

KIC 003544878

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 003544878-01 | OBS | No | 1.191038 | 132.485299 | 24.8 | 6.780 | 8.9 | 8.6 | 1.19 | 6478 | 0.59 | 4054.79 |
| 003544878-02 | OBS | No | 118.615798 | 238.409610 | 205.8 | 7.872 | 8.4 | 6.1 | 1.19 | 6478 | 1.83 | 8.78 |
| 003544878-03 | OBS | No | 102.310517 | 165.383907 | 177.7 | 9.792 | 8.3 | 6.0 | 1.19 | 6478 | 1.78 | 10.70 |
| 003544878-04 | OBS | No | 57.687975 | 135.908219 | 235.9 | 4.588 | 7.9 | 7.0 | 1.19 | 6478 | 2.05 | 22.97 |
| 003544878-05 | OBS | No | 76.661194 | 142.914283 | 261.5 | 2.446 | 8.0 | 8.3 | 1.19 | 6478 | 2.09 | 15.72 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 003544878-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 003544878-02 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST |
| 003544878-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS |
| 003544878-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 003544878-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

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

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

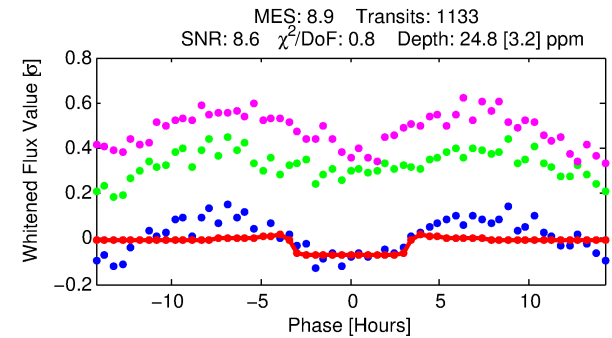
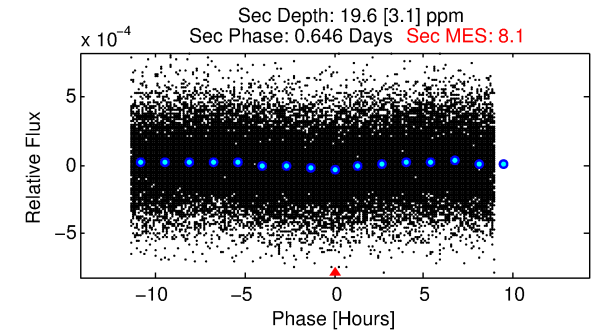
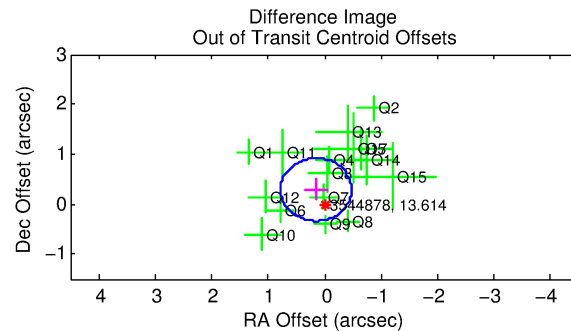
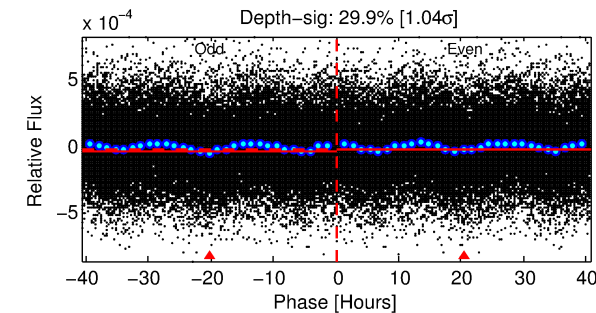
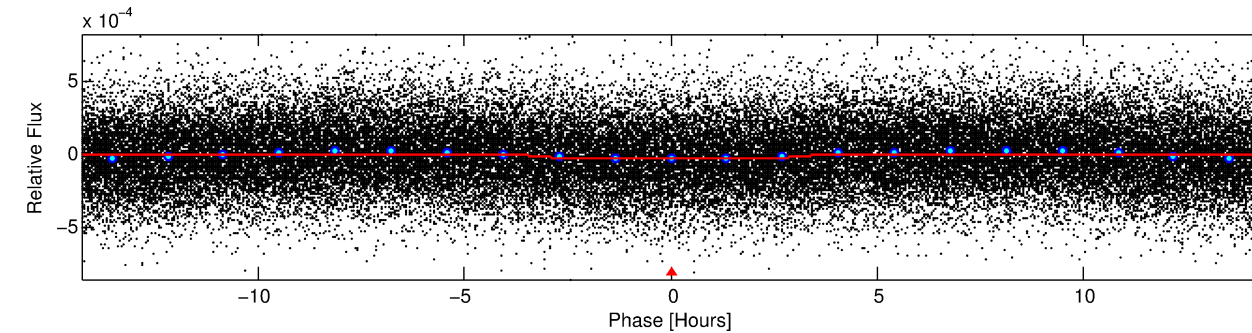
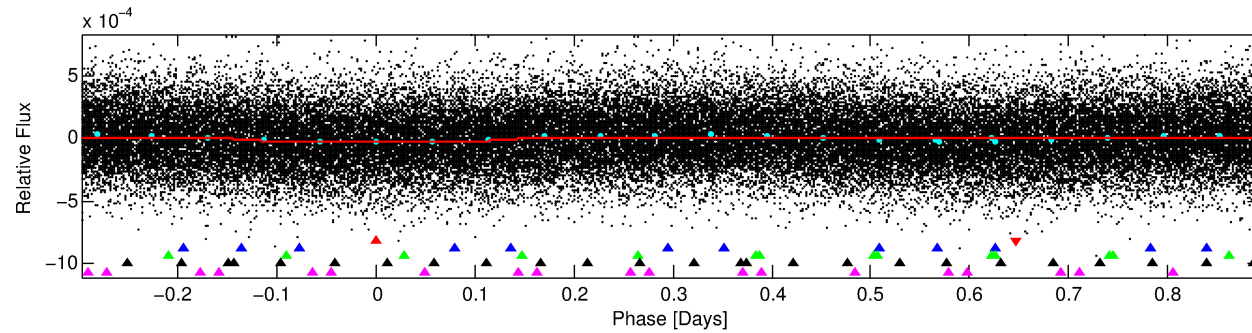
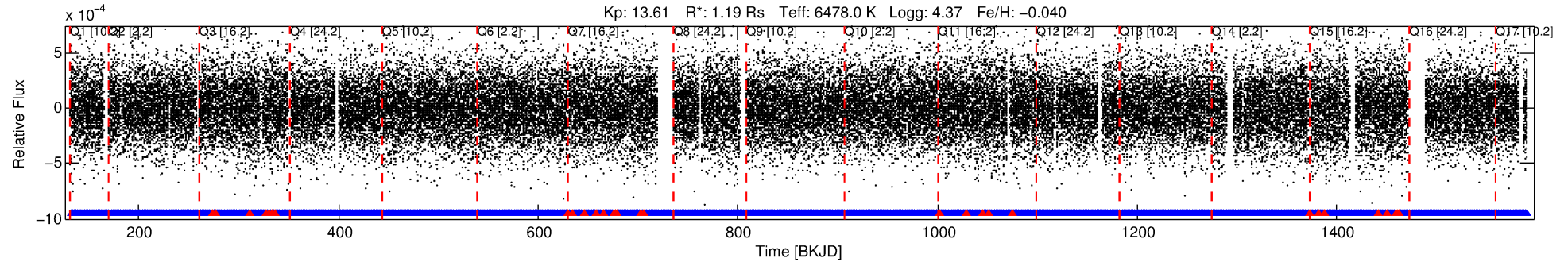
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003544878-01

No Significant Match Found

DV One-Page Summary

KIC: 3544878 Candidate: 1 of 5 Period: 1.191 d



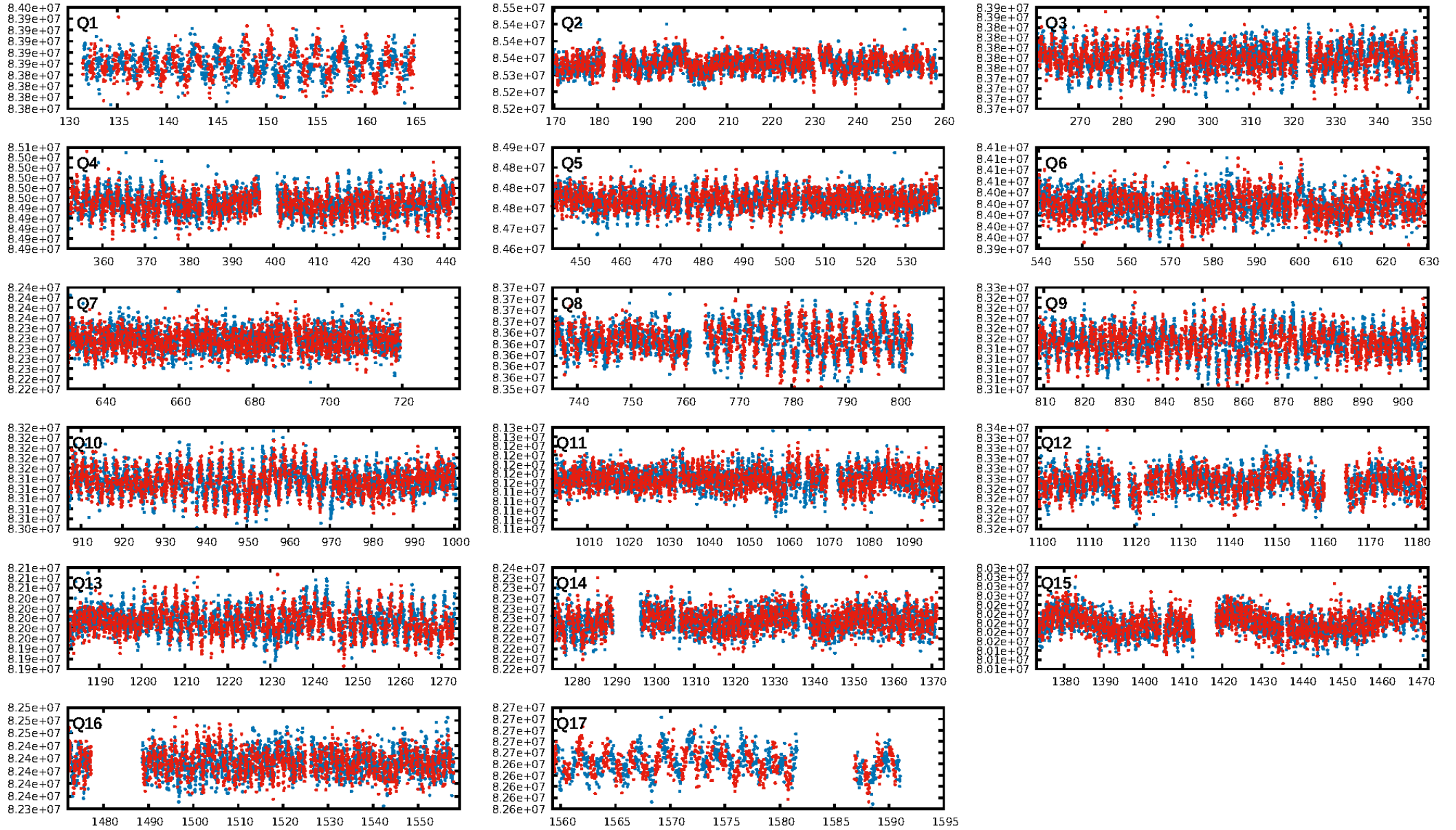
DV Fit Results:

Period = 1.19104 [0.00002] d
Epoch = 132.4853 [0.0058] BKJD
Rp/R* = 0.0046 [0.0050]
a/R* = 1.48 [4.64]
b = 0.00 [4904.97]
Seff = 4054.79 [1502.25]
Teq = 2035 [188] K
Rp = 0.59 [0.68] Re
a = 0.0234 [0.0057] AU
Ag = 16.75 [37.38] [0.42 σ]
Teffp = 6365 [3513] K [1.23 σ]

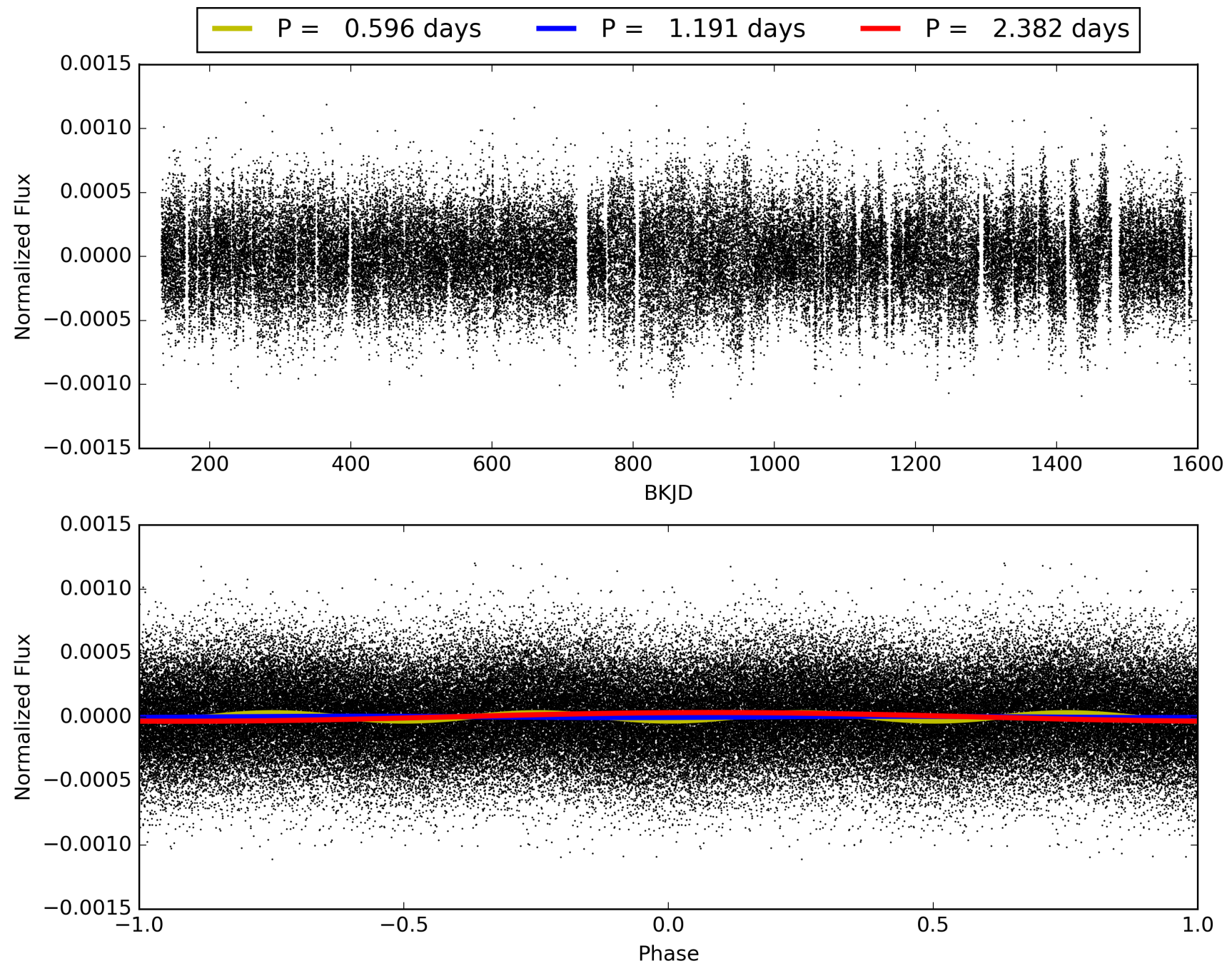
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [165.63 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.65e-09
RollingBand-fgt: 0.97 [1051/1082]
GhostDiagnostic-chr: 9.347
Centroid-sig: 10.9%
Centroid-so: 0.996 arcsec [1.05 σ]
OotOffset-rm: 0.328 arcsec [1.57 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-rm: 0.247 arcsec [1.18 σ]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.94 [15/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 003544878-01, PDC Light Curves

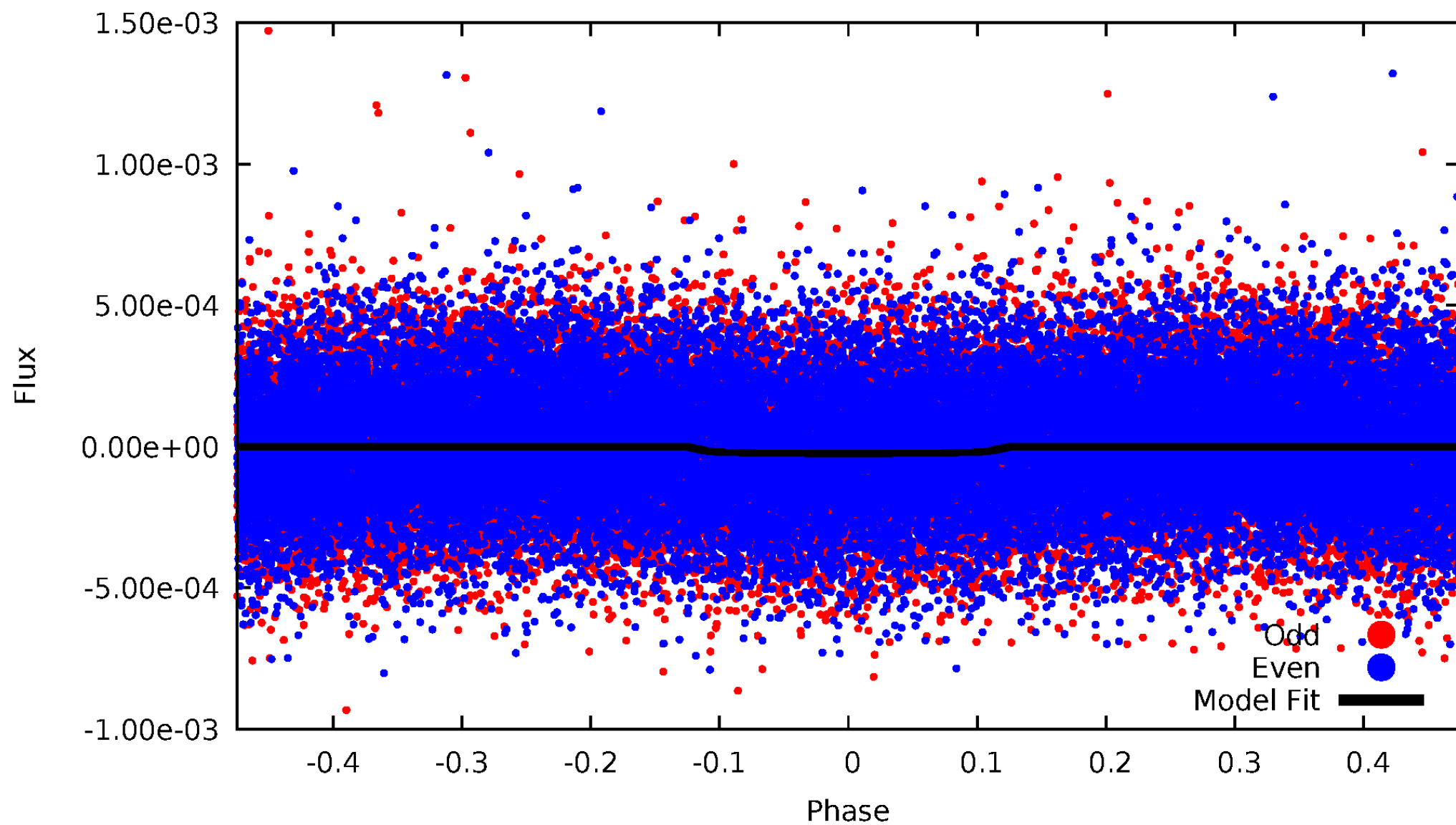


TCE 003544878-01



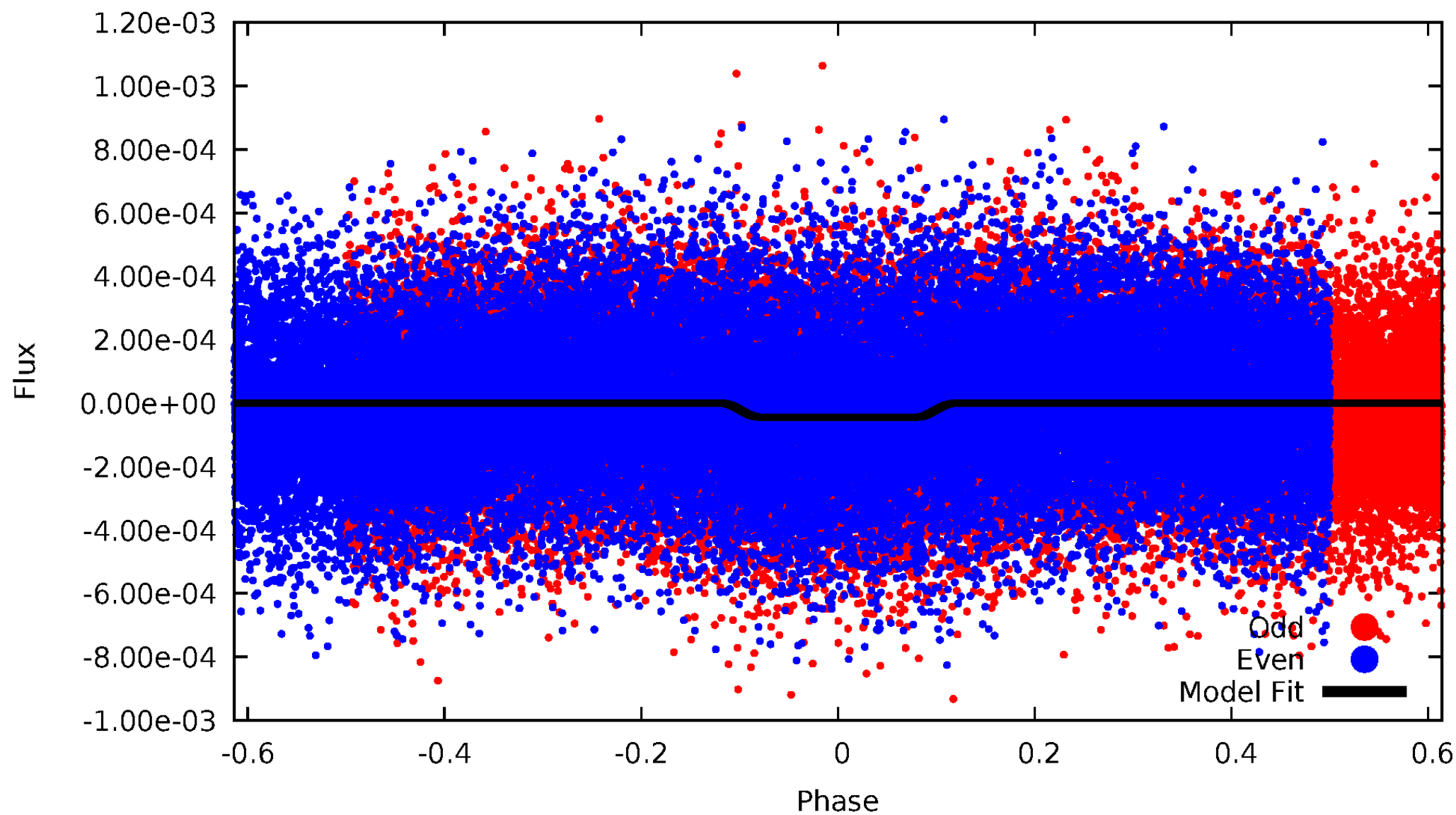
DV Odd/Even

TCE 003544878-01

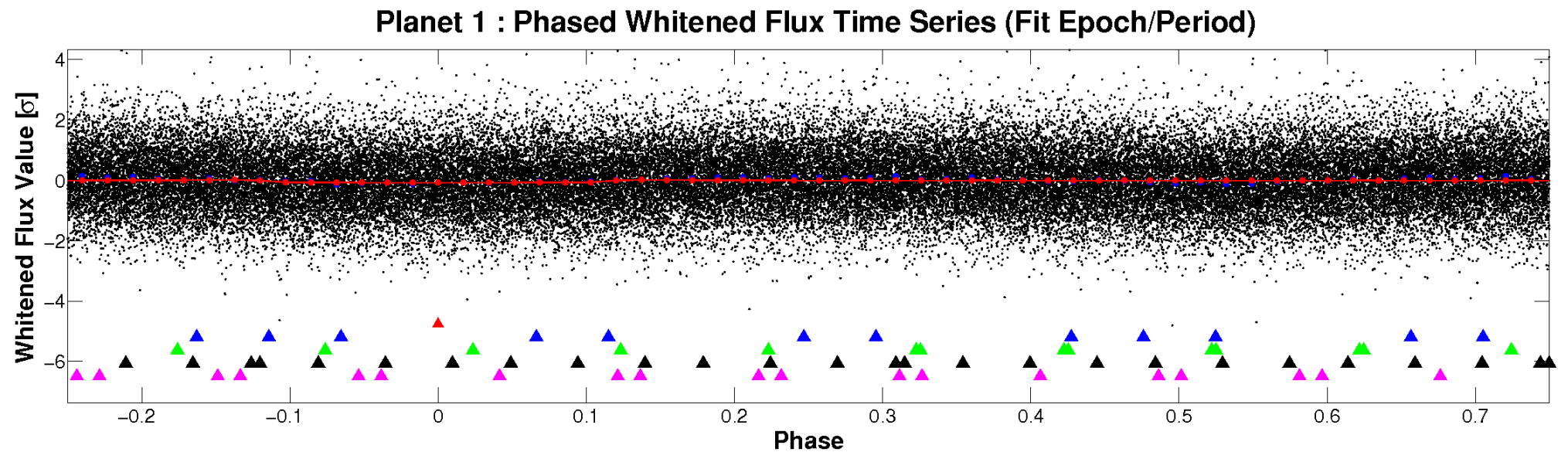
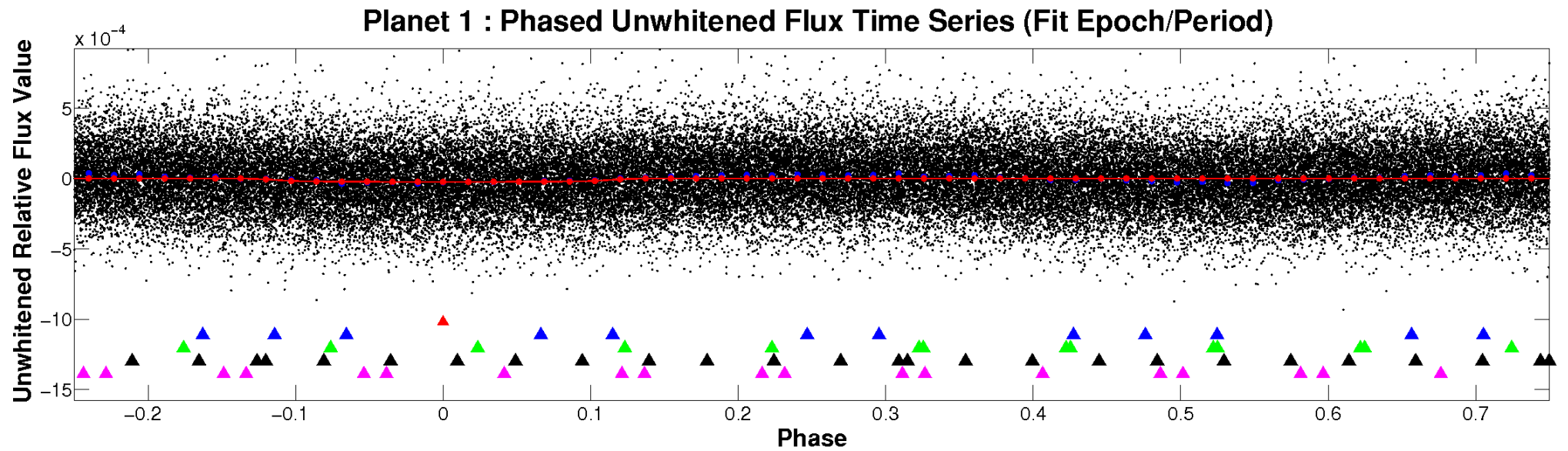


ALT Odd/Even

TCE 003544878-01

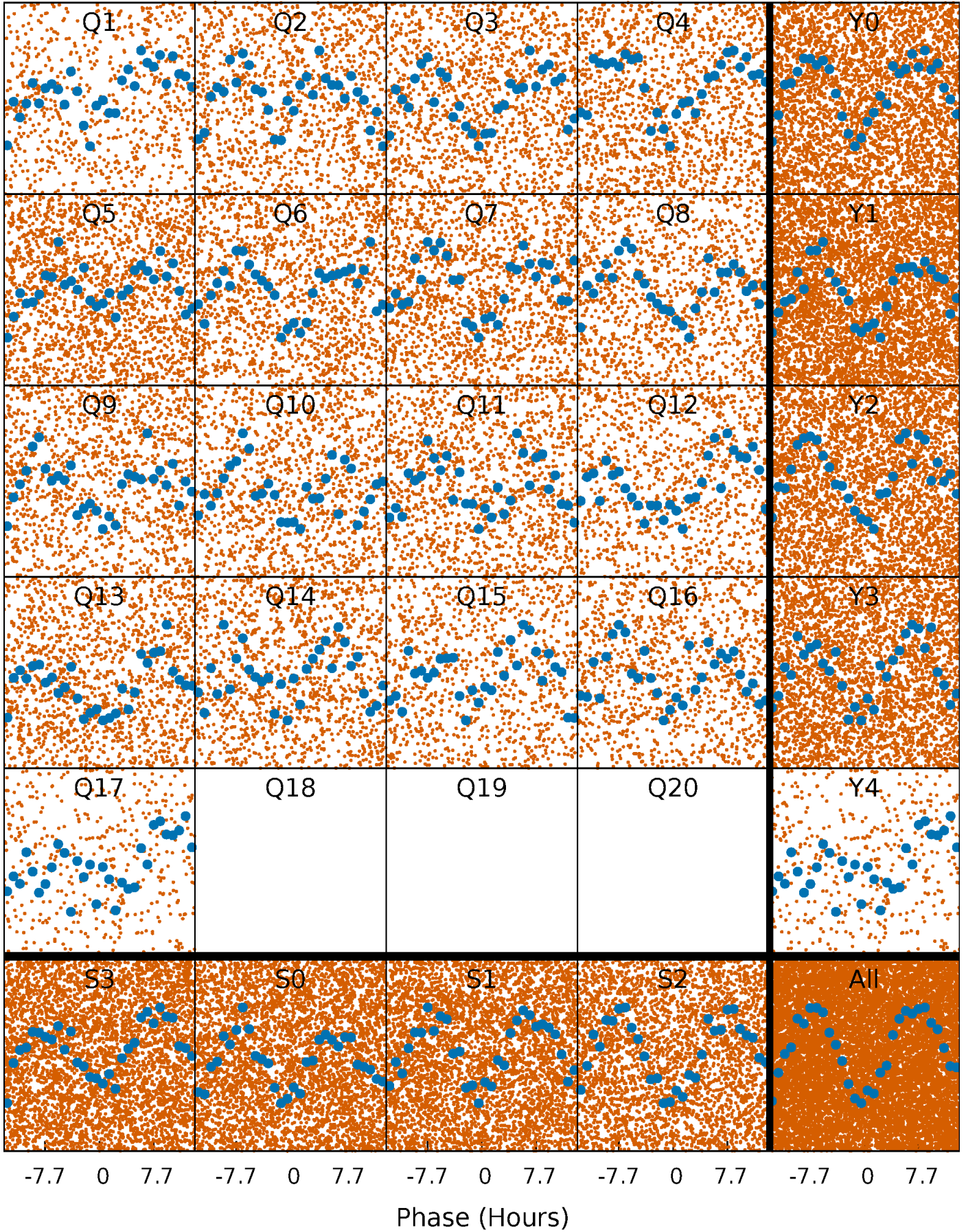


Non-Whitened Vs. Whitened Light Curve



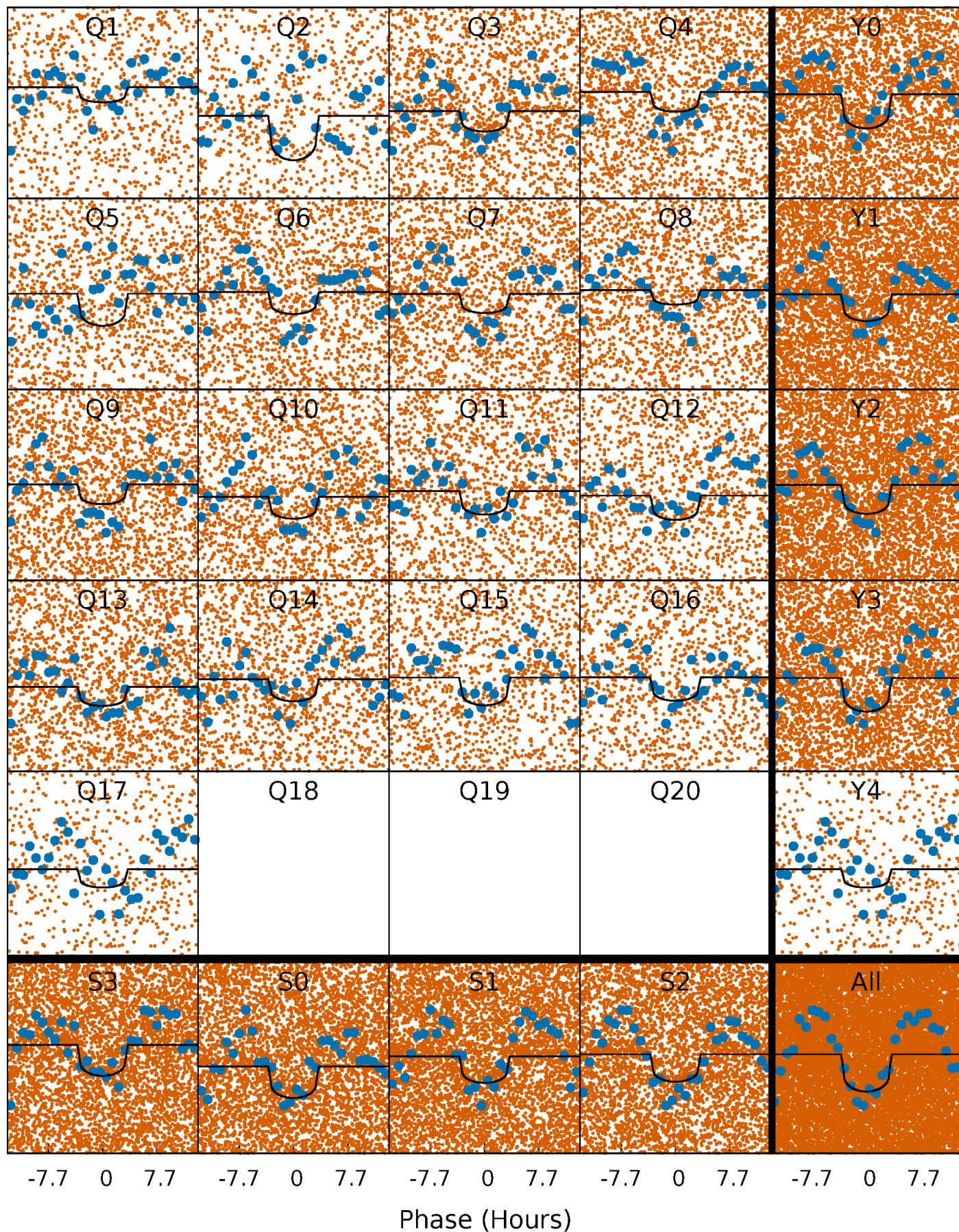
PDC Quarter-Phased Transit Curves

TCE 003544878-01 P= 1.191038 Days $T_0=132.485299$ (BKJD)



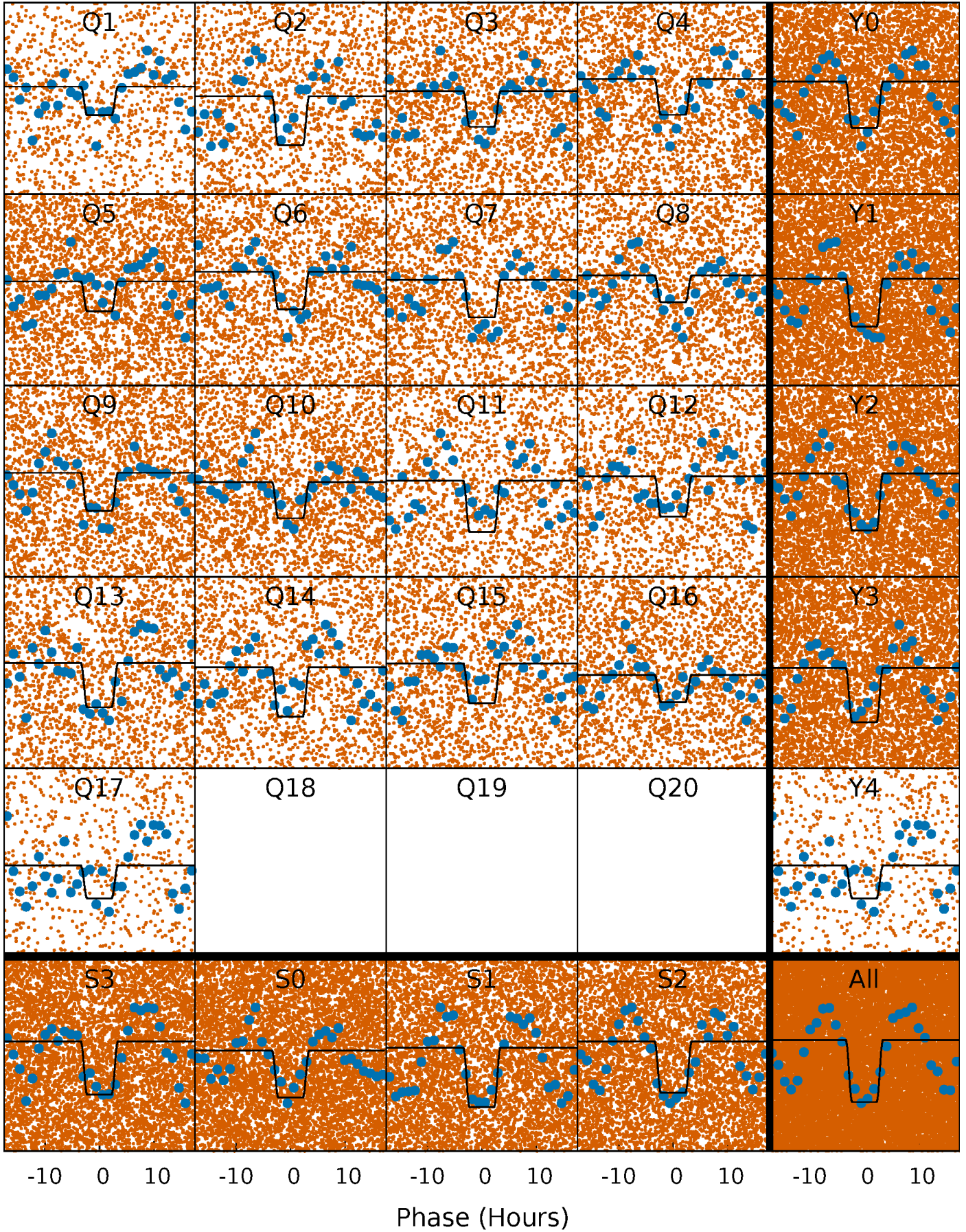
DV Quarter-Phased Transit Curves

TCE 003544878-01 P= 1.191038 Days $T_0=132.485299$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

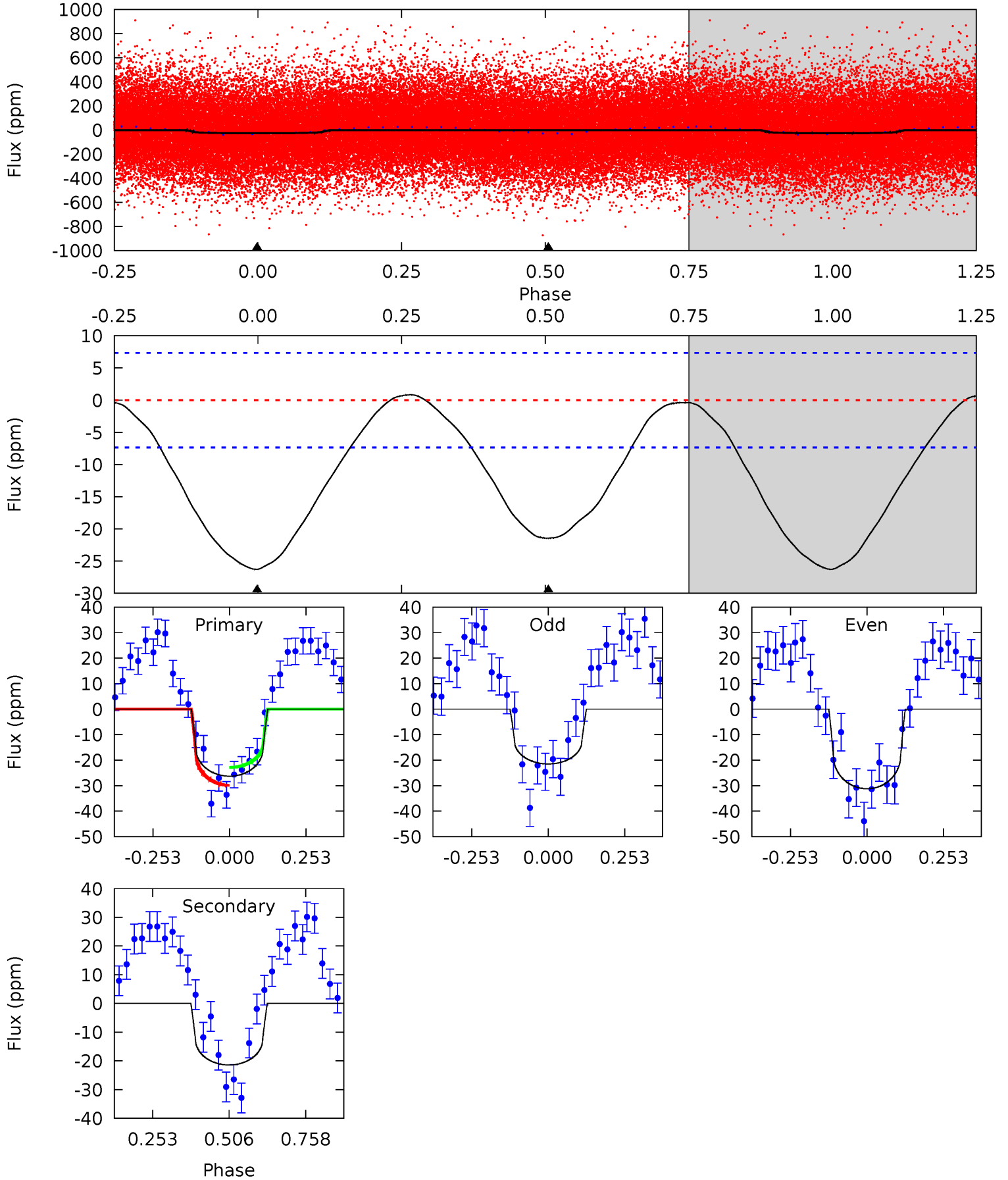
TCE 003544878-01 P= 1.191082 Days $T_0=132.456021$ (BKJD)



DV Model-Shift Uniqueness Test

003544878-01, P = 1.191038 Days, E = 131.294261 Days

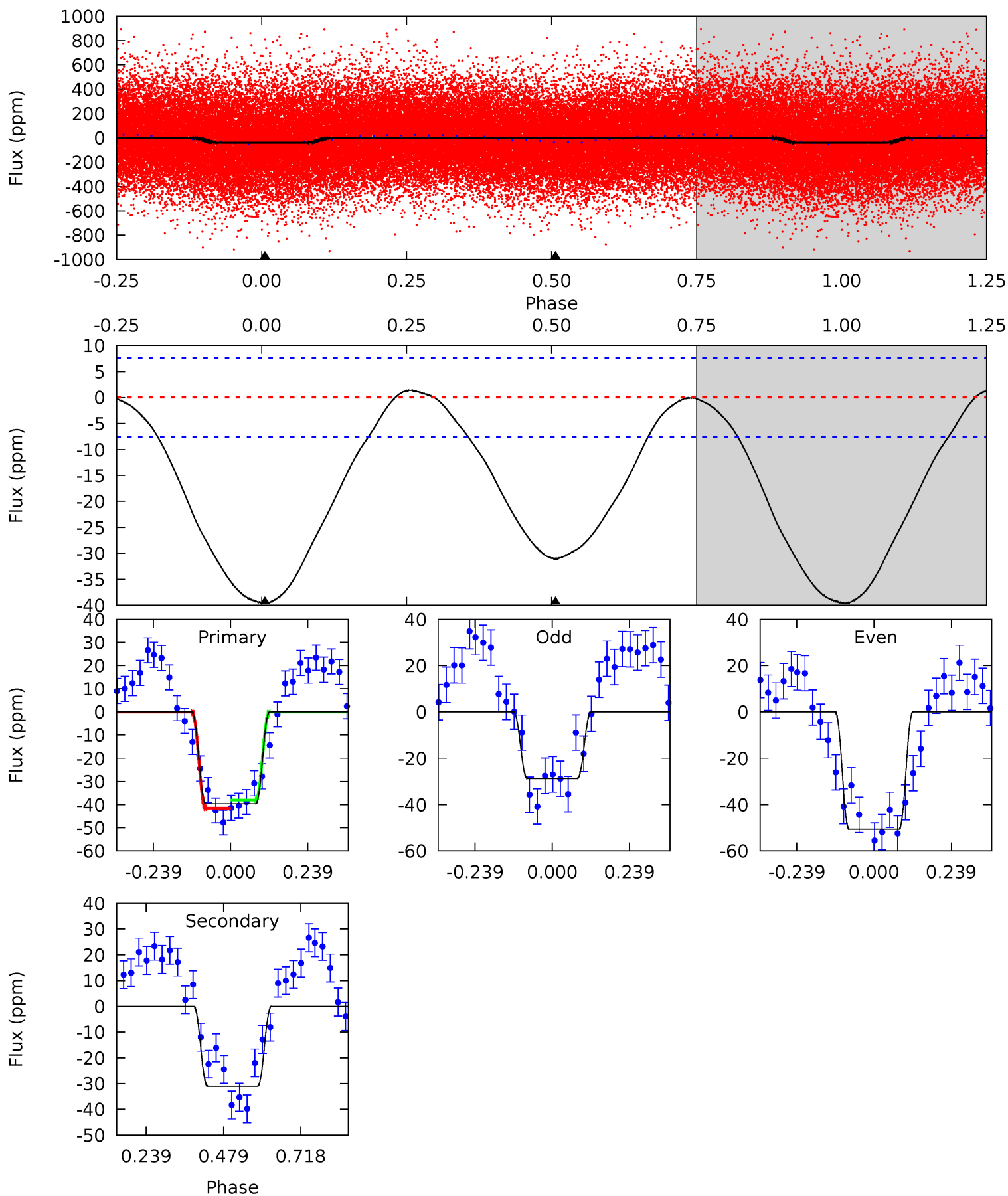
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 15.6 | 12.7 | 0 | 0 | 4.37 | 1.14 | 0.37 | 15.6 | 15.6 | 12.7 | 12.7 | 2.89 | 1.11 | 0.03 | 2.12 |



Alt Model-Shift Uniqueness Test

003544878-01, P = 1.191082 Days, E = 131.264939 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 22.7 | 17.8 | 0 | 0 | 4.38 | 1.18 | 0.58 | 22.7 | 22.7 | 17.8 | 17.8 | 6.30 | 1.23 | 0.03 | 0.95 |



Stellar Parameters For KIC 003544878

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6478^{+144}_{-208} | $4.371^{+0.062}_{-0.188}$ | $-0.040^{+0.250}_{-0.300}$ | $1.188^{+0.345}_{-0.148}$ | $1.209^{+0.169}_{-0.169}$ | $1.016^{+0.327}_{-0.483}$ |
| | +2%/-3% | +1%/-4% | +625%/-750% | +29%/-12% | +14%/-14% | +32%/-48% |
| 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 003544878-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|------------------------|----------------------------|
| DV | -21±2 | $0.77^{+0.56}_{-0.51}$ | 2882^{+195}_{-133} | 5810^{+5456}_{-1315} | 11^{+85}_{-8} |
| Alt. | -31±2 | $1.03^{+0.60}_{-0.60}$ | 2885^{+202}_{-125} | 5505^{+3413}_{-1007} | $8.809^{+40.203}_{-5.358}$ |

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

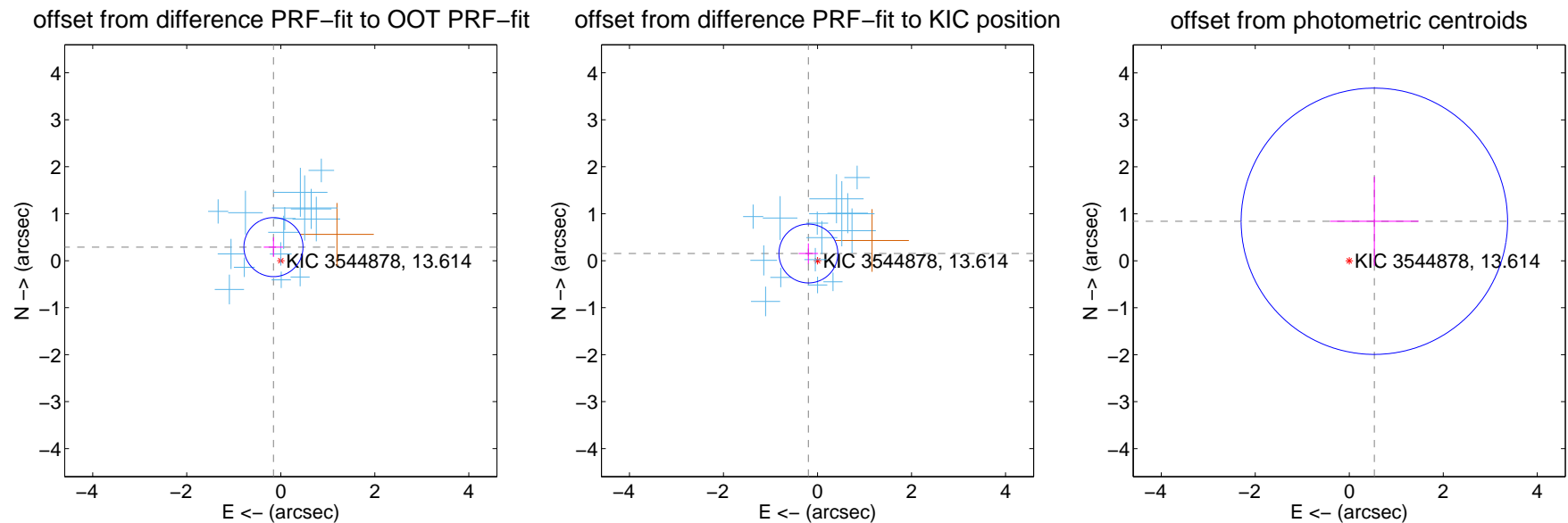
DV Centroid Data

Supplemental centroid analysis for 003544878-01. Kepler magnitude: 13.61. Transit SNR 8.65

There are 15 quarters with good PRF difference image offsets

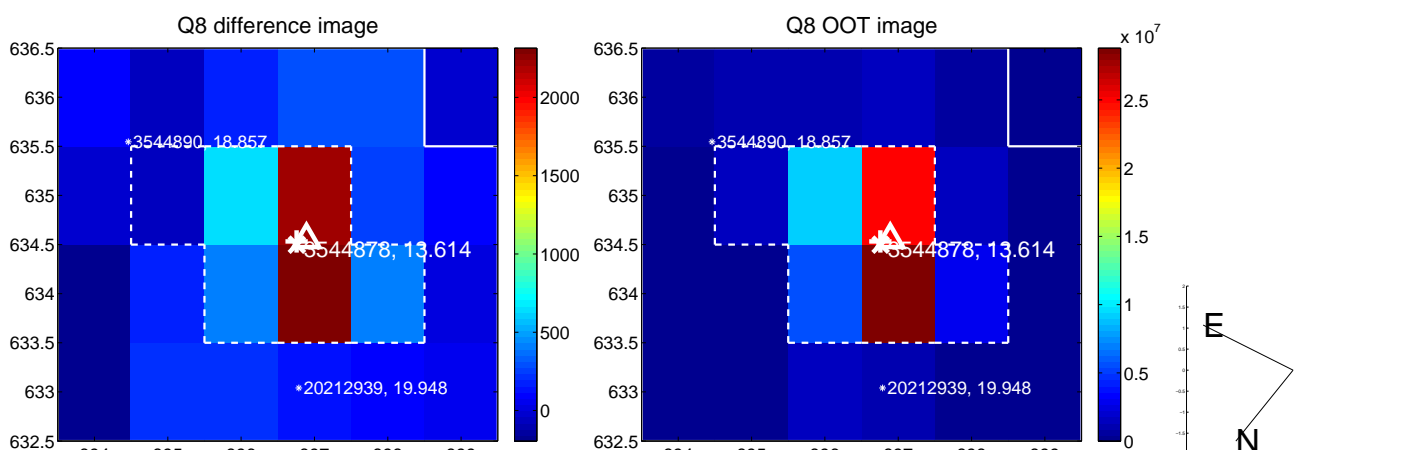
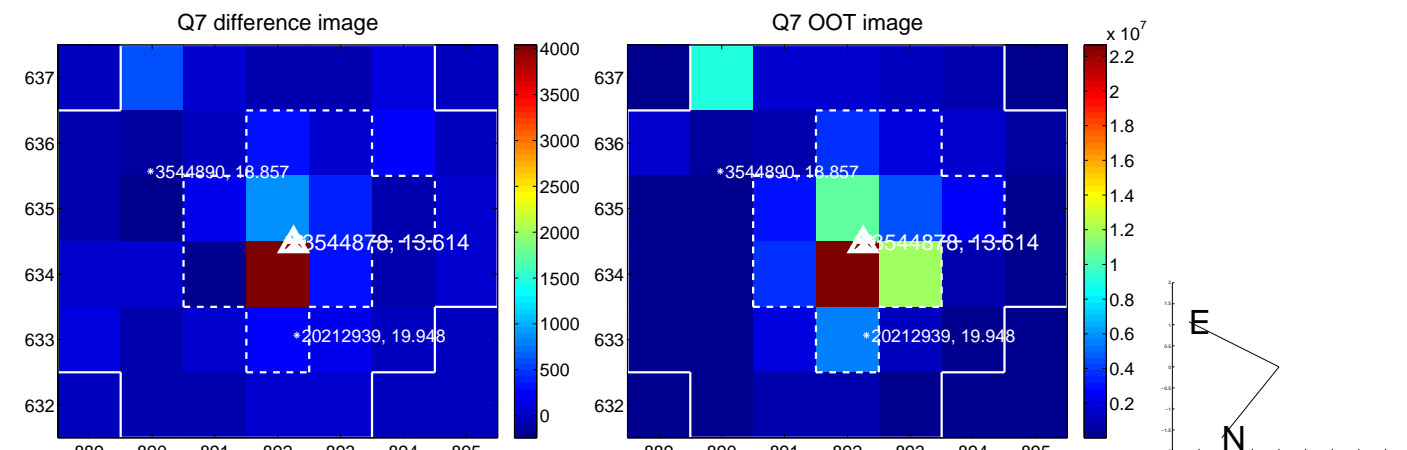
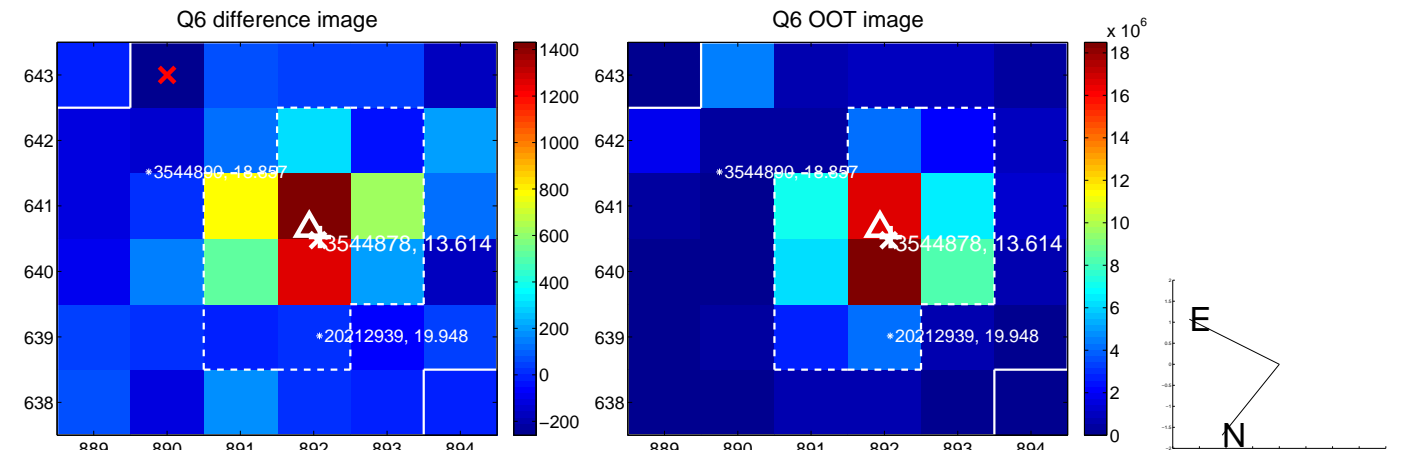
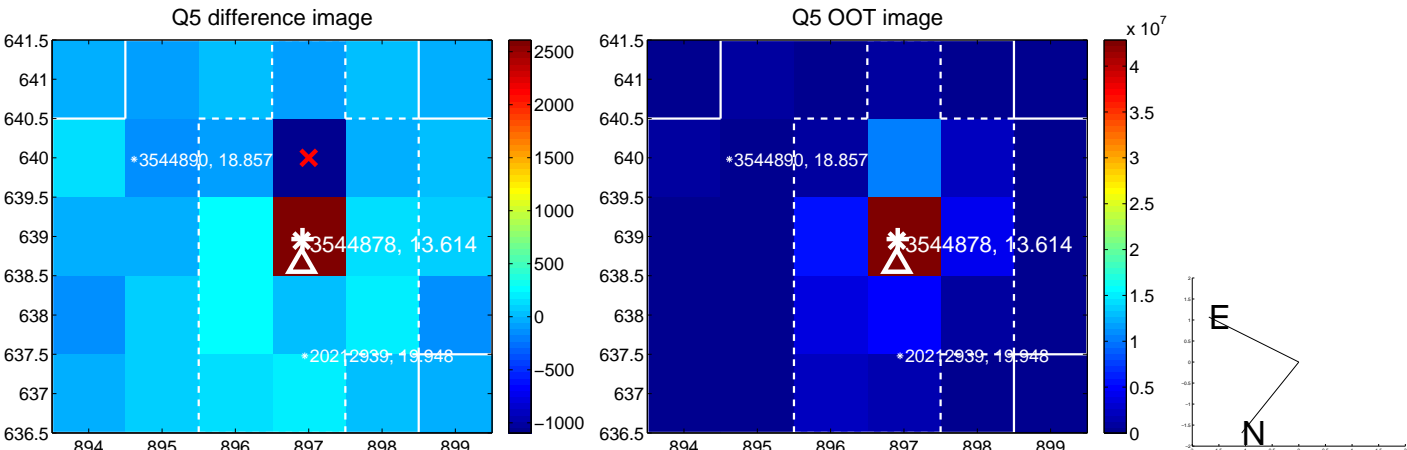
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.328 ± 0.210 | 1.57 | 0.156 ± 0.206 | 0.289 ± 0.211 |
| PRF-fit source offset from KIC position | 0.247 ± 0.209 | 1.18 | 0.194 ± 0.205 | 0.153 ± 0.215 |
| photometric centroid source offset | 1.00 ± 0.94 | 1.05 | -0.53 ± 0.94 | 0.84 ± 0.95 |

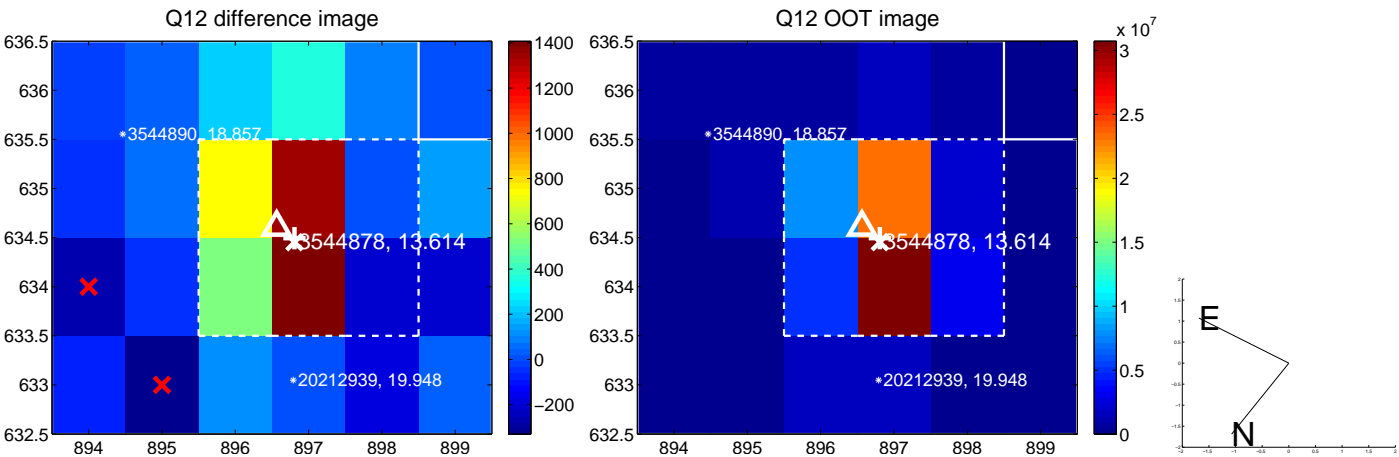
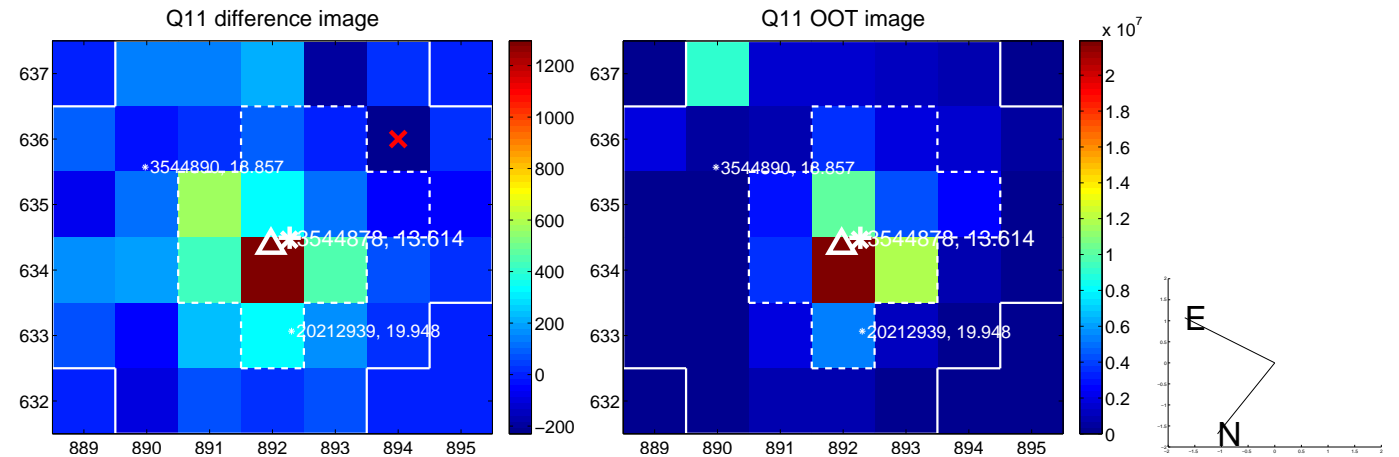
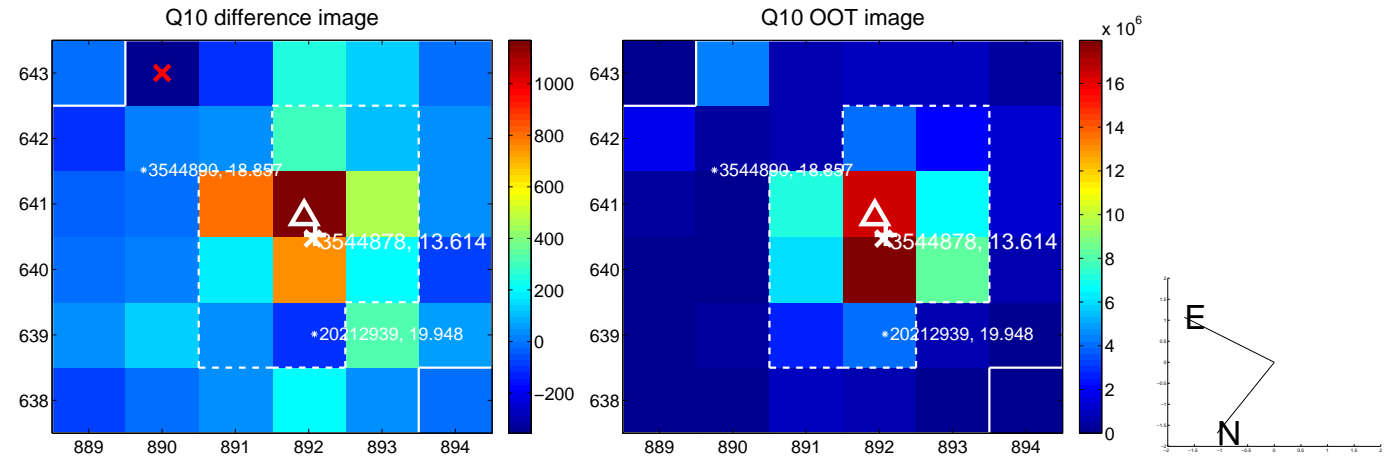
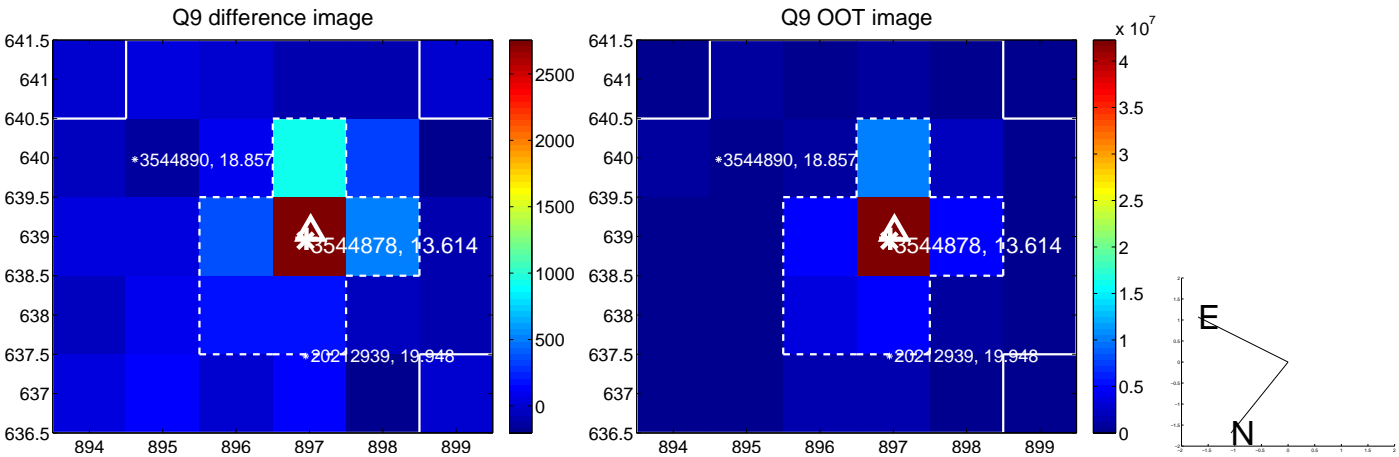


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

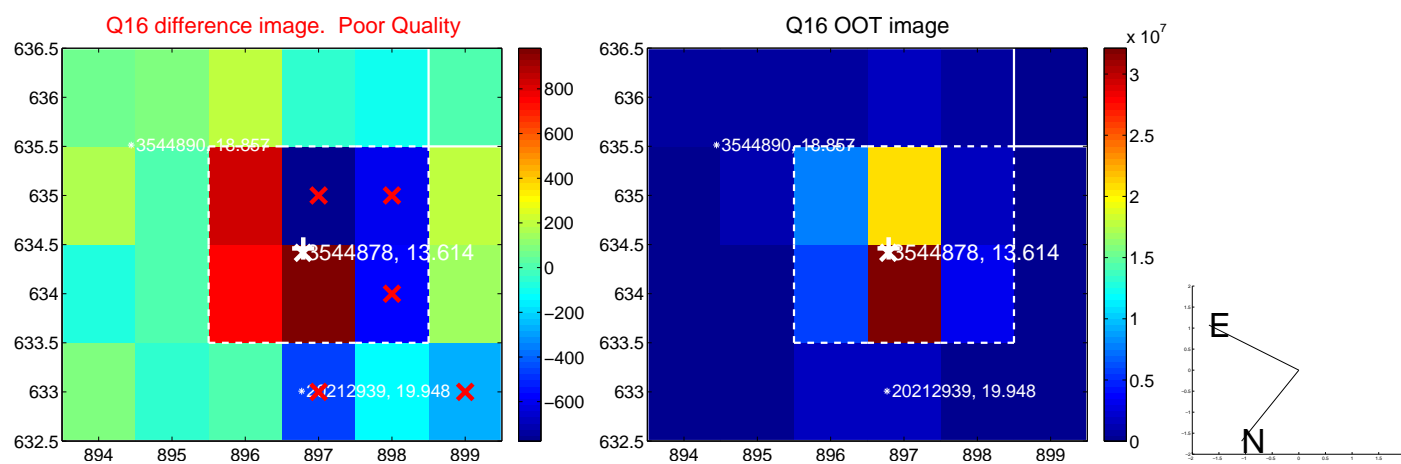
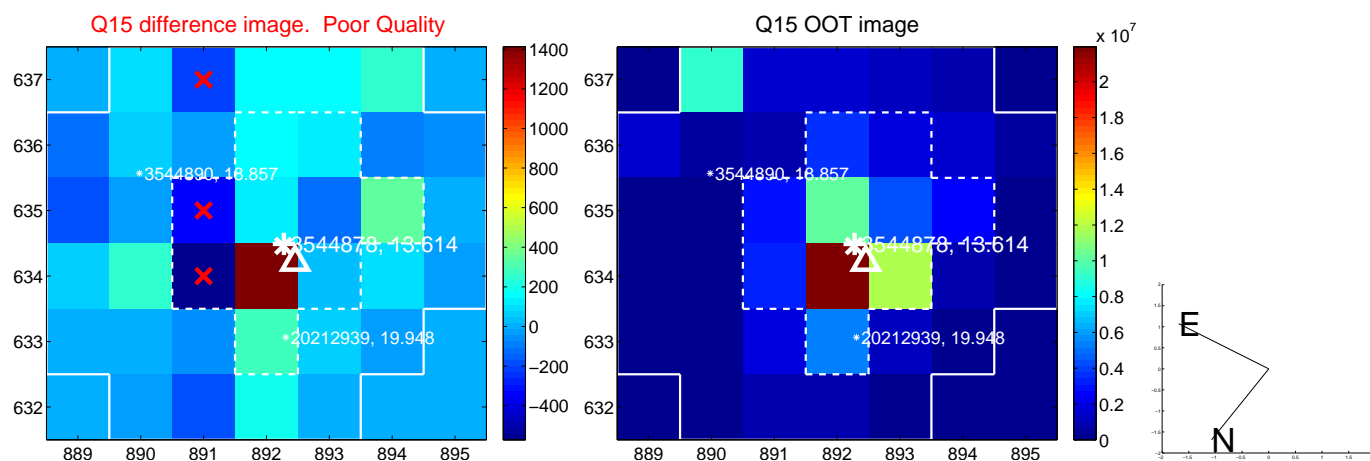
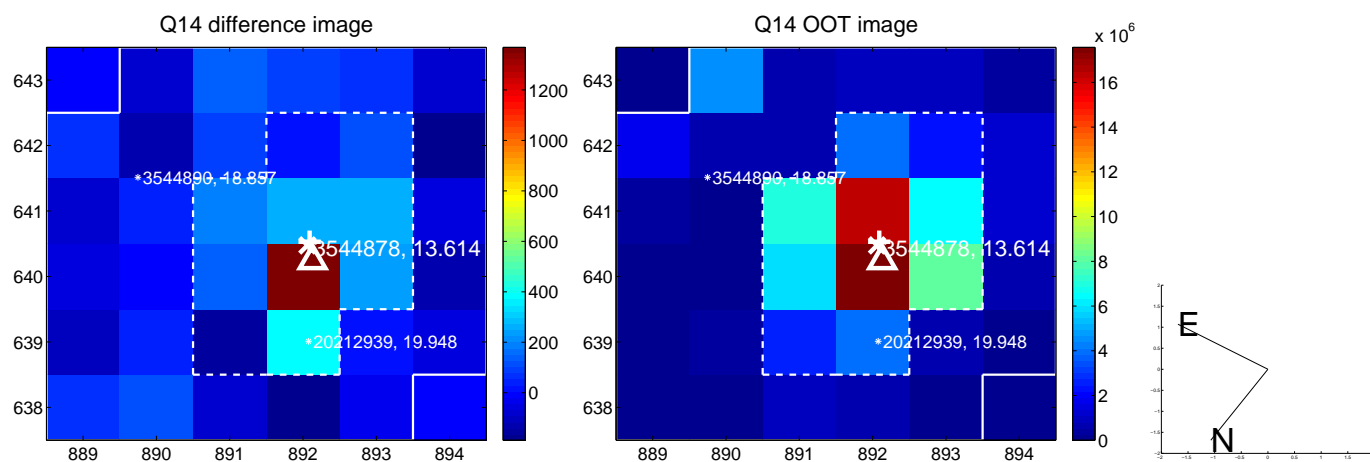
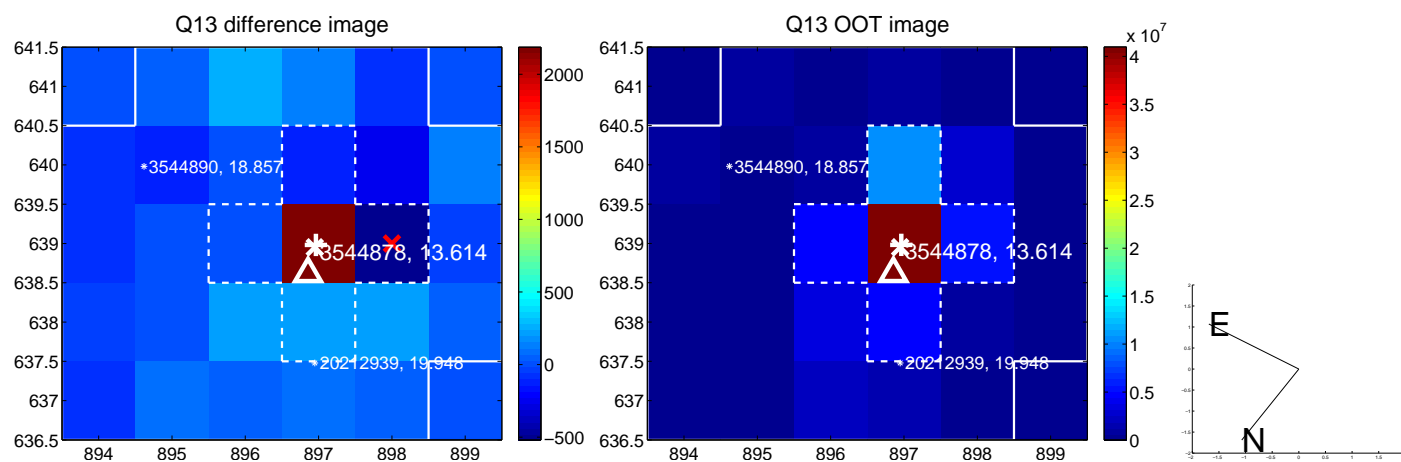
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



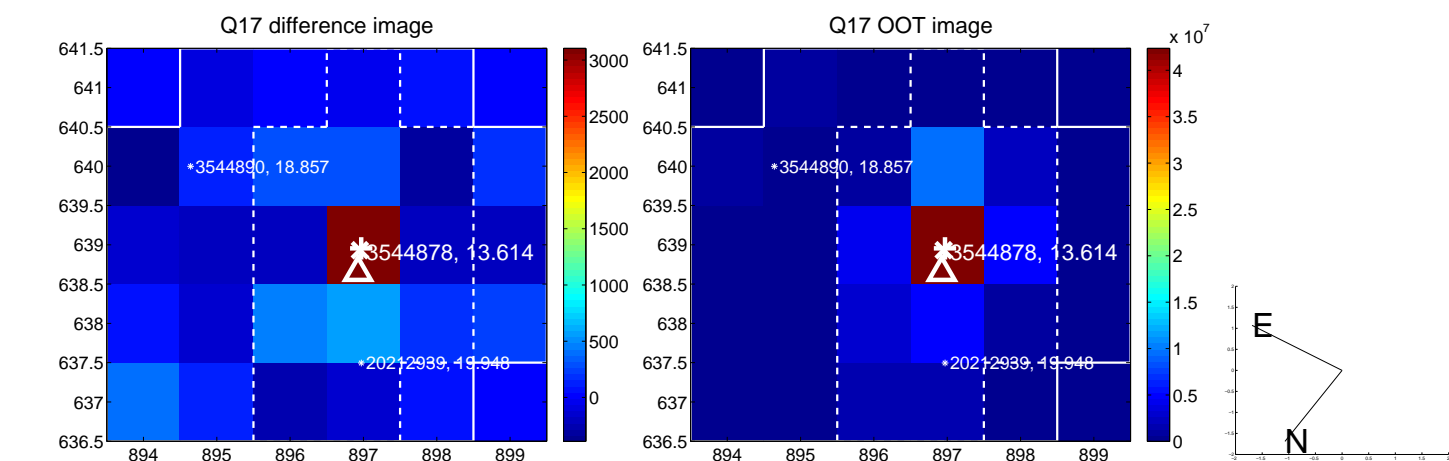
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



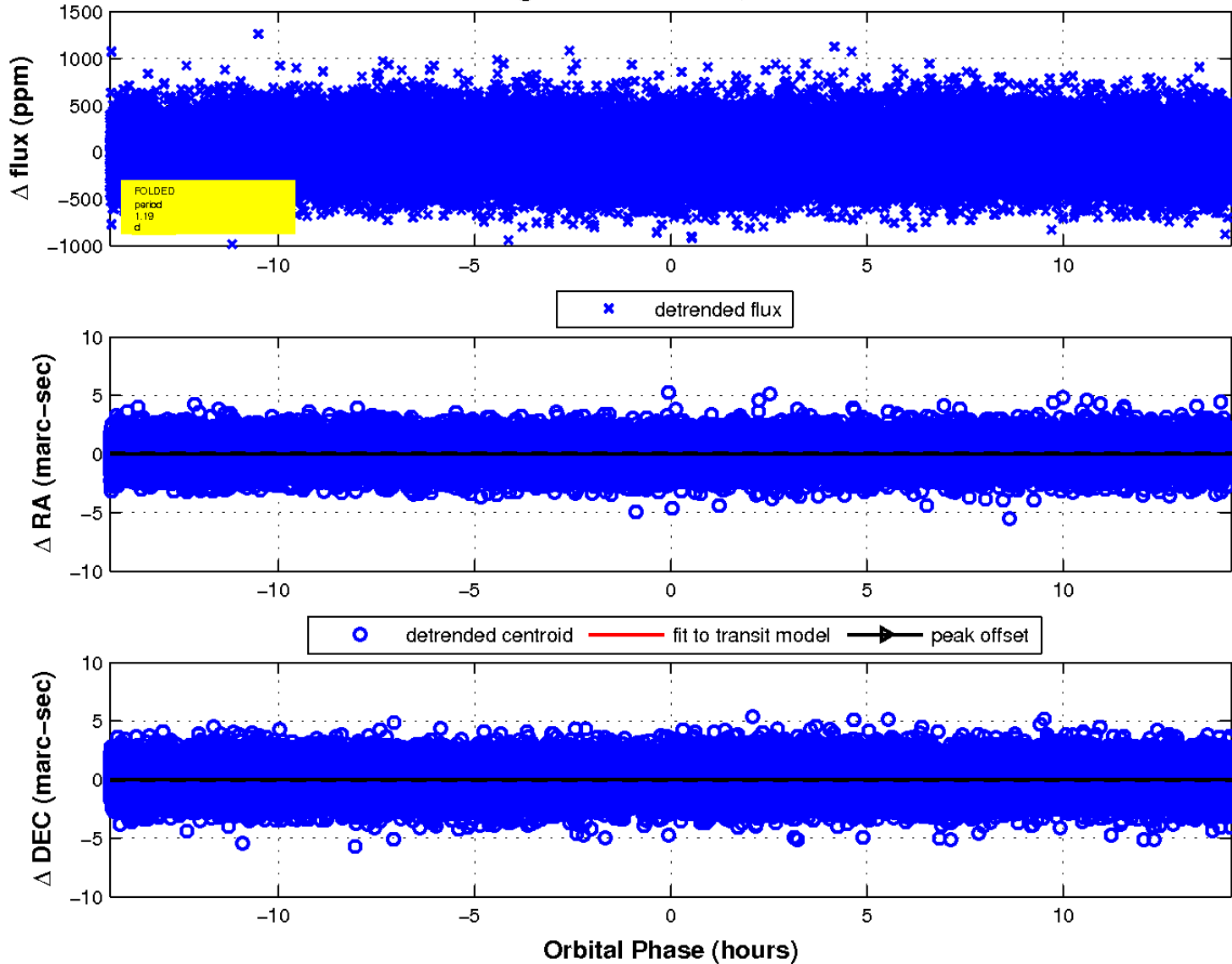
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

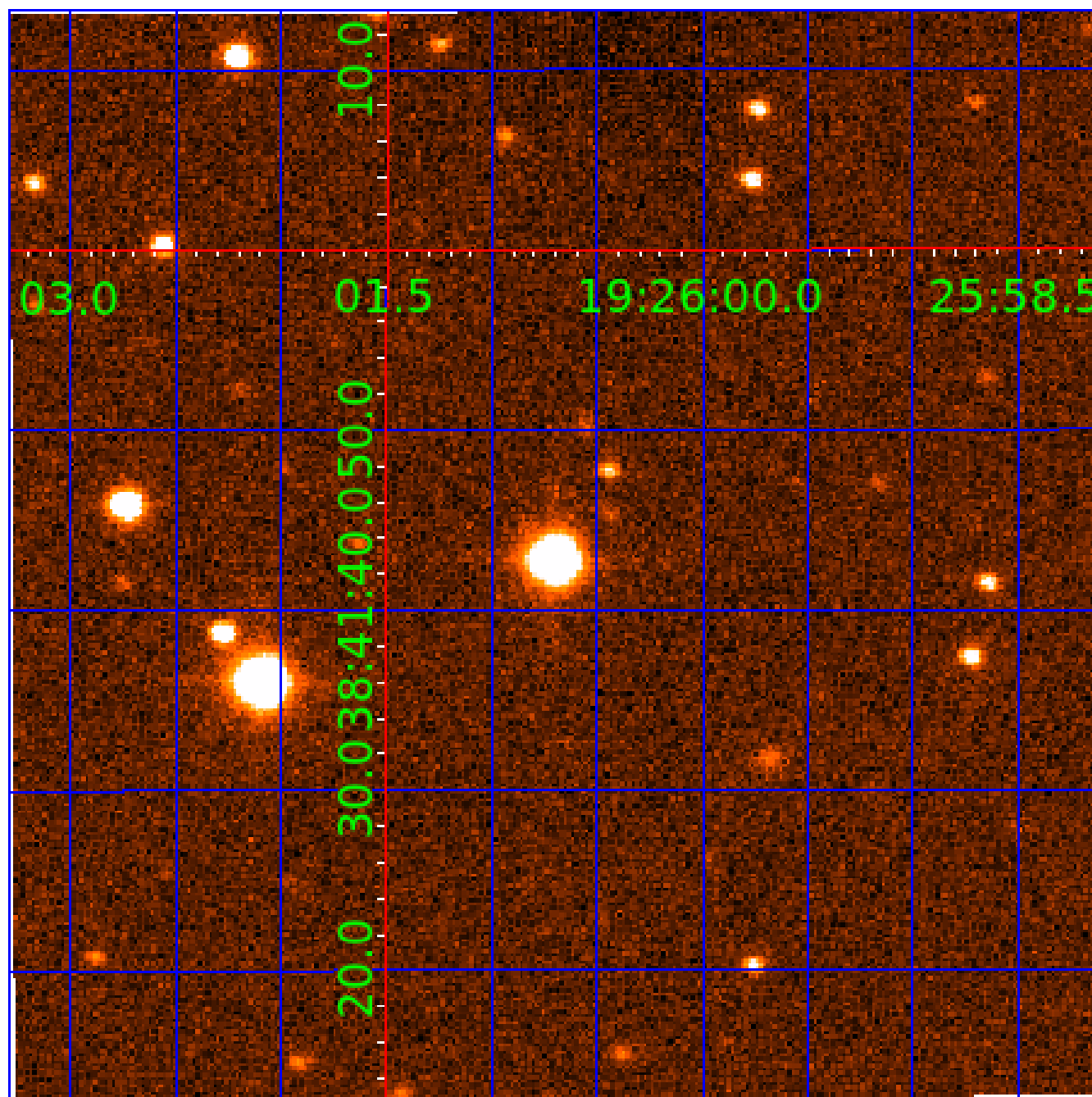


fluxWeightedCentroids, Planet 1 of 5



UKIRT Image

Declination



KIC 003544878

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 003544878-01 | OBS | No | 1.191038 | 132.485299 | 24.8 | 6.780 | 8.9 | 8.6 | 1.19 | 6478 | 0.59 | 4054.79 |
| 003544878-02 | OBS | No | 118.615798 | 238.409610 | 205.8 | 7.872 | 8.4 | 6.1 | 1.19 | 6478 | 1.83 | 8.78 |
| 003544878-03 | OBS | No | 102.310517 | 165.383907 | 177.7 | 9.792 | 8.3 | 6.0 | 1.19 | 6478 | 1.78 | 10.70 |
| 003544878-04 | OBS | No | 57.687975 | 135.908219 | 235.9 | 4.588 | 7.9 | 7.0 | 1.19 | 6478 | 2.05 | 22.97 |
| 003544878-05 | OBS | No | 76.661194 | 142.914283 | 261.5 | 2.446 | 8.0 | 8.3 | 1.19 | 6478 | 2.09 | 15.72 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 003544878-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 003544878-02 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST |
| 003544878-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS |
| 003544878-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 003544878-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

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

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

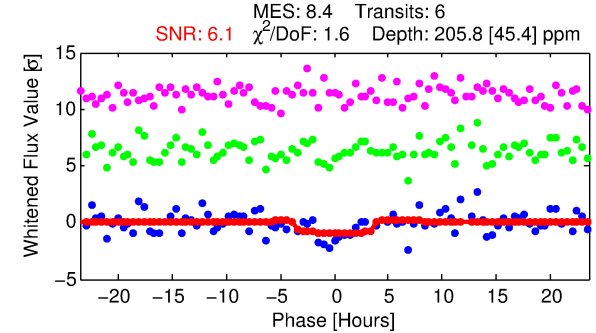
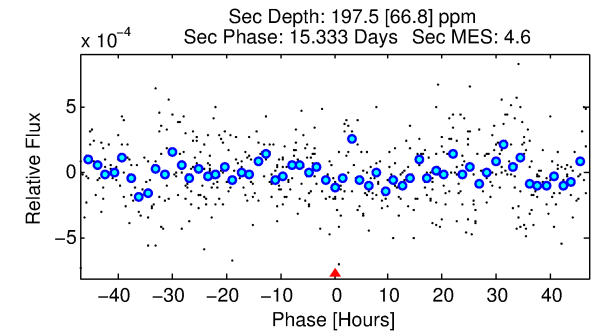
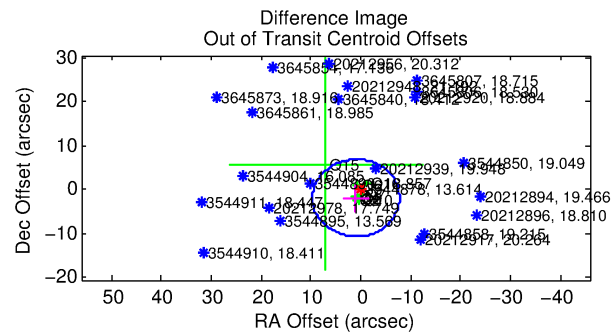
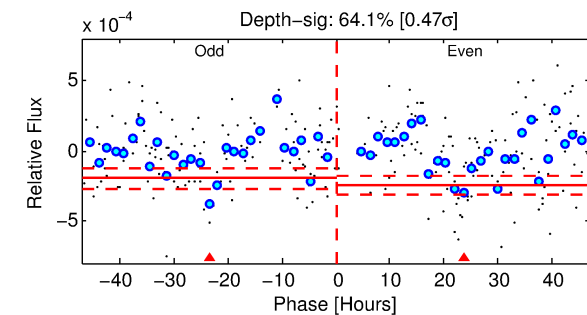
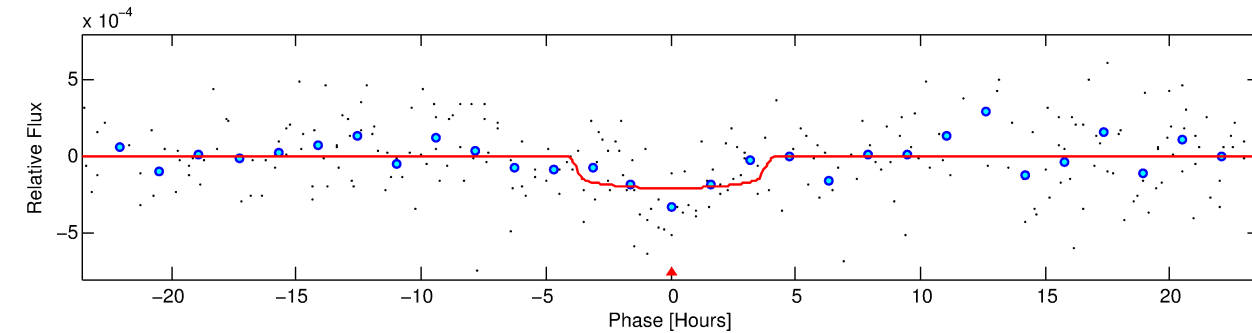
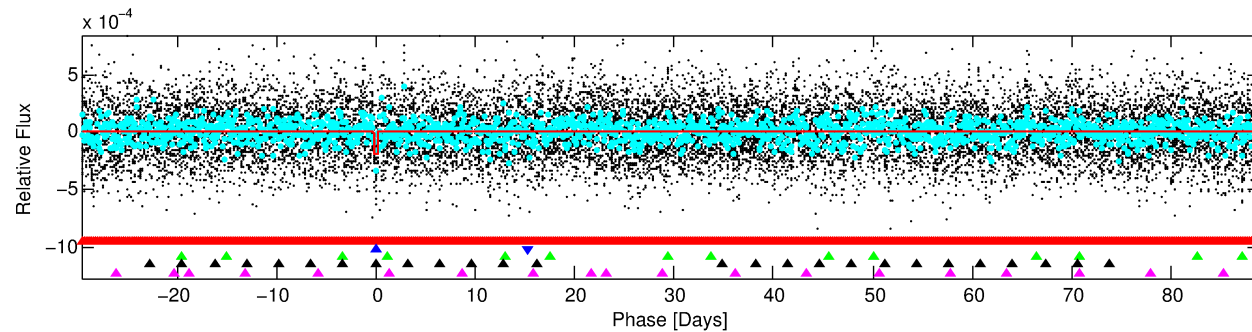
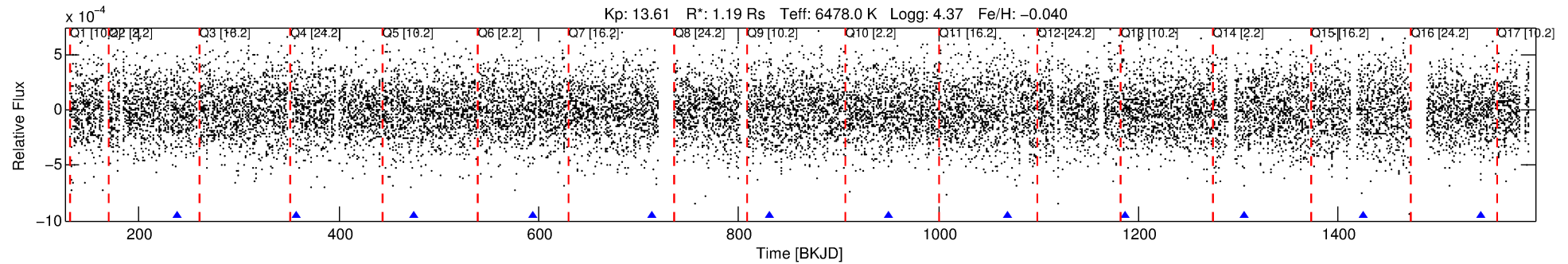
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003544878-02

No Significant Match Found

DV One-Page Summary

KIC: 3544878 Candidate: 2 of 5 Period: 118.616 d



DV Fit Results:

Period = 118.61580 [0.00373] d
Epoch = 238.4096 [0.0232] BKJD
Rp/R* = 0.0141 [0.0275]
a/R* = 82.31 [865.18]
b = 0.72 [7.11]
Seff = 8.78 [3.25]
Teq = 439 [41] K
Rp = 1.83 [3.60] Re
a = 0.5035 [0.1216] AU
Ag = 8204.52 [32119.12] [0.26 σ]
Teffp = 6460 [6300] K [0.96 σ]

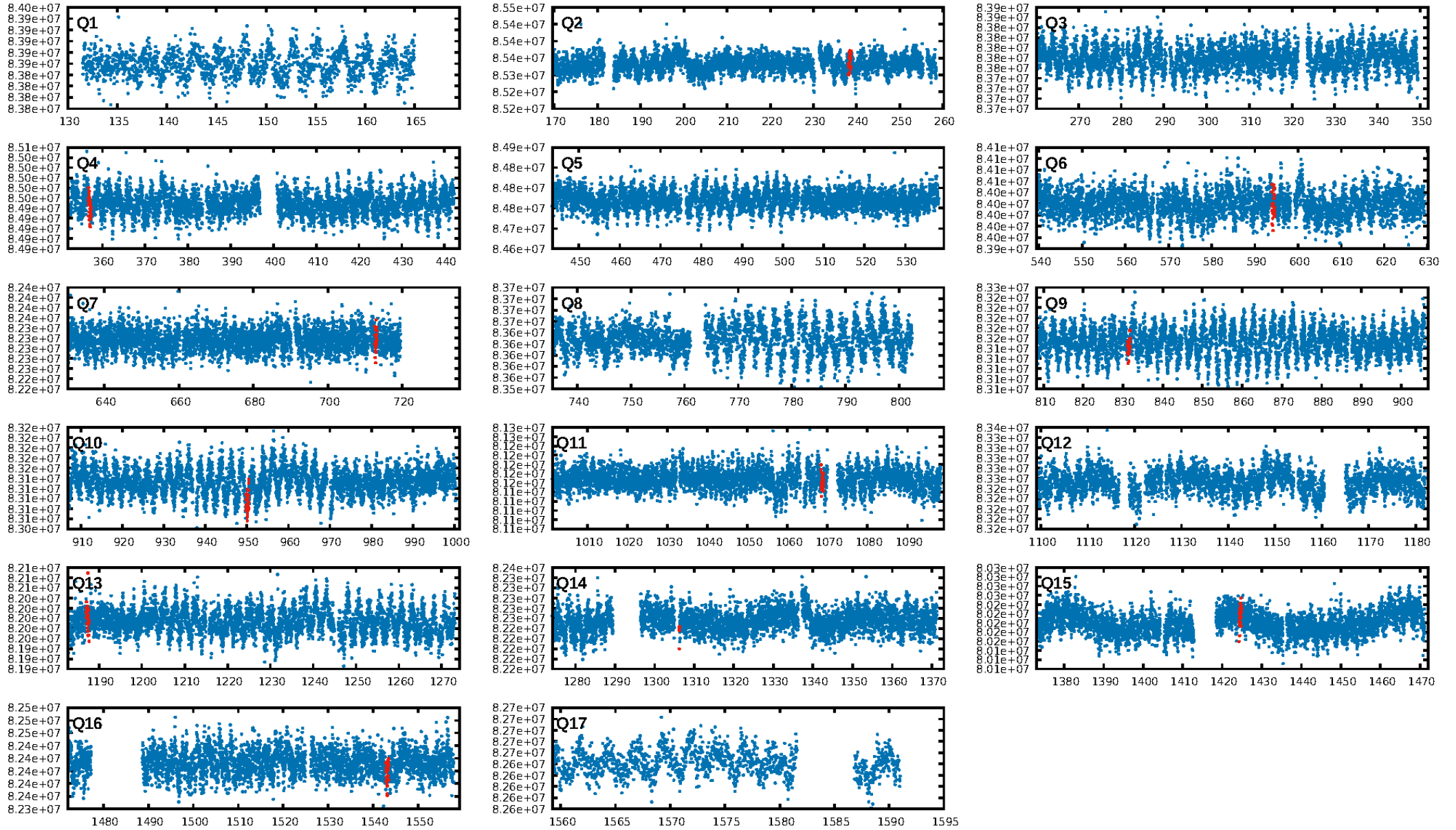
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [31.15 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 12.0%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: 3.10e-09
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.1306
Centroid-sig: 0.1%
Centroid-so: 2.849 arcsec [2.21 σ]
OotOffset-rm: 2.087 arcsec [0.72 σ]
KicOffset-rm: 2.187 arcsec [0.75 σ]
OotOffset-st: 3/2/2/1 [8]
KicOffset-st: 3/2/2/1 [8]
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DiffImageOverlap-fno: 0.00 [0/9]

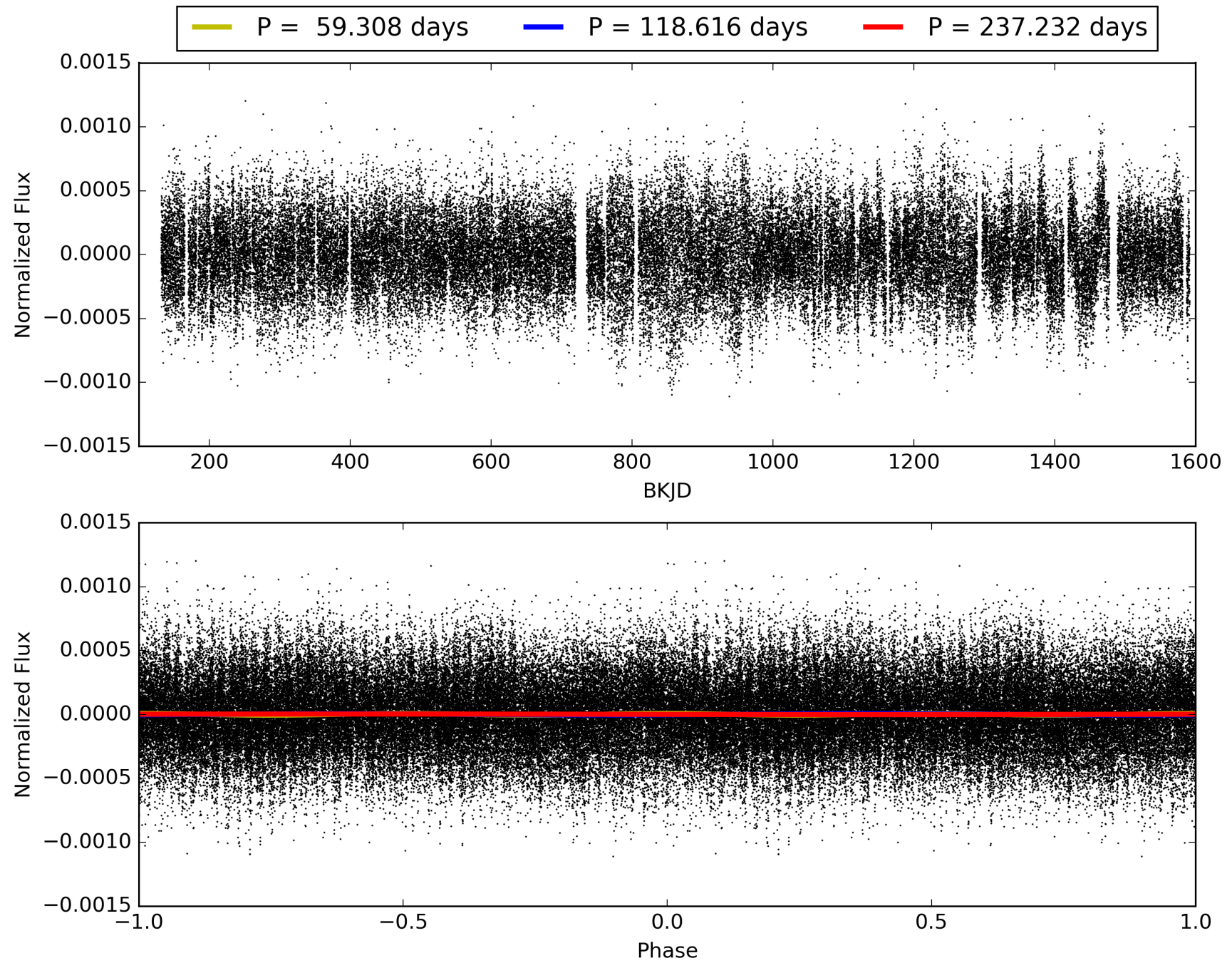
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:24:26 Z

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

TCE 003544878-02, PDC Light Curves

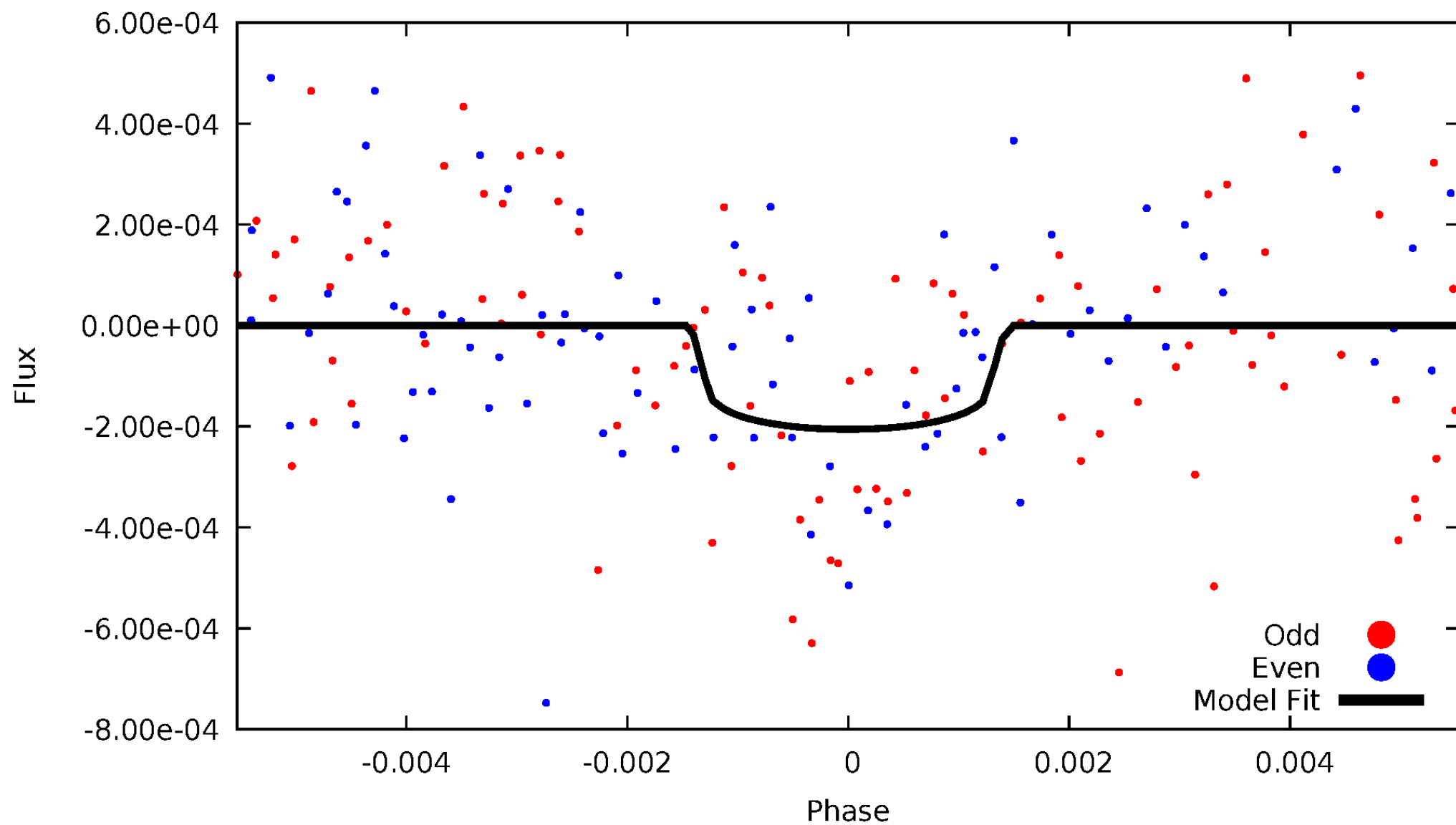


TCE 003544878-02



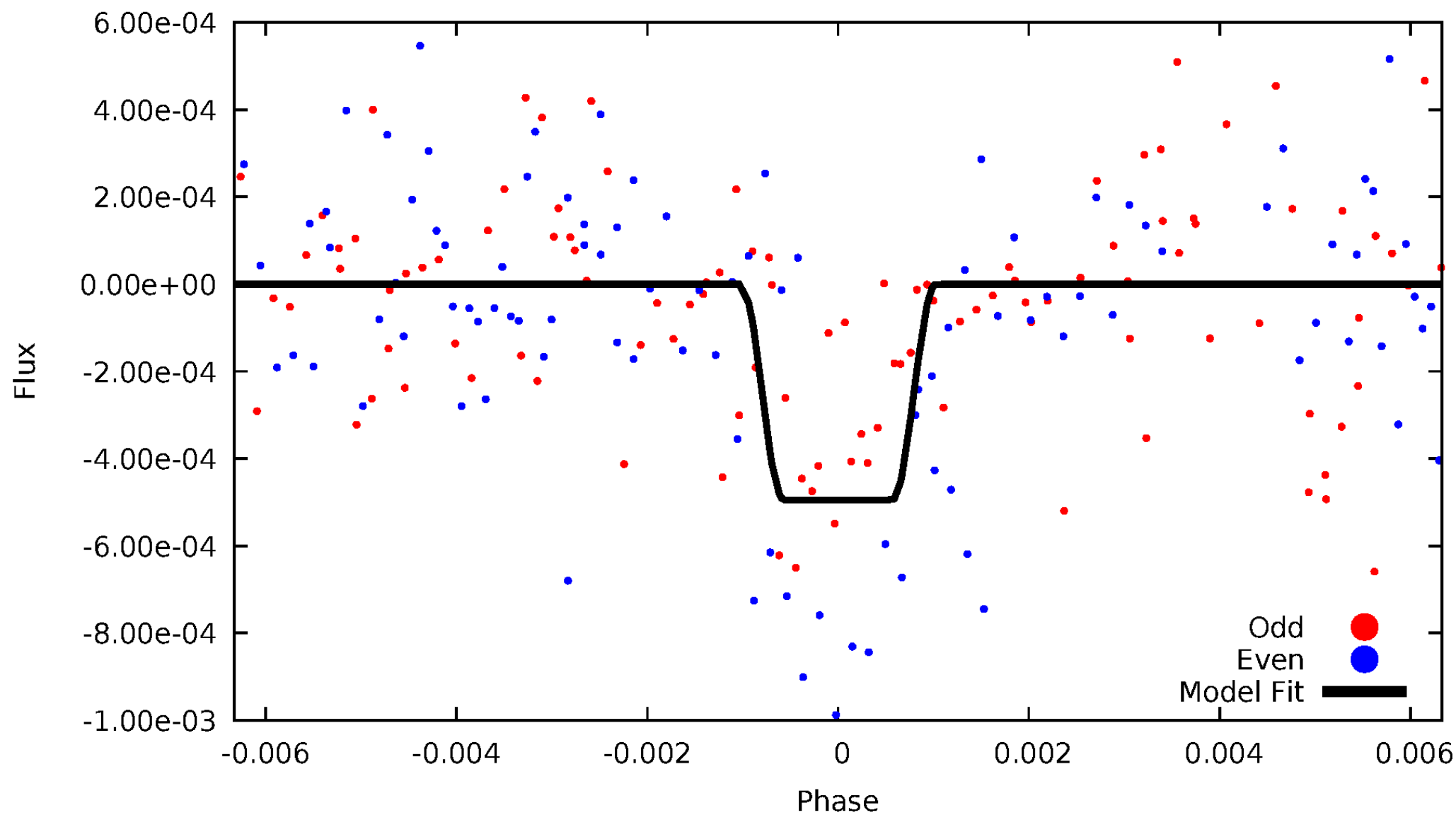
DV Odd/Even

TCE 003544878-02



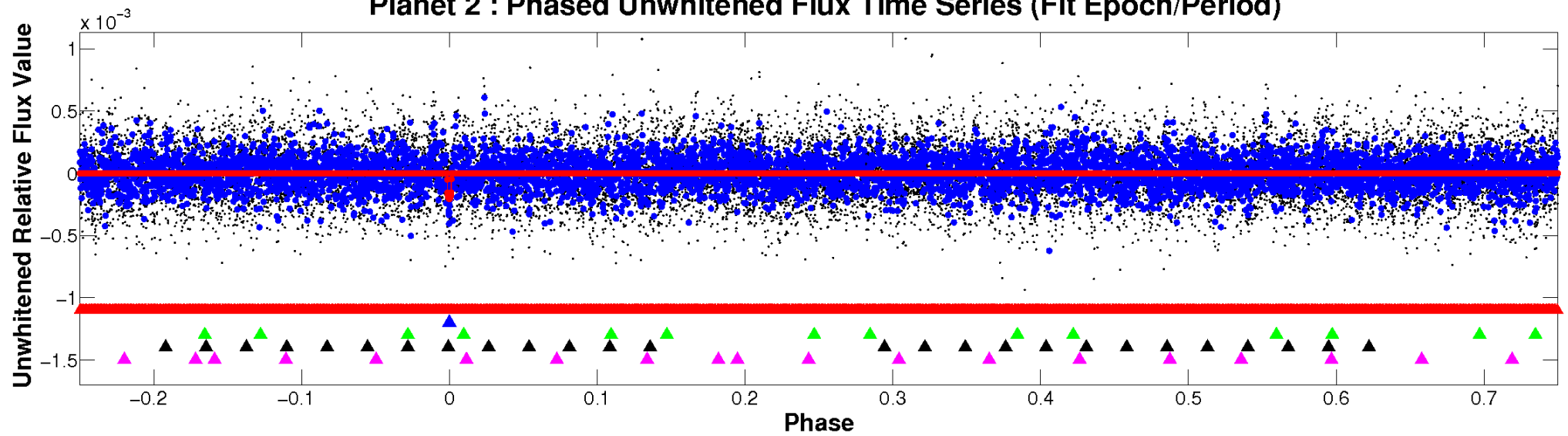
ALT Odd/Even

TCE 003544878-02

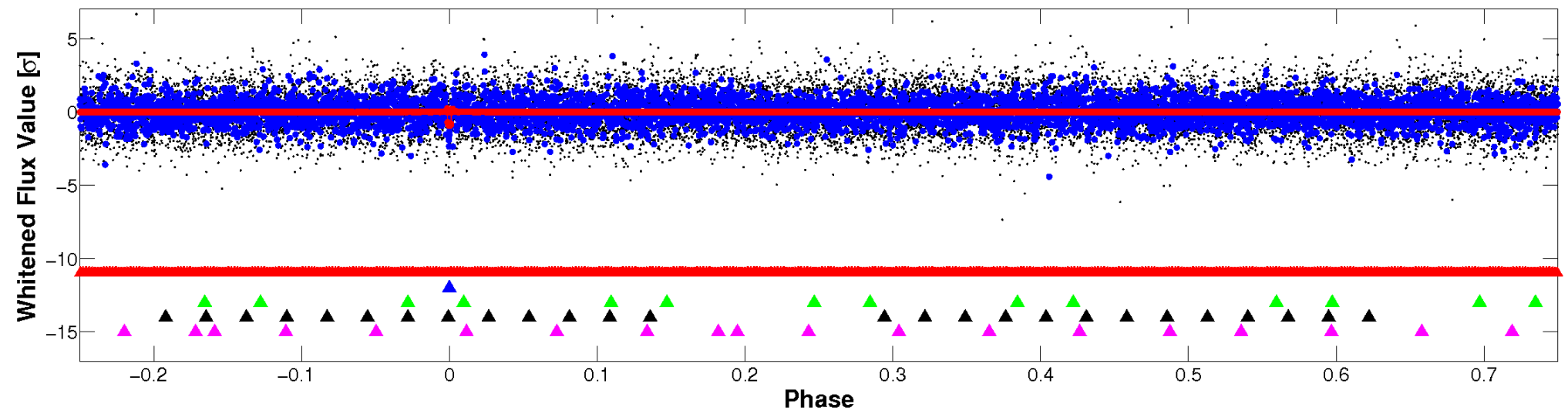


Non-Whitened Vs. Whitened Light Curve

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

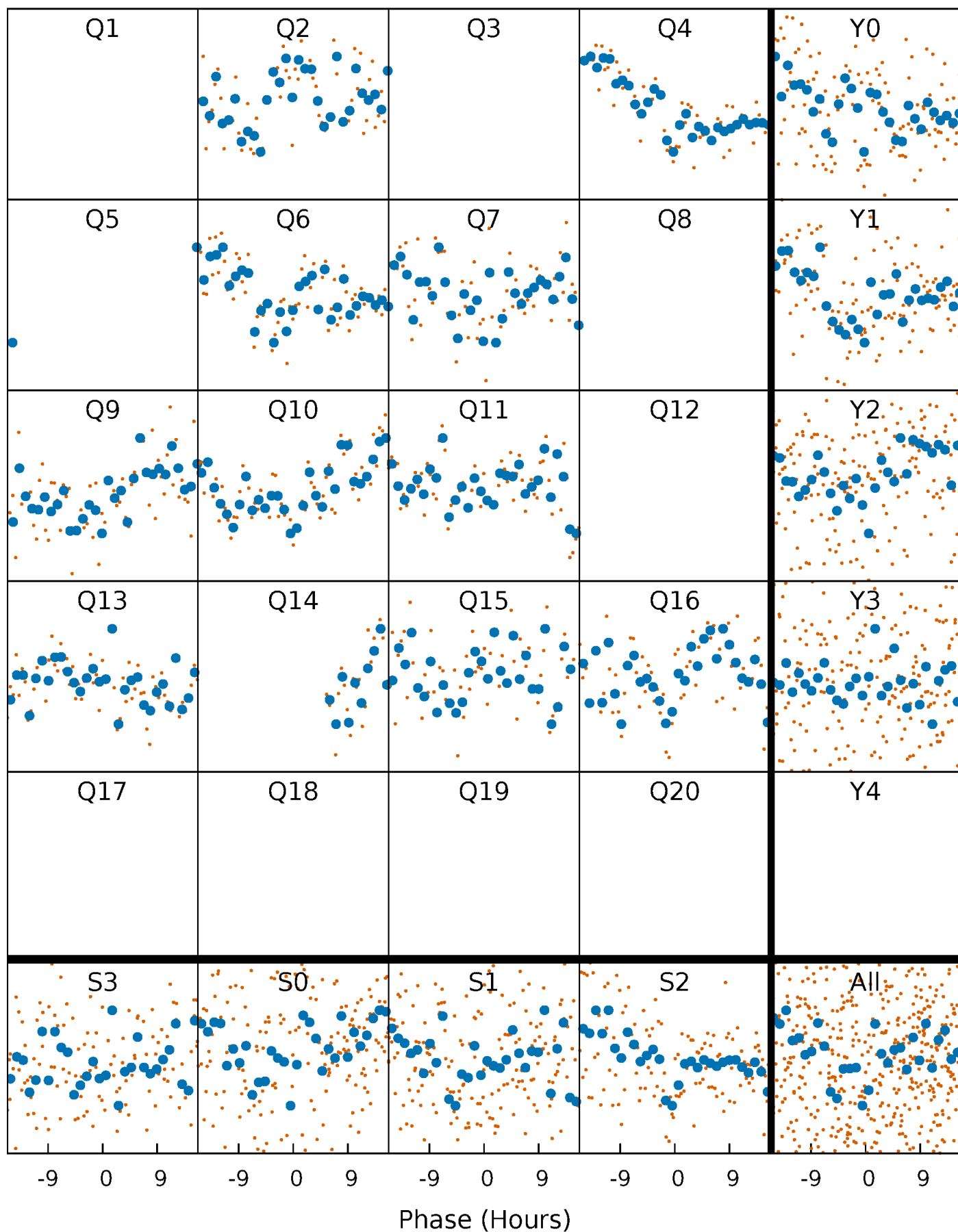


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



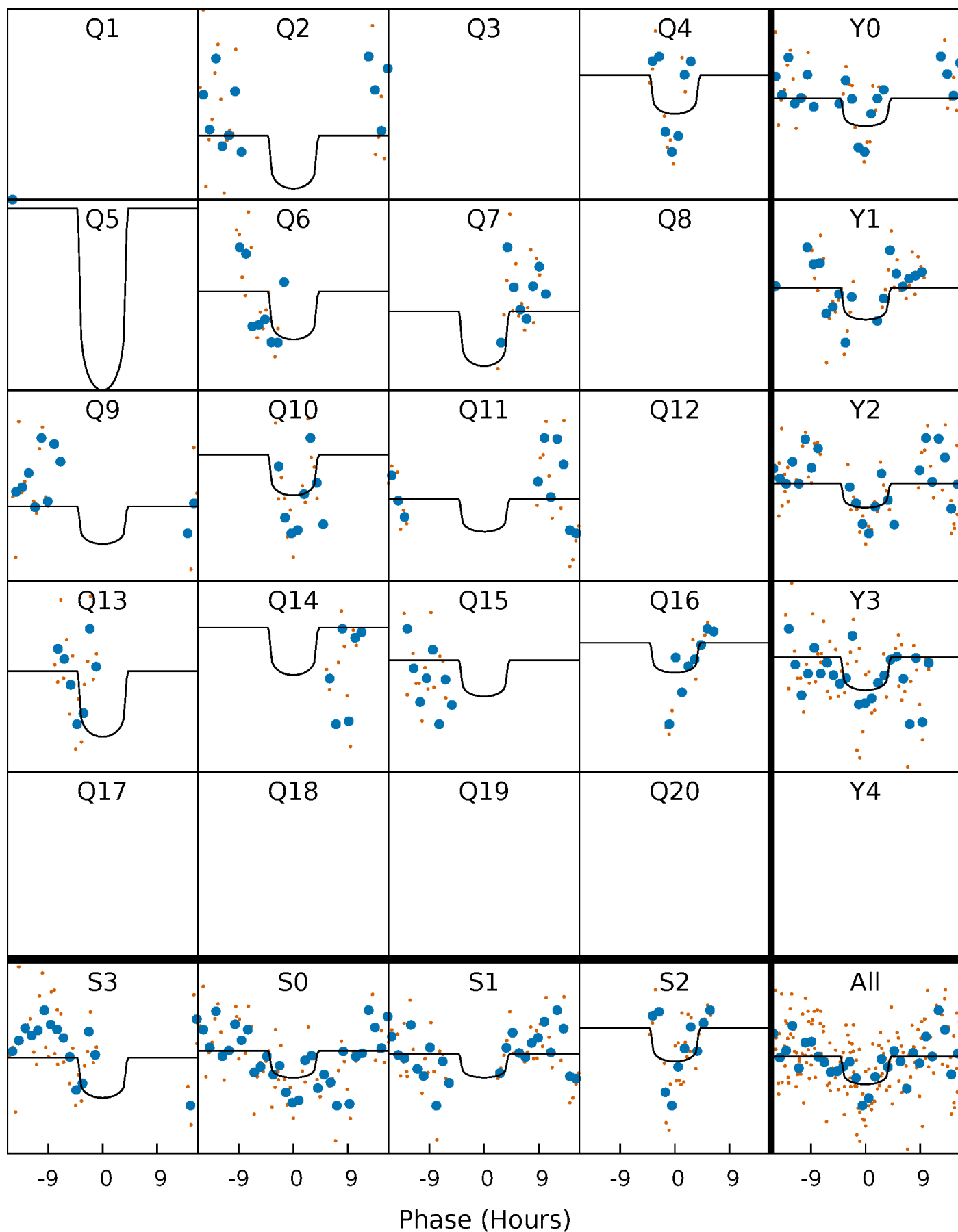
PDC Quarter-Phased Transit Curves

TCE 003544878-02 P=118.615798 Days $T_0=238.409610$ (BKJD)



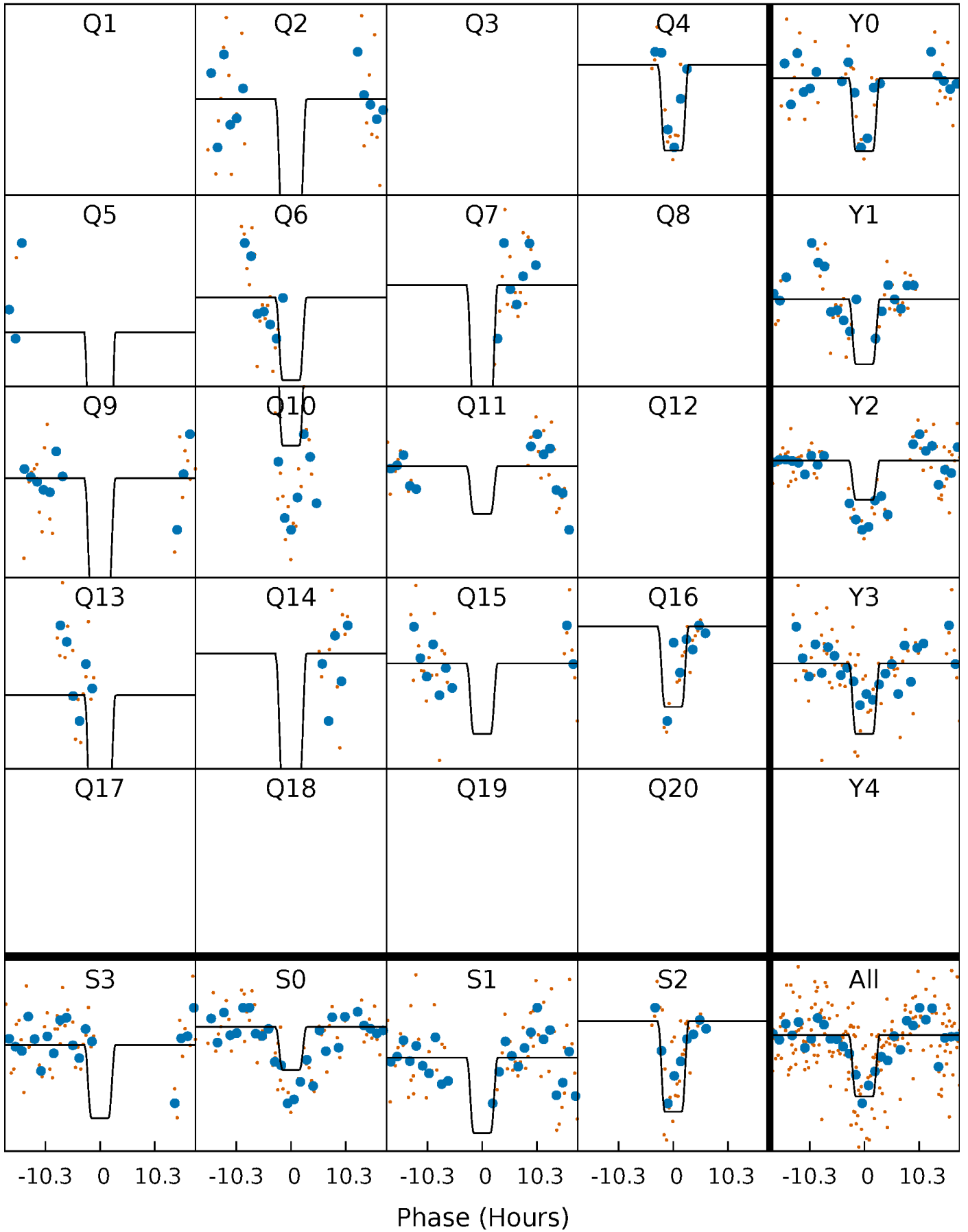
DV Quarter-Phased Transit Curves

TCE 003544878-02 P=118.615798 Days $T_0=238.409610$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

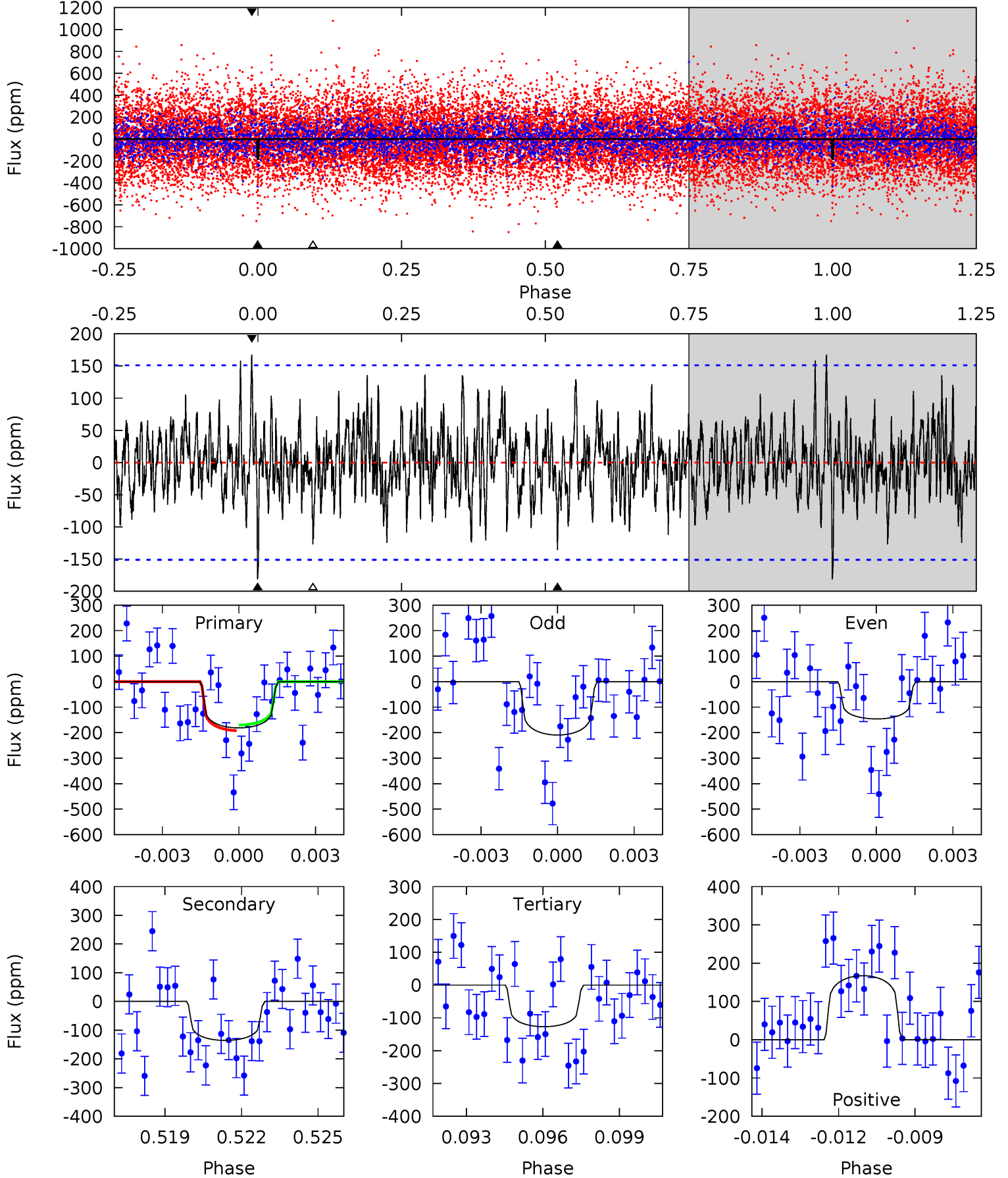
TCE 003544878-02 P=118.617809 Days $T_0=238.400866$ (BKJD)



DV Model-Shift Uniqueness Test

003544878-02, P = 118.615798 Days, E = 119.793812 Days

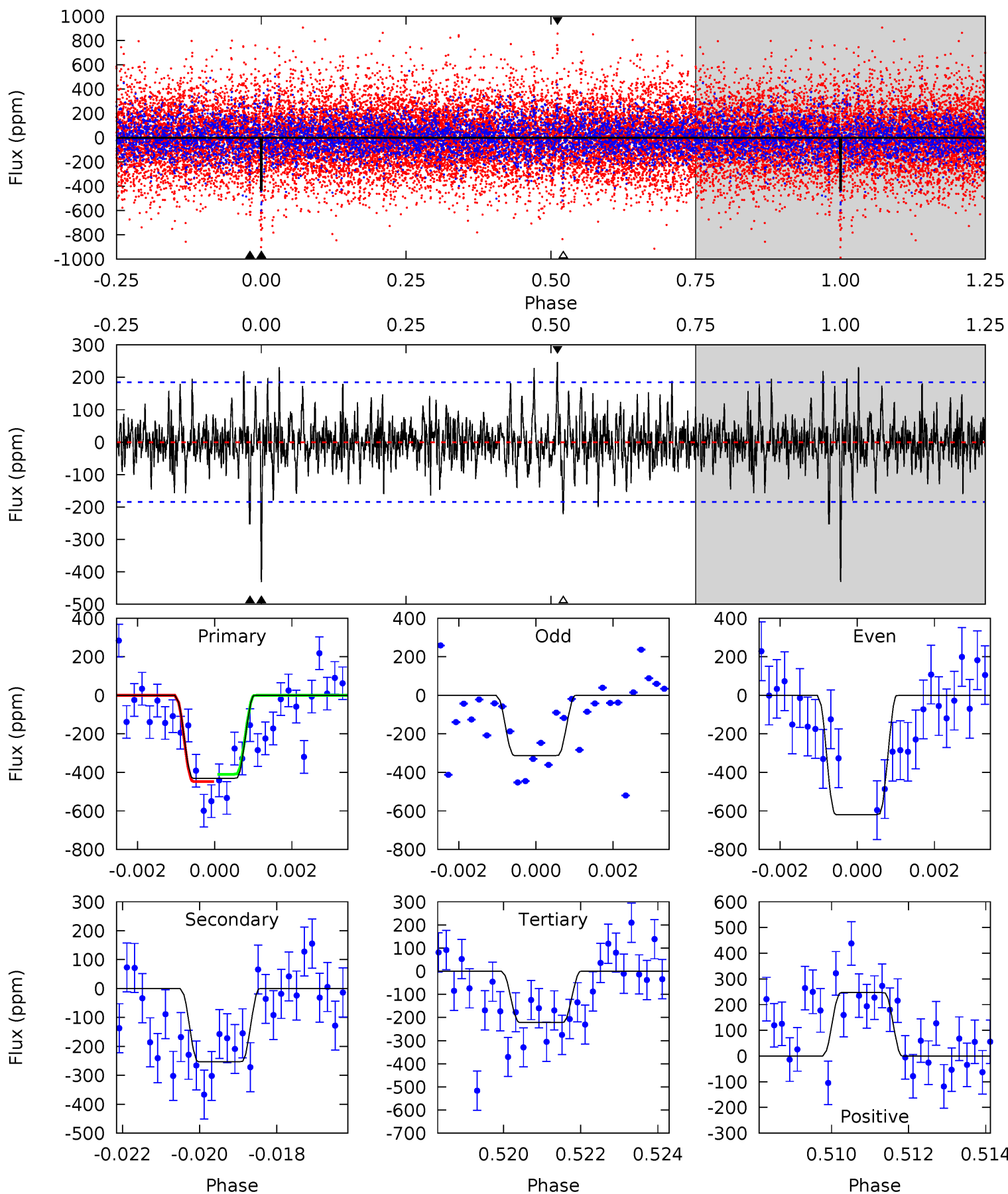
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.31 | 4.72 | 4.41 | 5.82 | 5.26 | 2.98 | 1.57 | 1.90 | 0.49 | 0.30 | -1.10 | 1.10 | 0.94 | 0.48 | 0.38 |



Alt Model-Shift Uniqueness Test

003544878-02, P = 118.617809 Days, E = 119.783057 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.4 | 7.30 | 6.41 | 7.12 | 5.33 | 3.09 | 1.66 | 6.04 | 5.32 | 0.90 | 0.18 | 4.35 | 1.10 | 0.36 | 0.54 |



Stellar Parameters For KIC 003544878

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6478^{+144}_{-208} | $4.371^{+0.062}_{-0.188}$ | $-0.040^{+0.250}_{-0.300}$ | $1.188^{+0.345}_{-0.148}$ | $1.209^{+0.169}_{-0.169}$ | $1.016^{+0.327}_{-0.483}$ |
| | +2%/-3% | +1%/-4% | +625%/-750% | +29%/-12% | +14%/-14% | +32%/-48% |
| 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 003544878-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|------------------------|-------------------------|
| DV | -136 ± 29 | $3.40^{+3.08}_{-2.19}$ | 622^{+42}_{-29} | 4547^{+2733}_{-920} | 1510^{+11225}_{-1080} |
| Alt. | -253 ± 35 | $4.09^{+3.32}_{-2.62}$ | 623^{+40}_{-31} | 4838^{+3406}_{-1015} | 2131^{+13757}_{-1506} |

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 $A_{obs} \gg 1.0$

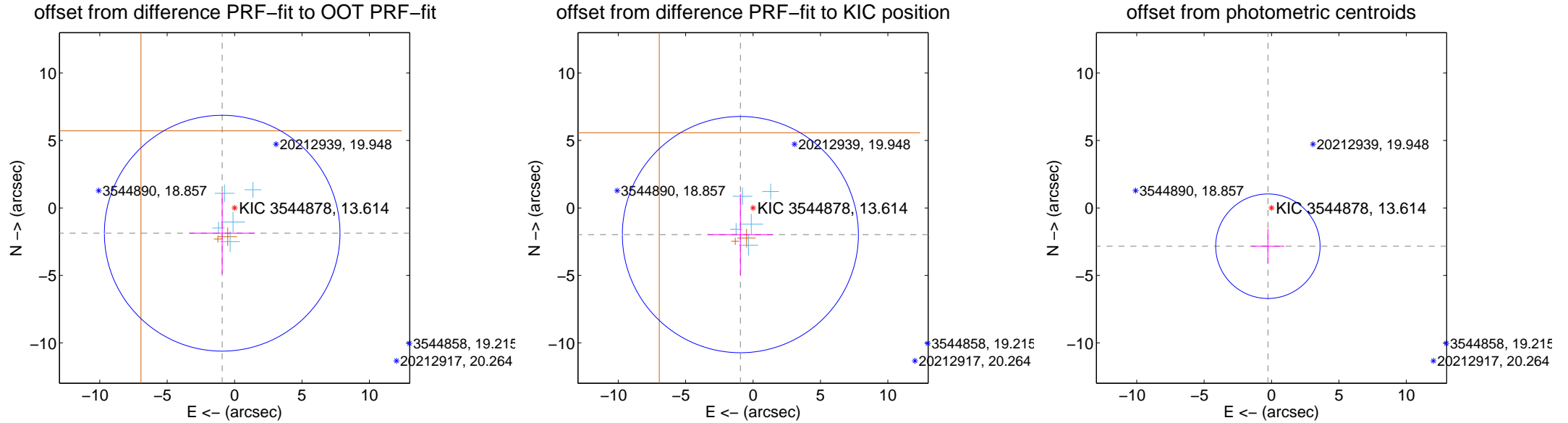
DV Centroid Data

Supplemental centroid analysis for 003544878-02. Kepler magnitude: 13.61. Transit SNR 6.08

There are 5 quarters with good PRF difference image offsets

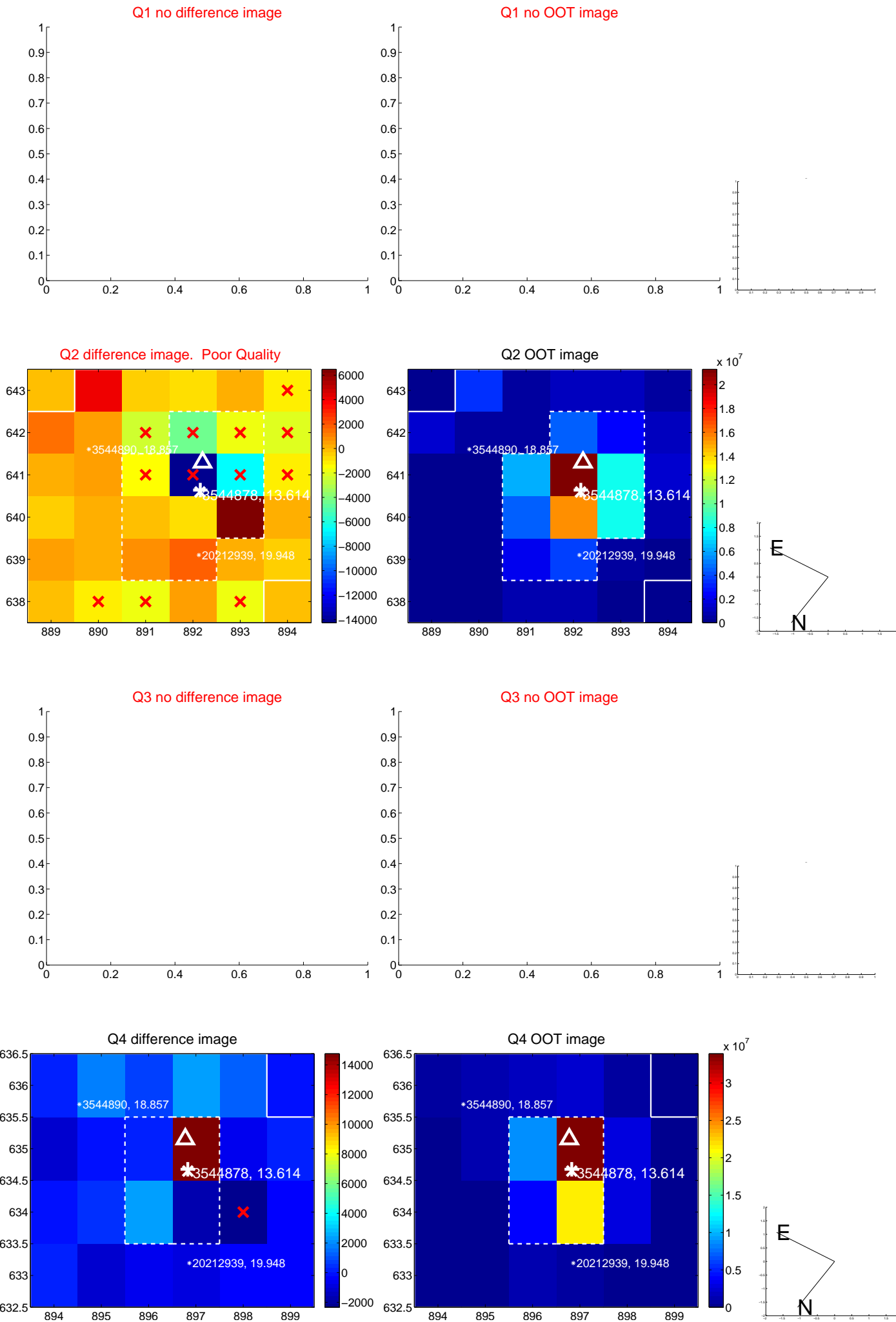
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 2.087 ± 2.913 | 0.72 | 0.920 ± 2.430 | -1.873 ± 3.018 |
| PRF-fit source offset from KIC position | 2.187 ± 2.919 | 0.75 | 0.940 ± 2.430 | -1.974 ± 3.018 |
| photometric centroid source offset | 2.85 ± 1.29 | 2.21 | 0.27 ± 1.22 | -2.84 ± 1.29 |



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.

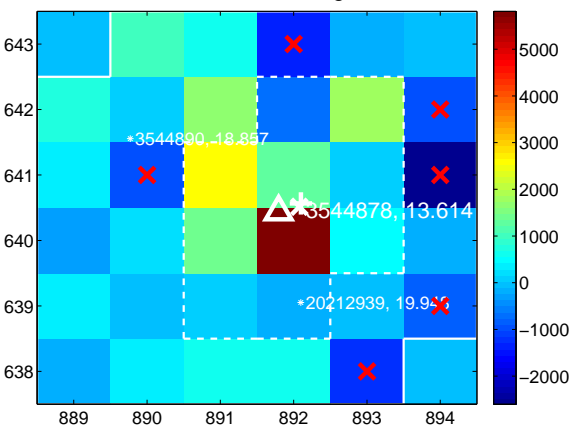
Q5 no difference image



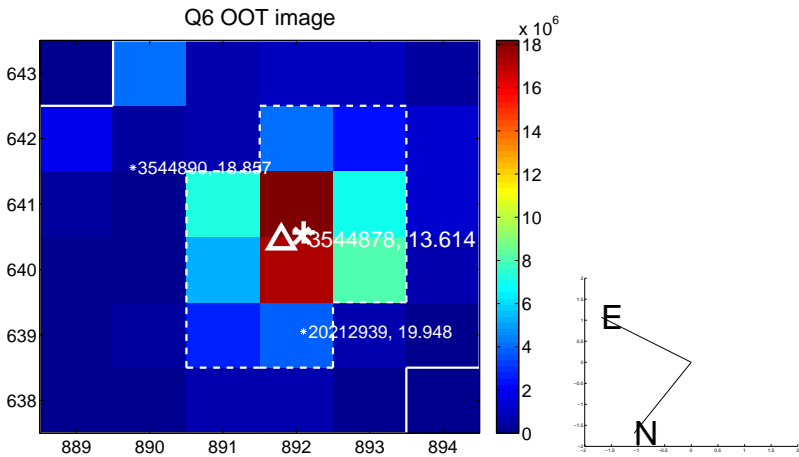
Q5 no OOT image



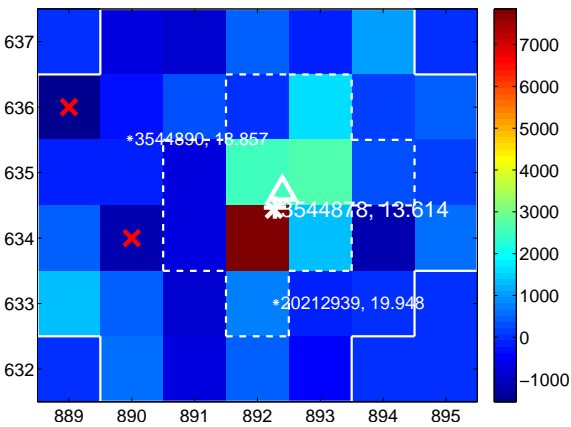
Q6 difference image



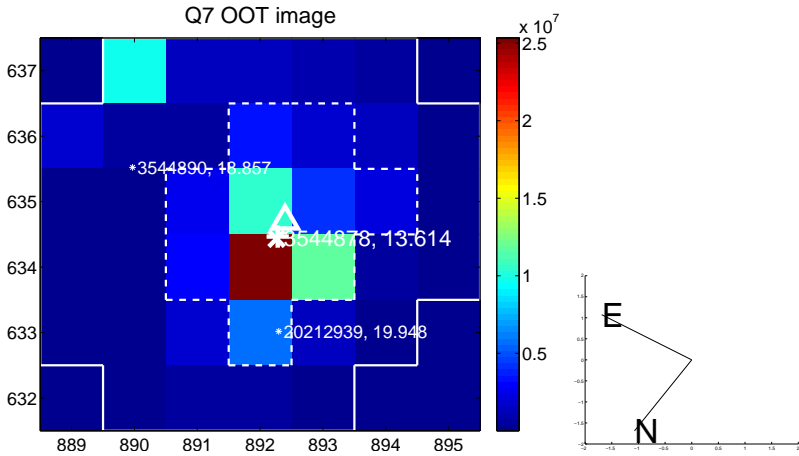
Q6 OOT image



Q7 difference image



Q7 OOT image



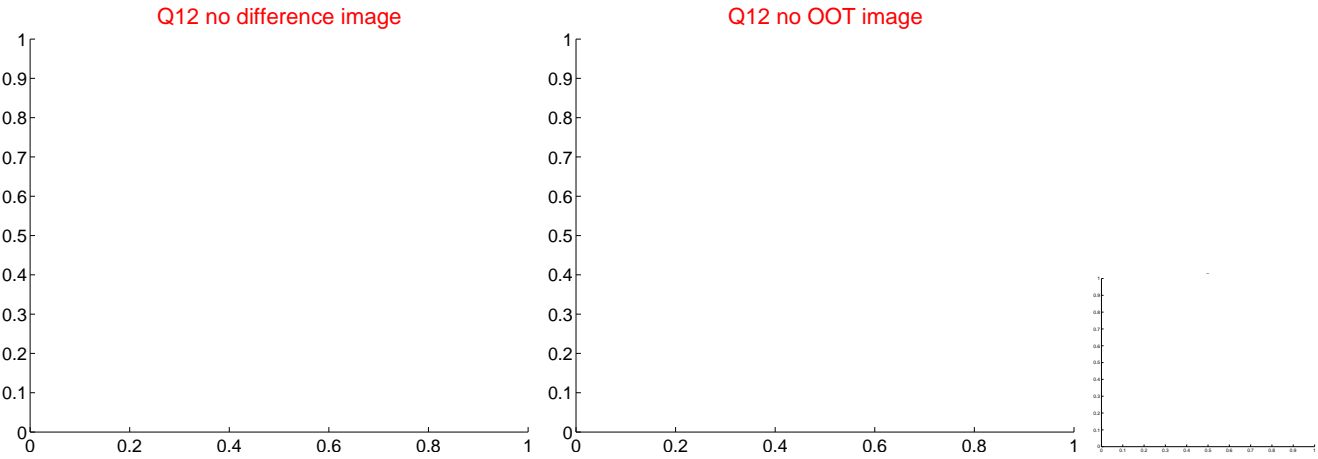
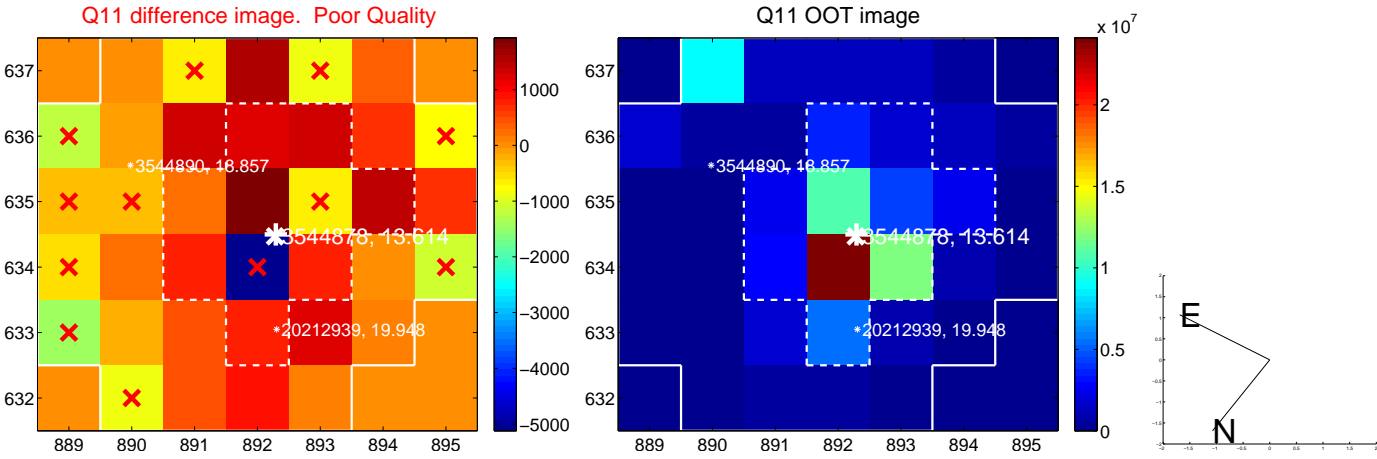
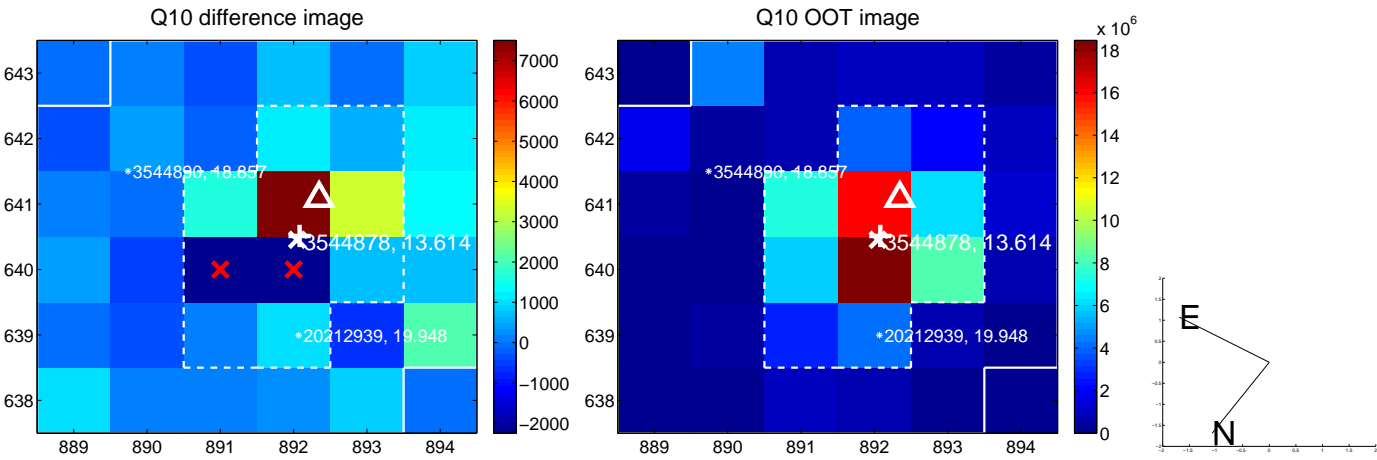
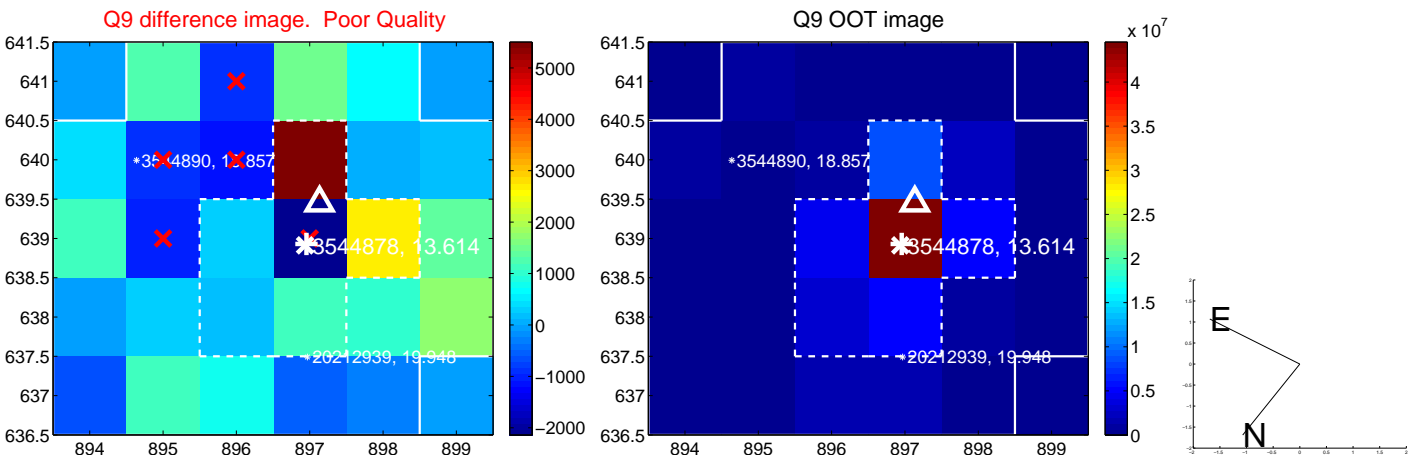
Q8 no difference image



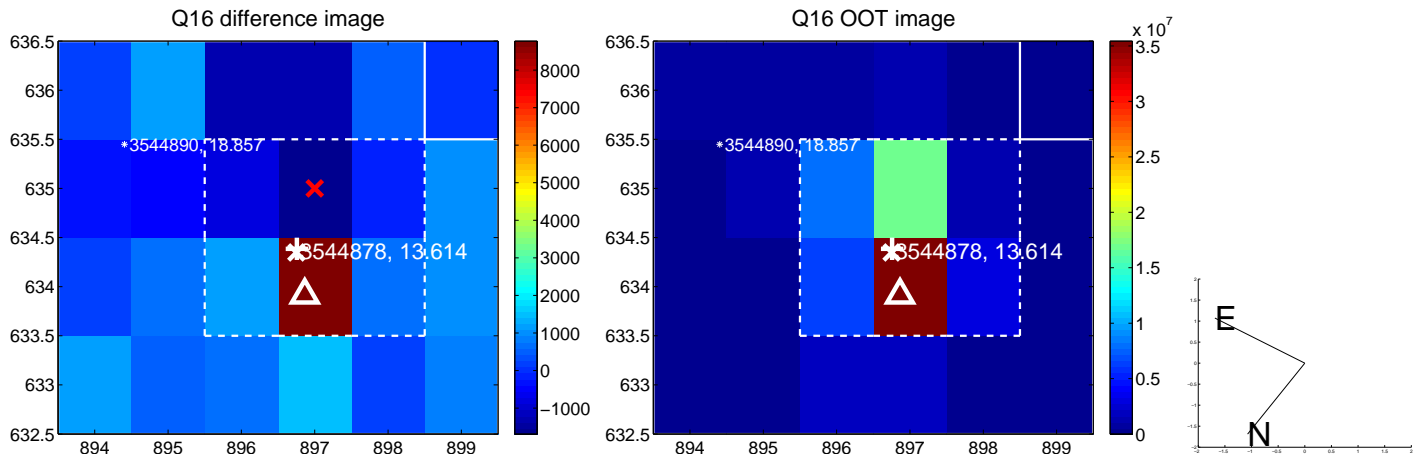
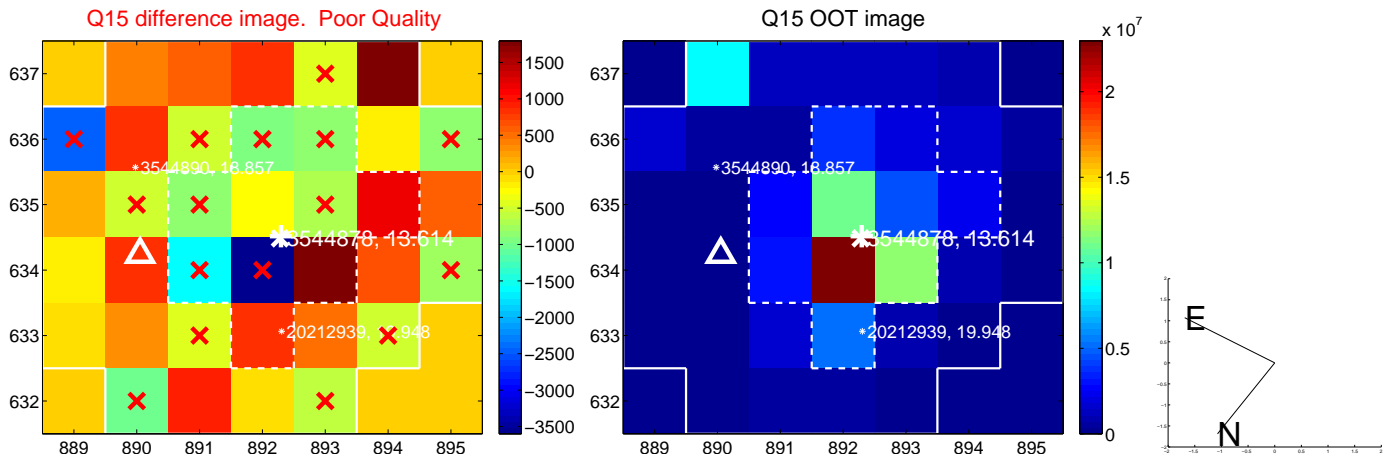
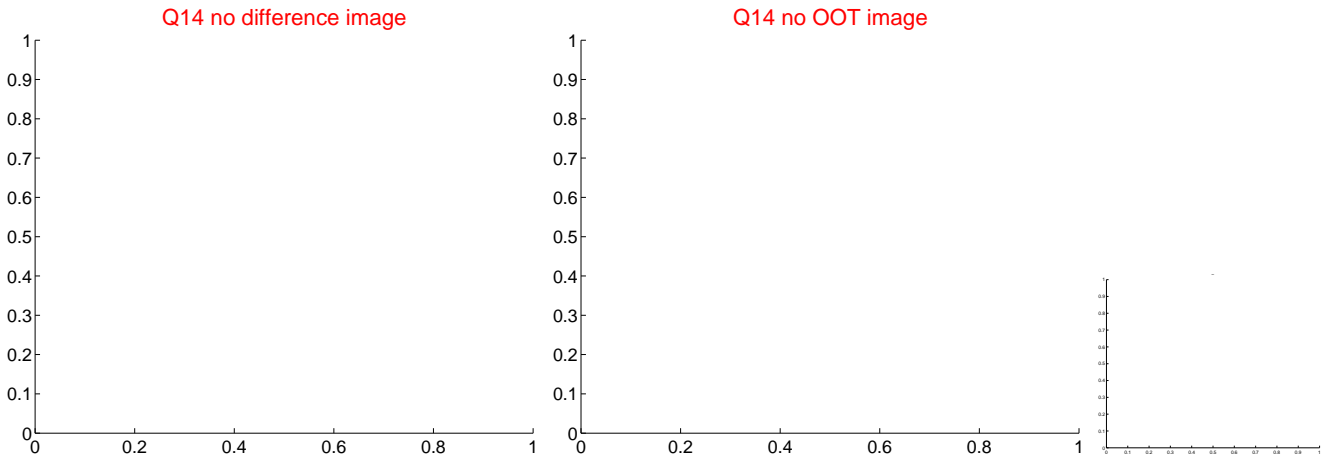
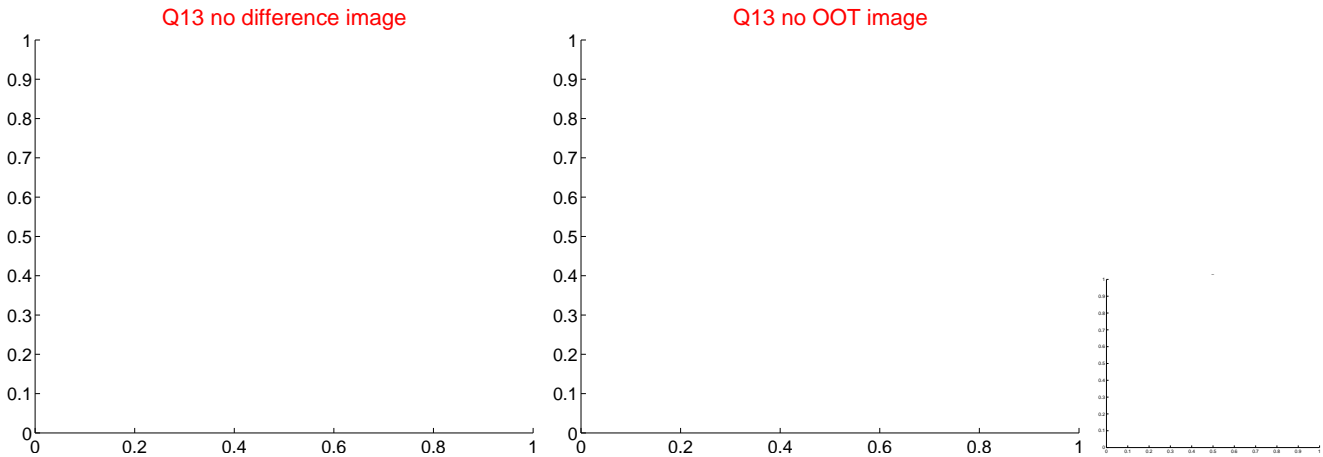
Q8 no OOT image



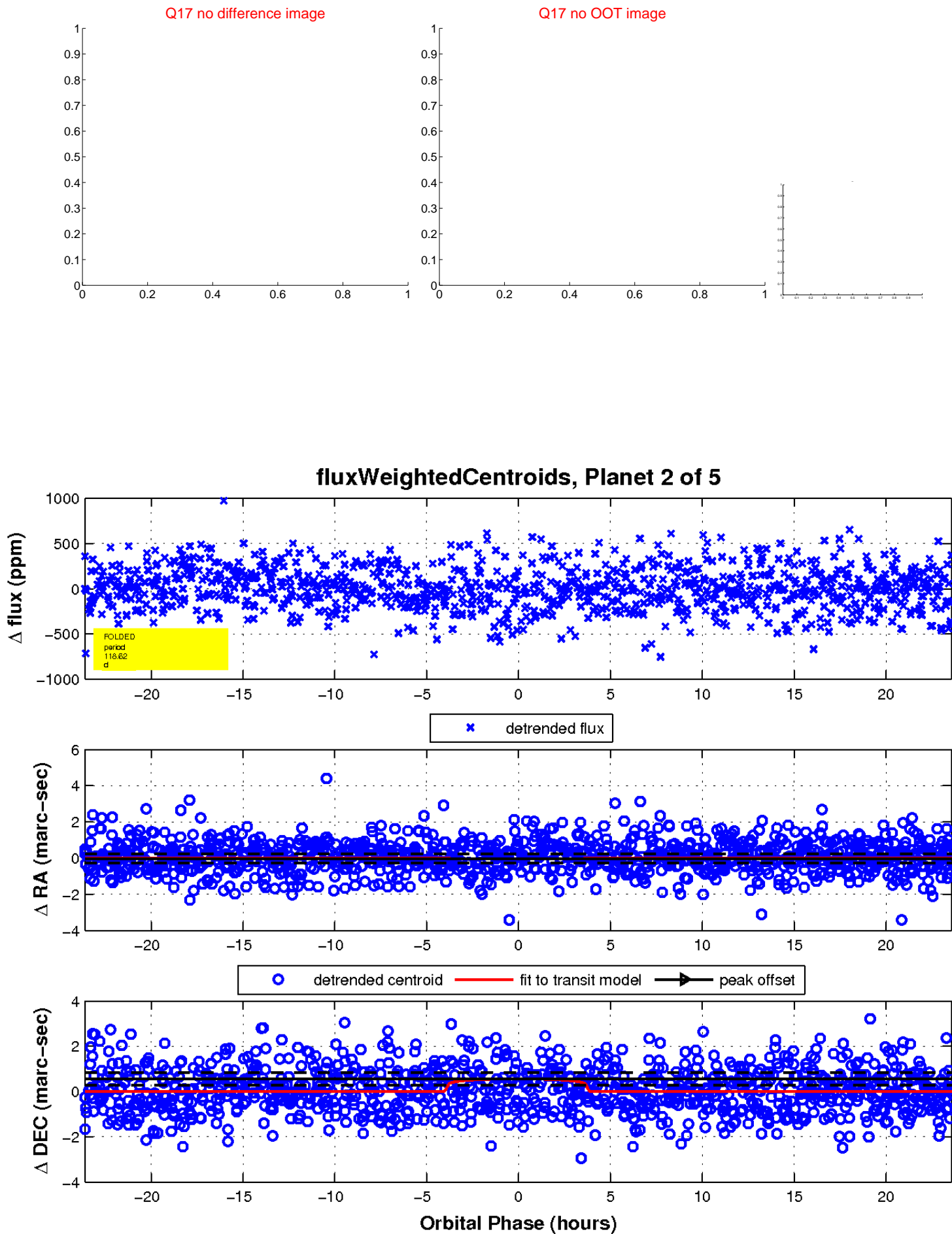
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

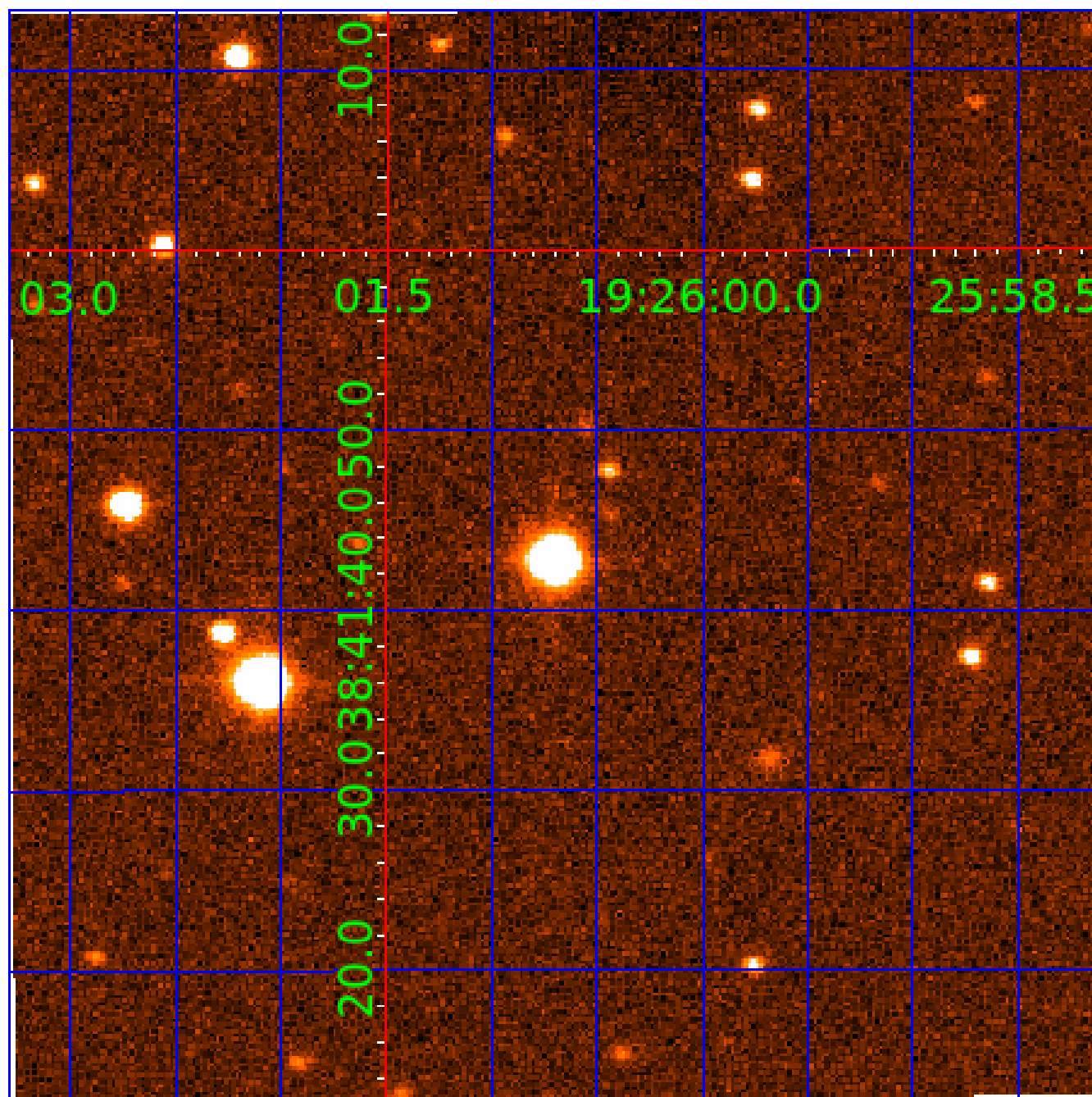


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003544878

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 003544878-01 | OBS | No | 1.191038 | 132.485299 | 24.8 | 6.780 | 8.9 | 8.6 | 1.19 | 6478 | 0.59 | 4054.79 |
| 003544878-02 | OBS | No | 118.615798 | 238.409610 | 205.8 | 7.872 | 8.4 | 6.1 | 1.19 | 6478 | 1.83 | 8.78 |
| 003544878-03 | OBS | No | 102.310517 | 165.383907 | 177.7 | 9.792 | 8.3 | 6.0 | 1.19 | 6478 | 1.78 | 10.70 |
| 003544878-04 | OBS | No | 57.687975 | 135.908219 | 235.9 | 4.588 | 7.9 | 7.0 | 1.19 | 6478 | 2.05 | 22.97 |
| 003544878-05 | OBS | No | 76.661194 | 142.914283 | 261.5 | 2.446 | 8.0 | 8.3 | 1.19 | 6478 | 2.09 | 15.72 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 003544878-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 003544878-02 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST |
| 003544878-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS |
| 003544878-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 003544878-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

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

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

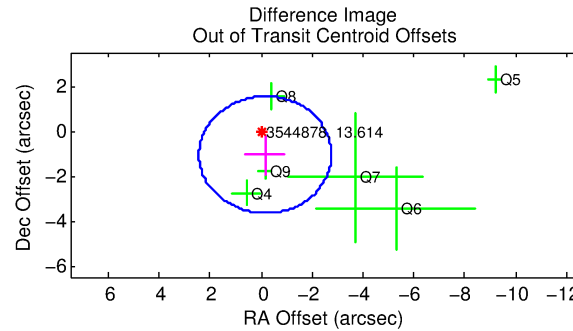
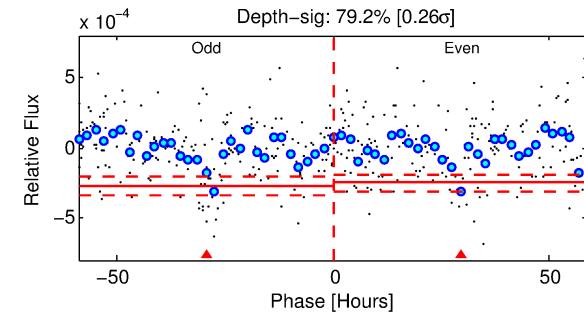
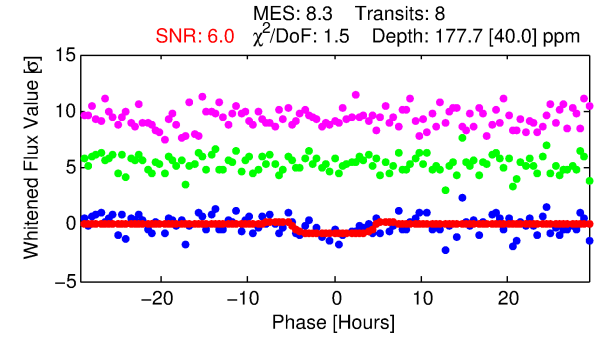
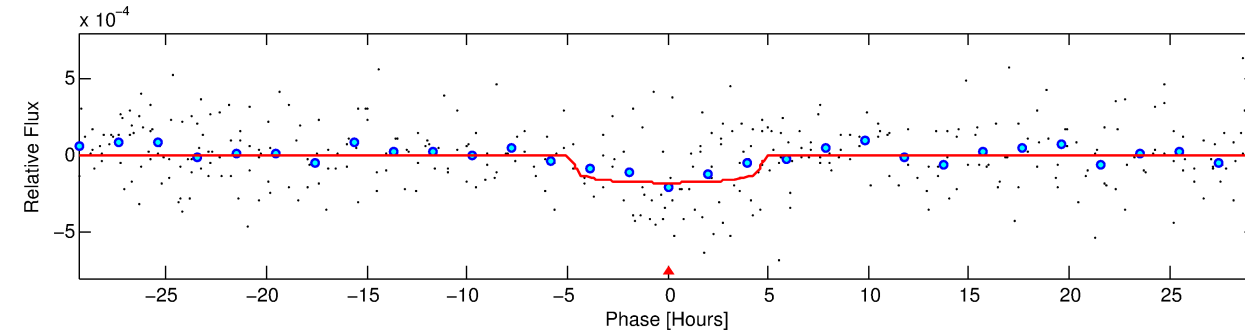
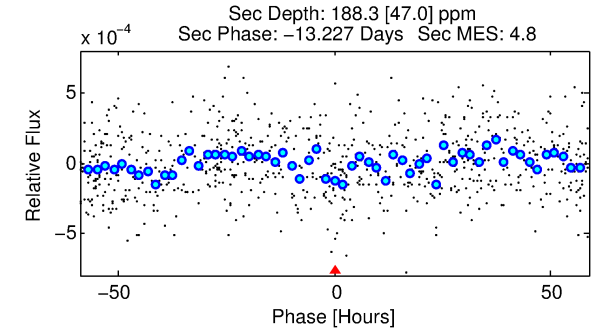
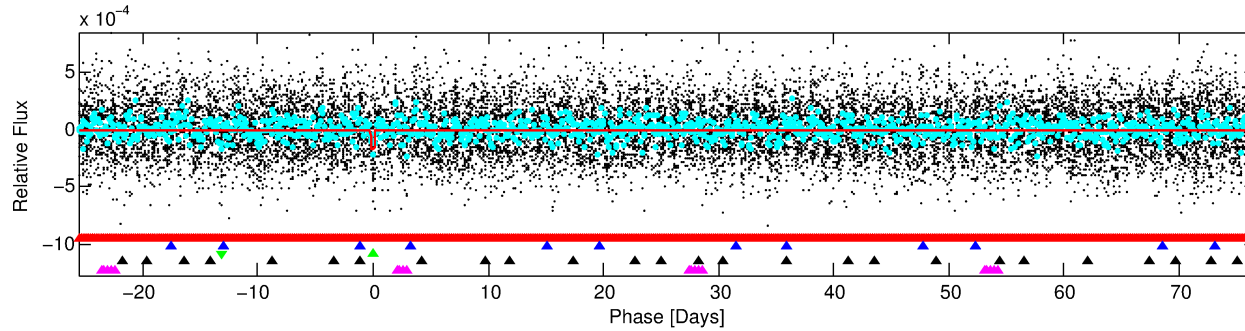
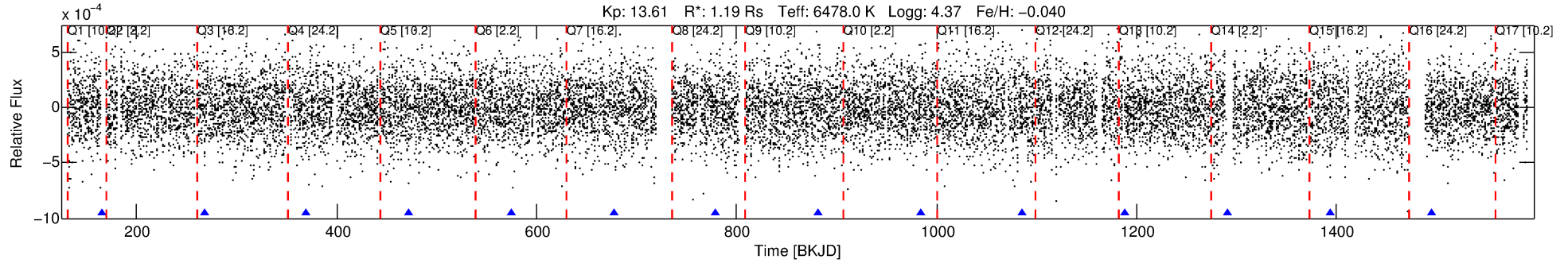
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003544878-03

No Significant Match Found

DV One-Page Summary

KIC: 3544878 Candidate: 3 of 5 Period: 102.311 d



DV Fit Results:

Period = 102.31052 [0.00354] d
Epoch = 165.3839 [0.0337] BKJD
Rp/R* = 0.0137 [0.0119]
a/R* = 45.96 [218.99]
b = 0.83 [1.75]
Seff = 10.70 [3.96]
Teq = 461 [43] K
Rp = 1.78 [1.62] Re
a = 0.4562 [0.1102] AU
Ag = 6829.07 [12197.22] [0.56σ]
Teffp = 6482 [2846] K [2.11σ]

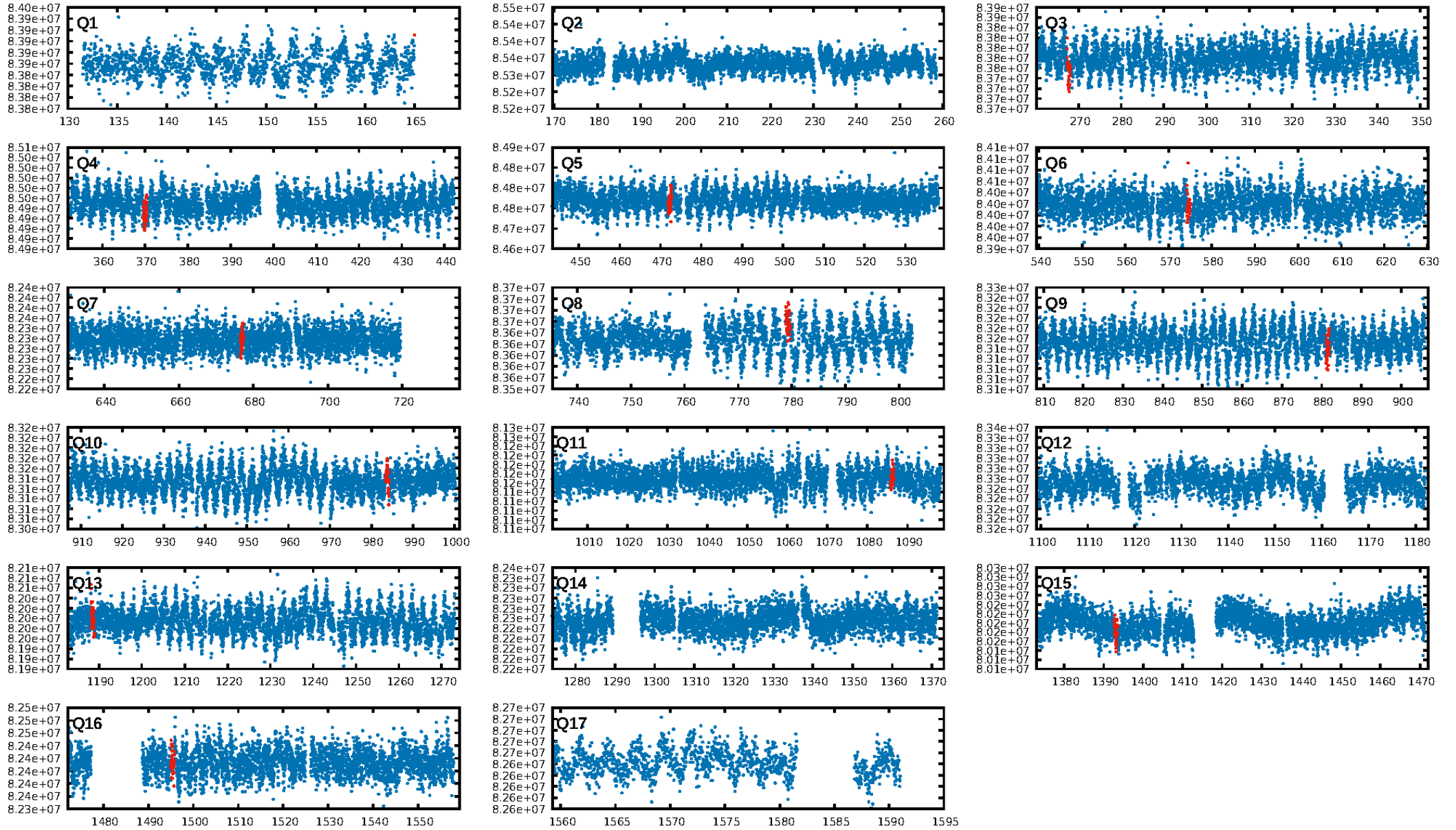
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.99σ]
LongPeriod-sig: 100.0% [31.15σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.66e-10
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: -0.2676
Centroid-sig: 64.8%
Centroid-so: 0.517 arcsec [0.43σ]
OotOffset-rm: 1.073 arcsec [1.24σ]
OotOffset-st: 1/1/2/2 [6]
KicOffset-rm: 1.172 arcsec [1.30σ]
KicOffset-st: 1/1/2/2 [6]
DiffImageQuality-fgm: 0.33 [2/6]
DiffImageOverlap-fno: 0.00 [0/9]

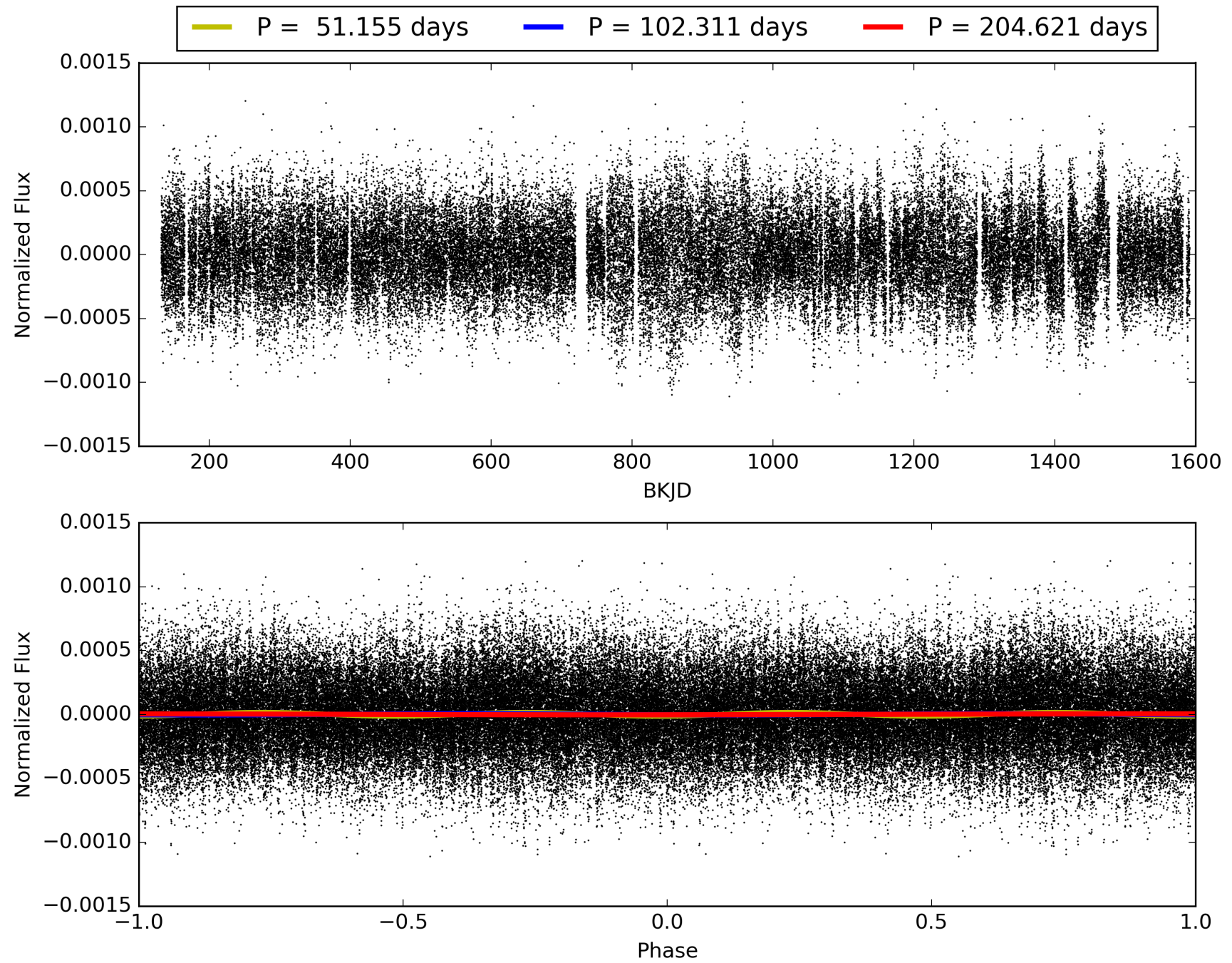
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:24:30 Z

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

TCE 003544878-03, PDC Light Curves

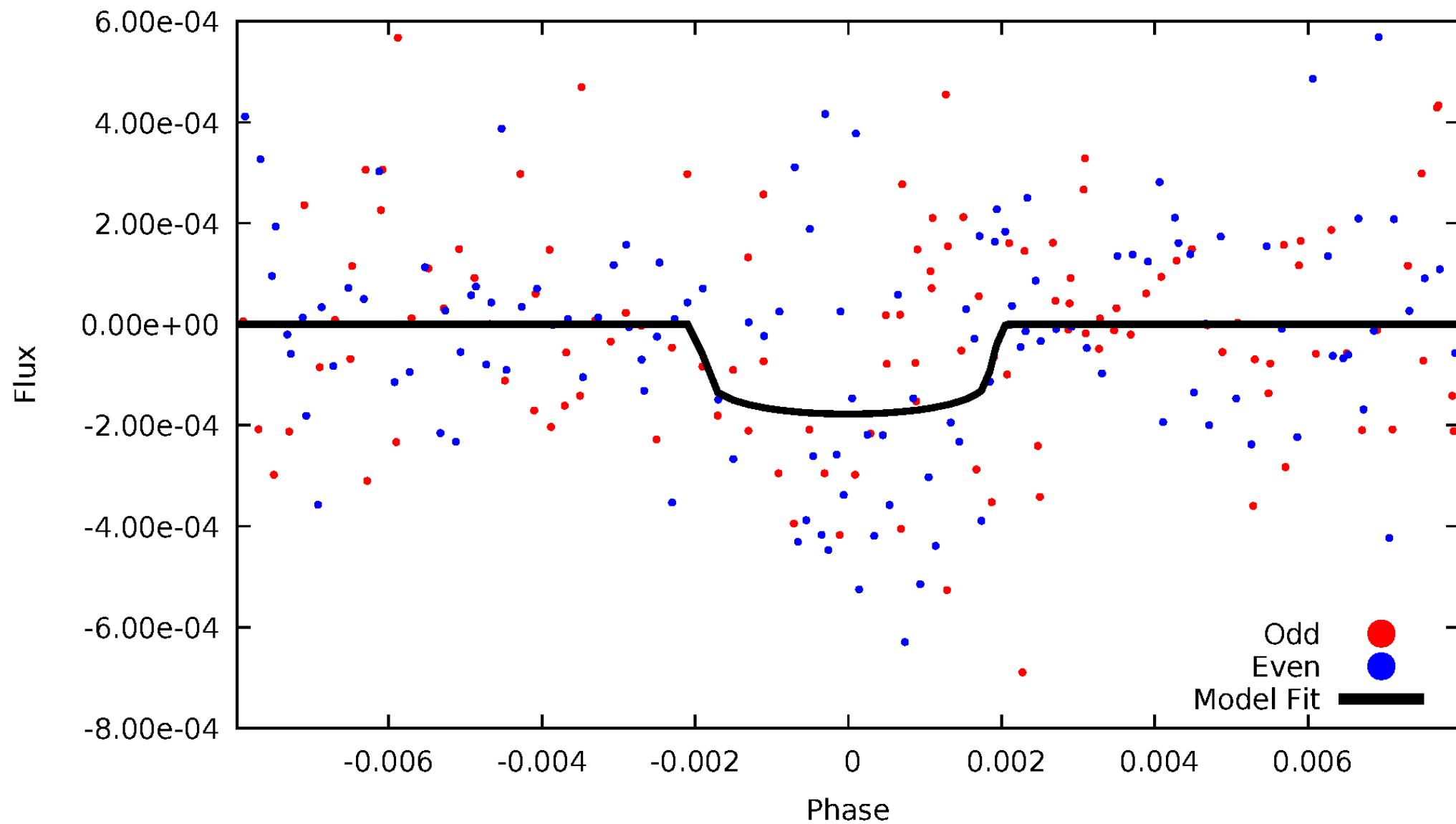


TCE 003544878-03



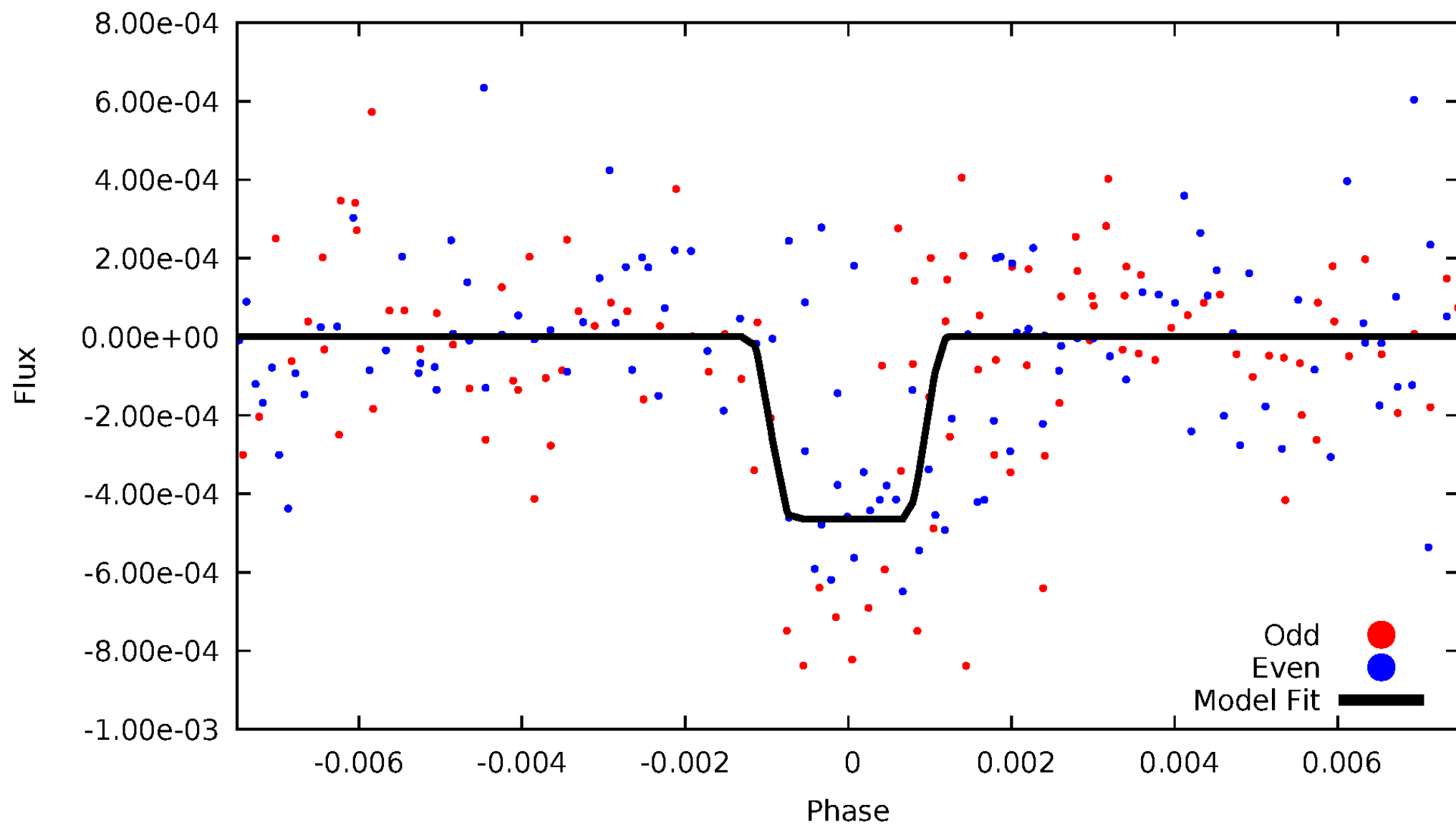
DV Odd/Even

TCE 003544878-03



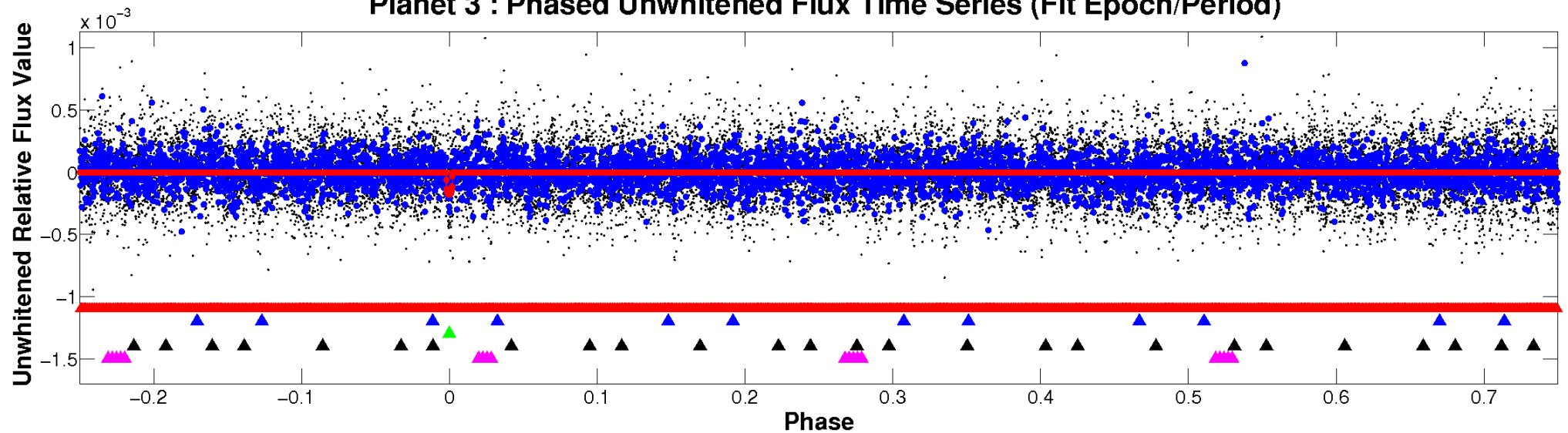
ALT Odd/Even

TCE 003544878-03

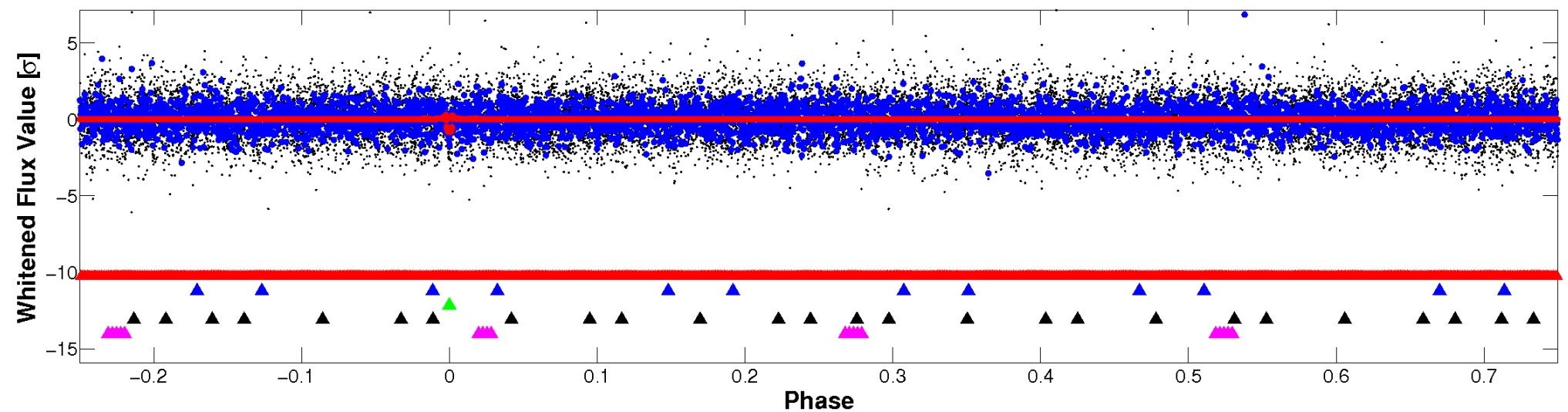


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

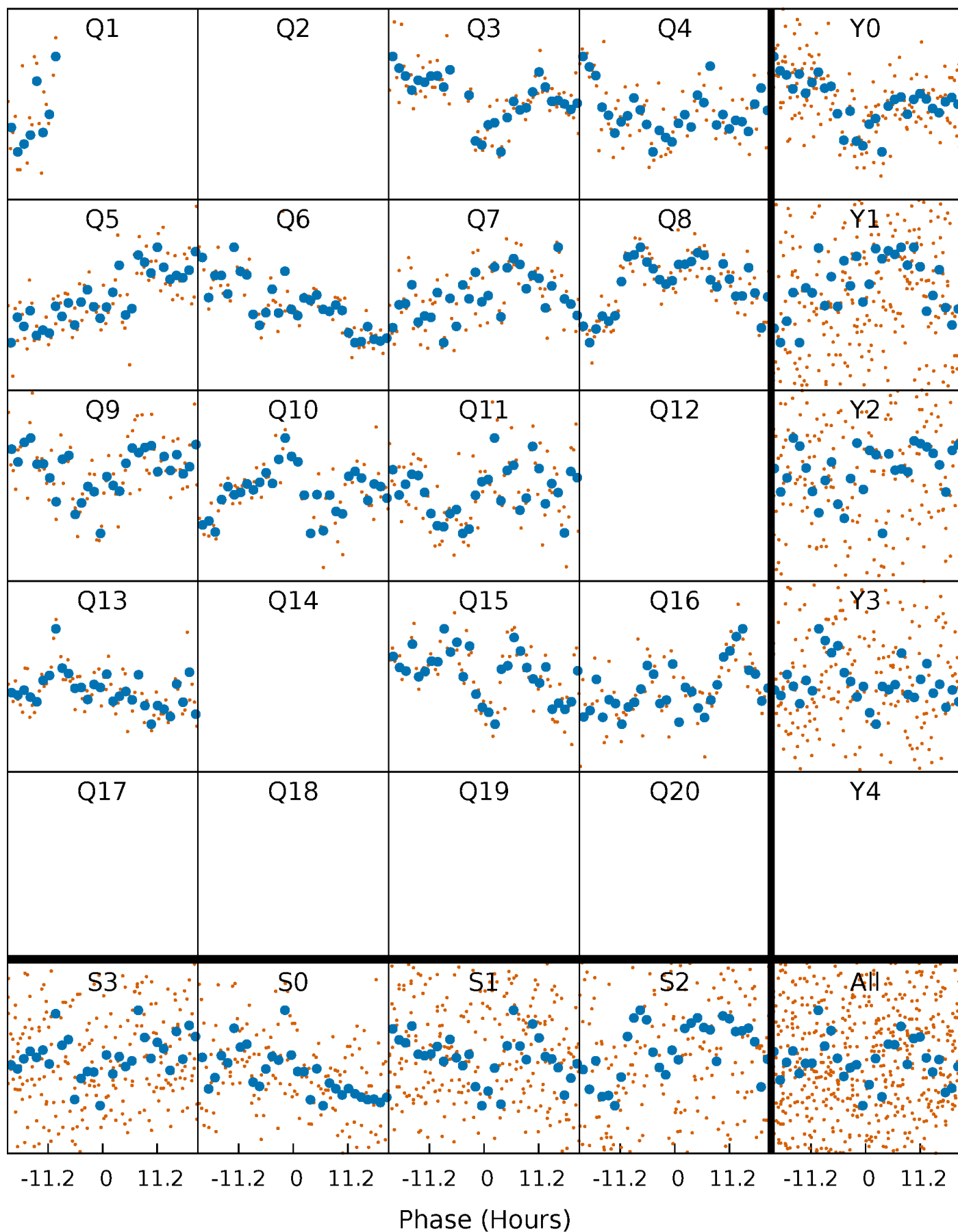


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



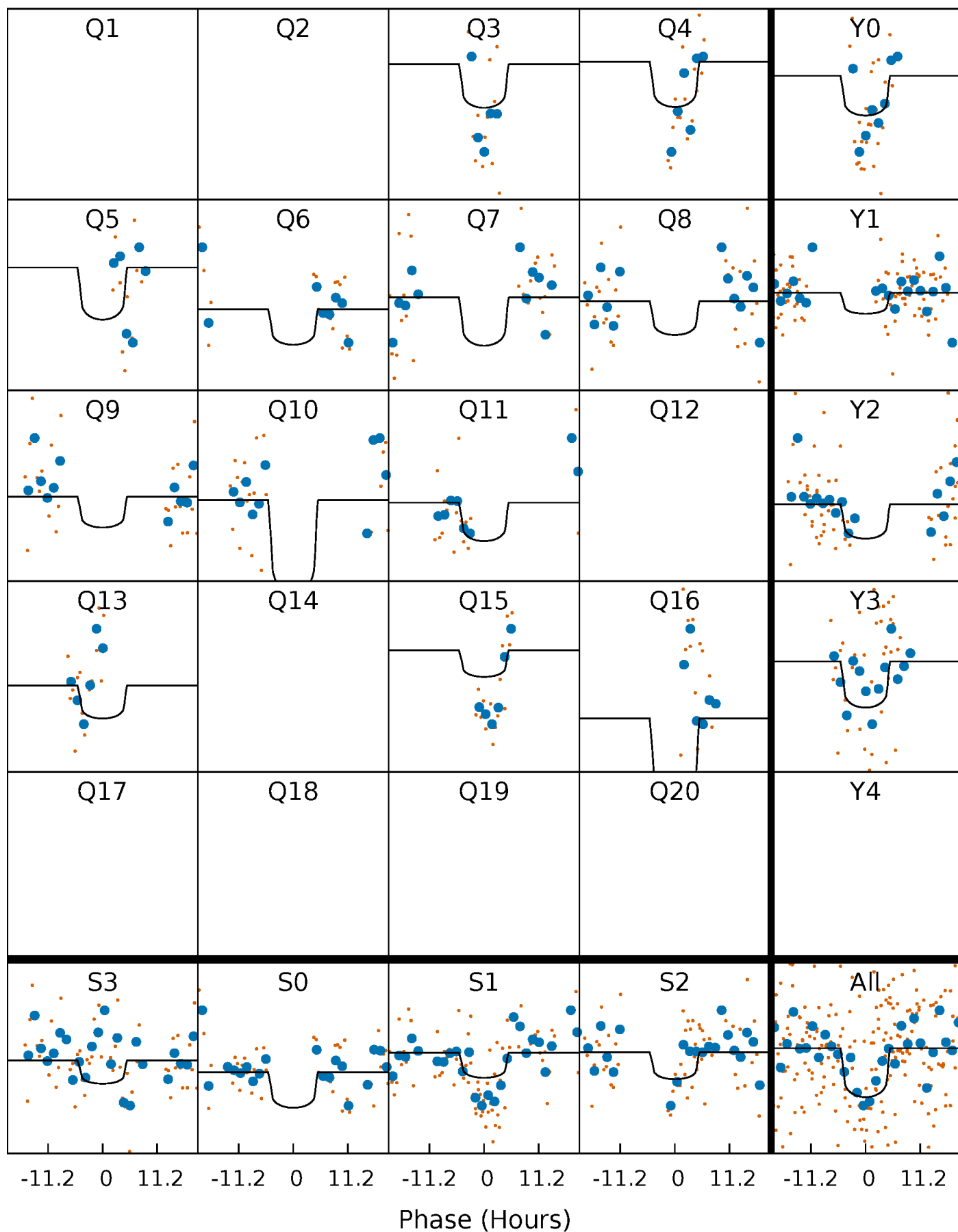
PDC Quarter-Phased Transit Curves

TCE 003544878-03 P=102.310517 Days $T_0=165.383907$ (BKJD)



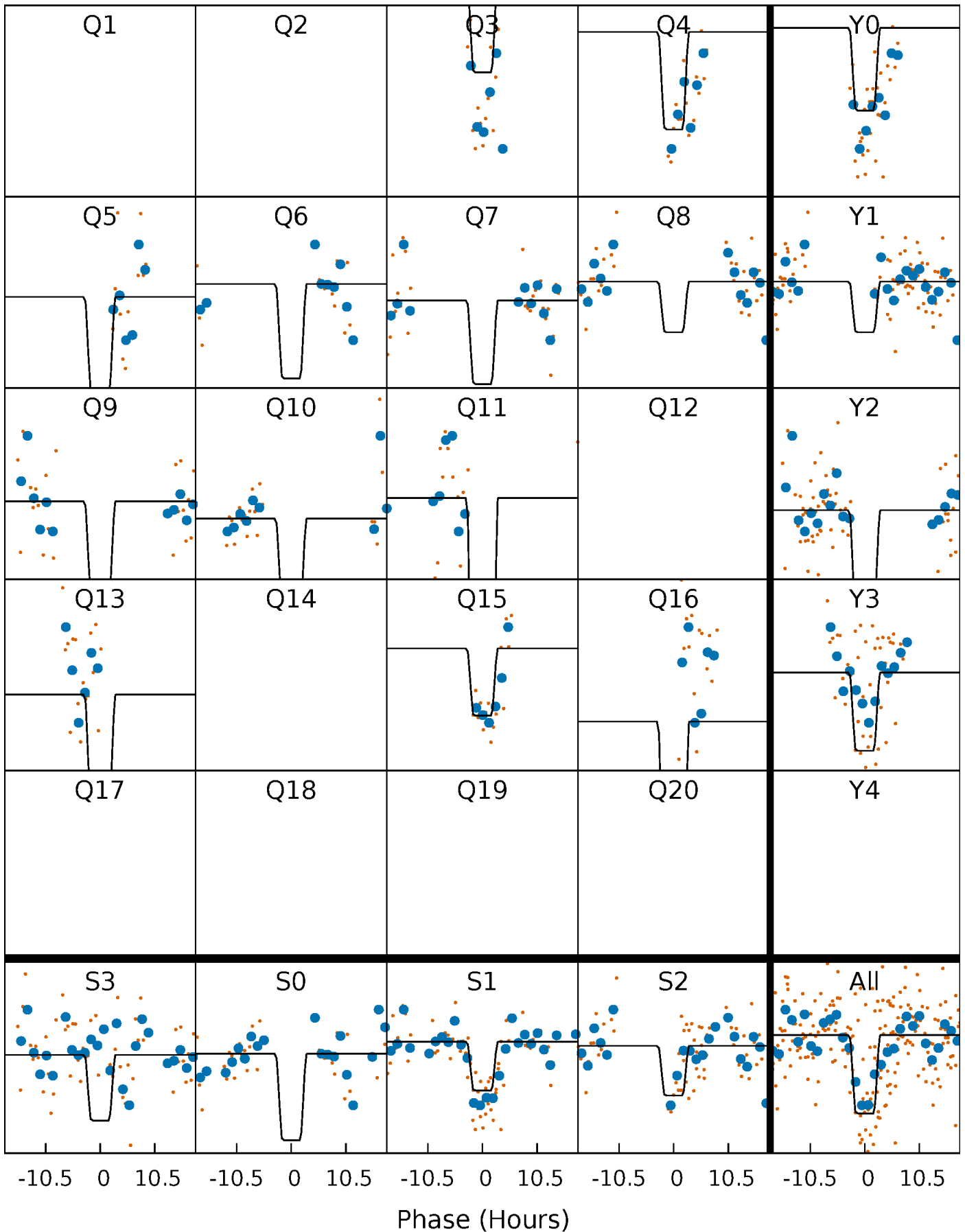
DV Quarter-Phased Transit Curves

TCE 003544878-03 P=102.310517 Days $T_0=165.383907$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

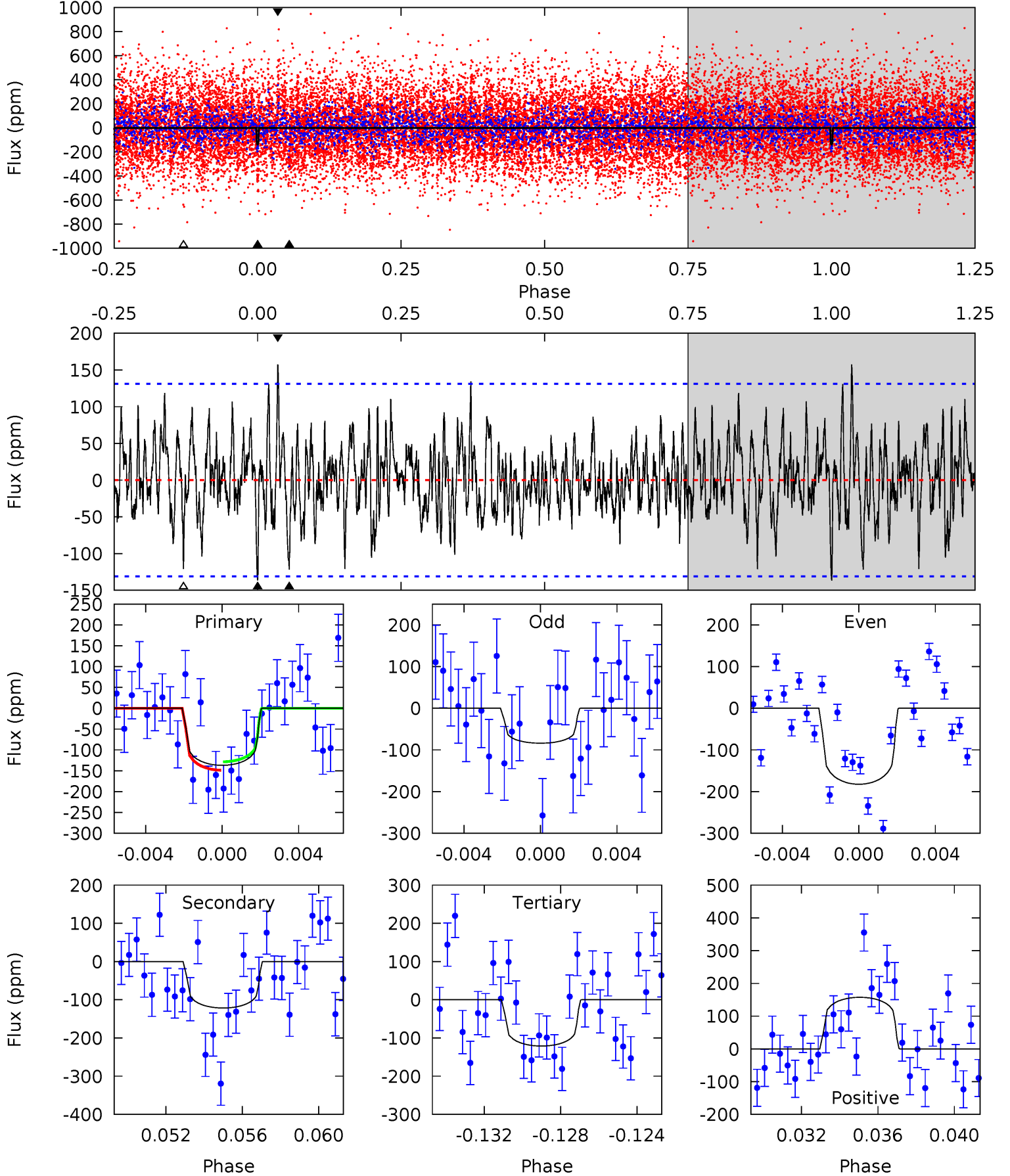
TCE 003544878-03 $P=102.312639$ Days $T_0=165.365613$ (BKJD)



DV Model-Shift Uniqueness Test

003544878-03, P = 102.310517 Days, E = 63.073390 Days

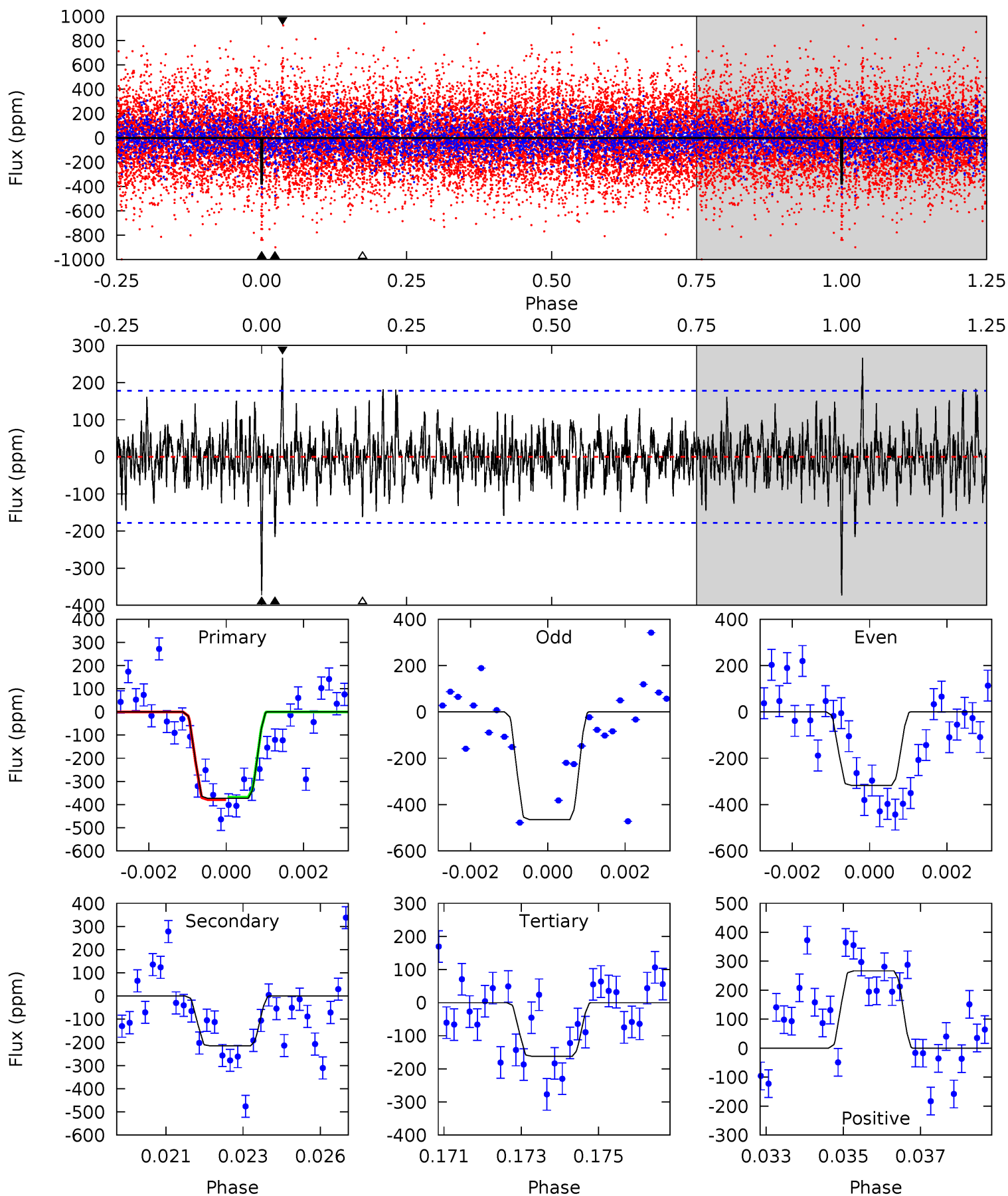
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.43 | 4.82 | 4.80 | 6.25 | 5.20 | 2.88 | 1.61 | 0.63 | -0.82 | 0.02 | -1.43 | 1.95 | 0.72 | 0.54 | 0.39 |



Alt Model-Shift Uniqueness Test

003544878-03, P = 102.312639 Days, E = 63.052974 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 | 6.41 | 4.83 | 7.94 | 5.30 | 3.04 | 1.58 | 6.28 | 3.17 | 1.58 | -1.53 | 2.18 | 0.87 | 0.42 | 0.15 |



Stellar Parameters For KIC 003544878

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6478^{+144}_{-208} | $4.371^{+0.062}_{-0.188}$ | $-0.040^{+0.250}_{-0.300}$ | $1.188^{+0.345}_{-0.148}$ | $1.209^{+0.169}_{-0.169}$ | $1.016^{+0.327}_{-0.483}$ |
| | +2%/-3% | +1%/-4% | +625%/-750% | +29%/-12% | +14%/-14% | +32%/-48% |
| 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 003544878-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|------------------------|-------------------------|
| DV | -122 ± 25 | $2.13^{+1.57}_{-1.25}$ | 655^{+46}_{-29} | 5433^{+3378}_{-1111} | 2980^{+14924}_{-2032} |
| Alt. | -215 ± 34 | $3.04^{+1.63}_{-1.55}$ | 655^{+43}_{-30} | 5250^{+2111}_{-854} | 2542^{+7709}_{-1467} |

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 $A_{obs} \gg 1.0$

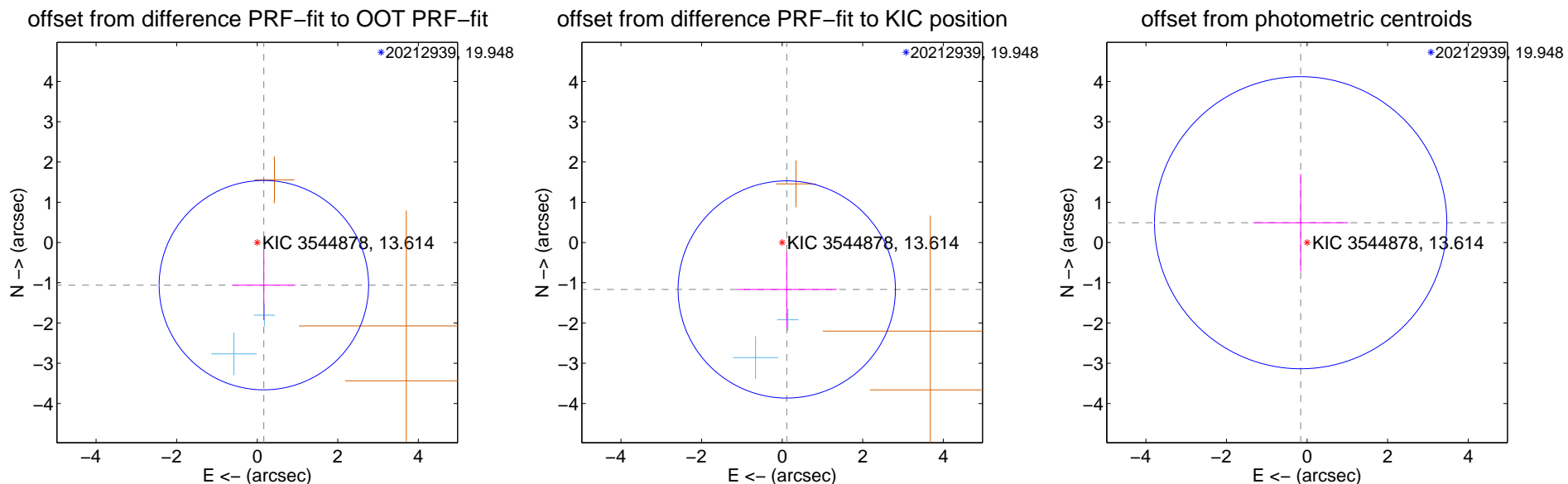
DV Centroid Data

Supplemental centroid analysis for 003544878-03. Kepler magnitude: 13.61. Transit SNR 6.00

There are 2 quarters with good PRF difference image offsets

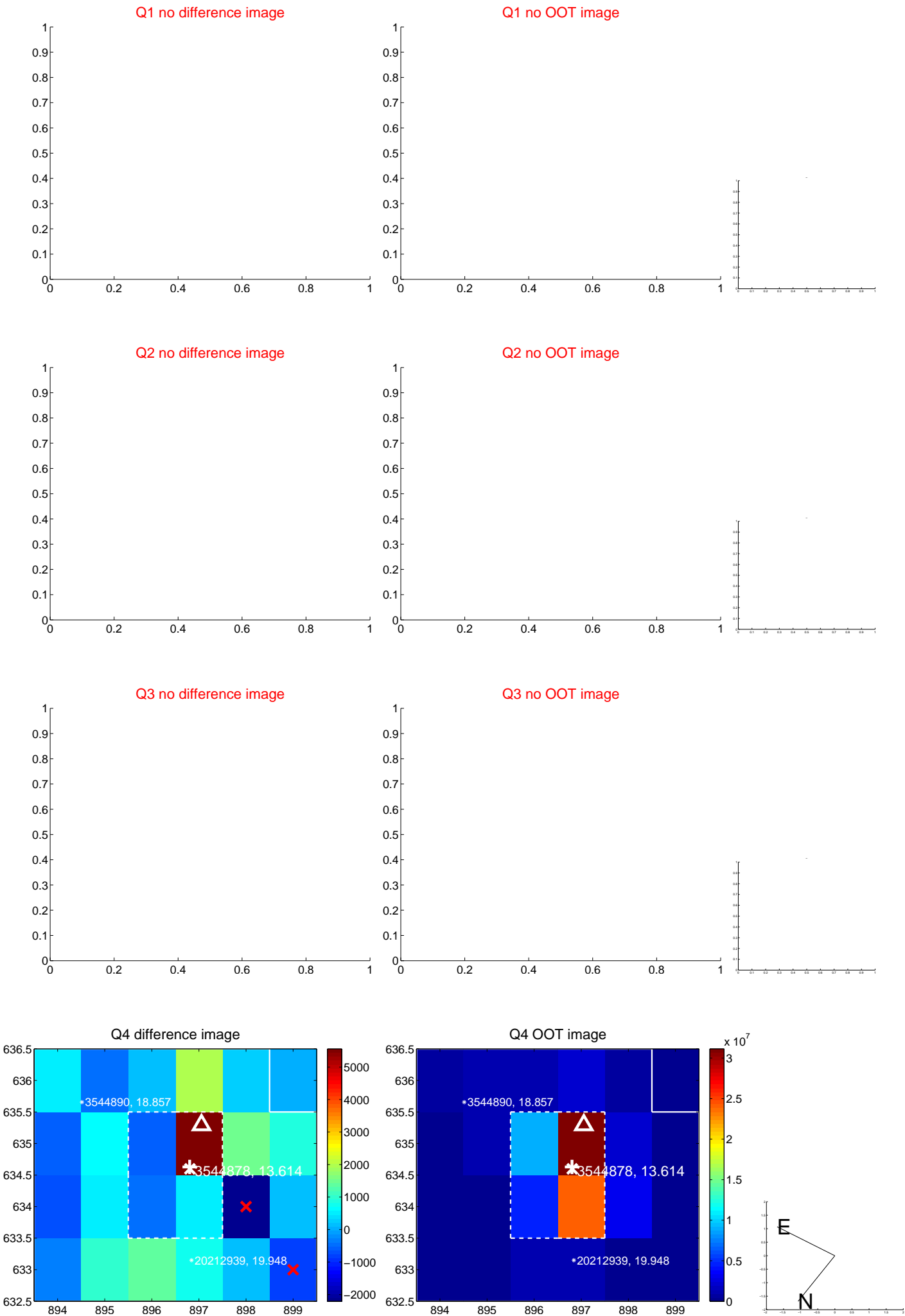
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 1.073 ± 0.867 | 1.24 | -0.165 ± 0.786 | -1.060 ± 0.869 |
| PRF-fit source offset from KIC position | 1.172 ± 0.899 | 1.30 | -0.114 ± 1.244 | -1.167 ± 0.940 |
| photometric centroid source offset | 0.52 ± 1.21 | 0.43 | 0.16 ± 1.18 | 0.49 ± 1.21 |

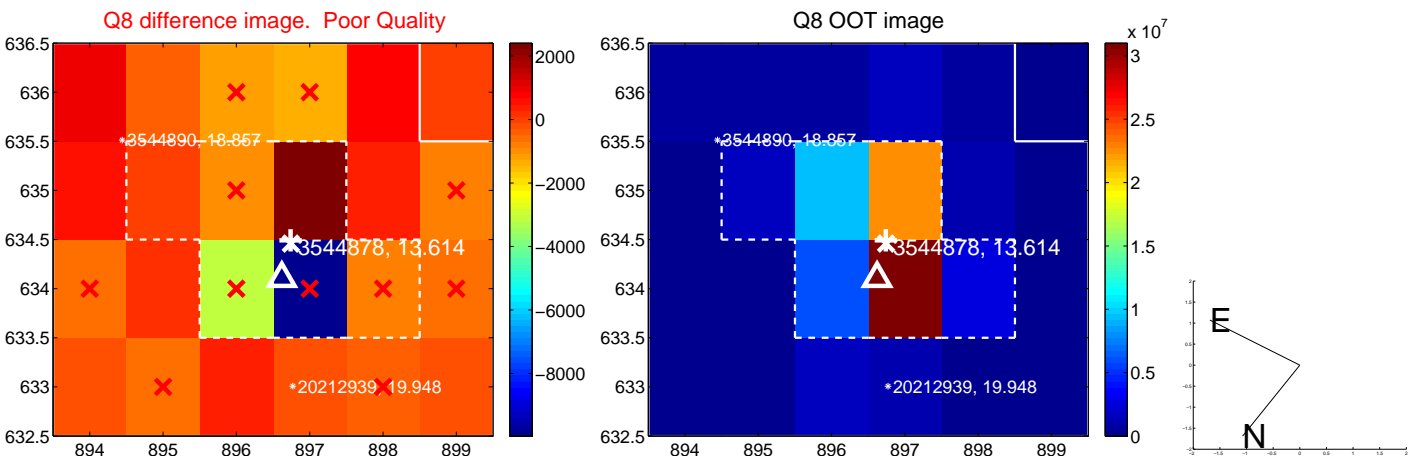
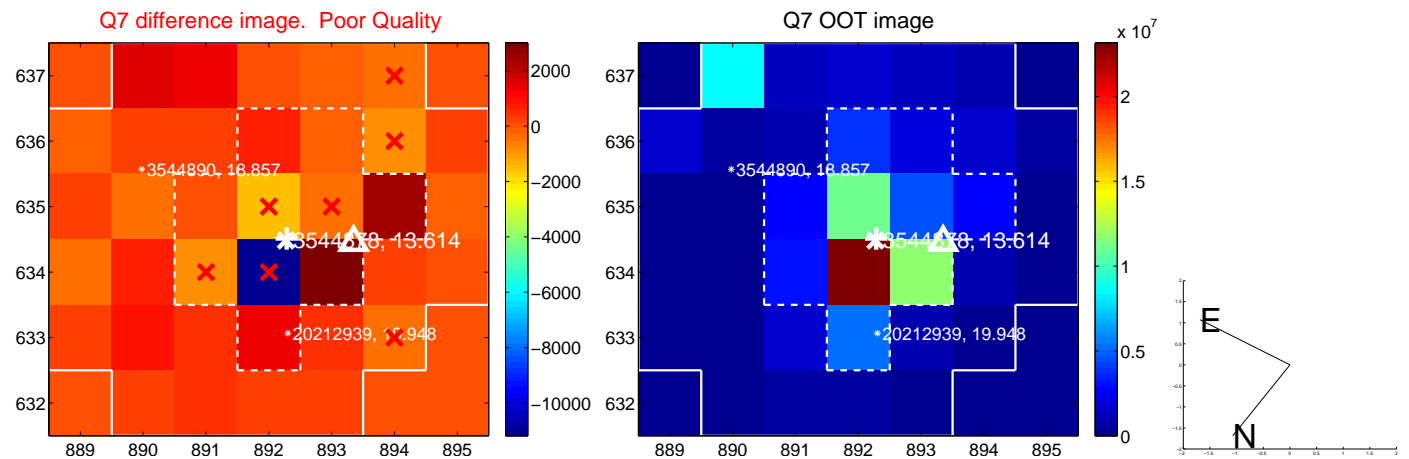
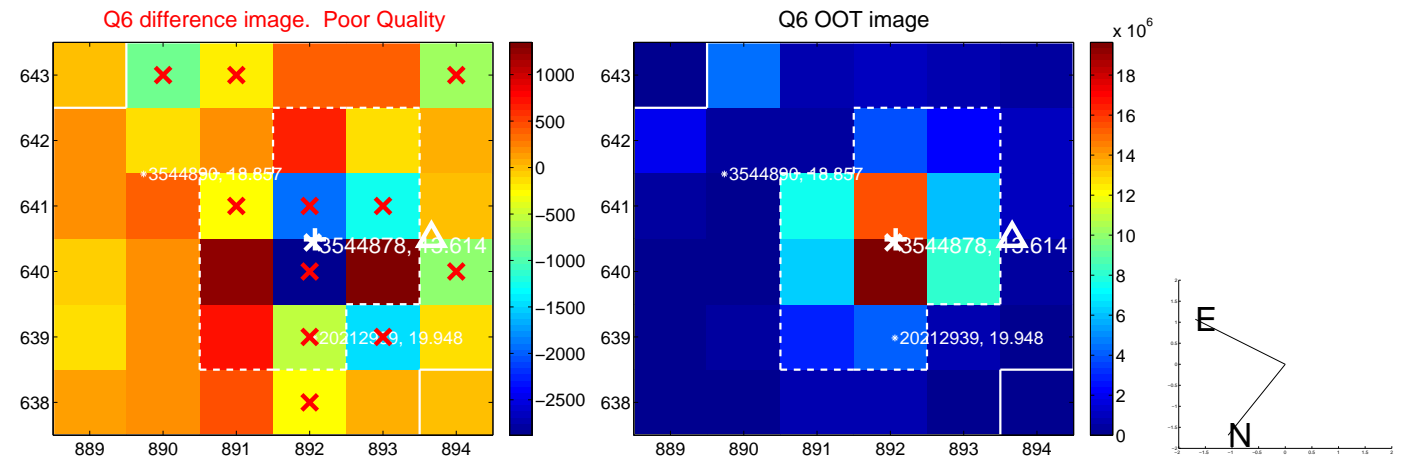
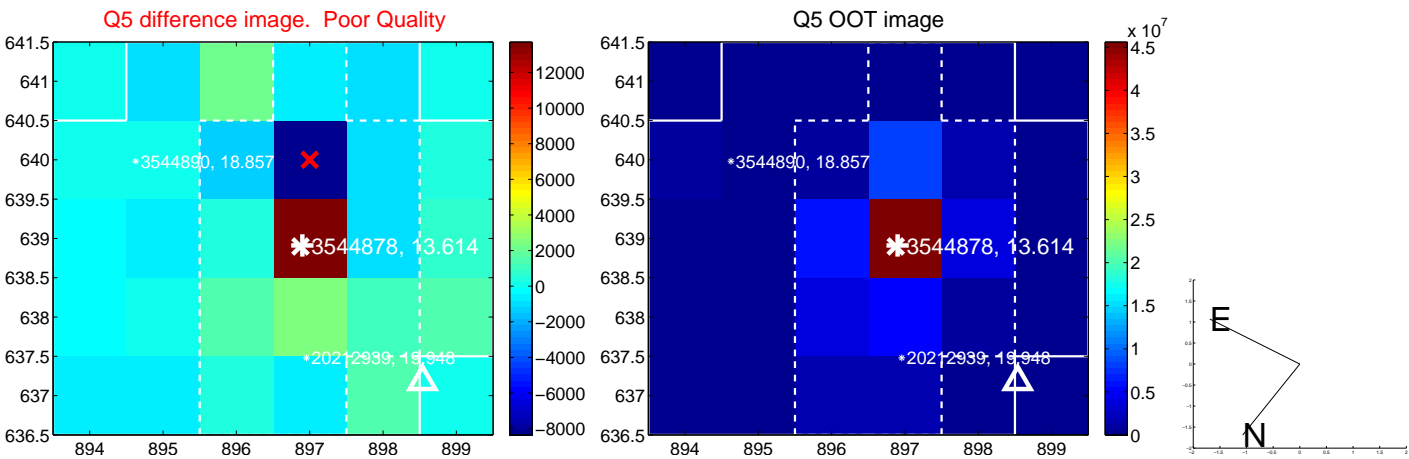


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

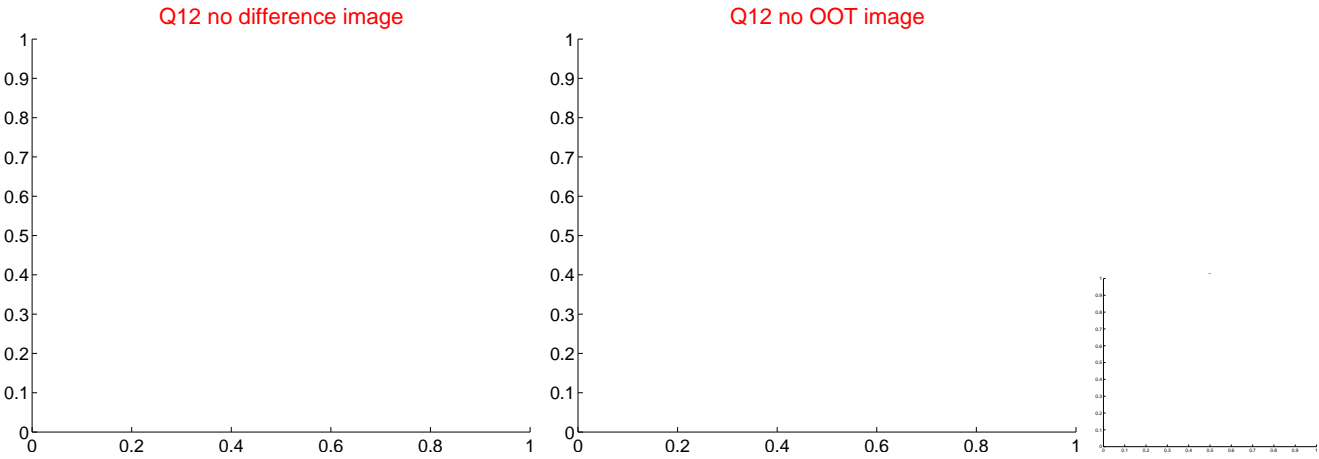
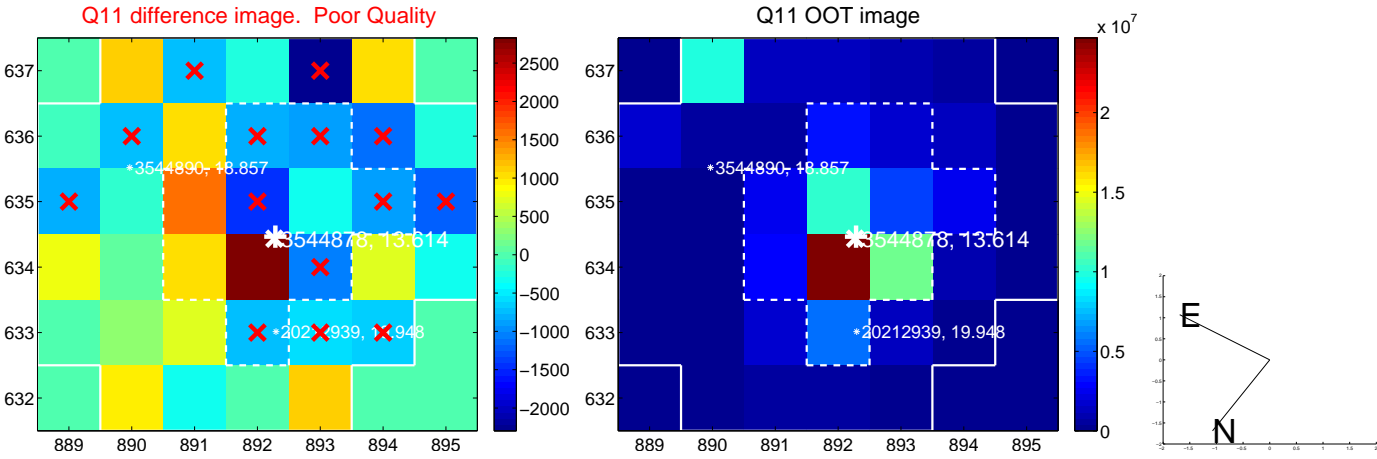
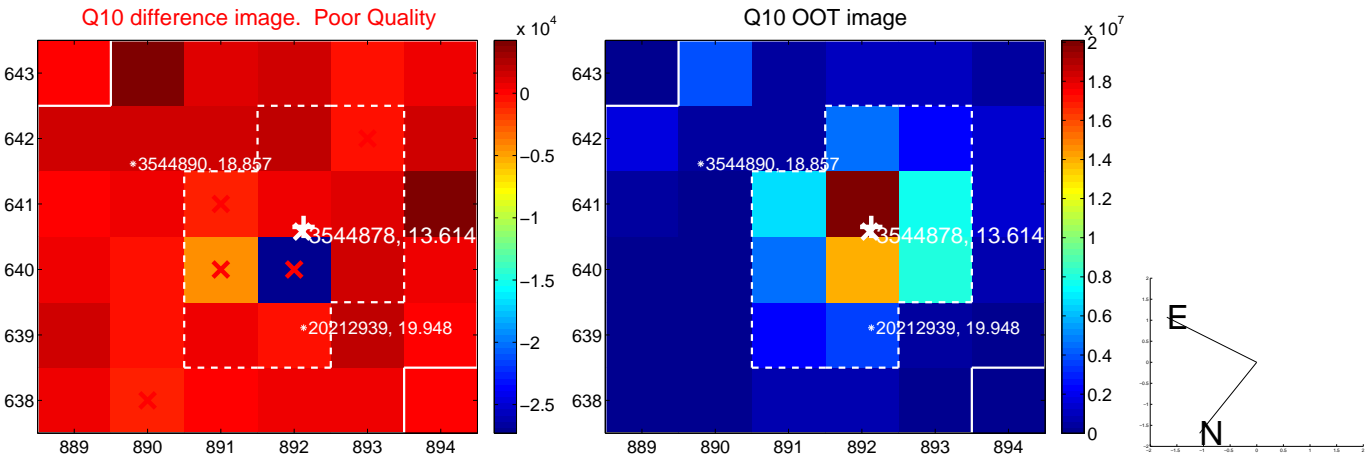
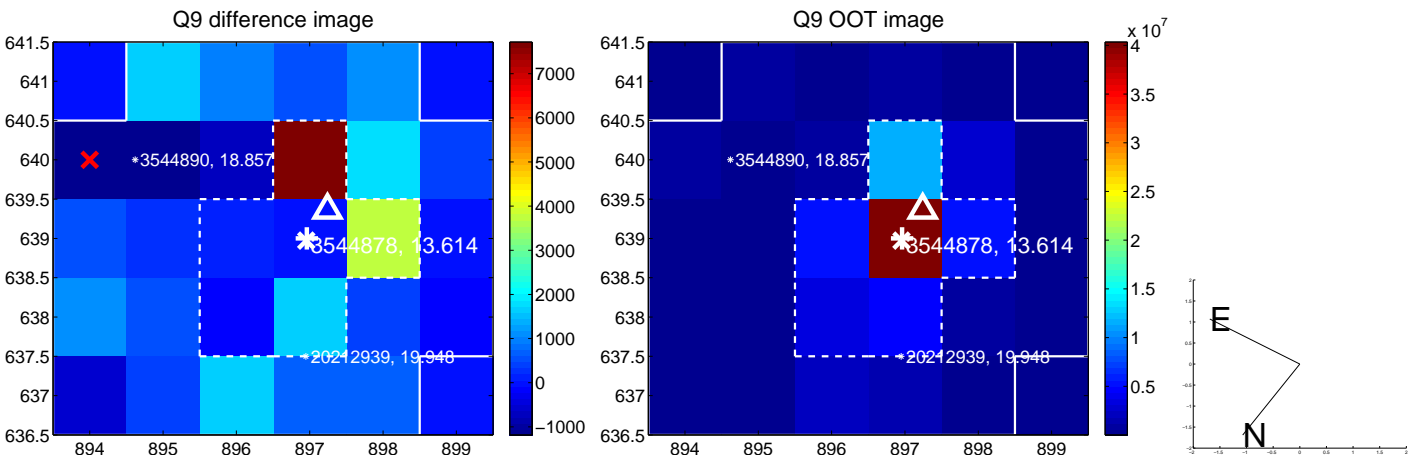
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



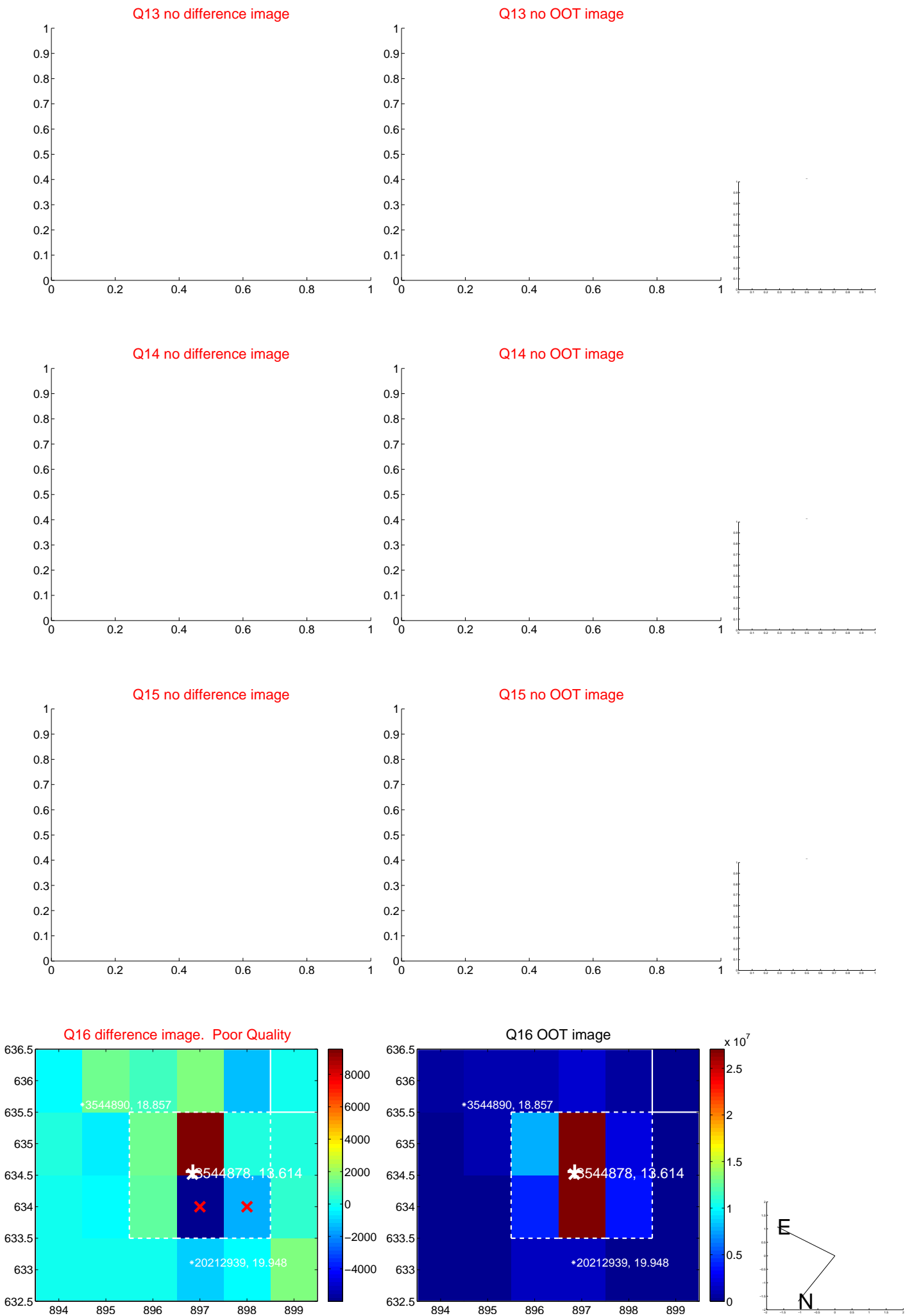
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



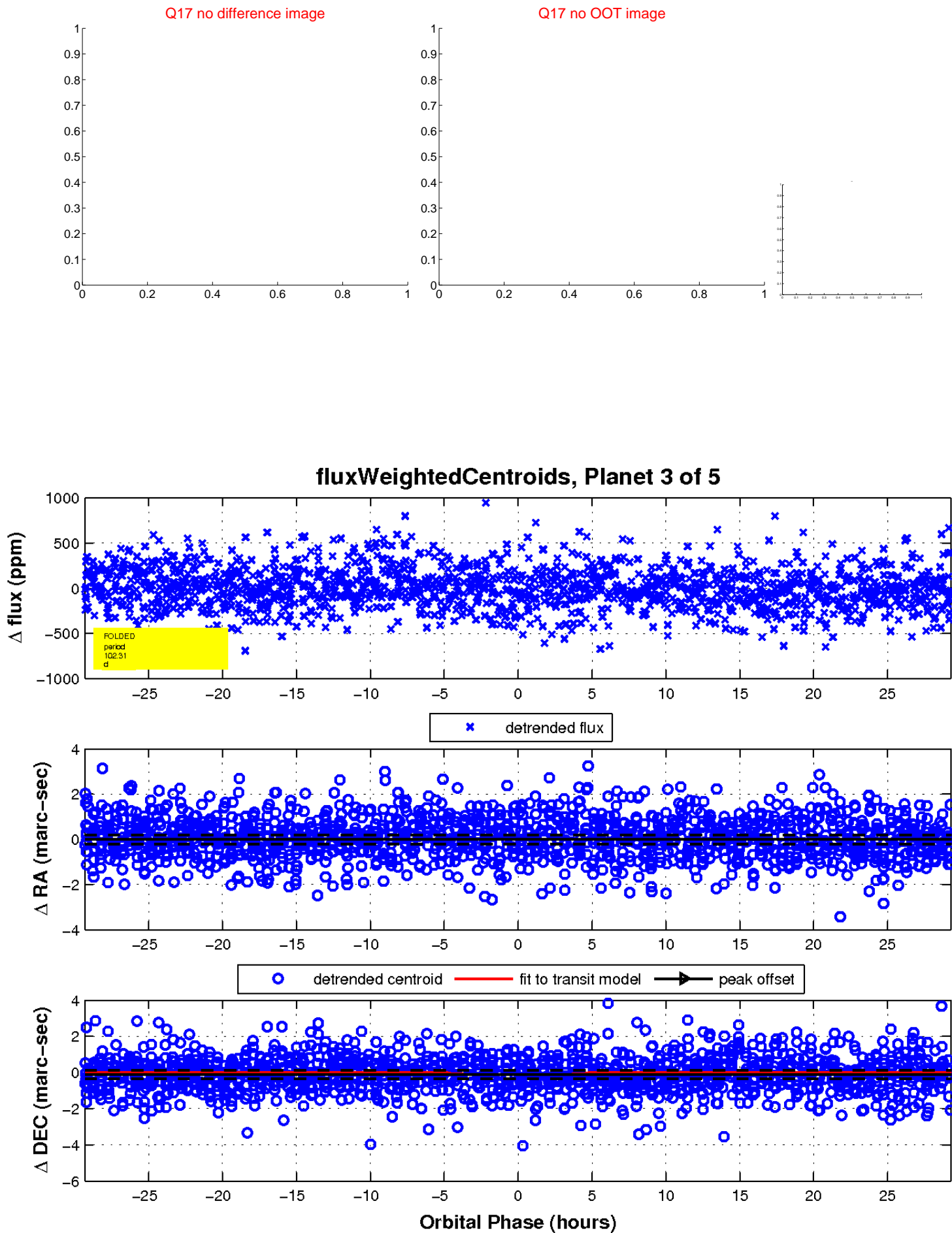
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

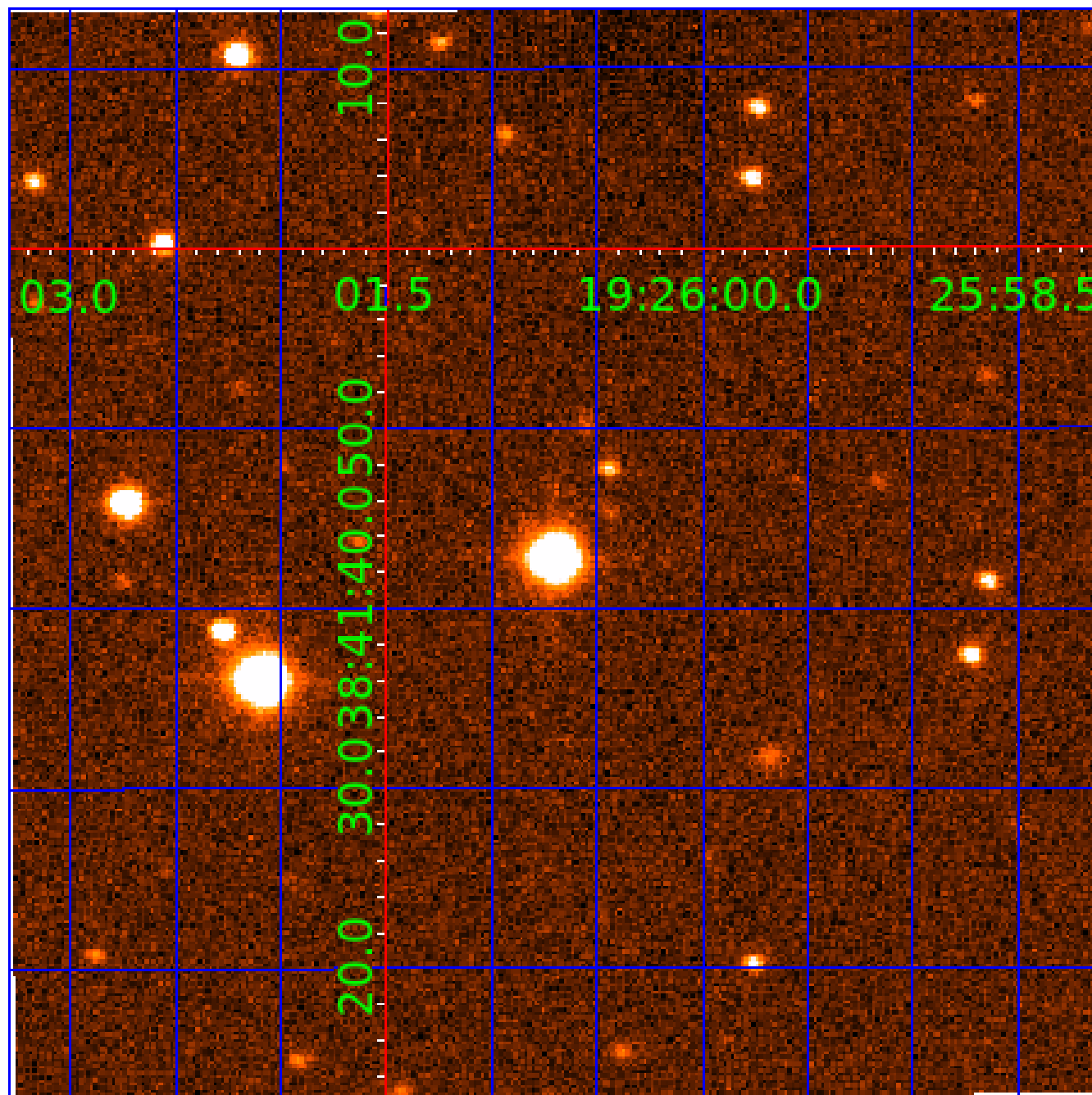


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003544878

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 003544878-01 | OBS | No | 1.191038 | 132.485299 | 24.8 | 6.780 | 8.9 | 8.6 | 1.19 | 6478 | 0.59 | 4054.79 |
| 003544878-02 | OBS | No | 118.615798 | 238.409610 | 205.8 | 7.872 | 8.4 | 6.1 | 1.19 | 6478 | 1.83 | 8.78 |
| 003544878-03 | OBS | No | 102.310517 | 165.383907 | 177.7 | 9.792 | 8.3 | 6.0 | 1.19 | 6478 | 1.78 | 10.70 |
| 003544878-04 | OBS | No | 57.687975 | 135.908219 | 235.9 | 4.588 | 7.9 | 7.0 | 1.19 | 6478 | 2.05 | 22.97 |
| 003544878-05 | OBS | No | 76.661194 | 142.914283 | 261.5 | 2.446 | 8.0 | 8.3 | 1.19 | 6478 | 2.09 | 15.72 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 003544878-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 003544878-02 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST |
| 003544878-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS |
| 003544878-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 003544878-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

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

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

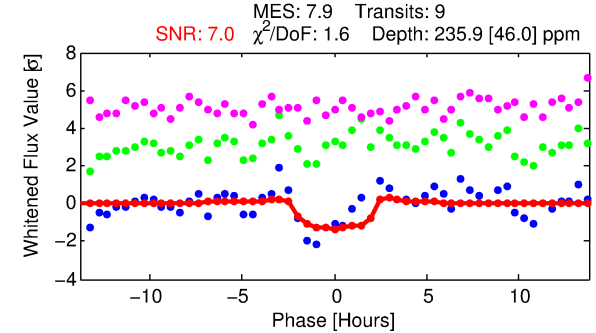
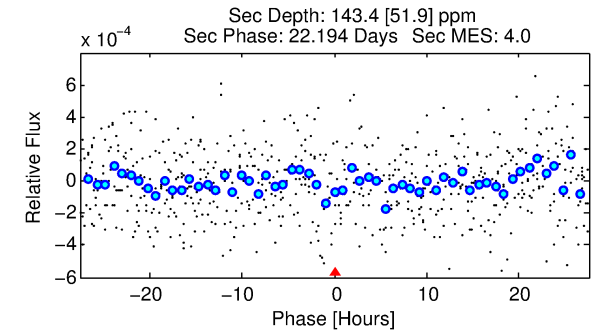
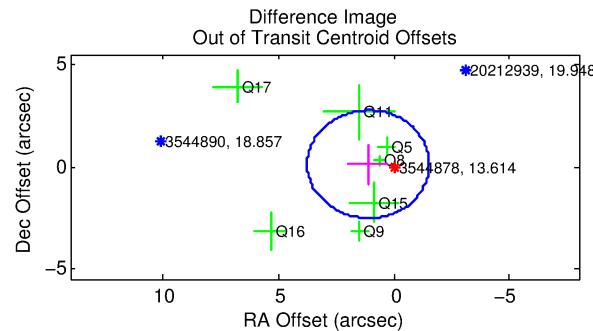
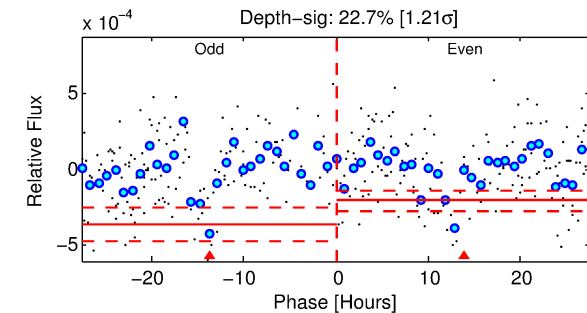
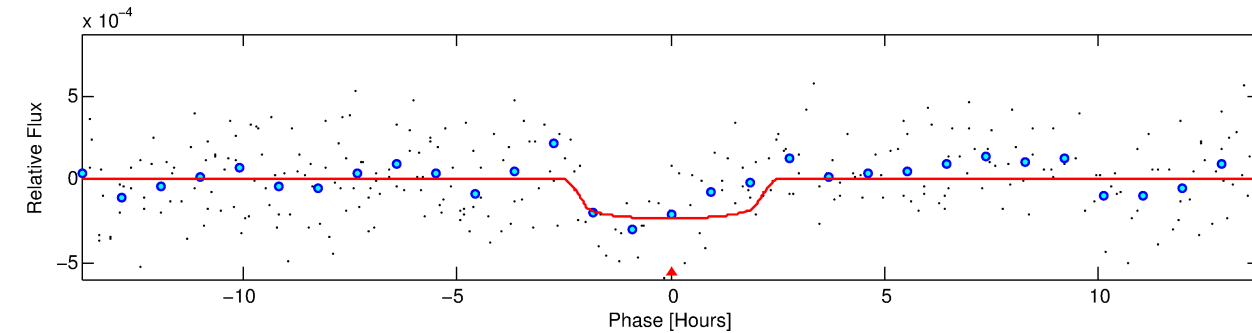
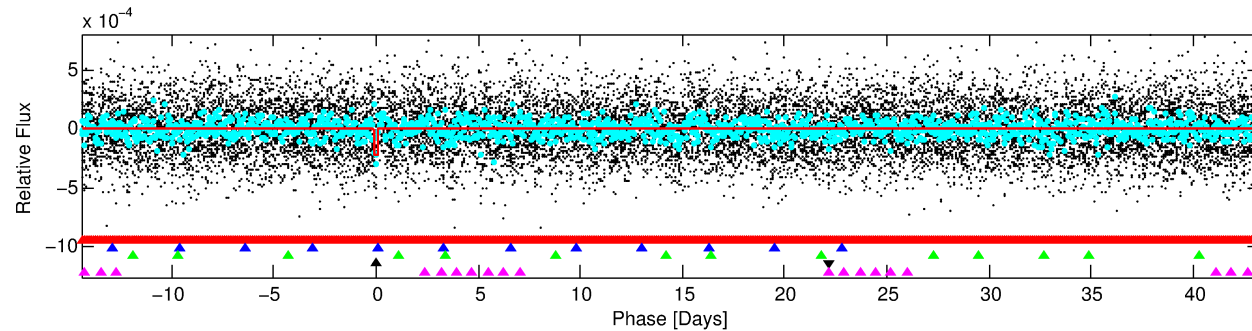
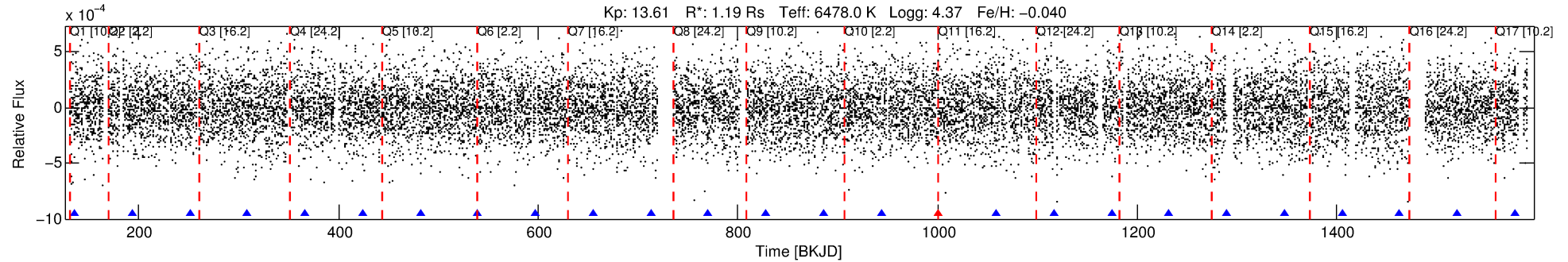
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003544878-04

No Significant Match Found

DV One-Page Summary

KIC: 3544878 Candidate: 4 of 5 Period: 57.688 d



DV Fit Results:

Period = 57.68797 [0.00115] d
Epoch = 135.9082 [0.0147] BKJD
Rp/R* = 0.0158 [0.0204]
a/R* = 55.62 [401.30]
b = 0.83 [2.63]
Seff = 22.97 [8.51]
Teq = 558 [52] K
Rp = 2.05 [2.72] Re
a = 0.3114 [0.0752] AU
Ag = 1824.32 [4810.55] [0.38 σ]
Teffp = 5640 [3690] K [1.38 σ]

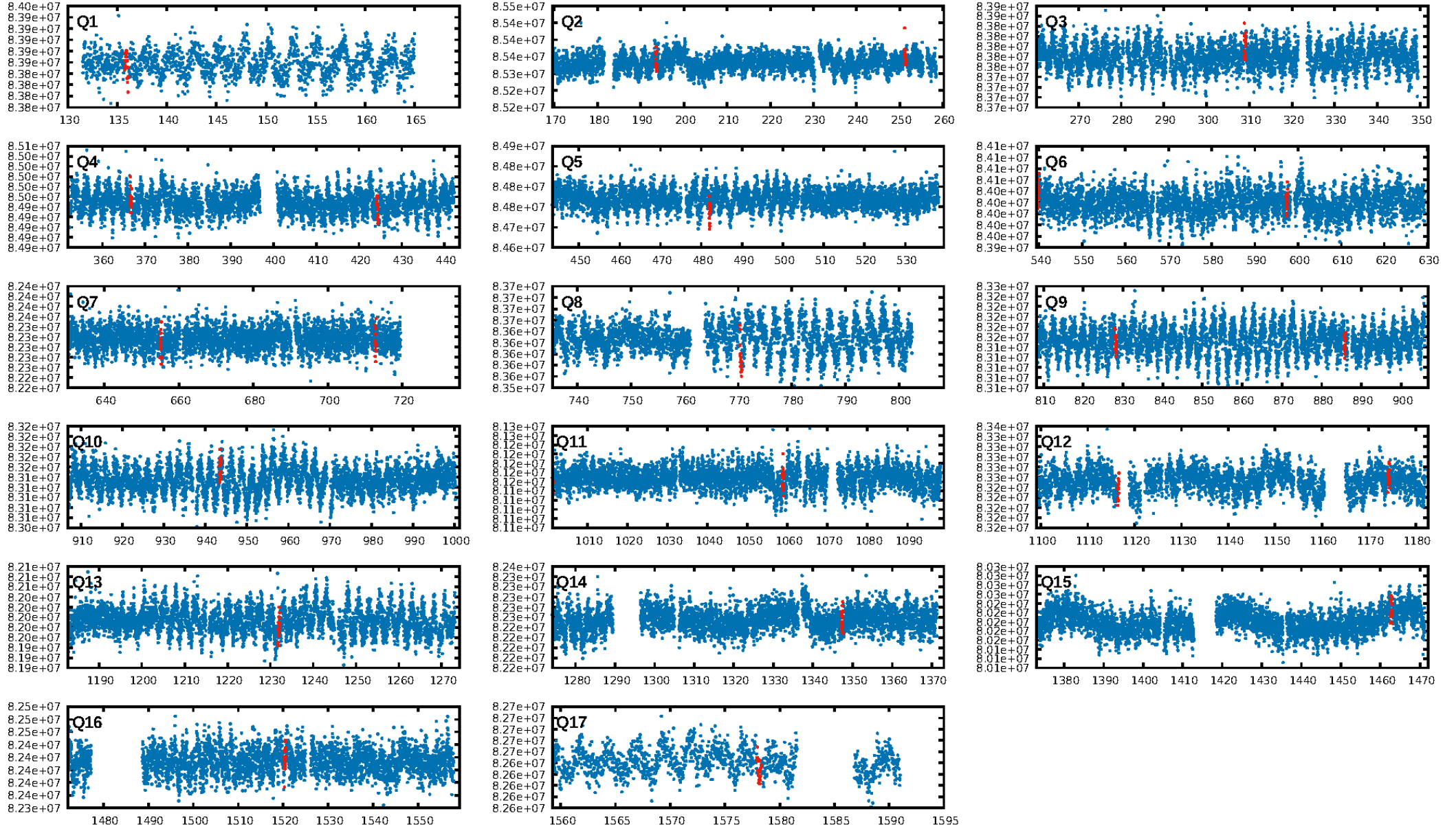
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [165.63 σ]
LongPeriod-sig: 100.0% [87.59 σ]
ModelChiSquare2-sig: 1.3%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 1.56e-08
RollingBand-fgt: 0.89 [8/9]
GhostDiagnostic-chr: -2.08
Centroid-sig: 26.2%
Centroid-so: 0.803 arcsec [0.96 σ]
OotOffset-rm: 1.118 arcsec [1.27 σ]
KicOffset-rm: 1.169 arcsec [1.53 σ]
OotOffset-st: 0/2/2/3 [7]
KicOffset-st: 0/2/2/3 [7]
DiffImageQuality-fgm: 0.43 [3/7]
DiffImageOverlap-fno: 0.06 [1/16]

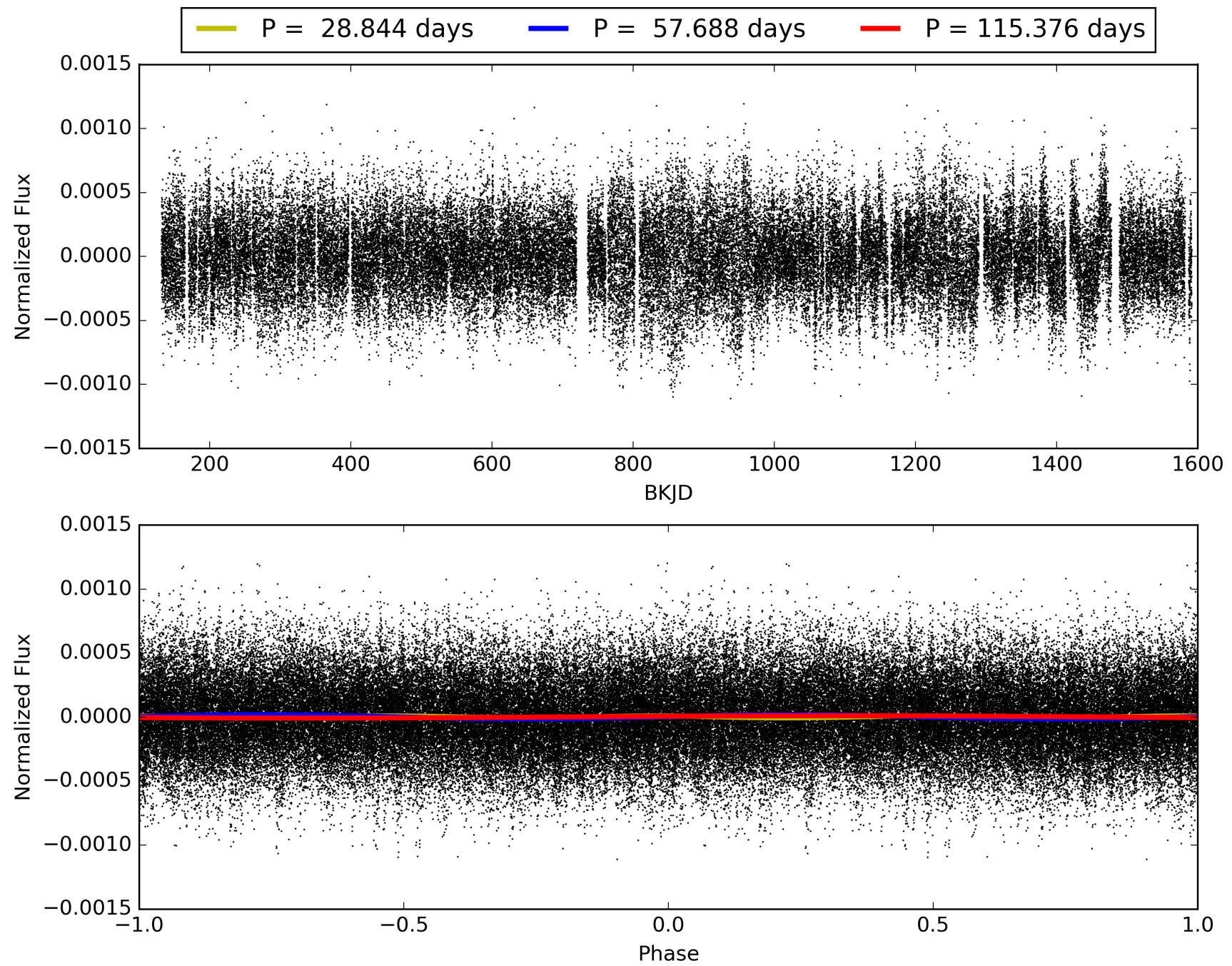
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:24:34 Z

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

TCE 003544878-04, PDC Light Curves

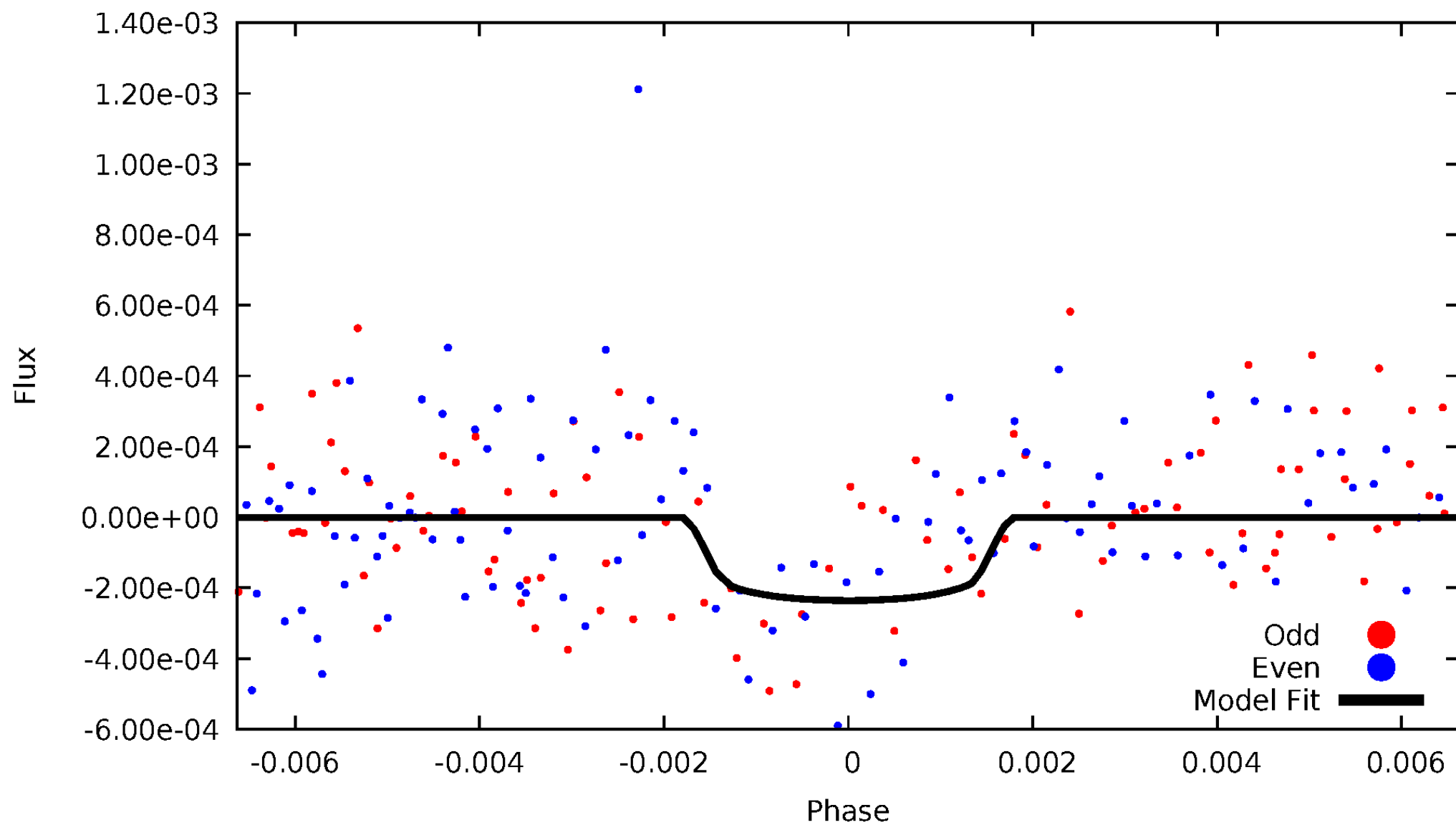


TCE 003544878-04



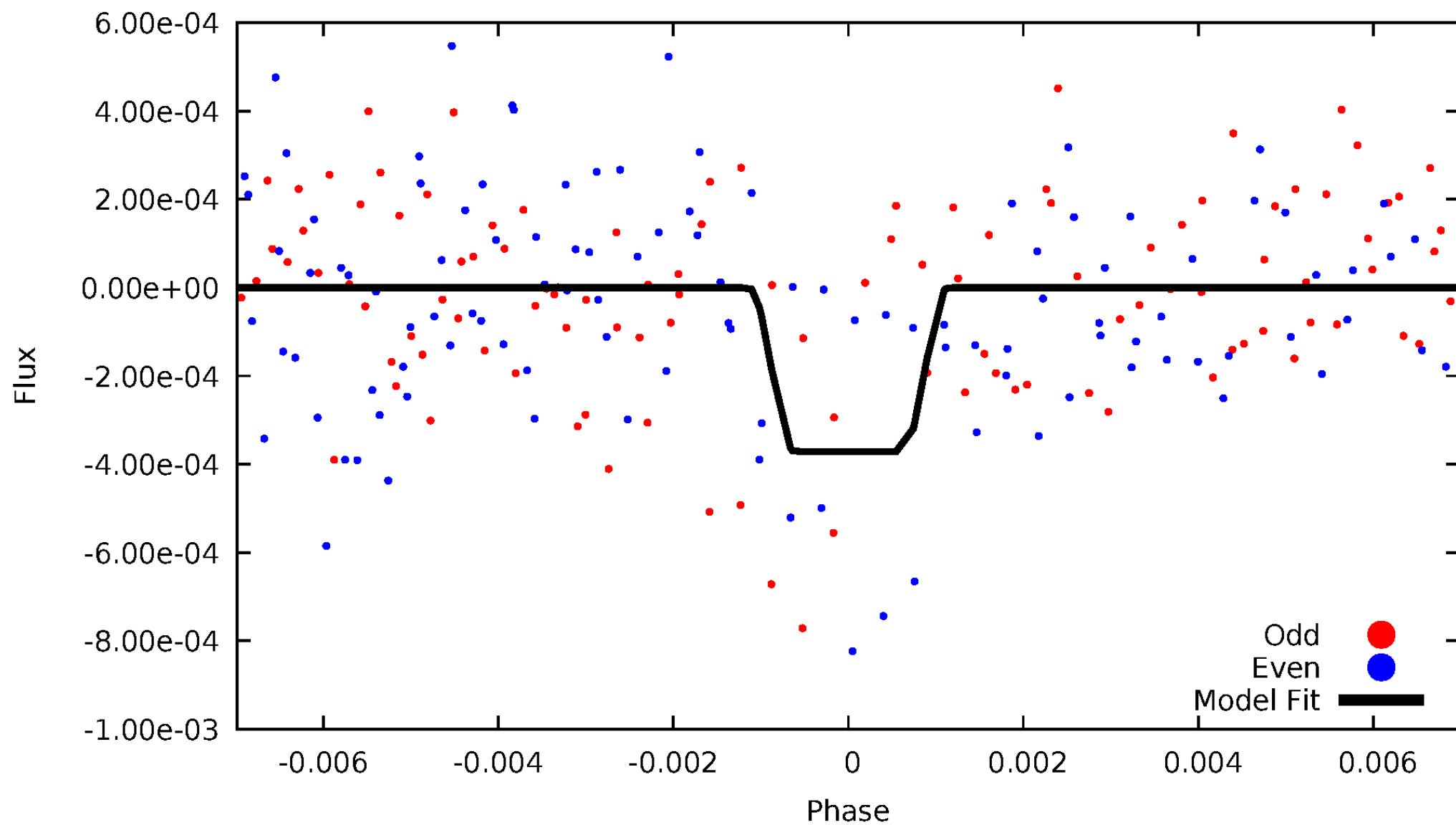
DV Odd/Even

TCE 003544878-04



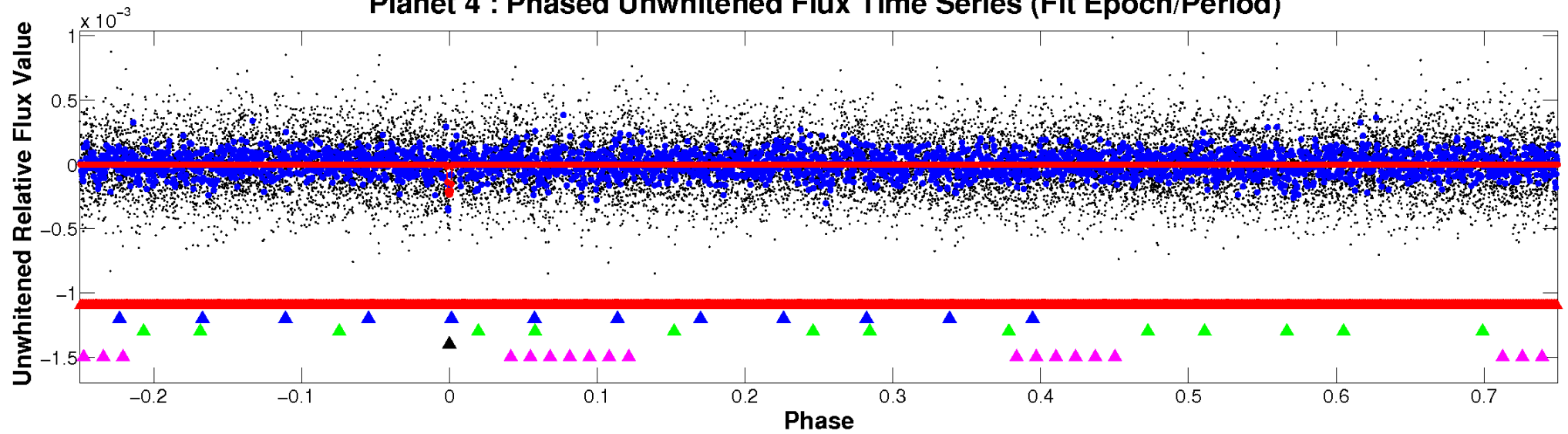
ALT Odd/Even

TCE 003544878-04

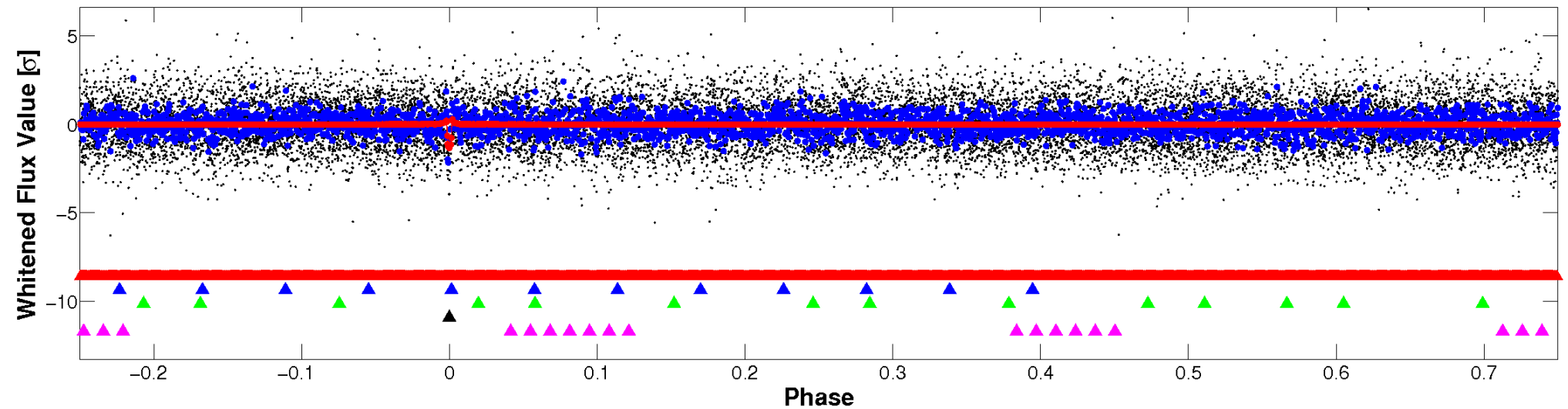


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

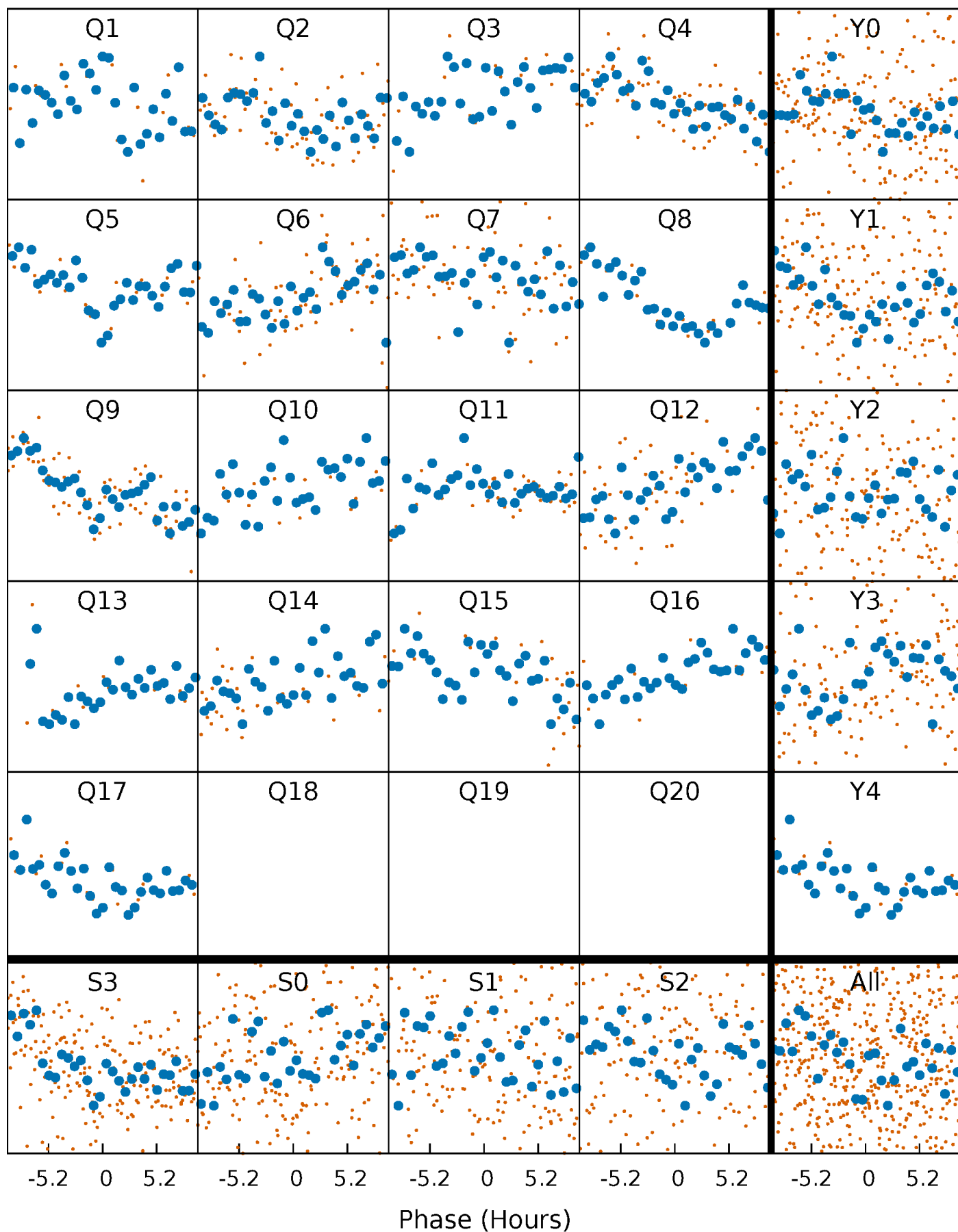


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



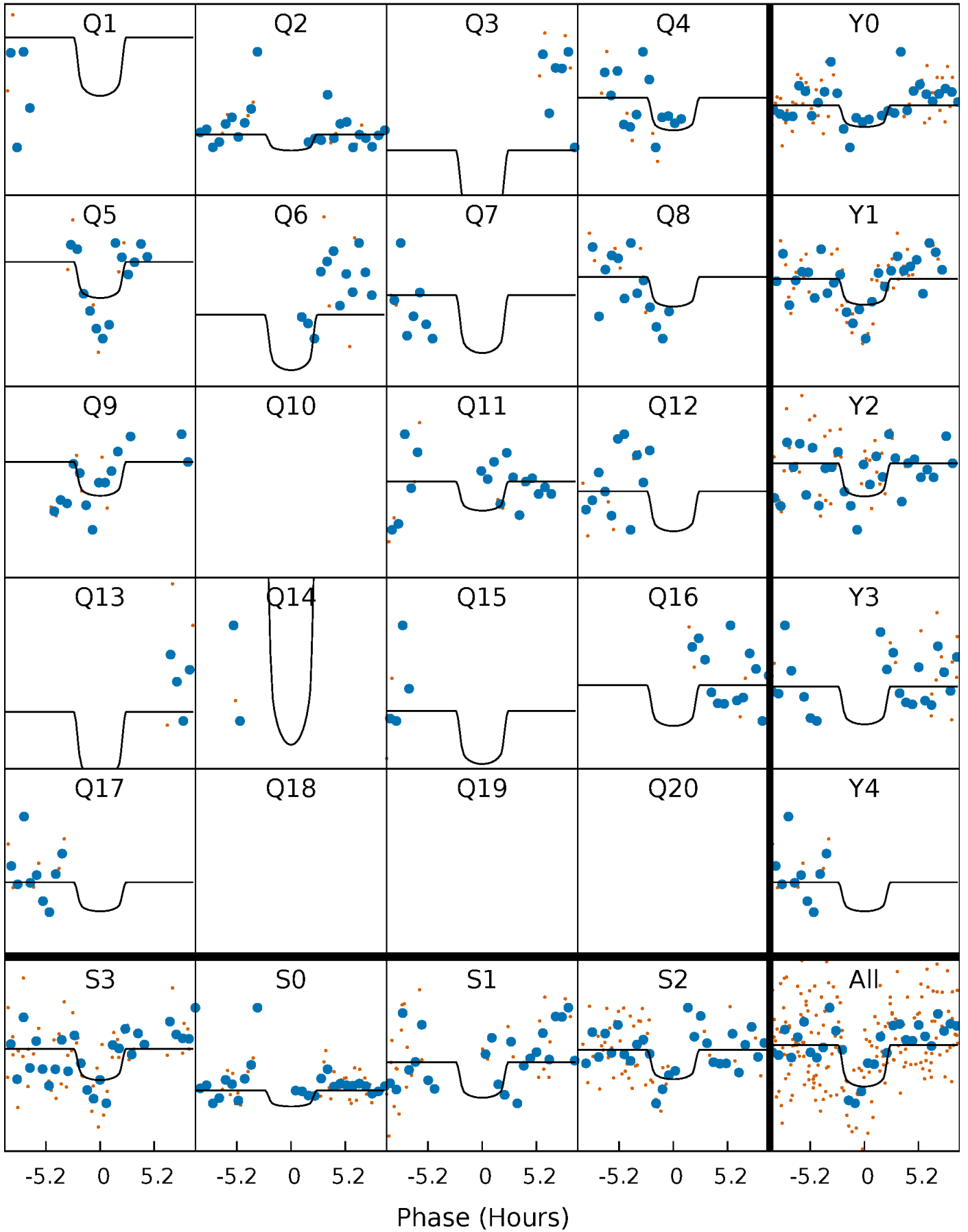
PDC Quarter-Phased Transit Curves

TCE 003544878-04 P= 57.687975 Days $T_0=135.908219$ (BKJD)



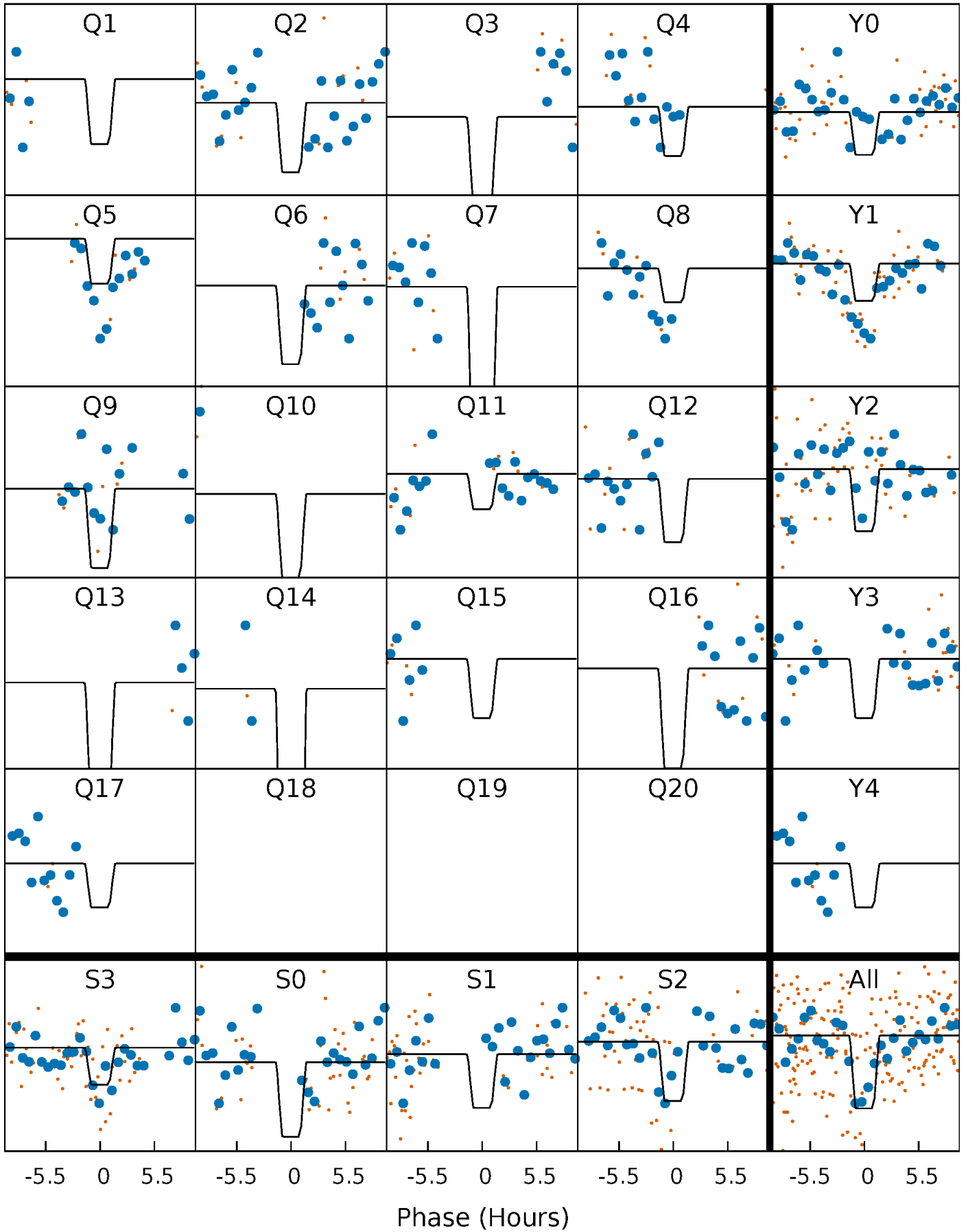
DV Quarter-Phased Transit Curves

TCE 003544878-04 P= 57.687975 Days $T_0=135.908219$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

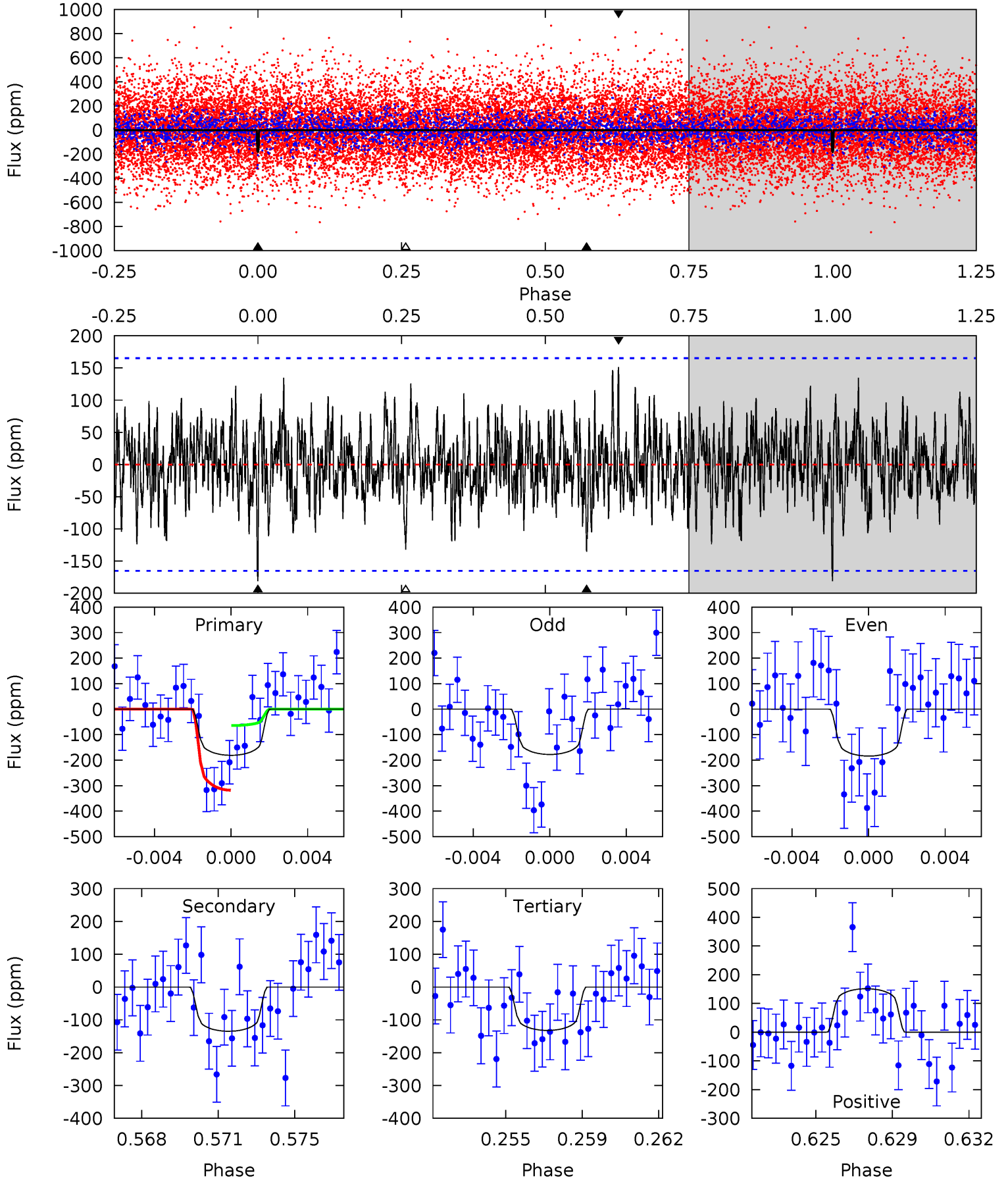
TCE 003544878-04 P= 57.686005 Days $T_0=135.910760$ (BKJD)



DV Model-Shift Uniqueness Test

003544878-04, P = 57.687975 Days, E = 78.220244 Days

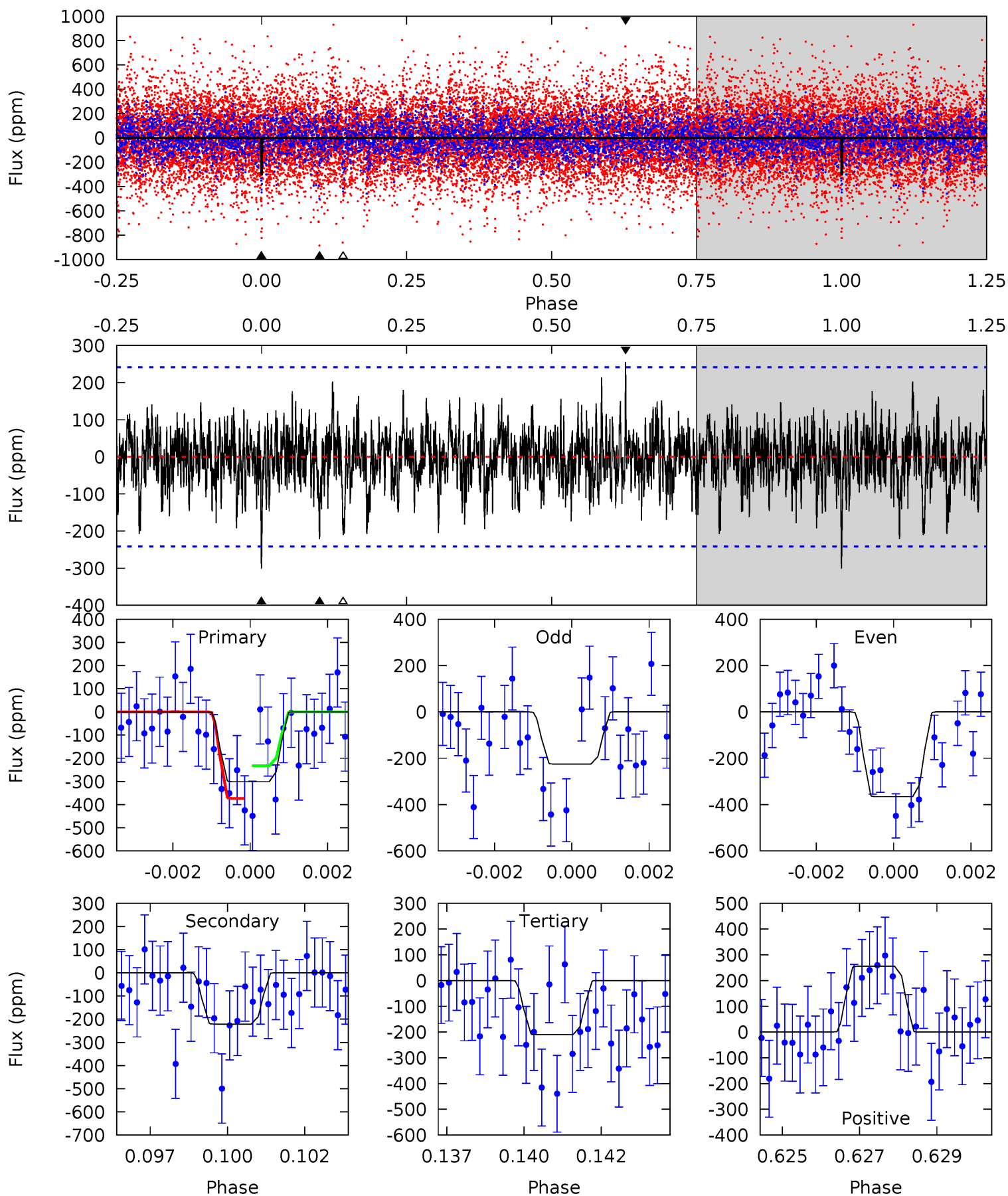
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.72 | 4.26 | 4.18 | 4.78 | 5.22 | 2.91 | 1.40 | 1.55 | 0.94 | 0.08 | -0.52 | 0.10 | 0.75 | 0.46 | 3.99 |



Alt Model-Shift Uniqueness Test

003544878-04, P = 57.686005 Days, E = 78.224755 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.61 | 4.86 | 4.63 | 5.61 | 5.31 | 3.06 | 1.36 | 1.99 | 1.00 | 0.23 | -0.75 | 1.54 | 2.96 | 0.46 | 1.55 |



Stellar Parameters For KIC 003544878

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6478^{+144}_{-208} | $4.371^{+0.062}_{-0.188}$ | $-0.040^{+0.250}_{-0.300}$ | $1.188^{+0.345}_{-0.148}$ | $1.209^{+0.169}_{-0.169}$ | $1.016^{+0.327}_{-0.483}$ |
| | +2%/-3% | +1%/-4% | +625%/-750% | +29%/-12% | +14%/-14% | +32%/-48% |
| 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 003544878-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|------------------------|-----------------------|
| DV | -135 ± 32 | $3.00^{+2.33}_{-1.84}$ | 791^{+52}_{-38} | 4833^{+2822}_{-991} | 814^{+4295}_{-577} |
| Alt. | -221 ± 46 | $3.19^{+2.58}_{-2.10}$ | 795^{+52}_{-40} | 5200^{+4029}_{-1077} | 1173^{+8401}_{-820} |

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 $A_{obs} \gg 1.0$

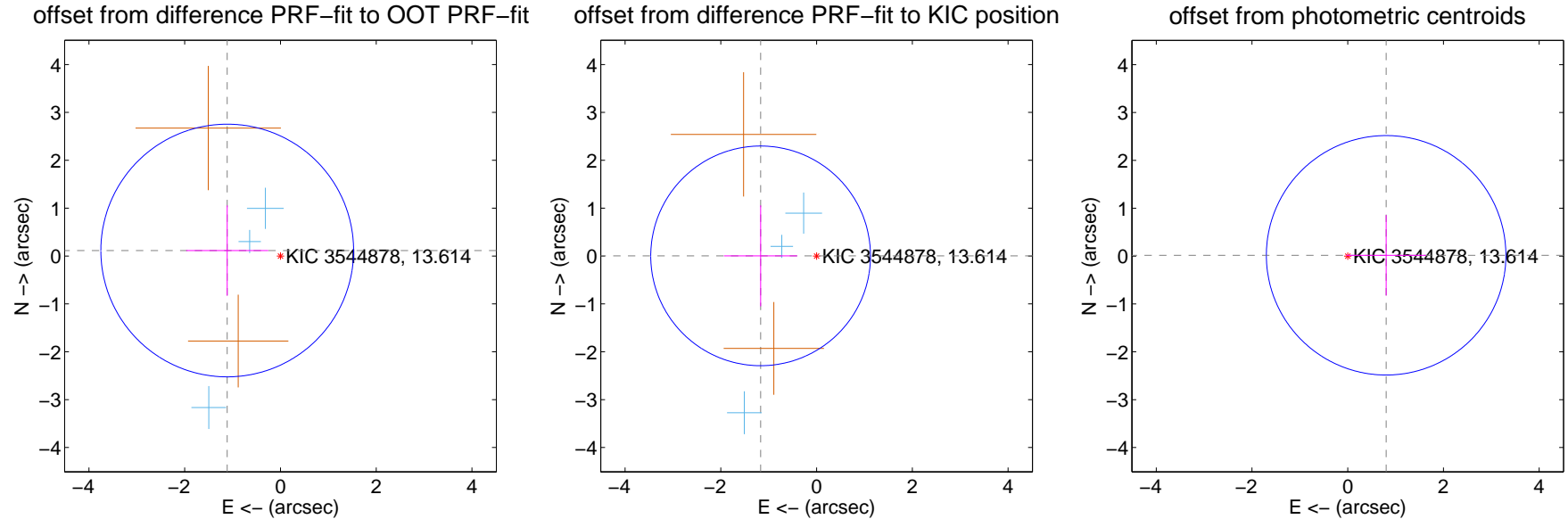
DV Centroid Data

Supplemental centroid analysis for 003544878-04. Kepler magnitude: 13.61. Transit SNR 6.99

There are 3 quarters with good PRF difference image offsets

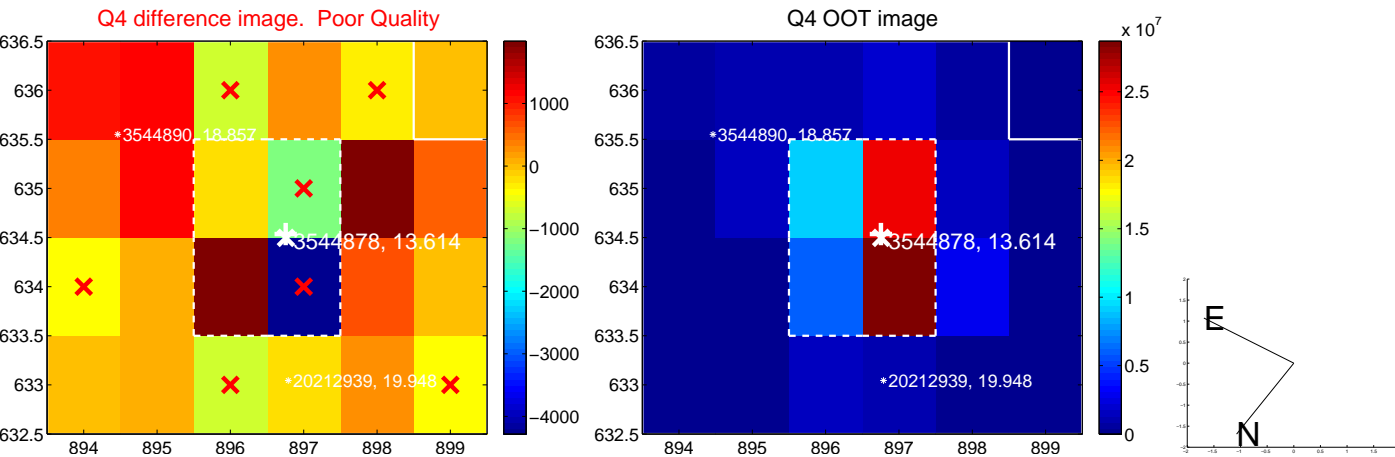
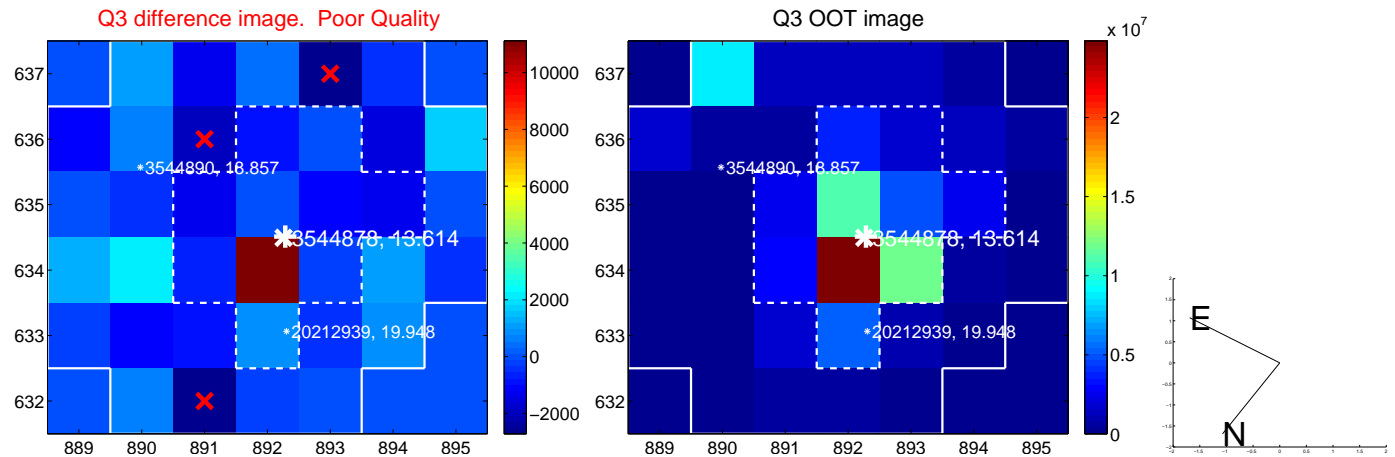
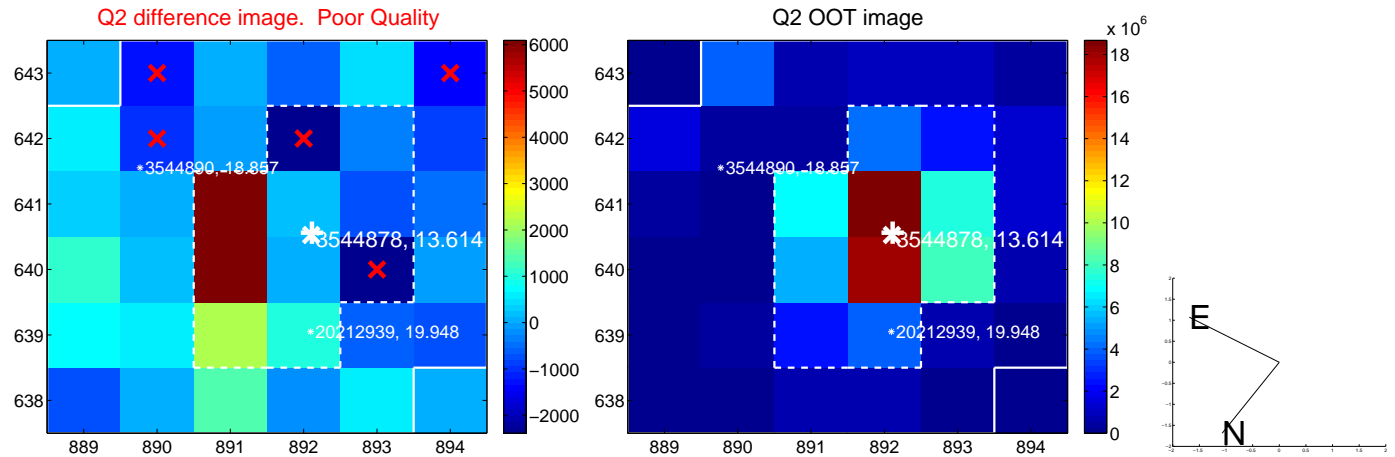
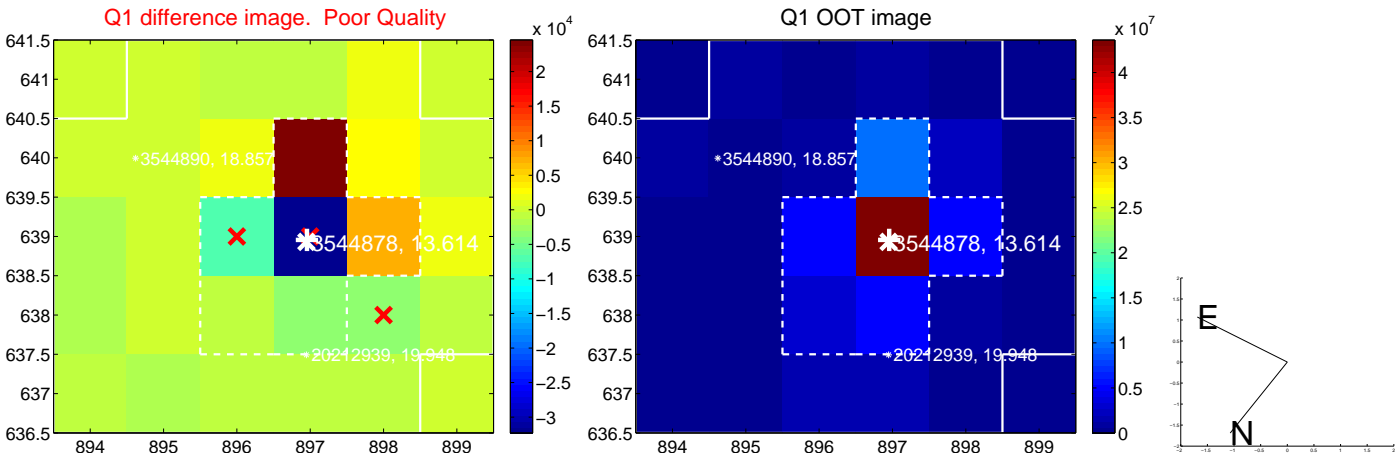
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.118 ± 0.880 | 1.27 | 1.112 ± 0.856 | 0.115 ± 0.943 |
| PRF-fit source offset from KIC position | 1.169 ± 0.765 | 1.53 | 1.169 ± 0.764 | 0.003 ± 1.054 |
| photometric centroid source offset | 0.80 ± 0.83 | 0.96 | -0.80 ± 0.83 | 0.02 ± 0.84 |

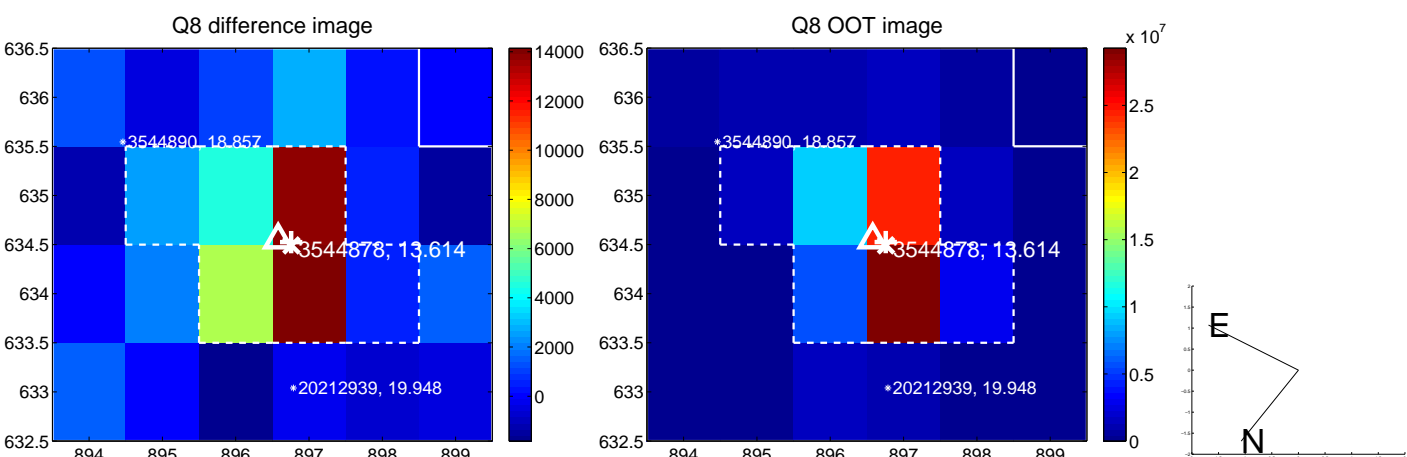
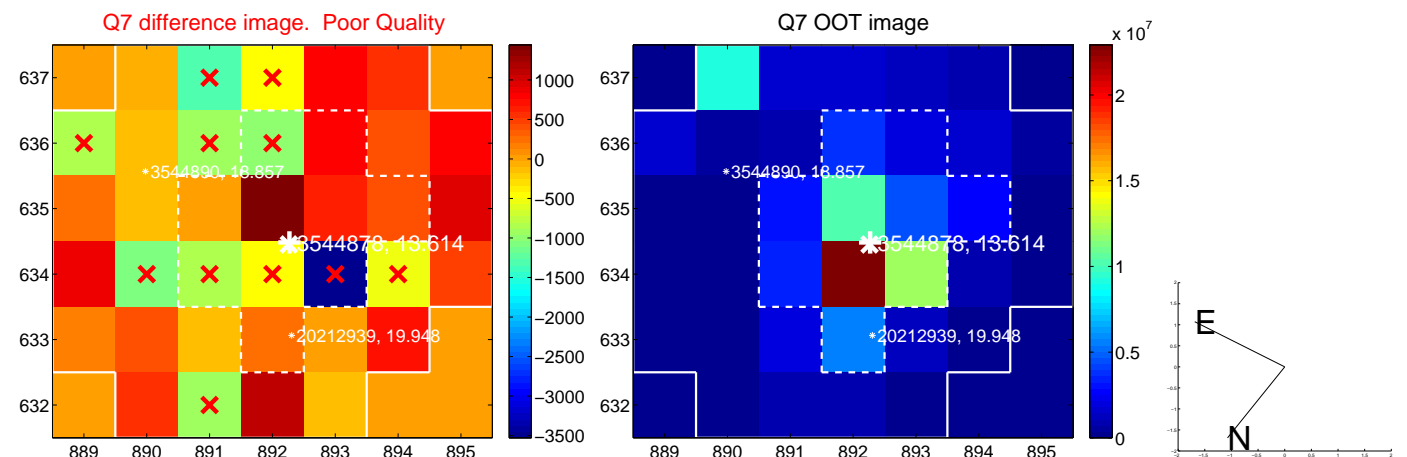
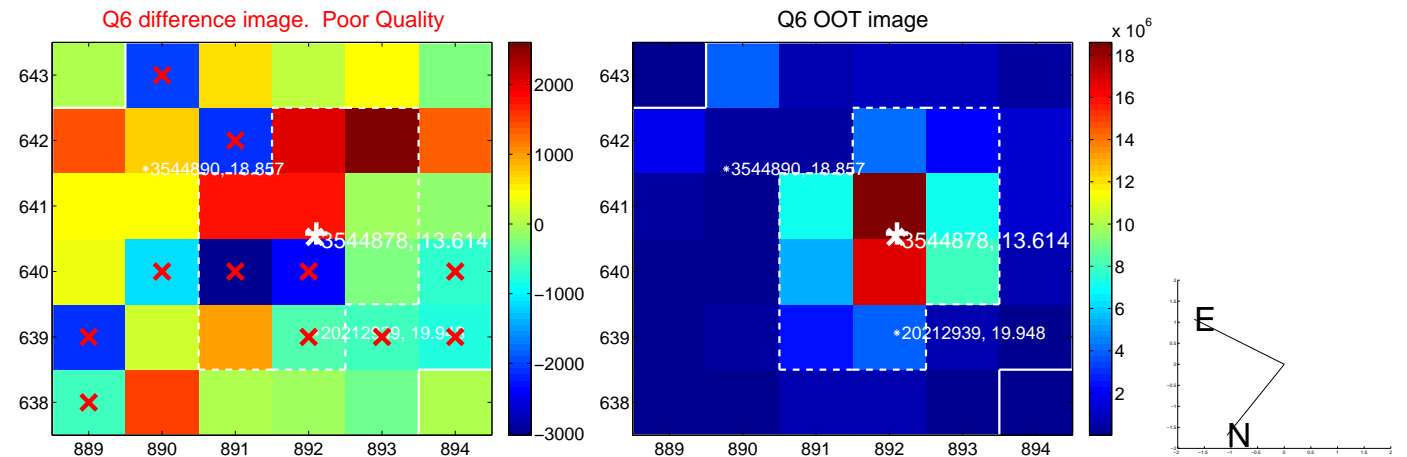
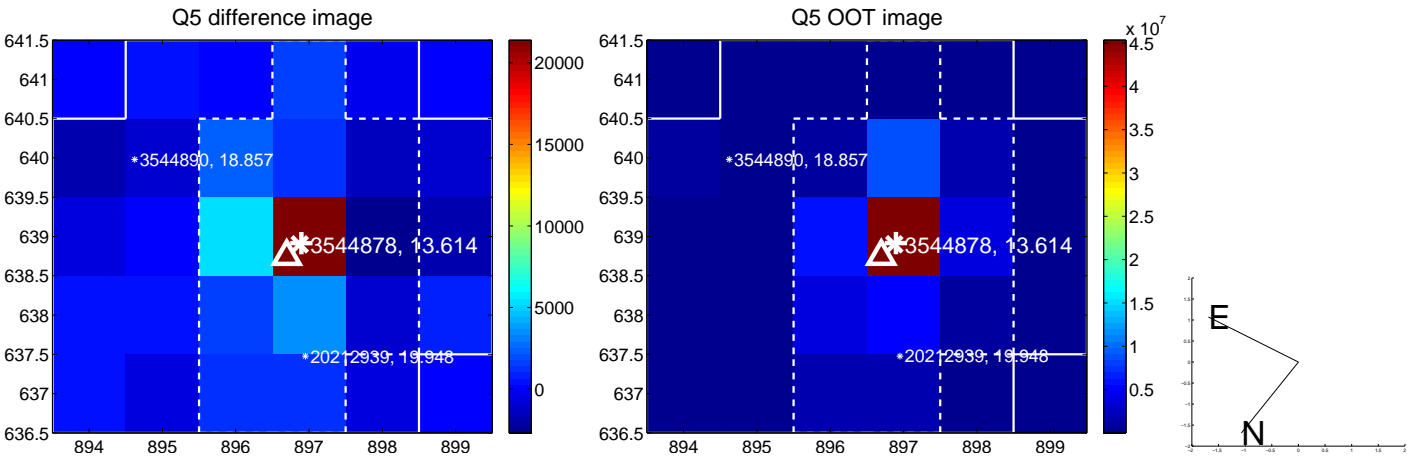


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

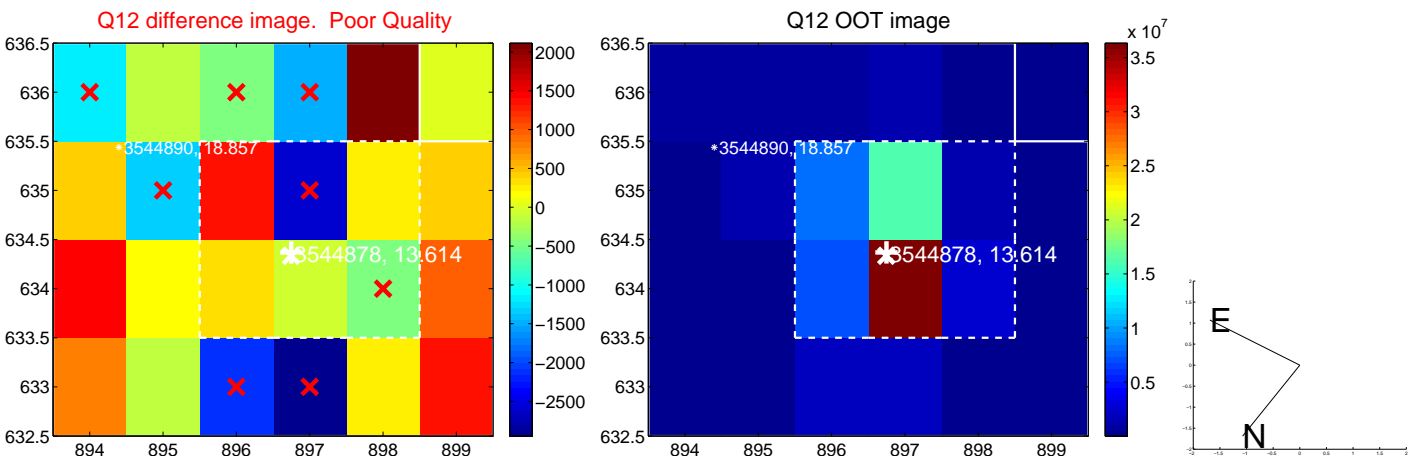
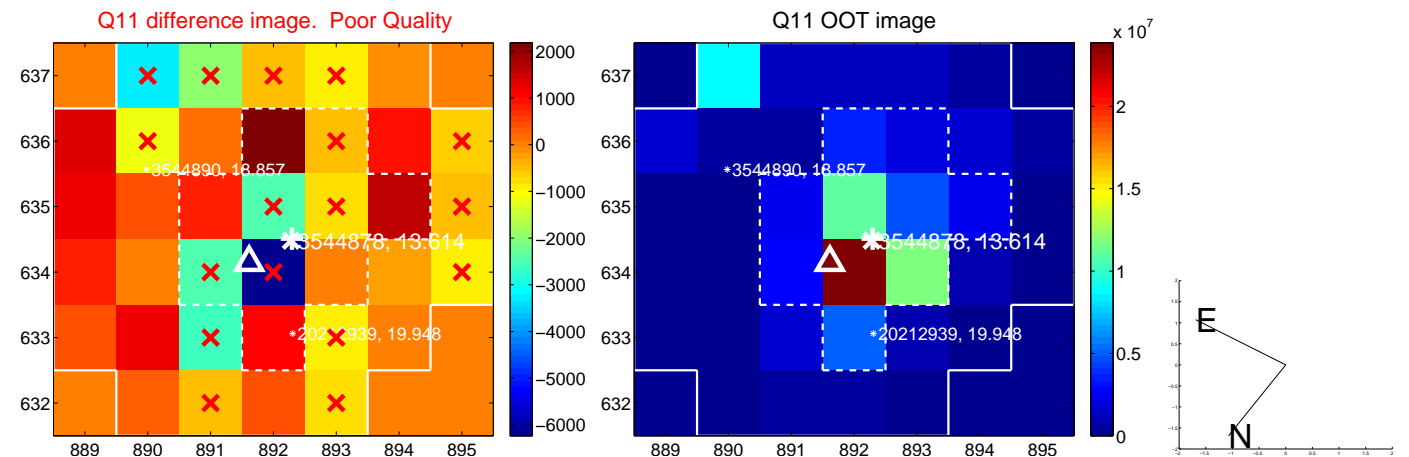
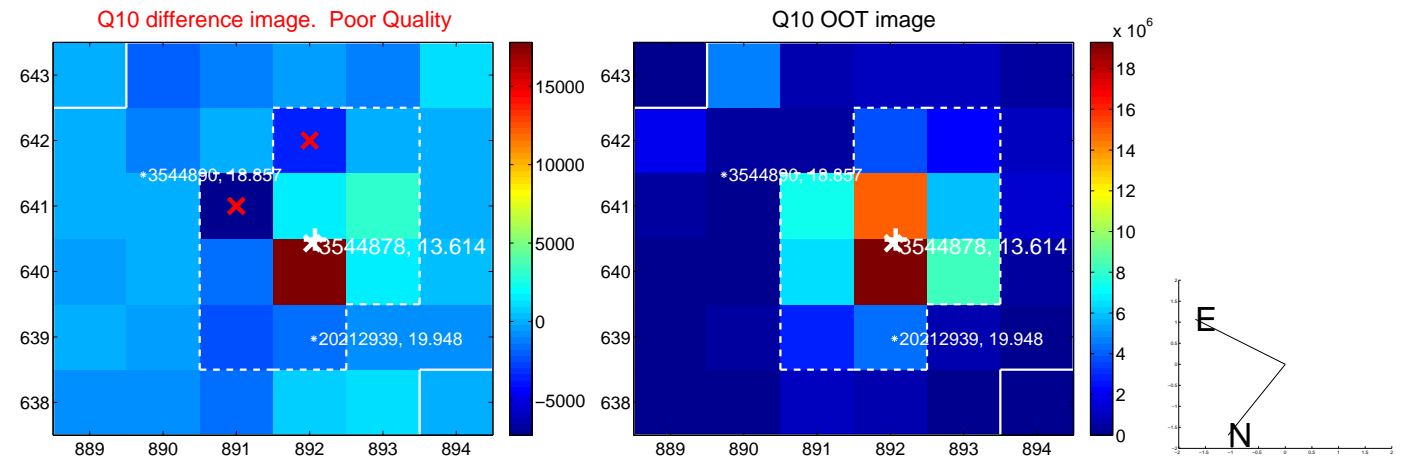
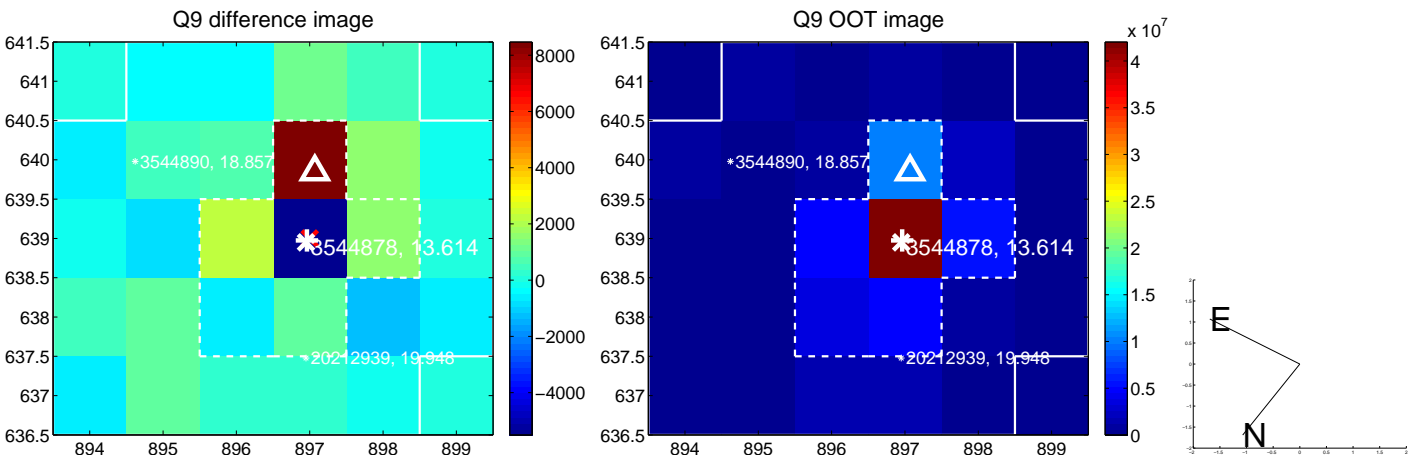
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



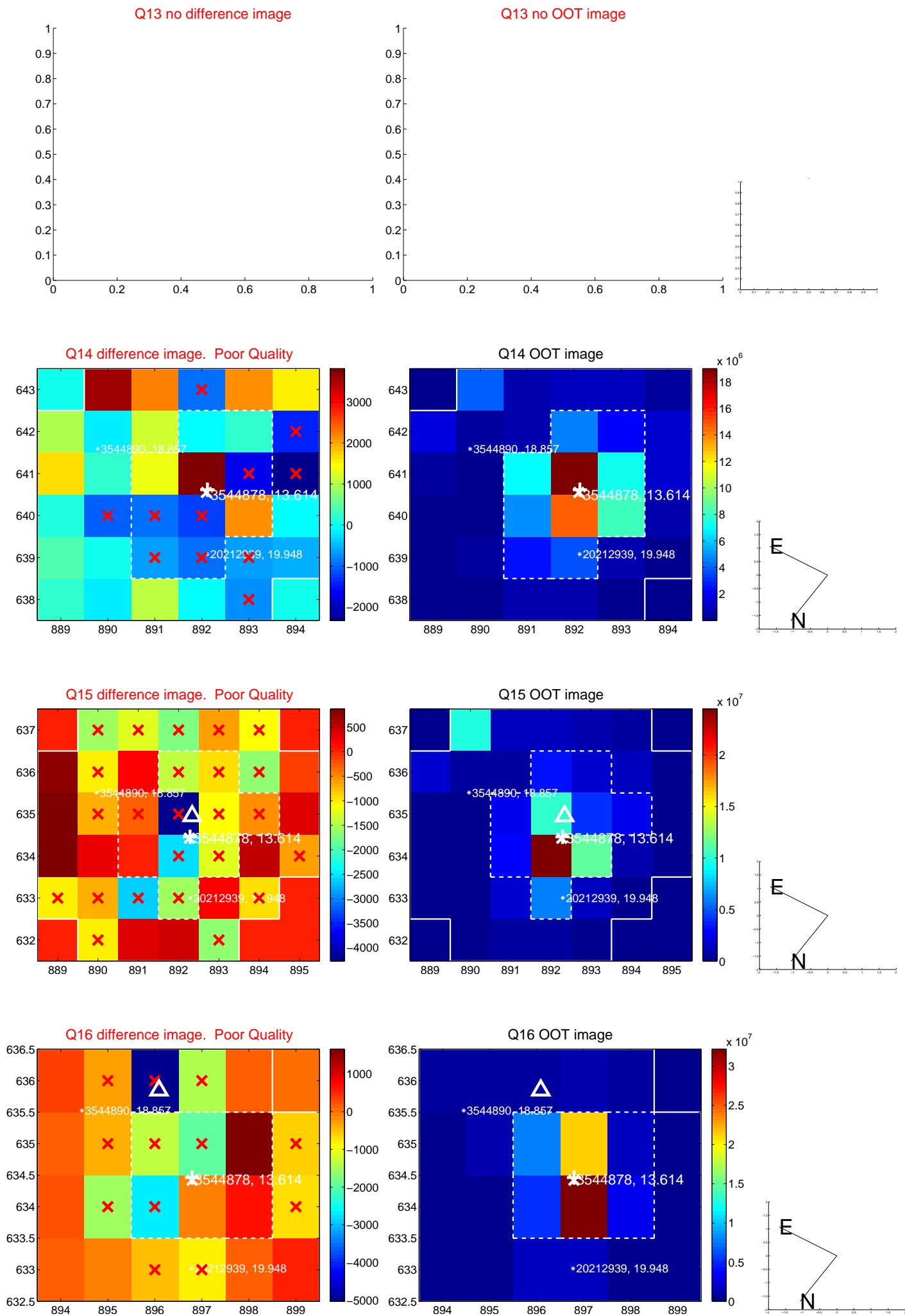
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



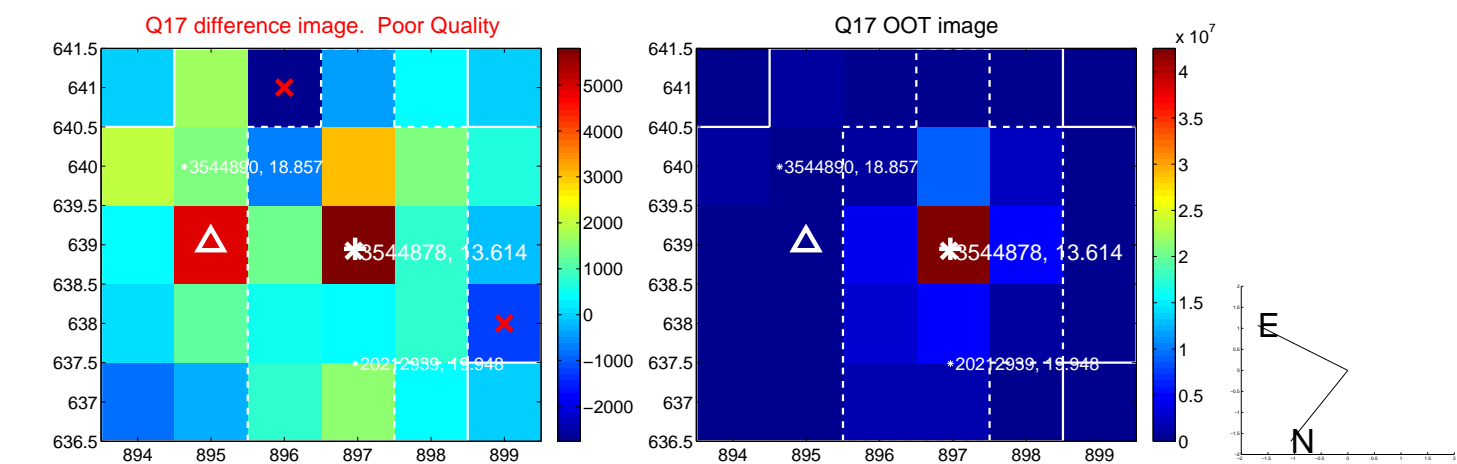
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



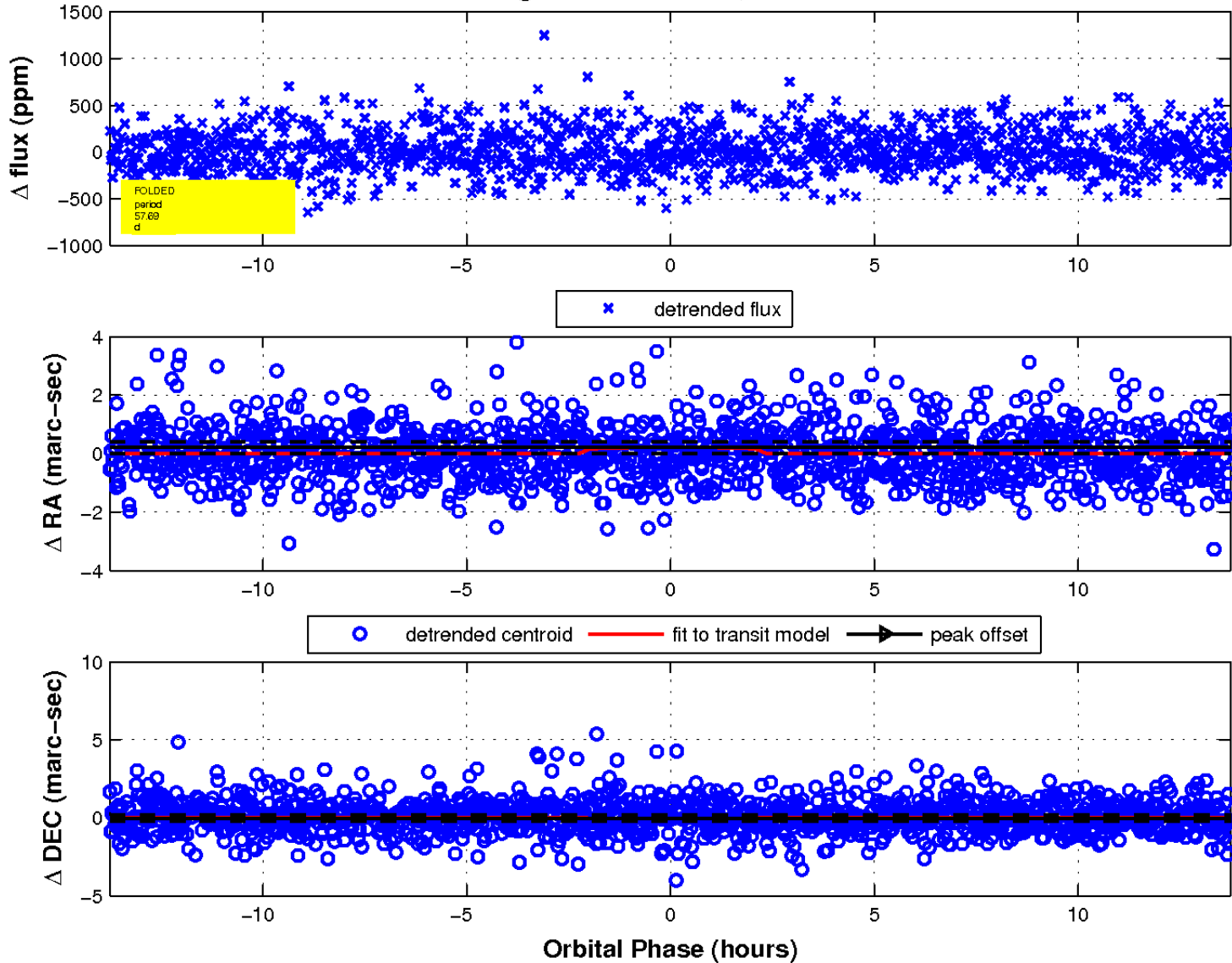
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

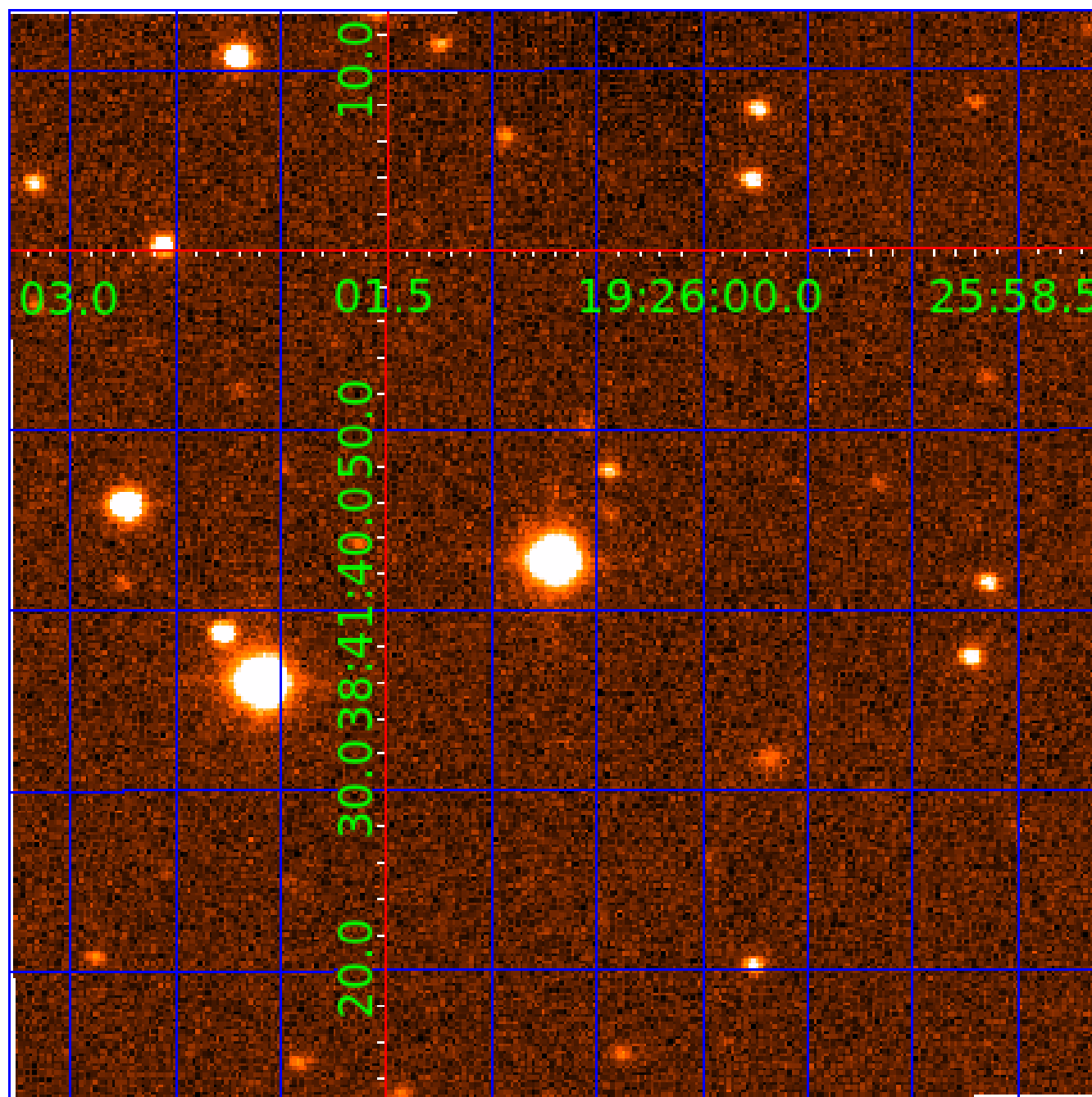


fluxWeightedCentroids, Planet 4 of 5



UKIRT Image

Declination



KIC 003544878

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 003544878-01 | OBS | No | 1.191038 | 132.485299 | 24.8 | 6.780 | 8.9 | 8.6 | 1.19 | 6478 | 0.59 | 4054.79 |
| 003544878-02 | OBS | No | 118.615798 | 238.409610 | 205.8 | 7.872 | 8.4 | 6.1 | 1.19 | 6478 | 1.83 | 8.78 |
| 003544878-03 | OBS | No | 102.310517 | 165.383907 | 177.7 | 9.792 | 8.3 | 6.0 | 1.19 | 6478 | 1.78 | 10.70 |
| 003544878-04 | OBS | No | 57.687975 | 135.908219 | 235.9 | 4.588 | 7.9 | 7.0 | 1.19 | 6478 | 2.05 | 22.97 |
| 003544878-05 | OBS | No | 76.661194 | 142.914283 | 261.5 | 2.446 | 8.0 | 8.3 | 1.19 | 6478 | 2.09 | 15.72 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 003544878-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV |
| 003544878-02 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST |
| 003544878-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS |
| 003544878-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS |
| 003544878-05 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT |

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

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

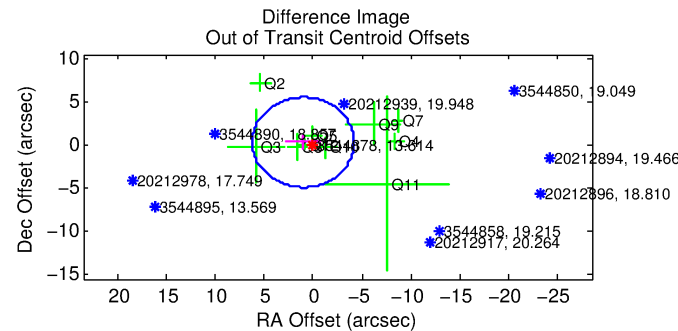
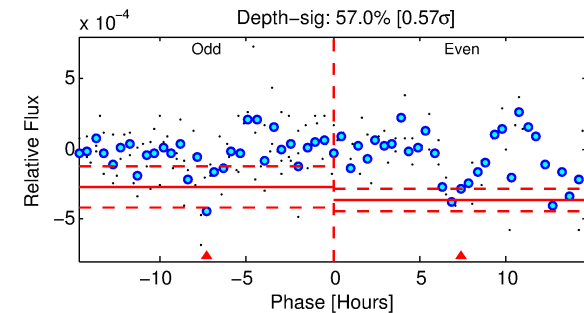
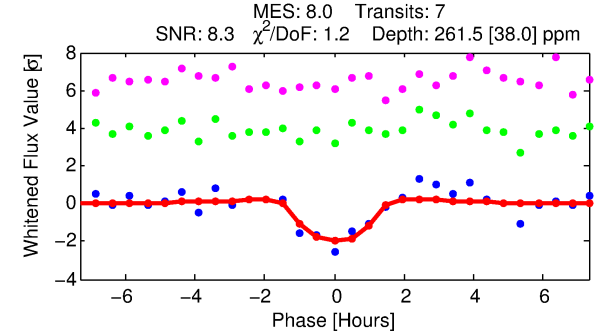
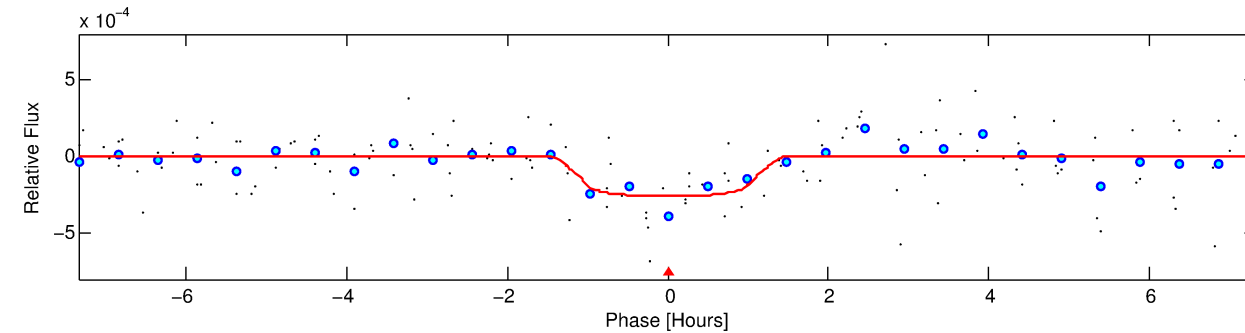
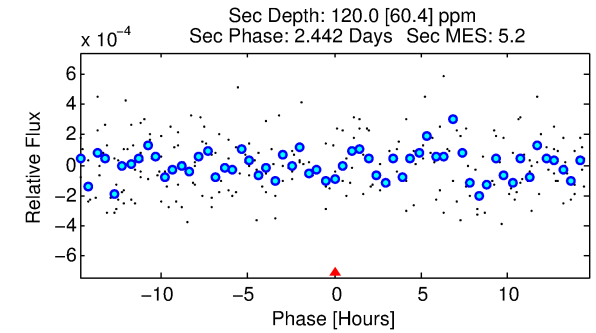
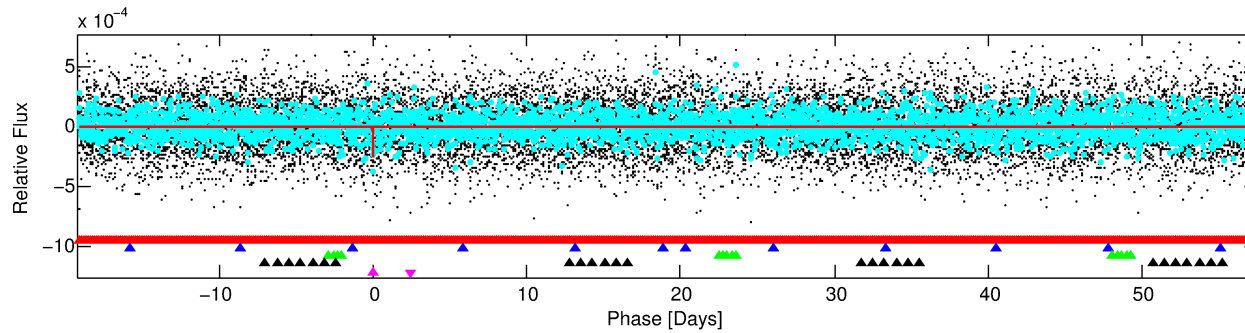
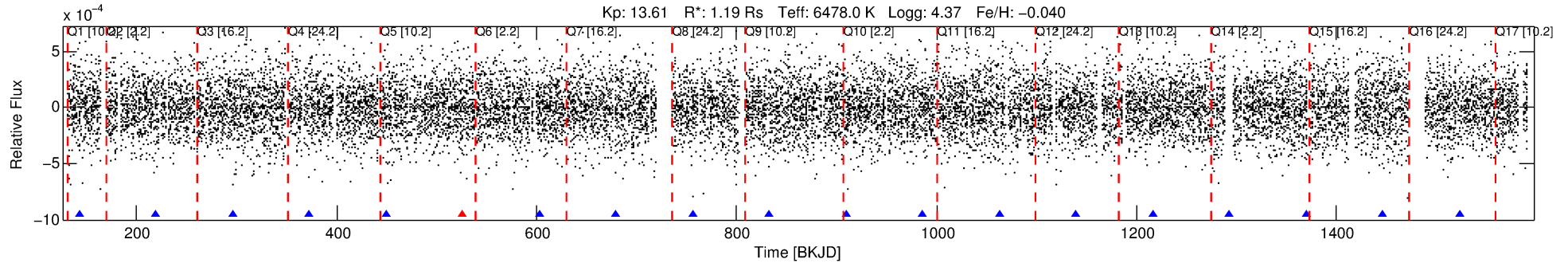
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003544878-05

No Significant Match Found

DV One-Page Summary

KIC: 3544878 Candidate: 5 of 5 Period: 76.661 d



DV Fit Results:

Period = 76.66119 [0.00105] d
Epoch = 142.9143 [0.0107] BKJD
Rp/R* = 0.0161 [0.0304]
a/R* = 164.48 [1670.95]
b = 0.75 [6.03]
Seff = 15.72 [5.82]
Teq = 508 [47] K
Rp = 2.09 [3.98] Re
a = 0.3764 [0.0909] AU
Ag = 2148.73 [8214.62] [0.26σ]
Teffp = 5345 [5090] K [0.95σ]

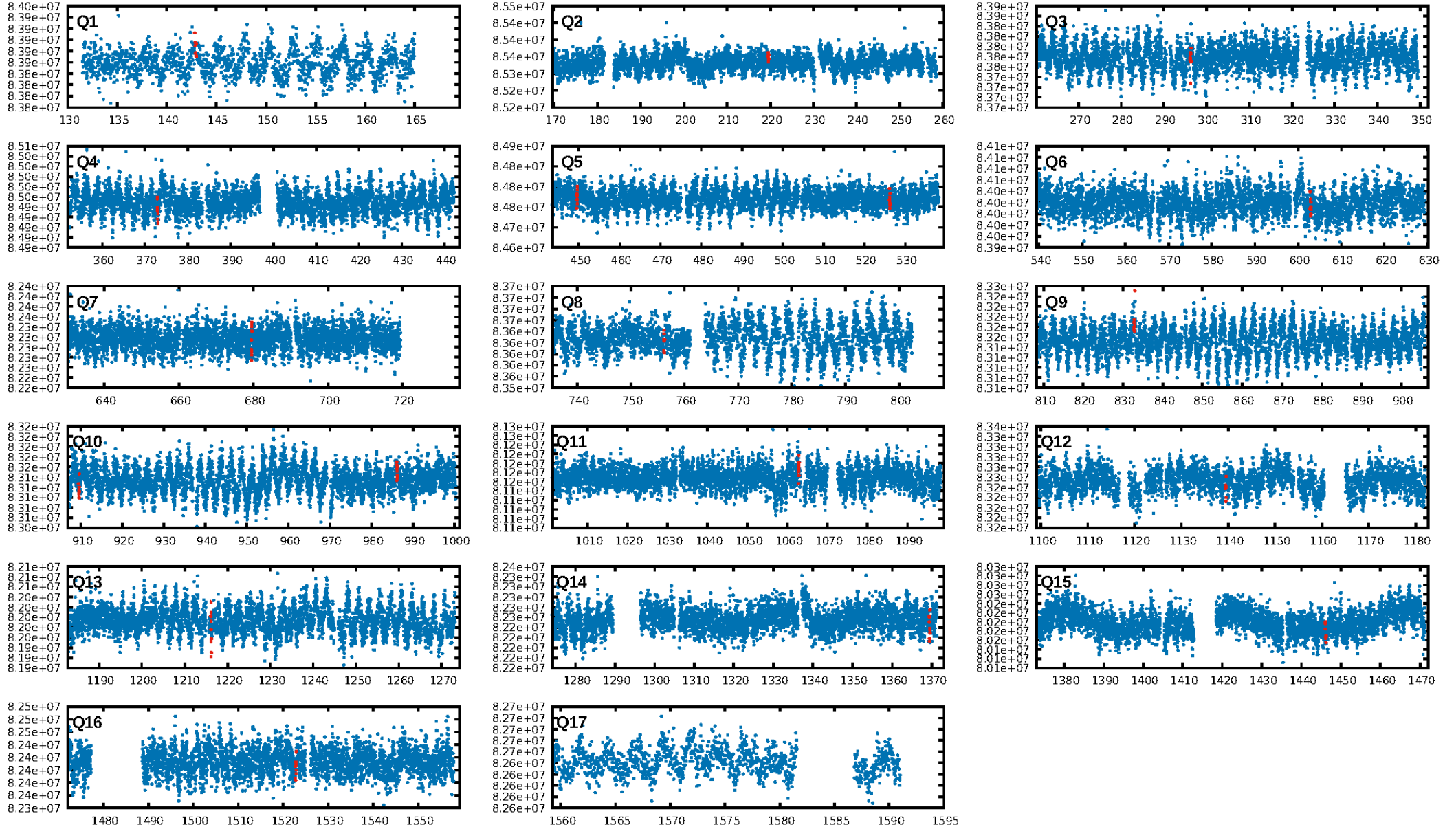
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [87.59σ]
LongPeriod-sig: 100.0% [60.99σ]
ModelChiSquare2-sig: 63.4%
ModelChiSquareGof-sig: 96.5%
Bootstrap-pfa: 1.27e-08
RollingBand-fgt: 0.86 [6/7]
GhostDiagnostic-chr: 0.4469
Centroid-sig: 3.1%
Centroid-so: 1.927 arcsec [1.66σ]
OotOffset-rm: 1.084 arcsec [0.62σ]
KicOffset-rm: 1.123 arcsec [0.64σ]
OotOffset-st: 2/3/3/2 [10]
KicOffset-st: 2/3/3/2 [10]
DiffImageQuality-fgm: 0.20 [2/10]
DiffImageOverlap-fno: 0.33 [5/15]

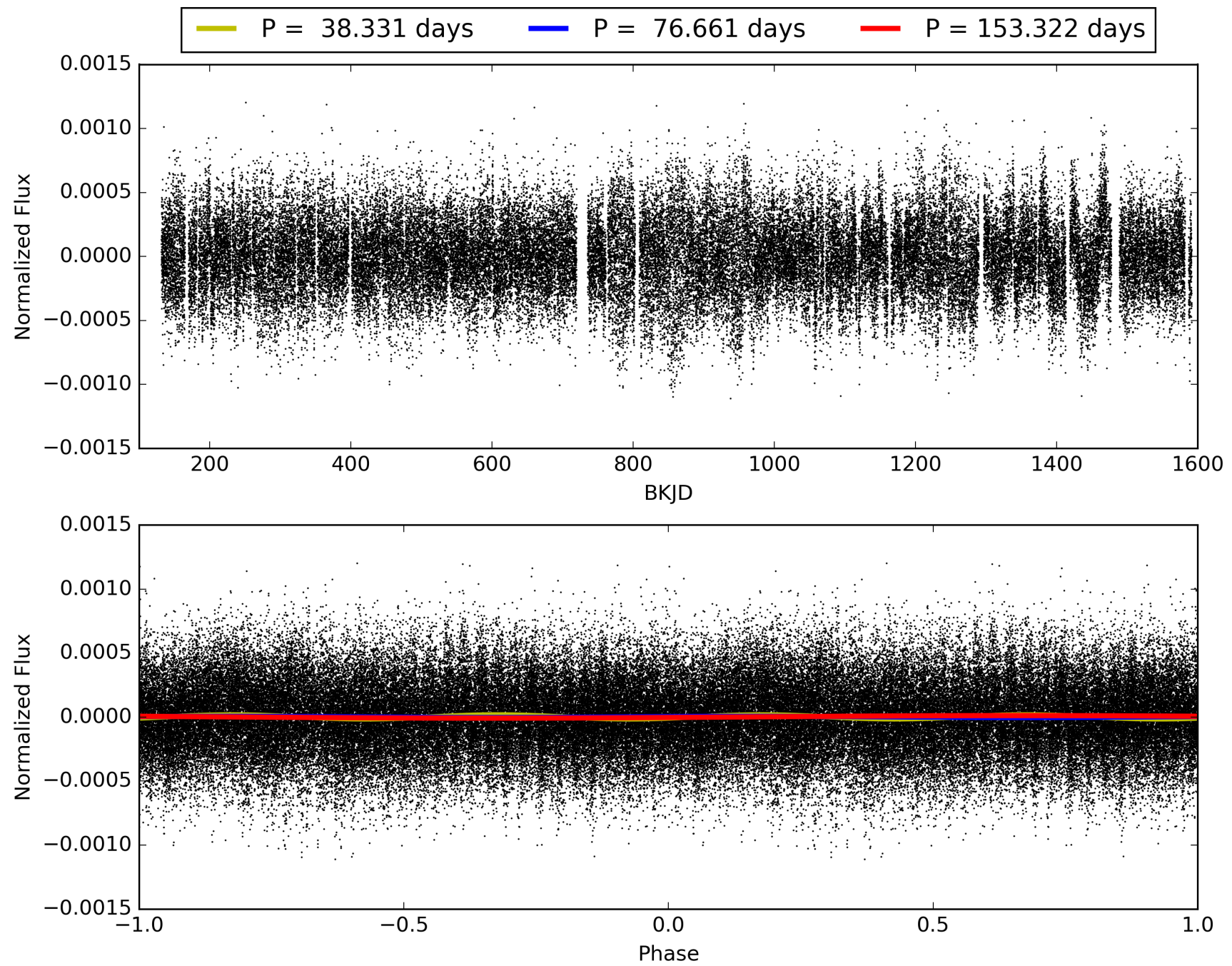
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:24:39 Z

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

TCE 003544878-05, PDC Light Curves

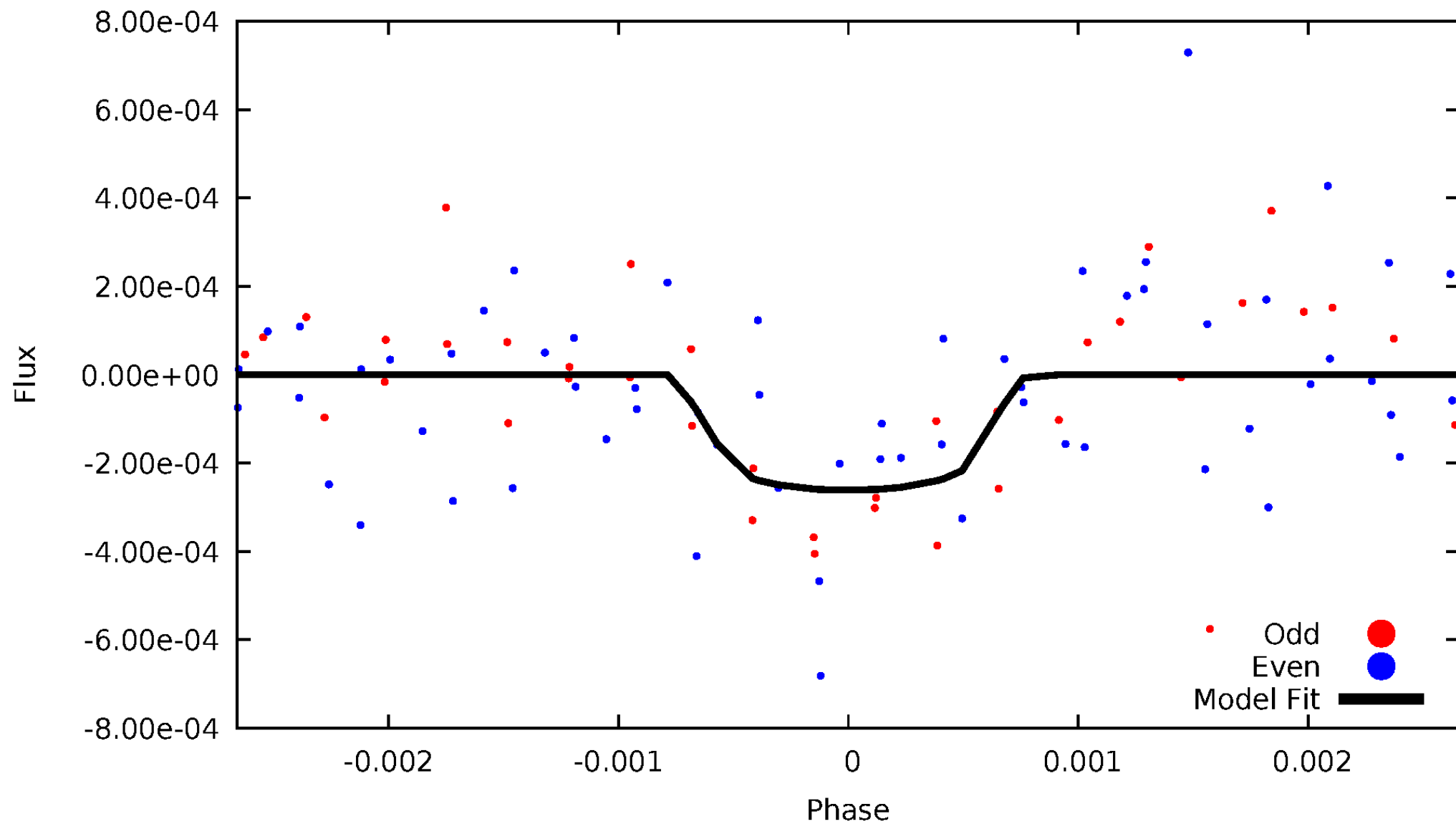


TCE 003544878-05



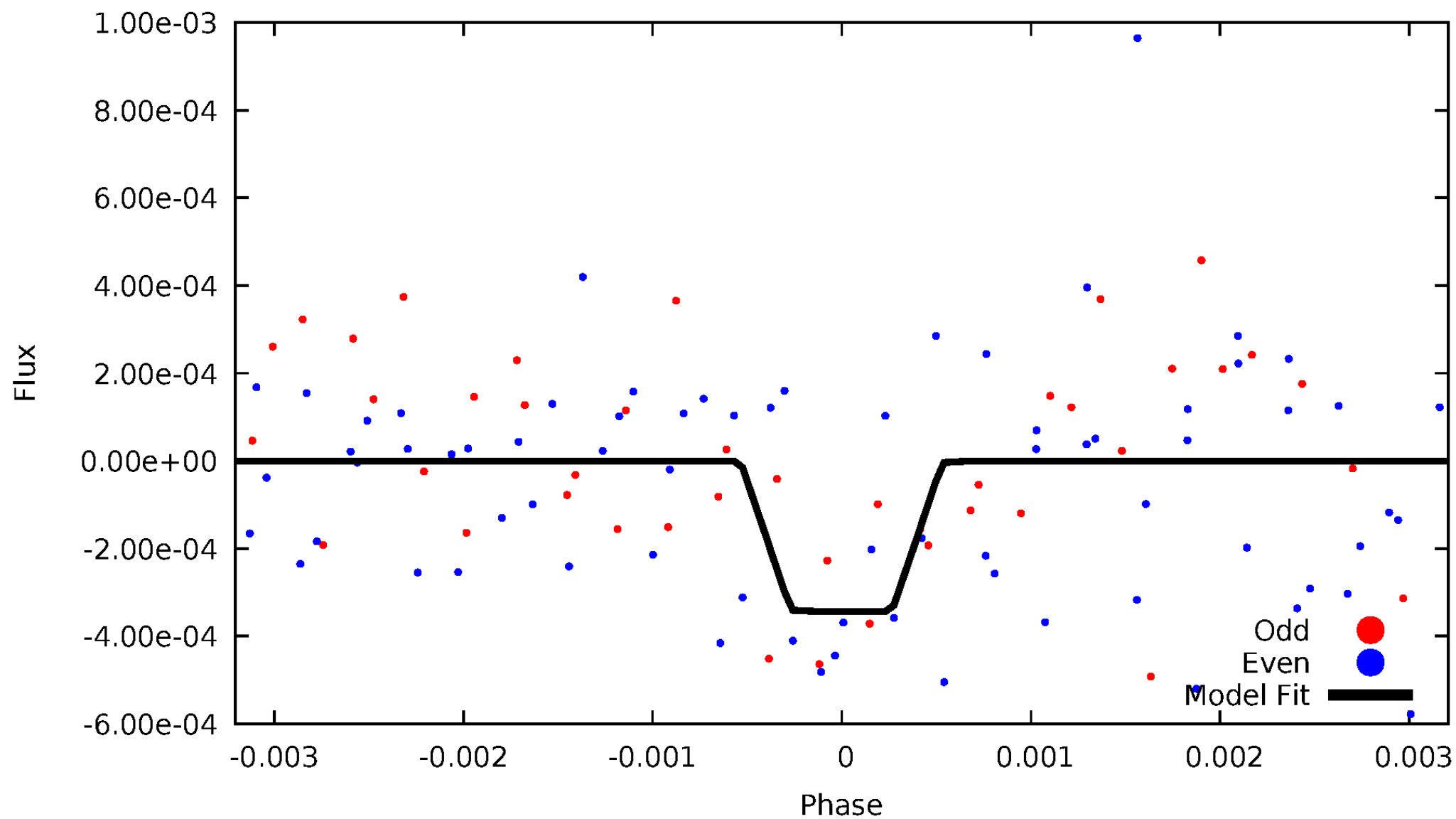
DV Odd/Even

TCE 003544878-05



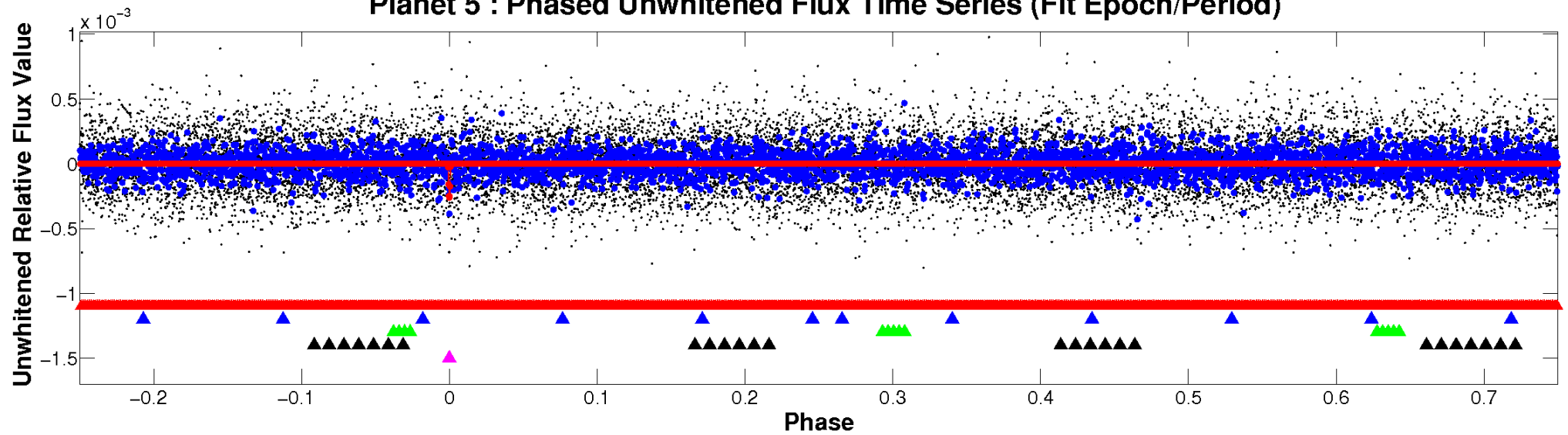
ALT Odd/Even

TCE 003544878-05

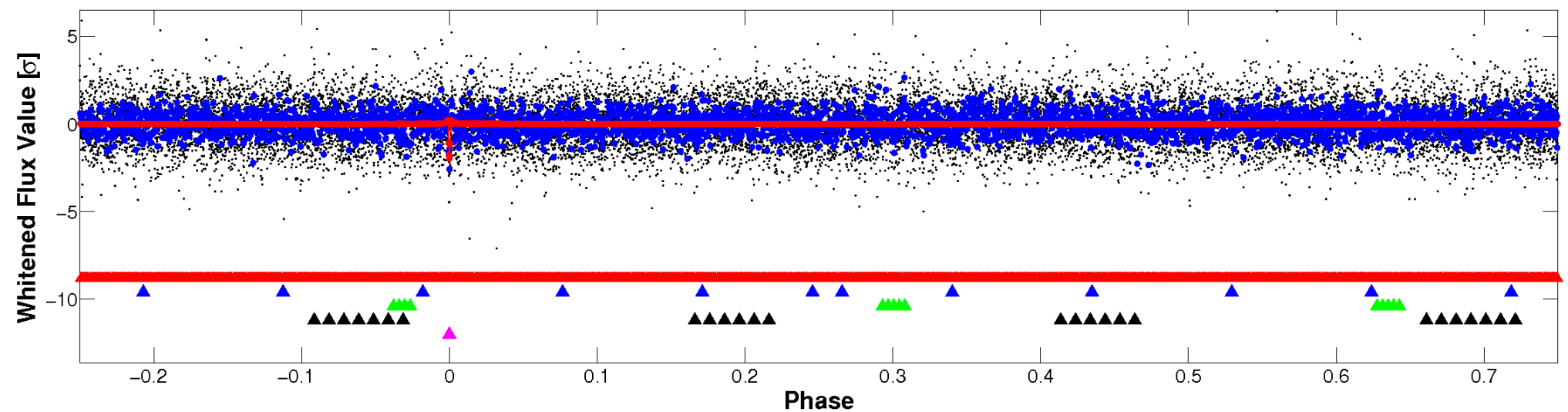


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

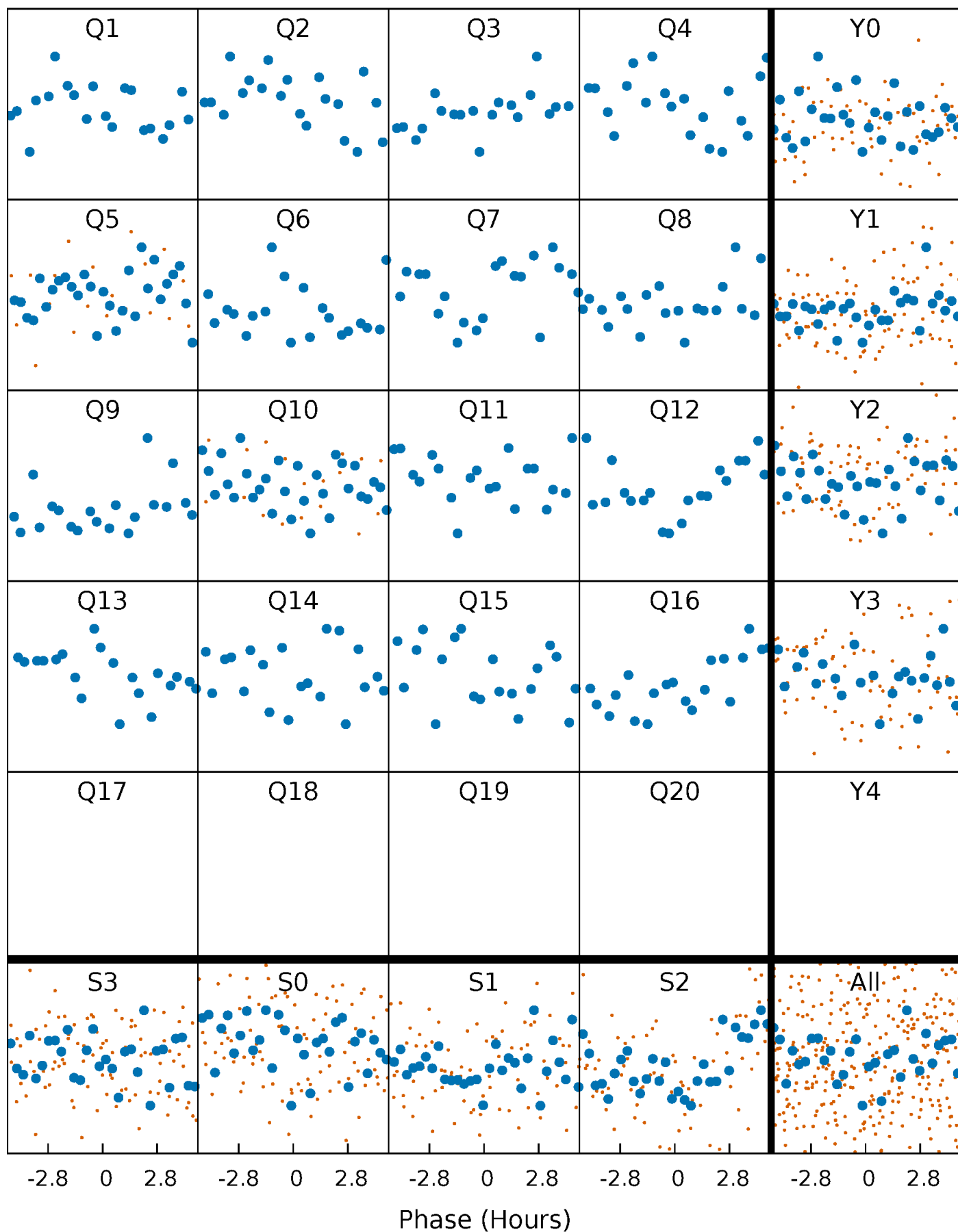


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



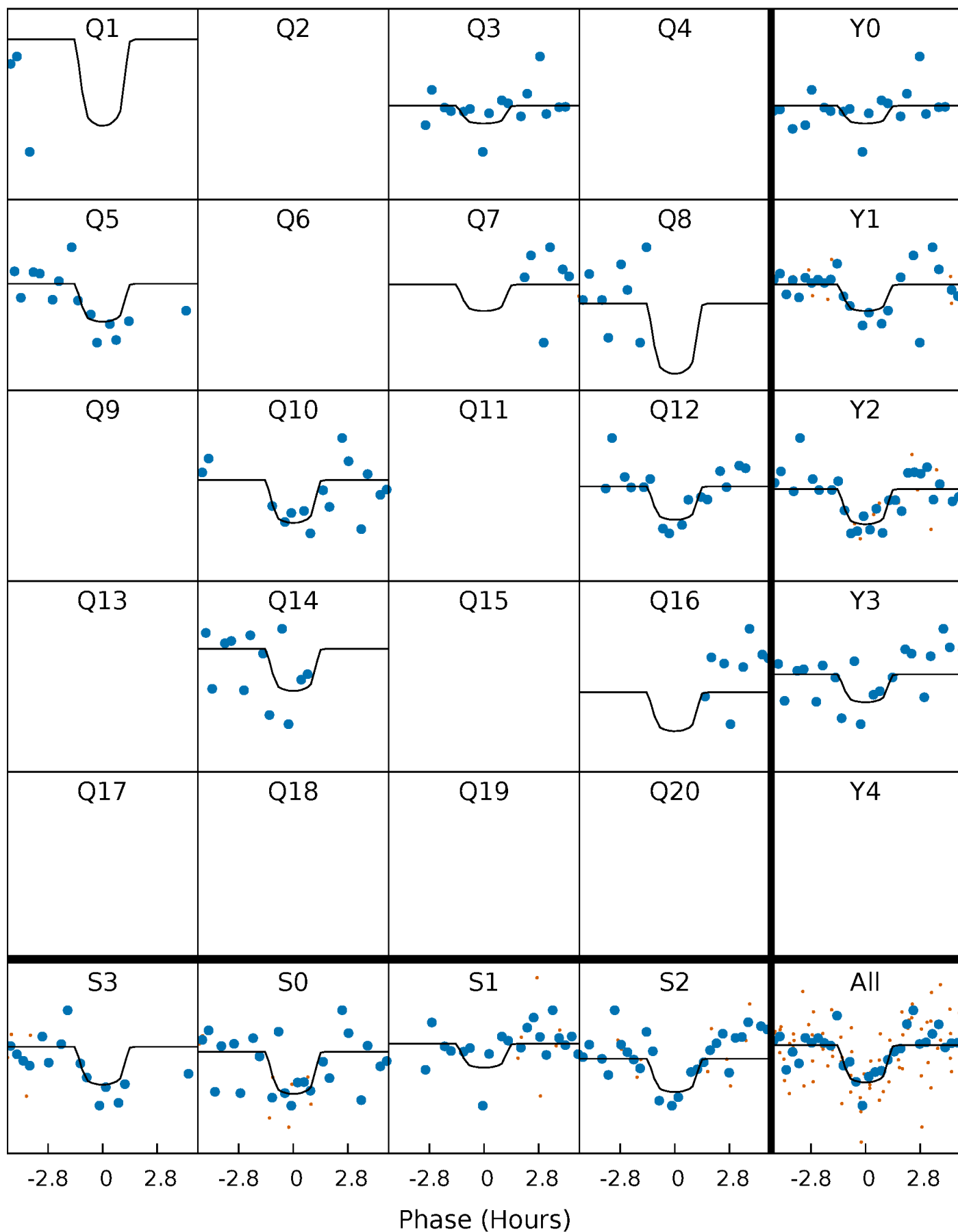
PDC Quarter-Phased Transit Curves

TCE 003544878-05 P= 76.661194 Days $T_0=142.914284$ (BKJD)



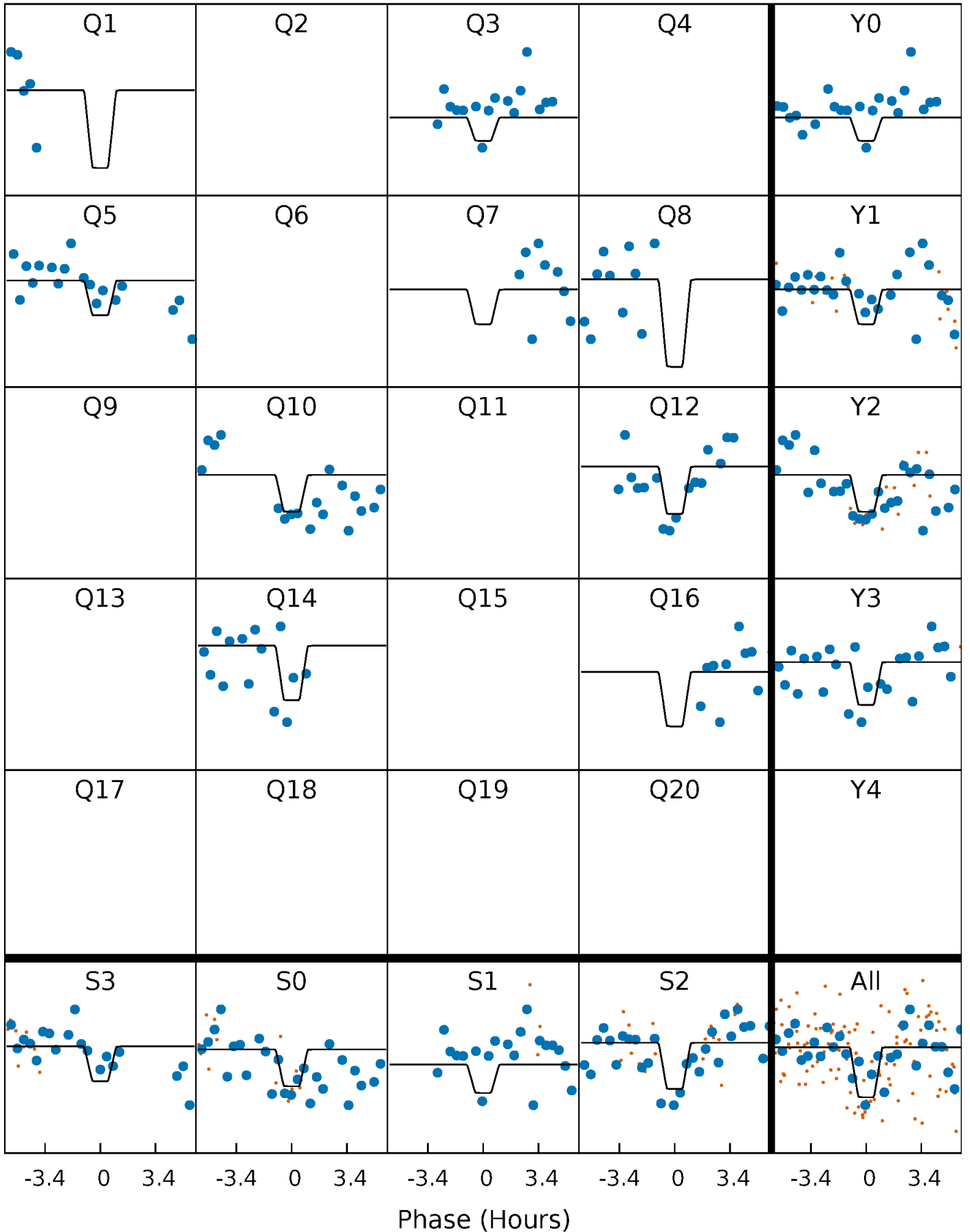
DV Quarter-Phased Transit Curves

TCE 003544878-05 $P = 76.661194$ Days $T_0 = 142.914284$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

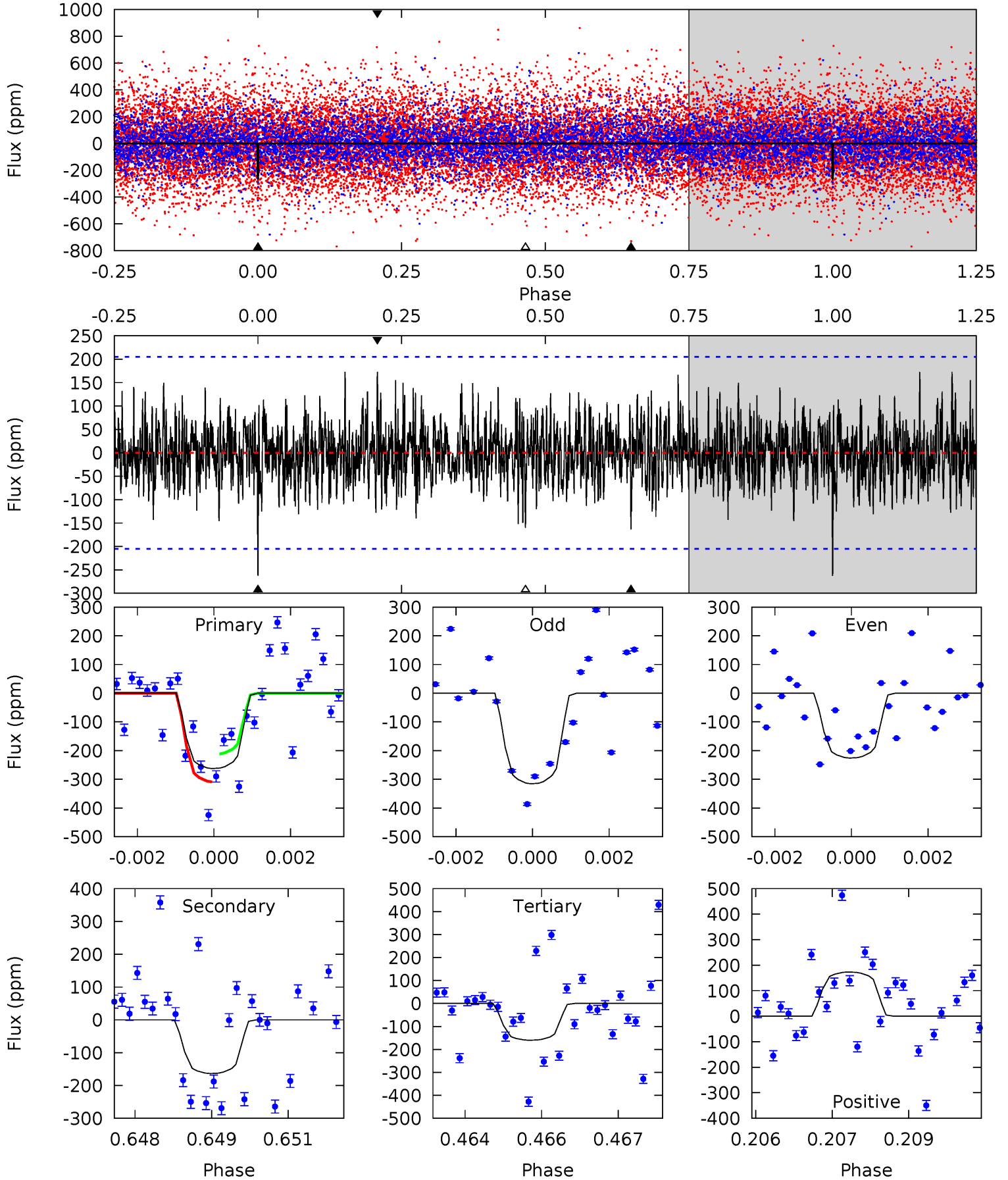
TCE 003544878-05 $P = 76.661560$ Days $T_0 = 142.907033$ (BKJD)



DV Model-Shift Uniqueness Test

003544878-05, P = 76.661194 Days, E = 66.253090 Days

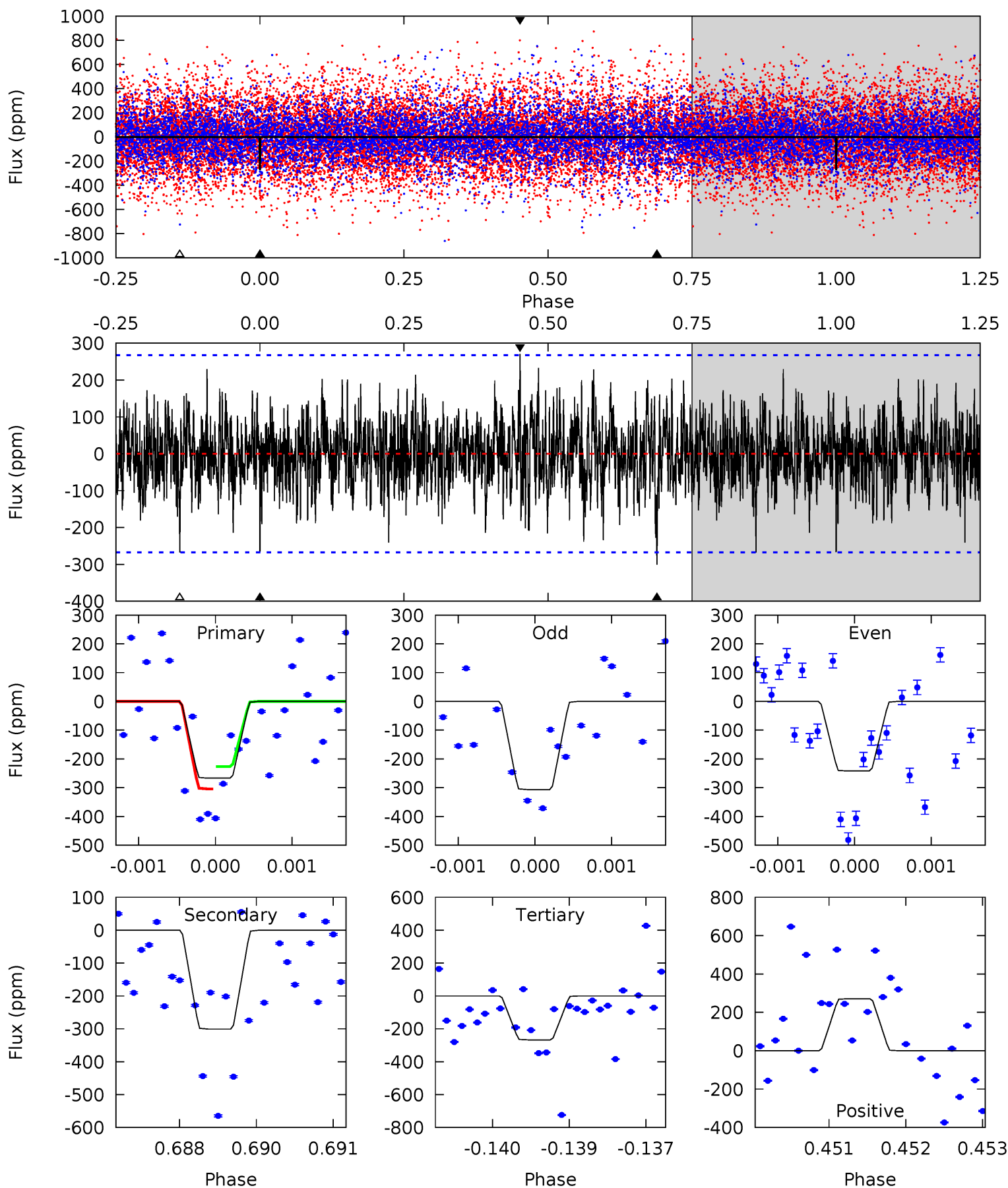
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.87 | 4.28 | 4.19 | 4.53 | 5.37 | 3.16 | 1.30 | 2.68 | 2.34 | 0.09 | -0.25 | 1.12 | 1.03 | 0.40 | 1.27 |



Alt Model-Shift Uniqueness Test

003544878-05, P = 76.661560 Days, E = 66.245473 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.40 | 6.09 | 5.41 | 5.49 | 5.42 | 3.24 | 1.47 | -0.01 | -0.09 | 0.68 | 0.60 | 0.64 | 0.99 | 0.47 | 0.79 |



Stellar Parameters For KIC 003544878

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6478^{+144}_{-208} | $4.371^{+0.062}_{-0.188}$ | $-0.040^{+0.250}_{-0.300}$ | $1.188^{+0.345}_{-0.148}$ | $1.209^{+0.169}_{-0.169}$ | $1.016^{+0.327}_{-0.483}$ |
| | +2%/-3% | +1%/-4% | +625%/-750% | +29%/-12% | +14%/-14% | +32%/-48% |
| 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 003544878-05 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|------------------------|-------------------------|
| DV | -163 ± 38 | $3.66^{+3.38}_{-2.53}$ | 720^{+49}_{-34} | 4558^{+3605}_{-963} | 954^{+8615}_{-725} |
| Alt. | -301 ± 49 | $3.98^{+3.55}_{-2.64}$ | 720^{+46}_{-33} | 5003^{+3846}_{-1055} | 1445^{+11310}_{-1040} |

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 $A_{obs} \gg 1.0$

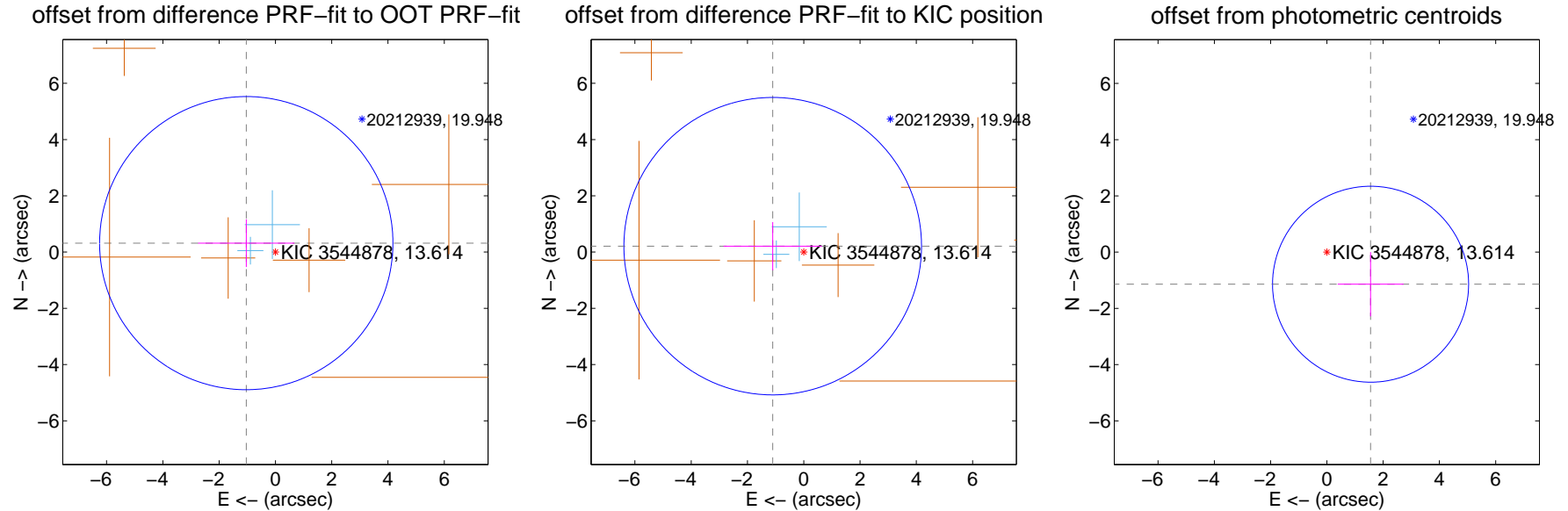
DV Centroid Data

Supplemental centroid analysis for 003544878-05. Kepler magnitude: 13.61. Transit SNR 8.34

There are 2 quarters with good PRF difference image offsets

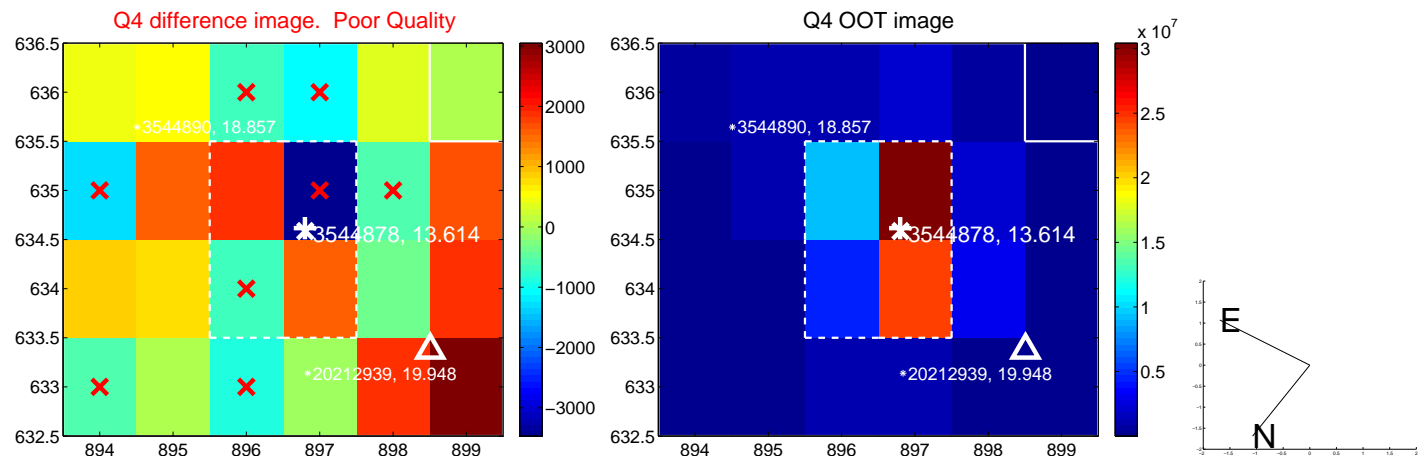
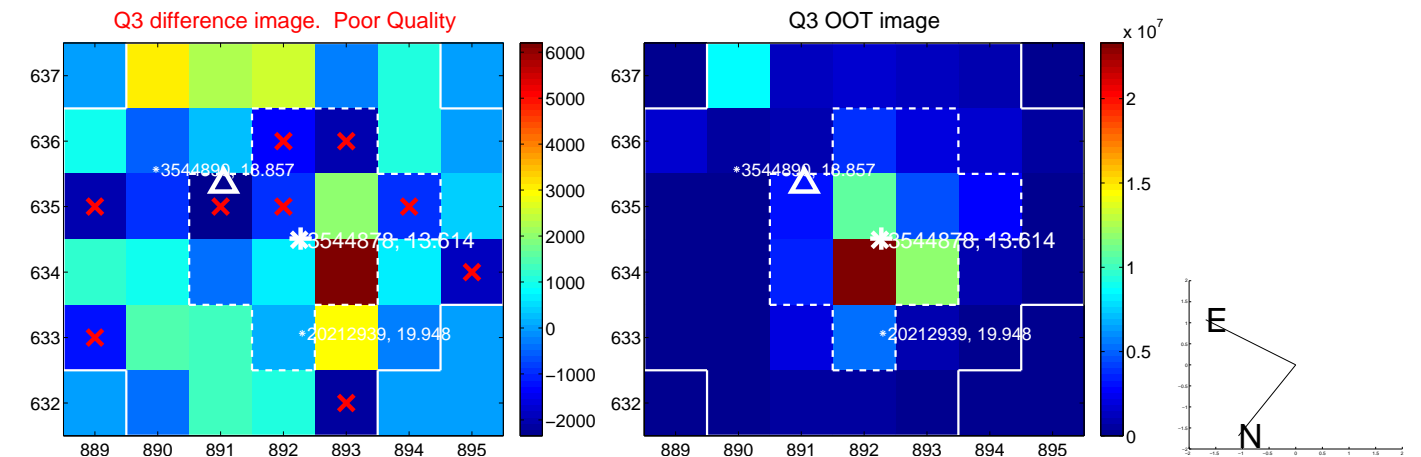
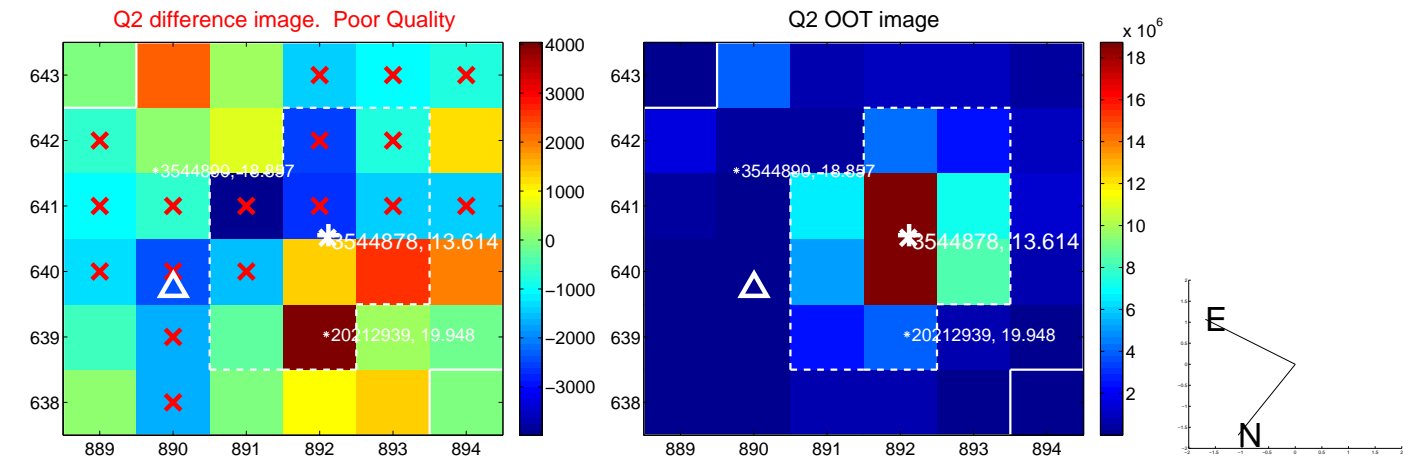
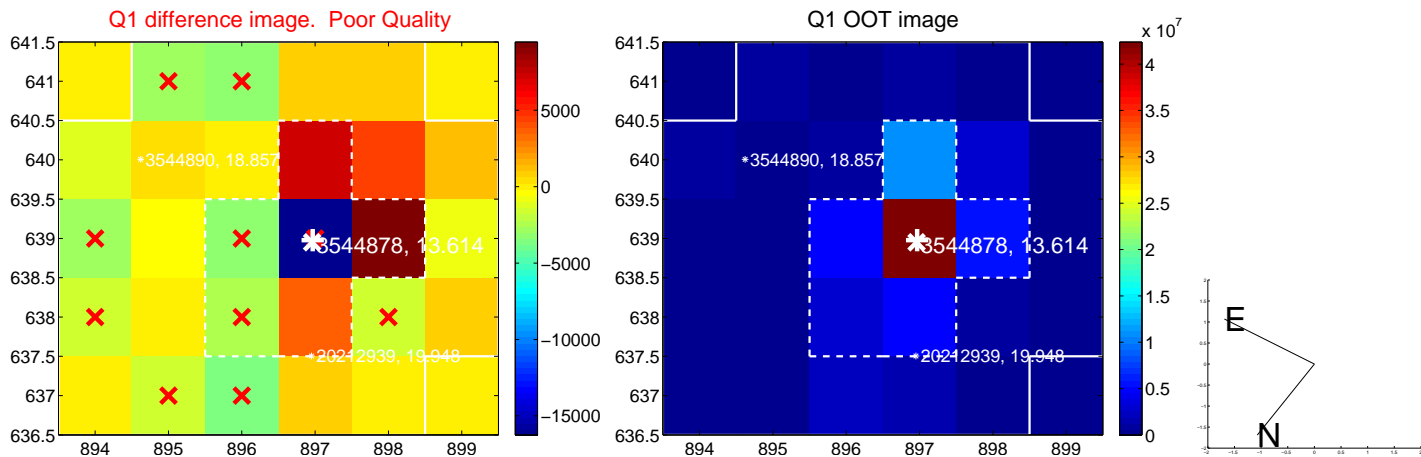
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 1.084 ± 1.737 | 0.62 | 1.036 ± 1.711 | 0.318 ± 0.850 |
| PRF-fit source offset from KIC position | 1.123 ± 1.762 | 0.64 | 1.103 ± 1.744 | 0.210 ± 0.857 |
| photometric centroid source offset | 1.93 ± 1.16 | 1.66 | -1.55 ± 1.17 | -1.14 ± 1.14 |

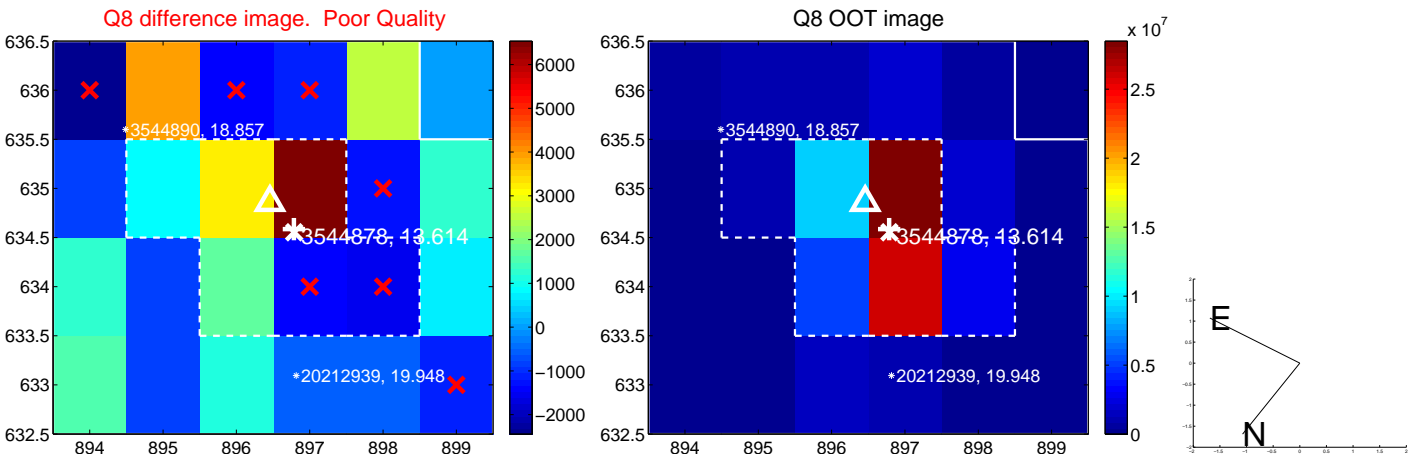
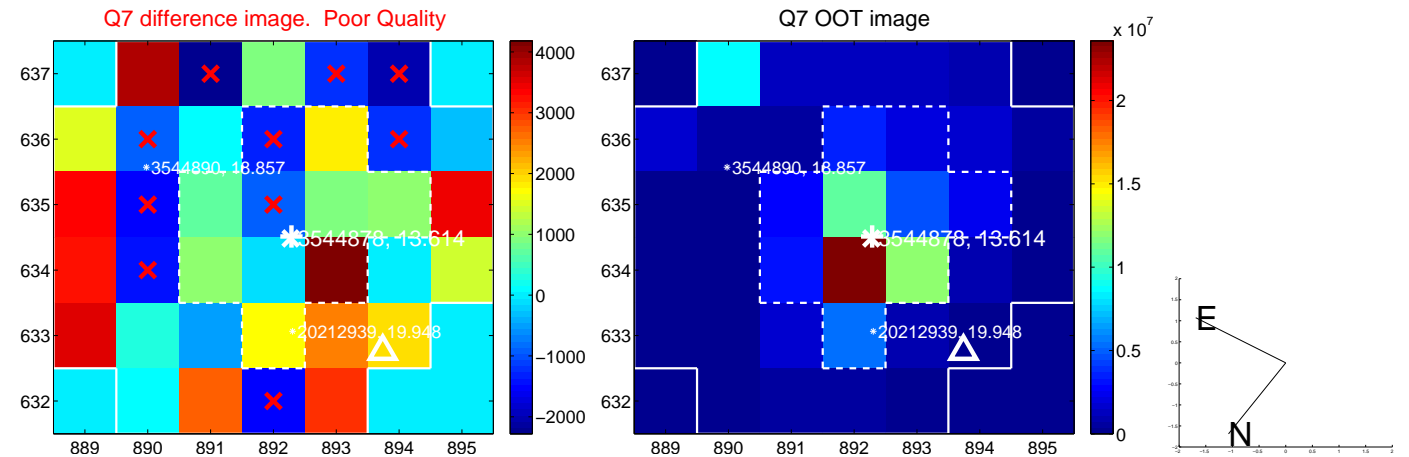
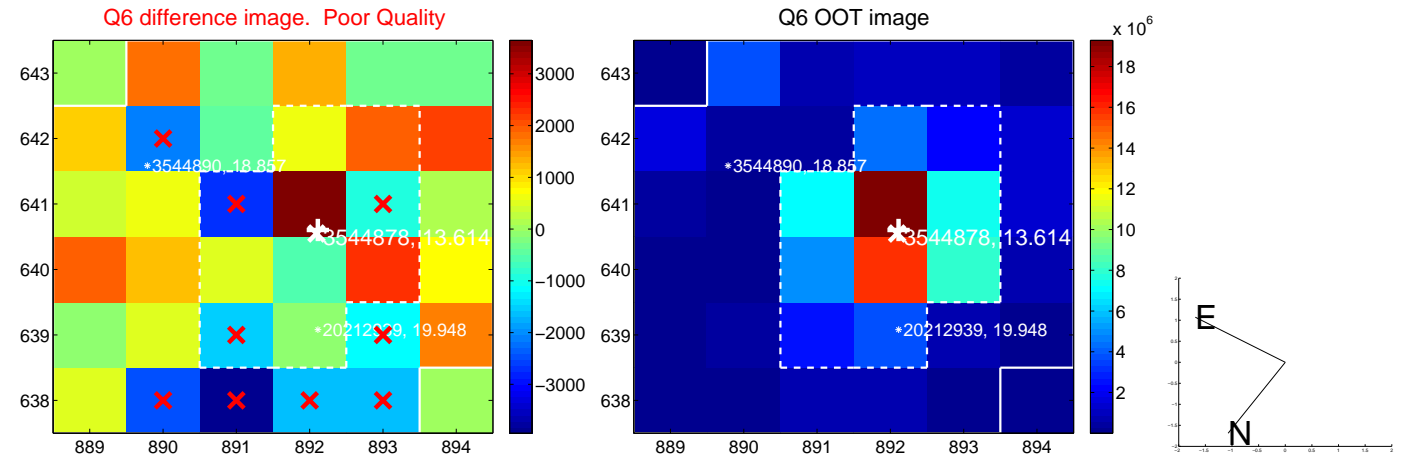
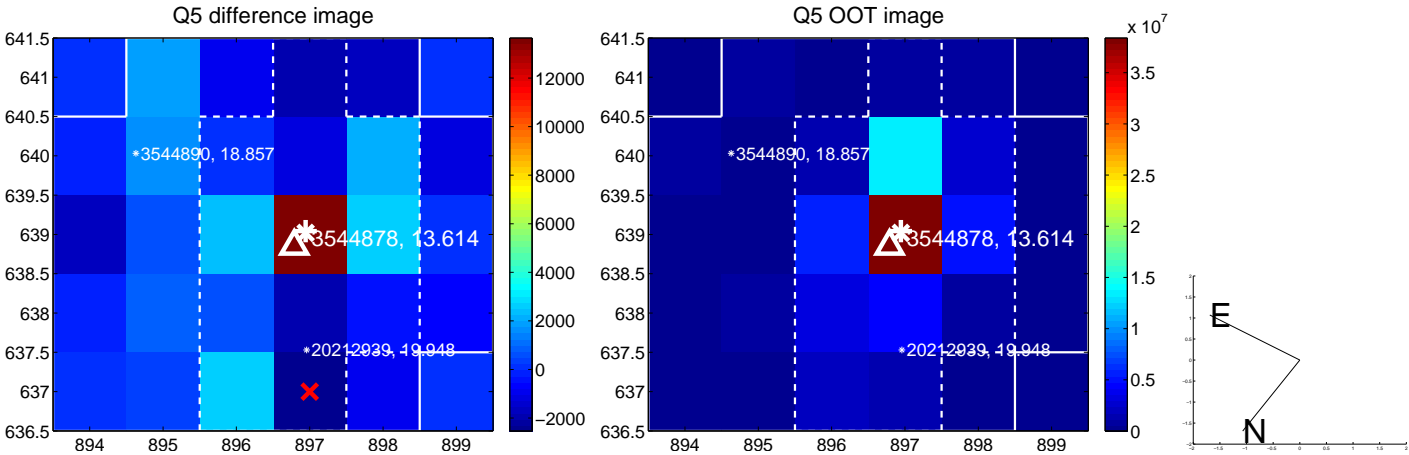


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

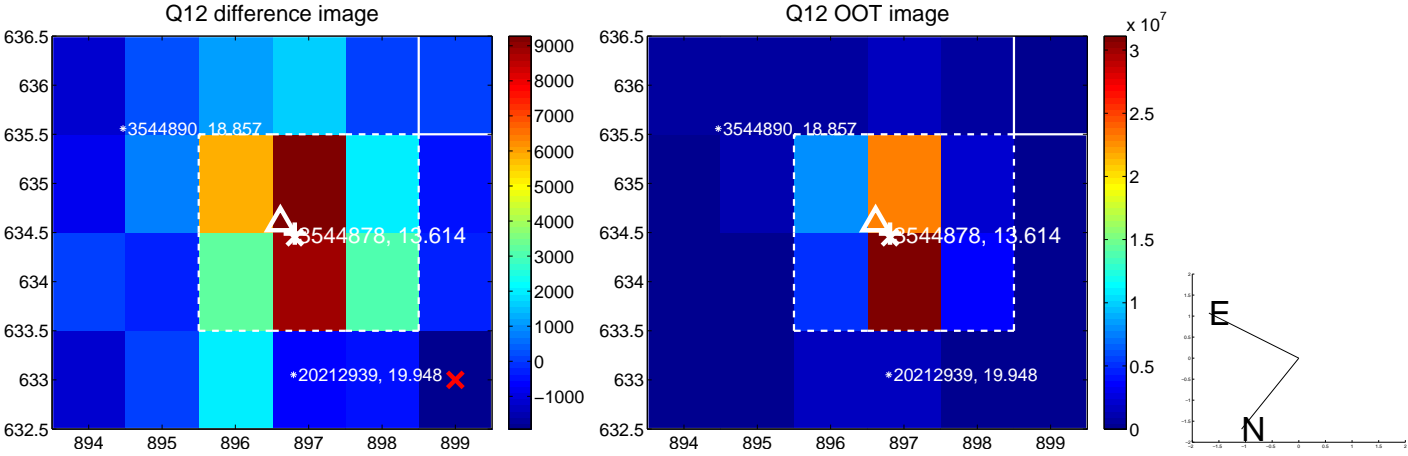
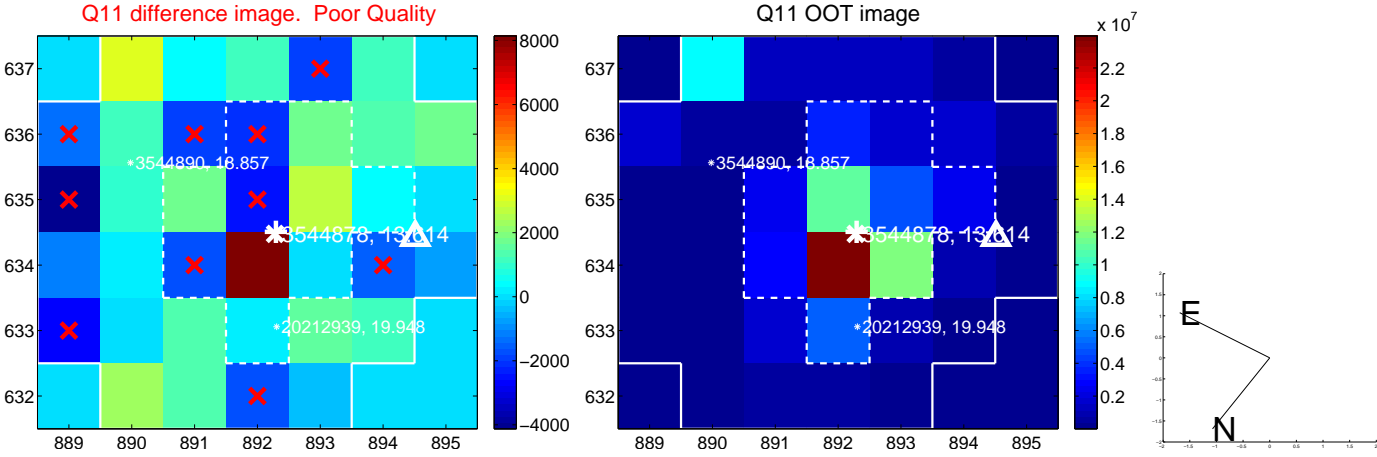
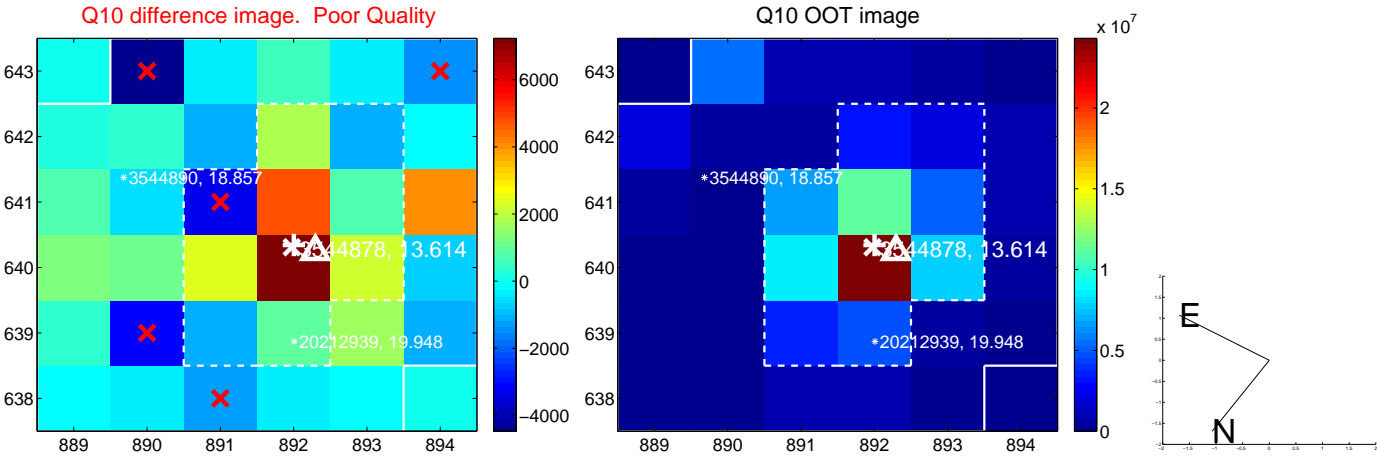
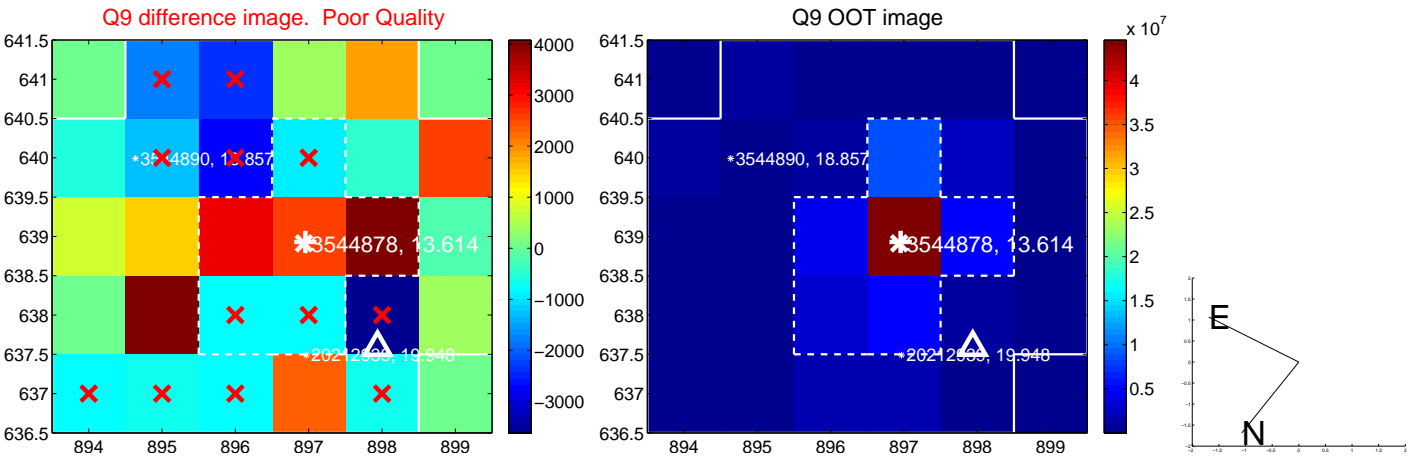
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



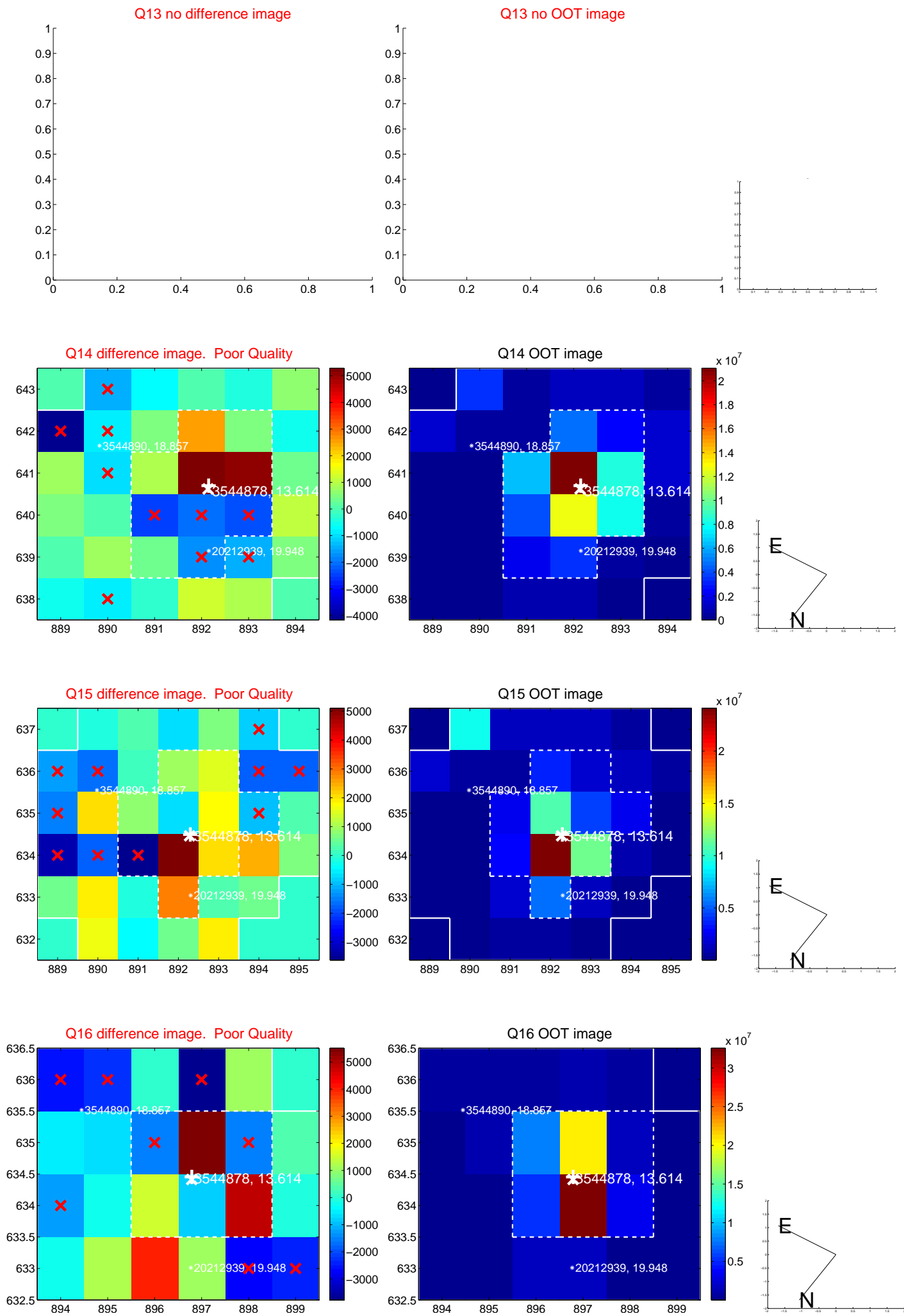
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



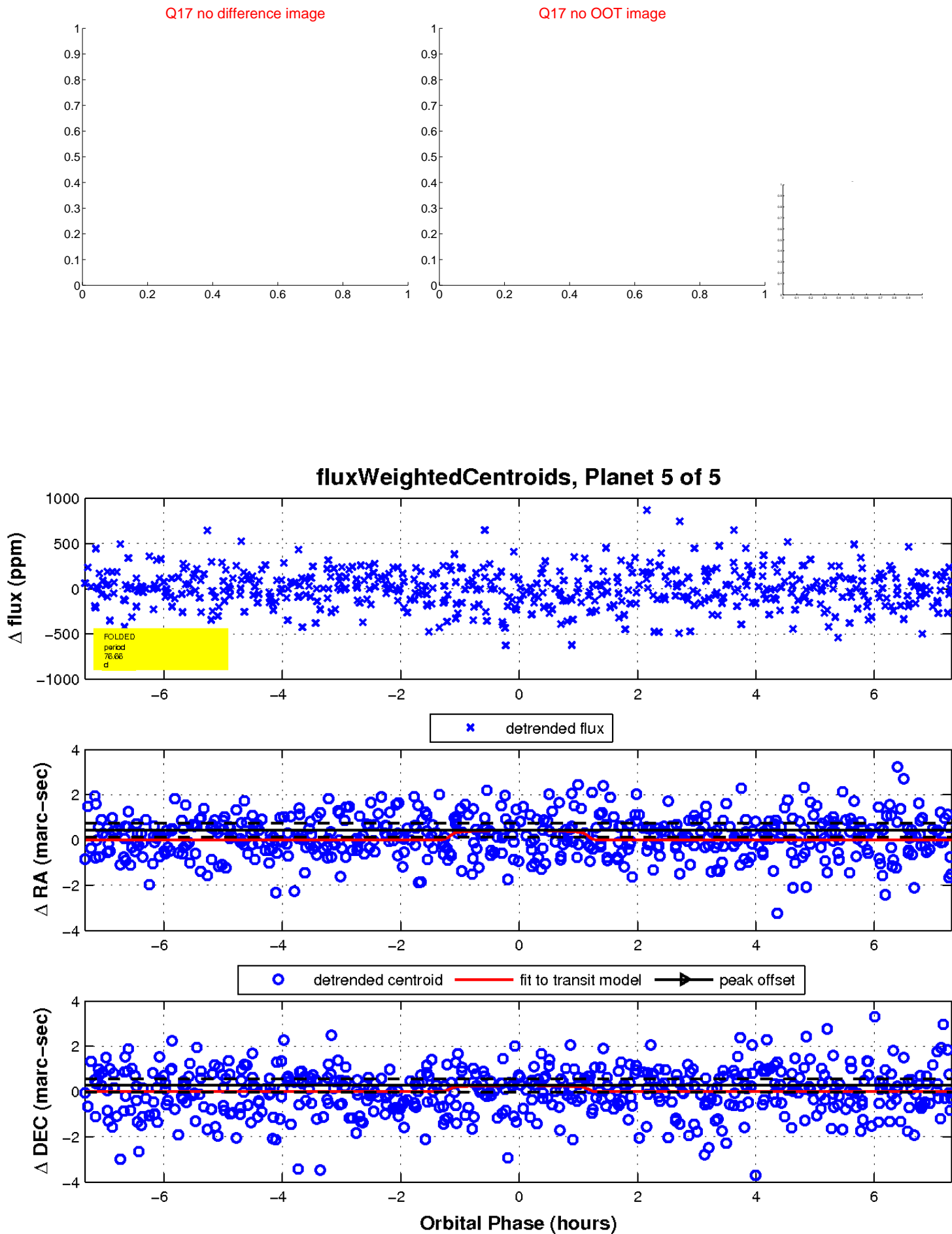
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

