

KIC 009480535

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009480535-01 | OBS | 3901.01 | 160.131200 | 203.473352 | 1141.5 | 13.800 | 26.5 | 28.2 | 1.76 | 6092 | 6.60 | 9.70 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 009480535-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | NO_COMMENT |

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 009480535-01

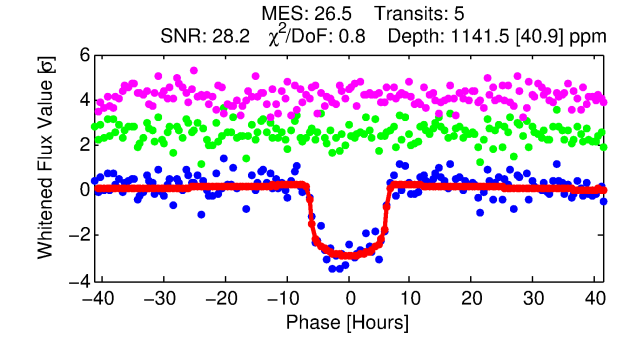
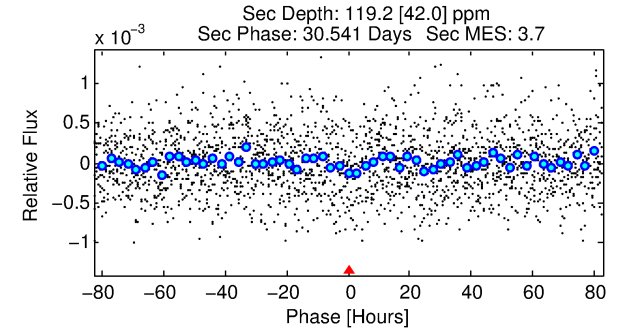
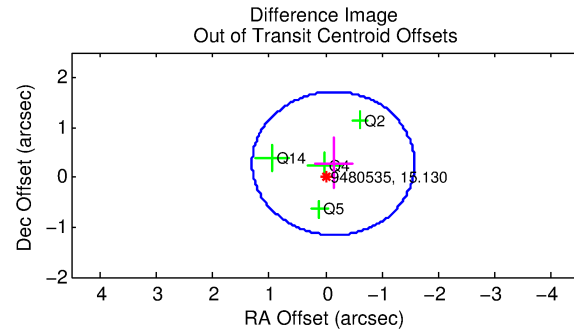
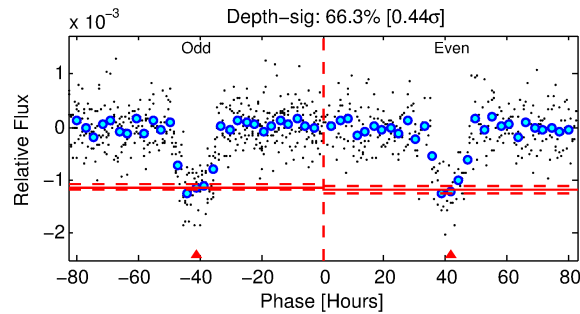
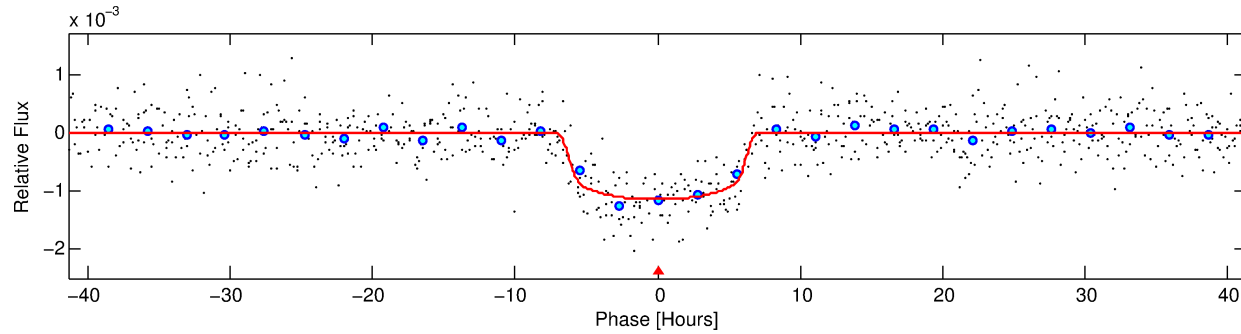
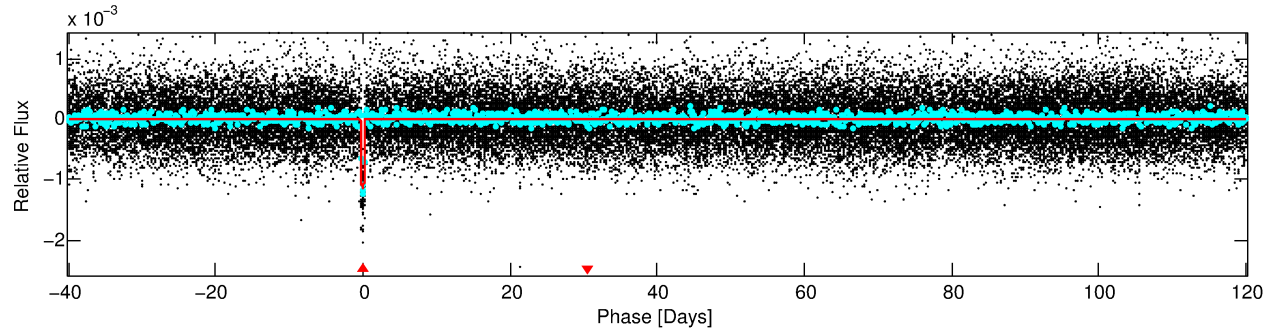
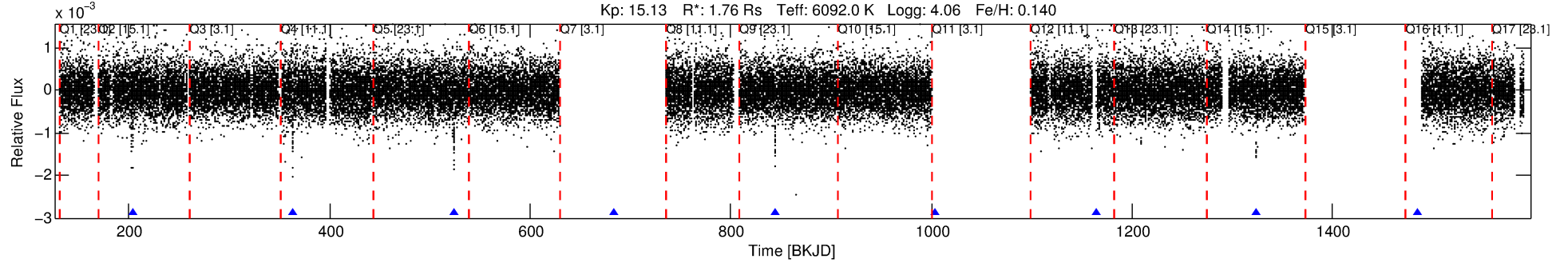
No Significant Match Found

DV One-Page Summary

KIC: 9480535 Candidate: 1 of 1 Period: 160.131 d

KOI: K03901.01 Corr: 0.977

Kp: 15.13 R*: 1.76 Rs Teff: 6092.0 K Logg: 4.06 Fe/H: 0.140



DV Fit Results:

Period = 160.13120 [0.00178] d
Epoch = 203.4734 [0.0070] BKJD
Rp/R* = 0.0344 [0.0019]
a/R* = 57.46 [13.74]
b = 0.81 [0.11]
Seff = 9.70 [3.11]
Teq = 450 [36] K
Rp = 6.60 [1.49] Re
a = 0.6274 [0.1269] AU
Ag = 592.44 [287.47] [2.06σ]
Teffp = 3433 [320] K [9.26σ]

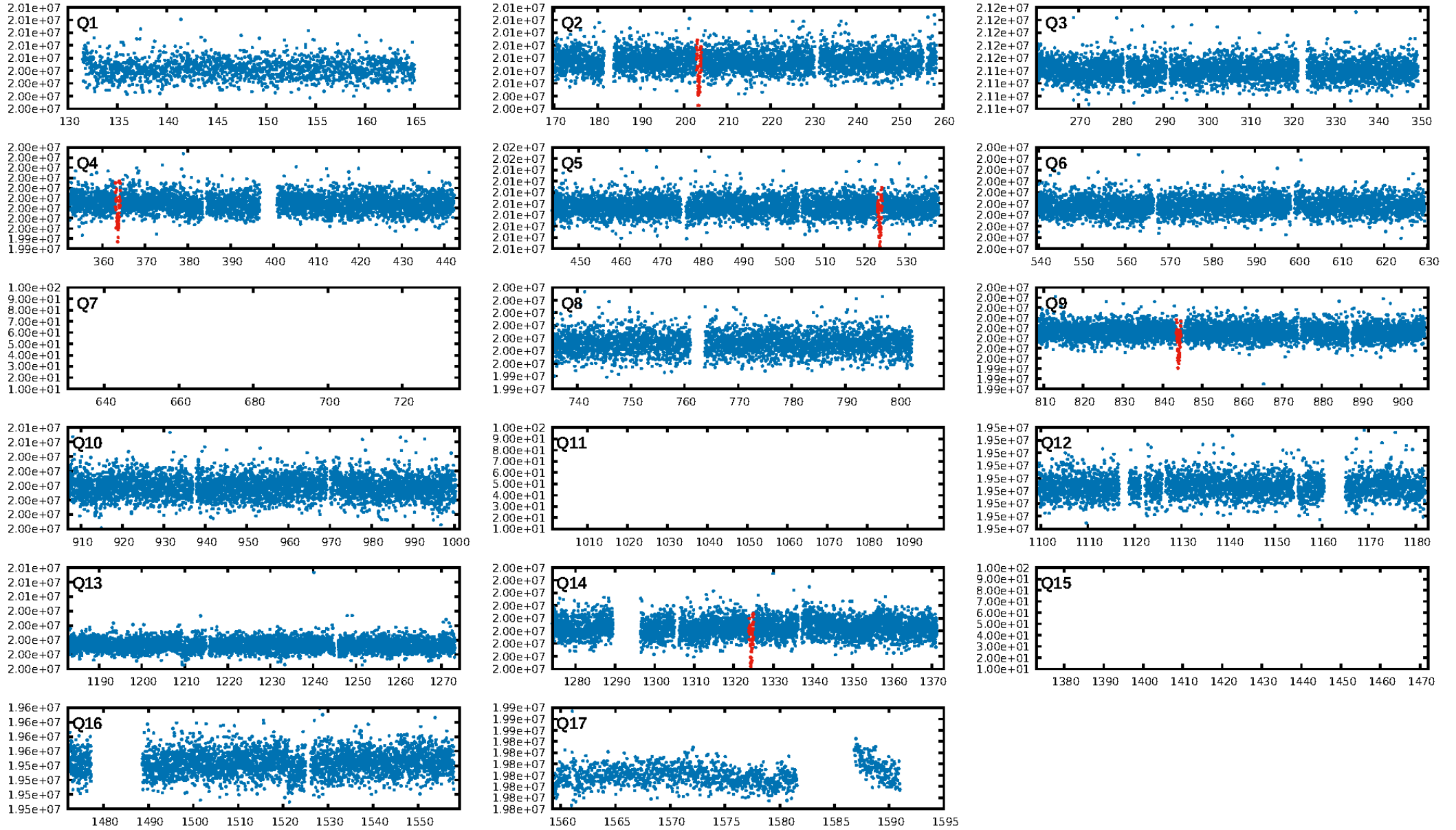
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 81.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.19e-135
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 152.7
Centroid-sig: 85.8%
Centroid-so: 0.471 arcsec [0.85σ]
OotOffset-rm: 0.307 arcsec [0.64σ]
KicOffset-rm: 0.363 arcsec [0.63σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-st: 2/0/1/1 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [4/4]

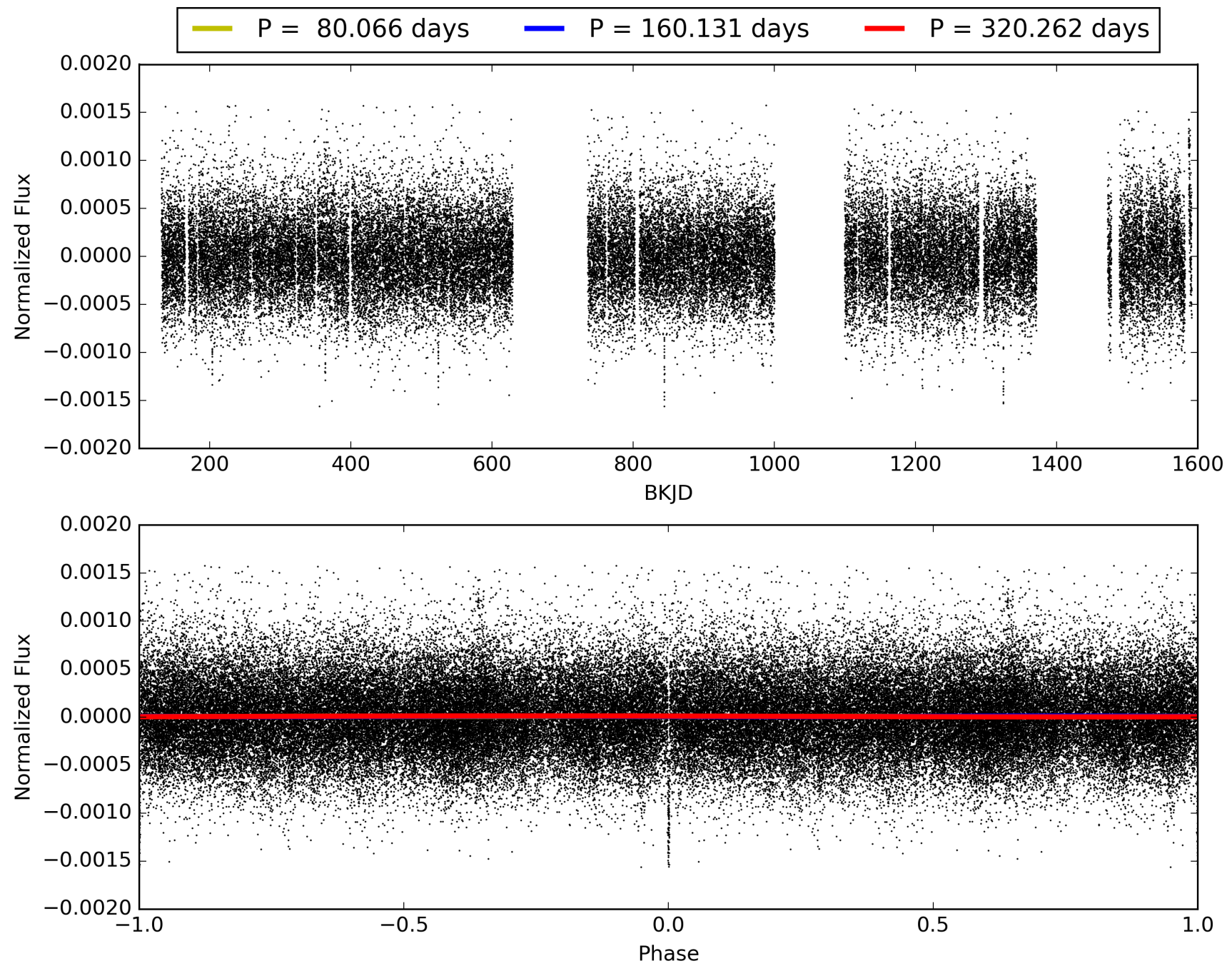
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:21:54 Z

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

TCE 009480535-01, PDC Light Curves

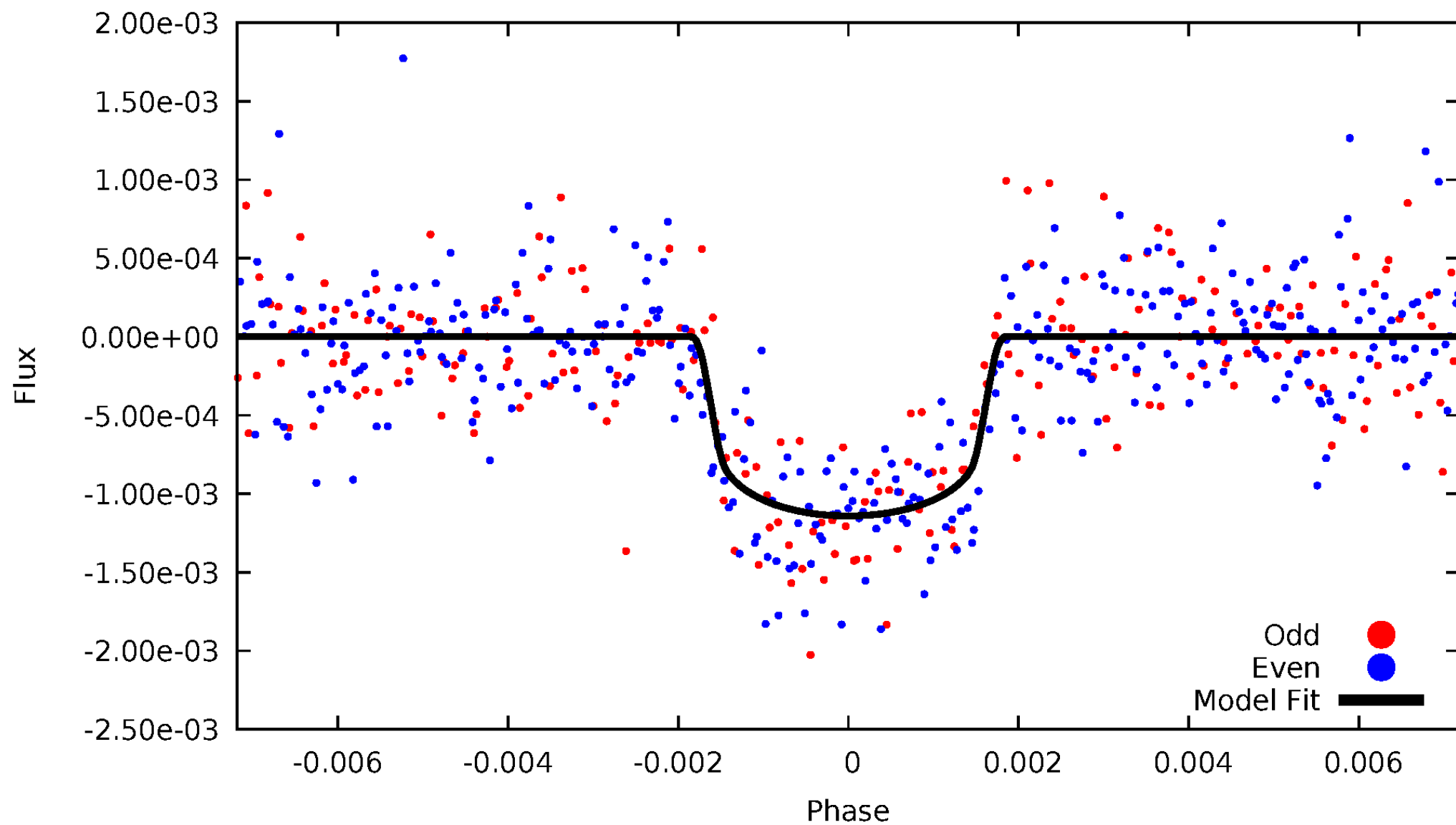


TCE 009480535-01



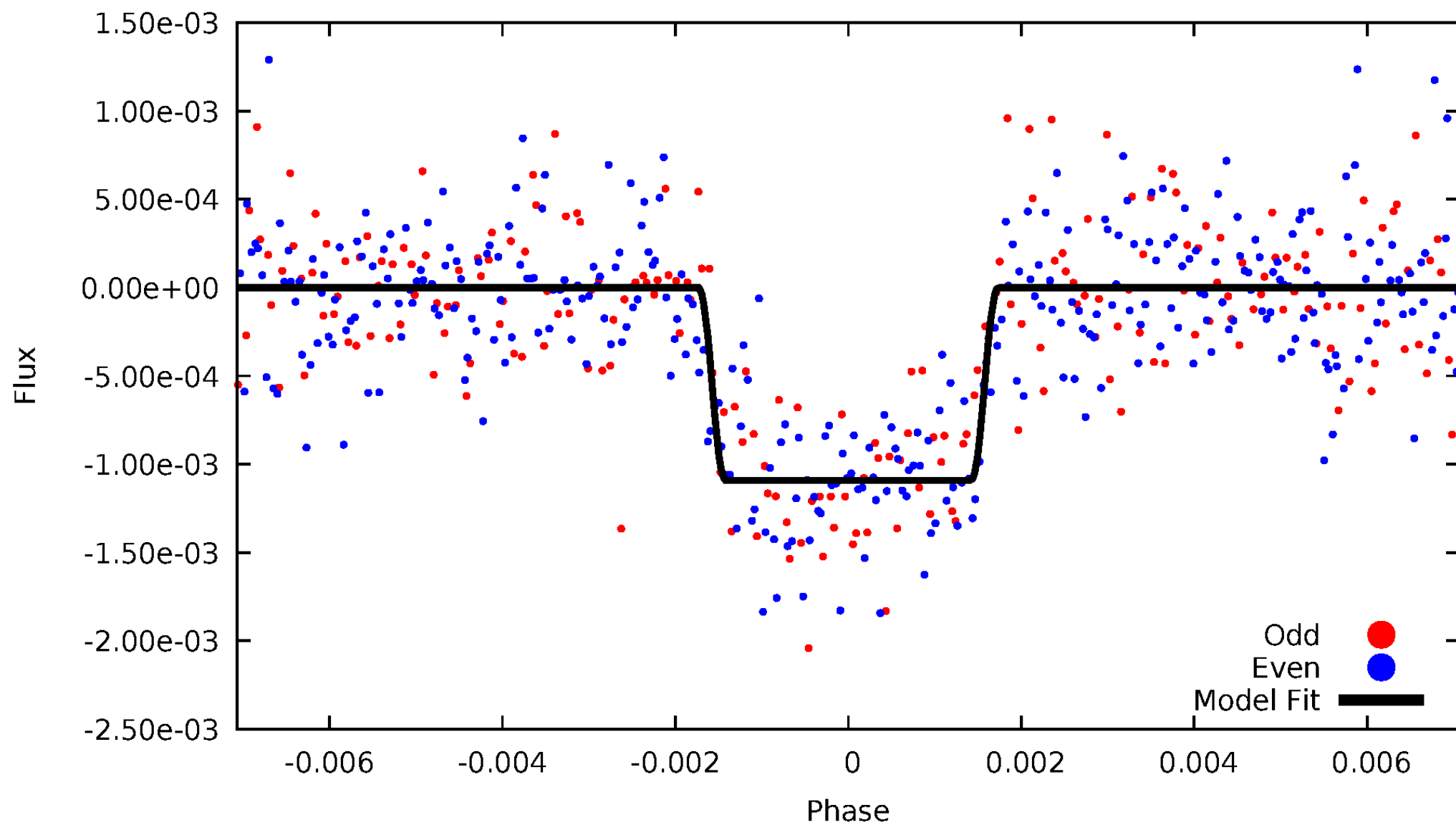
DV Odd/Even

TCE 009480535-01



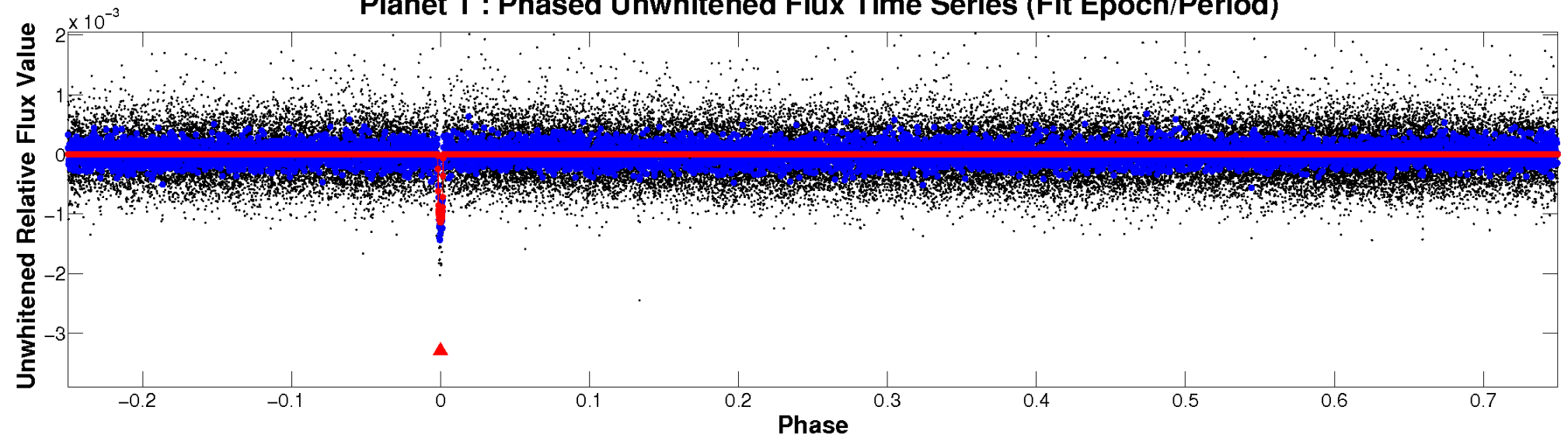
ALT Odd/Even

TCE 009480535-01

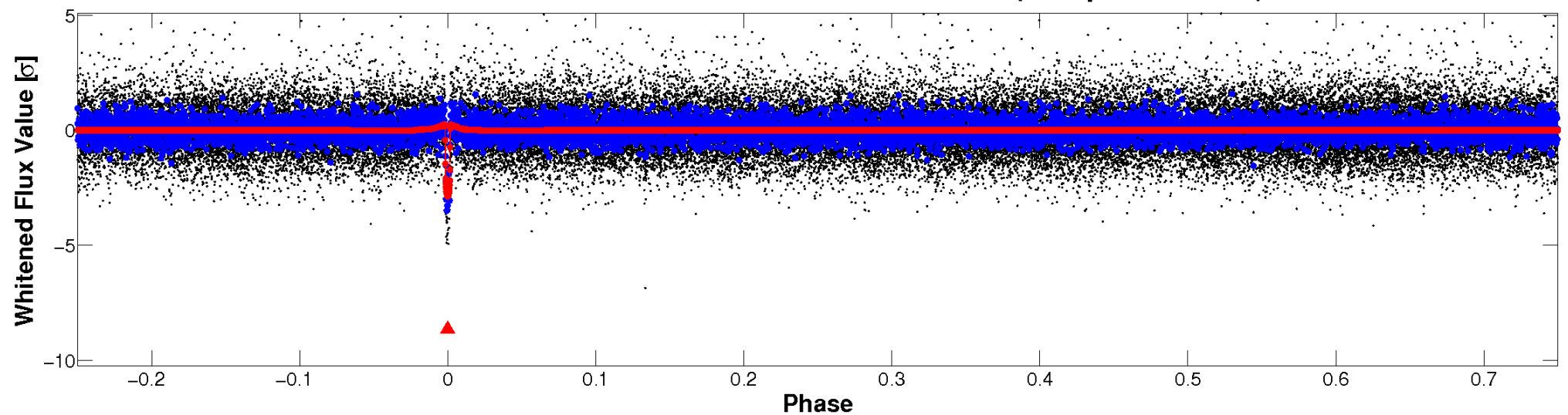


Non-Whitened Vs. Whitened Light Curve

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

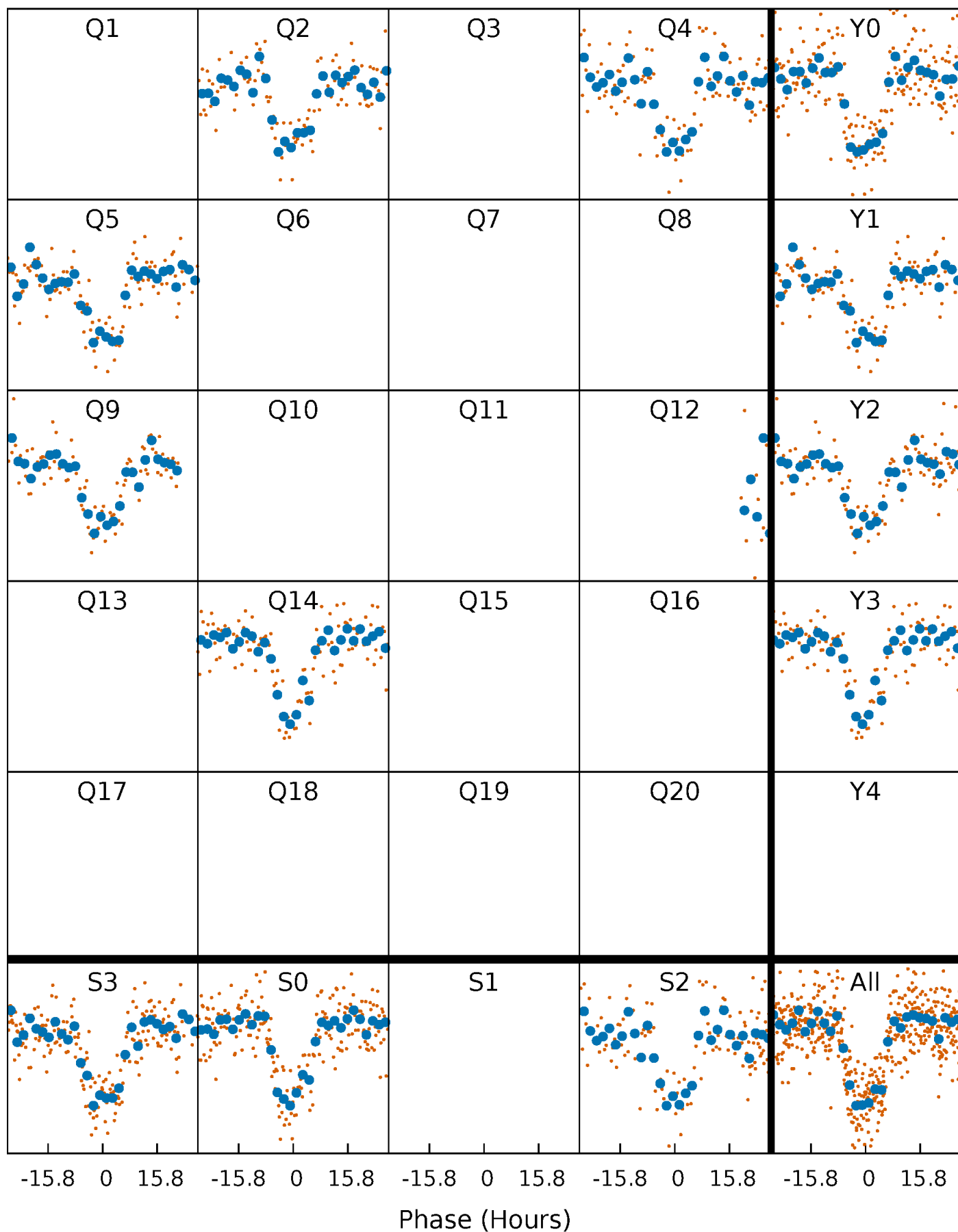


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



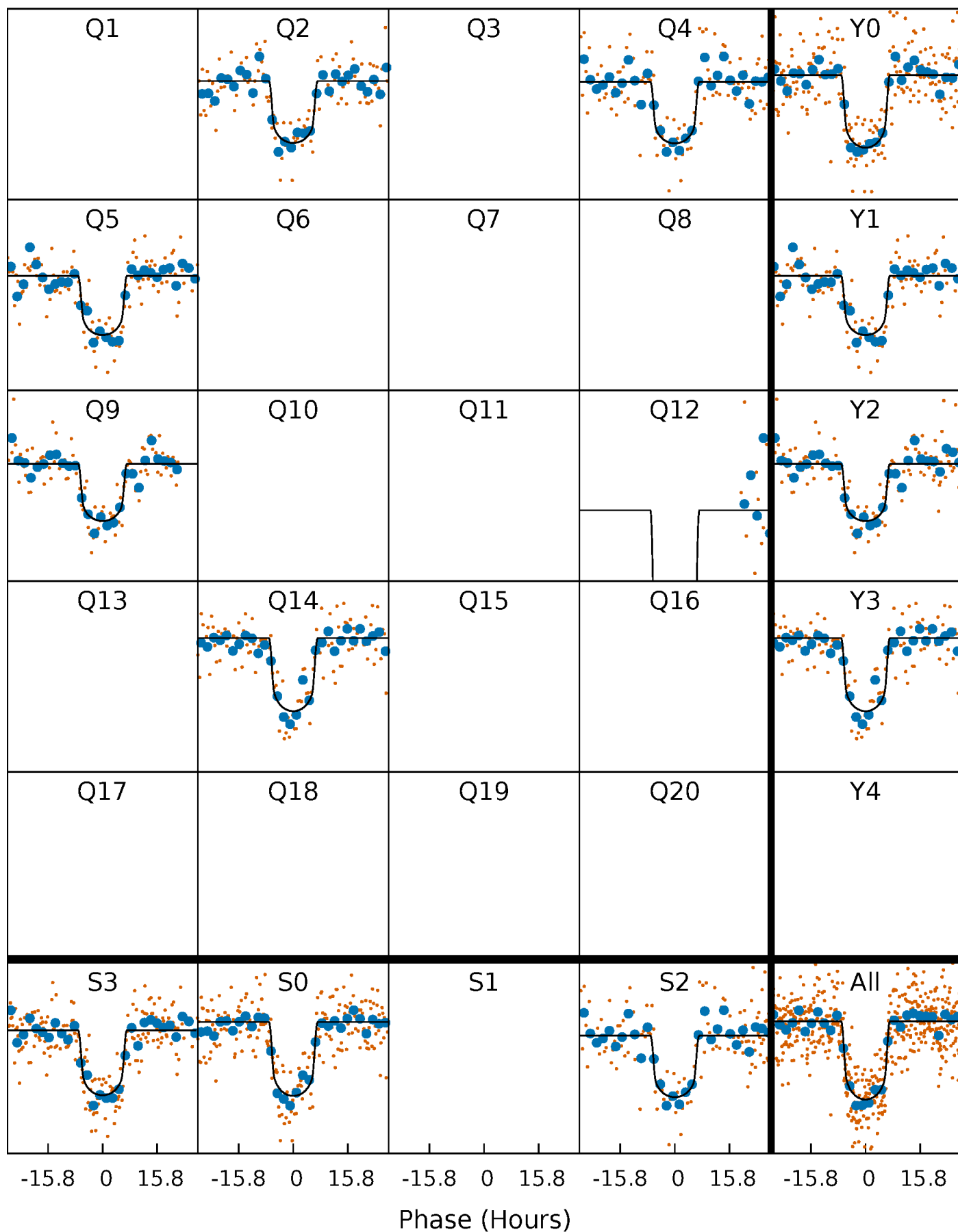
PDC Quarter-Phased Transit Curves

TCE 009480535-01 P=160.131200 Days $T_0=203.473352$ (BKJD)



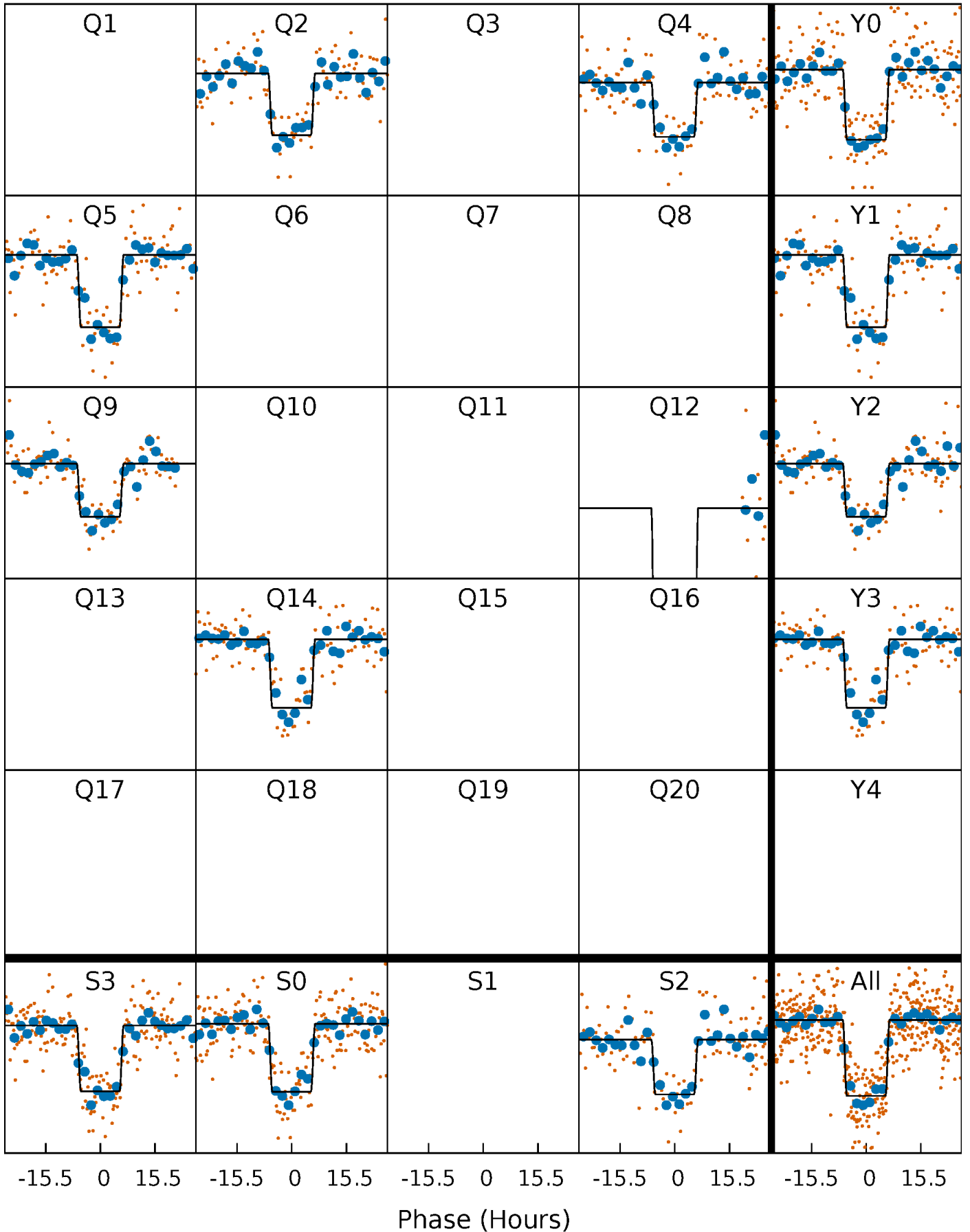
DV Quarter-Phased Transit Curves

TCE 009480535-01 P=160.131200 Days $T_0=203.473352$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

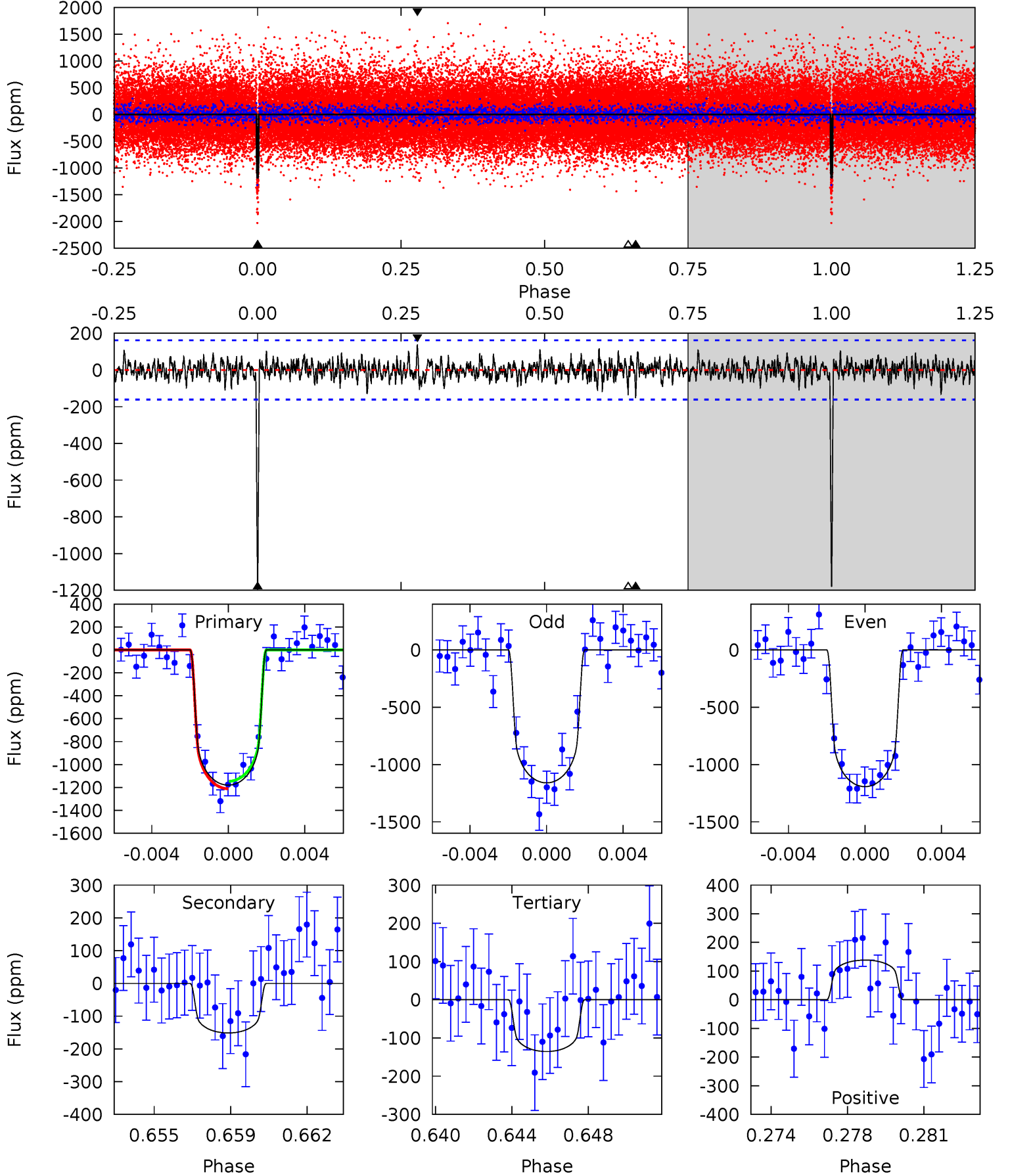
TCE 009480535-01 P=160.130999 Days $T_0=203.475715$ (BKJD)



DV Model-Shift Uniqueness Test

009480535-01, P = 160.131200 Days, E = 43.342152 Days

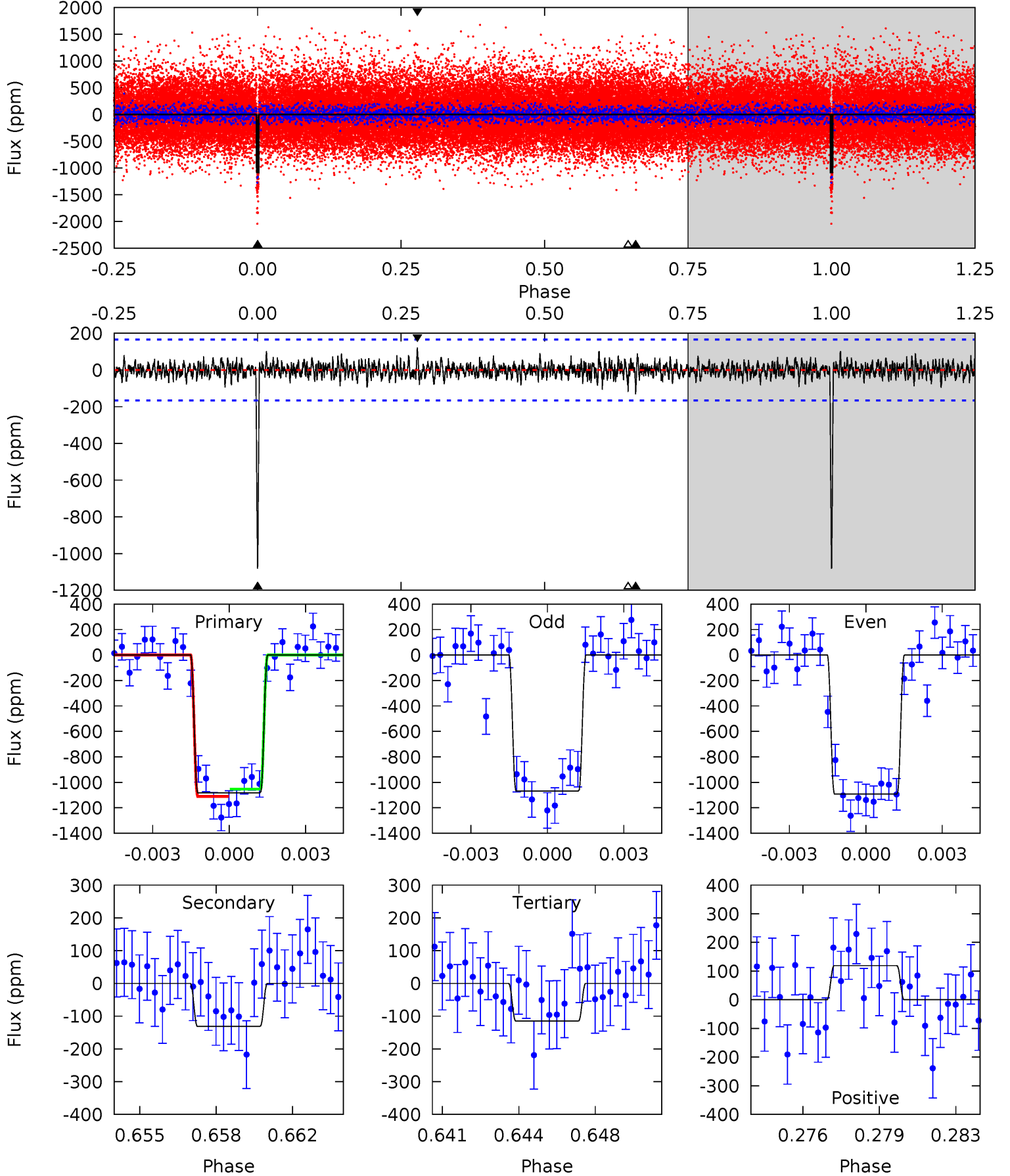
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 38.1 | 4.89 | 4.37 | 4.47 | 5.21 | 2.90 | 1.19 | 33.7 | 33.6 | 0.51 | 0.42 | 0.53 | 1.00 | 0.11 | 1.05 |



Alt Model-Shift Uniqueness Test

009480535-01, P = 160.130999 Days, E = 43.344716 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 34.1 | 4.13 | 3.62 | 3.76 | 5.23 | 2.92 | 0.92 | 30.5 | 30.3 | 0.51 | 0.38 | 0.37 | 1.00 | 0.10 | 0.89 |



Stellar Parameters For KIC 009480535

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 6092^{+79}_{-85} | $4.056^{+0.182}_{-0.112}$ | $0.140^{+0.150}_{-0.100}$ | $1.759^{+0.316}_{-0.386}$ | $1.283^{+0.132}_{-0.145}$ | $0.332^{+0.299}_{-0.116}$ |
| | +1%/-1% | +4%/-3% | +107%/-71% | +18%/-22% | +10%/-11% | +90%/-35% |
| 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 009480535-01 / KOI 3901.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|---------------|------------------------|-------------------|----------------------|---------------------|
| DV | -151 ± 31 | $6.53^{+0.80}_{-0.84}$ | 625^{+32}_{-35} | 3971^{+160}_{-181} | 761^{+301}_{-204} |
| Alt. | -131 ± 32 | $6.29^{+0.74}_{-0.79}$ | 625^{+28}_{-34} | 3916^{+179}_{-182} | 715^{+261}_{-209} |

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 $A_{obs} \gg 1.0$

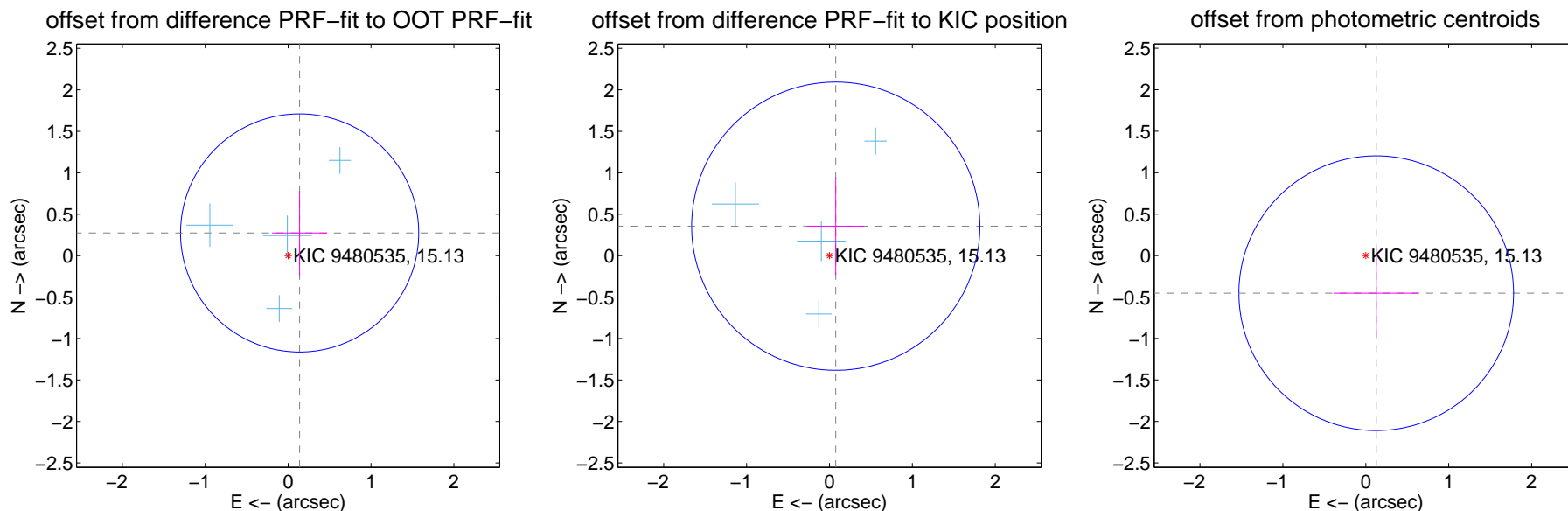
DV Centroid Data

Supplemental centroid analysis for 009480535-01. Kepler magnitude: 15.13. Transit SNR 28.25

There are 4 quarters with good PRF difference image offsets

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

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.307 ± 0.479 | 0.64 | -0.139 ± 0.332 | 0.274 ± 0.510 |
| PRF-fit source offset from KIC position | 0.363 ± 0.579 | 0.63 | -0.076 ± 0.344 | 0.355 ± 0.588 |
| photometric centroid source offset | 0.47 ± 0.55 | 0.85 | -0.13 ± 0.52 | -0.45 ± 0.55 |



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.

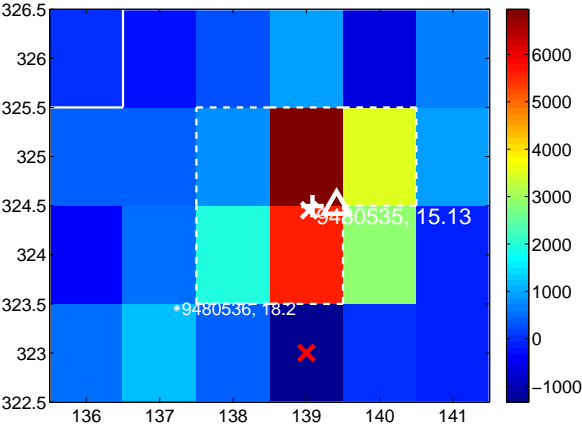
Q1 no difference image



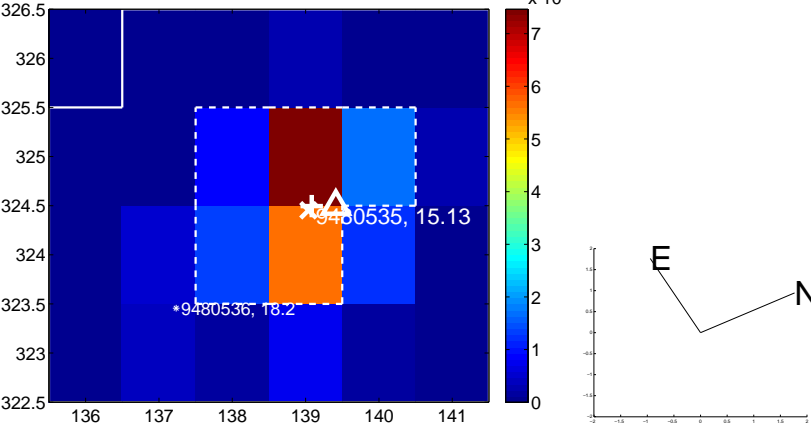
Q1 no OOT image



Q2 difference image



Q2 OOT image



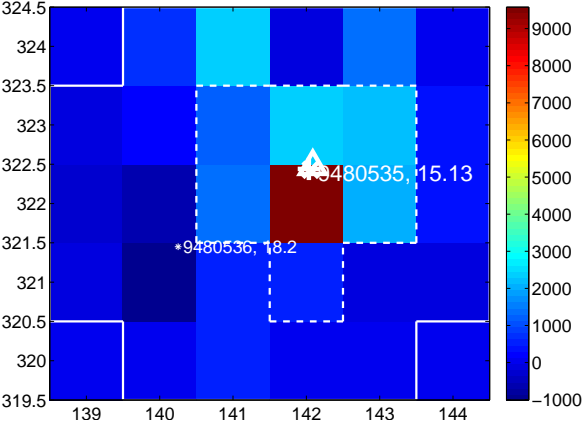
Q3 no difference image



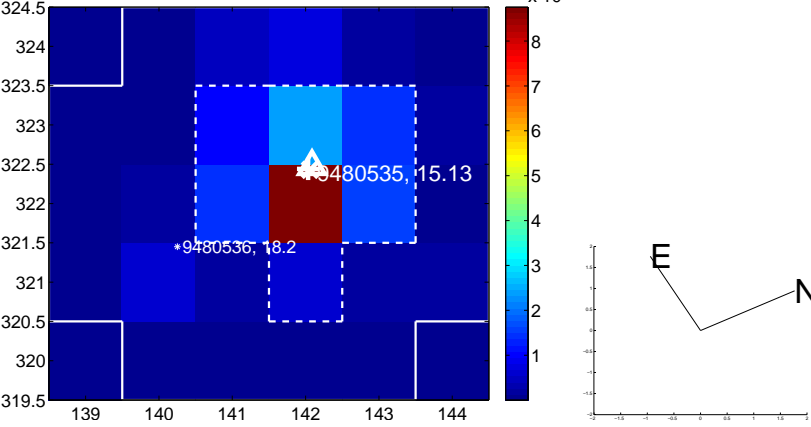
Q3 no OOT image



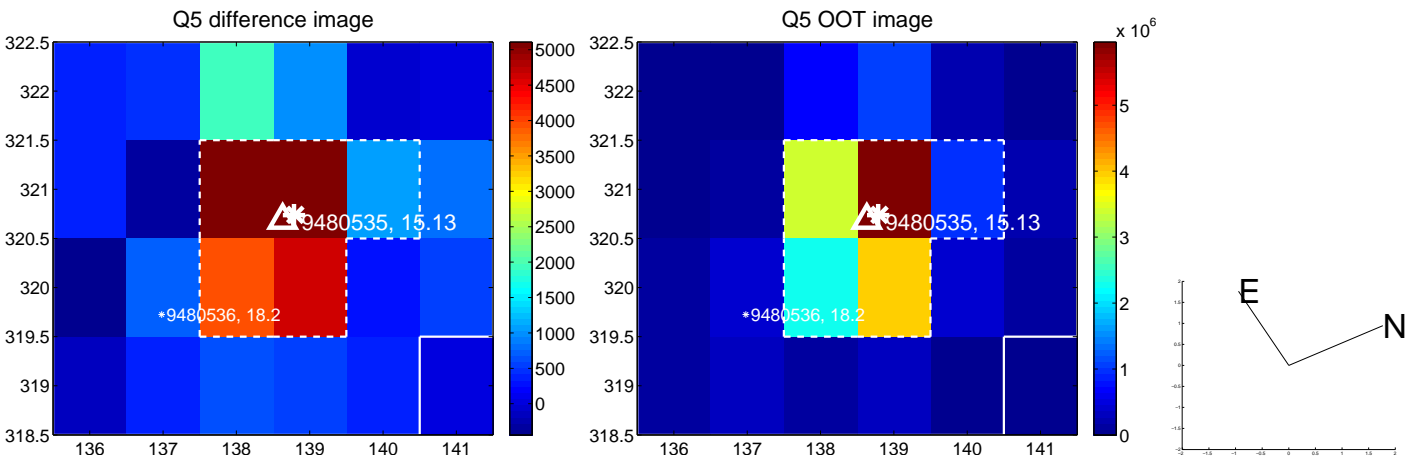
Q4 difference image



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.

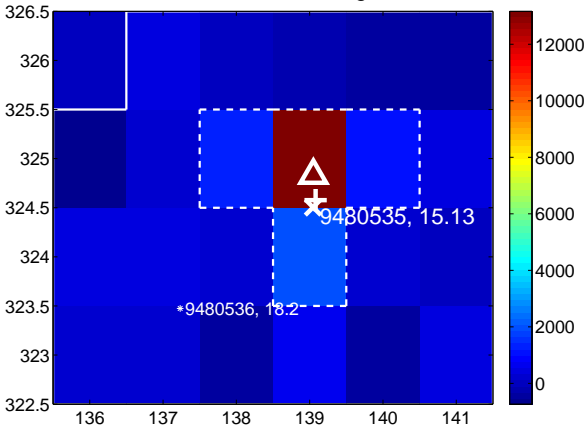
Q13 no difference image



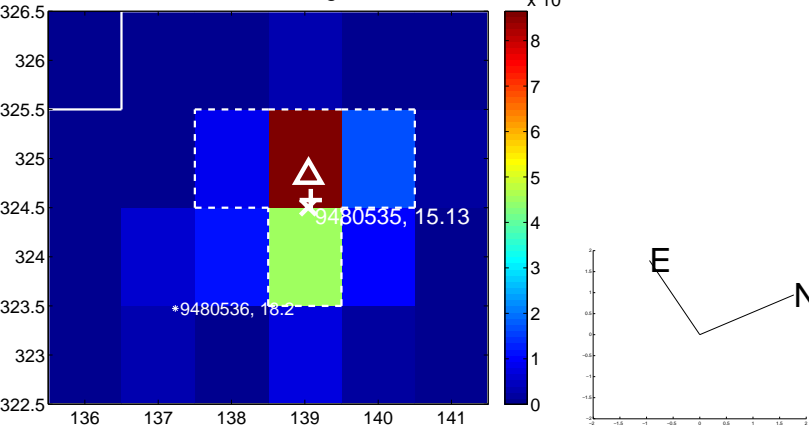
Q13 no OOT image



Q14 difference image



Q14 OOT image



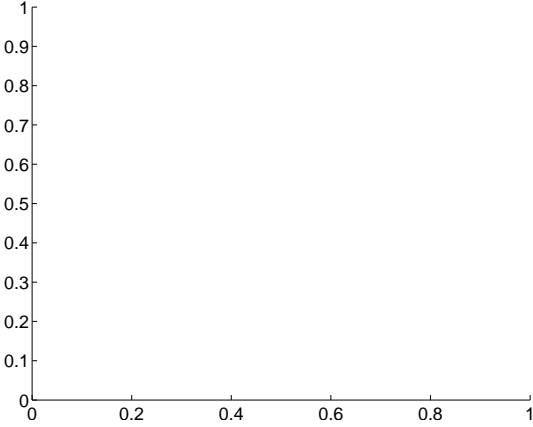
Q15 no difference image



Q15 no OOT image



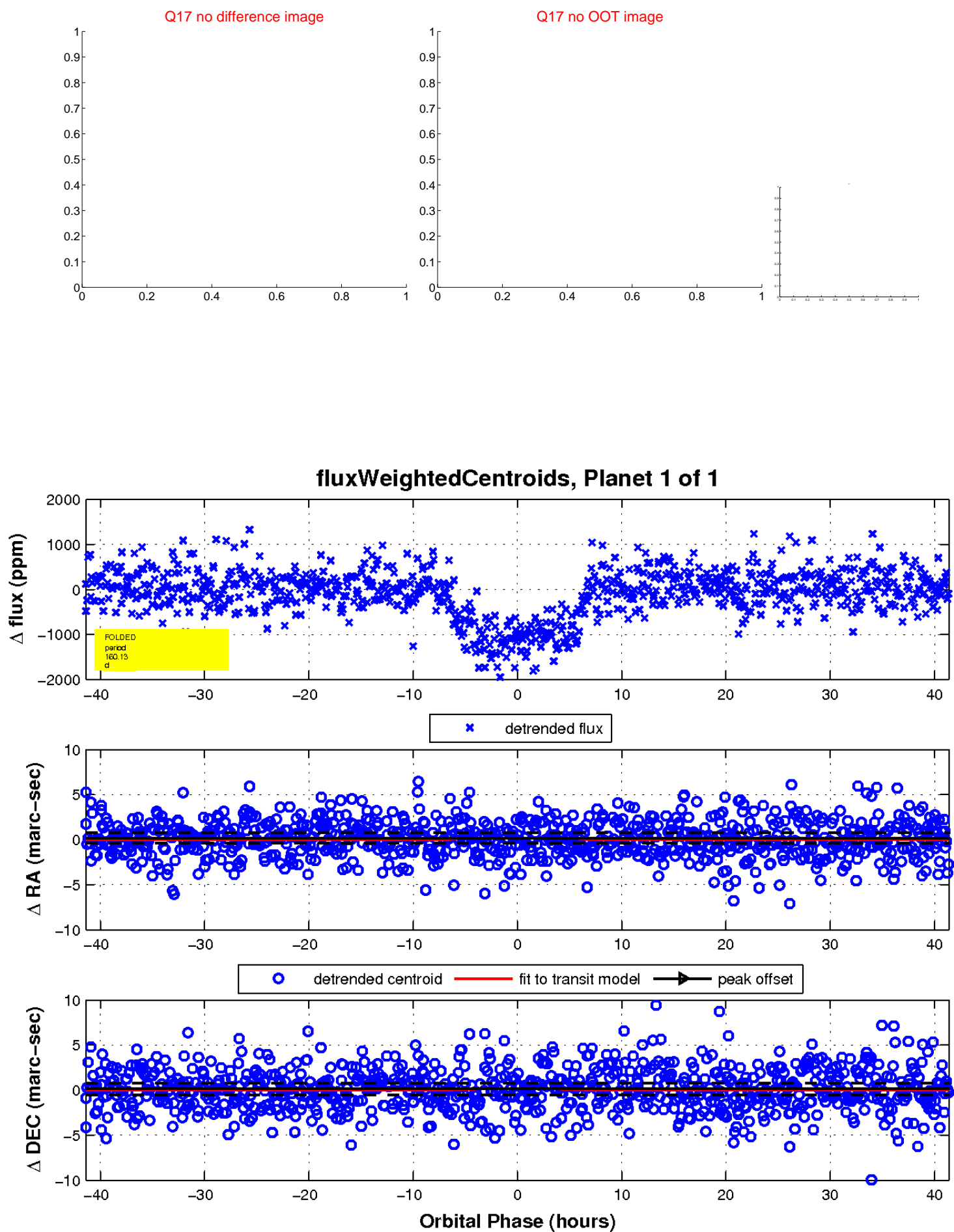
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

