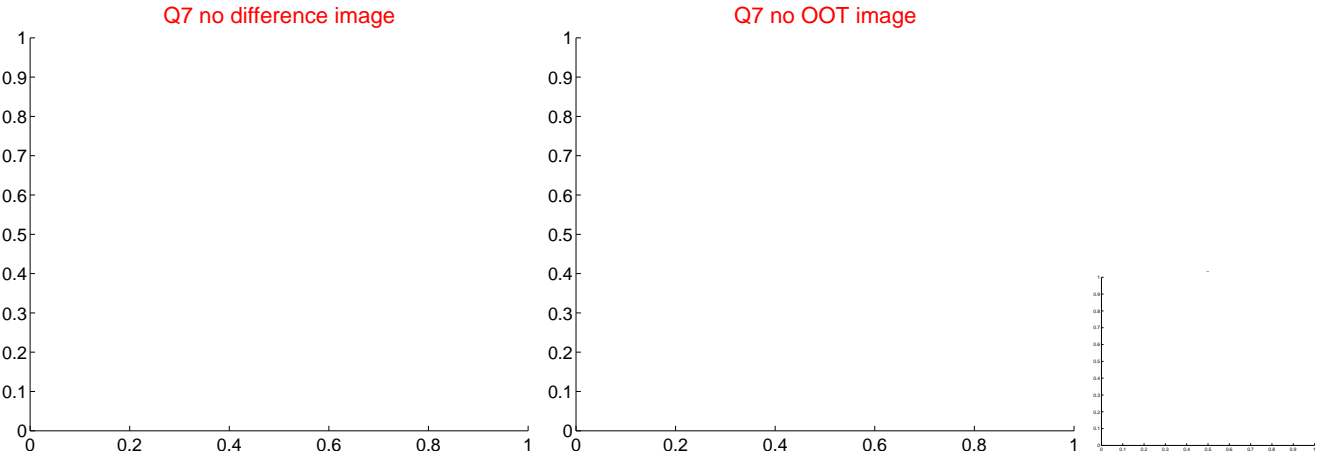
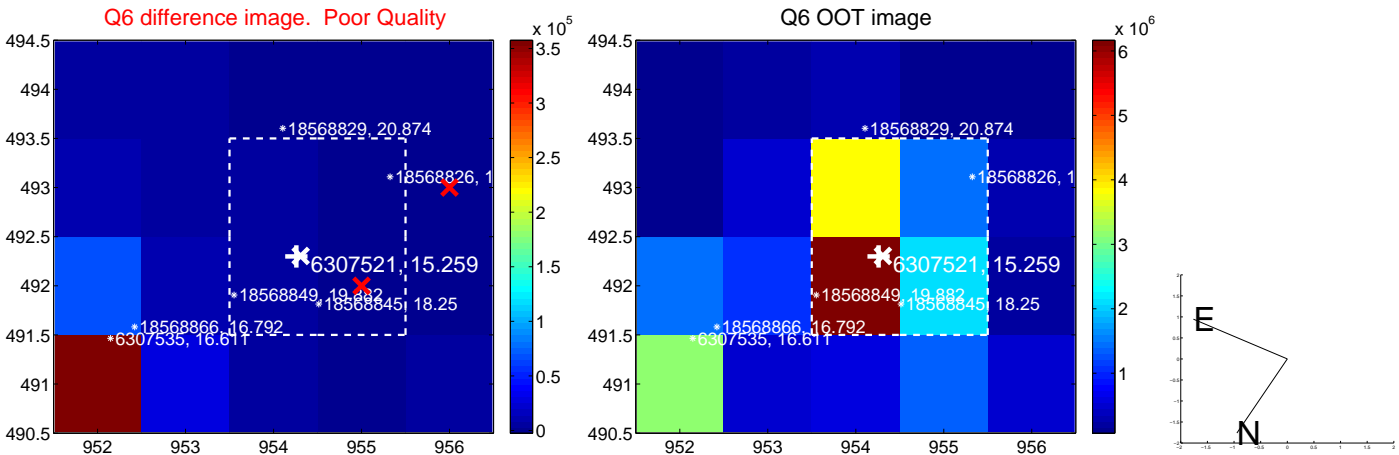
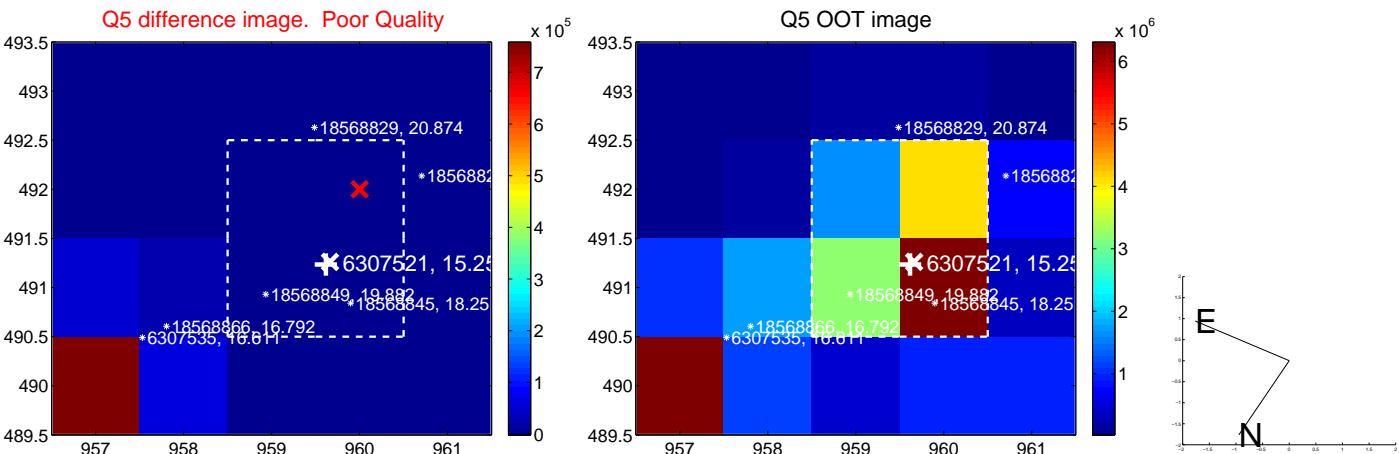


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

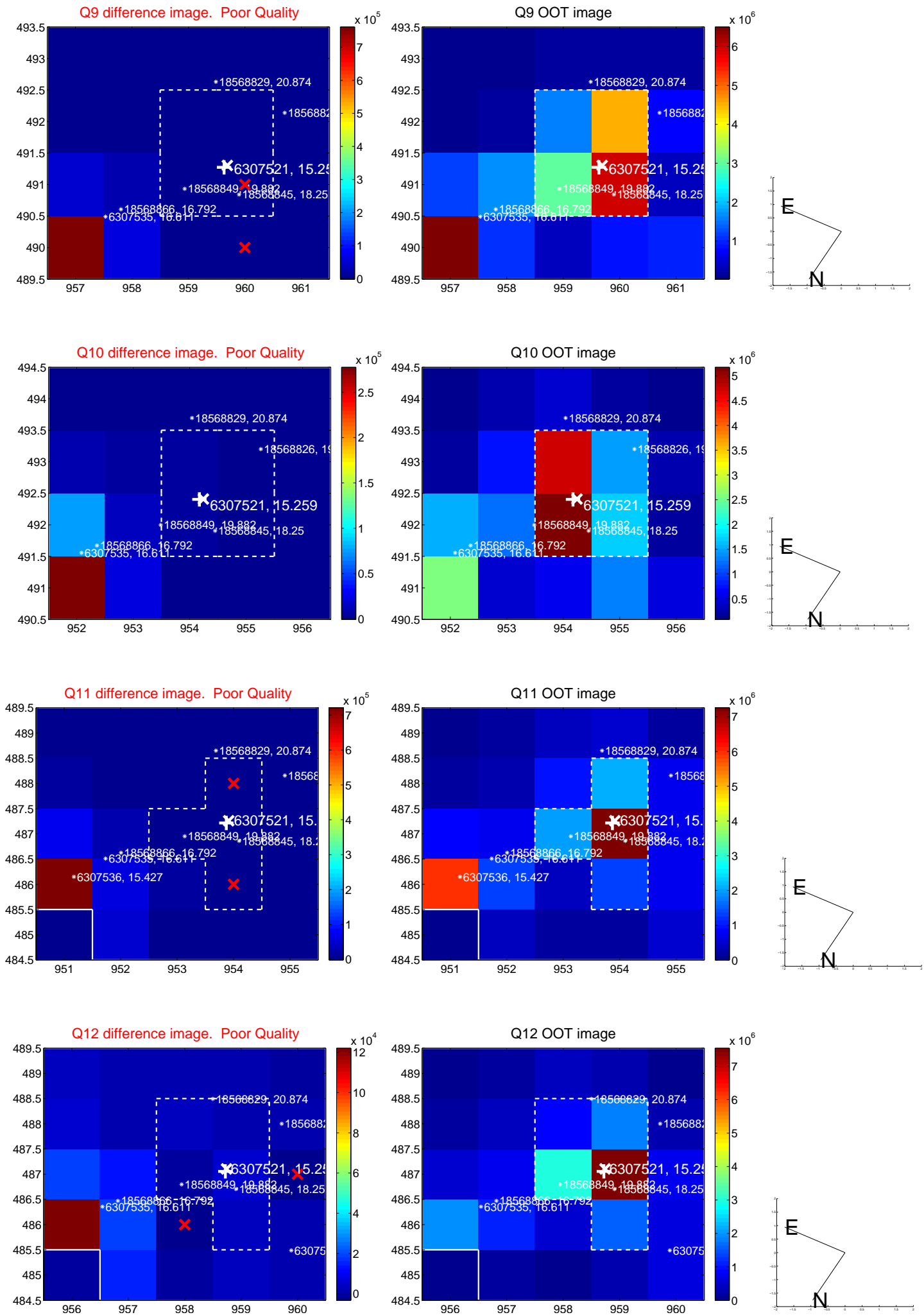
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



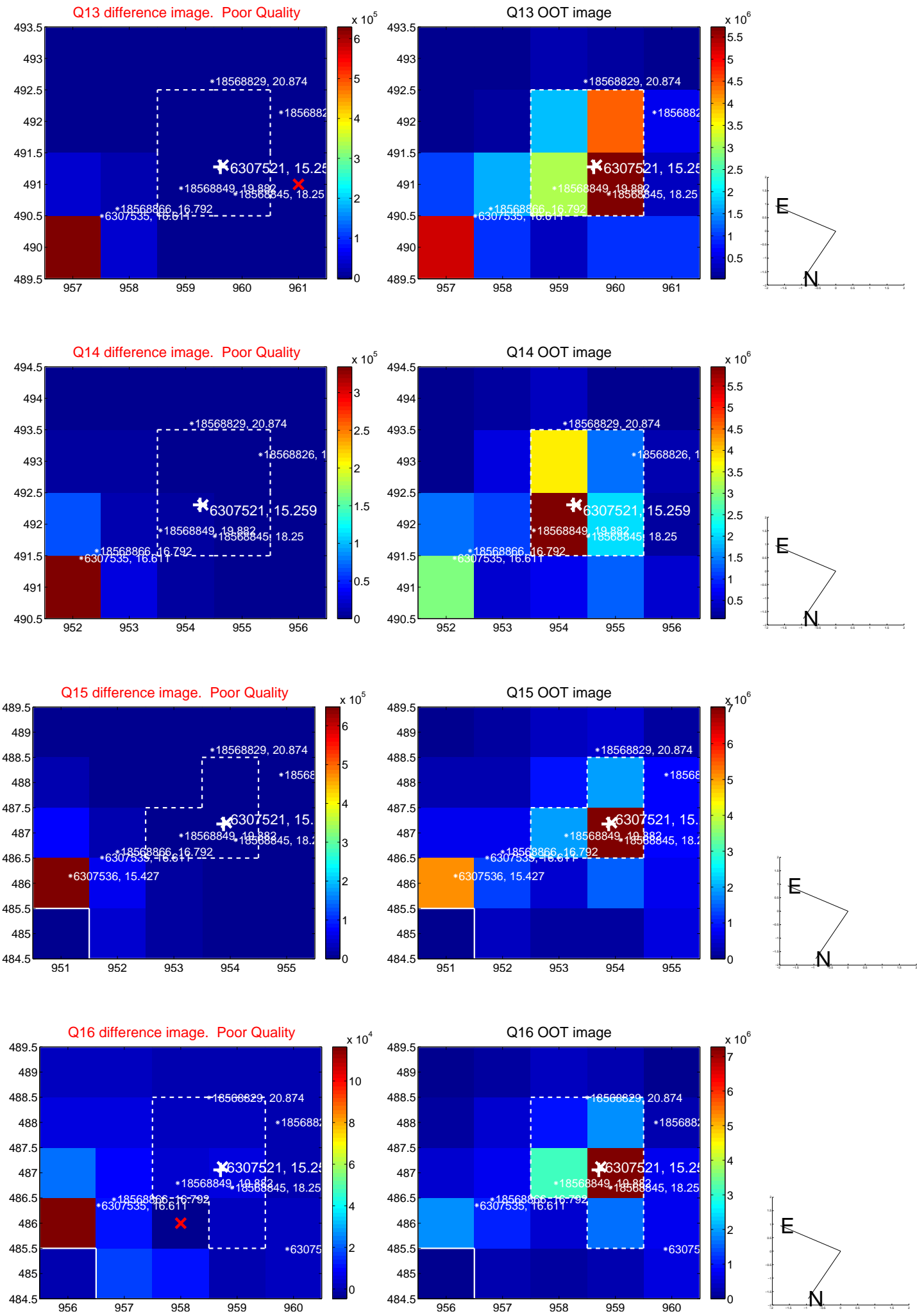
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



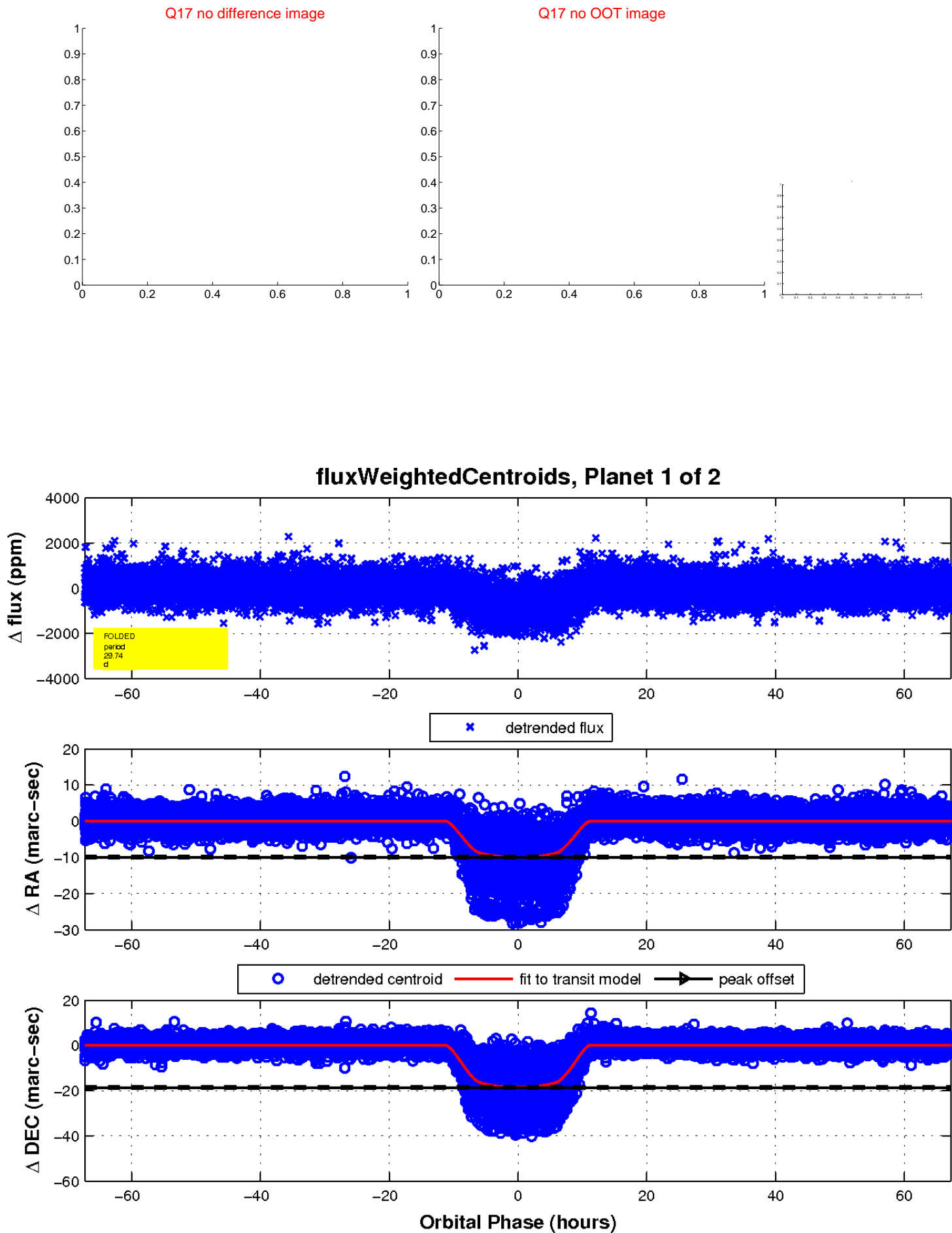
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

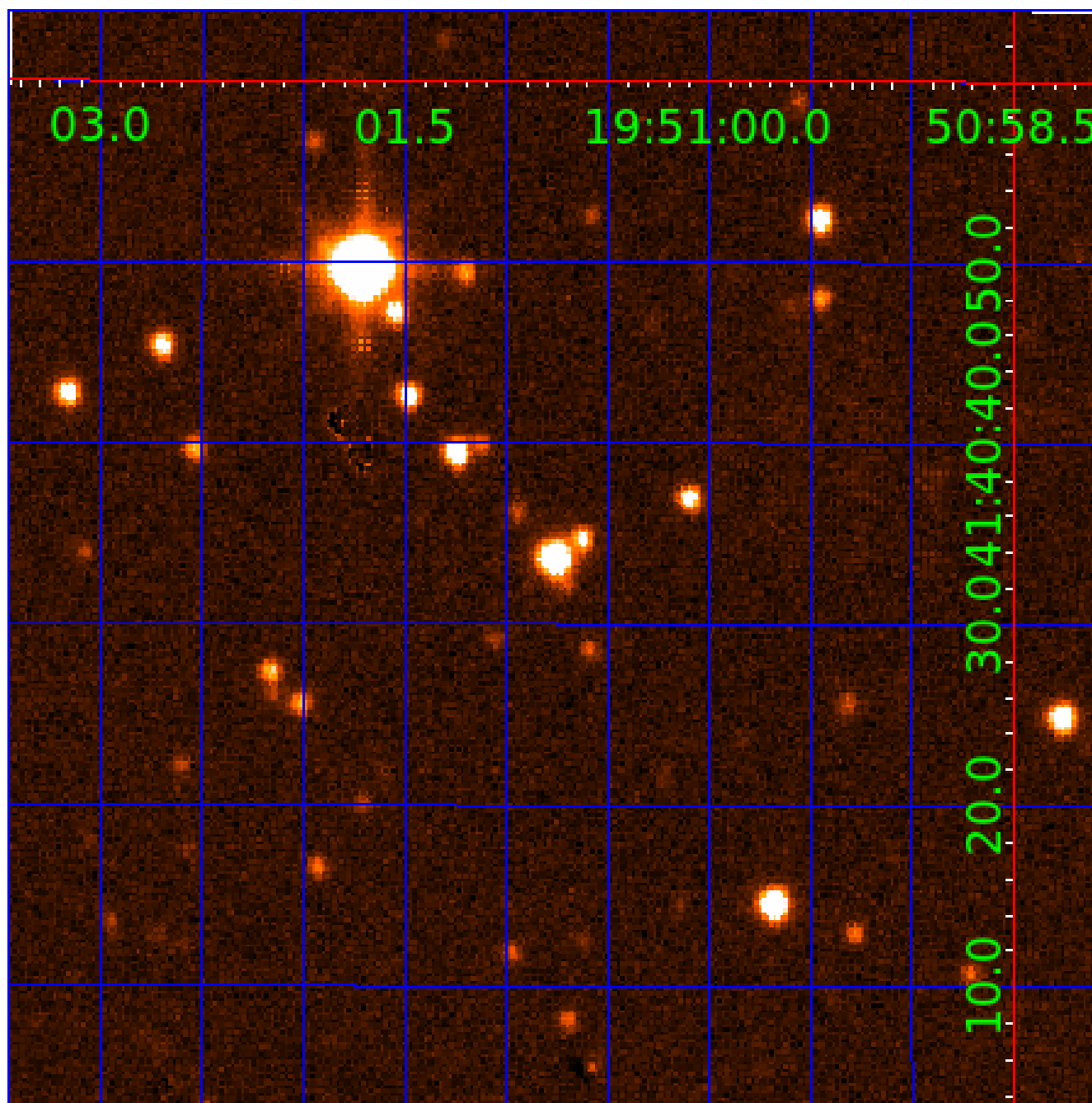


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006307521

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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006307521-02	OBS	1126.02	237.961816	350.845315	766.6	22.698	11.0	12.0	1.00	5334	4.09	1.42

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006307521-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
006307521-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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.

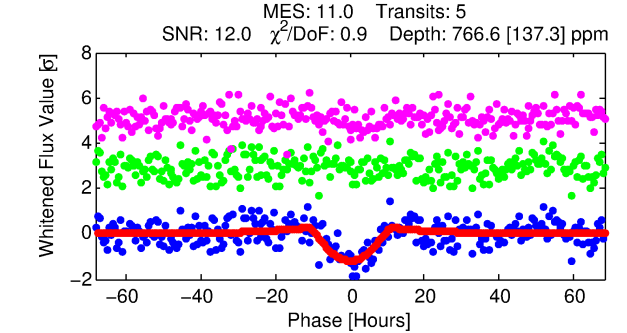
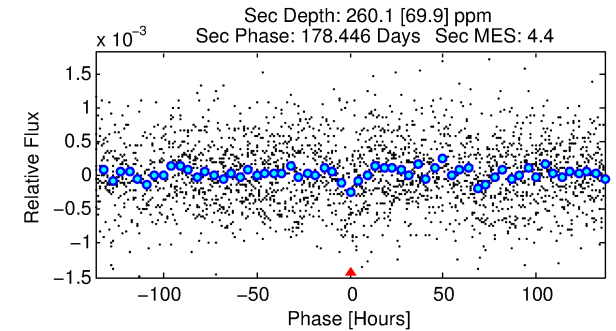
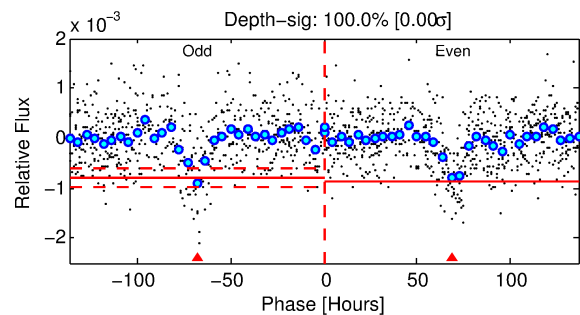
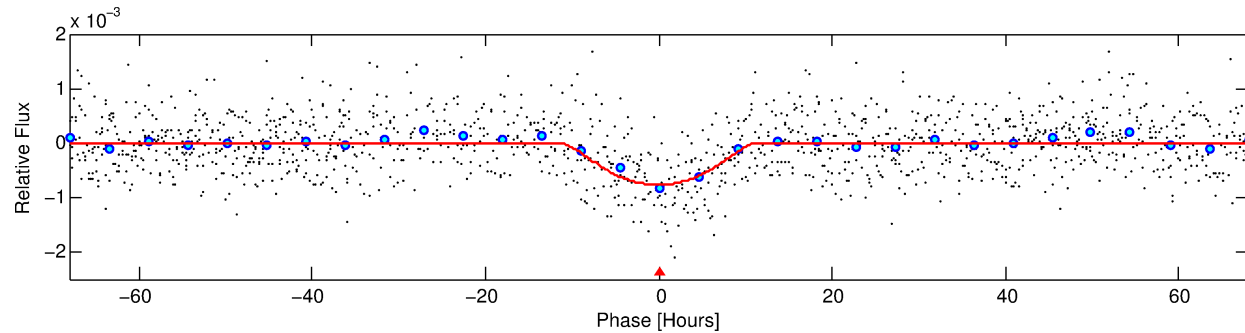
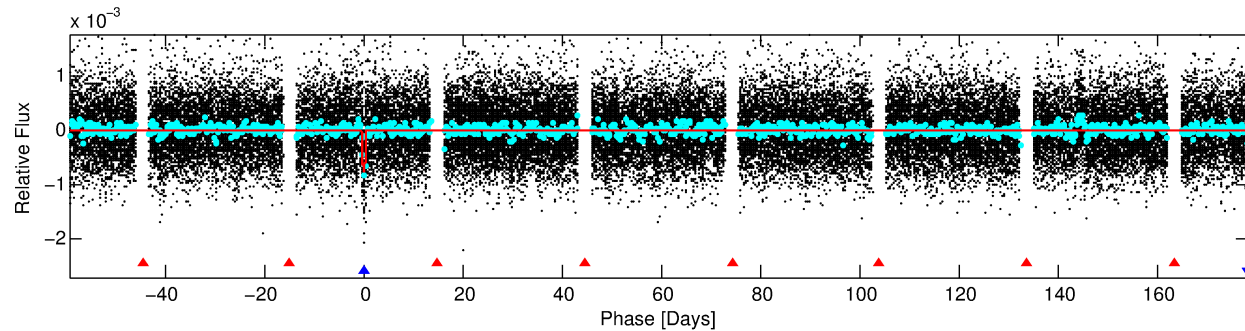
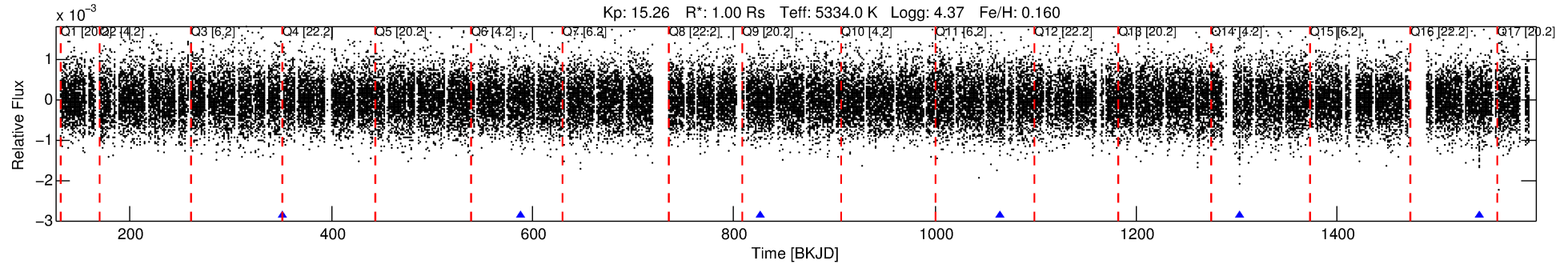
Ephemeris Match Information For 006307521-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
006307521-02	6307521	1120.01	6307537	8:1	19.3	2	4	11.75	15.26	90.10	Direct-PRF	0	4.63	0.19

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 6307521 Candidate: 2 of 2 Period: 237.962 d
KOI: K01126 Corr: No Ephemeris Match



DV Fit Results:

Period = 237.96182 [0.01414] d
Epoch = 350.8453 [0.0459] BKJD
Rp/R* = 0.0373 [0.0193]
a/R* = 28.37 [7.78]
b = 0.98 [0.04]
Seff = 1.42 [0.32]
Teq = 279 [16] K
Rp = 4.09 [2.19] Re
a = 0.7165 [0.0968] AU
Ag = 4398.91 [4788.60] [0.92σ]
Teffp = 3508 [937] K [3.45σ]

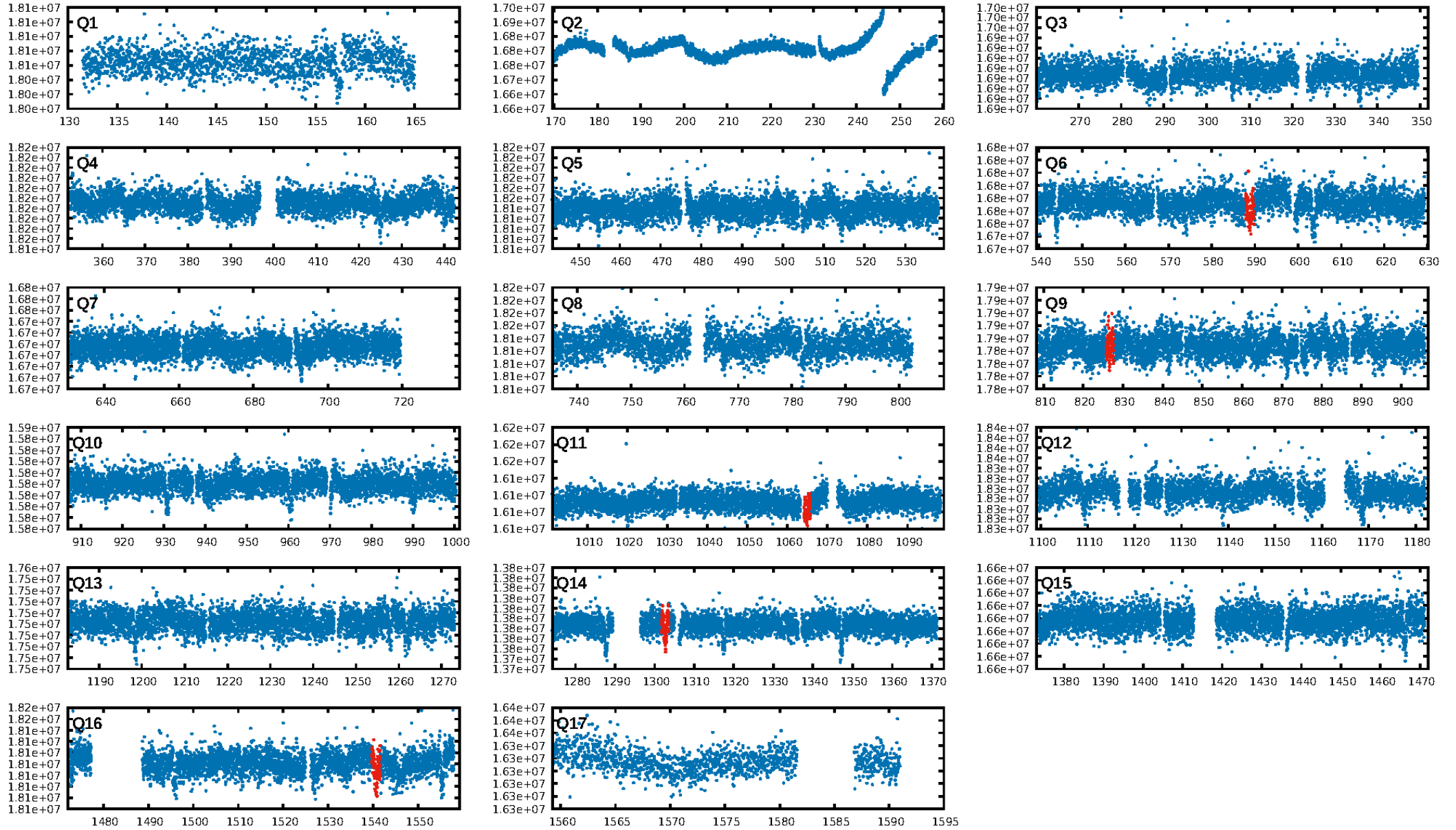
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [156.63σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.69e-13
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.03573
Centroid-sig: 0.0%
Centroid-so: 12.276 arcsec [8.70σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [4/4]

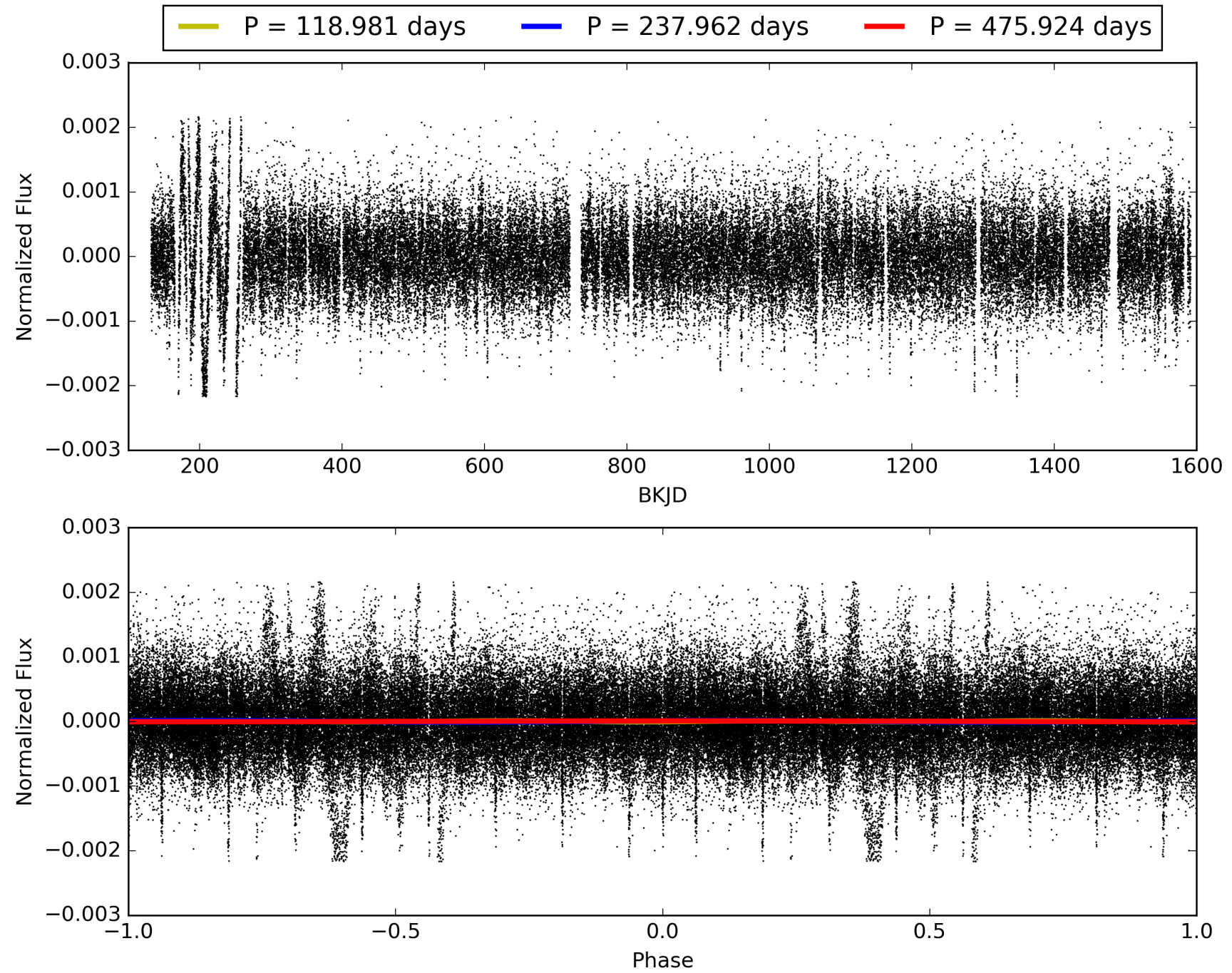
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:35:24 Z

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

TCE 006307521-02, PDC Light Curves

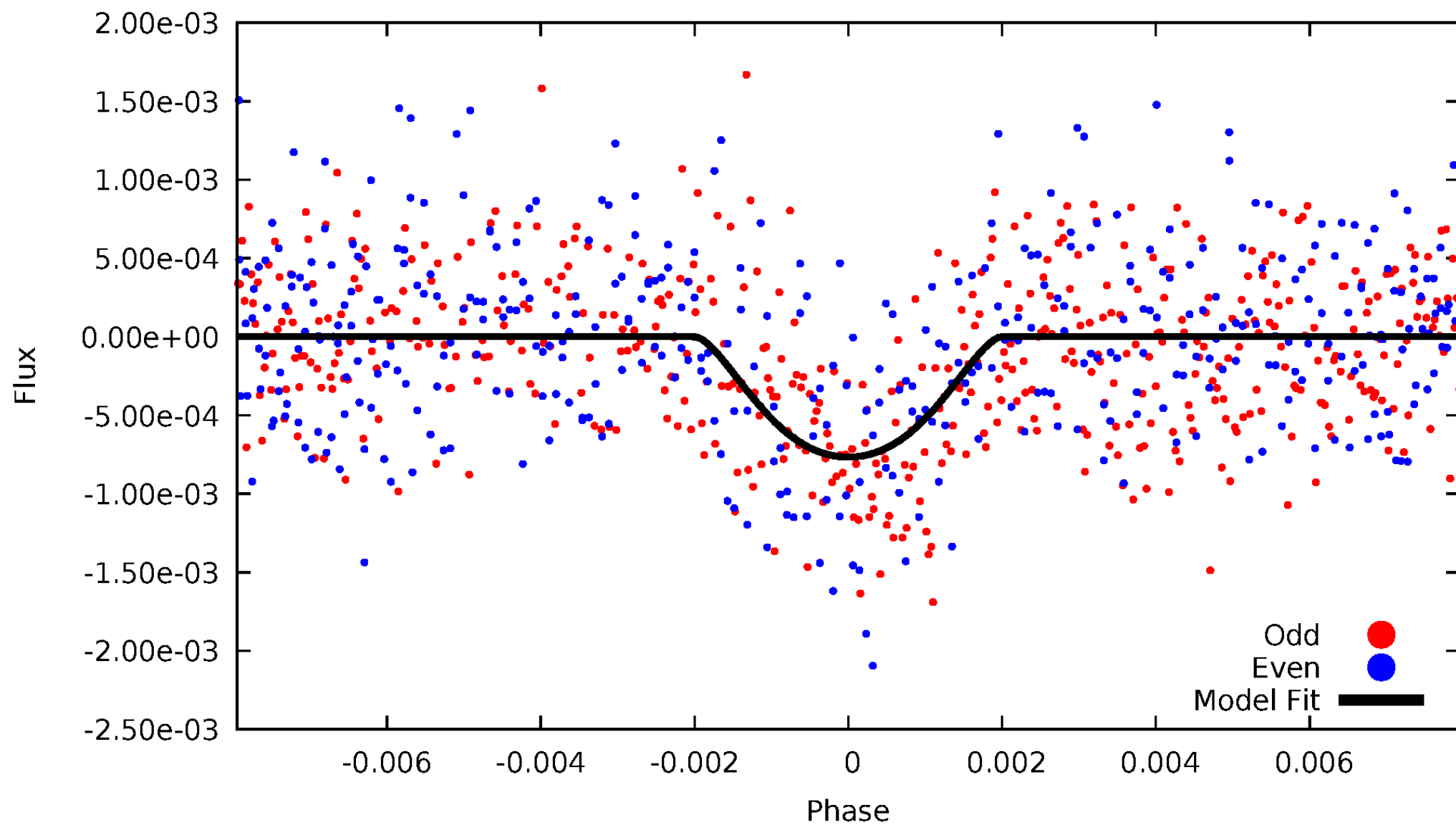


TCE 006307521-02



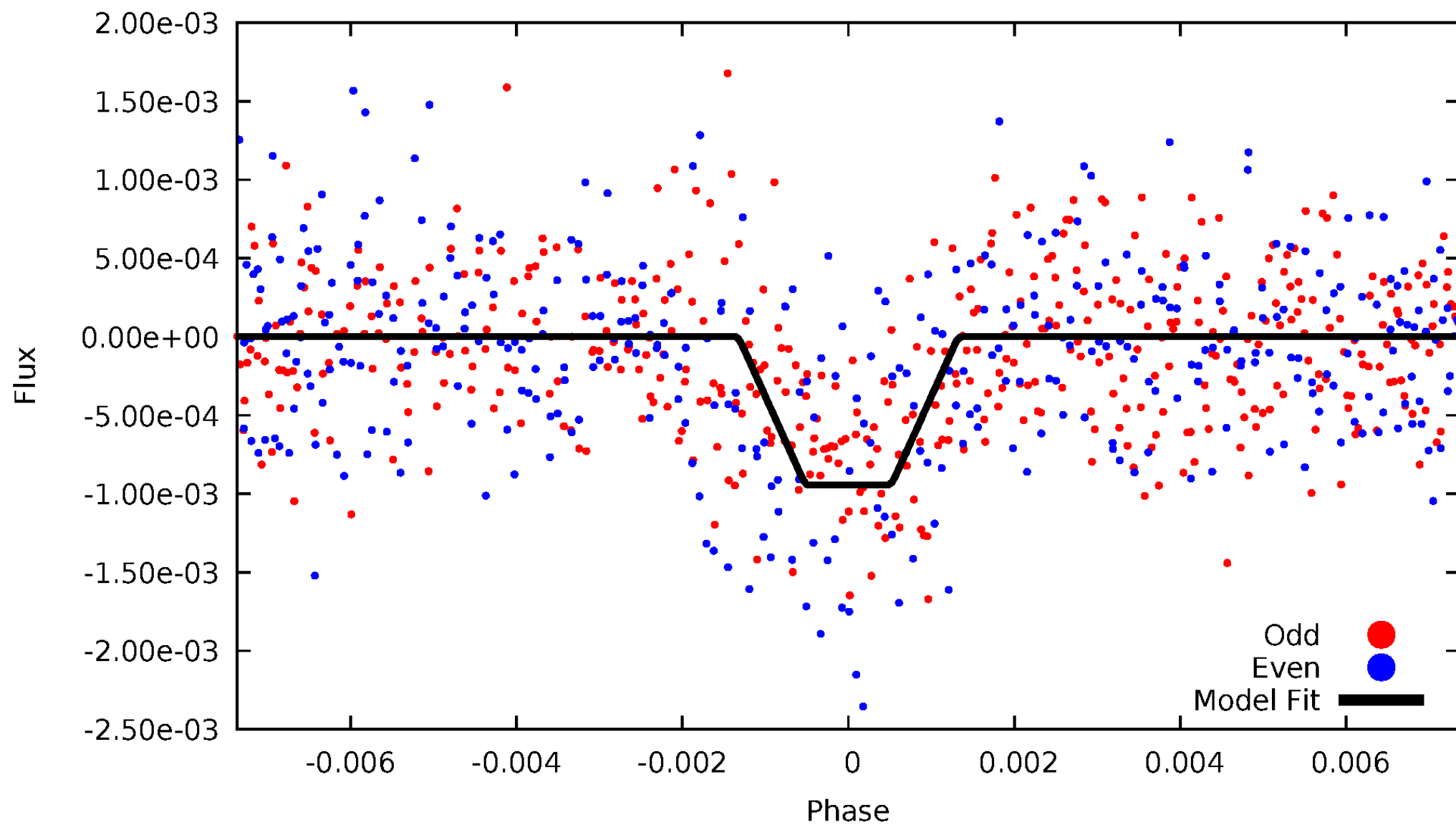
DV Odd/Even

TCE 006307521-02



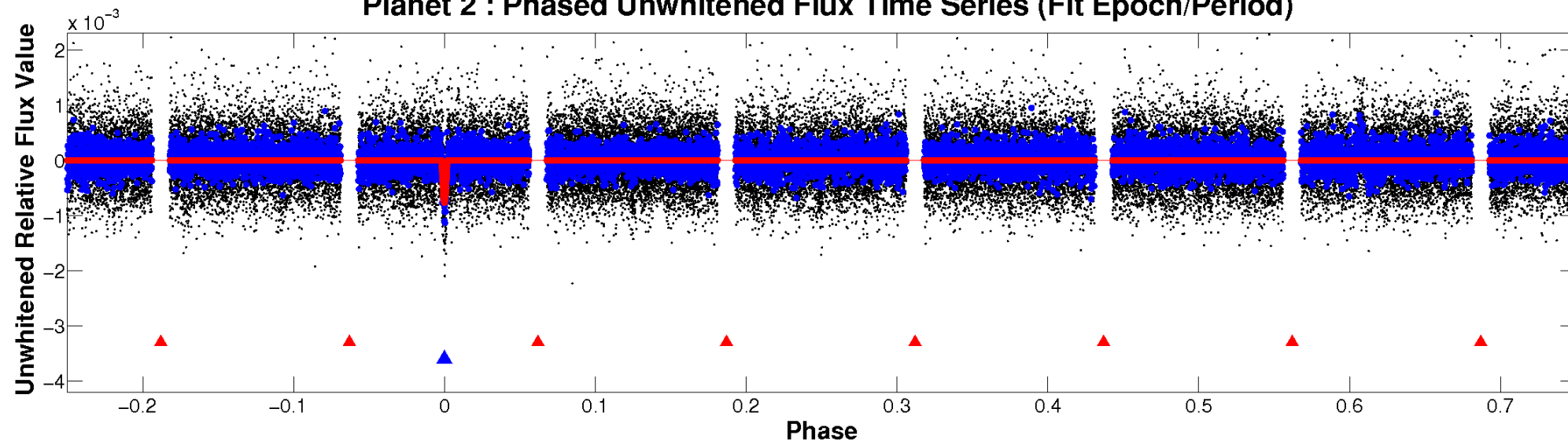
ALT Odd/Even

TCE 006307521-02

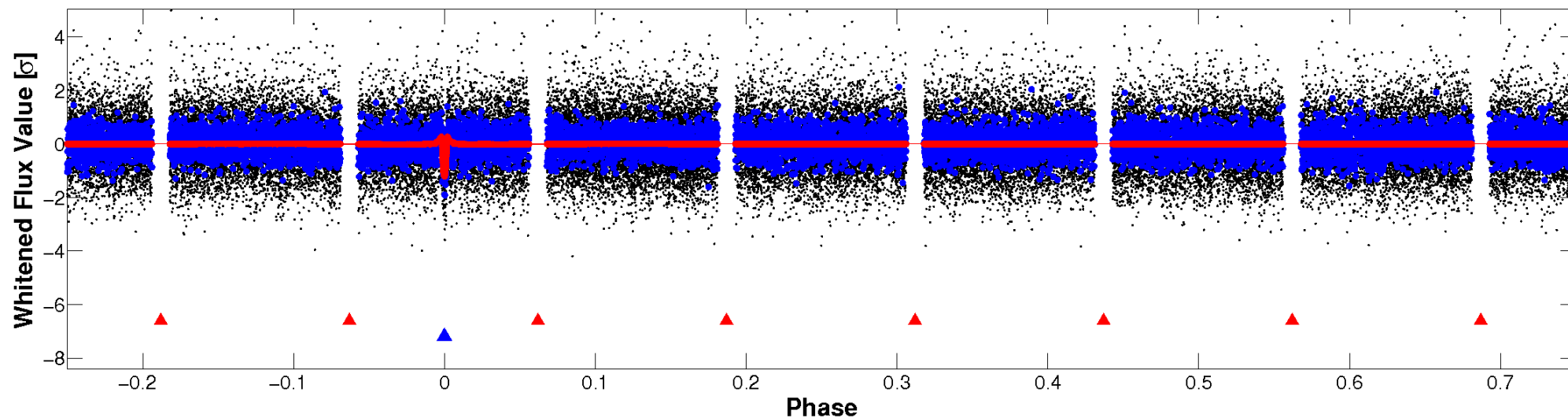


Non-Whitened Vs. Whitened Light Curve

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

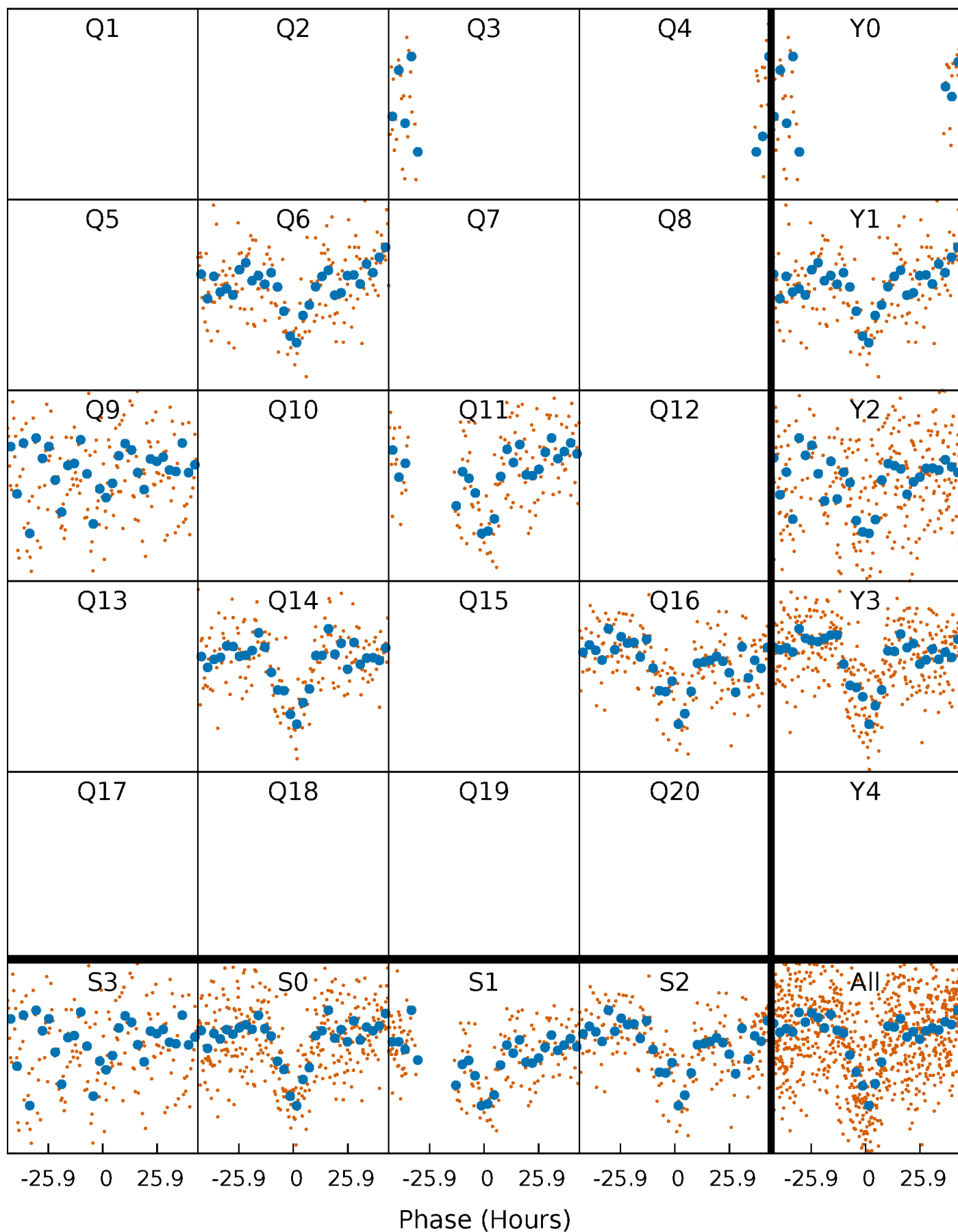


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



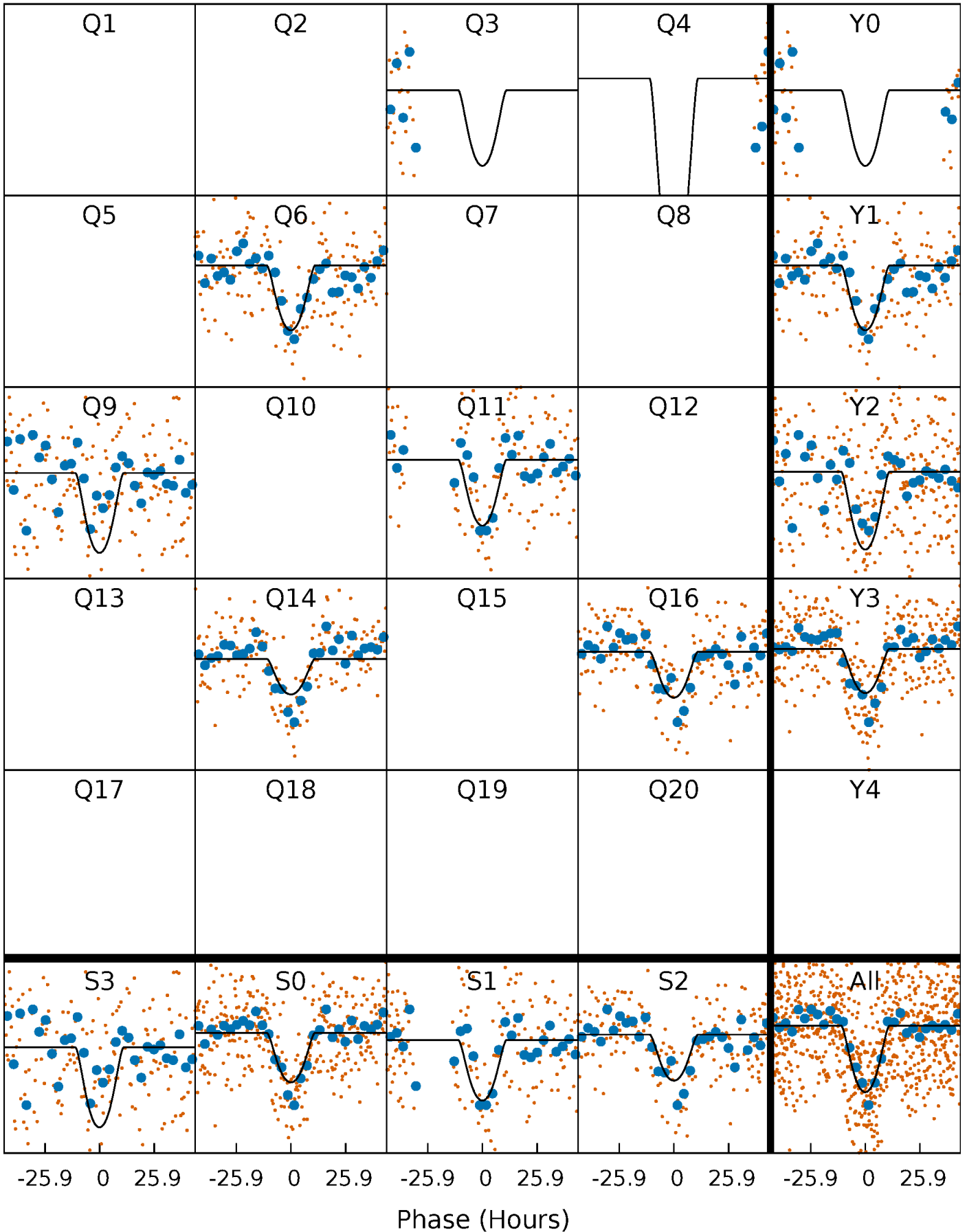
PDC Quarter-Phased Transit Curves

TCE 006307521-02 P=237.961816 Days $T_0=350.845315$ (BKJD)



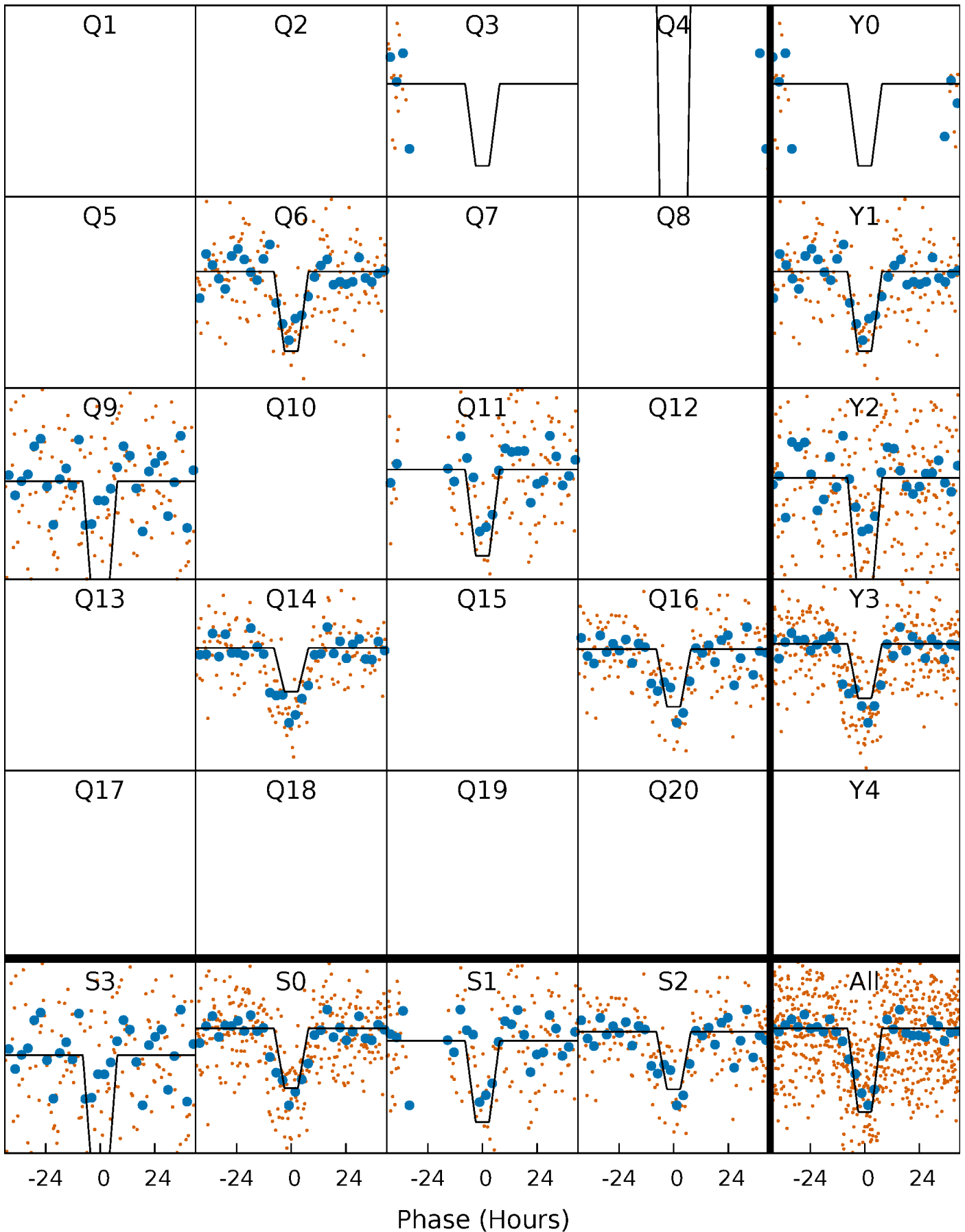
DV Quarter-Phased Transit Curves

TCE 006307521-02 $P=237.961816$ Days $T_0=350.845315$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

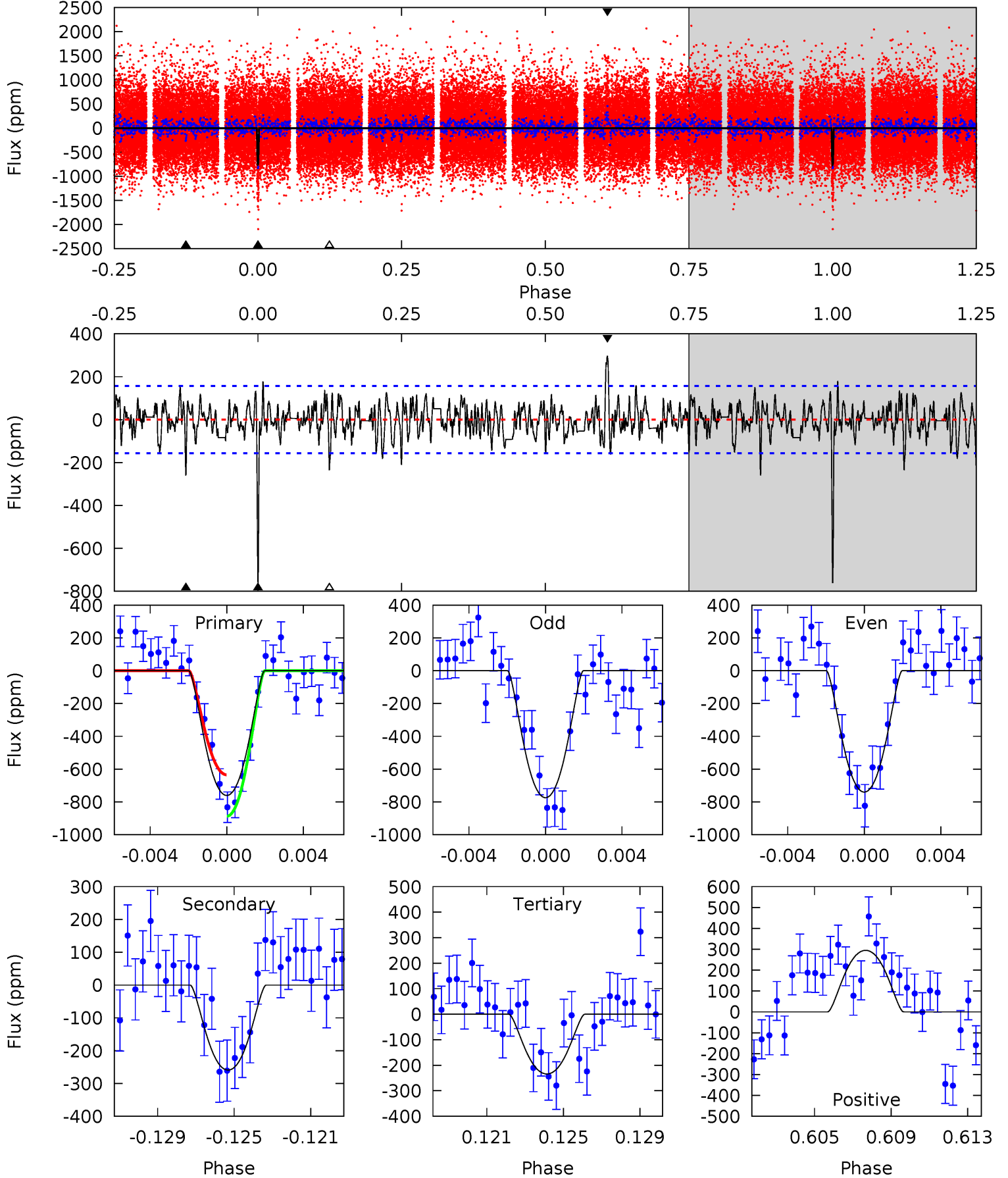
TCE 006307521-02 $P=237.962429$ Days $T_0=350.875366$ (BKJD)



DV Model-Shift Uniqueness Test

006307521-02, P = 237.961816 Days, E = 112.883499 Days

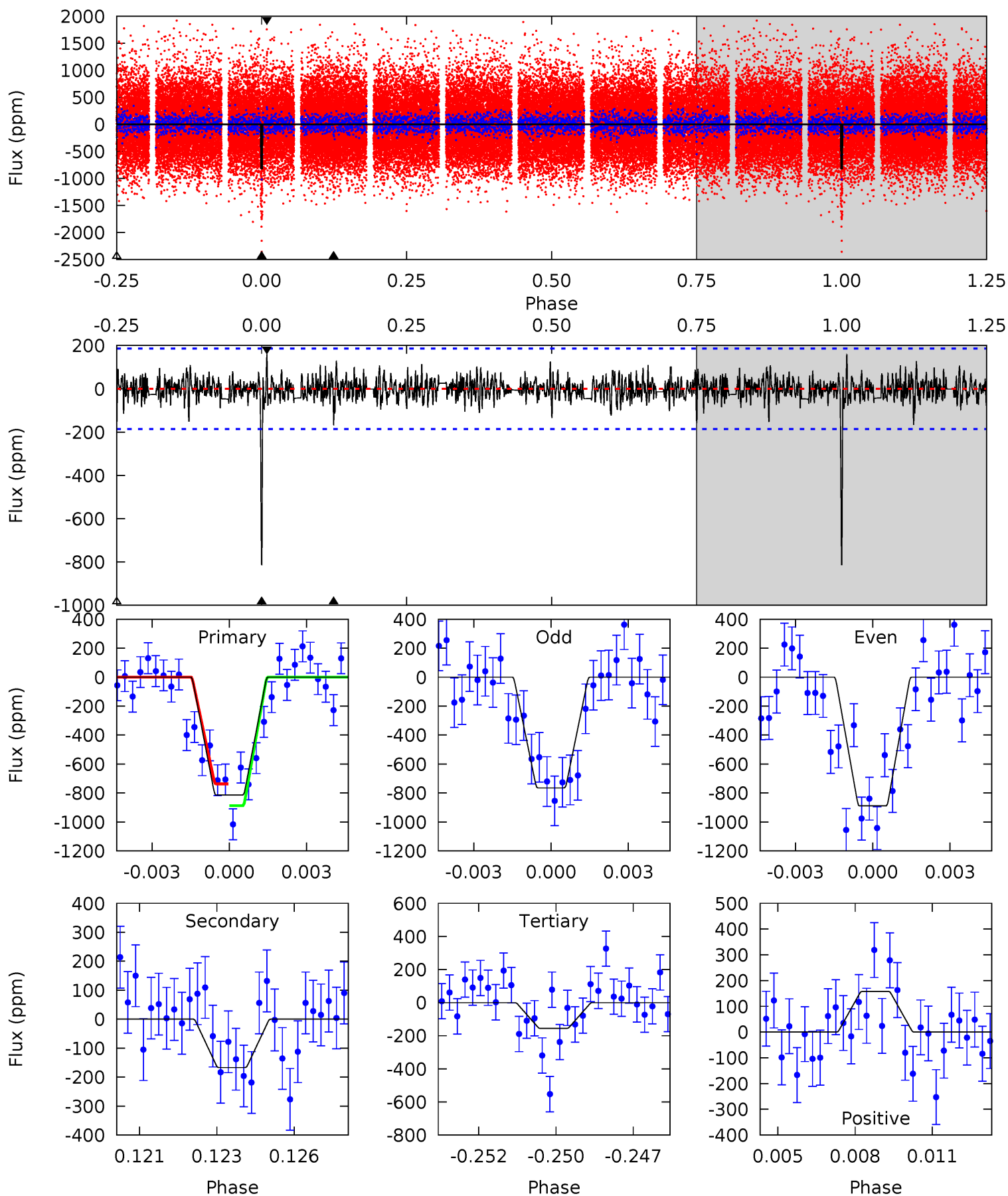
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.2	8.58	7.75	9.76	5.20	2.88	2.05	17.4	15.4	0.83	-1.18	0.55	1.06	0.28	4.19



Alt Model-Shift Uniqueness Test

006307521-02, P = 237.962429 Days, E = 112.912937 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.1	4.72	4.41	4.46	5.27	3.00	1.11	18.7	18.6	0.32	0.27	1.73	1.12	0.16	2.14



Stellar Parameters For KIC 006307521

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5334^{+80}_{-80}	$4.372^{+0.127}_{-0.104}$	$0.160^{+0.150}_{-0.100}$	$1.004^{+0.141}_{-0.141}$	$0.865^{+0.064}_{-0.032}$	$1.204^{+0.645}_{-0.356}$
	+1%/-1%	+3%/-2%	+94%/-62%	+14%/-14%	+7%/-4%	+54%/-30%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006307521-02 / KOI 1126.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-259 ± 30	$4.01^{+2.38}_{-1.90}$	388^{+16}_{-16}	3851^{+1096}_{-519}	4621^{+11707}_{-2831}
Alt.	-167 ± 35	$3.39^{+2.07}_{-1.82}$	388^{+16}_{-16}	3787^{+1336}_{-557}	4103^{+15268}_{-2612}

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

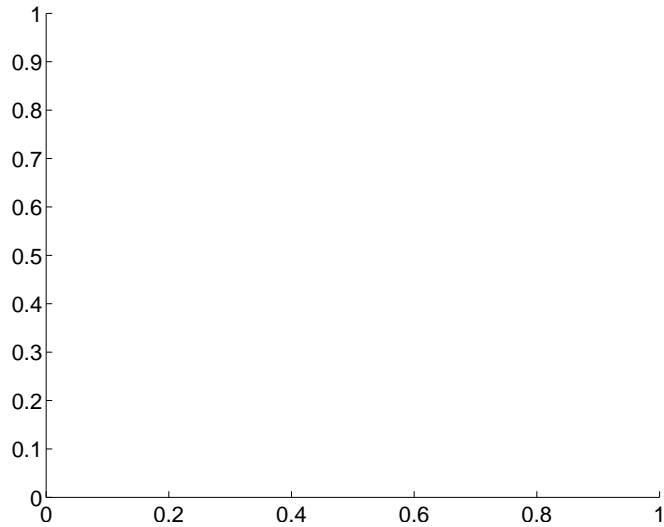
Supplemental centroid analysis for 006307521-02. Kepler magnitude: 15.26. Transit SNR 12.04

There are 0 quarters with good PRF difference image offsets

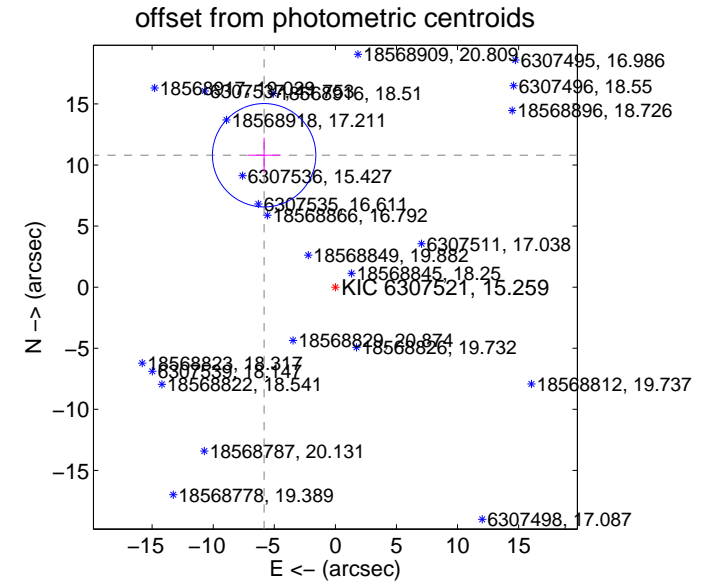
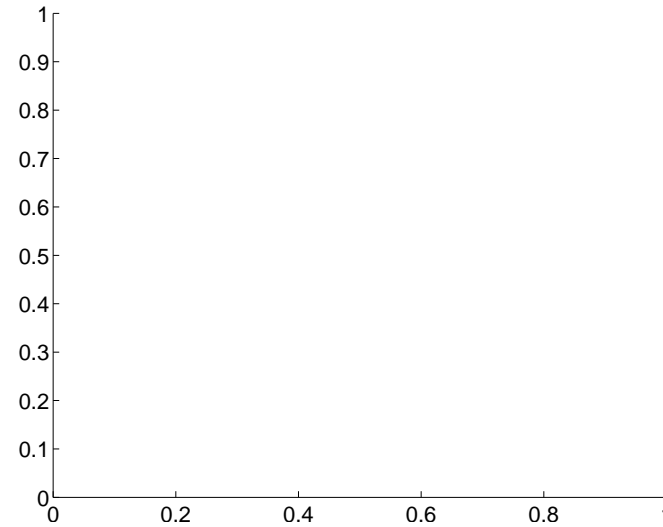
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	12.28 ± 1.41	8.70	5.83 ± 1.32	10.80 ± 1.44

There is no PRF-fit offset from OOT-fit

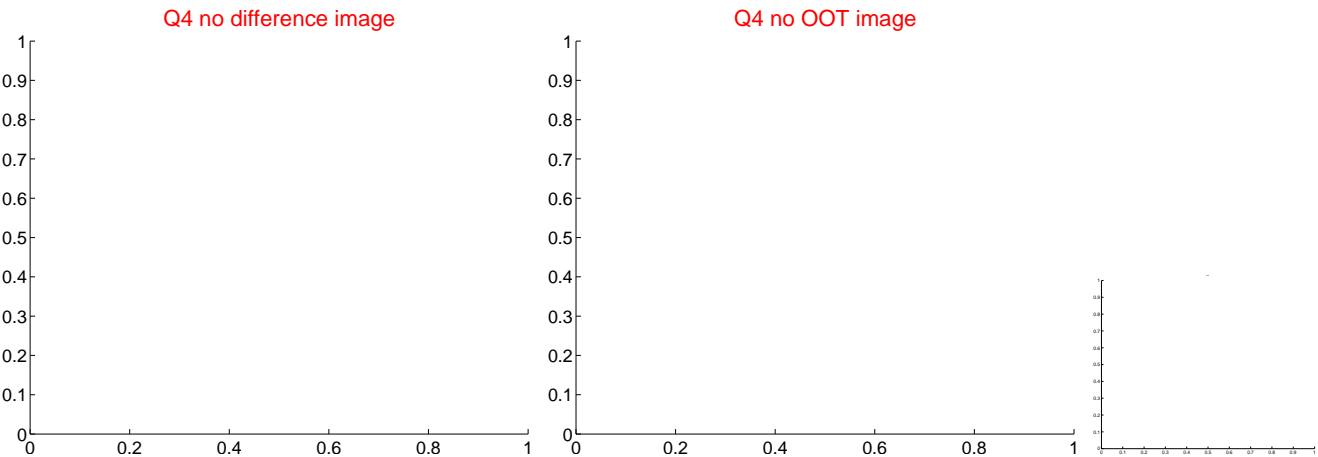
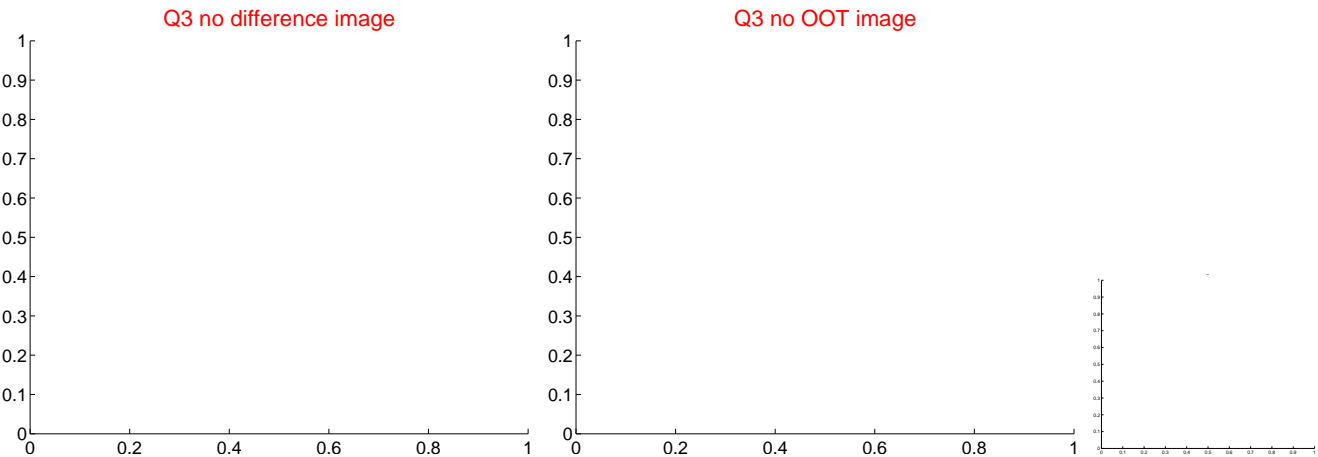
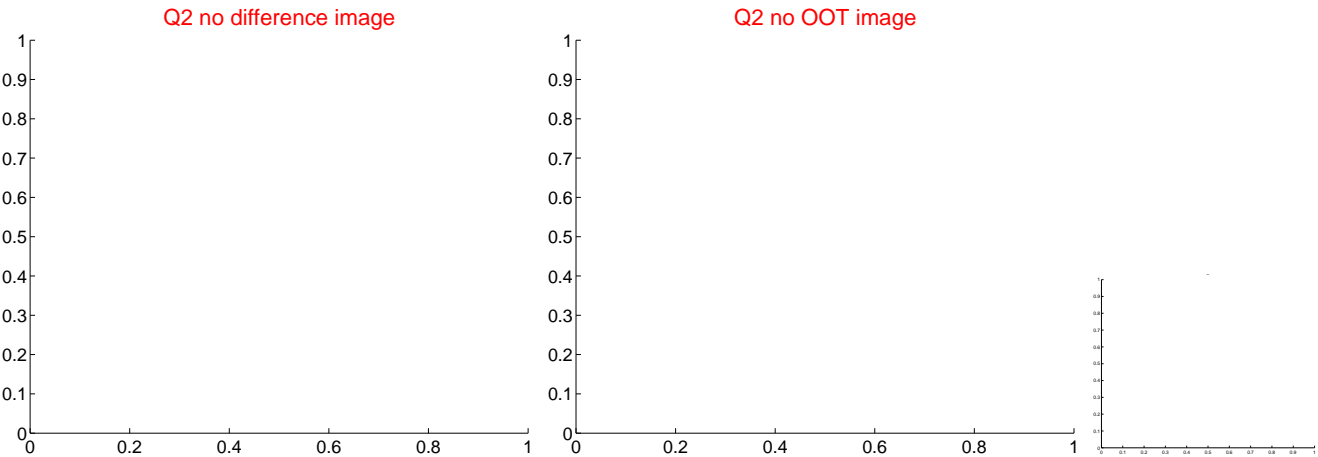
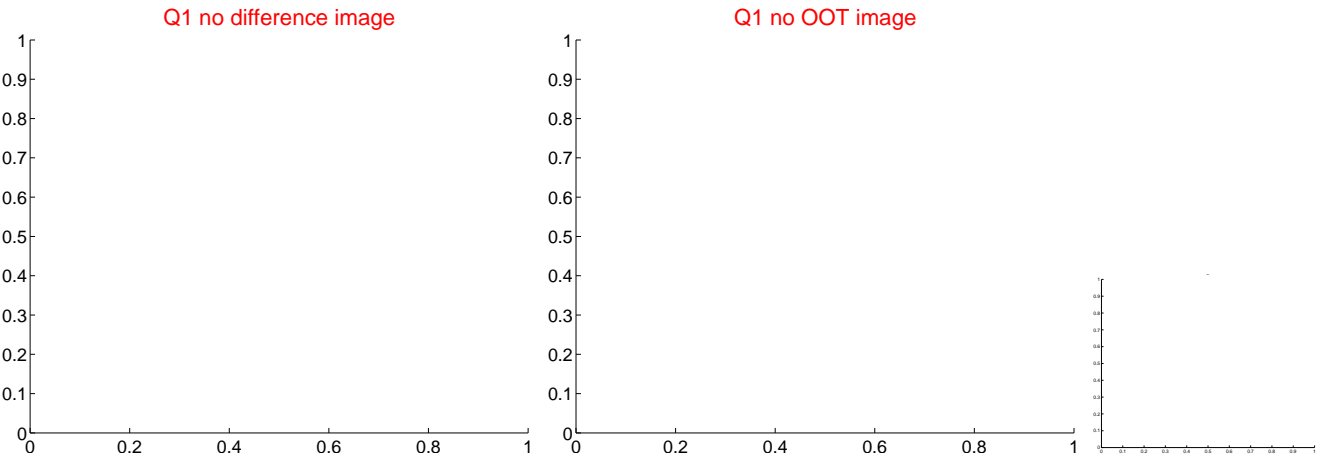


There is no PRF-fit offset from KIC

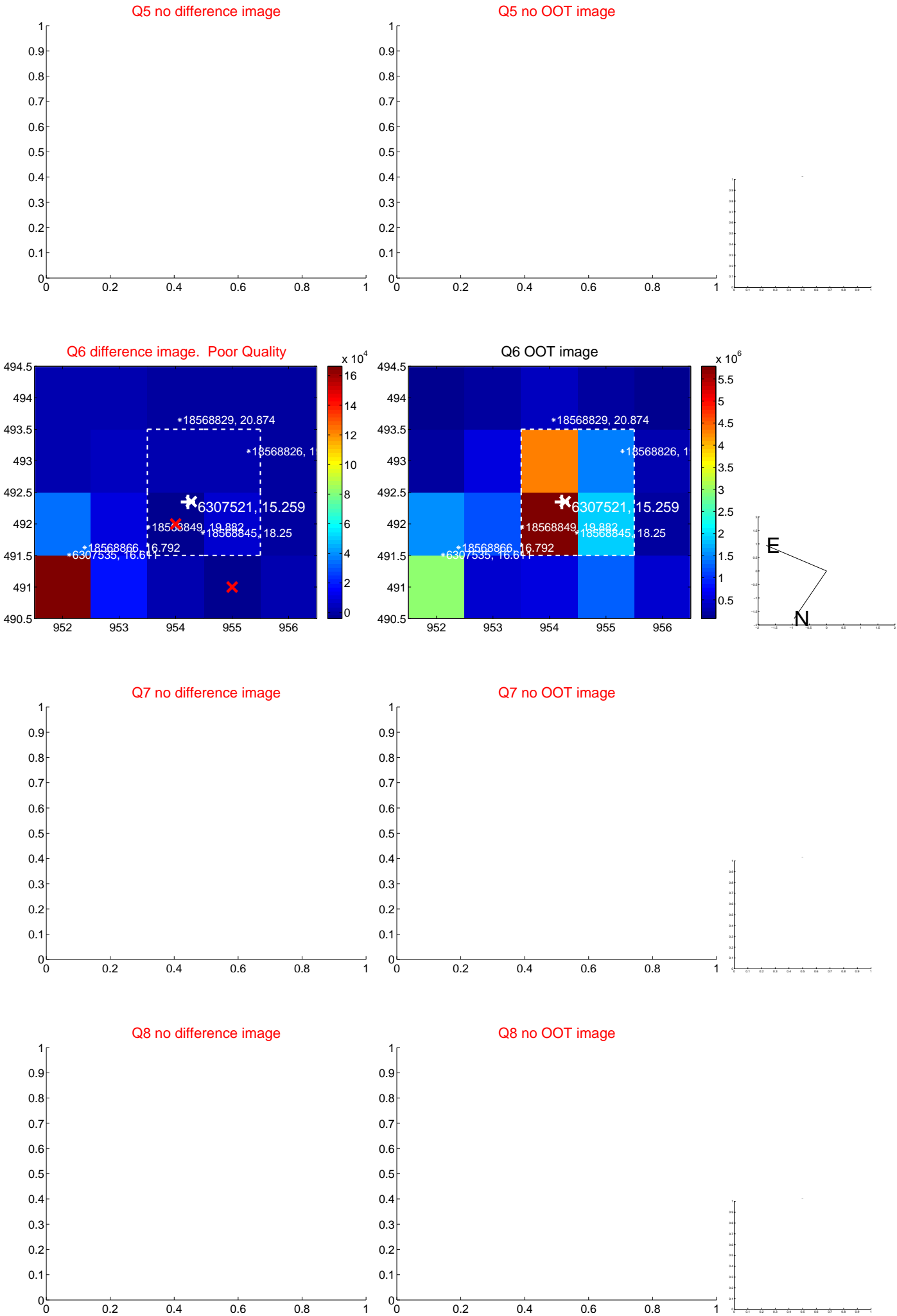


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

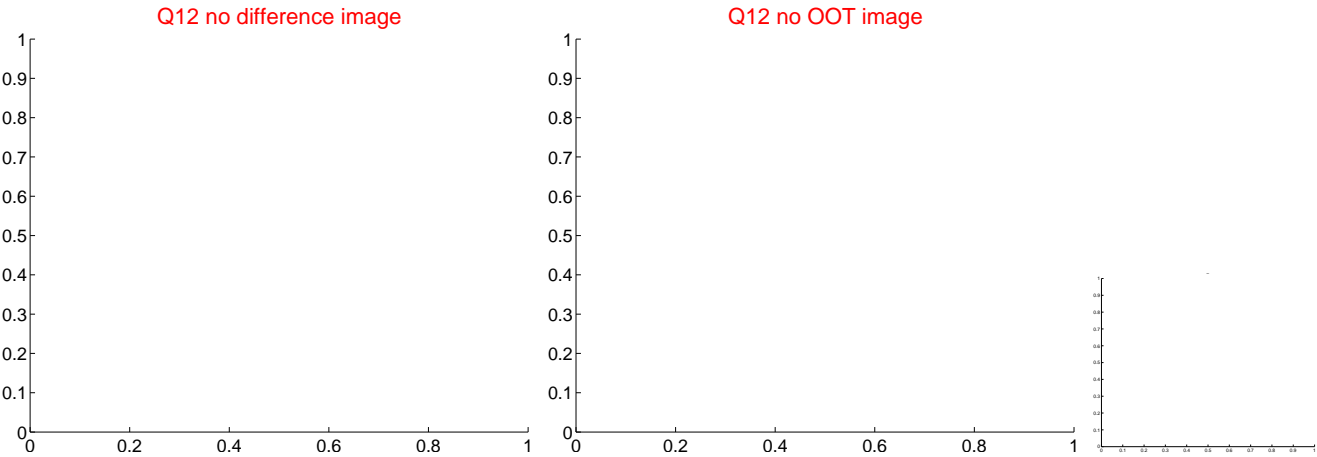
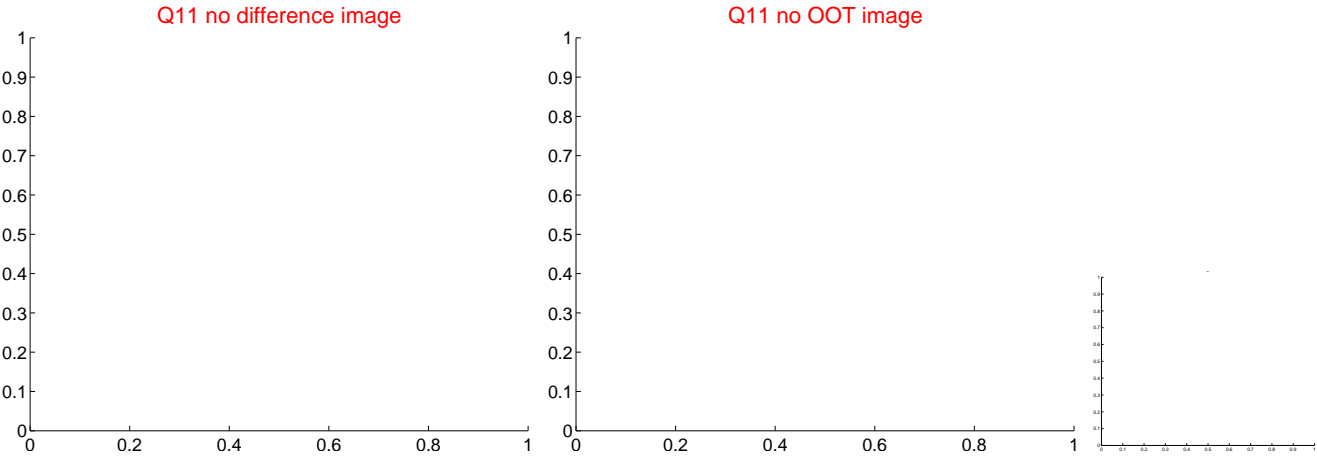
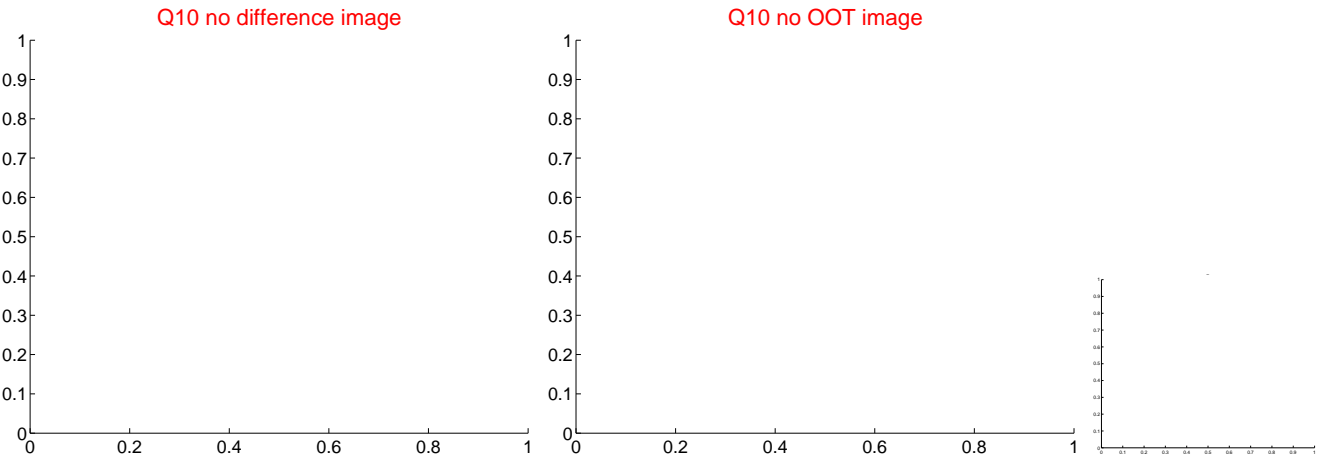
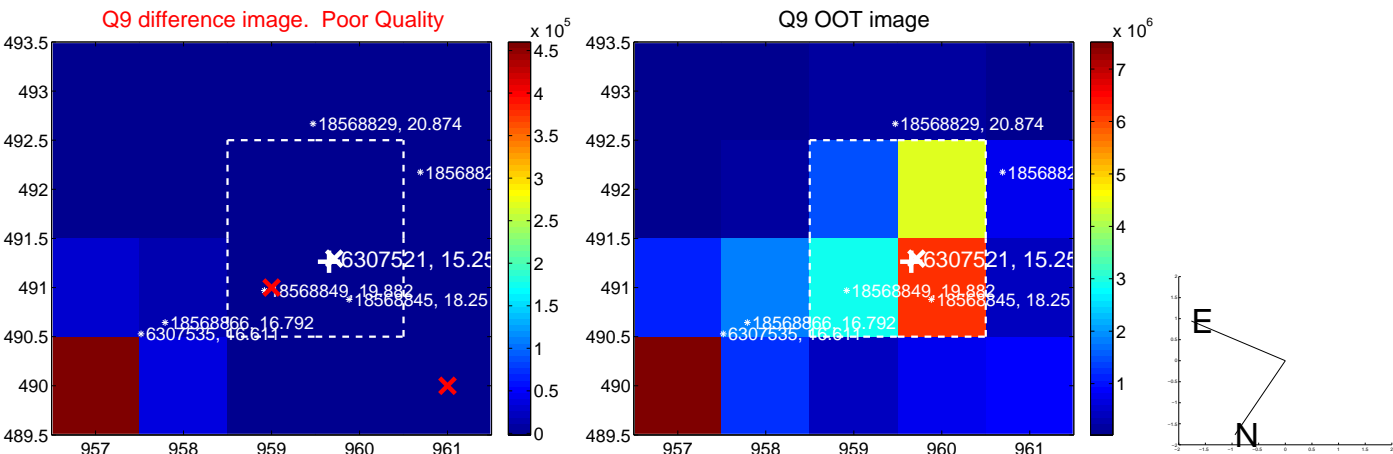
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



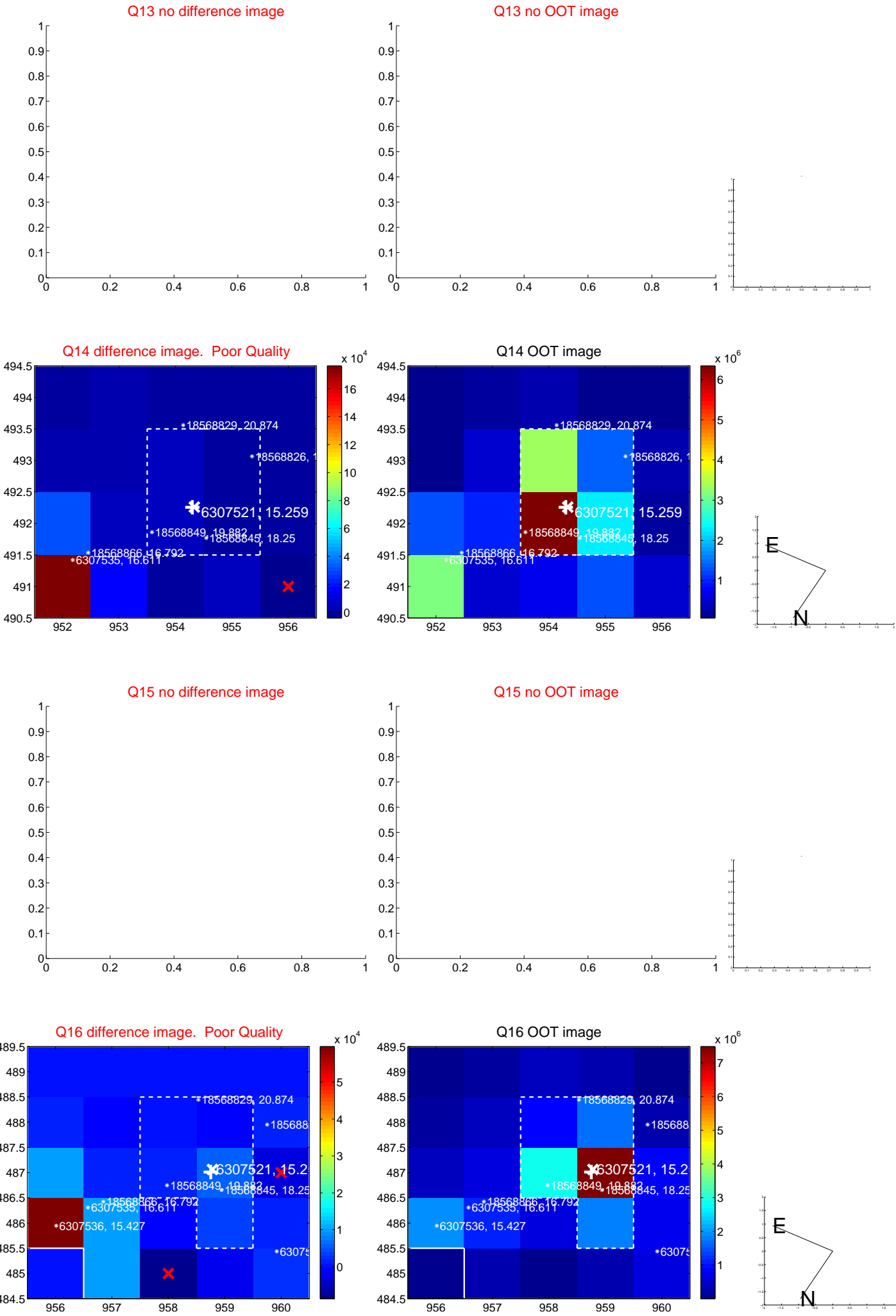
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



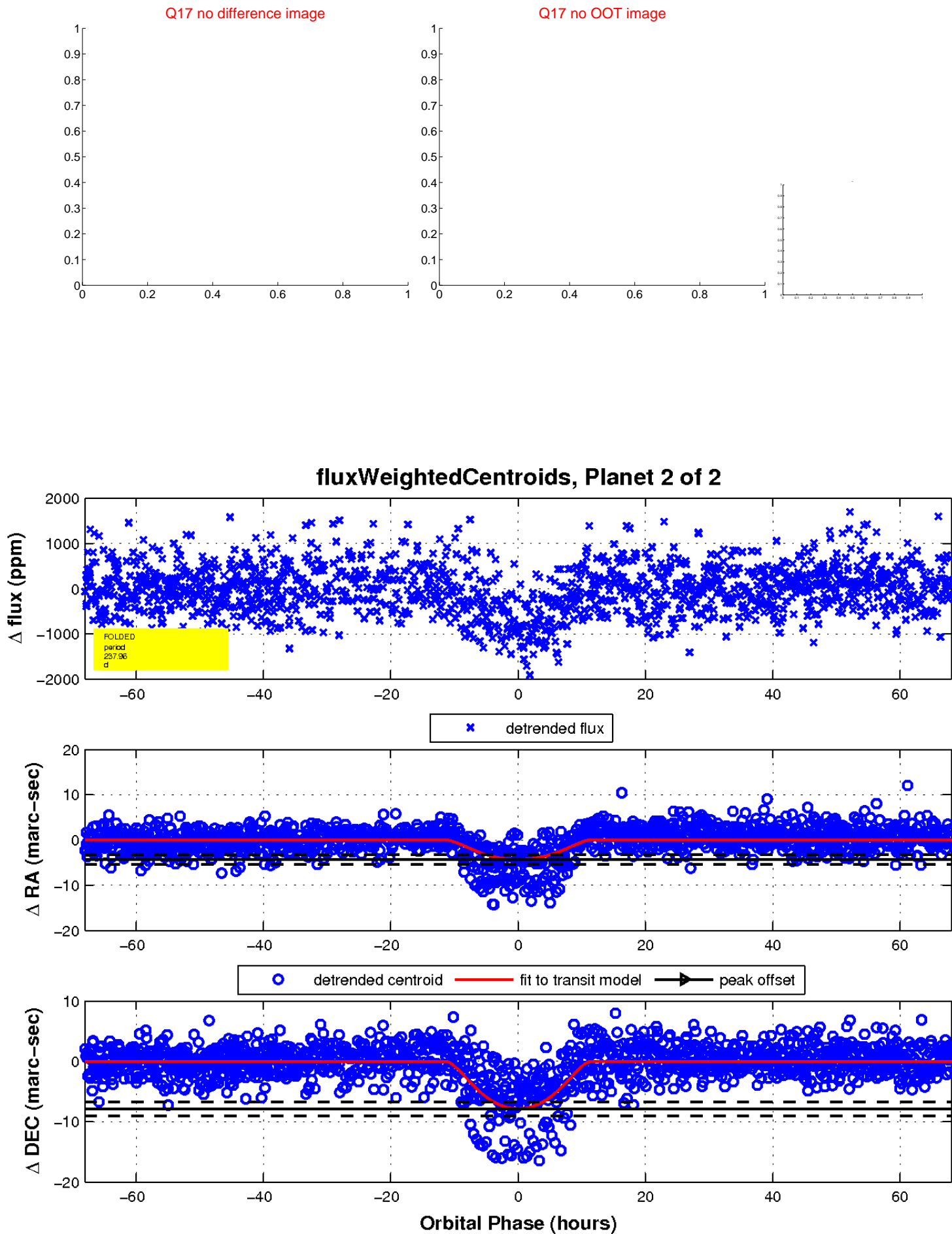
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

