

KIC 002970804

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})
002970804-01	OBS	3993.01	0.686993	131.660593	792.7	2.003	47.0	45.3	1.00	5780	3.61	4305.29
002970804-02	OBS	No	0.586730	131.672022	0.0	3.296	8.4	0.0	1.00	5780	0.00	5313.18
002970804-03	OBS	No	55.430480	150.765152	1545.8	2.533	8.6	7.7	1.00	5780	3.91	12.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002970804-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—CENT_SATURATED
002970804-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
002970804-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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 002970804-01

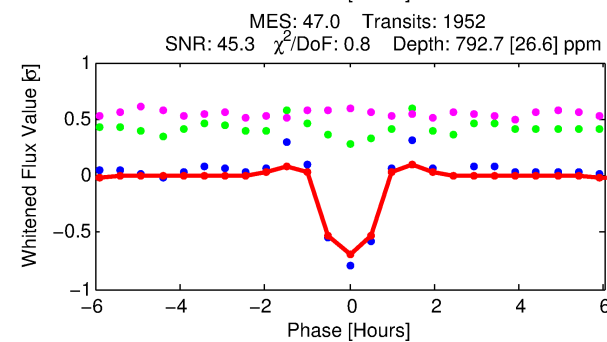
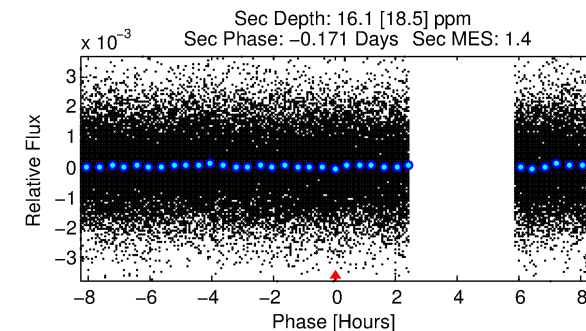
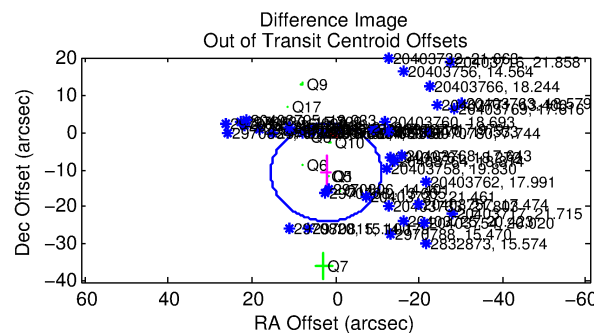
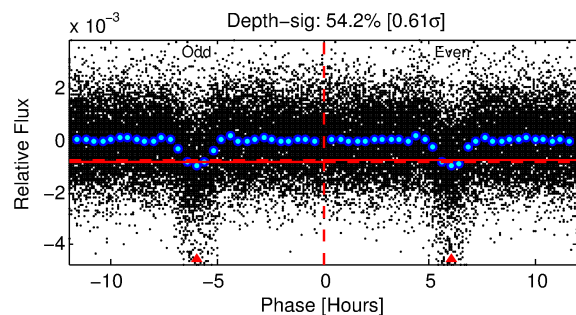
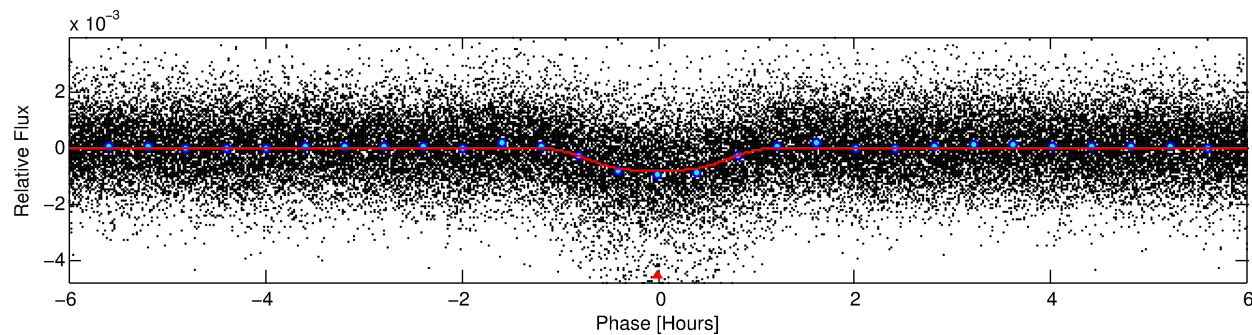
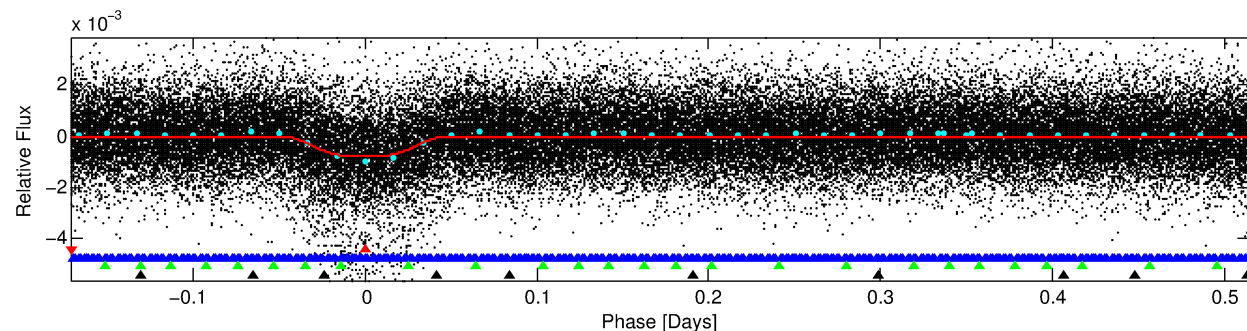
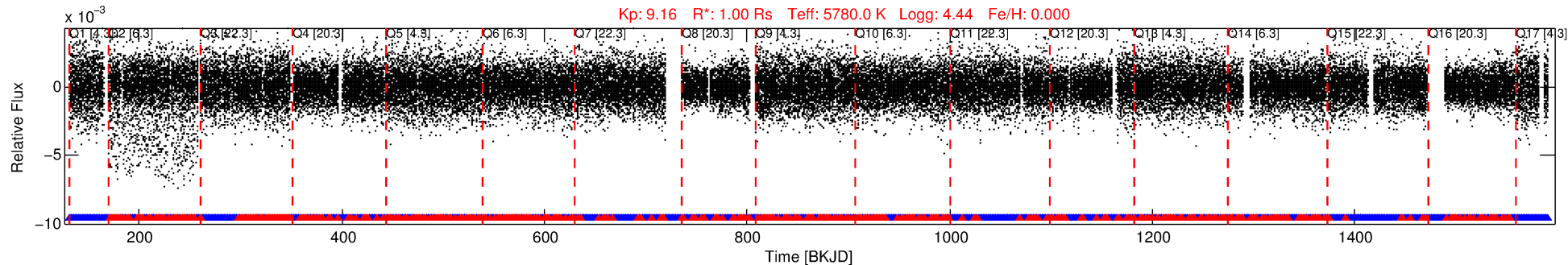
No Significant Match Found

DV One-Page Summary

KIC: 2970804 Candidate: 1 of 4 Period: 0.687 d

KOI: K03993.01 Corr: 0.770

Kp: 9.16 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



DV Fit Results:

Period = 0.68699 [0.00000] d
Epoch = 131.6606 [0.0005] BKJD
Rp/R* = 0.0331 [0.0009]
a/R* = 1.44 [0.06]
b = 0.95 [0.01]
Seff = 4305.29 [0.02]
Teq = 2066 [0] K
Rp = 3.61 [0.10] Re
a = 0.0152 [0.0000] AU
Ag = 0.16 [0.18] [-4.63σ]
Teffp = 2013 [580] K [-0.09σ]

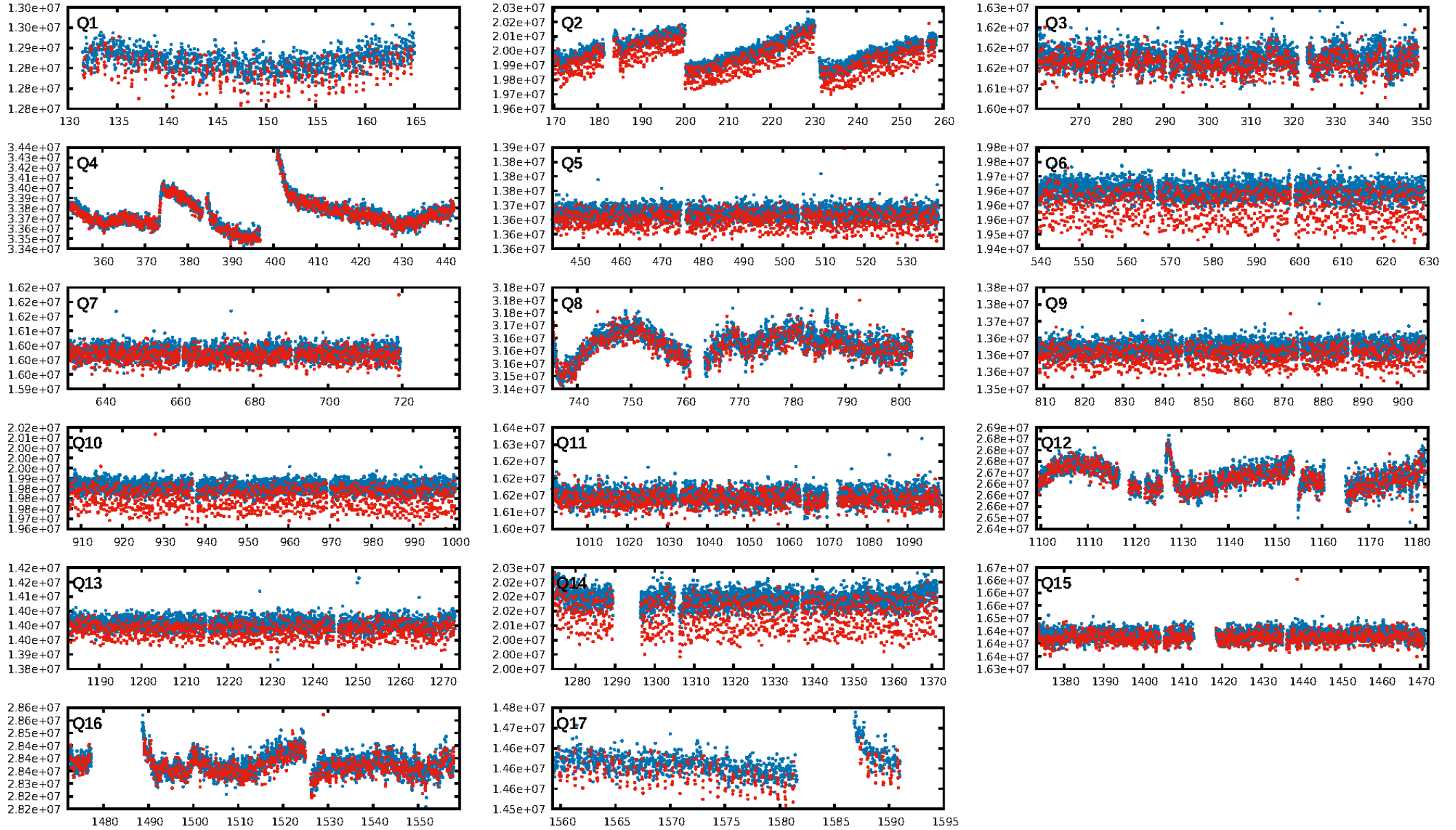
DV Diagnostic Results:

ShortPeriod-sig: 46.7% [0.62σ]
LongPeriod-sig: 100.0% [406.85σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.73 [1366/1864]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 9.272 arcsec [61.59σ]
OotOffset-rm: 10.976 arcsec [2.49σ]
OotOffset-st: 3/1/1/4 [9]
KicOffset-rm: 14.997 arcsec [4.53σ]
KicOffset-st: 4/1/1/4 [10]
DiffImageQuality-fgm: 0.10 [1/10]
DiffImageOverlap-fno: 0.00 [0/17]

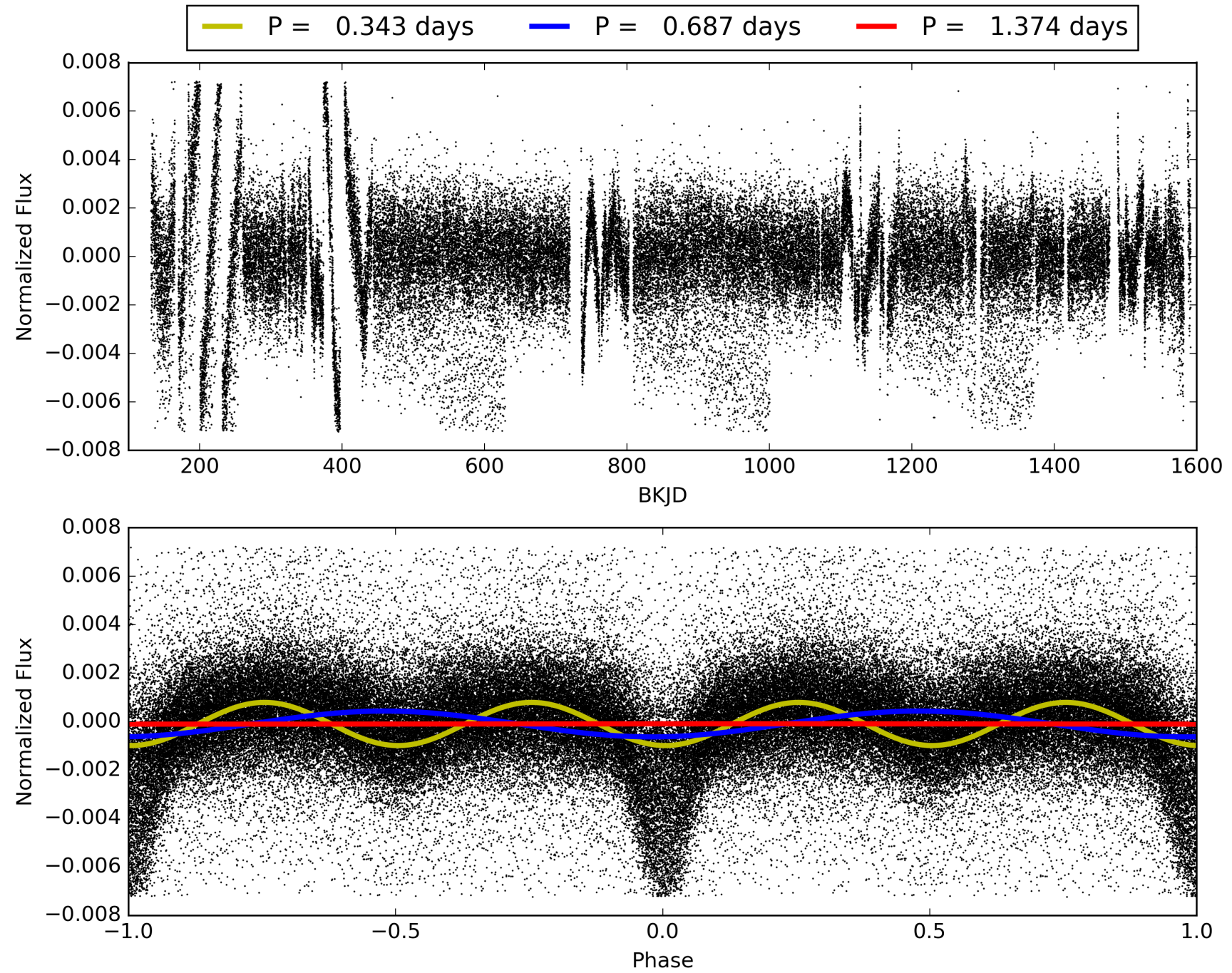
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:01:08 Z

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

TCE 002970804-01, PDC Light Curves

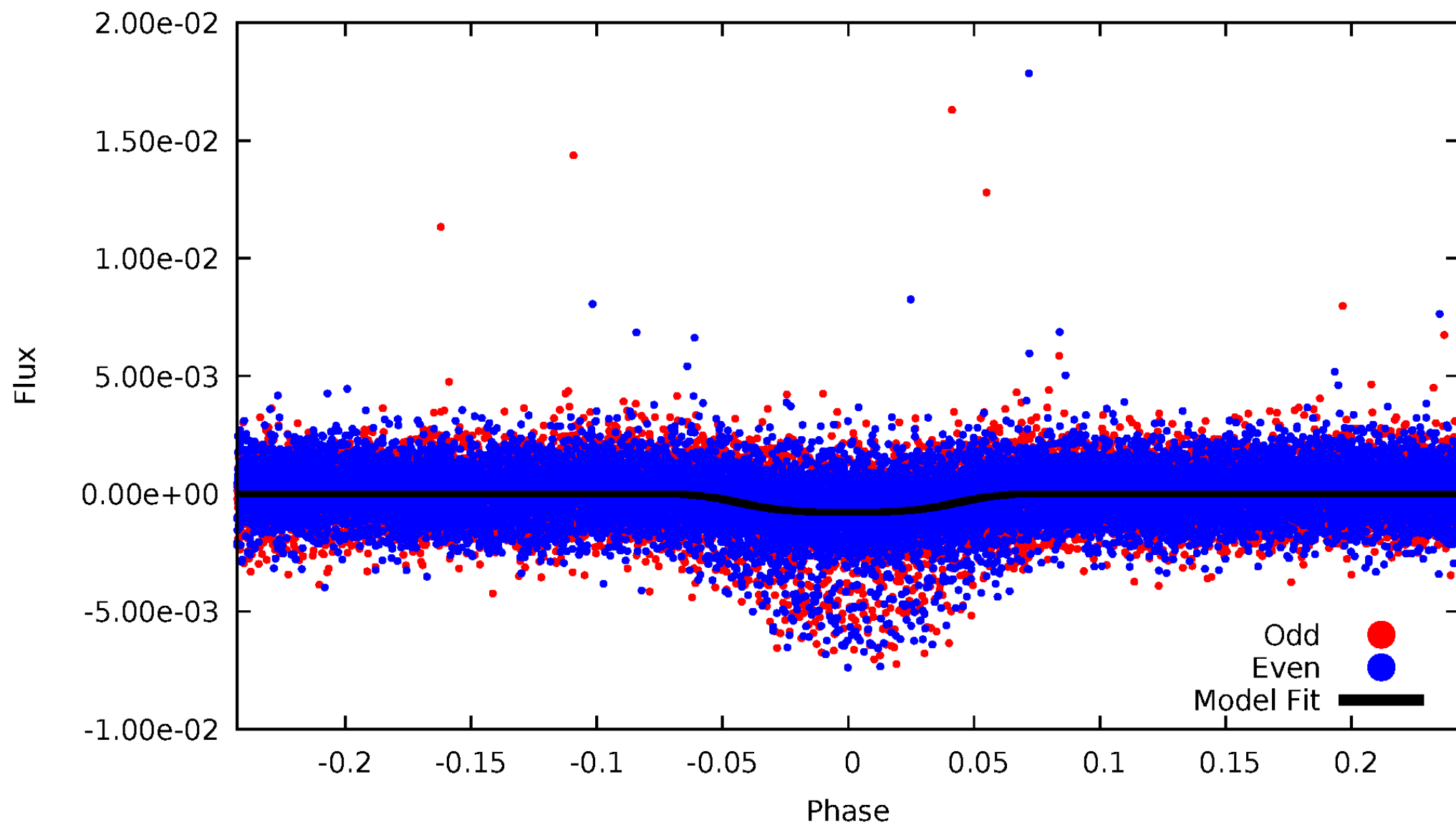


TCE 002970804-01



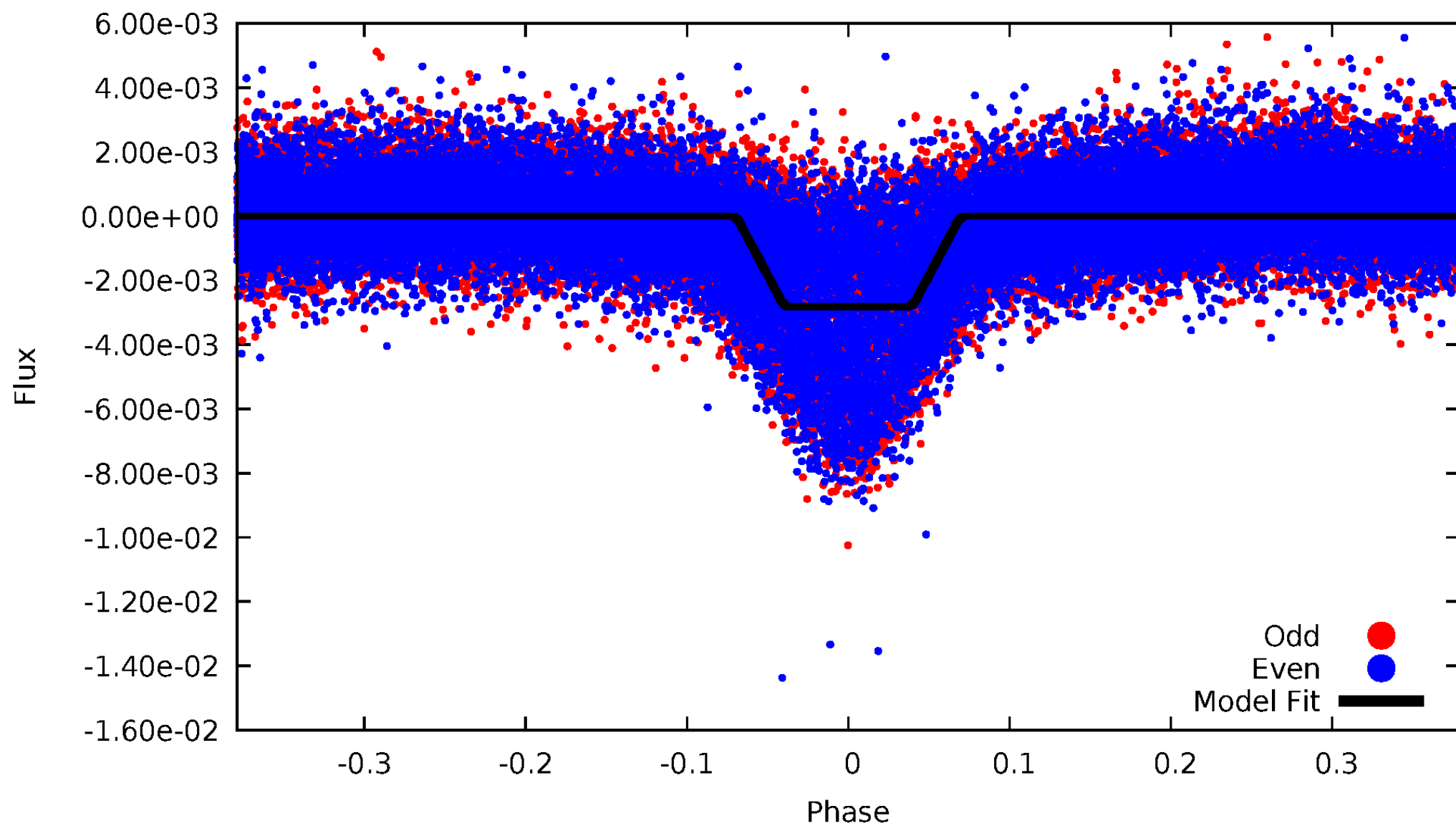
DV Odd/Even

TCE 002970804-01

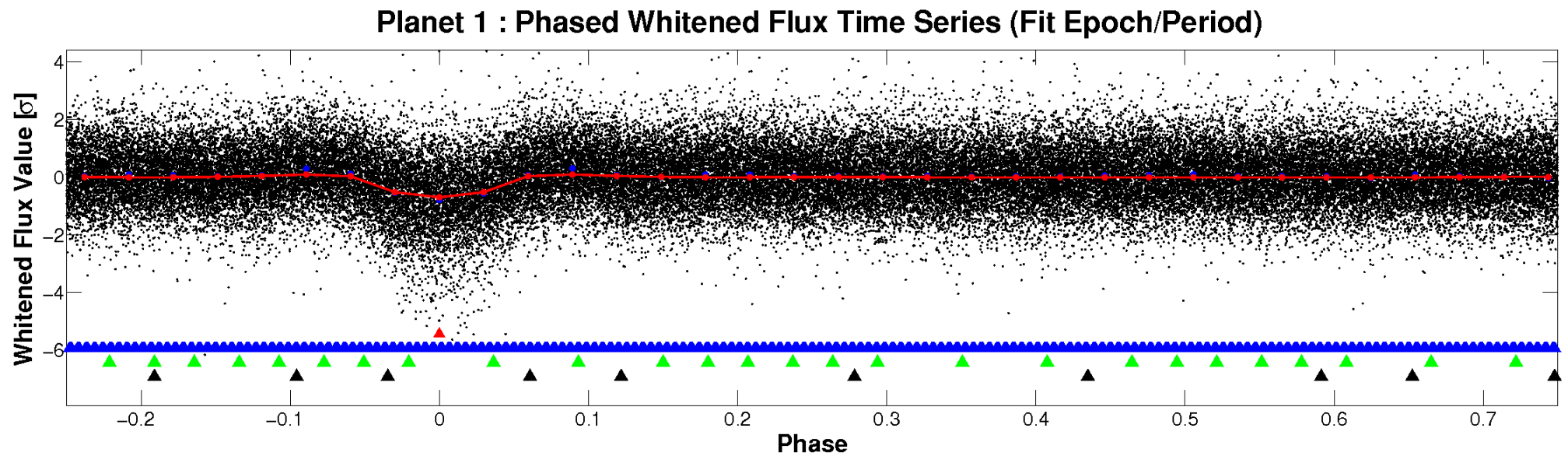
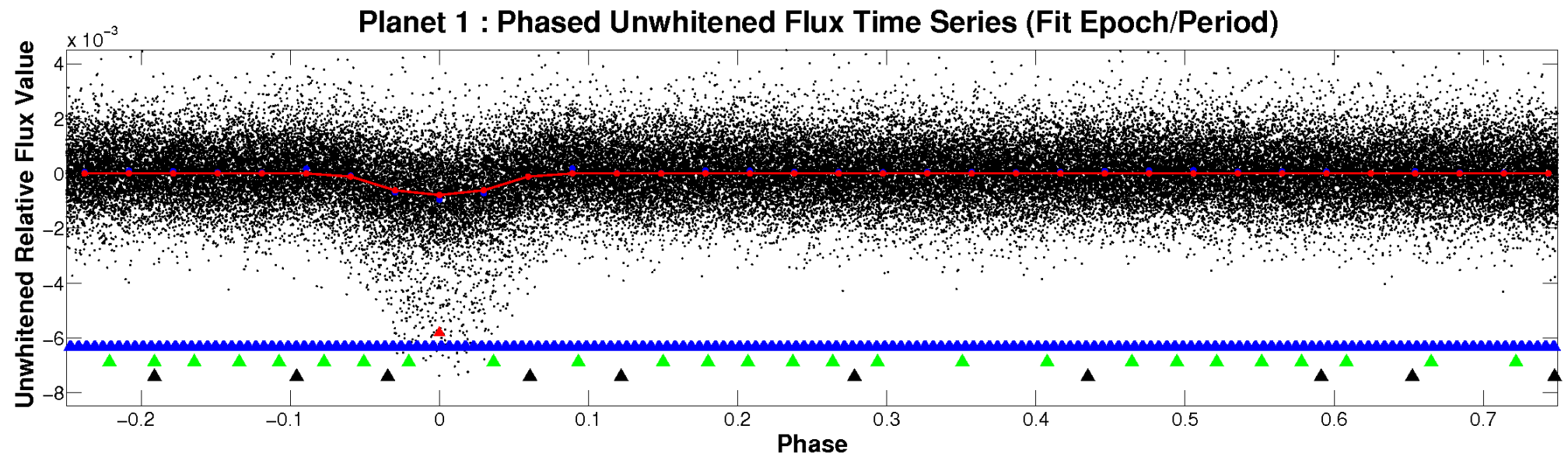


ALT Odd/Even

TCE 002970804-01

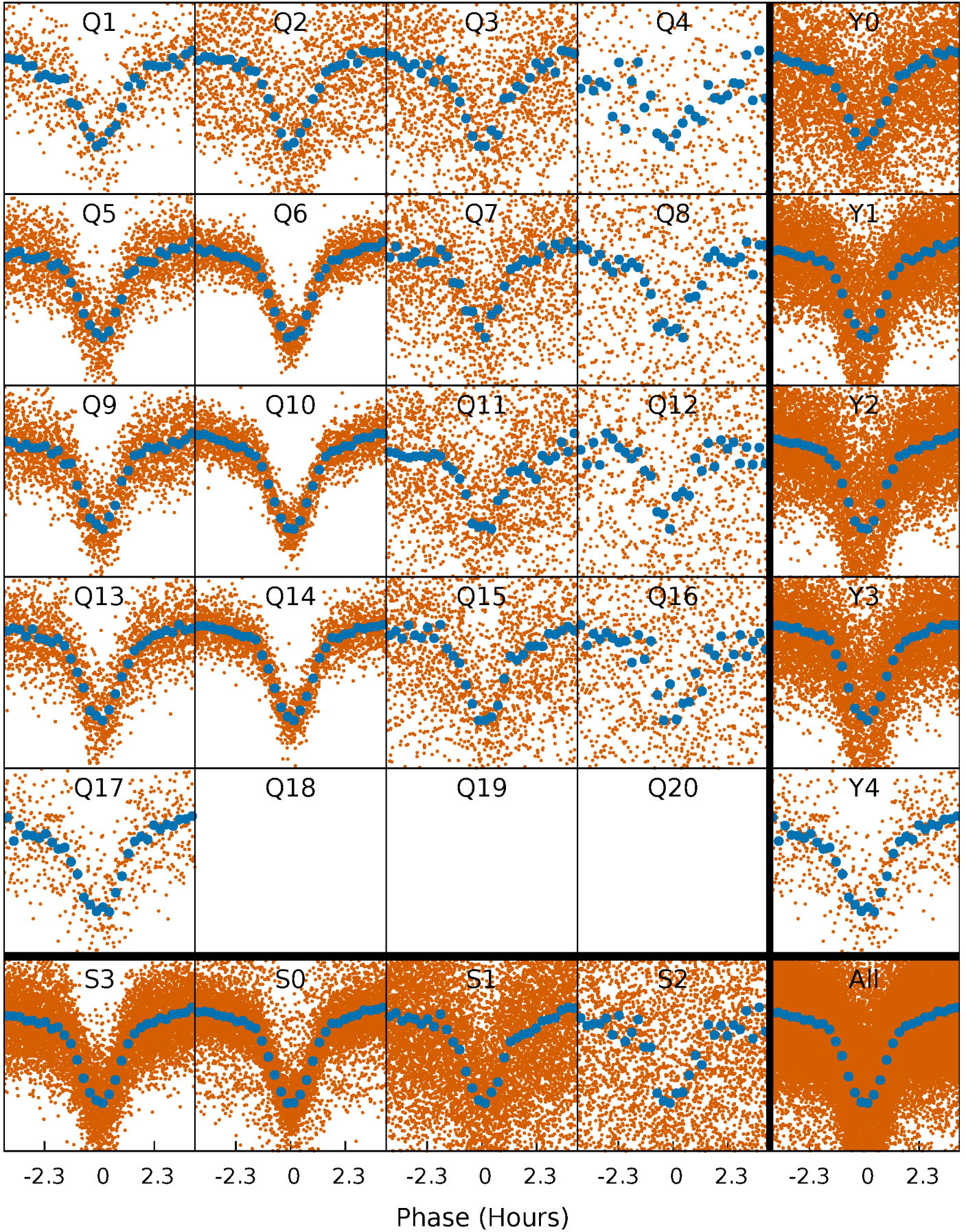


Non-Whitened Vs. Whitened Light Curve



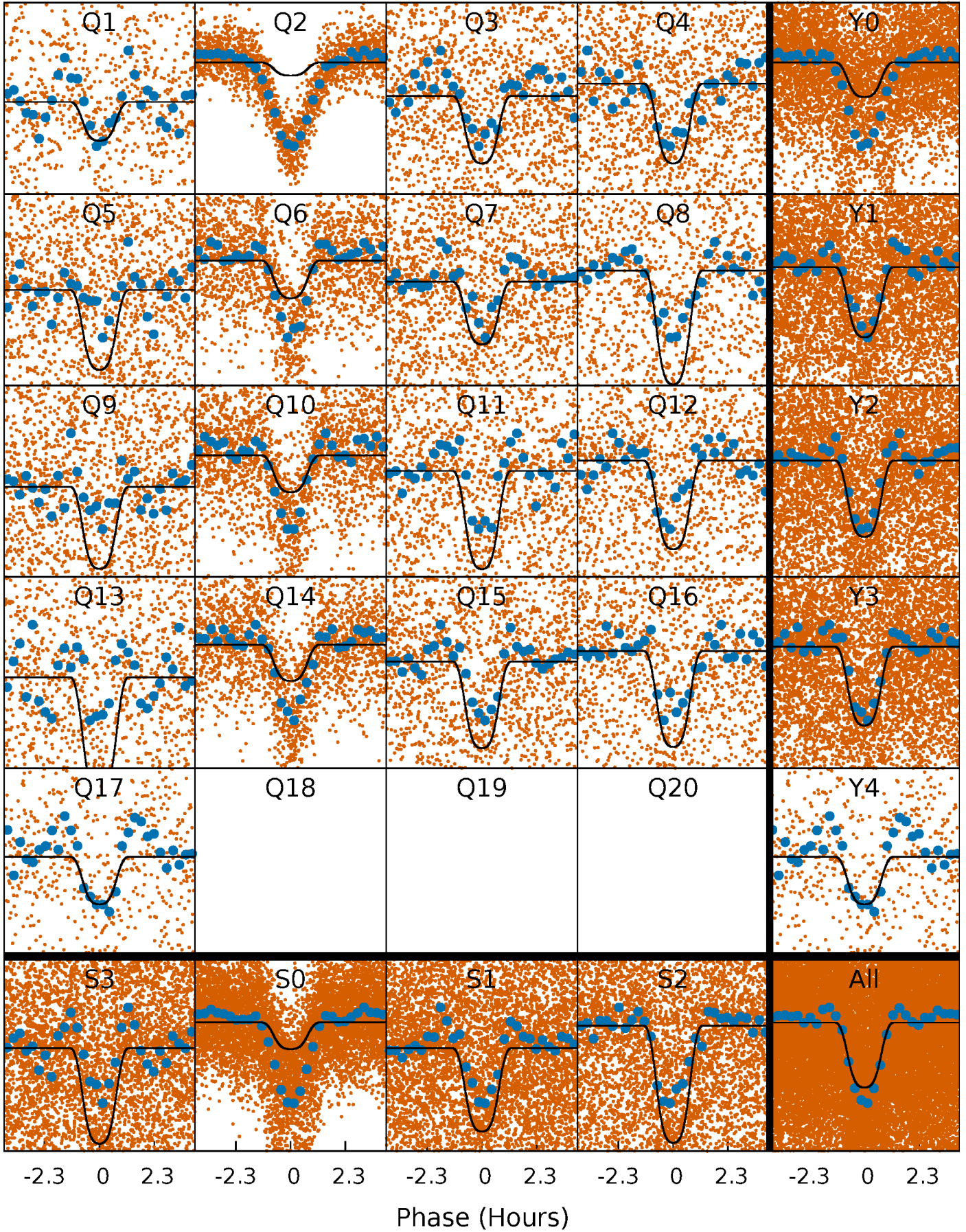
PDC Quarter-Phased Transit Curves

TCE 002970804-01 P= 0.686993 Days $T_0=131.660593$ (BKJD)



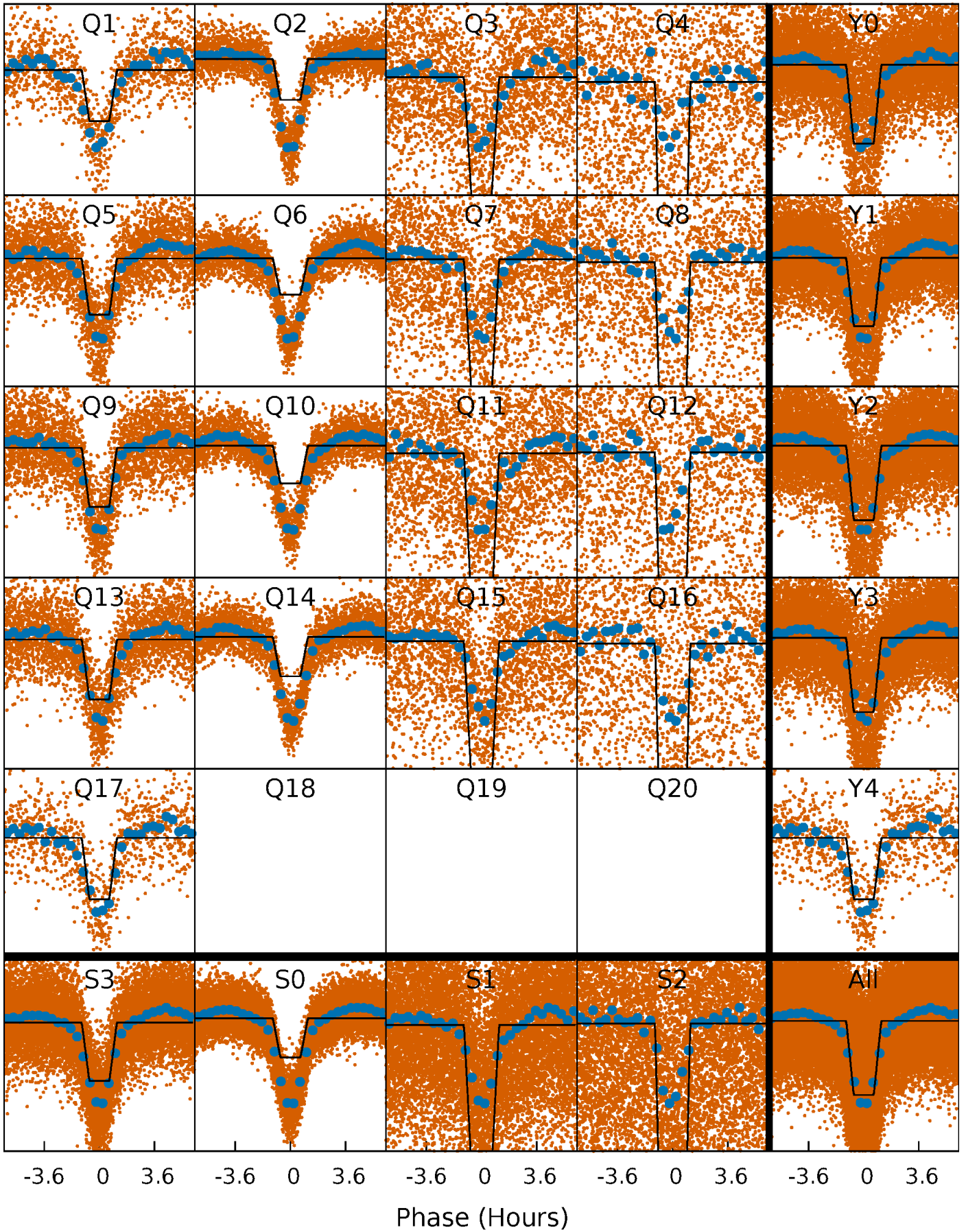
DV Quarter-Phased Transit Curves

TCE 002970804-01 P= 0.686993 Days $T_0=131.660593$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

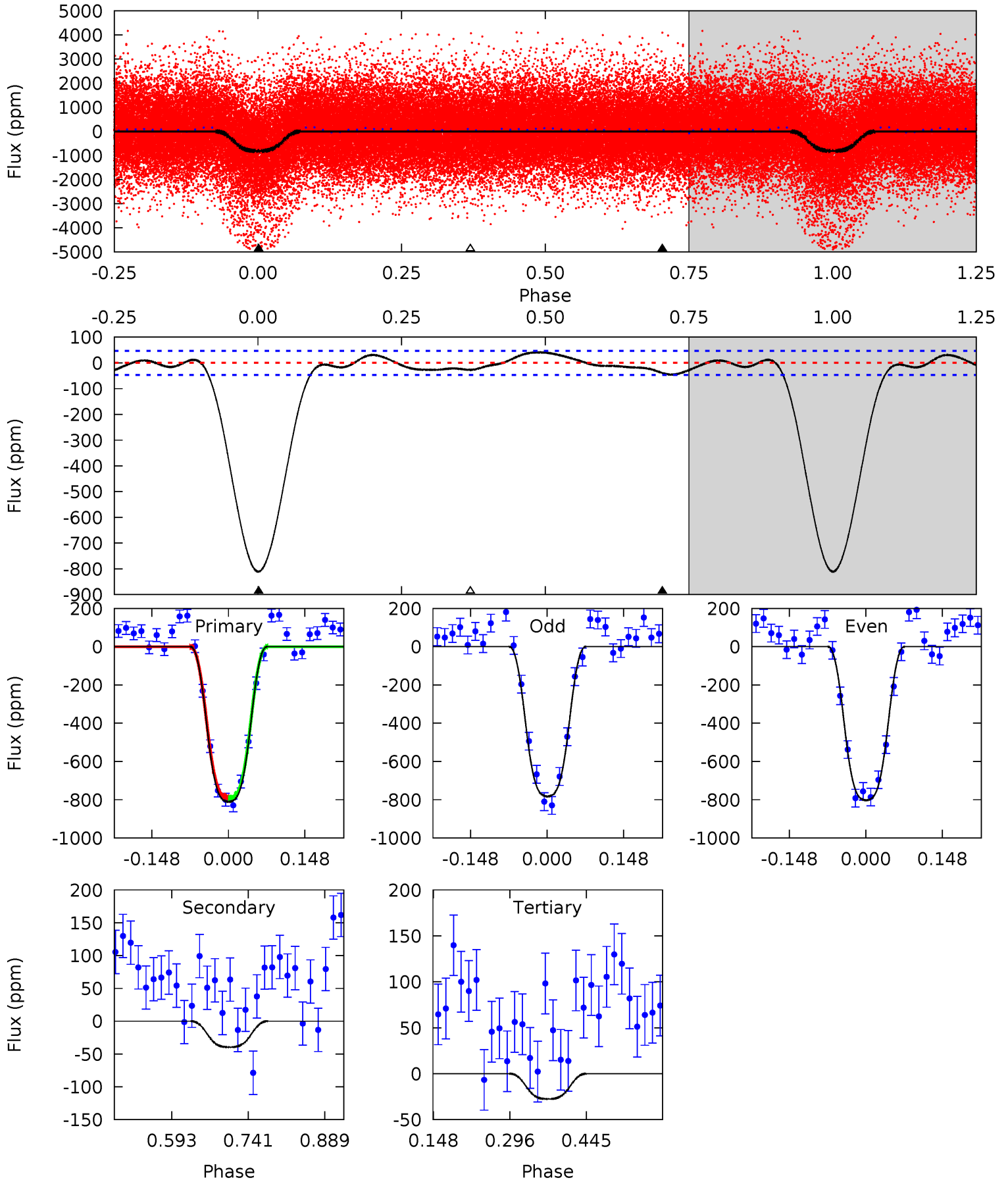
TCE 002970804-01 P= 0.686991 Days $T_0=131.664133$ (BKJD)



DV Model-Shift Uniqueness Test

002970804-01, P = 0.686993 Days, E = 130.973600 Days

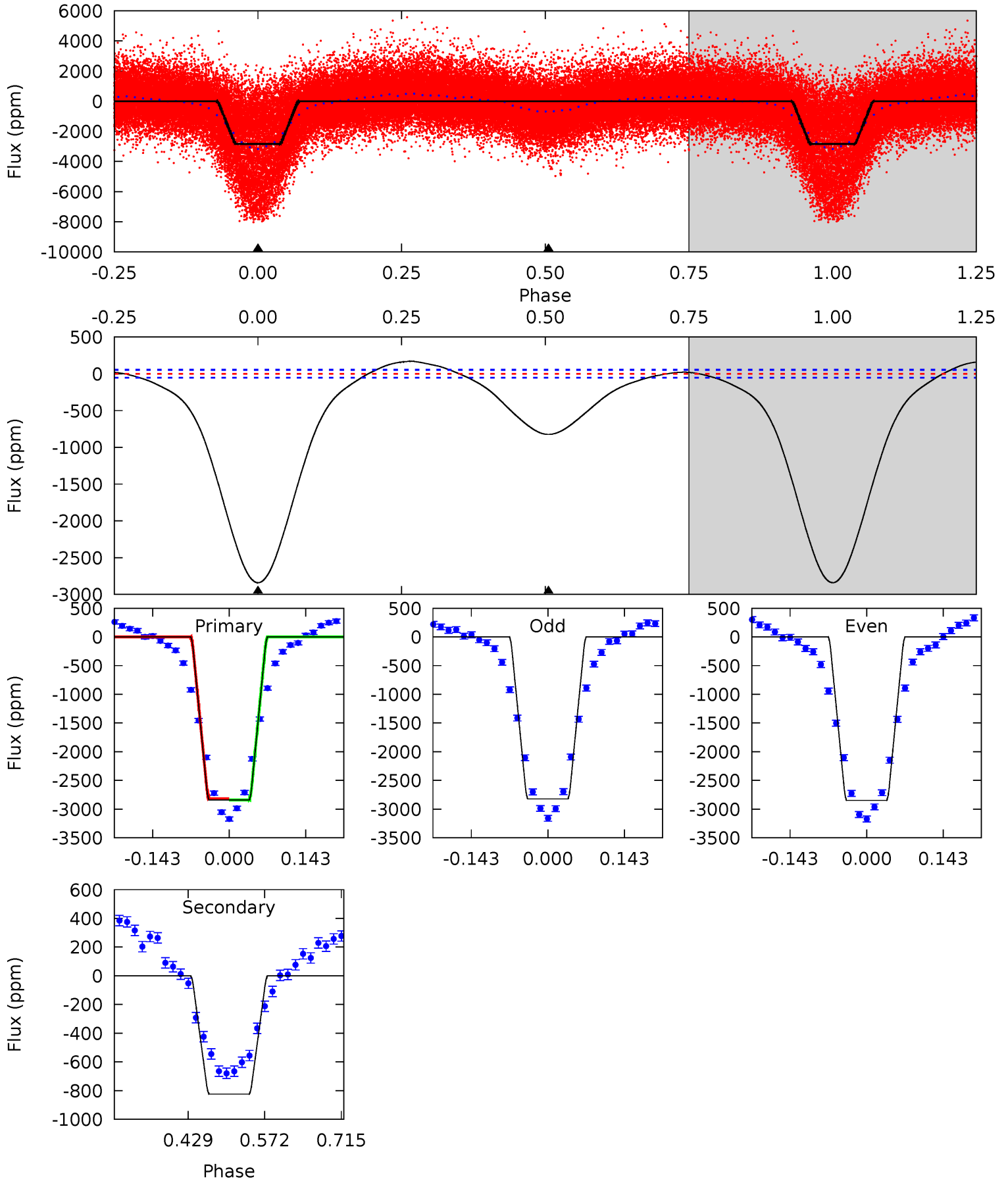
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
77.7	3.79	2.64	0	4.48	1.45	2.29	75.1	77.7	1.15	3.79	0.95	1.33	0.05	0.23



Alt Model-Shift Uniqueness Test

002970804-01, P = 0.686991 Days, E = 130.977142 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
239.2	69.4	0	0	4.49	1.46	9.40	239.2	239.2	69.4	69.4	1.12	1.09	0.06	0.88



Stellar Parameters For KIC 002970804

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 002970804-01 / KOI 3993.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-40 ± 10	$3.61^{+0.28}_{-0.27}$	2883^{+142}_{-122}	2564^{+294}_{-4737}	$0.388^{+0.123}_{-0.109}$
Alt.	-824 ± 12	$5.81^{+0.40}_{-0.42}$	2895^{+130}_{-132}	4368^{+131}_{-124}	$3.137^{+0.436}_{-0.362}$

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 $A_{obs} \gg 1.0$

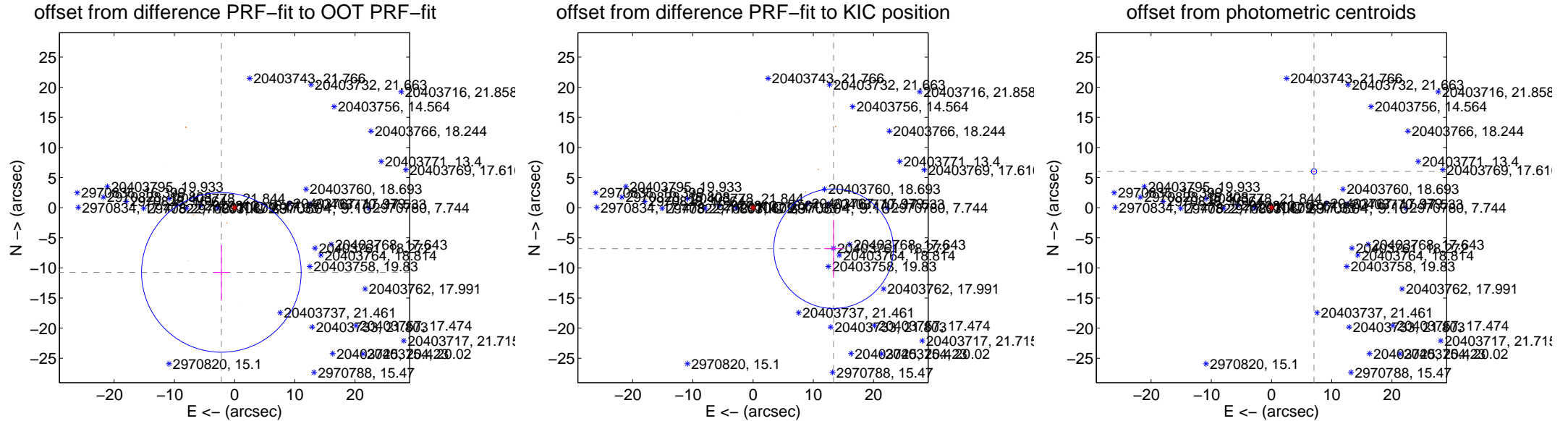
DV Centroid Data

Supplemental centroid analysis for 002970804-01. **Kepler magnitude: 9.16.** Transit SNR 45.32

There are 1 quarters with good PRF difference image offsets

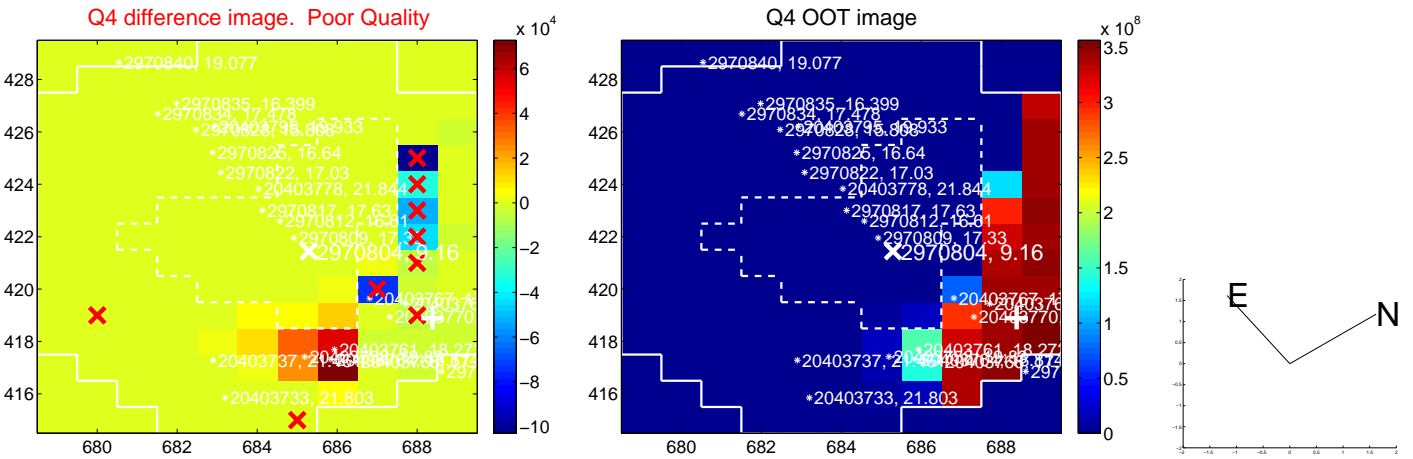
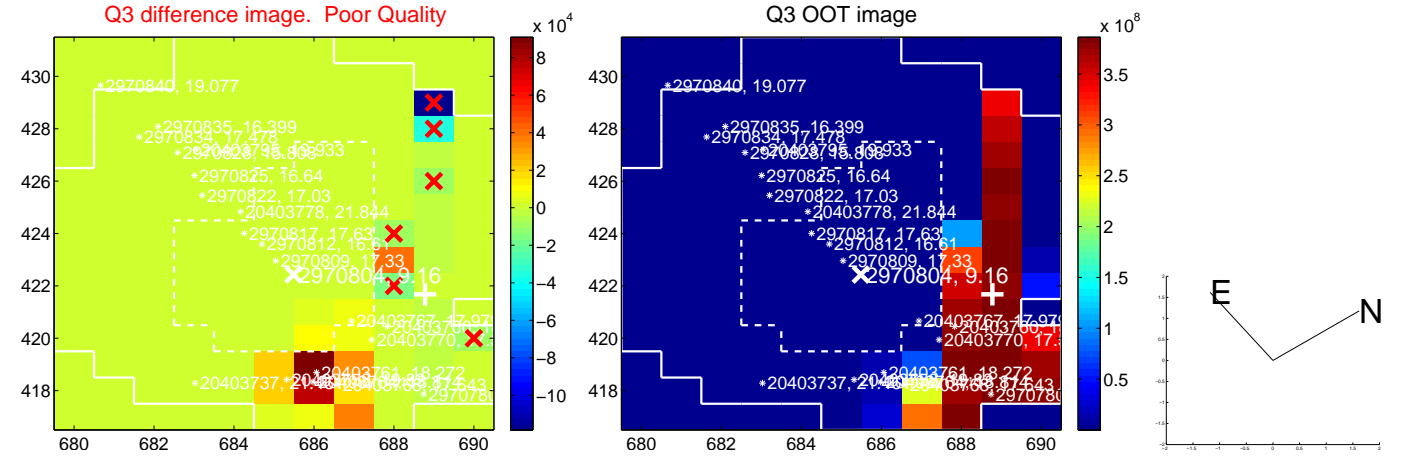
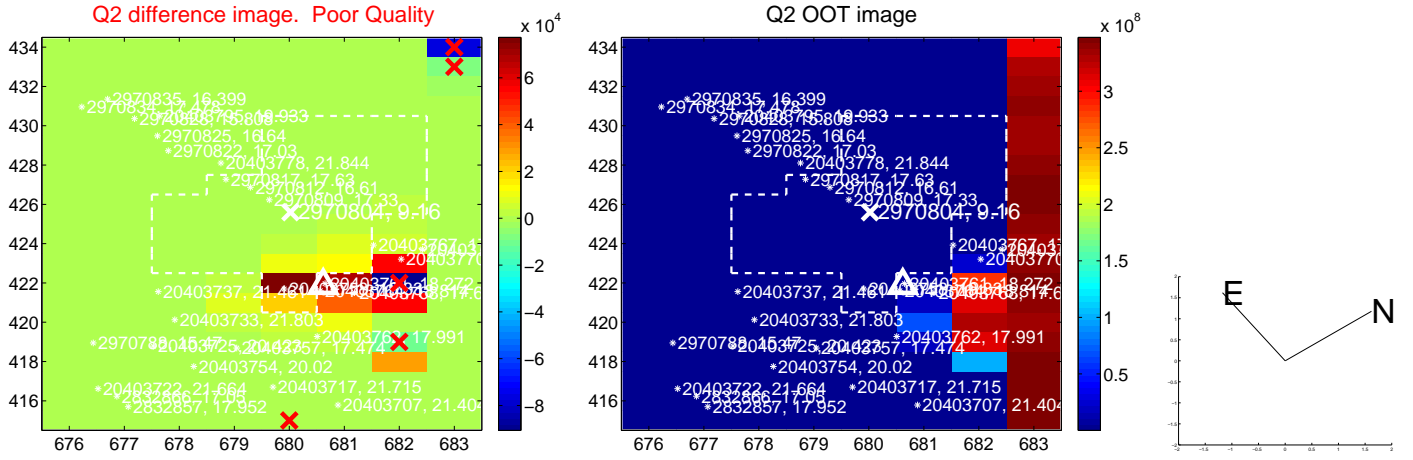
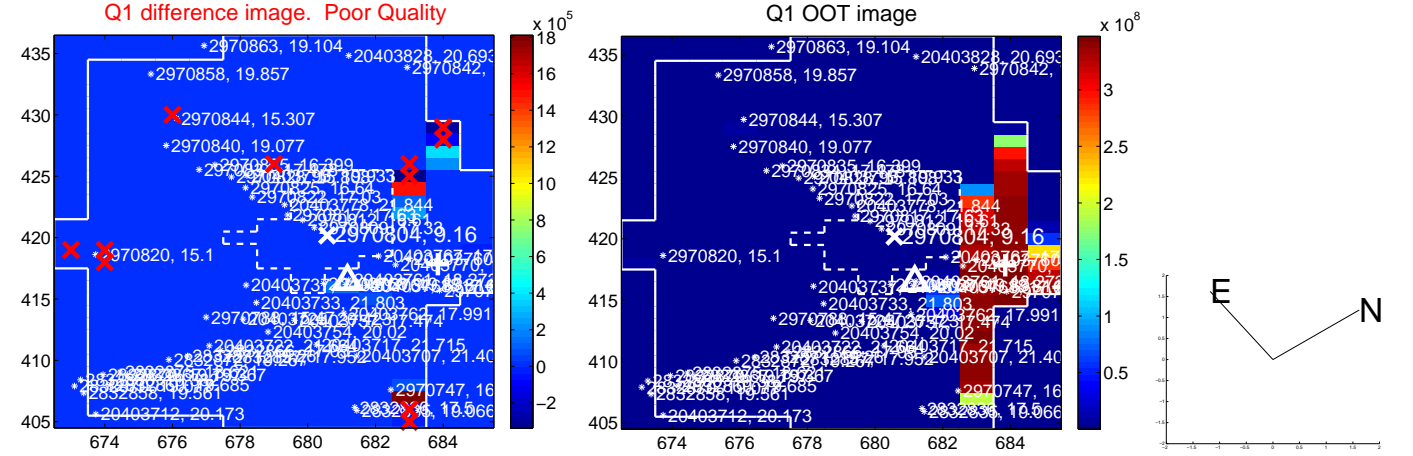
The OOT PRF centroid is offset from the target star catalog position by about 12.89 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	10.976 ± 4.416	2.49	2.195 ± 1.297	-10.755 ± 4.651
PRF-fit source offset from KIC position	14.997 ± 3.309	4.53	-13.364 ± 1.596	-6.806 ± 4.816
photometric centroid source offset	9.27 ± 0.15	61.59	-7.05 ± 0.15	6.02 ± 0.15

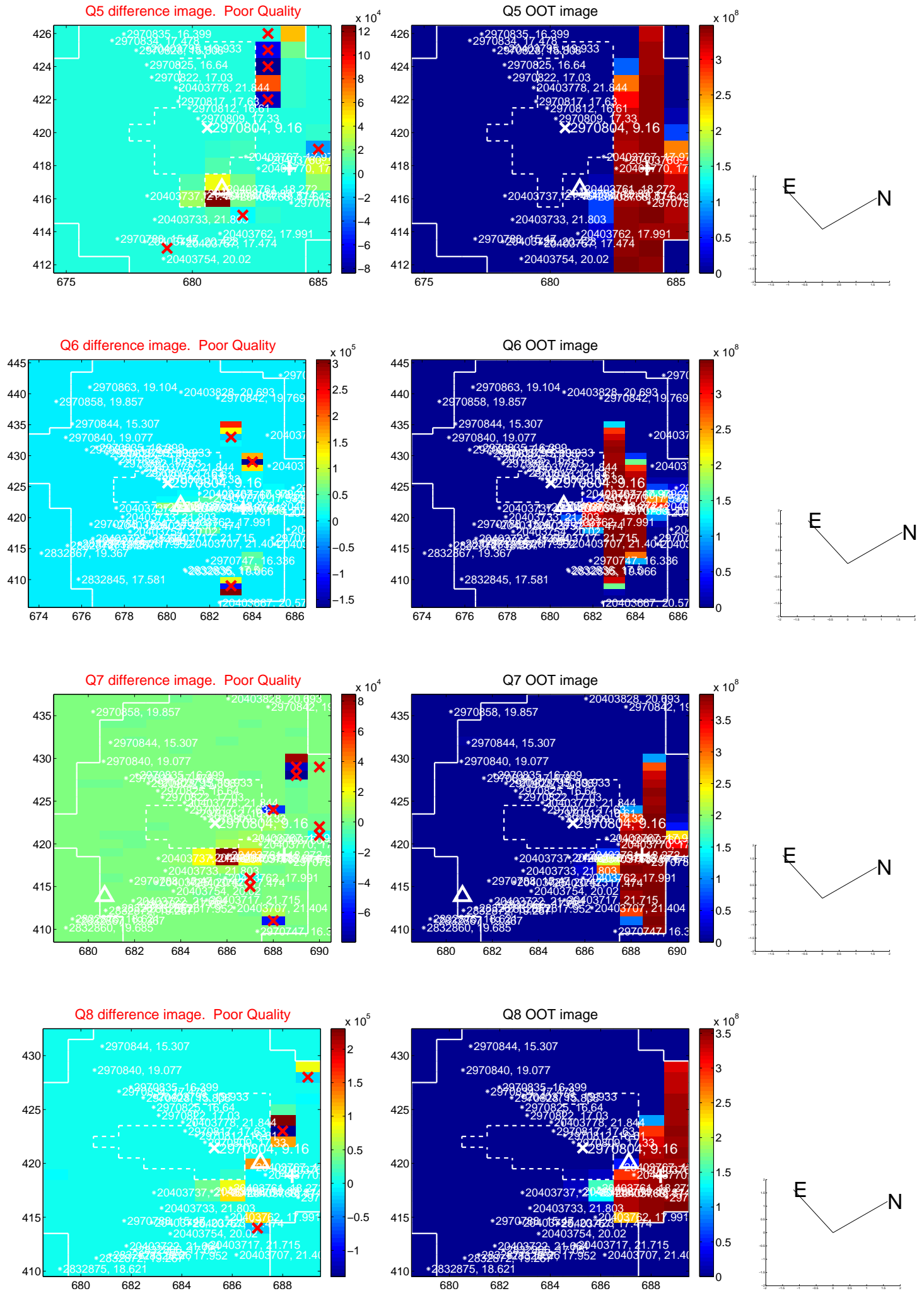


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

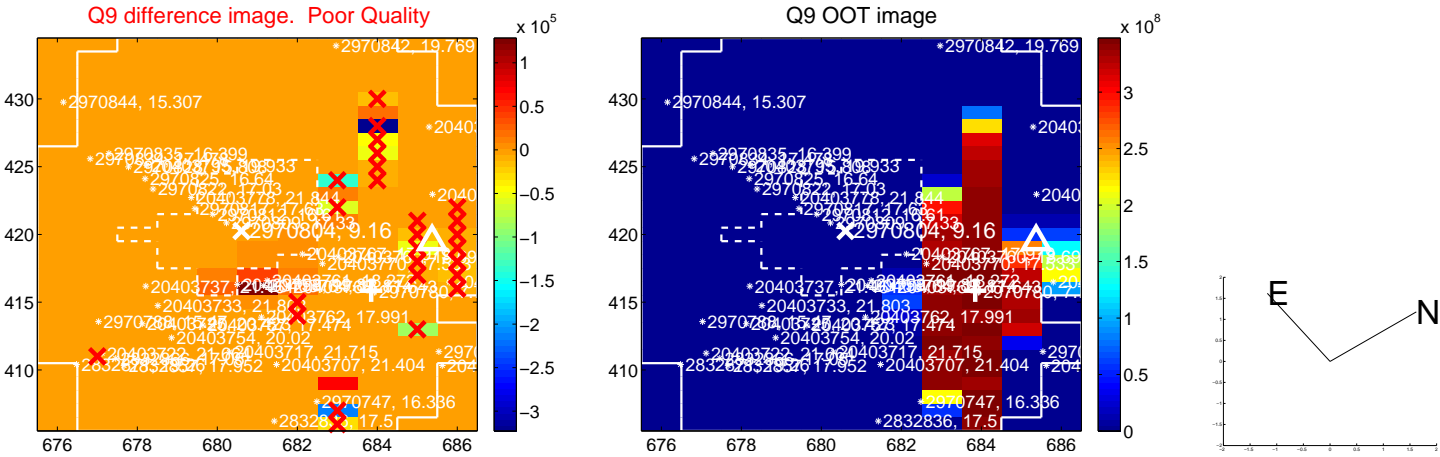
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



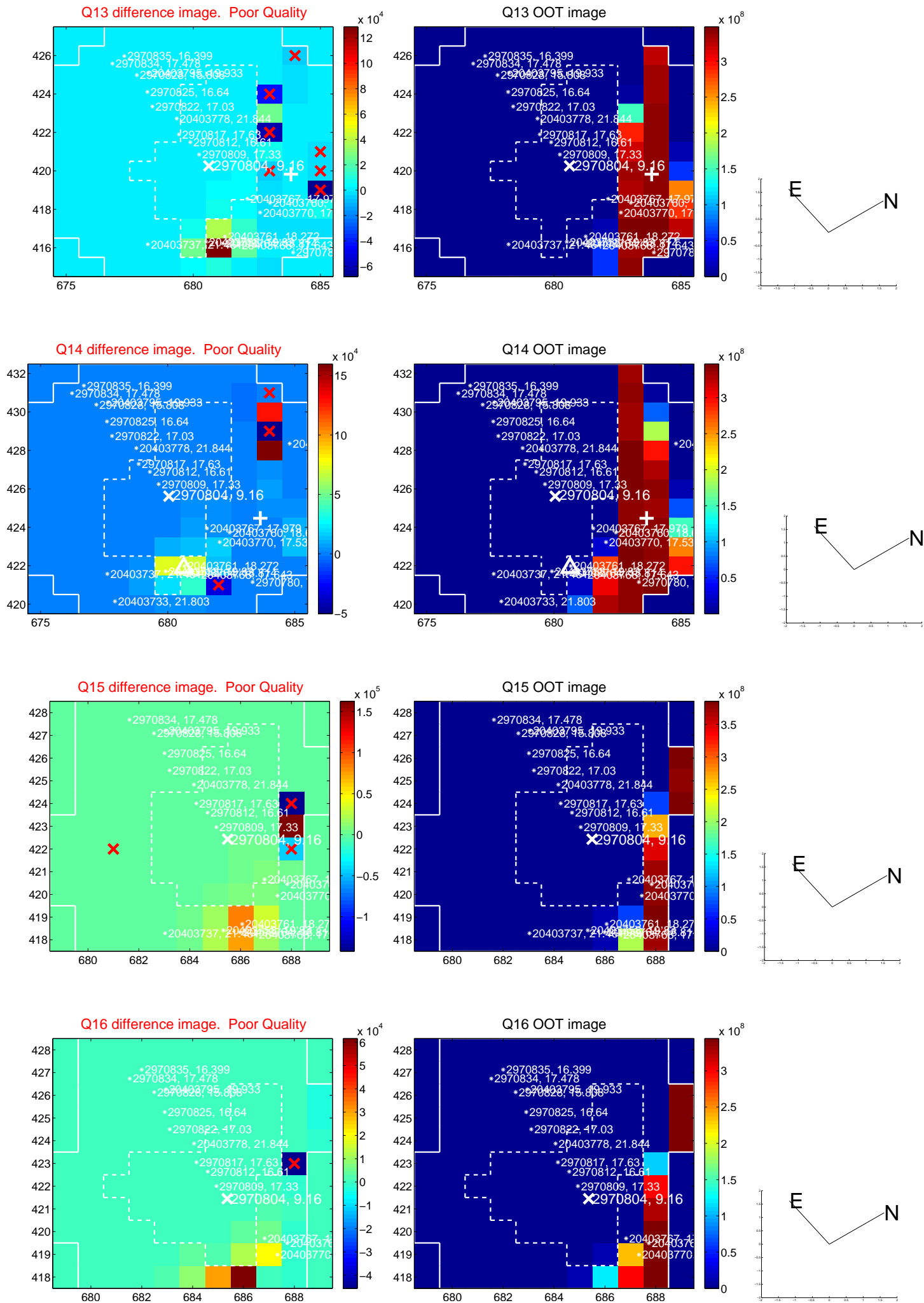
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



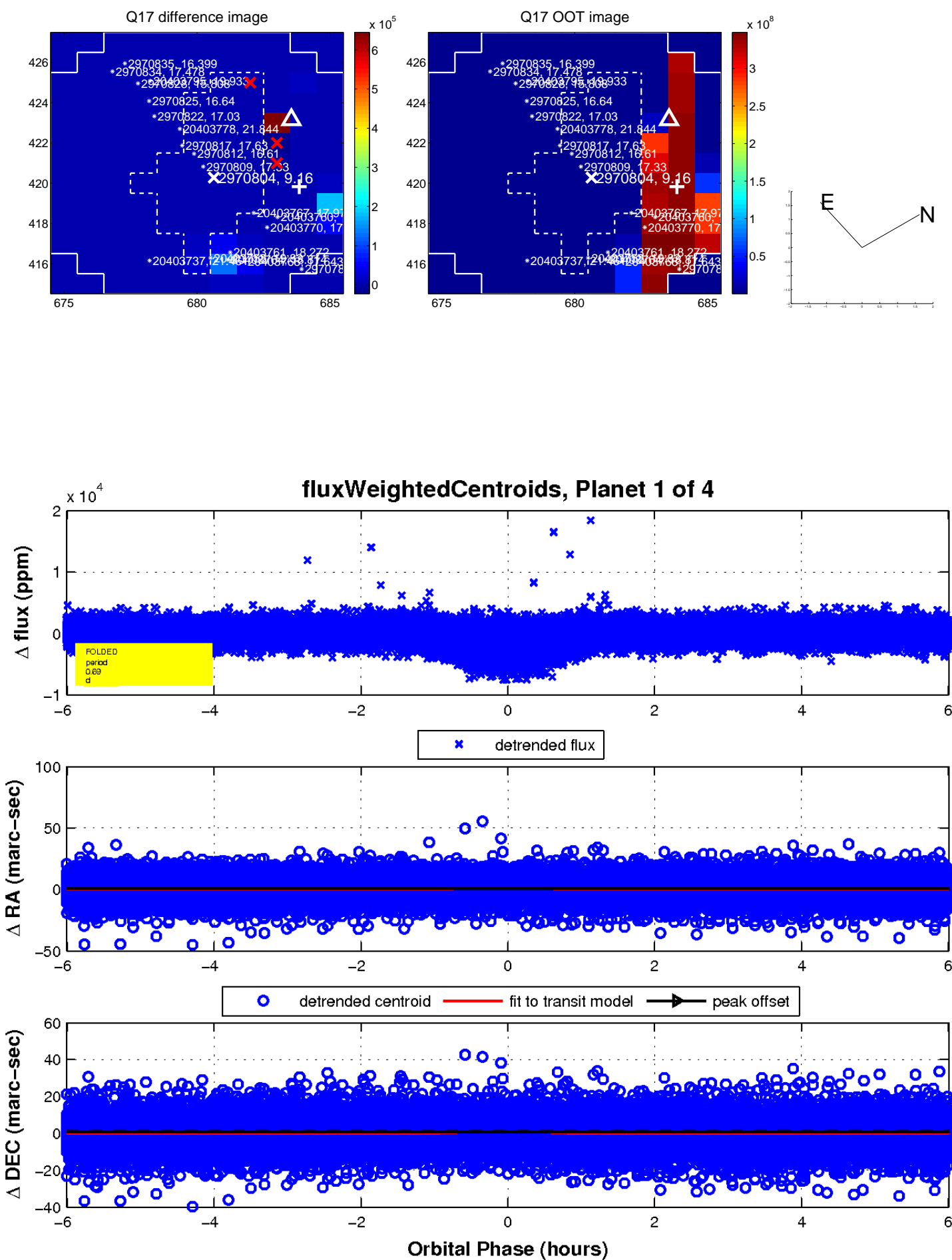
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



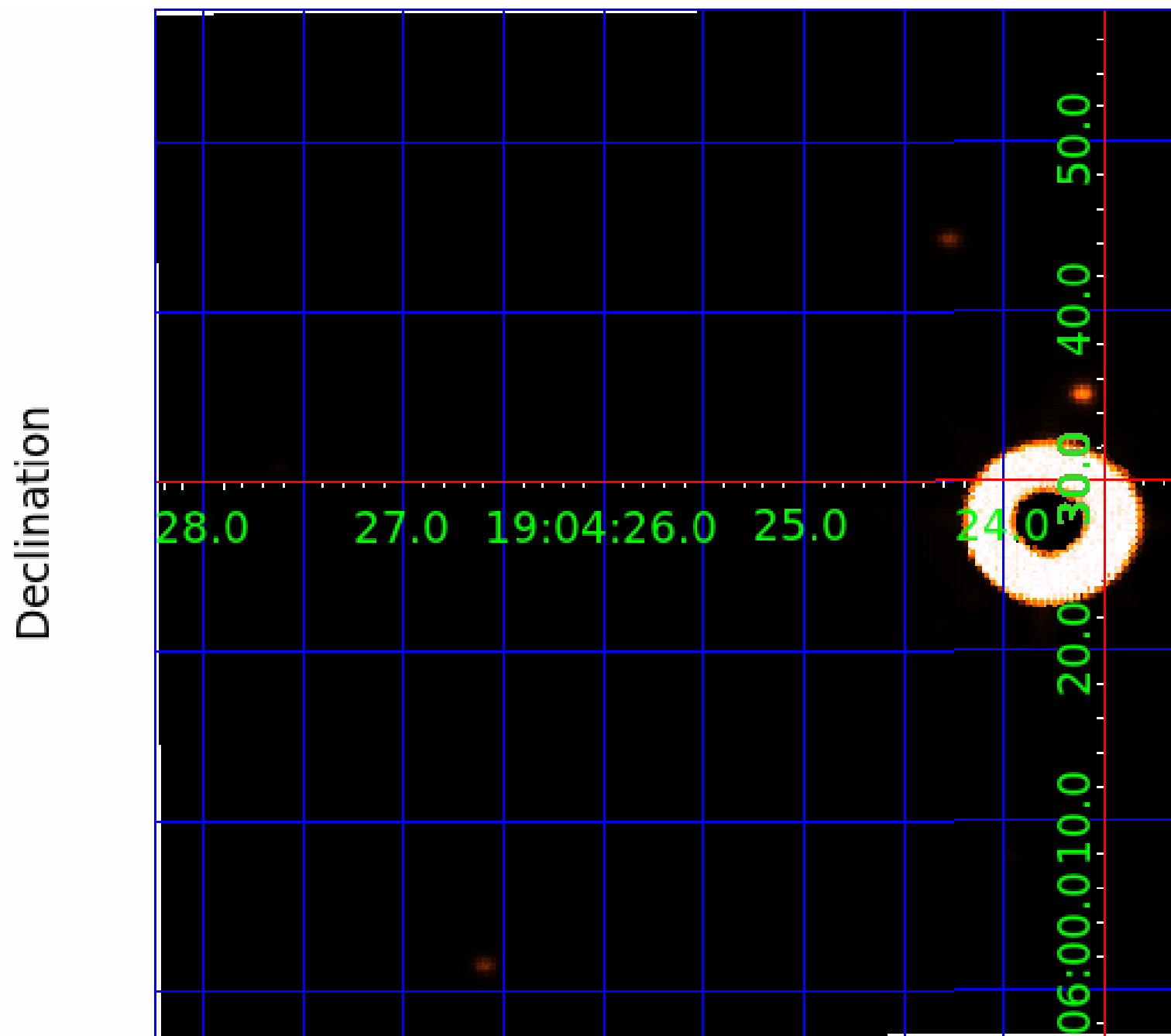
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 002970804

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})
002970804-01	OBS	3993.01	0.686993	131.660593	792.7	2.003	47.0	45.3	1.00	5780	3.61	4305.29
002970804-02	OBS	No	0.586730	131.672022	0.0	3.296	8.4	0.0	1.00	5780	0.00	5313.18
002970804-03	OBS	No	55.430480	150.765152	1545.8	2.533	8.6	7.7	1.00	5780	3.91	12.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002970804-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—CENT_SATURATED
002970804-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
002970804-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

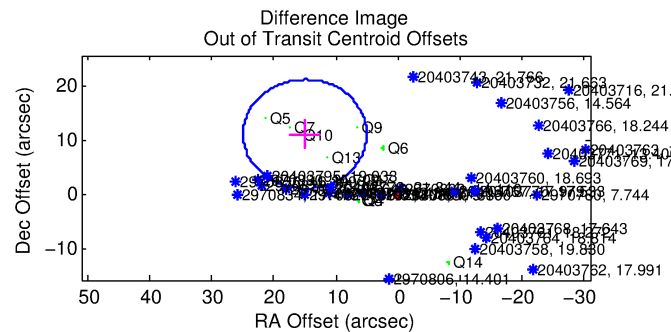
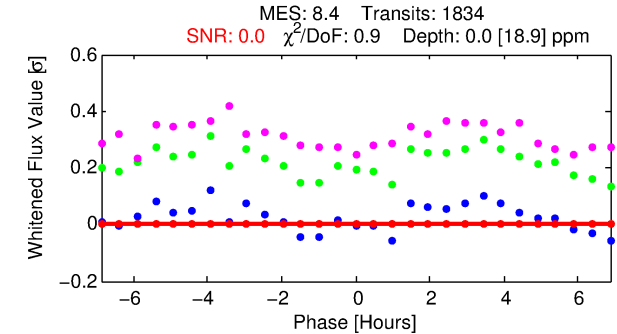
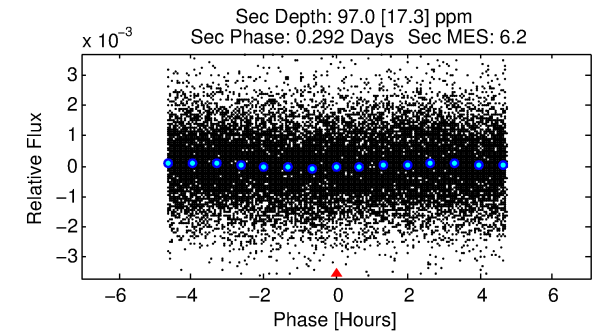
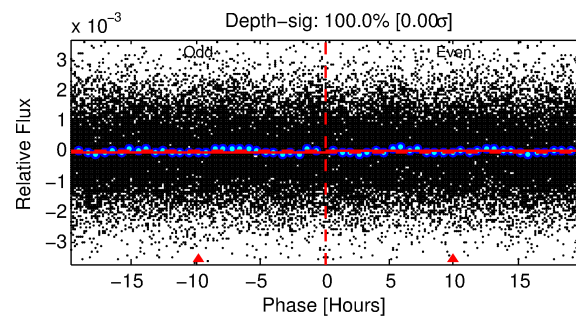
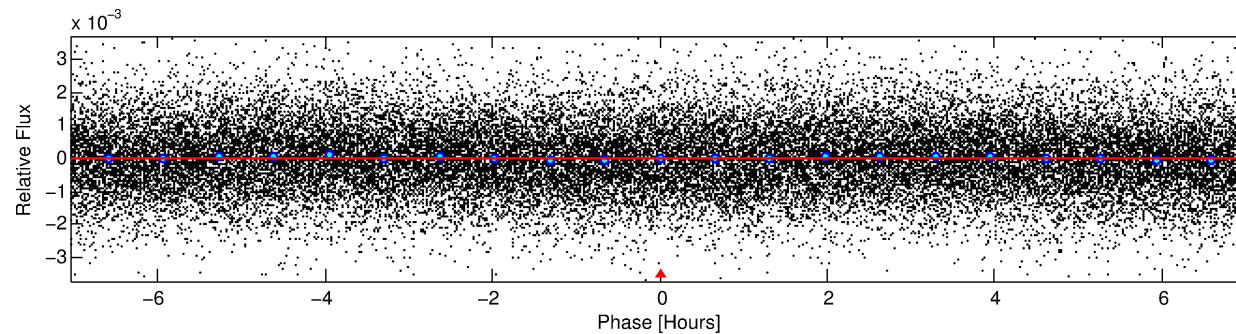
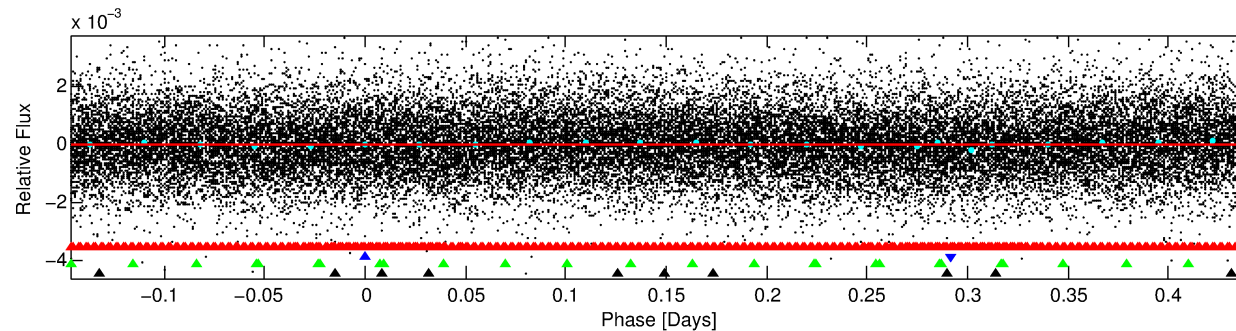
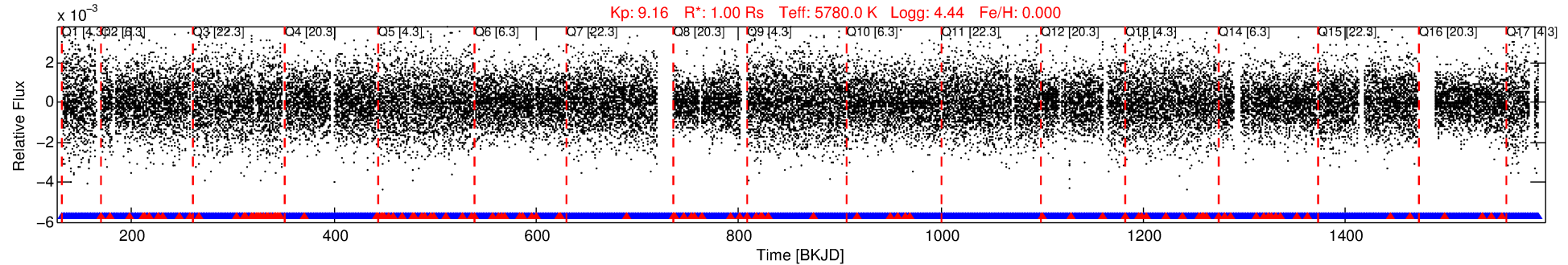
Ephemeris Match Information For 002970804-02

No Significant Match Found

DV One-Page Summary

KIC: 2970804 Candidate: 2 of 4 Period: 0.587 d
KOI: K03993 Corr: No Ephemeris Match

Kp: 9.16 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



DV Fit Results:

Period = 0.58673 [13.00274] d
Epoch = 131.6720 [4324.6267] BKJD
Rp/R* = 0.0000 [0.8016]
a/R* = 1.47 [7367.75]
a/R* = 0.20 [52051.93]
Seff = 5313.18 [156996.50]
Teq = 2177 [16082] K
Rp = 0.00 [87.47] Re
a = 0.0137 [0.2027] AU
Ag = 8693341.33 [1414909705231.60]
Teff = 182769 [7437620229] K [0.00]

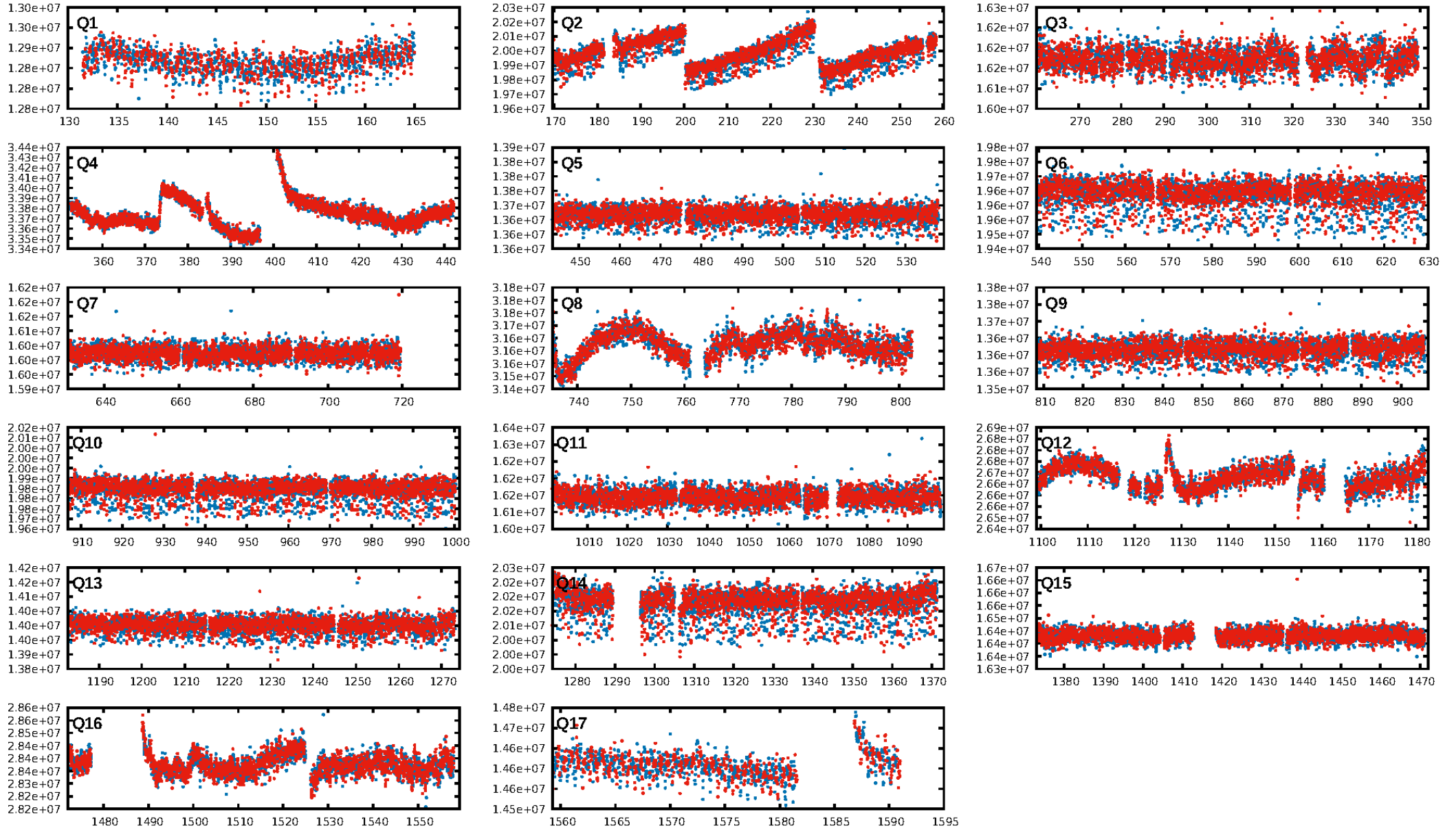
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 46.7% [0.62σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.93 [1632/1752]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OutOffset-rm: 18.650 arcsec [5.62σ]
KicOffset-rm: 13.304 arcsec [6.79σ]
OutOffset-st: 3/1/2/4 [10]
KicOffset-st: 4/3/2/4 [13]
DiffImageQuality-fgm: 0.23 [3/13]
DiffImageOverlap-fno: 0.00 [0/17]

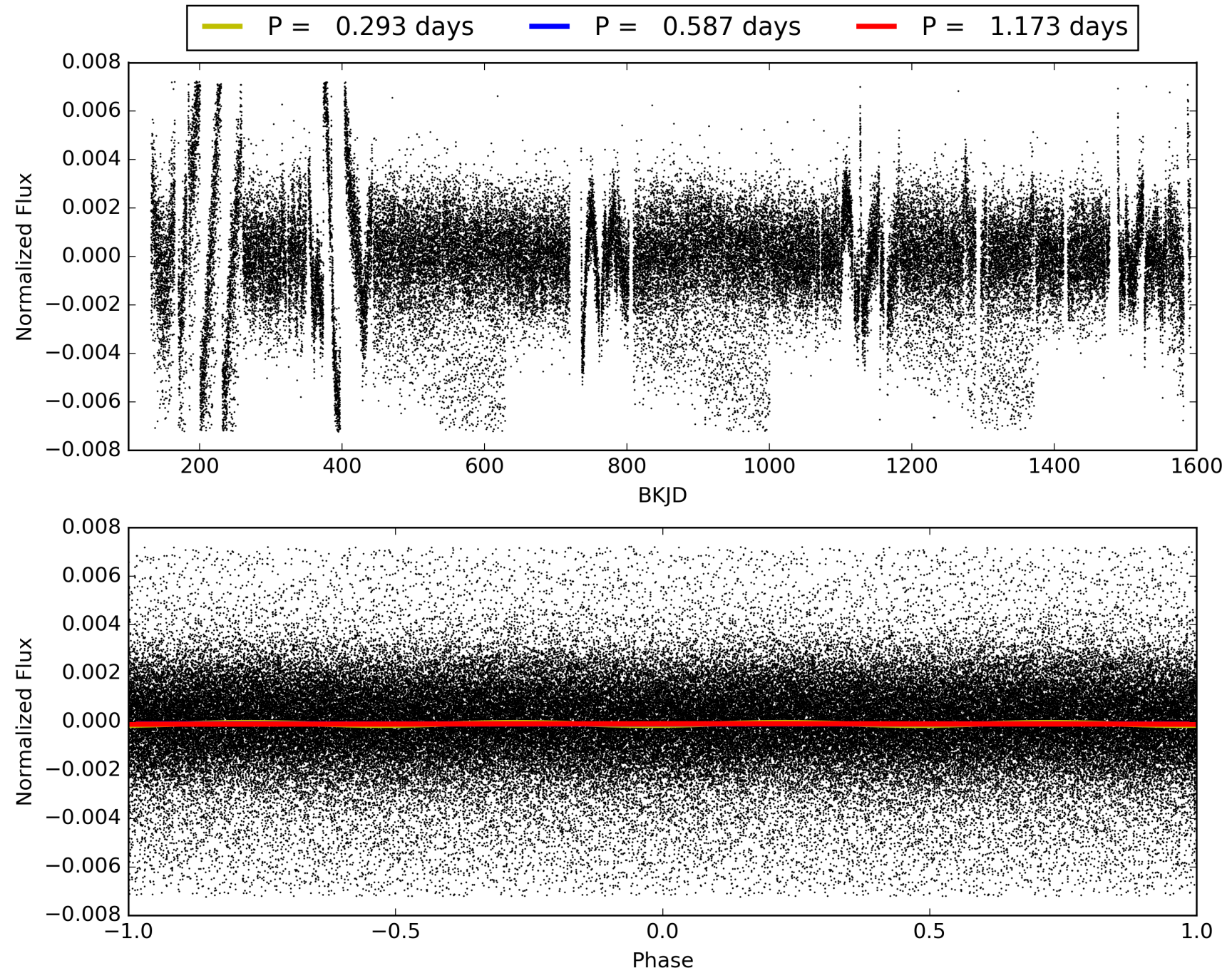
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 002970804-02, PDC Light Curves

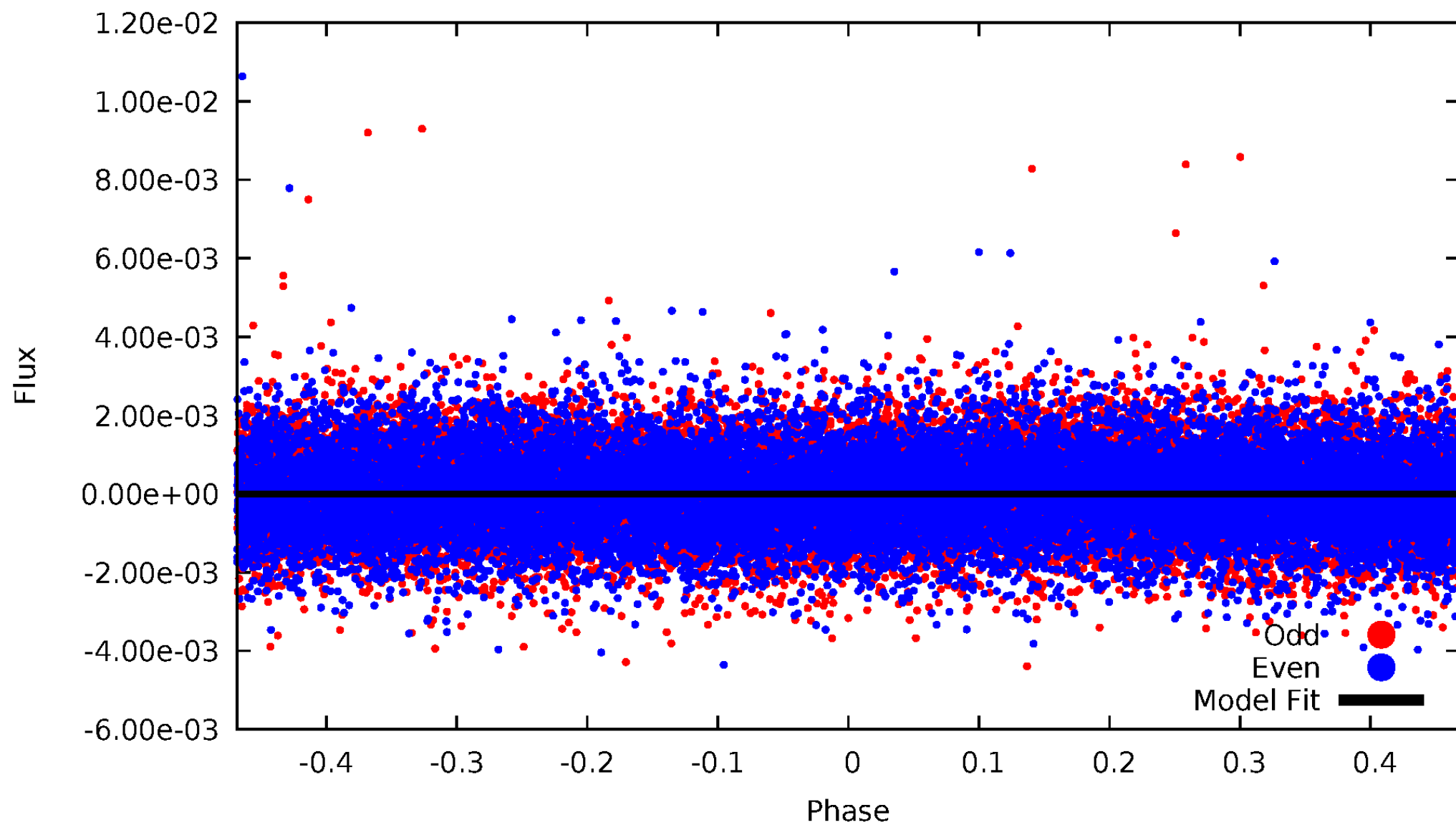


TCE 002970804-02



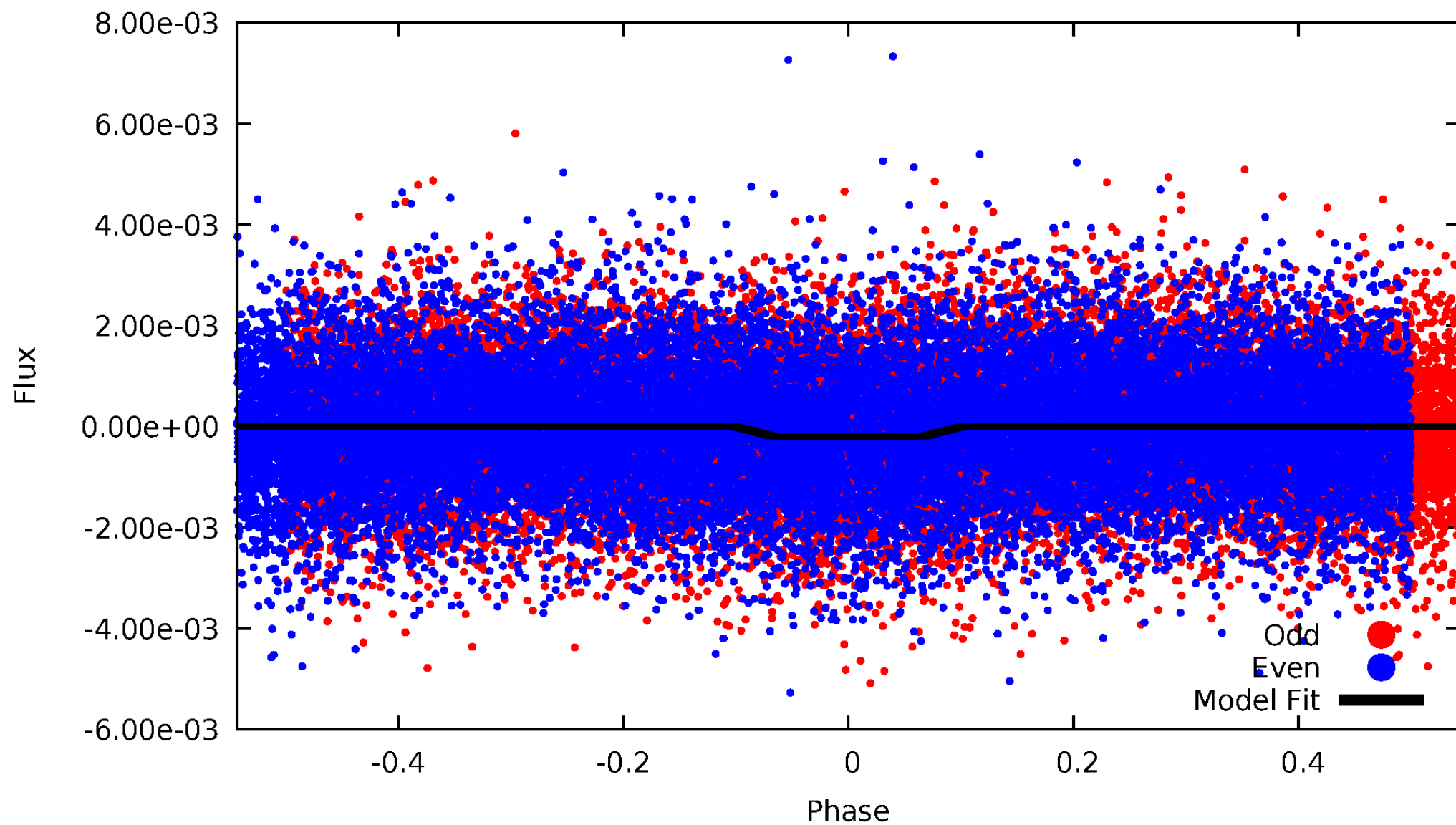
DV Odd/Even

TCE 002970804-02



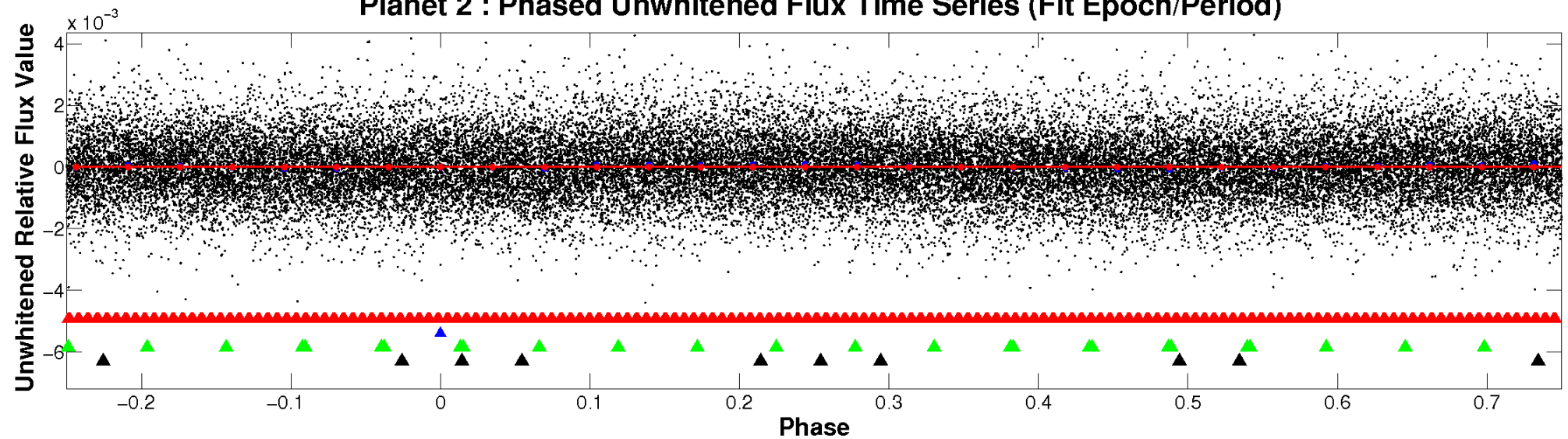
ALT Odd/Even

TCE 002970804-02

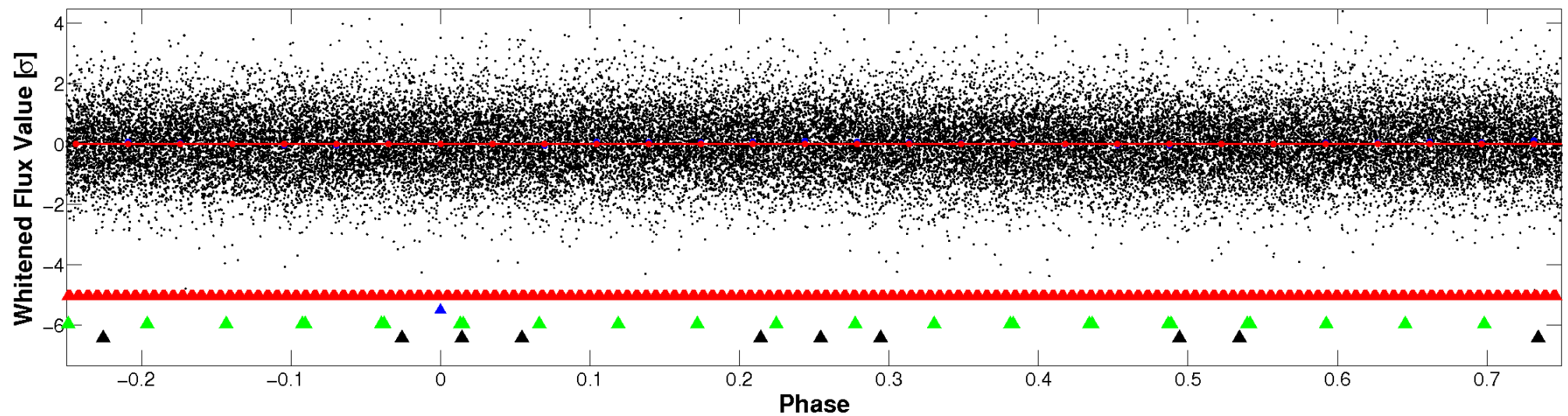


Non-Whitened Vs. Whitened Light Curve

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

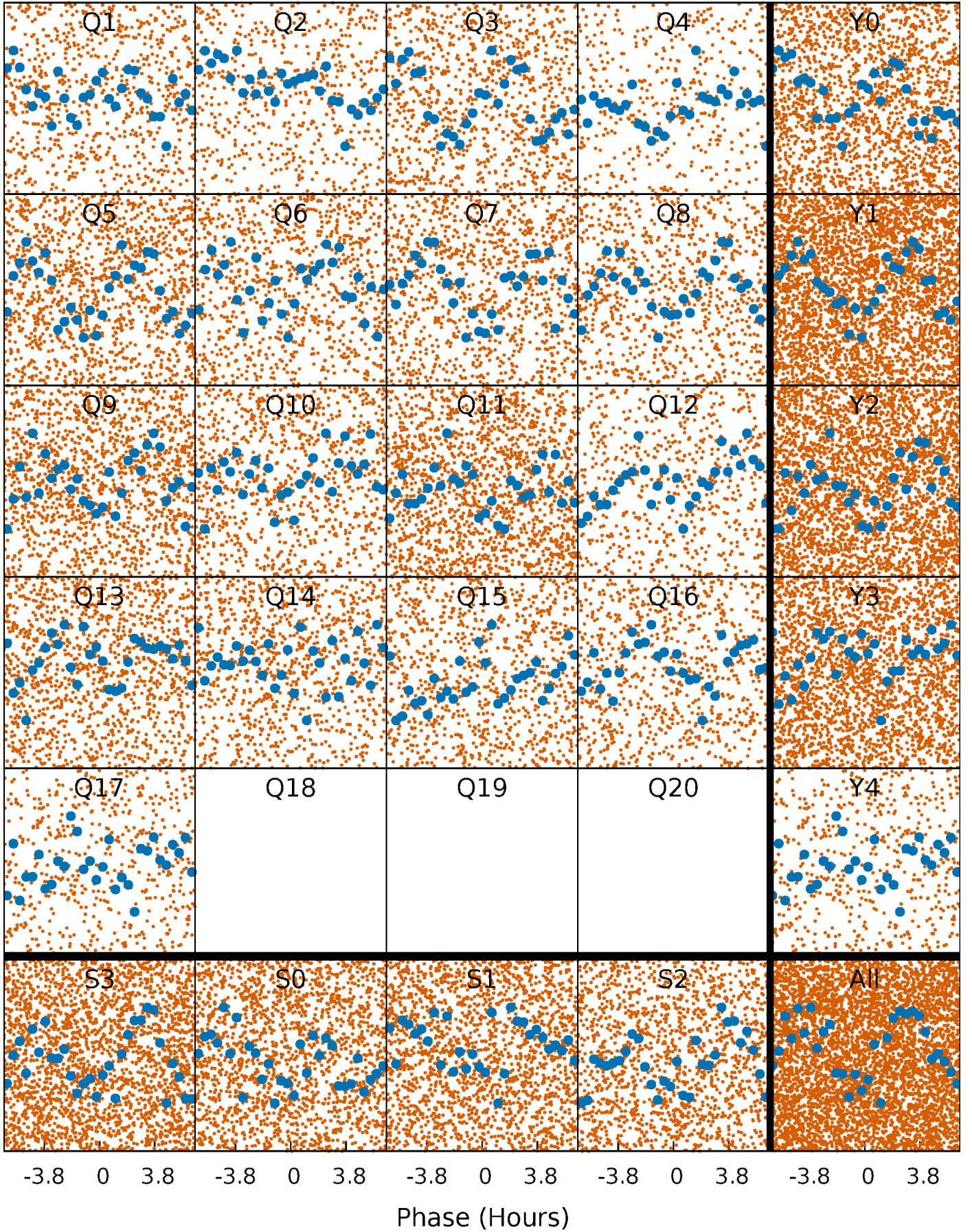


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



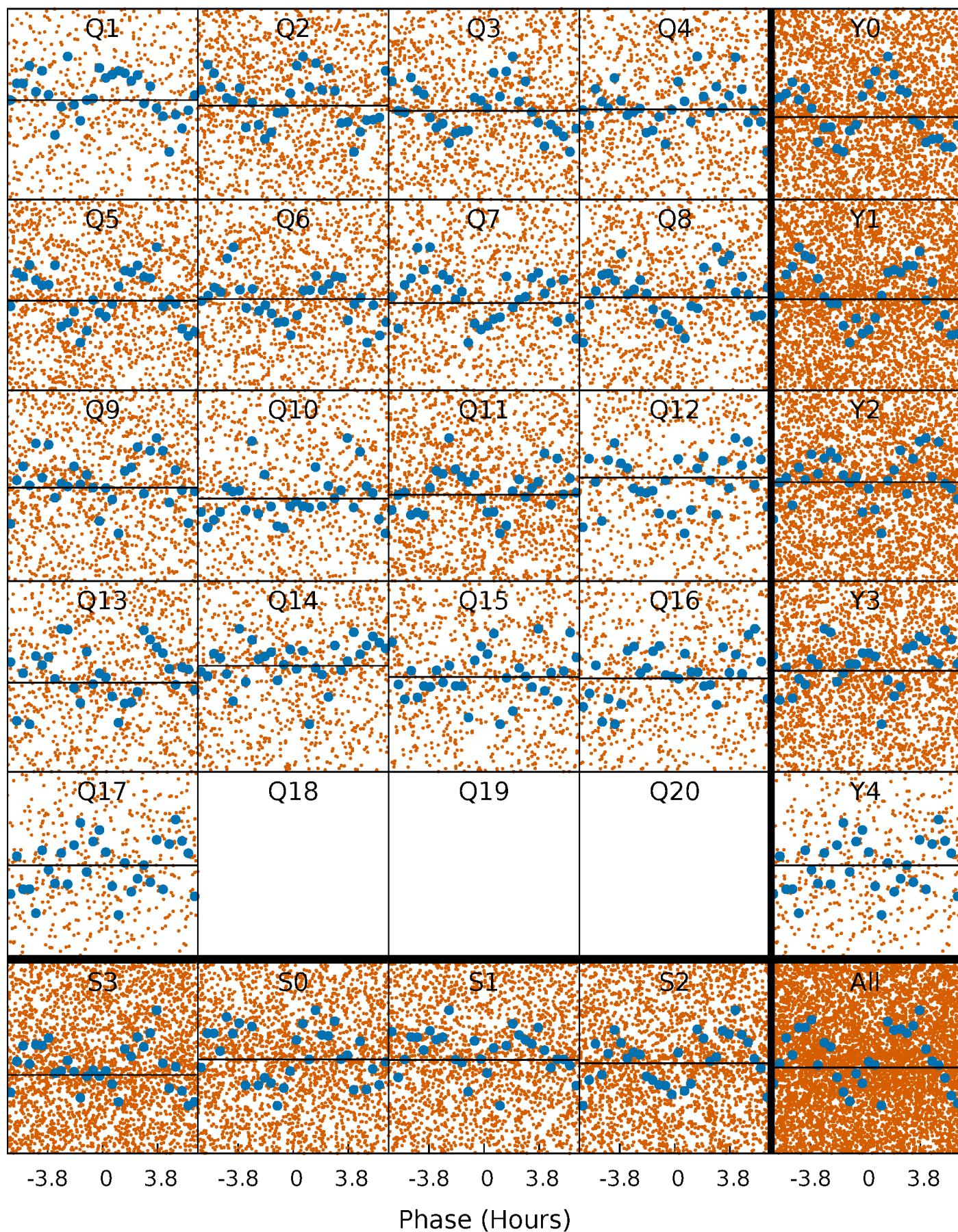
PDC Quarter-Phased Transit Curves

TCE 002970804-02 $P = 0.586730$ Days $T_0 = 131.672022$ (BKJD)



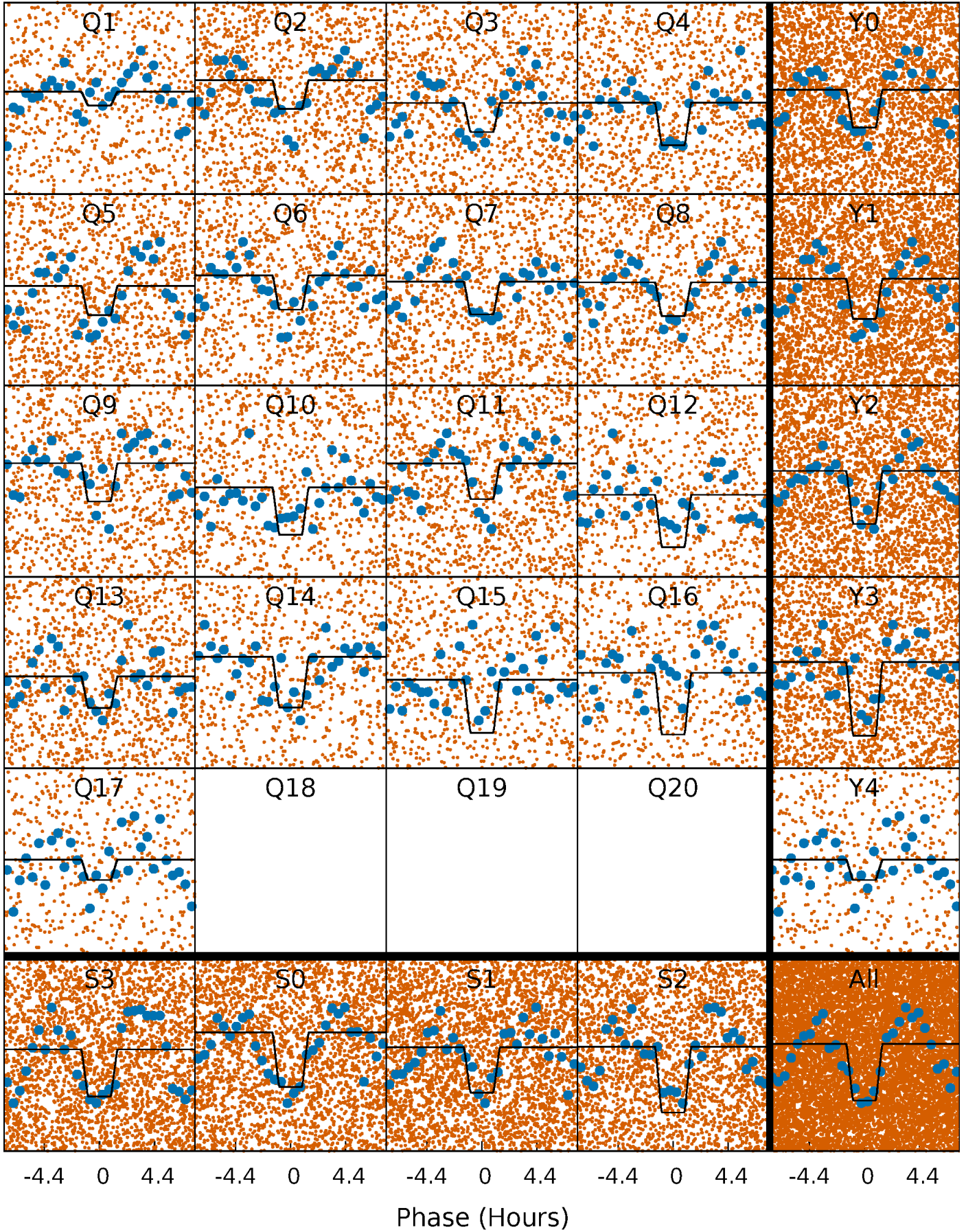
DV Quarter-Phased Transit Curves

TCE 002970804-02 $P = 0.586730$ Days $T_0 = 131.672022$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

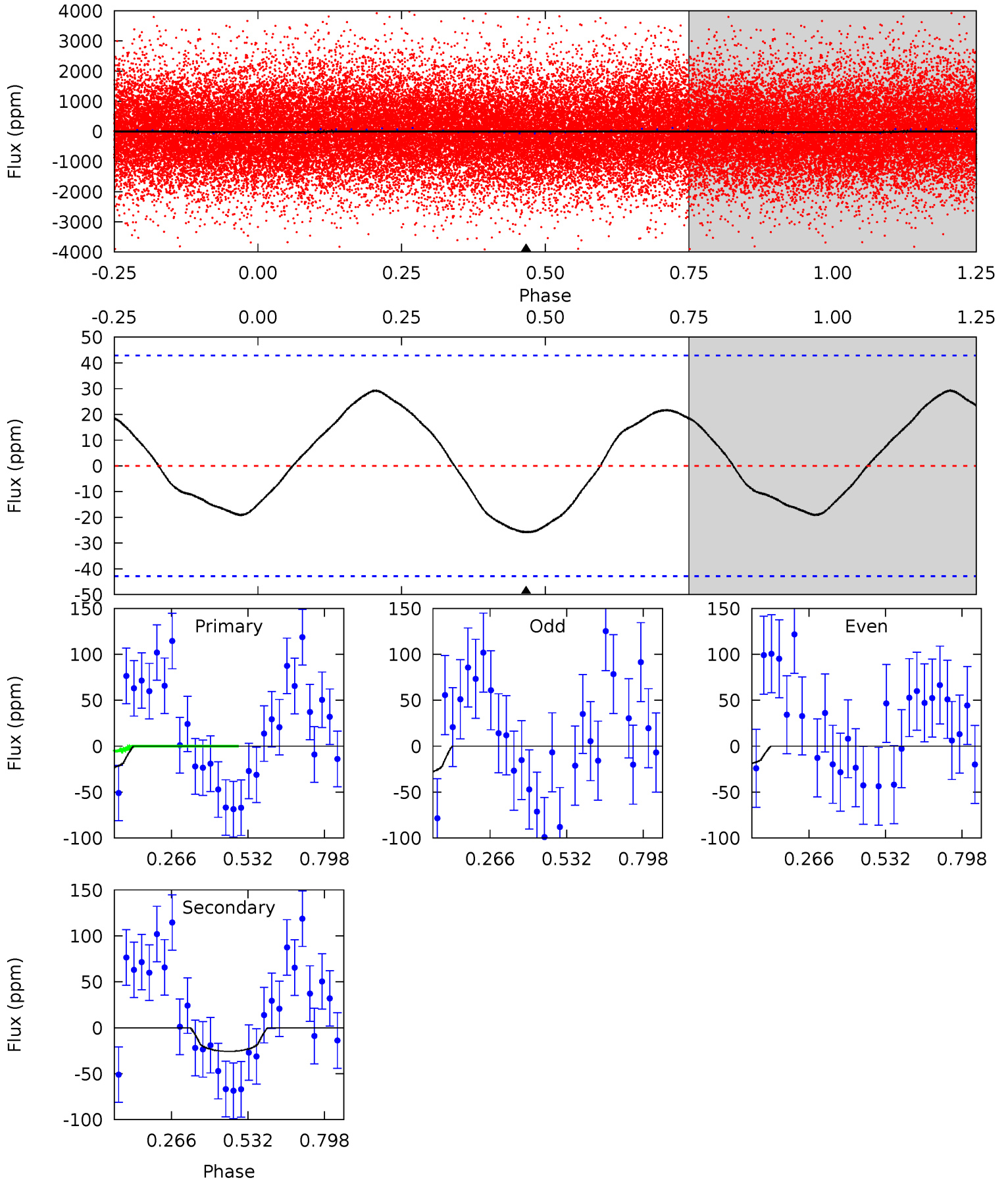
TCE 002970804-02 $P = 0.586799$ Days $T_0 = 131.588274$ (BKJD)



DV Model-Shift Uniqueness Test

002970804-02, P = 0.586730 Days, E = 131.085292 Days

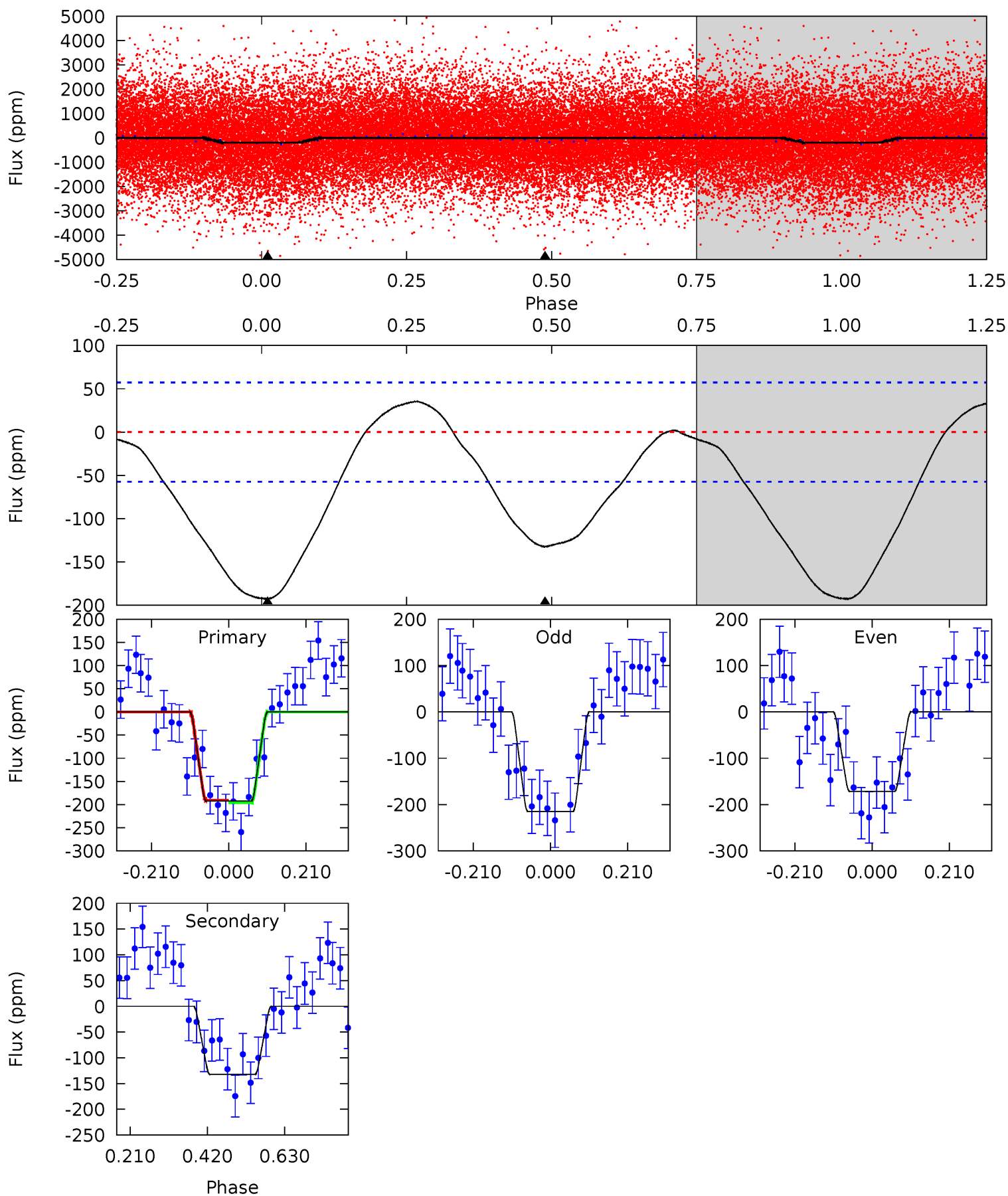
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.62	2.62	0	0	4.36	1.11	1.49	2.62	2.62	2.62	2.62	0.51	0.54	0.53	2.01



Alt Model-Shift Uniqueness Test

002970804-02, P = 0.586799 Days, E = 131.001475 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.8	10.2	0	0	4.41	1.25	1.58	14.8	14.8	10.2	10.2	1.68	1.09	0.16	0.21



Stellar Parameters For KIC 002970804

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 002970804-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-26 ± 10	$56.55^{+62.90}_{-39.25}$	1230^{+612}_{-269}	-1933^{+3243}_{-411}	$0.028^{+0.278}_{-0.025}$
Alt.	-132 ± 13	$59.14^{+70.72}_{-42.12}$	1239^{+684}_{-285}	-1817^{+4133}_{-511}	$0.125^{+1.809}_{-0.110}$

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 $A_{obs} \gg 1.0$

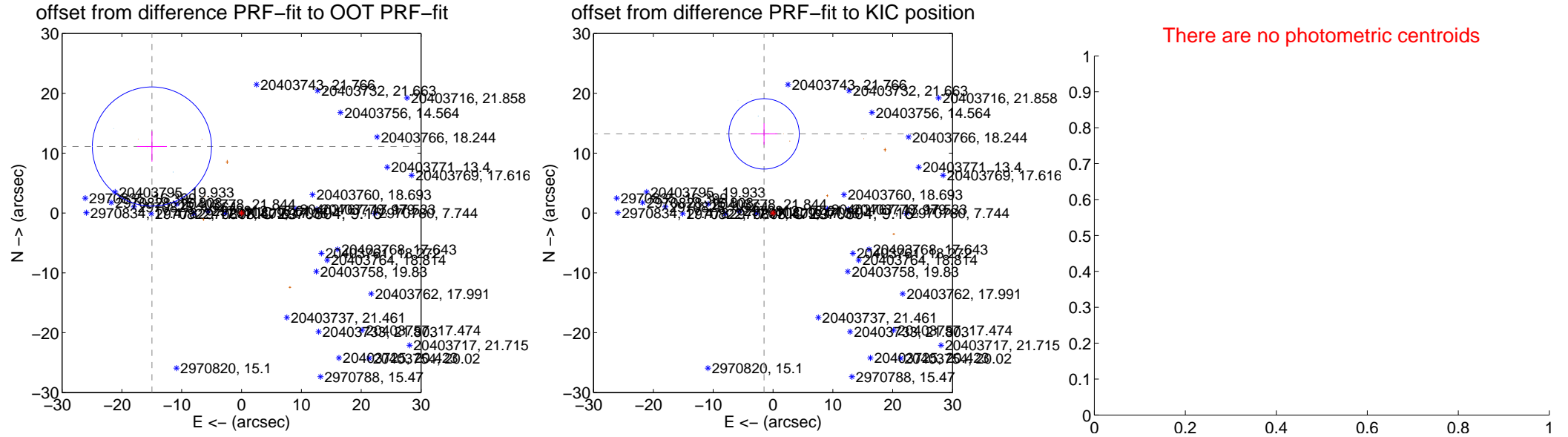
DV Centroid Data

Supplemental centroid analysis for 002970804-02. **Kepler magnitude: 9.16.** Transit SNR 0.00

There are 3 quarters with good PRF difference image offsets

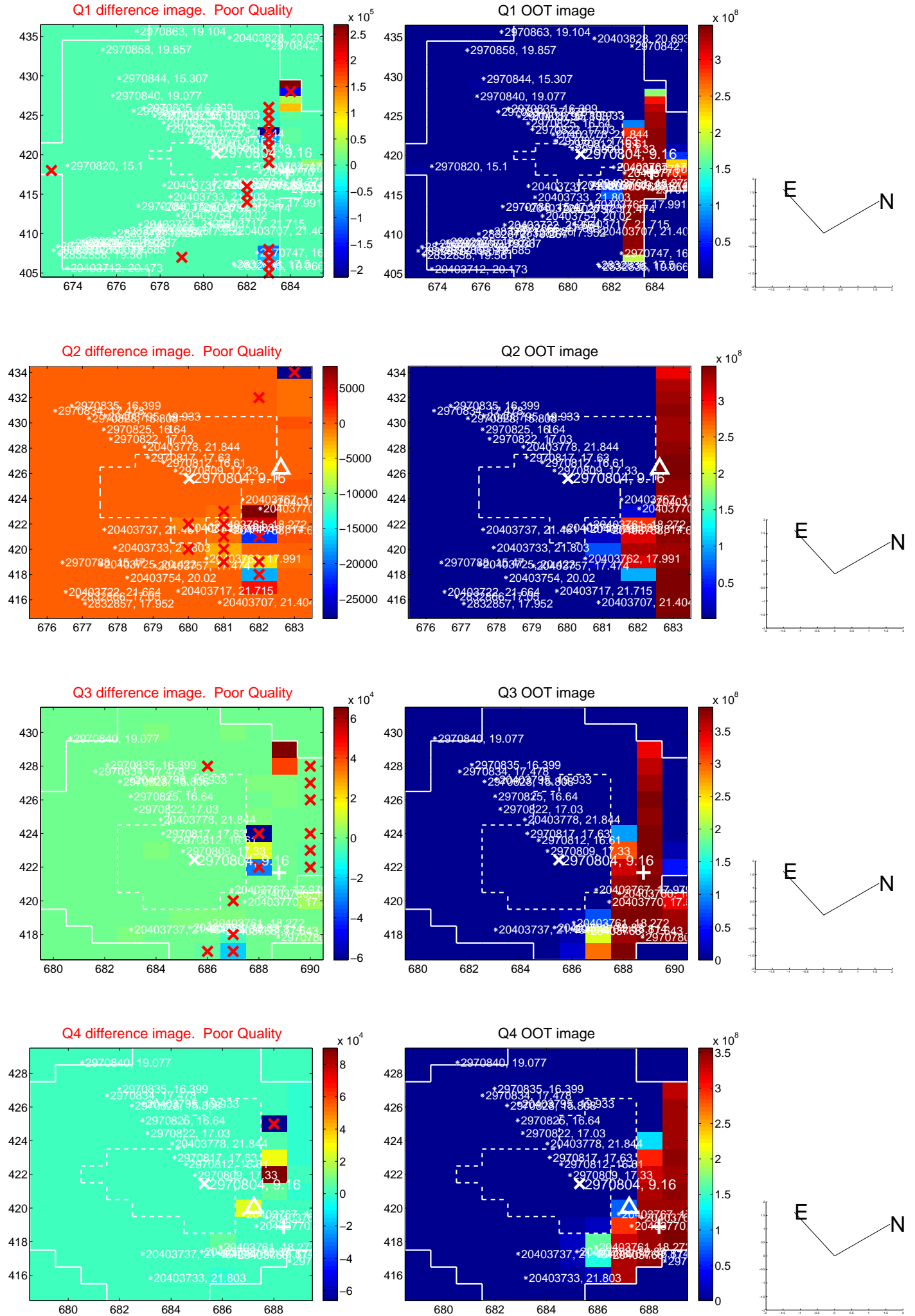
The OOT PRF centroid is offset from the target star catalog position by about 12.89 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	18.650 ± 3.318	5.62	14.978 ± 2.498	11.113 ± 2.535
PRF-fit source offset from KIC position	13.304 ± 1.960	6.79	1.492 ± 2.230	13.220 ± 1.779
photometric centroid source offset	—	—	—	—

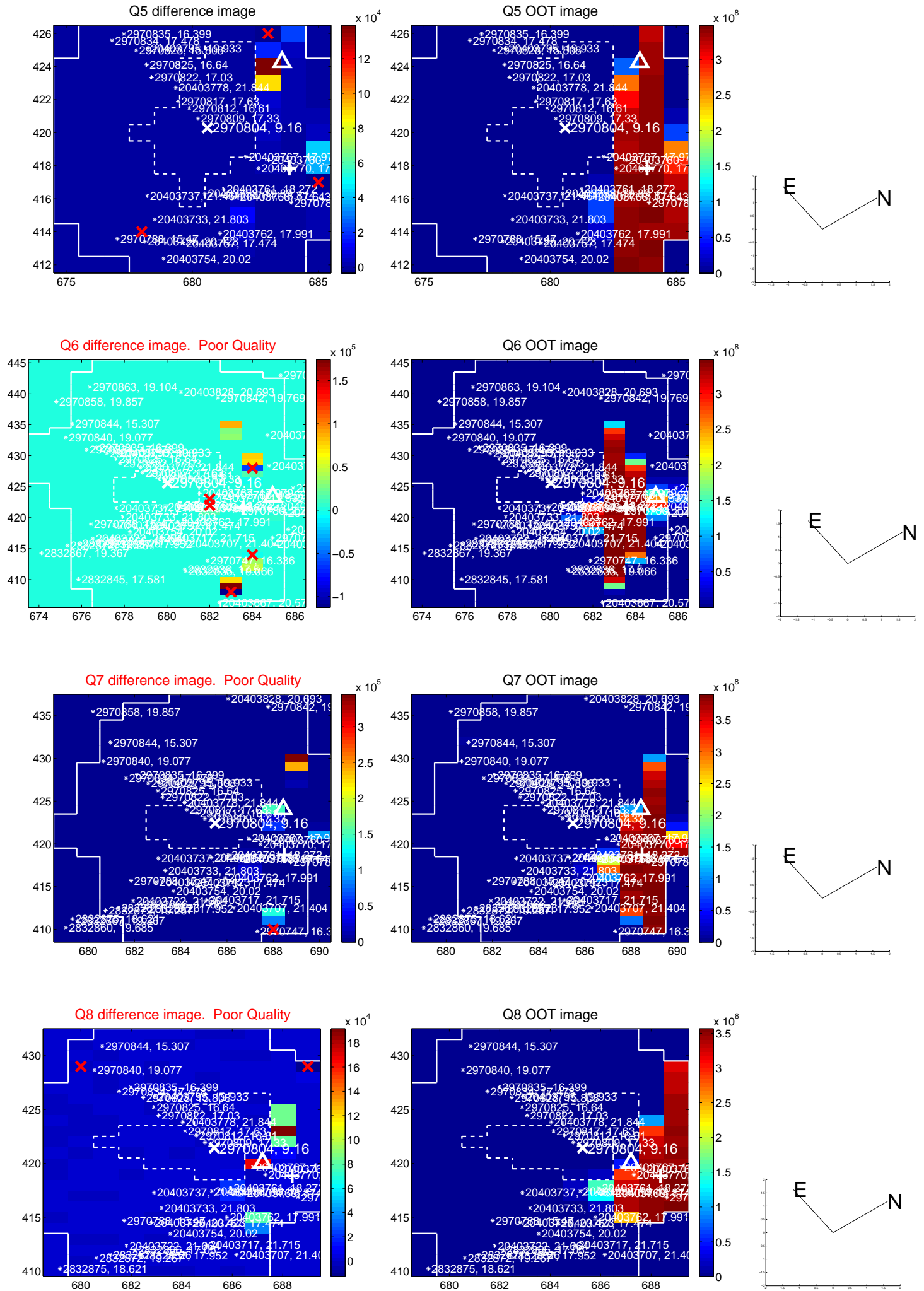


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

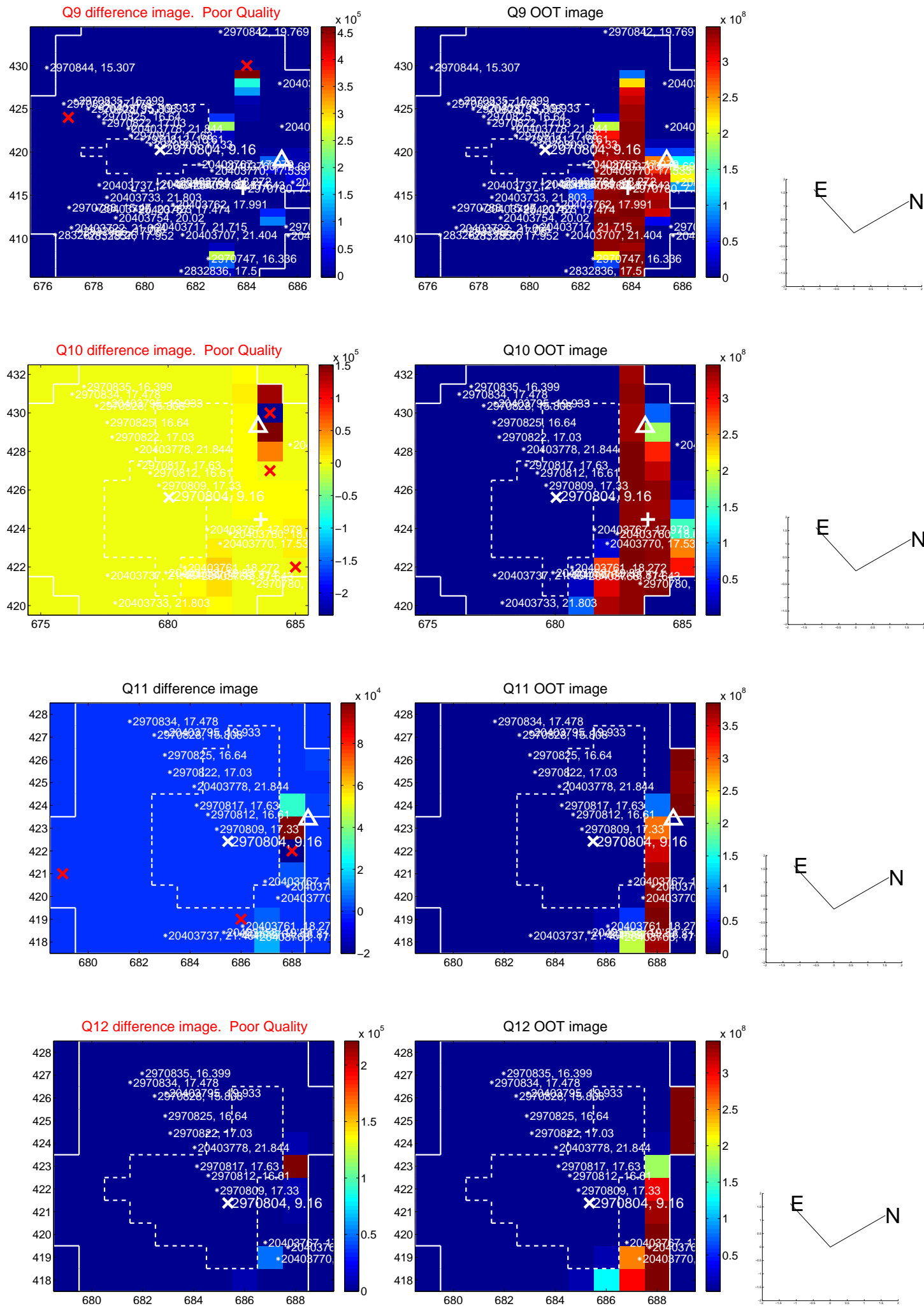
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



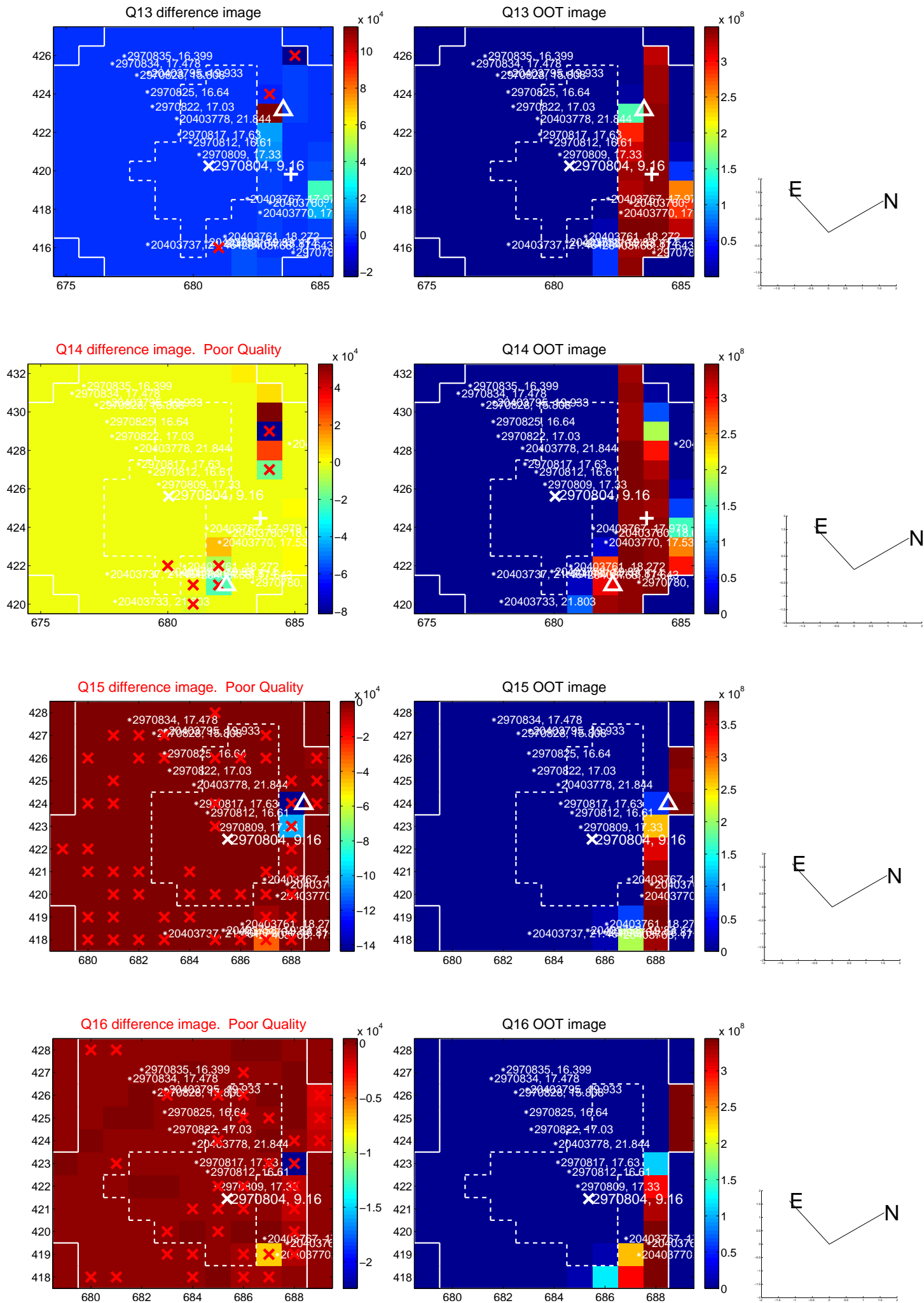
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



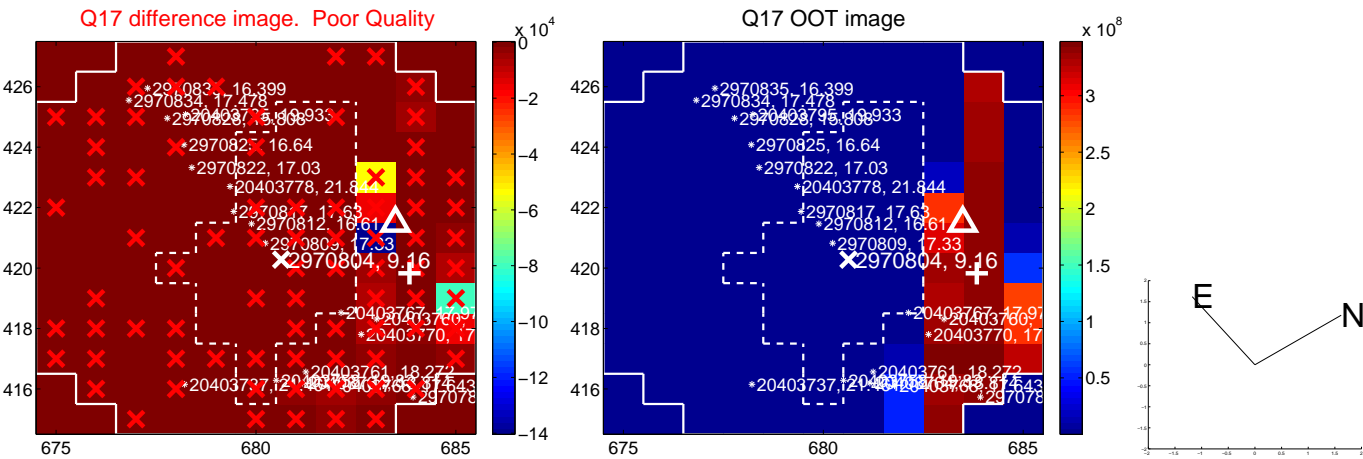
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



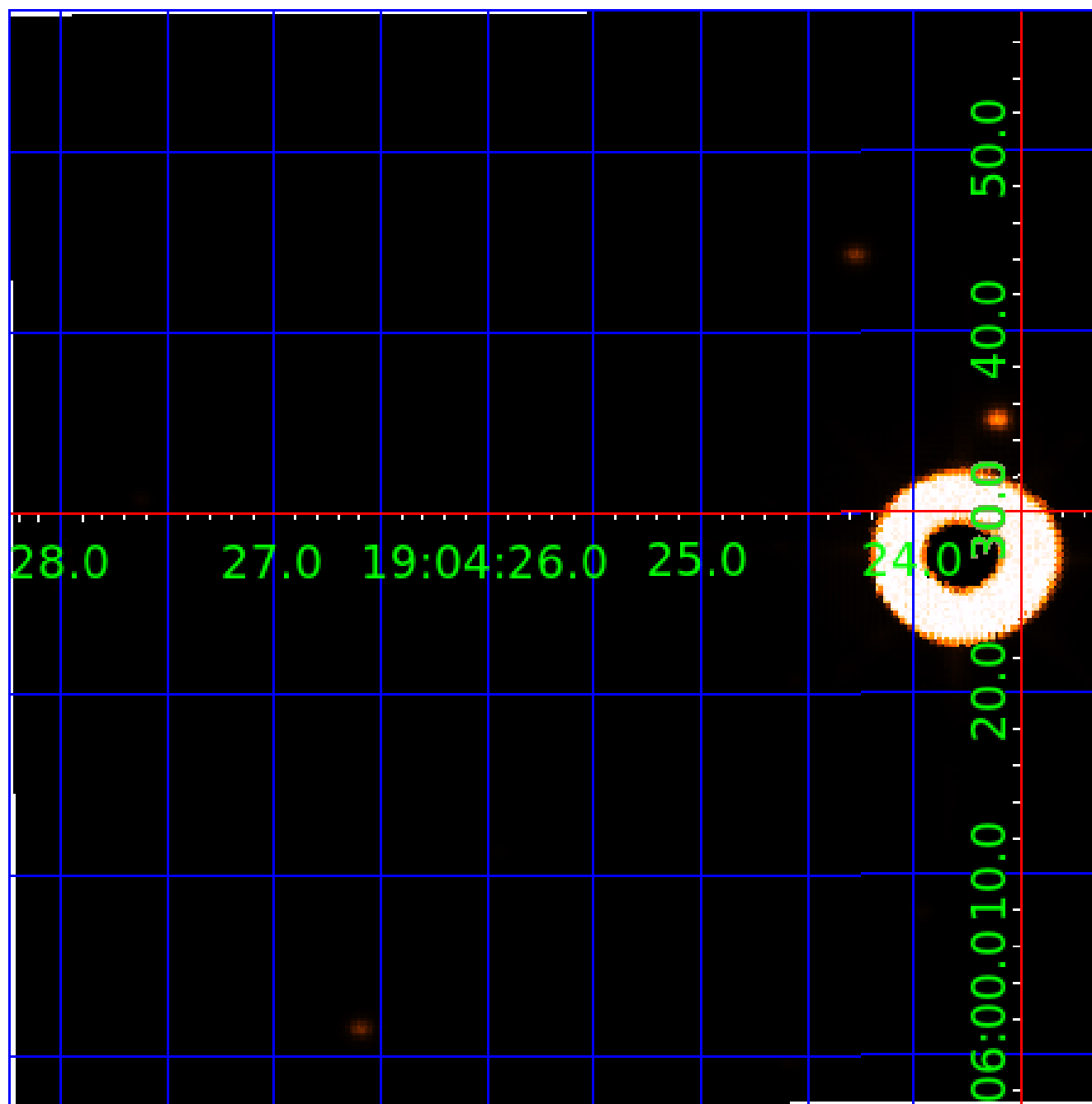
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 002970804

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})
002970804-01	OBS	3993.01	0.686993	131.660593	792.7	2.003	47.0	45.3	1.00	5780	3.61	4305.29
002970804-02	OBS	No	0.586730	131.672022	0.0	3.296	8.4	0.0	1.00	5780	0.00	5313.18
002970804-03	OBS	No	55.430480	150.765152	1545.8	2.533	8.6	7.7	1.00	5780	3.91	12.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002970804-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—CENT_SATURATED
002970804-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
002970804-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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 002970804-03

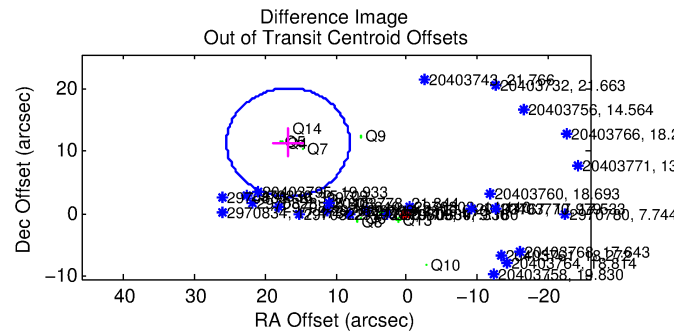
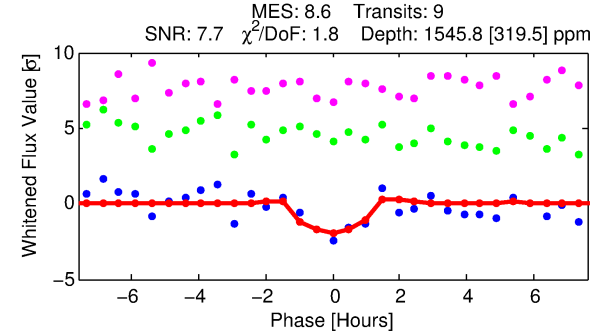
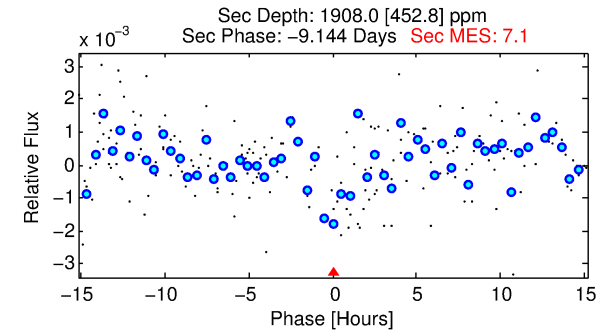
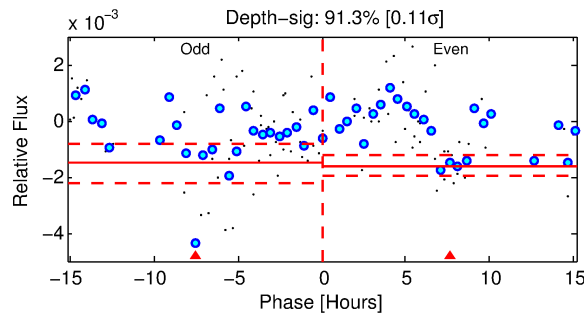
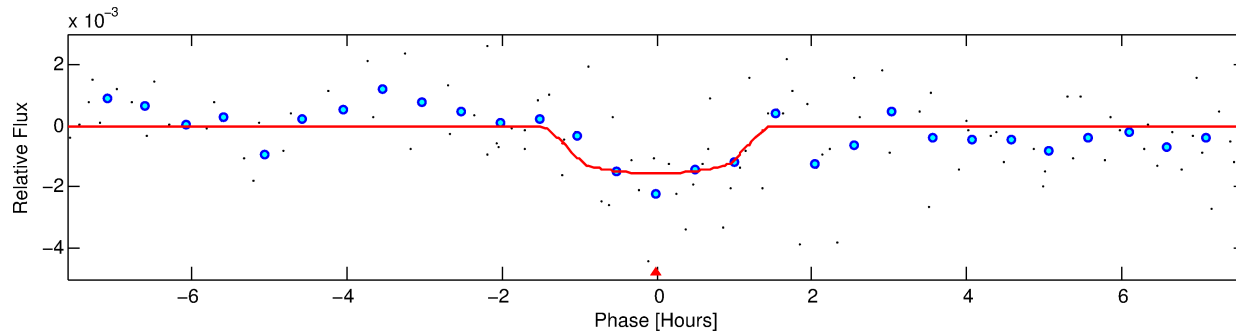
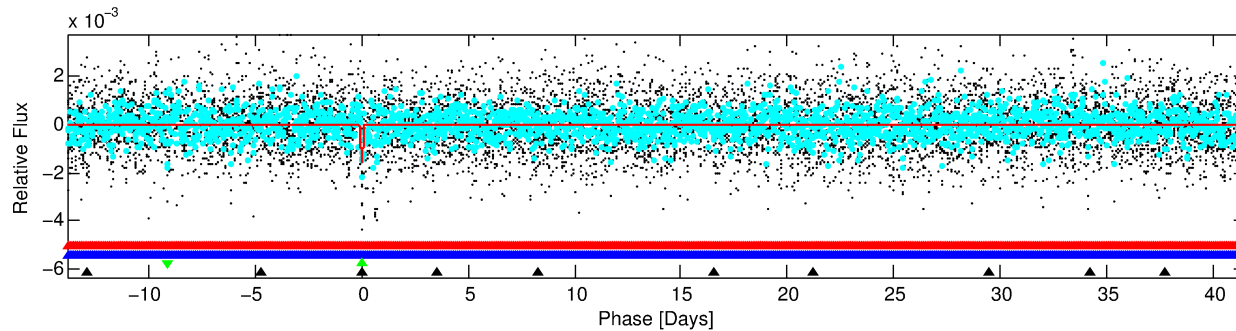
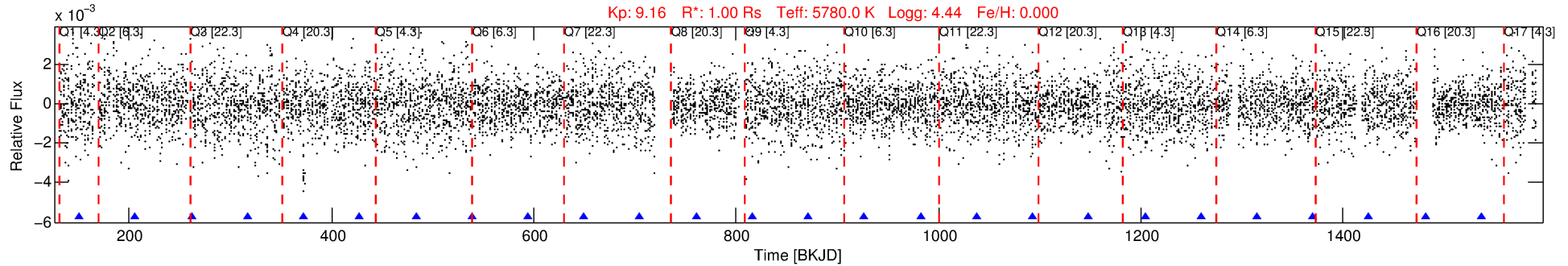
No Significant Match Found

DV One-Page Summary

KIC: 2970804 Candidate: 3 of 4 Period: 55.430 d

KOI: K03993 Corr: No Ephemeris Match

Kp: 9.16 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



DV Fit Results:

Period = 55.43048 [0.00072] d
Epoch = 150.7652 [0.0112] BKJD
Rp/R* = 0.0359 [0.1344]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: N/A
Seff = 12.35 [0.00]
Teq = 478 [0] K
Rp = 3.91 [14.67] Re
a = 0.2846 [0.0000] AU
Ag = 5551.35 [41646.61] [0.13σ]
Teff = 6379 [11964] K [0.49σ]

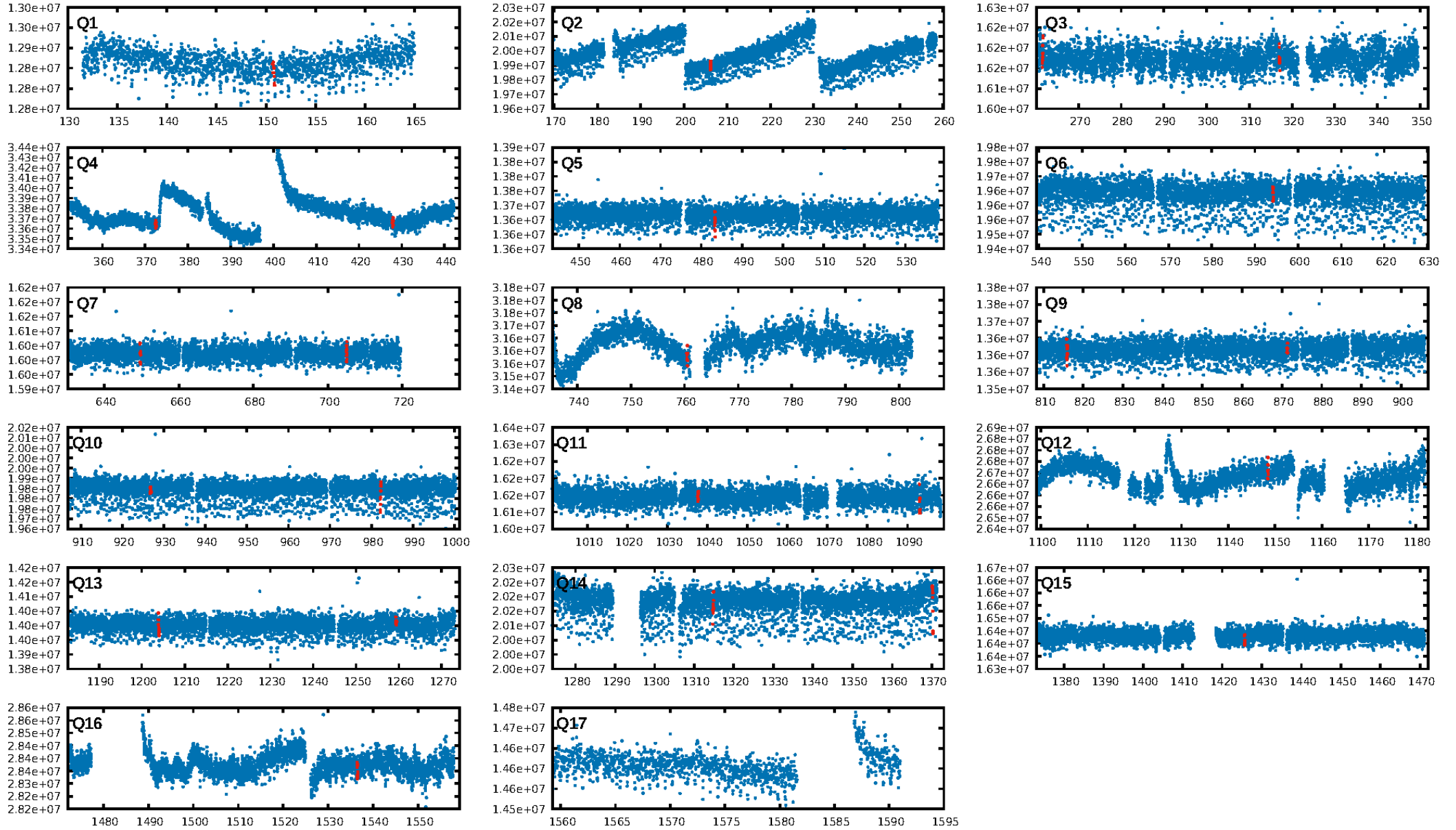
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [406.85σ]
LongPeriod-sig: 100.0% [180.26σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: N/A
Centroid-sig: 7.1%
Centroid-so: 9.120 arcsec [12.61σ]
OotOffset-rm: 20.238 arcsec [6.98σ]
KicOffset-rm: 12.666 arcsec [7.99σ]
OotOffset-st: 3/2/2/3 [10]
KicOffset-st: 4/3/2/3 [12]
DiffImageQuality-fgm: 0.33 [4/12]
DiffImageOverlap-fno: 0.00 [0/16]

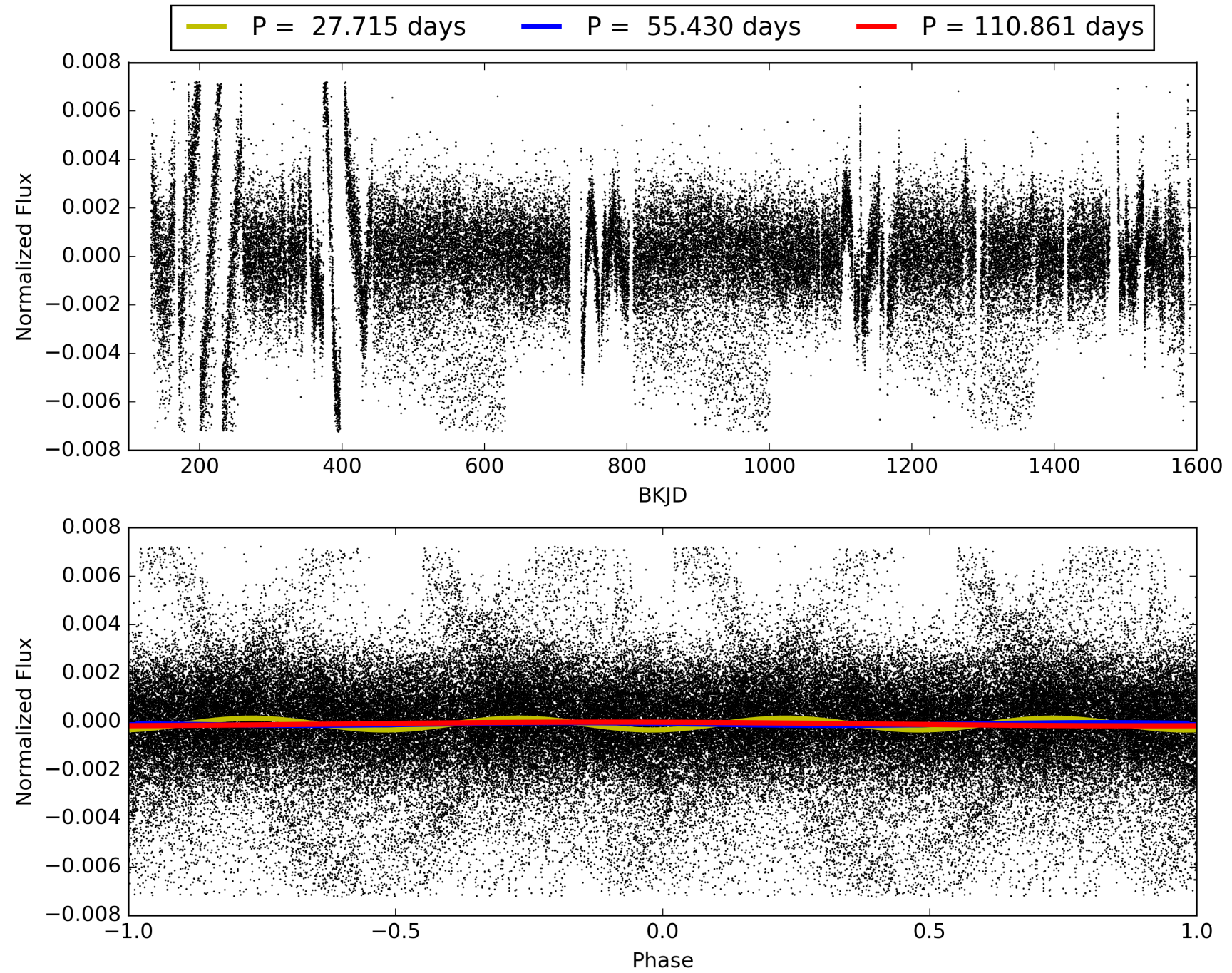
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:01:30 Z

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

TCE 002970804-03, PDC Light Curves

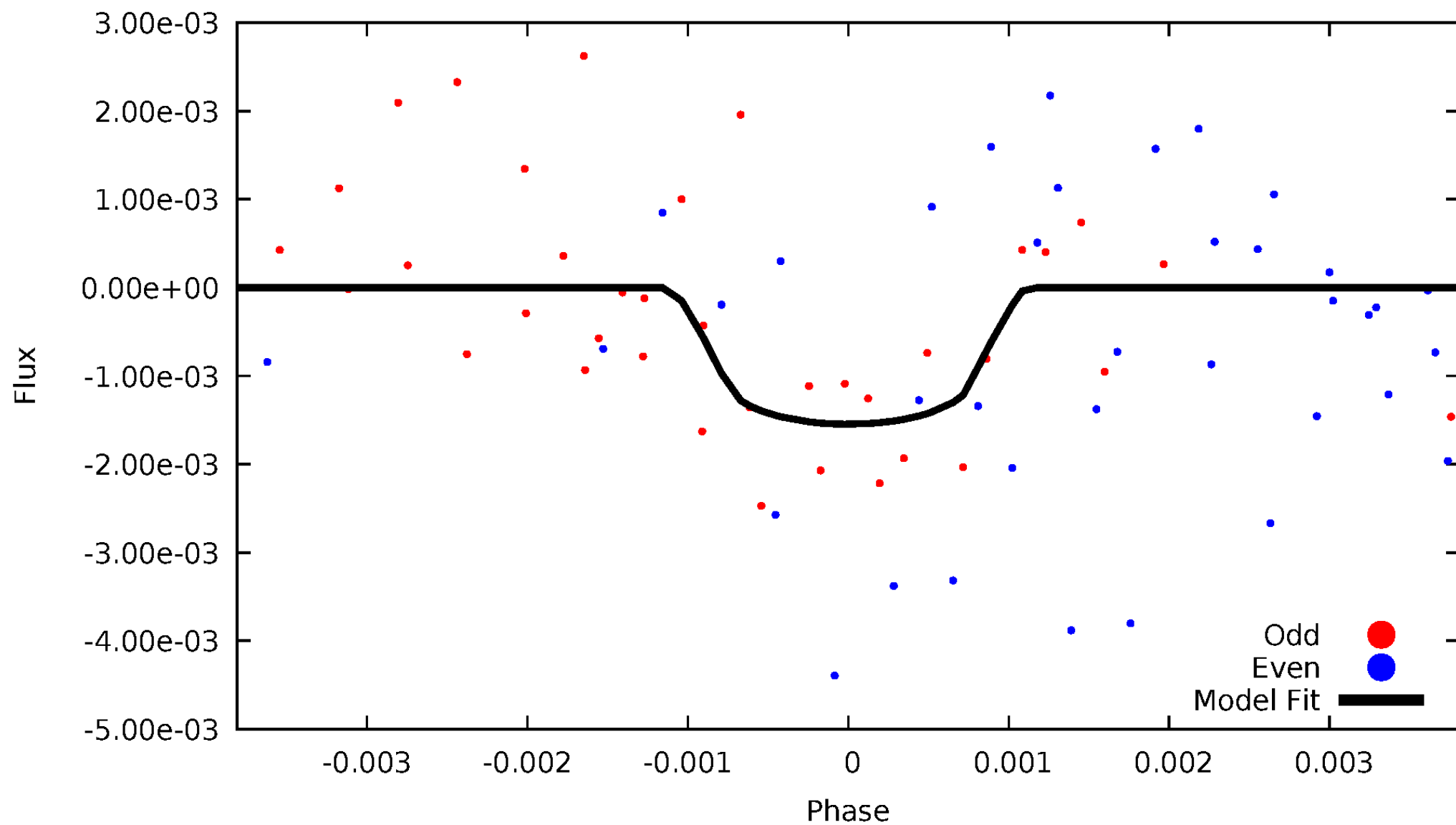


TCE 002970804-03



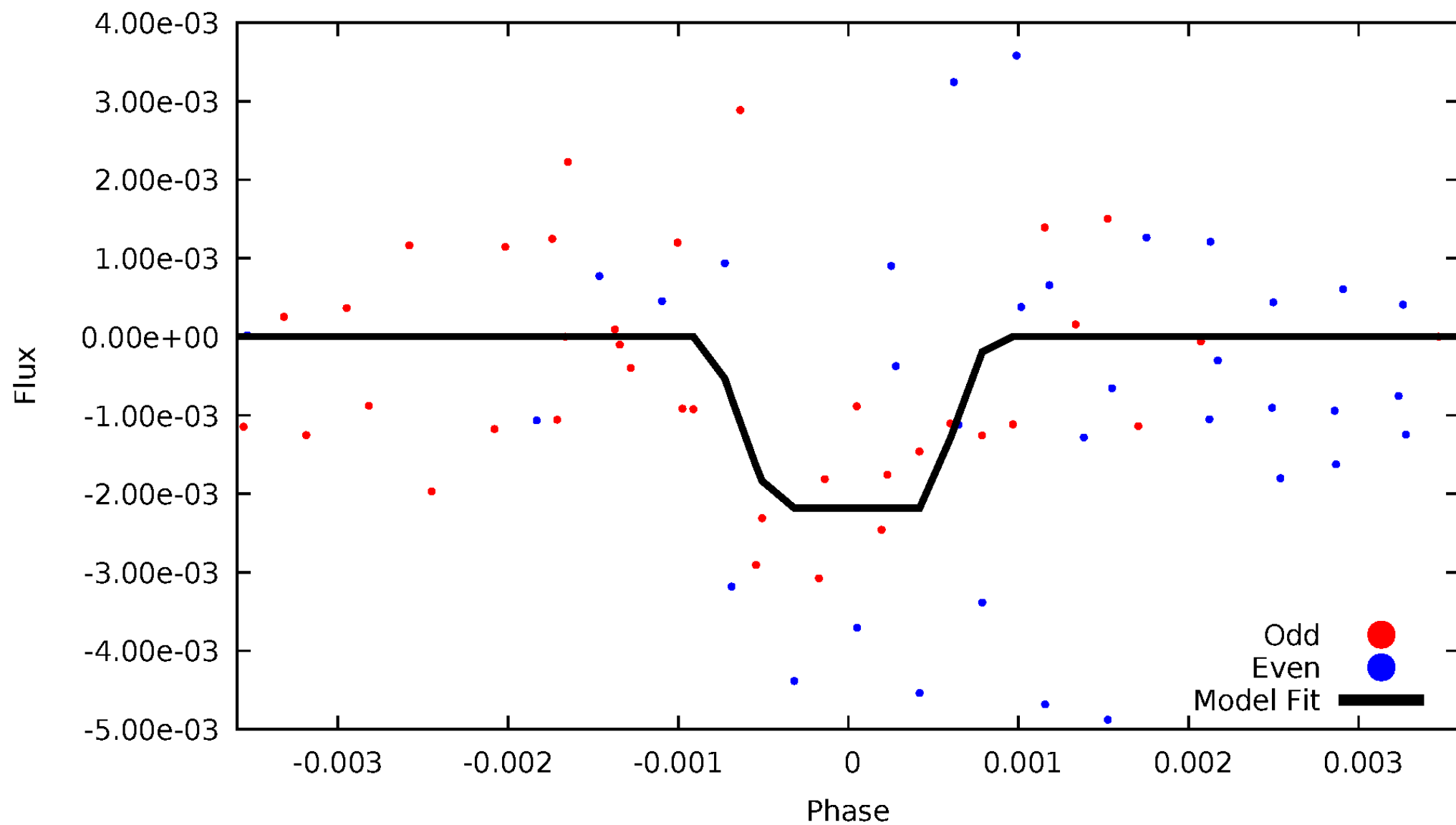
DV Odd/Even

TCE 002970804-03



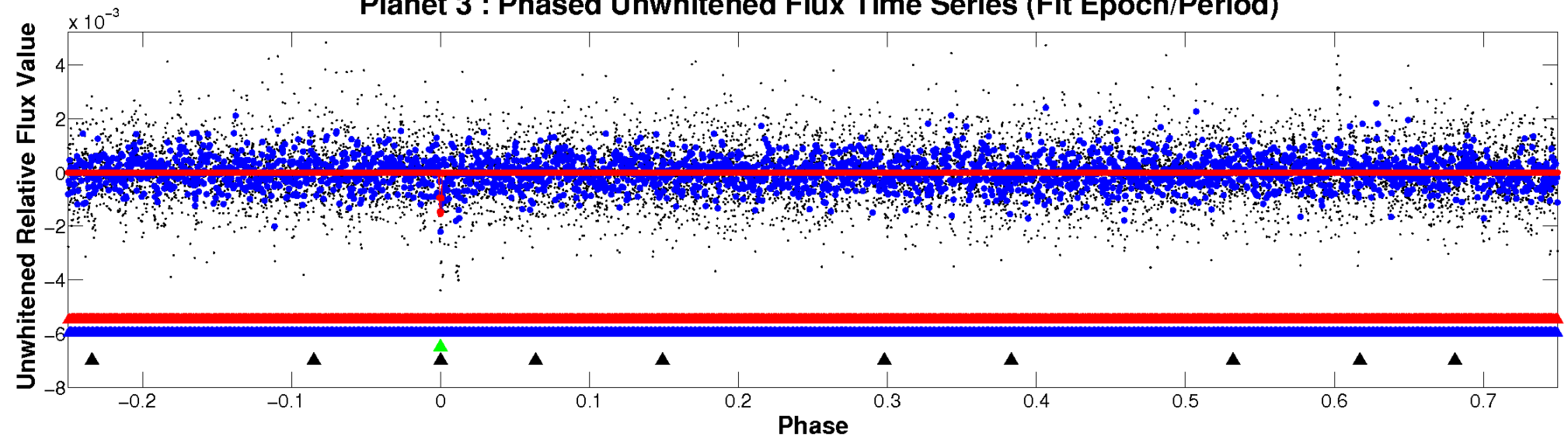
ALT Odd/Even

TCE 002970804-03

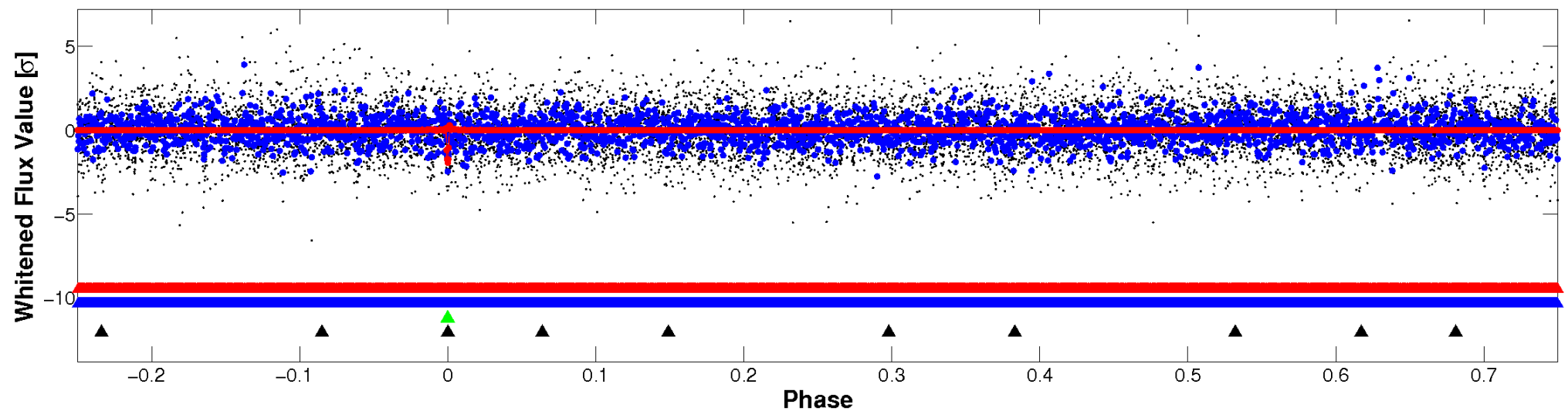


Non-Whitened Vs. Whitened Light Curve

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

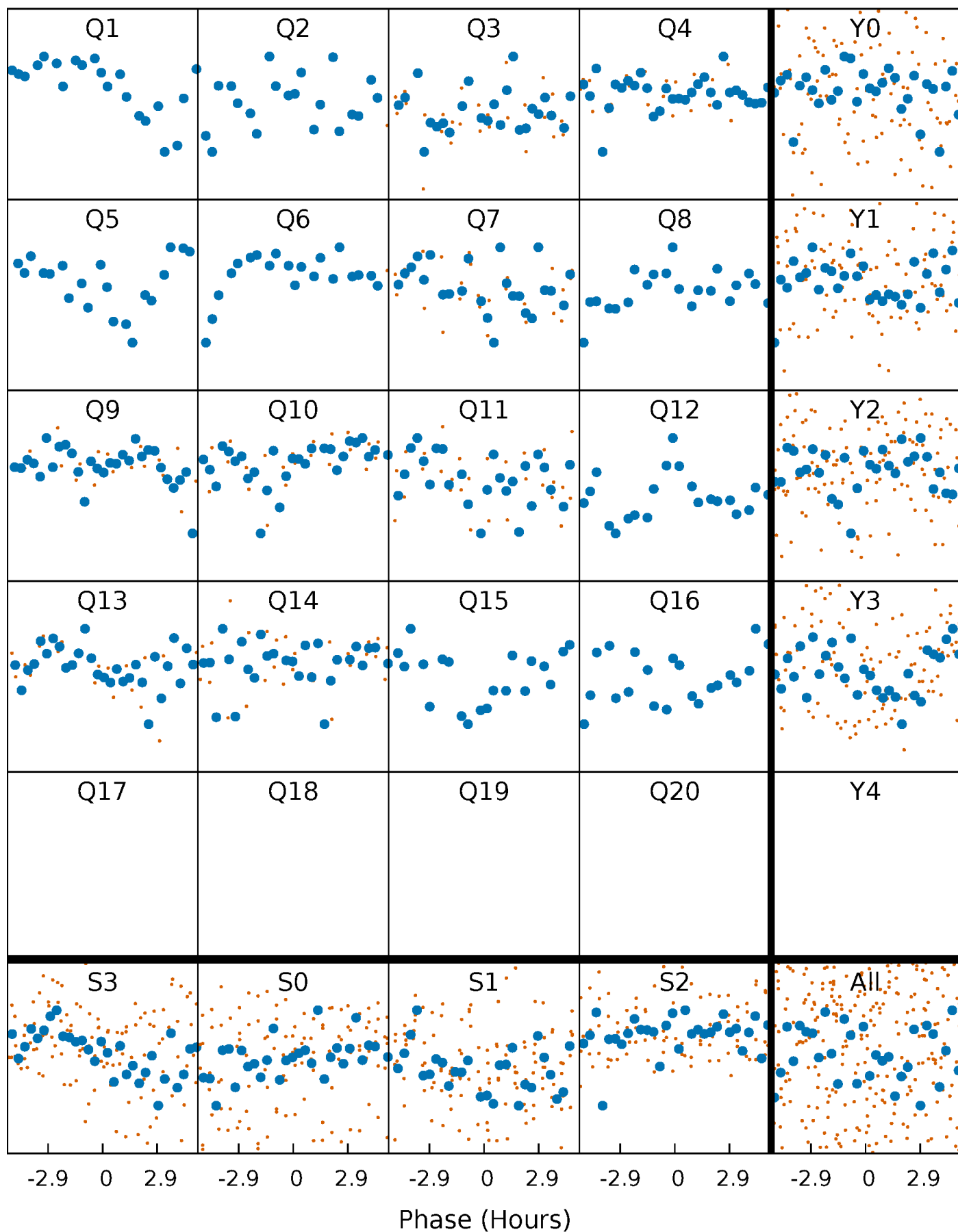


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



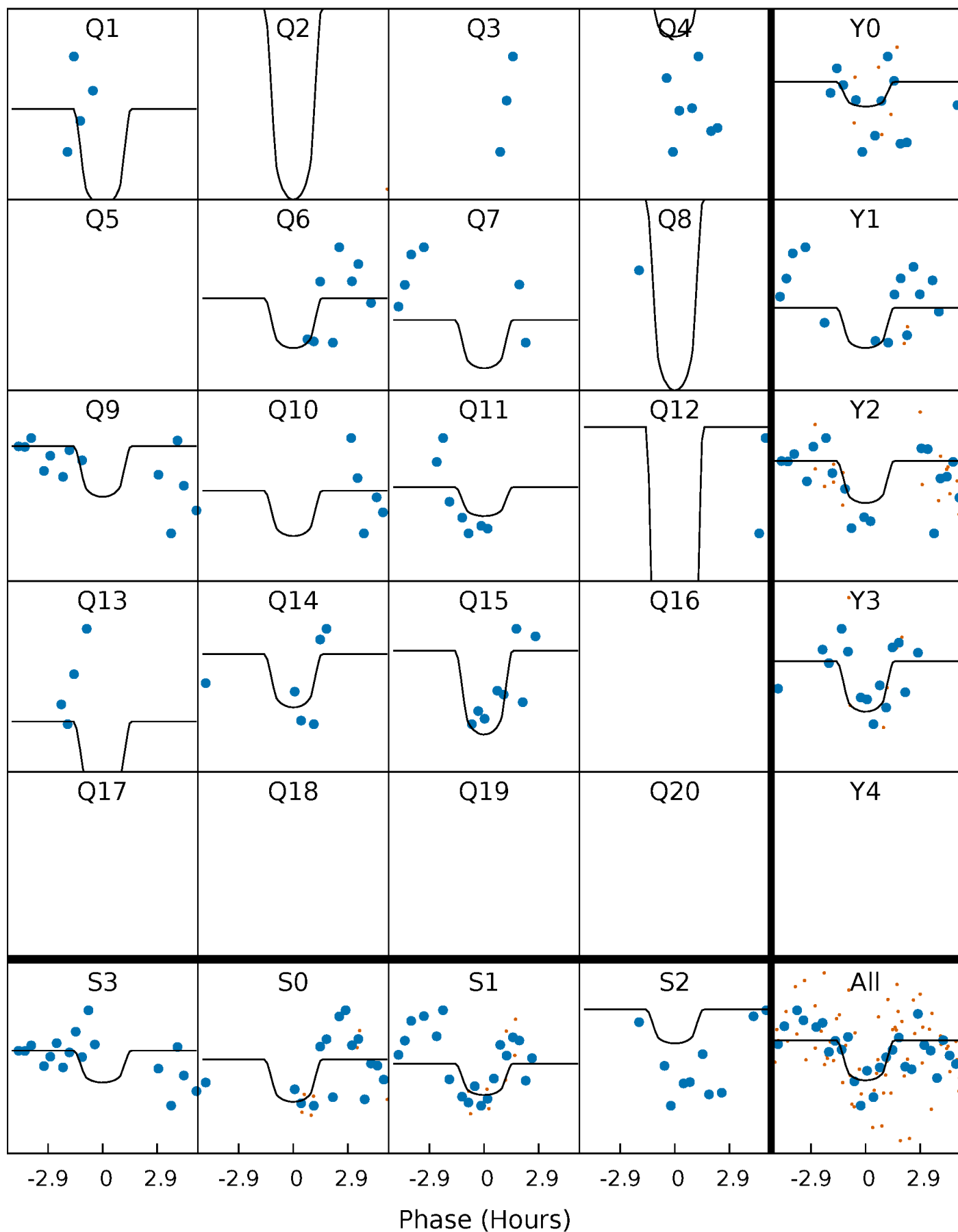
PDC Quarter-Phased Transit Curves

TCE 002970804-03 P= 55.430480 Days $T_0=150.765152$ (BKJD)



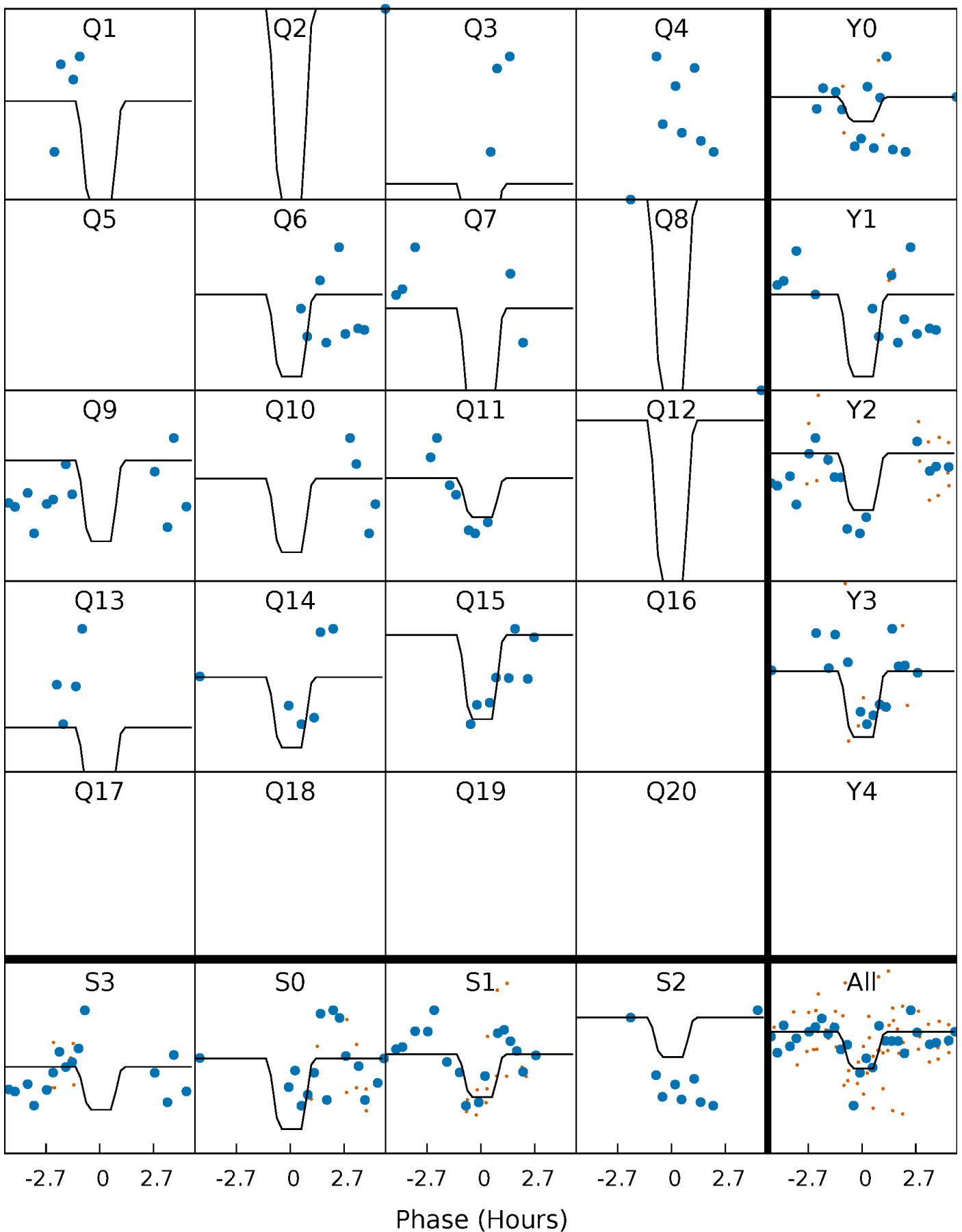
DV Quarter-Phased Transit Curves

TCE 002970804-03 P= 55.430480 Days $T_0=150.765152$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

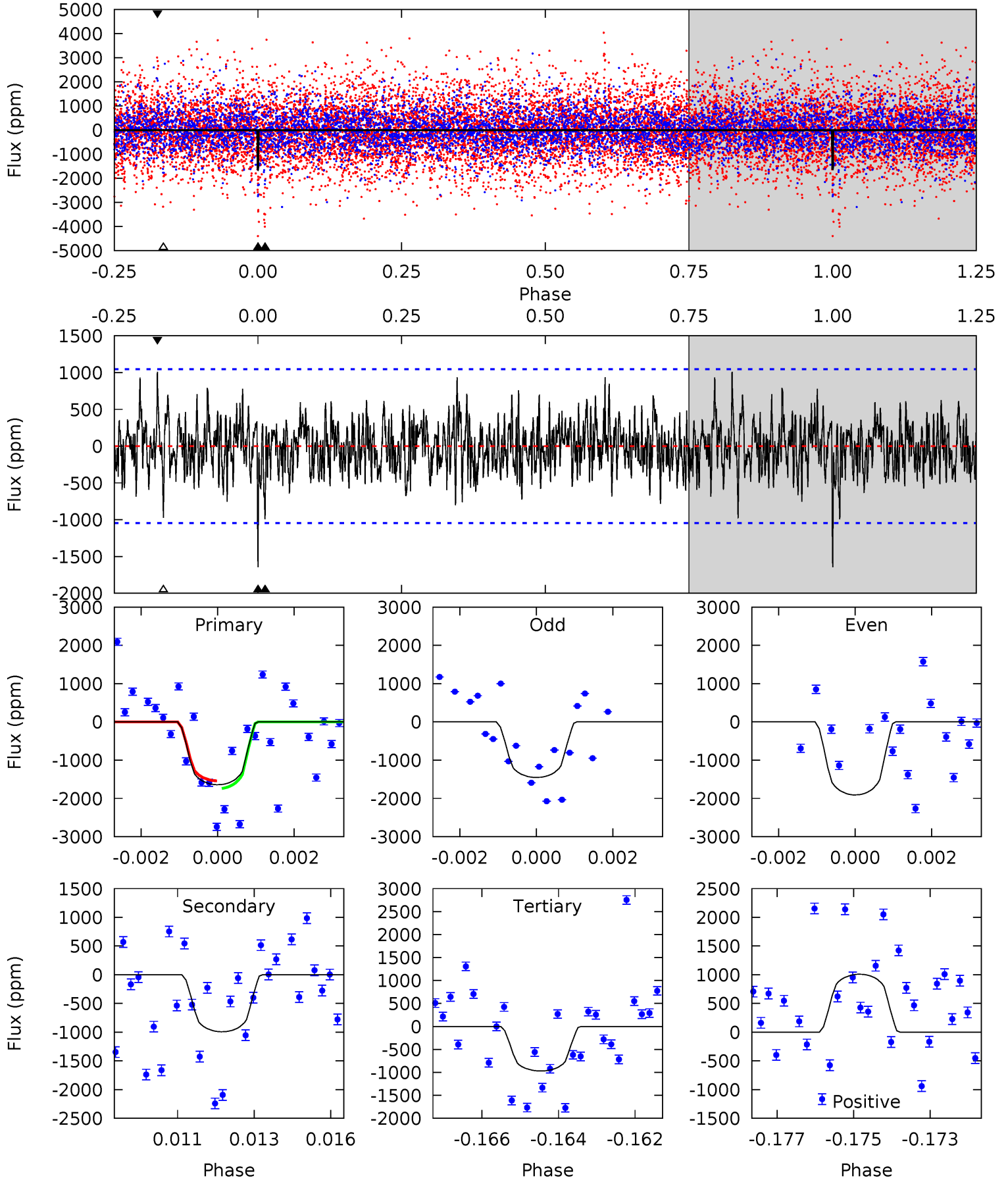
TCE 002970804-03 P= 55.429488 Days $T_0=150.782035$ (BKJD)



DV Model-Shift Uniqueness Test

002970804-03, P = 55.430480 Days, E = 95.334672 Days

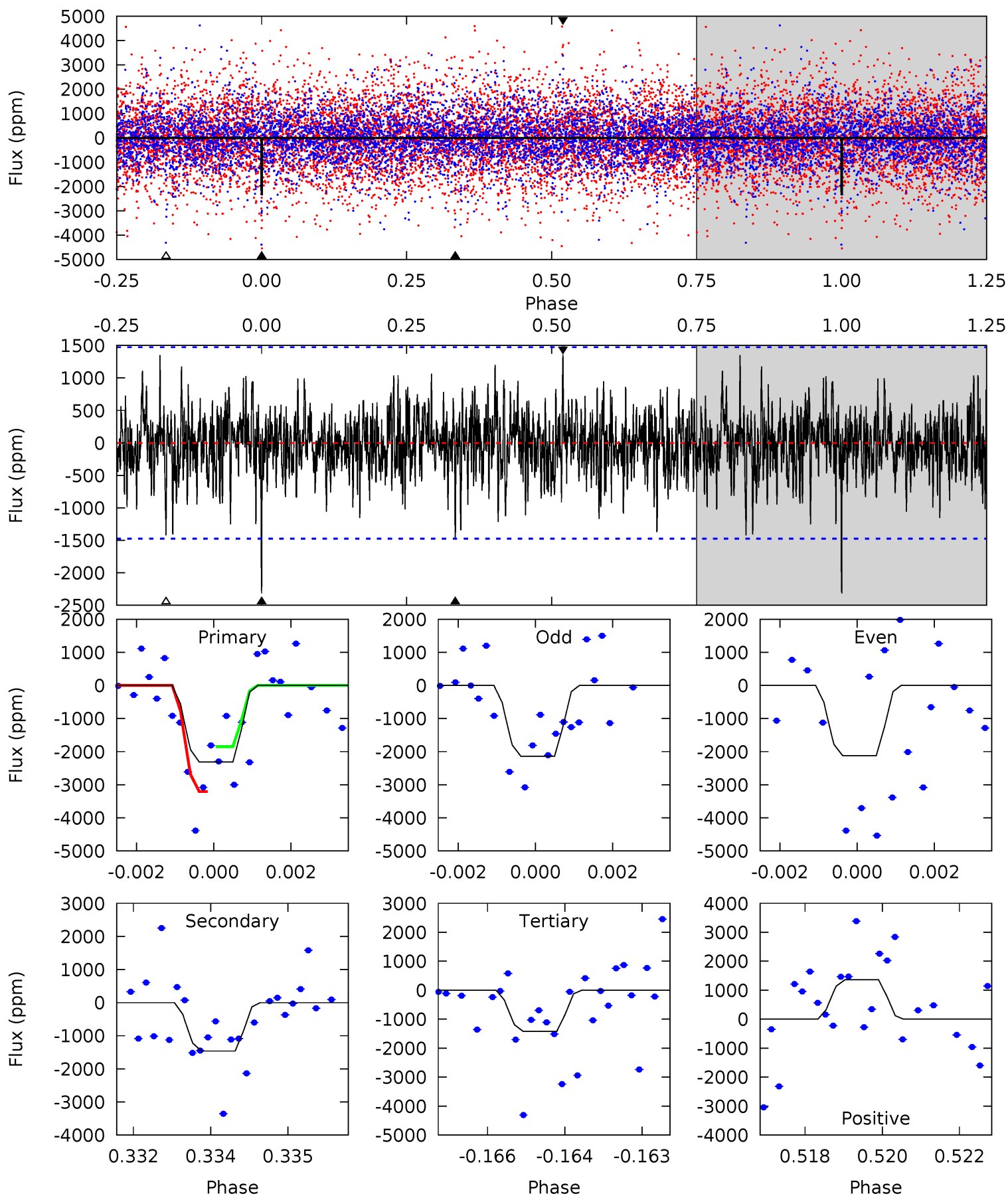
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.34	5.04	4.92	5.12	5.31	3.06	1.46	3.41	3.22	0.12	-0.08	1.14	0.59	0.38	0.51



Alt Model-Shift Uniqueness Test

002970804-03, P = 55.429488 Days, E = 95.352547 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.41	5.31	5.16	4.94	5.36	3.14	1.45	3.25	3.47	0.15	0.37	0.04	0.97	0.37	2.35



Stellar Parameters For KIC 002970804

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 002970804-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-994 ± 197	$10.81^{+11.77}_{-7.93}$	669^{+34}_{-32}	3680^{+2607}_{-742}	369^{+4726}_{-283}
Alt.	-1463 ± 275	$11.58^{+11.74}_{-7.64}$	667^{+30}_{-32}	3807^{+2072}_{-715}	466^{+3494}_{-349}

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 $A_{obs} \gg 1.0$

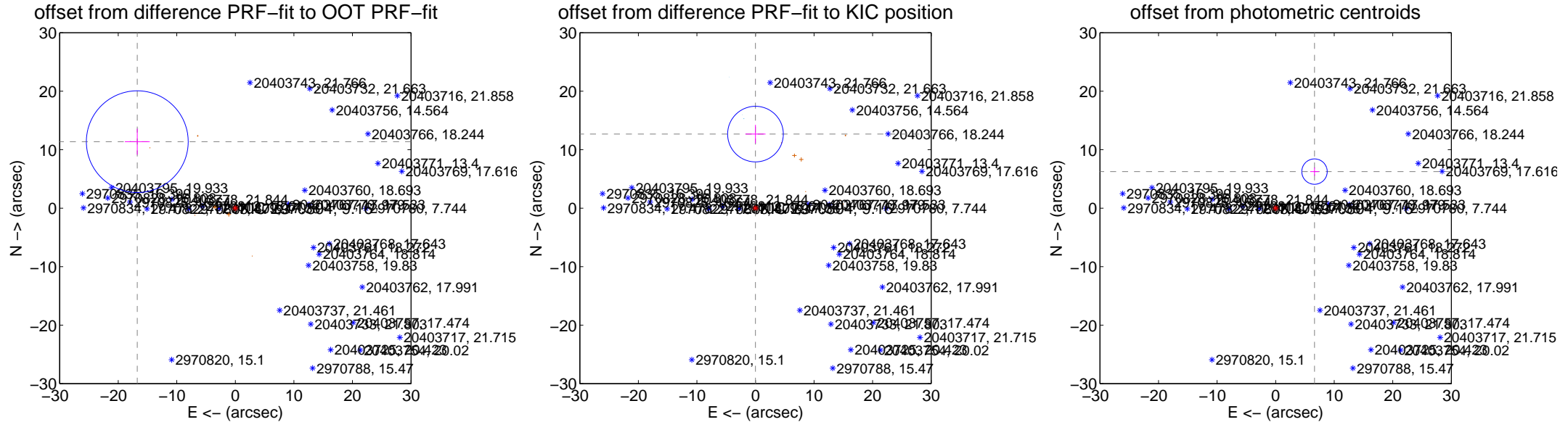
DV Centroid Data

Supplemental centroid analysis for 002970804-03. **Kepler magnitude: 9.16.** Transit SNR 7.70

There are 4 quarters with good PRF difference image offsets

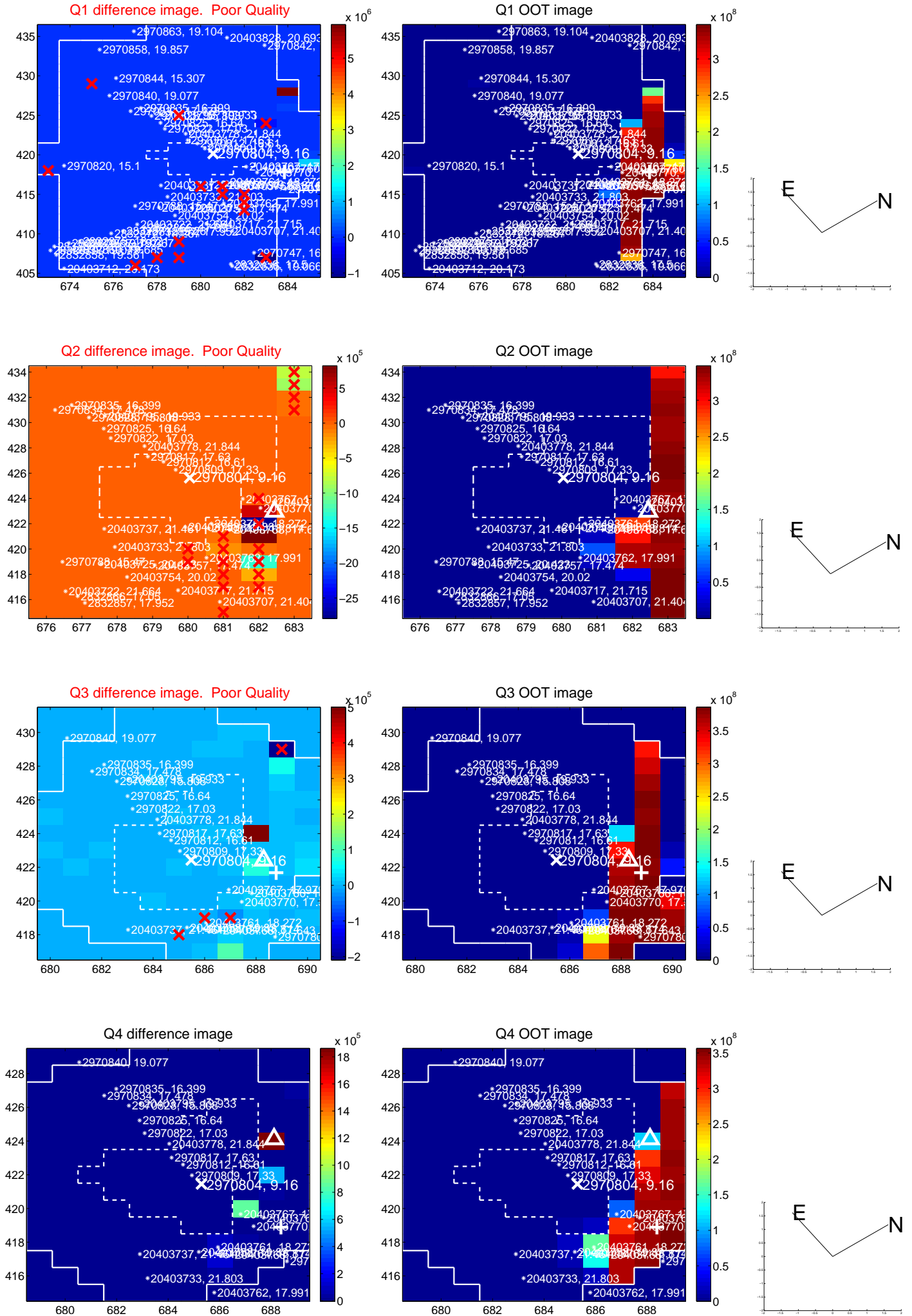
The OOT PRF centroid is offset from the target star catalog position by about 15.00 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	20.238 ± 2.898	6.98	16.743 ± 2.123	11.370 ± 2.231
PRF-fit source offset from KIC position	12.666 ± 1.585	7.99	0.004 ± 1.720	12.666 ± 1.584
photometric centroid source offset	9.12 ± 0.72	12.61	-6.64 ± 0.74	6.25 ± 0.70

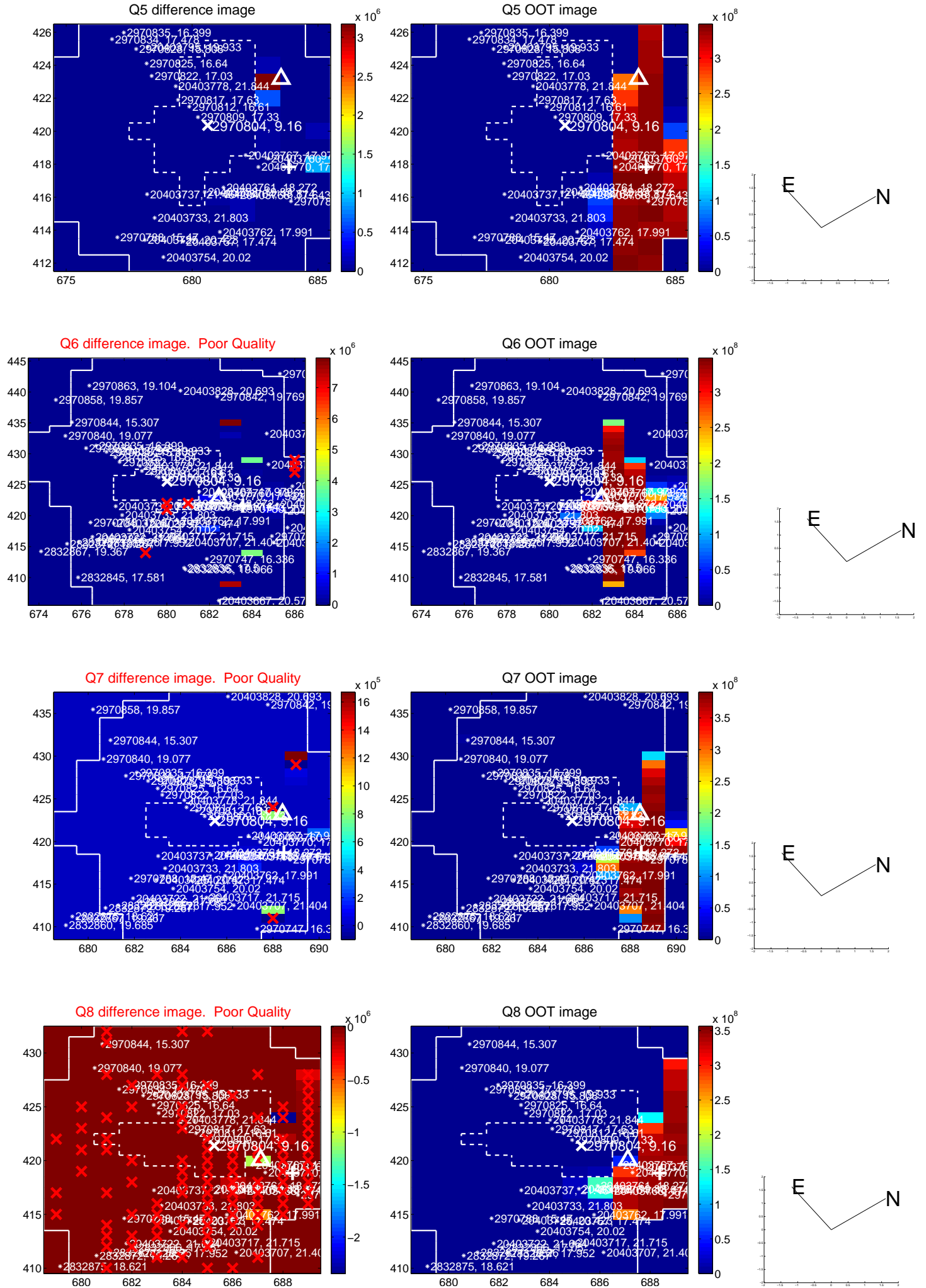


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

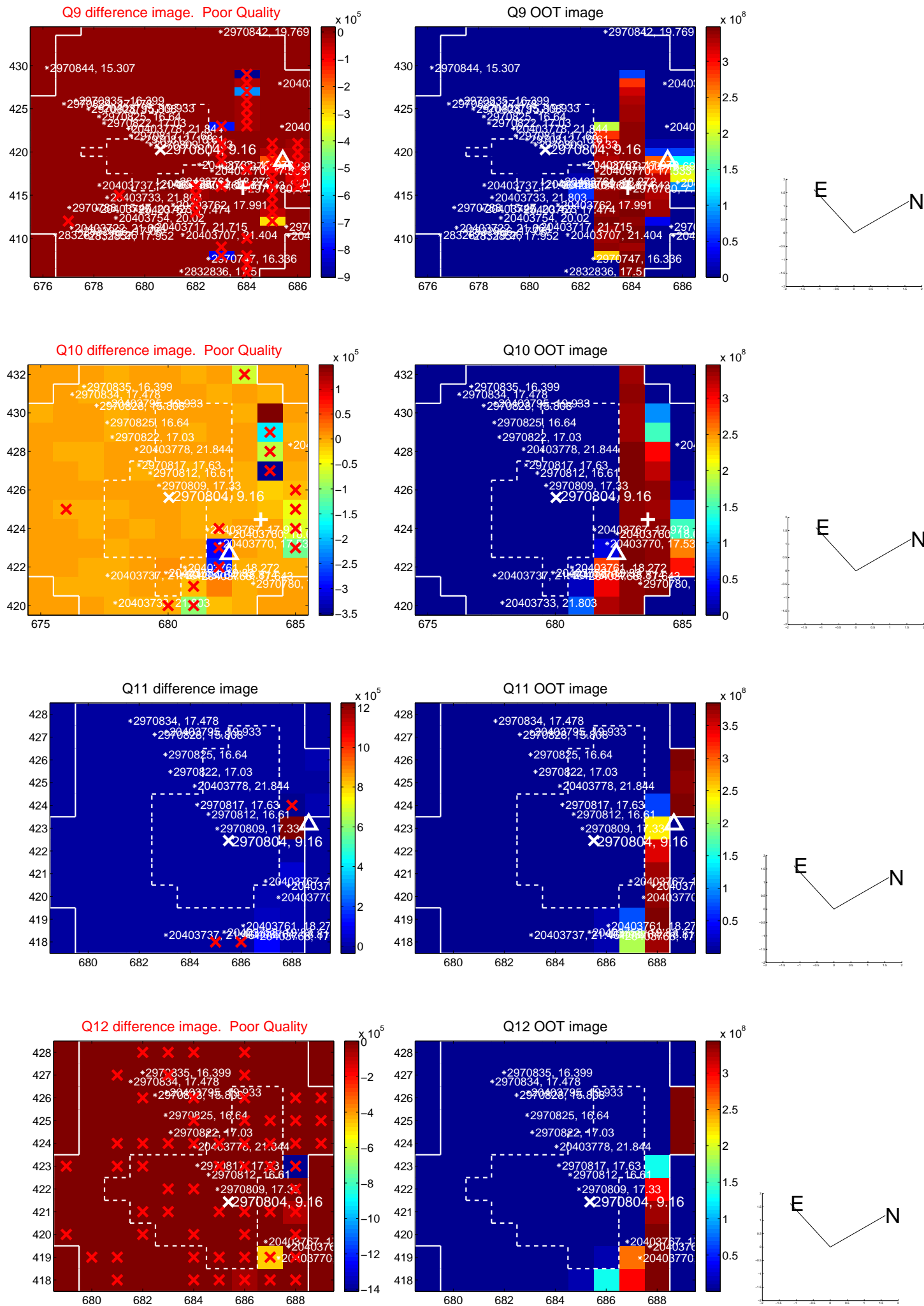
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



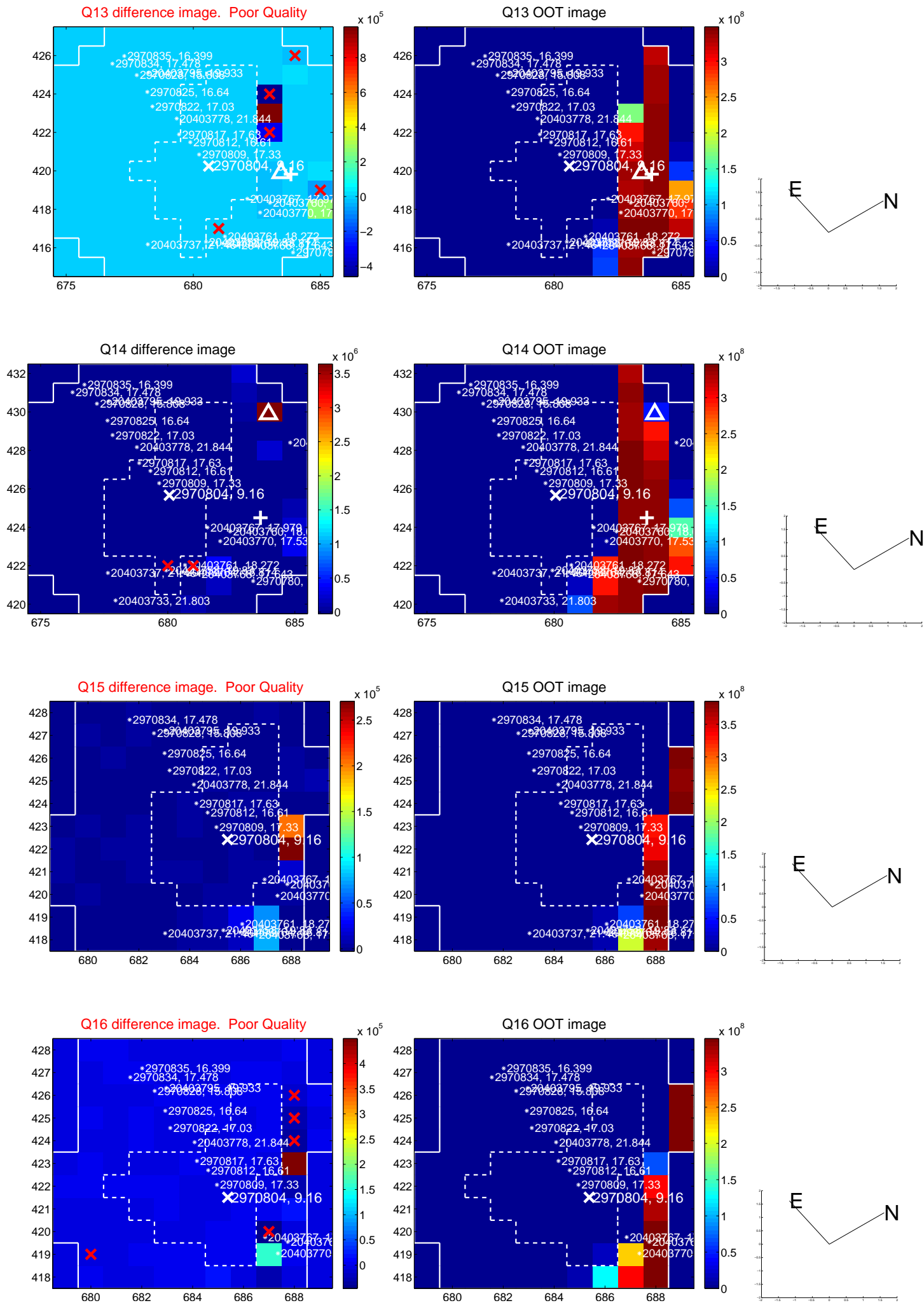
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



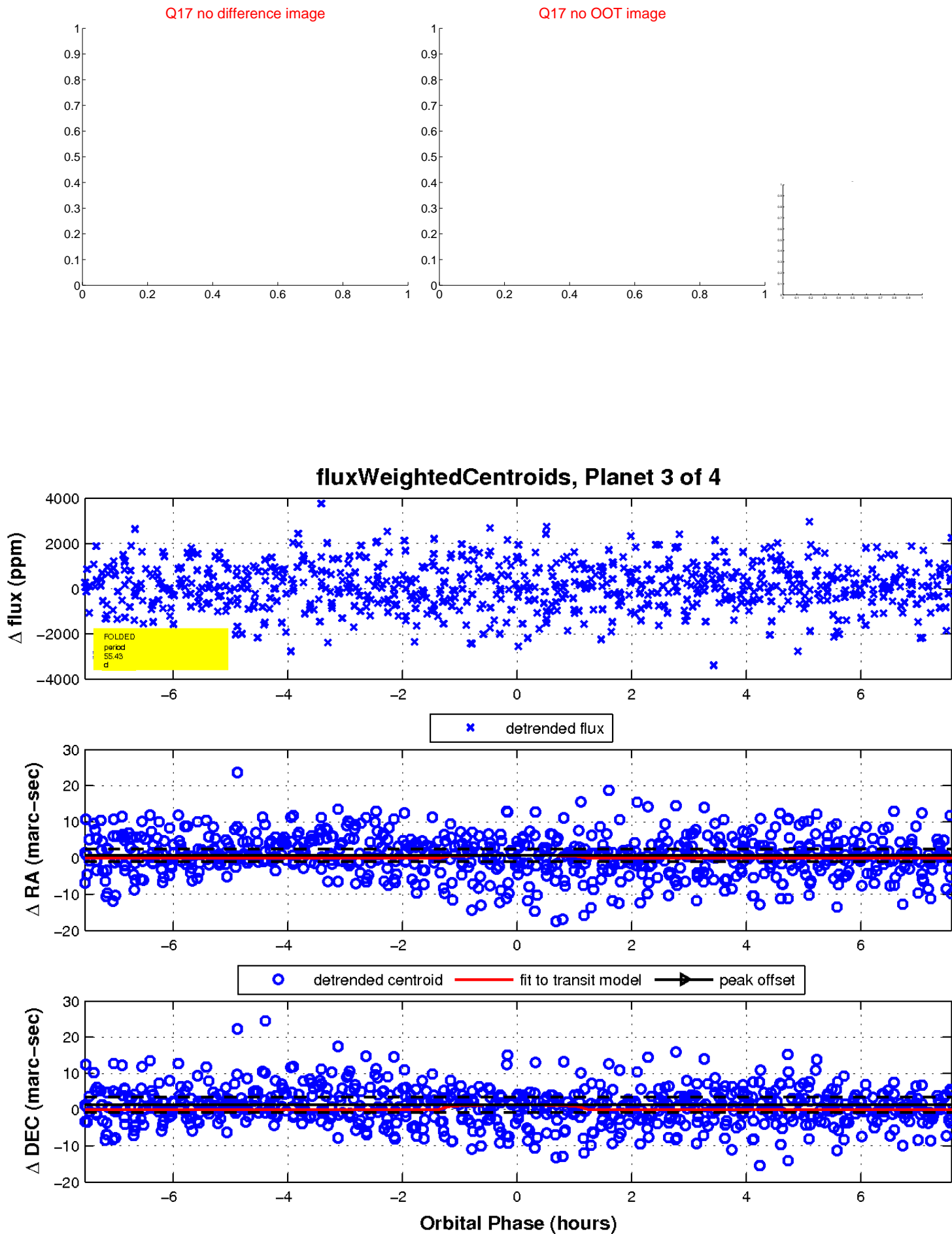
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

