

KIC 009788612

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})
009788612-01	OBS	No	3.522168	133.029616	282.8	3.452	8.7	6.5	1.94	7478	3.76	3576.10
009788612-02	OBS	No	1.761010	132.190519	181.7	8.104	8.7	7.7	1.94	7478	2.71	9011.72
009788612-03	OBS	No	2.559479	132.273063	140.5	3.470	7.8	1.7	1.94	7478	2.64	5473.79
009788612-04	OBS	No	2.559422	131.729174	585.5	30.713	8.2	12.6	1.94	7478	5.85	5473.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009788612-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009788612-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009788612-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009788612-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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.

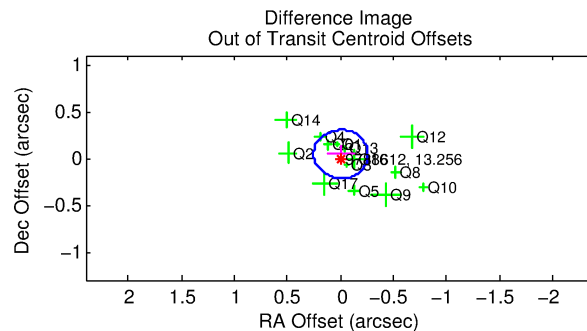
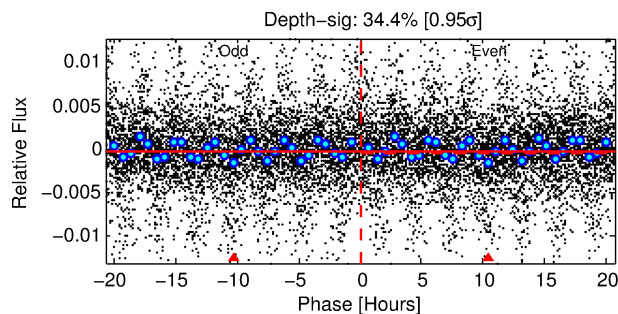
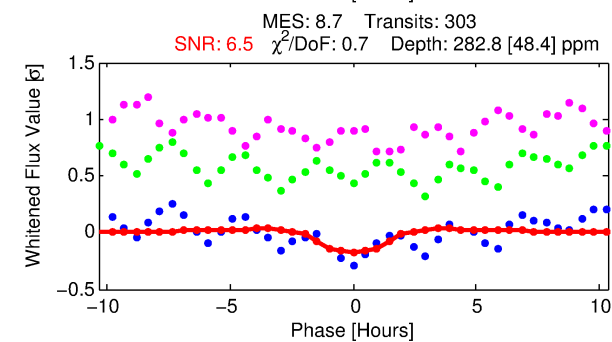
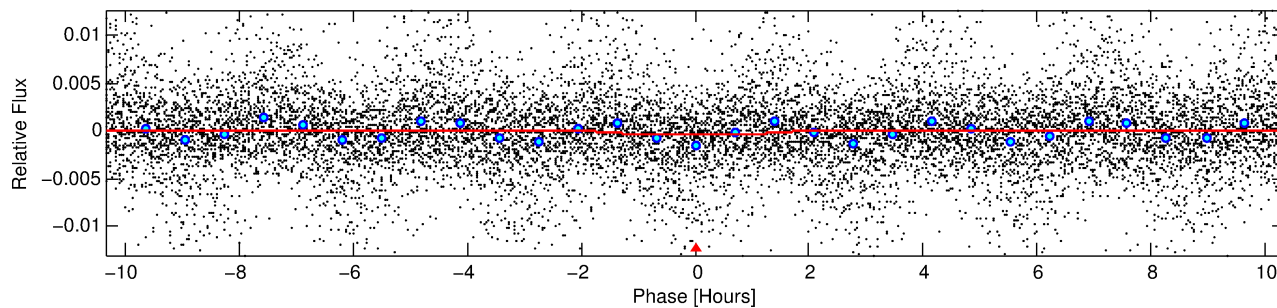
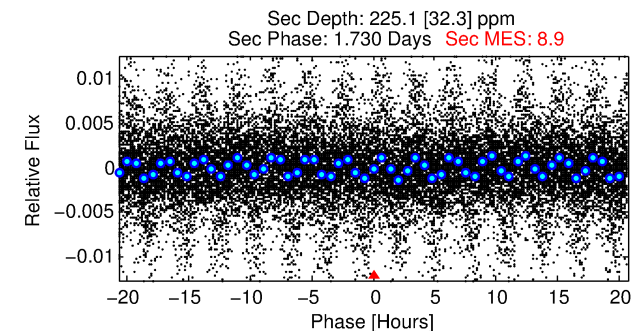
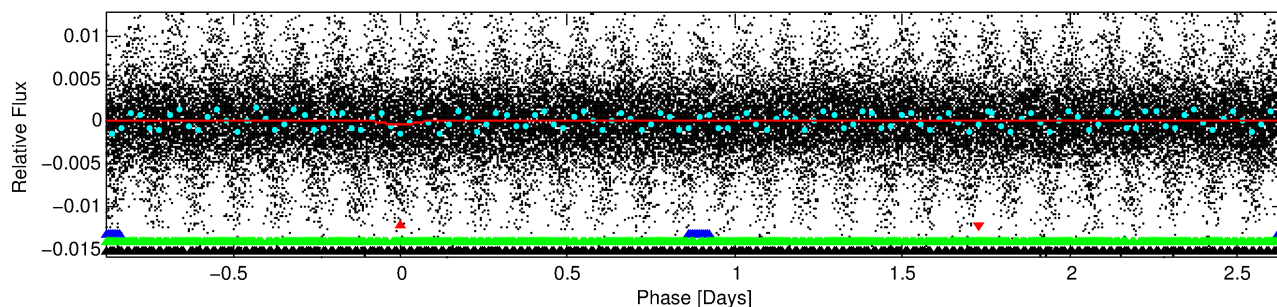
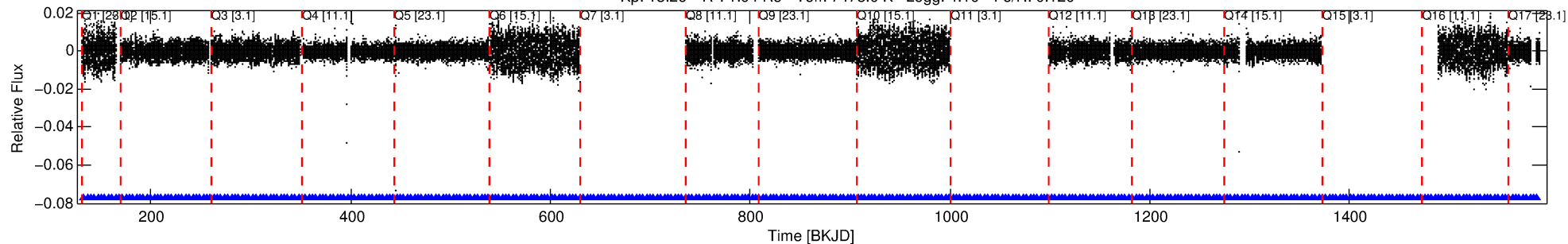
Ephemeris Match Information For 009788612-01

No Significant Match Found

DV One-Page Summary

KIC: 9788612 Candidate: 1 of 4 Period: 3.522 d

Kp: 13.26 R*: 1.94 Rs Teff: 7478.0 K Logg: 4.10 Fe/H: 0.120



DV Fit Results:

Period = 3.52217 [0.00005] d
Epoch = 133.0296 [0.0101] BKJD
Rp/R* = 0.0178 [0.0110]
a/R* = 3.84 [14.28]
b = 0.90 [0.86]
Seff = 3576.10 [1408.33]
Teq = 1972 [194] K
Rp = 3.76 [2.60] Re
a = 0.0542 [0.0135] AU
Ag = 25.68 [33.24] [0.74σ]
Teffp = 6863 [2160] K [2.26σ]

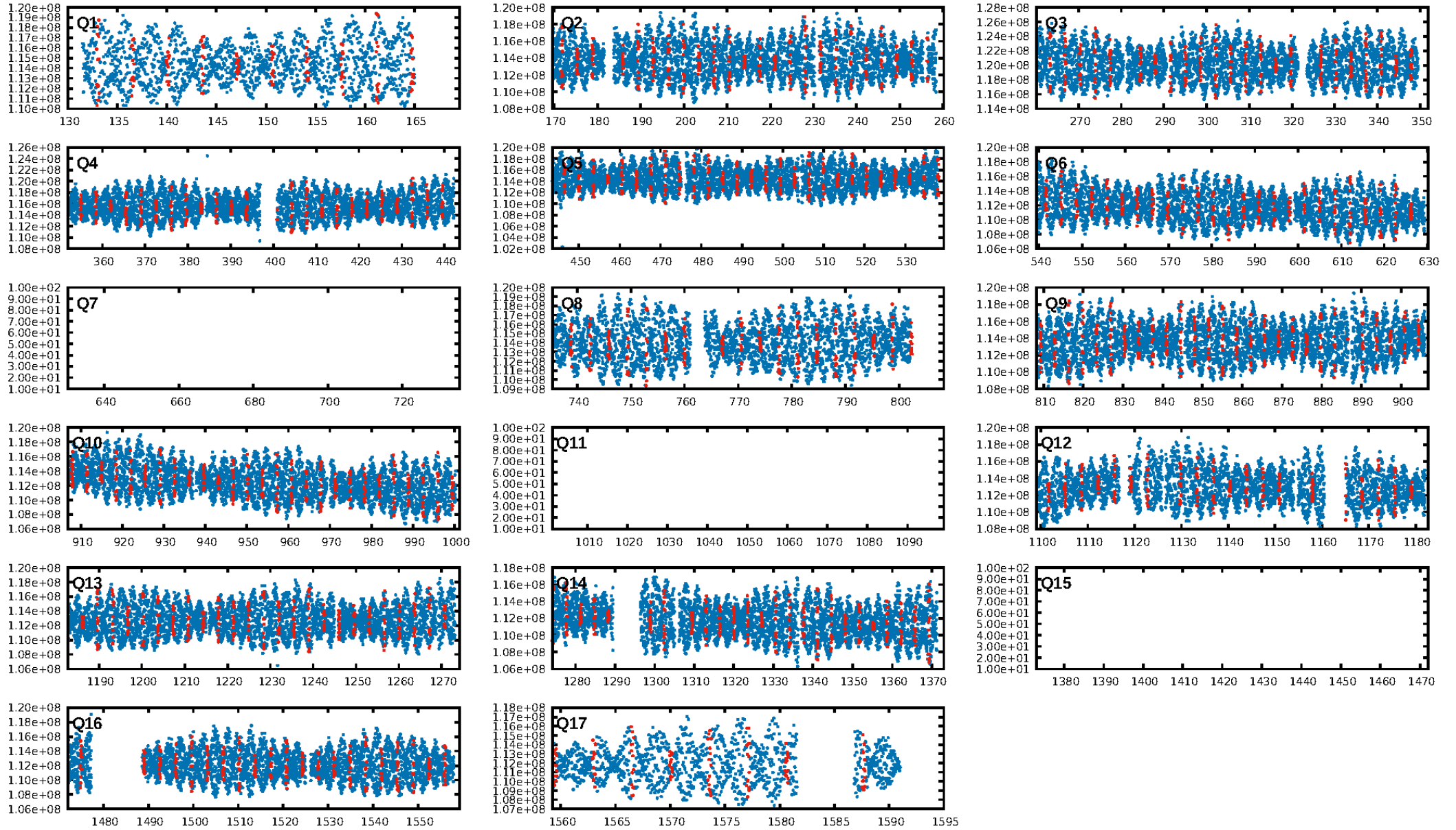
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.72σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [285/285]
GhostDiagnostic-chr: 0.4889
Centroid-sig: 61.8%
Centroid-so: 0.784 arcsec [2.25σ]
OotOffset-rm: 0.044 arcsec [0.52σ]
KicOffset-rm: 0.084 arcsec [0.95σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.64 [9/14]
DiffImageOverlap-fno: 1.00 [14/14]

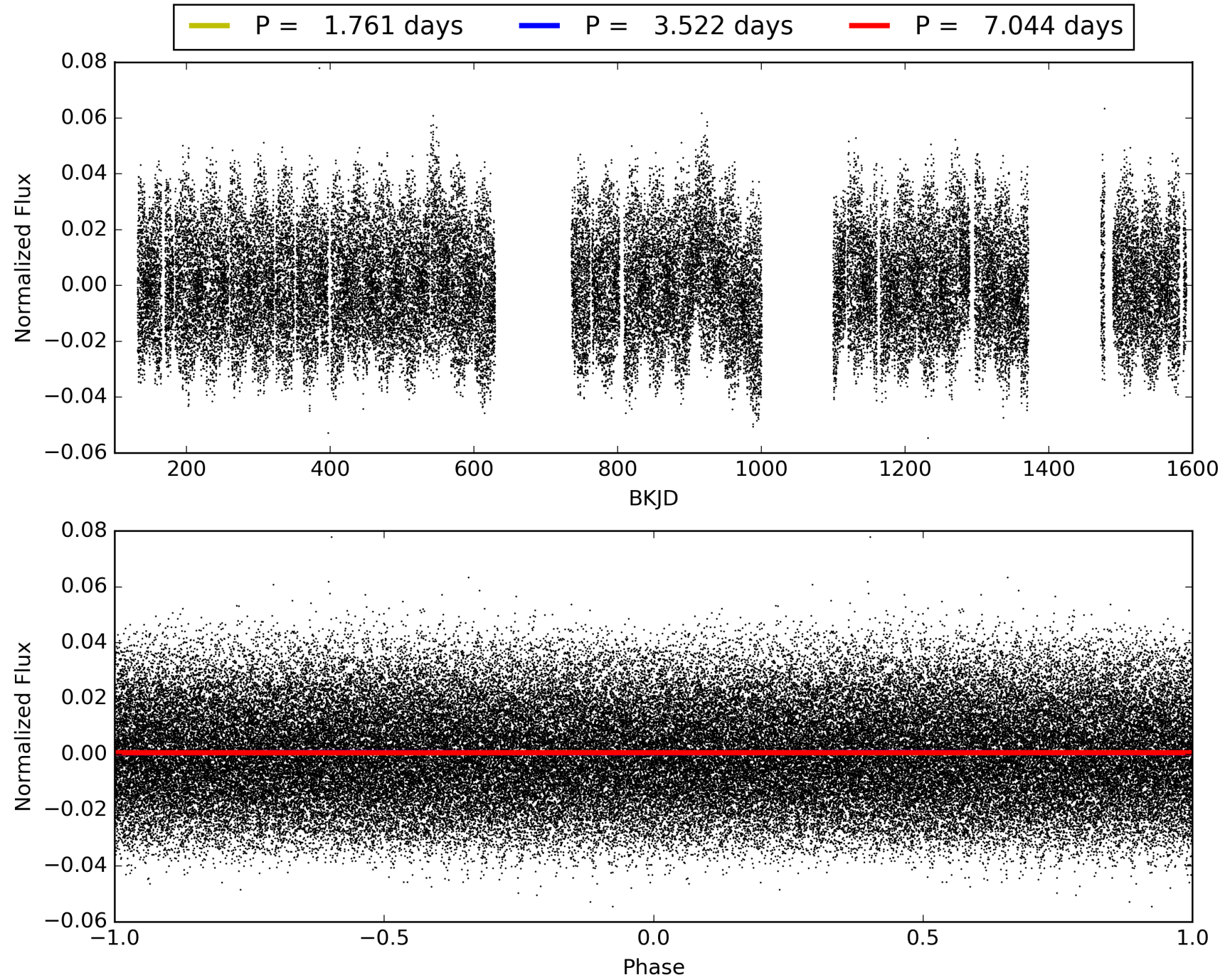
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 18:11:00 Z

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

TCE 009788612-01, PDC Light Curves

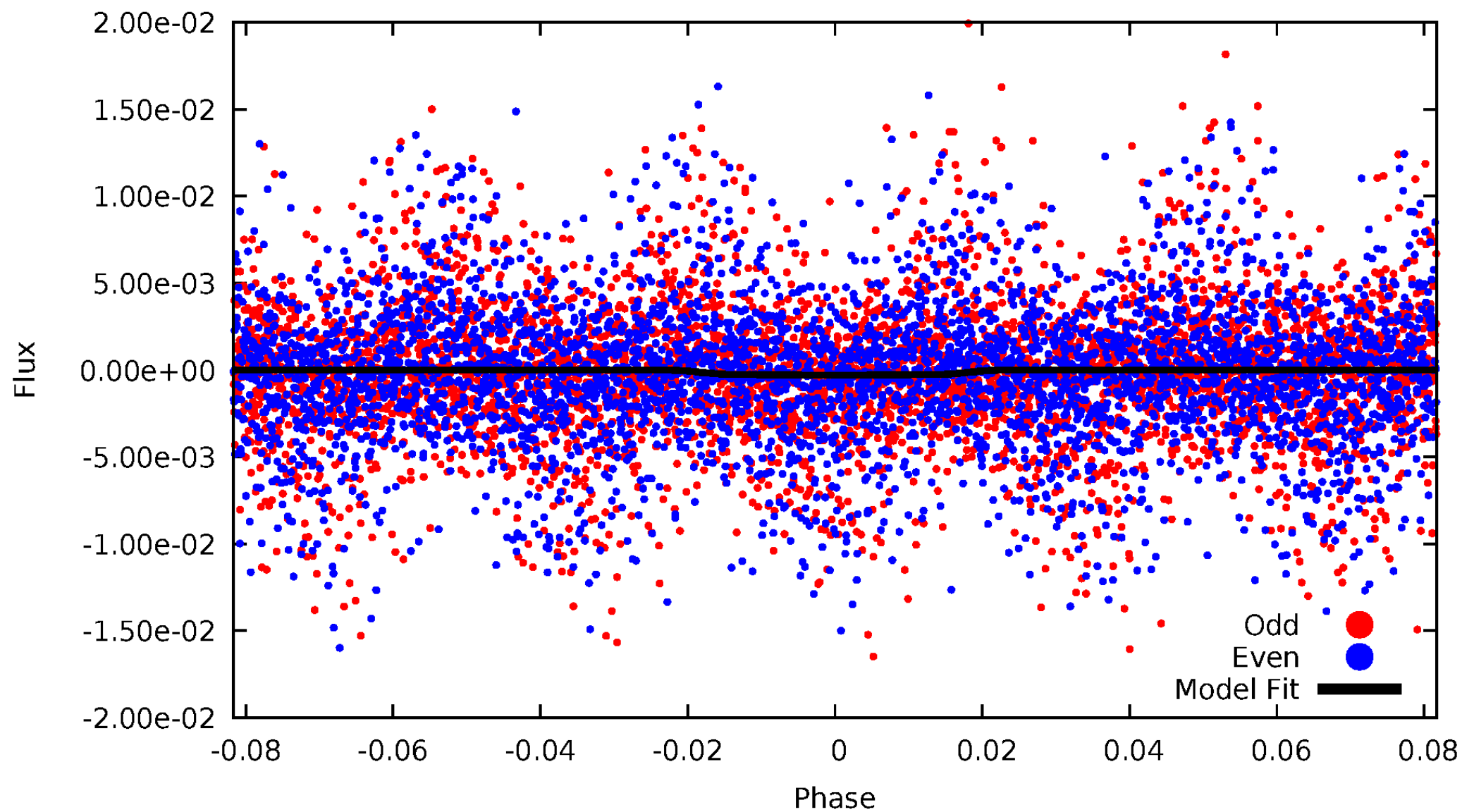


TCE 009788612-01



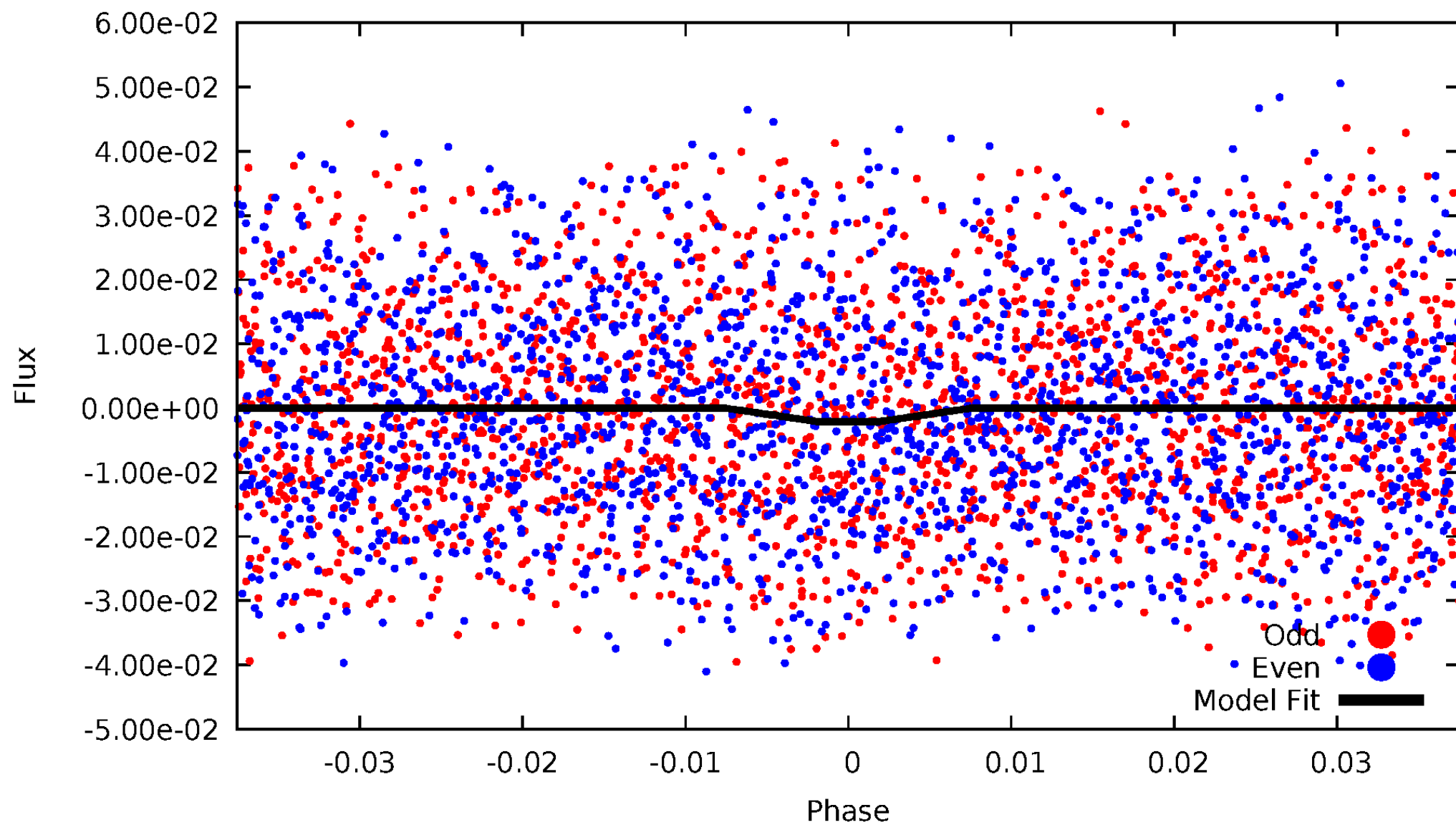
DV Odd/Even

TCE 009788612-01



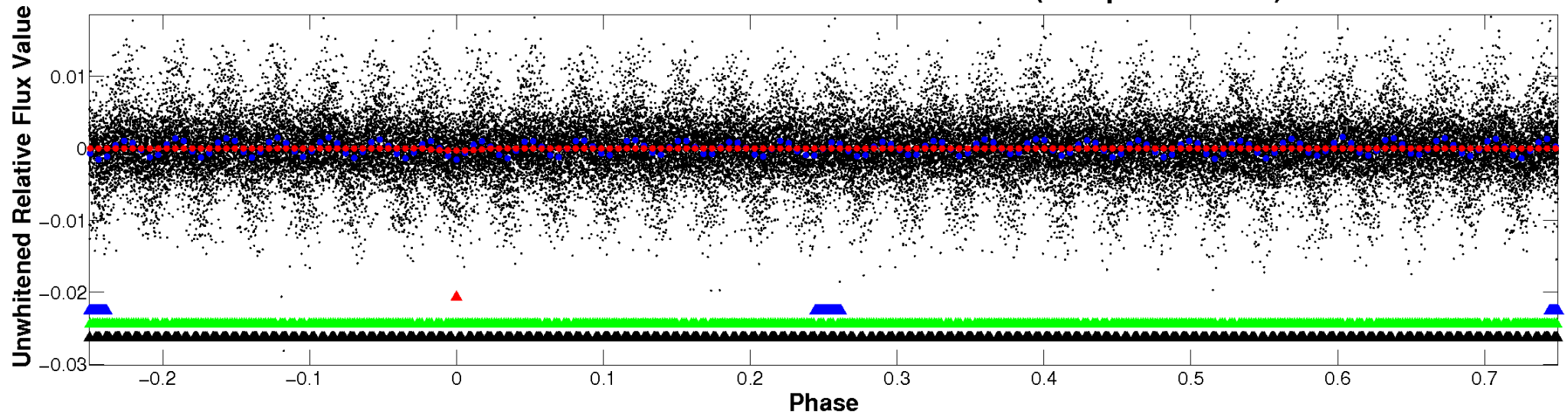
ALT Odd/Even

TCE 009788612-01

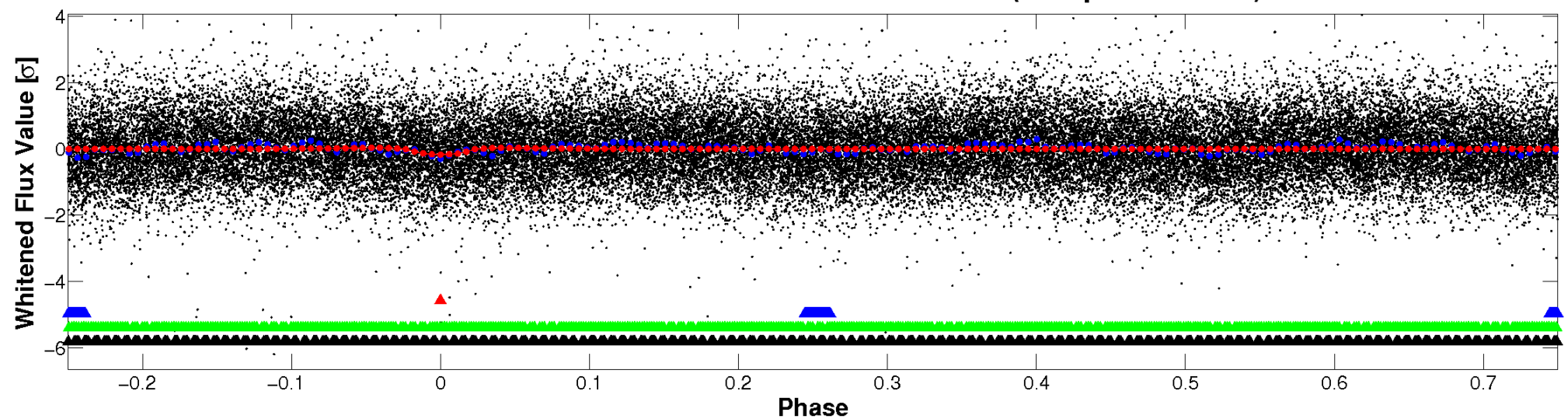


Non-Whitened Vs. Whitened Light Curve

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

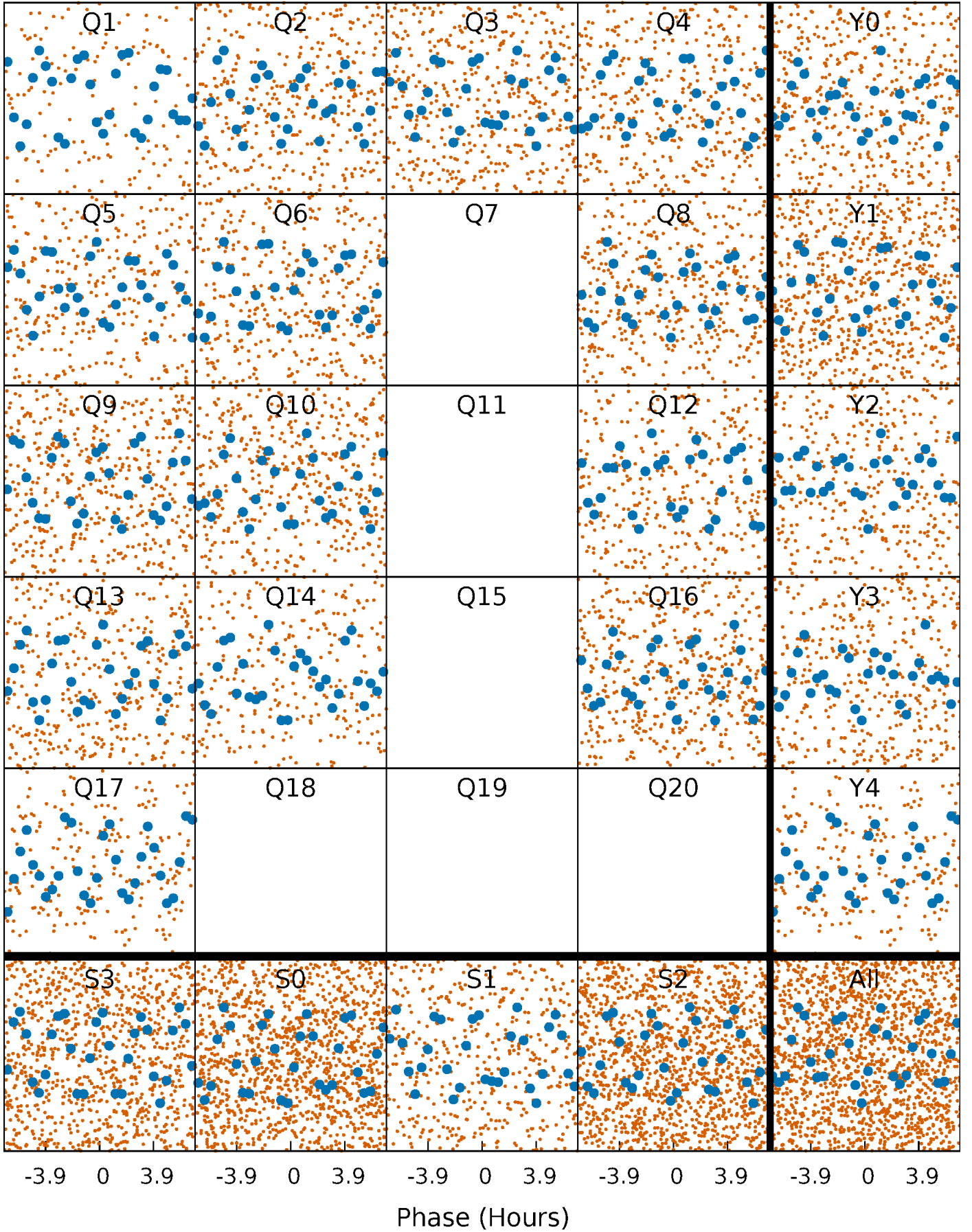


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



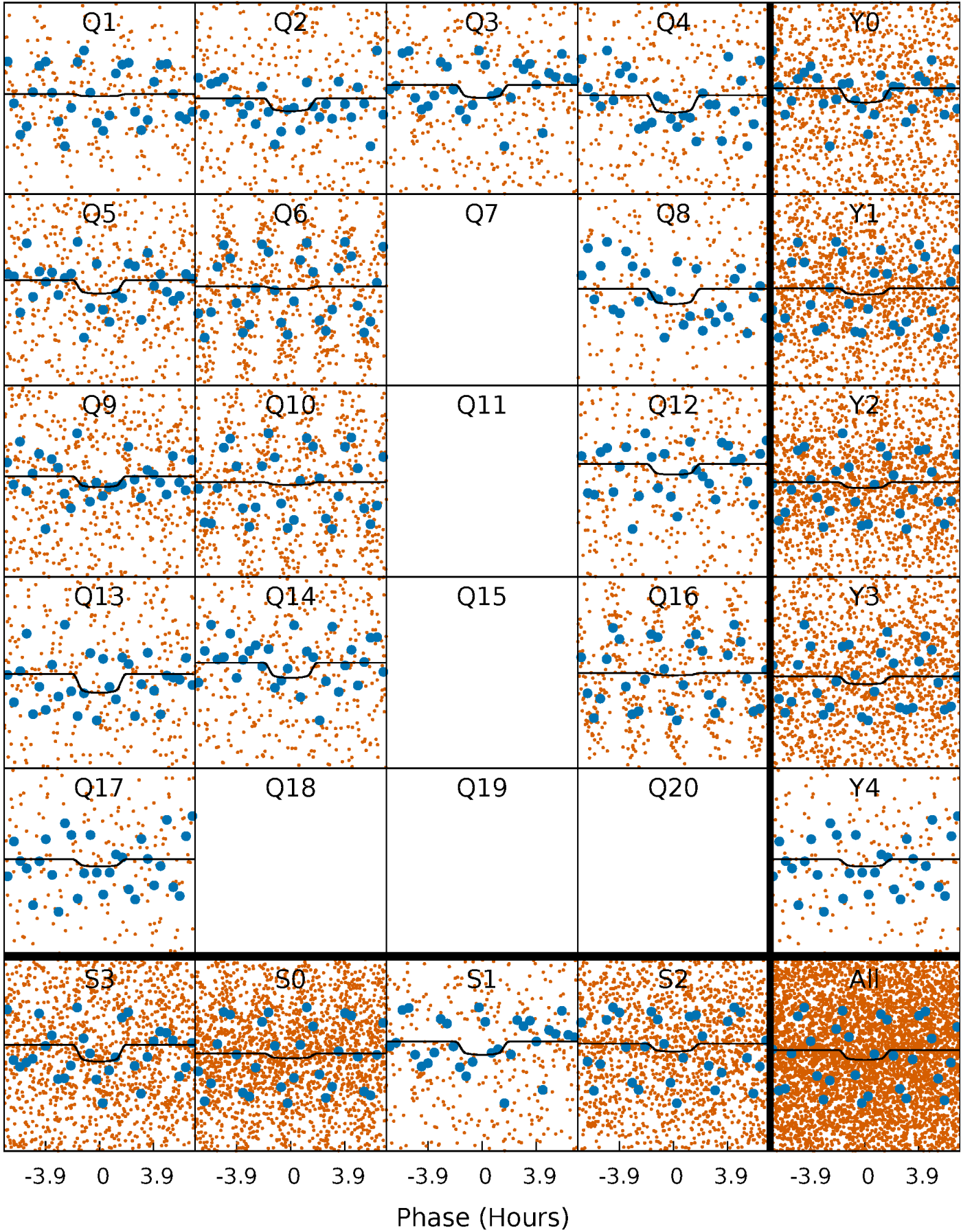
PDC Quarter-Phased Transit Curves

TCE 009788612-01 P= 3.522168 Days $T_0=133.029616$ (BKJD)



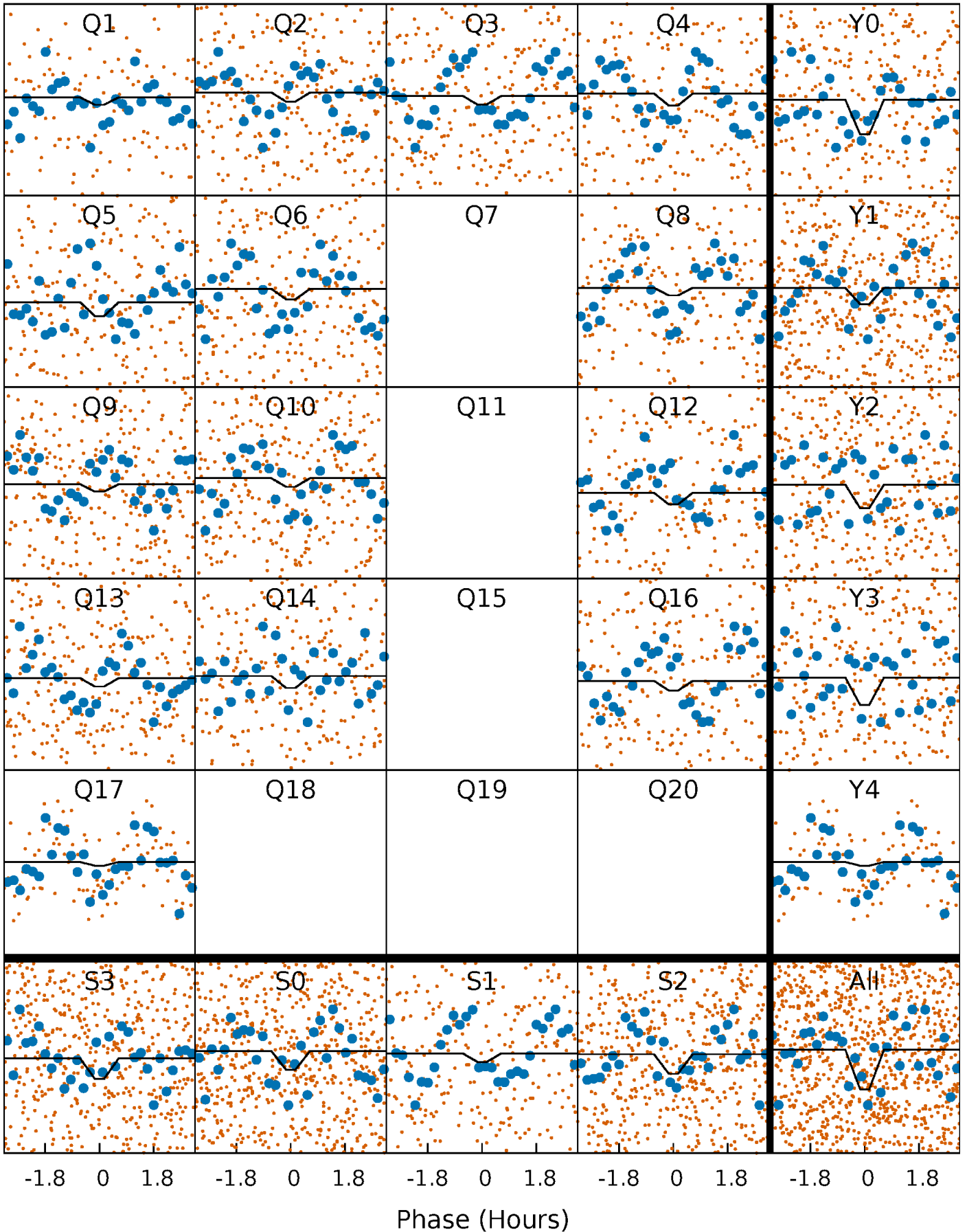
DV Quarter-Phased Transit Curves

TCE 009788612-01 P= 3.522168 Days $T_0=133.029616$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

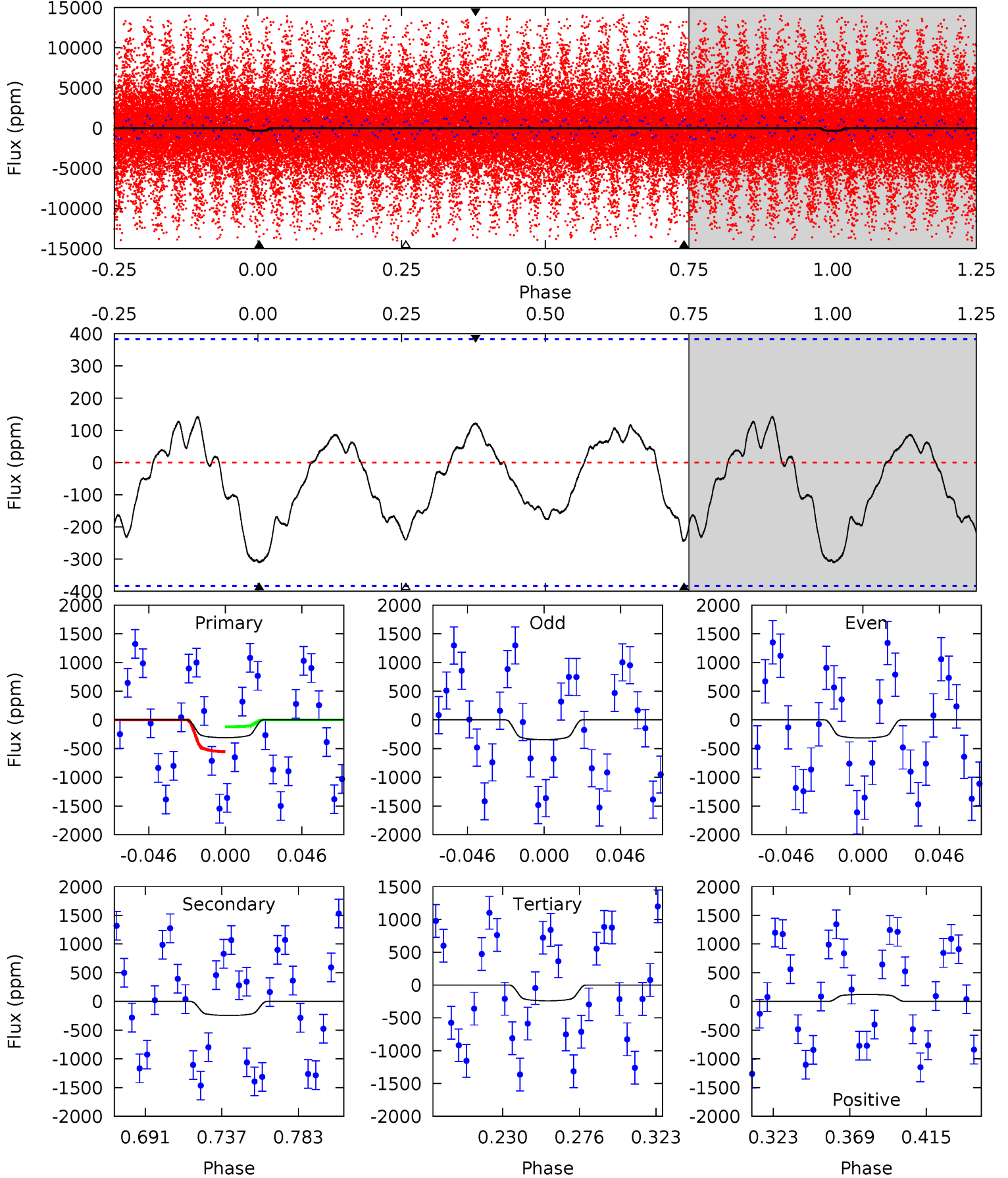
TCE 009788612-01 P= 3.522045 Days $T_0=133.042882$ (BKJD)



DV Model-Shift Uniqueness Test

009788612-01, P = 3.522168 Days, E = 129.507448 Days

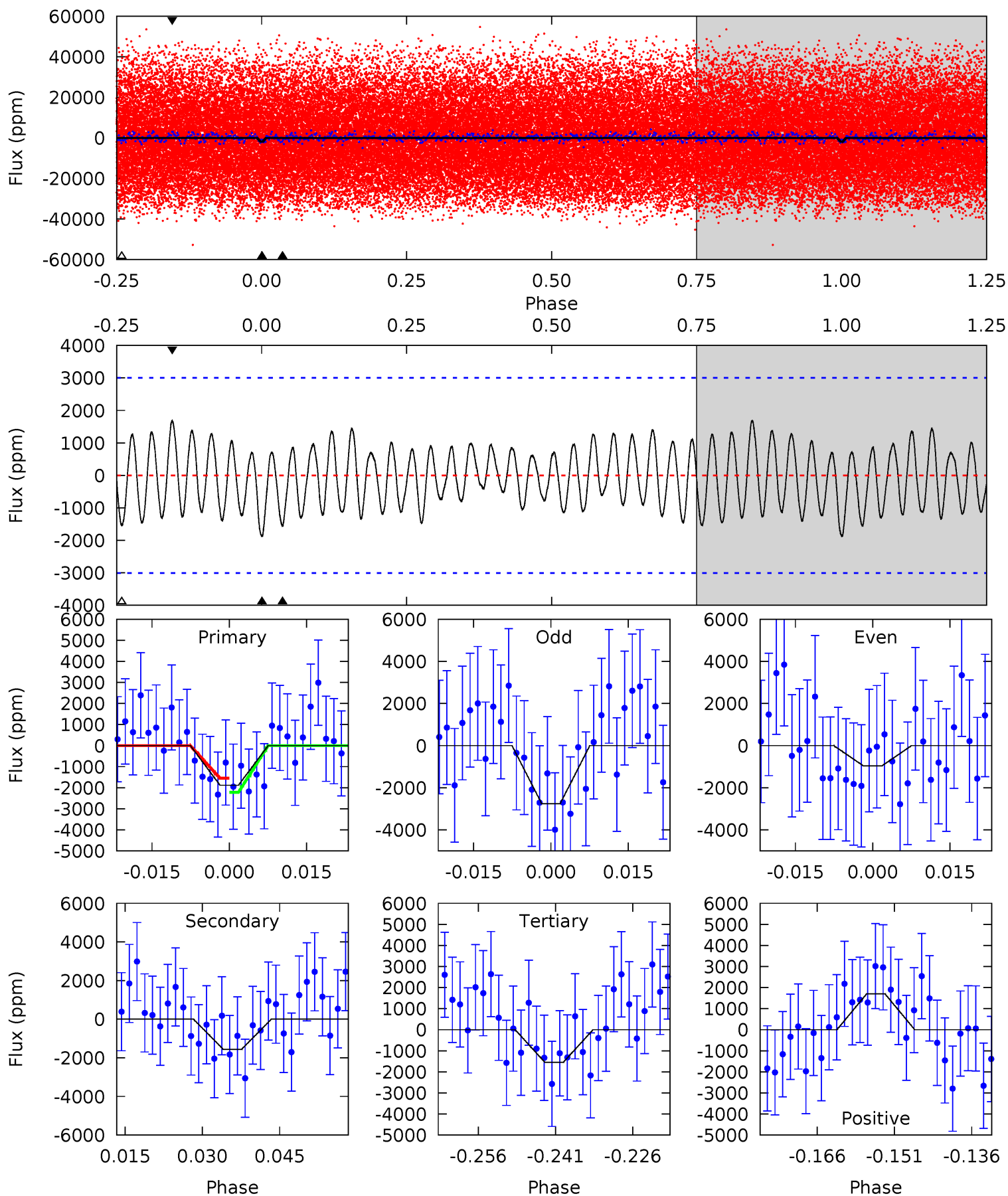
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.82	3.01	2.97	1.50	4.72	1.99	1.18	0.85	2.32	0.04	1.50	0.18	1.05	0.32	2.69



Alt Model-Shift Uniqueness Test

009788612-01, P = 3.522045 Days, E = 129.520837 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.10	2.57	2.55	2.80	4.95	2.43	1.31	0.55	0.30	0.01	-0.24	1.48	0.51	0.47	0.55



Stellar Parameters For KIC 009788612

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7478^{+206}_{-335}	$4.097^{+0.124}_{-0.186}$	$0.120^{+0.150}_{-0.400}$	$1.935^{+0.591}_{-0.394}$	$1.706^{+0.207}_{-0.276}$	$0.332^{+0.210}_{-0.175}$
	+3%/-4%	+3%/-5%	+125%/-333%	+31%/-20%	+12%/-16%	+63%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009788612-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-244 ± 81	$3.96^{+2.32}_{-2.14}$	2774^{+207}_{-180}	6780^{+4517}_{-1493}	25^{+91}_{-16}
Alt.	-1558 ± 607	$9.98^{+2.76}_{-2.61}$	2775^{+194}_{-174}	6717^{+1441}_{-1093}	25^{+24}_{-14}

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 $A_{obs} \gg 1.0$

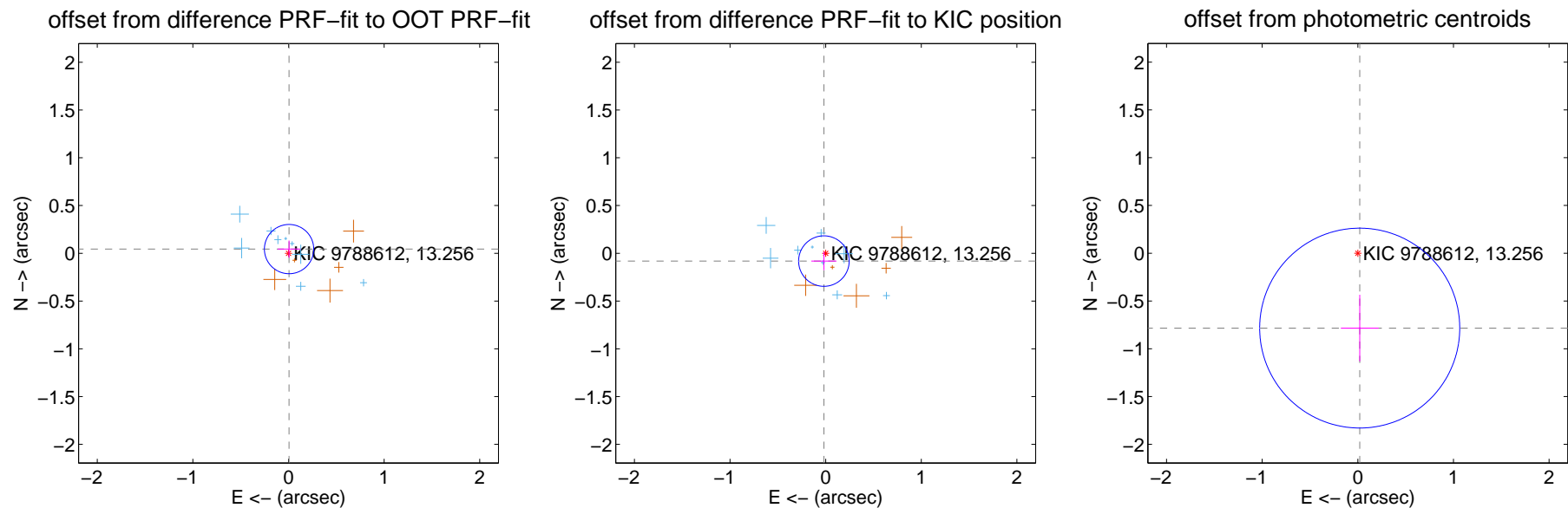
DV Centroid Data

Supplemental centroid analysis for 009788612-01. Kepler magnitude: 13.26. Transit SNR 6.49

There are 9 quarters with good PRF difference image offsets

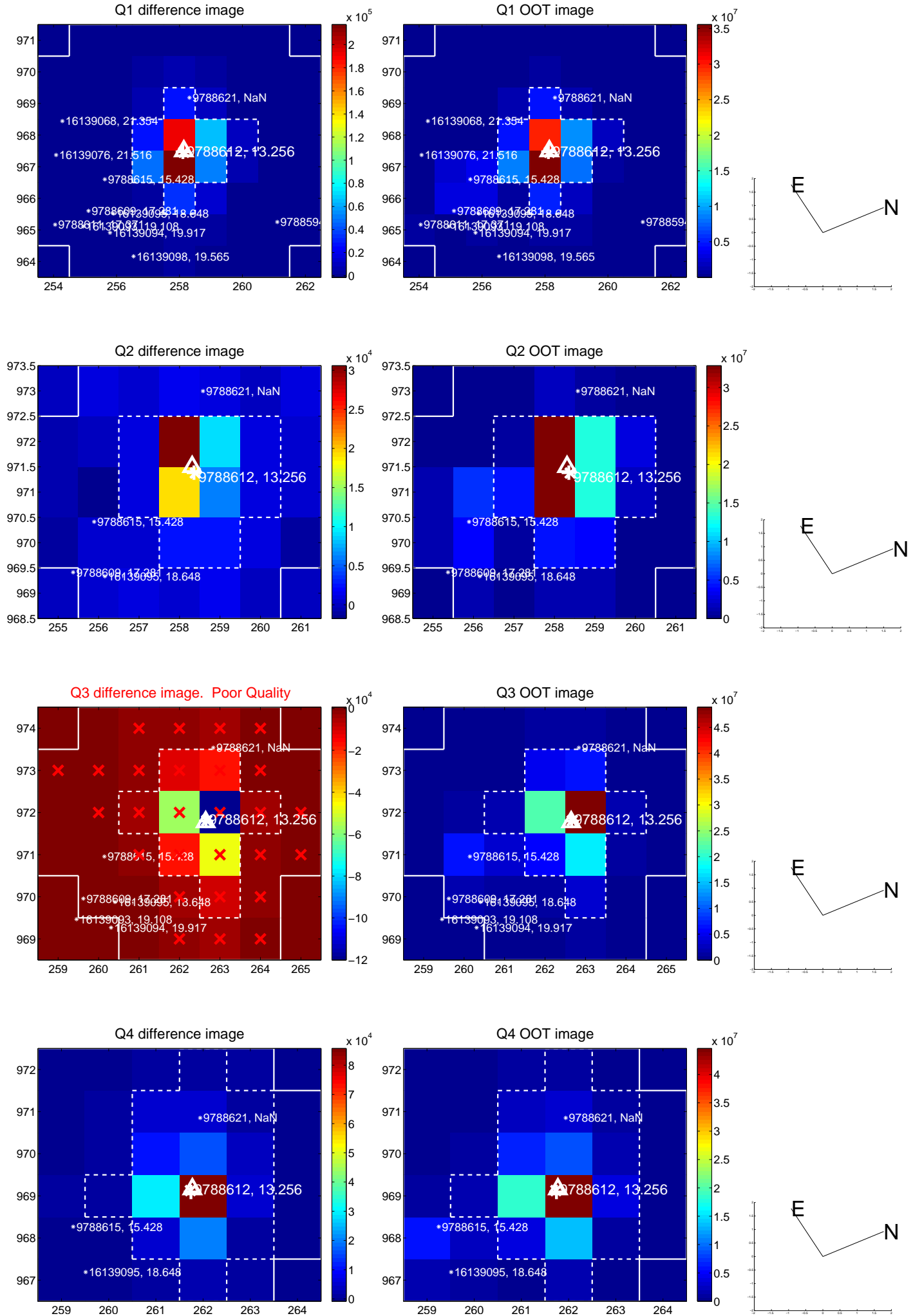
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.044 ± 0.086	0.52	-0.006 ± 0.119	0.044 ± 0.090
PRF-fit source offset from KIC position	0.084 ± 0.088	0.95	0.018 ± 0.131	-0.082 ± 0.094
photometric centroid source offset	0.78 ± 0.35	2.25	-0.02 ± 0.20	-0.78 ± 0.35

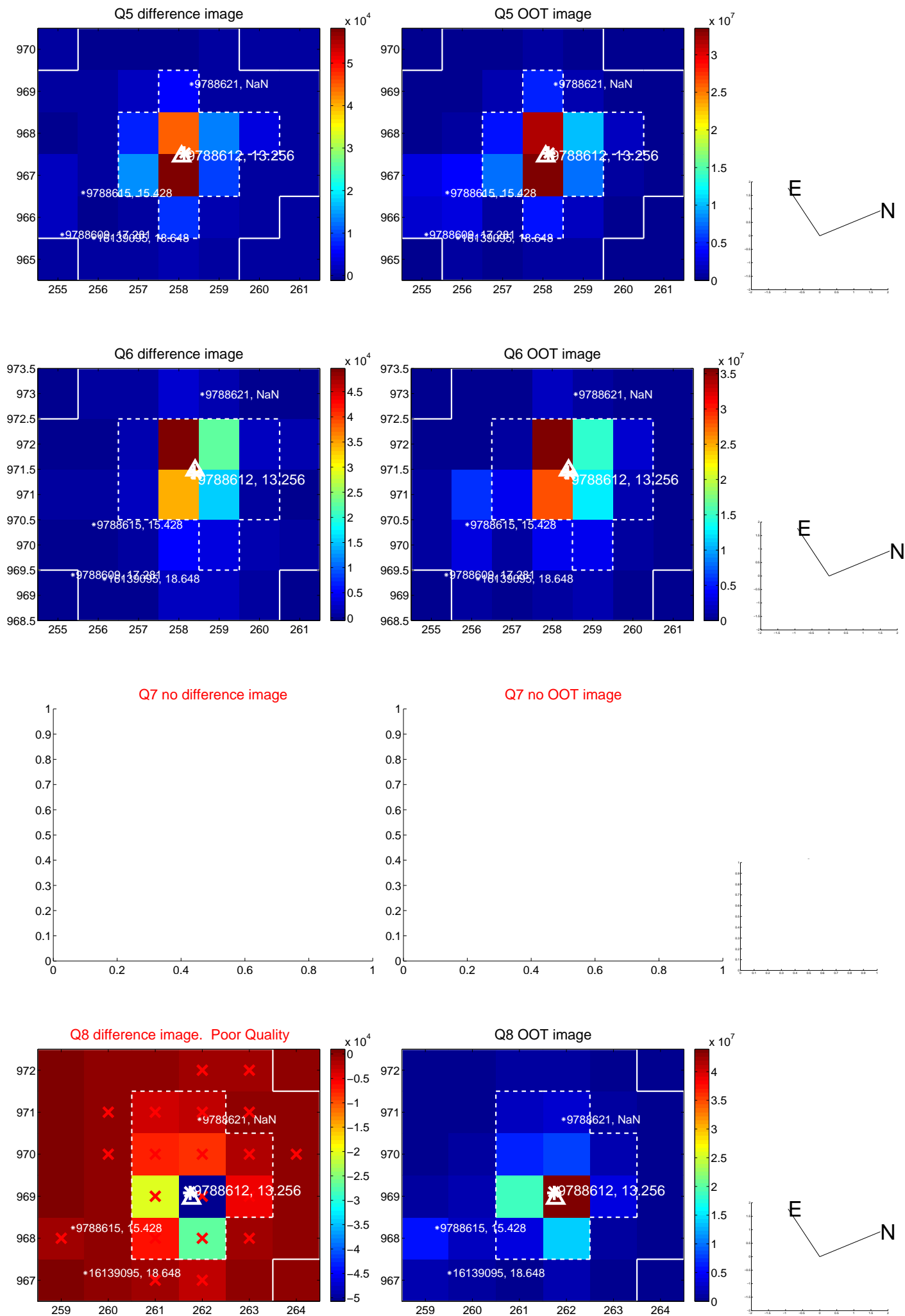


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

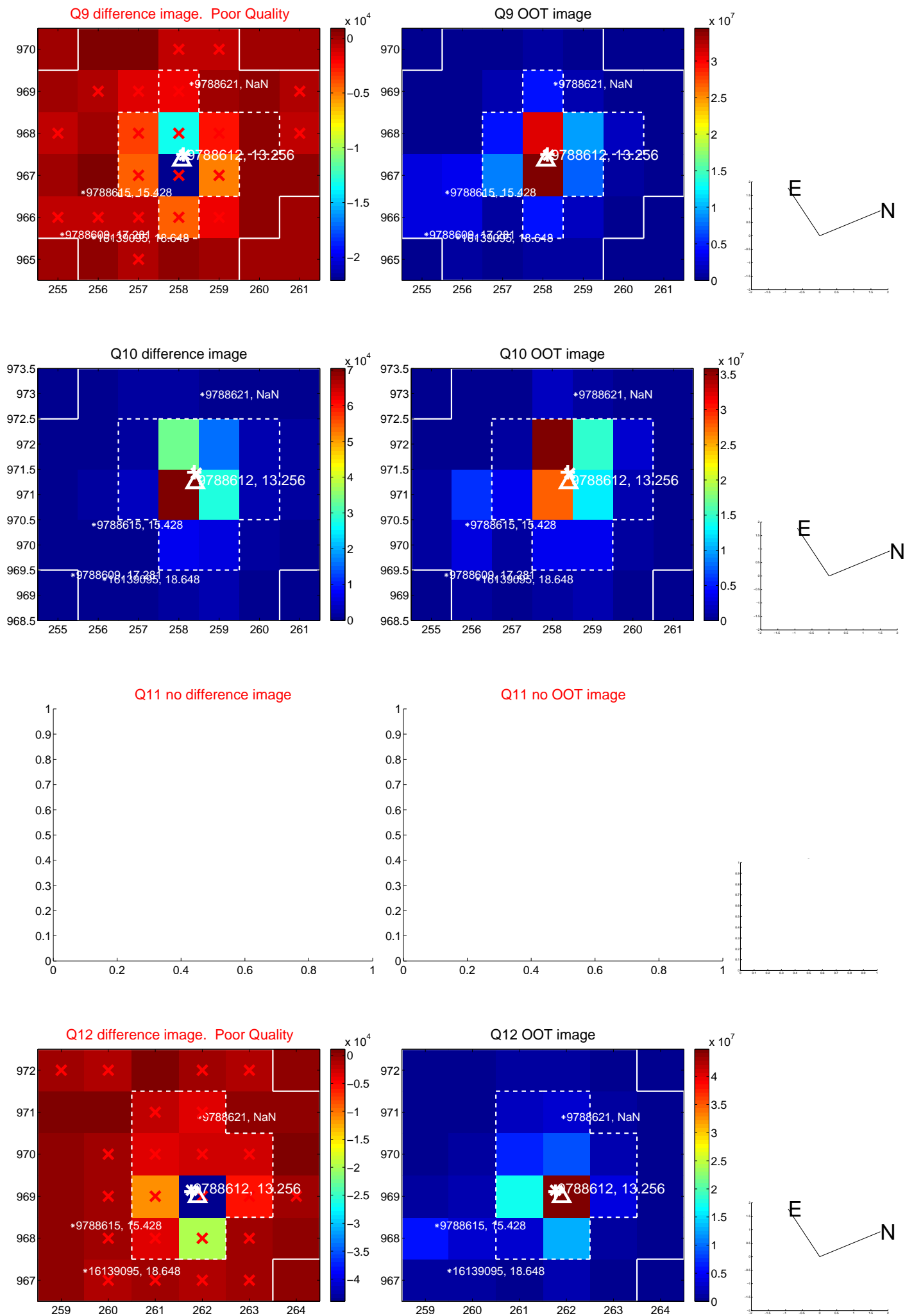
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



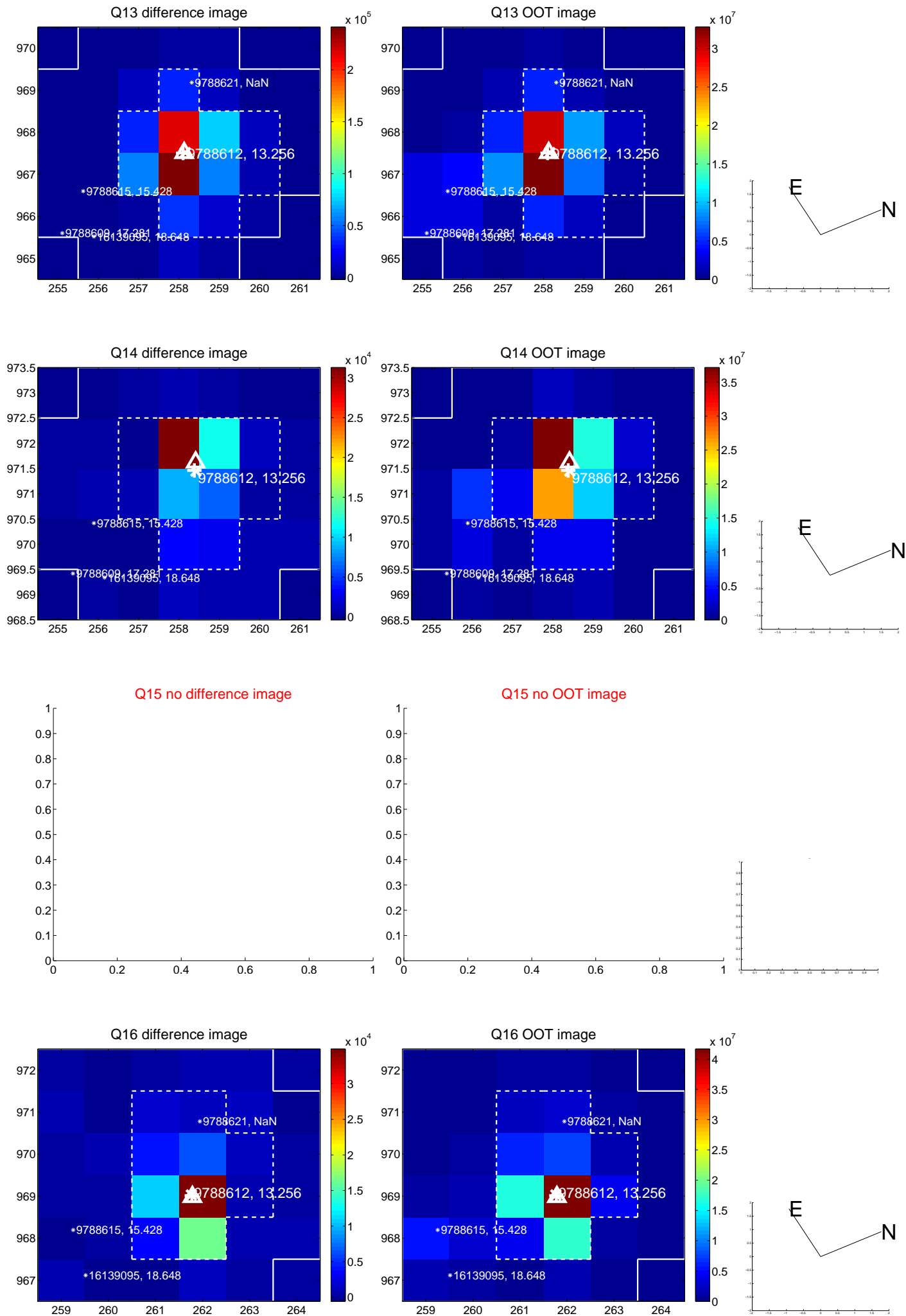
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

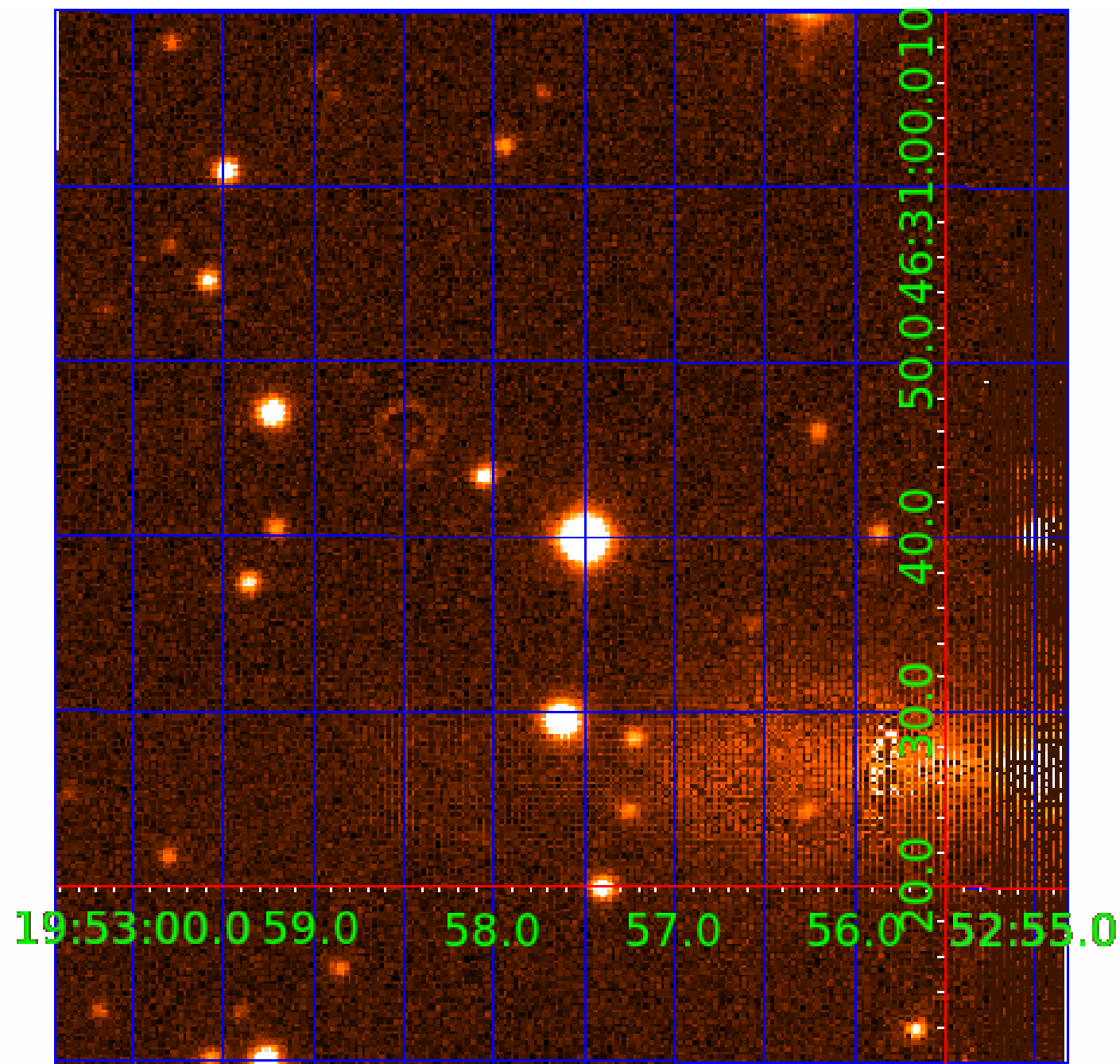


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009788612

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})
009788612-01	OBS	No	3.522168	133.029616	282.8	3.452	8.7	6.5	1.94	7478	3.76	3576.10
009788612-02	OBS	No	1.761010	132.190519	181.7	8.104	8.7	7.7	1.94	7478	2.71	9011.72
009788612-03	OBS	No	2.559479	132.273063	140.5	3.470	7.8	1.7	1.94	7478	2.64	5473.79
009788612-04	OBS	No	2.559422	131.729174	585.5	30.713	8.2	12.6	1.94	7478	5.85	5473.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009788612-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009788612-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009788612-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009788612-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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.

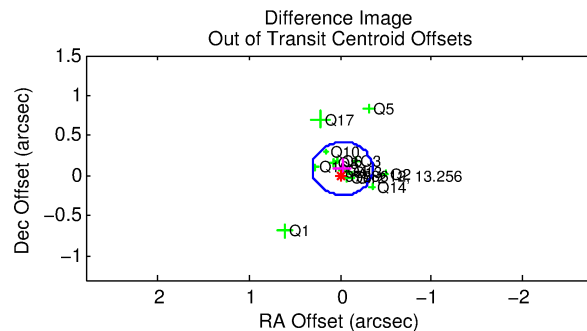
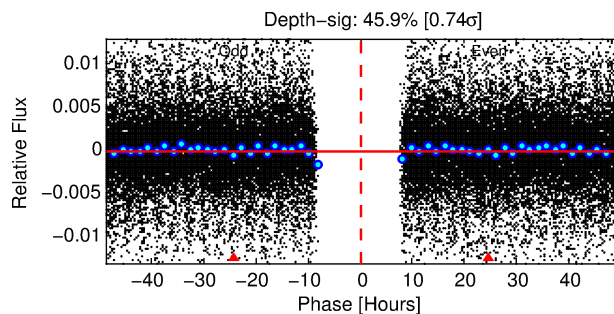
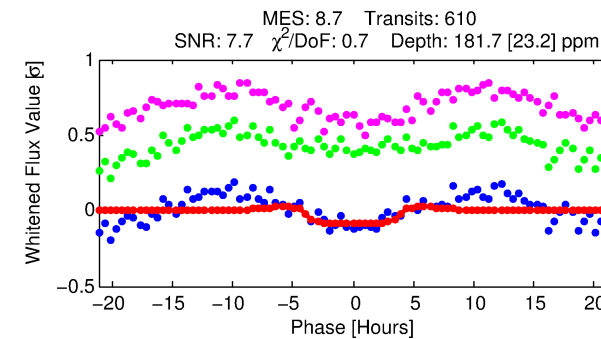
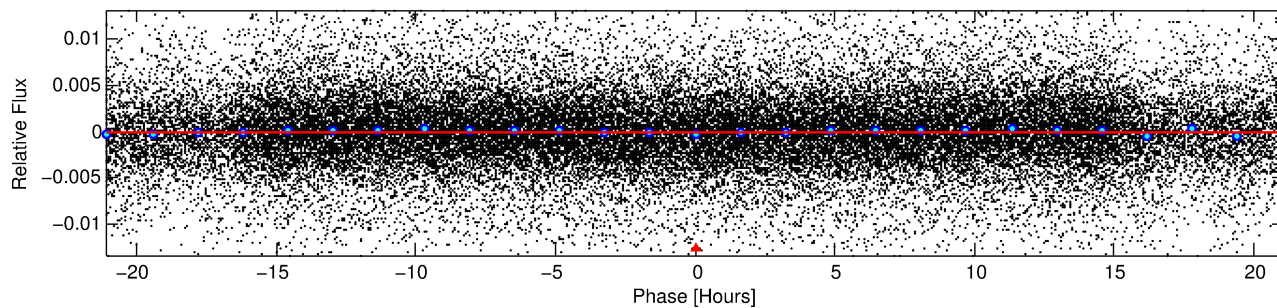
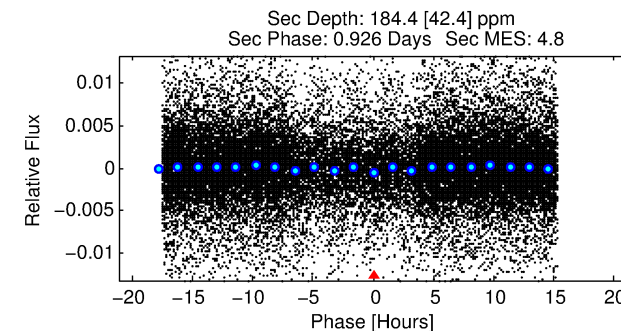
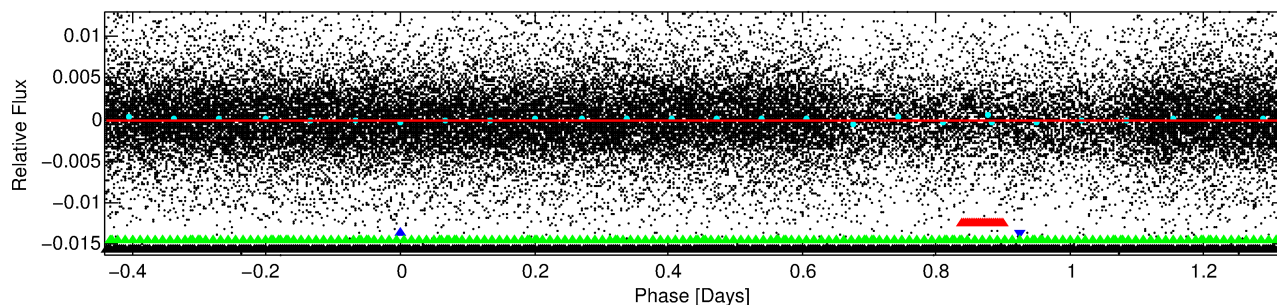
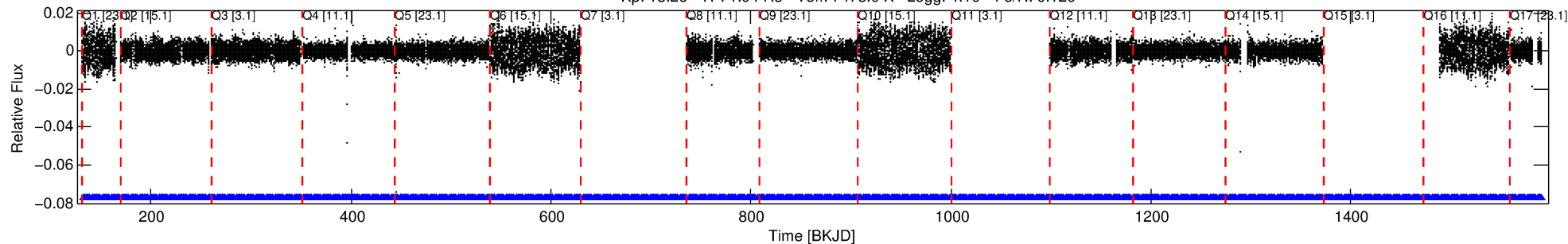
Ephemeris Match Information For 009788612-02

No Significant Match Found

DV One-Page Summary

KIC: 9788612 Candidate: 2 of 4 Period: 1.761 d

Kp: 13.26 R*: 1.94 Rs Teff: 7478.0 K Logg: 4.10 Fe/H: 0.120



DV Fit Results:

Period = 1.76101 [0.00003] d
Epoch = 132.1905 [0.0117] BKJD
Rp/R* = 0.0128 [0.0185]
a/R* = 1.64 [9.15]
b = 0.49 [13.77]
Seff = 9011.72 [3548.97]
Teq = 2484 [245] K
Rp = 2.71 [3.99] Re
a = 0.0341 [0.0085] AU
Ag = 16.09 [46.80] [0.32σ]
Teff = 7693 [5564] K [0.94σ]

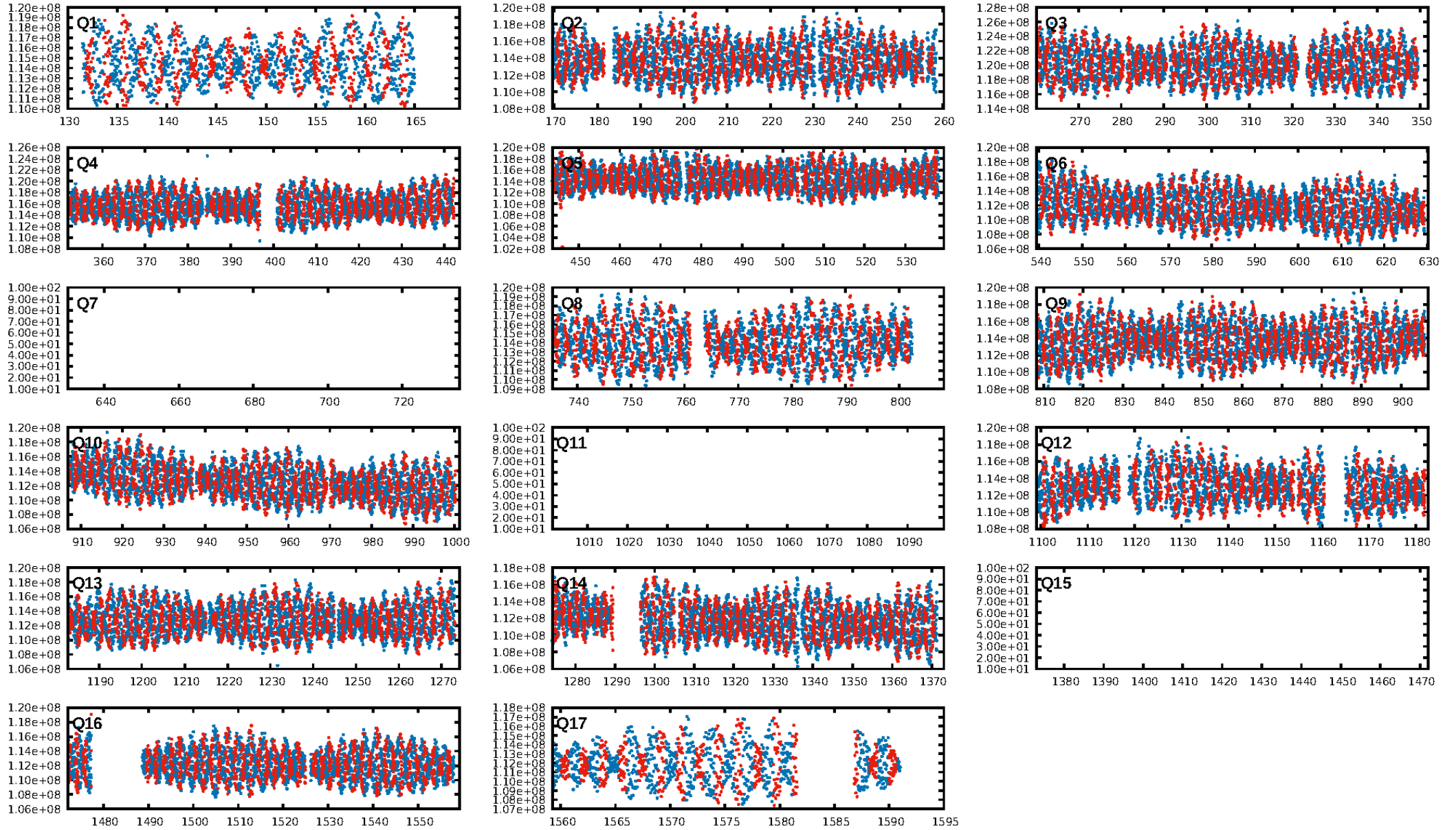
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 45.4% [0.60σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [575/575]
GhostDiagnostic-chr: 0.5633
Centroid-sig: 0.0%
Centroid-so: 0.581 arcsec [2.10σ]
OotOffset-rm: 0.092 arcsec [0.83σ]
KicOffset-rm: 0.019 arcsec [0.16σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
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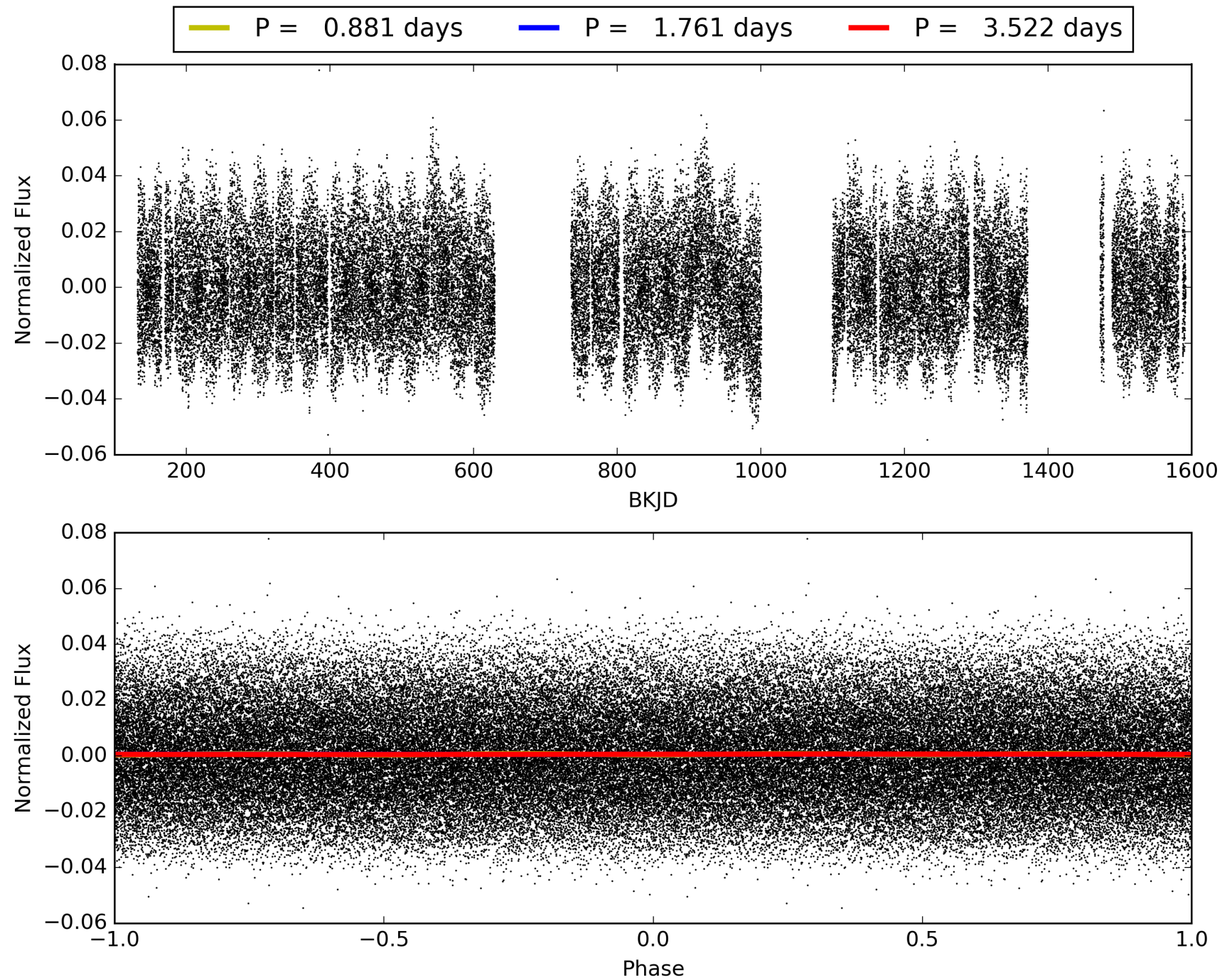
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 18:11:10 Z

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

TCE 009788612-02, PDC Light Curves

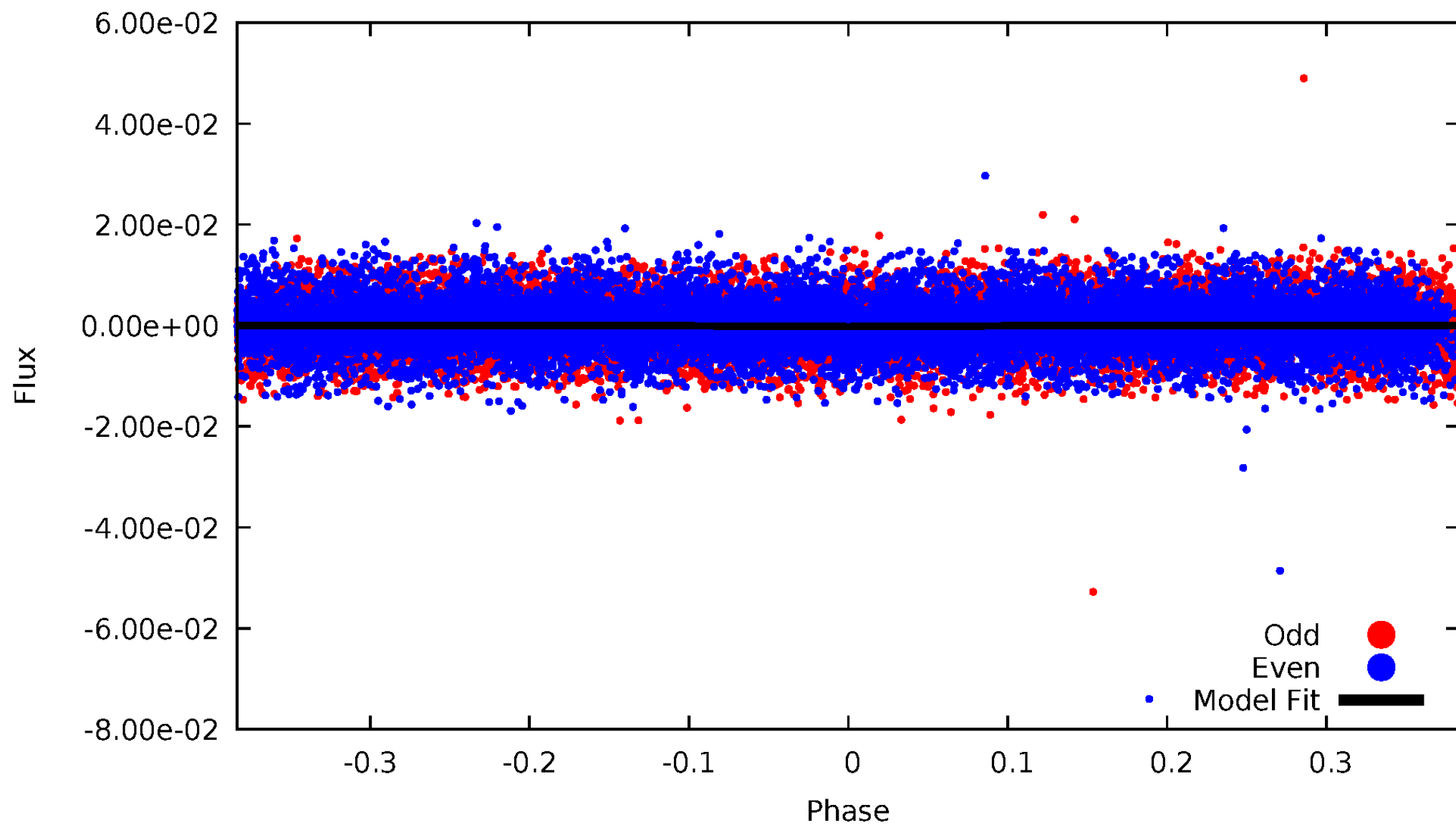


TCE 009788612-02



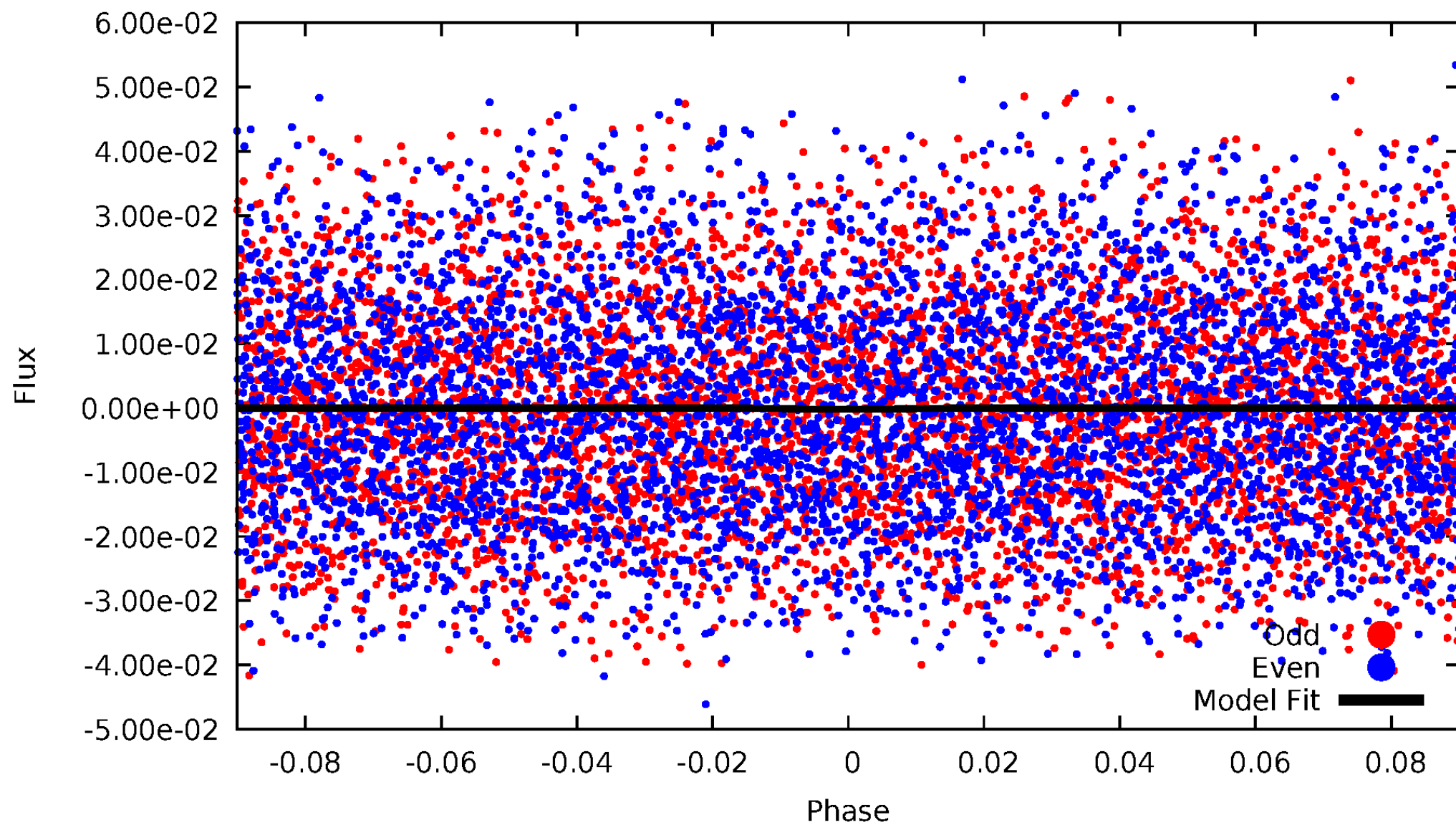
DV Odd/Even

TCE 009788612-02



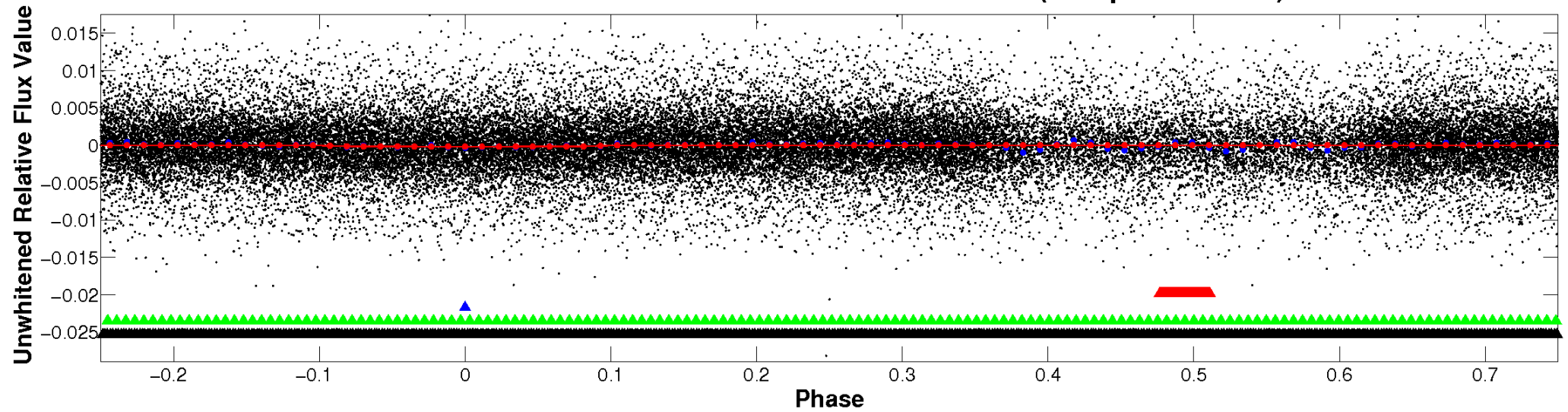
ALT Odd/Even

TCE 009788612-02

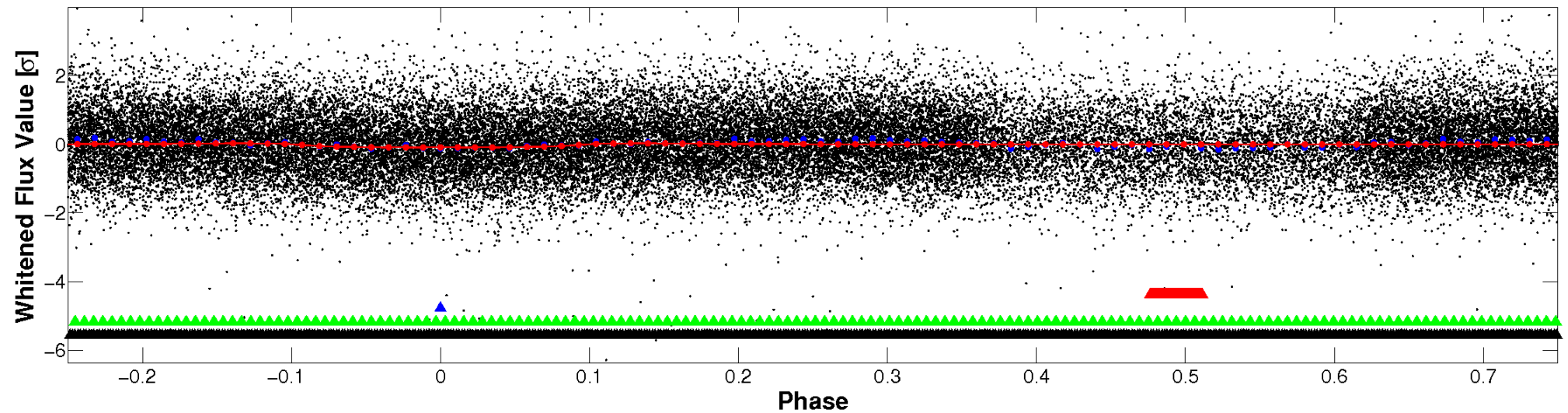


Non-Whitened Vs. Whitened Light Curve

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

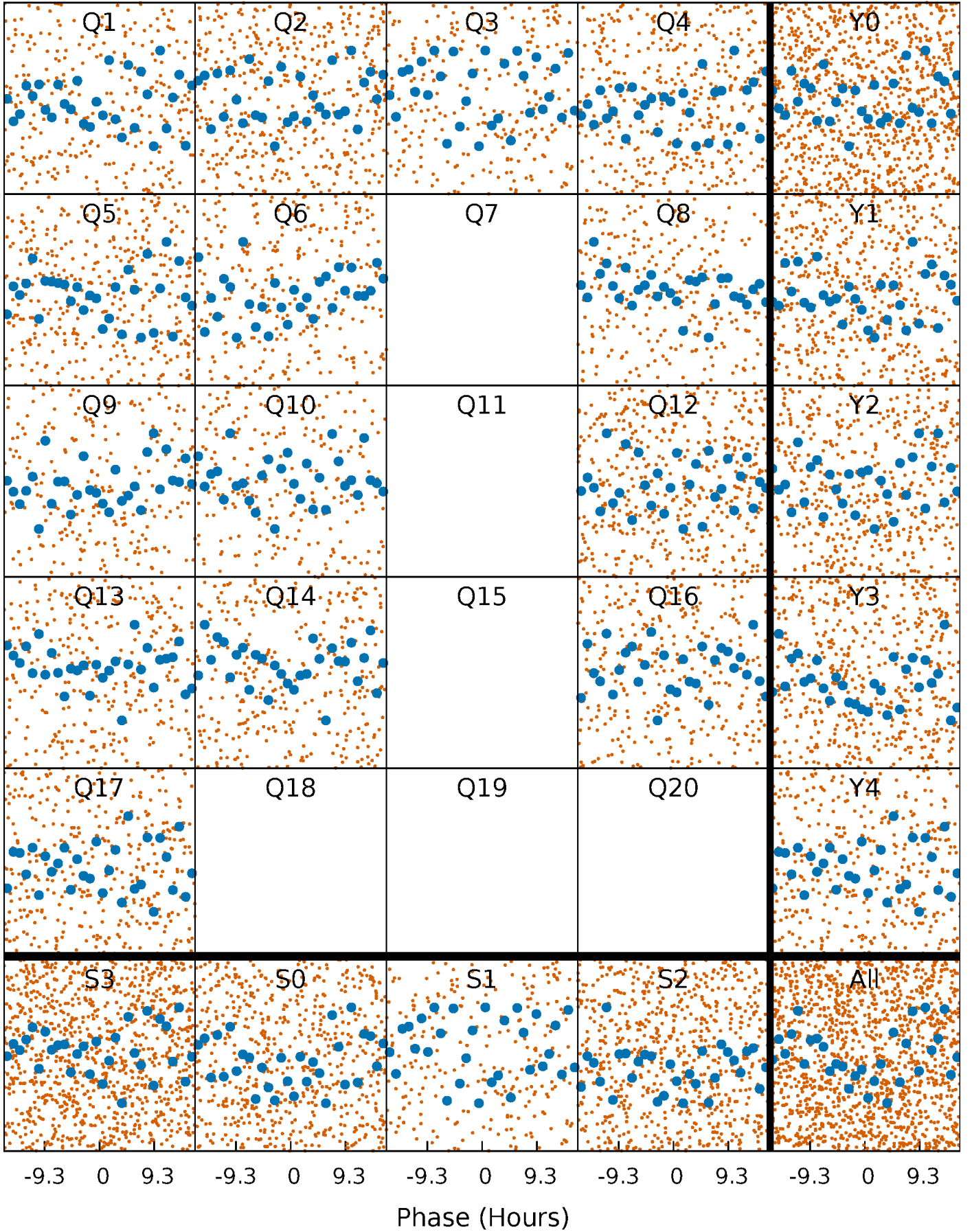


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



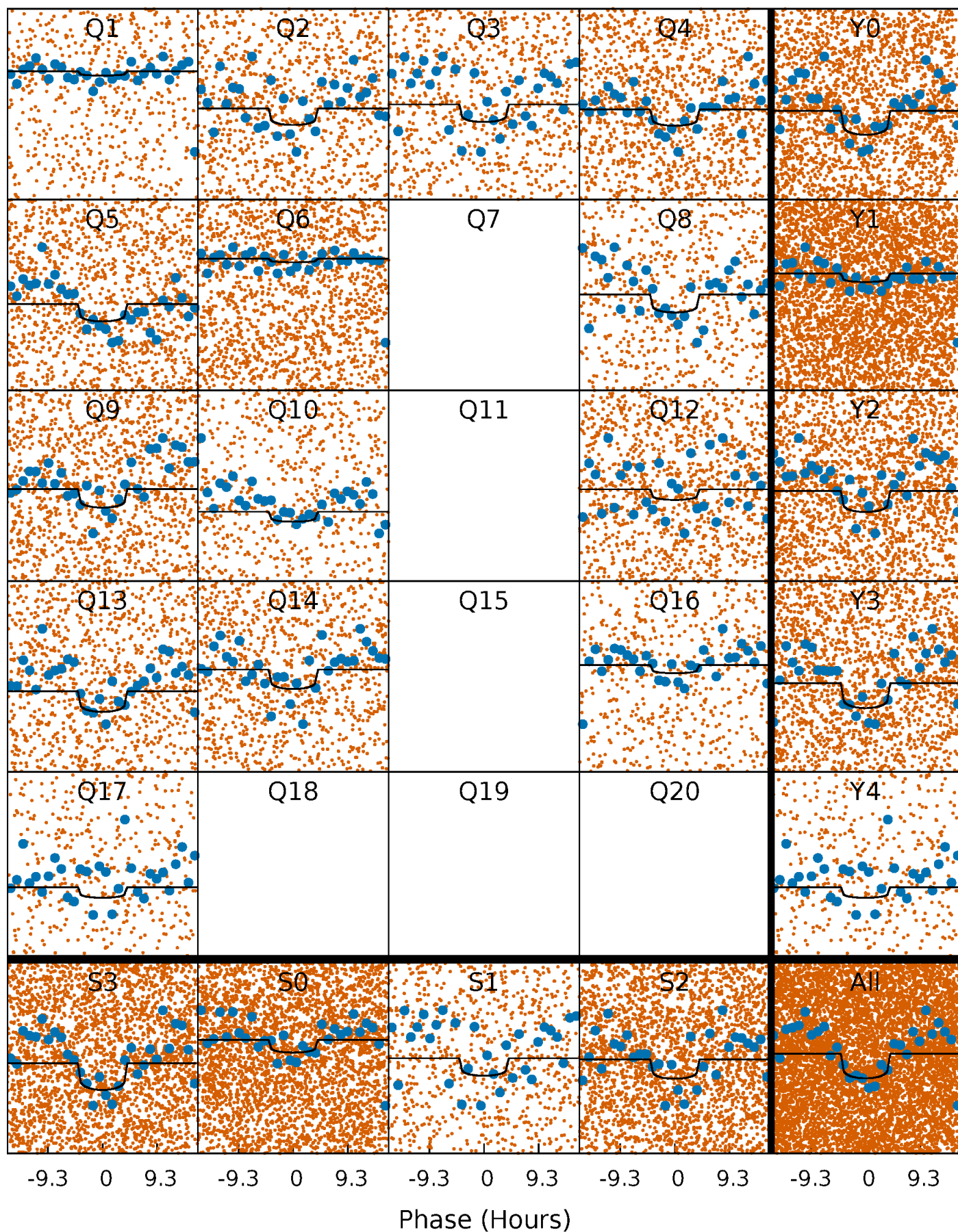
PDC Quarter-Phased Transit Curves

TCE 009788612-02 P= 1.761010 Days $T_0=132.190519$ (BKJD)



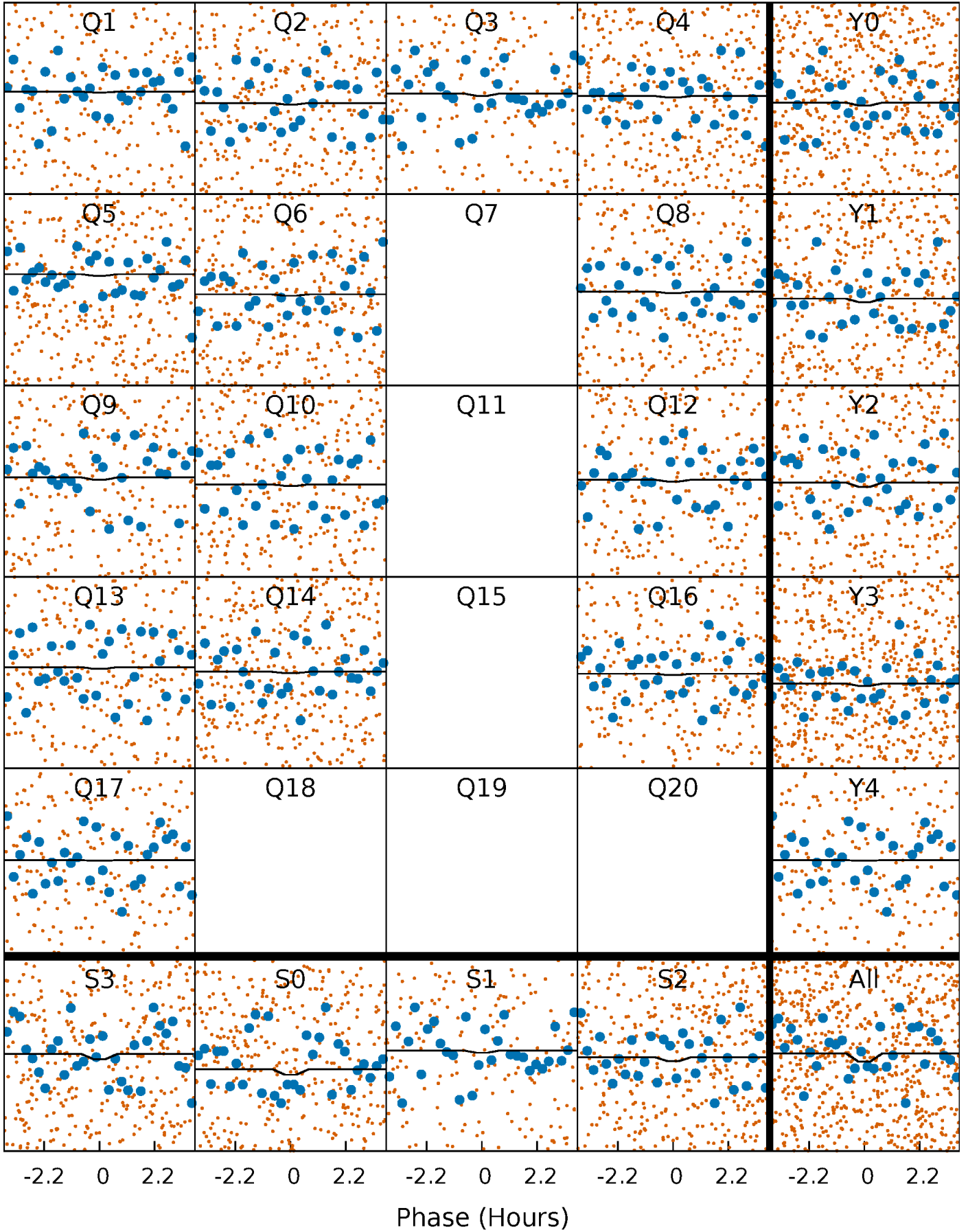
DV Quarter-Phased Transit Curves

TCE 009788612-02 P= 1.761010 Days $T_0=132.190519$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

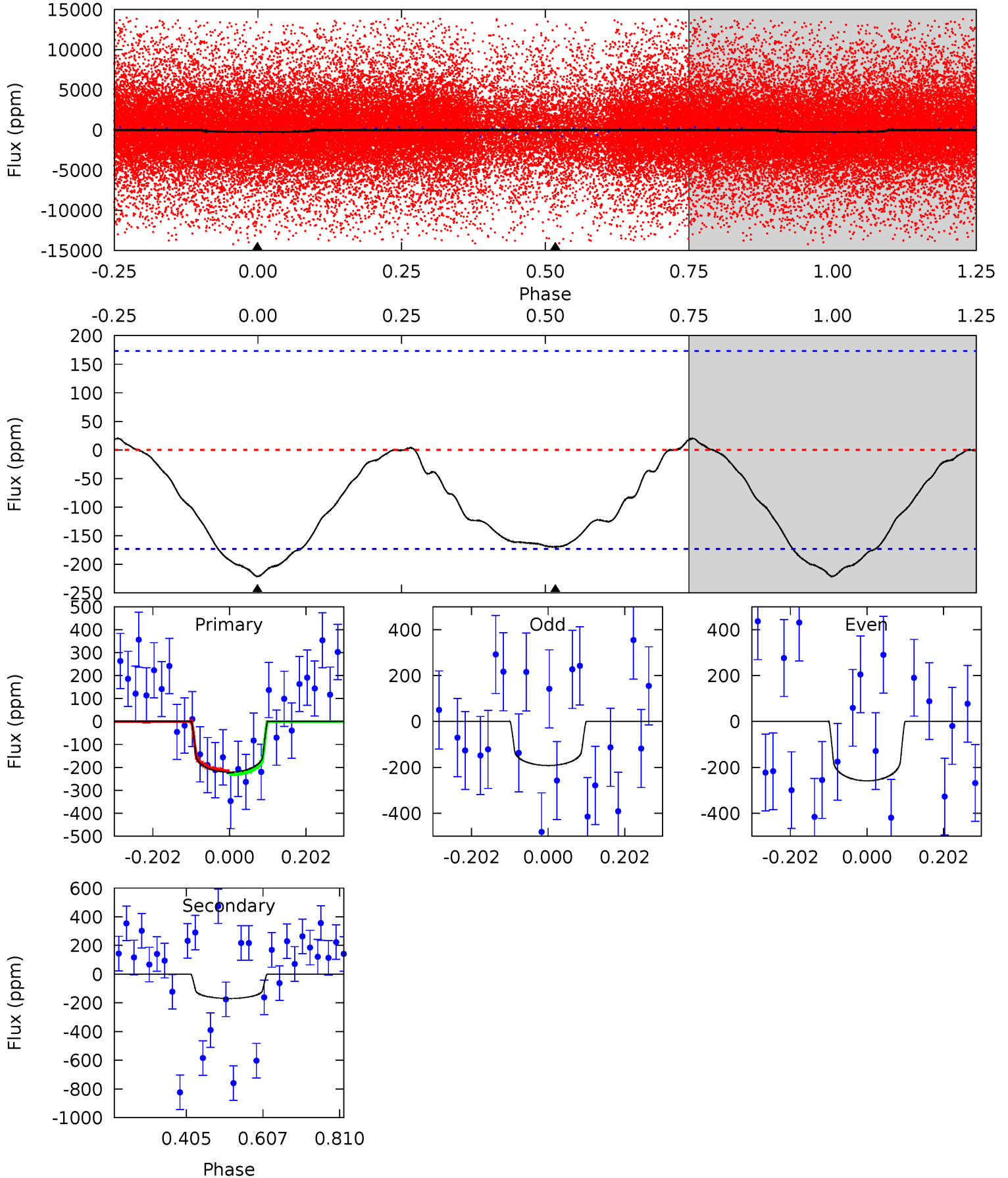
TCE 009788612-02 P= 1.760998 Days $T_0=132.194351$ (BKJD)



DV Model-Shift Uniqueness Test

009788612-02, P = 1.761010 Days, E = 130.429509 Days

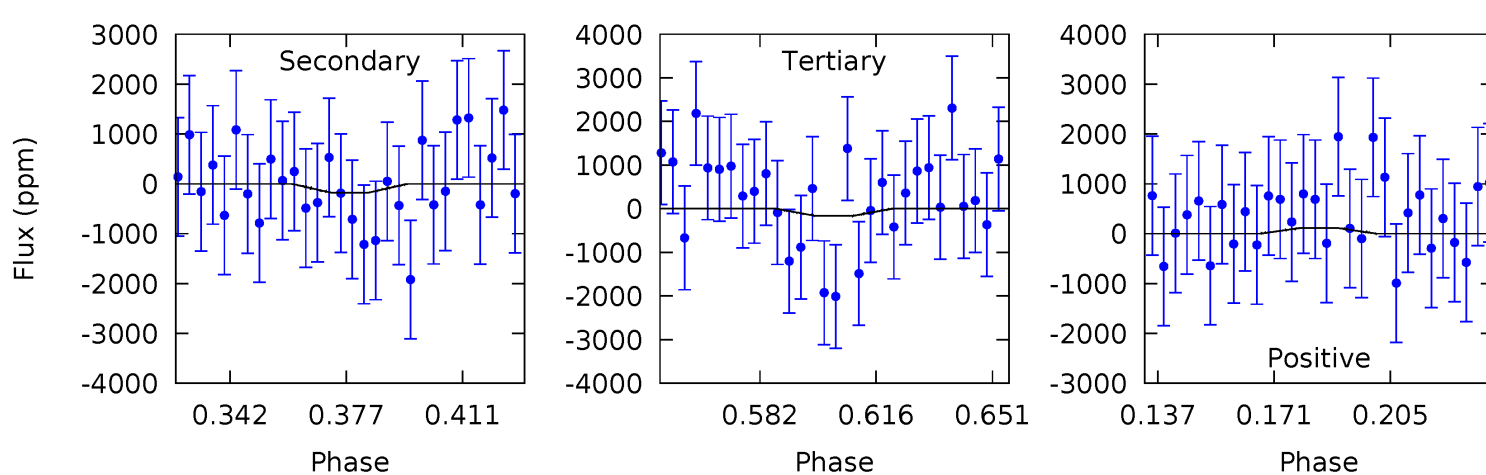
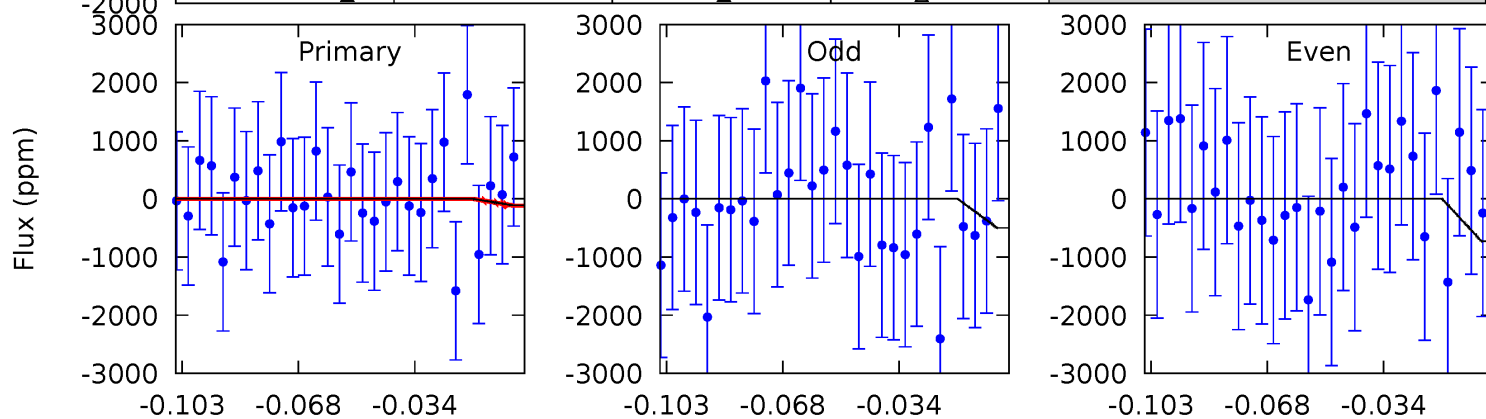
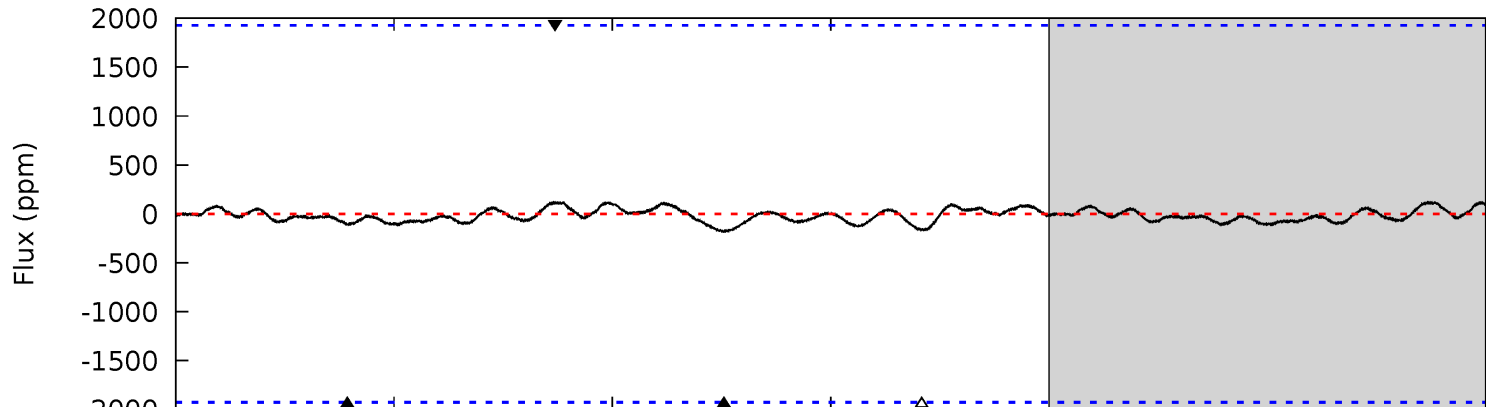
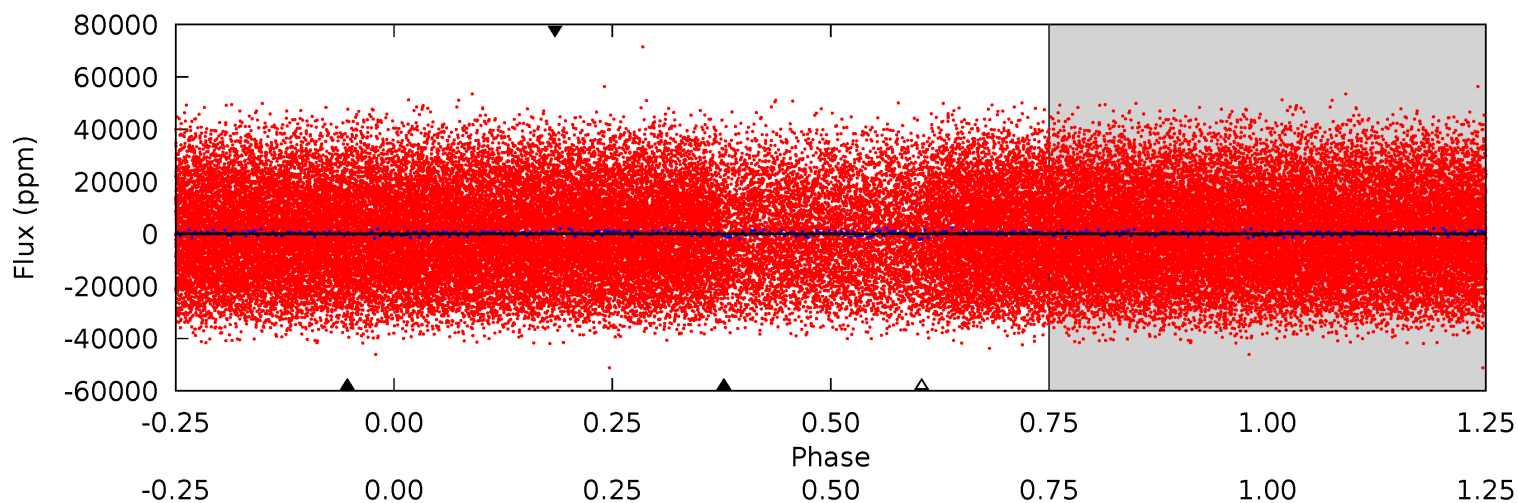
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.64	4.32	0	0	4.41	1.27	0.44	5.64	5.64	4.32	4.32	0.86	0.98	0.08	0.23



Alt Model-Shift Uniqueness Test

009788612-02, P = 1.760998 Days, E = 130.433353 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.27	0.44	0.41	0.28	4.78	2.12	0.15	-0.14	-0.01	0.03	0.16	0.29	0.50	0.39	0.01



Stellar Parameters For KIC 009788612

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7478^{+206}_{-335}	$4.097^{+0.124}_{-0.186}$	$0.120^{+0.150}_{-0.400}$	$1.935^{+0.591}_{-0.394}$	$1.706^{+0.207}_{-0.276}$	$0.332^{+0.210}_{-0.175}$
	+3%/-4%	+3%/-5%	+125%/-333%	+31%/-20%	+12%/-16%	+63%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009788612-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-169 ± 39	$3.83^{+3.59}_{-2.53}$	3500^{+276}_{-217}	6248^{+6722}_{-1764}	$7.349^{+58.334}_{-5.520}$
Alt.	-179 ± 403	$3.98^{+3.30}_{-2.70}$	3490^{+264}_{-225}	5254^{+6748}_{-12139}	$3.862^{+49.873}_{-14.489}$

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 $A_{obs} \gg 1.0$

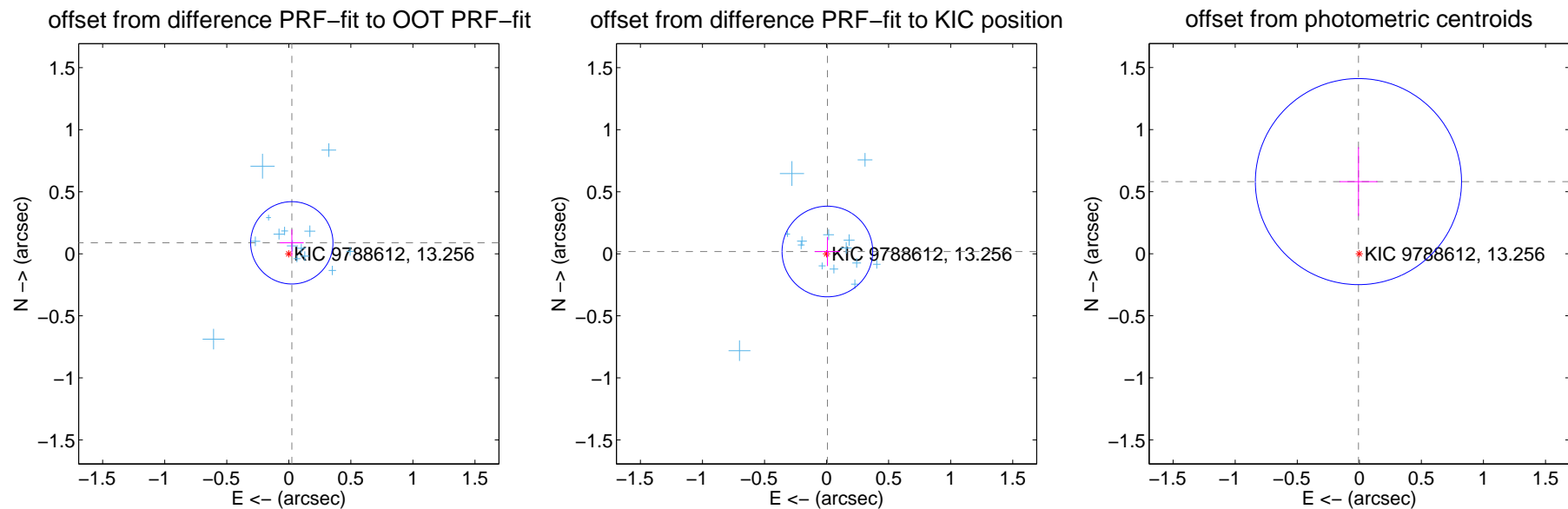
DV Centroid Data

Supplemental centroid analysis for 009788612-02. Kepler magnitude: 13.26. Transit SNR 7.69

There are 14 quarters with good PRF difference image offsets

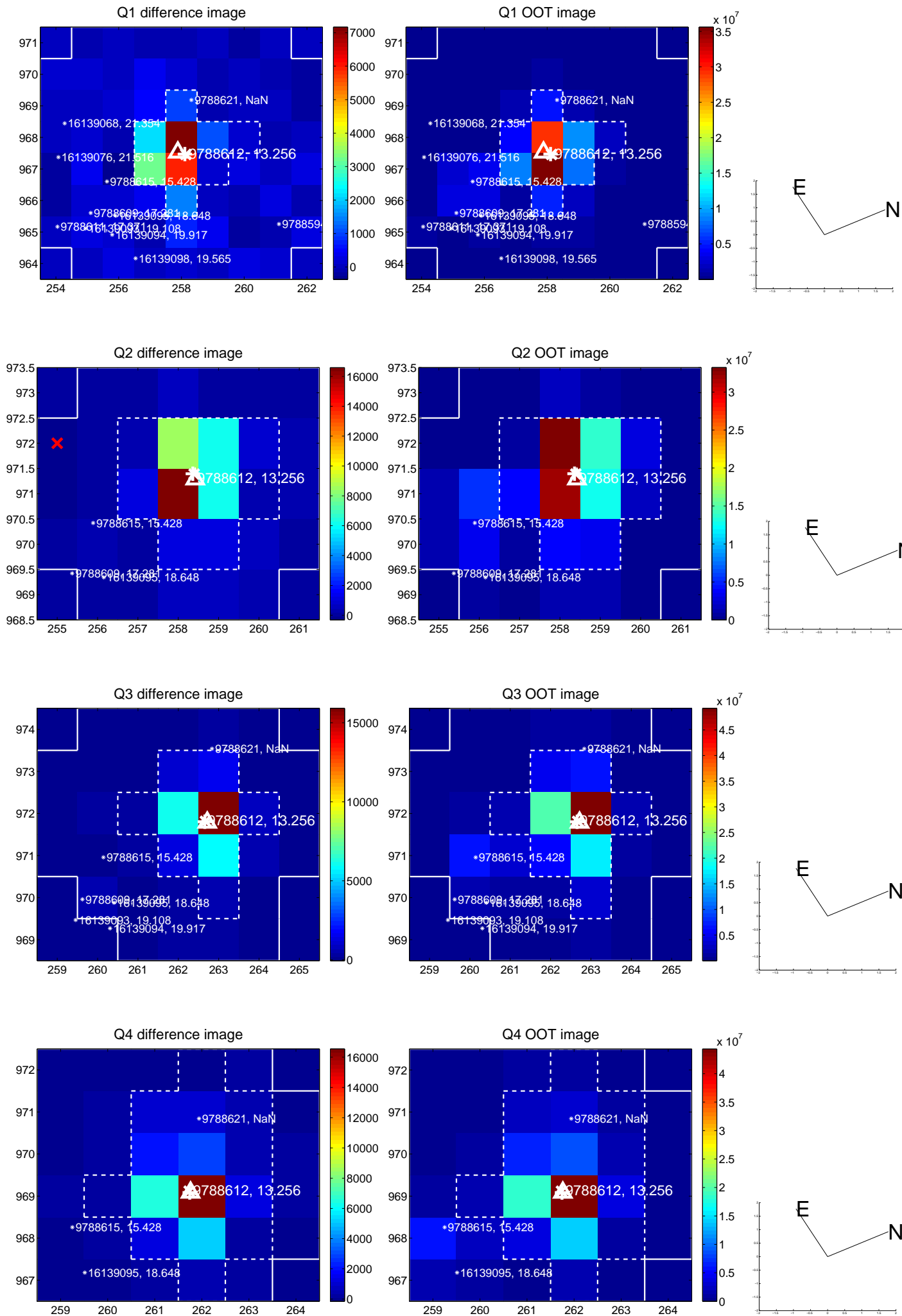
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.092 ± 0.111	0.83	-0.024 ± 0.096	0.088 ± 0.109
PRF-fit source offset from KIC position	0.019 ± 0.122	0.16	-0.006 ± 0.102	0.018 ± 0.117
photometric centroid source offset	0.58 ± 0.28	2.10	0.01 ± 0.15	0.58 ± 0.28

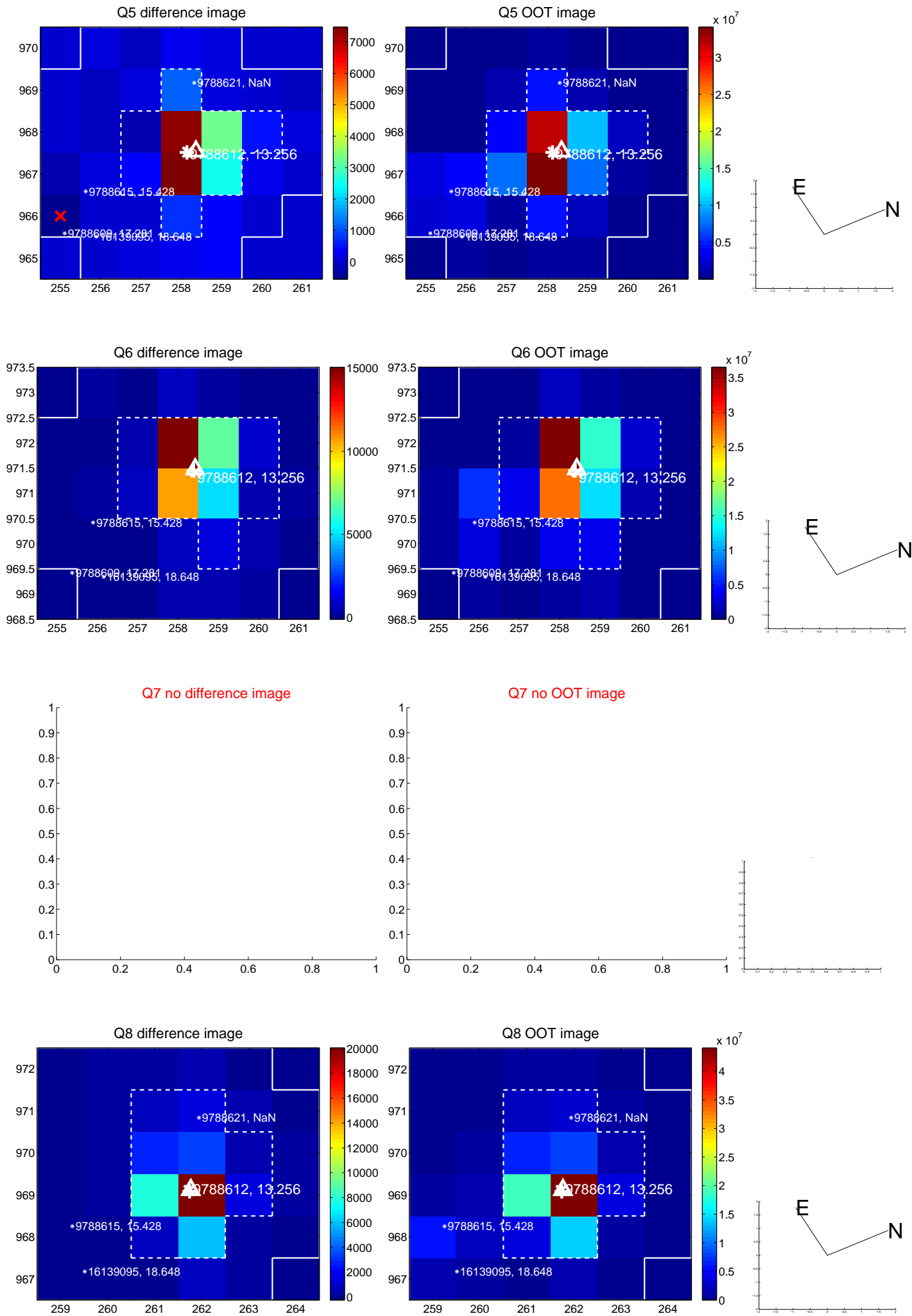


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

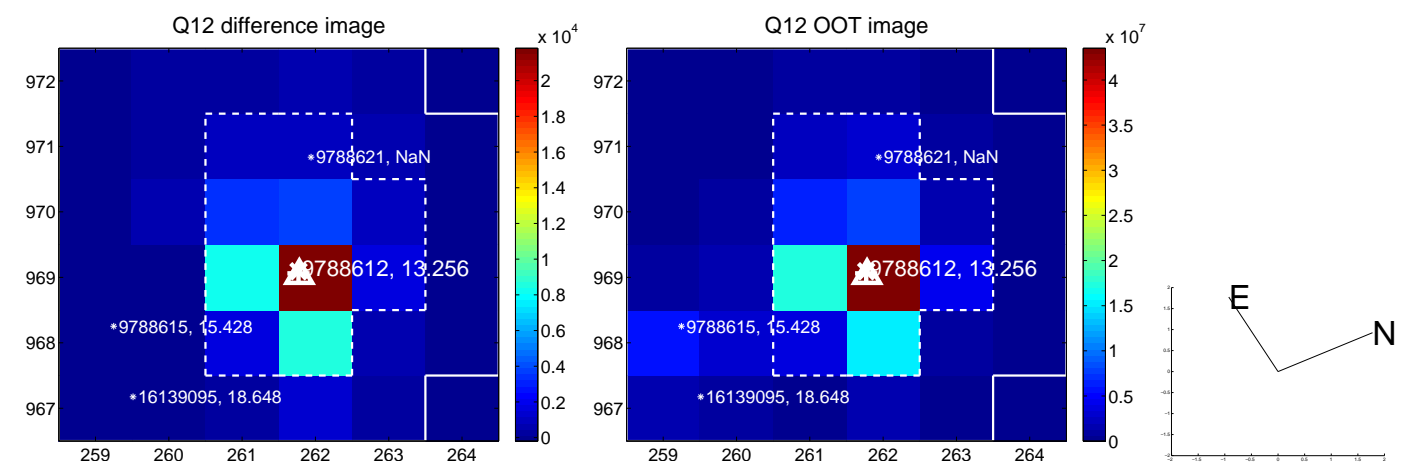
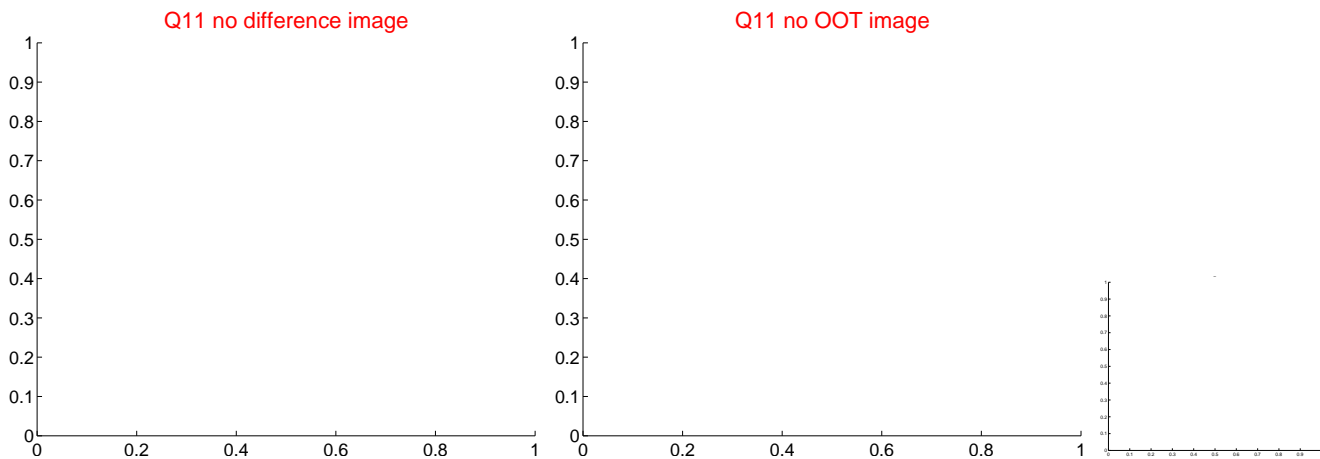
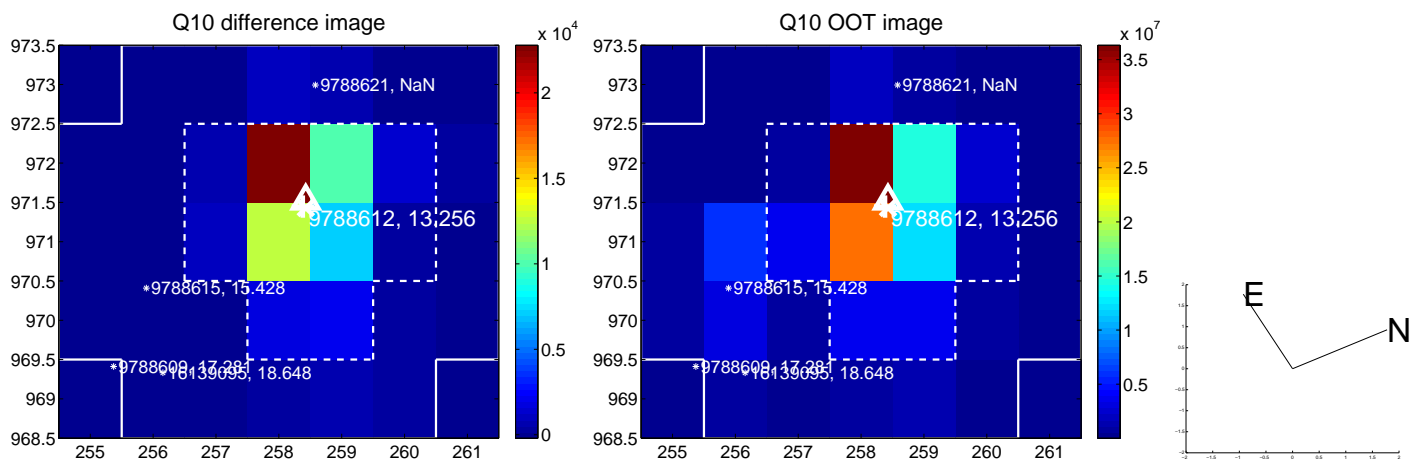
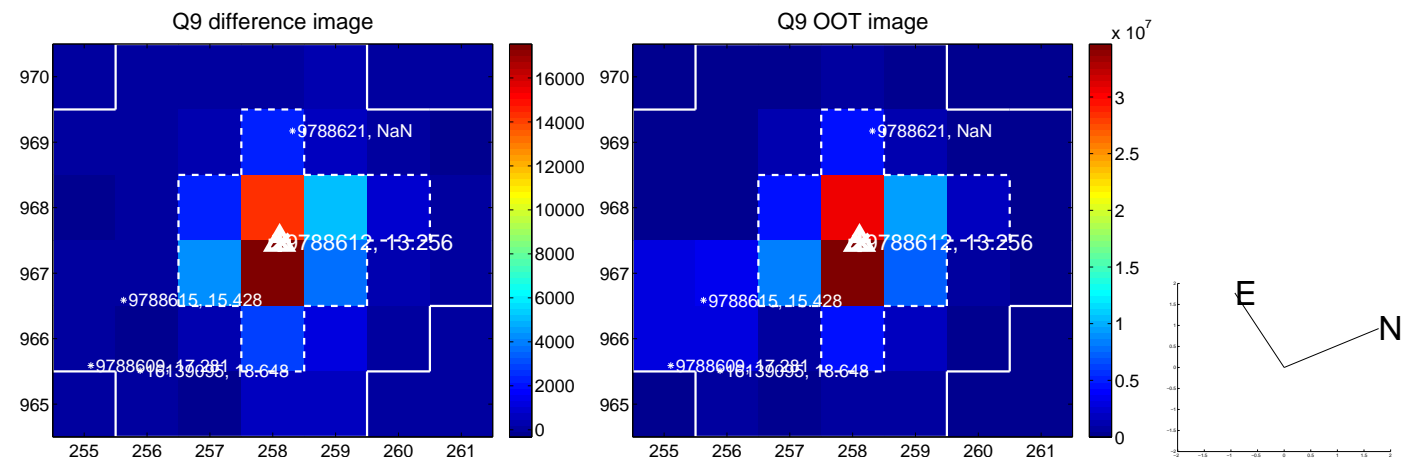
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



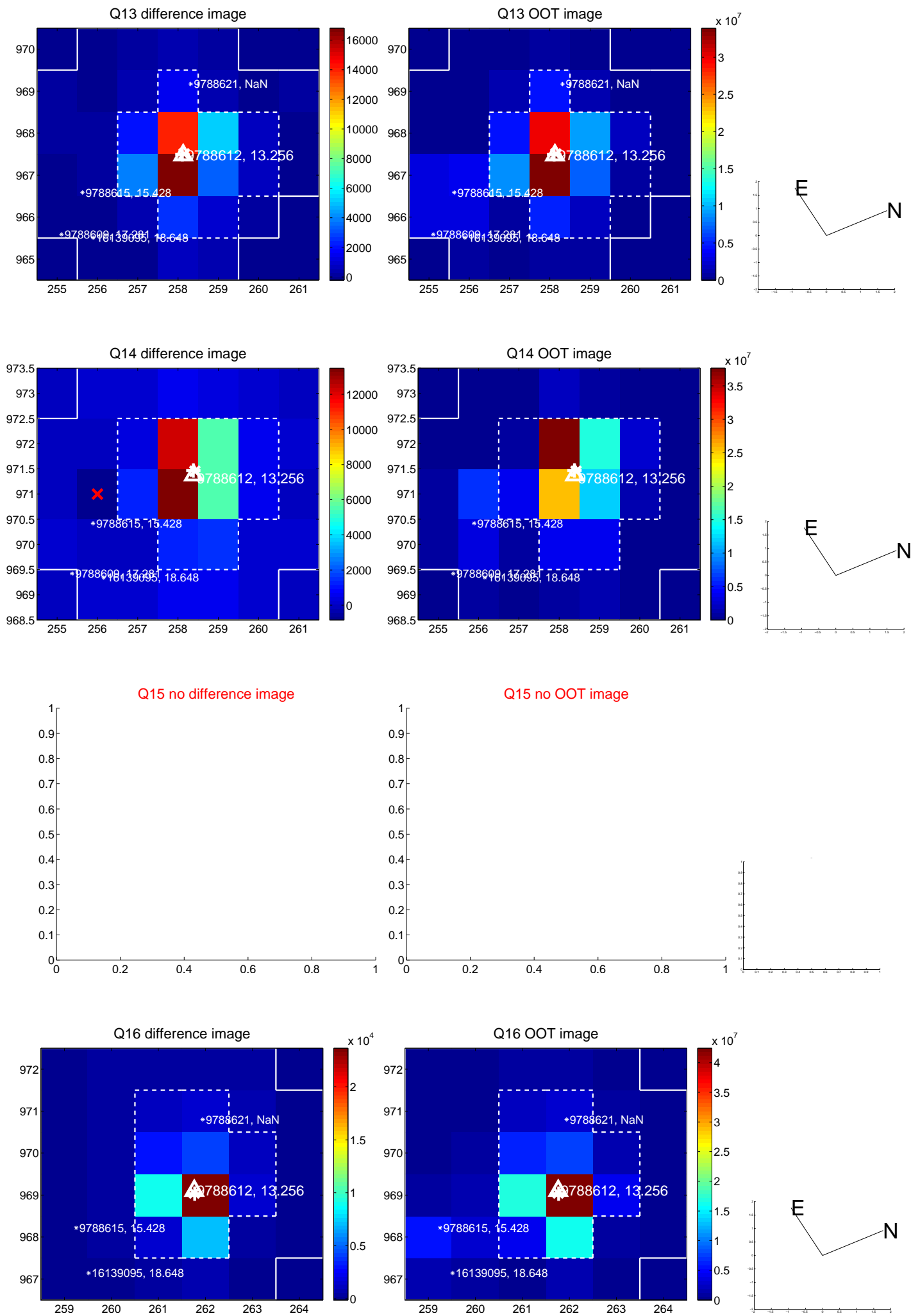
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



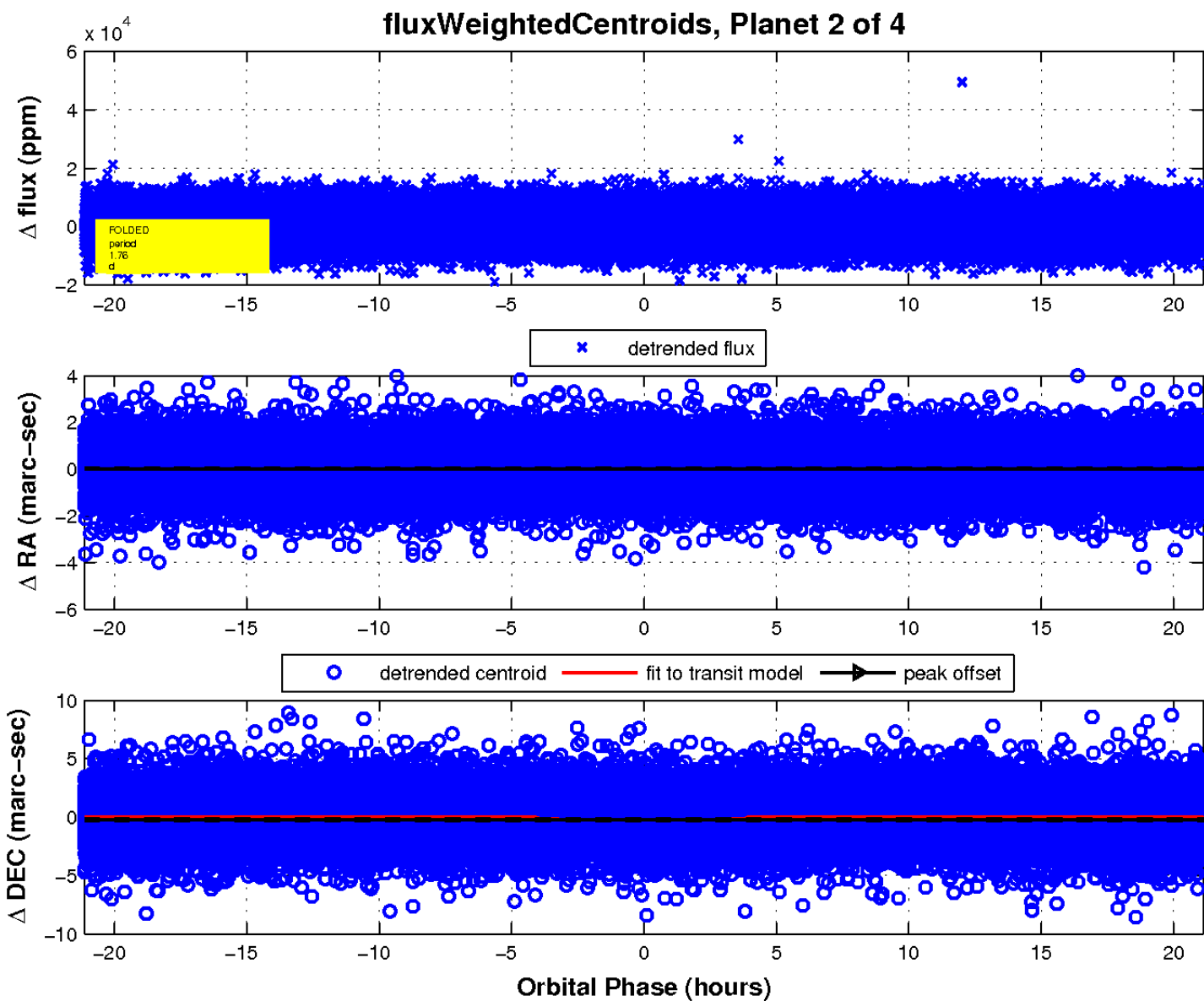
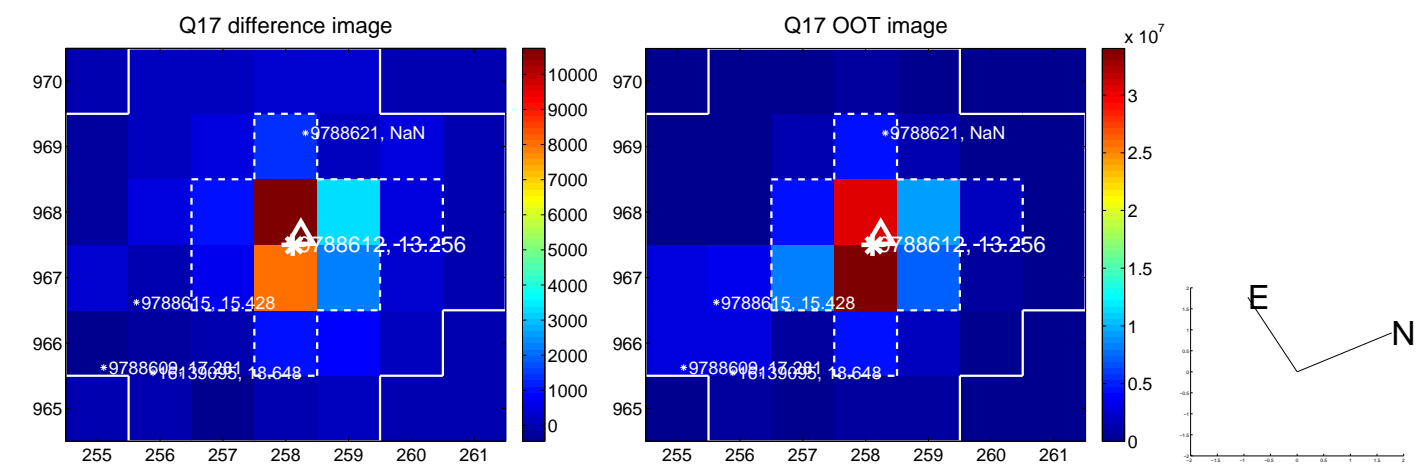
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

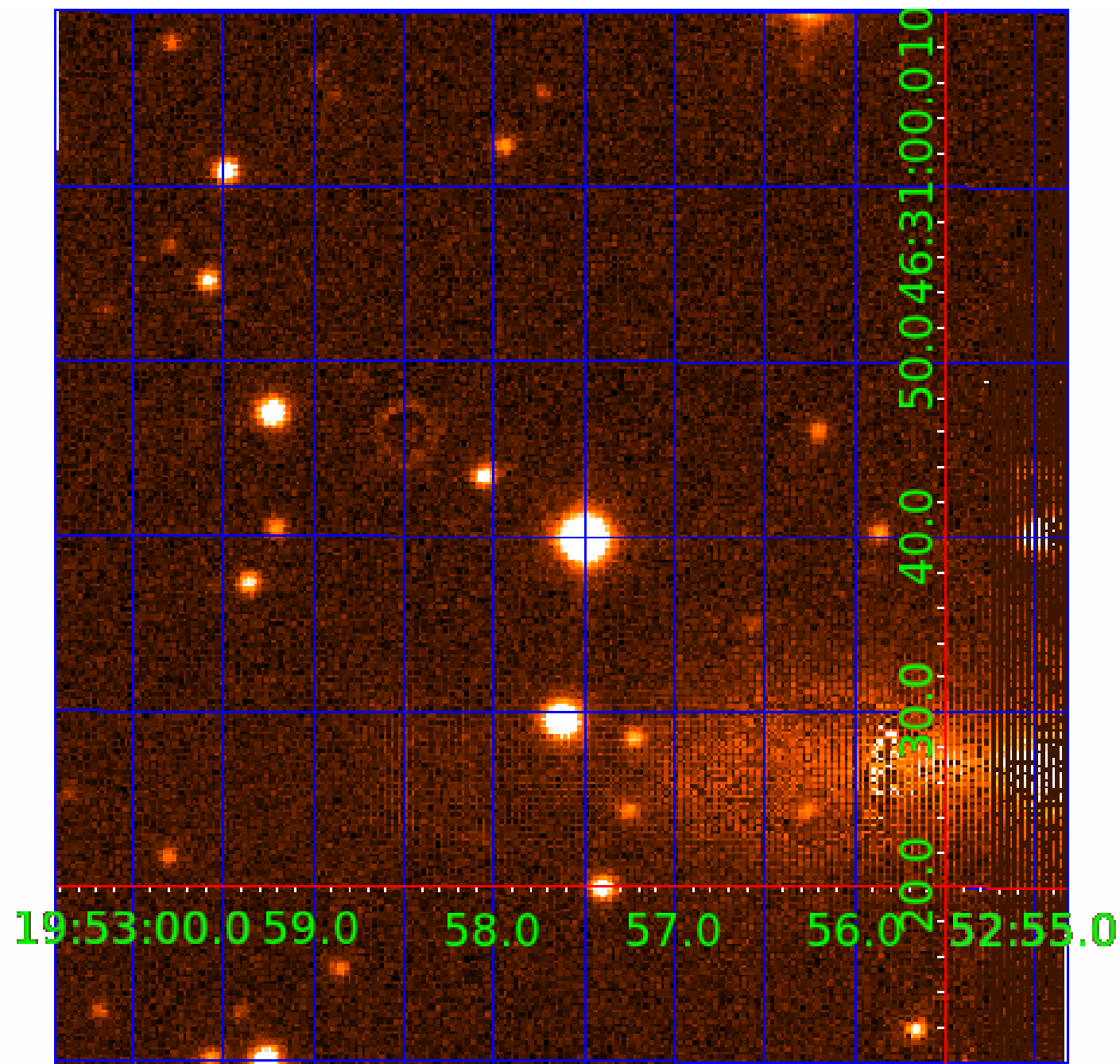


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009788612

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})
009788612-01	OBS	No	3.522168	133.029616	282.8	3.452	8.7	6.5	1.94	7478	3.76	3576.10
009788612-02	OBS	No	1.761010	132.190519	181.7	8.104	8.7	7.7	1.94	7478	2.71	9011.72
009788612-03	OBS	No	2.559479	132.273063	140.5	3.470	7.8	1.7	1.94	7478	2.64	5473.79
009788612-04	OBS	No	2.559422	131.729174	585.5	30.713	8.2	12.6	1.94	7478	5.85	5473.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009788612-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009788612-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009788612-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009788612-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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.

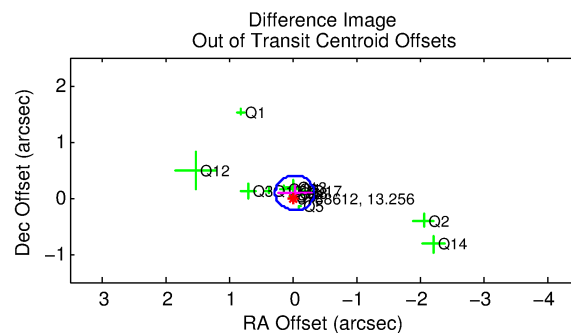
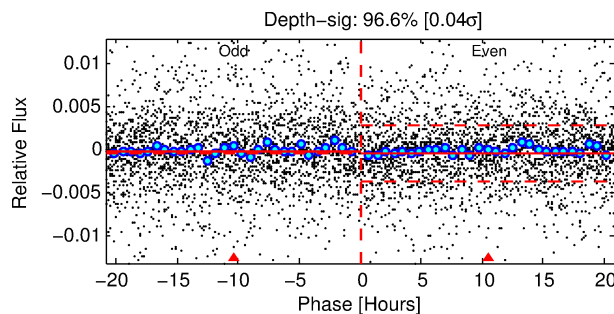
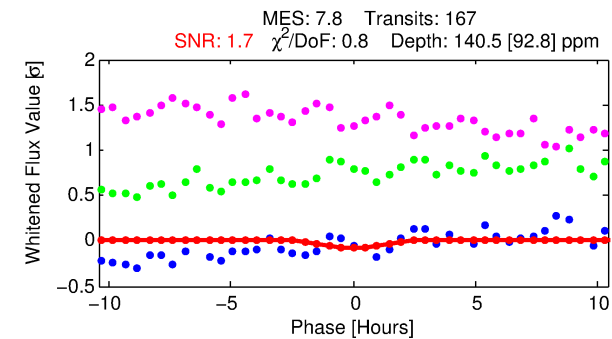
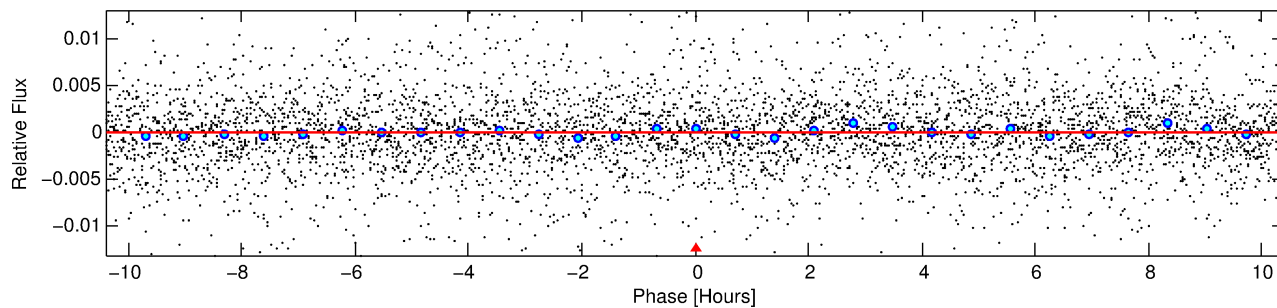
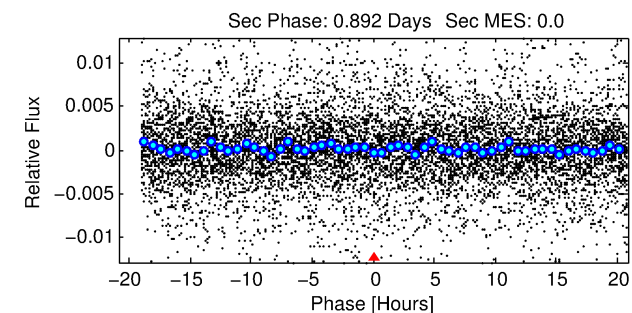
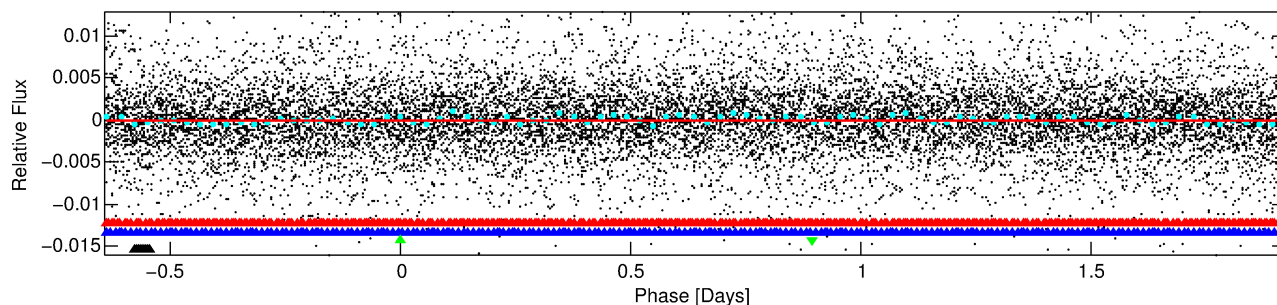
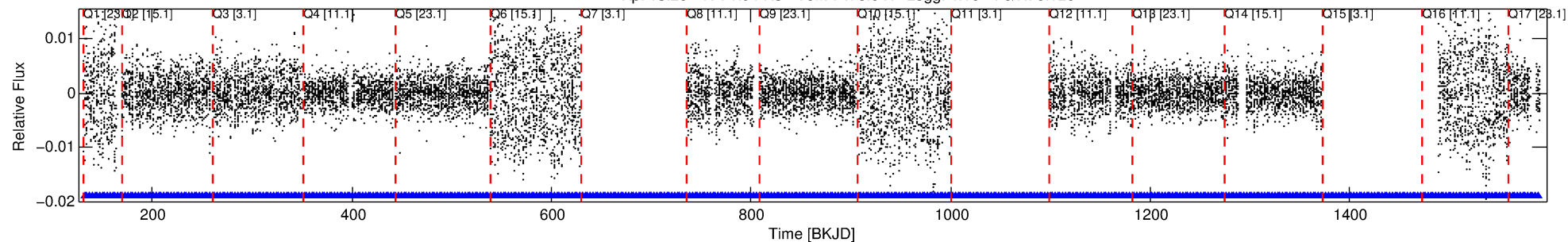
Ephemeris Match Information For 009788612-03

No Significant Match Found

DV One-Page Summary

KIC: 9788612 Candidate: 3 of 4 Period: 2.559 d

Kp: 13.26 R*: 1.94 Rs Teff: 7478.0 K Logg: 4.10 Fe/H: 0.120



DV Fit Results:

Period = 2.55948 [0.00015] d
Epoch = 132.2731 [0.0334] BKJD
Rp/R* = 0.0125 [0.0353]
a/R* = 2.83 [46.16]
b = 0.89 [4.19]
Seff = 5473.79 [2155.67]
Teq = 2193 [216] K
Rp = 2.64 [7.50] Re
a = 0.0438 [0.0109] AU
Ag = N/A
Teffp = N/A

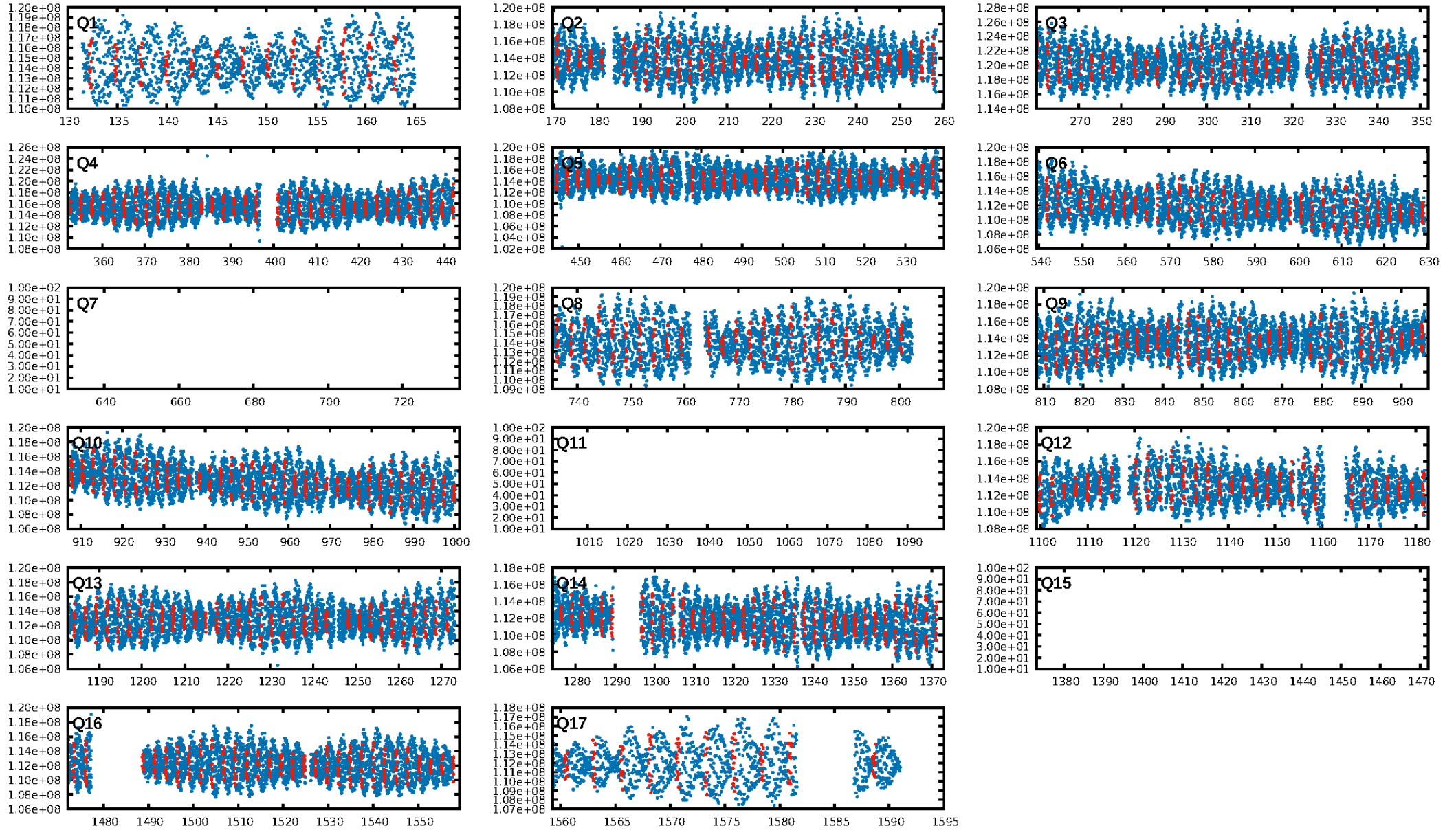
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [4.7σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [159/159]
GhostDiagnostic-chr: 1.195
Centroid-sig: 25.6%
Centroid-so: 0.781 arcsec [1.57σ]
OotOffset-rm: 0.093 arcsec [0.90σ]
KicOffset-rm: 0.045 arcsec [0.18σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.43 [6/14]
DiffImageOverlap-fno: 0.00 [0/14]

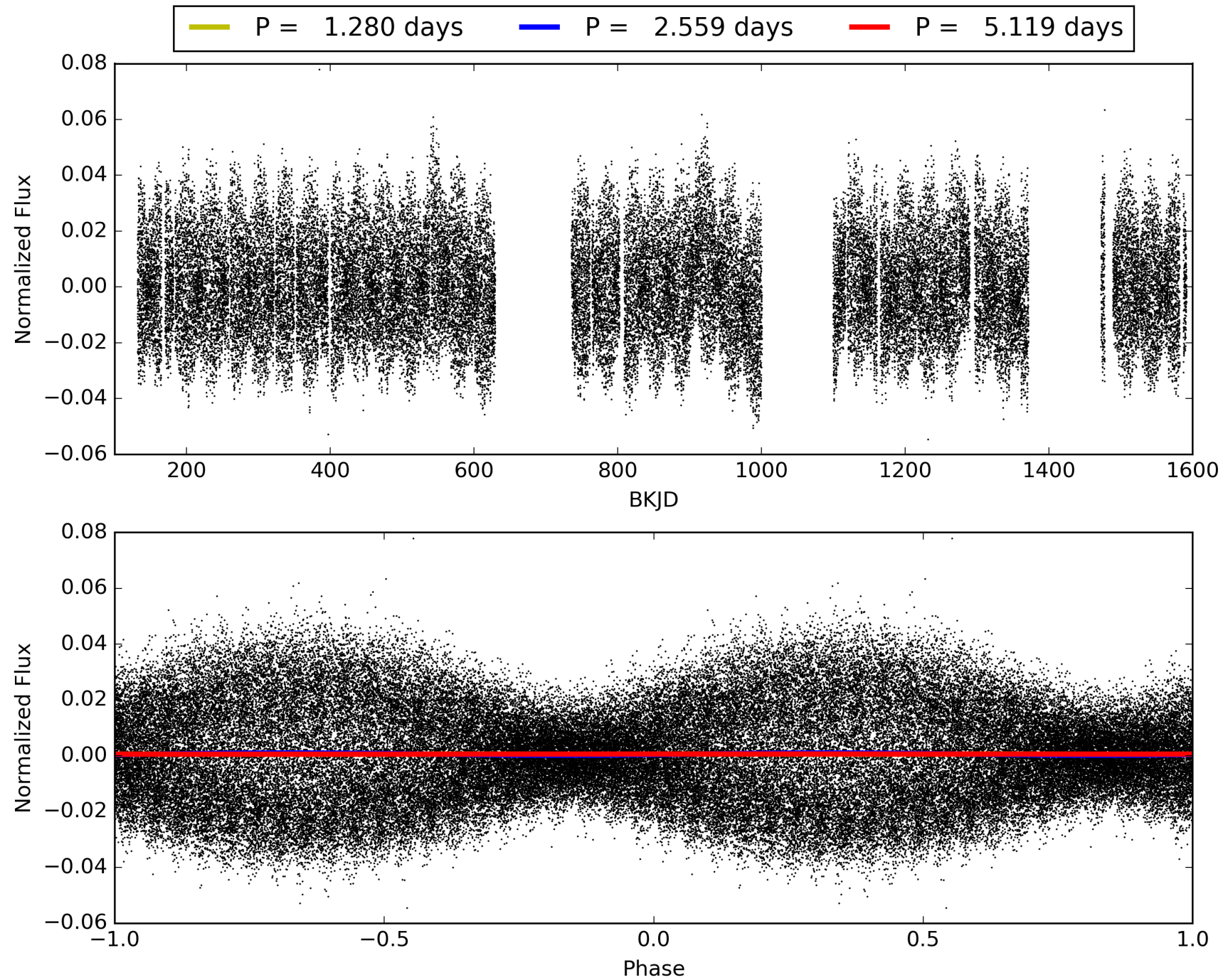
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 18:11:19 Z

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

TCE 009788612-03, PDC Light Curves

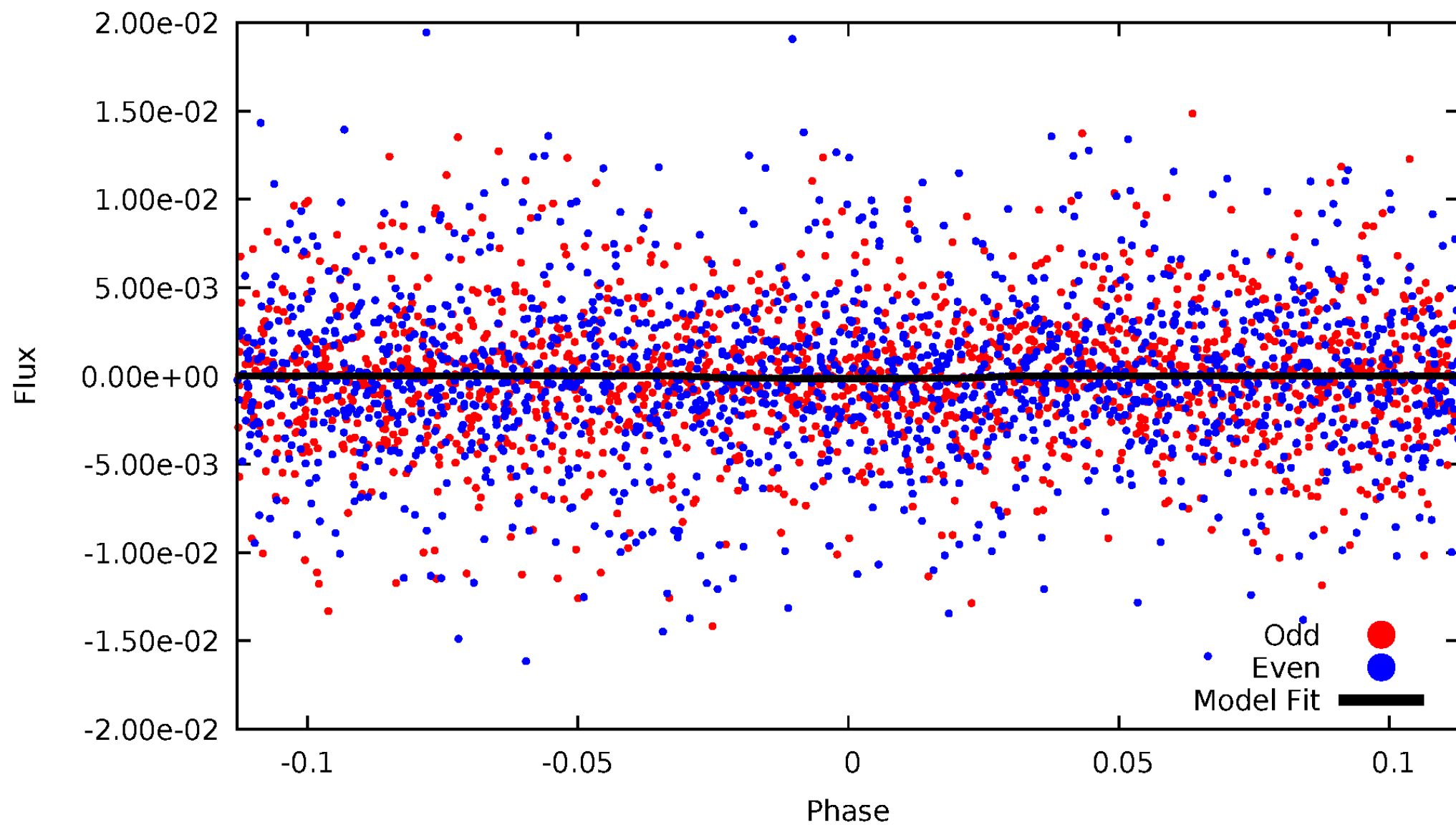


TCE 009788612-03



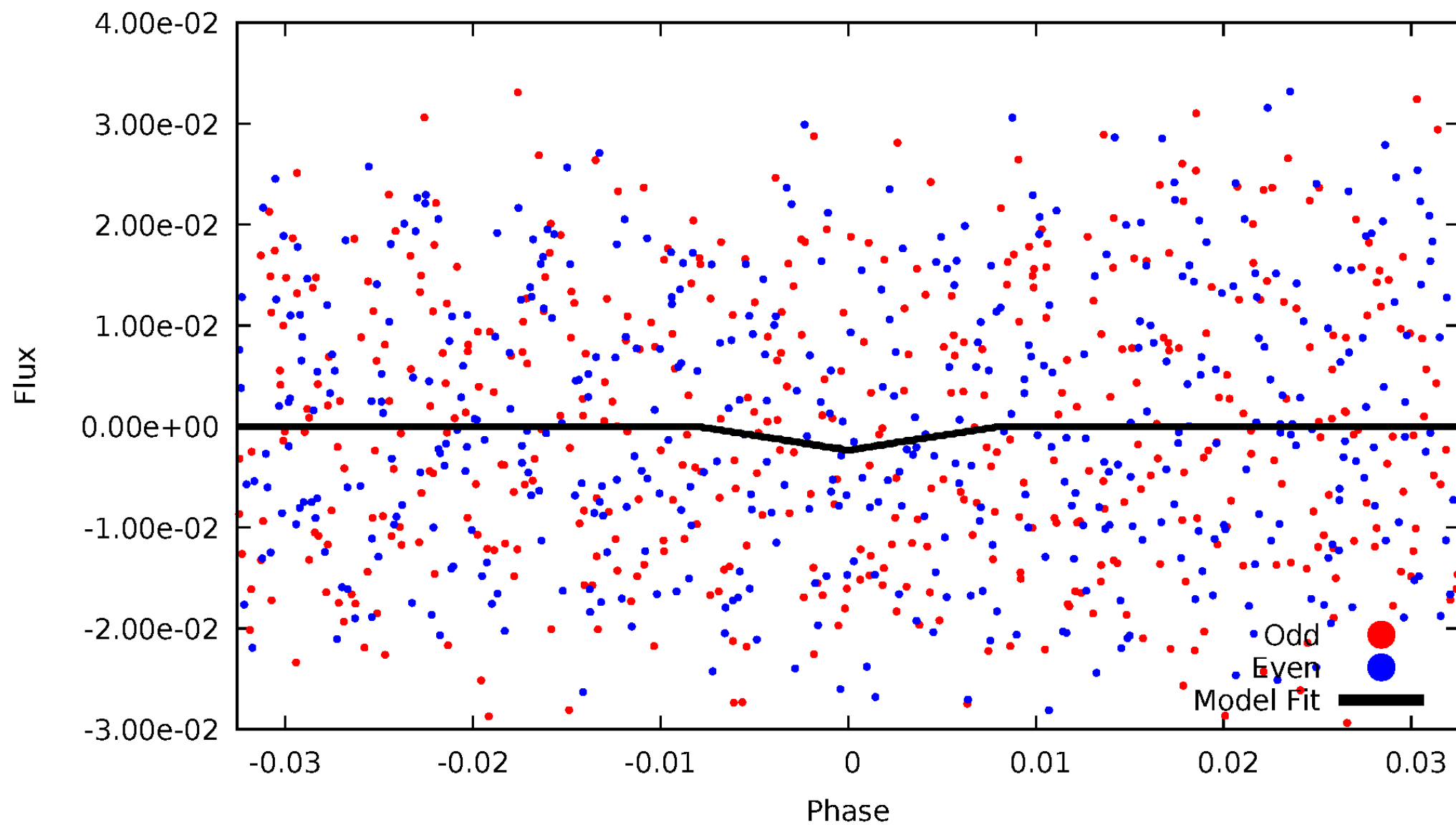
DV Odd/Even

TCE 009788612-03



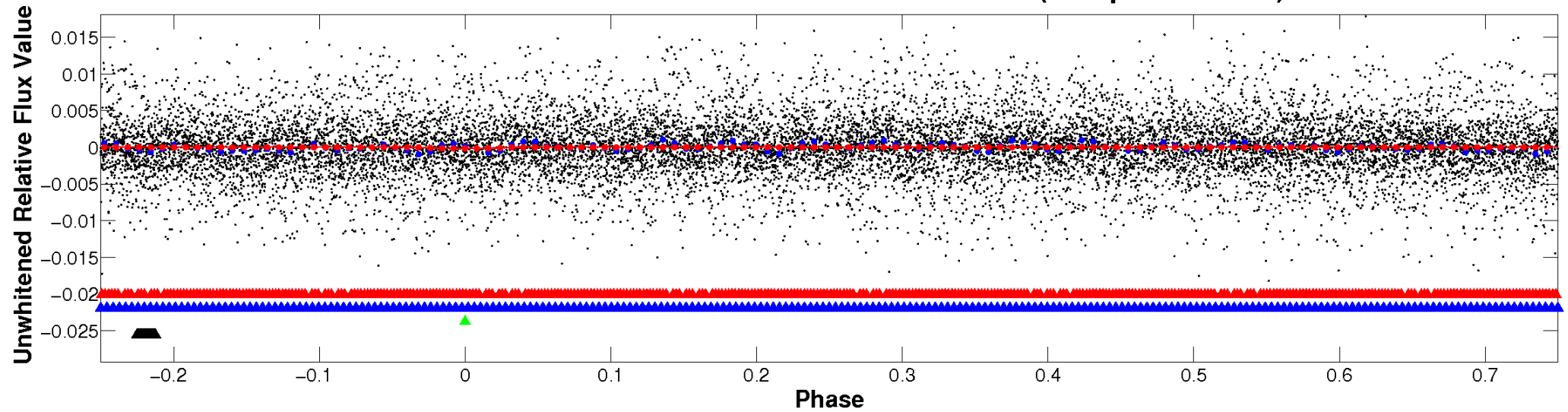
ALT Odd/Even

TCE 009788612-03

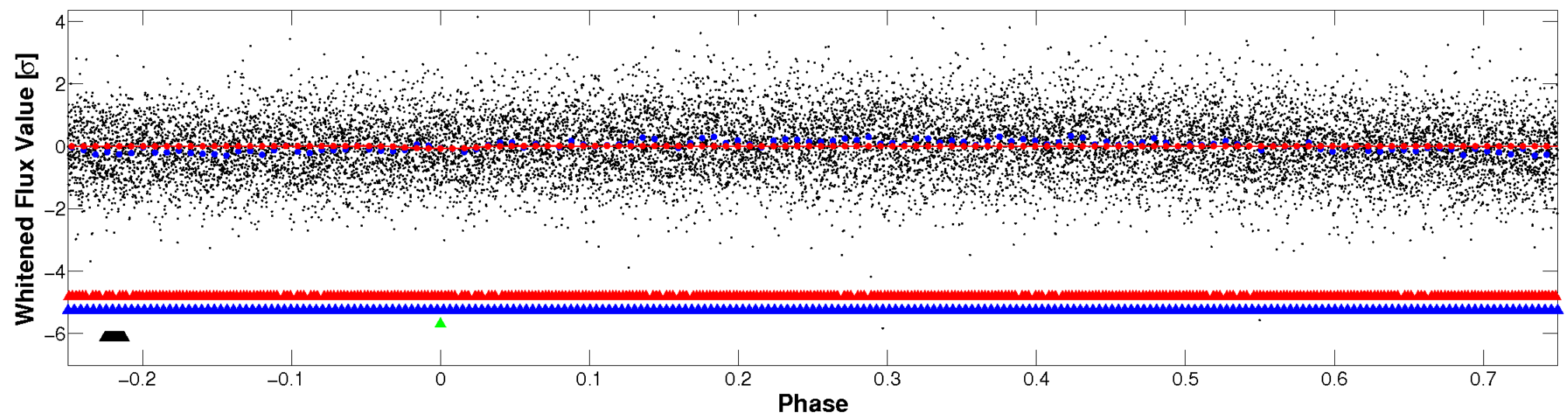


Non-Whitened Vs. Whitened Light Curve

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

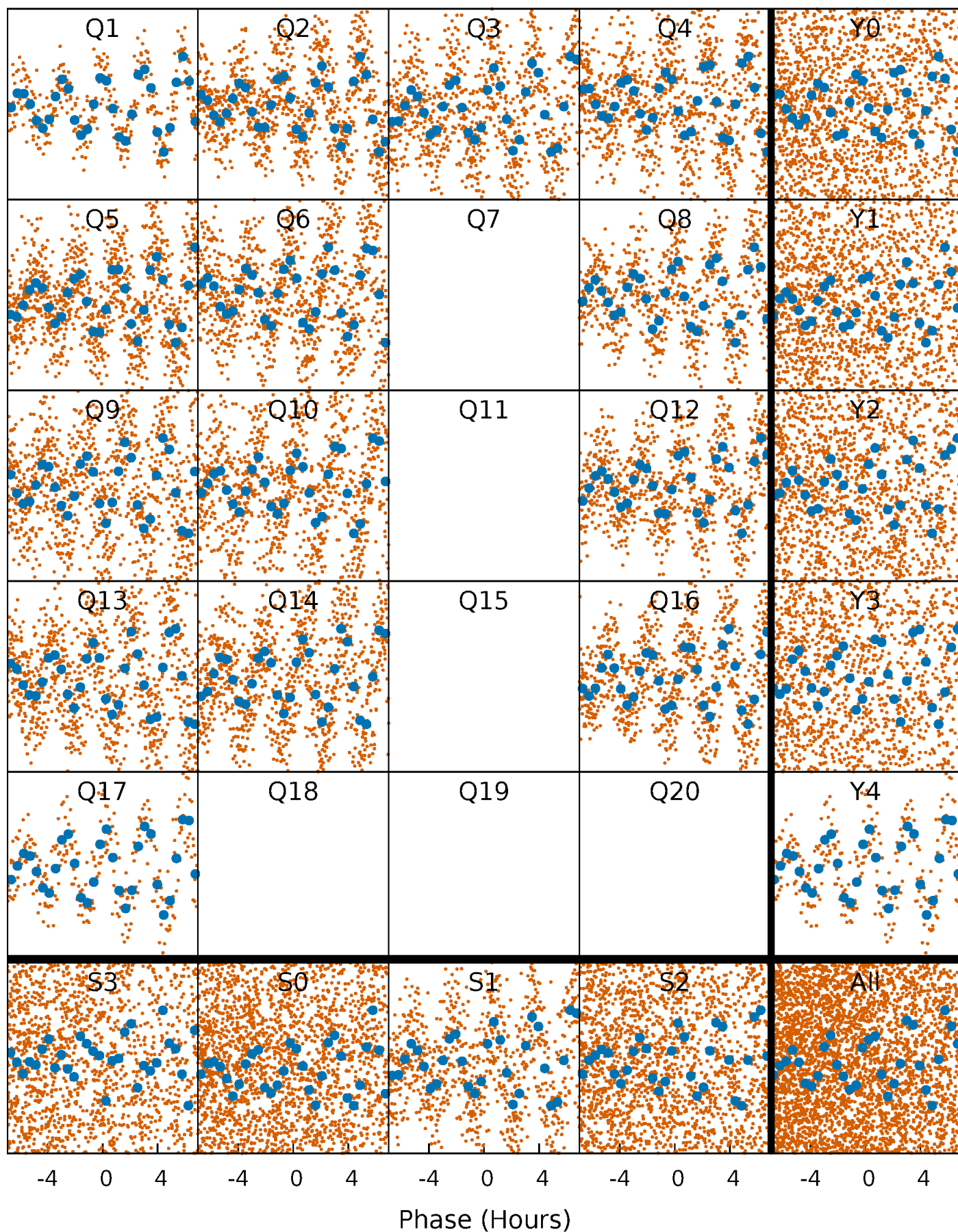


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



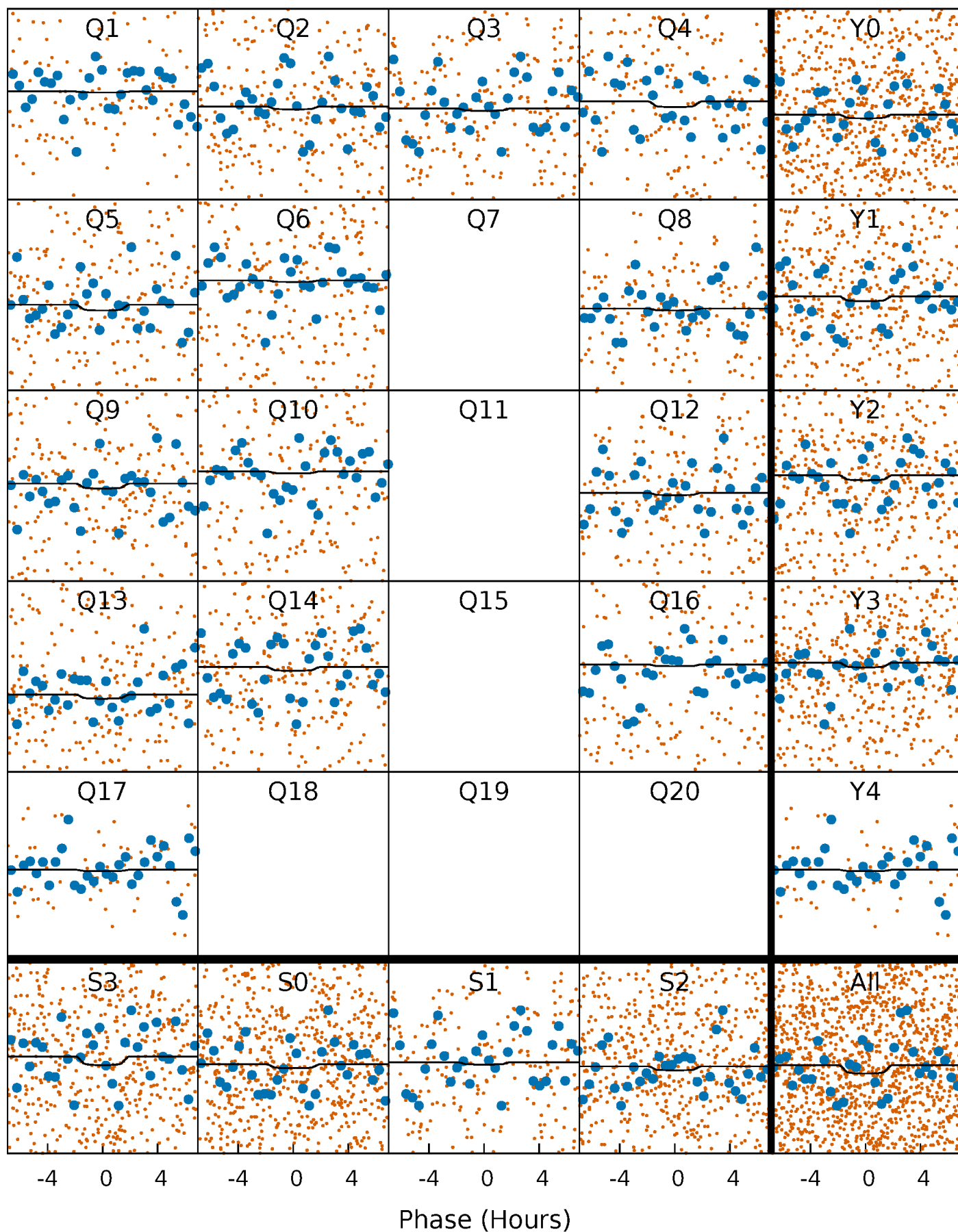
PDC Quarter-Phased Transit Curves

TCE 009788612-03 P= 2.559479 Days $T_0=132.273064$ (BKJD)



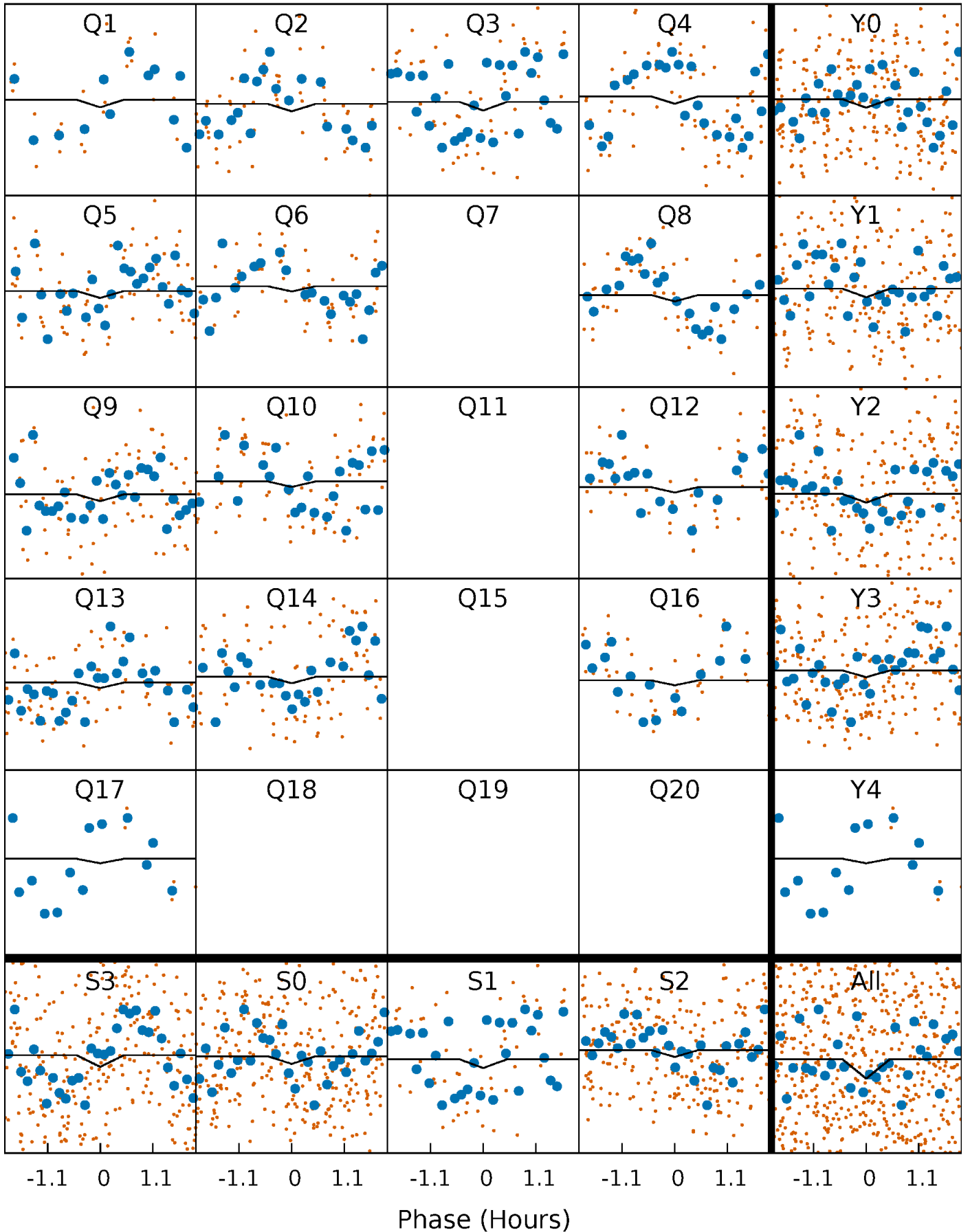
DV Quarter-Phased Transit Curves

TCE 009788612-03 P= 2.559479 Days $T_0=132.273064$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

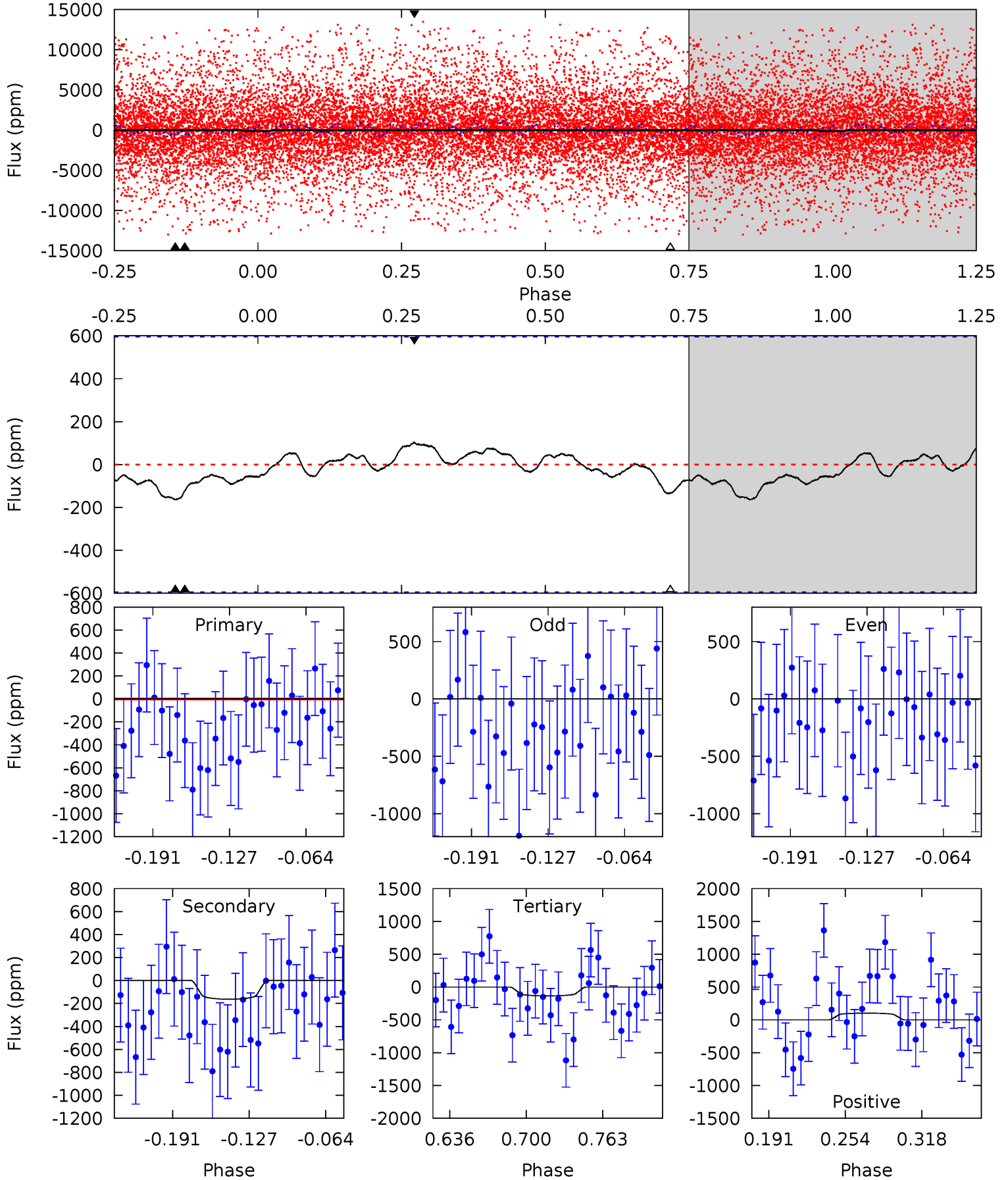
TCE 009788612-03 P= 2.559745 Days $T_0=132.237748$ (BKJD)



DV Model-Shift Uniqueness Test

009788612-03, P = 2.559479 Days, E = 129.713585 Days

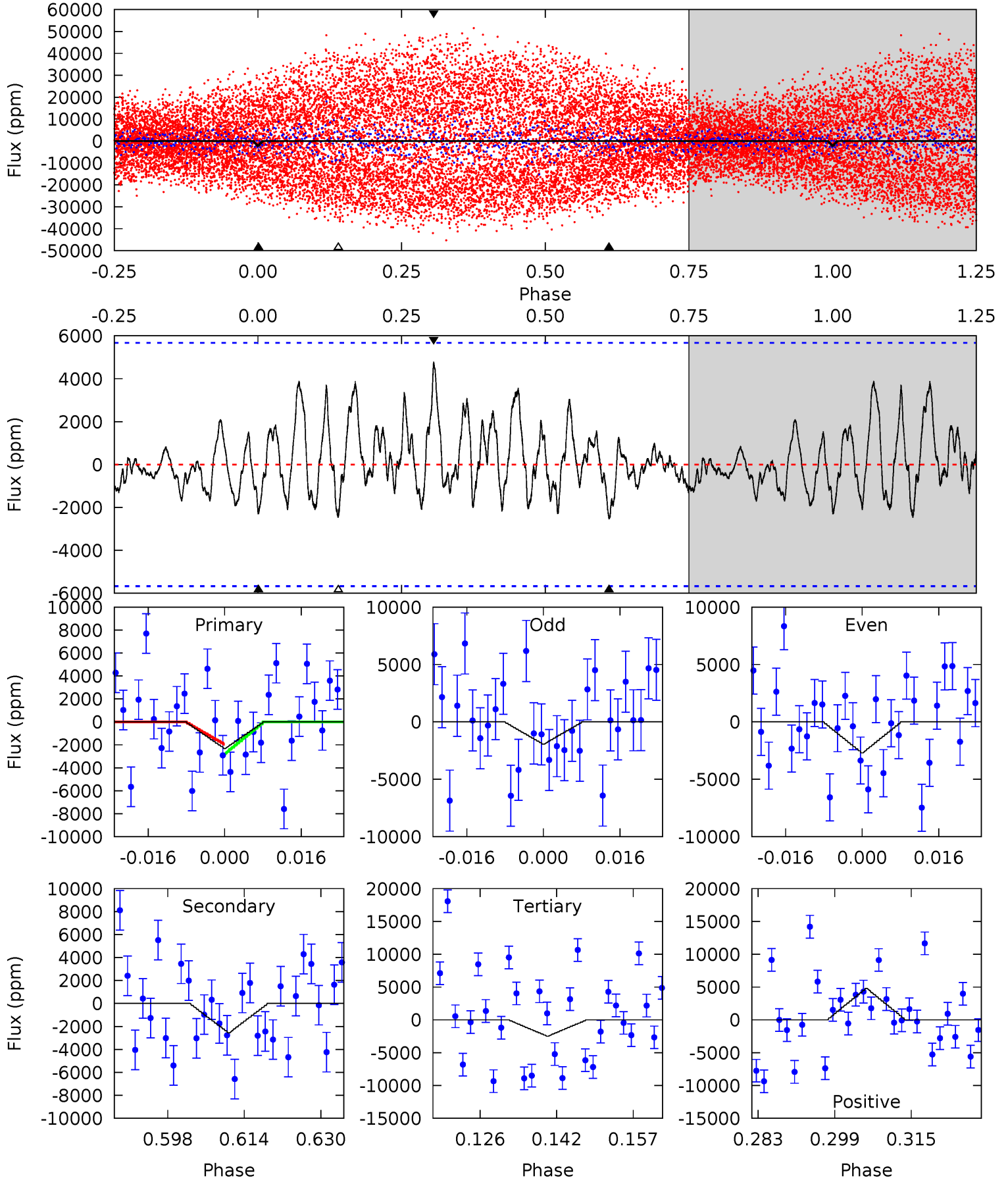
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.96	1.28	1.05	0.80	4.66	1.85	0.42	-0.09	0.16	0.23	0.47	0.13	1.19	0.39	0.67



Alt Model-Shift Uniqueness Test

009788612-03, P = 2.559745 Days, E = 129.678003 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.02	2.23	2.16	4.17	4.94	2.41	1.17	-0.15	-2.15	0.06	-1.95	0.33	0.41	0.65	0.36



Stellar Parameters For KIC 009788612

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7478^{+206}_{-335}	$4.097^{+0.124}_{-0.186}$	$0.120^{+0.150}_{-0.400}$	$1.935^{+0.591}_{-0.394}$	$1.706^{+0.207}_{-0.276}$	$0.332^{+0.210}_{-0.175}$
	+3%/-4%	+3%/-5%	+125%/-333%	+31%/-20%	+12%/-16%	+63%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009788612-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-163 ± 128	$6.35^{+5.97}_{-4.41}$	3076^{+233}_{-204}	4625^{+4168}_{-1955}	$3.261^{+37.112}_{-2.857}$
Alt.	-2554 ± 1147	$11.47^{+7.45}_{-6.86}$	3086^{+214}_{-204}	7143^{+6536}_{-1969}	20^{+98}_{-14}

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 $A_{obs} \gg 1.0$

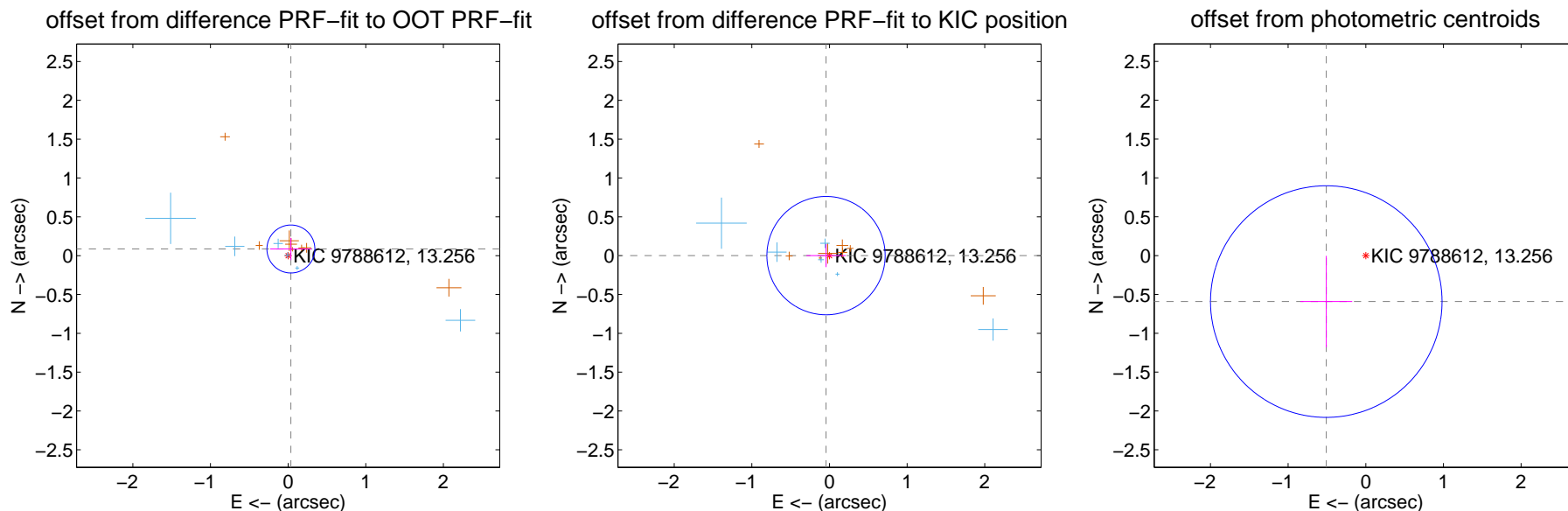
DV Centroid Data

Supplemental centroid analysis for 009788612-03. Kepler magnitude: 13.26. Transit SNR 1.73

There are 6 quarters with good PRF difference image offsets

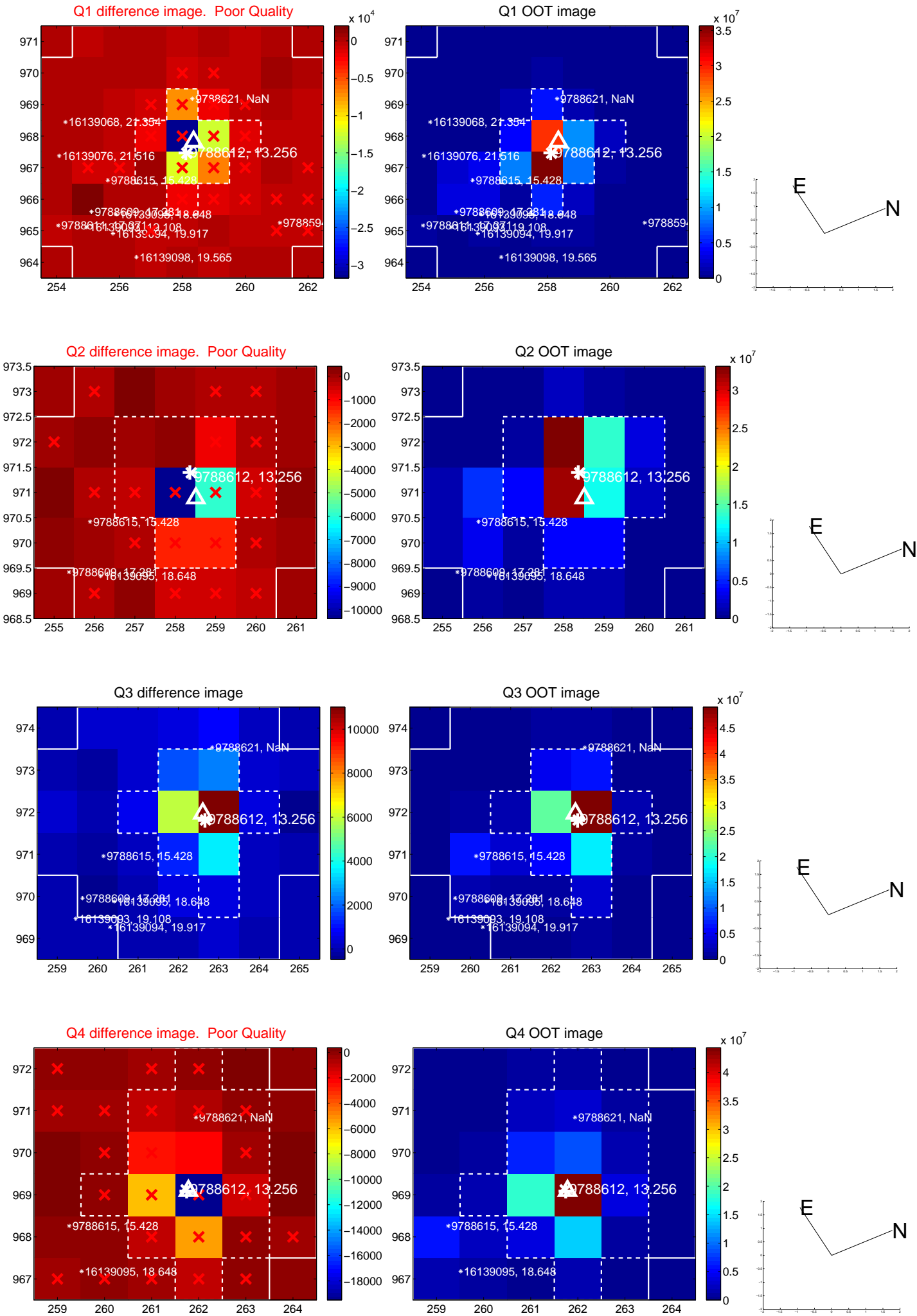
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.093 ± 0.103	0.90	-0.036 ± 0.267	0.086 ± 0.143
PRF-fit source offset from KIC position	0.045 ± 0.254	0.18	0.045 ± 0.253	0.001 ± 0.149
photometric centroid source offset	0.78 ± 0.50	1.57	0.51 ± 0.33	-0.59 ± 0.59

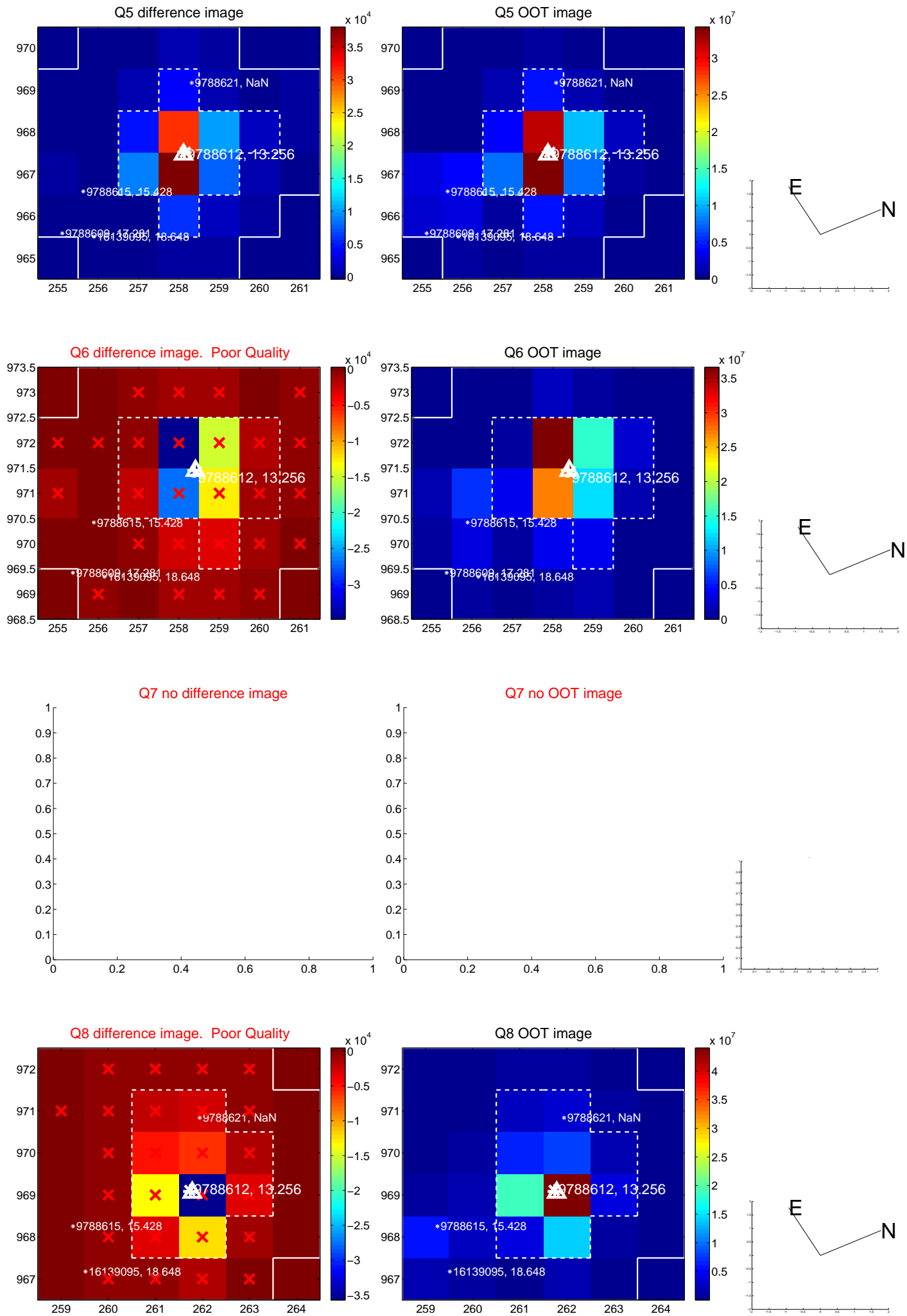


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

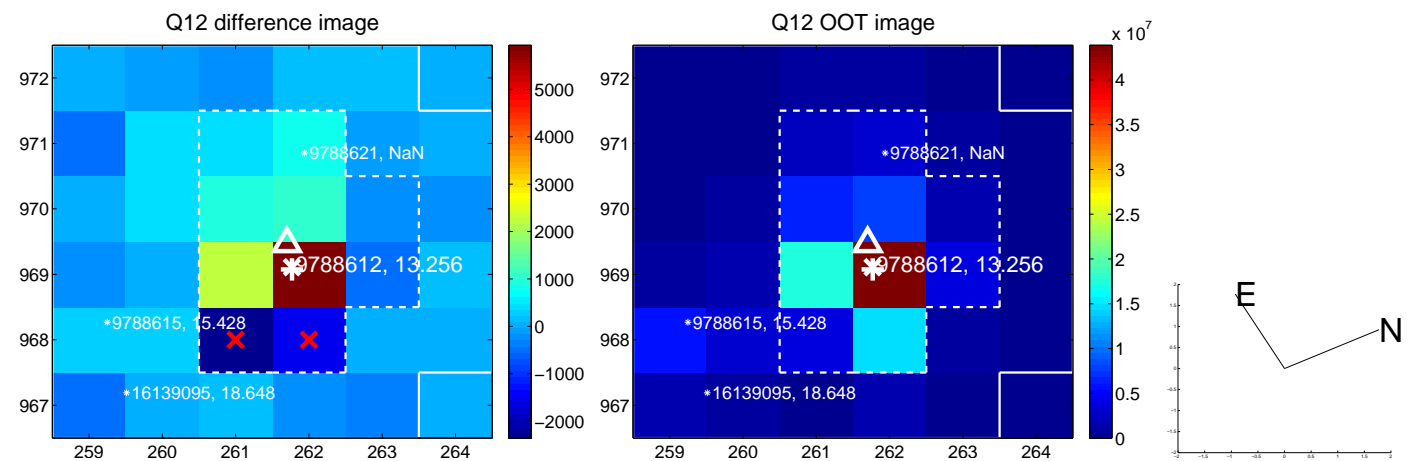
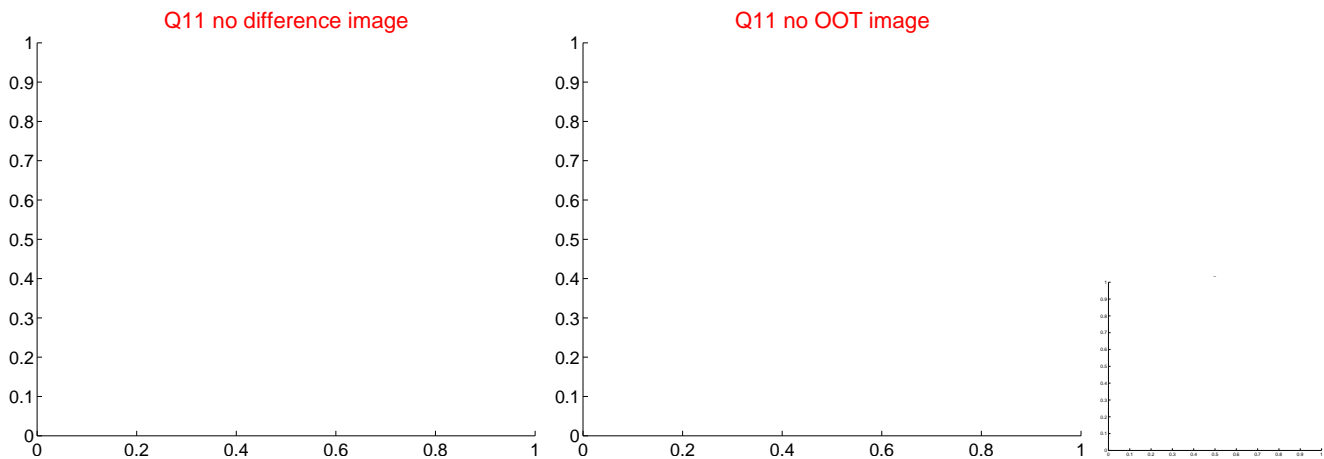
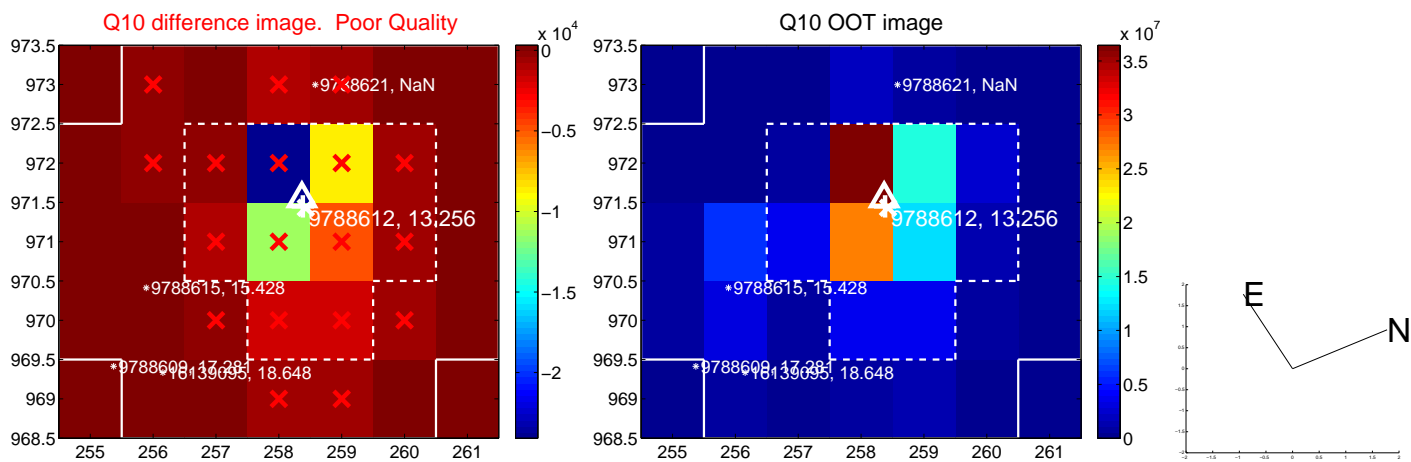
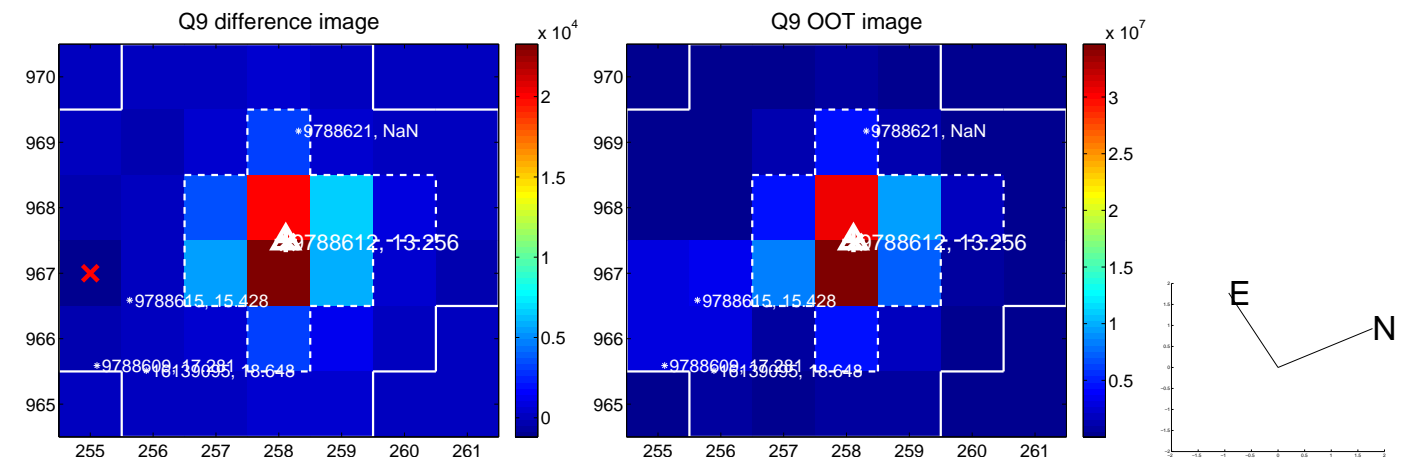
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



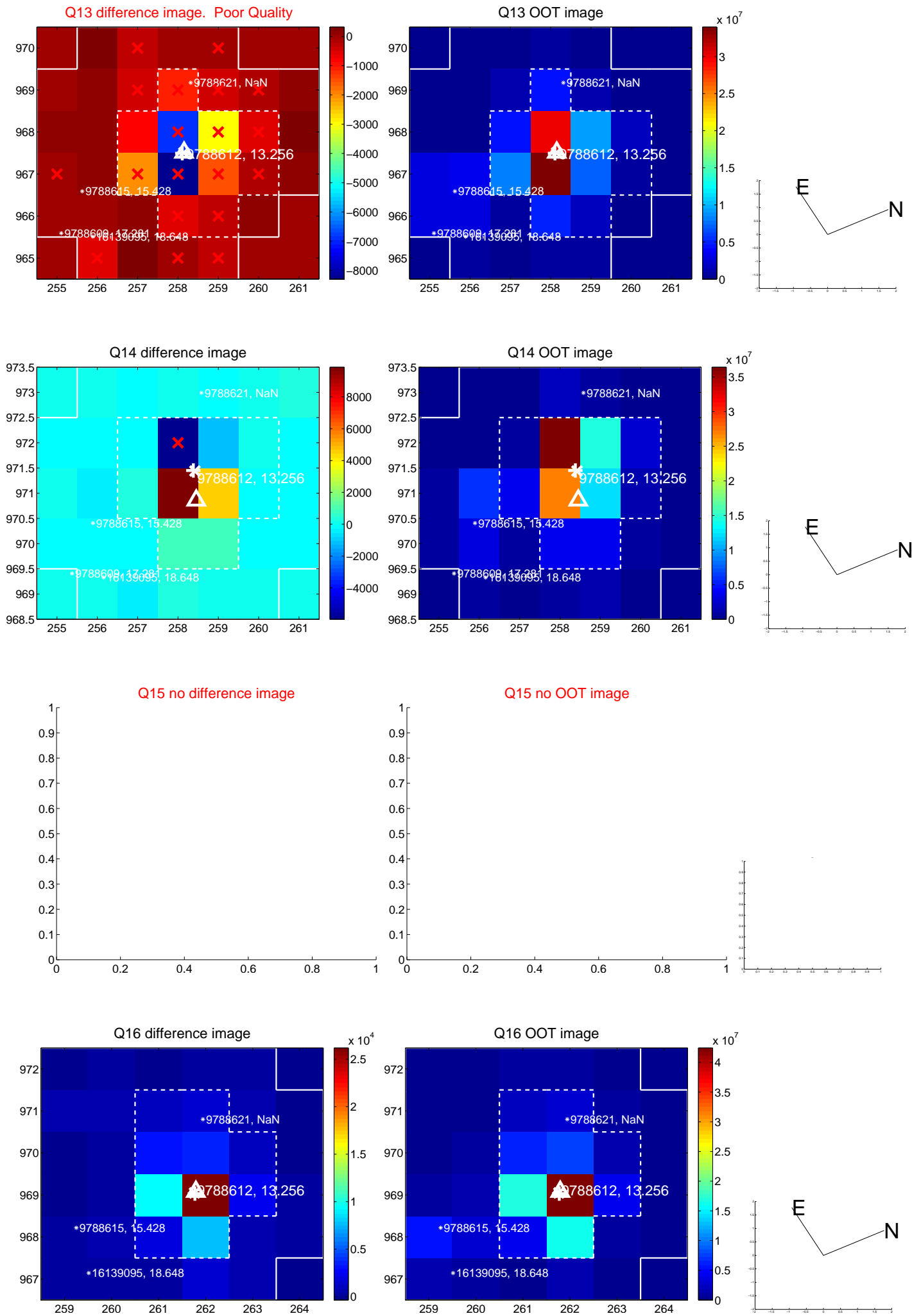
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

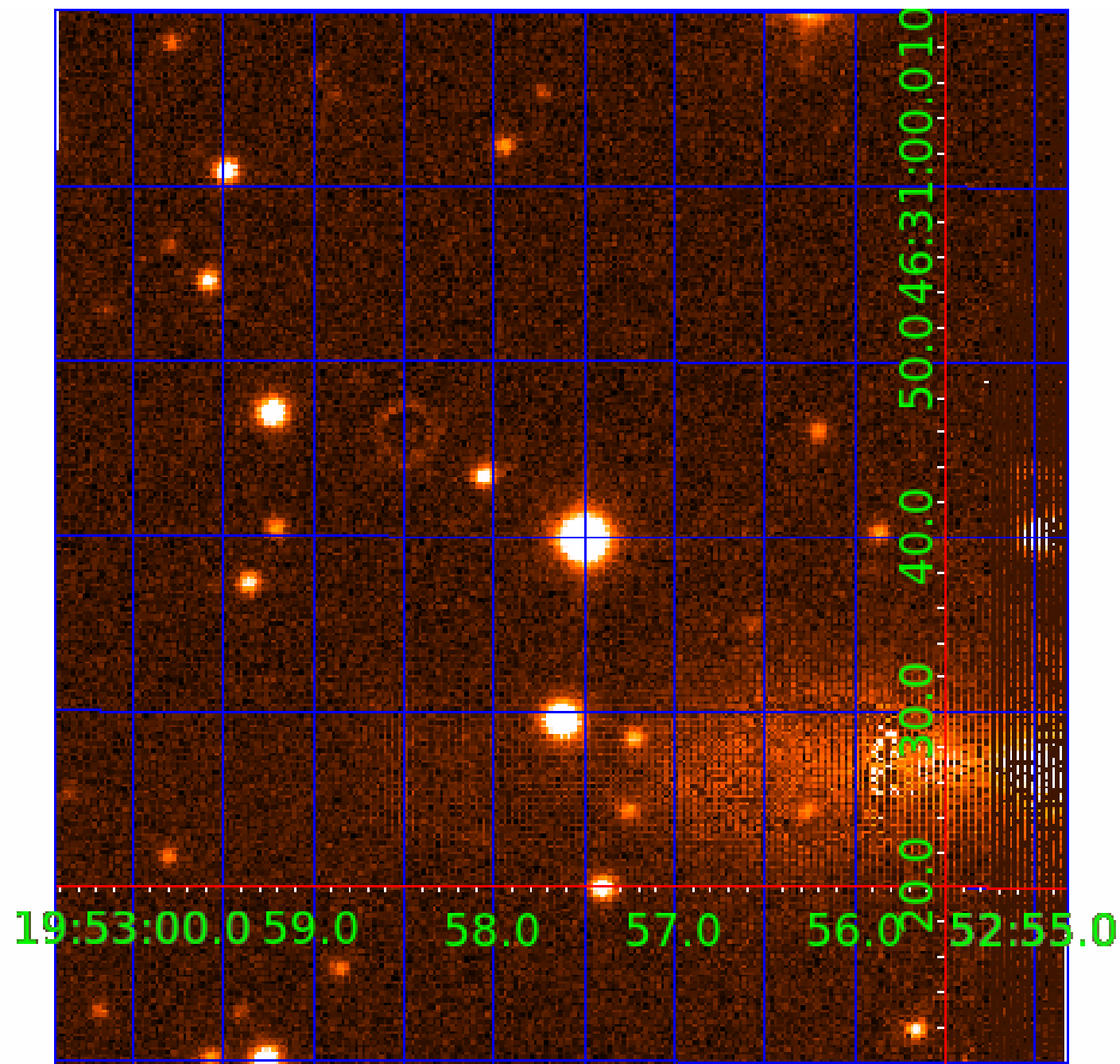


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009788612

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})
009788612-01	OBS	No	3.522168	133.029616	282.8	3.452	8.7	6.5	1.94	7478	3.76	3576.10
009788612-02	OBS	No	1.761010	132.190519	181.7	8.104	8.7	7.7	1.94	7478	2.71	9011.72
009788612-03	OBS	No	2.559479	132.273063	140.5	3.470	7.8	1.7	1.94	7478	2.64	5473.79
009788612-04	OBS	No	2.559422	131.729174	585.5	30.713	8.2	12.6	1.94	7478	5.85	5473.95

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009788612-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009788612-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009788612-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009788612-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

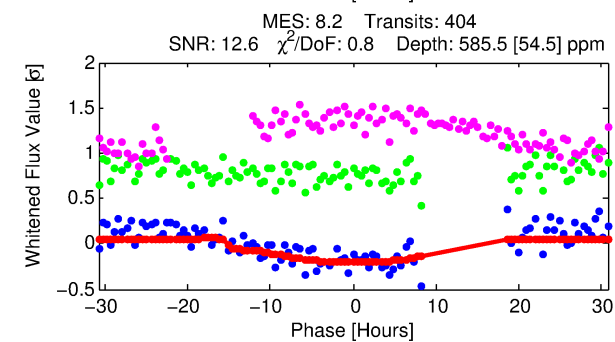
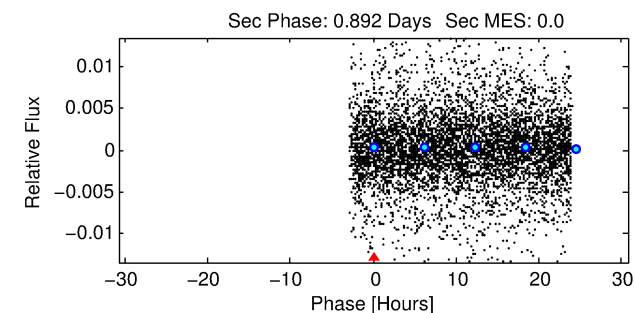
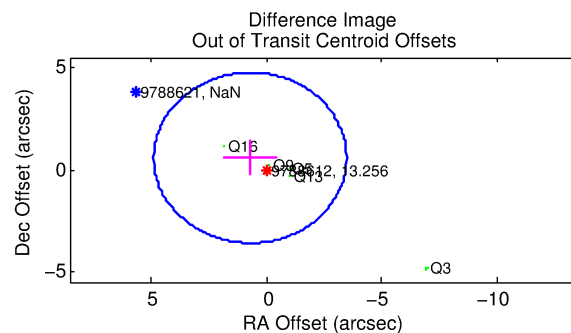
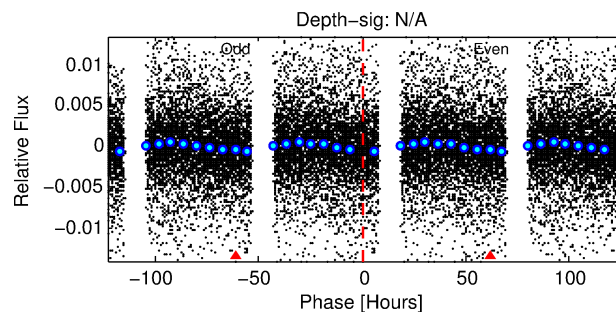
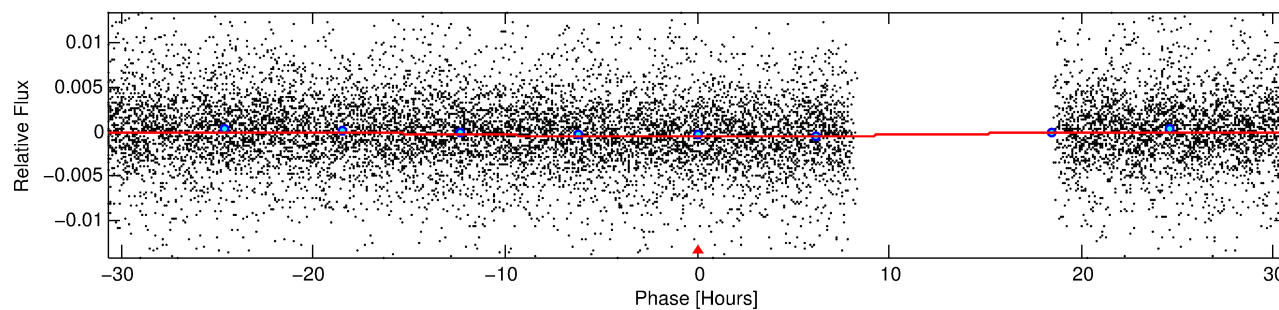
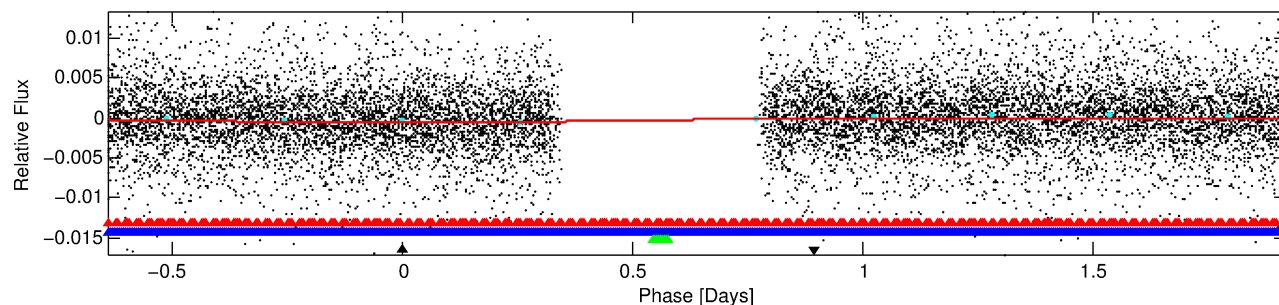
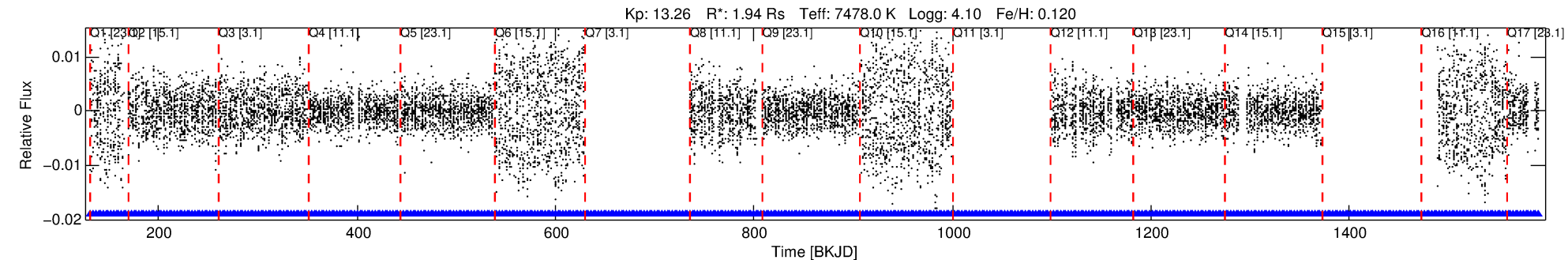
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009788612-04

No Significant Match Found

DV One-Page Summary

KIC: 9788612 Candidate: 4 of 4 Period: 2.559 d



DV Fit Results:

Period = 2.55942 [0.00010] d
Epoch = 131.7292 [0.0206] BKJD
Rp/R* = 0.0277 [0.0018]
a/R* = 1.00 [0.01]
b = 0.97 [0.01]
Seff = 5473.95 [2155.74]
Teff = 2193 [216] K
Rp = 5.85 [1.83] Re
a = 0.0438 [0.0109] AU
Ag = N/A
Teffp = N/A

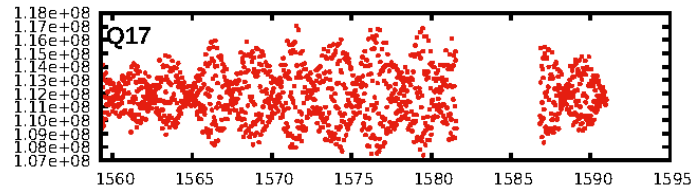
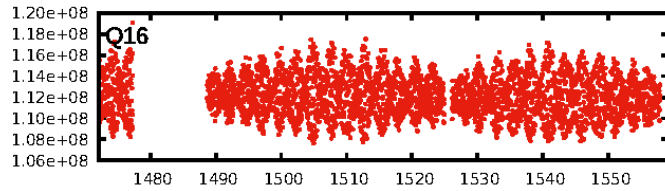
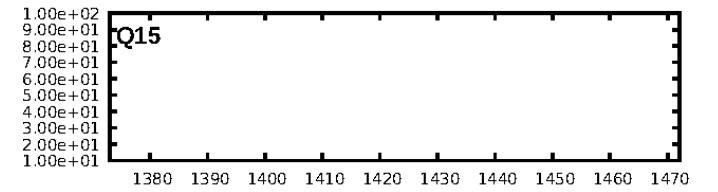
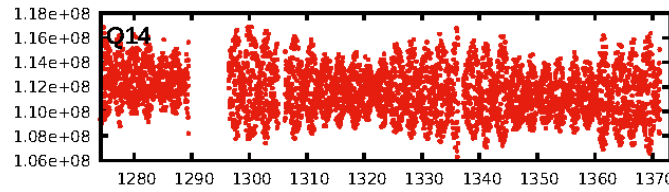
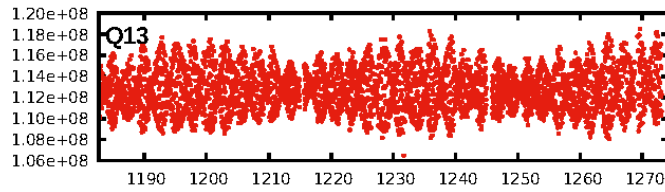
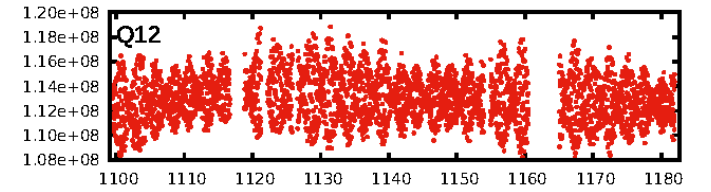
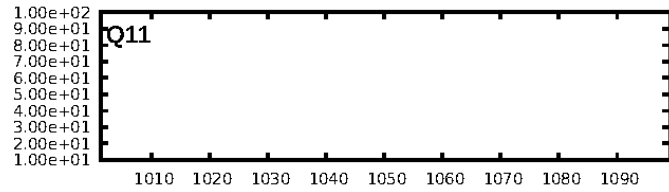
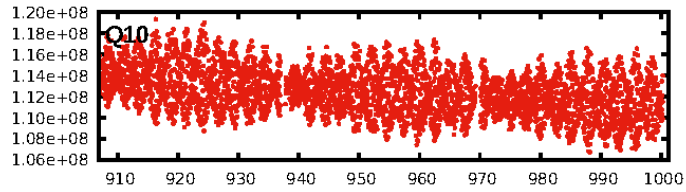
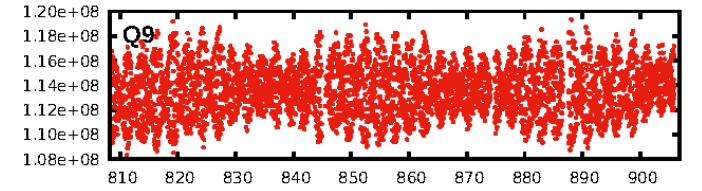
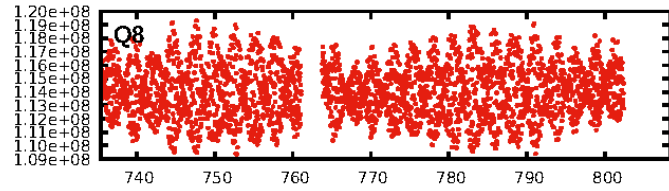
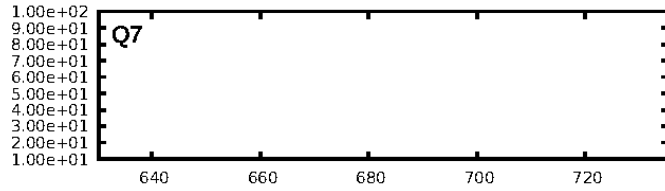
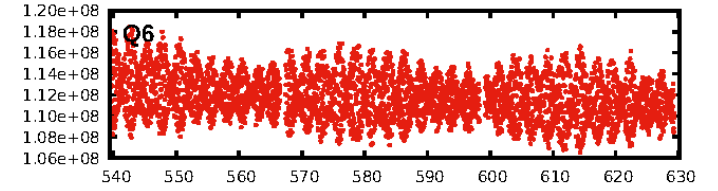
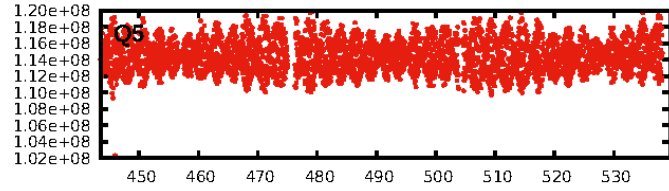
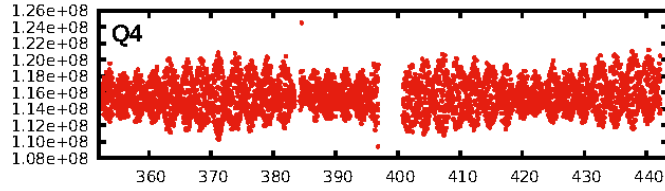
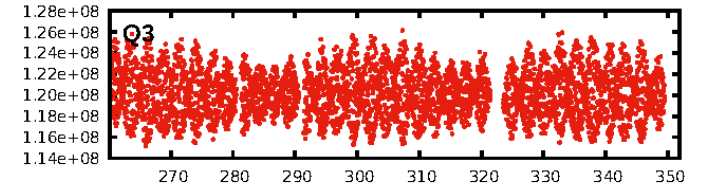
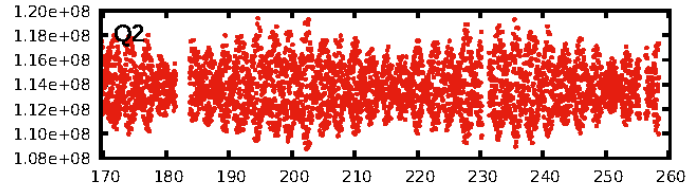
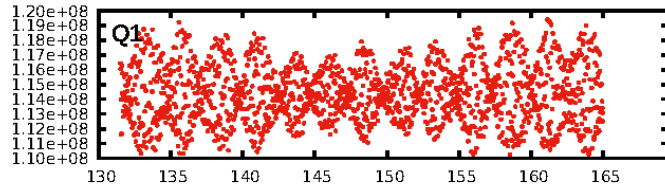
DV Diagnostic Results:

ShortPeriod-sig: 45.4% [0.60σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [381/381]
GhostDiagnostic-chr: 1.734
Centroid-sig: 0.0%
Centroid-so: 0.343 arcsec [5.57σ]
OotOffset-rm: 0.908 arcsec [0.65σ]
KicOffset-rm: 0.882 arcsec [0.54σ]
OotOffset-st: 0/1/1/3 [5]
KicOffset-st: 0/1/1/3 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 0.00 [0/14]

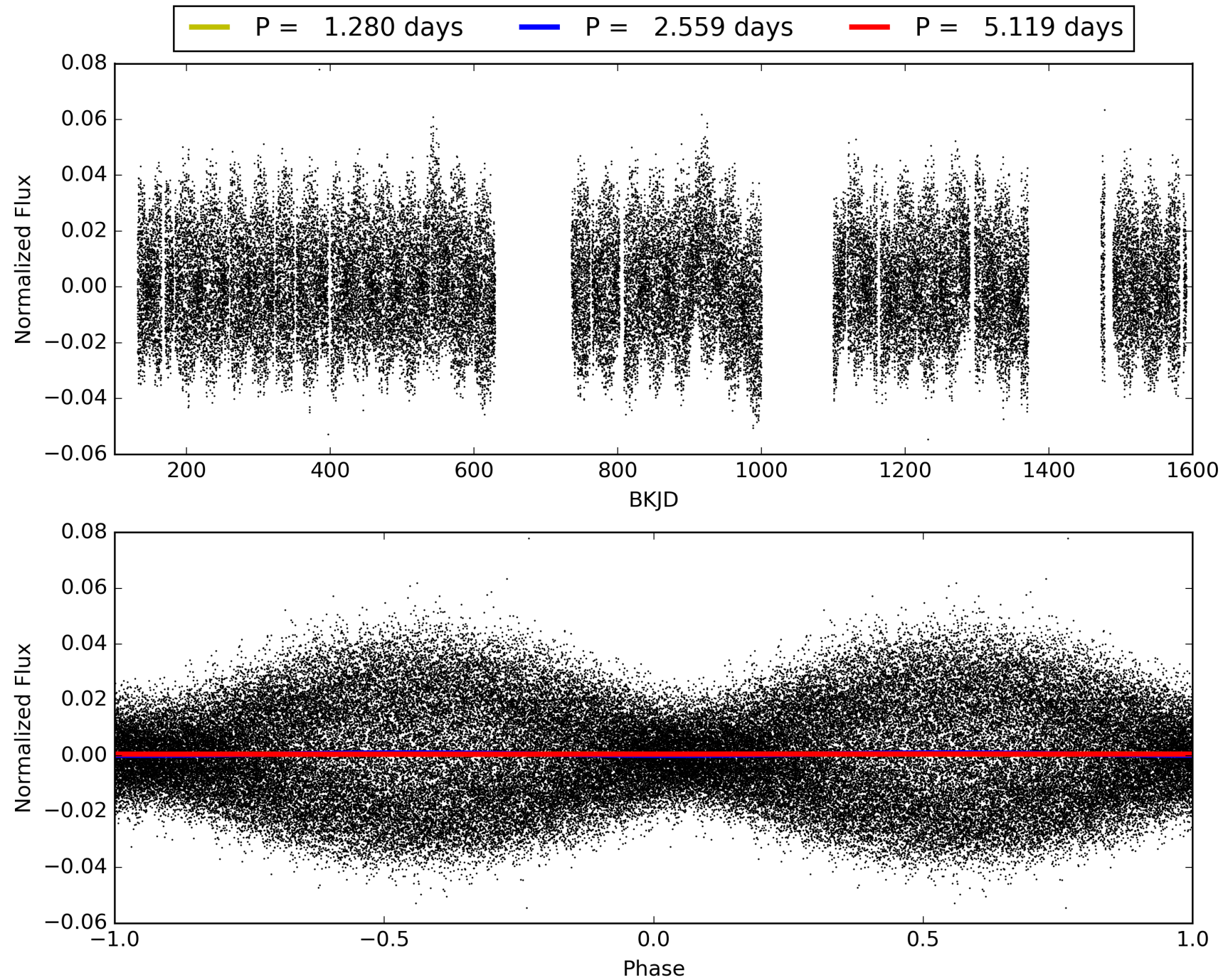
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 18:11:30 Z

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

TCE 009788612-04, PDC Light Curves

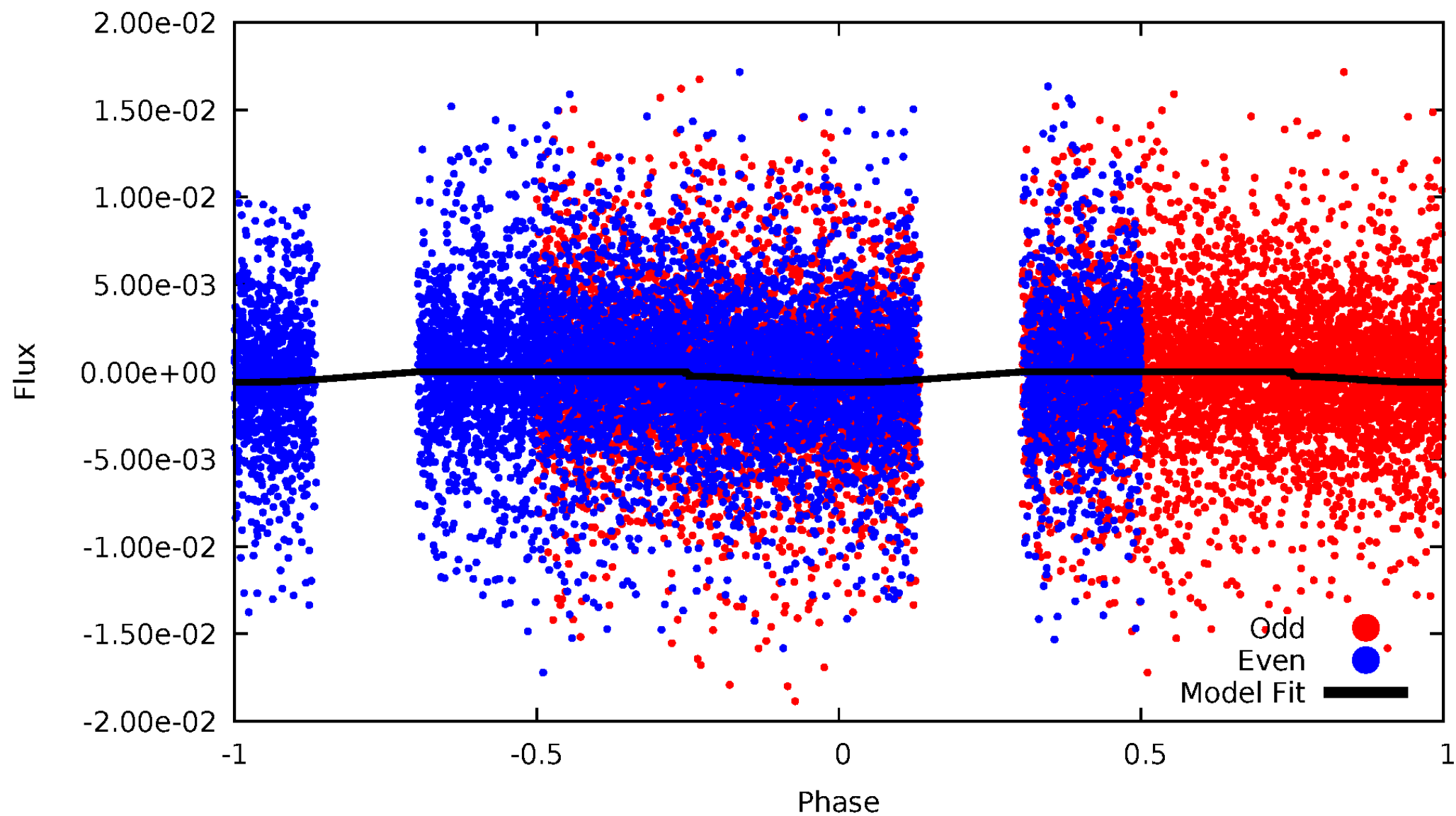


TCE 009788612-04



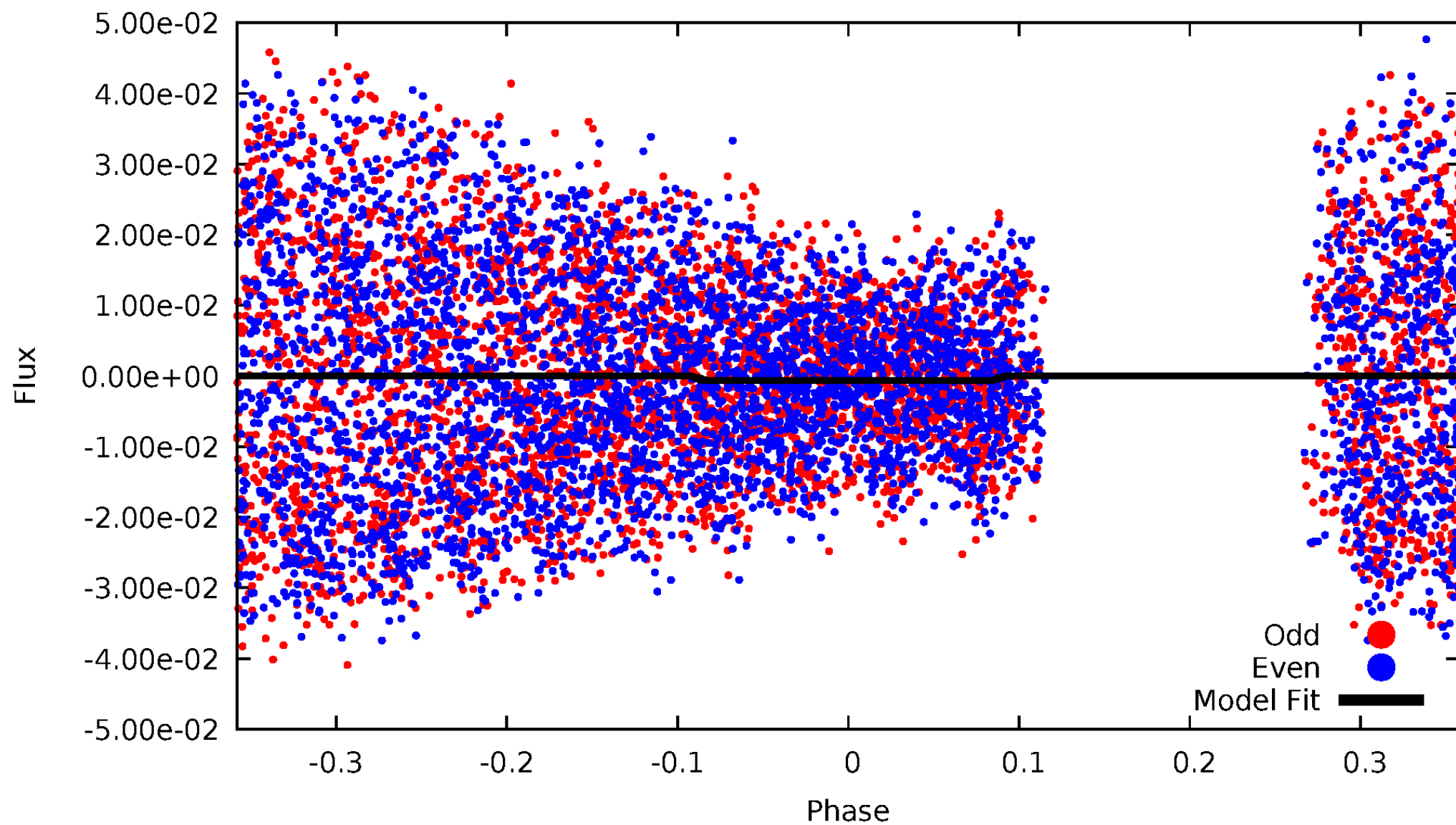
DV Odd/Even

TCE 009788612-04



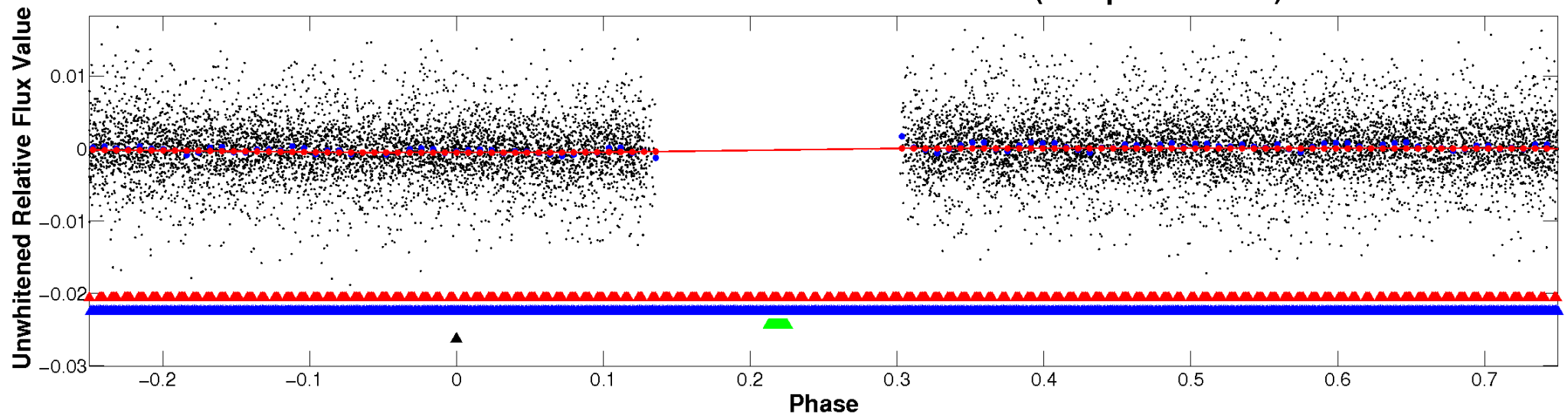
ALT Odd/Even

TCE 009788612-04

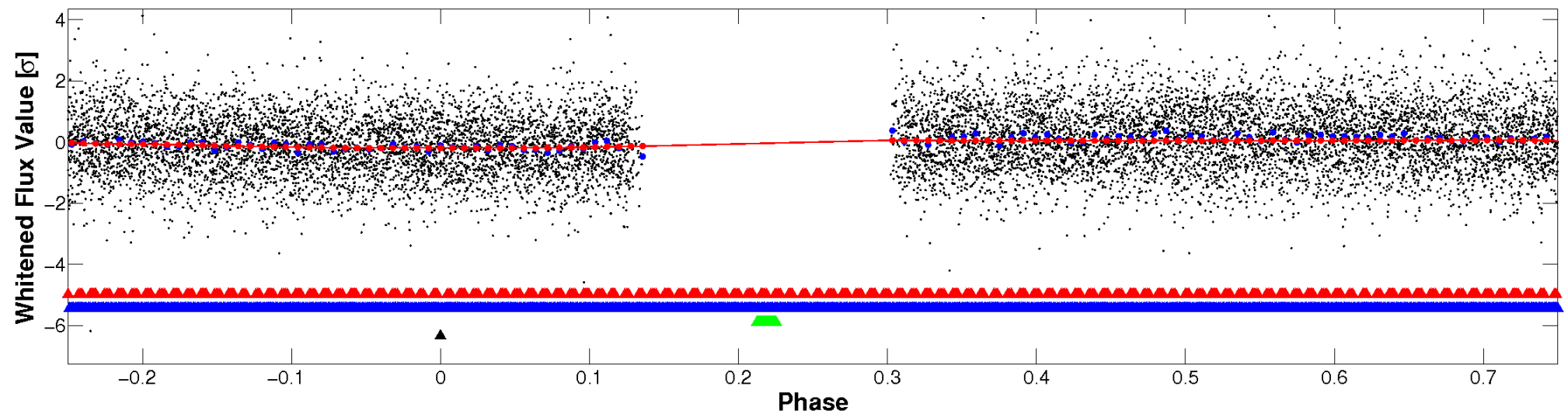


Non-Whitened Vs. Whitened Light Curve

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

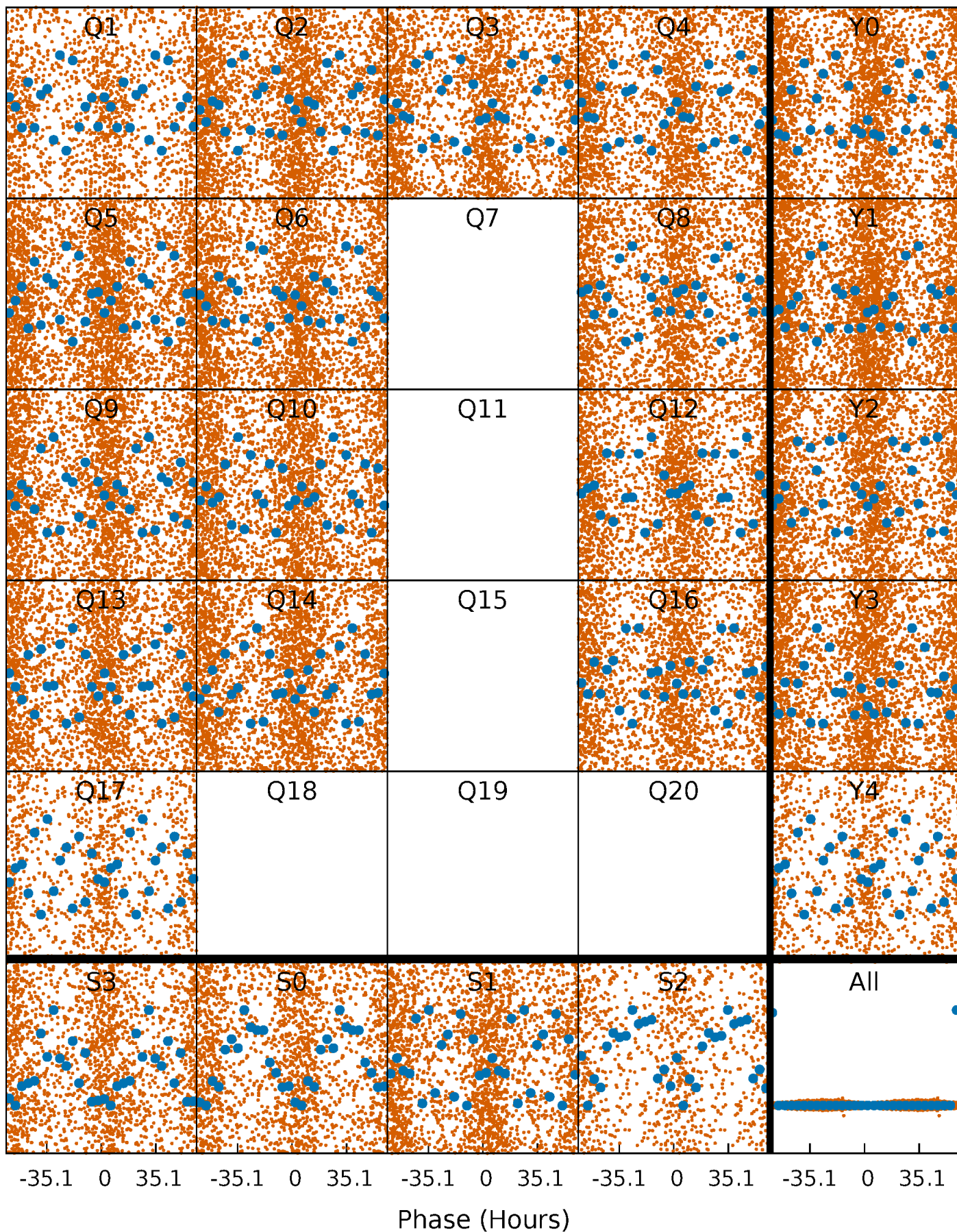


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



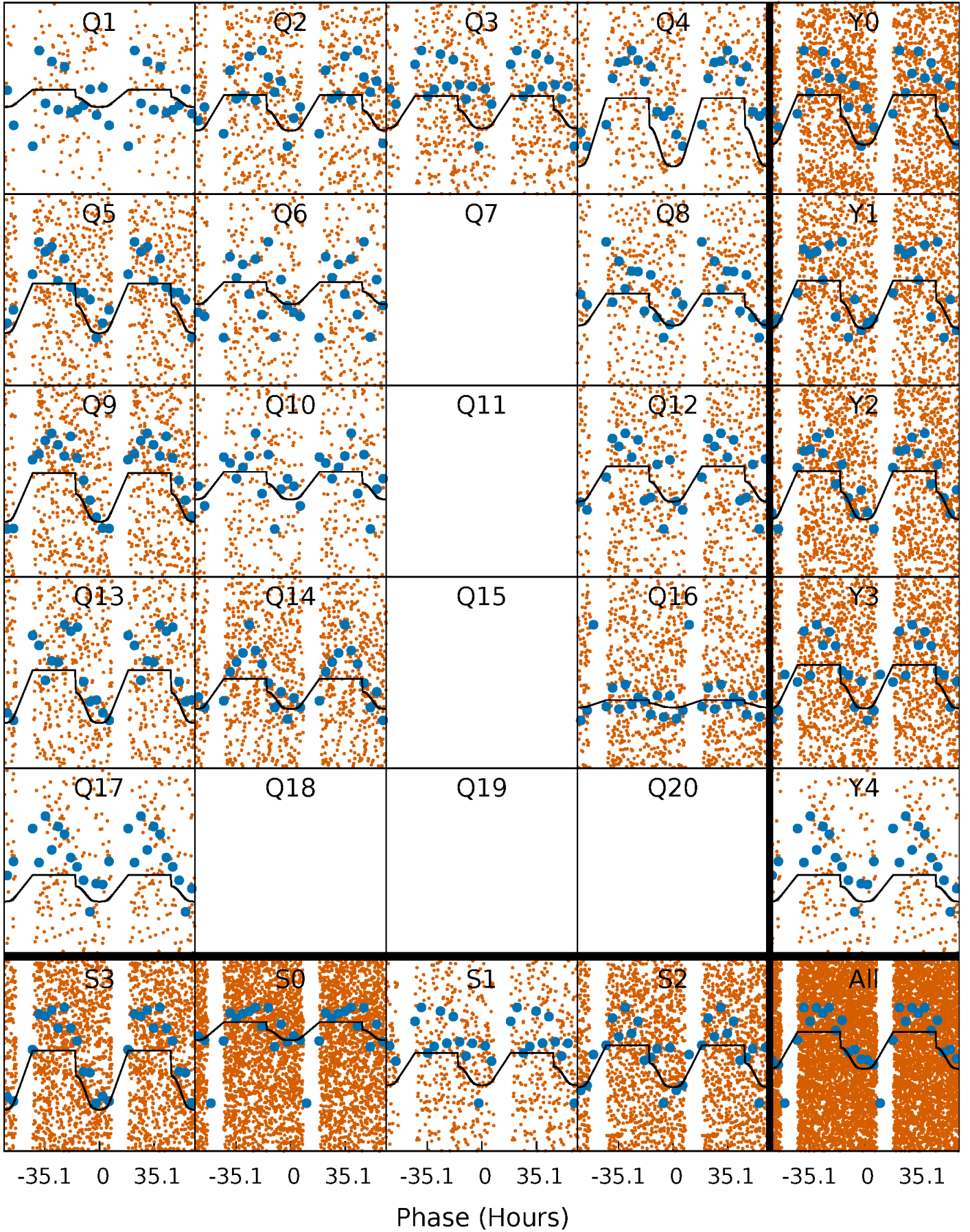
PDC Quarter-Phased Transit Curves

TCE 009788612-04 P= 2.559422 Days $T_0=131.729174$ (BKJD)



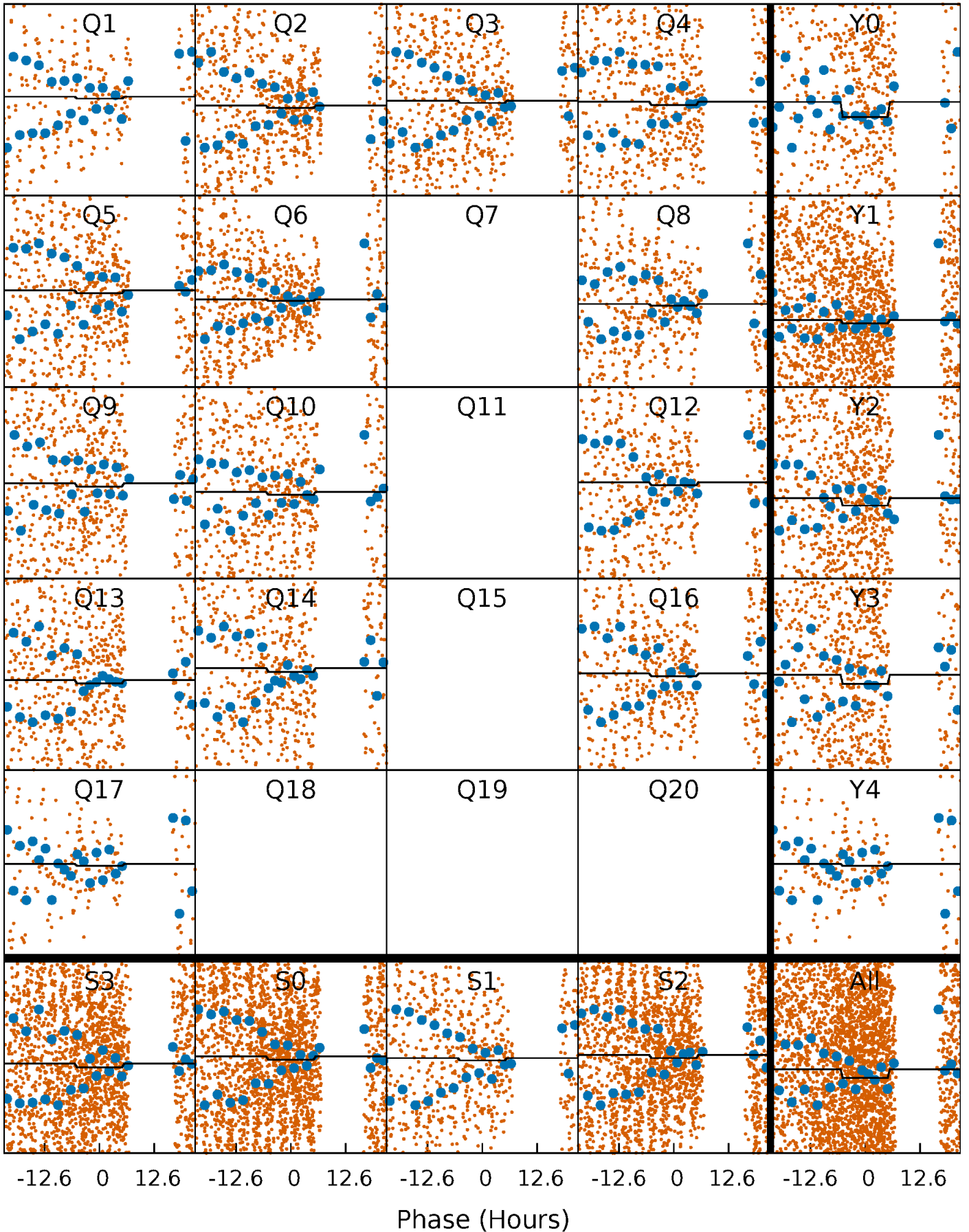
DV Quarter-Phased Transit Curves

TCE 009788612-04 P= 2.559422 Days $T_0=131.729174$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

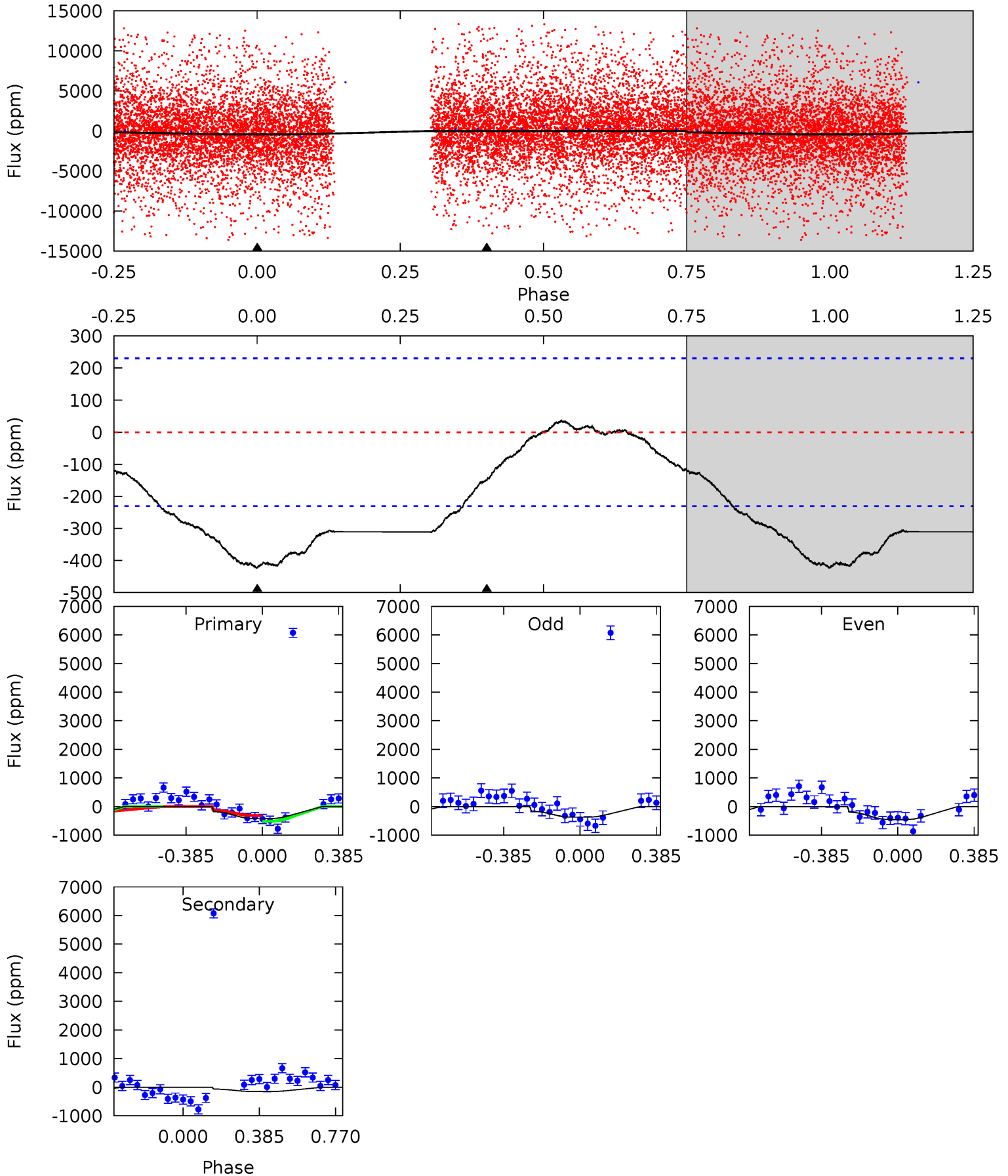
TCE 009788612-04 P= 2.559614 Days $T_0=131.746345$ (BKJD)



DV Model-Shift Uniqueness Test

009788612-04, P = 2.559422 Days, E = 129.169752 Days

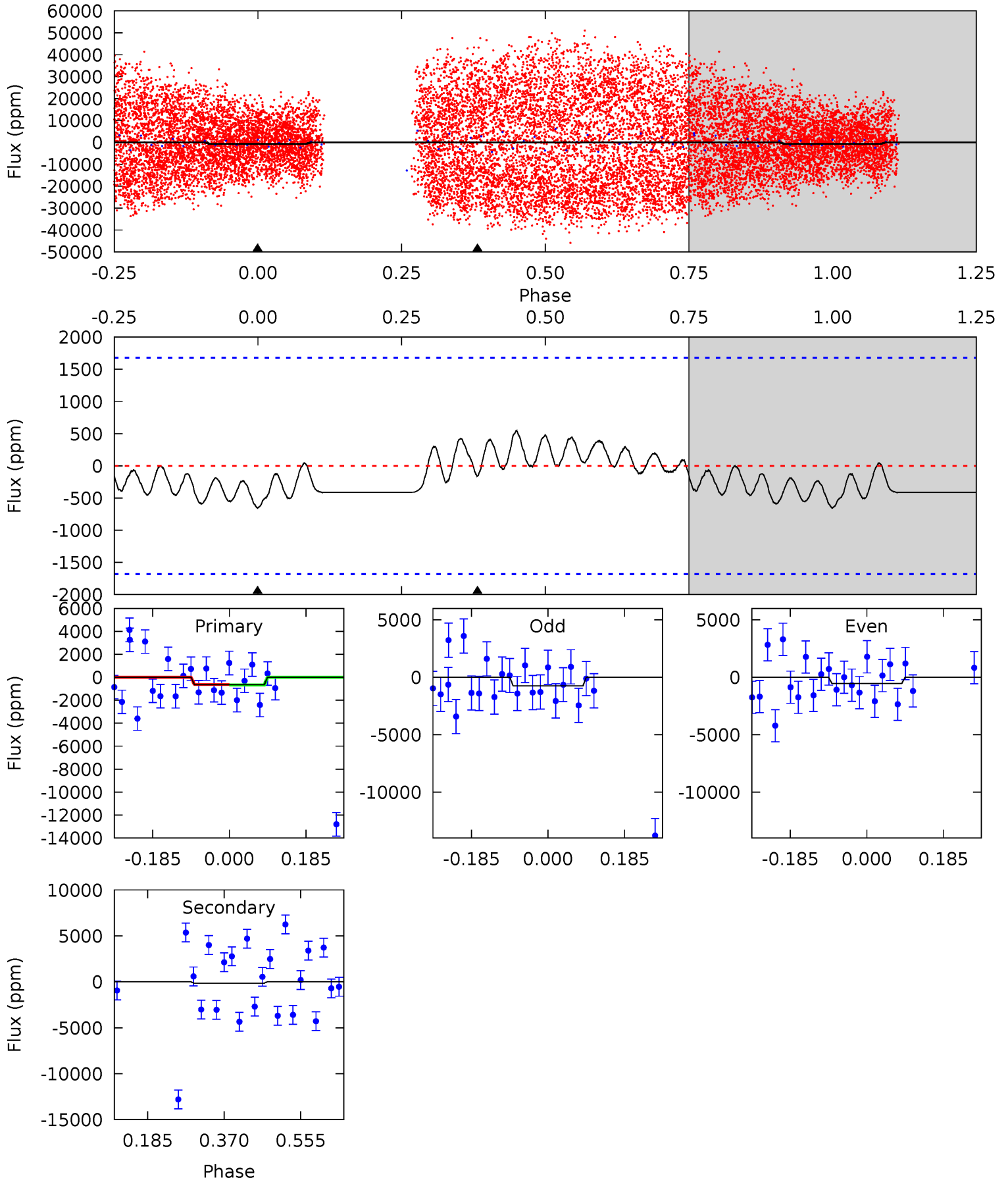
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.85	2.81	0	0	4.27	0.87	0.13	7.85	7.85	2.81	2.81	0.80	0.79	0.08	1.84



Alt Model-Shift Uniqueness Test

009788612-04, P = 2.559614 Days, E = 129.186731 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.72	0.43	0	0	4.43	1.33	0.56	1.72	1.72	0.43	0.43	0.28	1.36	0.46	0.06



Stellar Parameters For KIC 009788612

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7478^{+206}_{-335}	$4.097^{+0.124}_{-0.186}$	$0.120^{+0.150}_{-0.400}$	$1.935^{+0.591}_{-0.394}$	$1.706^{+0.207}_{-0.276}$	$0.332^{+0.210}_{-0.175}$
	+3%/-4%	+3%/-5%	+125%/-333%	+31%/-20%	+12%/-16%	+63%/-53%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009788612-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-151±54	$5.84^{+1.10}_{-0.76}$	3069^{+235}_{-196}	4912^{+391}_{-509}	$4.354^{+2.555}_{-1.706}$
Alt.	-161±379	$5.33^{+0.90}_{-0.65}$	3077^{+240}_{-202}	5106^{+2011}_{-10852}	$5.292^{+14.571}_{-13.567}$

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

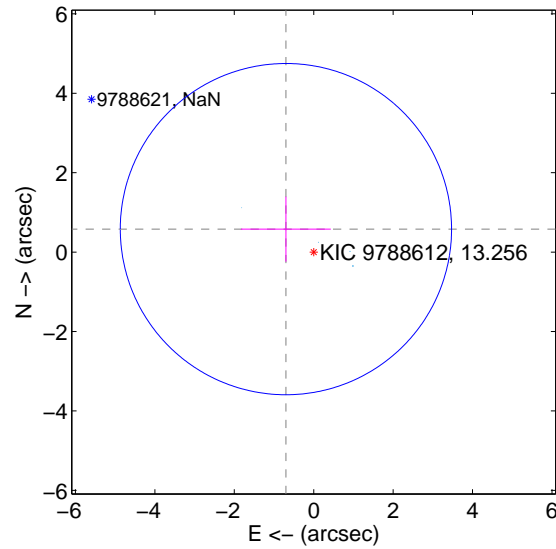
Supplemental centroid analysis for 009788612-04. Kepler magnitude: 13.26. Transit SNR 12.55

There are 4 quarters with good PRF difference image offsets

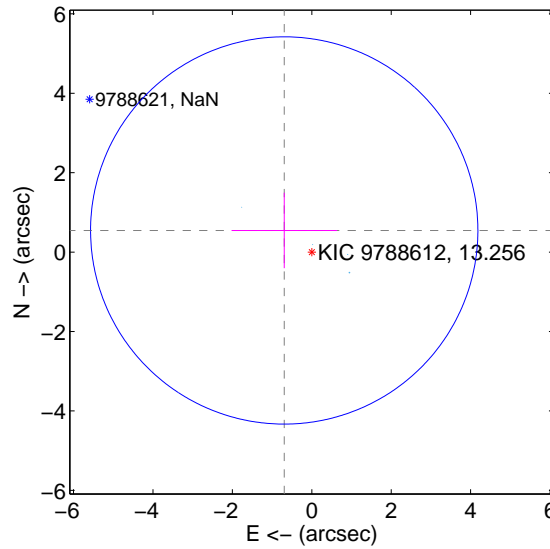
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.908 ± 1.390	0.65	0.700 ± 1.132	0.578 ± 0.819
PRF-fit source offset from KIC position	0.882 ± 1.625	0.54	0.694 ± 1.326	0.545 ± 0.950
photometric centroid source offset	0.34 ± 0.06	5.57	-0.10 ± 0.04	-0.33 ± 0.06

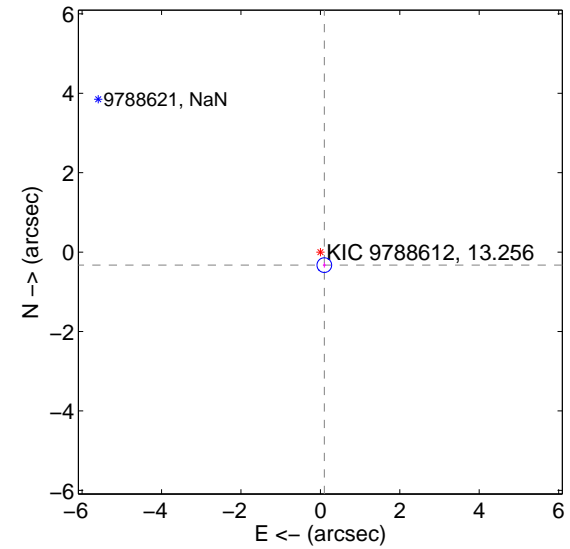
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

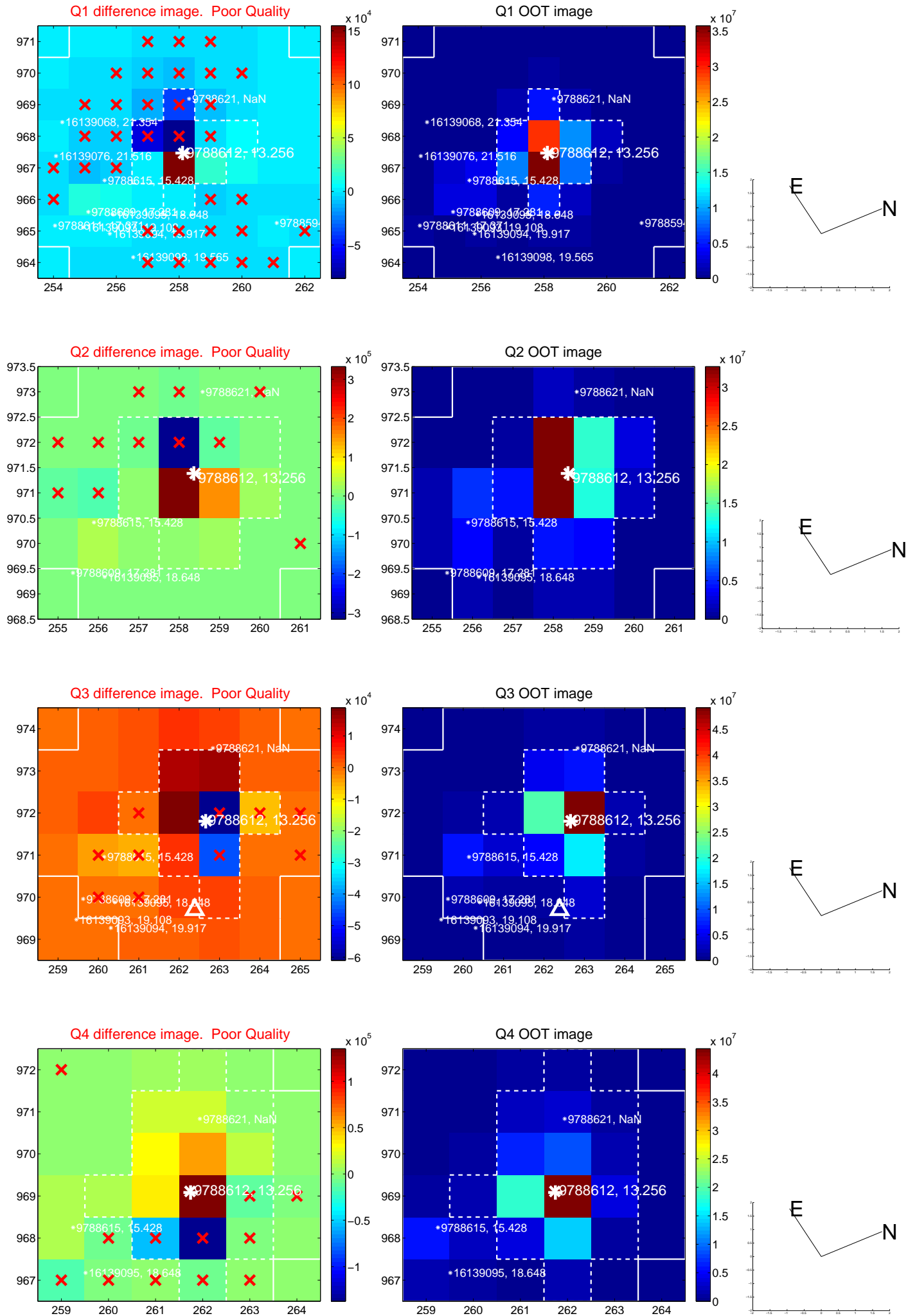


offset from photometric centroids

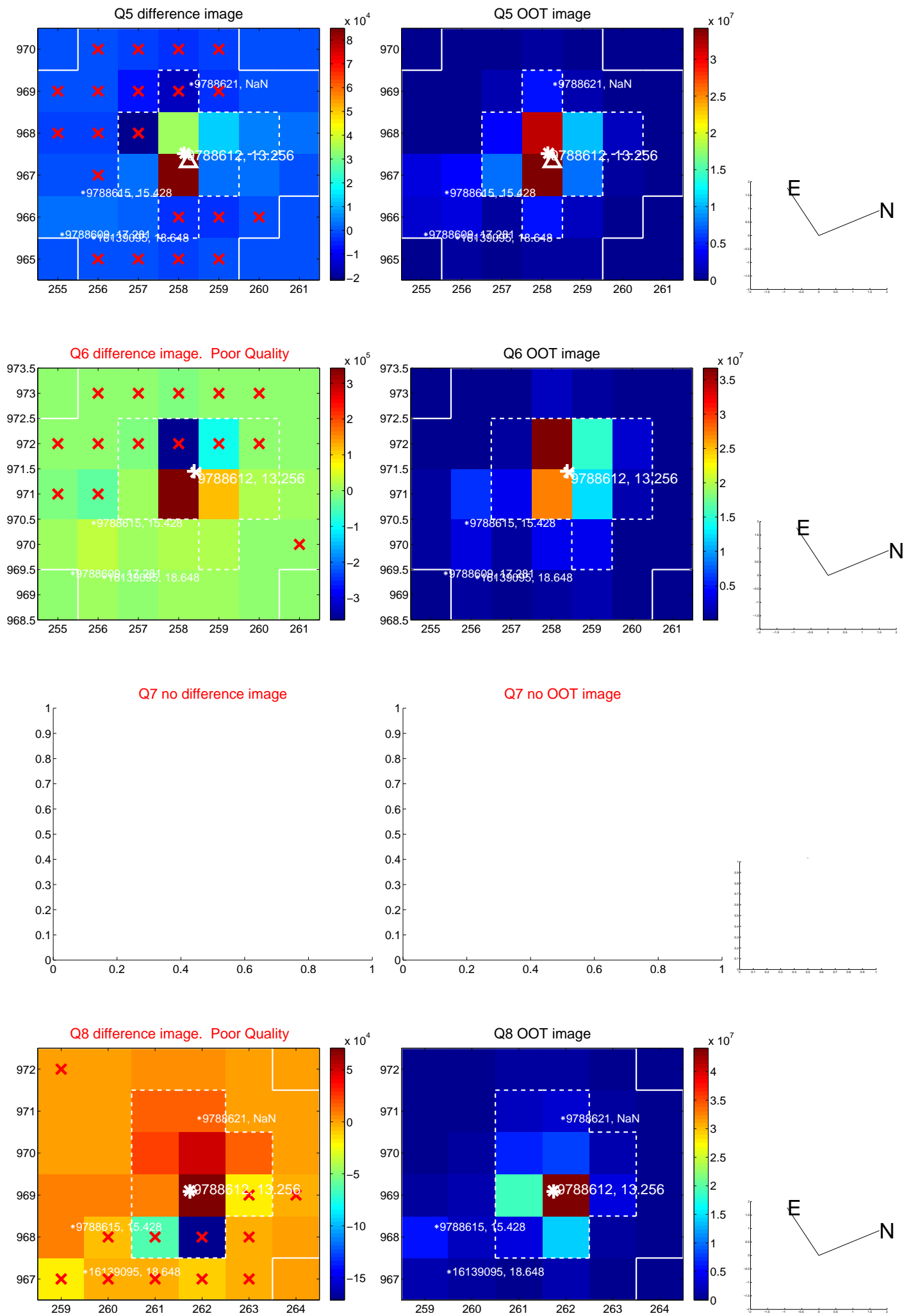


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

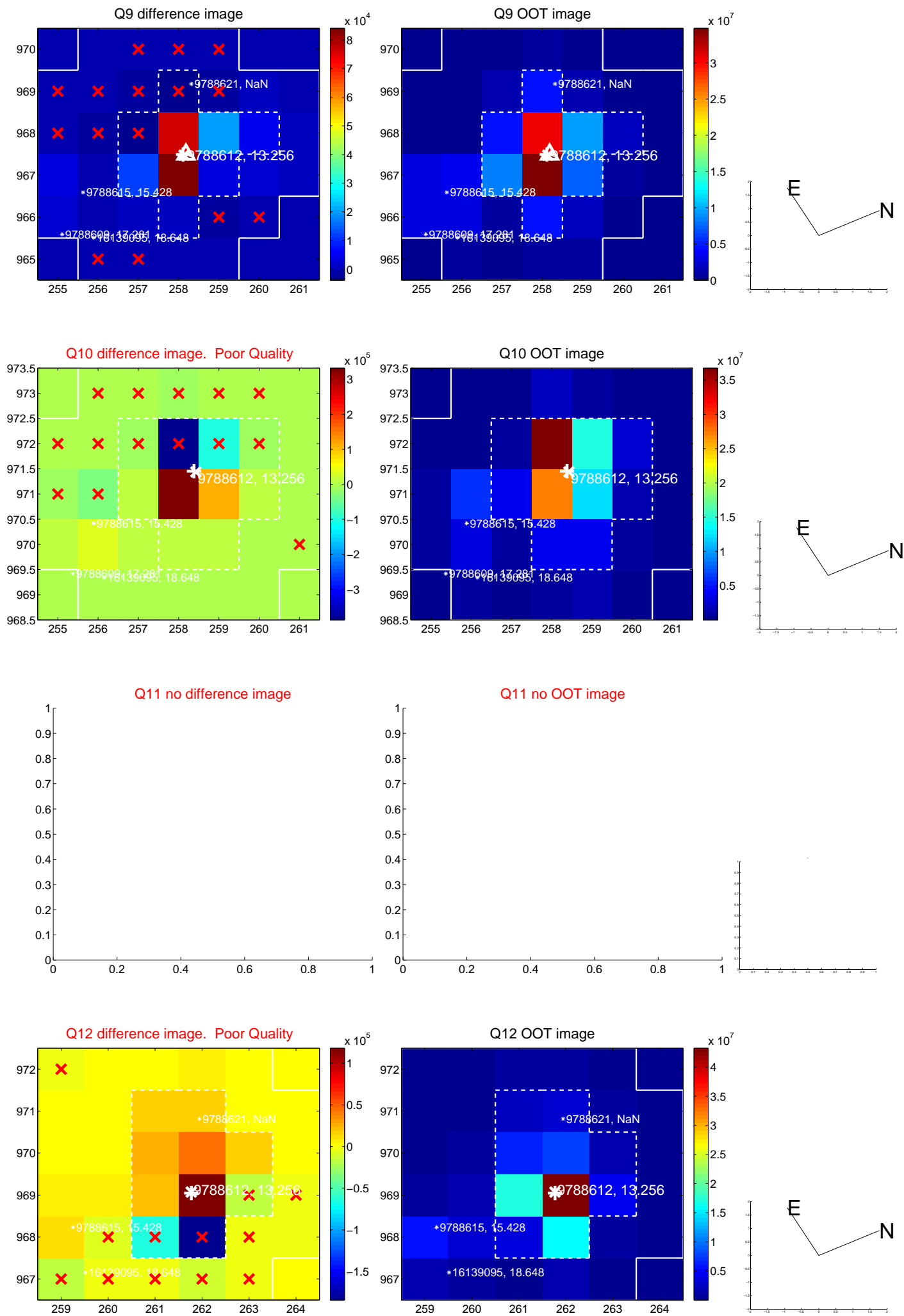
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



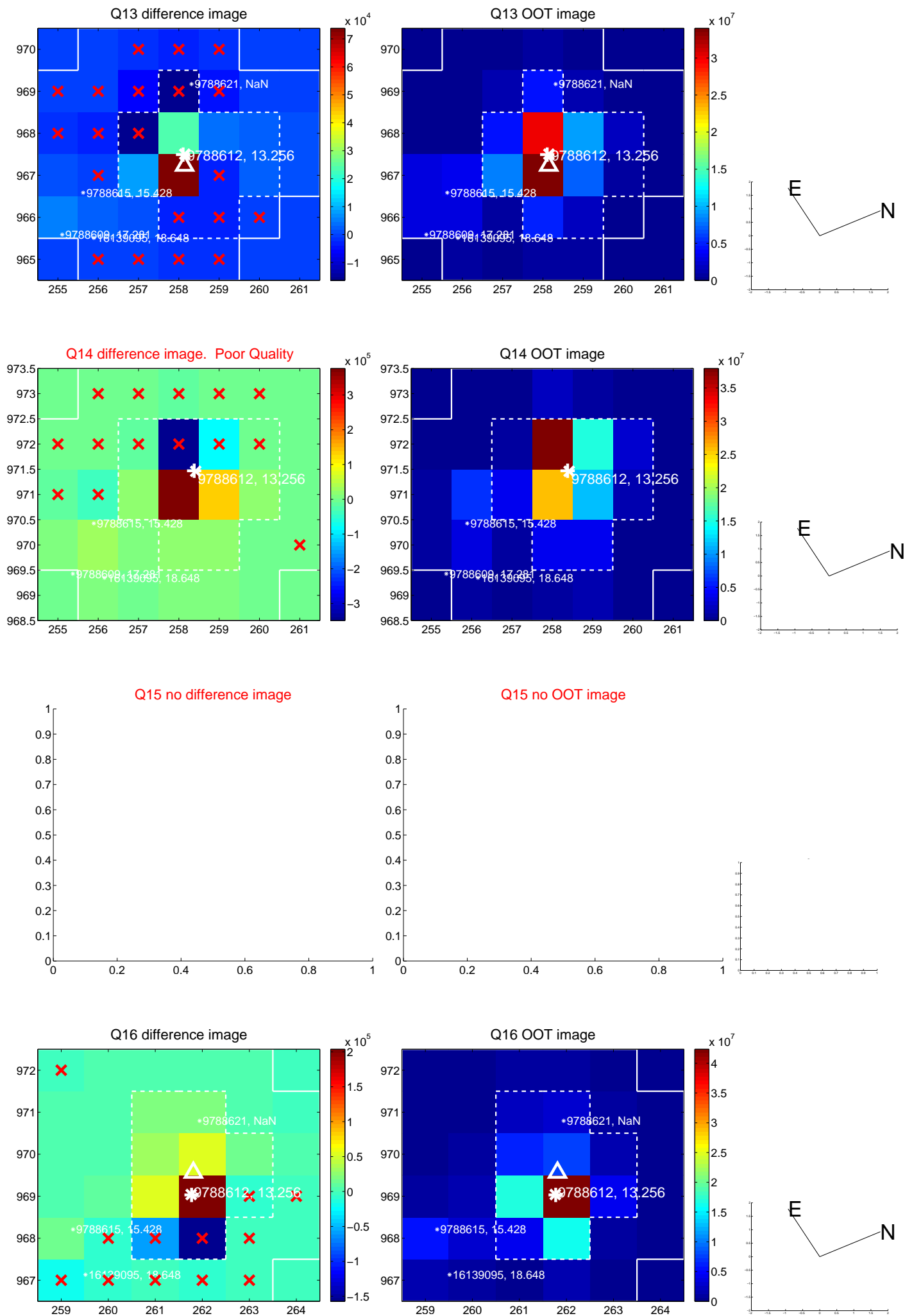
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



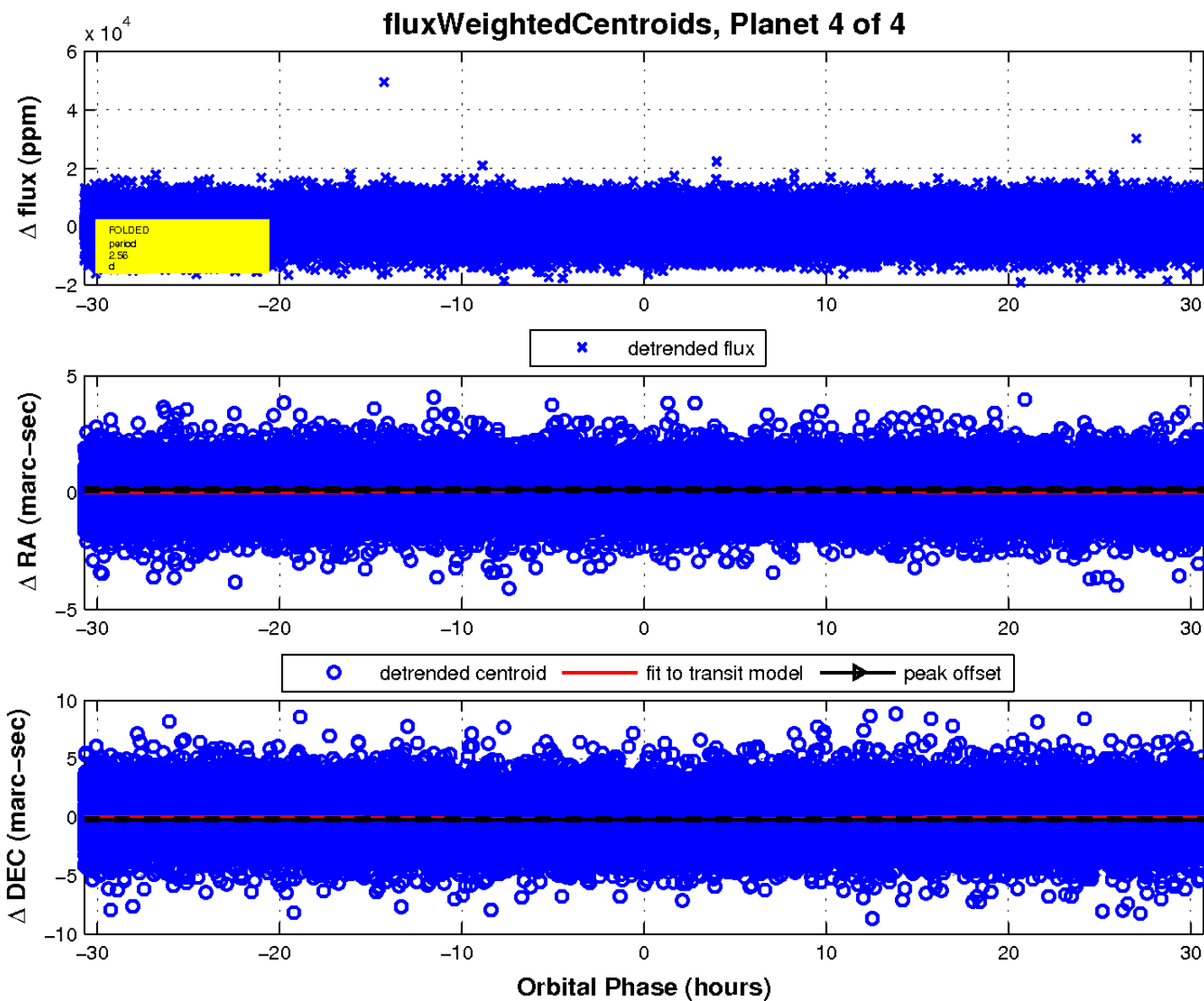
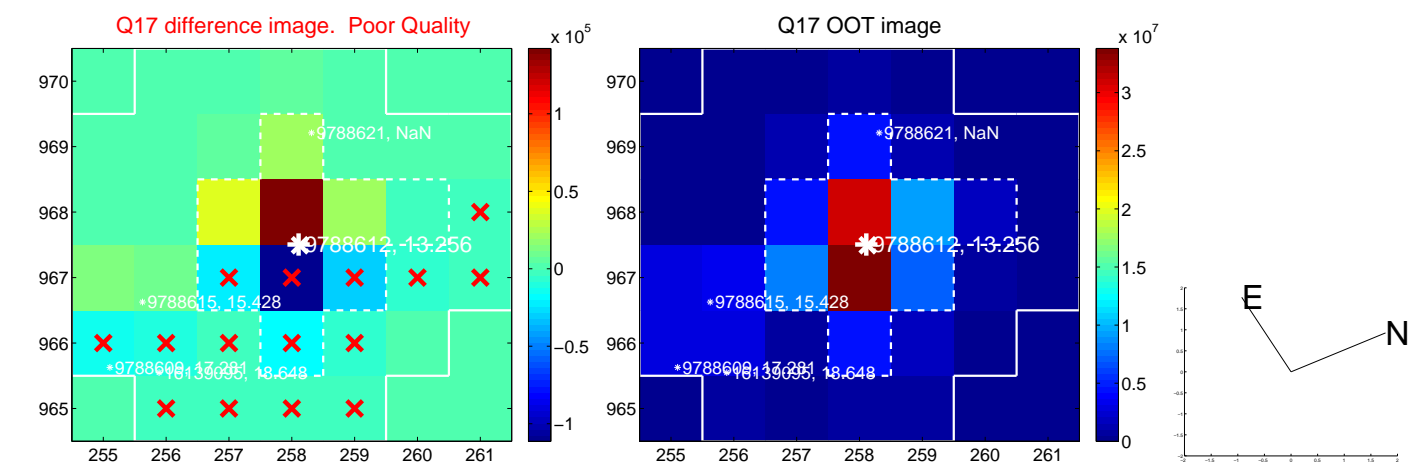
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

