

KIC 003858824

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})
003858824-01	OBS	0996.01	25.951886	154.885365	1940.0	14.721	54.2	57.2	0.74	5198	6.36	14.11
003858824-02	OBS	No	25.951689	148.933815	1575.1	19.623	51.6	59.8	0.74	5198	5.76	14.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003858824-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
003858824-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_FEW_DIFFS—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.

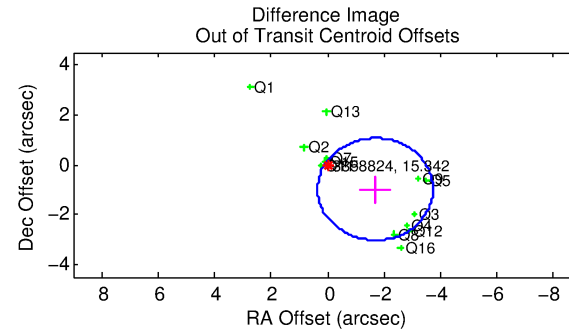
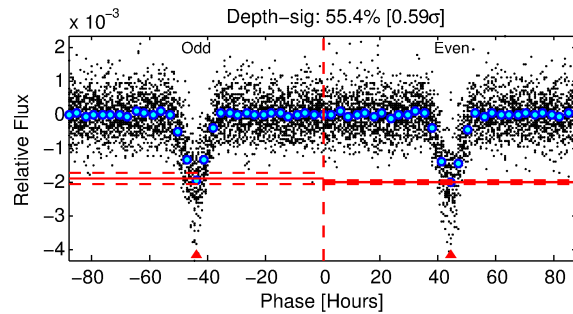
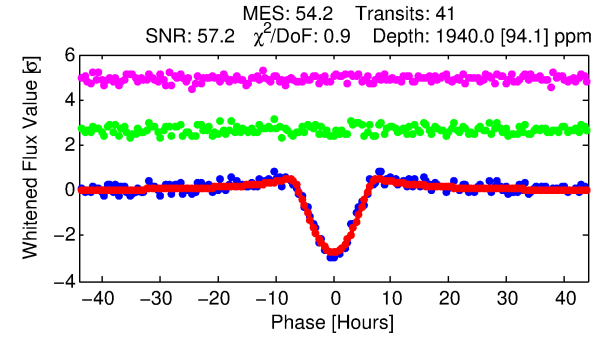
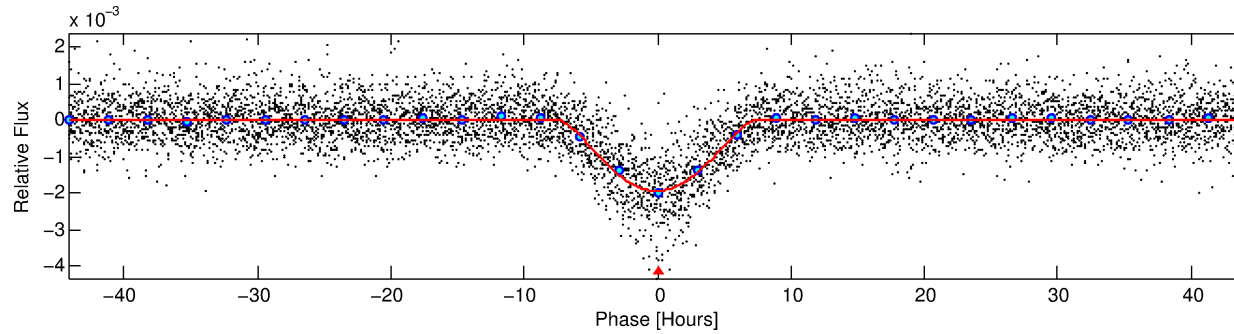
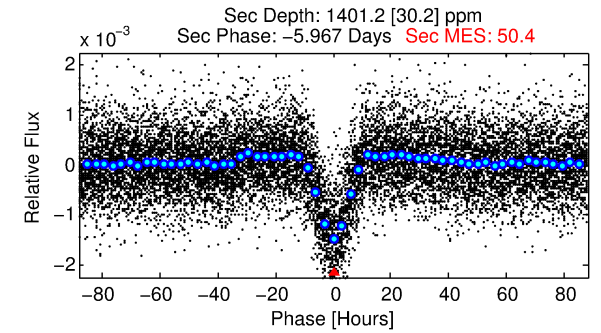
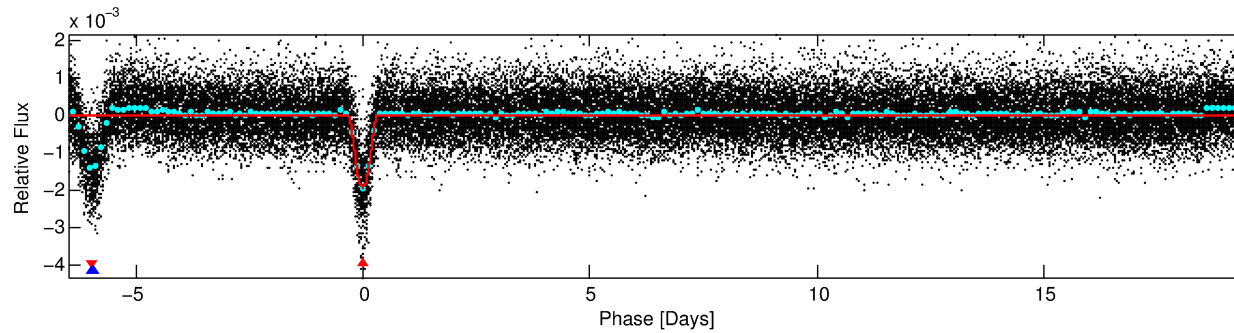
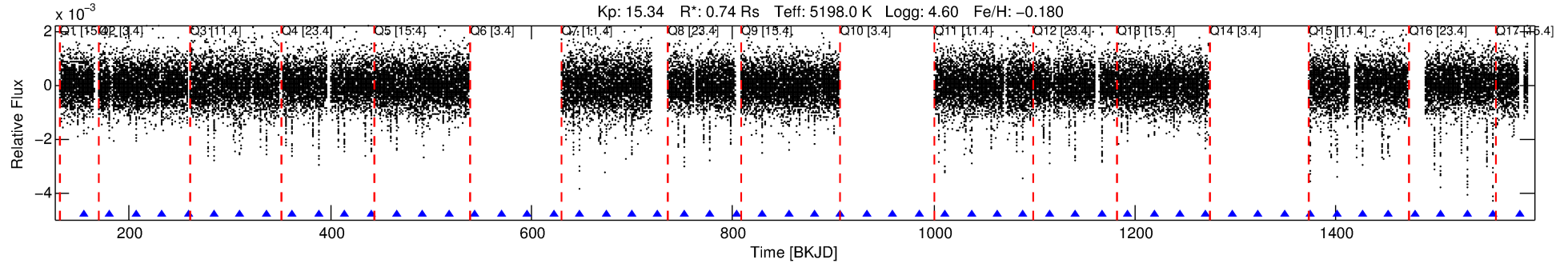
Ephemeris Match Information For 003858824-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003858824-01	3858824	003858884-01	3858884	1:1	61.1	14	-7	9.28	15.35	205.44	Direct-PRF	0	0.31	0.11

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: 3858824 Candidate: 1 of 2 Period: 25.952 d
KOI: K00996.01 Corr: 0.998



DV Fit Results:

Period = 25.95189 [0.00016] d
Epoch = 154.8854 [0.0047] BKJD
Rp/R* = 0.0785 [0.0463]
a/R* = 5.56 [0.66]
b = 1.00 [0.07]
Seff = 14.11 [2.82]
Teq = 494 [25] K
Rp = 6.36 [3.86] Re
a = 0.1597 [0.0185] AU
Ag = 486.66 [579.21] [0.84σ]
Teffp = 3589 [1063] K [2.91σ]

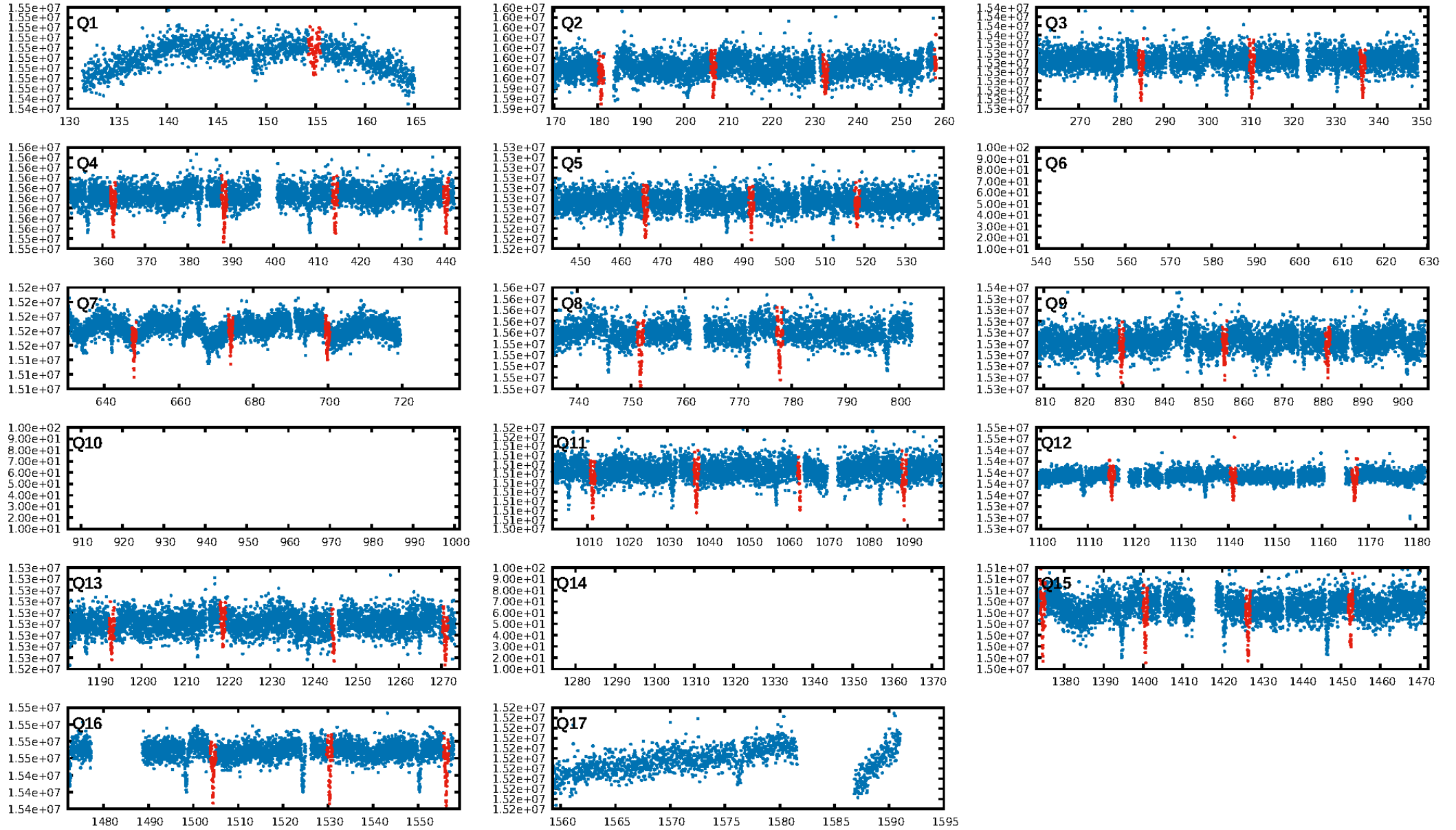
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [40/40]
GhostDiagnostic-chr: -0.02521
Centroid-sig: 0.0%
Centroid-so: 0.776 arcsec [3.42σ]
OotOffset-rm: 1.955 arcsec [2.87σ]
KicOffset-rm: 1.912 arcsec [2.52σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 0.00 [0/13]
DiffImageOverlap-fno: 1.00 [13/13]

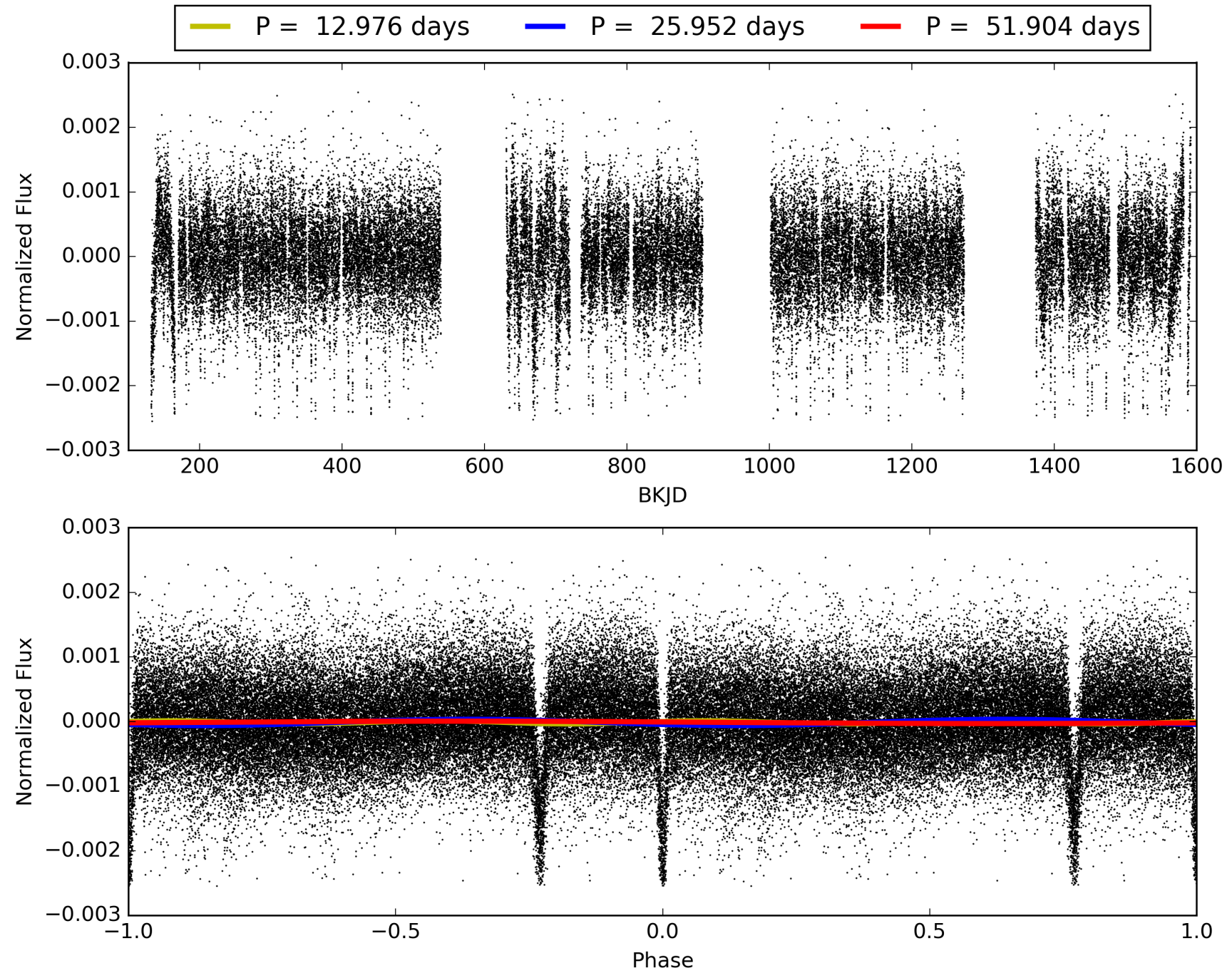
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:20:29 Z

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

TCE 003858824-01, PDC Light Curves

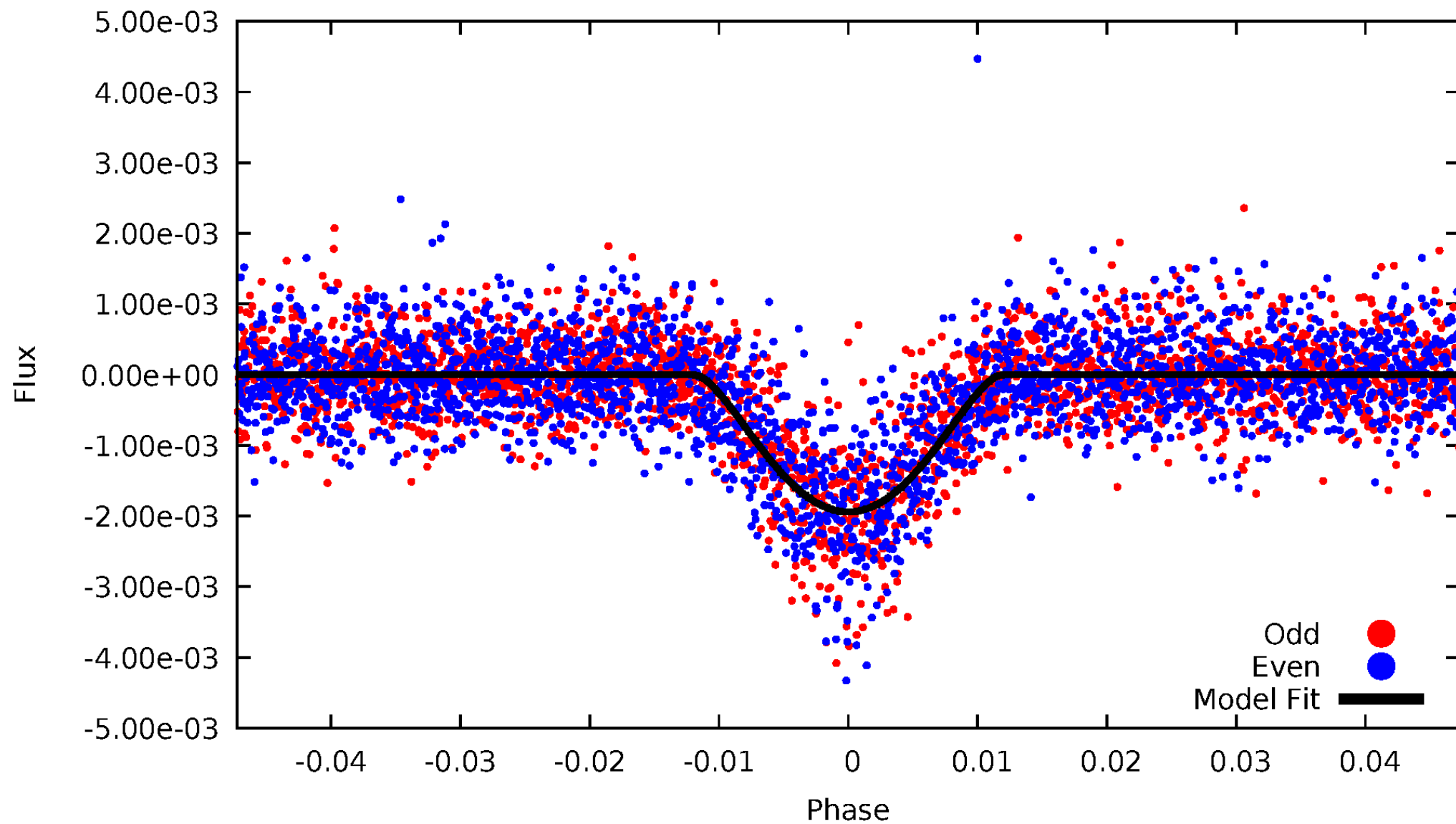


TCE 003858824-01



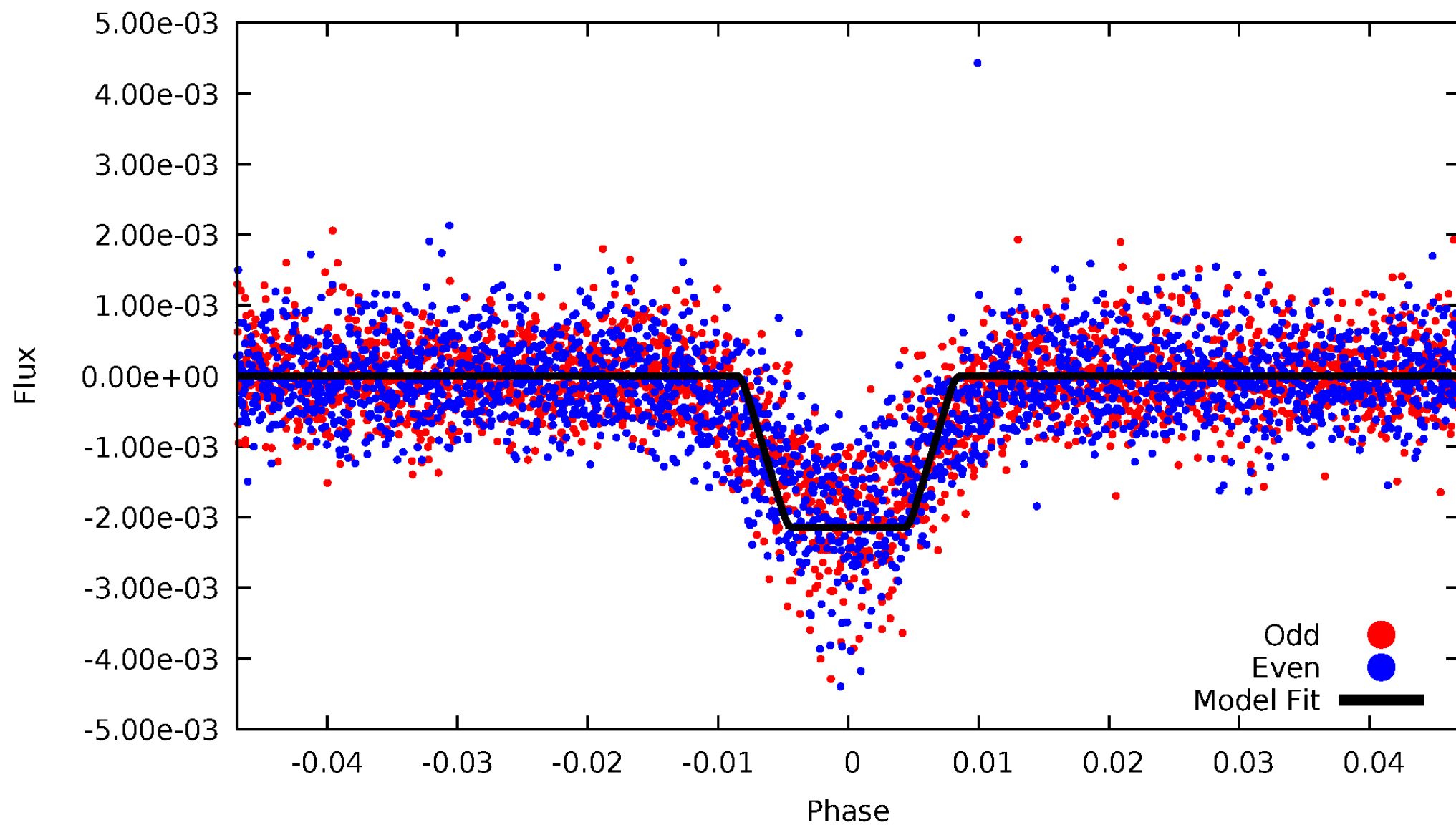
DV Odd/Even

TCE 003858824-01



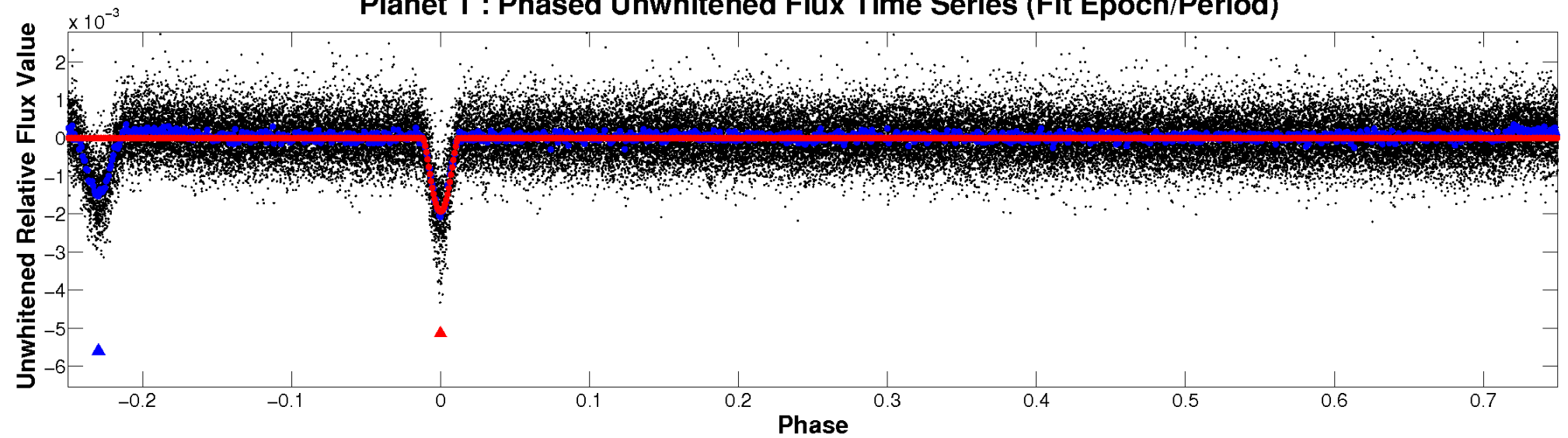
ALT Odd/Even

TCE 003858824-01

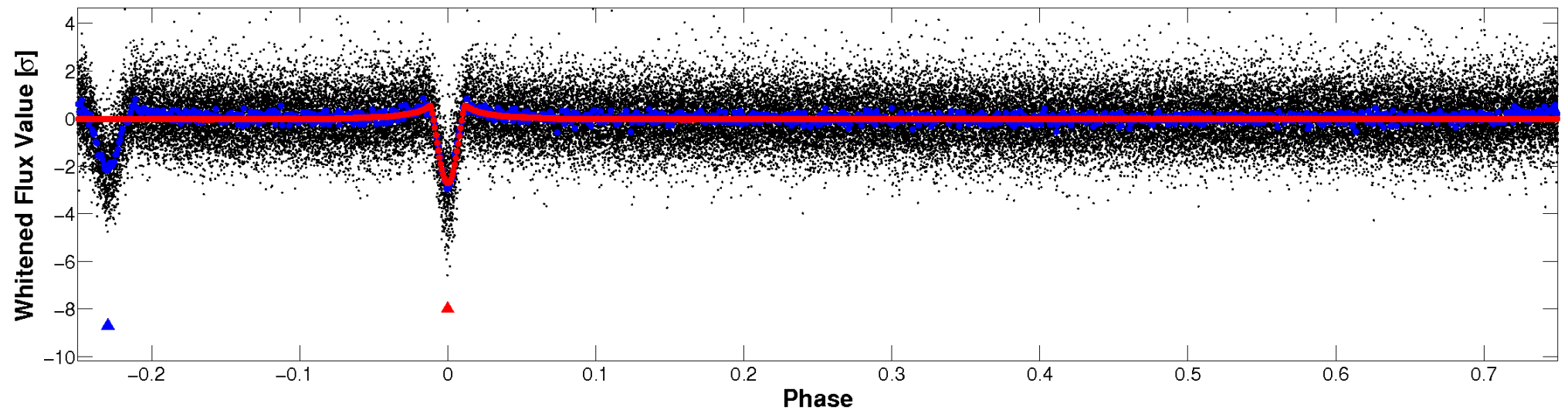


Non-Whitened Vs. Whitened Light Curve

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

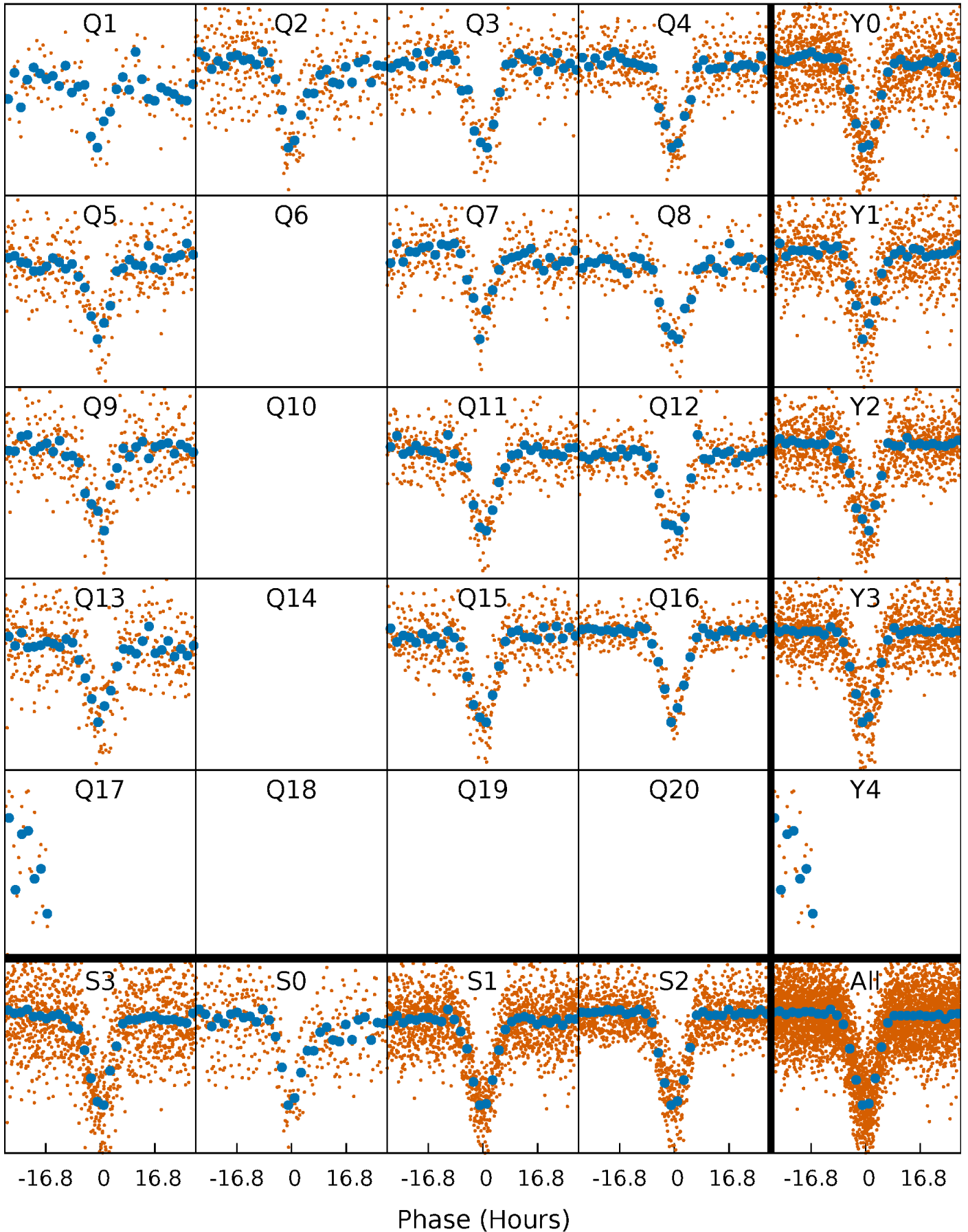


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



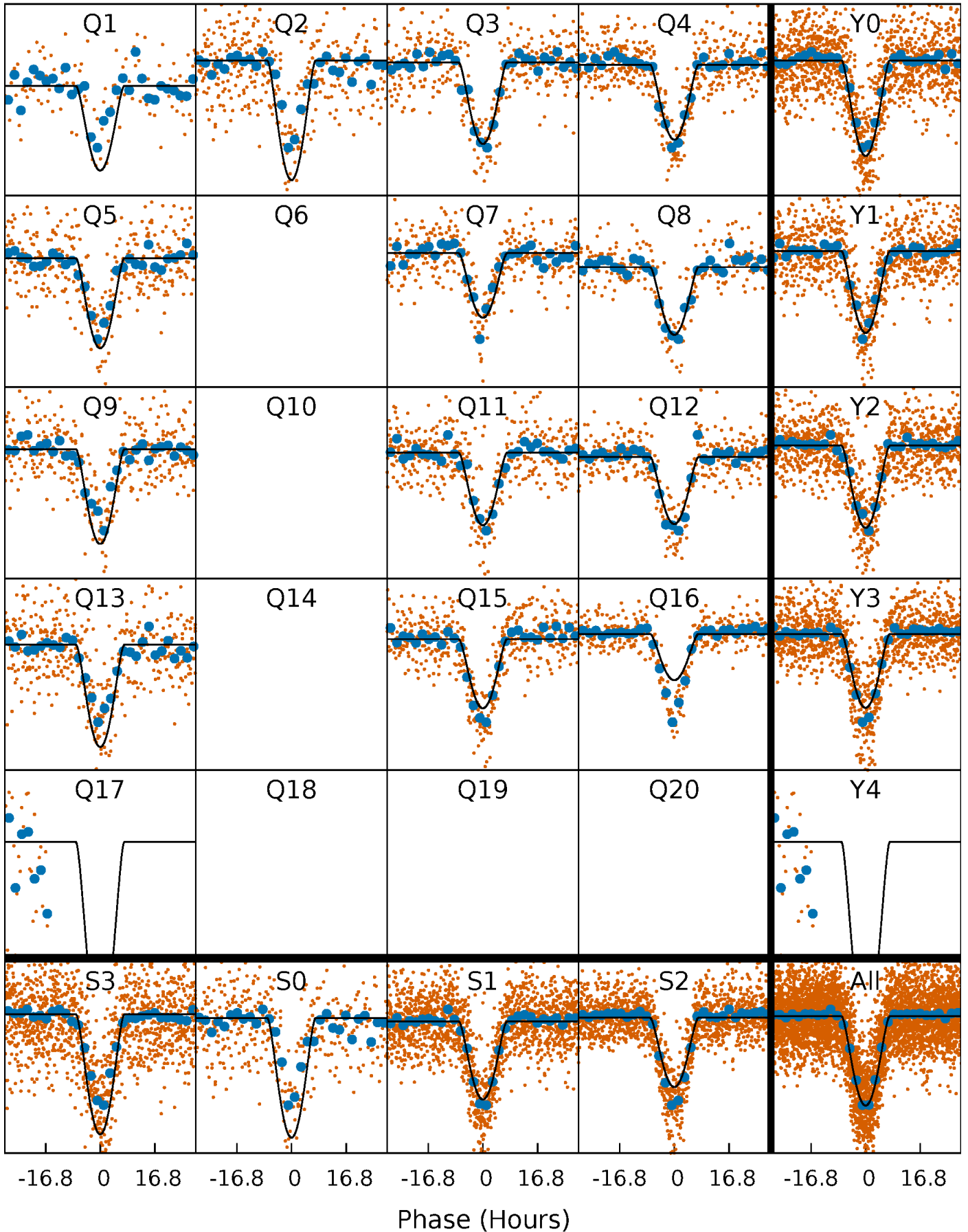
PDC Quarter-Phased Transit Curves

TCE 003858824-01 P= 25.951886 Days $T_0=154.885365$ (BKJD)



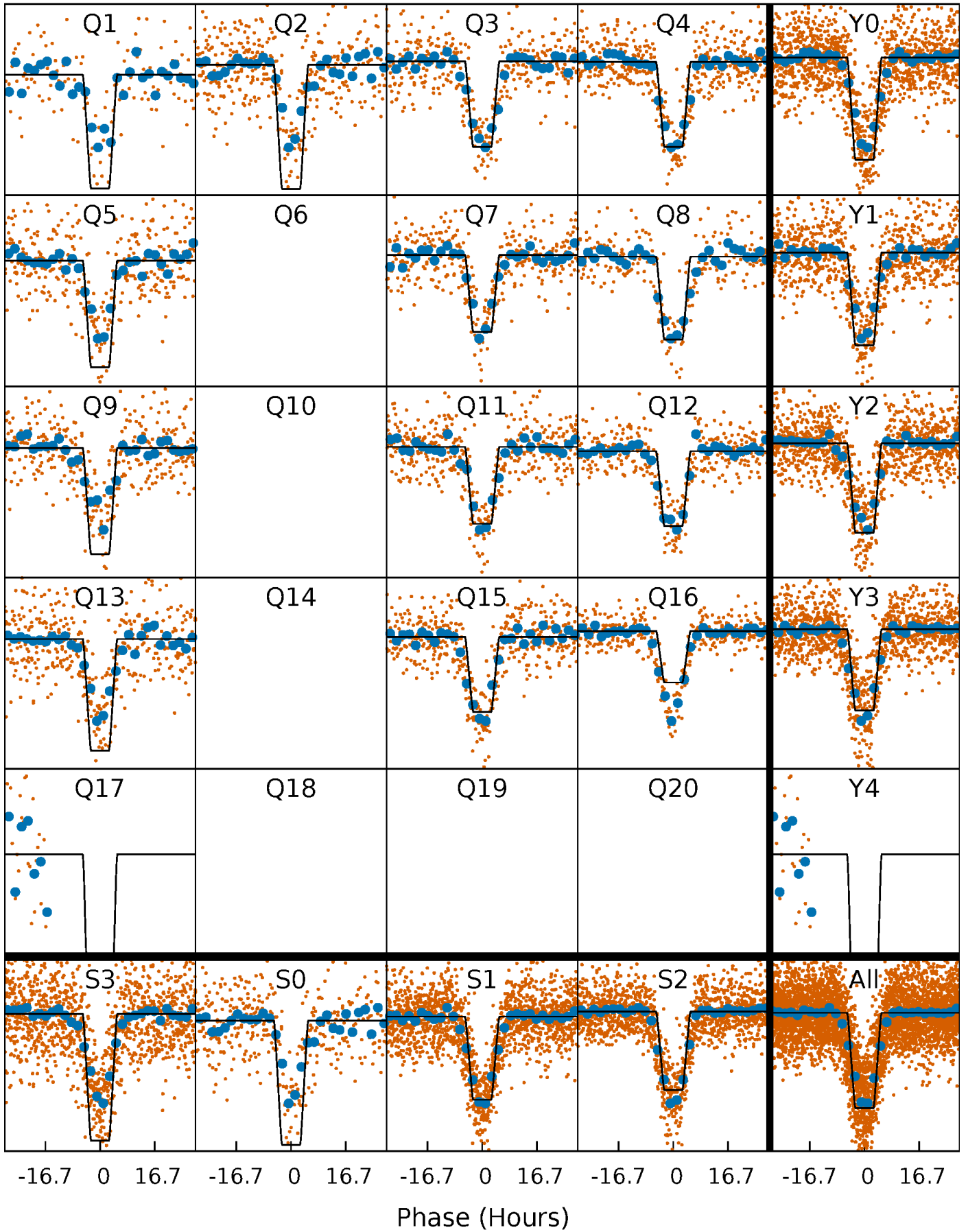
DV Quarter-Phased Transit Curves

TCE 003858824-01 P= 25.951886 Days $T_0=154.885365$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

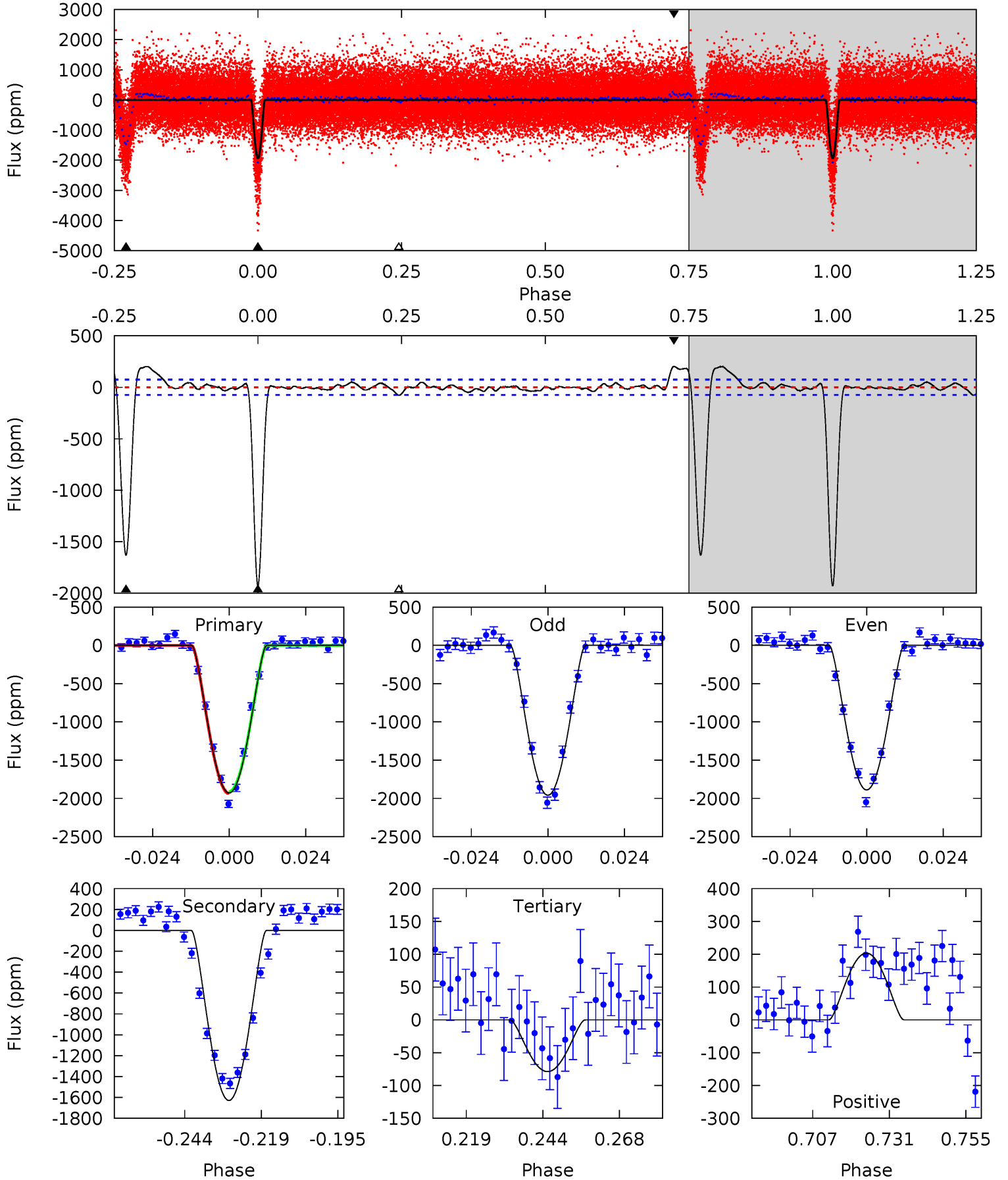
TCE 003858824-01 P= 25.952485 Days $T_0=154.864607$ (BKJD)



DV Model-Shift Uniqueness Test

003858824-01, P = 25.951886 Days, E = 128.933479 Days

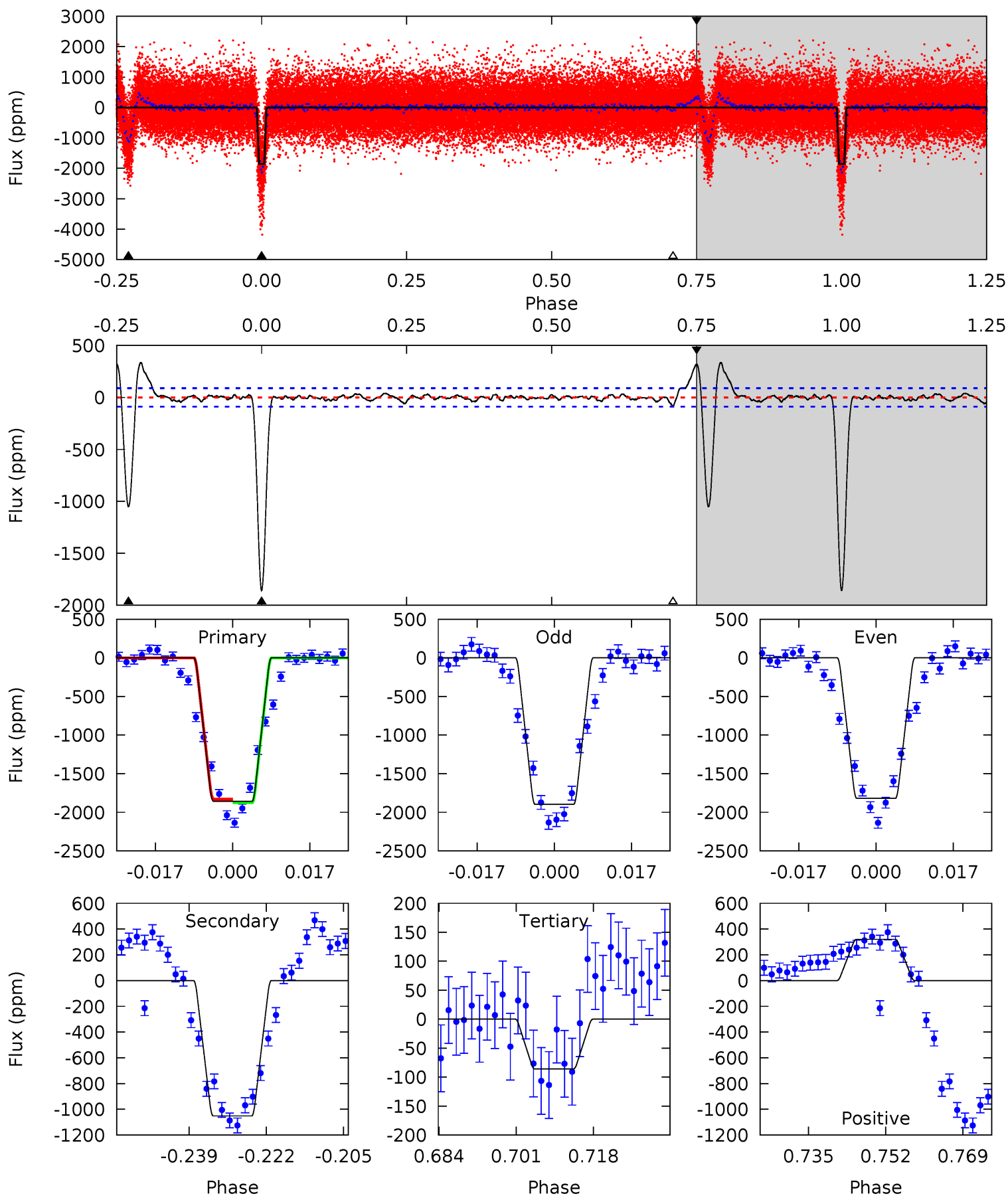
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
124.4	105.1	5.09	13.1	4.85	2.25	3.41	119.3	111.3	100.0	92.0	2.25	0.94	0.10	0.73



Alt Model-Shift Uniqueness Test

003858824-01, P = 25.952485 Days, E = 128.912122 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
102.0	57.7	4.72	17.6	4.92	2.38	3.15	97.3	84.4	53.0	40.2	2.11	0.97	0.15	1.21



Stellar Parameters For KIC 003858824

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5198^{+154}_{-154}	$4.604^{+0.036}_{-0.084}$	$-0.180^{+0.300}_{-0.300}$	$0.742^{+0.107}_{-0.057}$	$0.813^{+0.074}_{-0.083}$	$2.804^{+0.442}_{-0.814}$
	+3%/-3%	+1%/-2%	+167%/-167%	+14%/-8%	+9%/-10%	+16%/-29%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003858824-01 / KOI 0996.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1629 ± 16	$6.56^{+3.94}_{-3.49}$	696^{+28}_{-26}	3995^{+1408}_{-578}	521^{+1911}_{-313}
Alt.	-1051 ± 18	$4.72^{+3.44}_{-3.12}$	698^{+28}_{-27}	4145^{+2424}_{-699}	660^{+4995}_{-438}

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

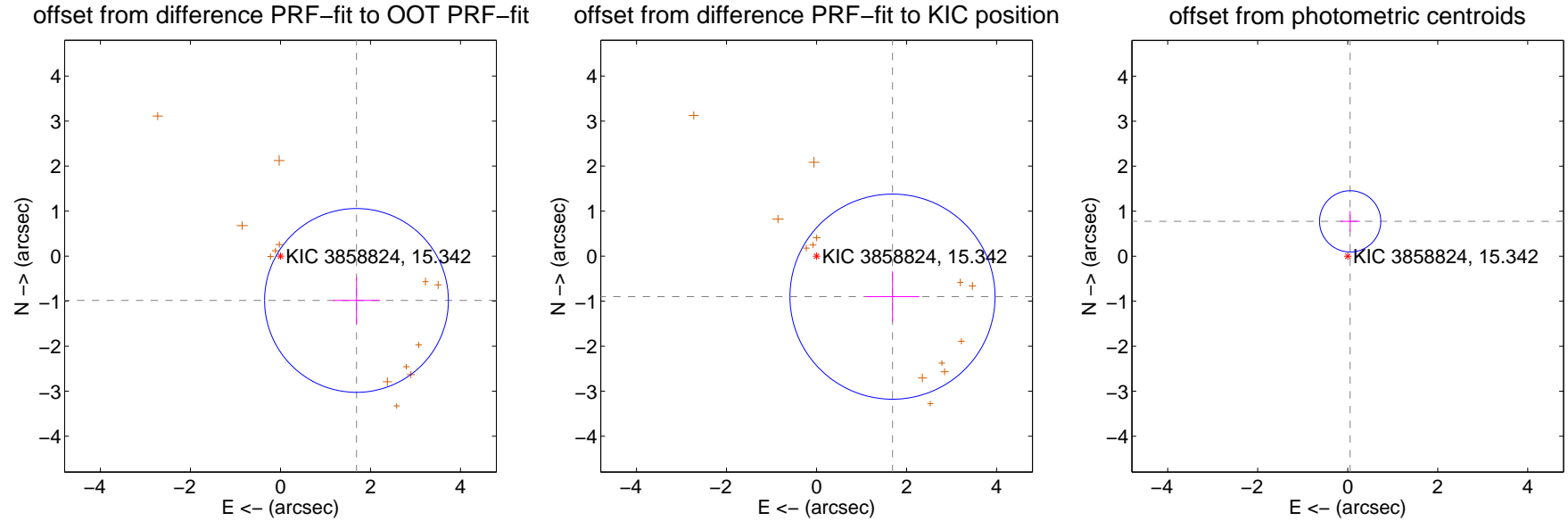
DV Centroid Data

Supplemental centroid analysis for 003858824-01. Kepler magnitude: 15.34. Transit SNR 57.23

There are 0 quarters with good PRF difference image offsets

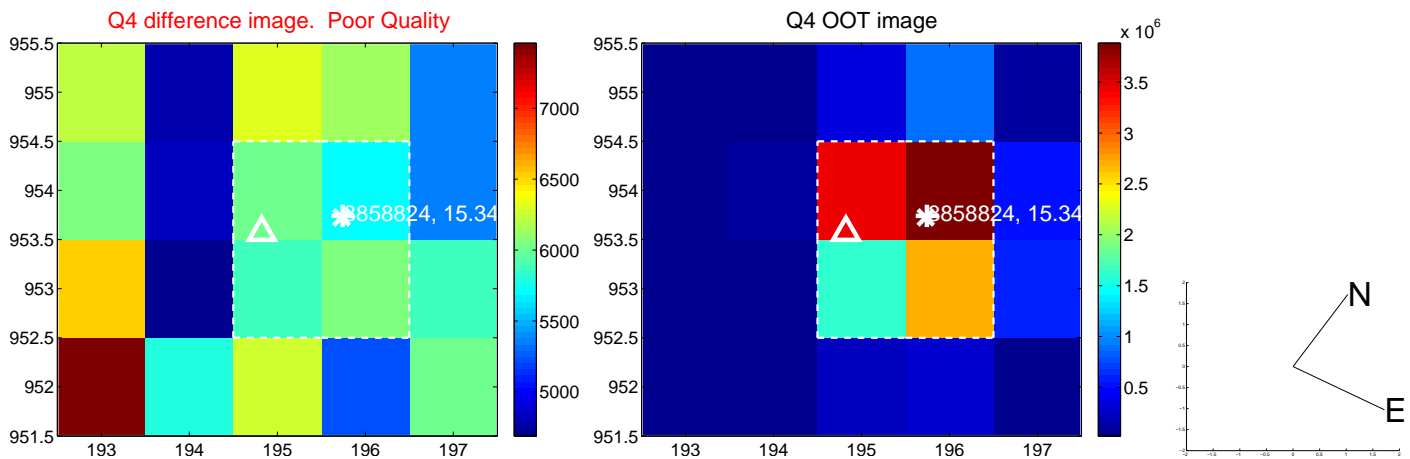
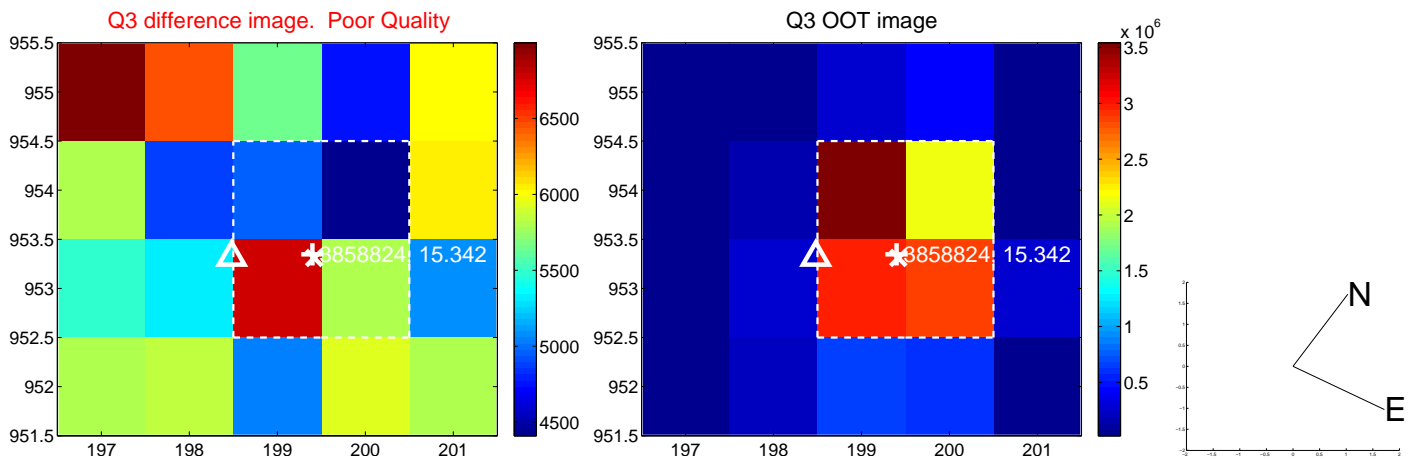
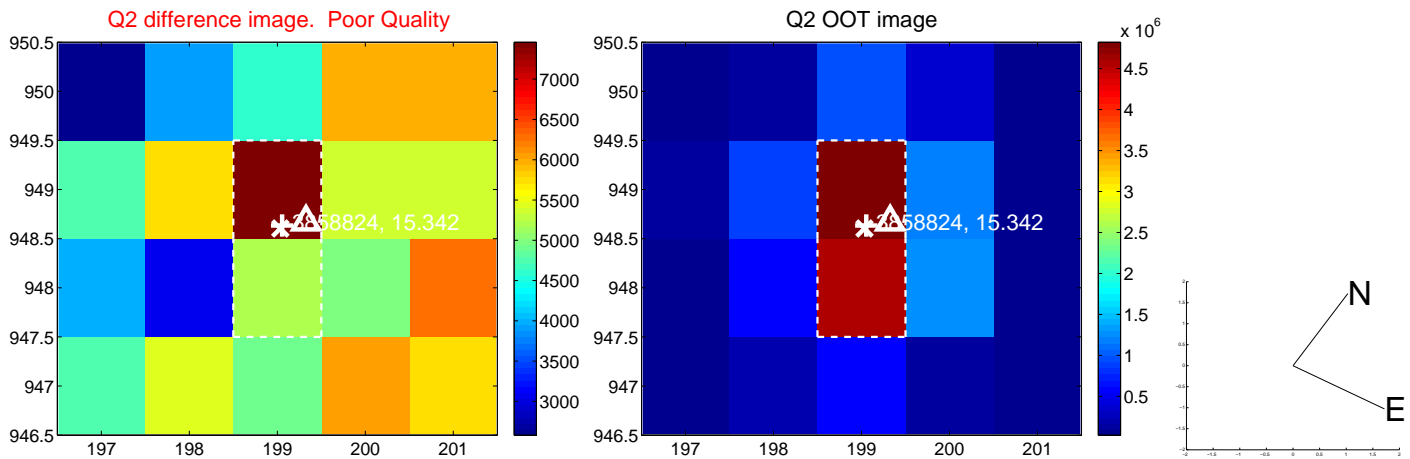
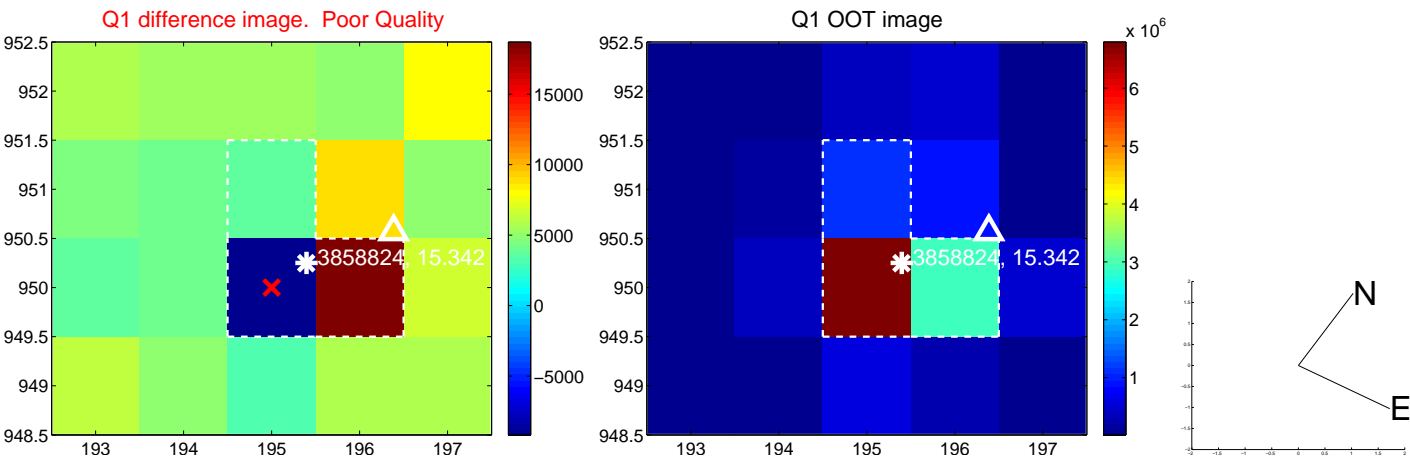
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.955 ± 0.680	2.87	-1.689 ± 0.523	-0.984 ± 0.523
PRF-fit source offset from KIC position	1.912 ± 0.759	2.52	-1.687 ± 0.598	-0.900 ± 0.560
photometric centroid source offset	0.78 ± 0.23	3.42	-0.05 ± 0.22	0.77 ± 0.23

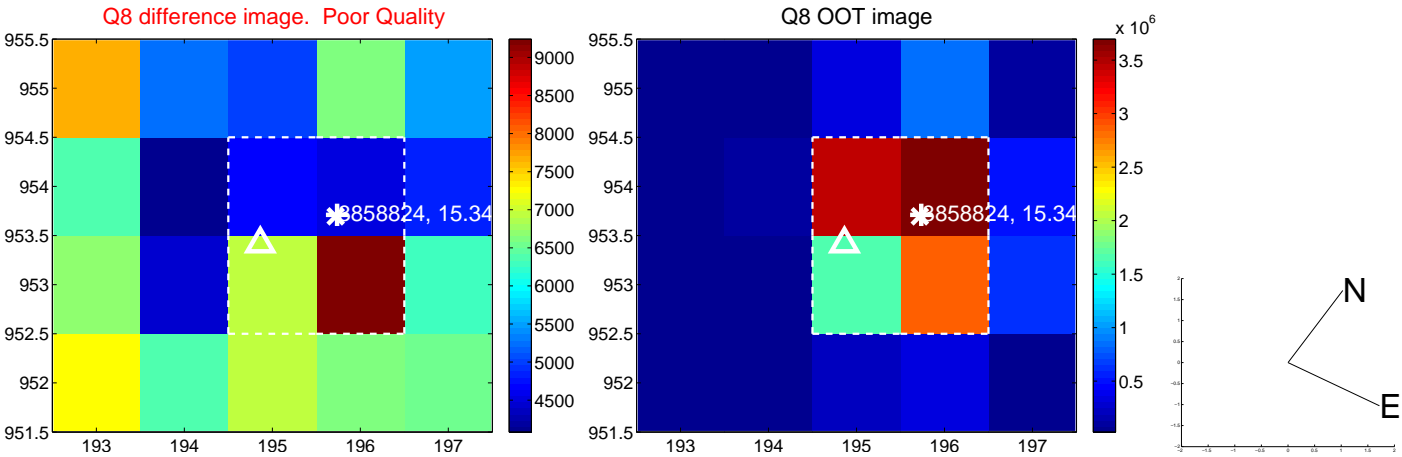
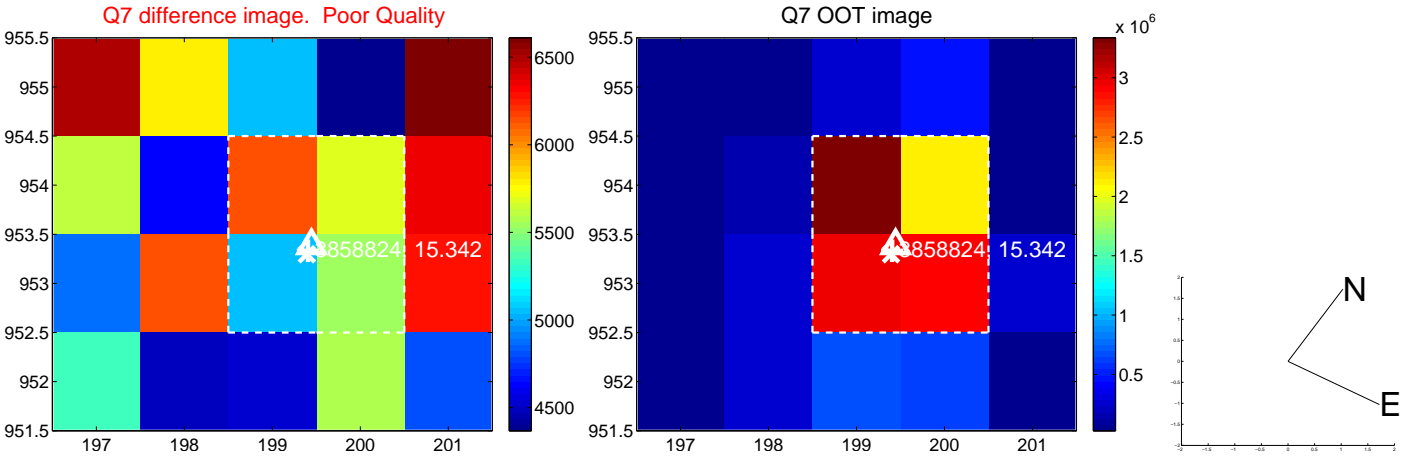
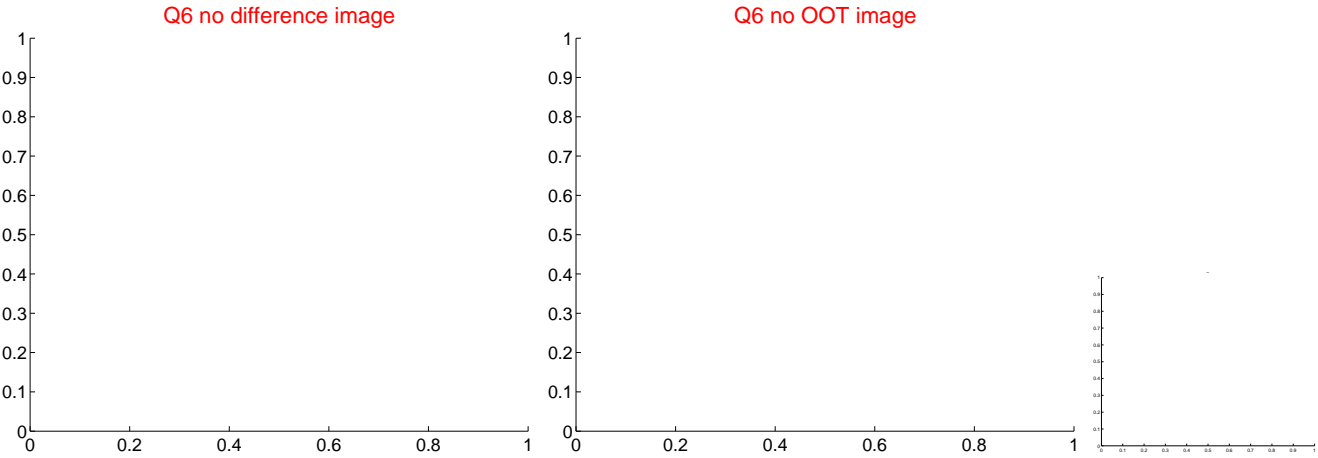
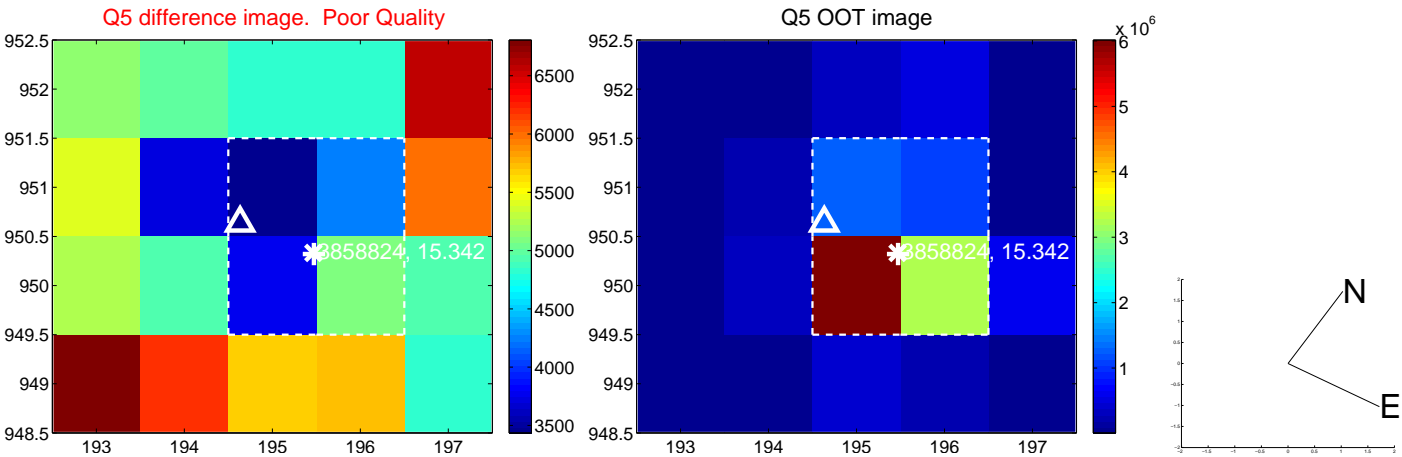


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

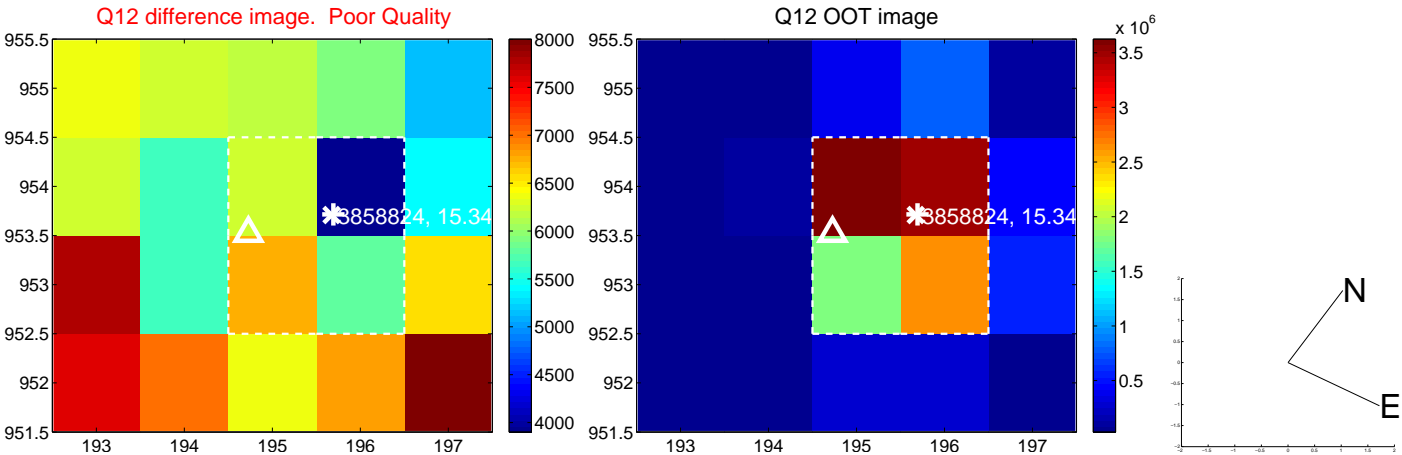
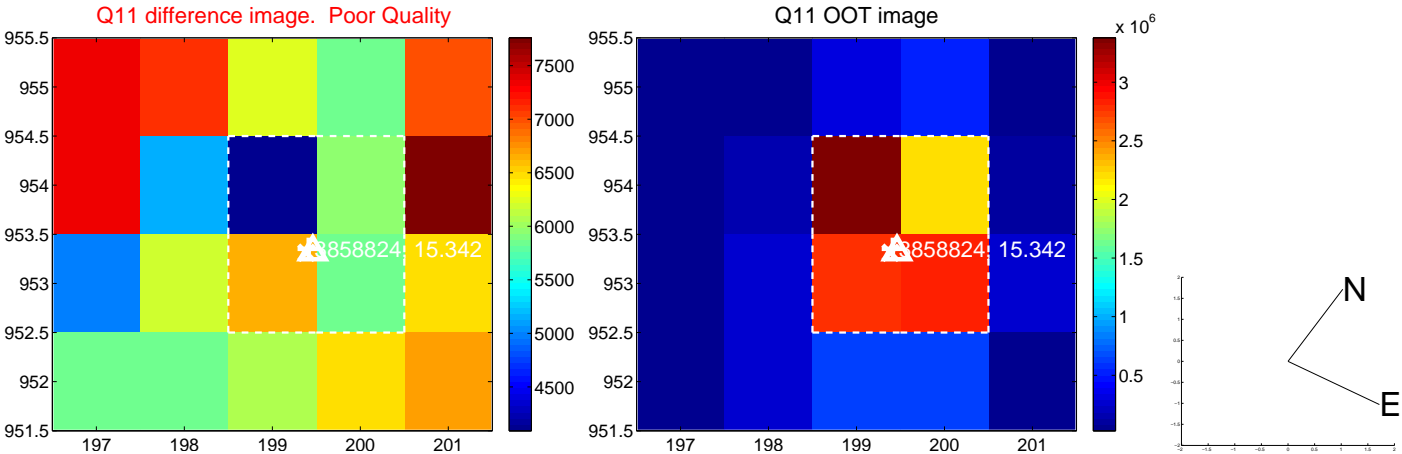
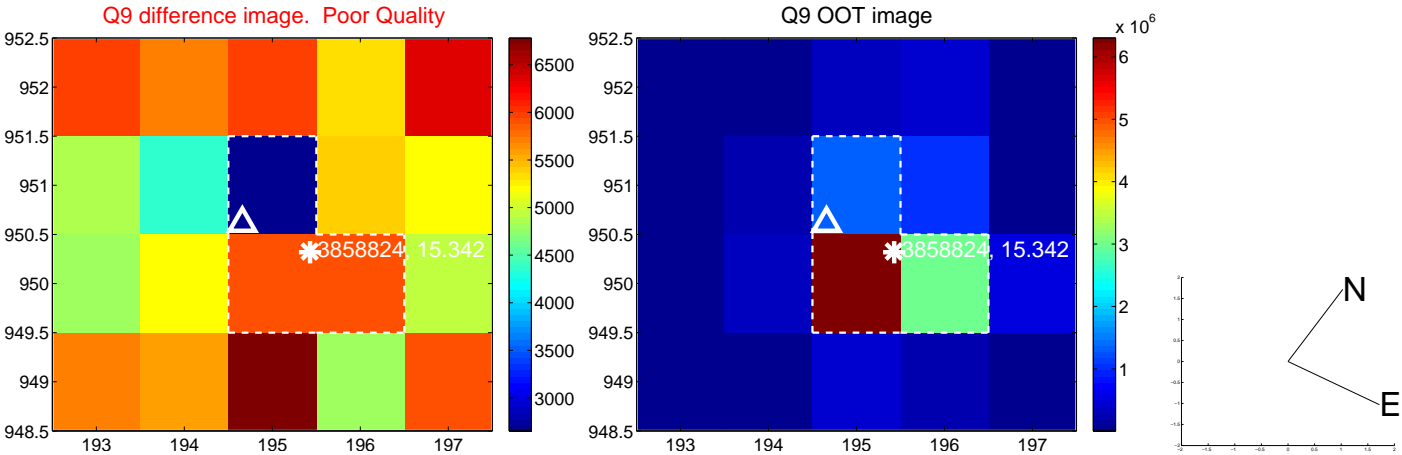
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



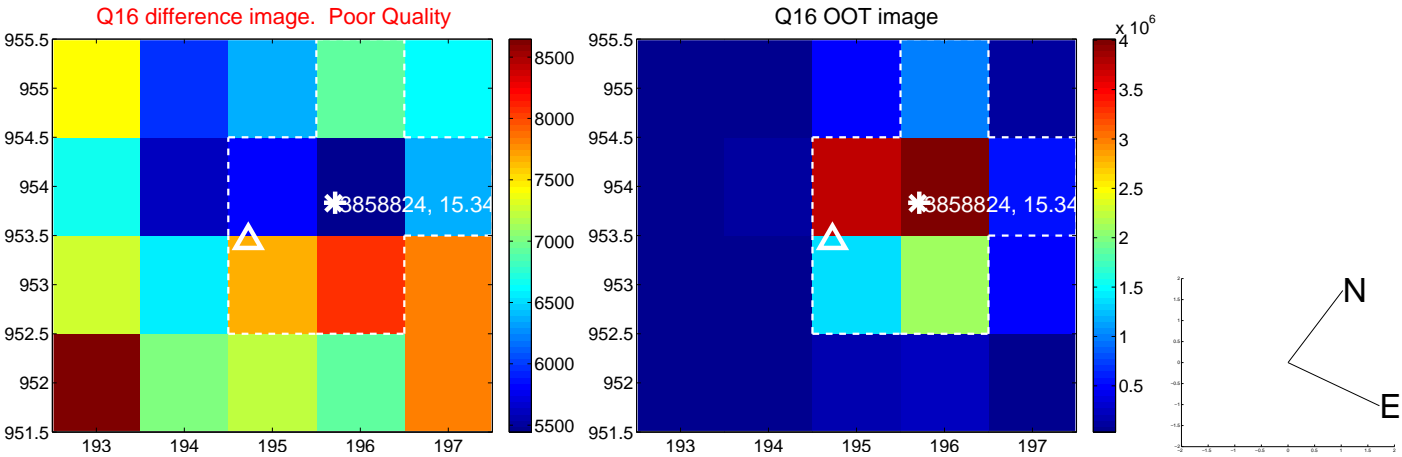
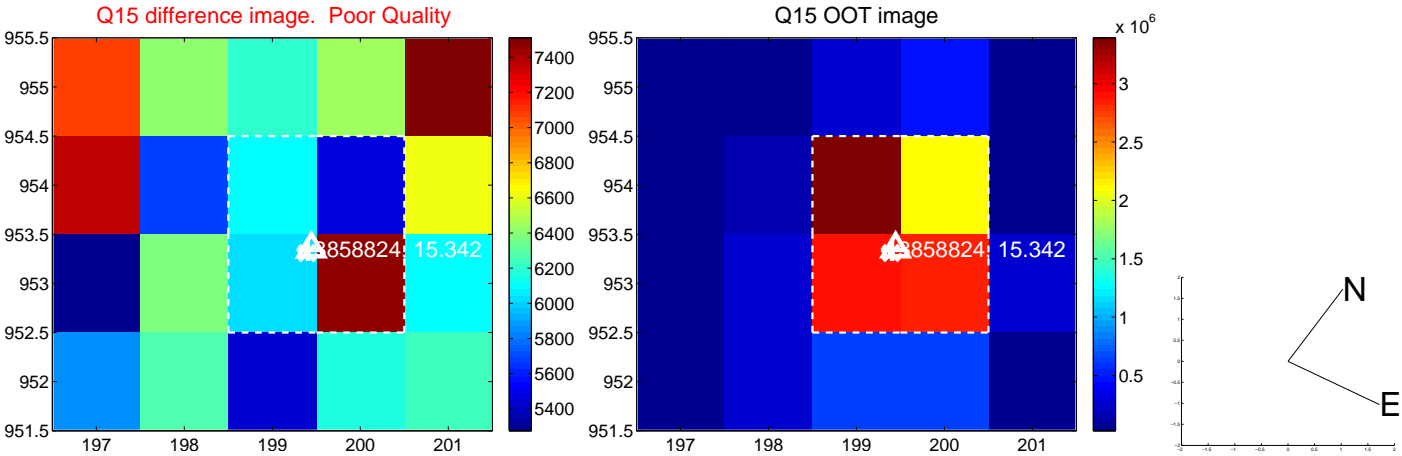
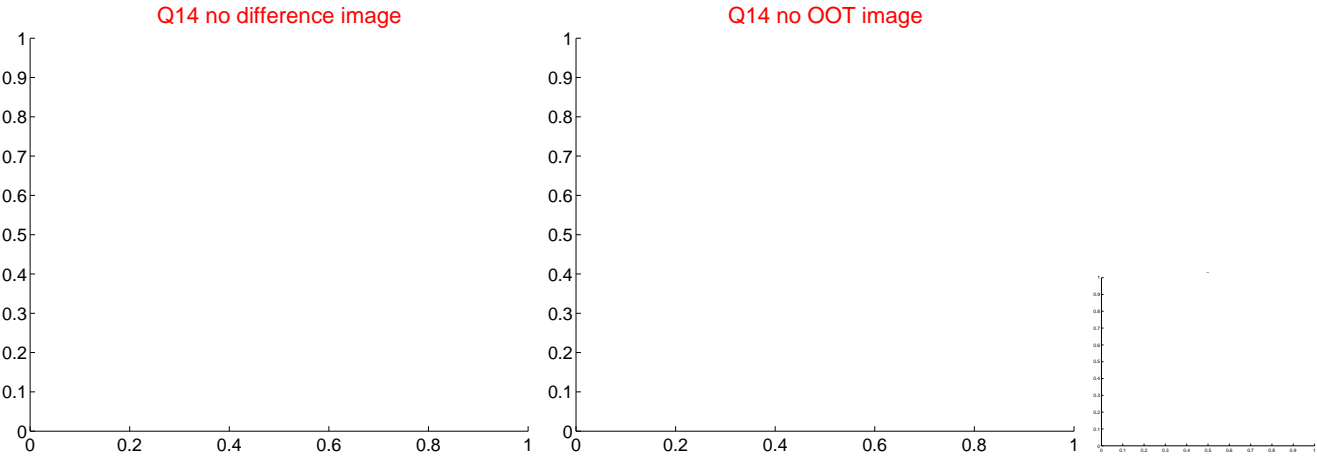
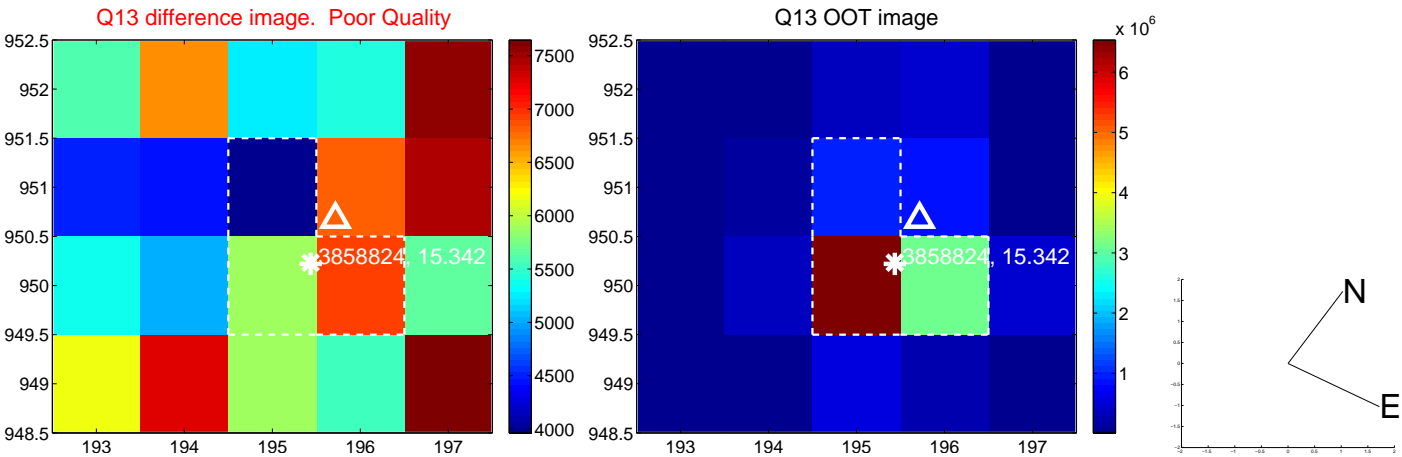
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



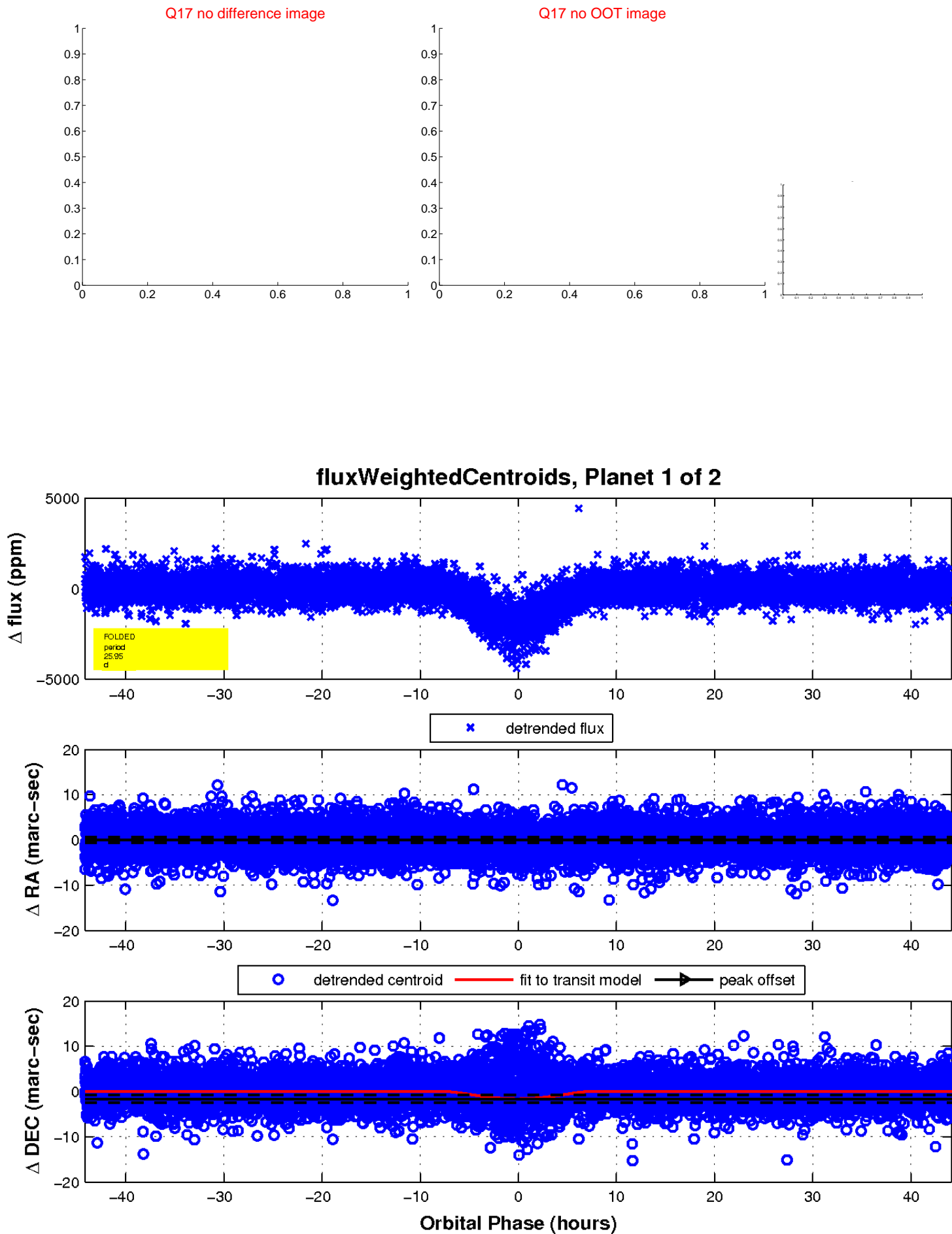
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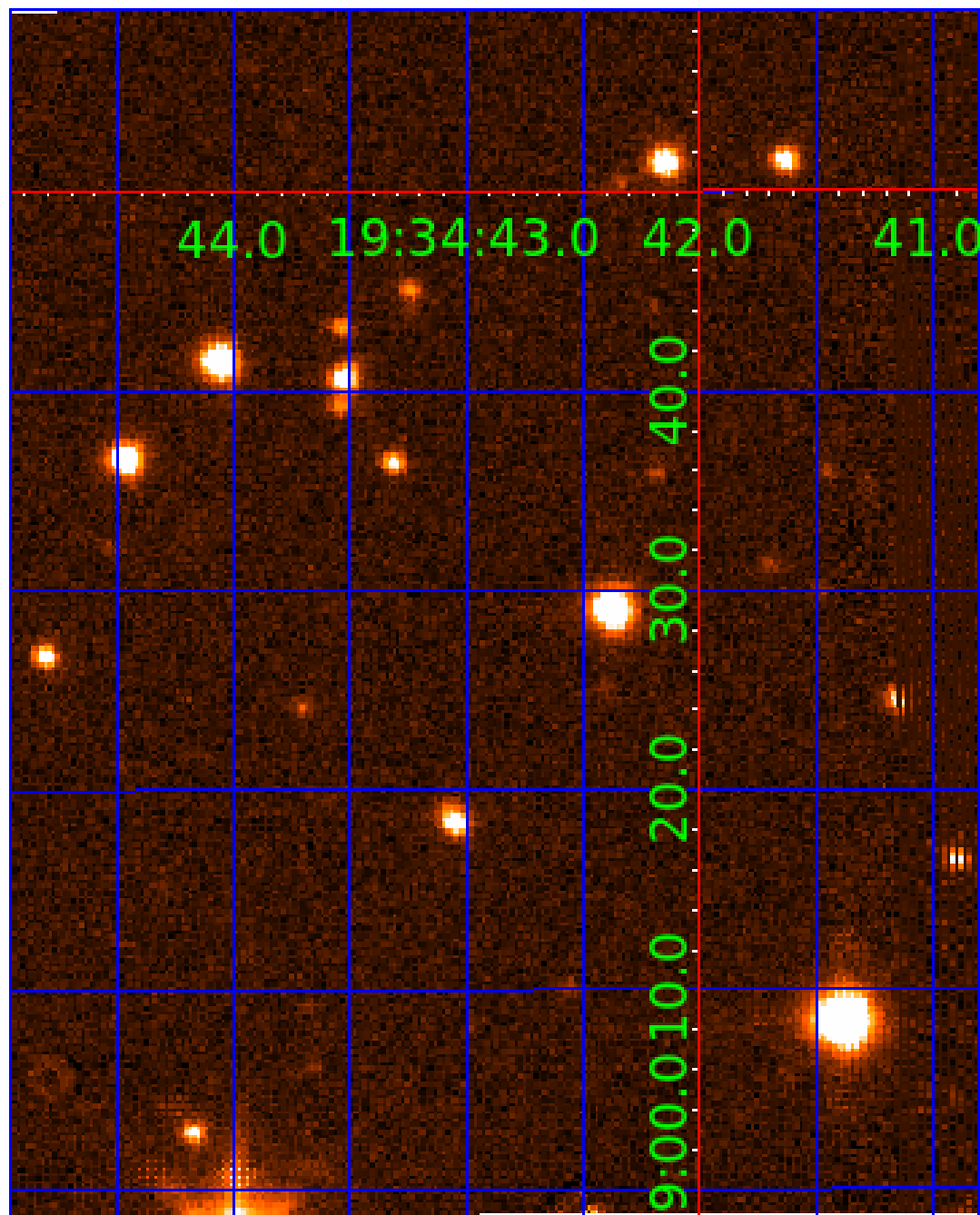


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003858824

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})
003858824-01	OBS	0996.01	25.951886	154.885365	1940.0	14.721	54.2	57.2	0.74	5198	6.36	14.11
003858824-02	OBS	No	25.951689	148.933815	1575.1	19.623	51.6	59.8	0.74	5198	5.76	14.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003858824-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
003858824-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_FEW_DIFFS—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 003858824-02

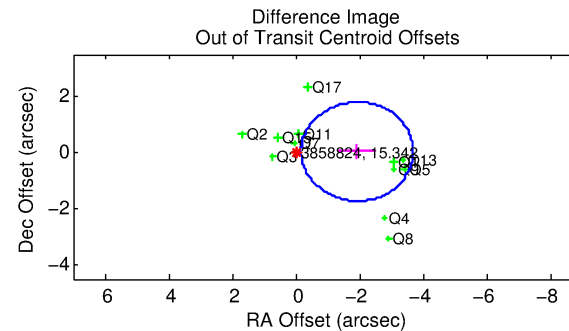
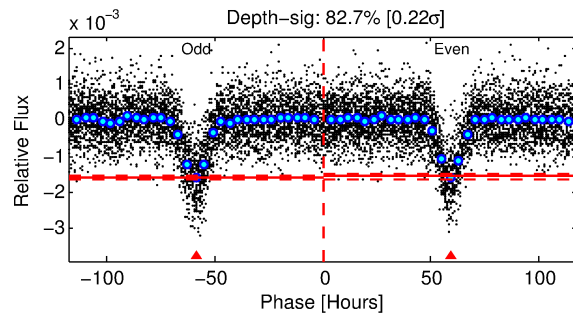
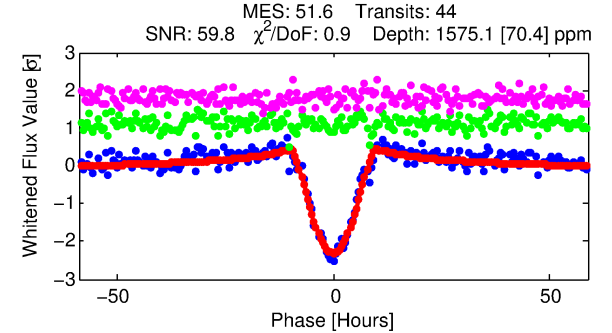
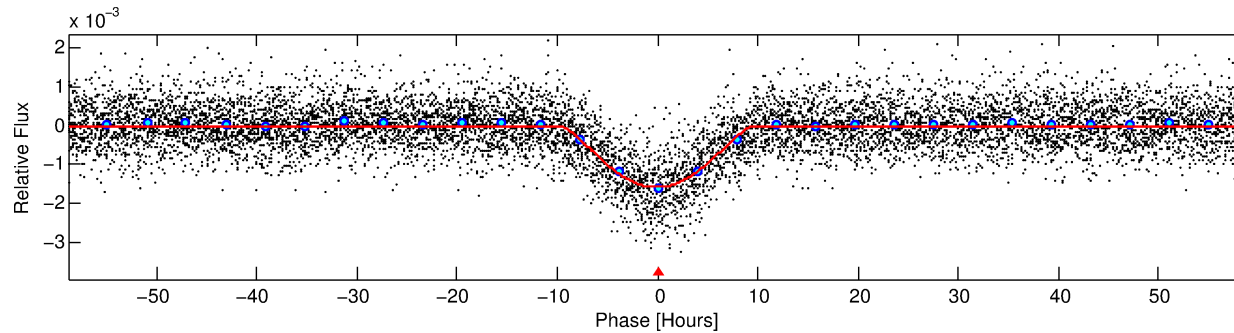
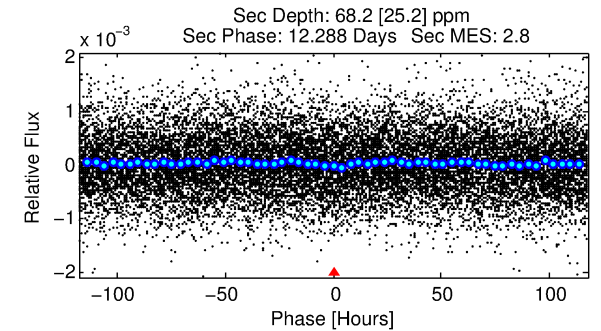
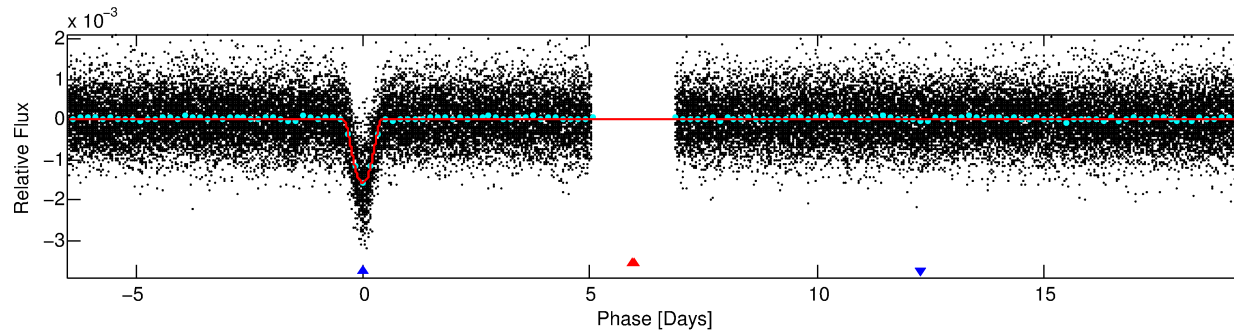
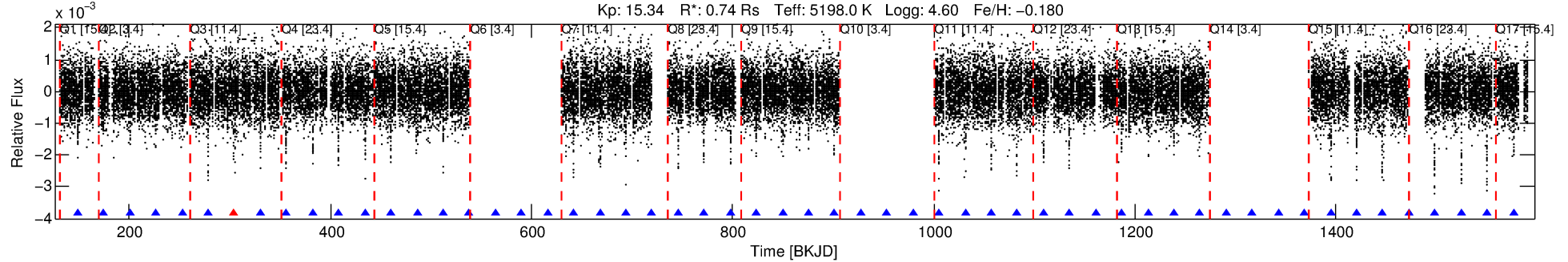
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003858824-02	3858824	003858884-02	3858884	1:1	61.1	14	-7	9.28	15.35	214.05	Direct-PRF	0	0.03	0.07

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: 3858824 Candidate: 2 of 2 Period: 25.952 d
KOI: K00996 Corr: No Ephemeris Match

Kp: 15.34 R*: 0.74 Rs Teff: 5198.0 K Logg: 4.60 Fe/H: -0.180



DV Fit Results:

Period = 25.95169 [0.00021] d
Epoch = 148.9338 [0.0063] BKJD
Rp/R* = 0.0712 [0.0403]
a/R* = 4.03 [0.46]
b = 1.00 [0.06]
Seff = 14.11 [2.82]
Teq = 494 [25] K
Rp = 5.76 [3.37] Re
a = 0.1597 [0.0185] AU
Ag = 28.85 [34.67] [0.80σ]
Teffp = 1771 [530] K [2.41σ]

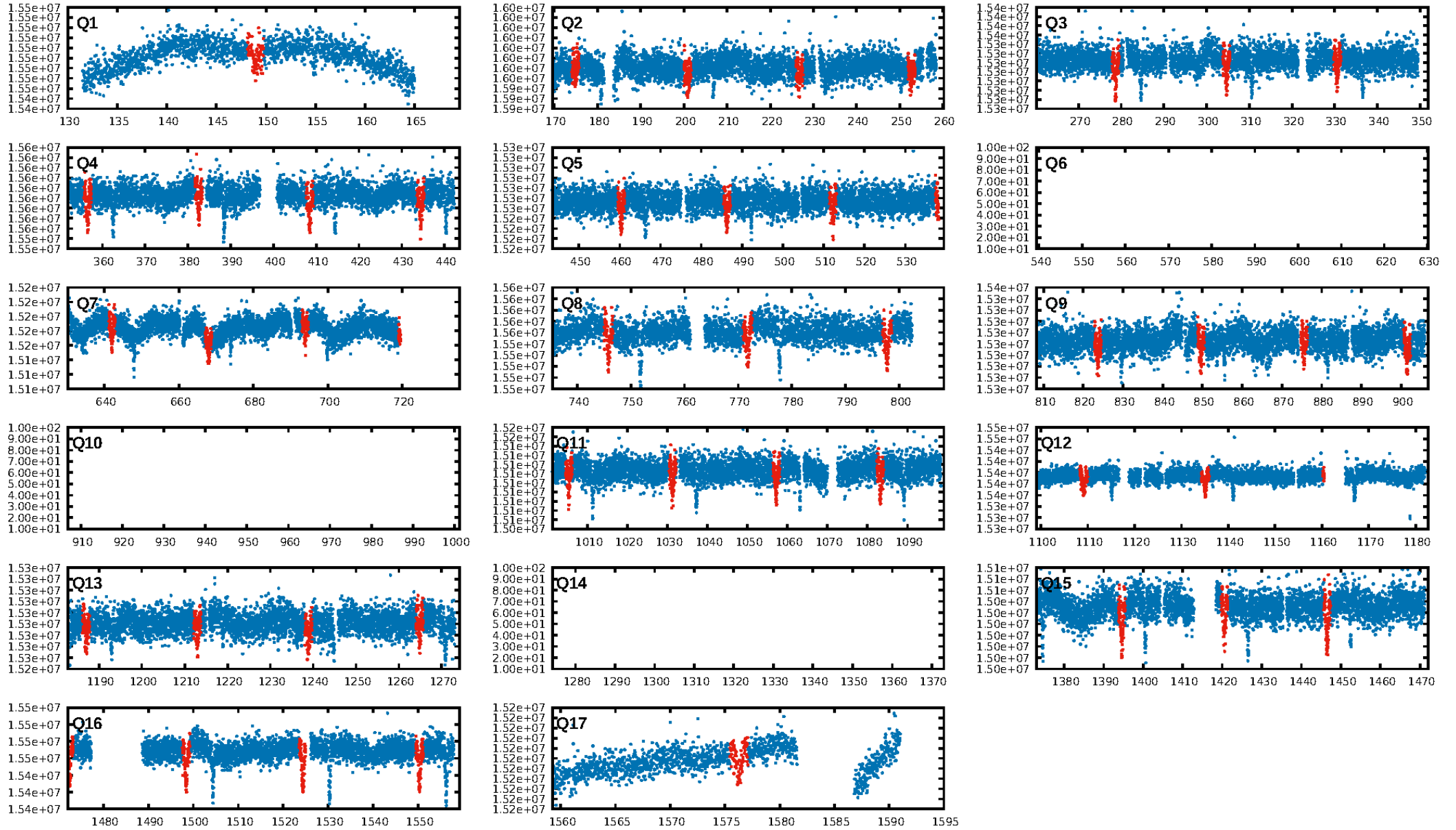
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.98 [41/42]
GhostDiagnostic-chr: -0.009938
Centroid-sig: 0.0%
Centroid-so: 1.214 arcsec [5.12σ]
OotOffset-rm: 1.933 arcsec [3.29σ]
KicOffset-rm: 1.928 arcsec [3.34σ]
OotOffset-st: 1/4/2/5 [12]
KicOffset-st: 1/4/2/5 [12]
DiffImageQuality-fgm: 0.00 [0/12]
DiffImageOverlap-fno: 1.00 [12/12]

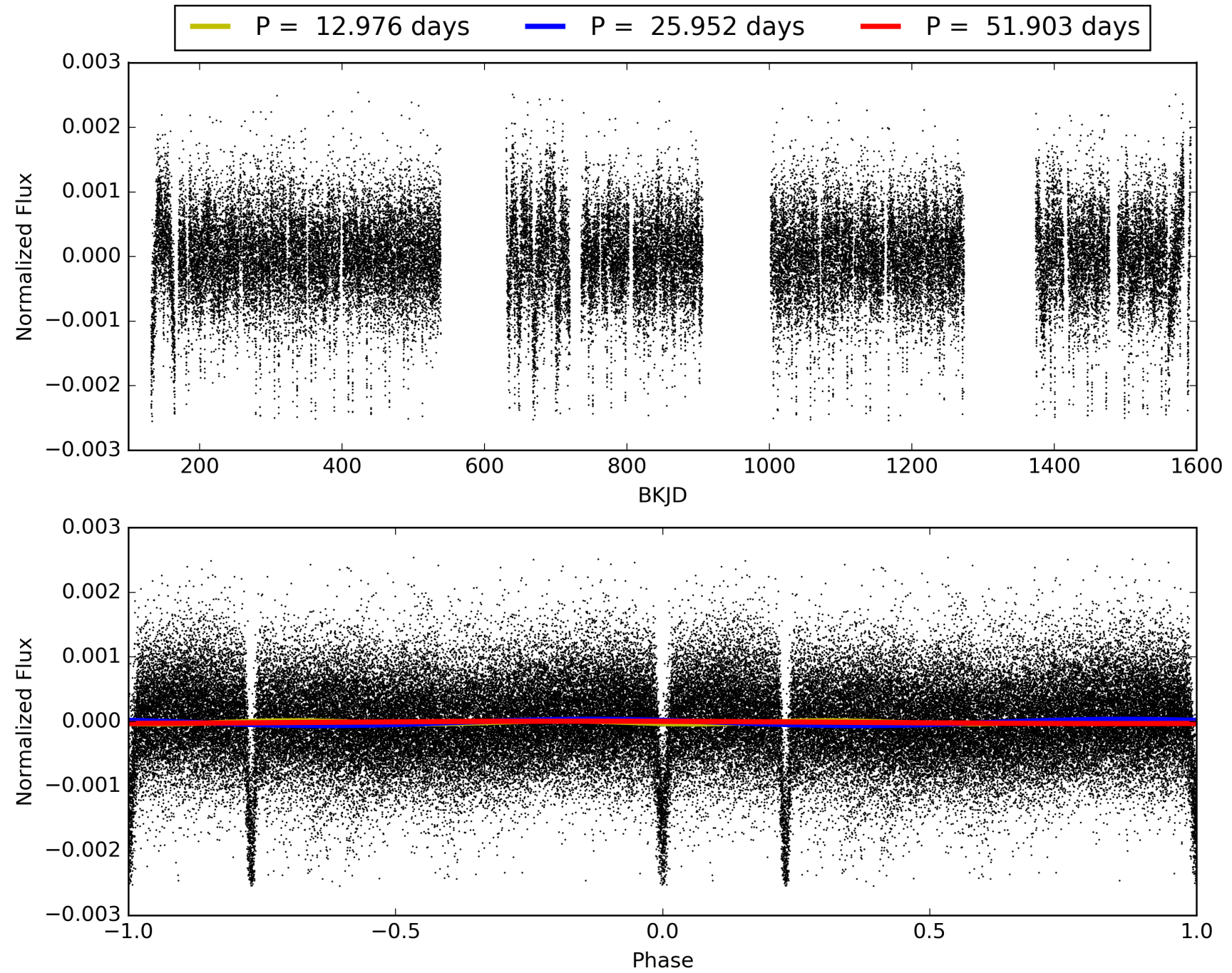
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:20:36 Z

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

TCE 003858824-02, PDC Light Curves

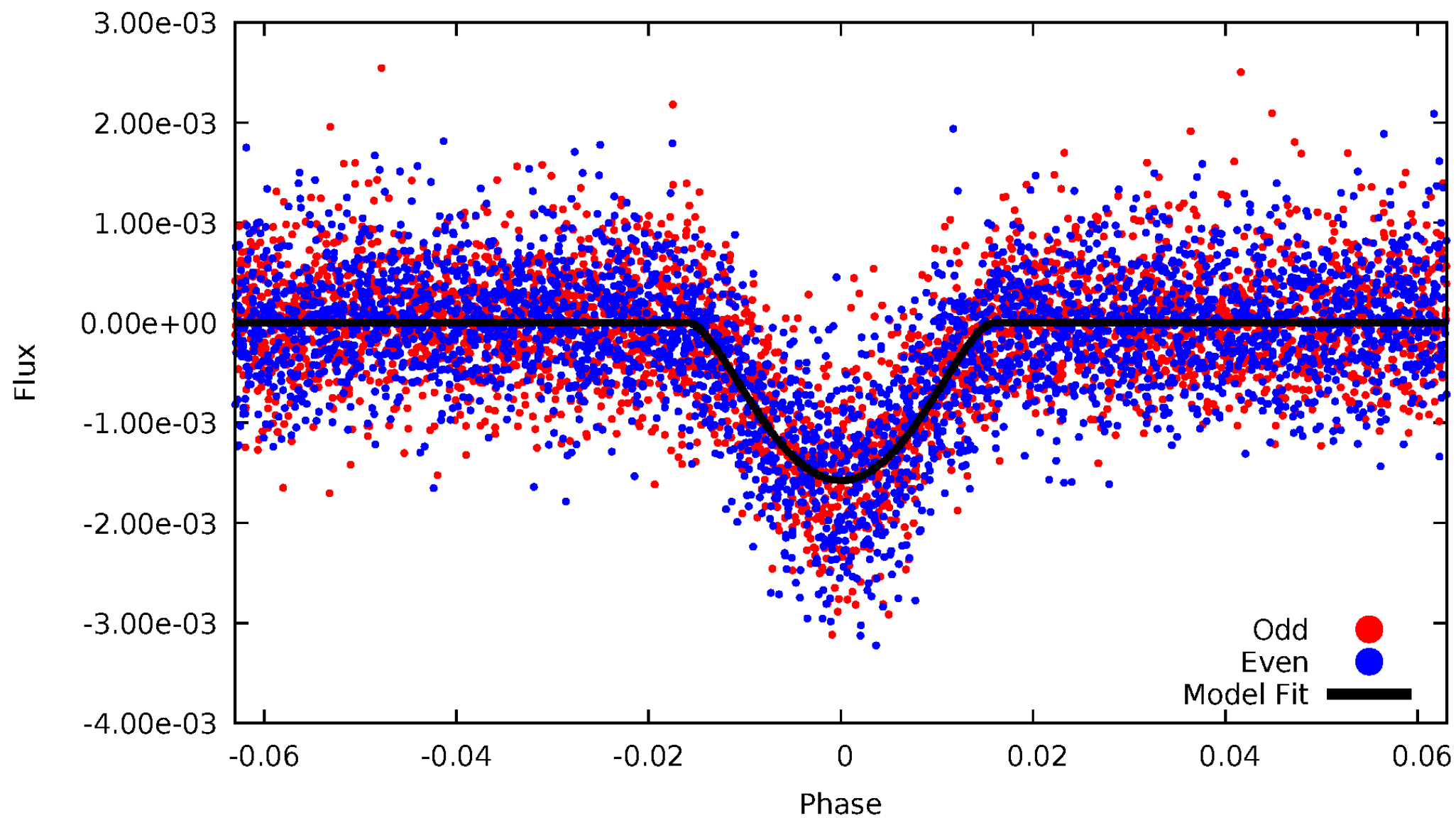


TCE 003858824-02



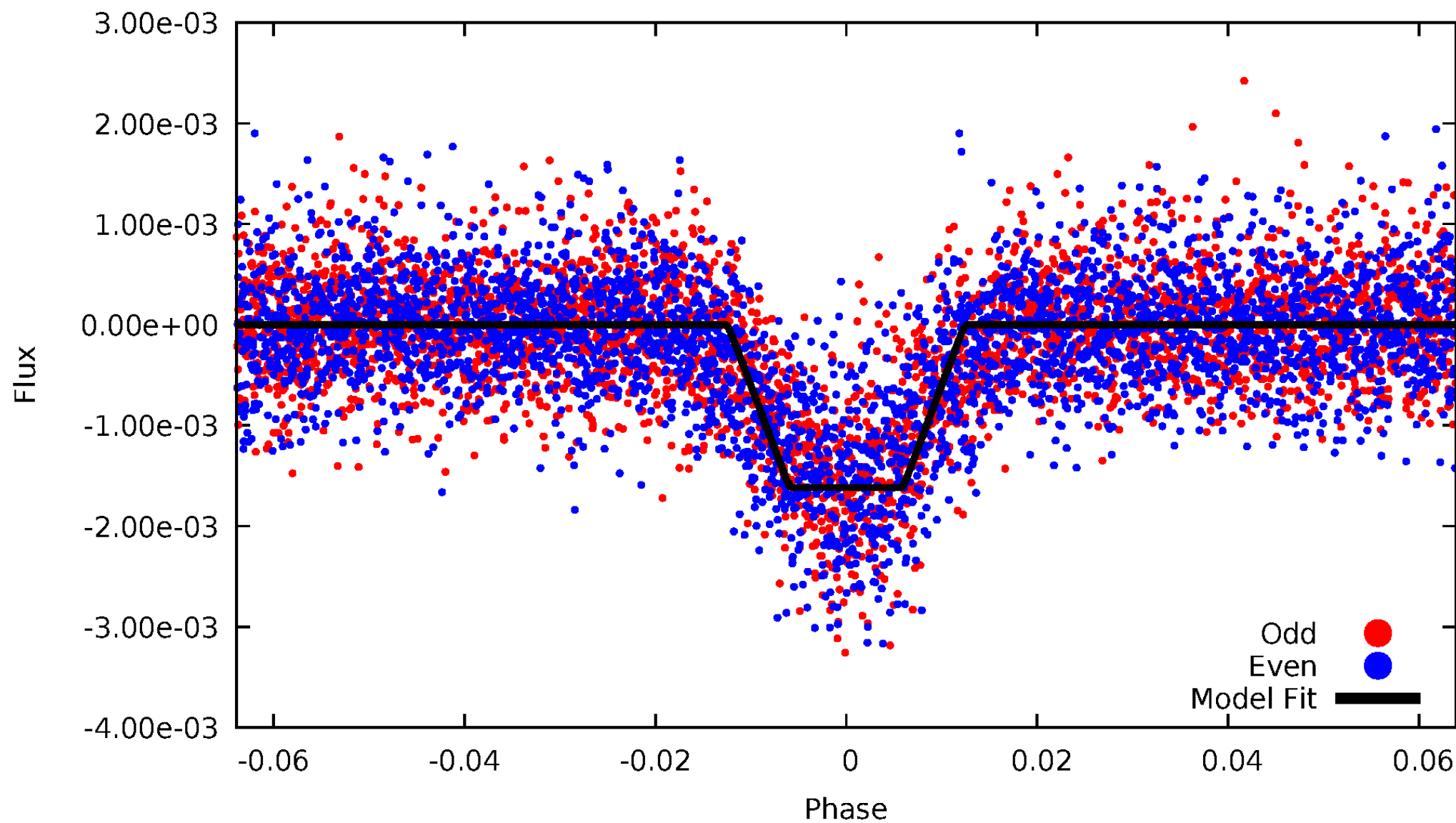
DV Odd/Even

TCE 003858824-02



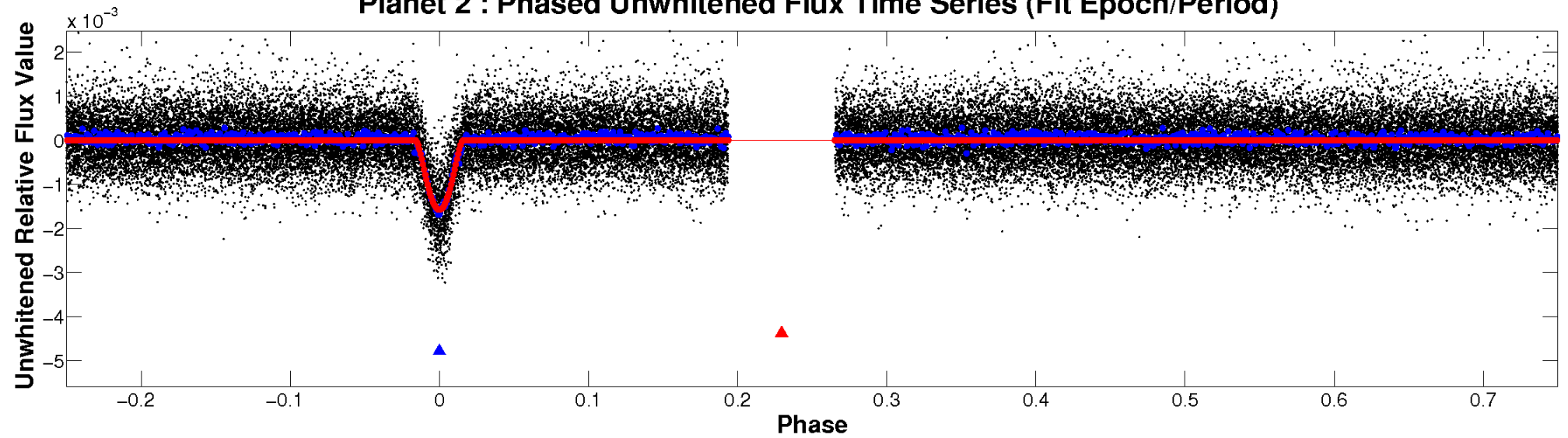
ALT Odd/Even

TCE 003858824-02

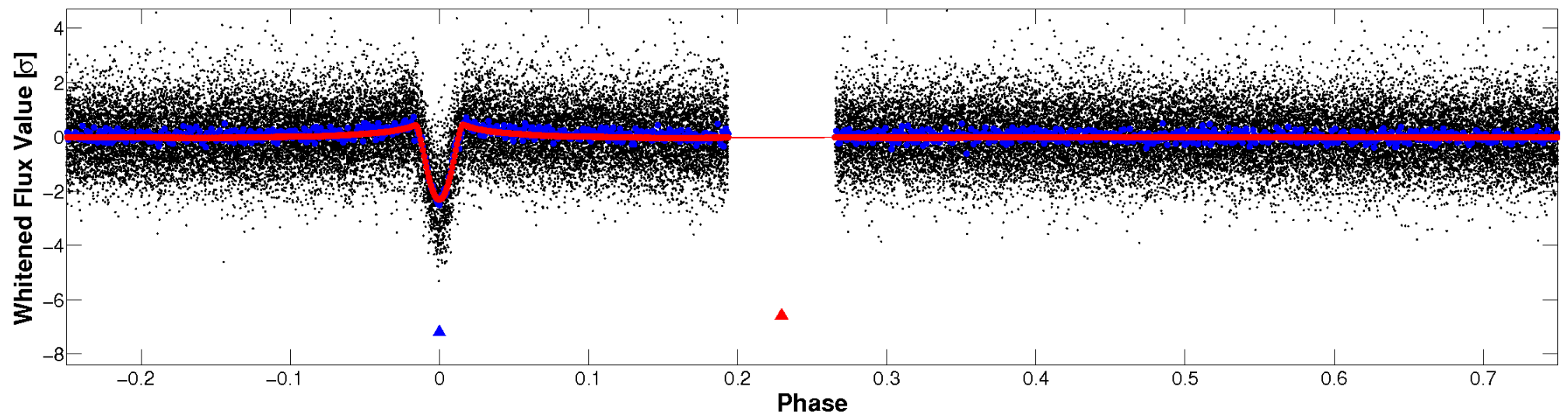


Non-Whitened Vs. Whitened Light Curve

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

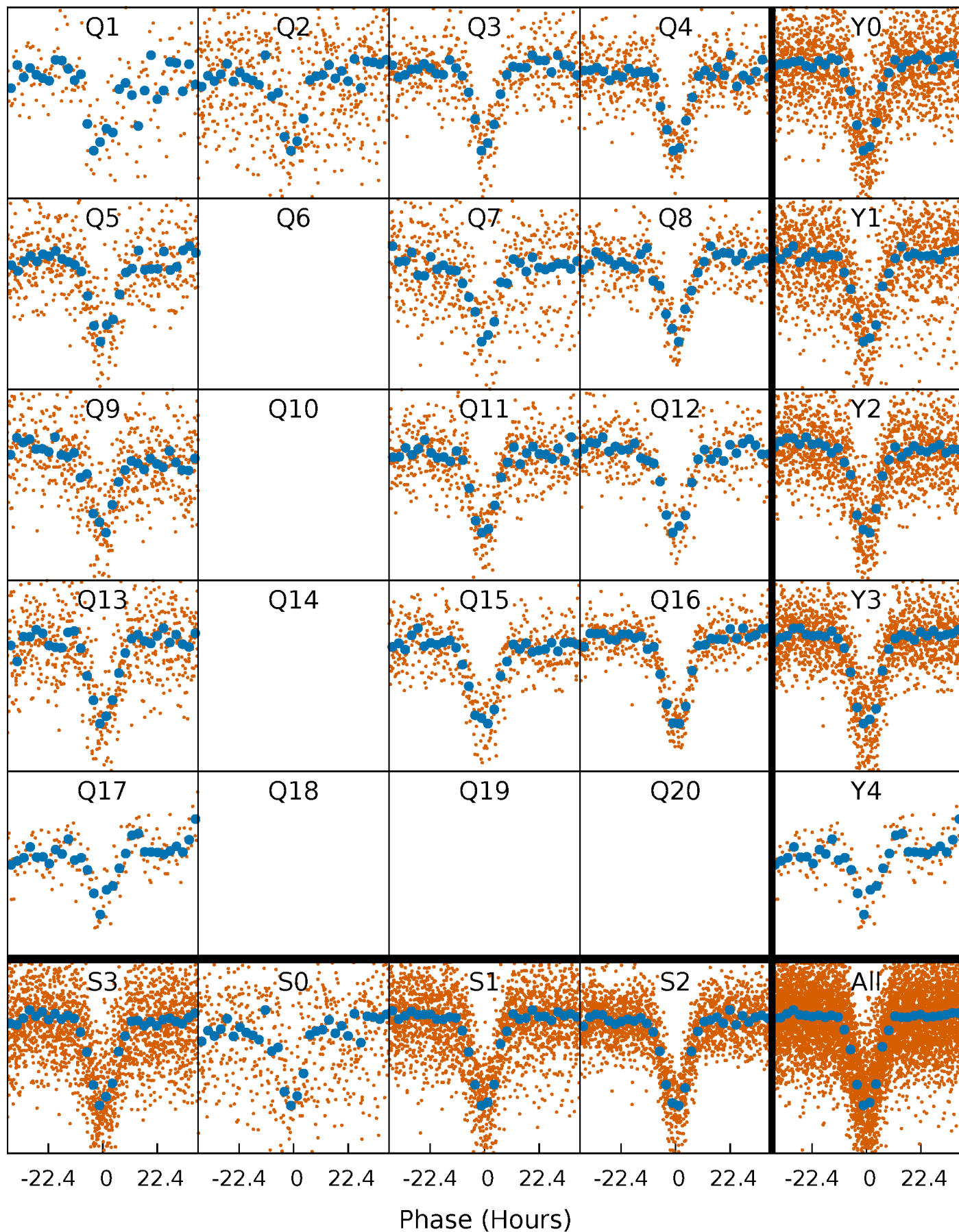


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



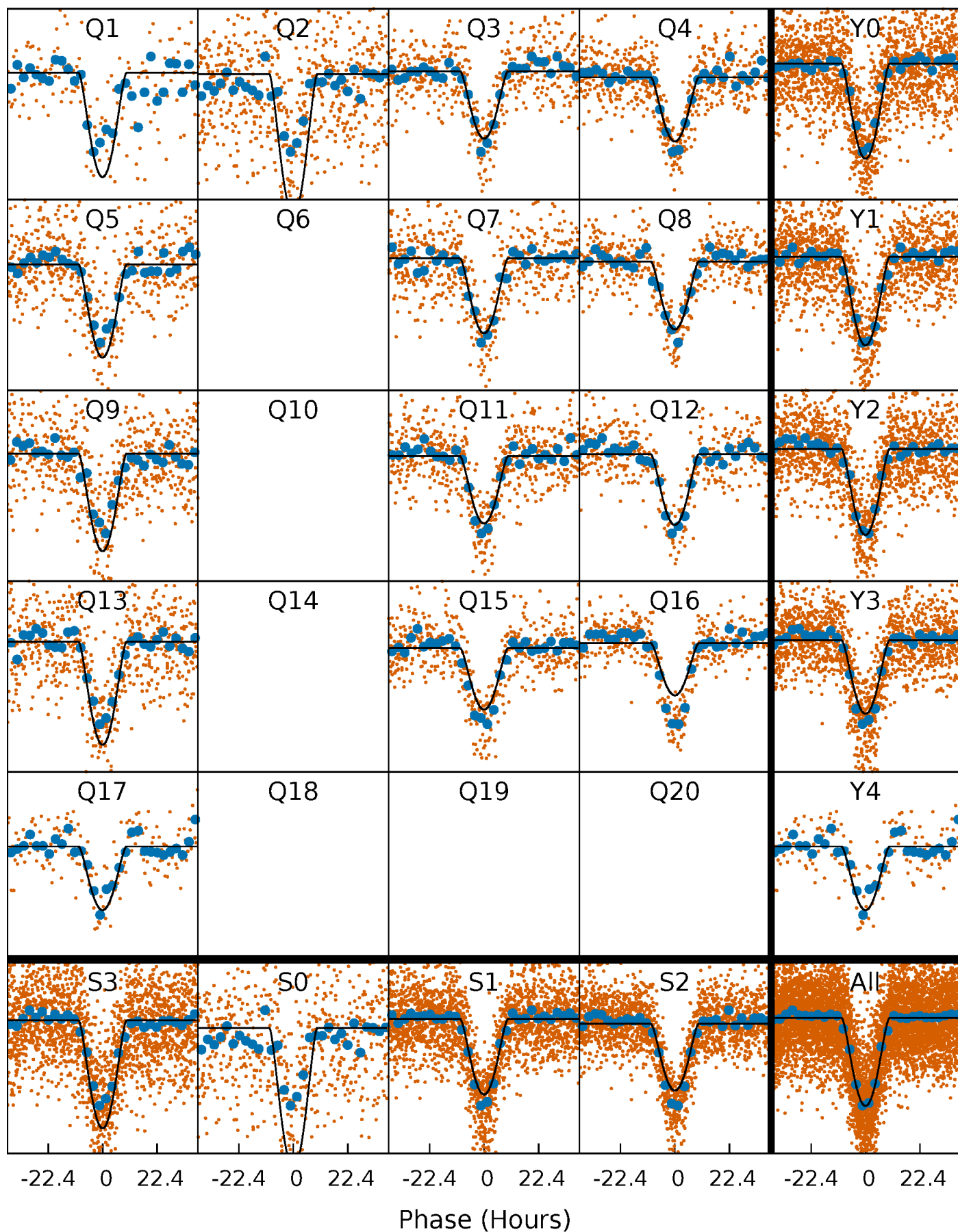
PDC Quarter-Phased Transit Curves

TCE 003858824-02 P= 25.951689 Days $T_0=148.933815$ (BKJD)



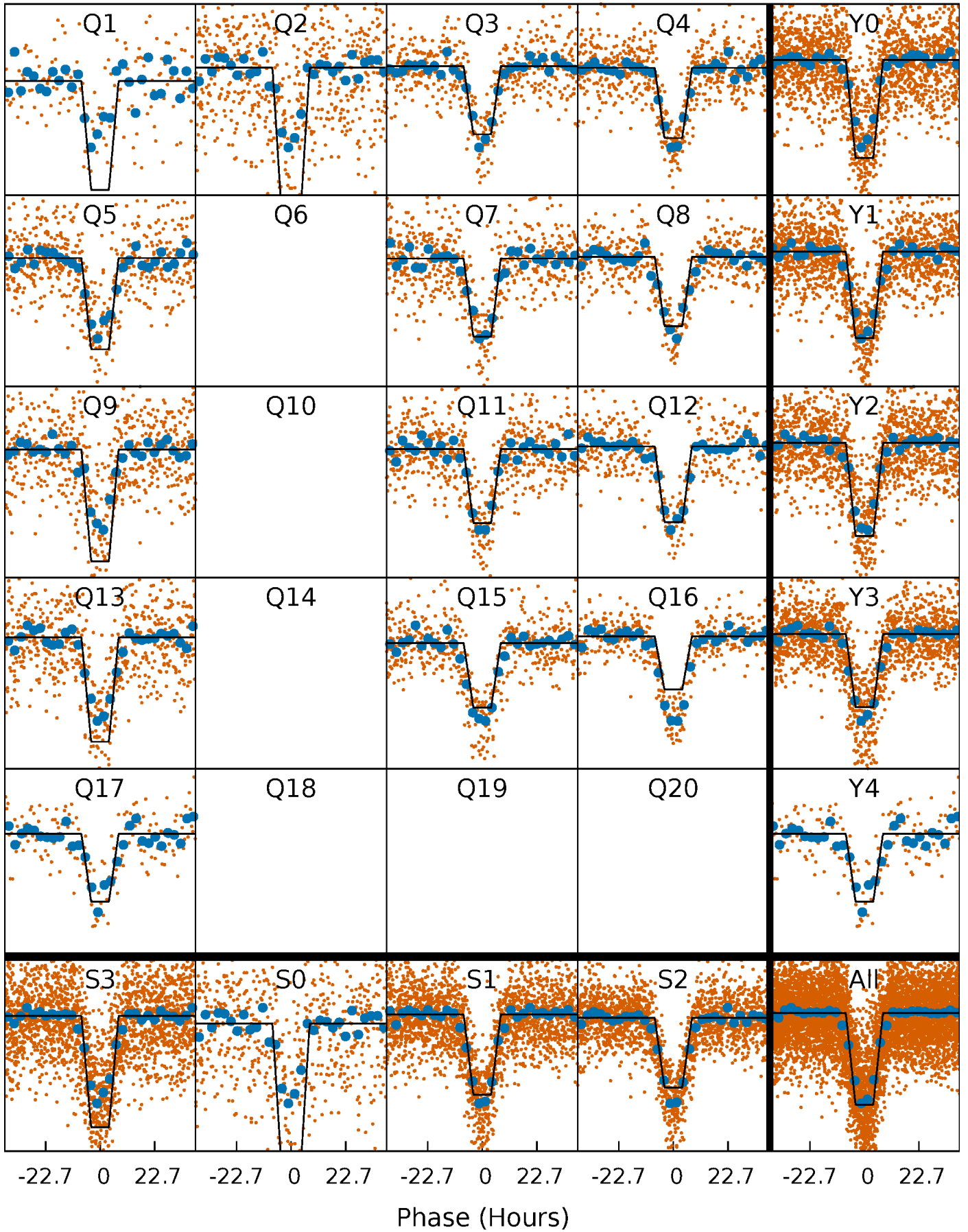
DV Quarter-Phased Transit Curves

TCE 003858824-02 P= 25.951689 Days $T_0=148.933815$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

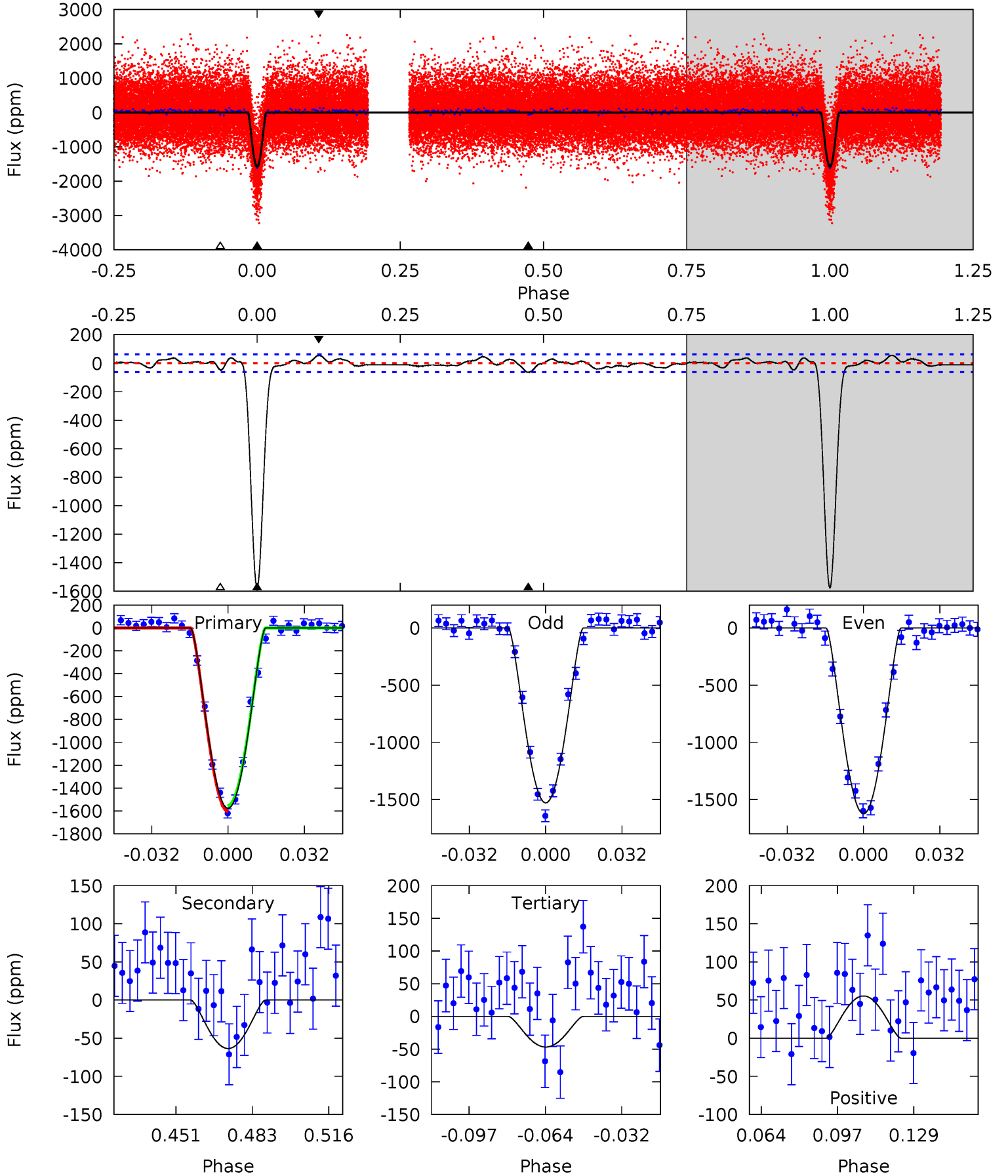
TCE 003858824-02 P= 25.951547 Days $T_0=148.936446$ (BKJD)



DV Model-Shift Uniqueness Test

003858824-02, P = 25.951689 Days, E = 122.982126 Days

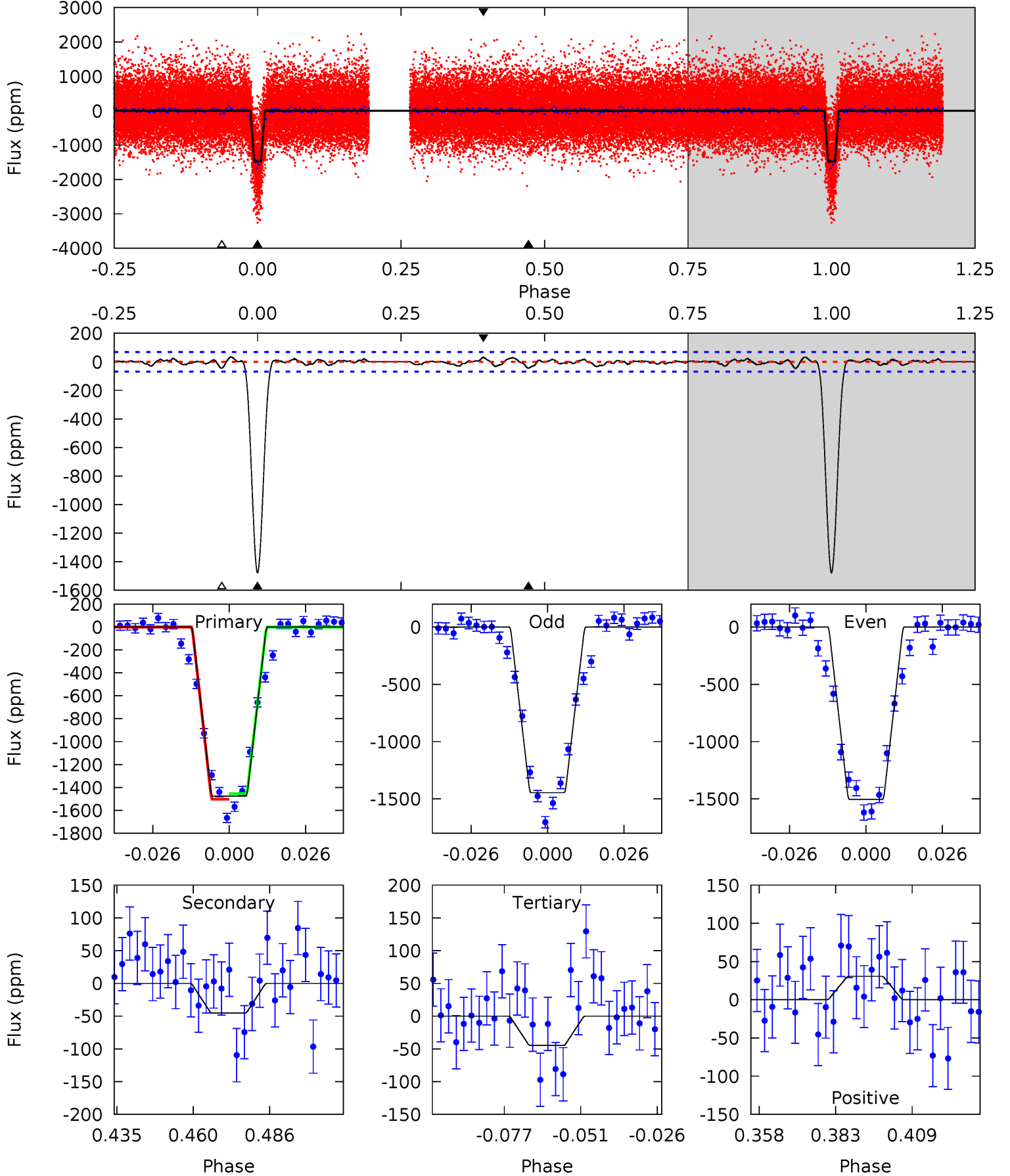
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
121.6	4.90	3.61	4.27	4.80	2.14	1.56	117.9	117.3	1.29	0.63	3.68	0.93	0.03	1.91



Alt Model-Shift Uniqueness Test

003858824-02, P = 25.951547 Days, E = 122.984899 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
103.6	3.17	3.14	2.15	4.84	2.23	0.92	100.4	101.4	0.03	1.02	2.03	0.96	0.02	1.71



Stellar Parameters For KIC 003858824

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5198^{+154}_{-154}	$4.604^{+0.036}_{-0.084}$	$-0.180^{+0.300}_{-0.300}$	$0.742^{+0.107}_{-0.057}$	$0.813^{+0.074}_{-0.083}$	$2.804^{+0.442}_{-0.814}$
	+3%/-3%	+1%/-2%	+167%/-167%	+14%/-8%	+9%/-10%	+16%/-29%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003858824-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-64 ± 13	$5.99^{+3.43}_{-3.11}$	697^{+27}_{-24}	2516^{+572}_{-244}	23^{+80}_{-13}
Alt.	-45 ± 14	$4.07^{+2.95}_{-2.60}$	696^{+27}_{-25}	2653^{+994}_{-335}	35^{+269}_{-24}

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

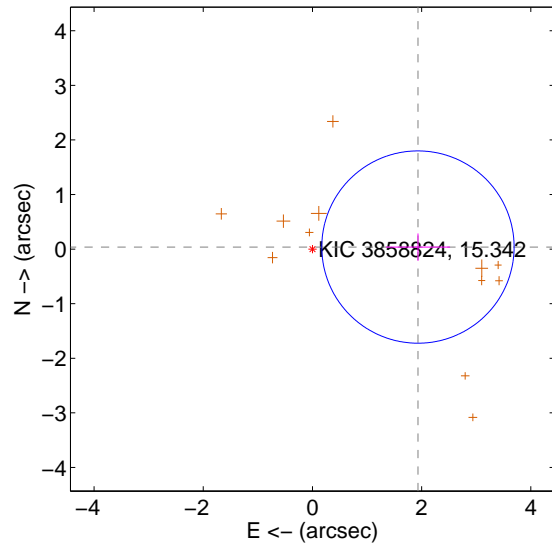
Supplemental centroid analysis for 003858824-02. Kepler magnitude: 15.34. Transit SNR 59.79

There are 0 quarters with good PRF difference image offsets

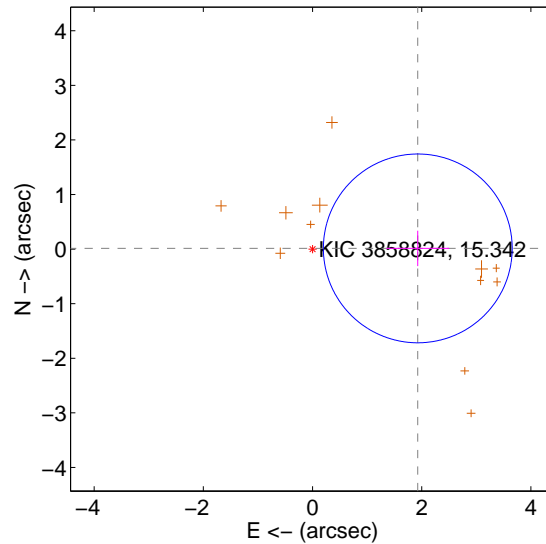
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.933 ± 0.587	3.29	-1.933 ± 0.587	0.037 ± 0.250
PRF-fit source offset from KIC position	1.928 ± 0.576	3.34	-1.928 ± 0.576	0.013 ± 0.324
photometric centroid source offset	1.21 ± 0.24	5.12	0.18 ± 0.22	1.20 ± 0.24

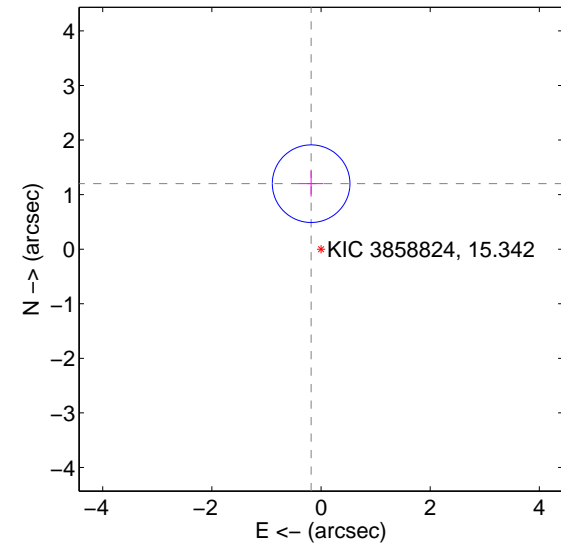
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

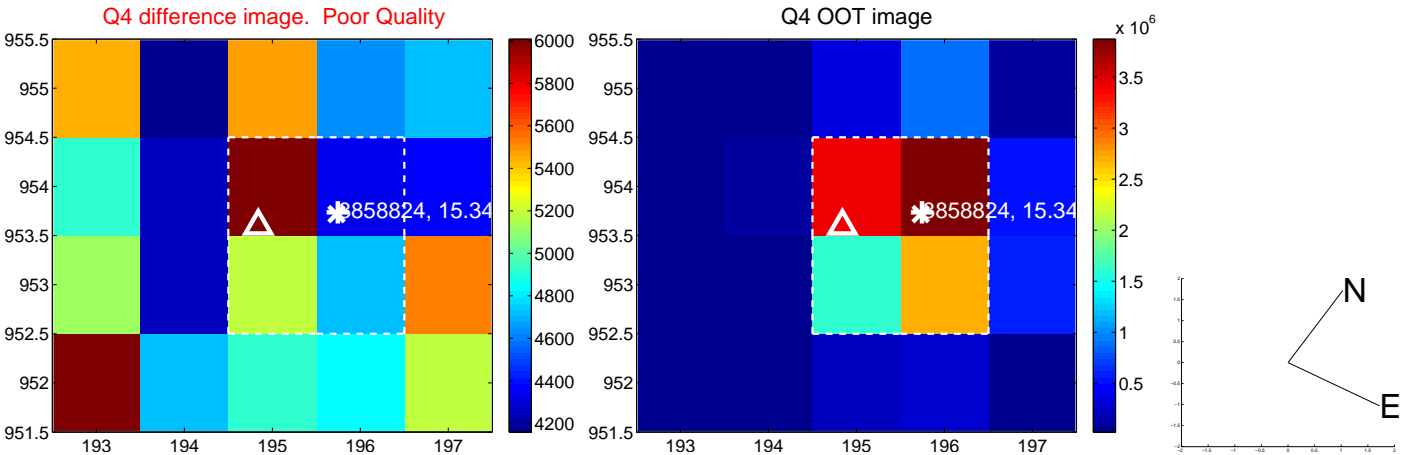
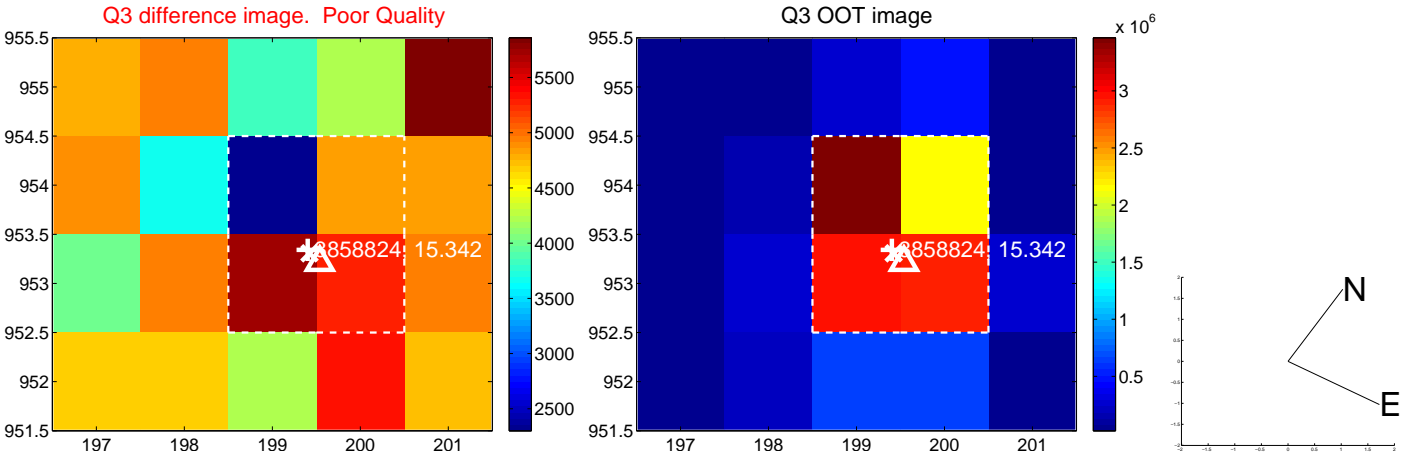
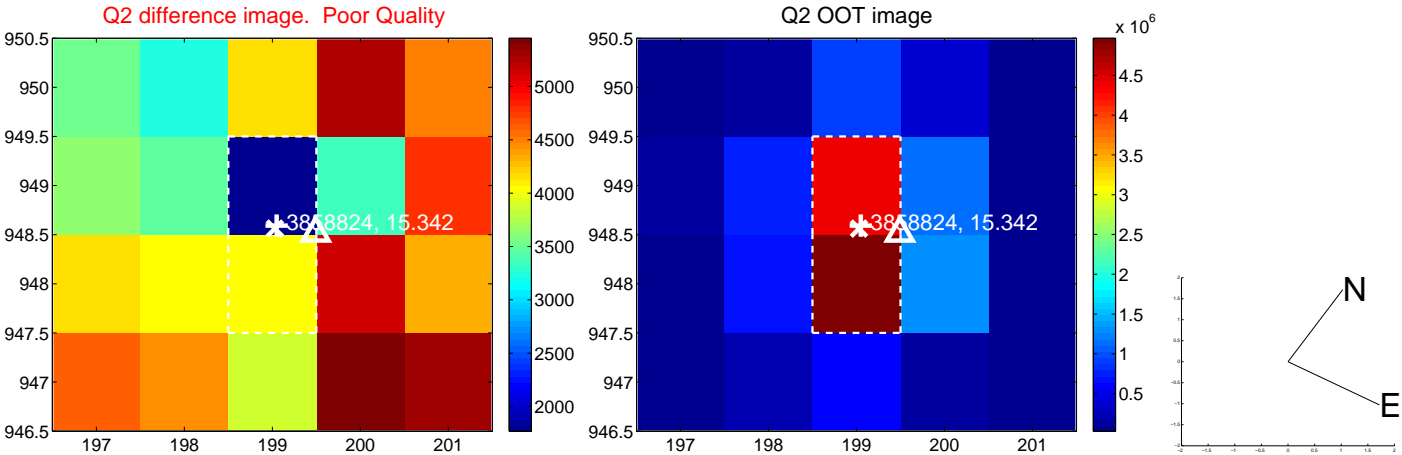
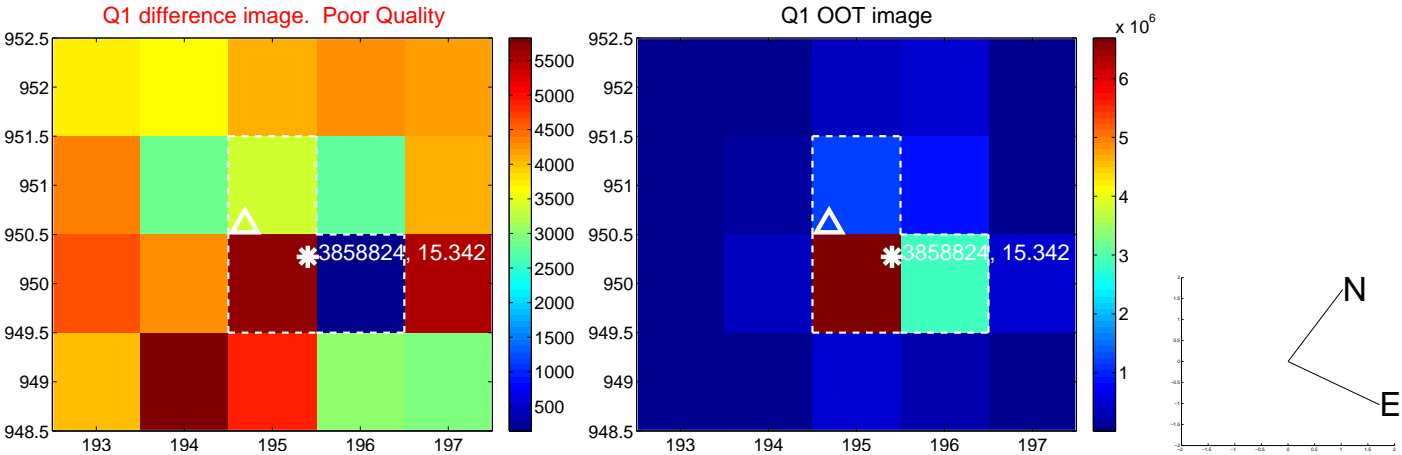


offset from photometric centroids

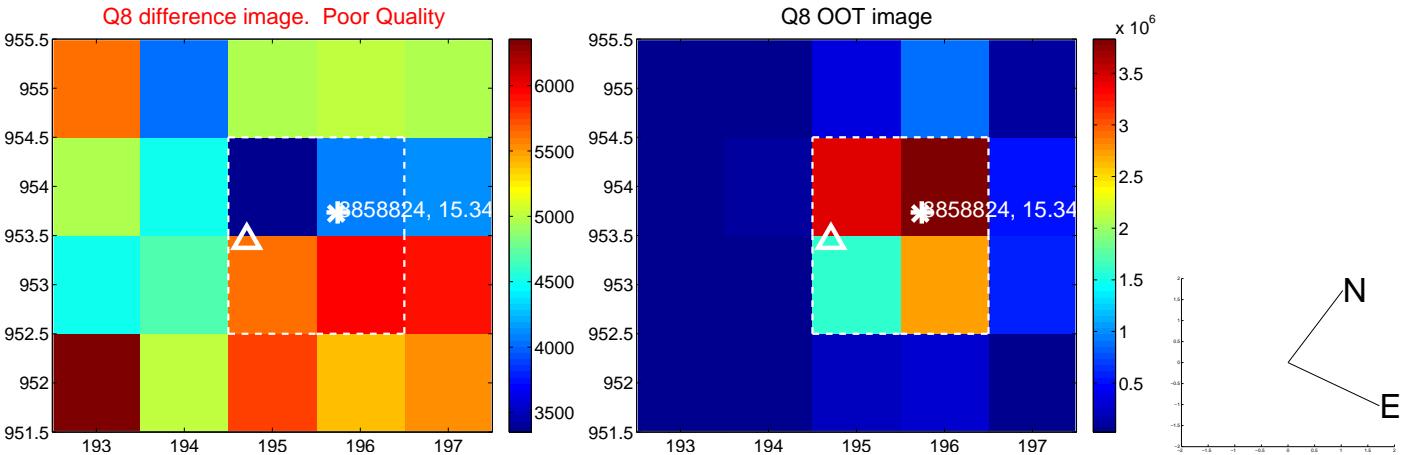
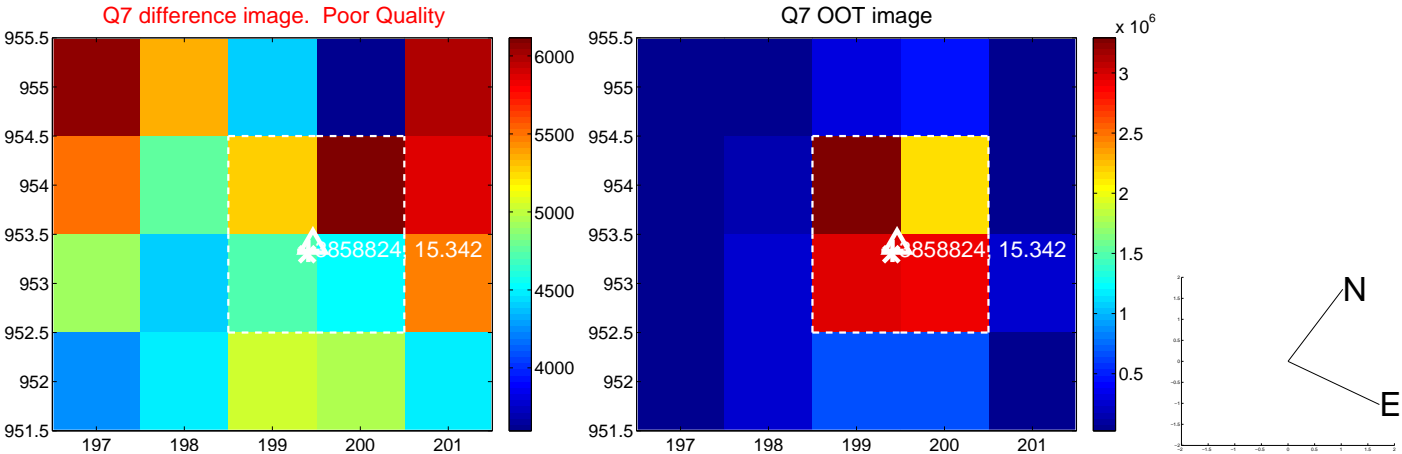
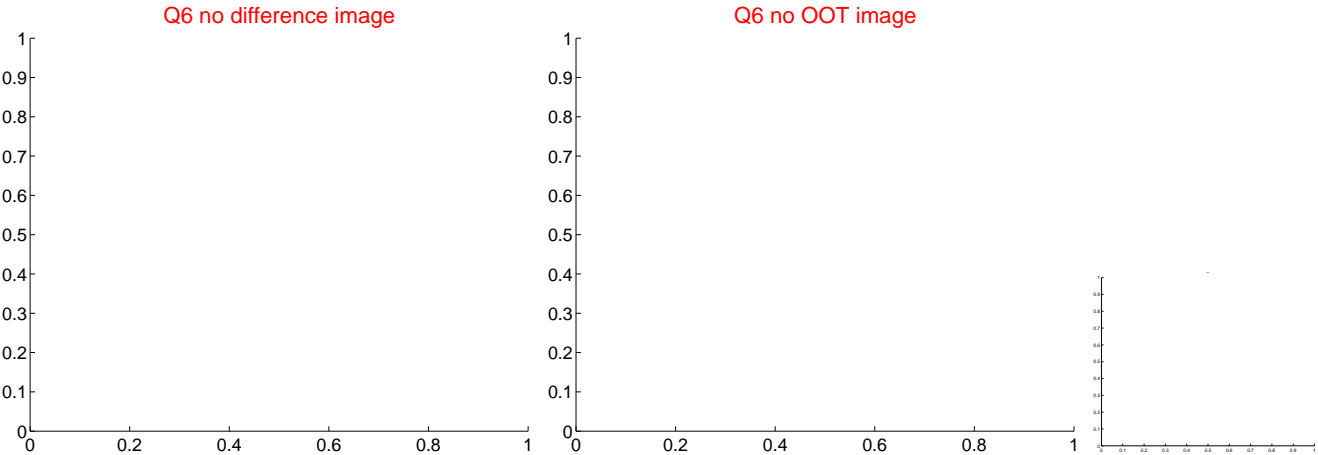
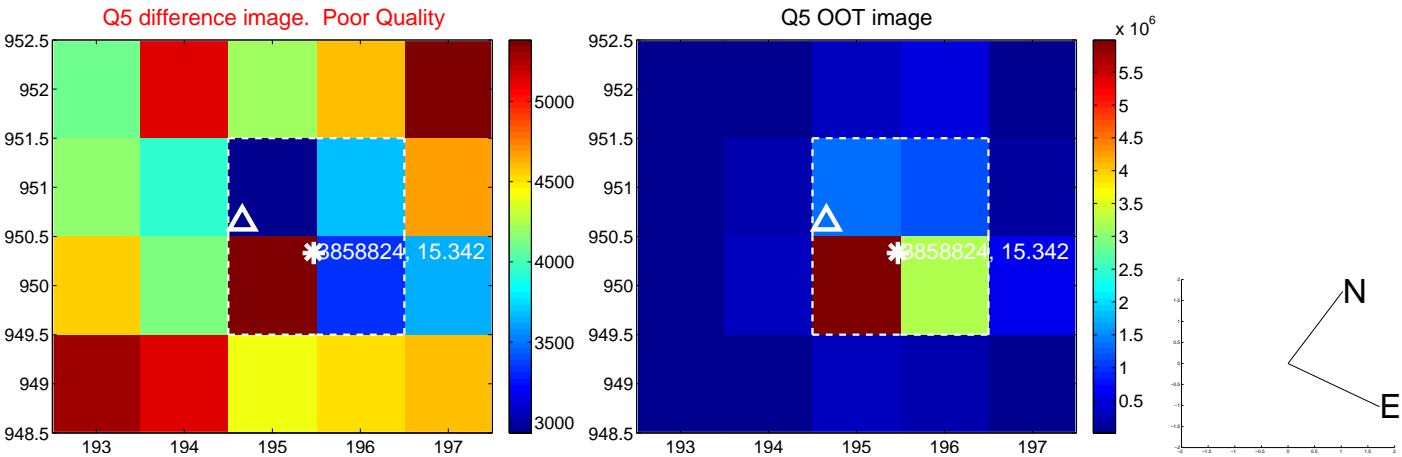


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

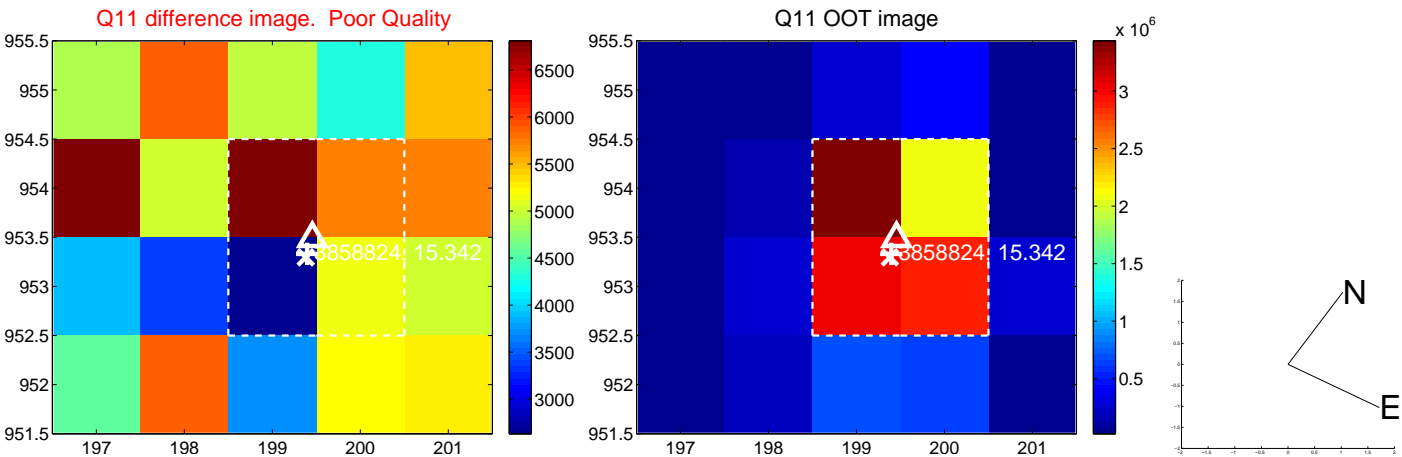
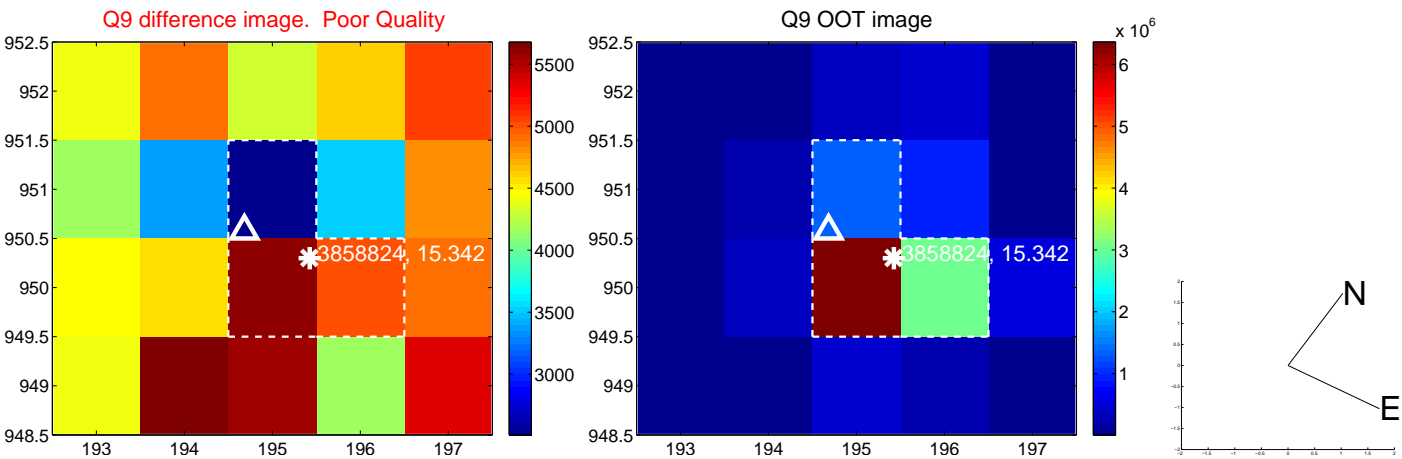
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



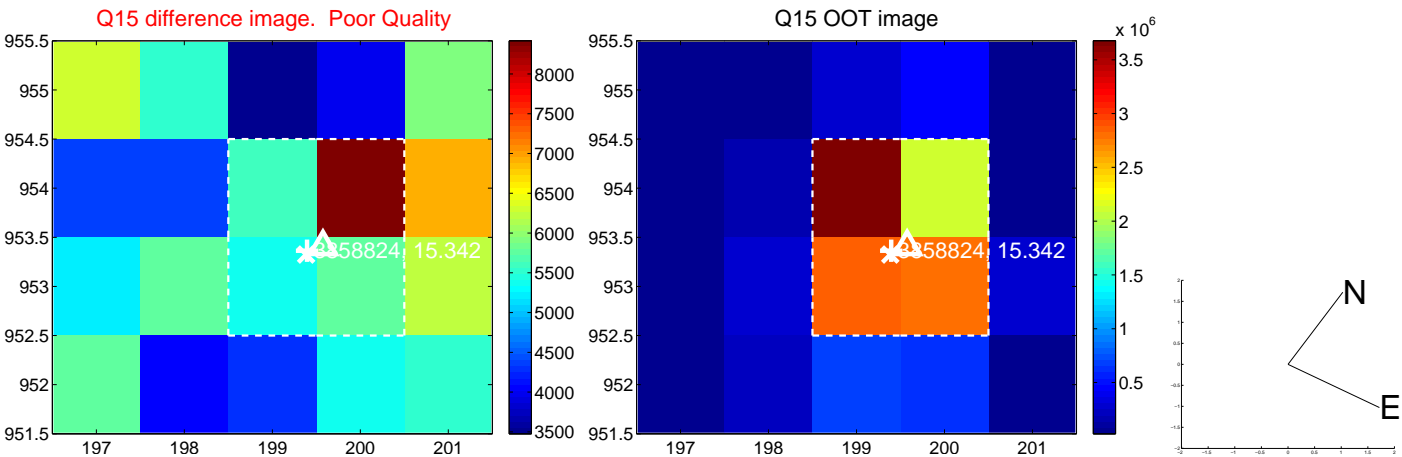
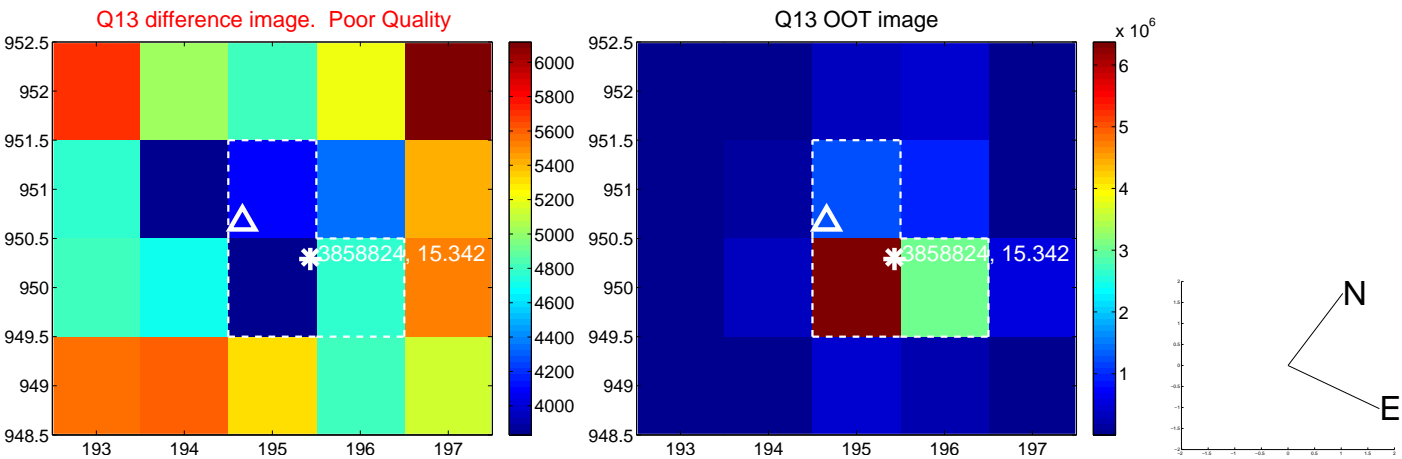
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



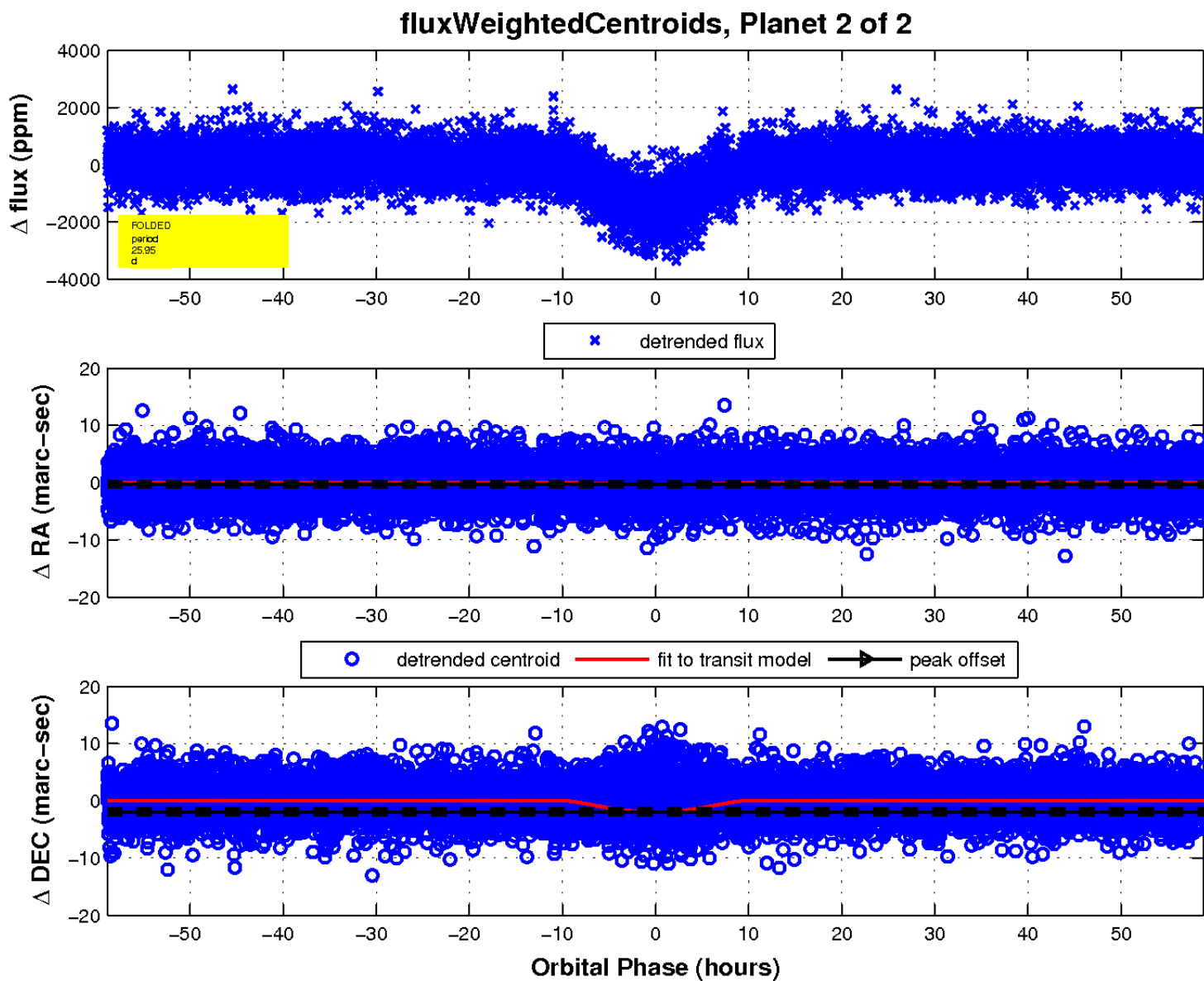
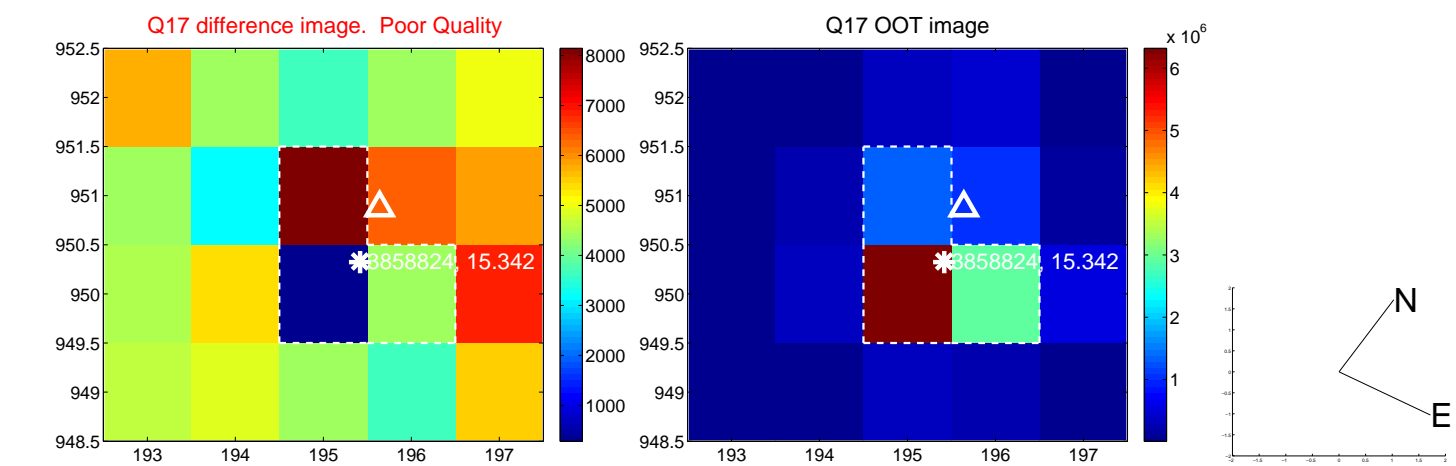
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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.



UKIRT Image

Declination

