

KIC 002581452

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})
002581452-01	OBS	No	2.617491	133.800090	26.3	13.331	8.9	8.0	5.75	5117	3.04	9511.99
002581452-02	OBS	No	33.977508	153.321823	95.4	18.301	18.3	5.2	5.75	5117	6.58	311.79
002581452-03	OBS	No	169.717627	279.461846	190.7	17.272	9.8	6.5	5.75	5117	8.54	36.52
002581452-04	OBS	No	107.762815	209.299153	453.3	2.515	9.1	9.6	5.75	5117	14.13	66.91
002581452-05	OBS	No	111.863738	193.627102	352.0	2.918	8.7	8.1	5.75	5117	13.21	63.66
002581452-06	OBS	No	215.566106	271.224013	414.9	3.600	8.2	8.4	5.75	5117	12.38	26.55
002581452-07	OBS	No	142.742350	232.683893	469.7	2.796	8.5	8.1	5.75	5117	12.60	45.99
002581452-08	OBS	No	638.962510	294.409498	388.3	3.756	7.8	7.4	5.75	5117	13.57	6.24
002581452-09	OBS	No	52.615085	177.948320	286.7	2.766	7.6	7.4	5.75	5117	11.24	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002581452-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
002581452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002581452-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002581452-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— SAME_NTL_PERIOD—CENT_UNCERTAIN
002581452-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
002581452-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS— CENT_FEW_DIFFS
002581452-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

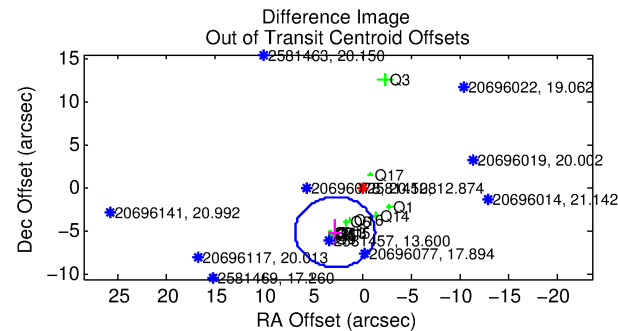
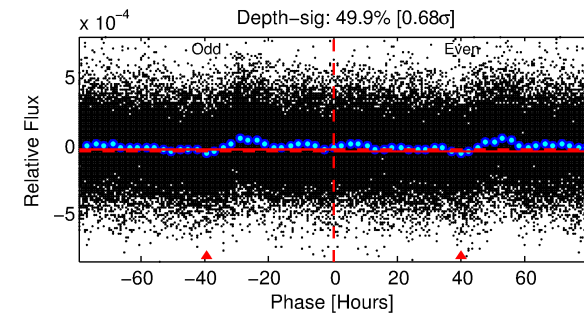
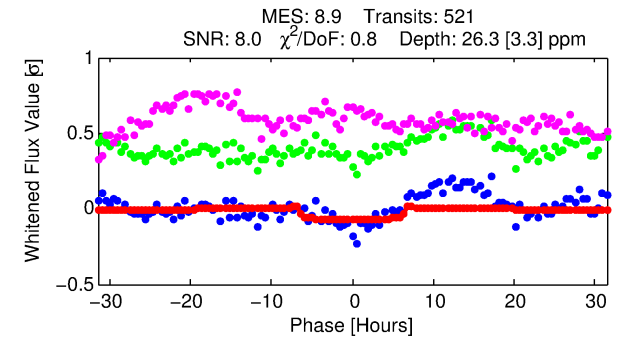
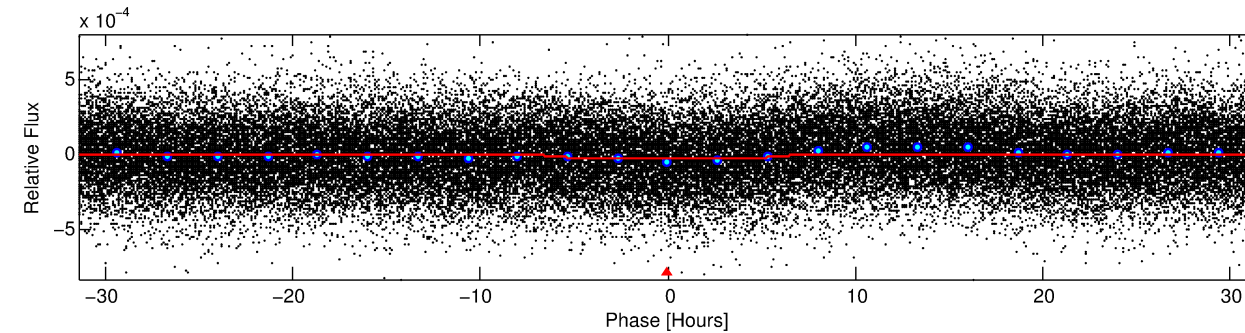
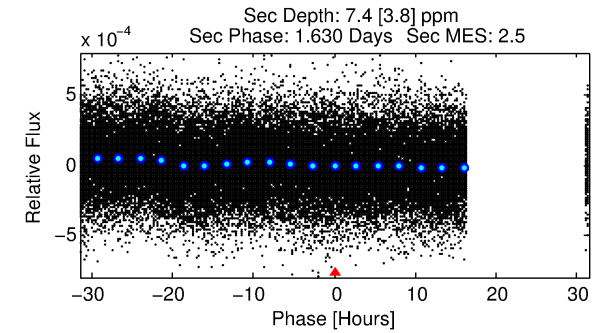
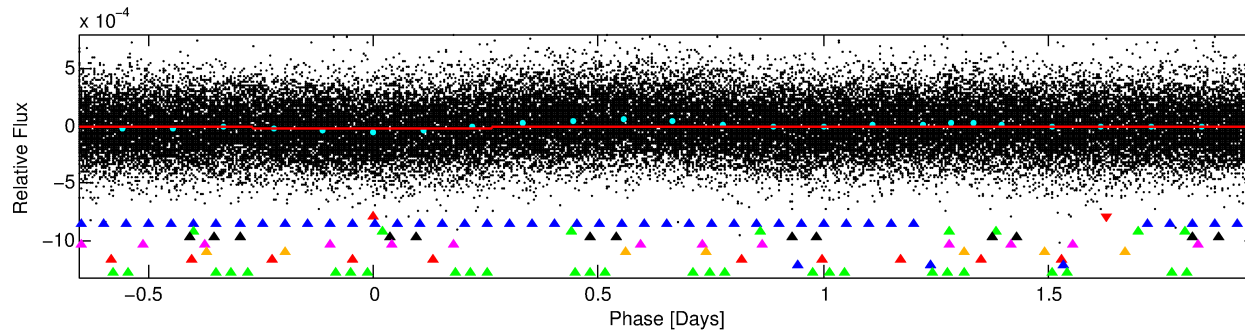
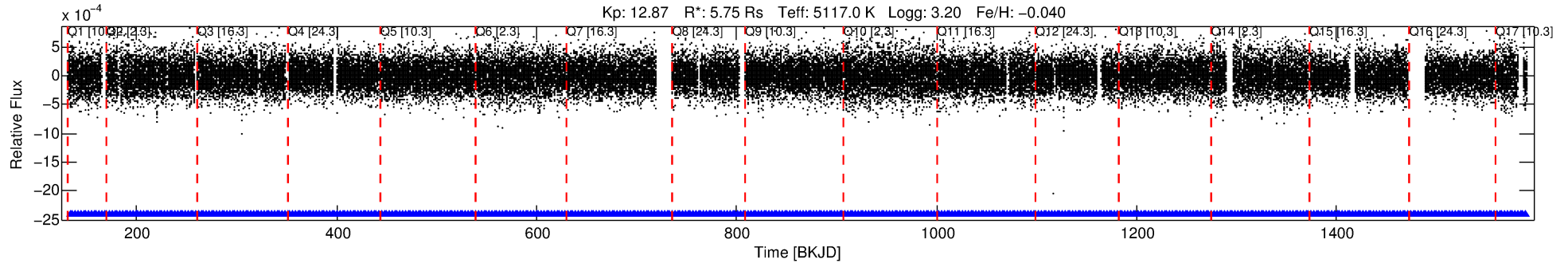
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002581452-01

No Significant Match Found

DV One-Page Summary

KIC: 2581452 Candidate: 1 of 9 Period: 2.617 d



DV Fit Results:

Period = 2.61749 [0.00005] d
Epoch = 133.8001 [0.0107] BKJD
Rp/R* = 0.0049 [0.0030]
a/R* = 1.44 [1.72]
b = 0.59 [2.56]
Seff = 9511.99 [7183.96]
Teq = 2518 [475] K
Rp = 3.04 [2.46] Re
a = 0.0462 [0.0221] AU
Ag = 0.93 [1.43] [-0.05σ]
Teffp = 3828 [1291] K [0.95σ]

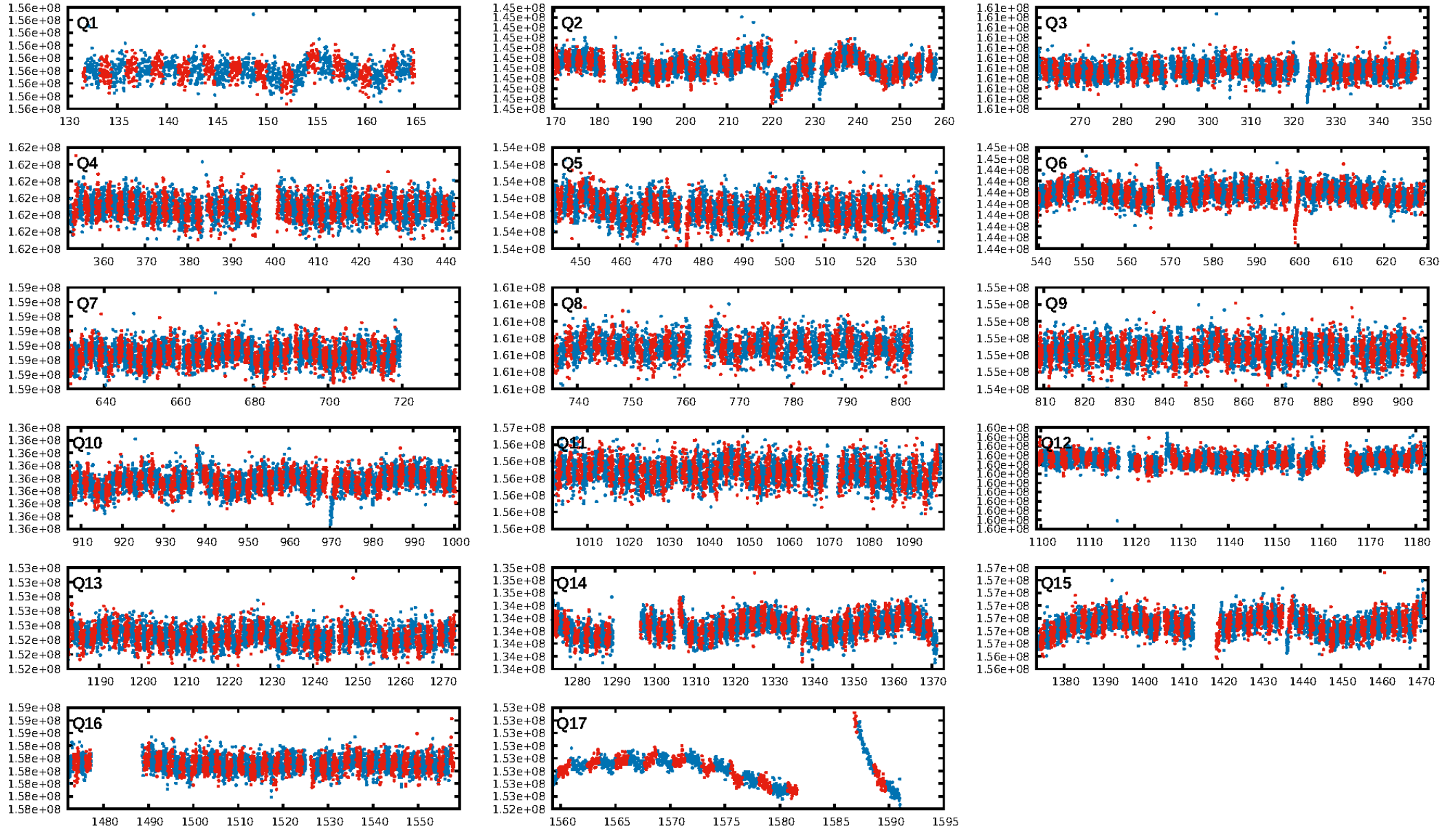
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [33.24σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.41e-11
RollingBand-fgt: 1.00 [498/498]
GhostDiagnostic-chr: 0.6278
Centroid-sig: N/A
Centroid-so: 8.274 arcsec [8.18σ]
OotOffset-rm: 5.784 arcsec [4.24σ]
KicOffset-rm: 6.226 arcsec [4.09σ]
OotOffset-st: 2/4/1/5 [12]
KicOffset-st: 2/4/1/5 [12]
DiffImageQuality-fgm: 0.67 [8/12]
DiffImageOverlap-fno: 1.00 [17/17]

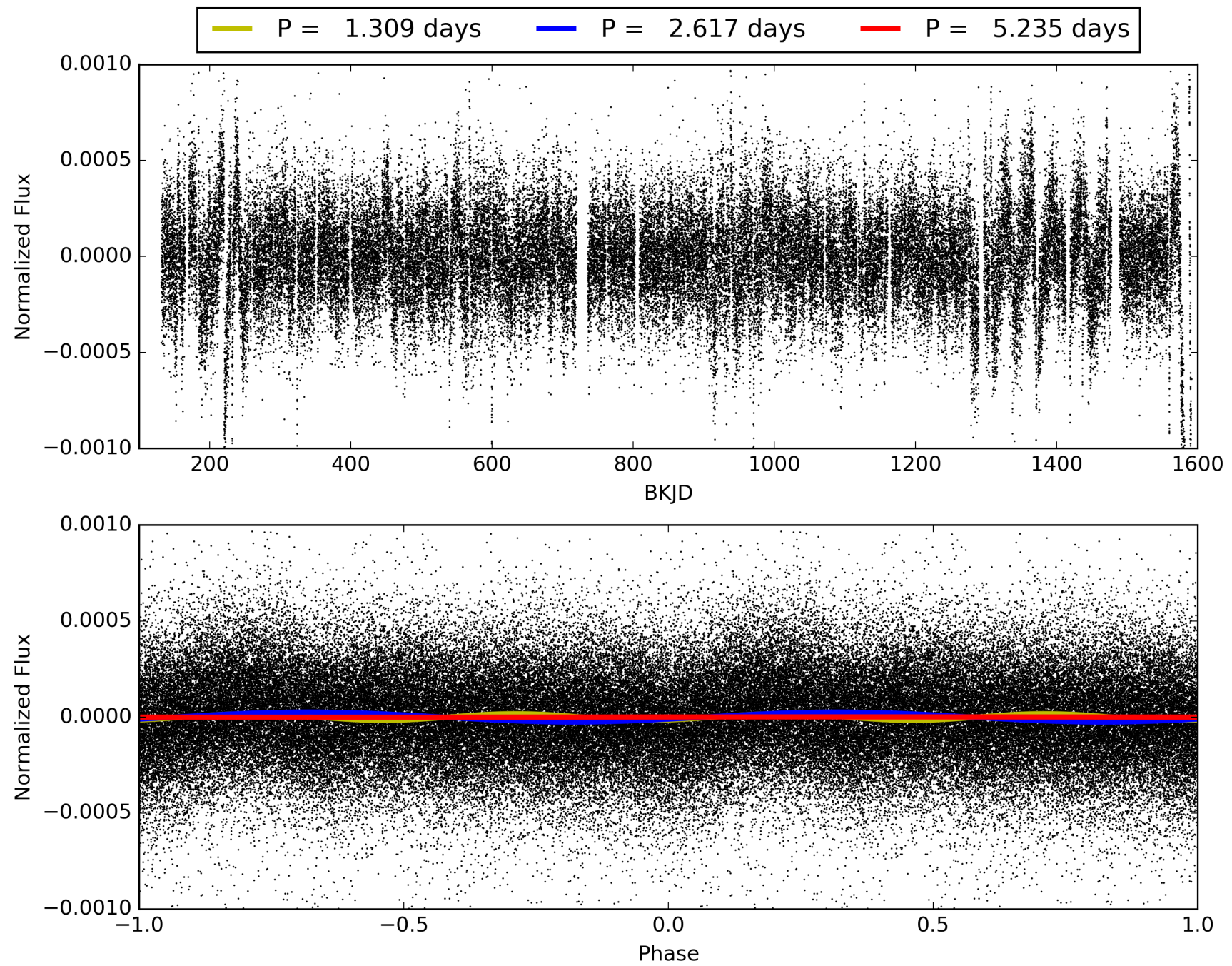
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:22:09 Z

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

TCE 002581452-01, PDC Light Curves

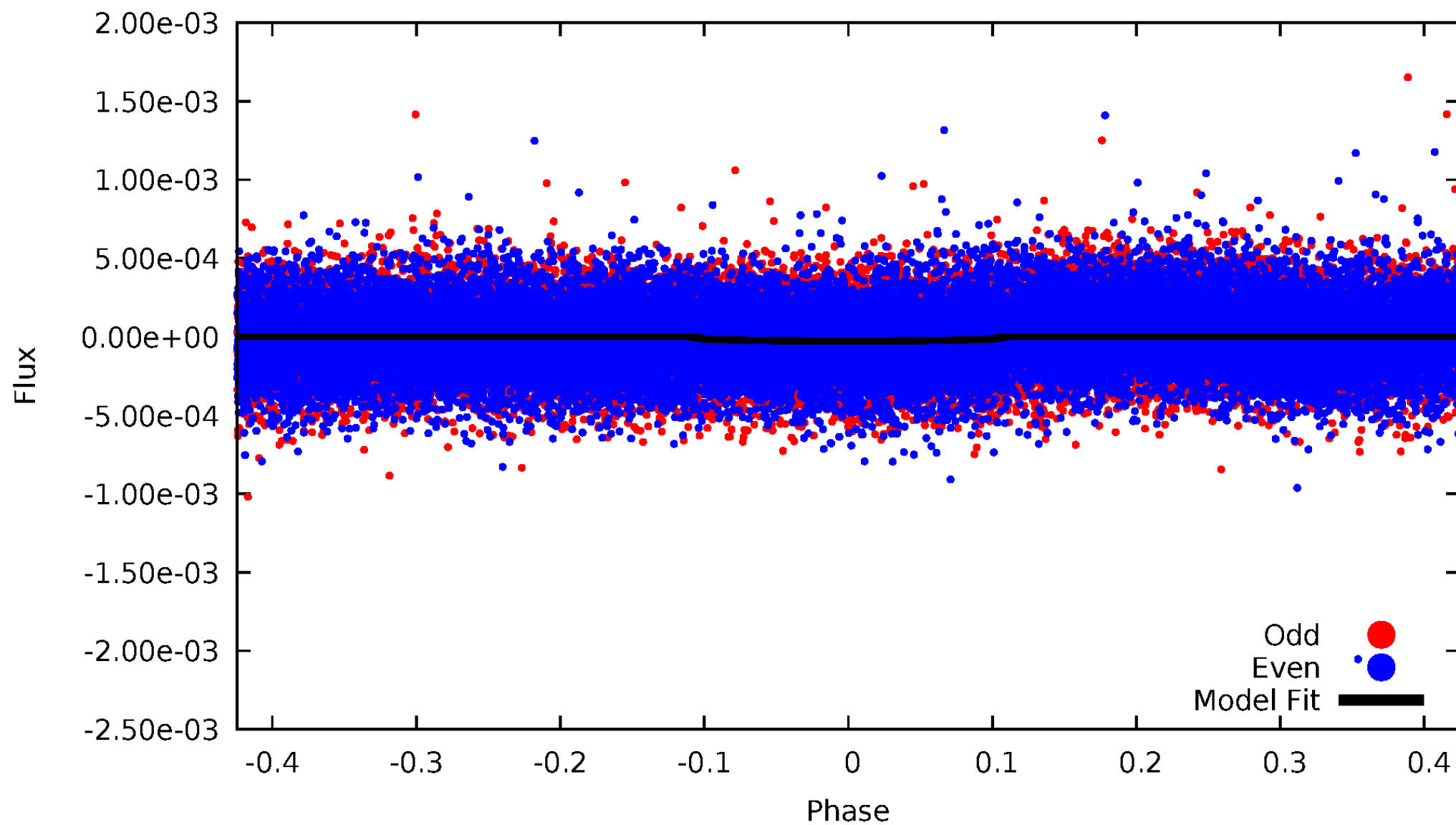


TCE 002581452-01



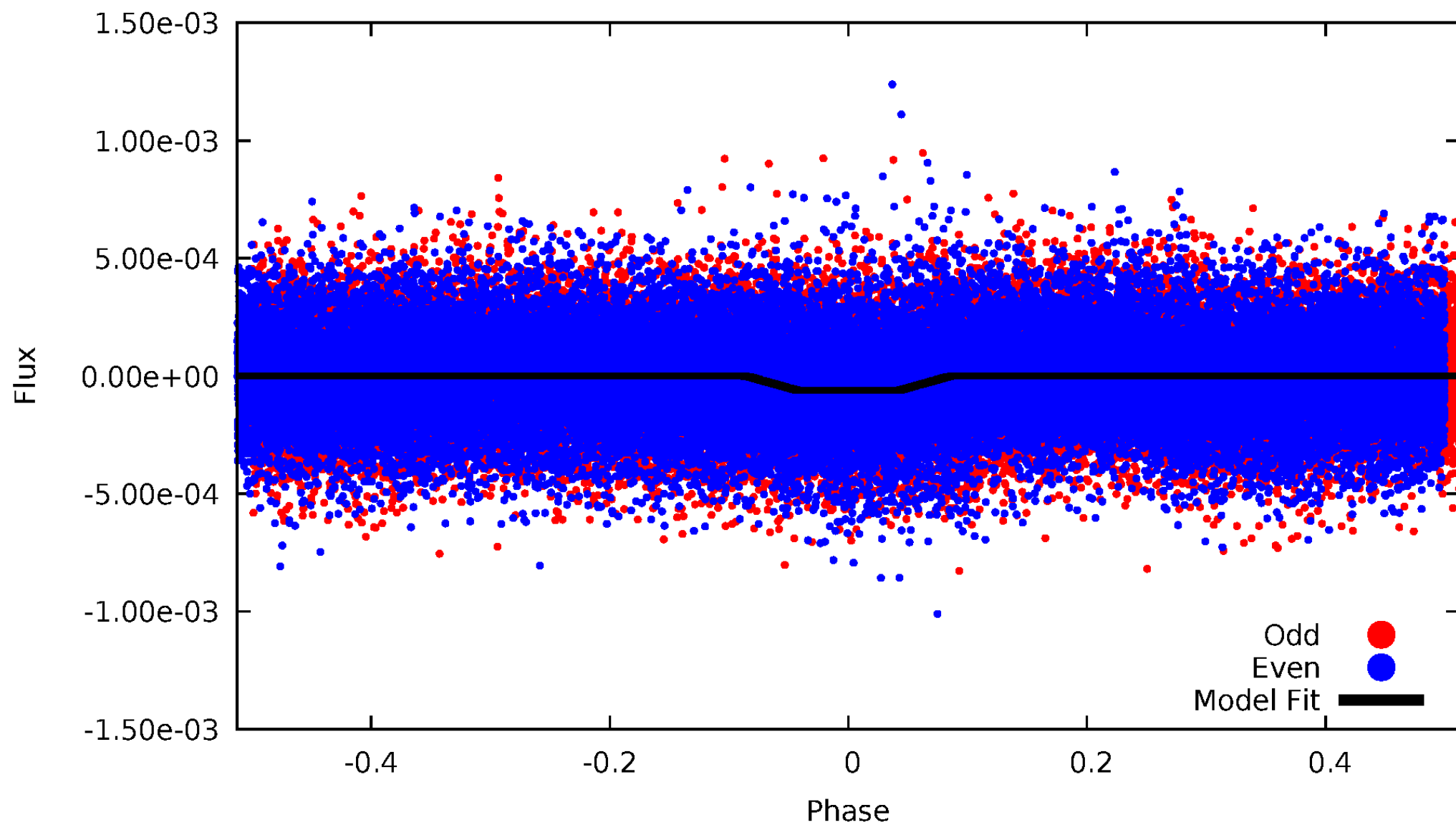
DV Odd/Even

TCE 002581452-01



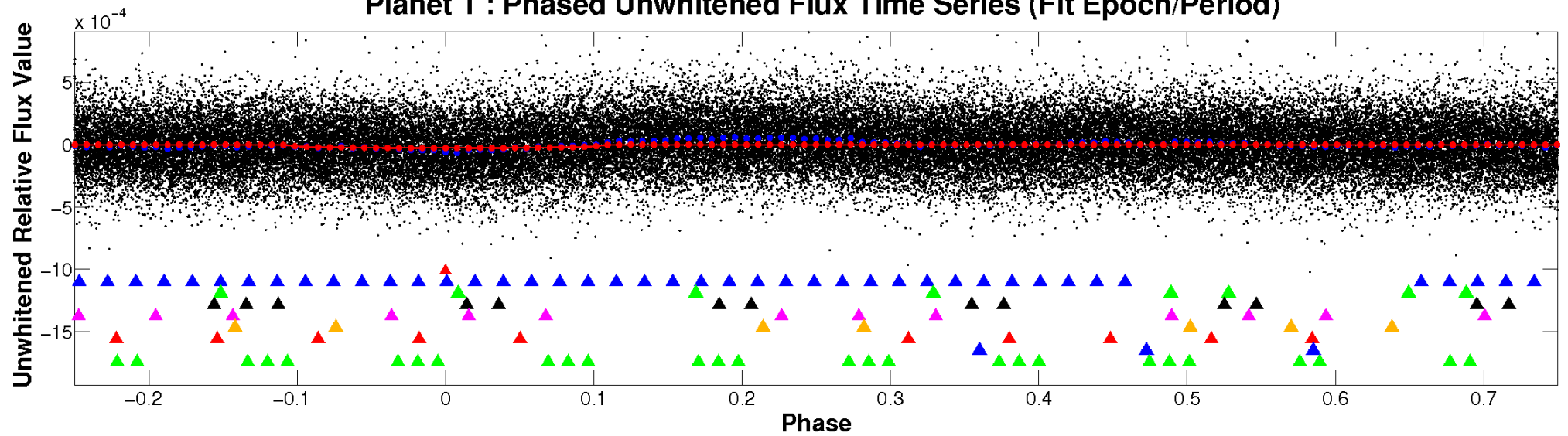
ALT Odd/Even

TCE 002581452-01

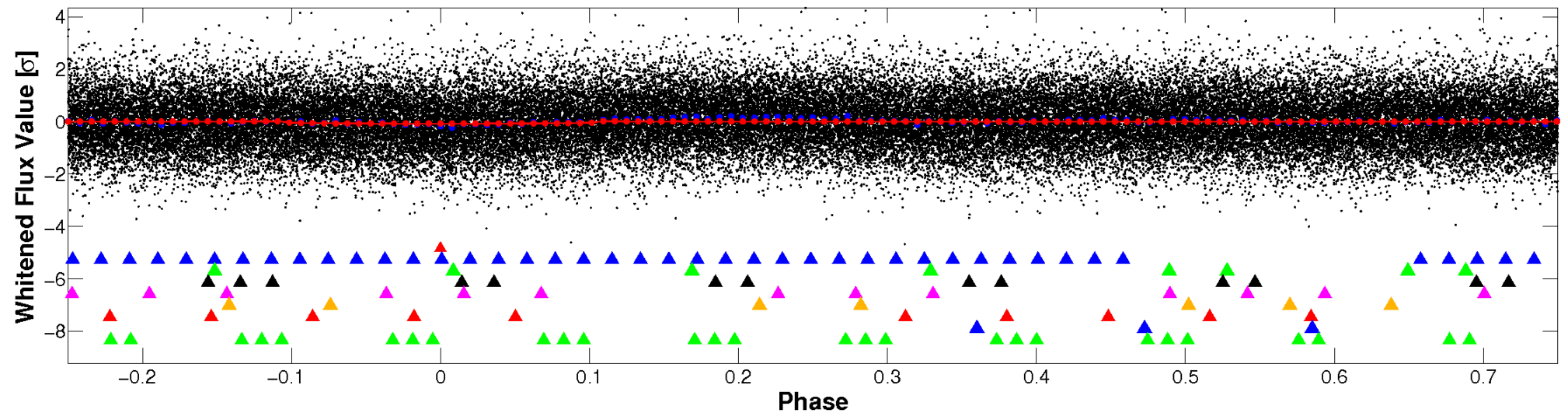


Non-Whitened Vs. Whitened Light Curve

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

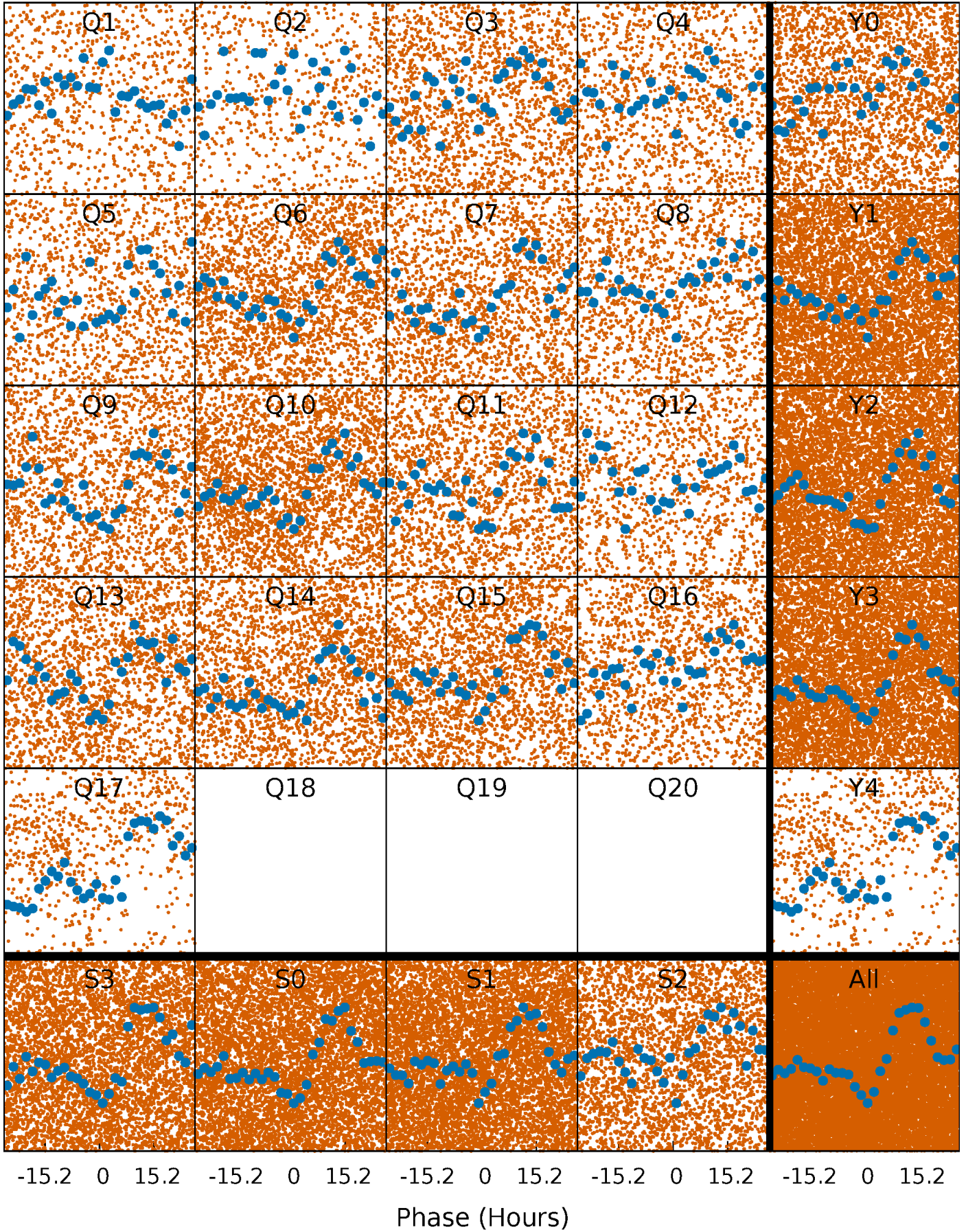


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



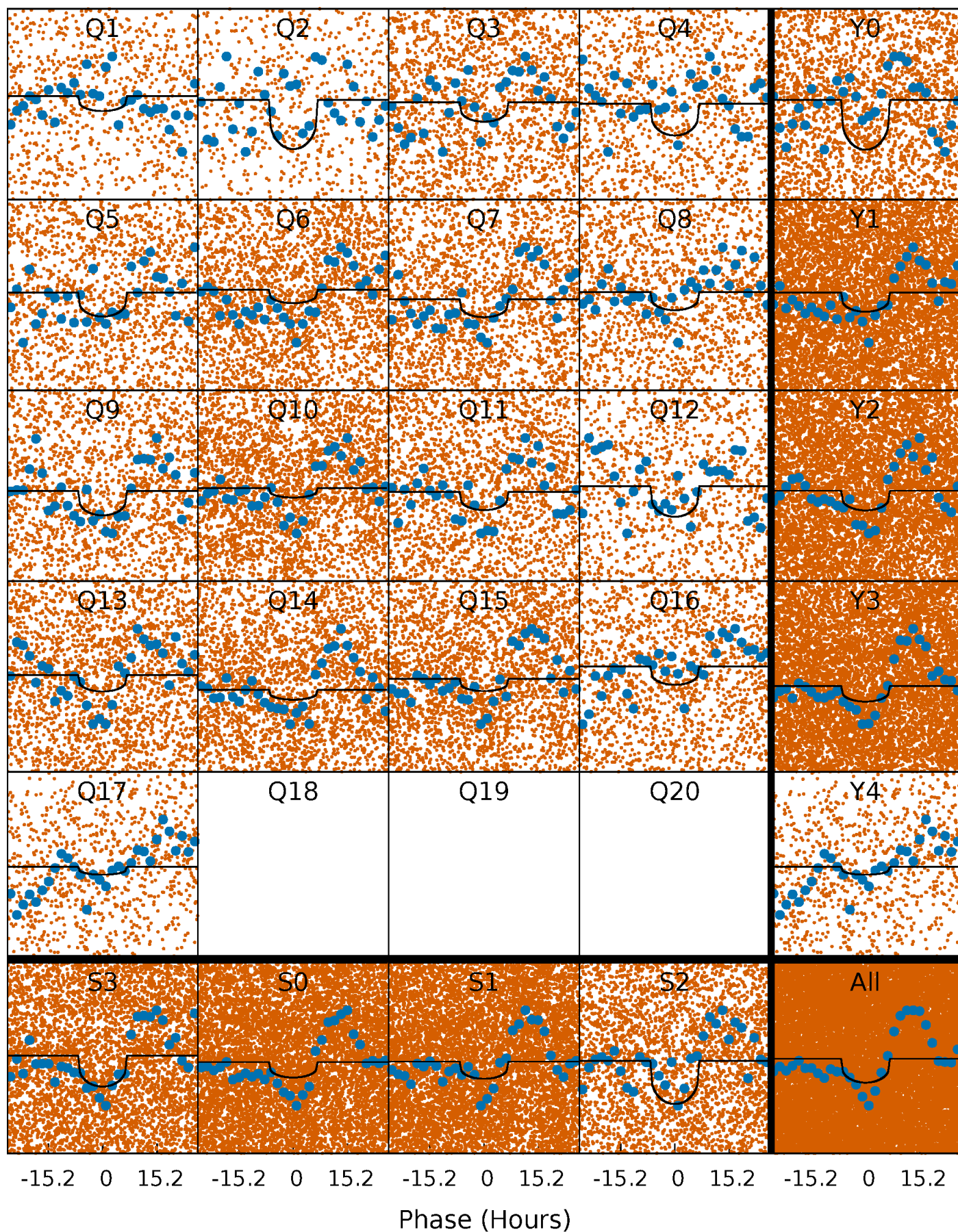
PDC Quarter-Phased Transit Curves

TCE 002581452-01 P= 2.617491 Days $T_0=133.800090$ (BKJD)



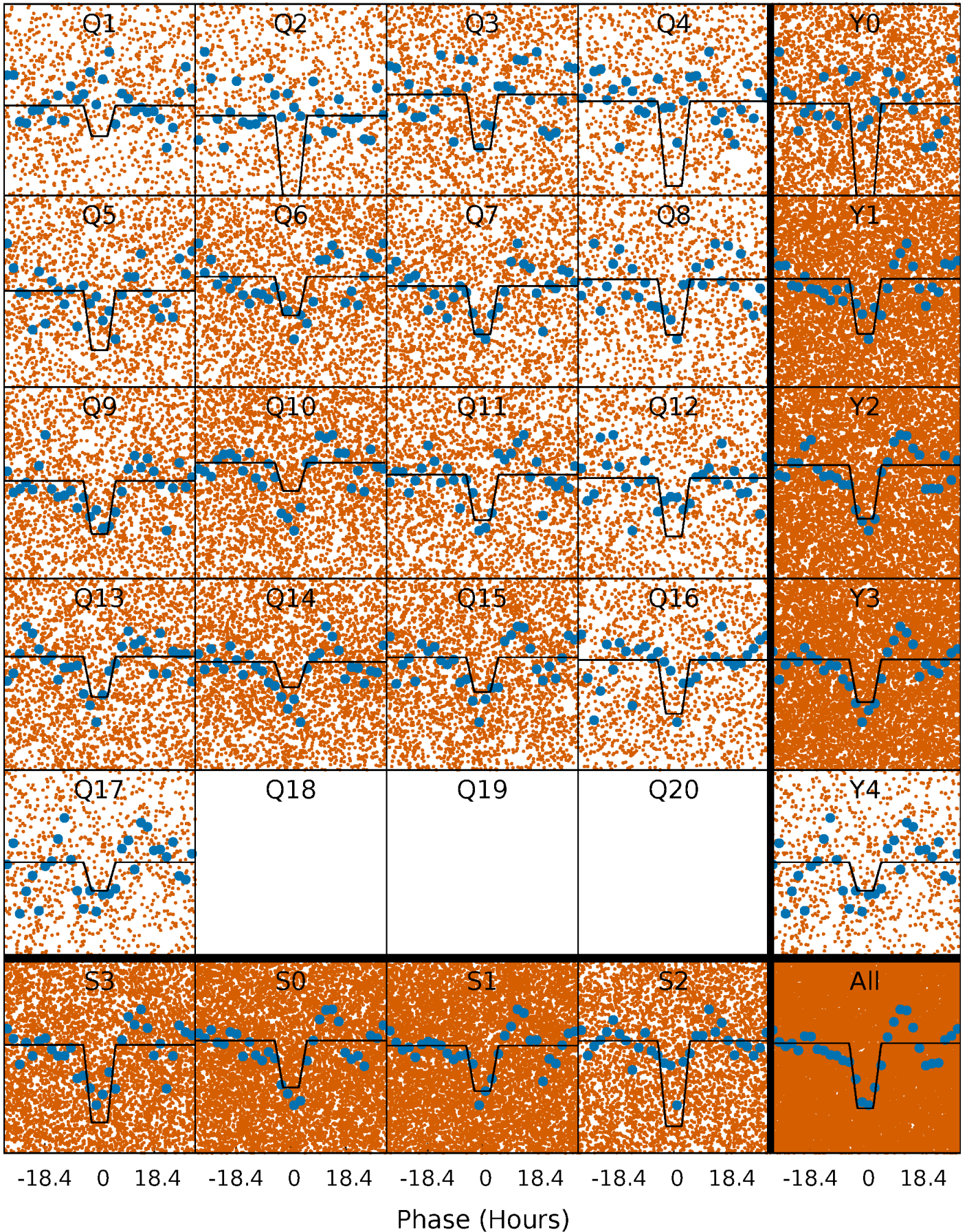
DV Quarter-Phased Transit Curves

TCE 002581452-01 P= 2.617491 Days $T_0=133.800090$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

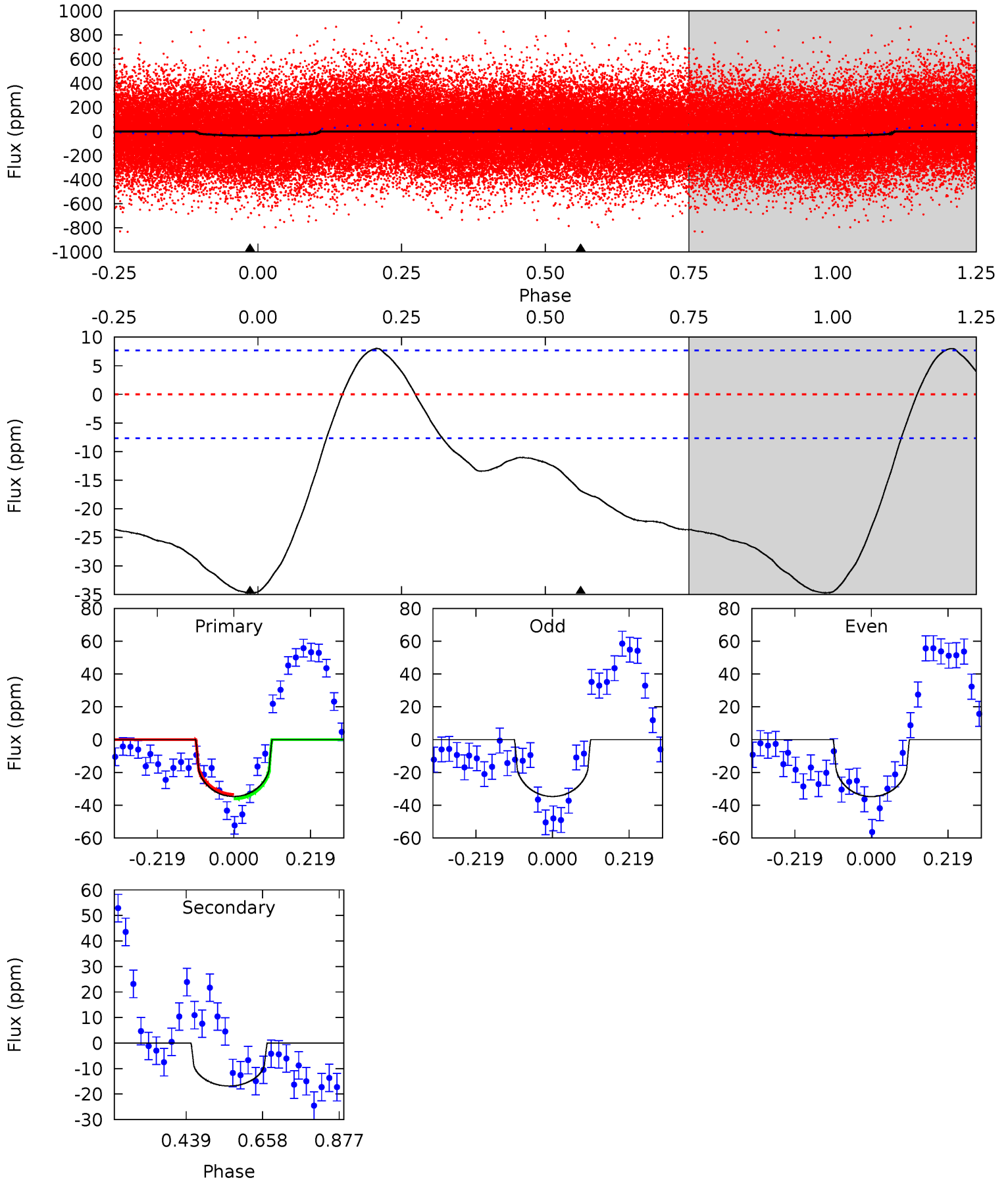
TCE 002581452-01 P= 2.617690 Days $T_0=133.757353$ (BKJD)



DV Model-Shift Uniqueness Test

002581452-01, P = 2.617491 Days, E = 131.182599 Days

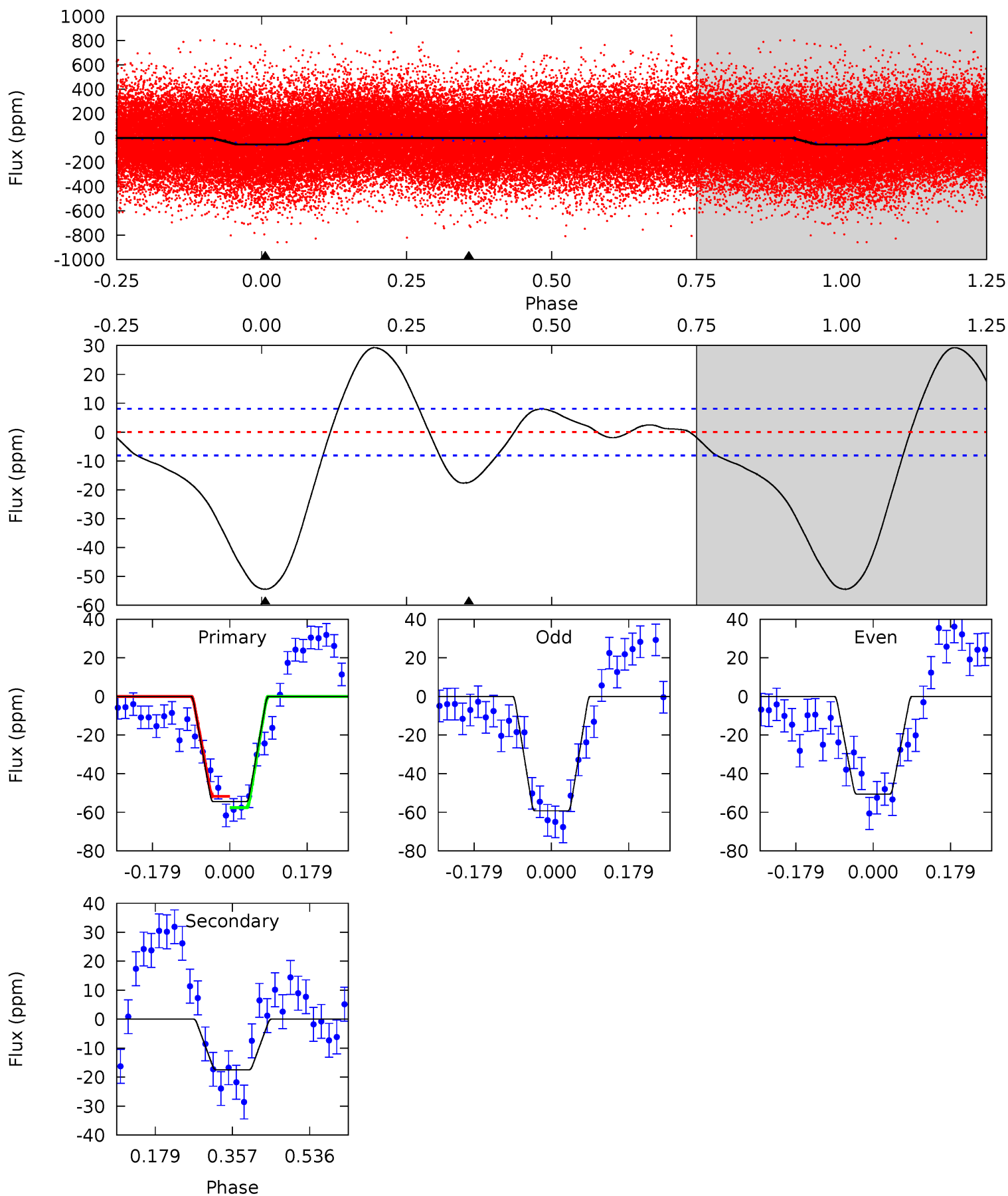
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.9	9.65	0	0	4.40	1.23	3.36	19.9	19.9	9.65	9.65	0.02	0.93	0.19	0.75



Alt Model-Shift Uniqueness Test

002581452-01, P = 2.617690 Days, E = 131.139663 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.9	9.58	0	0	4.44	1.35	2.37	29.9	29.9	9.58	9.58	2.39	1.00	0.35	1.59



Stellar Parameters For KIC 002581452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5117^{+115}_{-166}	$3.202^{+0.429}_{-0.231}$	$-0.040^{+0.250}_{-0.300}$	$5.751^{+1.608}_{-2.987}$	$1.922^{+0.278}_{-0.903}$	$0.014^{+0.068}_{-0.008}$
	+2%/-3%	+13%/-7%	+625%/-750%	+28%/-52%	+14%/-47%	+476%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002581452-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-17 ± 2	$2.85^{+2.37}_{-1.71}$	3491^{+353}_{-434}	4588^{+2423}_{-972}	$2.325^{+11.752}_{-1.589}$
Alt.	-17 ± 2	$4.55^{+2.39}_{-1.96}$	3496^{+335}_{-452}	3713^{+975}_{-808}	$0.936^{+1.839}_{-0.529}$

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

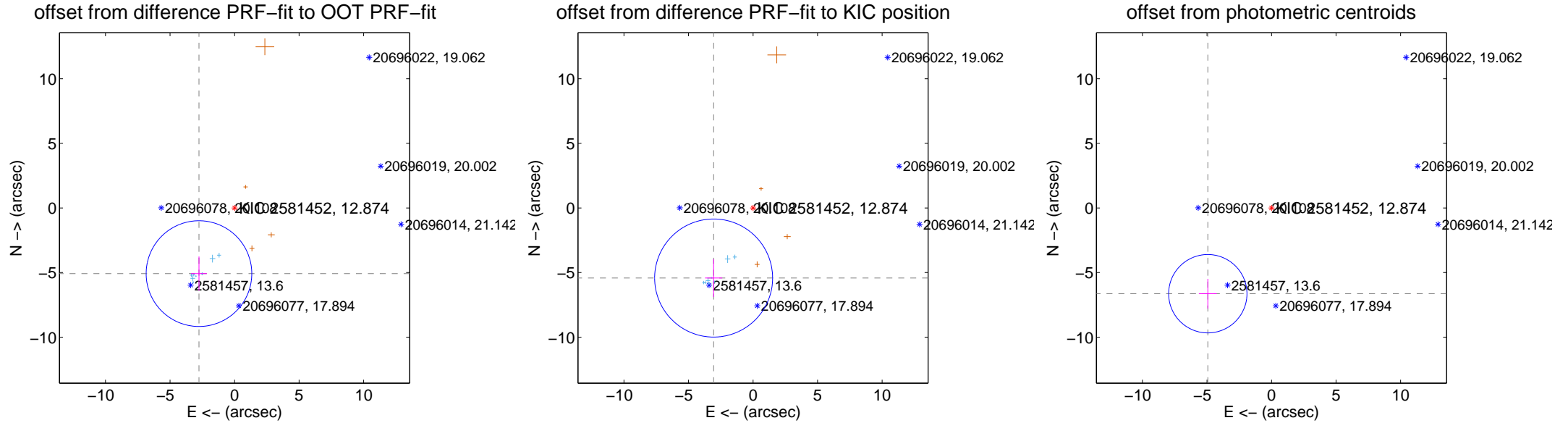
DV Centroid Data

Supplemental centroid analysis for 002581452-01. Kepler magnitude: 12.87. Transit SNR 8.02

There are 8 quarters with good PRF difference image offsets

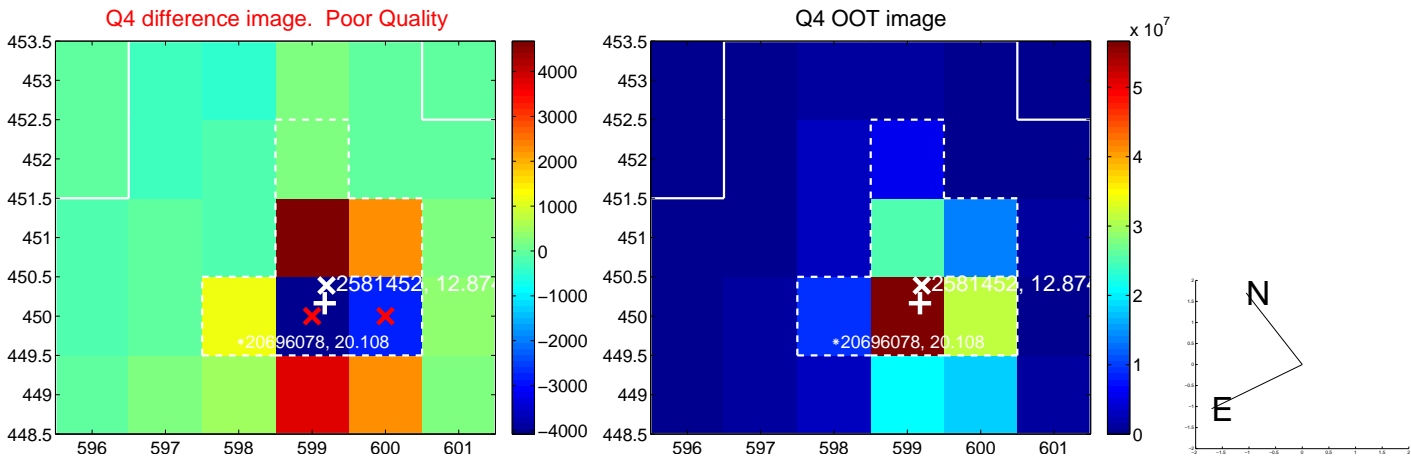
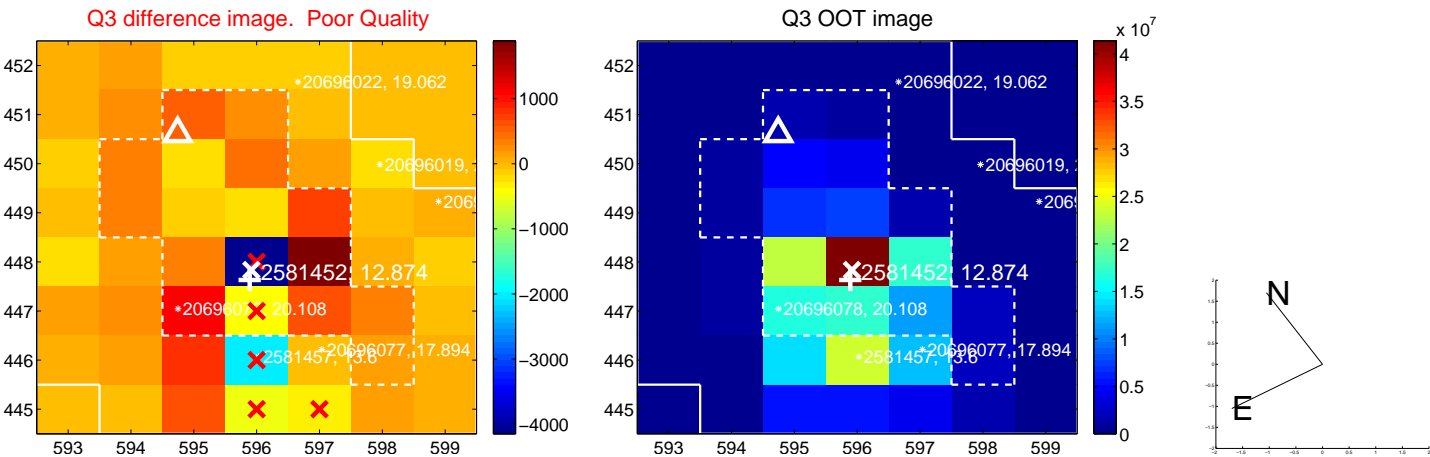
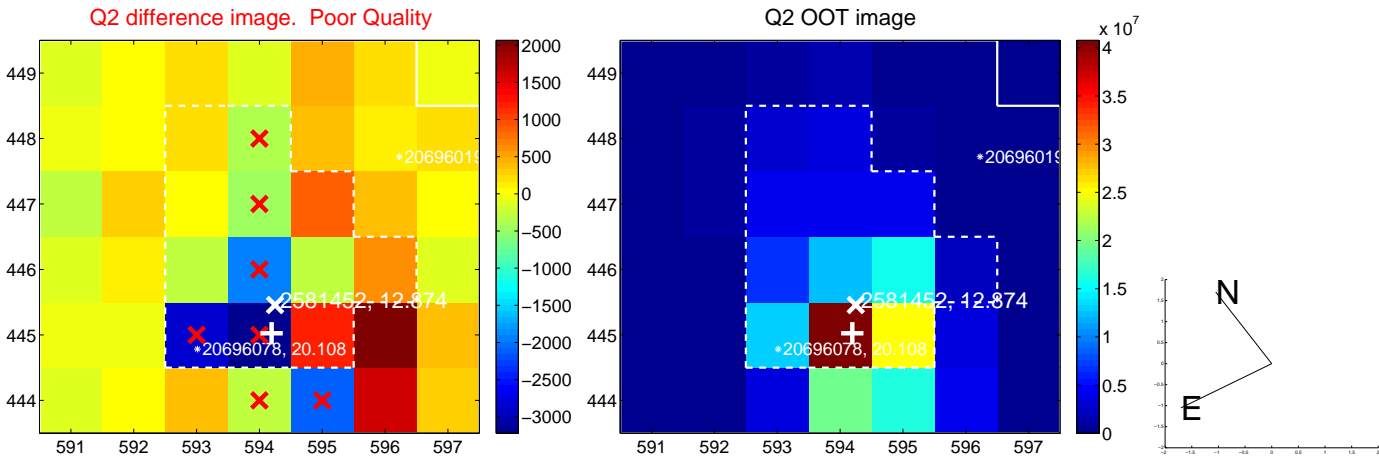
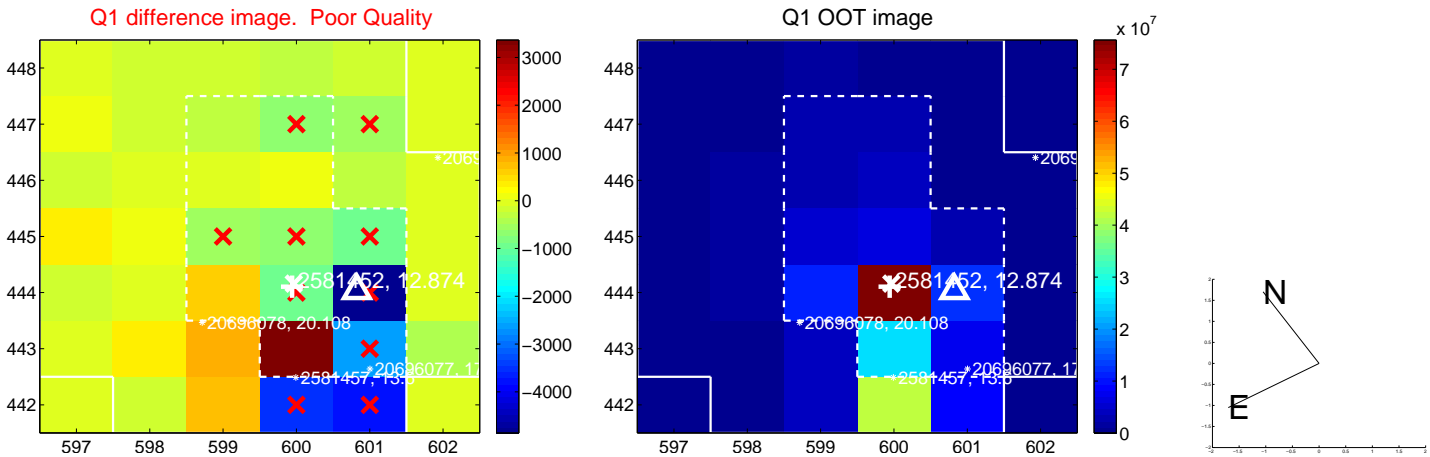
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.784 ± 1.364	4.24	2.759 ± 0.610	-5.084 ± 1.324
PRF-fit source offset from KIC position	6.226 ± 1.524	4.09	3.055 ± 0.667	-5.425 ± 1.464
photometric centroid source offset	8.27 ± 1.01	8.18	4.94 ± 0.69	-6.64 ± 1.15

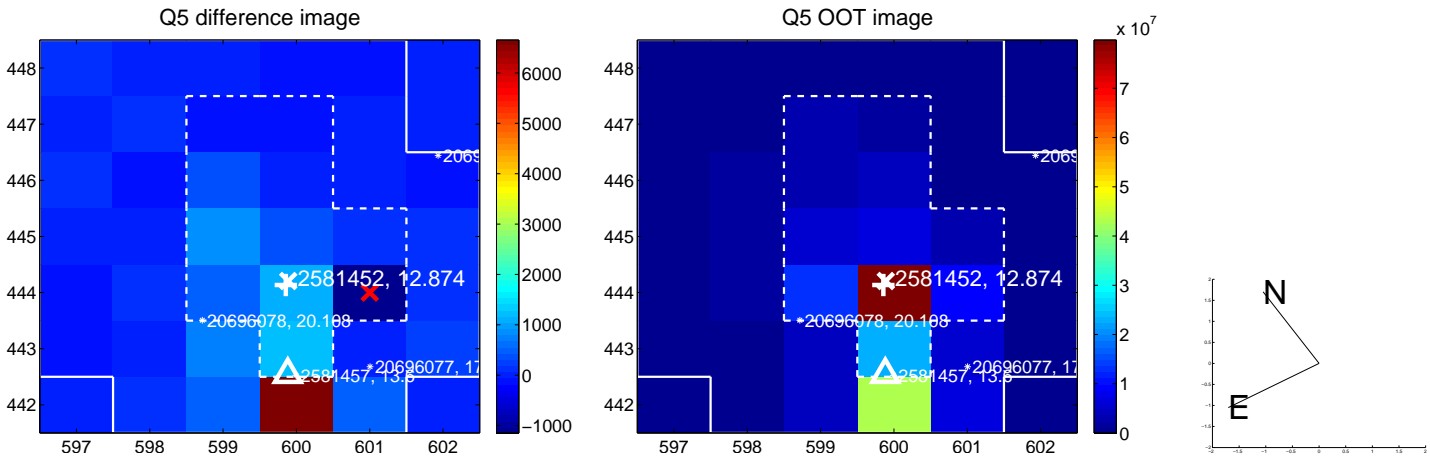


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

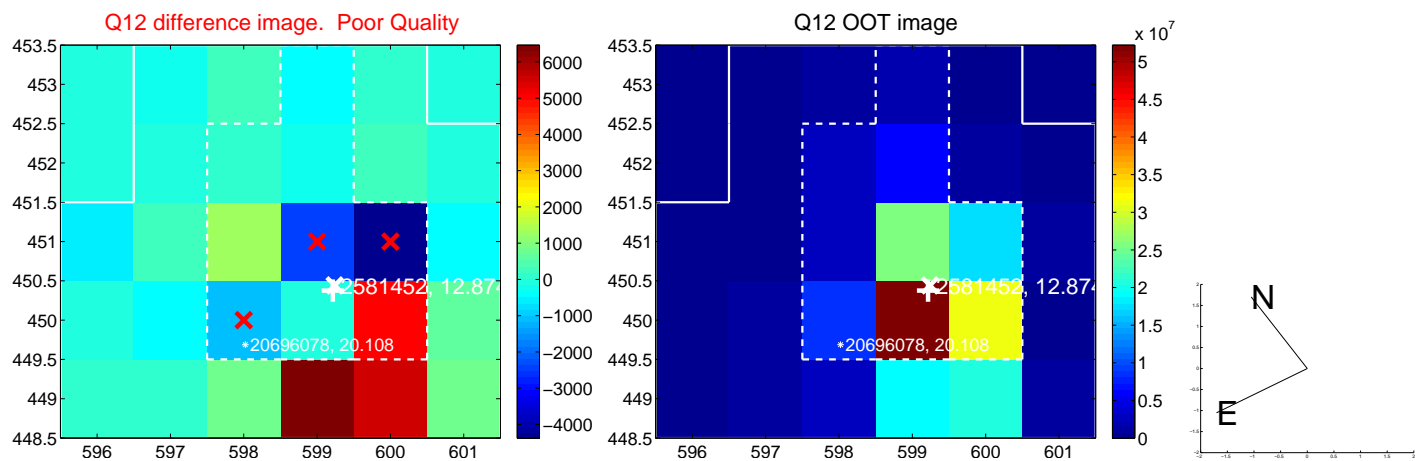
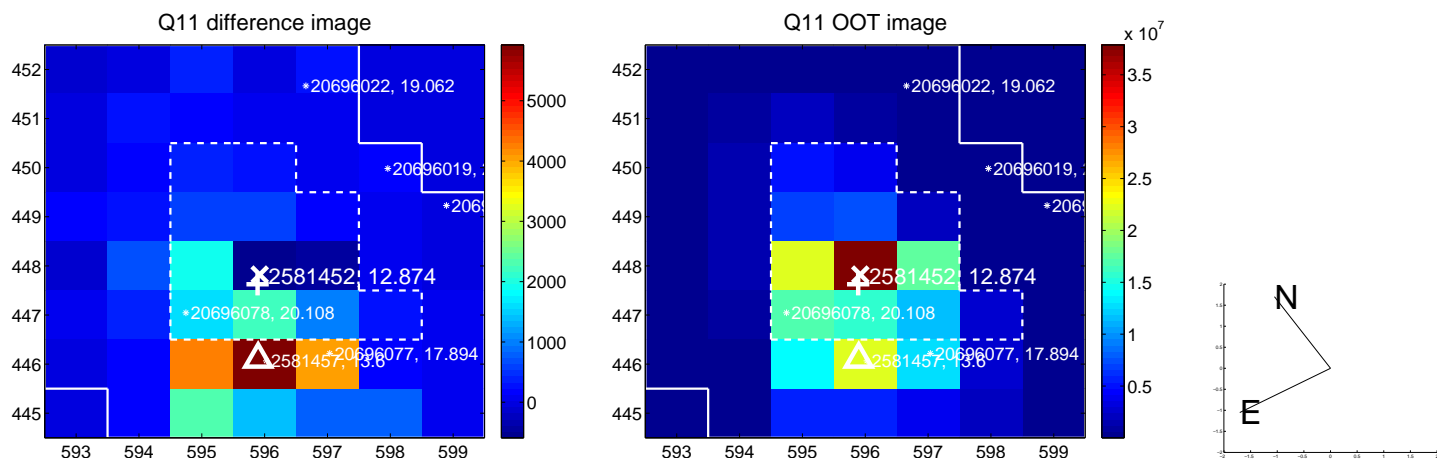
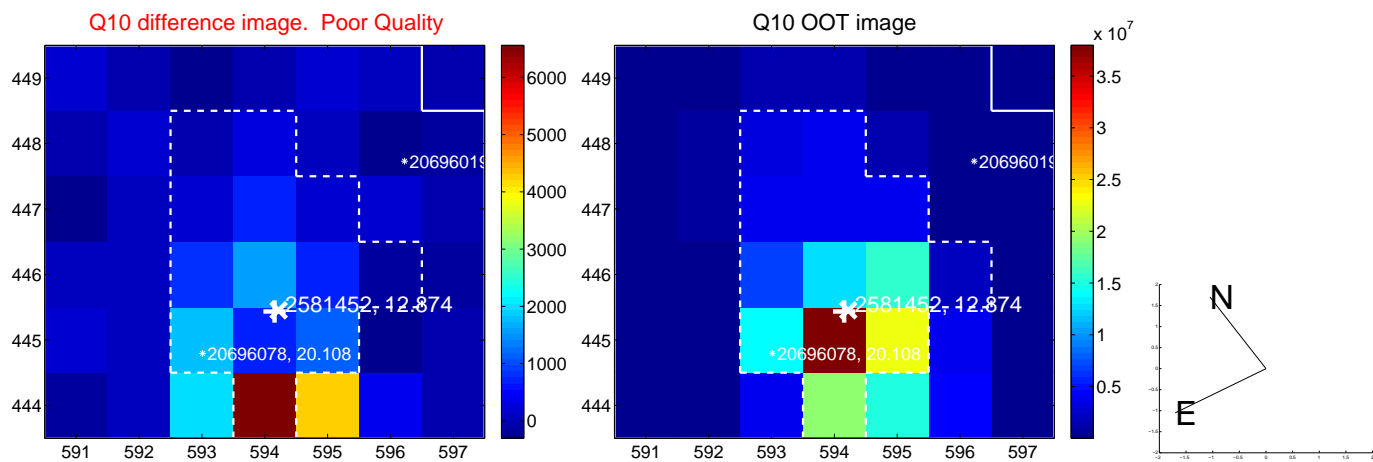
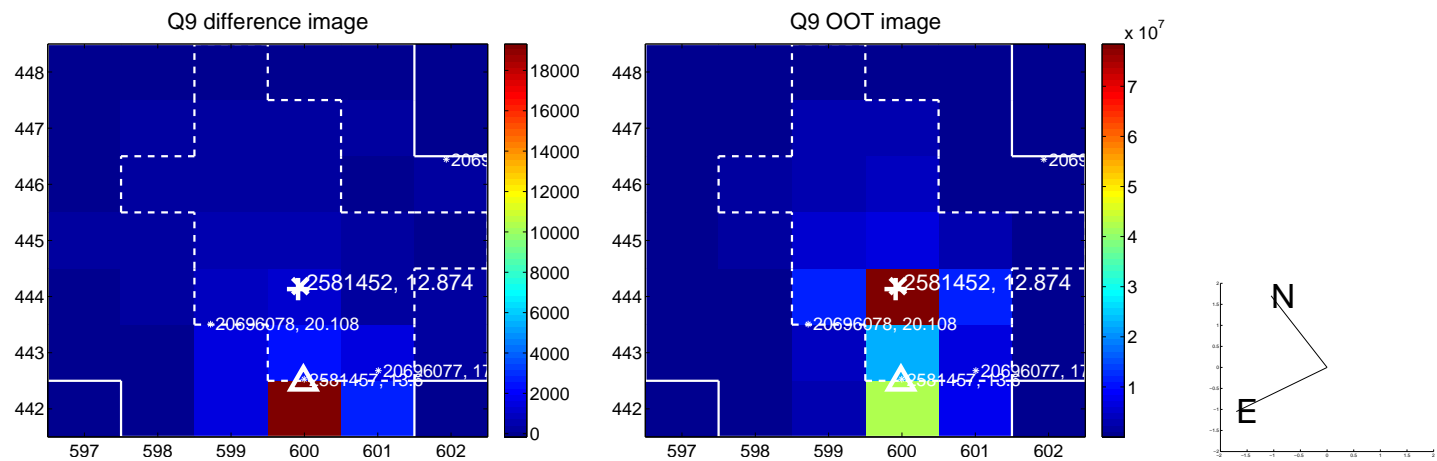
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



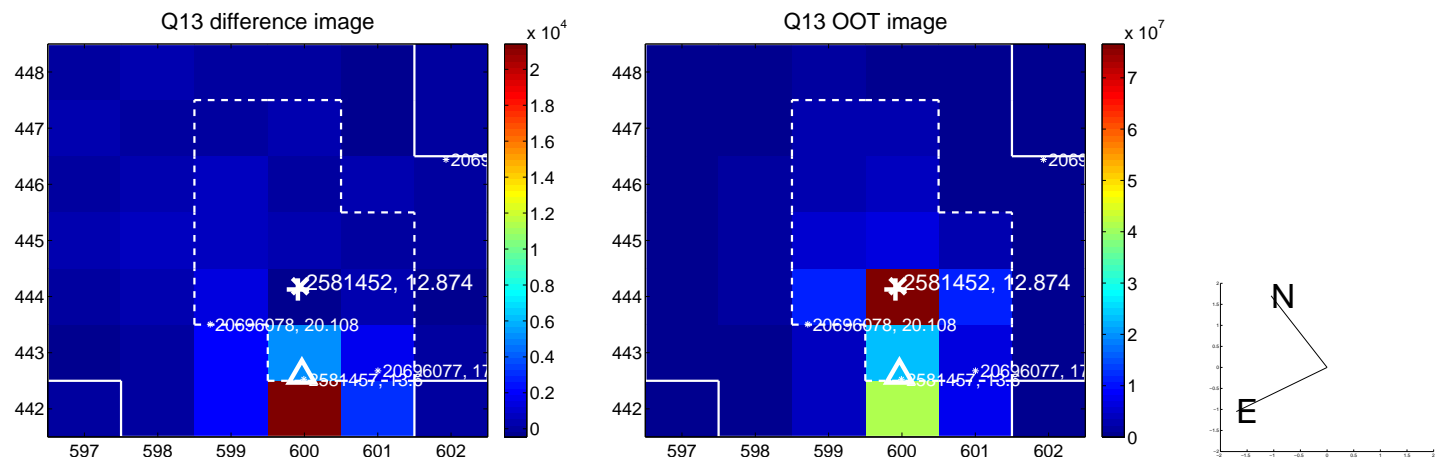
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



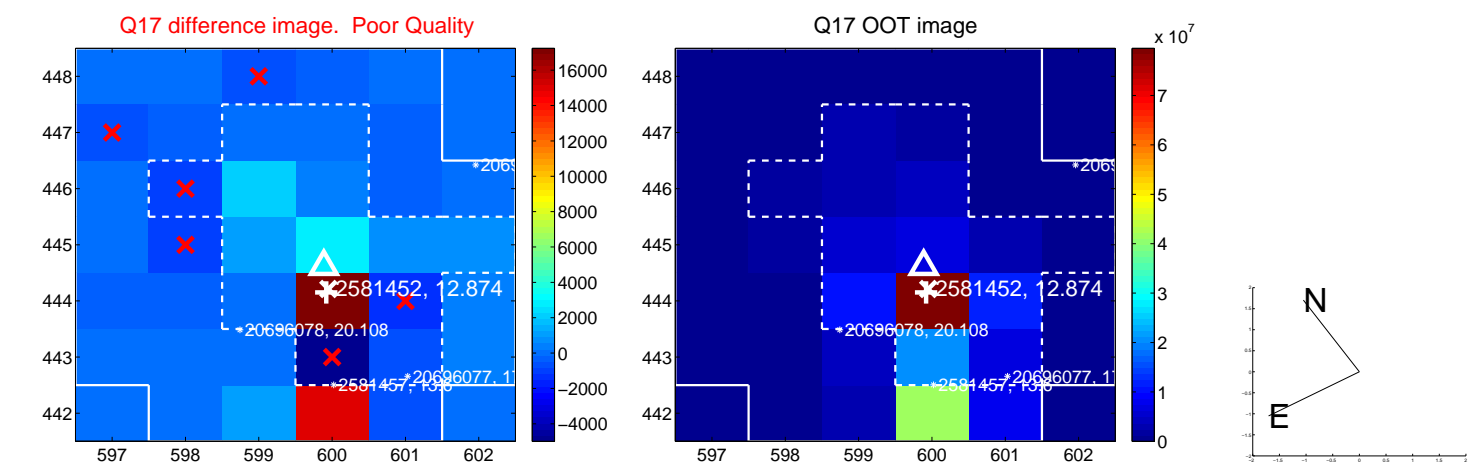
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



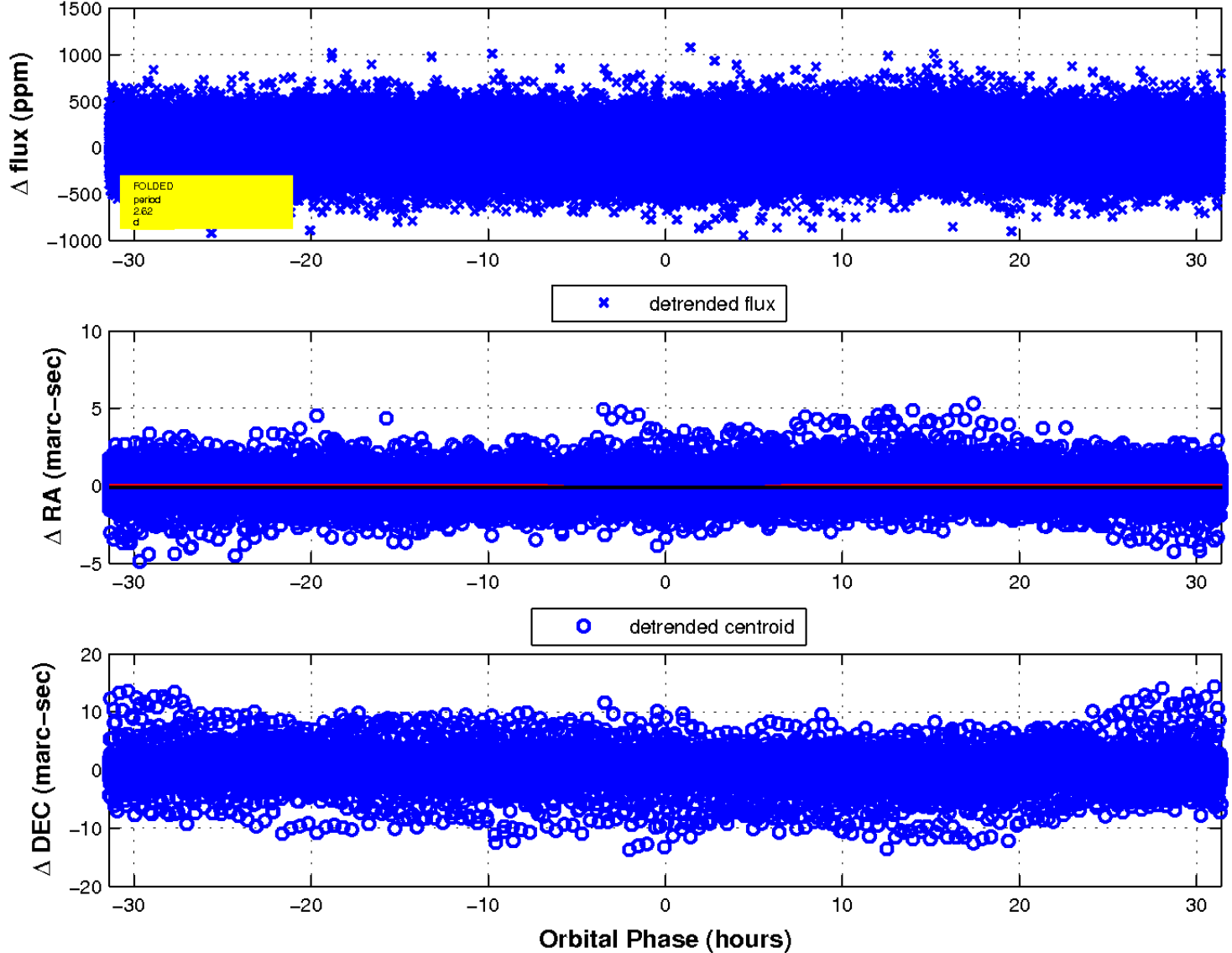
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



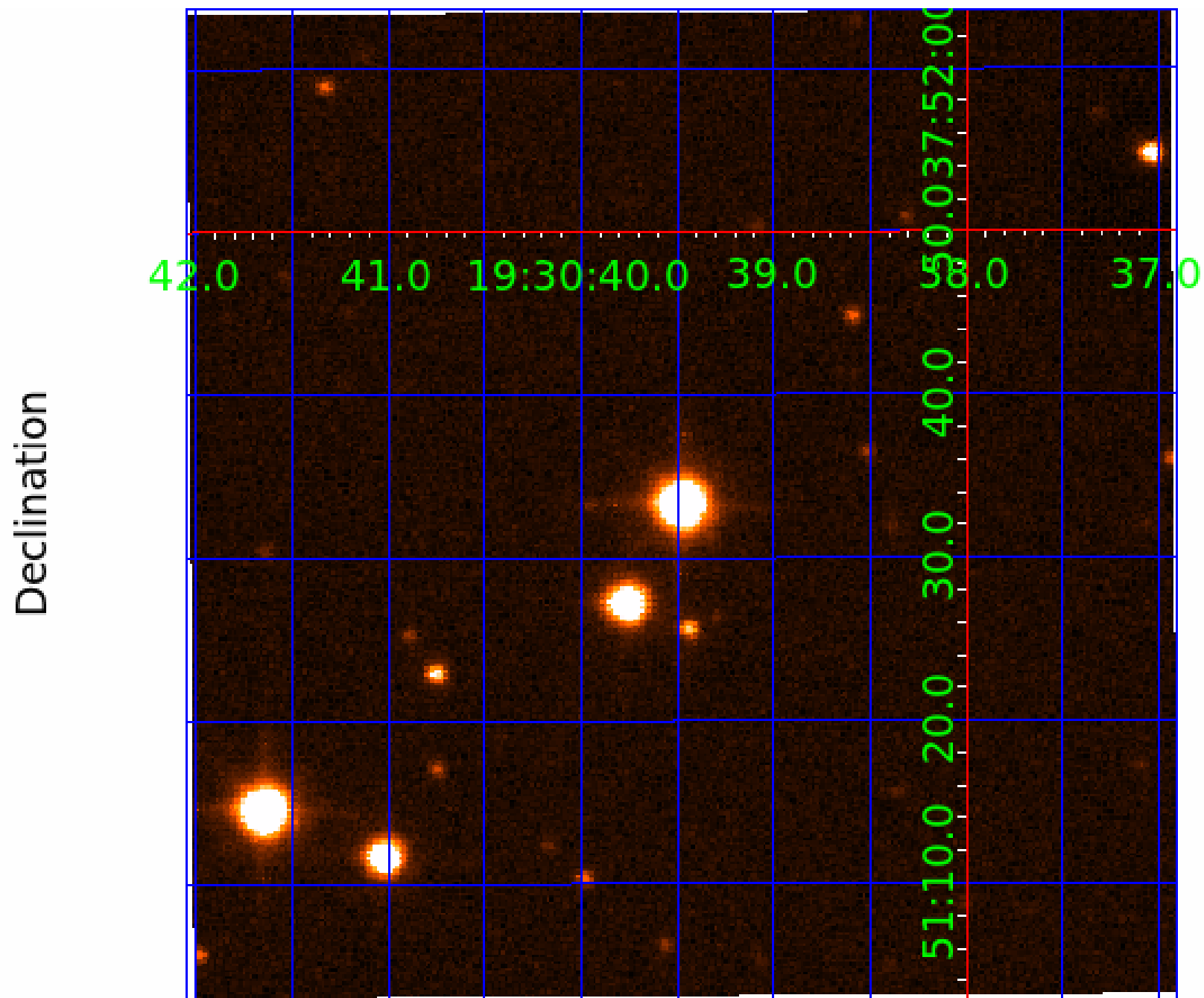
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 9



UKIRT Image



KIC 002581452

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})
002581452-01	OBS	No	2.617491	133.800090	26.3	13.331	8.9	8.0	5.75	5117	3.04	9511.99
002581452-02	OBS	No	33.977508	153.321823	95.4	18.301	18.3	5.2	5.75	5117	6.58	311.79
002581452-03	OBS	No	169.717627	279.461846	190.7	17.272	9.8	6.5	5.75	5117	8.54	36.52
002581452-04	OBS	No	107.762815	209.299153	453.3	2.515	9.1	9.6	5.75	5117	14.13	66.91
002581452-05	OBS	No	111.863738	193.627102	352.0	2.918	8.7	8.1	5.75	5117	13.21	63.66
002581452-06	OBS	No	215.566106	271.224013	414.9	3.600	8.2	8.4	5.75	5117	12.38	26.55
002581452-07	OBS	No	142.742350	232.683893	469.7	2.796	8.5	8.1	5.75	5117	12.60	45.99
002581452-08	OBS	No	638.962510	294.409498	388.3	3.756	7.8	7.4	5.75	5117	13.57	6.24
002581452-09	OBS	No	52.615085	177.948320	286.7	2.766	7.6	7.4	5.75	5117	11.24	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002581452-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
002581452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002581452-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002581452-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_UNCERTAIN
002581452-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
002581452-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002581452-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

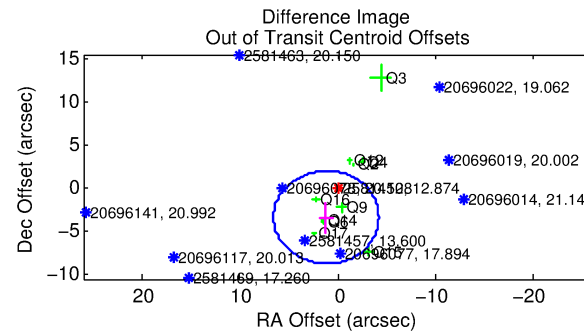
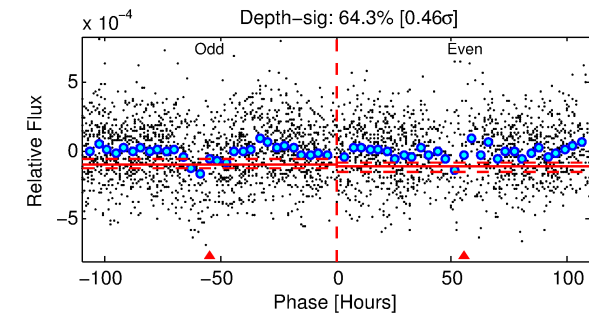
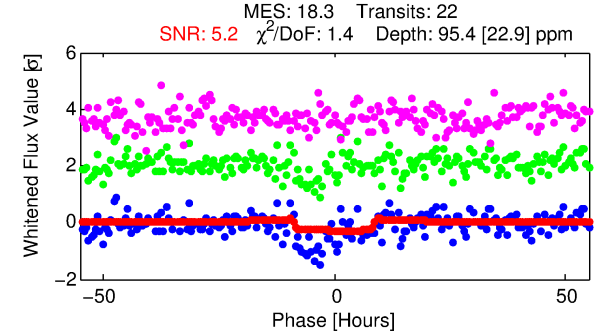
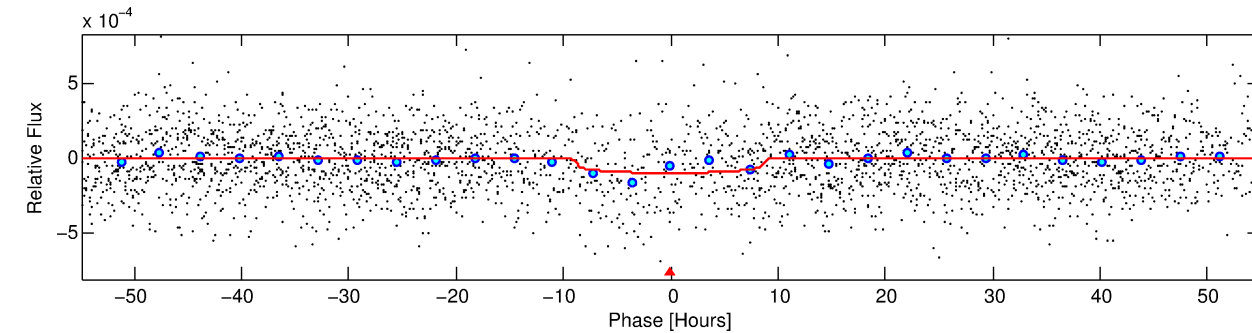
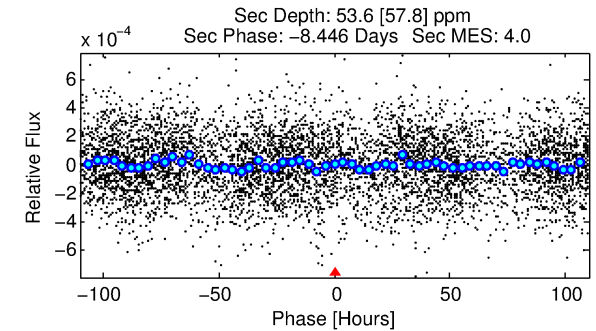
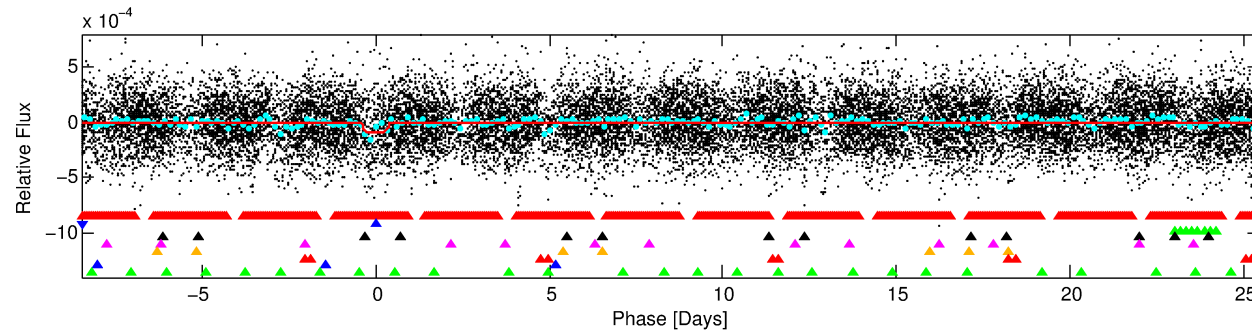
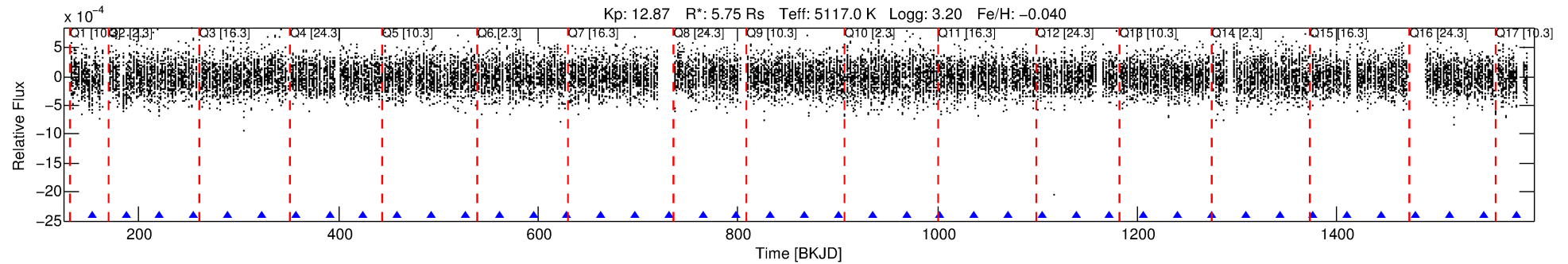
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002581452-02

No Significant Match Found

DV One-Page Summary

KIC: 2581452 Candidate: 2 of 9 Period: 33.978 d



DV Fit Results:

Period = 33.97751 [0.00315] d
Epoch = 153.3218 [0.0711] BKJD
Rp/R* = 0.0105 [0.0035]
a/R* = 7.39 [9.41]
b = 0.87 [0.36]
Seff = 311.79 [235.48]
Teff = 1071 [202] K
Rp = 6.58 [4.07] Re
a = 0.2553 [0.1220] AU
Ag = 44.36 [65.31] [0.66σ]
Teffp = 4276 [1365] K [2.32σ]

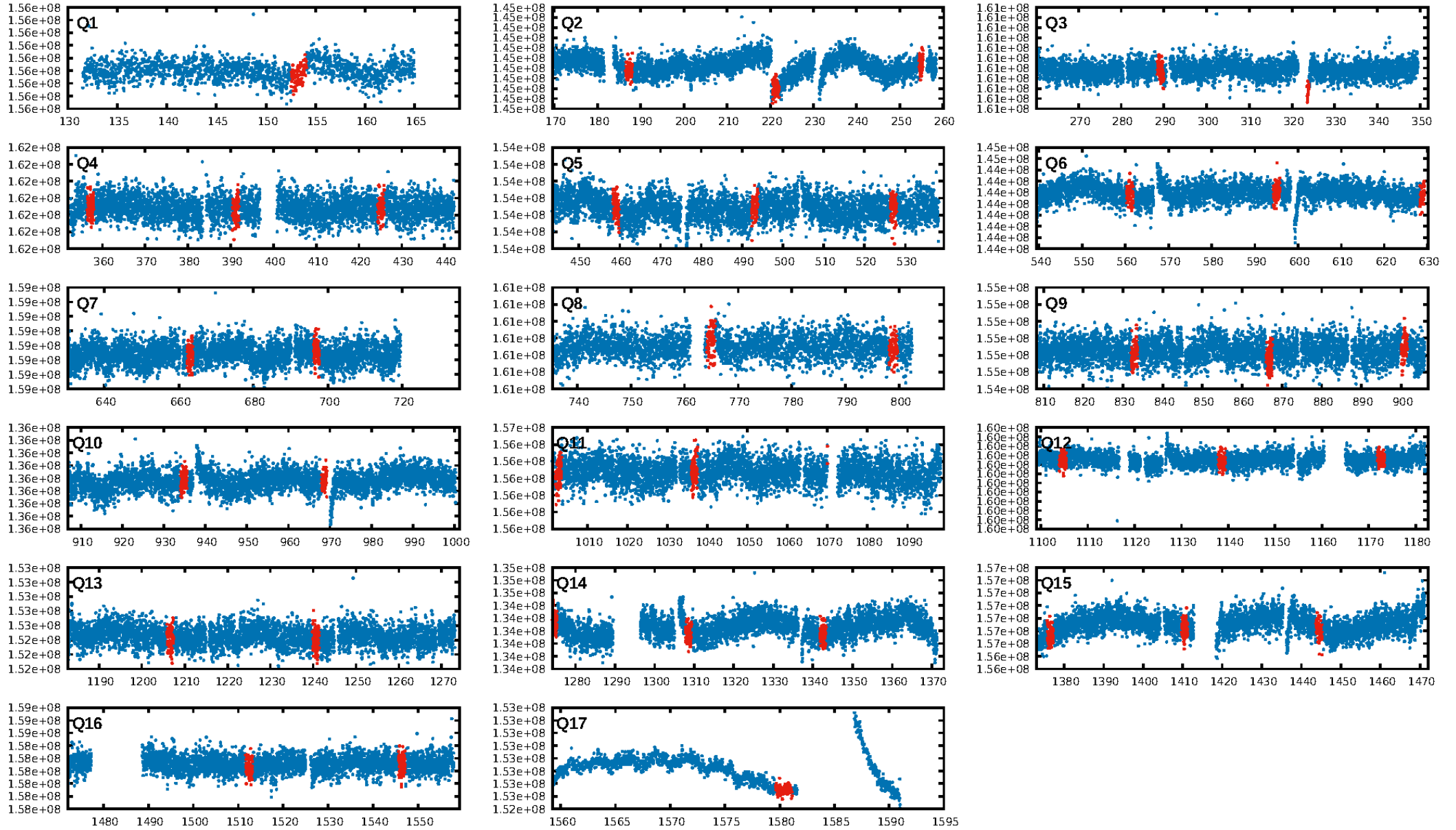
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.24σ]
LongPeriod-sig: 100.0% [24.17σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.70e-40
RollingBand-fgt: 1.00 [20/20]
GhostDiagnostic-chr: -1.692
Centroid-sig: N/A
Centroid-so: 2.508 arcsec [2.73σ]
OotOffset-rm: 3.562 arcsec [1.99σ]
KicOffset-rm: 3.733 arcsec [2.20σ]
OotOffset-st: 3/2/3/2 [10]
KicOffset-st: 3/2/3/2 [10]
DiffImageQuality-fgm: 0.30 [3/10]
DiffImageOverlap-fno: 0.00 [0/16]

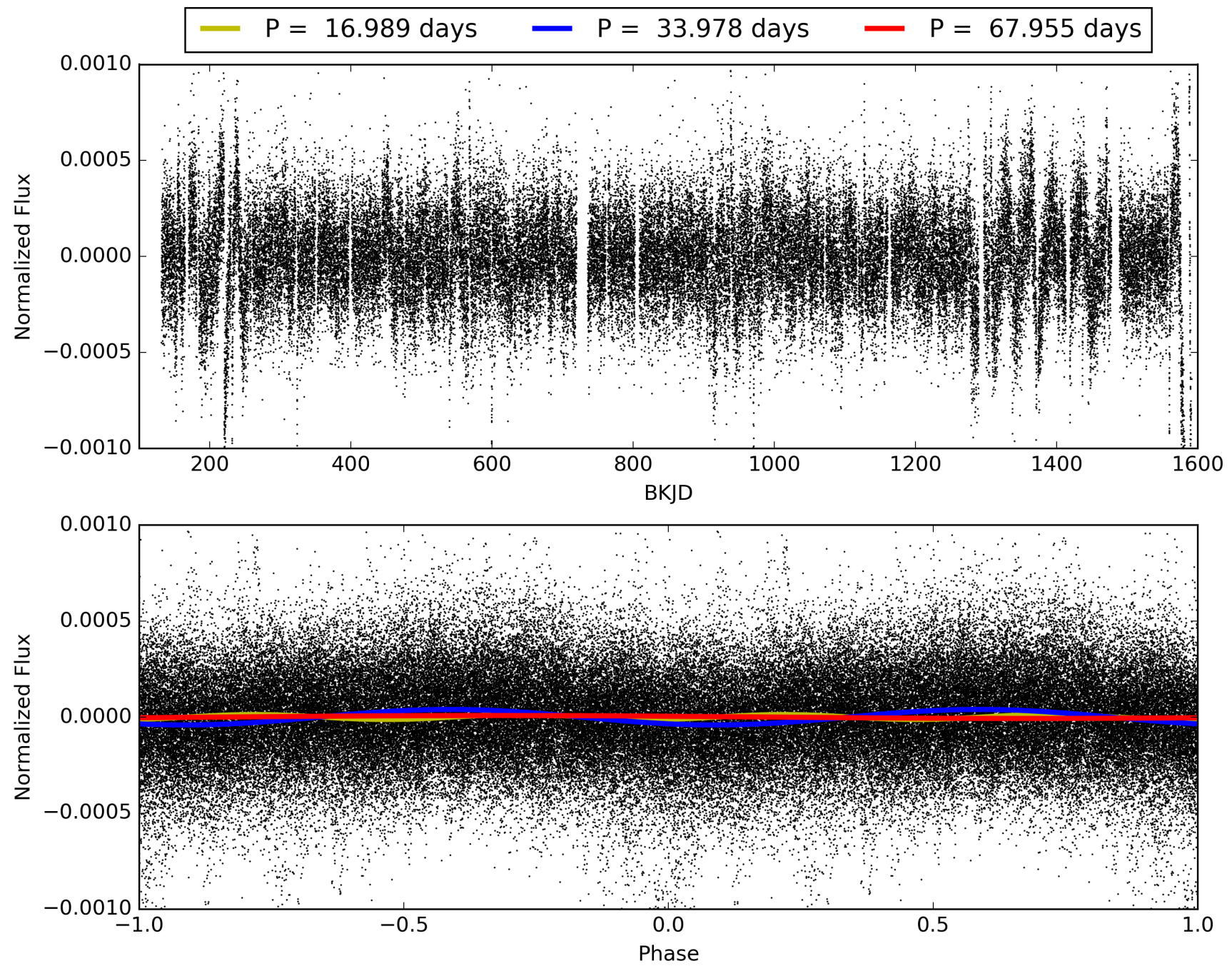
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:22:26 Z

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

TCE 002581452-02, PDC Light Curves

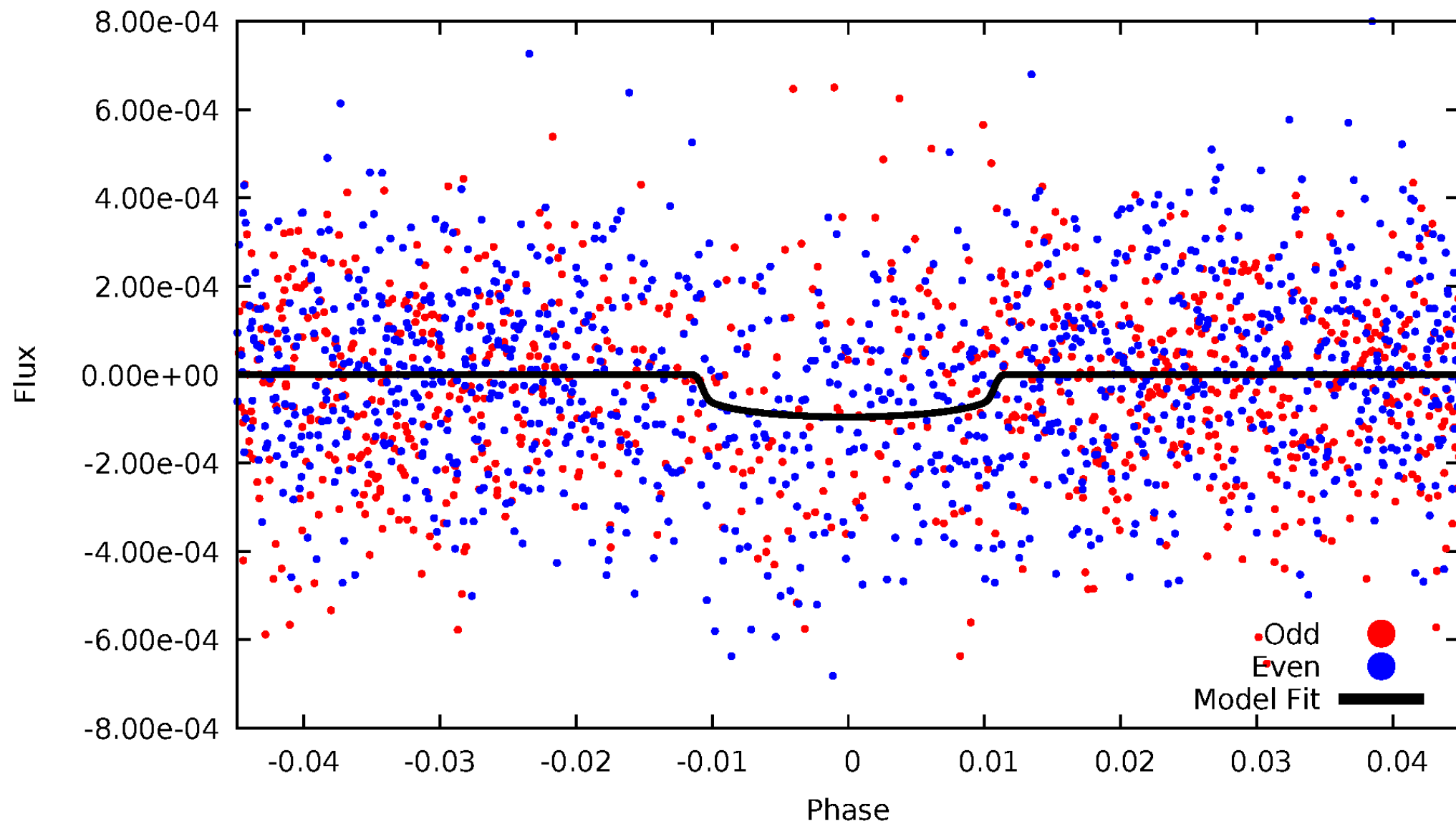


TCE 002581452-02



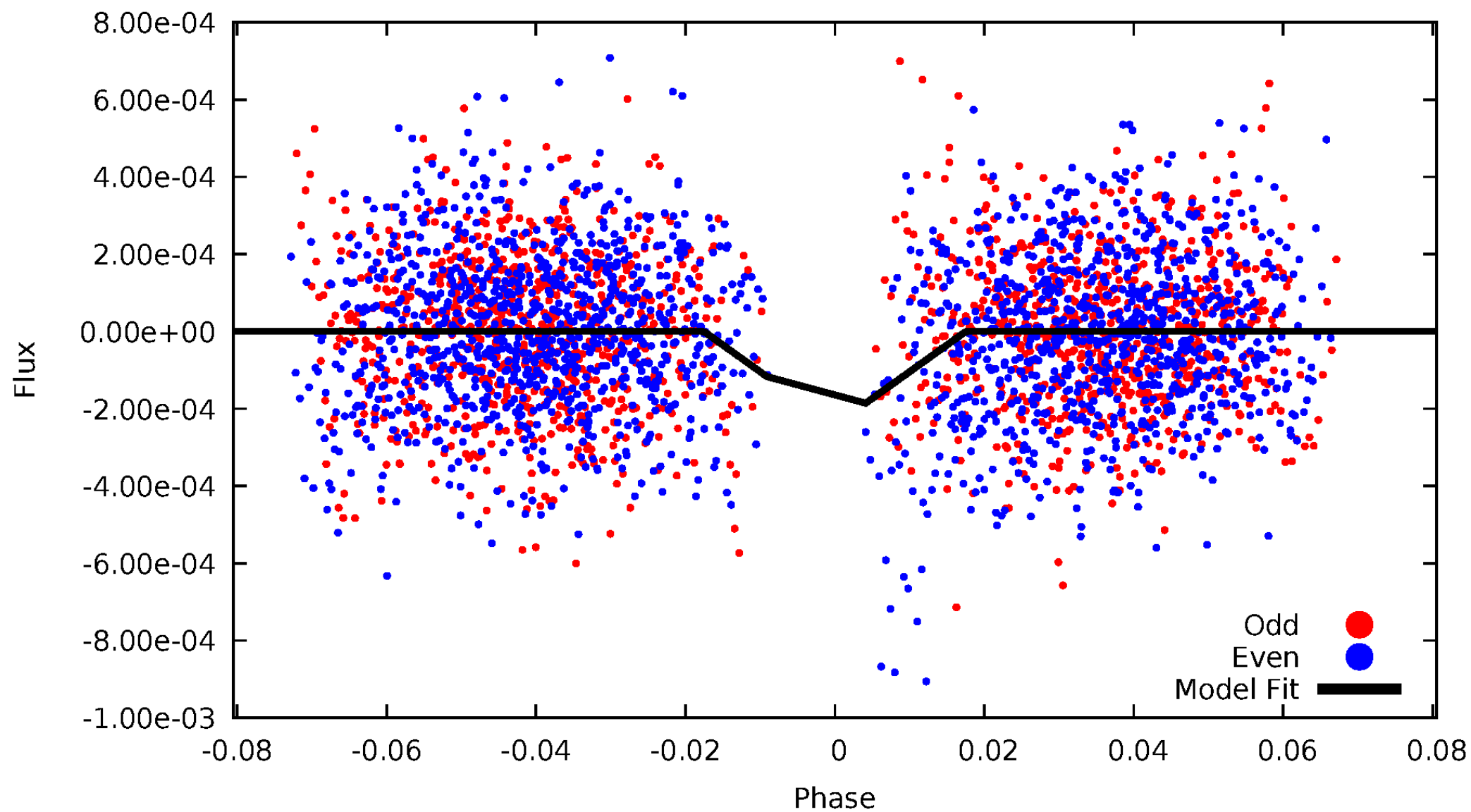
DV Odd/Even

TCE 002581452-02



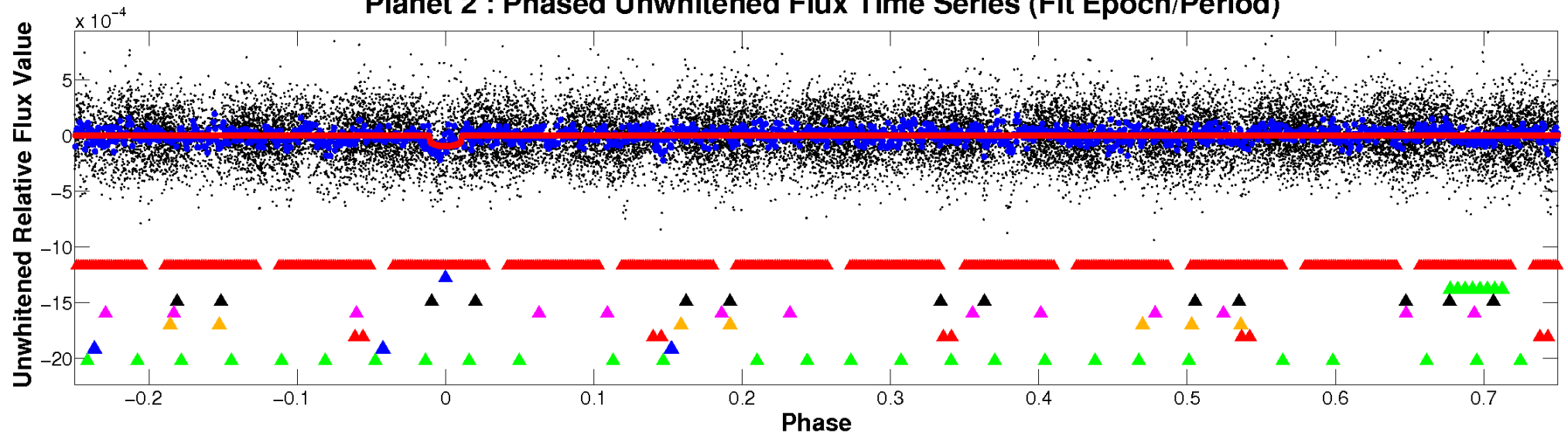
ALT Odd/Even

TCE 002581452-02

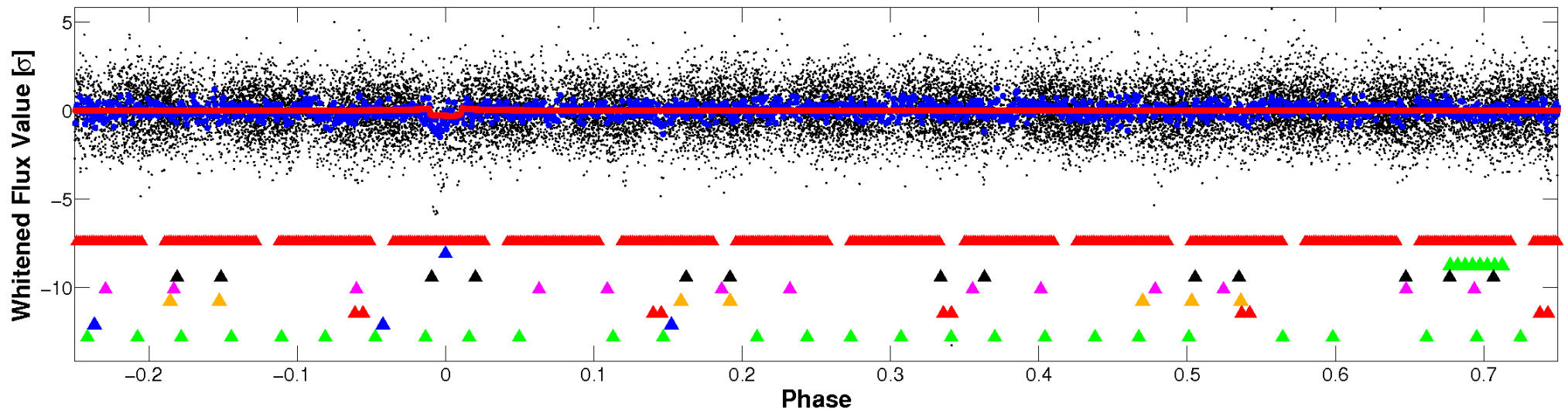


Non-Whitened Vs. Whitened Light Curve

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

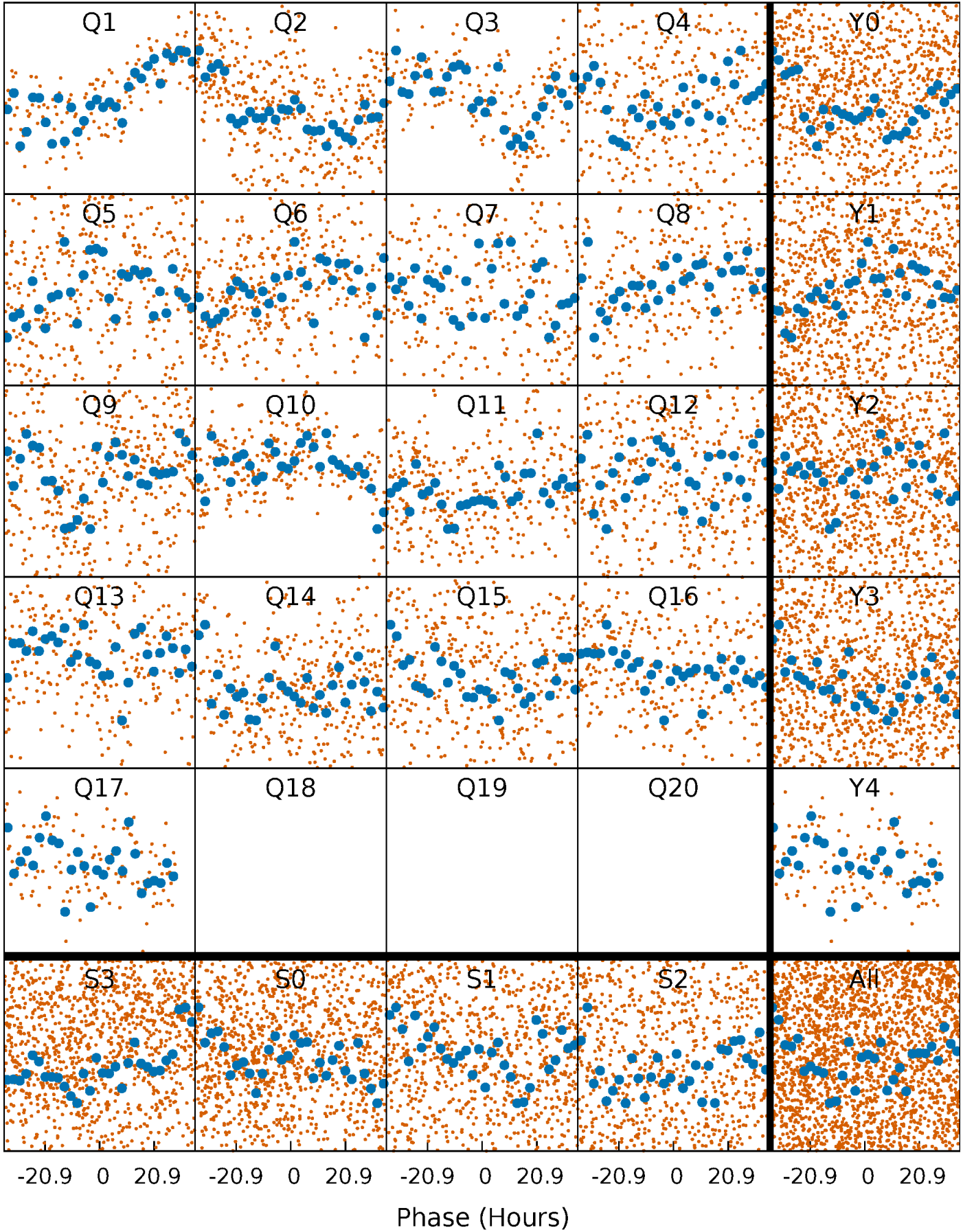


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



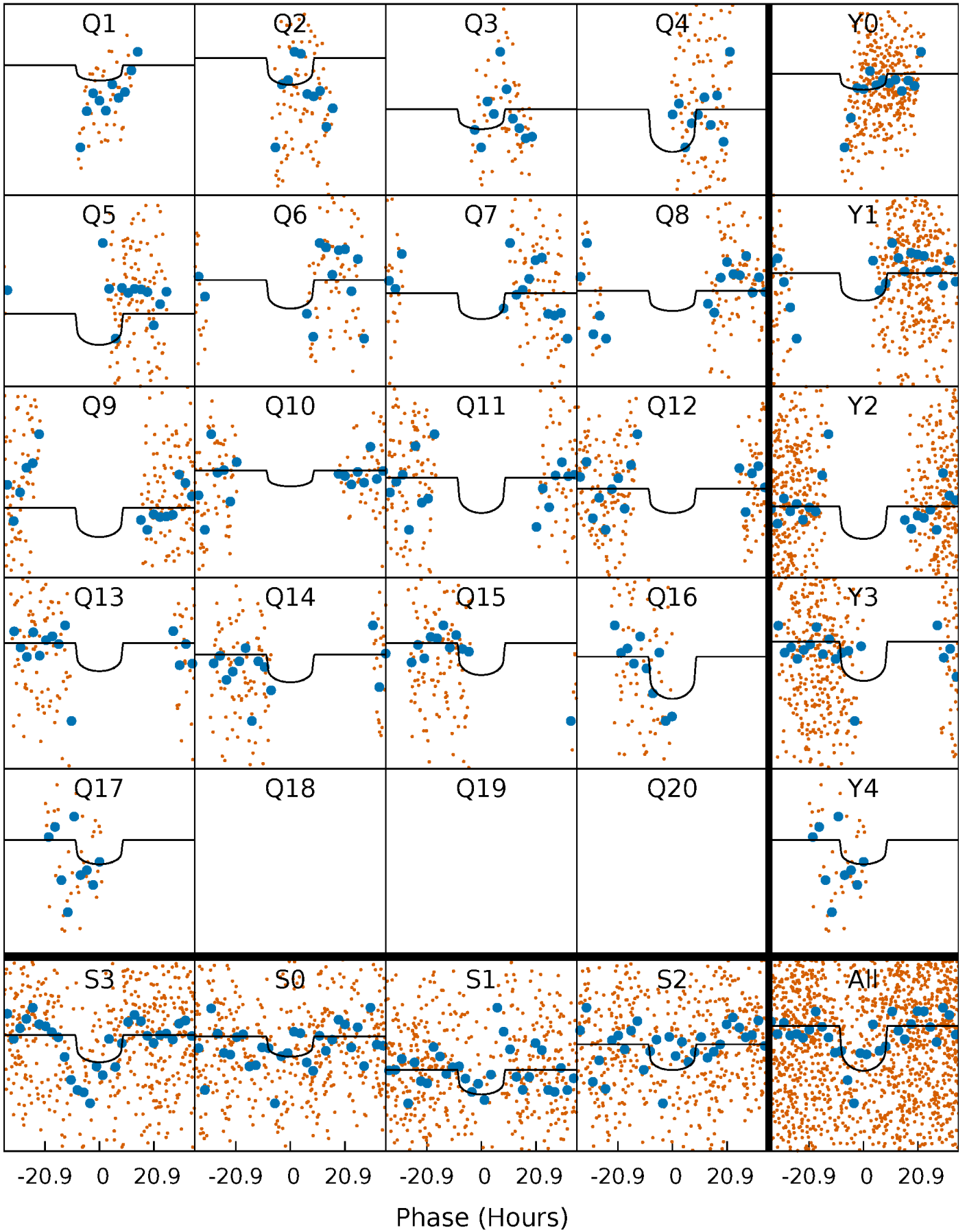
PDC Quarter-Phased Transit Curves

TCE 002581452-02 P= 33.977508 Days $T_0=153.321823$ (BKJD)



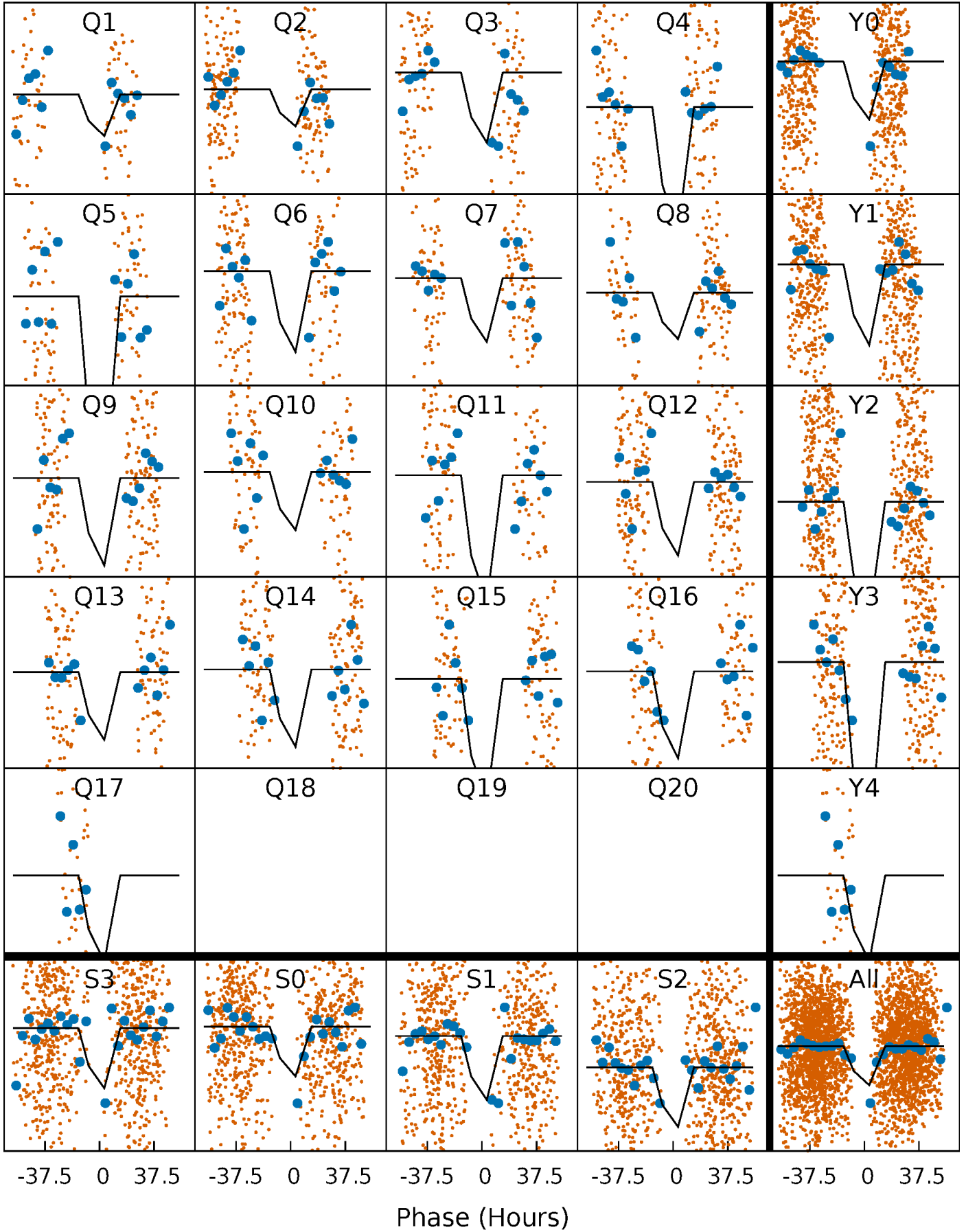
DV Quarter-Phased Transit Curves

TCE 002581452-02 P= 33.977508 Days $T_0=153.321823$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

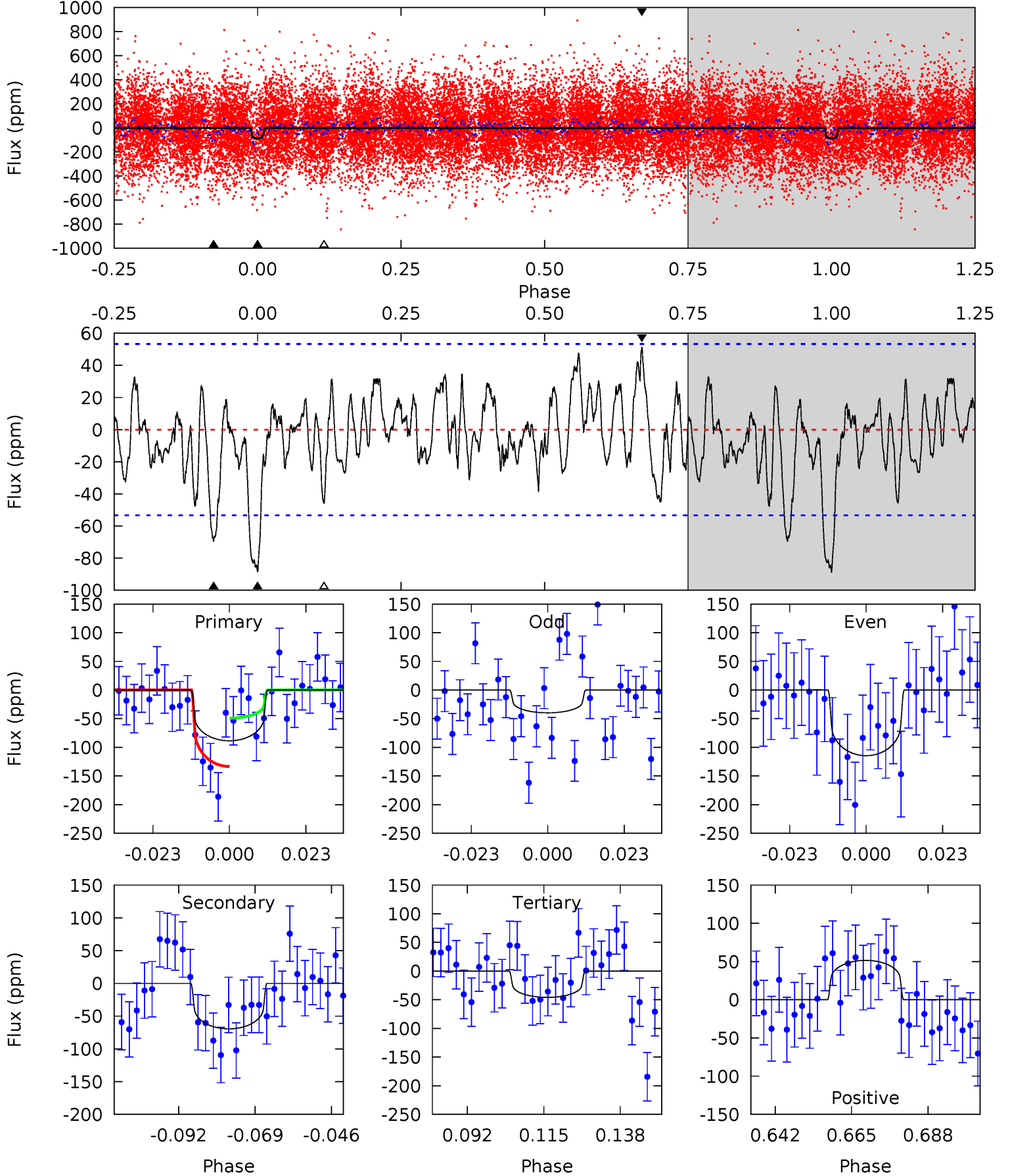
TCE 002581452-02 P= 33.997527 Days $T_0=152.828193$ (BKJD)



DV Model-Shift Uniqueness Test

002581452-02, P = 33.977508 Days, E = 119.344315 Days

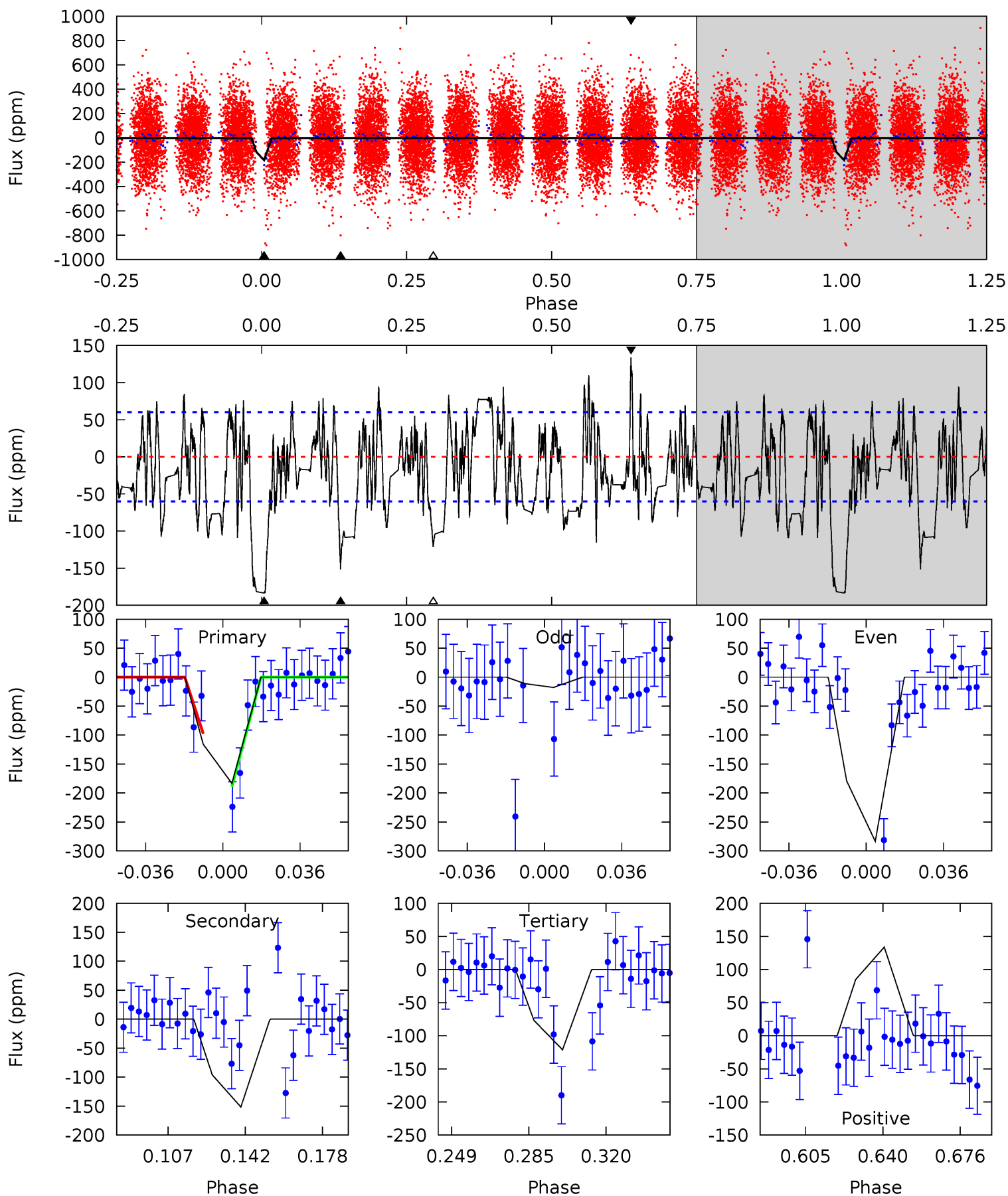
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.08	6.34	4.19	4.70	4.86	2.27	1.74	3.89	3.38	2.15	1.63	3.34	0.64	0.37	3.83



Alt Model-Shift Uniqueness Test

002581452-02, P = 33.997527 Days, E = 118.830666 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.6	12.1	9.65	10.7	4.78	2.10	3.40	4.95	3.94	2.42	1.41	10.4	1.51	0.42	3.35



Stellar Parameters For KIC 002581452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5117^{+115}_{-166}	$3.202^{+0.429}_{-0.231}$	$-0.040^{+0.250}_{-0.300}$	$5.751^{+1.608}_{-2.987}$	$1.922^{+0.278}_{-0.903}$	$0.014^{+0.068}_{-0.008}$
	+2%/-3%	+13%/-7%	+625%/-750%	+28%/-52%	+14%/-47%	+476%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002581452-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-69 ± 11	$6.23^{+3.02}_{-2.44}$	1503^{+127}_{-195}	4625^{+1009}_{-546}	62^{+105}_{-34}
Alt.	-152 ± 13	$8.01^{+2.96}_{-2.80}$	1482^{+139}_{-191}	4877^{+685}_{-430}	82^{+103}_{-37}

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

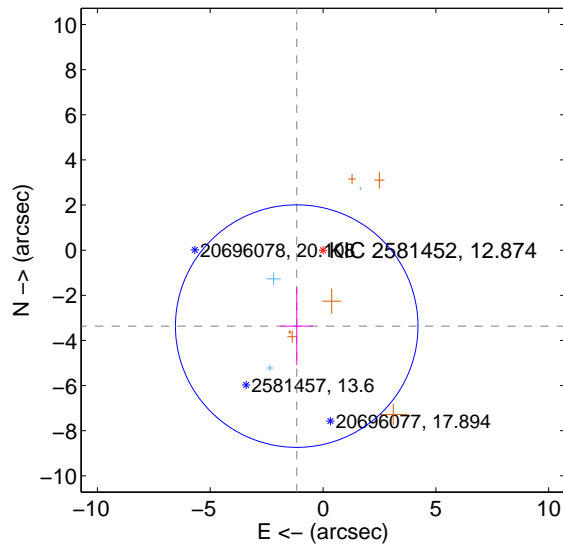
Supplemental centroid analysis for 002581452-02. Kepler magnitude: 12.87. Transit SNR 5.18

There are 3 quarters with good PRF difference image offsets

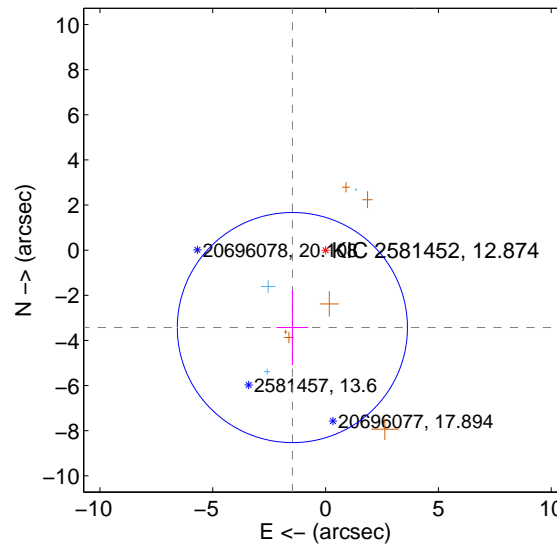
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.562 ± 1.792	1.99	1.166 ± 0.721	-3.366 ± 1.720
PRF-fit source offset from KIC position	3.733 ± 1.700	2.20	1.472 ± 0.708	-3.430 ± 1.667
photometric centroid source offset	2.51 ± 0.92	2.73	1.88 ± 0.67	-1.66 ± 1.16

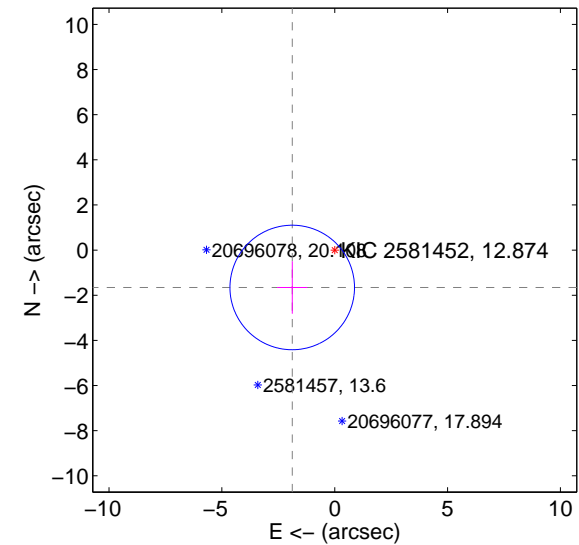
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

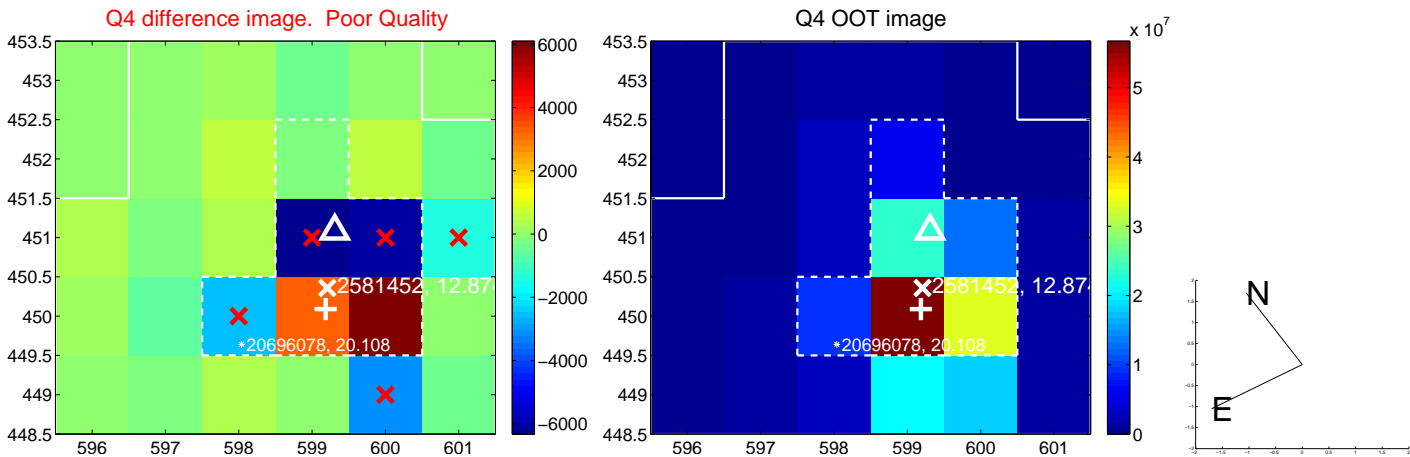
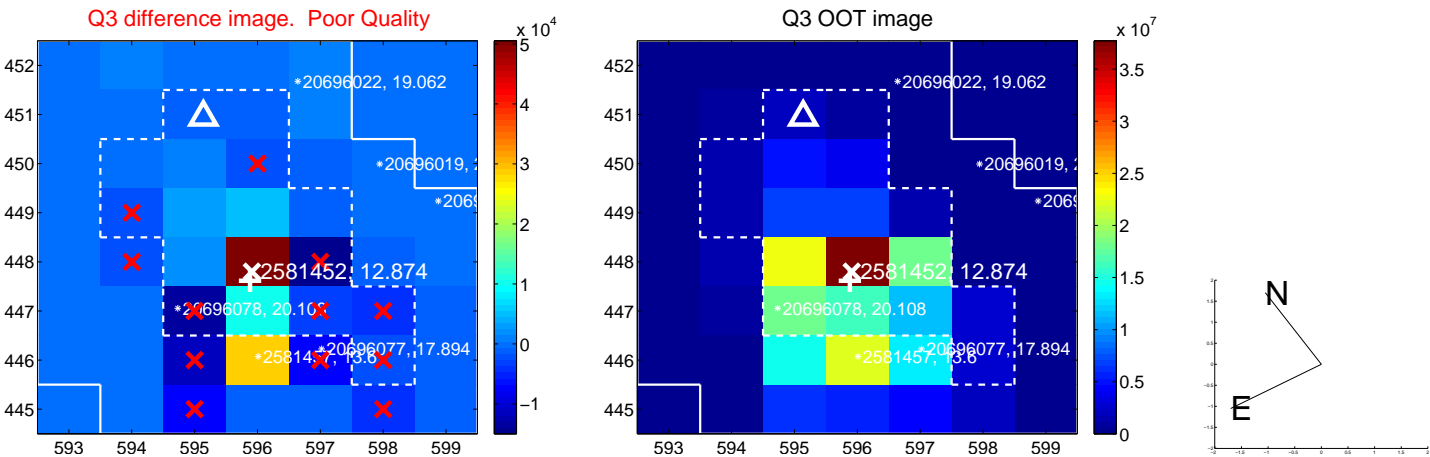
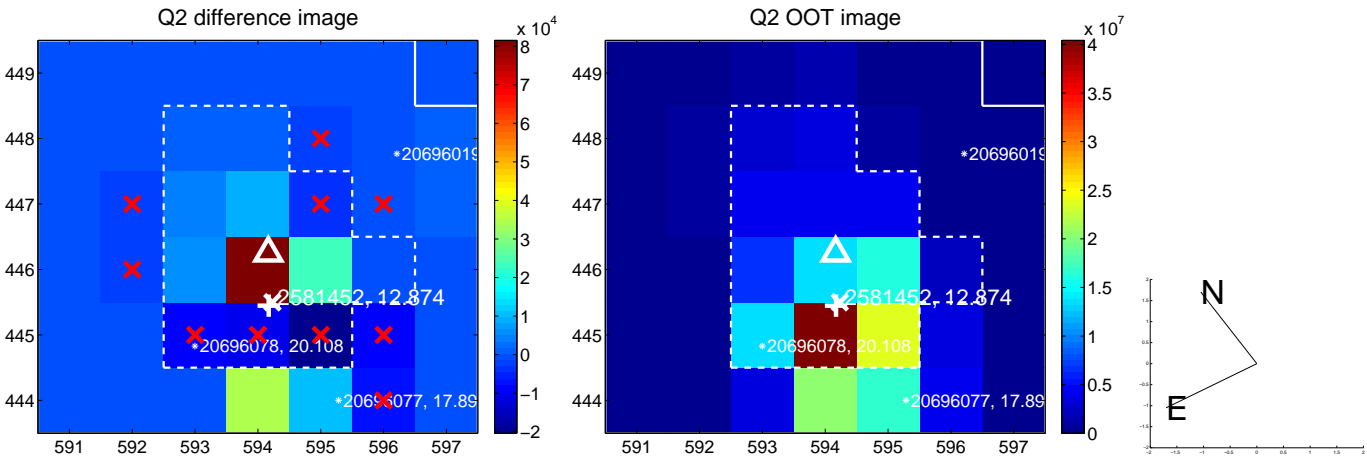
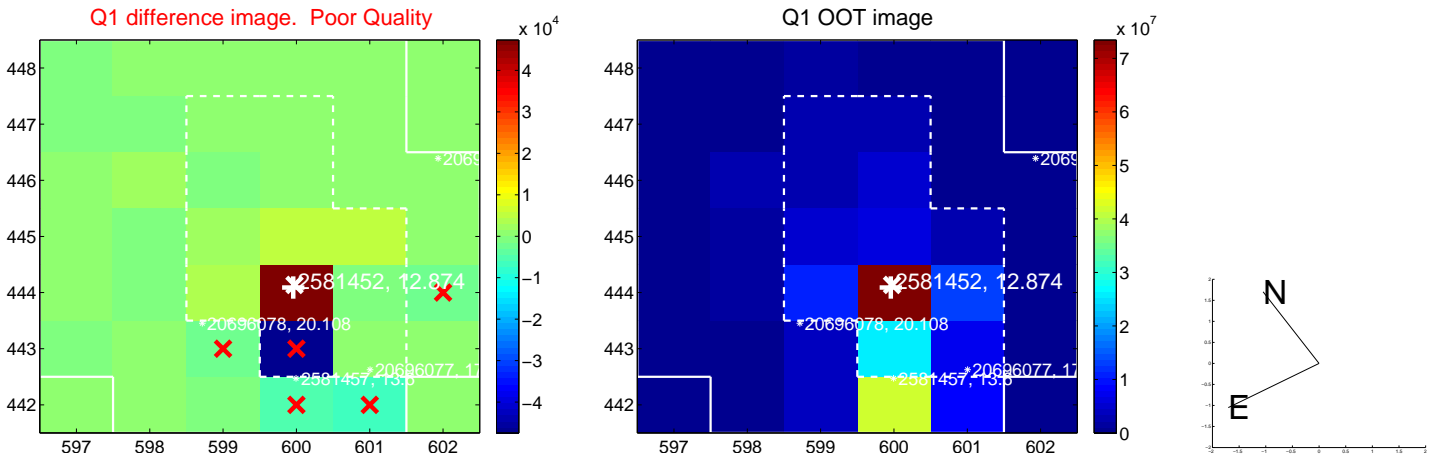


offset from photometric centroids

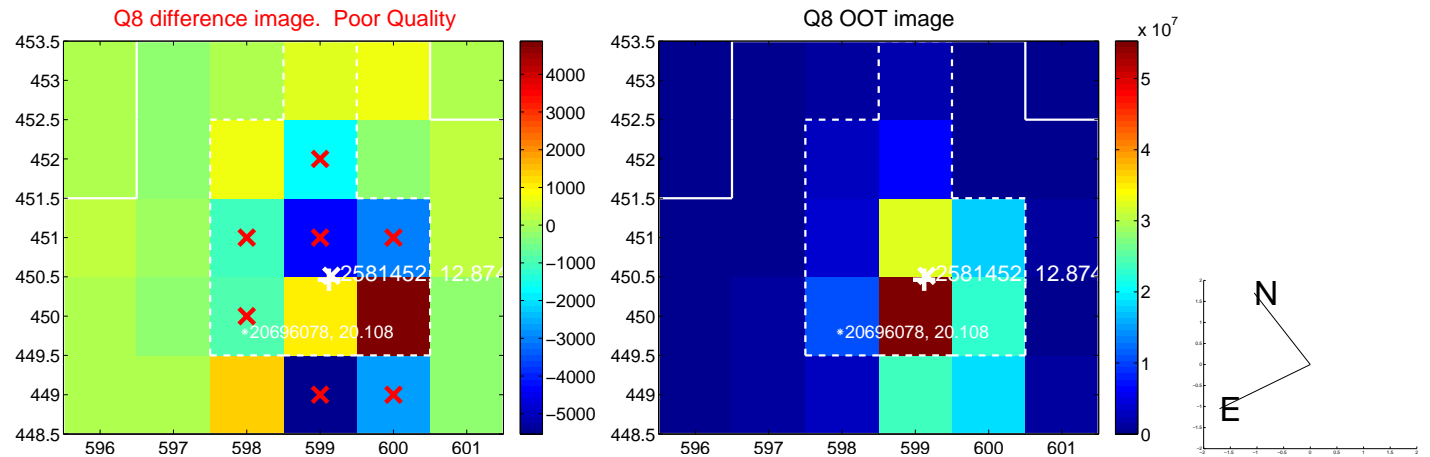
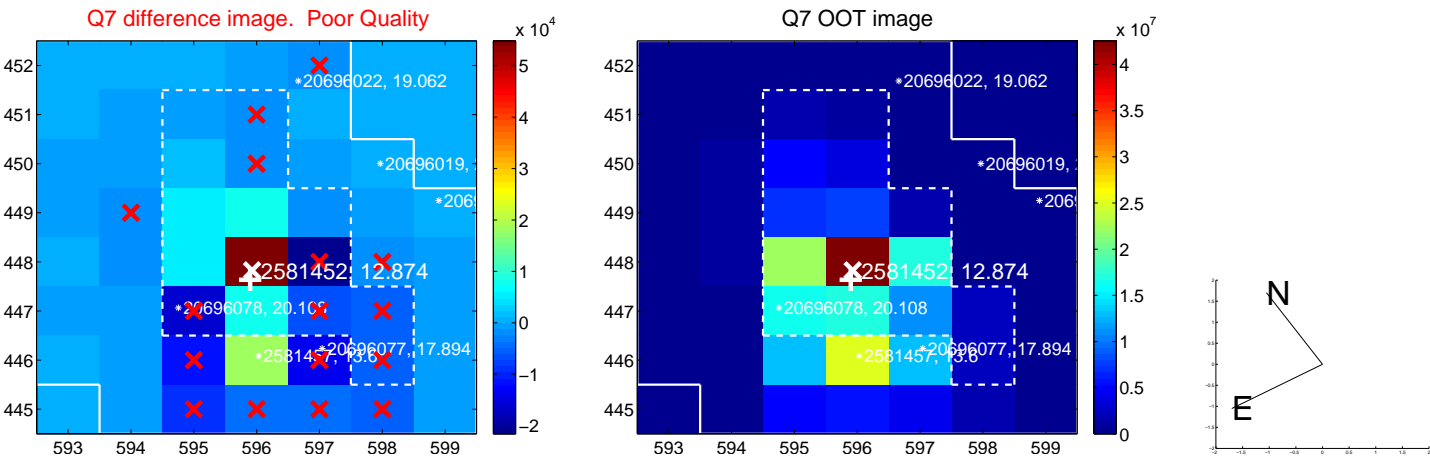
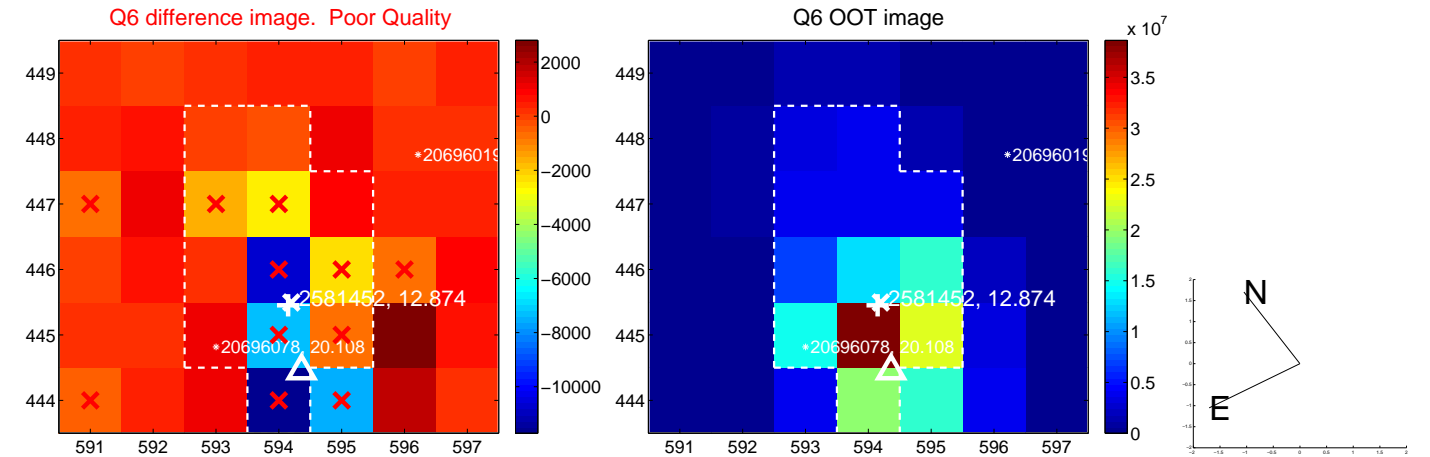
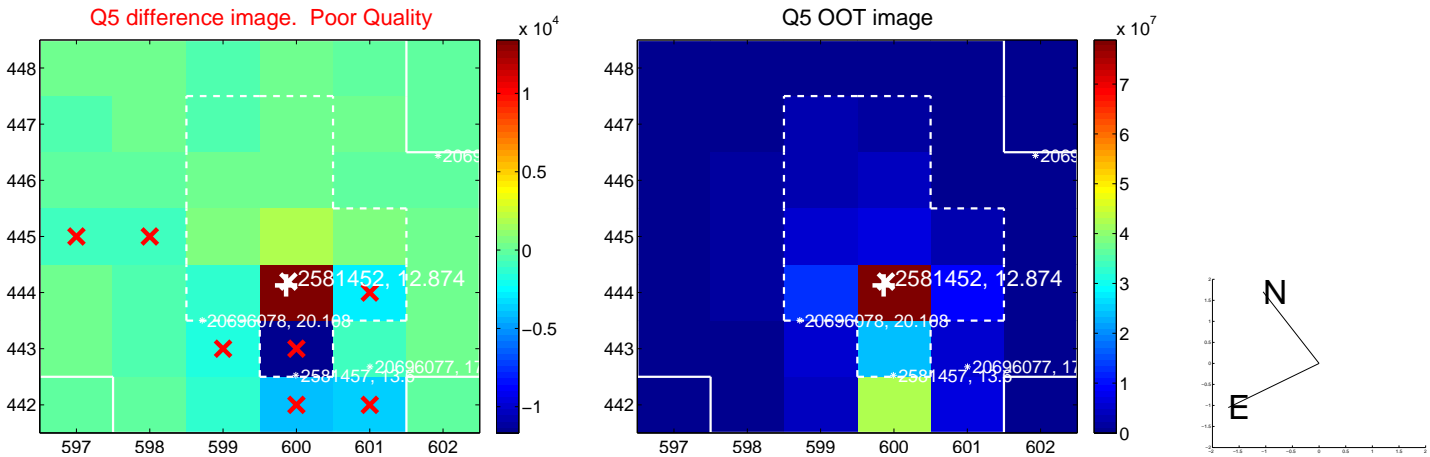


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

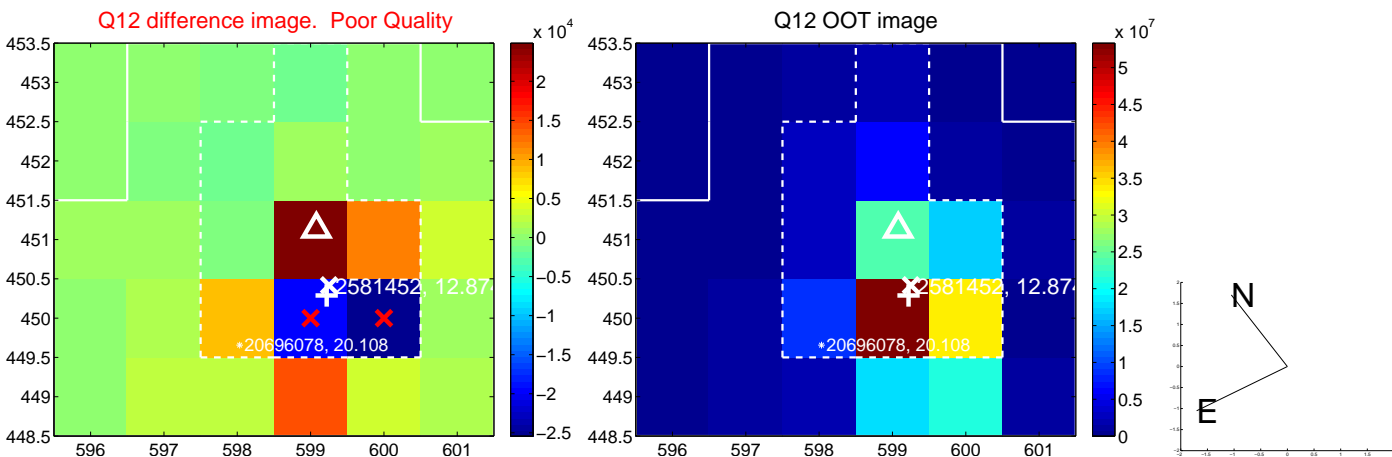
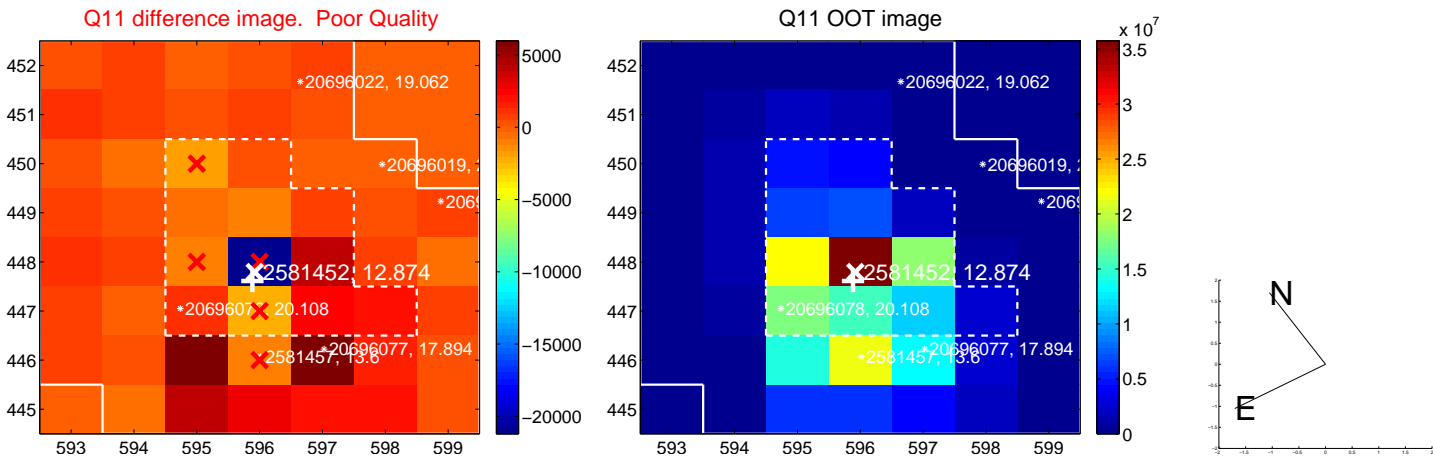
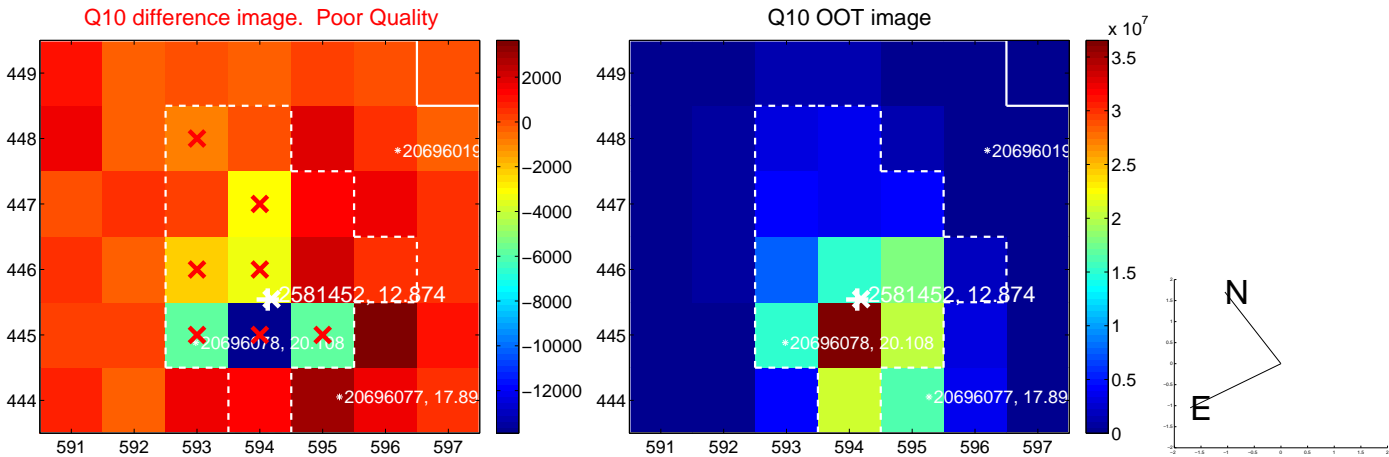
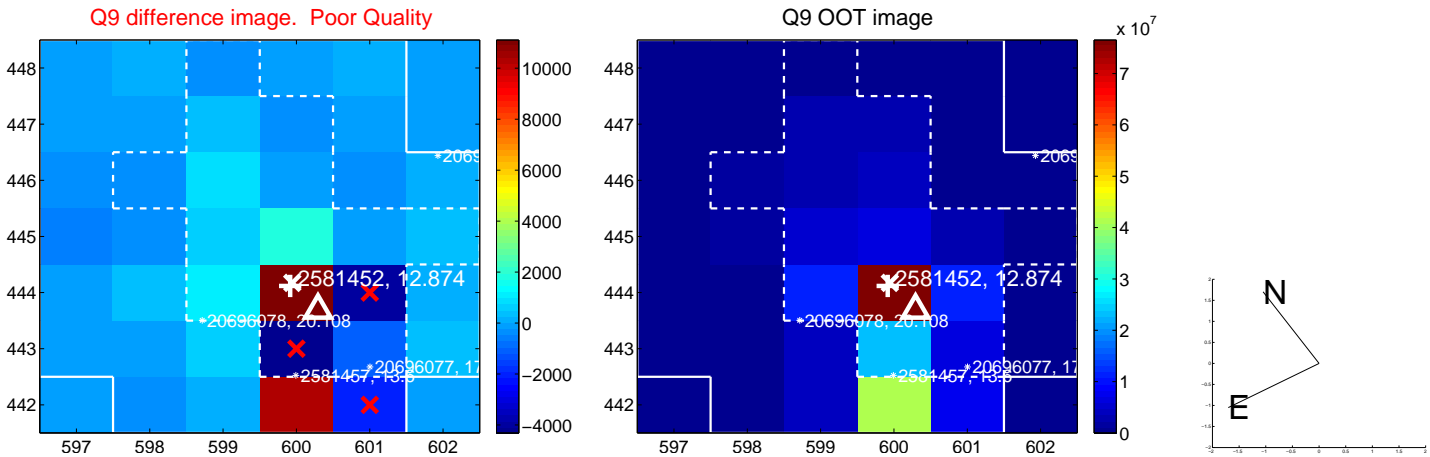
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



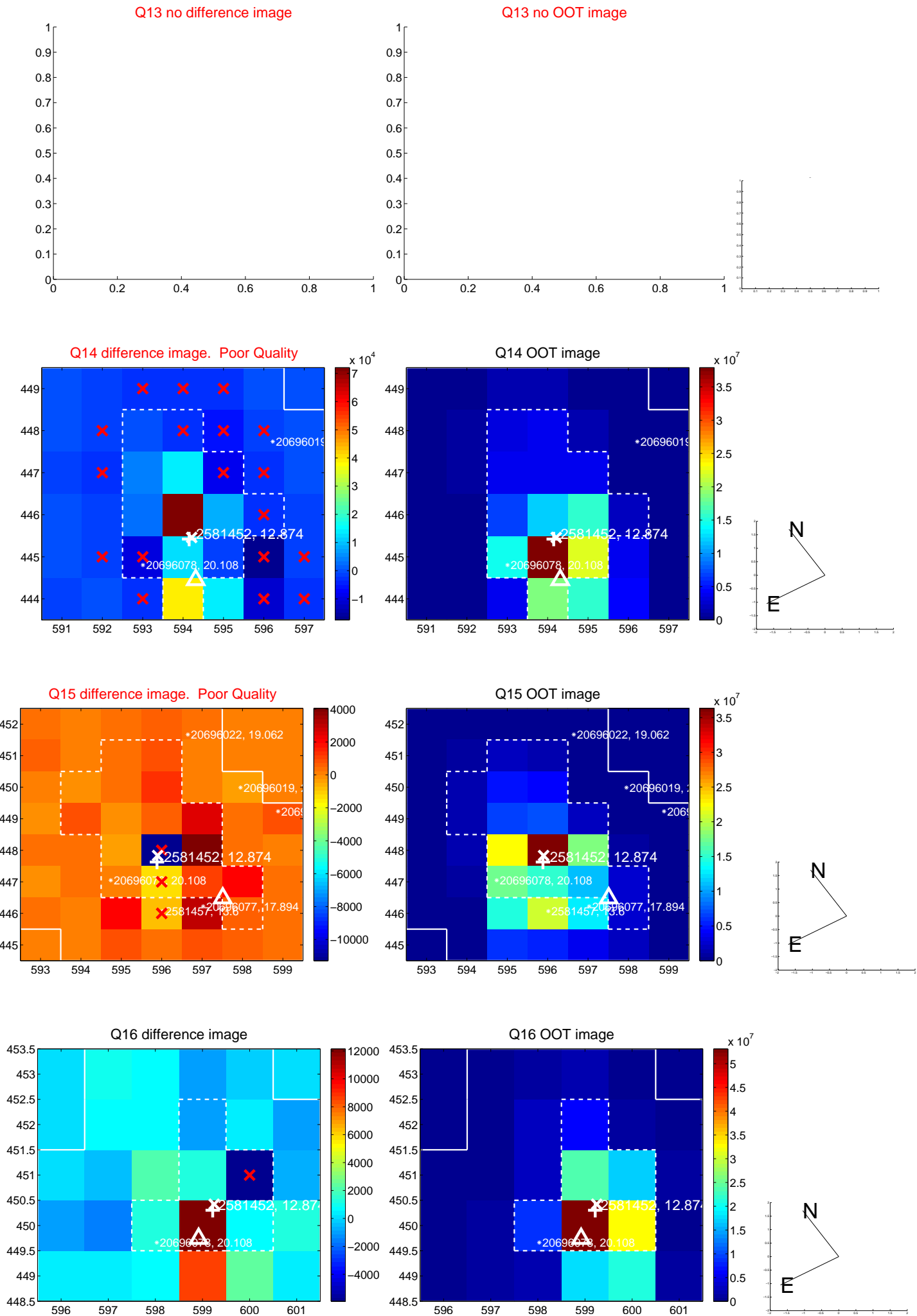
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



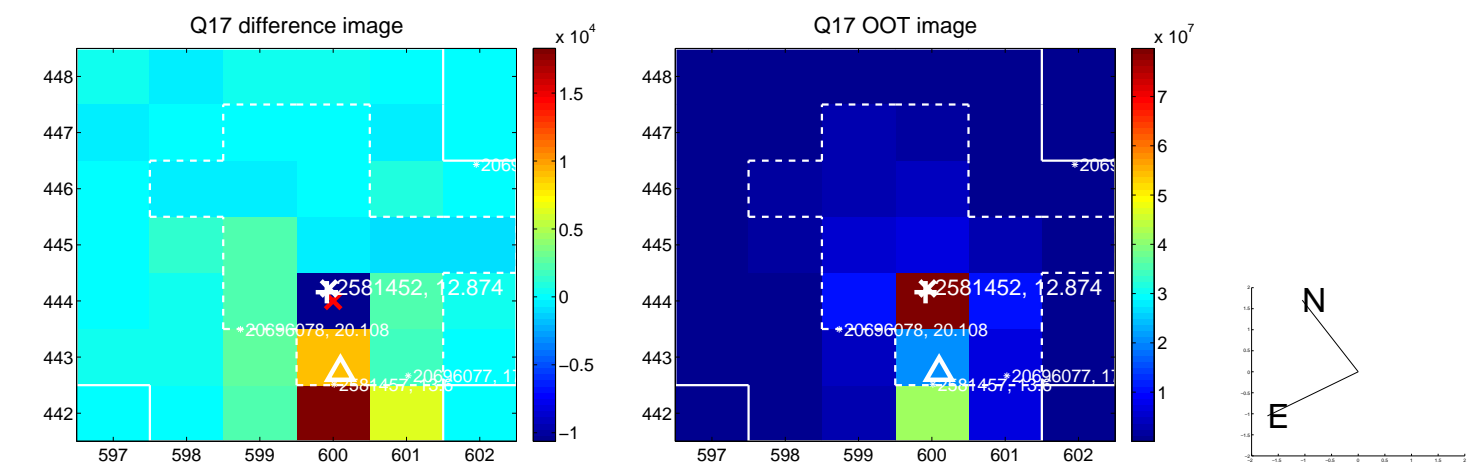
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



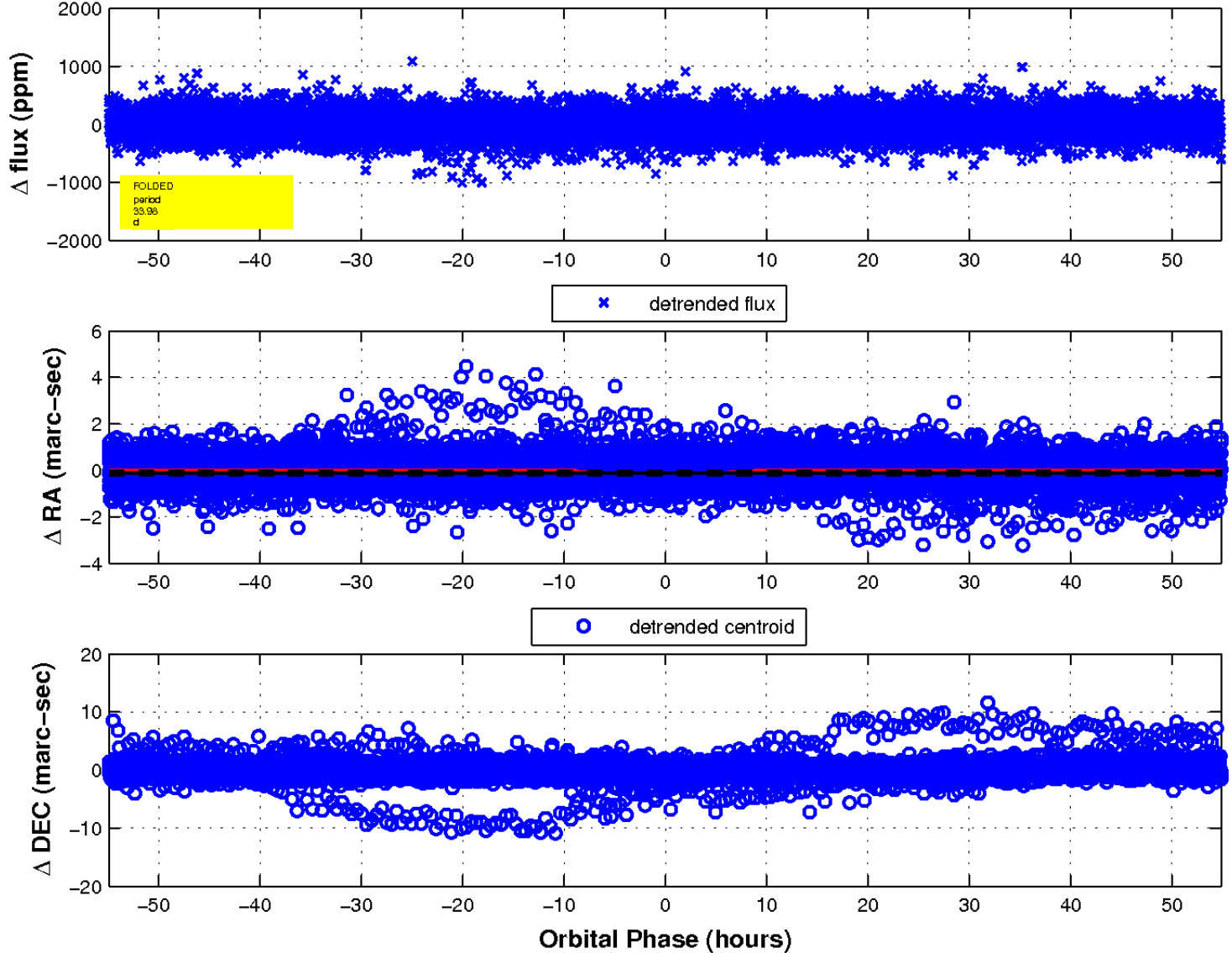
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



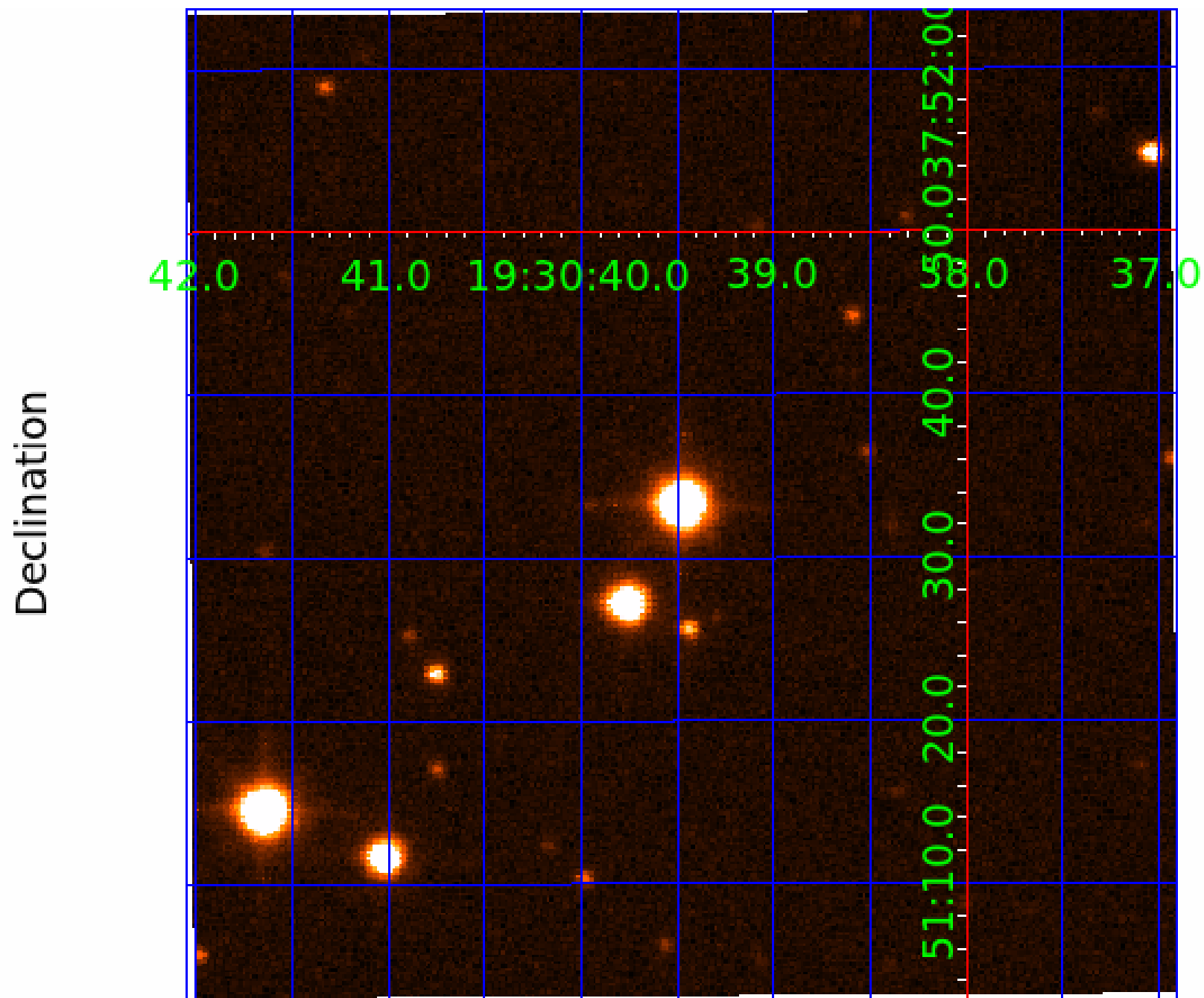
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 9



UKIRT Image



KIC 002581452

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})
002581452-01	OBS	No	2.617491	133.800090	26.3	13.331	8.9	8.0	5.75	5117	3.04	9511.99
002581452-02	OBS	No	33.977508	153.321823	95.4	18.301	18.3	5.2	5.75	5117	6.58	311.79
002581452-03	OBS	No	169.717627	279.461846	190.7	17.272	9.8	6.5	5.75	5117	8.54	36.52
002581452-04	OBS	No	107.762815	209.299153	453.3	2.515	9.1	9.6	5.75	5117	14.13	66.91
002581452-05	OBS	No	111.863738	193.627102	352.0	2.918	8.7	8.1	5.75	5117	13.21	63.66
002581452-06	OBS	No	215.566106	271.224013	414.9	3.600	8.2	8.4	5.75	5117	12.38	26.55
002581452-07	OBS	No	142.742350	232.683893	469.7	2.796	8.5	8.1	5.75	5117	12.60	45.99
002581452-08	OBS	No	638.962510	294.409498	388.3	3.756	7.8	7.4	5.75	5117	13.57	6.24
002581452-09	OBS	No	52.615085	177.948320	286.7	2.766	7.6	7.4	5.75	5117	11.24	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002581452-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
002581452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002581452-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002581452-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_UNCERTAIN
002581452-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
002581452-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002581452-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

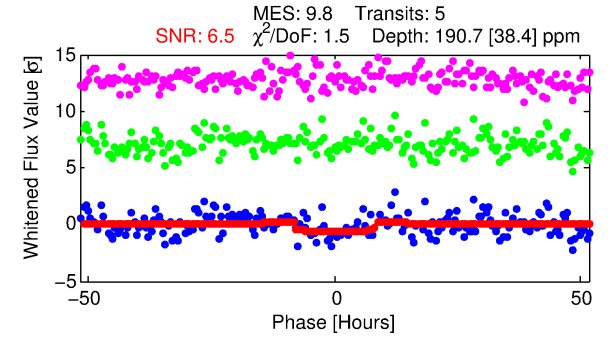
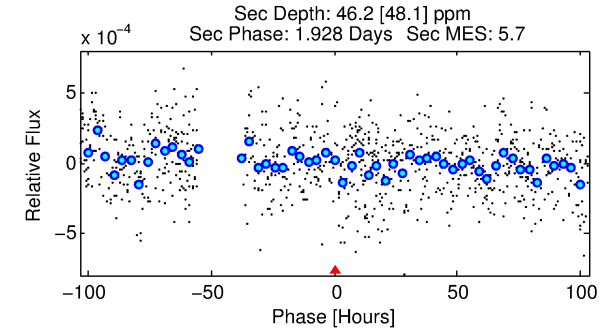
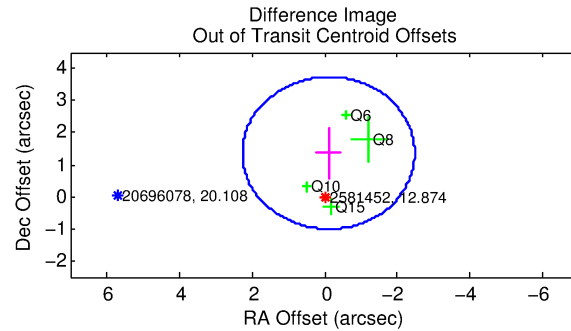
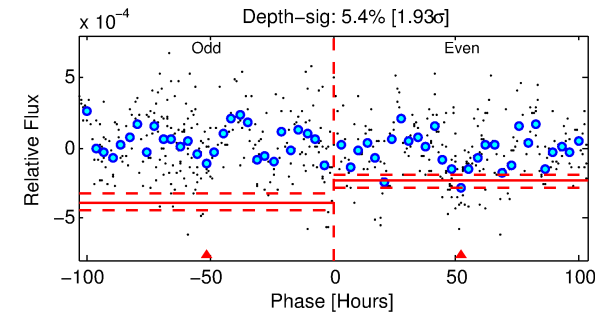
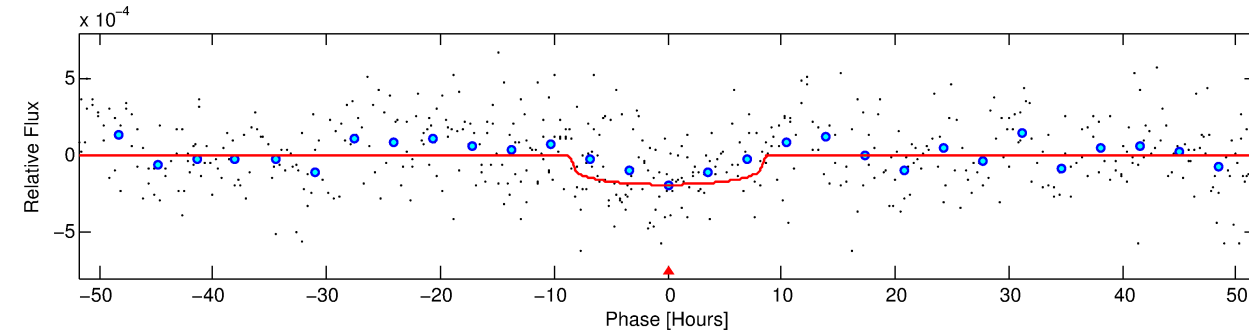
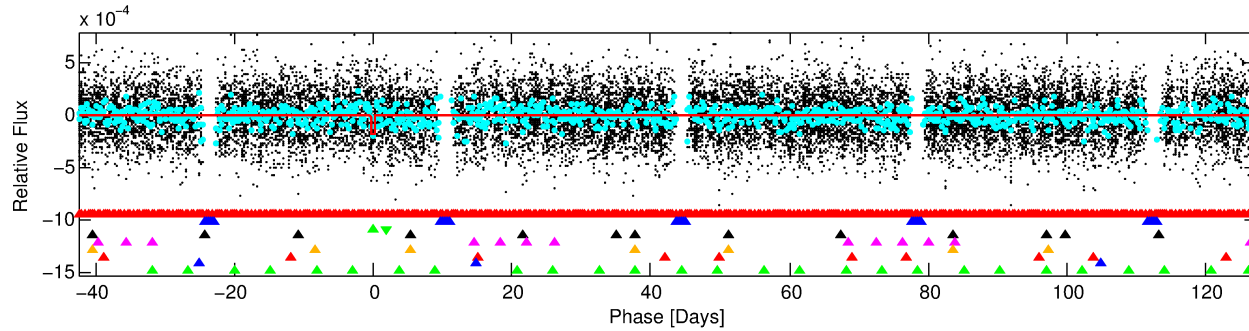
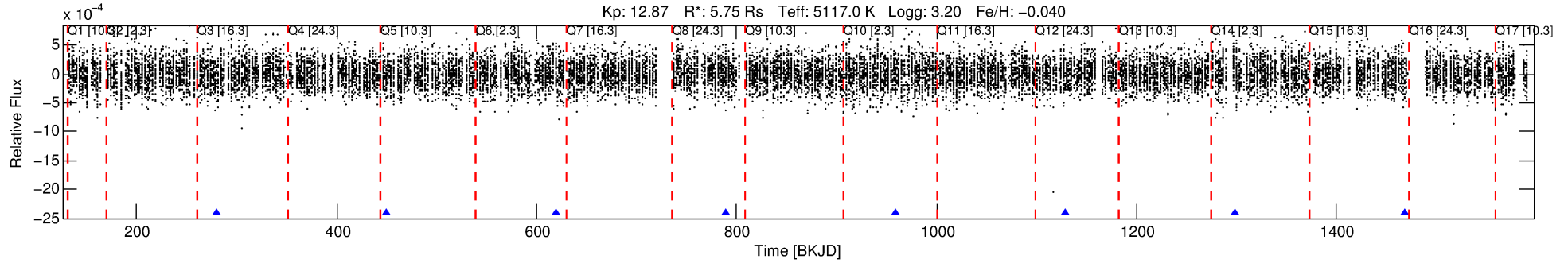
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002581452-03

No Significant Match Found

DV One-Page Summary

KIC: 2581452 Candidate: 3 of 9 Period: 169.718 d



DV Fit Results:

Period = 169.71763 [0.00692] d
Epoch = 279.4618 [0.0311] BKJD
Rp/R* = 0.0136 [0.0077]
a/R* = 53.29 [110.08]
b = 0.72 [1.38]
Seff = 36.52 [27.58]
Teff = 627 [118] K
Rp = 8.54 [6.54] Re
a = 0.7459 [0.3564] AU
Ag = 193.51 [329.90] [0.58σ]
Teffp = 3615 [1391] K [2.14σ]

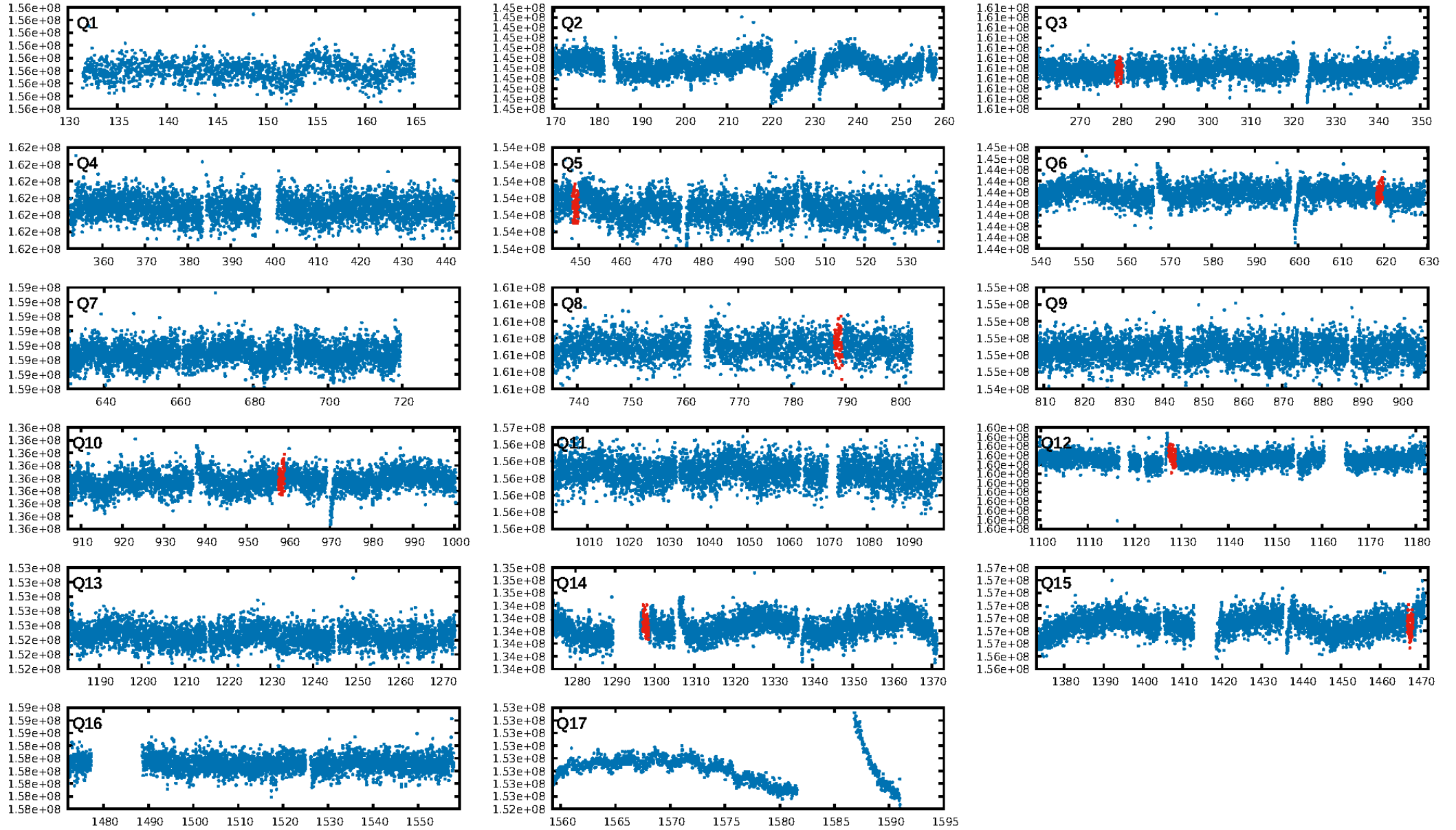
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [37.00σ]
LongPeriod-sig: 100.0% [62.37σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.09e-12
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -4.785
Centroid-sig: N/A
Centroid-so: 1.308 arcsec [1.27σ]
OotOffset-rm: 1.366 arcsec [1.73σ]
KicOffset-rm: 0.781 arcsec [1.25σ]
OotOffset-st: 2/1/1/0 [4]
KicOffset-st: 2/1/1/0 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 0.00 [0/6]

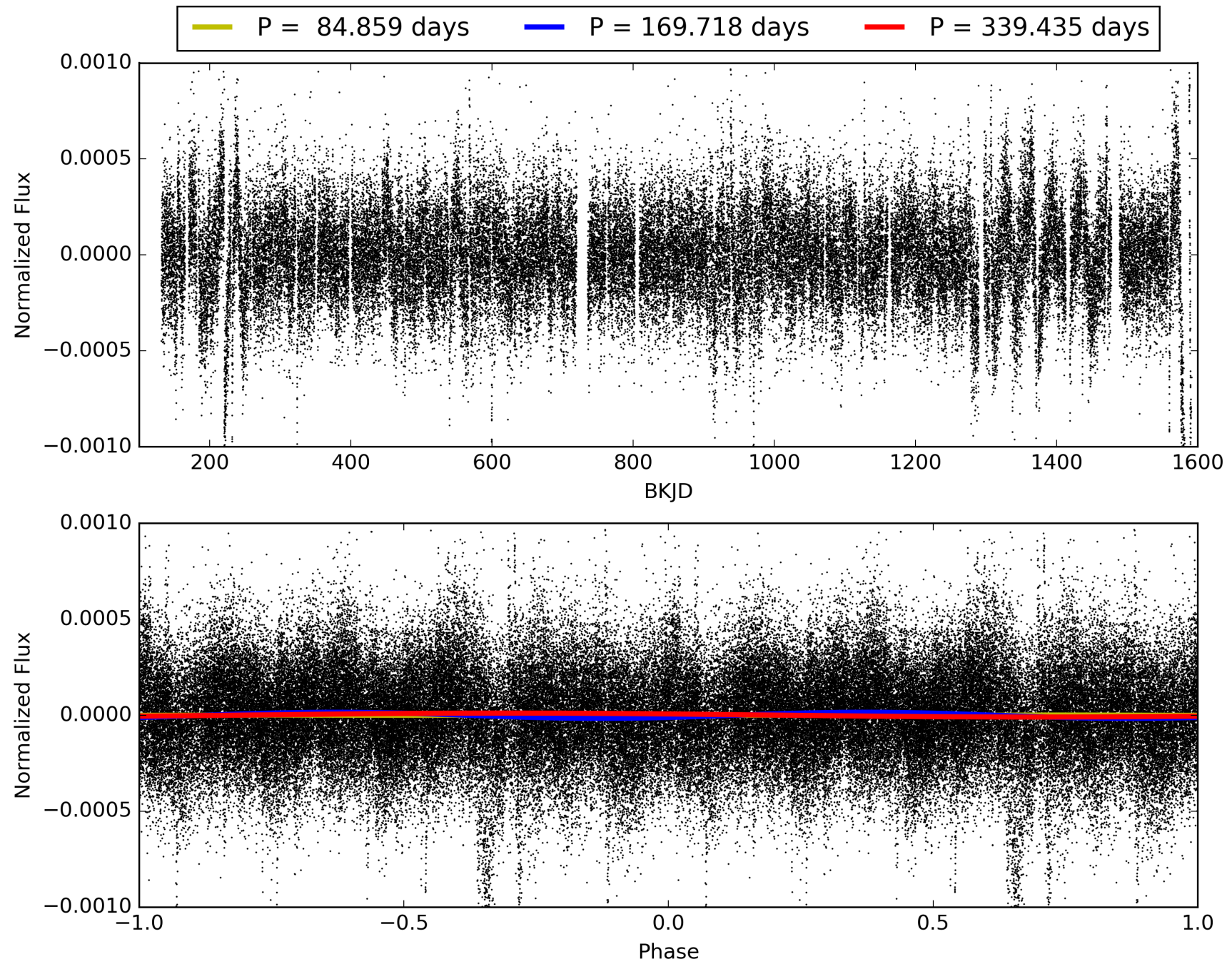
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:22:31 Z

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

TCE 002581452-03, PDC Light Curves

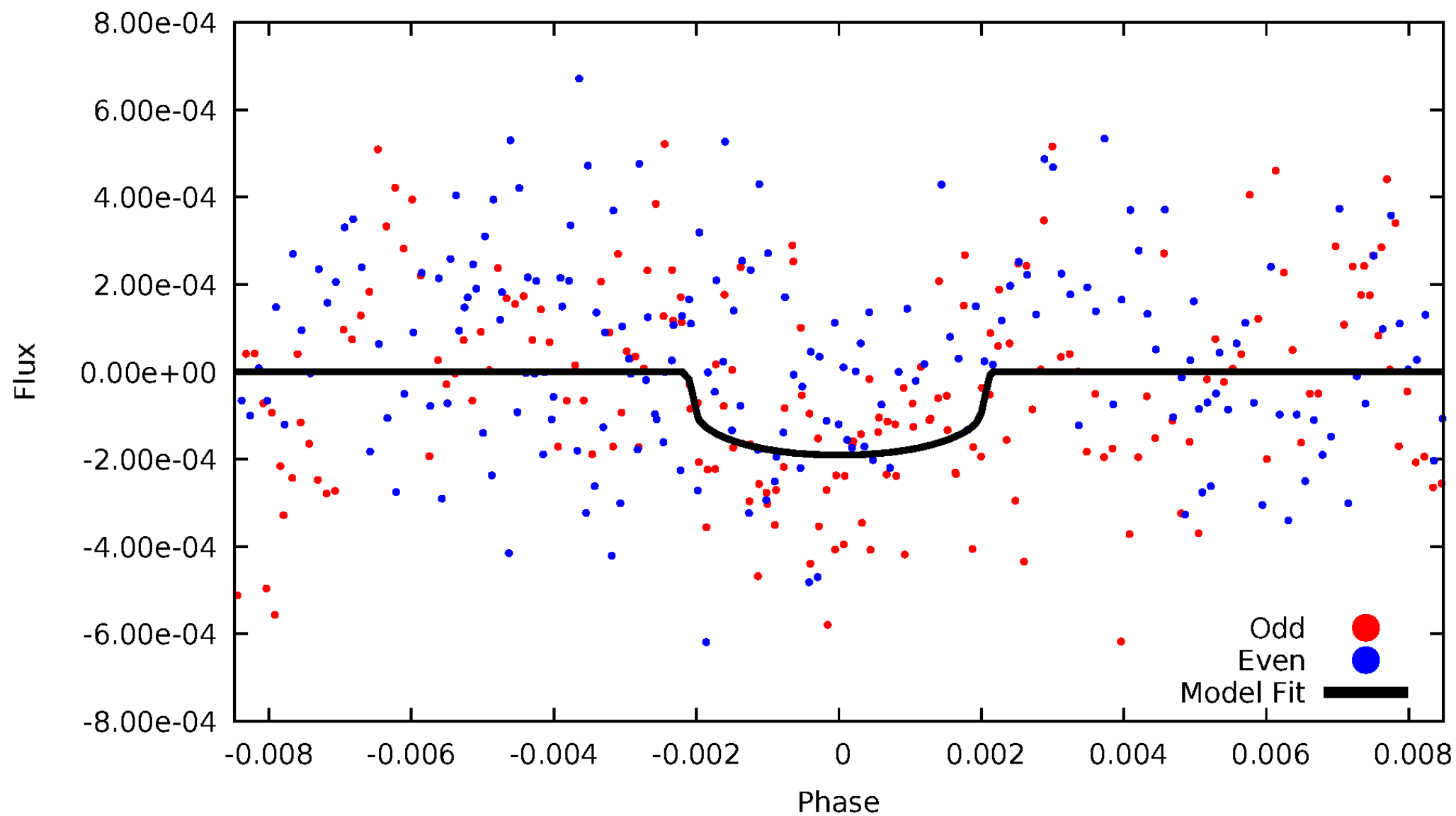


TCE 002581452-03



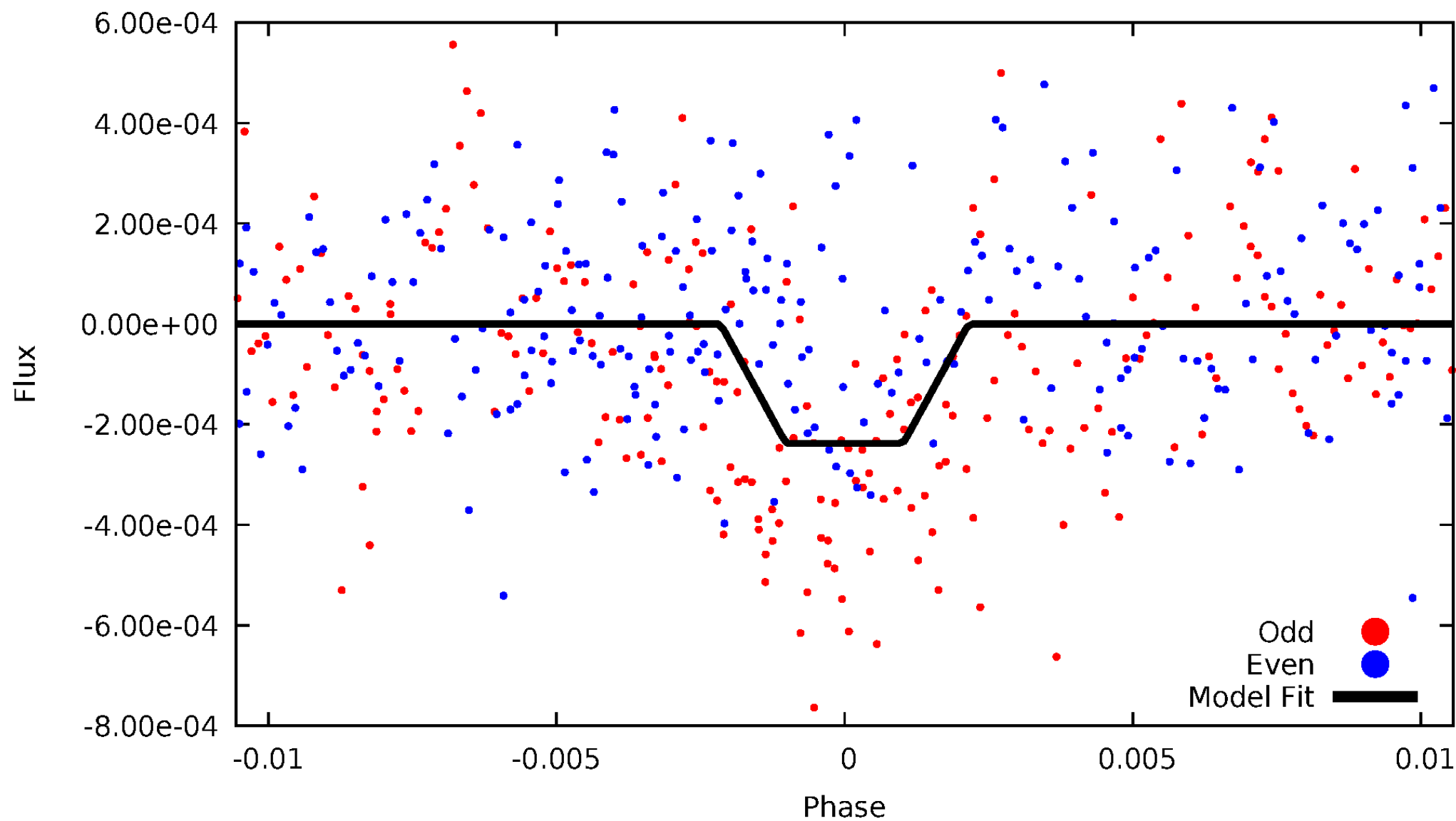
DV Odd/Even

TCE 002581452-03



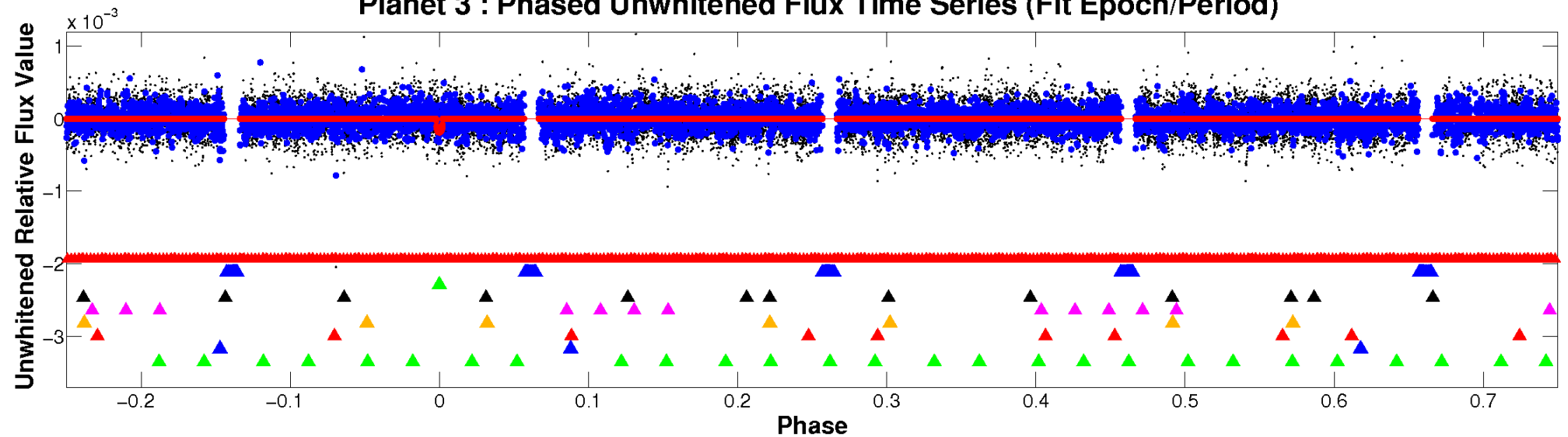
ALT Odd/Even

TCE 002581452-03

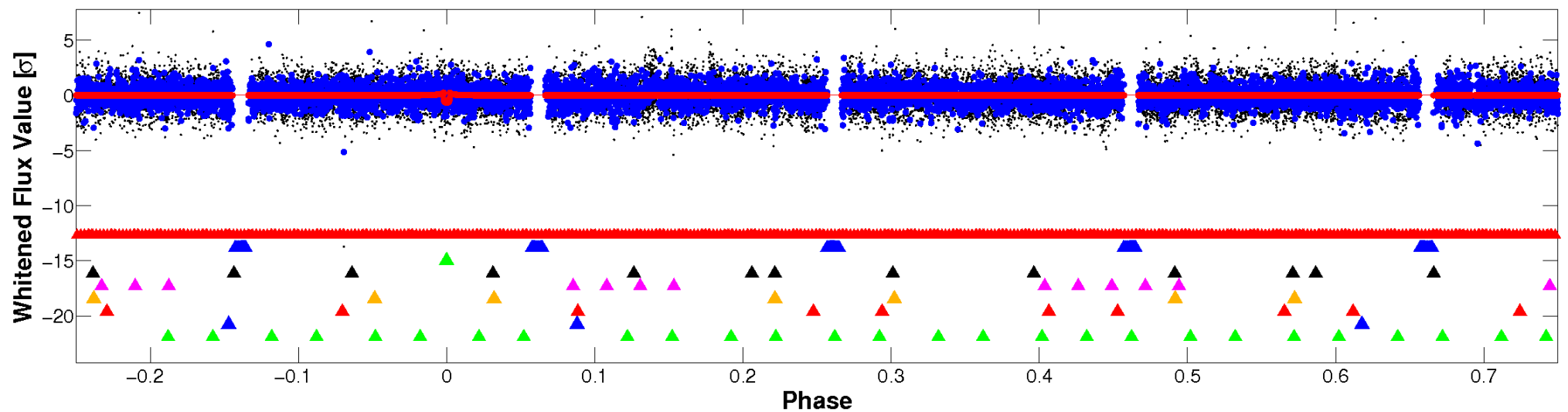


Non-Whitened Vs. Whitened Light Curve

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

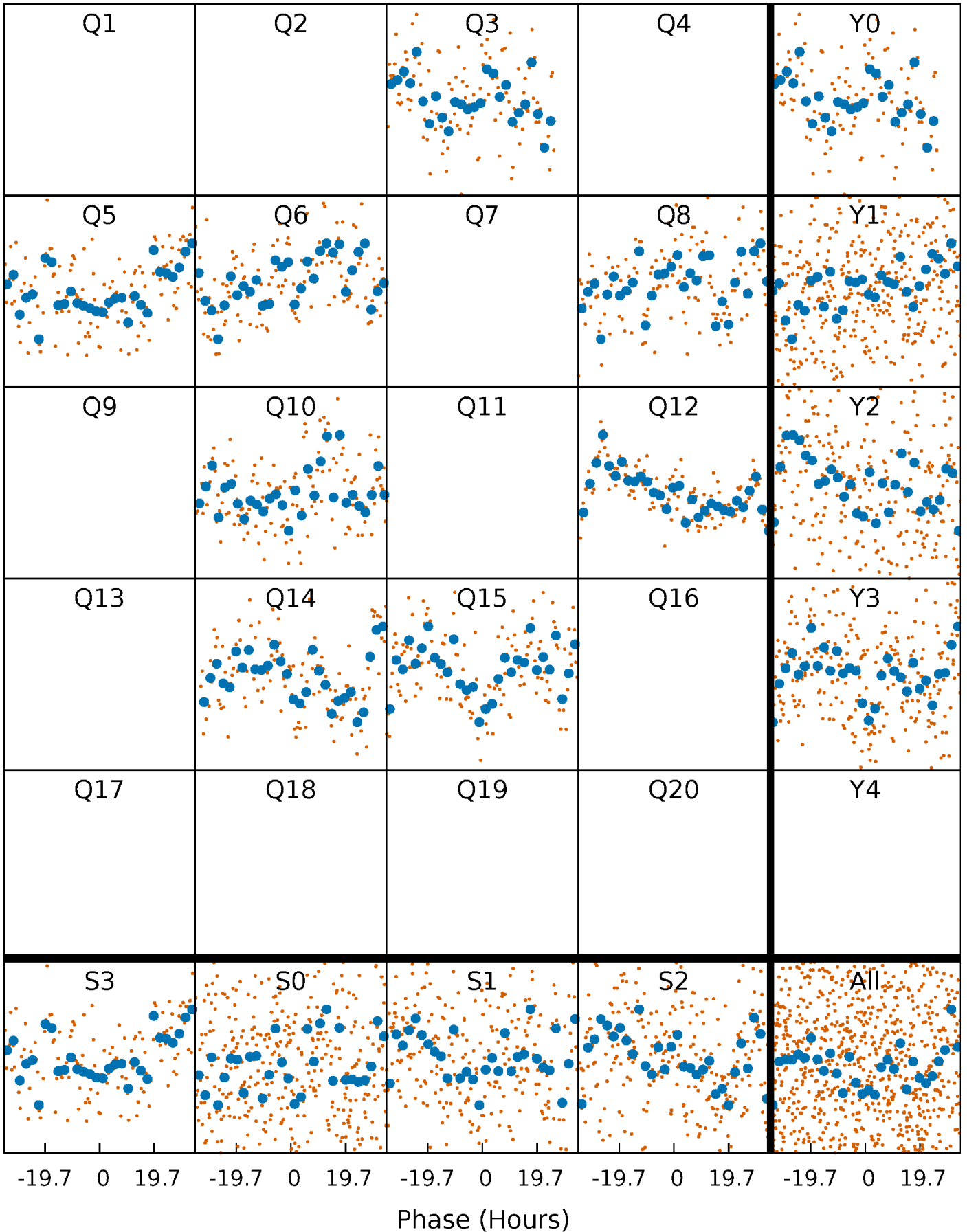


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



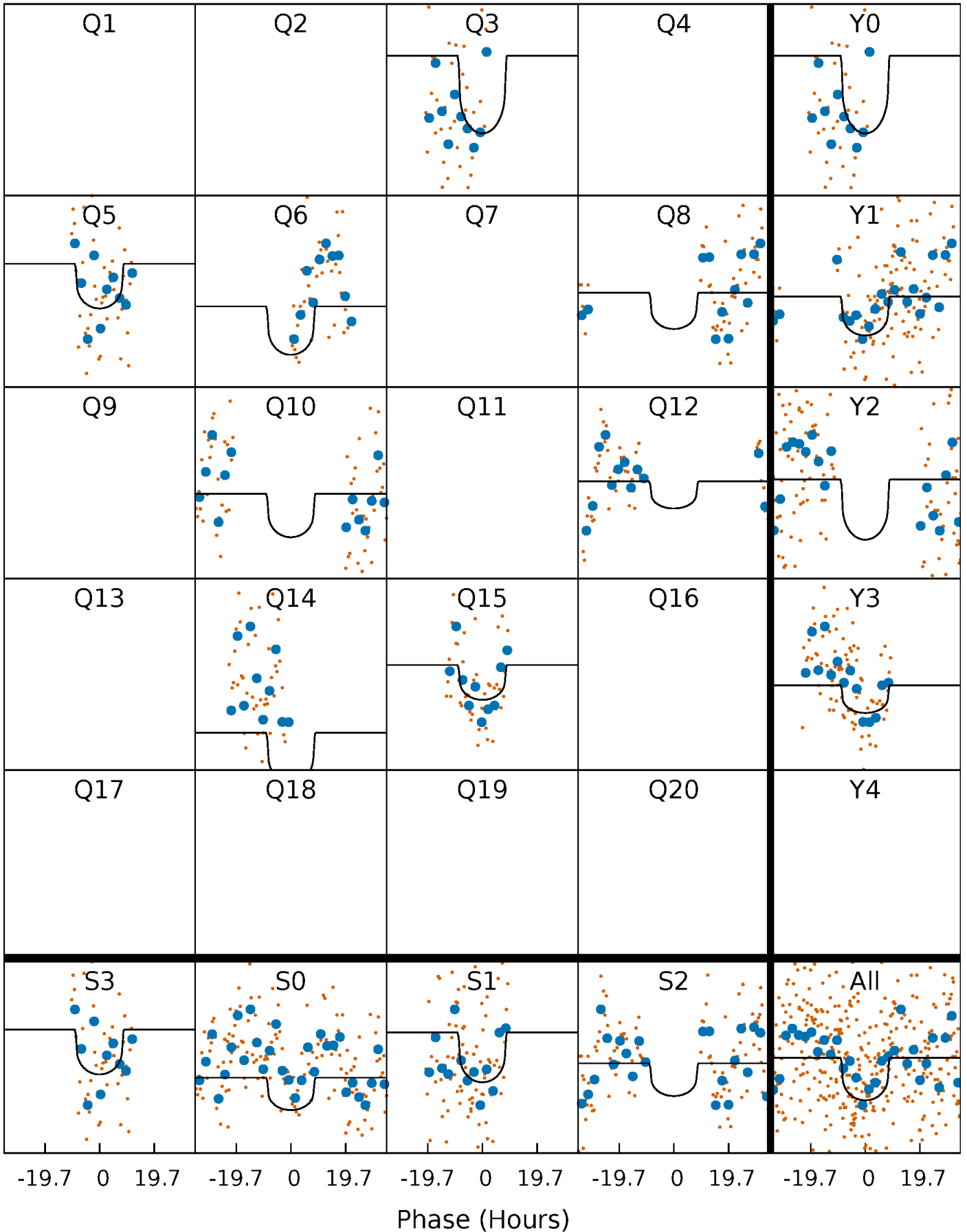
PDC Quarter-Phased Transit Curves

TCE 002581452-03 $P=169.717626$ Days $T_0=279.461846$ (BKJD)



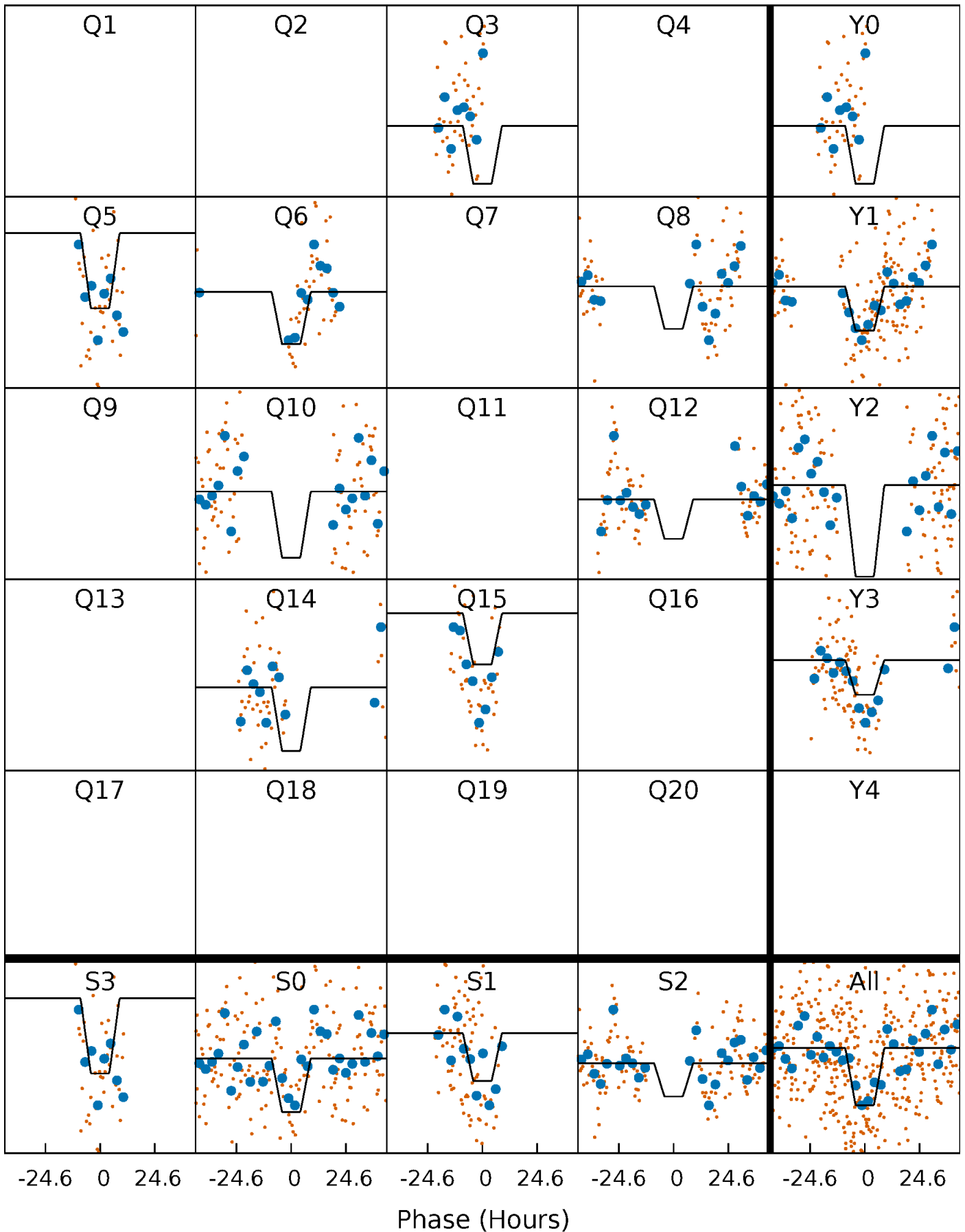
DV Quarter-Phased Transit Curves

TCE 002581452-03 $P=169.717626$ Days $T_0=279.461846$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

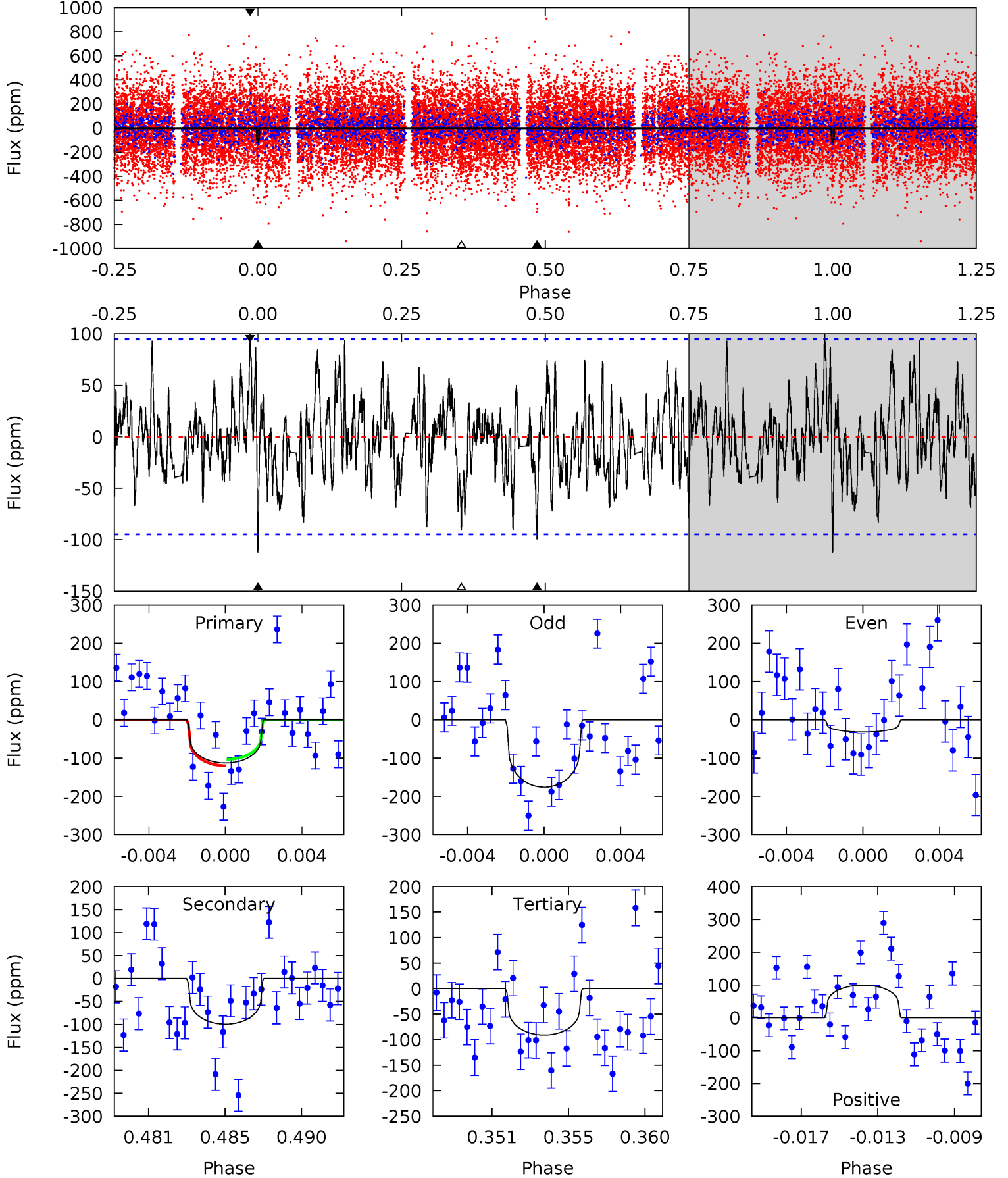
TCE 002581452-03 P=169.721149 Days $T_0=279.499478$ (BKJD)



DV Model-Shift Uniqueness Test

002581452-03, P = 169.717626 Days, E = 109.744220 Days

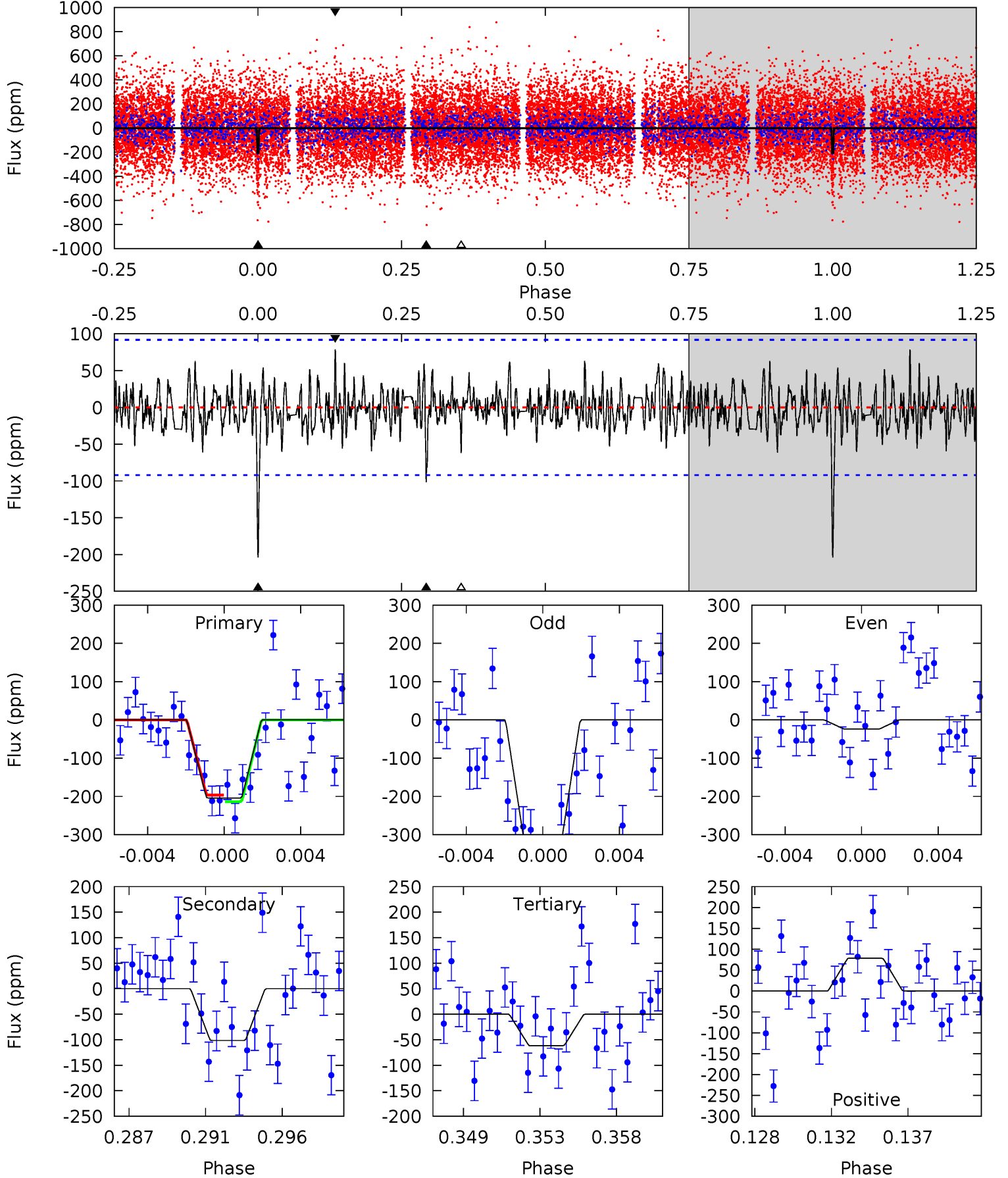
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.16	5.45	4.97	5.45	5.18	2.85	1.78	1.19	0.71	0.48	-0.00	3.91	0.49	0.47	0.45



Alt Model-Shift Uniqueness Test

002581452-03, P = 169.721149 Days, E = 109.778329 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	5.71	3.48	4.43	5.18	2.85	1.20	8.02	7.07	2.23	1.29	8.66	0.95	0.28	0.48



Stellar Parameters For KIC 002581452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5117^{+115}_{-166}	$3.202^{+0.429}_{-0.231}$	$-0.040^{+0.250}_{-0.300}$	$5.751^{+1.608}_{-2.987}$	$1.922^{+0.278}_{-0.903}$	$0.014^{+0.068}_{-0.008}$
	+2%/-3%	+13%/-7%	+625%/-750%	+28%/-52%	+14%/-47%	+476%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002581452-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-100 ± 18	$8.11^{+5.72}_{-4.51}$	872^{+86}_{-107}	4402^{+1945}_{-633}	440^{+1682}_{-282}
Alt.	-101 ± 18	$8.93^{+5.67}_{-4.43}$	870^{+86}_{-119}	4269^{+1339}_{-566}	369^{+1020}_{-228}

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

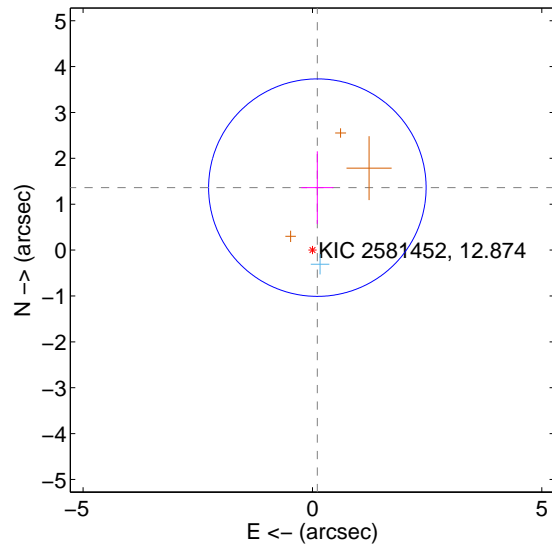
Supplemental centroid analysis for 002581452-03. Kepler magnitude: 12.87. Transit SNR 6.53

There are 1 quarters with good PRF difference image offsets

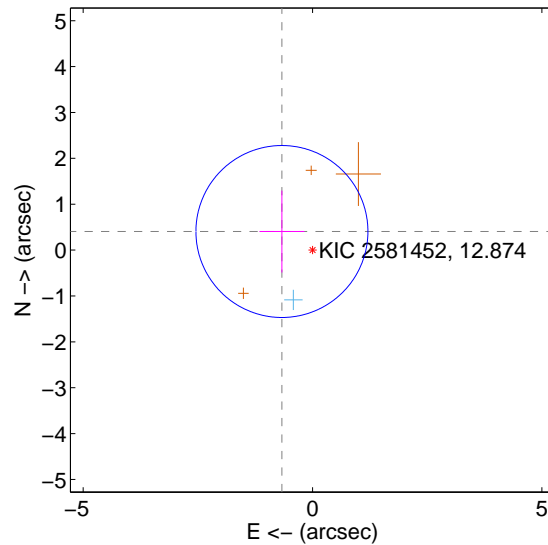
The direct PRF centroid is offset from the target star catalog position by about 0.97 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.366 ± 0.790	1.73	-0.107 ± 0.352	1.362 ± 0.792
PRF-fit source offset from KIC position	0.781 ± 0.625	1.25	0.667 ± 0.490	0.405 ± 0.892
photometric centroid source offset	1.31 ± 1.03	1.27	1.07 ± 0.79	-0.75 ± 1.39

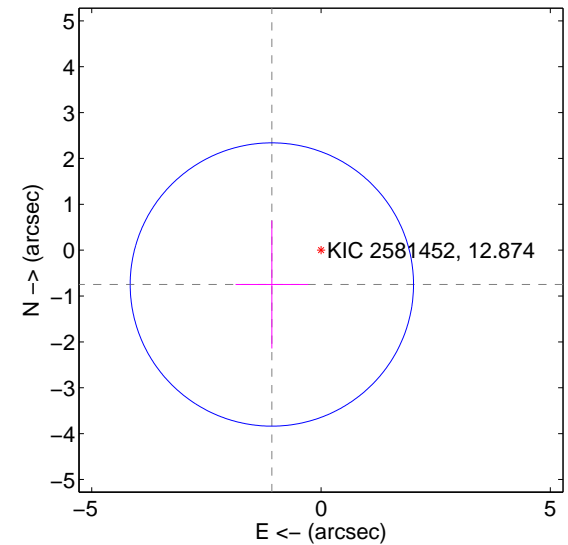
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

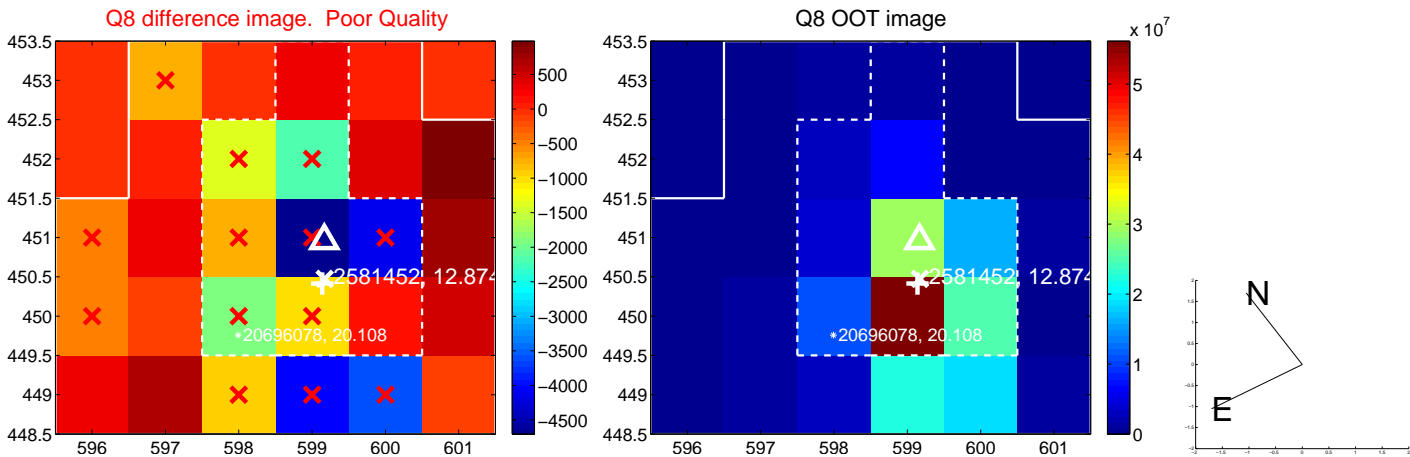
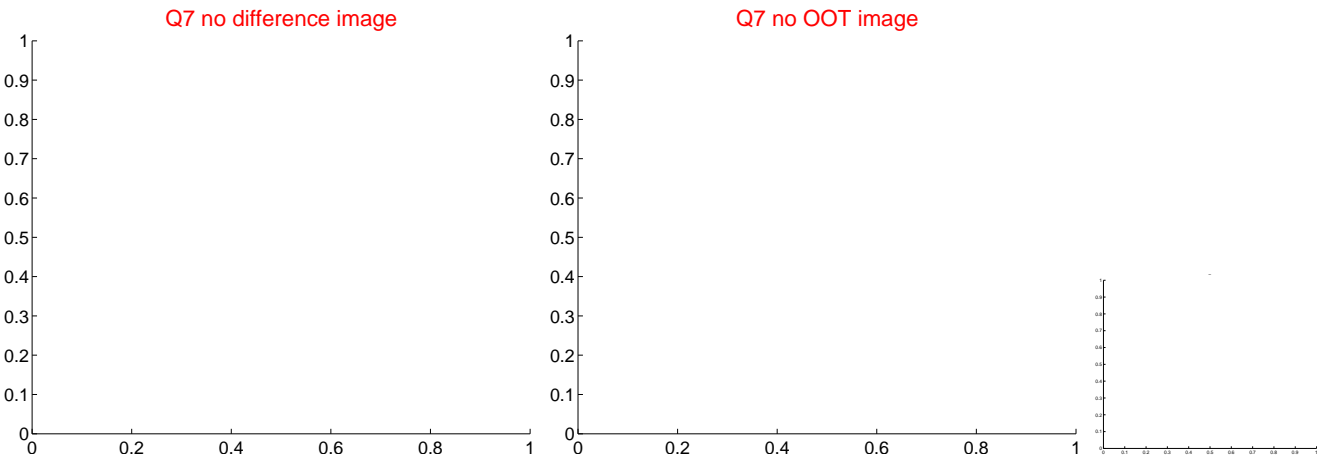
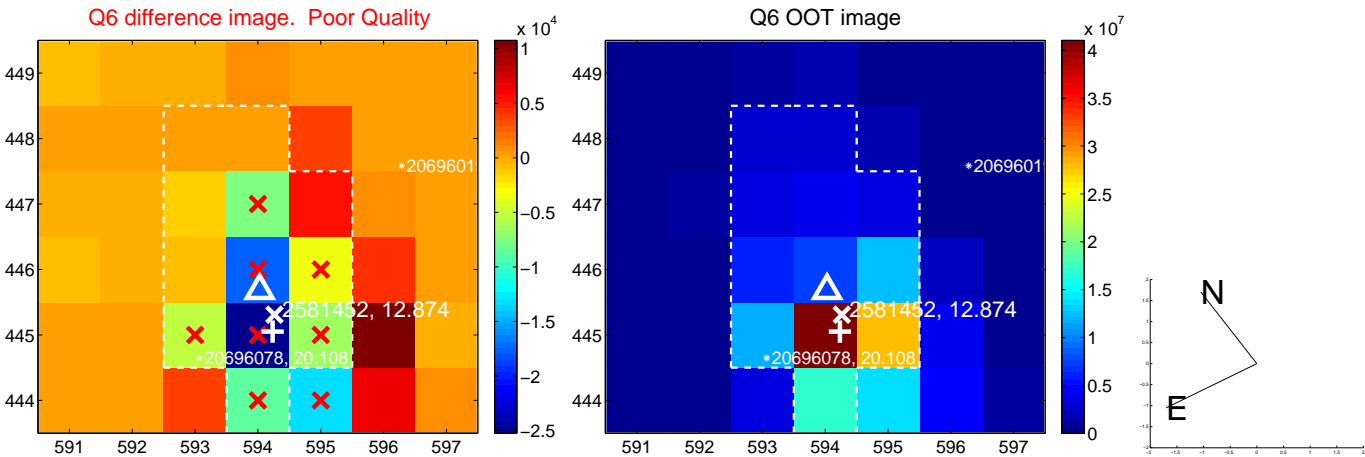
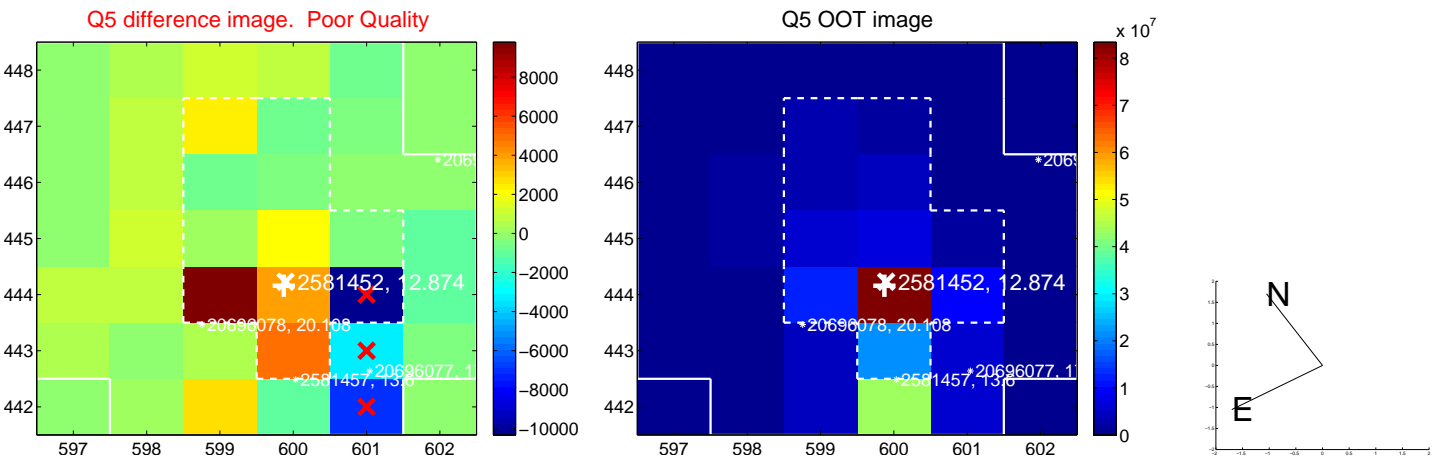


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

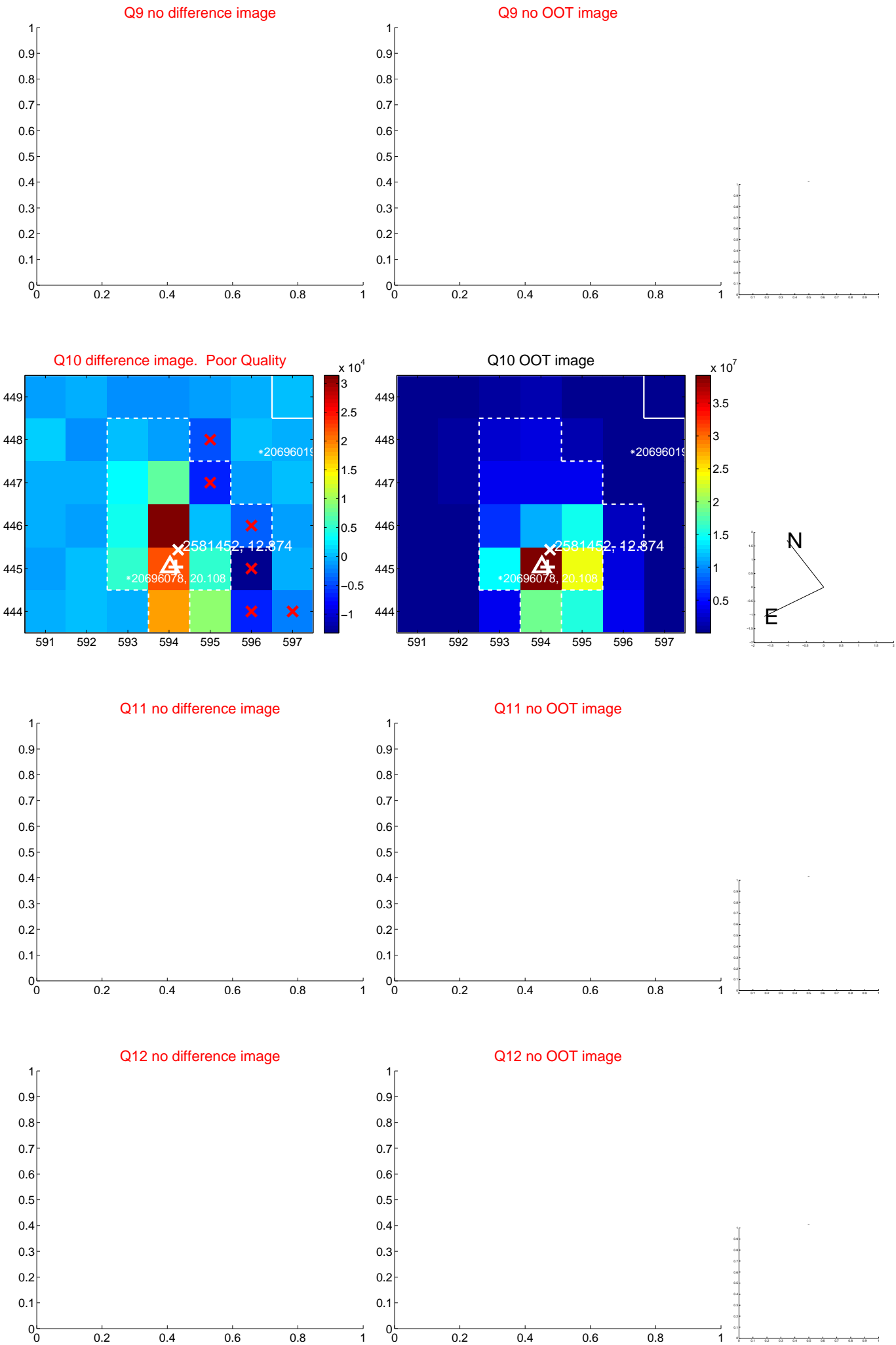
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

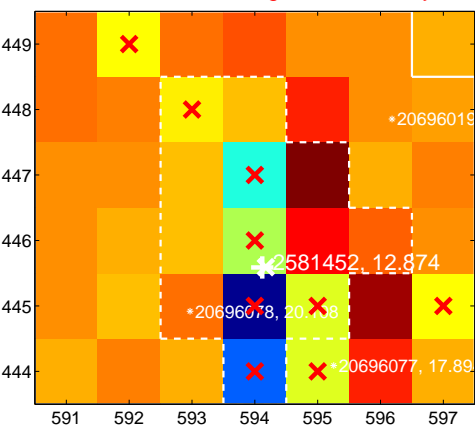
Q13 no difference image



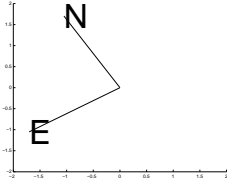
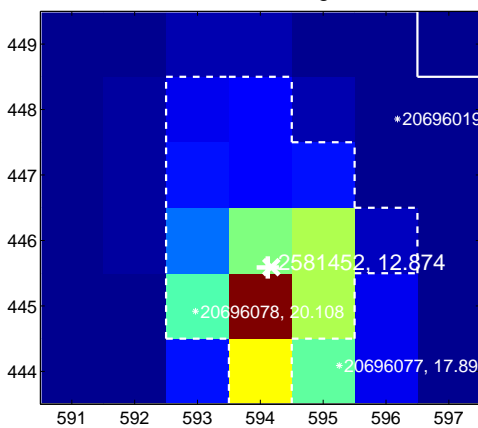
Q13 no OOT image



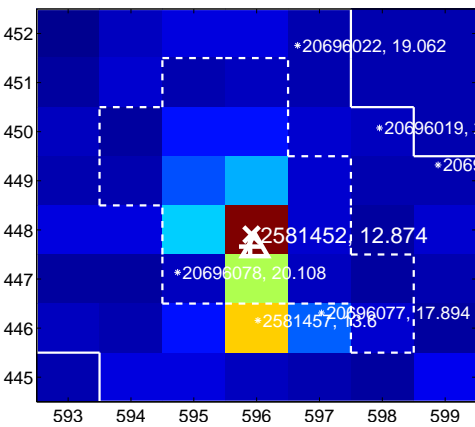
Q14 difference image. Poor Quality



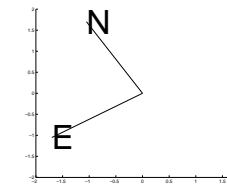
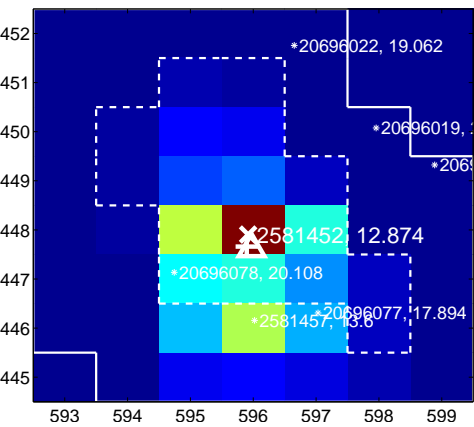
Q14 OOT image



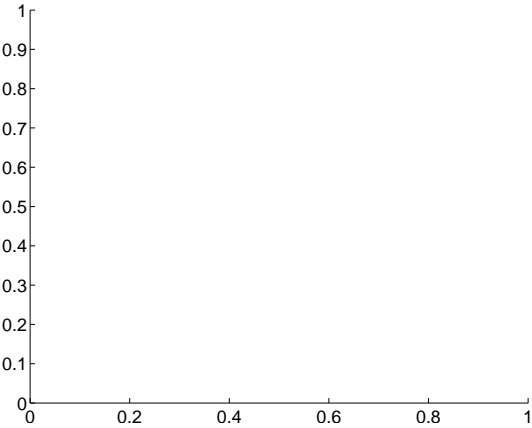
Q15 difference image



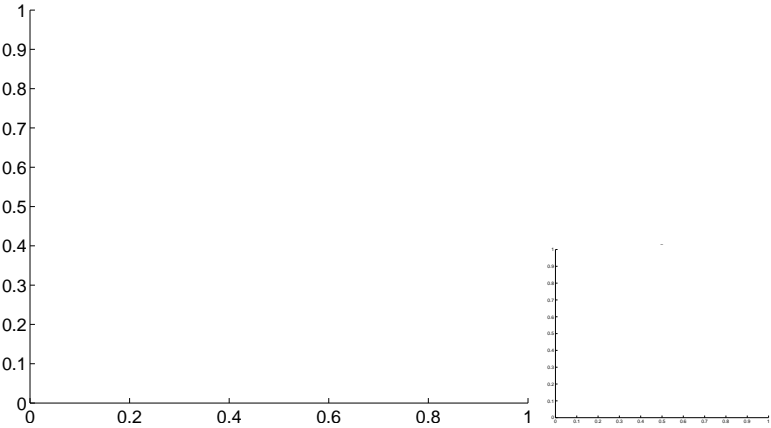
Q15 OOT image



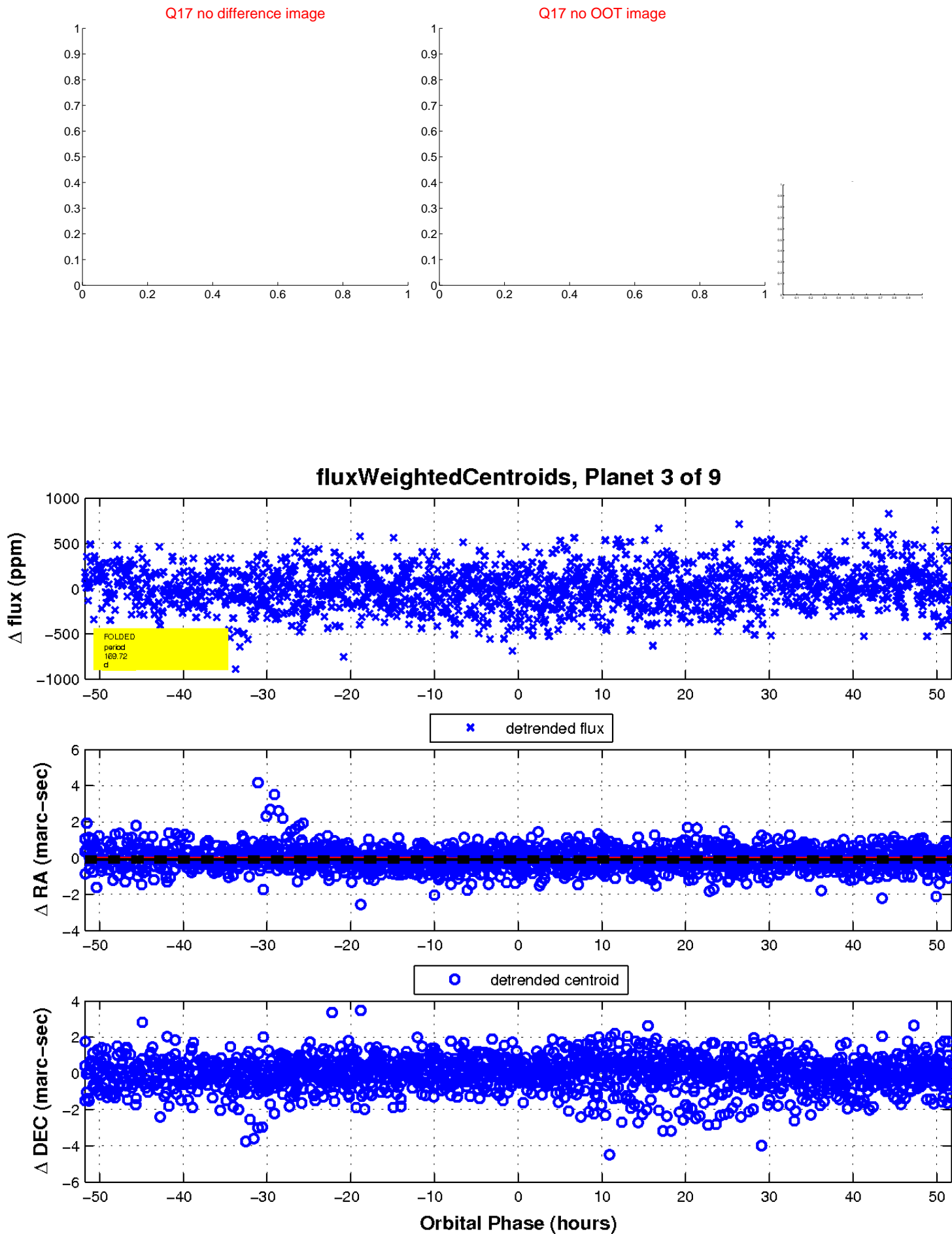
Q16 no difference image



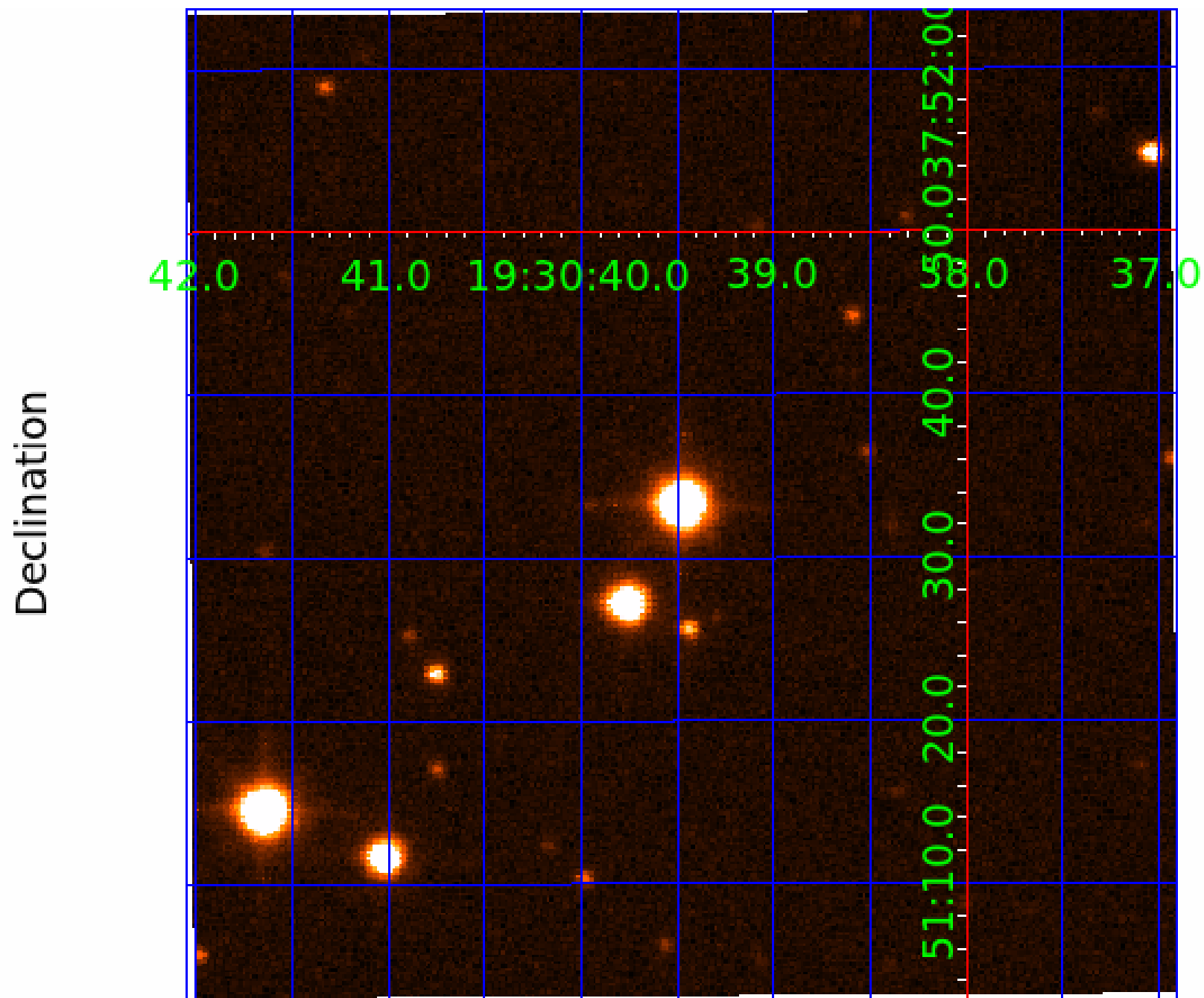
Q16 no OOT image



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



UKIRT Image



KIC 002581452

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})
002581452-01	OBS	No	2.617491	133.800090	26.3	13.331	8.9	8.0	5.75	5117	3.04	9511.99
002581452-02	OBS	No	33.977508	153.321823	95.4	18.301	18.3	5.2	5.75	5117	6.58	311.79
002581452-03	OBS	No	169.717627	279.461846	190.7	17.272	9.8	6.5	5.75	5117	8.54	36.52
002581452-04	OBS	No	107.762815	209.299153	453.3	2.515	9.1	9.6	5.75	5117	14.13	66.91
002581452-05	OBS	No	111.863738	193.627102	352.0	2.918	8.7	8.1	5.75	5117	13.21	63.66
002581452-06	OBS	No	215.566106	271.224013	414.9	3.600	8.2	8.4	5.75	5117	12.38	26.55
002581452-07	OBS	No	142.742350	232.683893	469.7	2.796	8.5	8.1	5.75	5117	12.60	45.99
002581452-08	OBS	No	638.962510	294.409498	388.3	3.756	7.8	7.4	5.75	5117	13.57	6.24
002581452-09	OBS	No	52.615085	177.948320	286.7	2.766	7.6	7.4	5.75	5117	11.24	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002581452-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
002581452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002581452-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002581452-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_UNCERTAIN
002581452-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
002581452-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002581452-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

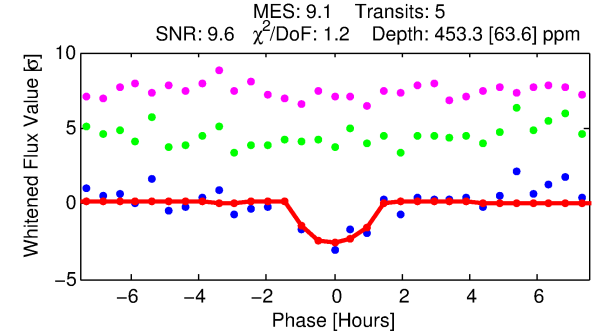
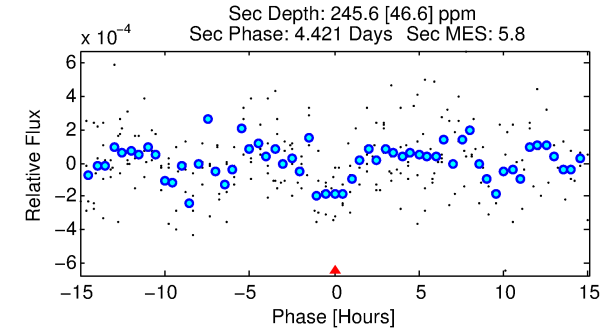
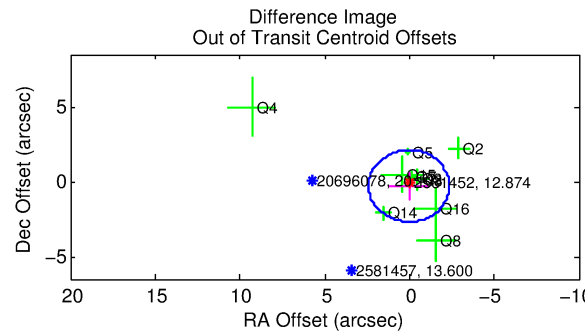
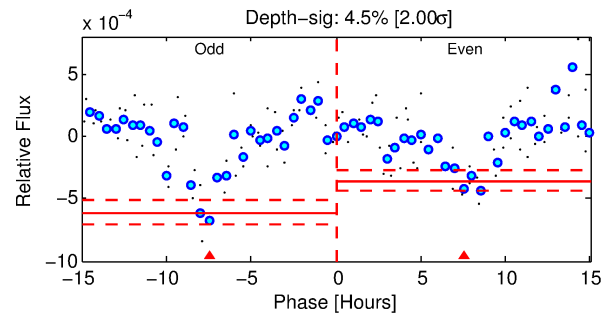
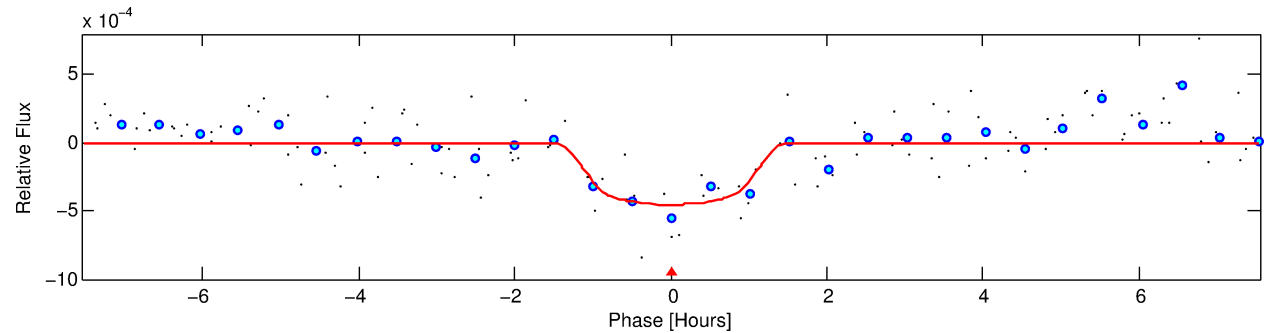
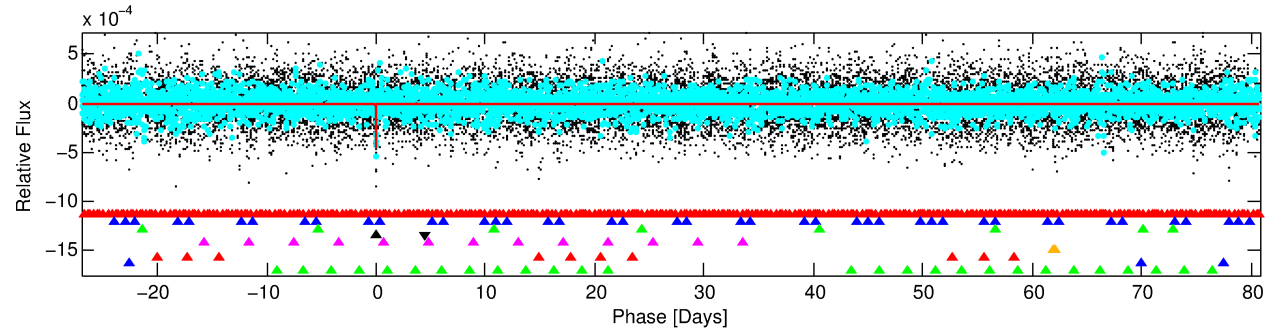
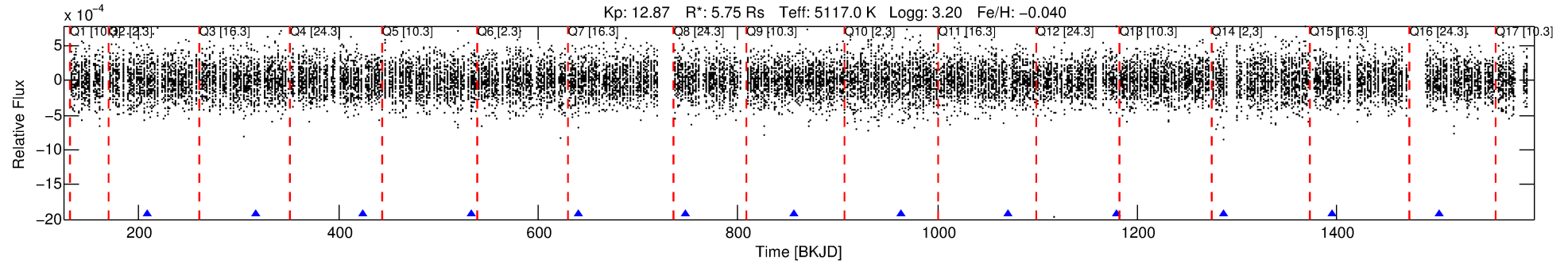
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002581452-04

No Significant Match Found

DV One-Page Summary

KIC: 2581452 Candidate: 4 of 9 Period: 107.763 d



DV Fit Results:

Period = 107.76281 [0.00143] d
Epoch = 209.2992 [0.0102] BKJD
Rp/R* = 0.0225 [0.0284]
a/R* = 187.81 [905.65]
b = 0.85 [1.67]
Seff = 66.91 [50.53]
Teq = 729 [138] K
Rp = 14.13 [19.28] Re
a = 0.5510 [0.2633] AU
Ag = 205.61 [542.59] [0.38 σ]
Teffp = 4270 [2706] K [1.31 σ]

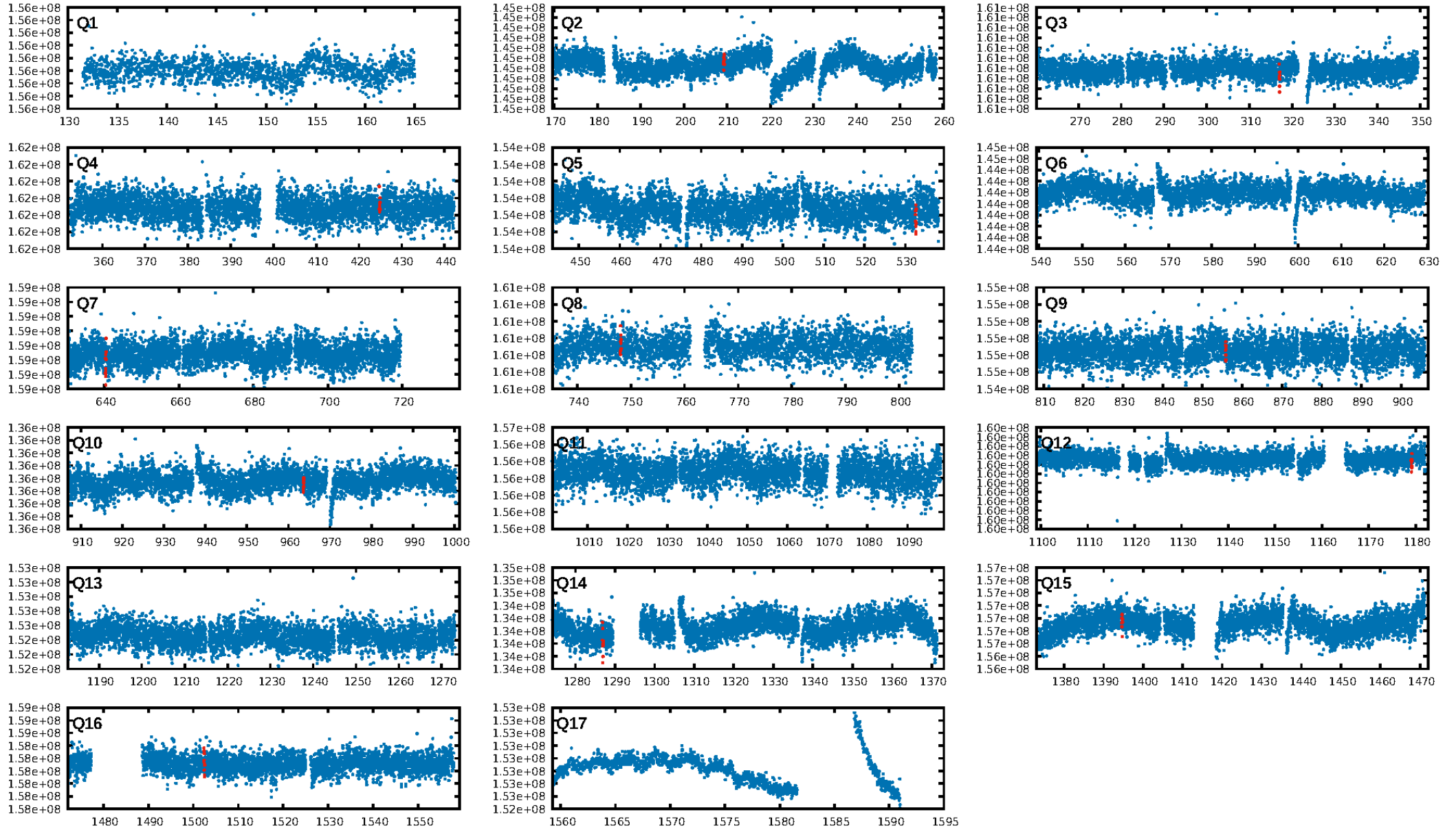
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [354.07 σ]
LongPeriod-sig: 100.0% [25.55 σ]
ModelChiSquare2-sig: 57.4%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 3.30e-11
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 10.93
Centroid-sig: N/A
Centroid-so: 0.760 arcsec [1.40 σ]
OotOffset-rm: 0.290 arcsec [0.36 σ]
KicOffset-rm: 0.723 arcsec [1.06 σ]
OotOffset-st: 2/3/3/1 [9]
KicOffset-st: 2/3/3/1 [9]
DiffImageQuality-fgm: 0.44 [4/9]
DiffImageOverlap-fno: 0.45 [5/11]

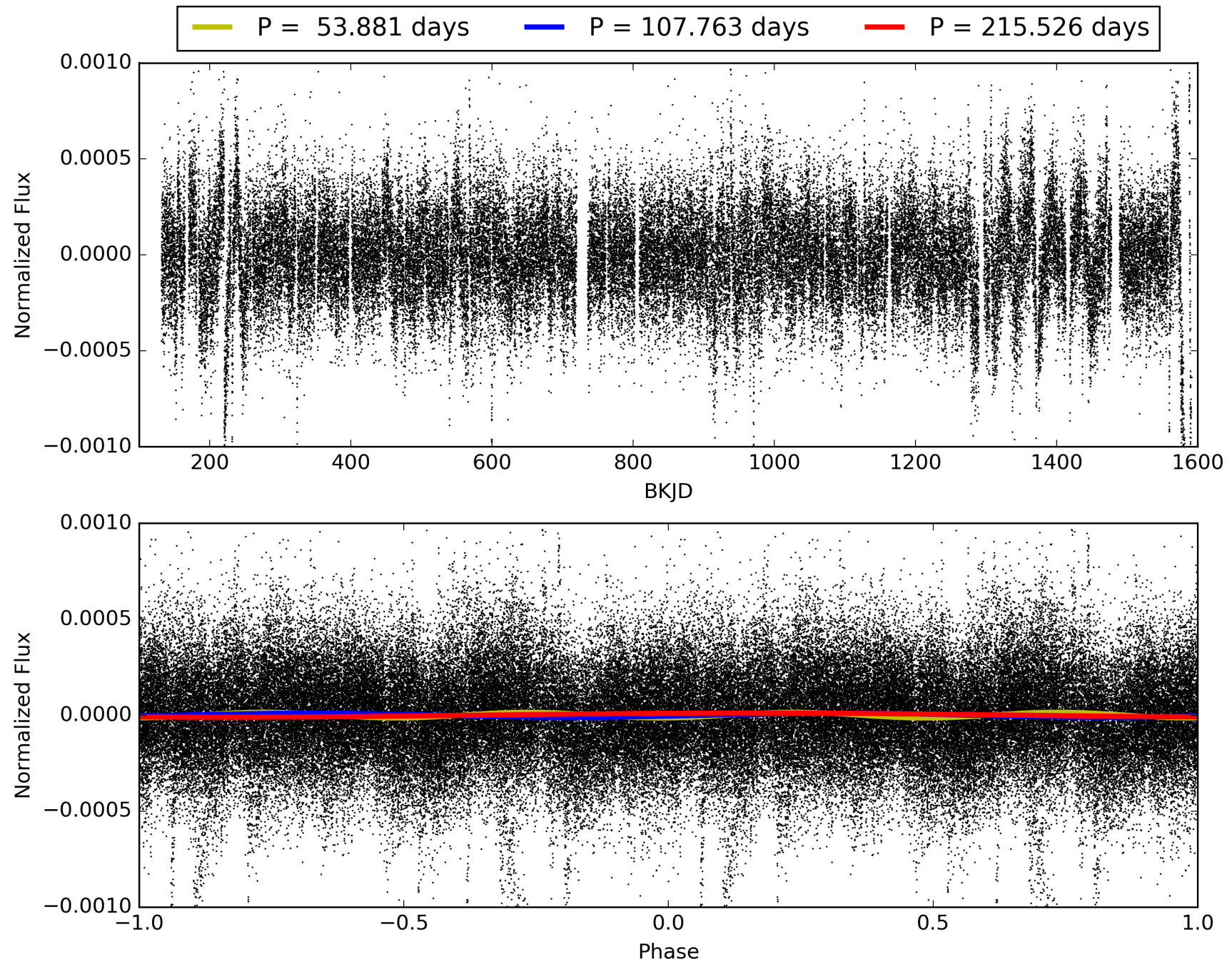
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:22:37 Z

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

TCE 002581452-04, PDC Light Curves

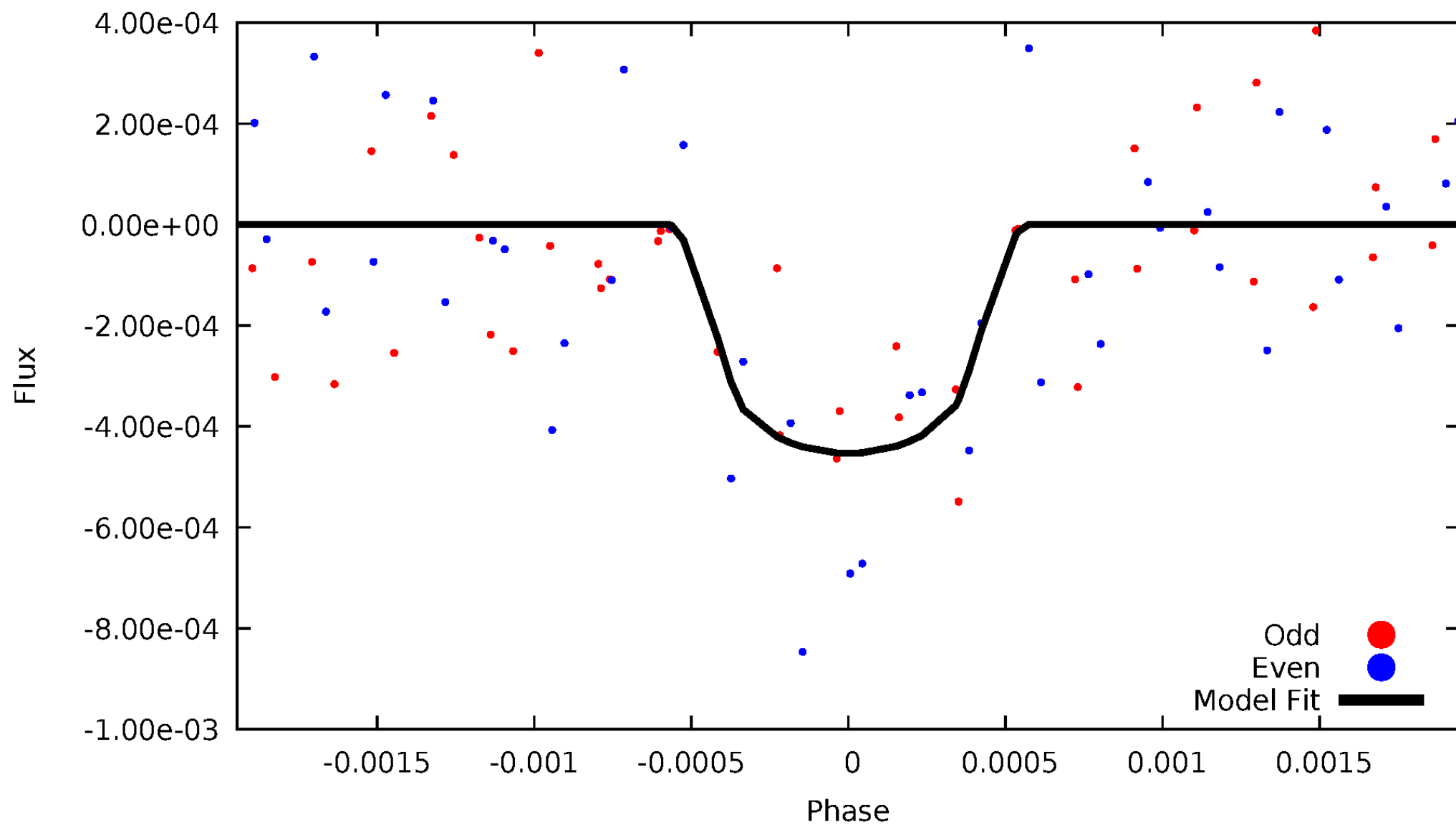


TCE 002581452-04



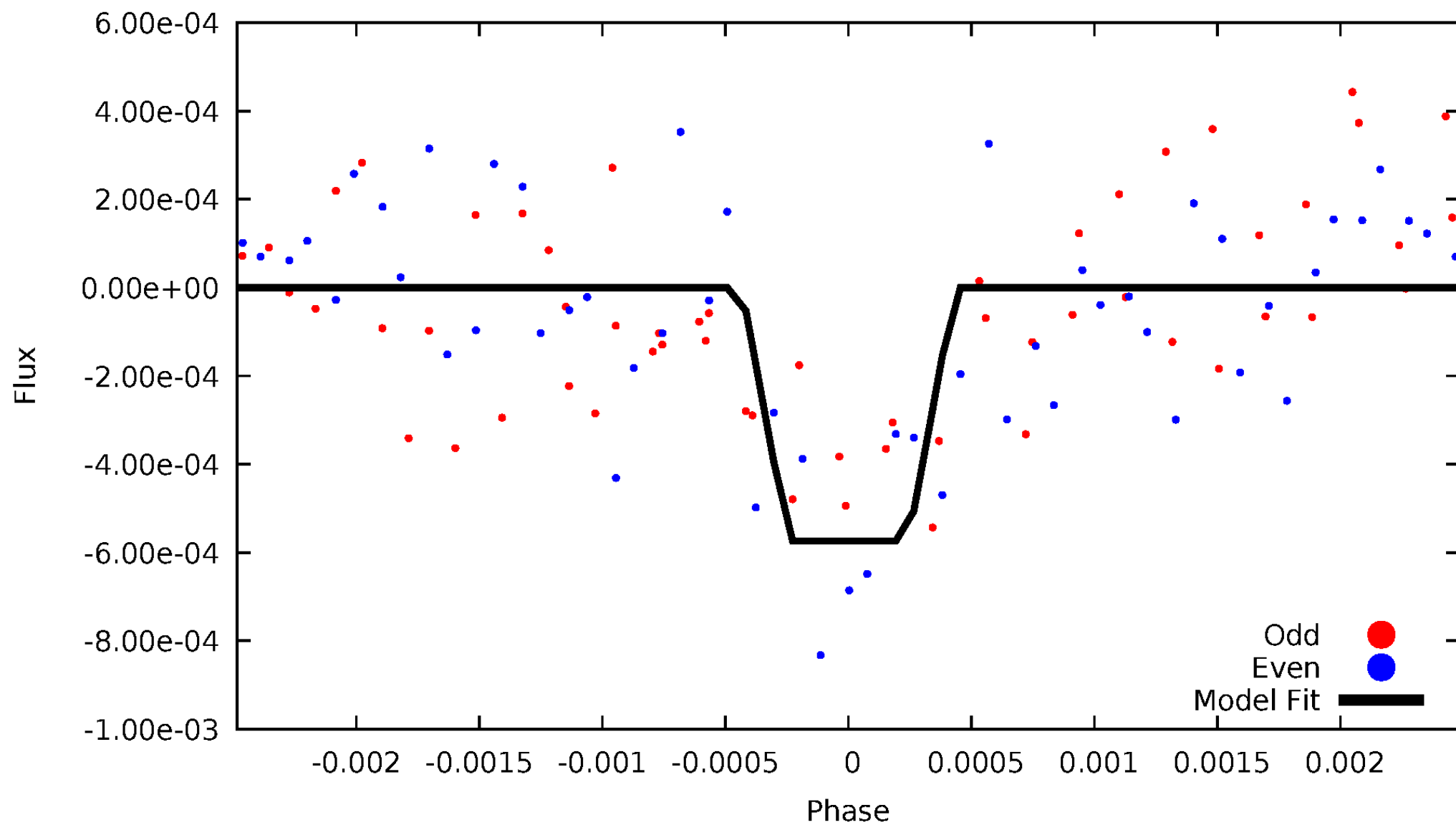
DV Odd/Even

TCE 002581452-04



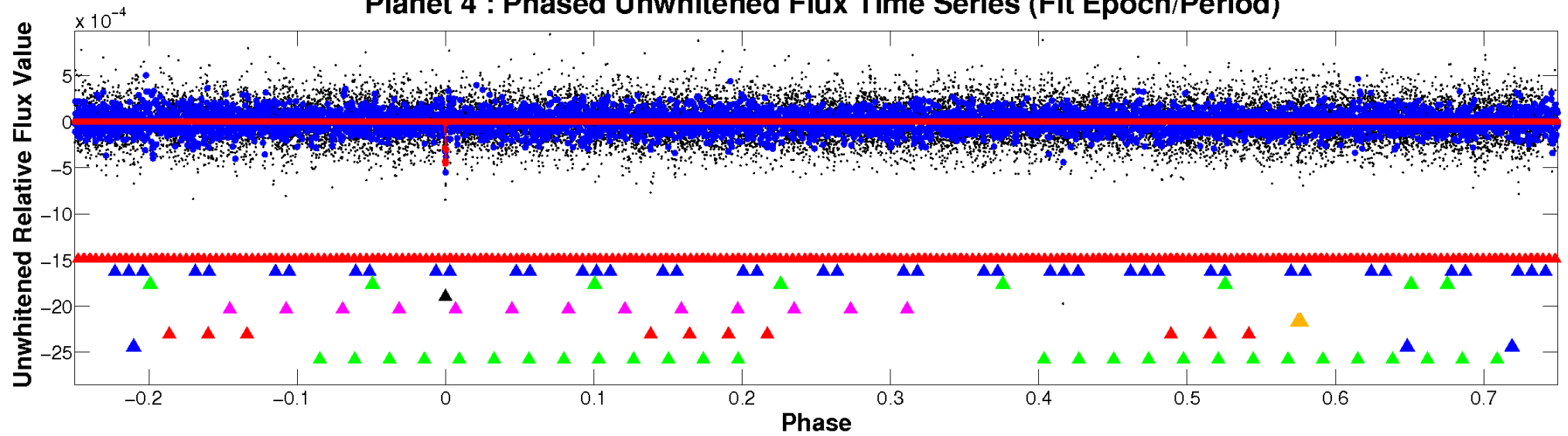
ALT Odd/Even

TCE 002581452-04

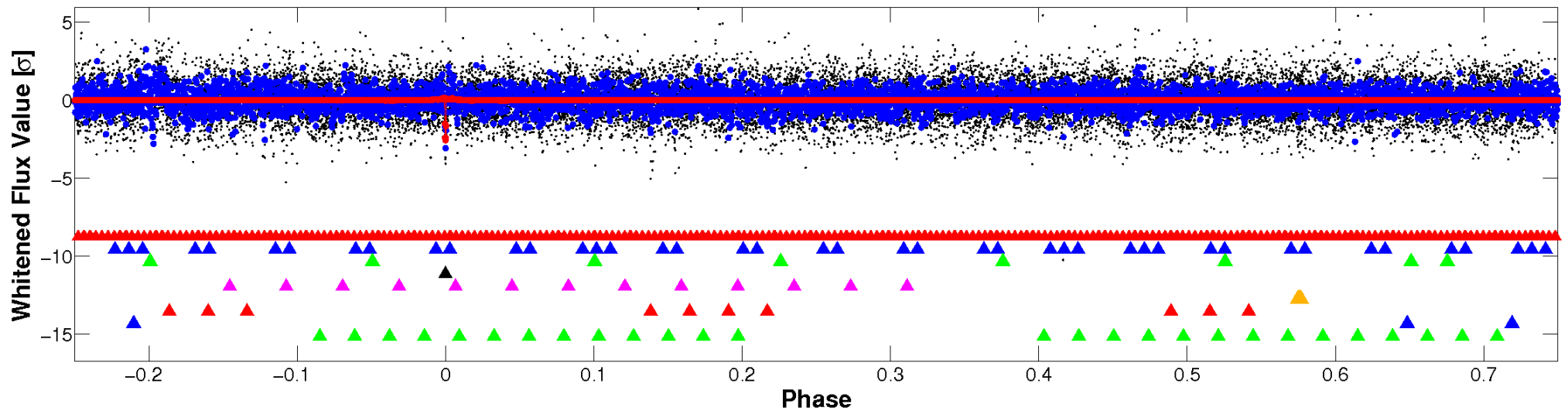


Non-Whitened Vs. Whitened Light Curve

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

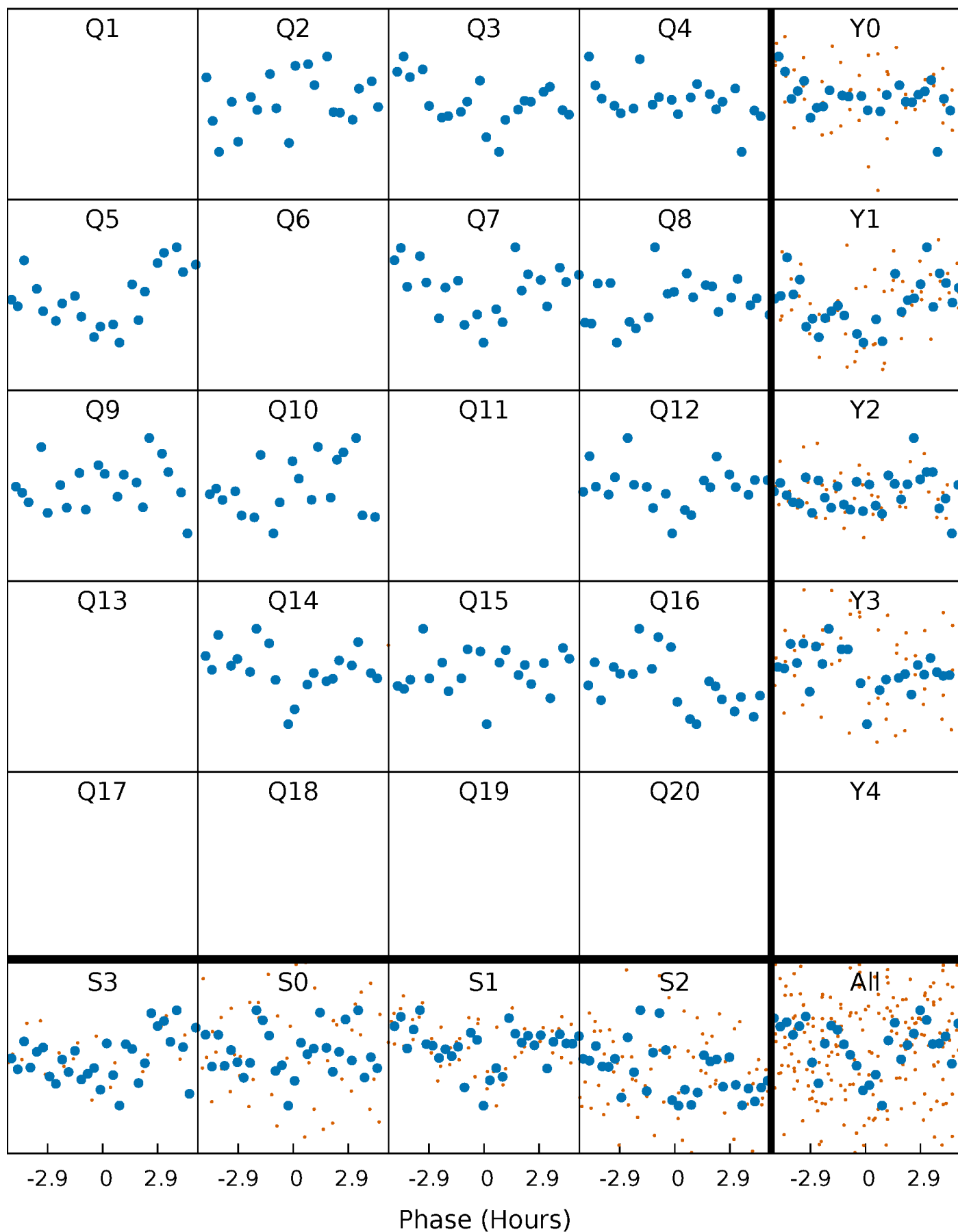


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



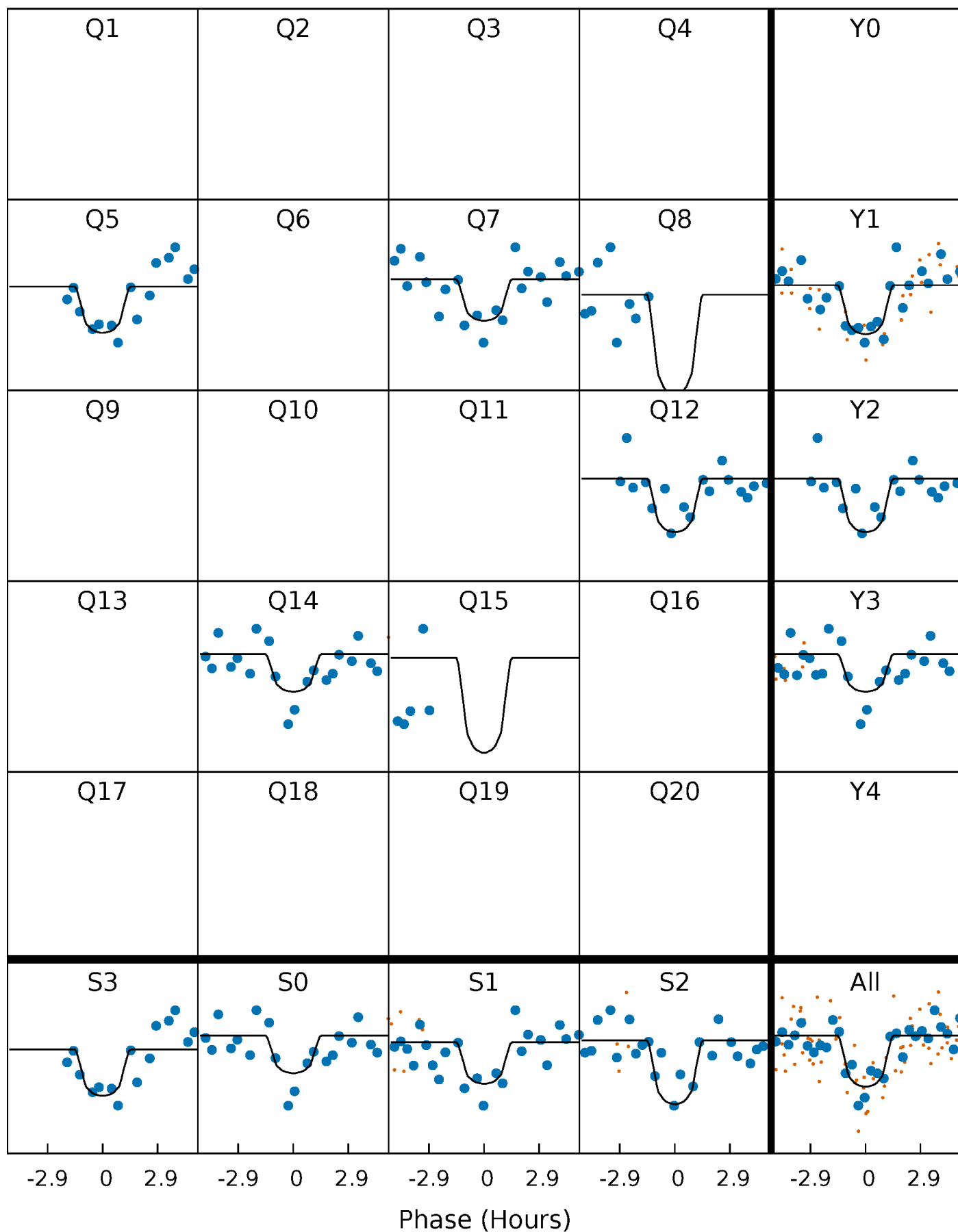
PDC Quarter-Phased Transit Curves

TCE 002581452-04 P=107.762815 Days $T_0=209.299153$ (BKJD)



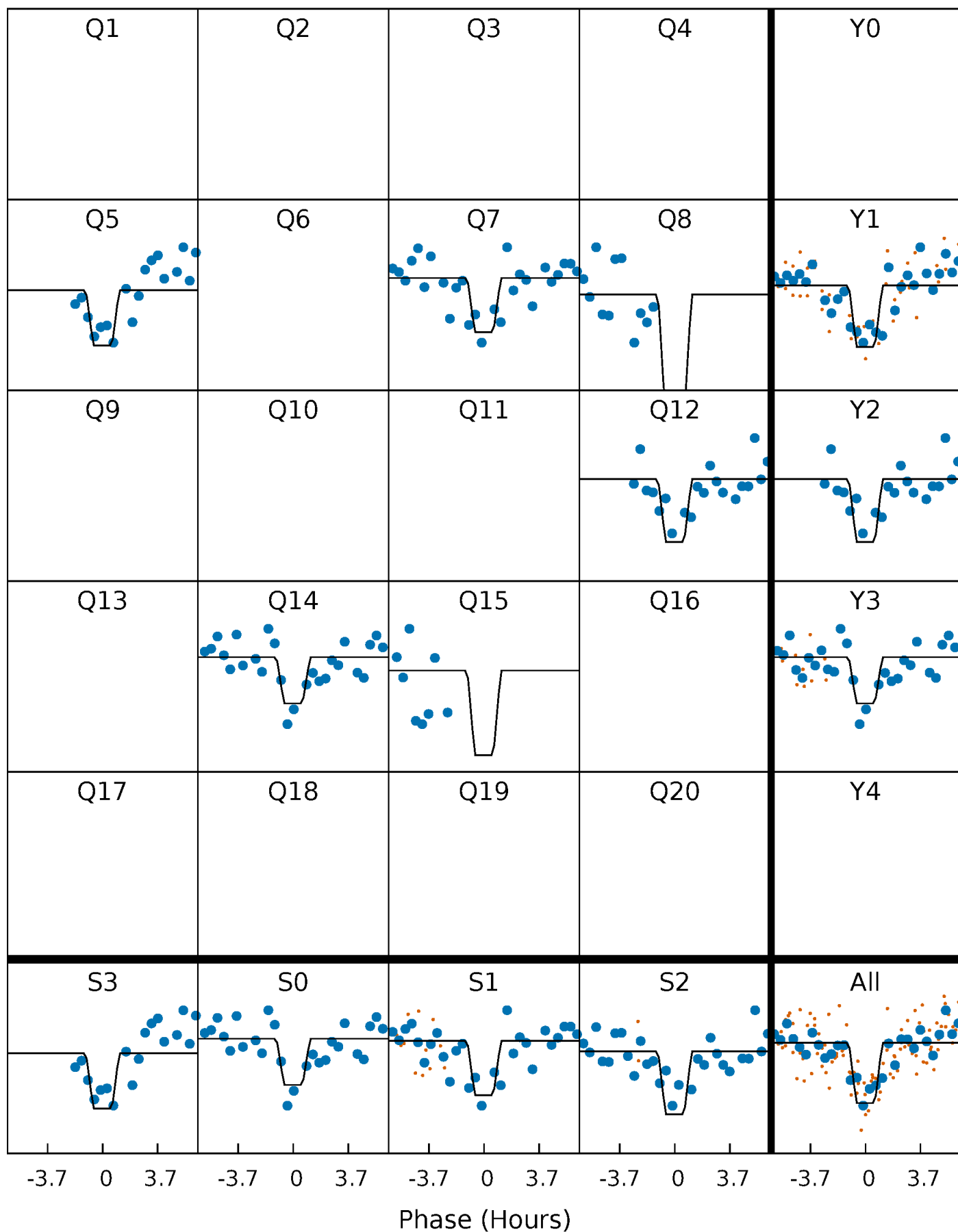
DV Quarter-Phased Transit Curves

TCE 002581452-04 P=107.762815 Days $T_0=209.299153$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

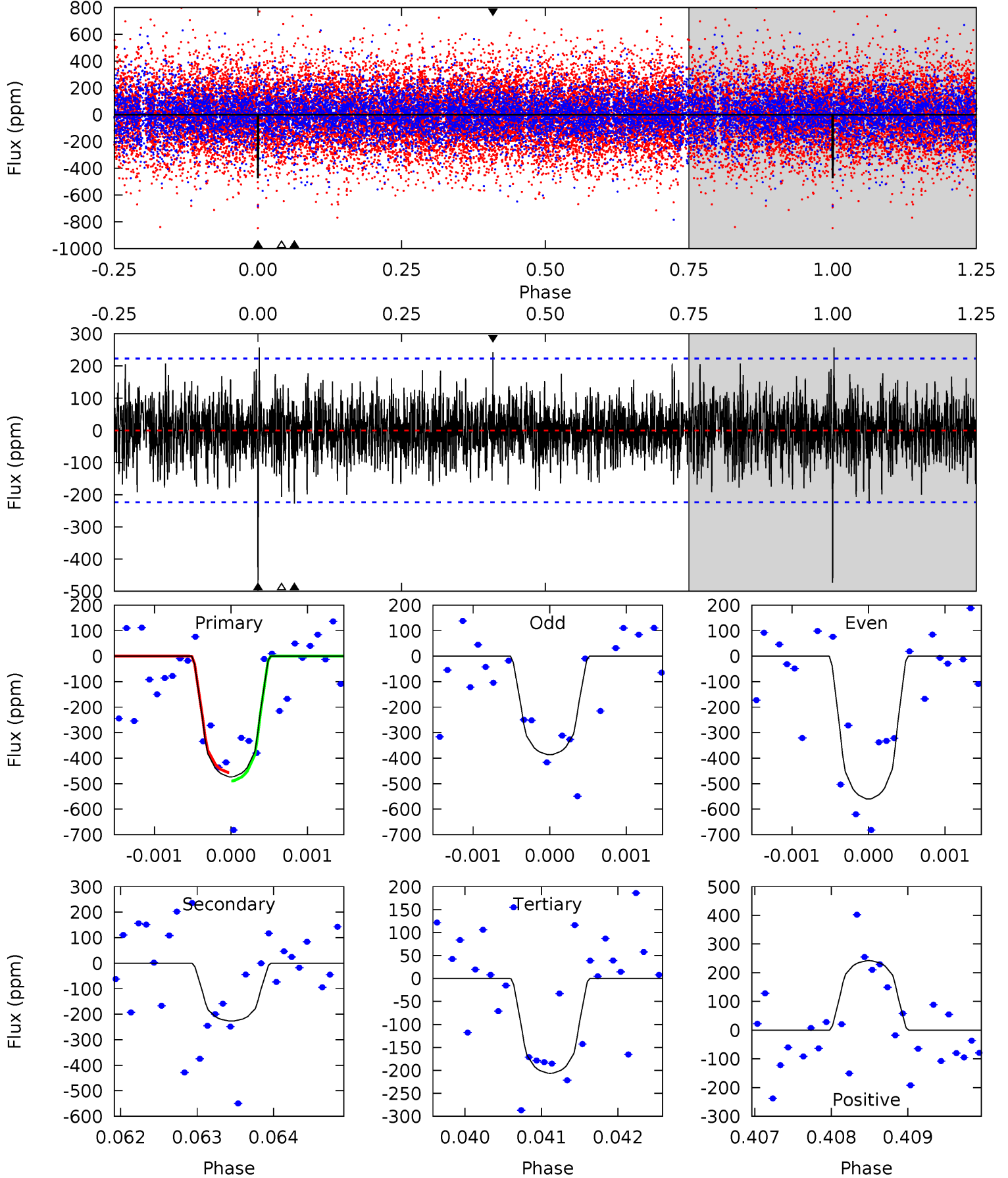
TCE 002581452-04 P=107.762187 Days $T_0=209.301959$ (BKJD)



DV Model-Shift Uniqueness Test

002581452-04, P = 107.762815 Days, E = 101.536338 Days

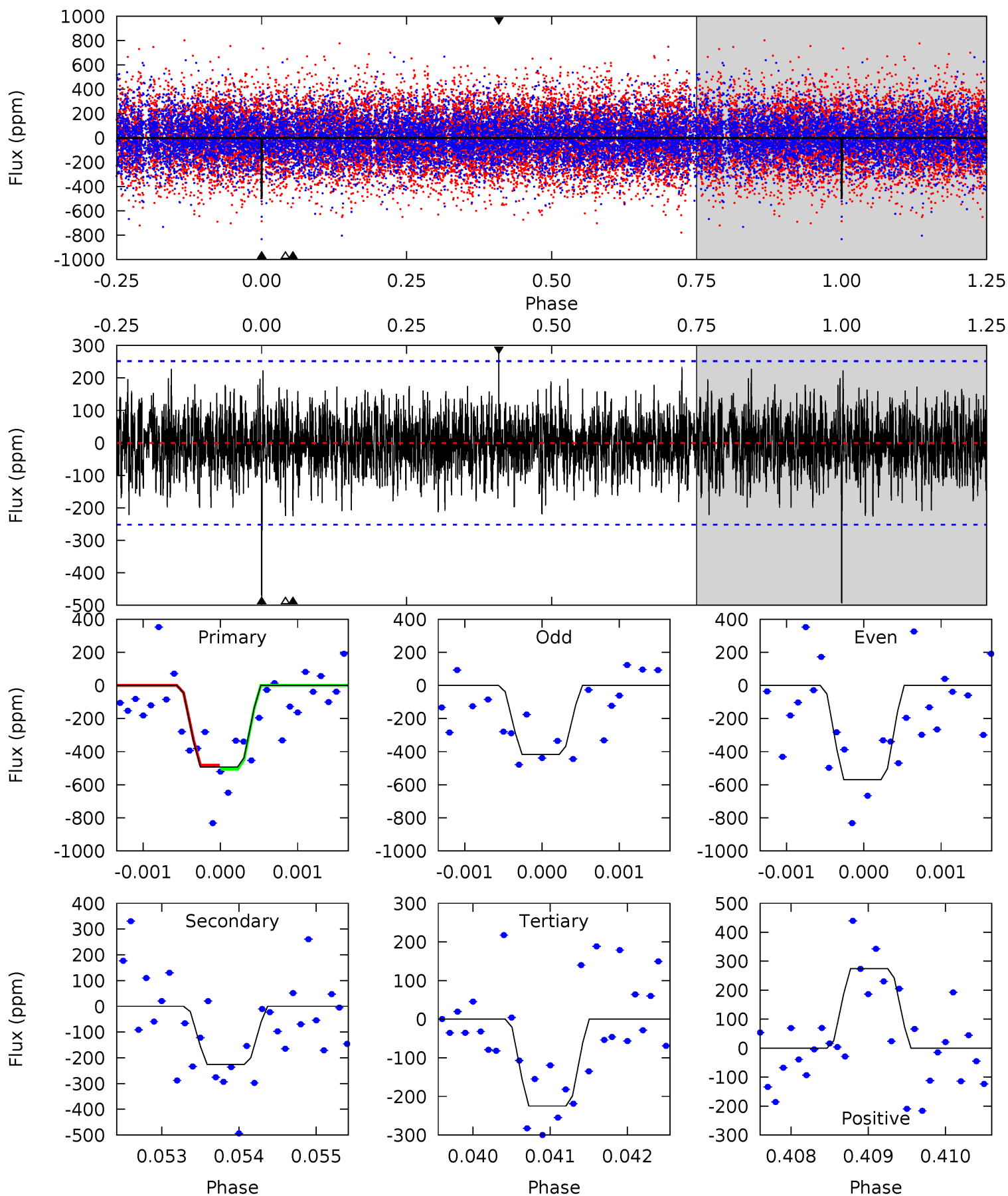
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	5.52	5.03	5.89	5.43	3.26	1.52	6.50	5.63	0.49	-0.37	2.16	0.94	0.35	0.40



Alt Model-Shift Uniqueness Test

002581452-04, P = 107.762187 Days, E = 101.539772 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	4.91	4.89	5.97	5.48	3.33	1.46	5.84	4.76	0.02	-1.06	1.66	0.99	0.36	0.28



Stellar Parameters For KIC 002581452

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5117^{+115}_{-166}	$3.202^{+0.429}_{-0.231}$	$-0.040^{+0.250}_{-0.300}$	$5.751^{+1.608}_{-2.987}$	$1.922^{+0.278}_{-0.903}$	$0.014^{+0.068}_{-0.008}$
	+2%/-3%	+13%/-7%	+625%/-750%	+28%/-52%	+14%/-47%	+476%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002581452-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-227 ± 41	$17.26^{+16.63}_{-10.78}$	1016^{+94}_{-118}	3917^{+1875}_{-752}	117^{+686}_{-86}
Alt.	-226 ± 46	$17.84^{+17.64}_{-11.76}$	1015^{+92}_{-122}	3833^{+2148}_{-659}	114^{+810}_{-86}

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

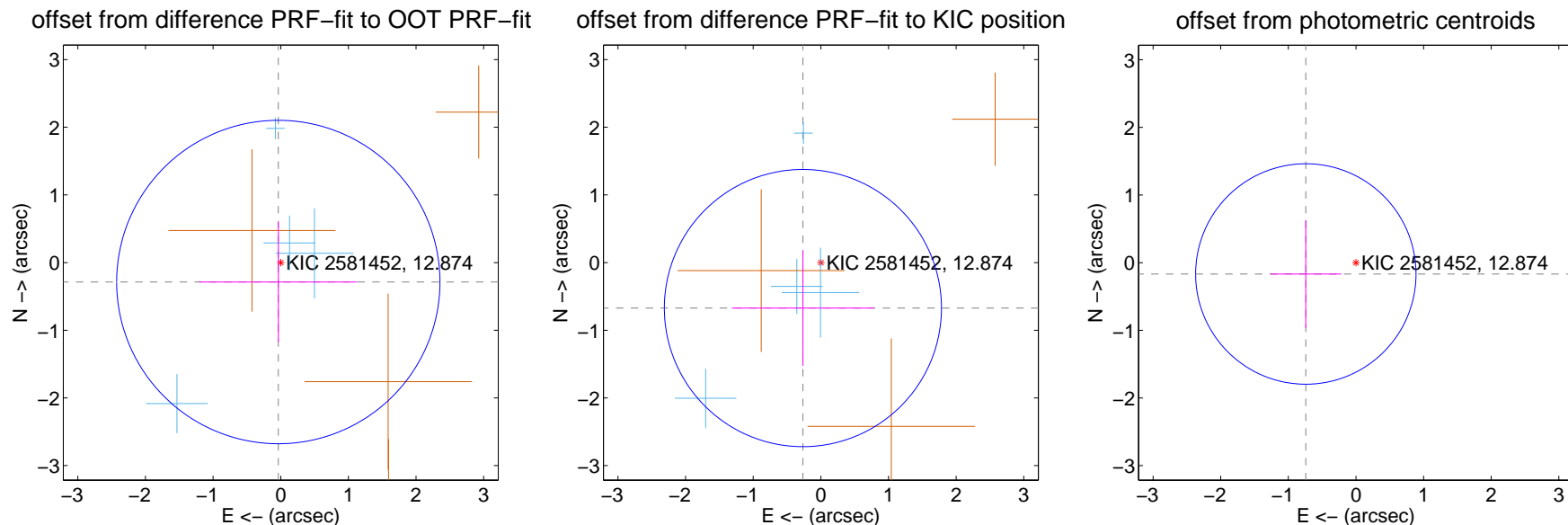
DV Centroid Data

Supplemental centroid analysis for 002581452-04. Kepler magnitude: 12.87. Transit SNR 9.56

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.86 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.290 ± 0.797	0.36	0.036 ± 1.166	-0.287 ± 0.885
PRF-fit source offset from KIC position	0.723 ± 0.683	1.06	0.265 ± 1.051	-0.672 ± 0.855
photometric centroid source offset	0.76 ± 0.54	1.40	0.74 ± 0.53	-0.17 ± 0.80



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.

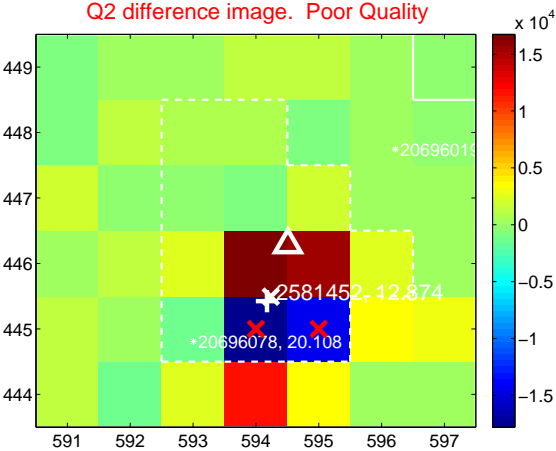
Q1 no difference image



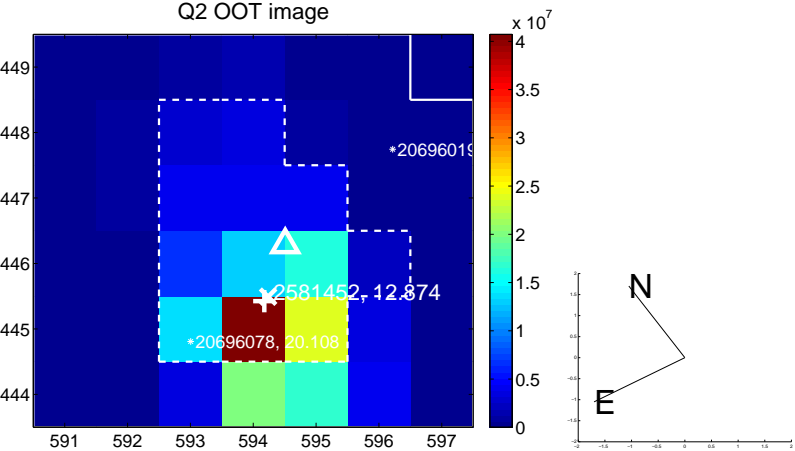
Q1 no OOT image



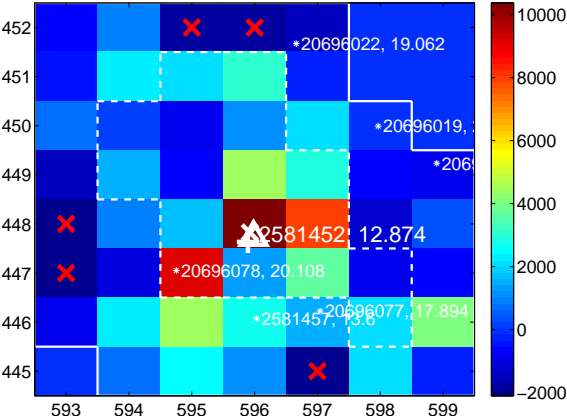
Q2 difference image. Poor Quality



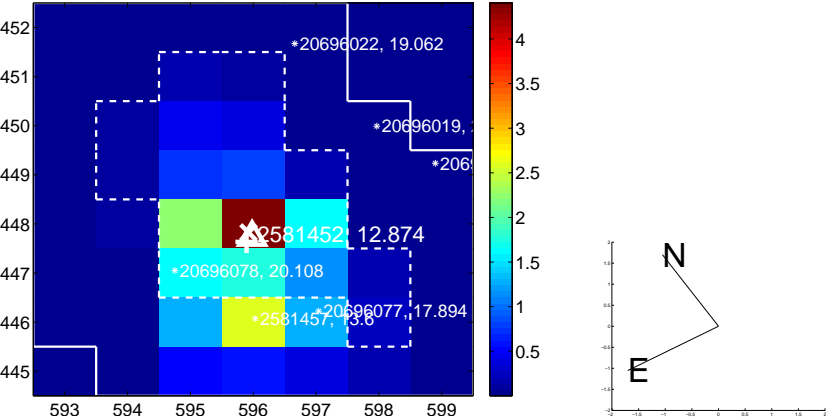
Q2 OOT image



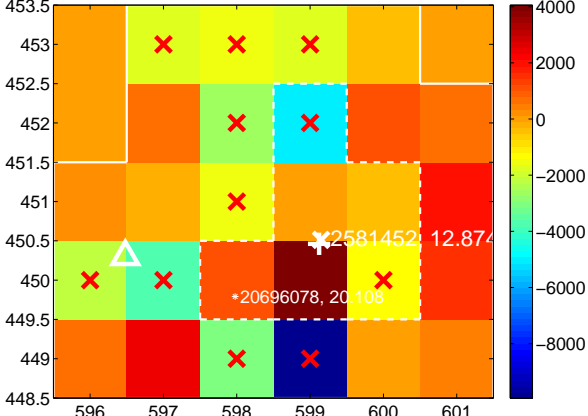
Q3 difference image



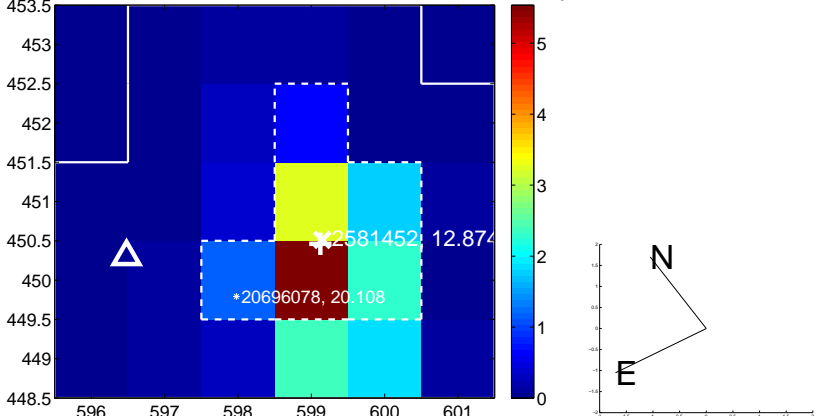
Q3 OOT image



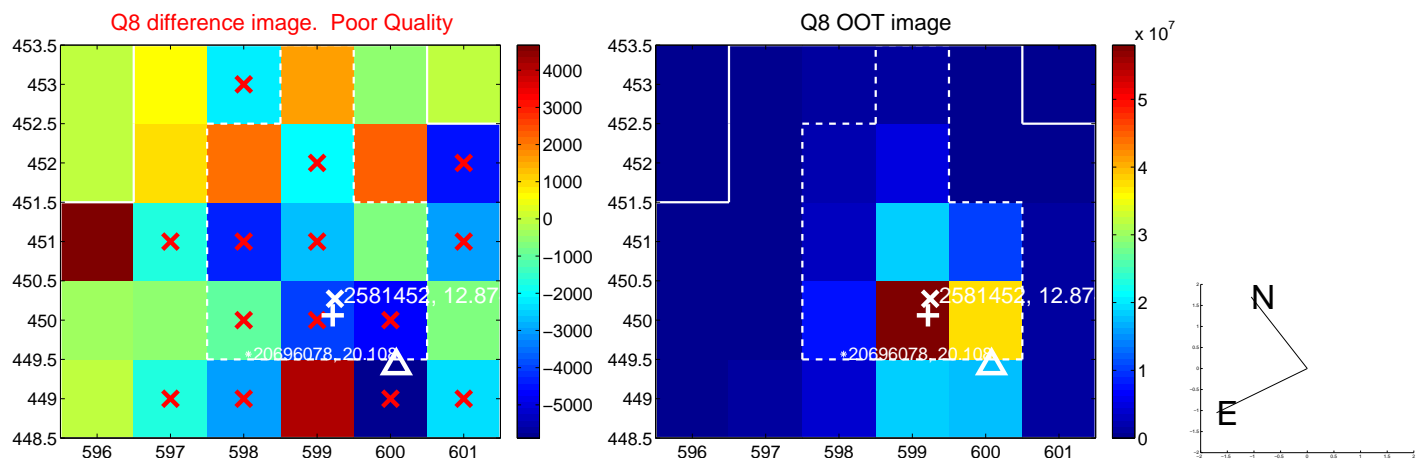
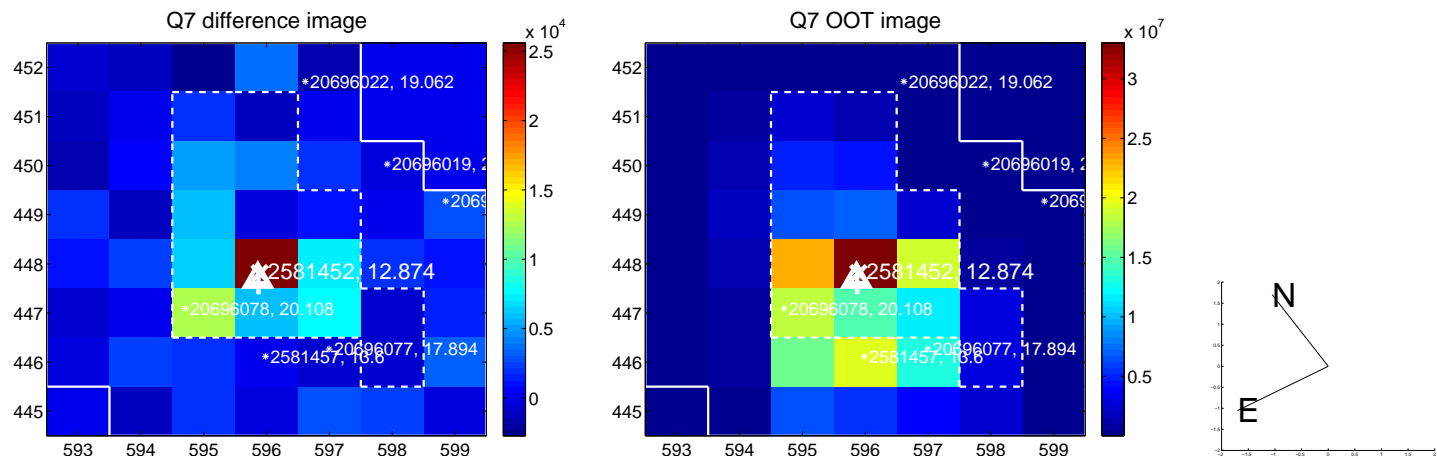
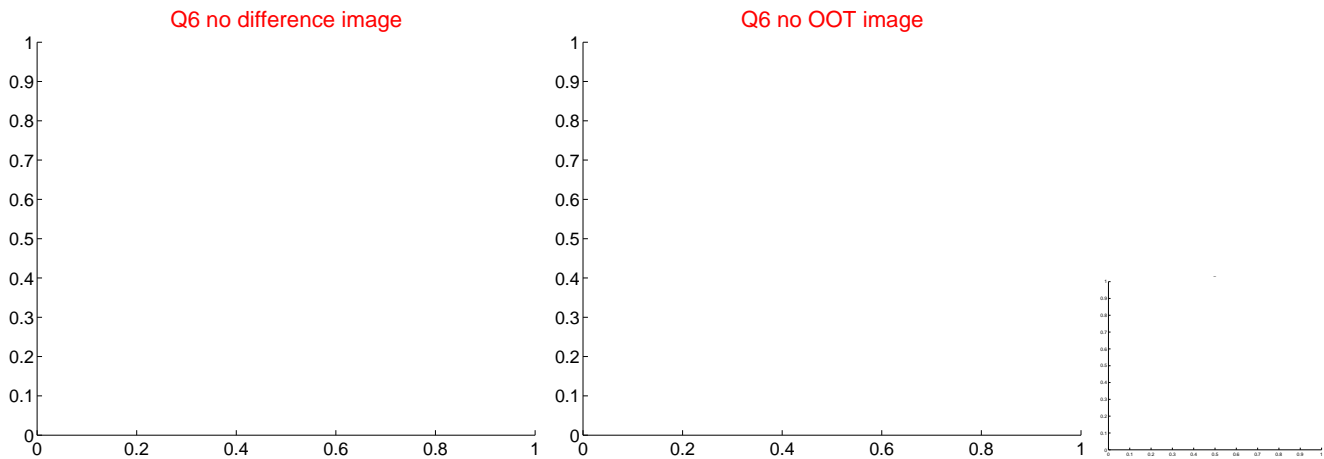
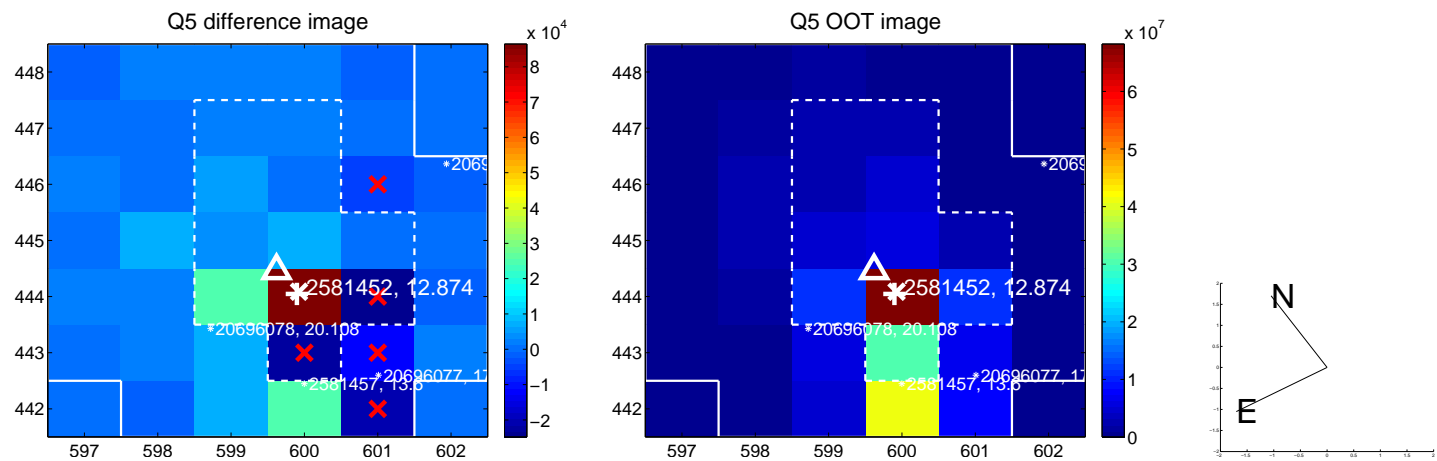
Q4 difference image. Poor Quality



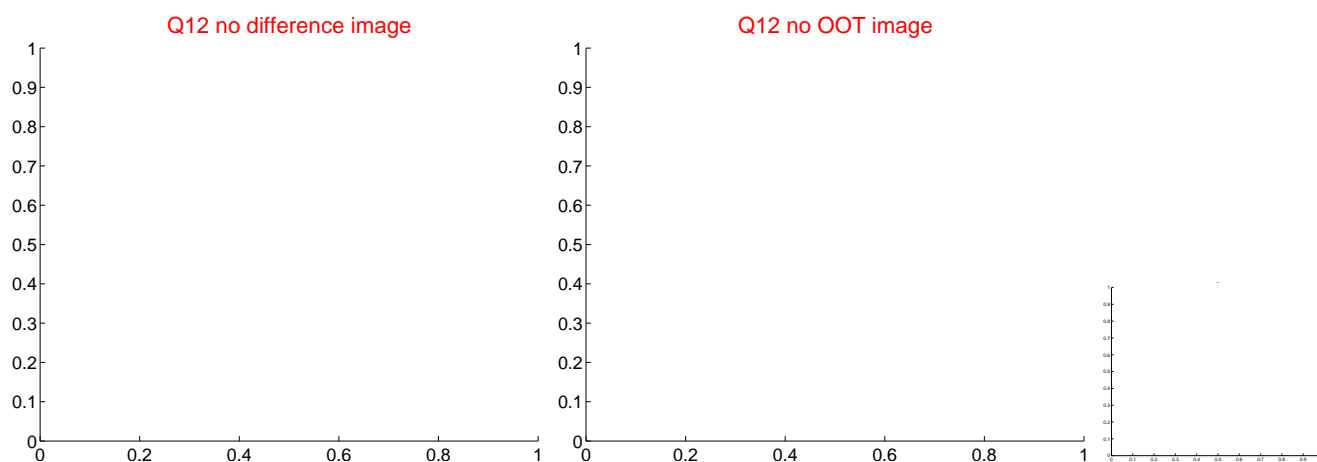
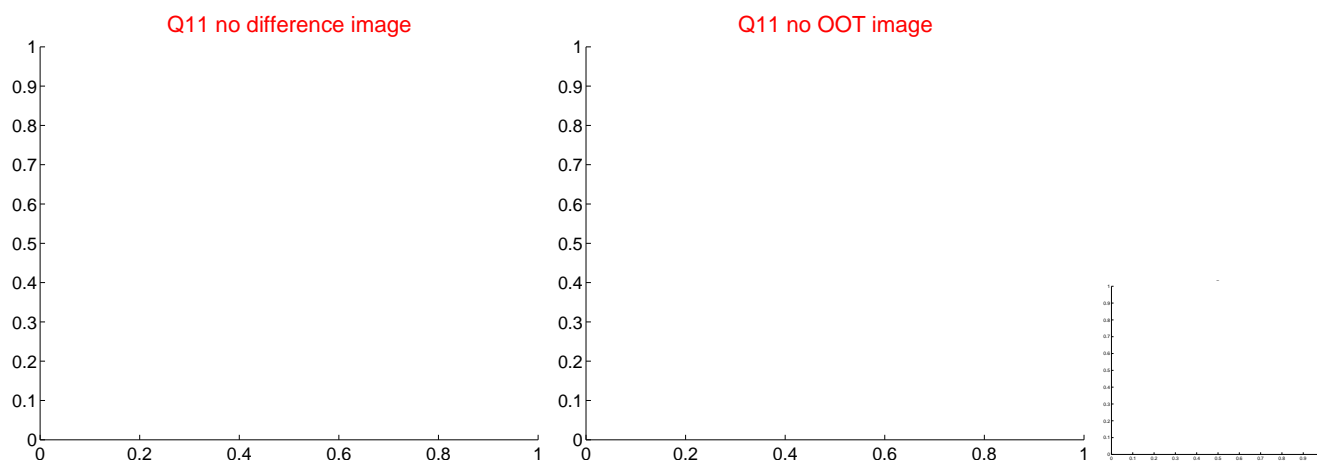
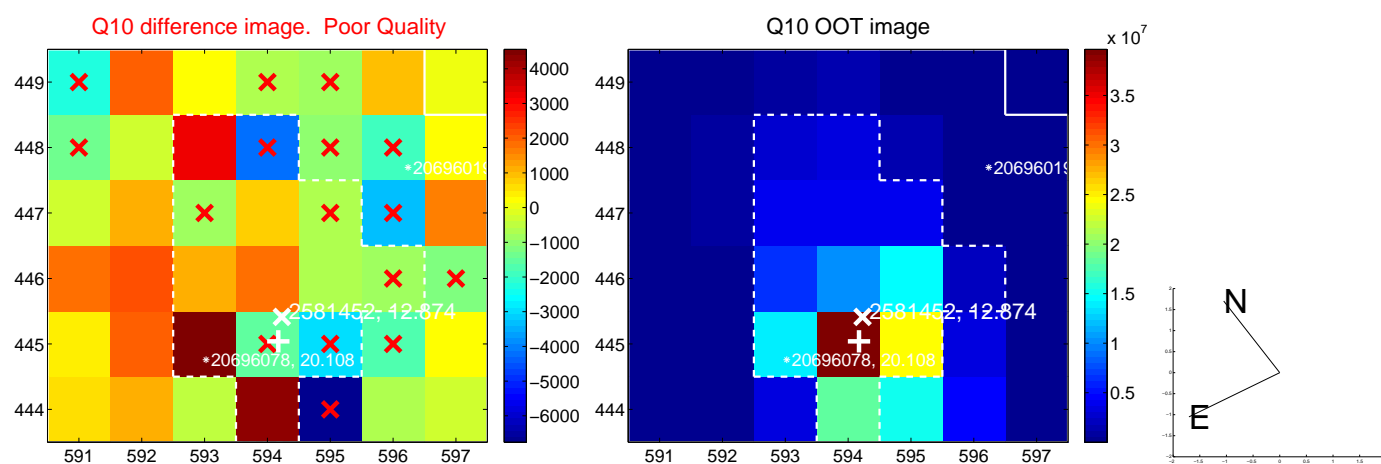
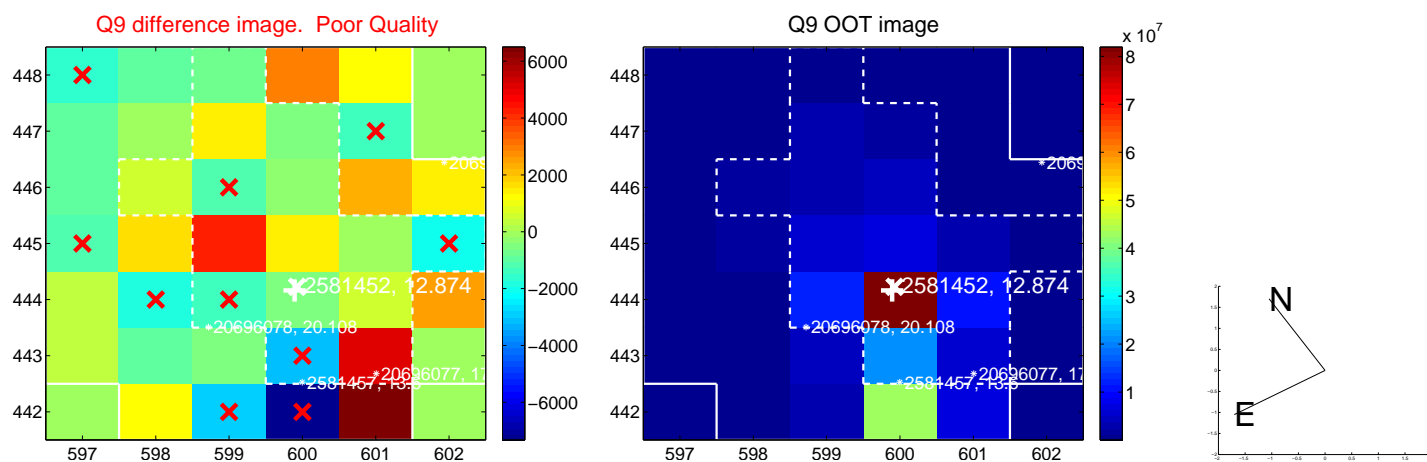
Q4 OOT image



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.

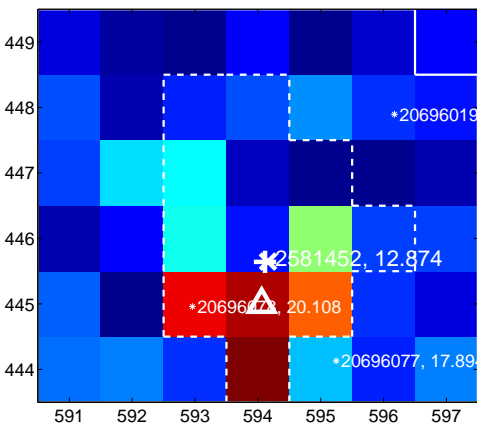
Q13 no difference image



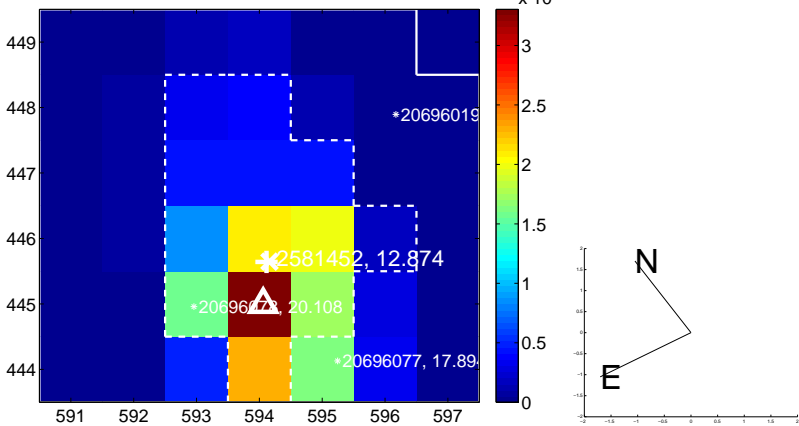
Q13 no OOT image



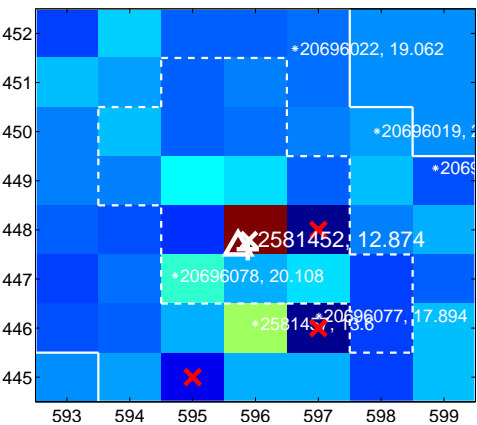
Q14 difference image



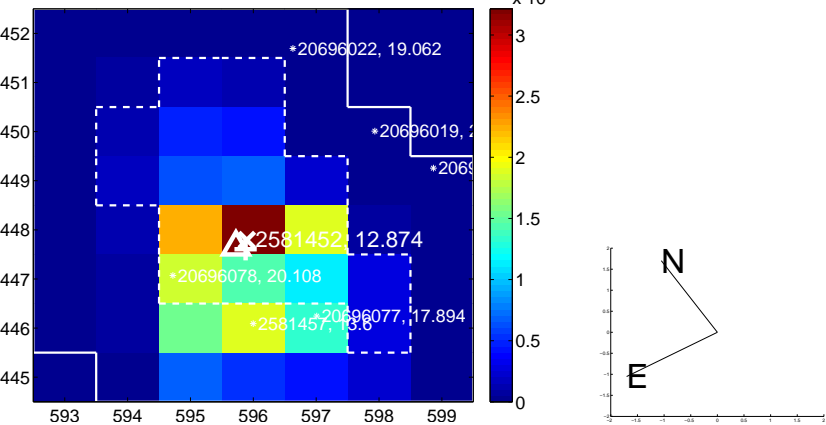
Q14 OOT image



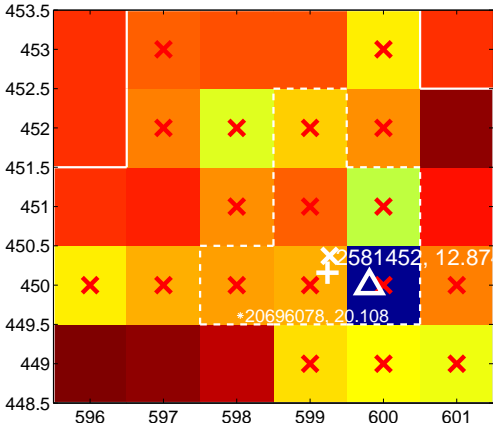
Q15 difference image. Poor Quality



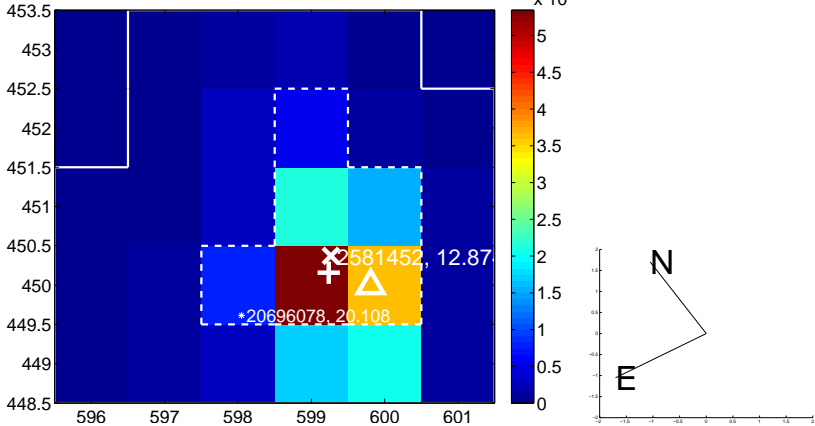
Q15 OOT image



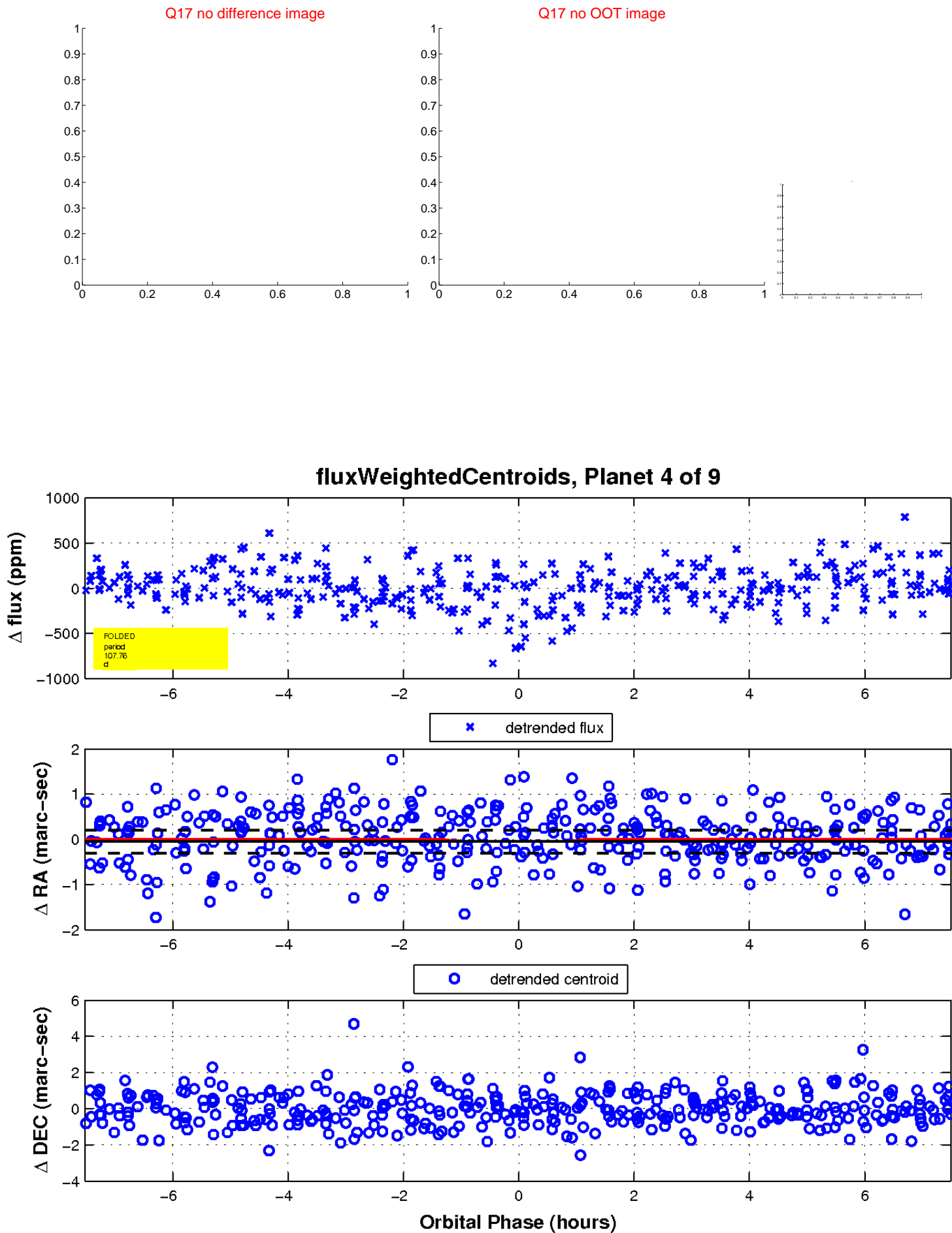
Q16 difference image. Poor Quality



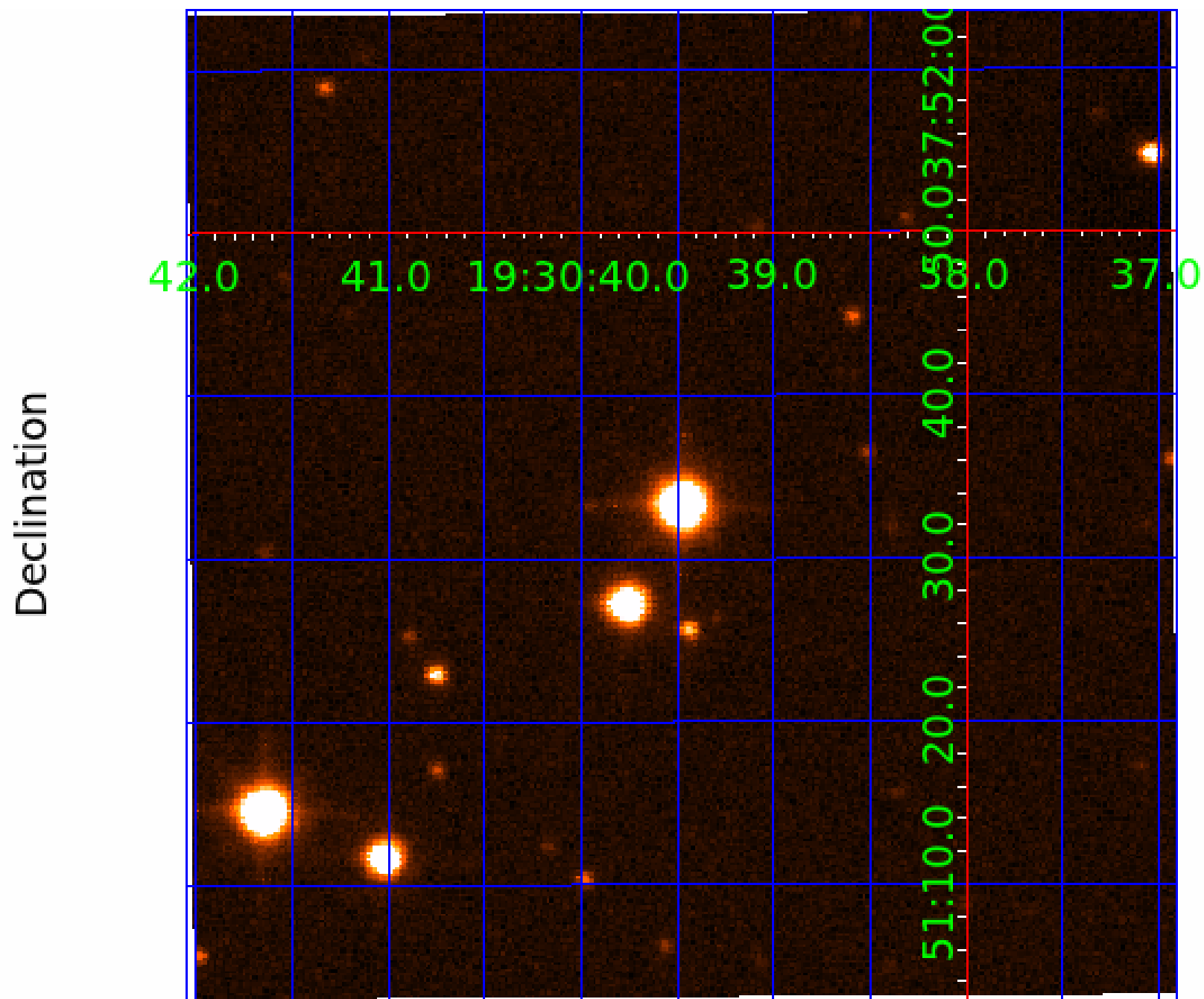
Q16 OOT image



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



UKIRT Image



KIC 002581452

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})
002581452-01	OBS	No	2.617491	133.800090	26.3	13.331	8.9	8.0	5.75	5117	3.04	9511.99
002581452-02	OBS	No	33.977508	153.321823	95.4	18.301	18.3	5.2	5.75	5117	6.58	311.79
002581452-03	OBS	No	169.717627	279.461846	190.7	17.272	9.8	6.5	5.75	5117	8.54	36.52
002581452-04	OBS	No	107.762815	209.299153	453.3	2.515	9.1	9.6	5.75	5117	14.13	66.91
002581452-05	OBS	No	111.863738	193.627102	352.0	2.918	8.7	8.1	5.75	5117	13.21	63.66
002581452-06	OBS	No	215.566106	271.224013	414.9	3.600	8.2	8.4	5.75	5117	12.38	26.55
002581452-07	OBS	No	142.742350	232.683893	469.7	2.796	8.5	8.1	5.75	5117	12.60	45.99
002581452-08	OBS	No	638.962510	294.409498	388.3	3.756	7.8	7.4	5.75	5117	13.57	6.24
002581452-09	OBS	No	52.615085	177.948320	286.7	2.766	7.6	7.4	5.75	5117	11.24	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002581452-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
002581452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002581452-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002581452-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_UNCERTAIN
002581452-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
002581452-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002581452-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

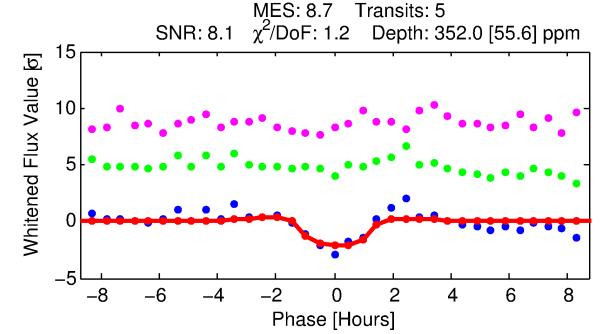
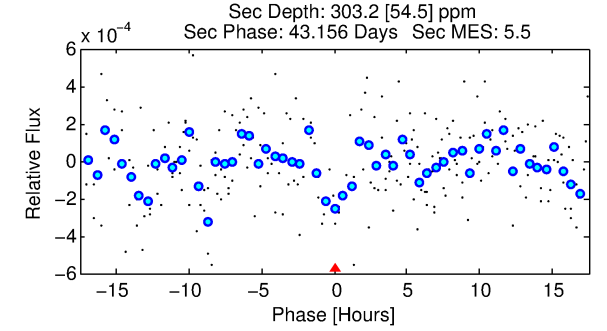
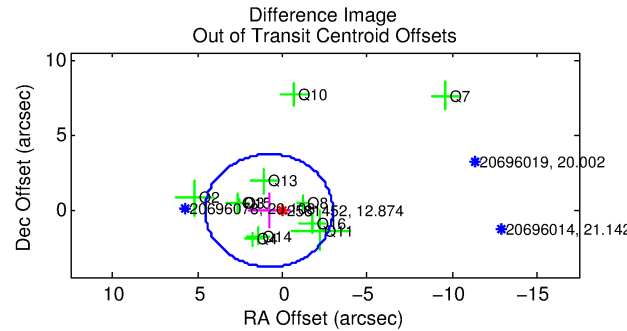
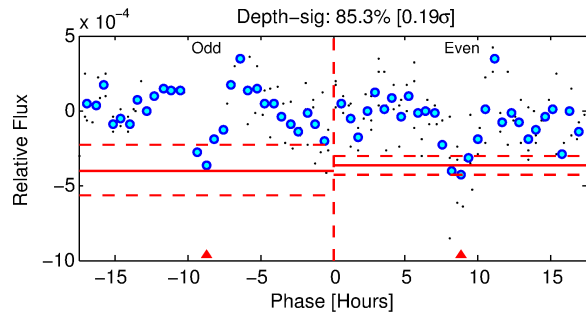
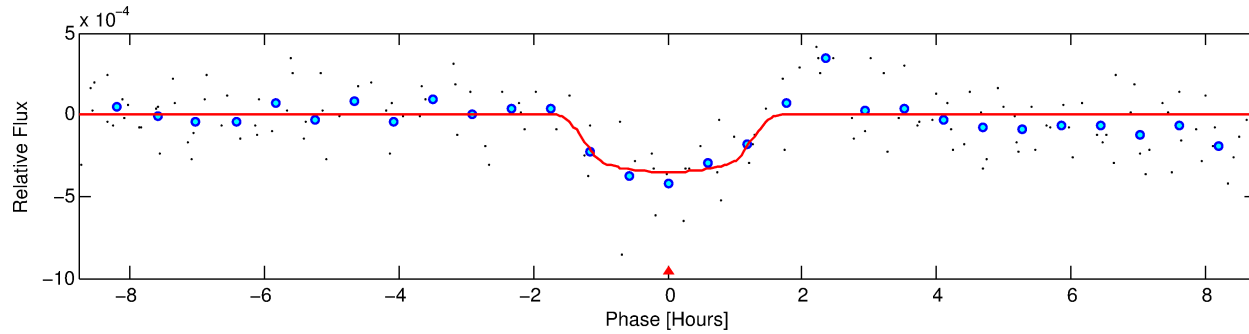
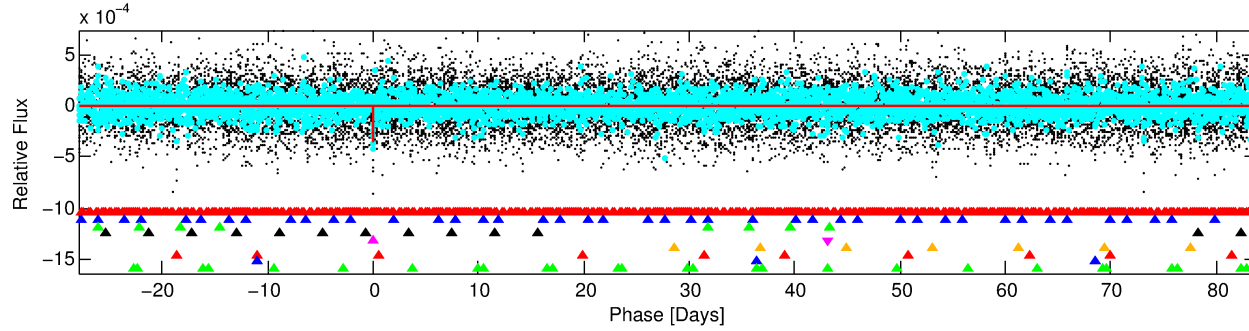
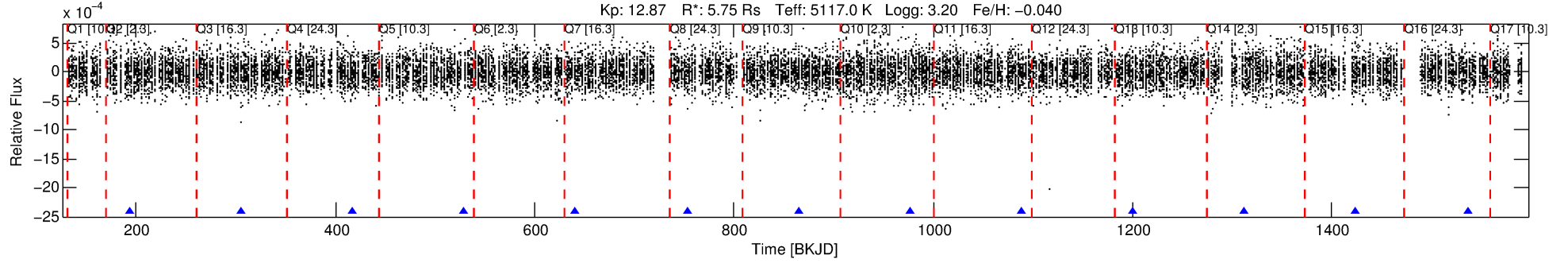
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002581452-05

No Significant Match Found

DV One-Page Summary

KIC: 2581452 Candidate: 5 of 9 Period: 111.864 d



DV Fit Results:

Period = 111.86374 [0.00150] d
Epoch = 193.6271 [0.0100] BKJD
Rp/R* = 0.0210 [0.0237]
a/R* = 136.30 [635.26]
b = 0.91 [0.92]
Seff = 63.66 [48.08]
Teq = 720 [136] K
Rp = 13.21 [16.35] Re
a = 0.5649 [0.2699] AU
Ag = 305.10 [724.33] [0.42σ]
Teffp = 4654 [2628] K [1.50σ]

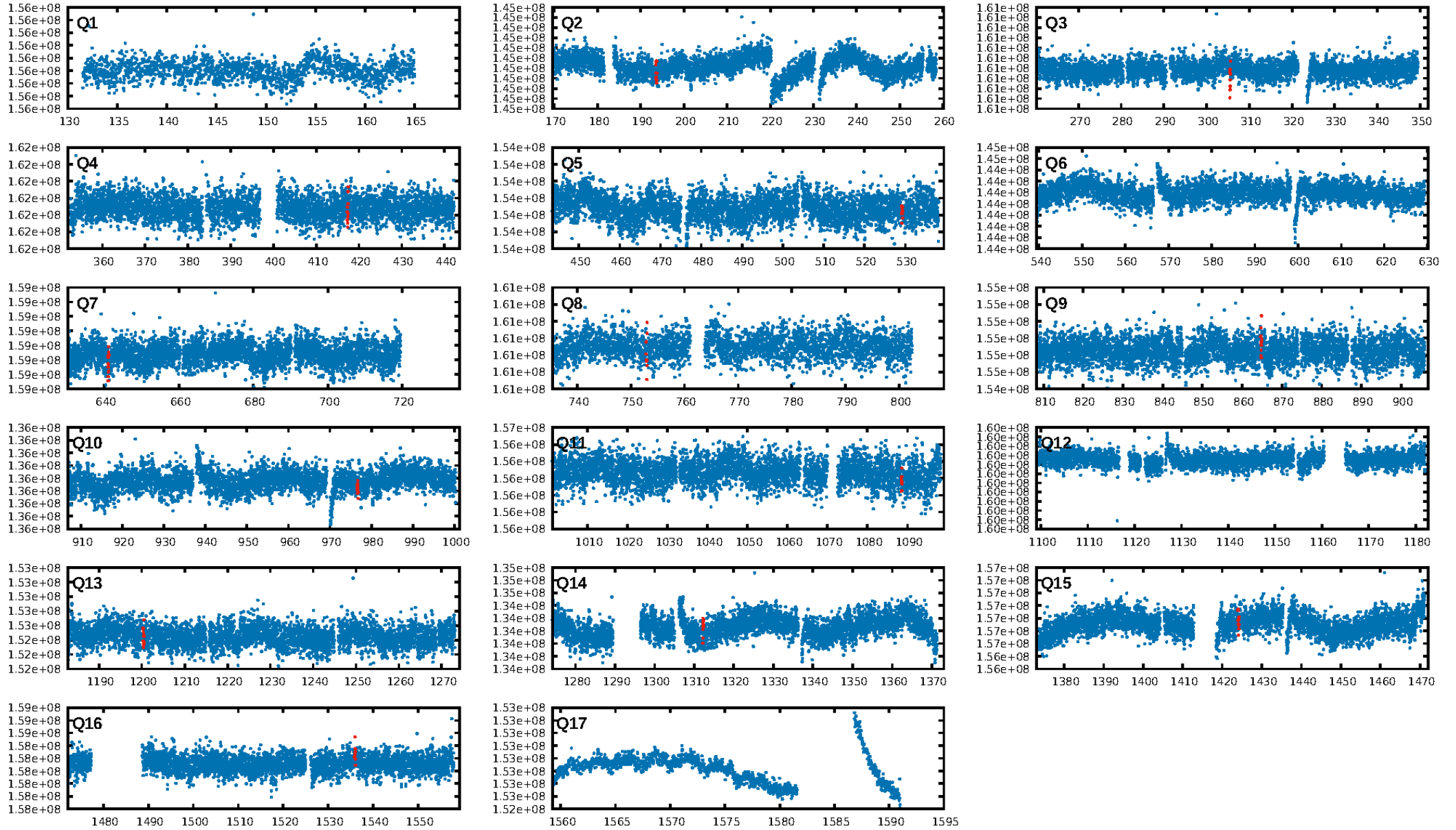
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [25.55σ]
LongPeriod-sig: 100.0% [183.36σ]
ModelChiSquare2-sig: 13.0%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: 1.59e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.5274
Centroid-sig: N/A
Centroid-so: 0.396 arcsec [0.65σ]
OotOffset-rm: 0.791 arcsec [0.63σ]
KicOffset-rm: 1.267 arcsec [1.01σ]
OotOffset-st: 3/4/3/1 [11]
KicOffset-st: 3/4/3/1 [11]
DiffImageQuality-fgm: 0.27 [3/11]
DiffImageOverlap-fno: 0.62 [8/13]

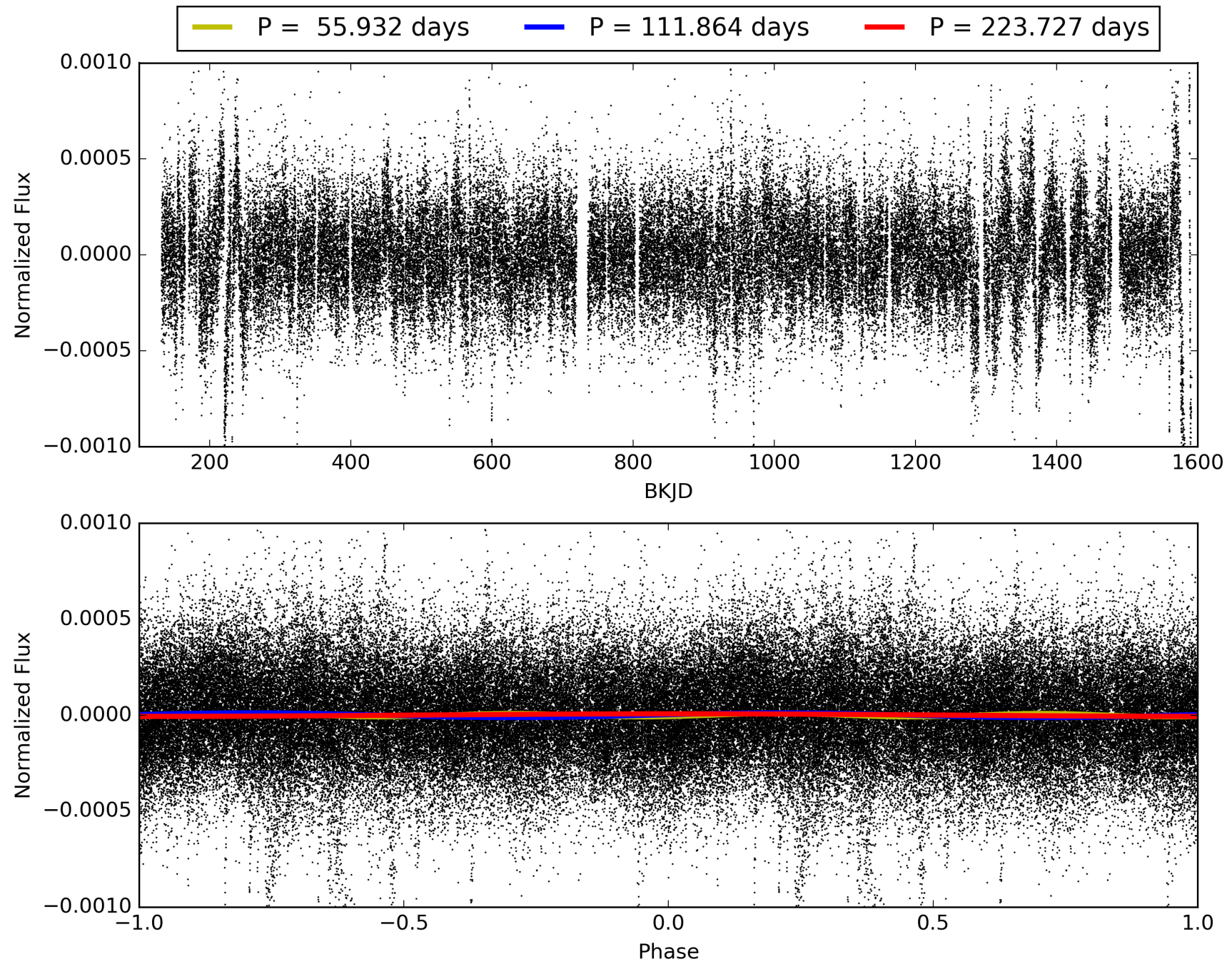
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:22:42 Z

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

TCE 002581452-05, PDC Light Curves

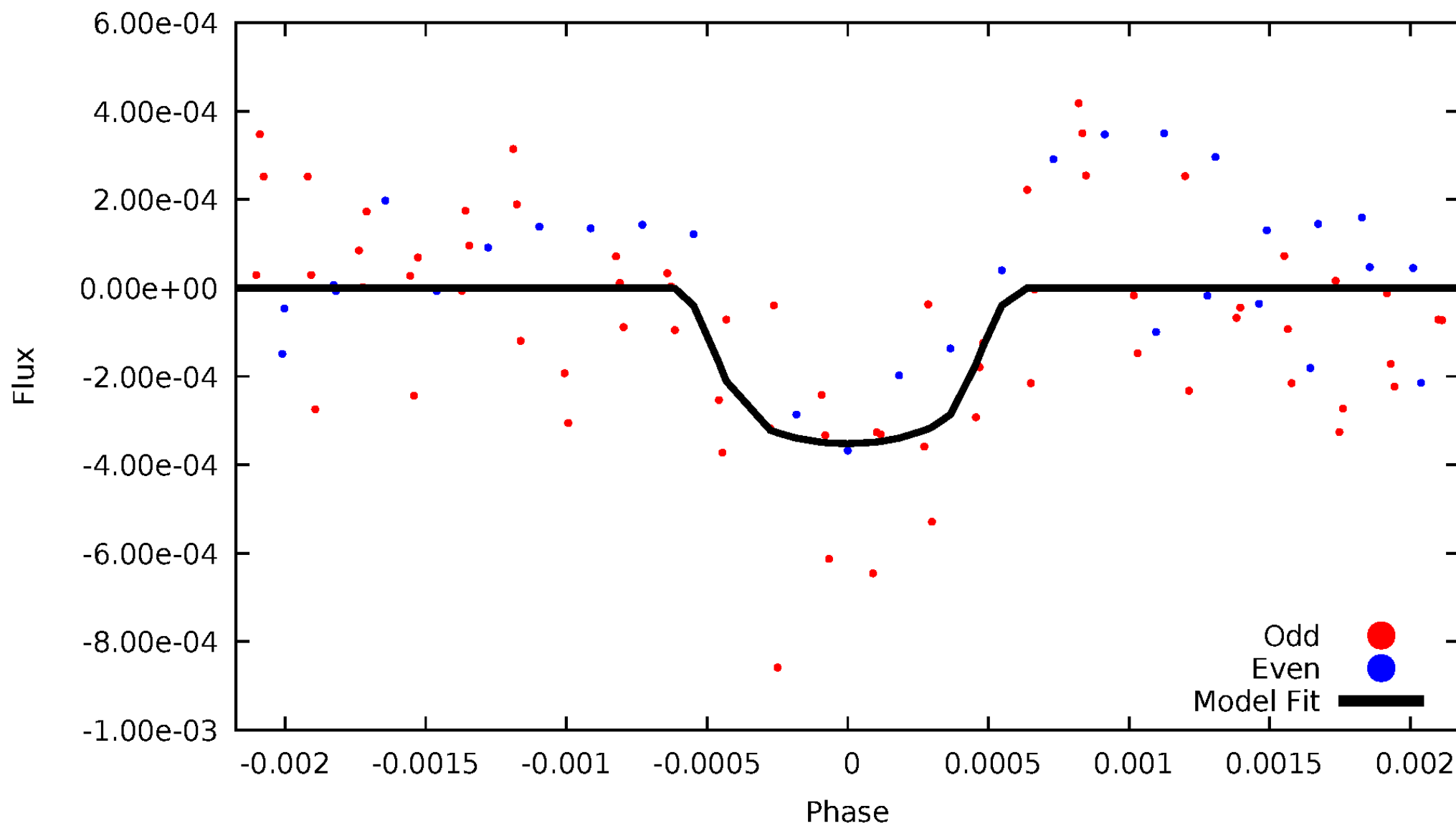


TCE 002581452-05



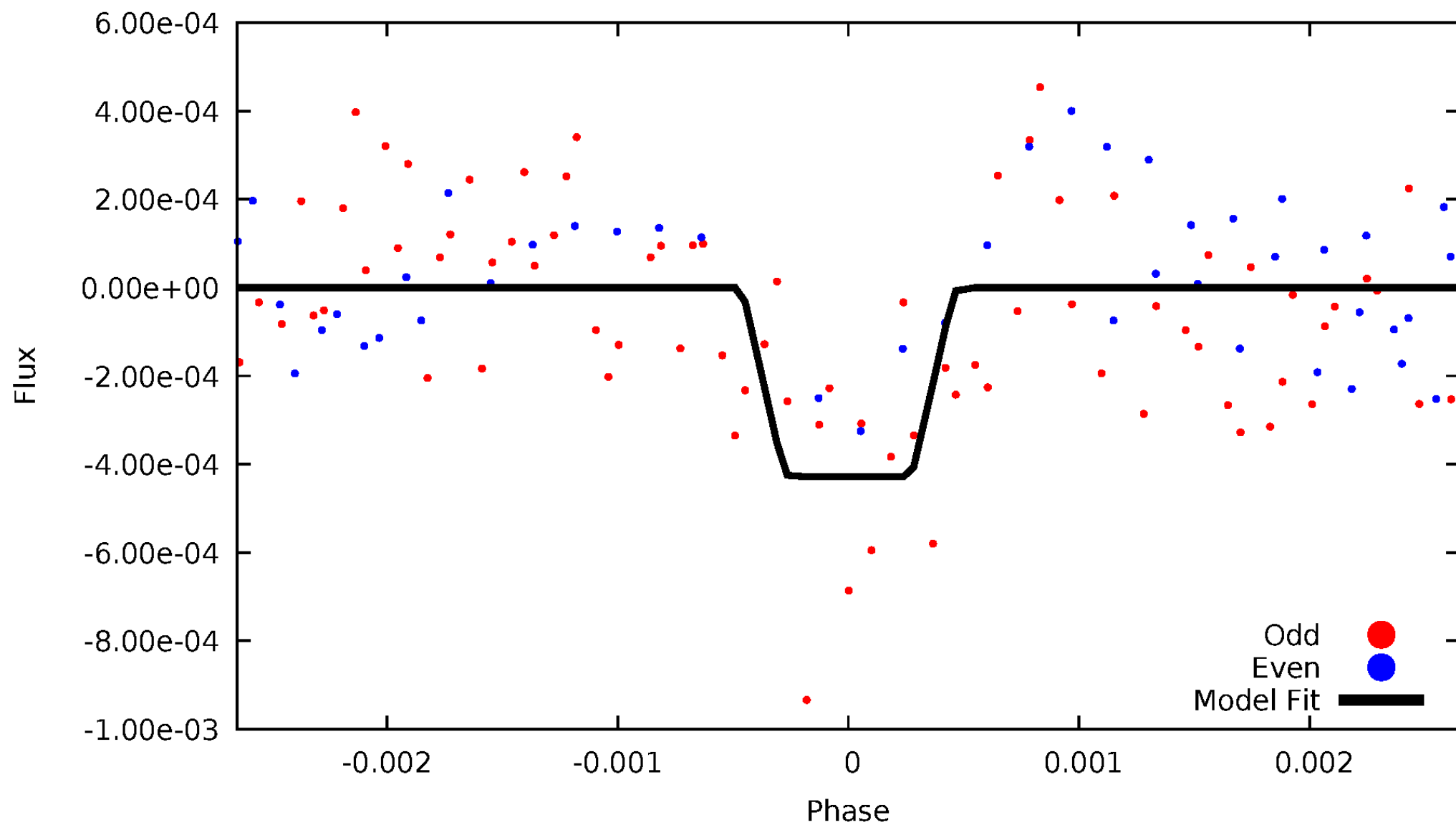
DV Odd/Even

TCE 002581452-05



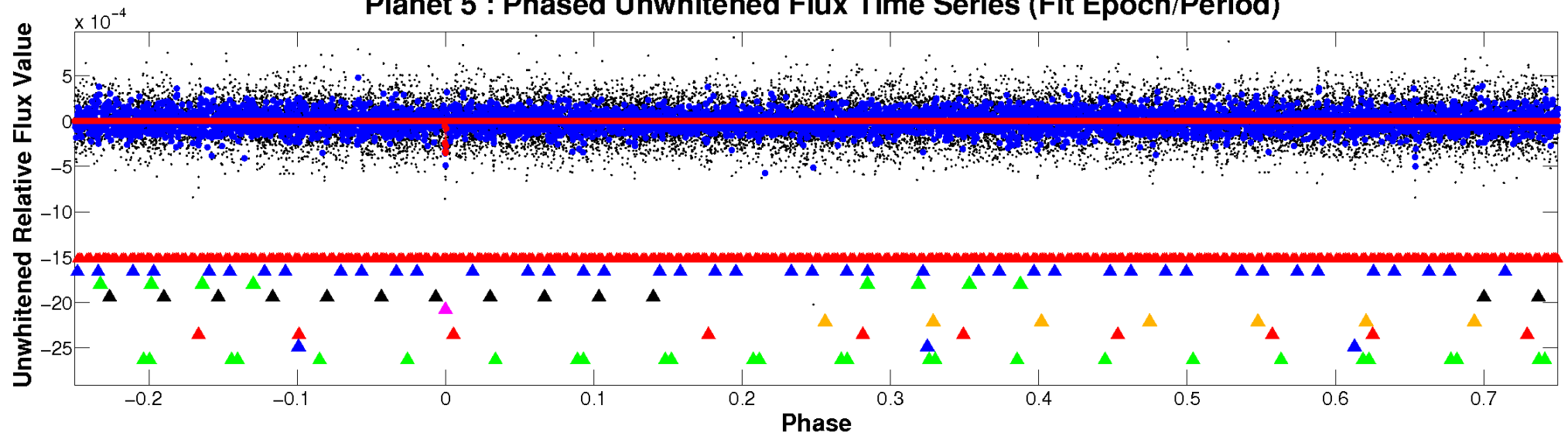
ALT Odd/Even

TCE 002581452-05

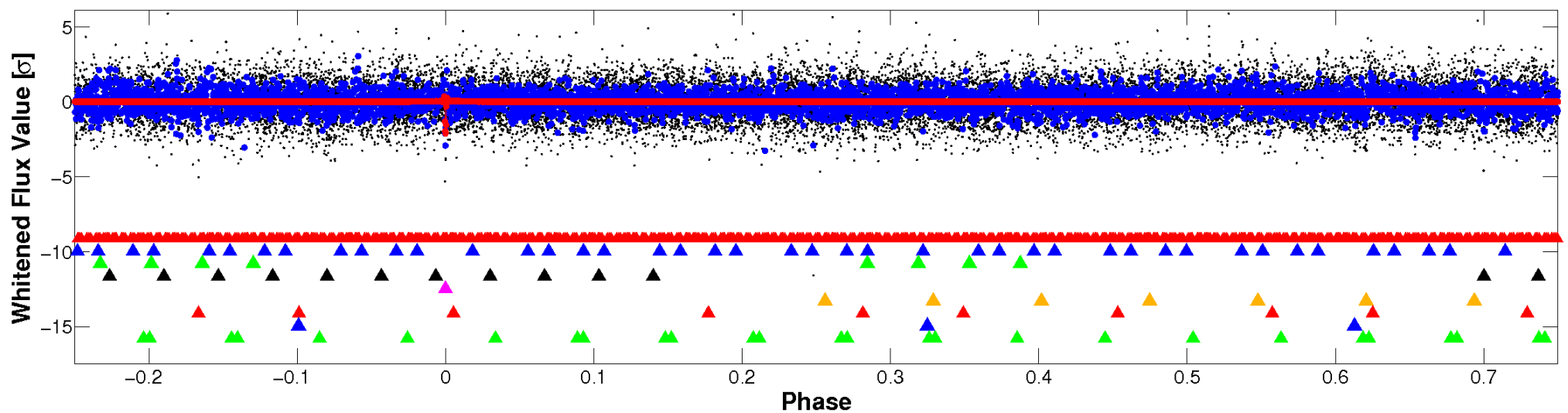


Non-Whitened Vs. Whitened Light Curve

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

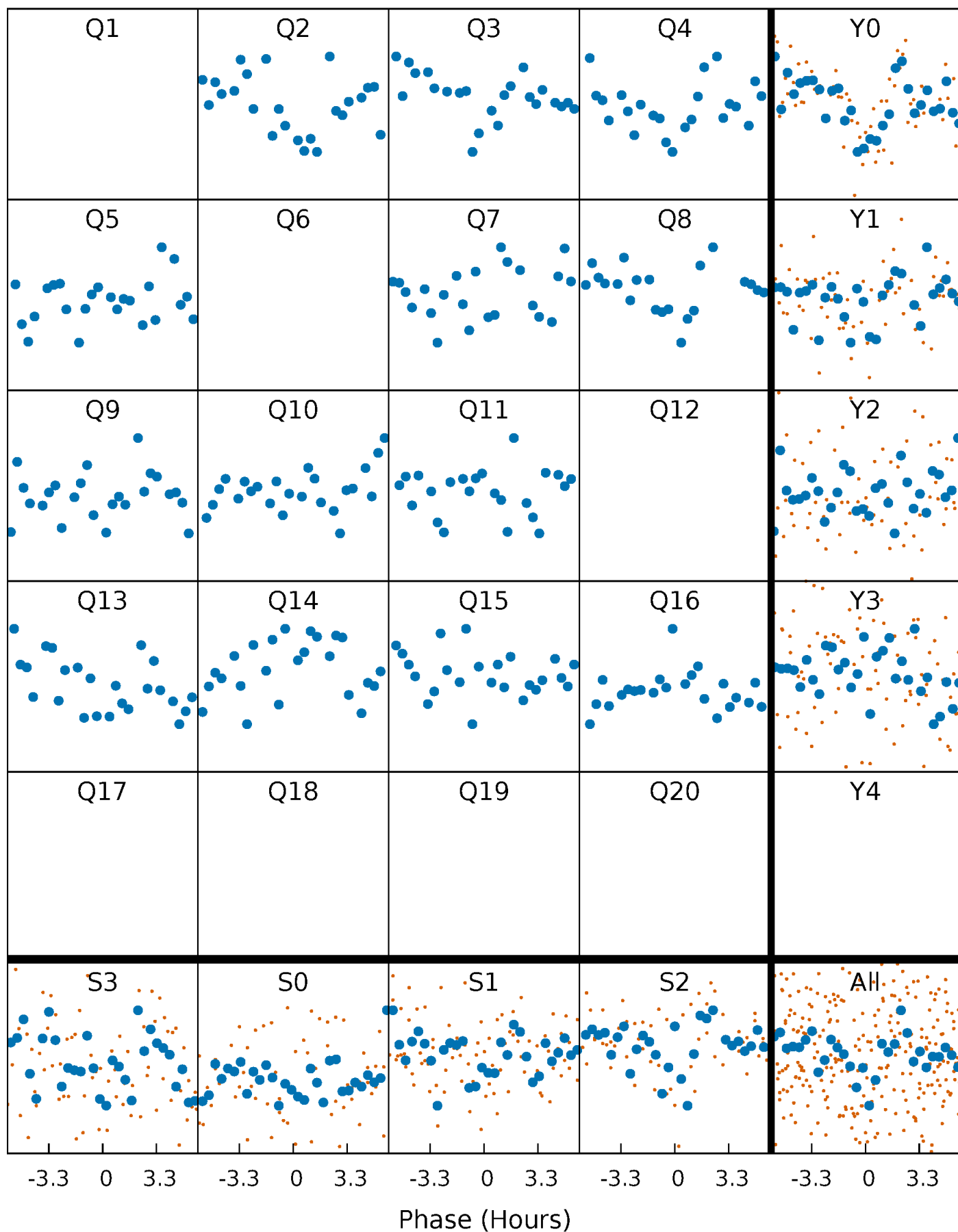


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



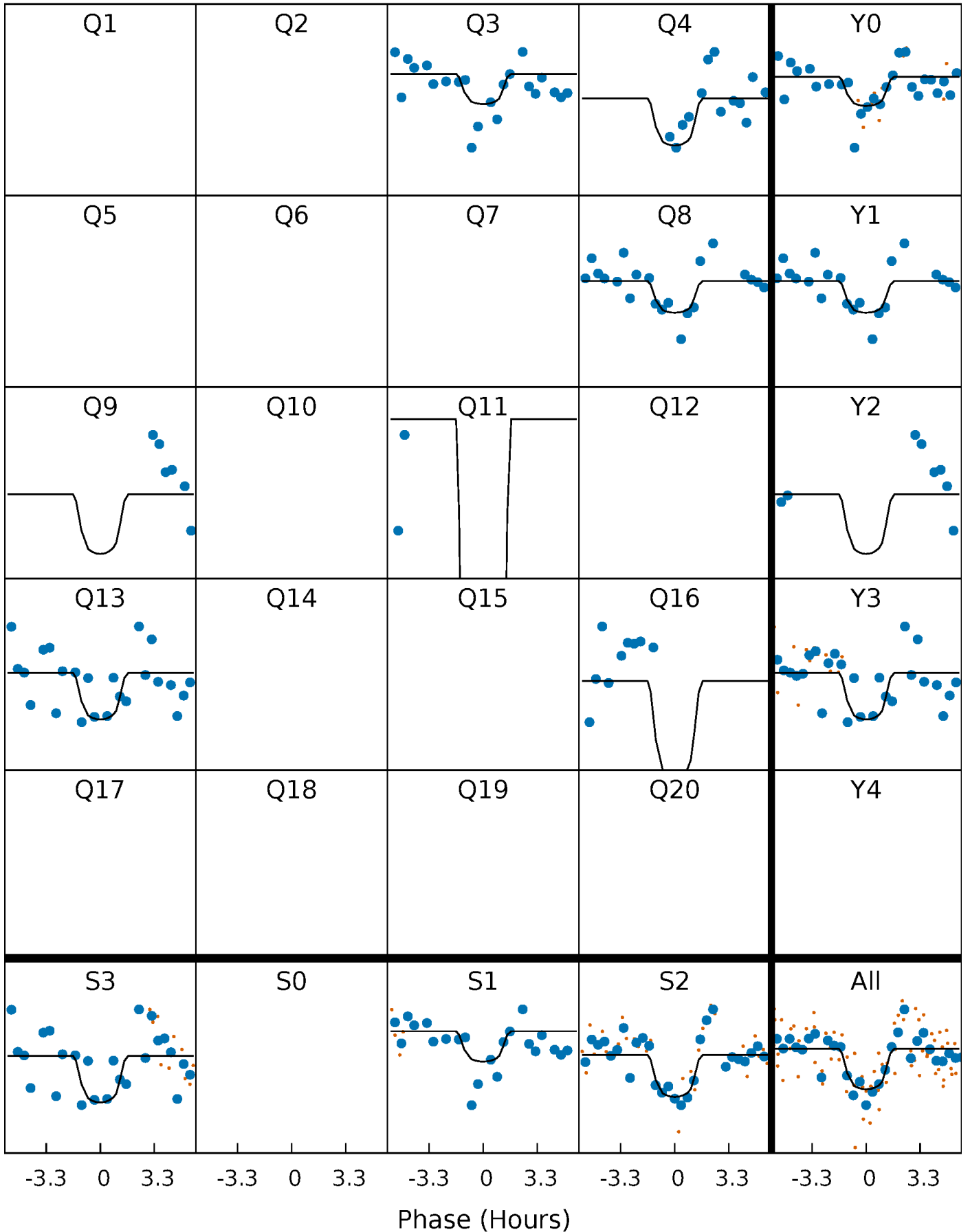
PDC Quarter-Phased Transit Curves

TCE 002581452-05 $P=111.863738$ Days $T_0=193.627102$ (BKJD)



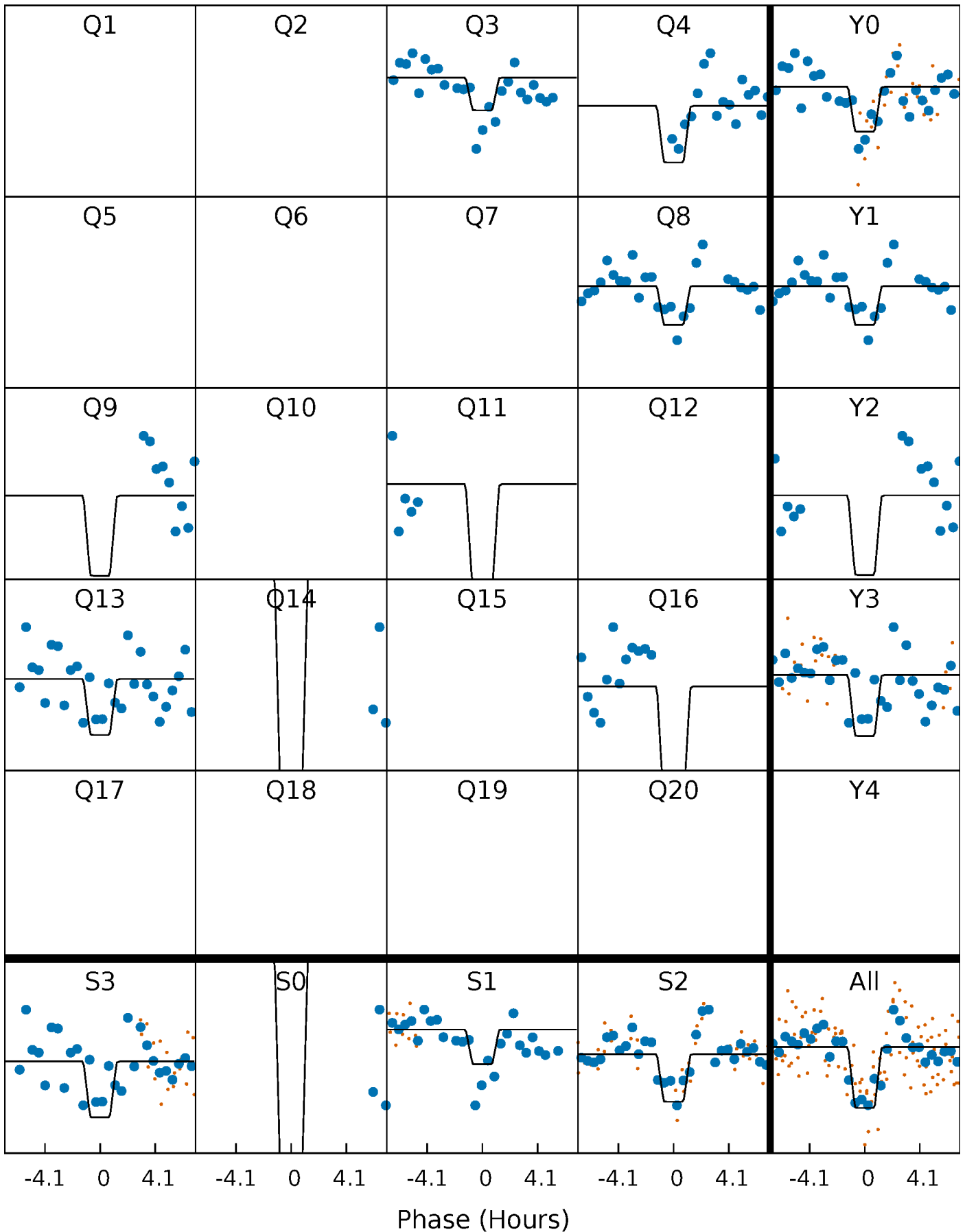
DV Quarter-Phased Transit Curves

TCE 002581452-05 $P=111.863738$ Days $T_0=193.627102$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

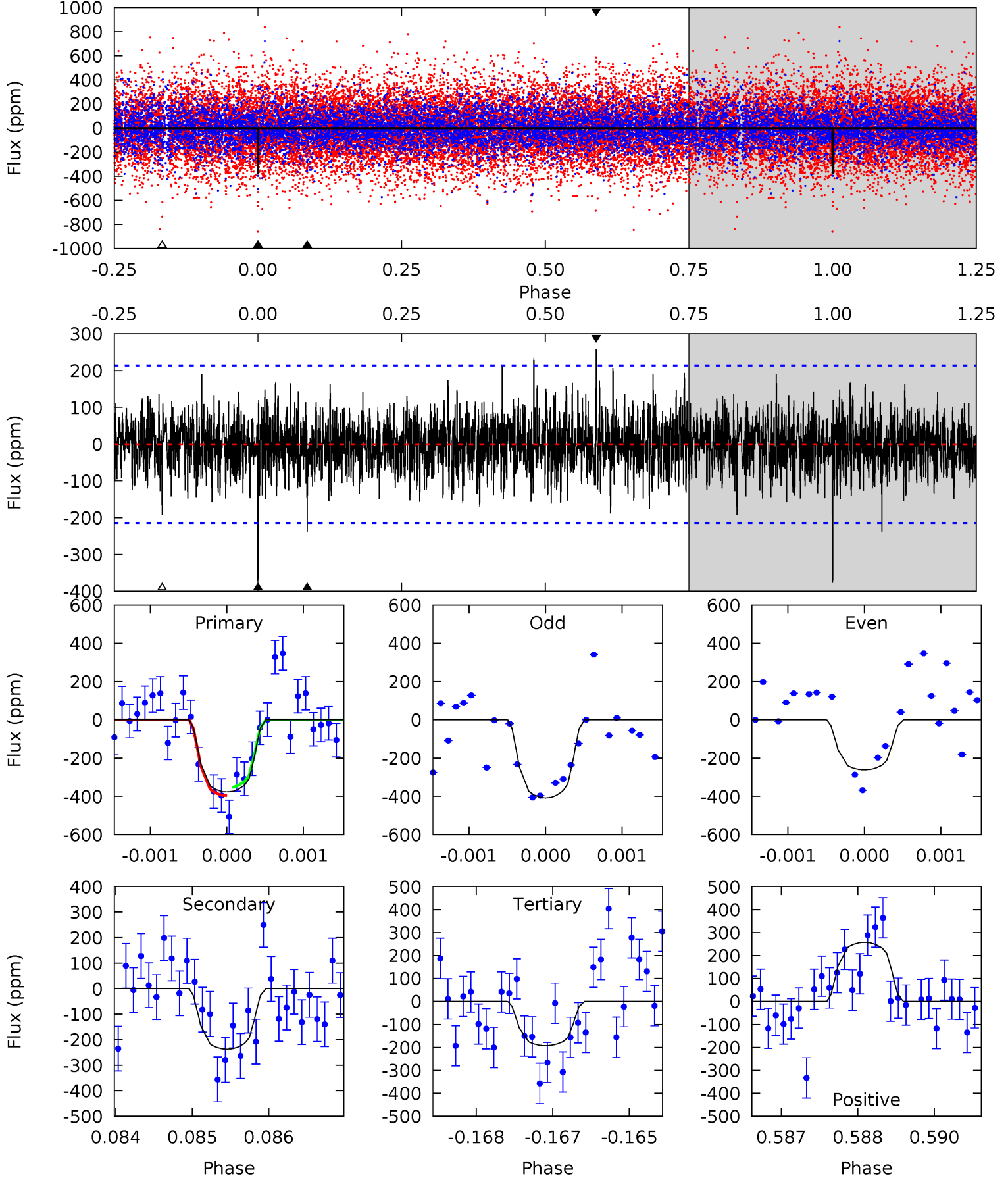
TCE 002581452-05 $P=111.865346$ Days $T_0=193.617862$ (BKJD)



DV Model-Shift Uniqueness Test

002581452-05, P = 111.863738 Days, E = 81.763364 Days

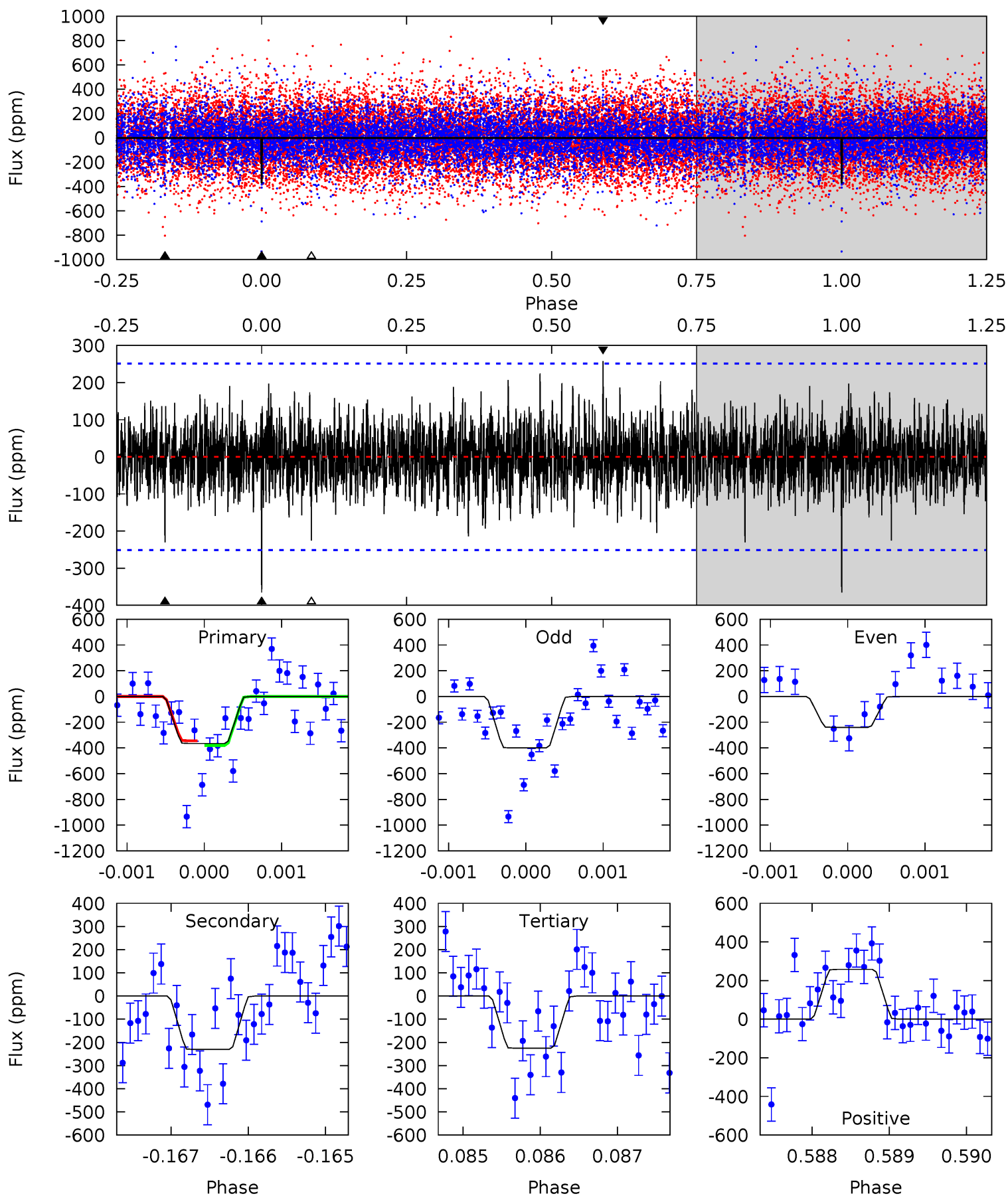
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.52	5.99	4.87	6.50	5.41	3.23	1.48	4.65	3.01	1.12	-0.51	1.61	1.08	0.41	0.55



Alt Model-Shift Uniqueness Test

002581452-05, P = 111.865346 Days, E = 81.752516 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.95	5.02	4.90	5.61	5.47	3.32	1.33	3.05	2.35	0.11	-0.59	1.46	1.20	0.41	0.37



Stellar Parameters For KIC 002581452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5117^{+115}_{-166}	$3.202^{+0.429}_{-0.231}$	$-0.040^{+0.250}_{-0.300}$	$5.751^{+1.608}_{-2.987}$	$1.922^{+0.278}_{-0.903}$	$0.014^{+0.068}_{-0.008}$
	+2%/-3%	+13%/-7%	+625%/-750%	+28%/-52%	+14%/-47%	+476%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002581452-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-237 ± 40	$15.75^{+14.00}_{-10.36}$	1003^{+91}_{-125}	4119^{+2313}_{-742}	153^{+1193}_{-106}
Alt.	-231 ± 46	$14.70^{+14.25}_{-9.39}$	995^{+98}_{-122}	4148^{+2331}_{-777}	178^{+1242}_{-134}

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 $A_{obs} \gg 1.0$

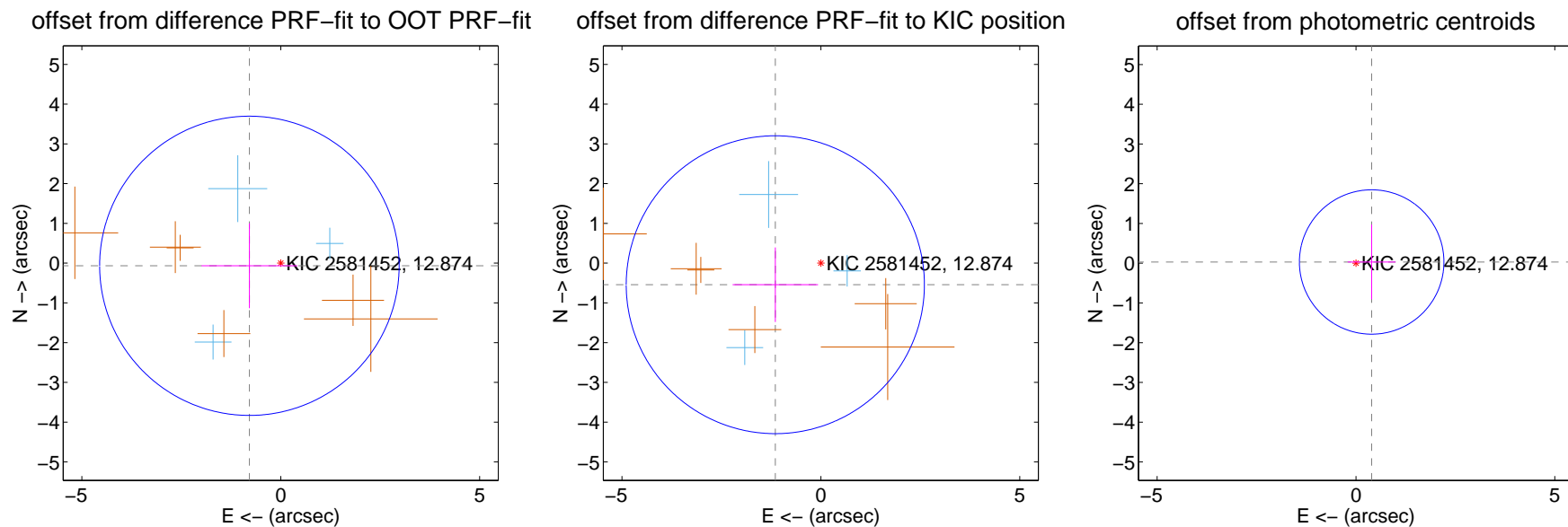
DV Centroid Data

Supplemental centroid analysis for 002581452-05. Kepler magnitude: 12.87. Transit SNR 8.09

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.791 ± 1.255	0.63	0.788 ± 1.203	-0.067 ± 1.067
PRF-fit source offset from KIC position	1.267 ± 1.249	1.01	1.145 ± 1.073	-0.543 ± 0.938
photometric centroid source offset	0.40 ± 0.61	0.65	-0.39 ± 0.60	0.03 ± 0.94



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.

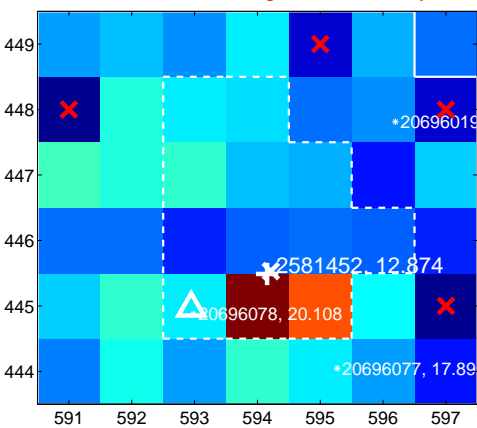
Q1 no difference image



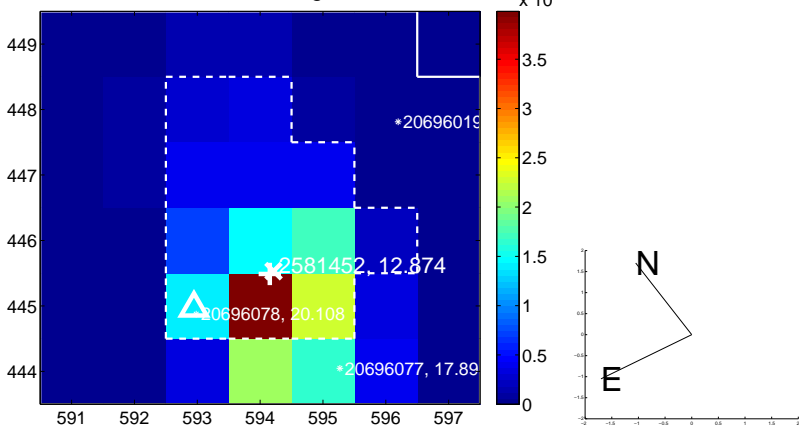
Q1 no OOT image



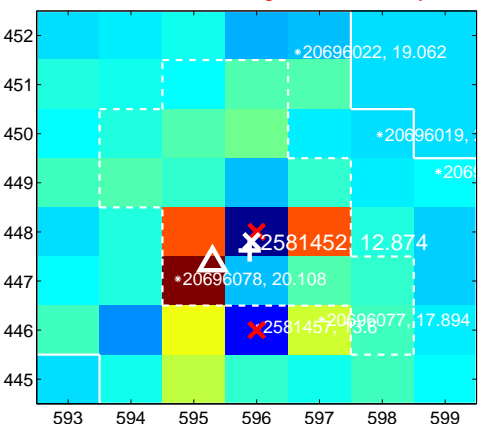
Q2 difference image. Poor Quality



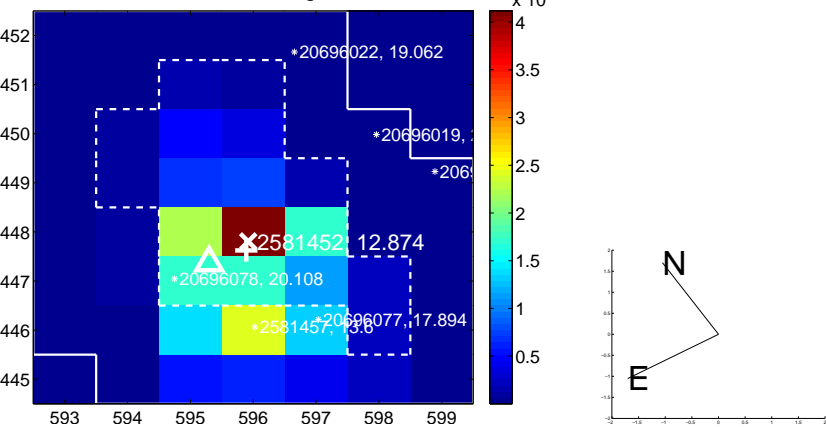
Q2 OOT image



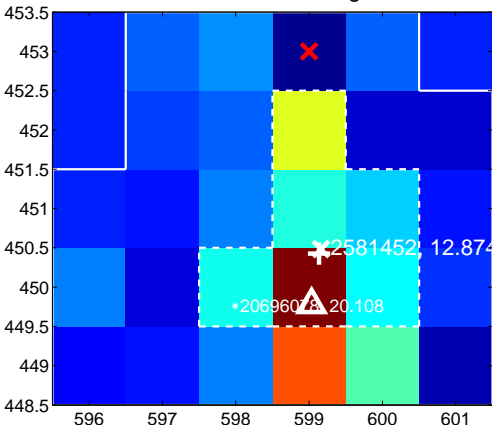
Q3 difference image. Poor Quality



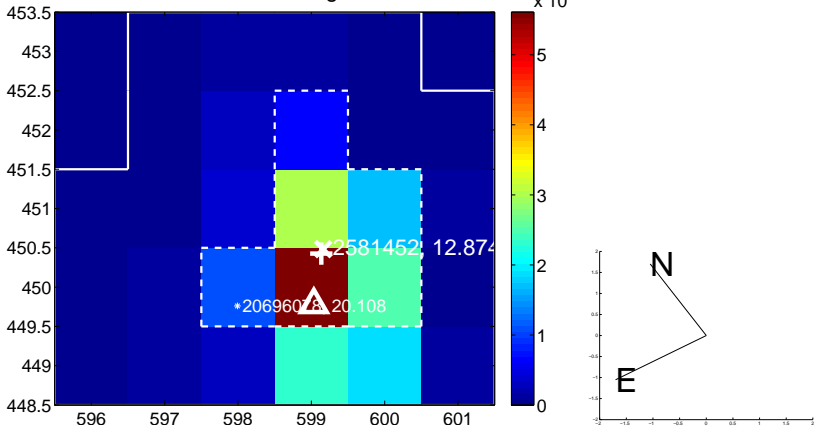
Q3 OOT image



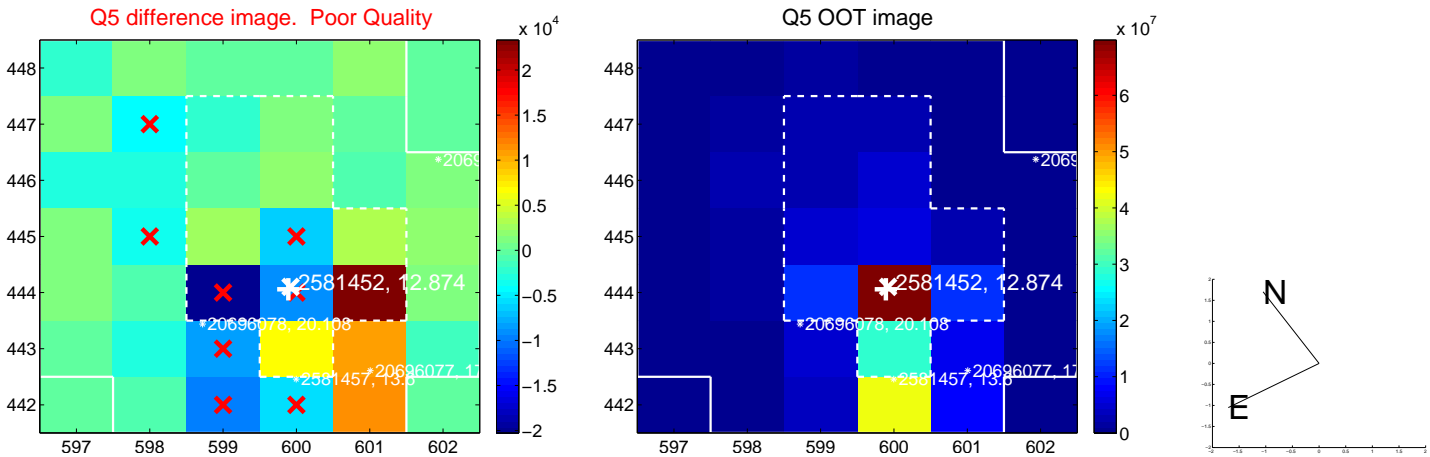
Q4 difference image



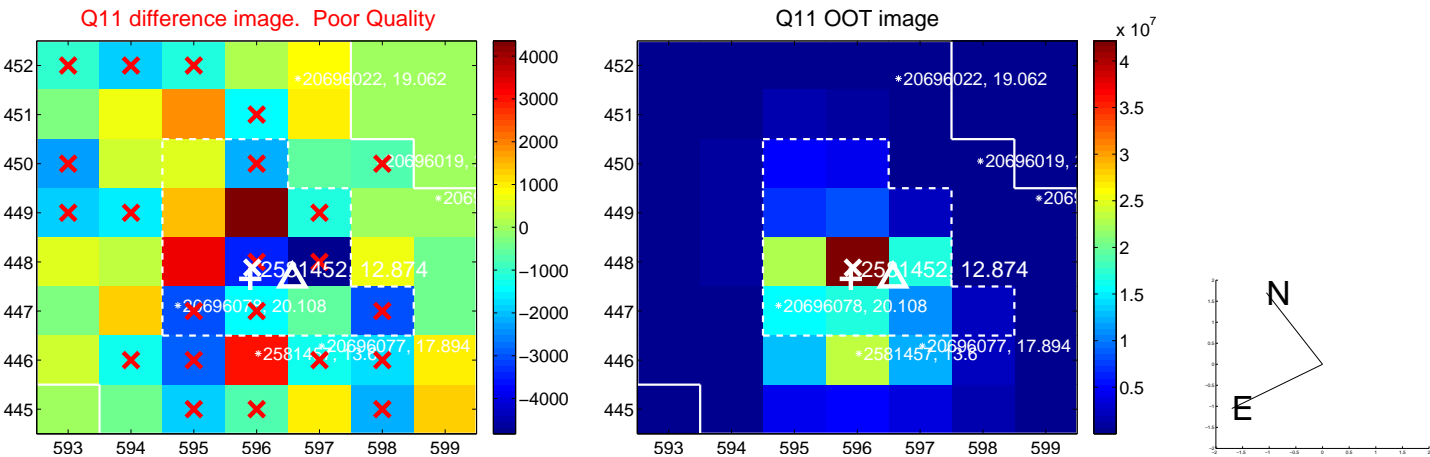
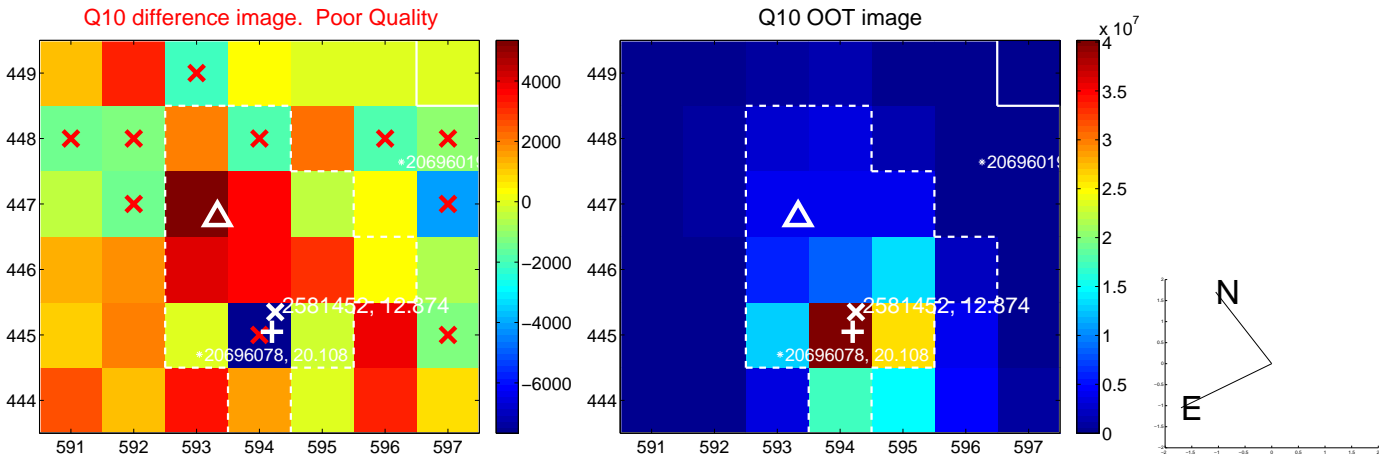
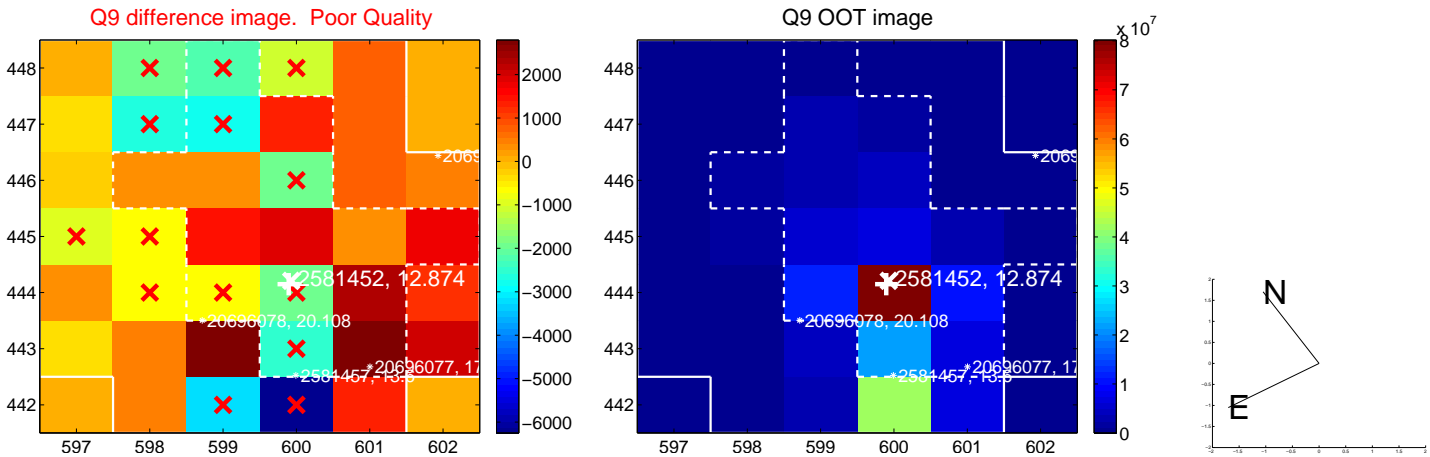
Q4 OOT image



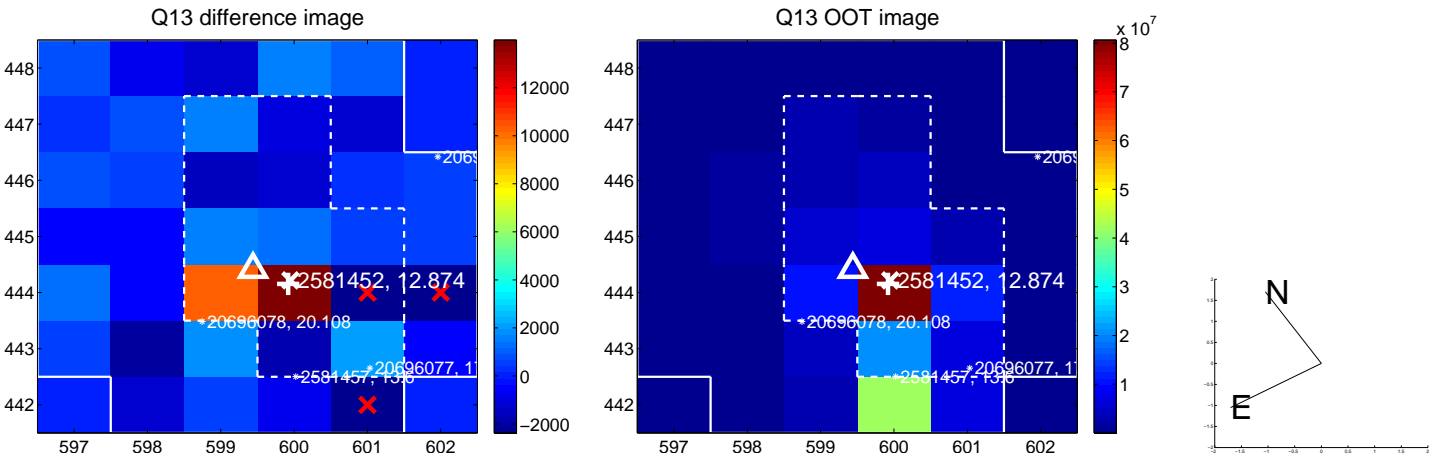
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



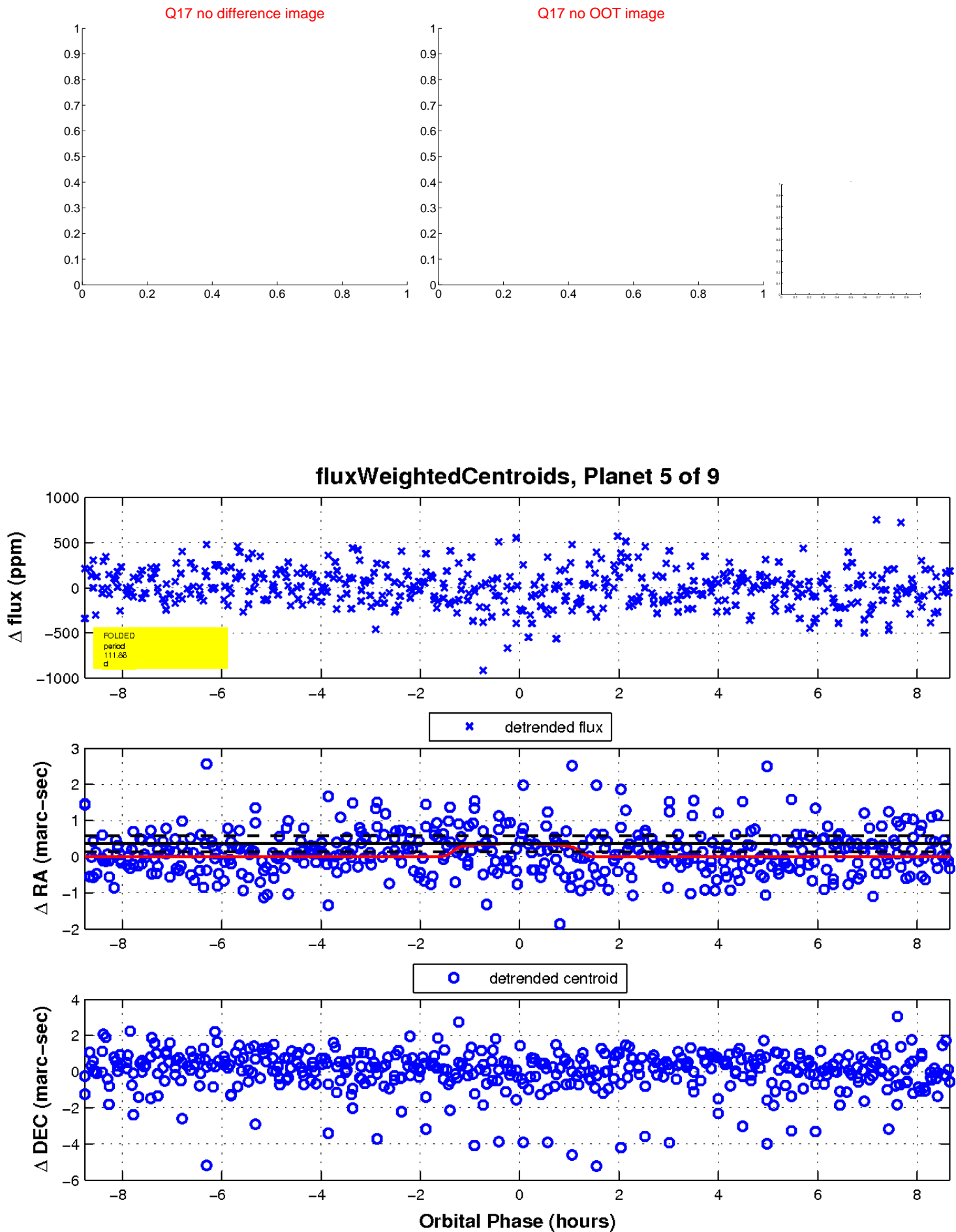
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



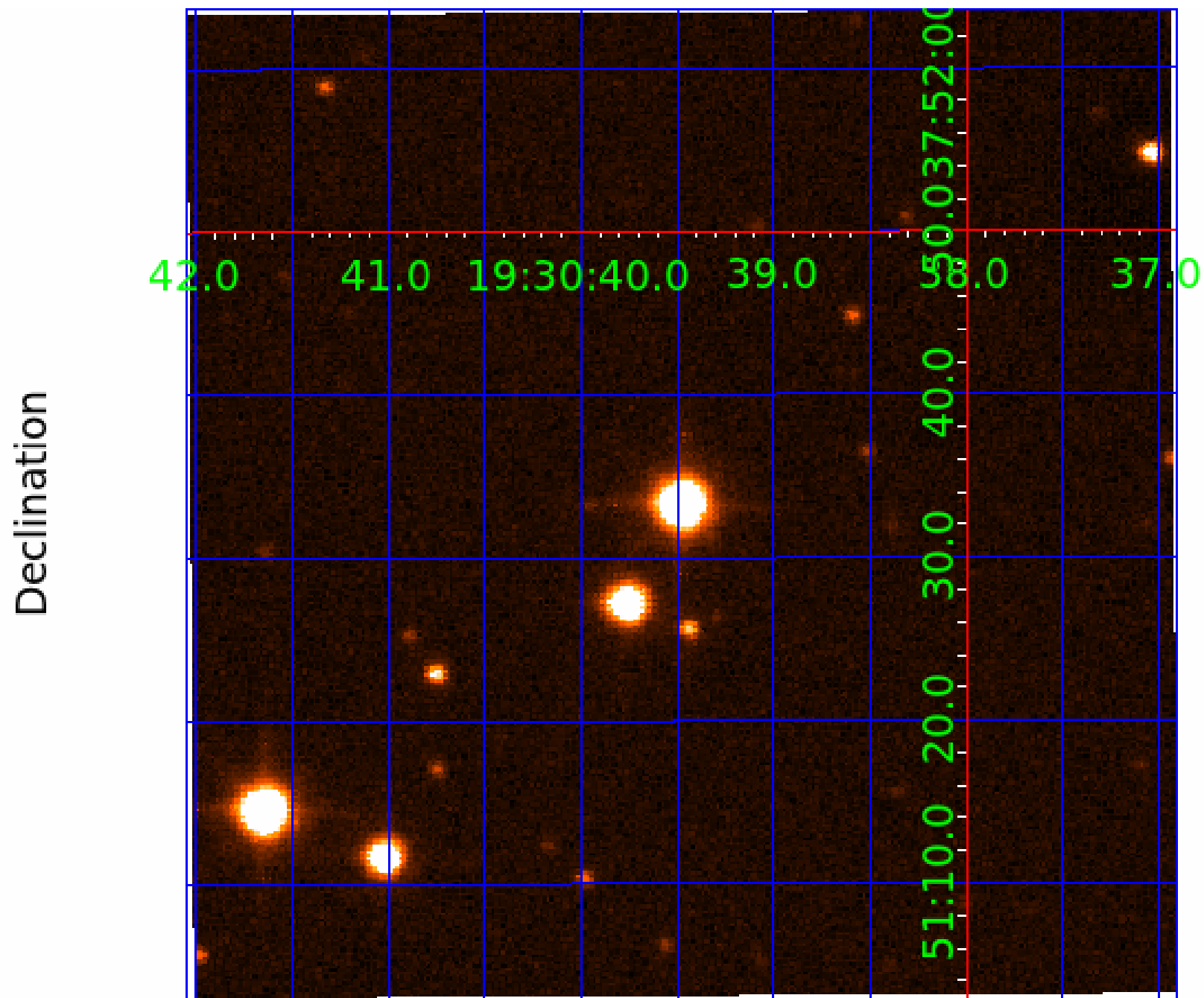
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 002581452

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})
002581452-01	OBS	No	2.617491	133.800090	26.3	13.331	8.9	8.0	5.75	5117	3.04	9511.99
002581452-02	OBS	No	33.977508	153.321823	95.4	18.301	18.3	5.2	5.75	5117	6.58	311.79
002581452-03	OBS	No	169.717627	279.461846	190.7	17.272	9.8	6.5	5.75	5117	8.54	36.52
002581452-04	OBS	No	107.762815	209.299153	453.3	2.515	9.1	9.6	5.75	5117	14.13	66.91
002581452-05	OBS	No	111.863738	193.627102	352.0	2.918	8.7	8.1	5.75	5117	13.21	63.66
002581452-06	OBS	No	215.566106	271.224013	414.9	3.600	8.2	8.4	5.75	5117	12.38	26.55
002581452-07	OBS	No	142.742350	232.683893	469.7	2.796	8.5	8.1	5.75	5117	12.60	45.99
002581452-08	OBS	No	638.962510	294.409498	388.3	3.756	7.8	7.4	5.75	5117	13.57	6.24
002581452-09	OBS	No	52.615085	177.948320	286.7	2.766	7.6	7.4	5.75	5117	11.24	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002581452-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
002581452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002581452-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002581452-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— SAME_NTL_PERIOD—CENT_UNCERTAIN
002581452-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
002581452-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS— CENT_FEW_DIFFS
002581452-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

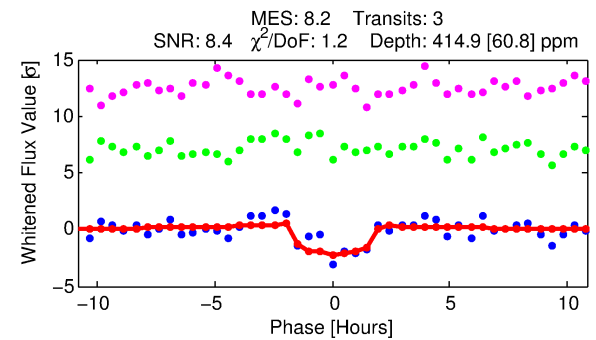
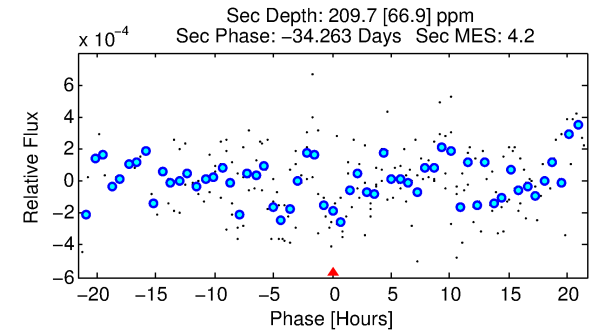
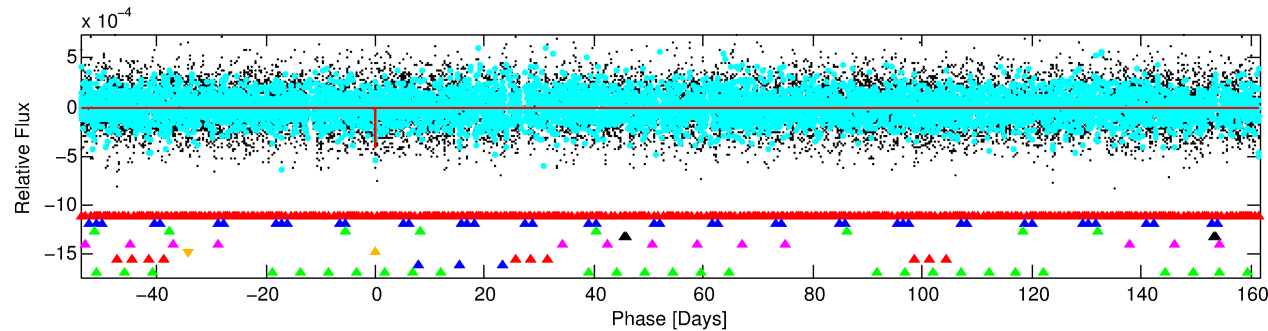
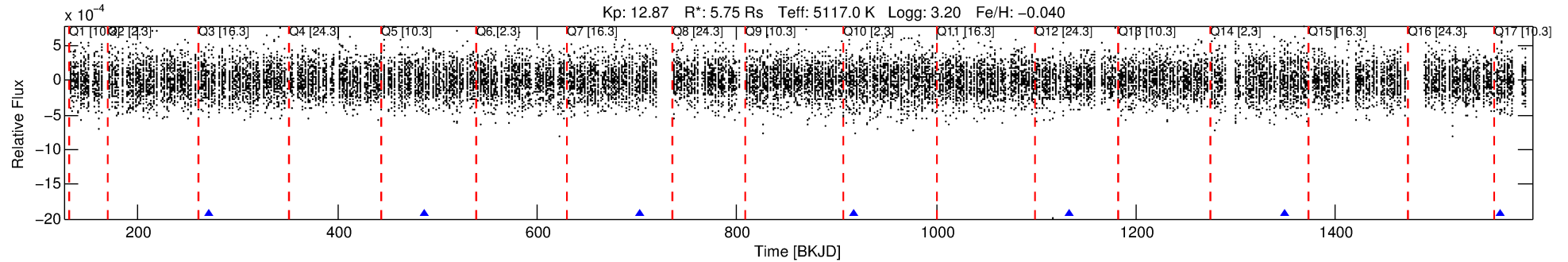
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002581452-06

No Significant Match Found

DV One-Page Summary

KIC: 2581452 Candidate: 6 of 9 Period: 215.566 d

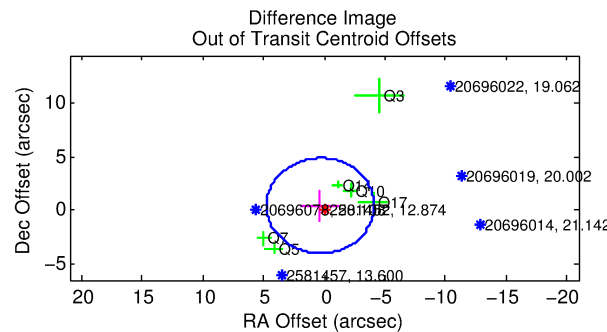
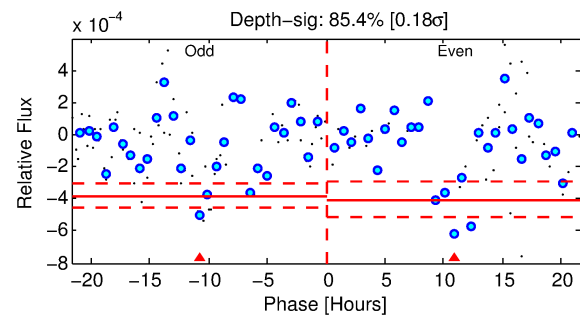
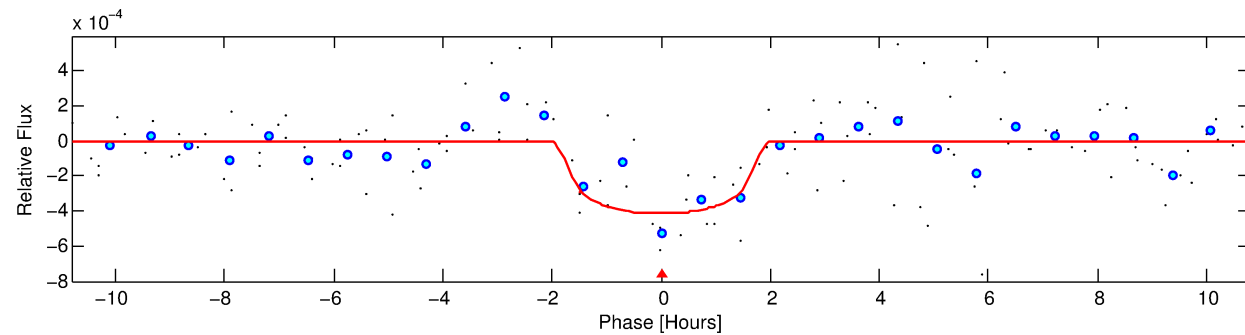


DV Fit Results:

Period = 215.56611 [0.00249] d
Epoch = 271.2240 [0.0083] BKJD
Rp/R* = 0.0197 [0.0401]
a/R* = 350.01 [2574.51]
b = 0.67 [6.09]
Seff = 26.55 [20.05]
Teq = 579 [109] K
Rp = 12.38 [25.97] Re
a = 0.8748 [0.4180] AU
Ag = 575.63 [2384.55] [0.24σ]
Teffp = 4383 [4468] K [0.85σ]

DV Diagnostic Results:

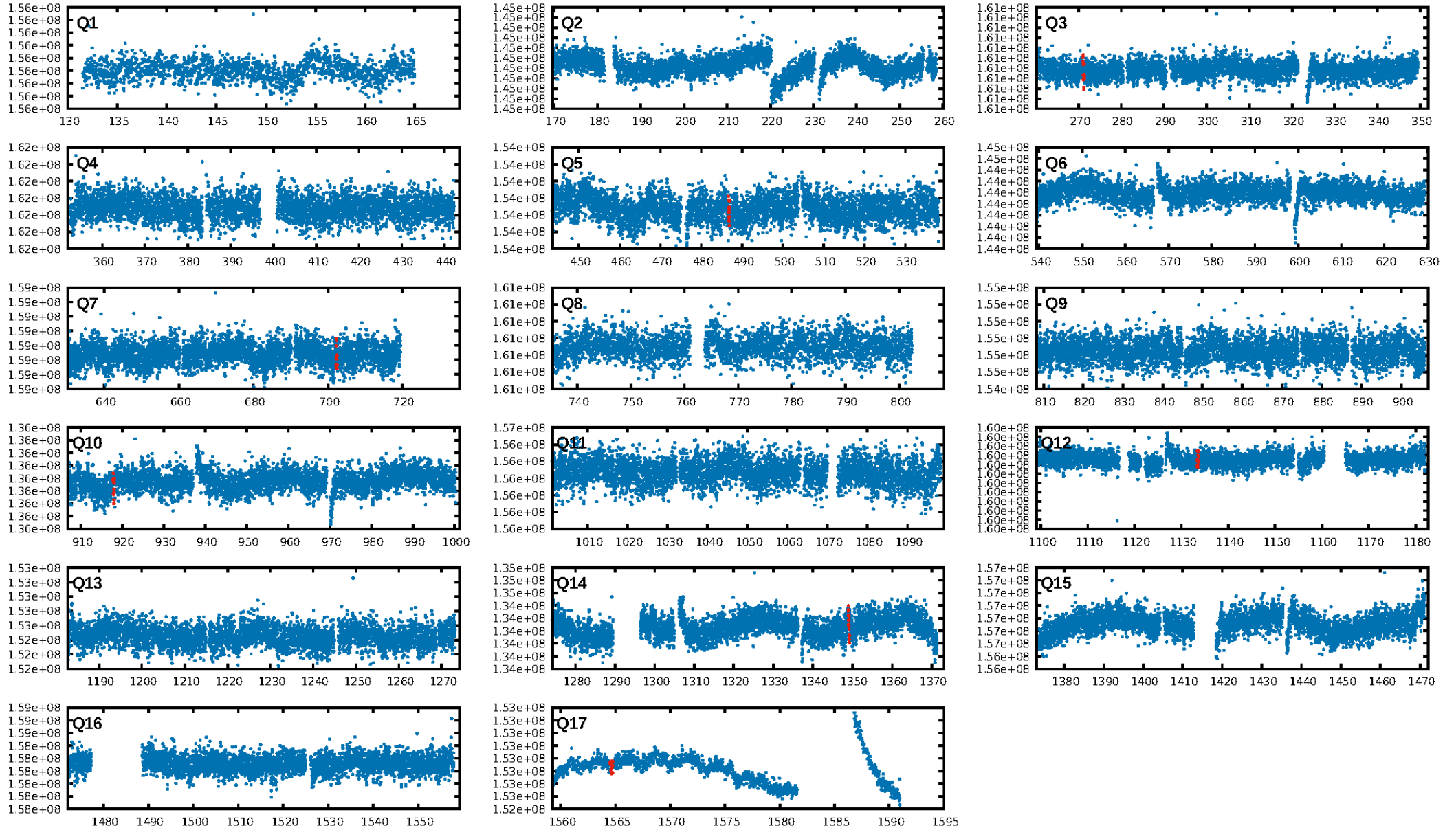
ShortPeriod-sig: 100.0% [62.37σ]
LongPeriod-sig: 100.0% [1952.96σ]
ModelChiSquare2-sig: 83.0%
ModelChiSquareGof-sig: 93.8%
Bootstrap-pfa: 1.90e-08
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.355
Centroid-sig: N/A
Centroid-so: 1.705 arcsec [1.74σ]
OotOffset-rm: 0.548 arcsec [0.37σ]
OotOffset-st: 2/2/0/2 [6]
KicOffset-rm: 0.844 arcsec [0.54σ]
KicOffset-st: 2/2/0/2 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.57 [4/7]



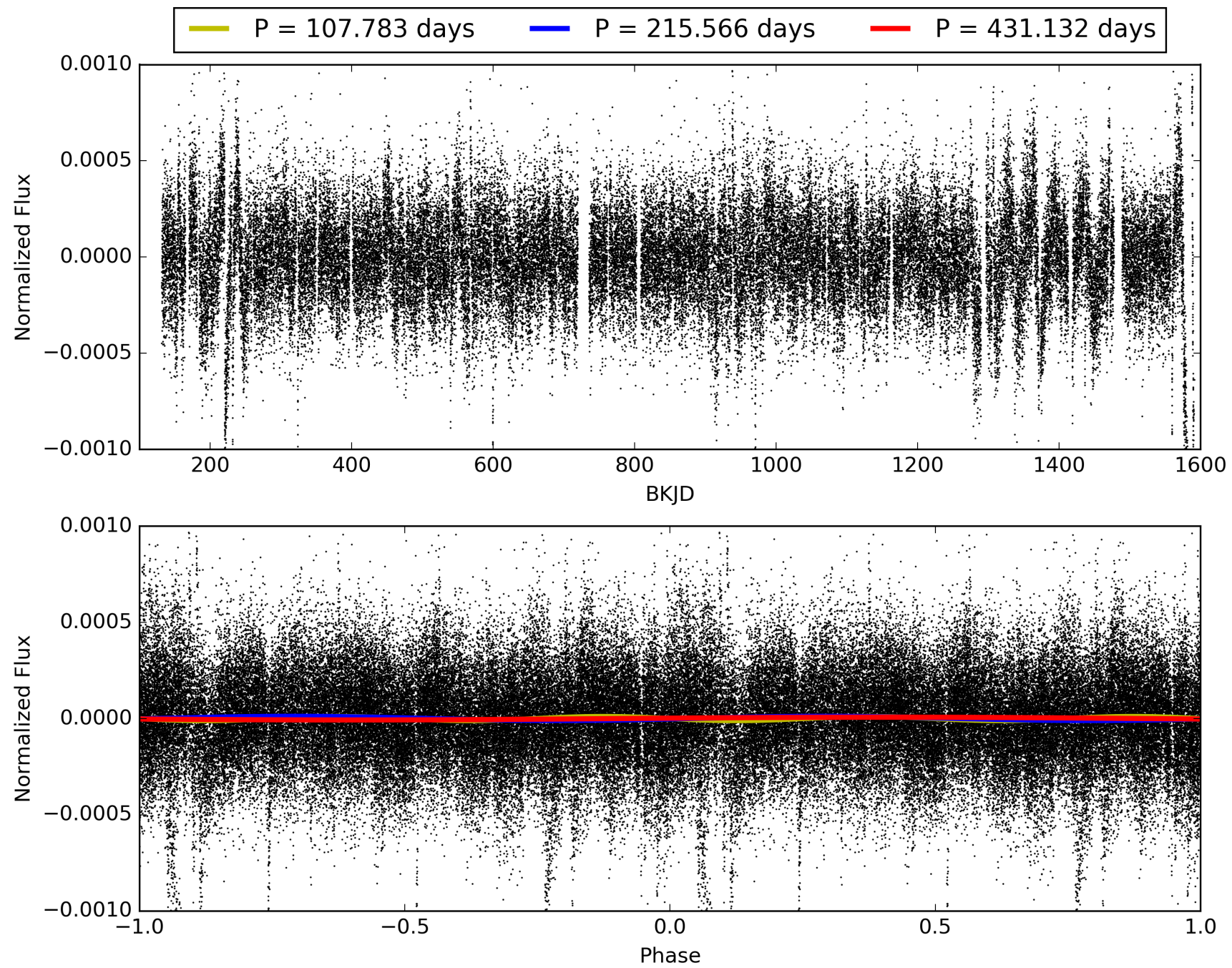
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:22:48 Z

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

TCE 002581452-06, PDC Light Curves

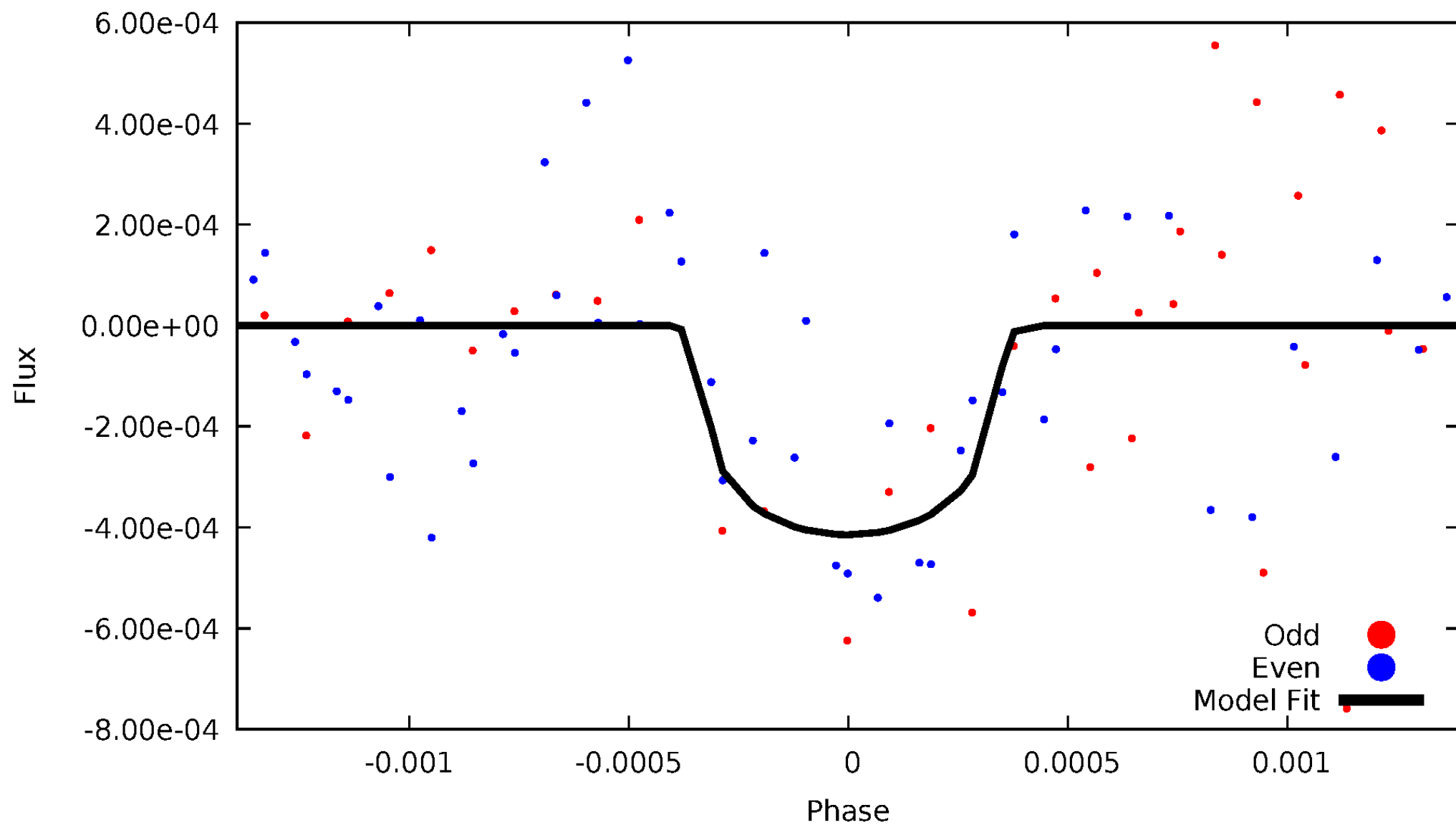


TCE 002581452-06



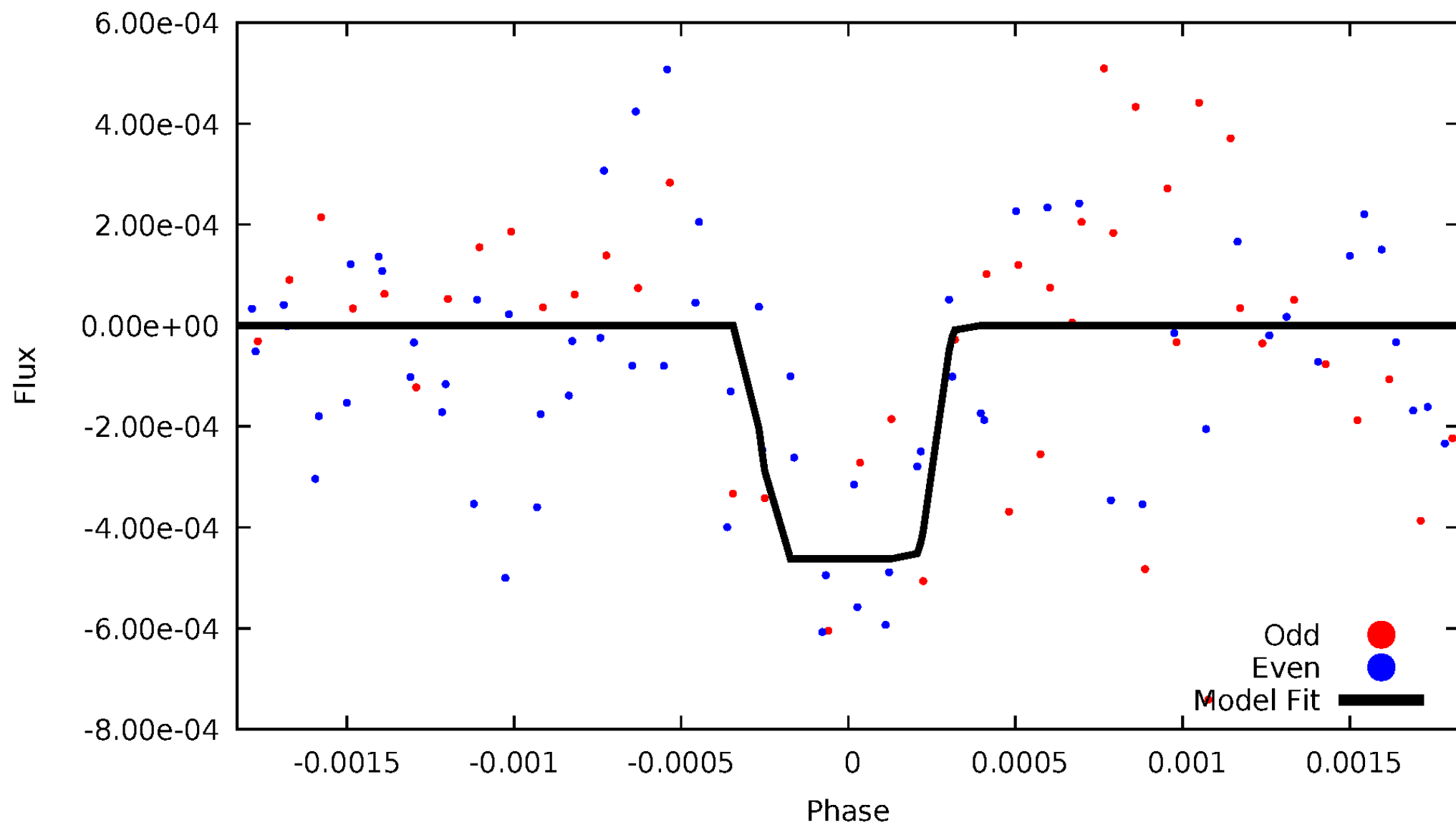
DV Odd/Even

TCE 002581452-06



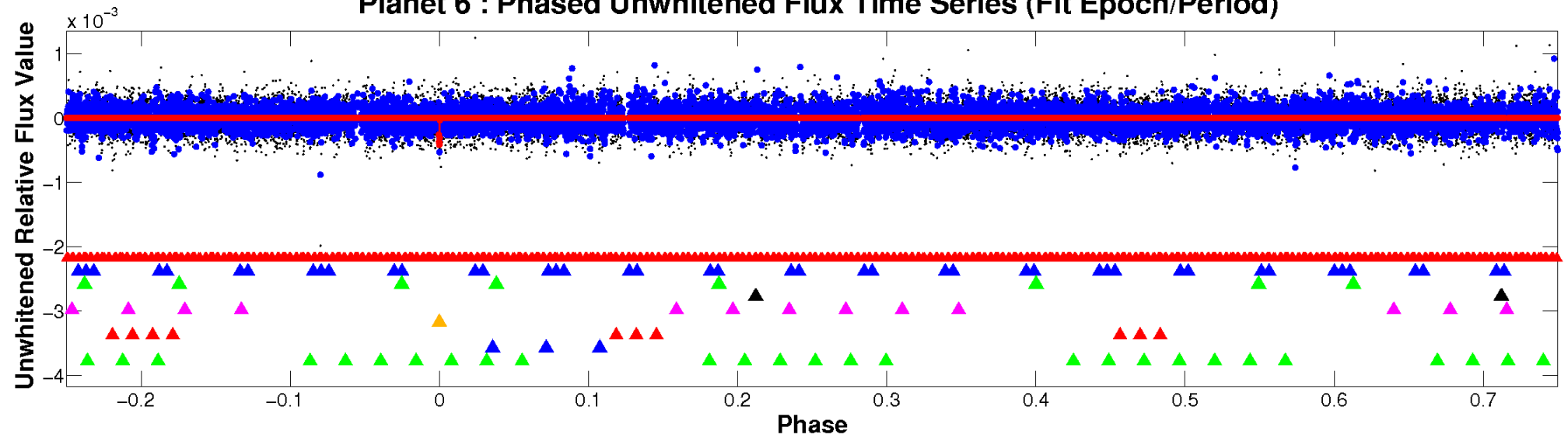
ALT Odd/Even

TCE 002581452-06

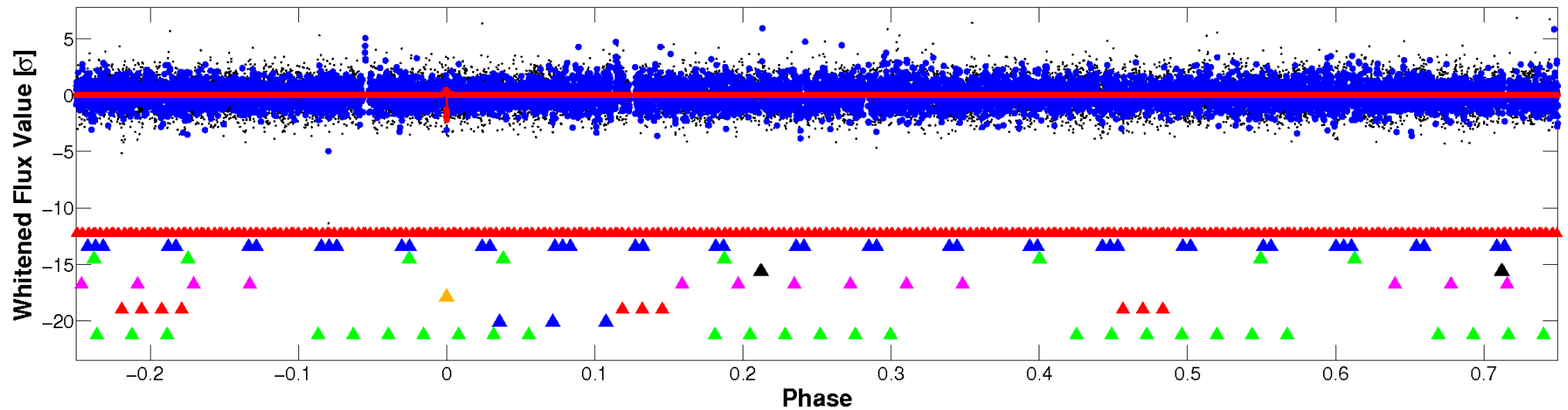


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

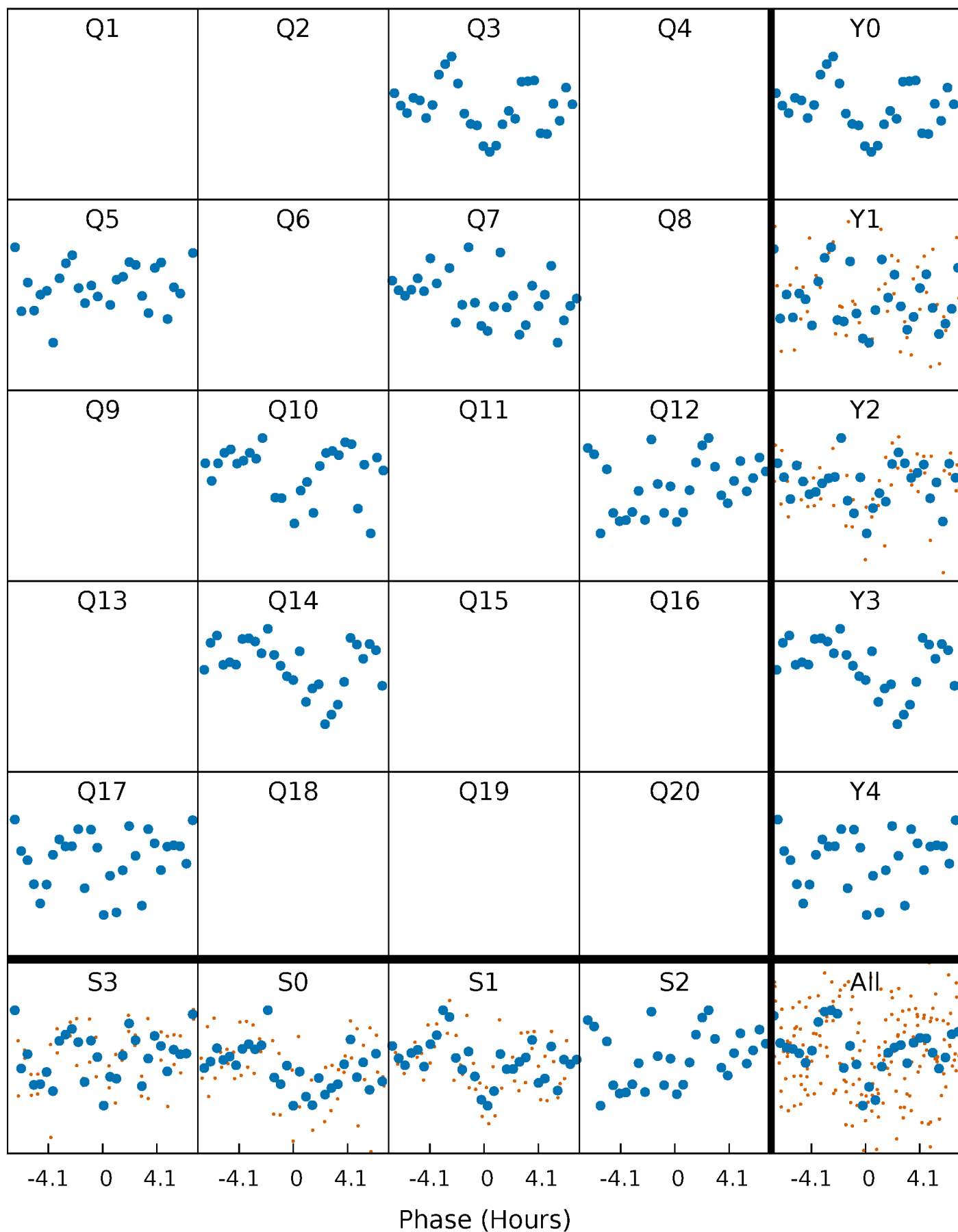


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



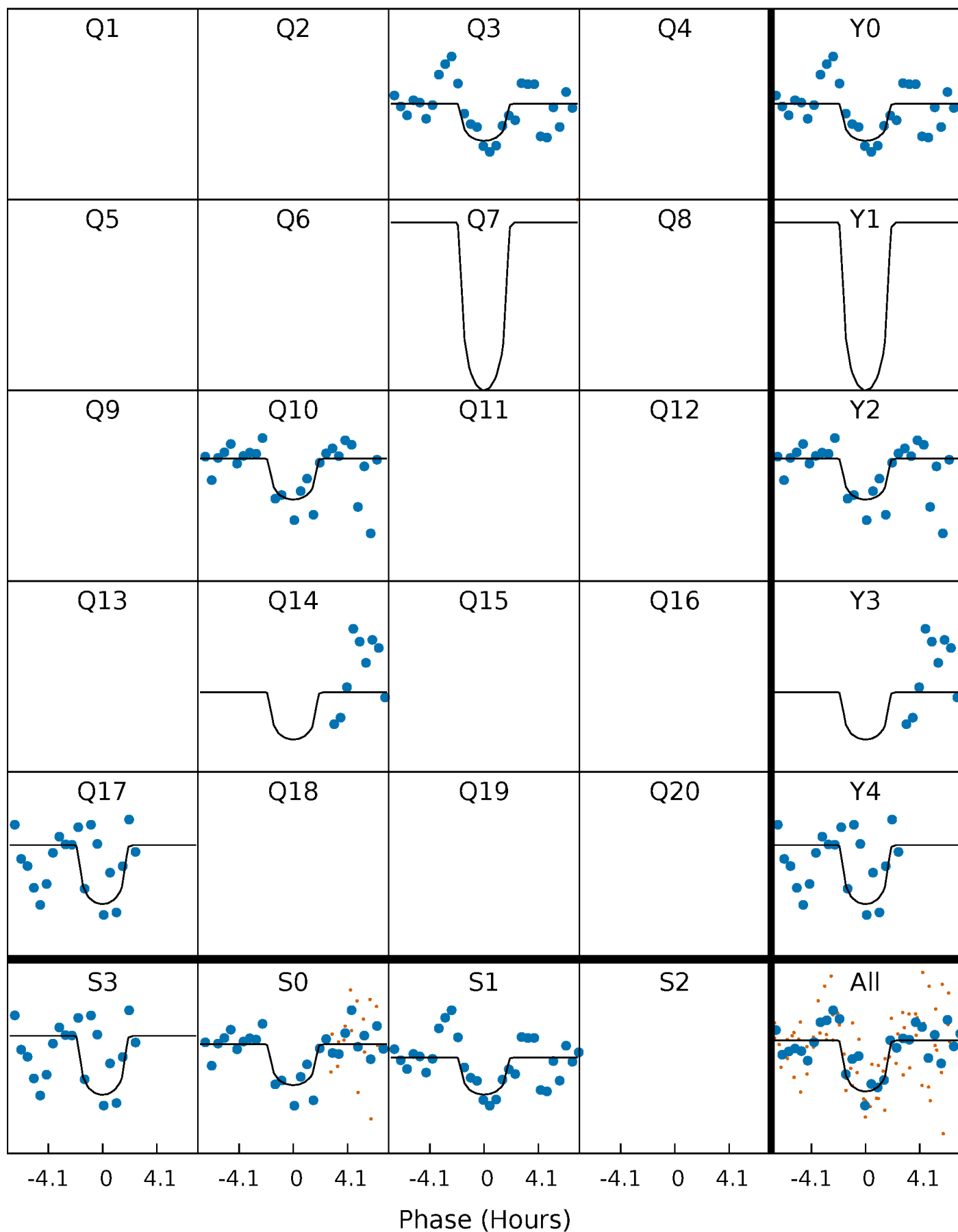
PDC Quarter-Phased Transit Curves

TCE 002581452-06 P=215.566106 Days $T_0=271.224013$ (BKJD)



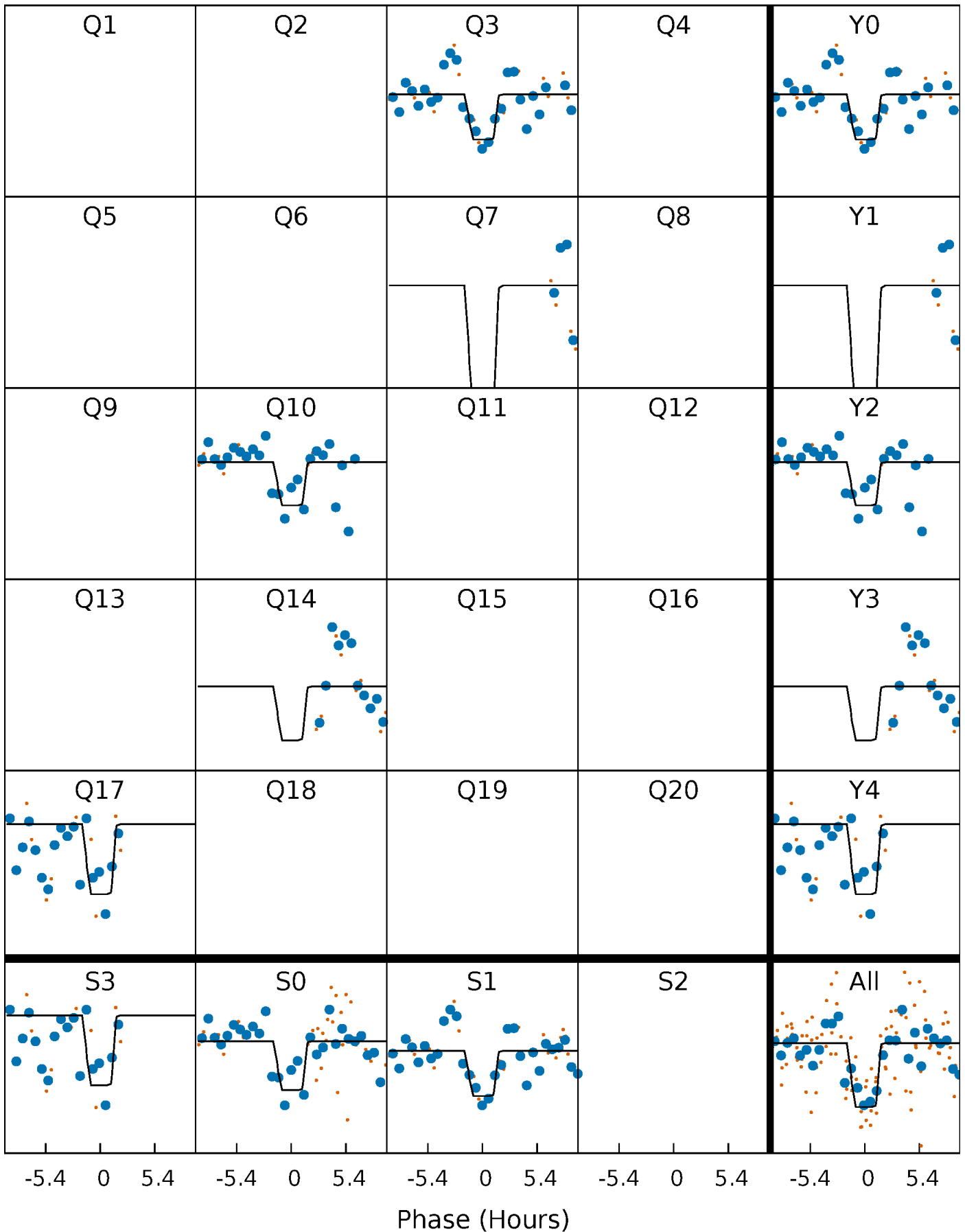
DV Quarter-Phased Transit Curves

TCE 002581452-06 P=215.566106 Days $T_0=271.224013$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

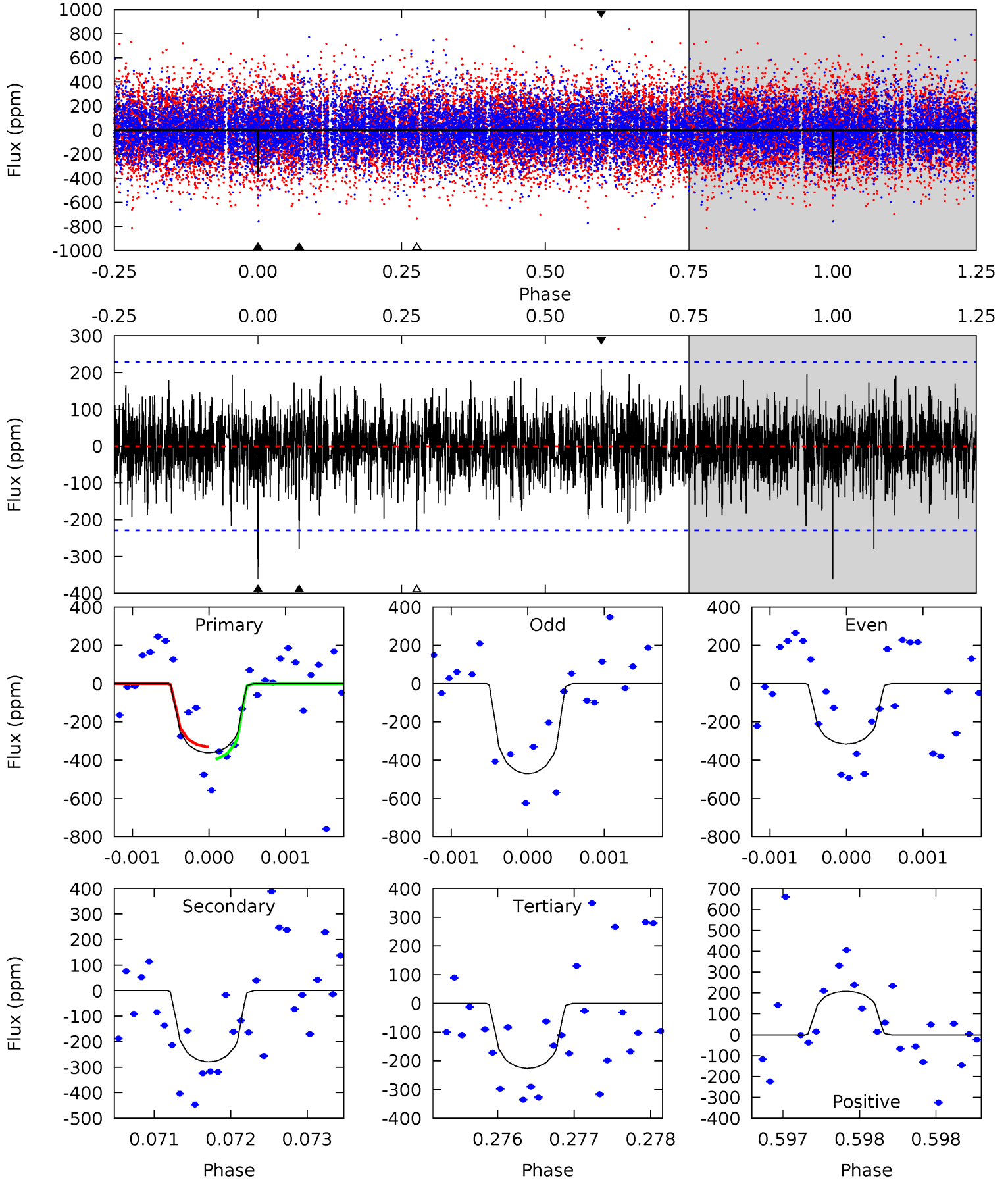
TCE 002581452-06 P=215.567437 Days $T_0=271.232538$ (BKJD)



DV Model-Shift Uniqueness Test

002581452-06, P = 215.566106 Days, E = 55.657907 Days

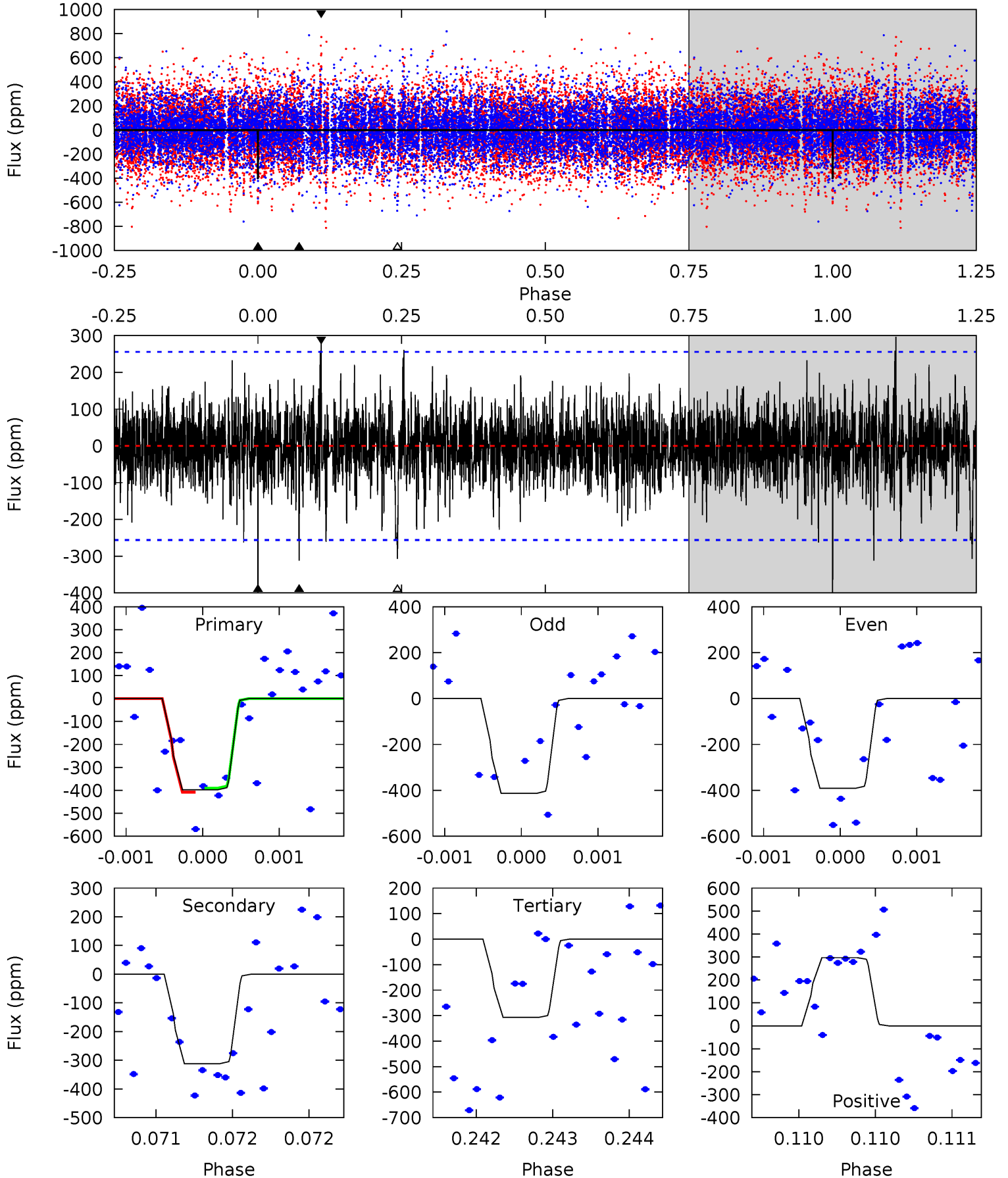
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.68	6.70	5.44	5.00	5.50	3.37	1.50	3.25	3.68	1.26	1.70	1.74	0.92	0.37	0.79



Alt Model-Shift Uniqueness Test

002581452-06, $P = 215.567437$ Days, $E = 55.665101$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.59	6.74	6.63	6.41	5.53	3.41	1.42	1.96	2.18	0.11	0.33	0.22	0.96	0.43	0.18



Stellar Parameters For KIC 002581452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5117^{+115}_{-166}	$3.202^{+0.429}_{-0.231}$	$-0.040^{+0.250}_{-0.300}$	$5.751^{+1.608}_{-2.987}$	$1.922^{+0.278}_{-0.903}$	$0.014^{+0.068}_{-0.008}$
	+2%/-3%	+13%/-7%	+625%/-750%	+28%/-52%	+14%/-47%	+476%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002581452-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-279 ± 42	$21.11^{+22.26}_{-14.34}$	806^{+71}_{-97}	3789^{+2158}_{-714}	250^{+2145}_{-191}
Alt.	-312 ± 46	$21.34^{+20.73}_{-13.85}$	808^{+76}_{-96}	3873^{+1999}_{-726}	281^{+1868}_{-212}

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

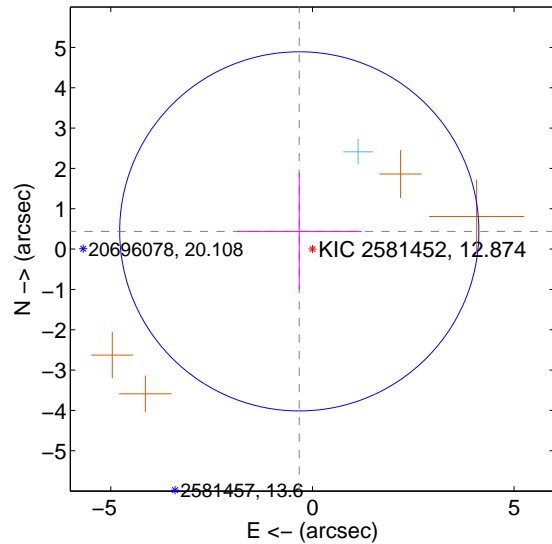
Supplemental centroid analysis for 002581452-06. Kepler magnitude: 12.87. Transit SNR 8.36

There are 1 quarters with good PRF difference image offsets

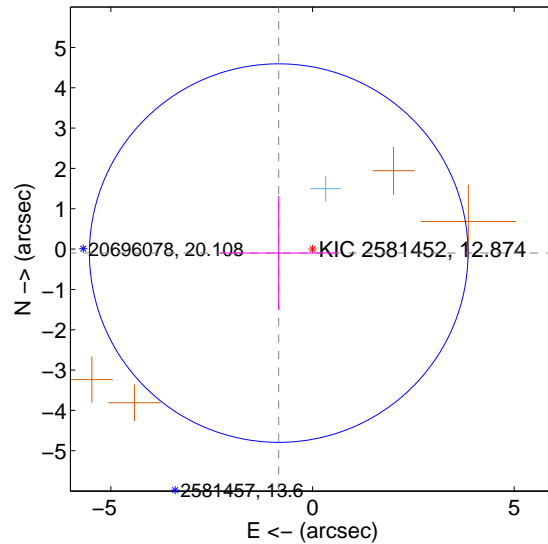
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.548 ± 1.484	0.37	0.327 ± 1.546	0.440 ± 1.448
PRF-fit source offset from KIC position	0.844 ± 1.564	0.54	0.838 ± 1.441	-0.099 ± 1.414
photometric centroid source offset	1.71 ± 0.98	1.74	0.51 ± 0.63	-1.63 ± 1.01

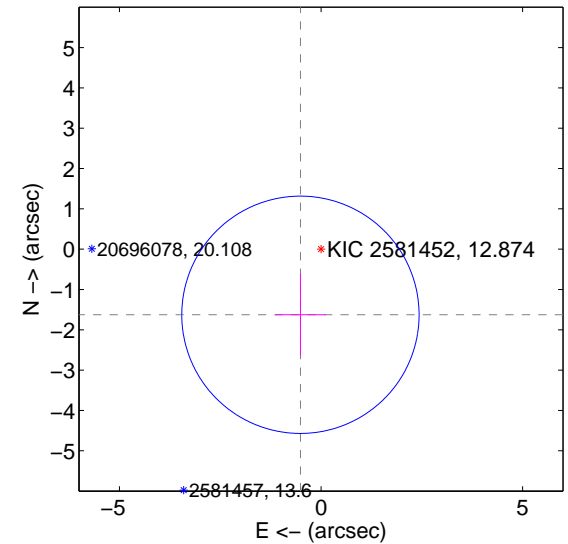
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

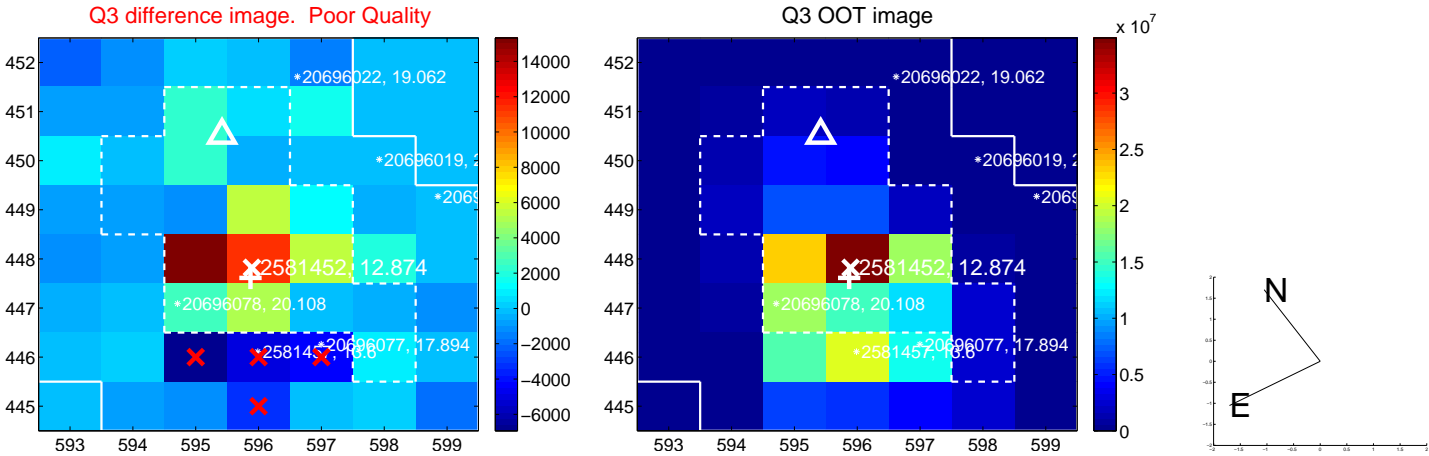


offset from photometric centroids

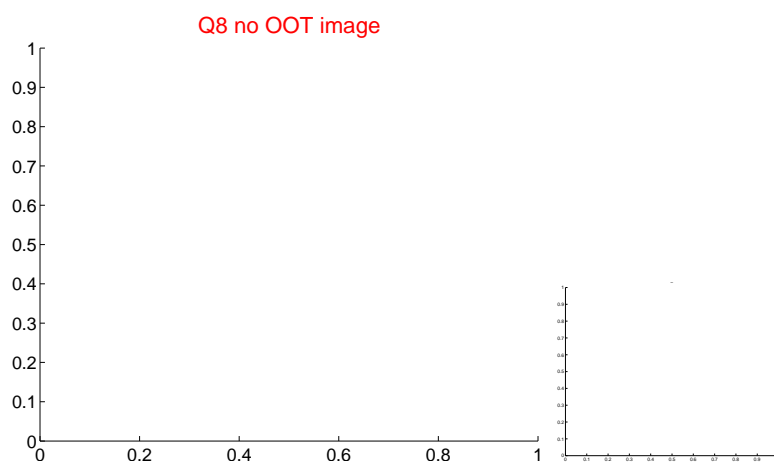
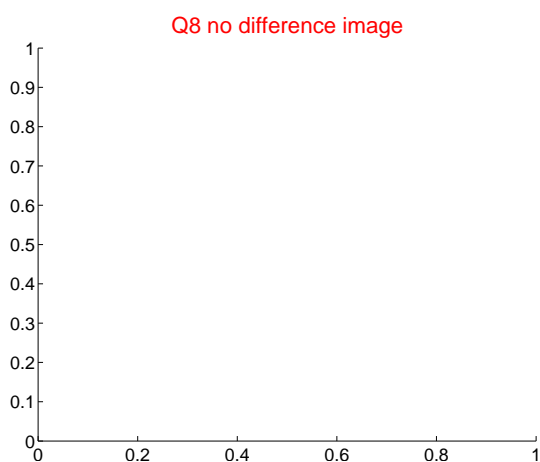
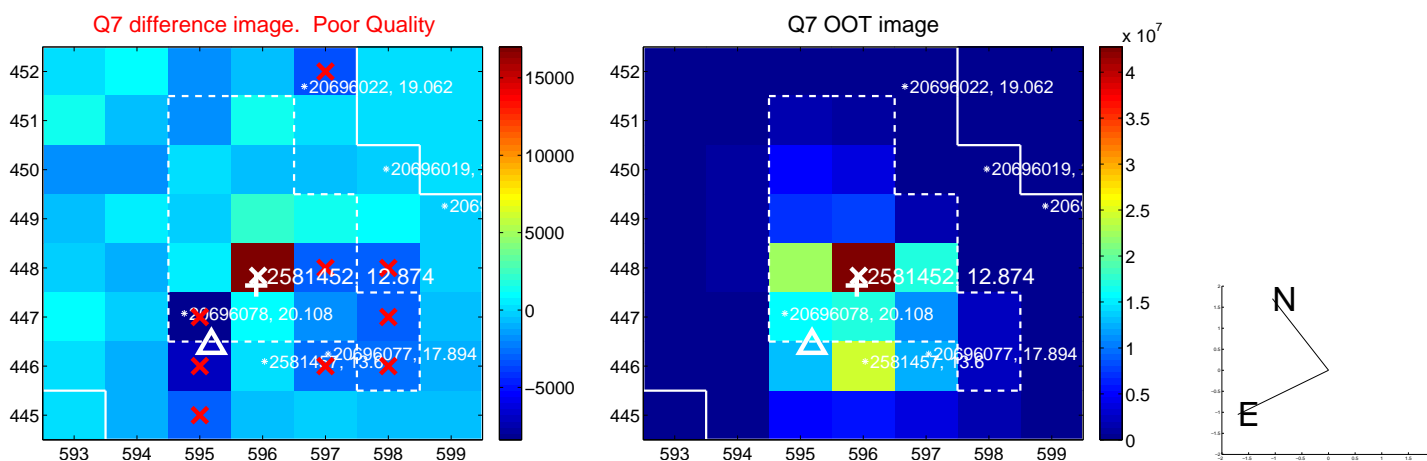
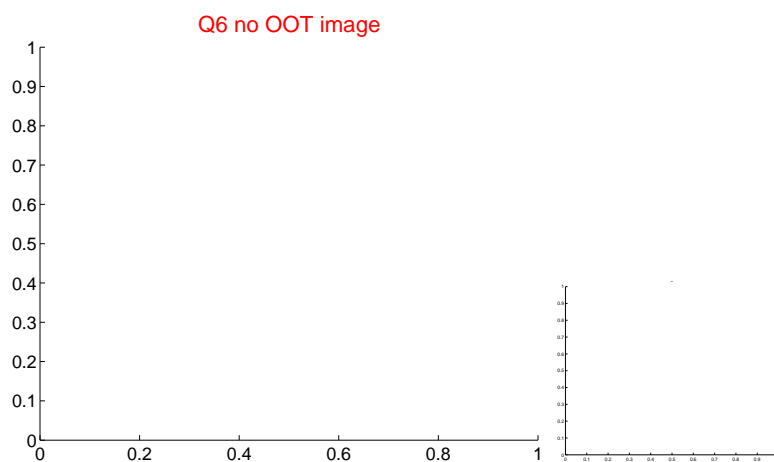
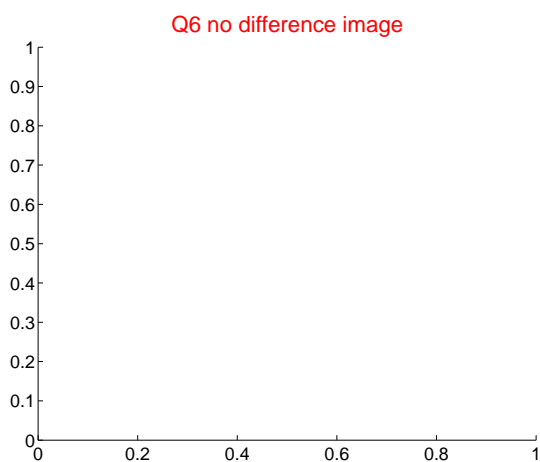
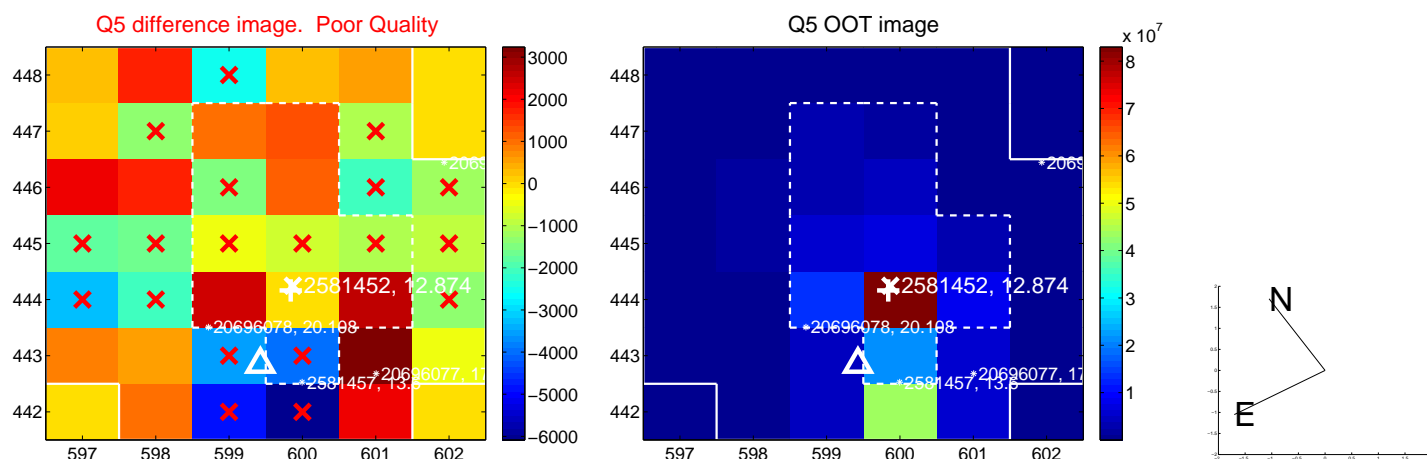


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

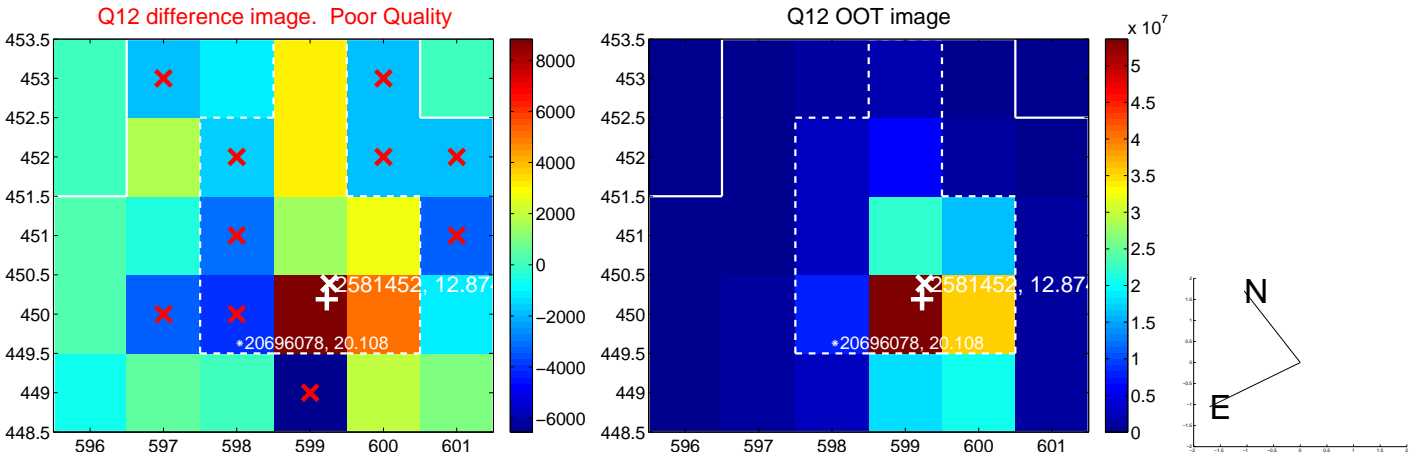
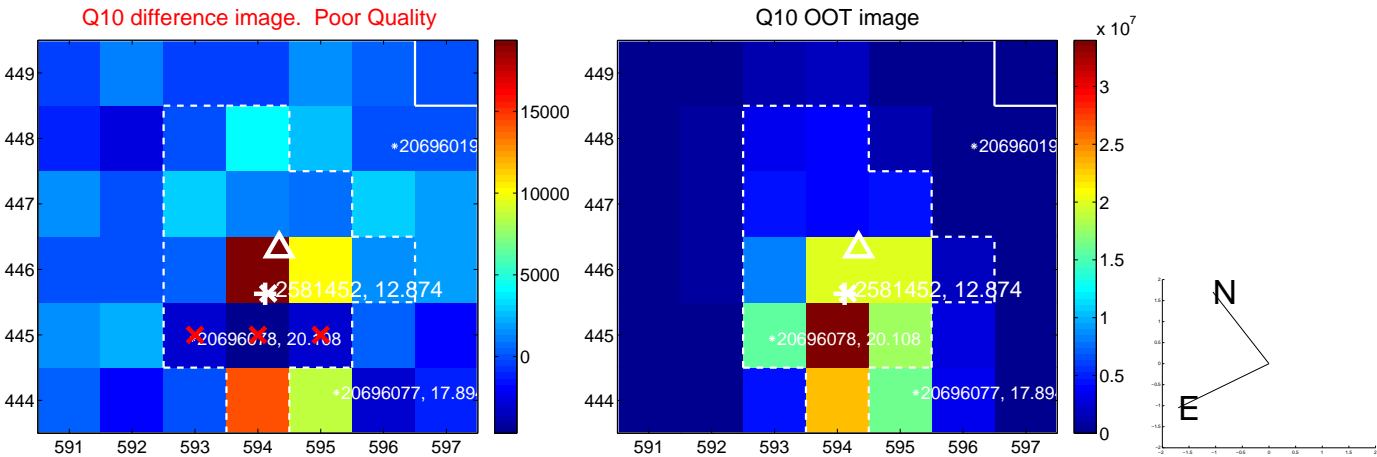
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



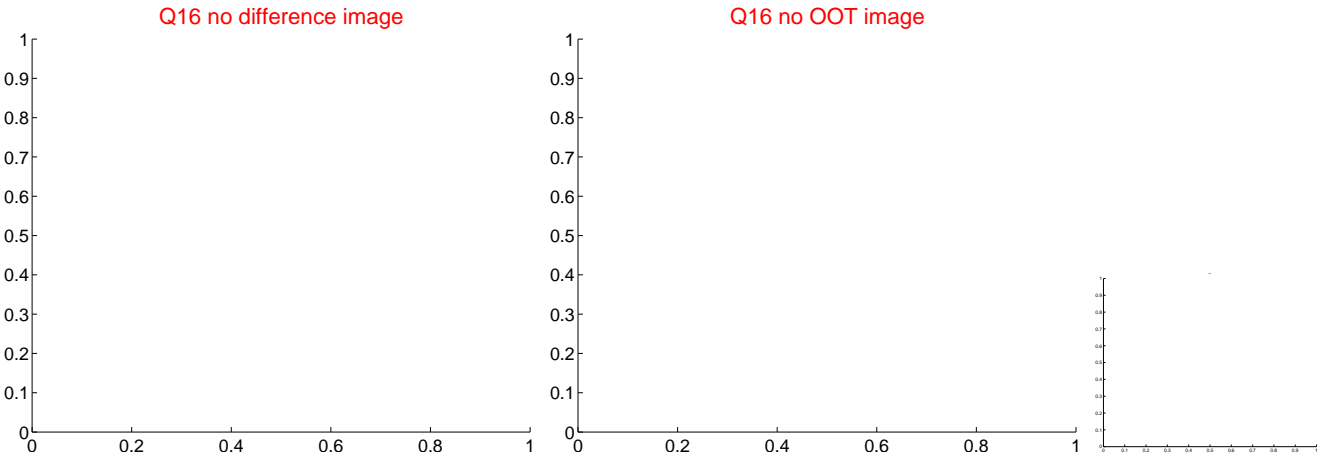
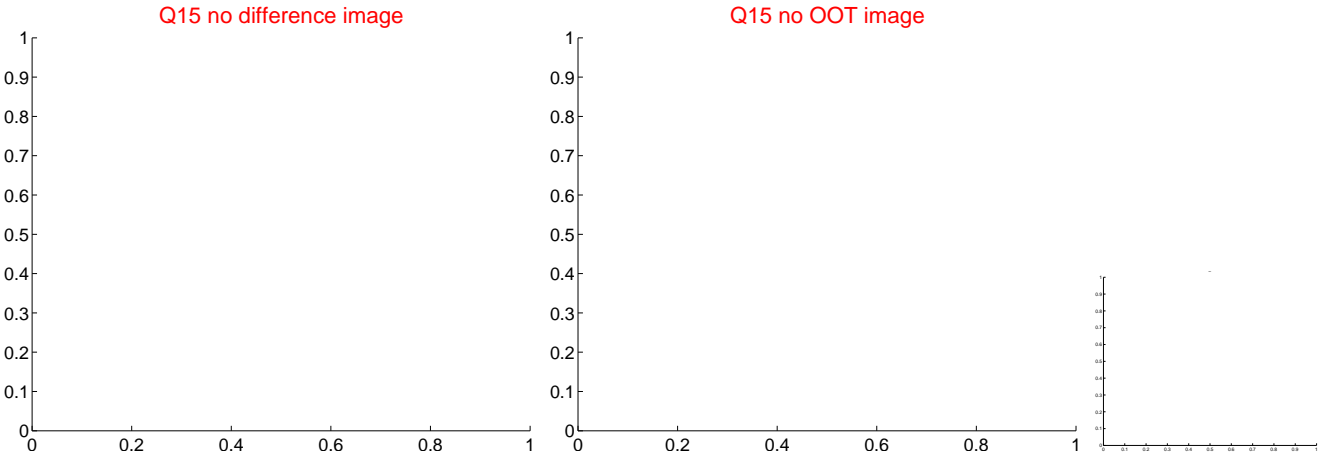
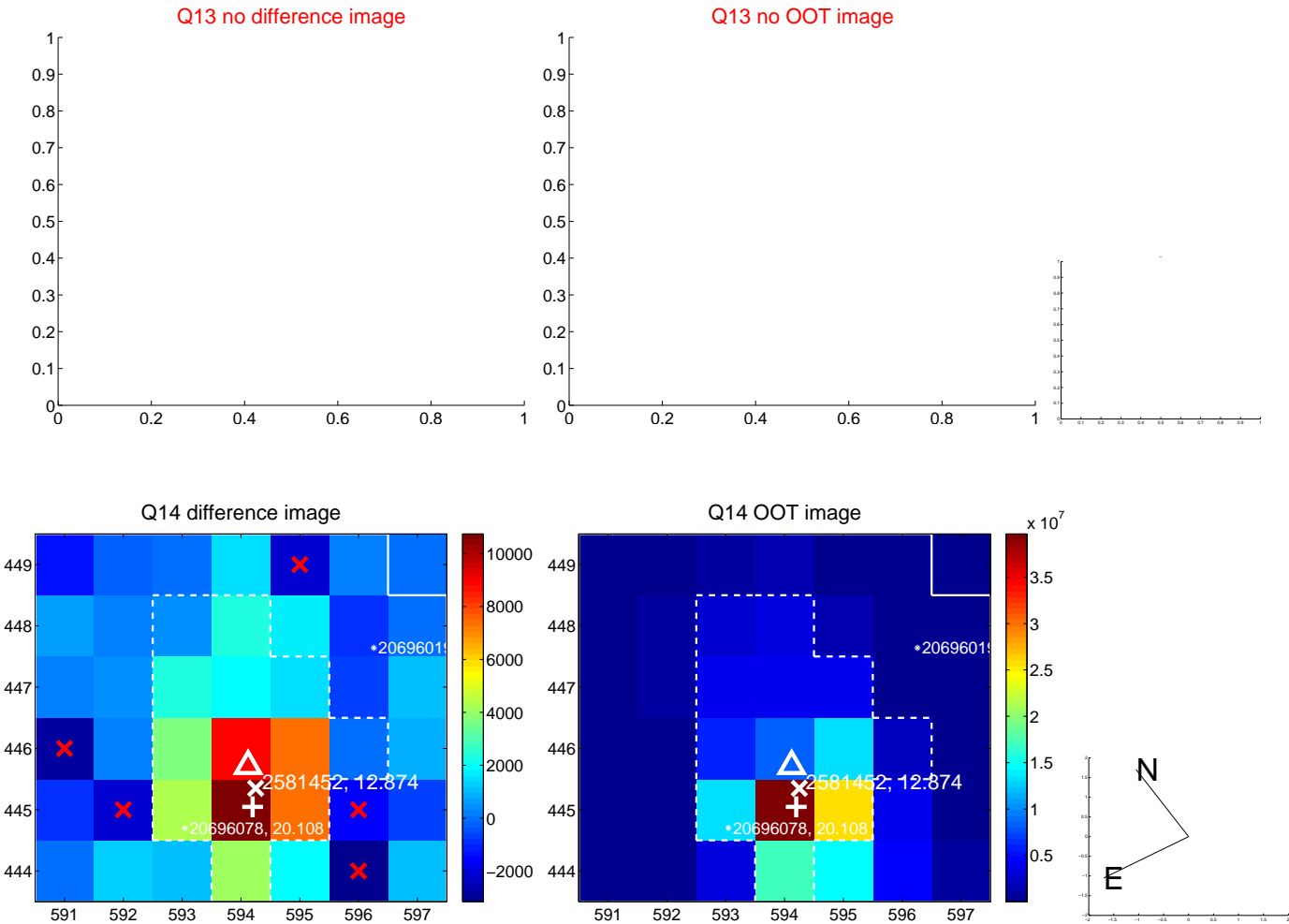
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



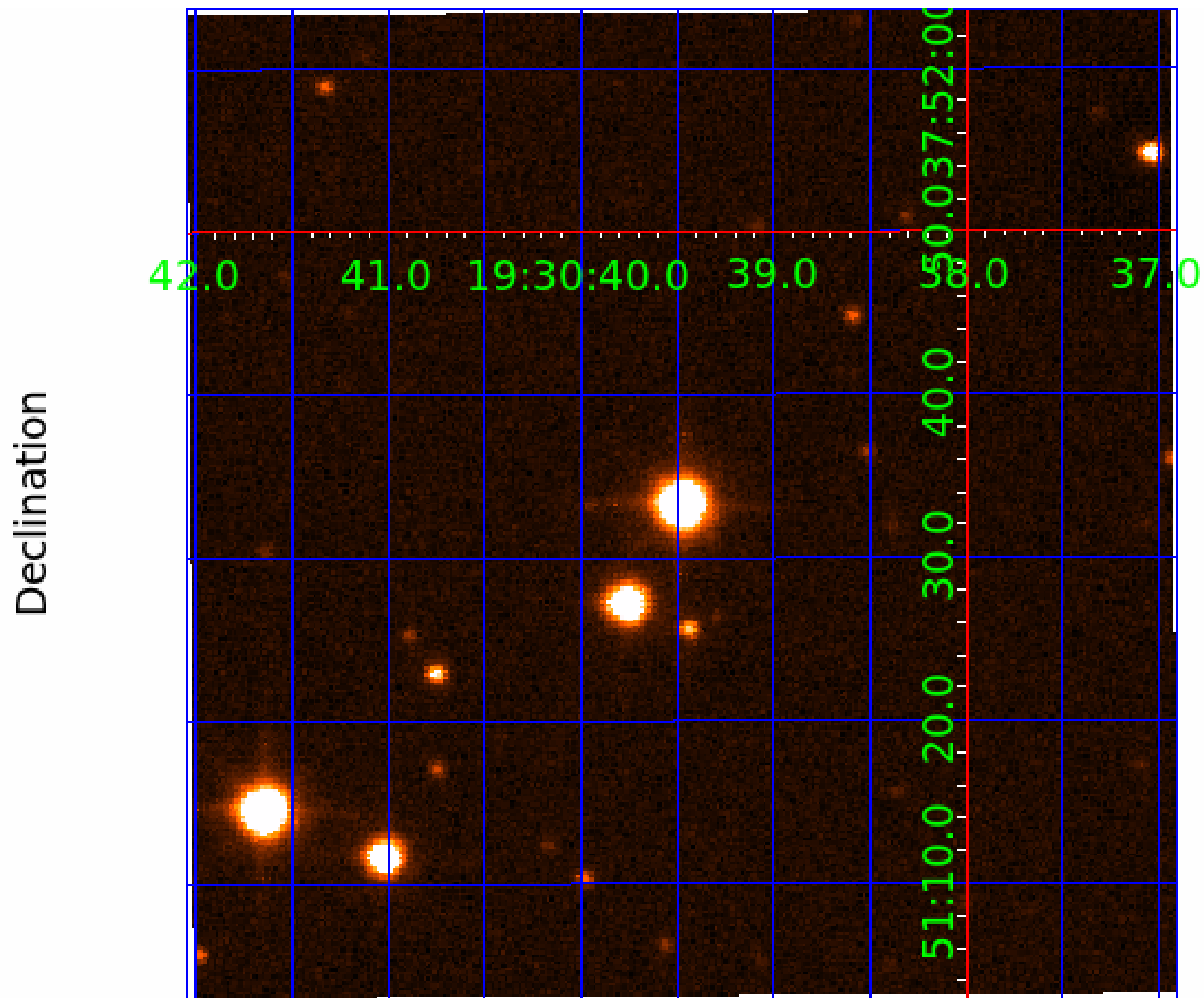
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 002581452

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})
002581452-01	OBS	No	2.617491	133.800090	26.3	13.331	8.9	8.0	5.75	5117	3.04	9511.99
002581452-02	OBS	No	33.977508	153.321823	95.4	18.301	18.3	5.2	5.75	5117	6.58	311.79
002581452-03	OBS	No	169.717627	279.461846	190.7	17.272	9.8	6.5	5.75	5117	8.54	36.52
002581452-04	OBS	No	107.762815	209.299153	453.3	2.515	9.1	9.6	5.75	5117	14.13	66.91
002581452-05	OBS	No	111.863738	193.627102	352.0	2.918	8.7	8.1	5.75	5117	13.21	63.66
002581452-06	OBS	No	215.566106	271.224013	414.9	3.600	8.2	8.4	5.75	5117	12.38	26.55
002581452-07	OBS	No	142.742350	232.683893	469.7	2.796	8.5	8.1	5.75	5117	12.60	45.99
002581452-08	OBS	No	638.962510	294.409498	388.3	3.756	7.8	7.4	5.75	5117	13.57	6.24
002581452-09	OBS	No	52.615085	177.948320	286.7	2.766	7.6	7.4	5.75	5117	11.24	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002581452-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
002581452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002581452-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002581452-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_UNCERTAIN
002581452-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
002581452-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002581452-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

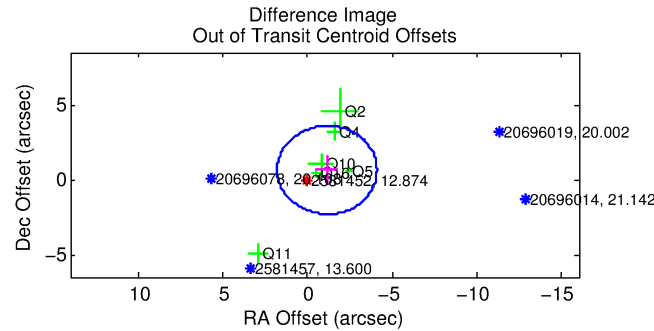
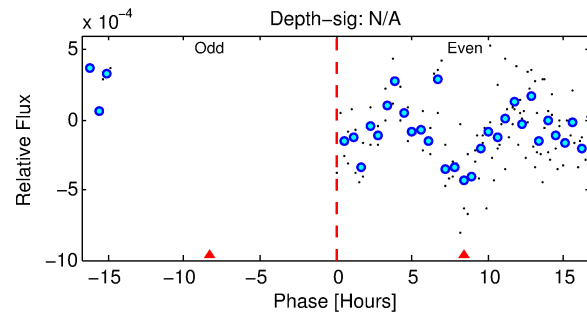
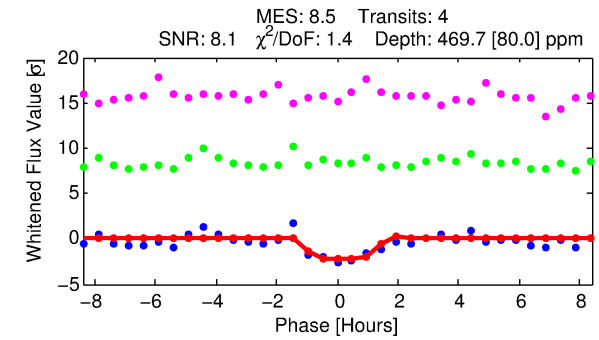
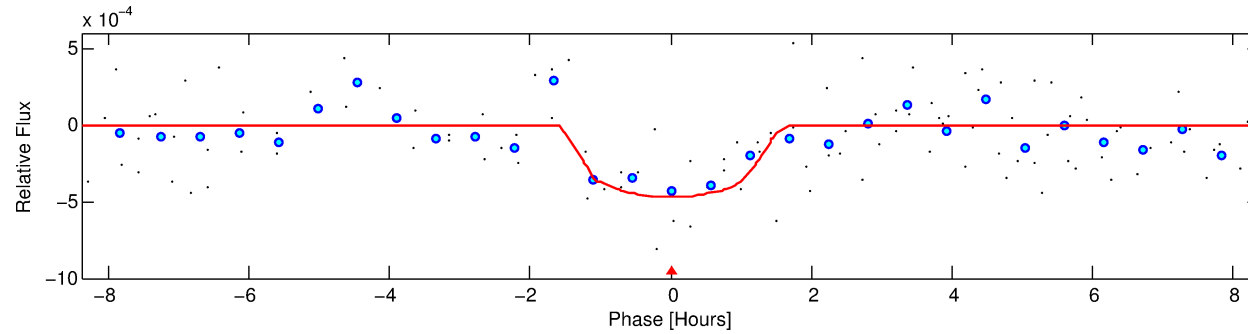
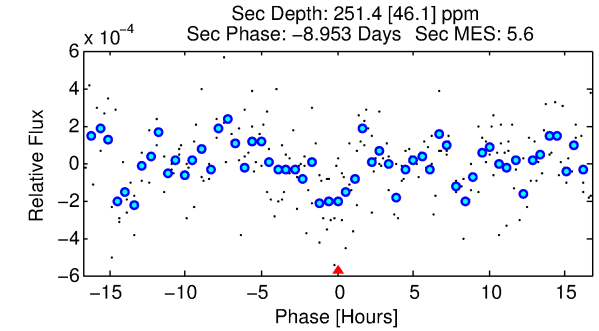
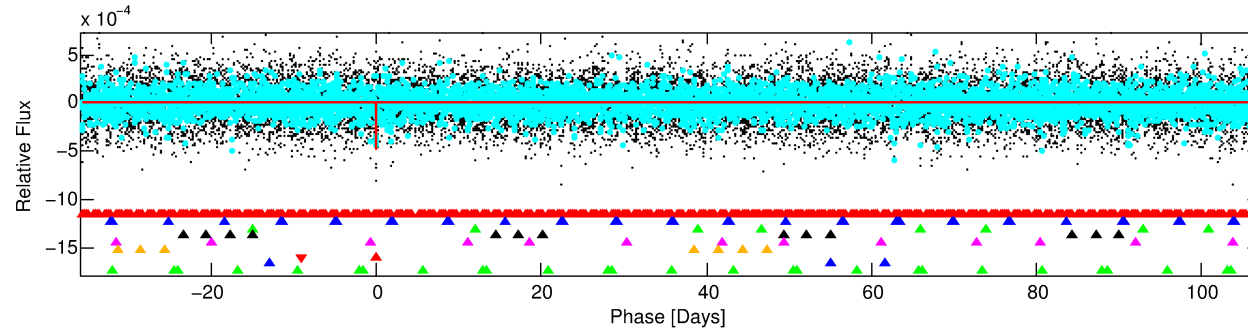
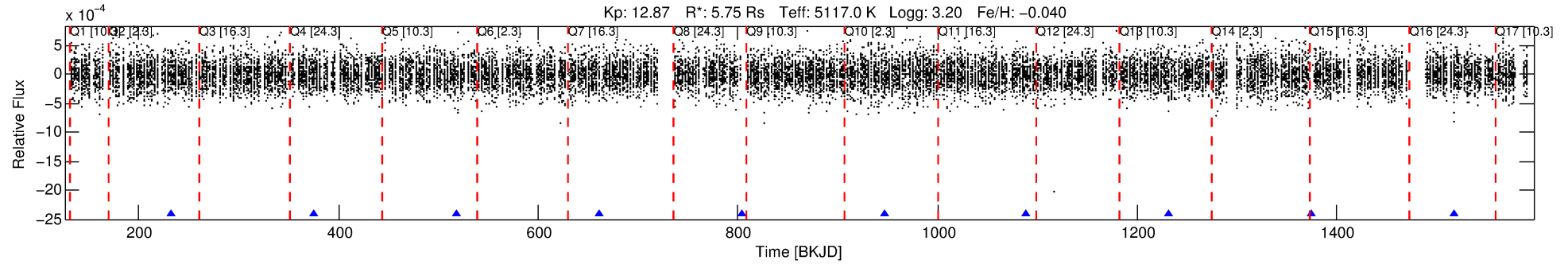
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002581452-07

No Significant Match Found

DV One-Page Summary

KIC: 2581452 Candidate: 7 of 9 Period: 142.742 d



DV Fit Results:

Period = 142.74235 [0.00158] d
Epoch = 232.6839 [0.0117] BKJD
Rp/R* = 0.0201 [0.0913]
a/R* = 349.31 [5690.01]
b = 0.49 [25.99]
Seff = 46.00 [34.74]
Teq = 664 [125] K
Rp = 12.60 [57.68] Re
a = 0.6646 [0.3176] AU
Ag = 384.99 [3515.43] [0.11σ]
Teffp = 4548 [10348] K [0.38σ]

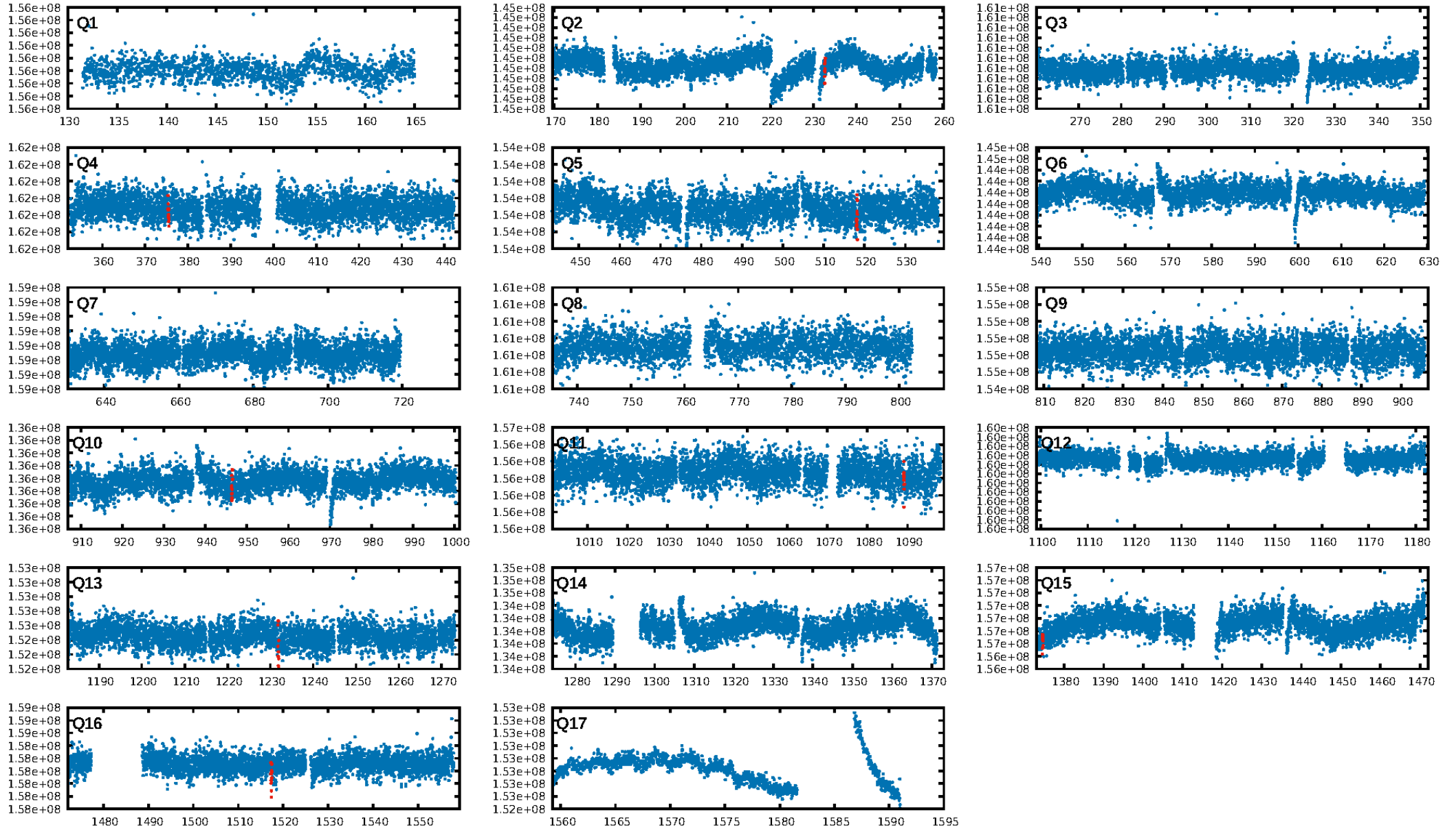
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [183.36σ]
LongPeriod-sig: 100.0% [37.00σ]
ModelChiSquare2-sig: 50.5%
ModelChiSquareGof-sig: 82.6%
Bootstrap-pfa: 2.87e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.5542
Centroid-sig: N/A
Centroid-so: 1.588 arcsec [1.79σ]
OotOffset-rm: 1.311 arcsec [1.33σ]
KicOffset-rm: 0.688 arcsec [0.42σ]
OotOffset-st: 2/1/2/1 [6]
KicOffset-st: 2/1/2/1 [6]
DiffImageQuality-fgm: 0.50 [3/6]
DiffImageOverlap-fno: 0.50 [3/6]

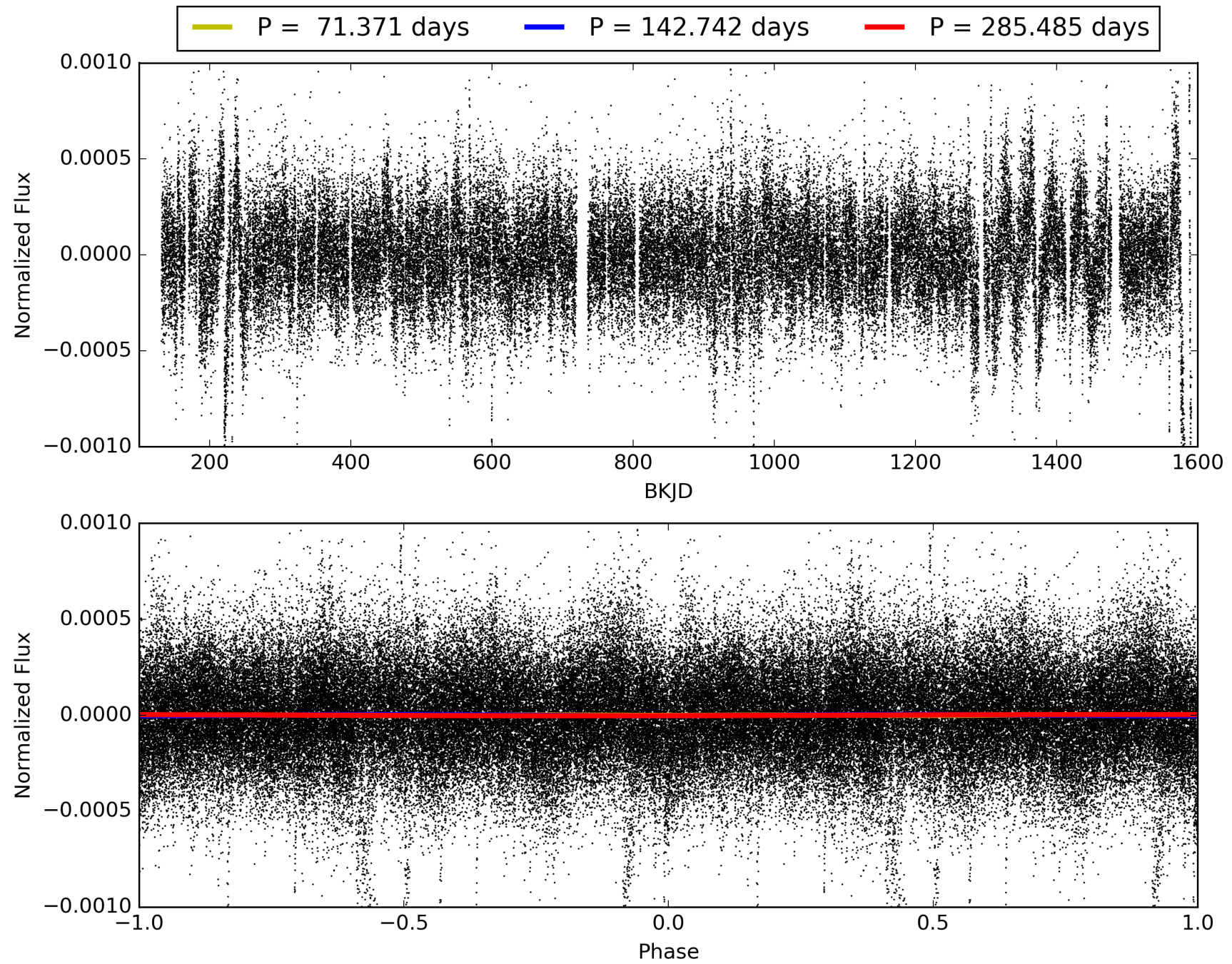
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:22:54 Z

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

TCE 002581452-07, PDC Light Curves

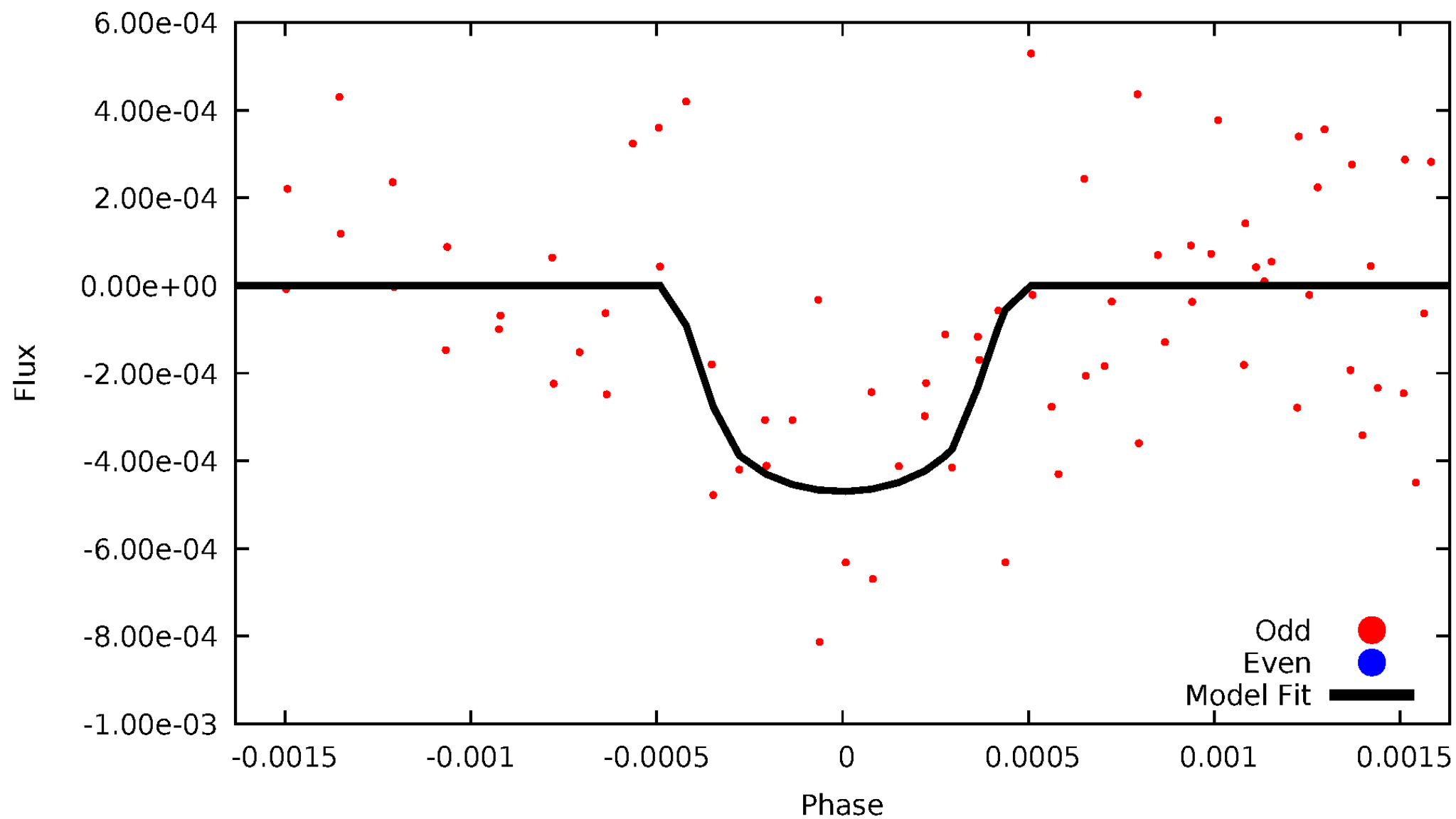


TCE 002581452-07



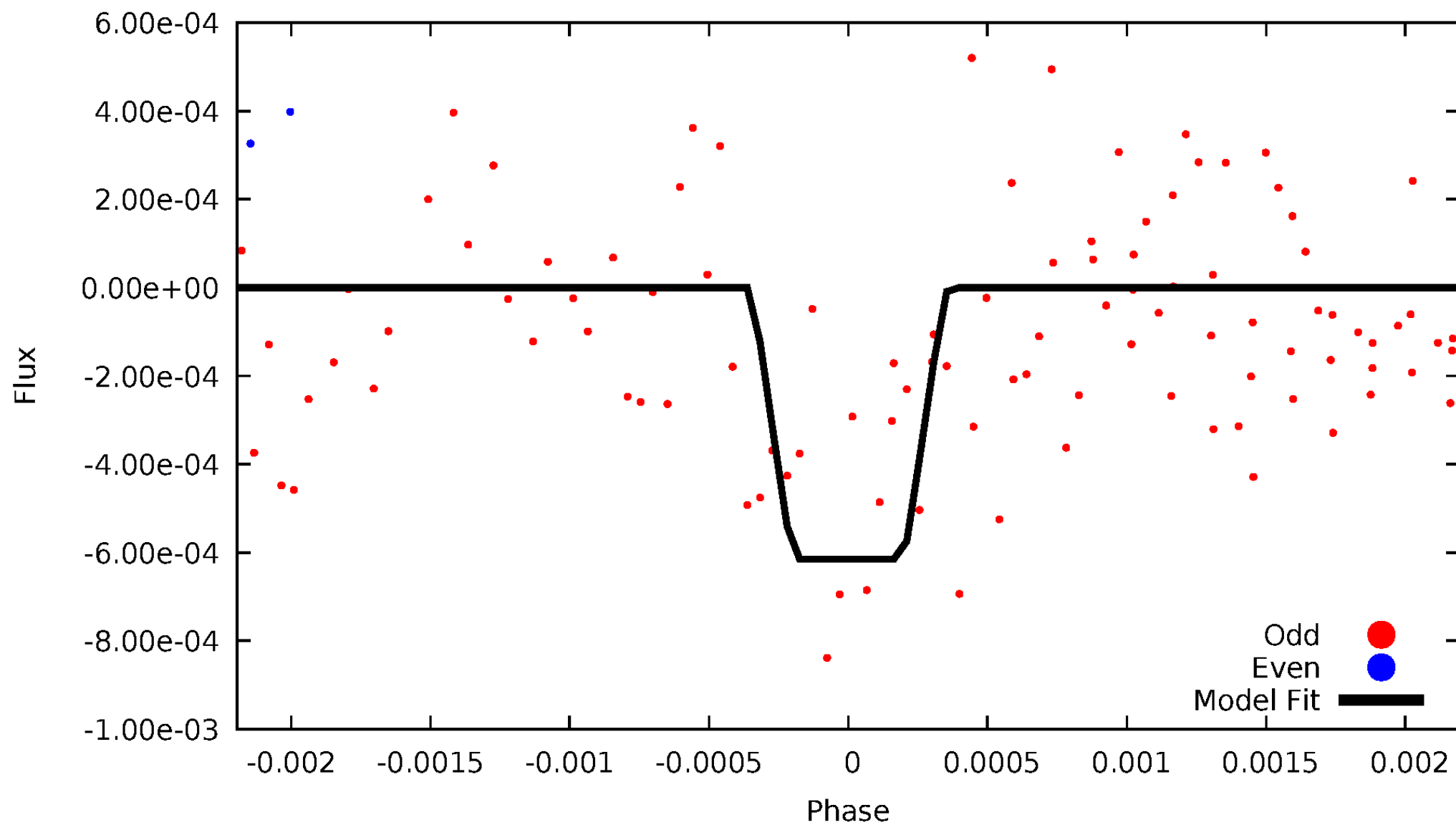
DV Odd/Even

TCE 002581452-07



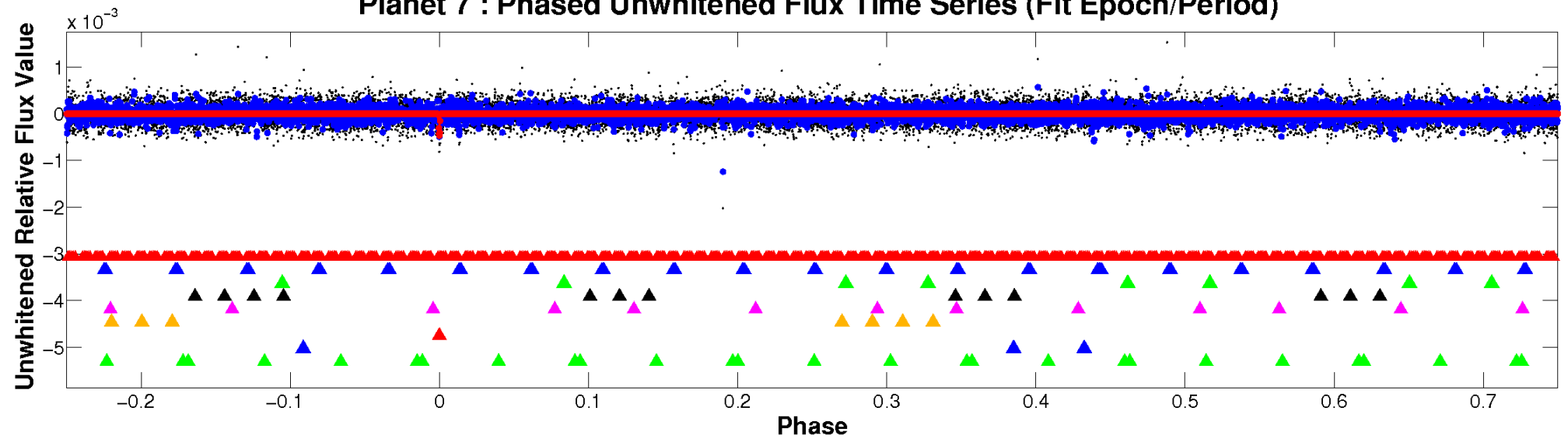
ALT Odd/Even

TCE 002581452-07

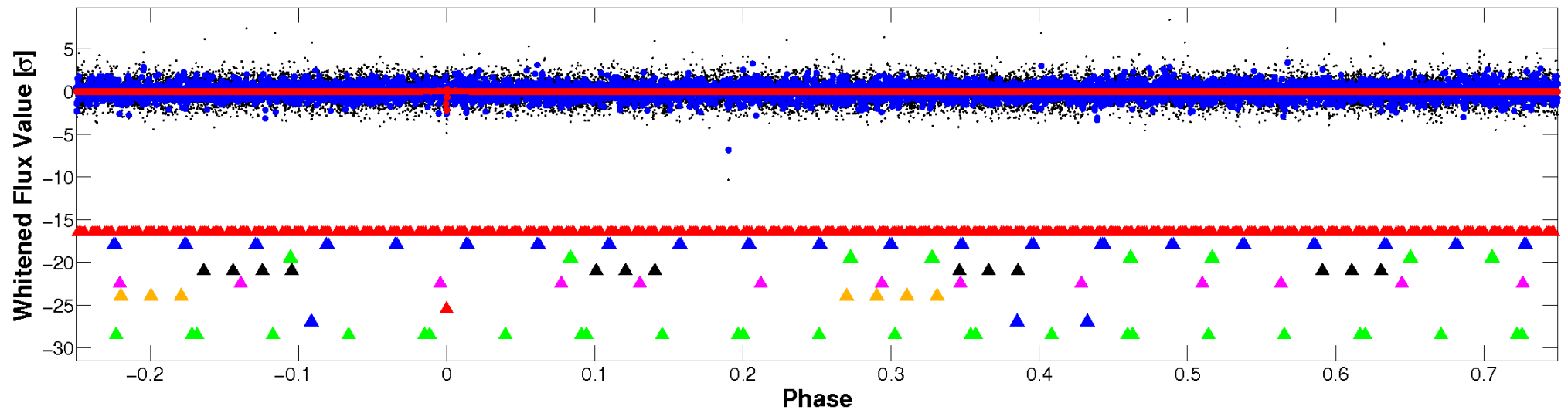


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

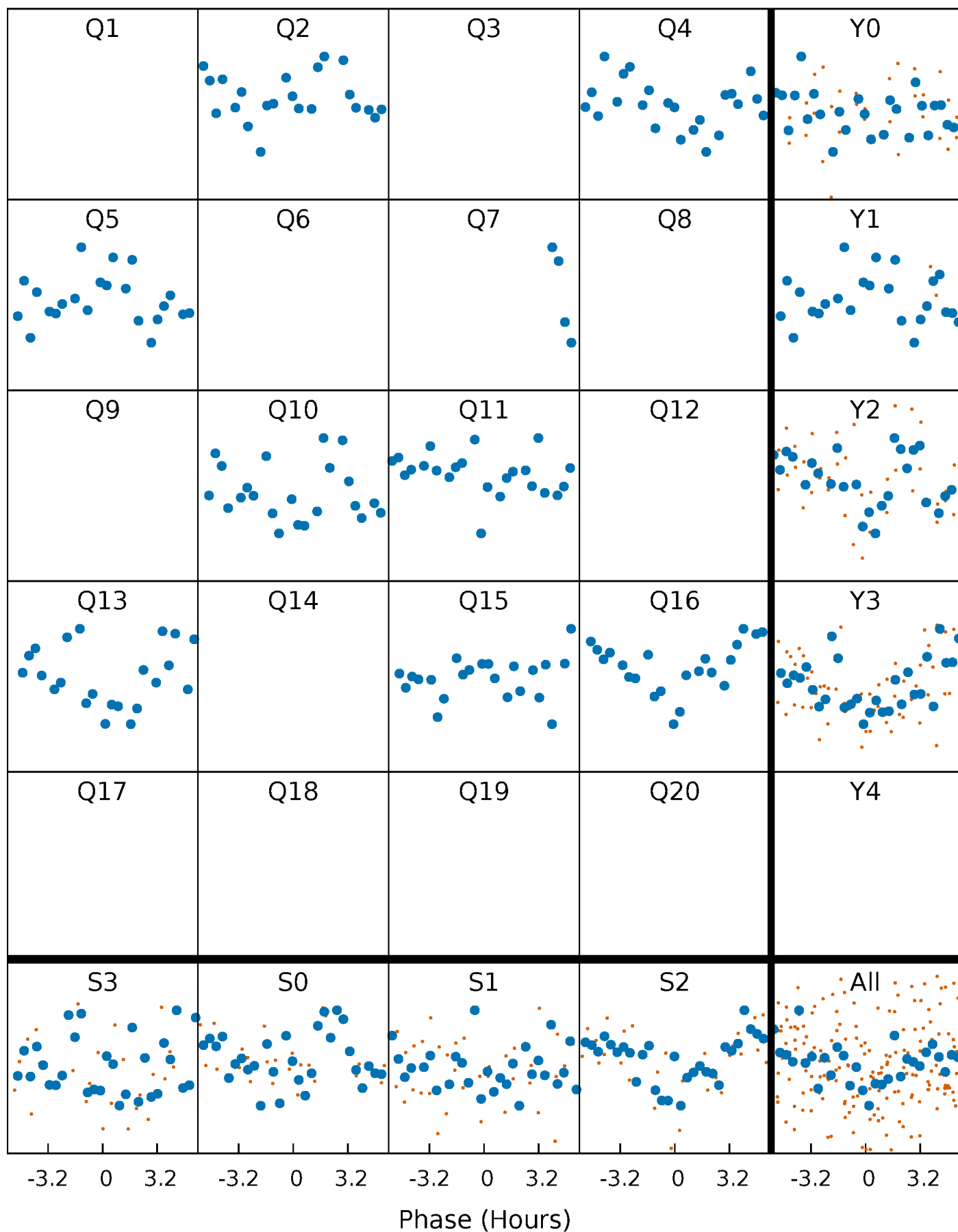


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



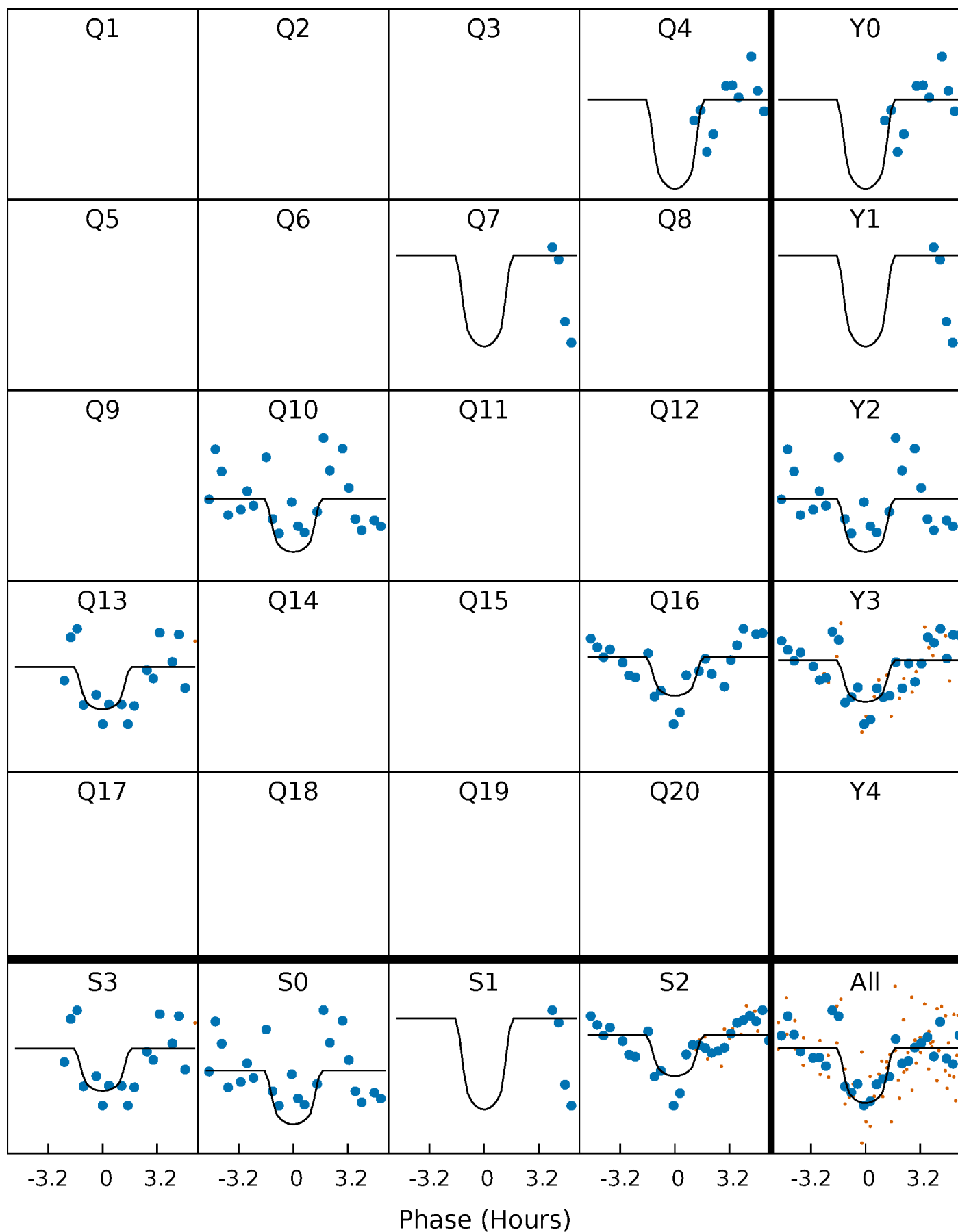
PDC Quarter-Phased Transit Curves

TCE 002581452-07 P=142.742350 Days $T_0=232.683893$ (BKJD)



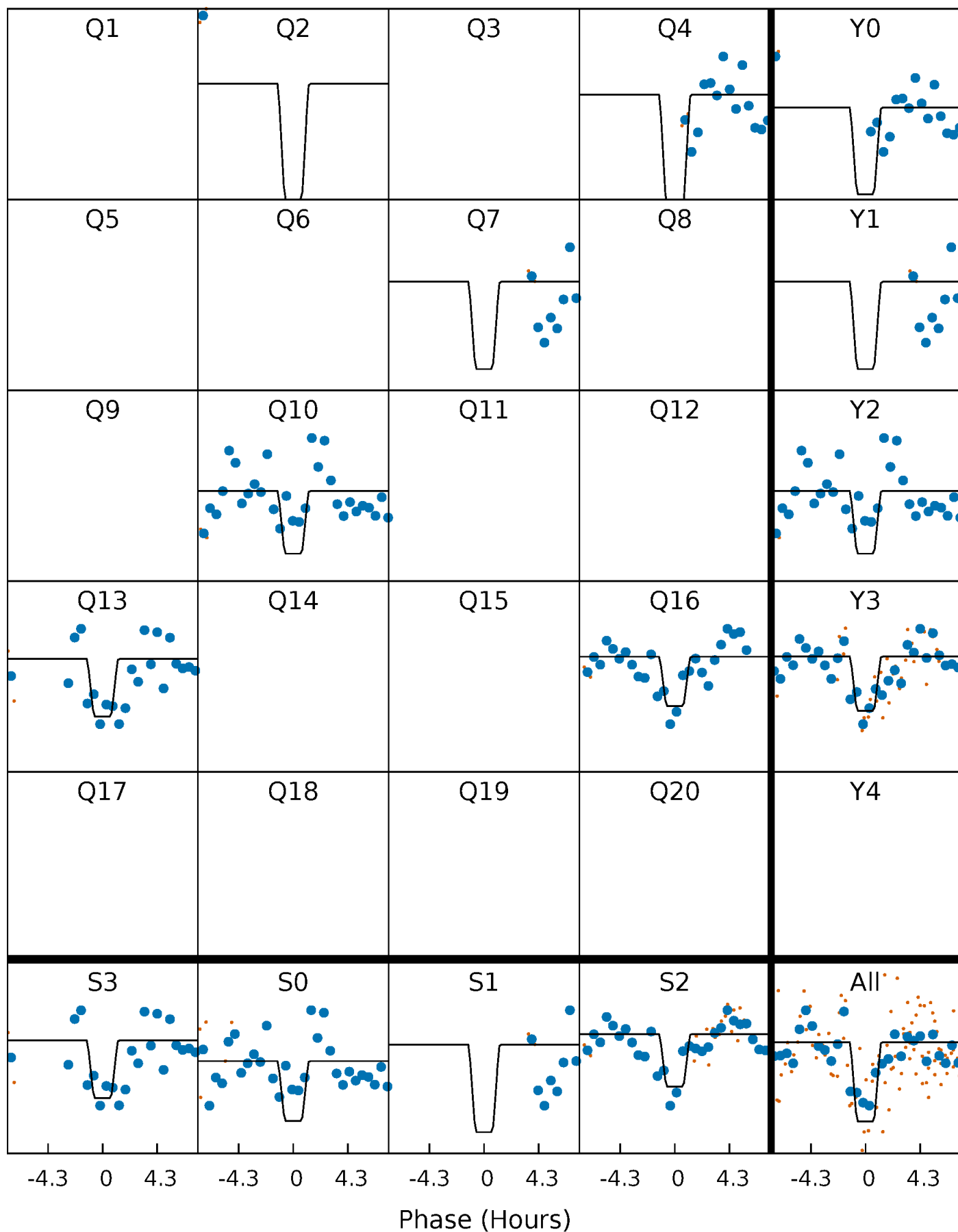
DV Quarter-Phased Transit Curves

TCE 002581452-07 $P=142.742350$ Days $T_0=232.683893$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

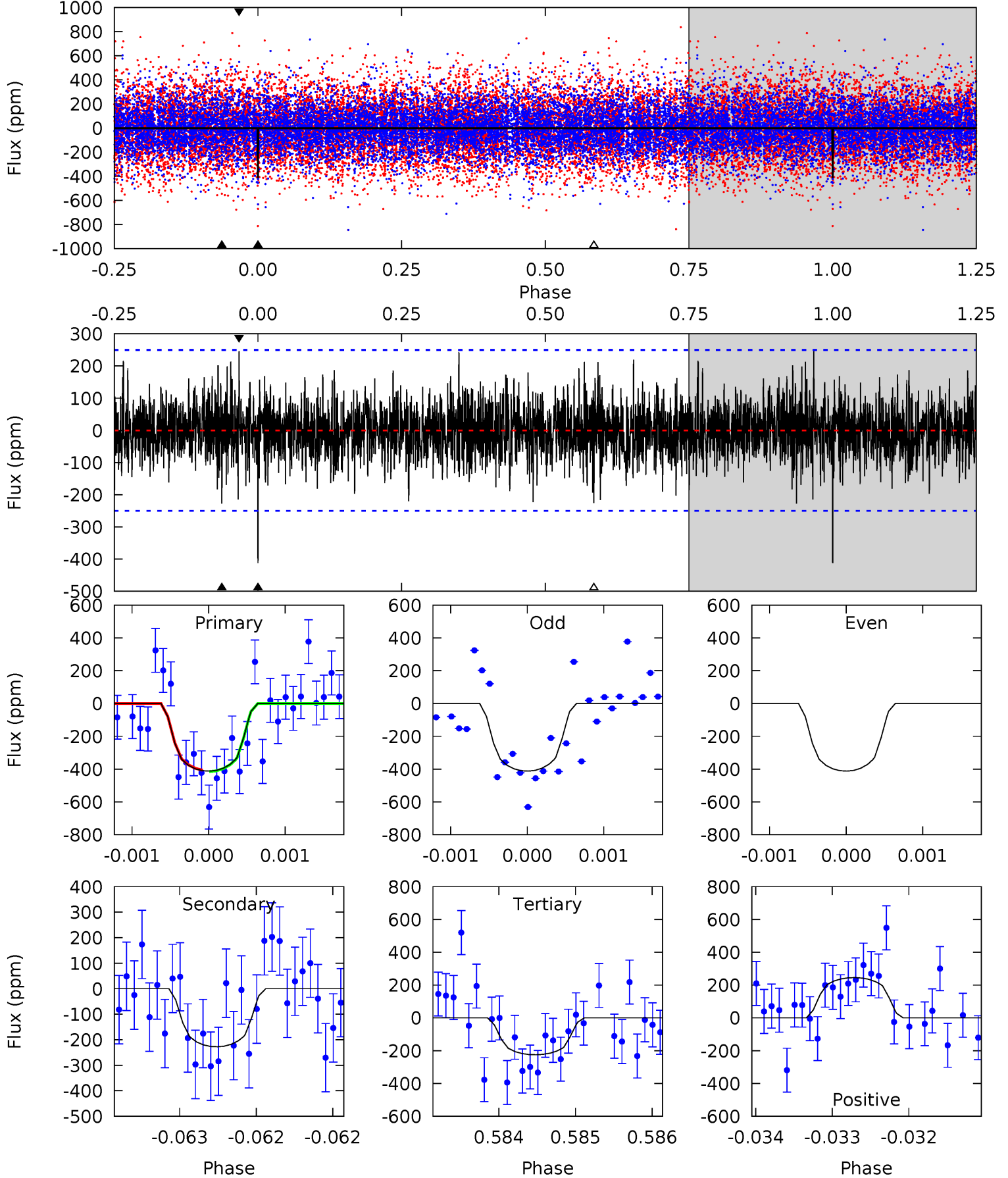
TCE 002581452-07 $P=142.740605$ Days $T_0=232.701749$ (BKJD)



DV Model-Shift Uniqueness Test

002581452-07, P = 142.742350 Days, E = 89.941543 Days

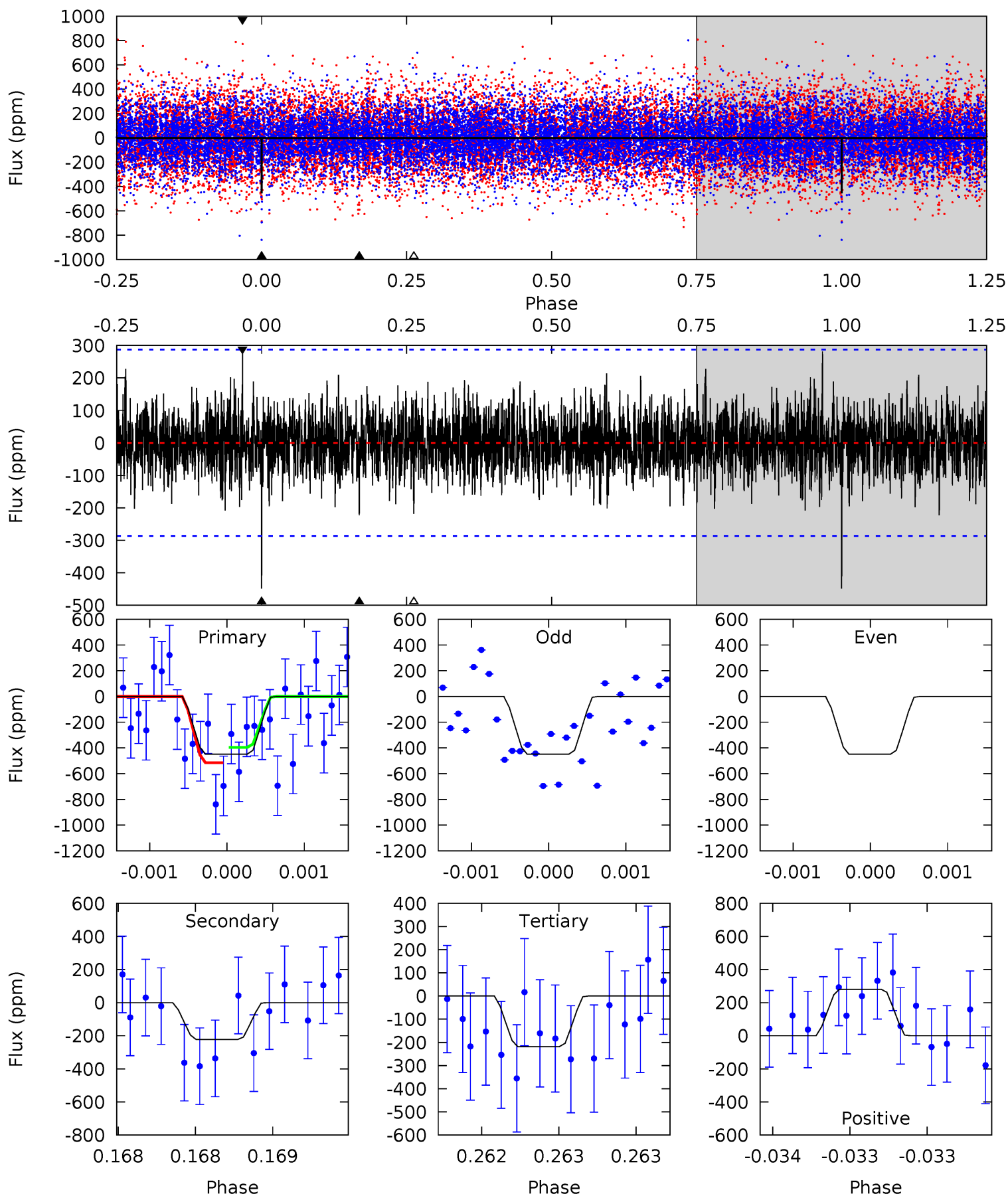
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.07	5.00	4.95	5.40	5.49	3.36	1.42	4.12	3.67	0.06	-0.39	0	1.01	0.37	0.09



Alt Model-Shift Uniqueness Test

002581452-07, P = 142.740605 Days, E = 89.961144 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.65	4.29	4.21	5.42	5.53	3.42	1.27	4.43	3.23	0.08	-1.13	0	0.96	0.39	1.10



Stellar Parameters For KIC 002581452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5117^{+115}_{-166}	$3.202^{+0.429}_{-0.231}$	$-0.040^{+0.250}_{-0.300}$	$5.751^{+1.608}_{-2.987}$	$1.922^{+0.278}_{-0.903}$	$0.014^{+0.068}_{-0.008}$
	+2%/-3%	+13%/-7%	+625%/-750%	+28%/-52%	+14%/-47%	+476%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002581452-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-228 ± 46	$42.73^{+43.67}_{-31.19}$	922^{+84}_{-117}	2966^{+1398}_{-491}	28^{+352}_{-21}
Alt.	-222 ± 52	$41.49^{+44.13}_{-28.75}$	916^{+99}_{-125}	2936^{+1235}_{-472}	29^{+280}_{-22}

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

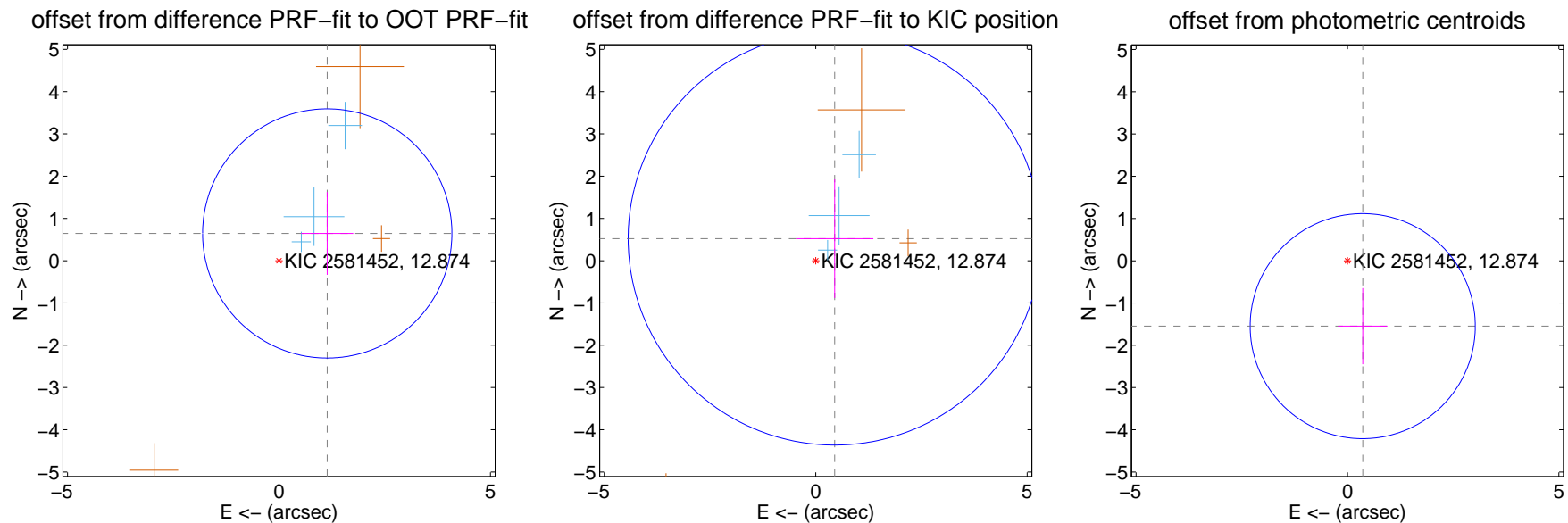
DV Centroid Data

Supplemental centroid analysis for 002581452-07. Kepler magnitude: 12.87. Transit SNR 8.11

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.311 ± 0.982	1.33	-1.141 ± 0.616	0.645 ± 0.980
PRF-fit source offset from KIC position	0.688 ± 1.628	0.42	-0.448 ± 0.913	0.521 ± 1.402
photometric centroid source offset	1.59 ± 0.89	1.79	-0.36 ± 0.58	-1.55 ± 0.90



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.

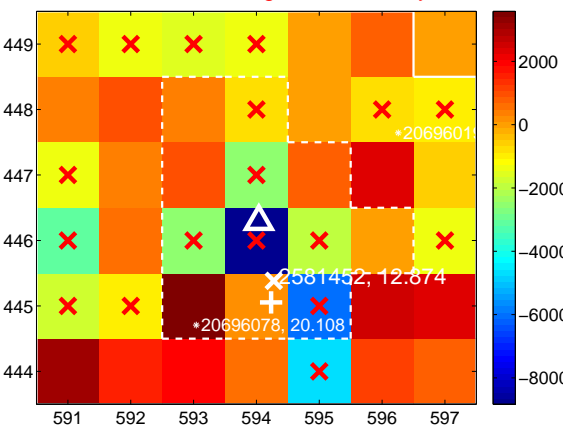
Q1 no difference image



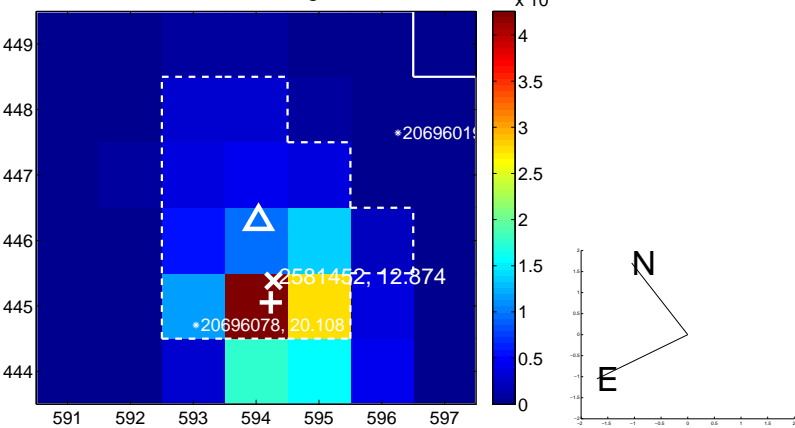
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



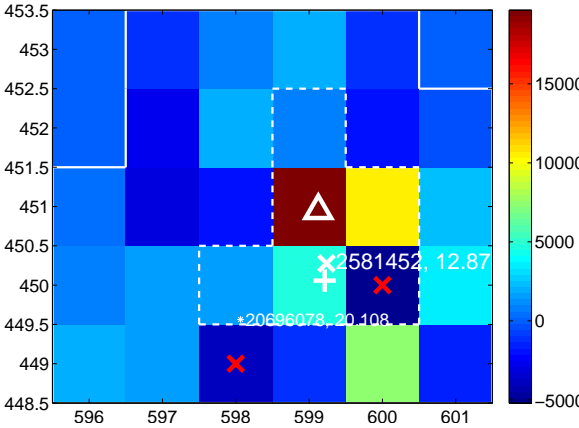
Q3 no difference image



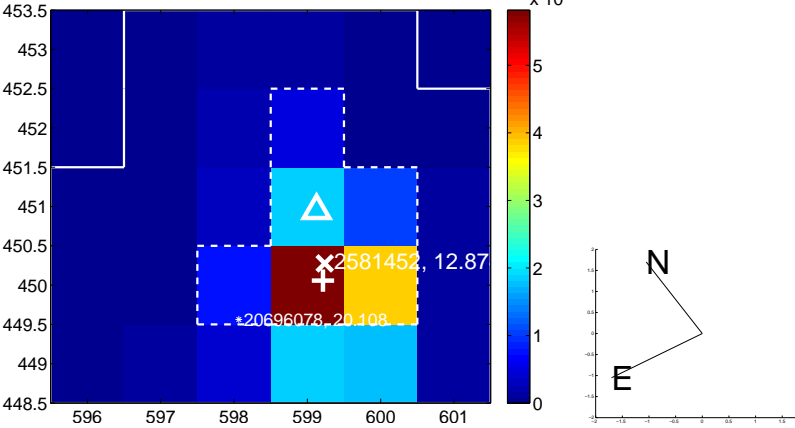
Q3 no OOT image



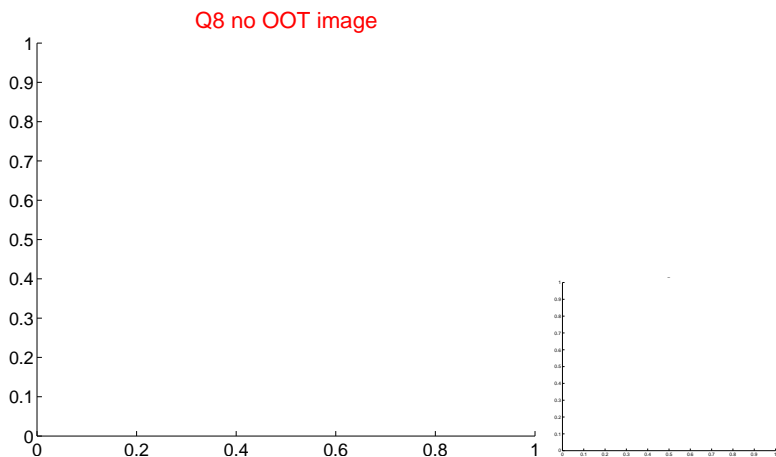
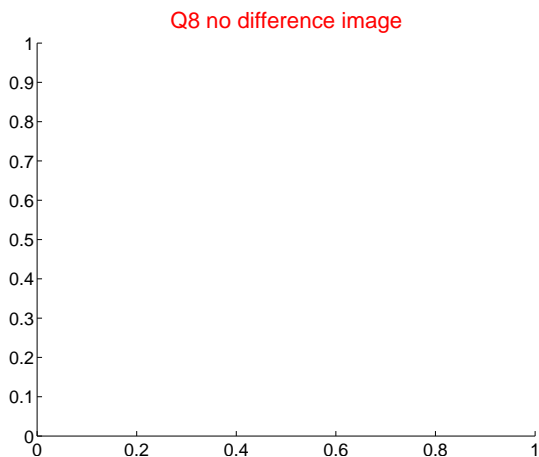
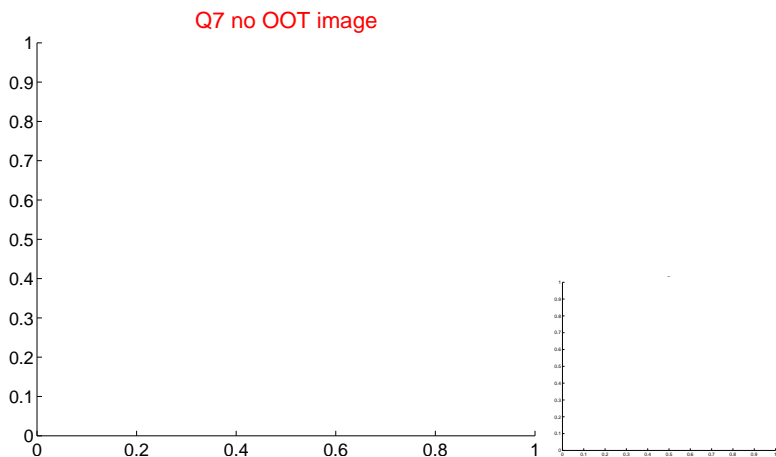
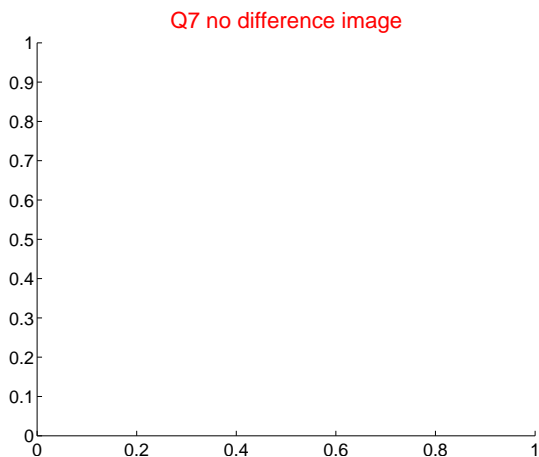
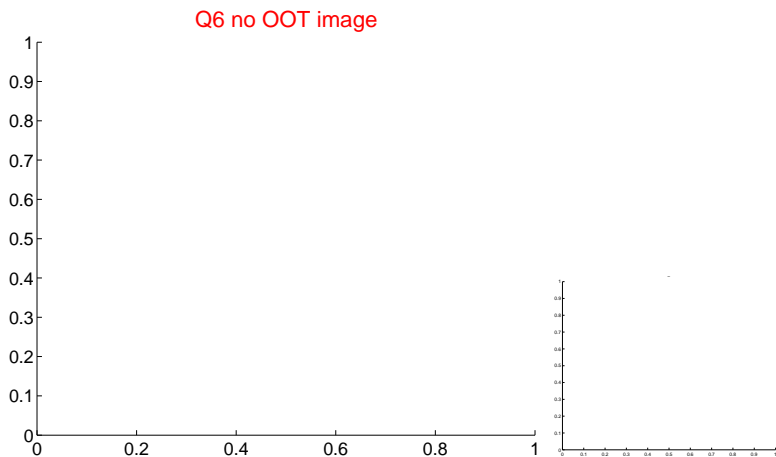
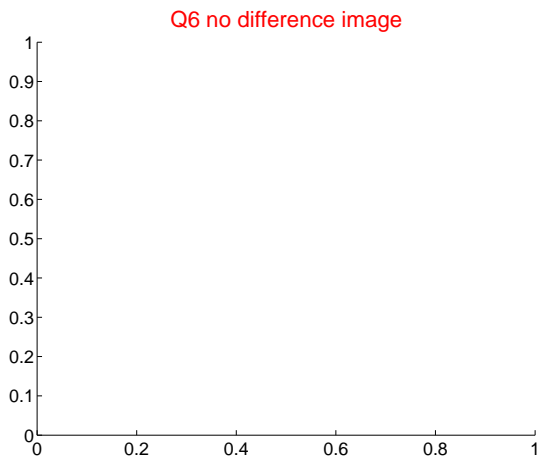
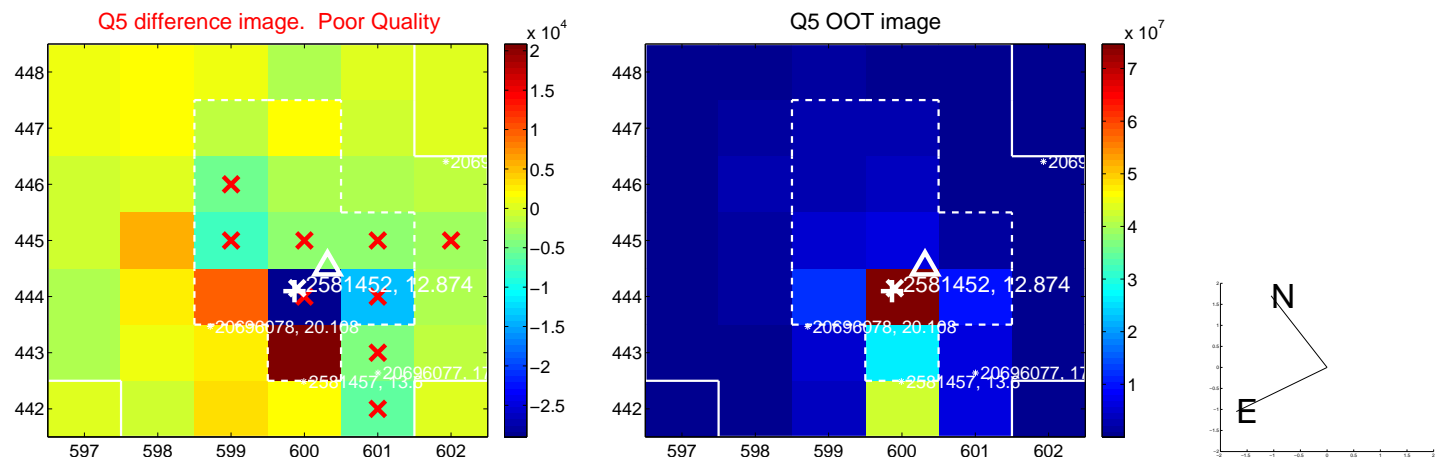
Q4 difference image



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.

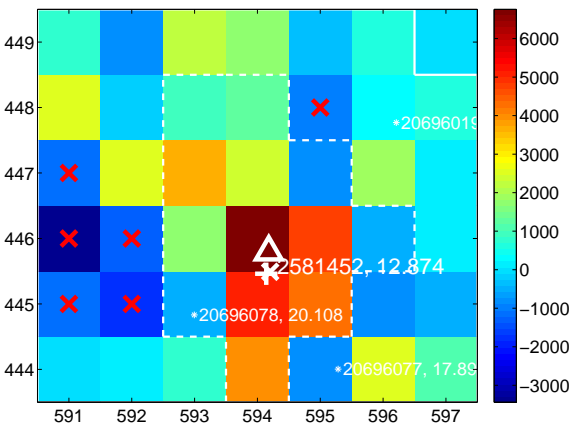
Q9 no difference image



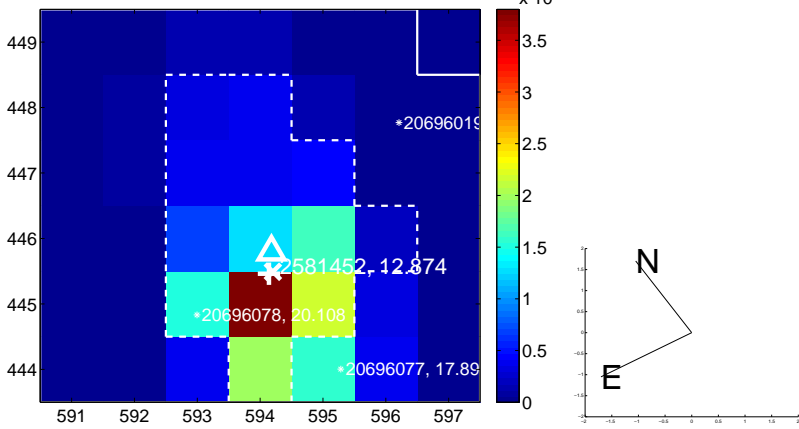
Q9 no OOT image



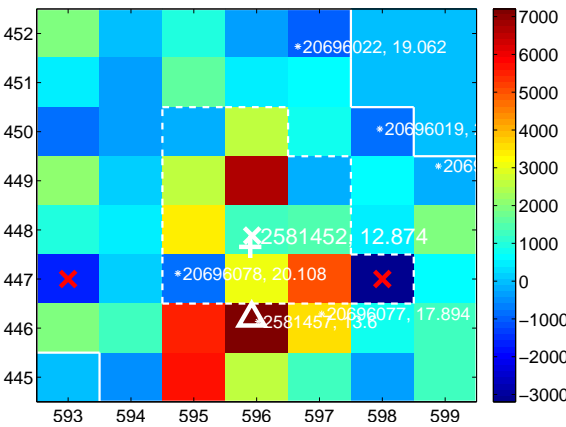
Q10 difference image



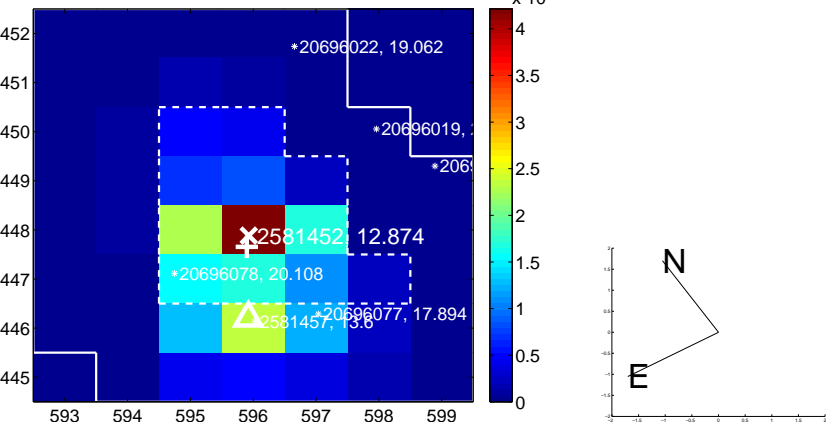
Q10 OOT image



Q11 difference image. Poor Quality



Q11 OOT image



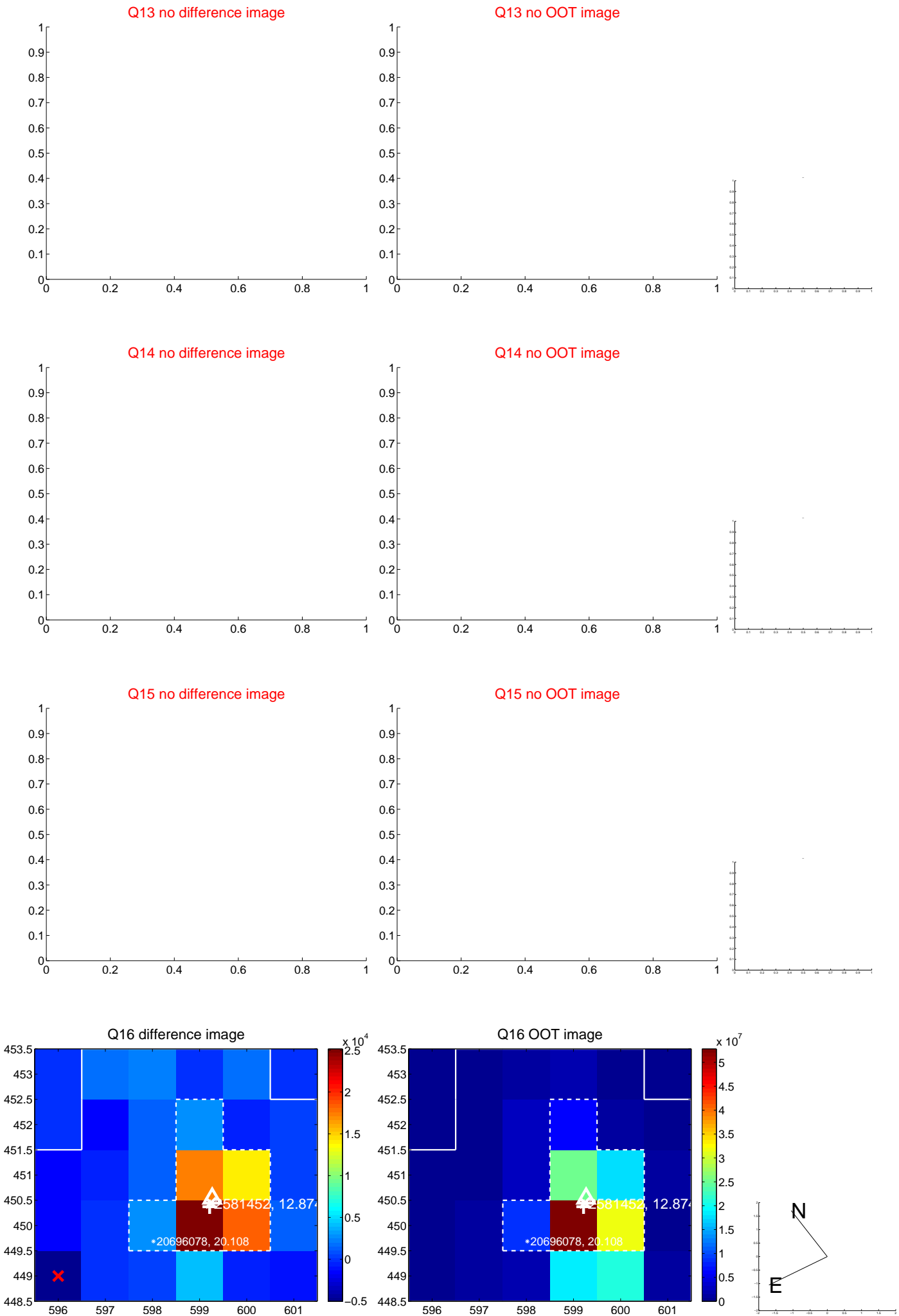
Q12 no difference image



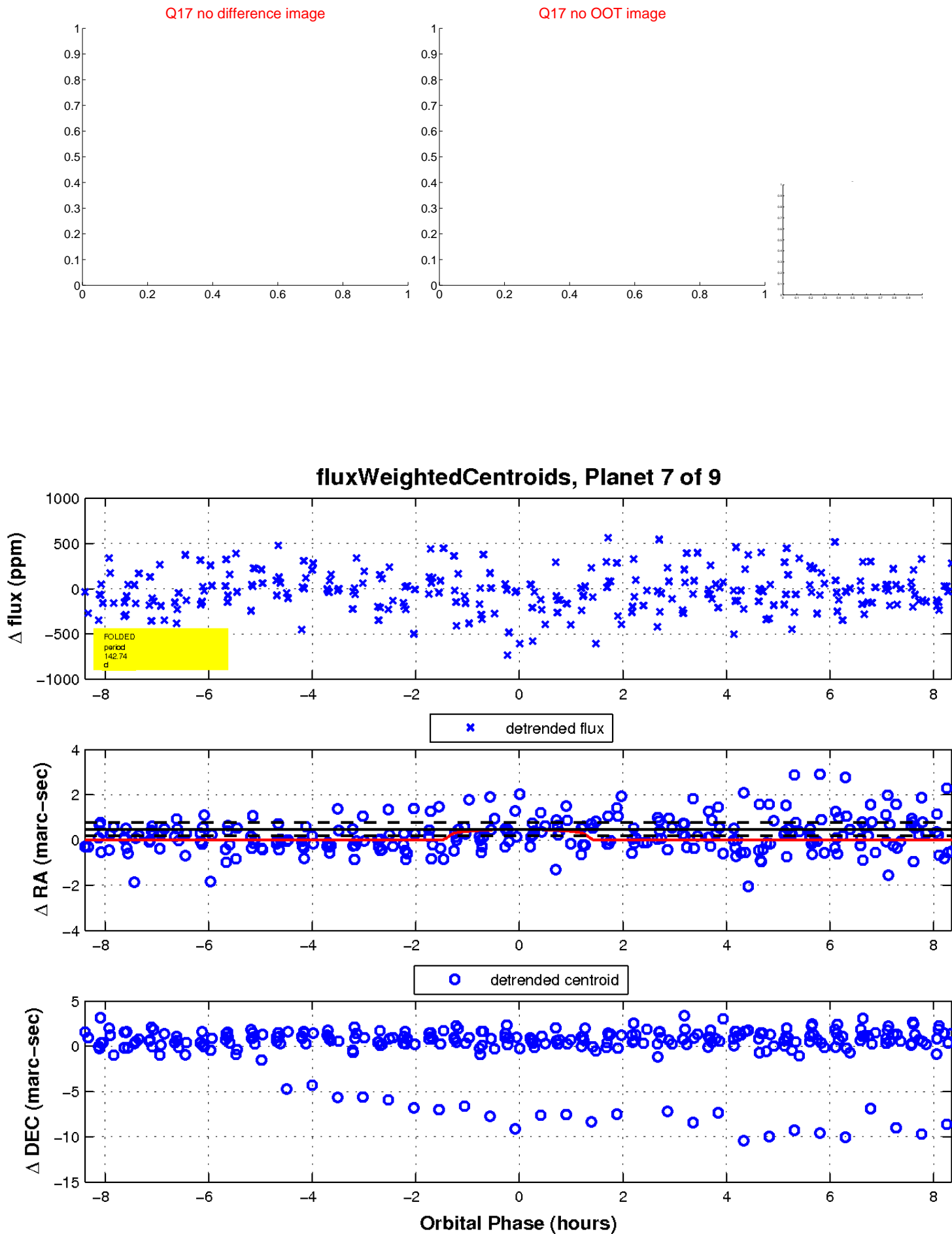
Q12 no OOT image



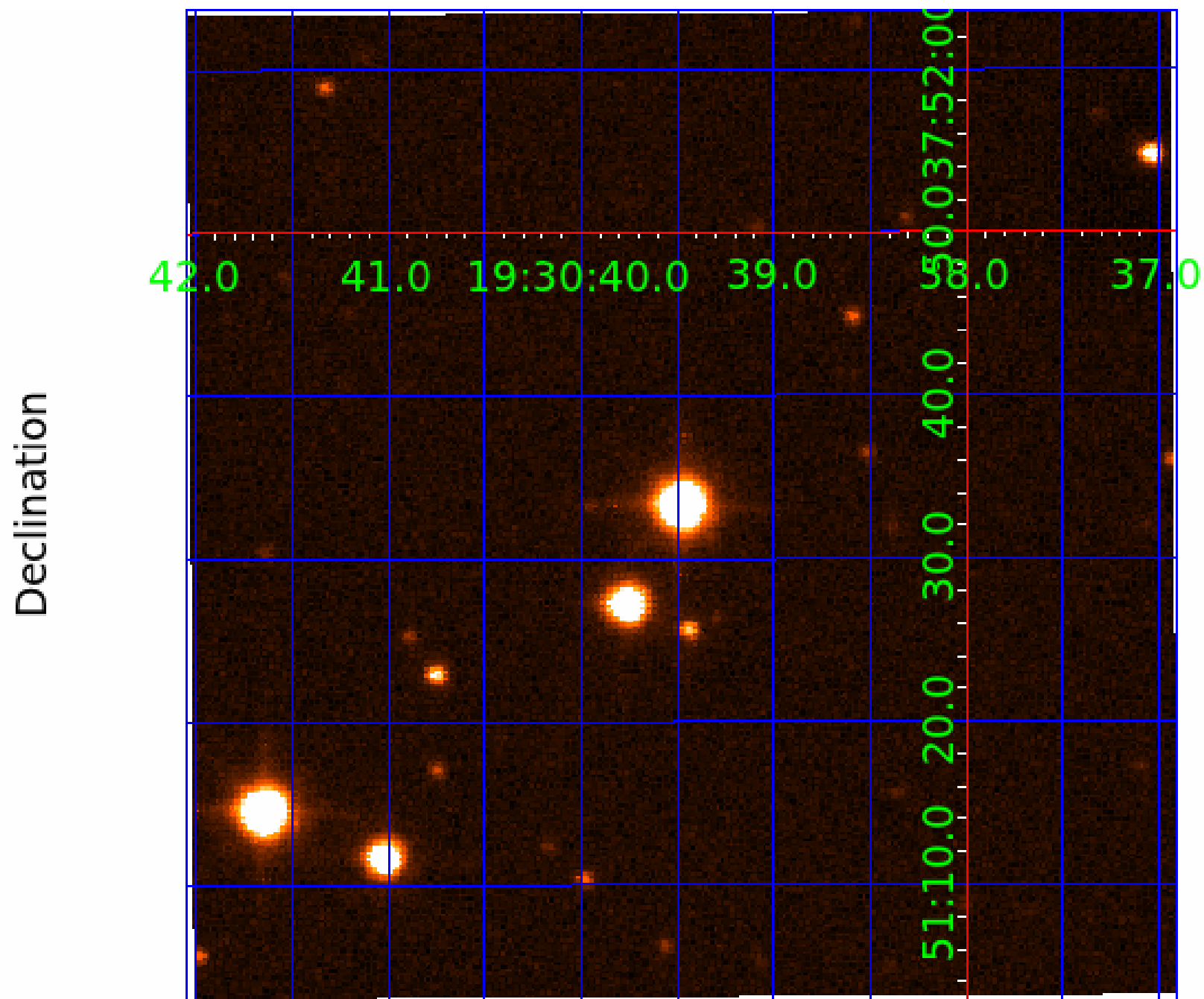
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 002581452

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})
002581452-01	OBS	No	2.617491	133.800090	26.3	13.331	8.9	8.0	5.75	5117	3.04	9511.99
002581452-02	OBS	No	33.977508	153.321823	95.4	18.301	18.3	5.2	5.75	5117	6.58	311.79
002581452-03	OBS	No	169.717627	279.461846	190.7	17.272	9.8	6.5	5.75	5117	8.54	36.52
002581452-04	OBS	No	107.762815	209.299153	453.3	2.515	9.1	9.6	5.75	5117	14.13	66.91
002581452-05	OBS	No	111.863738	193.627102	352.0	2.918	8.7	8.1	5.75	5117	13.21	63.66
002581452-06	OBS	No	215.566106	271.224013	414.9	3.600	8.2	8.4	5.75	5117	12.38	26.55
002581452-07	OBS	No	142.742350	232.683893	469.7	2.796	8.5	8.1	5.75	5117	12.60	45.99
002581452-08	OBS	No	638.962510	294.409498	388.3	3.756	7.8	7.4	5.75	5117	13.57	6.24
002581452-09	OBS	No	52.615085	177.948320	286.7	2.766	7.6	7.4	5.75	5117	11.24	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002581452-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
002581452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002581452-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002581452-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— SAME_NTL_PERIOD—CENT_UNCERTAIN
002581452-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
002581452-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS— CENT_FEW_DIFFS
002581452-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

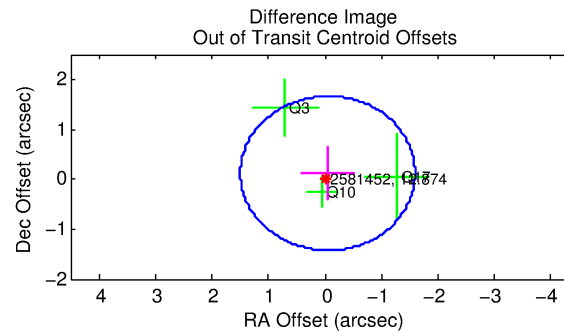
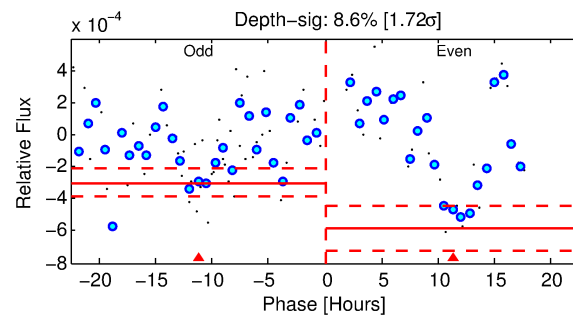
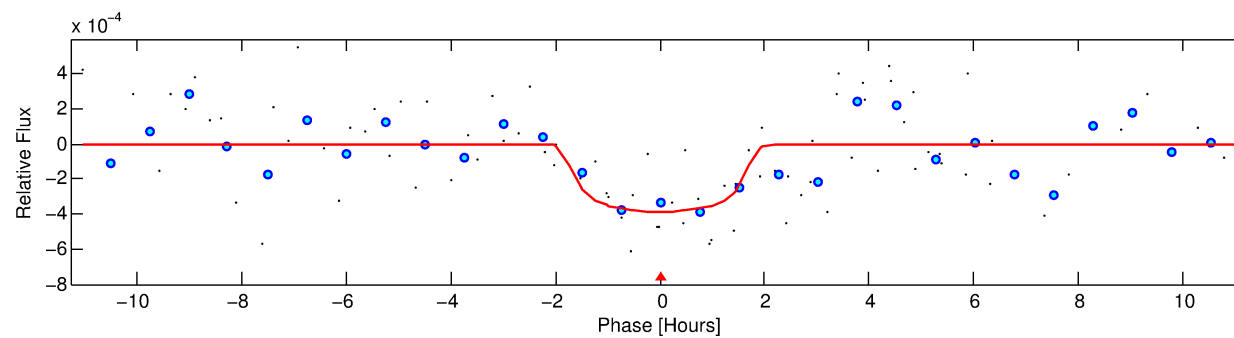
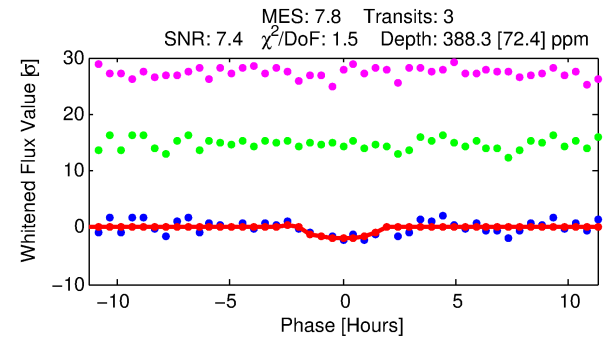
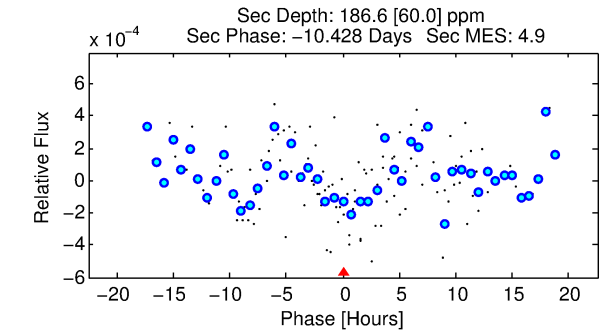
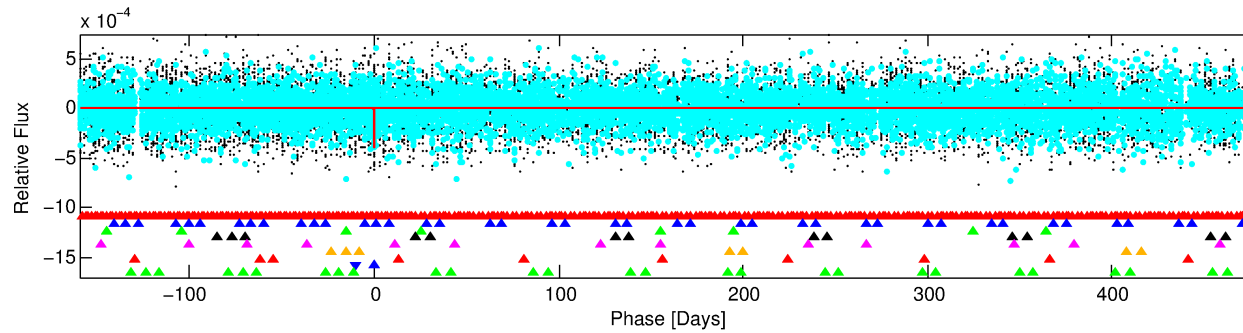
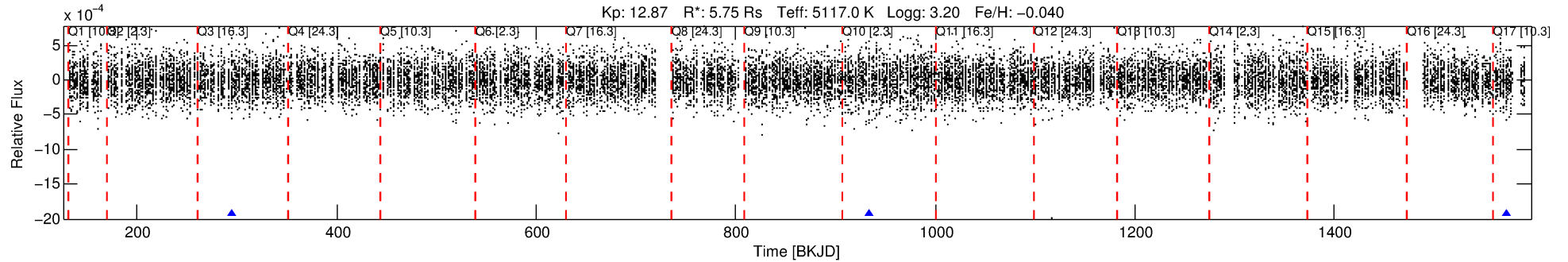
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002581452-08

No Significant Match Found

DV One-Page Summary

KIC: 2581452 Candidate: 8 of 9 Period: 638.963 d



DV Fit Results:

Period = 638.96251 [0.00897] d
Epoch = 294.4095 [0.0128] BKJD
Rp/R* = 0.0216 [0.0124]
a/R* = 652.09 [1489.81]
b = 0.89 [0.54]
Seff = 6.23 [4.71]
Teq = 403 [76] K
Rp = 13.57 [10.50] Re
a = 1.8051 [0.8625] AU
Ag = 1815.71 [2549.43] [0.71 σ]
Teffp = 4067 [1218] K [3.00 σ]

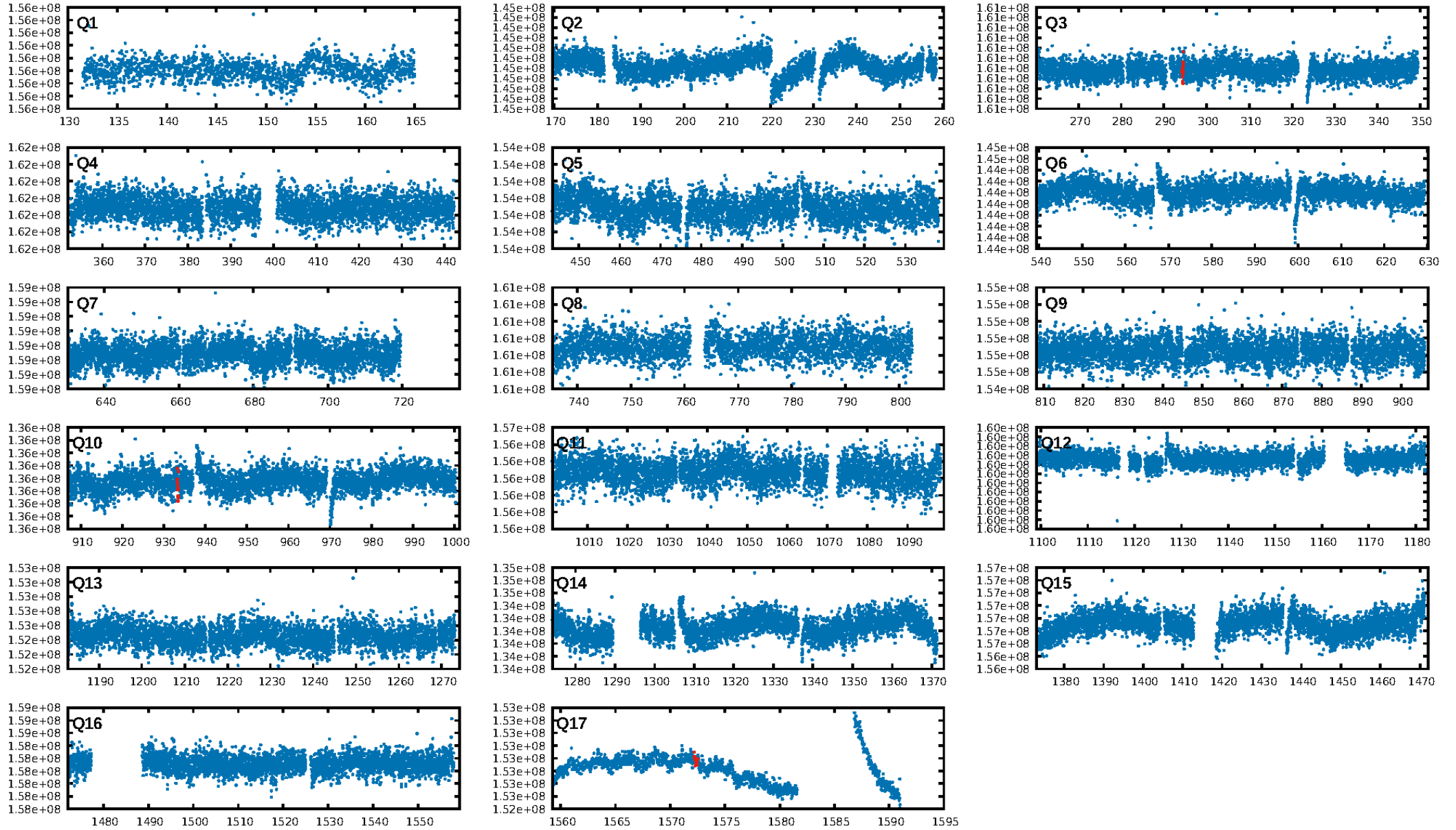
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1952.96 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 18.6%
ModelChiSquareGof-sig: 92.2%
Bootstrap-pfa: 1.15e-08
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 2.421
Centroid-sig: N/A
Centroid-so: 1.183 arcsec [0.93 σ]
OotOffset-rm: 0.127 arcsec [0.25 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.212 arcsec [0.43 σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

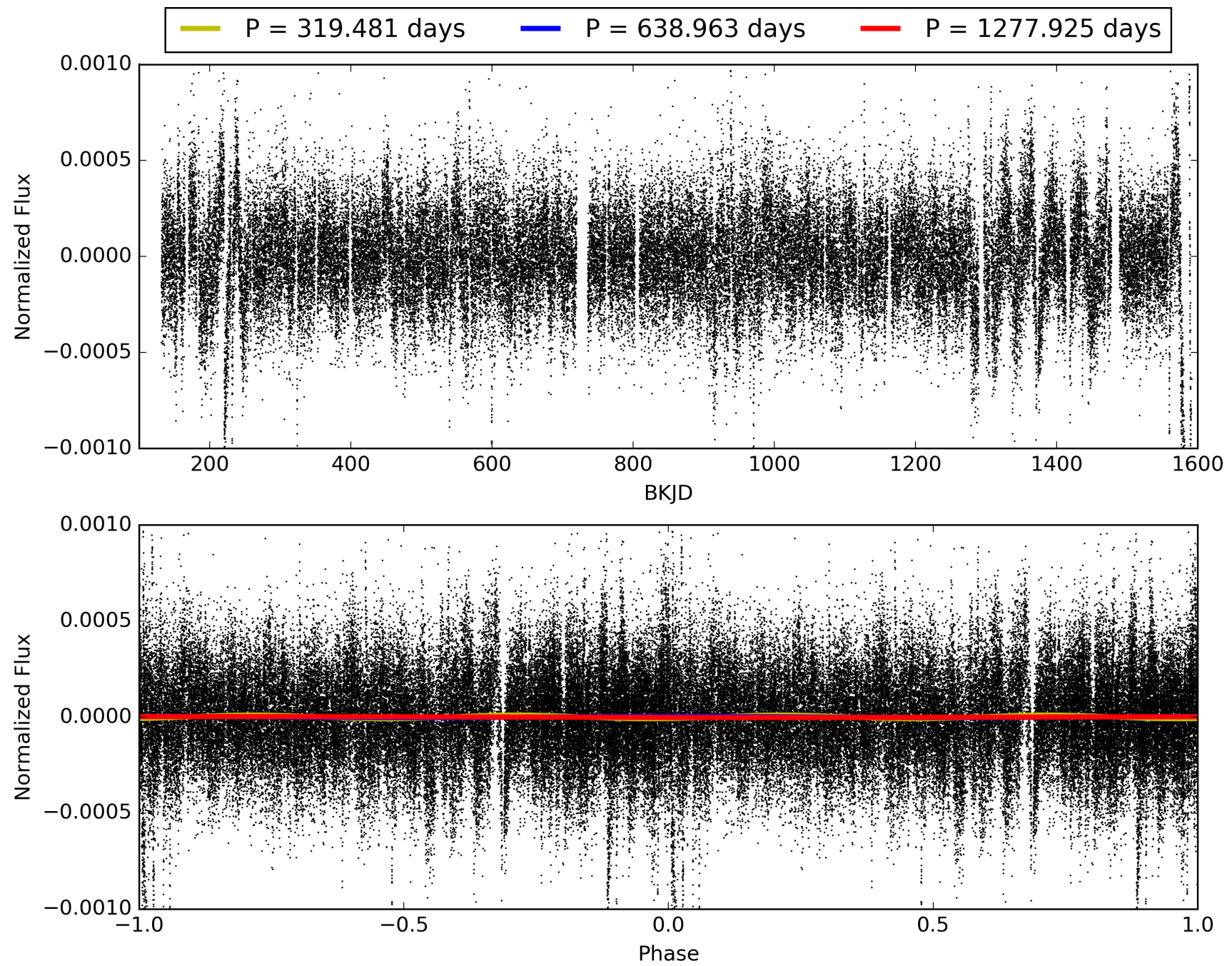
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:23:04 Z

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

TCE 002581452-08, PDC Light Curves

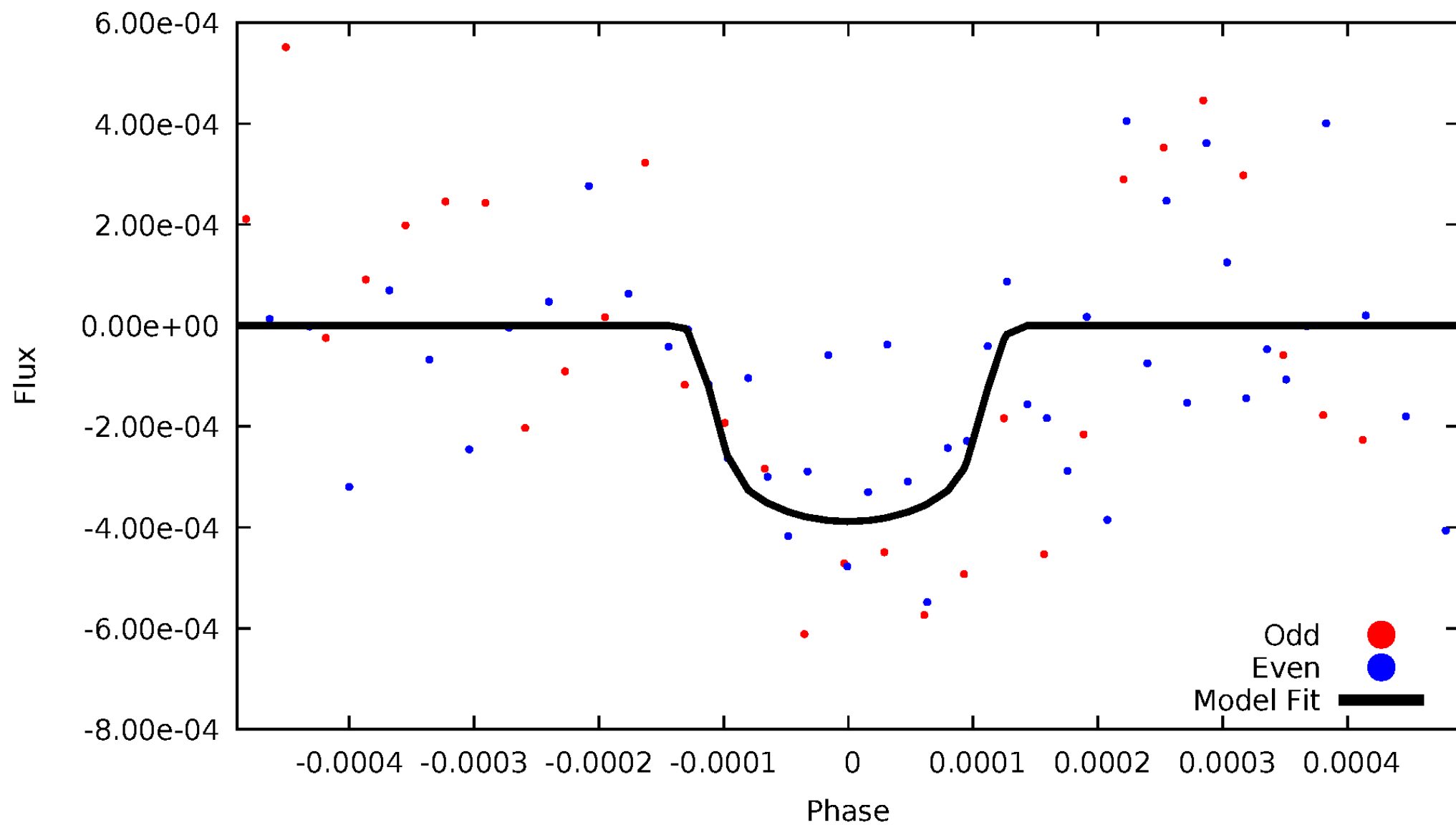


TCE 002581452-08



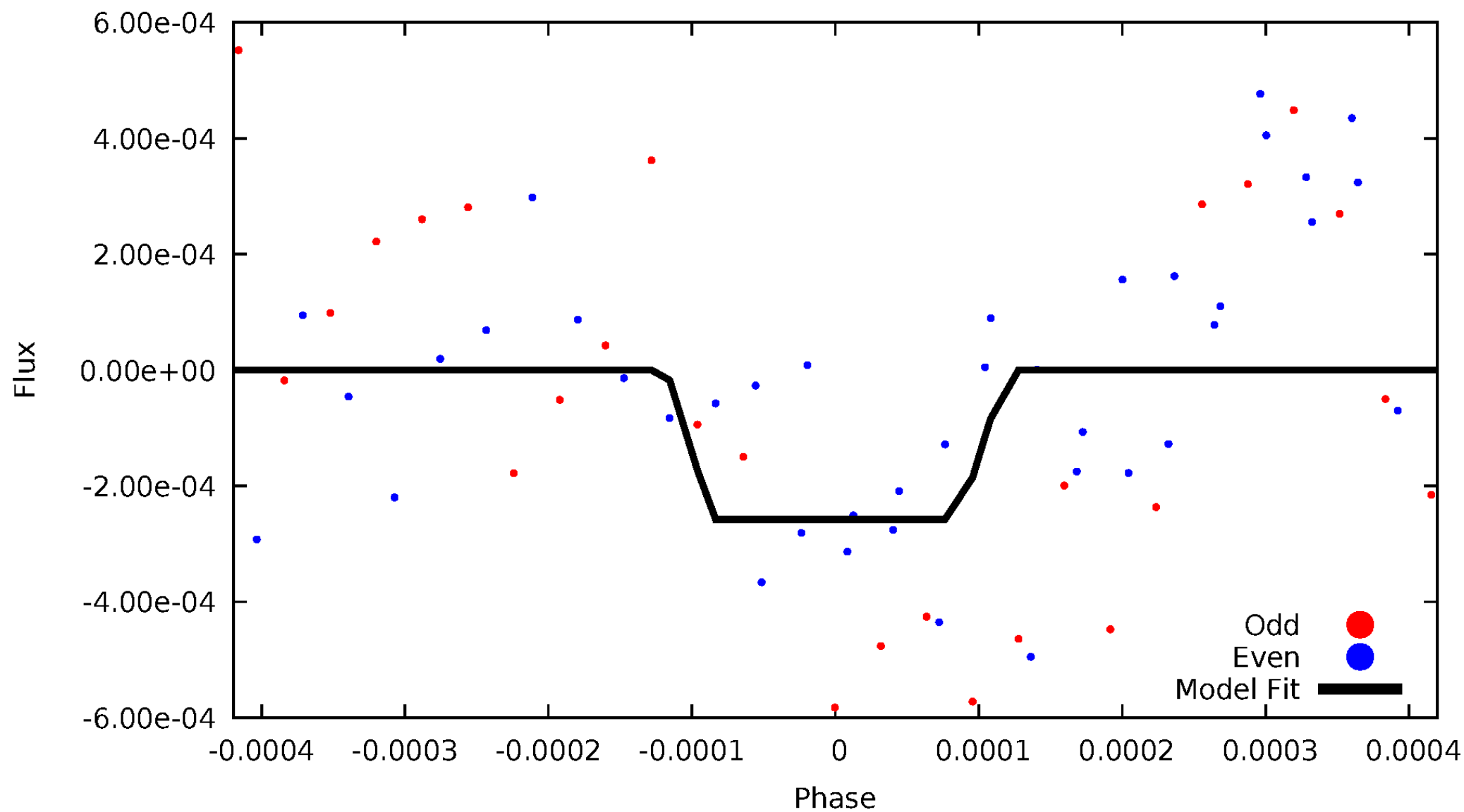
DV Odd/Even

TCE 002581452-08



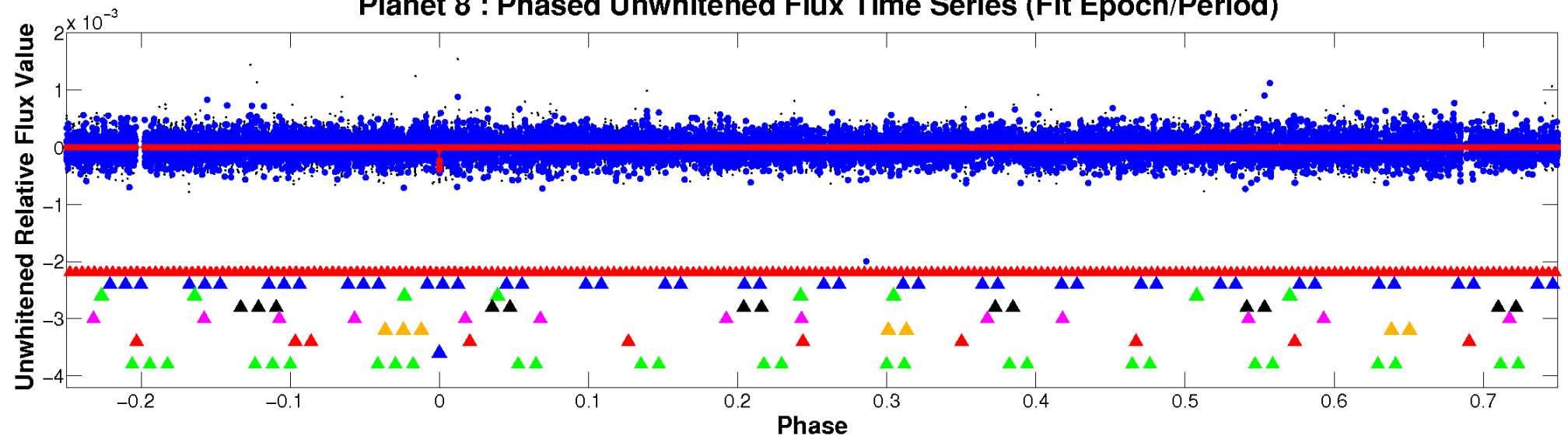
ALT Odd/Even

TCE 002581452-08

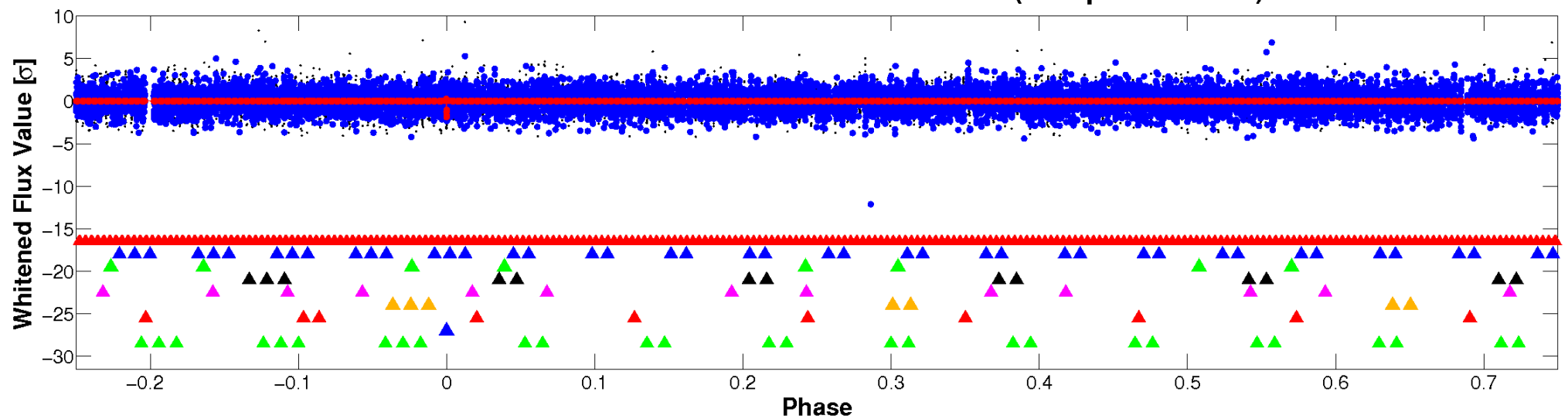


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

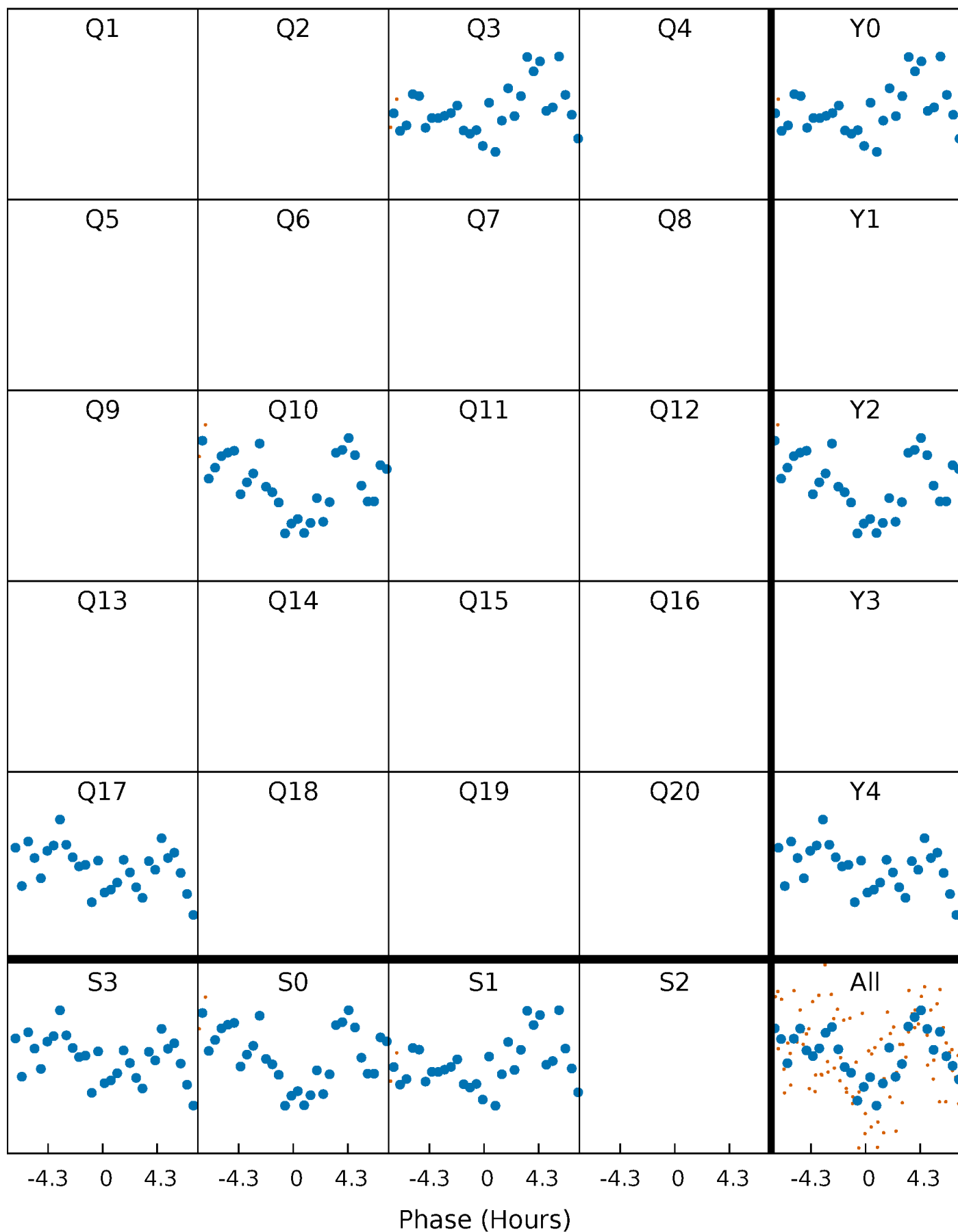


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



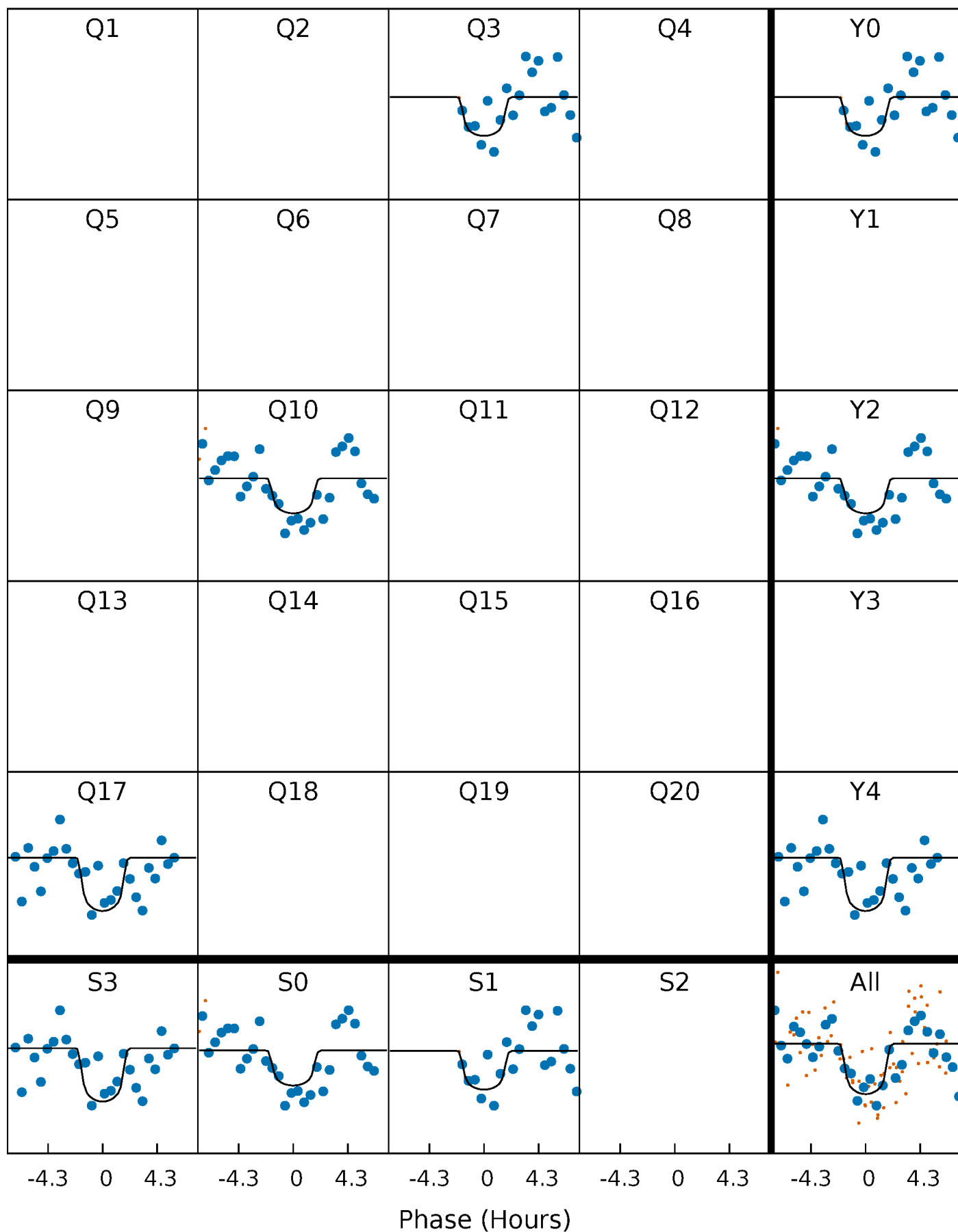
PDC Quarter-Phased Transit Curves

TCE 002581452-08 $P=638.962510$ Days $T_0=294.409498$ (BKJD)



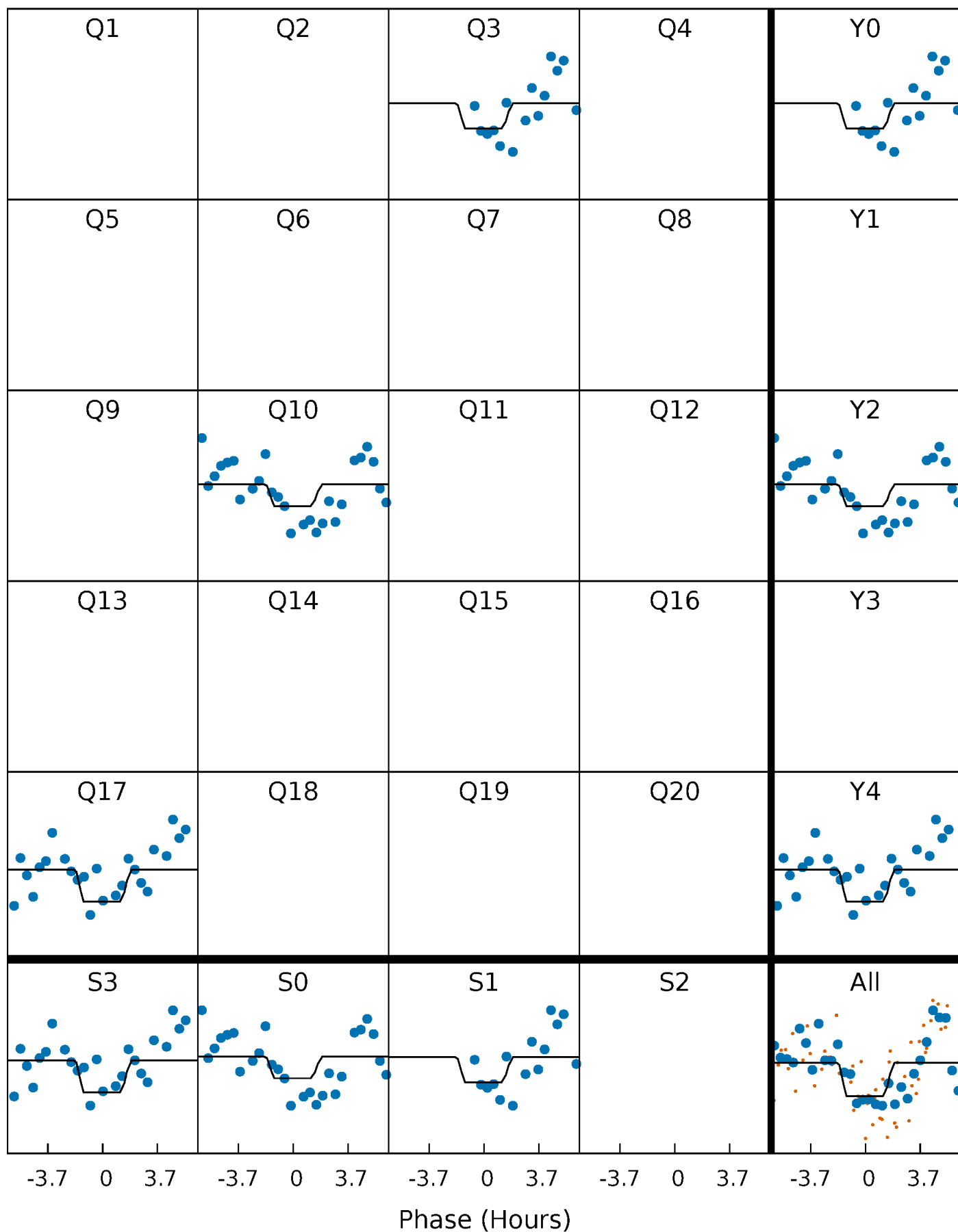
DV Quarter-Phased Transit Curves

TCE 002581452-08 $P=638.962510$ Days $T_0=294.409498$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

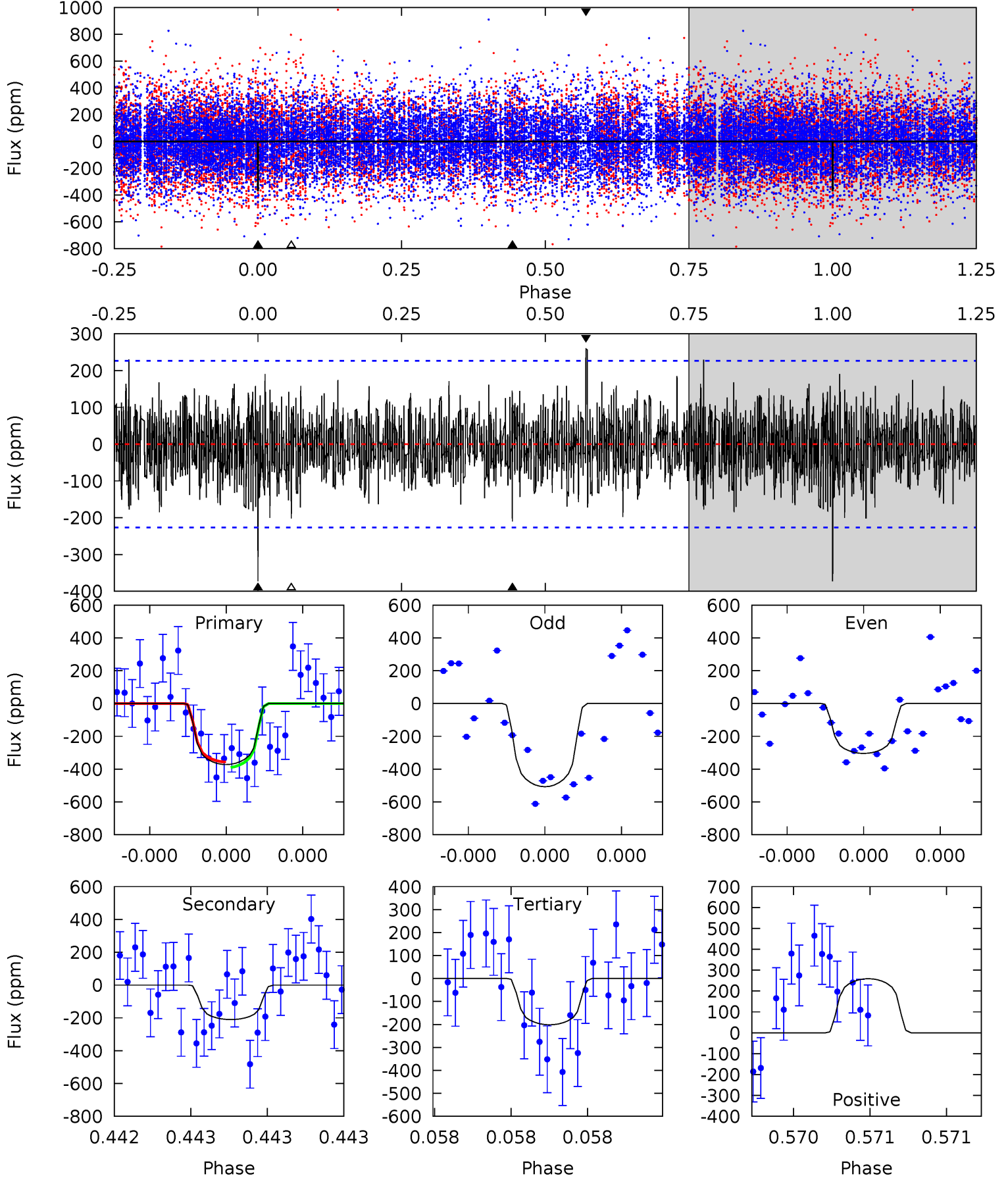
TCE 002581452-08 P=638.986907 Days $T_0=294.362789$ (BKJD)



DV Model-Shift Uniqueness Test

002581452-08, P = 638.962510 Days, E = 294.409498 Days

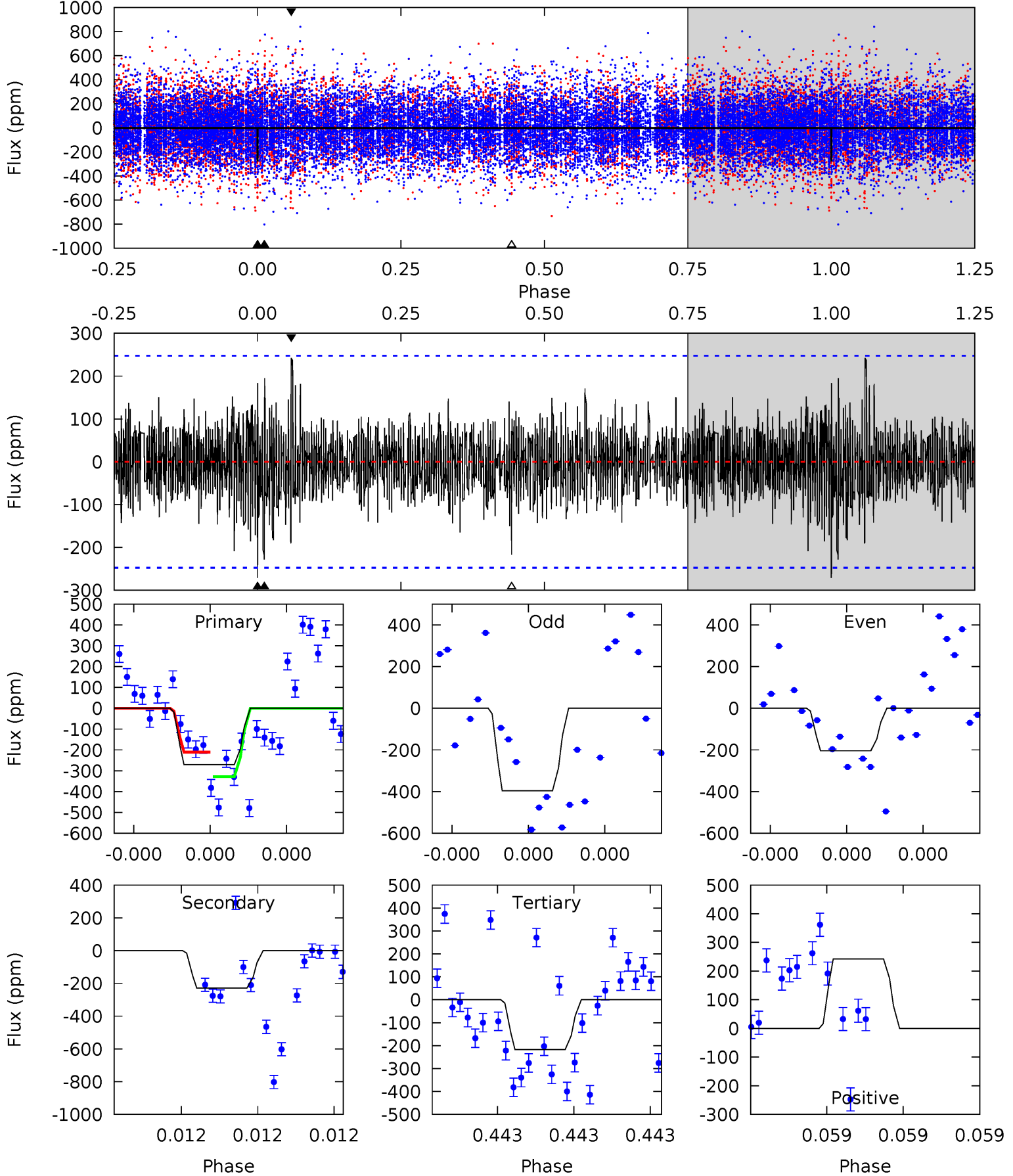
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.35	5.28	5.06	6.50	5.69	3.65	1.47	4.29	2.84	0.22	-1.22	2.41	1.08	0.41	0.42



Alt Model-Shift Uniqueness Test

002581452-08, P = 638.986907 Days, E = 294.362789 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.23	5.25	4.99	5.58	5.70	3.67	1.18	1.25	0.65	0.26	-0.34	2.12	1.06	0.47	1.35



Stellar Parameters For KIC 002581452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5117^{+115}_{-166}	$3.202^{+0.429}_{-0.231}$	$-0.040^{+0.250}_{-0.300}$	$5.751^{+1.608}_{-2.987}$	$1.922^{+0.278}_{-0.903}$	$0.014^{+0.068}_{-0.008}$
	+2%/-3%	+13%/-7%	+625%/-750%	+28%/-52%	+14%/-47%	+476%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002581452-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-210 ± 40	$13.13^{+8.99}_{-7.34}$	562^{+51}_{-69}	4300^{+1668}_{-657}	2125^{+9022}_{-1384}
Alt.	-228 ± 43	$10.15^{+7.83}_{-6.29}$	562^{+49}_{-70}	4825^{+2749}_{-916}	3792^{+19808}_{-2632}

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

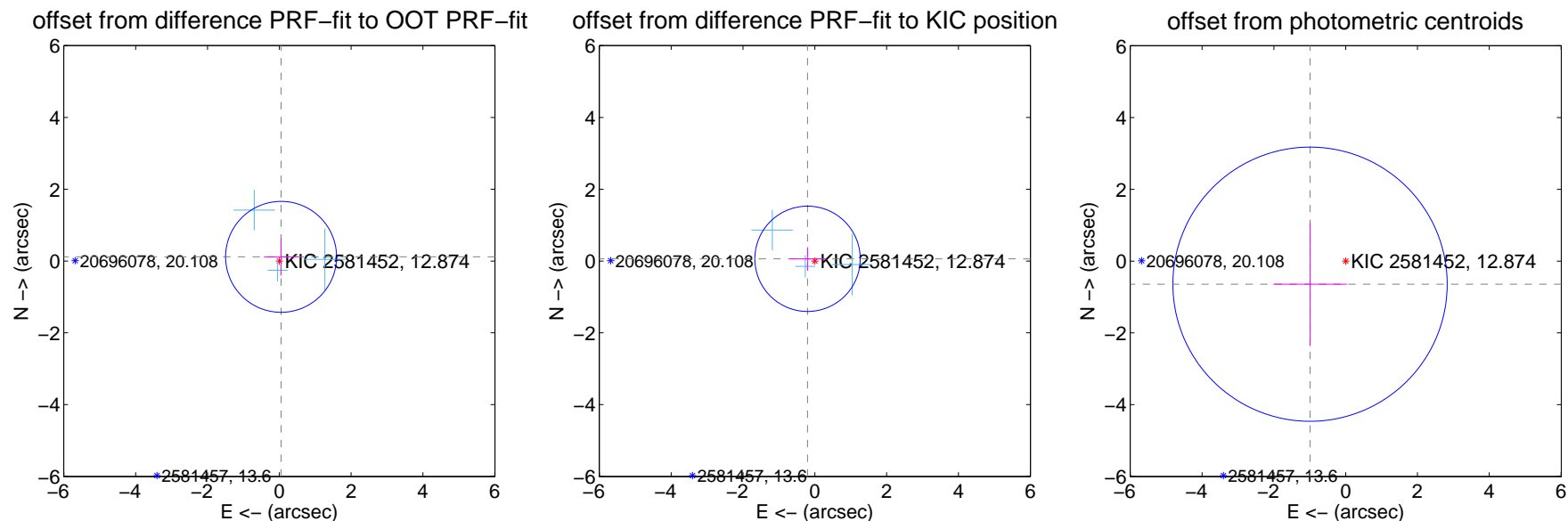
DV Centroid Data

Supplemental centroid analysis for 002581452-08. Kepler magnitude: 12.87. Transit SNR 7.43

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.127 ± 0.515	0.25	-0.049 ± 0.476	0.117 ± 0.522
PRF-fit source offset from KIC position	0.212 ± 0.489	0.43	0.203 ± 0.502	0.062 ± 0.324
photometric centroid source offset	1.18 ± 1.27	0.93	0.99 ± 1.03	-0.64 ± 1.72



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; Δ : difference centroid. red \times : large negative pixel value.

Q1 no difference image



Q1 no OOT image



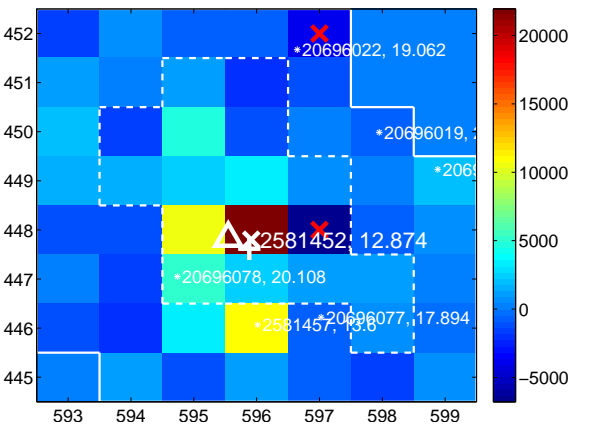
Q2 no difference image



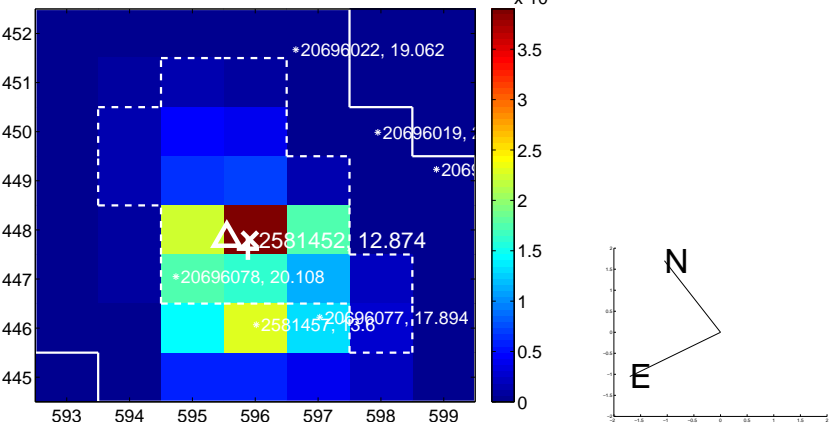
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image



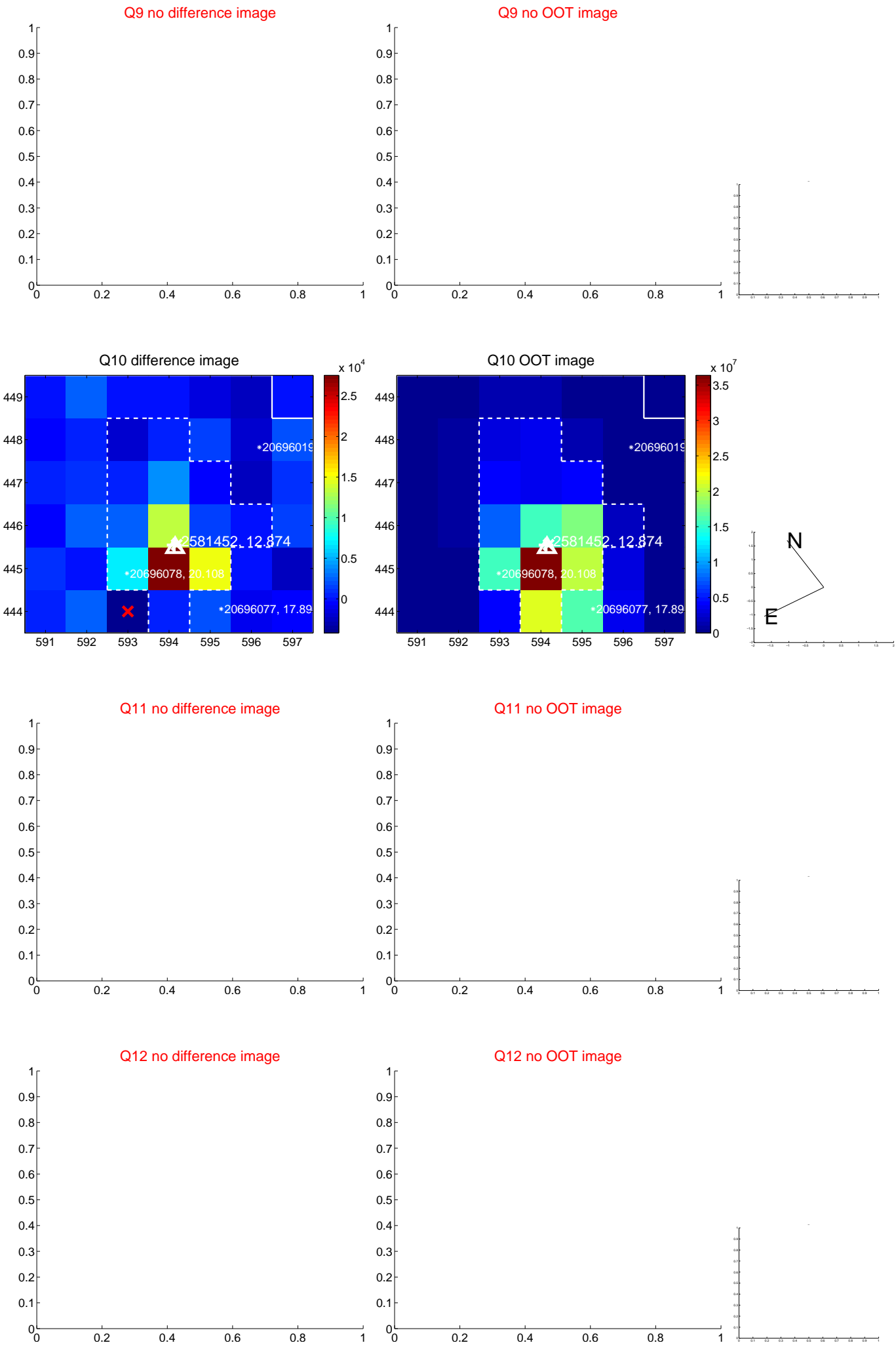
Q4 no OOT image



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



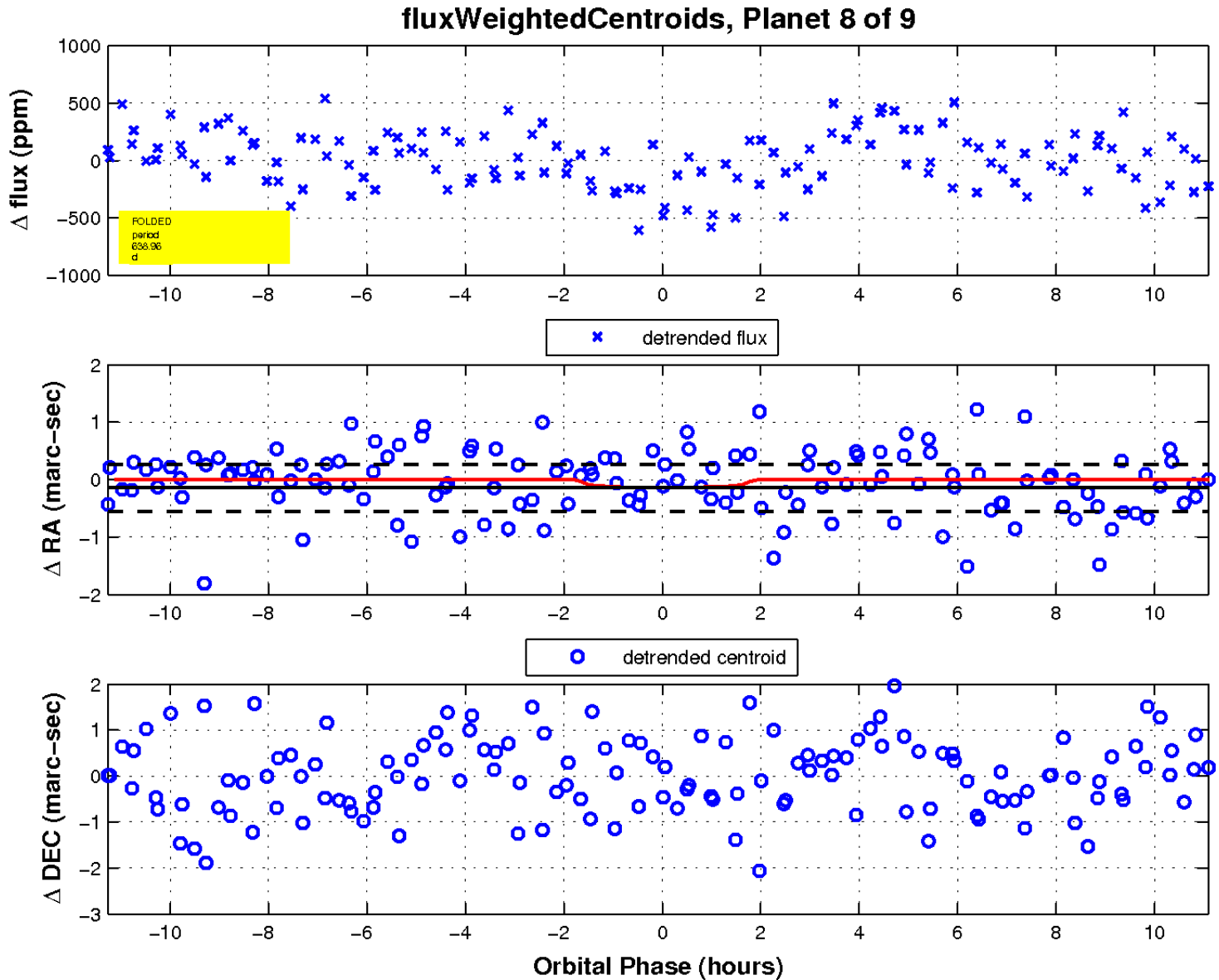
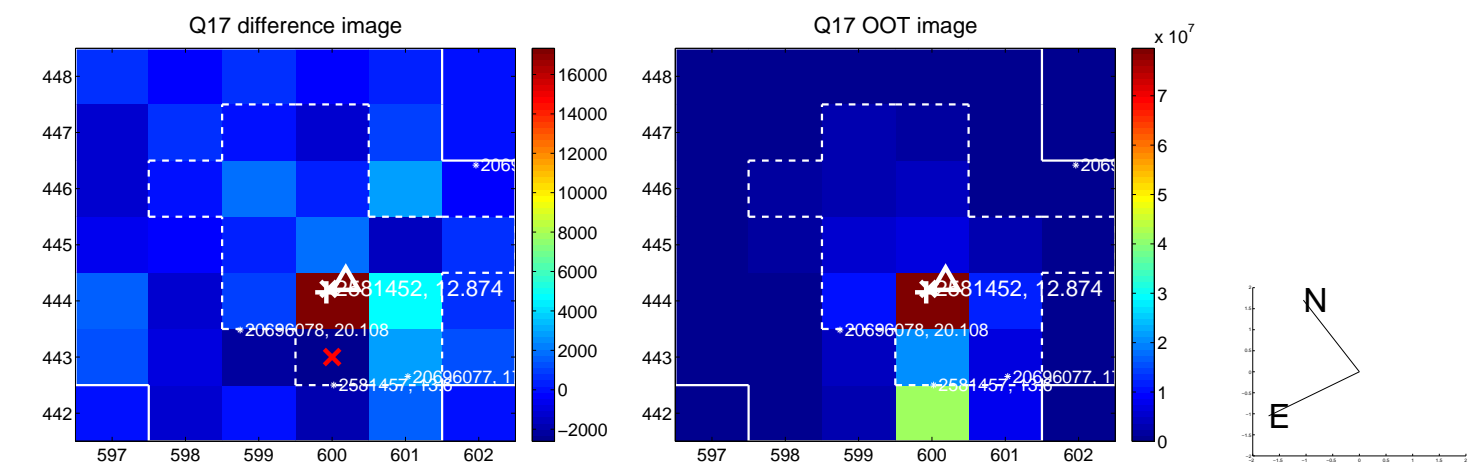
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



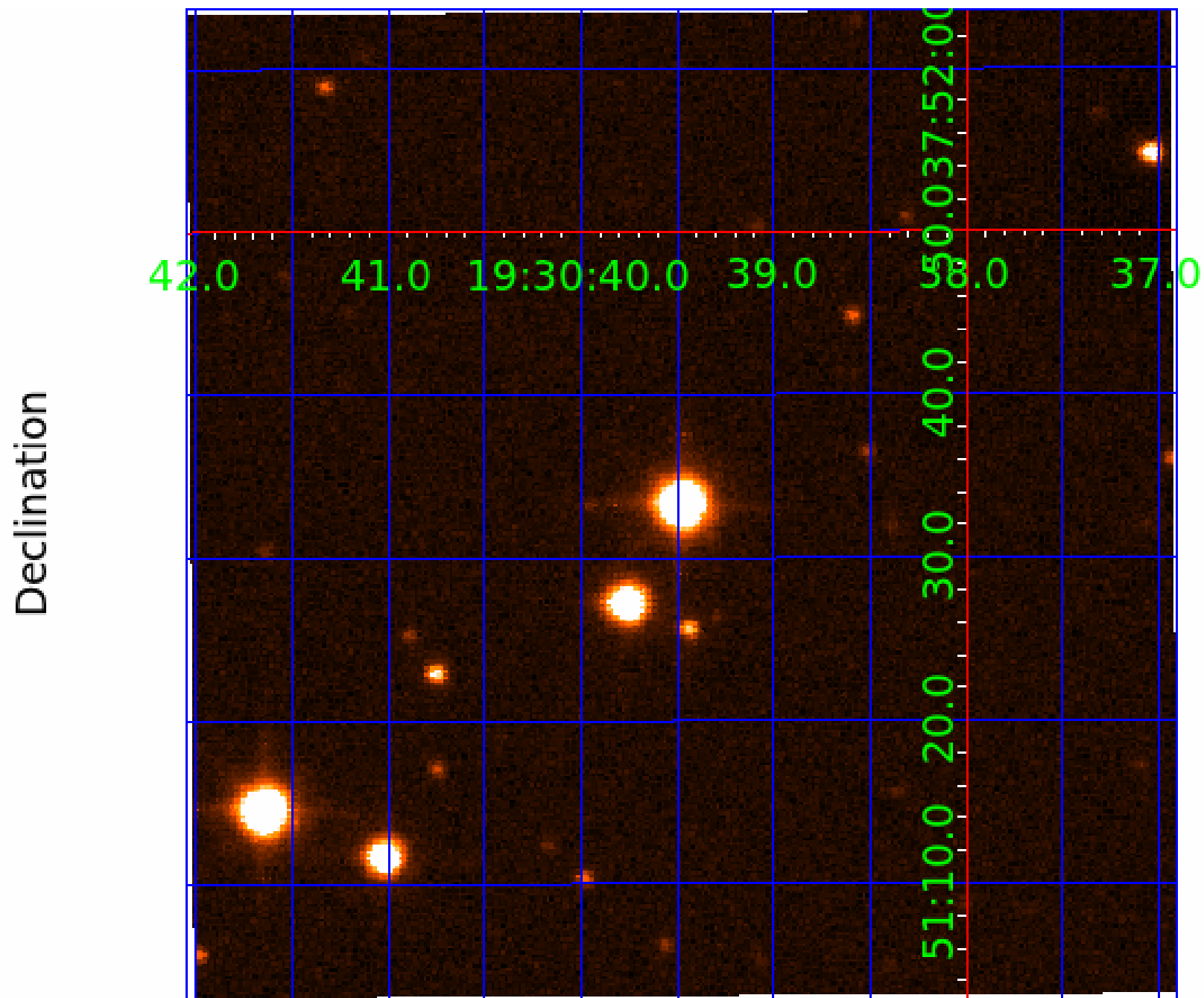
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 002581452

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})
002581452-01	OBS	No	2.617491	133.800090	26.3	13.331	8.9	8.0	5.75	5117	3.04	9511.99
002581452-02	OBS	No	33.977508	153.321823	95.4	18.301	18.3	5.2	5.75	5117	6.58	311.79
002581452-03	OBS	No	169.717627	279.461846	190.7	17.272	9.8	6.5	5.75	5117	8.54	36.52
002581452-04	OBS	No	107.762815	209.299153	453.3	2.515	9.1	9.6	5.75	5117	14.13	66.91
002581452-05	OBS	No	111.863738	193.627102	352.0	2.918	8.7	8.1	5.75	5117	13.21	63.66
002581452-06	OBS	No	215.566106	271.224013	414.9	3.600	8.2	8.4	5.75	5117	12.38	26.55
002581452-07	OBS	No	142.742350	232.683893	469.7	2.796	8.5	8.1	5.75	5117	12.60	45.99
002581452-08	OBS	No	638.962510	294.409498	388.3	3.756	7.8	7.4	5.75	5117	13.57	6.24
002581452-09	OBS	No	52.615085	177.948320	286.7	2.766	7.6	7.4	5.75	5117	11.24	174.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002581452-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
002581452-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002581452-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
002581452-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_ALT
002581452-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_UNCERTAIN
002581452-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
002581452-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002581452-09	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

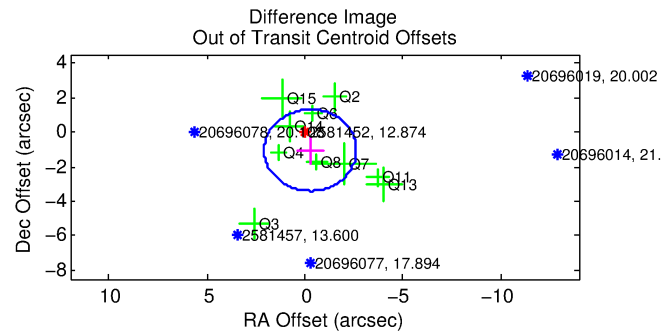
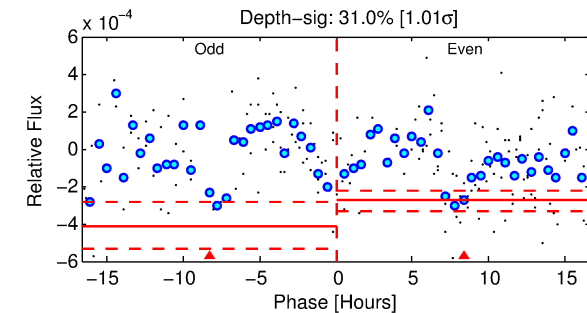
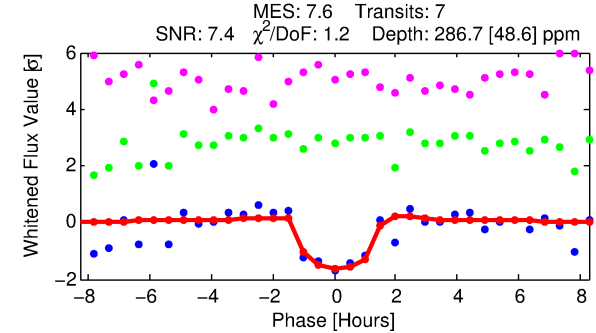
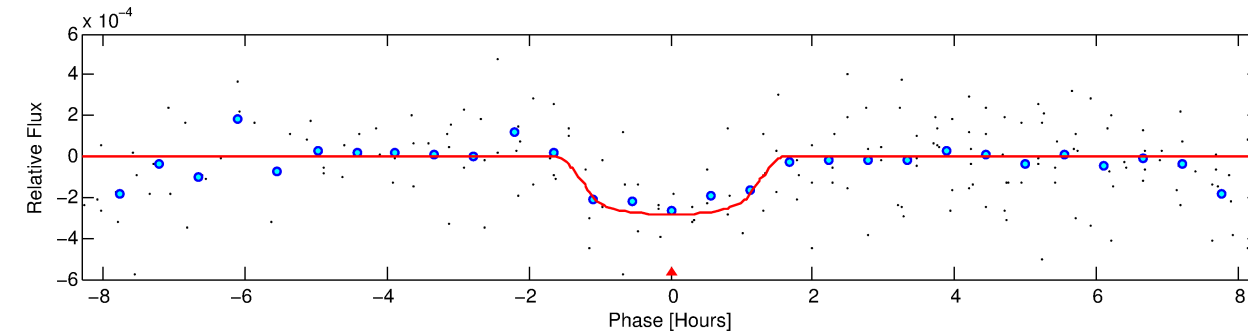
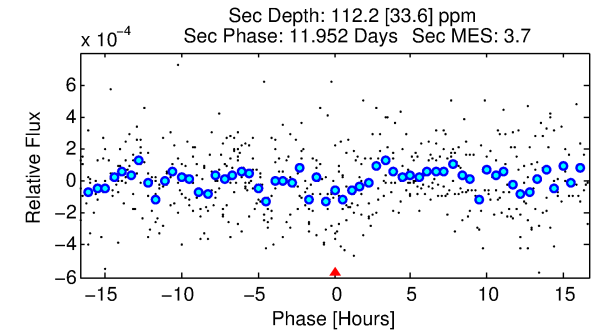
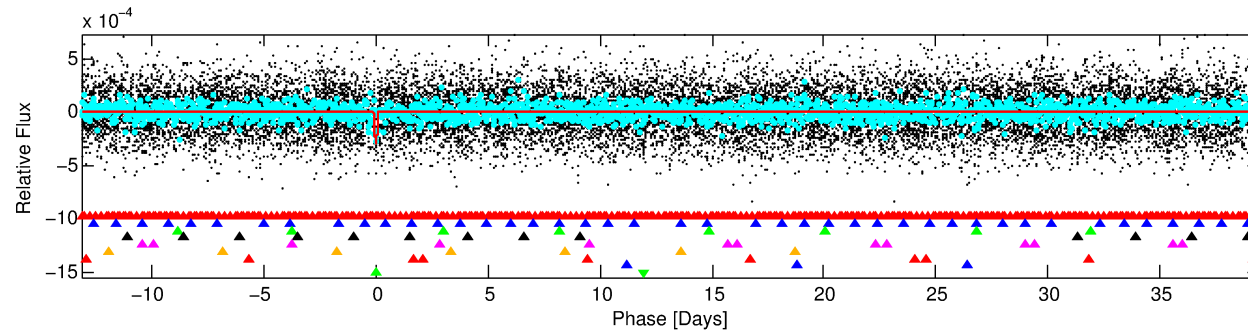
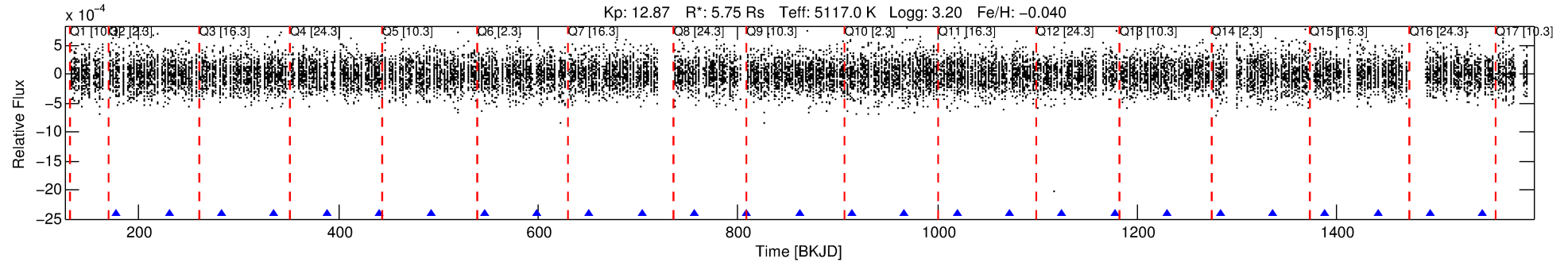
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002581452-09

No Significant Match Found

DV One-Page Summary

KIC: 2581452 Candidate: 9 of 9 Period: 52.615 d



DV Fit Results:

Period = 52.61509 [0.00072] d
Epoch = 177.9483 [0.0115] BKJD
Rp/R* = 0.0179 [0.0319]
a/R* = 81.83 [567.91]
b = 0.85 [2.37]
Seff = 174.04 [131.44]
Teq = 926 [175] K
Rp = 11.24 [20.88] Re
a = 0.3417 [0.1633] AU
Ag = 57.02 [208.37] [0.27σ]
Teffp = 3935 [3522] K [0.85σ]

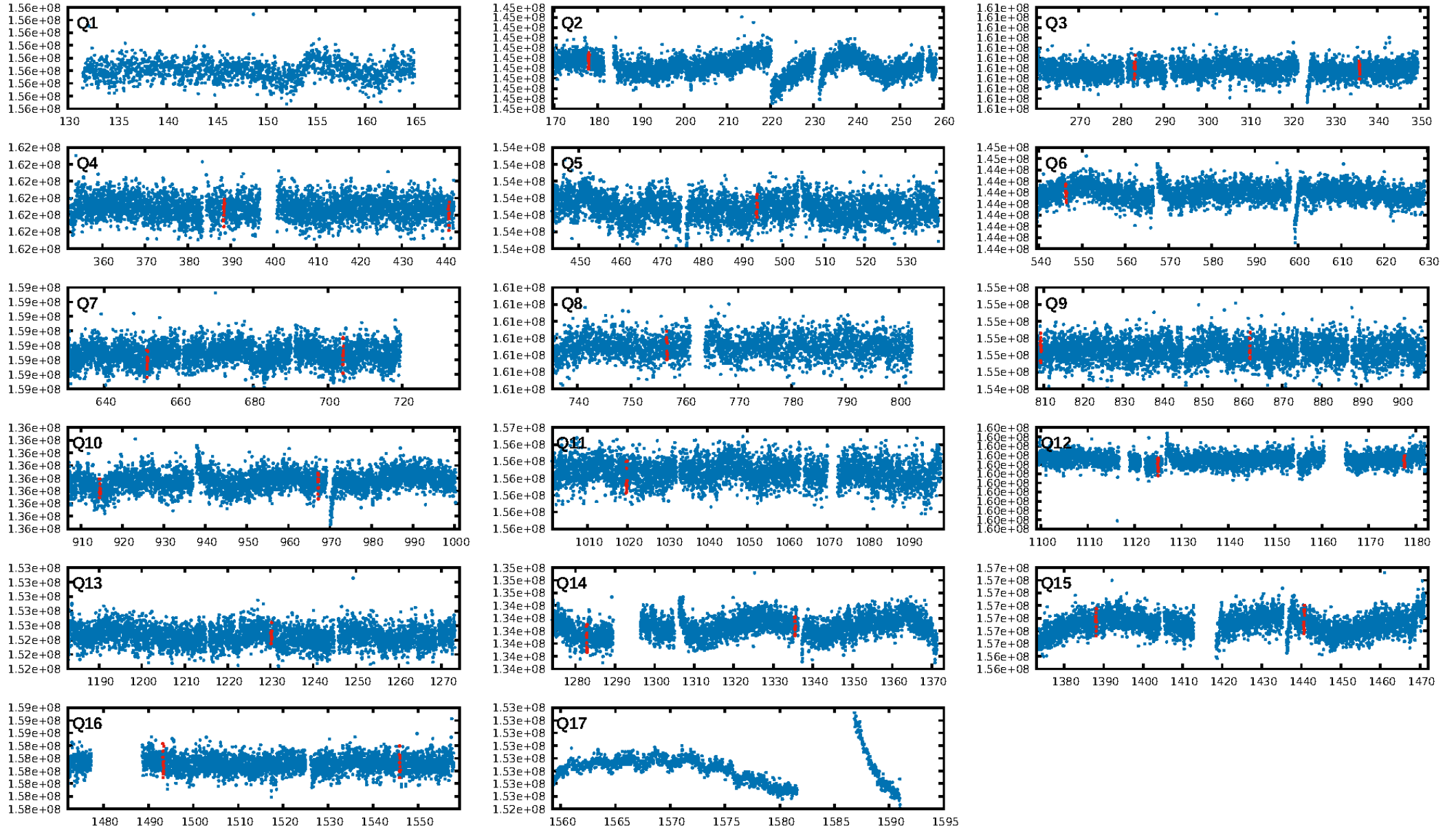
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.17σ]
LongPeriod-sig: 100.0% [354.07σ]
ModelChiSquare2-sig: 68.6%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 9.13e-08
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -1.683
Centroid-sig: N/A
Centroid-so: 0.368 arcsec [0.44σ]
OotOffset-rm: 1.082 arcsec [1.38σ]
OotOffset-st: 3/4/2/1 [10]
KicOffset-rm: 1.384 arcsec [1.75σ]
KicOffset-st: 3/4/2/1 [10]
DiffImageQuality-fgm: 0.40 [4/10]
DiffImageOverlap-fno: 0.53 [8/15]

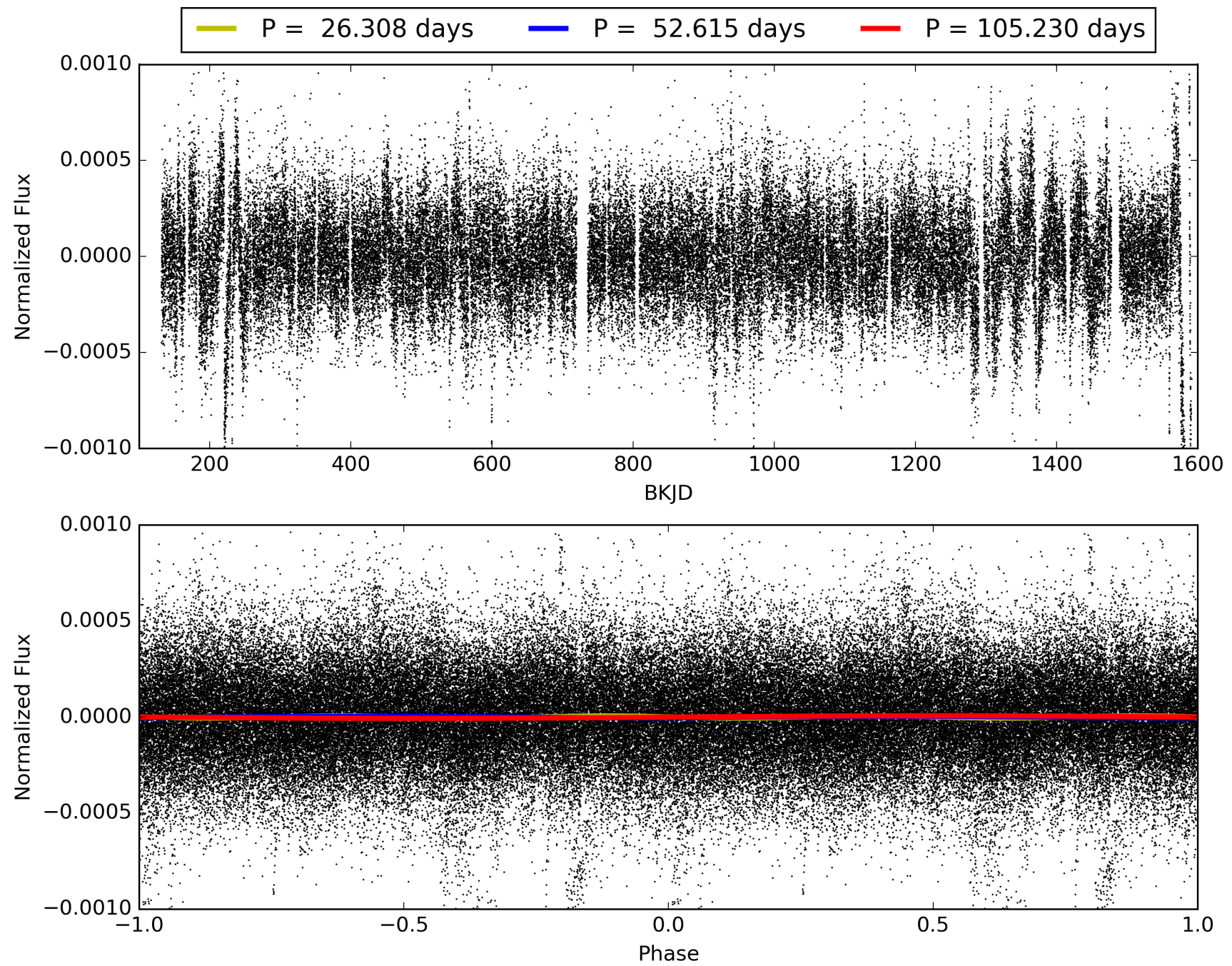
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:23:09 Z

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

TCE 002581452-09, PDC Light Curves

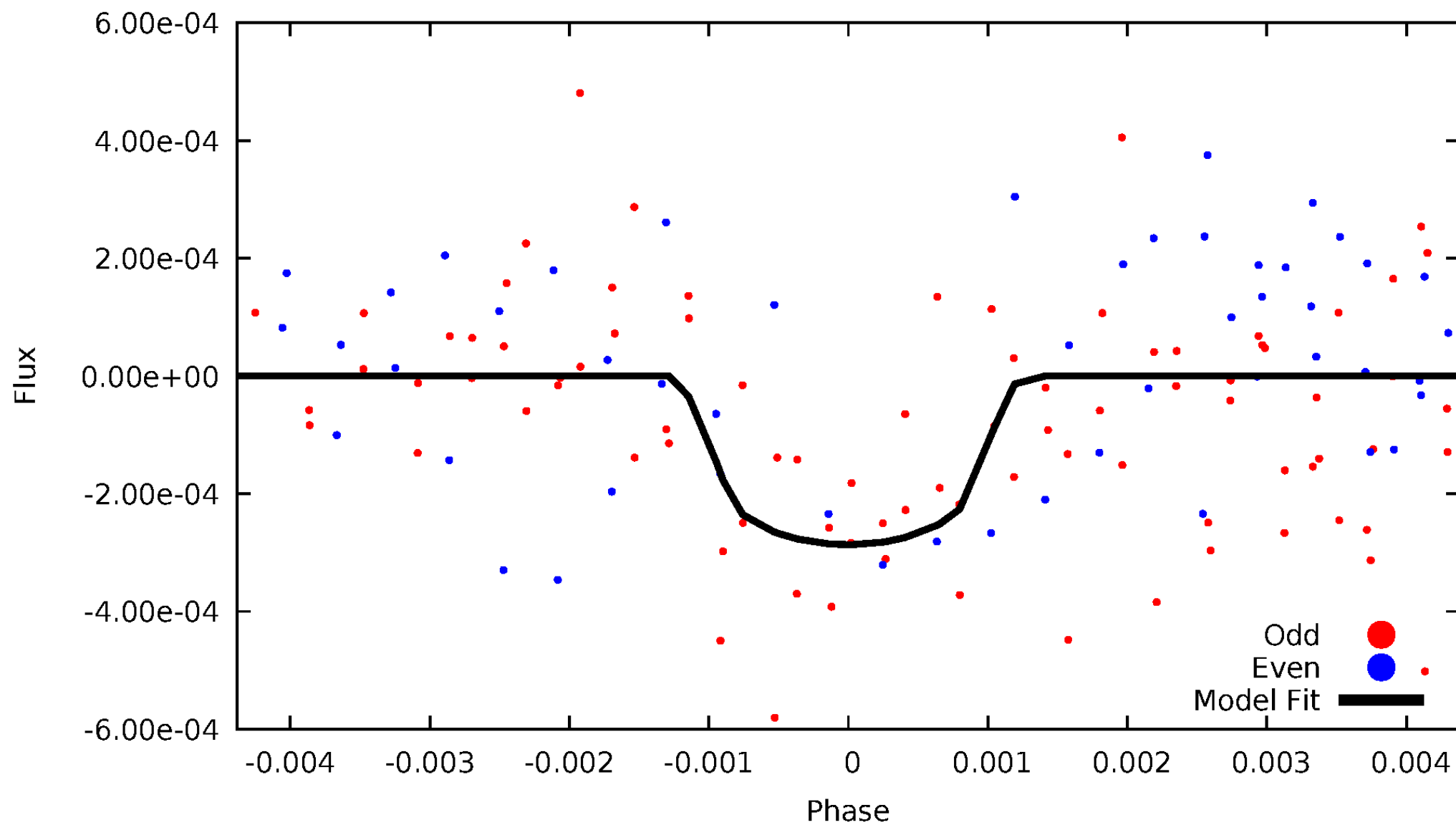


TCE 002581452-09



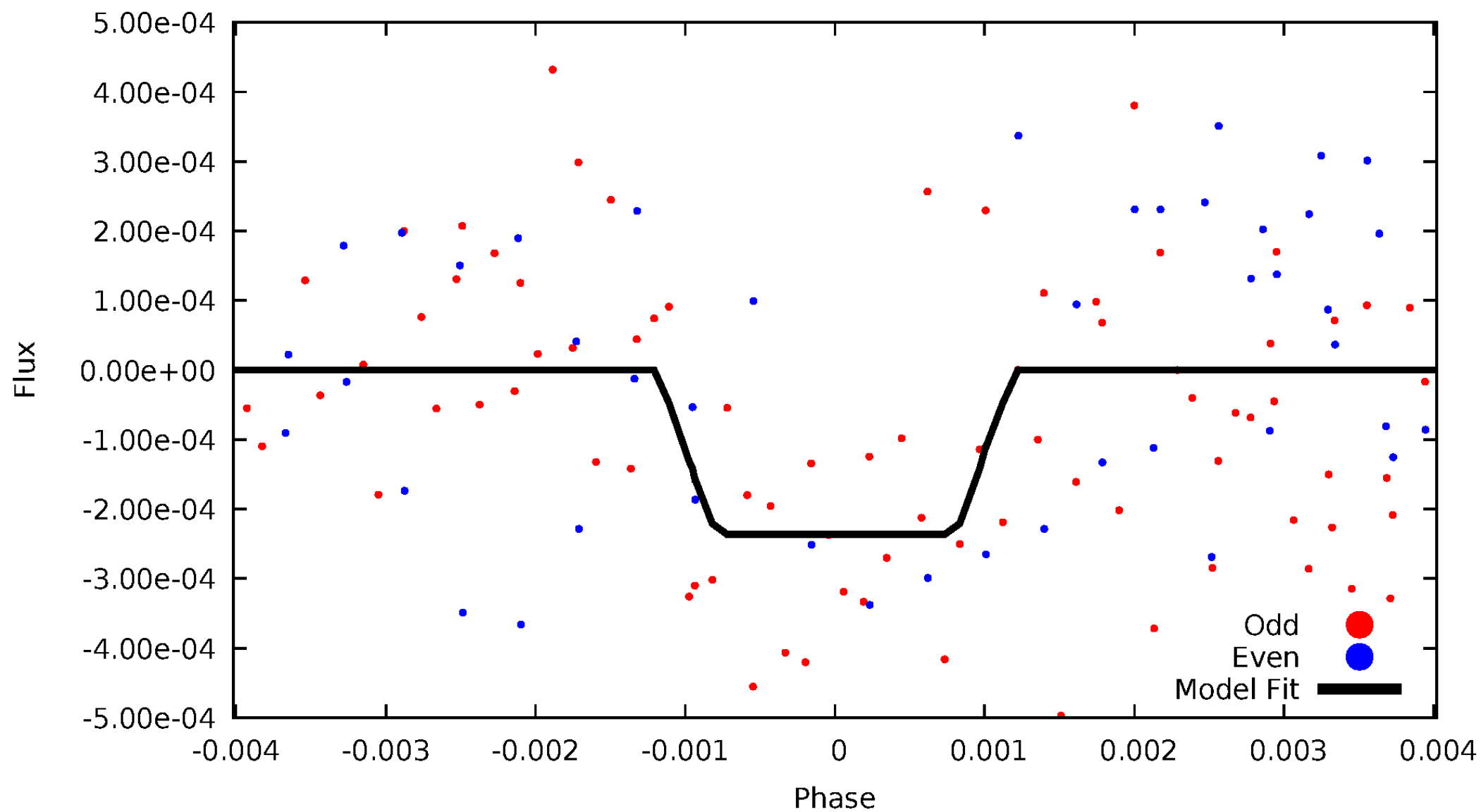
DV Odd/Even

TCE 002581452-09



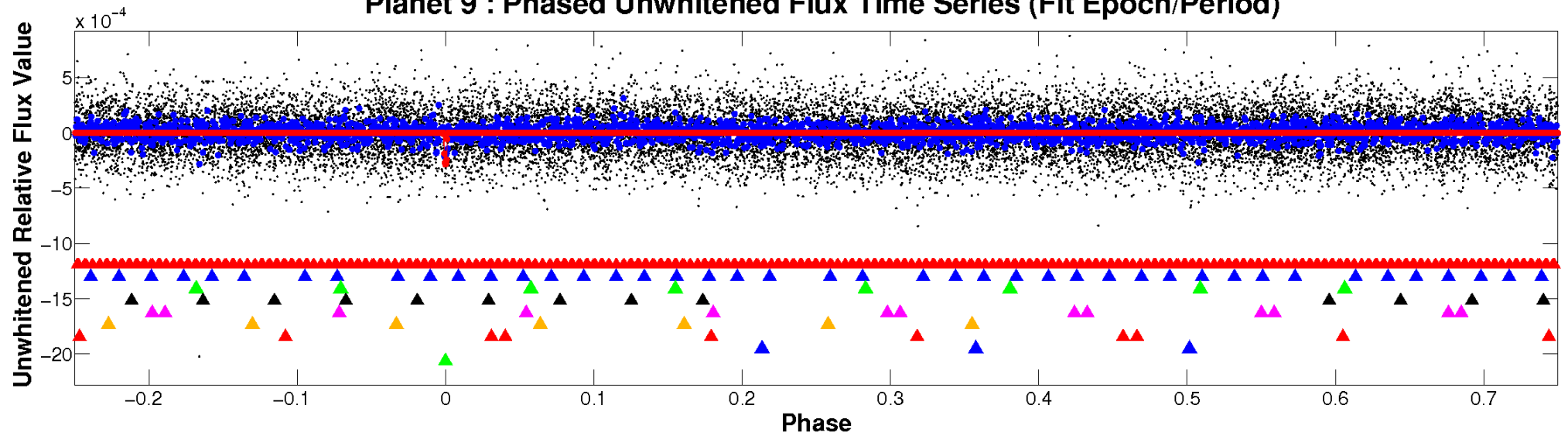
ALT Odd/Even

TCE 002581452-09

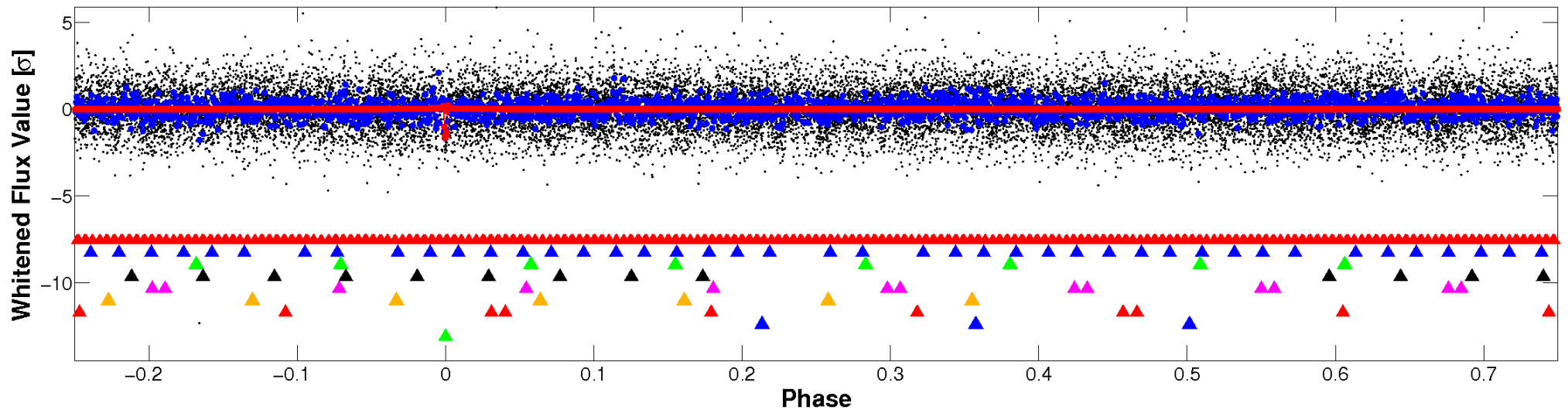


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

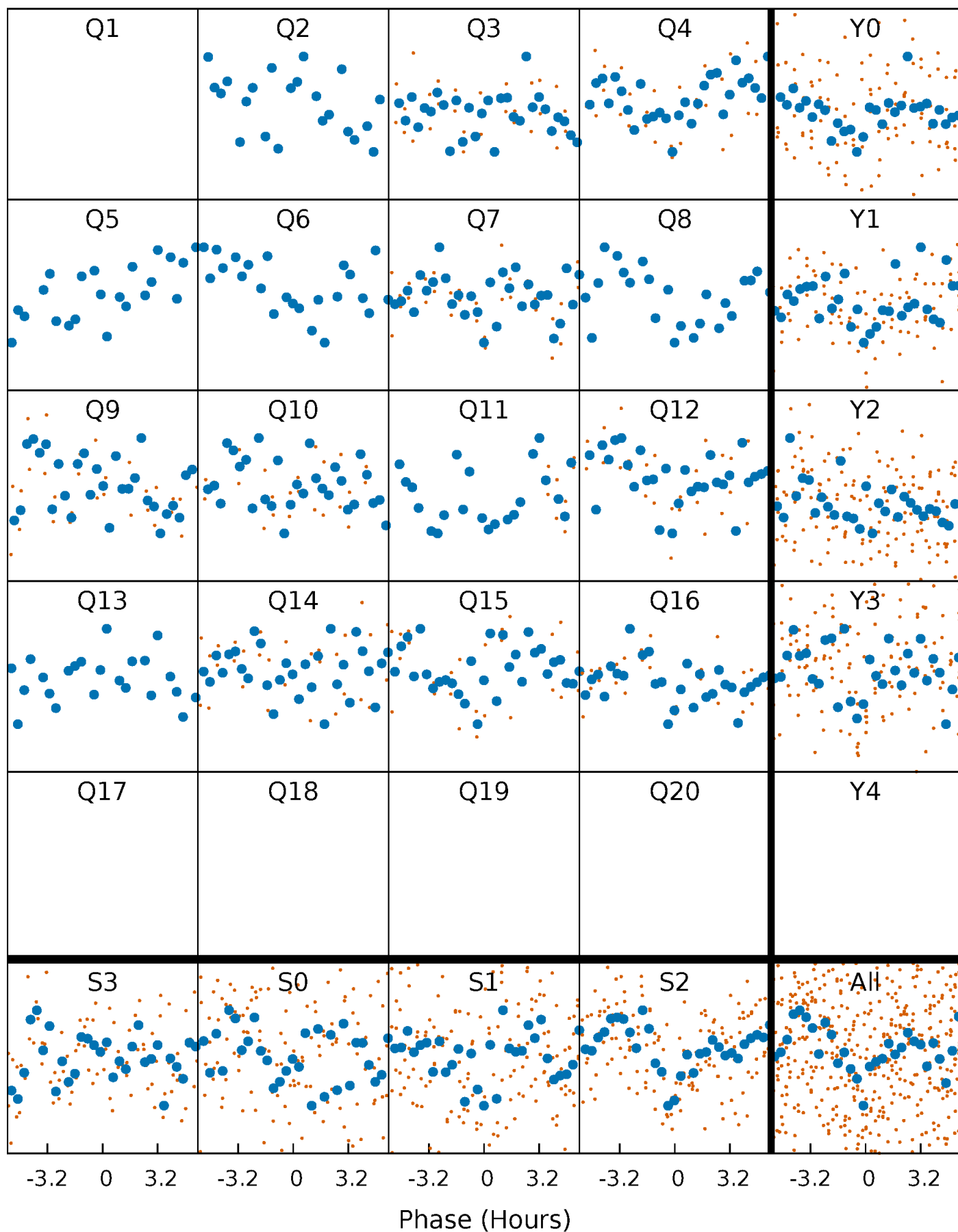


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



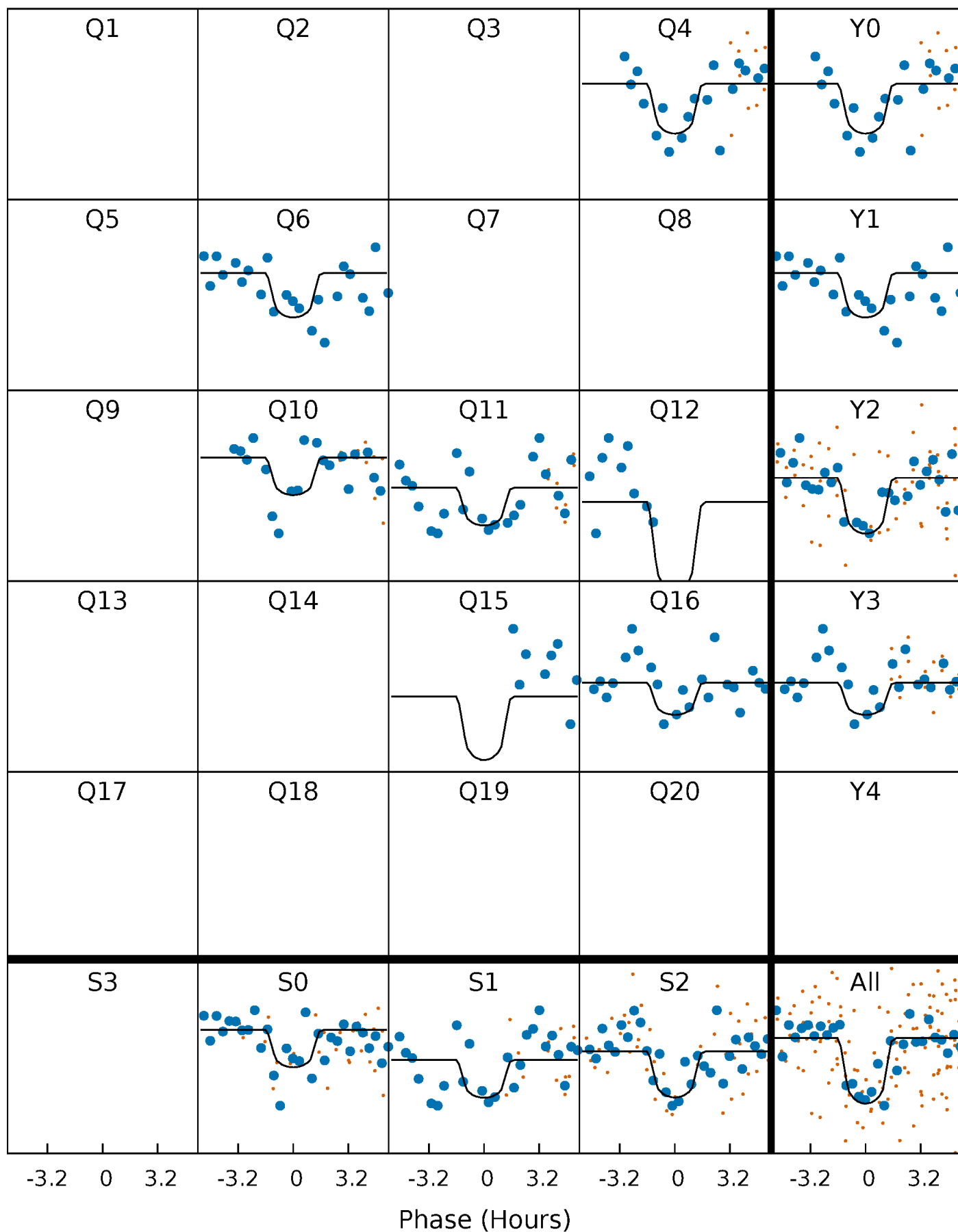
PDC Quarter-Phased Transit Curves

TCE 002581452-09 $P = 52.615085$ Days $T_0 = 177.948320$ (BKJD)



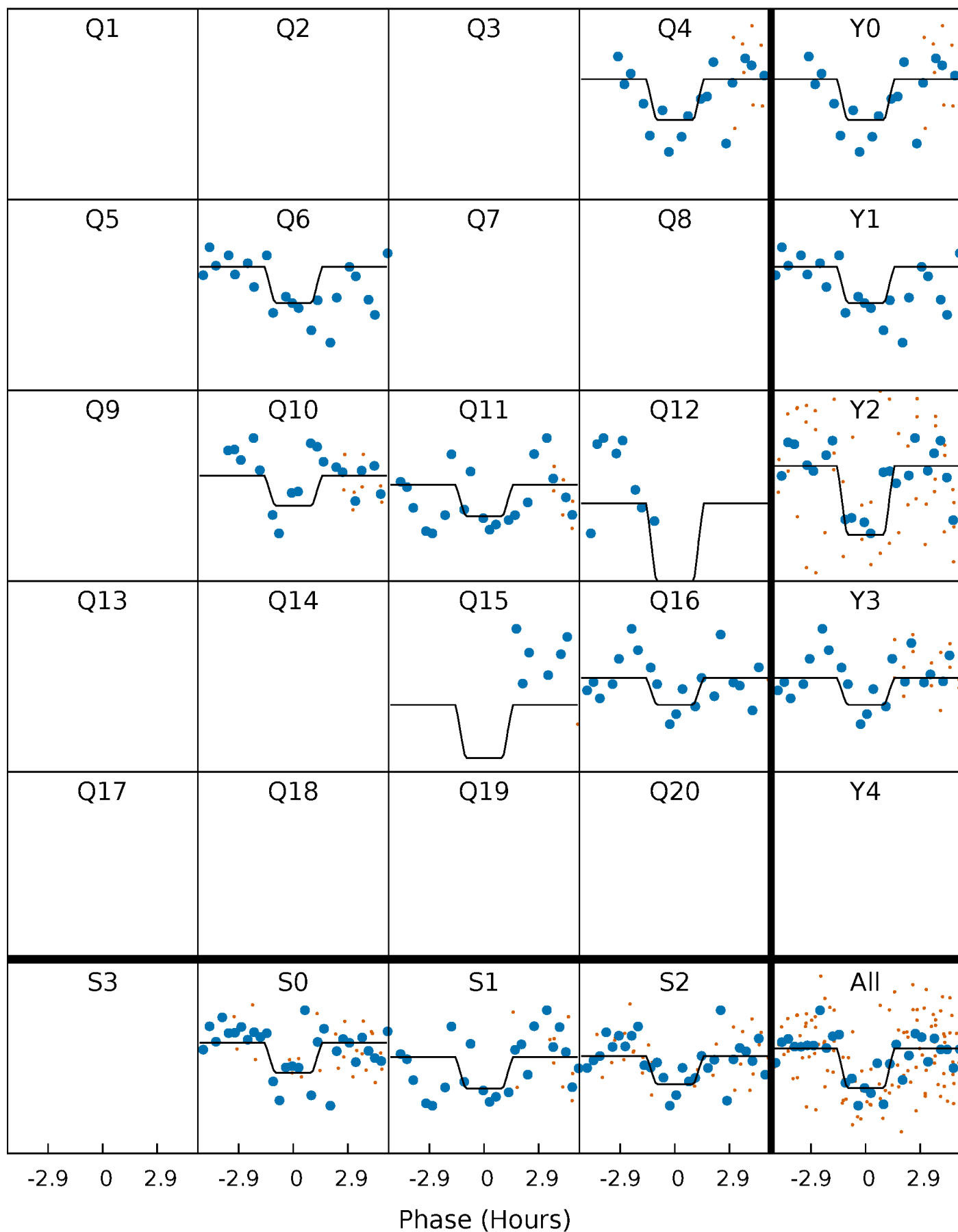
DV Quarter-Phased Transit Curves

TCE 002581452-09 P= 52.615085 Days $T_0=177.948320$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

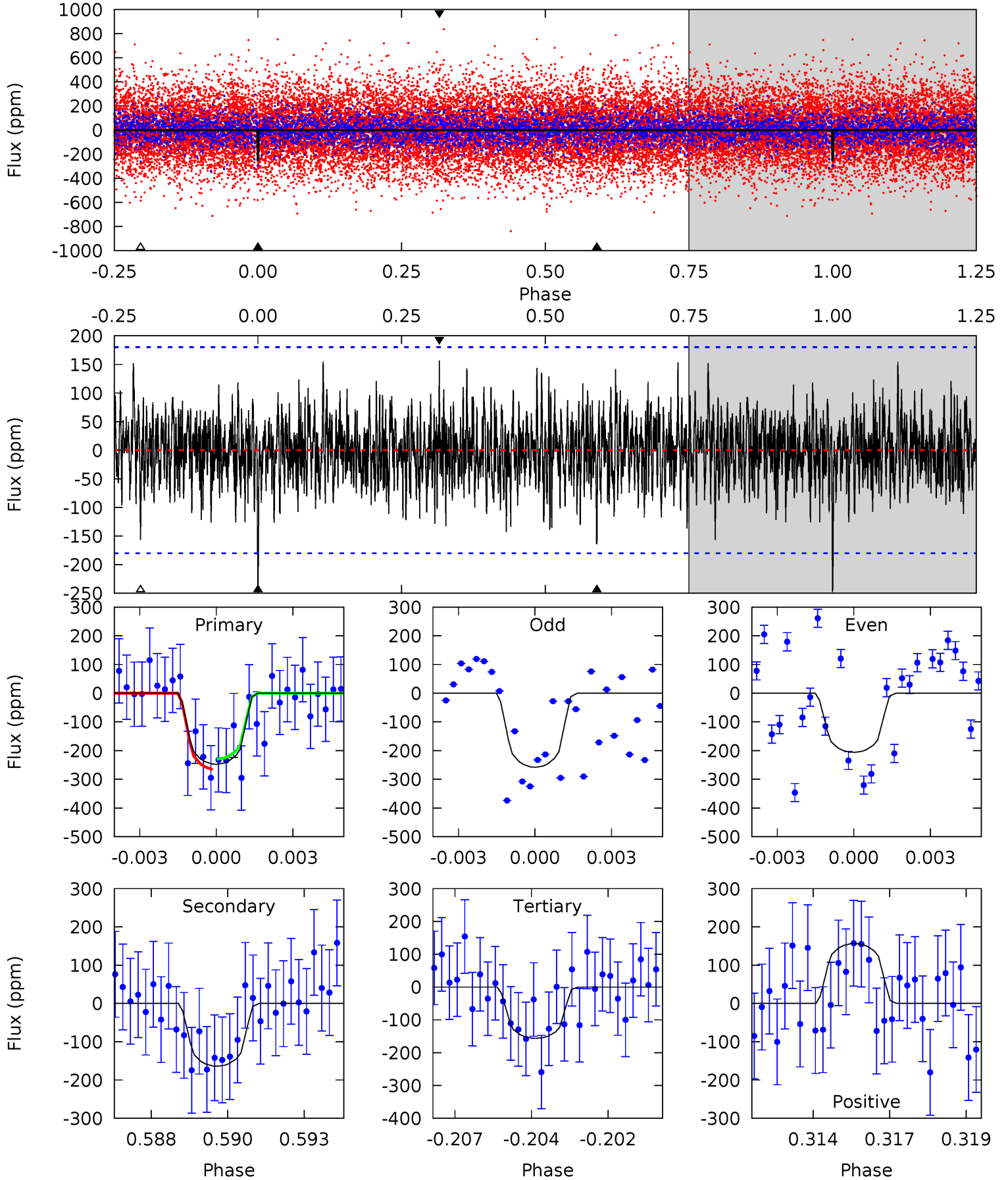
TCE 002581452-09 $P = 52.614784$ Days $T_0 = 177.953886$ (BKJD)



DV Model-Shift Uniqueness Test

002581452-09, P = 52.615085 Days, E = 125.333235 Days

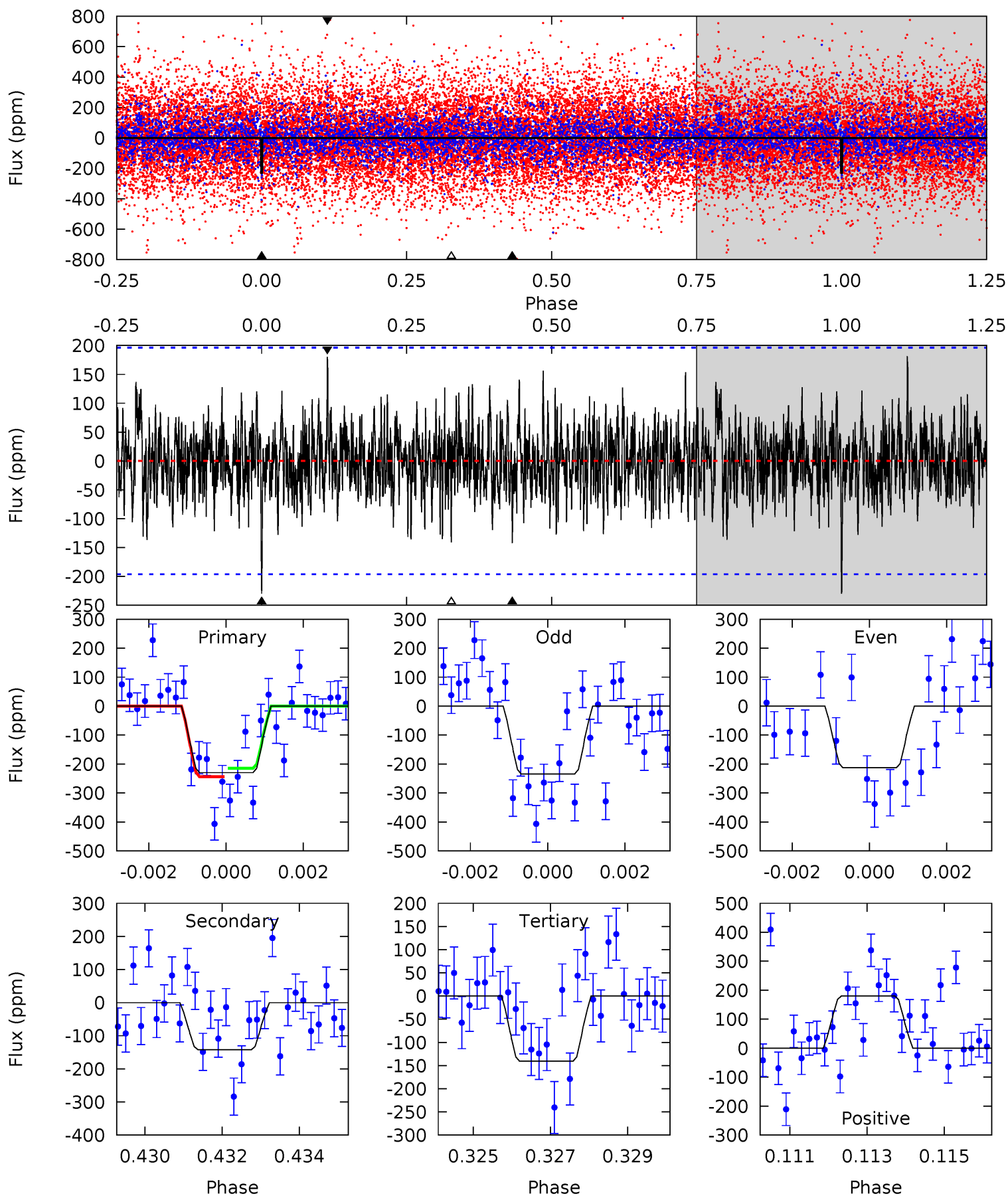
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.26	4.81	4.59	4.59	5.28	3.02	1.40	2.67	2.67	0.22	0.22	0.66	1.01	0.39	0.52



Alt Model-Shift Uniqueness Test

002581452-09, P = 52.614784 Days, E = 125.339102 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.23	3.85	3.81	4.88	5.32	3.08	1.27	2.42	1.35	0.03	-1.03	0.25	1.04	0.44	0.40



Stellar Parameters For KIC 002581452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5117^{+115}_{-166}	$3.202^{+0.429}_{-0.231}$	$-0.040^{+0.250}_{-0.300}$	$5.751^{+1.608}_{-2.987}$	$1.922^{+0.278}_{-0.903}$	$0.014^{+0.068}_{-0.008}$
	+2%/-3%	+13%/-7%	+625%/-750%	+28%/-52%	+14%/-47%	+476%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002581452-09 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-164 ± 34	$17.14^{+17.84}_{-11.41}$	1286^{+118}_{-149}	3691^{+1974}_{-656}	32^{+273}_{-24}
Alt.	-142 ± 37	$16.58^{+16.69}_{-11.08}$	1288^{+111}_{-167}	3609^{+1817}_{-655}	30^{+267}_{-23}

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

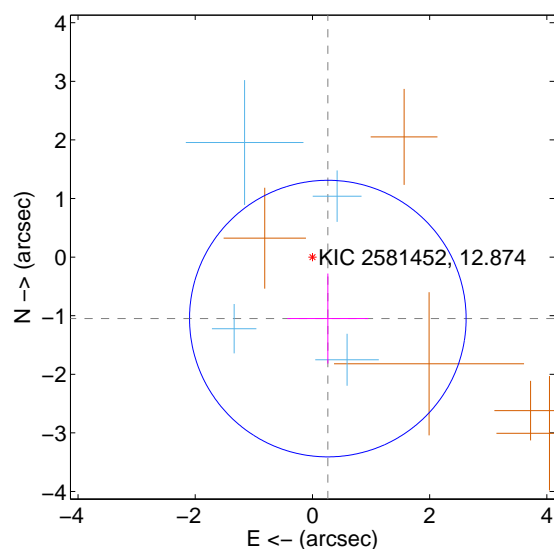
Supplemental centroid analysis for 002581452-09. Kepler magnitude: 12.87. Transit SNR 7.35

There are 4 quarters with good PRF difference image offsets

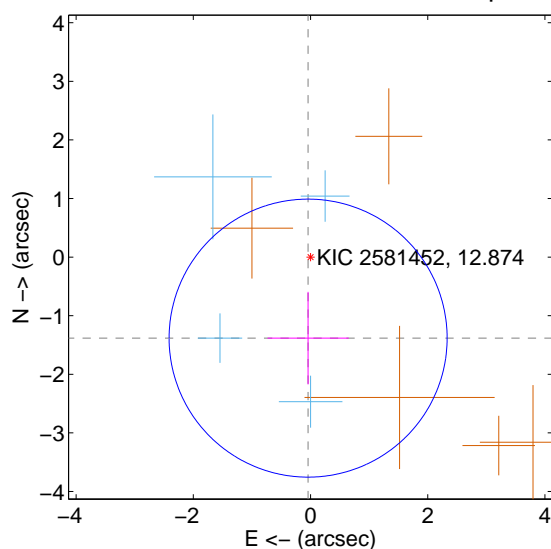
The direct PRF centroid is offset from the target star catalog position by about 0.78 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.082 ± 0.787	1.38	-0.263 ± 0.692	-1.049 ± 0.768
PRF-fit source offset from KIC position	1.384 ± 0.791	1.75	0.041 ± 0.692	-1.383 ± 0.790
photometric centroid source offset	0.37 ± 0.84	0.44	0.04 ± 0.55	-0.37 ± 0.84

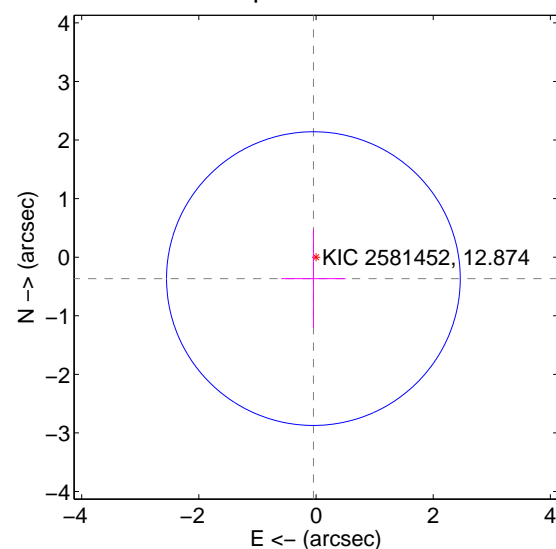
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

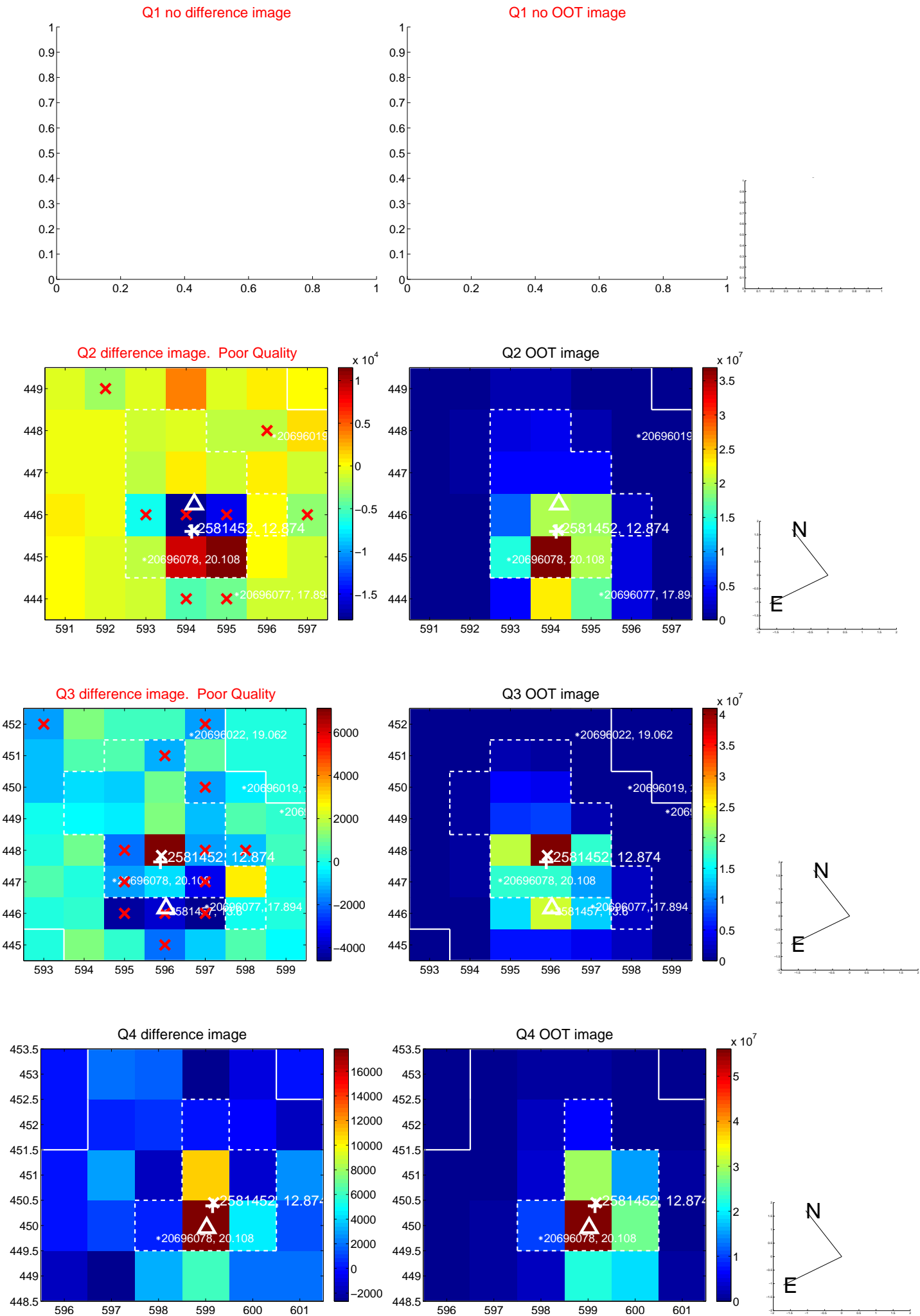


offset from photometric centroids

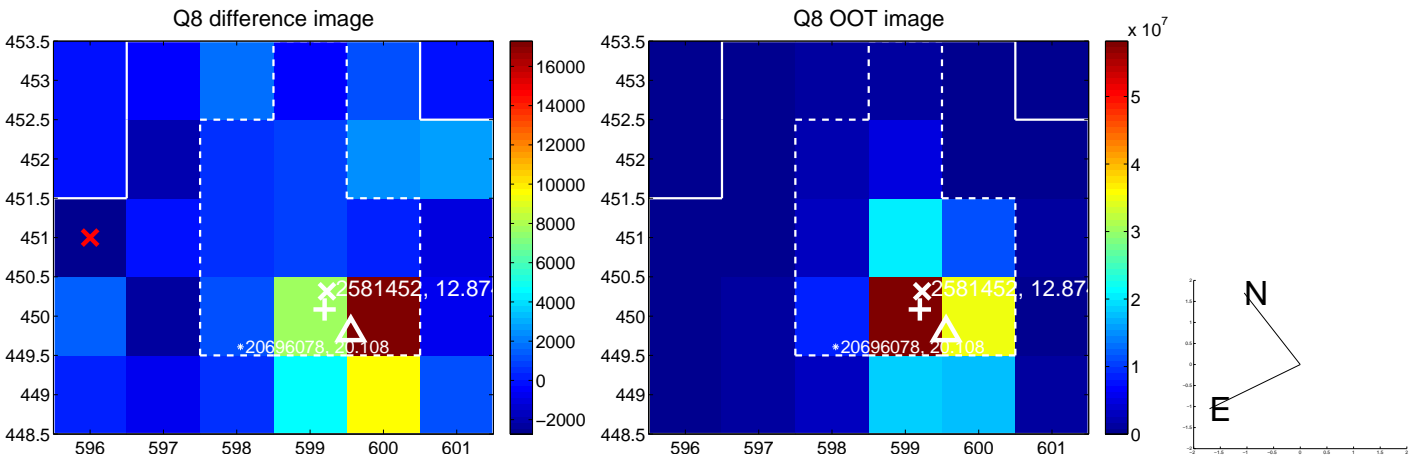
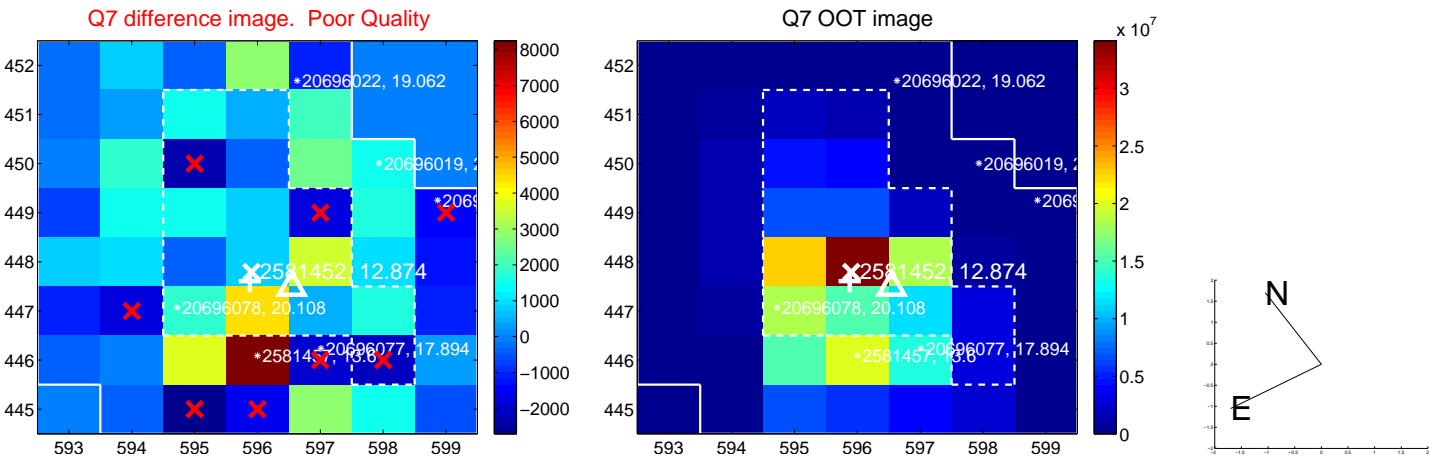
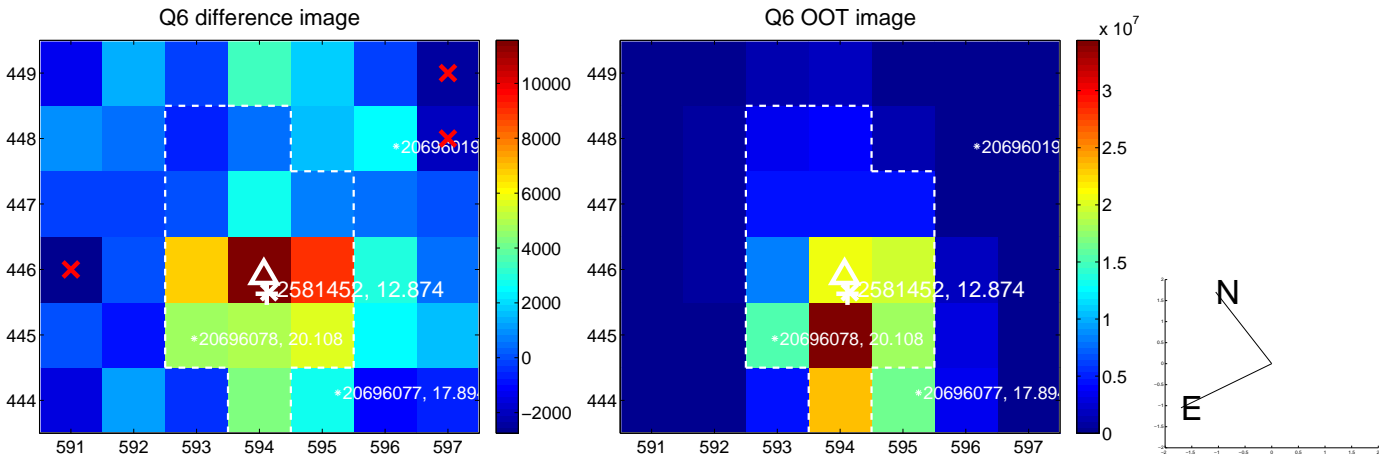
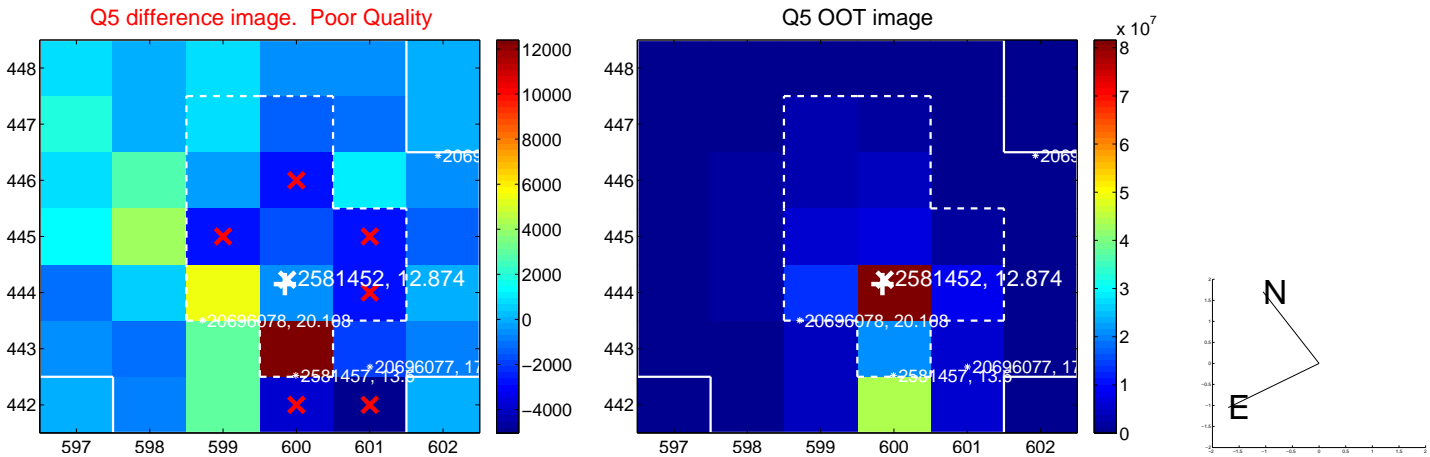


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

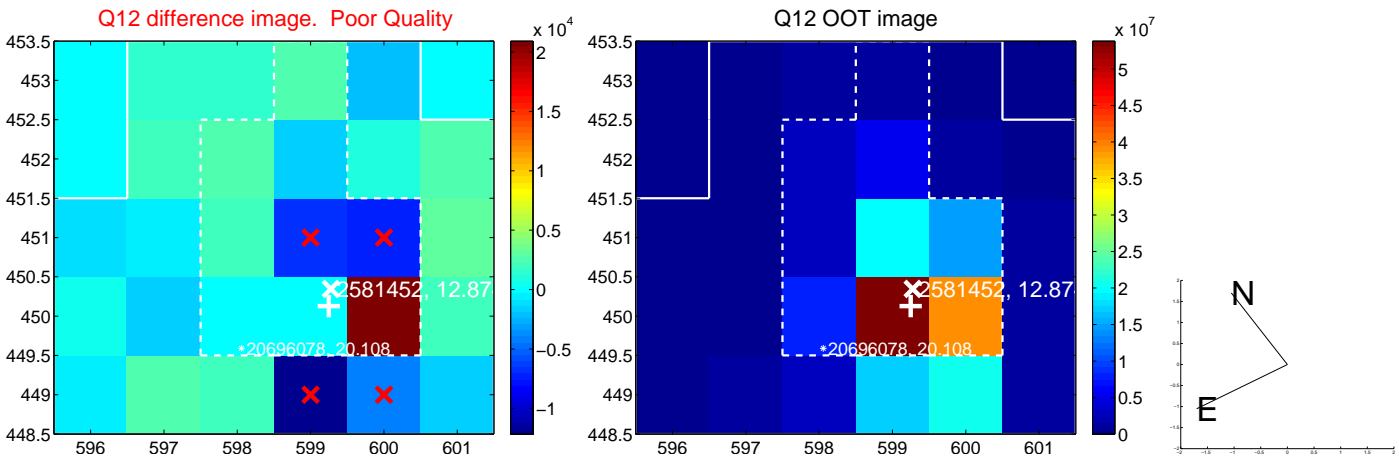
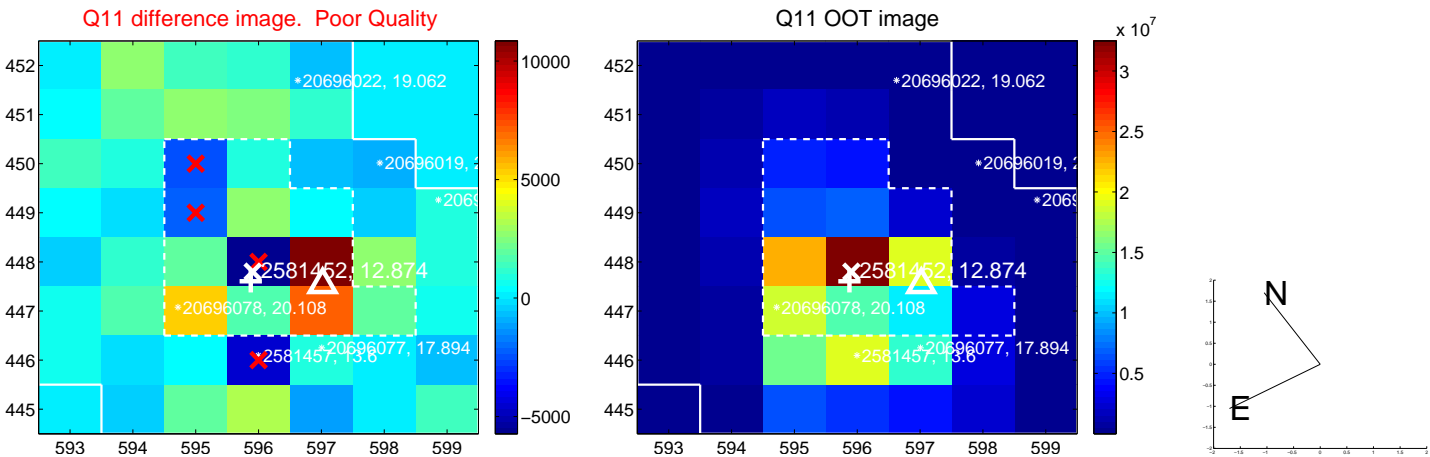
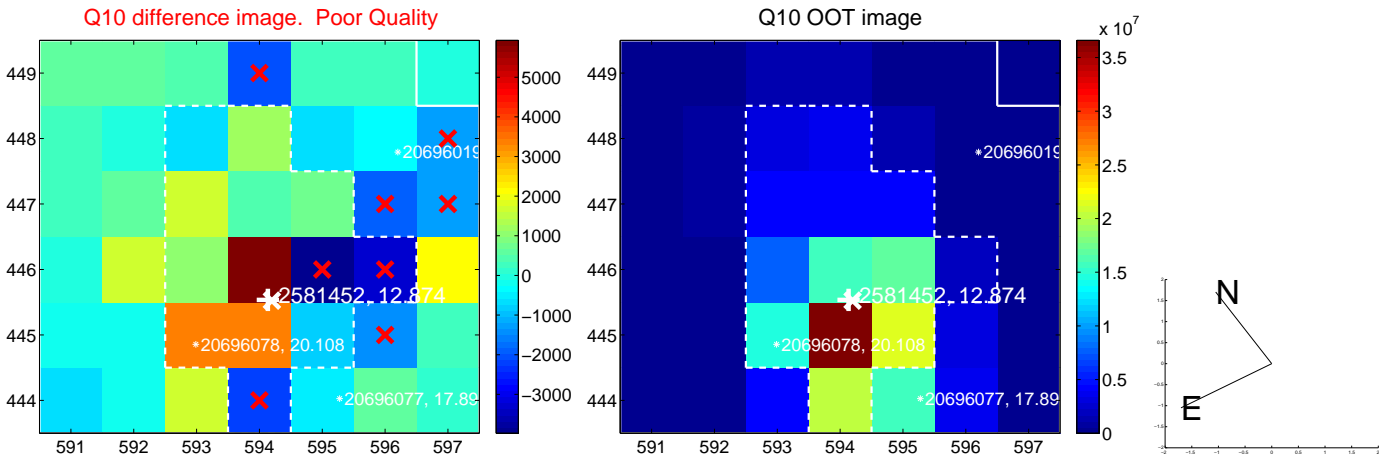
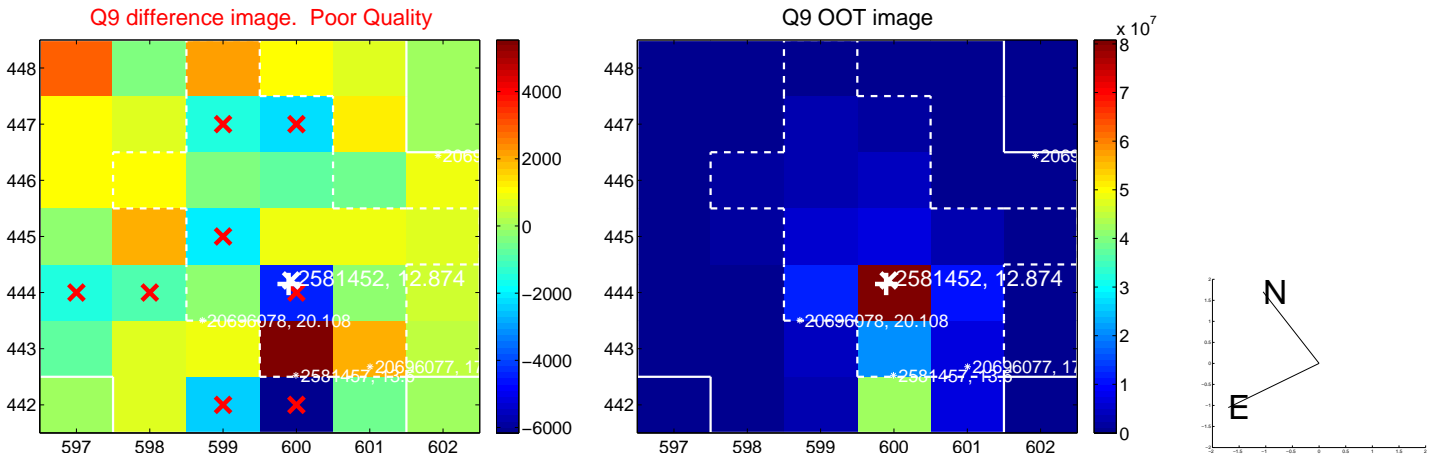
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



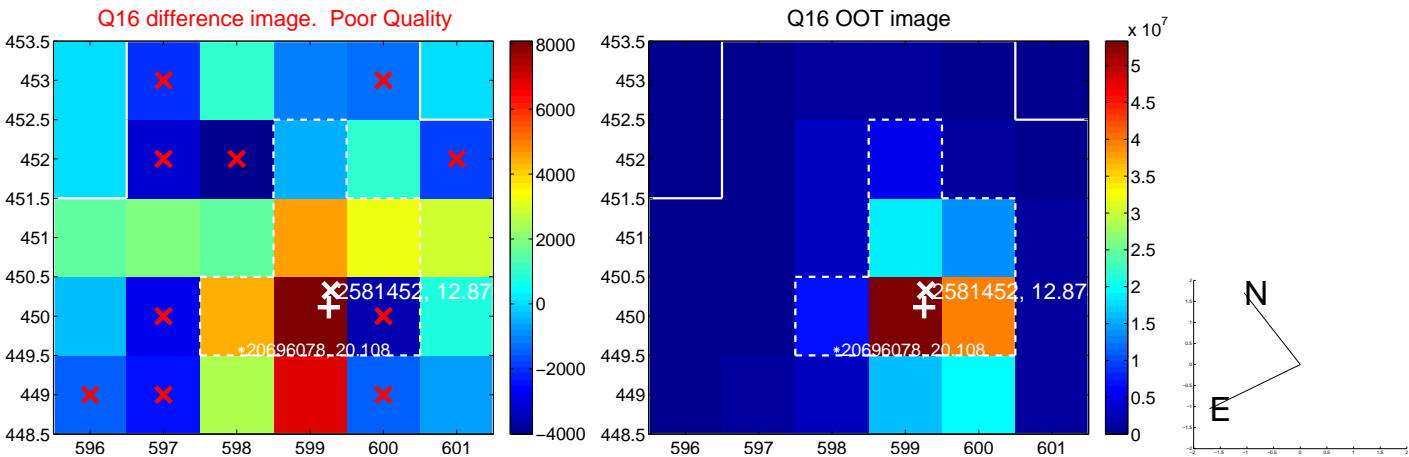
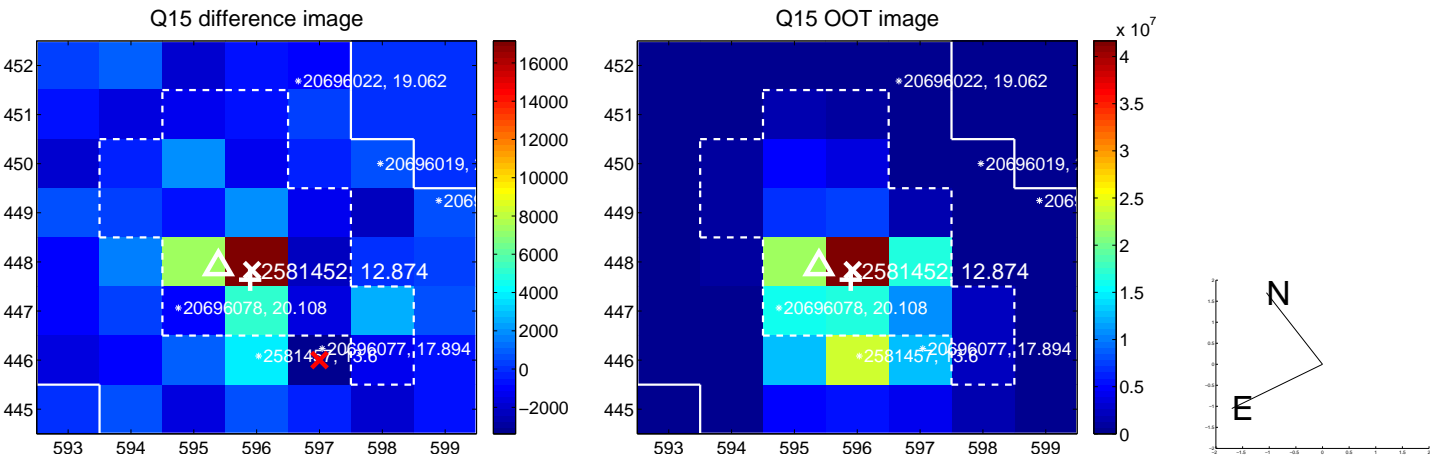
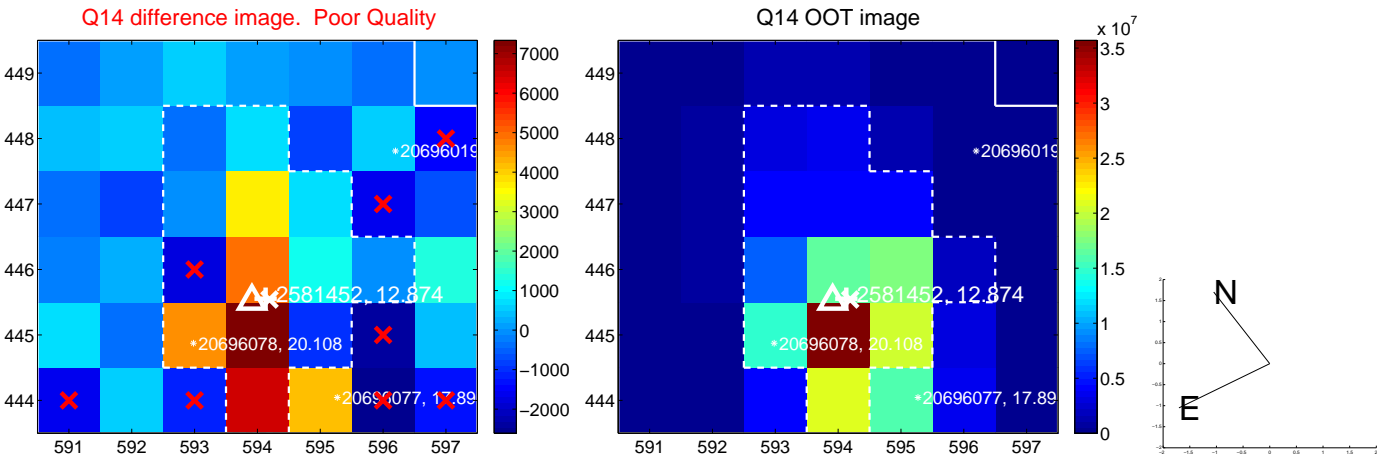
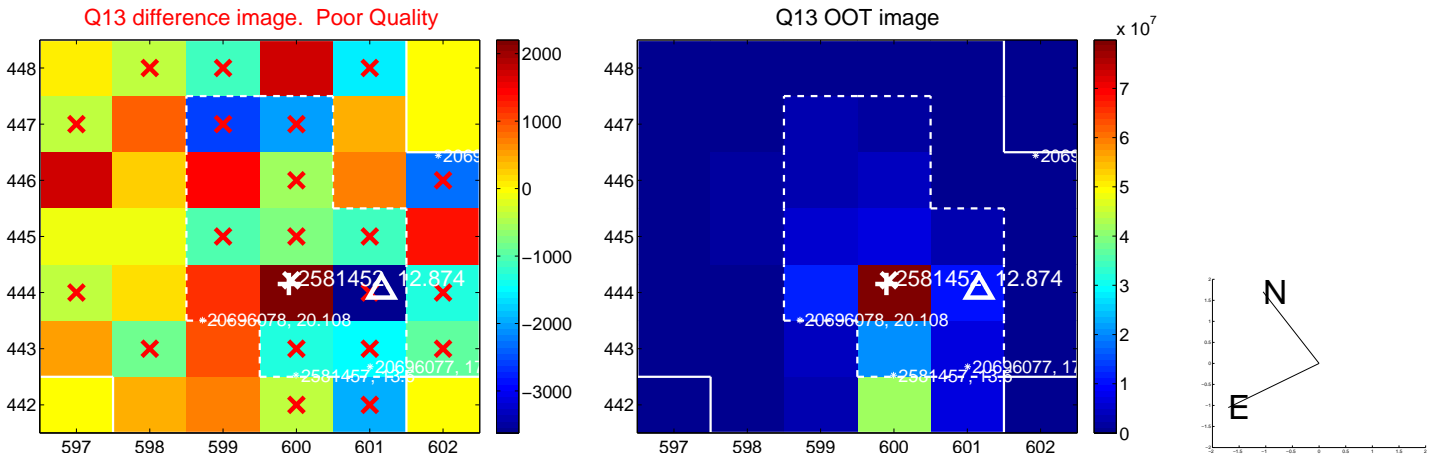
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



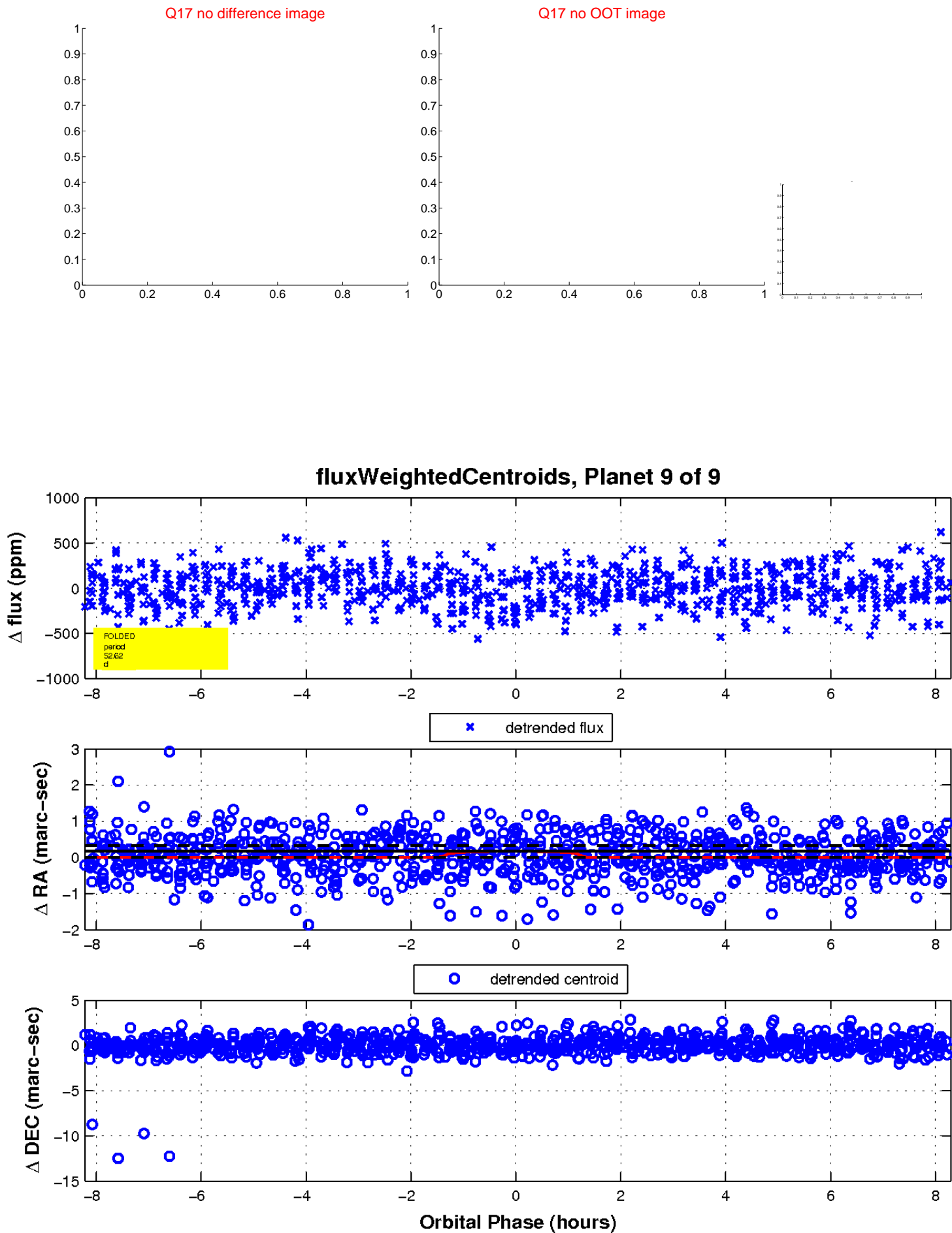
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

