

# KIC 008836921

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008836921-01	OBS	No	427.153058	458.567433	1219.7	5.646	8.5	6.5	0.54	4226	2.40	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008836921-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—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.

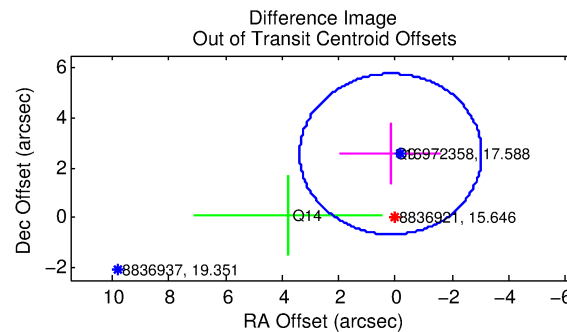
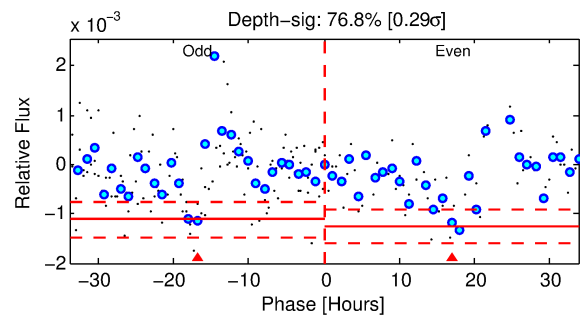
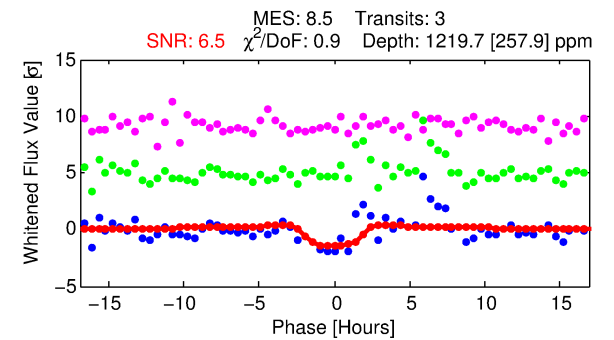
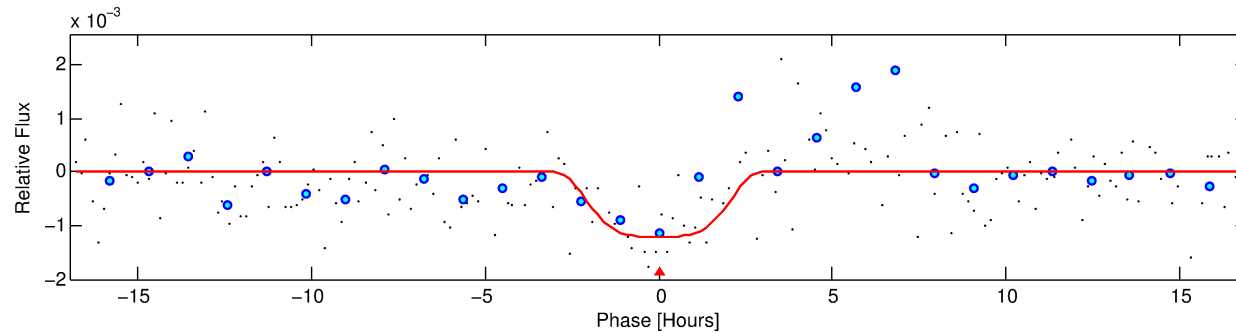
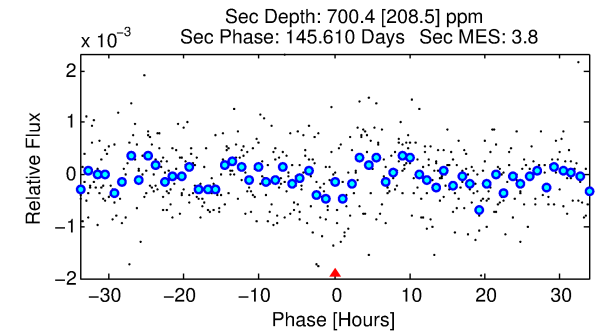
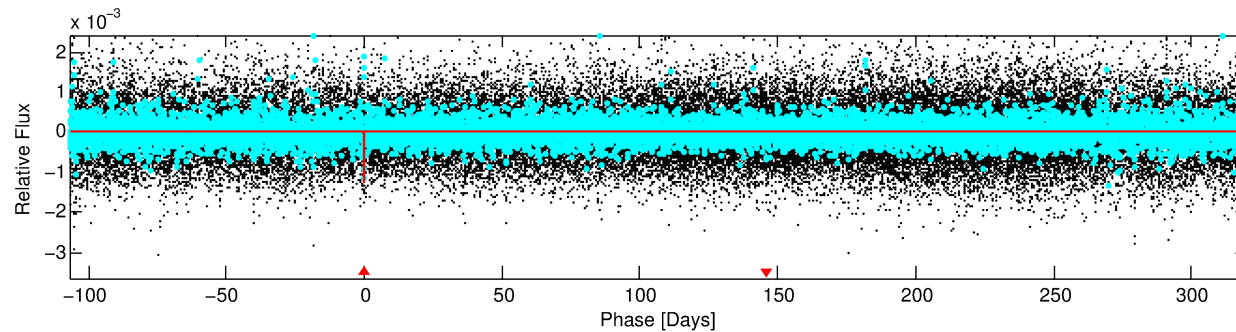
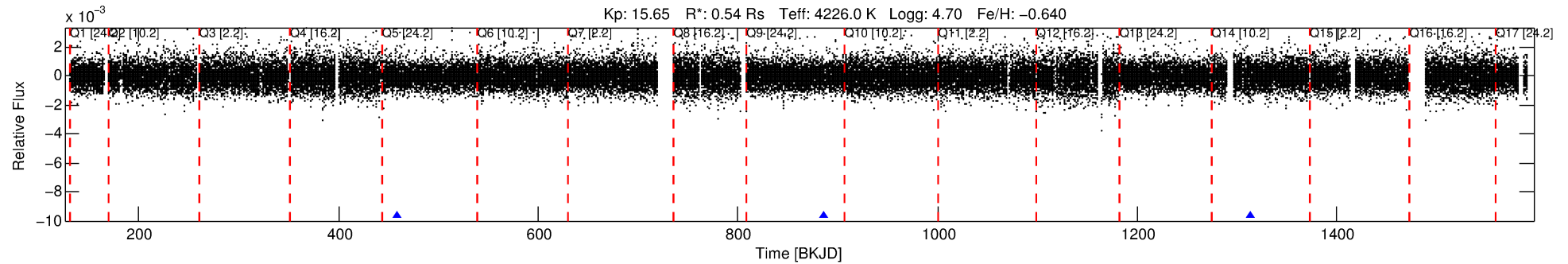
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008836921-01

No Significant Match Found

# DV One-Page Summary

KIC: 8836921 Candidate: 1 of 1 Period: 427.153 d



## DV Fit Results:

Period = 427.15306 [0.01298] d  
Epoch = 458.5674 [0.0150] BKJD  
Rp/R\* = 0.0406 [0.0069]  
a/R\* = 255.39 [103.68]  
b = 0.94 [0.05]  
Seff = 0.10 [0.02]  
Teq = 145 [7] K  
Rp = 2.40 [0.49] Re  
a = 0.8990 [0.0809] AU  
Ag = 53918.25 [25206.53] [2.14σ]  
Teffp = 3411 [400] K [8.16σ]

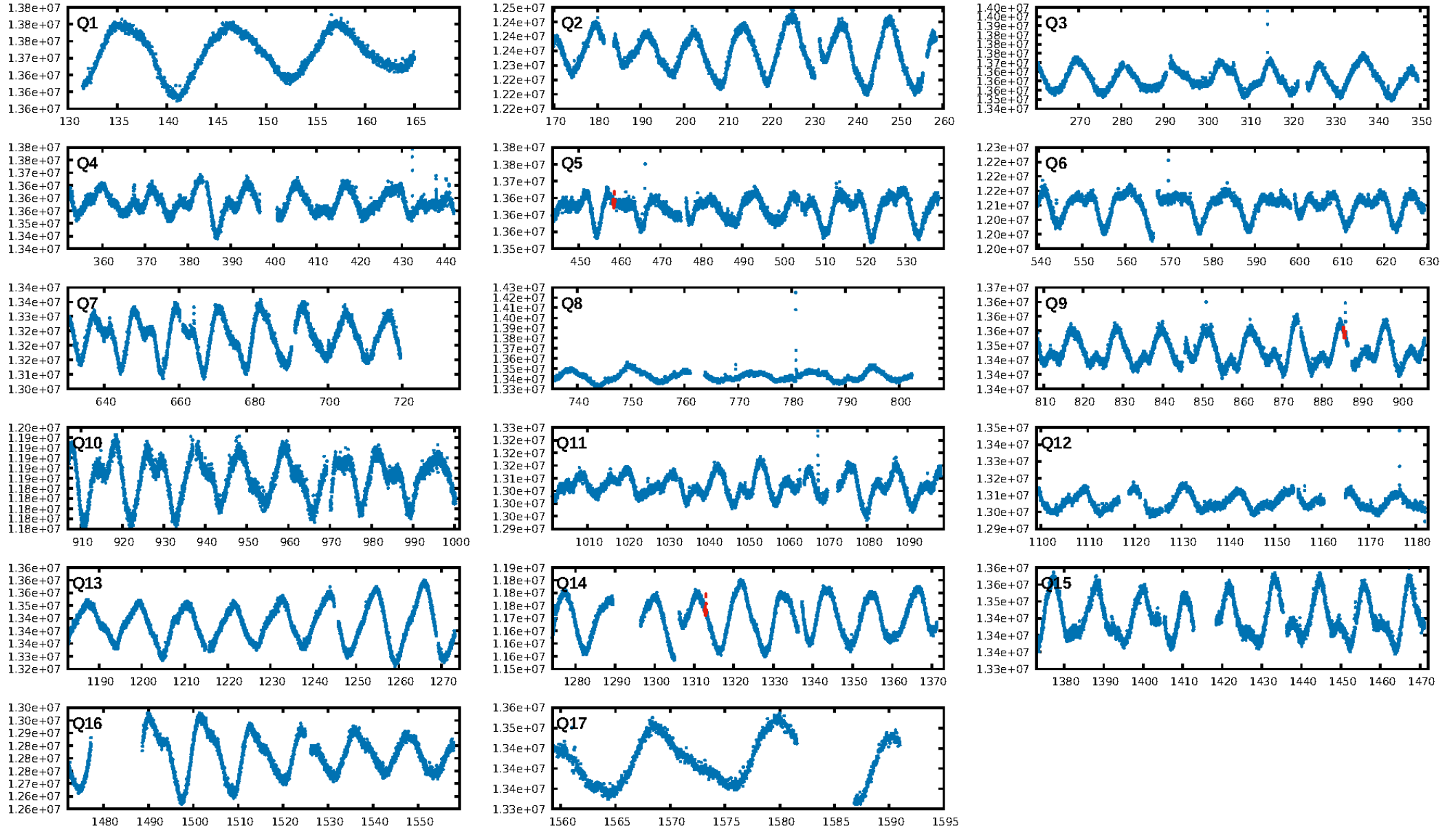
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 27.9%  
ModelChiSquareGof-sig: 99.7%  
**Bootstrap-pfa: 7.60e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 3.995  
Centroid-sig: 0.7%  
**Centroid-so: 4.384 arcsec [3.16σ]**  
OotOffset-rm: 2.551 arcsec [2.38σ]  
KicOffset-rm: 2.315 arcsec [2.84σ]  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

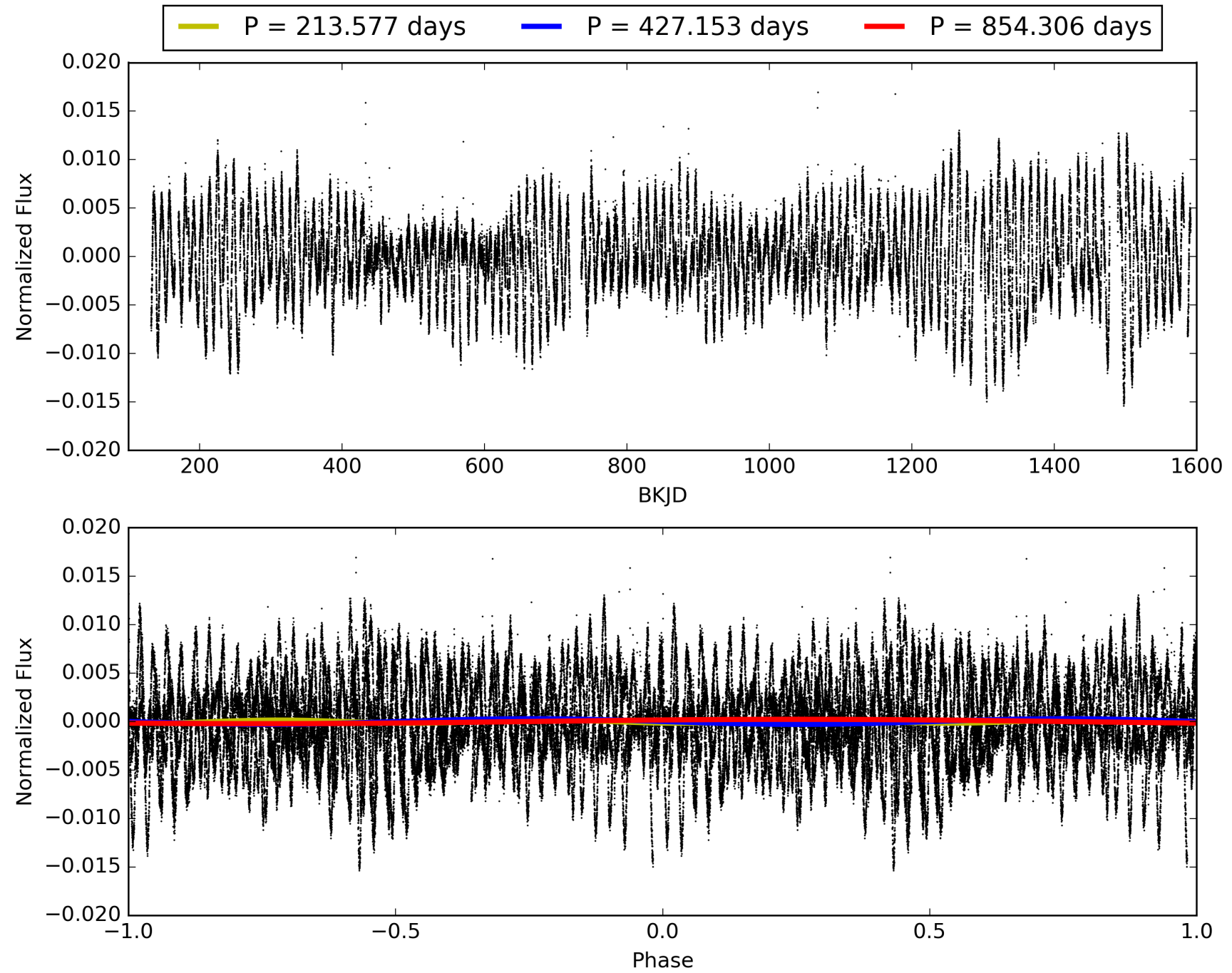
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:04:53 Z

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

# TCE 008836921-01, PDC Light Curves

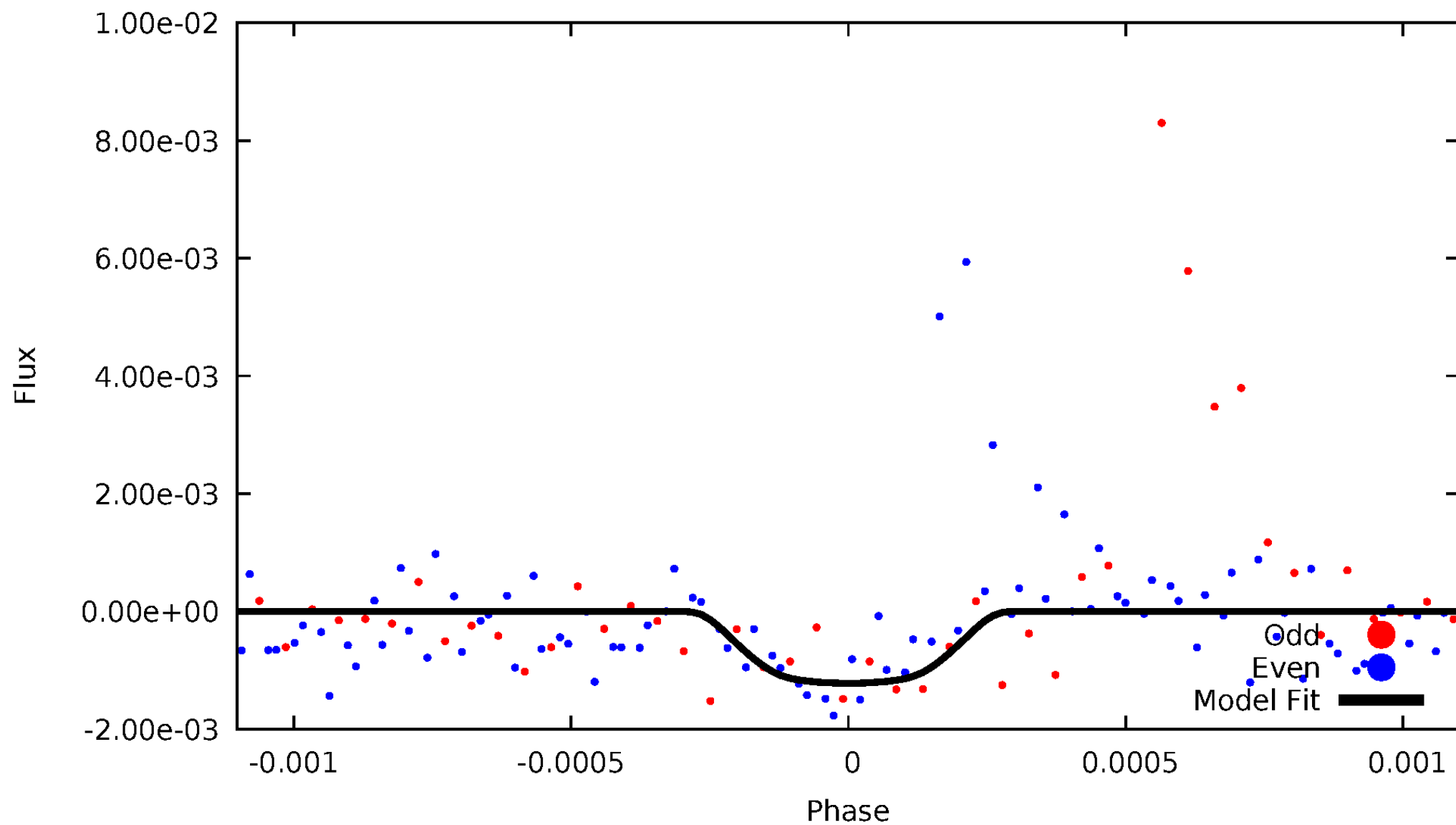


# TCE 008836921-01



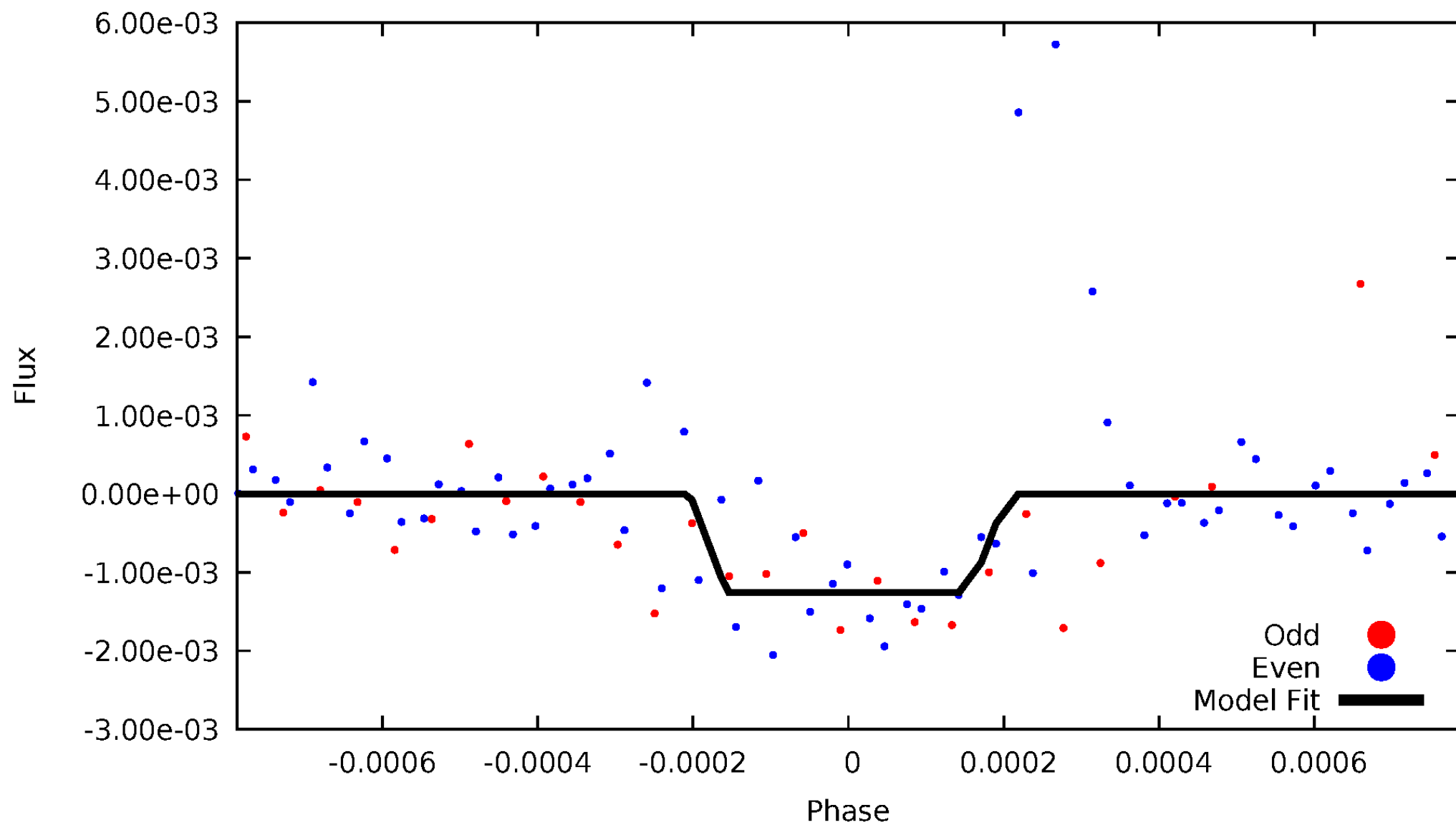
# DV Odd/Even

TCE 008836921-01

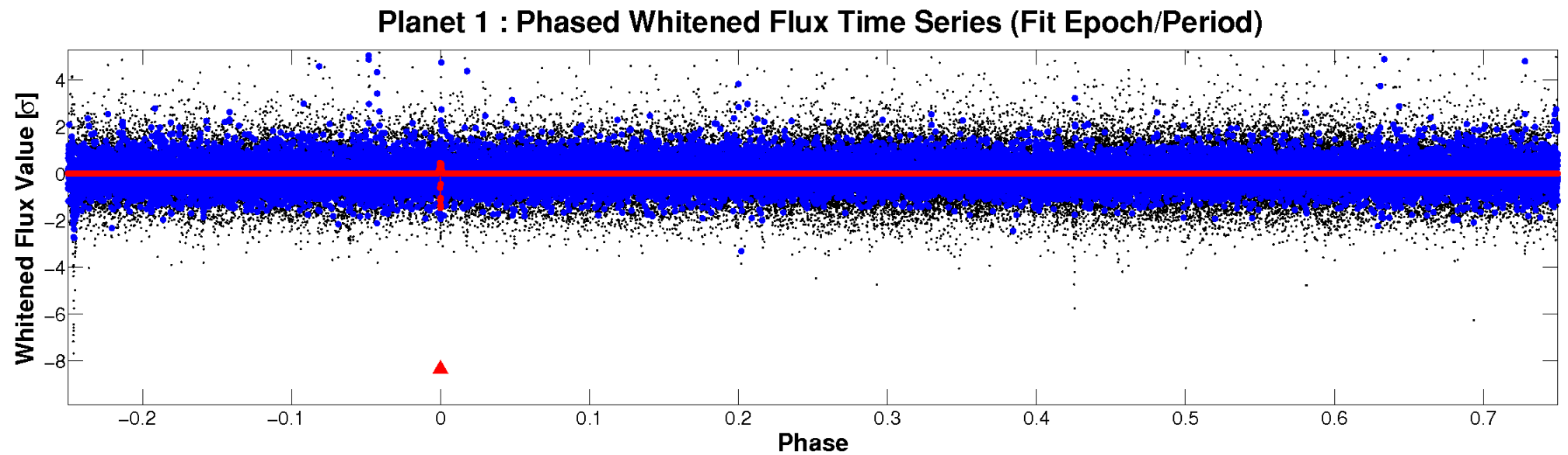
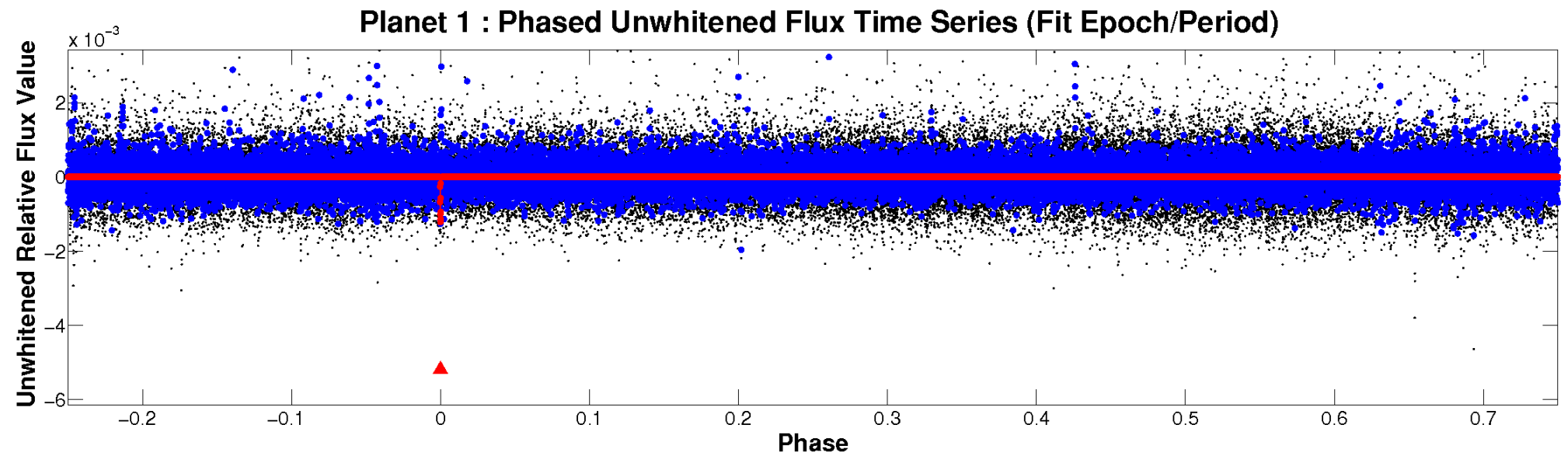


# ALT Odd/Even

TCE 008836921-01

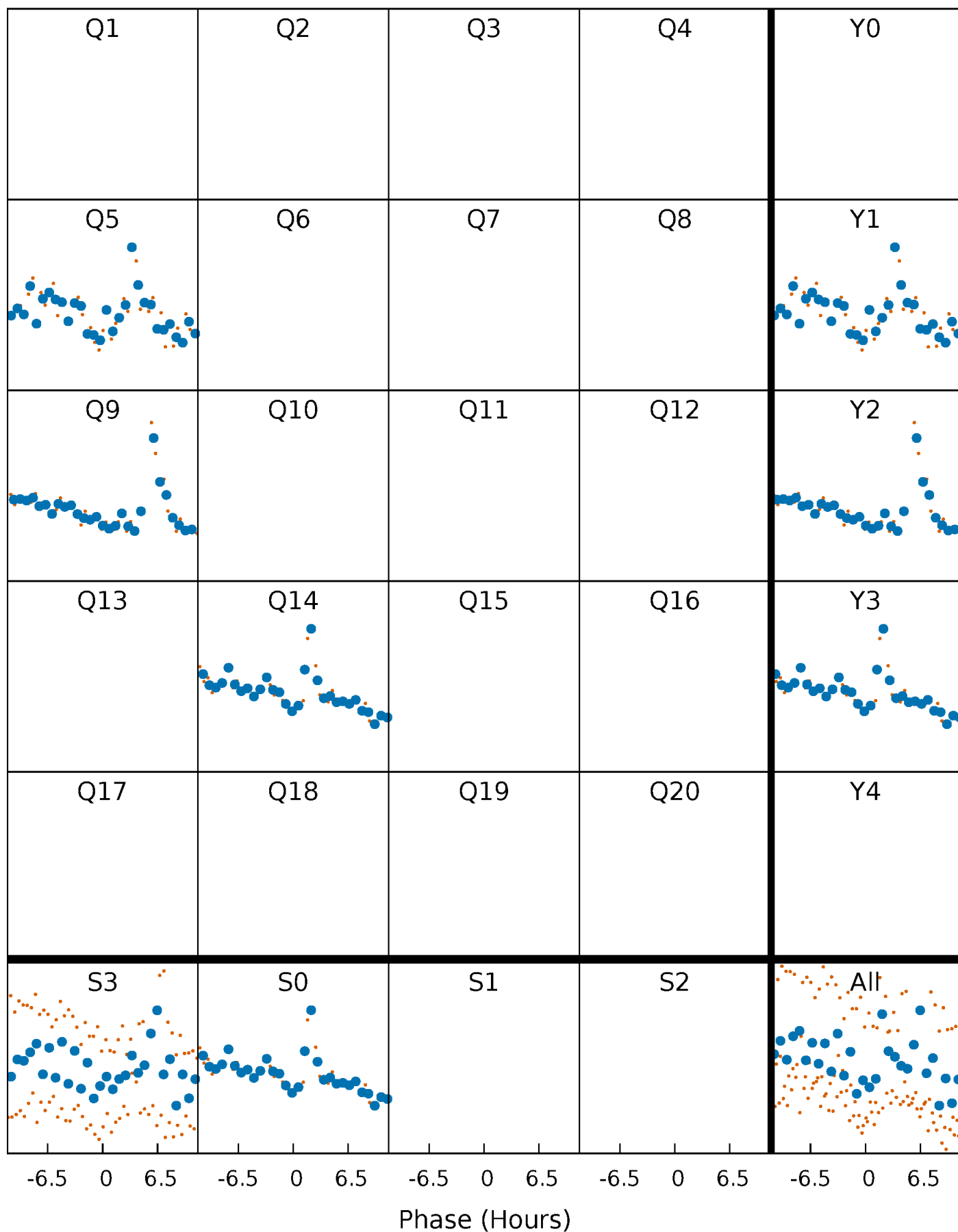


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

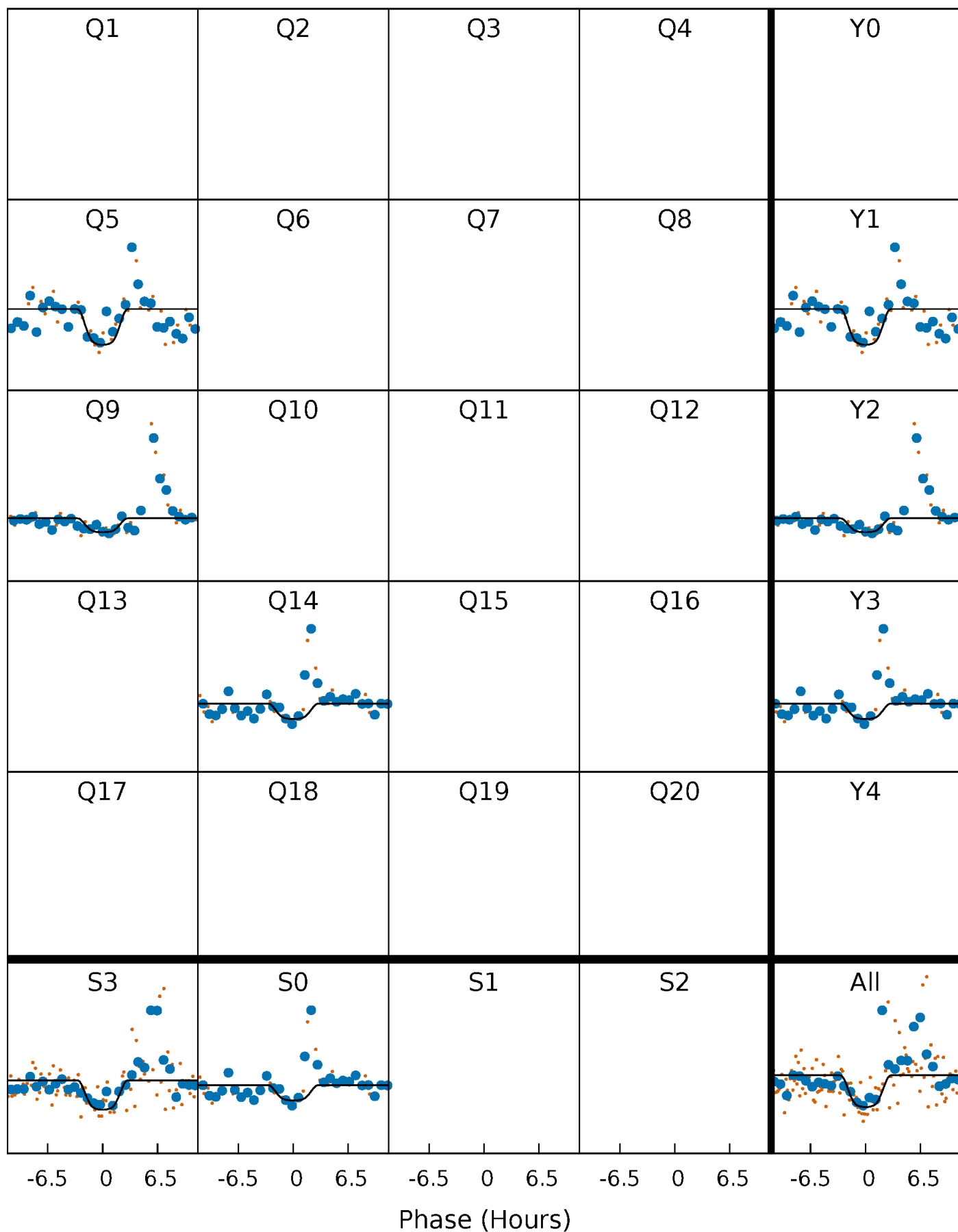
TCE 008836921-01 P=427.153057 Days  $T_0=458.567433$  (BKJD)





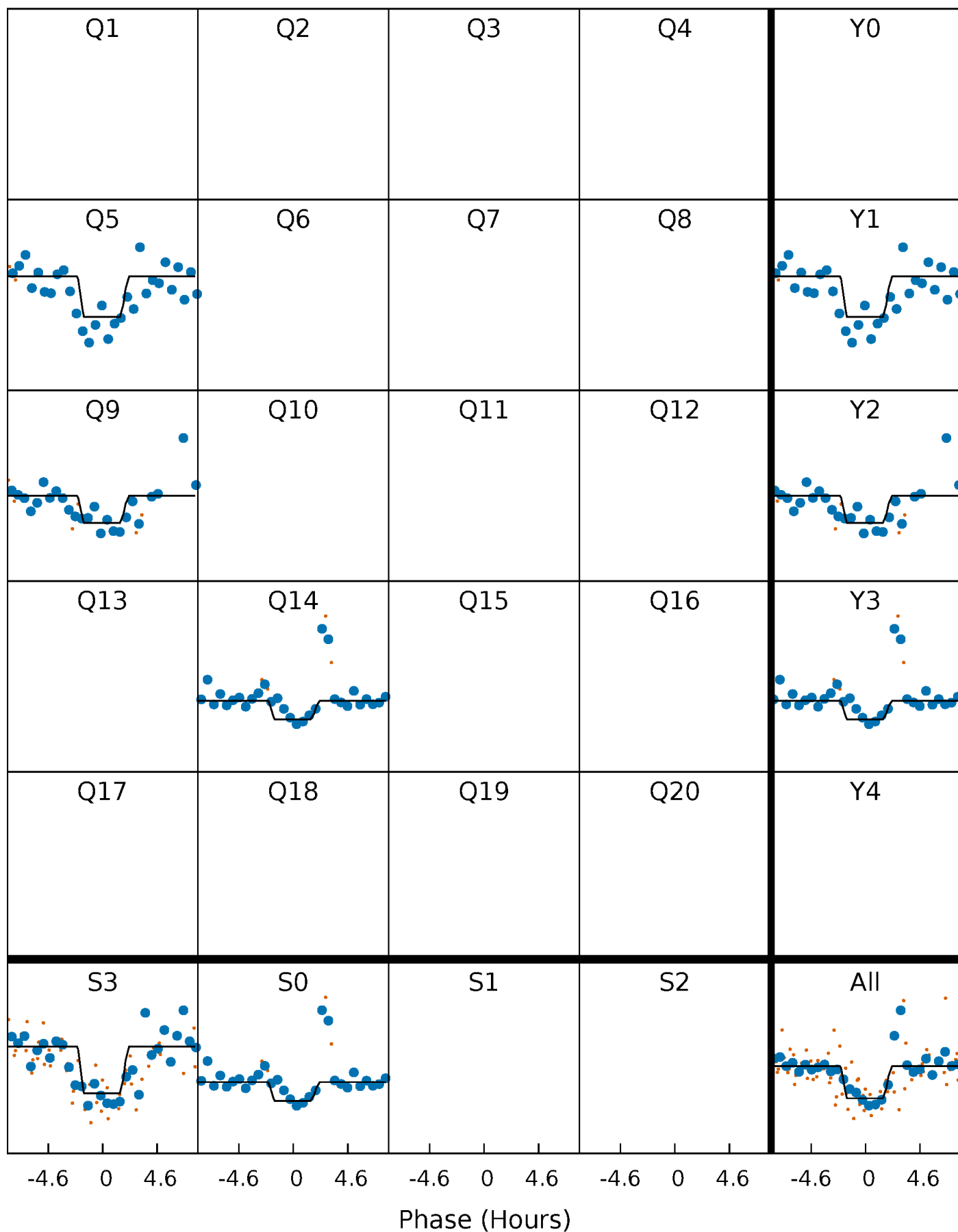
# DV Quarter-Phased Transit Curves

TCE 008836921-01 P=427.153057 Days  $T_0=458.567433$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

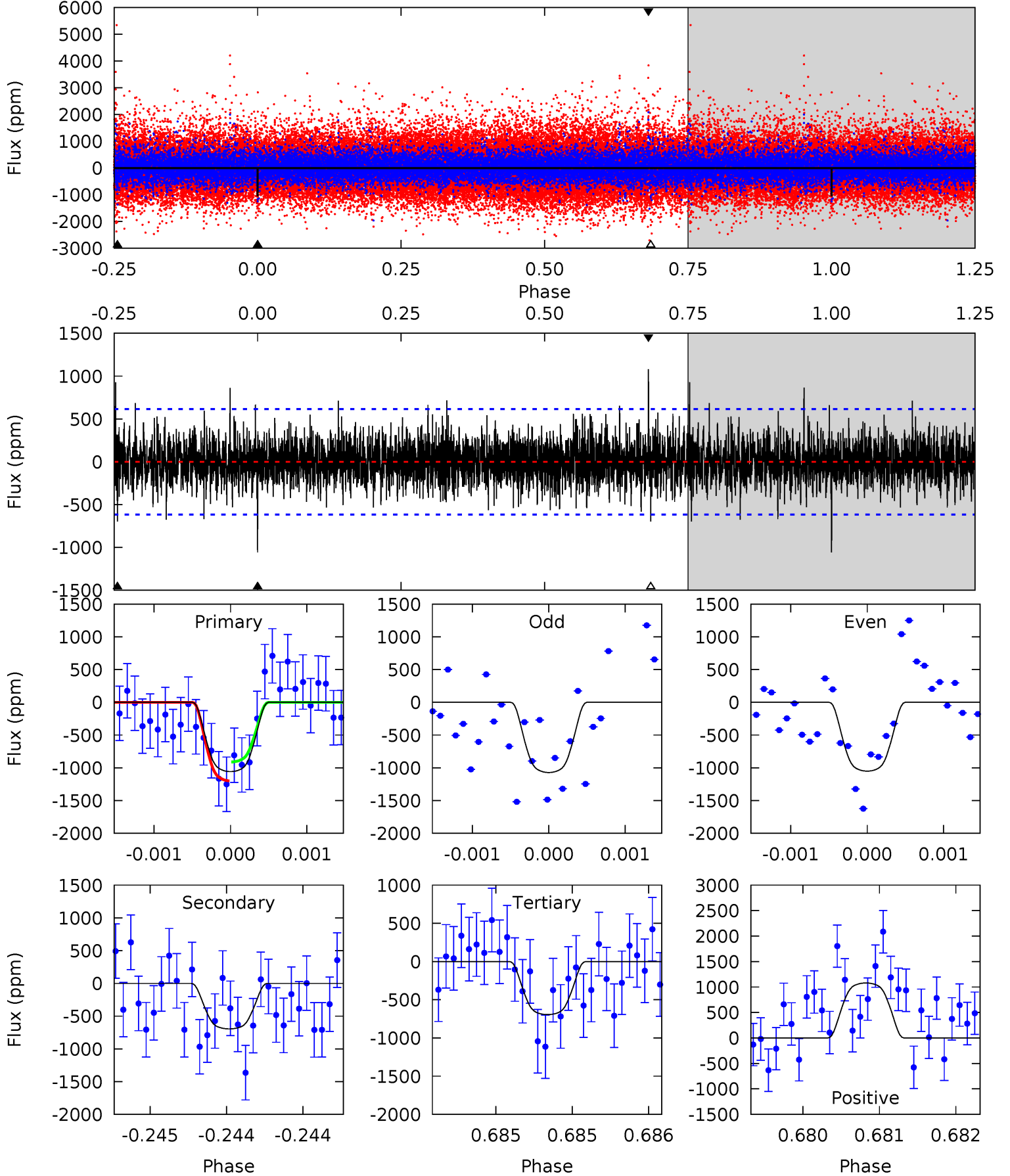
TCE 008836921-01 P=427.129516 Days  $T_0=458.591286$  (BKJD)



# DV Model-Shift Uniqueness Test

008836921-01,  $P = 427.153057$  Days,  $E = 31.414376$  Days

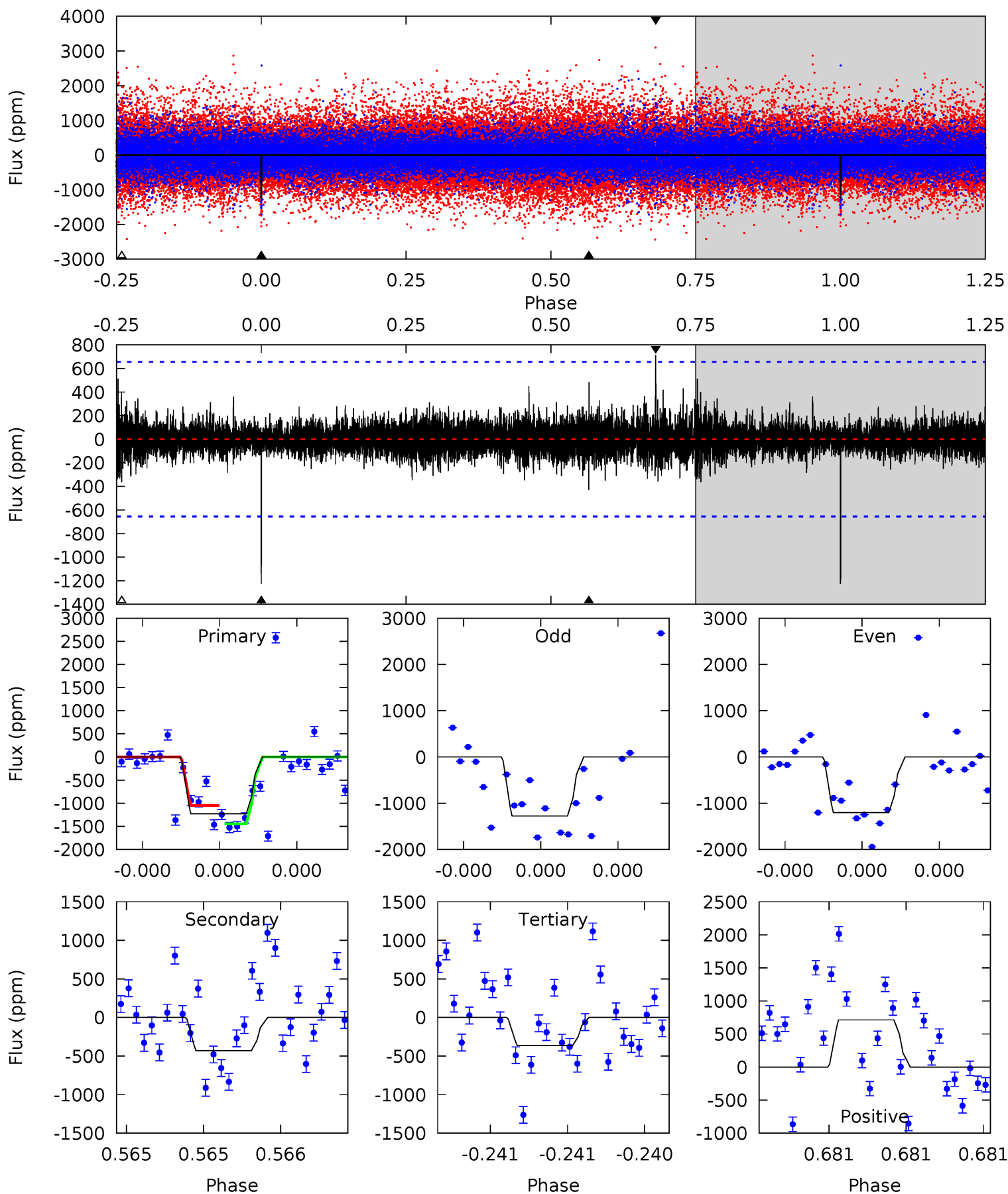
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.53	6.25	6.25	9.72	5.54	3.44	1.63	3.28	-0.19	0.00	-3.47	0.08	0.79	0.50	1.30



# Alt Model-Shift Uniqueness Test

008836921-01, P = 427.129516 Days, E = 31.461770 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	3.67	3.10	6.11	5.61	3.53	0.77	7.40	4.40	0.57	-2.43	0.29	0.96	0.37	1.69



### Stellar Parameters For KIC 008836921

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4226^{+115}_{-140}$	$4.695^{+0.067}_{-0.031}$	$-0.640^{+0.300}_{-0.300}$	$0.542^{+0.049}_{-0.060}$	$0.531^{+0.056}_{-0.046}$	$4.688^{+1.442}_{-0.630}$
	+3%/-3%	+1%/-1%	+47%/-47%	+9%/-11%	+11%/-9%	+31%/-13%
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 008836921-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-695 \pm 111$	$2.36^{+0.46}_{-0.42}$	$200^{+8}_{-8}$	$3633^{+268}_{-218}$	$55314^{+28384}_{-16980}$
Alt.	$-430 \pm 117$	$2.08^{+0.40}_{-0.44}$	$200^{+7}_{-8}$	$3501^{+308}_{-242}$	$44715^{+28168}_{-17044}$

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

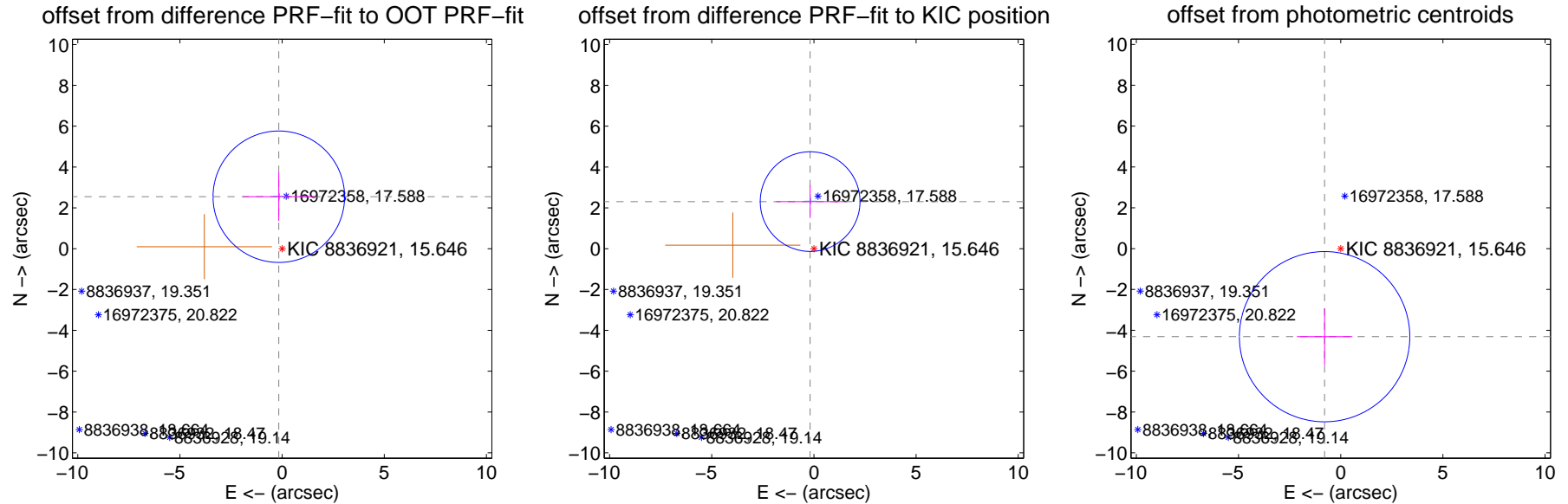
## DV Centroid Data

Supplemental centroid analysis for 008836921-01. Kepler magnitude: 15.65. Transit SNR 6.50

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.551 \pm 1.073$	2.38	$0.161 \pm 1.759$	$2.546 \pm 1.186$
PRF-fit source offset from KIC position	$2.315 \pm 0.814$	2.84	$0.186 \pm 1.662$	$2.307 \pm 0.805$
photometric centroid source offset	$4.38 \pm 1.39$	3.16	$0.79 \pm 1.36$	$-4.31 \pm 1.39$

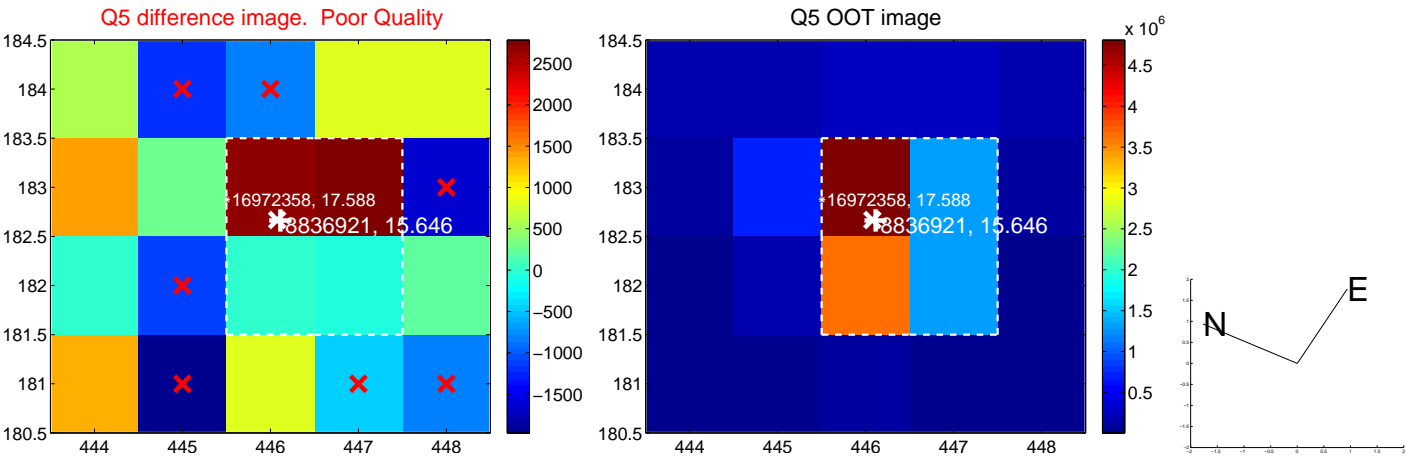


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

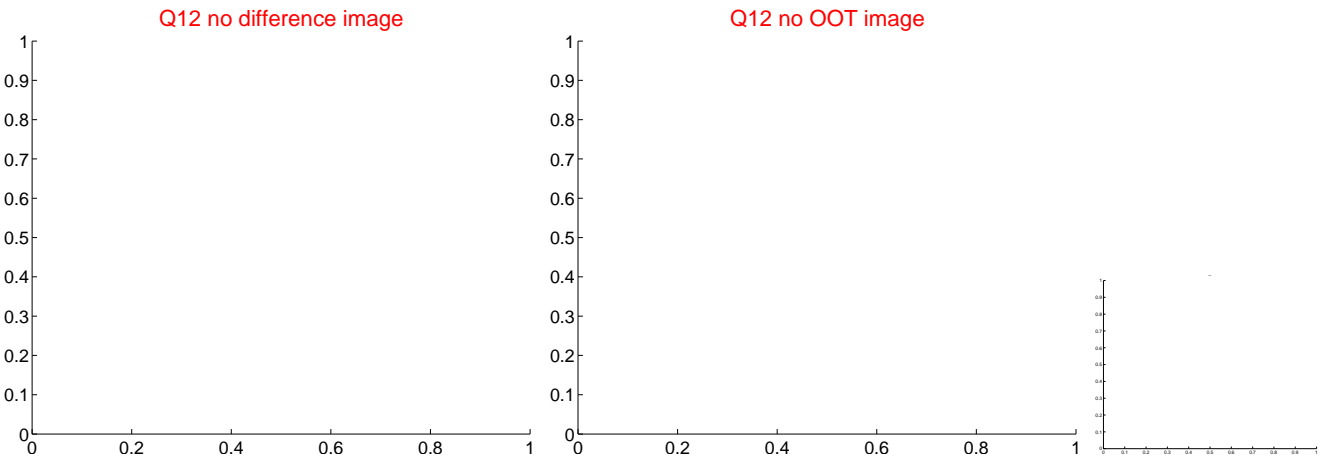
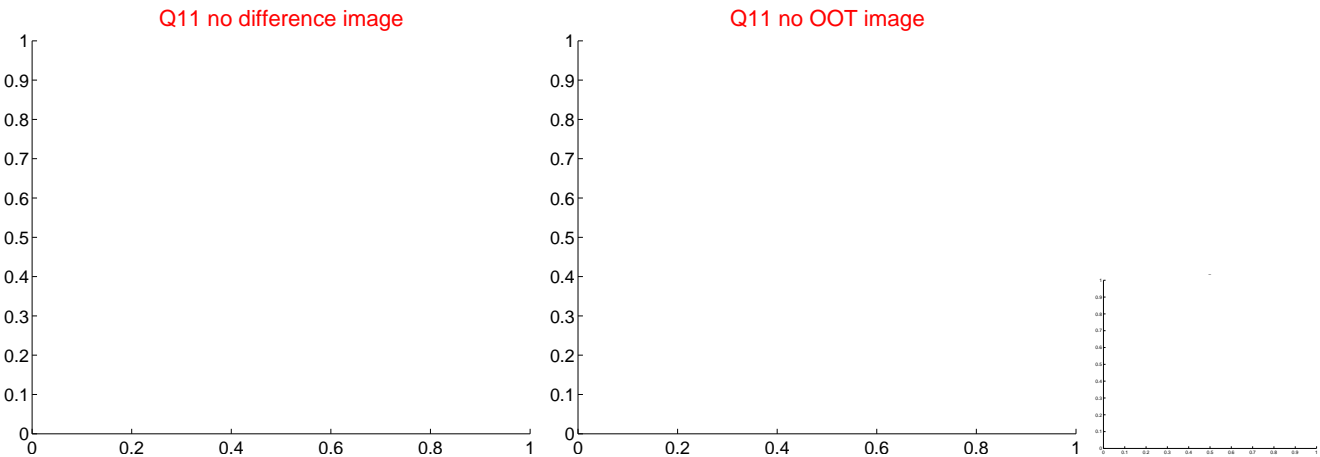
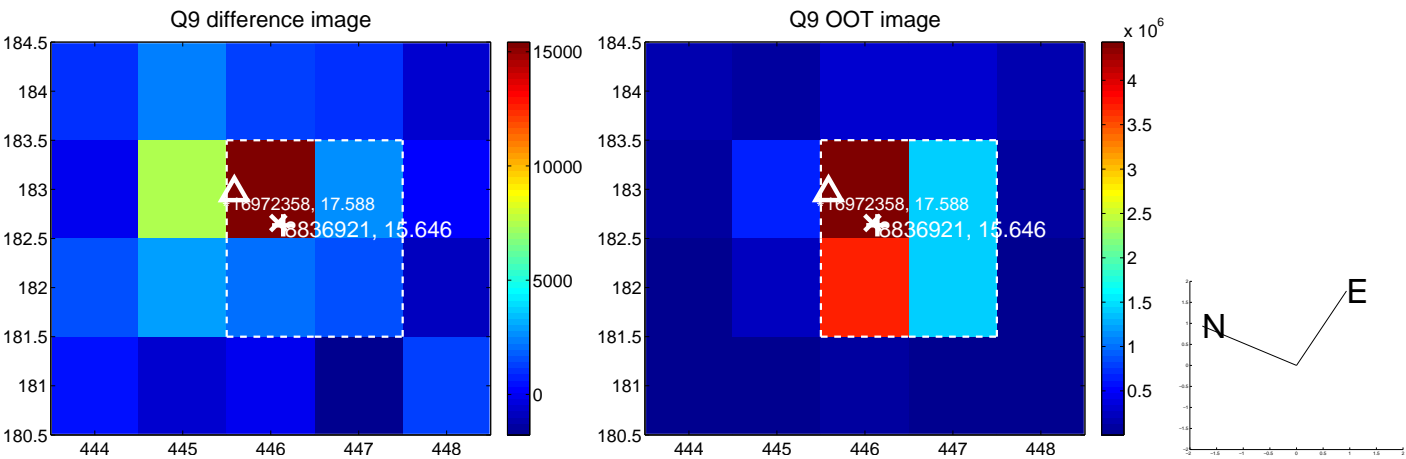


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

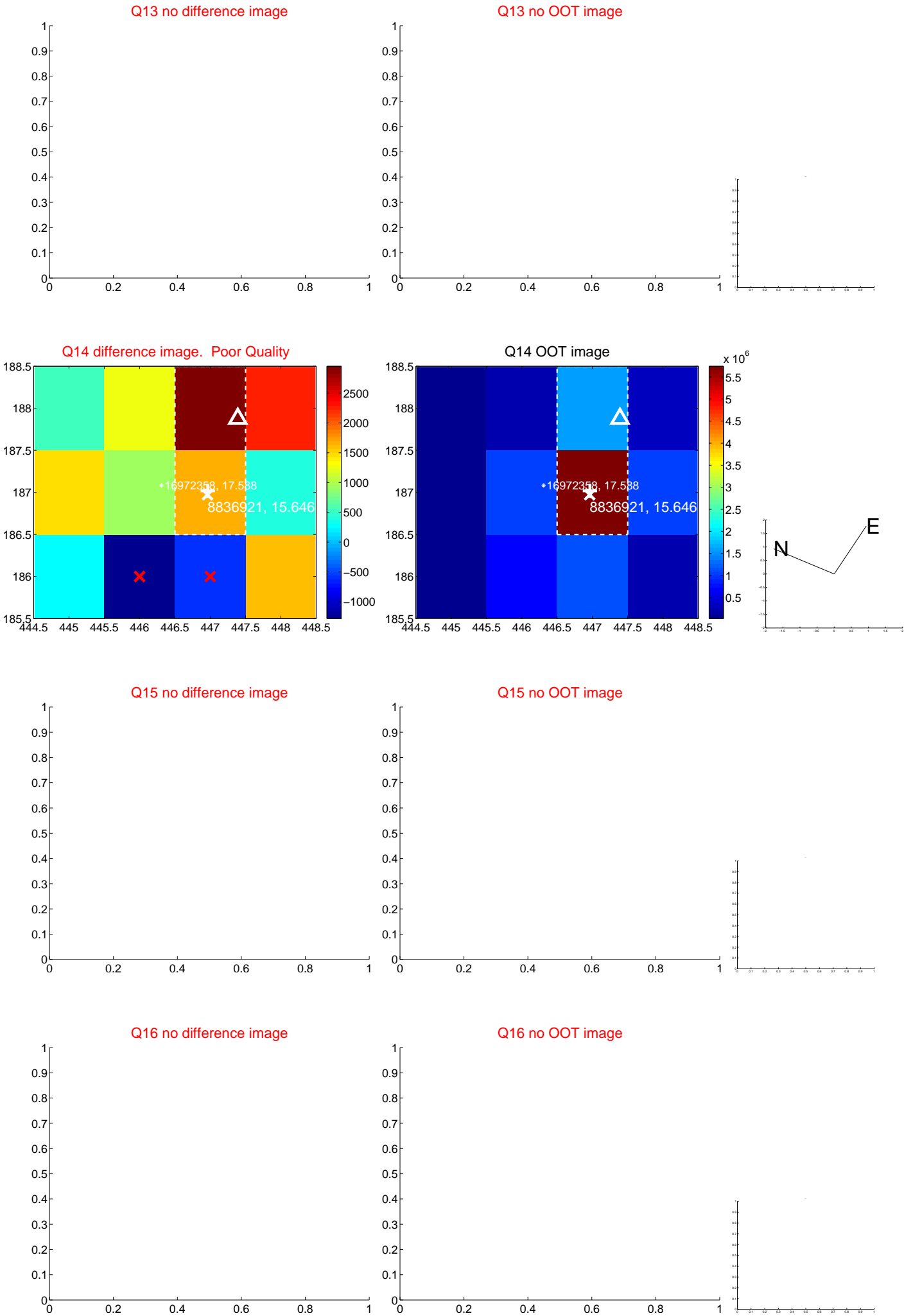




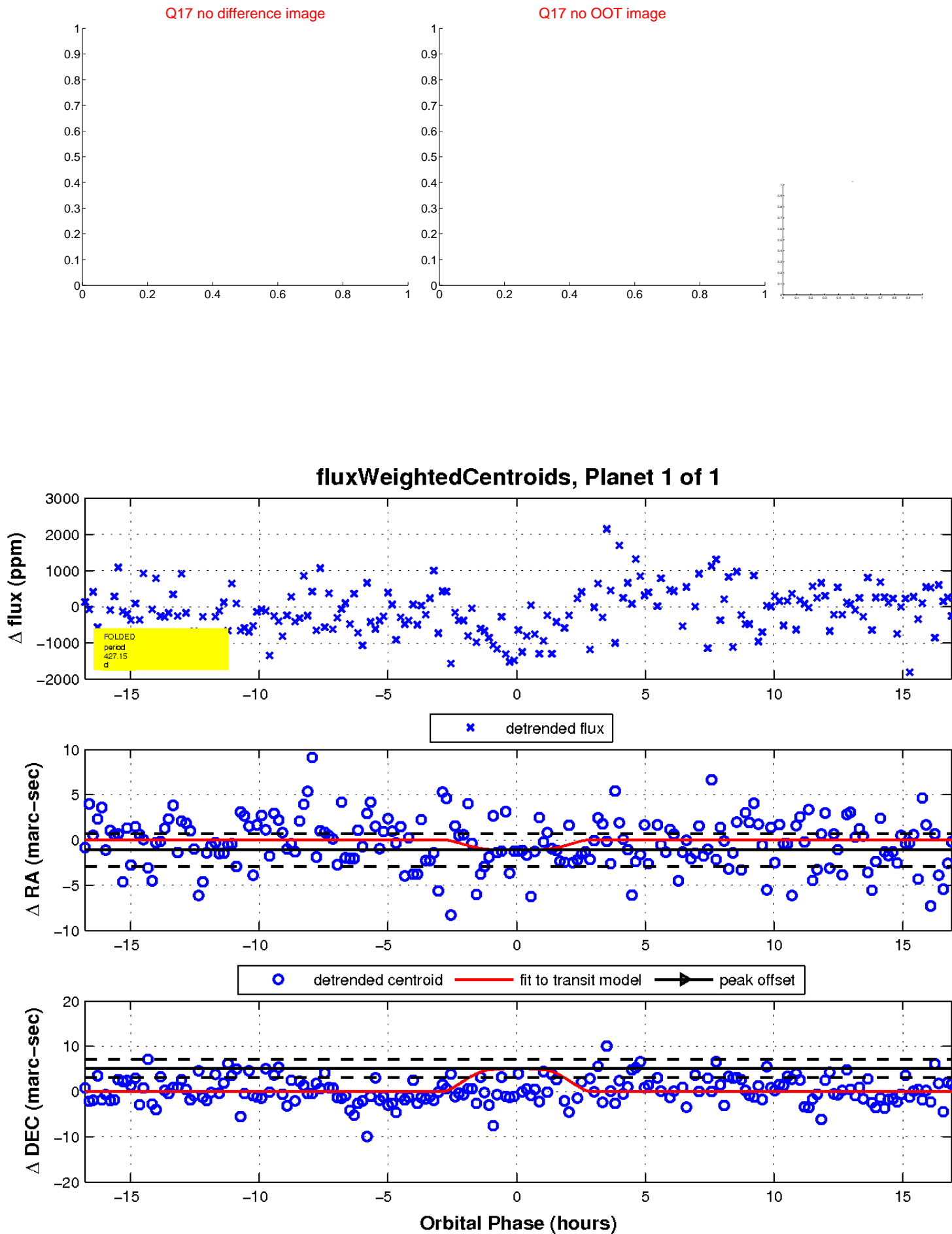
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# UKIRT Image

Declination

