

KIC 003757521

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})
003757521-01	OBS	No	274.081511	248.433974	70.8	6.381	8.0	2.0	1.86	6861	1.82	7.71
003757521-02	OBS	No	0.751392	132.214961	16.5	2.037	8.9	7.8	1.86	6861	0.88	20094.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003757521-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
003757521-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_ALT

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

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

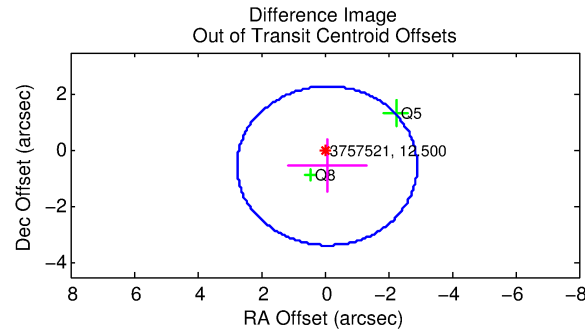
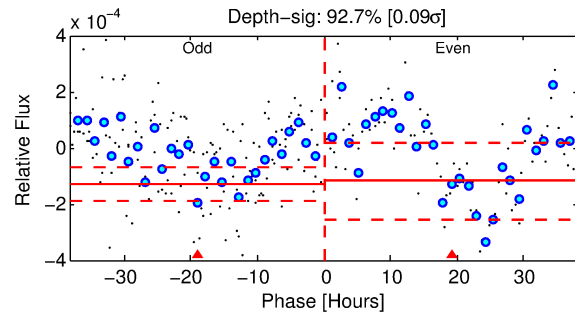
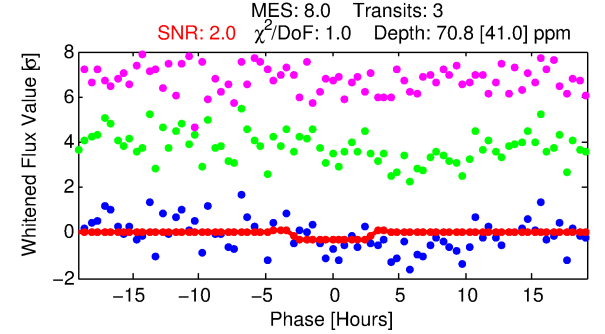
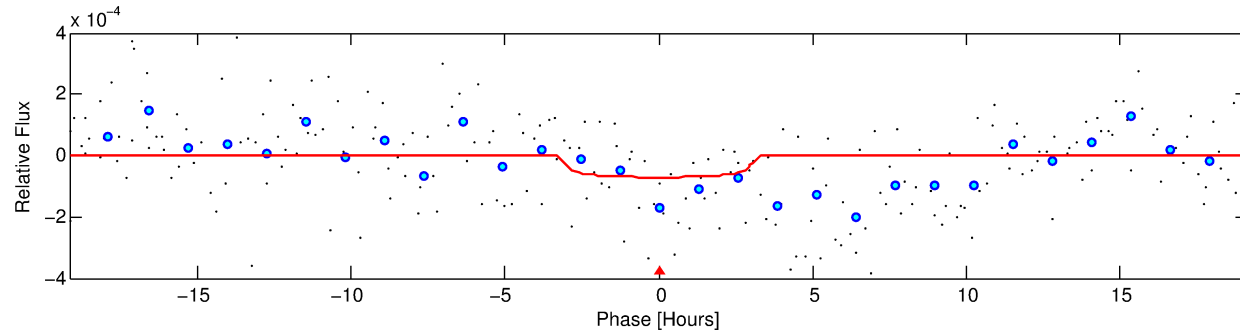
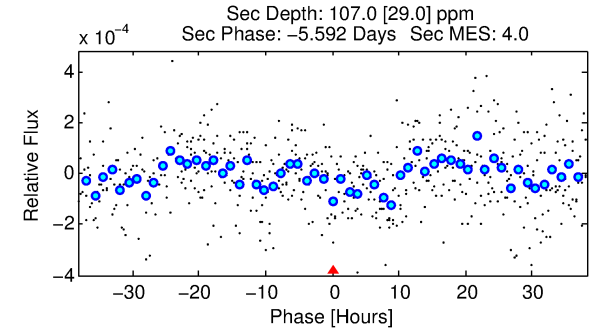
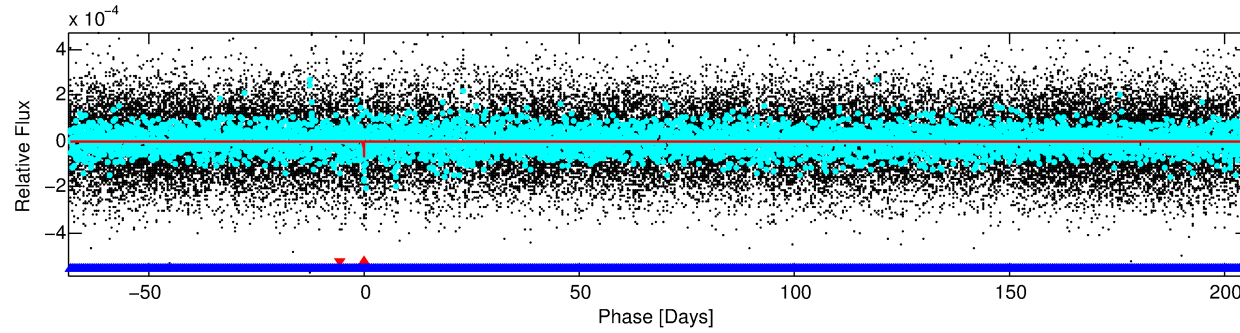
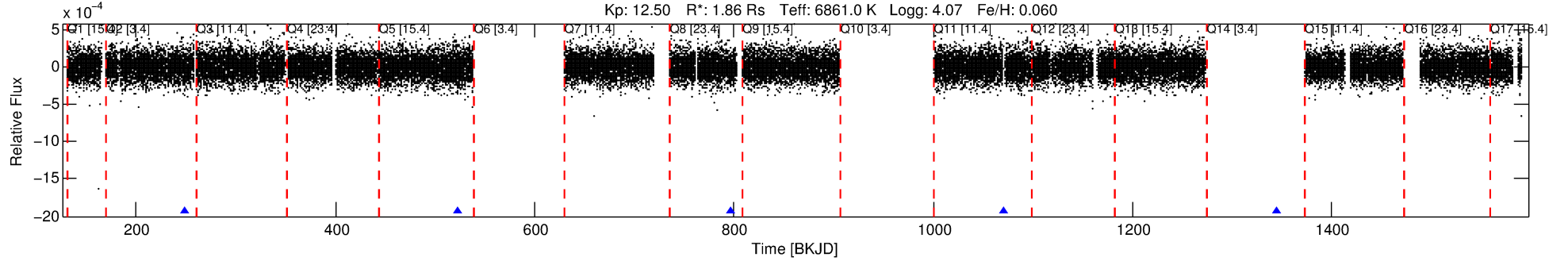
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003757521-01

No Significant Match Found

DV One-Page Summary

KIC: 3757521 Candidate: 1 of 2 Period: 274.082 d
KOI: K05006 Corr: No Ephemeris Match



DV Fit Results:

Period = 274.08151 [0.02704] d
Epoch = 248.4340 [0.0337] BKJD
Rp/R* = 0.0090 [0.0089]
a/R* = 150.45 [849.86]
b = 0.90 [1.21]
Seff = 7.71 [1.86]
Teq = 425 [26] K
Rp = 1.82 [1.85] Re
a = 0.9464 [0.1505] AU
Ag = 15832.29 [32059.74] [0.49σ]
Teffp = 7369 [3706] K [1.87σ]

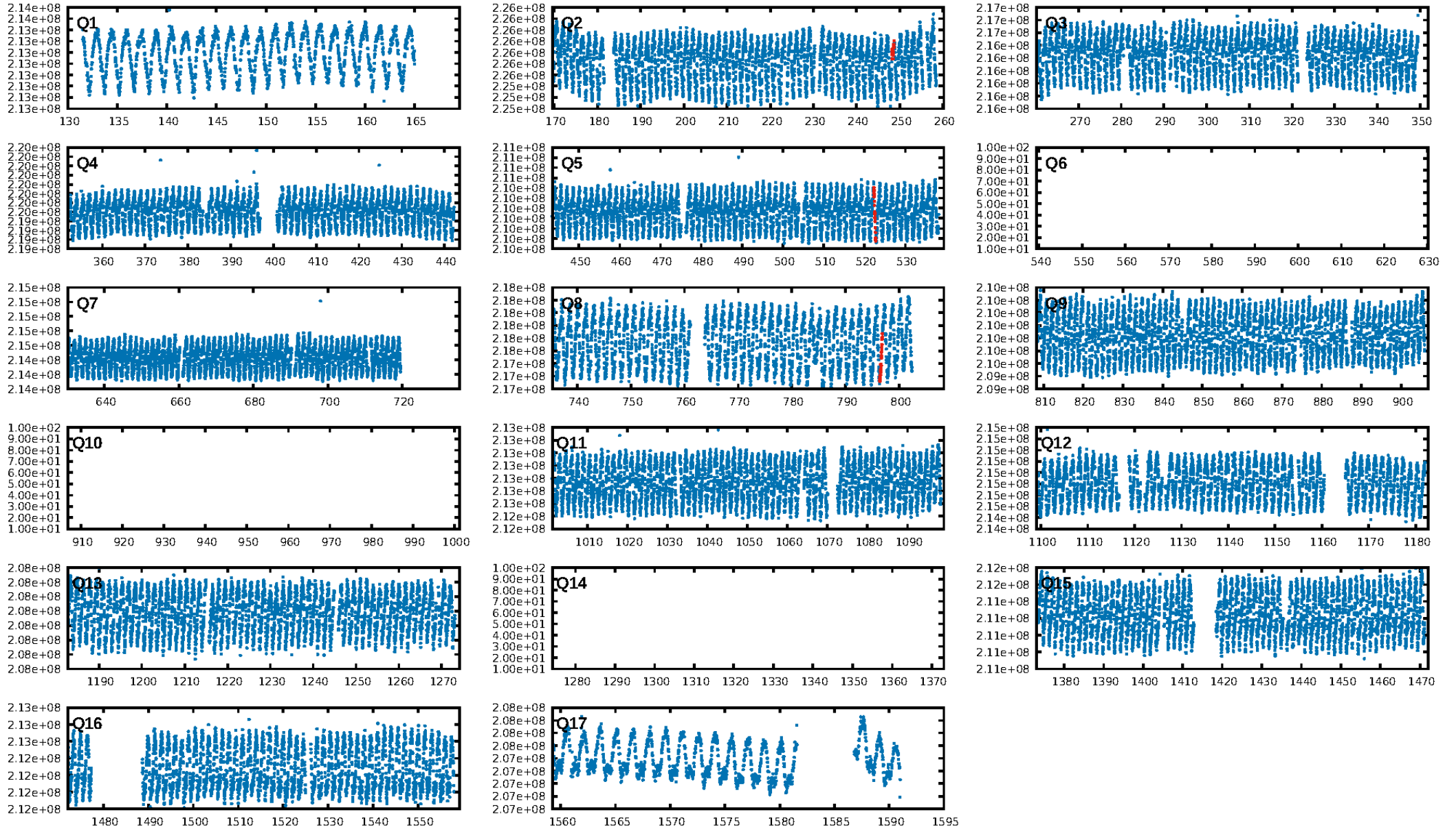
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [979.32σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.0%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: 5.08e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6197
Centroid-sig: 40.0%
Centroid-so: 3.253 arcsec [0.64σ]
OotOffset-rm: 0.548 arcsec [0.58σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-rm: 0.515 arcsec [0.54σ]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/3]

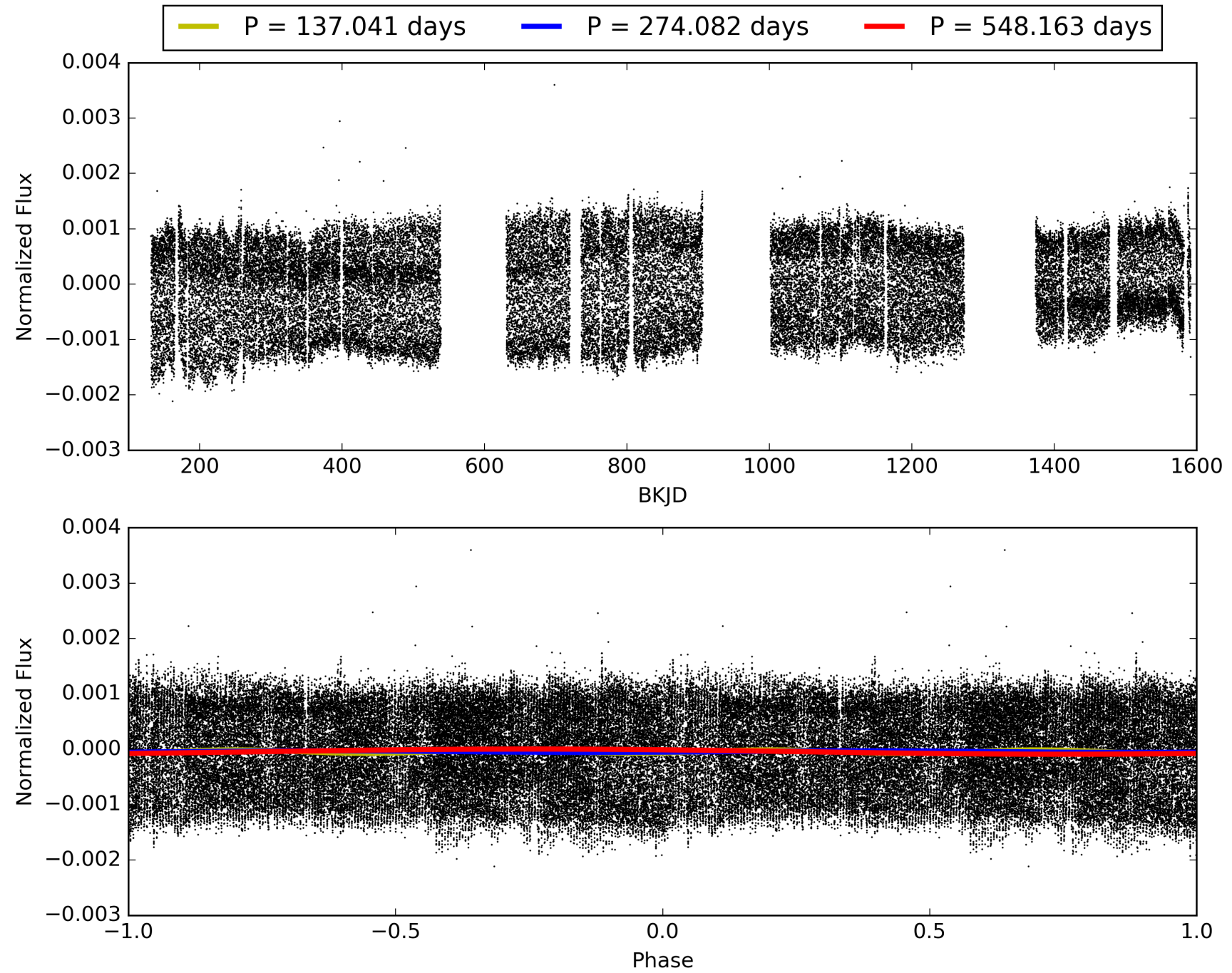
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:15:08 Z

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

TCE 003757521-01, PDC Light Curves

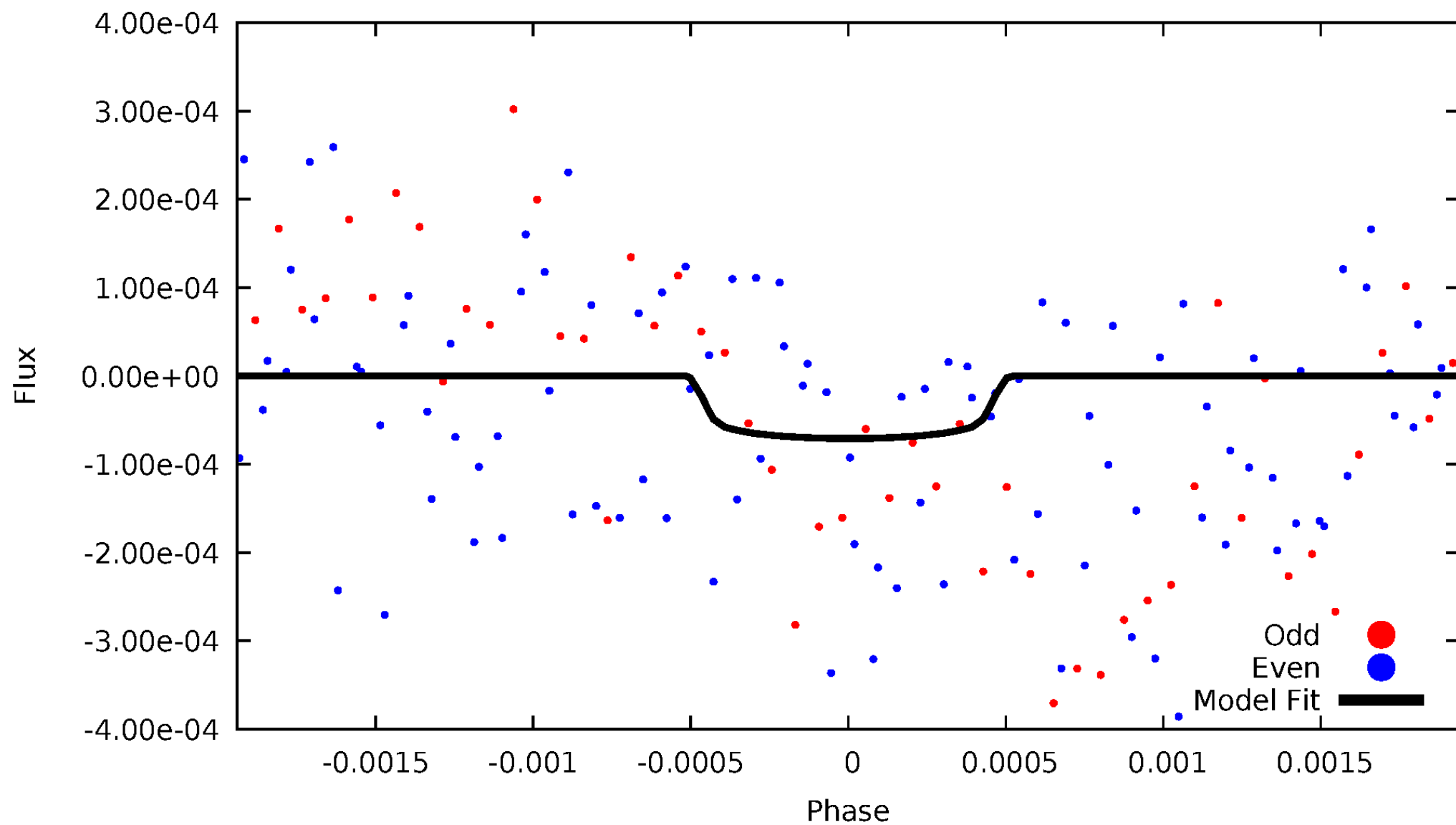


TCE 003757521-01



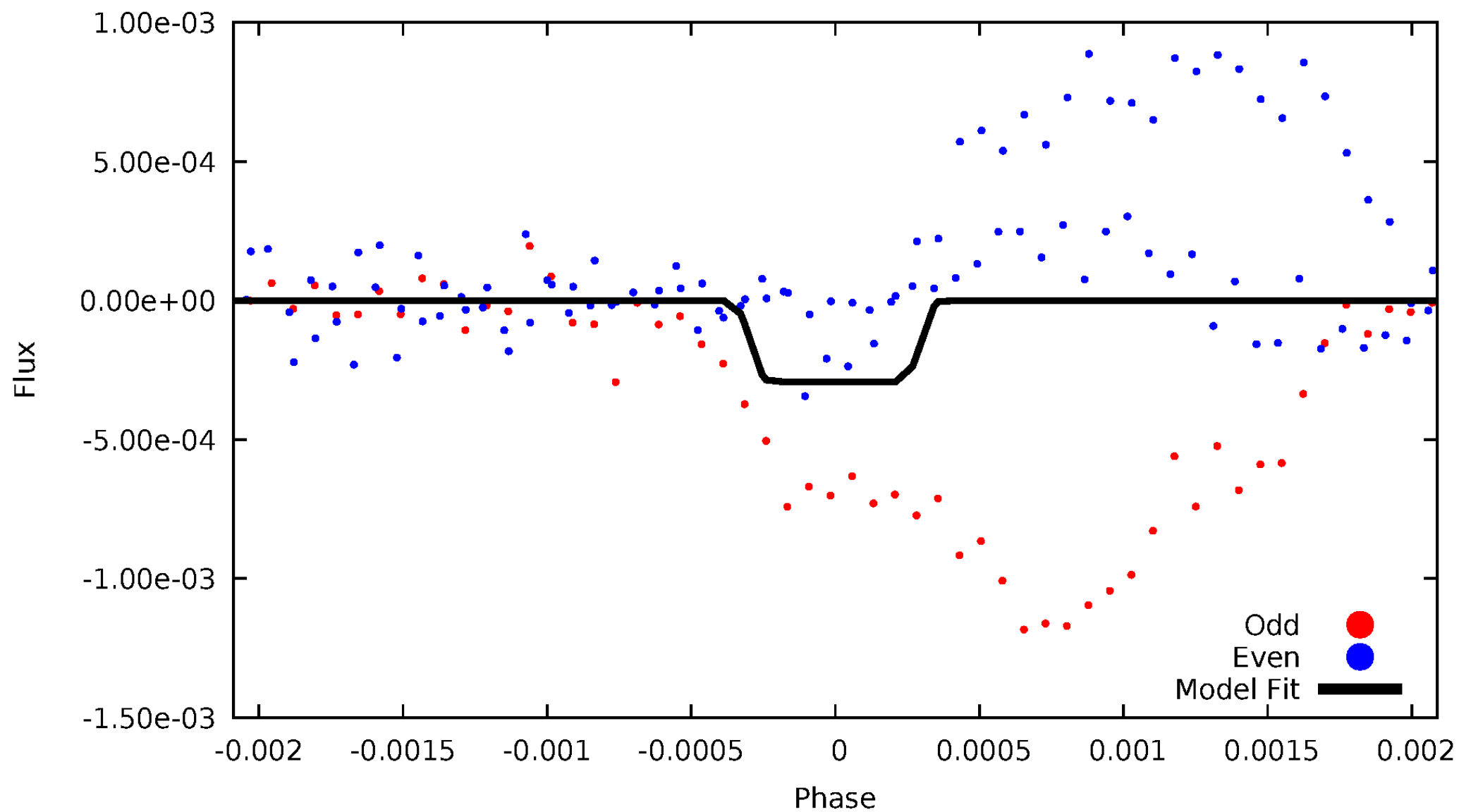
DV Odd/Even

TCE 003757521-01

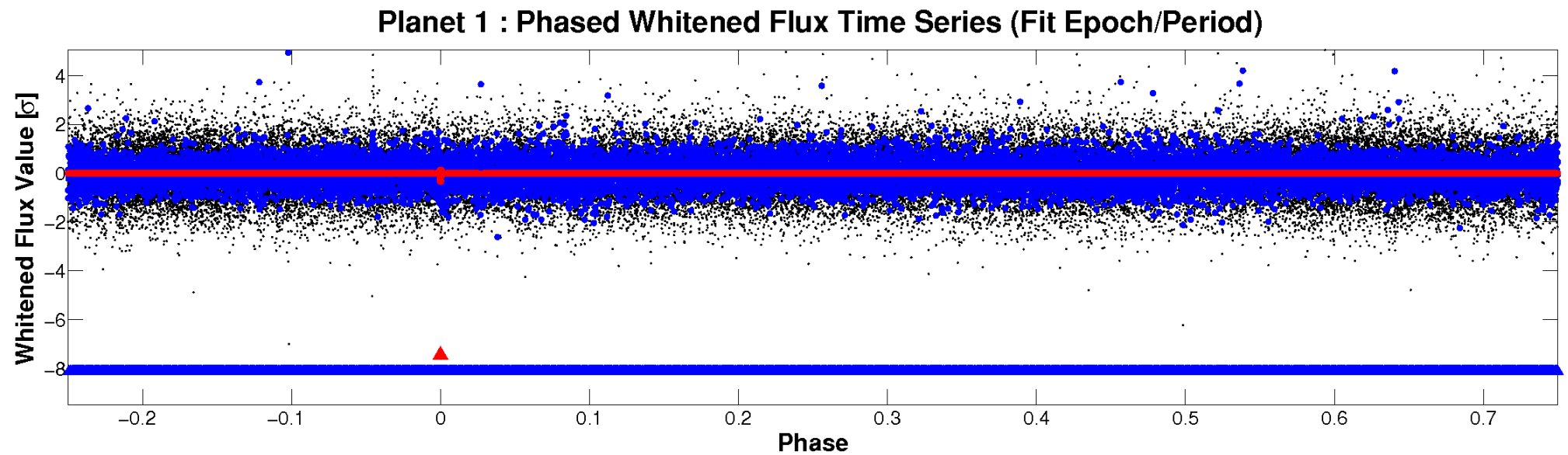
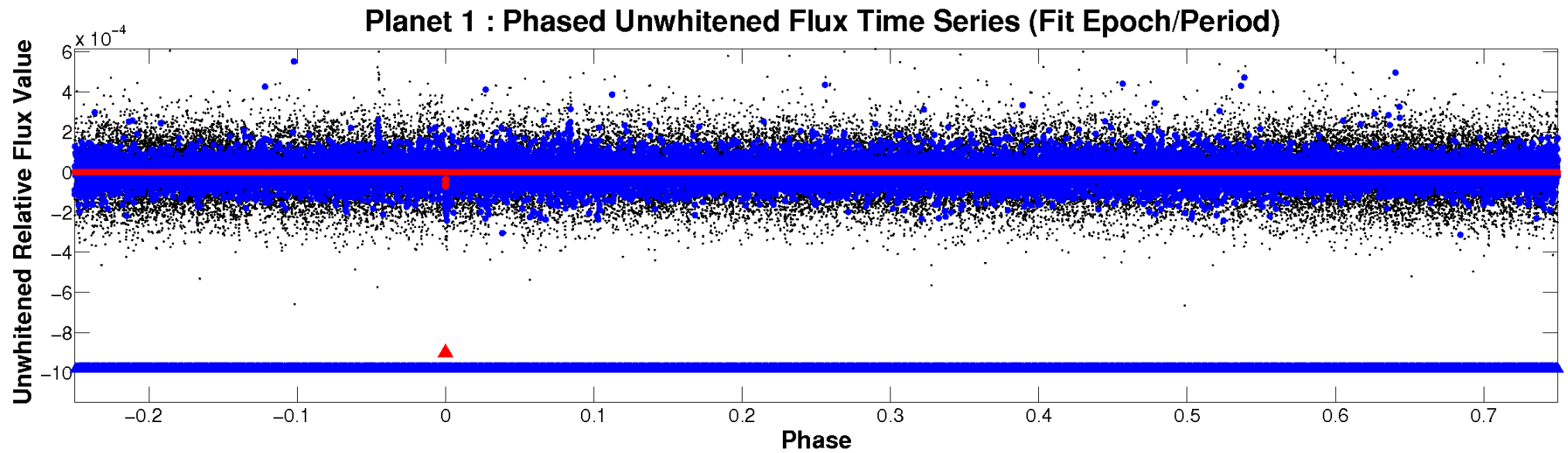


ALT Odd/Even

TCE 003757521-01

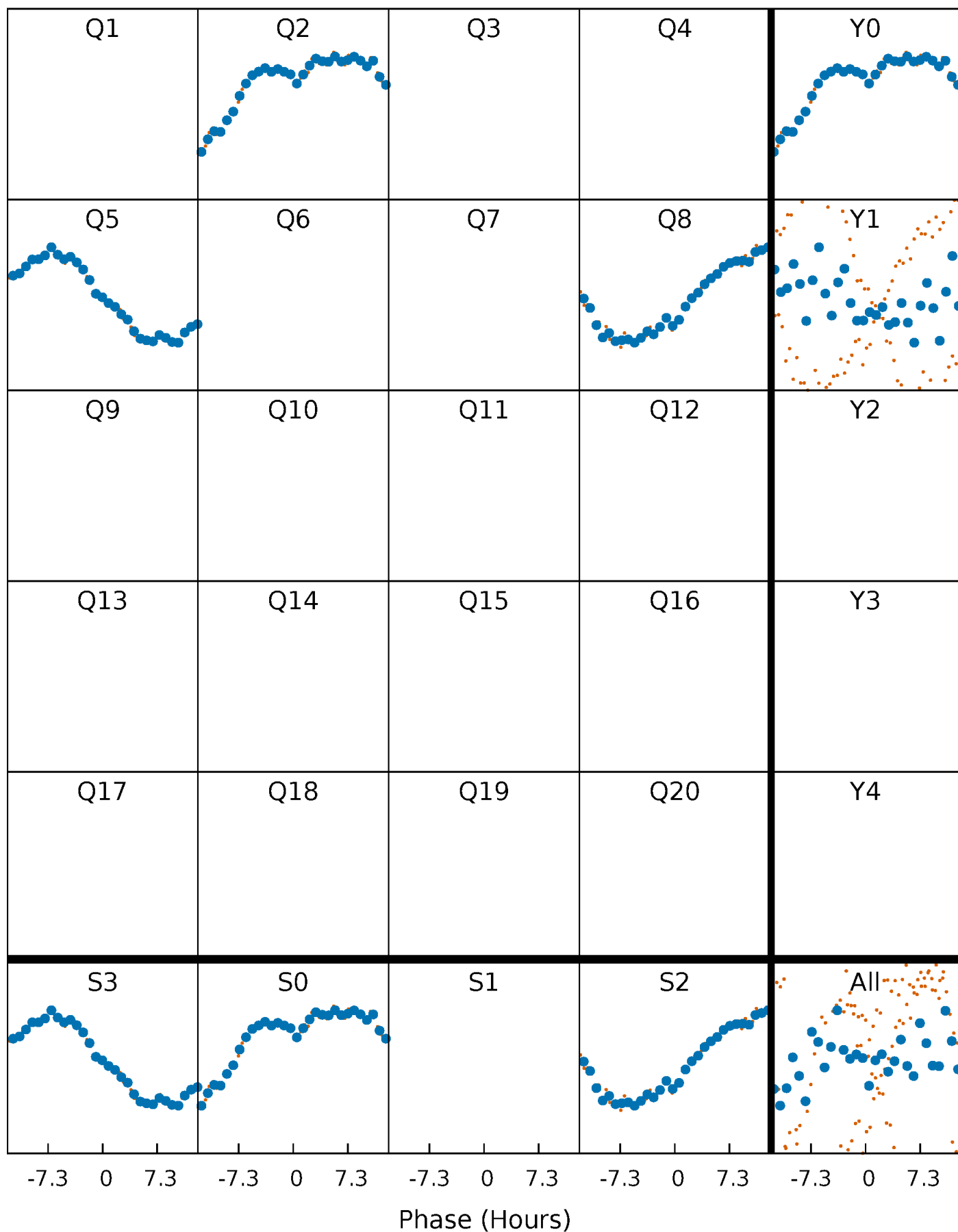


Non-Whitened Vs. Whitened Light Curve



PDC Quarter-Phased Transit Curves

TCE 003757521-01 P=274.081511 Days $T_0=248.433974$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 003757521-01 $P=274.081511$ Days $T_0=248.433974$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

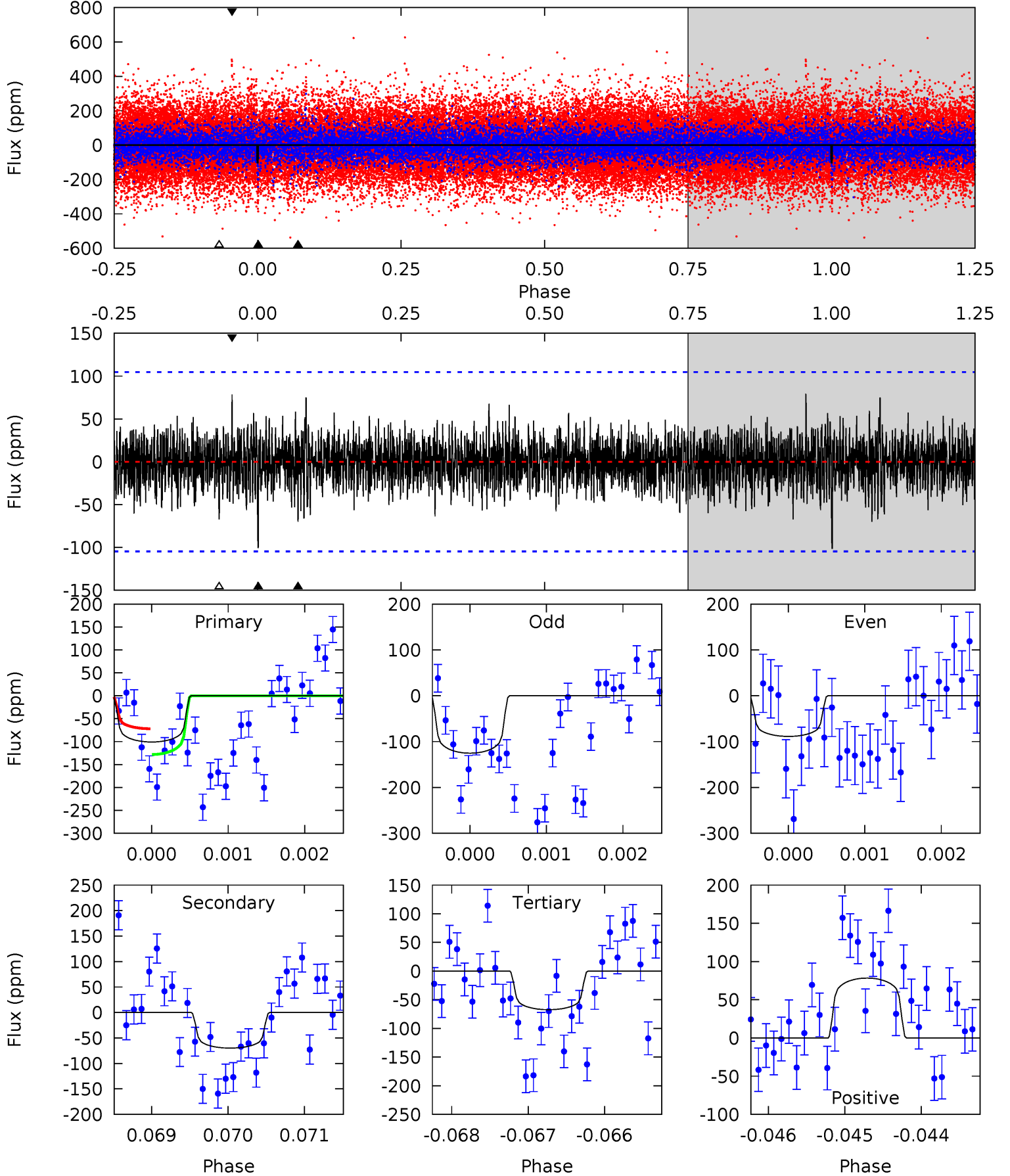
TCE 003757521-01 $P=274.095774$ Days $T_0=248.419020$ (BKJD)



DV Model-Shift Uniqueness Test

003757521-01, P = 274.081511 Days, E = 248.433974 Days

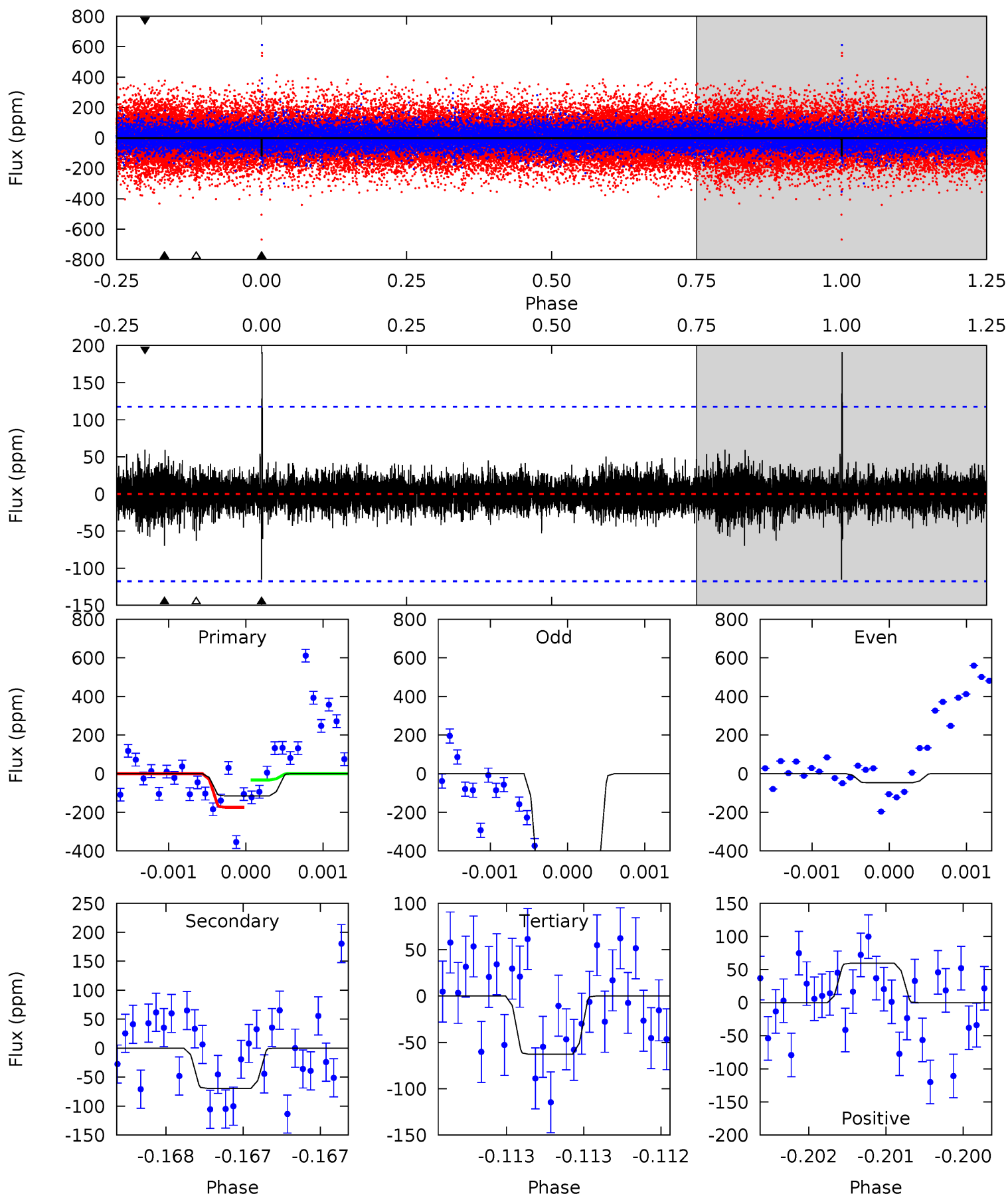
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.25	3.64	3.50	4.08	5.45	3.29	1.06	1.75	1.17	0.13	-0.44	0.89	0.94	0.44	1.46



Alt Model-Shift Uniqueness Test

003757521-01, P = 274.095774 Days, E = 248.419020 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.42	3.26	2.95	2.80	5.52	3.40	0.67	2.47	2.62	0.31	0.46	17.0	2.94	0.62	3.30



Stellar Parameters For KIC 003757521

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6861^{+72}_{-82}	$4.074^{+0.132}_{-0.108}$	$0.060^{+0.150}_{-0.150}$	$1.865^{+0.343}_{-0.312}$	$1.505^{+0.116}_{-0.116}$	$0.327^{+0.209}_{-0.109}$
	+1%/-1%	+3%/-3%	+250%/-250%	+18%/-17%	+8%/-8%	+64%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003757521-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-70 ± 19	$2.12^{+1.67}_{-1.24}$	594^{+25}_{-25}	5983^{+4776}_{-1345}	7259^{+40217}_{-5002}
Alt.	-69 ± 21	$3.47^{+1.82}_{-1.59}$	590^{+29}_{-27}	4854^{+1554}_{-825}	2865^{+6671}_{-1789}

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 $A_{obs} \gg 1.0$

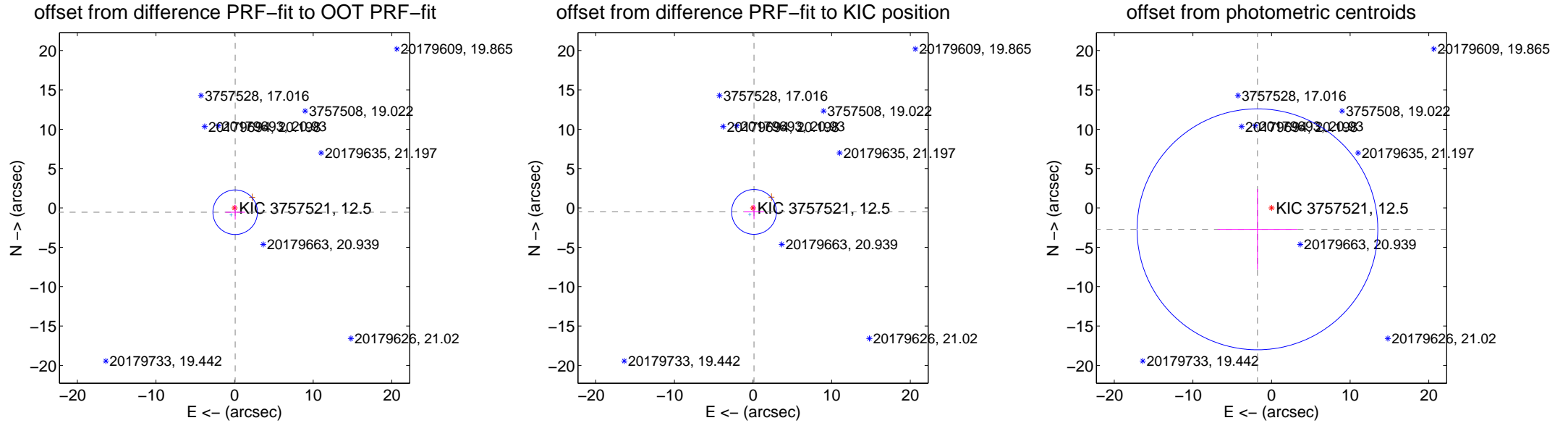
DV Centroid Data

Supplemental centroid analysis for 003757521-01. Kepler magnitude: 12.50. Transit SNR 1.96

There are 1 quarters with good PRF difference image offsets

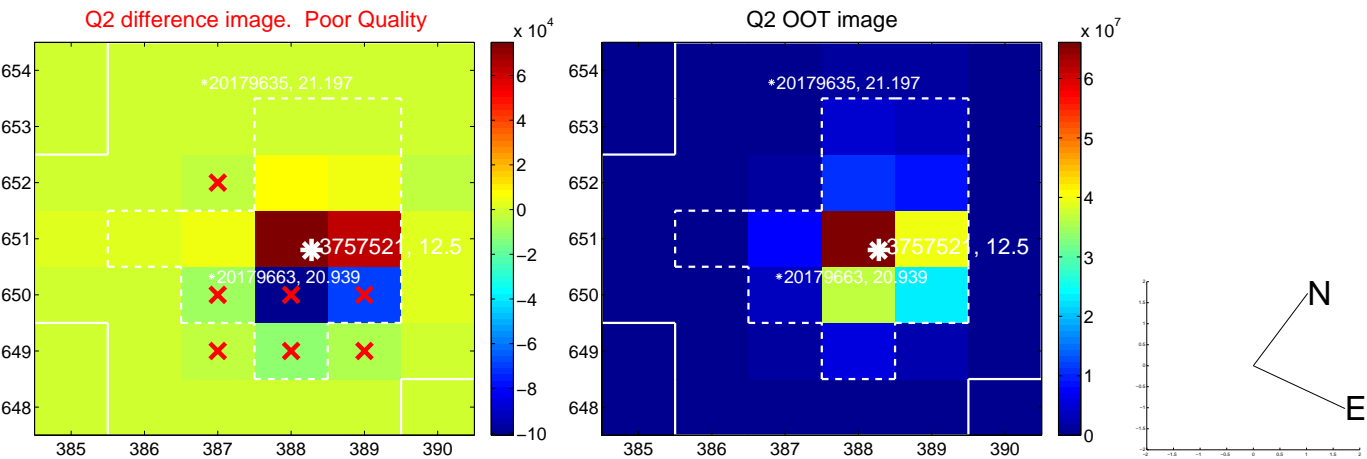
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.548 ± 0.944	0.58	-0.076 ± 1.240	-0.543 ± 0.937
PRF-fit source offset from KIC position	0.515 ± 0.950	0.54	-0.119 ± 1.274	-0.501 ± 0.928
photometric centroid source offset	3.25 ± 5.10	0.64	1.79 ± 5.08	-2.72 ± 5.11

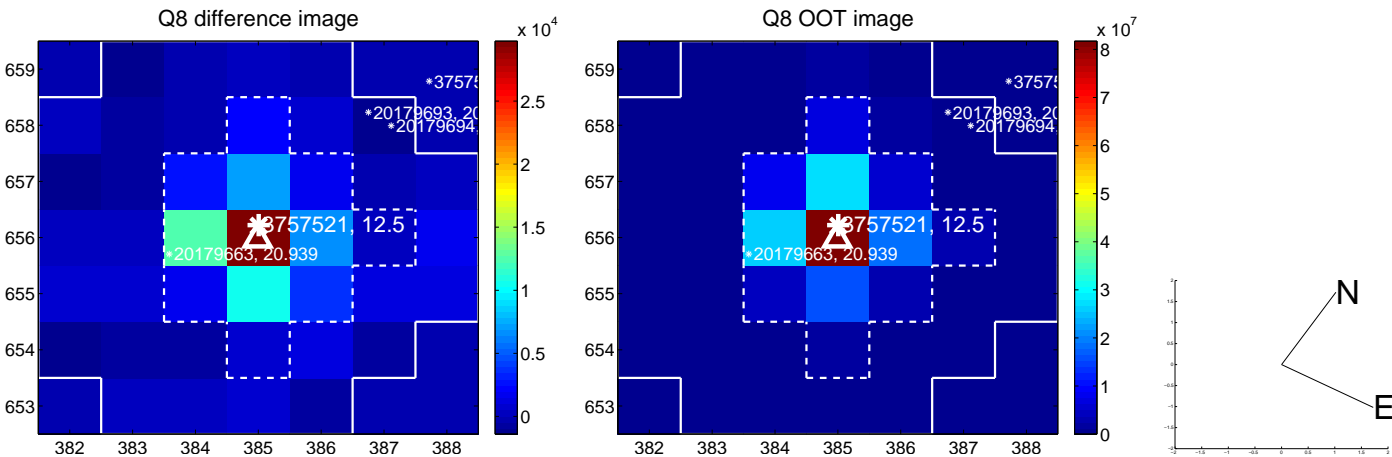
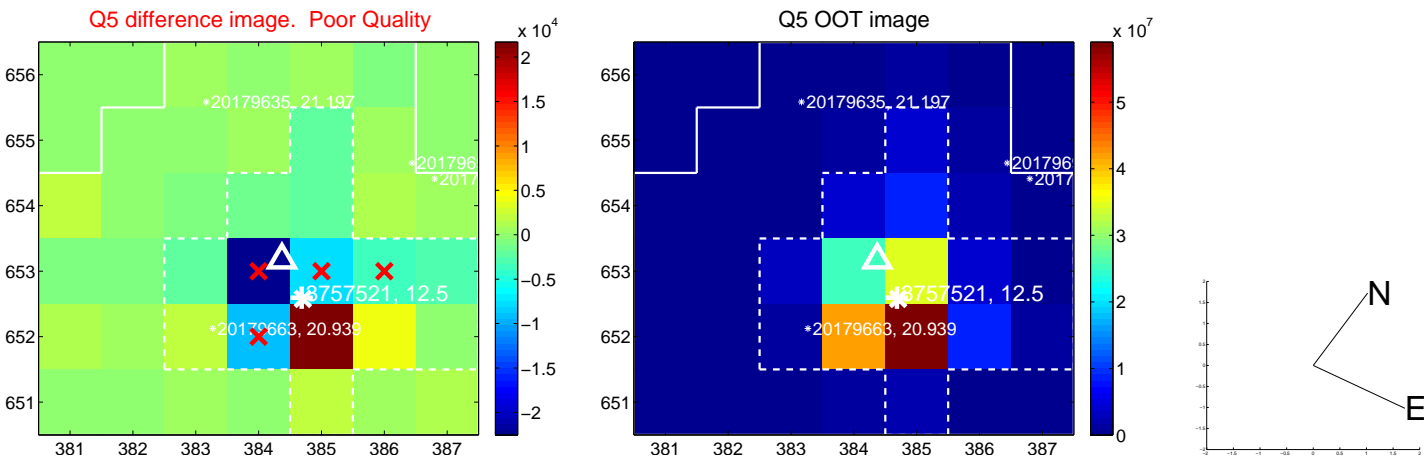


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



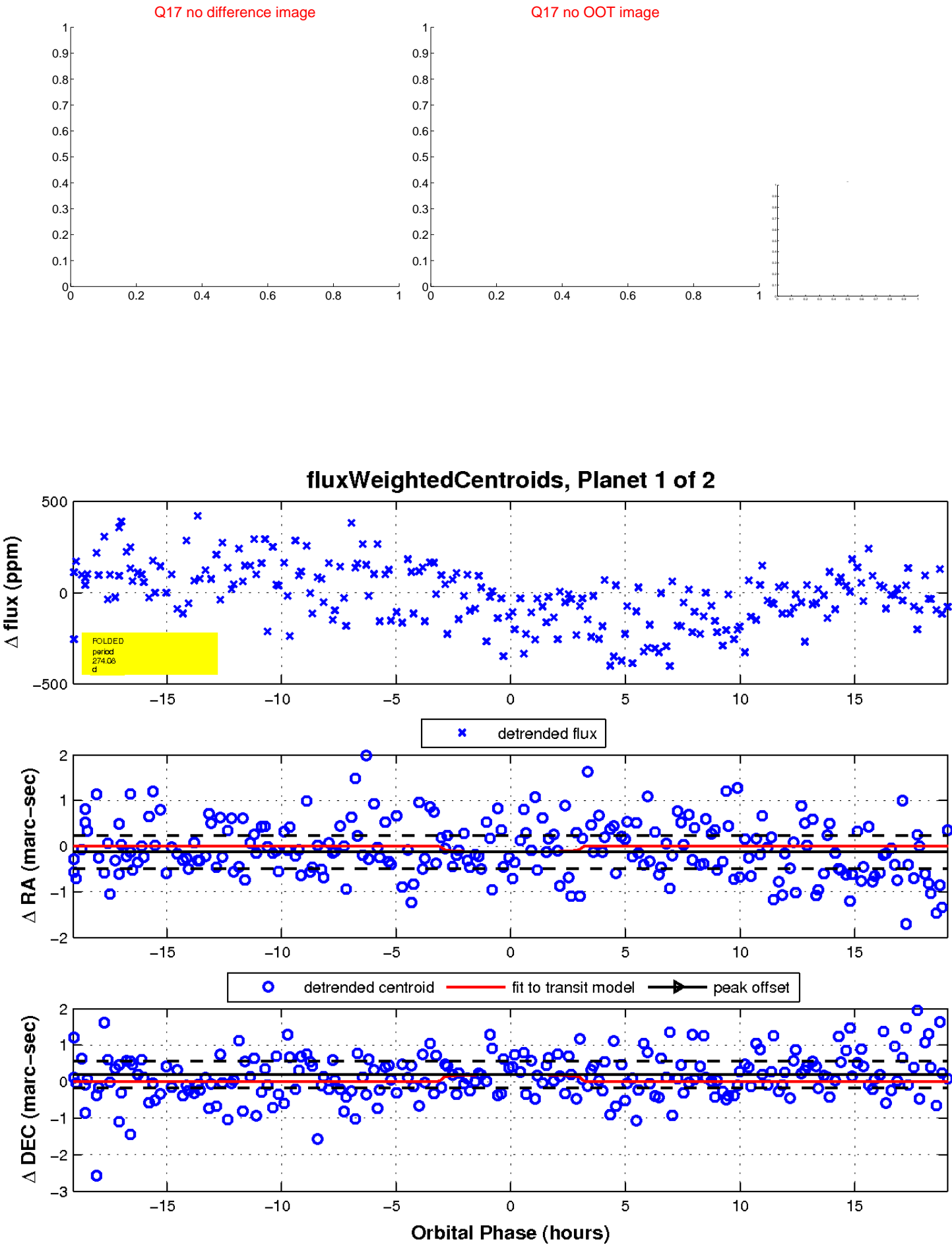
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

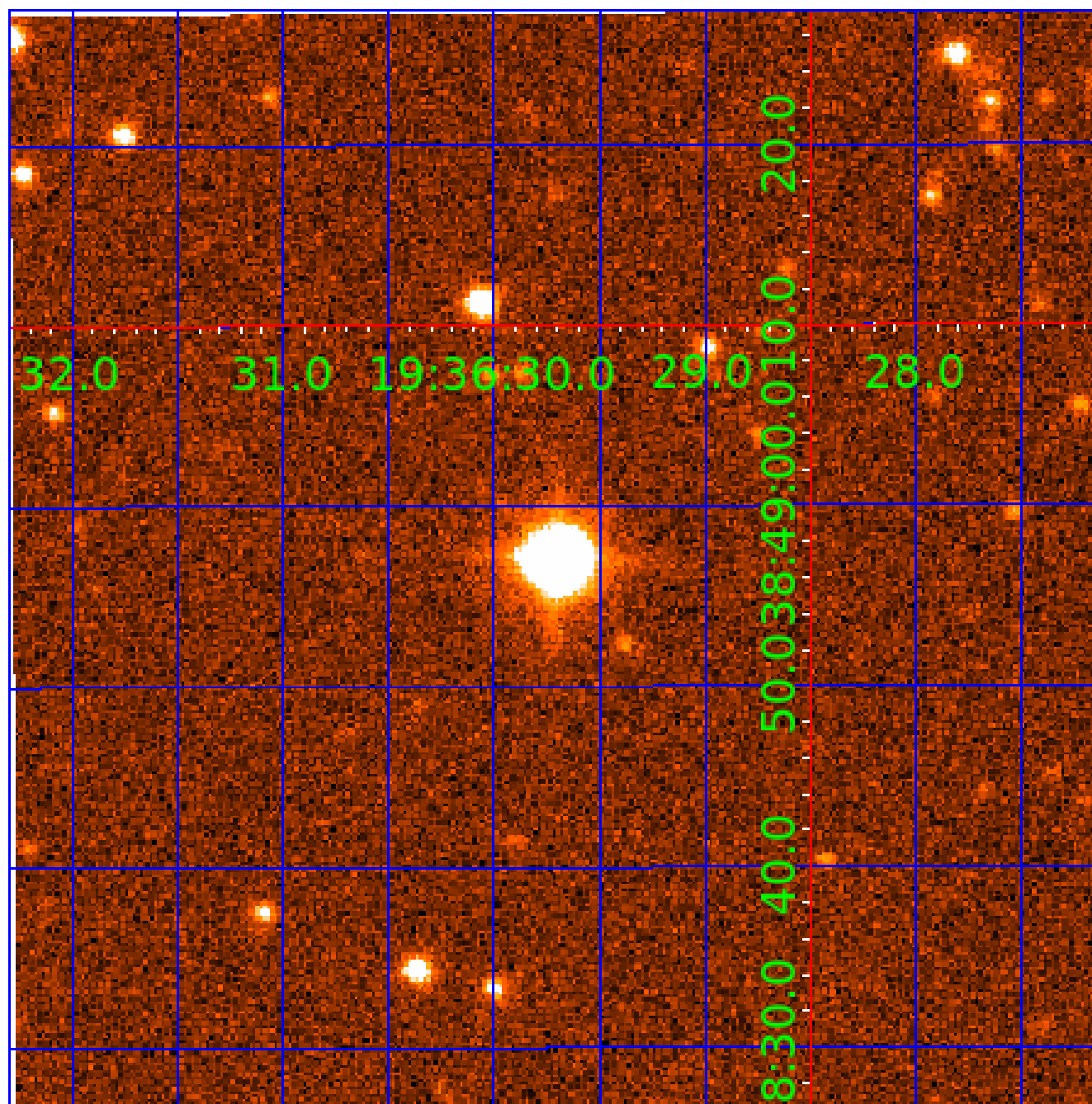


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003757521

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})
003757521-01	OBS	No	274.081511	248.433974	70.8	6.381	8.0	2.0	1.86	6861	1.82	7.71
003757521-02	OBS	No	0.751392	132.214961	16.5	2.037	8.9	7.8	1.86	6861	0.88	20094.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003757521-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
003757521-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_ALT

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

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

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

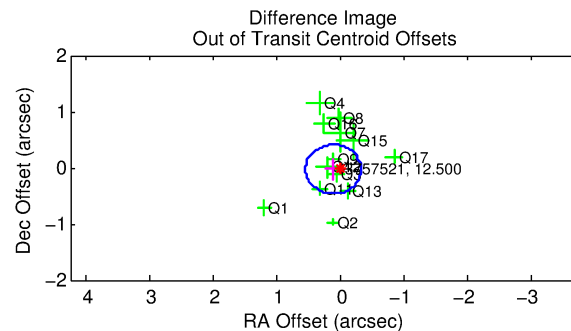
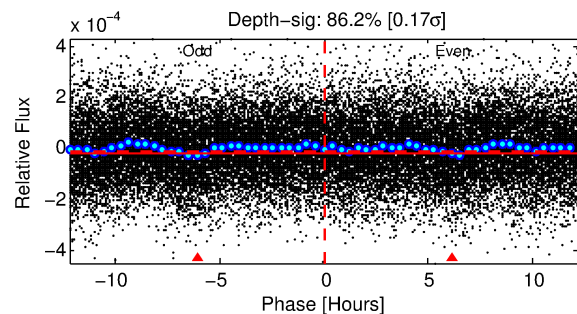
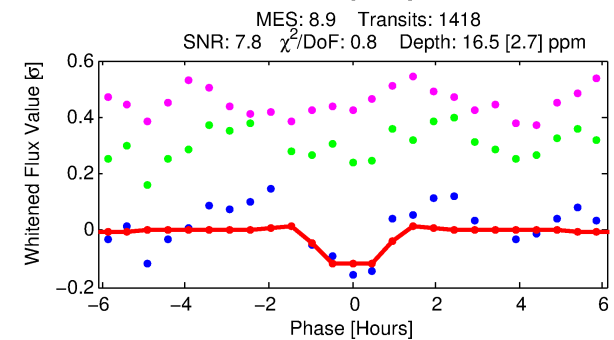
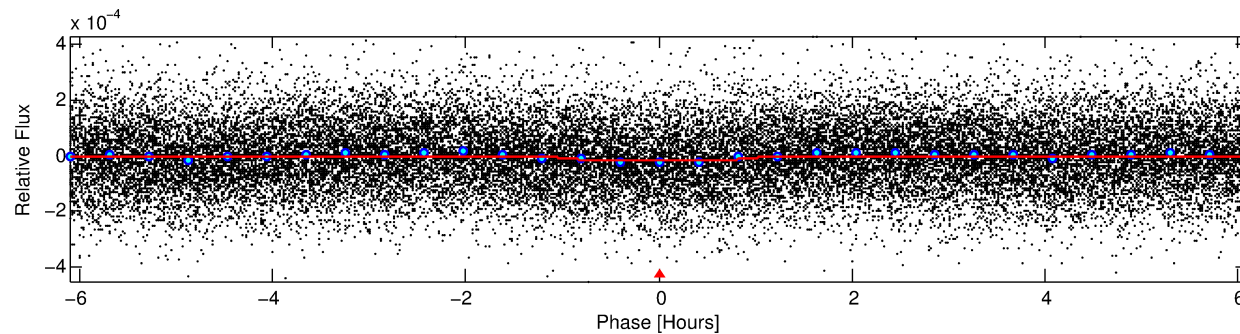
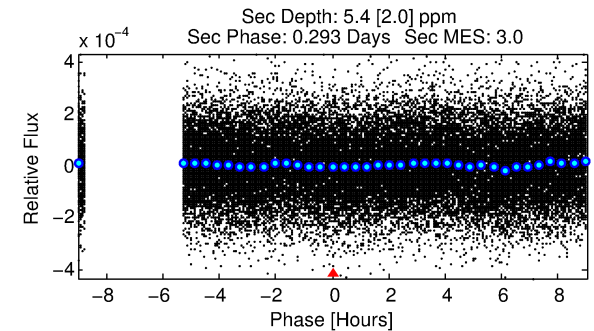
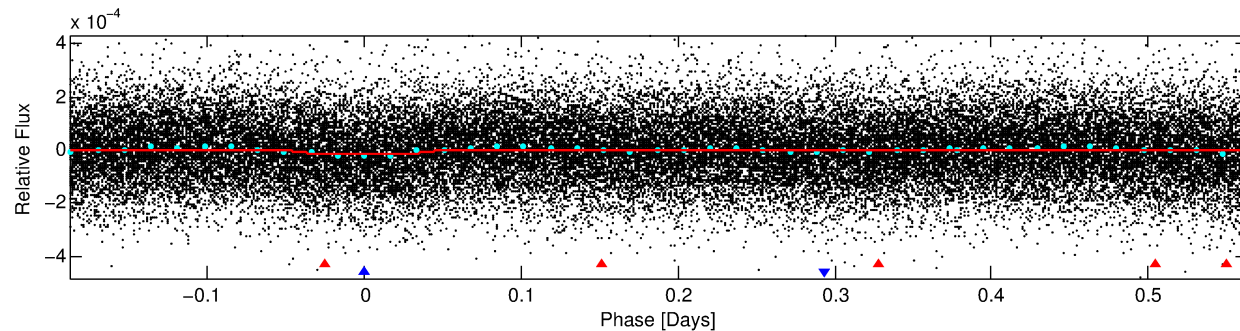
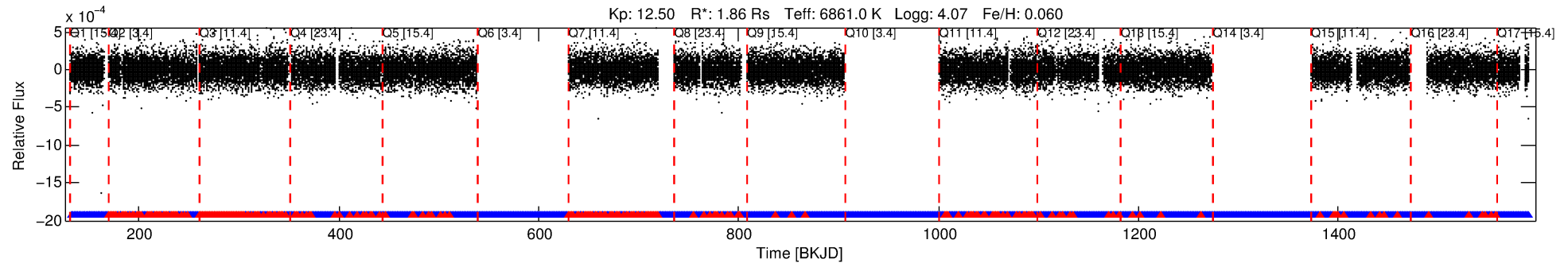
Ephemeris Match Information For 003757521-02

No Significant Match Found

DV One-Page Summary

KIC: 3757521 Candidate: 2 of 2 Period: 0.751 d

KOI: K05006 Corr: No Ephemeris Match



DV Fit Results:

Period = 0.75139 [0.00001] d
Epoch = 132.2150 [0.0031] BKJD
Rp/R* = 0.0043 [0.0014]
a/R* = 1.56 [1.77]
b = 0.90 [0.40]
Seff = 20094.38 [4855.05]
Teq = 3036 [183] K
Rp = 0.88 [0.33] Re
a = 0.0185 [0.0029] AU
Ag = 1.30 [1.03] [0.29σ]
Teffp = 5013 [946] K [2.05σ]

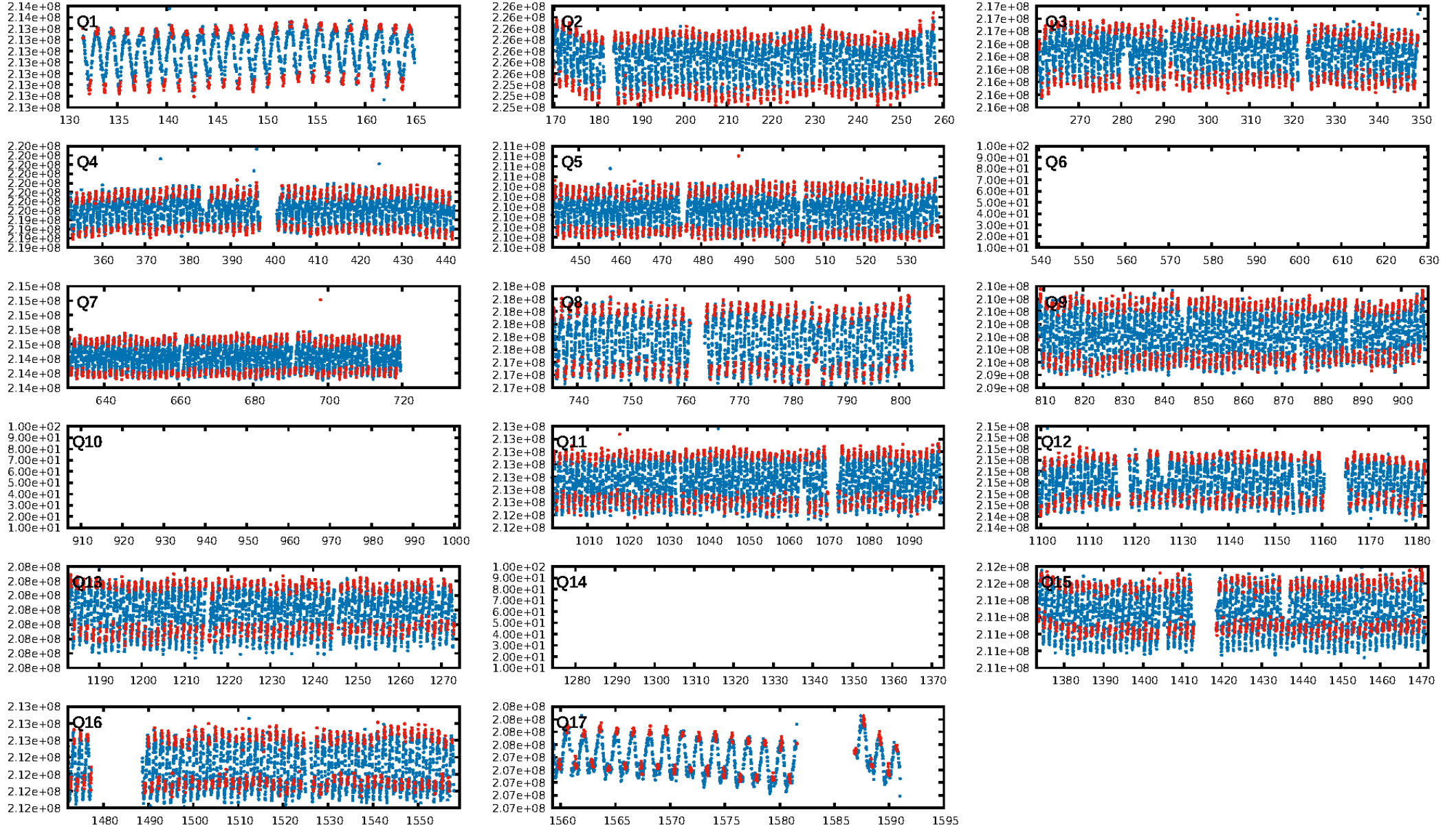
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [979.32σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.56e-15
RollingBand-fgt: 0.78 [1047/1338]
GhostDiagnostic-chr: 3.671
Centroid-sig: 0.2%
Centroid-so: 2.663 arcsec [1.76σ]
OotOffset-rm: 0.119 arcsec [0.82σ]
KicOffset-rm: 0.100 arcsec [0.80σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 0.31 [4/13]
DiffImageOverlap-fno: 1.00 [14/14]

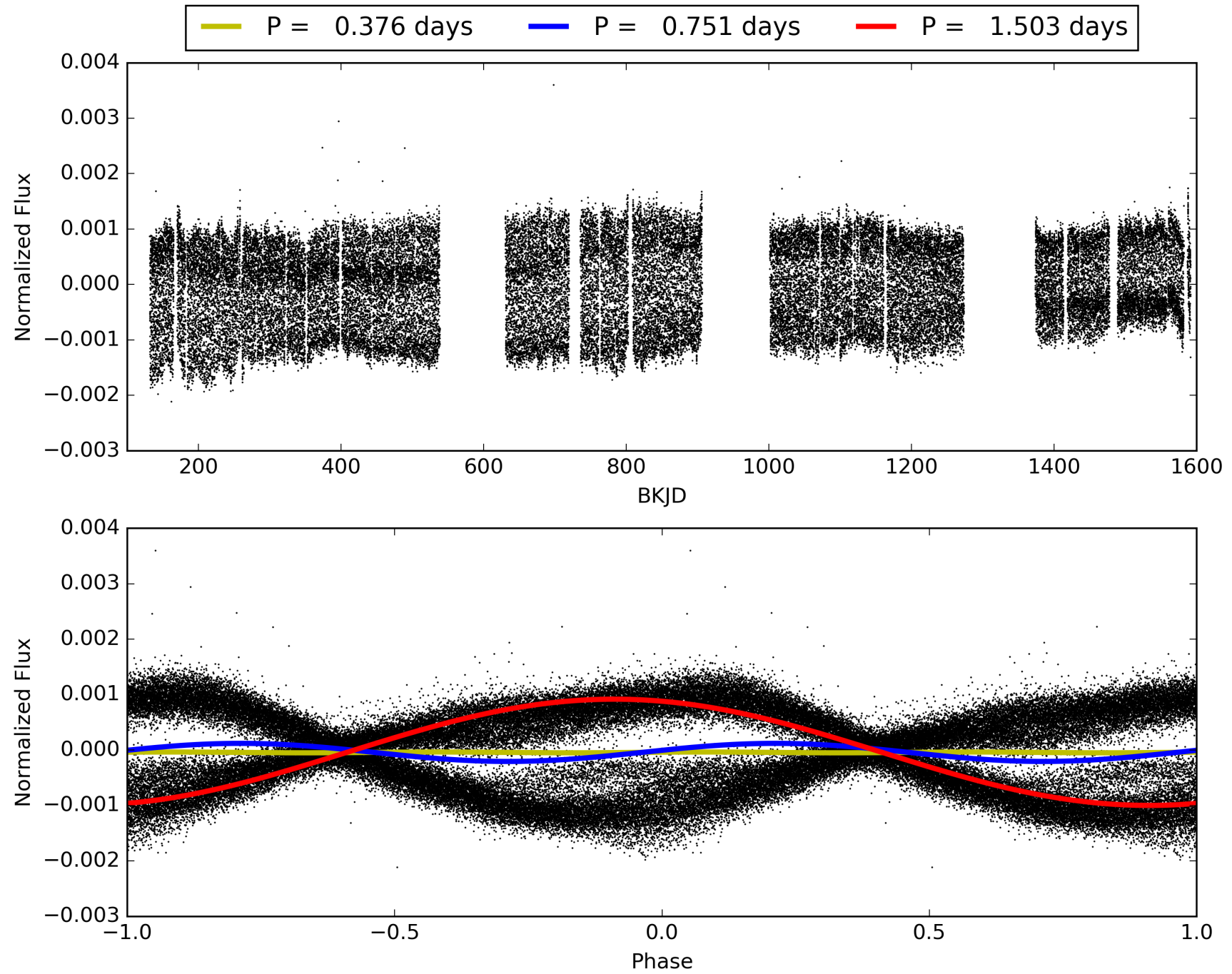
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:15:16 Z

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

TCE 003757521-02, PDC Light Curves

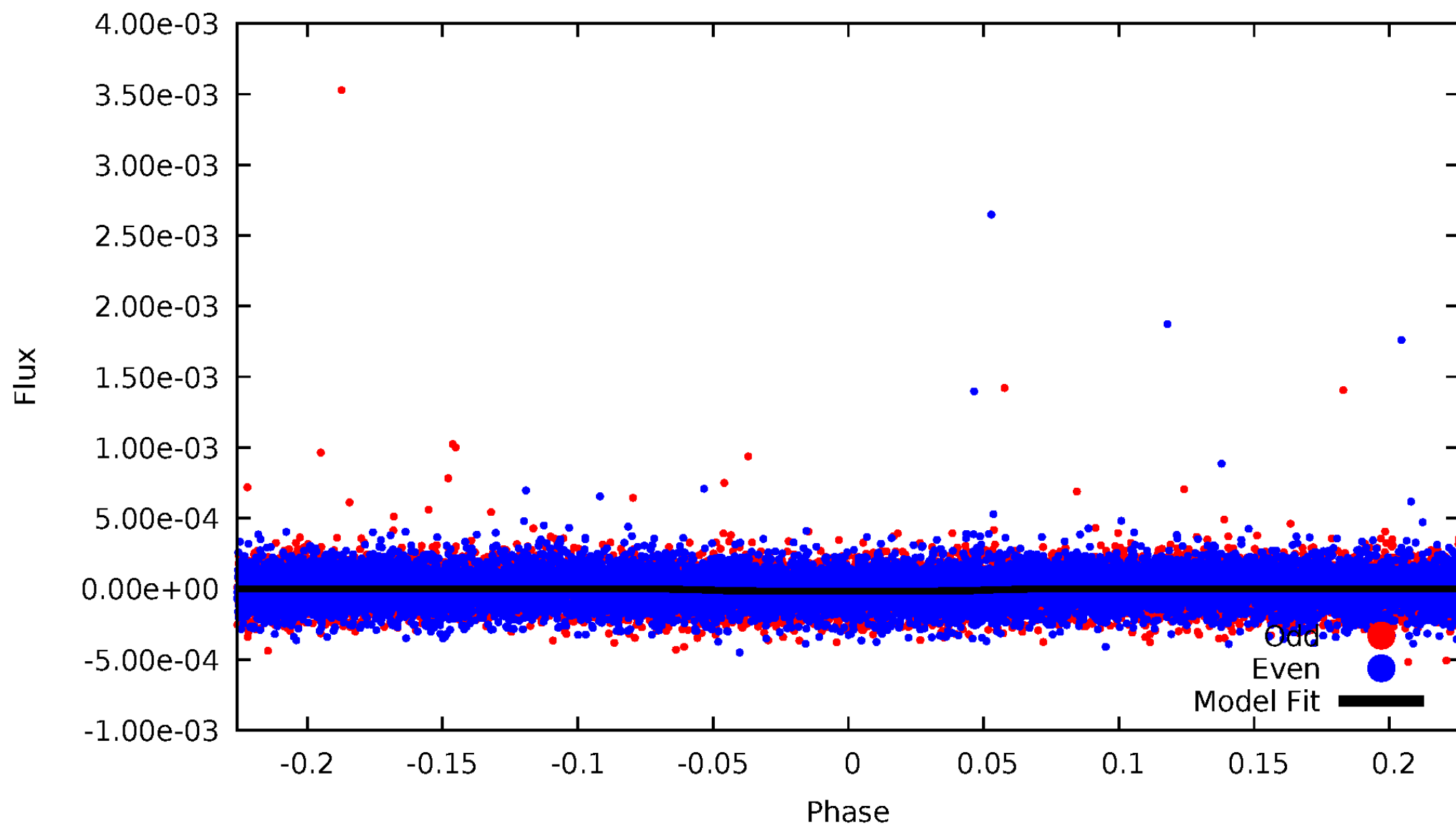


TCE 003757521-02



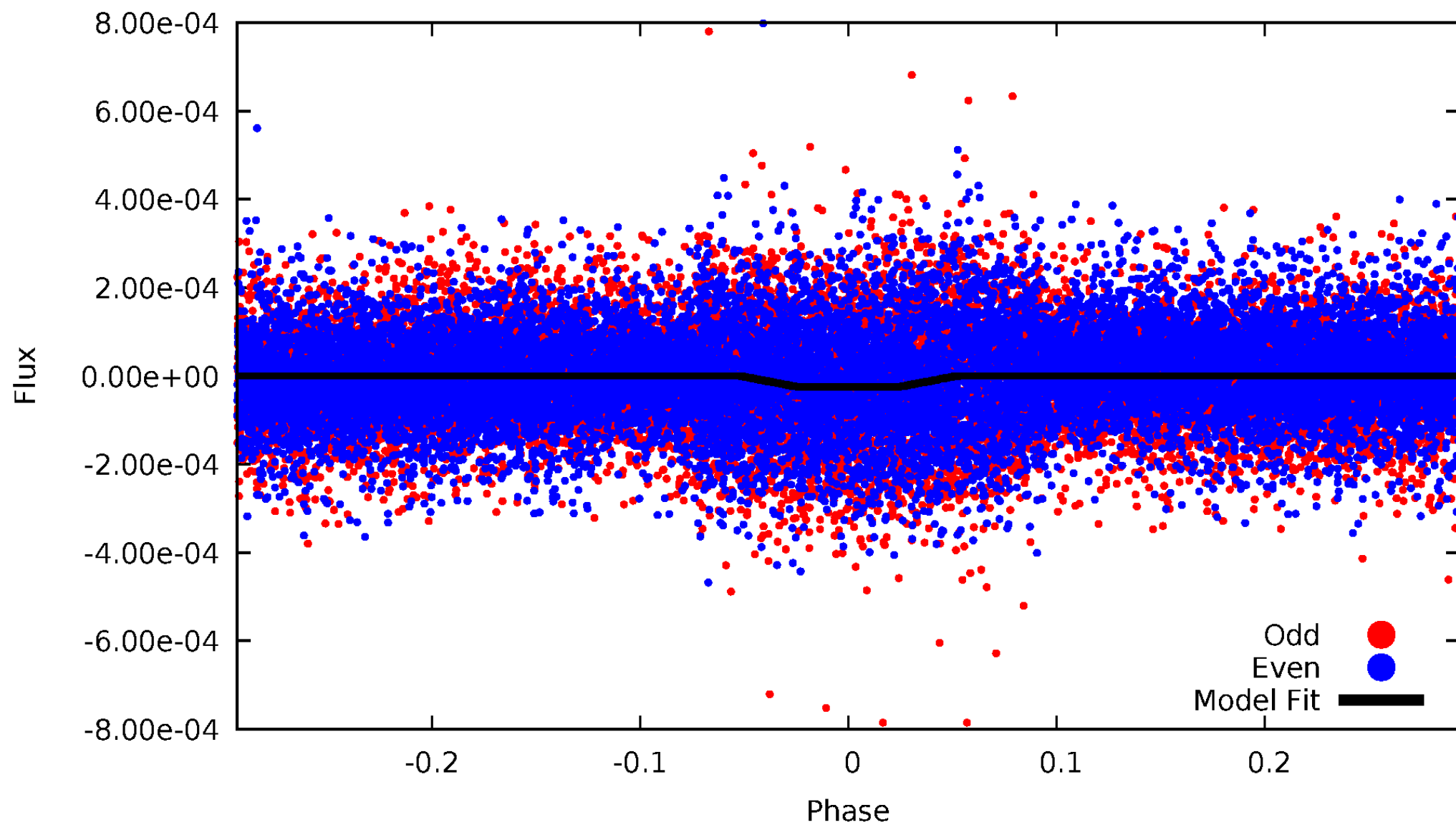
DV Odd/Even

TCE 003757521-02



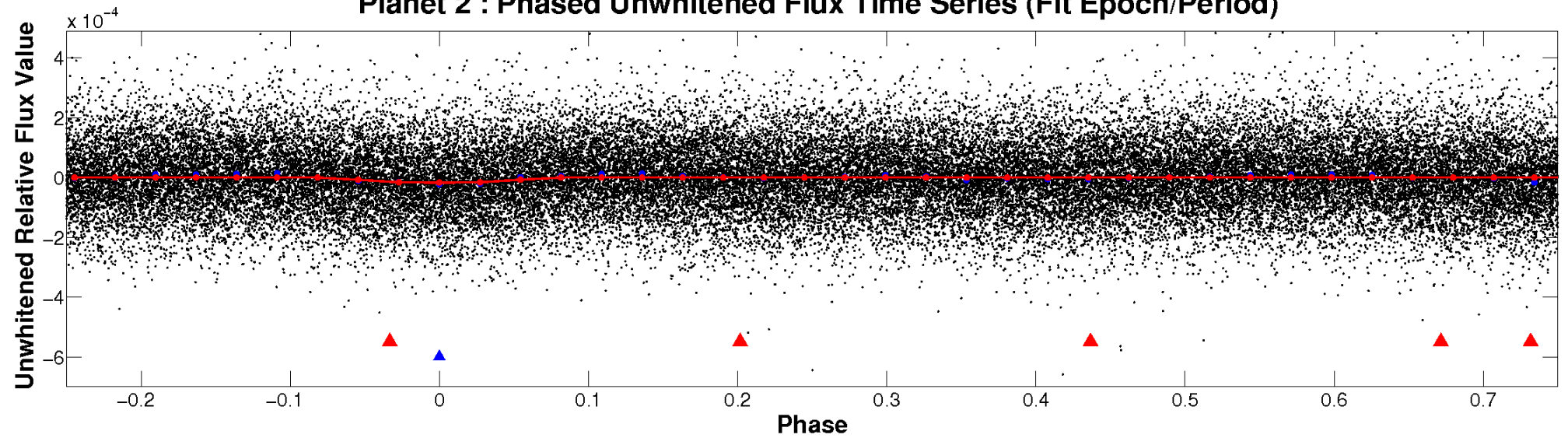
ALT Odd/Even

TCE 003757521-02

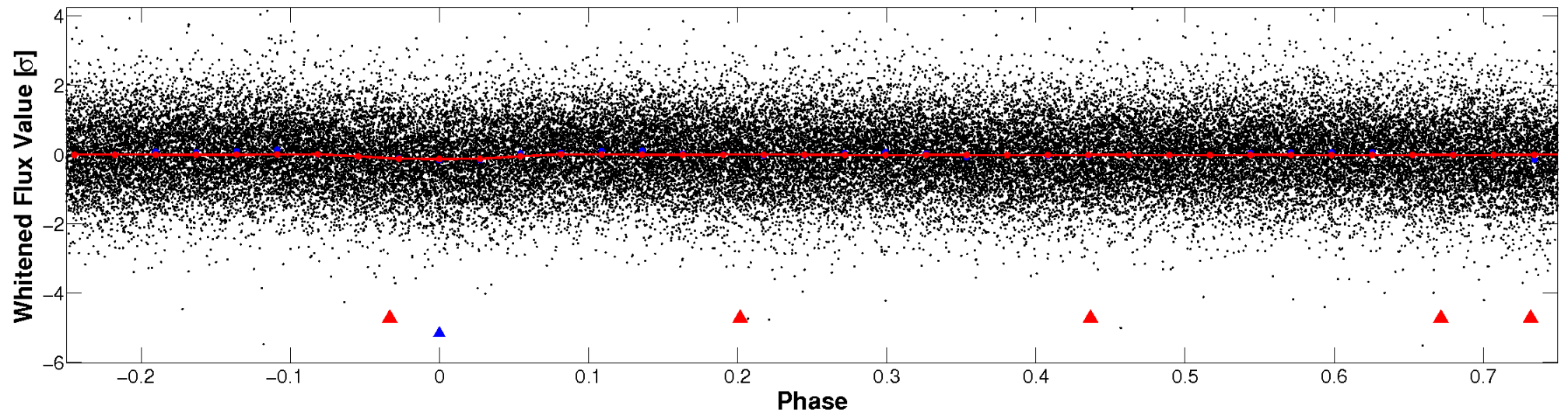


Non-Whitened Vs. Whitened Light Curve

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

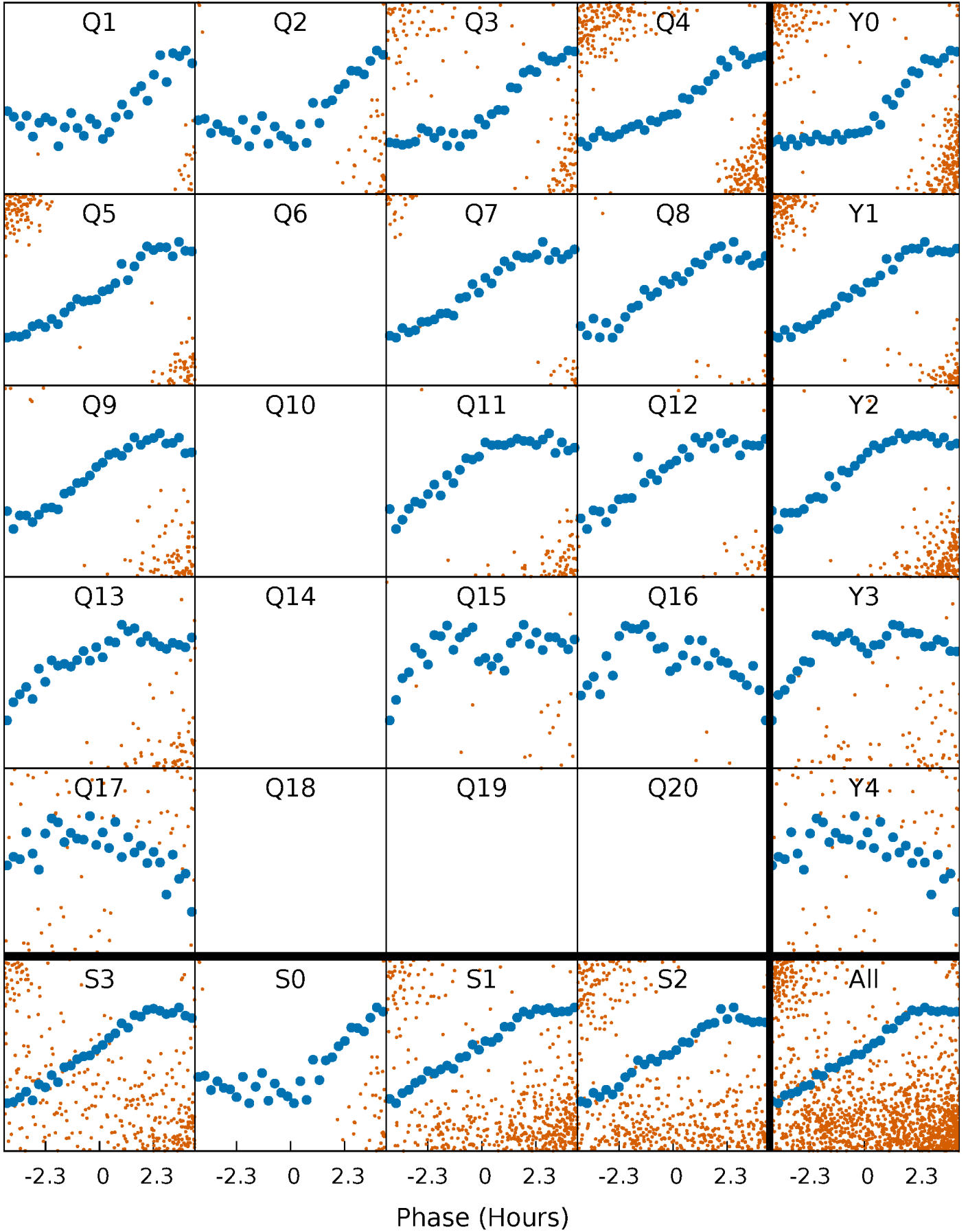


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



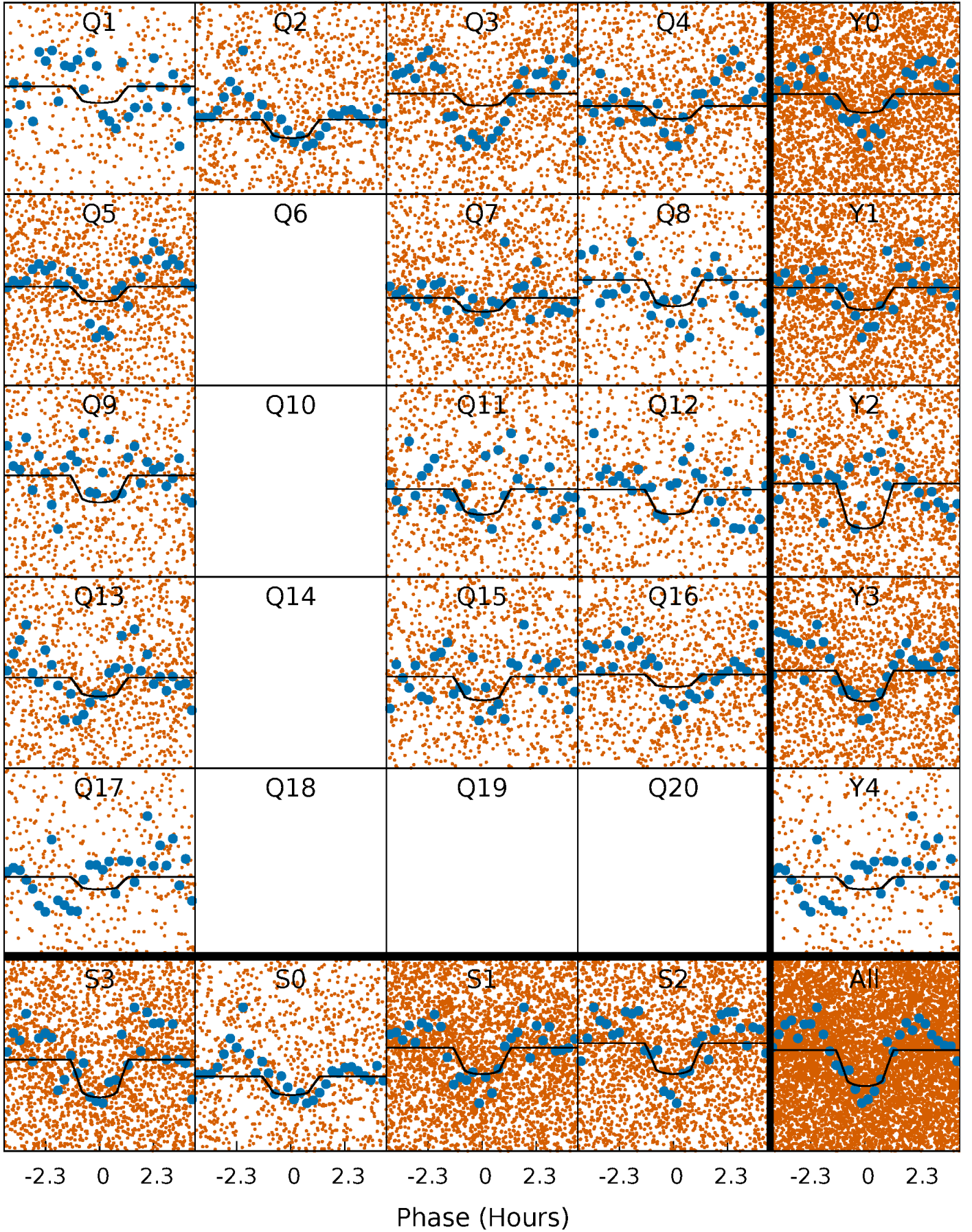
PDC Quarter-Phased Transit Curves

TCE 003757521-02 P= 0.751392 Days $T_0=132.214961$ (BKJD)



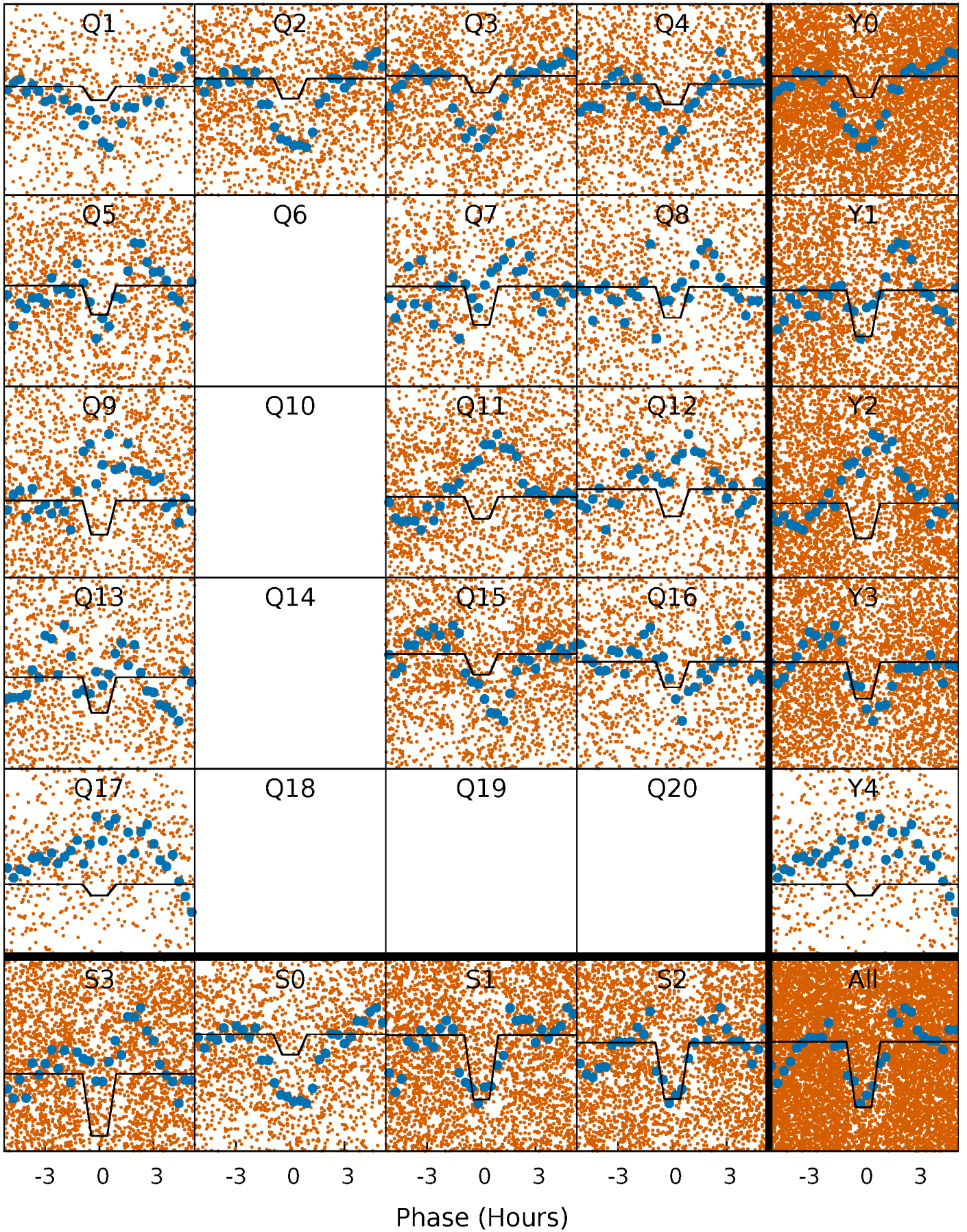
DV Quarter-Phased Transit Curves

TCE 003757521-02 $P = 0.751392$ Days $T_0 = 132.214961$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

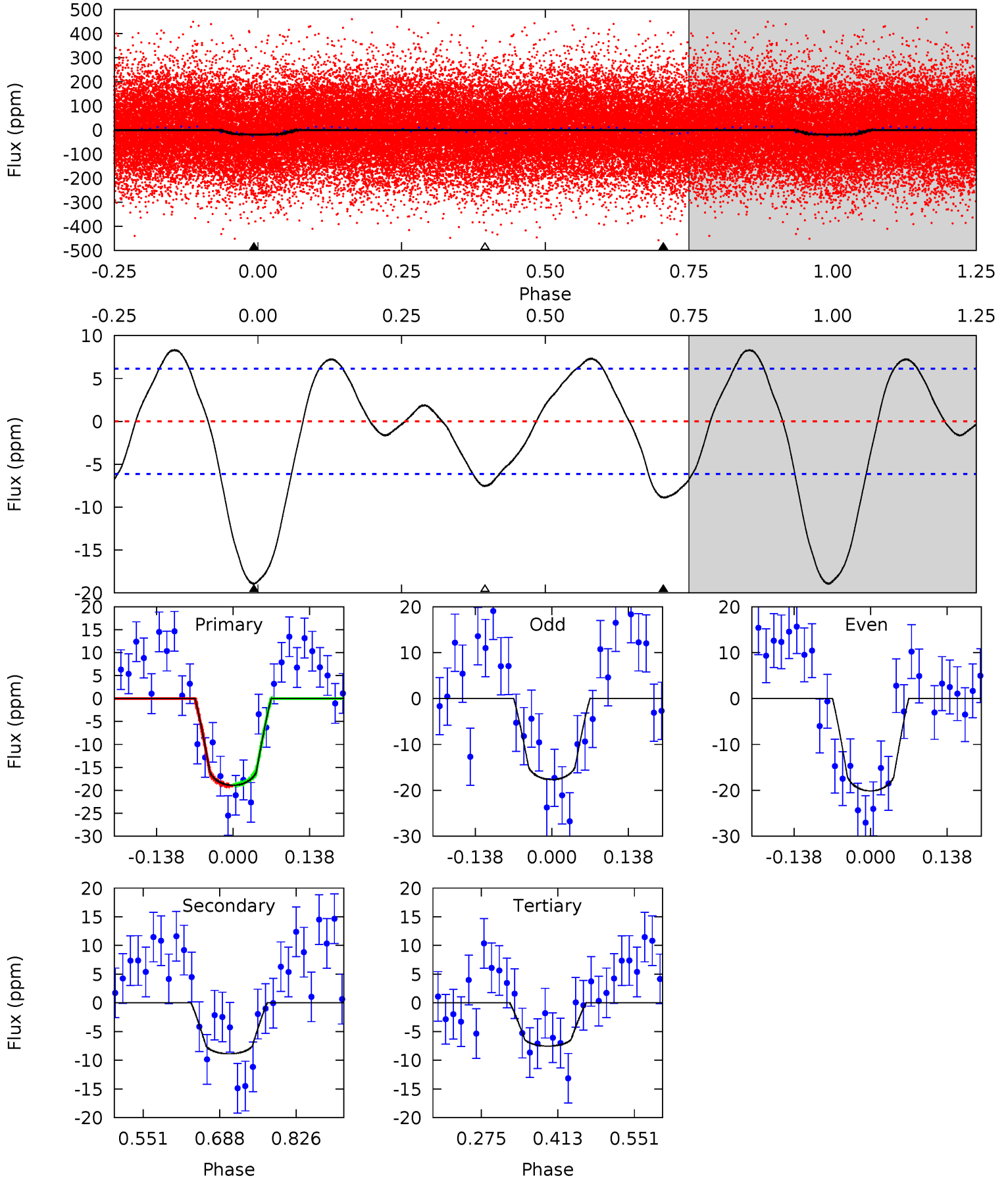
TCE 003757521-02 P= 0.751380 Days $T_0=132.220027$ (BKJD)



DV Model-Shift Uniqueness Test

003757521-02, P = 0.751392 Days, E = 131.463569 Days

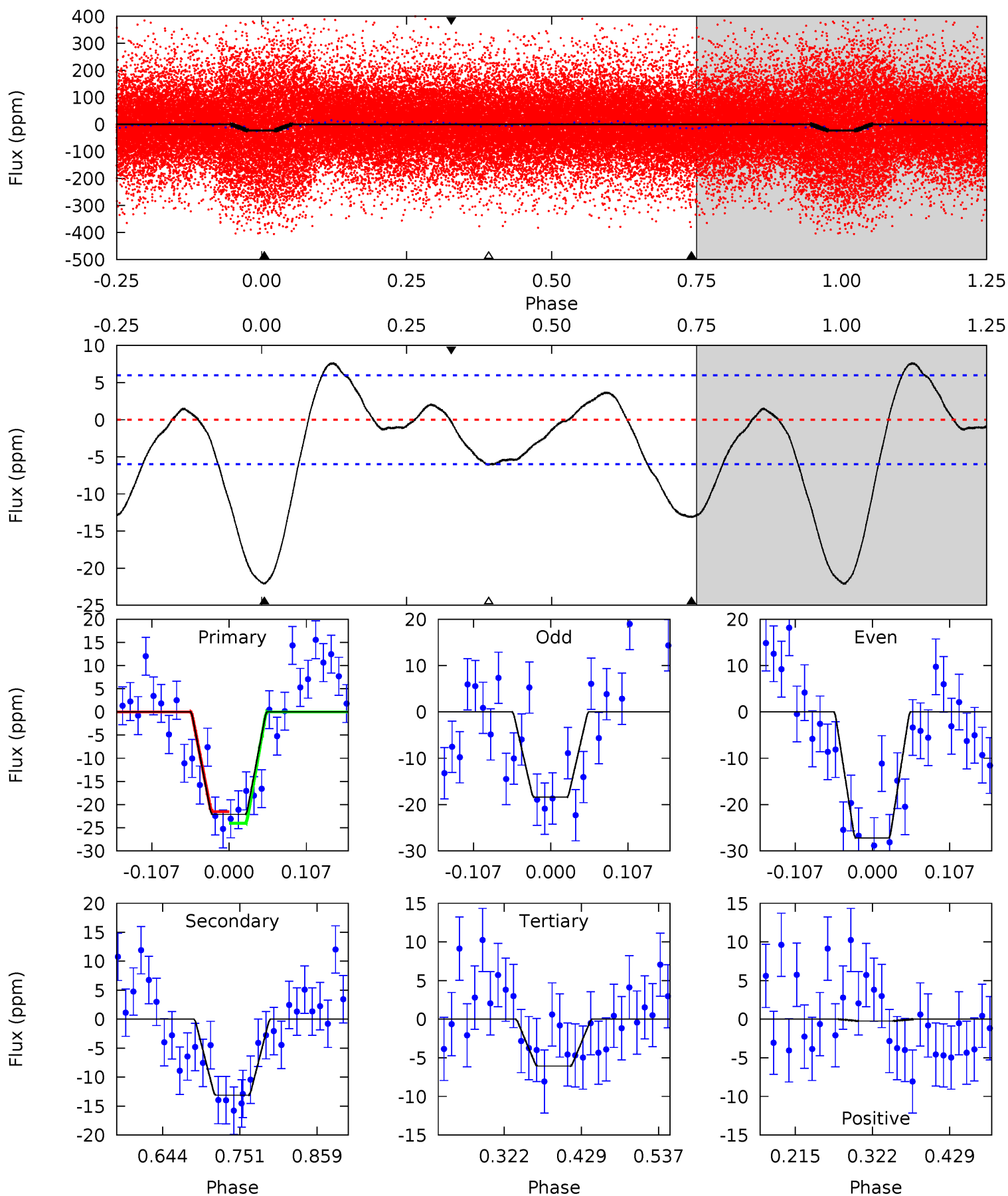
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.9	6.51	5.52	0	4.50	1.48	3.08	8.35	13.9	0.98	6.51	0.90	0.99	0.31	0.10



Alt Model-Shift Uniqueness Test

003757521-02, P = 0.751380 Days, E = 131.468647 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	9.97	4.61	-0.18	4.55	1.61	2.56	12.2	17.0	5.36	10.1	3.35	0.89	0.26	0.94



Stellar Parameters For KIC 003757521

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6861^{+72}_{-82}	$4.074^{+0.132}_{-0.108}$	$0.060^{+0.150}_{-0.150}$	$1.865^{+0.343}_{-0.312}$	$1.505^{+0.116}_{-0.116}$	$0.327^{+0.209}_{-0.109}$
	+1%/-1%	+3%/-3%	+250%/-250%	+18%/-17%	+8%/-8%	+64%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003757521-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-9 ± 1	$0.88^{+0.31}_{-0.30}$	4231^{+196}_{-185}	5478^{+1400}_{-805}	$2.183^{+2.829}_{-0.996}$
Alt.	-13 ± 1	$0.99^{+0.33}_{-0.30}$	4237^{+176}_{-202}	5651^{+1205}_{-711}	$2.503^{+2.532}_{-1.093}$

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 $A_{obs} \gg 1.0$

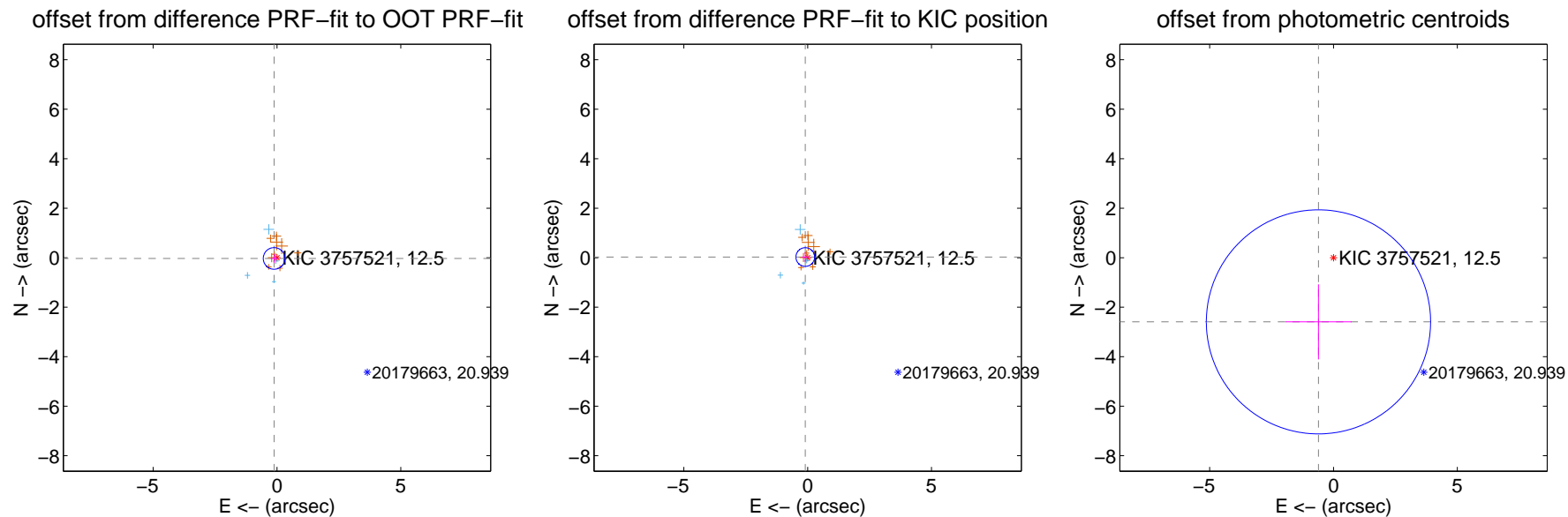
DV Centroid Data

Supplemental centroid analysis for 003757521-02. Kepler magnitude: 12.50. Transit SNR 7.85

There are 4 quarters with good PRF difference image offsets

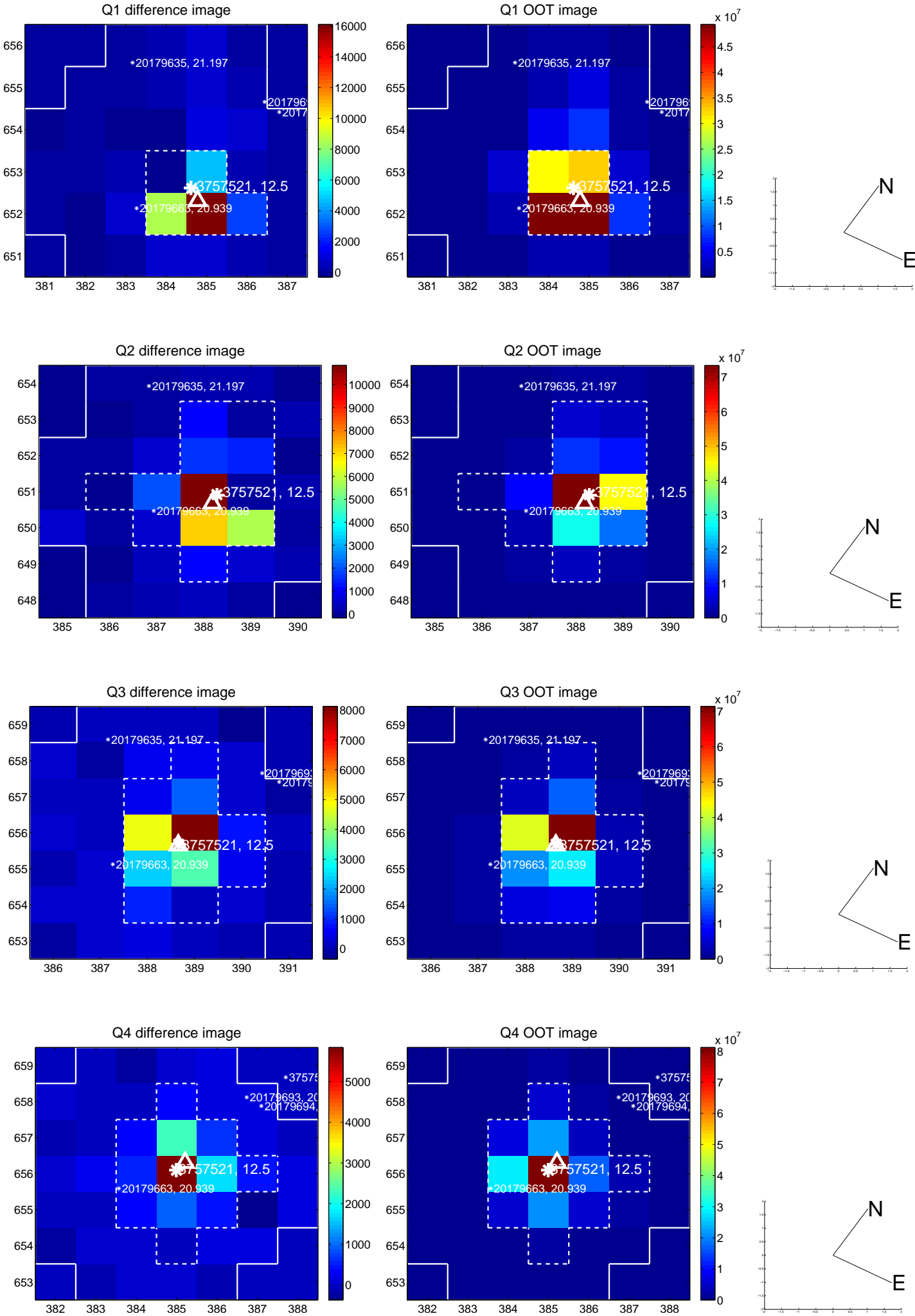
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.119 ± 0.146	0.82	0.116 ± 0.130	-0.029 ± 0.186
PRF-fit source offset from KIC position	0.100 ± 0.126	0.80	0.096 ± 0.135	0.027 ± 0.203
photometric centroid source offset	2.66 ± 1.51	1.76	0.61 ± 1.34	-2.59 ± 1.52

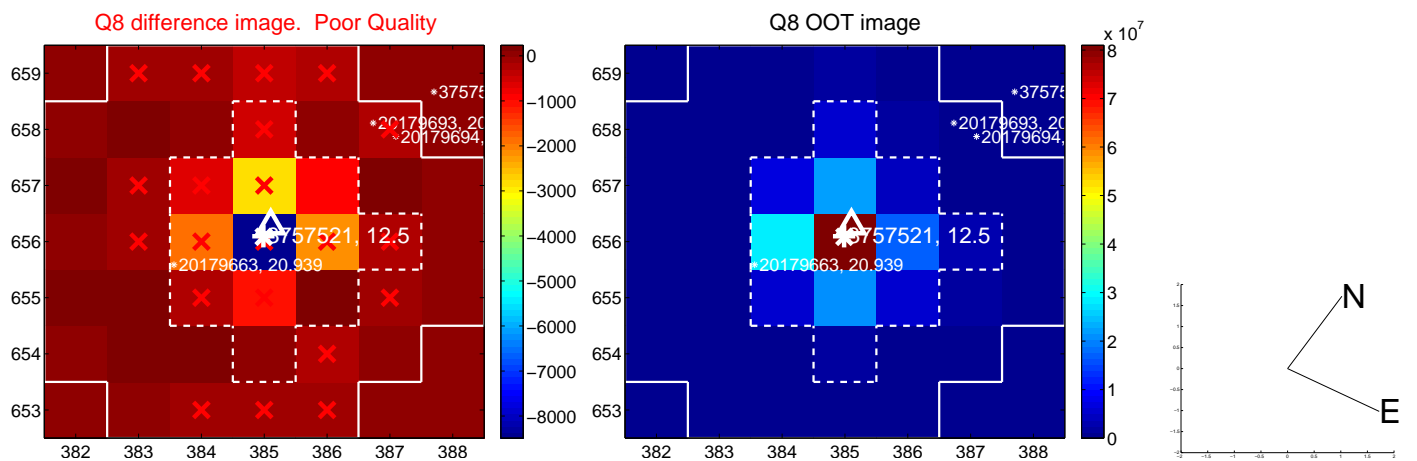
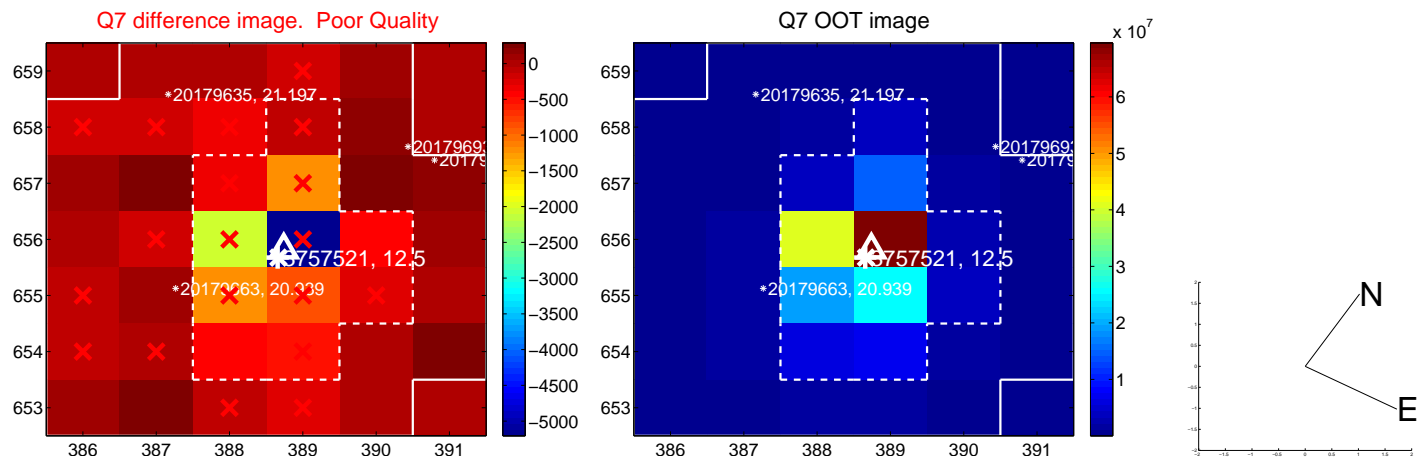
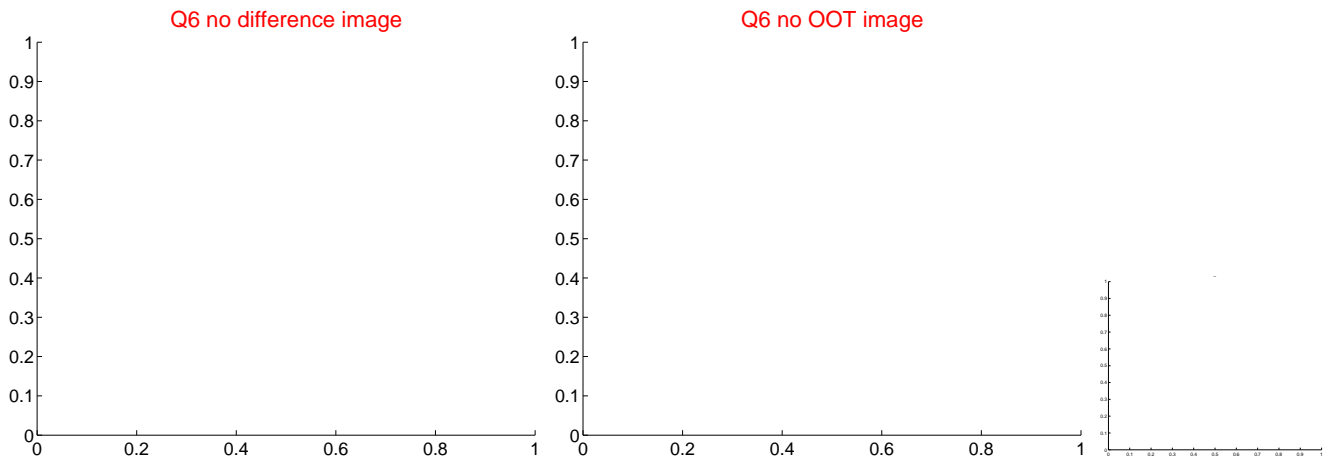
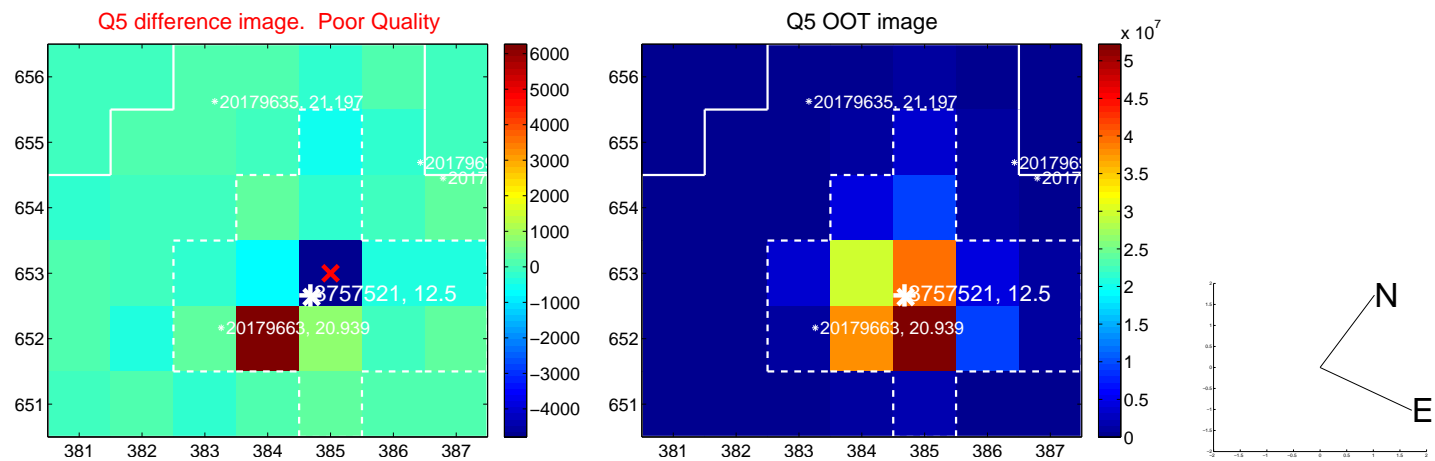


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

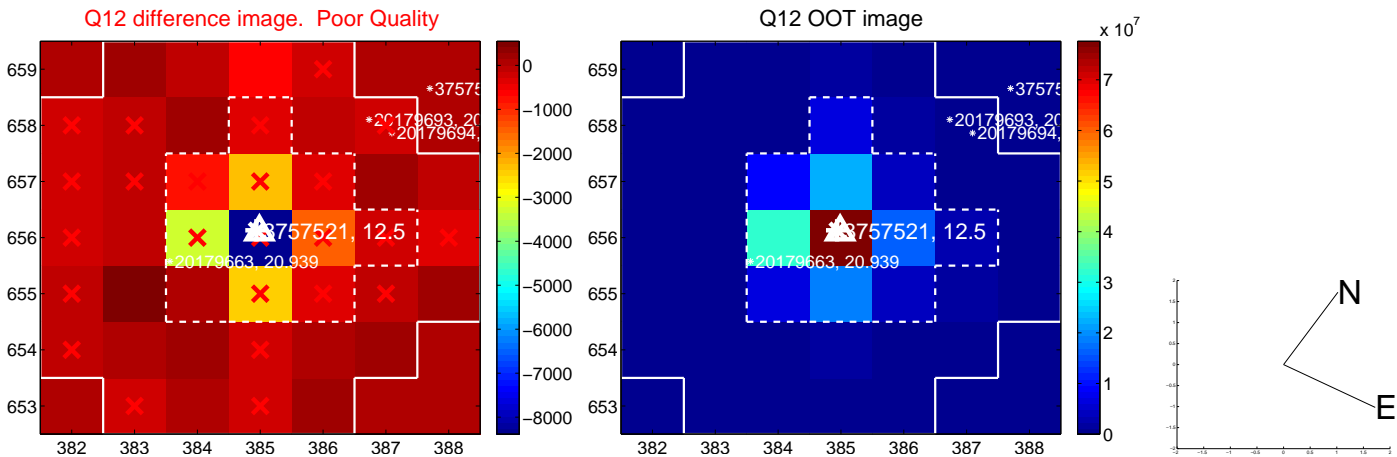
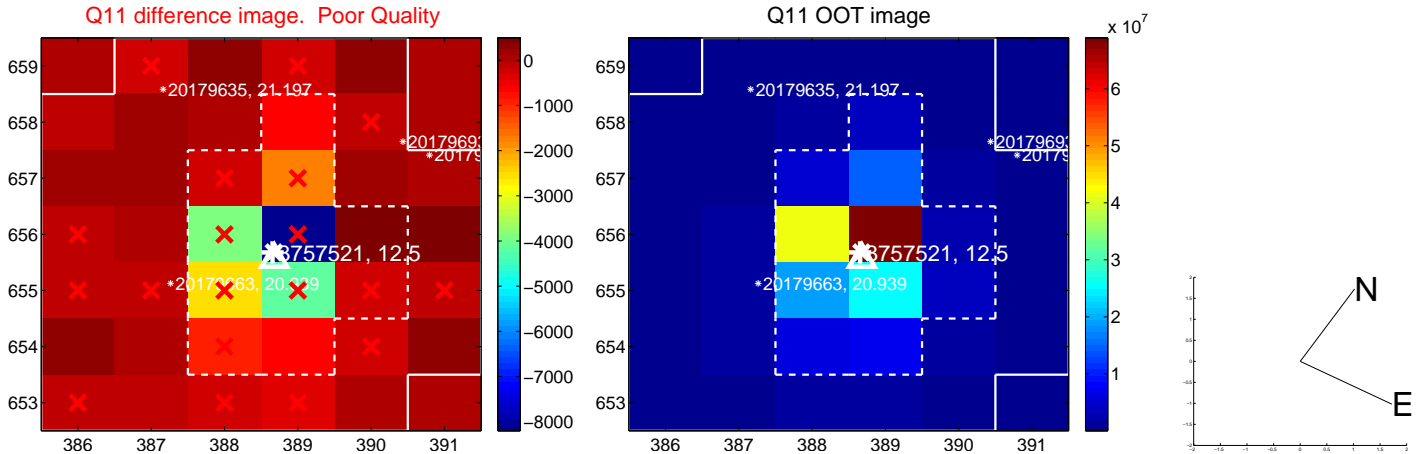
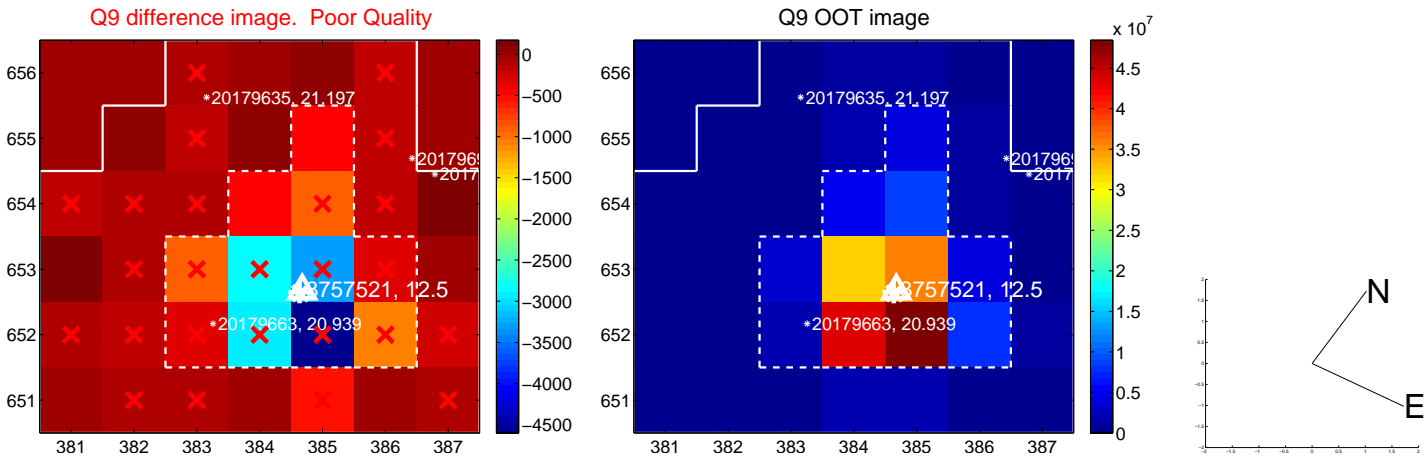
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



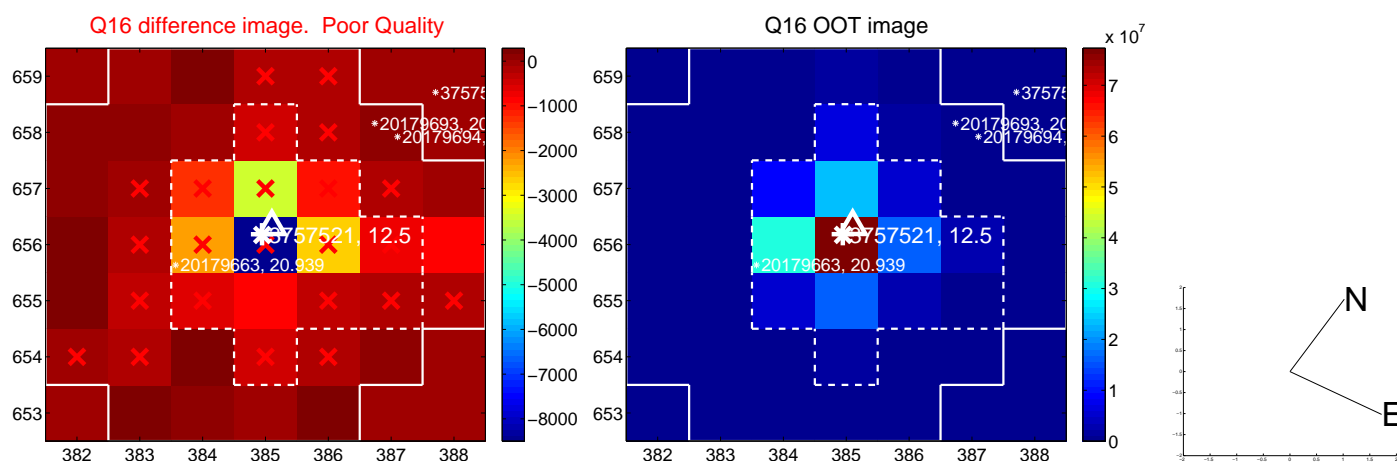
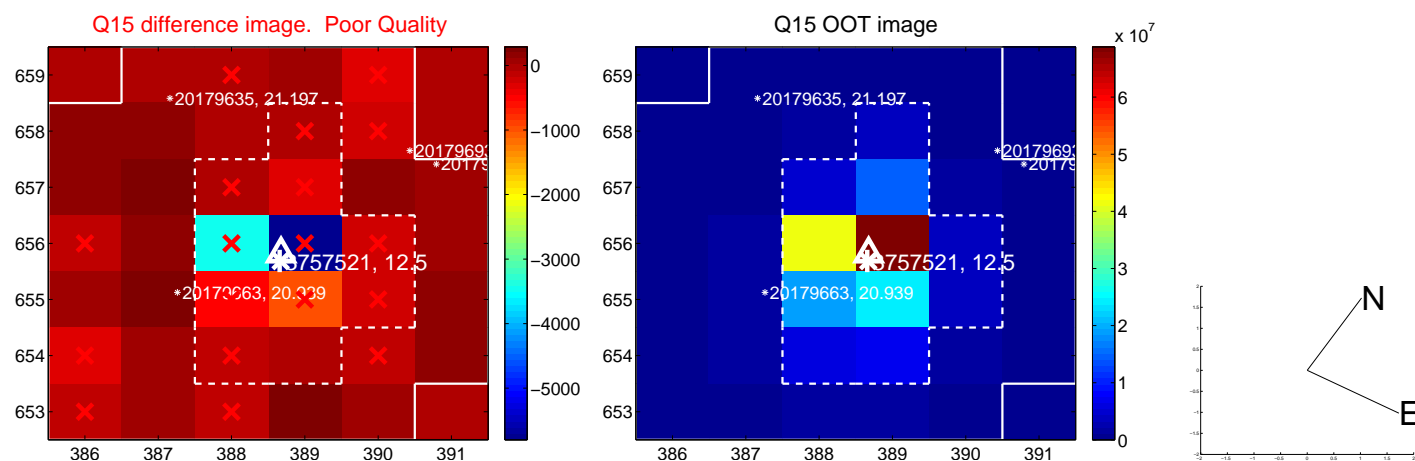
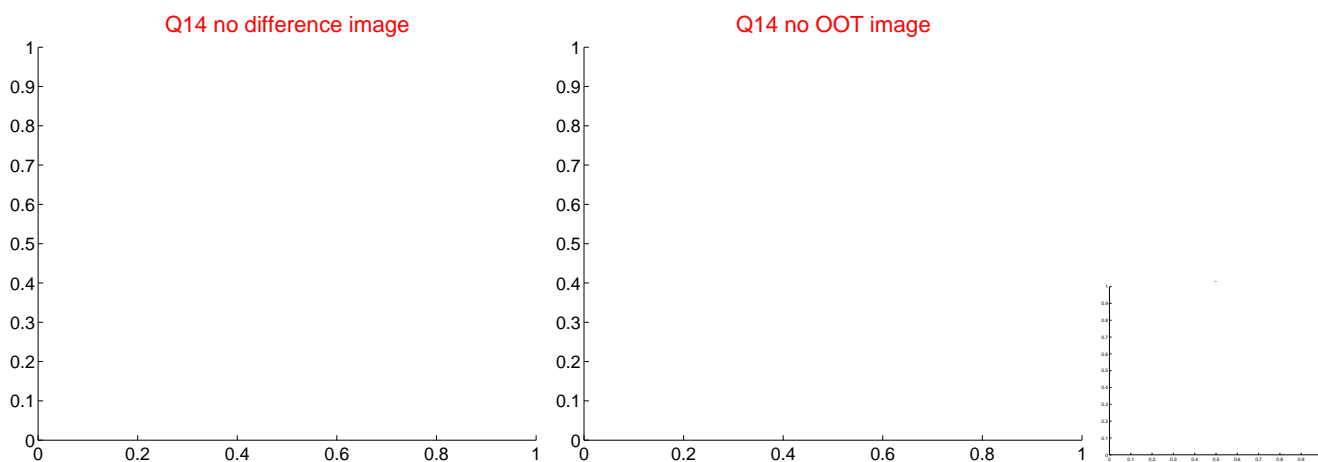
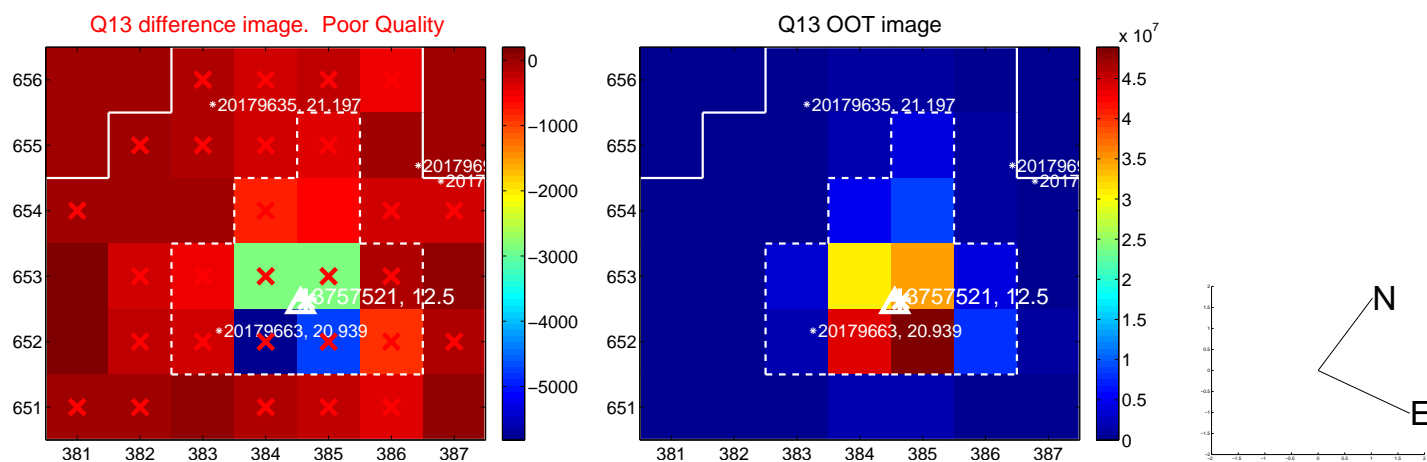
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



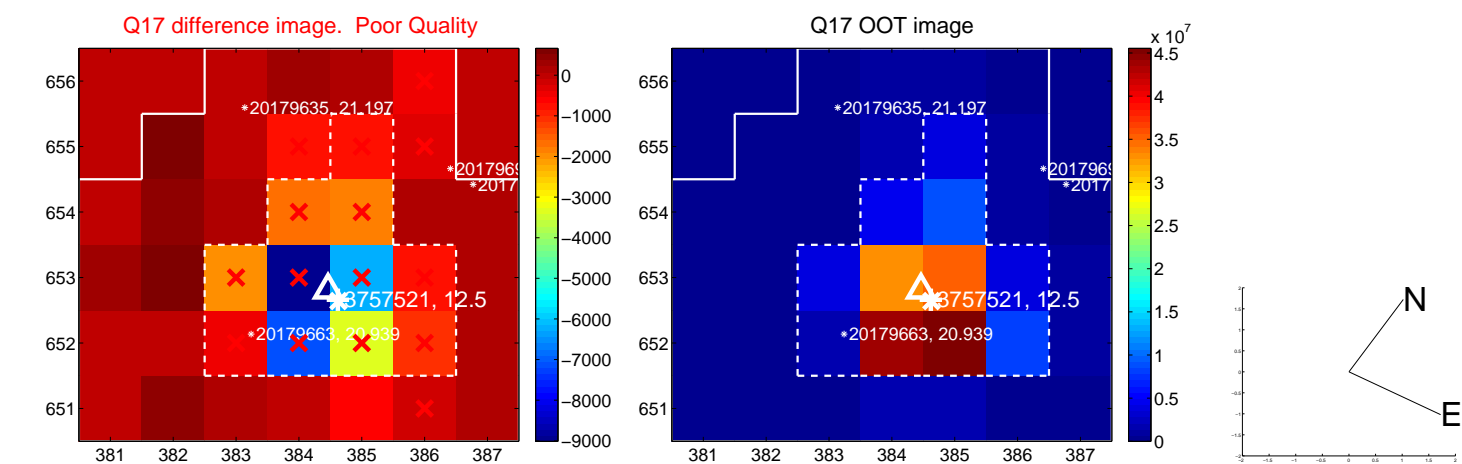
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



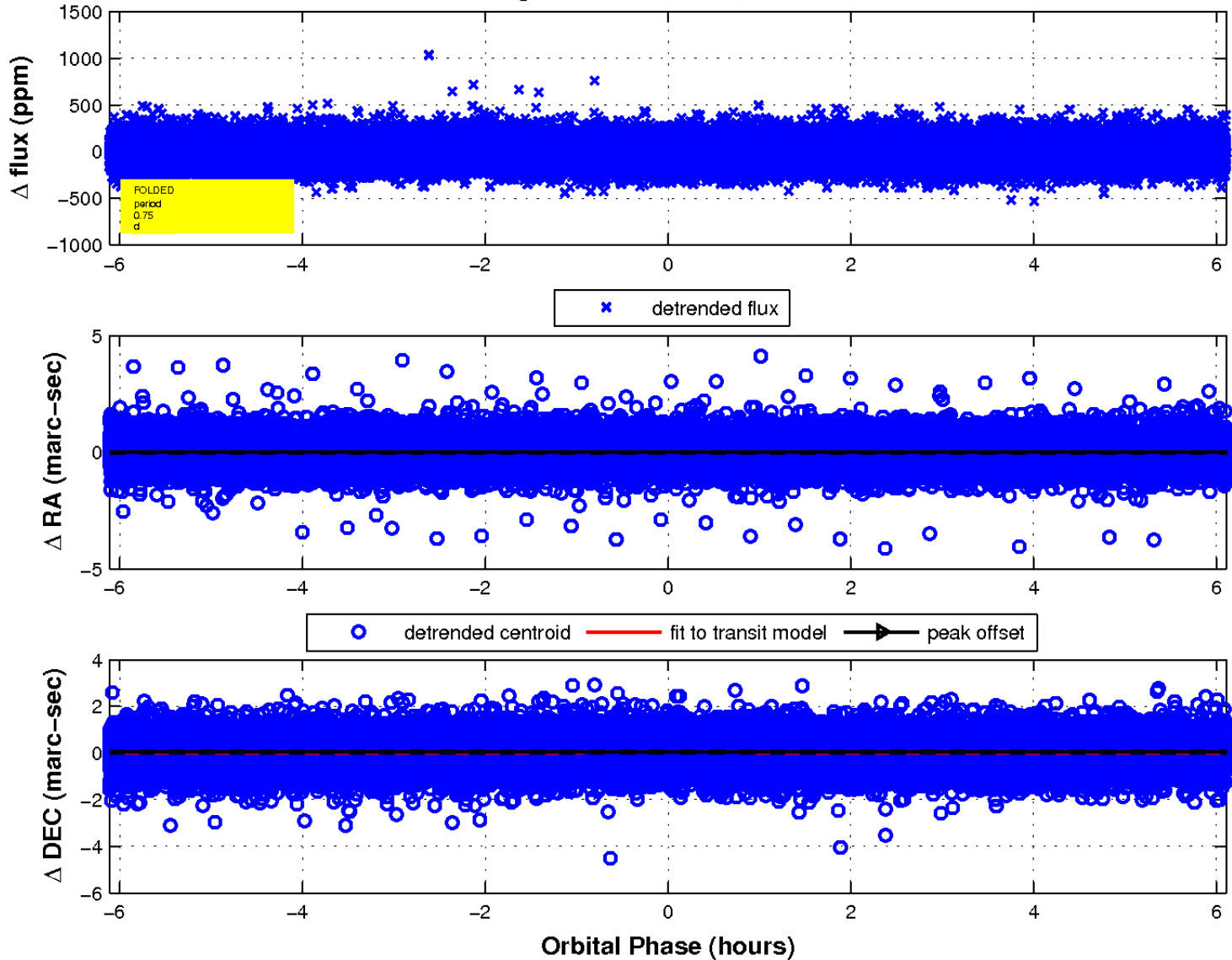
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

