

KIC 005476448

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})
005476448-01	OBS	No	549.743807	339.766513	3050.5	21.898	22.0	2.2	1.72	7247	11.25	3.19
005476448-02	OBS	No	311.108174	182.969539	820.3	3.000	29.2	-1.0	1.72	7247	5.00	6.82
005476448-03	OBS	No	230.886134	321.557819	245.9	1.771	21.8	1.8	1.72	7247	3.08	10.14
005476448-04	OBS	No	273.769832	255.463307	682.7	3.000	21.3	-1.0	1.72	7247	4.56	8.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005476448-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005476448-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005476448-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005476448-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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.

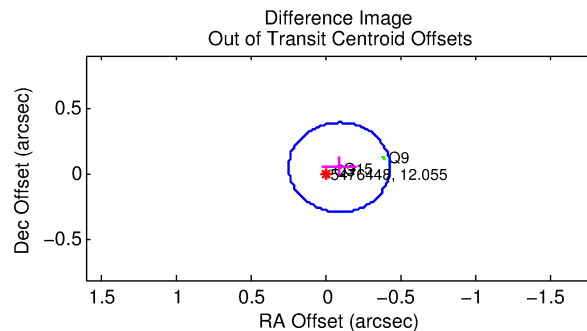
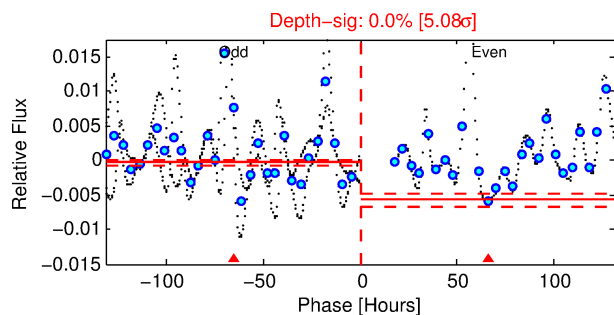
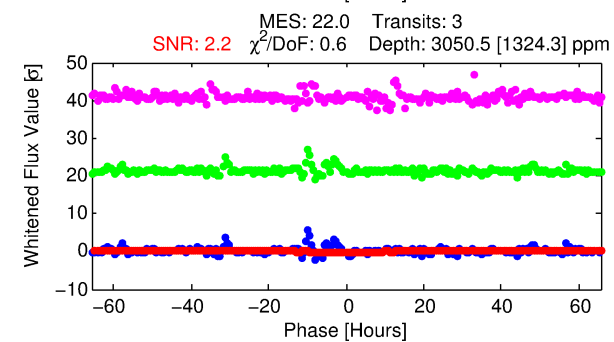
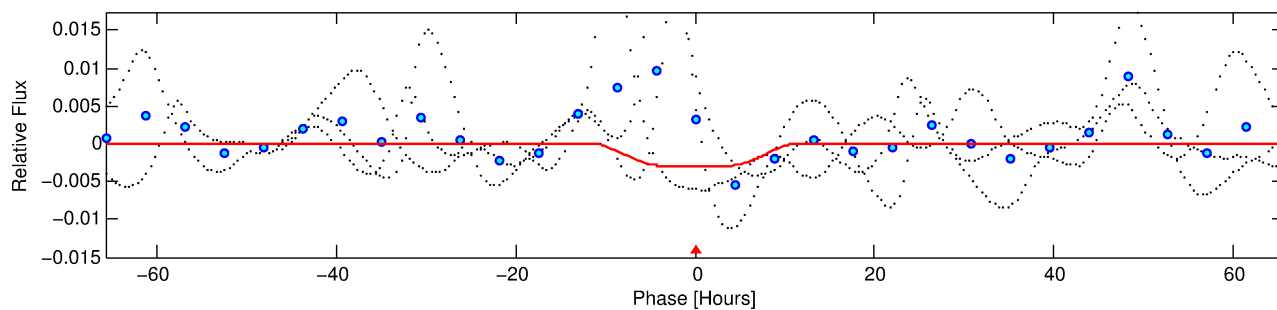
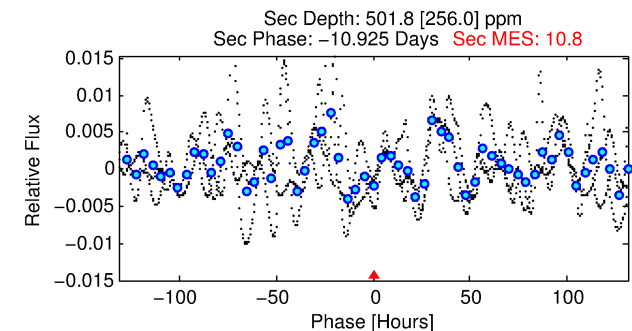
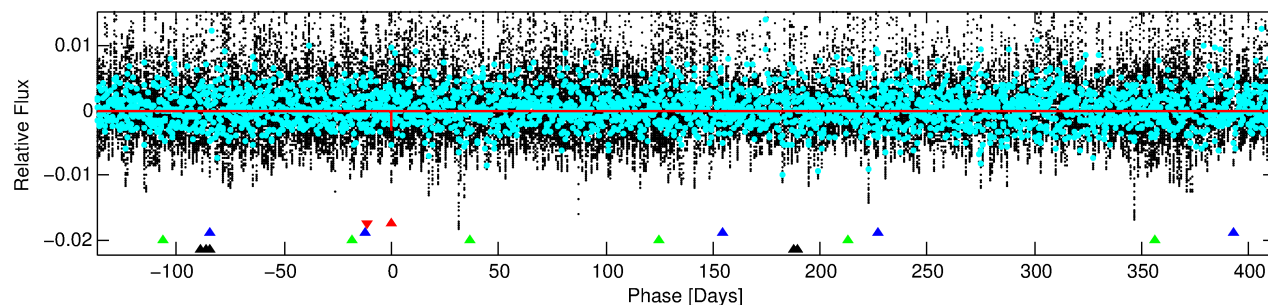
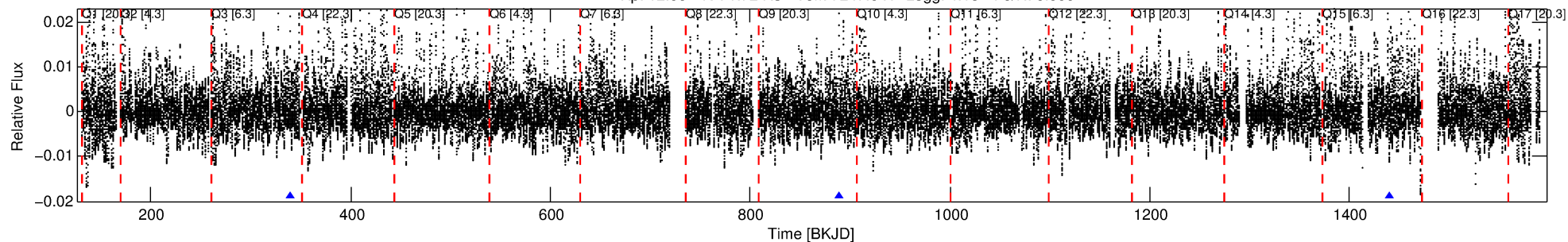
Ephemeris Match Information For 005476448-01

No Significant Match Found

DV One-Page Summary

KIC: 5476448 Candidate: 1 of 4 Period: 549.744 d

Kp: 12.06 R*: 1.72 Rs Teff: 7247.0 K Logg: 4.15 Fe/H: 0.000



DV Fit Results:

Period = 549.74381 [0.03240] d
Epoch = 339.7665 [0.0404] BKJD
Rp/R* = 0.0599 [0.0126]
a/R* = 101.00 [12.68]
b = 0.92 [0.02]
Seff = 3.19 [1.31]
Teq = 341 [35] K
Rp = 11.25 [4.25] Re
a = 1.5147 [0.3949] AU
Ag = 5006.36 [3803.53] [1.32σ]
Teff = 4432 [755] K [5.41σ]

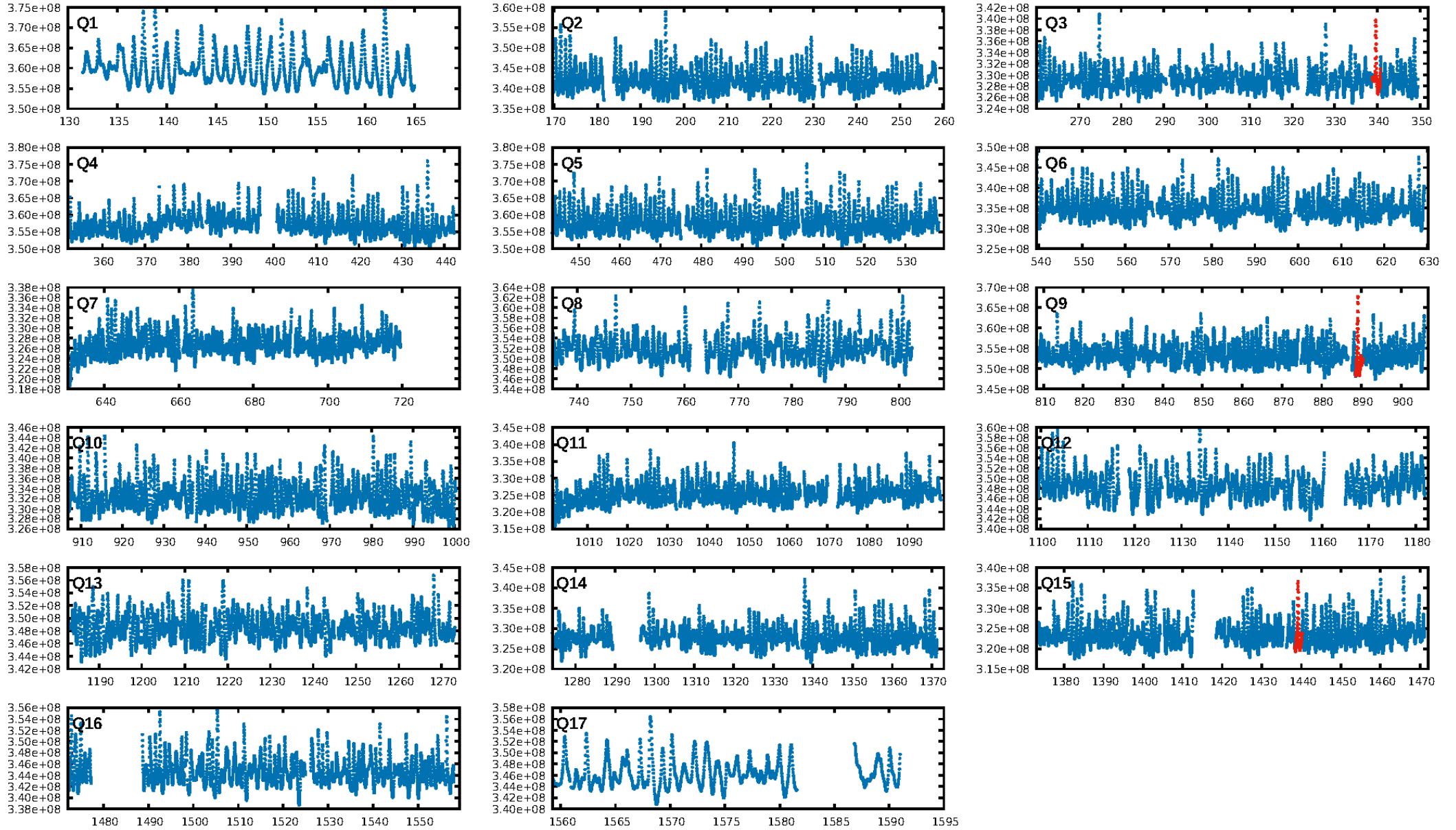
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [259.12σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 16.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.165
Centroid-sig: 0.0%
Centroid-so: 2.536 arcsec [4.65σ]
OotOffset-rm: 0.108 arcsec [0.96σ]
OotOffset-st: 0/2/0/1 [3]
KicOffset-rm: 0.202 arcsec [2.27σ]
KicOffset-st: 0/2/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

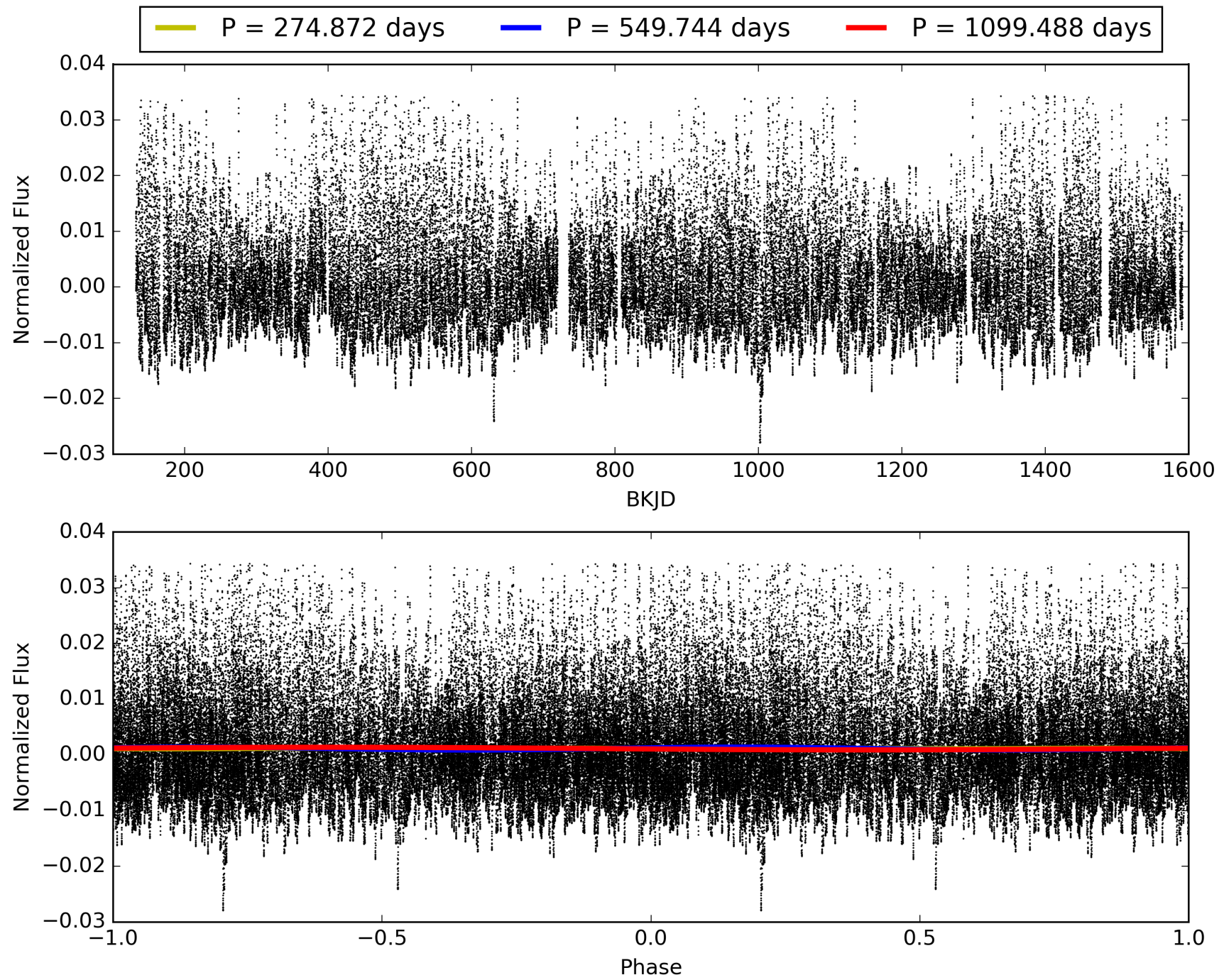
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:35:00 Z

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

TCE 005476448-01, PDC Light Curves

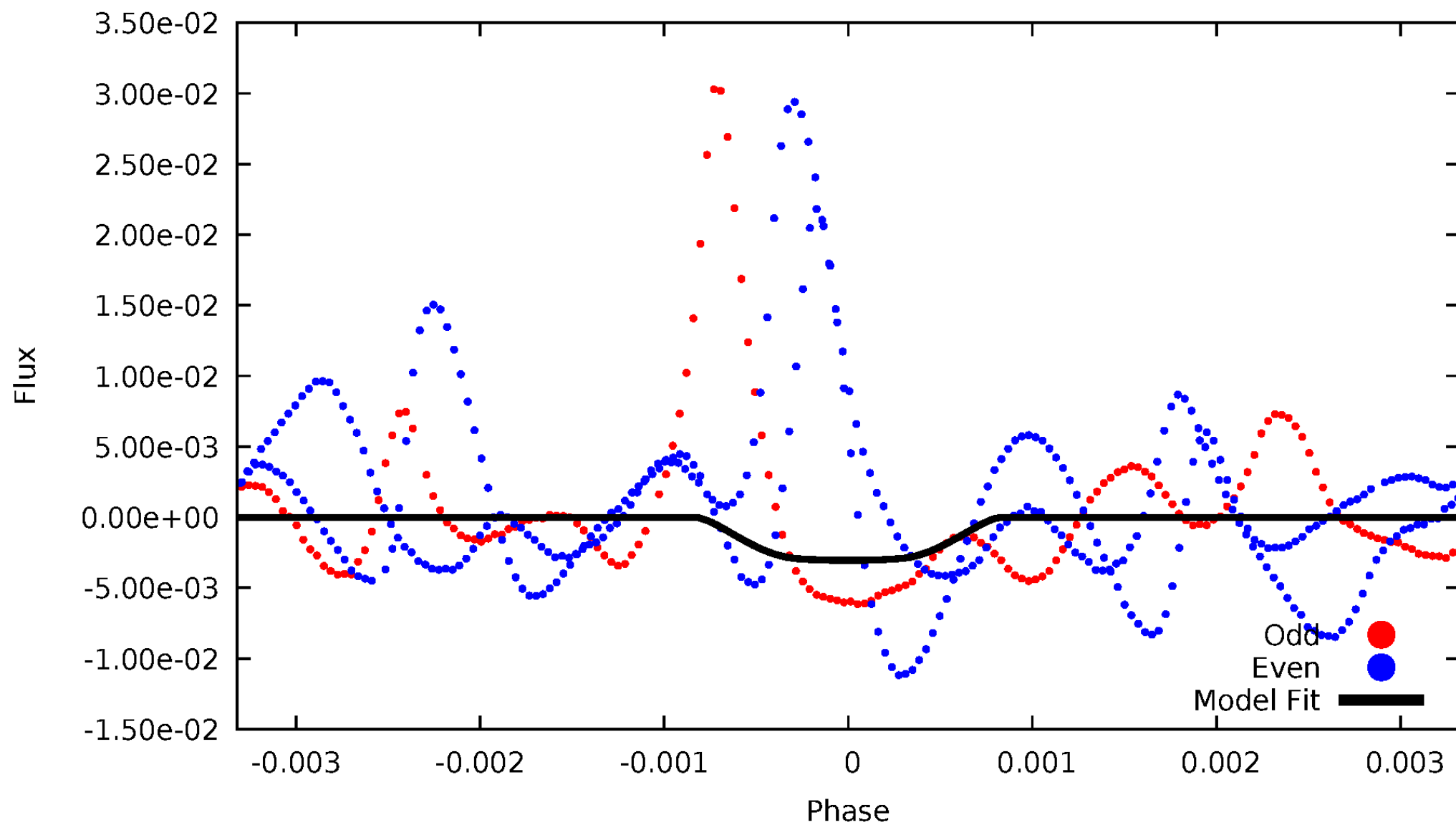


TCE 005476448-01



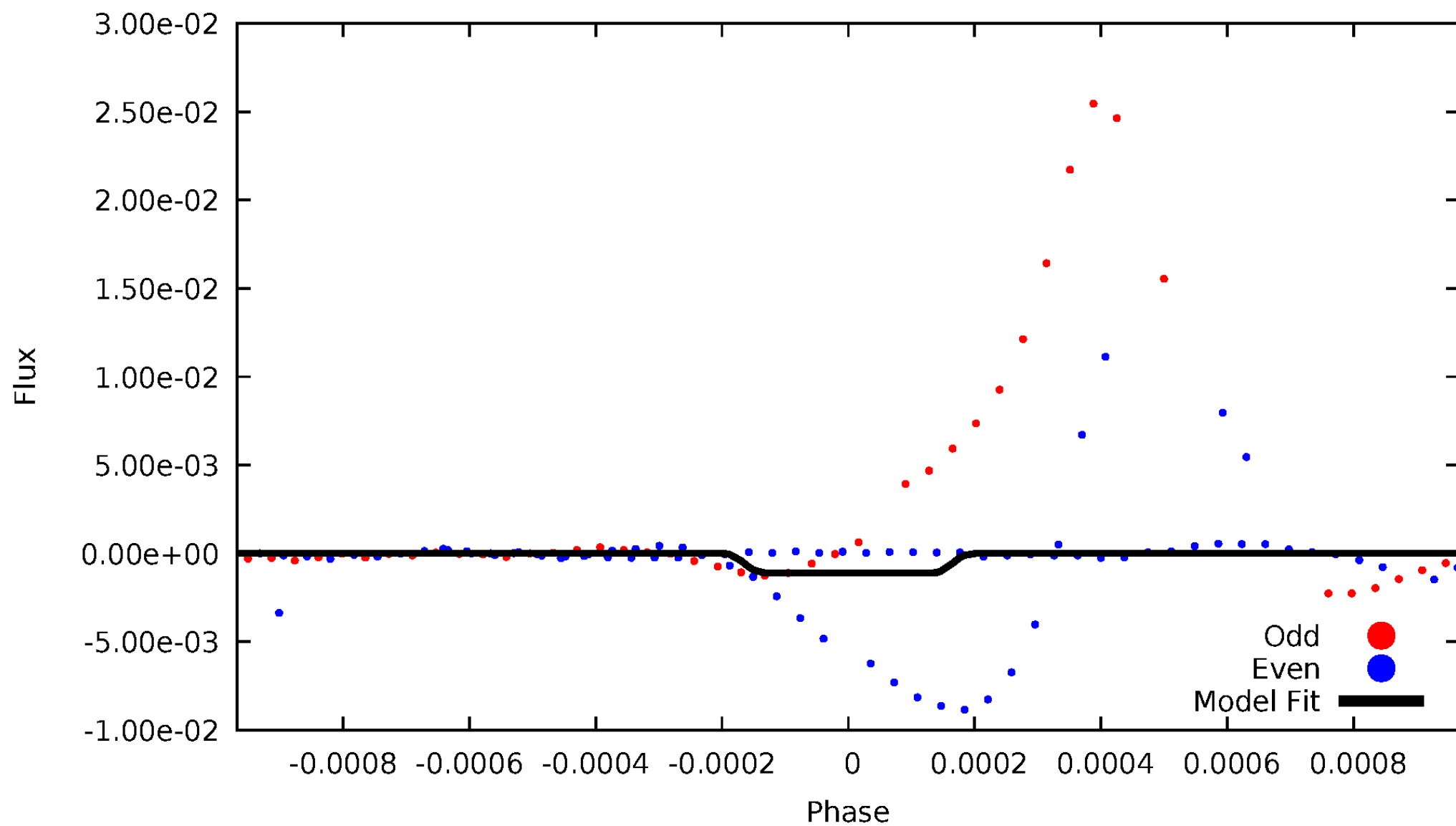
DV Odd/Even

TCE 005476448-01



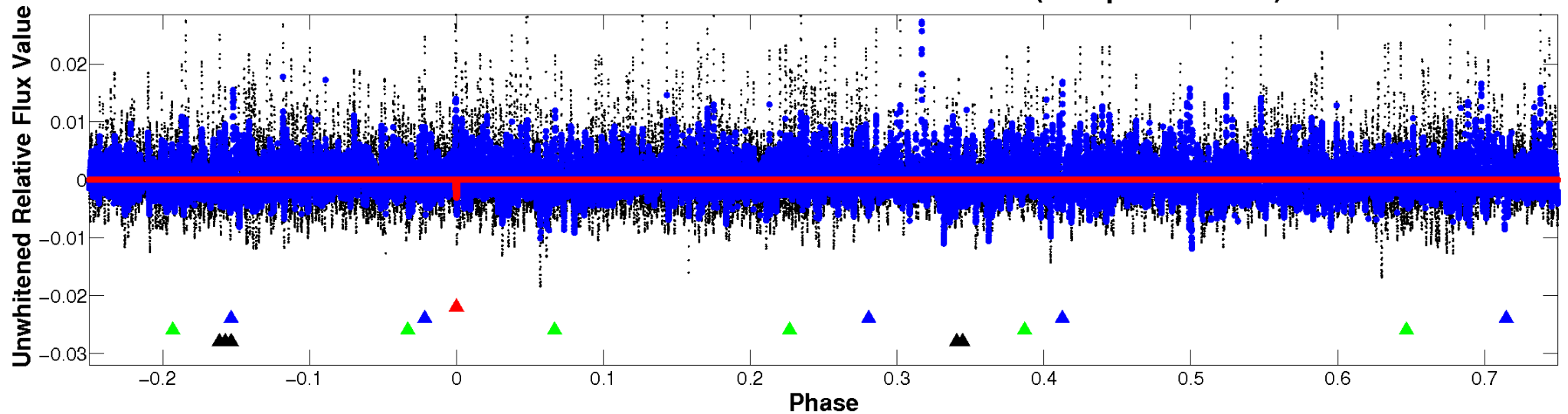
ALT Odd/Even

TCE 005476448-01

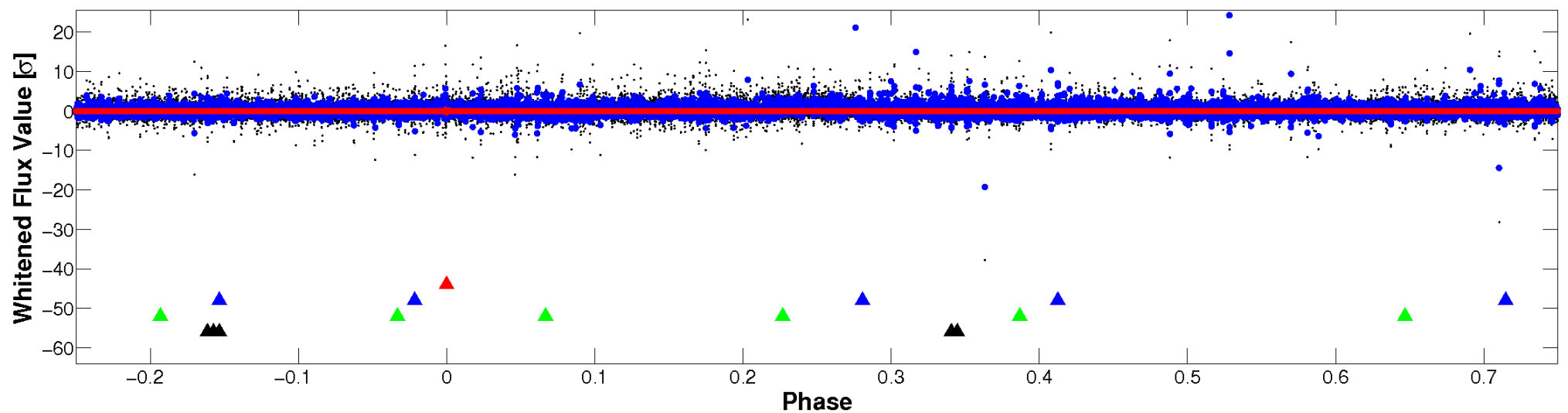


Non-Whitened Vs. Whitened Light Curve

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

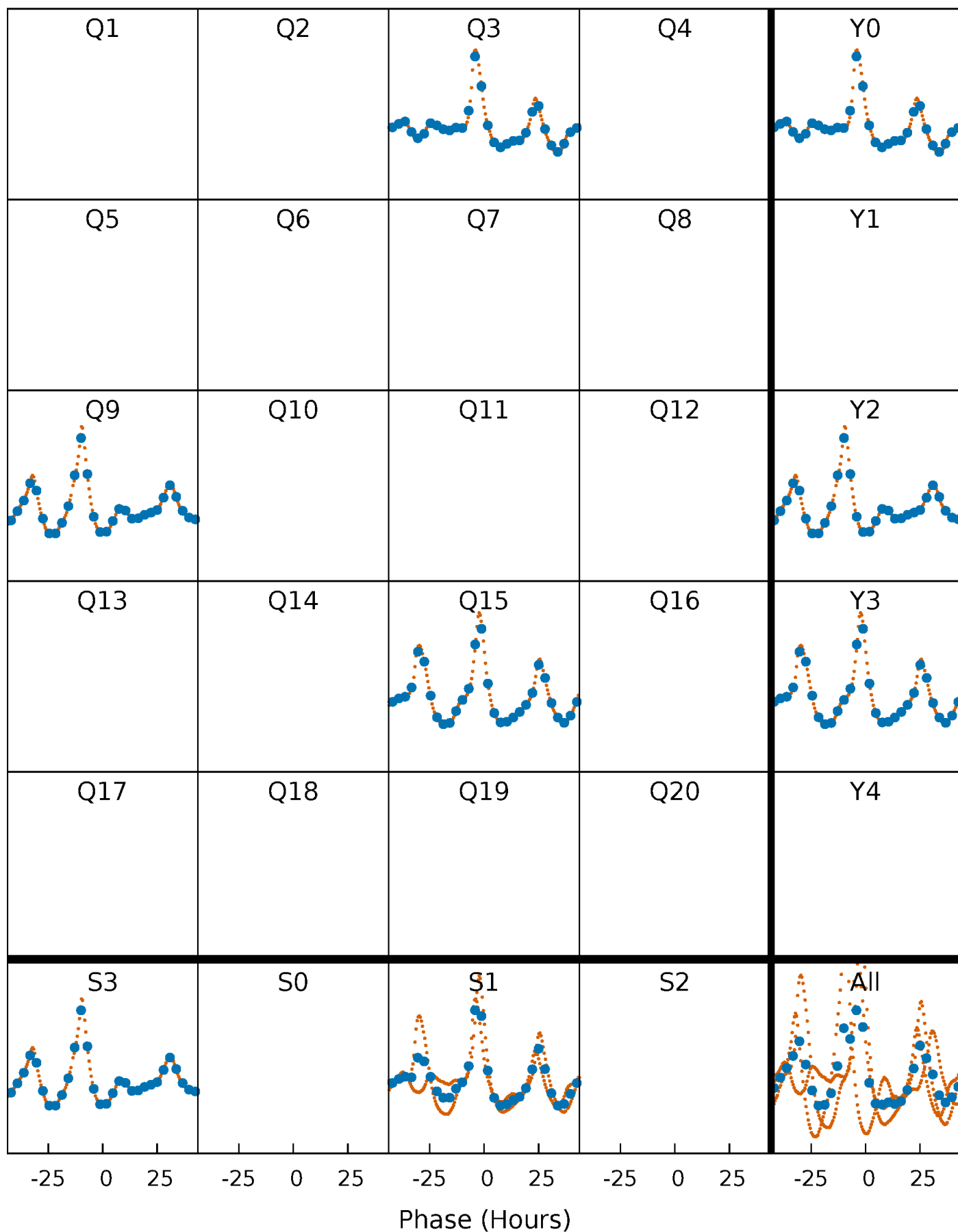


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 005476448-01 P=549.743807 Days $T_0=339.766513$ (BKJD)



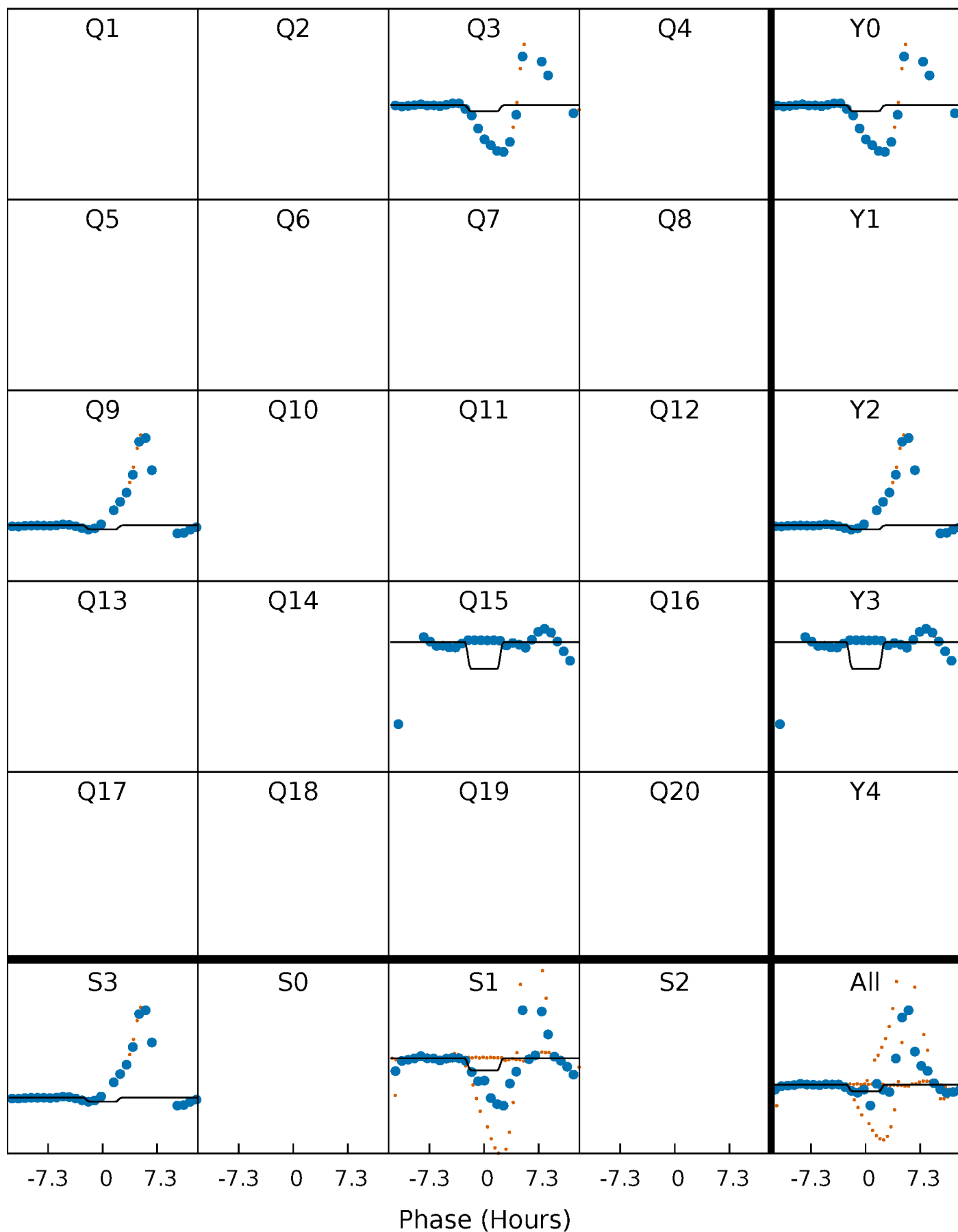
DV Quarter-Phased Transit Curves

TCE 005476448-01 P=549.743807 Days $T_0=339.766513$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

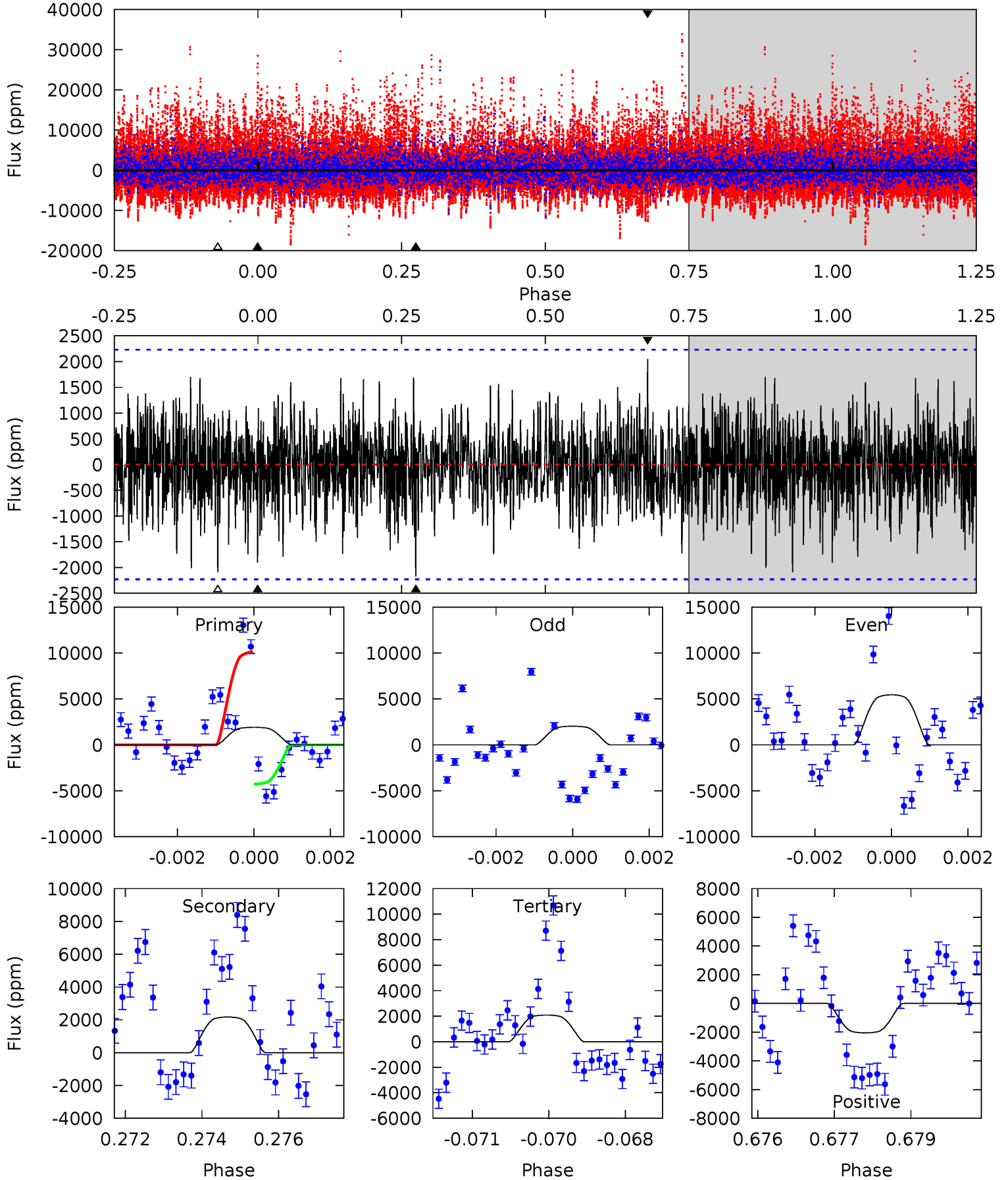
TCE 005476448-01 P=549.553785 Days $T_0=339.341758$ (BKJD)



DV Model-Shift Uniqueness Test

005476448-01, P = 549.743807 Days, E = 339.766513 Days

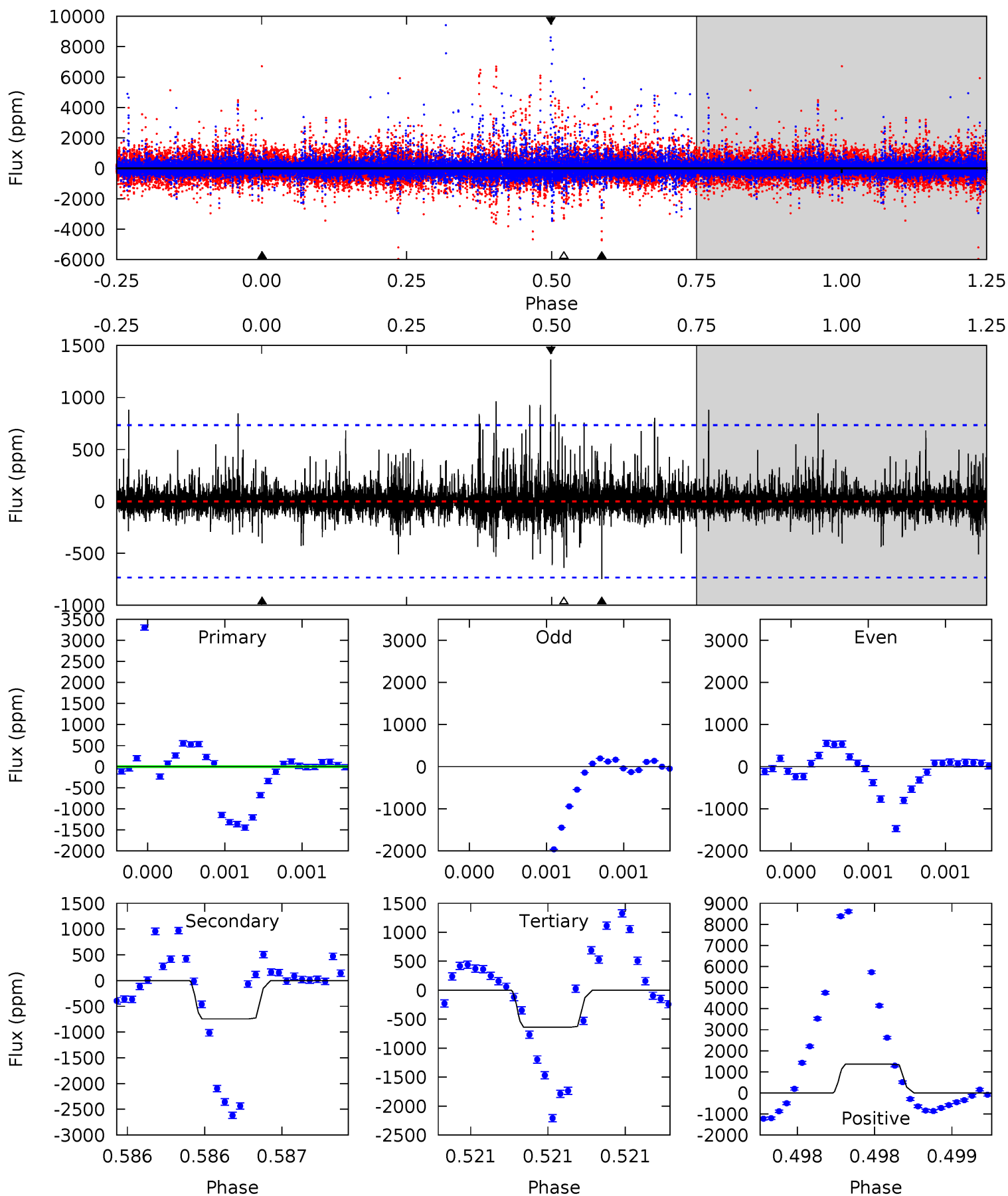
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.58	5.22	5.02	4.92	5.36	3.14	1.40	-0.44	-0.34	0.20	0.30	4.06	3.69	0.49	7.02



Alt Model-Shift Uniqueness Test

005476448-01, P = 549.553785 Days, E = 339.341758 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.92	5.71	4.90	10.4	5.62	3.55	0.84	-2.99	-8.52	0.80	-4.73	1.66	-20.9	0.65	1.23



Stellar Parameters For KIC 005476448

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7247^{+201}_{-302}	$4.152^{+0.124}_{-0.202}$	$0.000^{+0.200}_{-0.350}$	$1.721^{+0.541}_{-0.316}$	$1.533^{+0.212}_{-0.236}$	$0.423^{+0.266}_{-0.222}$
	+3%/-4%	+3%/-5%	+inf%/-inf%	+31%/-18%	+14%/-15%	+63%/-52%
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 005476448-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2173±416	$11.40^{+3.03}_{-2.75}$	479^{+40}_{-29}	6323^{+925}_{-675}	20818^{+14946}_{-8568}
Alt.	-745±131	$6.28^{+2.76}_{-2.26}$	479^{+38}_{-32}	6481^{+2048}_{-977}	23468^{+34394}_{-12217}

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 $A_{obs} \gg 1.0$

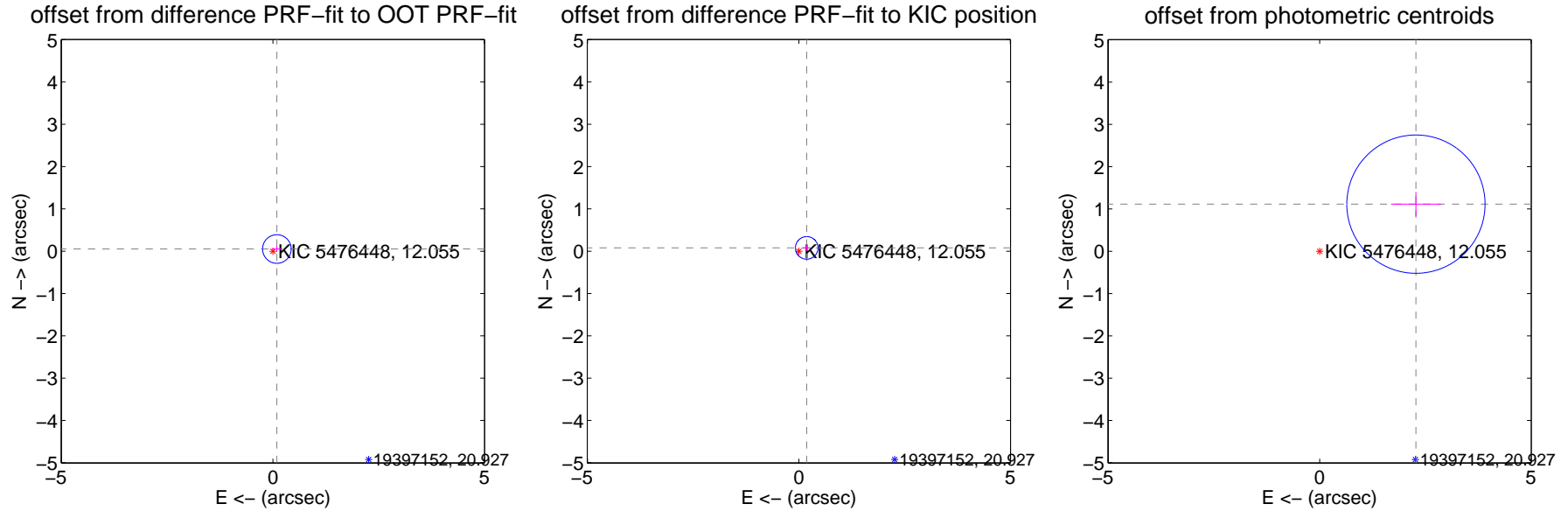
DV Centroid Data

Supplemental centroid analysis for 005476448-01. Kepler magnitude: 12.05. Transit SNR 2.19

There are 1 quarters with good PRF difference image offsets

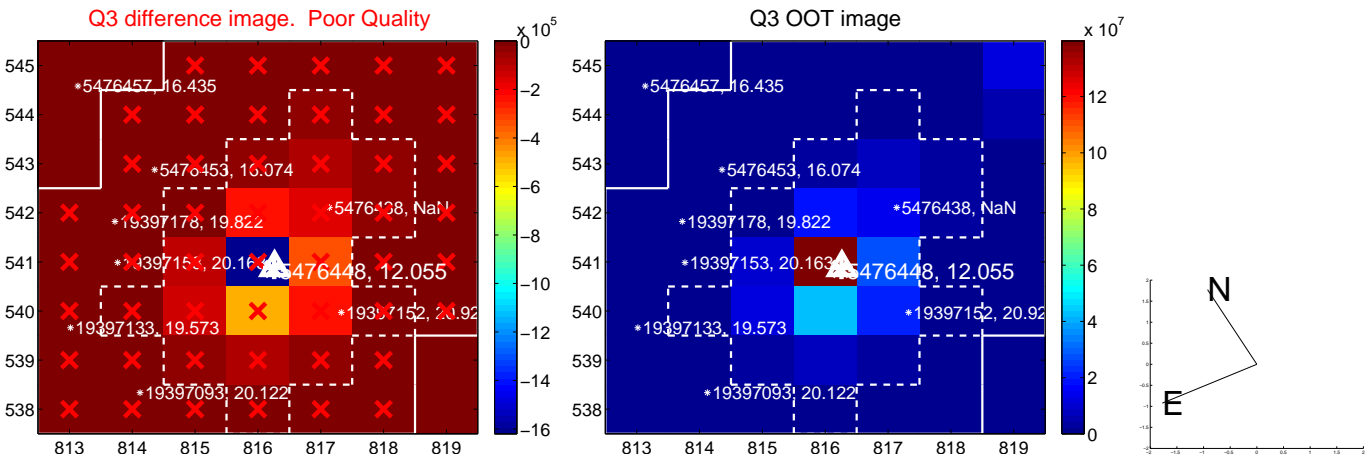
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.108 ± 0.113	0.96	-0.094 ± 0.112	0.052 ± 0.071
PRF-fit source offset from KIC position	0.202 ± 0.089	2.27	-0.186 ± 0.092	0.078 ± 0.067
photometric centroid source offset	2.54 ± 0.55	4.65	-2.28 ± 0.59	1.11 ± 0.29



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

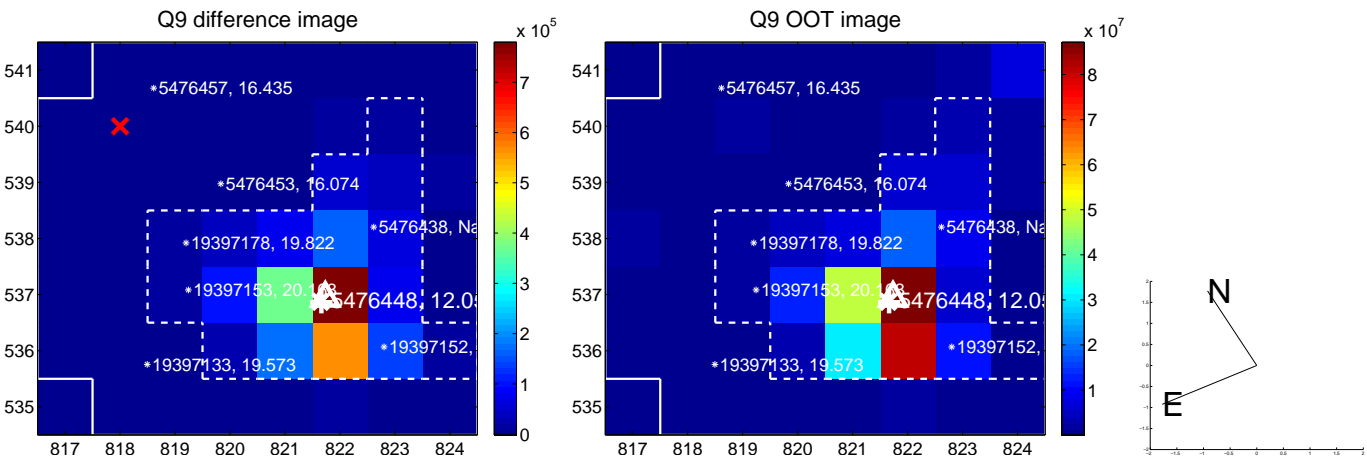
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



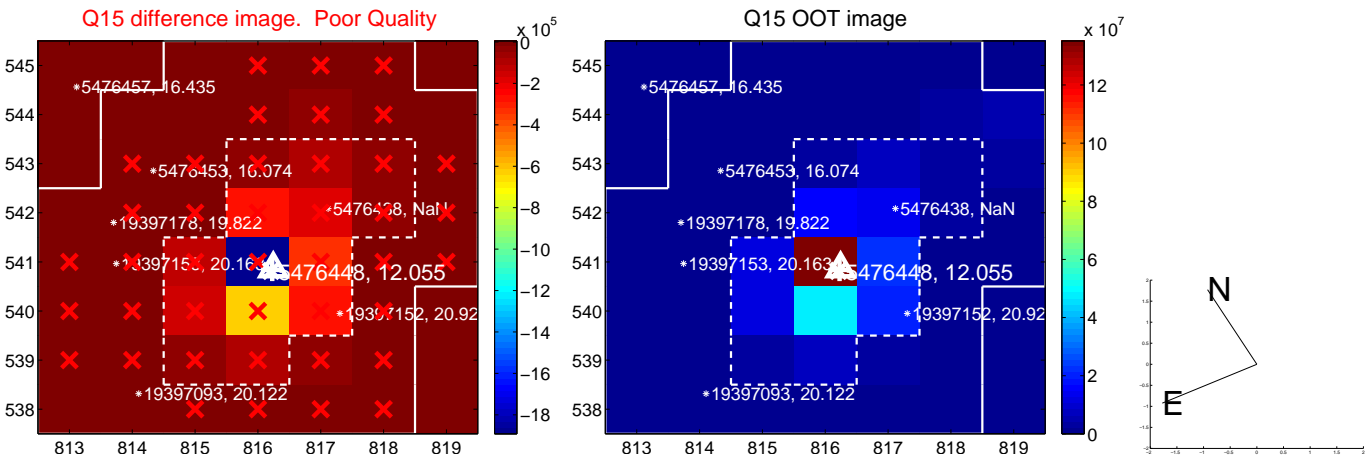
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



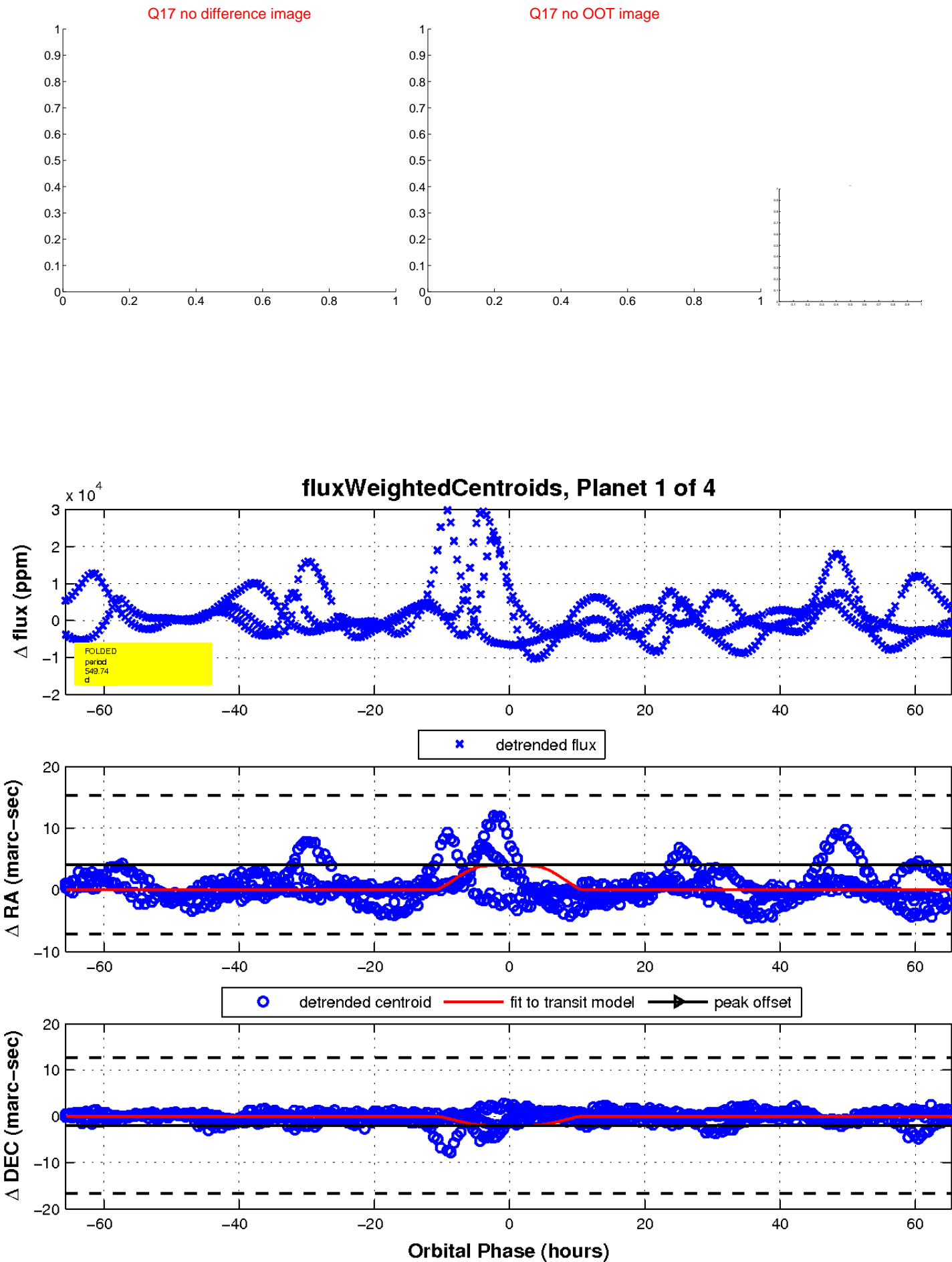
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

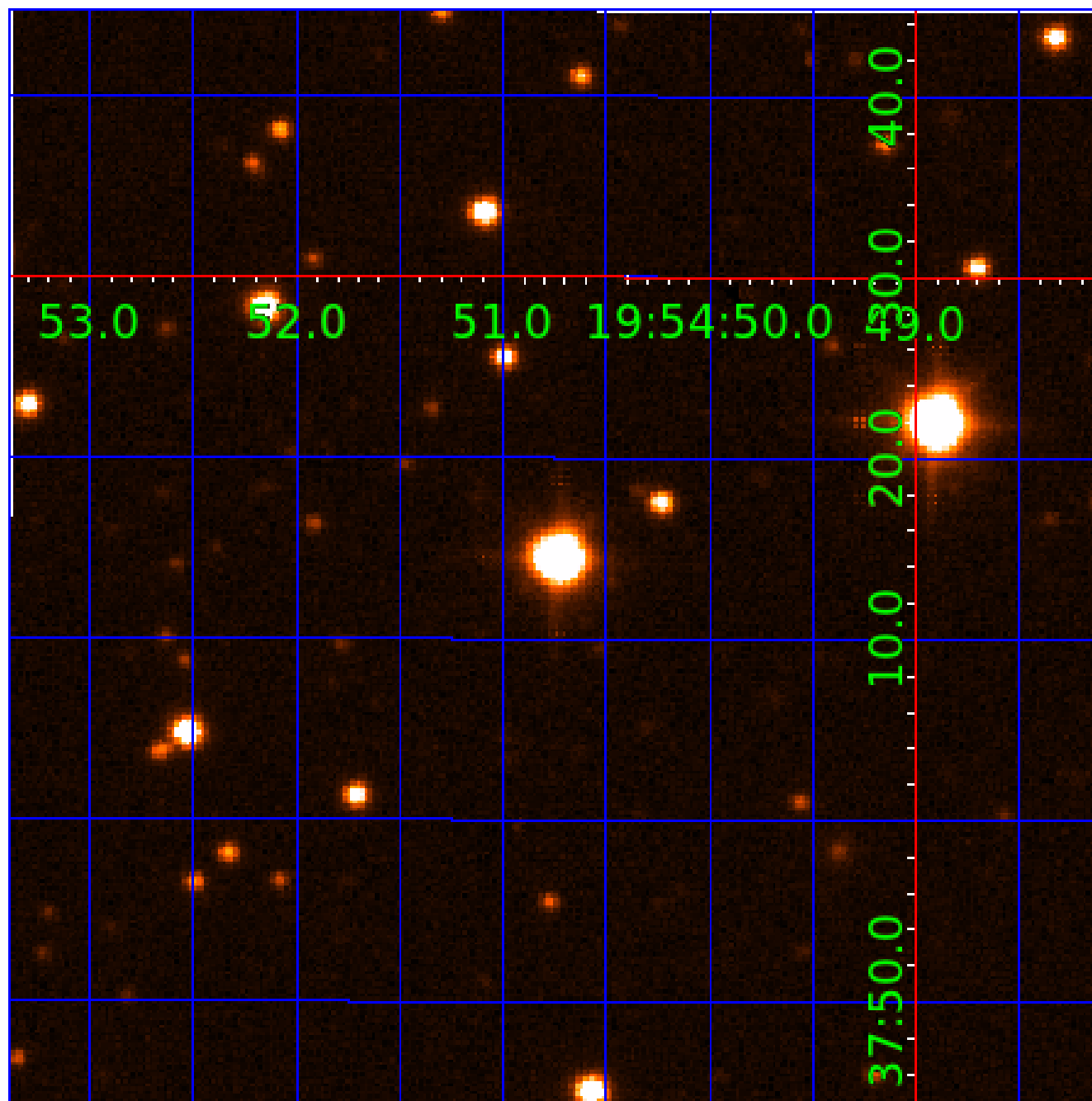


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005476448

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})
005476448-01	OBS	No	549.743807	339.766513	3050.5	21.898	22.0	2.2	1.72	7247	11.25	3.19
005476448-02	OBS	No	311.108174	182.969539	820.3	3.000	29.2	-1.0	1.72	7247	5.00	6.82
005476448-03	OBS	No	230.886134	321.557819	245.9	1.771	21.8	1.8	1.72	7247	3.08	10.14
005476448-04	OBS	No	273.769832	255.463307	682.7	3.000	21.3	-1.0	1.72	7247	4.56	8.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005476448-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005476448-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005476448-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005476448-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

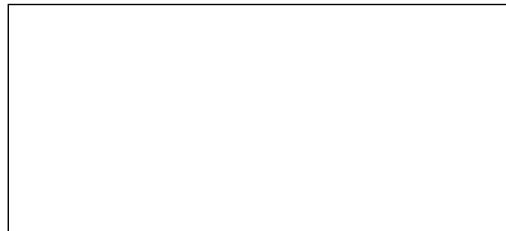
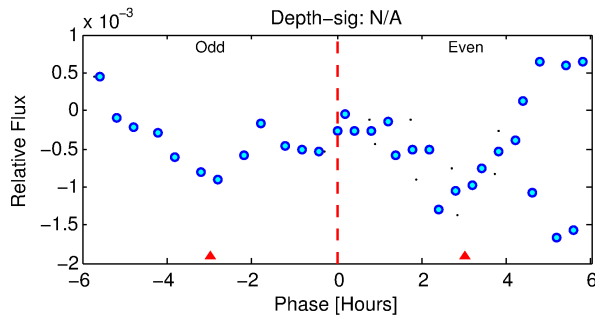
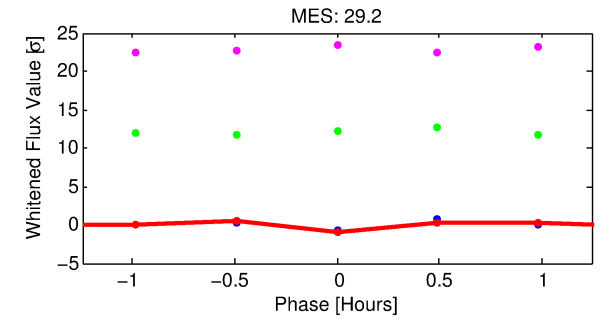
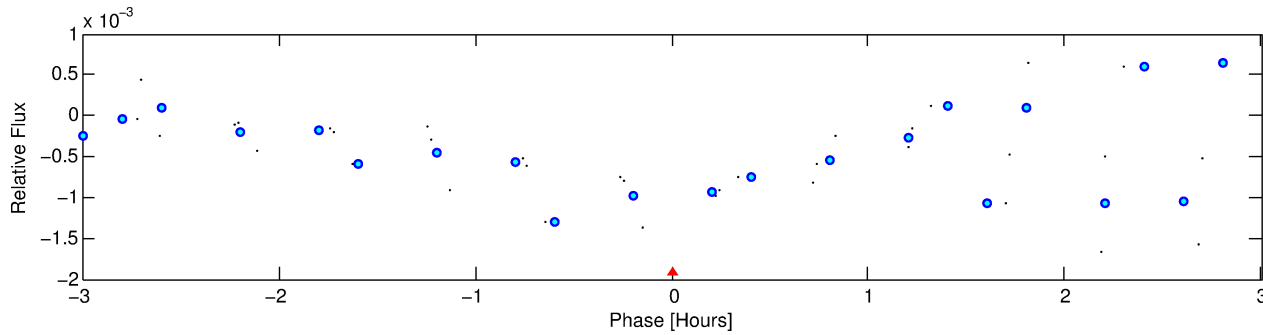
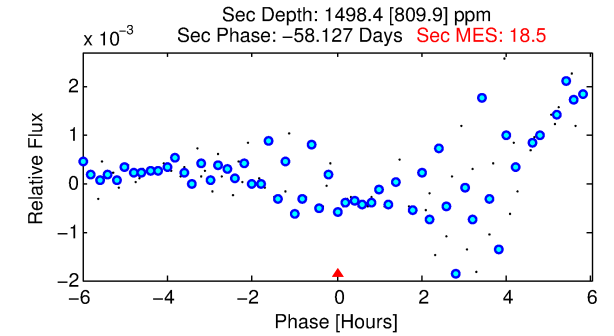
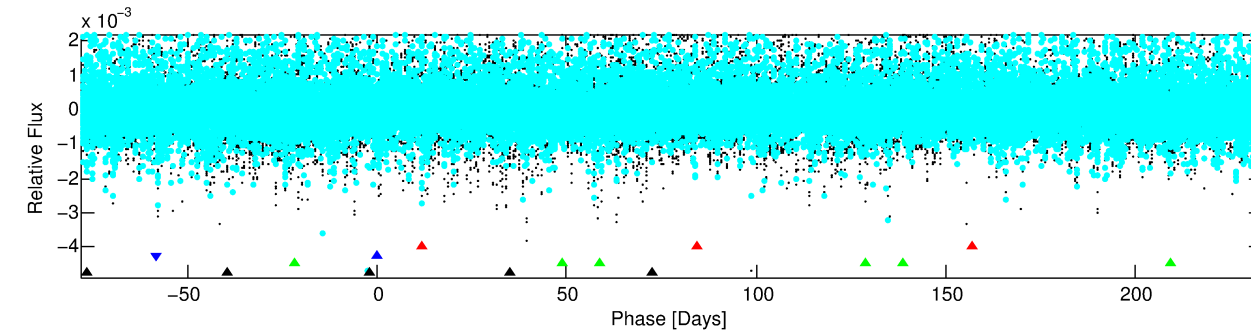
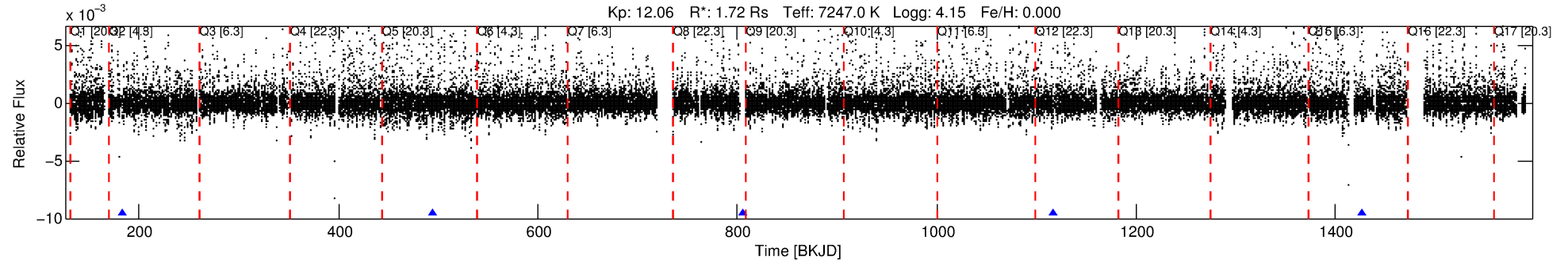
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005476448-02

No Significant Match Found

DV One-Page Summary

KIC: 5476448 Candidate: 2 of 4 Period: 311.108 d



TPS TCE Results:

Period = 311.10817 d
Epoch = 182.9695 BKJD

DV fit results are unavailable

DV Diagnostic Results:

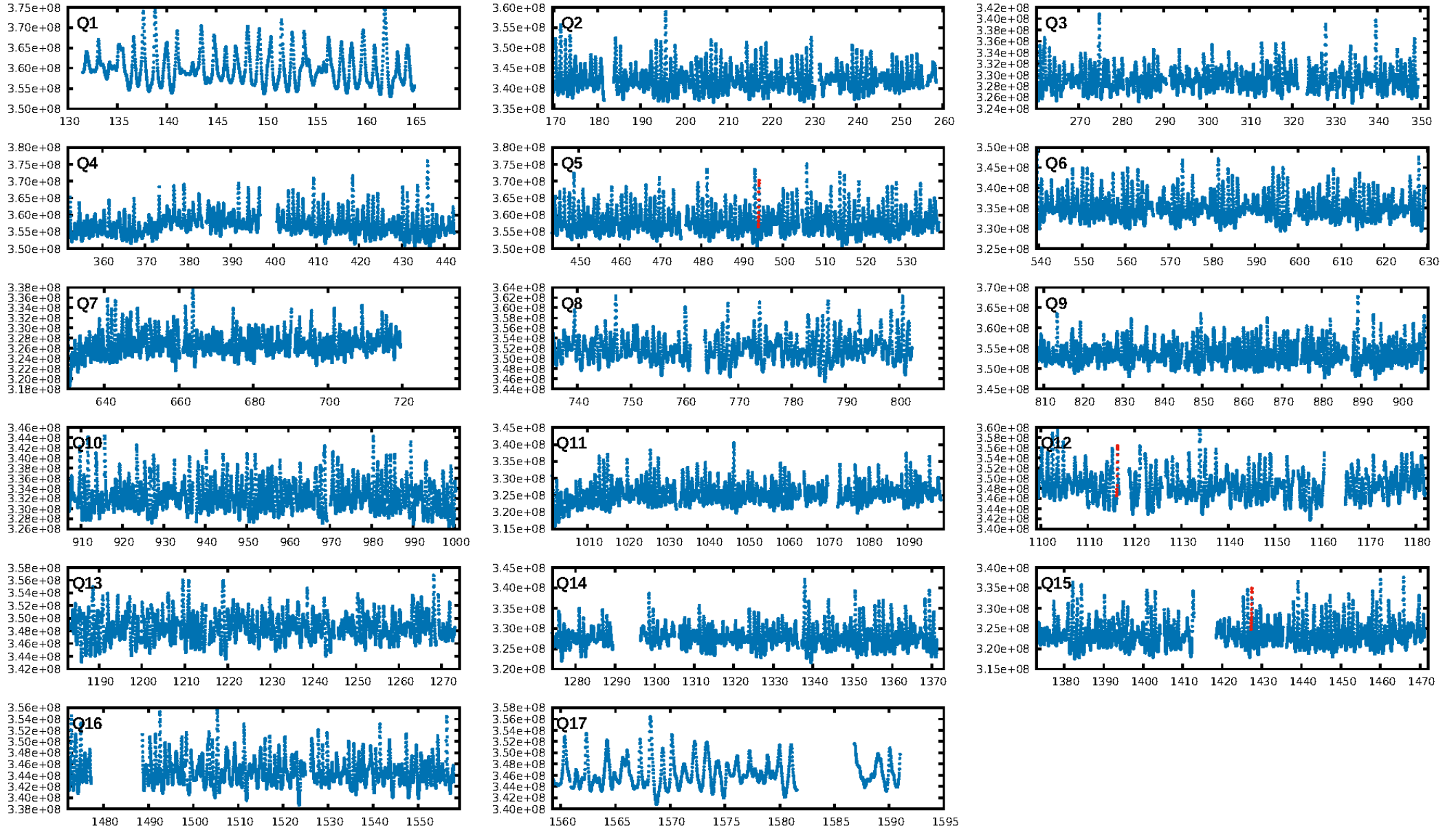
ShortPeriod-sig: 100.0% [211.22σ]
LongPeriod-sig: 100.0% [259.12σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.684

Centroid-sig: 63.5%
Centroid-so: 1.463 arcsec [2.04σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: N/A

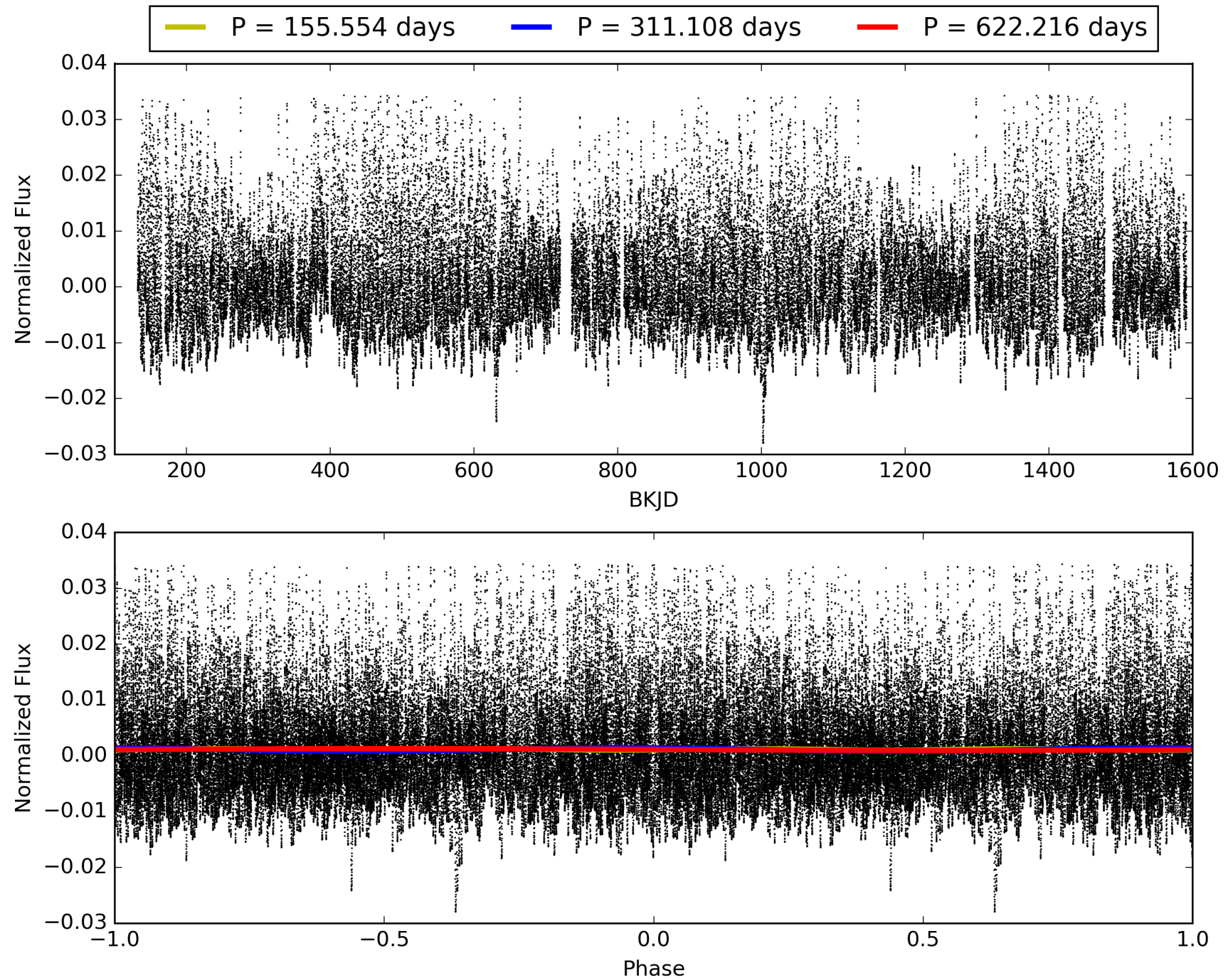
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:35:35 Z

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

TCE 005476448-02, PDC Light Curves

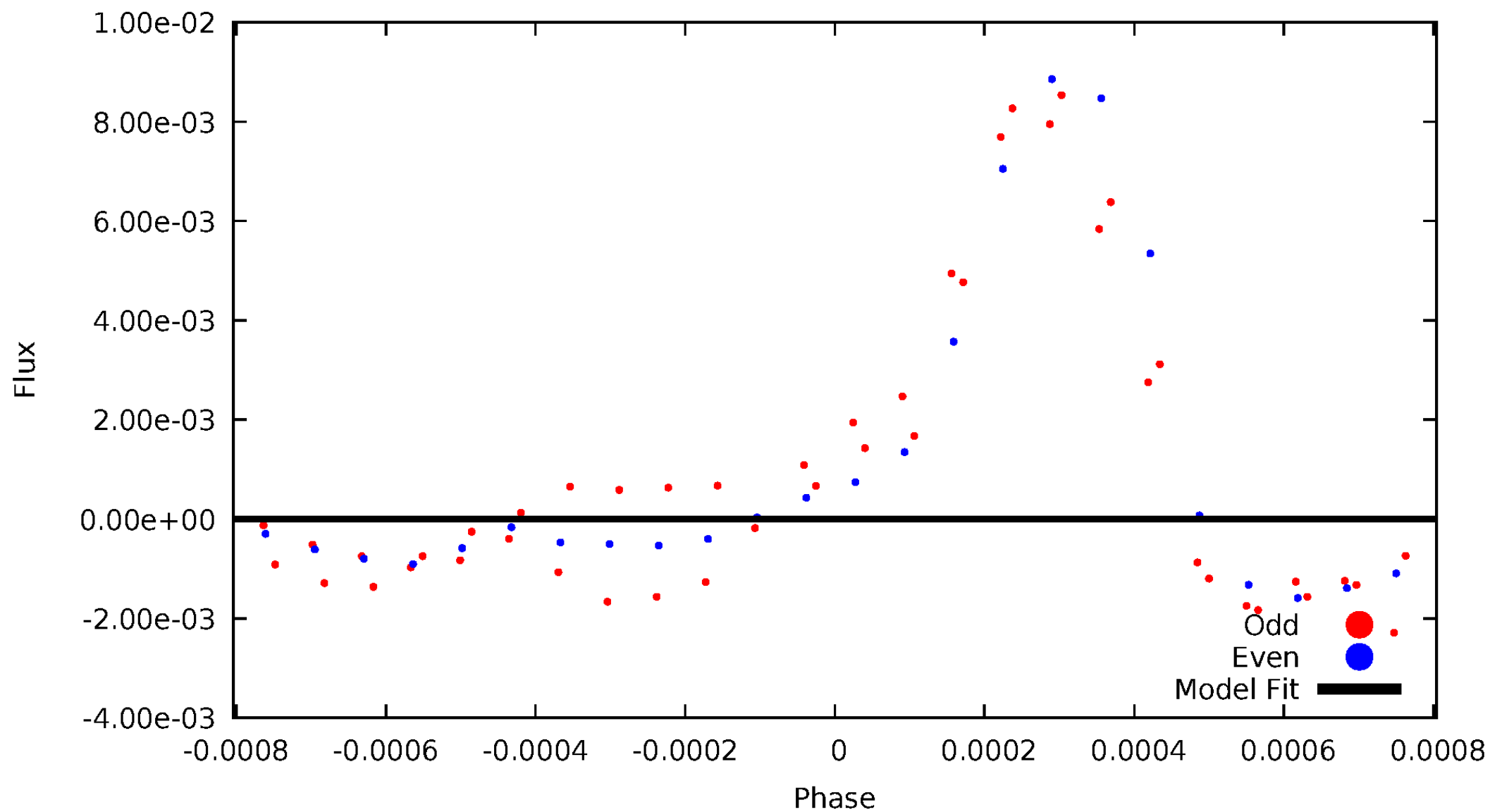


TCE 005476448-02



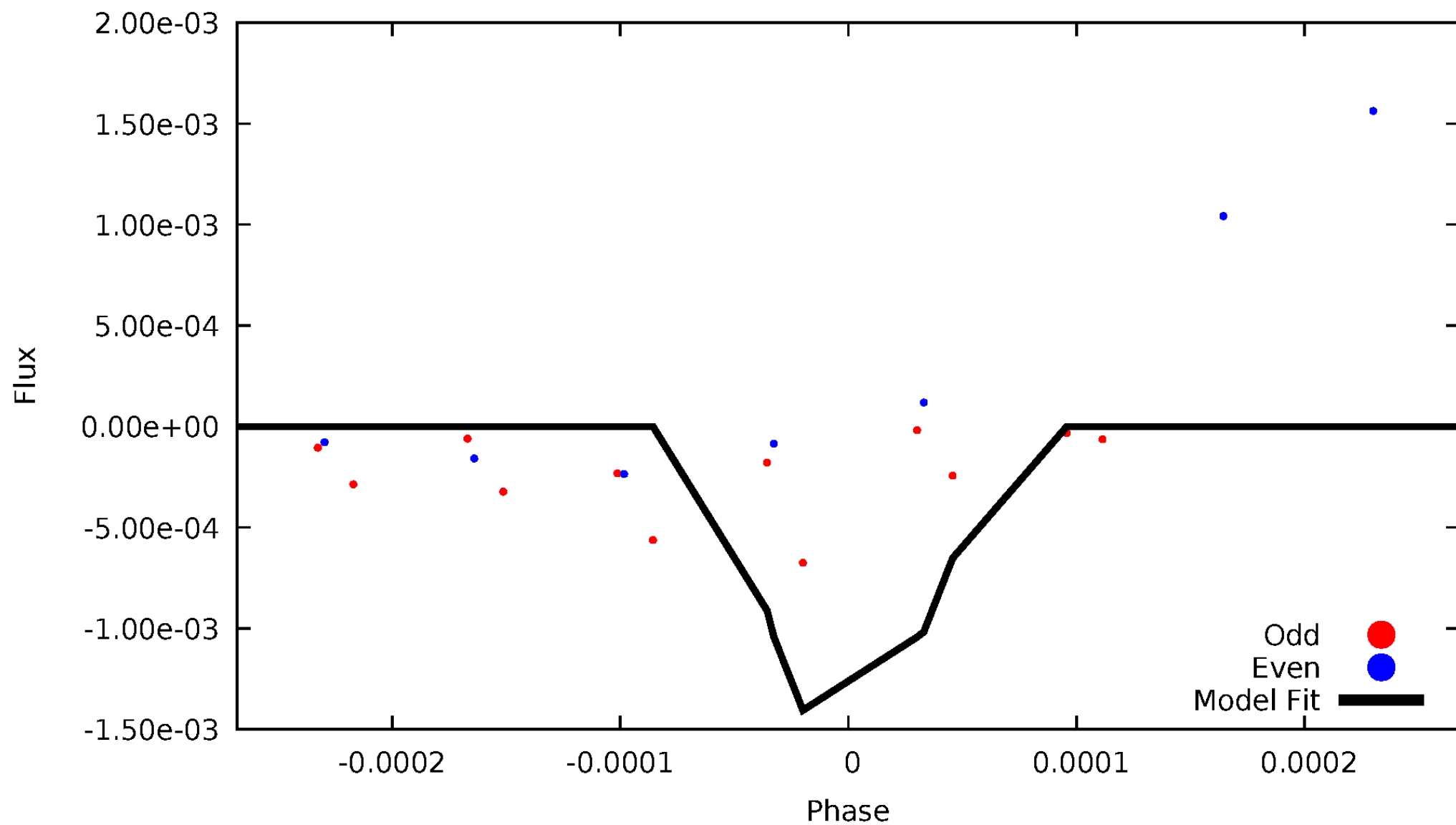
DV Odd/Even

TCE 005476448-02



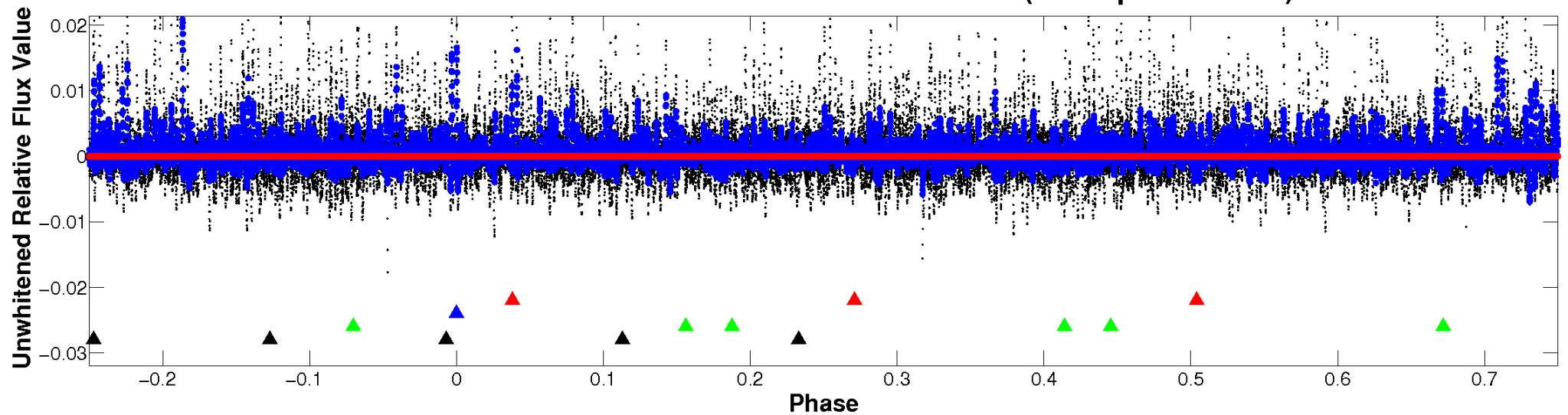
ALT Odd/Even

TCE 005476448-02



Non-Whitened Vs. Whitened Light Curve

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

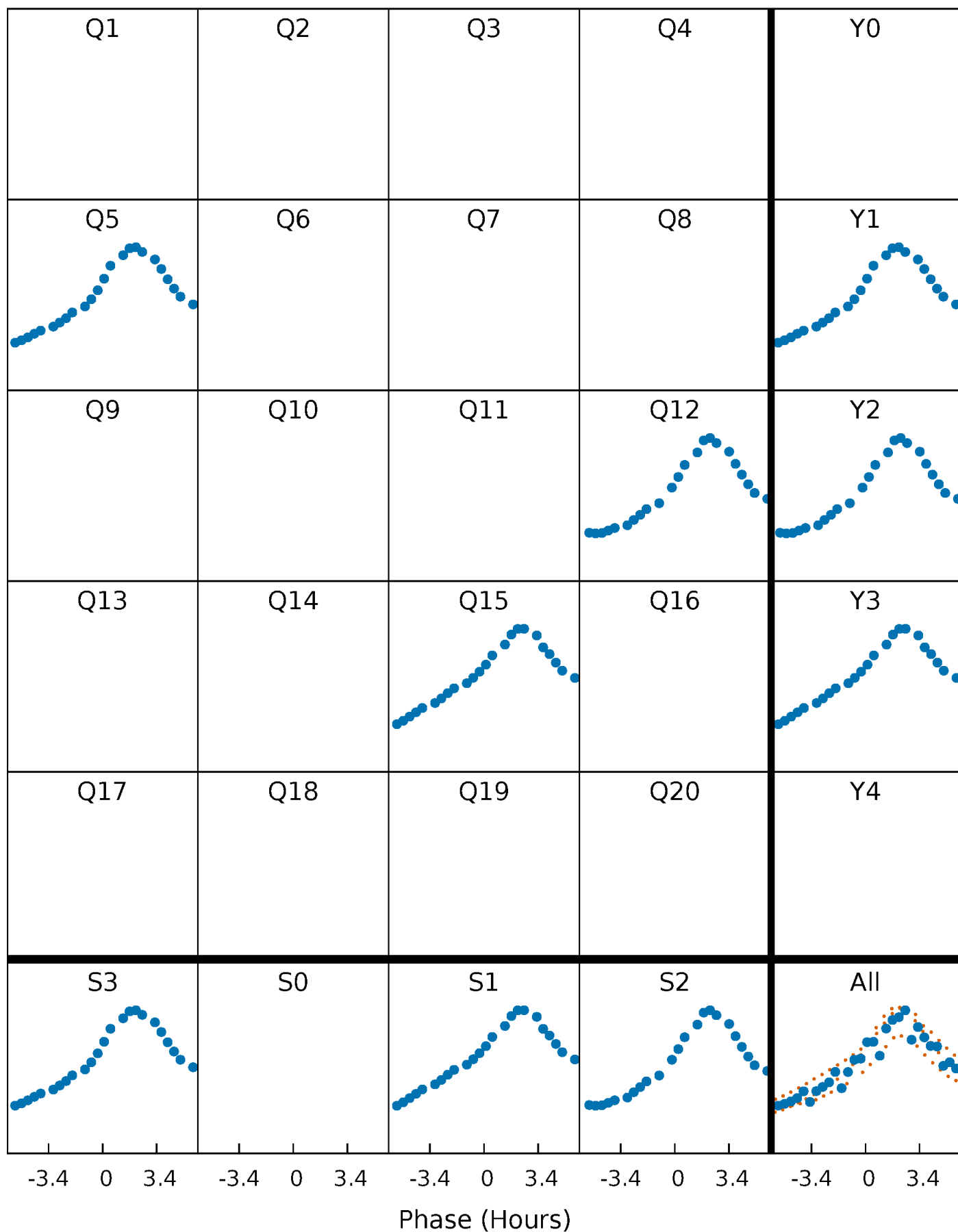


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



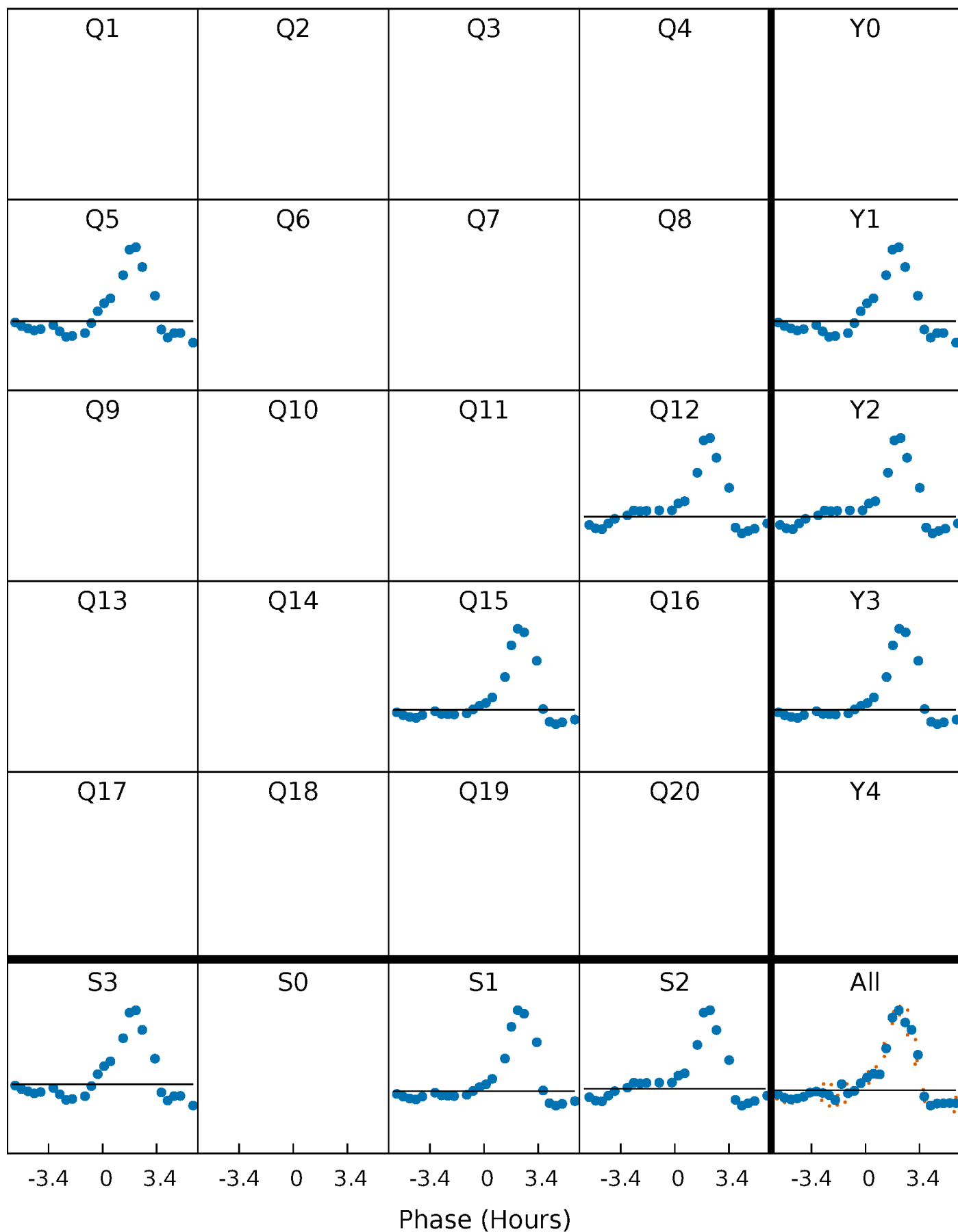
PDC Quarter-Phased Transit Curves

TCE 005476448-02 P=311.108174 Days $T_0=182.969539$ (BKJD)



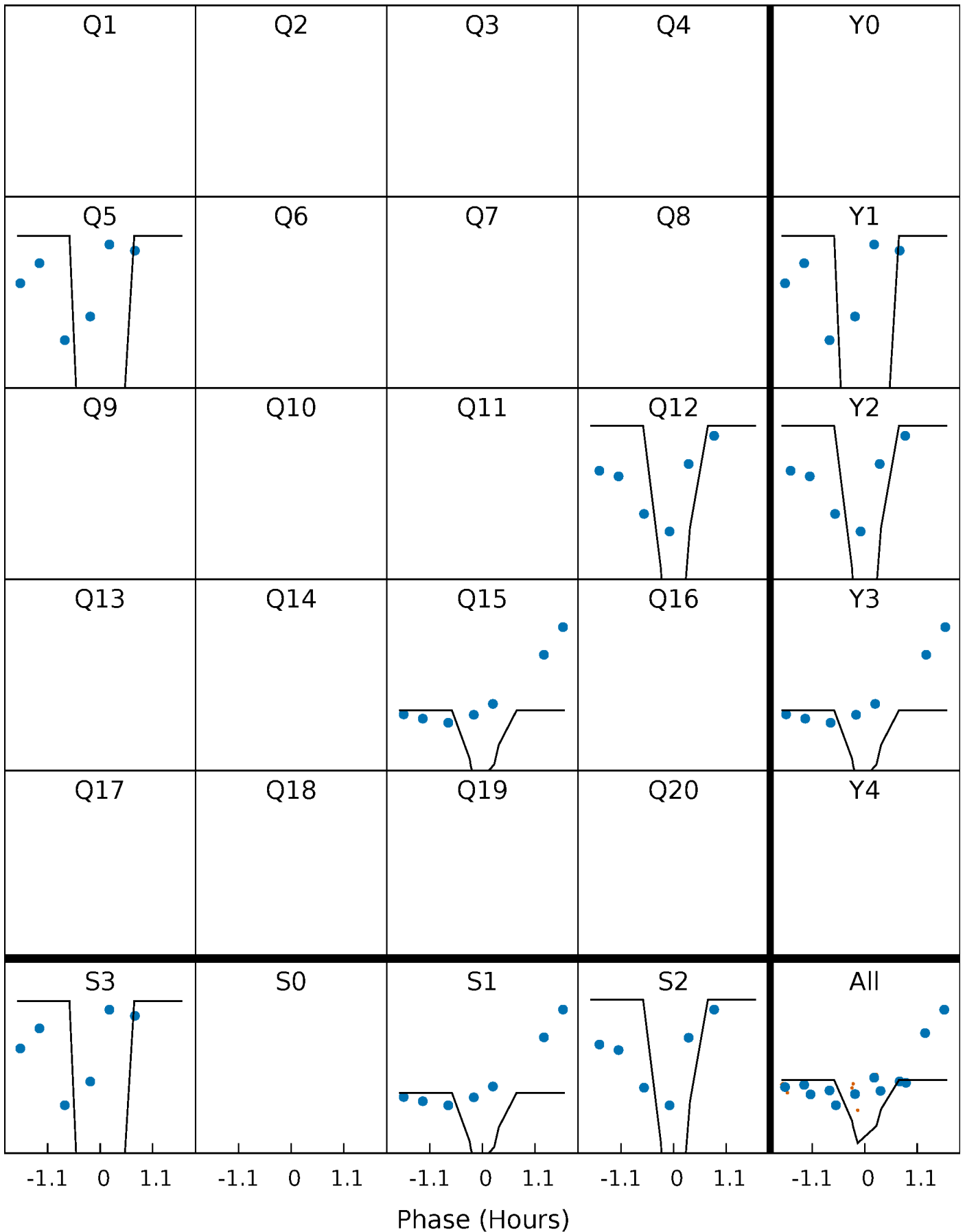
DV Quarter-Phased Transit Curves

TCE 005476448-02 P=311.108174 Days $T_0=182.969539$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

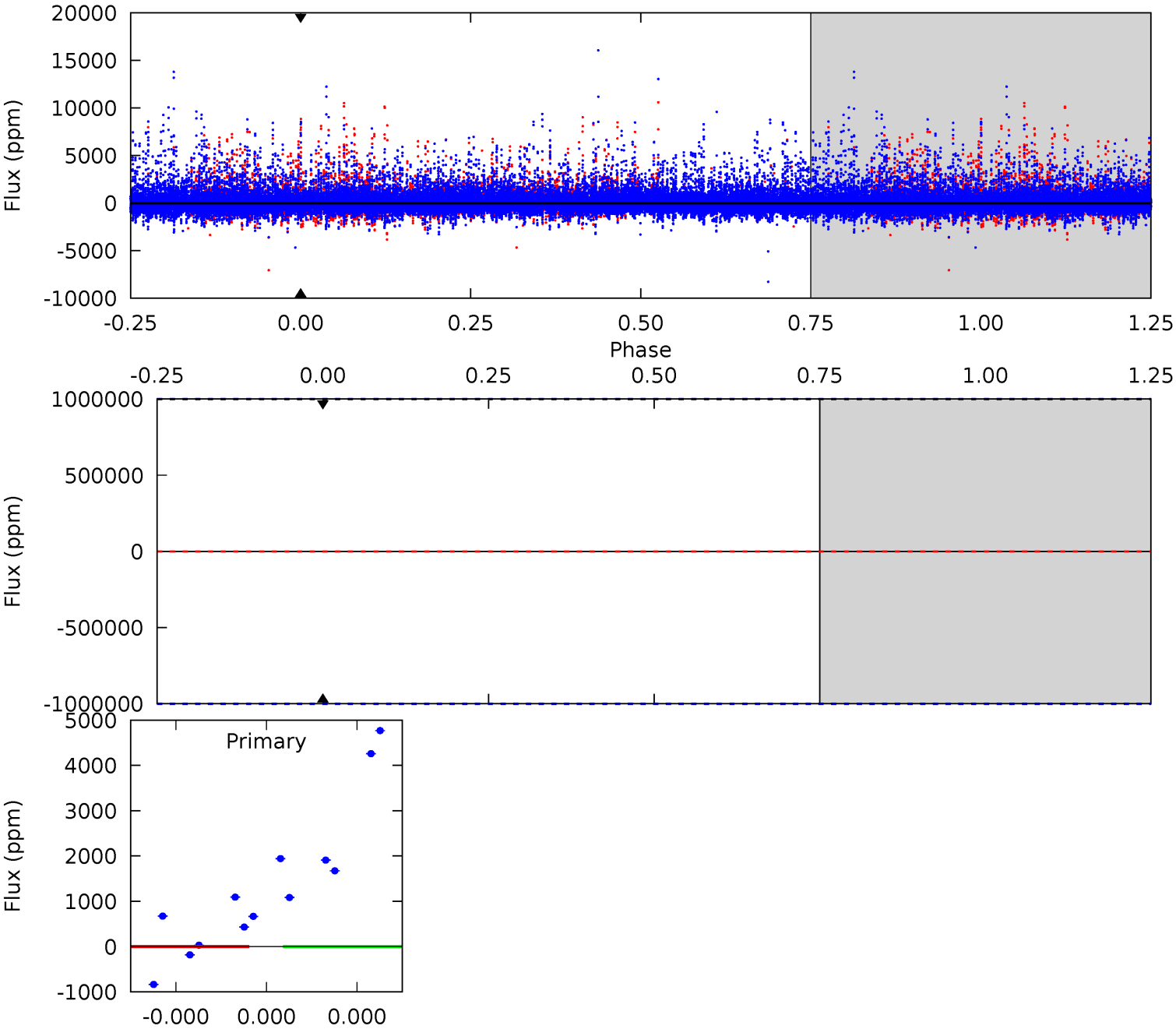
TCE 005476448-02 P=311.108174 Days $T_0=182.783914$ (BKJD)



DV Model-Shift Uniqueness Test

005476448-02, P = 311.108174 Days, E = 182.969539 Days

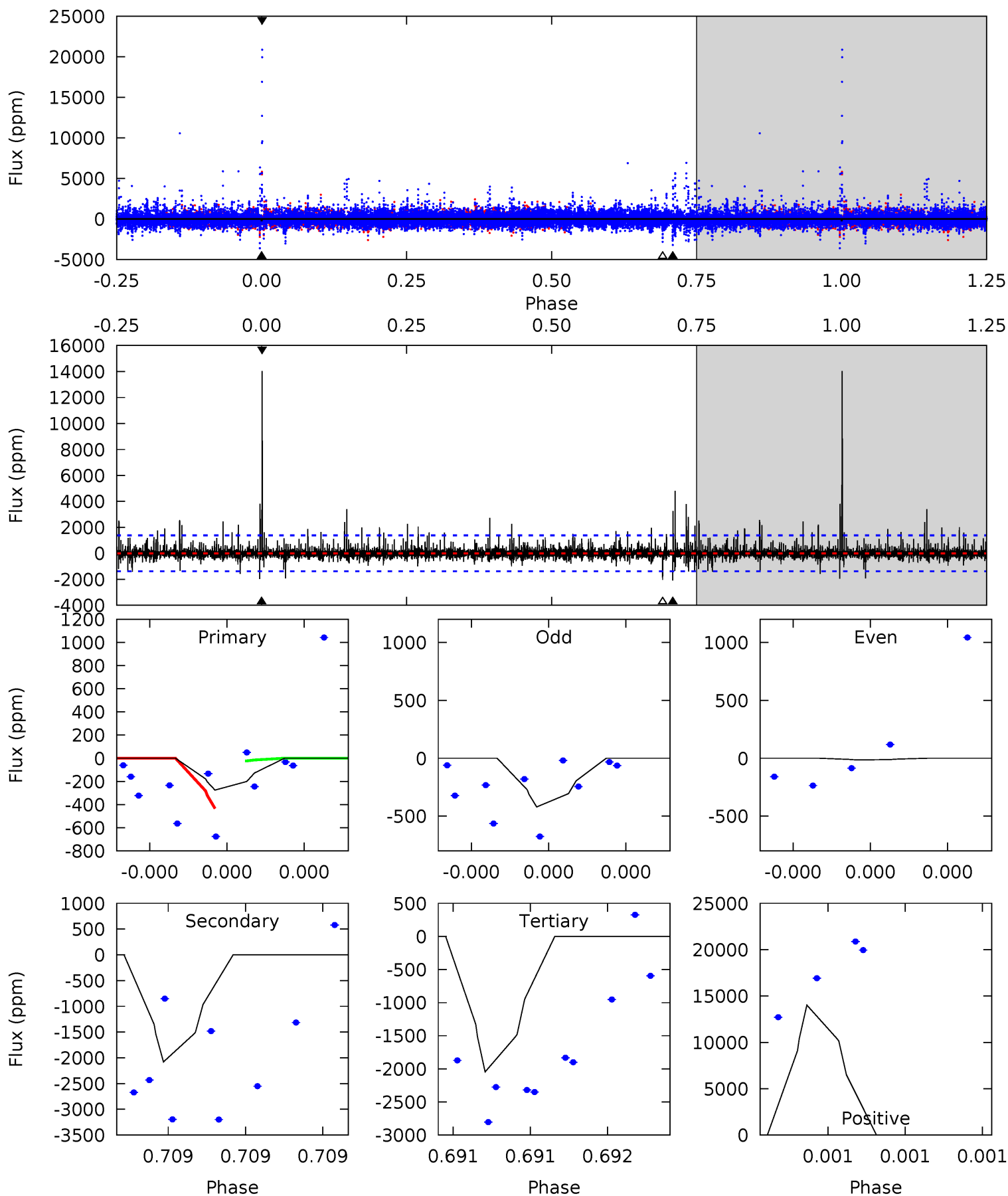
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005476448-02, P = 311.108174 Days, E = 182.783914 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.16	8.74	8.60	59.0	5.81	3.83	1.19	-7.44	-57.8	0.14	-50.2	0.59	1.89	0.87	0.77



Stellar Parameters For KIC 005476448

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7247^{+201}_{-302}	$4.152^{+0.124}_{-0.202}$	$0.000^{+0.200}_{-0.350}$	$1.721^{+0.541}_{-0.316}$	$1.533^{+0.212}_{-0.236}$	$0.423^{+0.266}_{-0.222}$
	+3%/-4%	+3%/-5%	+inf%/-inf%	+31%/-18%	+14%/-15%	+63%/-52%
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 005476448-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$14.98^{+15.32}_{-9.87}$	576^{+47}_{-34}	4110^{+32422}_{-38227}	$1800^{+508450}_{-480545}$
Alt.	-2079 ± 238	$16.86^{+15.83}_{-11.63}$	579^{+45}_{-37}	5208^{+4520}_{-1199}	4341^{+38797}_{-3227}

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 005476448-02. Kepler magnitude: 12.05. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	1.46 ± 0.72	2.04	-1.38 ± 0.73	0.50 ± 0.60

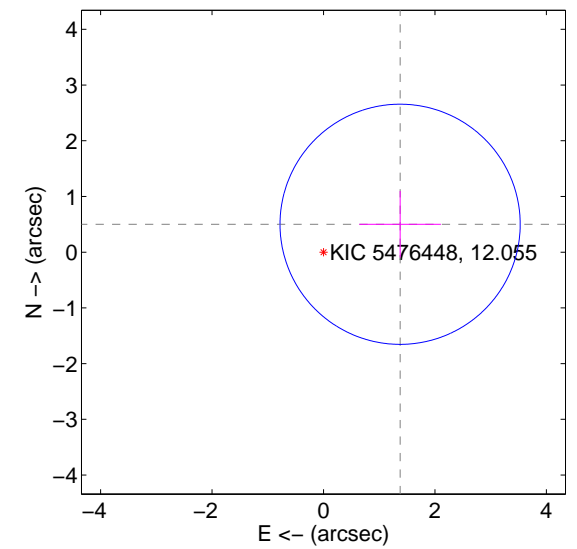
There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



offset from photometric centroids



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

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



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



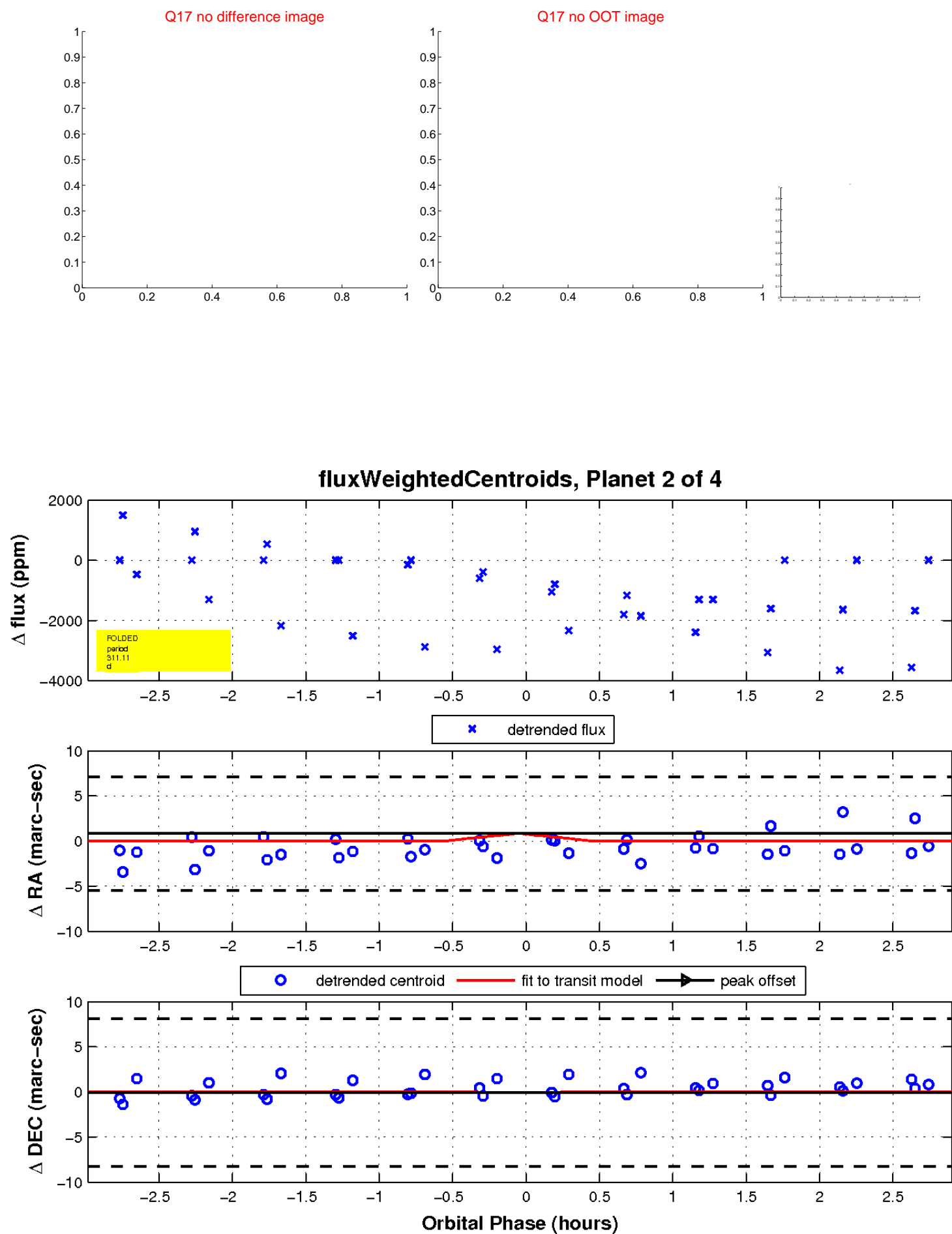
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

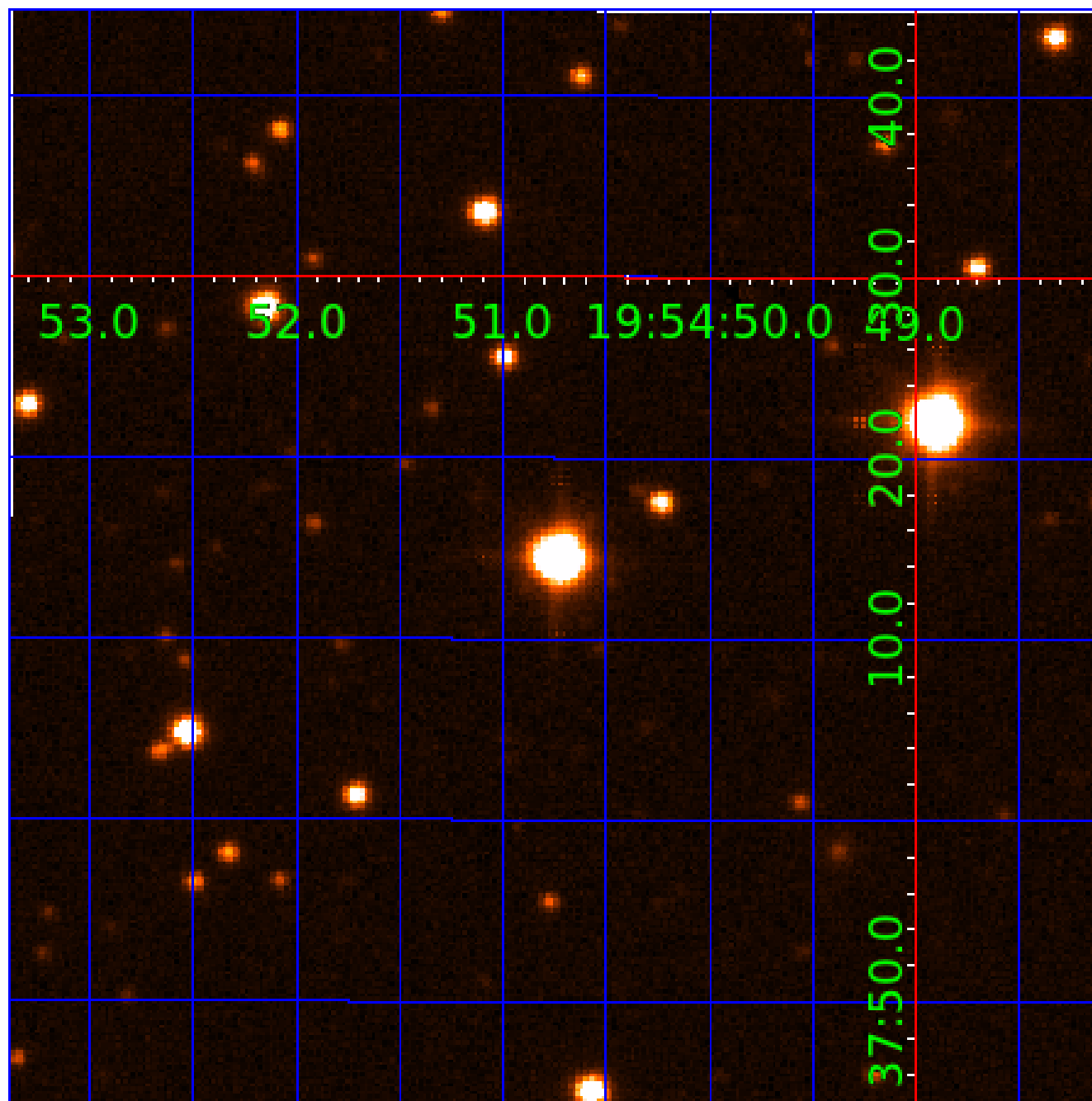


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005476448

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})
005476448-01	OBS	No	549.743807	339.766513	3050.5	21.898	22.0	2.2	1.72	7247	11.25	3.19
005476448-02	OBS	No	311.108174	182.969539	820.3	3.000	29.2	-1.0	1.72	7247	5.00	6.82
005476448-03	OBS	No	230.886134	321.557819	245.9	1.771	21.8	1.8	1.72	7247	3.08	10.14
005476448-04	OBS	No	273.769832	255.463307	682.7	3.000	21.3	-1.0	1.72	7247	4.56	8.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005476448-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005476448-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005476448-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005476448-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

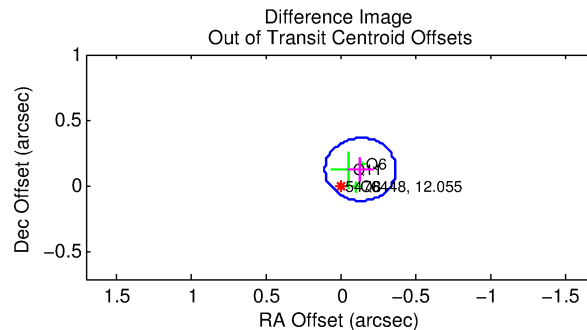
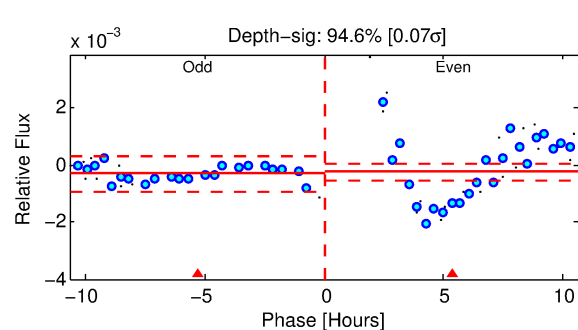
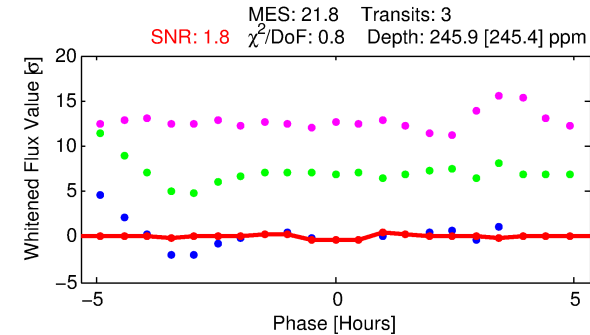
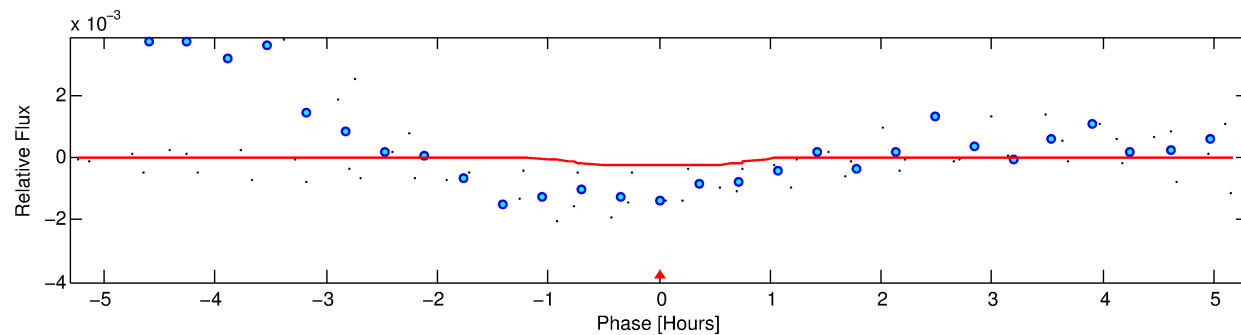
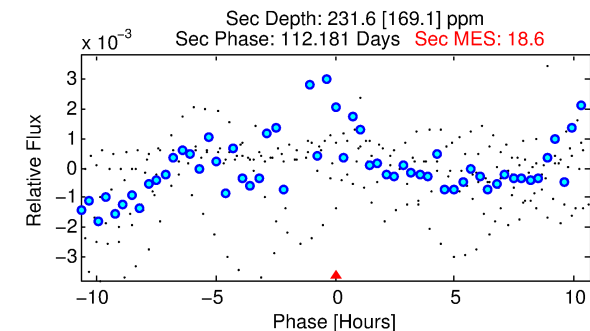
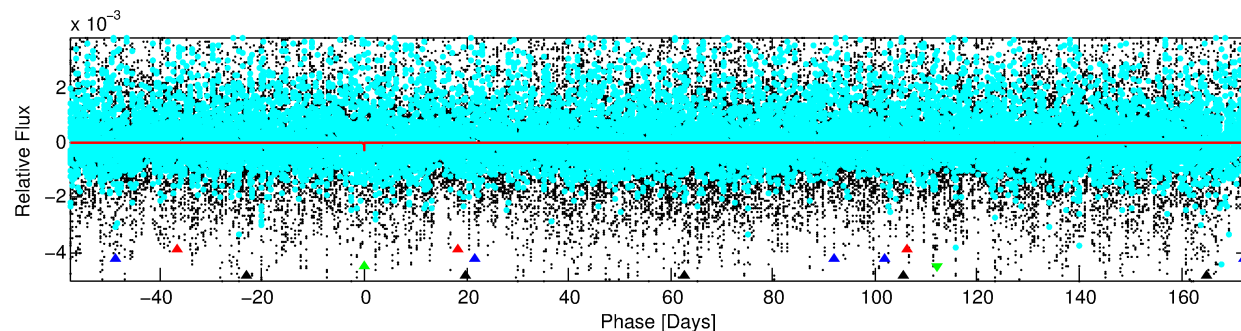
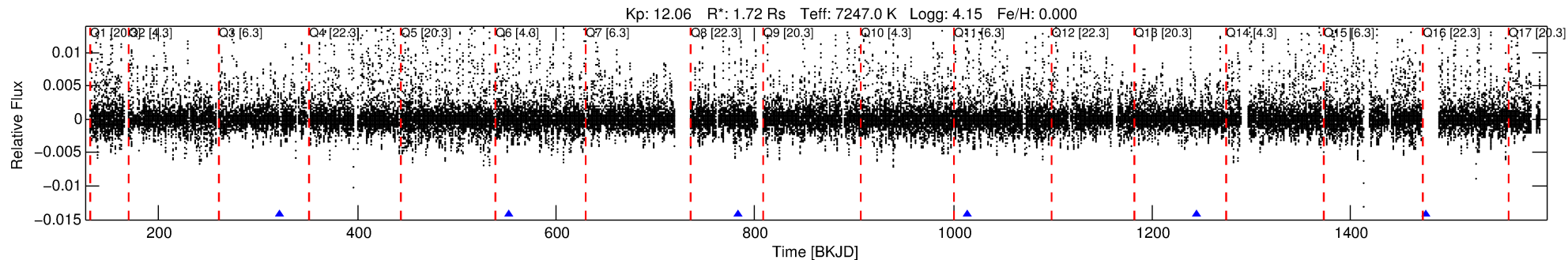
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005476448-03

No Significant Match Found

DV One-Page Summary

KIC: 5476448 Candidate: 3 of 4 Period: 230.886 d



DV Fit Results:

Period = 230.88613 [0.00879] d
Epoch = 321.5578 [0.0189] BKJD
Rp/R* = 0.0164 [0.0755]
a/R* = 518.24 [14350.09]
b = 0.87 [7.64]
Seff = 10.14 [4.16]
Teq = 455 [47] K
Rp = 3.08 [14.22] Re
a = 0.8495 [0.2214] AU
Ag = 9692.27 [89636.23] [0.11 σ]
Teff = 6981 [16130] K [0.40 σ]

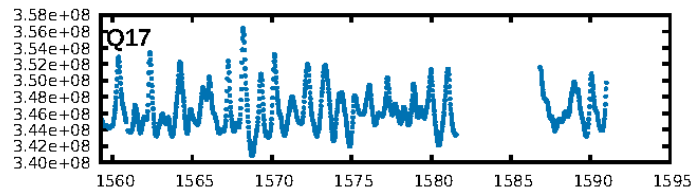
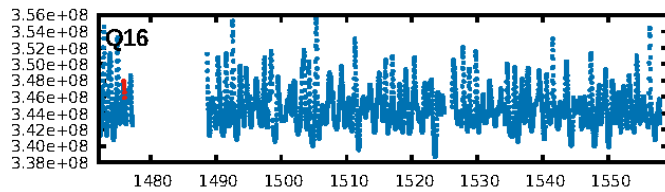
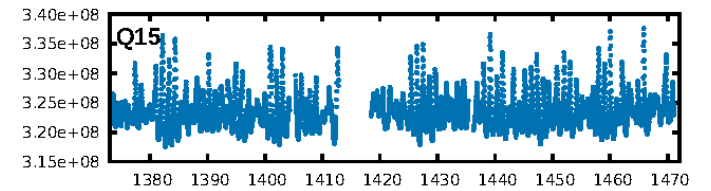
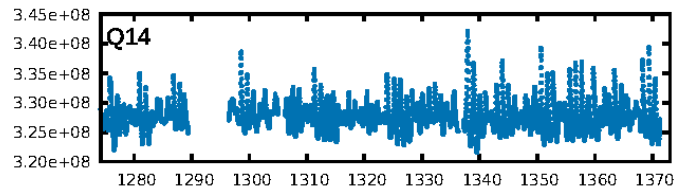
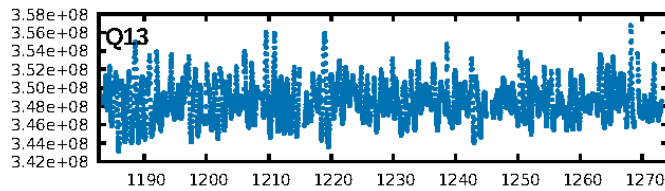
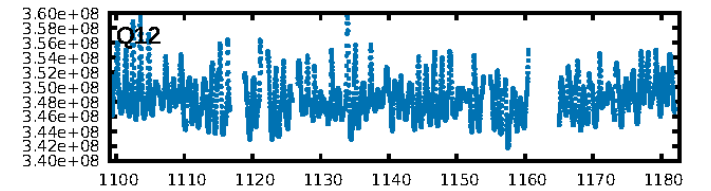
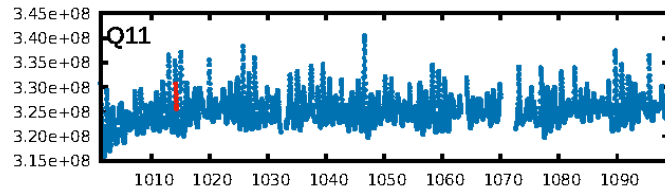
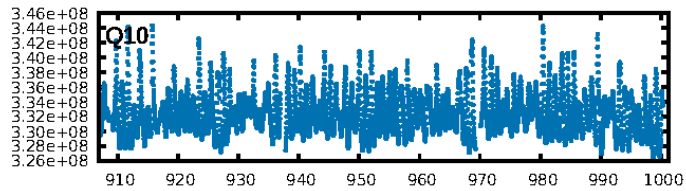
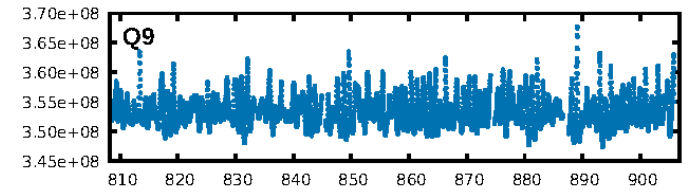
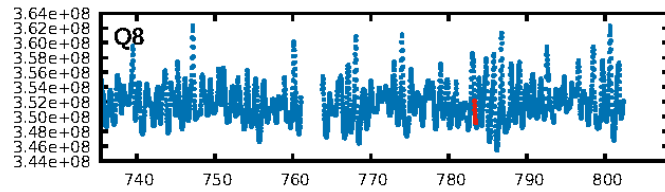
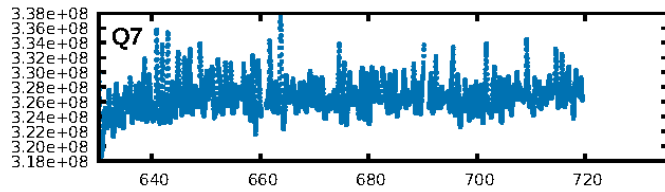
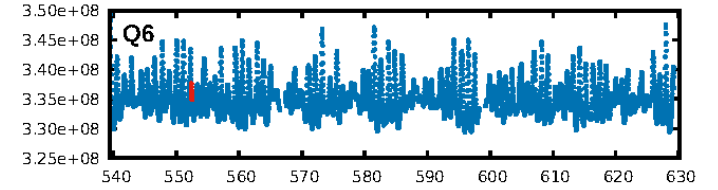
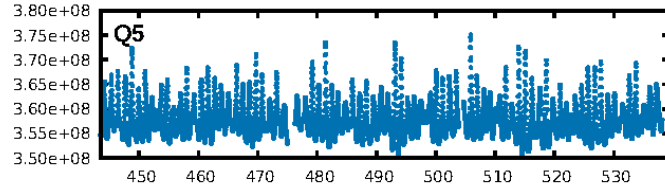
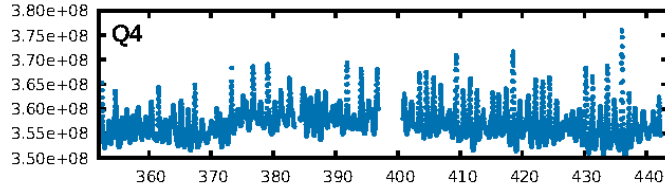
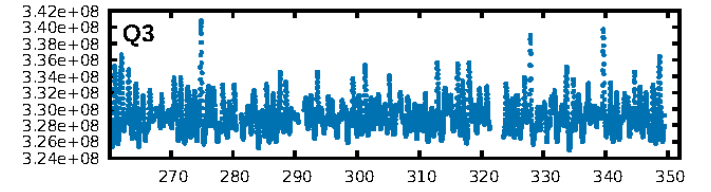
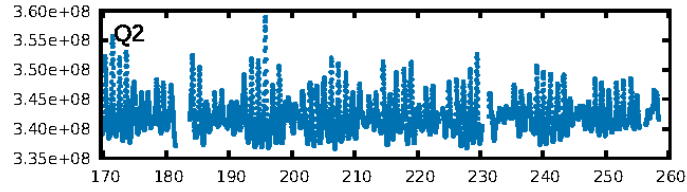
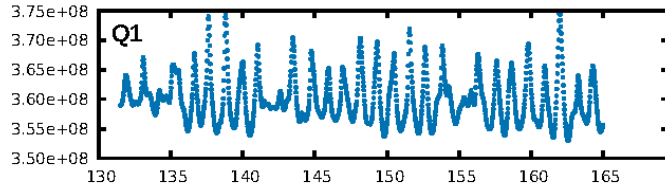
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [295.42 σ]
ModelChiSquare2-sig: 74.3%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.9082
Centroid-sig: 82.8%
Centroid-so: 2.516 arcsec [0.64 σ]
OotOffset-rm: 0.188 arcsec [2.37 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.271 arcsec [3.47 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

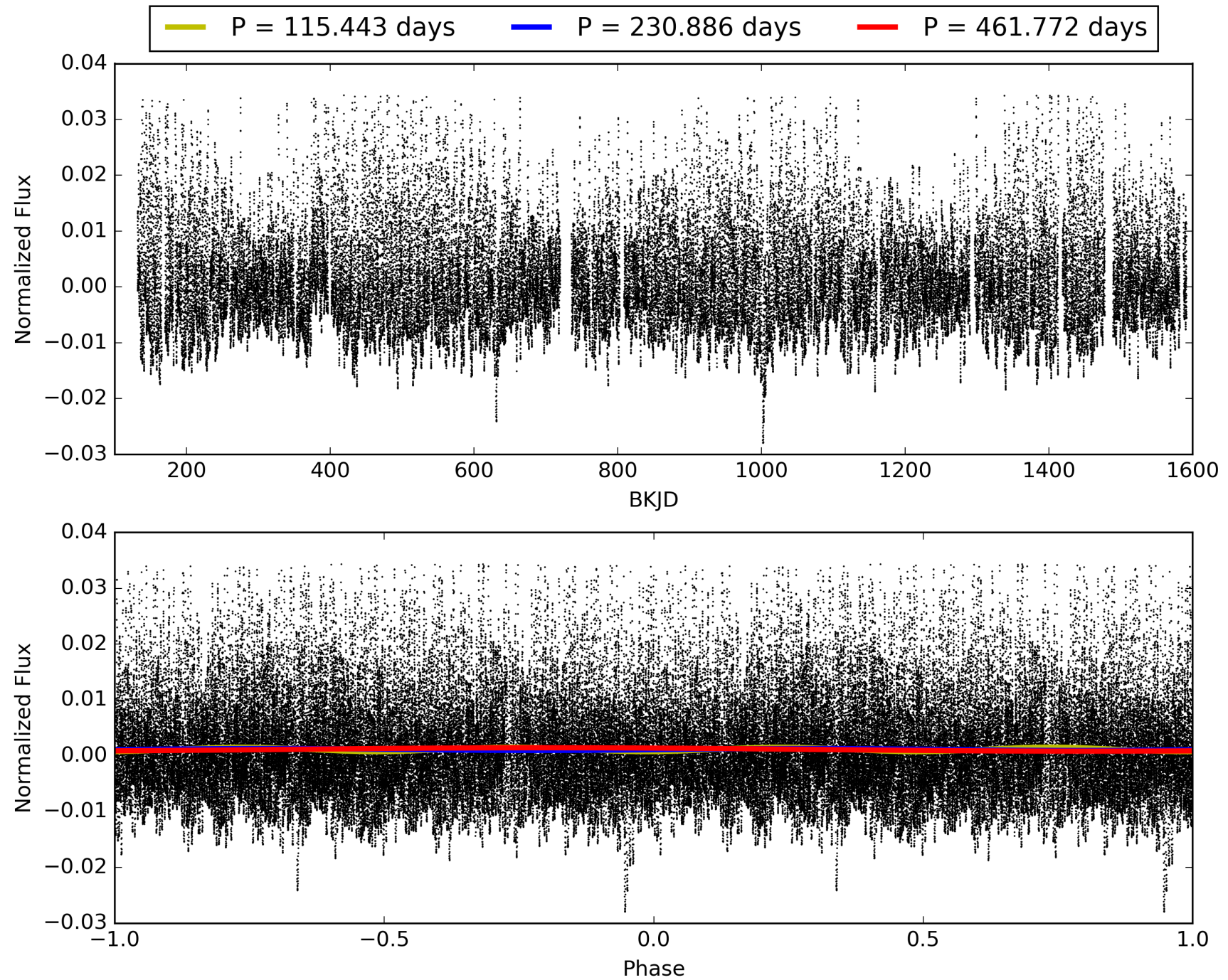
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:35:55 Z

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

TCE 005476448-03, PDC Light Curves

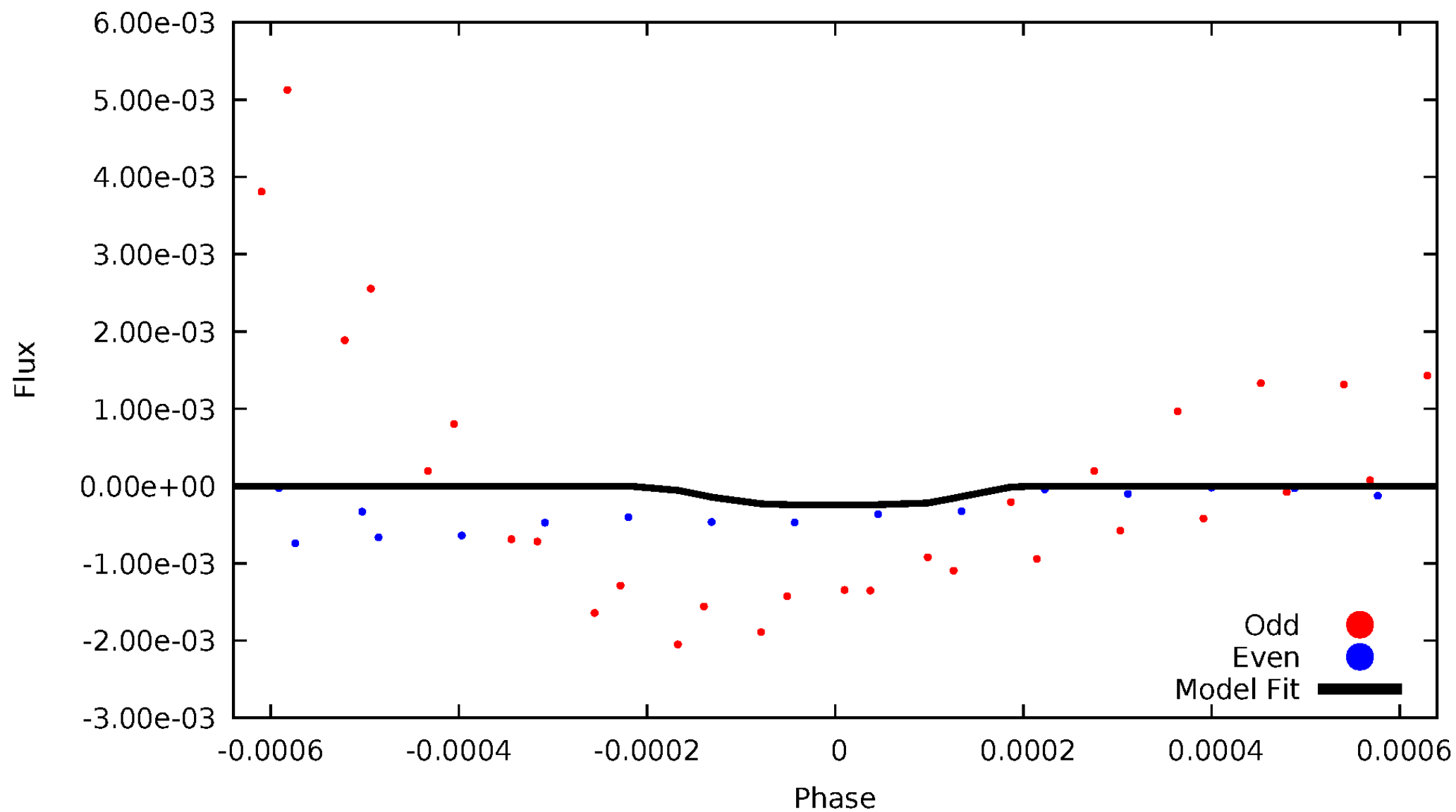


TCE 005476448-03



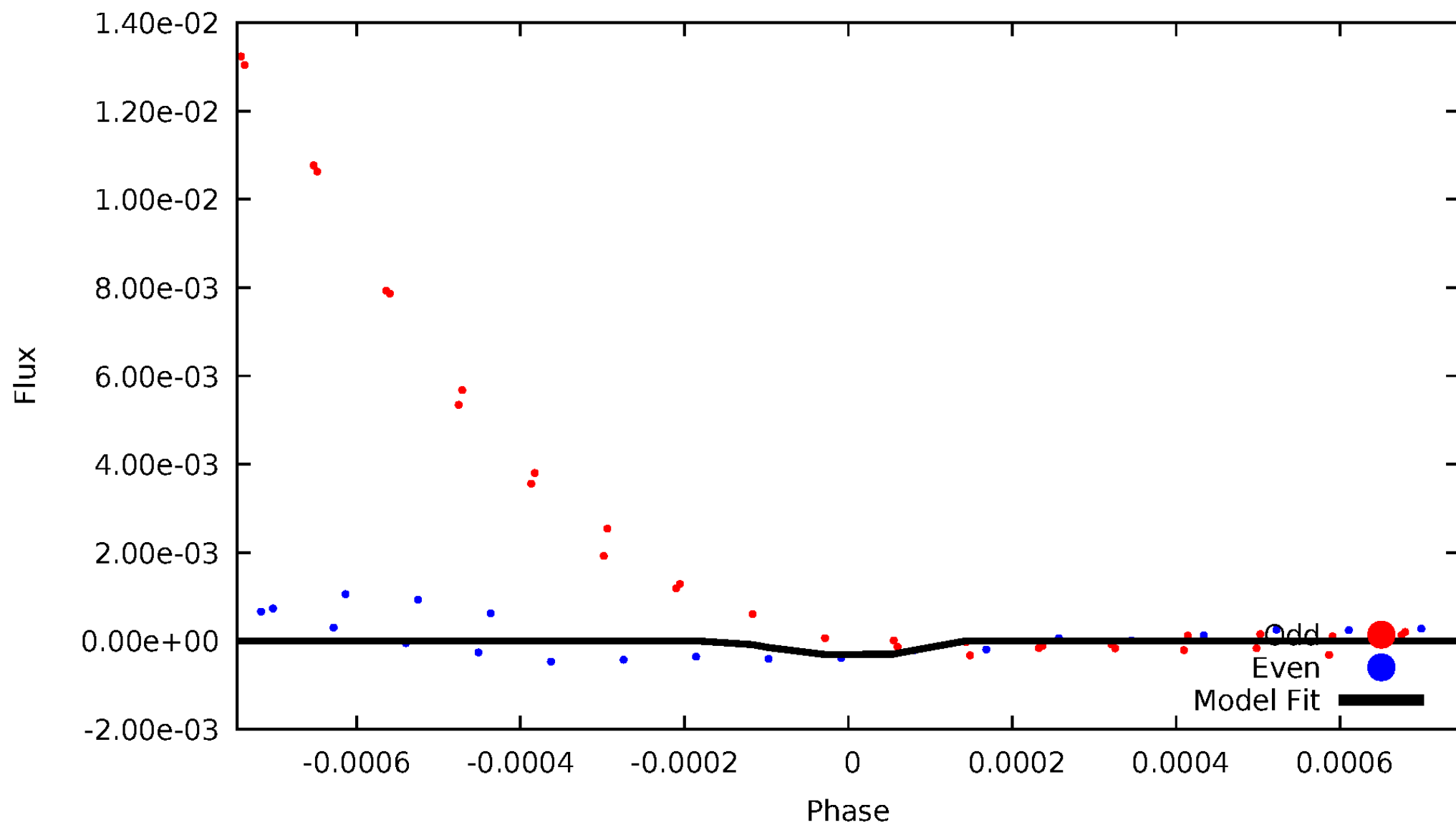
DV Odd/Even

TCE 005476448-03



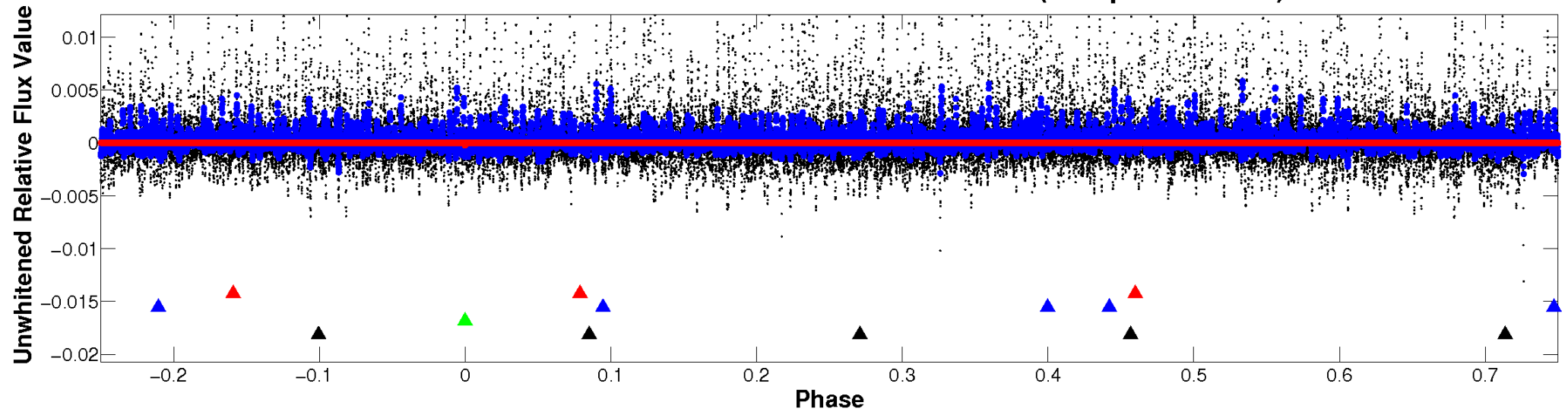
ALT Odd/Even

TCE 005476448-03

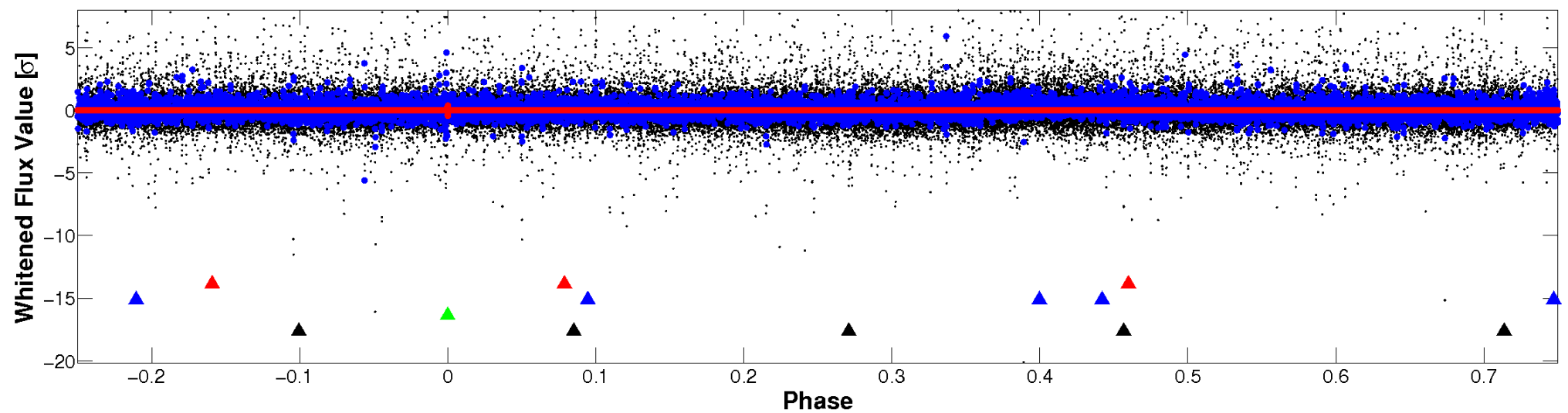


Non-Whitened Vs. Whitened Light Curve

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

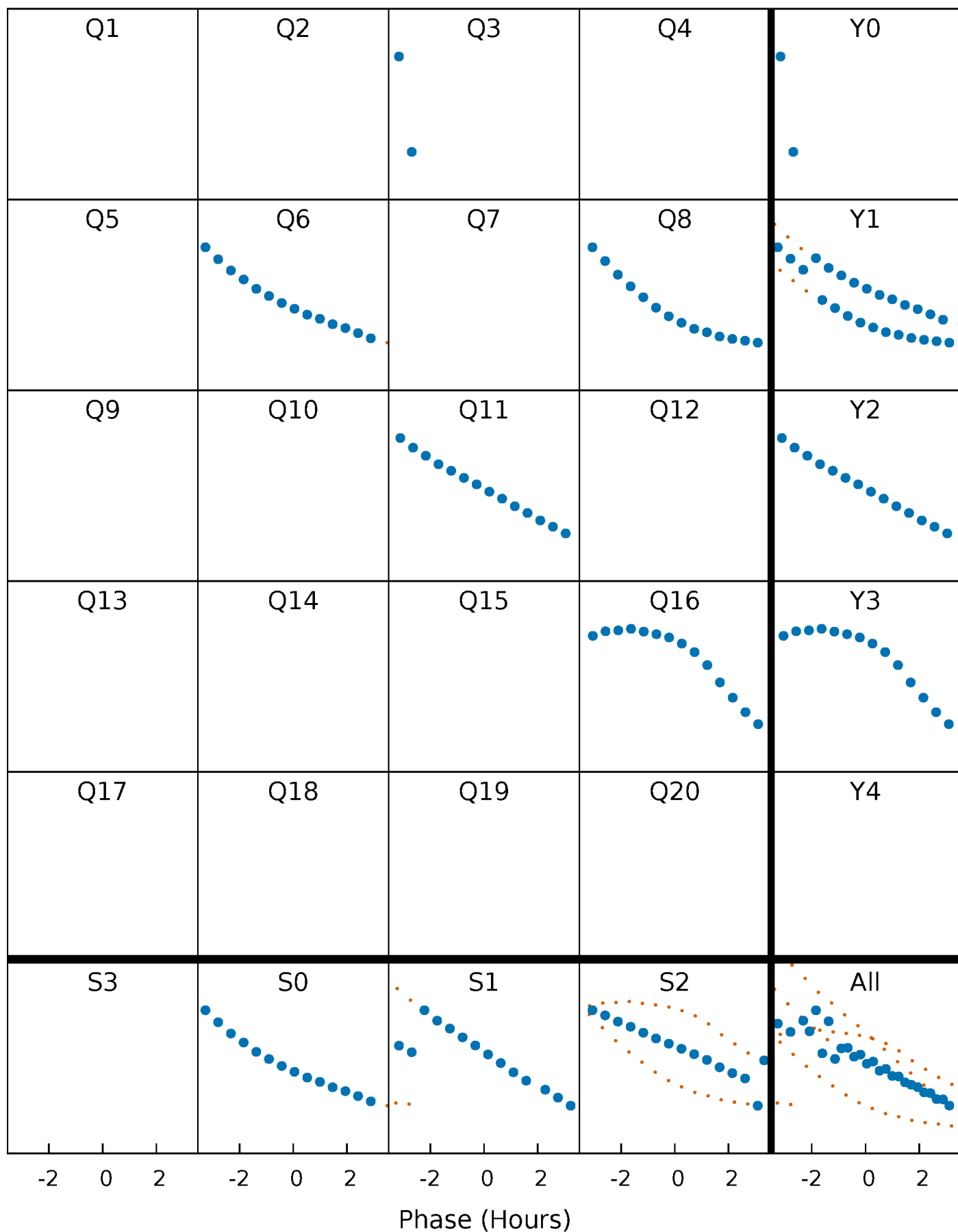


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



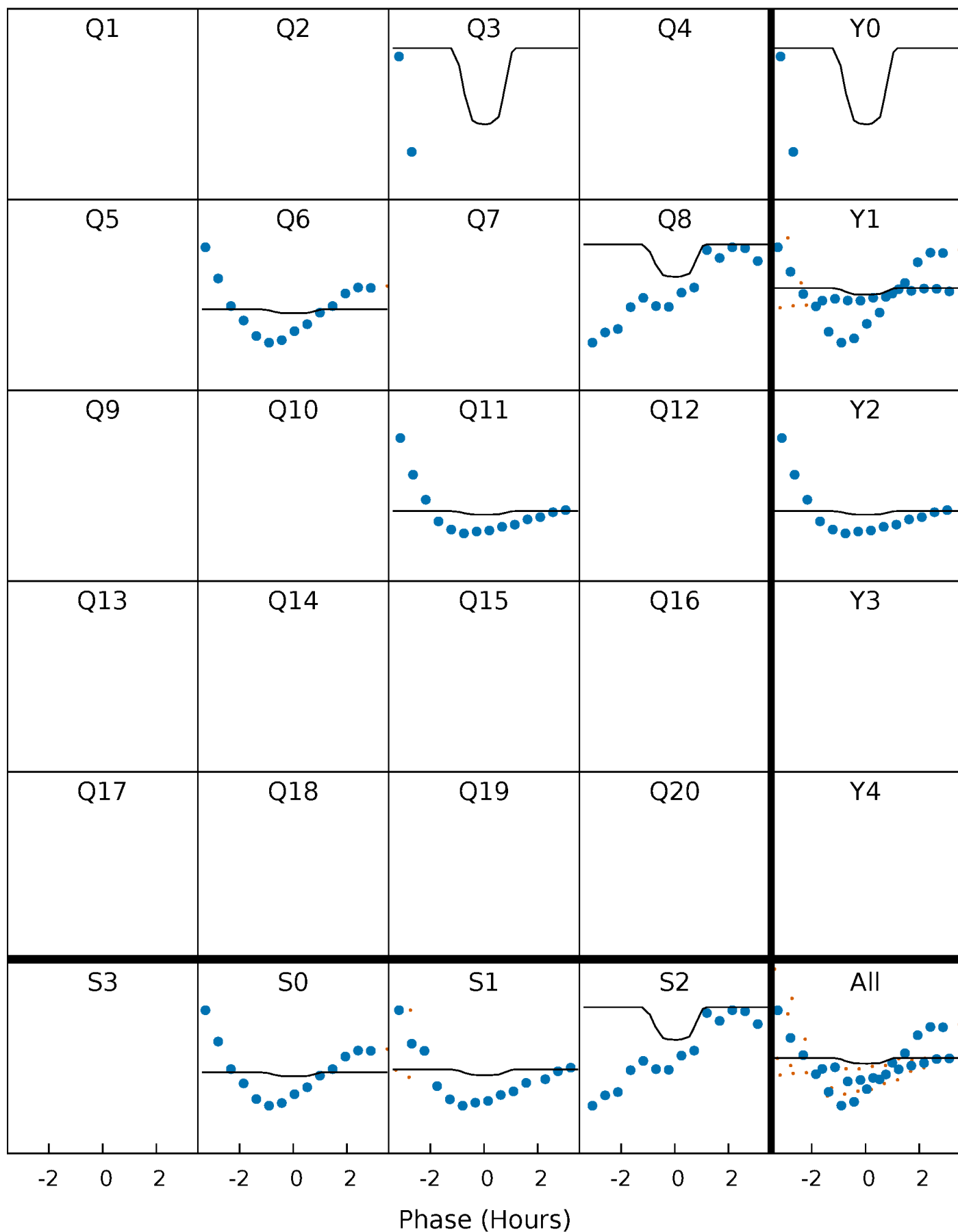
PDC Quarter-Phased Transit Curves

TCE 005476448-03 P=230.886134 Days $T_0=321.557819$ (BKJD)



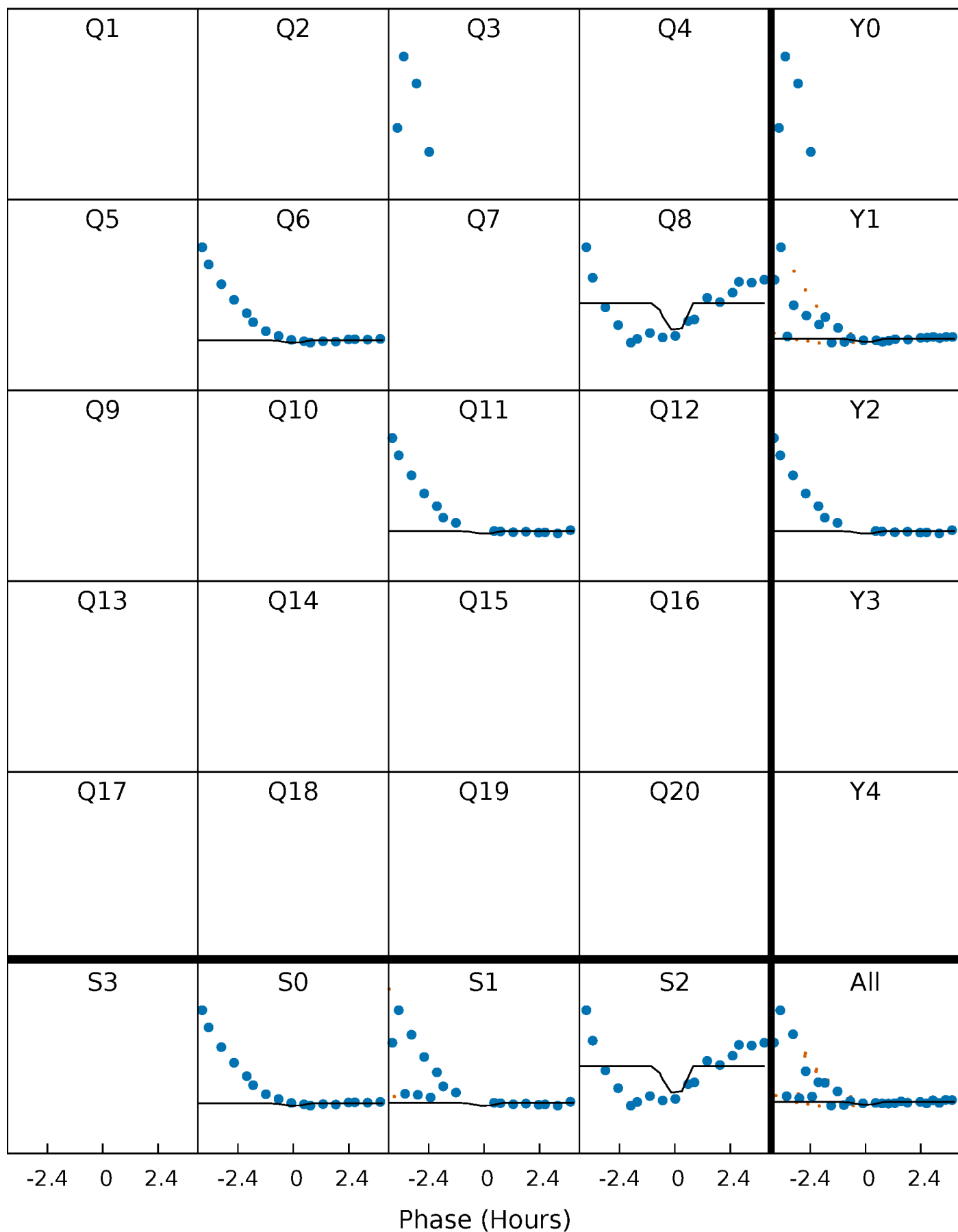
DV Quarter-Phased Transit Curves

TCE 005476448-03 P=230.886134 Days $T_0=321.557819$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

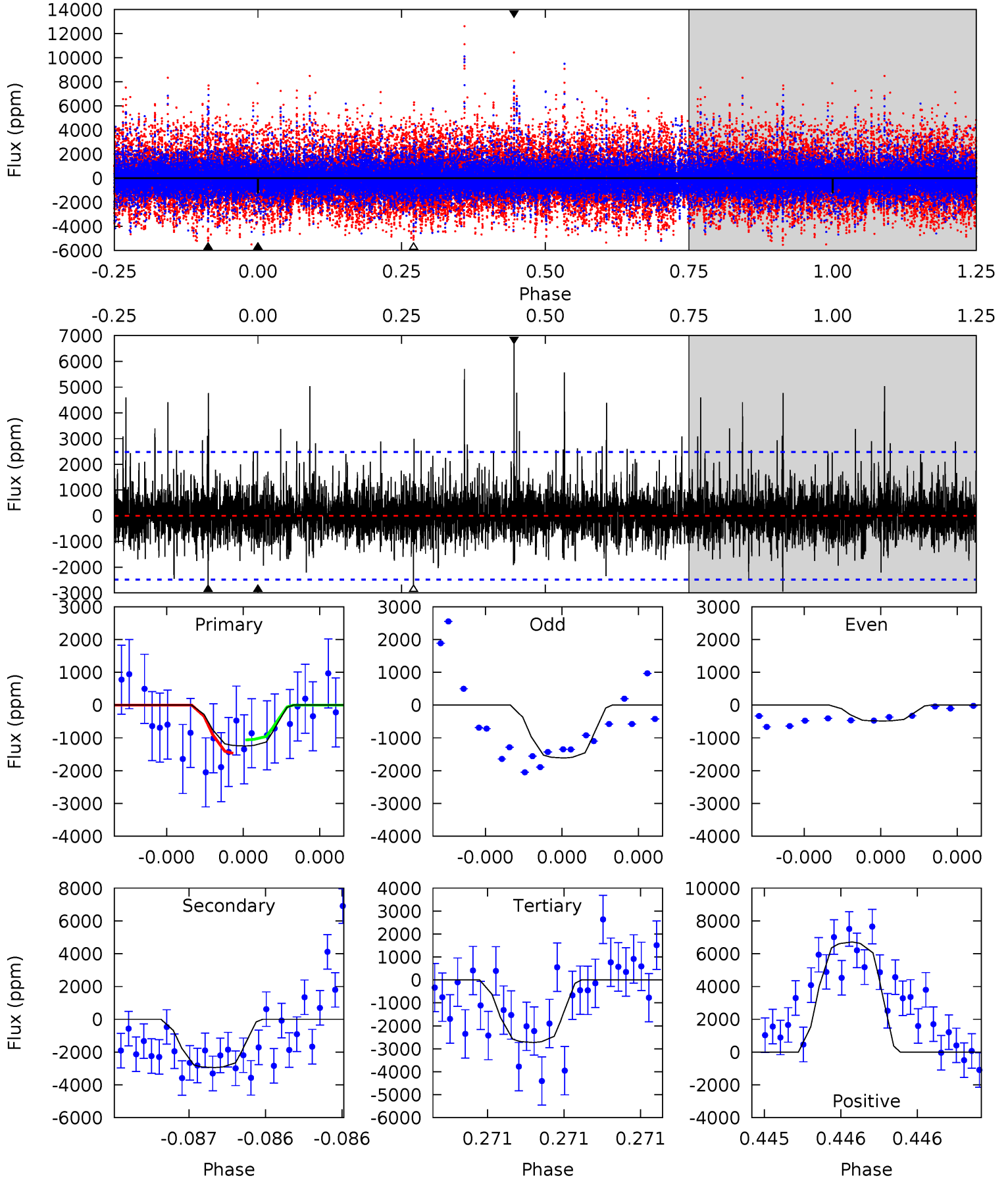
TCE 005476448-03 P=230.889841 Days $T_0=321.542528$ (BKJD)



DV Model-Shift Uniqueness Test

005476448-03, P = 230.886134 Days, E = 90.671685 Days

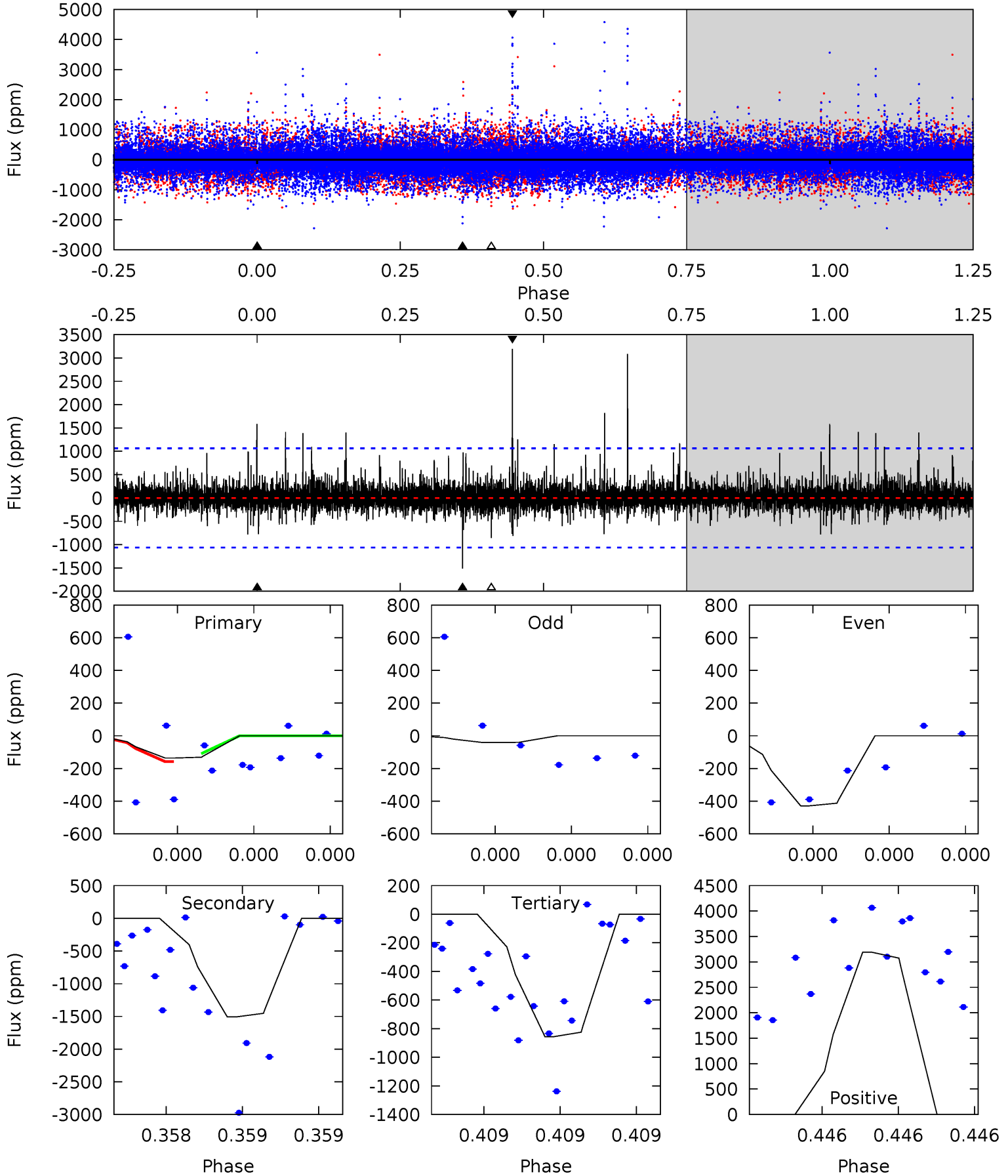
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.84	6.71	6.21	15.3	5.65	3.59	1.53	-3.37	-12.4	0.50	-8.57	1.08	0.77	0.69	0.46



Alt Model-Shift Uniqueness Test

005476448-03, P = 230.889841 Days, E = 90.652687 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.74	8.15	4.63	17.2	5.75	3.75	0.95	-3.89	-16.5	3.52	-9.10	0.76	1.00	0.68	0.13



Stellar Parameters For KIC 005476448

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7247^{+201}_{-302}	$4.152^{+0.124}_{-0.202}$	$0.000^{+0.200}_{-0.350}$	$1.721^{+0.541}_{-0.316}$	$1.533^{+0.212}_{-0.236}$	$0.423^{+0.266}_{-0.222}$
	+3%/-4%	+3%/-5%	+inf%/-inf%	+31%/-18%	+14%/-15%	+63%/-52%
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 005476448-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2947 ± 439	$11.29^{+12.71}_{-8.06}$	637^{+55}_{-41}	6805^{+10936}_{-1967}	$8611^{+102663}_{-6587}$
Alt.	-1509 ± 185	$11.65^{+11.51}_{-8.15}$	642^{+51}_{-41}	5771^{+6184}_{-1457}	4348^{+41499}_{-3209}

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 $A_{obs} \gg 1.0$

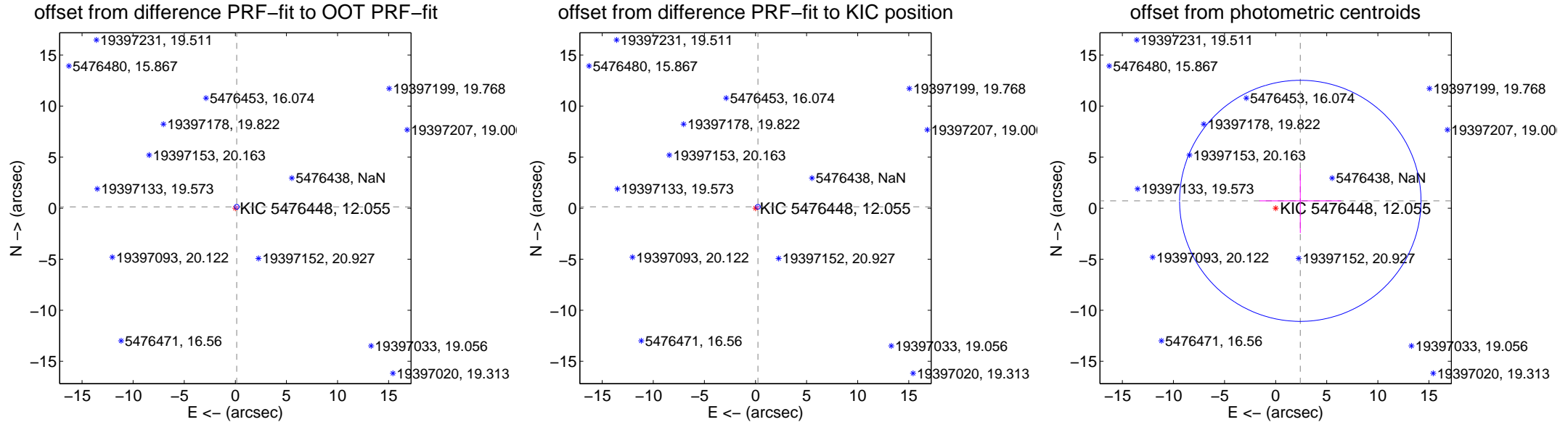
DV Centroid Data

Supplemental centroid analysis for 005476448-03. Kepler magnitude: 12.05. Transit SNR 1.76

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.188 ± 0.079	2.37	-0.136 ± 0.077	0.130 ± 0.082
PRF-fit source offset from KIC position	0.271 ± 0.078	3.47	-0.237 ± 0.077	0.132 ± 0.082
photometric centroid source offset	2.52 ± 3.94	0.64	-2.41 ± 4.00	0.72 ± 3.16



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

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



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

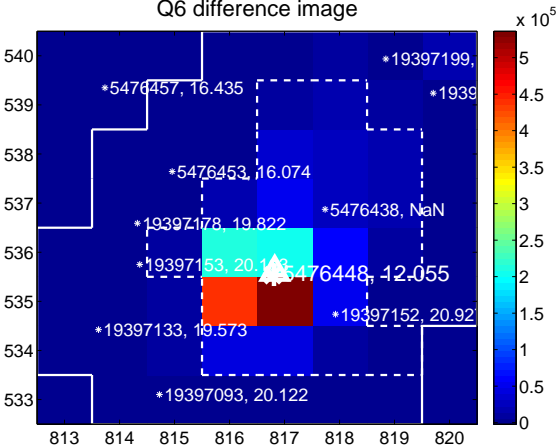
Q5 no difference image



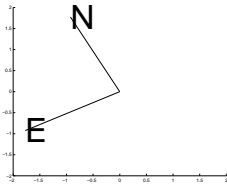
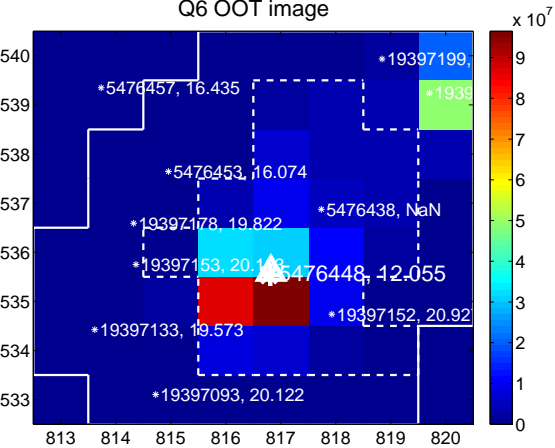
Q5 no OOT image



Q6 difference image



Q6 OOT image



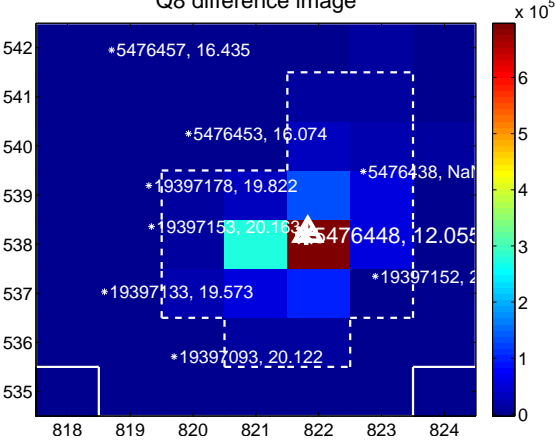
Q7 no difference image



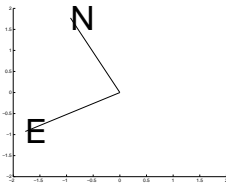
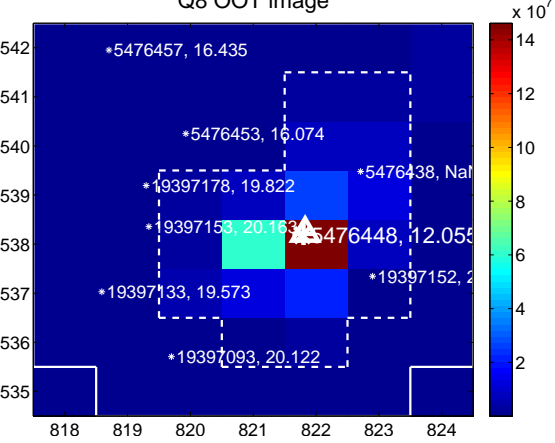
Q7 no OOT image



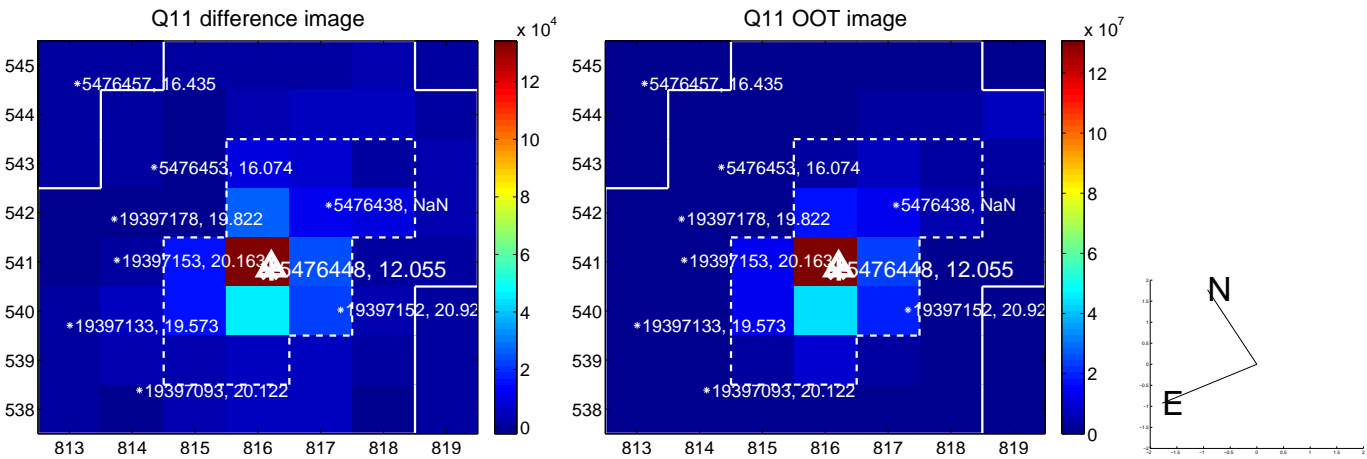
Q8 difference image



Q8 OOT image



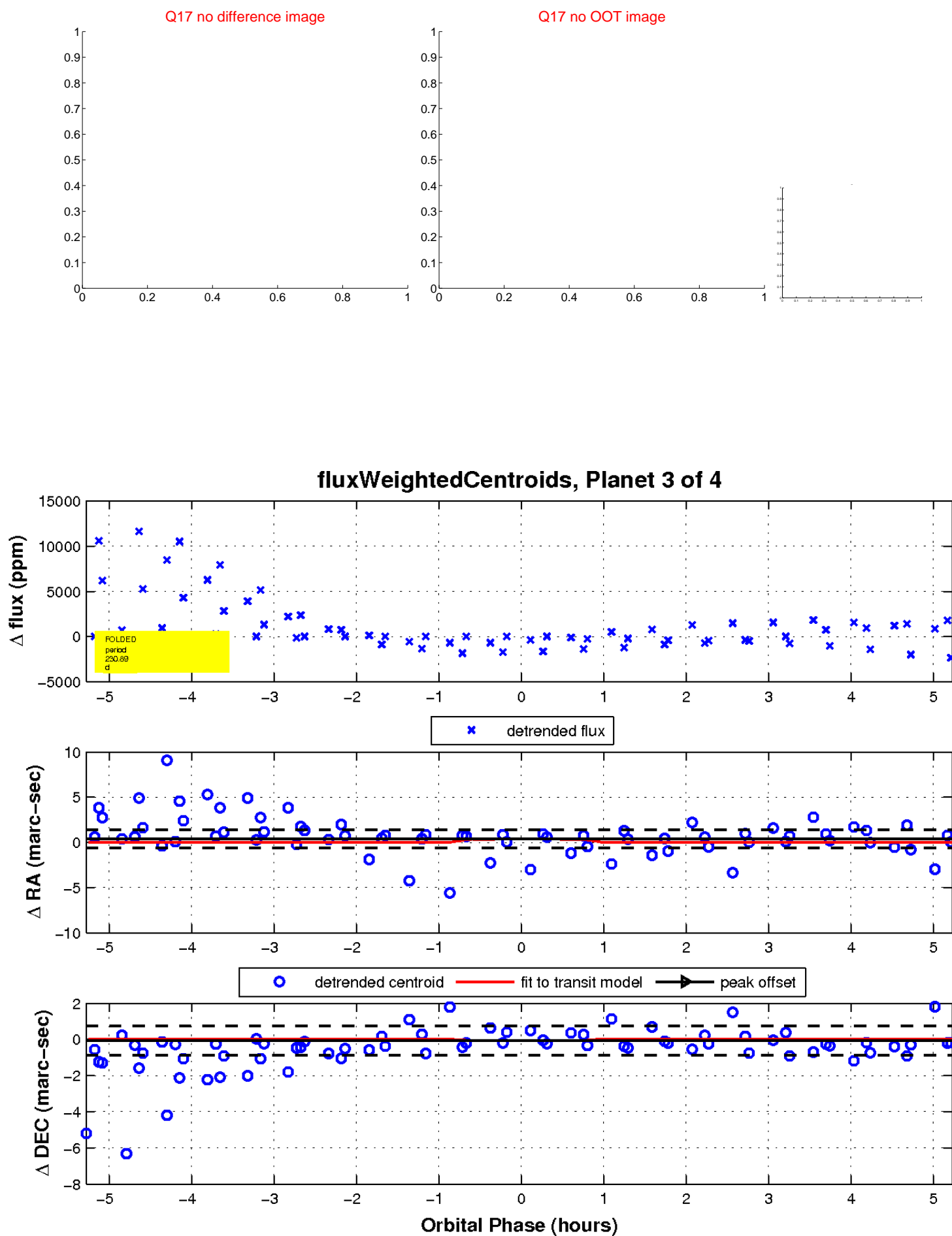
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

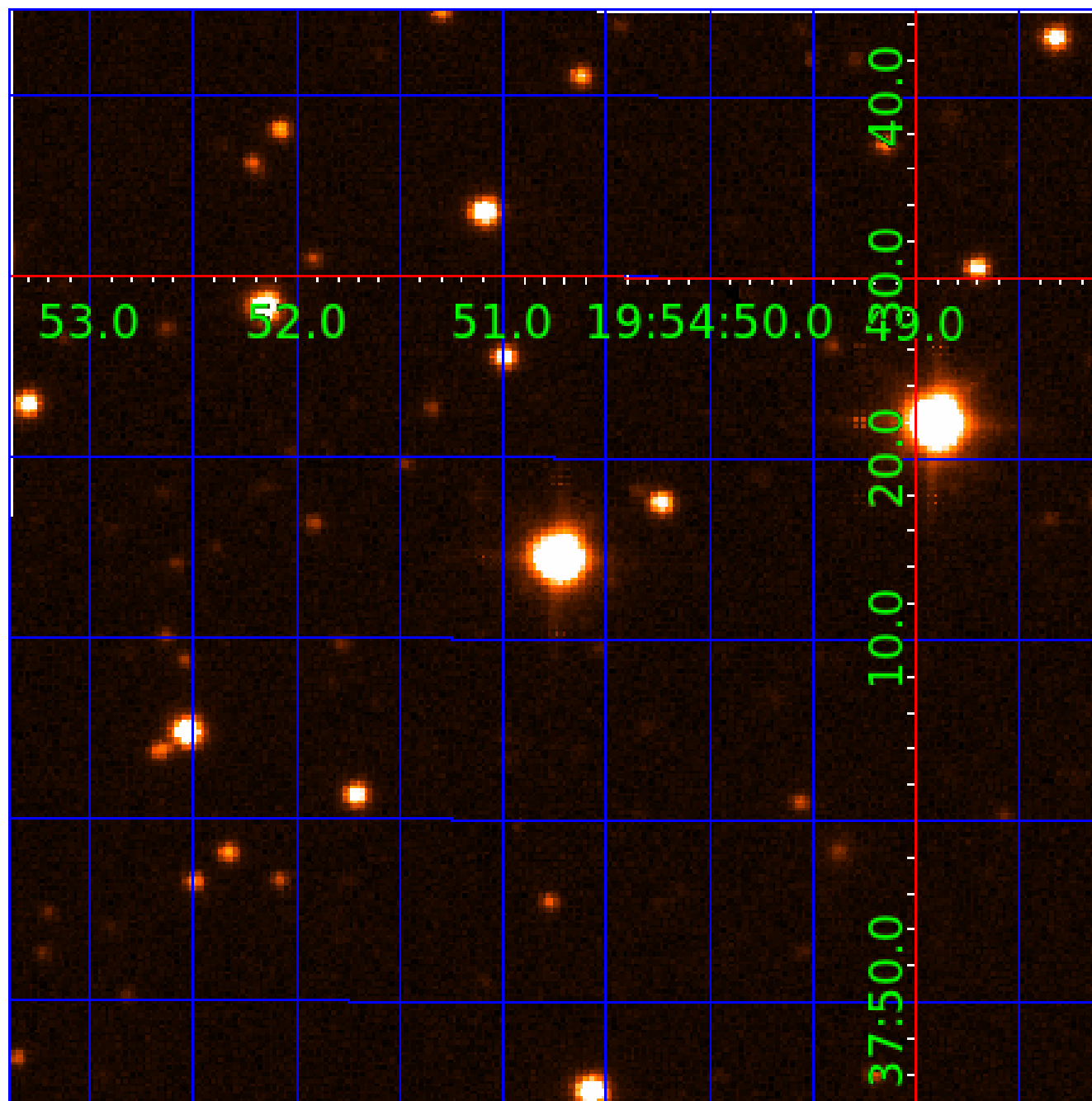


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005476448

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})
005476448-01	OBS	No	549.743807	339.766513	3050.5	21.898	22.0	2.2	1.72	7247	11.25	3.19
005476448-02	OBS	No	311.108174	182.969539	820.3	3.000	29.2	-1.0	1.72	7247	5.00	6.82
005476448-03	OBS	No	230.886134	321.557819	245.9	1.771	21.8	1.8	1.72	7247	3.08	10.14
005476448-04	OBS	No	273.769832	255.463307	682.7	3.000	21.3	-1.0	1.72	7247	4.56	8.08

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005476448-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005476448-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005476448-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005476448-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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.

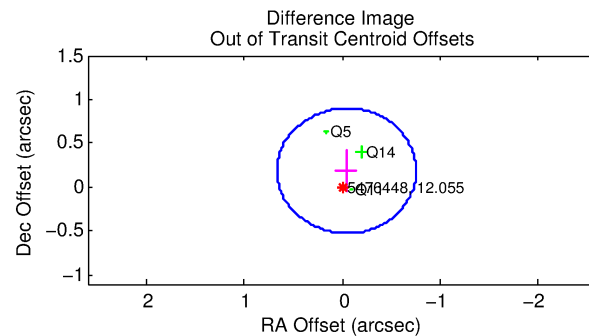
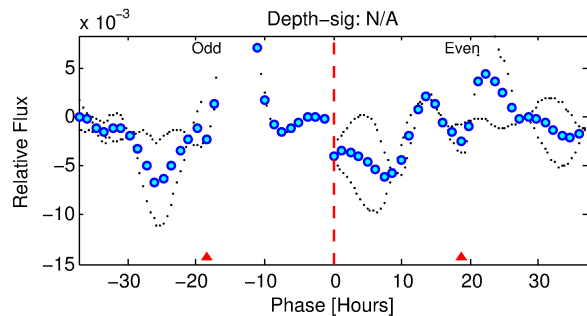
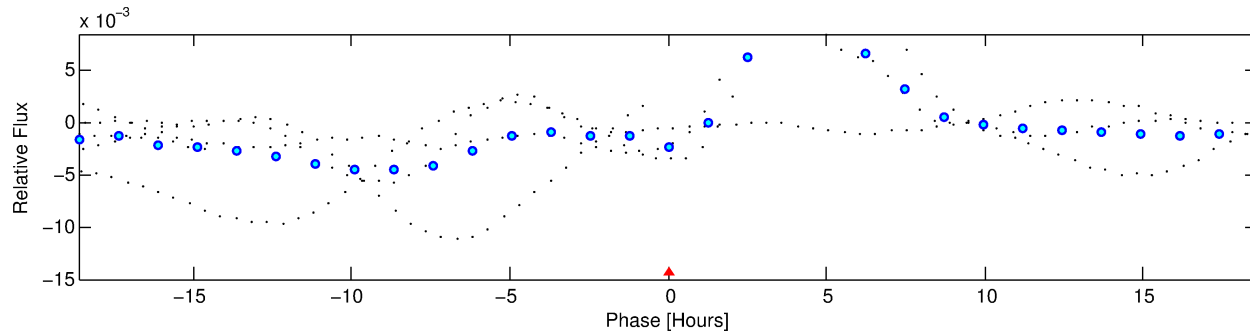
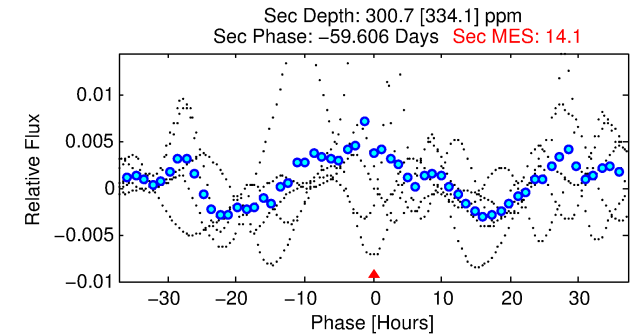
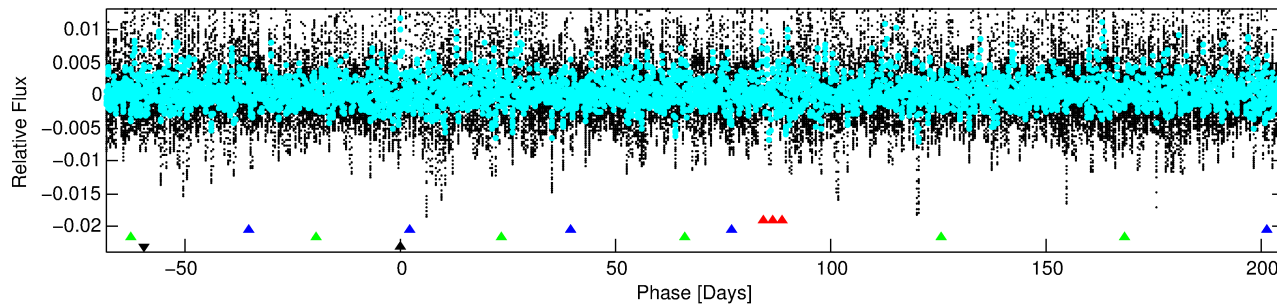
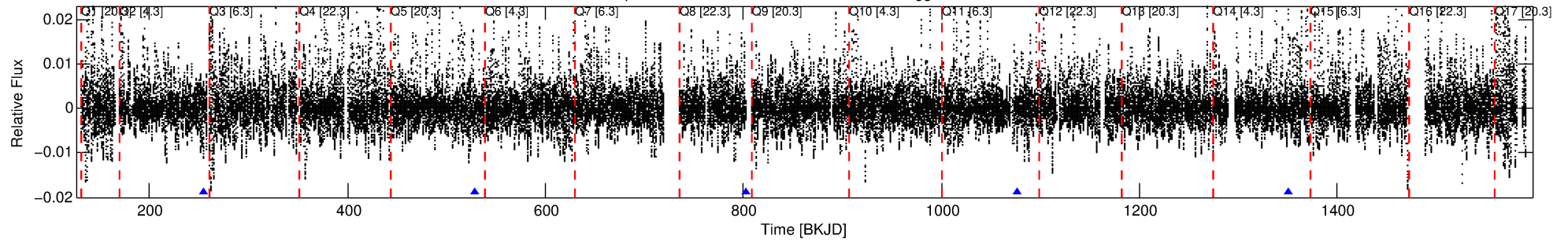
Ephemeris Match Information For 005476448-04

No Significant Match Found

DV One-Page Summary

KIC: 5476448 Candidate: 4 of 4 Period: 273.770 d

Kp: 12.06 R*: 1.72 Rs Teff: 7247.0 K Logg: 4.15 Fe/H: 0.000



TPS TCE Results:

Period = 273.76983 d
Epoch = 255.4633 BKJD

DV fit results are unavailable

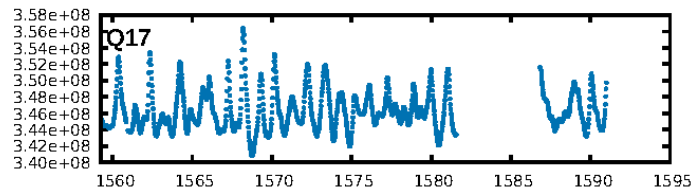
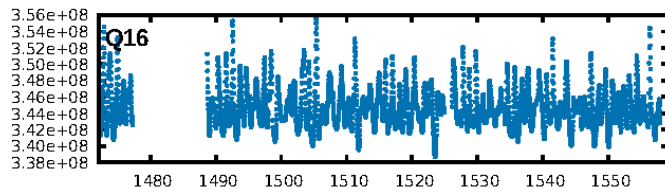
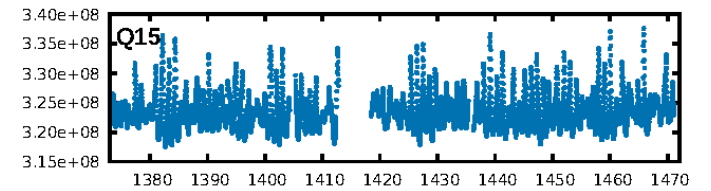
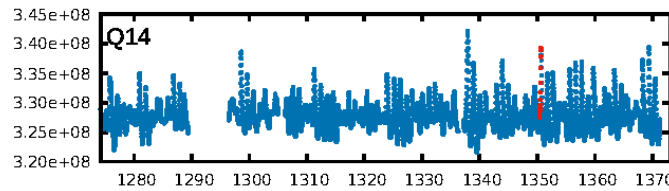
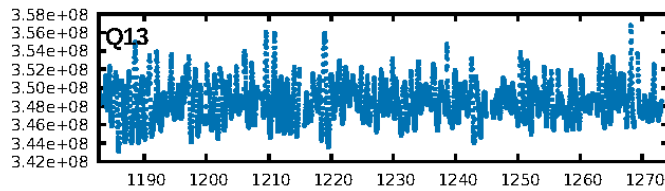
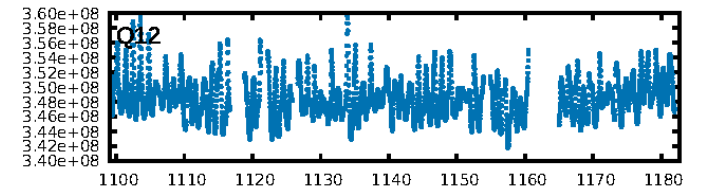
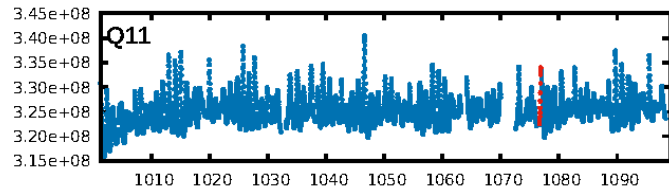
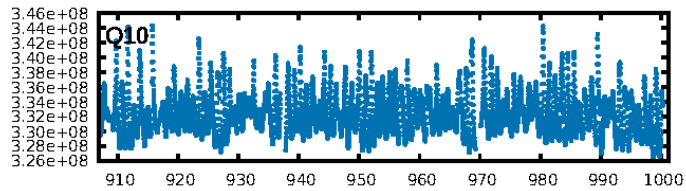
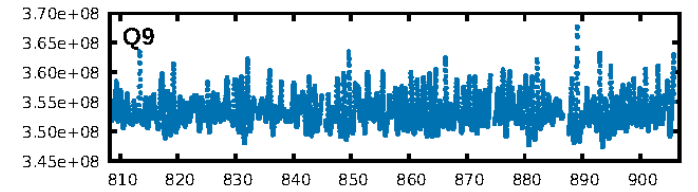
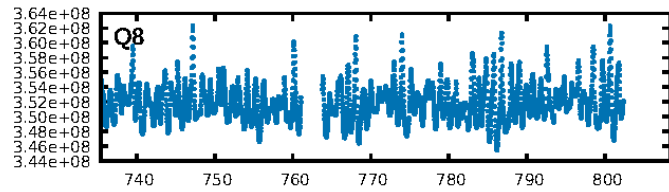
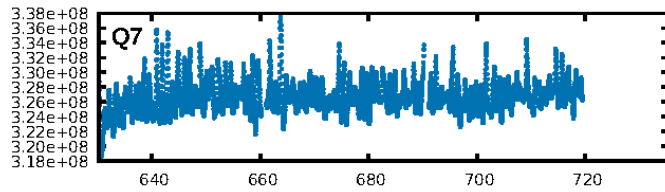
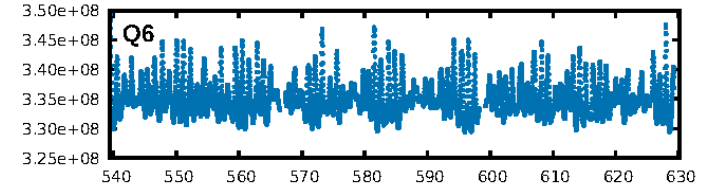
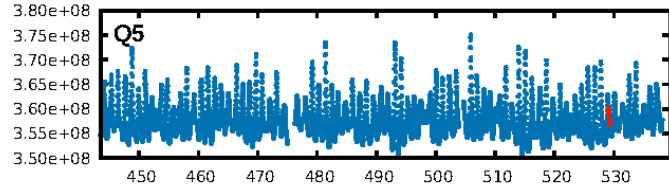
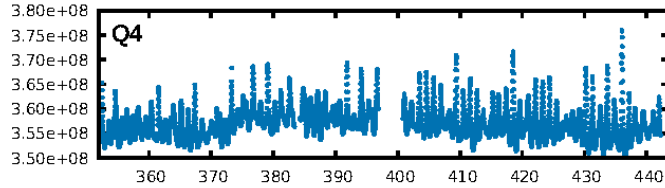
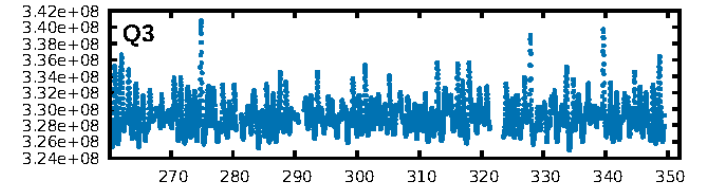
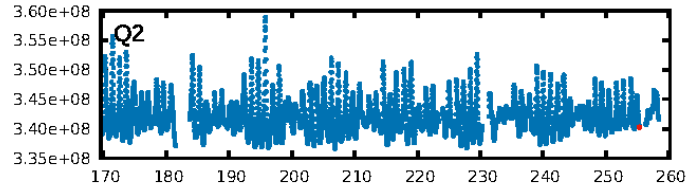
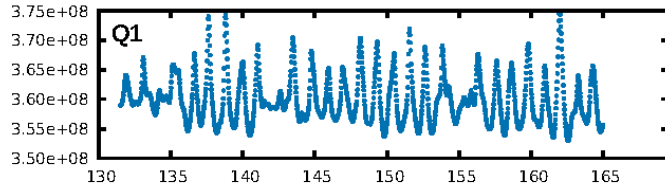
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [295.42σ]
LongPeriod-sig: 100.0% [211.22σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.2795
Centroid-sig: 46.0%
Centroid-so: 1.041 arcsec [8.12σ]
OotOffset-rm: 0.193 arcsec [0.82σ]
KicOffset-rm: 0.237 arcsec [1.30σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

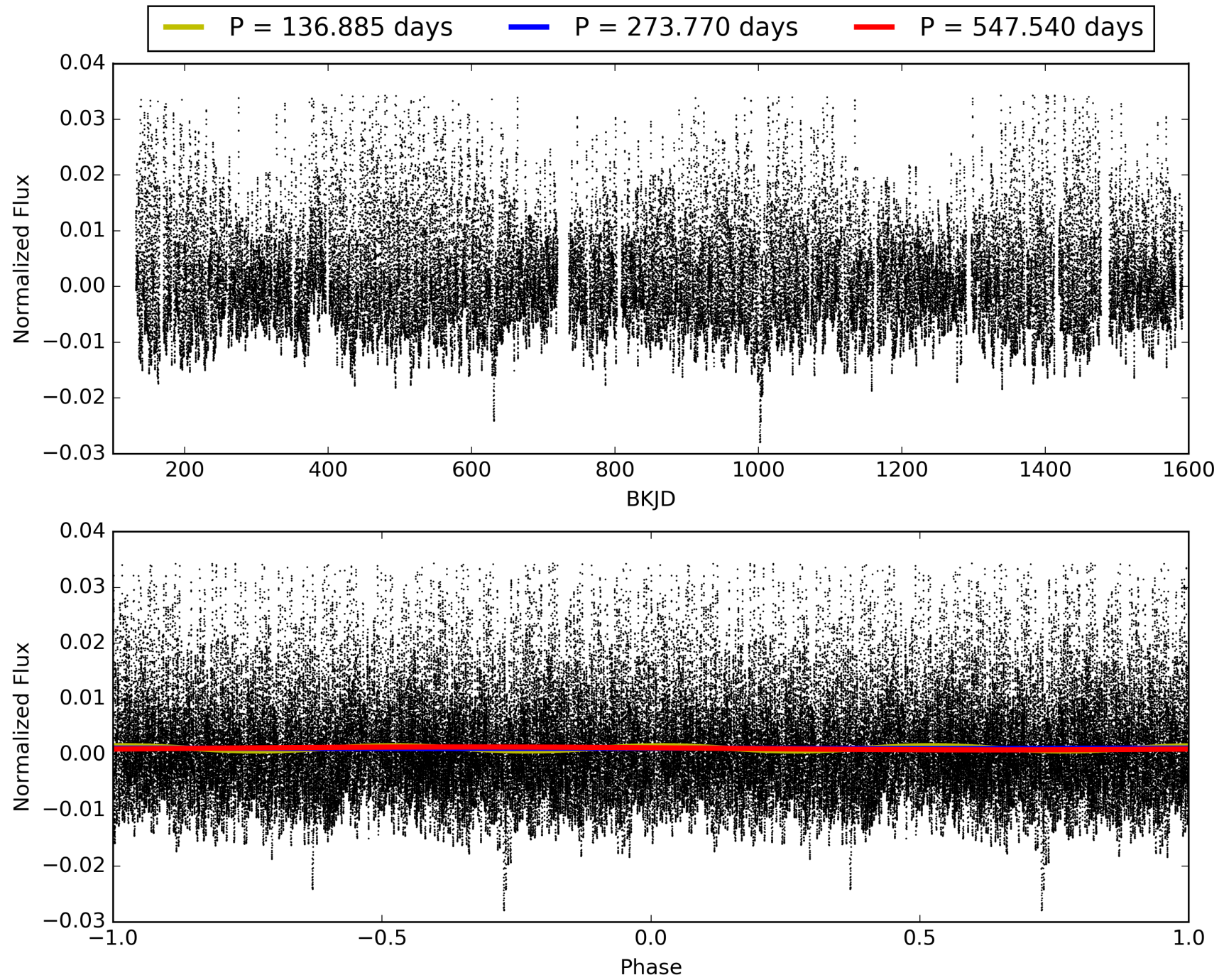
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:36:05 Z

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

TCE 005476448-04, PDC Light Curves

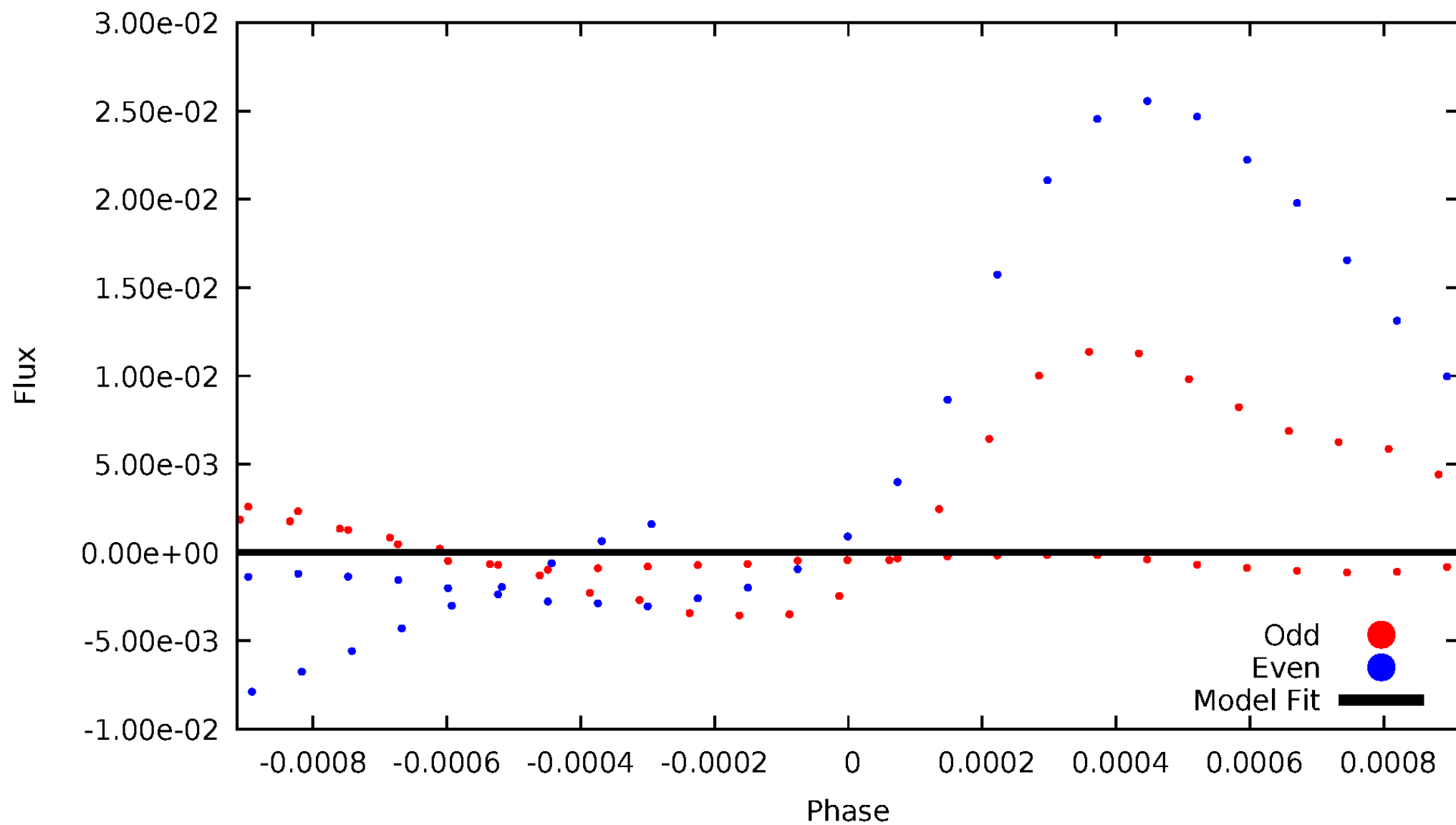


TCE 005476448-04



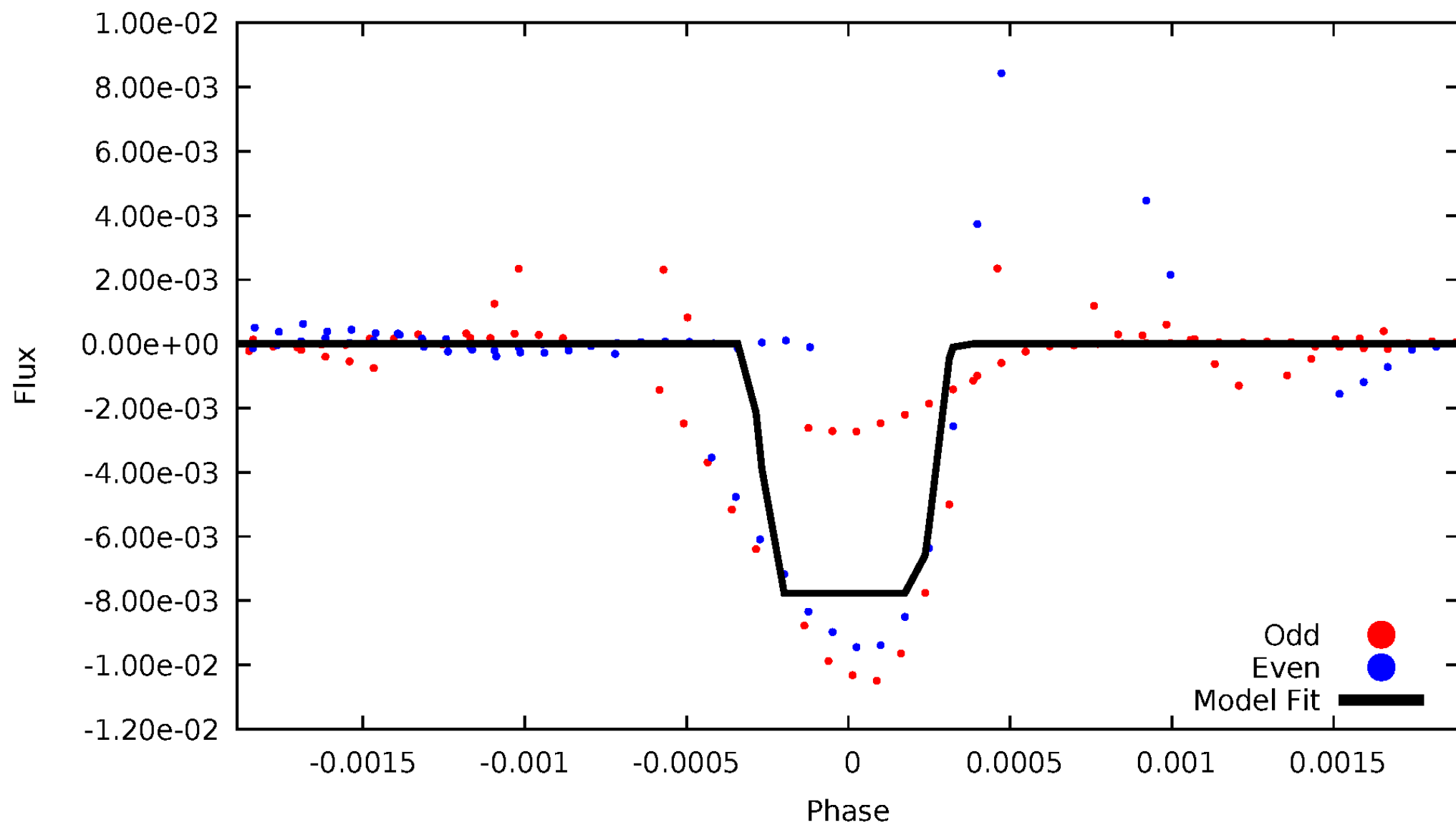
DV Odd/Even

TCE 005476448-04



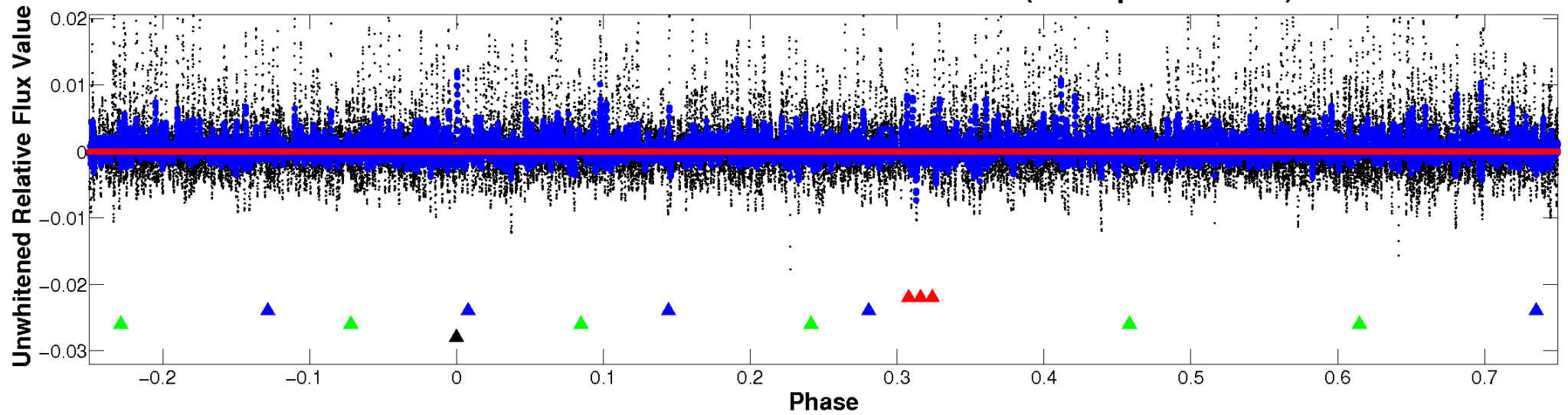
ALT Odd/Even

TCE 005476448-04



Non-Whitened Vs. Whitened Light Curve

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

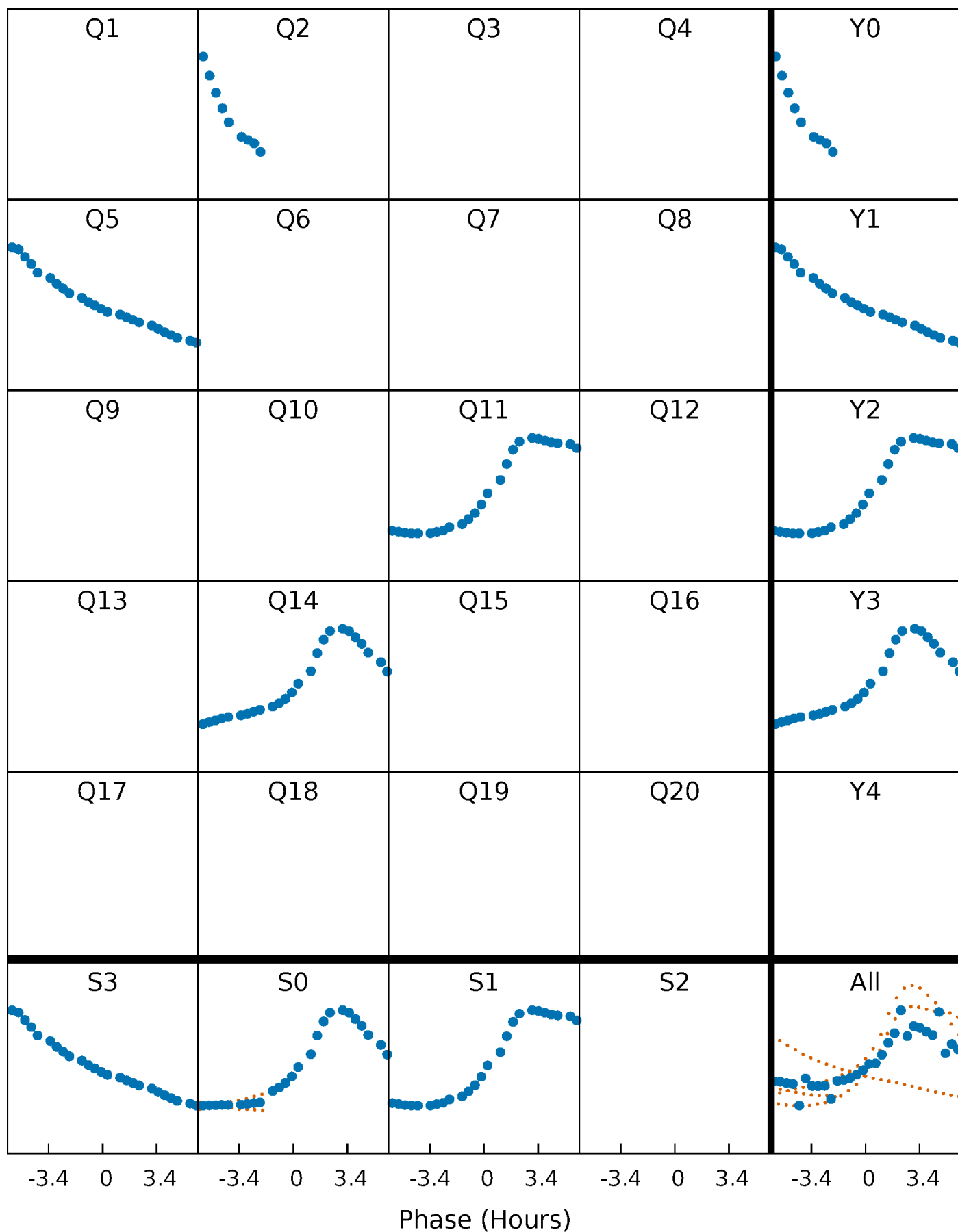


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



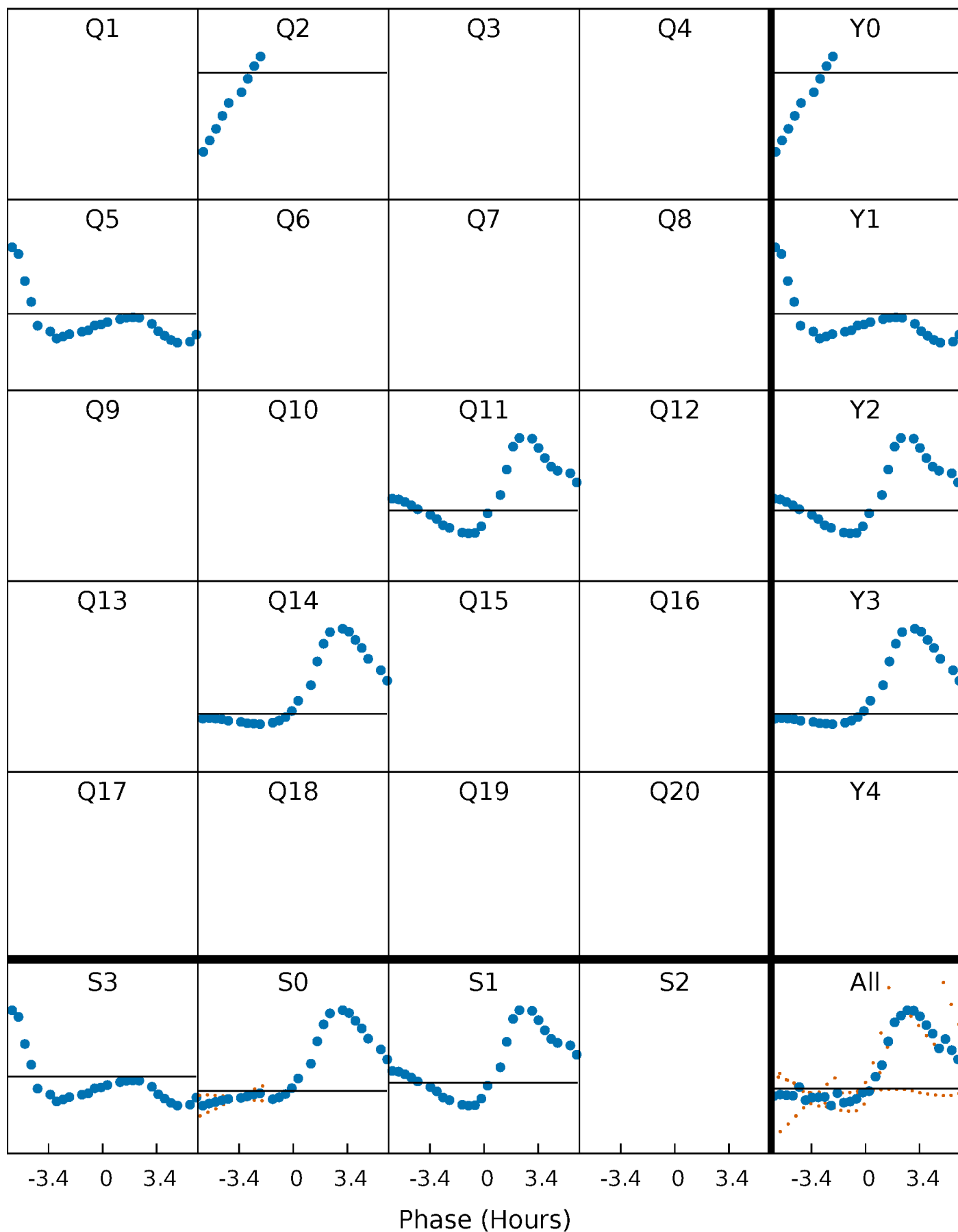
PDC Quarter-Phased Transit Curves

TCE 005476448-04 P=273.769832 Days $T_0=255.463307$ (BKJD)



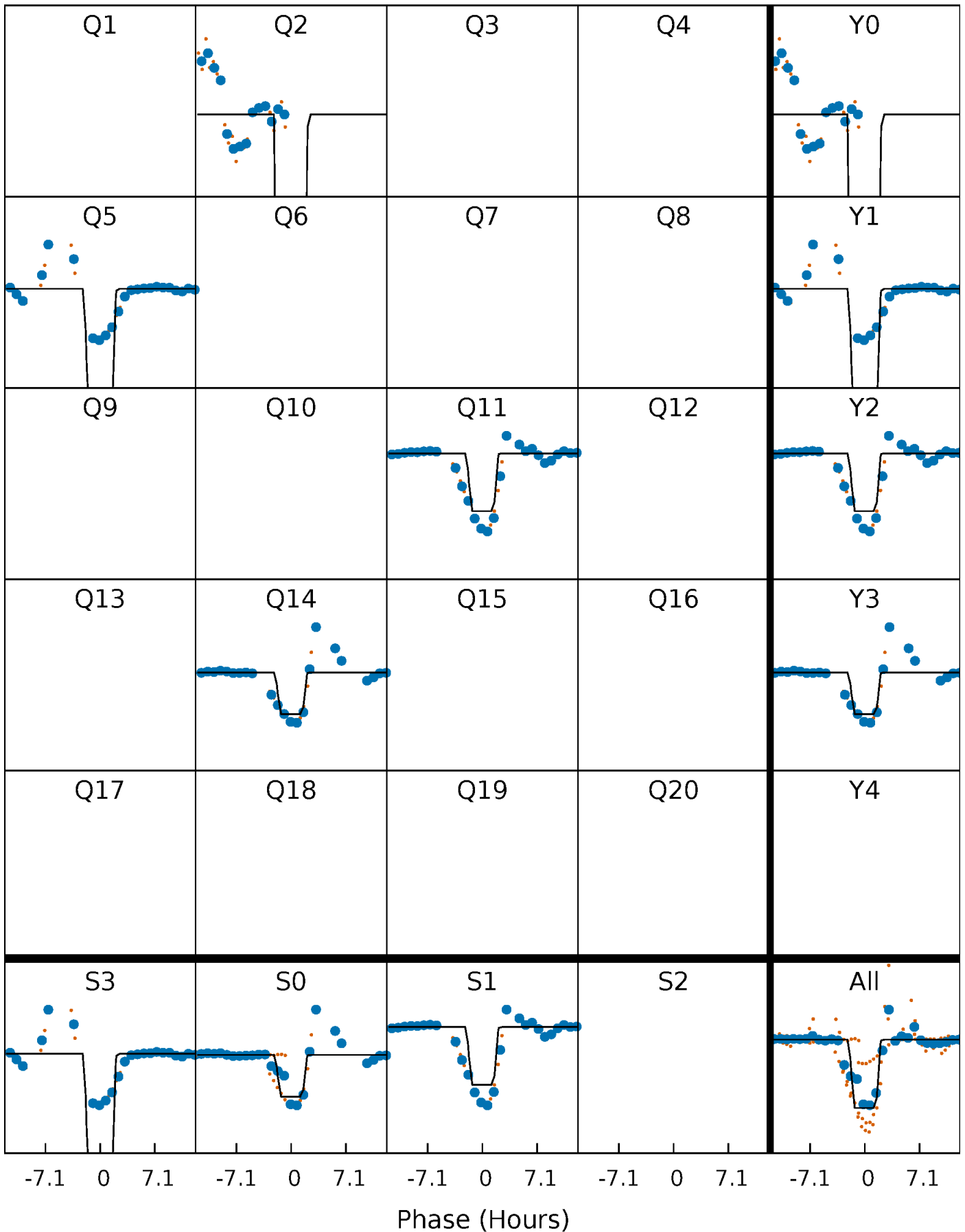
DV Quarter-Phased Transit Curves

TCE 005476448-04 P=273.769832 Days $T_0=255.463307$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

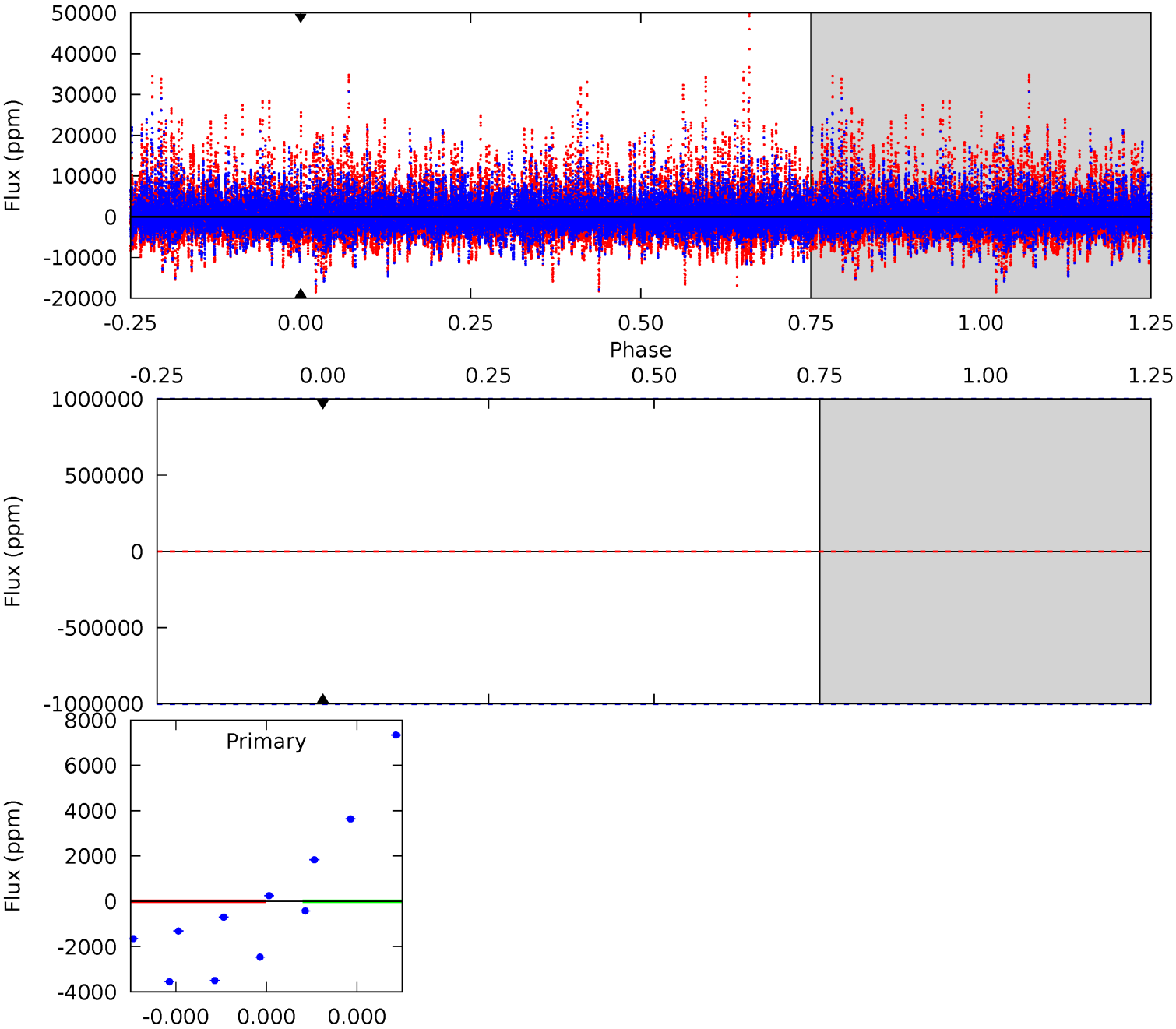
TCE 005476448-04 P=273.769832 Days $T_0=255.415141$ (BKJD)



DV Model-Shift Uniqueness Test

005476448-04, P = 273.769832 Days, E = 255.463307 Days

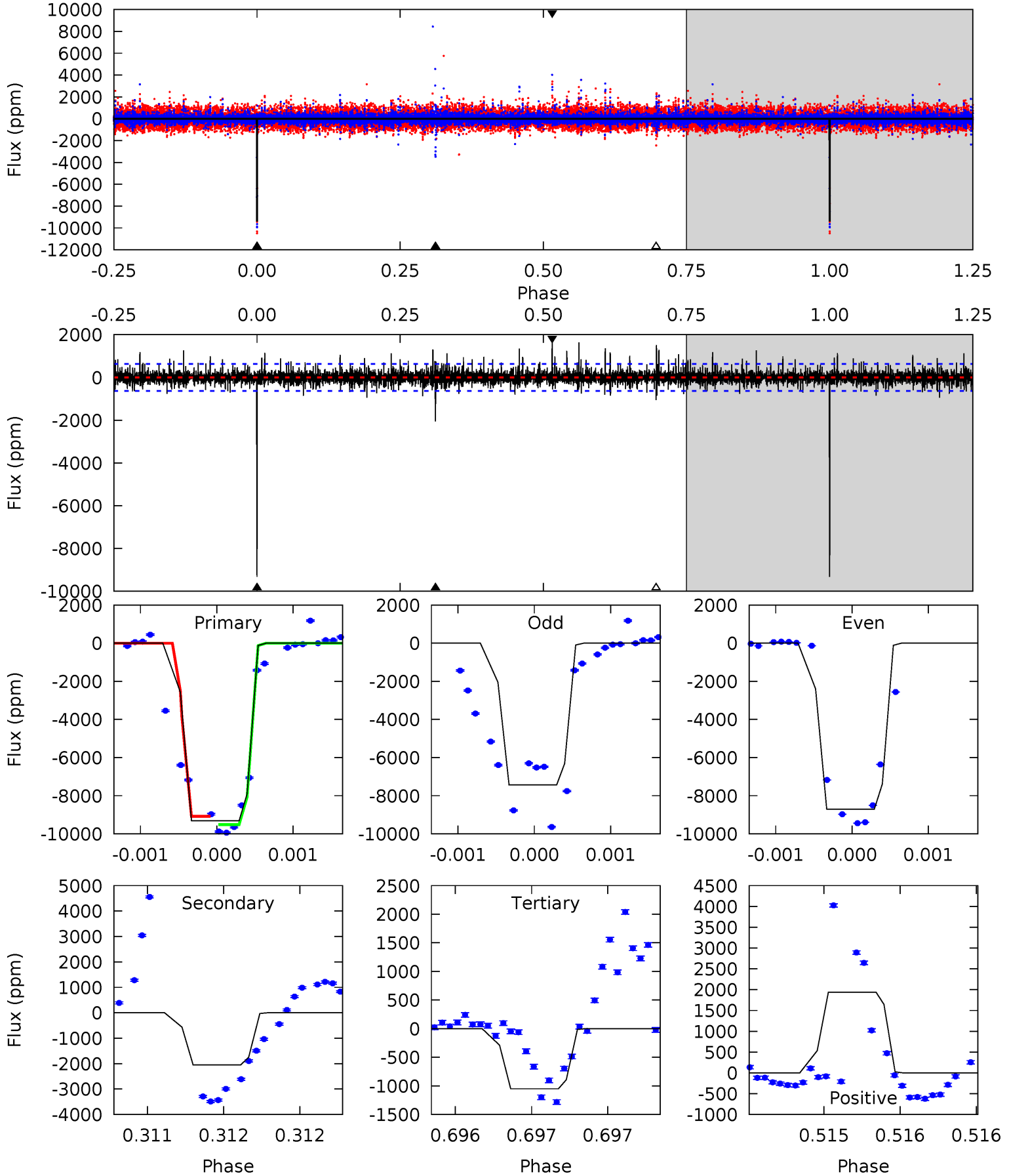
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005476448-04, P = 273.769832 Days, E = 255.415141 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
81.9	18.0	9.24	17.0	5.54	3.43	1.70	72.7	64.9	8.79	1.00	4.78	0.94	0.17	1.52



Stellar Parameters For KIC 005476448

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7247^{+201}_{-302}	$4.152^{+0.124}_{-0.202}$	$0.000^{+0.200}_{-0.350}$	$1.721^{+0.541}_{-0.316}$	$1.533^{+0.212}_{-0.236}$	$0.423^{+0.266}_{-0.222}$
	+3%/-4%	+3%/-5%	+inf%/-inf%	+31%/-18%	+14%/-15%	+63%/-52%
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 005476448-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$15.32^{+15.25}_{-10.26}$	603^{+48}_{-40}	-5175^{+37066}_{-23403}	$-3628.697^{+380743.145}_{-312462.047}$
Alt.	-2051 ± 114	$21.33^{+17.98}_{-14.13}$	603^{+51}_{-39}	4737^{+3235}_{-938}	2214^{+17579}_{-1556}

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

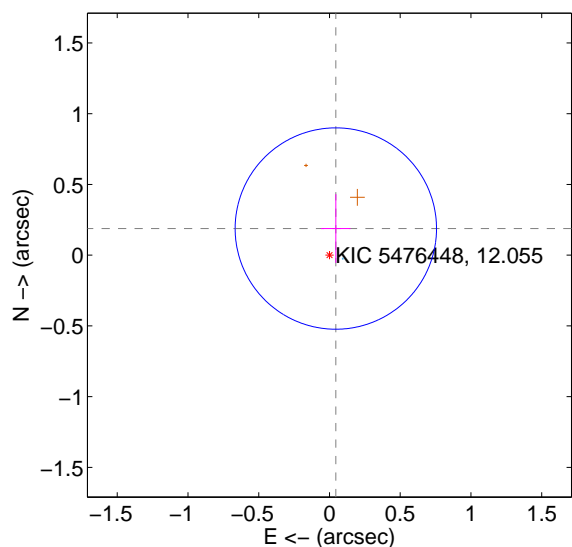
Supplemental centroid analysis for 005476448-04. Kepler magnitude: 12.05. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

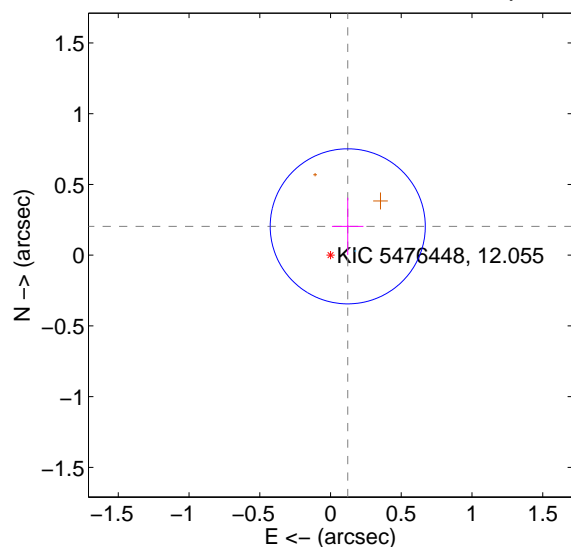
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.193 ± 0.237	0.82	-0.045 ± 0.104	0.188 ± 0.243
PRF-fit source offset from KIC position	0.237 ± 0.183	1.30	-0.122 ± 0.111	0.204 ± 0.202
photometric centroid source offset	1.04 ± 0.13	8.12	-0.89 ± 0.14	0.53 ± 0.10

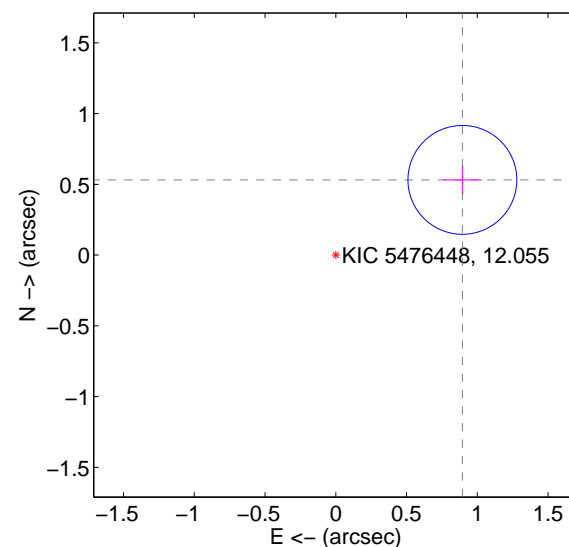
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

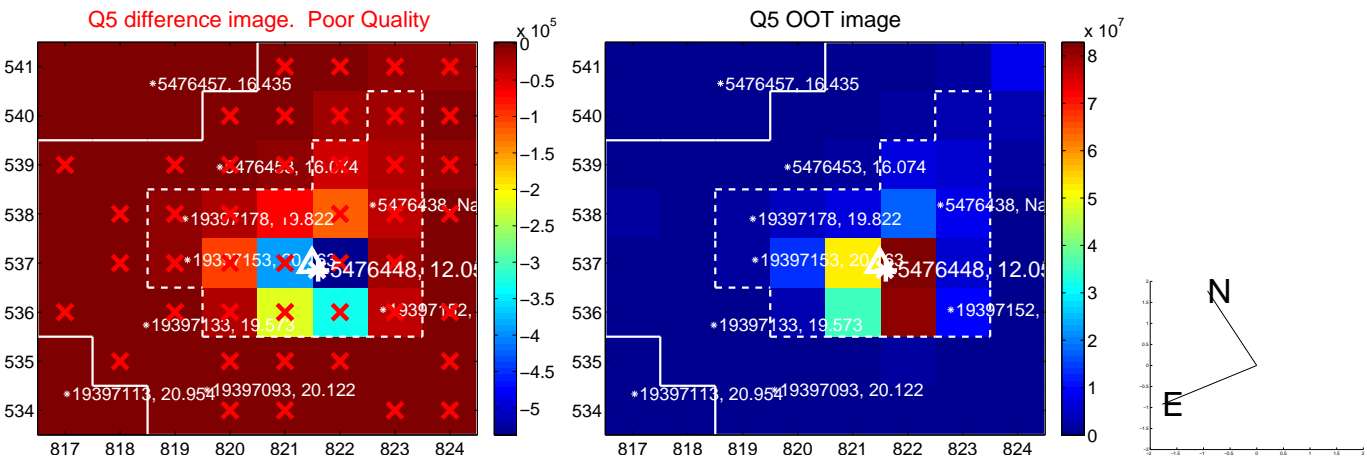


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

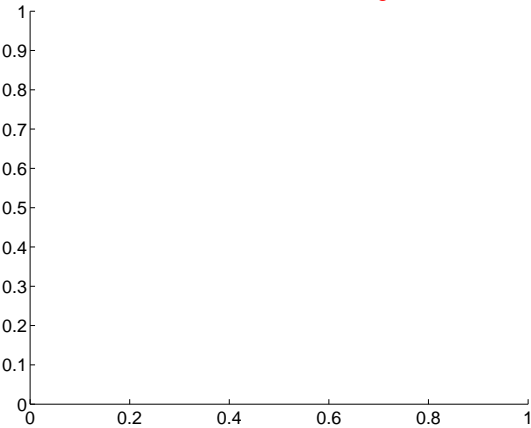
Q9 no difference image



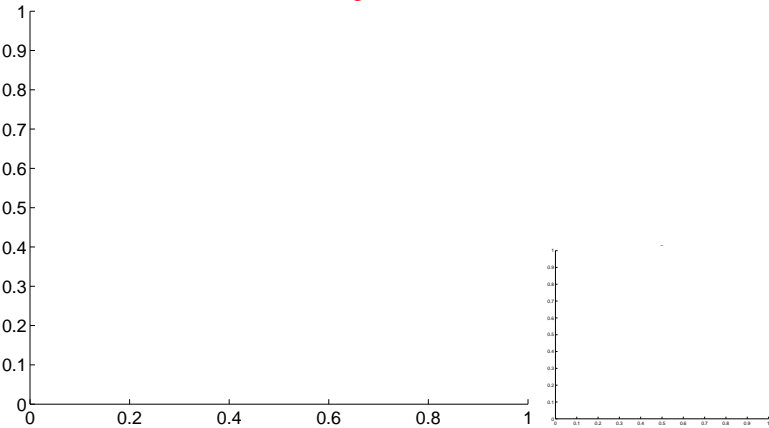
Q9 no OOT image



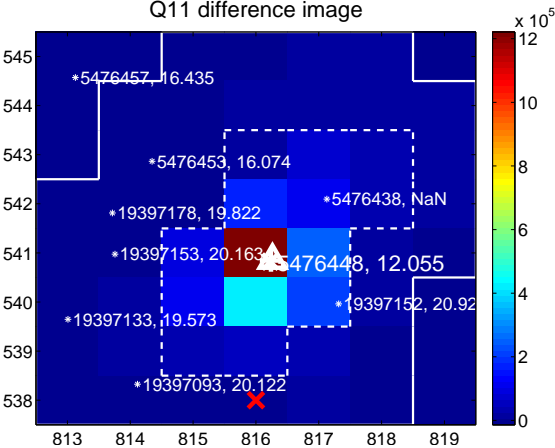
Q10 no difference image



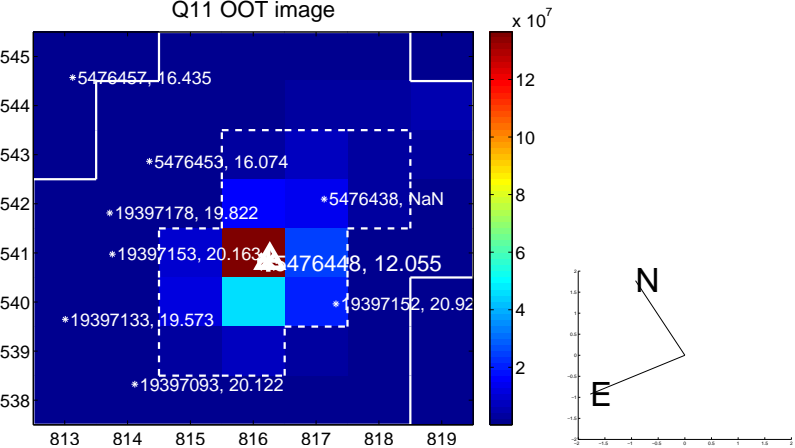
Q10 no OOT image



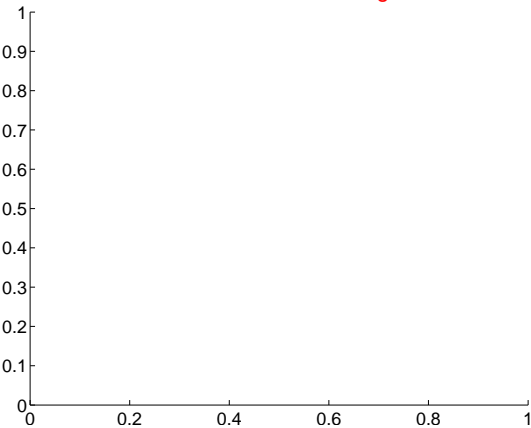
Q11 difference image



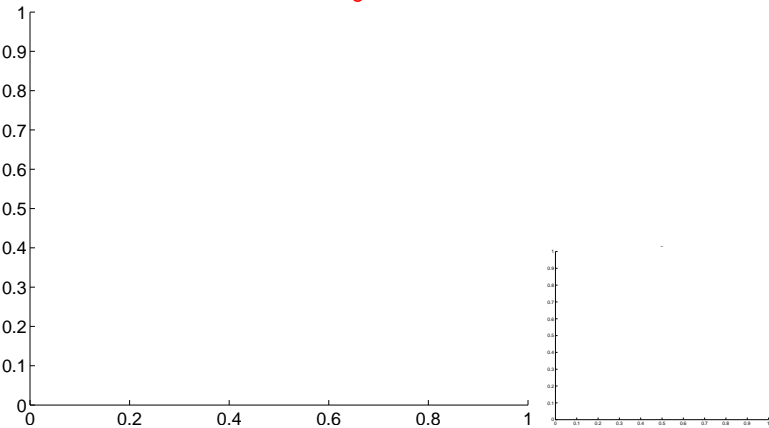
Q11 OOT image



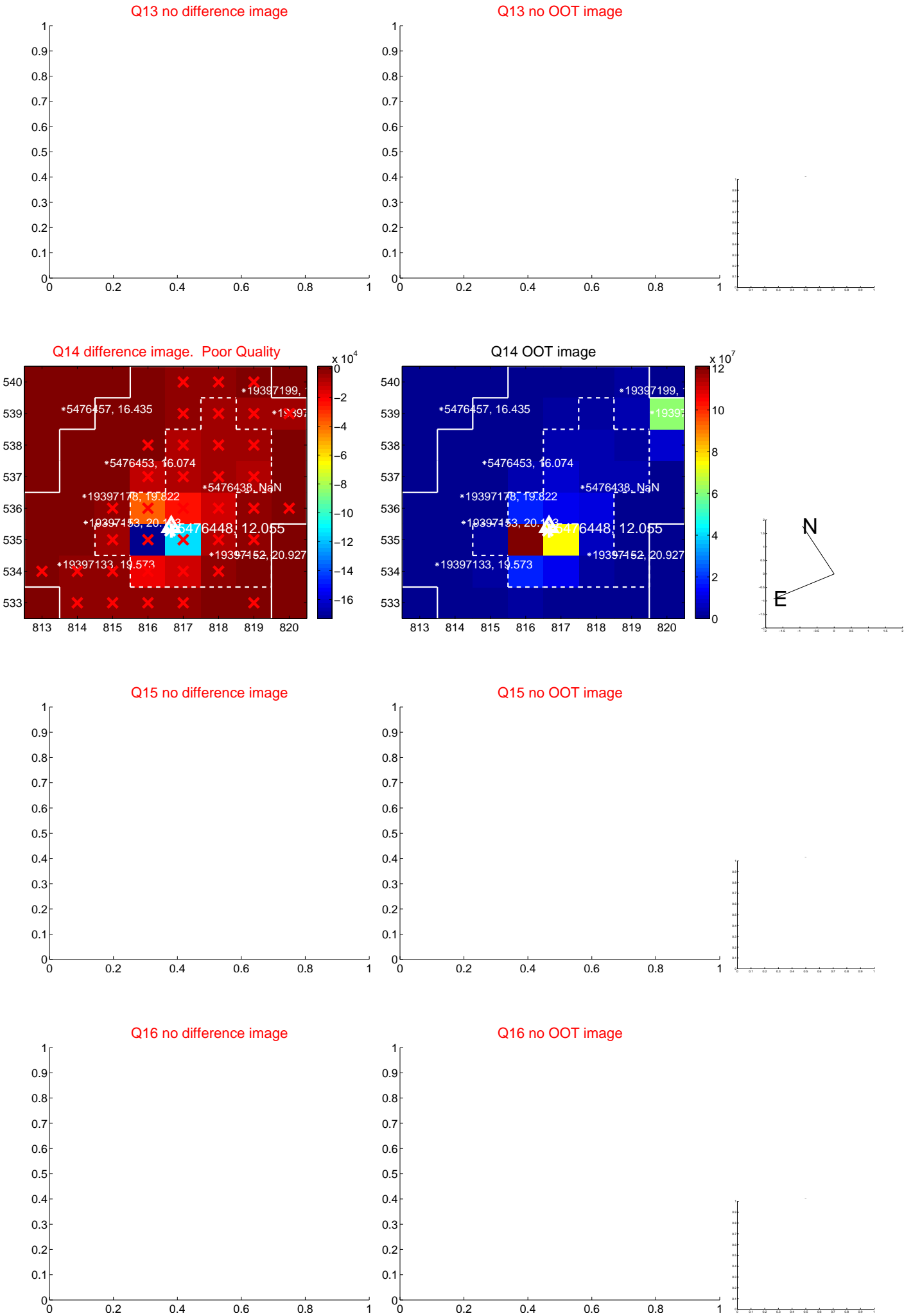
Q12 no difference image



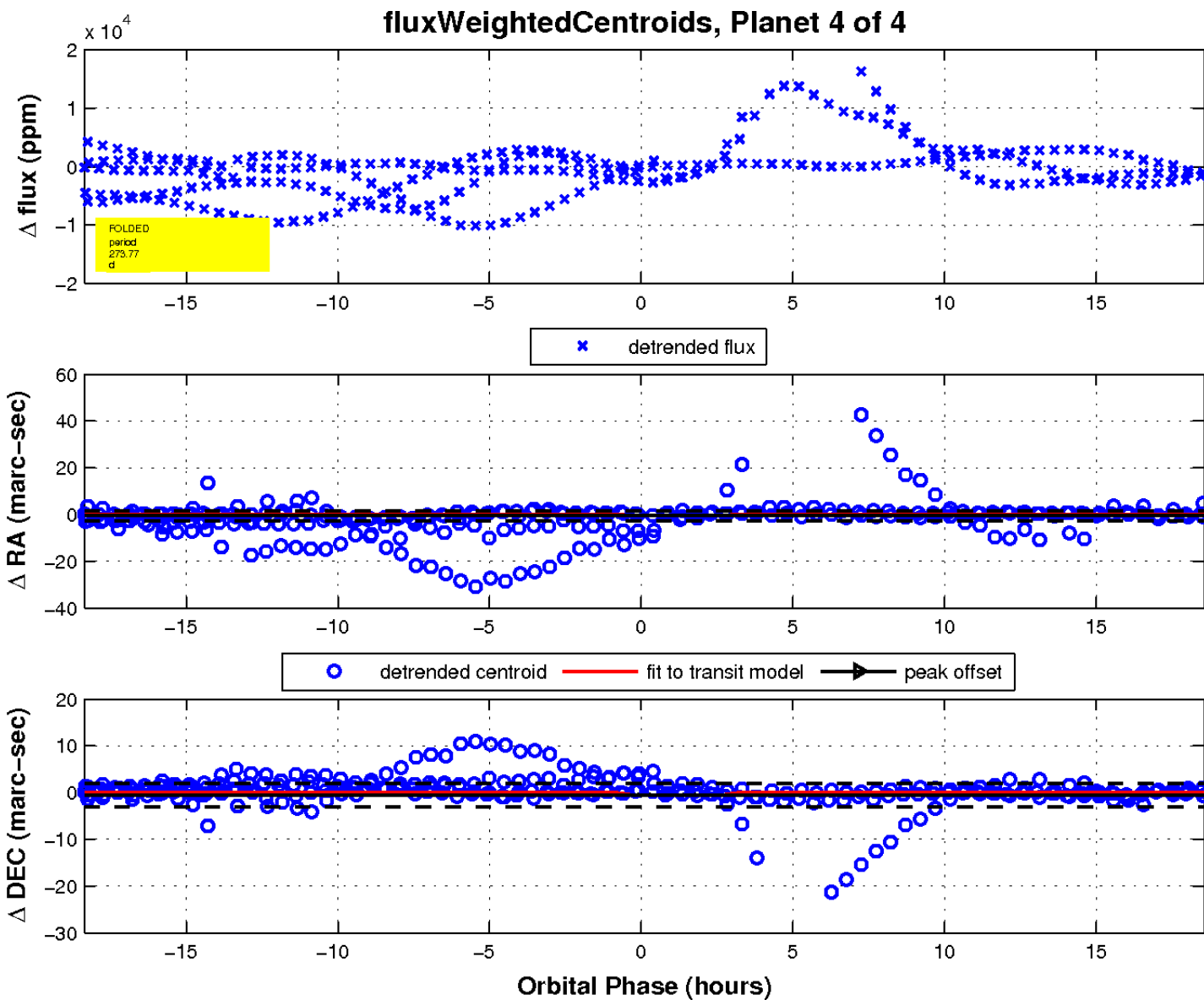
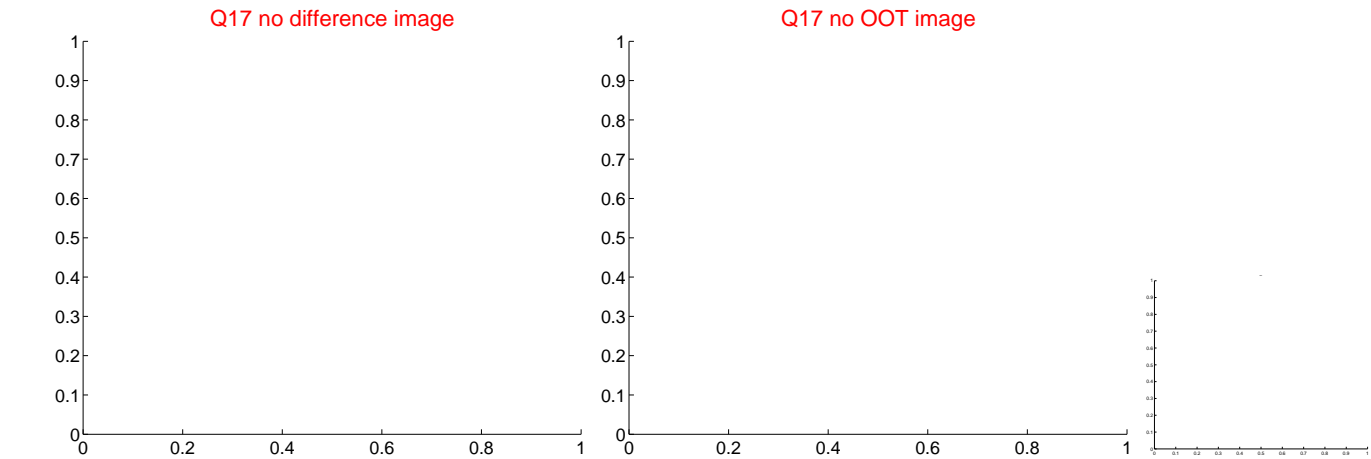
Q12 no OOT image



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

Declination

