

KIC 008096758

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008096758-01 | OBS | No | 487.939310 | 134.301877 | 3848.8 | 4.940 | 41.9 | 55.4 | 154.44 | 3273 | 1975.34 | 1527.66 |
| 008096758-02 | OBS | No | 467.288272 | 159.447076 | 3031.9 | 5.000 | 189.8 | -1.0 | 154.44 | 3273 | 780.97 | 1618.33 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008096758-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_SATURATED |
| 008096758-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_SATURATED |

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

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

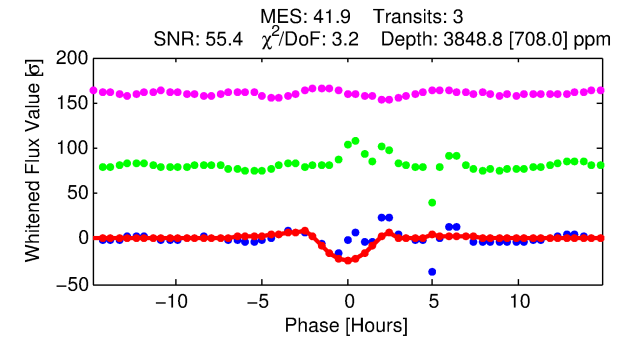
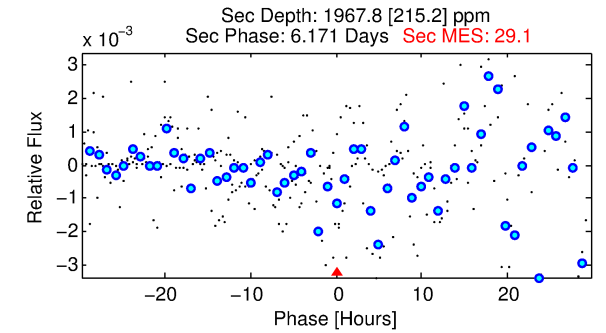
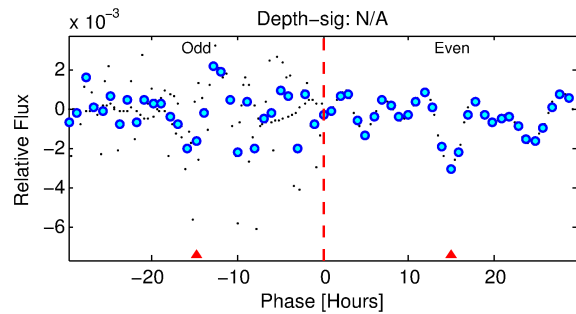
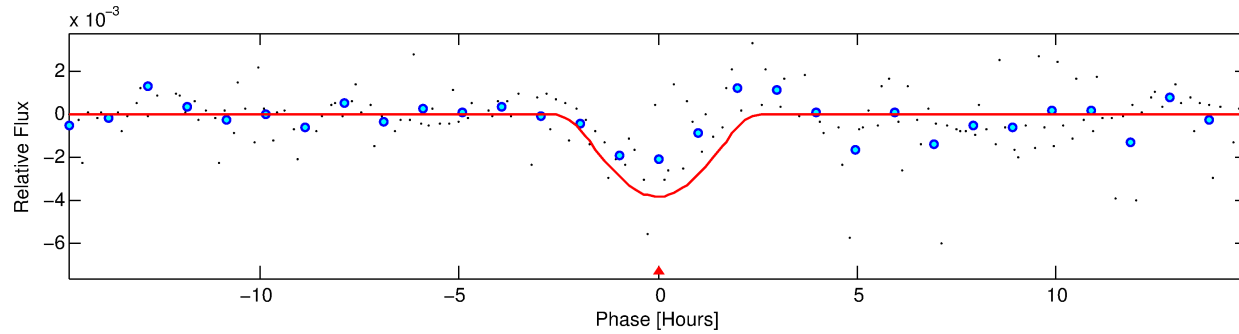
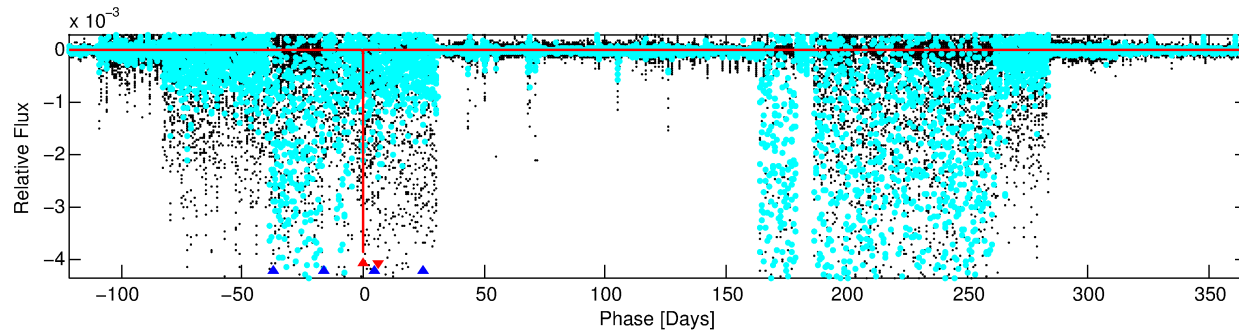
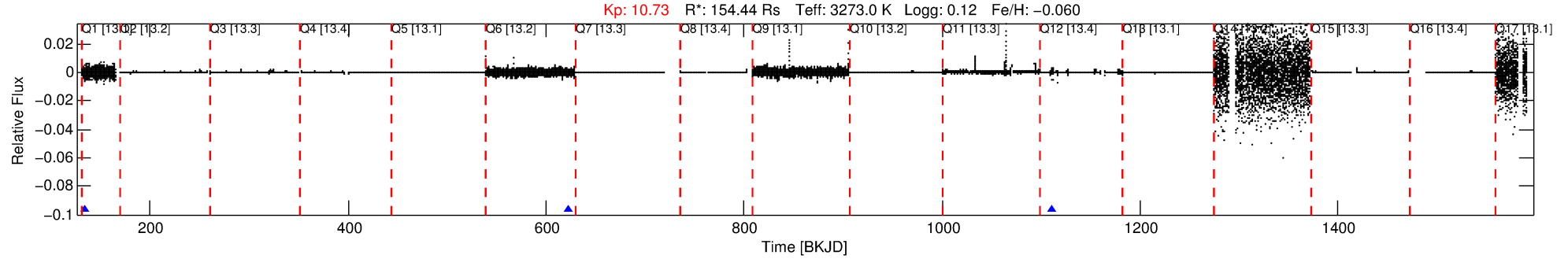
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008096758-01

No Significant Match Found

DV One-Page Summary

KIC: 8096758 Candidate: 1 of 2 Period: 487.939 d



DV Fit Results:

Period = 487.93931 [0.00852] d
Epoch = 134.3019 [0.0162] BKJD
Rp/R* = 0.1172 [0.2725]
a/R* = 377.79 [147.46]
b = 1.00 [0.39]
Seff = 1527.66 [552.55]
Teq = 1594 [144] K
Rp = 1975.34 [4607.55] Re
a = 1.2670 [0.2524] AU
Ag = 0.45 [2.08] [-0.27σ]
Teffp = 2014 [2342] K [0.18σ]

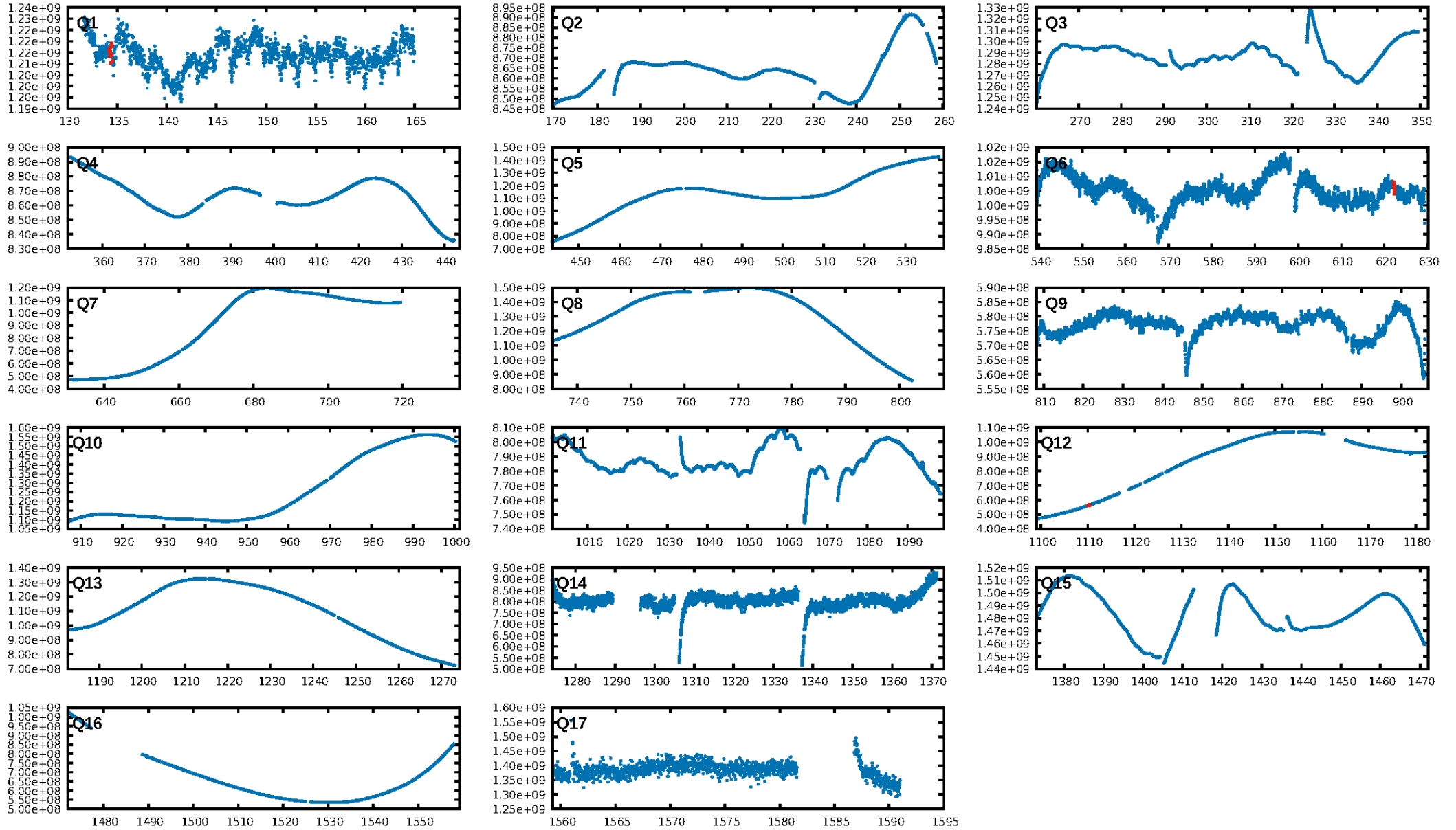
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [70.51σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 16.5%
Bootstrap-pfa: 3.77e-05
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: N/A
Centroid-sig: 95.4%
Centroid-so: 0.163 arcsec [0.90σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [2/2]

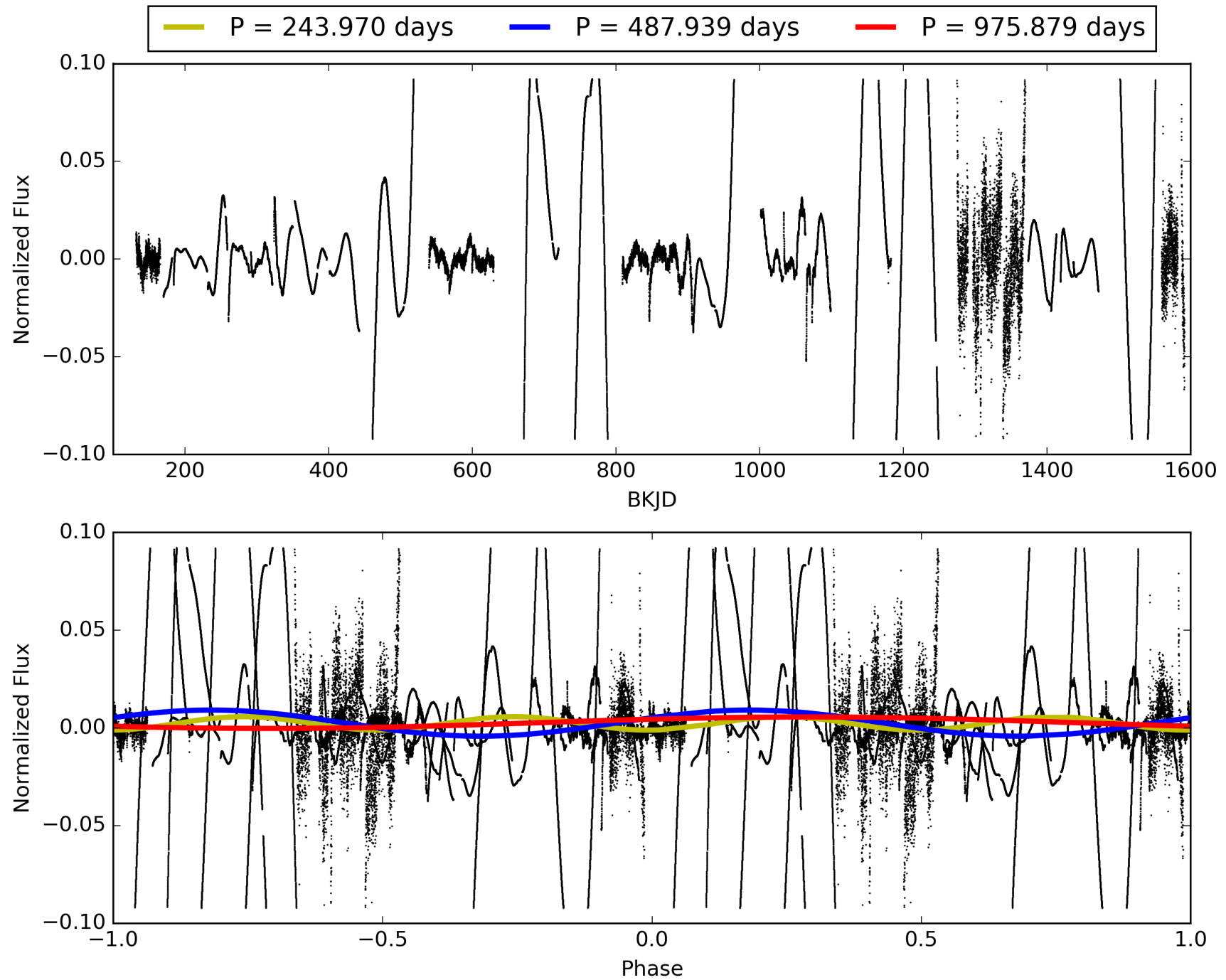
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:57:16 Z

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

TCE 008096758-01, PDC Light Curves

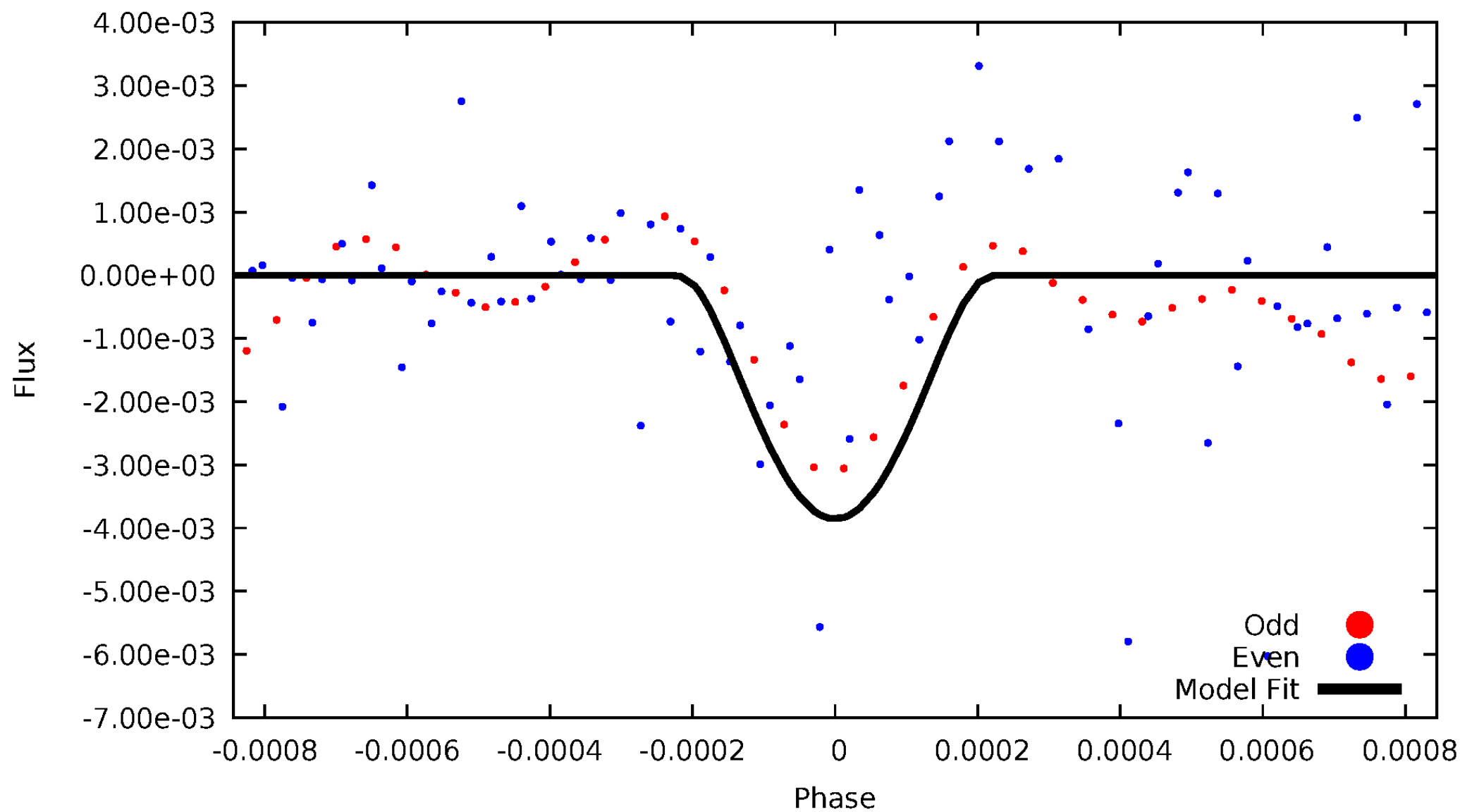


TCE 008096758-01



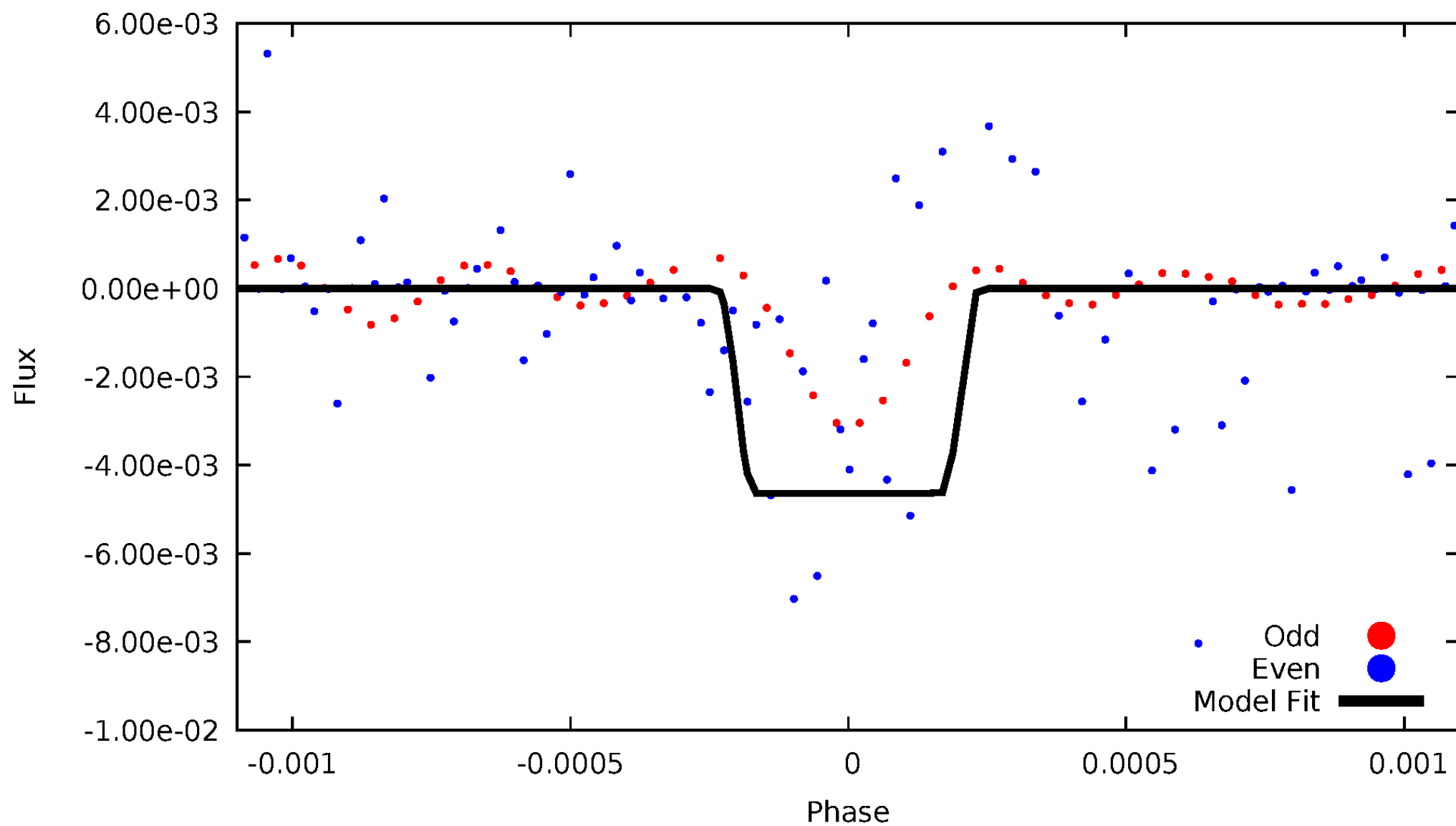
DV Odd/Even

TCE 008096758-01



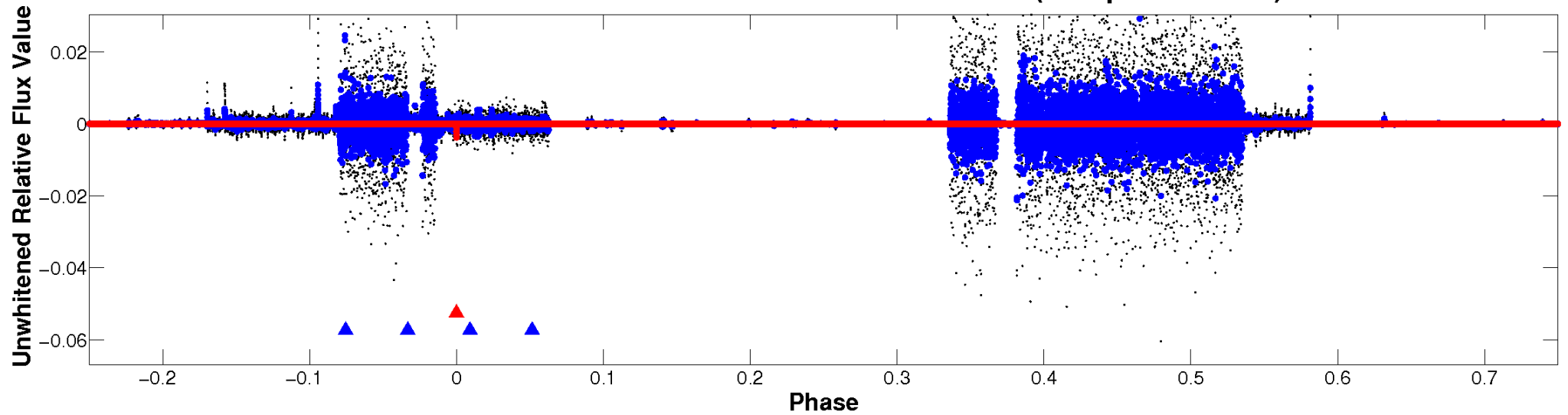
ALT Odd/Even

TCE 008096758-01

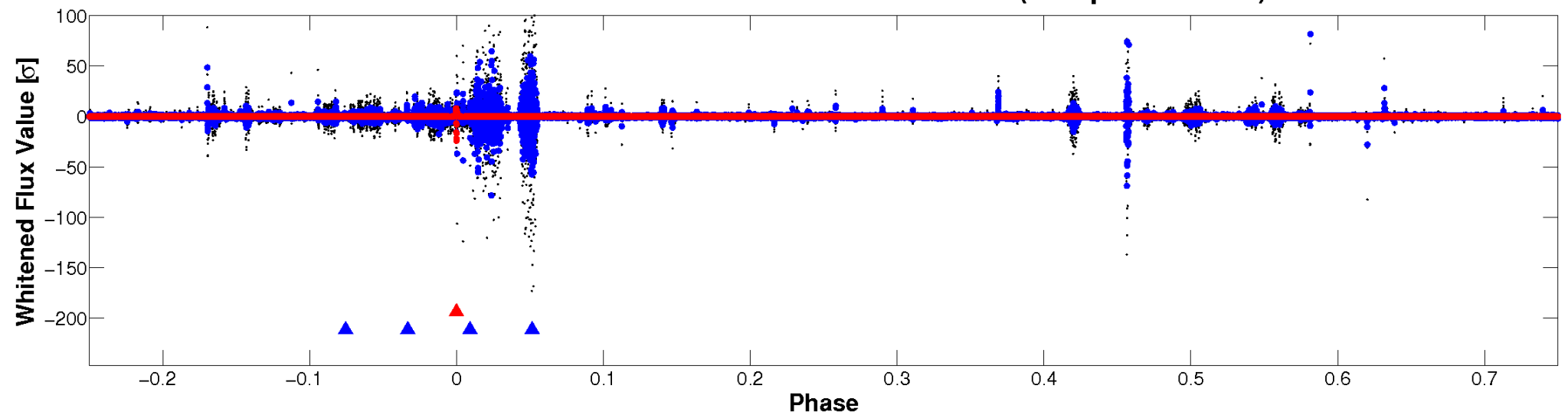


Non-Whitened Vs. Whitened Light Curve

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

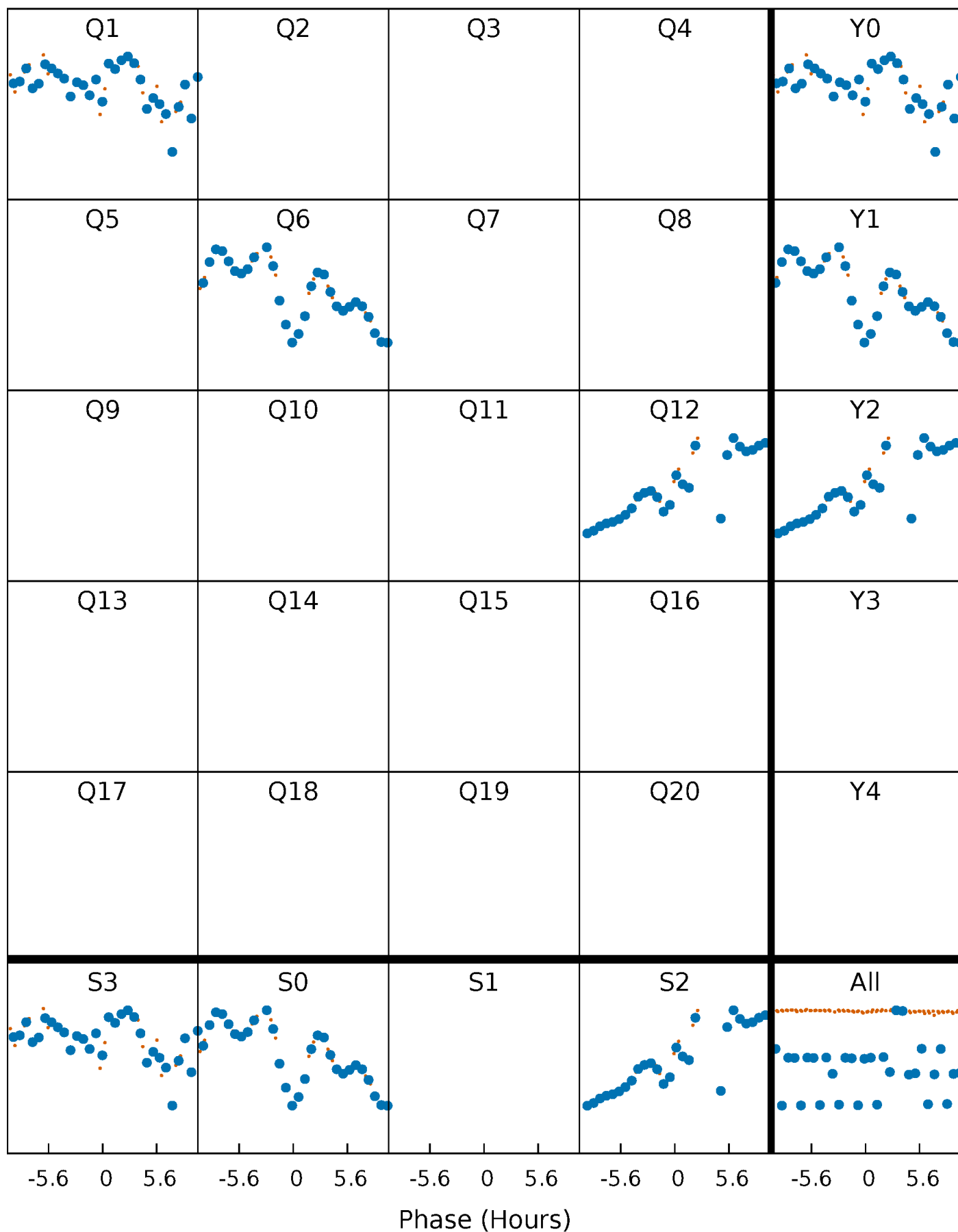


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



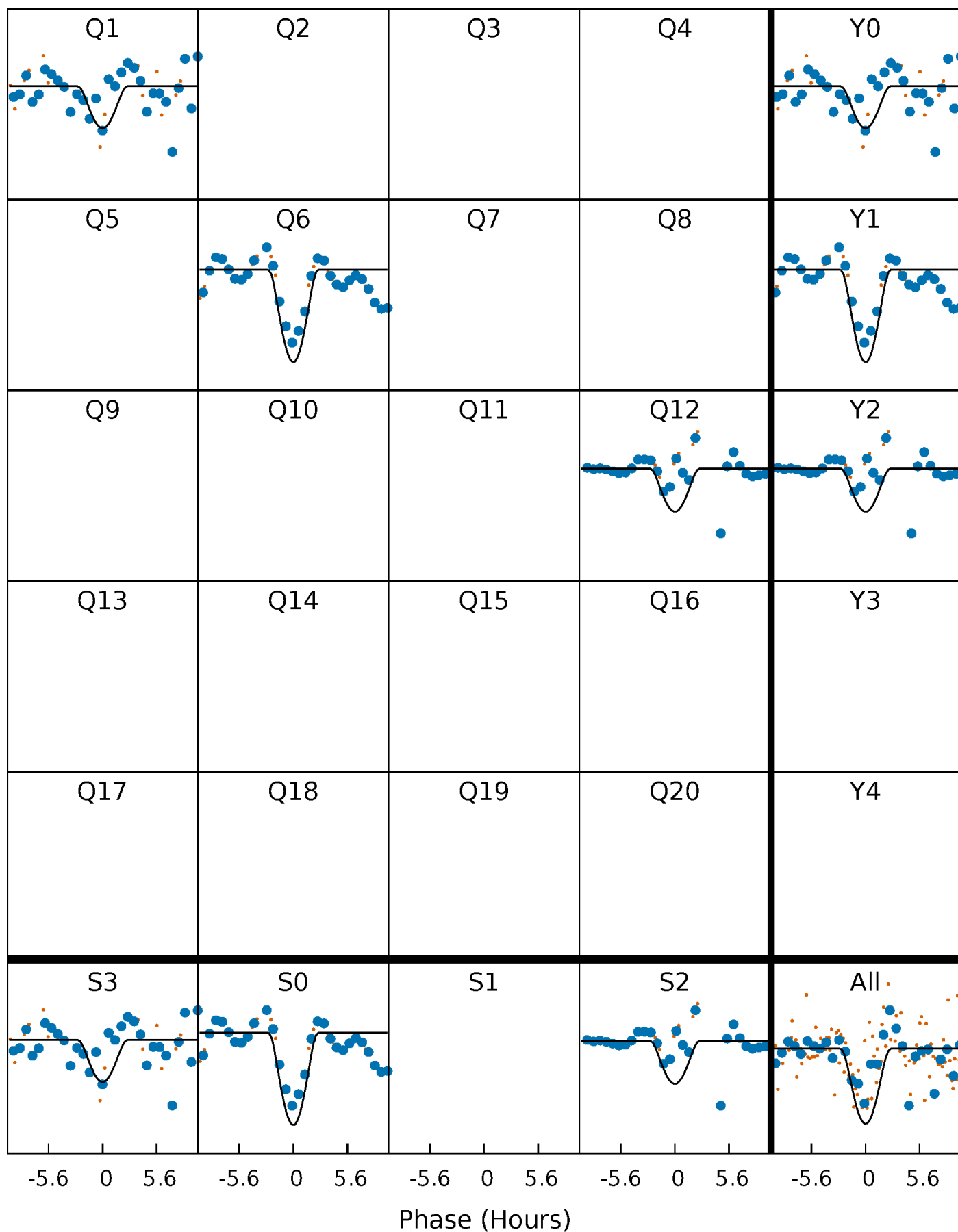
PDC Quarter-Phased Transit Curves

TCE 008096758-01 P=487.939310 Days $T_0=134.301876$ (BKJD)



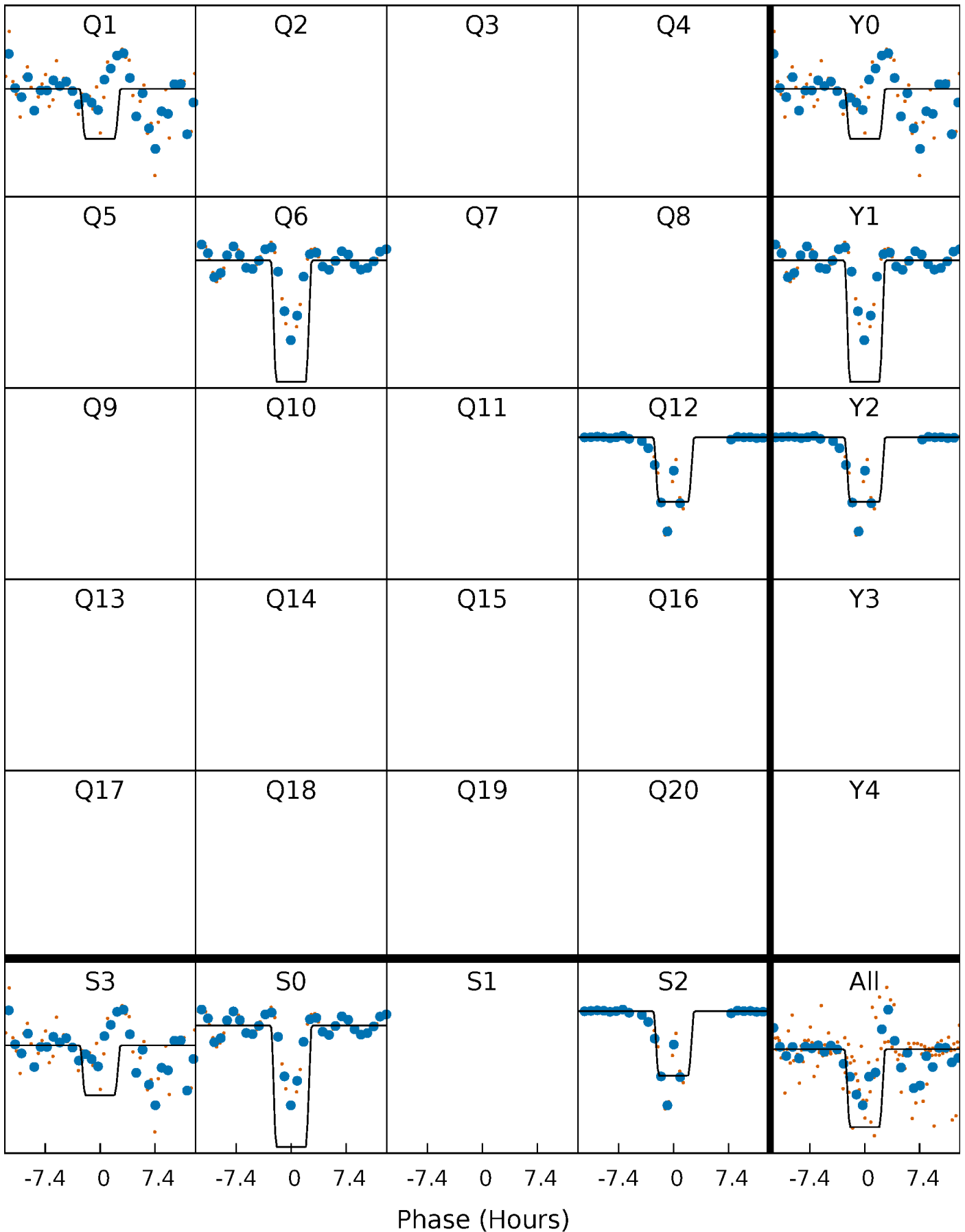
DV Quarter-Phased Transit Curves

TCE 008096758-01 P=487.939310 Days $T_0=134.301876$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

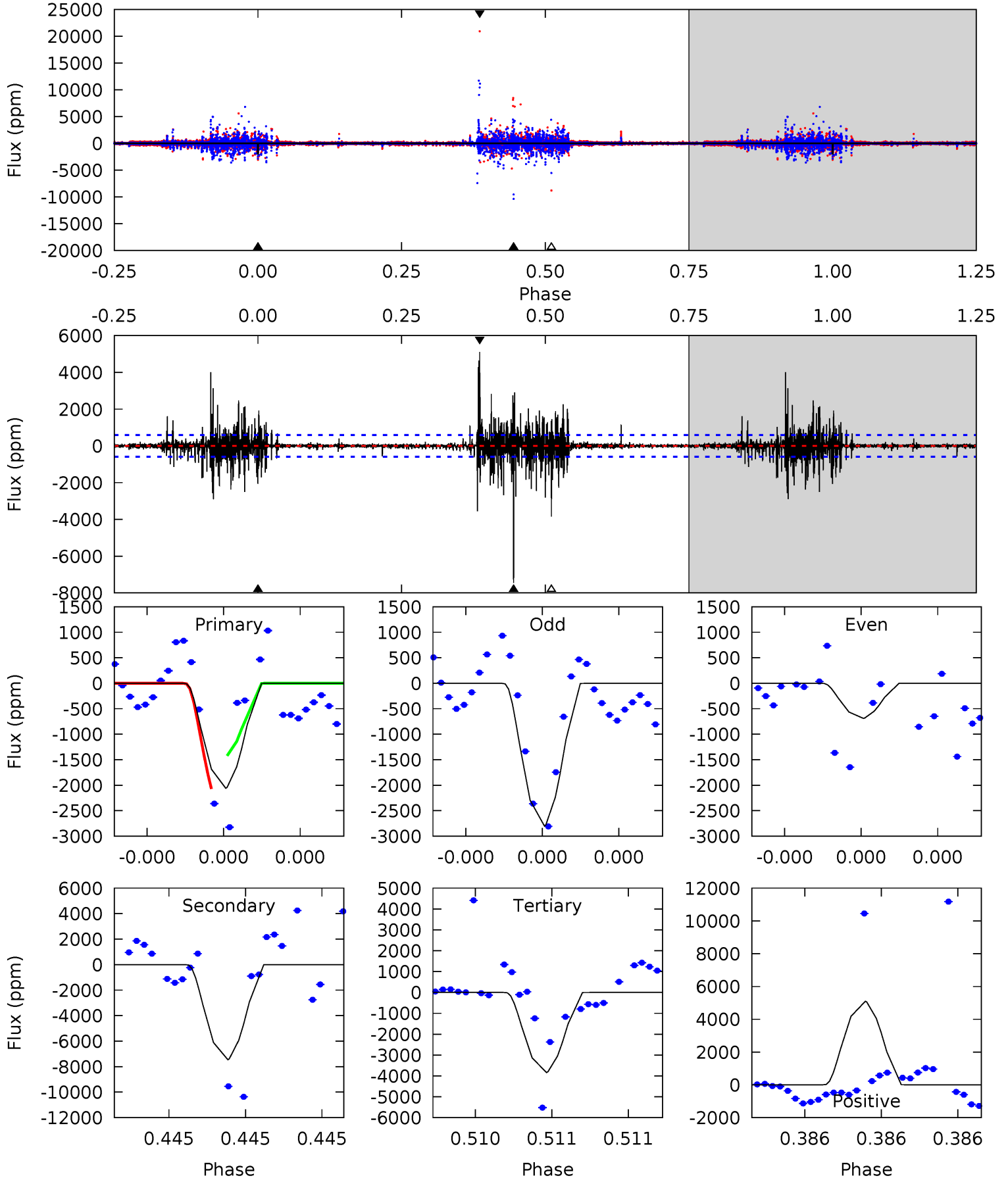
TCE 008096758-01 P=487.946602 Days $T_0=134.290486$ (BKJD)



DV Model-Shift Uniqueness Test

008096758-01, P = 487.939310 Days, E = 134.301876 Days

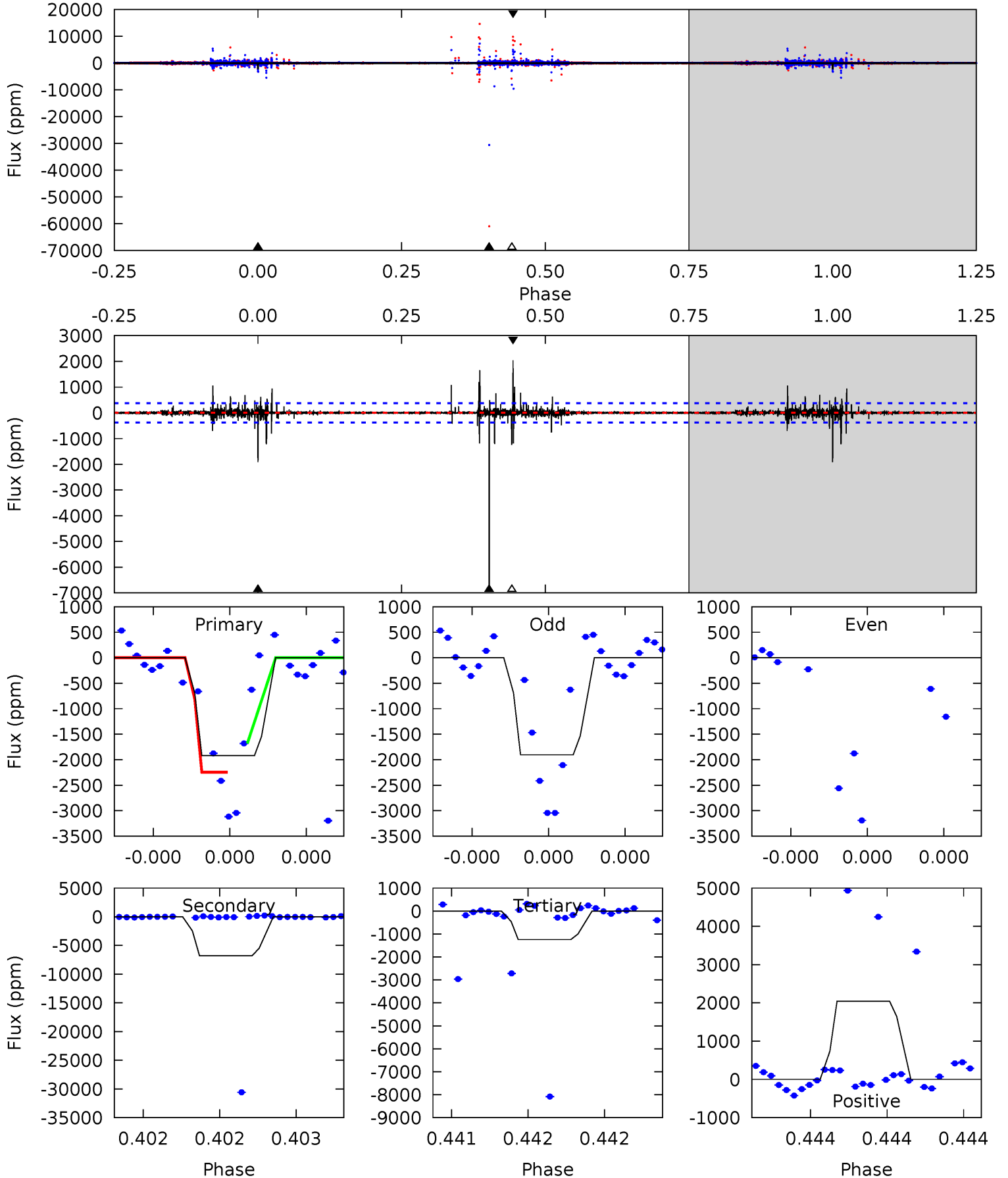
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 19.6 | 70.9 | 36.4 | 48.5 | 5.59 | 3.51 | 2.60 | -16.9 | -28.9 | 34.4 | 22.4 | 3.97 | 0.79 | 0.41 | 0 |



Alt Model-Shift Uniqueness Test

008096758-01, P = 487.946602 Days, E = 134.290486 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 28.4 | 100.7 | 18.4 | 30.3 | 5.59 | 3.51 | 1.11 | 10.0 | -1.84 | 82.3 | 70.5 | 0 | 1.27 | 0.23 | 2.05 |



Stellar Parameters For KIC 008096758

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|----------------------------|------------------------------|---------------------------|---|
| | 3273^{+117}_{-78} | $0.117^{+0.200}_{-0.050}$ | $-0.060^{+0.250}_{-0.150}$ | $154.438^{+9.192}_{-29.414}$ | $1.138^{+0.189}_{-0.155}$ | $0.000^{+0.000}_{-0.000}$ |
| | +4%/-2% | +171%/-43% | +417%/-250% | +6%/-19% | +17%/-14% | +88%/-15% |
| Source | KIC0 | 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 008096758-01 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-----------------|---------------------------------|---------------------|------------------------|---------------------------|
| DV | -7459 ± 105 | $3535.01^{+4119.35}_{-2424.42}$ | 2194^{+93}_{-120} | 2317^{+1205}_{-4575} | $0.554^{+5.128}_{-0.437}$ |
| Alt. | -6796 ± 67 | $3384.54^{+3490.49}_{-2320.38}$ | 2195^{+95}_{-115} | 2298^{+1175}_{-4517} | $0.530^{+4.724}_{-0.399}$ |

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

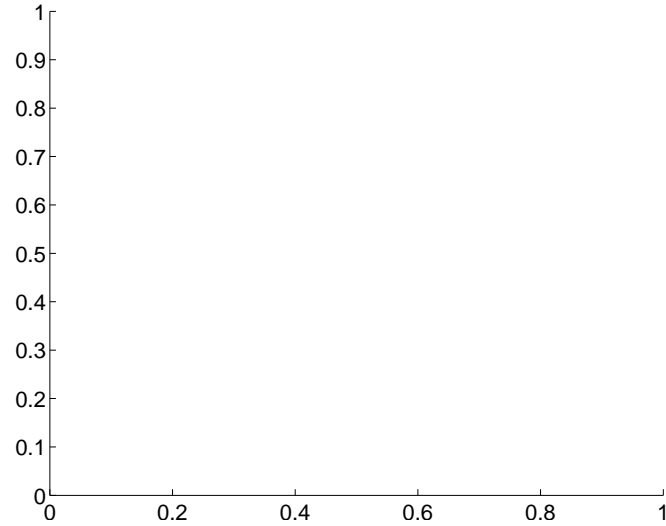
Supplemental centroid analysis for 008096758-01. **Kepler magnitude: 10.73.** Transit SNR 55.41

There are 0 quarters with good PRF difference image offsets

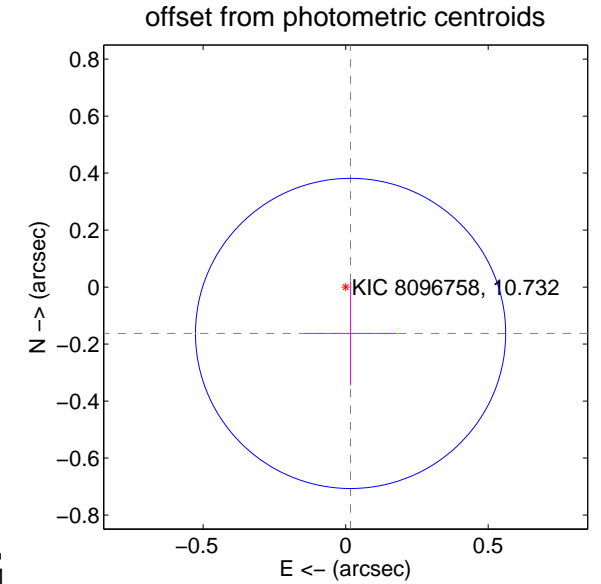
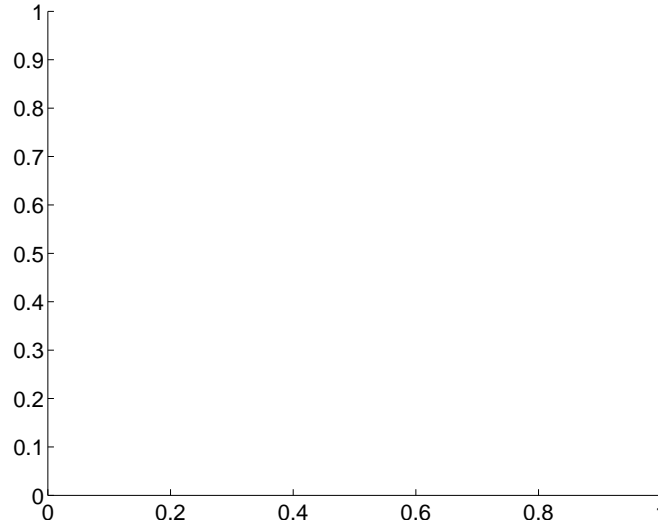
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

| | 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 | 0.16 ± 0.18 | 0.90 | -0.02 ± 0.16 | -0.16 ± 0.18 |

There is no PRF-fit offset from OOT-fit

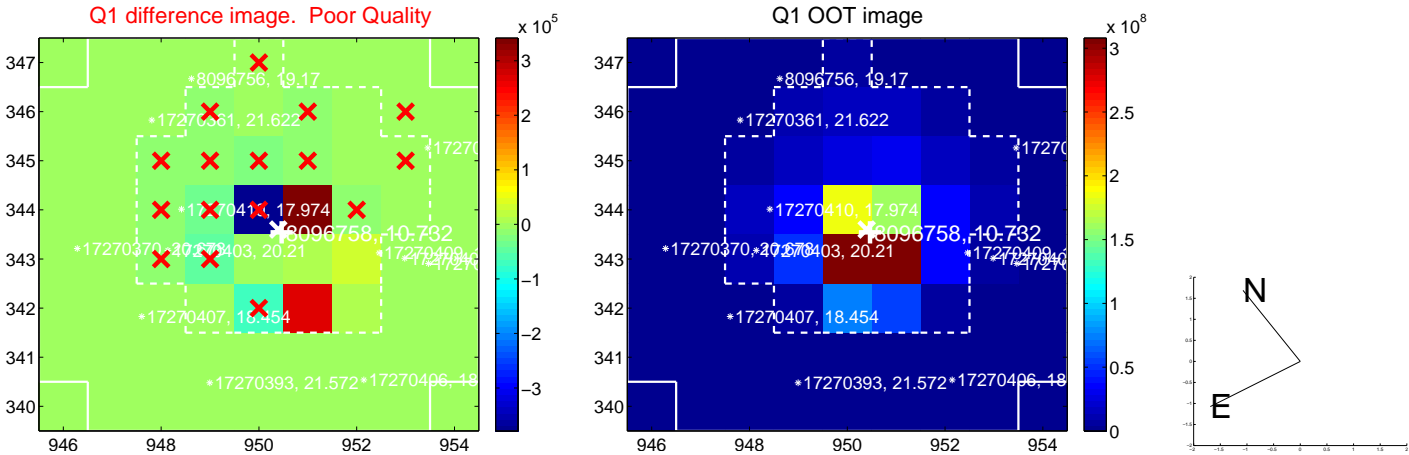


There is no PRF-fit offset from KIC

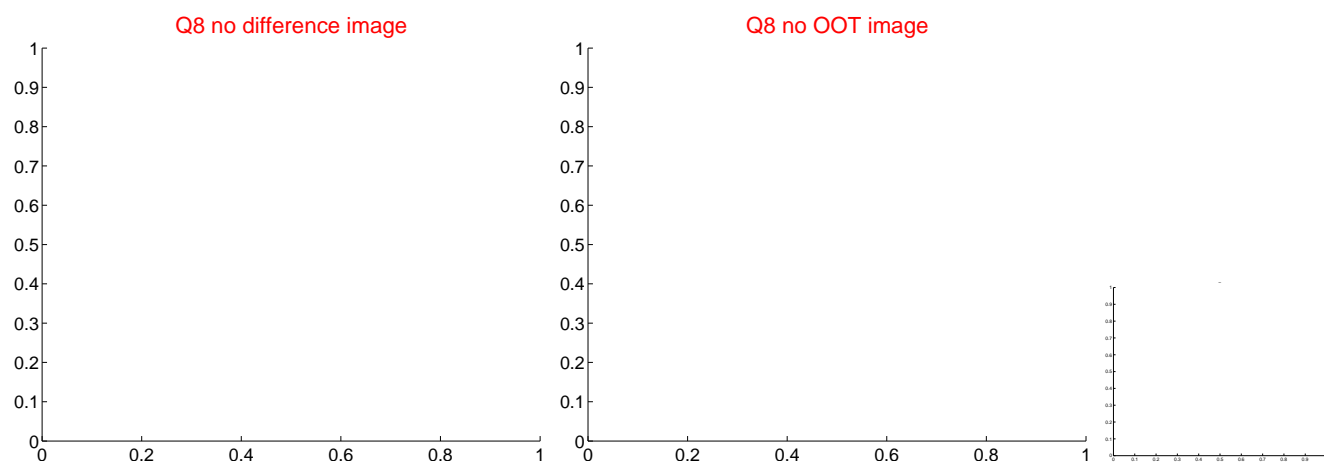
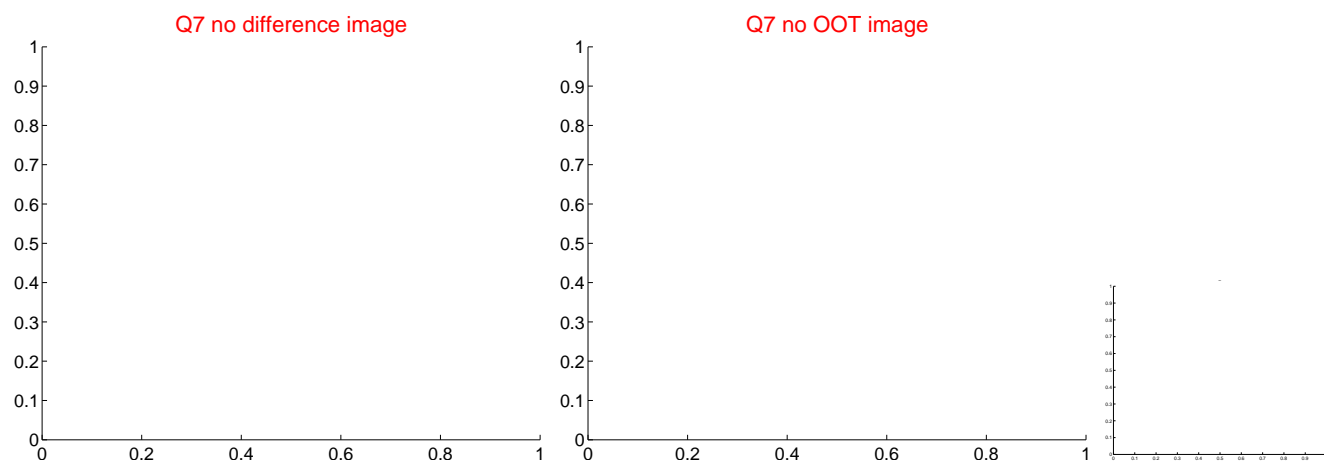
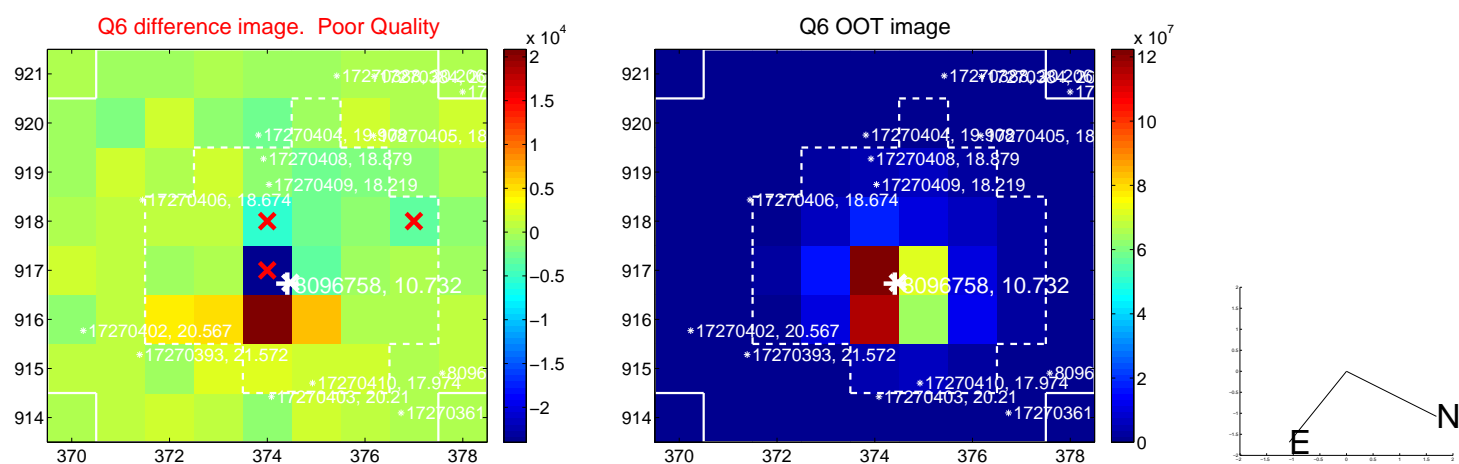
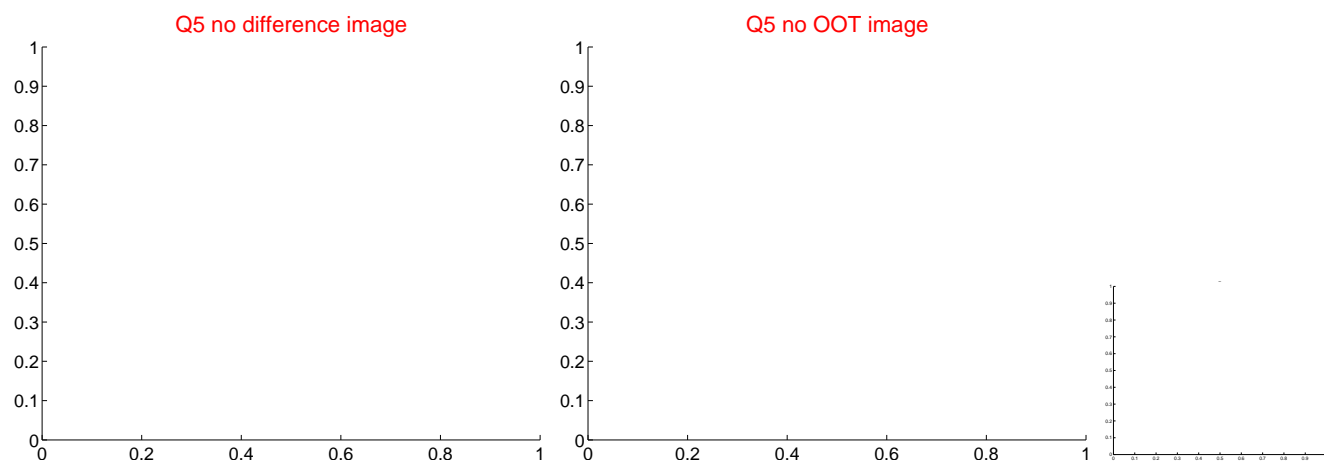


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

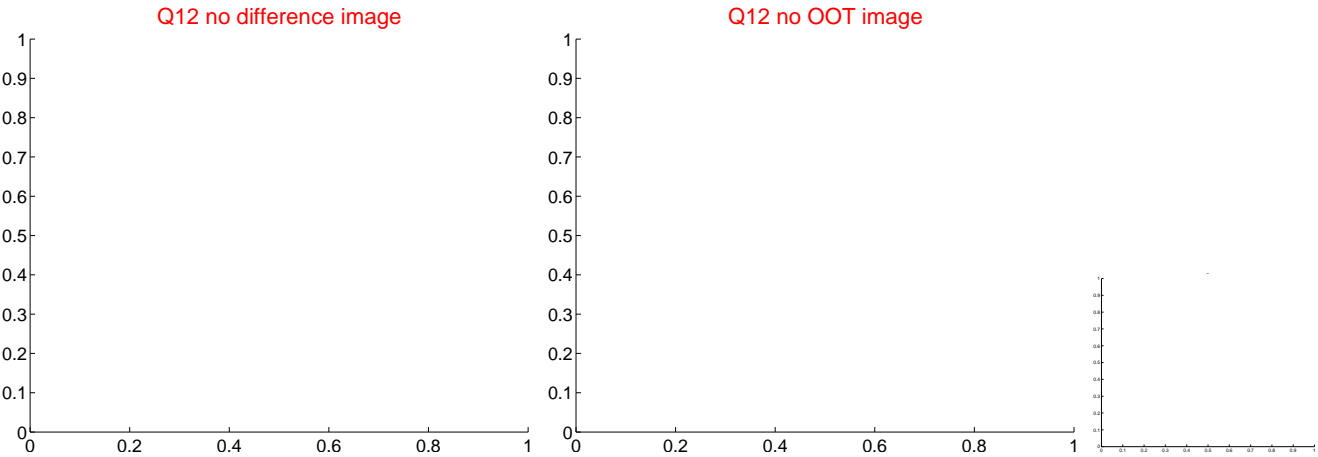
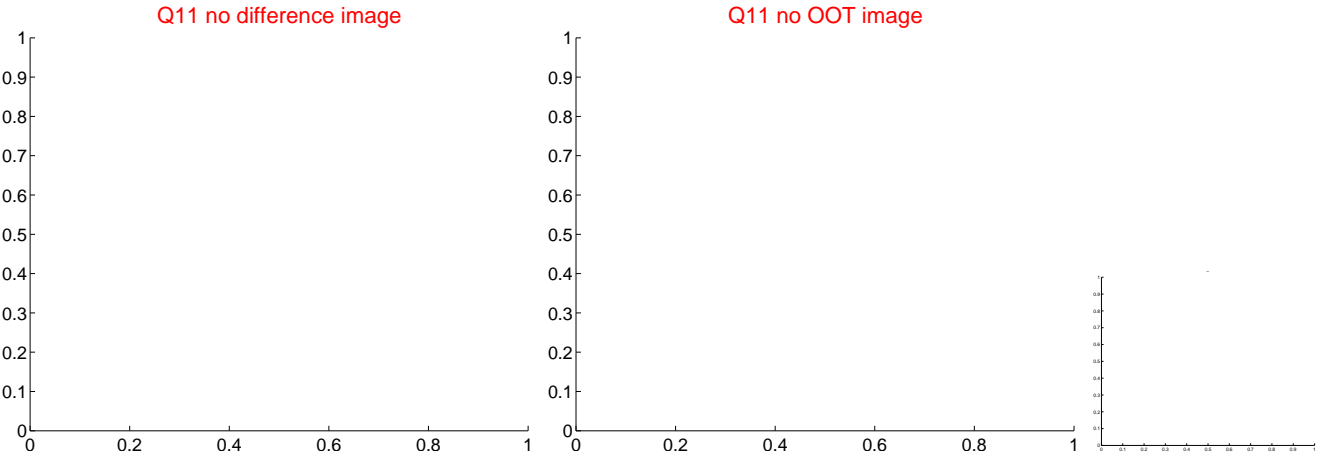
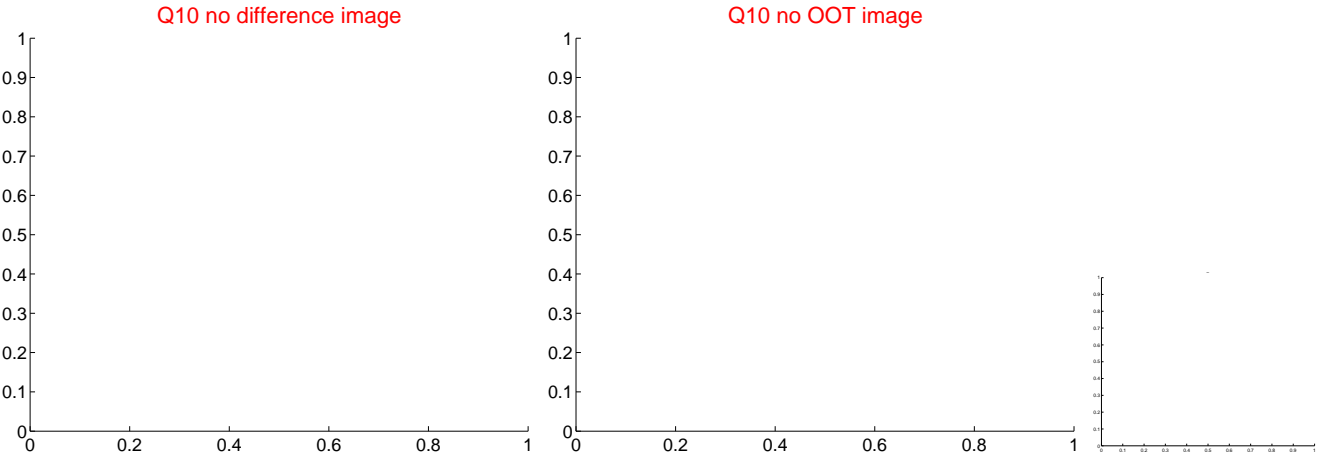
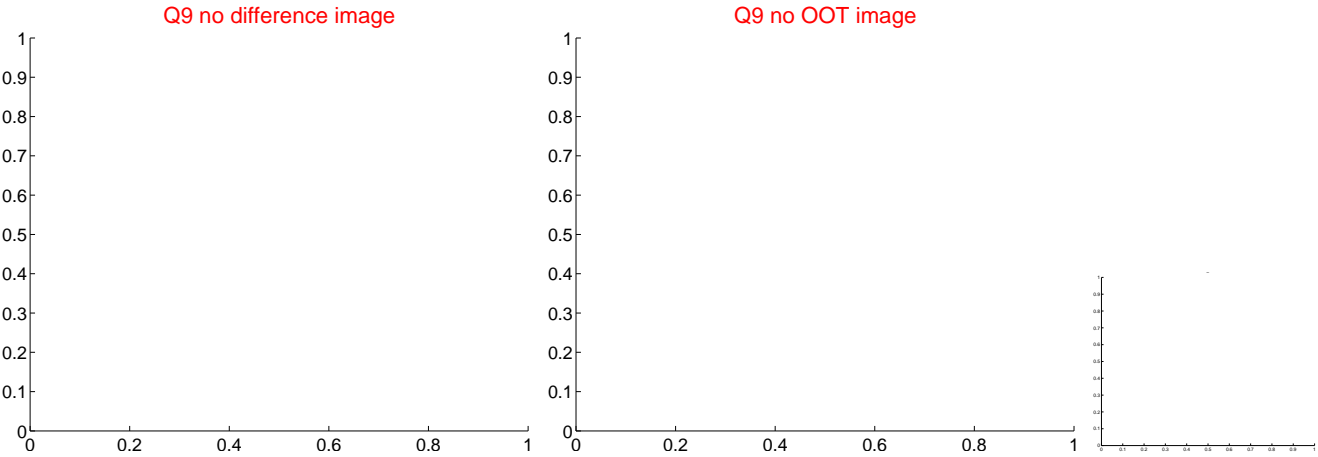
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



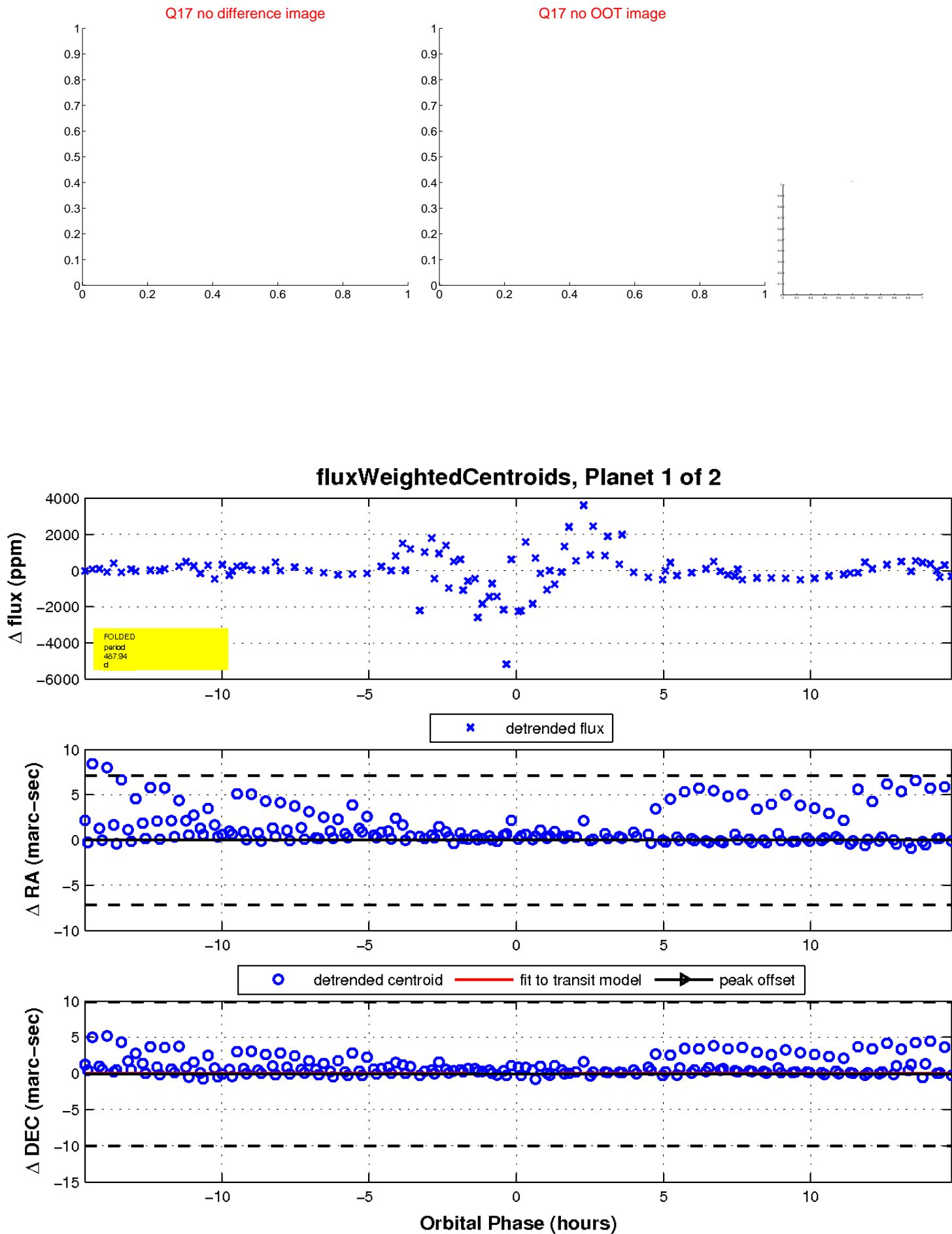
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



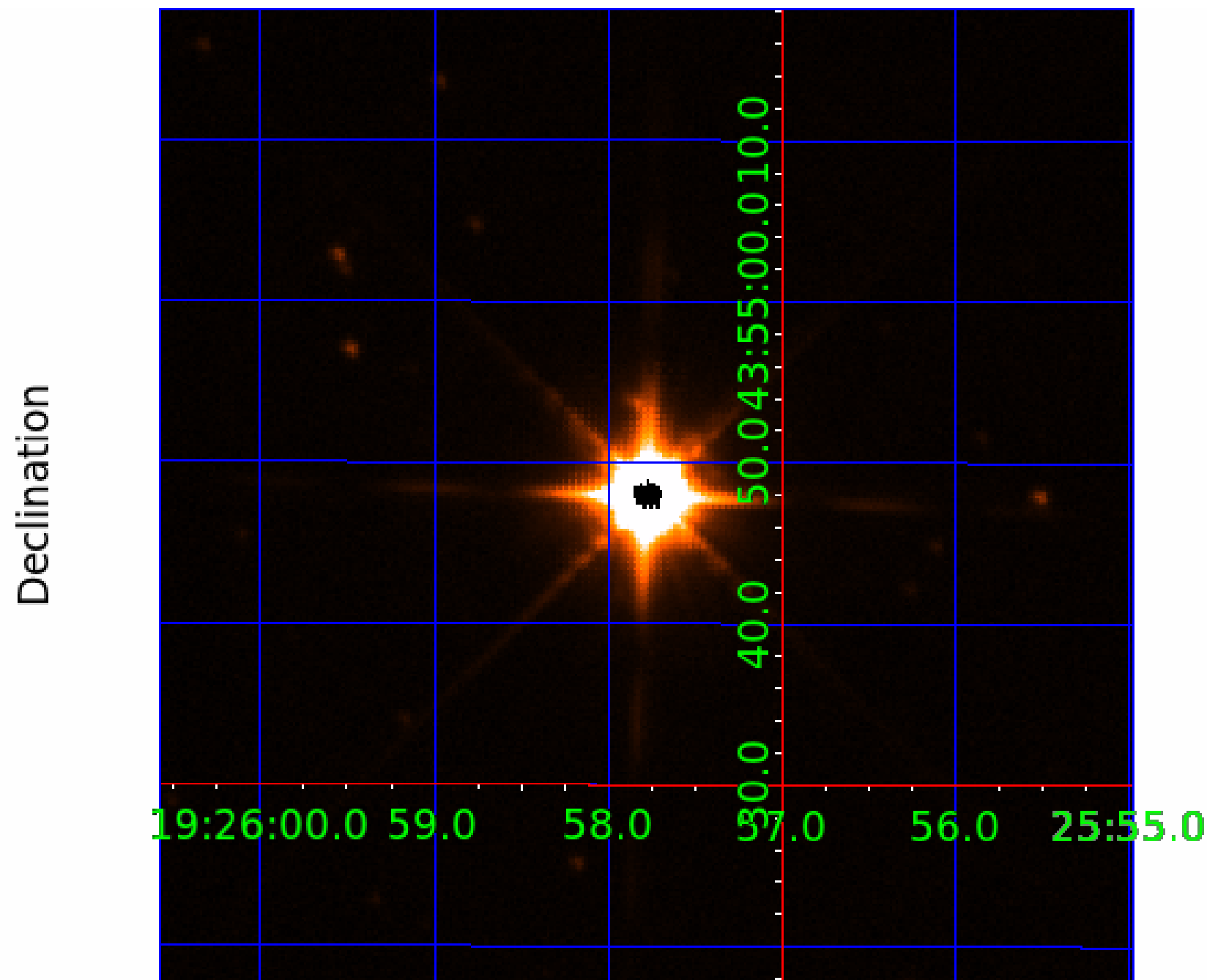
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008096758

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-------|------|-----------------------------|-----------------|------------------------|------------------------|
| 008096758-01 | OBS | No | 487.939310 | 134.301877 | 3848.8 | 4.940 | 41.9 | 55.4 | 154.44 | 3273 | 1975.34 | 1527.66 |
| 008096758-02 | OBS | No | 467.288272 | 159.447076 | 3031.9 | 5.000 | 189.8 | -1.0 | 154.44 | 3273 | 780.97 | 1618.33 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 008096758-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_SATURATED |
| 008096758-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_SATURATED |

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.

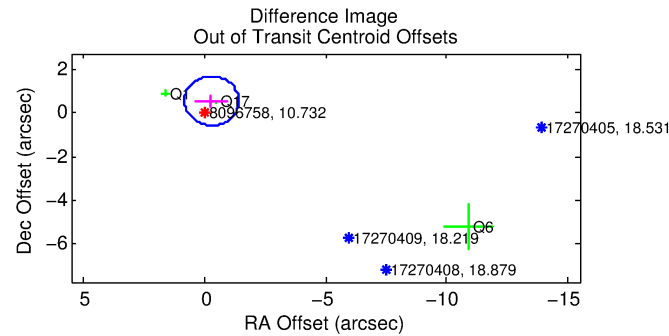
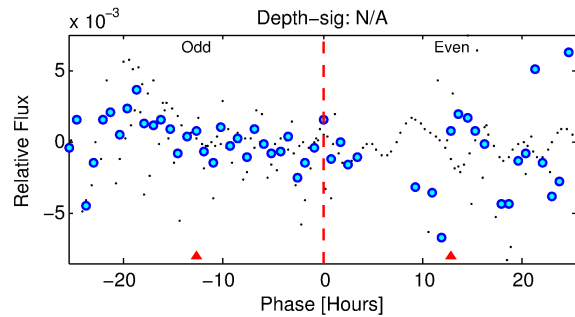
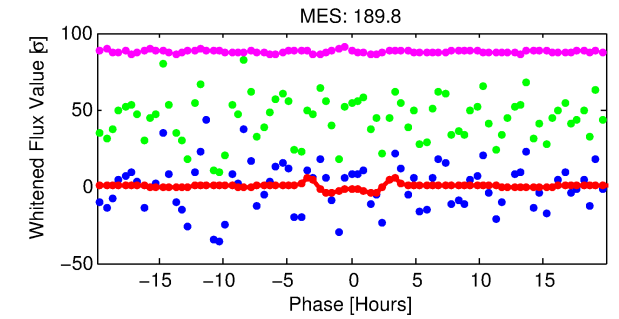
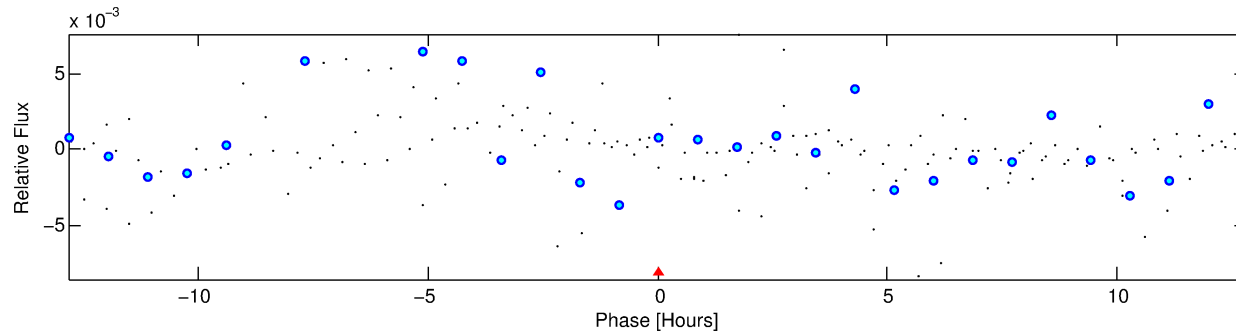
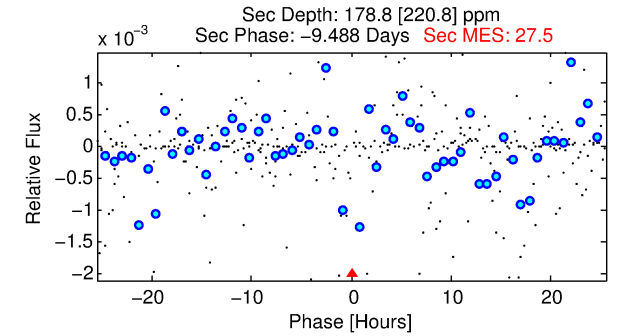
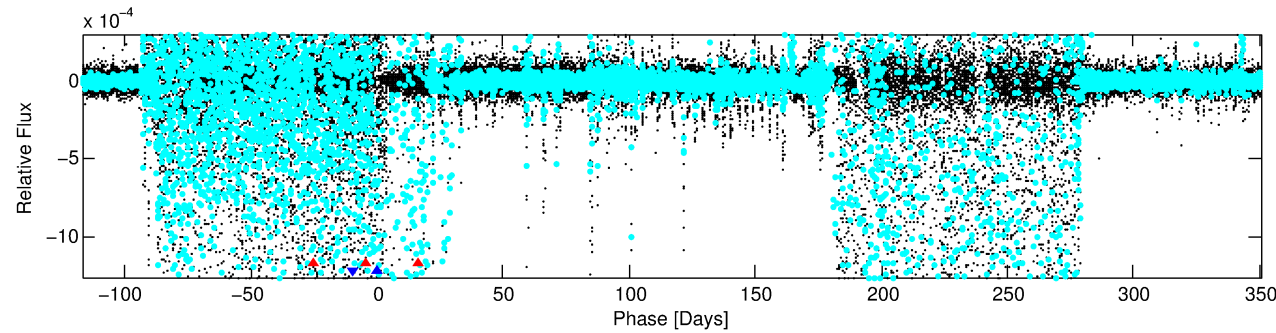
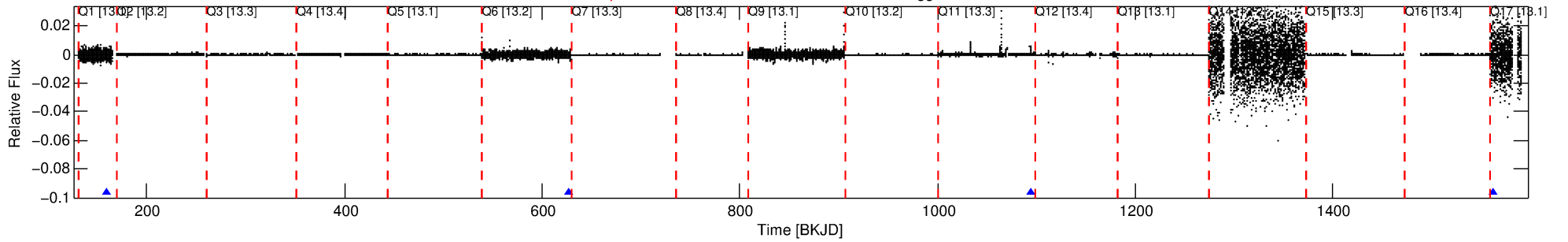
Ephemeris Match Information For 008096758-02

No Significant Match Found

DV One-Page Summary

KIC: 8096758 Candidate: 2 of 2 Period: 467.288 d

Kp: 10.73 R*: 154.44 Rs Teff: 3273.0 K Logg: 0.12 Fe/H: -0.060



TPS TCE Results:

Period = 467.28827 d
Epoch = 159.4471 BKJD

DV fit results are unavailable

DV Diagnostic Results:

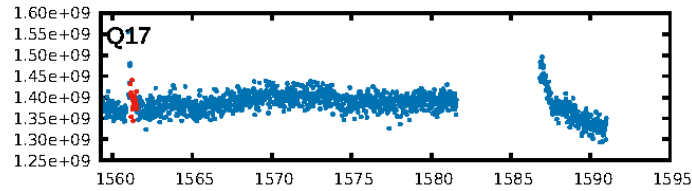
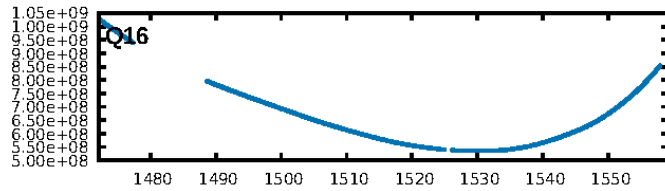
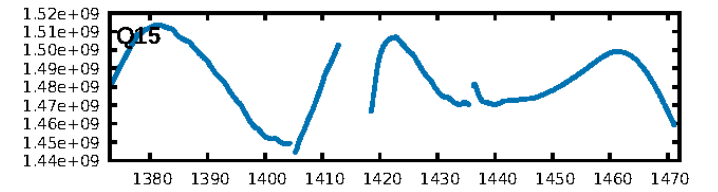
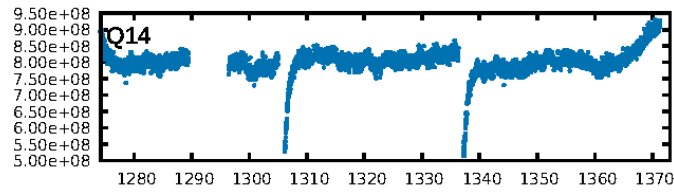
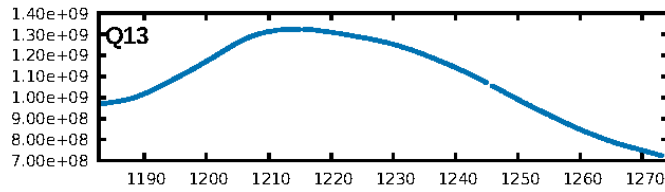
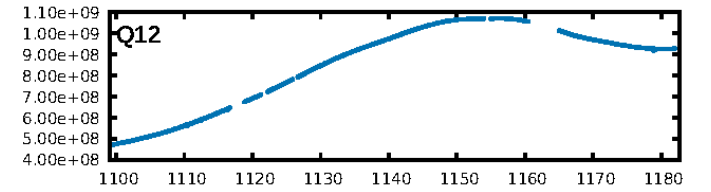
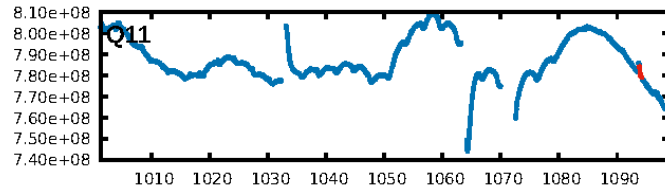
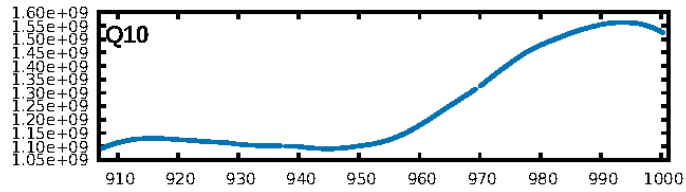
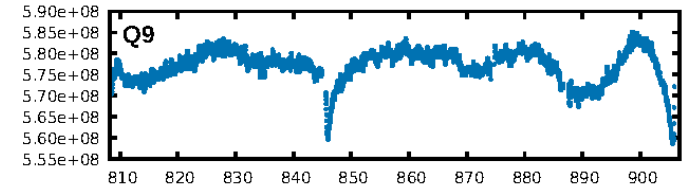
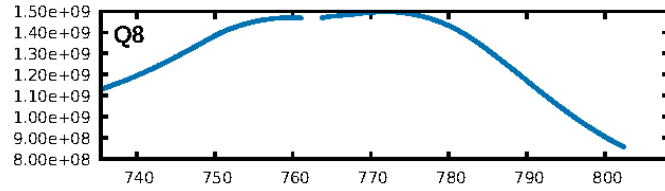
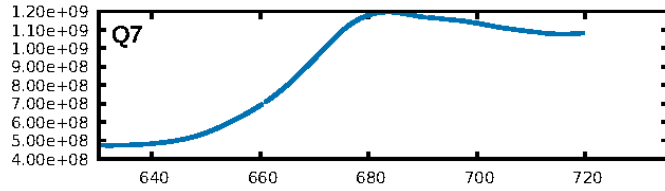
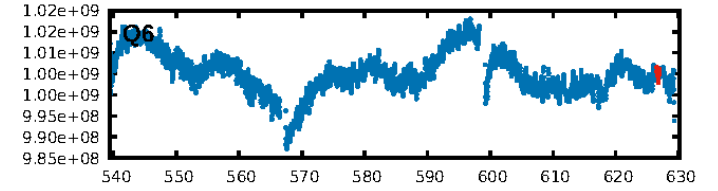
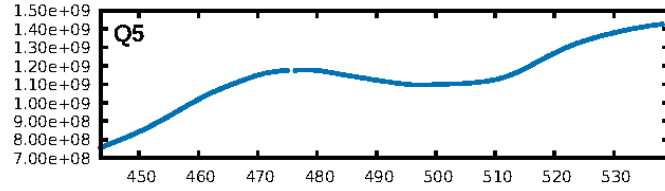
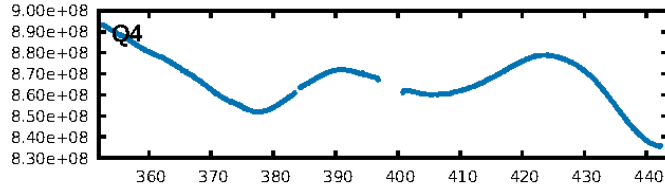
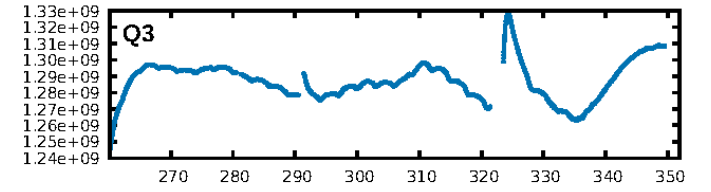
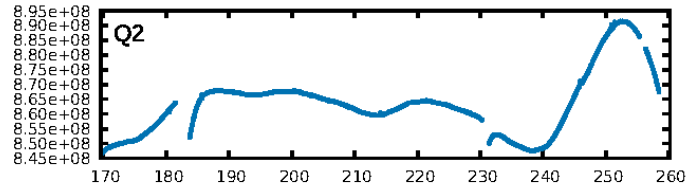
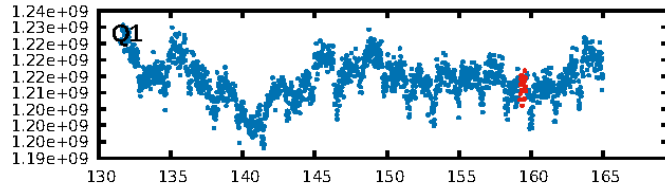
ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [70.51σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.15e-12
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: N/A

Centroid-sig: 4.4%
Centroid-so: 1.296 arcsec [2.60σ]
OotOffset-rm: 0.643 arcsec [1.72σ]
KicOffset-rm: 0.247 arcsec [0.12σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

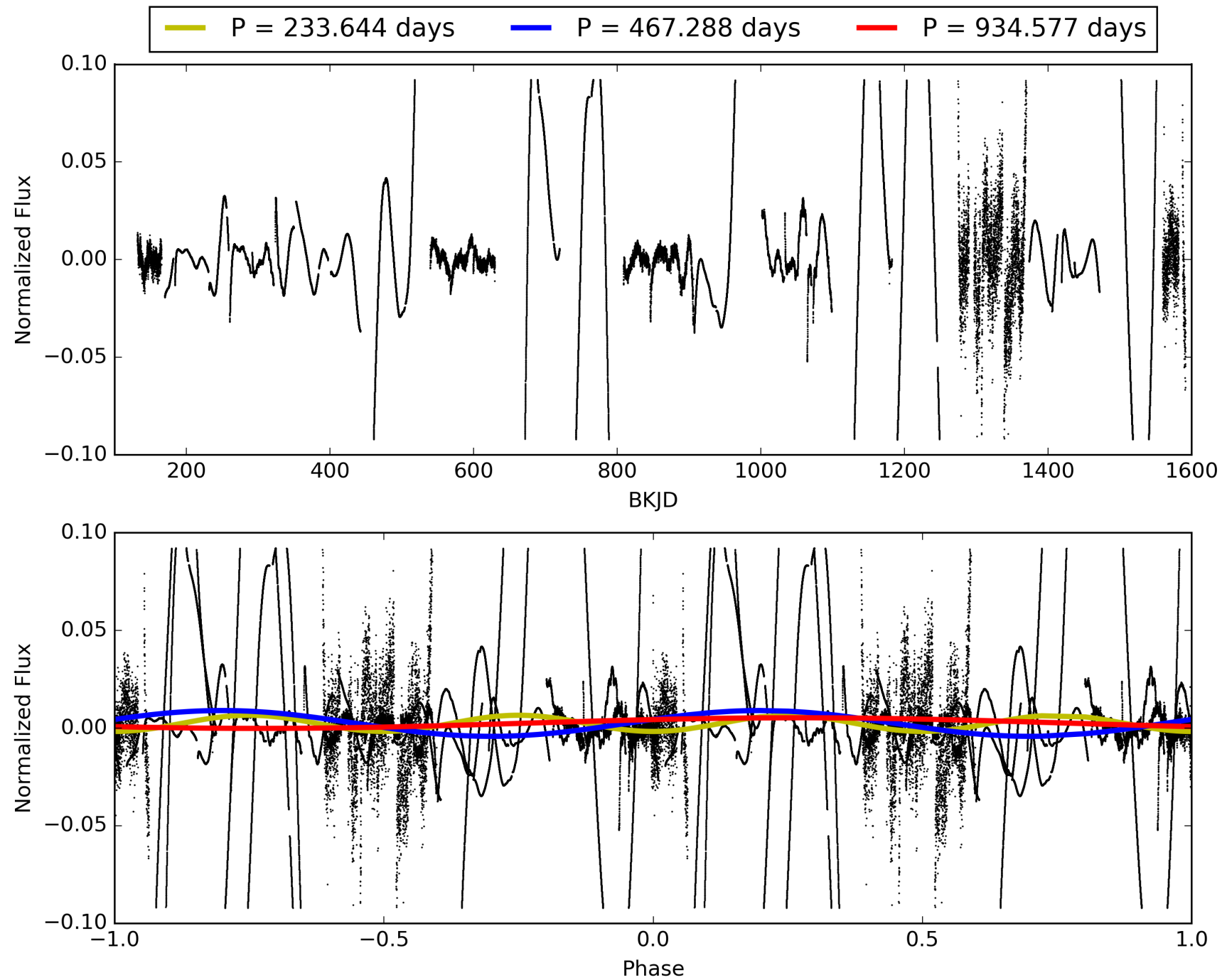
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:57:31 Z

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

TCE 008096758-02, PDC Light Curves

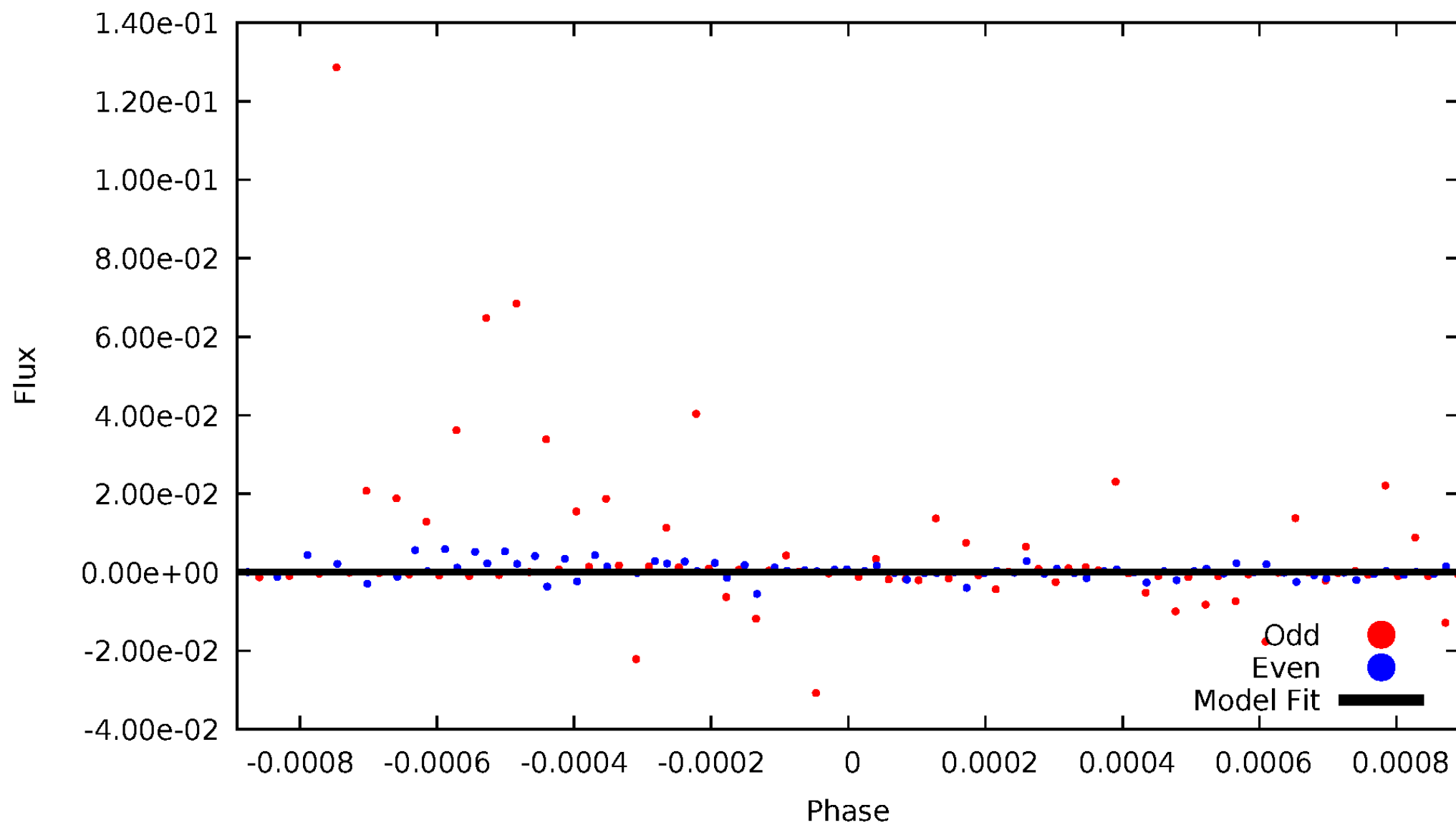


TCE 008096758-02



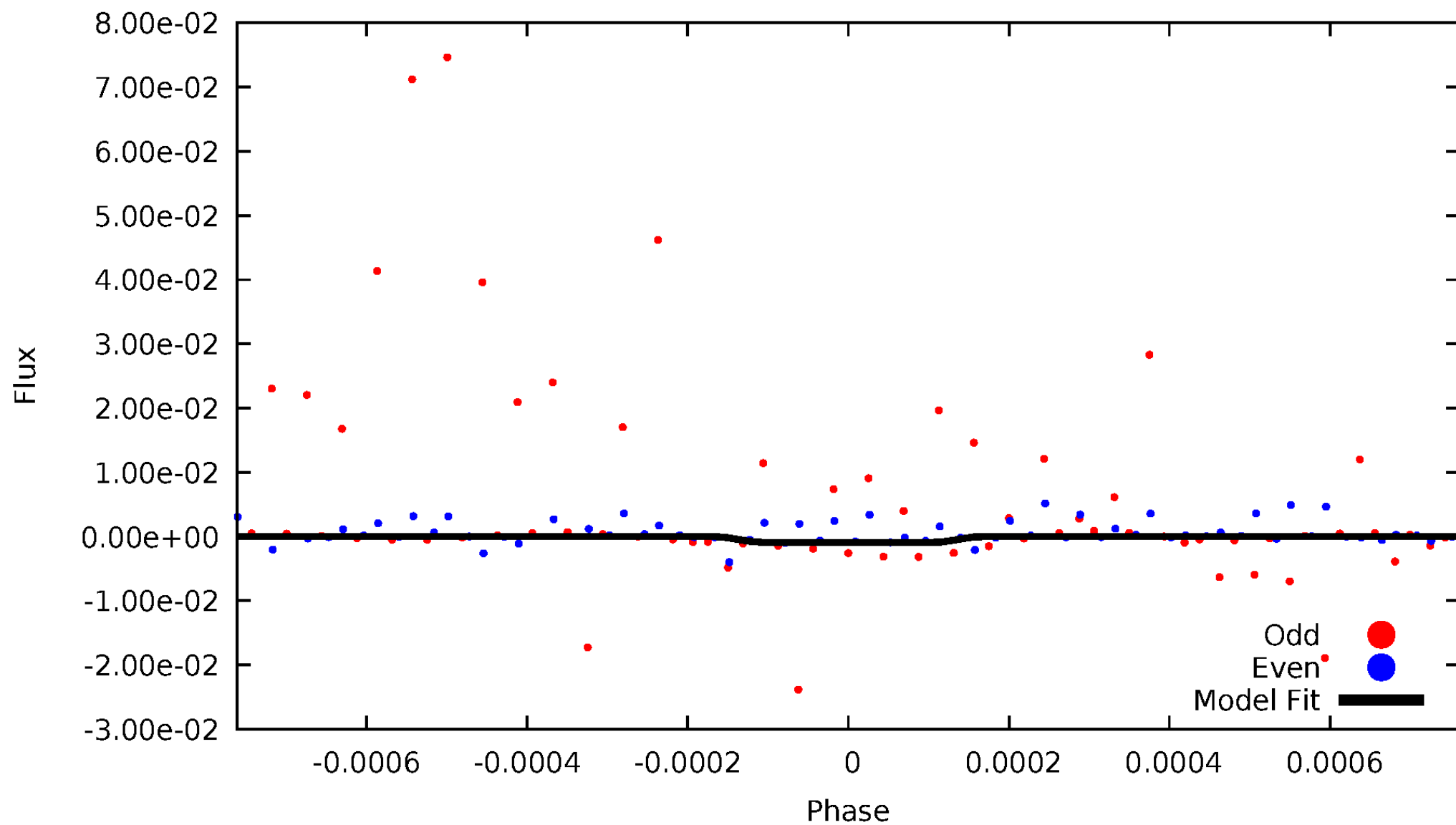
DV Odd/Even

TCE 008096758-02



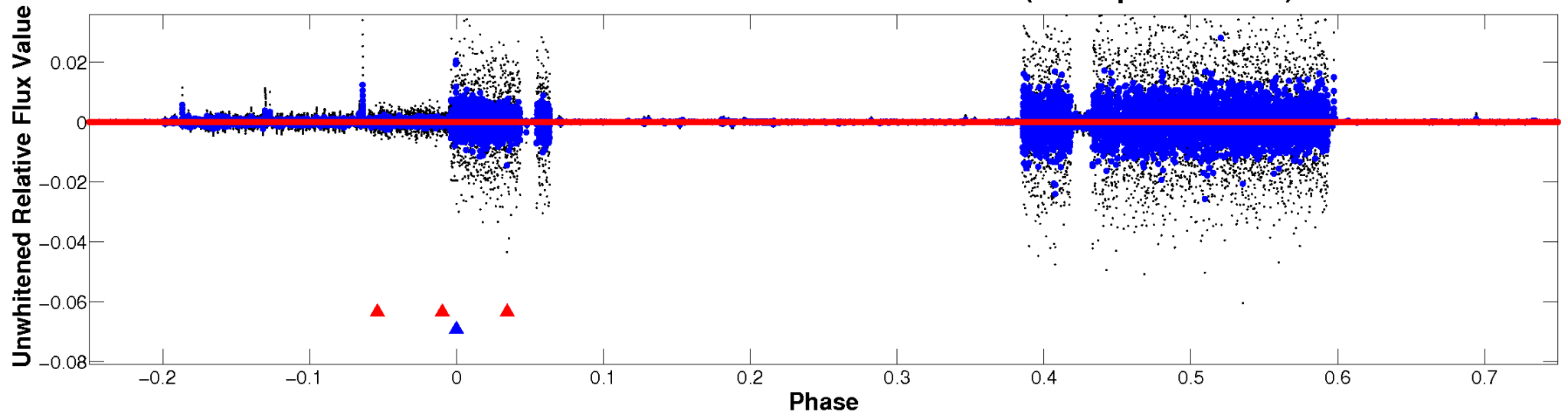
ALT Odd/Even

TCE 008096758-02

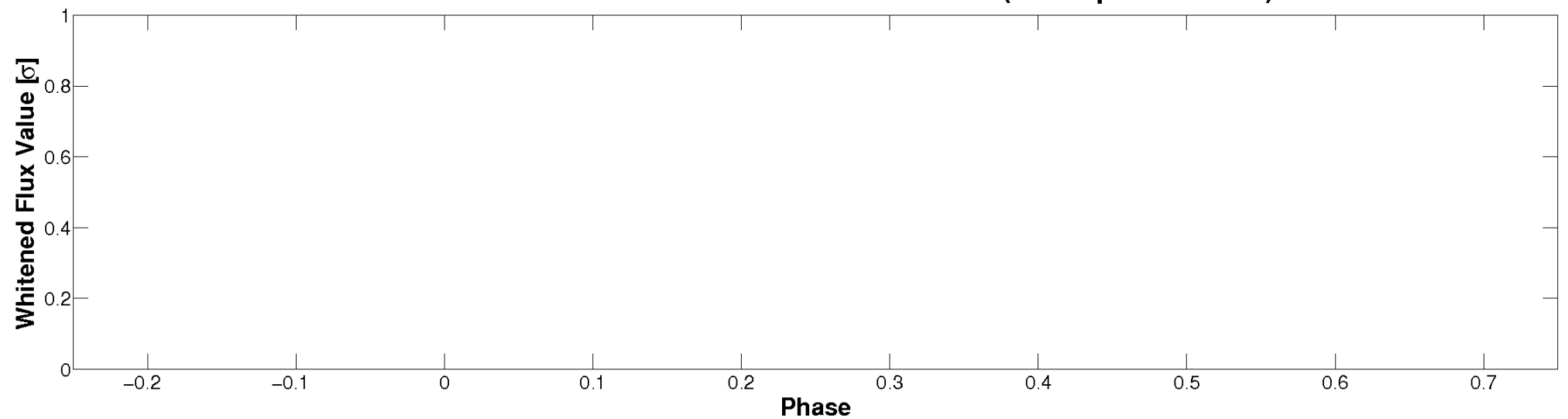


Non-Whitened Vs. Whitened Light Curve

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

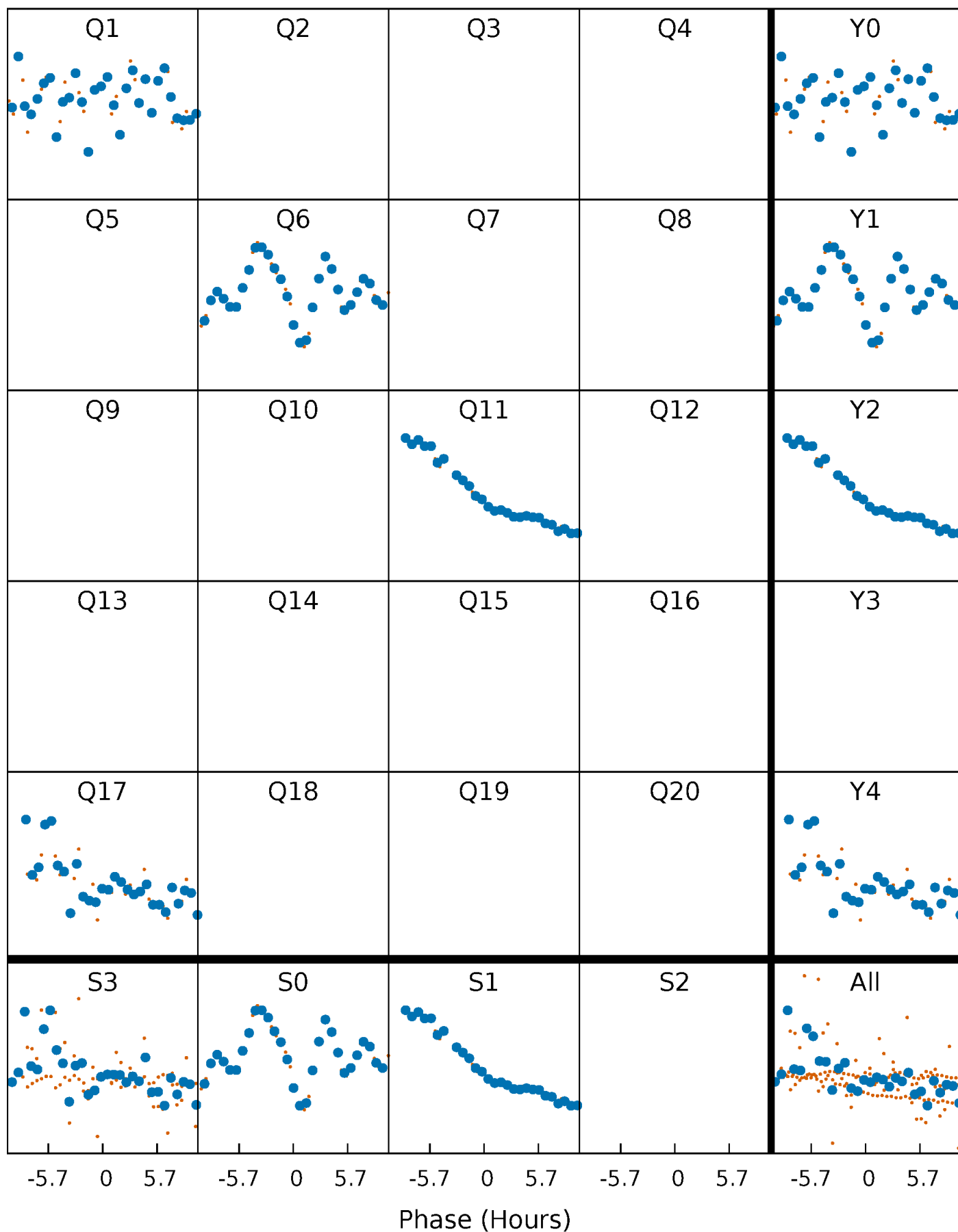


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



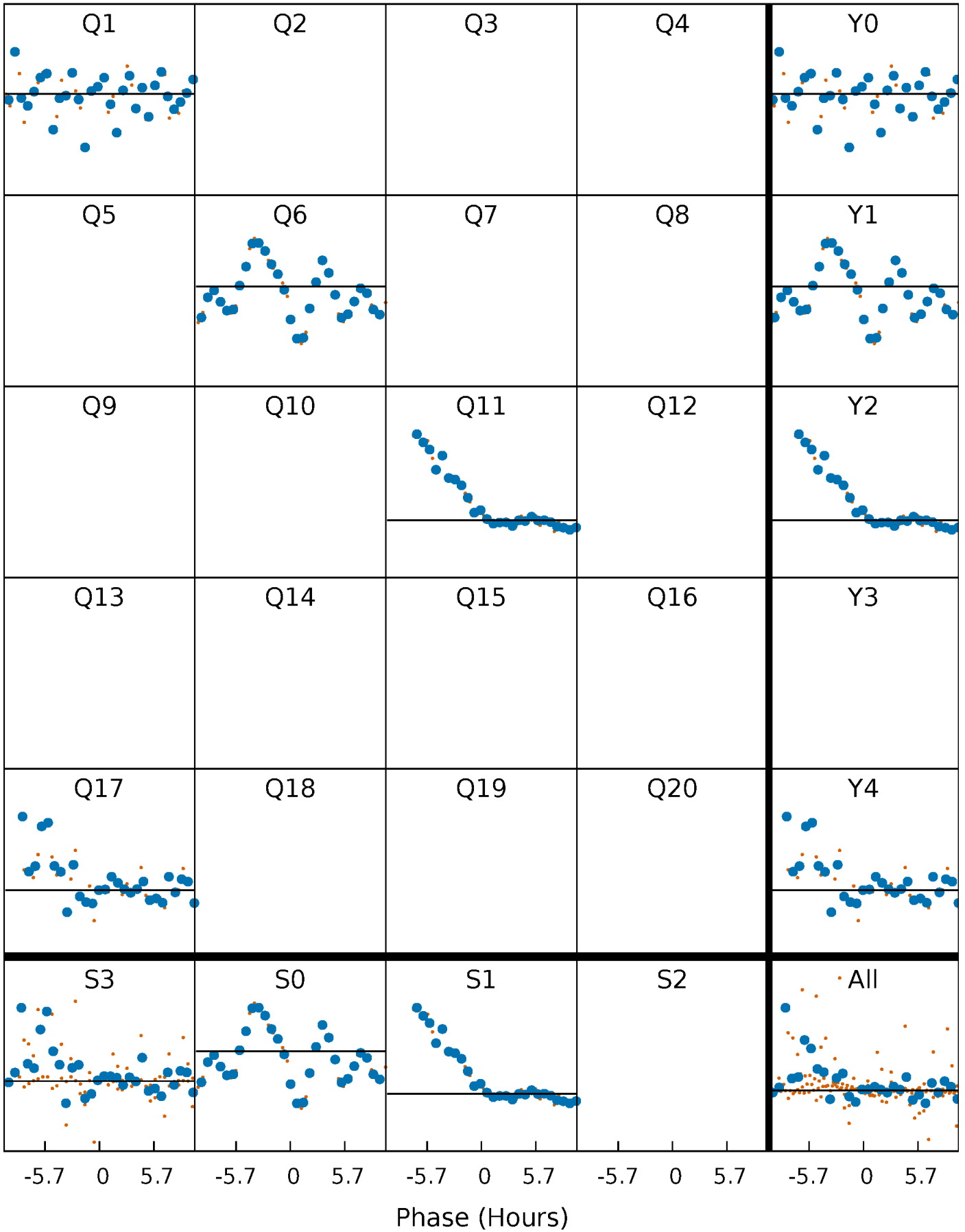
PDC Quarter-Phased Transit Curves

TCE 008096758-02 $P=467.288272$ Days $T_0=159.447076$ (BKJD)



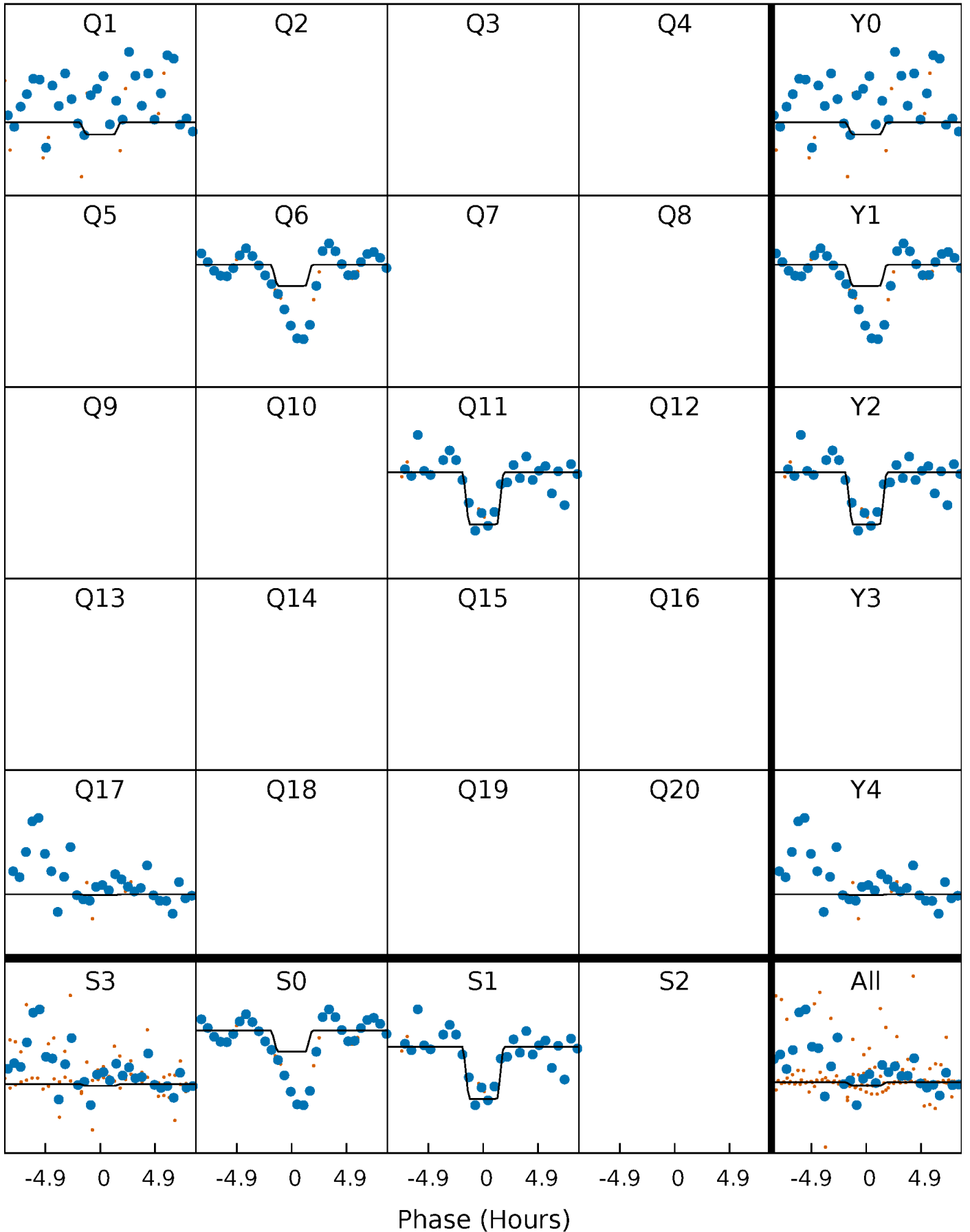
DV Quarter-Phased Transit Curves

TCE 008096758-02 $P=467.288272$ Days $T_0=159.447076$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

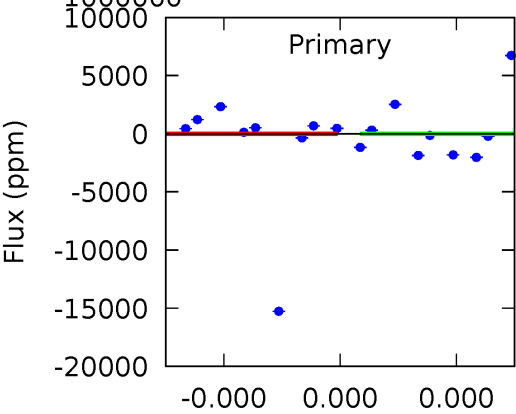
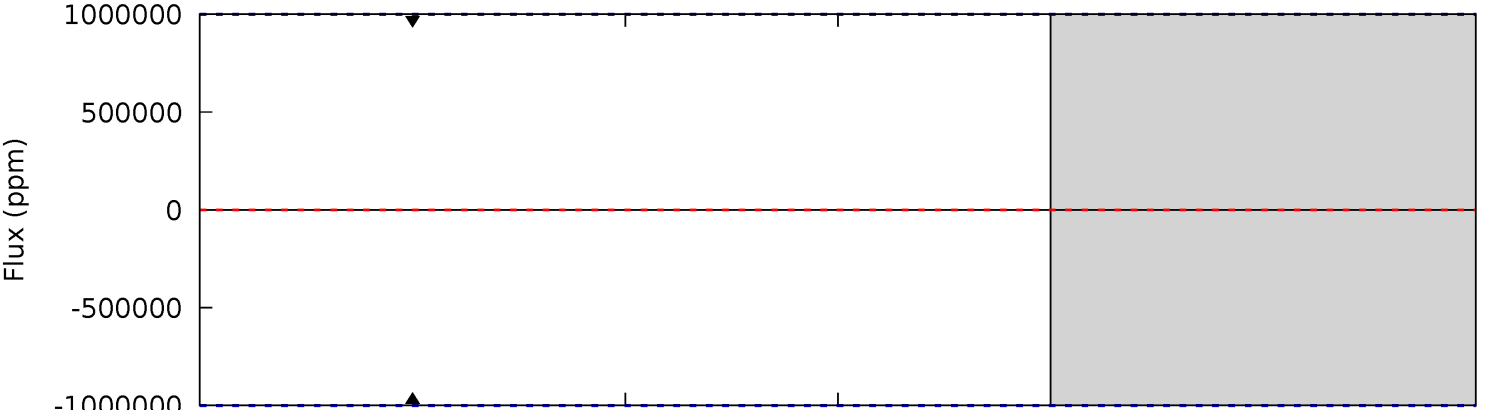
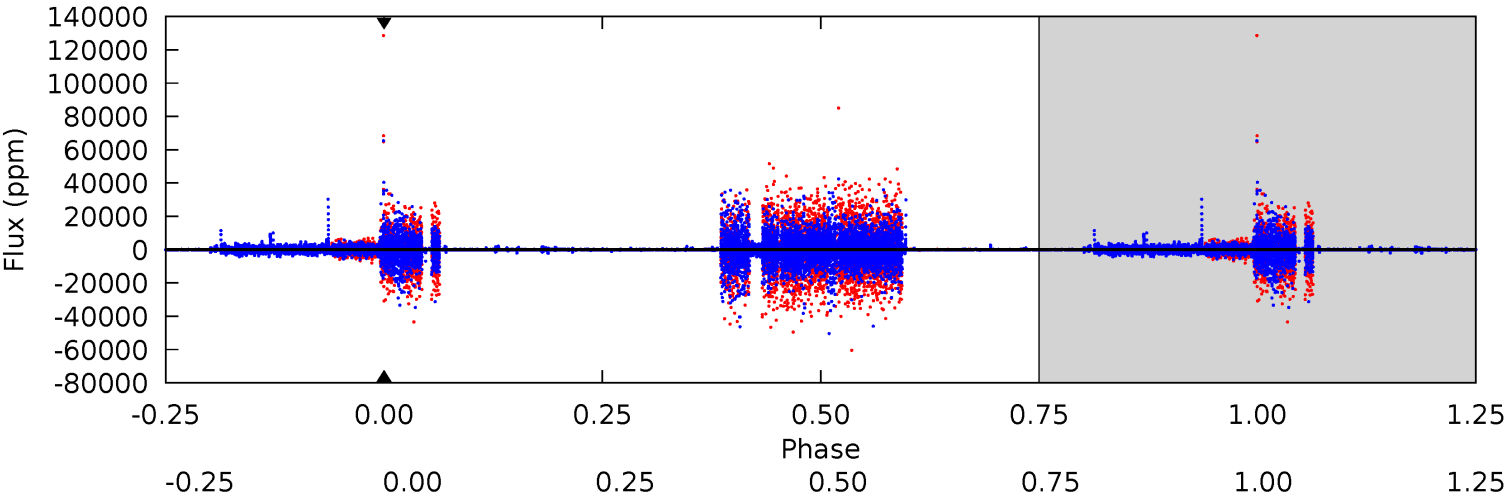
TCE 008096758-02 P=467.288272 Days $T_0=159.454119$ (BKJD)



DV Model-Shift Uniqueness Test

008096758-02, P = 467.288272 Days, E = 159.447076 Days

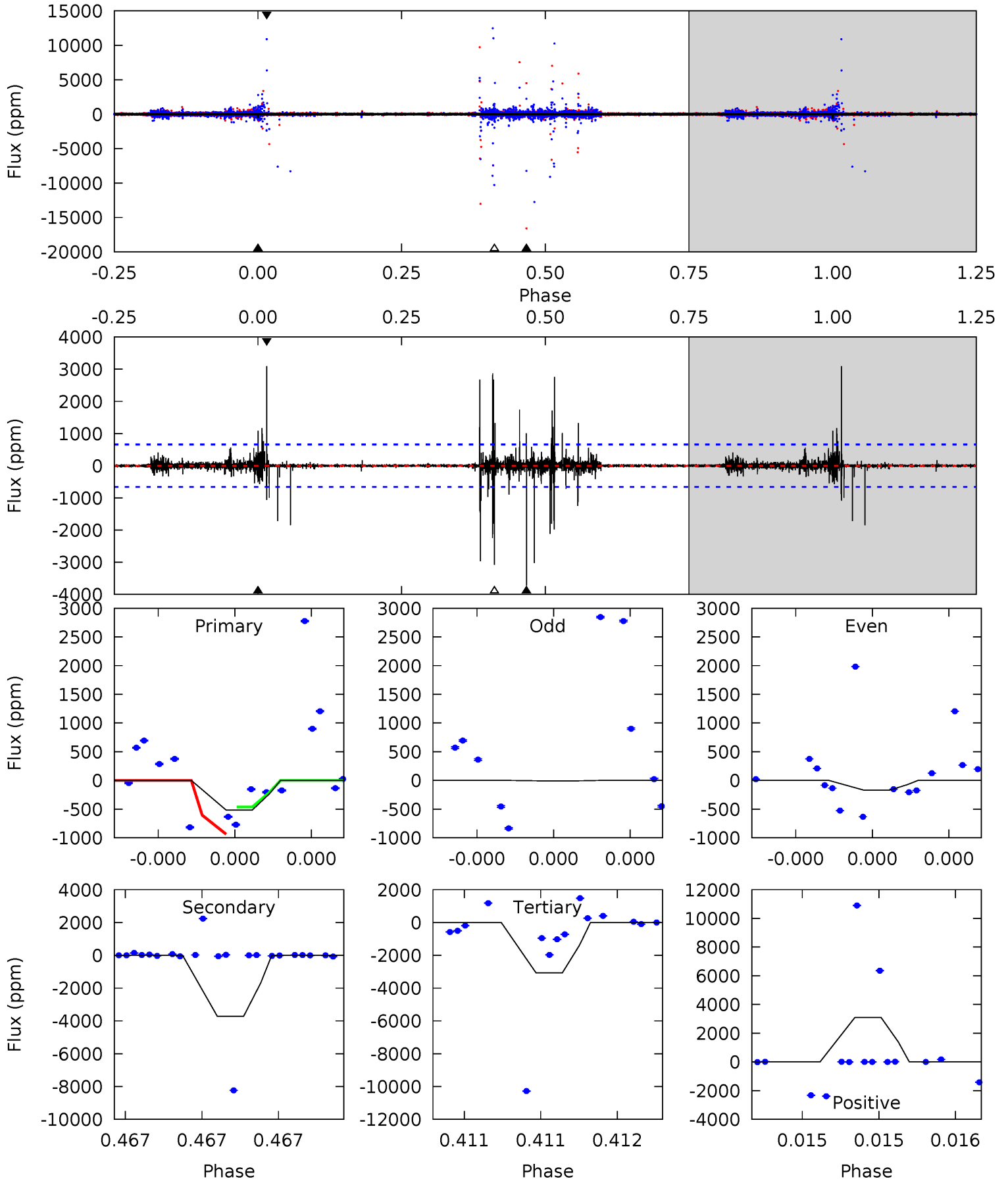
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-----|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 0 | 0 | 0 | 0 | 1.00 | 1.00 | 1.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Alt Model-Shift Uniqueness Test

008096758-02, P = 467.288272 Days, E = 159.454119 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 4.44 | 32.1 | 26.5 | 26.6 | 5.66 | 3.61 | 0.87 | -22.0 | -22.2 | 5.60 | 5.46 | 0.16 | 1.63 | 0.45 | 0 |



Stellar Parameters For KIC 008096758

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|----------------------------|------------------------------|---------------------------|---|
| | 3273^{+117}_{-78} | $0.117^{+0.200}_{-0.050}$ | $-0.060^{+0.250}_{-0.150}$ | $154.438^{+9.192}_{-29.414}$ | $1.138^{+0.189}_{-0.155}$ | $0.000^{+0.000}_{-0.000}$ |
| | +4%/-2% | +171%/-43% | +417%/-250% | +6%/-19% | +17%/-14% | +88%/-15% |
| Source | KIC0 | 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 008096758-02 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-----------------|--------------------------------|---------------------|-------------------------|------------------------------|
| DV | 0 ± 1000000 | $1382.14^{+1360.93}_{-909.68}$ | 2232^{+97}_{-113} | -2783^{+8489}_{-3232} | $-0.623^{+64.140}_{-72.367}$ |
| Alt. | -3728 ± 116 | $1301.61^{+1226.52}_{-909.24}$ | 2232^{+99}_{-122} | 2959^{+1546}_{-651} | $1.868^{+18.920}_{-1.363}$ |

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 $A_{obs} \gg 1.0$

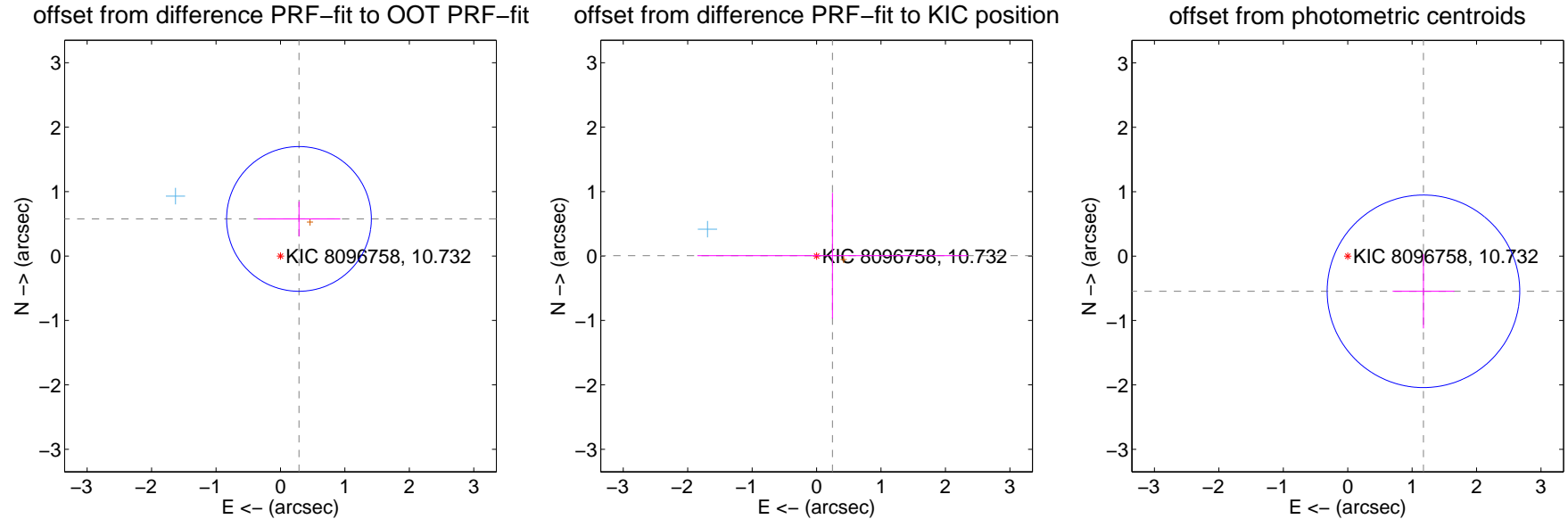
DV Centroid Data

Supplemental centroid analysis for 008096758-02. **Kepler magnitude: 10.73.** Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

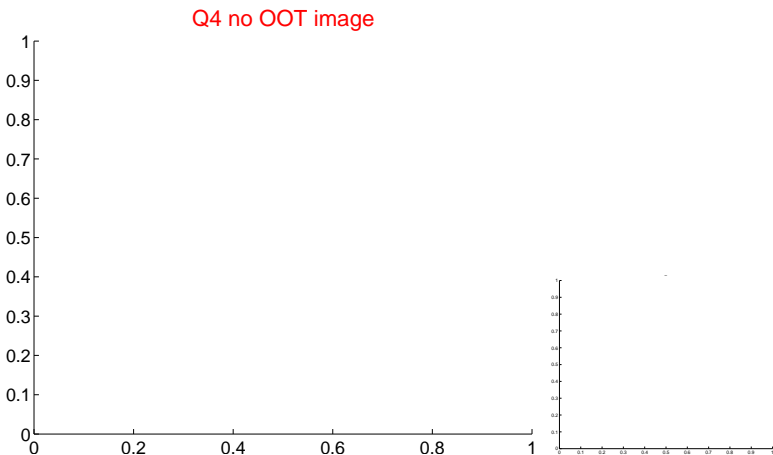
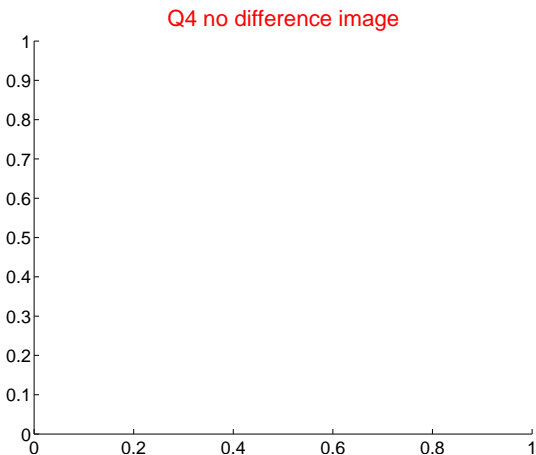
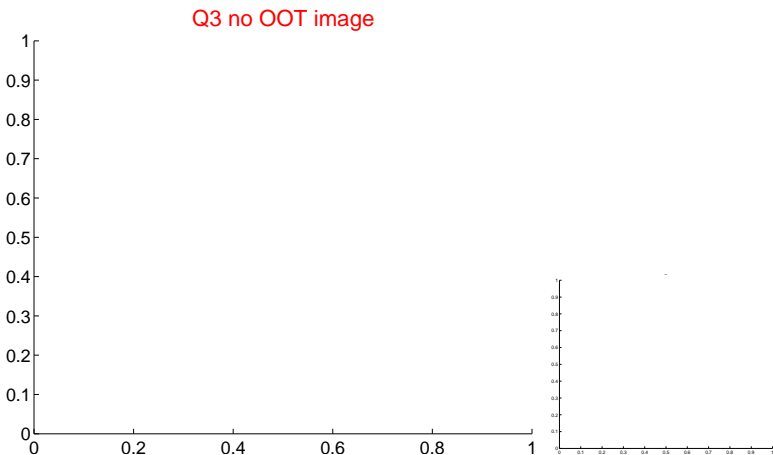
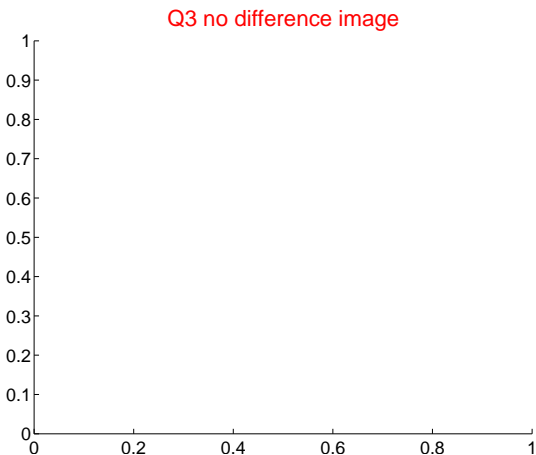
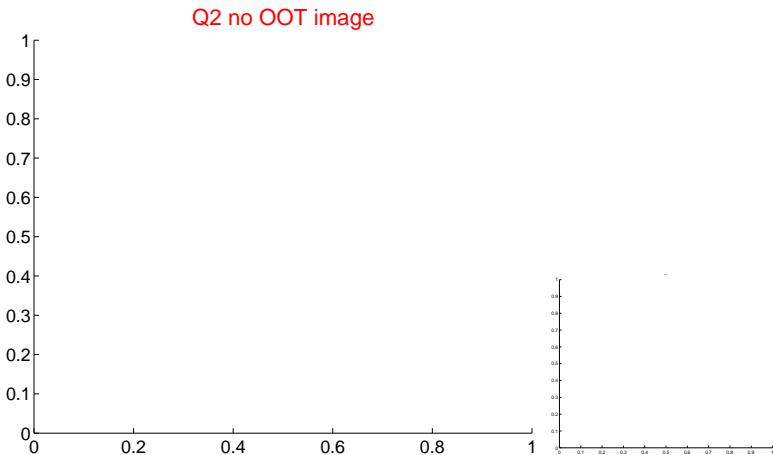
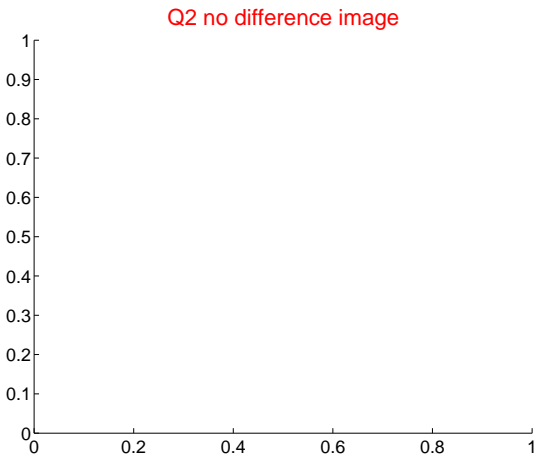
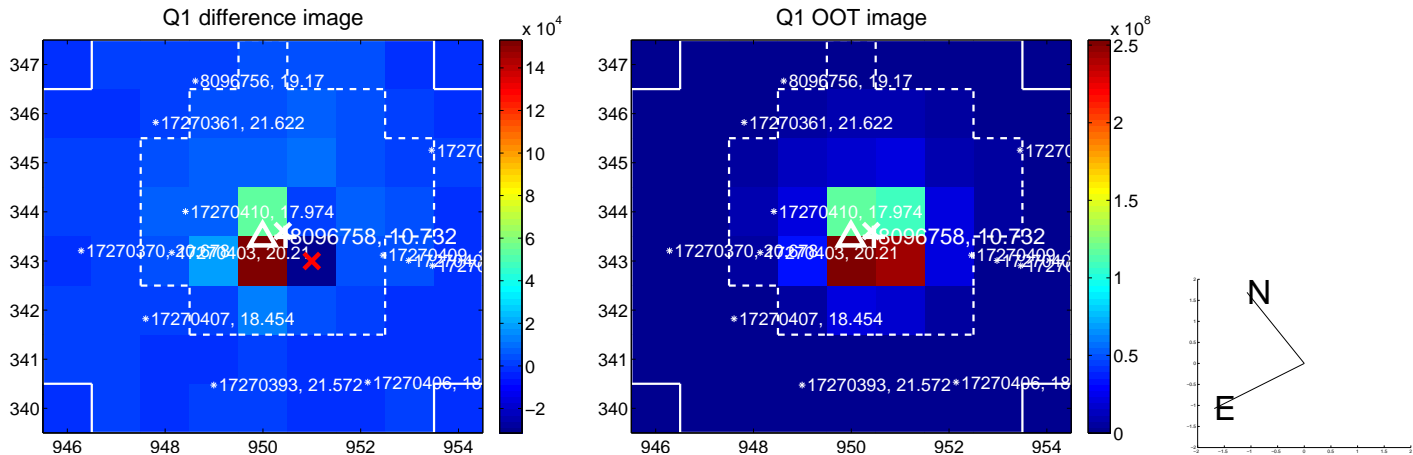
The direct PRF centroid is offset from the target star catalog position by about 0.58 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.643 ± 0.374 | 1.72 | -0.287 ± 0.642 | 0.576 ± 0.269 |
| PRF-fit source offset from KIC position | 0.247 ± 2.076 | 0.12 | -0.247 ± 2.097 | 0.005 ± 0.975 |
| photometric centroid source offset | 1.30 ± 0.50 | 2.60 | -1.18 ± 0.48 | -0.55 ± 0.58 |



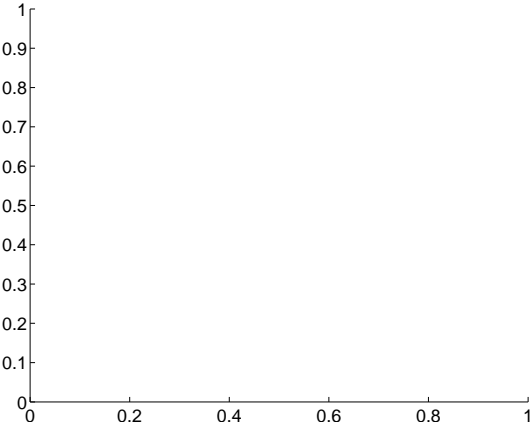
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

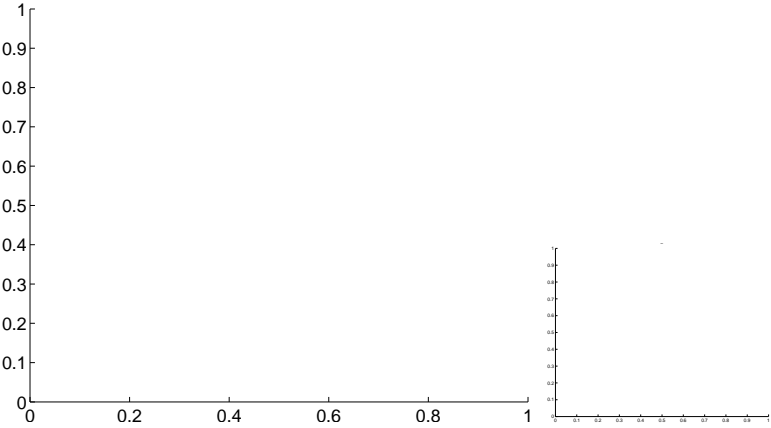


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

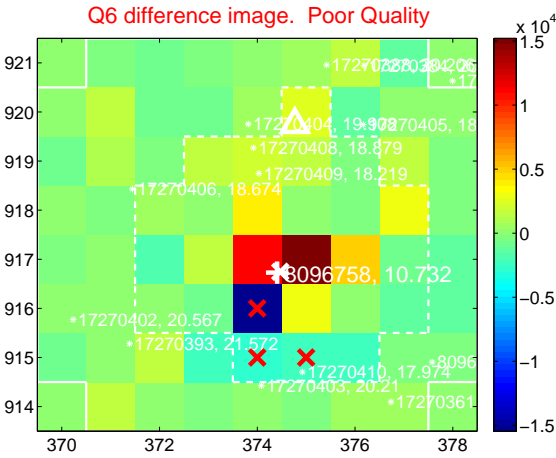
Q5 no difference image



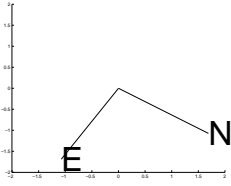
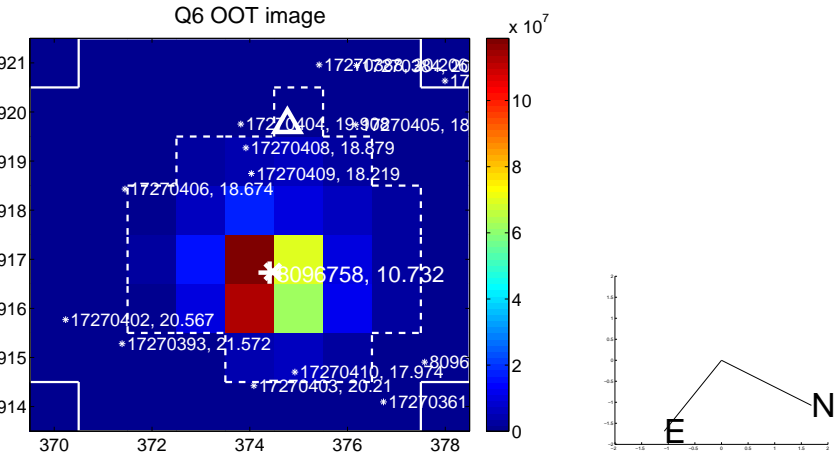
Q5 no OOT image



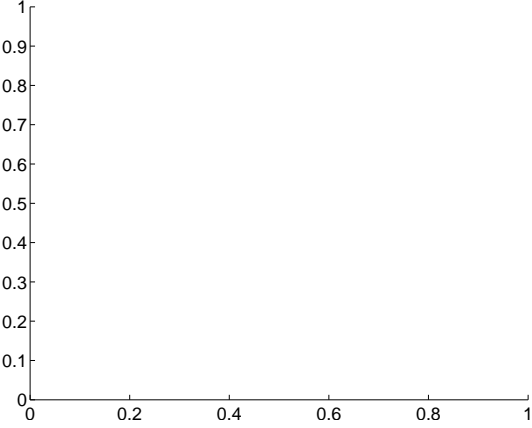
Q6 difference image. Poor Quality



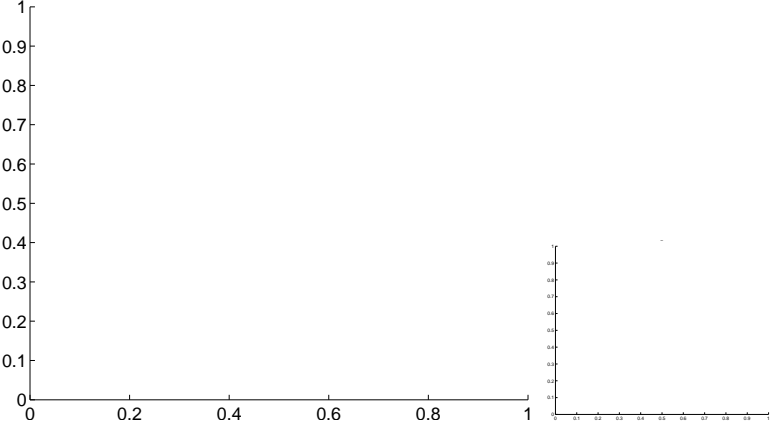
Q6 OOT image



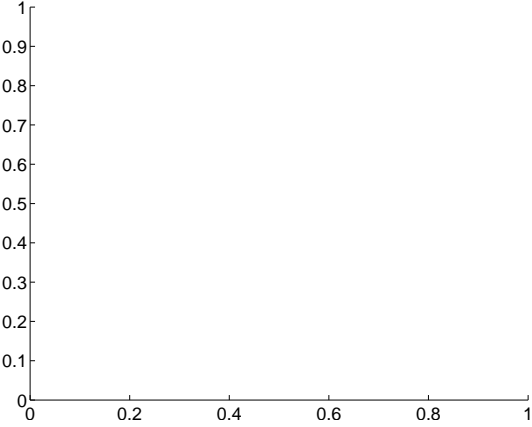
Q7 no difference image



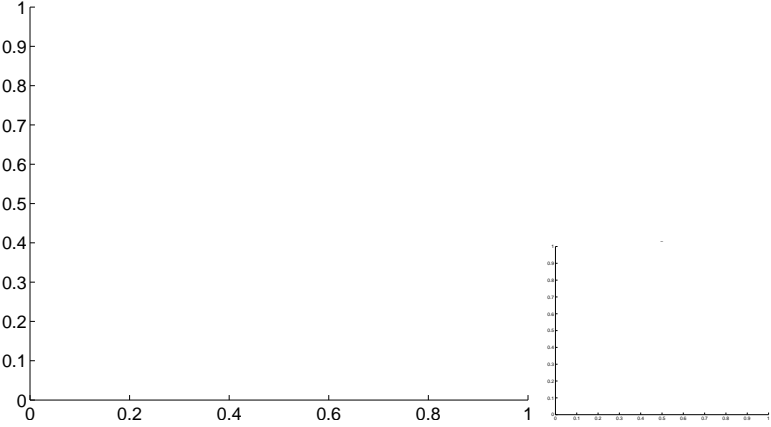
Q7 no OOT image



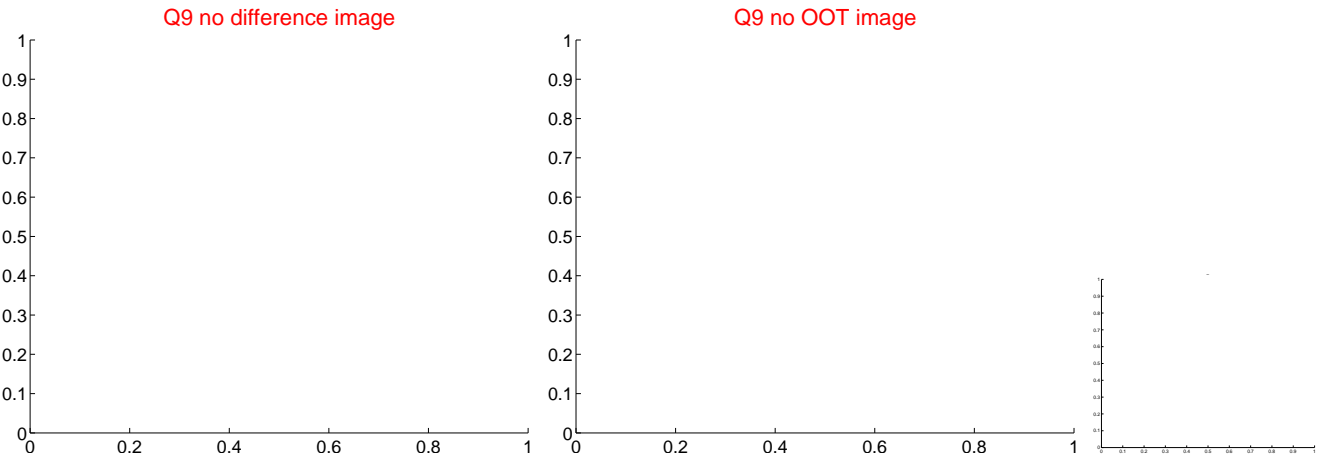
Q8 no difference image



Q8 no OOT image



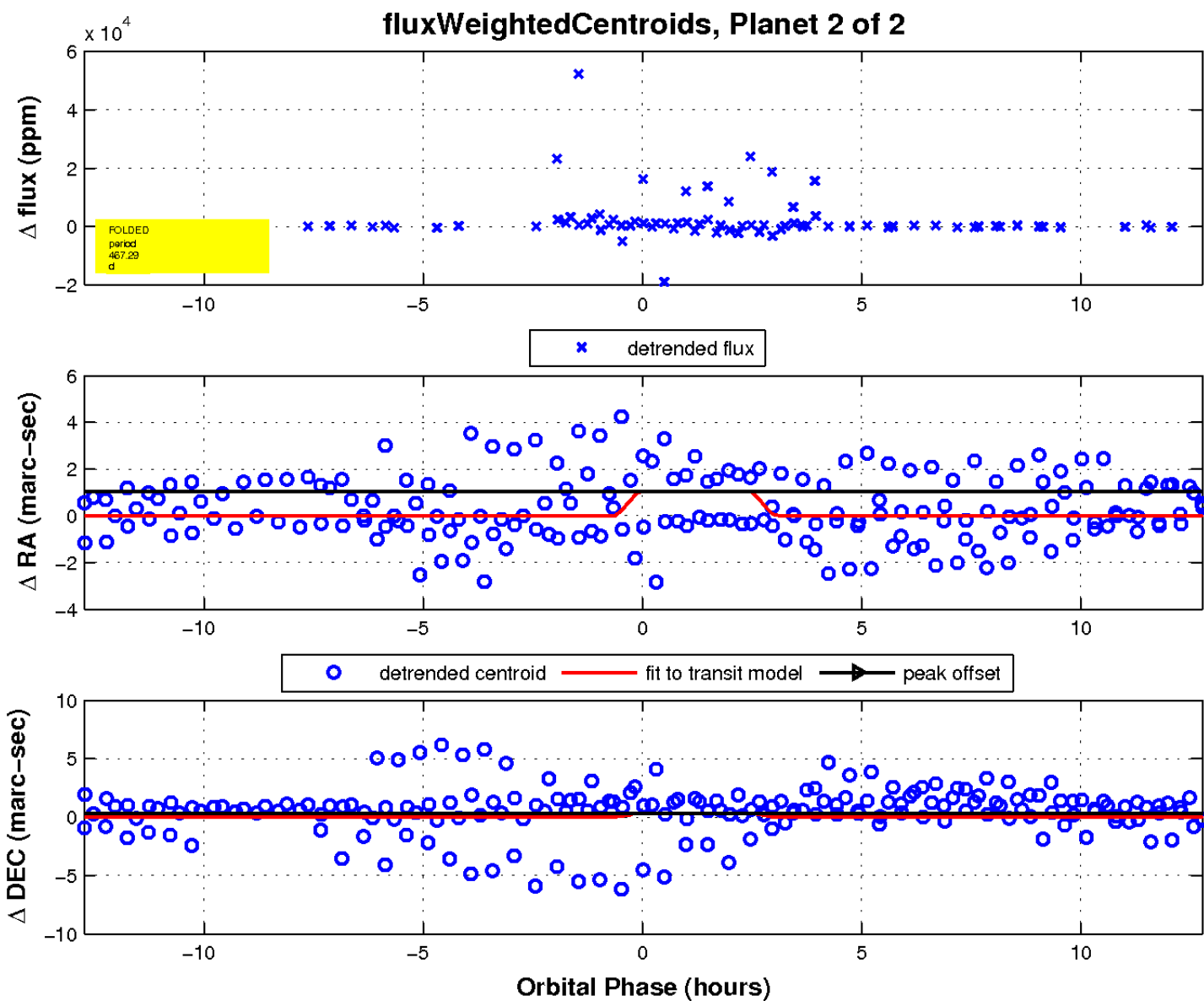
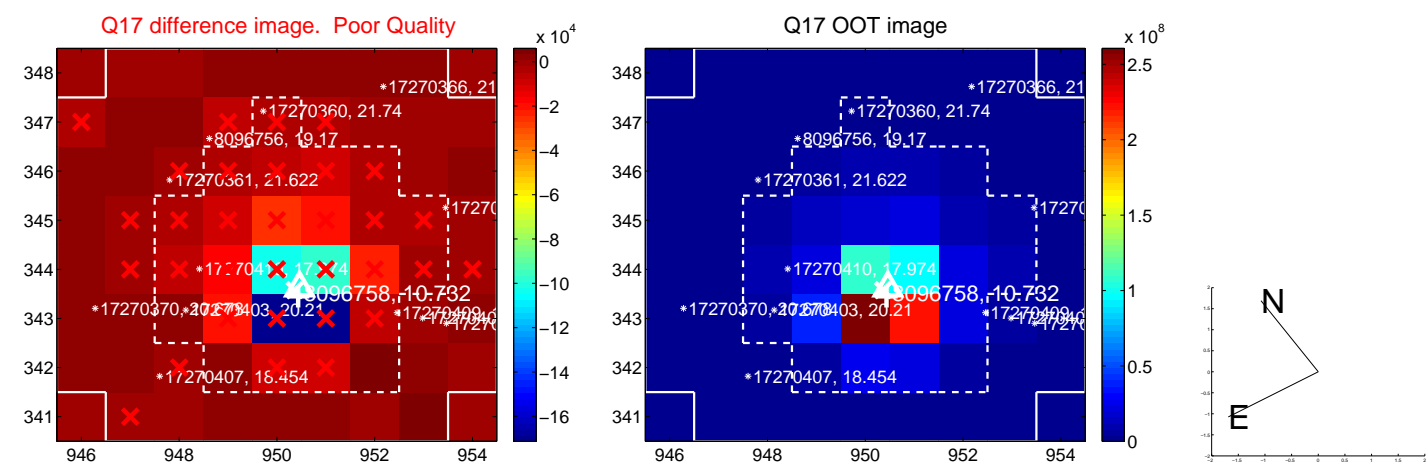
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

