

# KIC 010081748

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010081748-01	OBS	No	0.714708	131.525931	18.6	2.624	11.1	11.6	2.91	6828	1.46	44152.93
010081748-02	OBS	No	1.430282	131.577117	2.6	12.556	10.7	1.0	2.91	6828	0.48	17507.96

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010081748-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_FEW_DIFFS
010081748-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—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.

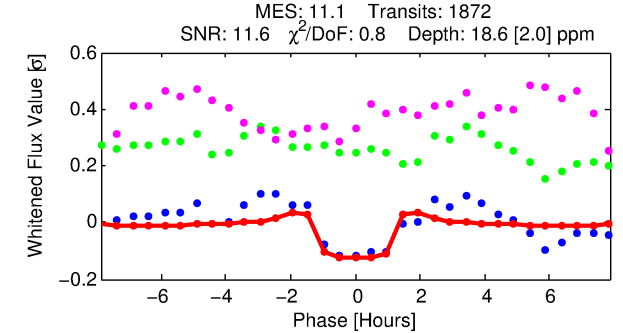
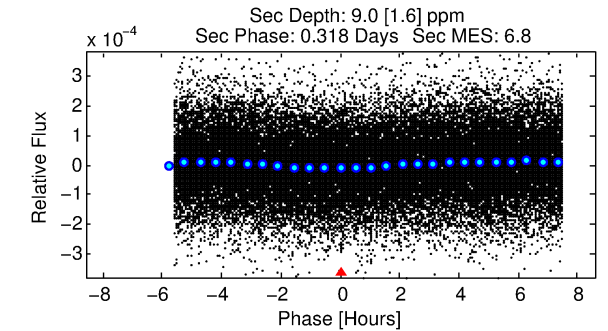
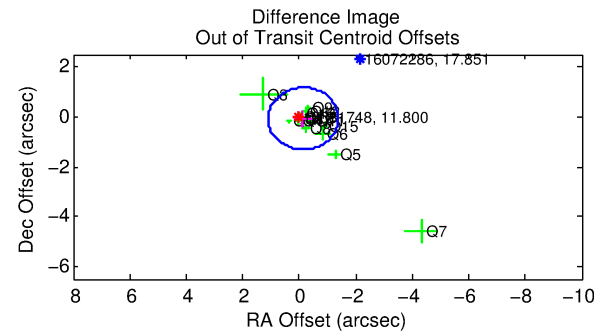
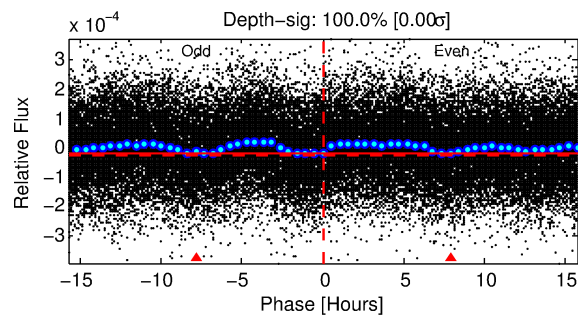
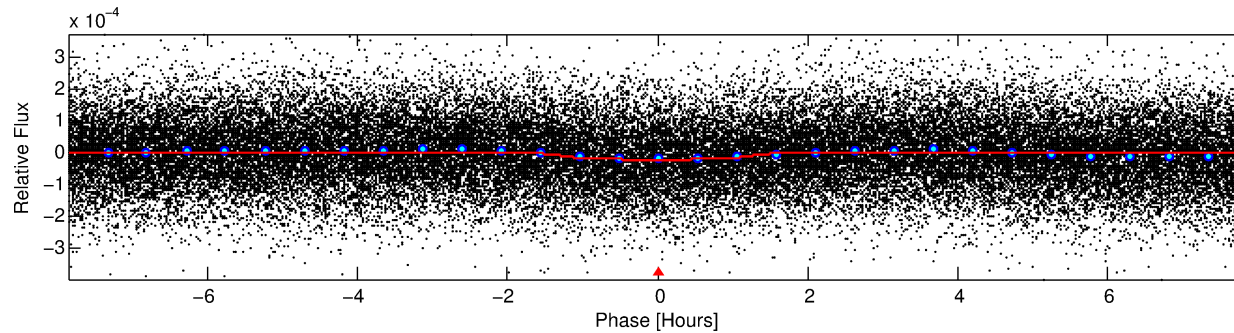
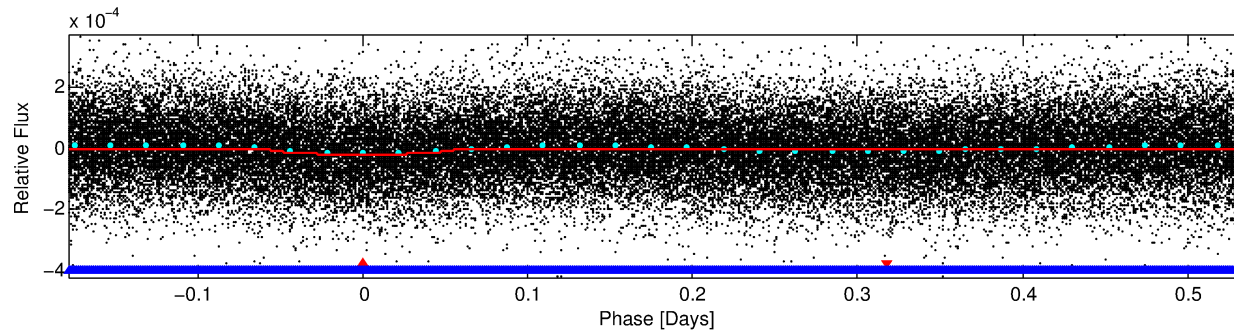
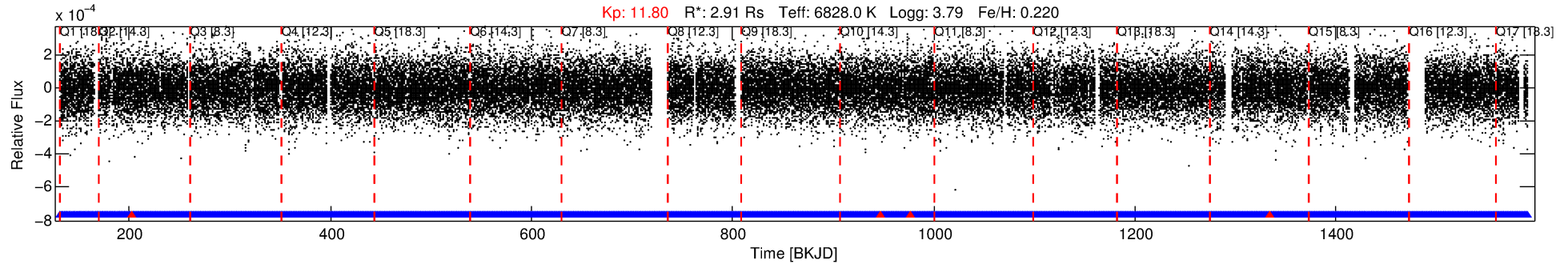
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010081748-01

No Significant Match Found

# DV One-Page Summary

KIC: 10081748 Candidate: 1 of 2 Period: 0.715 d



## DV Fit Results:

Period = 0.71471 [0.00001] d  
Epoch = 131.5259 [0.0019] BKJD  
 $R_p/R^*$  = 0.0046 [0.0010]  
 $a/R^*$  = 1.33 [0.75]  
 $b$  = 0.90 [0.29]  
 $\text{Seff}$  = 44152.93 [21275.14]  
 $T_{\text{eq}}$  = 3696 [445] K  
 $R_p$  = 1.46 [0.58]  $R_e$   
 $a$  = 0.0193 [0.0058] AU  
 $\text{Ag}$  = 0.87 [0.58] [-0.23 $\sigma$ ]  
 $T_{\text{eff}}$  = 5512 [681] K [2.23 $\sigma$ ]

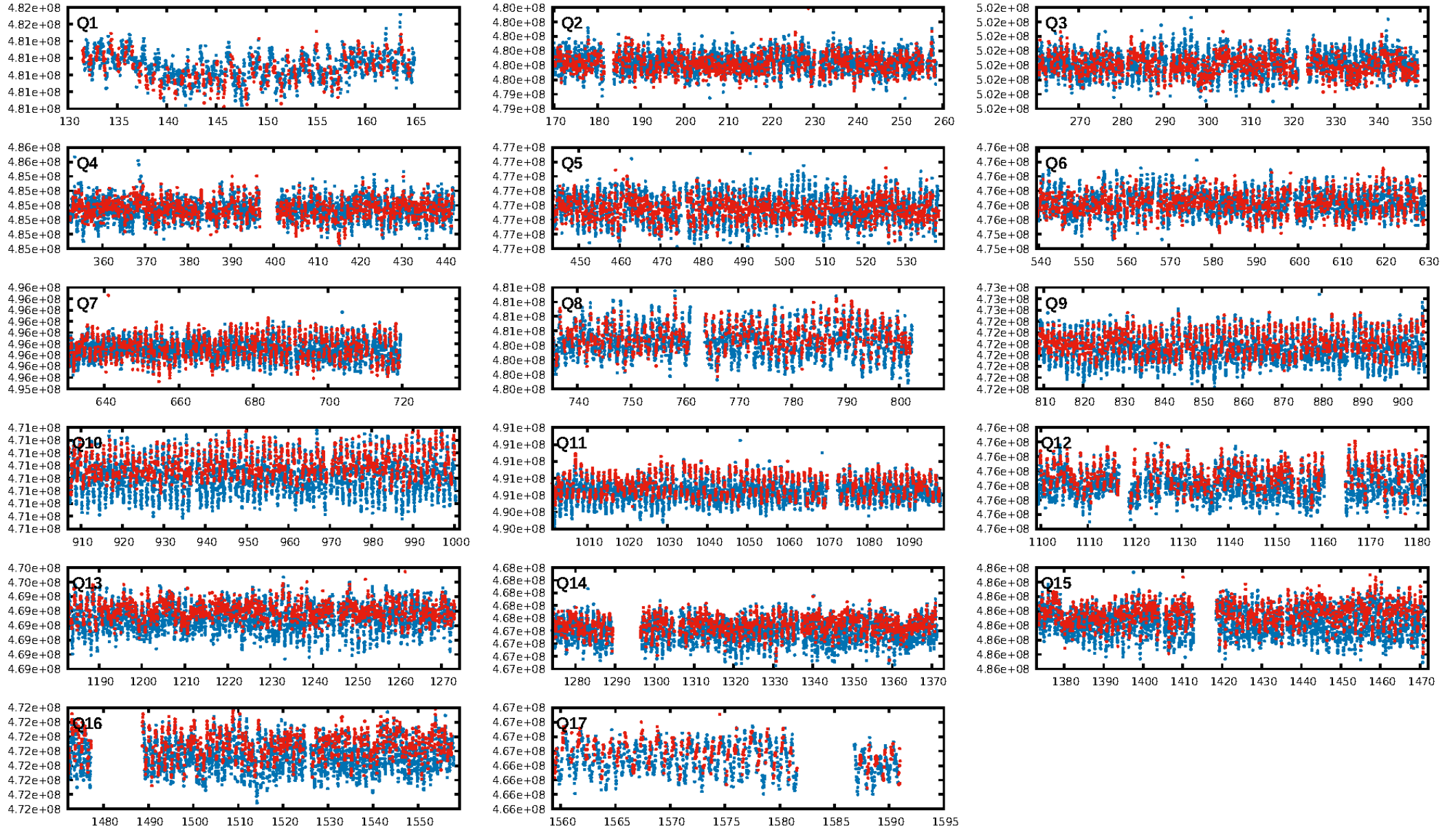
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 81.9% [1.34 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgm: 1.00 [1784/1788]  
GhostDiagnostic-chr: 3.727  
Centroid-sig: 0.0%  
Centroid-so: 0.997 arcsec [2.41 $\sigma$ ]  
OotOffset-rm: 0.149 arcsec [0.36 $\sigma$ ]  
KicOffset-rm: 0.192 arcsec [0.42 $\sigma$ ]  
OotOffset-st: 3/4/3/4 [14]  
KicOffset-st: 3/4/3/4 [14]  
DiffImageQuality-fgm: 0.07 [1/14]  
DiffImageOverlap-fno: 0.53 [9/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:07:31 Z

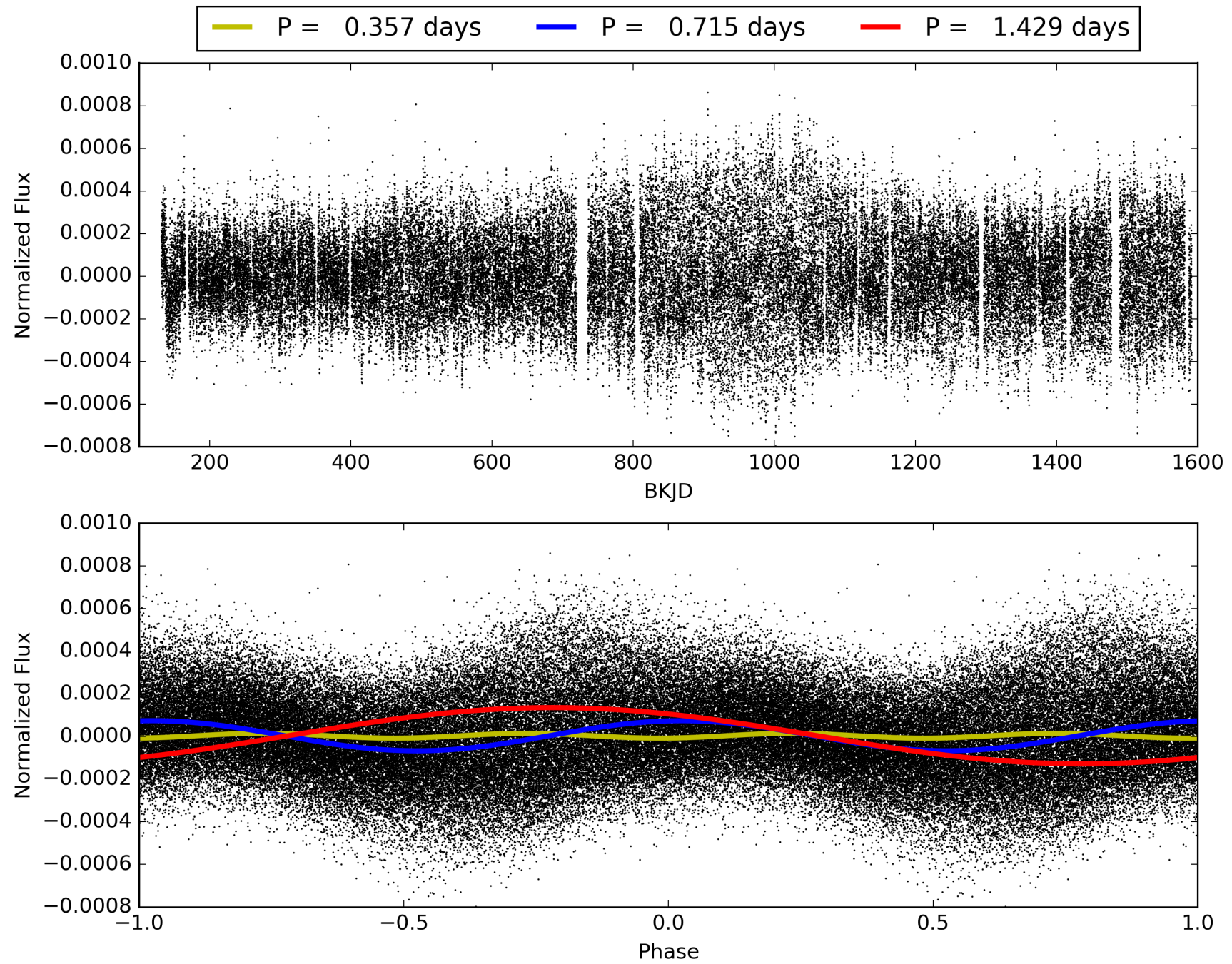
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010081748-01, PDC Light Curves



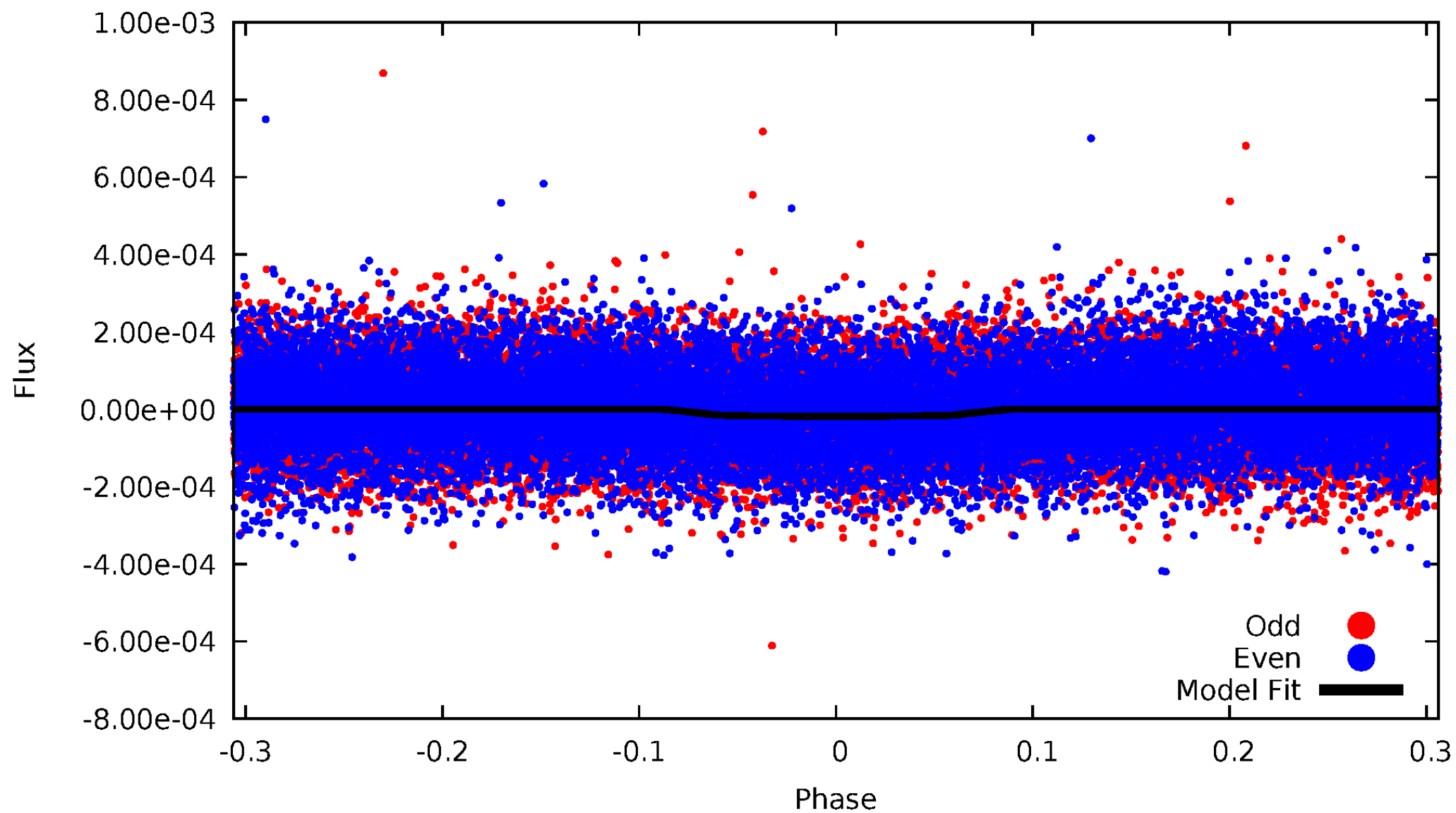


TCE 010081748-01



# DV Odd/Even

TCE 010081748-01

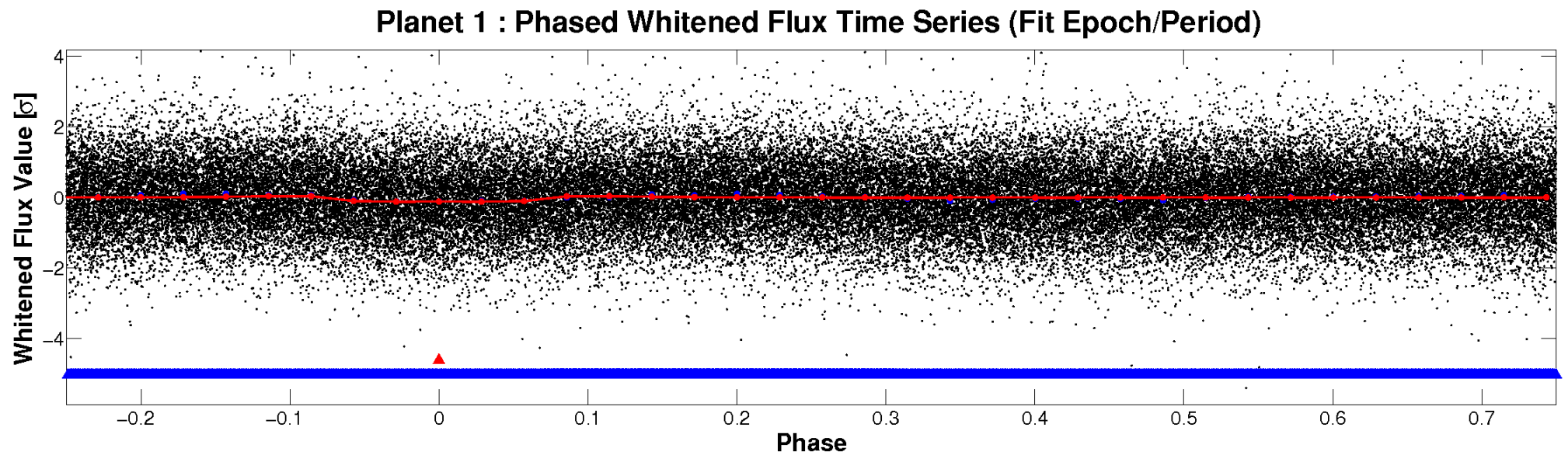
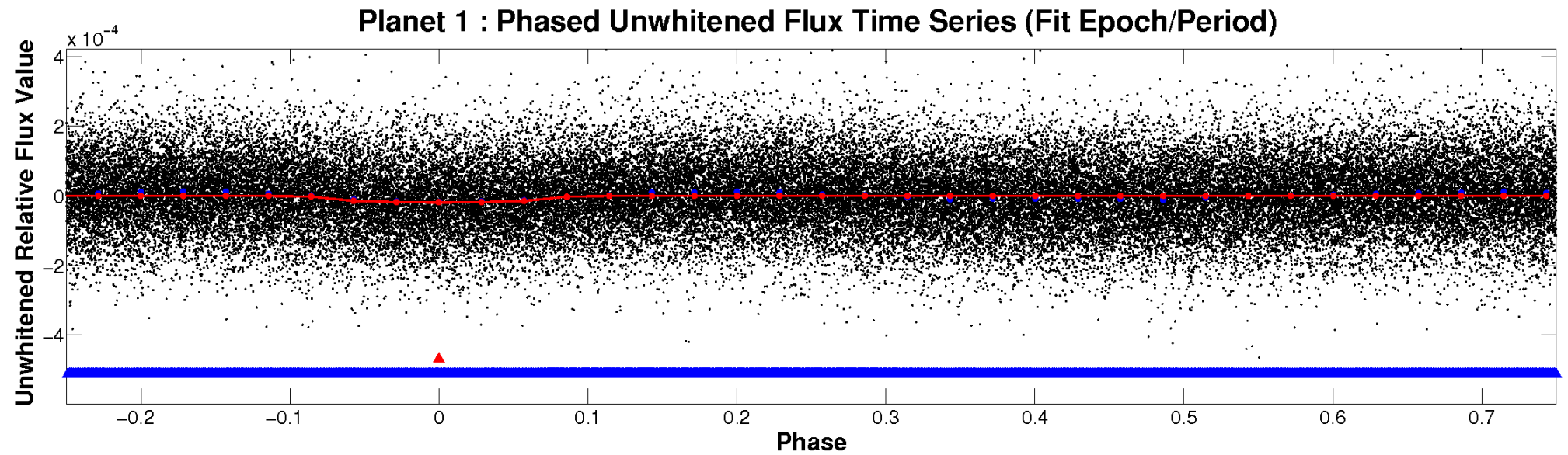




ALT Odd/Even

This plot does not exist for this TCE.

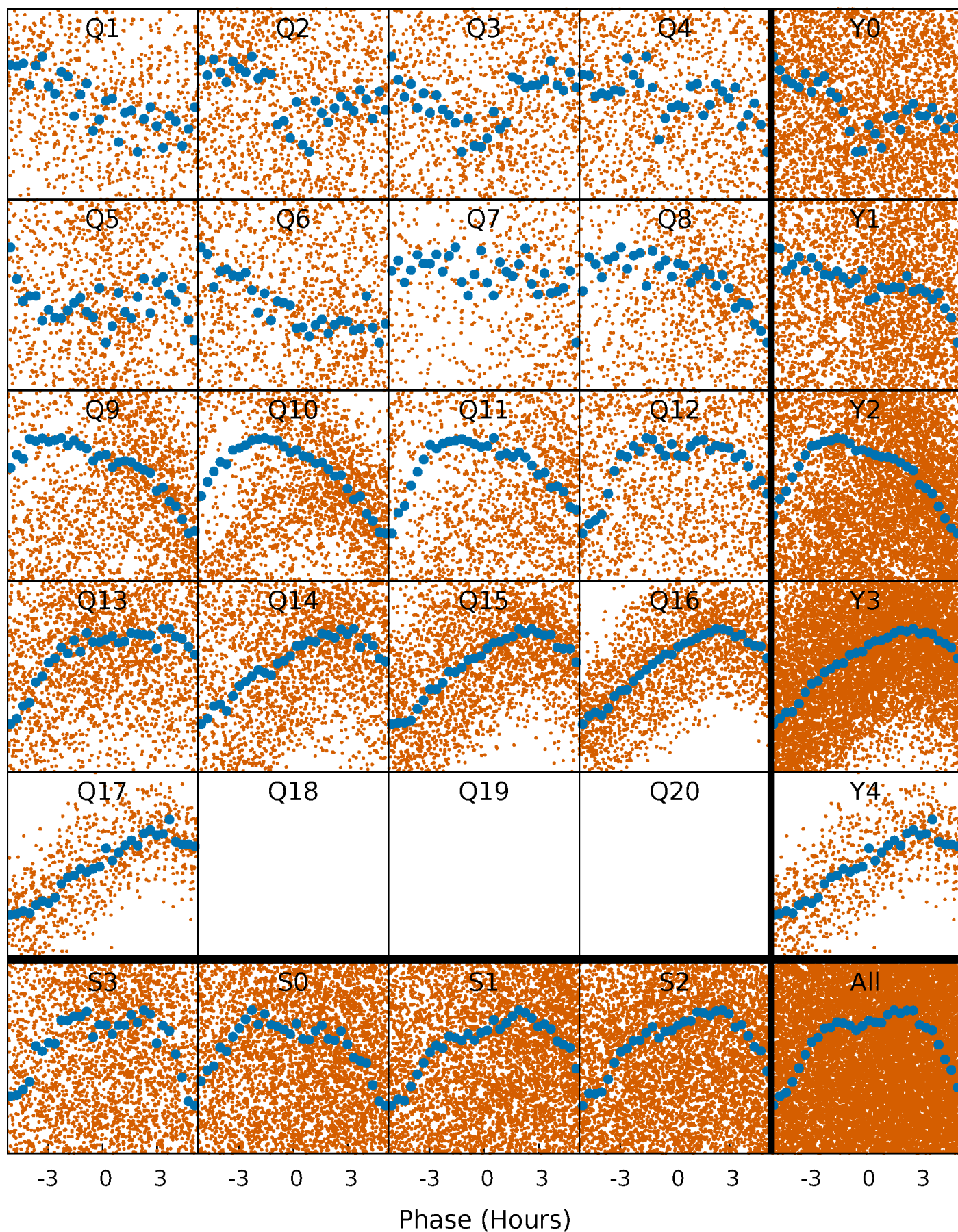
# Non-Whitened Vs. Whitened Light Curve





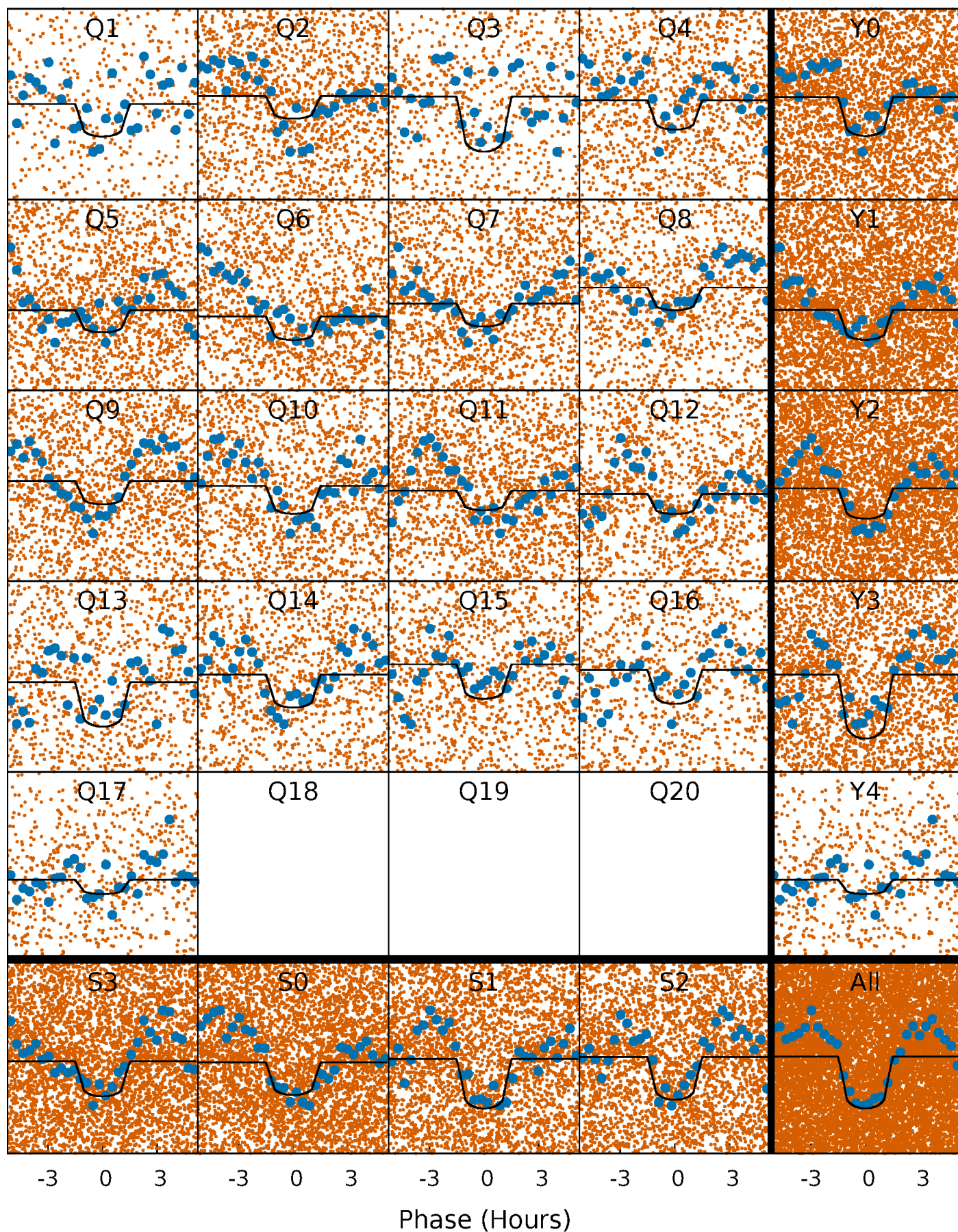
# PDC Quarter-Phased Transit Curves

TCE 010081748-01 P= 0.714708 Days  $T_0=131.525931$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 010081748-01   P= 0.714708 Days    $T_0=131.525931$  (BKJD)



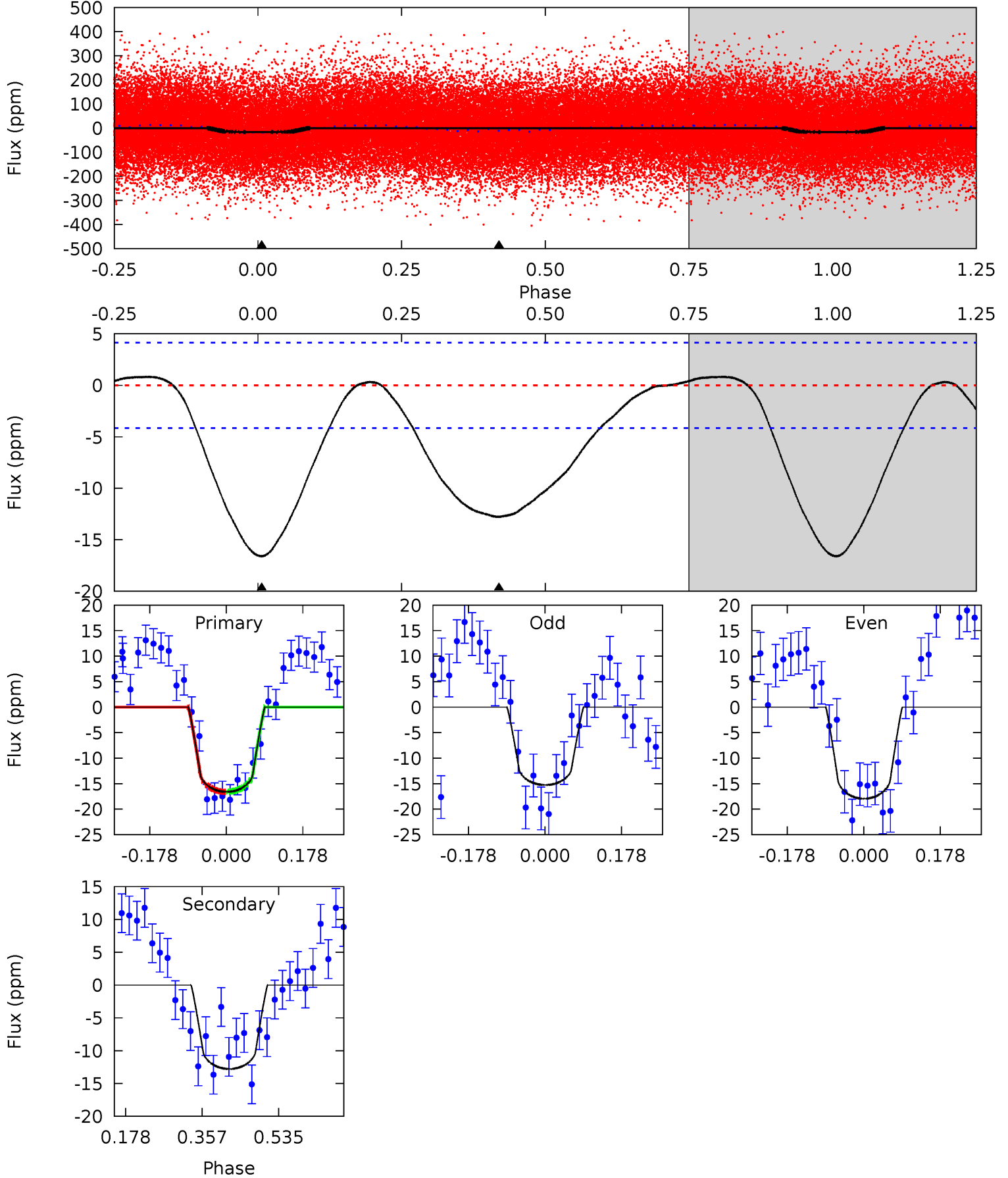
This plot does not exist for this TCE.



# DV Model-Shift Uniqueness Test

010081748-01,  $P = 0.714708$  Days,  $E = 130.811223$  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
17.8	13.7	0	0	4.44	1.35	1.34	17.8	17.8	13.7	13.7	1.44	1.03	0.05	0.02



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.



### Stellar Parameters For KIC 010081748

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6828^{+160}_{-220}$	$3.785^{+0.266}_{-0.114}$	$0.220^{+0.150}_{-0.300}$	$2.908^{+0.519}_{-0.964}$	$1.878^{+0.163}_{-0.352}$	$0.107^{+0.186}_{-0.038}$
	+2%/-3%	+7%/-3%	+68%/-136%	+18%/-33%	+9%/-19%	+173%/-35%
Source	PHO1	FLK73	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 010081748-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-13 \pm 1$	$1.40^{+0.38}_{-0.35}$	$5091^{+316}_{-429}$	$5590^{+883}_{-662}$	$1.324^{+1.007}_{-0.497}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{max}$  = 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

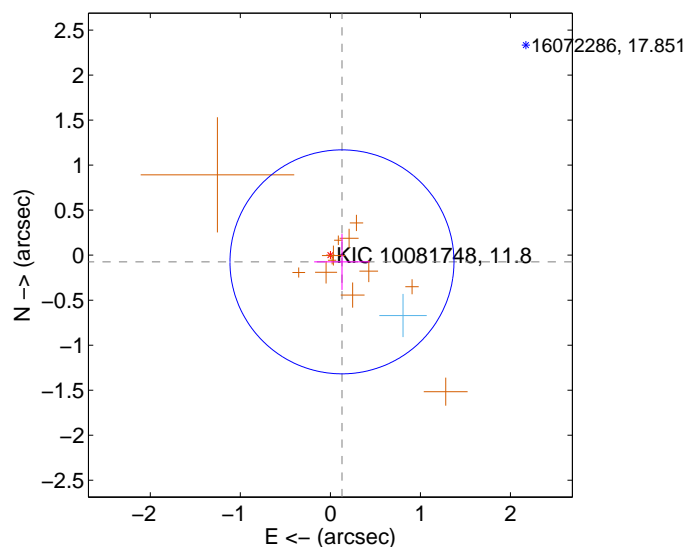
Supplemental centroid analysis for 010081748-01. **Kepler magnitude: 11.80.** Transit SNR 11.60

**There are 1 quarters with good PRF difference image offsets**

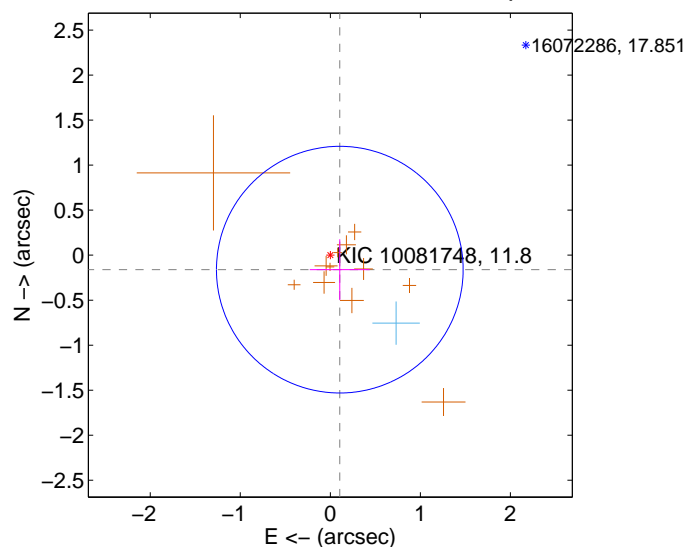
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.149 \pm 0.415$	0.36	$-0.129 \pm 0.309$	$-0.074 \pm 0.312$
PRF-fit source offset from KIC position	$0.192 \pm 0.457$	0.42	$-0.105 \pm 0.333$	$-0.161 \pm 0.338$
photometric centroid source offset	$1.00 \pm 0.41$	2.41	$-0.55 \pm 0.39$	$0.83 \pm 0.43$

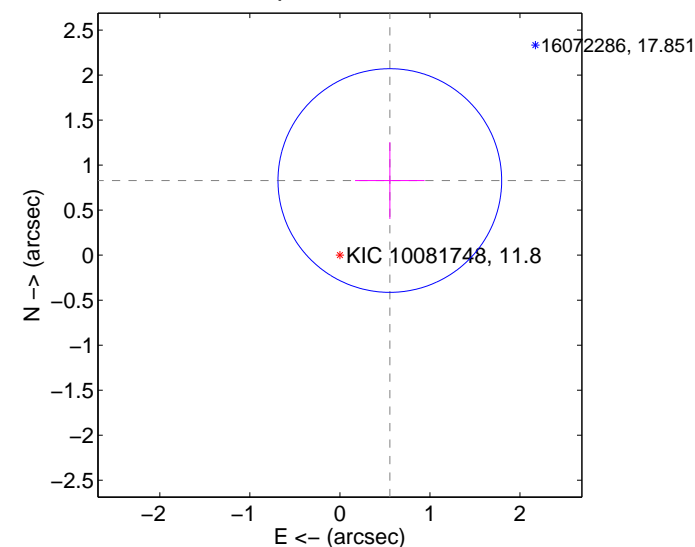
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

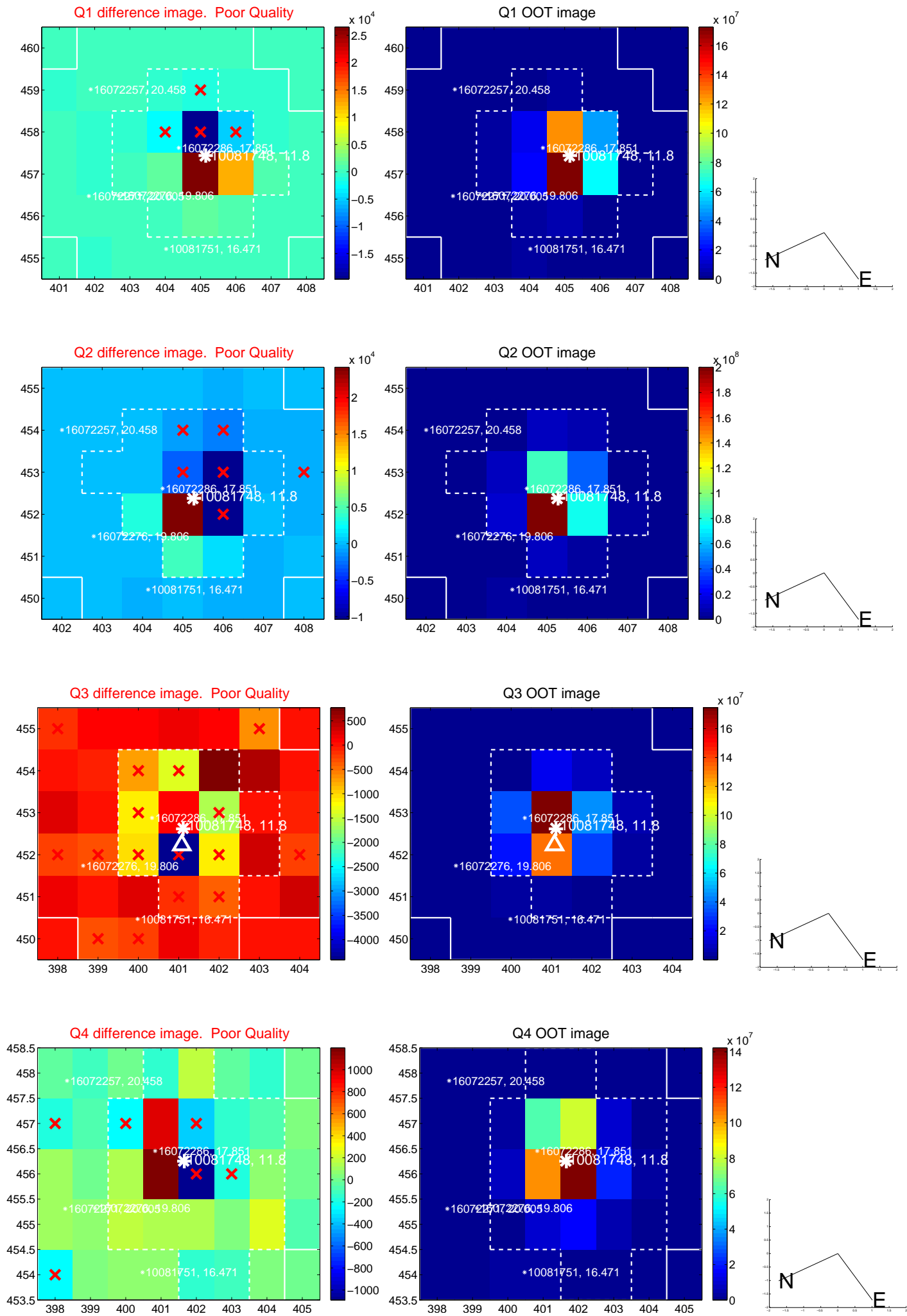


offset from photometric centroids

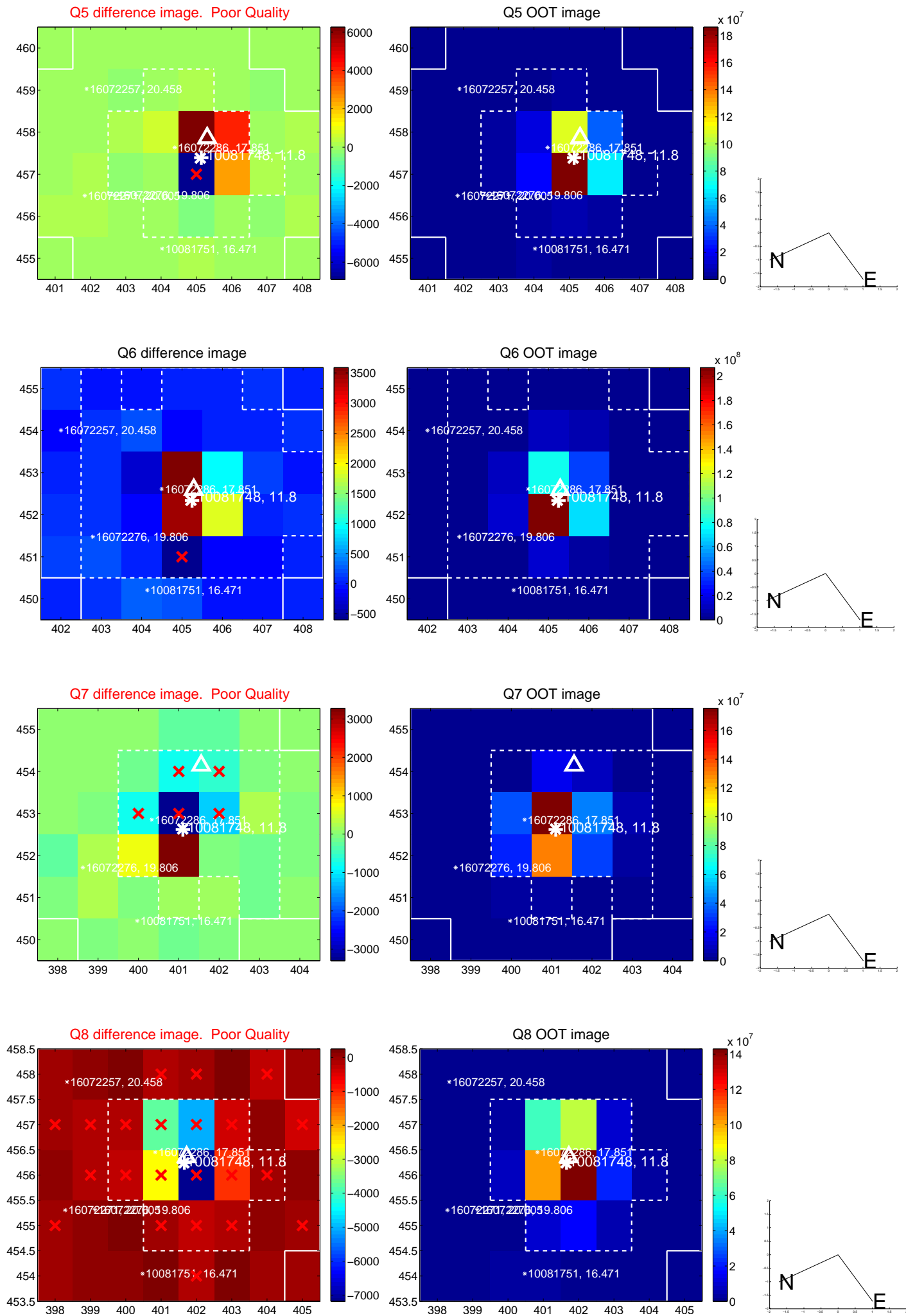


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

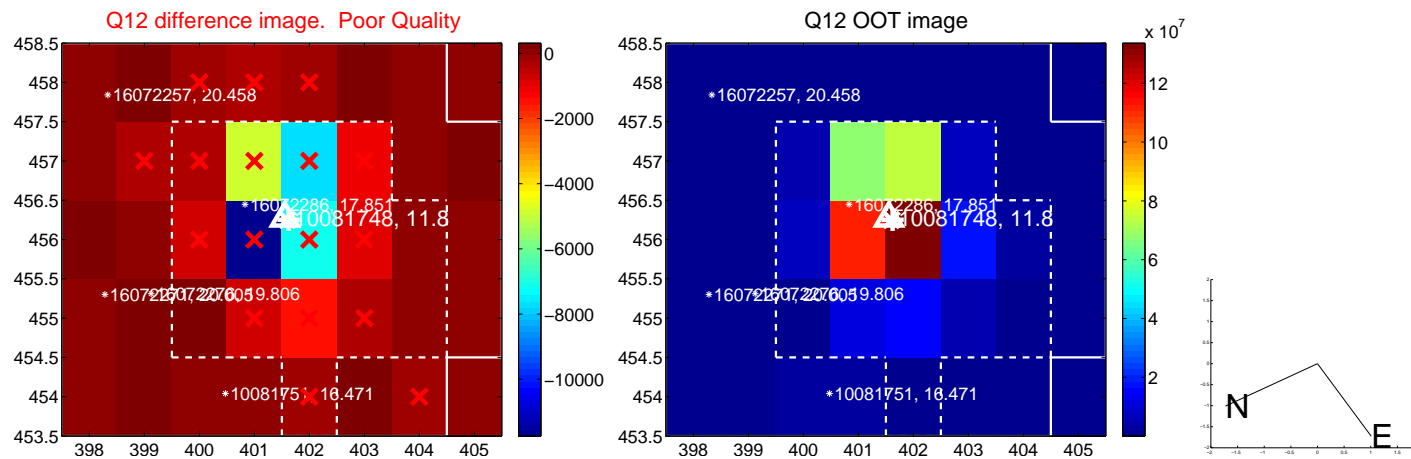
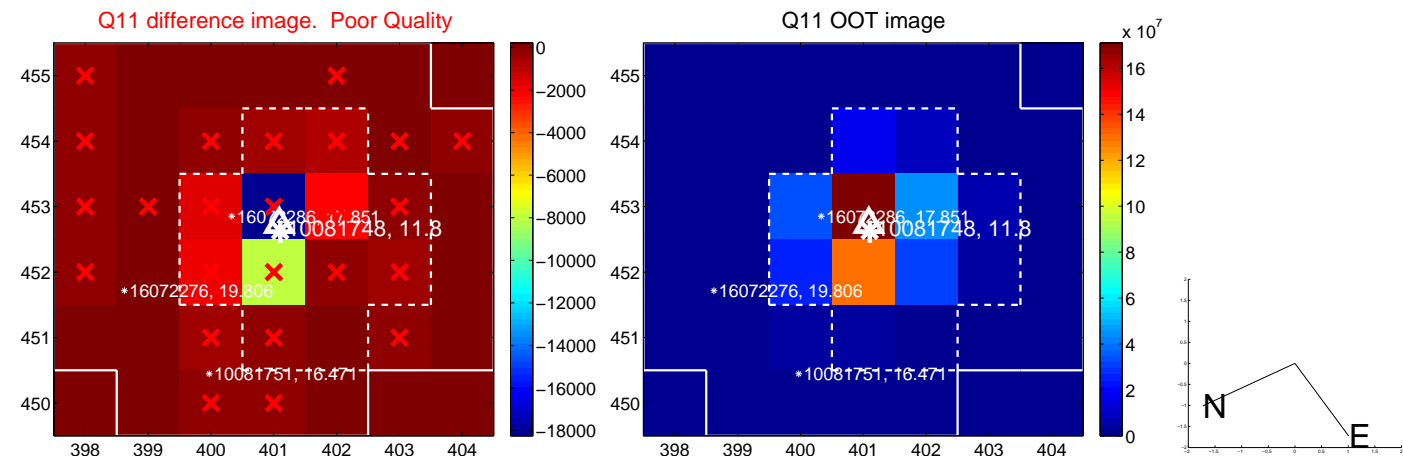
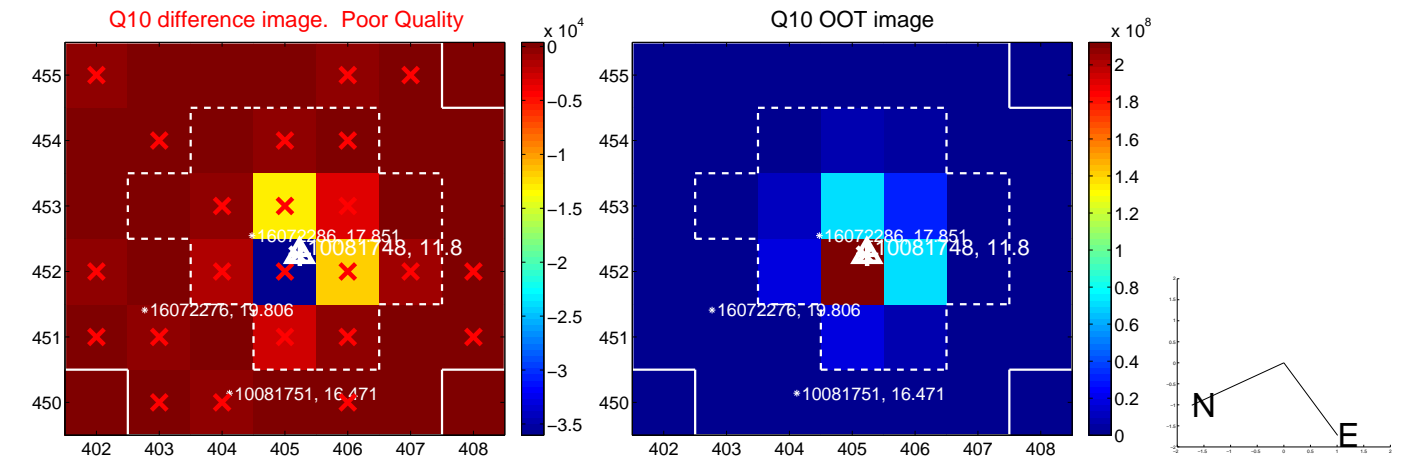
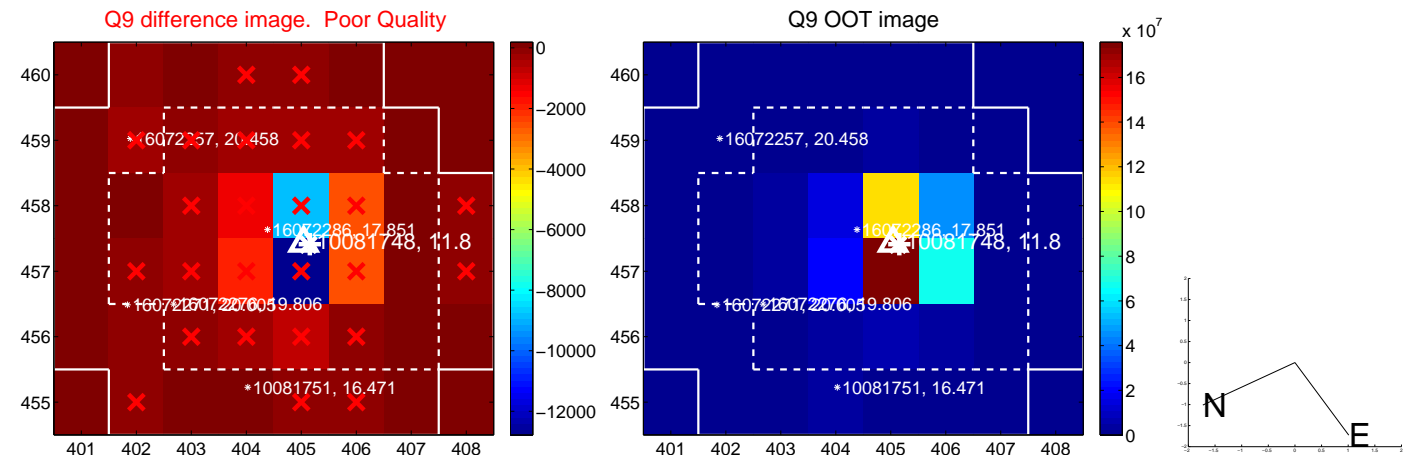
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

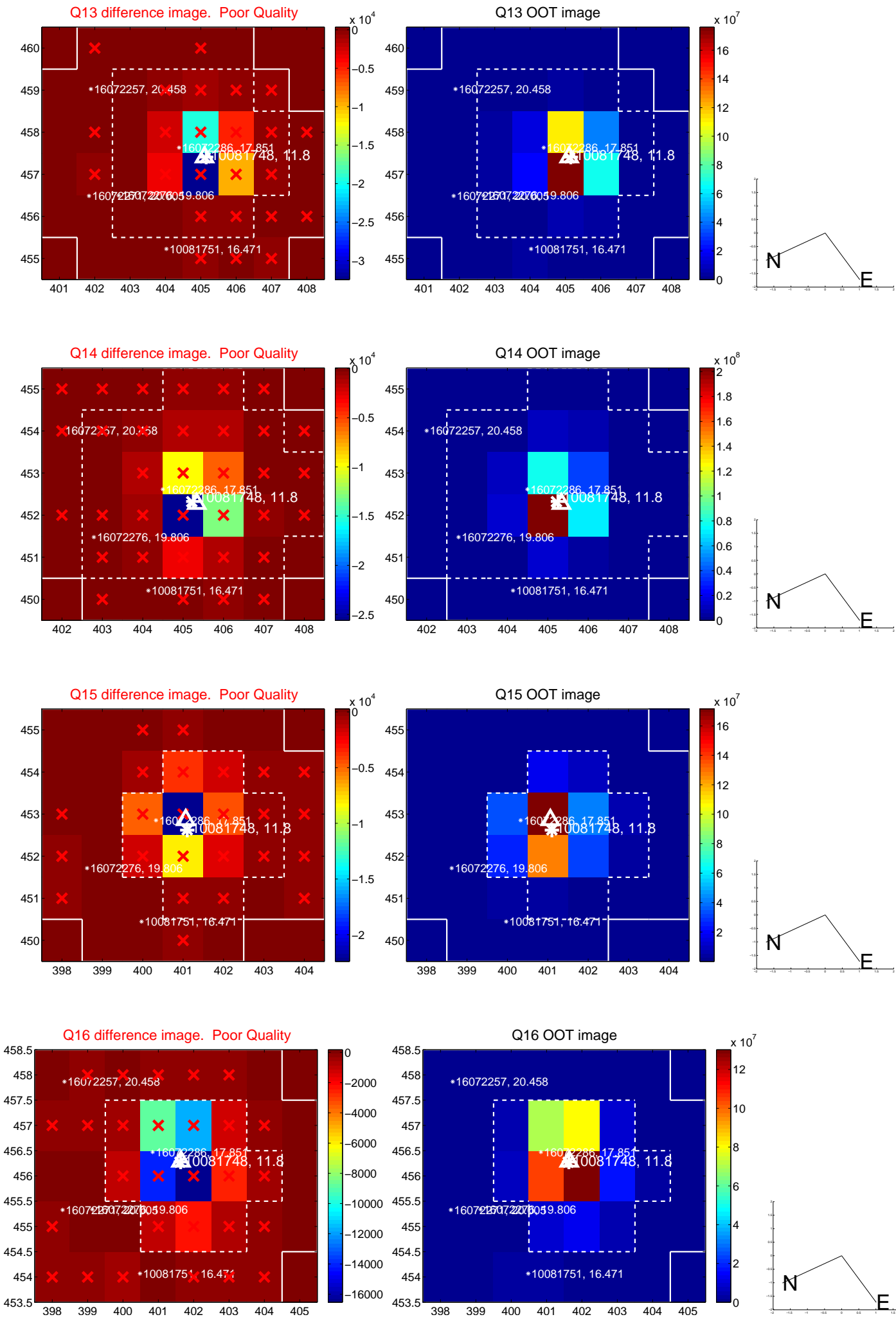


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

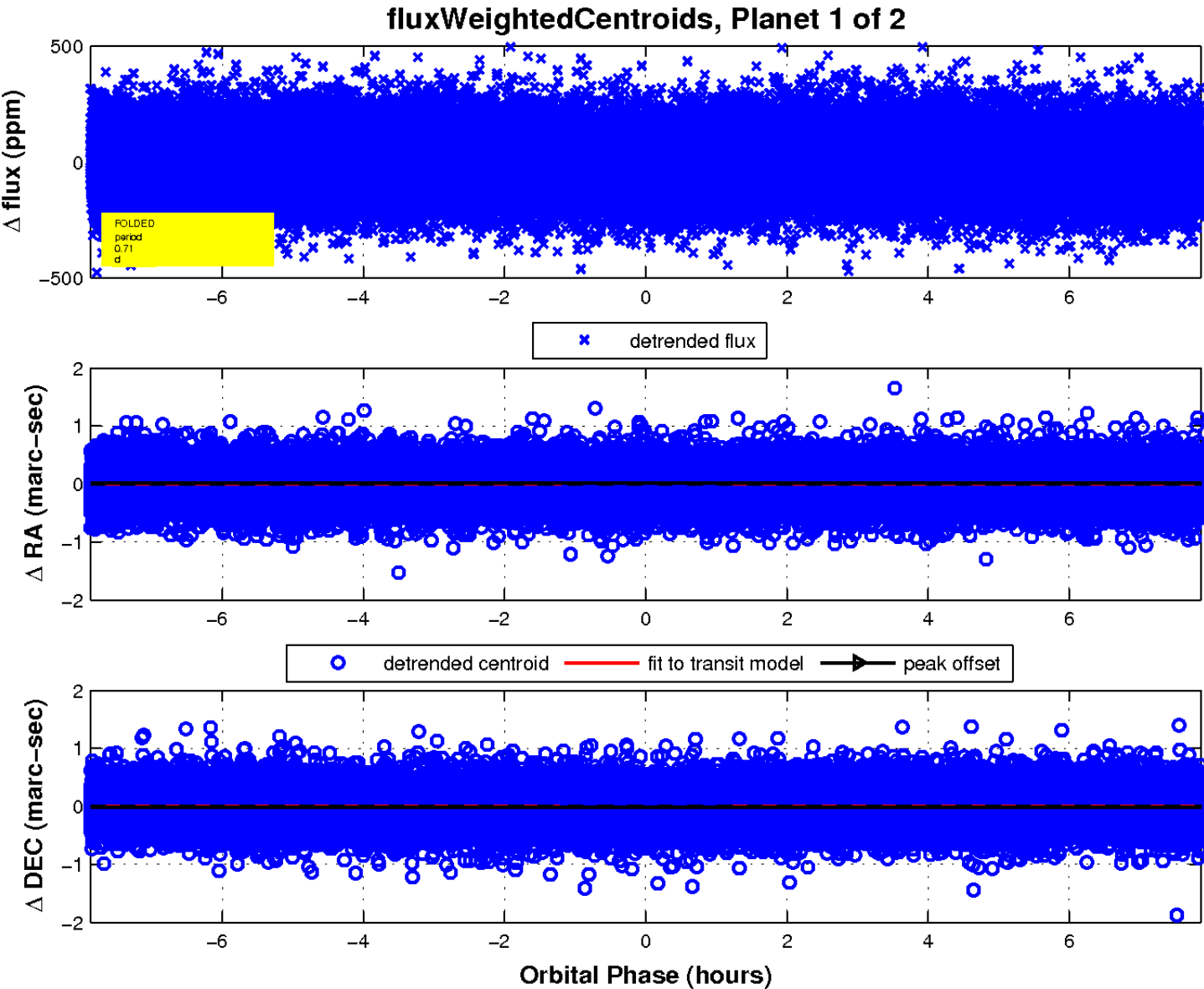
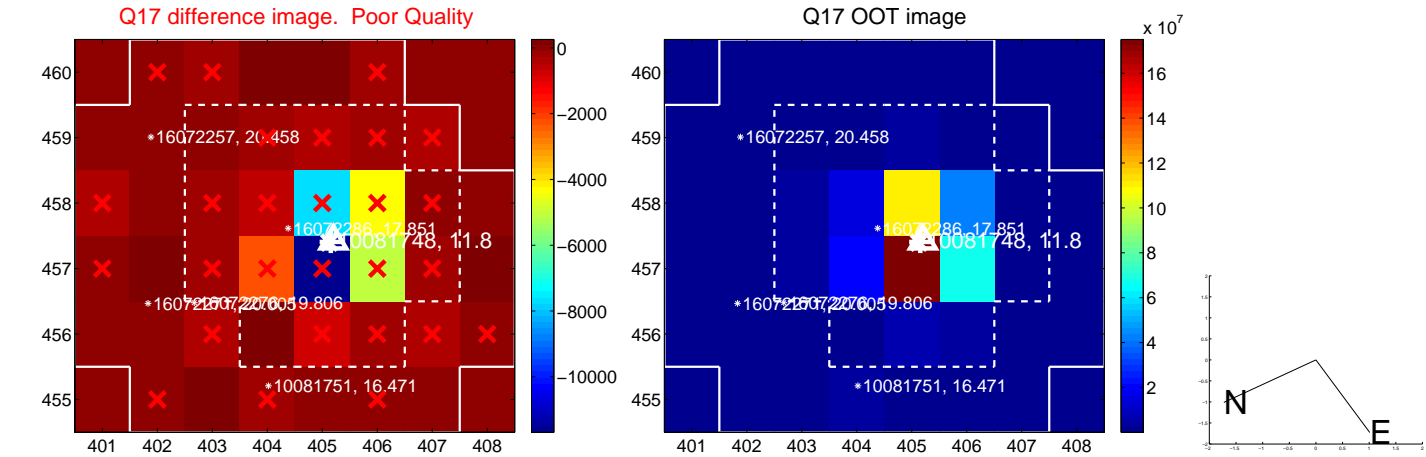




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

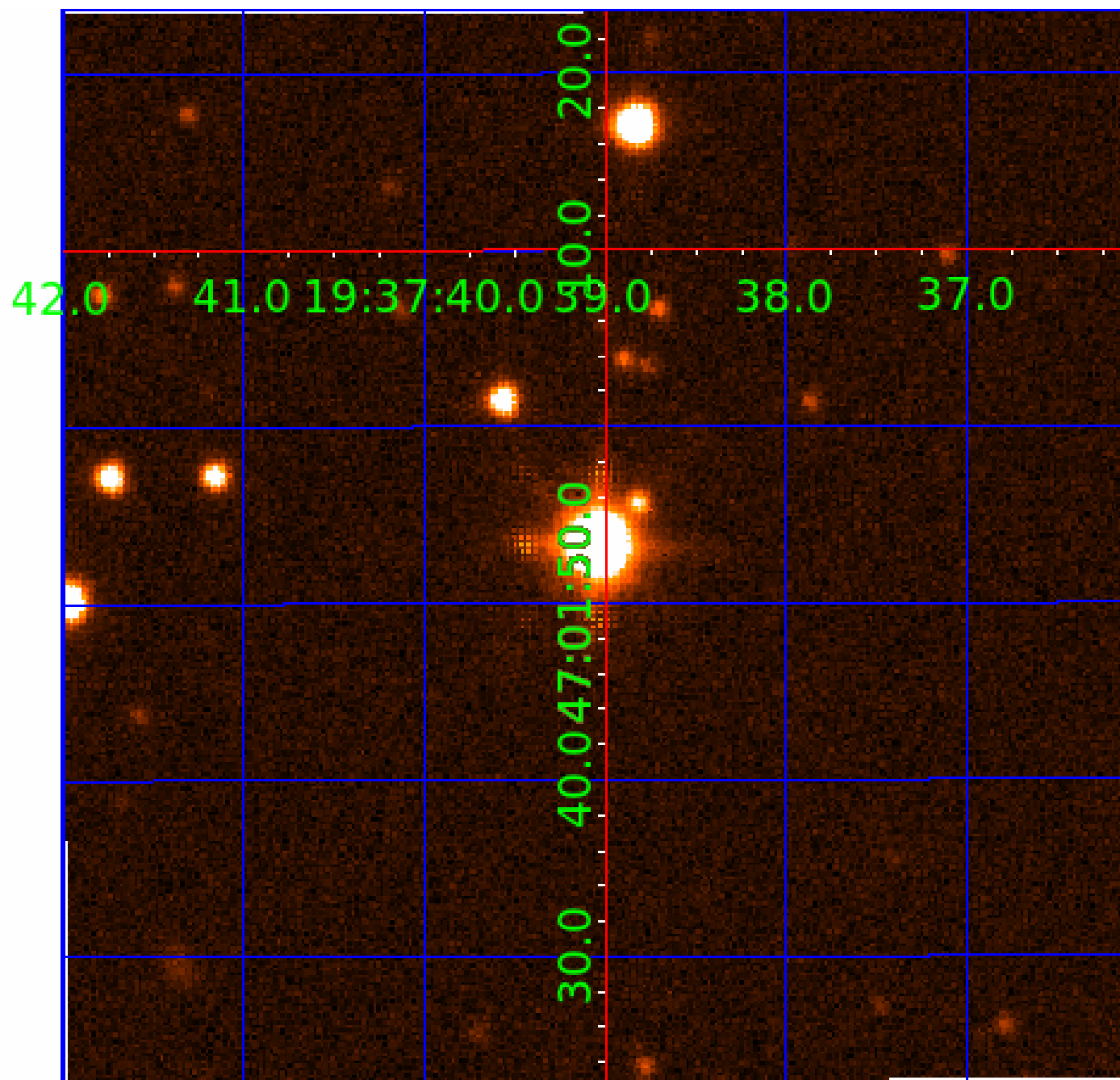


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010081748

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010081748-01	OBS	No	0.714708	131.525931	18.6	2.624	11.1	11.6	2.91	6828	1.46	44152.93
010081748-02	OBS	No	1.430282	131.577117	2.6	12.556	10.7	1.0	2.91	6828	0.48	17507.96

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010081748-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_FEW_DIFFS
010081748-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—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.

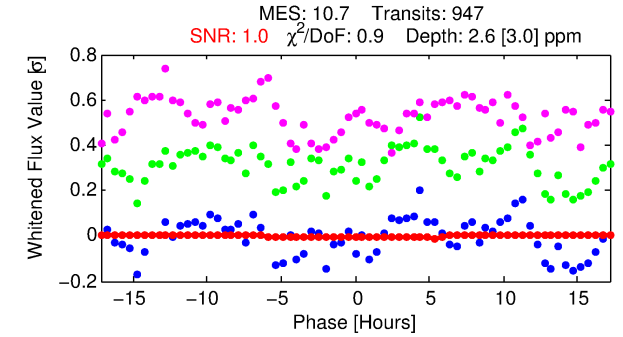
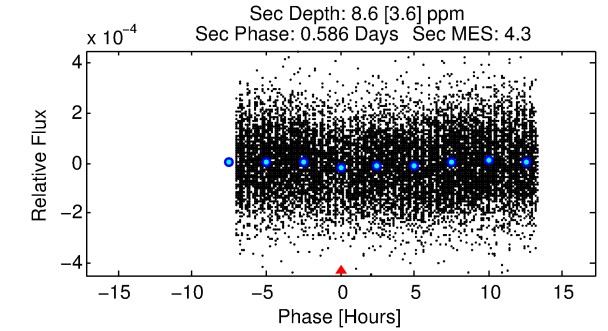
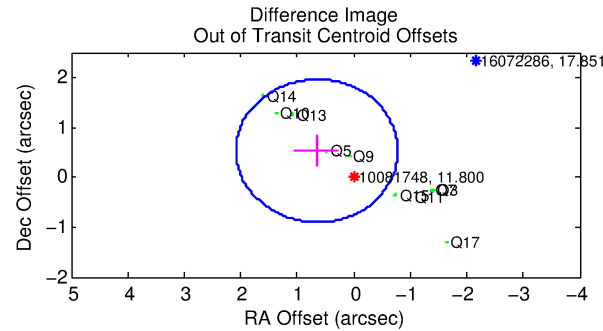
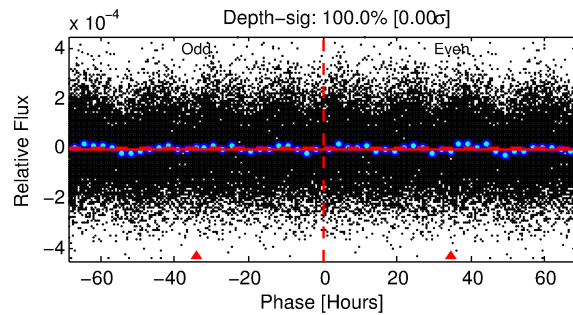
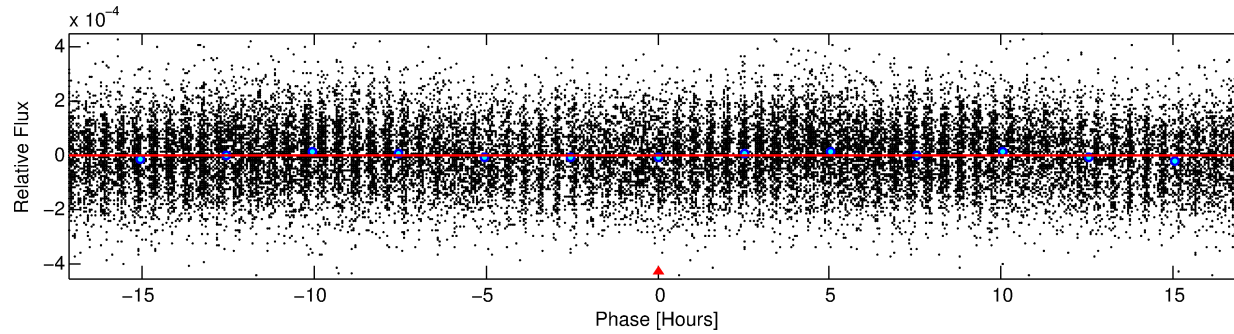
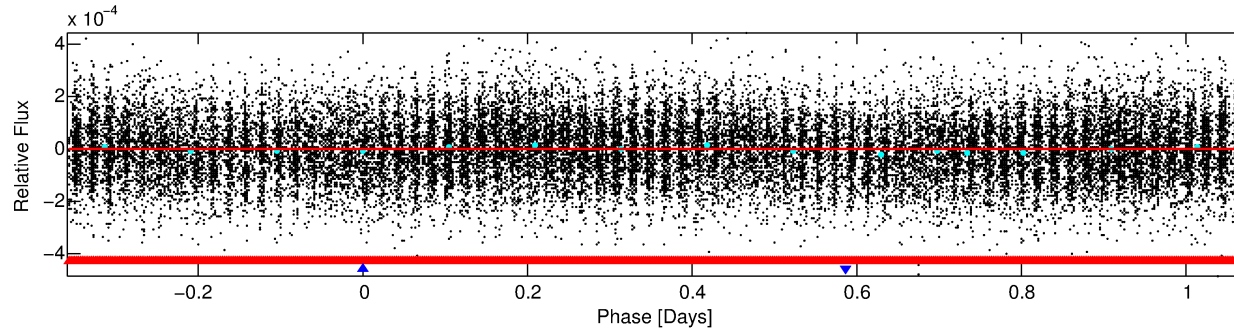
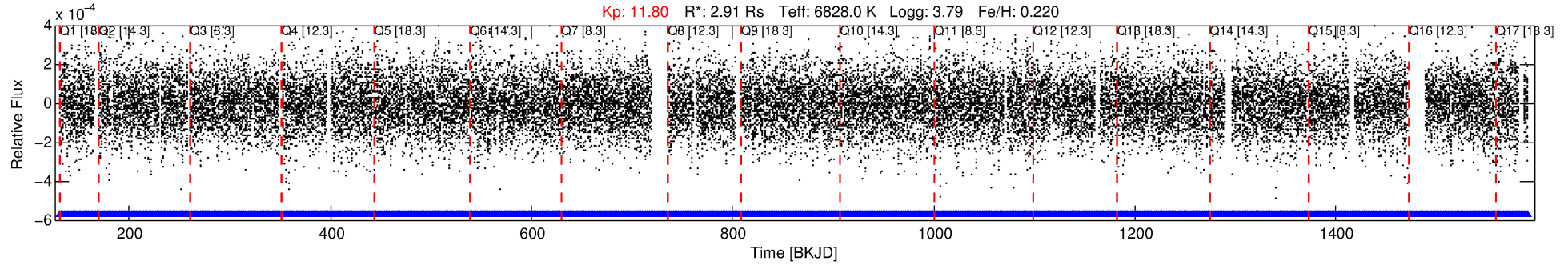
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010081748-02

No Significant Match Found

# DV One-Page Summary

KIC: 10081748 Candidate: 2 of 2 Period: 1.430 d



## DV Fit Results:

Period = 1.43028 [0.00016] d  
Epoch = 131.5771 [0.0429] BKJD  
Rp/R\* = 0.0015 [0.0074]  
a/R\* = 1.09 [4.79]  
b = 0.30 [85.76]  
Seff = 17507.96 [8436.23]  
Teq = 2933 [353] K  
Rp = 0.48 [2.36] Re  
a = 0.0307 [0.0092] AU  
Ag = 19.68 [194.86] [0.10σ]  
Teffp = 9552 [23618] K [0.28σ]

## DV Diagnostic Results:

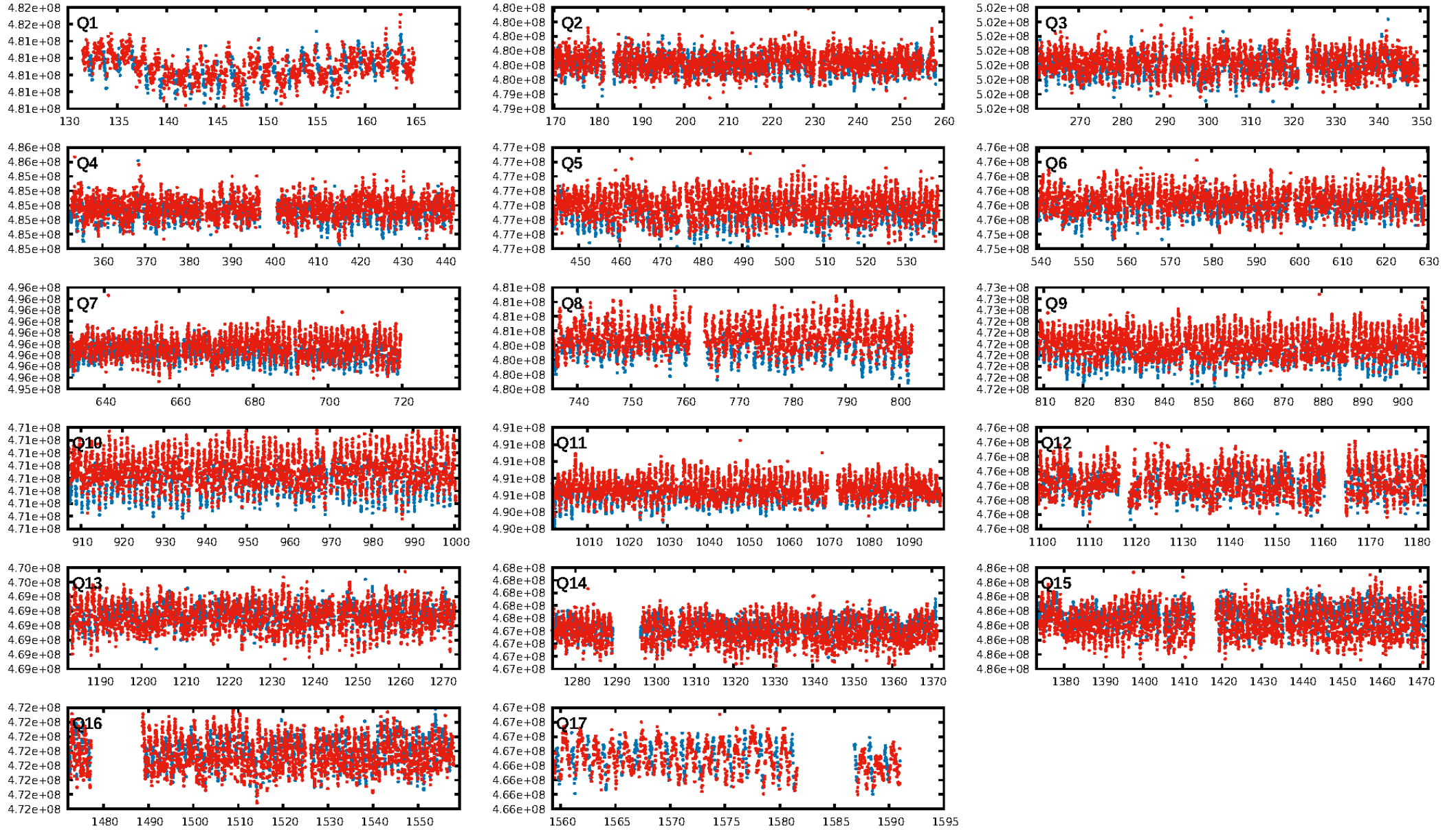
ShortPeriod-sig: 81.9% [1.34σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [904/904]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.837 arcsec [1.75σ]  
KicOffset-rm: 0.820 arcsec [1.89σ]  
OotOffset-st: 2/4/0/4 [10]  
KicOffset-st: 2/4/0/4 [10]  
DiffImageQuality-fgm: 0.00 [0/10]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:07:46 Z

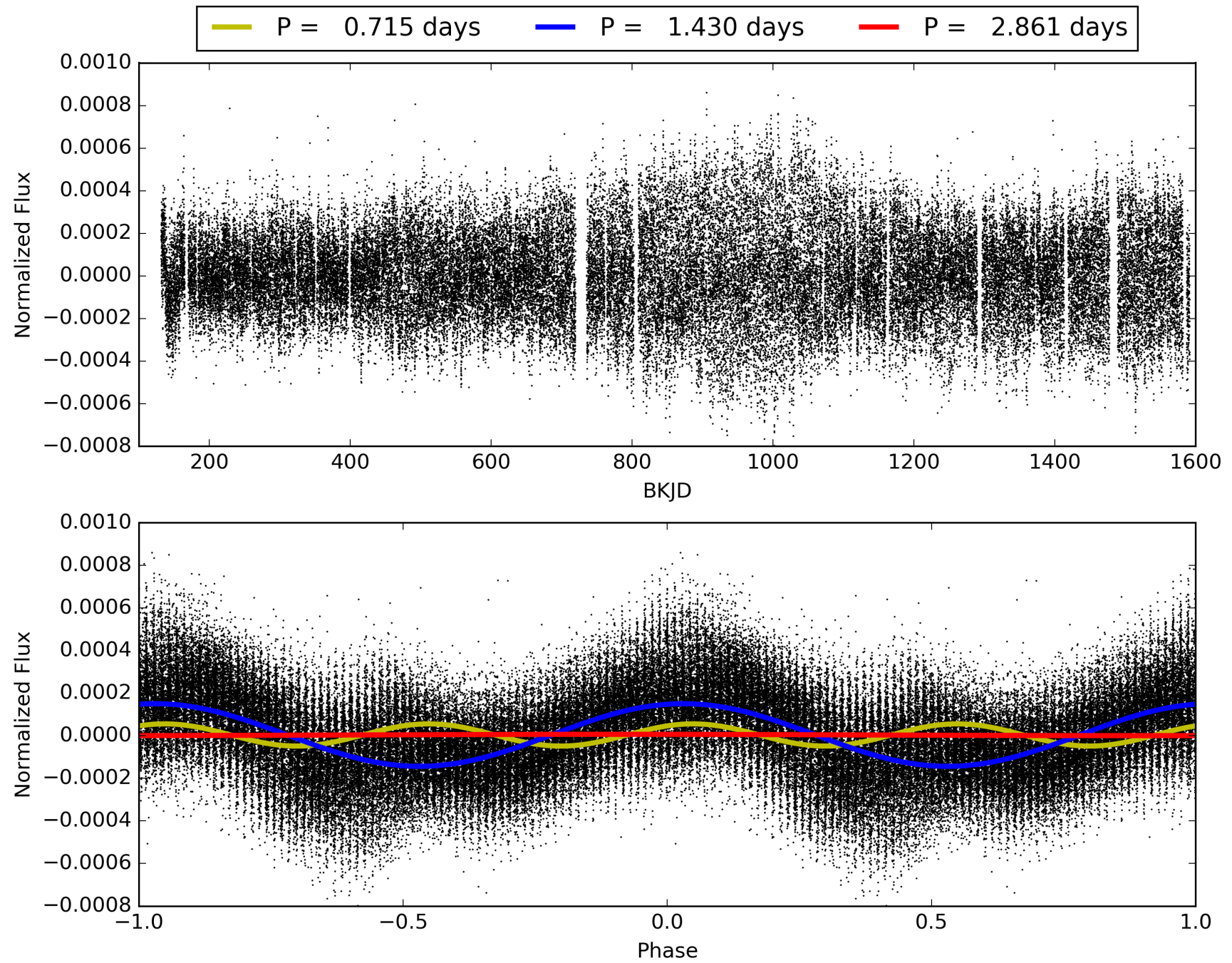
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 010081748-02, PDC Light Curves

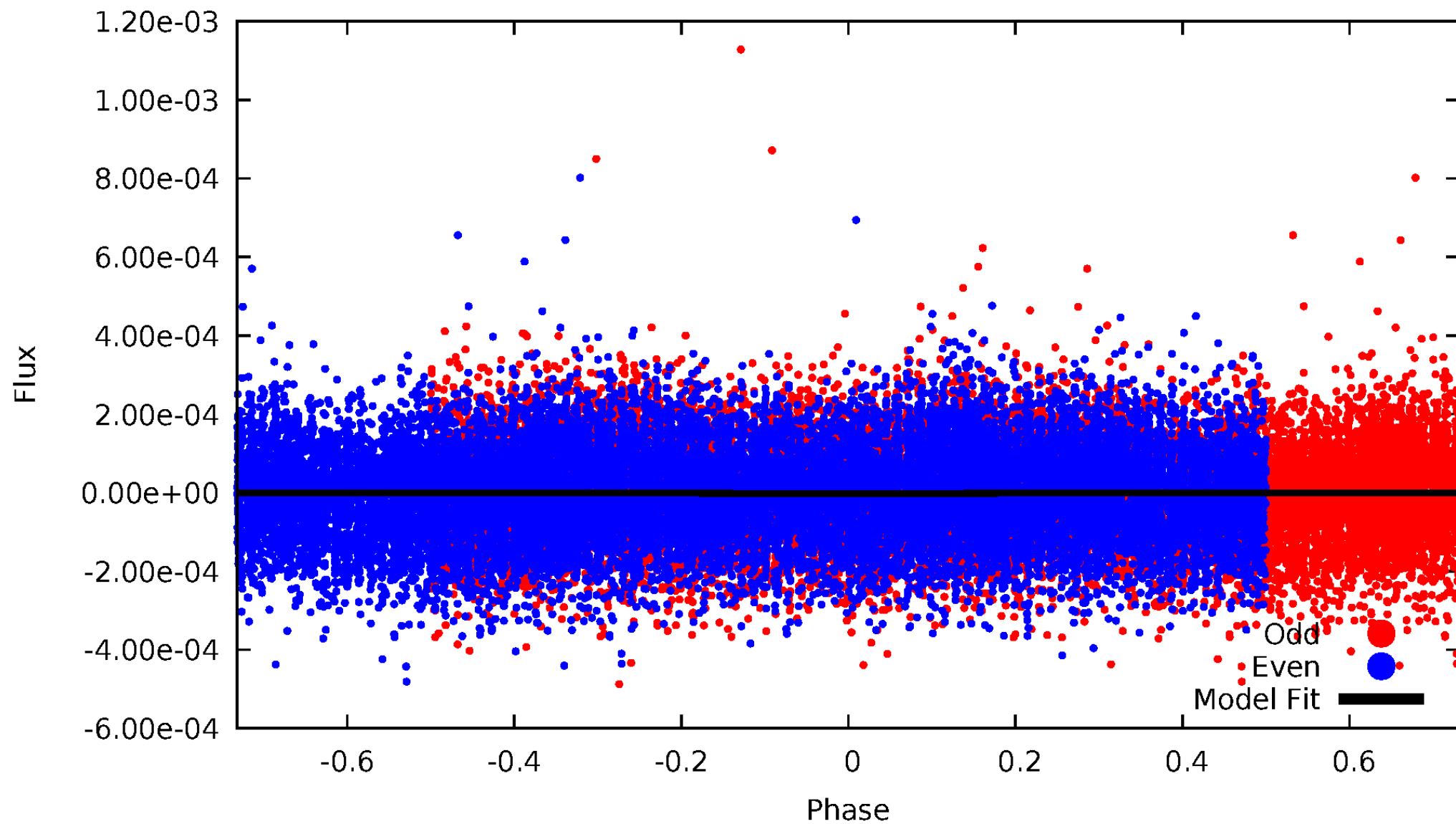


TCE 010081748-02



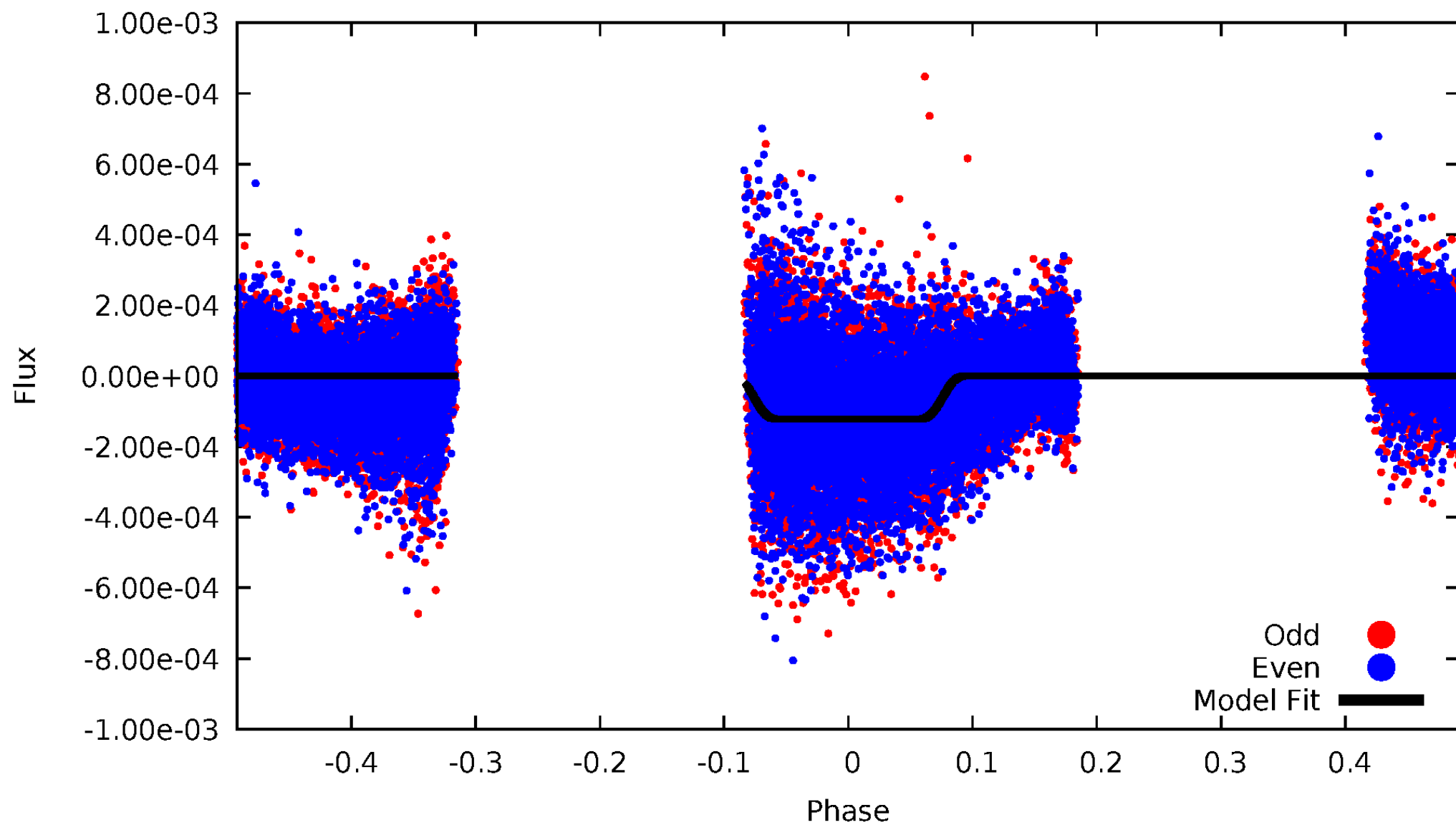
# DV Odd/Even

TCE 010081748-02



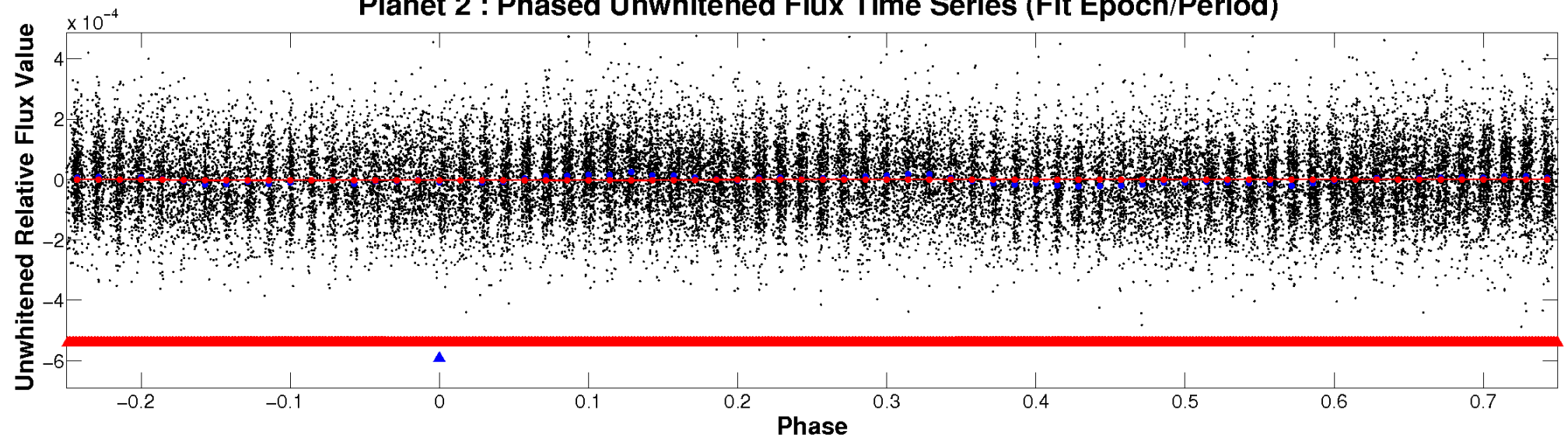
# ALT Odd/Even

TCE 010081748-02

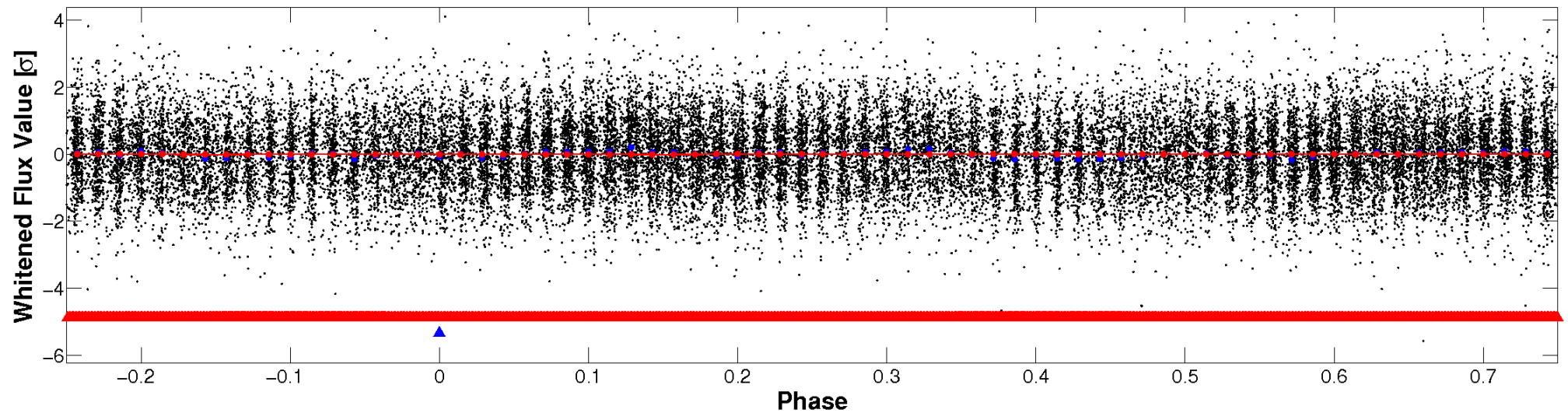


# Non-Whitened Vs. Whitened Light Curve

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



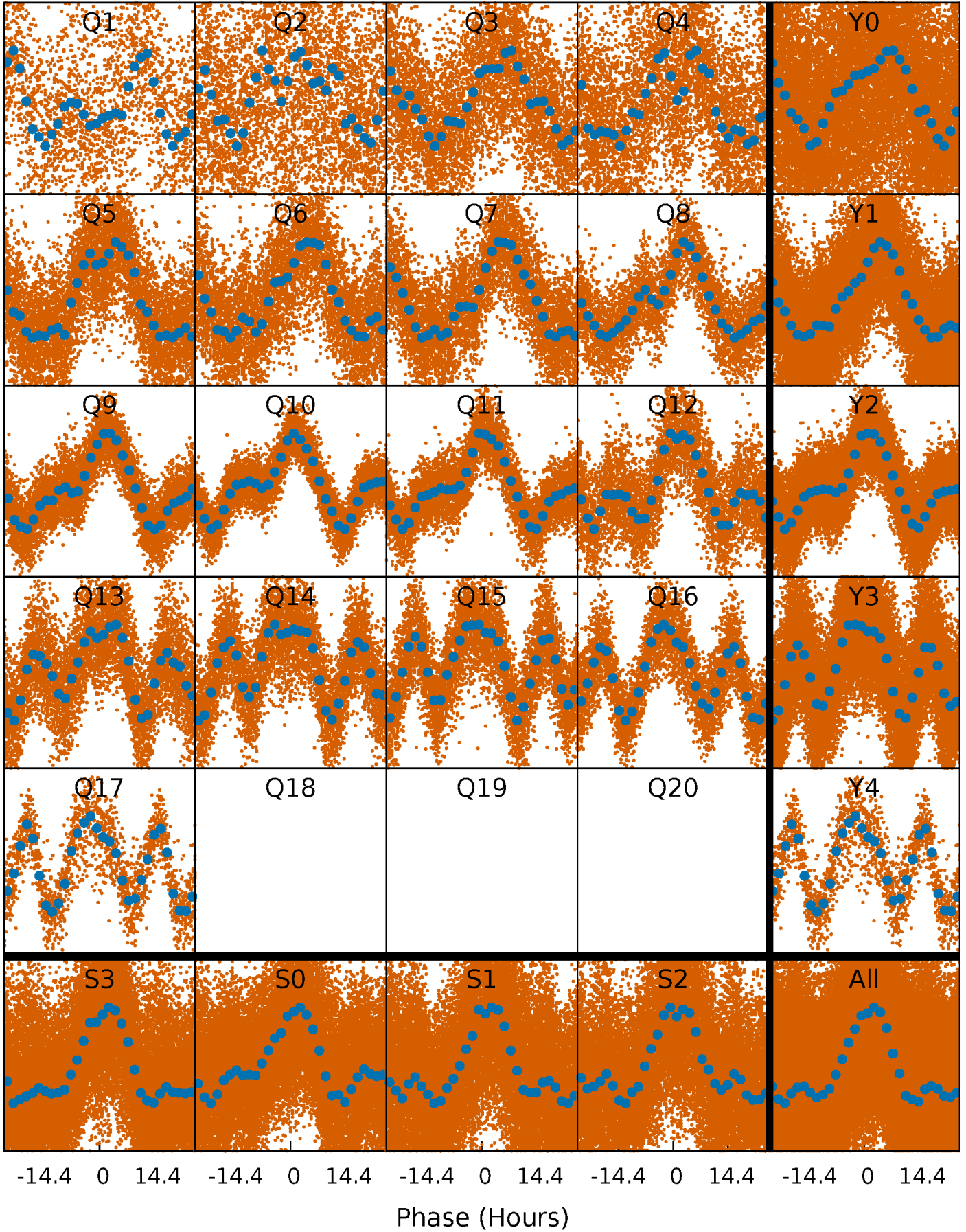
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





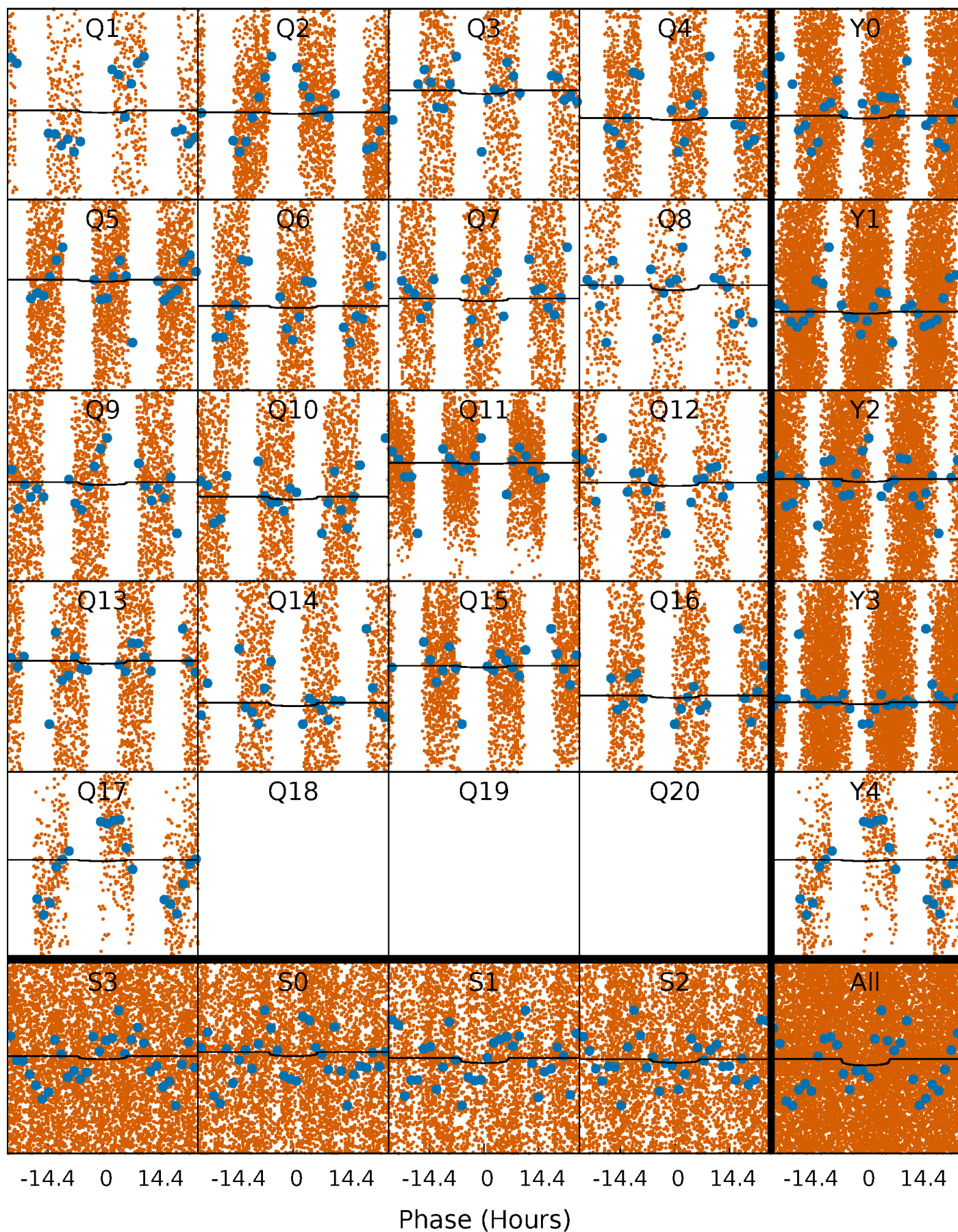
# PDC Quarter-Phased Transit Curves

TCE 010081748-02   P= 1.430282 Days    $T_0=131.577117$  (BKJD)



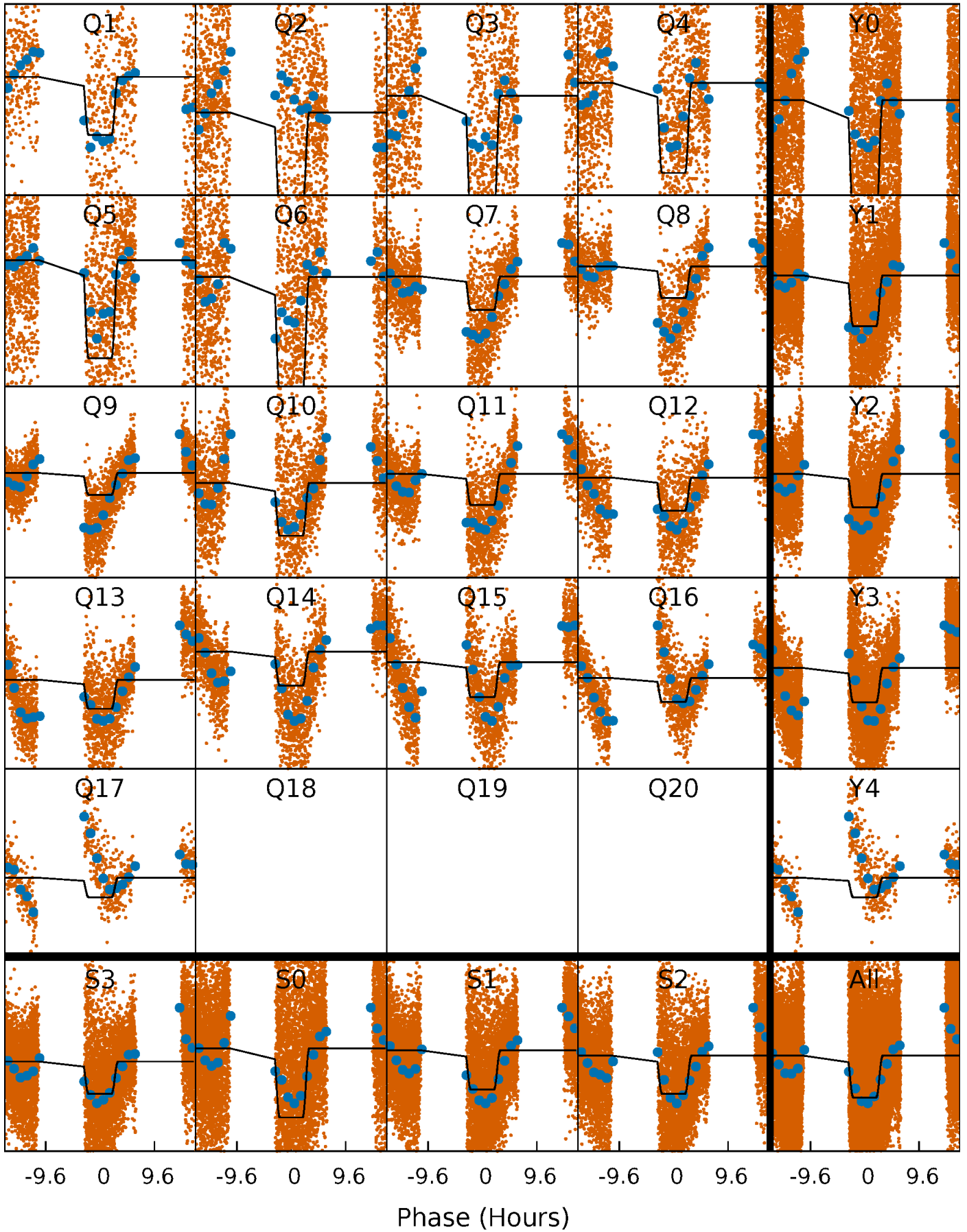
# DV Quarter-Phased Transit Curves

TCE 010081748-02   P= 1.430282 Days    $T_0=131.577117$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010081748-02 P= 1.429436 Days  $T_0=131.801061$  (BKJD)

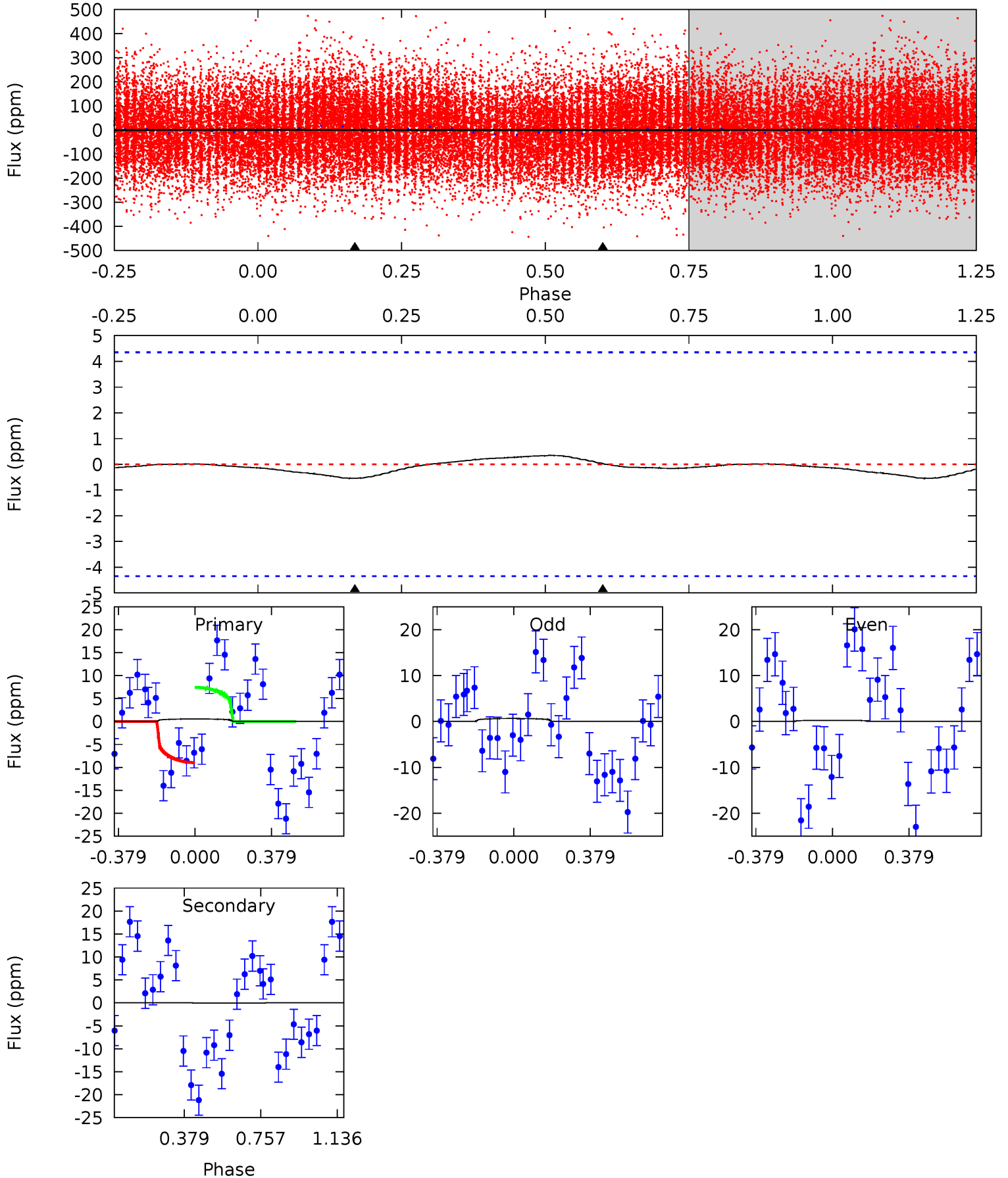




# DV Model-Shift Uniqueness Test

010081748-02, P = 1.430282 Days, E = 131.577117 Days

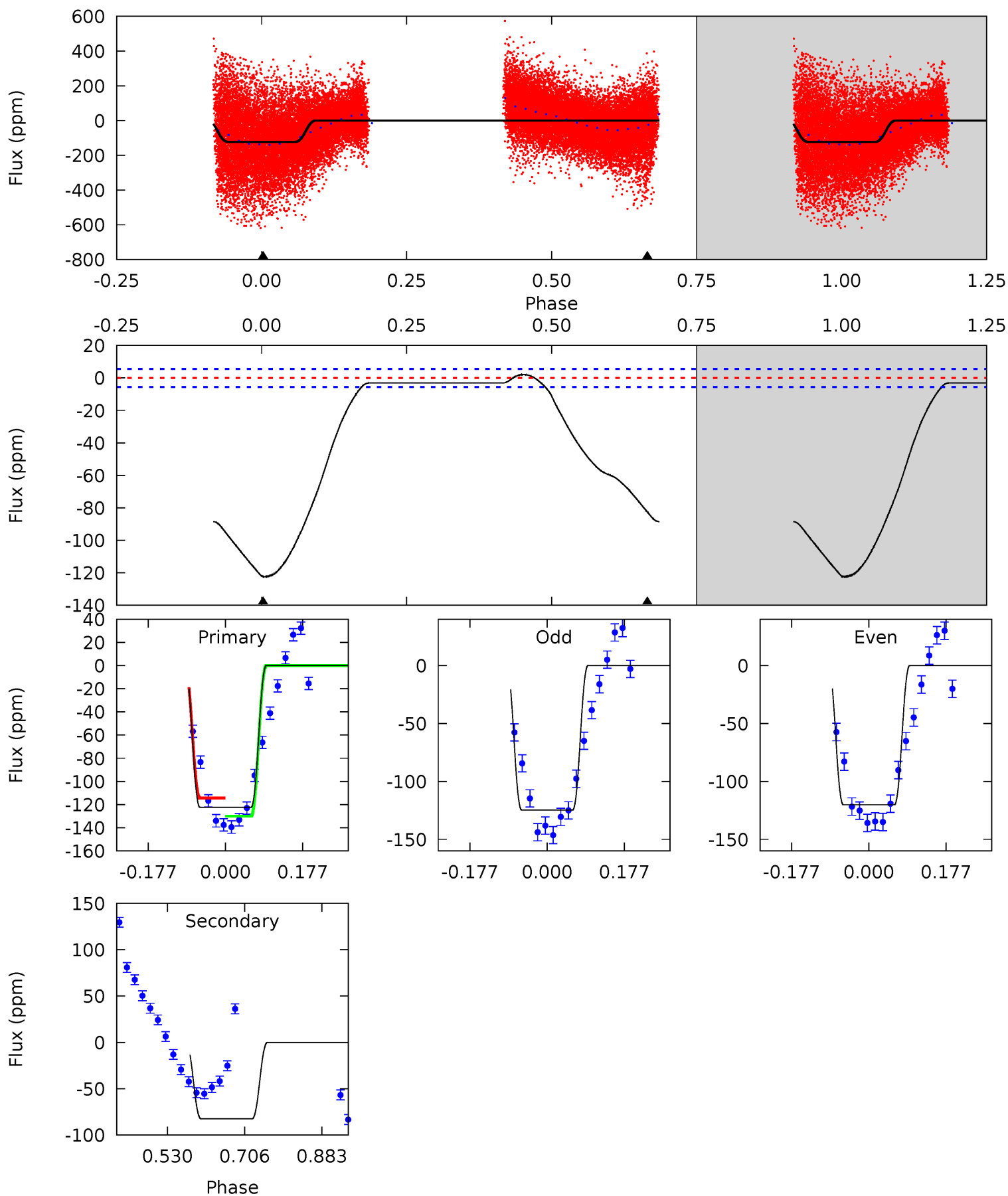
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.54	-0.03	0	0	4.28	0.88	0.02	0.54	0.54	-0.03	-0.03	0.20	2.04	0.39	0.74



# Alt Model-Shift Uniqueness Test

010081748-02, P = 1.429436 Days, E = 130.371625 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
98.6	66.5	0	0	4.44	1.35	2.45	98.6	98.6	66.5	66.5	1.79	0.98	0.02	6.90



### Stellar Parameters For KIC 010081748

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6828^{+160}_{-220}$	$3.785^{+0.266}_{-0.114}$	$0.220^{+0.150}_{-0.300}$	$2.908^{+0.519}_{-0.964}$	$1.878^{+0.163}_{-0.352}$	$0.107^{+0.186}_{-0.038}$
	+2%/-3%	+7%/-3%	+68%/-136%	+18%/-33%	+9%/-19%	+173%/-35%
Source	PHO1	FLK73	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 010081748-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1$	$1.72^{+1.77}_{-1.26}$	$4036^{+257}_{-342}$	$-3697^{+5881}_{-575}$	$-0.004^{+0.309}_{-0.424}$
Alt.	$-83 \pm 1$	$3.35^{+2.39}_{-1.78}$	$4028^{+260}_{-329}$	$5954^{+3126}_{-1355}$	$3.749^{+11.628}_{-2.443}$

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



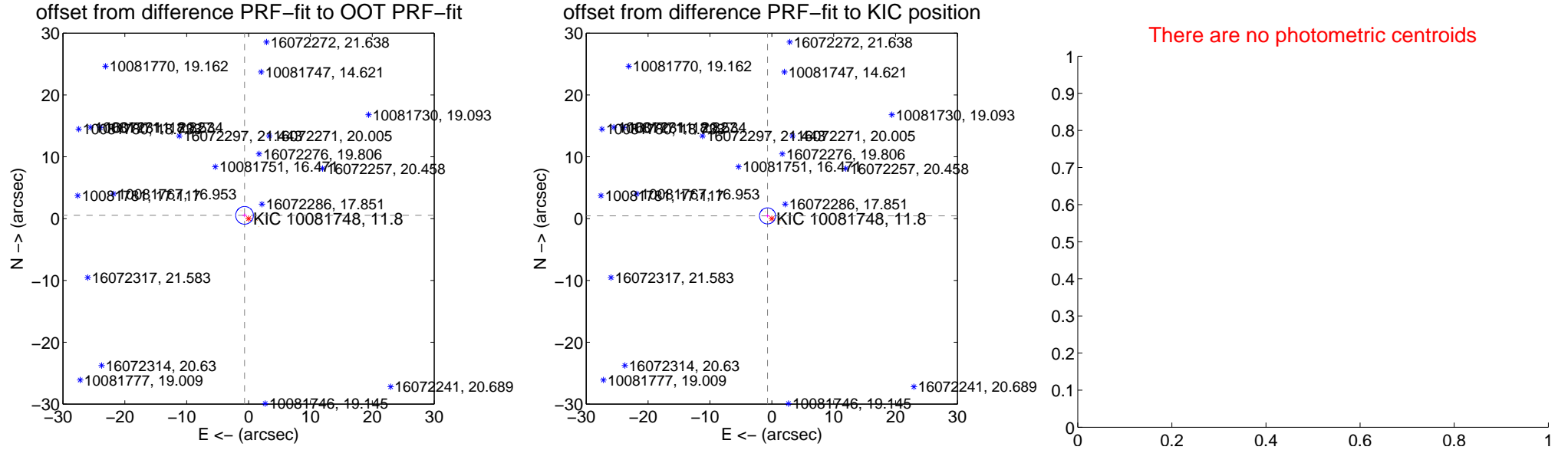
## DV Centroid Data

Supplemental centroid analysis for 010081748-02. **Kepler magnitude: 11.80.** Transit SNR 1.04

**There are 0 quarters with good PRF difference image offsets**

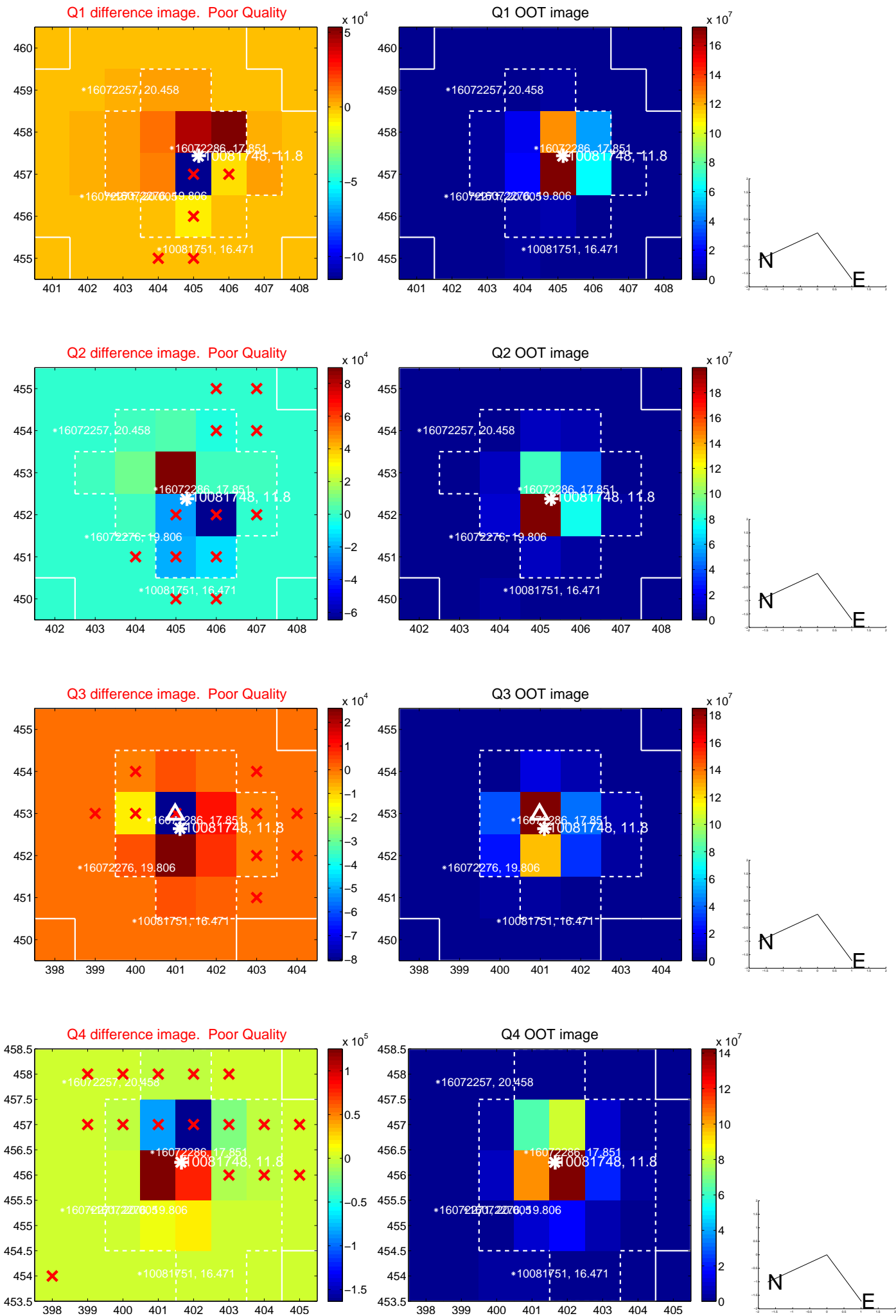
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.837 \pm 0.477$	1.75	$0.651 \pm 0.382$	$0.526 \pm 0.301$
PRF-fit source offset from KIC position	$0.820 \pm 0.434$	1.89	$0.691 \pm 0.355$	$0.440 \pm 0.268$
photometric centroid source offset	—	—	—	—

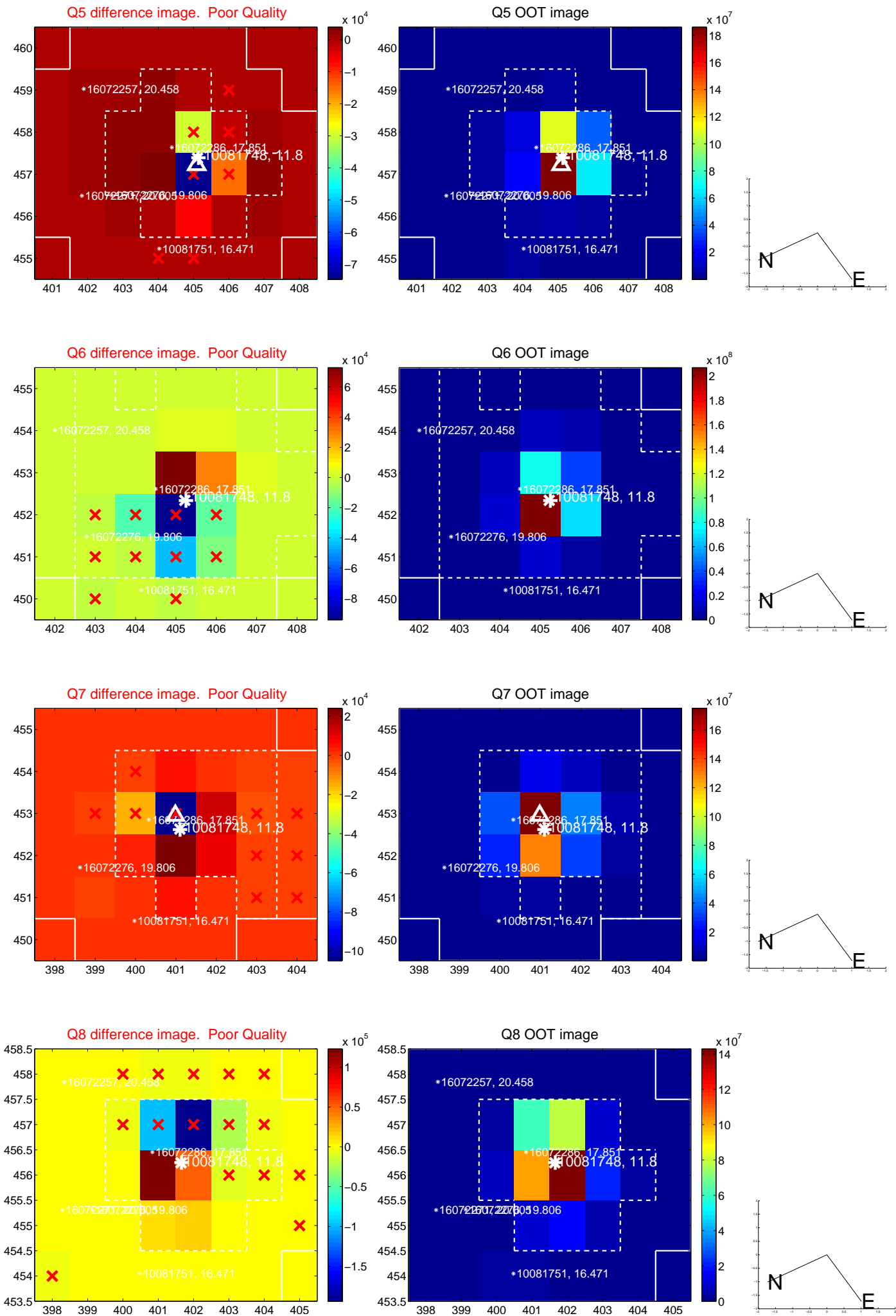


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

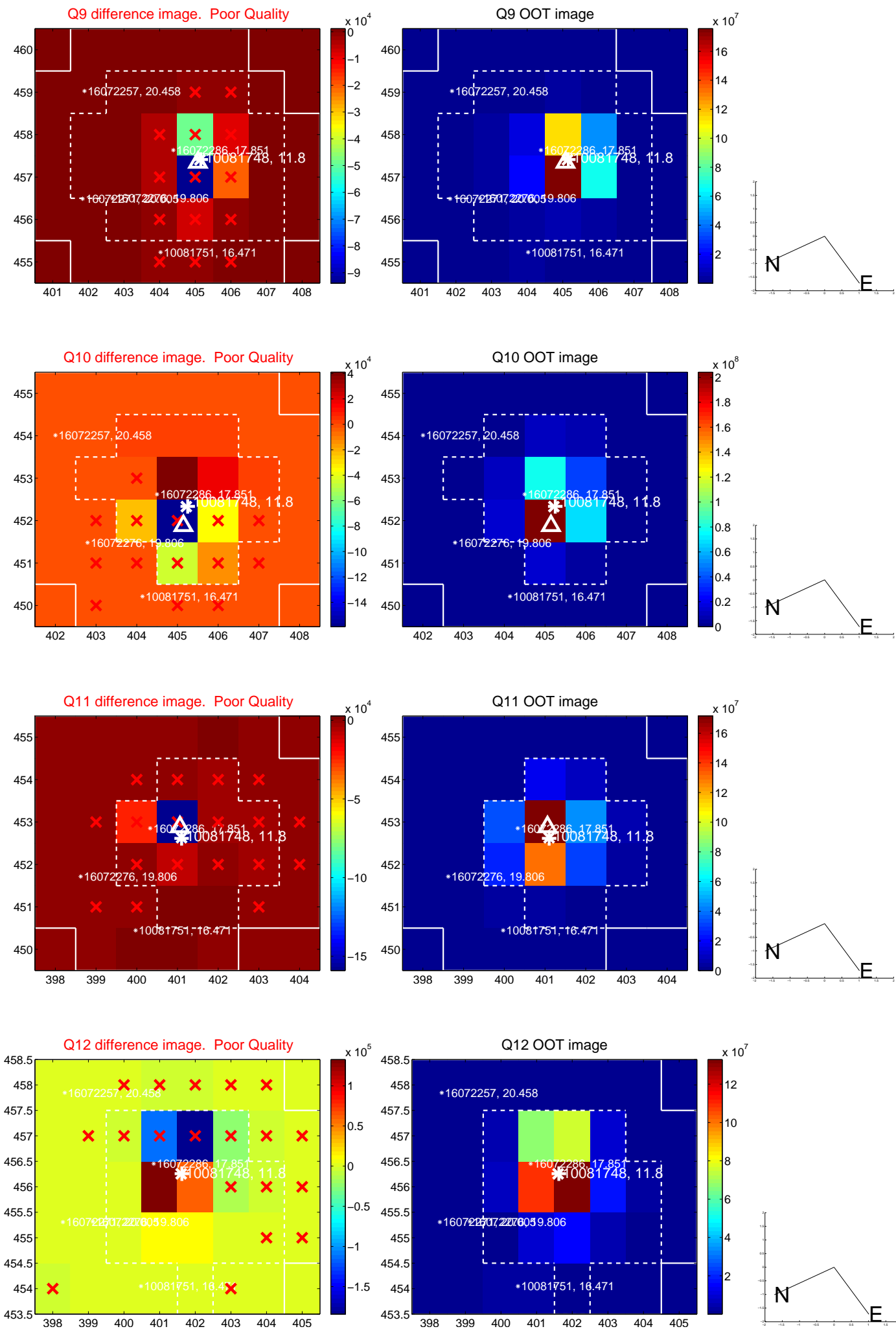
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



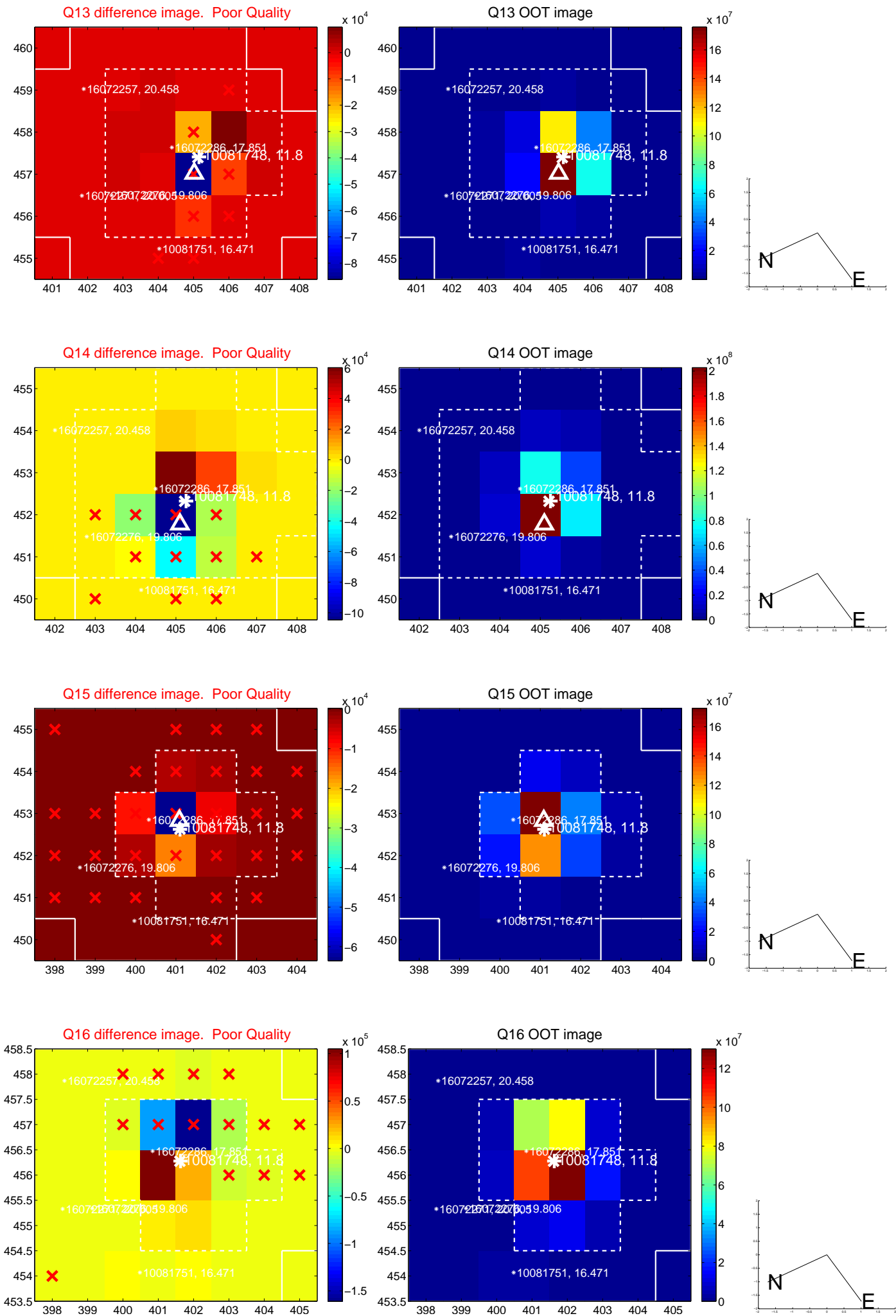
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



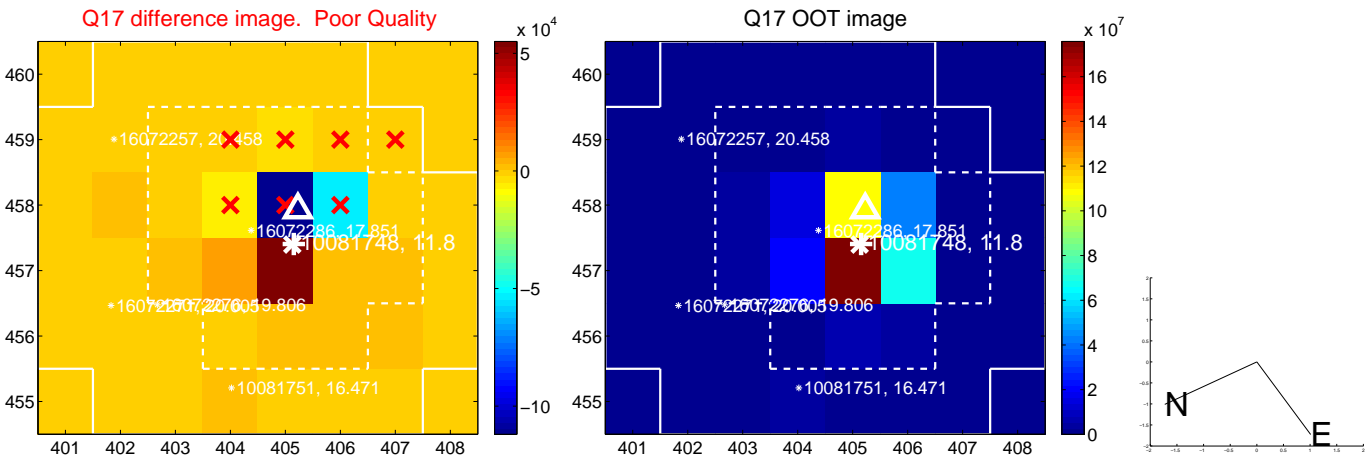
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



folded centroid time series figure for this object.



UKIRT Image

