

# KIC 002715108

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002715108-01	OBS	No	356.255723	307.961774	2020.7	13.197	8.7	8.9	1.22	6643	9.86	2.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002715108-01	OBS	FP	0.00	1	0	0	0	LPP_DV—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.

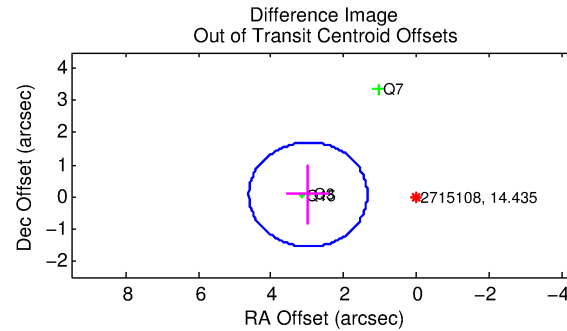
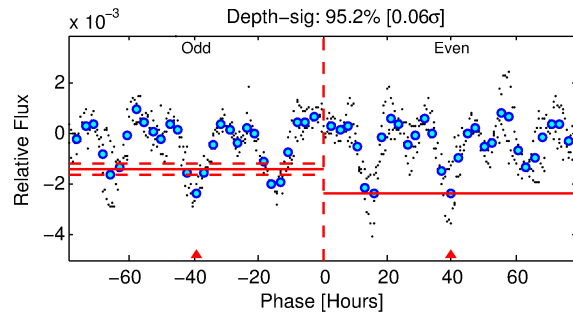
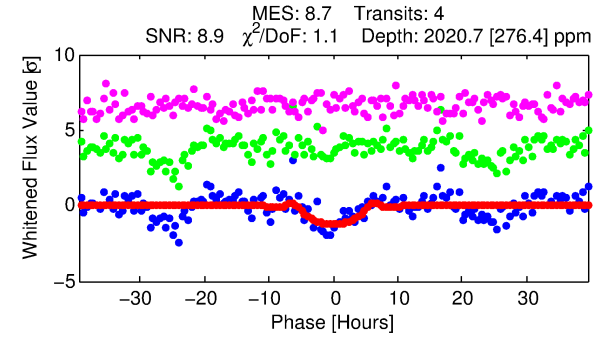
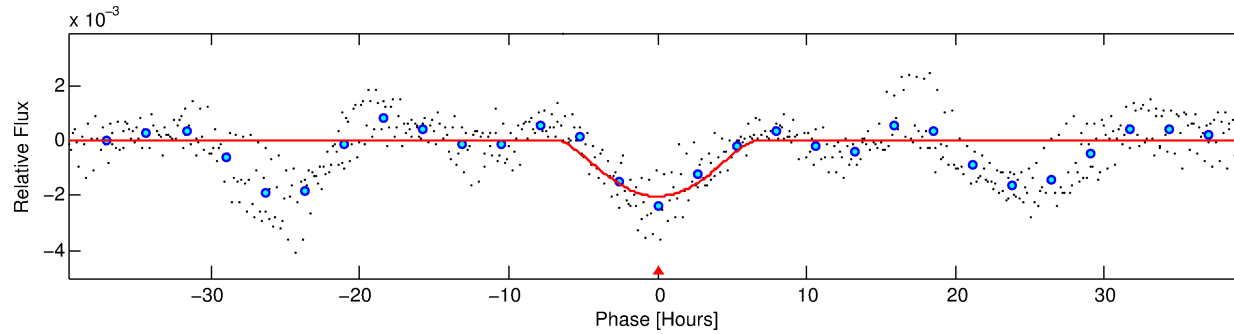
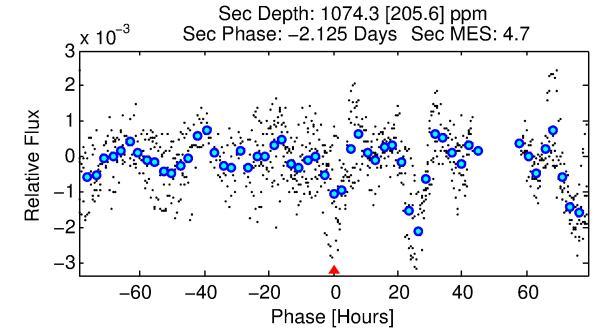
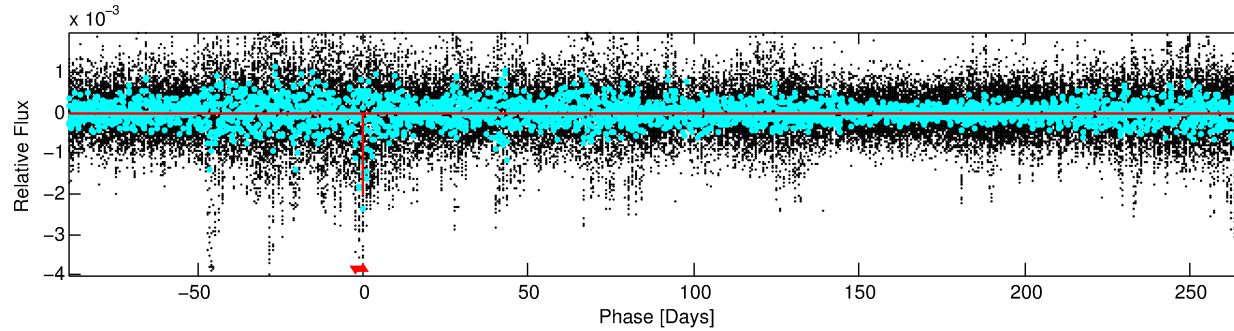
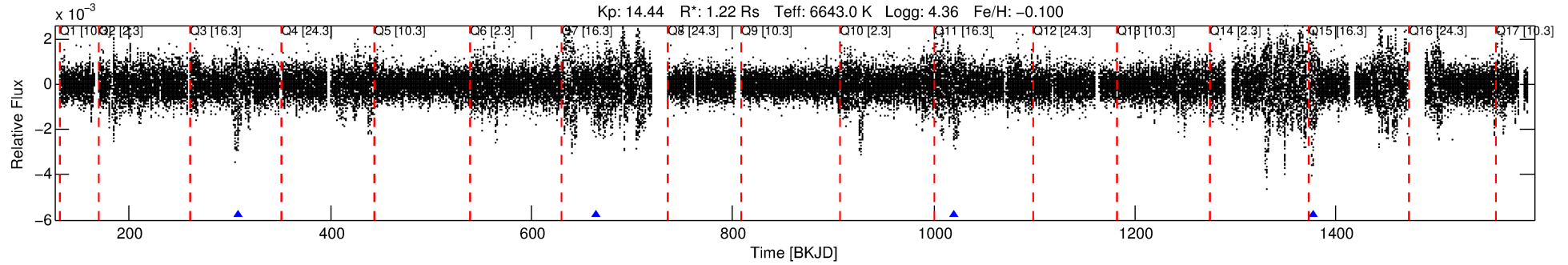
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002715108-01

No Significant Match Found

# DV One-Page Summary

KIC: 2715108 Candidate: 1 of 1 Period: 356.256 d



## DV Fit Results:

Period = 356.25572 [0.01383] d  
Epoch = 307.9618 [0.0251] BKJD  
Rp/R\* = 0.0743 [0.1319]  
a/R\* = 82.22 [31.16]  
b = 1.00 [0.20]  
Seff = 2.33 [0.91]  
Teq = 315 [31] K  
Rp = 9.86 [17.76] Re  
a = 1.0532 [0.2660] AU  
Ag = 6738.39 [24081.21] [0.28σ]  
Teffp = 4411 [3924] K [1.04σ]

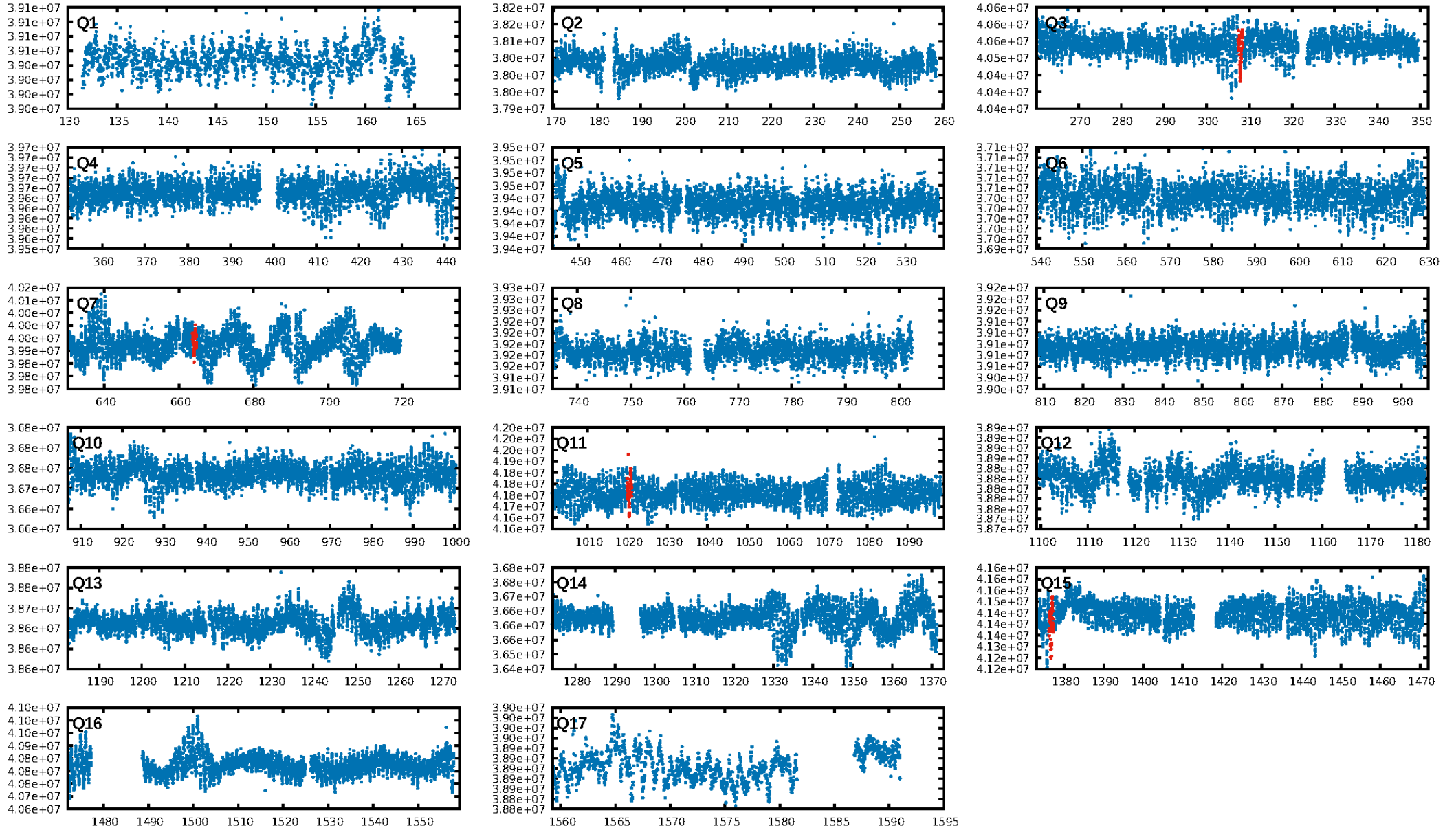
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.3%  
ModelChiSquareGof-sig: 99.7%  
**Bootstrap-pfa: 1.13e-11**  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.5535**  
Centroid-sig: 11.5%  
Centroid-so: 0.806 arcsec [1.84σ]  
**OotOffset-rm: 2.982 arcsec [5.49σ]**  
**KicOffset-rm: 2.740 arcsec [7.34σ]**  
OotOffset-st: 0/3/0/0 [3]  
KicOffset-st: 0/3/0/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

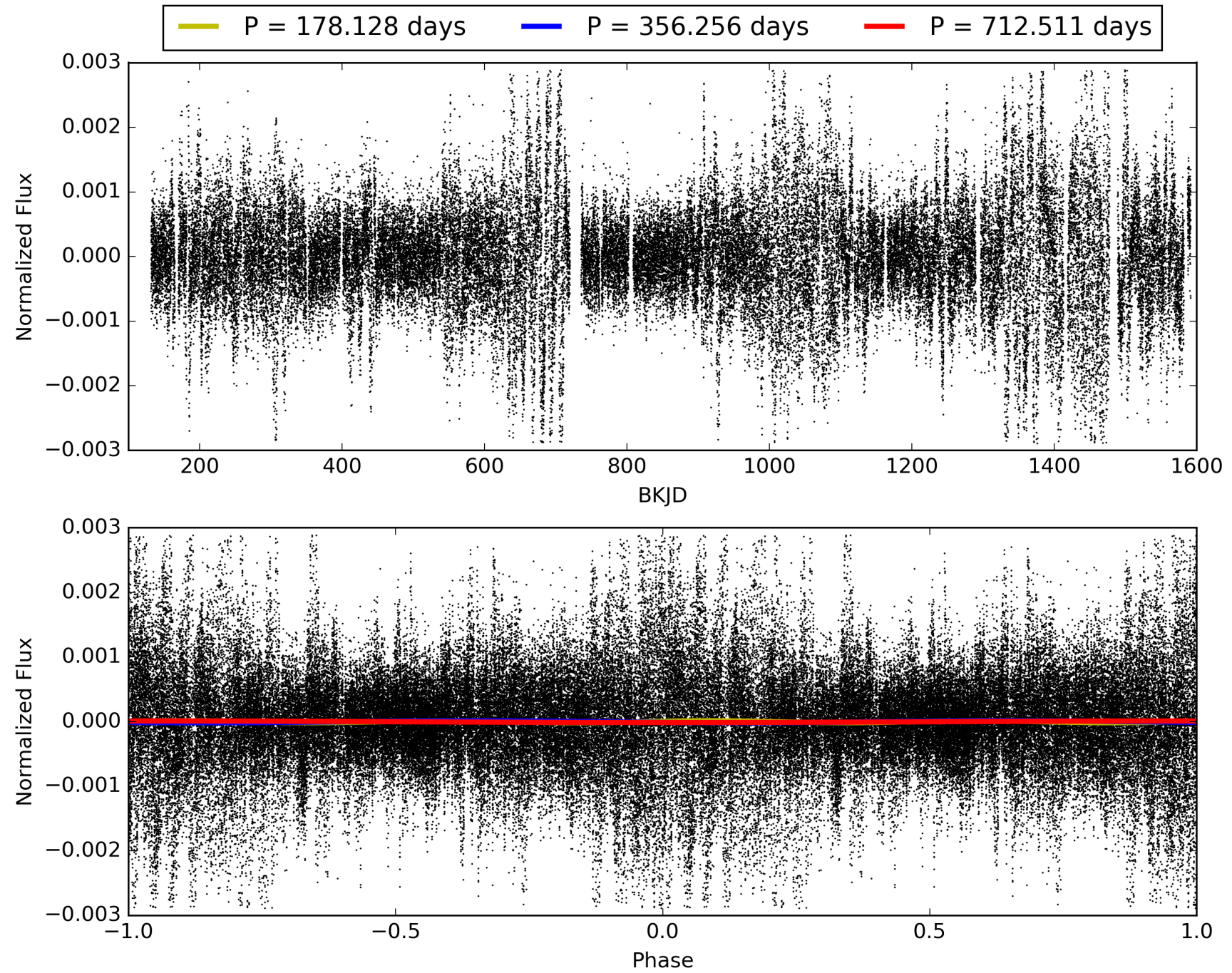
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:13:04 Z

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

# TCE 002715108-01, PDC Light Curves

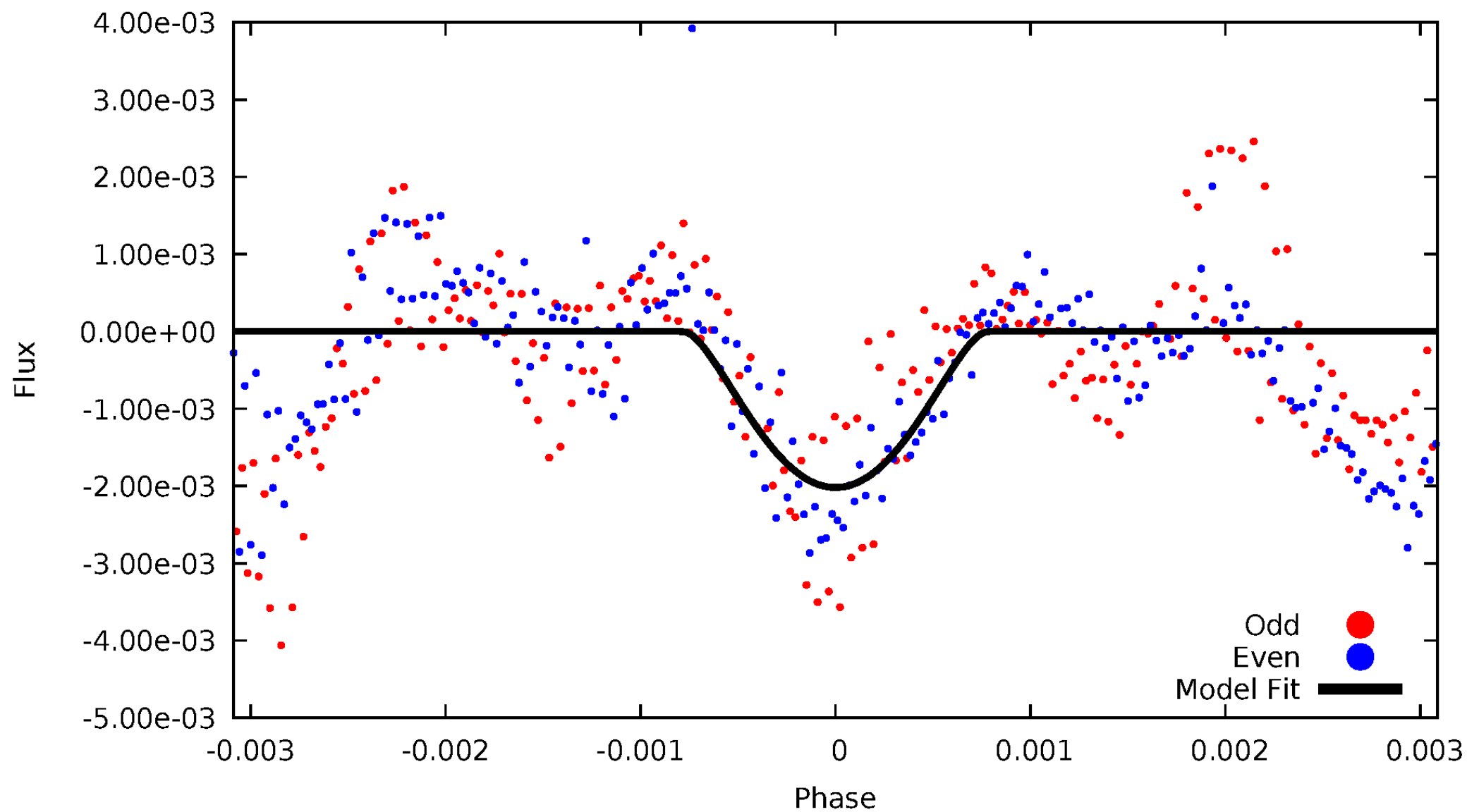


TCE 002715108-01



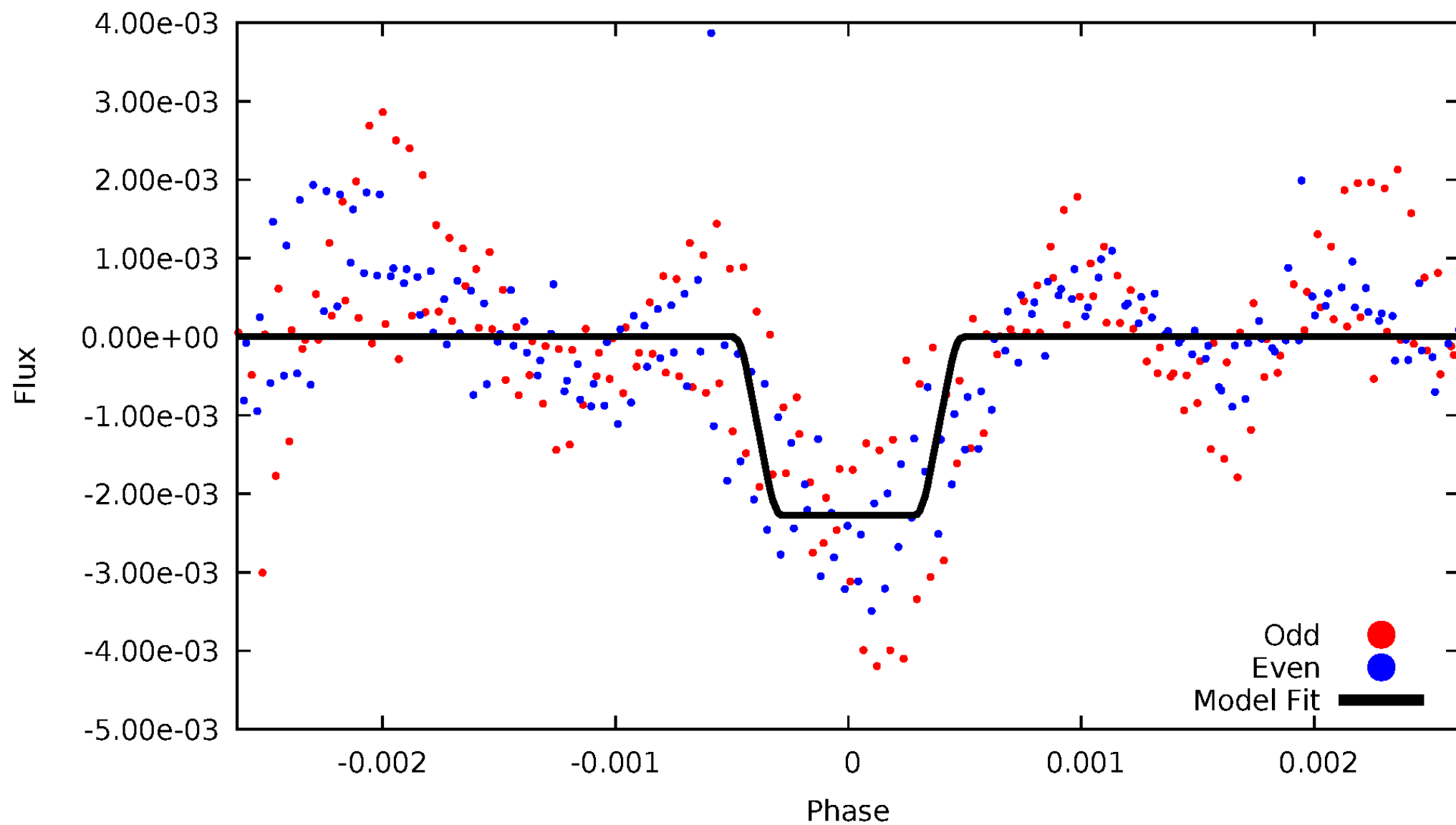
# DV Odd/Even

TCE 002715108-01



# ALT Odd/Even

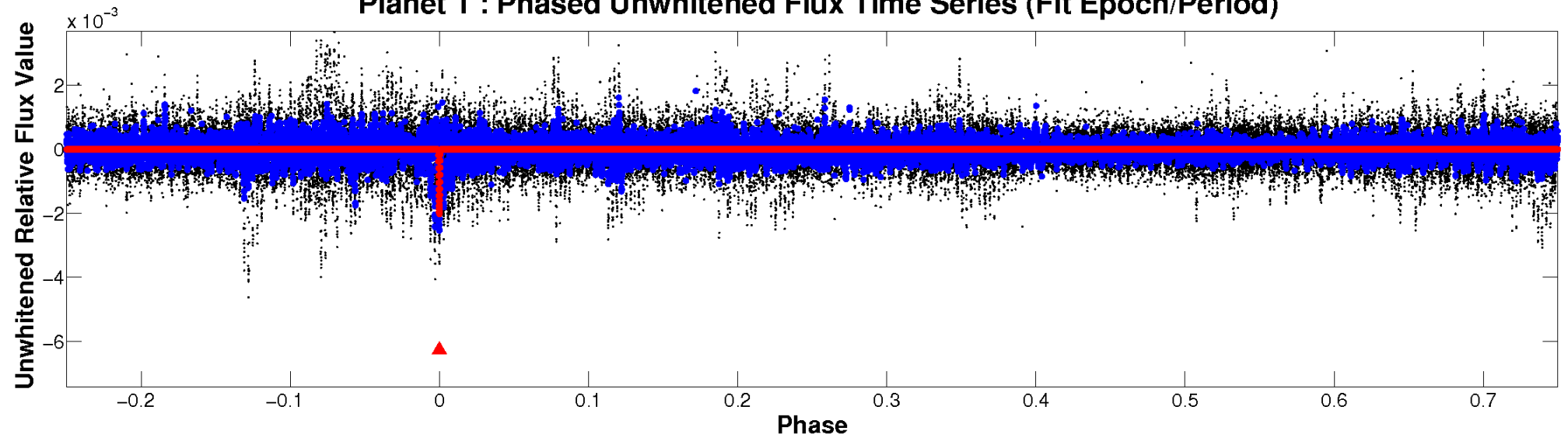
TCE 002715108-01



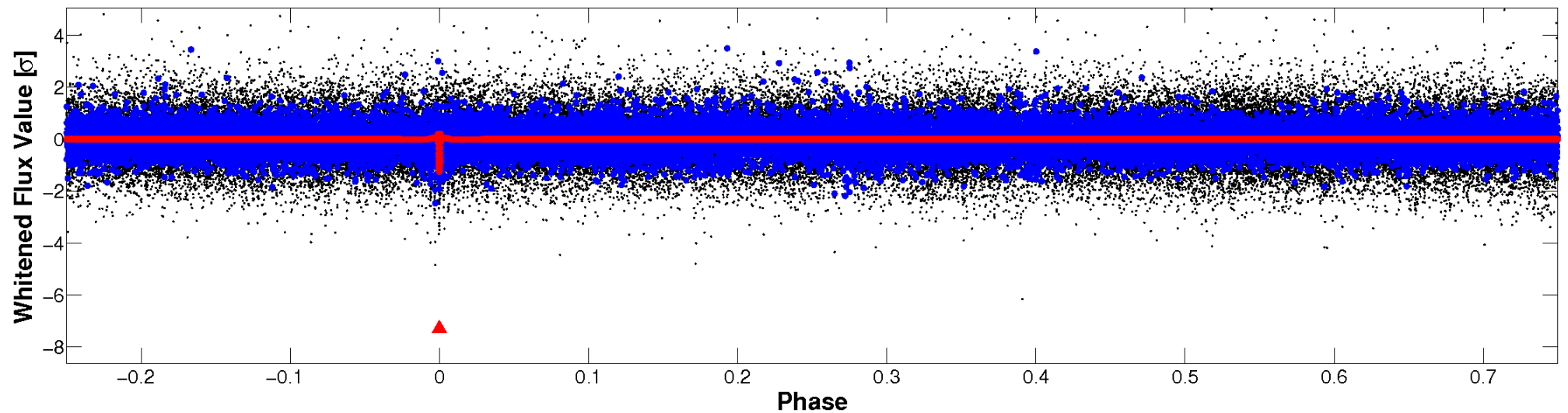


# Non-Whitened Vs. Whitened Light Curve

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

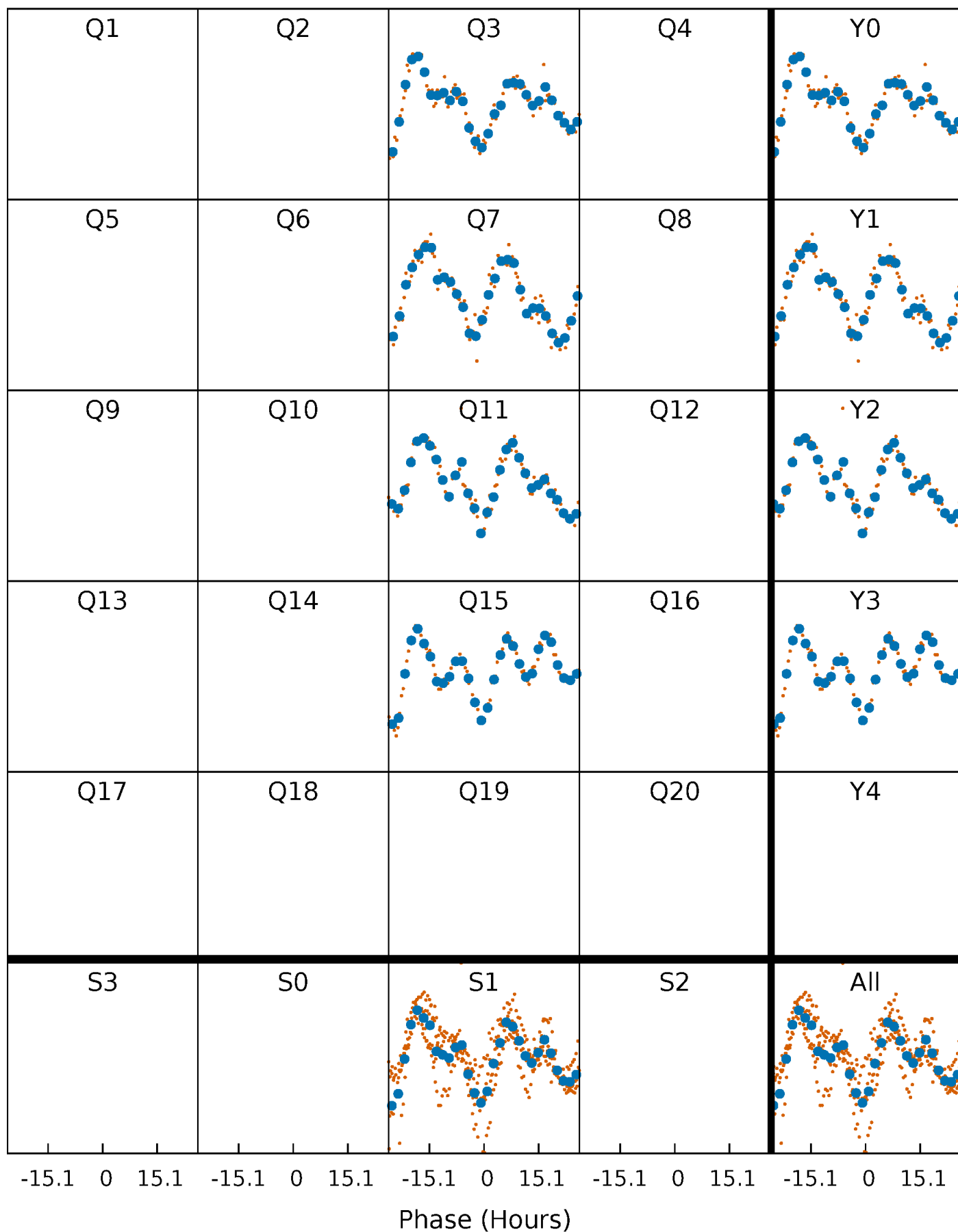


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

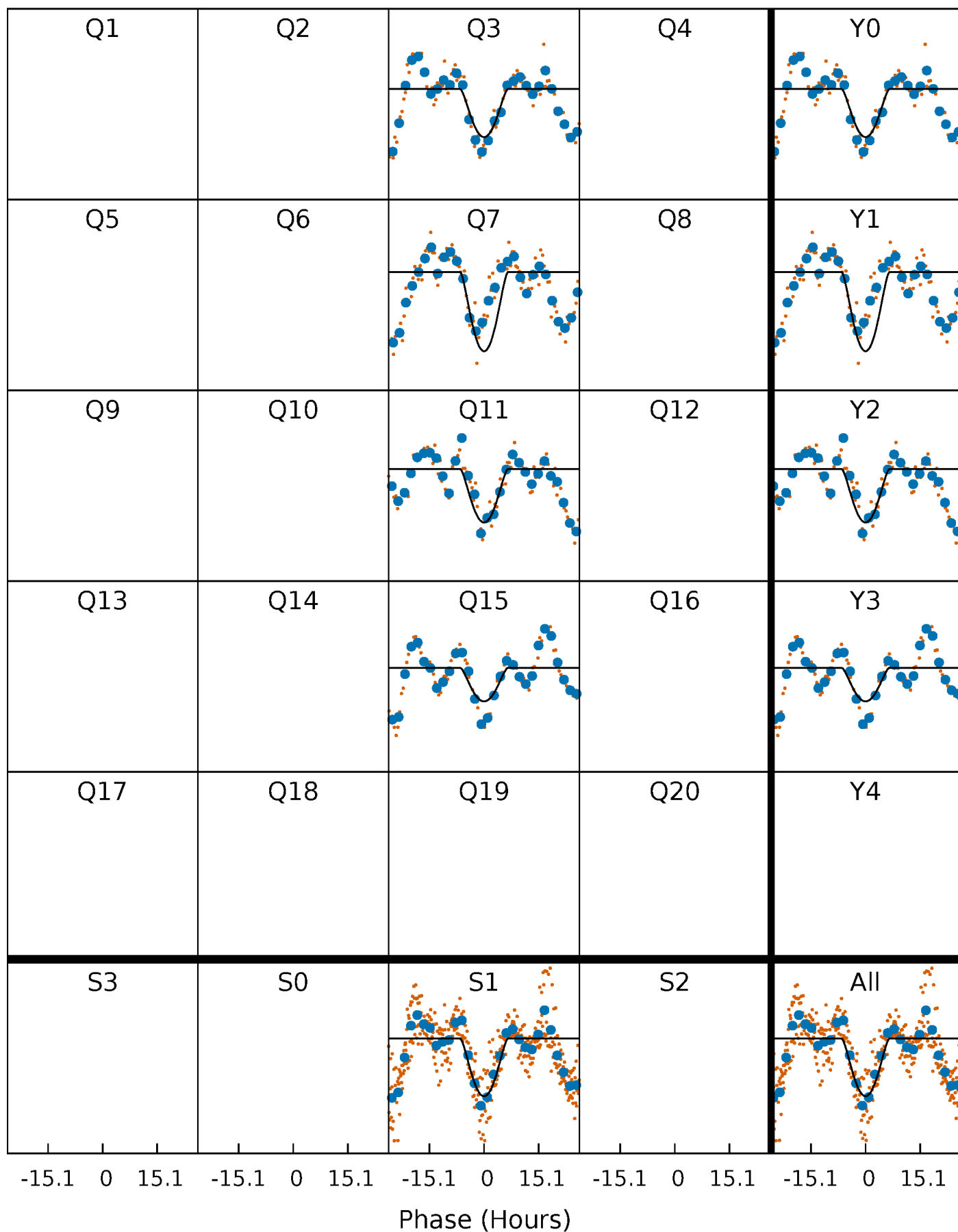
TCE 002715108-01 P=356.255723 Days  $T_0=307.961774$  (BKJD)





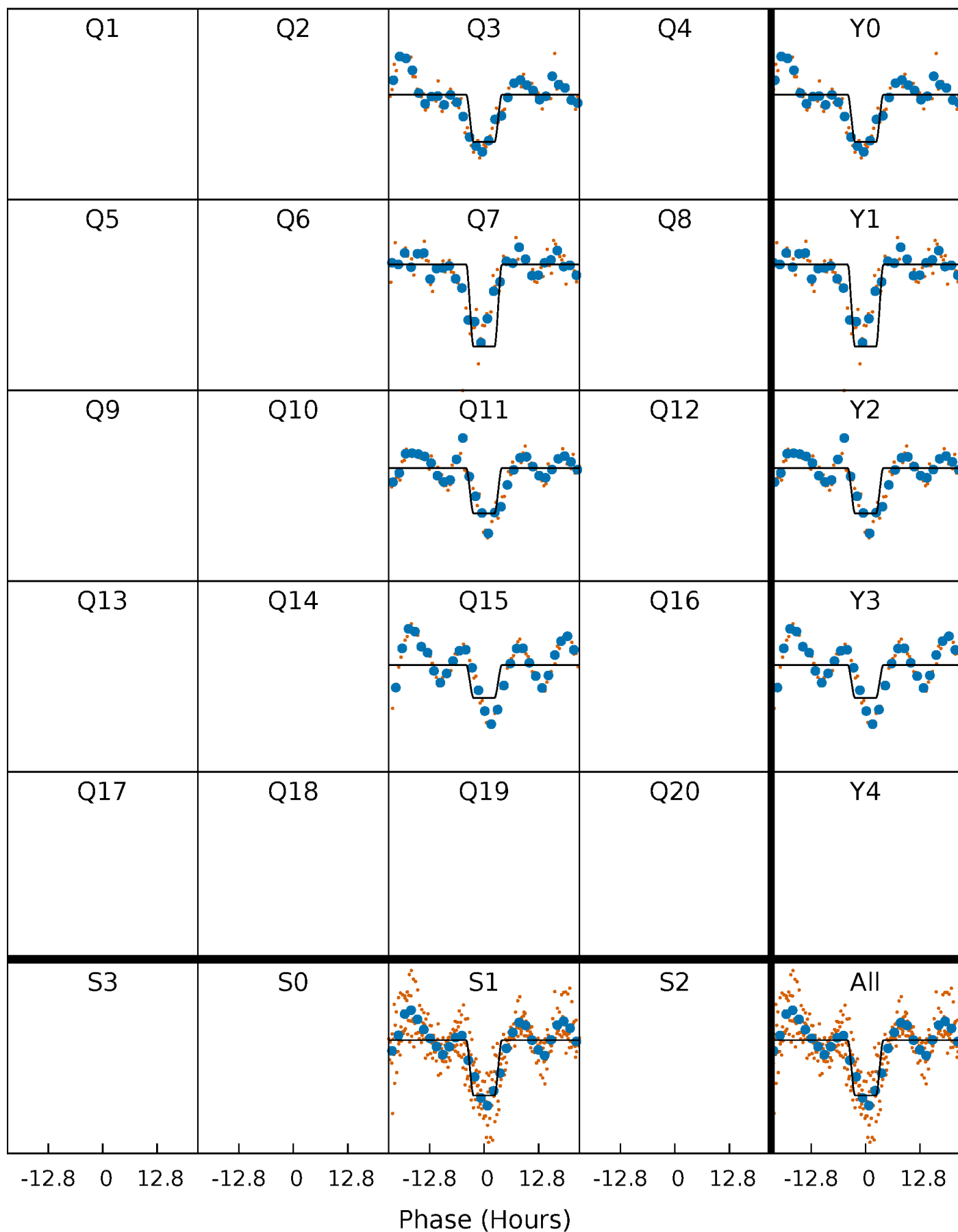
# DV Quarter-Phased Transit Curves

TCE 002715108-01 P=356.255723 Days  $T_0=307.961774$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

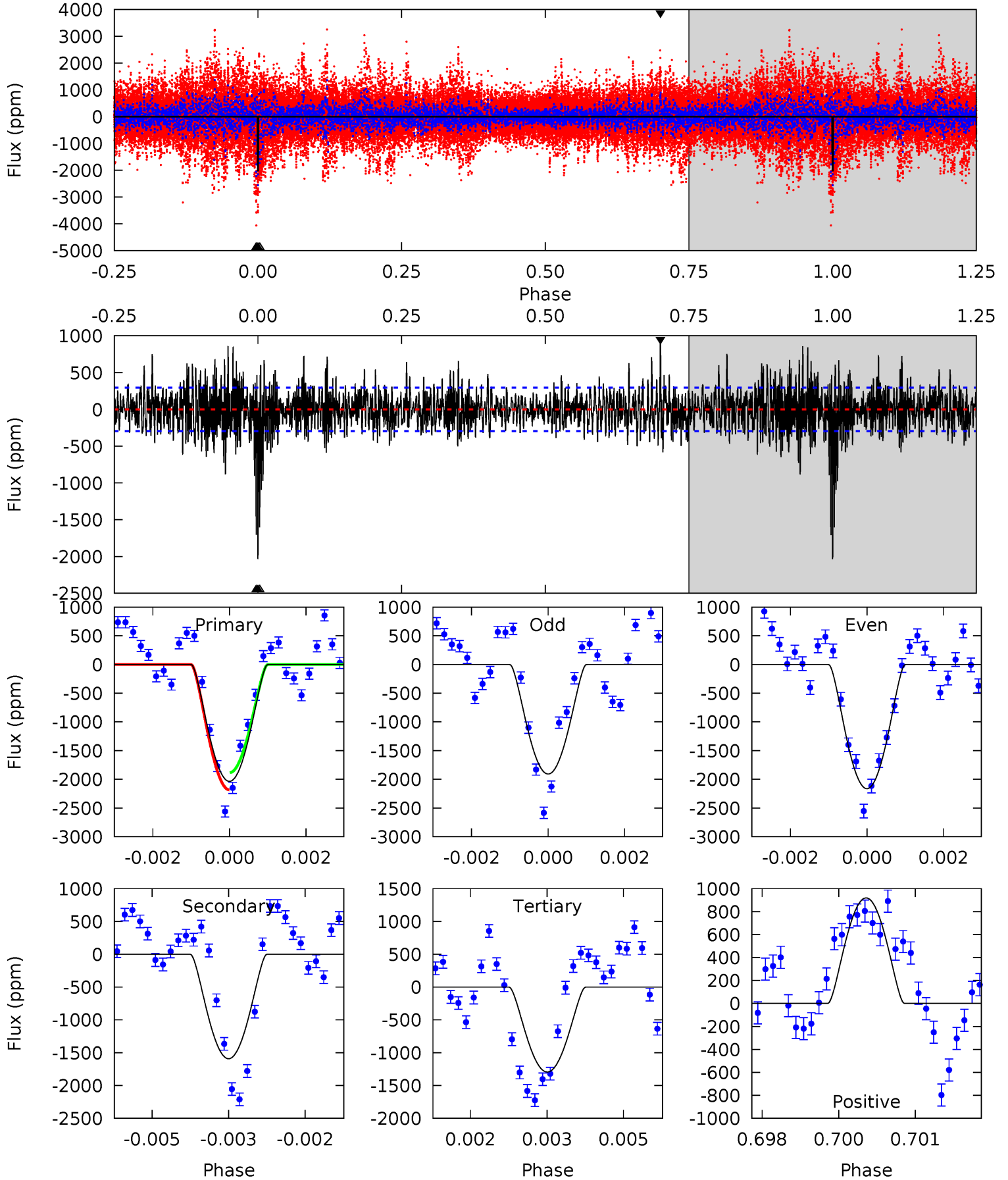
TCE 002715108-01 P=356.231874 Days  $T_0=307.957136$  (BKJD)



# DV Model-Shift Uniqueness Test

002715108-01, P = 356.255723 Days, E = 307.961774 Days

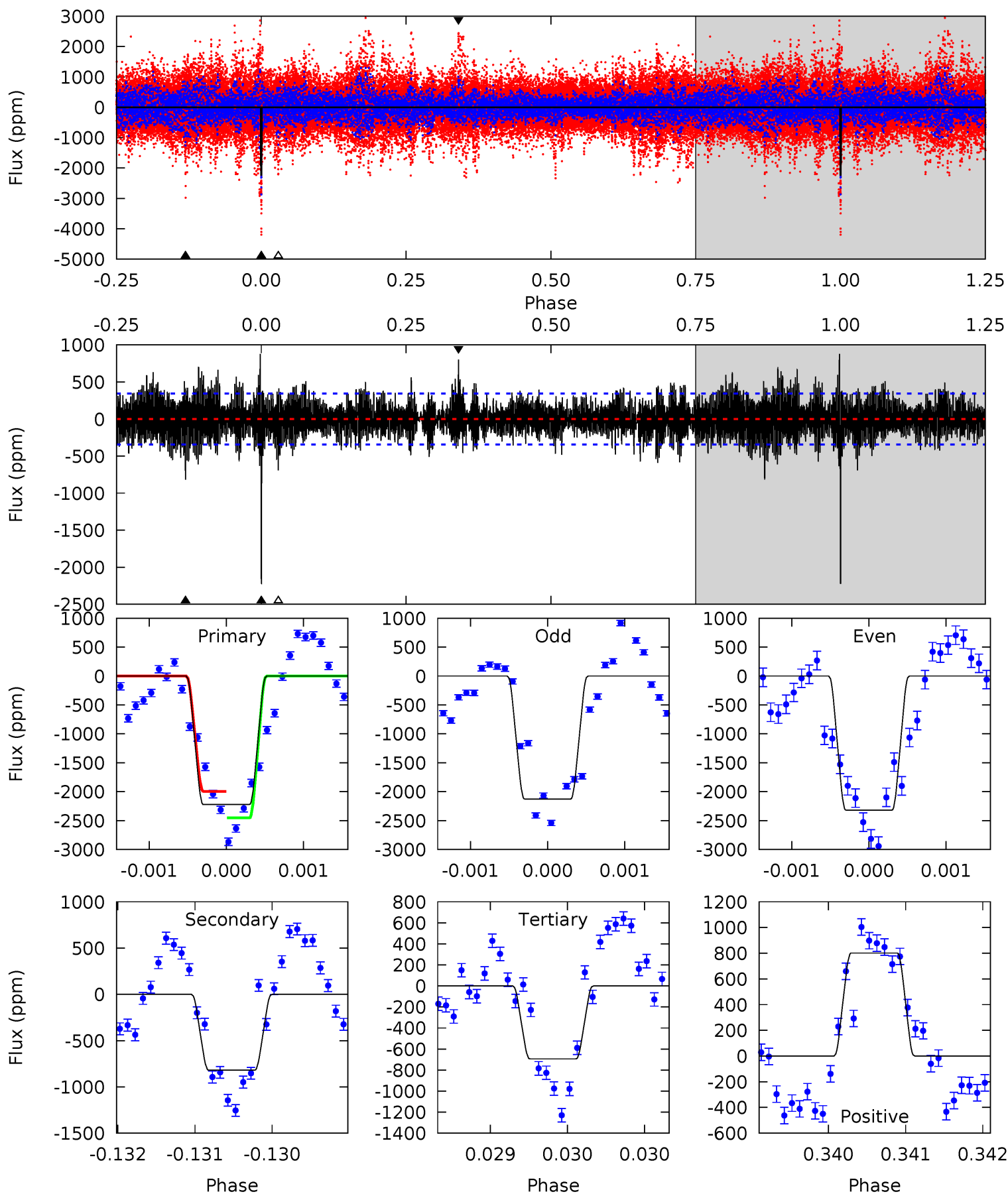
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.1	29.0	23.6	16.7	5.37	3.16	4.03	13.5	20.4	5.42	12.3	2.24	0.94	0.31	2.74



# Alt Model-Shift Uniqueness Test

002715108-01, P = 356.231874 Days, E = 307.957136 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
35.2	13.0	11.0	12.7	5.46	3.30	3.07	24.2	22.5	1.98	0.27	1.49	0.96	0.28	3.65



### Stellar Parameters For KIC 002715108

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6643^{+161}_{-241}$	$4.357^{+0.065}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.216^{+0.371}_{-0.132}$	$1.235^{+0.168}_{-0.168}$	$0.967^{+0.270}_{-0.480}$
	+2%/-4%	+1%/-4%	+250%/-300%	+31%/-11%	+14%/-14%	+28%/-50%
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 002715108-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1592 \pm 55$	$16.46^{+15.66}_{-11.26}$	$446^{+30}_{-23}$	$4097^{+2589}_{-811}$	$3562^{+30461}_{-2632}$
Alt.	$-818 \pm 63$	$15.80^{+14.91}_{-10.86}$	$445^{+32}_{-20}$	$3729^{+2145}_{-696}$	$2003^{+19101}_{-1489}$

$T_{max}$  = 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

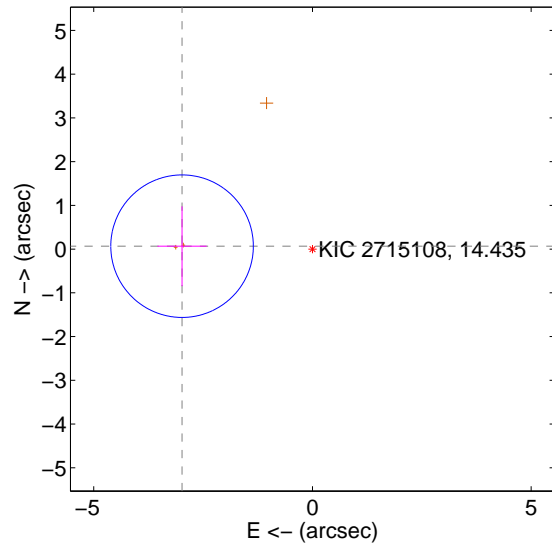
Supplemental centroid analysis for 002715108-01. Kepler magnitude: 14.44. Transit SNR 8.91

There are 0 quarters with good PRF difference image offsets

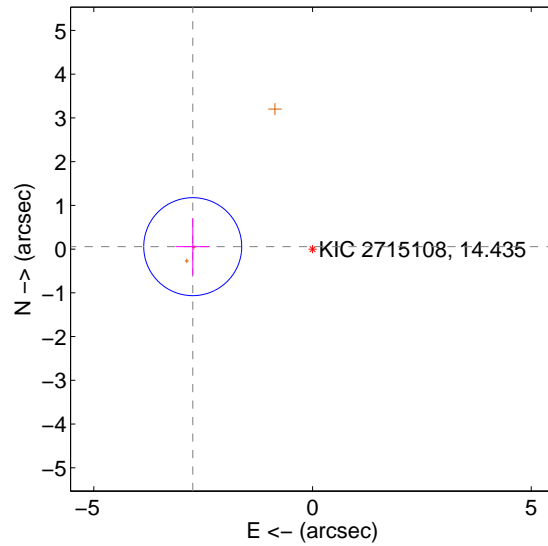
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	2.982 $\pm$ 0.543	5.49	2.981 $\pm$ 0.563	0.067 $\pm$ 0.913
PRF-fit source offset from KIC position	2.740 $\pm$ 0.373	7.34	2.739 $\pm$ 0.387	0.056 $\pm$ 0.655
photometric centroid source offset	0.81 $\pm$ 0.44	1.84	0.62 $\pm$ 0.33	-0.52 $\pm$ 0.56

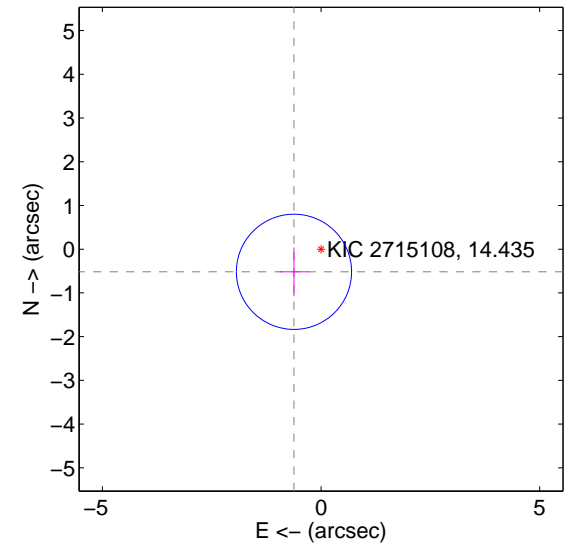
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



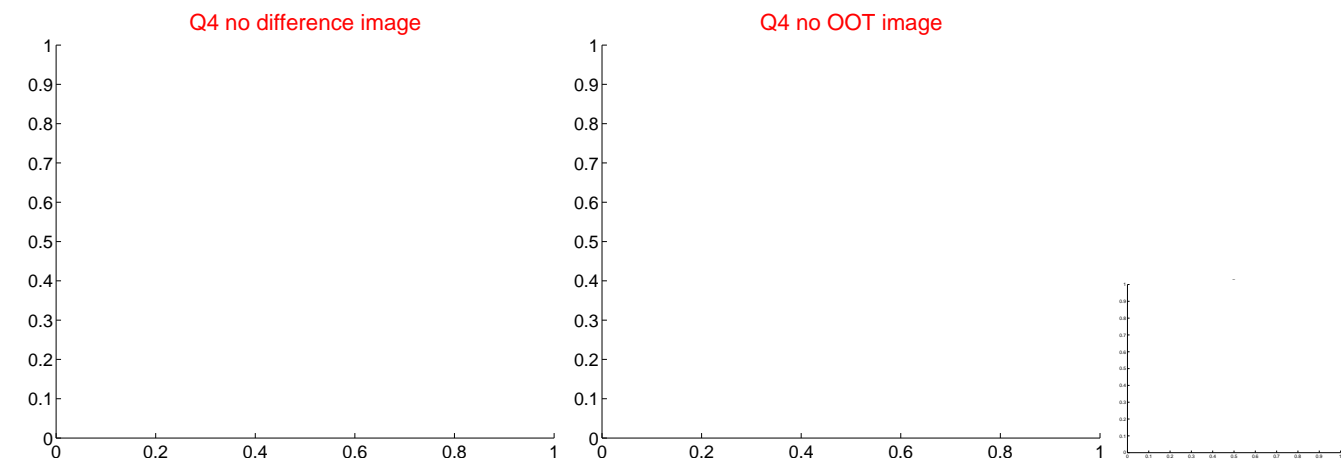
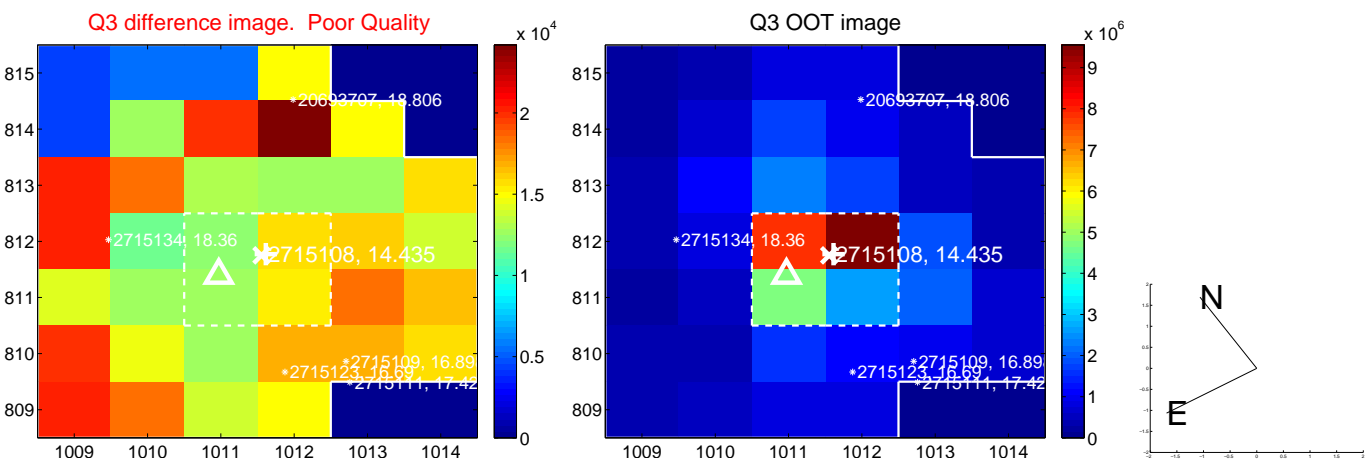
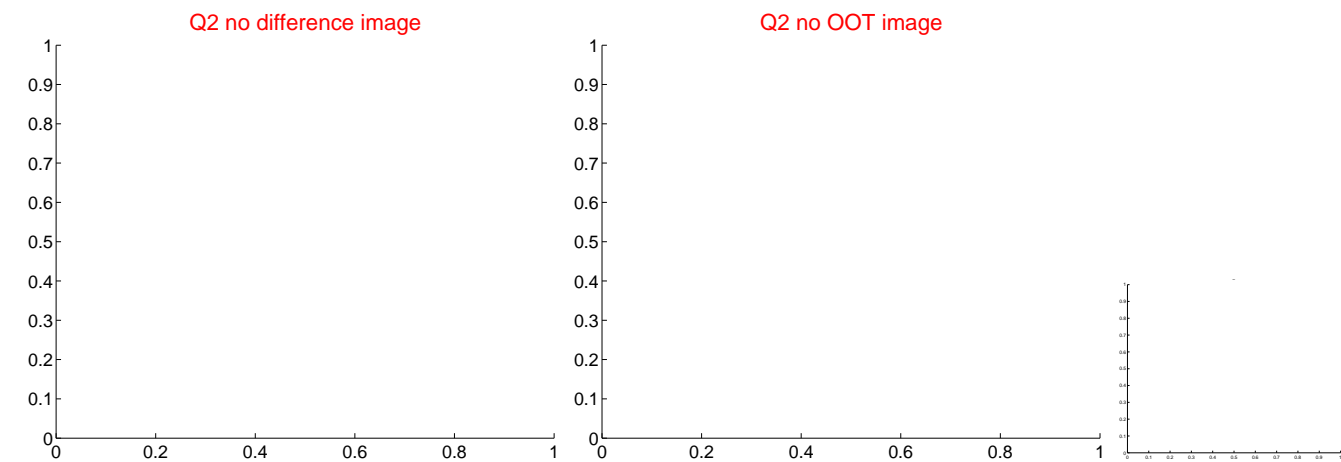
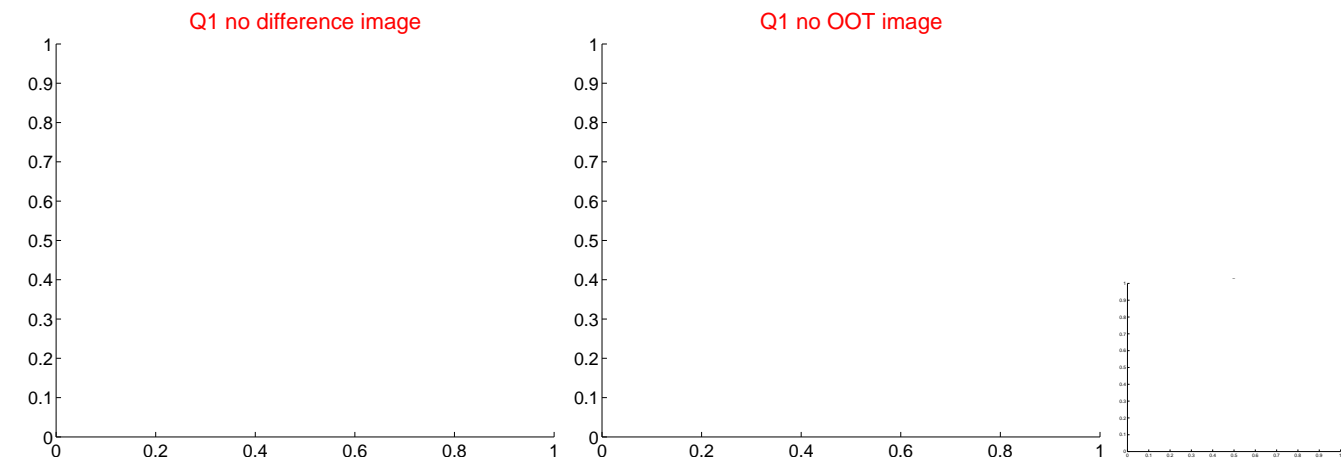
offset from photometric centroids



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



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

Q5 no difference image



Q5 no OOT image



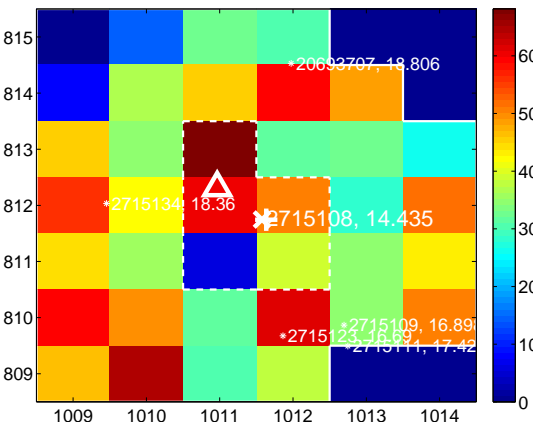
Q6 no difference image



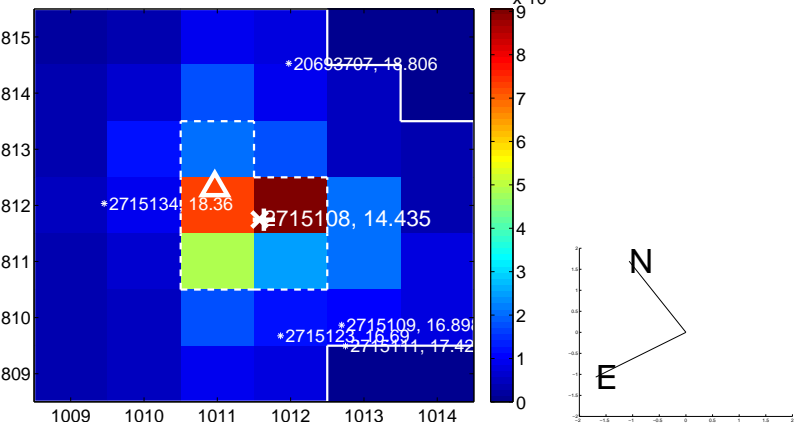
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



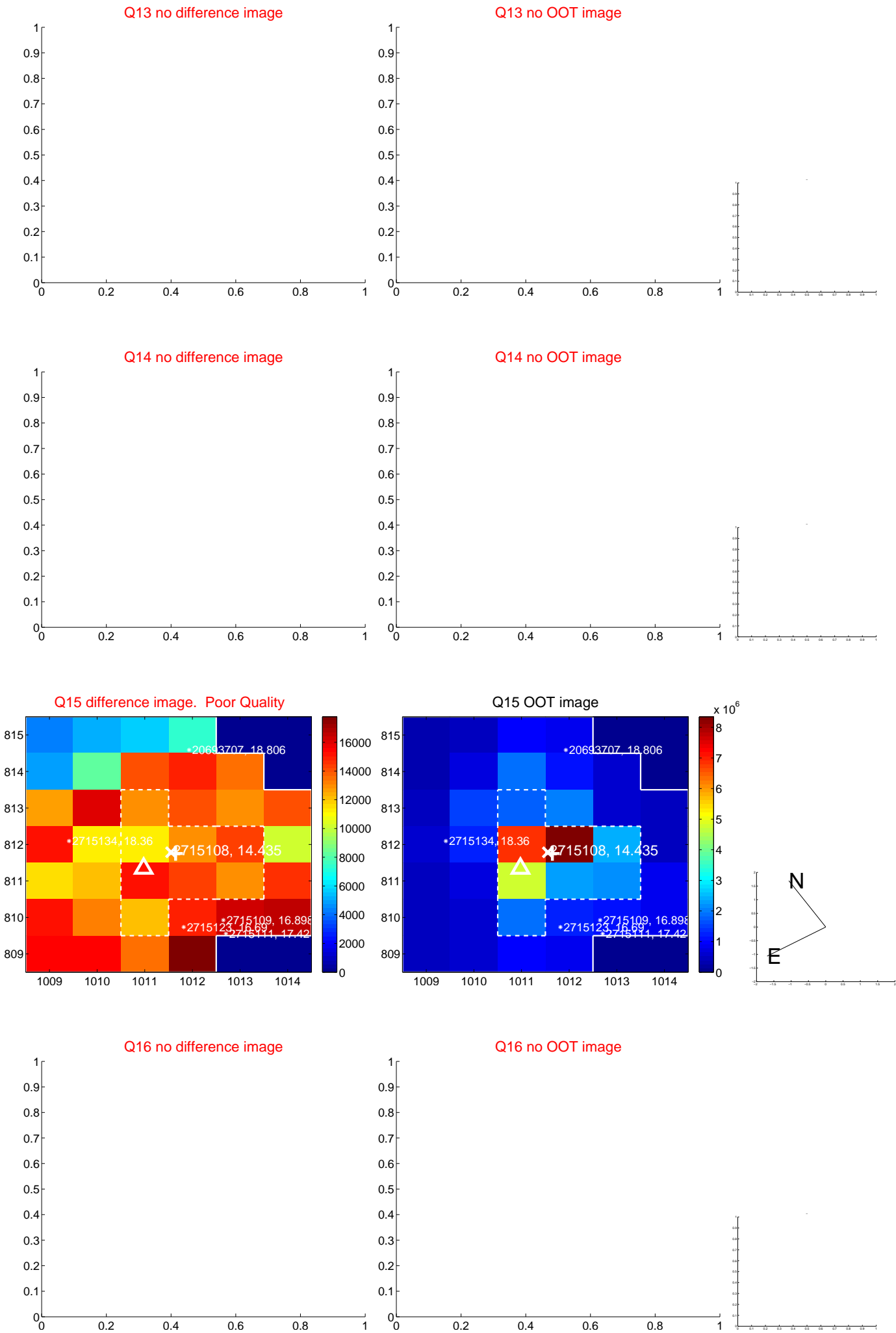
Q8 no OOT image



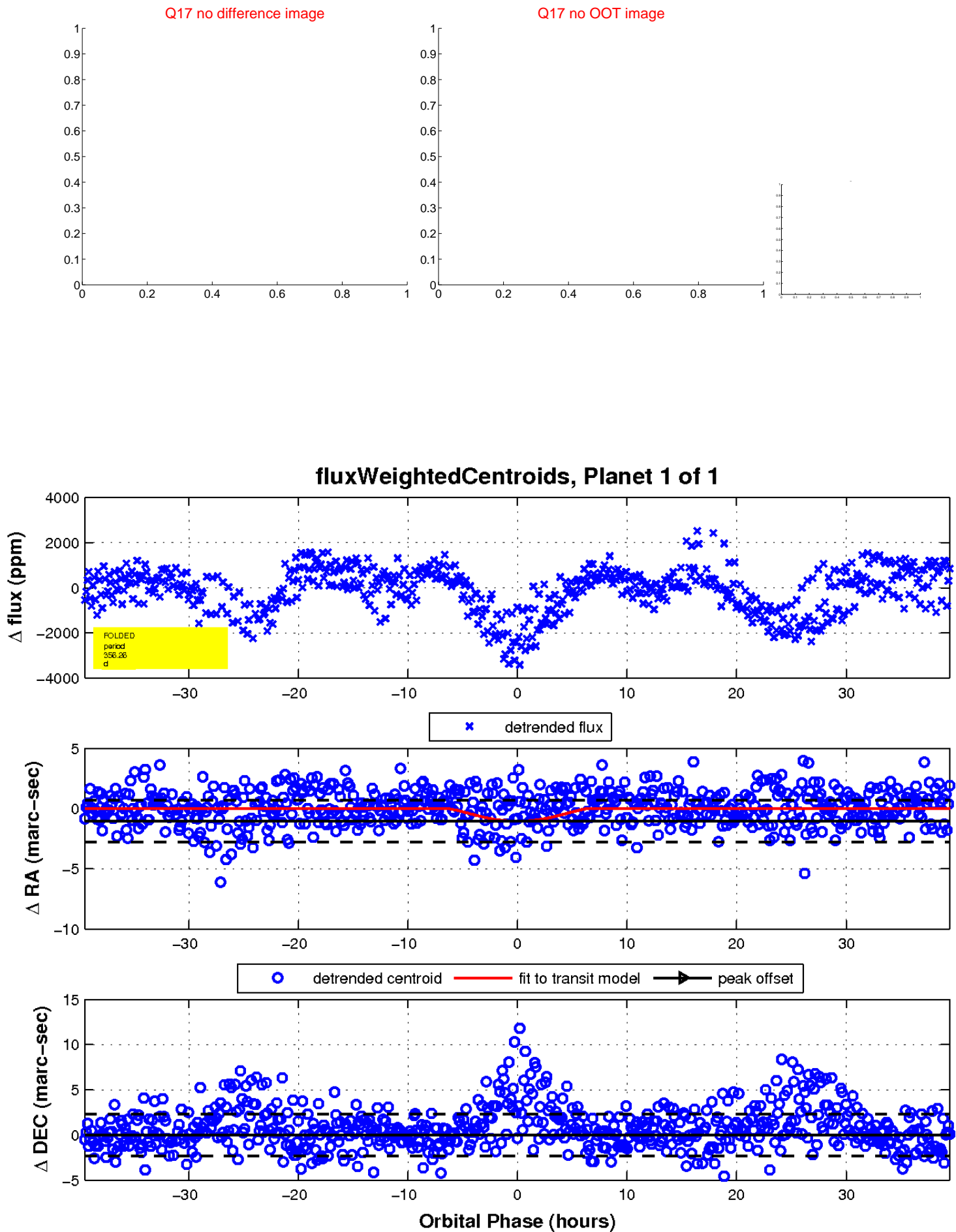
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

