

KIC 009814220

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009814220-01 | OBS | No | 494.183985 | 514.655821 | 404.3 | 13.691 | 7.7 | 7.6 | 0.94 | 5910 | 2.04 | 0.63 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009814220-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

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

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

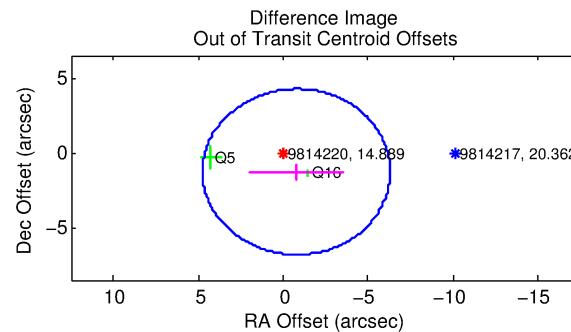
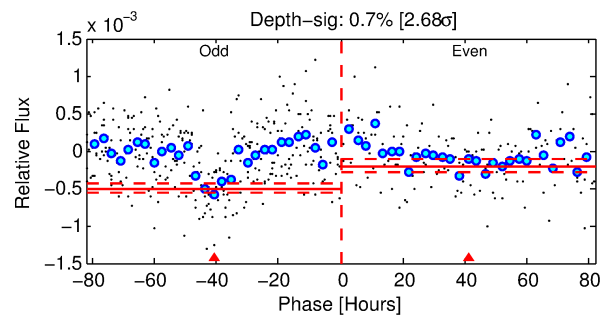
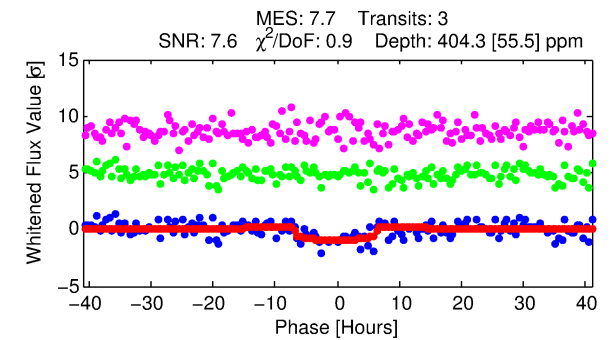
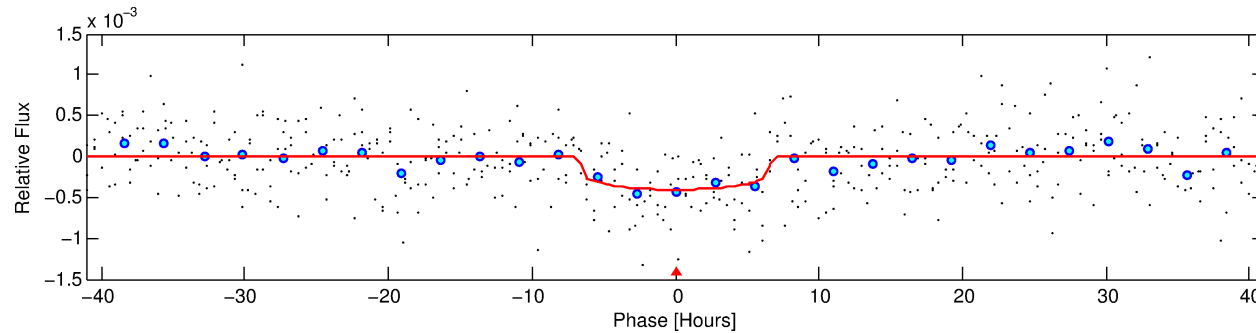
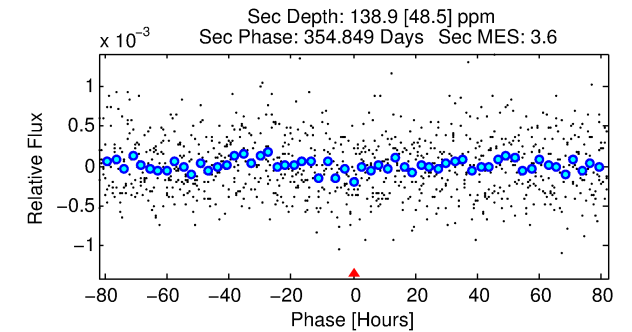
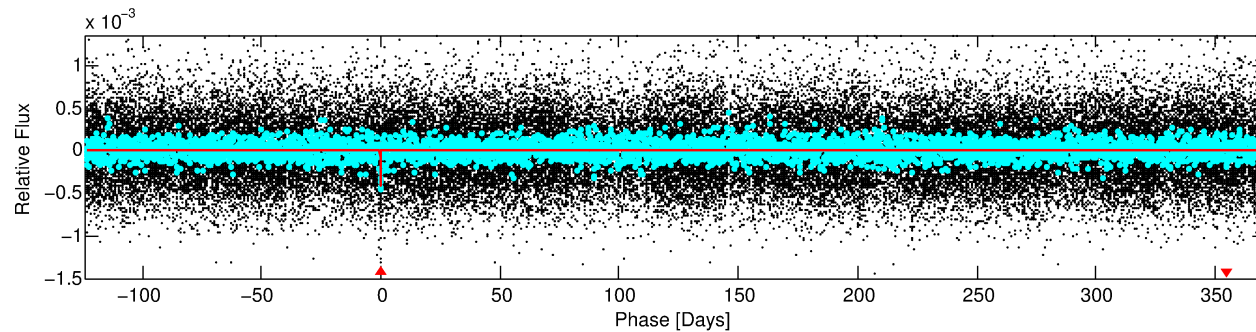
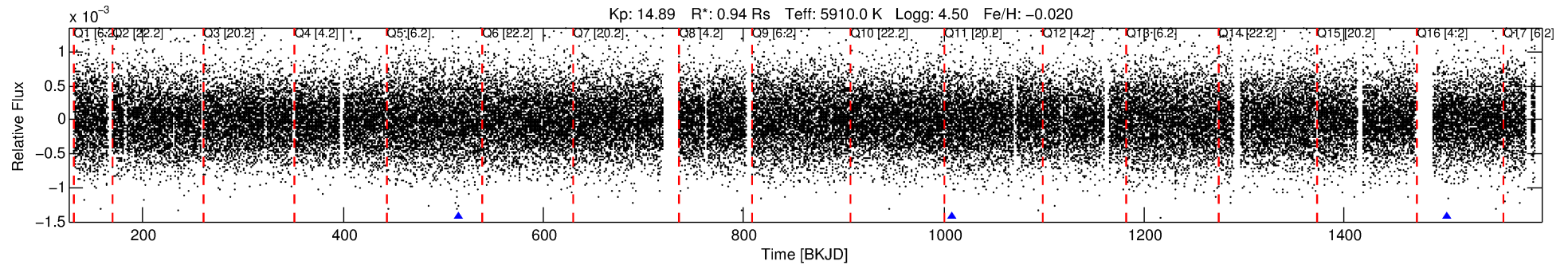
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009814220-01

No Significant Match Found

DV One-Page Summary

KIC: 9814220 Candidate: 1 of 1 Period: 494.184 d



DV Fit Results:

Period = 494.18399 [0.01724] d
Epoch = 514.6558 [0.0245] BKJD
Rp/R* = 0.0199 [0.0130]
a/R* = 195.94 [582.32]
b = 0.73 [1.92]
Seff = 0.63 [0.27]
Teq = 227 [24] K
Rp = 2.04 [1.48] Re
a = 1.2361 [0.3391] AU
Ag = 28082.16 [39790.24] [0.71 σ]
Teffp = 4551 [1550] K [2.79 σ]

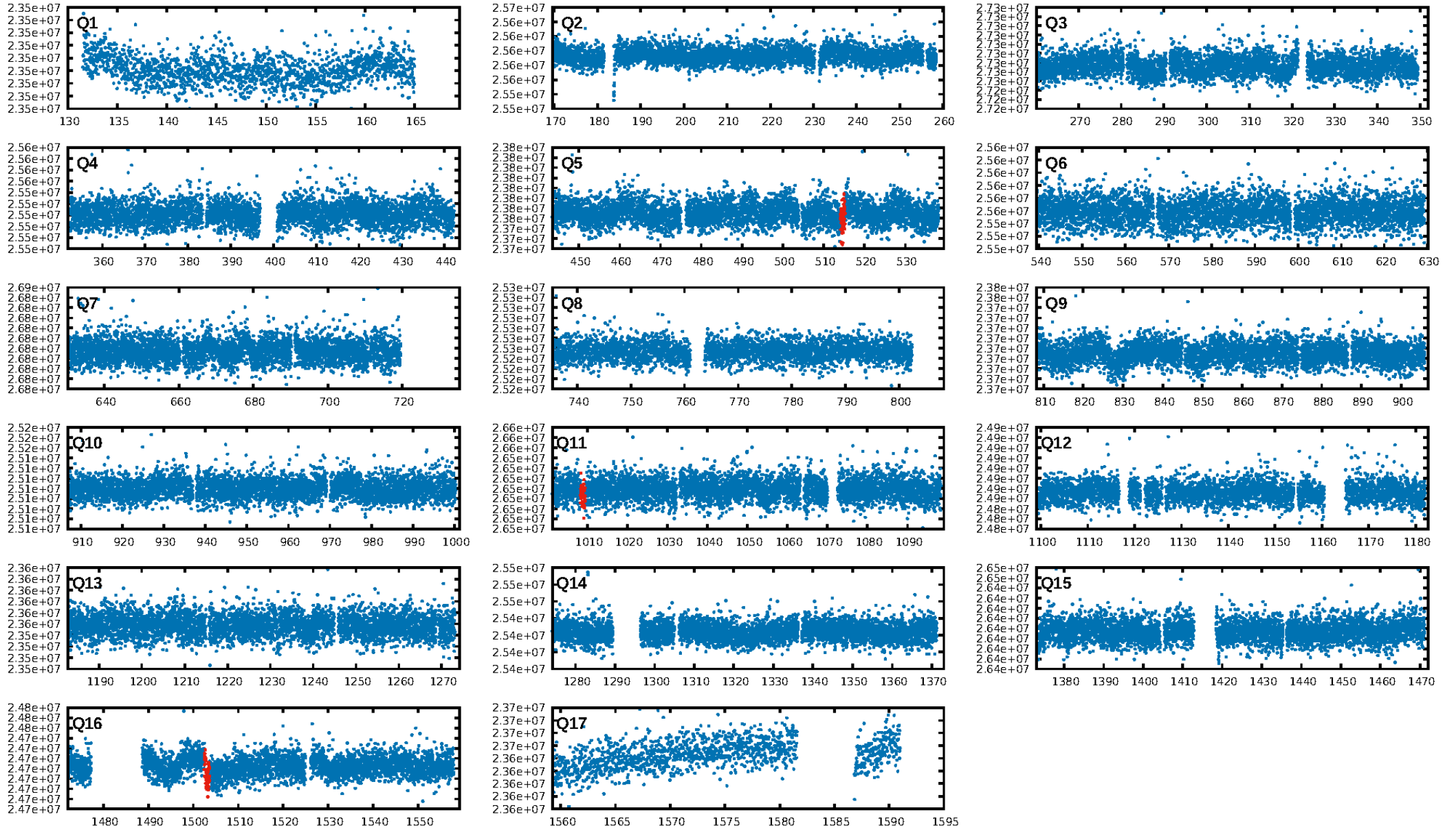
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 8.4%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 4.93e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.5374
Centroid-sig: 30.9%
Centroid-so: 2.347 arcsec [1.13 σ]
OotOffset-rm: 1.500 arcsec [0.81 σ]
KicOffset-rm: 1.795 arcsec [1.70 σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

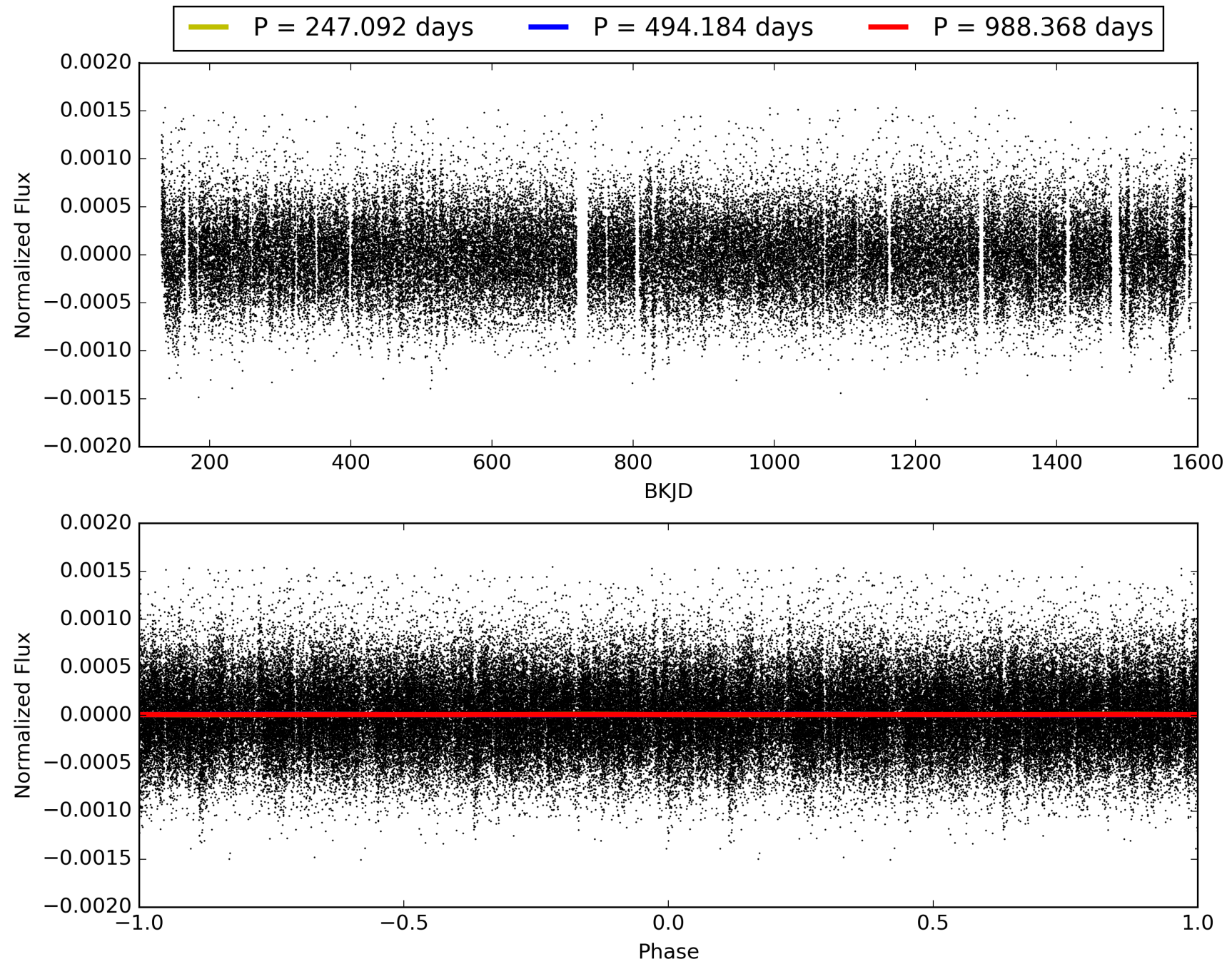
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 19:37:12 Z

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

TCE 009814220-01, PDC Light Curves

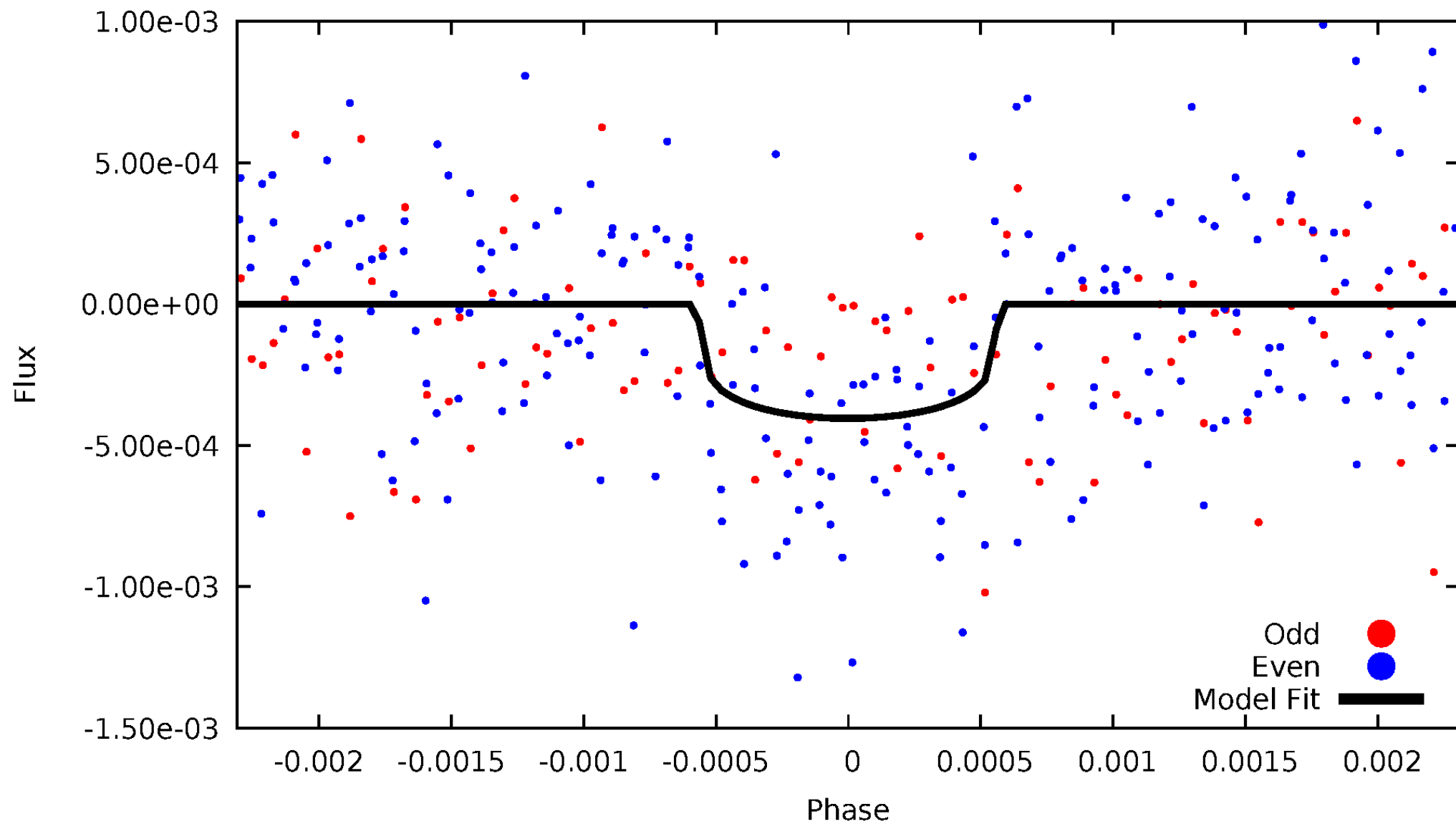


TCE 009814220-01



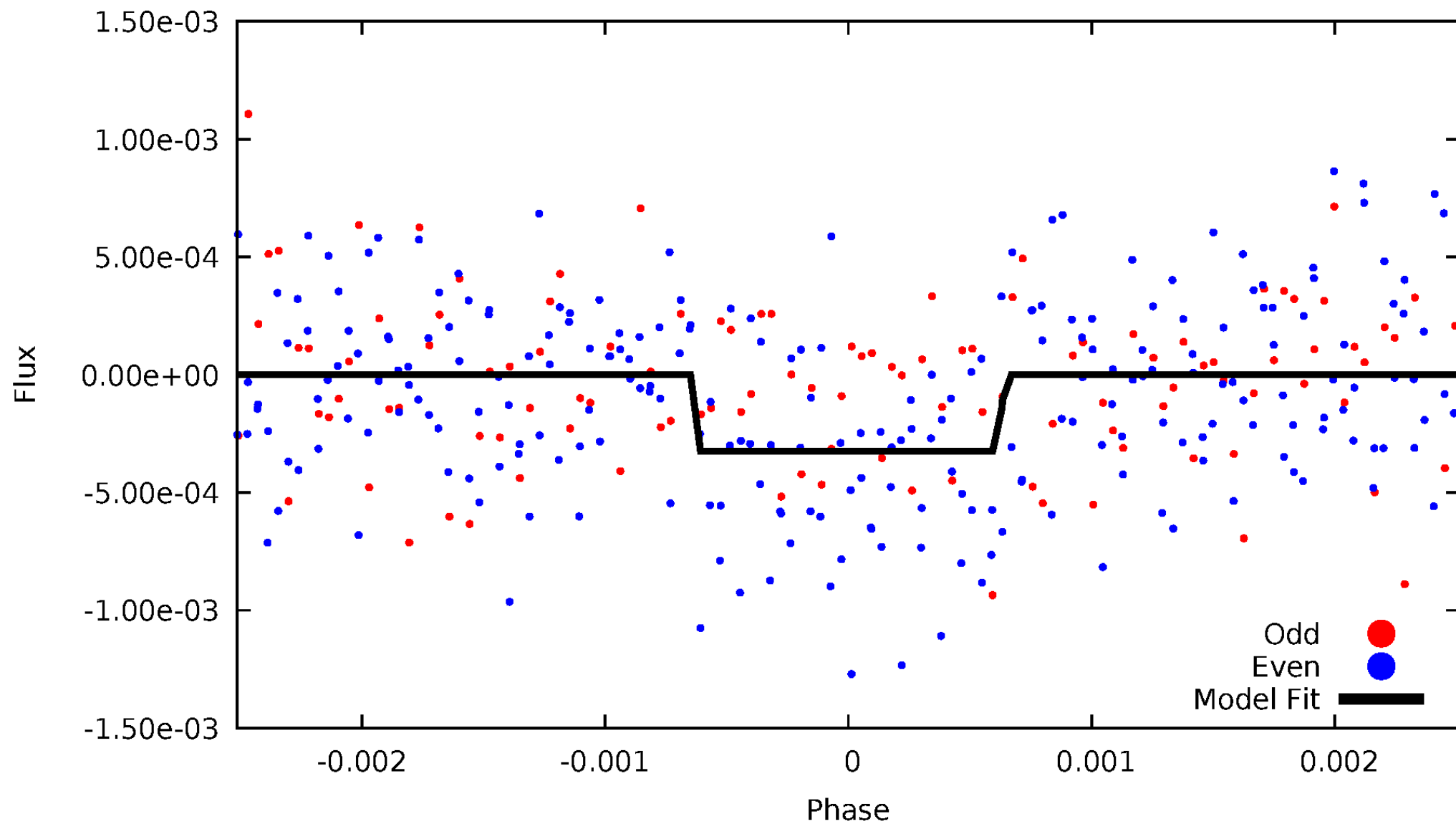
DV Odd/Even

TCE 009814220-01

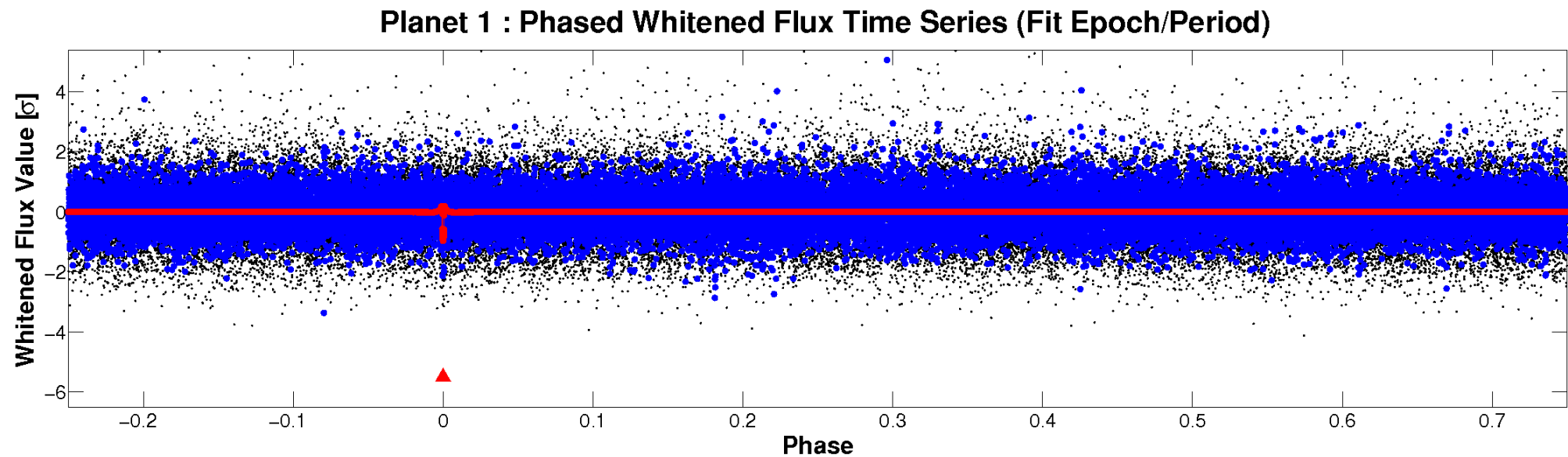
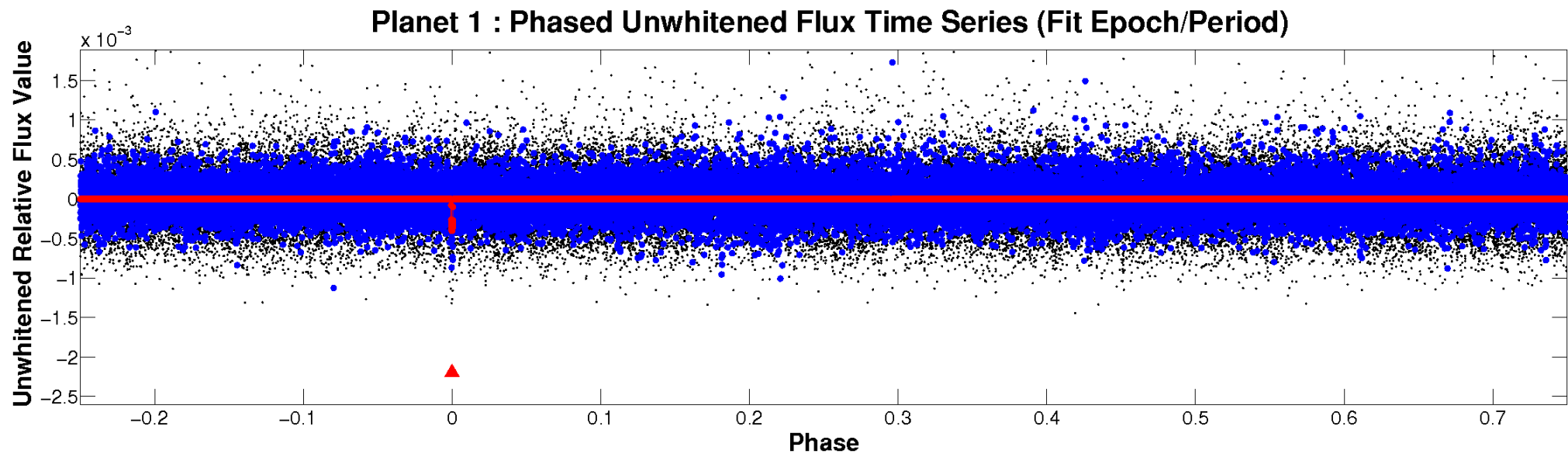


ALT Odd/Even

TCE 009814220-01



Non-Whitened Vs. Whitened Light Curve



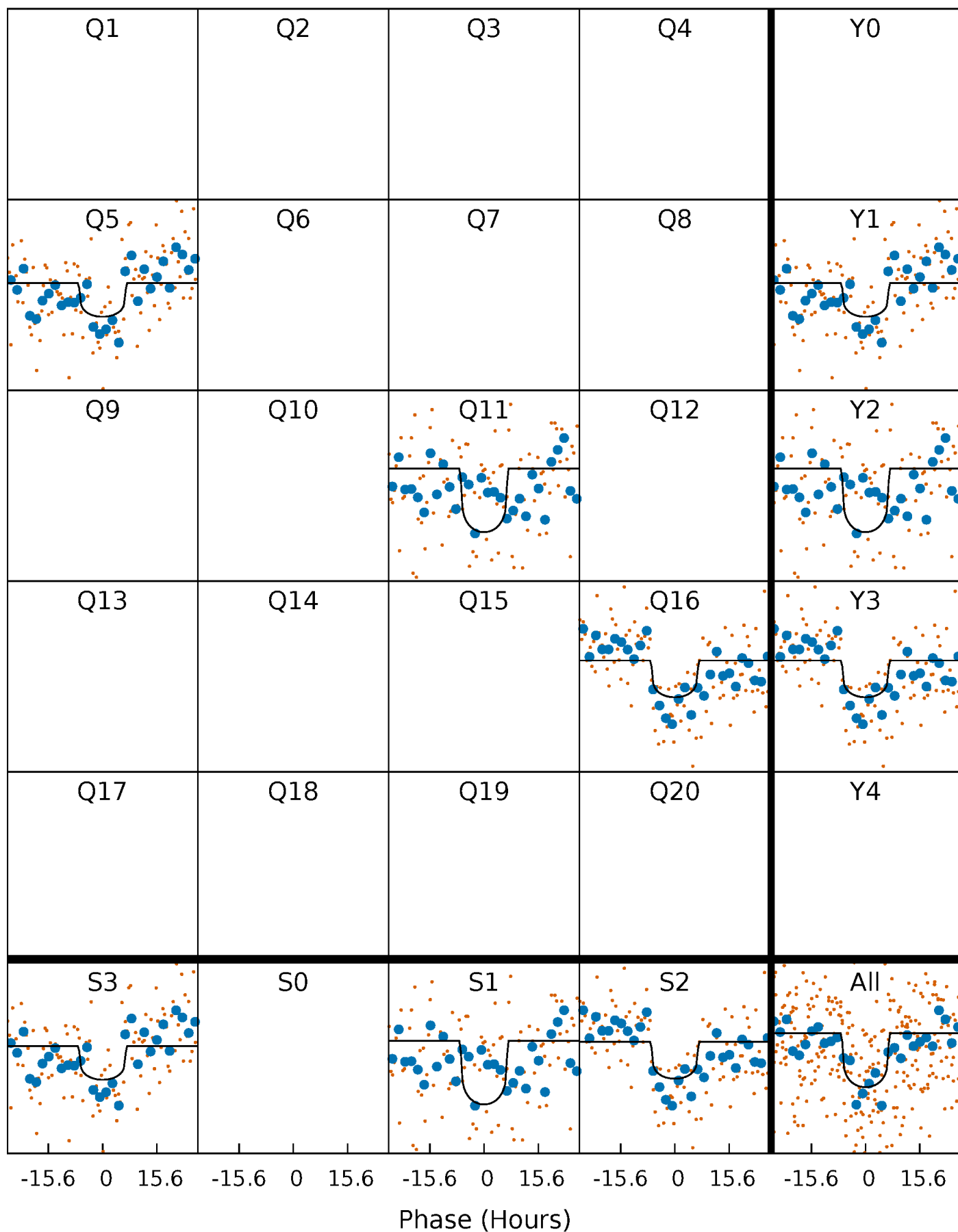
PDC Quarter-Phased Transit Curves

TCE 009814220-01 P=494.183985 Days $T_0=514.655821$ (BKJD)



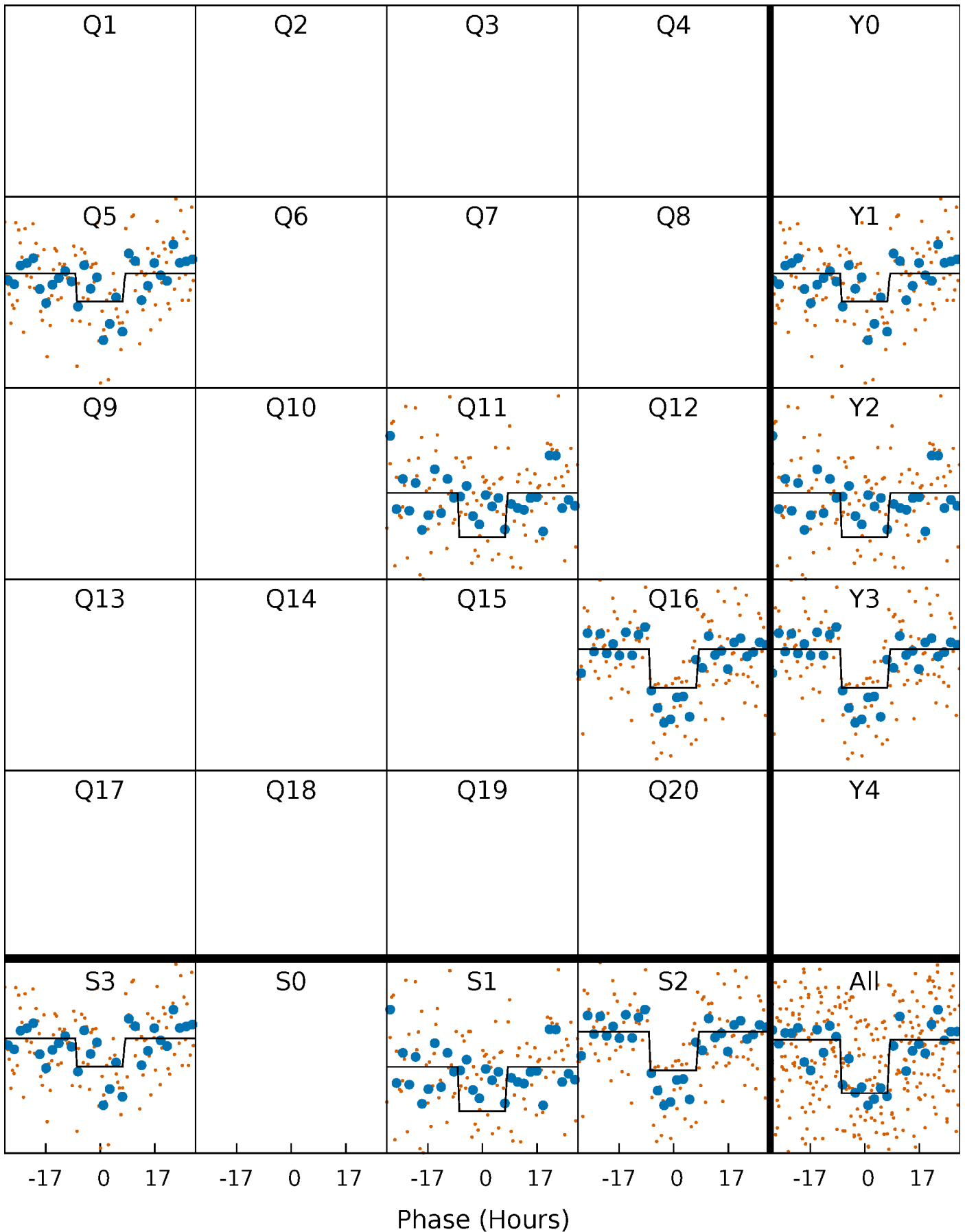
DV Quarter-Phased Transit Curves

TCE 009814220-01 P=494.183985 Days $T_0=514.655821$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

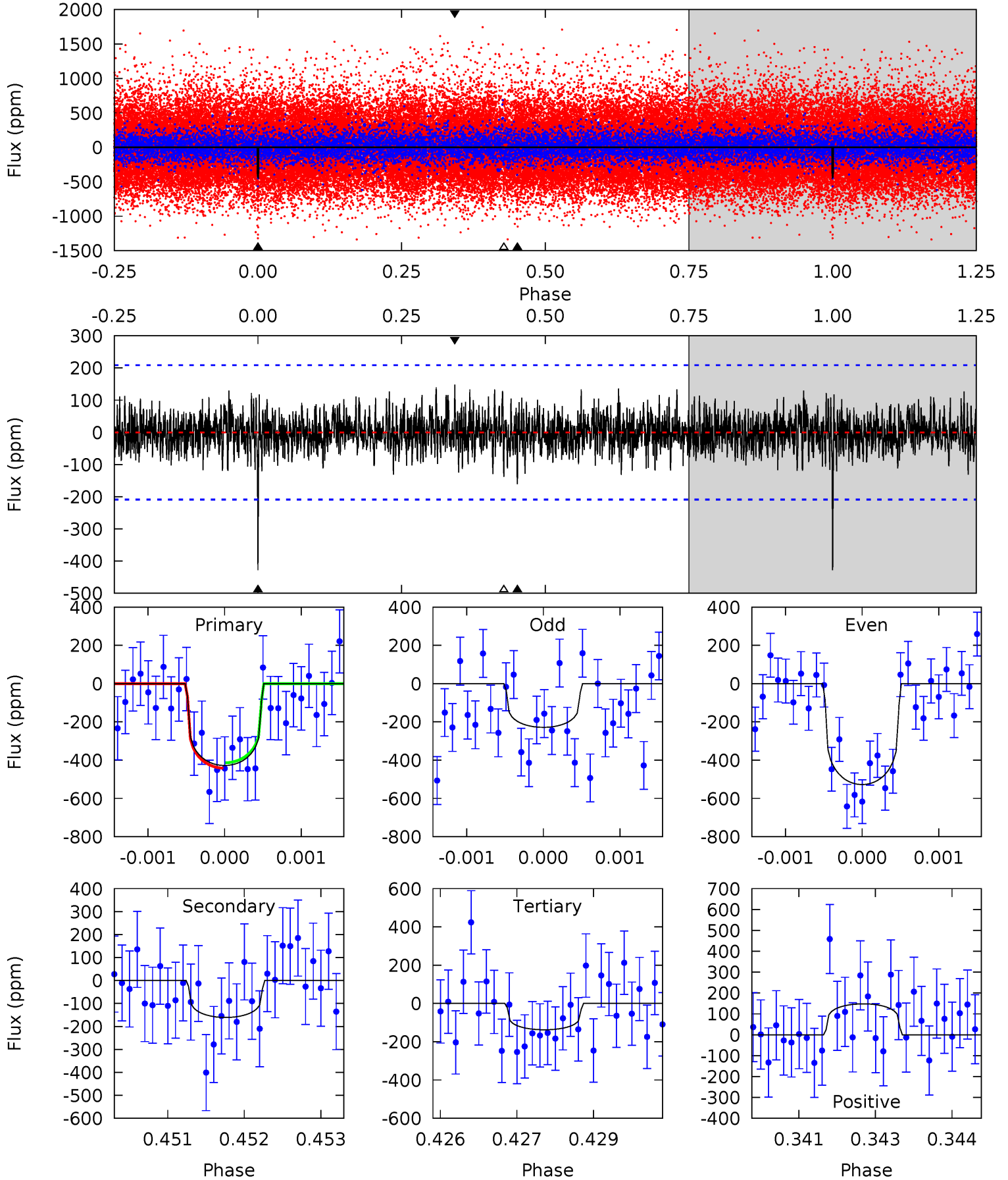
TCE 009814220-01 P=494.246949 Days $T_0=514.555076$ (BKJD)



DV Model-Shift Uniqueness Test

009814220-01, $P = 494.183985$ Days, $E = 20.471836$ Days

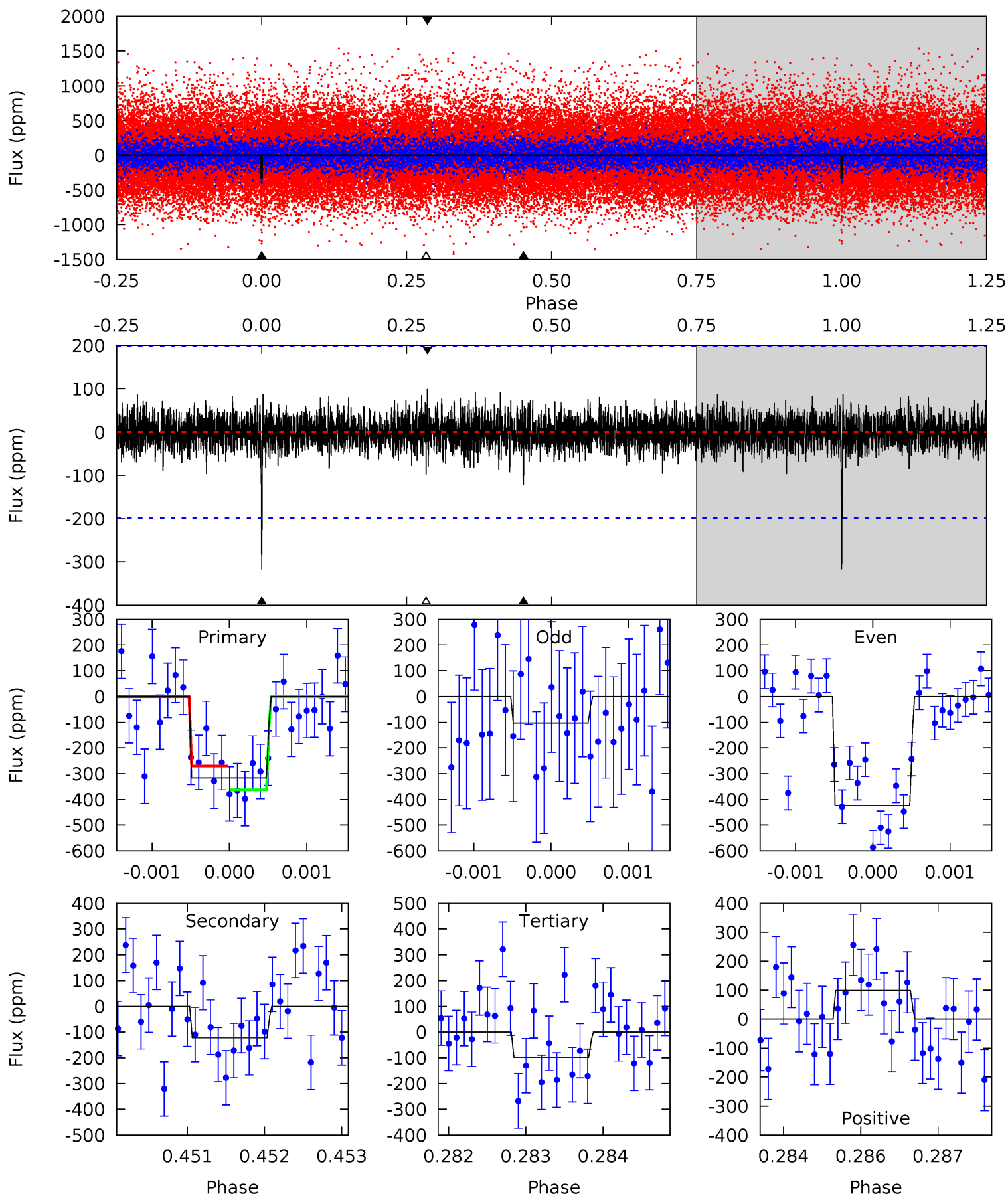
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.1 | 4.18 | 3.57 | 3.85 | 5.42 | 3.25 | 1.10 | 7.54 | 7.27 | 0.61 | 0.33 | 3.66 | 0.91 | 0.26 | 0.37 |



Alt Model-Shift Uniqueness Test

009814220-01, $P = 494.246949$ Days, $E = 20.308127$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.64 | 3.35 | 2.66 | 2.71 | 5.41 | 3.23 | 0.70 | 5.99 | 5.93 | 0.69 | 0.64 | 4.13 | 0.86 | 0.24 | 1.25 |



Stellar Parameters For KIC 009814220

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5910^{+158}_{-193} | $4.505^{+0.040}_{-0.229}$ | $-0.020^{+0.250}_{-0.300}$ | $0.940^{+0.297}_{-0.099}$ | $1.032^{+0.127}_{-0.127}$ | $1.750^{+0.382}_{-0.954}$ |
| | +3%/-3% | +1%/-5% | +1250%/-1500% | +32%/-11% | +12%/-12% | +22%/-54% |
| 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 009814220-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|-----------------------|----------------------------|
| DV | -161 ± 38 | $2.34^{+1.37}_{-1.21}$ | 327^{+27}_{-15} | 4681^{+1937}_{-749} | 23474^{+84766}_{-14602} |
| Alt. | -123 ± 37 | $2.10^{+1.55}_{-1.23}$ | 327^{+25}_{-14} | 4628^{+2286}_{-843} | $23200^{+109125}_{-16126}$ |

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 $A_{obs} \gg 1.0$

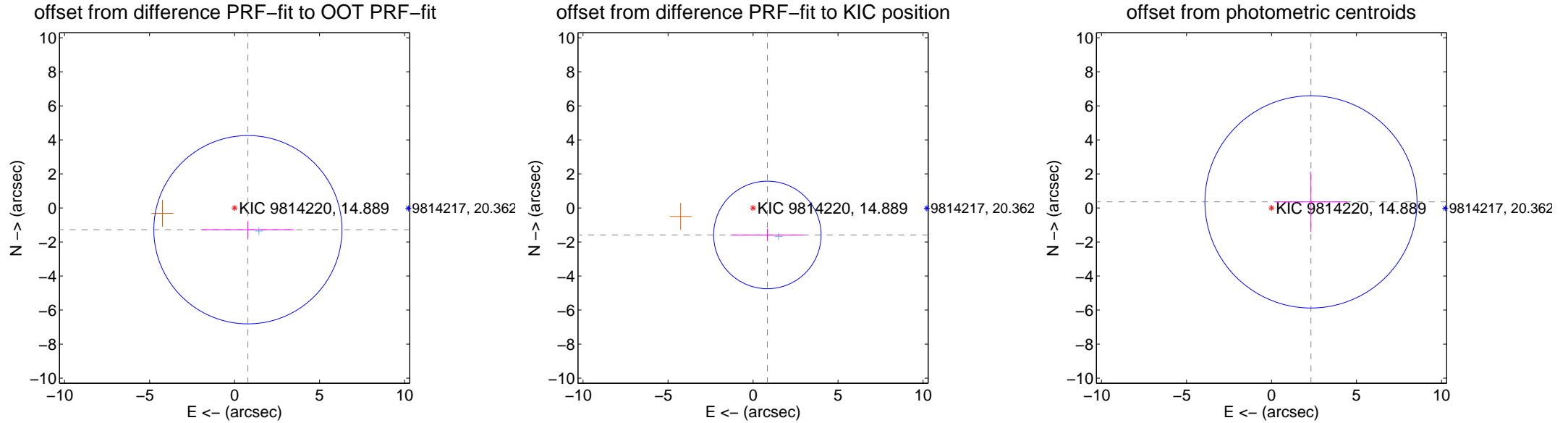
DV Centroid Data

Supplemental centroid analysis for 009814220-01. Kepler magnitude: 14.89. Transit SNR 7.58

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 1.500 ± 1.844 | 0.81 | -0.783 ± 2.718 | -1.279 ± 0.501 |
| PRF-fit source offset from KIC position | 1.795 ± 1.053 | 1.70 | -0.842 ± 2.142 | -1.586 ± 0.360 |
| photometric centroid source offset | 2.35 ± 2.08 | 1.13 | -2.32 ± 2.09 | 0.36 ± 1.78 |

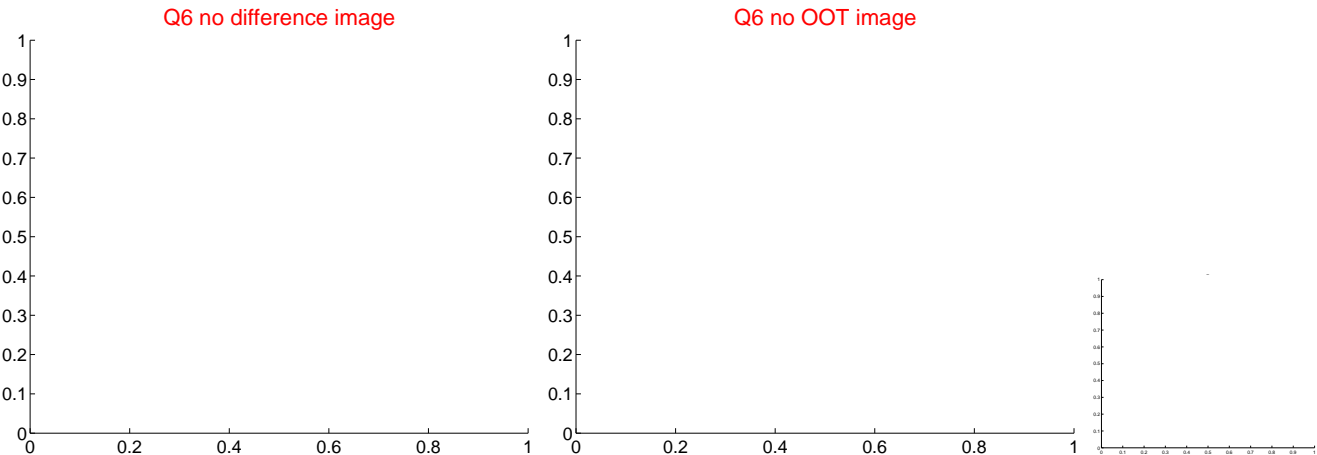
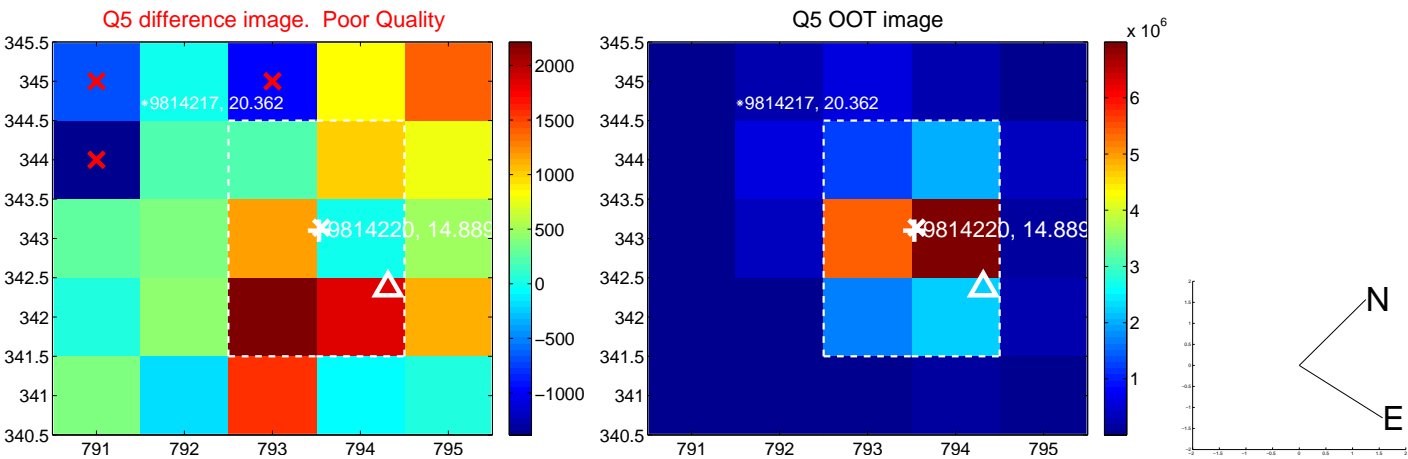


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

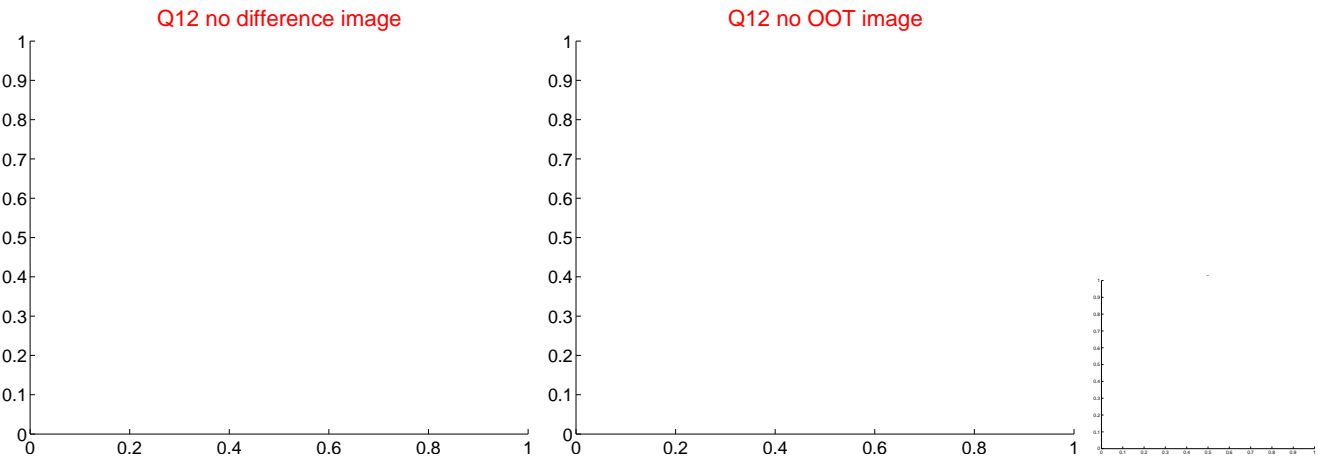
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



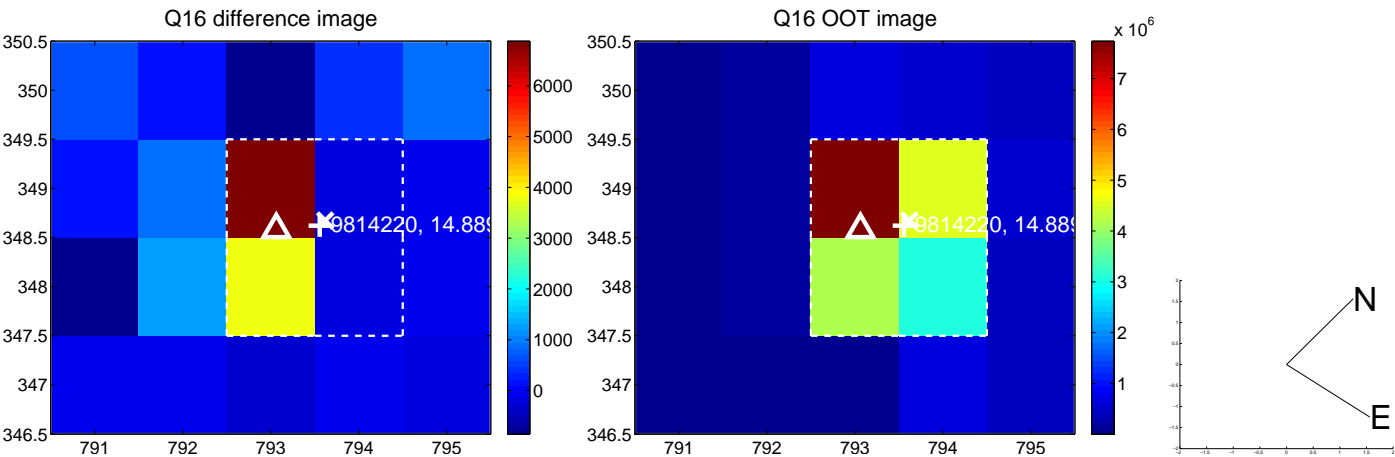
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



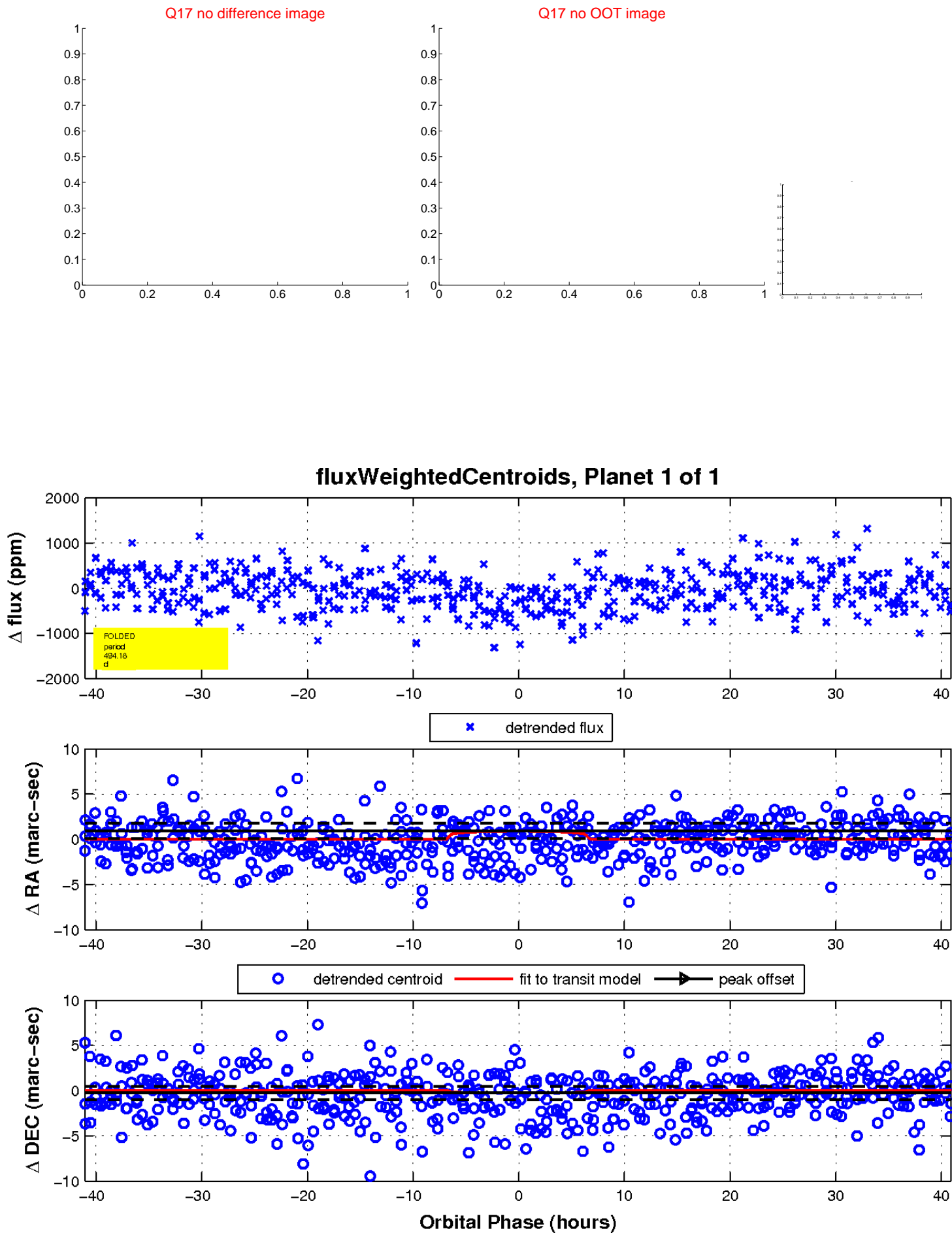
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

