

# KIC 007381977

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007381977-01	OBS	No	2.321422	132.730742	37.9	8.151	7.6	8.0	0.80	5672	0.50	546.77
007381977-02	OBS	No	150.444142	142.125480	290.6	12.177	21.3	6.0	0.80	5672	1.50	2.10
007381977-03	OBS	No	258.578855	279.789495	348.1	16.233	10.0	8.1	0.80	5672	1.57	1.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007381977-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
007381977-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_UNCERTAIN—HALO_GHOST
007381977-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

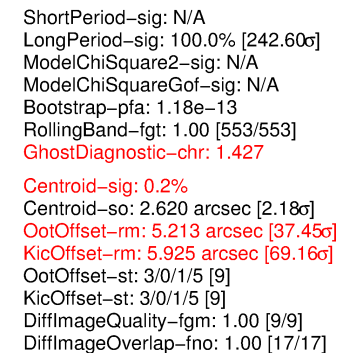
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

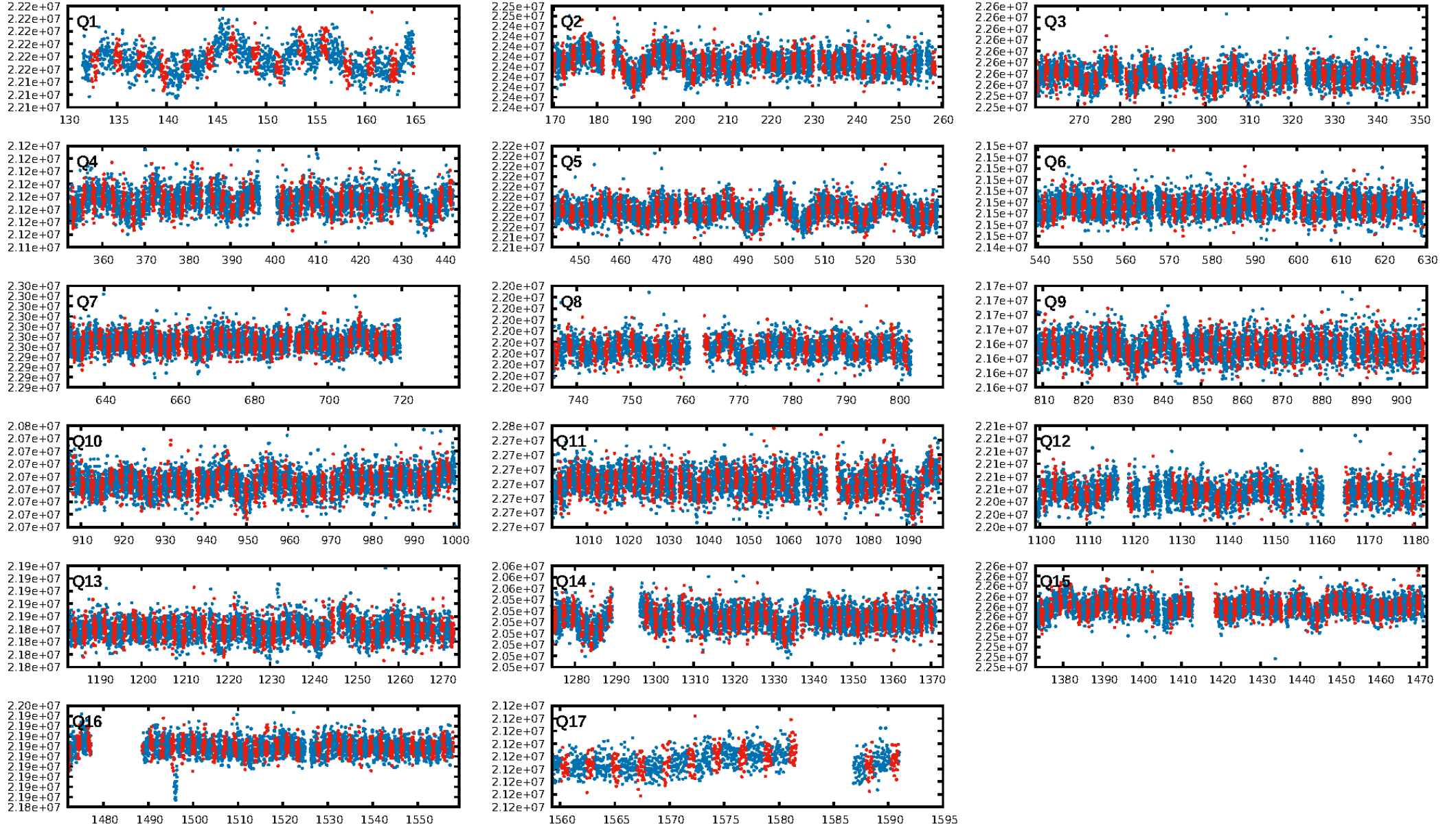
## Ephemeris Match Information For 007381977-01

No Significant Match Found

## KIC: 7381977    Candidate: 1 of 3    Period: 2.321 d

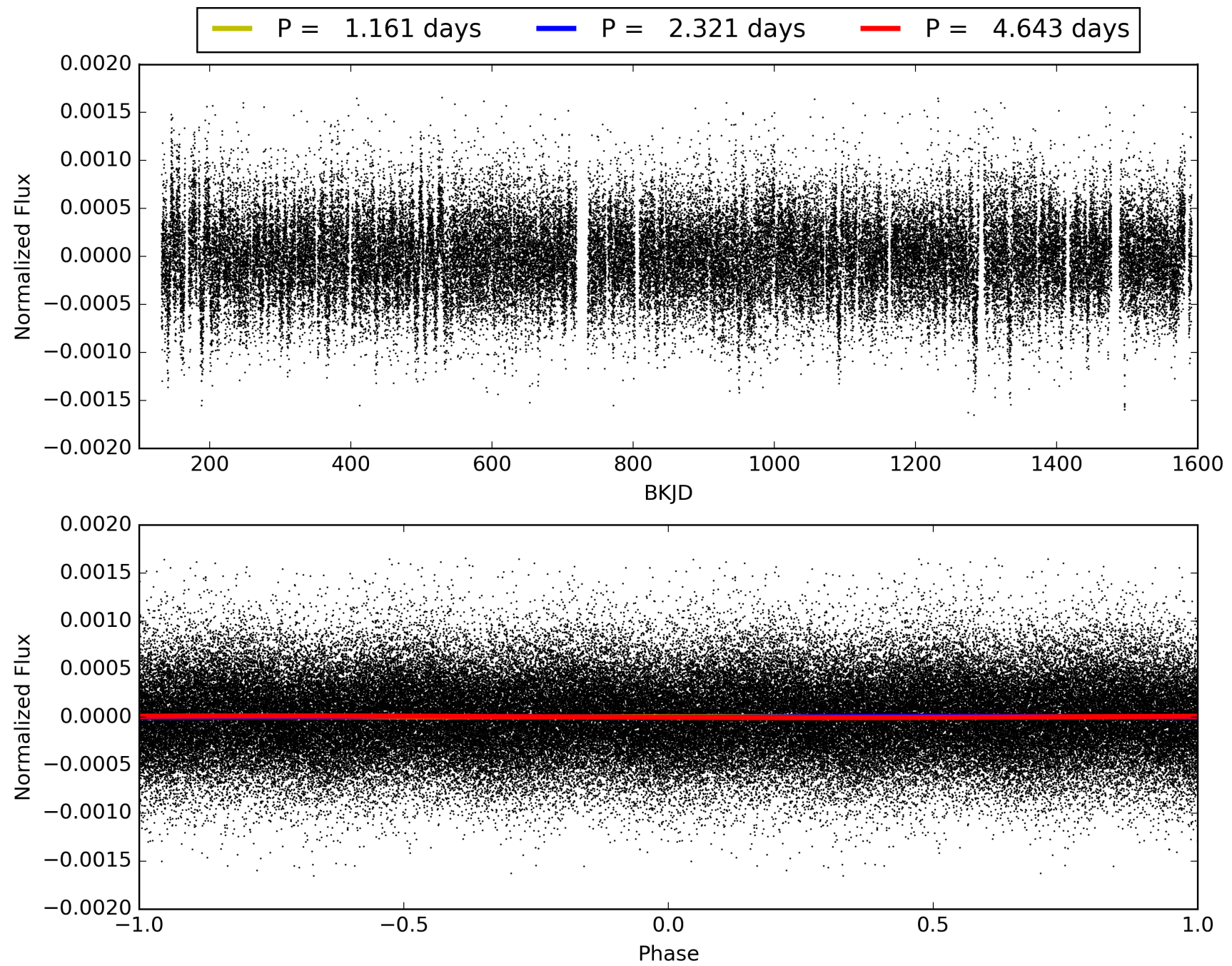


# TCE 007381977-01, PDC Light Curves





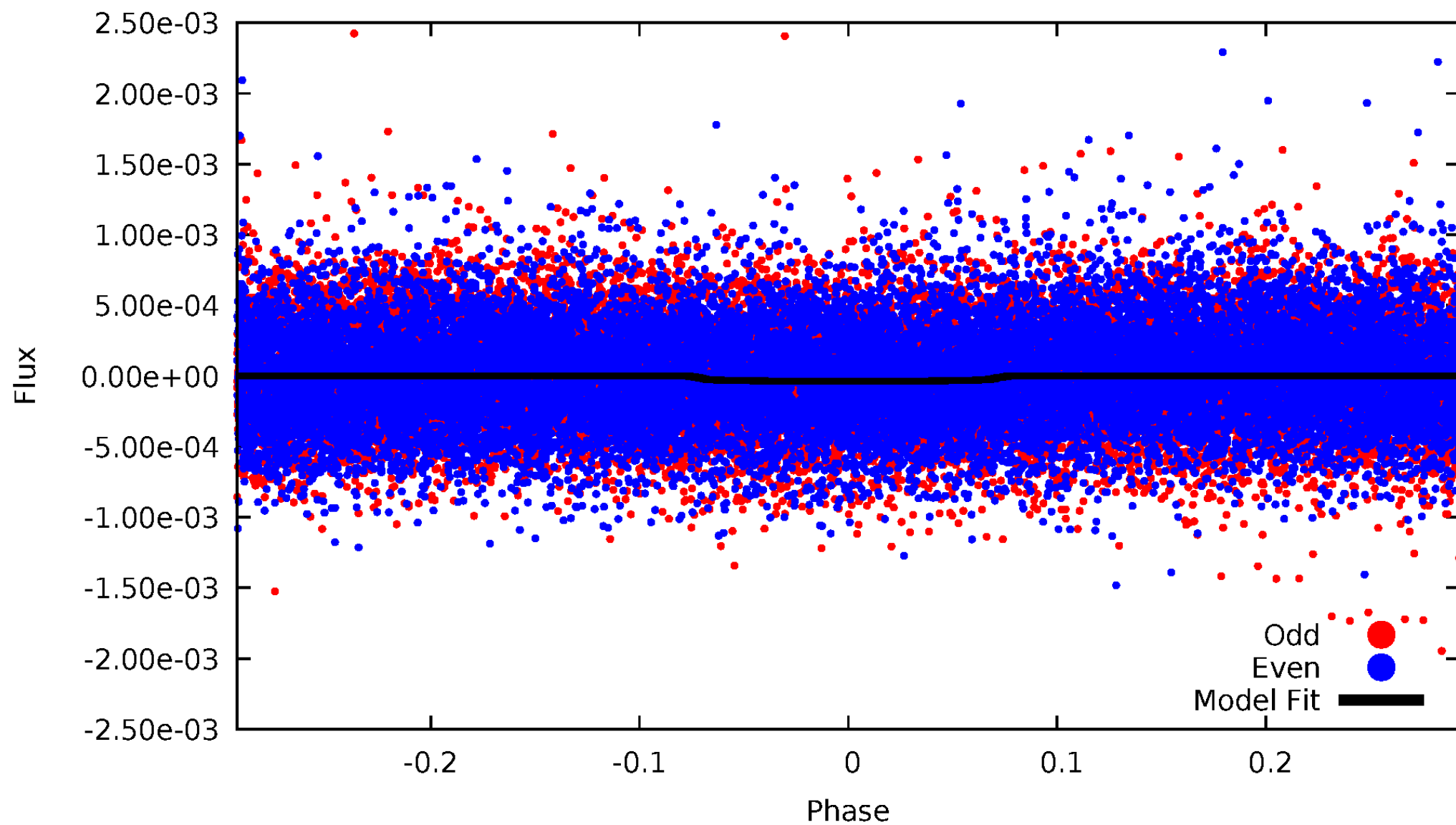
TCE 007381977-01





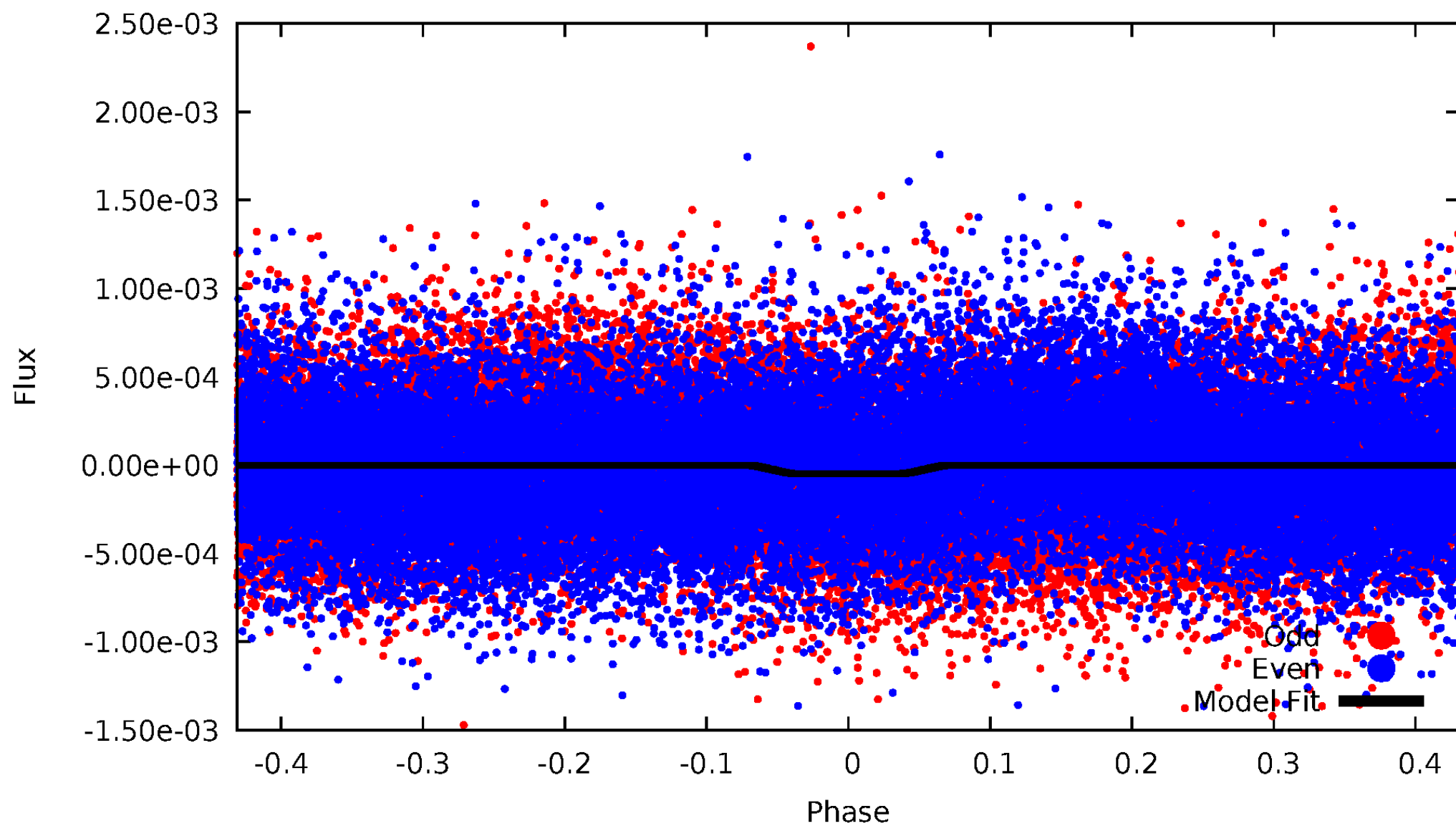
# DV Odd/Even

TCE 007381977-01



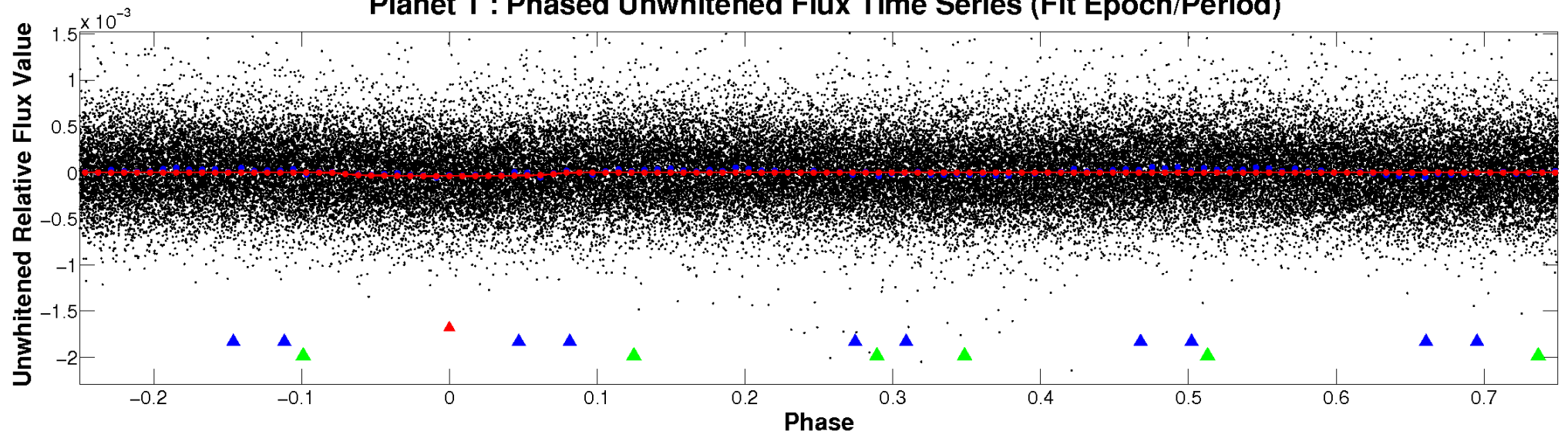
# ALT Odd/Even

TCE 007381977-01

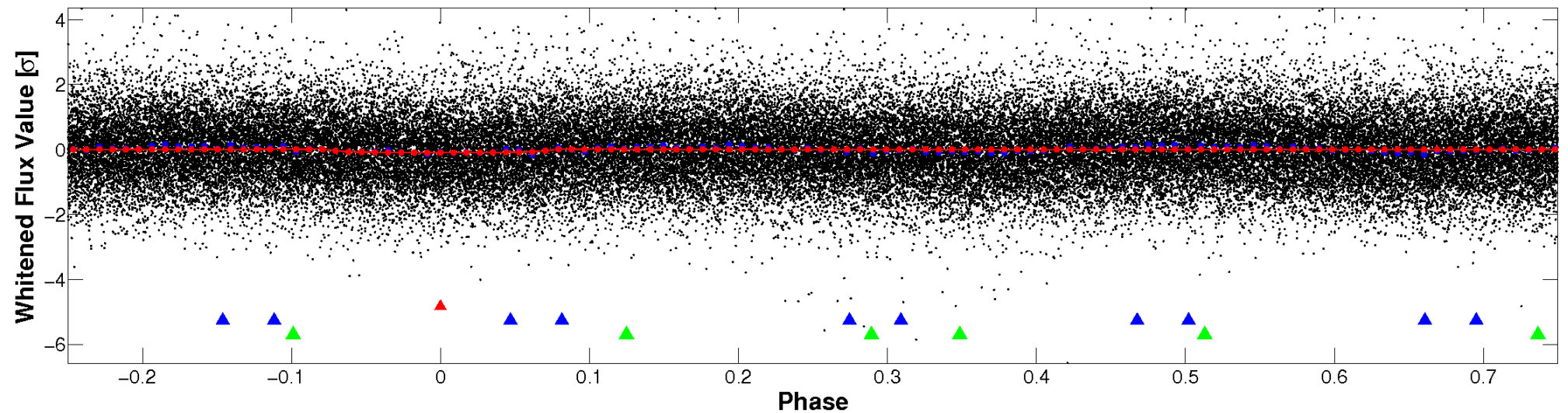


# Non-Whitened Vs. Whitened Light Curve

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



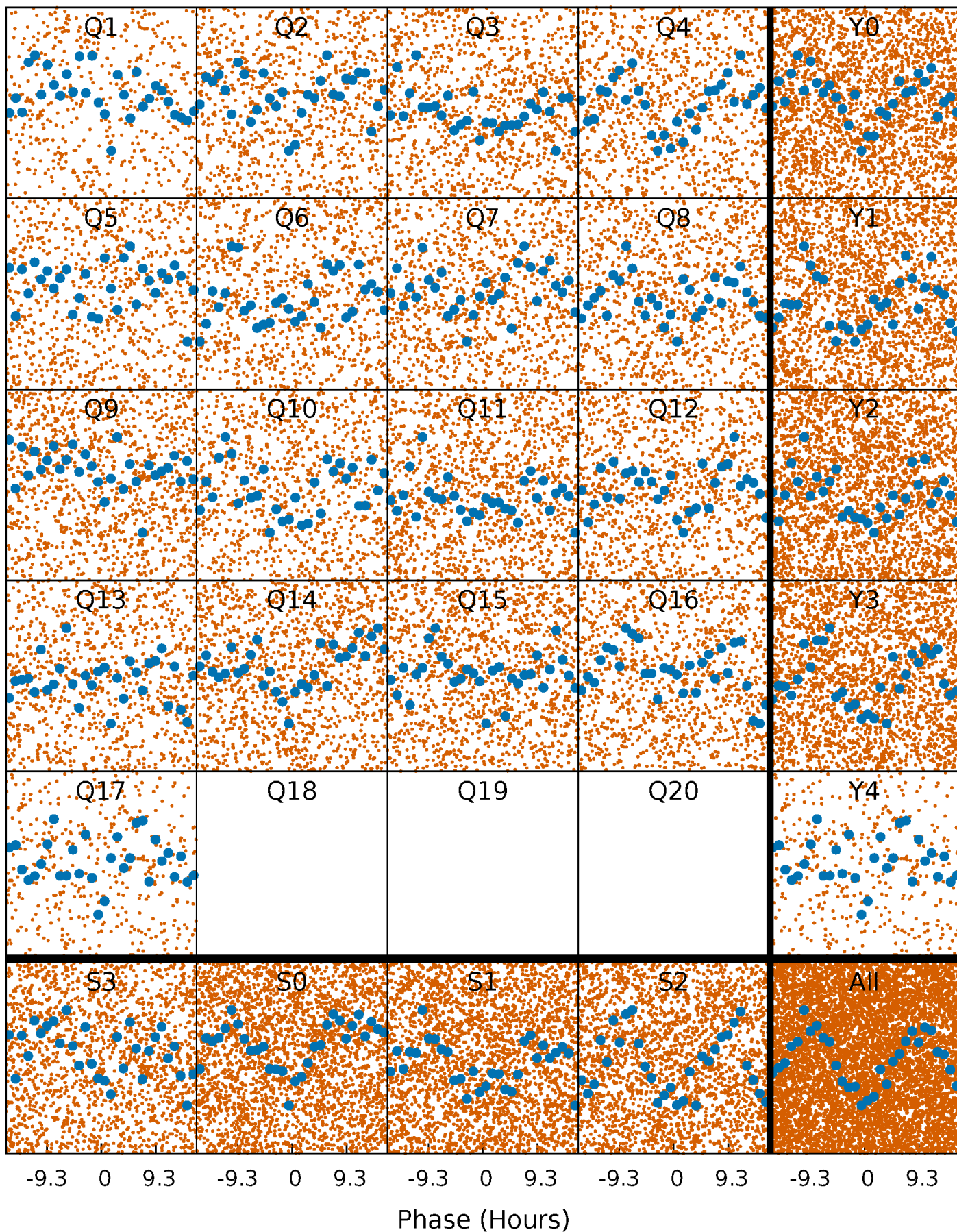
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





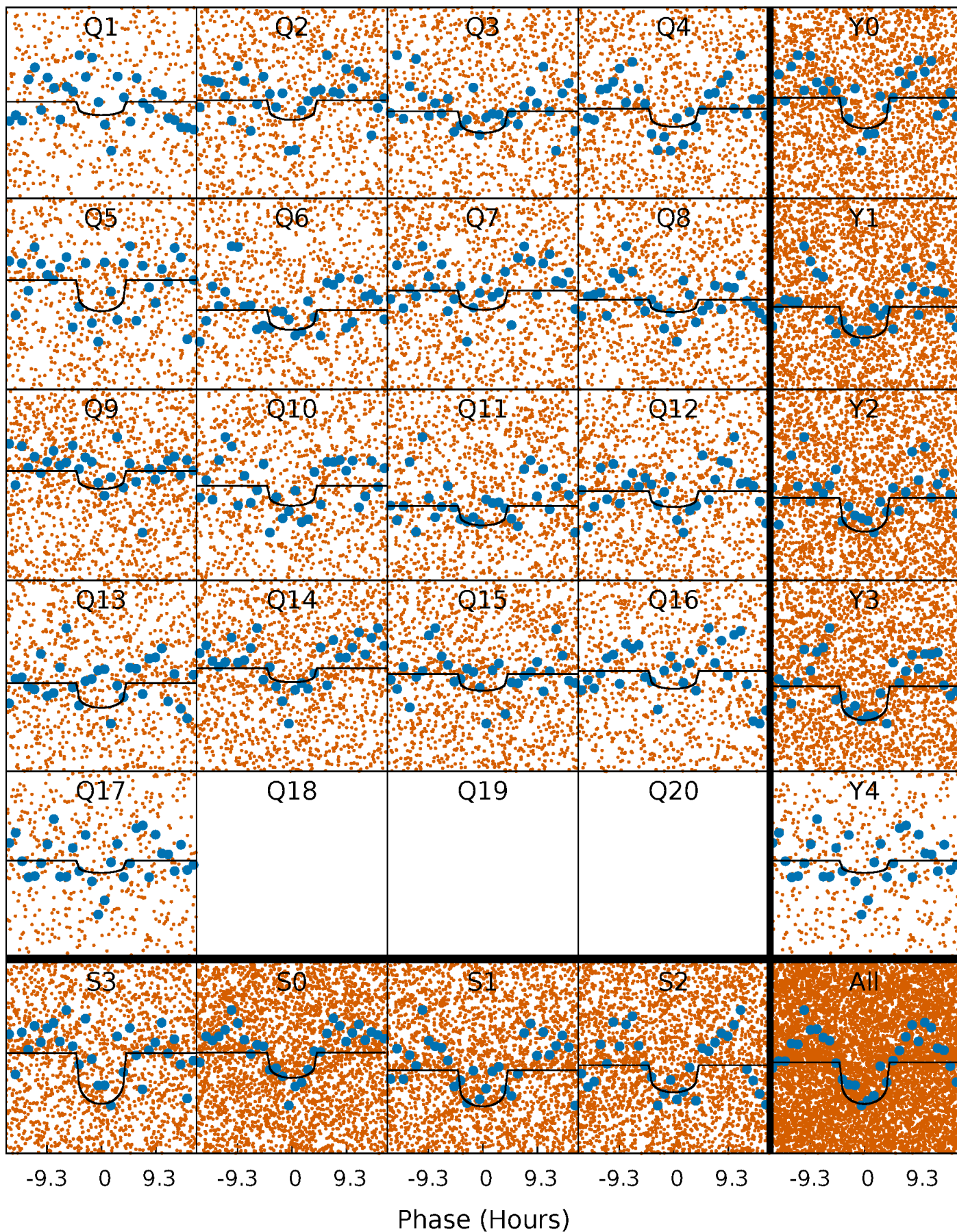
# PDC Quarter-Phased Transit Curves

TCE 007381977-01 P= 2.321422 Days  $T_0=132.730742$  (BKJD)



# DV Quarter-Phased Transit Curves

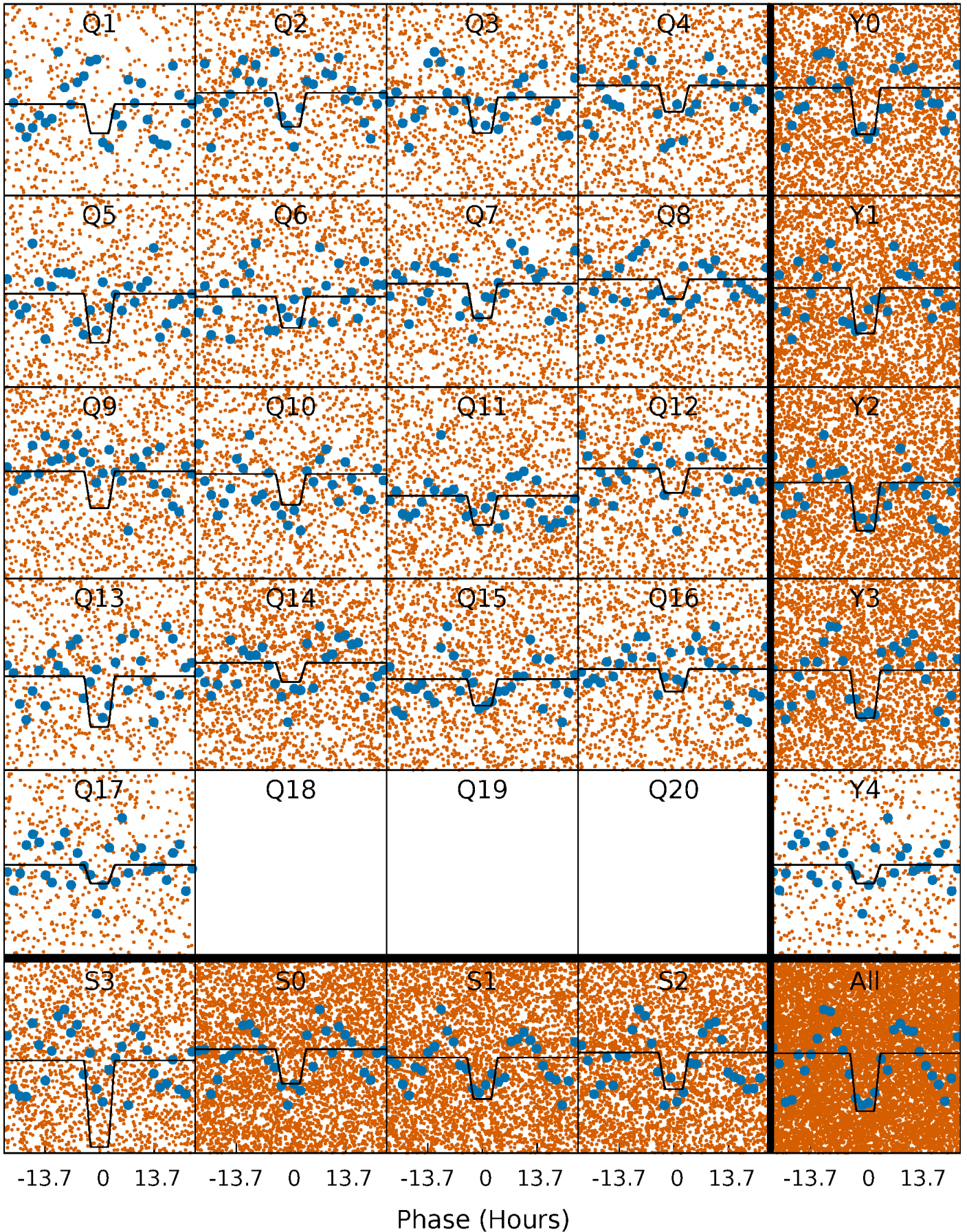
TCE 007381977-01 P= 2.321422 Days  $T_0=132.730742$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 007381977-01 P= 2.321512 Days  $T_0=132.704908$  (BKJD)

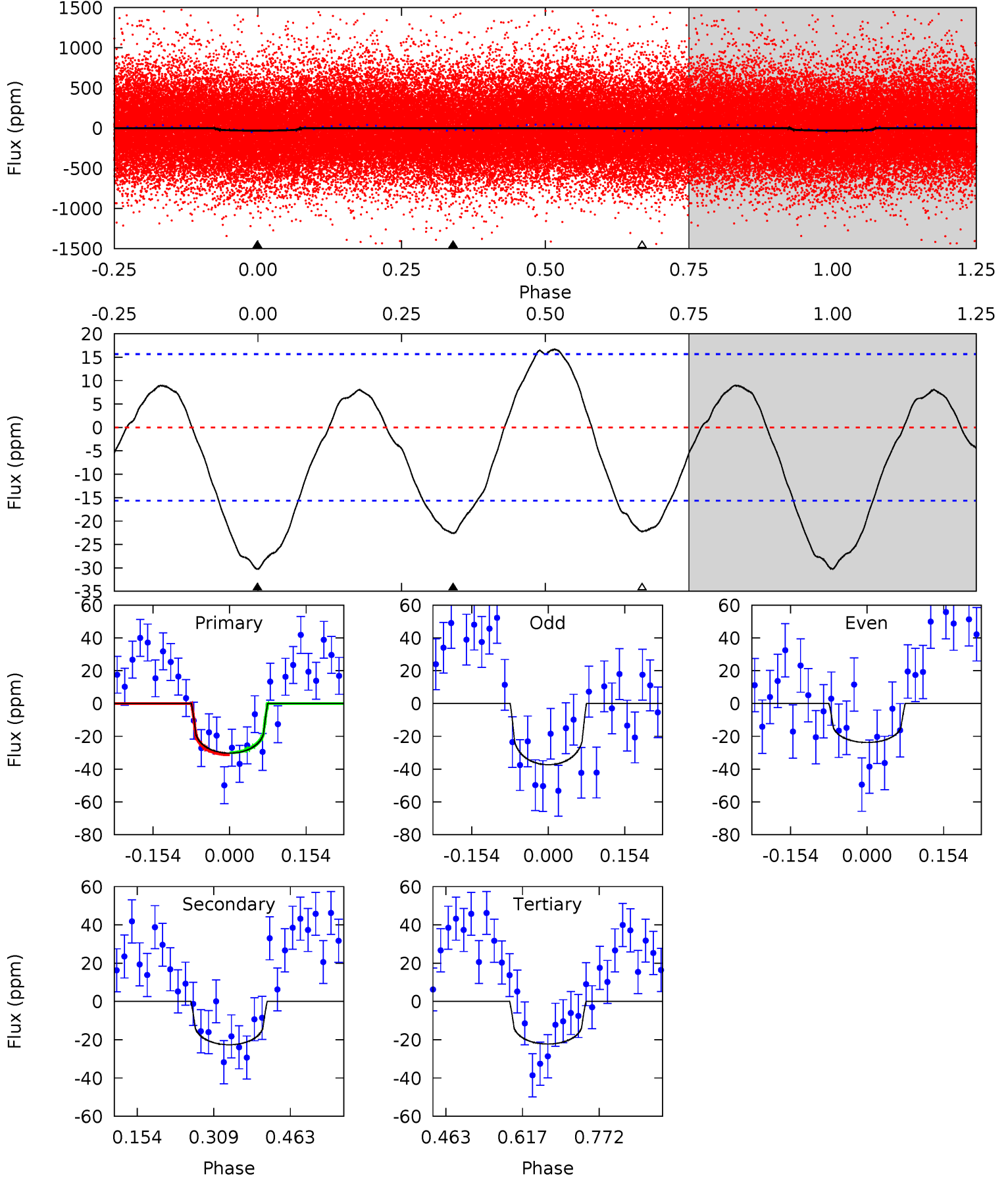




# DV Model-Shift Uniqueness Test

007381977-01, P = 2.321422 Days, E = 130.409320 Days

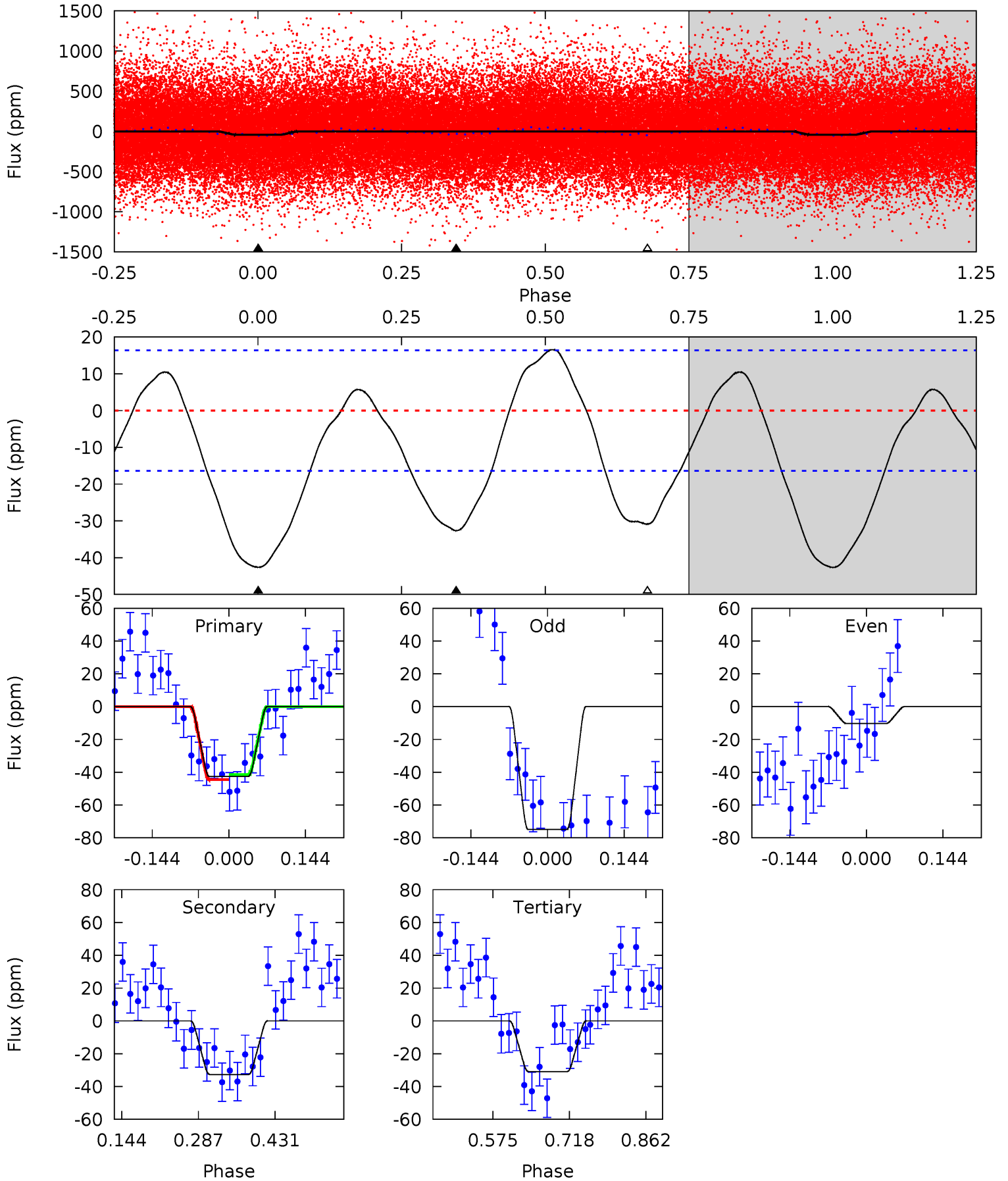
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.65	6.46	6.35	0	4.47	1.42	3.64	2.29	8.65	0.11	6.46	1.95	0.95	0.36	0.19



# Alt Model-Shift Uniqueness Test

007381977-01, P = 2.321512 Days, E = 130.383396 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	8.96	8.46	0	4.49	1.46	4.29	3.22	11.7	0.49	8.96	8.80	1.07	0.28	0.41



### Stellar Parameters For KIC 007381977

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5672^{+152}_{-169}$	$4.577^{+0.031}_{-0.168}$	$-0.300^{+0.300}_{-0.300}$	$0.797^{+0.206}_{-0.069}$	$0.887^{+0.088}_{-0.107}$	$2.463^{+0.413}_{-1.133}$
	+3%/-3%	+1%/-4%	+100%/-100%	+26%/-9%	+10%/-12%	+17%/-46%
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 007381977-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-23 \pm 3$	$0.60^{+0.45}_{-0.37}$	$1759^{+111}_{-73}$	$4878^{+3048}_{-939}$	$36^{+195}_{-24}$
Alt.	$-33 \pm 4$	$0.65^{+0.45}_{-0.35}$	$1763^{+99}_{-73}$	$5078^{+2470}_{-936}$	$44^{+166}_{-29}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = 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

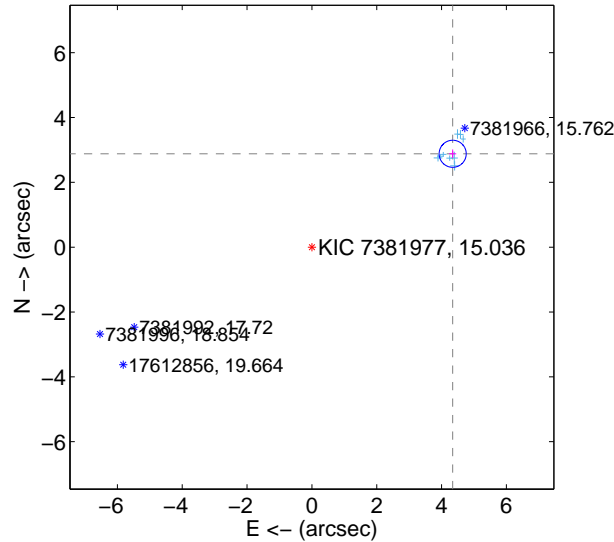
Supplemental centroid analysis for 007381977-01. Kepler magnitude: 15.04. Transit SNR 7.95

There are 9 quarters with good PRF difference image offsets

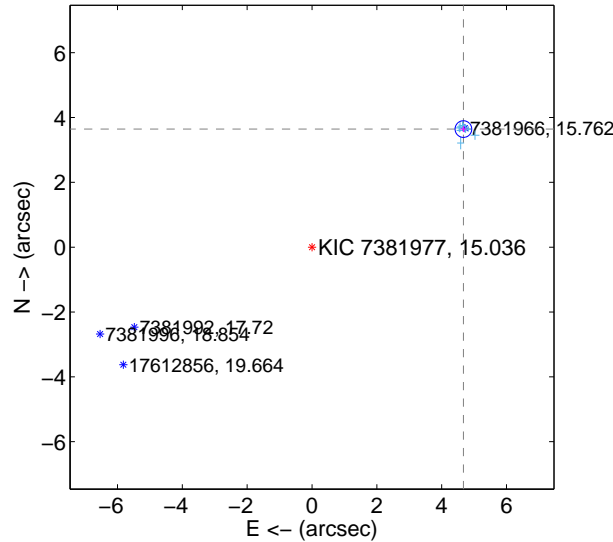
The direct PRF centroid is offset from the target star catalog position by about 1.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>5.213 \pm 0.139</math></b>	<b>37.45</b>	$-4.344 \pm 0.110$	$2.882 \pm 0.133$
PRF-fit source offset from KIC position	<b><math>5.925 \pm 0.086</math></b>	<b>69.16</b>	$-4.672 \pm 0.086$	$3.644 \pm 0.093$
photometric centroid source offset	$2.62 \pm 1.20$	2.18	$-2.19 \pm 1.20$	$-1.44 \pm 1.20$

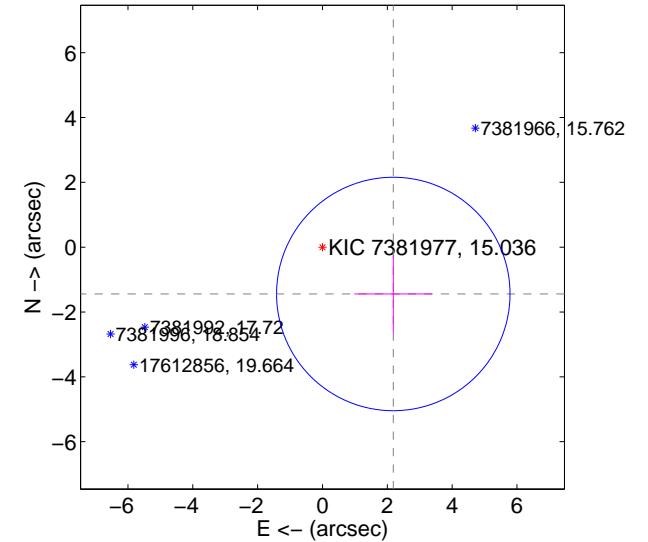
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

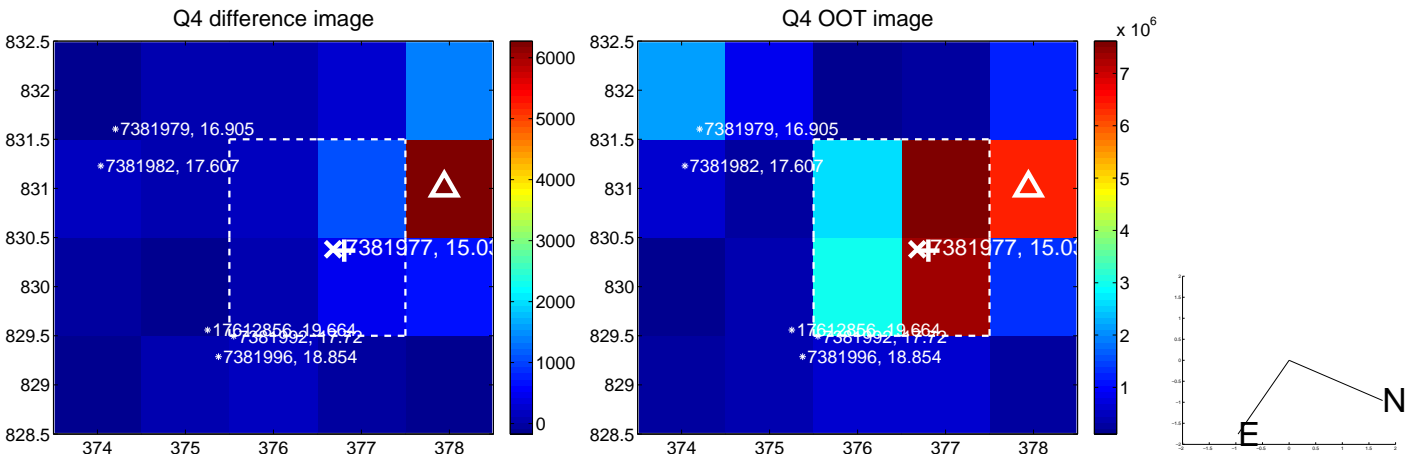
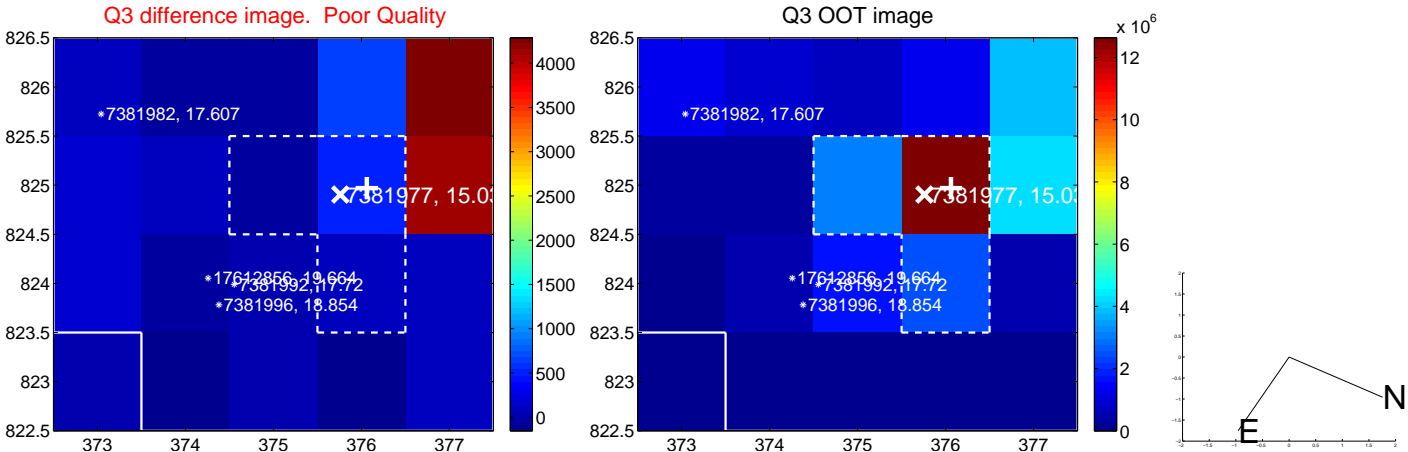
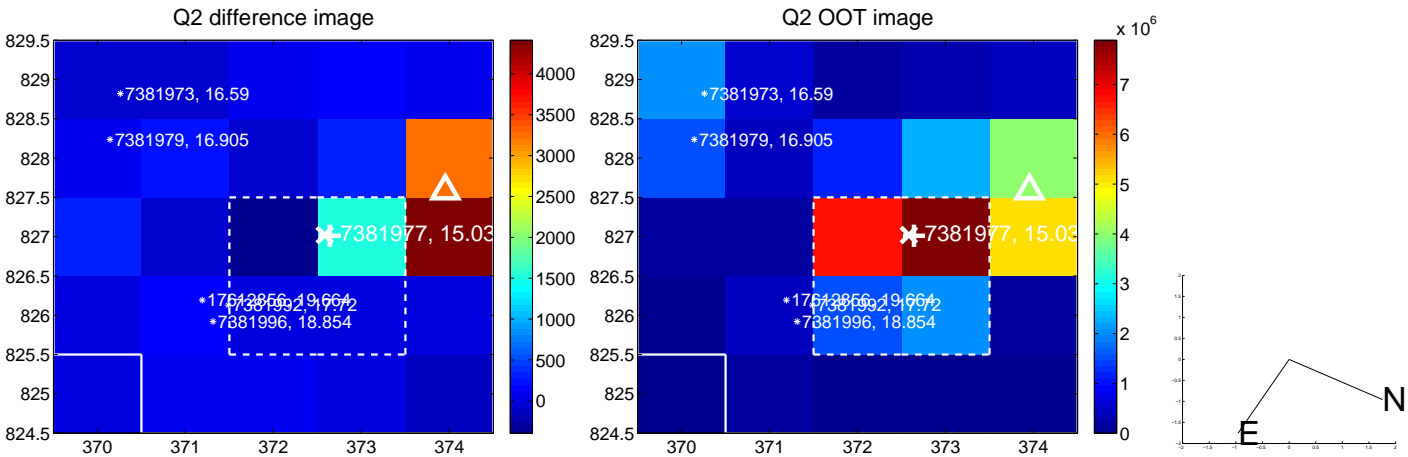
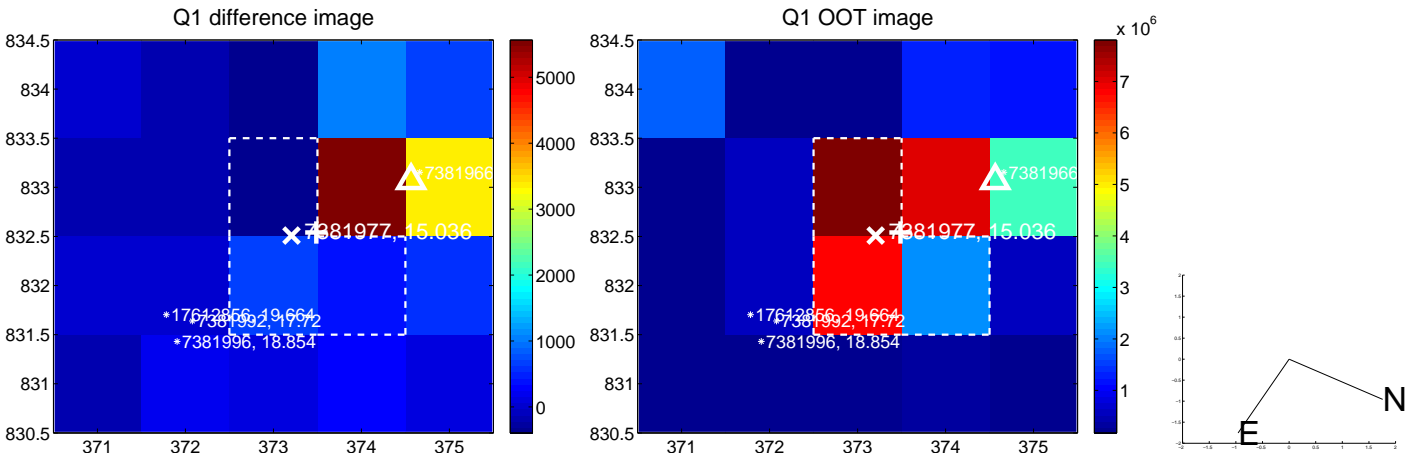


offset from photometric centroids

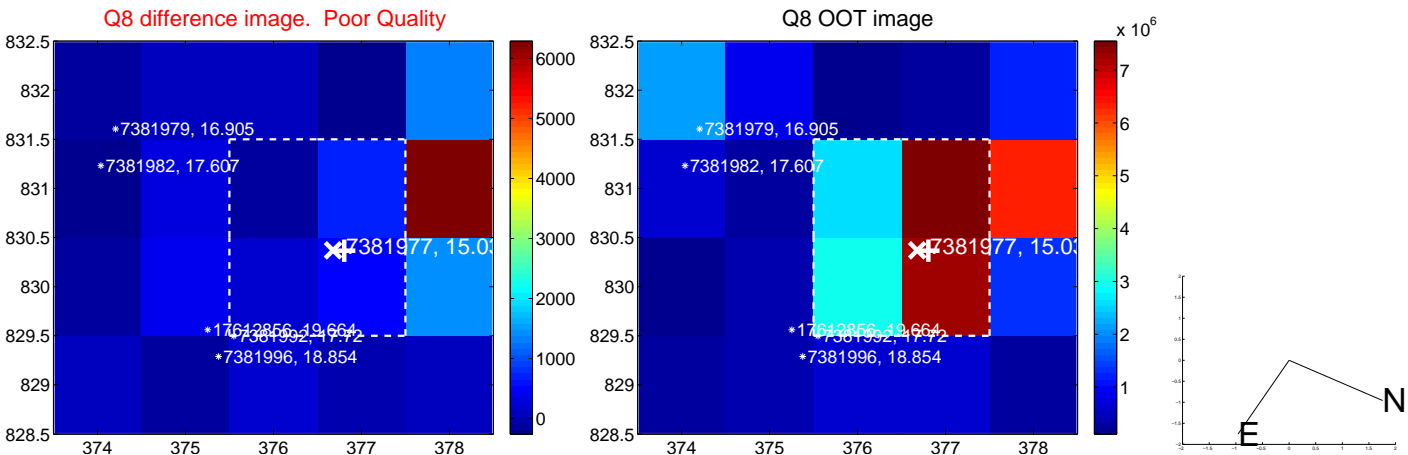
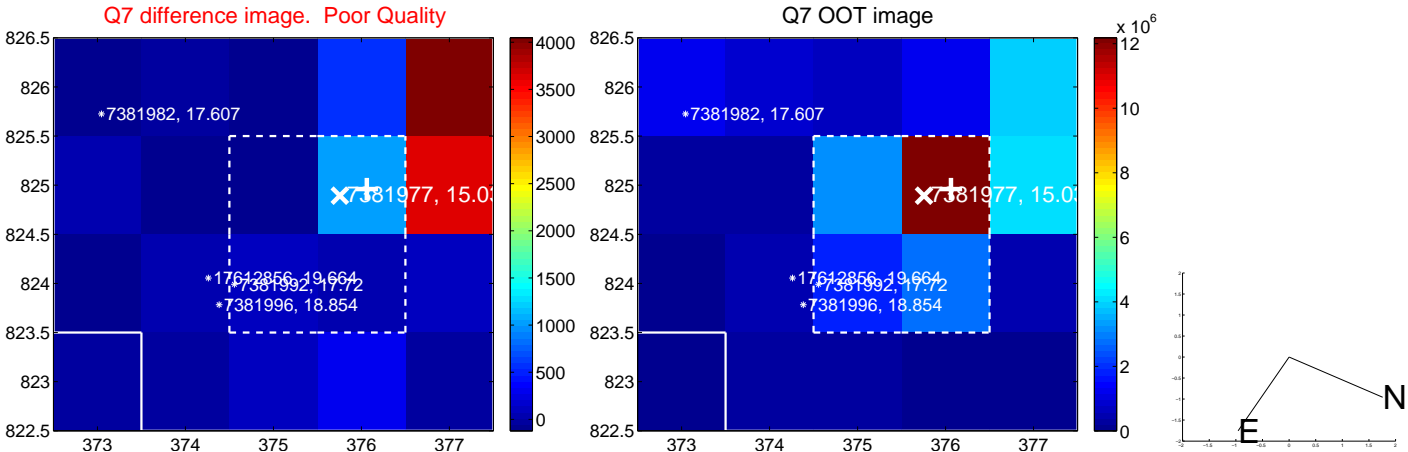
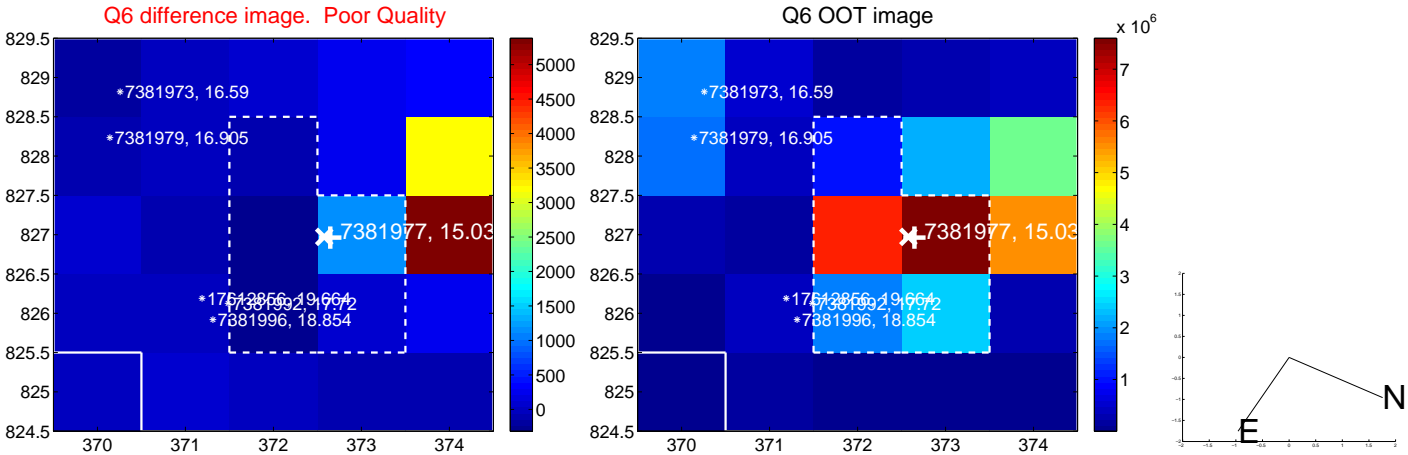
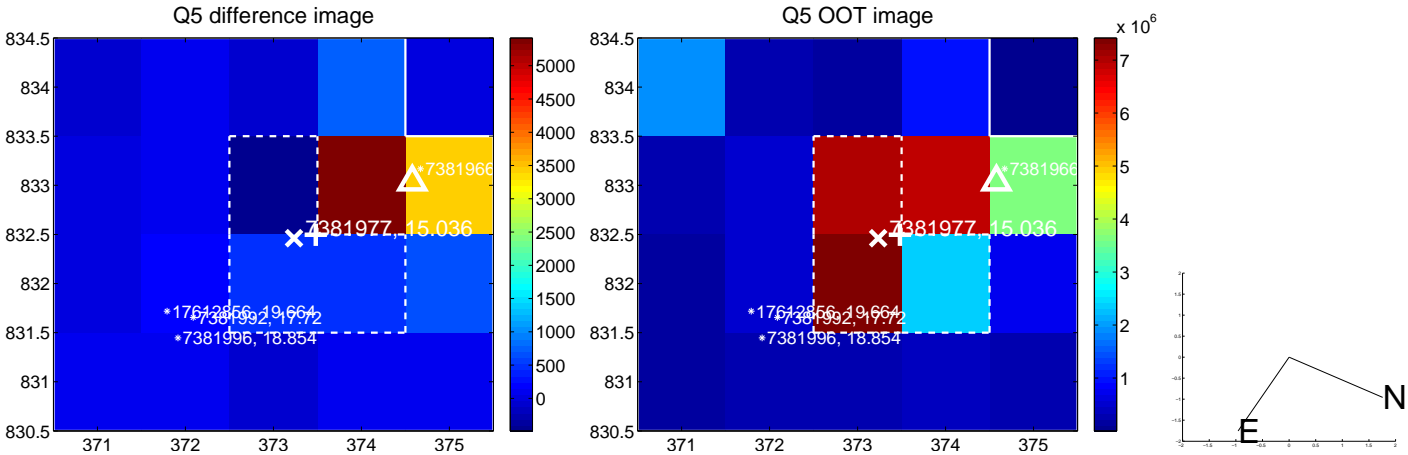


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

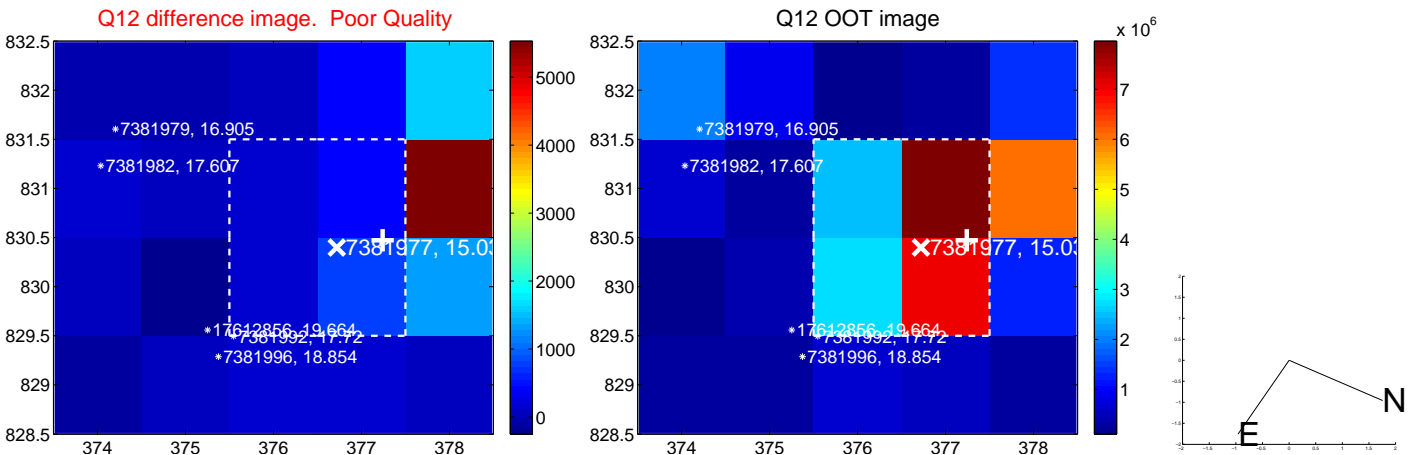
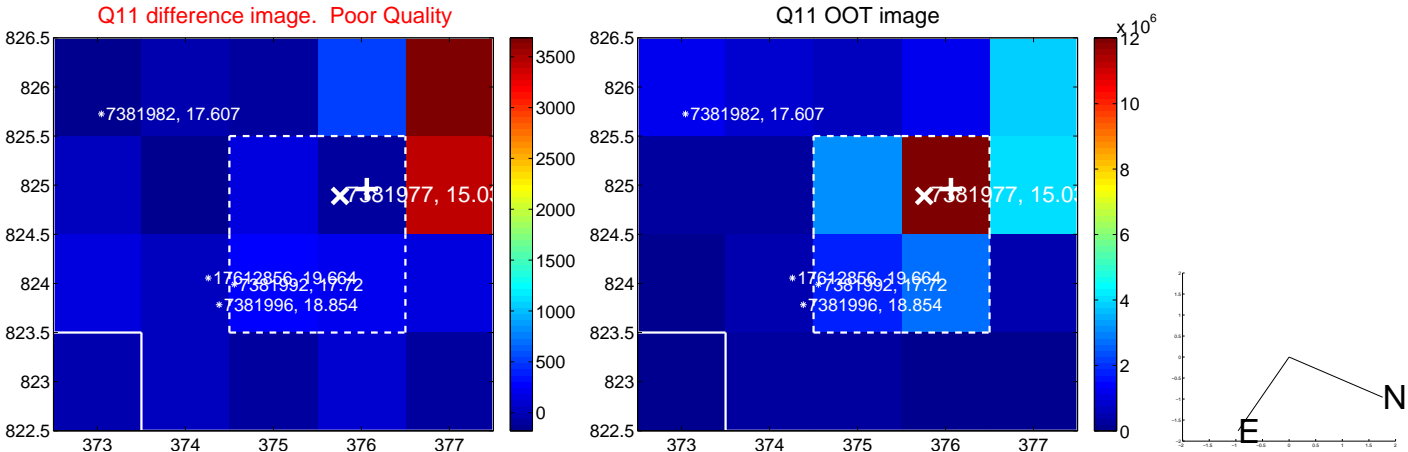
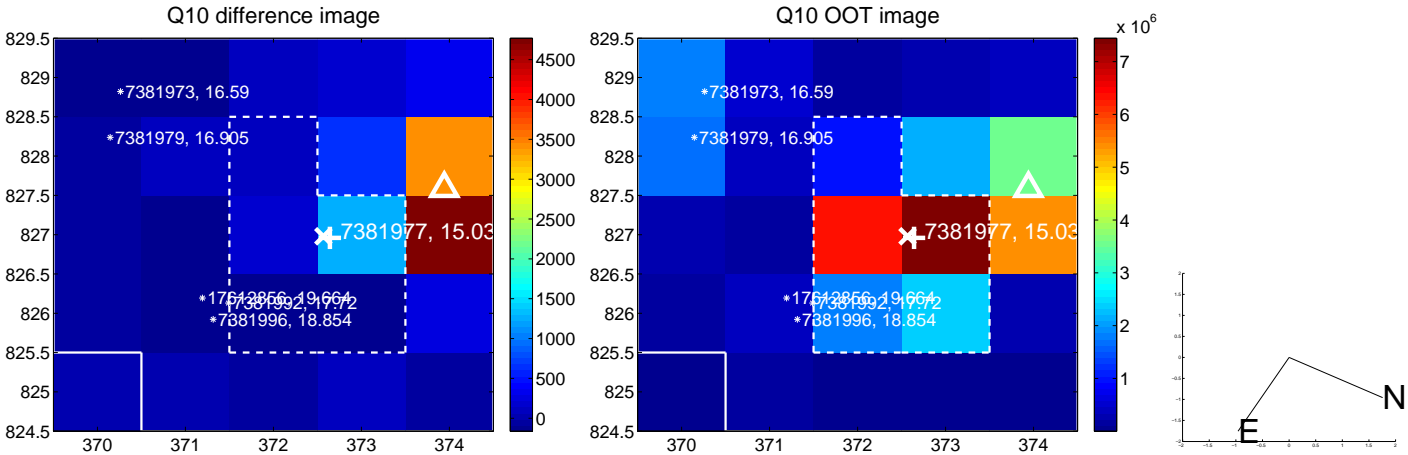
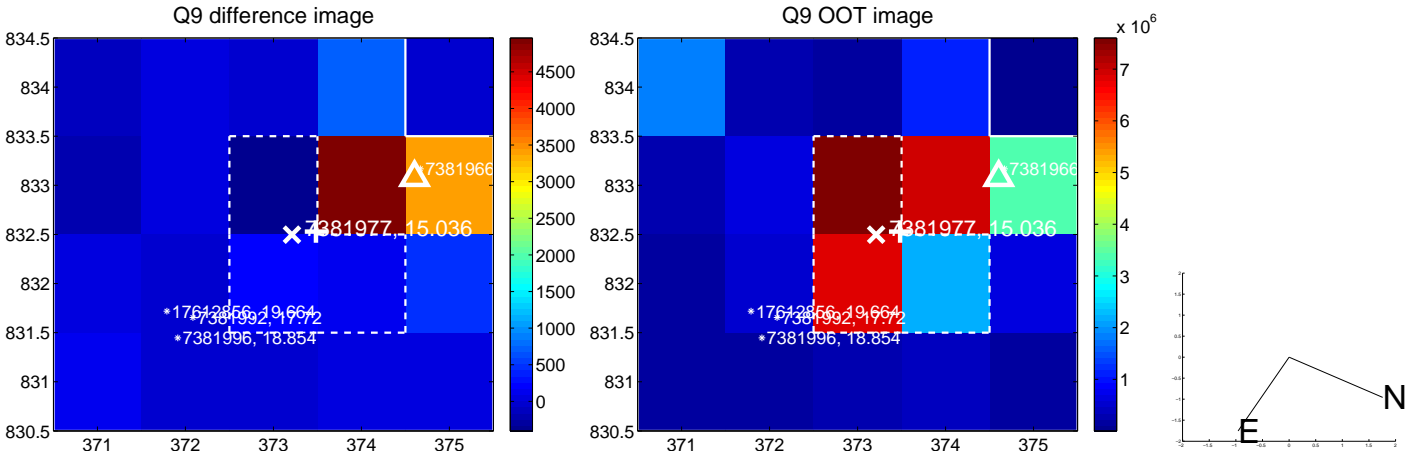


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

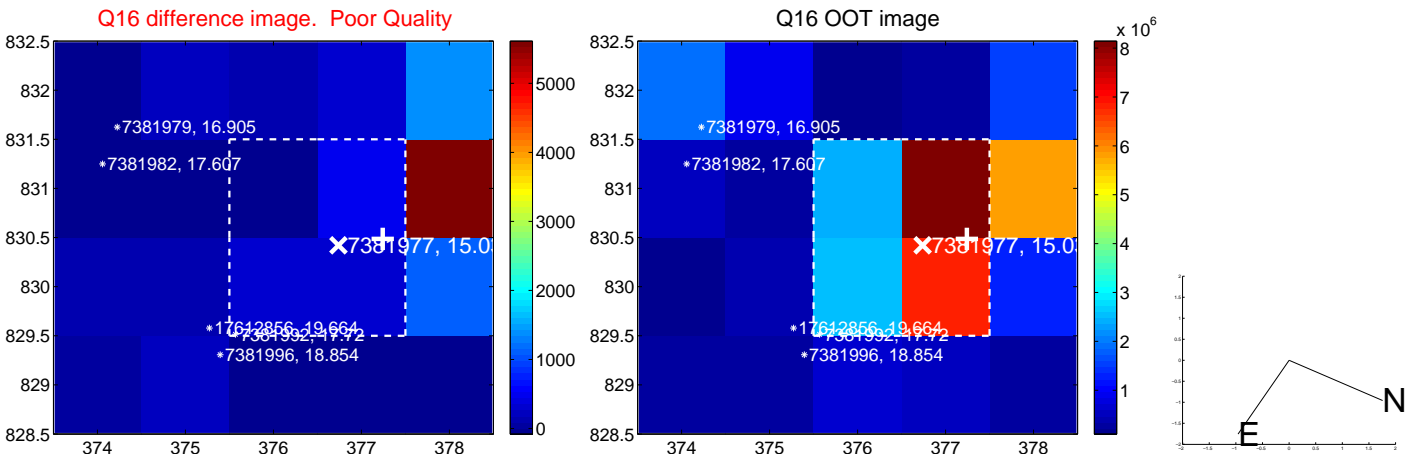
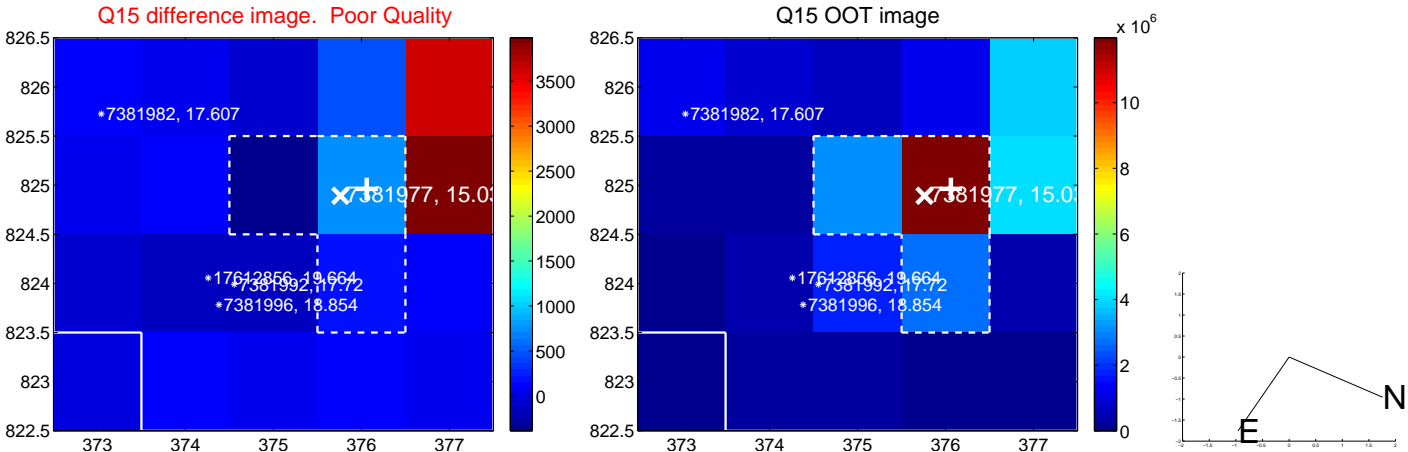
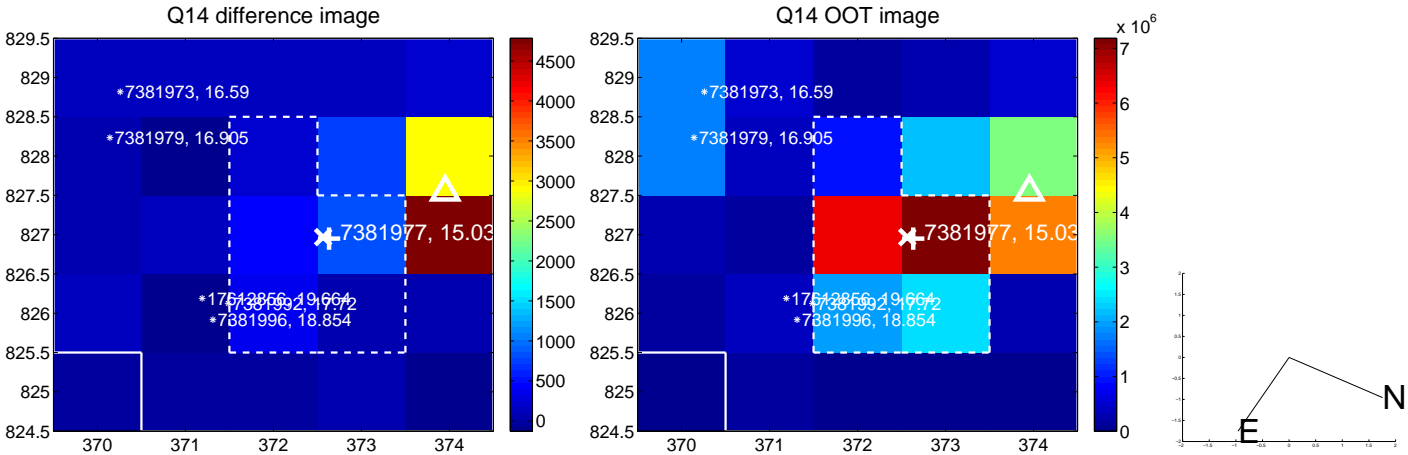
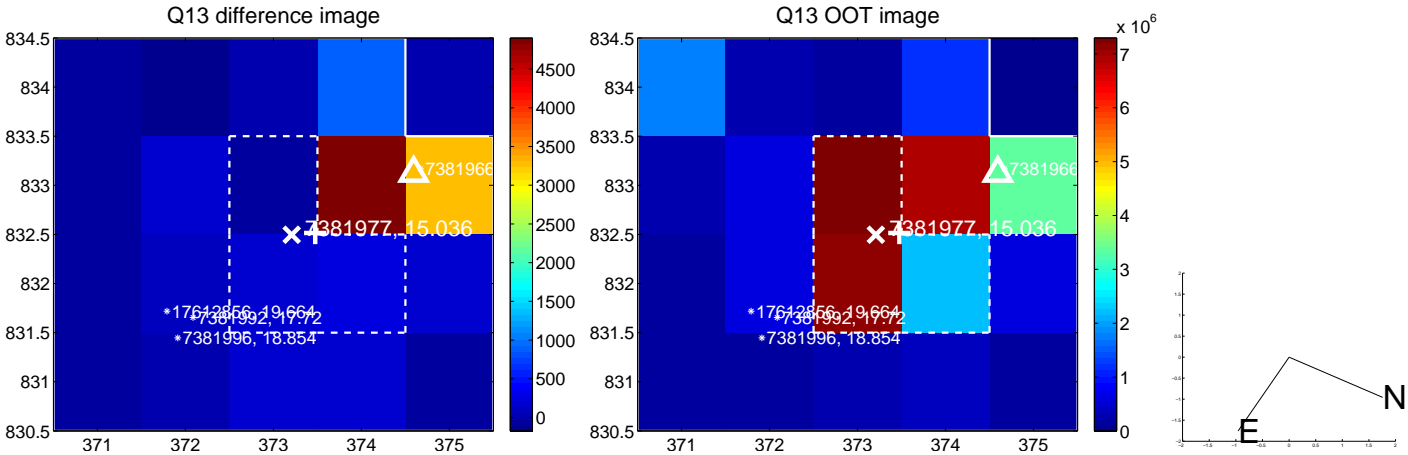




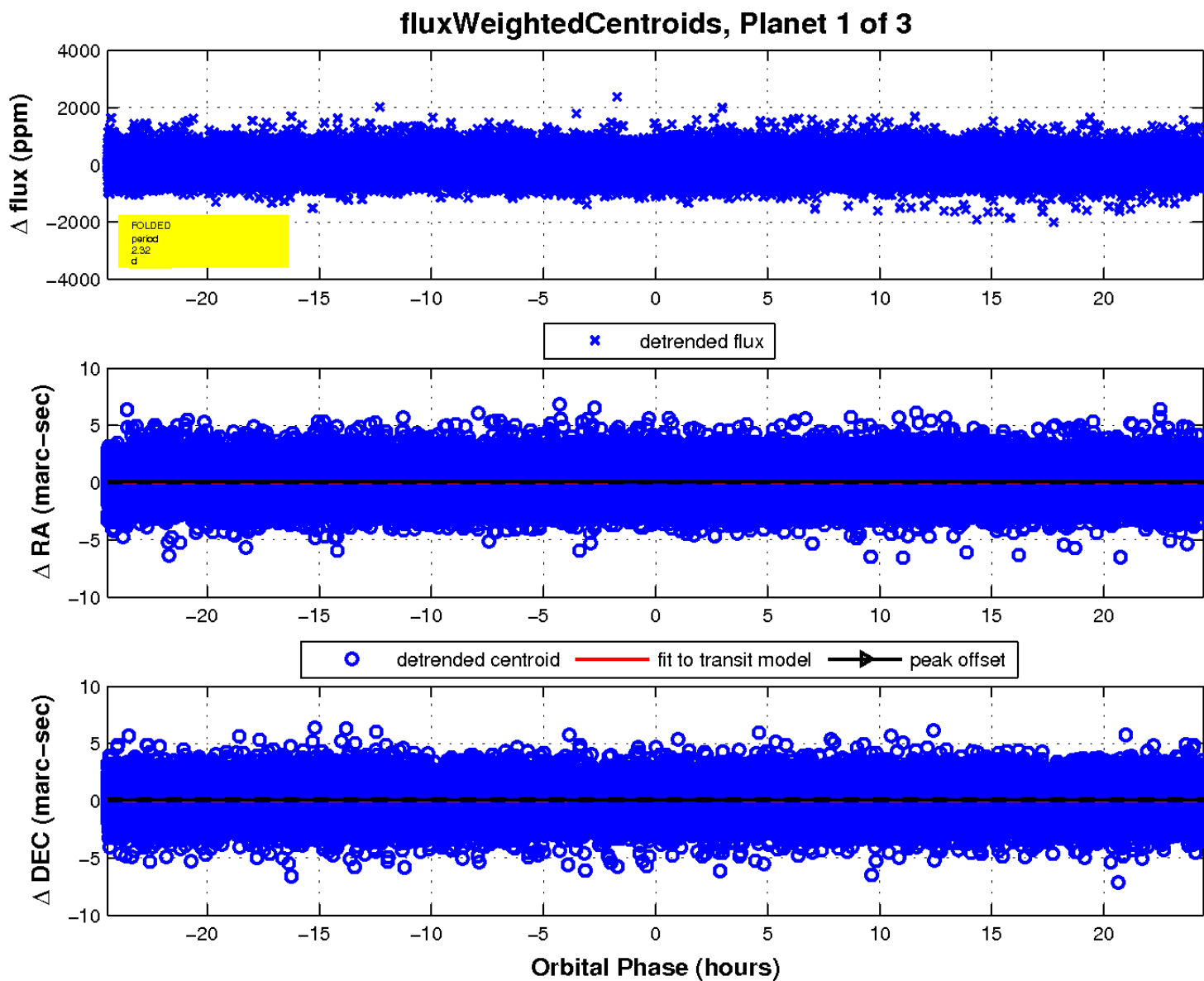
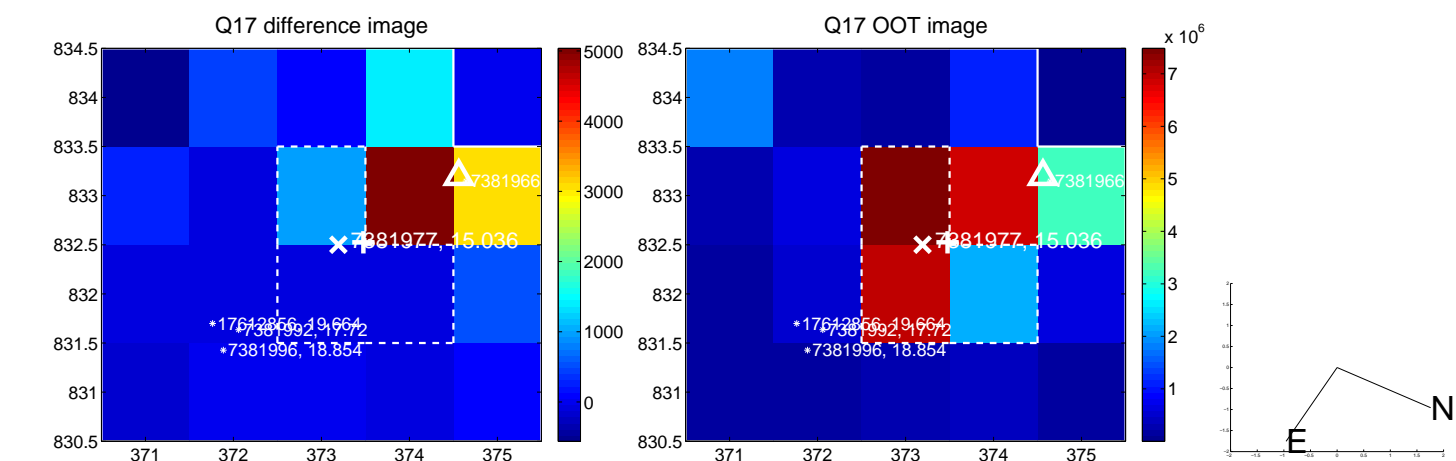
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

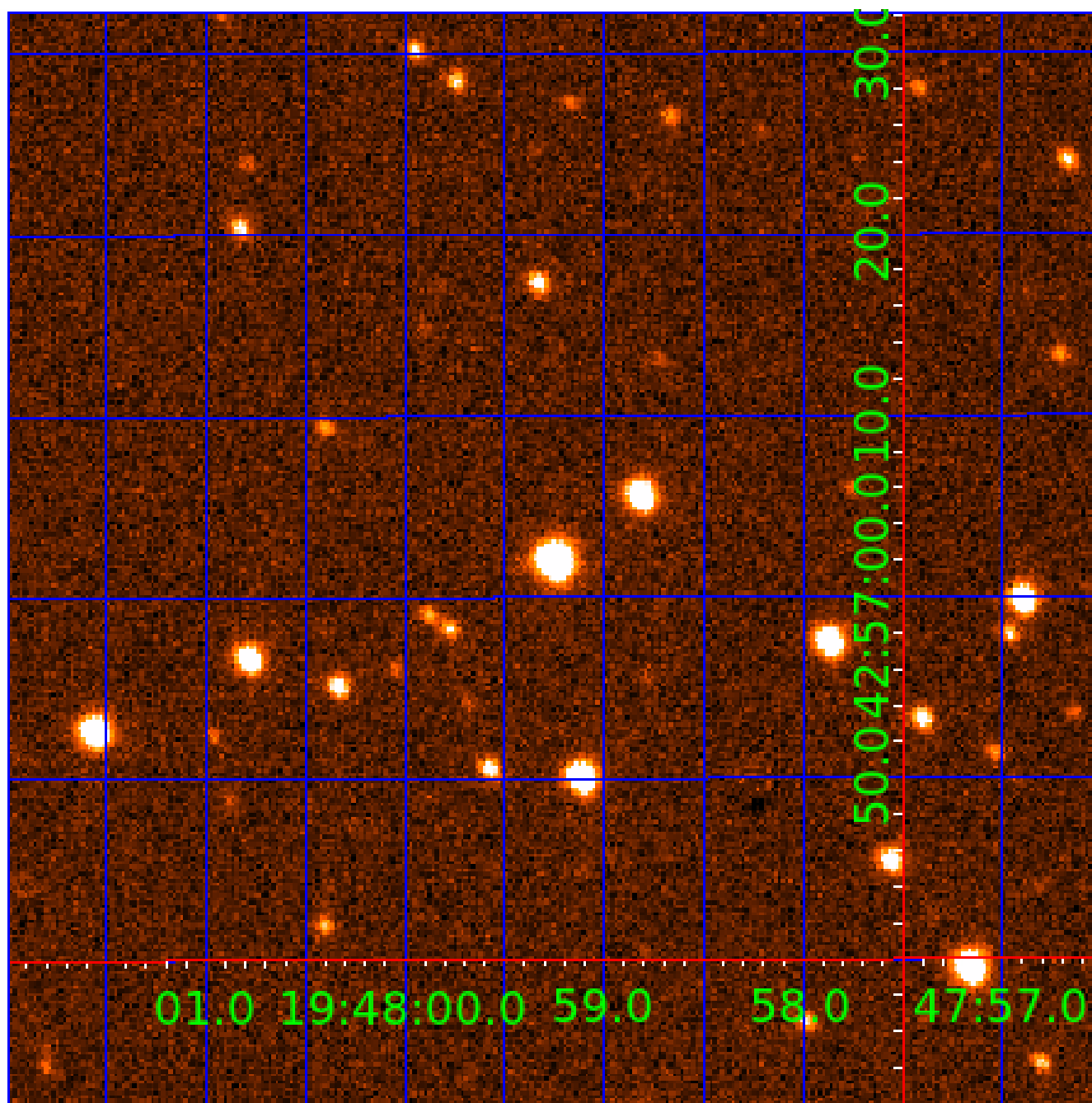


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007381977

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007381977-01	OBS	No	2.321422	132.730742	37.9	8.151	7.6	8.0	0.80	5672	0.50	546.77
007381977-02	OBS	No	150.444142	142.125480	290.6	12.177	21.3	6.0	0.80	5672	1.50	2.10
007381977-03	OBS	No	258.578855	279.789495	348.1	16.233	10.0	8.1	0.80	5672	1.57	1.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007381977-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
007381977-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_UNCERTAIN—HALO_GHOST
007381977-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

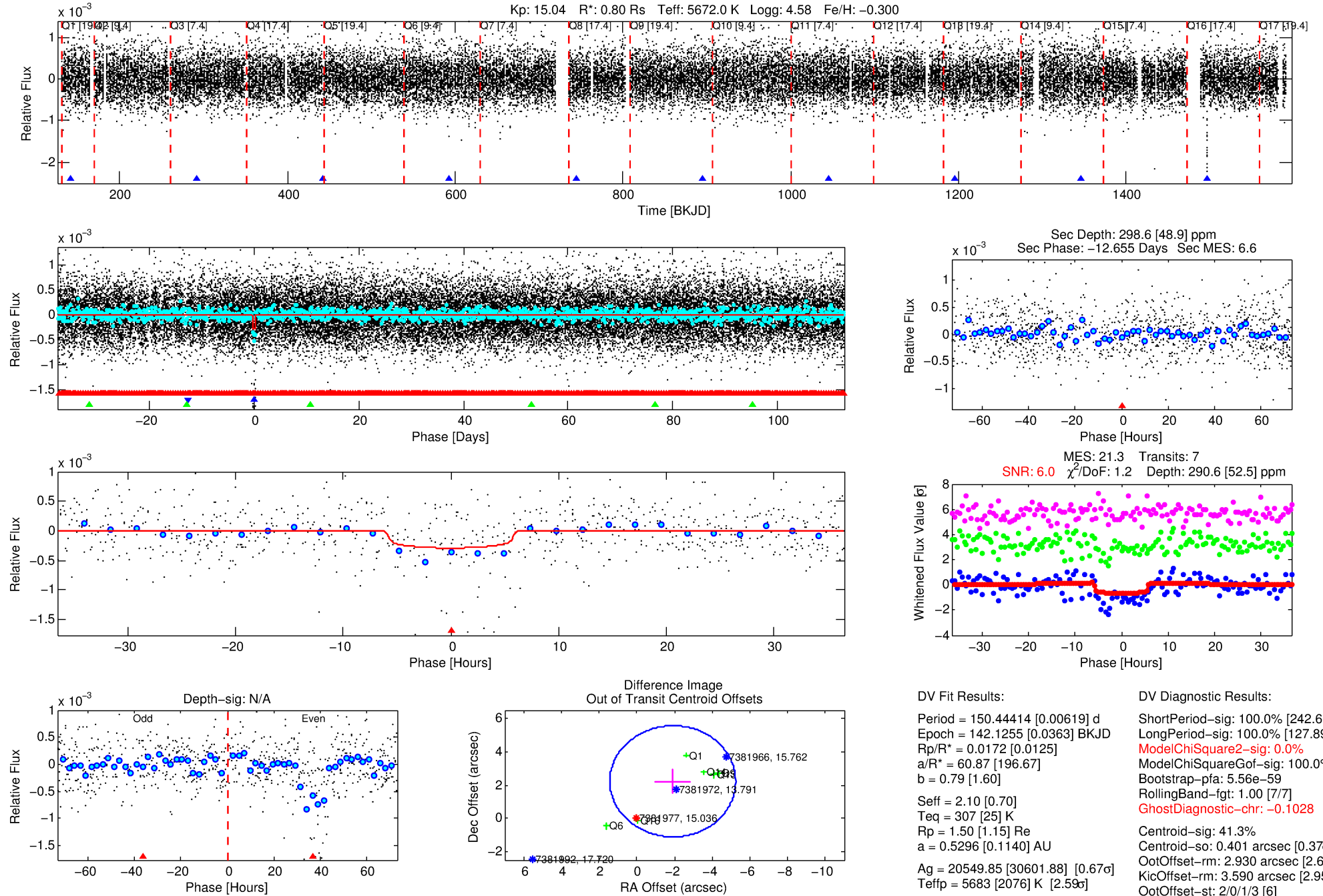
## Ephemeris Match Information For 007381977-02

No Significant Match Found



# DV One-Page Summary

KIC: 7381977 Candidate: 2 of 3 Period: 150.444 d



## DV Fit Results:

Period = 150.44414 [0.00619] d  
Epoch = 142.1255 [0.0363] BKJD  
Rp/R\* = 0.0172 [0.0125]  
a/R\* = 60.87 [196.67]  
b = 0.79 [1.60]  
Seff = 2.10 [0.70]  
Teff = 307 [25] K  
Rp = 1.50 [1.15] Re  
a = 0.5296 [0.1140] AU  
Ag = 20549.85 [30601.88] [0.67] $\sigma$   
Teffp = 5683 [2076] K [2.59] $\sigma$

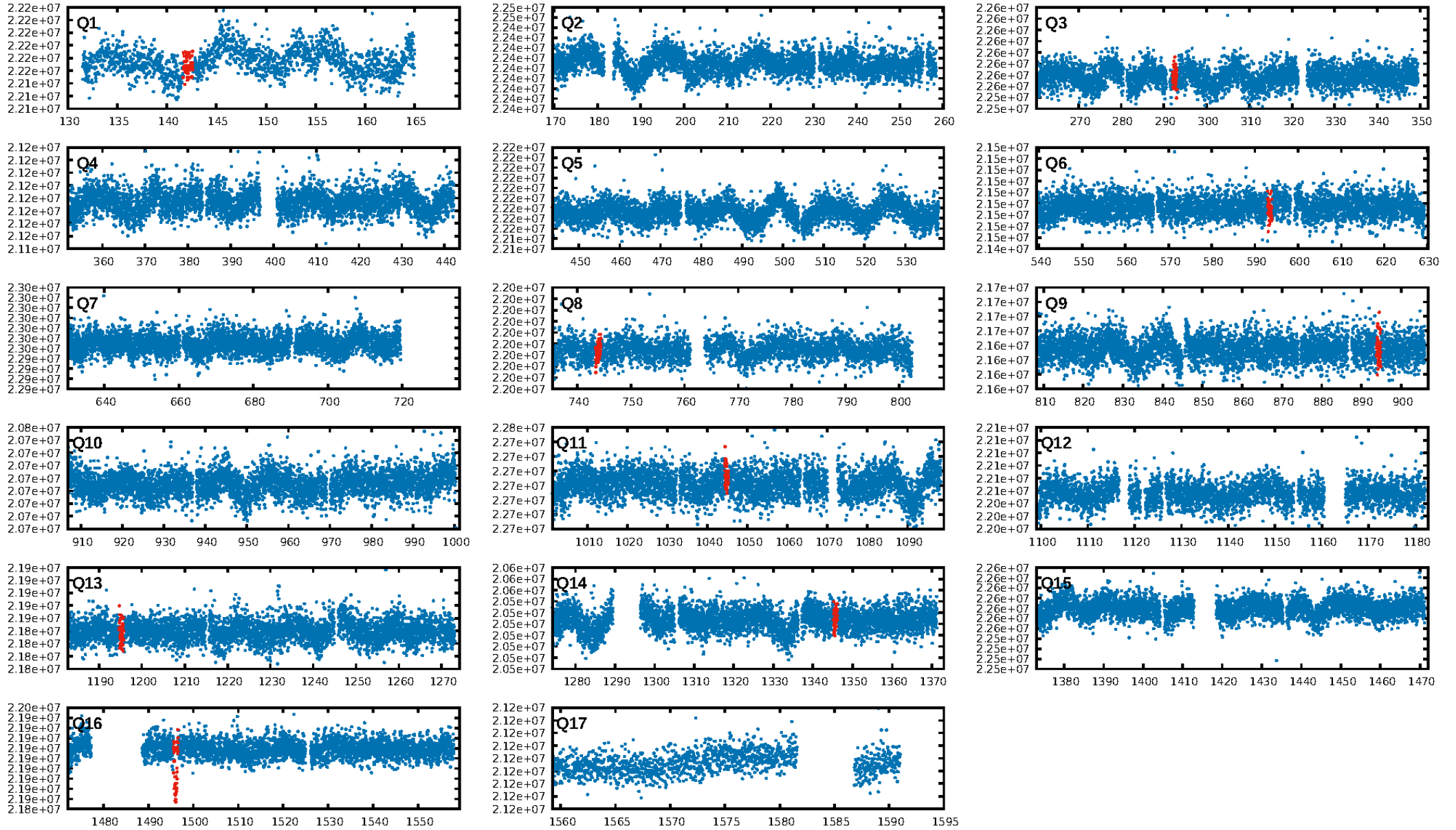
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [242.60 $\sigma$ ]  
LongPeriod-sig: 100.0% [127.89 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.56e-59  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: -0.1028  
Centroid-sig: 41.3%  
Centroid-so: 0.401 arcsec [0.37 $\sigma$ ]  
OotOffset-rm: 2.930 arcsec [2.63 $\sigma$ ]  
KicOffset-rm: 3.590 arcsec [2.95 $\sigma$ ]  
OotOffset-st: 2/0/1/3 [6]  
KicOffset-st: 2/0/1/3 [6]  
DiffImageQuality-fgm: 0.50 [3/6]  
DiffImageOverlap-fno: 0.25 [2/8]

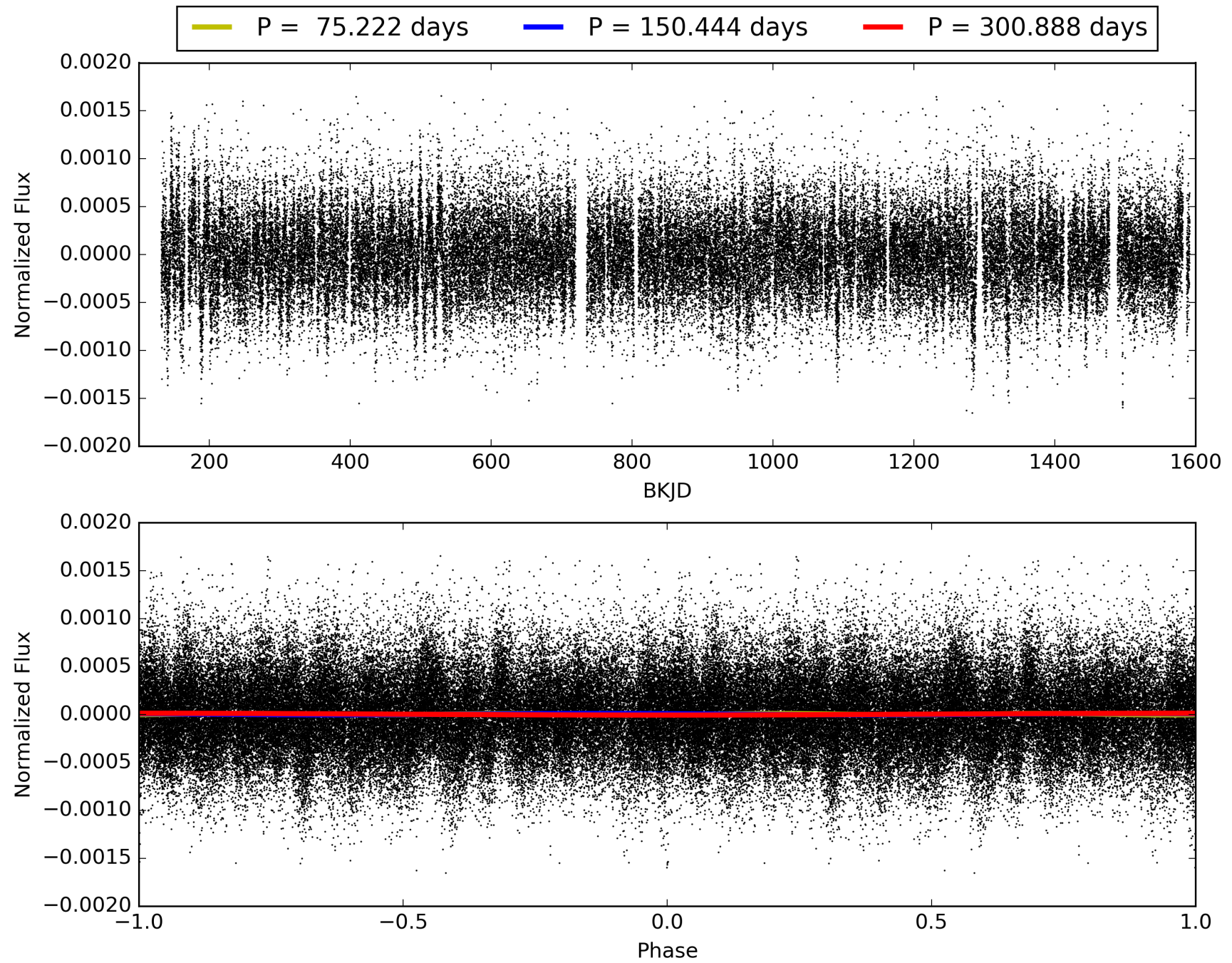
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:14:27 Z

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

# TCE 007381977-02, PDC Light Curves

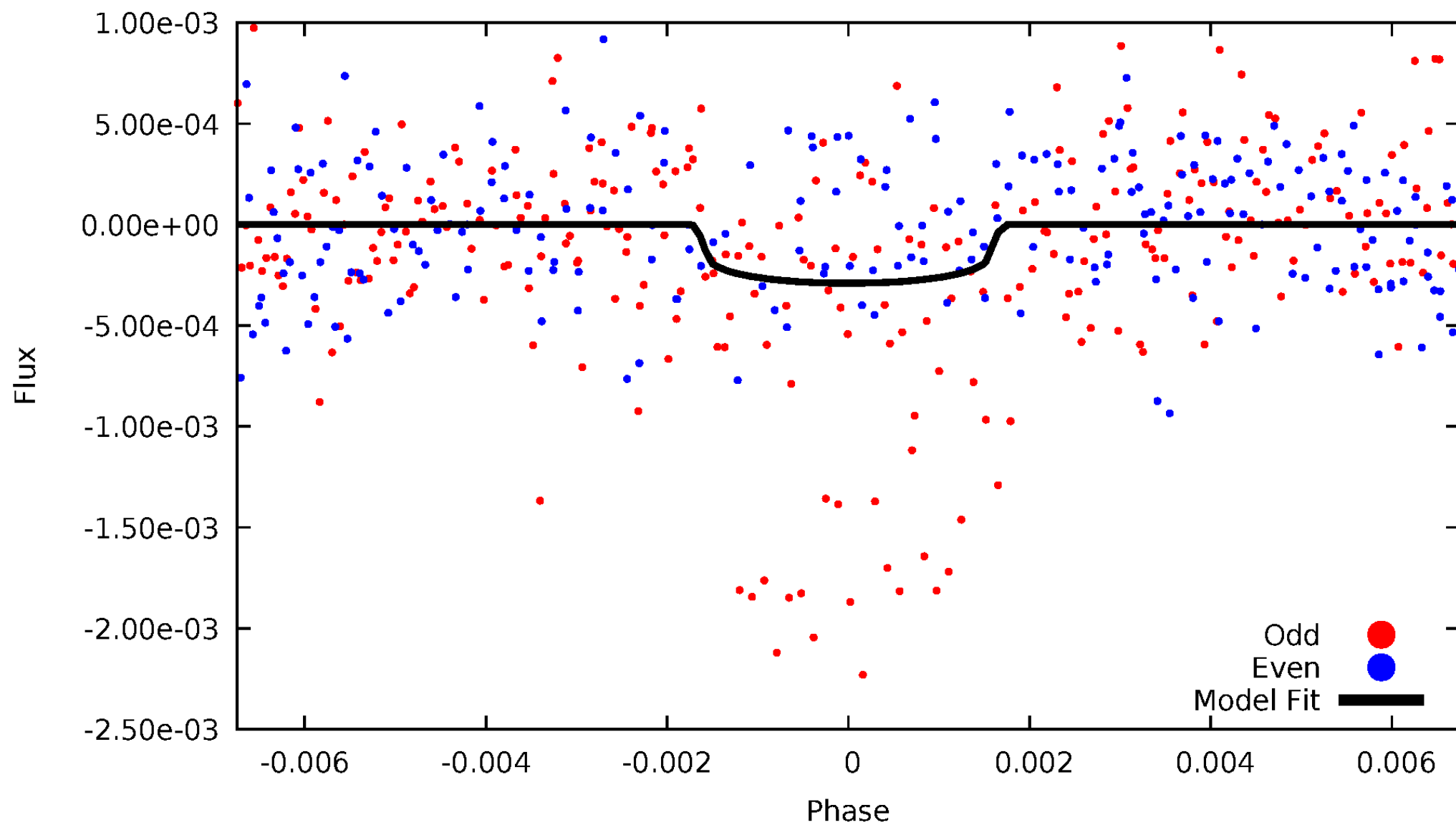


TCE 007381977-02



# DV Odd/Even

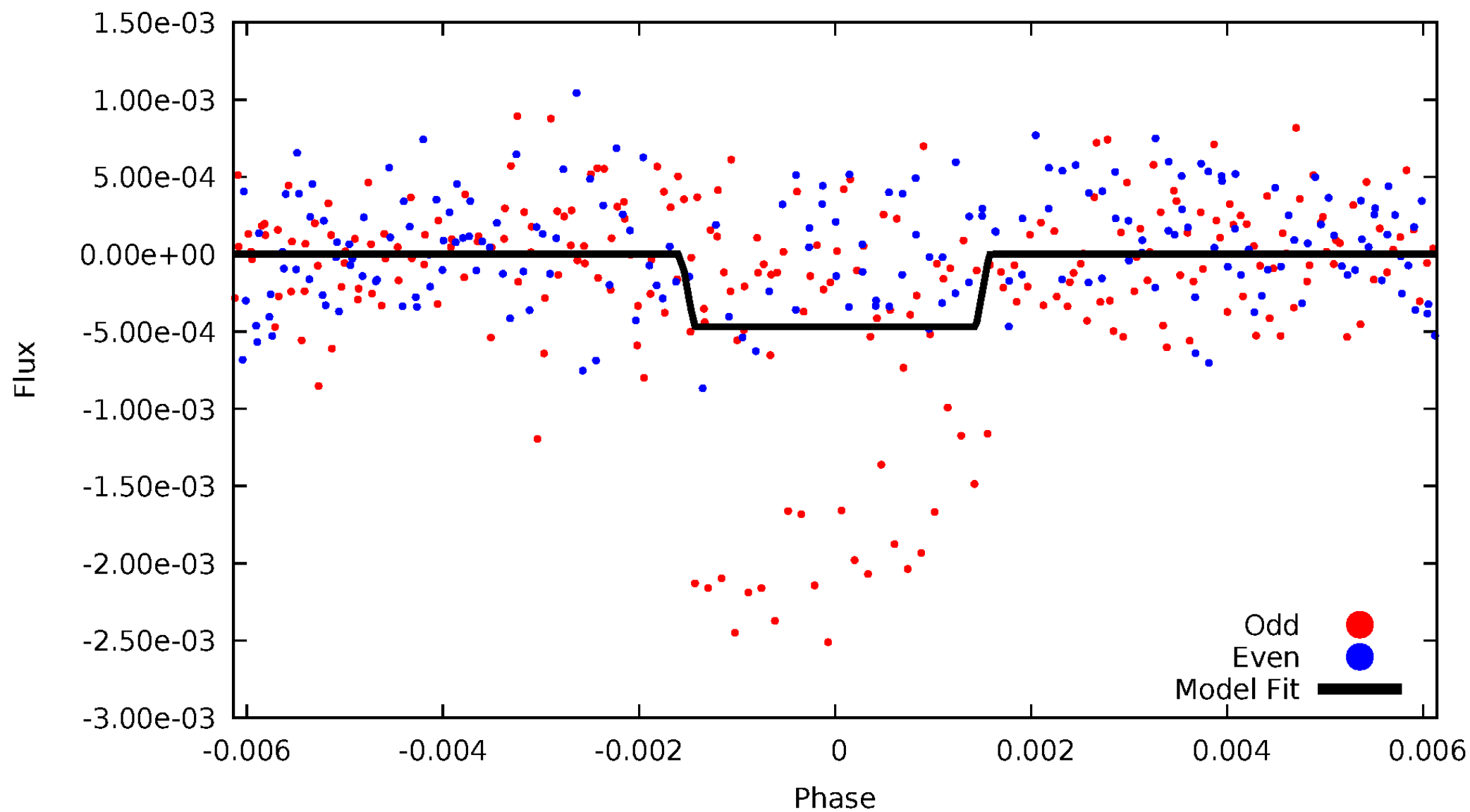
TCE 007381977-02





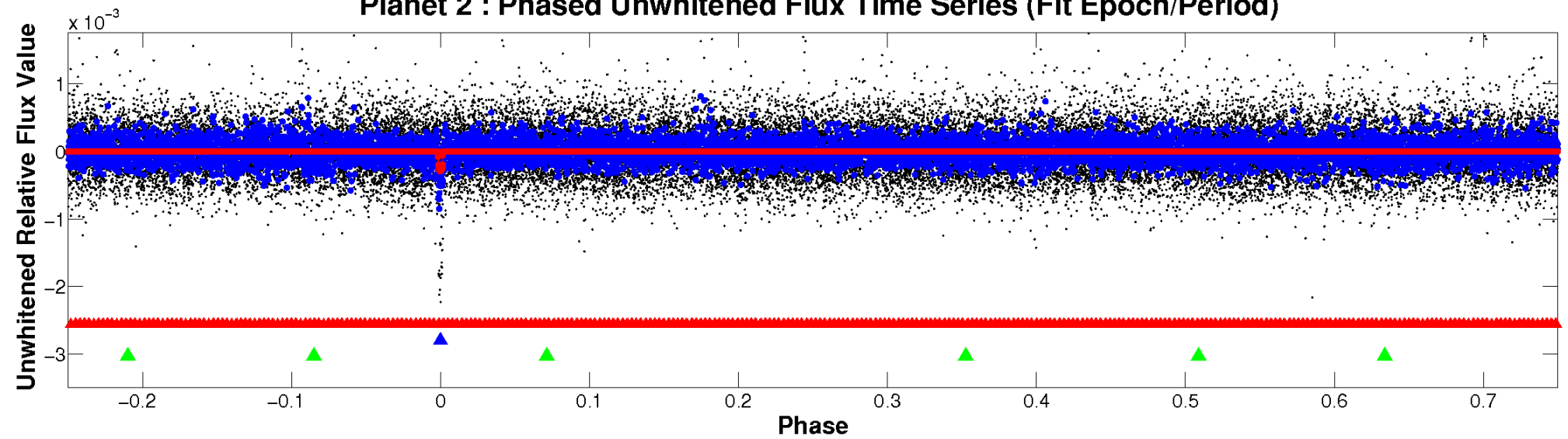
# ALT Odd/Even

TCE 007381977-02

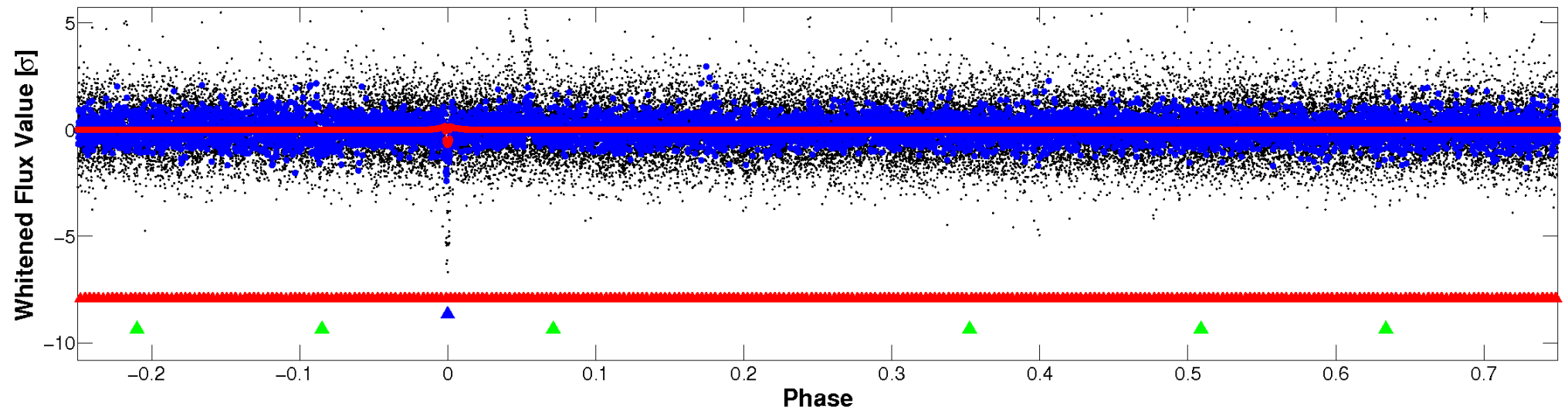


# Non-Whitened Vs. Whitened Light Curve

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



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



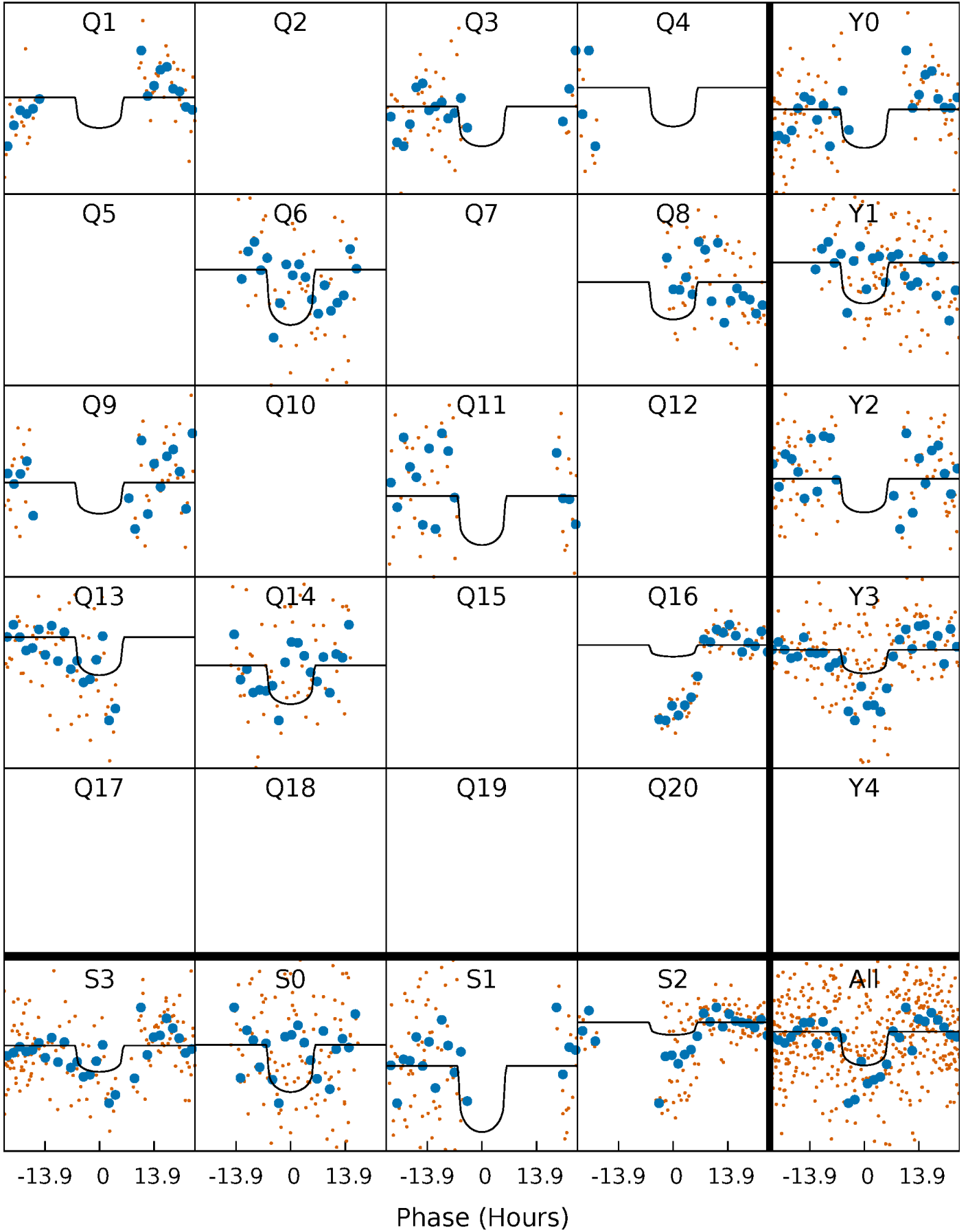
# PDC Quarter-Phased Transit Curves

TCE 007381977-02 P=150.444142 Days  $T_0=142.125480$  (BKJD)



# DV Quarter-Phased Transit Curves

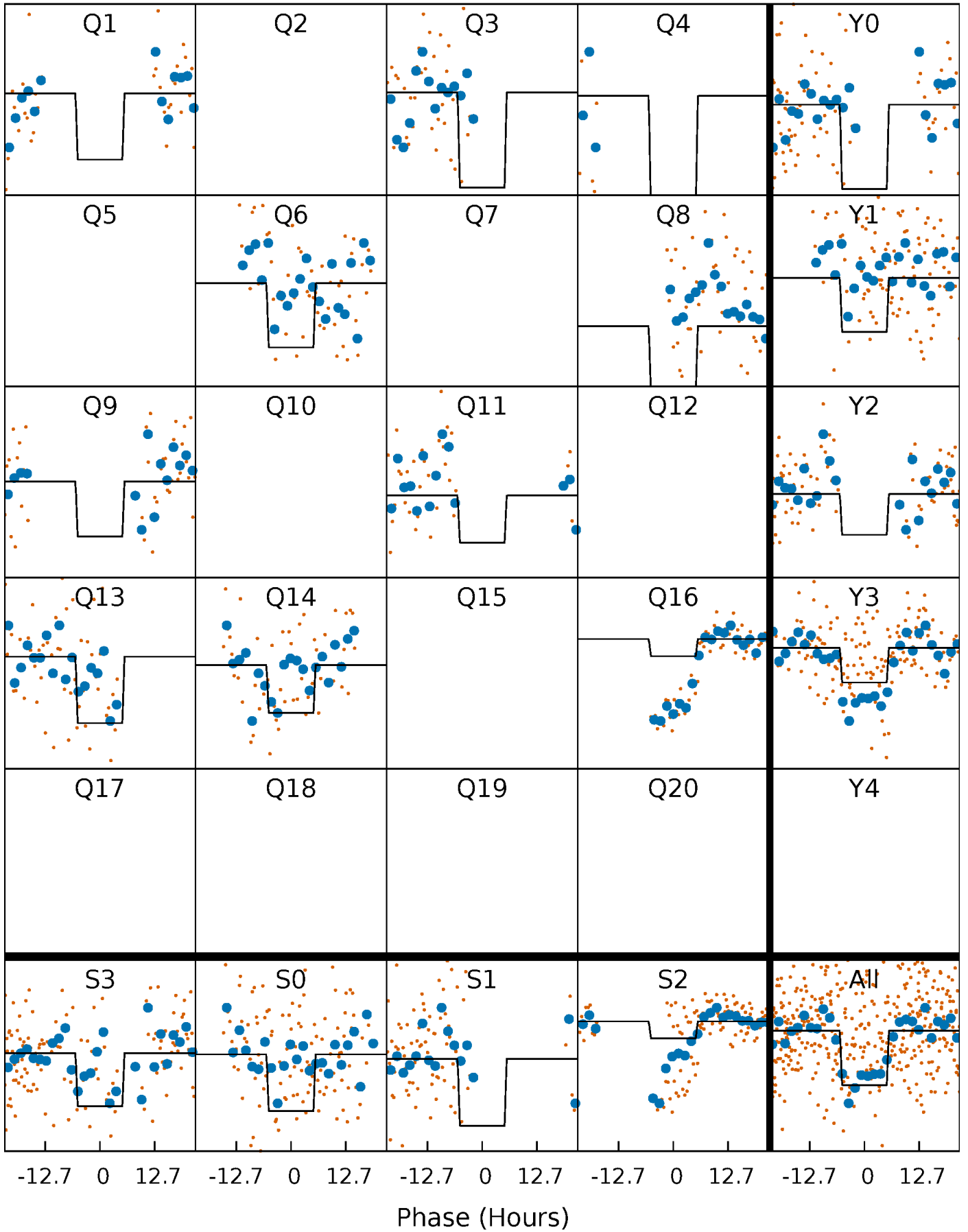
TCE 007381977-02 P=150.444142 Days  $T_0=142.125480$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

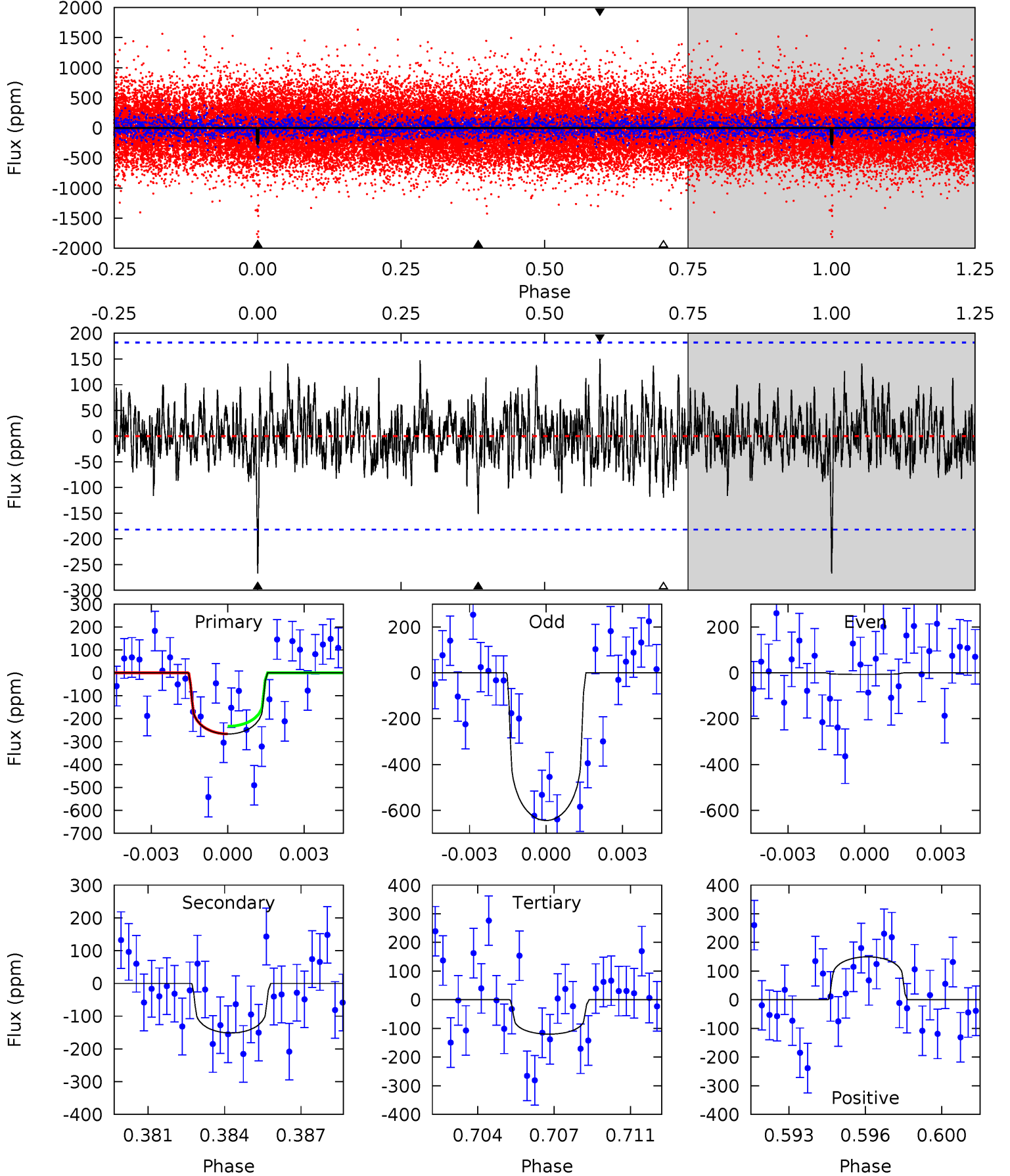
TCE 007381977-02 P=150.459114 Days  $T_0=142.025595$  (BKJD)



# DV Model-Shift Uniqueness Test

007381977-02, P = 150.444142 Days, E = 142.125480 Days

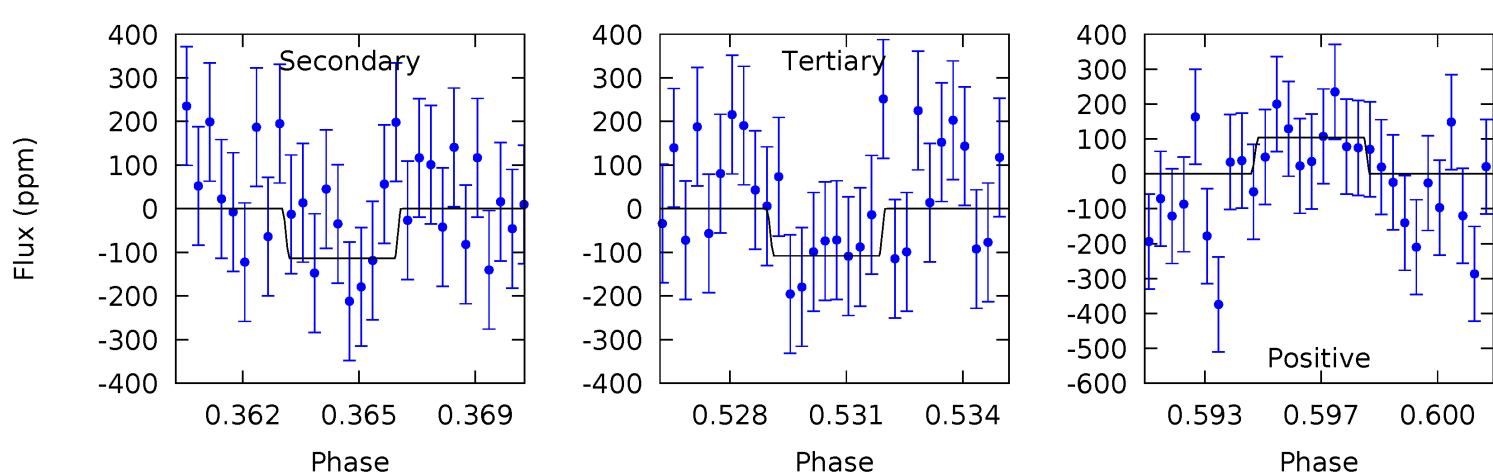
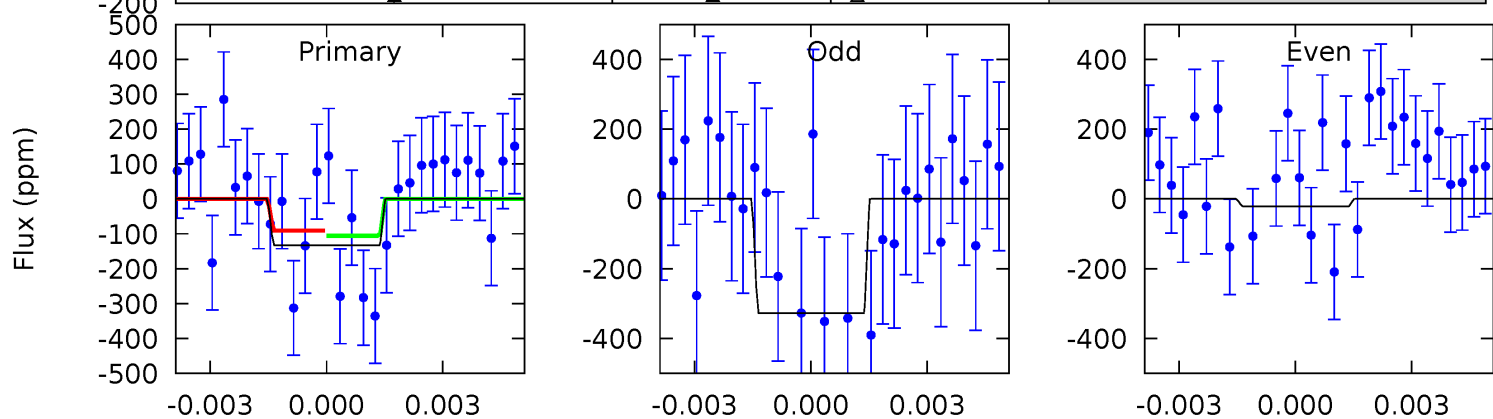
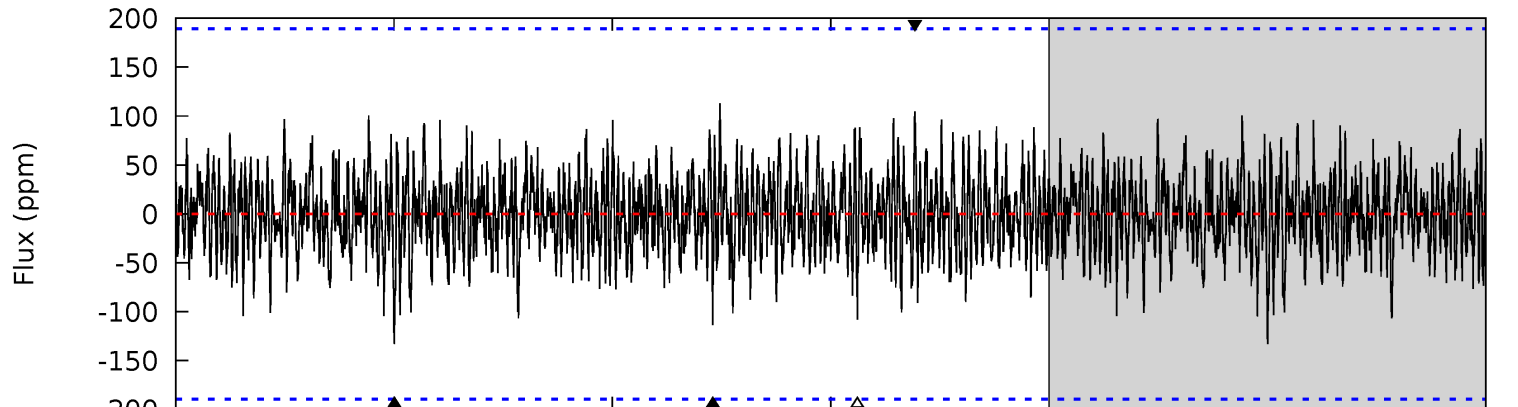
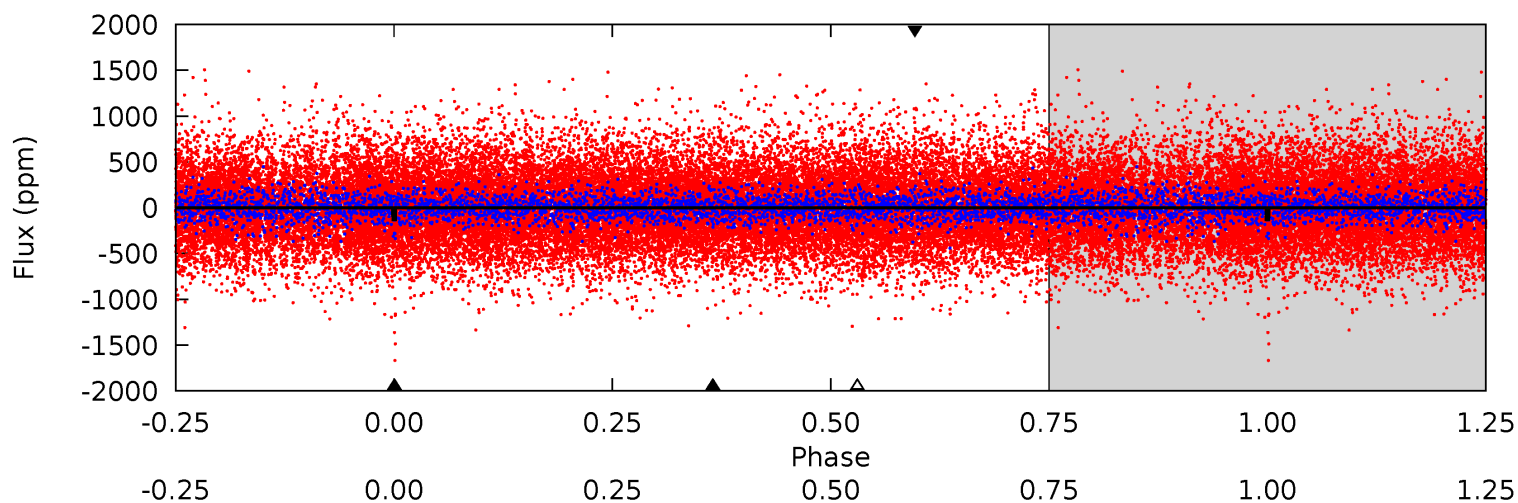
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.68	4.35	3.45	4.31	5.23	2.93	1.22	4.22	3.37	0.90	0.04	9.28	3.42	0.36	0.48



# Alt Model-Shift Uniqueness Test

007381977-02, P = 150.459114 Days, E = 142.025595 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.68	3.15	2.99	2.90	5.25	2.96	0.98	0.69	0.78	0.15	0.25	4.22	4.47	0.46	0.20



### Stellar Parameters For KIC 007381977

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5672^{+152}_{-169}$	$4.577^{+0.031}_{-0.168}$	$-0.300^{+0.300}_{-0.300}$	$0.797^{+0.206}_{-0.069}$	$0.887^{+0.088}_{-0.107}$	$2.463^{+0.413}_{-1.133}$
	+3%/-3%	+1%/-4%	+100%/-100%	+26%/-9%	+10%/-12%	+17%/-46%
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 007381977-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-151 \pm 35$	$1.68^{+1.10}_{-0.99}$	$439^{+26}_{-19}$	$4733^{+2640}_{-820}$	$7914^{+40446}_{-5097}$
Alt.	$-114 \pm 36$	$2.06^{+1.13}_{-1.03}$	$439^{+26}_{-17}$	$4128^{+1389}_{-588}$	$3966^{+12030}_{-2423}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$



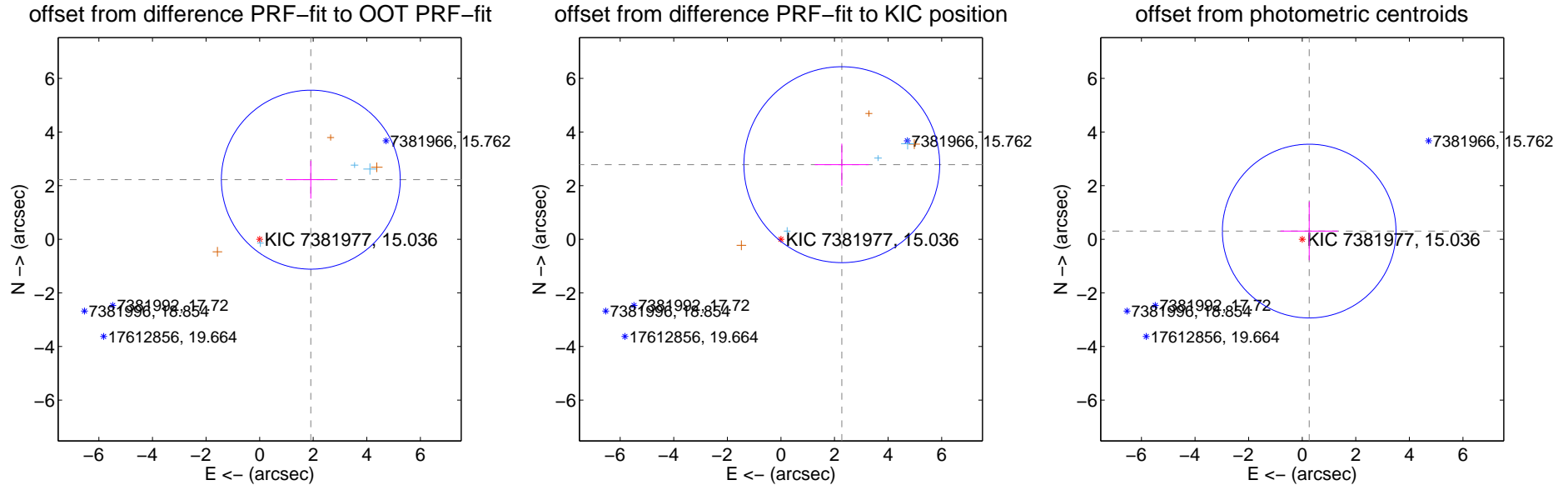
## DV Centroid Data

Supplemental centroid analysis for 007381977-02. Kepler magnitude: 15.04. Transit SNR 6.03

There are 3 quarters with good PRF difference image offsets

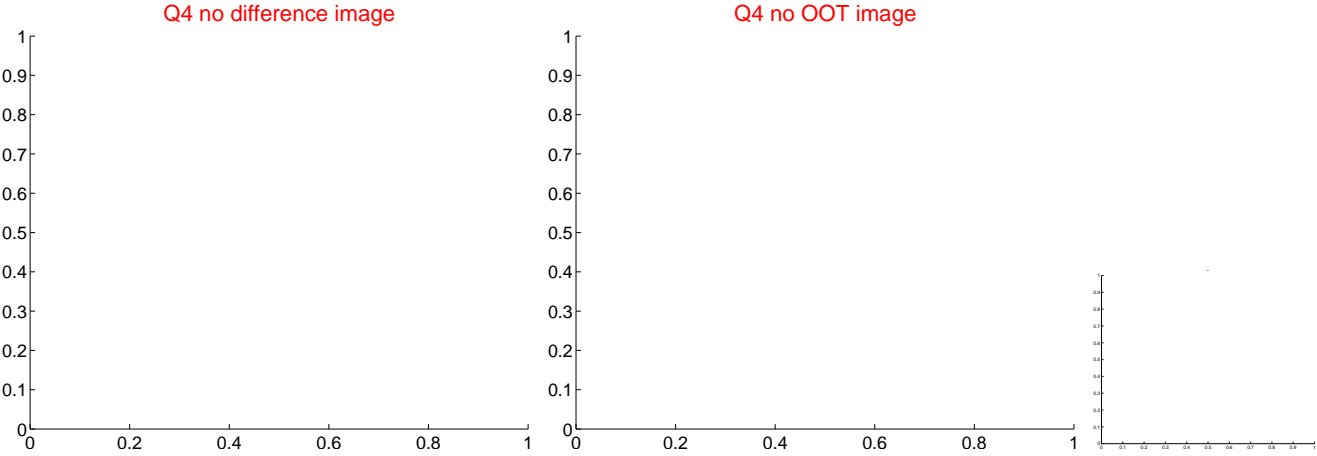
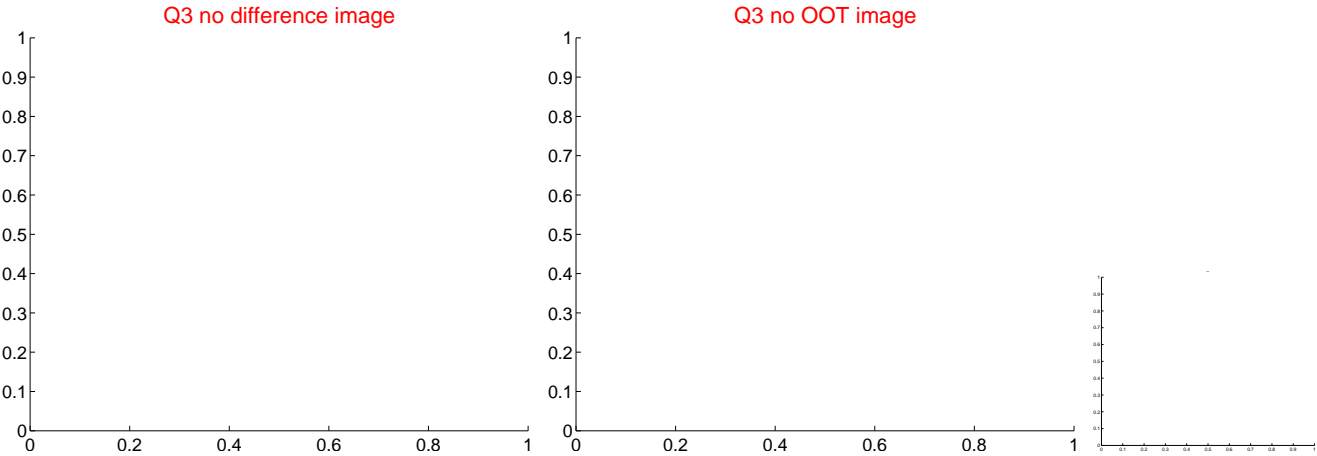
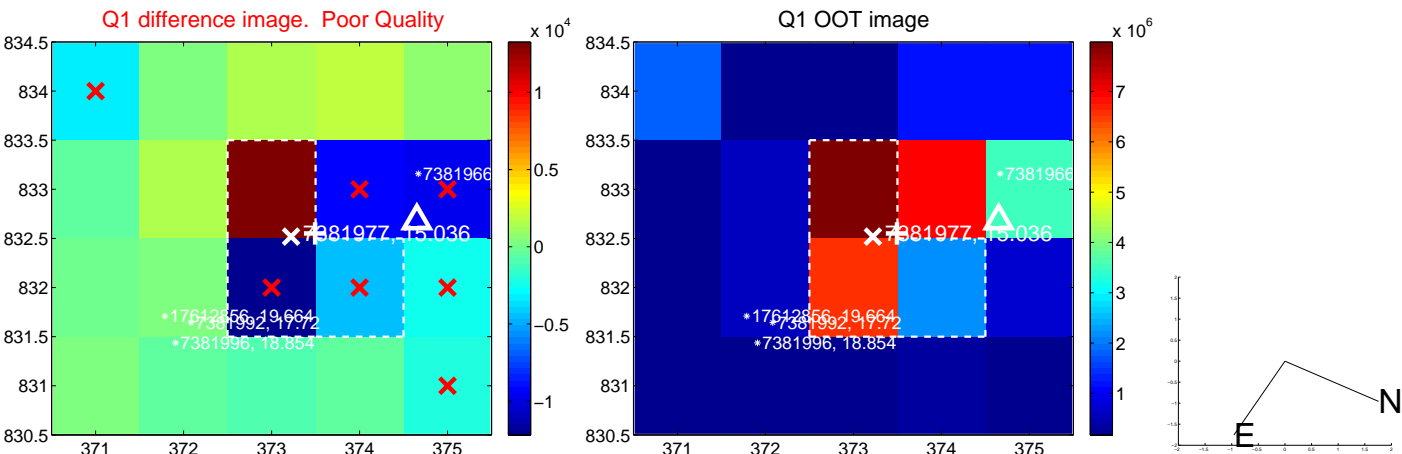
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.930 \pm 1.113$	2.63	$-1.910 \pm 0.934$	$2.222 \pm 0.707$
PRF-fit source offset from KIC position	$3.590 \pm 1.218$	2.95	$-2.271 \pm 1.008$	$2.781 \pm 0.785$
photometric centroid source offset	$0.40 \pm 1.08$	0.37	$-0.26 \pm 1.07$	$0.30 \pm 1.09$

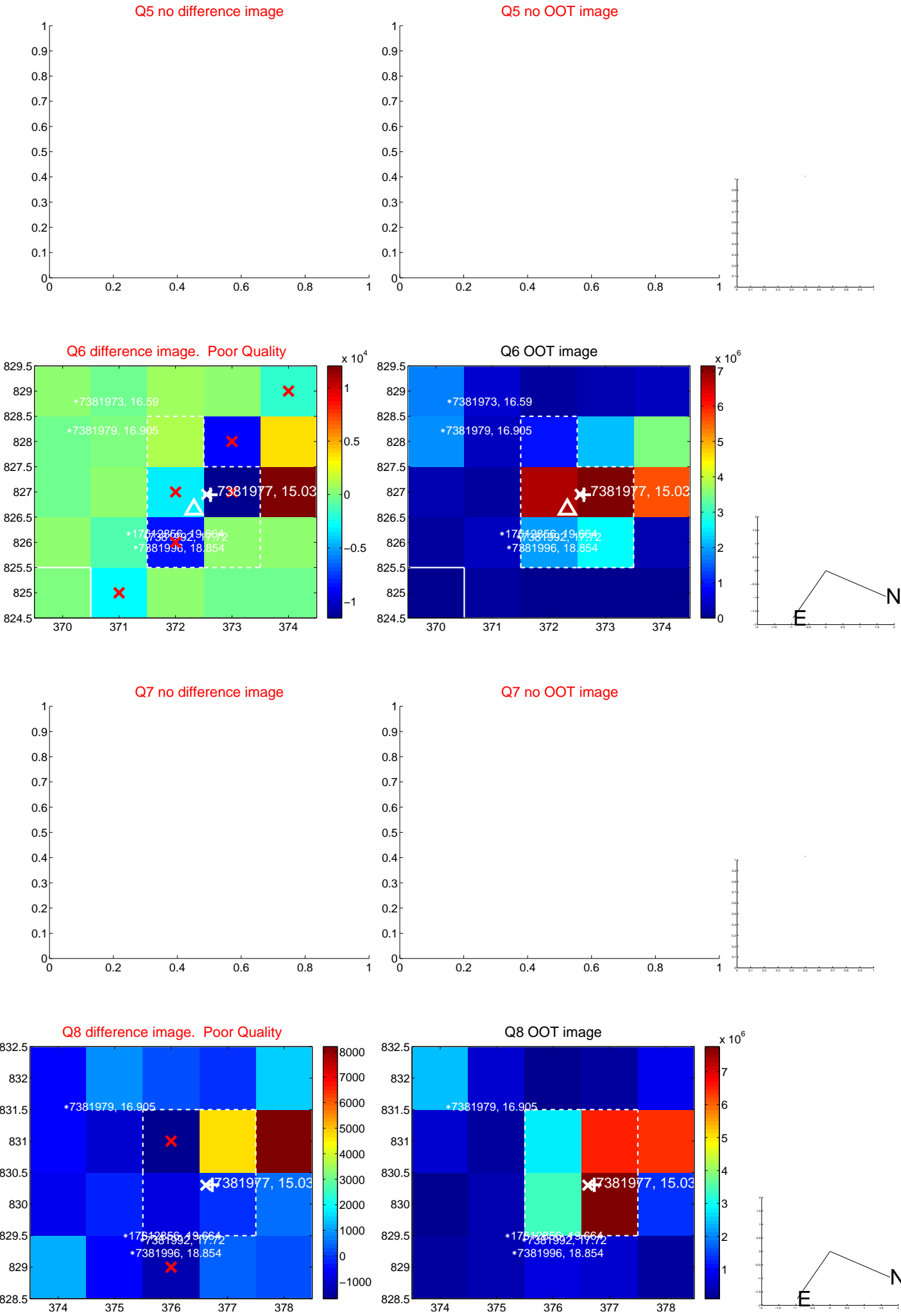


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

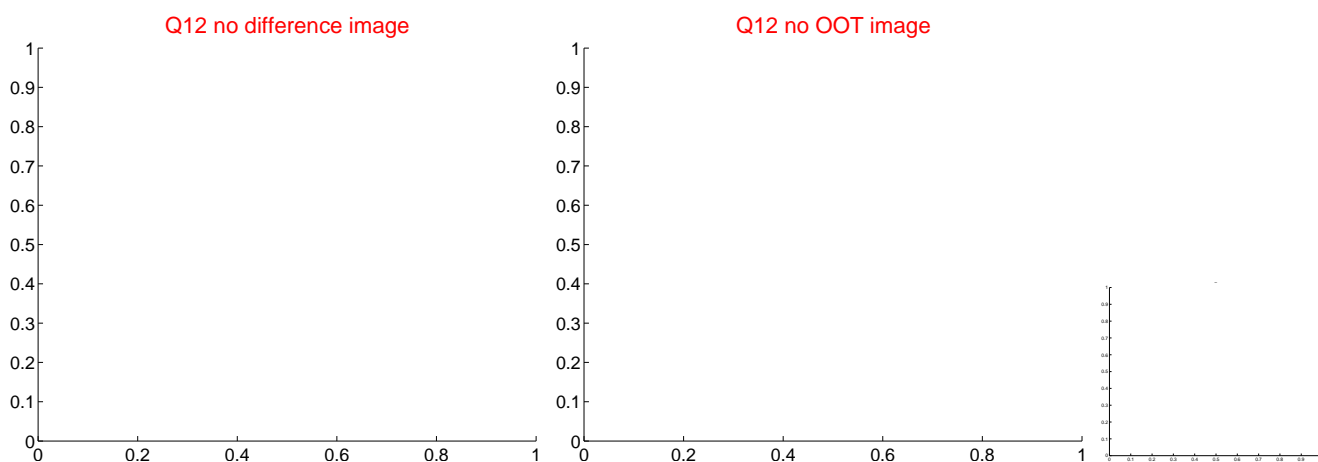
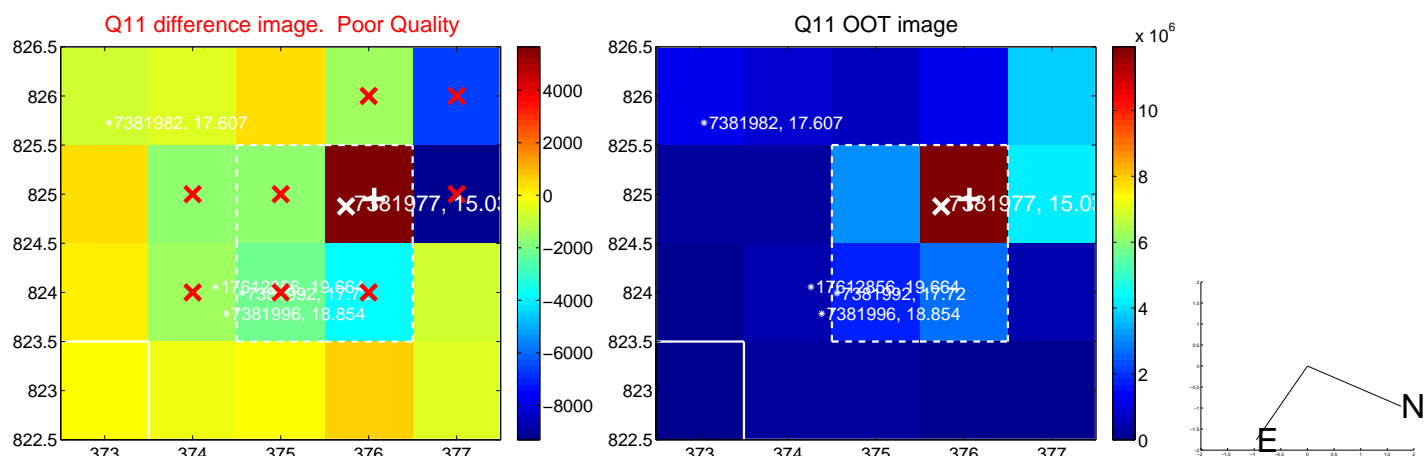
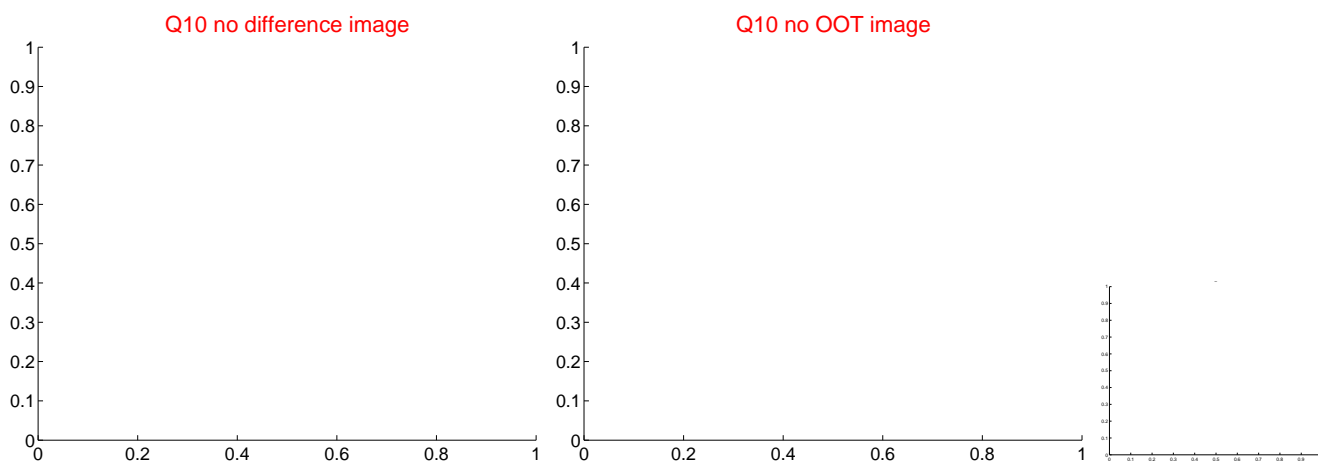
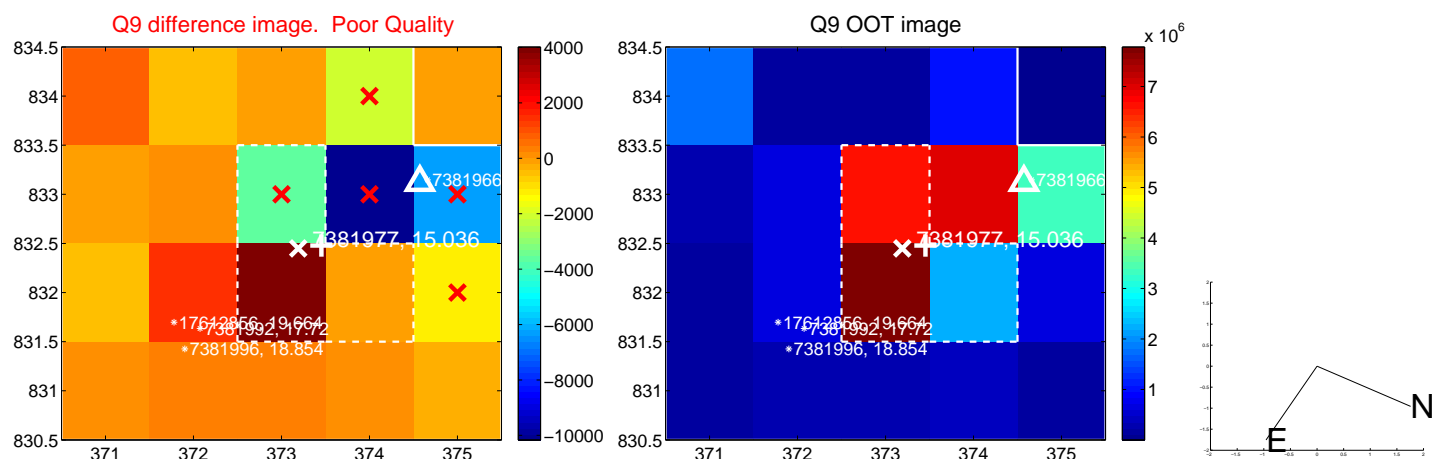
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



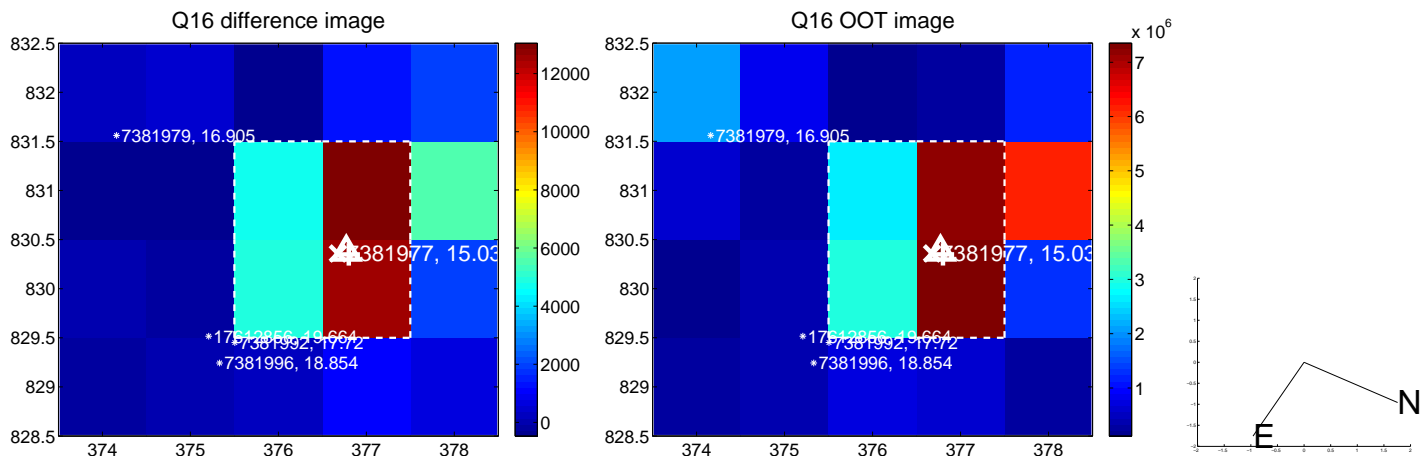
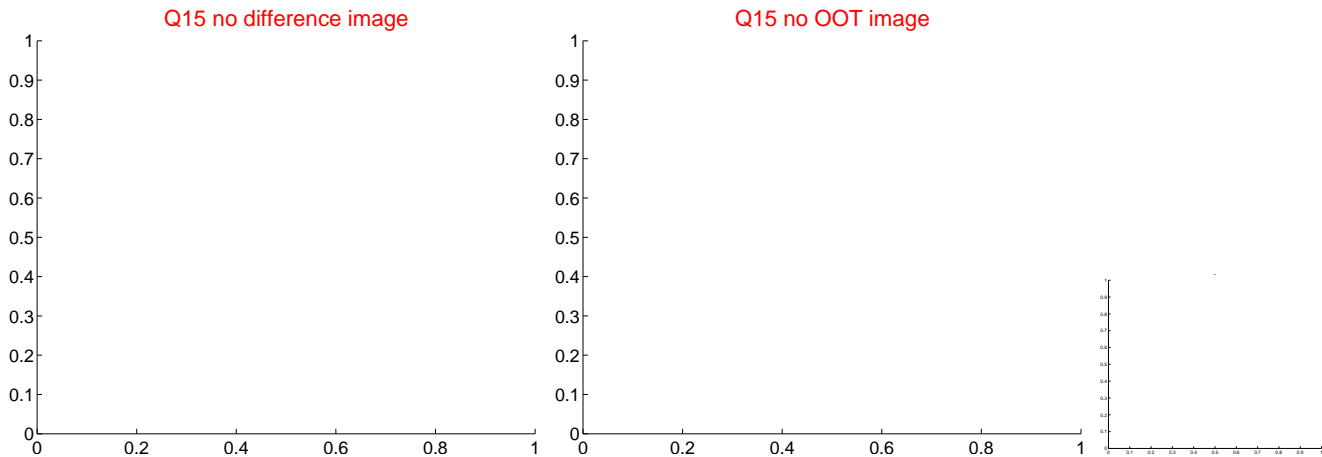
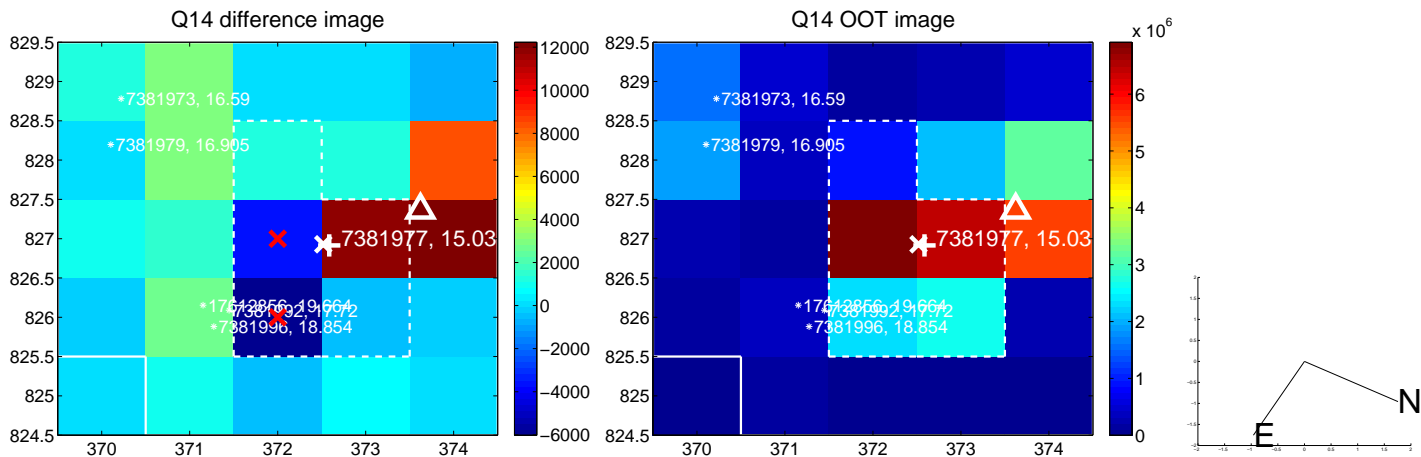
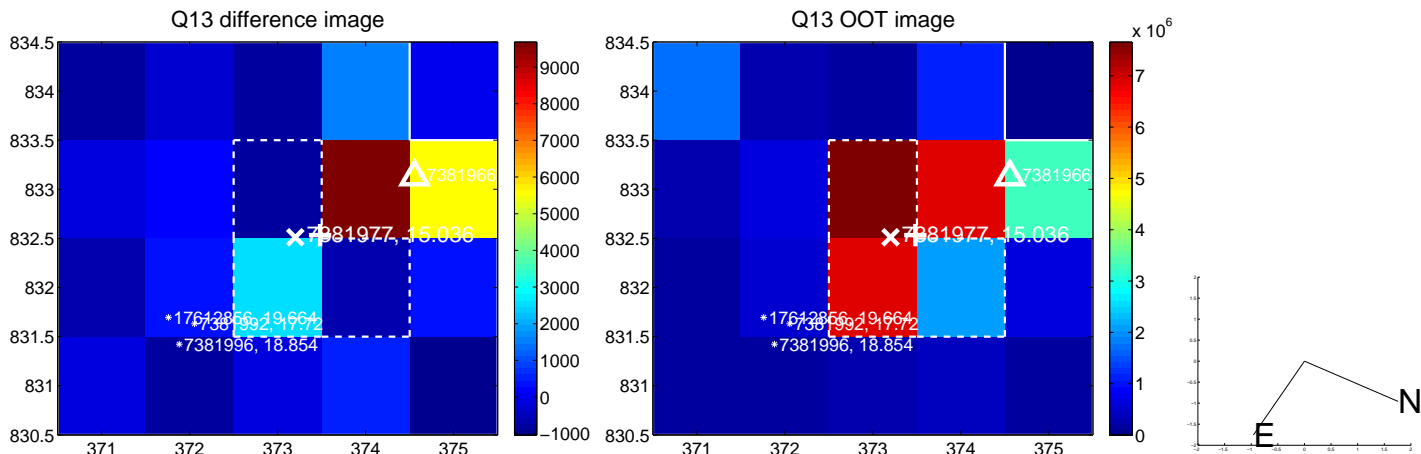
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

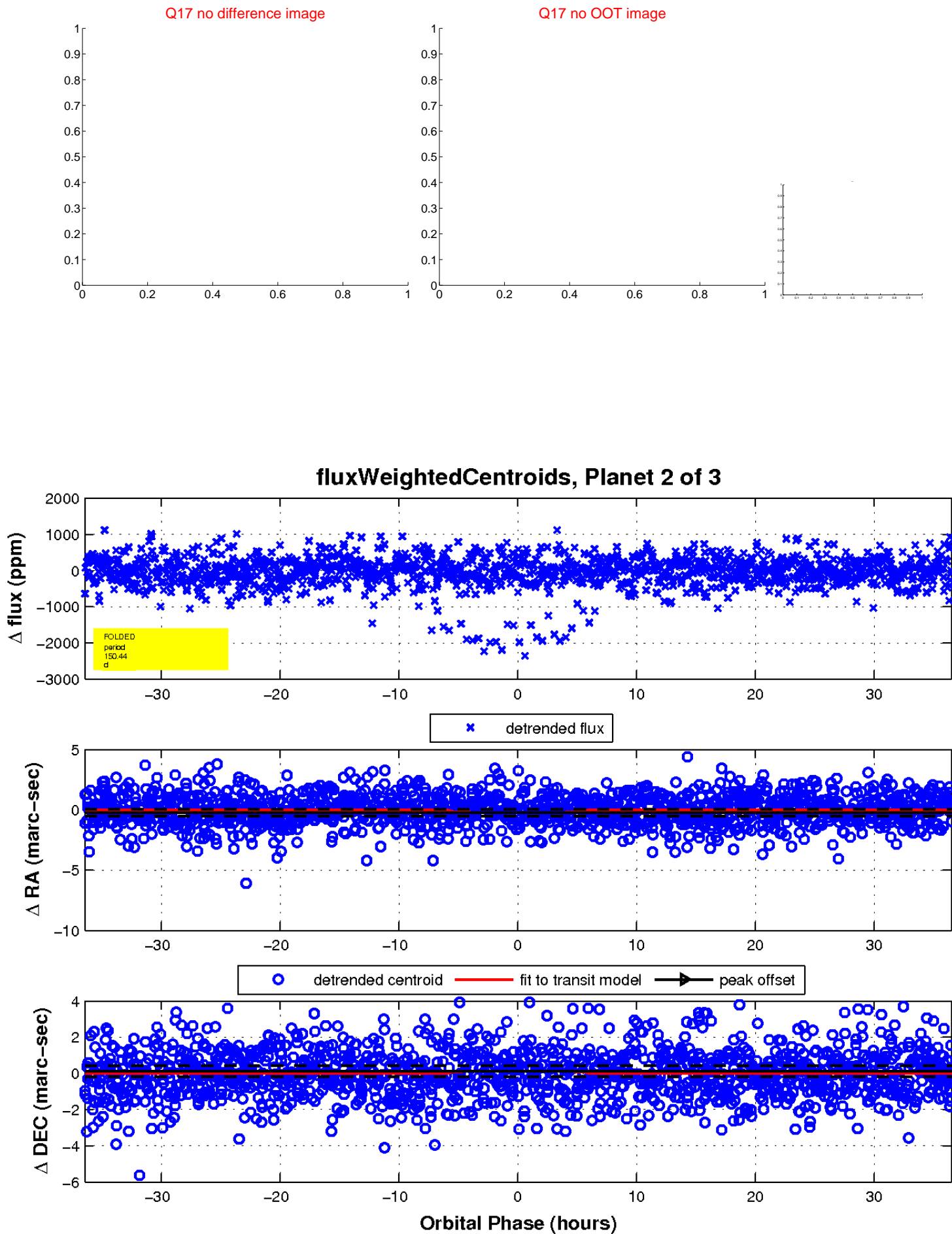


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



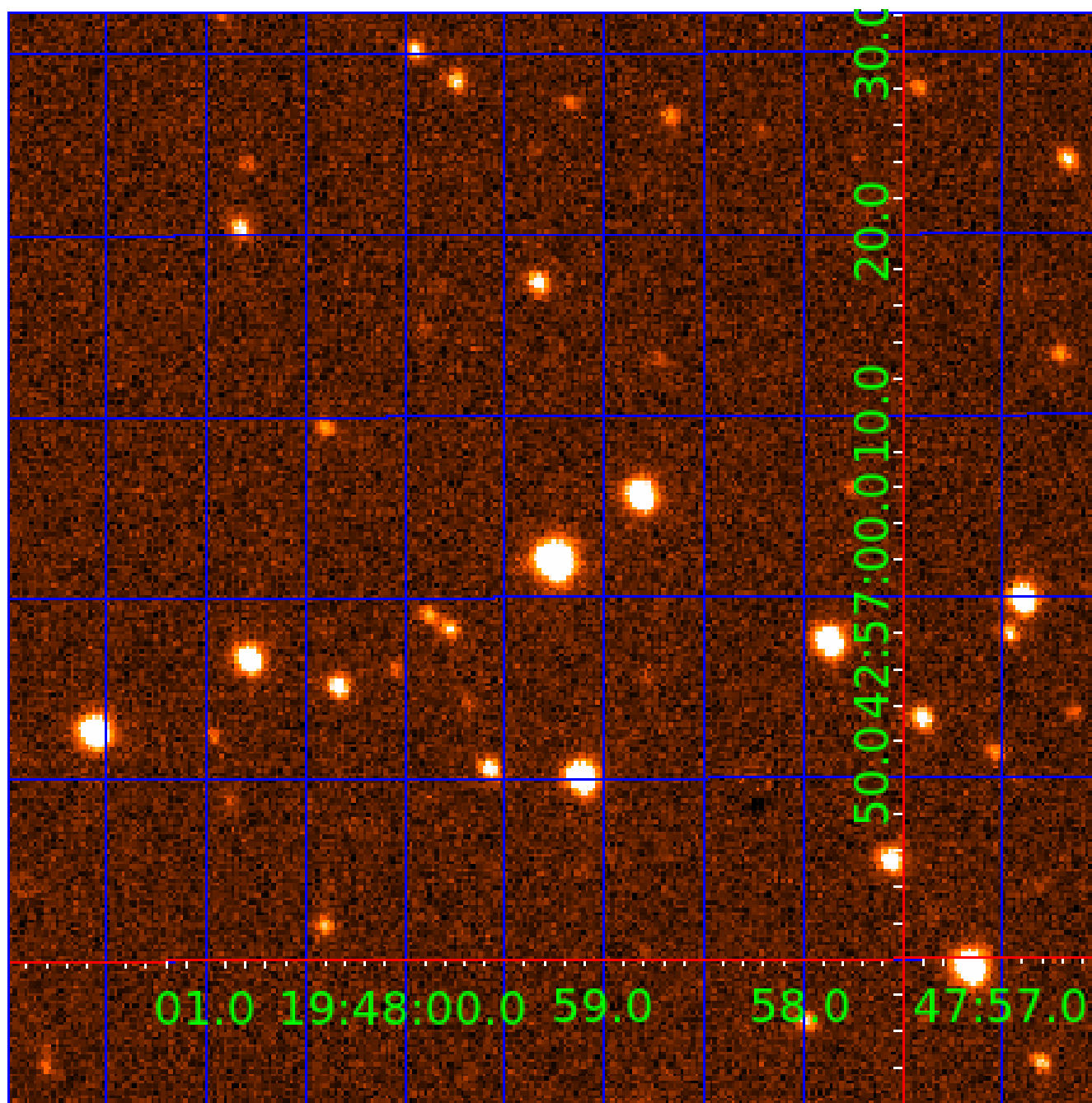


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007381977

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007381977-01	OBS	No	2.321422	132.730742	37.9	8.151	7.6	8.0	0.80	5672	0.50	546.77
007381977-02	OBS	No	150.444142	142.125480	290.6	12.177	21.3	6.0	0.80	5672	1.50	2.10
007381977-03	OBS	No	258.578855	279.789495	348.1	16.233	10.0	8.1	0.80	5672	1.57	1.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007381977-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
007381977-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_UNCERTAIN—HALO_GHOST
007381977-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

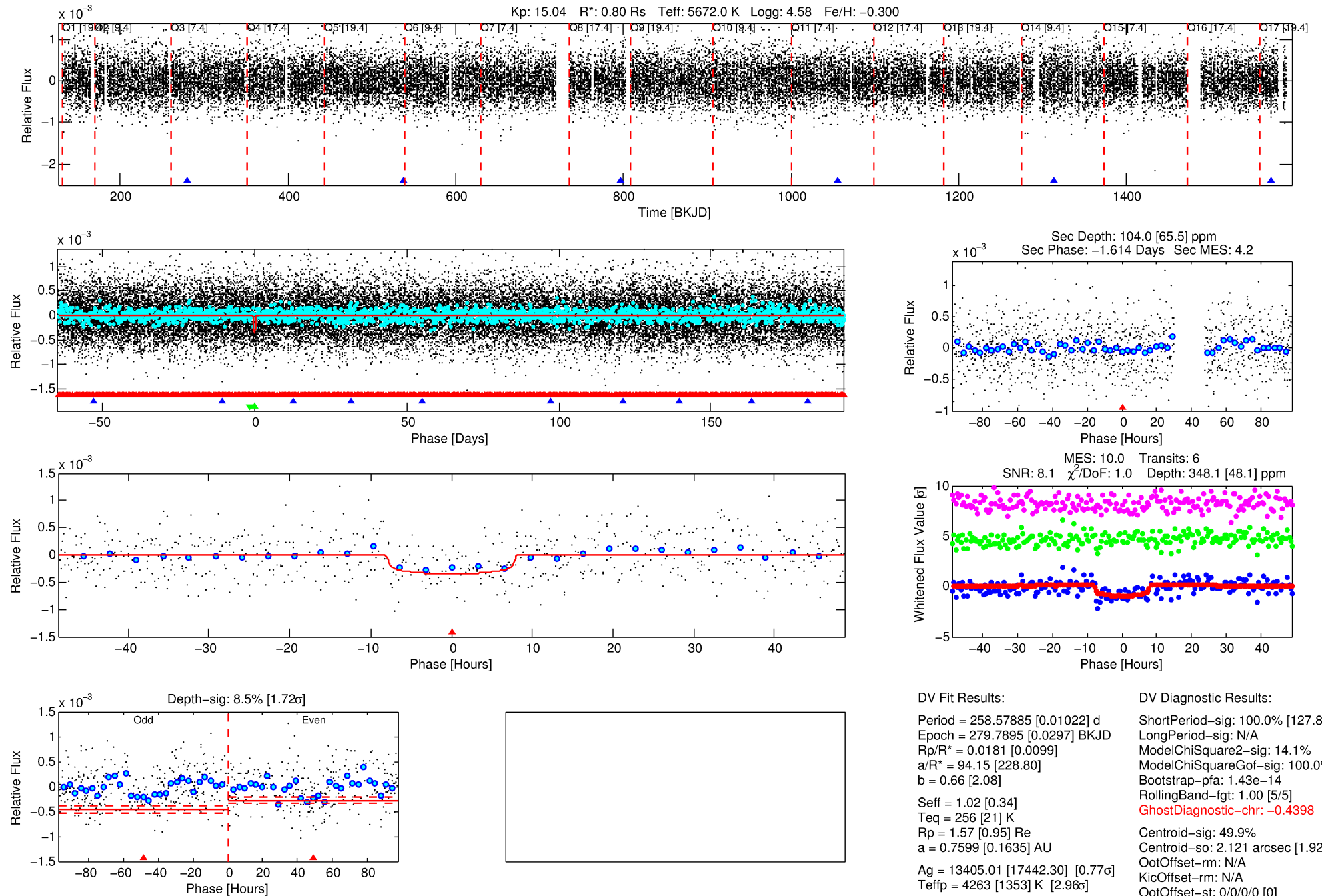
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007381977-03

No Significant Match Found

# DV One-Page Summary

KIC: 7381977 Candidate: 3 of 3 Period: 258.579 d



## DV Fit Results:

Period = 258.57885 [0.01022] d  
Epoch = 279.7895 [0.0297] BKJD  
Rp/R\* = 0.0181 [0.0099]  
a/R\* = 94.15 [228.80]  
b = 0.66 [2.08]  
Seff = 1.02 [0.34]  
Teq = 256 [21] K  
Rp = 1.57 [0.95] Re  
a = 0.7599 [0.1635] AU  
Ag = 13405.01 [17442.30] [0.77 $\sigma$ ]  
Teffp = 4263 [1353] K [2.96 $\sigma$ ]

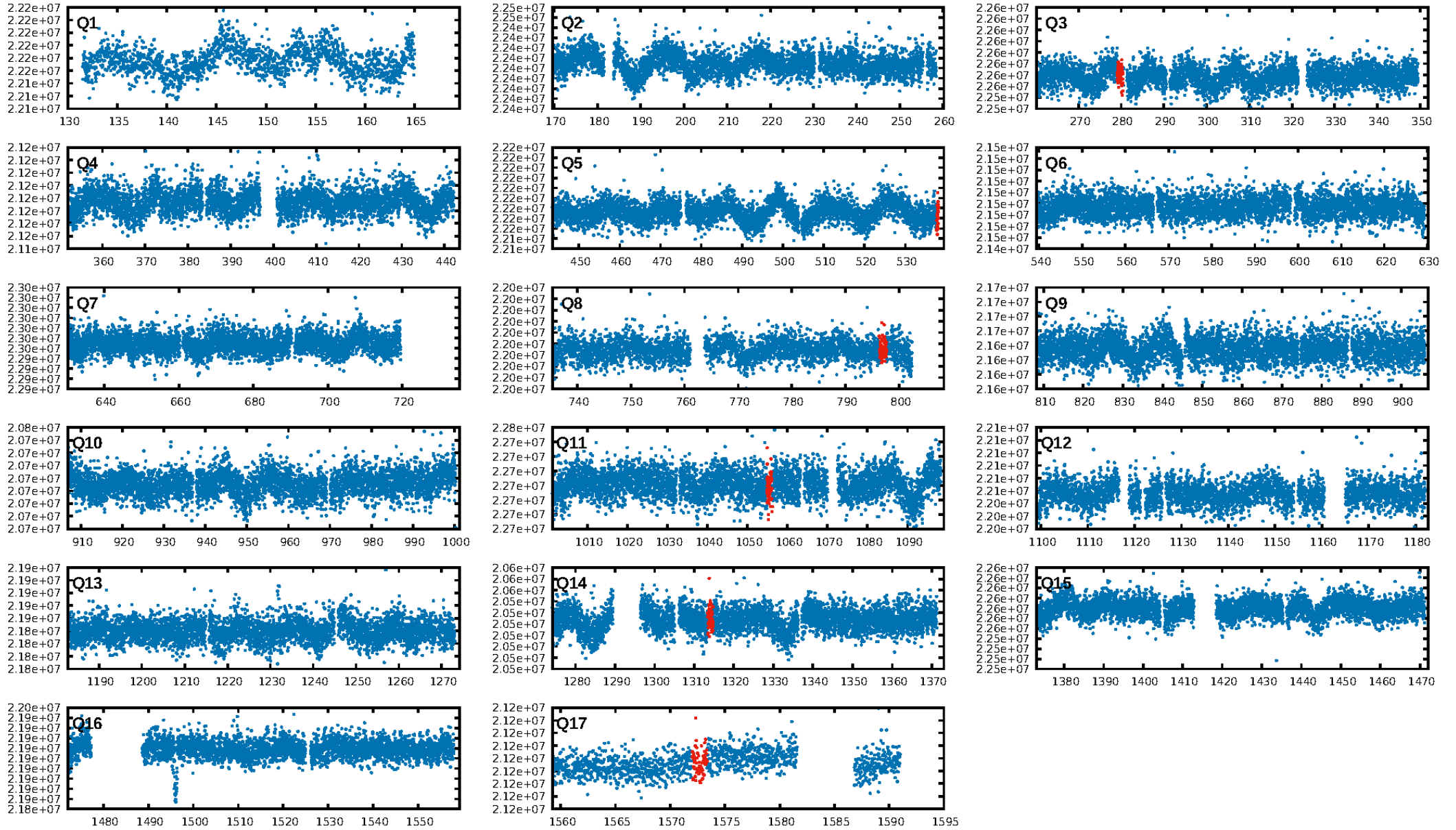
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [127.89 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 14.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.43e-14  
RollingBand-fgt: 1.00 [5/5]  
**GhostDiagnostic-chr: -0.4398**  
Centroid-sig: 49.9%  
Centroid-so: 2.121 arcsec [1.92 $\sigma$ ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 0.00 [0/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:14:33 Z

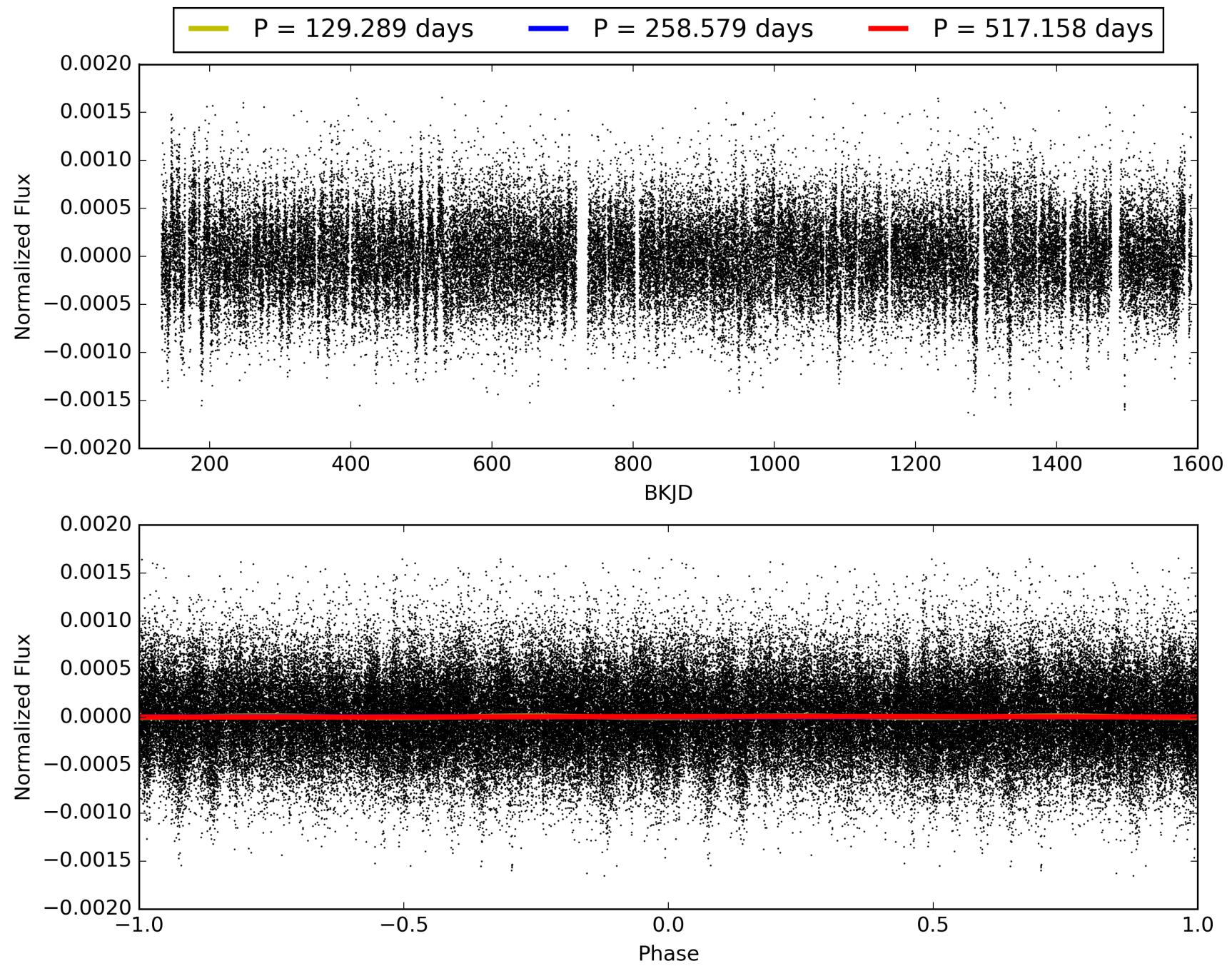
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007381977-03, PDC Light Curves



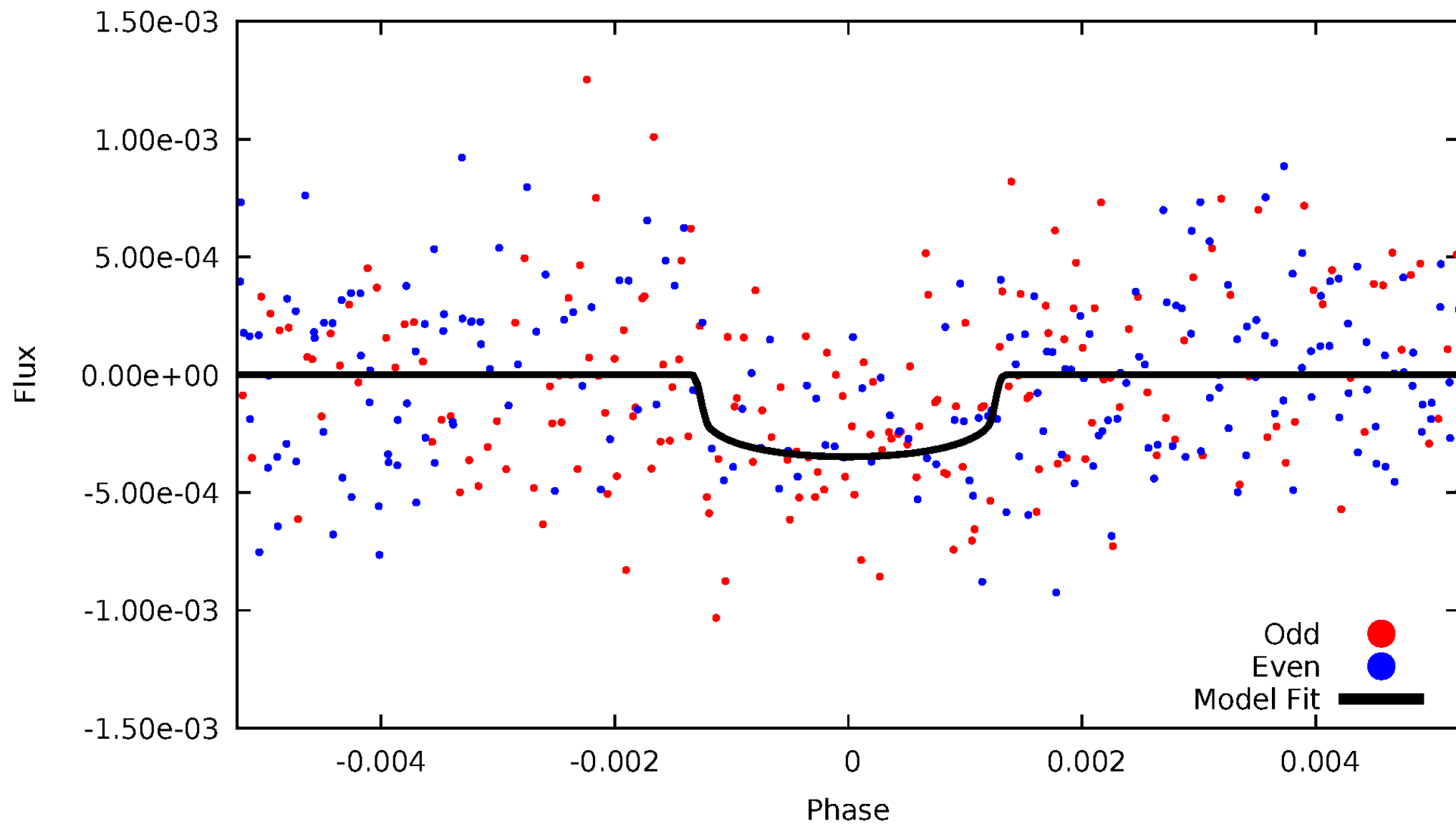


TCE 007381977-03



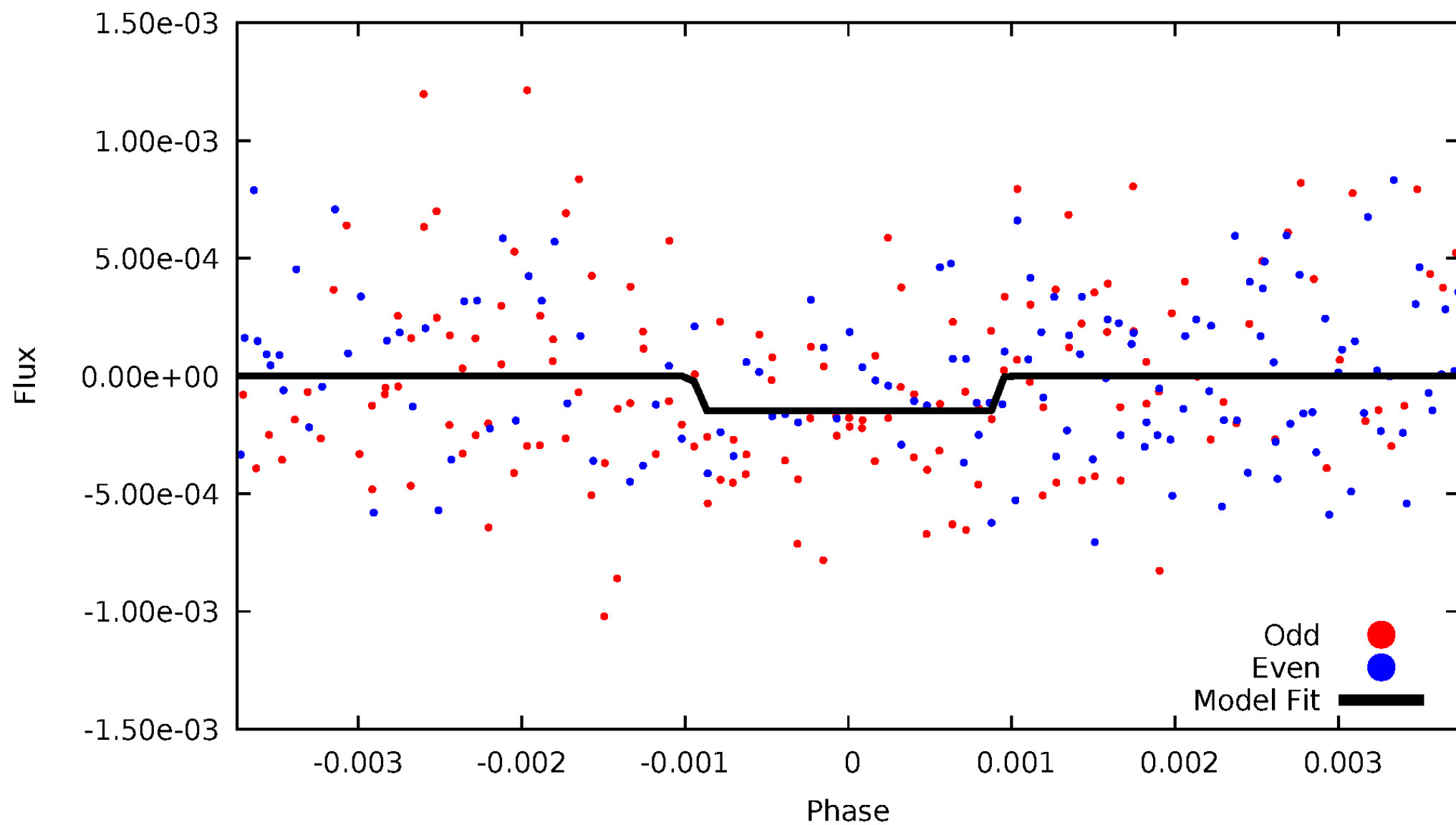
# DV Odd/Even

TCE 007381977-03



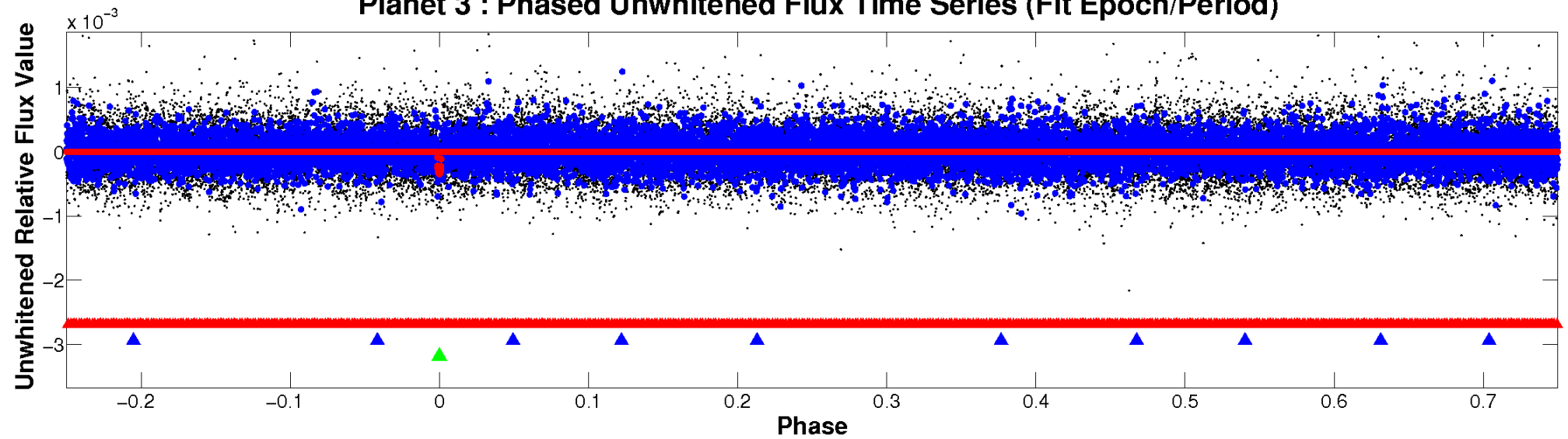
# ALT Odd/Even

TCE 007381977-03

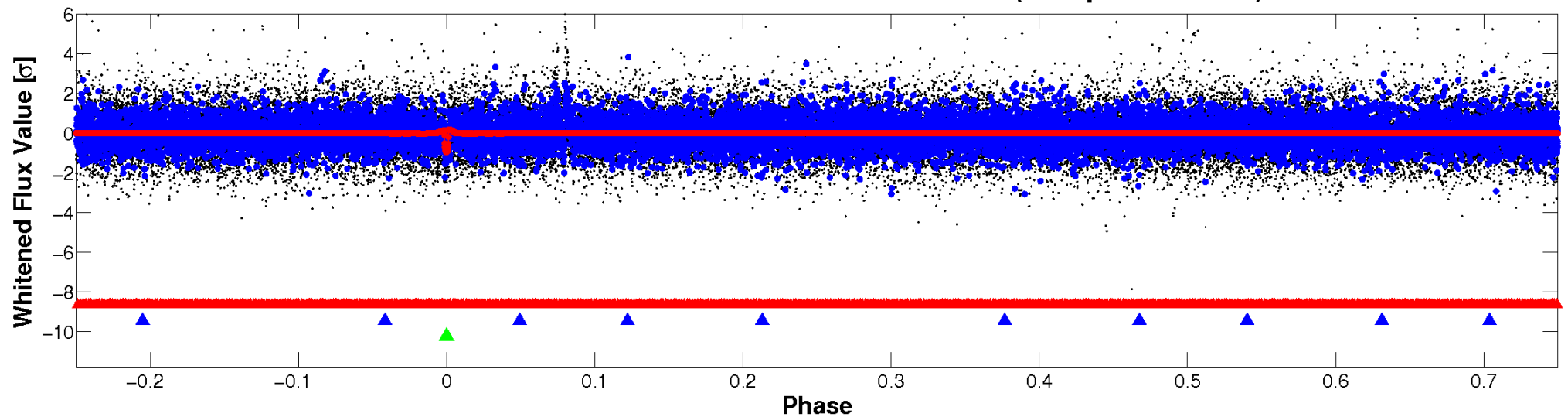


# Non-Whitened Vs. Whitened Light Curve

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

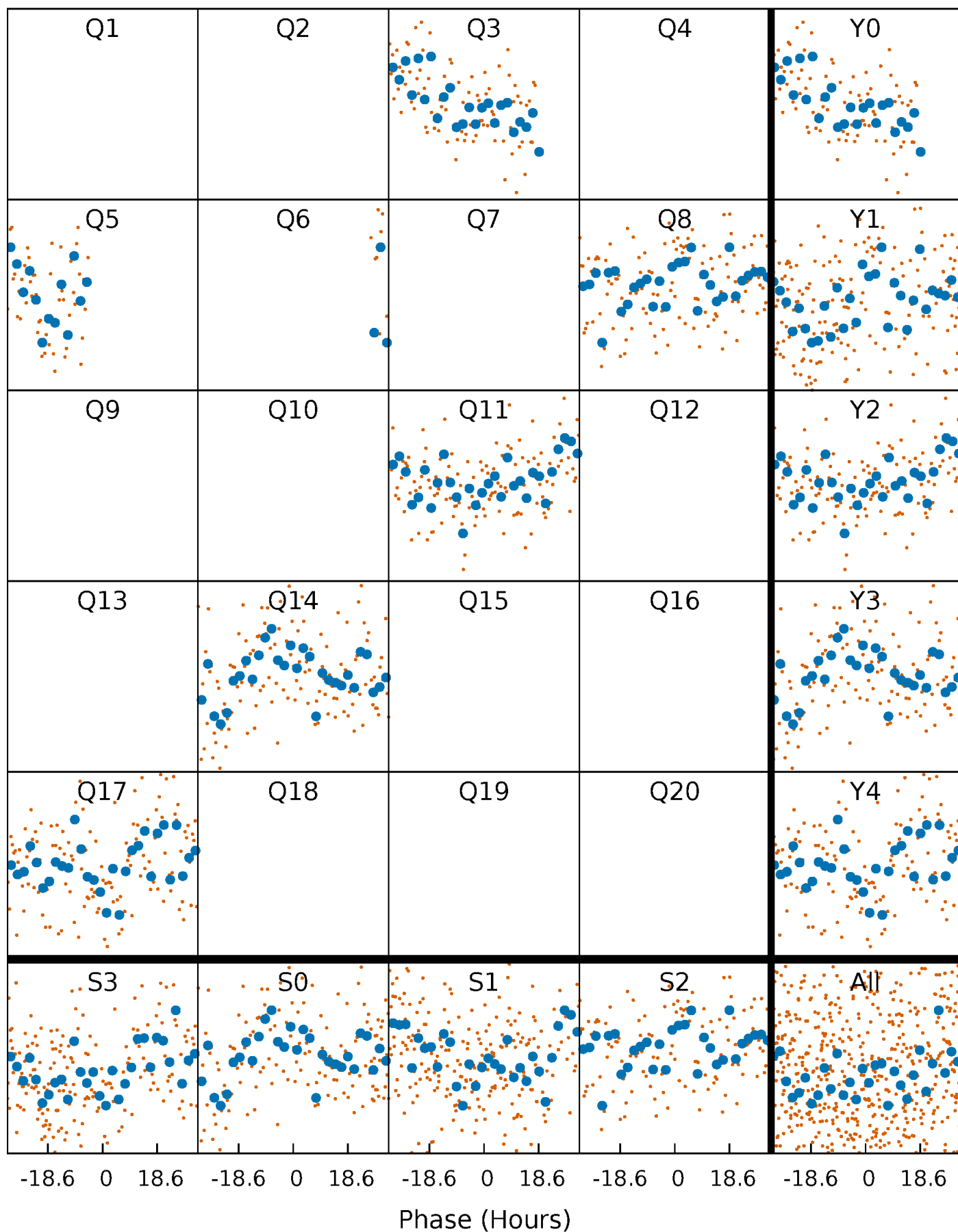


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

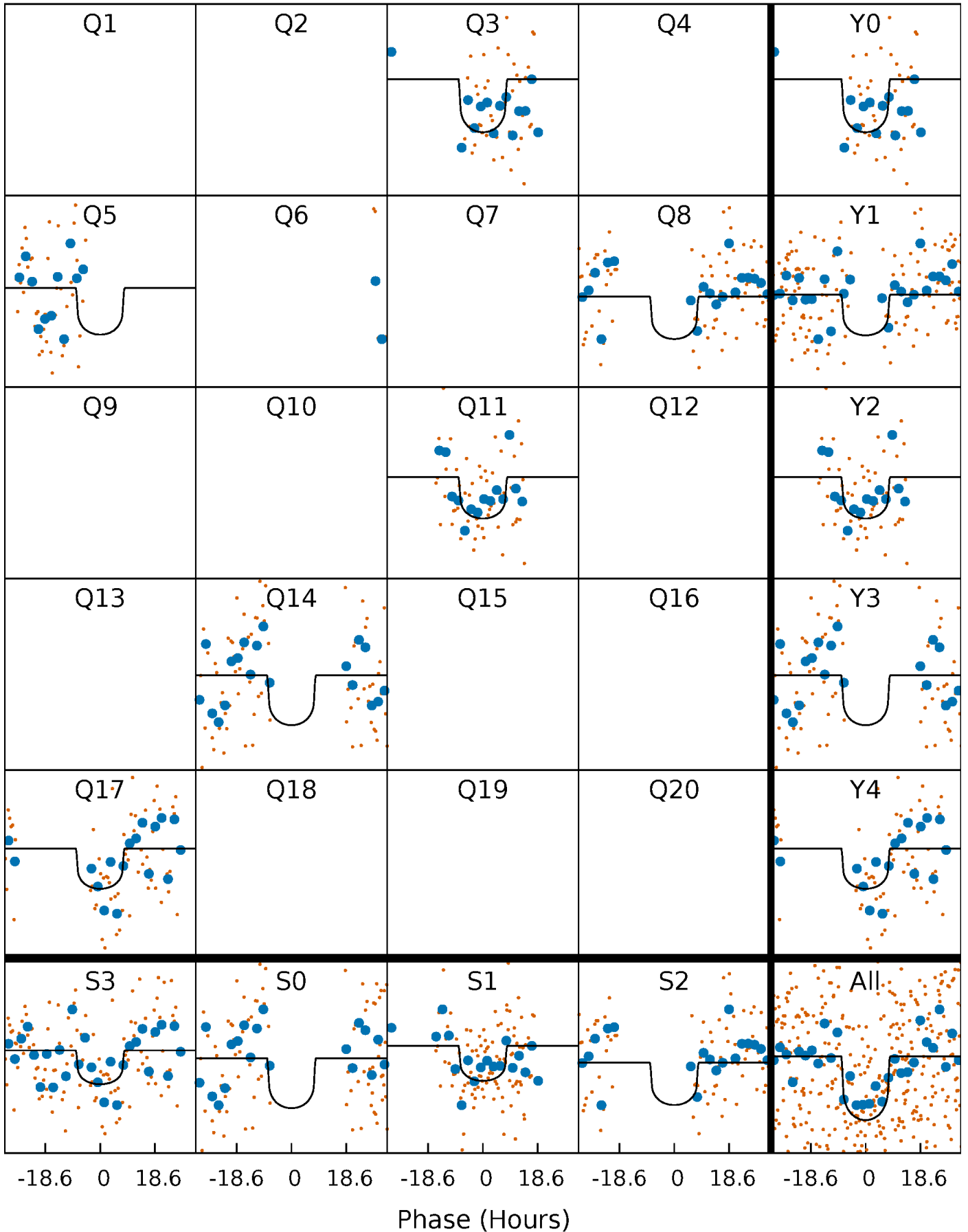
TCE 007381977-03 P=258.578855 Days  $T_0=279.789495$  (BKJD)





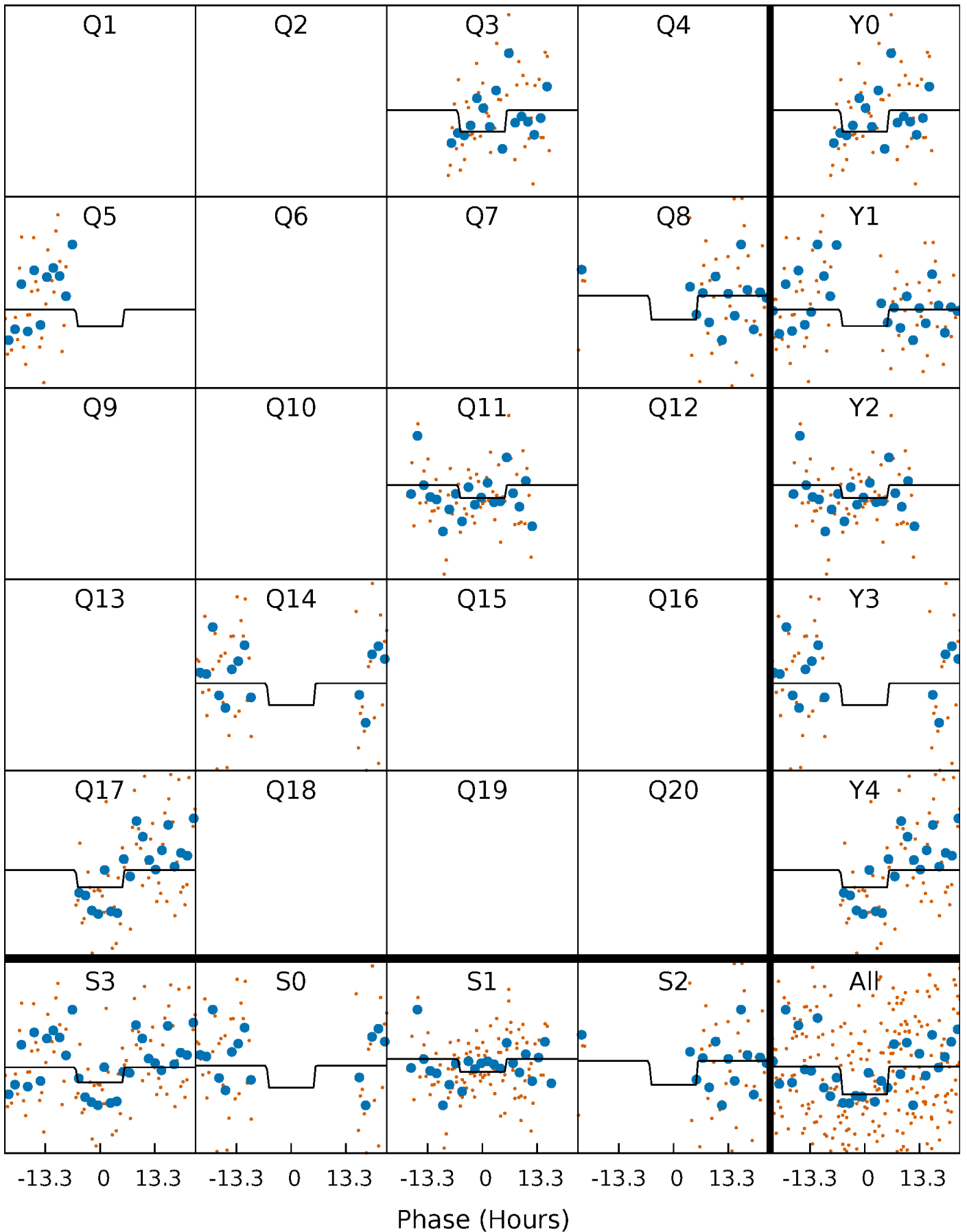
# DV Quarter-Phased Transit Curves

TCE 007381977-03     $P=258.578855$  Days     $T_0=279.789495$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

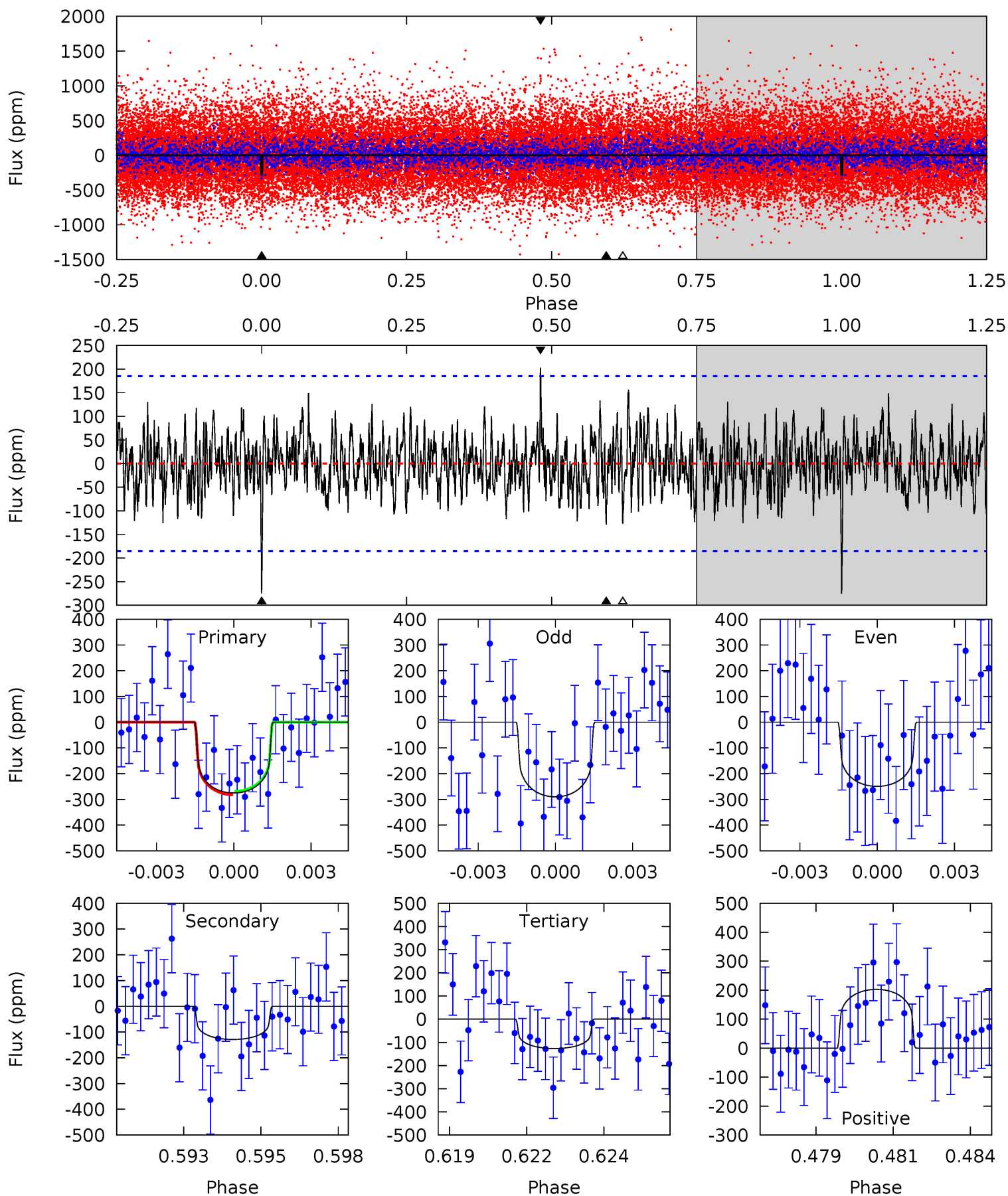
TCE 007381977-03     $P=258.586702$  Days     $T_0=279.859222$  (BKJD)



# DV Model-Shift Uniqueness Test

007381977-03, P = 258.578855 Days, E = 21.210640 Days

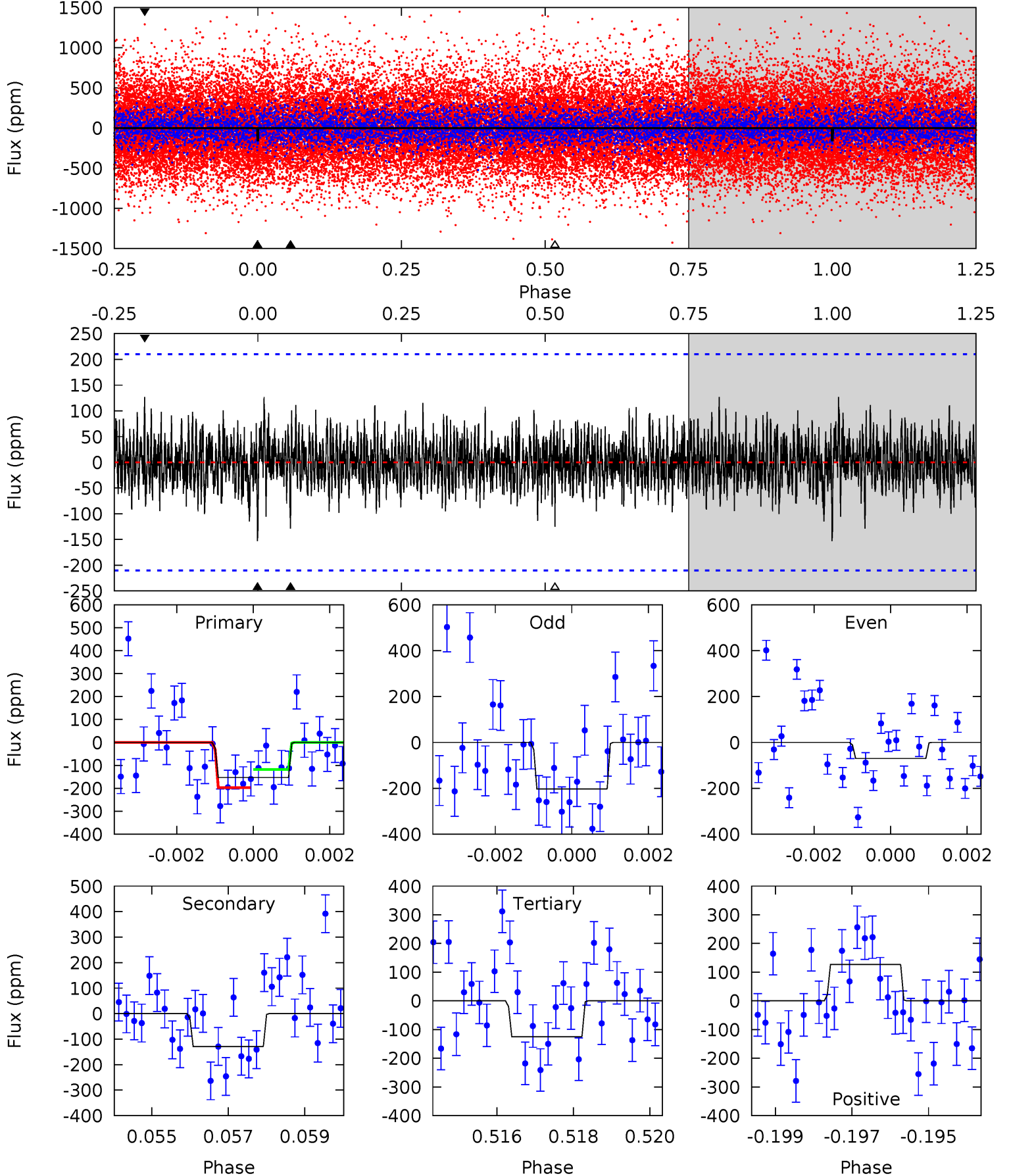
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.84	3.67	3.61	5.79	5.28	3.01	1.38	4.23	2.06	0.06	-2.11	0.57	0.93	0.42	0.18



# Alt Model-Shift Uniqueness Test

007381977-03,  $P = 258.586702$  Days,  $E = 21.272520$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.89	3.27	3.17	3.22	5.34	3.11	0.91	0.72	0.67	0.10	0.05	1.65	1.10	0.45	0.99



### Stellar Parameters For KIC 007381977

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5672^{+152}_{-169}$	$4.577^{+0.031}_{-0.168}$	$-0.300^{+0.300}_{-0.300}$	$0.797^{+0.206}_{-0.069}$	$0.887^{+0.088}_{-0.107}$	$2.463^{+0.413}_{-1.133}$
	+3%/-3%	+1%/-4%	+100%/-100%	+26%/-9%	+10%/-12%	+17%/-46%
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 007381977-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-129 \pm 35$	$1.69^{+0.96}_{-0.81}$	$366^{+21}_{-16}$	$4557^{+1642}_{-656}$	$13981^{+40070}_{-8453}$
Alt.	$-129 \pm 39$	$1.24^{+0.80}_{-0.74}$	$366^{+20}_{-15}$	$5228^{+3045}_{-1036}$	$25512^{+137688}_{-16740}$

$T_{max}$  = 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

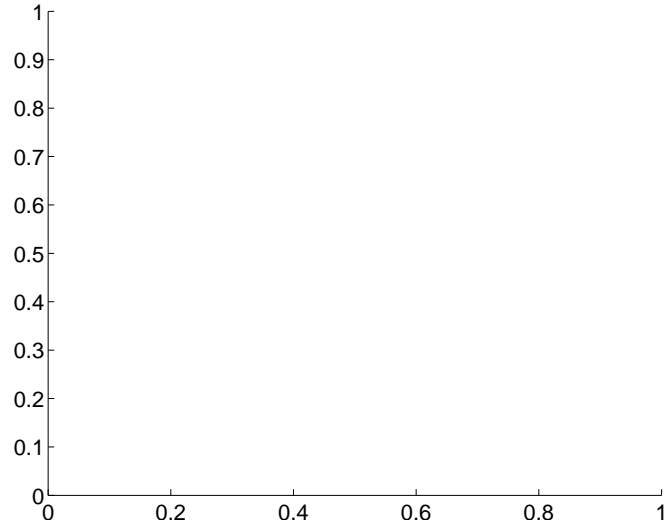
Supplemental centroid analysis for 007381977-03. Kepler magnitude: 15.04. Transit SNR 8.08

There are 0 quarters with good PRF difference image offsets

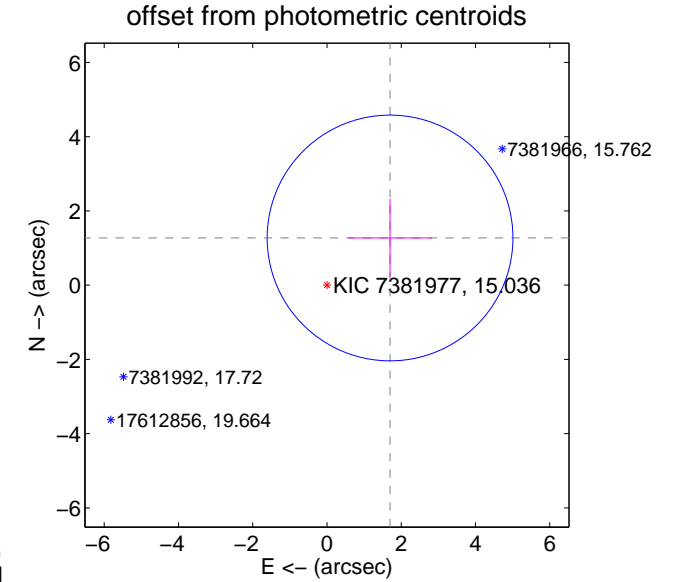
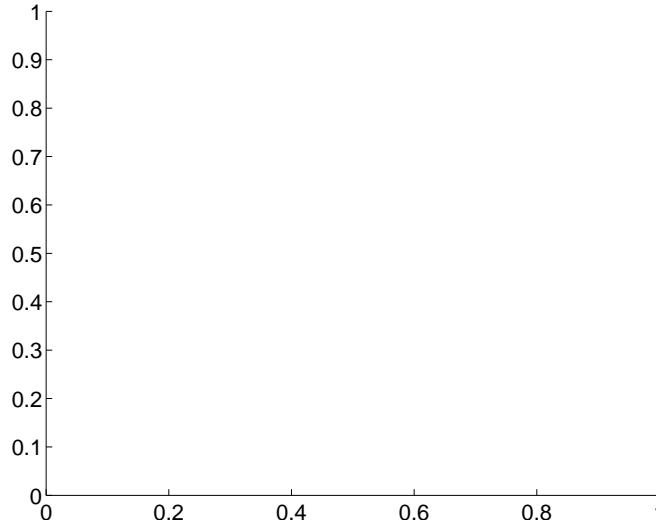
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$2.12 \pm 1.10$	1.92	$-1.70 \pm 1.13$	$1.27 \pm 1.05$

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



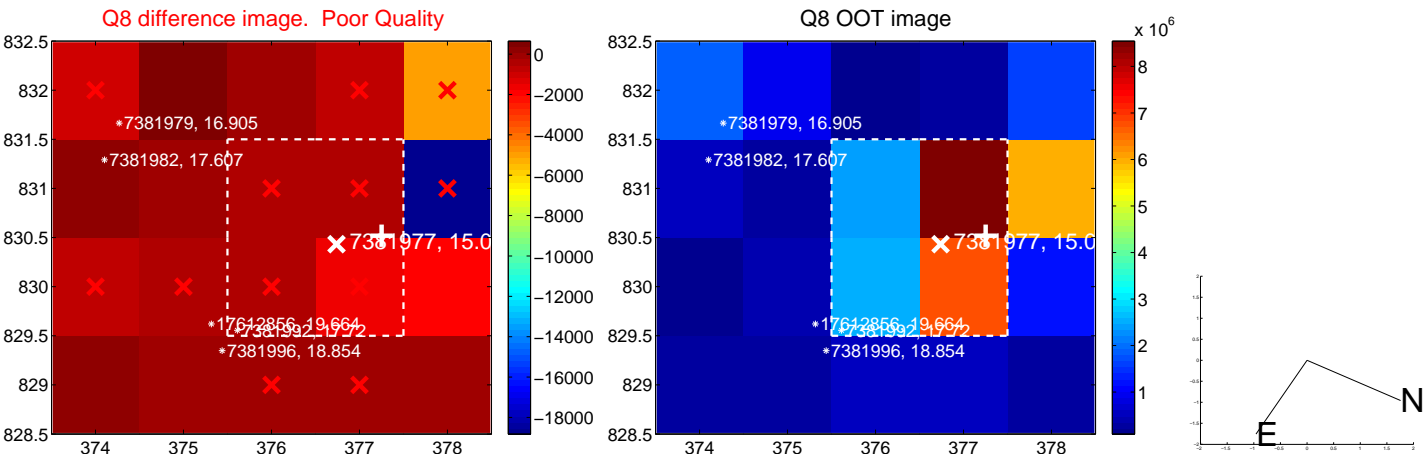
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



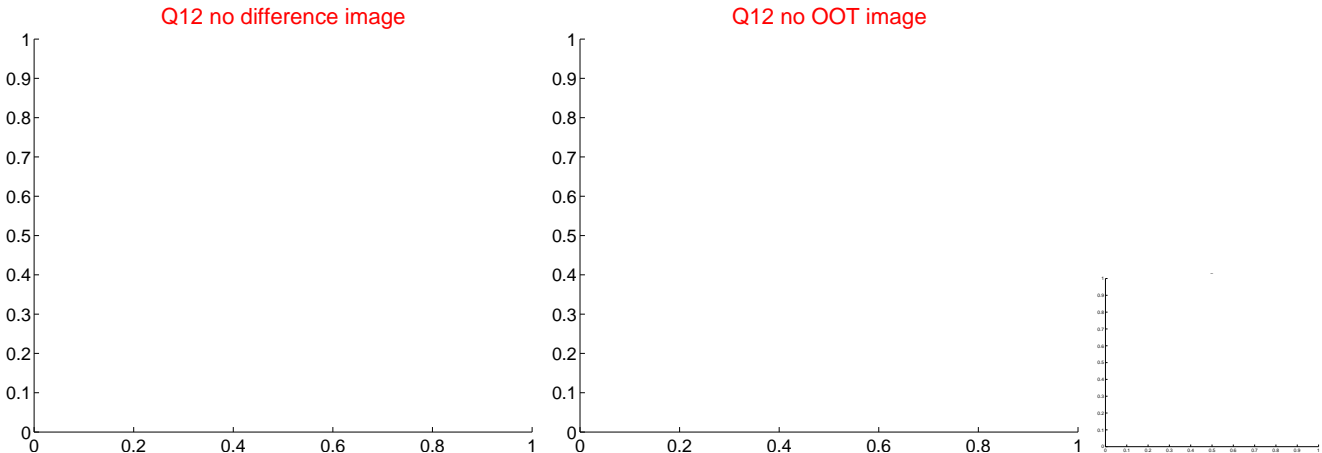
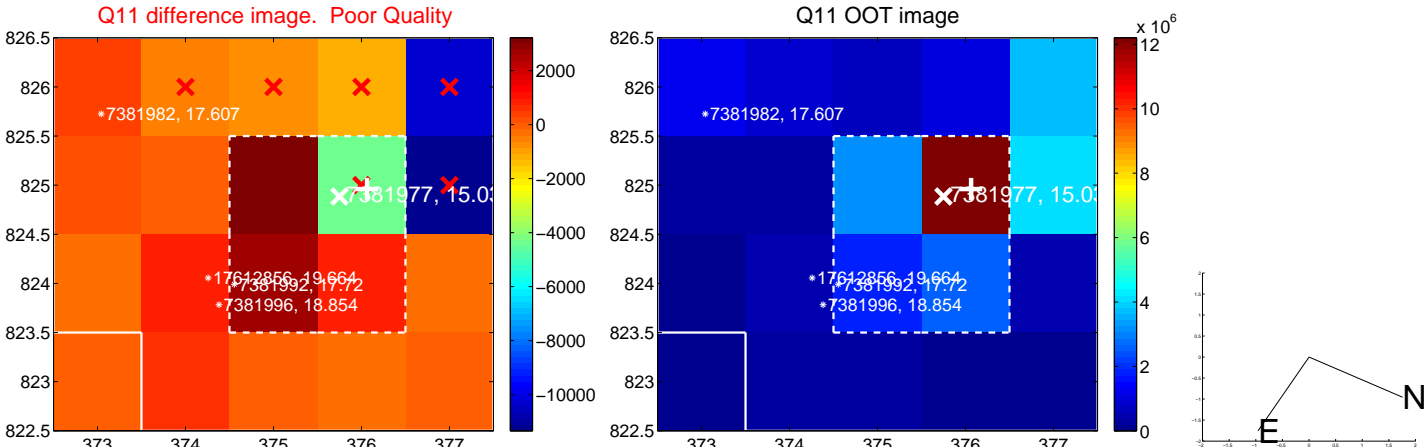
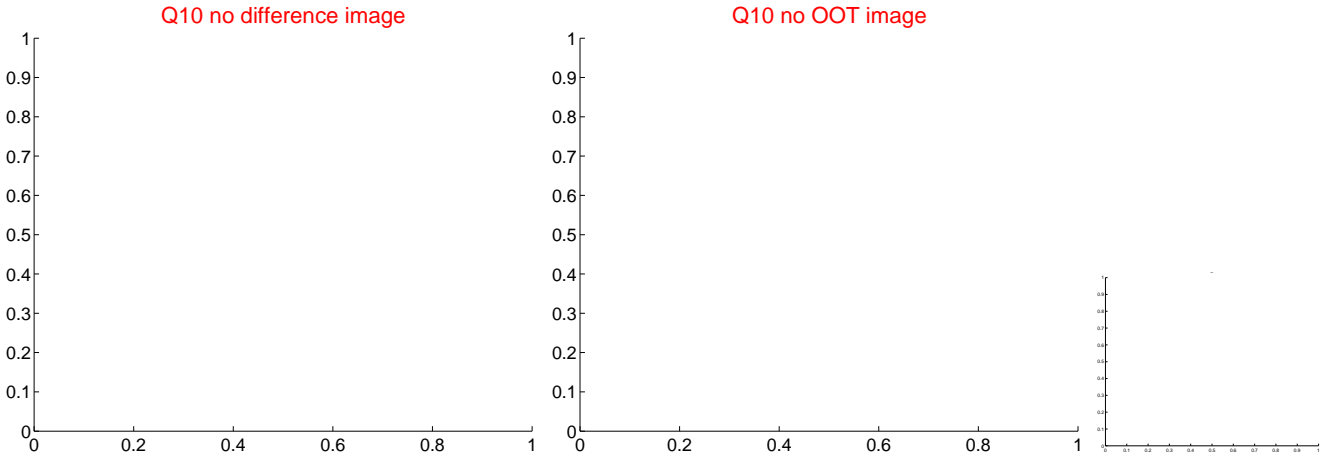
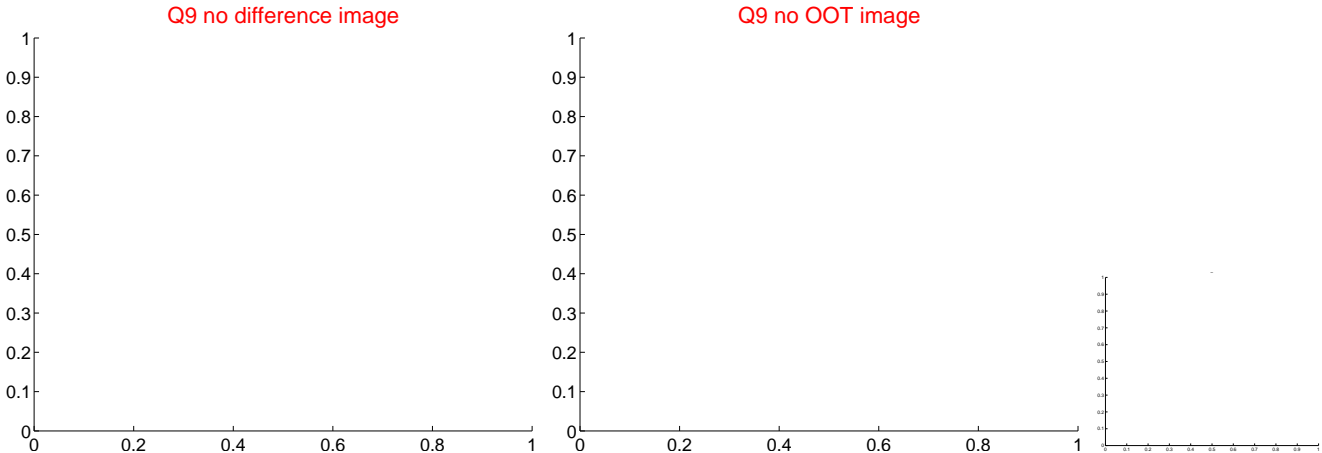
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

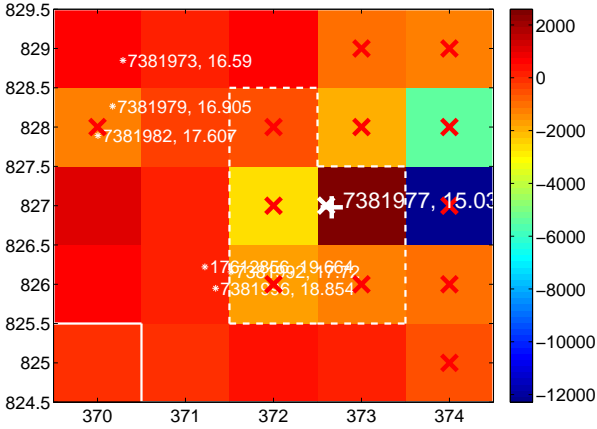
Q13 no difference image



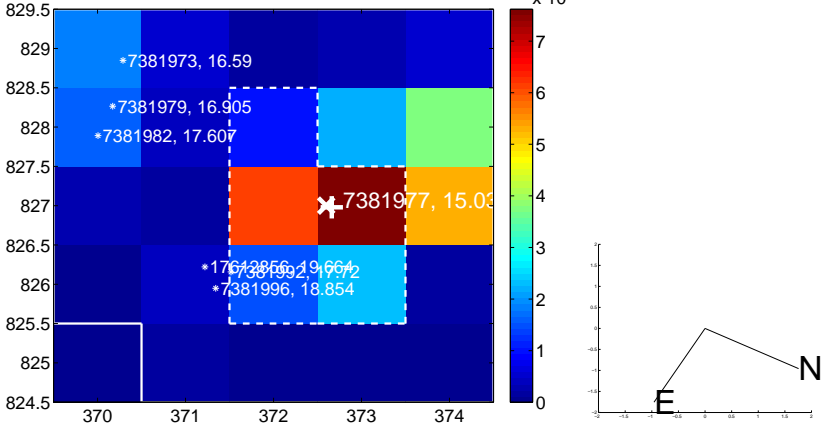
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



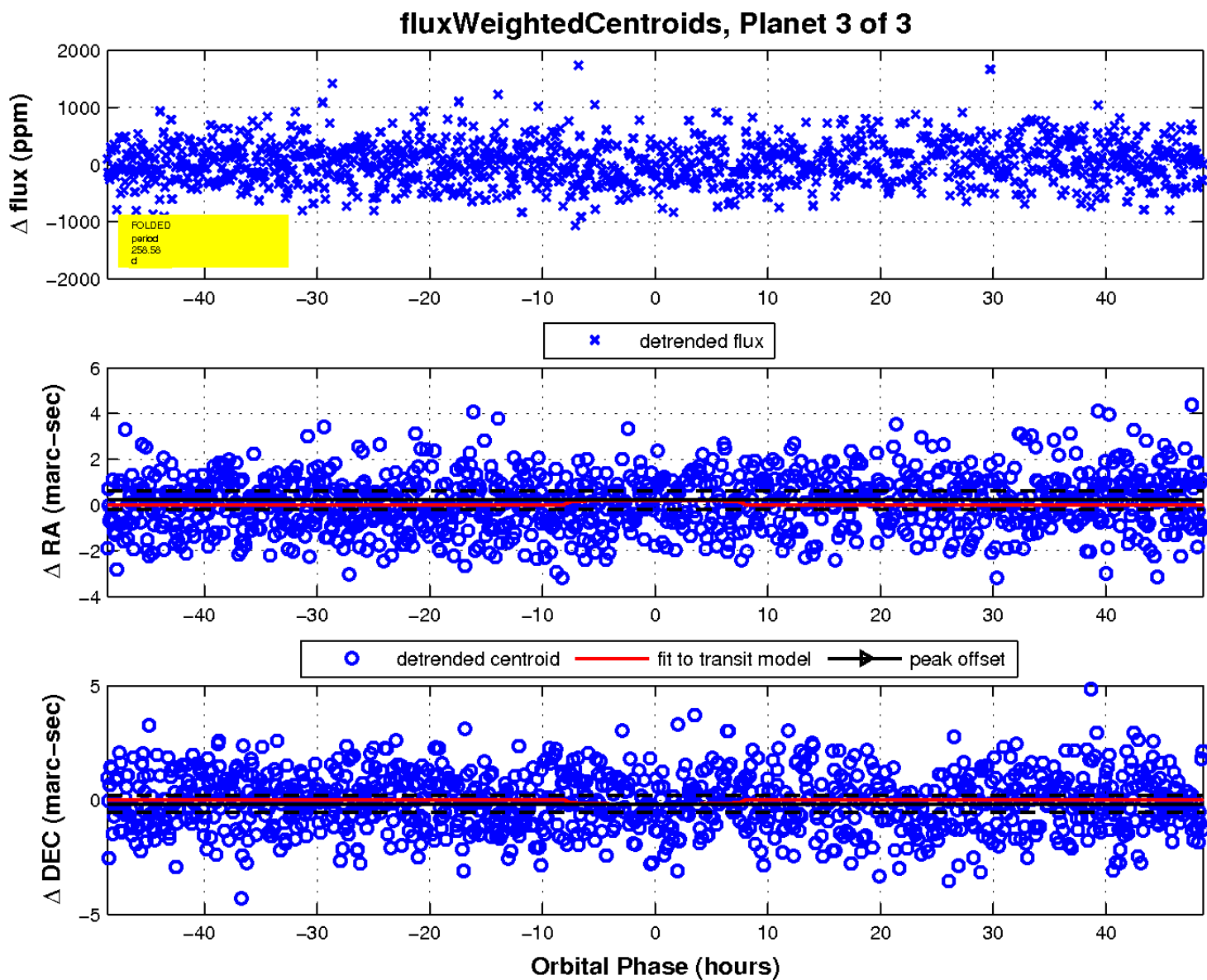
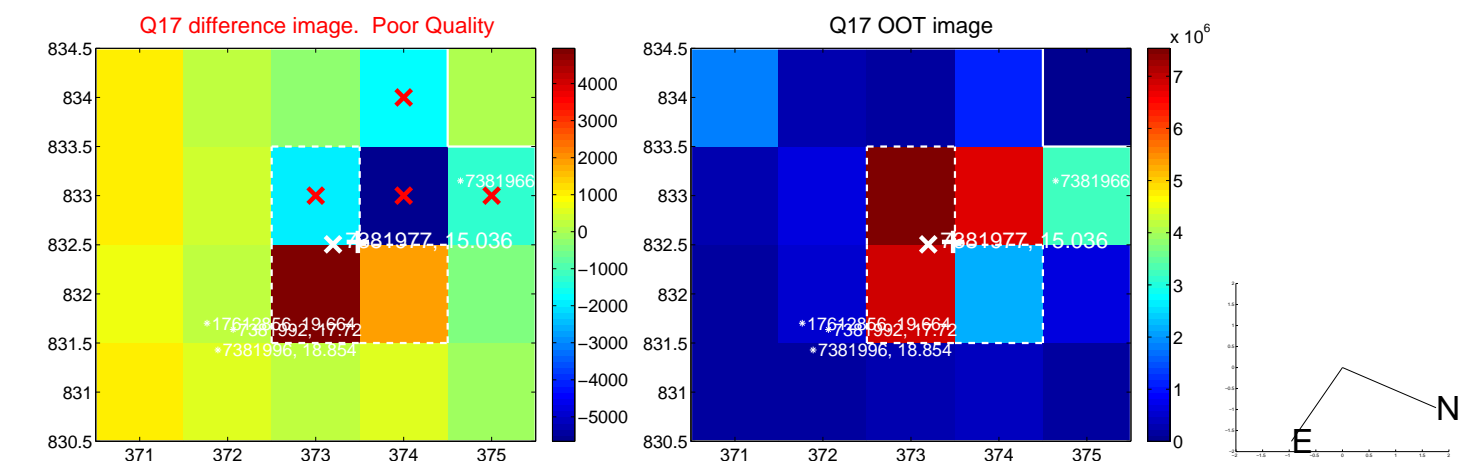
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

