

# KIC 011080481

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011080481-01	OBS	No	455.822672	328.025254	719.7	2.321	16.7	2.0	0.68	5339	1.95	0.33
011080481-02	OBS	No	0.997835	132.461315	116.8	1.893	8.9	8.6	0.68	5339	0.86	1165.65

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011080481-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011080481-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

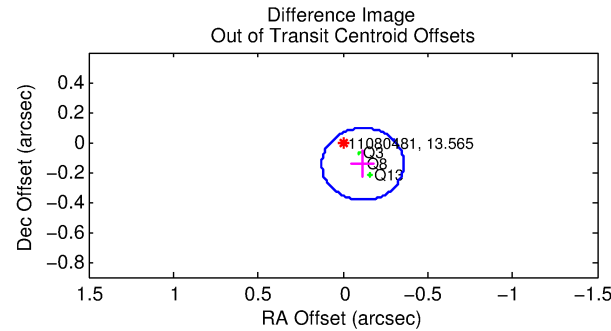
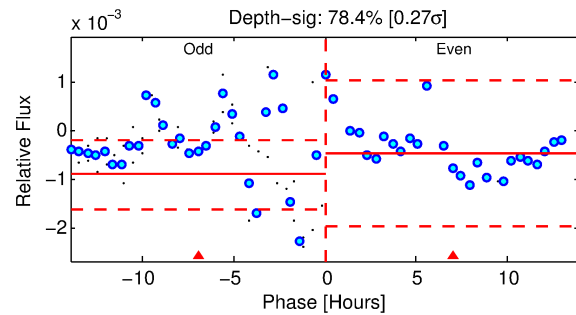
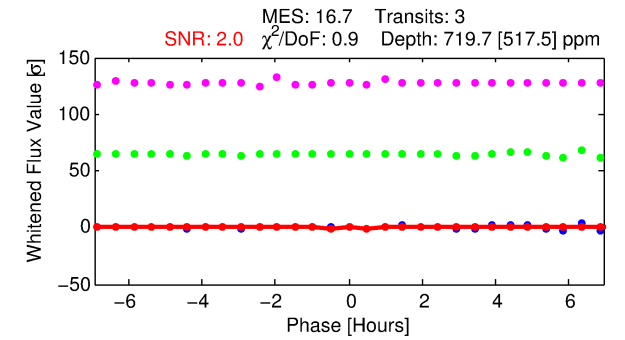
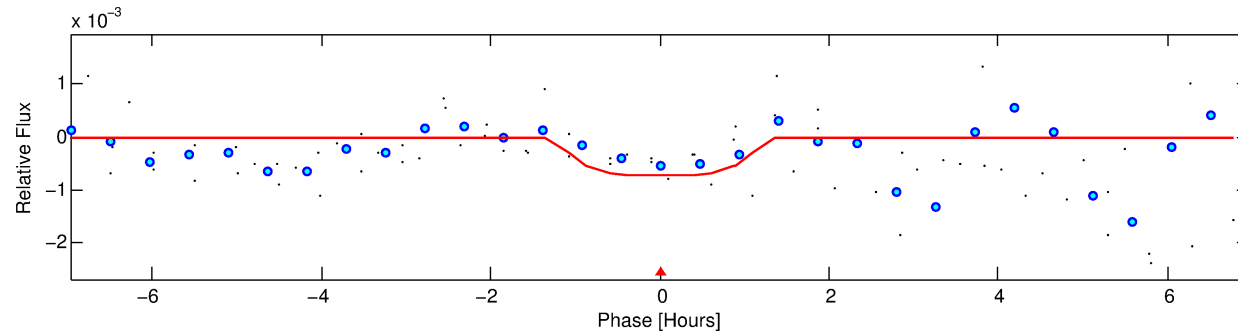
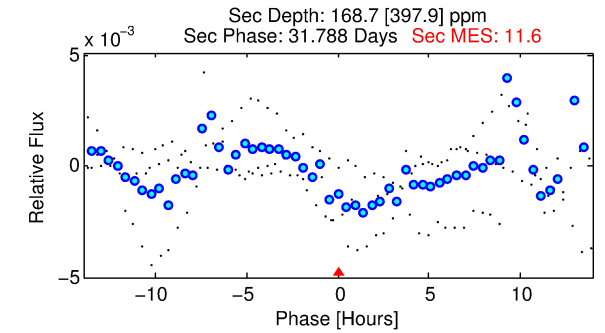
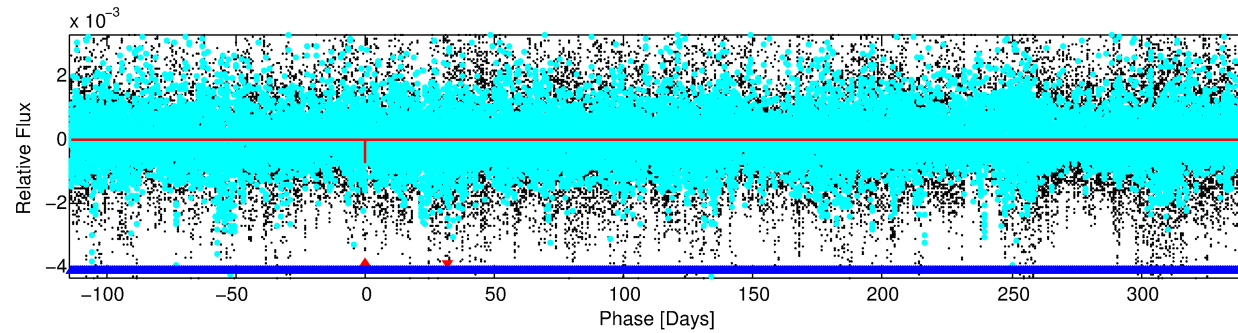
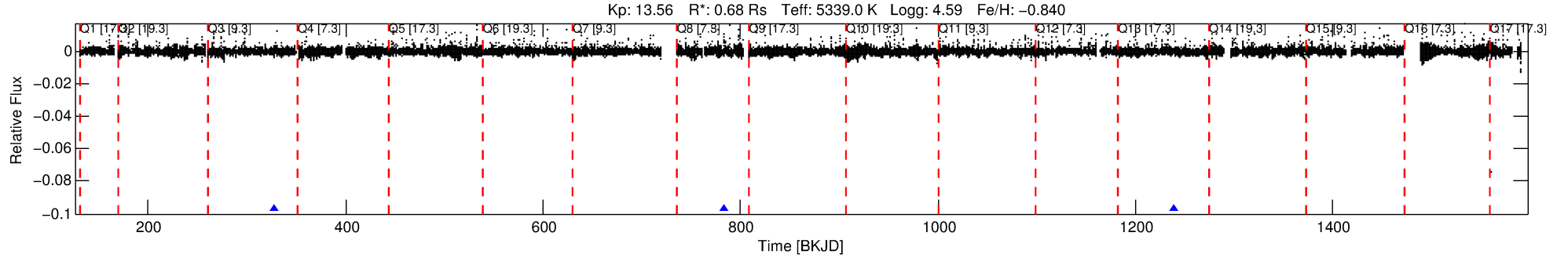
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011080481-01

No Significant Match Found

# DV One-Page Summary

KIC: 11080481 Candidate: 1 of 2 Period: 455.823 d



## DV Fit Results:

Period = 455.82267 [0.00931] d  
Epoch = 328.0253 [0.0154] BKJD  
Rp/R\* = 0.0263 [0.0753]  
a/R\* = 1131.30 [13549.10]  
b = 0.70 [8.99]  
Seff = 0.33 [0.06]  
Teq = 193 [9] K  
Rp = 1.95 [5.58] Re  
a = 1.0065 [0.0874] AU  
Ag = 24829.51 [153984.83] [0.16σ]  
Teffp = 3755 [5821] K [0.61σ]

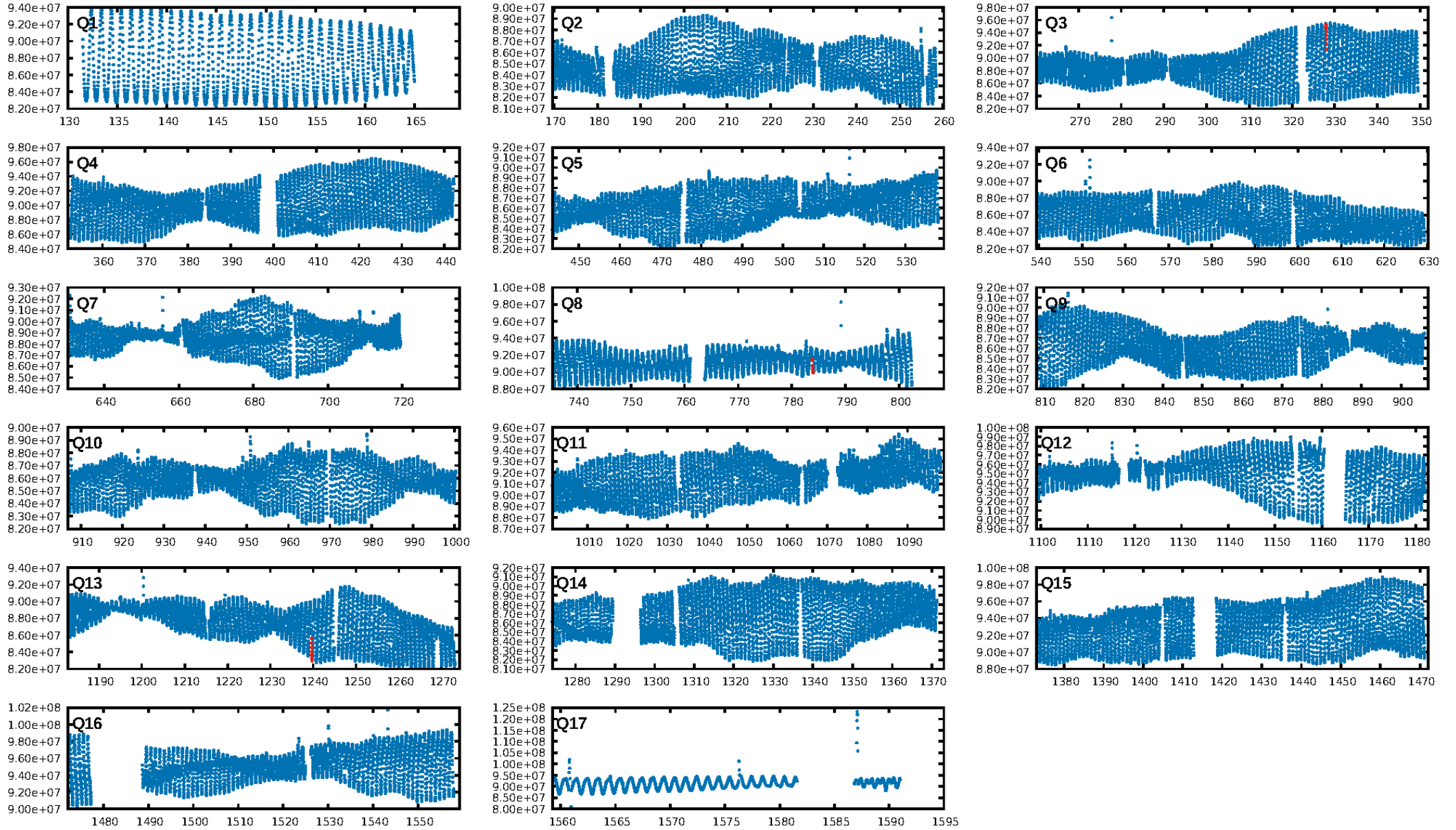
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3644.25σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 53.7%  
ModelChiSquareGof-sig: 99.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.5412  
Centroid-sig: 31.4%  
Centroid-so: 1.647 arcsec [0.59σ]  
OotOffset-rm: 0.187 arcsec [2.33σ]  
KicOffset-rm: 0.153 arcsec [2.12σ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-st: 0/1/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.33 [1/3]

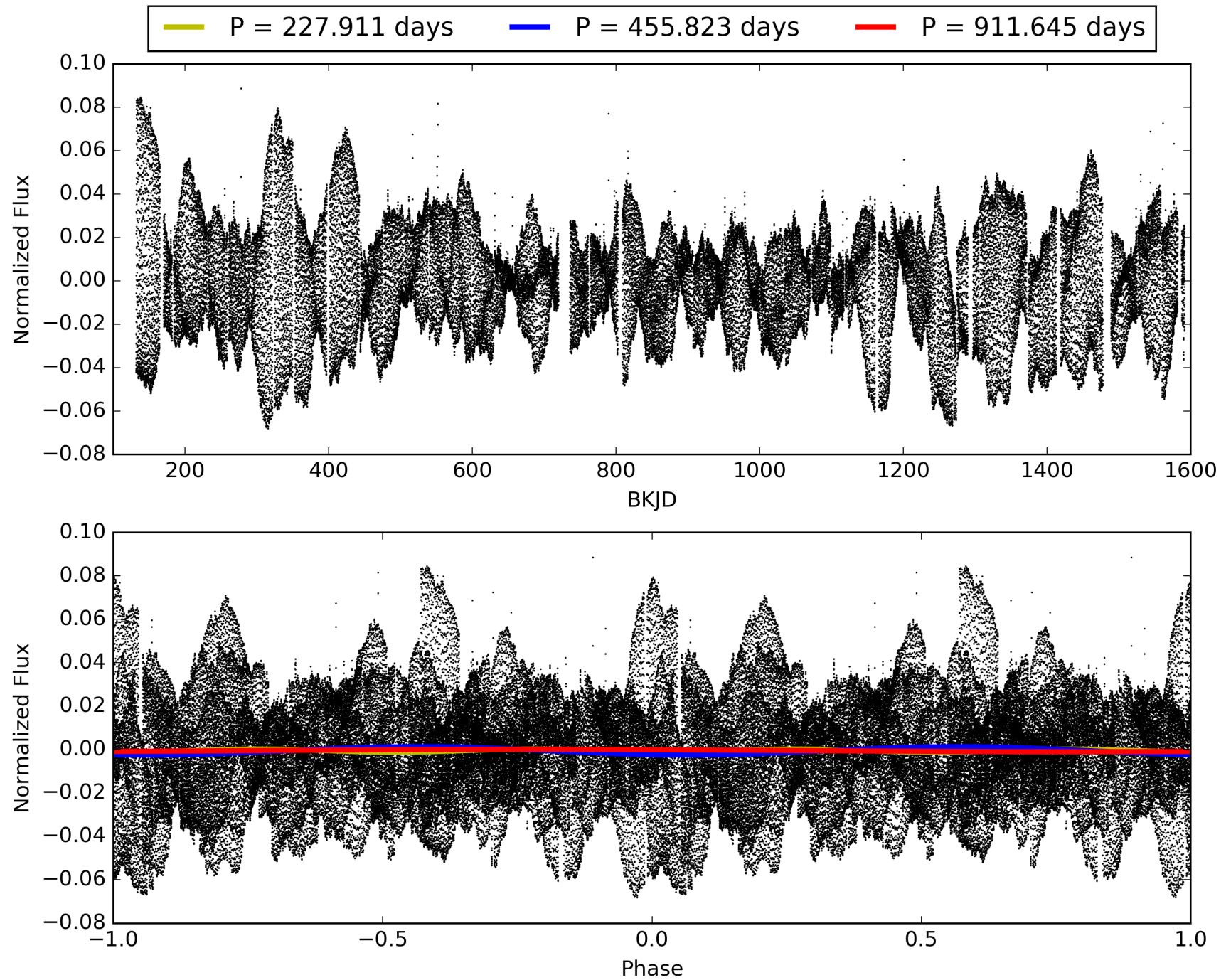
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:08:26 Z

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

# TCE 011080481-01, PDC Light Curves

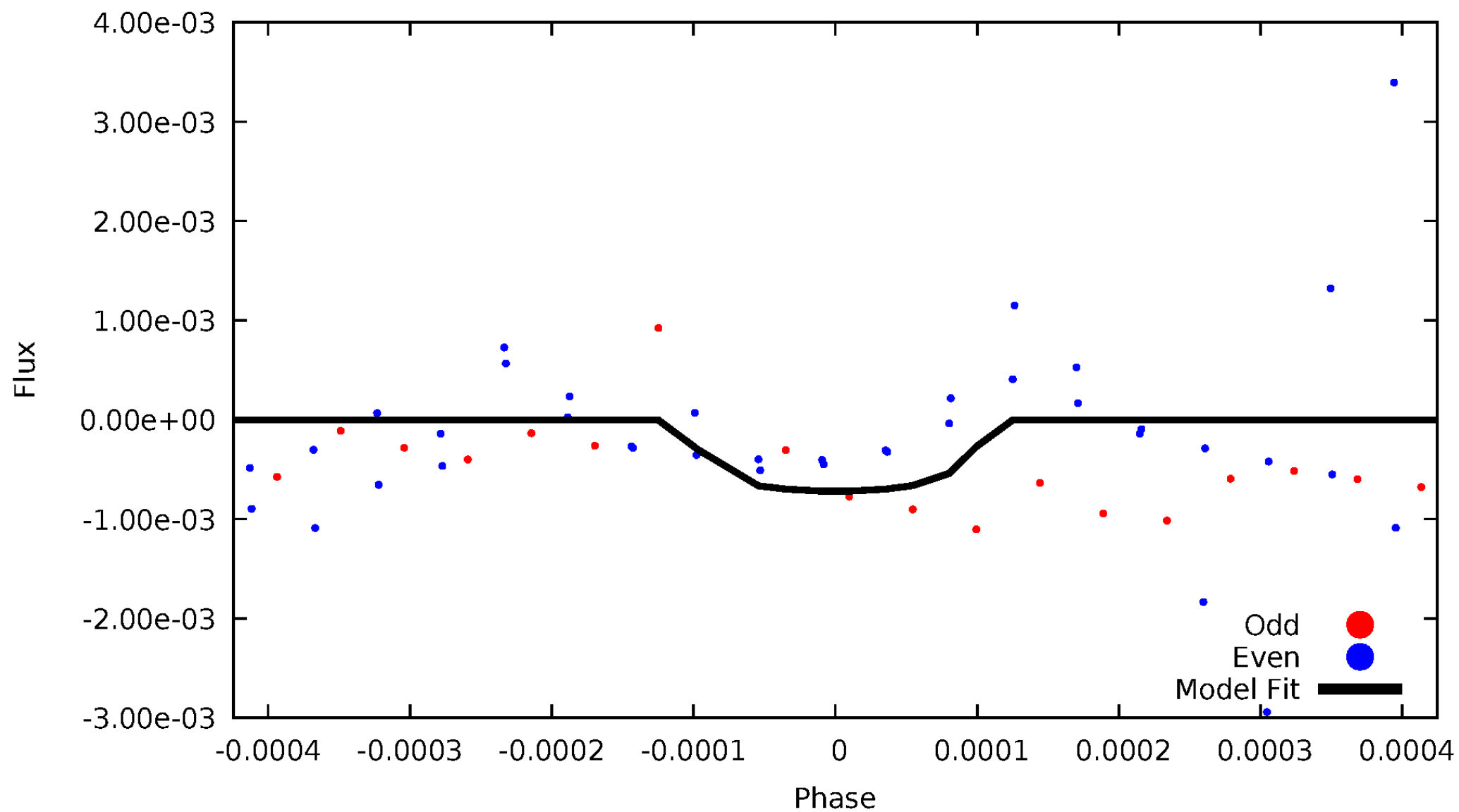


# TCE 011080481-01



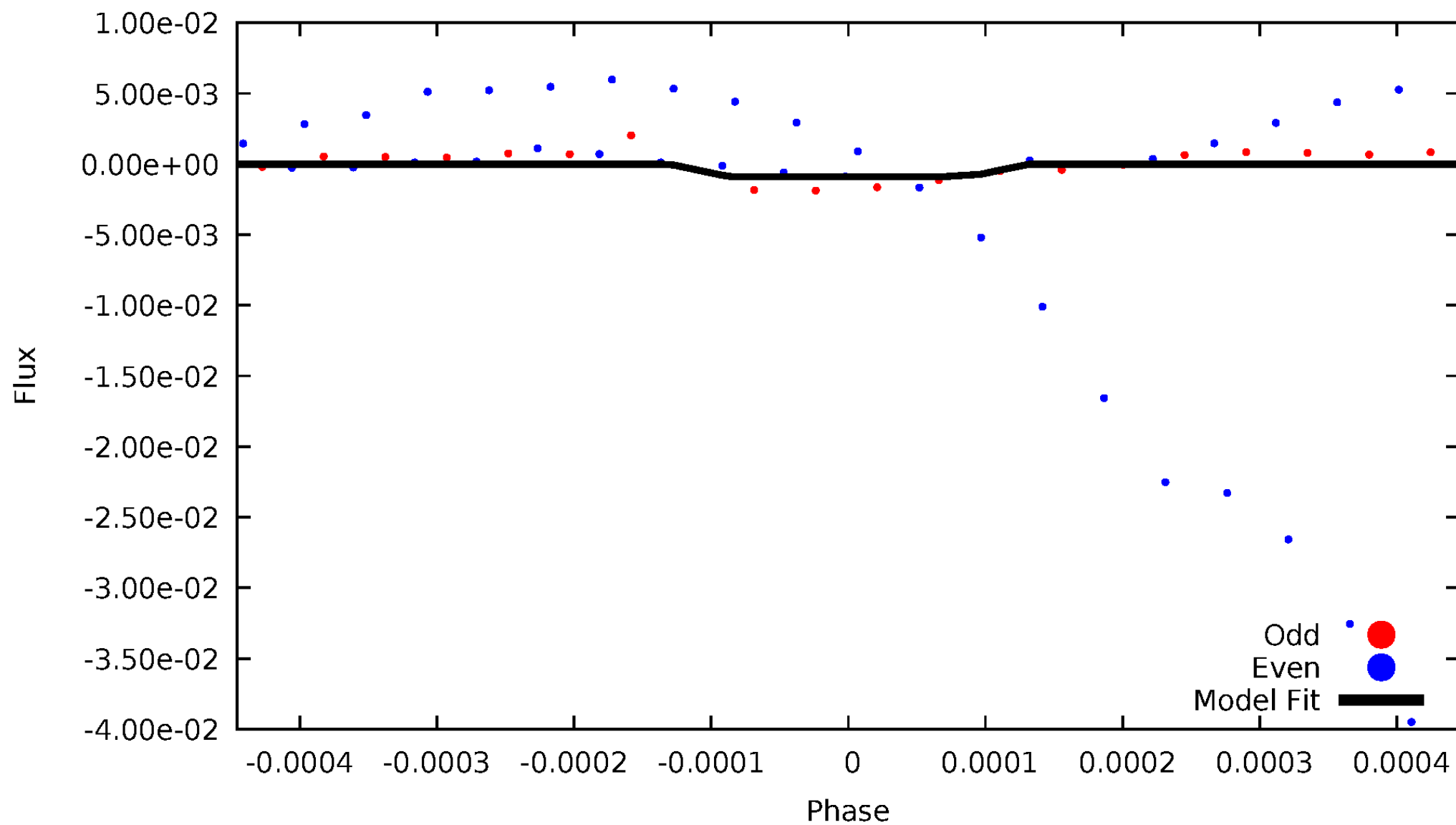
# DV Odd/Even

TCE 011080481-01



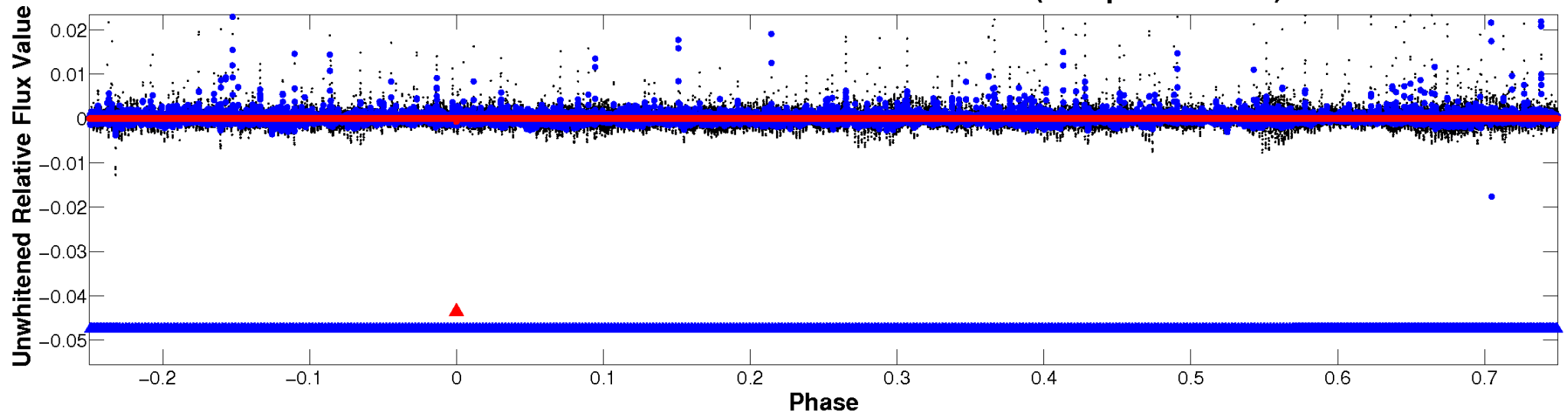
# ALT Odd/Even

TCE 011080481-01

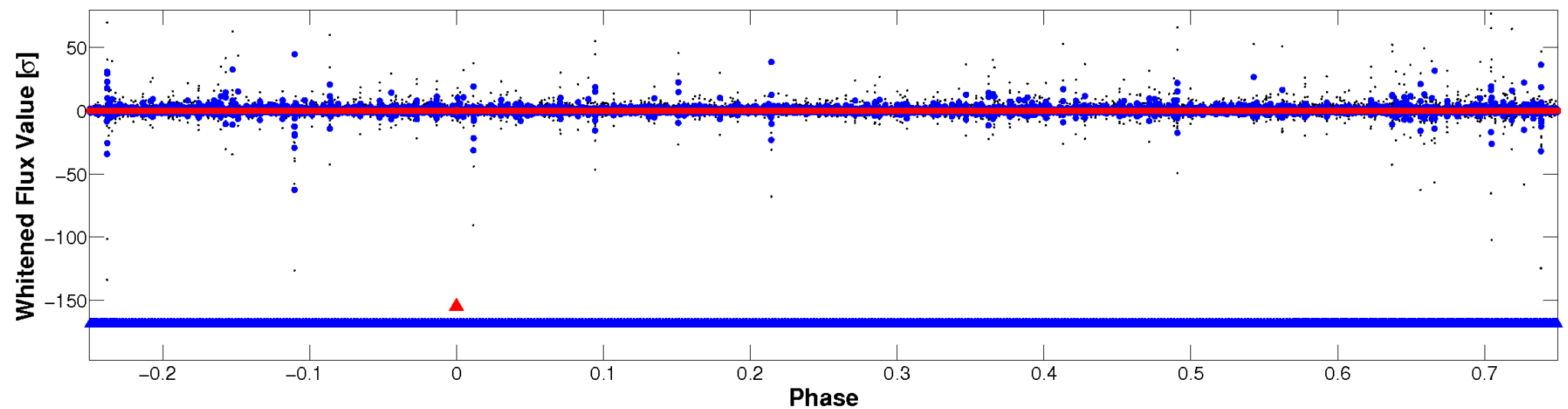


# Non-Whitened Vs. Whitened Light Curve

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

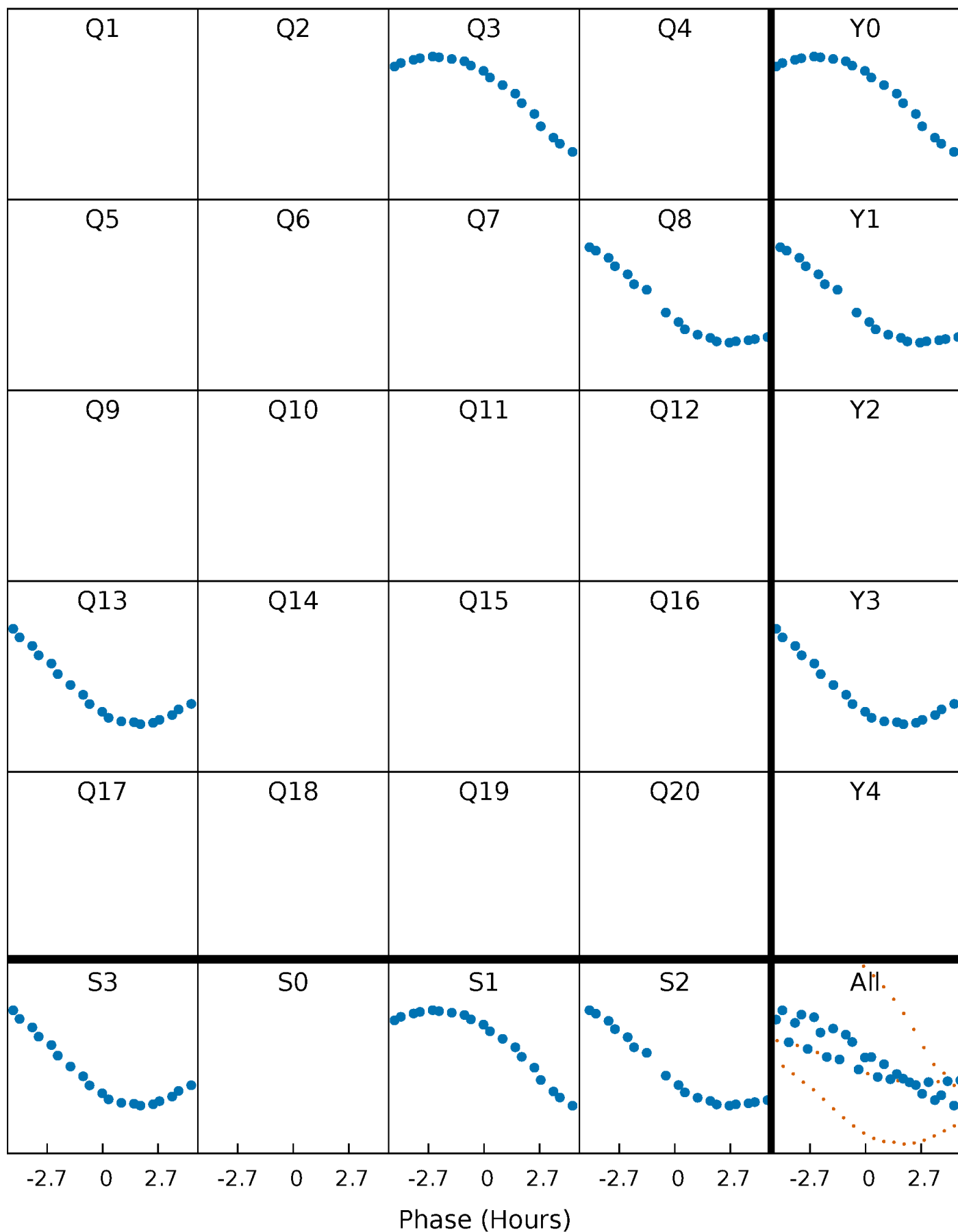


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

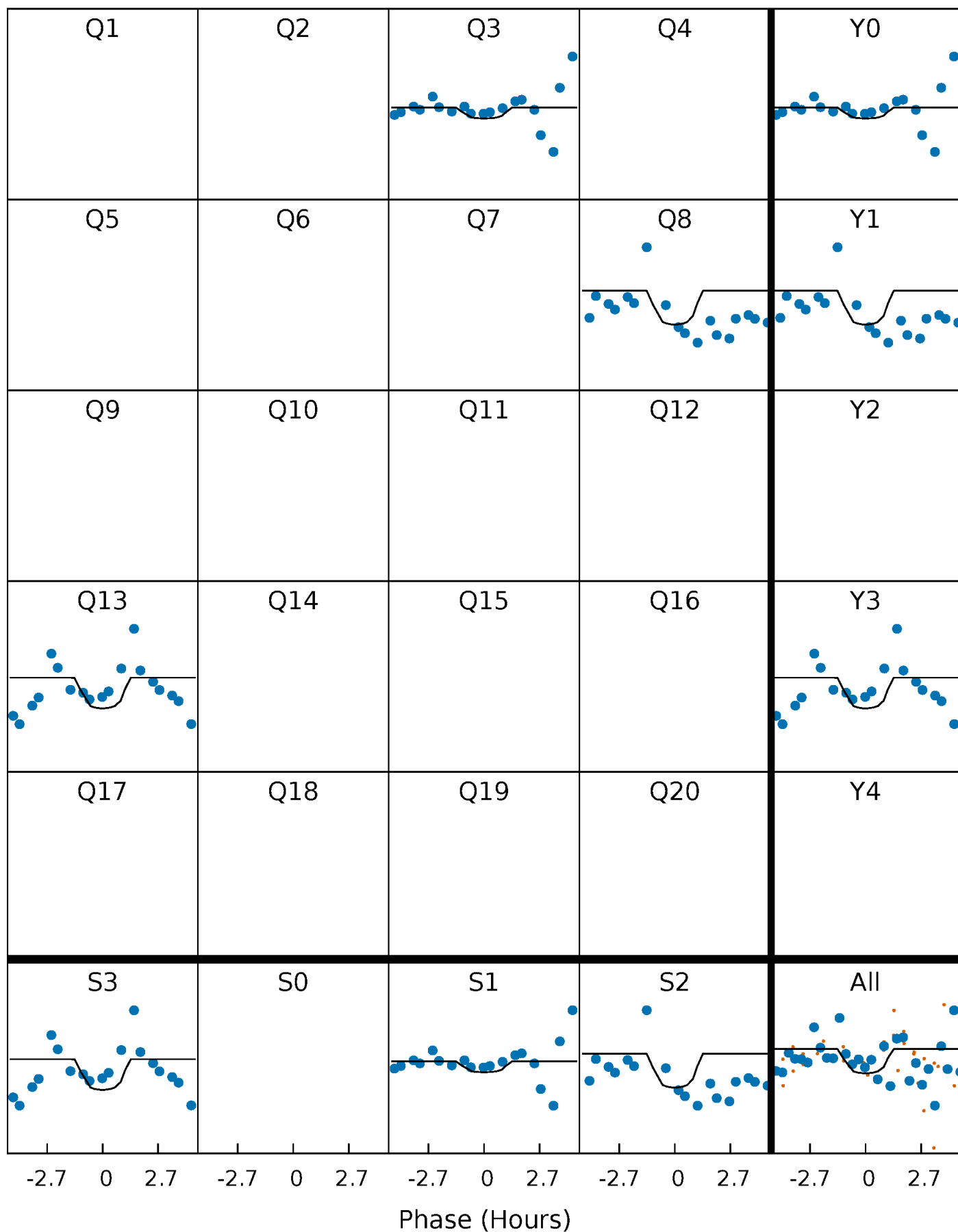
TCE 011080481-01 P=455.822672 Days  $T_0=328.025254$  (BKJD)





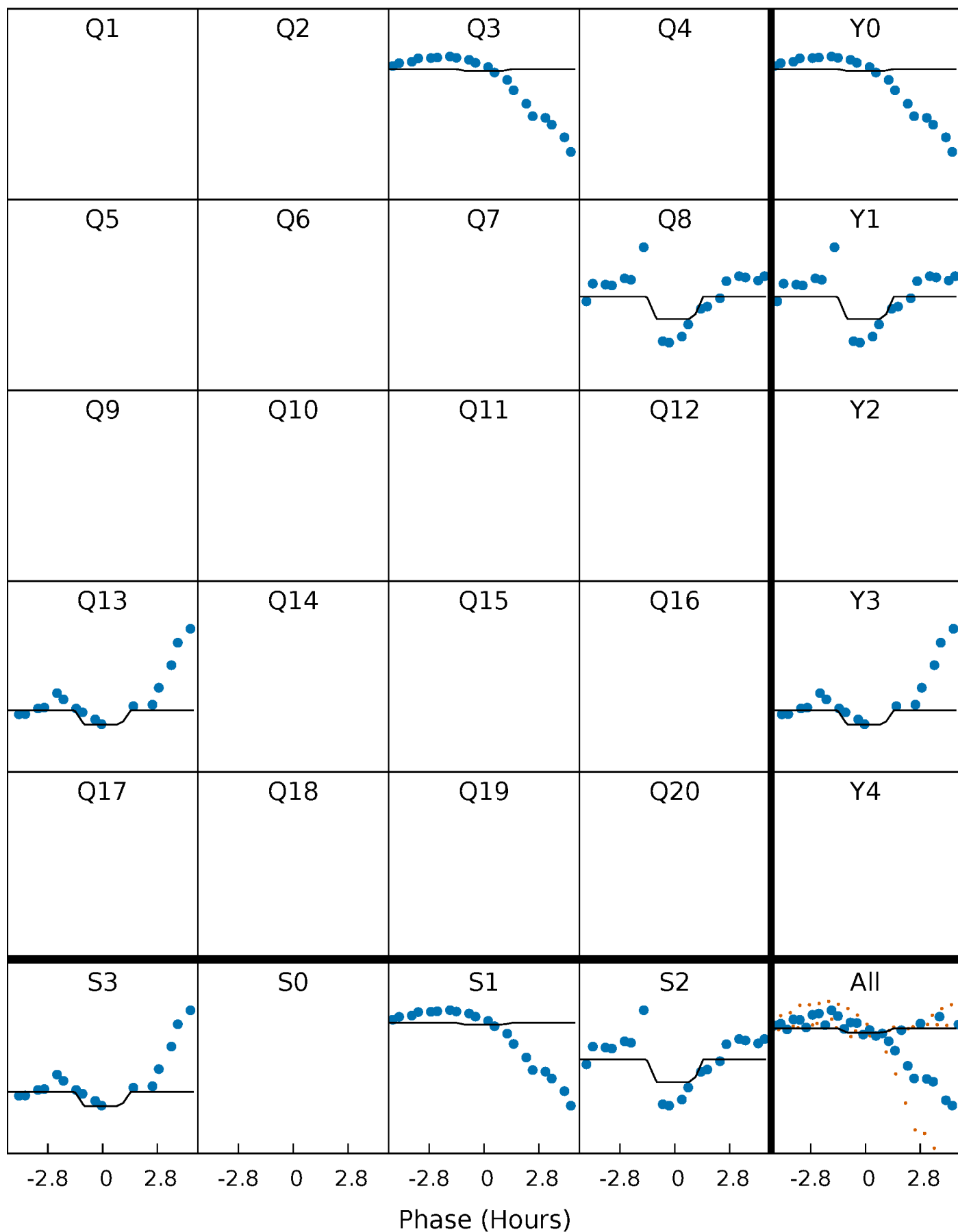
# DV Quarter-Phased Transit Curves

TCE 011080481-01     $P=455.822672$  Days     $T_0=328.025254$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

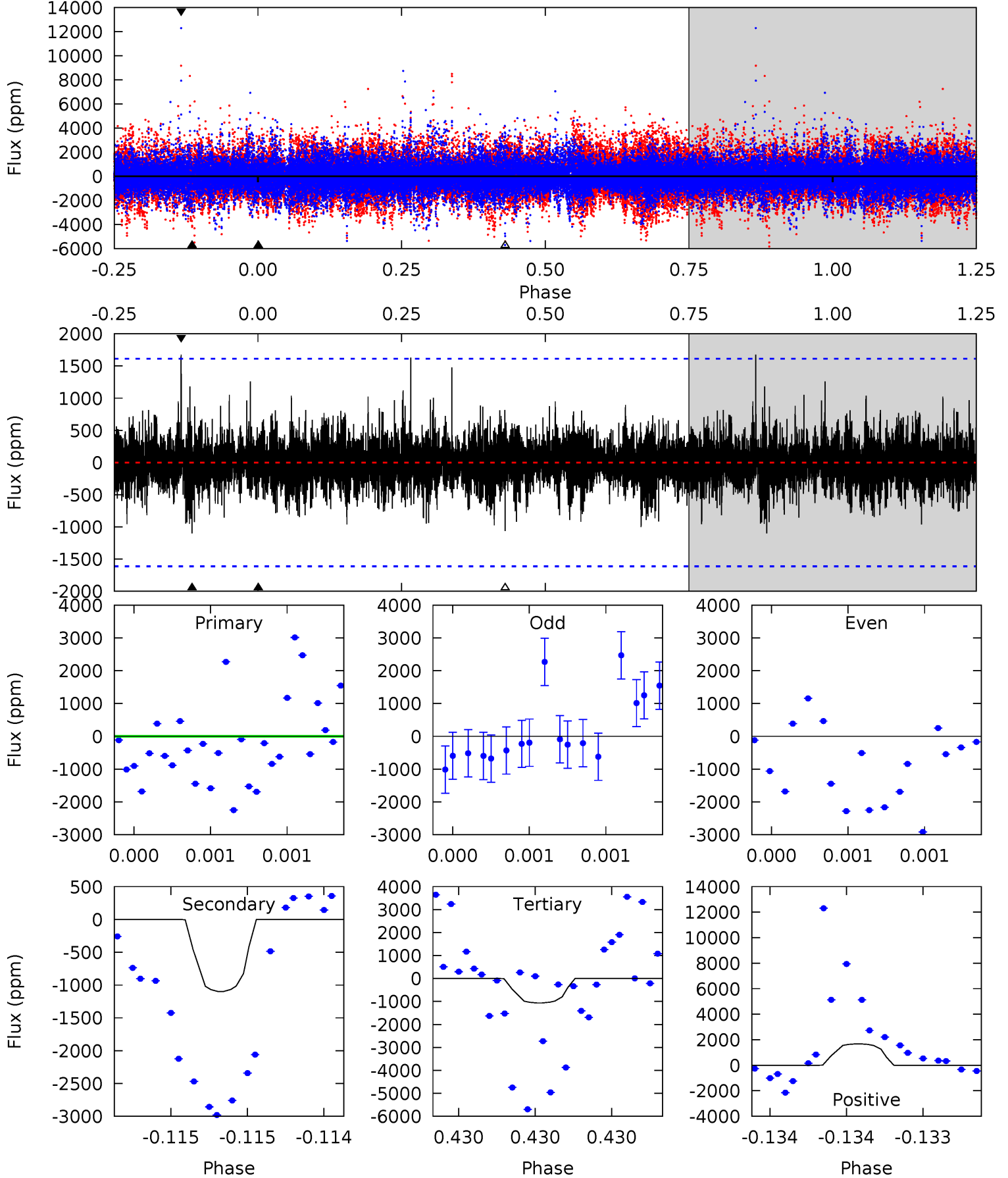
TCE 011080481-01 P=455.804612 Days  $T_0=328.058643$  (BKJD)



# DV Model-Shift Uniqueness Test

011080481-01, P = 455.822672 Days, E = 328.025254 Days

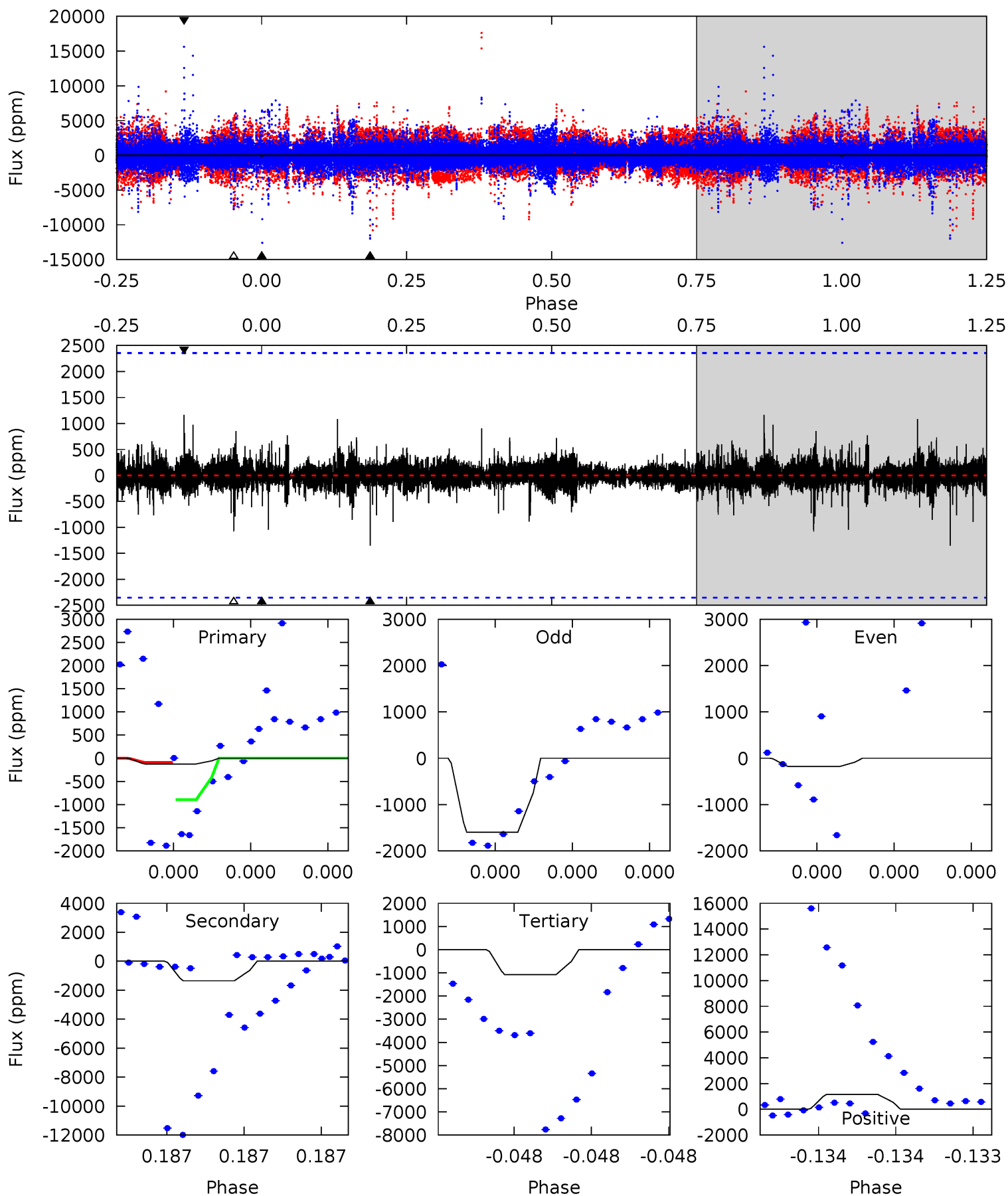
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.63	3.87	3.75	5.91	5.68	3.64	0.91	-2.11	-4.28	0.12	-2.04	0.56	1.38	0.60	0.14



# Alt Model-Shift Uniqueness Test

011080481-01, P = 455.804612 Days, E = 328.058643 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
0.30	3.27	2.62	2.82	5.71	3.69	0.38	-2.32	-2.52	0.65	0.45	1.28	0.89	0.46	0.94



### Stellar Parameters For KIC 011080481

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5339^{+160}_{-144}$	$4.590^{+0.078}_{-0.052}$	$-0.840^{+0.300}_{-0.300}$	$0.679^{+0.064}_{-0.064}$	$0.654^{+0.071}_{-0.029}$	$2.946^{+0.981}_{-0.570}$
	+3%/-3%	+2%/-1%	+36%/-36%	+9%/-9%	+11%/-4%	+33%/-19%
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 011080481-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1099 \pm 284$	$4.24^{+4.53}_{-2.82}$	$270^{+9}_{-10}$	$4270^{+2752}_{-982}$	$34981^{+268404}_{-27386}$
Alt.	$-1348 \pm 412$	$5.04^{+4.40}_{-3.60}$	$269^{+11}_{-10}$	$4168^{+3065}_{-855}$	$30345^{+321979}_{-22614}$

$T_{\text{max}}$  = 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

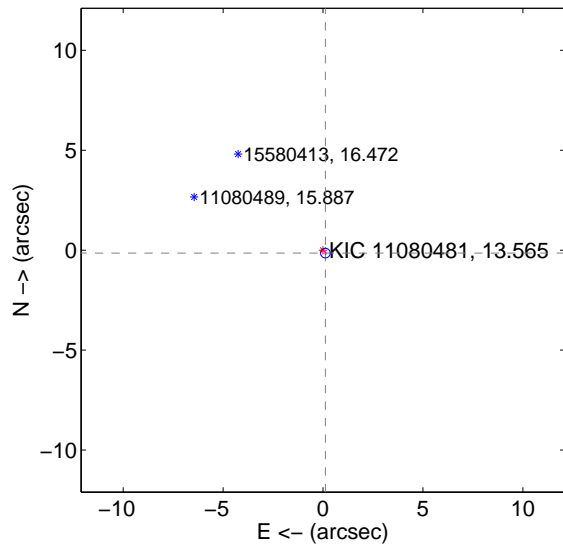
Supplemental centroid analysis for 011080481-01. Kepler magnitude: 13.56. Transit SNR 1.98

There are 2 quarters with good PRF difference image offsets

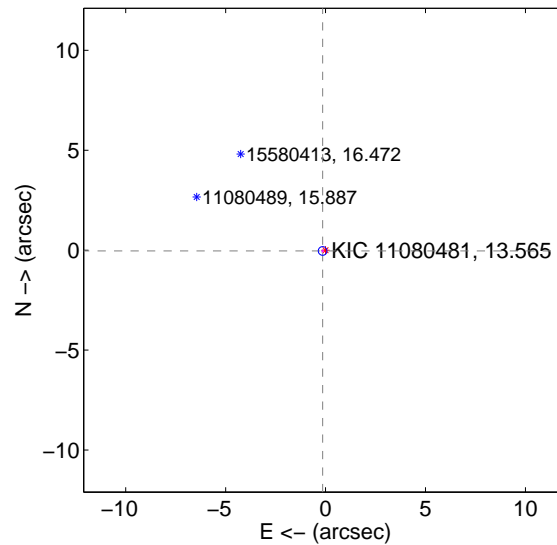
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.187 \pm 0.080$	2.33	$-0.117 \pm 0.070$	$-0.146 \pm 0.086$
PRF-fit source offset from KIC position	$0.153 \pm 0.072$	2.12	$0.148 \pm 0.072$	$-0.039 \pm 0.078$
photometric centroid source offset	$1.65 \pm 2.81$	0.59	$-1.49 \pm 2.95$	$-0.69 \pm 2.10$

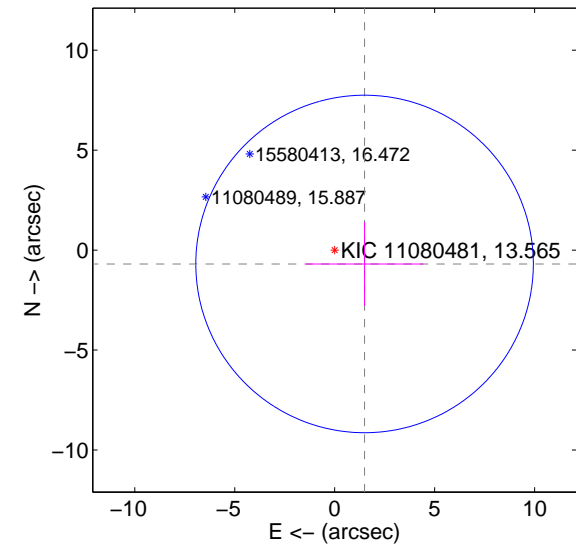
offset from difference PRF-fit to OOT PRF-fit



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- $\sigma$  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.

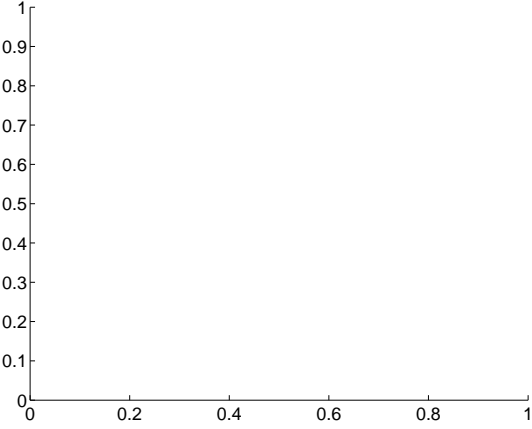
Q1 no difference image



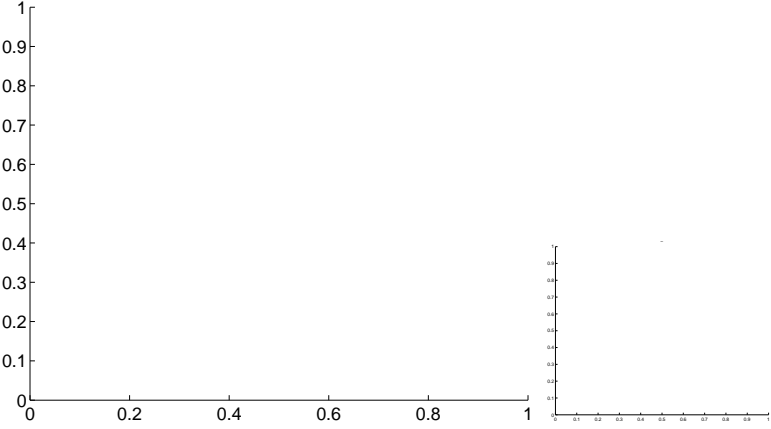
Q1 no OOT image



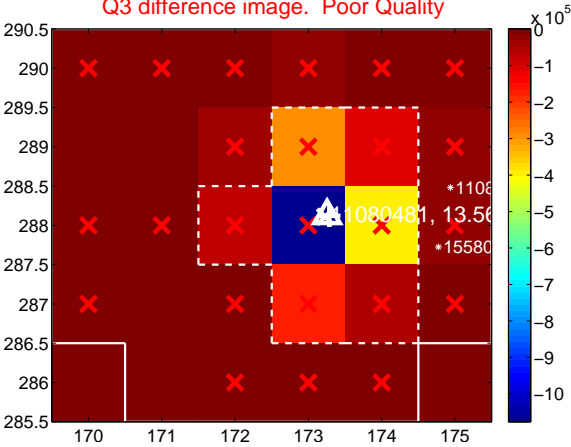
Q2 no difference image



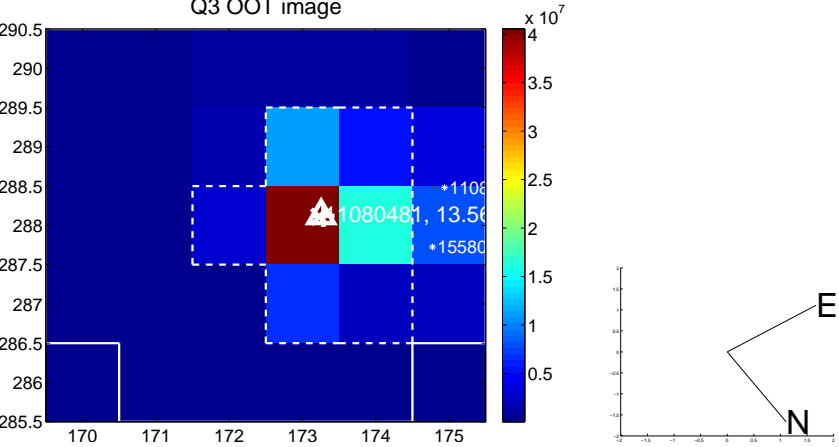
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



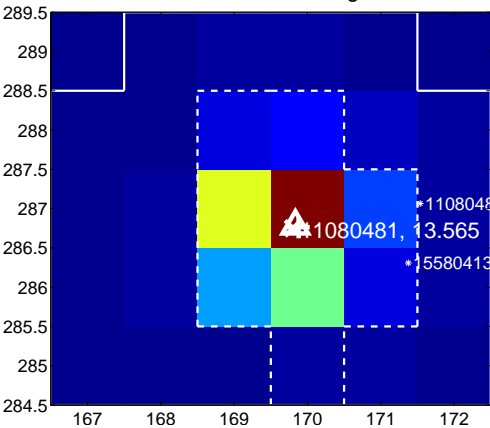
Q7 no difference image



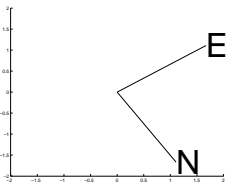
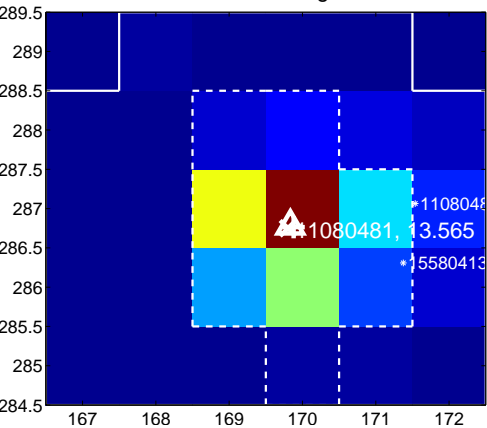
Q7 no OOT image



Q8 difference image



Q8 OOT image

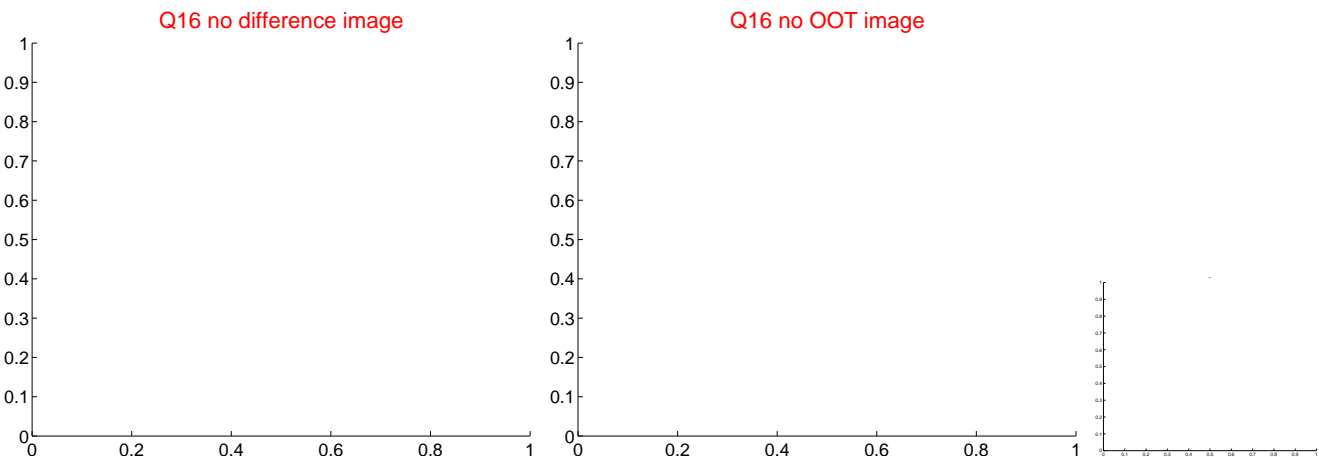
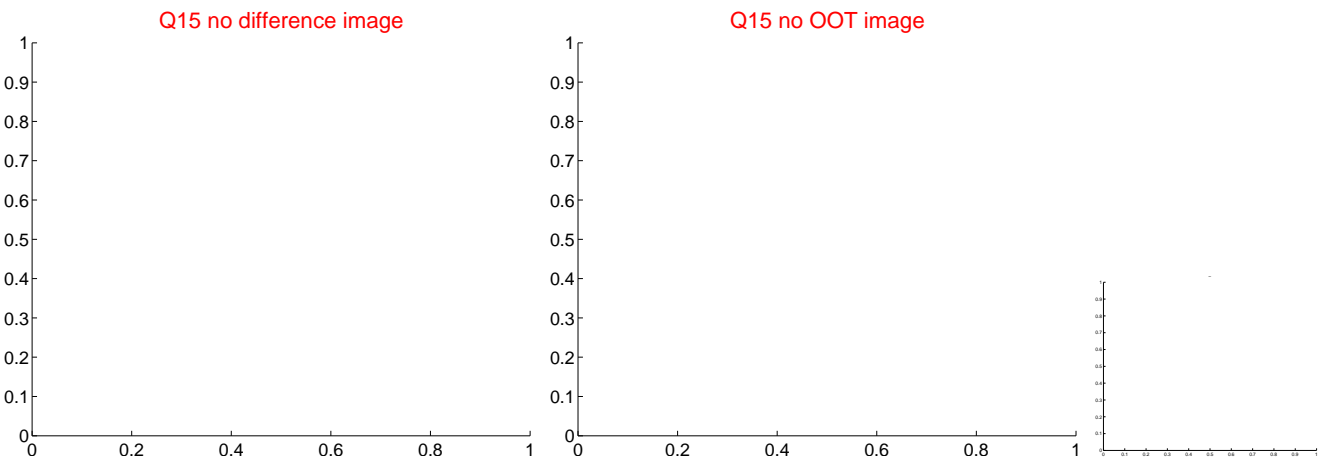
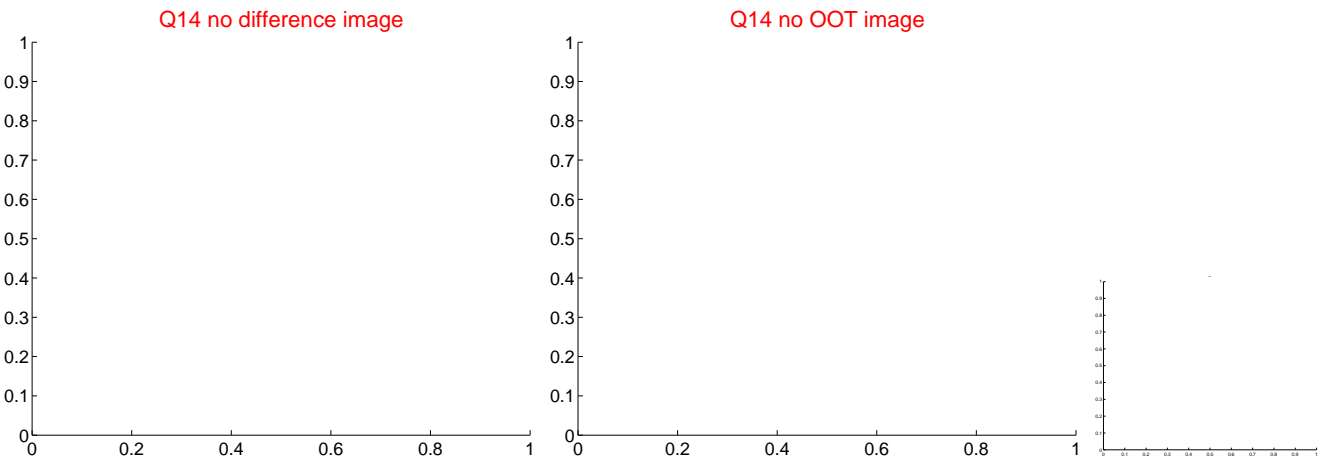
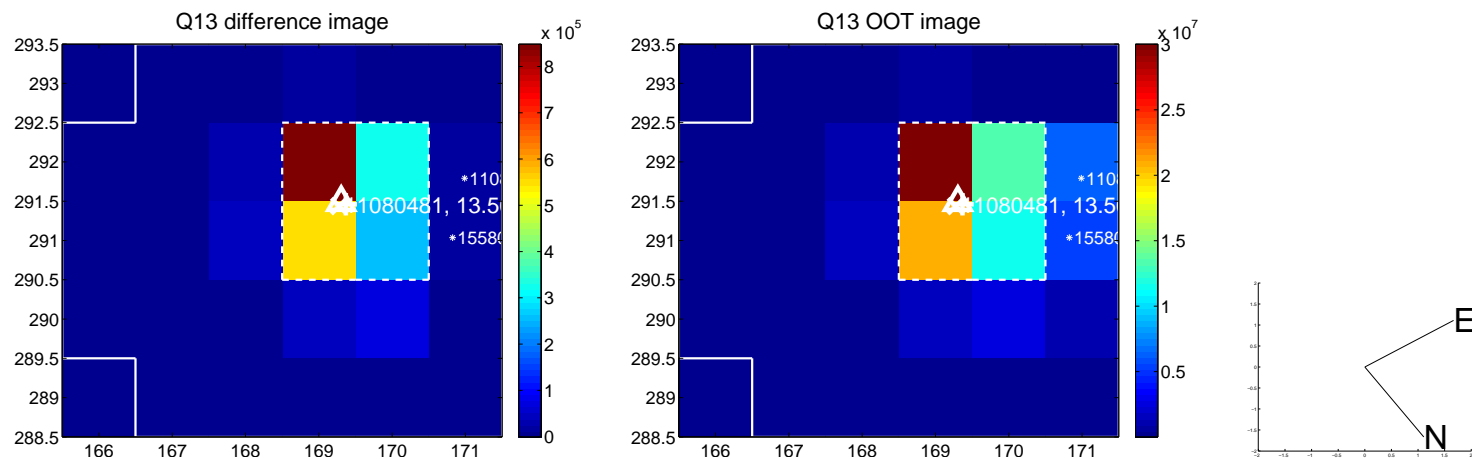




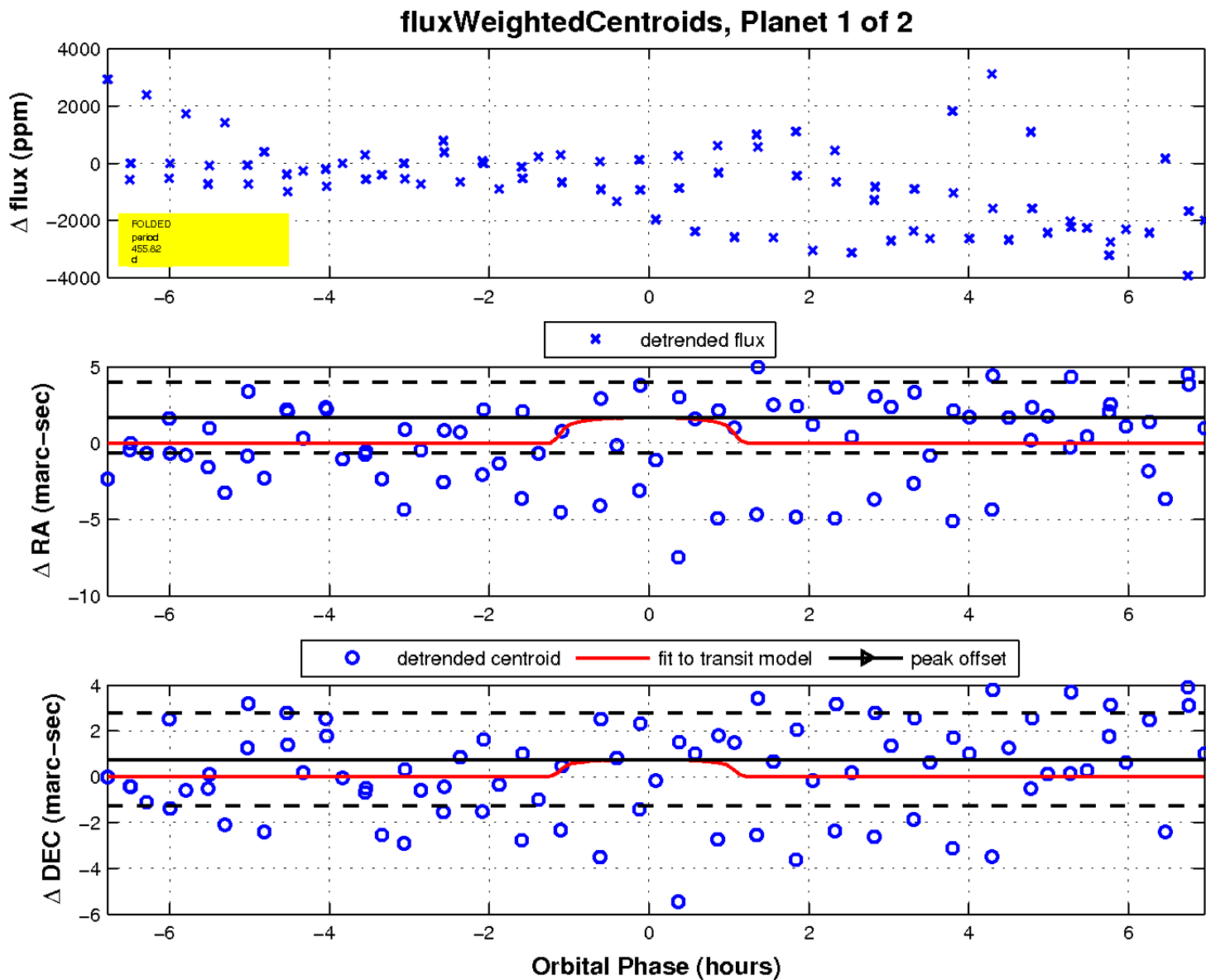
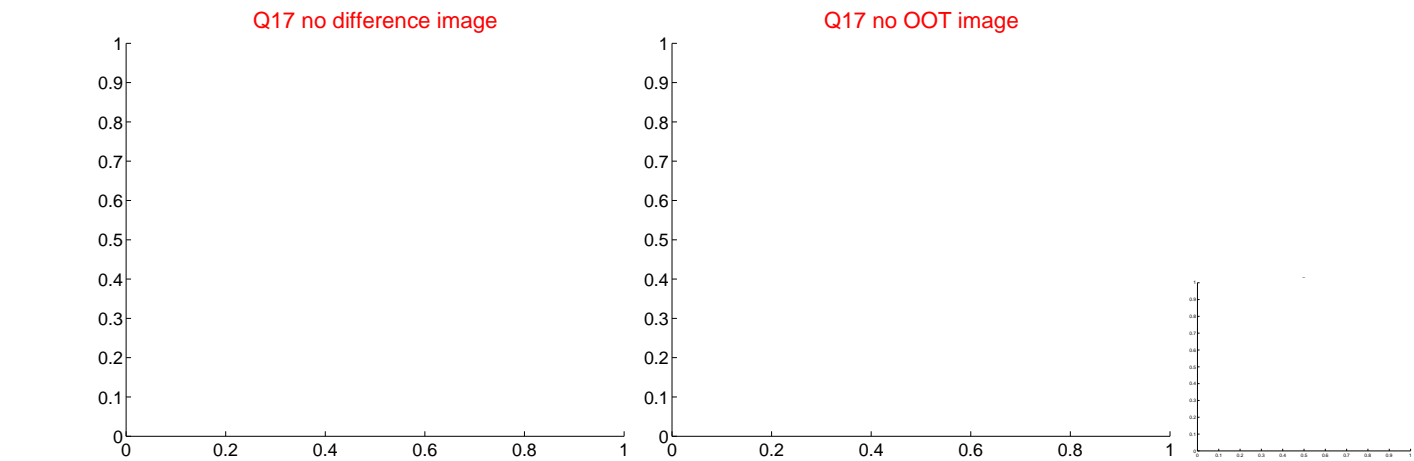
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

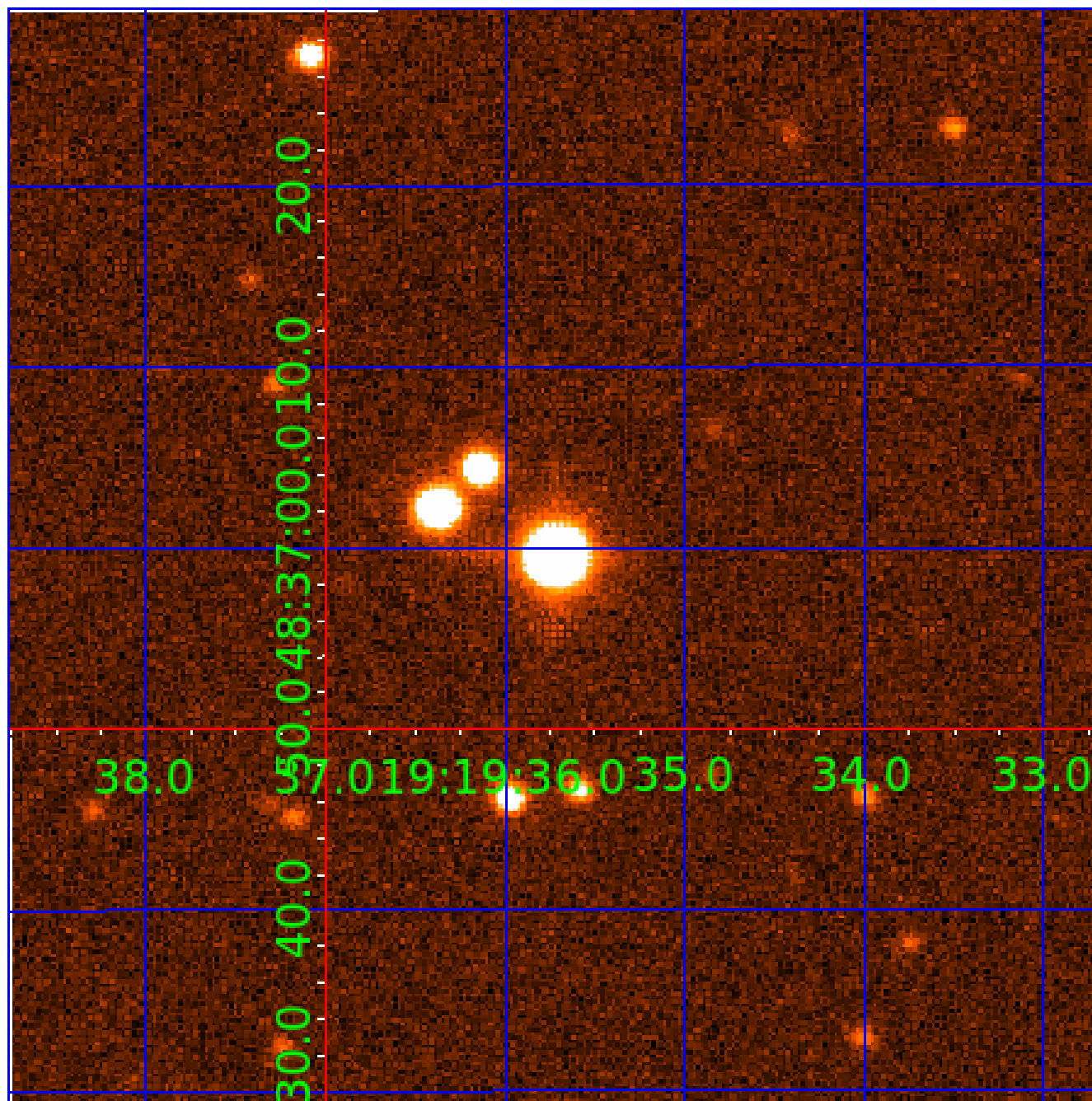


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011080481

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011080481-01	OBS	No	455.822672	328.025254	719.7	2.321	16.7	2.0	0.68	5339	1.95	0.33
011080481-02	OBS	No	0.997835	132.461315	116.8	1.893	8.9	8.6	0.68	5339	0.86	1165.65

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011080481-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011080481-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

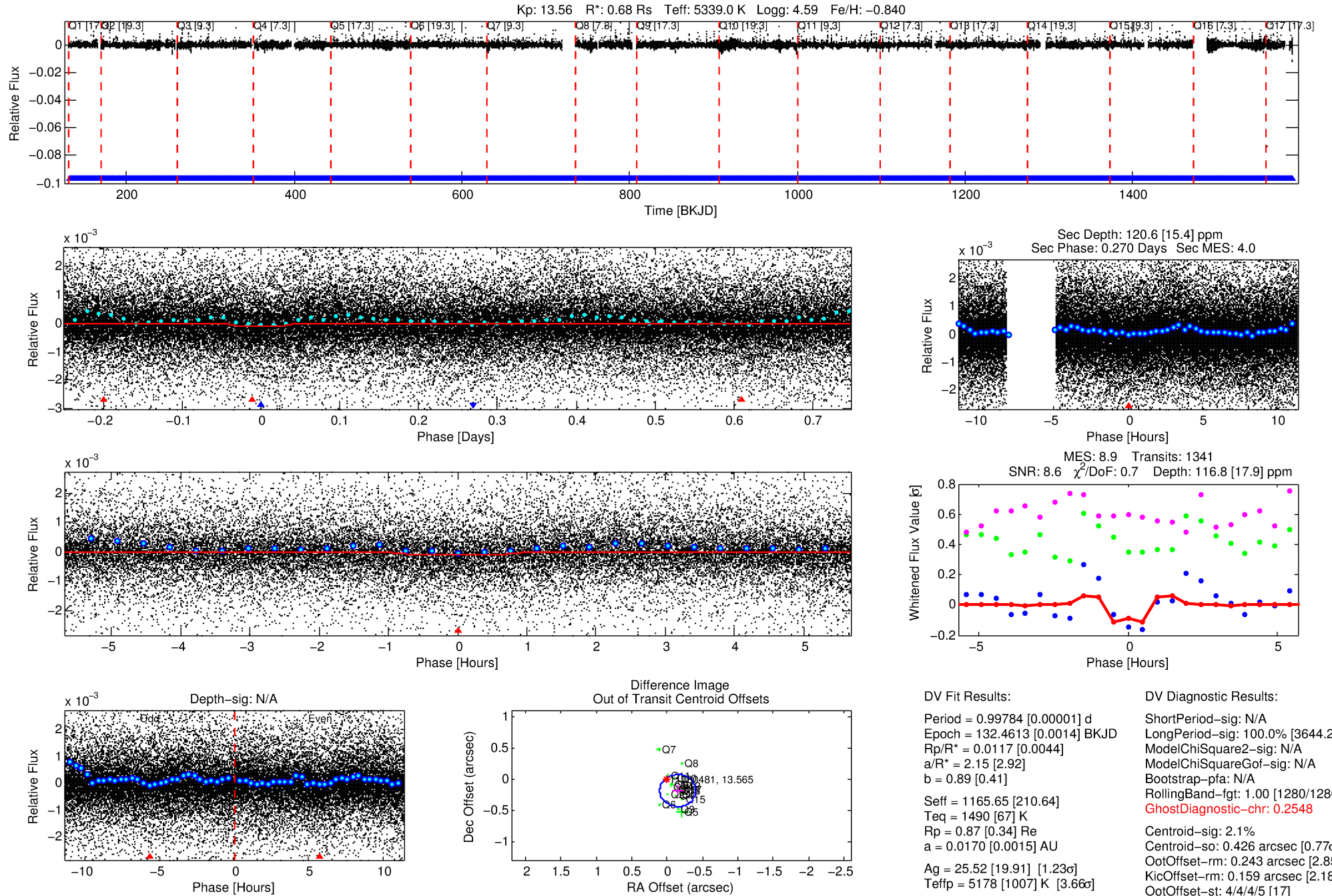
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011080481-02

No Significant Match Found

# DV One-Page Summary

KIC: 11080481 Candidate: 2 of 2 Period: 0.998 d



## DV Fit Results:

Period = 0.99784 [0.00001] d  
Epoch = 132.4613 [0.0014] BKJD  
Rp/R\* = 0.0117 [0.0044]  
a/R\* = 2.15 [2.92]  
b = 0.89 [0.41]  
Seff = 1165.65 [210.64]  
Teq = 1490 [67] K  
Rp = 0.87 [0.34] Re  
a = 0.0170 [0.0015] AU  
Ag = 25.52 [19.91] [1.23σ]  
Teffp = 5178 [1007] K [3.66σ]

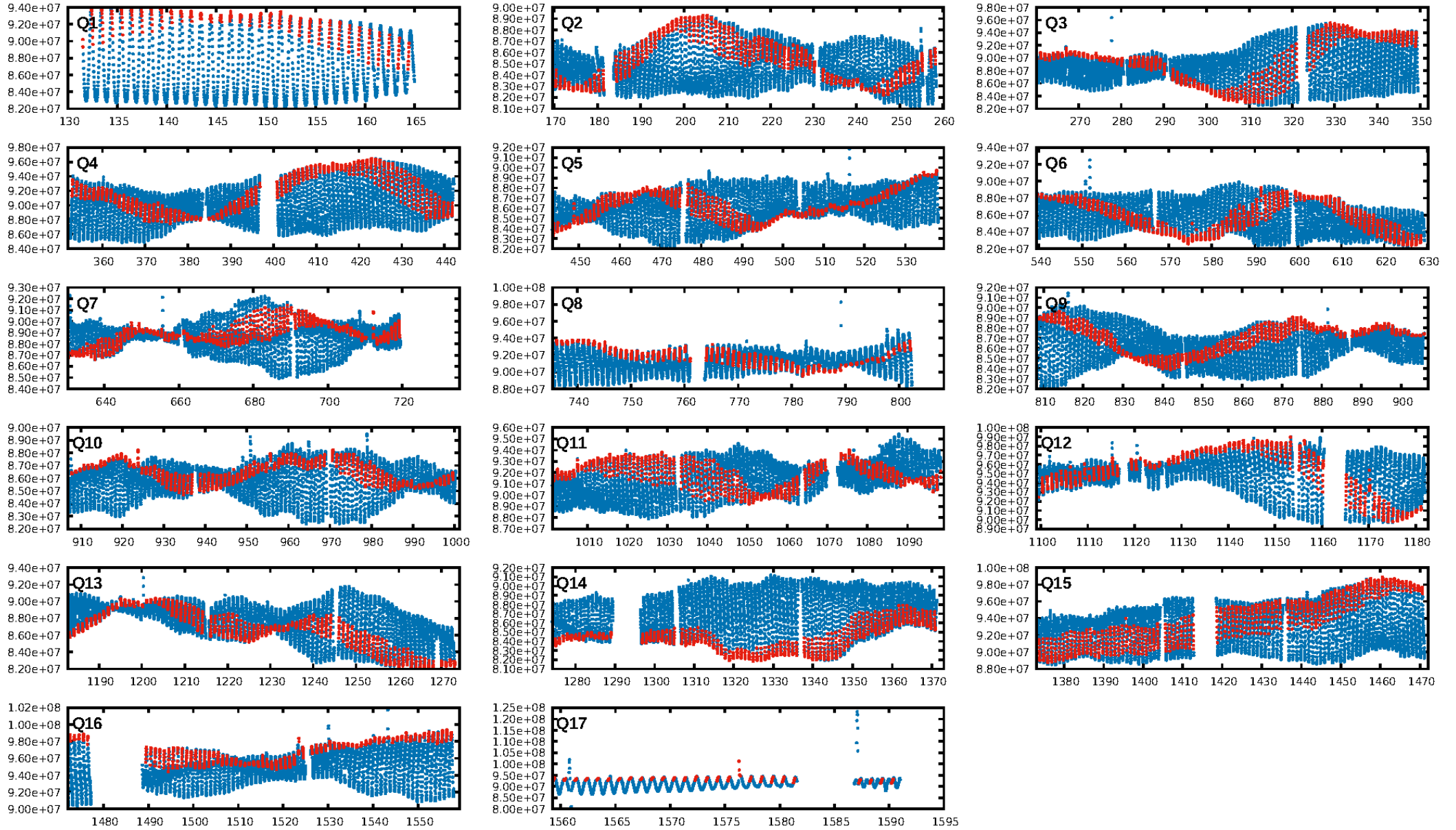
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [3644.25σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1280/1280]  
**GhostDiagnostic-chr: 0.2548**  
Centroid-sig: 2.1%  
Centroid-so: 0.426 arcsec [0.77σ]  
OotOffset-rm: 0.243 arcsec [2.85σ]  
KicOffset-rm: 0.159 arcsec [2.18σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.24 [4/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:08:33 Z

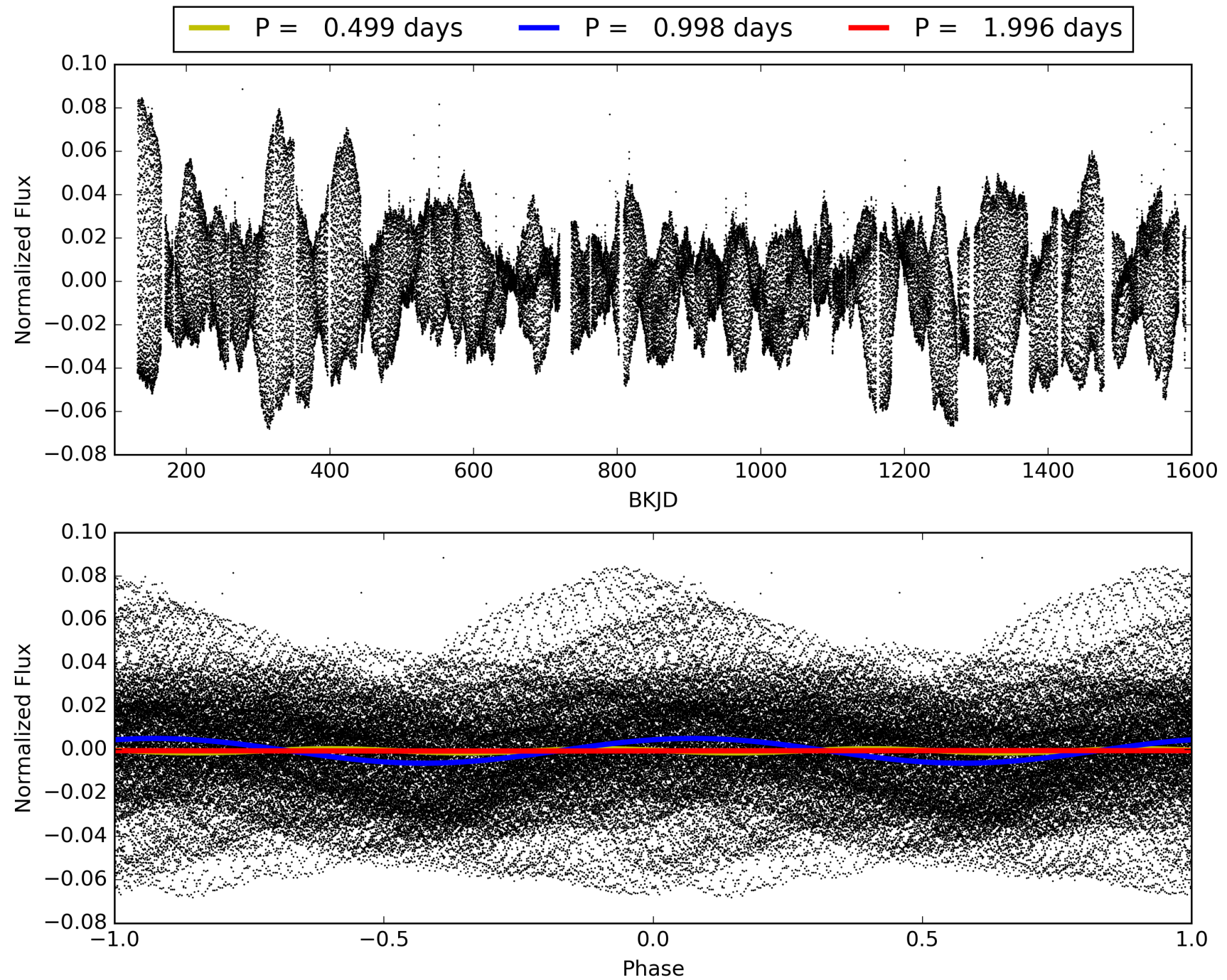
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011080481-02, PDC Light Curves





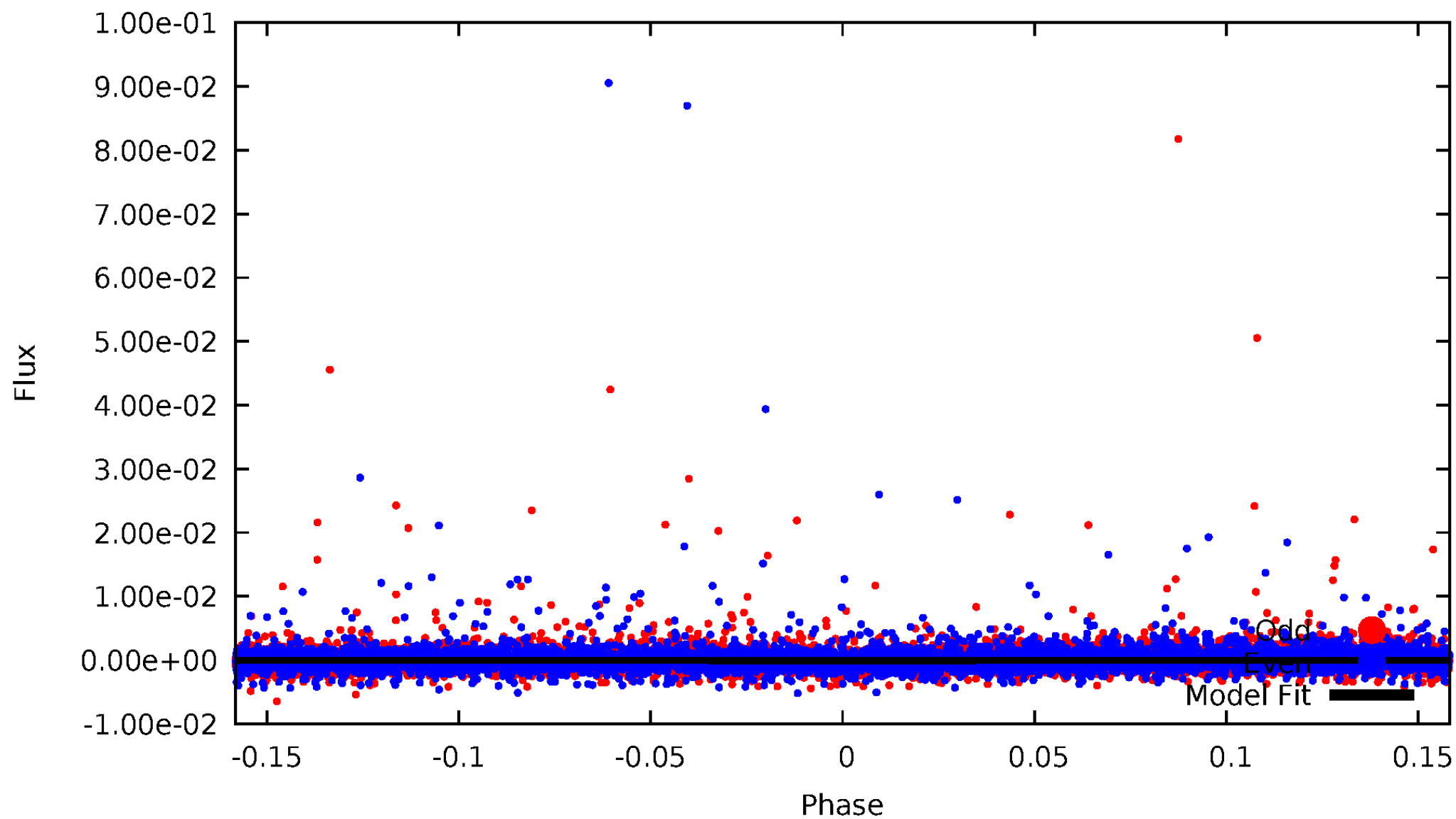
TCE 011080481-02





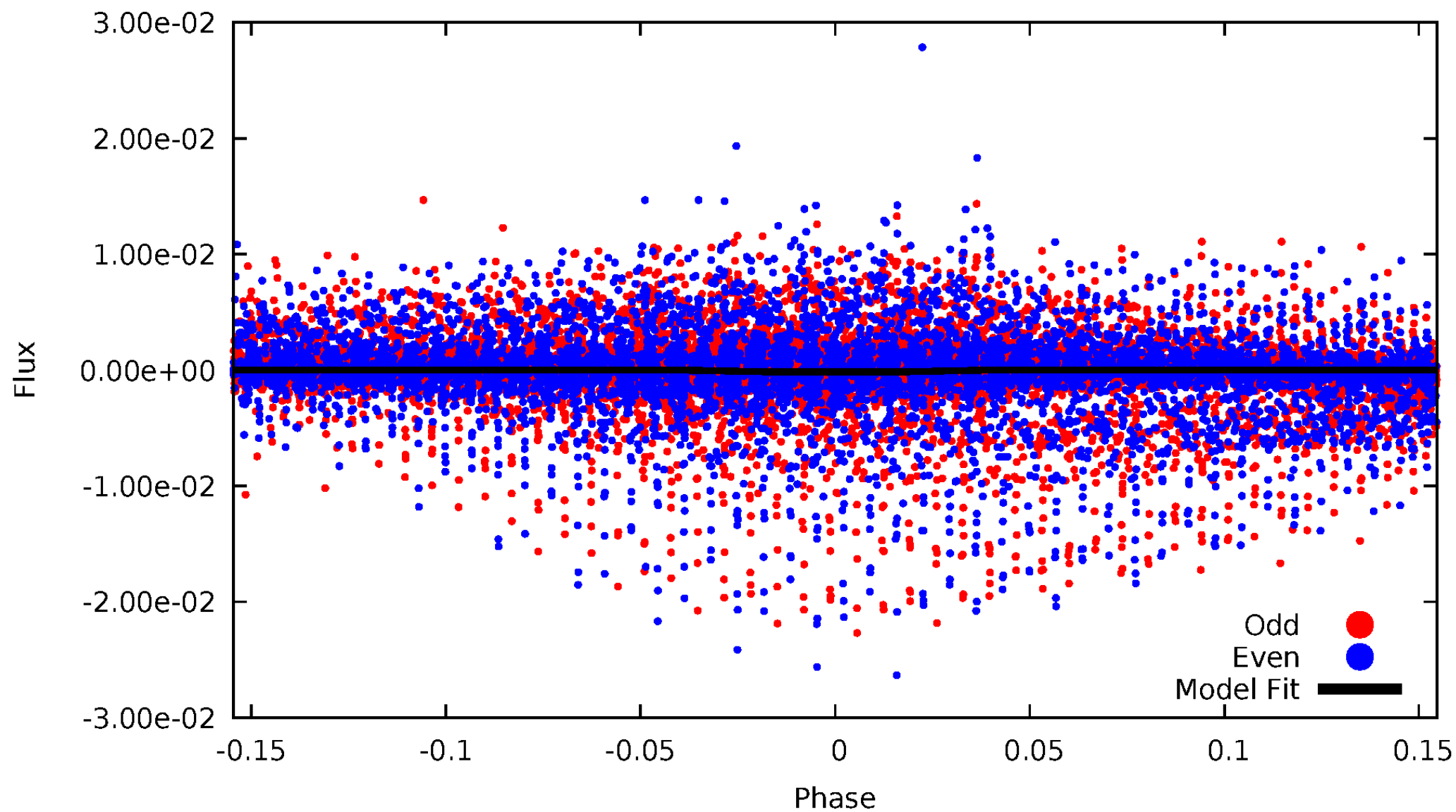
# DV Odd/Even

TCE 011080481-02



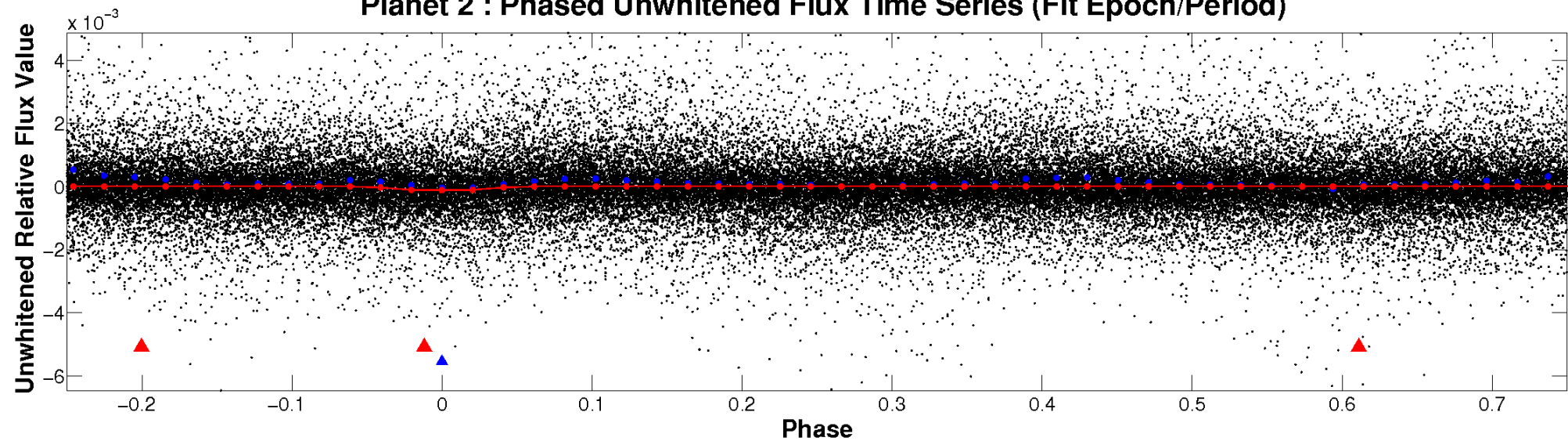
# ALT Odd/Even

TCE 011080481-02

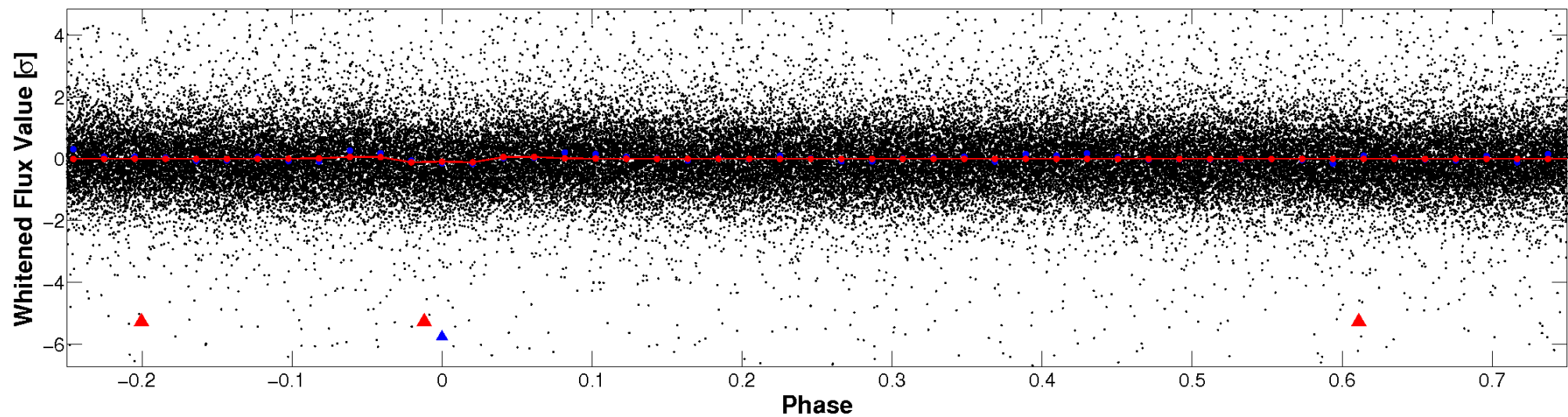


# Non-Whitened Vs. Whitened Light Curve

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

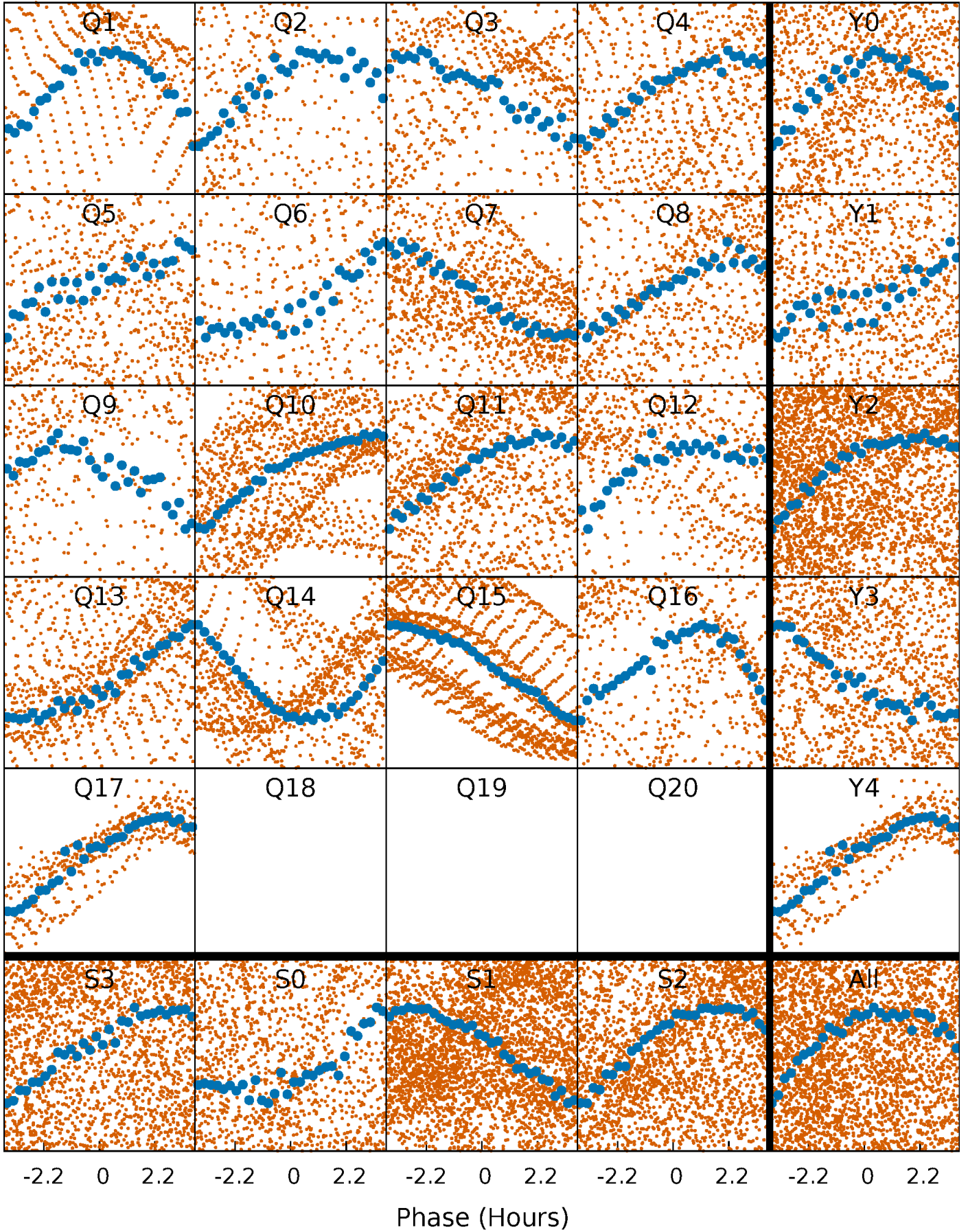


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

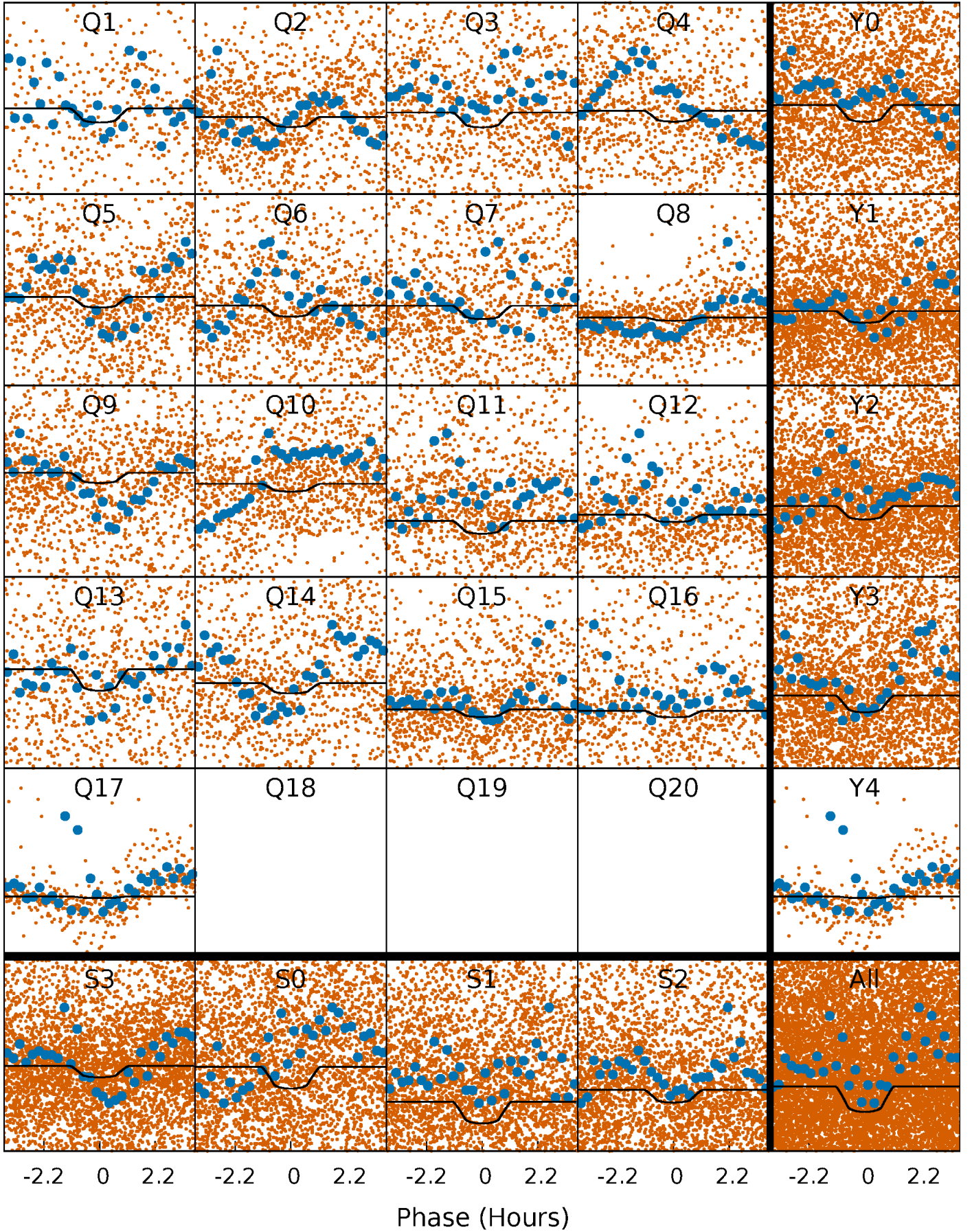
TCE 011080481-02   P= 0.997835 Days    $T_0=132.461315$  (BKJD)





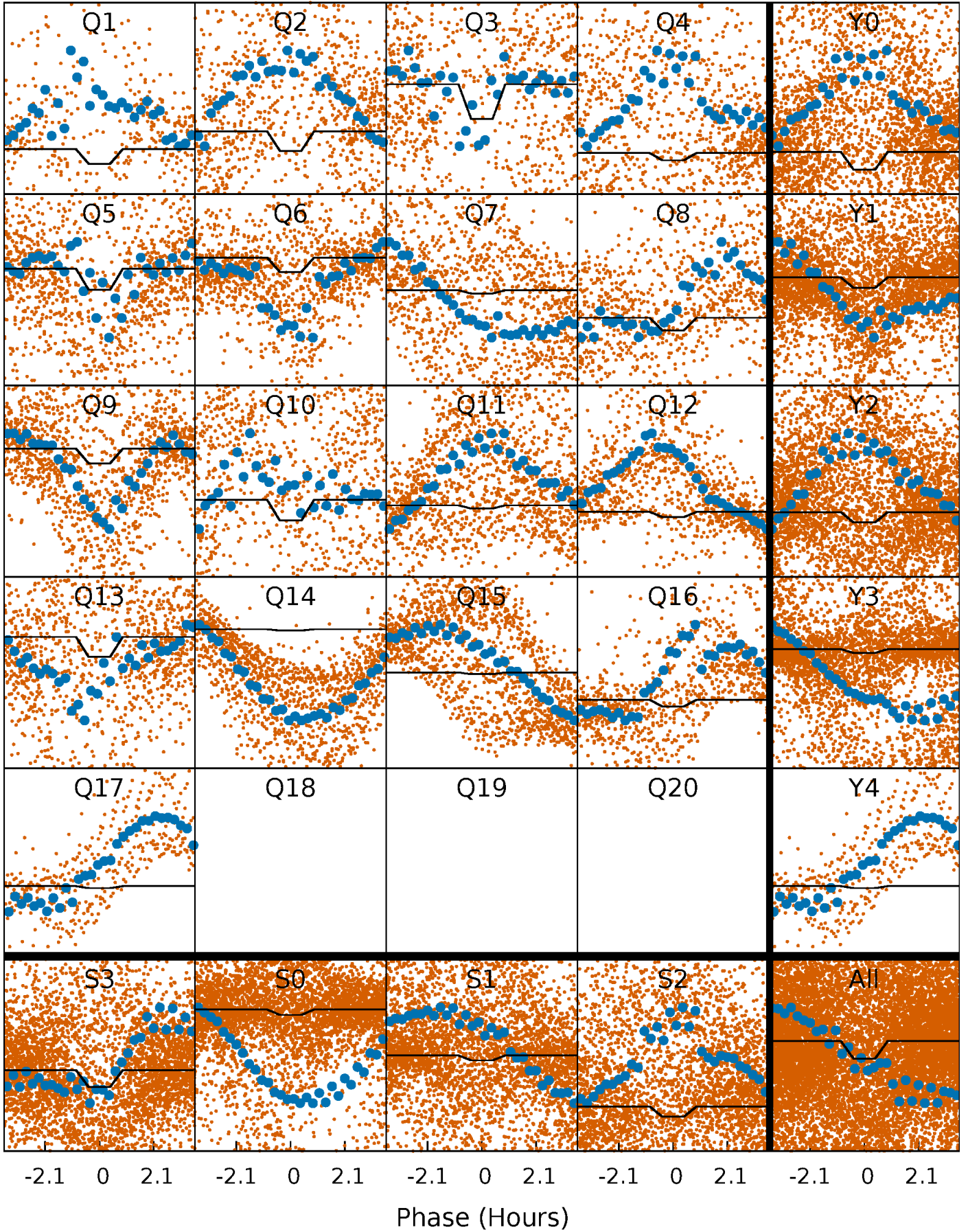
# DV Quarter-Phased Transit Curves

TCE 011080481-02   P= 0.997835 Days    $T_0=132.461315$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011080481-02   P= 0.997857 Days    $T_0=132.456581$  (BKJD)

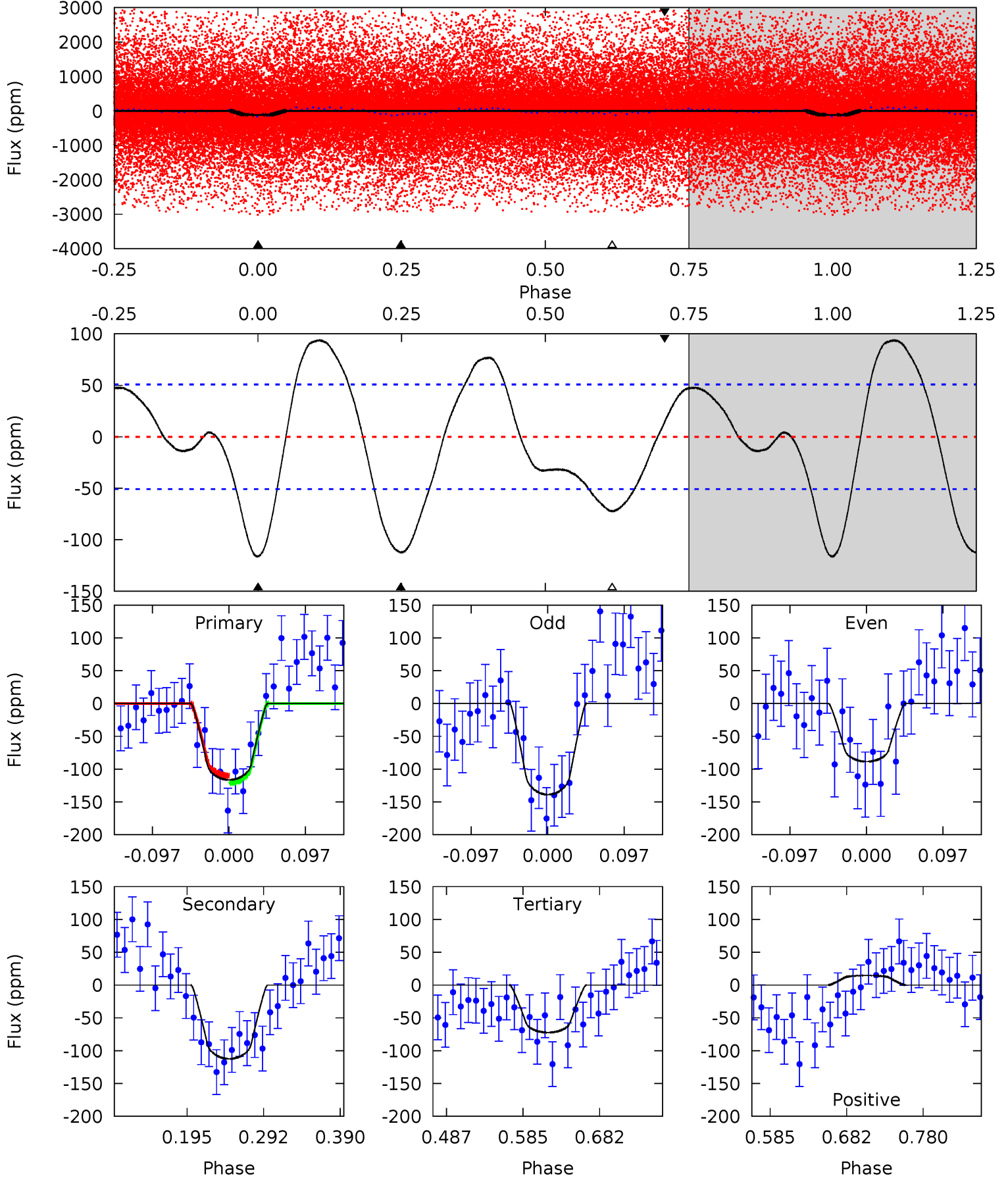




# DV Model-Shift Uniqueness Test

011080481-02, P = 0.997835 Days, E = 131.463480 Days

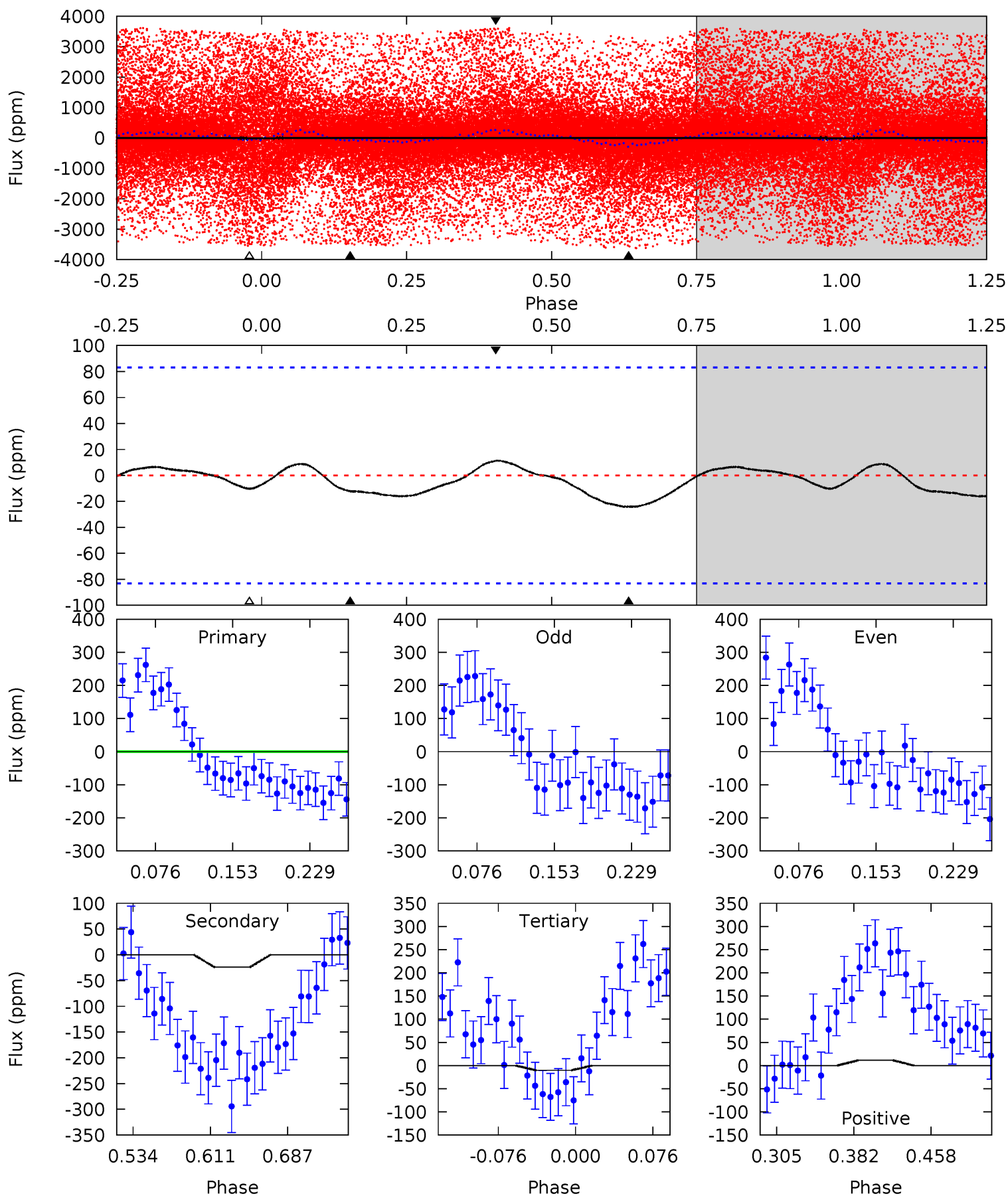
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	10.1	6.51	1.31	4.57	1.66	4.30	3.96	9.17	3.61	8.81	2.29	0.00	0.45	0.50



# Alt Model-Shift Uniqueness Test

011080481-02, P = 0.997857 Days, E = 131.458724 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
0.68	1.34	0.57	0.62	4.62	1.77	0.41	0.11	0.05	0.77	0.72	0.87	10.6	0.32	0.90





### Stellar Parameters For KIC 011080481

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5339^{+160}_{-144}$	$4.590^{+0.078}_{-0.052}$	$-0.840^{+0.300}_{-0.300}$	$0.679^{+0.064}_{-0.064}$	$0.654^{+0.071}_{-0.029}$	$2.946^{+0.981}_{-0.570}$
	+3%/-3%	+2%/-1%	+36%/-36%	+9%/-9%	+11%/-4%	+33%/-19%
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 011080481-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-112 \pm 11$	$0.86^{+0.33}_{-0.31}$	$2078^{+77}_{-79}$	$5126^{+1269}_{-660}$	$24^{+38}_{-12}$
Alt.	$-24 \pm 18$	$0.95^{+0.33}_{-0.33}$	$2076^{+84}_{-82}$	$3593^{+768}_{-824}$	$3.884^{+7.280}_{-3.001}$

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

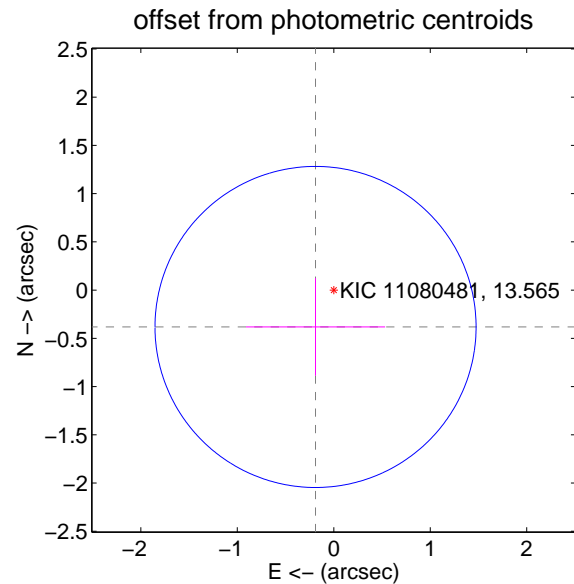
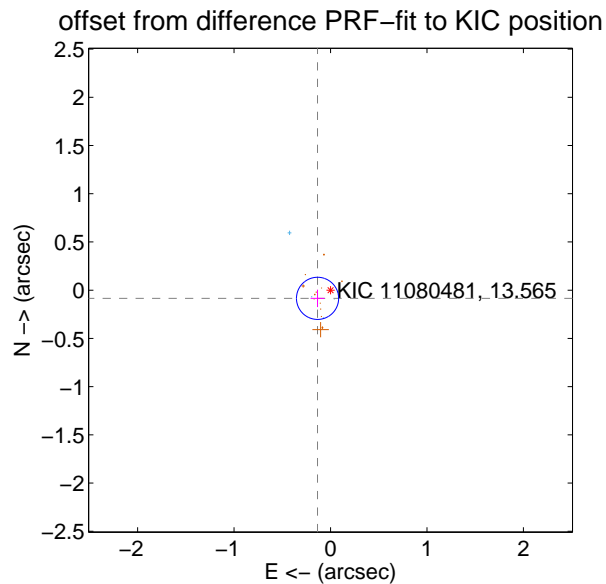
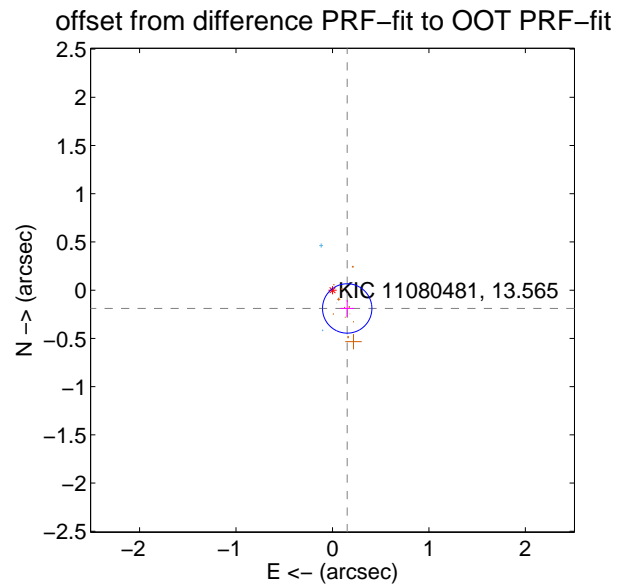
## DV Centroid Data

Supplemental centroid analysis for 011080481-02. Kepler magnitude: 13.56. Transit SNR 8.65

There are 4 quarters with good PRF difference image offsets

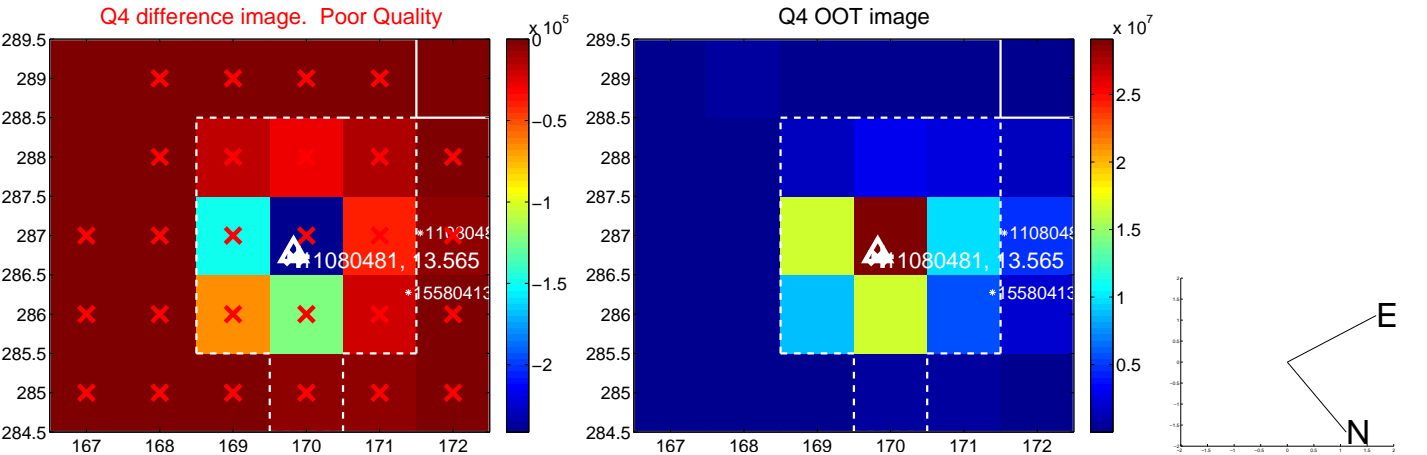
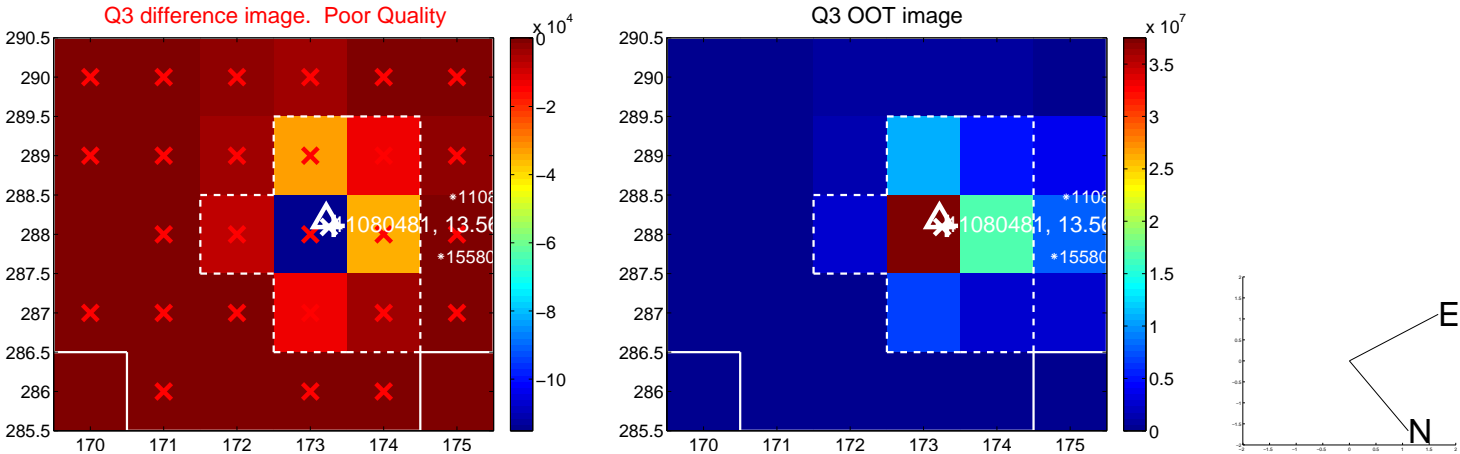
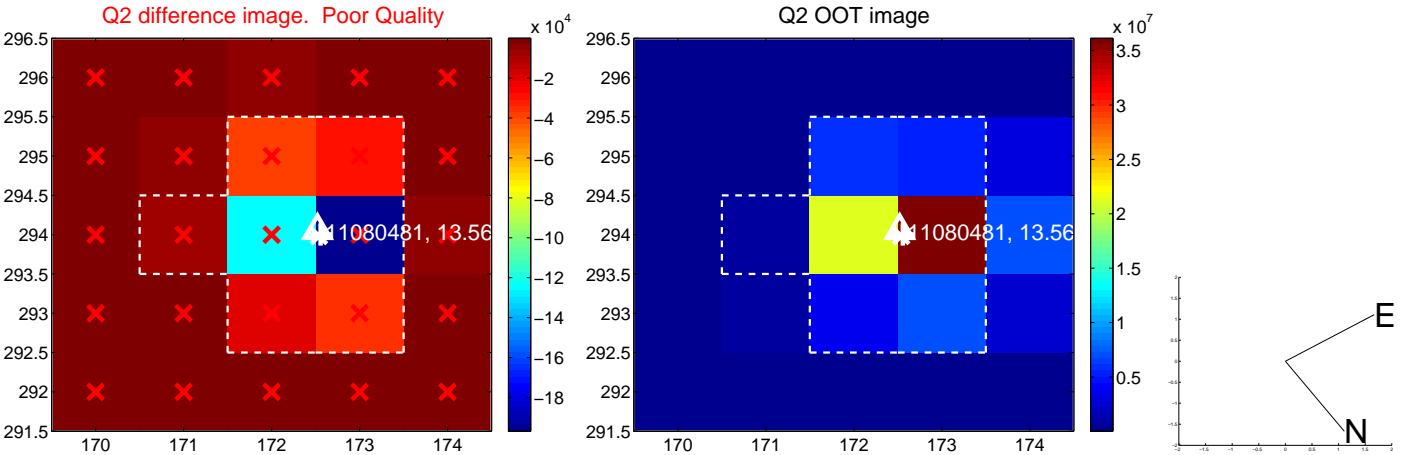
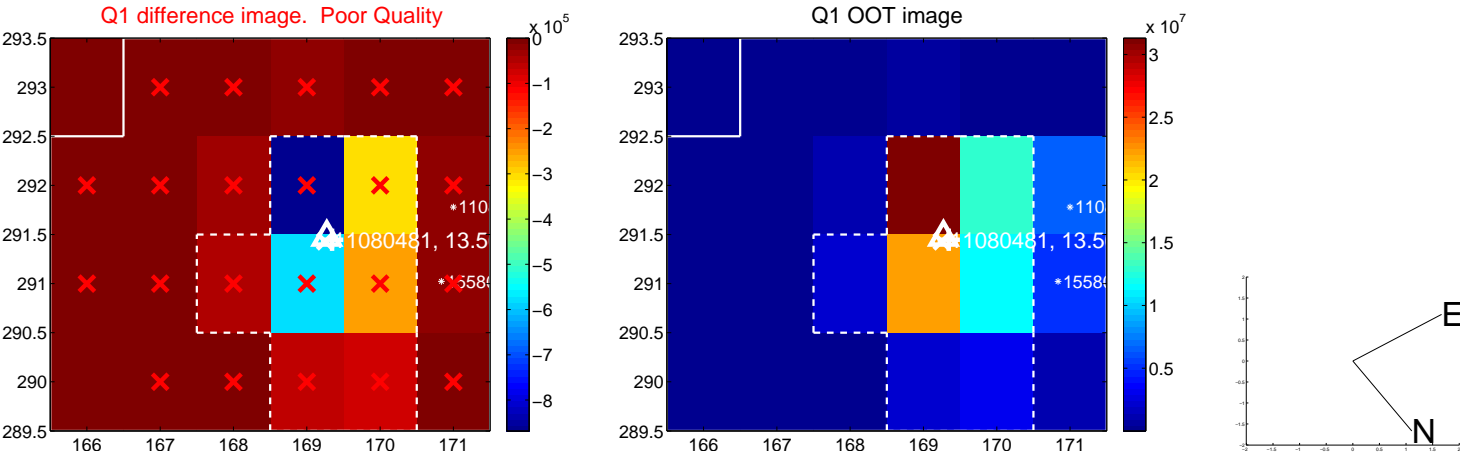
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.243 \pm 0.085$	2.85	$-0.153 \pm 0.071$	$-0.190 \pm 0.088$
PRF-fit source offset from KIC position	$0.159 \pm 0.073$	2.18	$0.134 \pm 0.072$	$-0.085 \pm 0.091$
photometric centroid source offset	$0.43 \pm 0.55$	0.77	$0.19 \pm 0.72$	$-0.38 \pm 0.51$



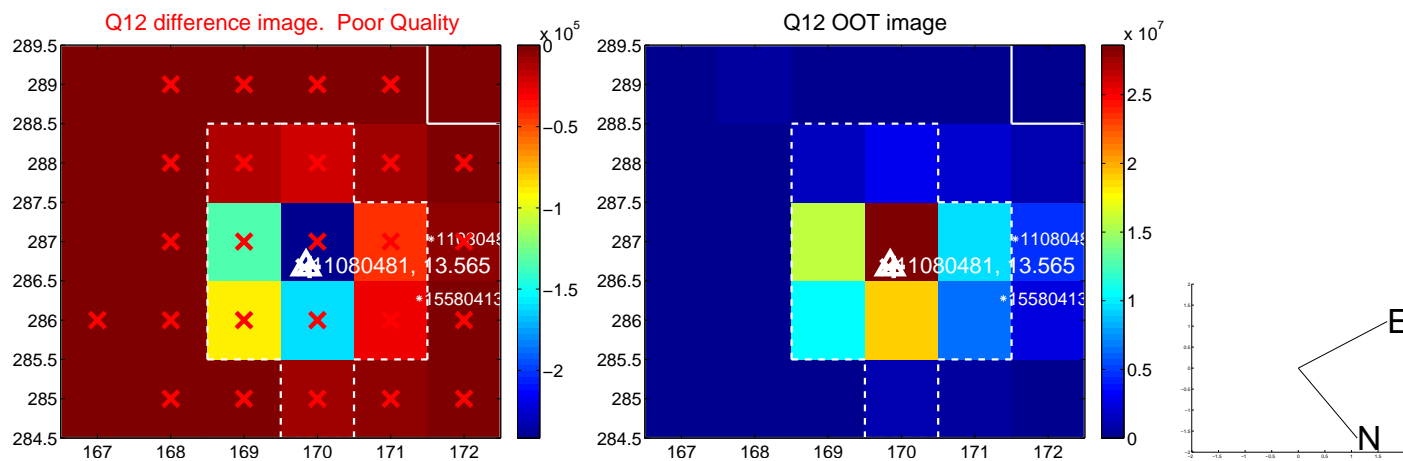
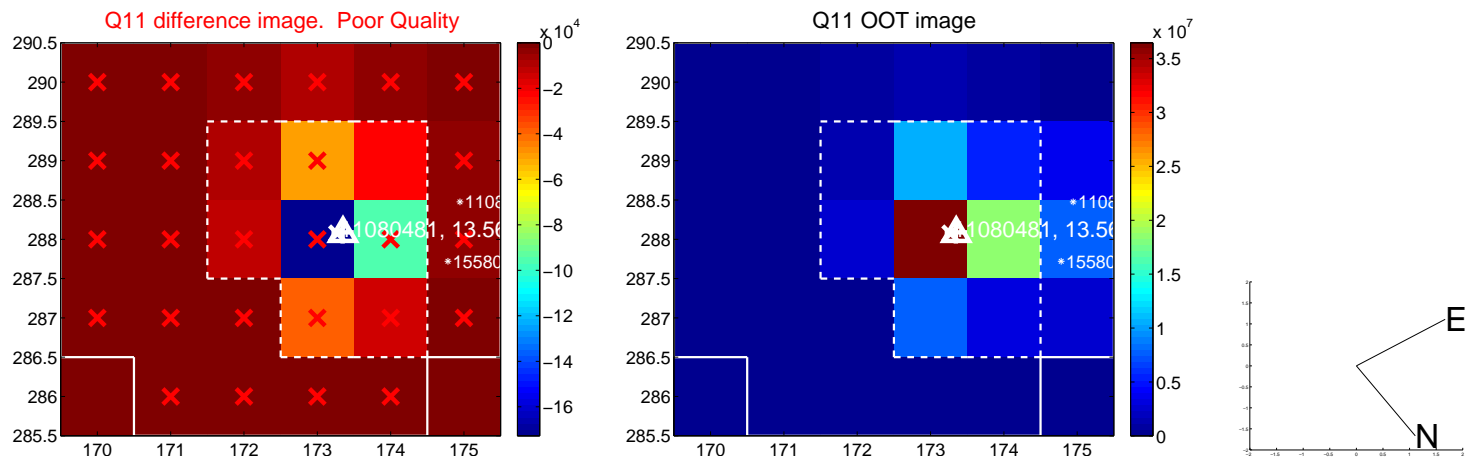
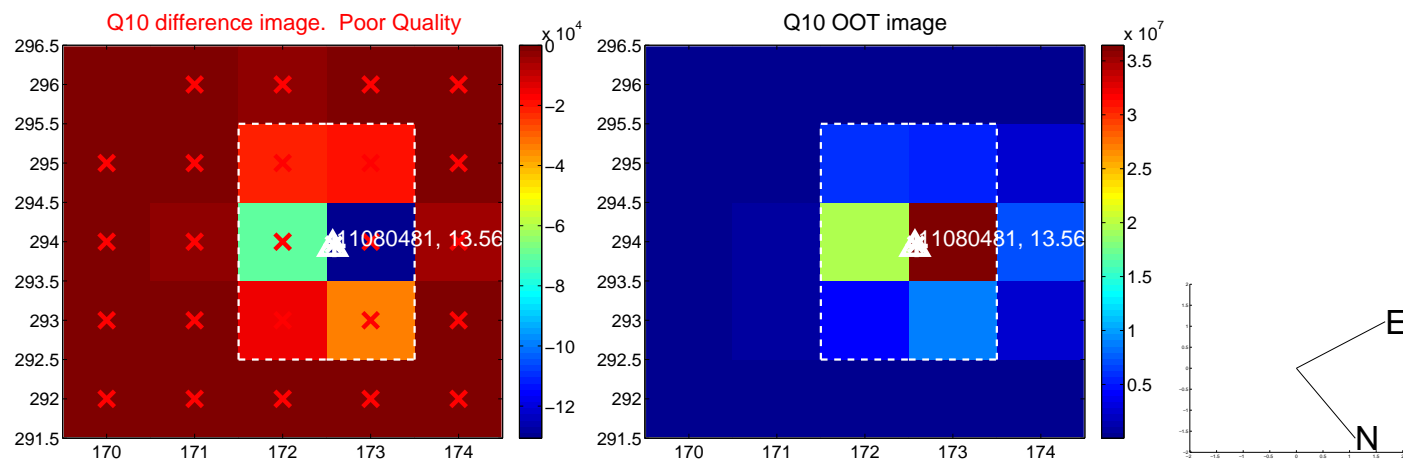
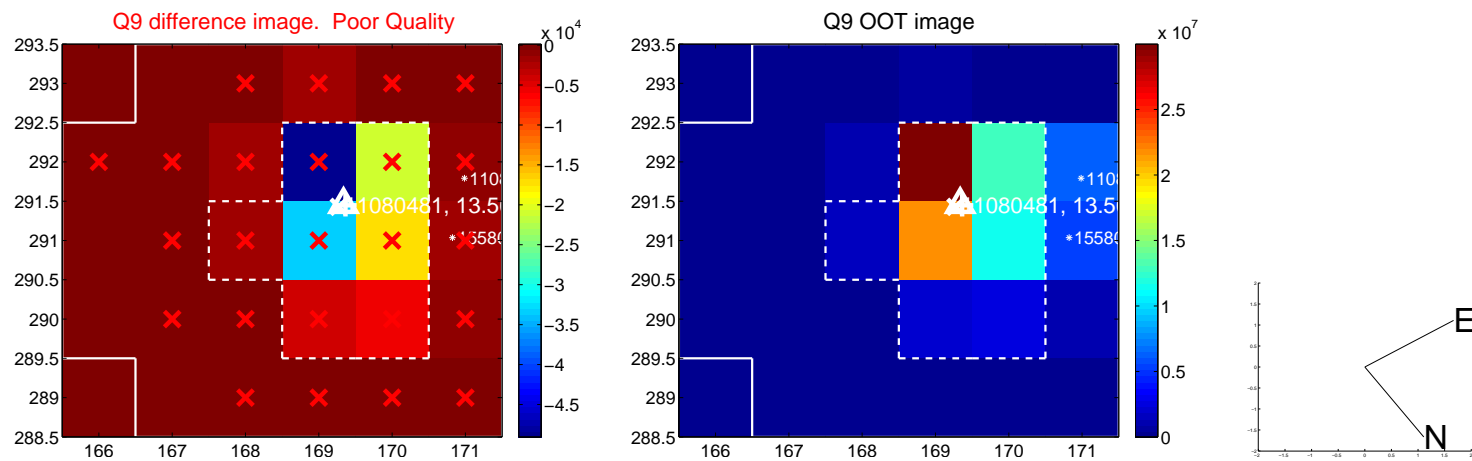
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

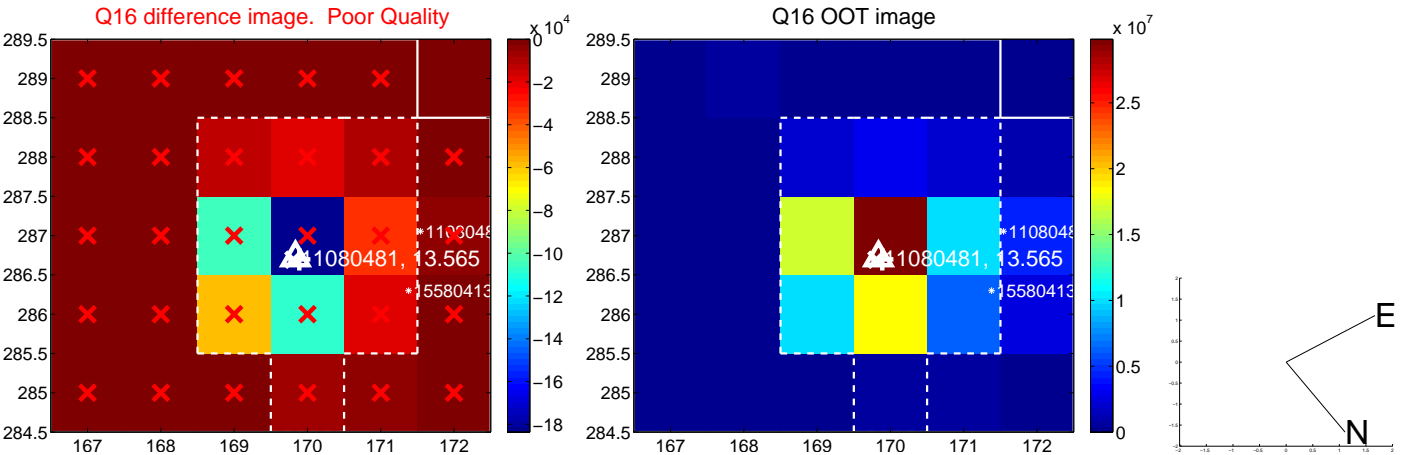
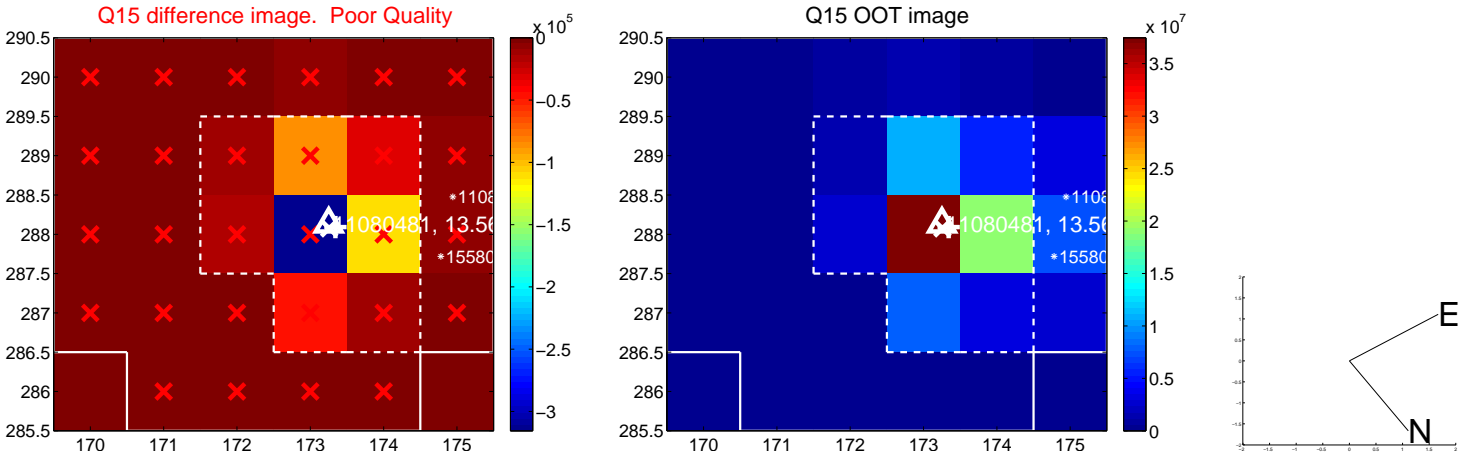
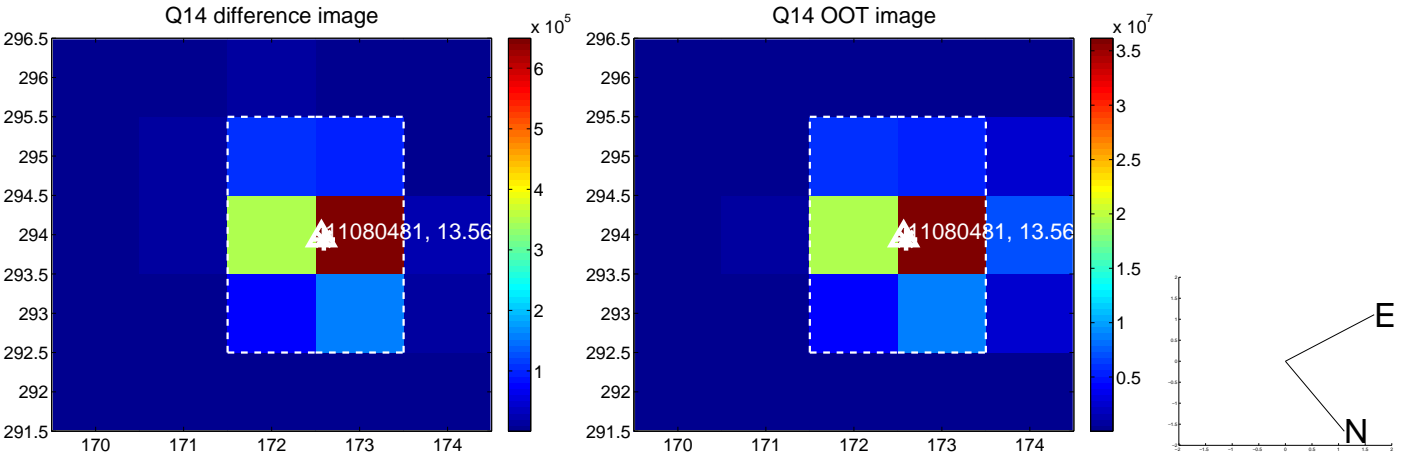
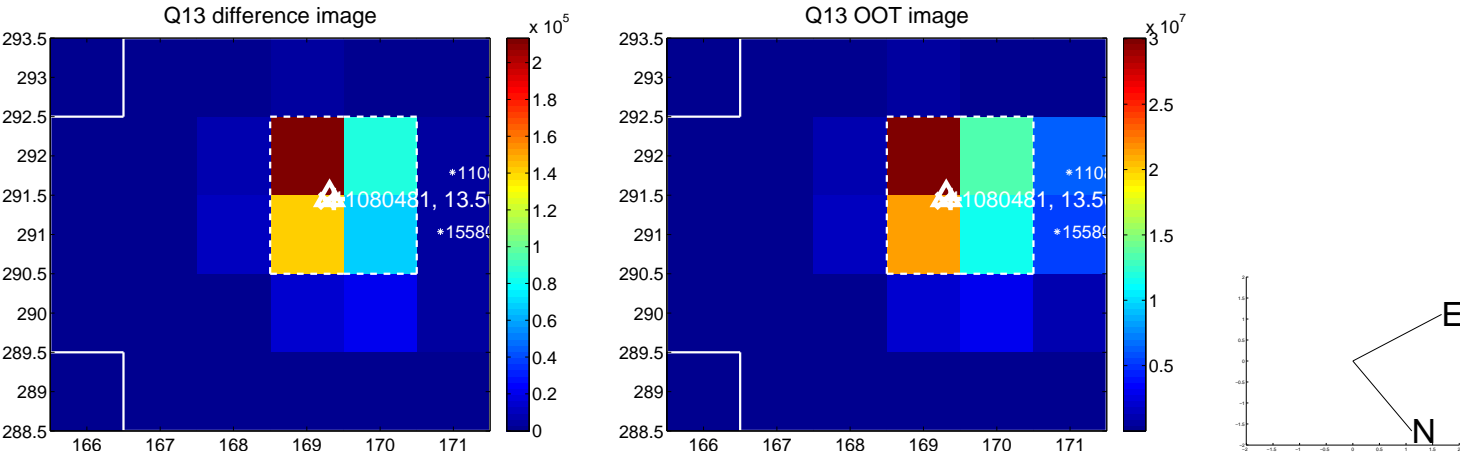




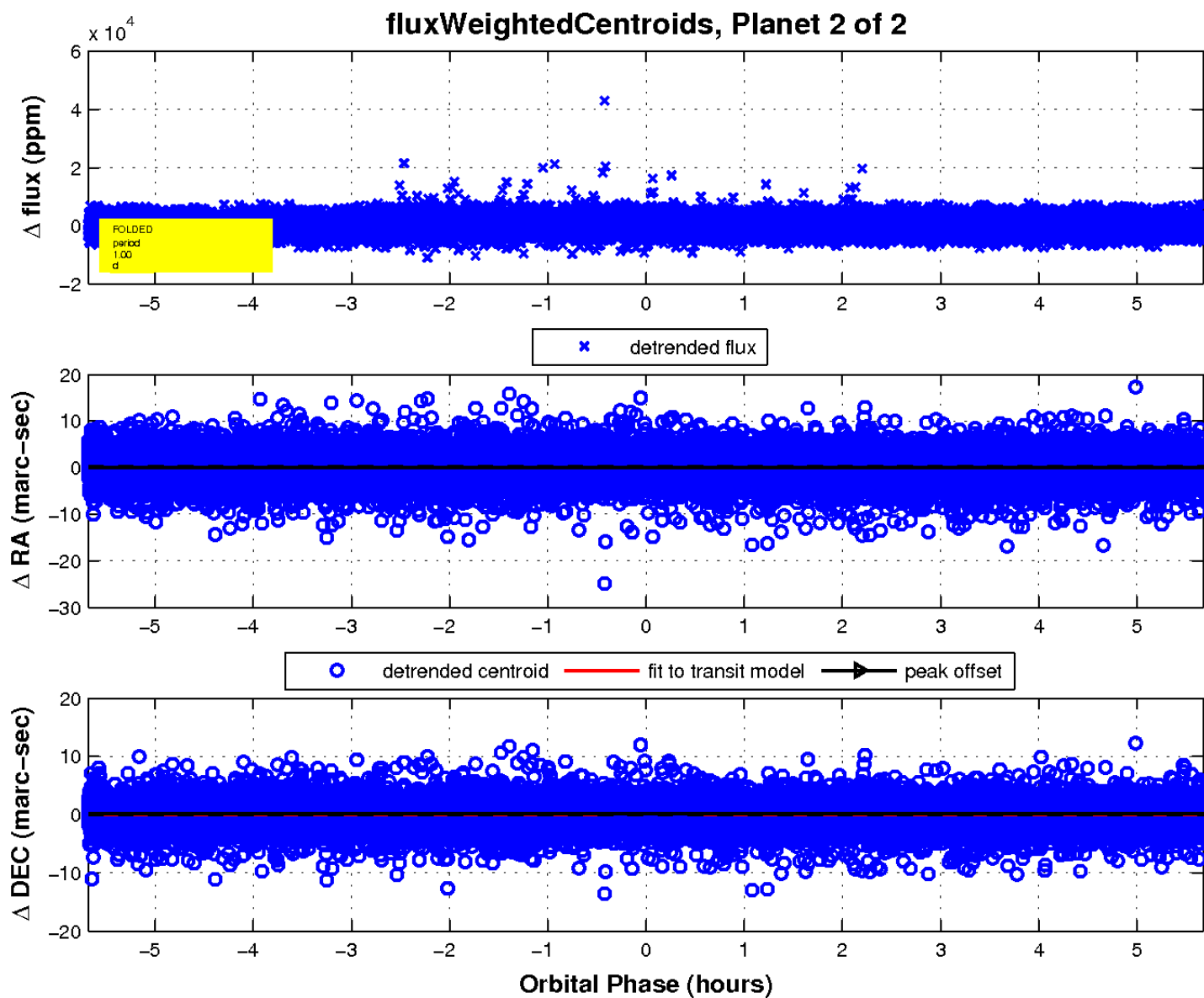
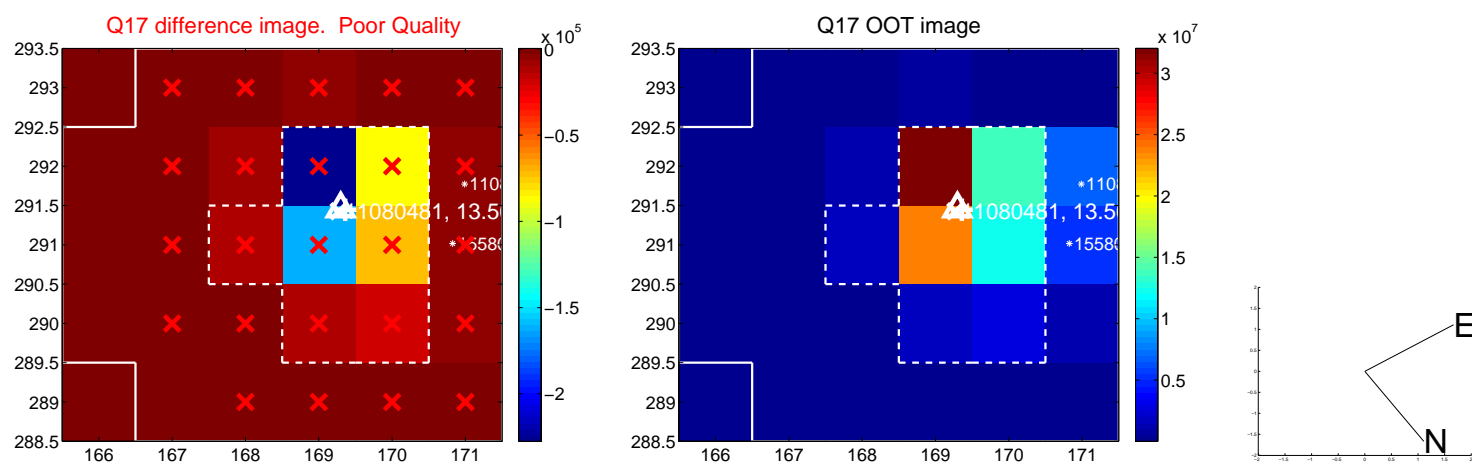
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

