

KIC 007842621

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})
007842621-01	OBS	No	0.527856	132.032698	15.8	1.522	11.4	12.6	3.52	7841	1.58	0.00
007842621-02	OBS	No	0.899501	131.770647	14.9	6.285	10.0	12.1	3.52	7841	1.38	78673.04
007842621-03	OBS	No	84.844747	168.289414	174.9	2.405	9.1	10.3	3.52	7841	5.44	183.23
007842621-04	OBS	No	17.056349	146.514115	94.1	2.878	9.0	7.4	3.52	7841	4.18	1555.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007842621-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
007842621-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—CENT_SATURATED
007842621-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
007842621-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST

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

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

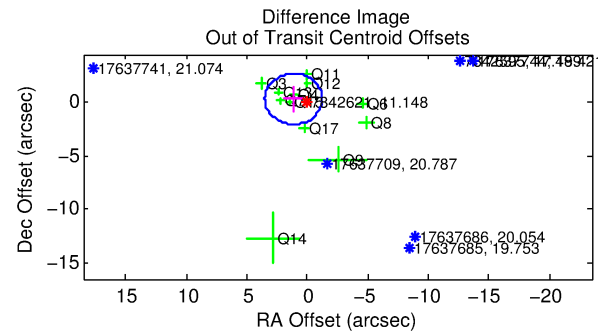
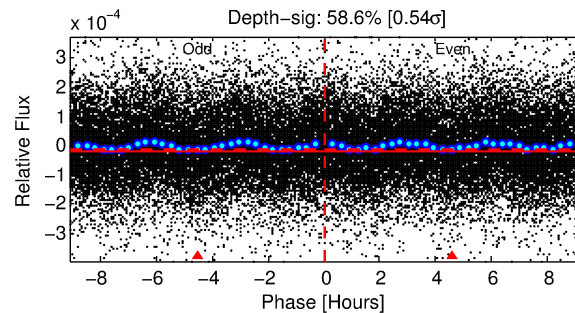
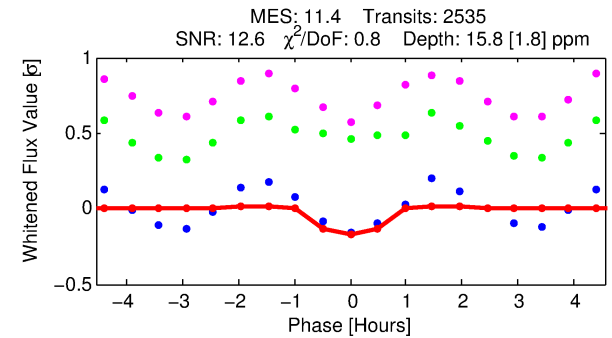
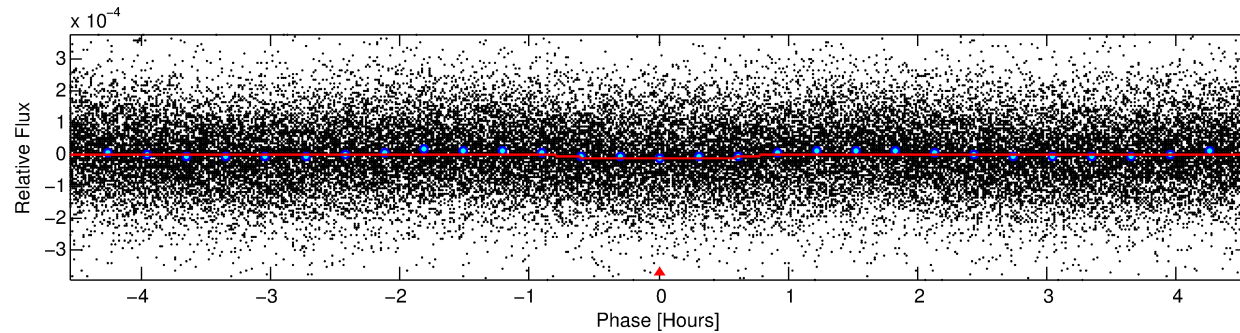
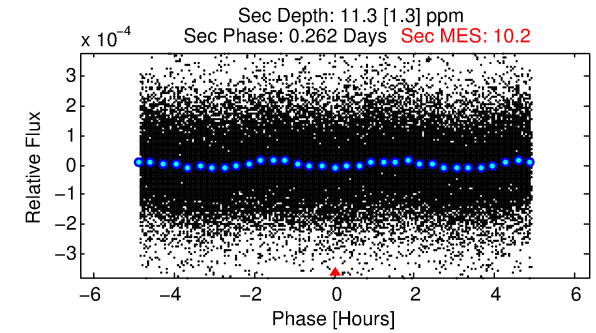
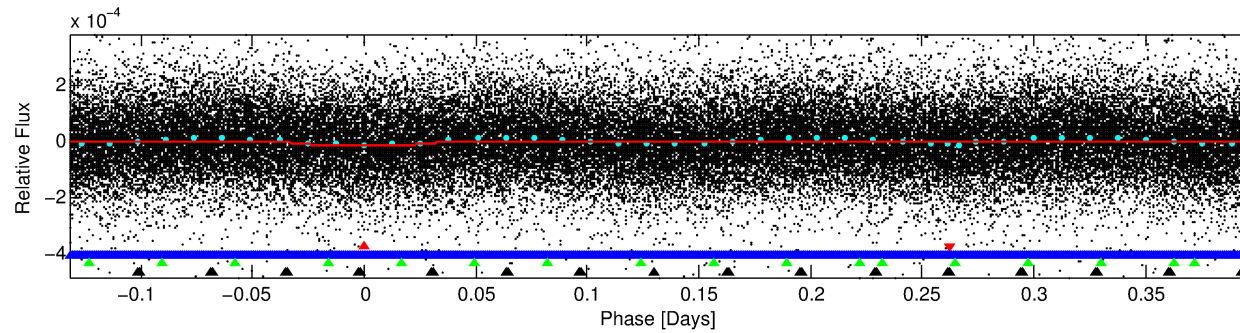
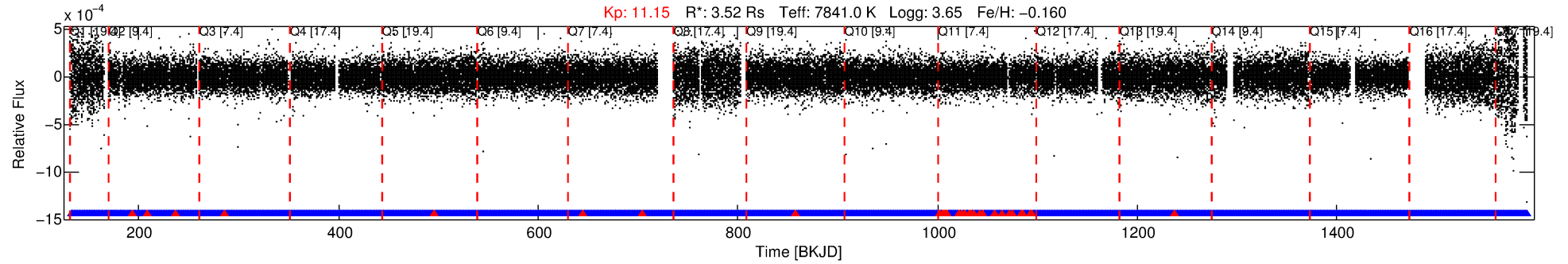
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007842621-01

No Significant Match Found

DV One-Page Summary

KIC: 7842621 Candidate: 1 of 4 Period: 0.528 d



DV Fit Results:

Period = 0.52786 [0.00001] d
Epoch = 132.0327 [0.0018] BKJD
 $R_p/R^* = 0.0041$ [0.0006]
 $a/R^* = 1.68$ [0.88]
 $b = 0.85$ [0.27]
 $\text{Seff} = \text{N/A}$
 $\text{Teq} = \text{N/A}$
 $R_p = 1.59$ [0.81] R_e
 $a = \text{N/A}$
 $\text{Ag} = \text{N/A}$
 $\text{Teffp} = \text{N/A}$

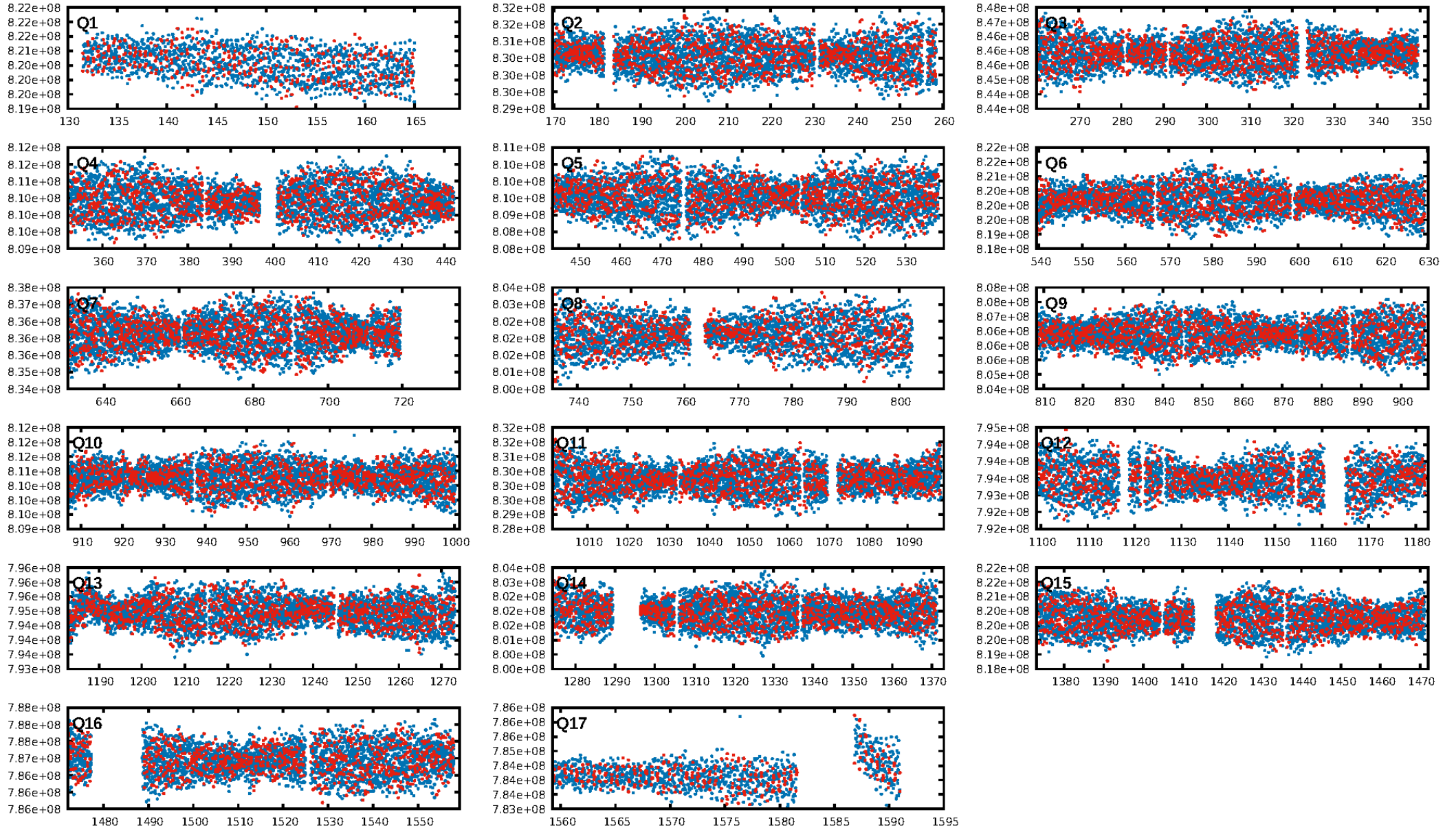
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 83.2% [1.38σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.99e-18
RollingBand-fgt: 0.99 [2386/2419]
GhostDiagnostic-chr: 1.842
Centroid-sig: 23.7%
Centroid-so: 0.532 arcsec [0.82σ]
OotOffset-rm: 1.200 arcsec [1.52σ]
KicOffset-rm: 1.381 arcsec [1.77σ]
OotOffset-st: 2/4/3/3 [12]
KicOffset-st: 2/4/3/3 [12]
DiffImageQuality-fgm: 0.17 [2/12]
DiffImageOverlap-fno: 1.00 [17/17]

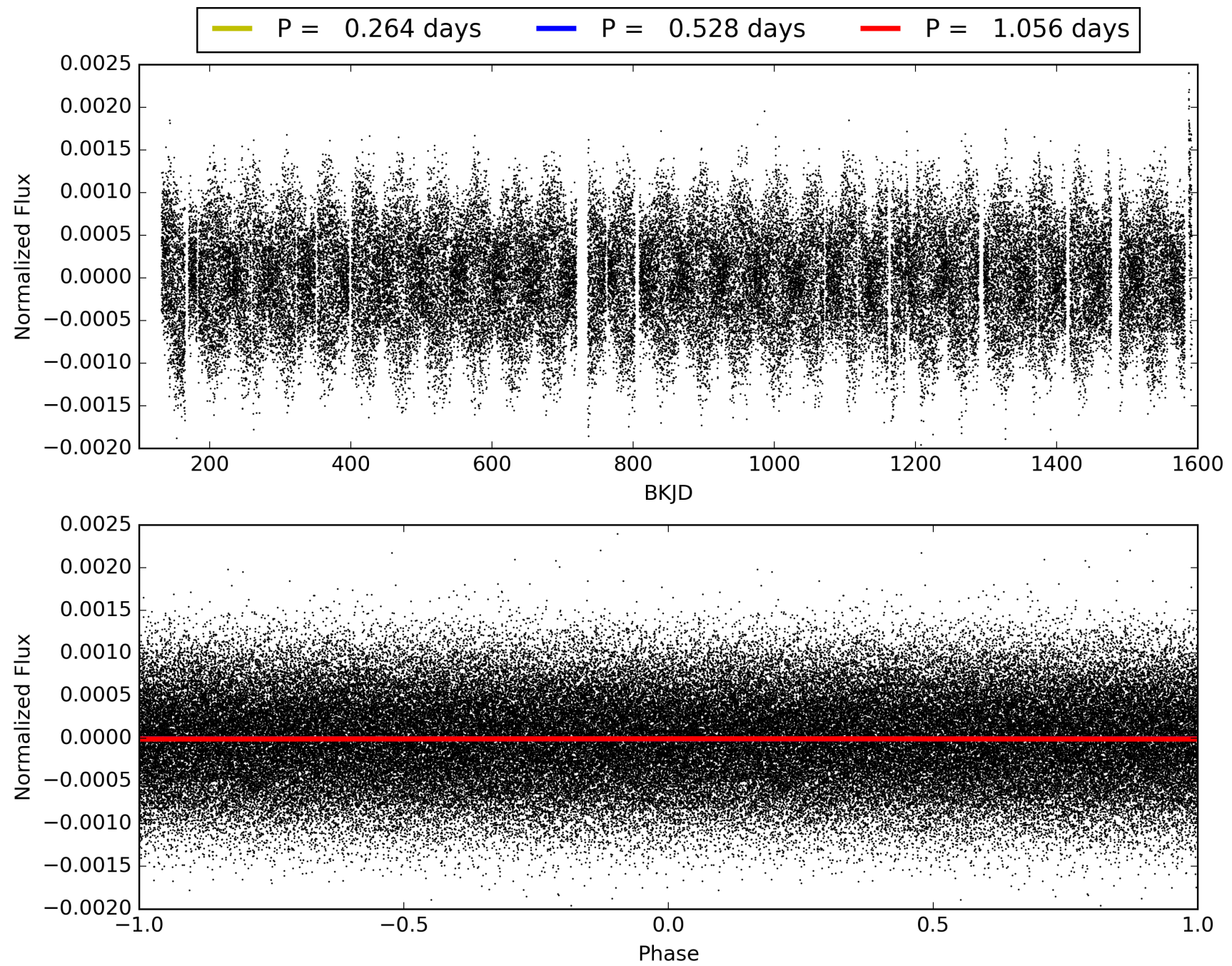
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 007842621-01, PDC Light Curves

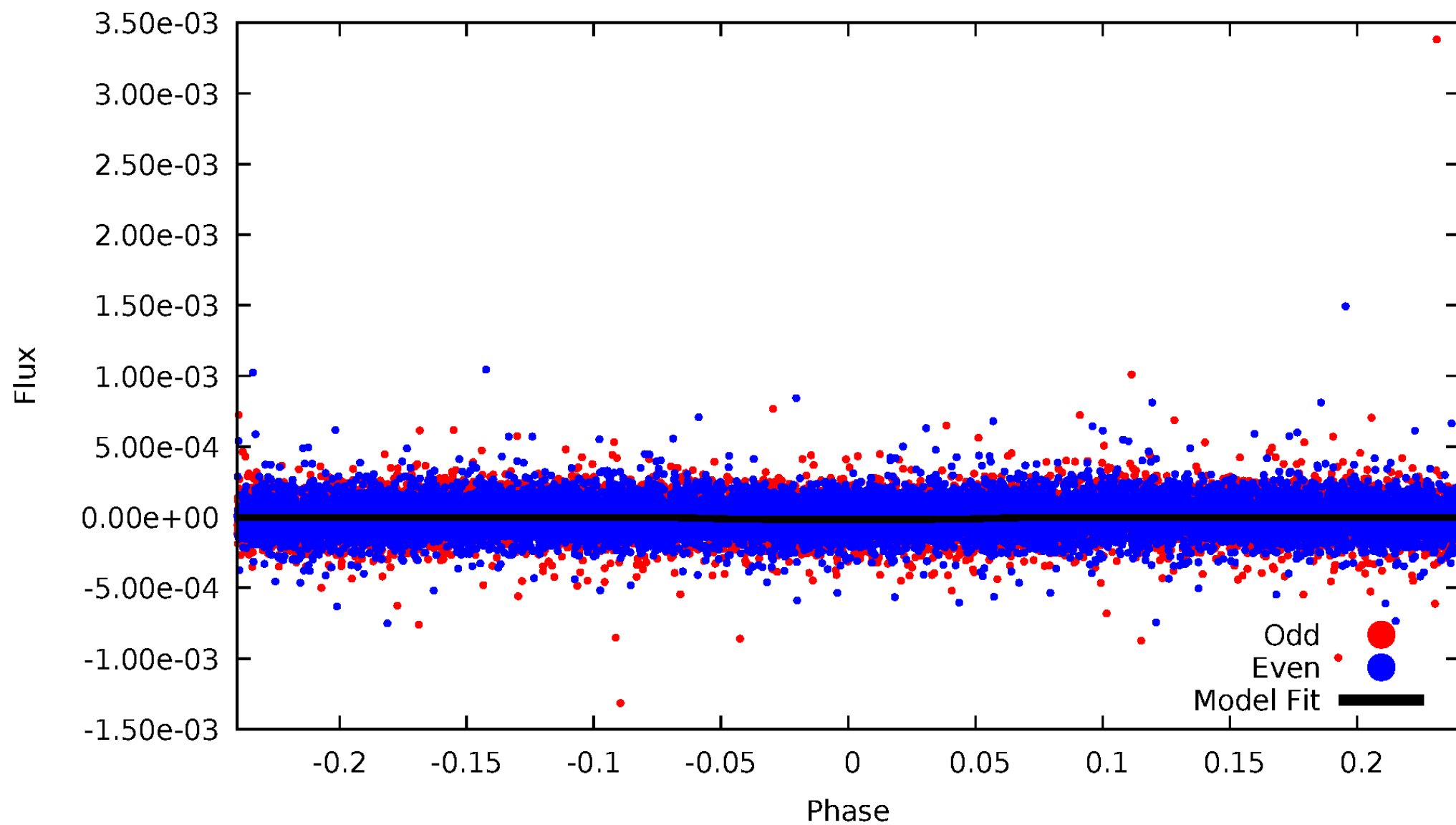


TCE 007842621-01



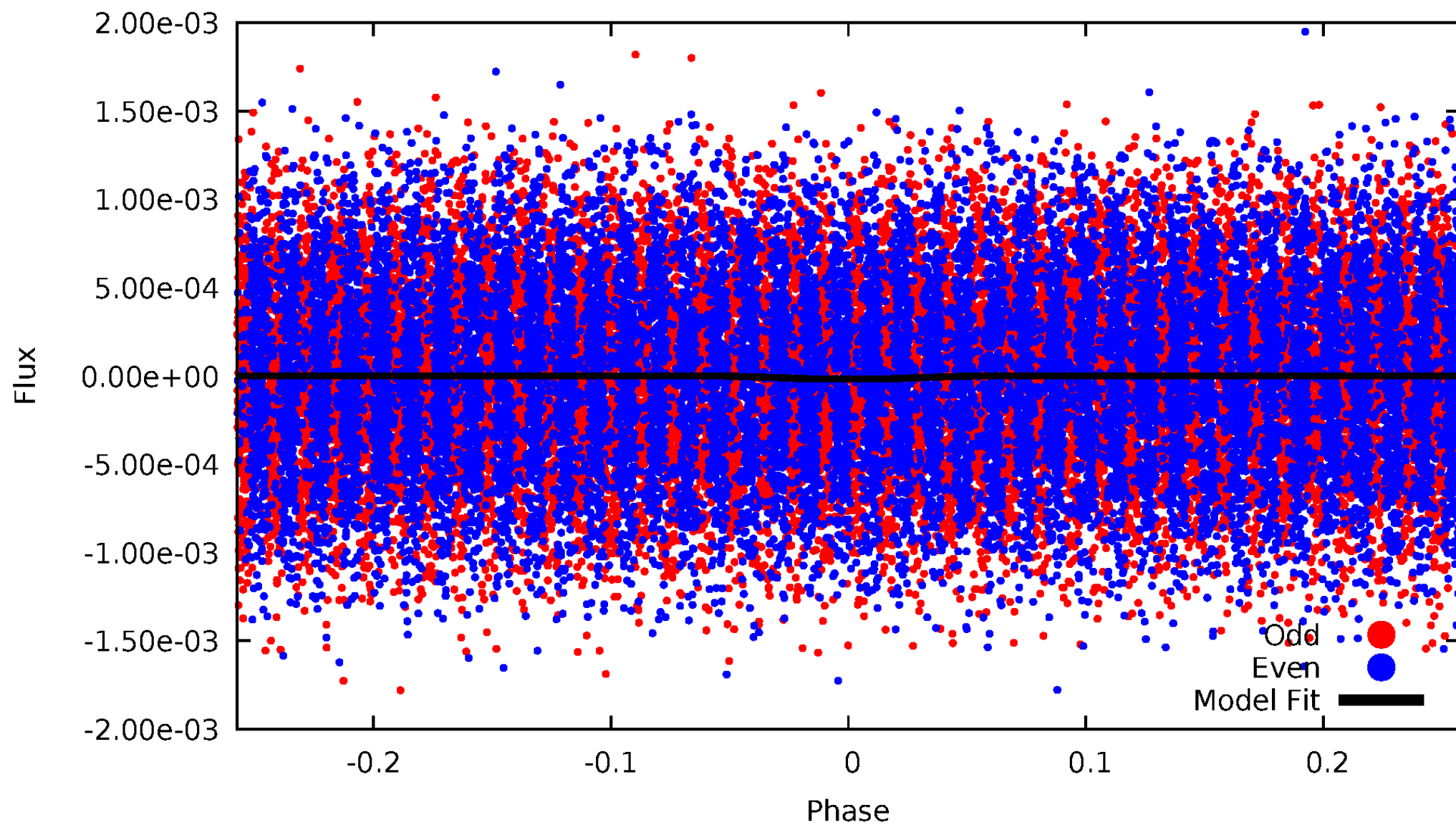
DV Odd/Even

TCE 007842621-01



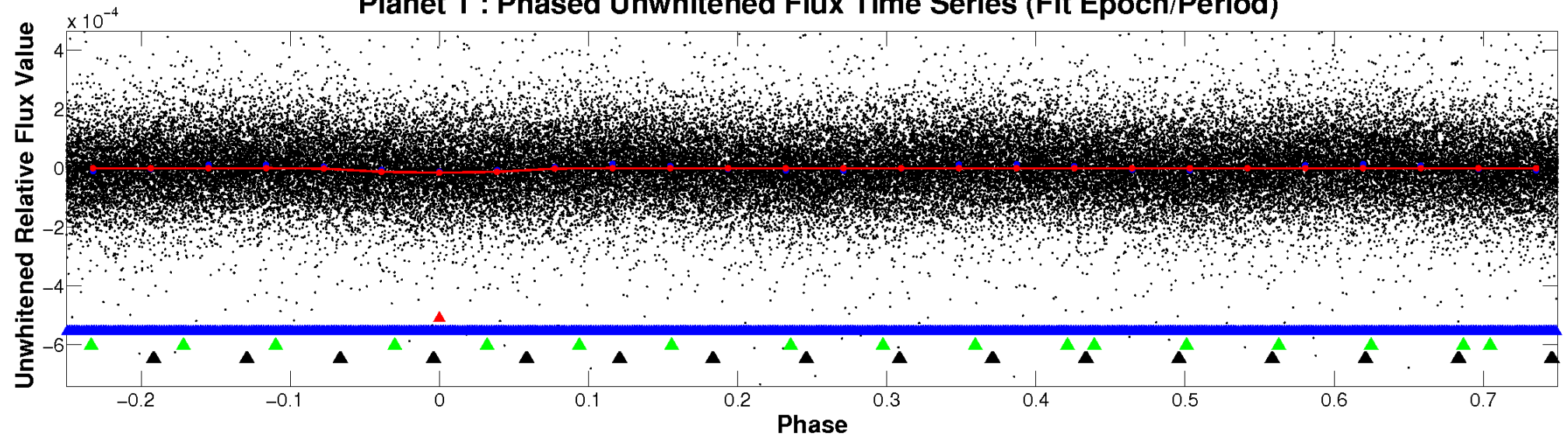
ALT Odd/Even

TCE 007842621-01

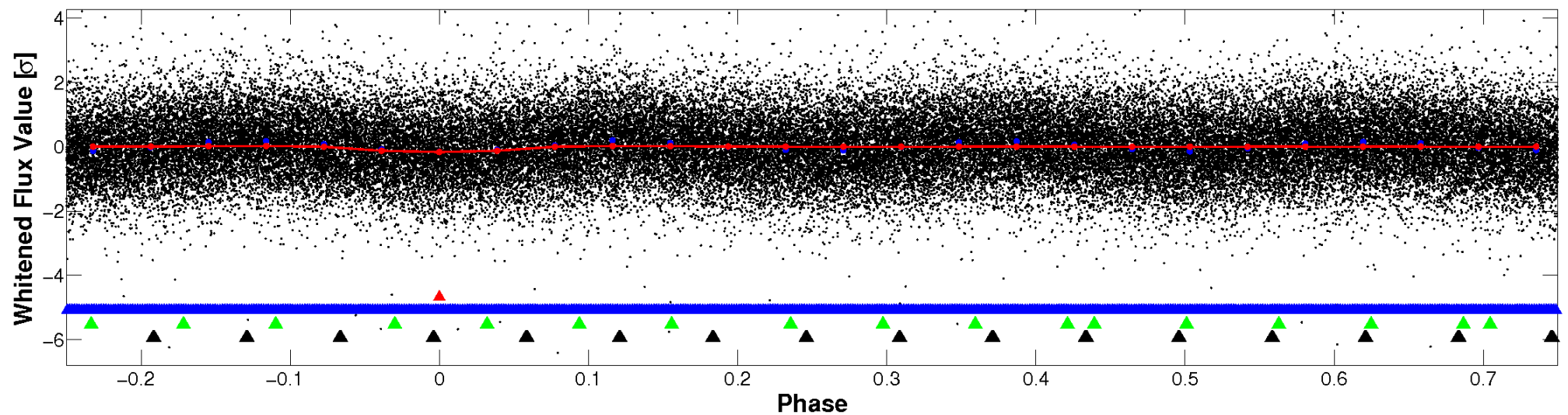


Non-Whitened Vs. Whitened Light Curve

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

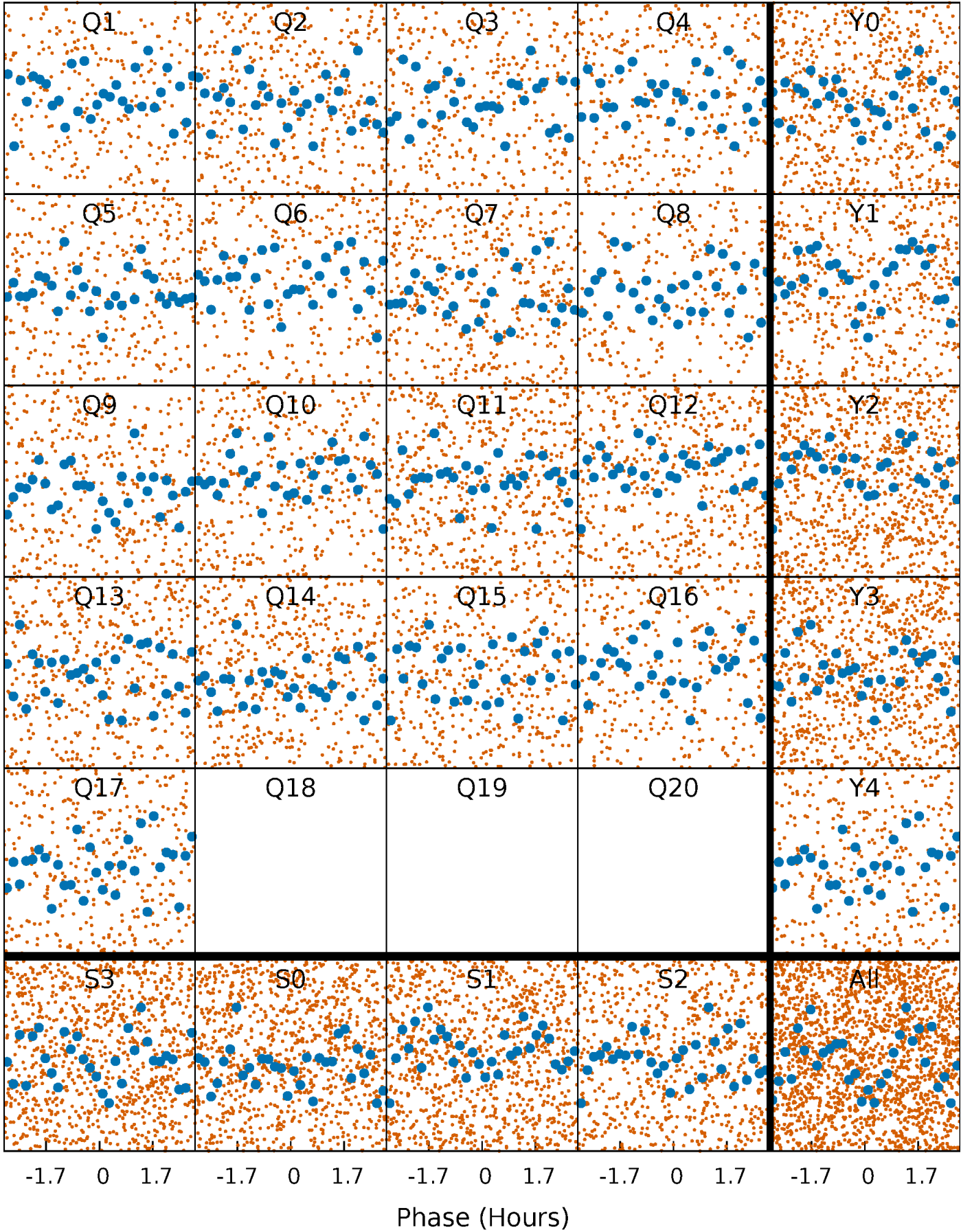


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



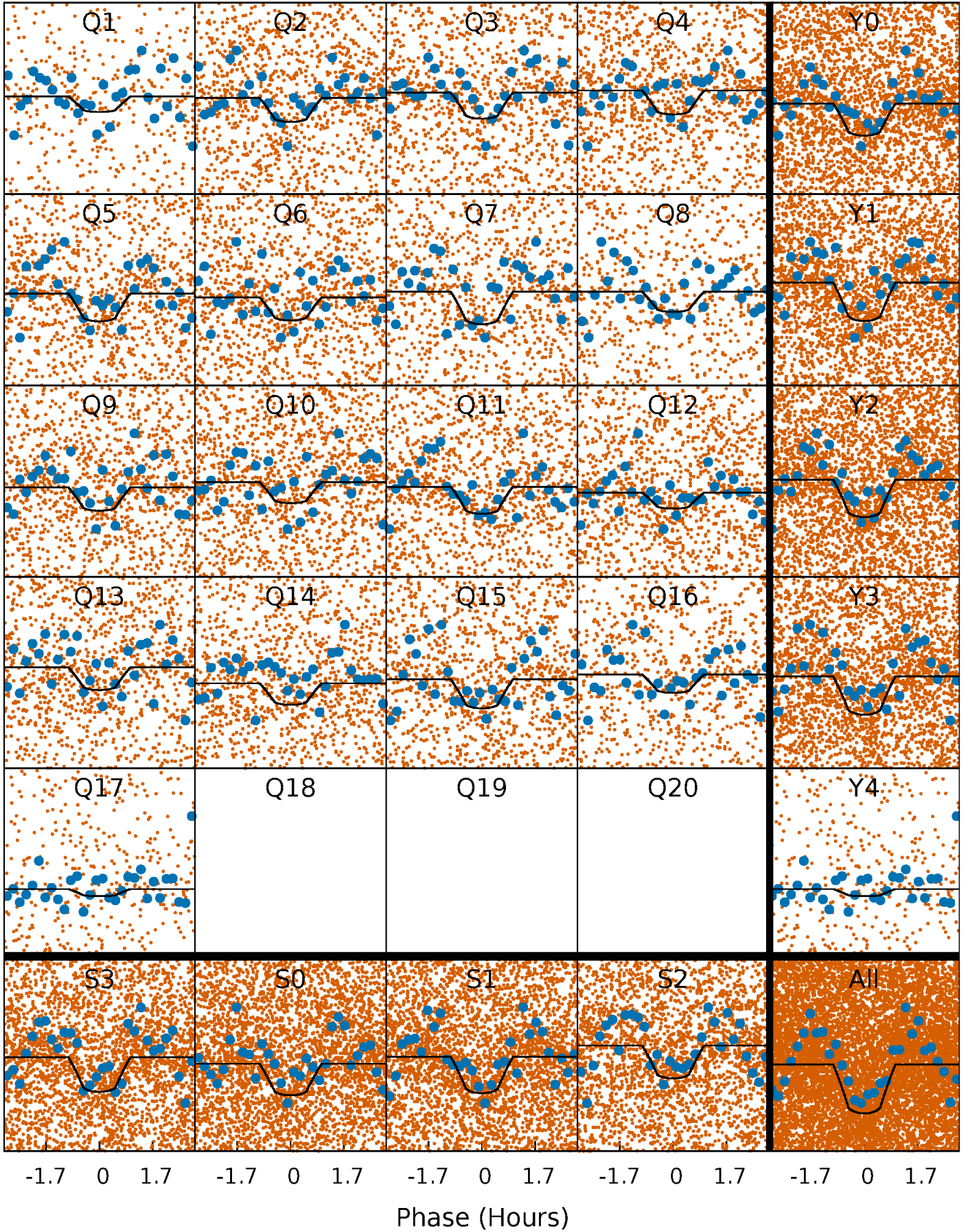
PDC Quarter-Phased Transit Curves

TCE 007842621-01 P= 0.527856 Days $T_0=132.032698$ (BKJD)



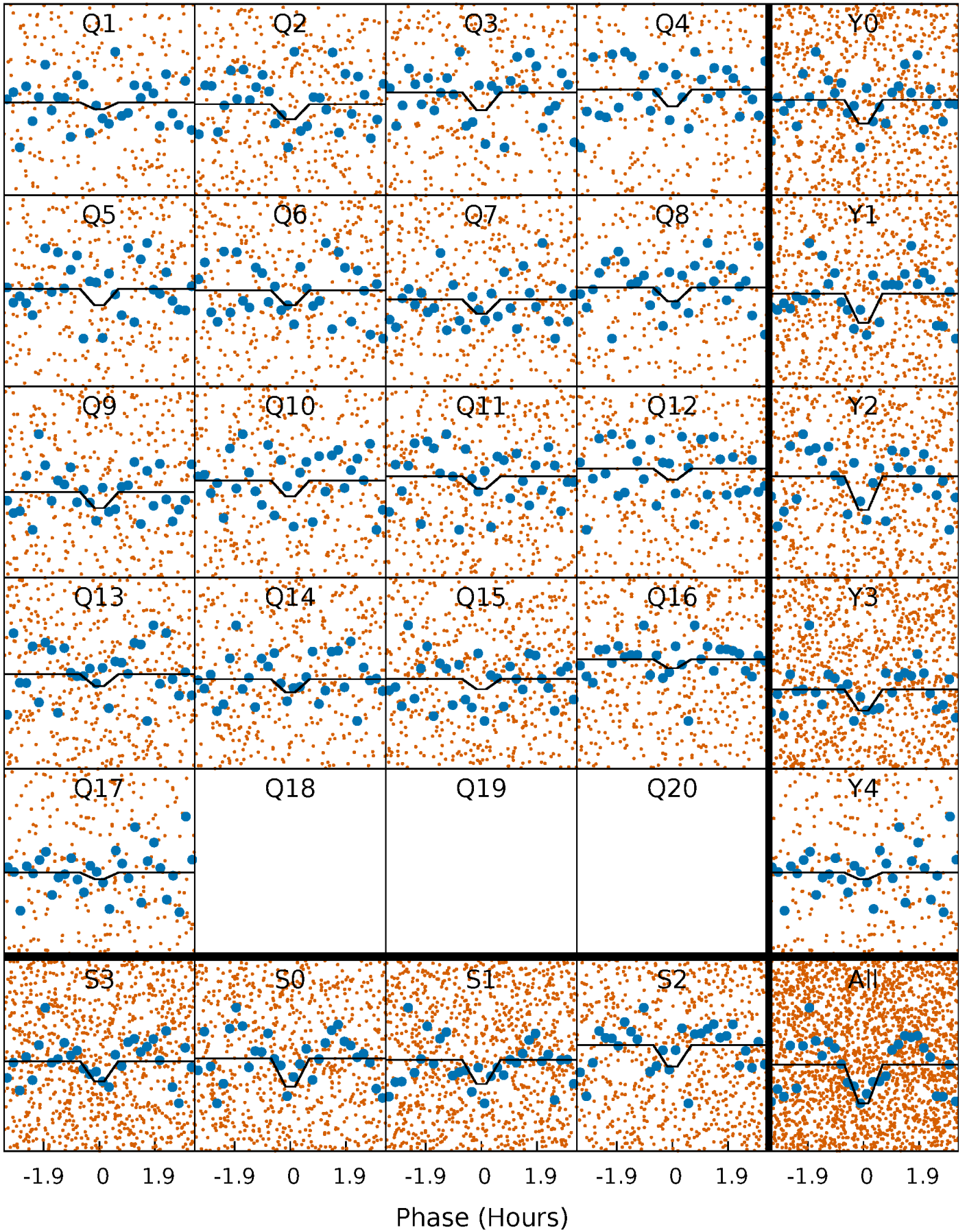
DV Quarter-Phased Transit Curves

TCE 007842621-01 P= 0.527856 Days $T_0=132.032698$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

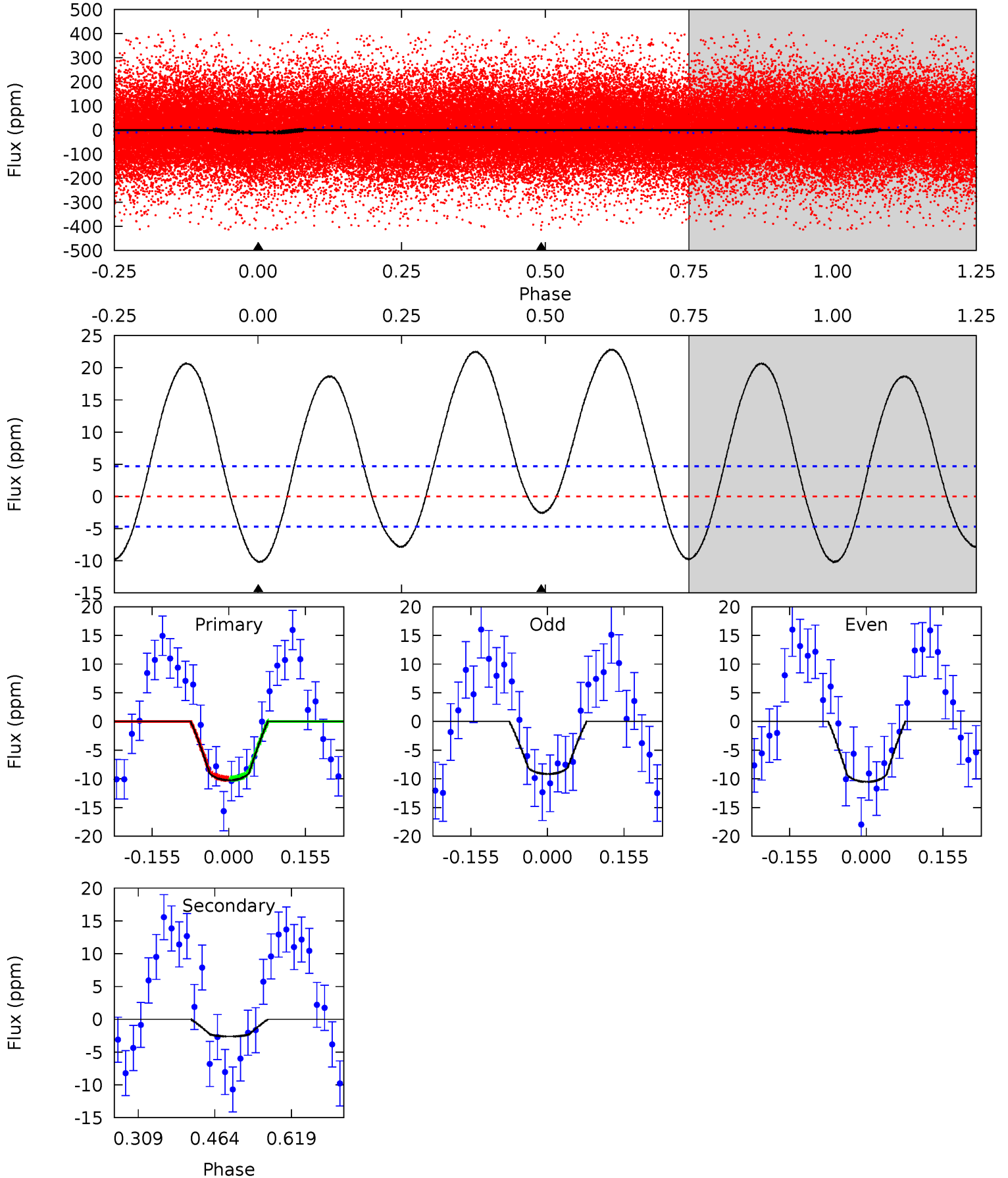
TCE 007842621-01 P= 0.527859 Days $T_0=132.030266$ (BKJD)



DV Model-Shift Uniqueness Test

007842621-01, P = 0.527856 Days, E = 131.504842 Days

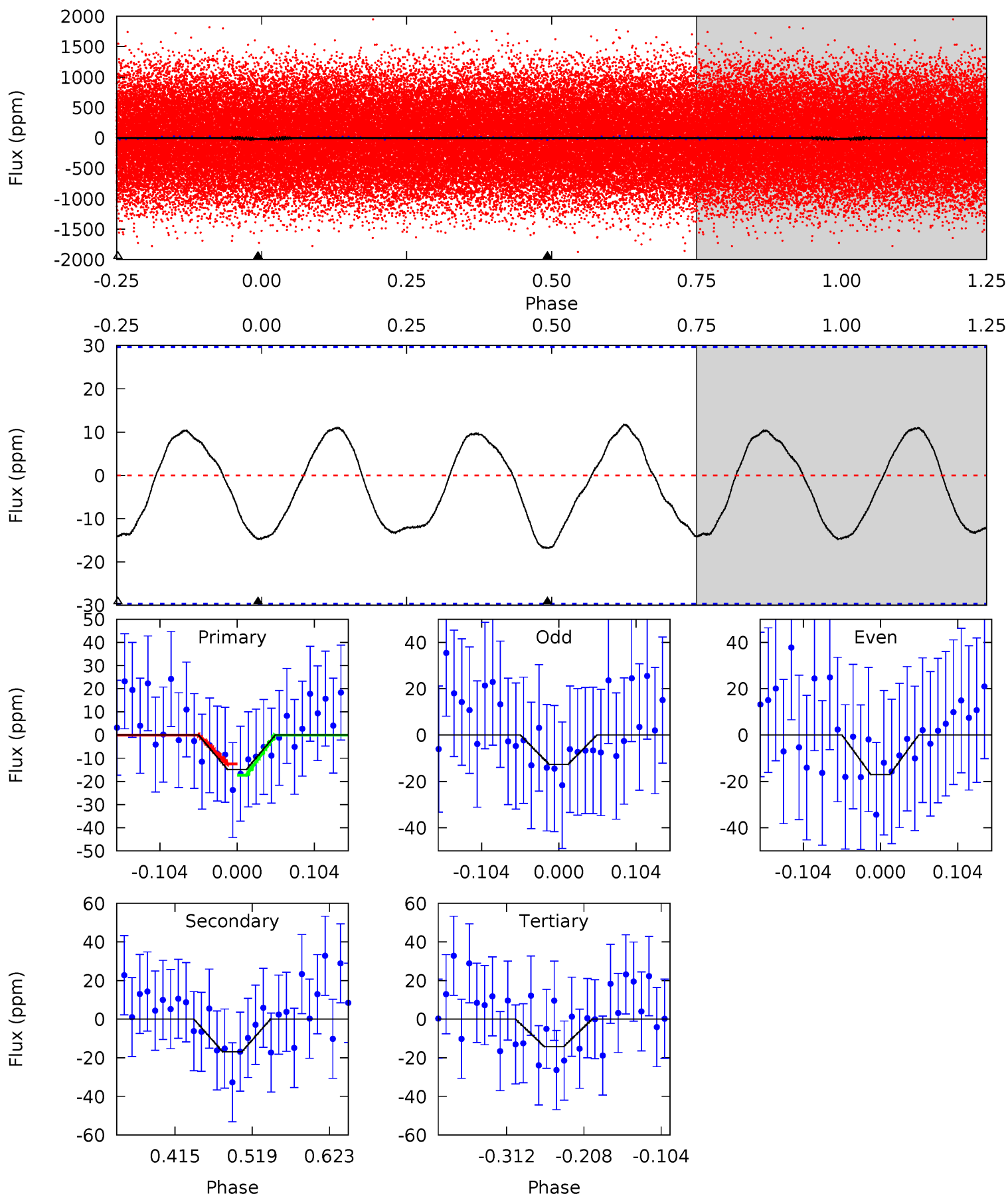
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.77	2.50	0	0	4.47	1.42	7.70	9.77	9.77	2.50	2.50	0.66	0.81	0.69	0.00



Alt Model-Shift Uniqueness Test

007842621-01, P = 0.527859 Days, E = 131.502407 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.28	2.60	2.19	0	4.56	1.63	1.41	0.09	2.28	0.41	2.60	0.34	0.83	0.41	0.38



Stellar Parameters For KIC 007842621

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7841^{+217}_{-326}	$3.652^{+0.476}_{-0.084}$	$-0.160^{+0.200}_{-0.300}$	$3.517^{+0.734}_{-1.712}$	$2.025^{+0.343}_{-0.514}$	$0.066^{+0.329}_{-0.022}$
	+3%/-4%	+13%/-2%	+125%/-188%	+21%/-49%	+17%/-25%	+501%/-34%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007842621-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3 ± 1	$1.45^{+0.35}_{-0.40}$	6815^{+496}_{-883}	-4490^{+8206}_{-787}	$0.182^{+0.177}_{-0.091}$
Alt.	-17 ± 7	$1.46^{+0.33}_{-0.36}$	6811^{+544}_{-765}	6993^{+1458}_{-1465}	$1.109^{+0.946}_{-0.511}$

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 $A_{obs} \gg 1.0$

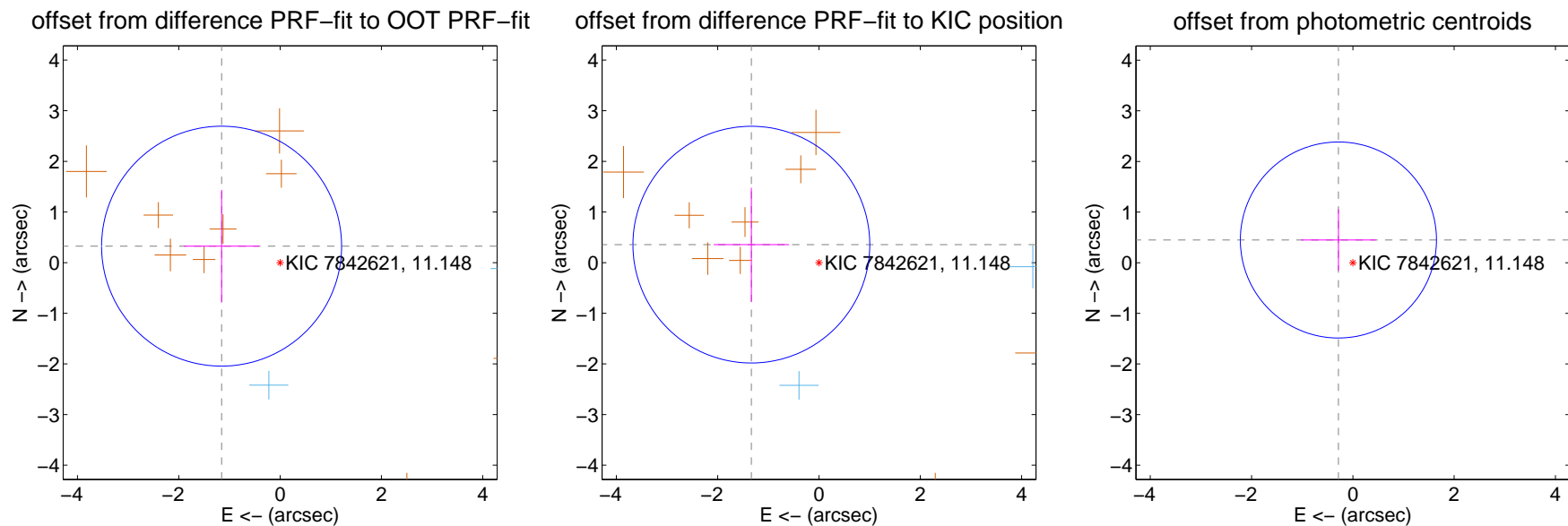
DV Centroid Data

Supplemental centroid analysis for 007842621-01. **Kepler magnitude: 11.15.** Transit SNR 12.62

There are 2 quarters with good PRF difference image offsets

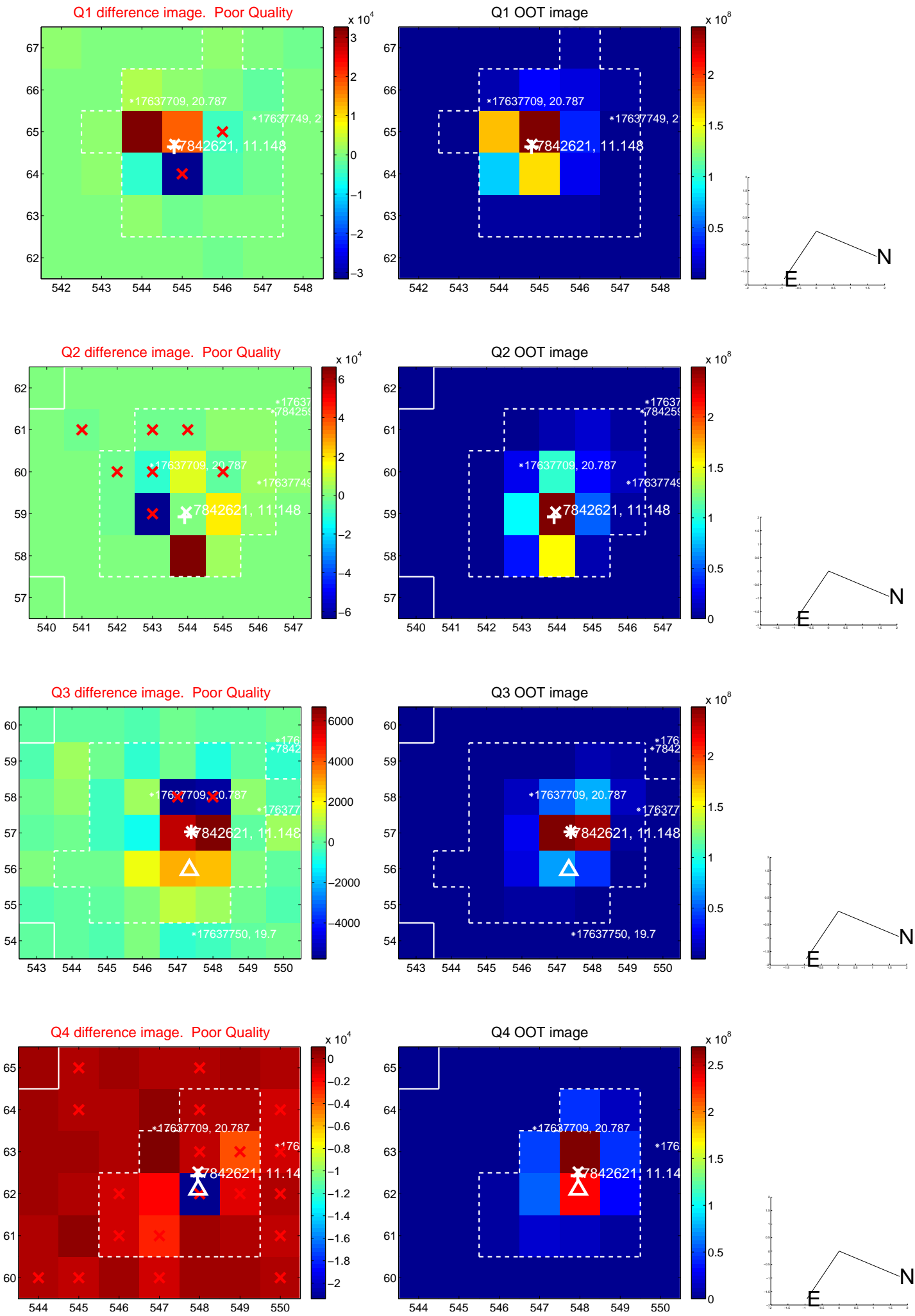
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.200 ± 0.790	1.52	1.155 ± 0.744	0.325 ± 1.110
PRF-fit source offset from KIC position	1.381 ± 0.779	1.77	1.335 ± 0.743	0.356 ± 1.124
photometric centroid source offset	0.53 ± 0.65	0.82	0.29 ± 0.74	0.45 ± 0.60

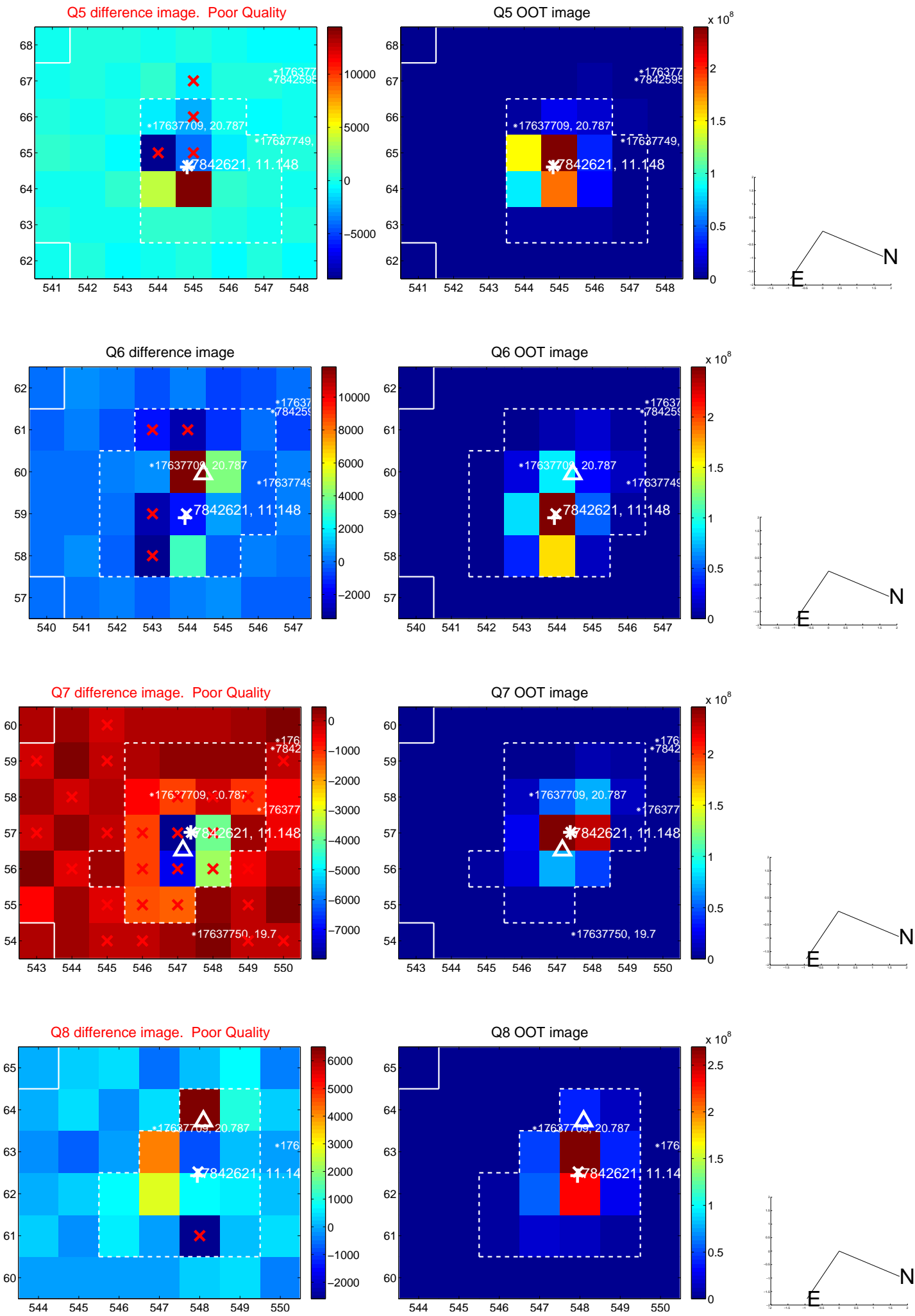


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

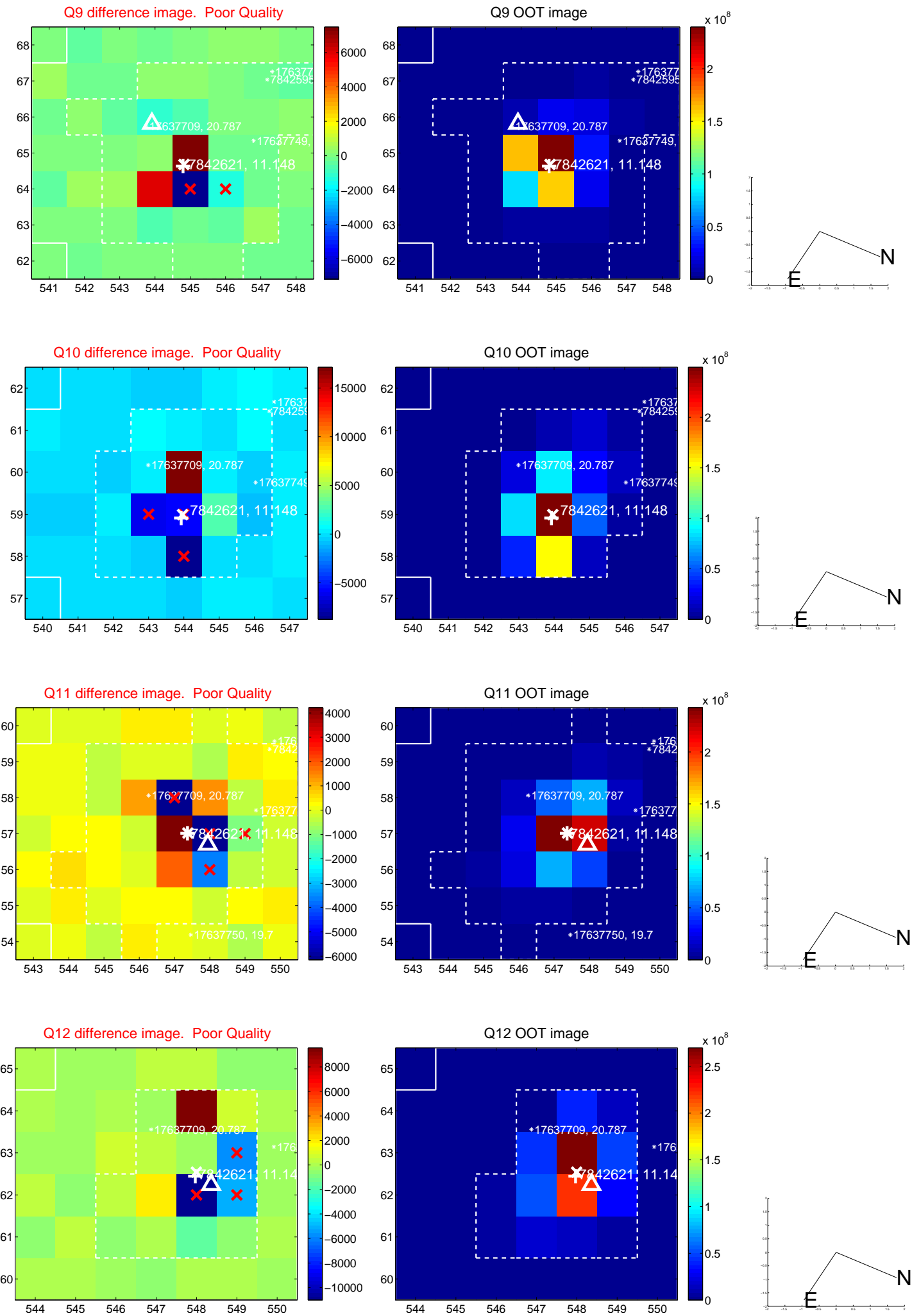
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



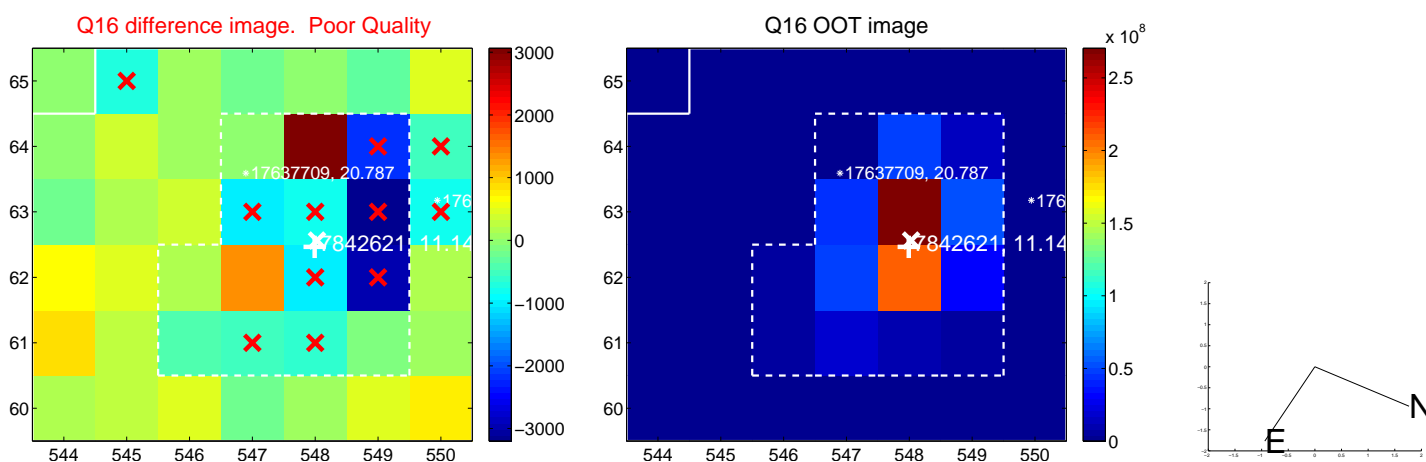
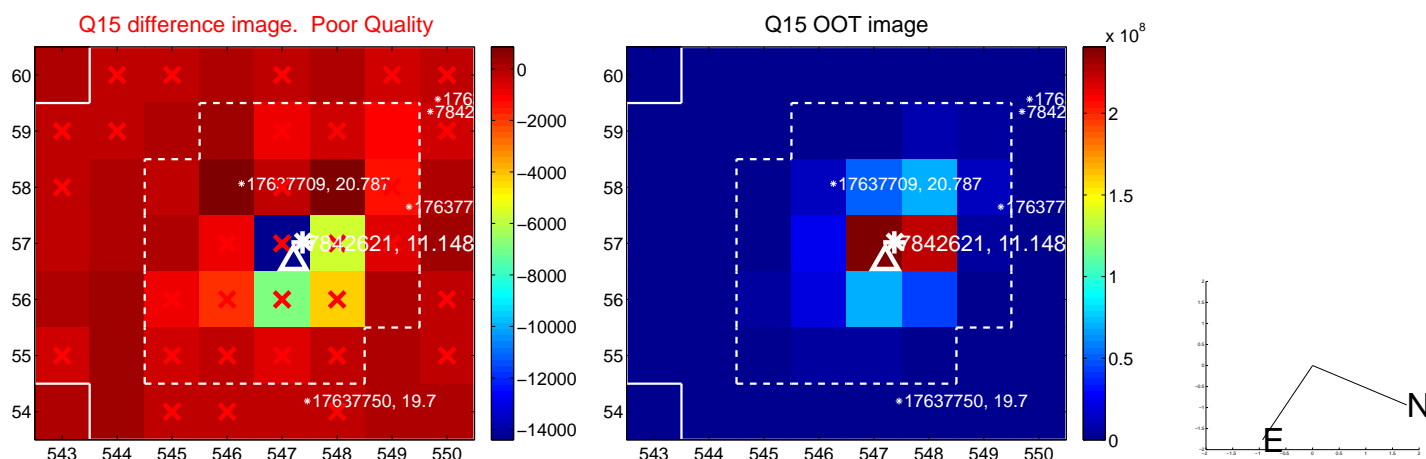
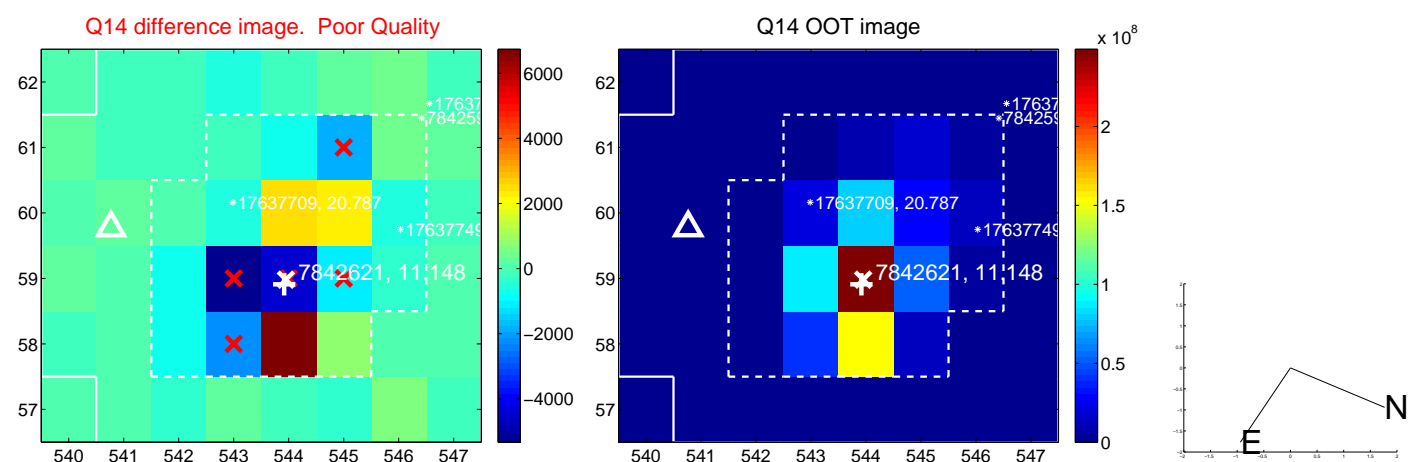
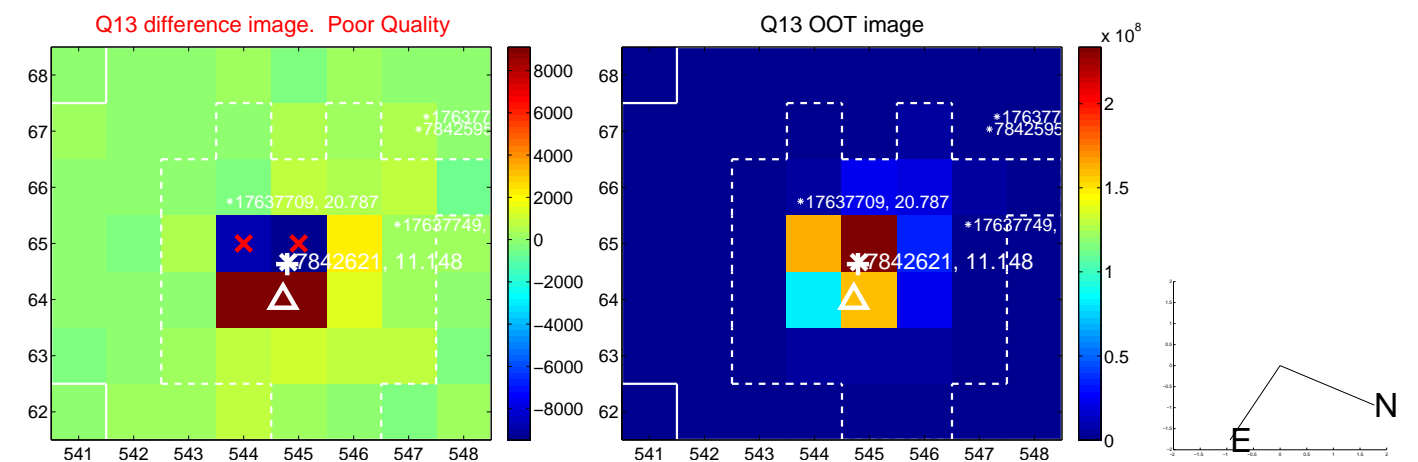
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

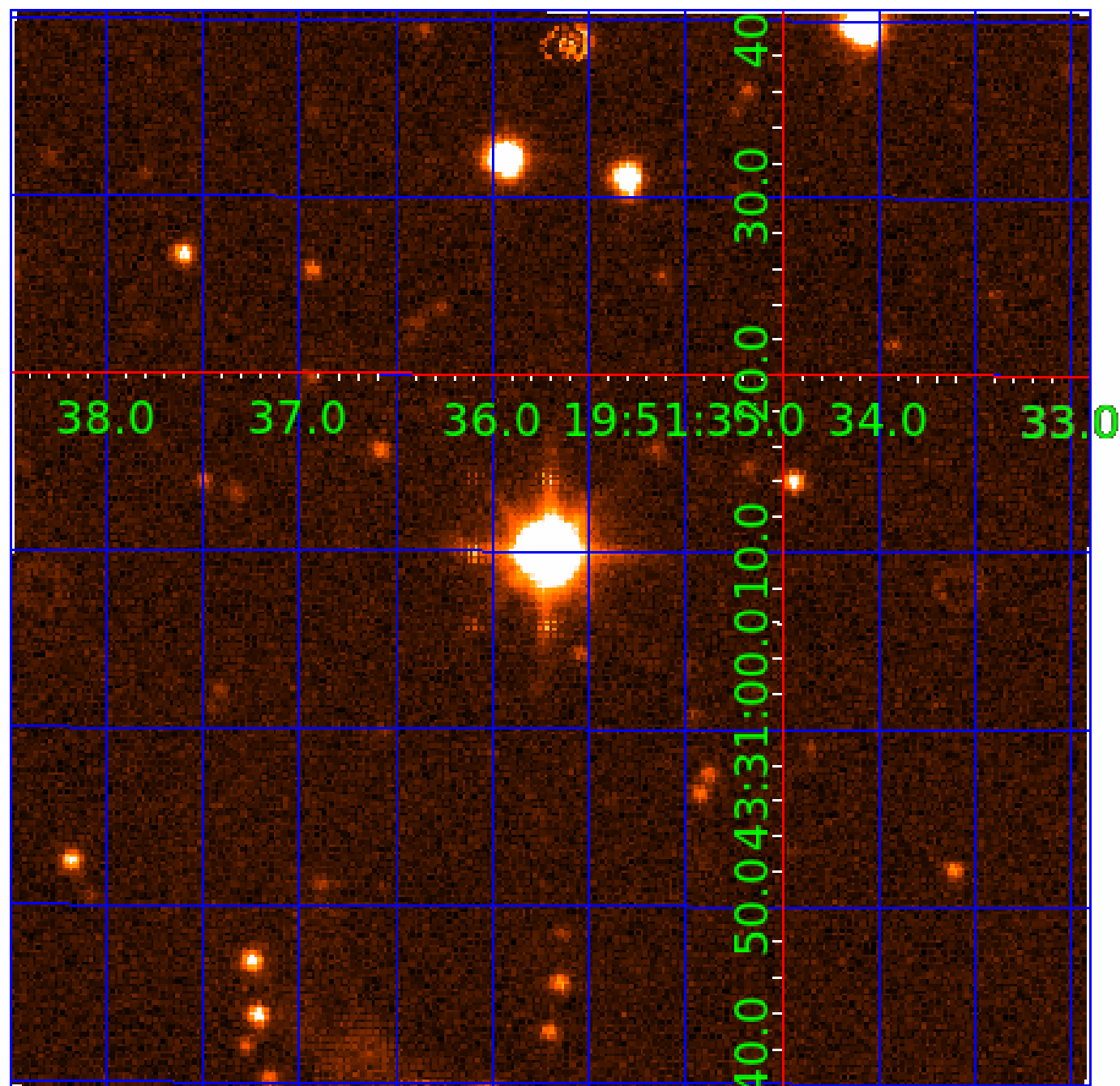


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007842621

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})
007842621-01	OBS	No	0.527856	132.032698	15.8	1.522	11.4	12.6	3.52	7841	1.58	0.00
007842621-02	OBS	No	0.899501	131.770647	14.9	6.285	10.0	12.1	3.52	7841	1.38	78673.04
007842621-03	OBS	No	84.844747	168.289414	174.9	2.405	9.1	10.3	3.52	7841	5.44	183.23
007842621-04	OBS	No	17.056349	146.514115	94.1	2.878	9.0	7.4	3.52	7841	4.18	1555.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007842621-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
007842621-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—CENT_SATURATED
007842621-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
007842621-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST

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

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

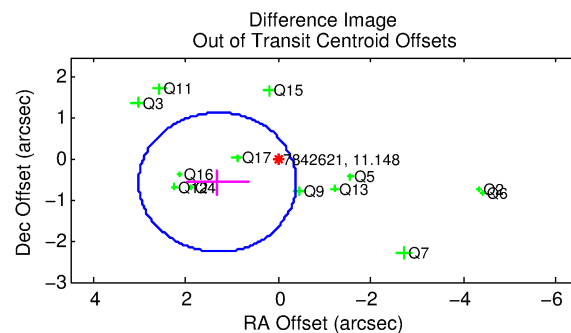
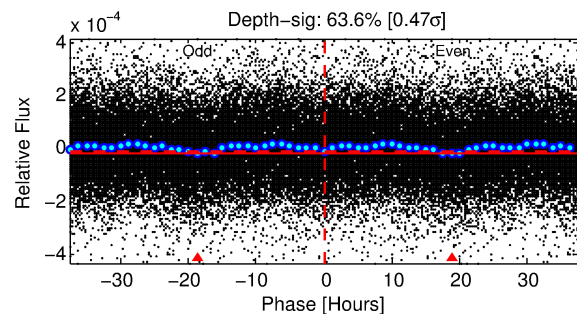
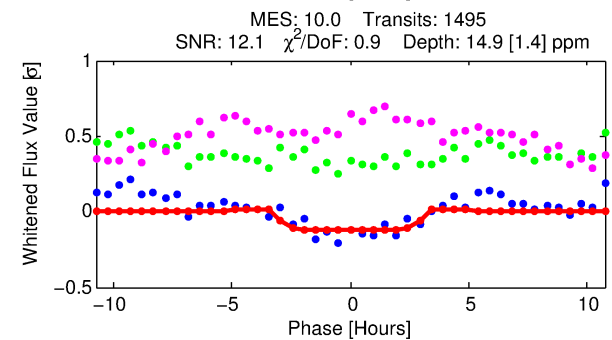
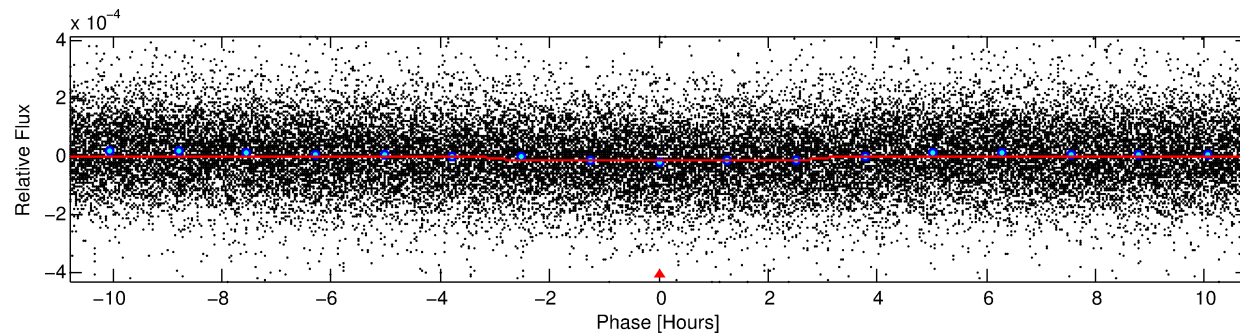
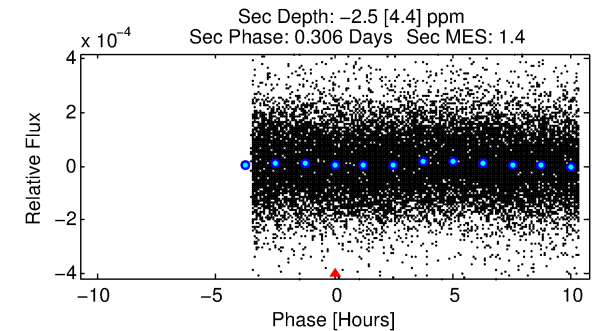
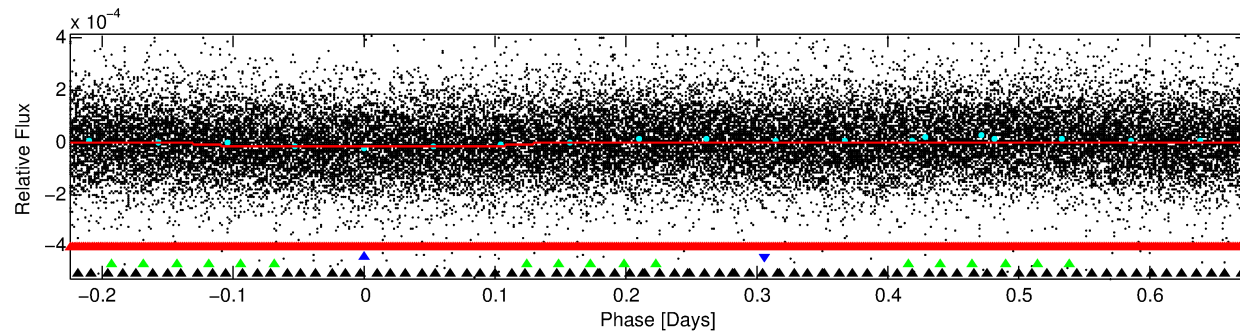
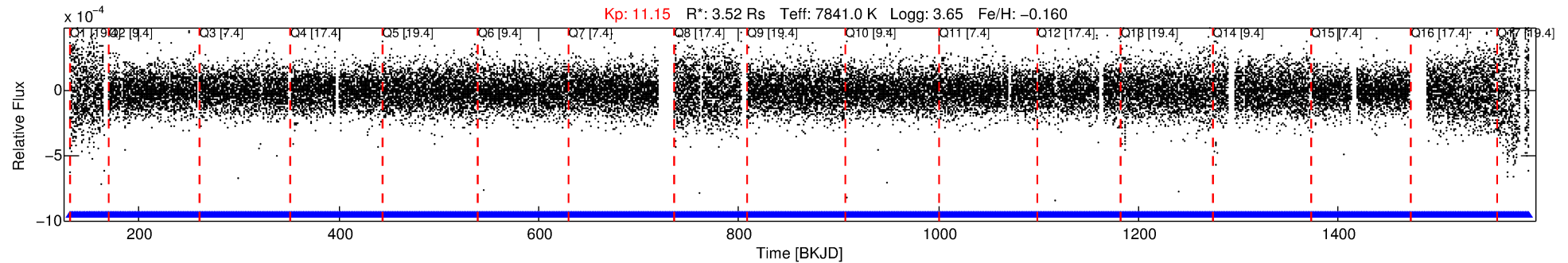
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007842621-02

No Significant Match Found

DV One-Page Summary

KIC: 7842621 Candidate: 2 of 4 Period: 0.900 d



DV Fit Results:

Period = 0.89950 [0.00001] d
Epoch = 131.7706 [0.0050] BKJD
Rp/R* = 0.0036 [0.0029]
a/R* = 1.25 [2.00]
b = 0.27 [15.49]
Seff = 78673.04 [64246.23]
Teq = 4271 [872] K
Rp = 1.38 [1.30] Re
a = 0.0231 [0.0113] AU
Ag = N/A
Teffp = N/A

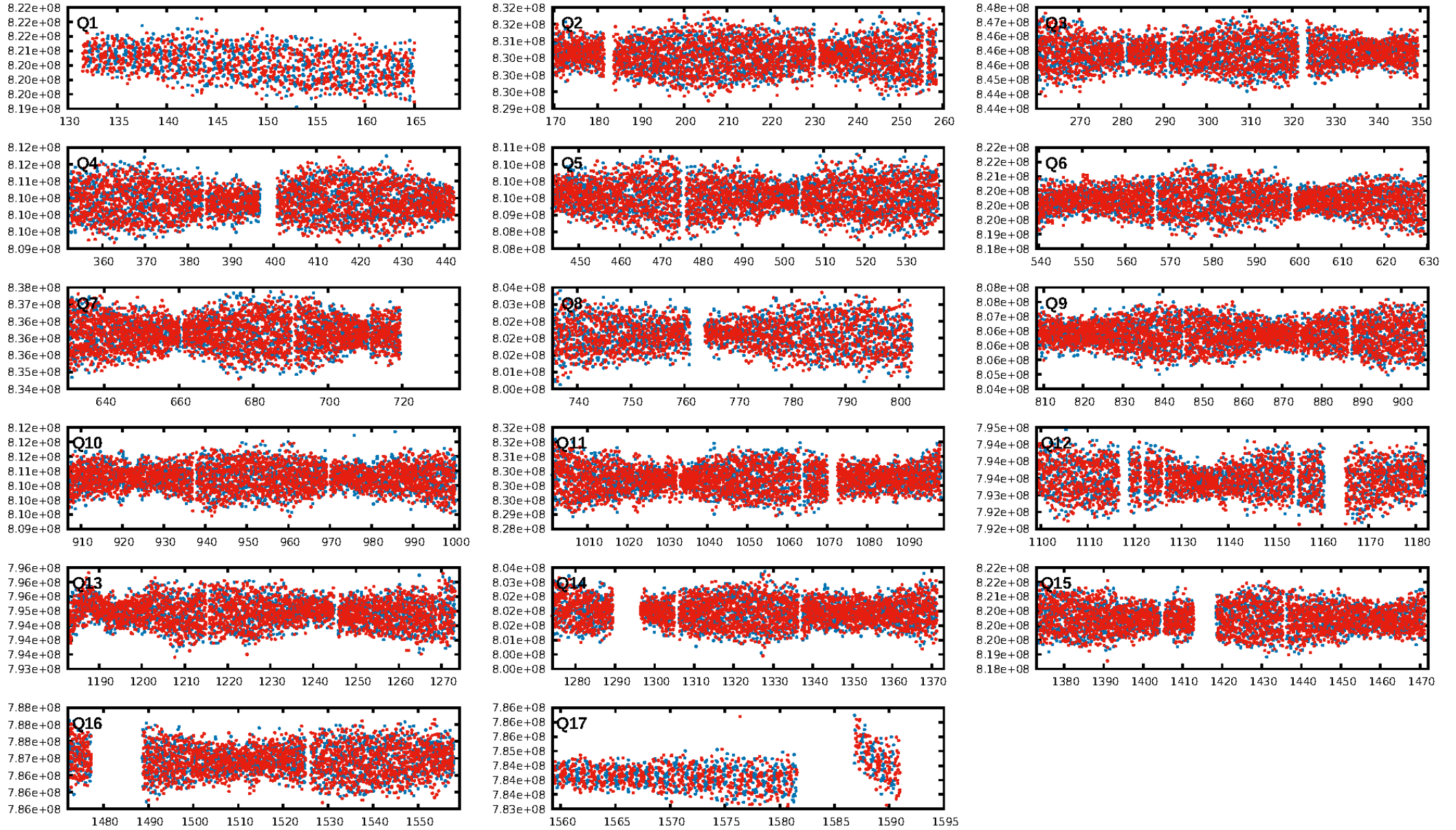
DV Diagnostic Results:

ShortPeriod-sig: 83.2% [1.38σ]
LongPeriod-sig: 100.0% [56.10σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.65e-08
RollingBand-fgt: 1.00 [1427/1427]
GhostDiagnostic-chr: 2.234
Centroid-sig: 14.8%
Centroid-so: 0.781 arcsec [1.19σ]
OotOffset-rm: 1.429 arcsec [2.52σ]
KicOffset-rm: 1.408 arcsec [2.57σ]
OotOffset-st: 2/4/3/4 [13]
KicOffset-st: 2/4/3/4 [13]
DiffImageQuality-fgm: 0.85 [11/13]
DiffImageOverlap-fno: 0.00 [0/17]

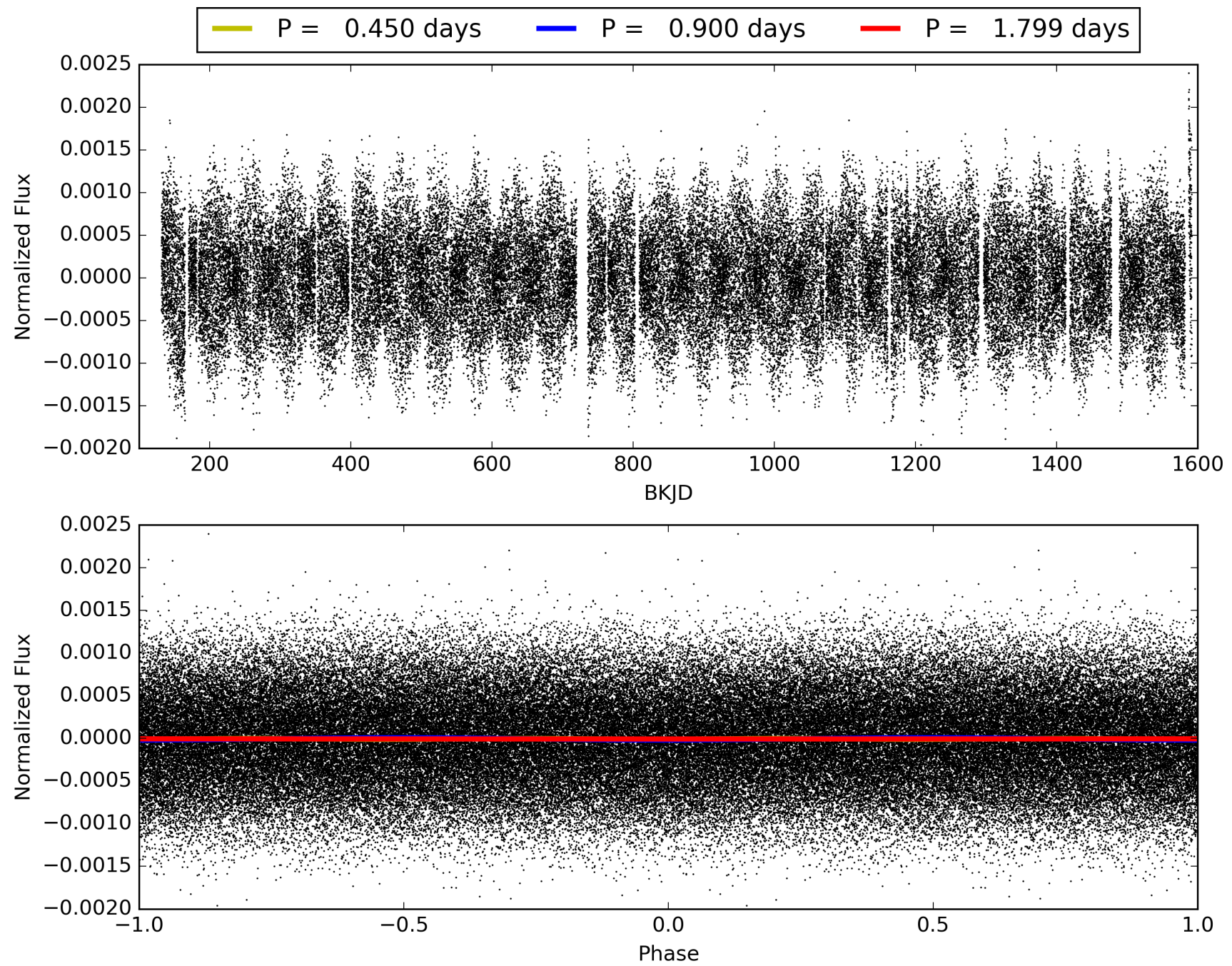
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:18:22 Z

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

TCE 007842621-02, PDC Light Curves

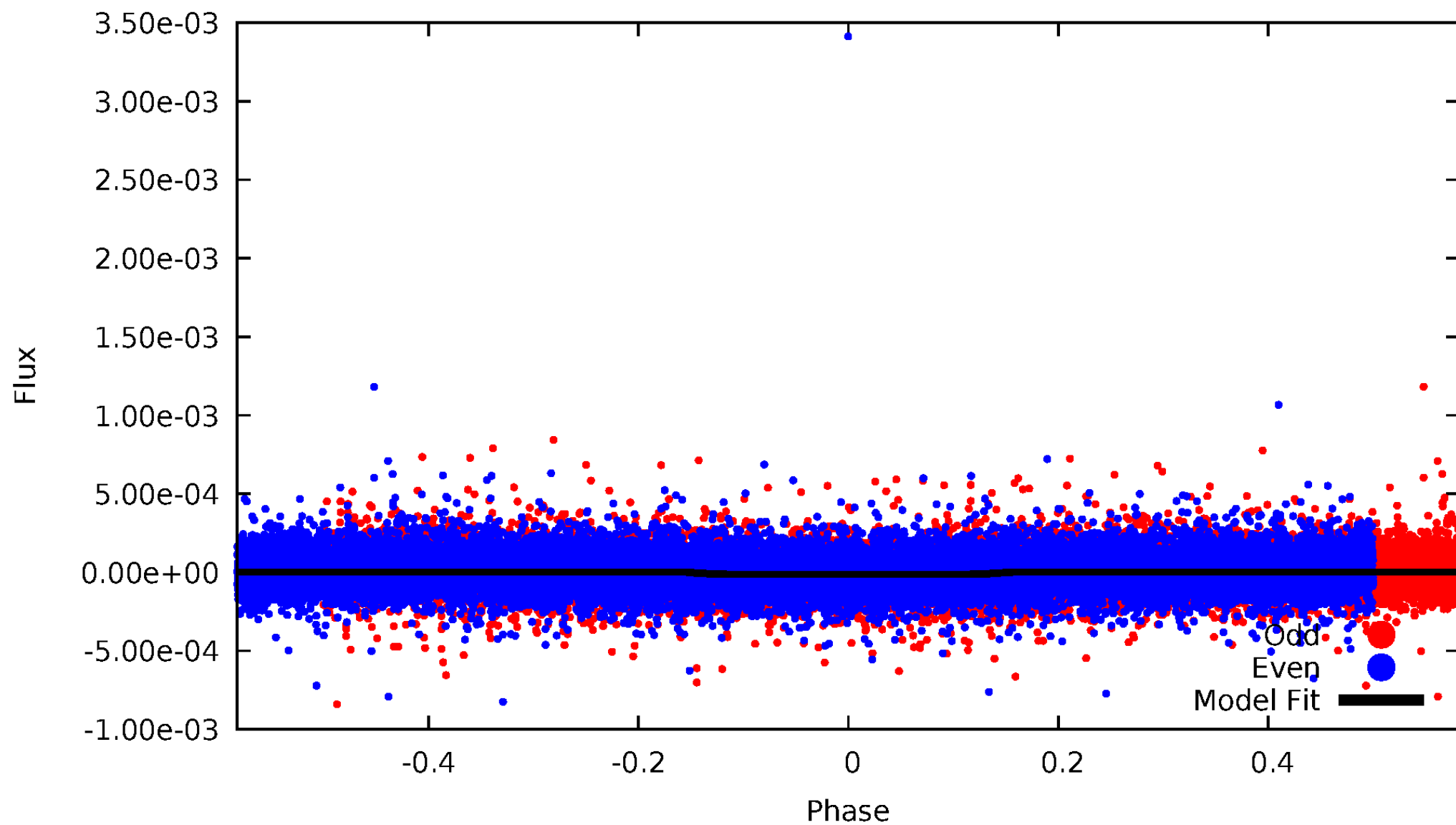


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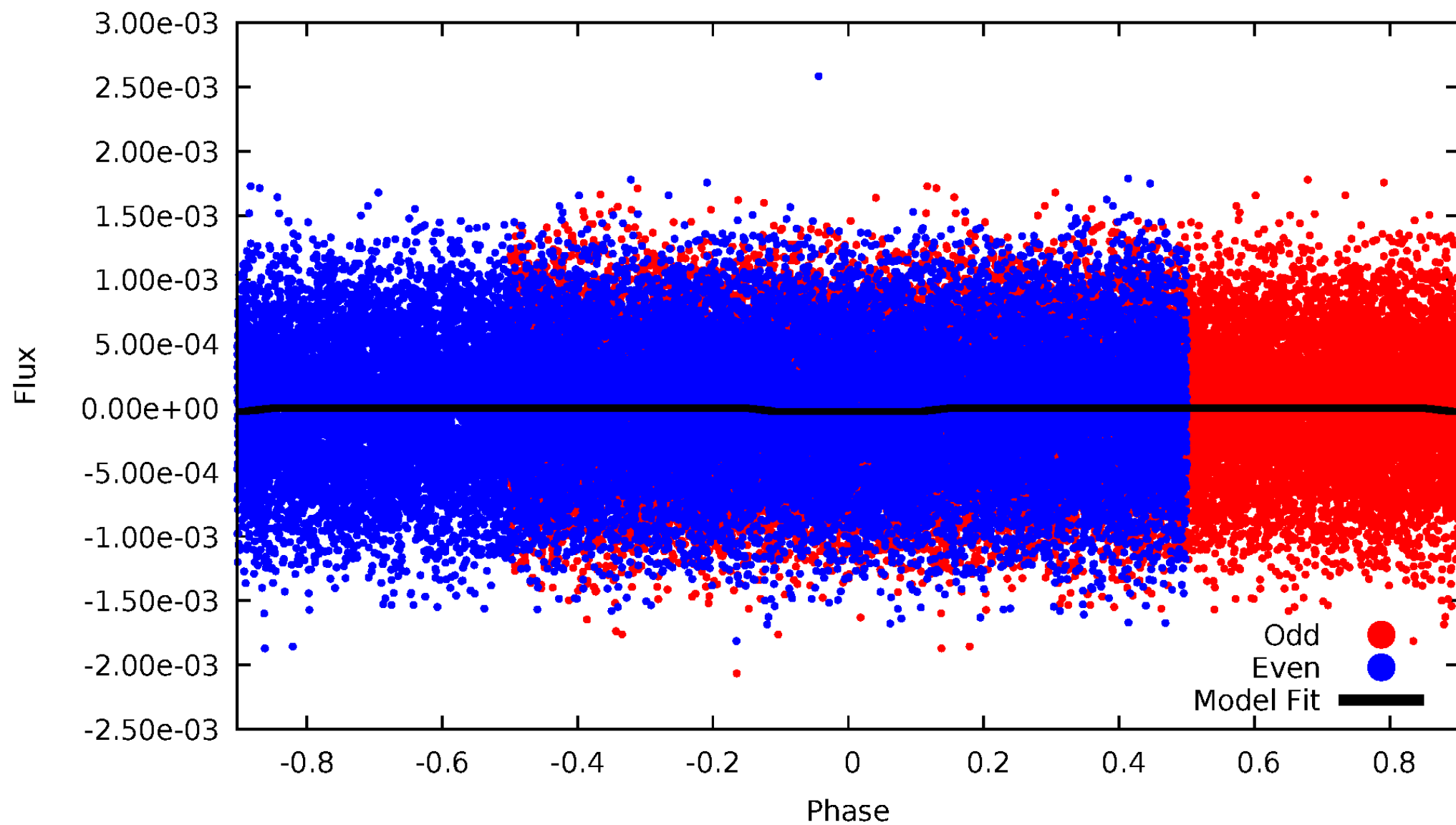
DV Odd/Even

TCE 007842621-02



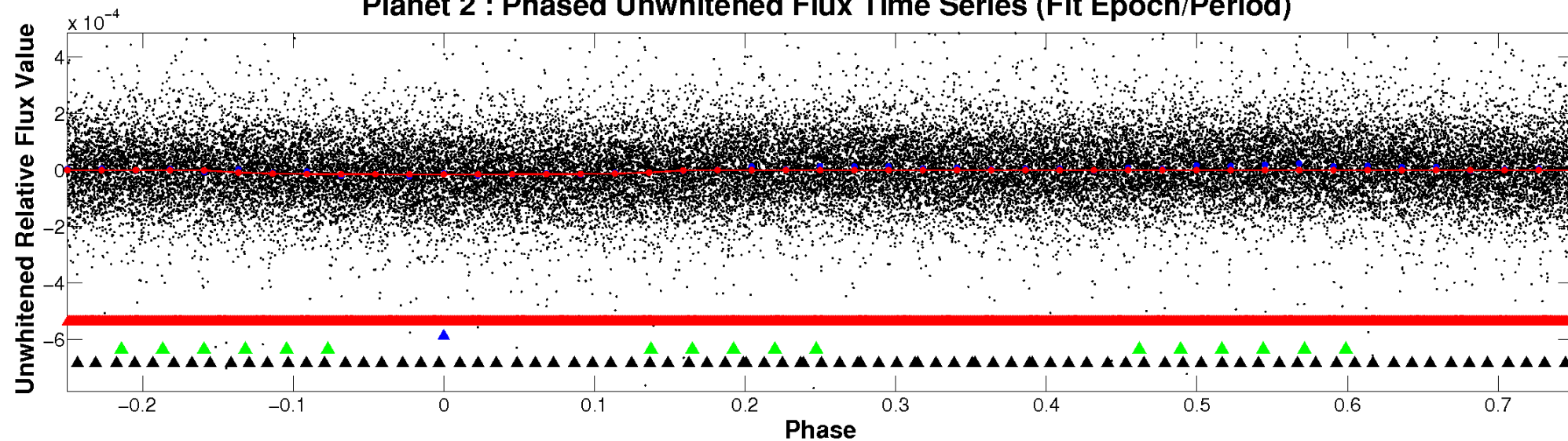
ALT Odd/Even

TCE 007842621-02

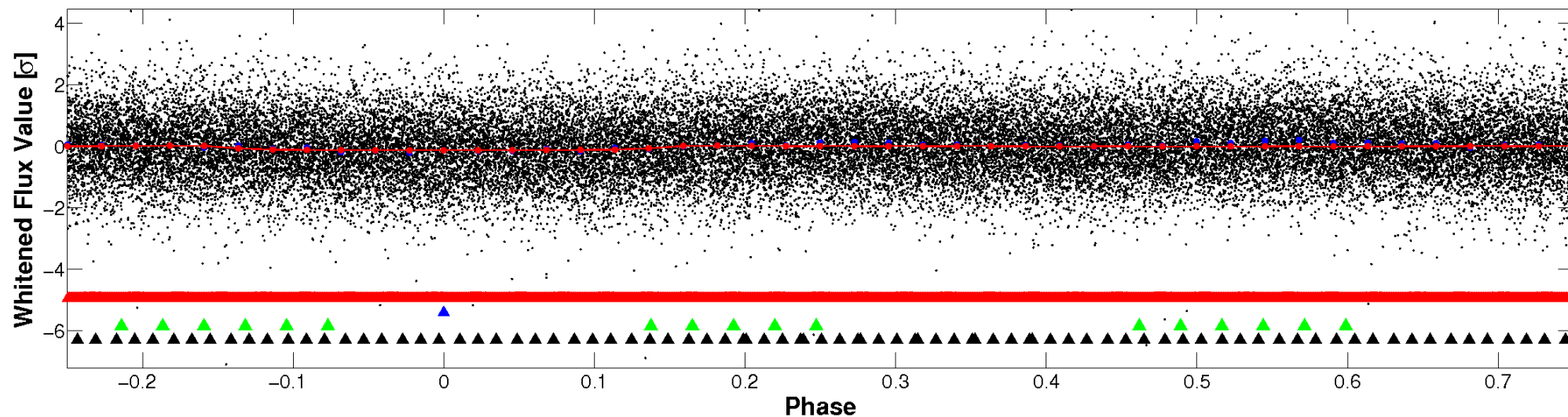


Non-Whitened Vs. Whitened Light Curve

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

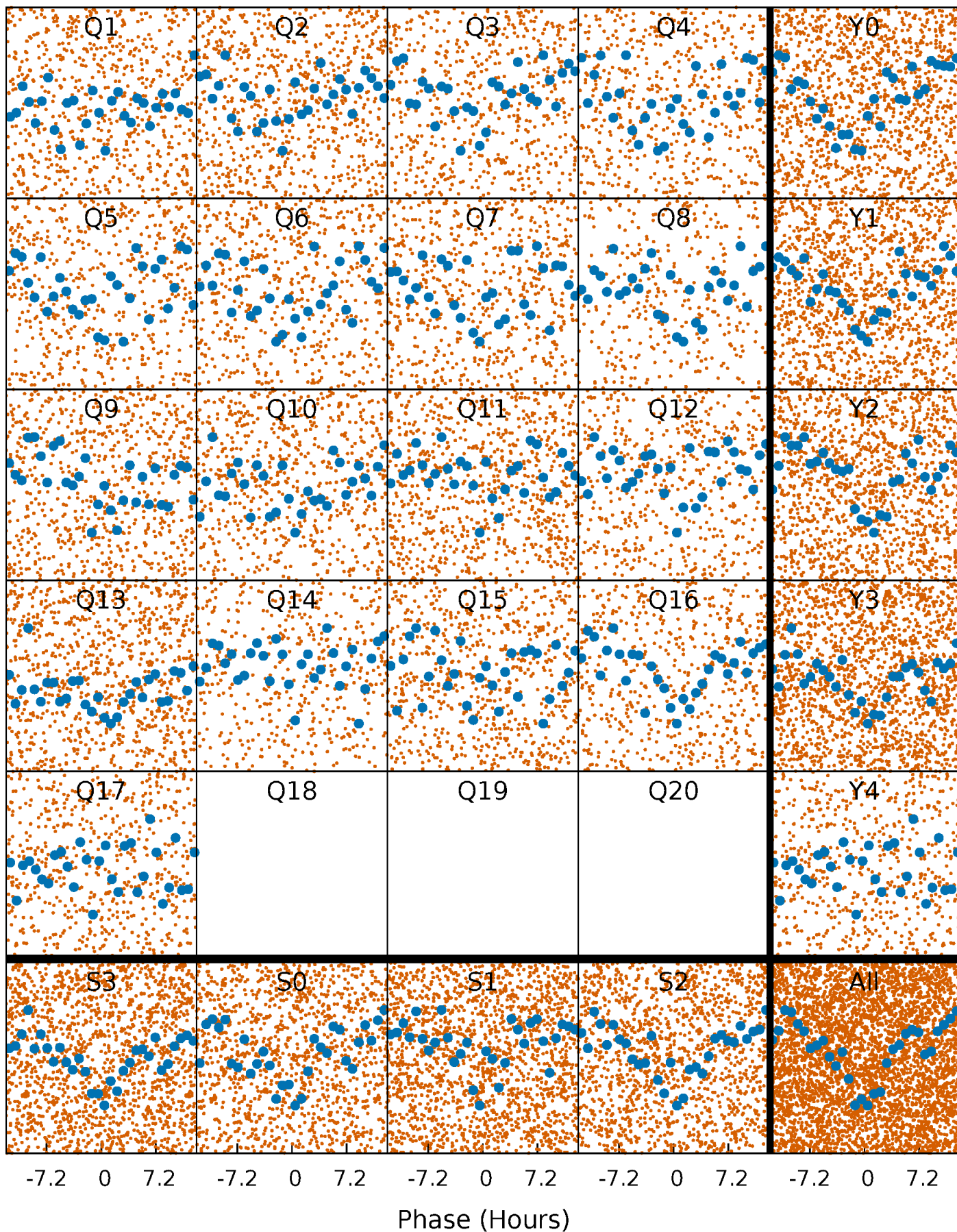


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



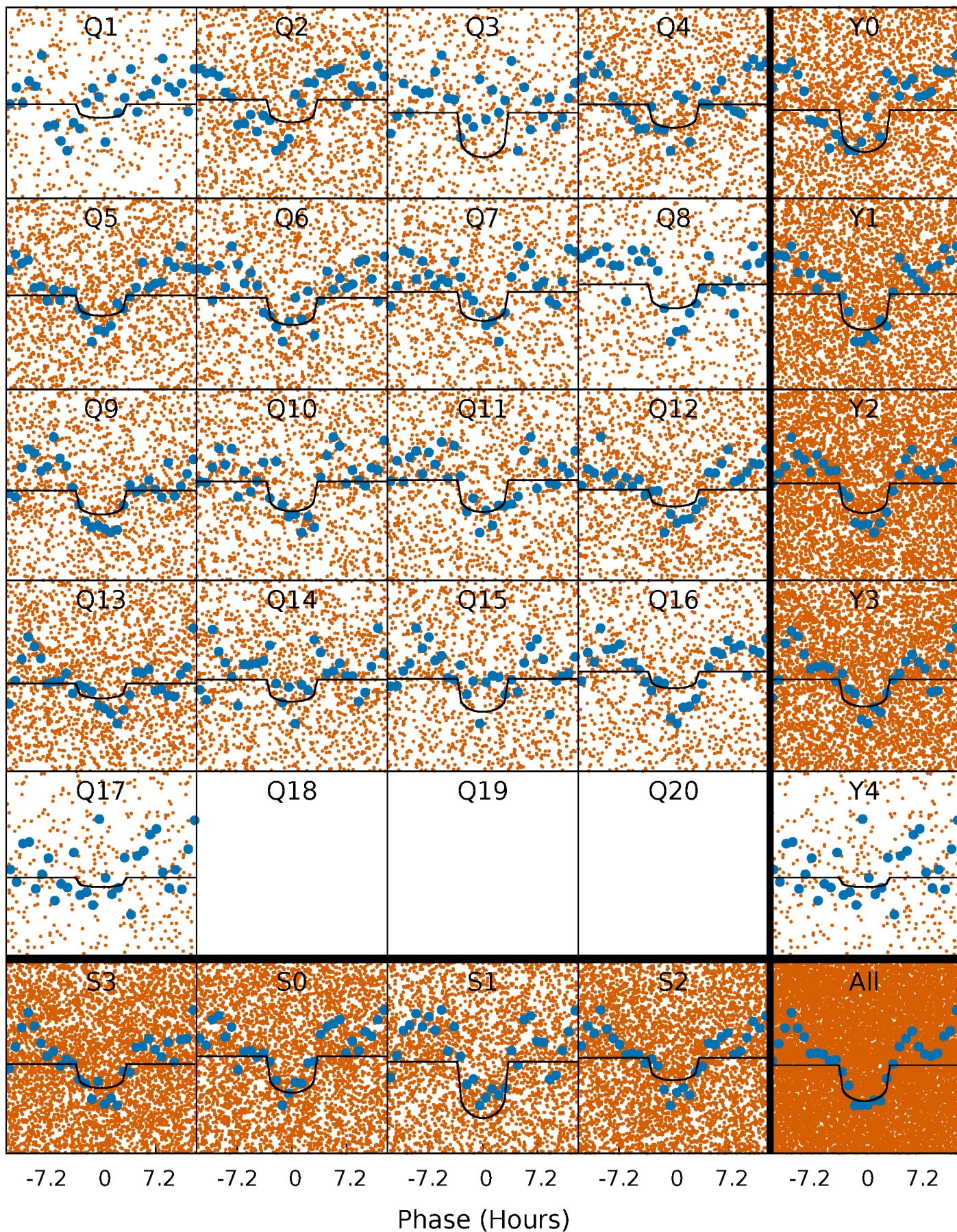
PDC Quarter-Phased Transit Curves

TCE 007842621-02 P= 0.899501 Days $T_0=131.770647$ (BKJD)



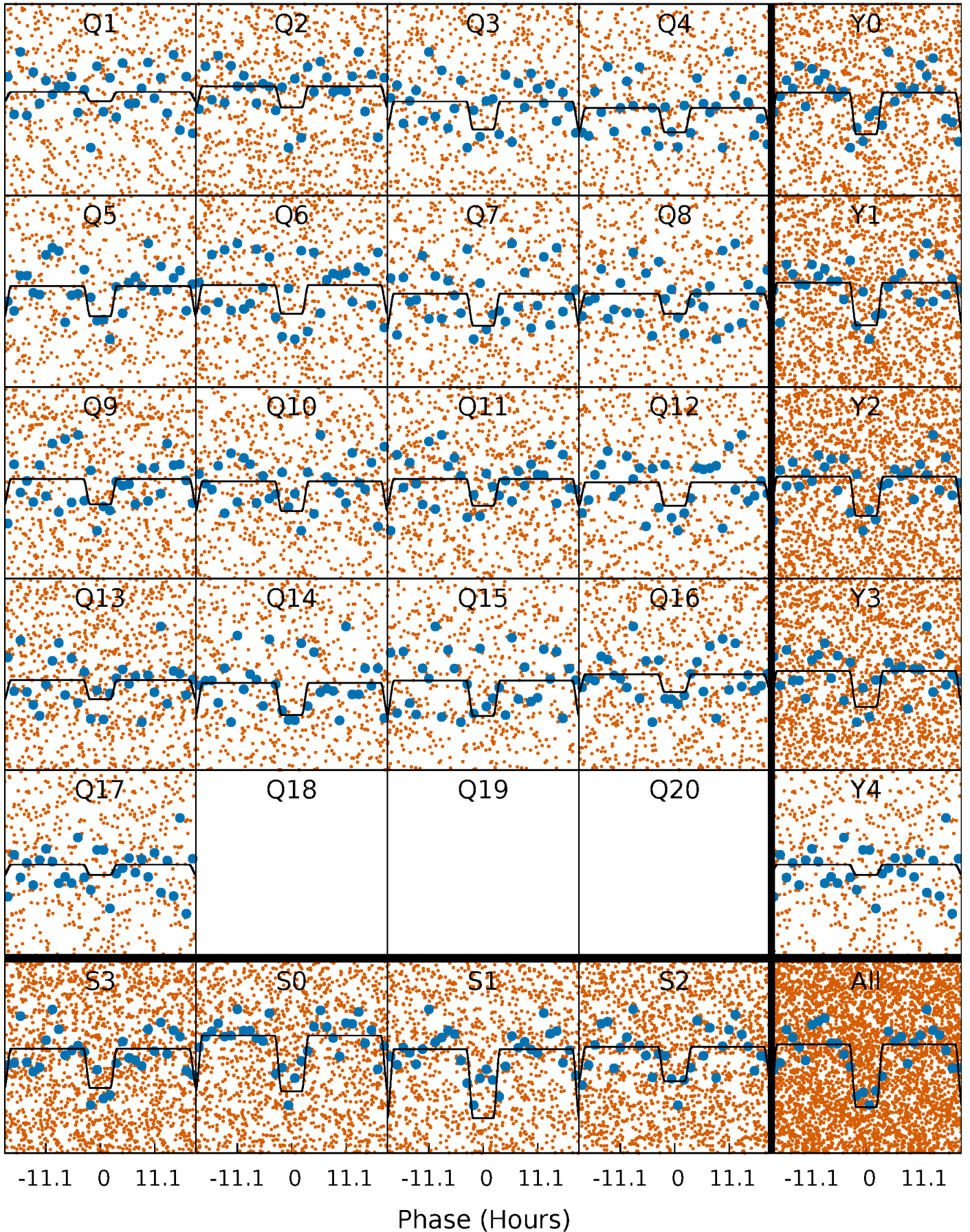
DV Quarter-Phased Transit Curves

TCE 007842621-02 P= 0.899501 Days $T_0=131.770647$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

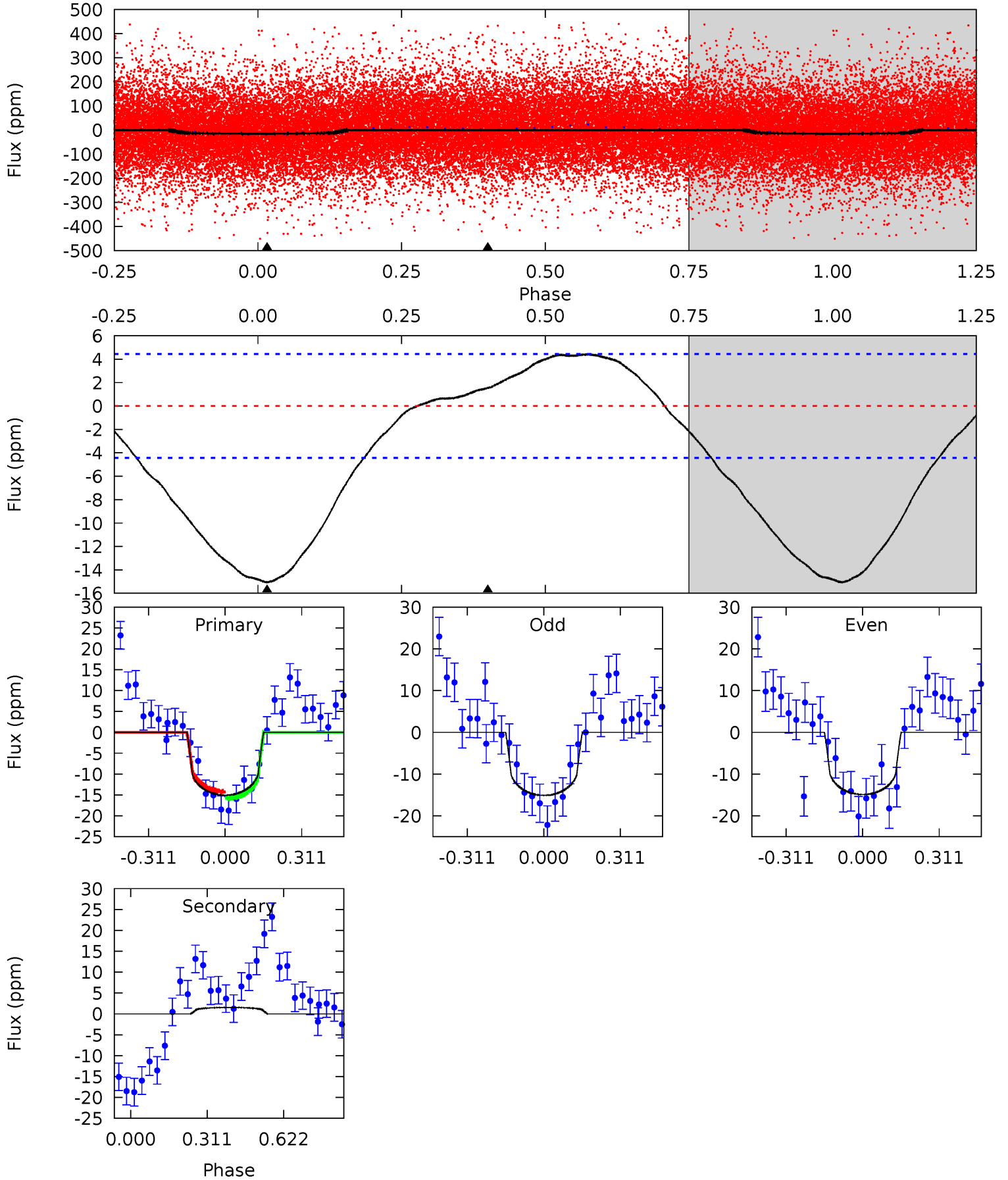
TCE 007842621-02 P= 0.899565 Days $T_0=131.707704$ (BKJD)



DV Model-Shift Uniqueness Test

007842621-02, P = 0.899501 Days, E = 130.871146 Days

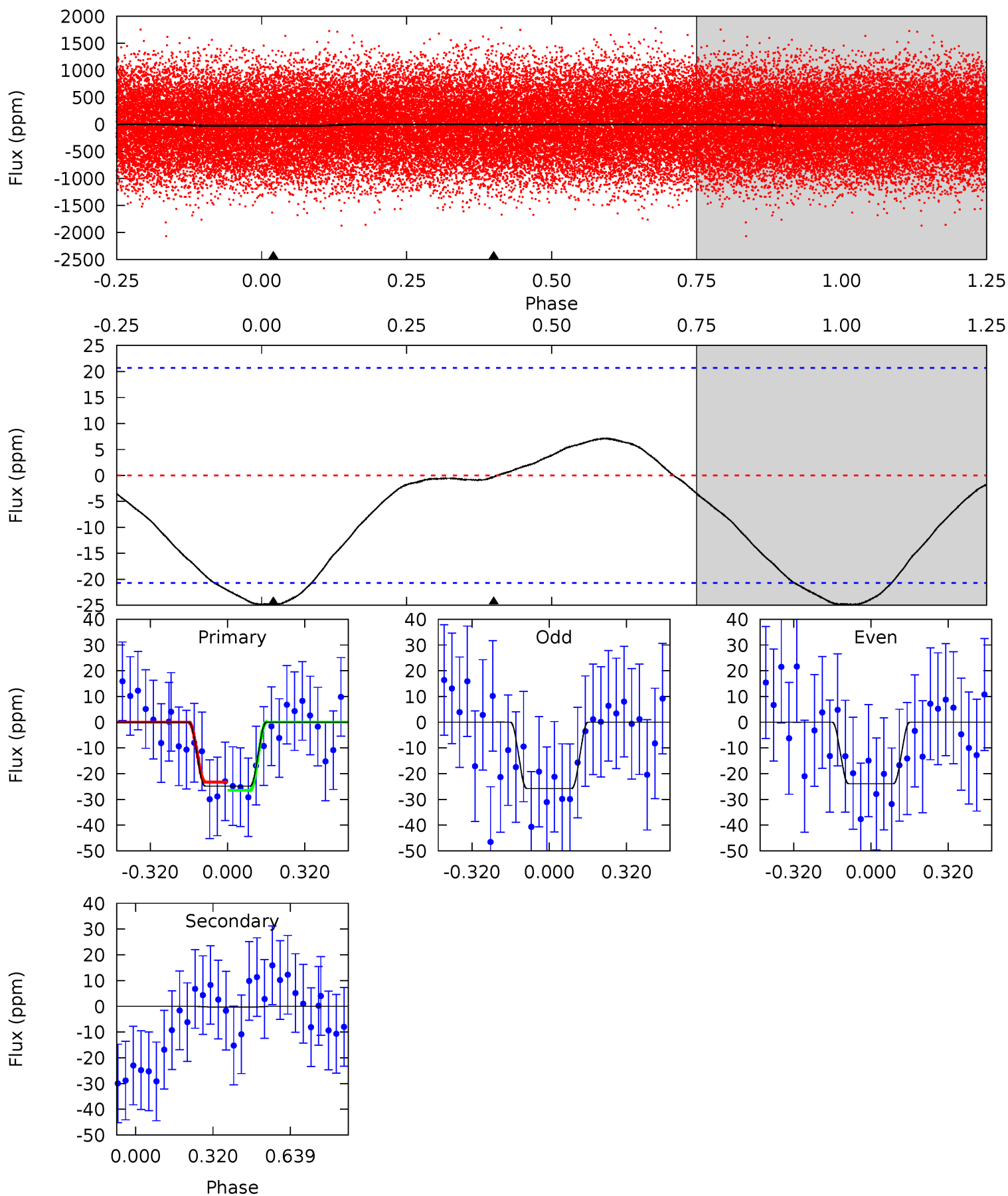
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.7	-1.51	0	0	4.32	1.01	1.56	14.7	14.7	-1.51	-1.51	0.10	1.04	0.23	0.74



Alt Model-Shift Uniqueness Test

007842621-02, P = 0.899565 Days, E = 130.808139 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.18	0.06	0	0	4.31	1.00	0.56	5.18	5.18	0.06	0.06	0.19	1.26	0.22	0.33



Stellar Parameters For KIC 007842621

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7841^{+217}_{-326}	$3.652^{+0.476}_{-0.084}$	$-0.160^{+0.200}_{-0.300}$	$3.517^{+0.734}_{-1.712}$	$2.025^{+0.343}_{-0.514}$	$0.066^{+0.329}_{-0.022}$
	+3%/-4%	+13%/-2%	+125%/-188%	+21%/-49%	+17%/-25%	+501%/-34%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007842621-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	2 ± 1	$1.29^{+0.98}_{-0.82}$	5705^{+410}_{-752}	-5295^{+557}_{-1868}	$-0.245^{+0.199}_{-1.409}$
Alt.	-0 ± 5	$1.80^{+1.23}_{-0.94}$	5720^{+434}_{-778}	-4621^{+9317}_{-1154}	$0.020^{+0.674}_{-0.524}$

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

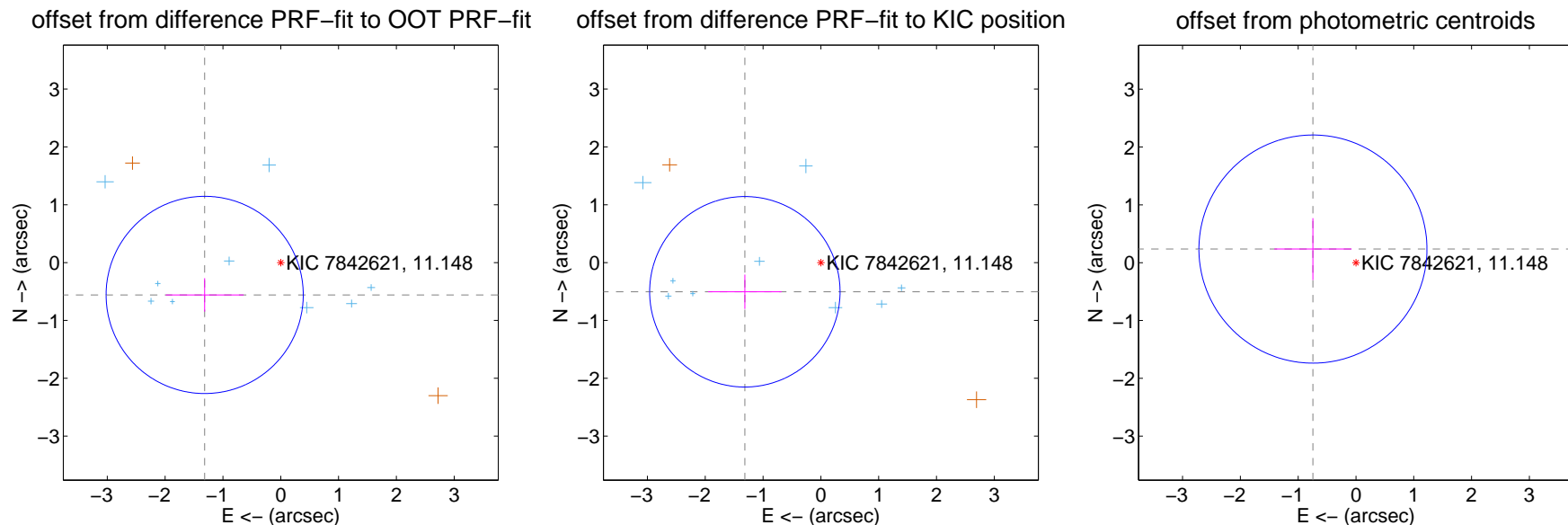
DV Centroid Data

Supplemental centroid analysis for 007842621-02. **Kepler magnitude: 11.15.** Transit SNR 12.10

There are 11 quarters with good PRF difference image offsets

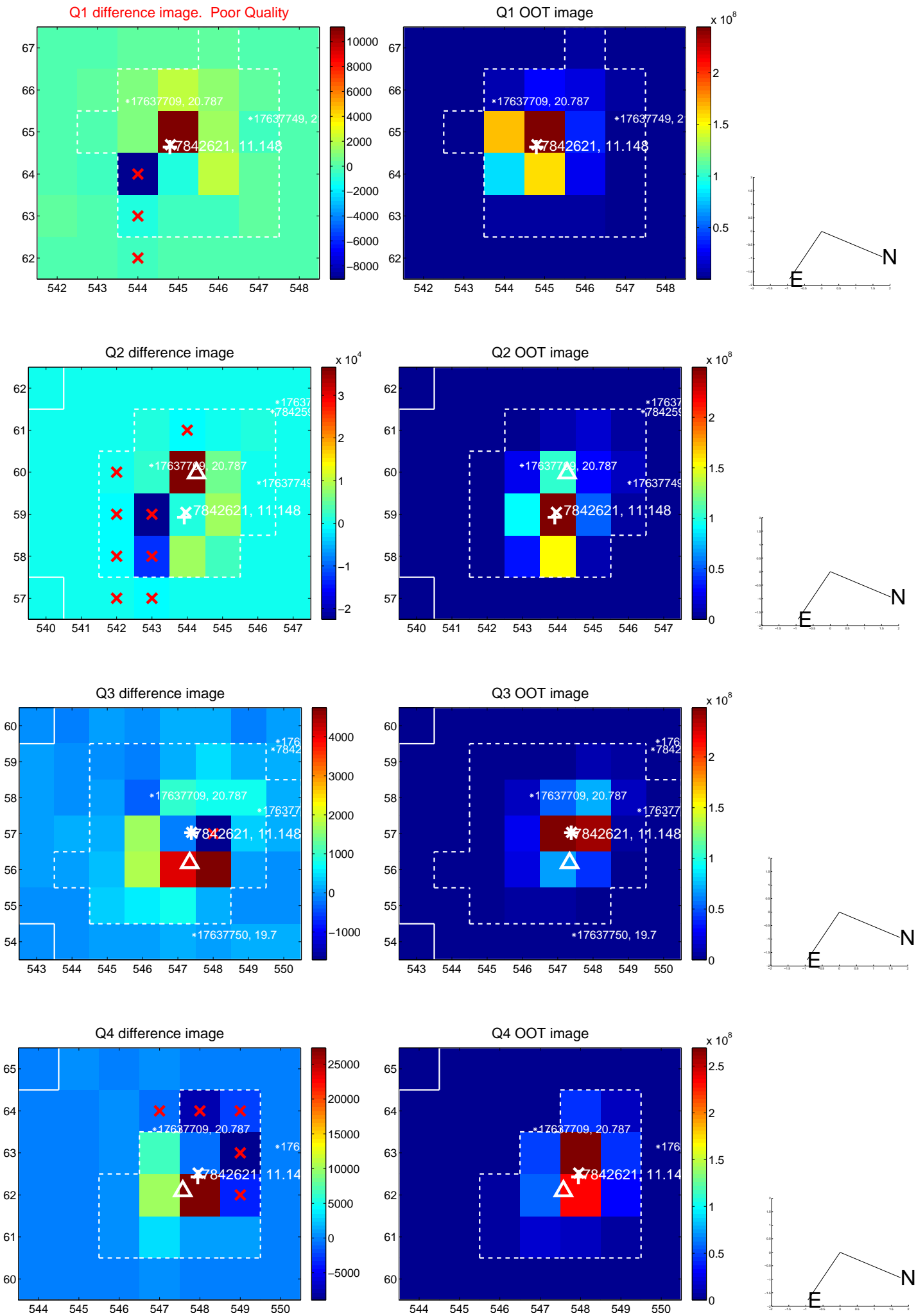
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.429 ± 0.568	2.52	1.316 ± 0.673	-0.559 ± 0.289
PRF-fit source offset from KIC position	1.408 ± 0.549	2.57	1.315 ± 0.636	-0.505 ± 0.297
photometric centroid source offset	0.78 ± 0.66	1.19	0.74 ± 0.67	0.24 ± 0.54

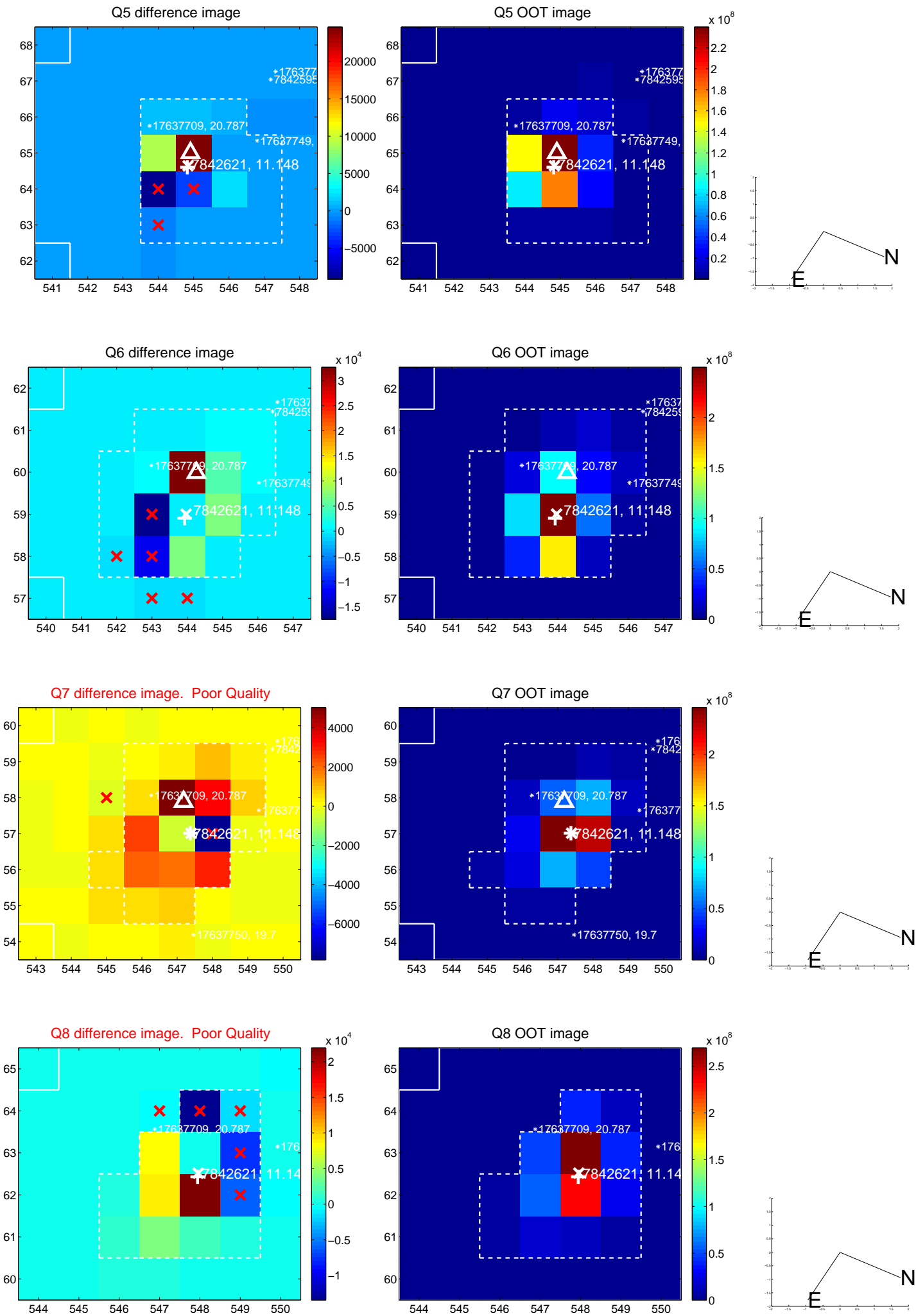


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

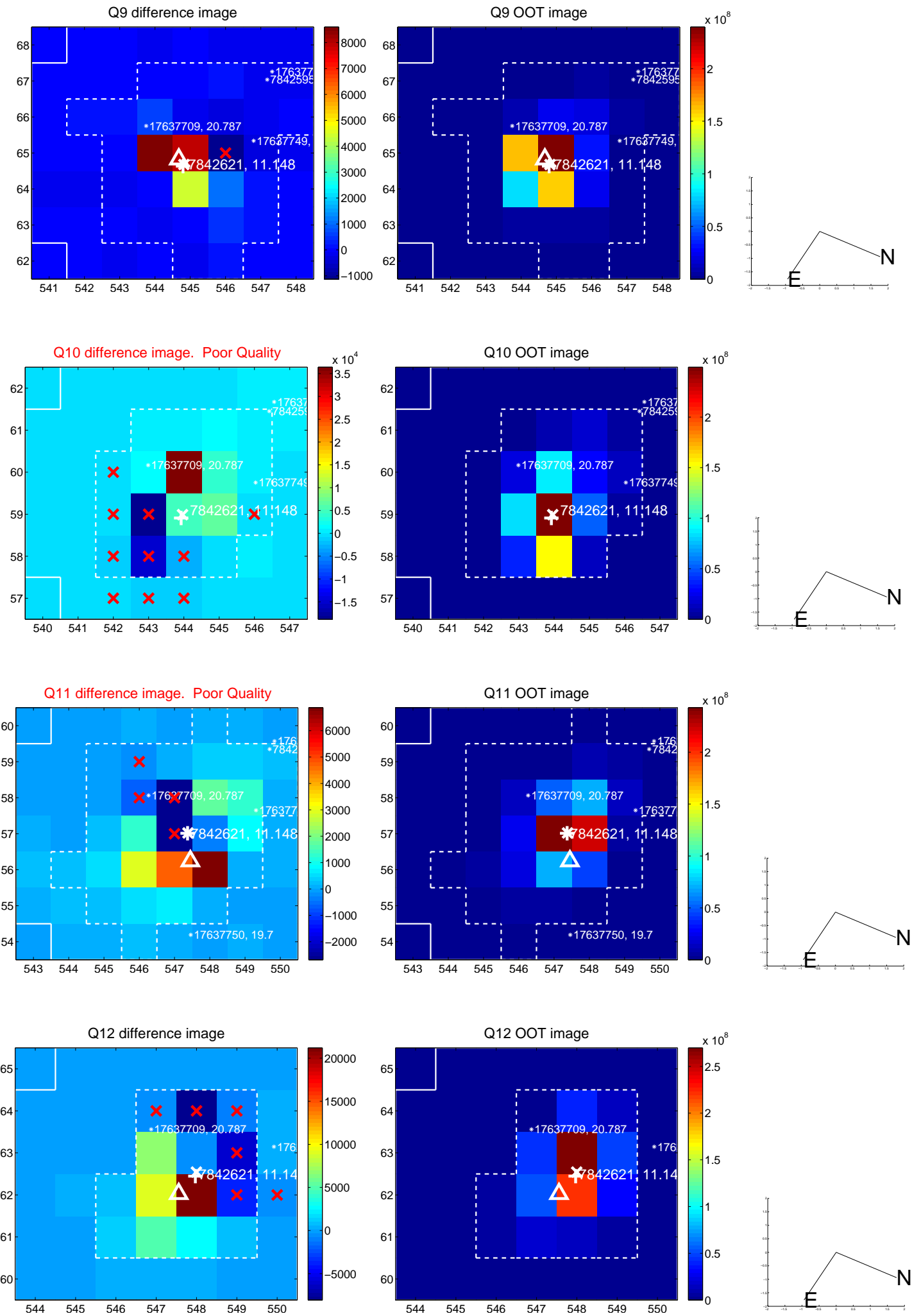
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



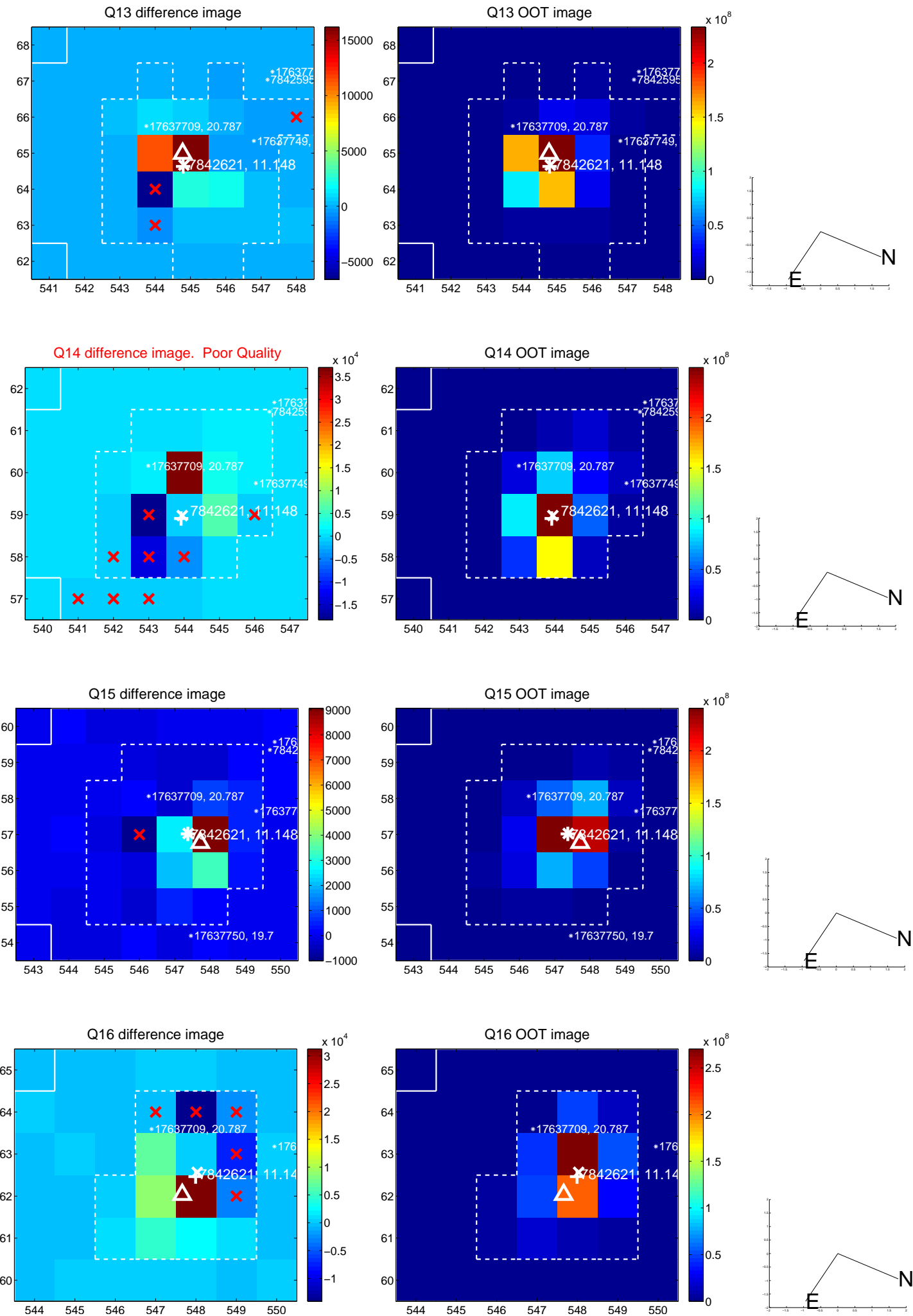
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



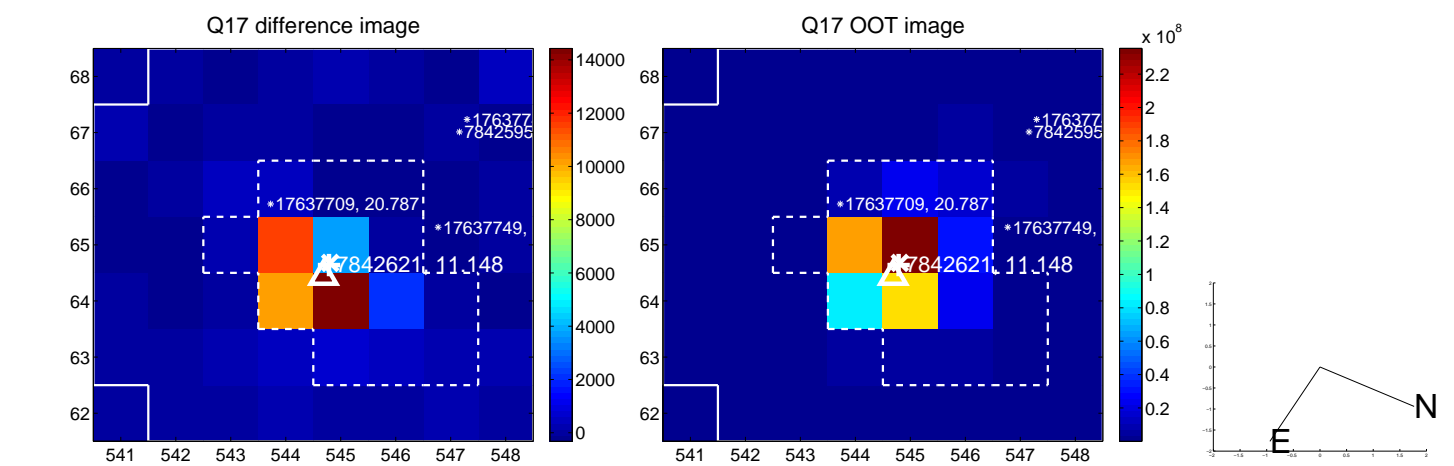
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



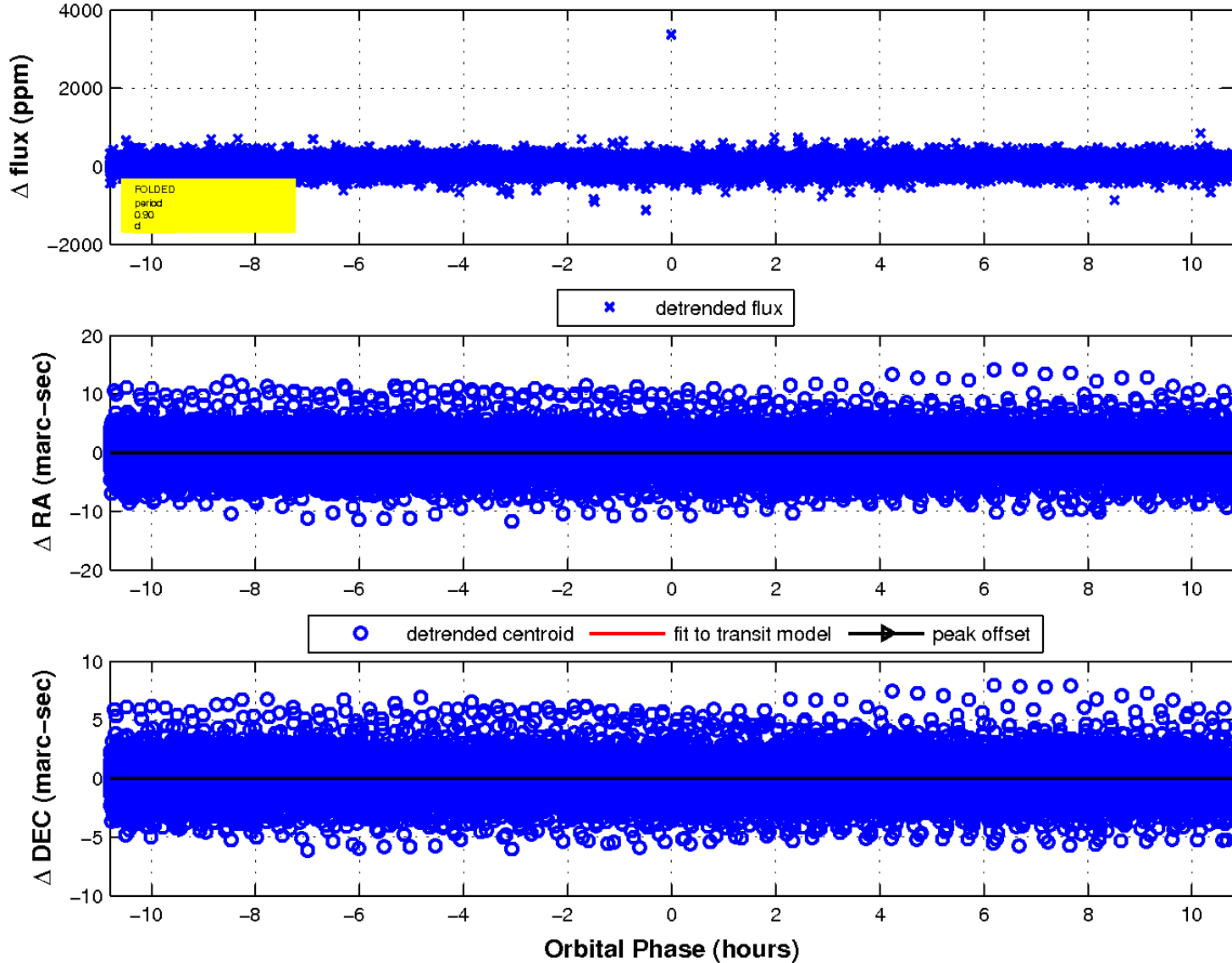
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

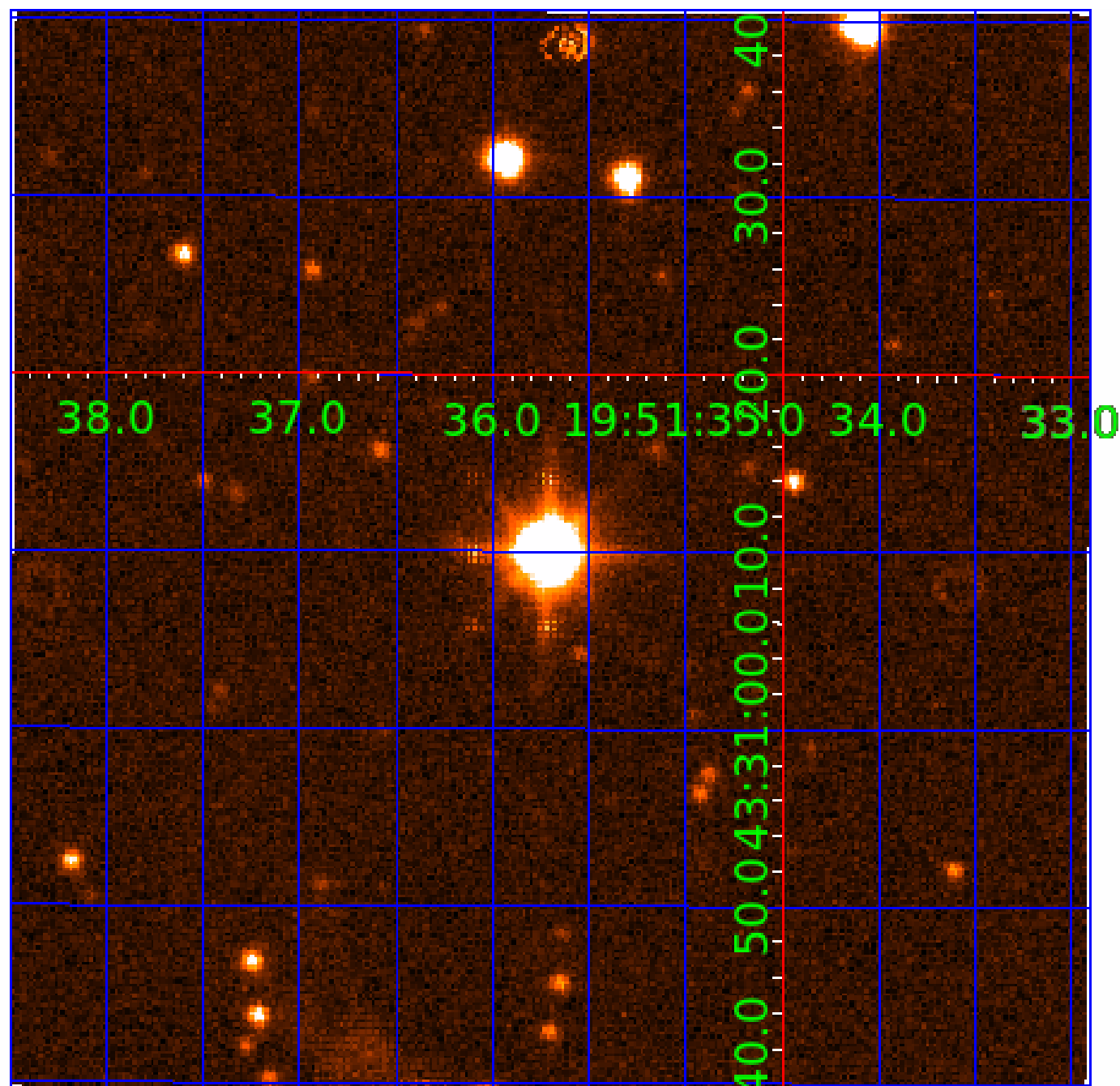


fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



KIC 007842621

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})
007842621-01	OBS	No	0.527856	132.032698	15.8	1.522	11.4	12.6	3.52	7841	1.58	0.00
007842621-02	OBS	No	0.899501	131.770647	14.9	6.285	10.0	12.1	3.52	7841	1.38	78673.04
007842621-03	OBS	No	84.844747	168.289414	174.9	2.405	9.1	10.3	3.52	7841	5.44	183.23
007842621-04	OBS	No	17.056349	146.514115	94.1	2.878	9.0	7.4	3.52	7841	4.18	1555.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007842621-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
007842621-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—CENT_SATURATED
007842621-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
007842621-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST

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

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

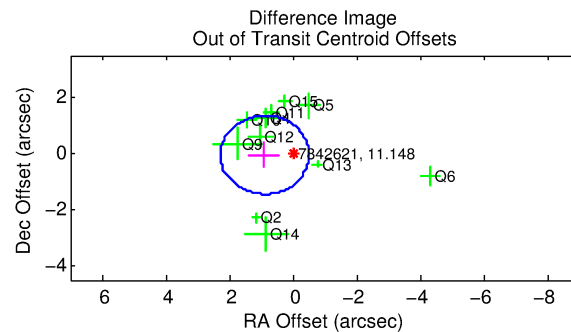
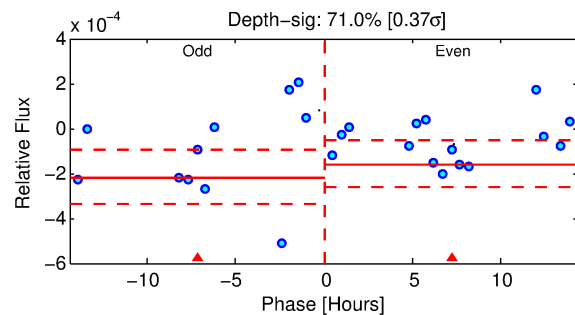
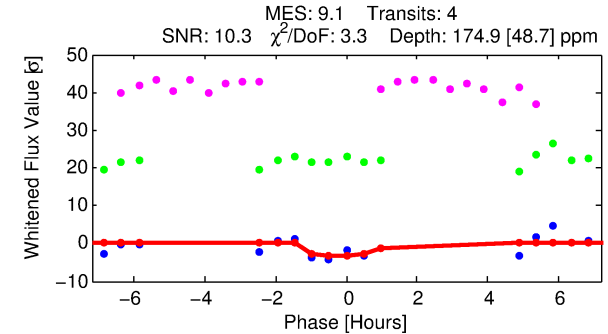
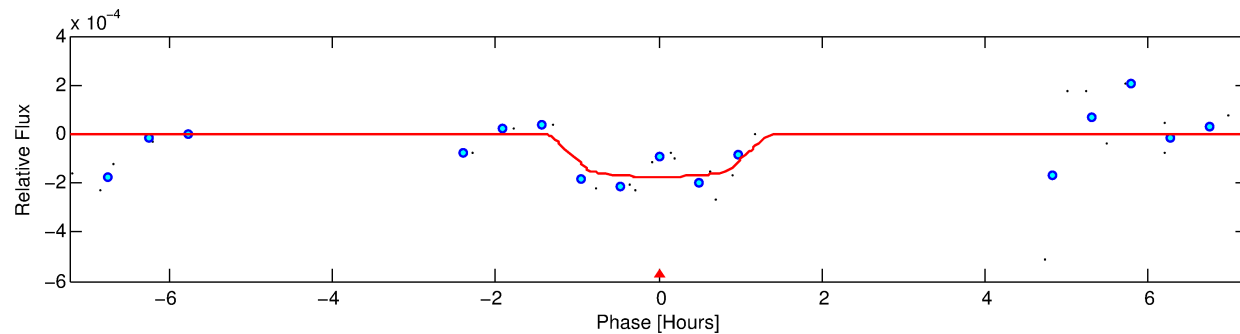
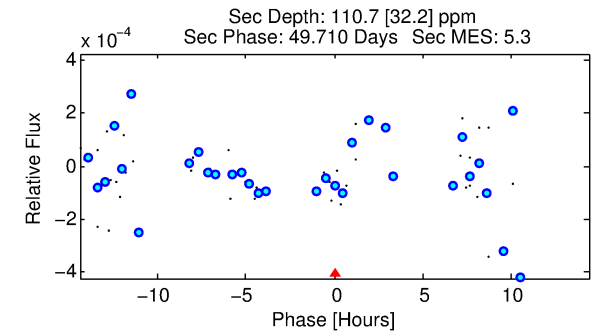
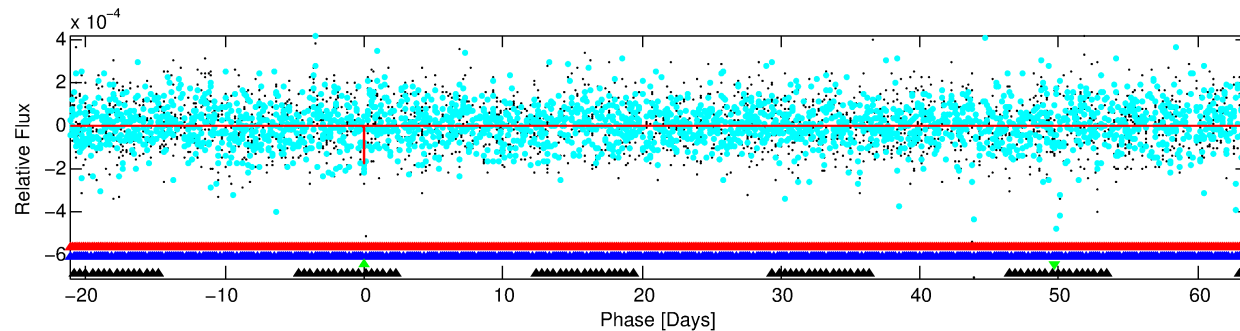
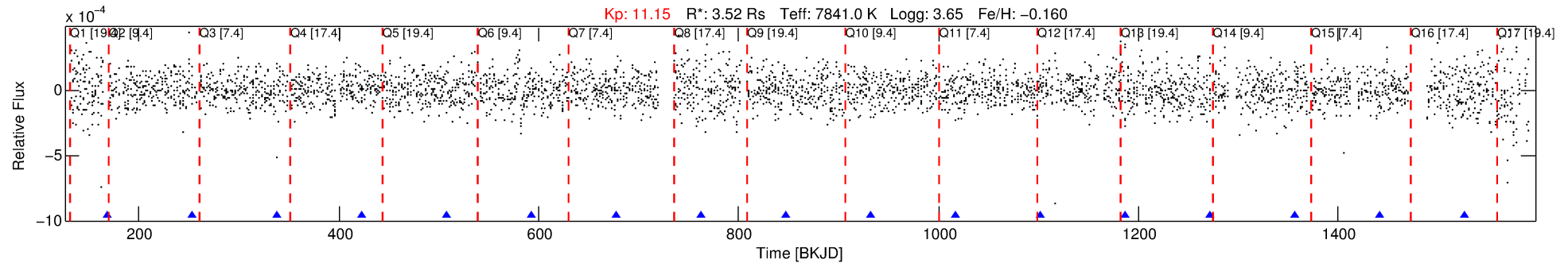
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007842621-03

No Significant Match Found

DV One-Page Summary

KIC: 7842621 Candidate: 3 of 4 Period: 84.845 d



DV Fit Results:

Period = 84.84475 [0.01058] d
Epoch = 168.2894 [0.1038] BKJD
Rp/R* = 0.0142 [0.0568]
a/R* = 124.66 [2996.94]
b = 0.90 [5.13]
Seff = 183.23 [149.63]
Teq = 938 [192] K
Rp = 5.44 [21.97] Re
a = 0.4781 [0.2337] AU
Ag = 470.78 [3796.12] [0.12 σ]
Teffp = 6756 [13556] K [0.43 σ]

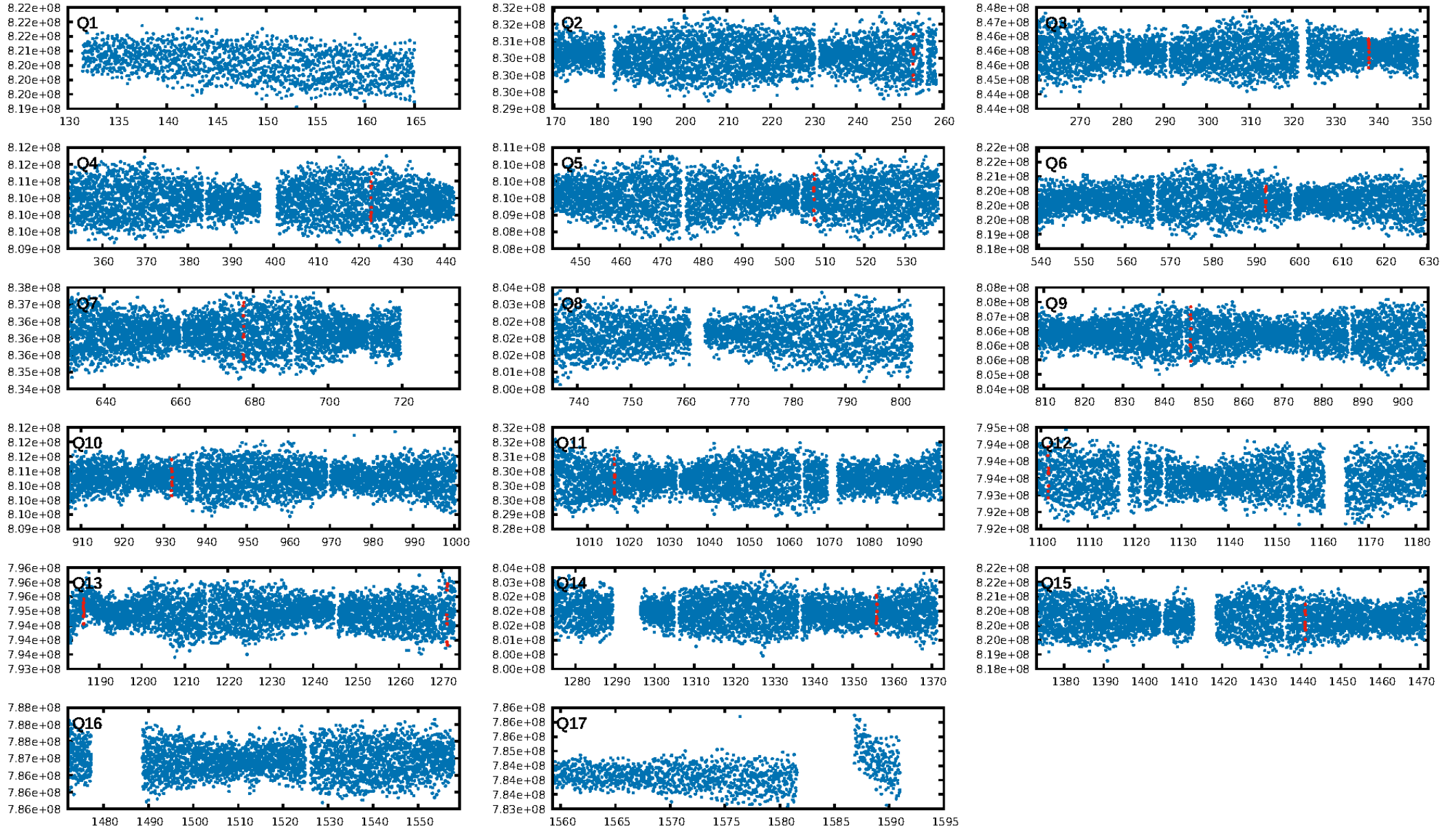
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [433.82 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 58.9%
ModelChiSquareGof-sig: 99.0%
Bootstrap-pfa: 1.75e-08
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.04442
Centroid-sig: 70.3%
Centroid-so: 0.389 arcsec [0.51 σ]
OotOffset-rm: 0.888 arcsec [1.91 σ]
KicOffset-rm: 0.847 arcsec [1.91 σ]
OotOffset-st: 4/2/2/3 [11]
KicOffset-st: 4/2/2/3 [11]
DiffImageQuality-fgm: 0.45 [5/11]
DiffImageOverlap-fno: 0.00 [0/13]

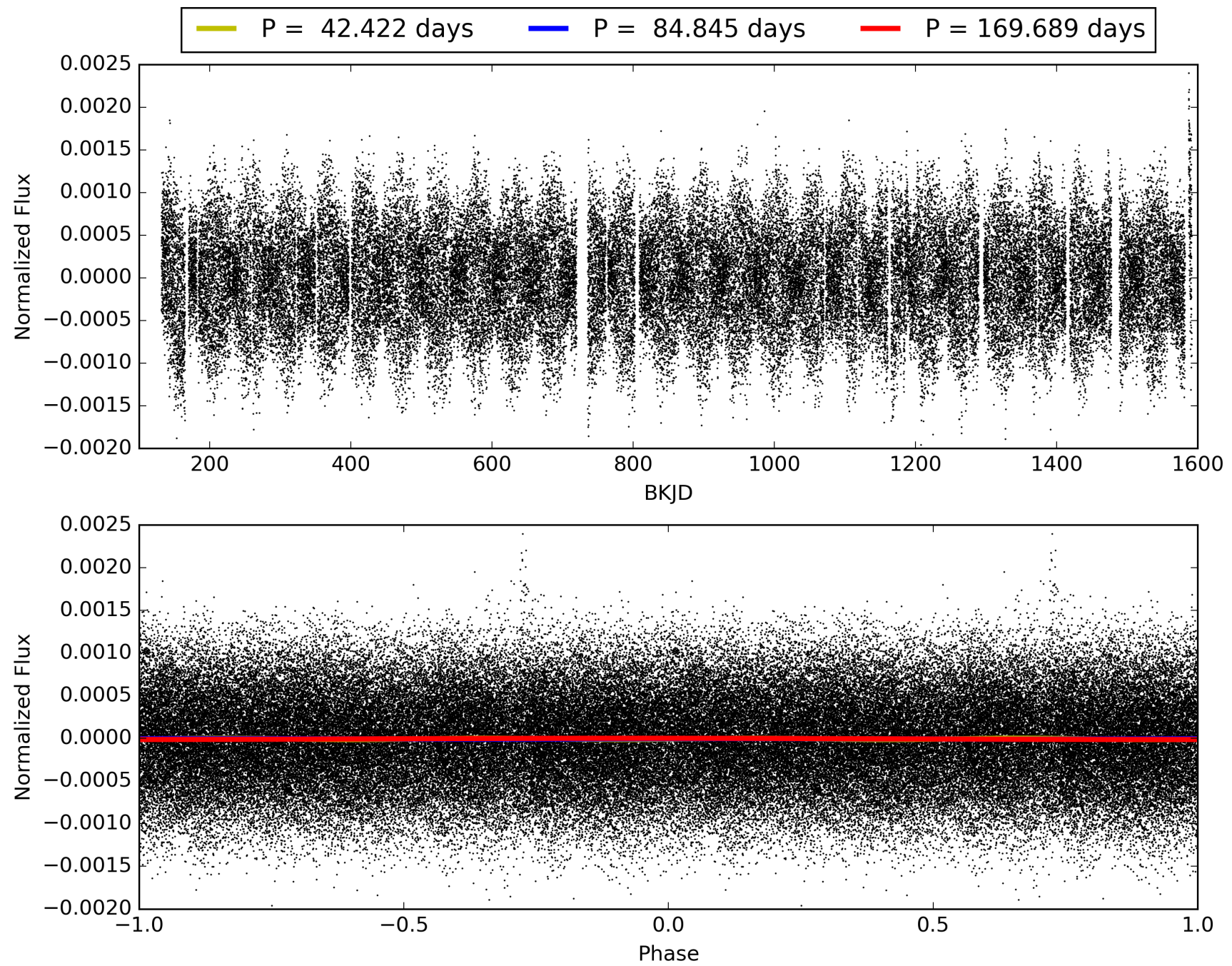
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:18:30 Z

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

TCE 007842621-03, PDC Light Curves

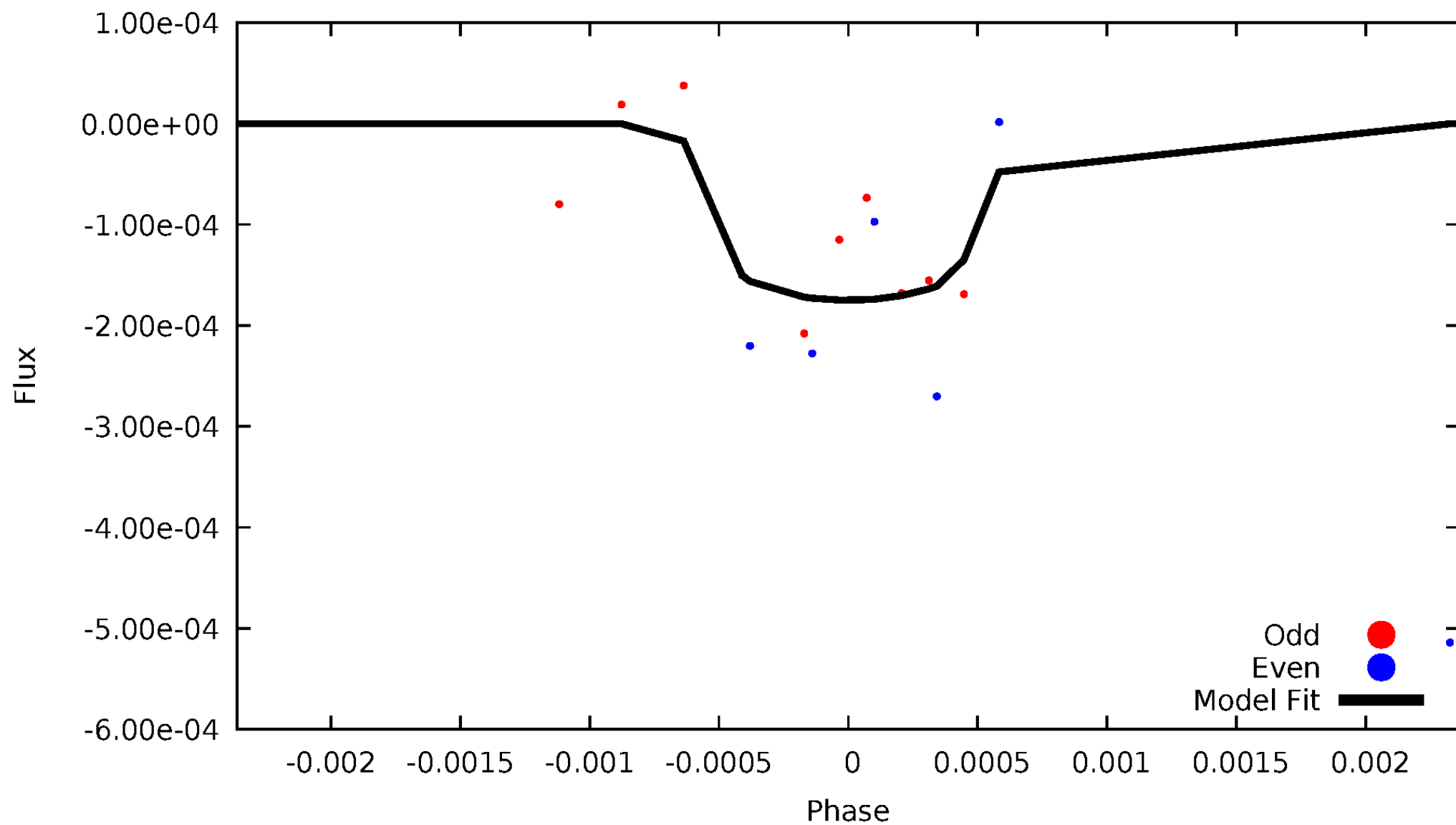


TCE 007842621-03



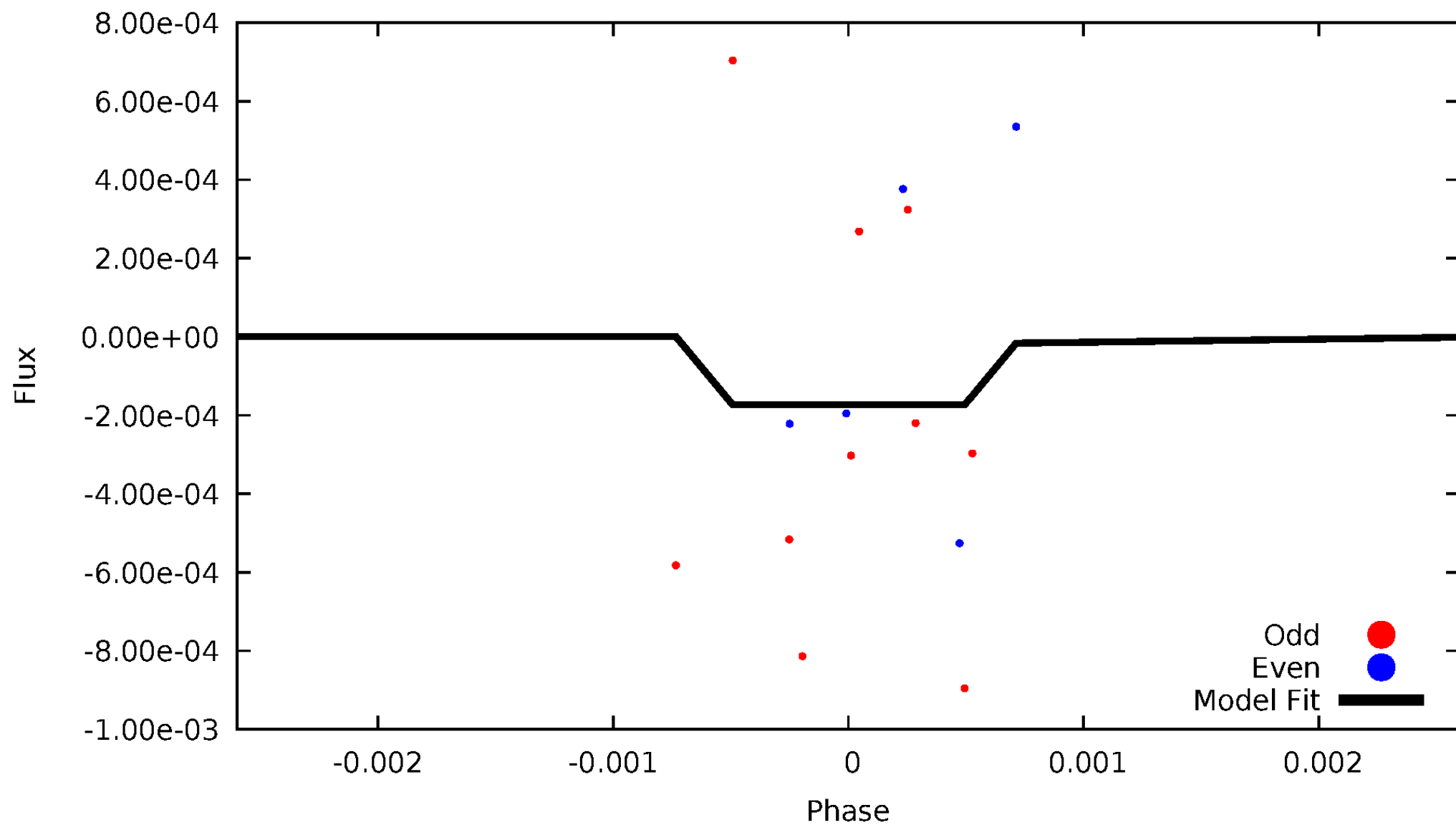
DV Odd/Even

TCE 007842621-03



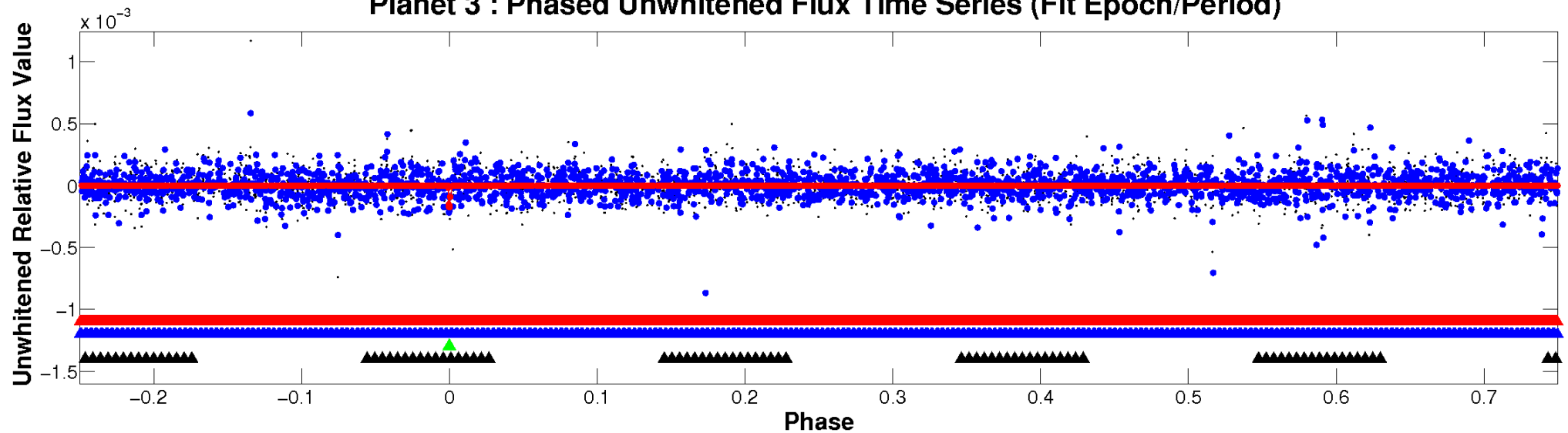
ALT Odd/Even

TCE 007842621-03

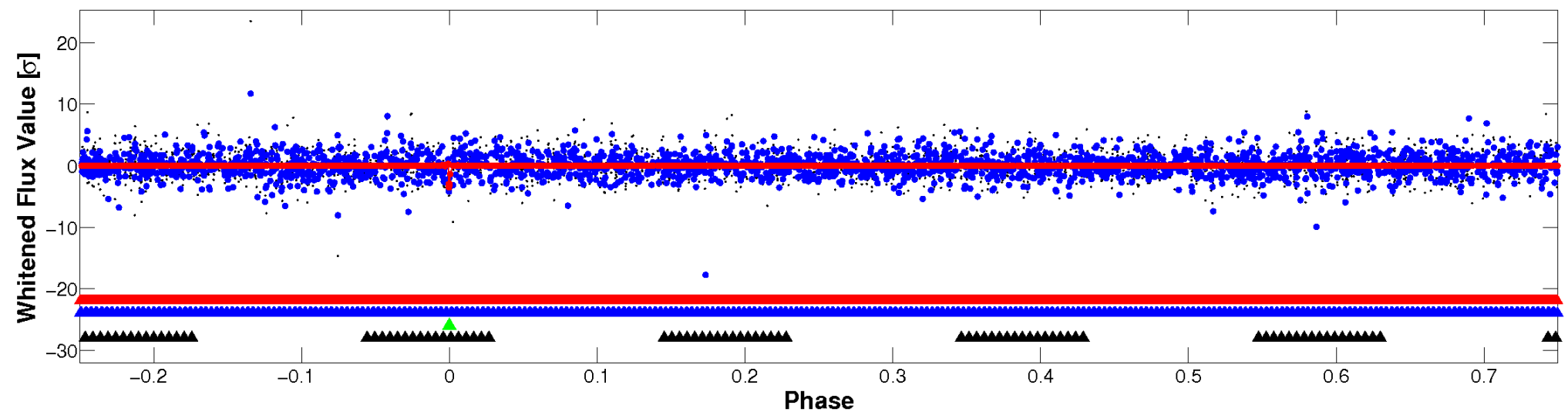


Non-Whitened Vs. Whitened Light Curve

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

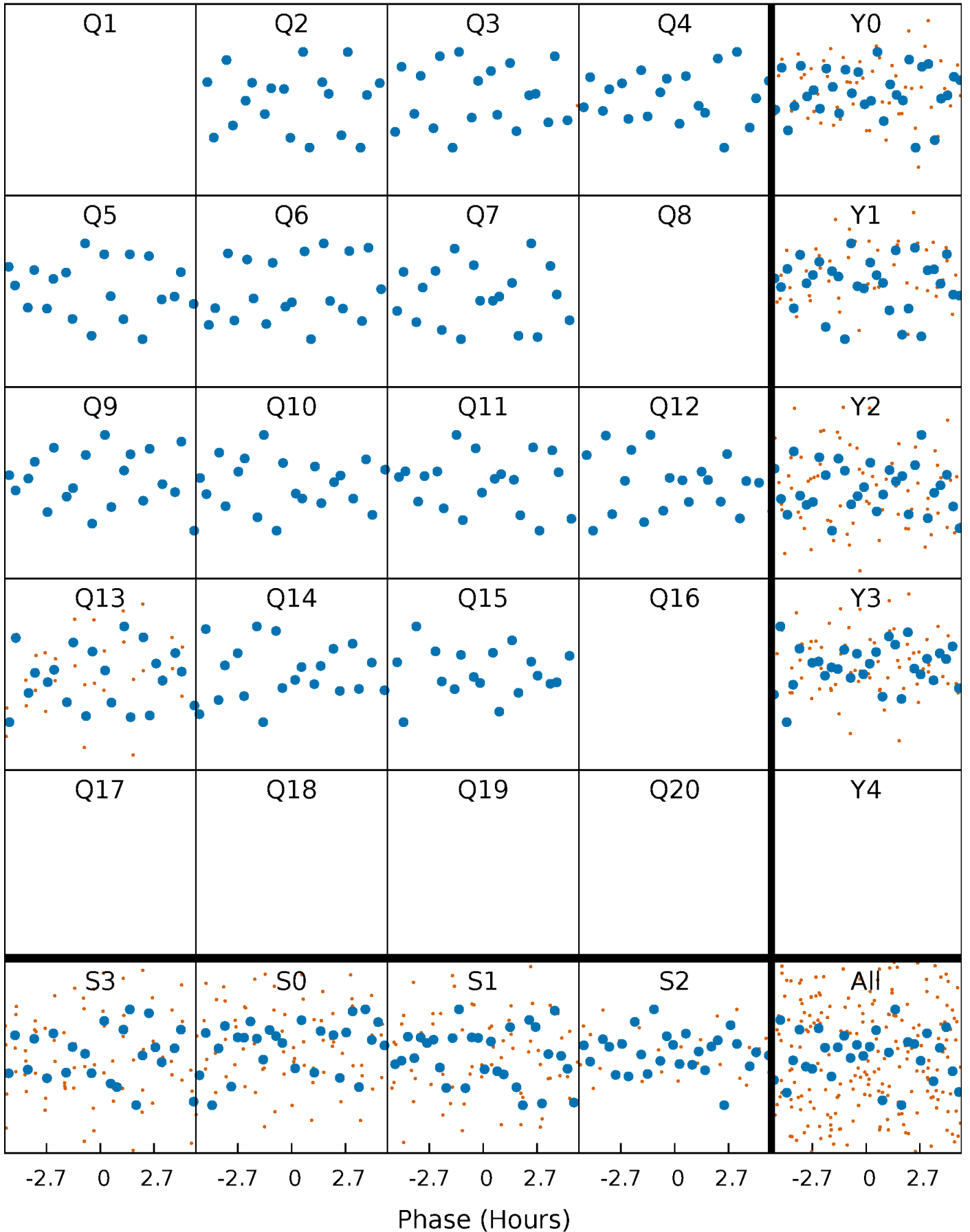


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



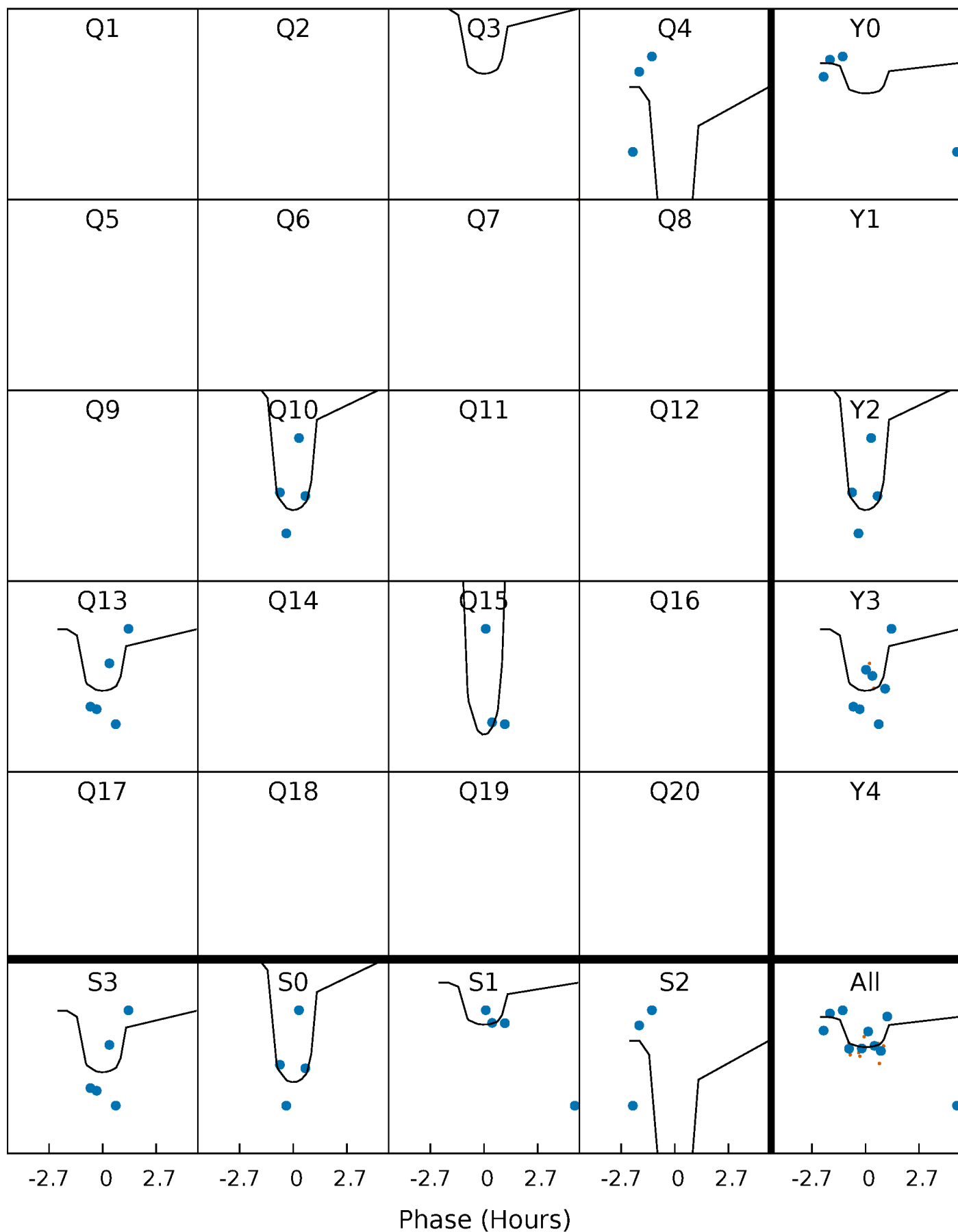
PDC Quarter-Phased Transit Curves

TCE 007842621-03 P= 84.844747 Days $T_0=168.289414$ (BKJD)



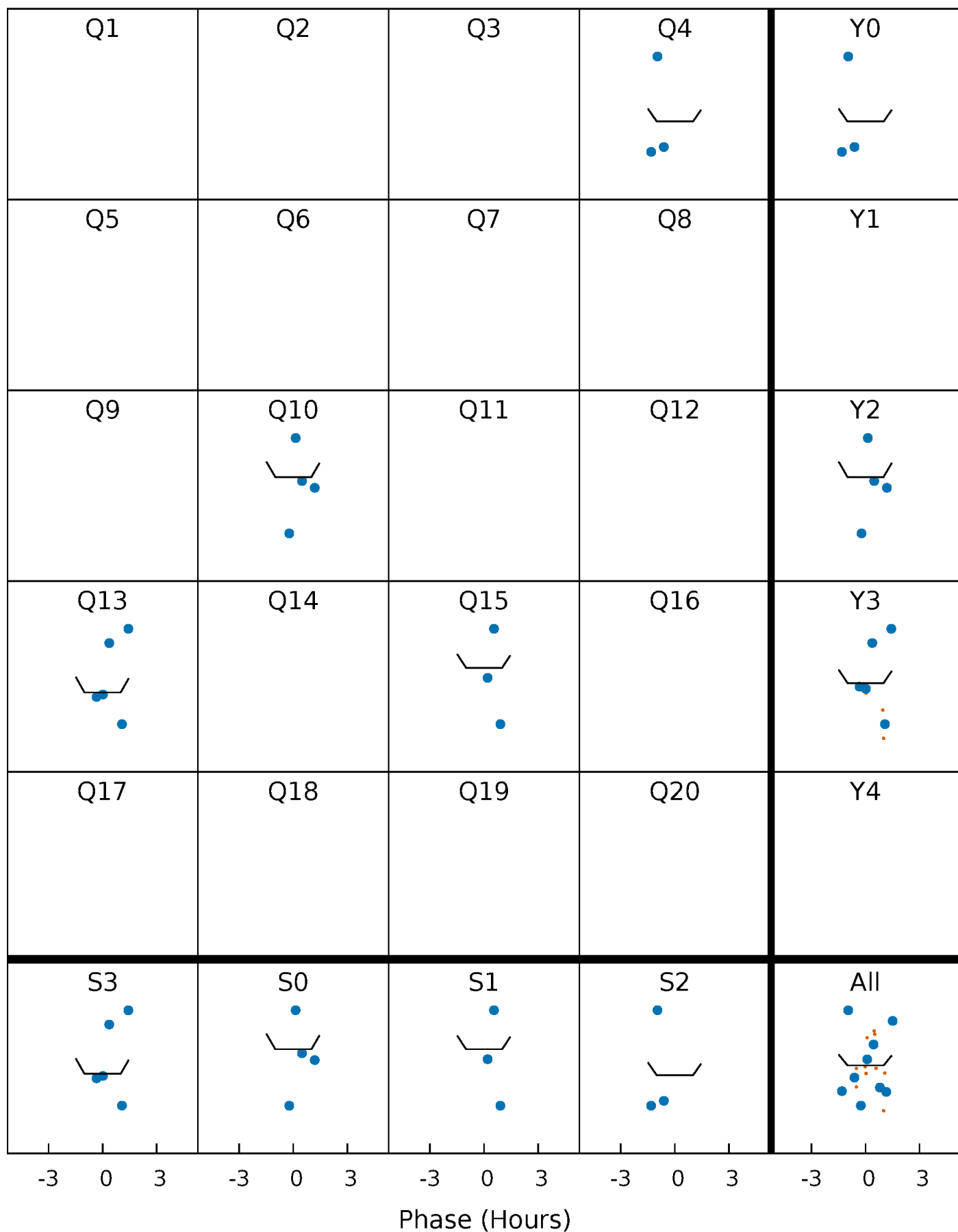
DV Quarter-Phased Transit Curves

TCE 007842621-03 $P = 84.844747$ Days $T_0 = 168.289414$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

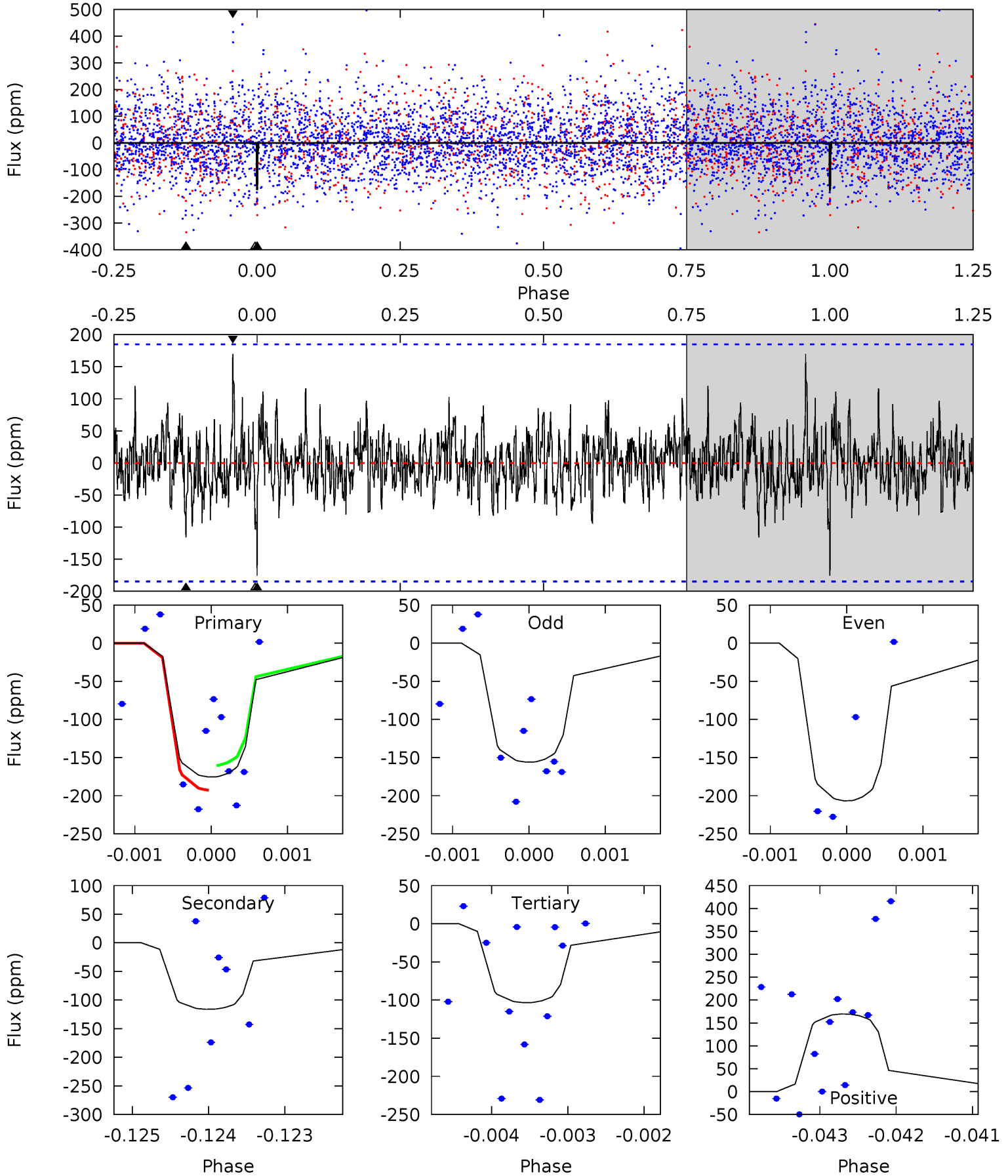
TCE 007842621-03 P= 84.847139 Days $T_0=168.249580$ (BKJD)



DV Model-Shift Uniqueness Test

007842621-03, P = 84.844747 Days, E = 83.444667 Days

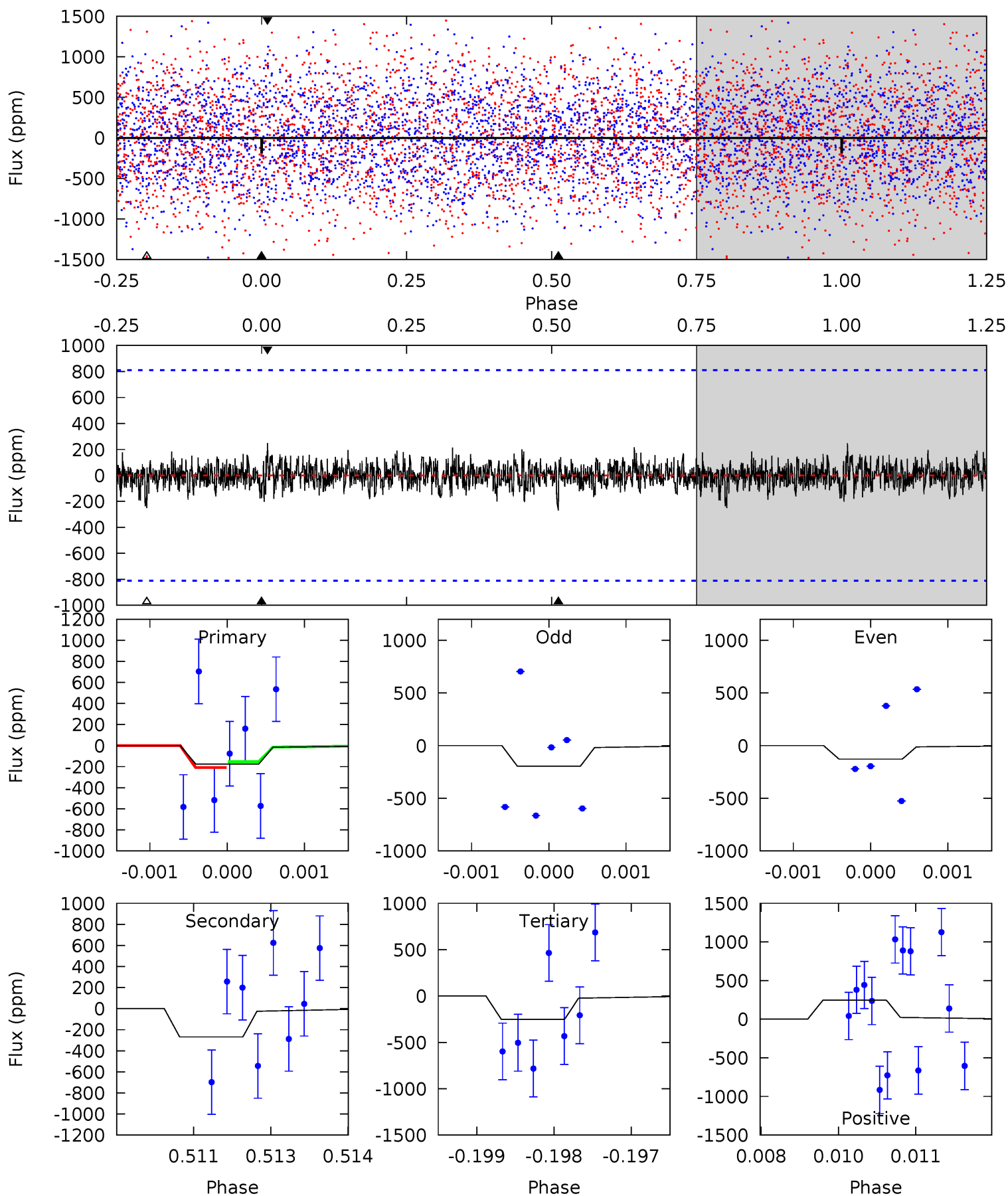
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.18	3.43	3.05	5.01	5.45	3.29	1.05	2.13	0.17	0.38	-1.58	0.79	1.08	0.49	0.47



Alt Model-Shift Uniqueness Test

007842621-03, P = 84.847139 Days, E = 83.402441 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.17	1.79	1.69	1.65	5.42	3.24	0.42	-0.52	-0.49	0.11	0.14	0.21	0.75	0.48	0.18



Stellar Parameters For KIC 007842621

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7841^{+217}_{-326}	$3.652^{+0.476}_{-0.084}$	$-0.160^{+0.200}_{-0.300}$	$3.517^{+0.734}_{-1.712}$	$2.025^{+0.343}_{-0.514}$	$0.066^{+0.329}_{-0.022}$
	+3%/-4%	+13%/-2%	+125%/-188%	+21%/-49%	+17%/-25%	+501%/-34%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007842621-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-116 ± 34	$15.23^{+15.36}_{-10.72}$	1261^{+88}_{-163}	4050^{+2423}_{-885}	63^{+559}_{-49}
Alt.	-268 ± 150	$14.85^{+16.67}_{-10.43}$	1245^{+107}_{-158}	4682^{+3837}_{-1252}	137^{+1440}_{-115}

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

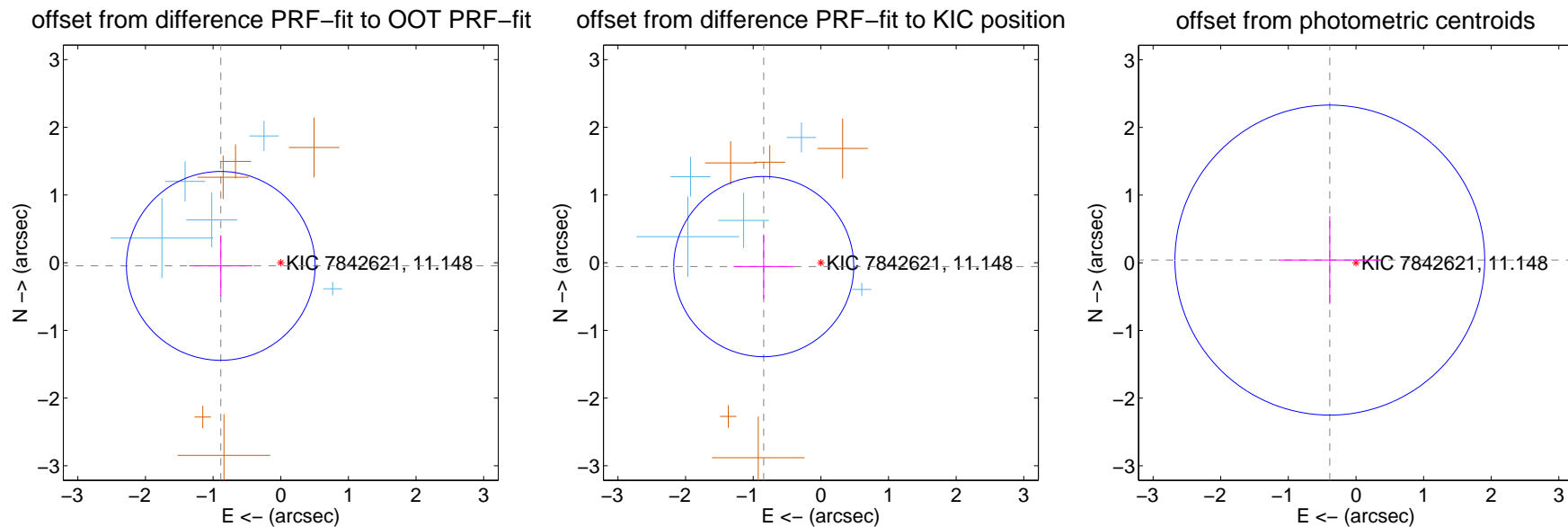
DV Centroid Data

Supplemental centroid analysis for 007842621-03. **Kepler magnitude: 11.15.** Transit SNR 10.27

There are 5 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.888 ± 0.465	1.91	0.887 ± 0.466	-0.047 ± 0.448
PRF-fit source offset from KIC position	0.847 ± 0.444	1.91	0.845 ± 0.445	-0.058 ± 0.477
photometric centroid source offset	0.39 ± 0.76	0.51	0.39 ± 0.76	0.04 ± 0.65



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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

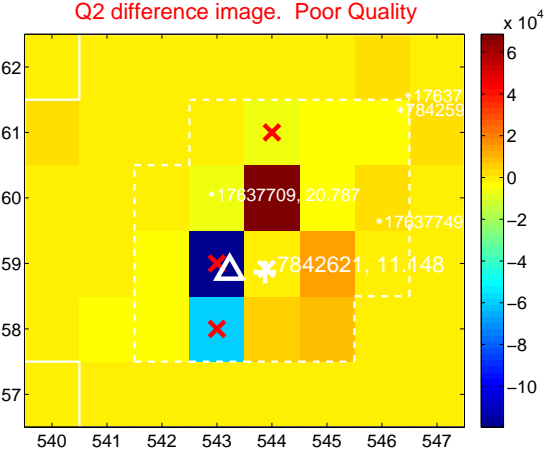
Q1 no difference image



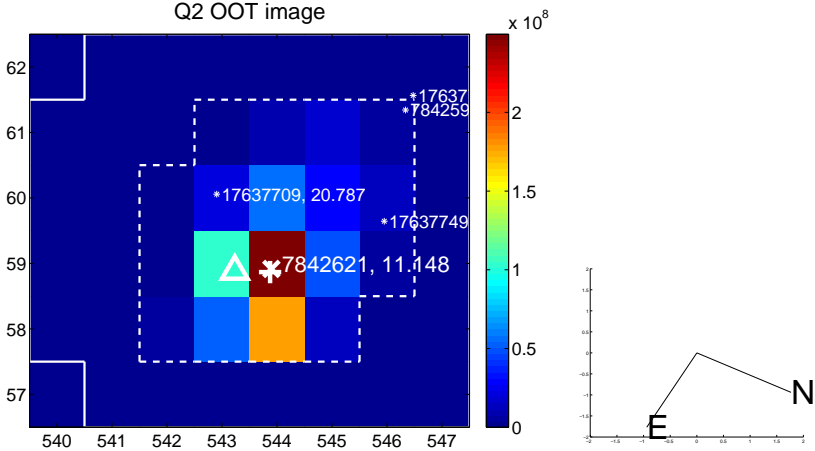
Q1 no OOT image



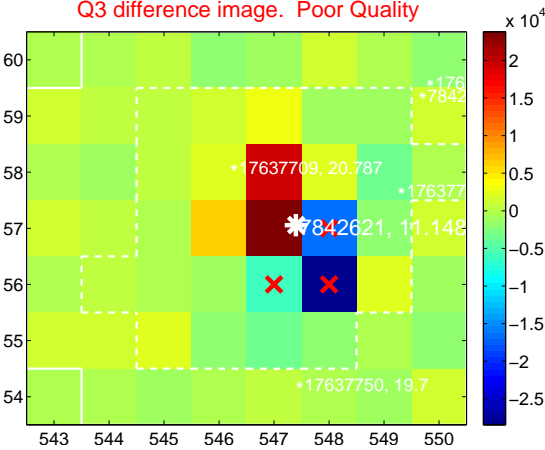
Q2 difference image. Poor Quality



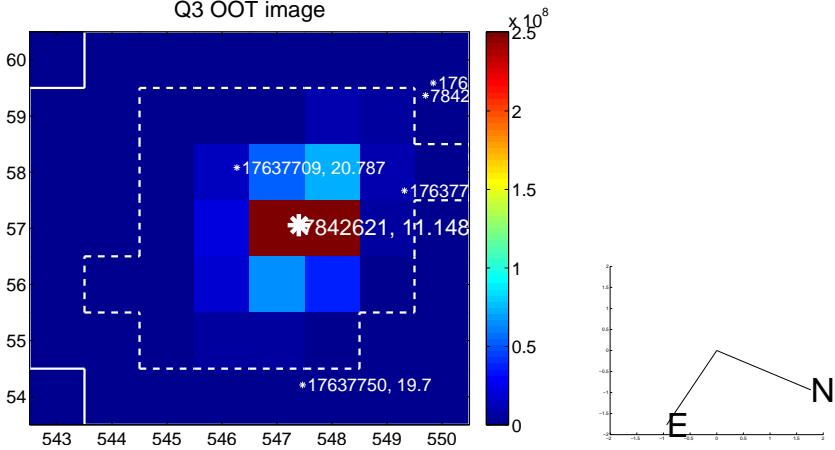
Q2 OOT image



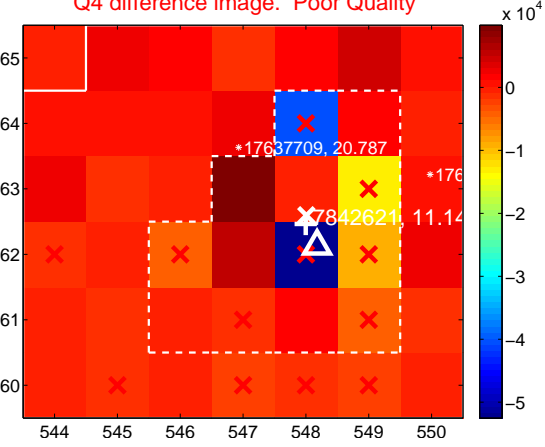
Q3 difference image. Poor Quality



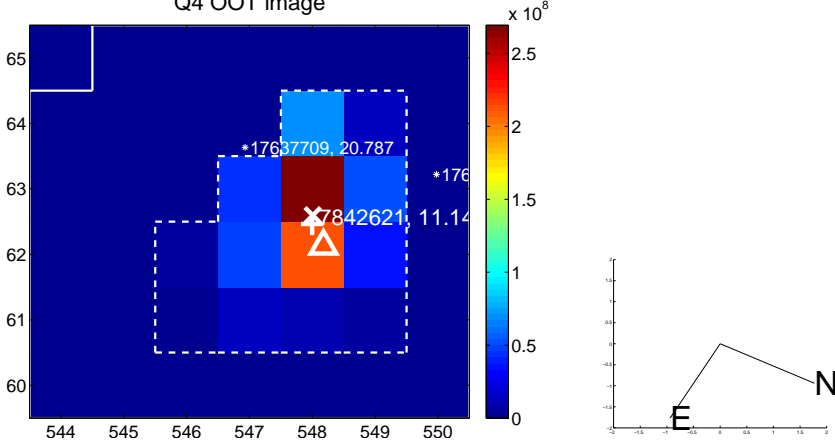
Q3 OOT image



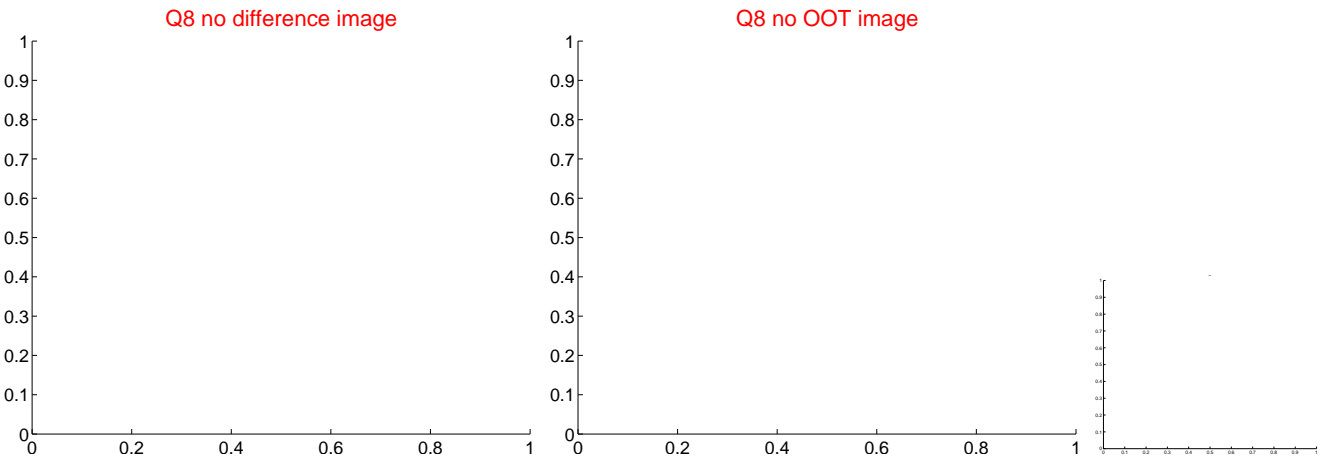
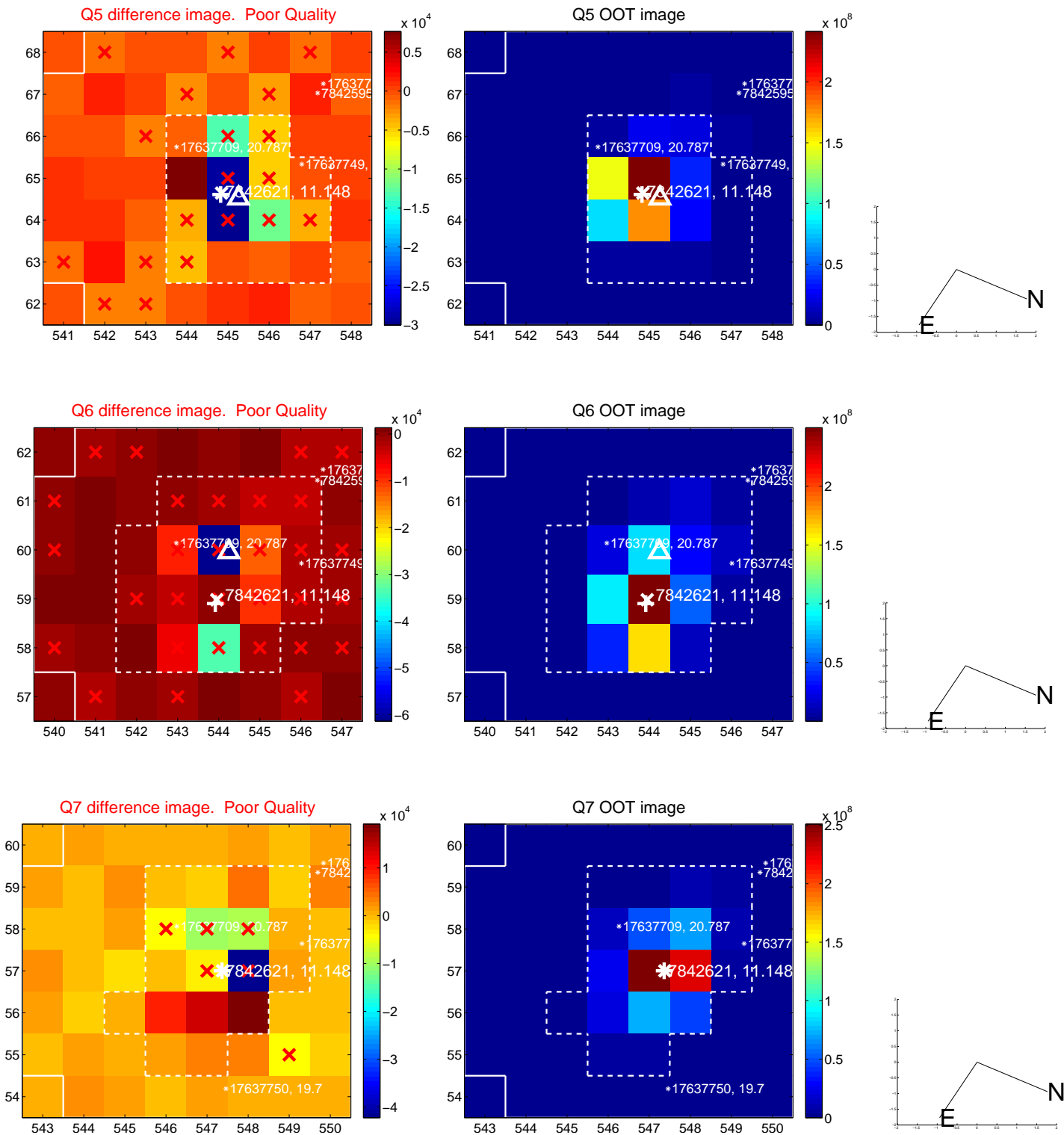
Q4 difference image. Poor Quality



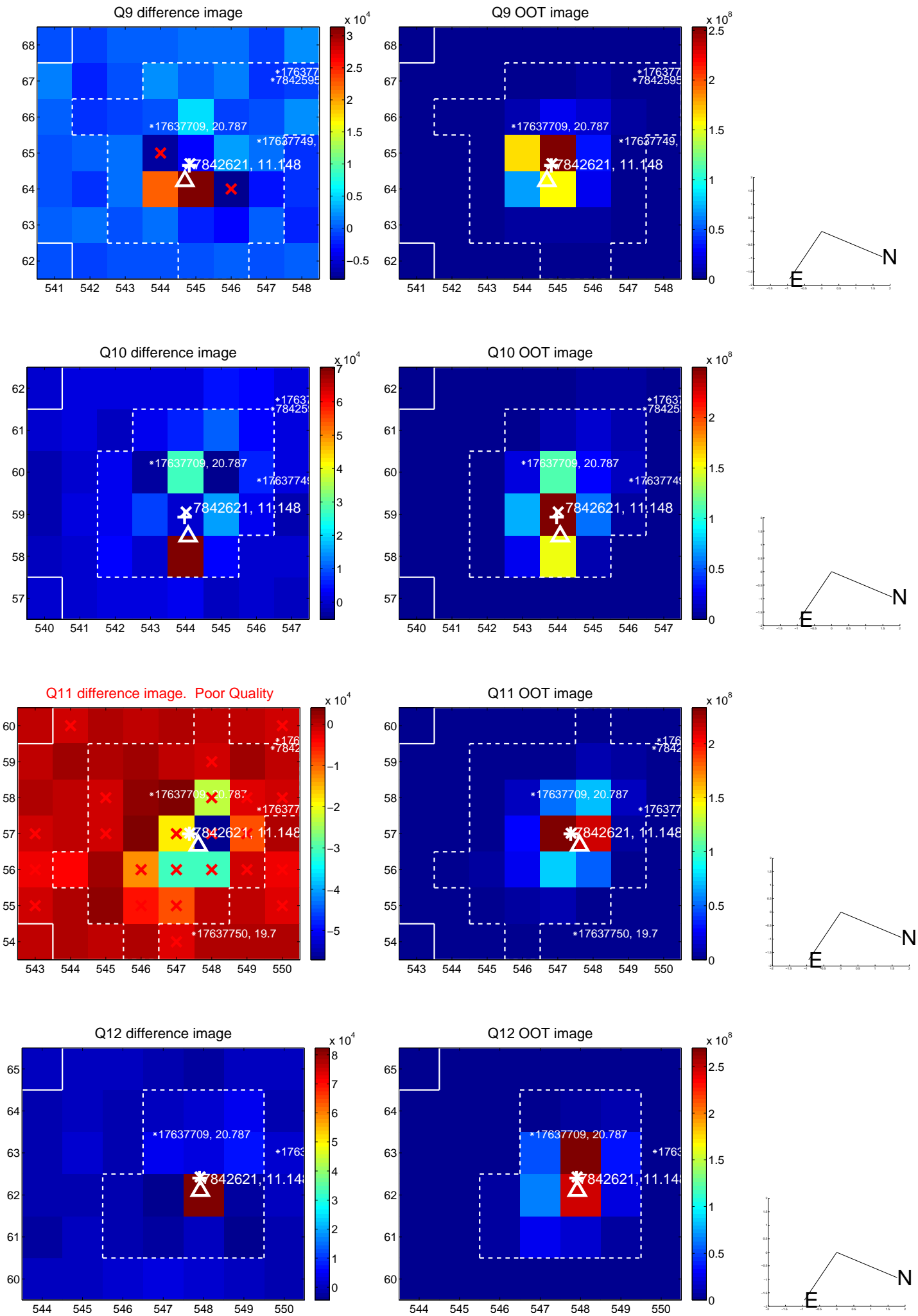
Q4 OOT image



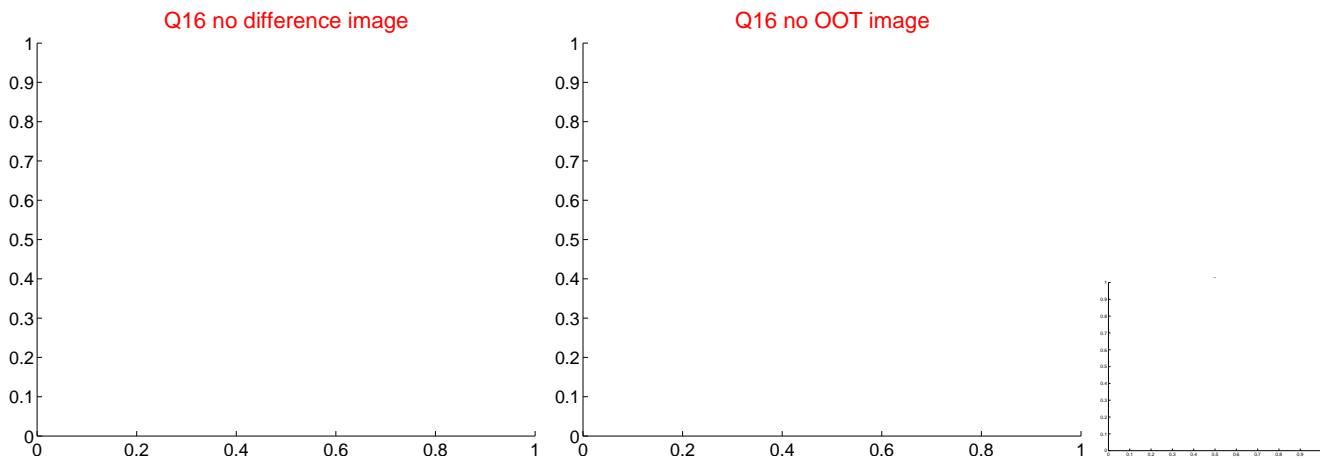
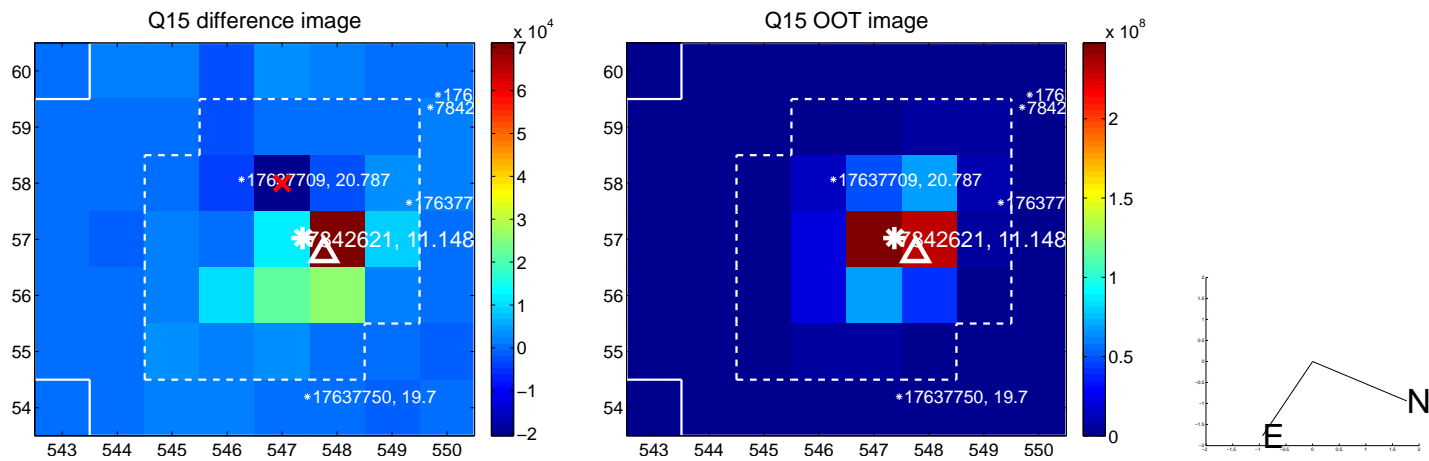
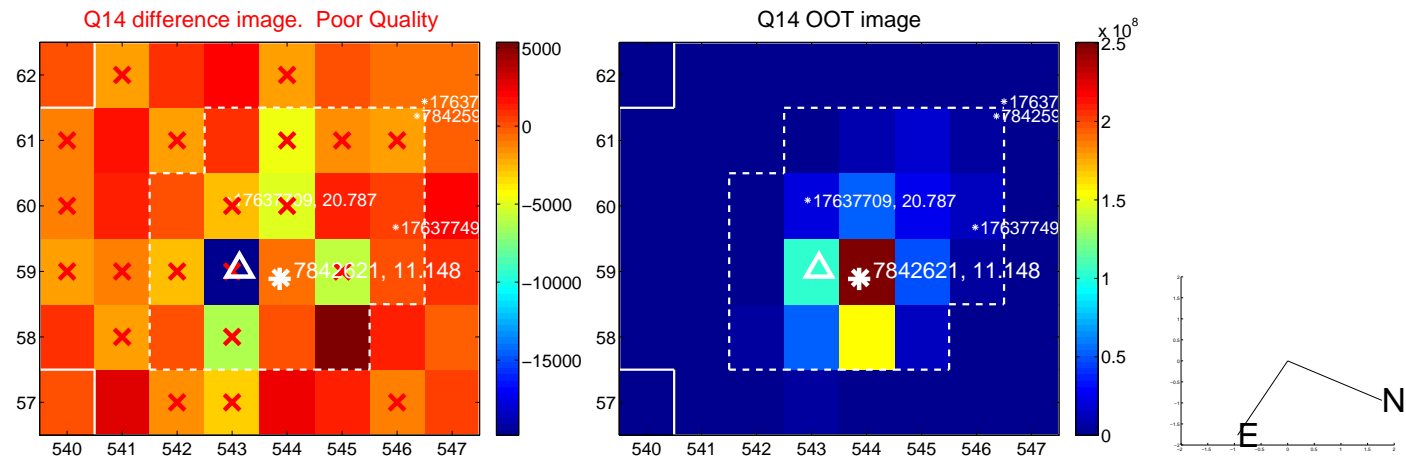
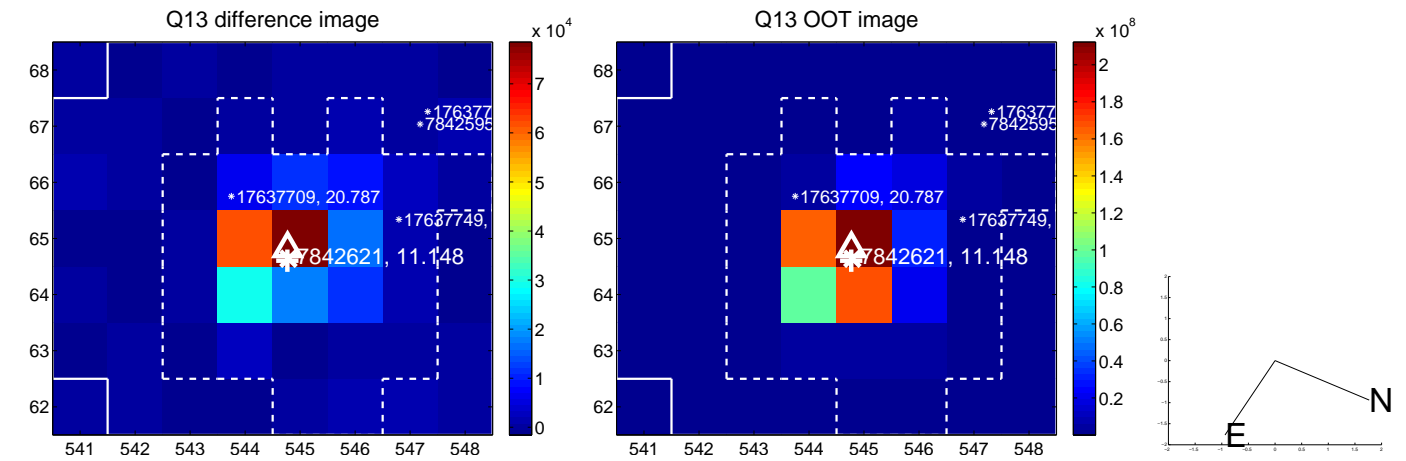
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



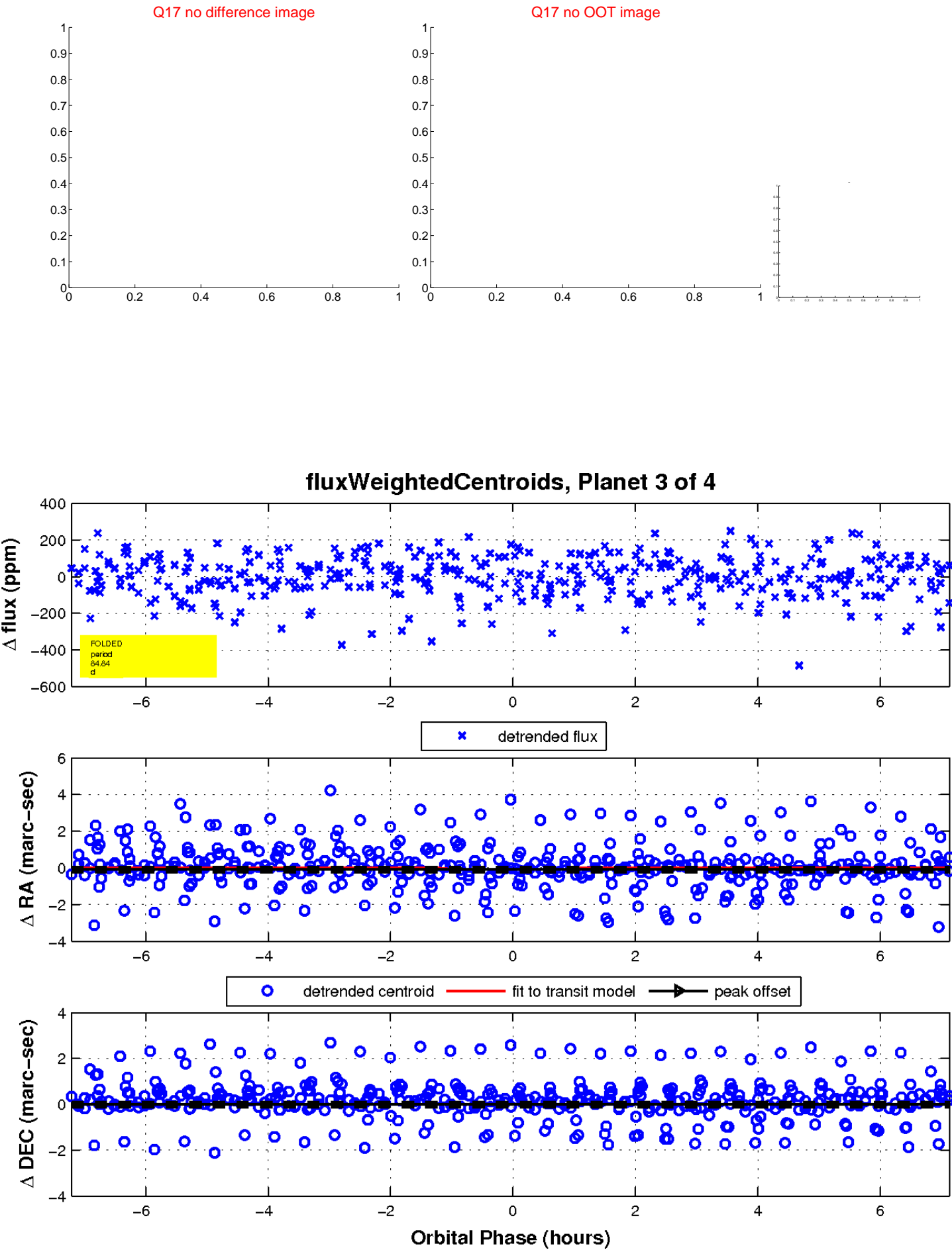
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

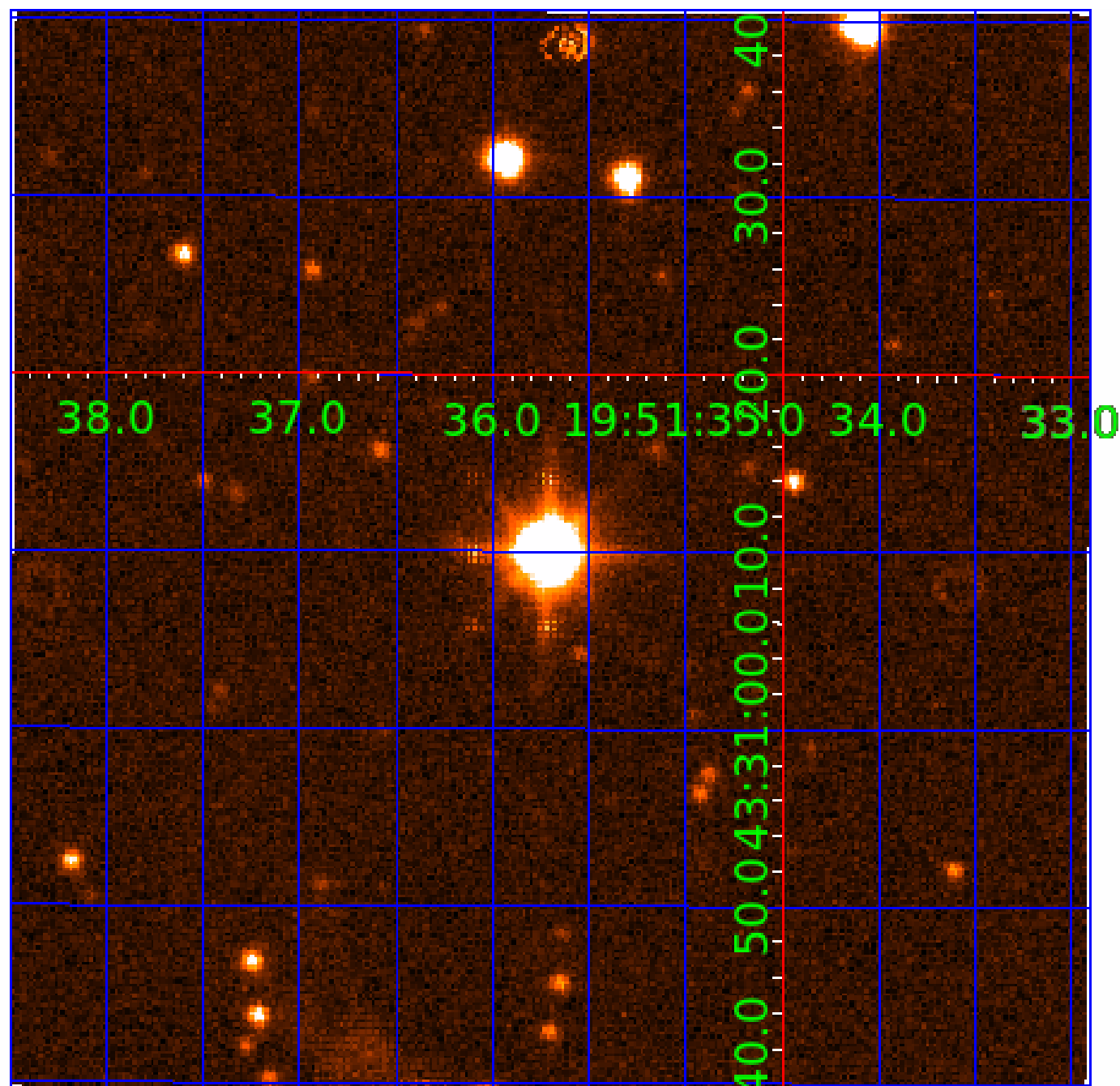


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007842621

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})
007842621-01	OBS	No	0.527856	132.032698	15.8	1.522	11.4	12.6	3.52	7841	1.58	0.00
007842621-02	OBS	No	0.899501	131.770647	14.9	6.285	10.0	12.1	3.52	7841	1.38	78673.04
007842621-03	OBS	No	84.844747	168.289414	174.9	2.405	9.1	10.3	3.52	7841	5.44	183.23
007842621-04	OBS	No	17.056349	146.514115	94.1	2.878	9.0	7.4	3.52	7841	4.18	1555.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007842621-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
007842621-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—CENT_SATURATED
007842621-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST
007842621-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST

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

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

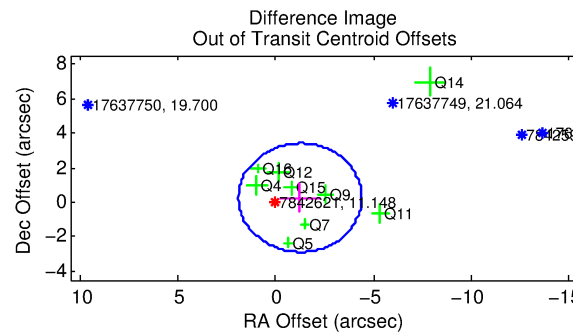
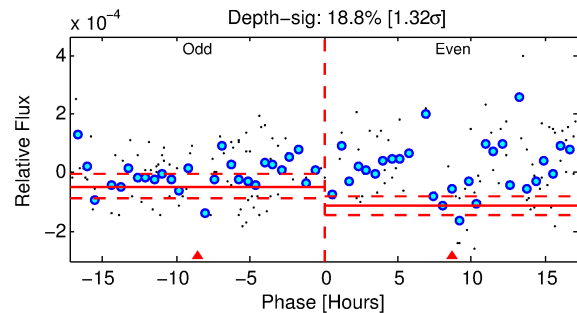
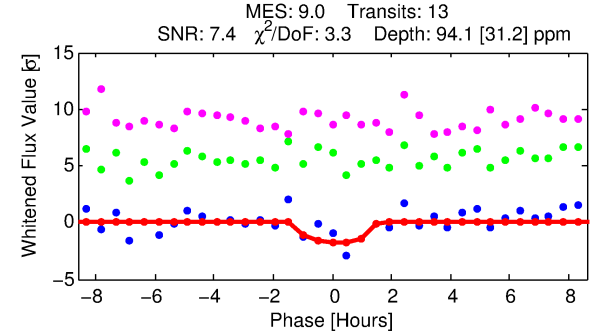
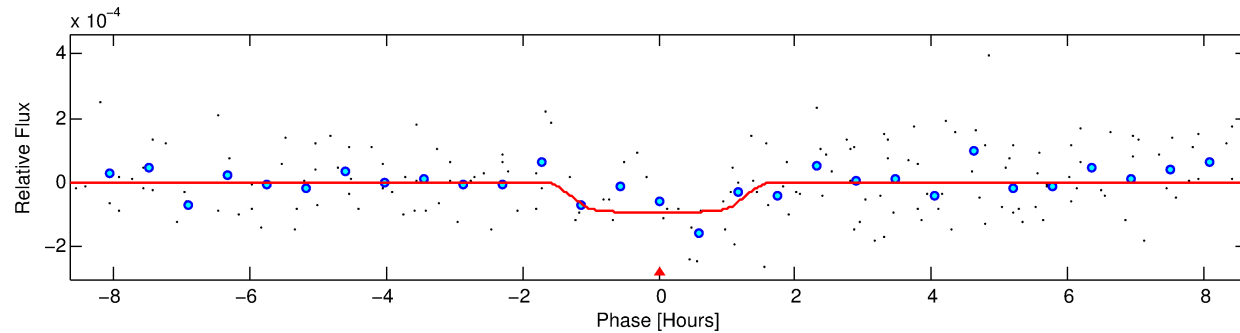
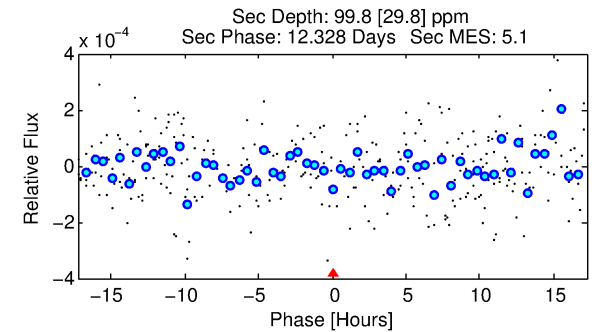
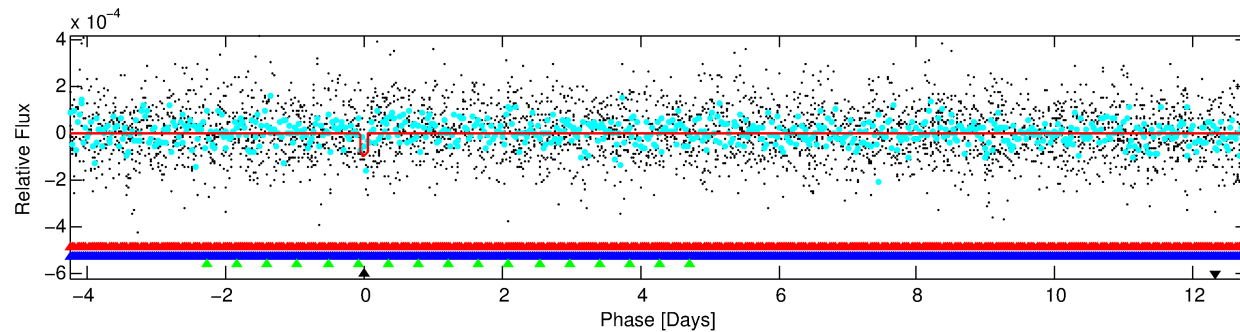
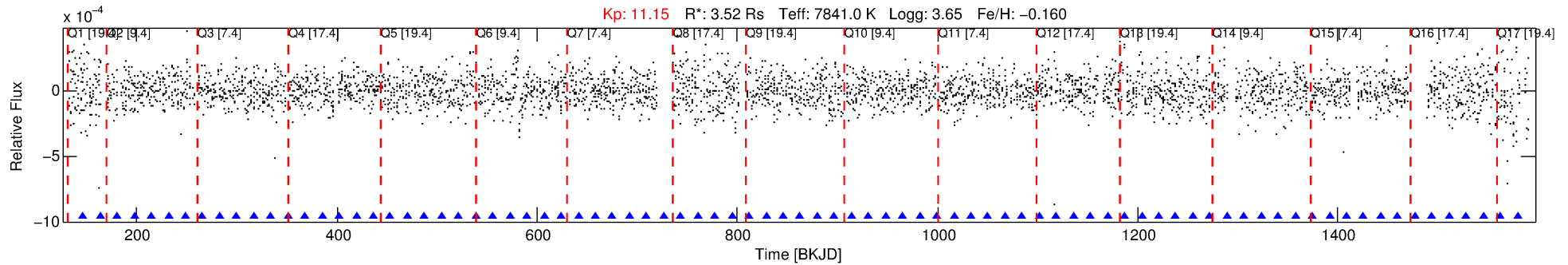
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007842621-04

No Significant Match Found

DV One-Page Summary

KIC: 7842621 Candidate: 4 of 4 Period: 17.056 d



DV Fit Results:

Period = 17.05635 [0.00033] d
Epoch = 146.5141 [0.0185] BKJD
 R_p/R^* = 0.0109 [0.0075]
 a/R^* = 16.03 [67.05]
 b = 0.95 [0.46]
 S_{eff} = 1555.90 [1270.58]
 T_{eq} = 1601 [327] K
 R_p = 4.18 [3.54] R_e
 a = 0.1641 [0.0802] AU
 A_g = 84.74 [137.87] [0.61σ]
 T_{effp} = 7513 [2679] K [2.19σ]

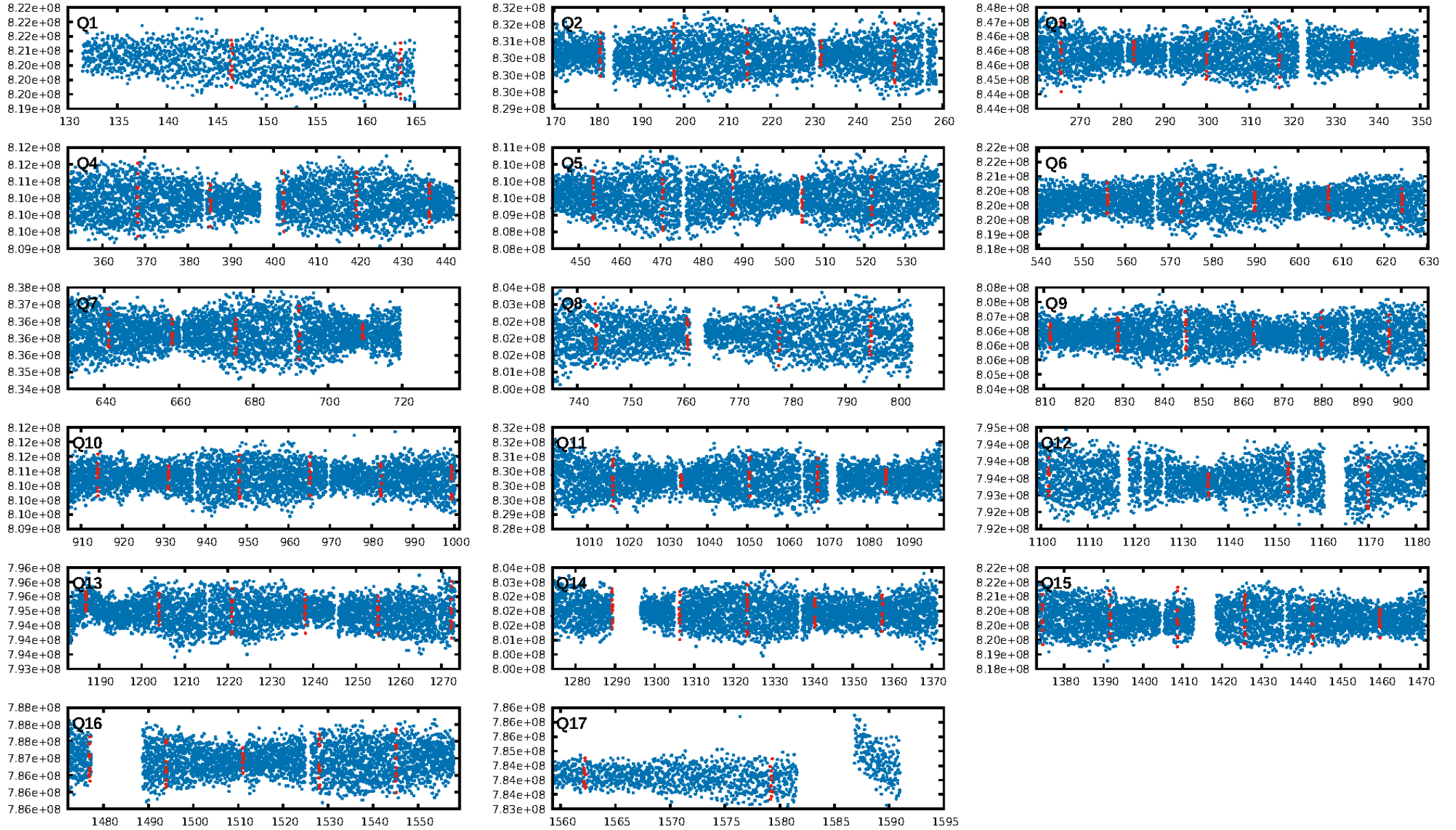
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [56.10σ]
LongPeriod-sig: 100.0% [433.82σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 95.7%
Bootstrap-pfa: 1.25e-08
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 0.0684
Centroid-sig: 5.0%
Centroid-so: 0.638 arcsec [1.31σ]
OotOffset-rm: 1.275 arcsec [1.22σ]
KicOffset-rm: 1.126 arcsec [1.13σ]
OotOffset-st: 1/3/3/2 [9]
KicOffset-st: 1/3/3/2 [9]
DiffImageQuality-fgm: 0.11 [1/9]
DiffImageOverlap-fno: 0.00 [0/17]

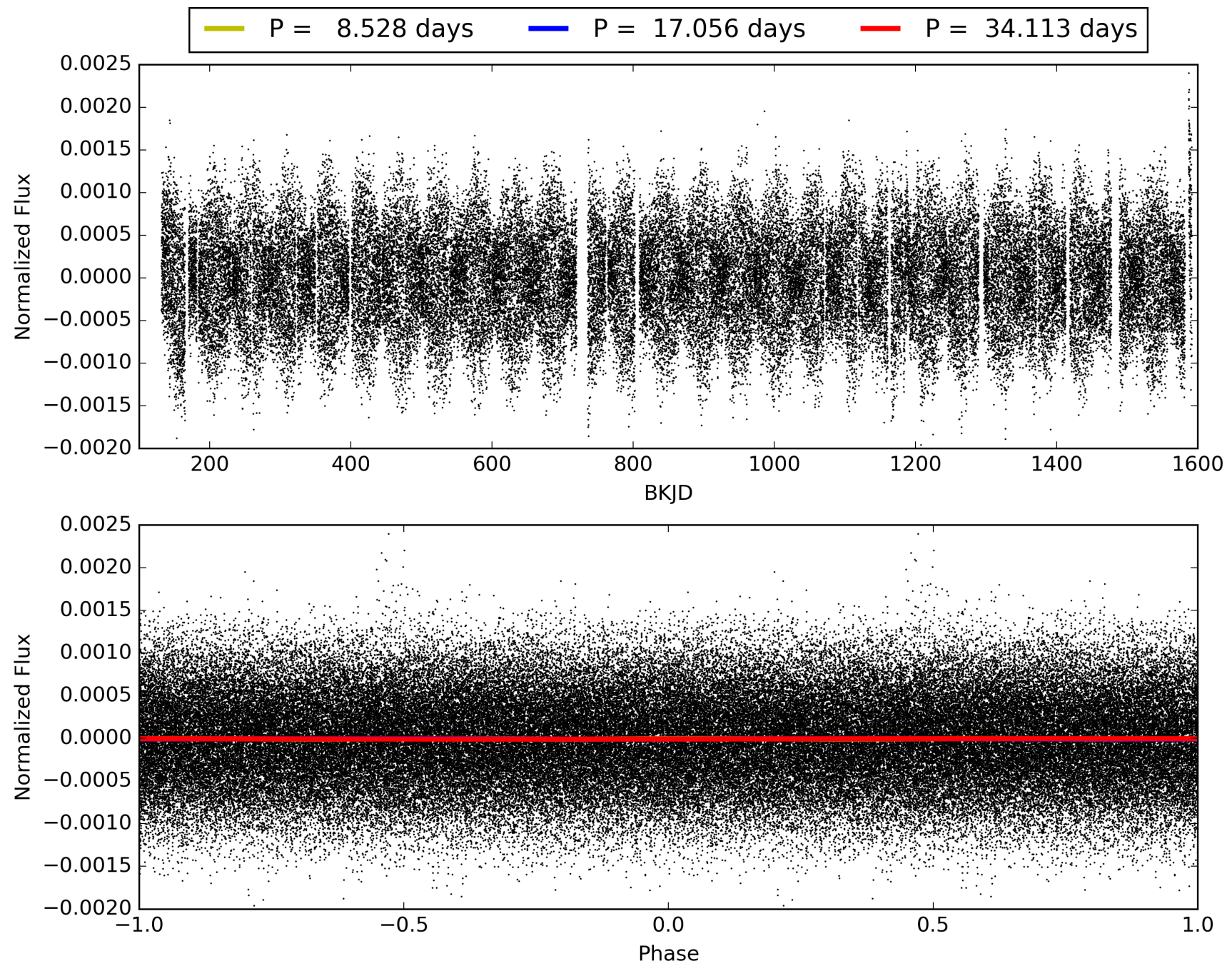
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:18:33 Z

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

TCE 007842621-04, PDC Light Curves

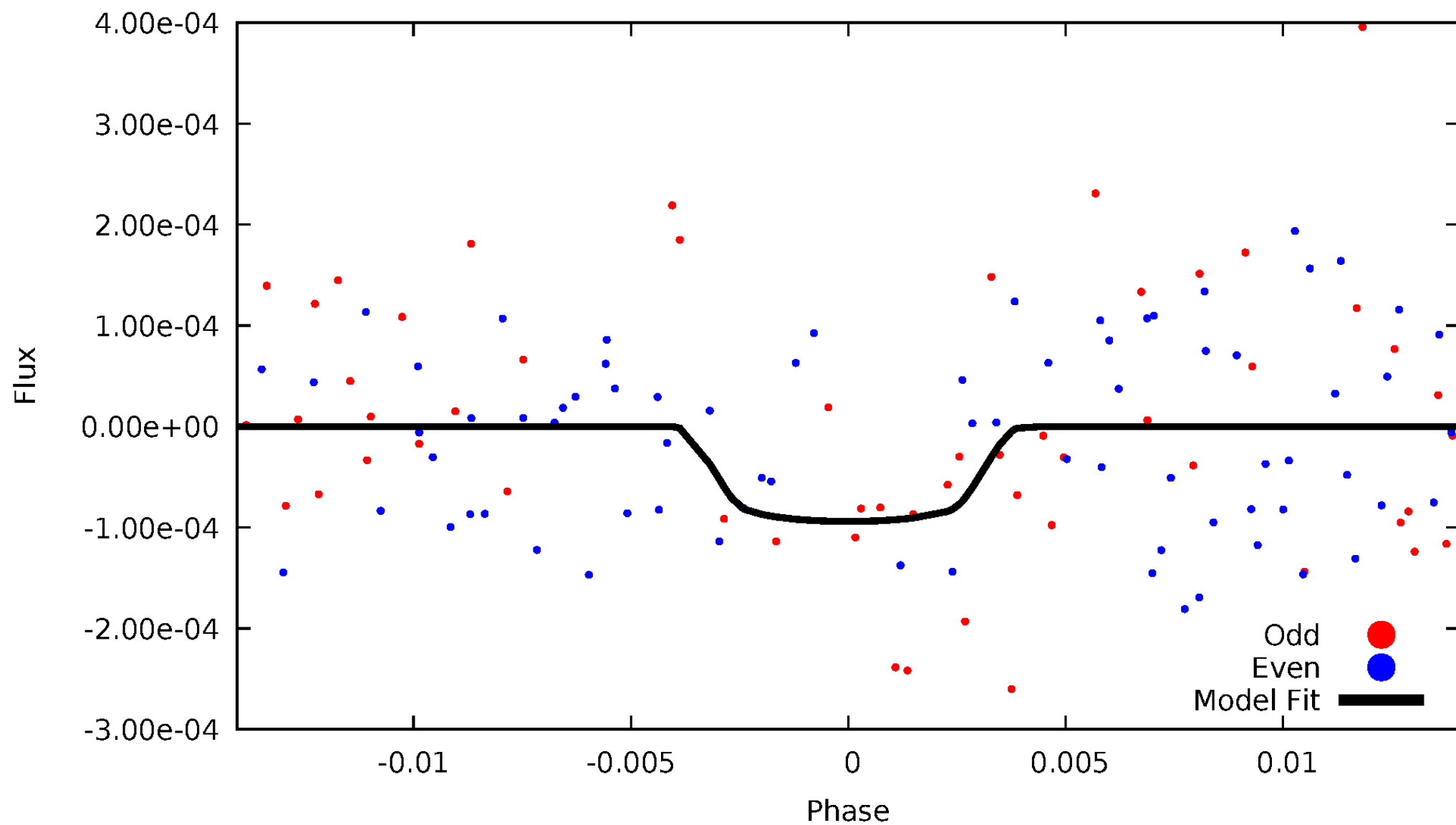


TCE 007842621-04



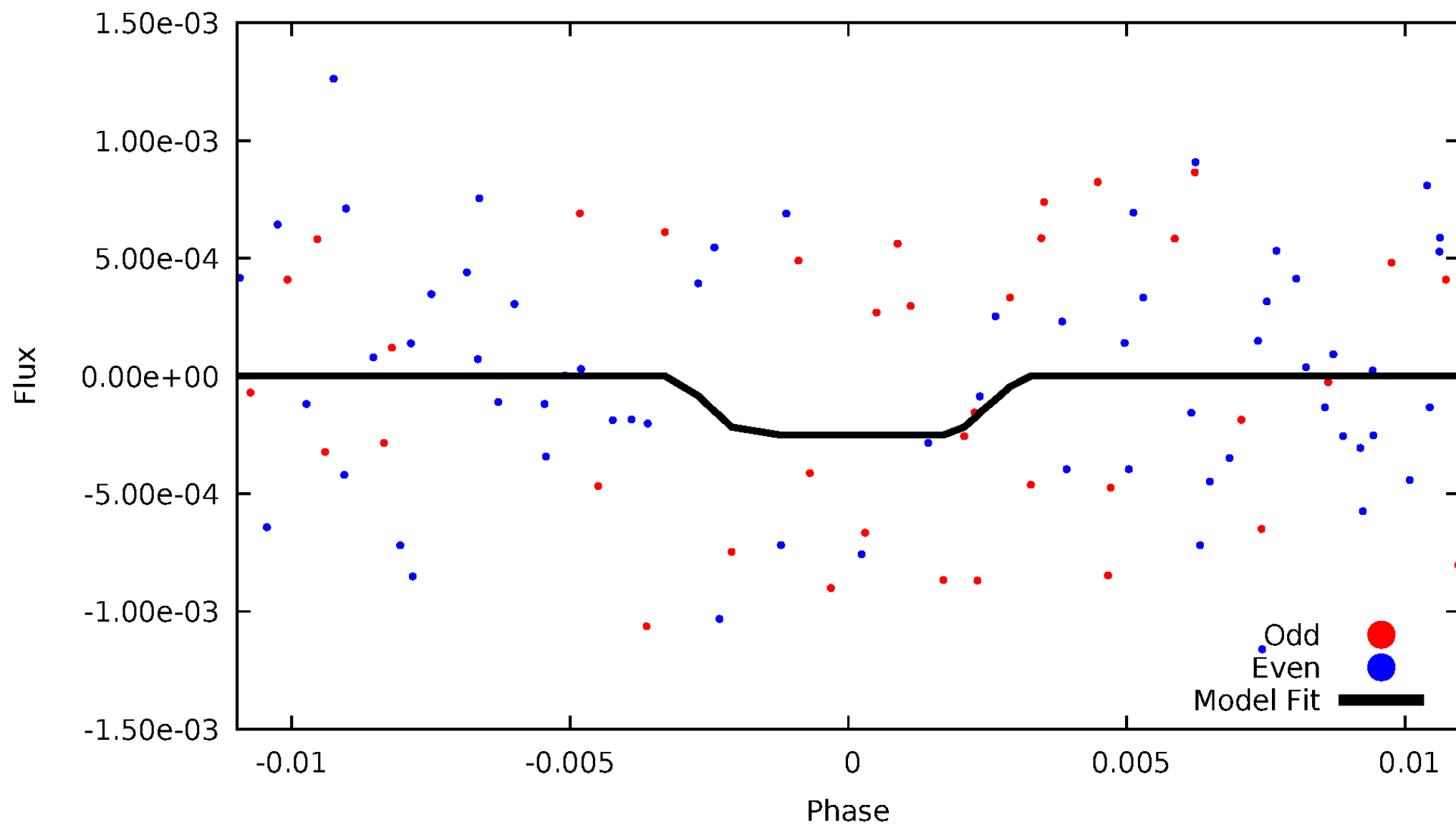
DV Odd/Even

TCE 007842621-04



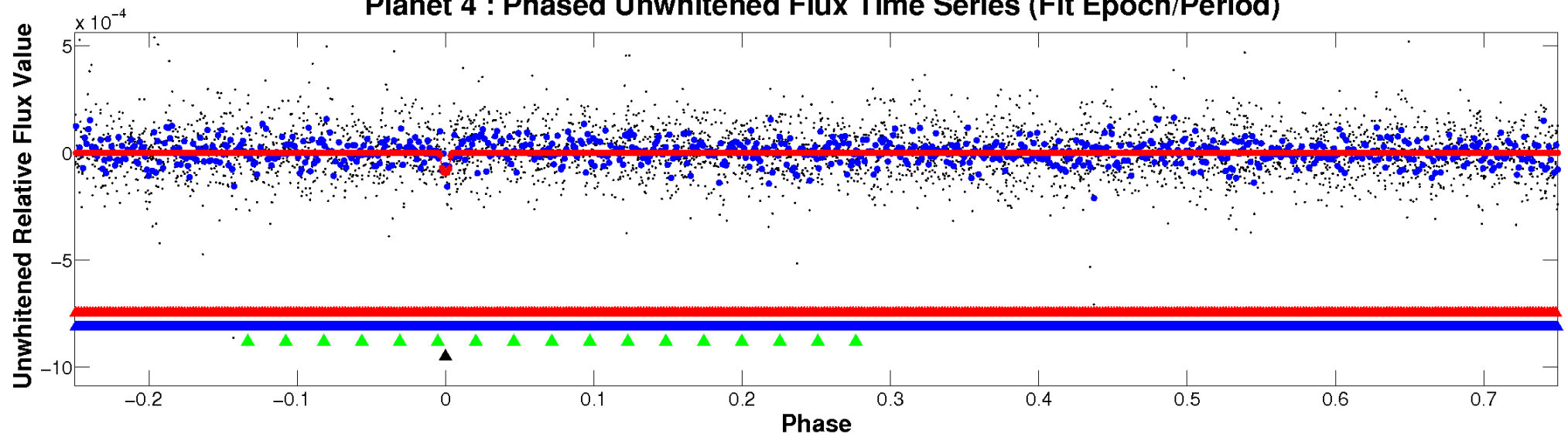
ALT Odd/Even

TCE 007842621-04

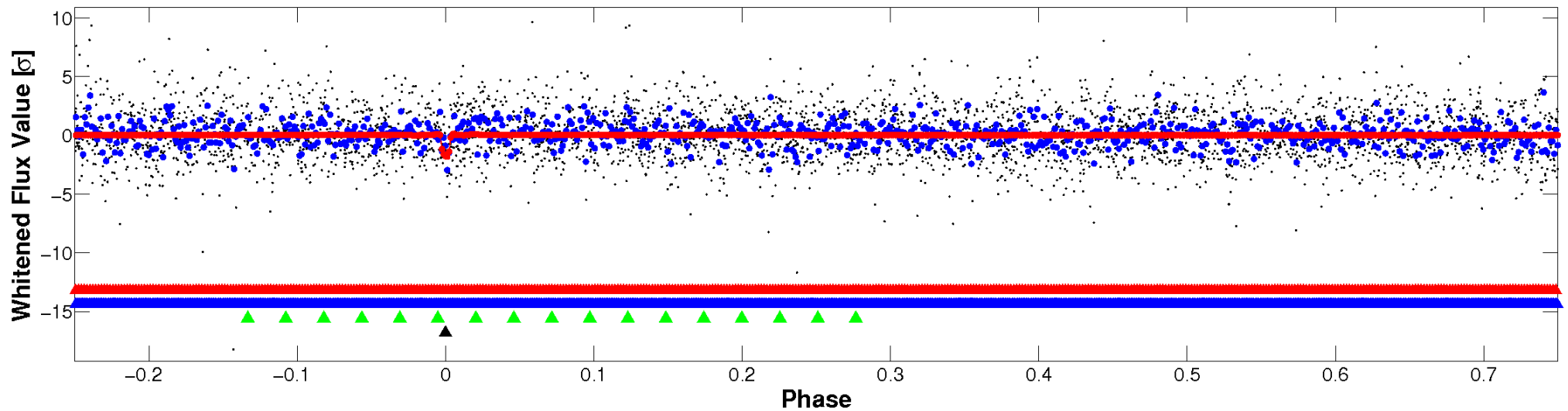


Non-Whitened Vs. Whitened Light Curve

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

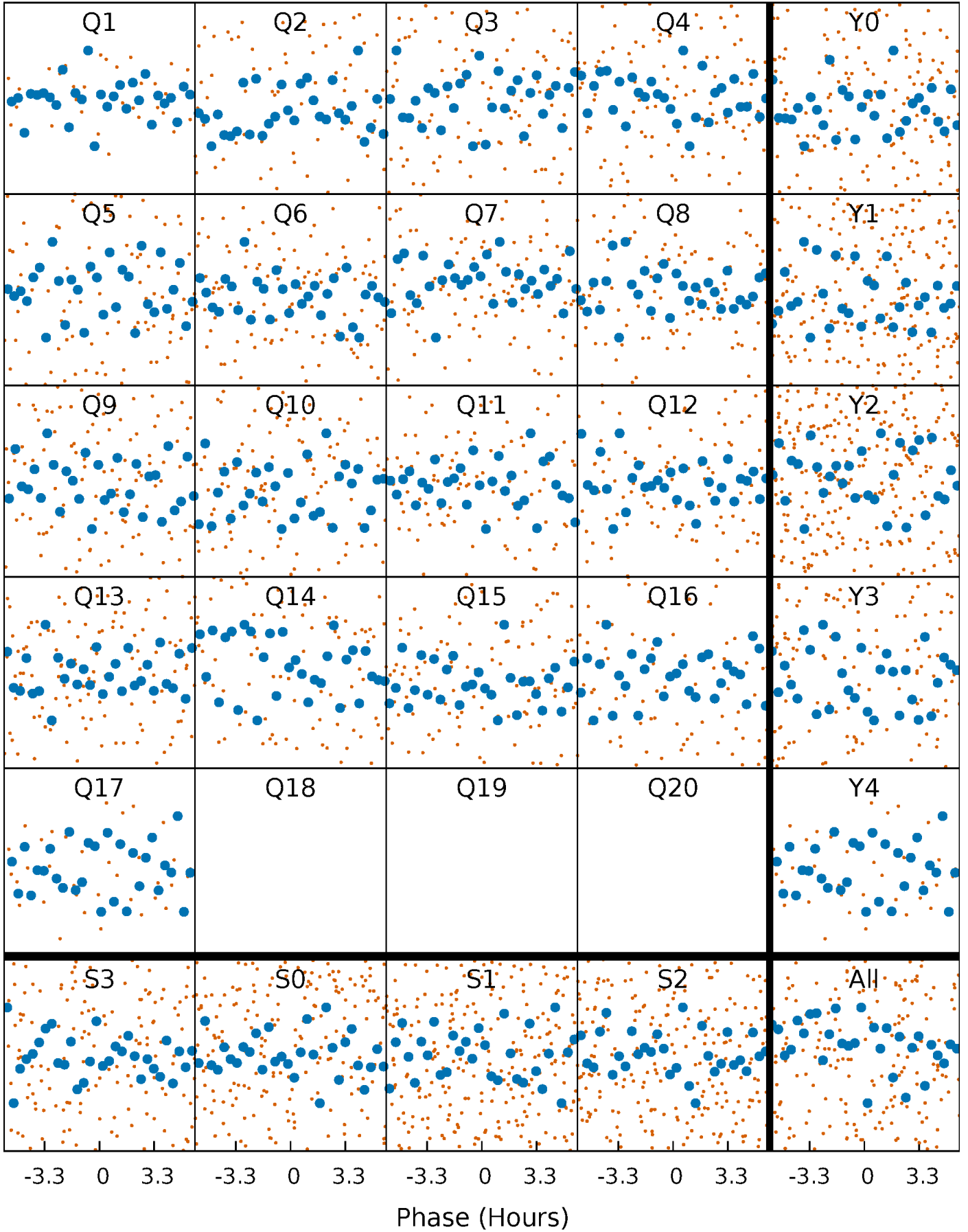


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



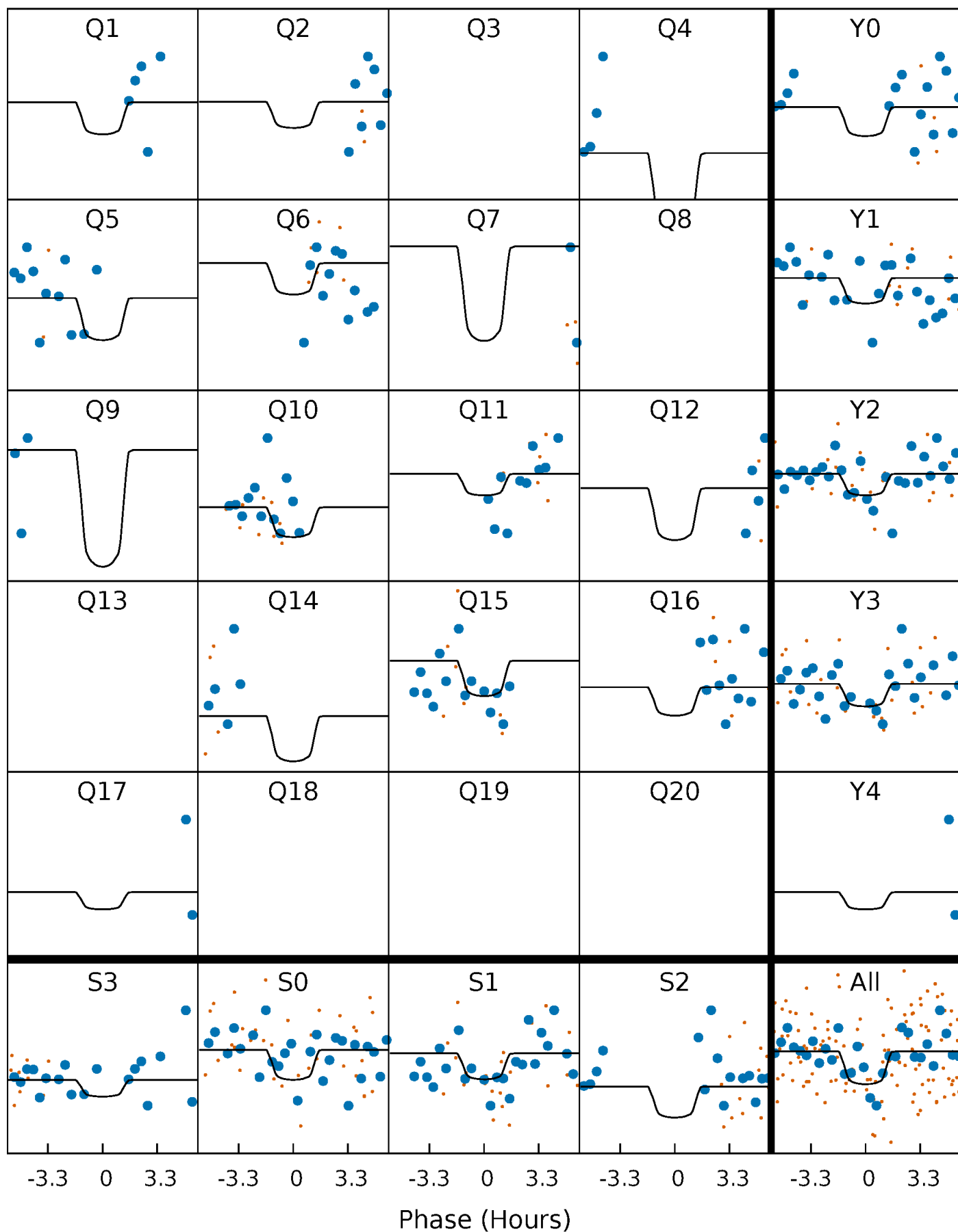
PDC Quarter-Phased Transit Curves

TCE 007842621-04 P= 17.056349 Days $T_0=146.514115$ (BKJD)



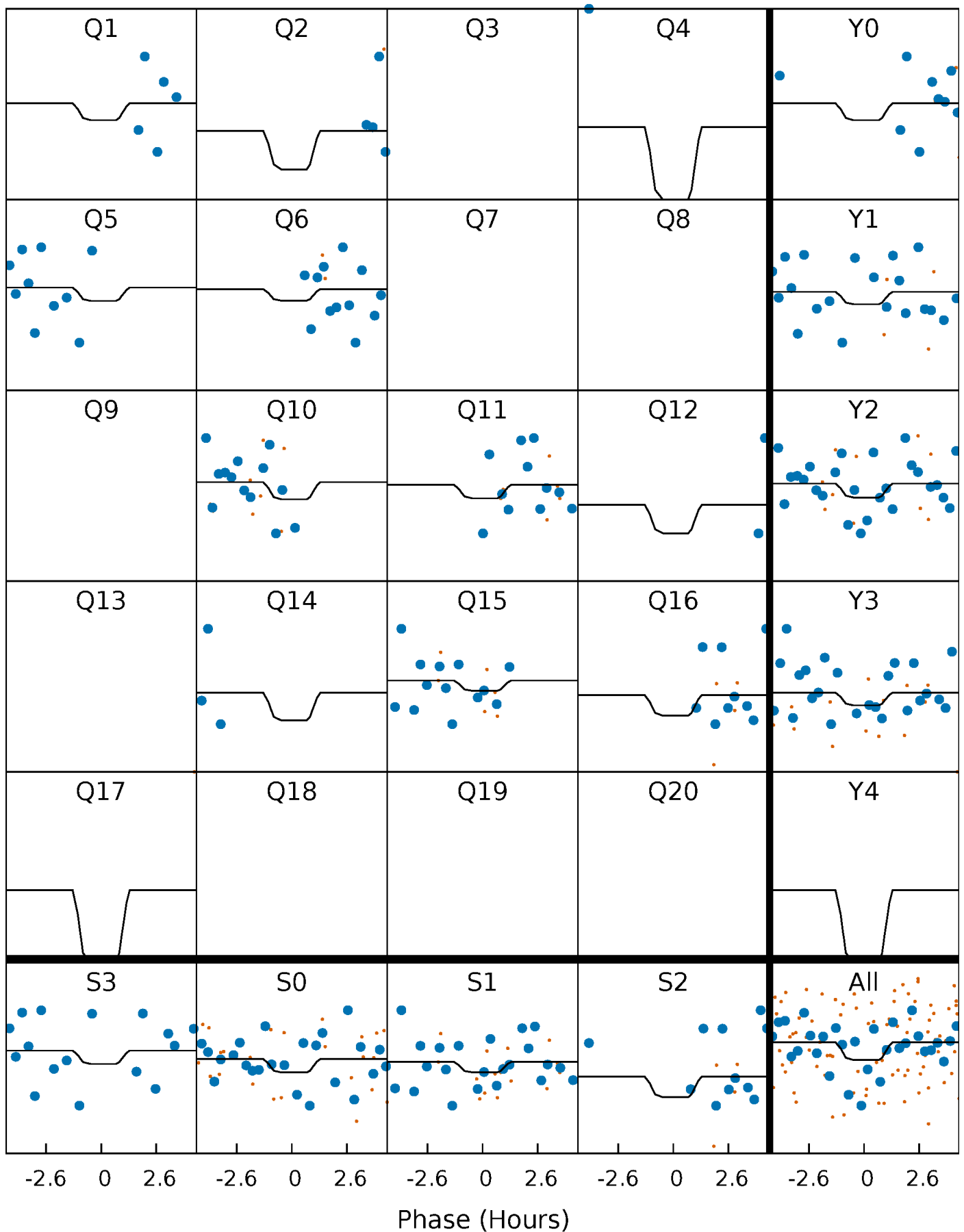
DV Quarter-Phased Transit Curves

TCE 007842621-04 P= 17.056349 Days $T_0=146.514115$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

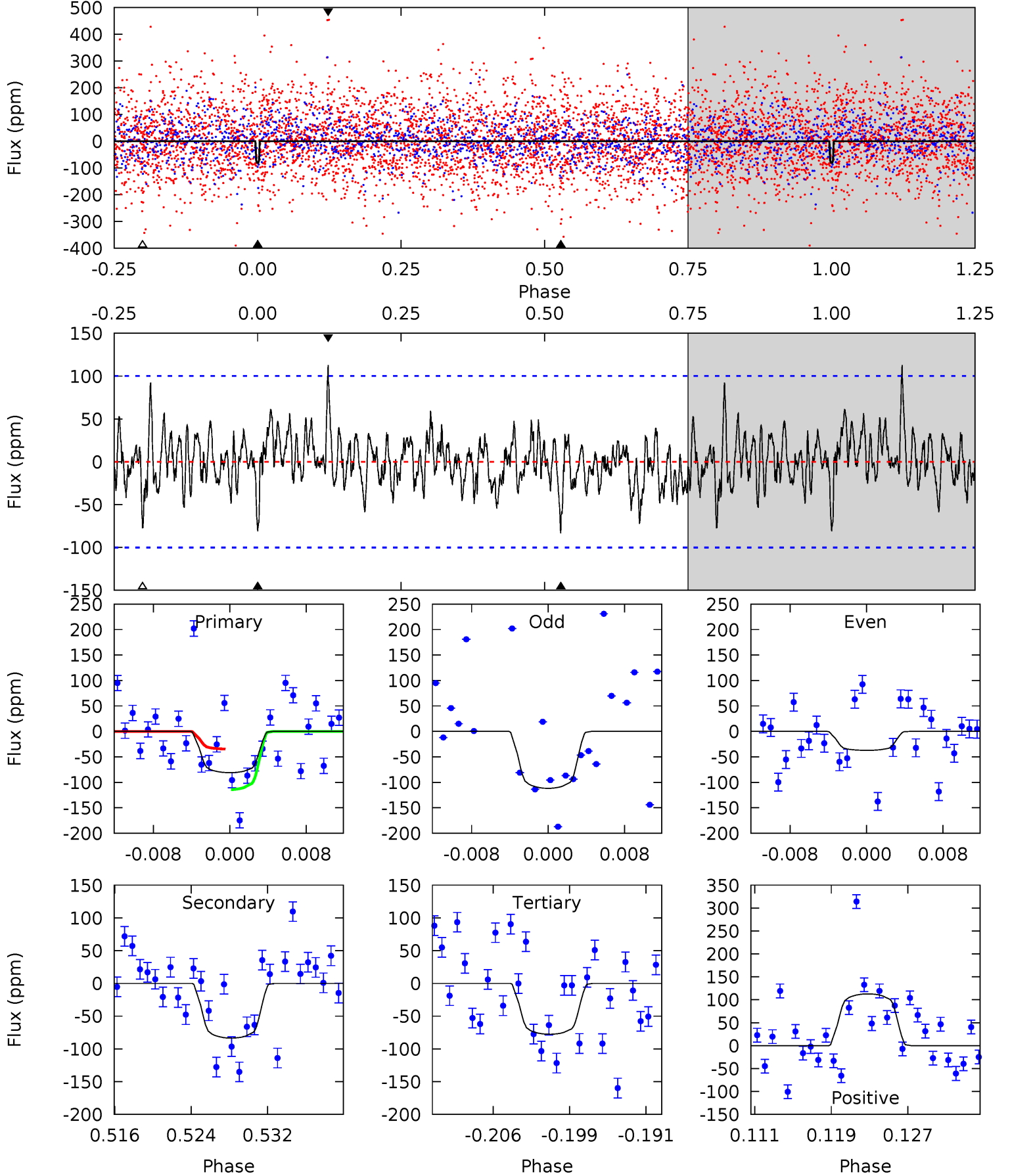
TCE 007842621-04 P= 17.056681 Days $T_0=146.505231$ (BKJD)



DV Model-Shift Uniqueness Test

007842621-04, P = 17.056349 Days, E = 129.457766 Days

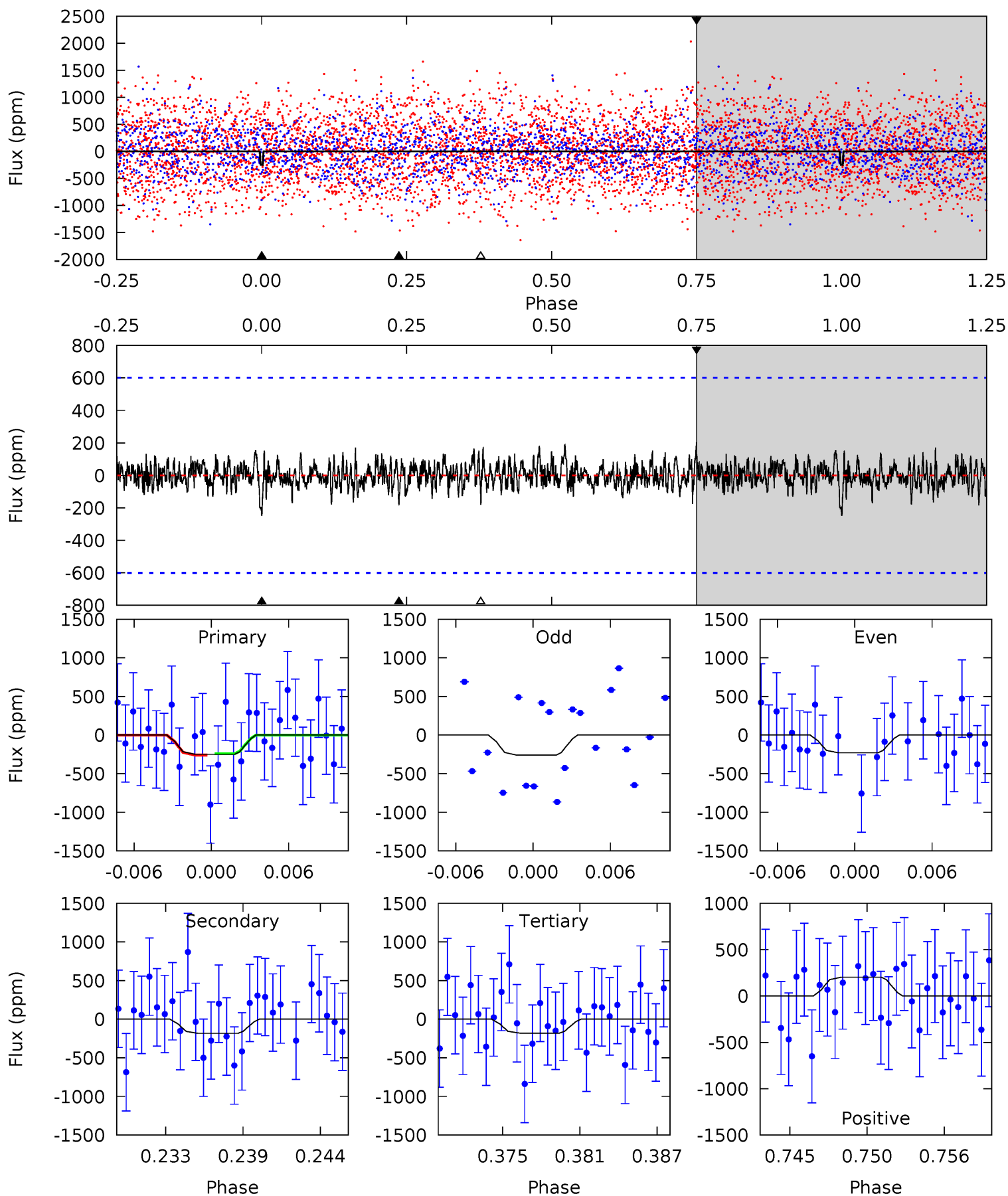
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.10	4.23	3.93	5.71	5.07	2.65	1.26	0.17	-1.61	0.30	-1.48	1.89	0.82	0.57	1.97



Alt Model-Shift Uniqueness Test

007842621-04, P = 17.056681 Days, E = 129.448550 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.13	1.57	1.54	1.74	5.13	2.77	0.51	0.59	0.39	0.03	-0.17	0.12	0.90	0.45	0.07



Stellar Parameters For KIC 007842621

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7841^{+217}_{-326}	$3.652^{+0.476}_{-0.084}$	$-0.160^{+0.200}_{-0.300}$	$3.517^{+0.734}_{-1.712}$	$2.025^{+0.343}_{-0.514}$	$0.066^{+0.329}_{-0.022}$
	+3%/-4%	+13%/-2%	+125%/-188%	+21%/-49%	+17%/-25%	+501%/-34%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007842621-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-84 ± 20	$3.83^{+2.82}_{-2.32}$	2146^{+165}_{-291}	6801^{+6182}_{-1533}	80^{+453}_{-54}
Alt.	-184 ± 117	$5.30^{+3.04}_{-2.47}$	2136^{+159}_{-268}	6862^{+3760}_{-1604}	84^{+275}_{-58}

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 $A_{obs} \gg 1.0$

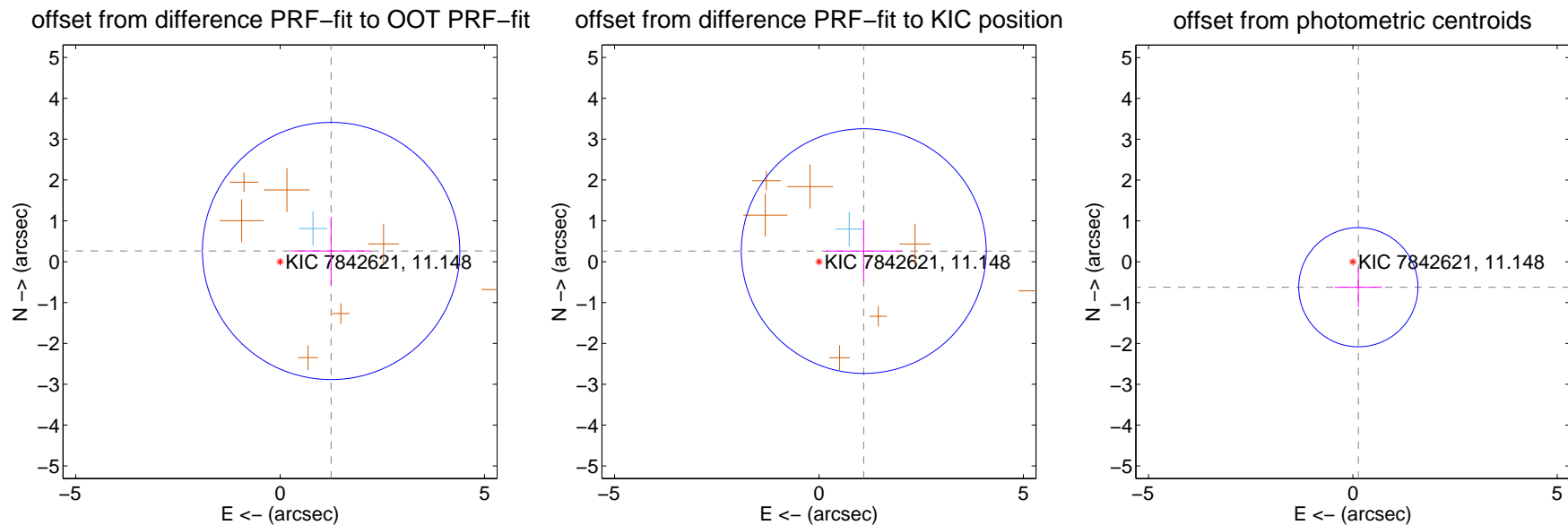
DV Centroid Data

Supplemental centroid analysis for 007842621-04. **Kepler magnitude: 11.15.** Transit SNR 7.35

There are 1 quarters with good PRF difference image offsets

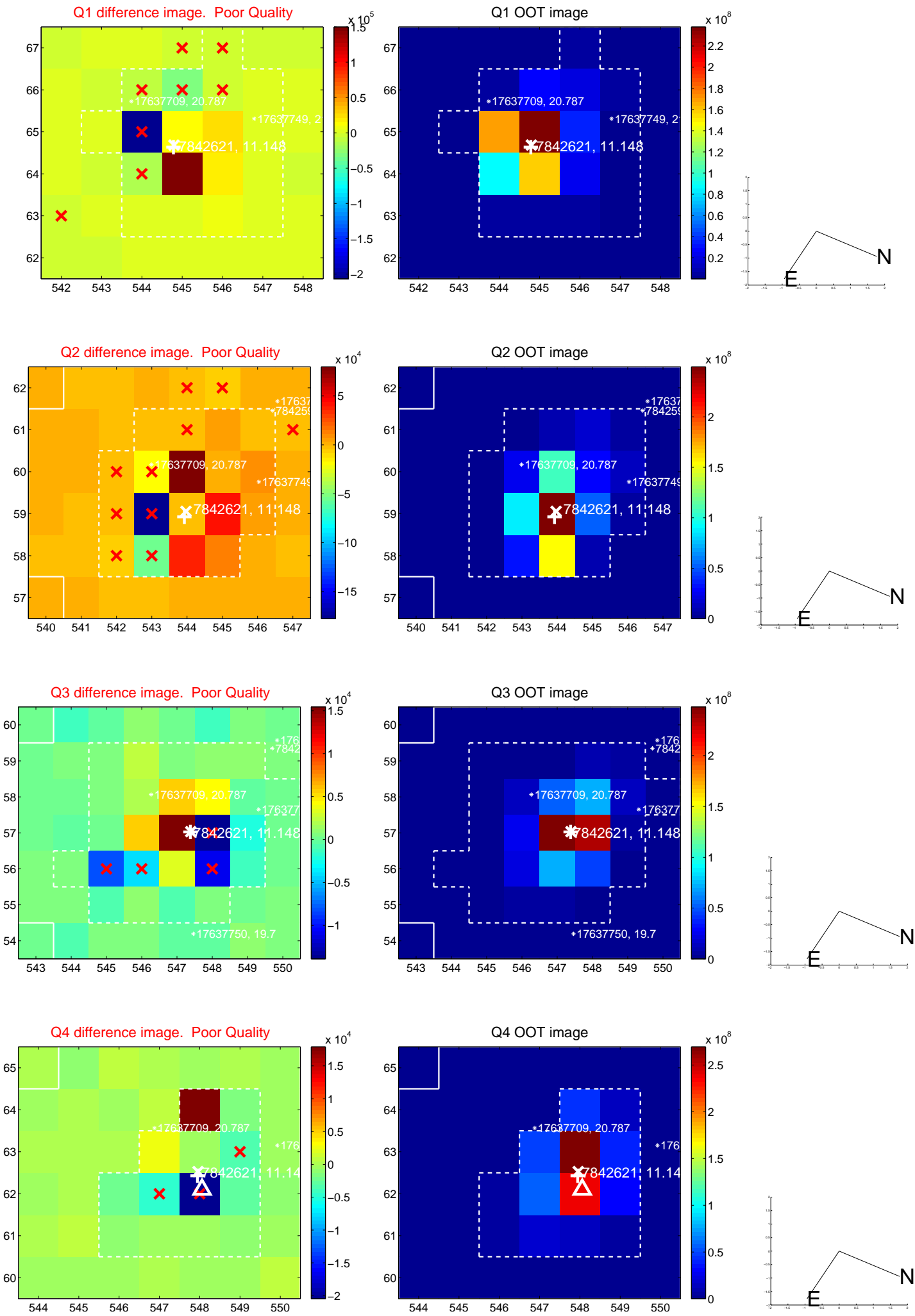
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.275 ± 1.049	1.22	-1.248 ± 0.986	0.262 ± 0.834
PRF-fit source offset from KIC position	1.126 ± 0.998	1.13	-1.095 ± 0.934	0.260 ± 0.747
photometric centroid source offset	0.64 ± 0.49	1.31	-0.13 ± 0.58	-0.62 ± 0.48

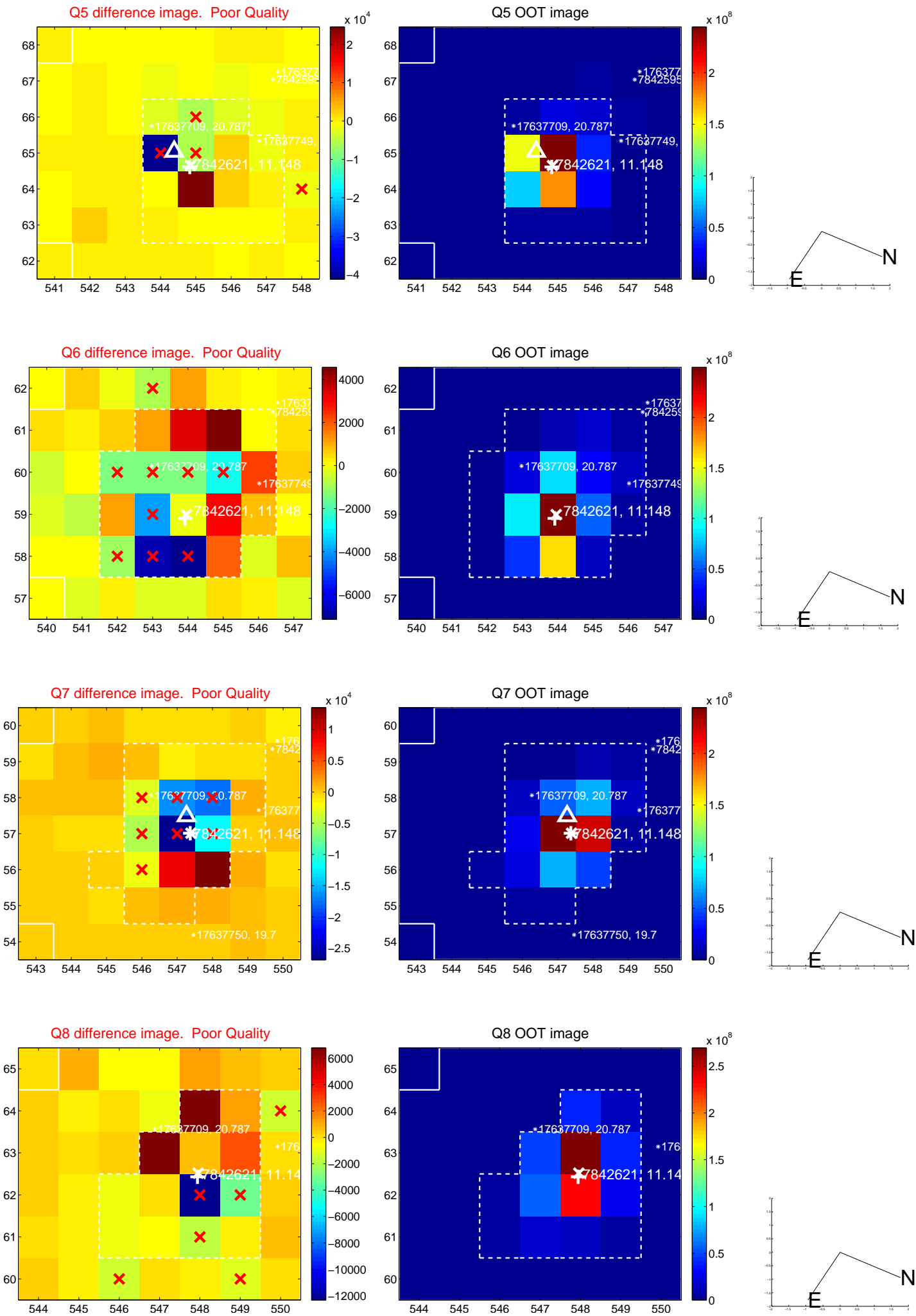


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

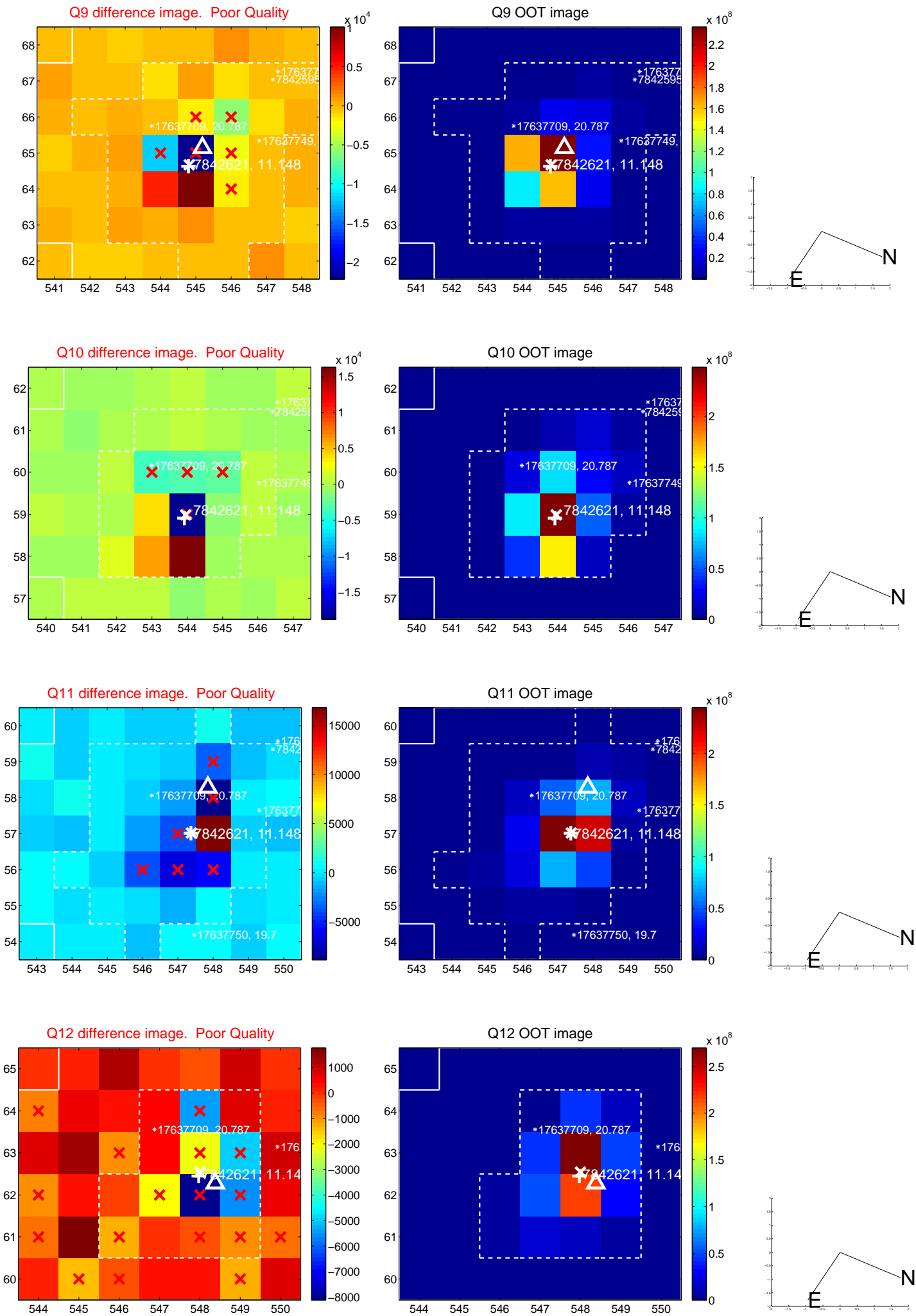
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



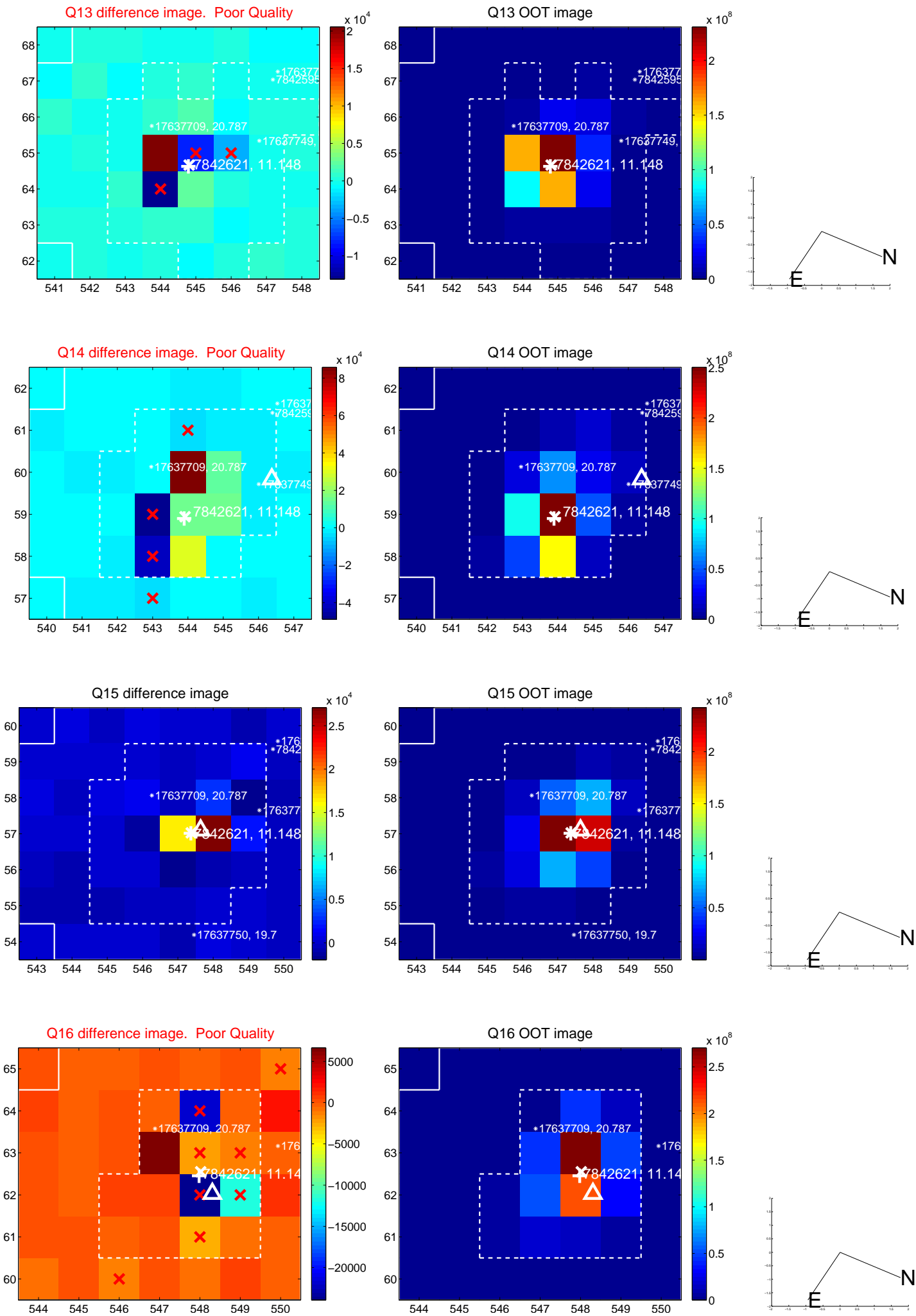
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



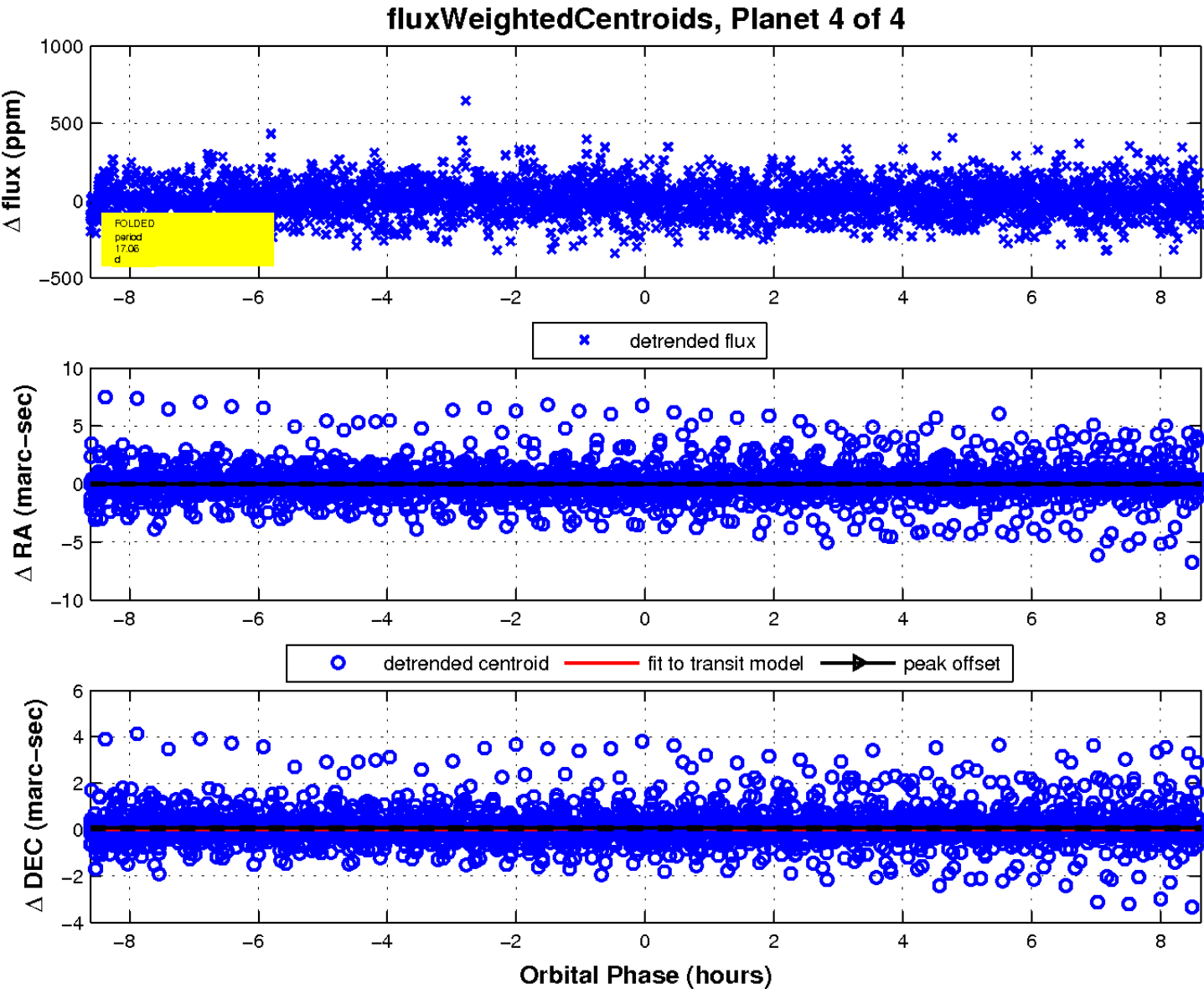
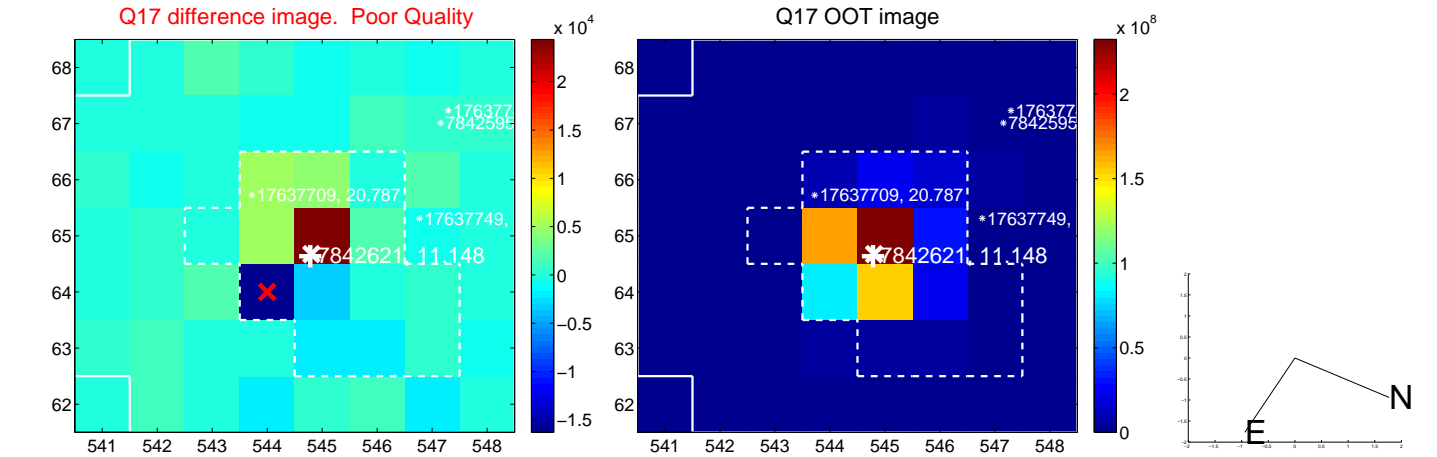
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

