

# KIC 009142544

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009142544-01	OBS	No	432.928430	480.110484	573.8	16.650	9.6	9.5	0.77	5295	2.15	0.42

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009142544-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

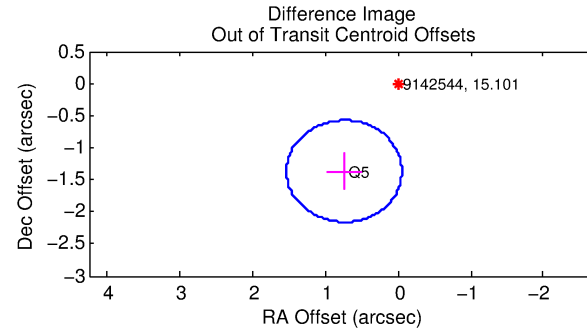
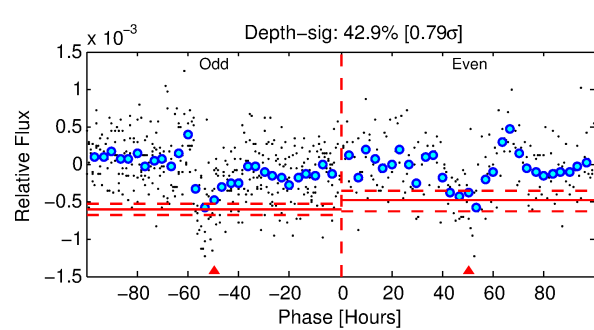
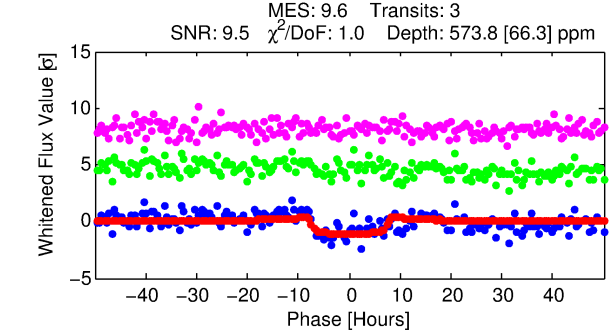
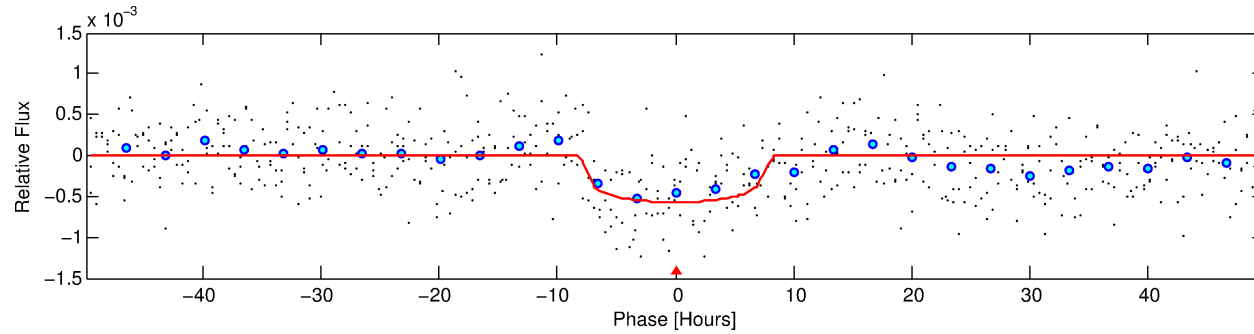
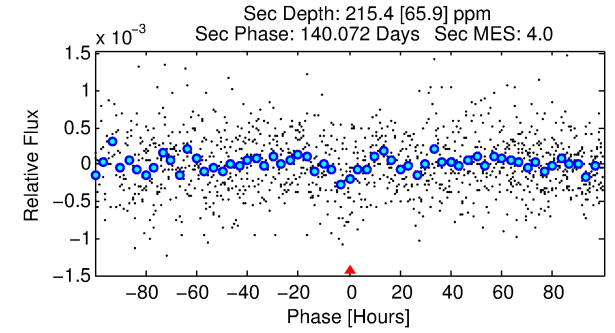
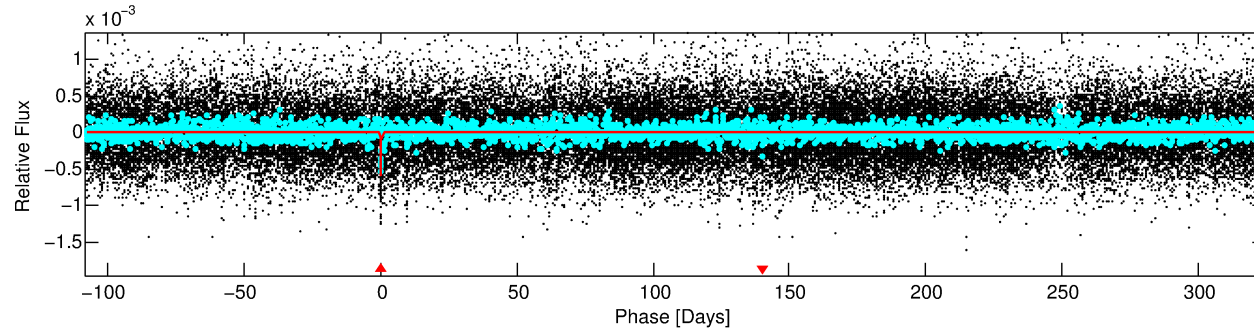
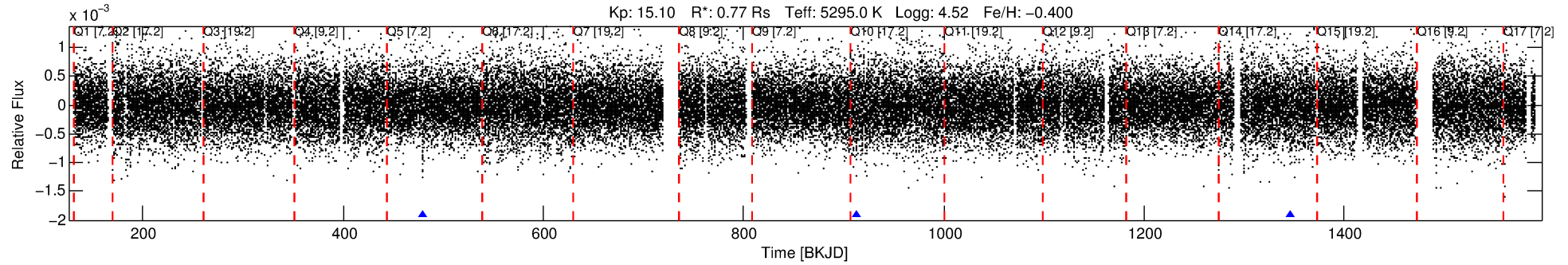
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009142544-01

No Significant Match Found

# DV One-Page Summary

KIC: 9142544 Candidate: 1 of 1 Period: 432.928 d



## DV Fit Results:

Period = 432.92843 [0.01738] d  
Epoch = 480.1105 [0.0215] BKJD  
Rp/R\* = 0.0255 [0.0041]  
a/R\* = 109.43 [67.18]  
b = 0.86 [0.18]  
Seff = 0.42 [0.09]  
Teq = 205 [11] K  
Rp = 2.15 [0.45] Re  
a = 1.0033 [0.1192] AU  
Ag = 25810.64 [12378.19] [2.09 $\sigma$ ]  
Teffp = 4018 [461] K [8.26 $\sigma$ ]

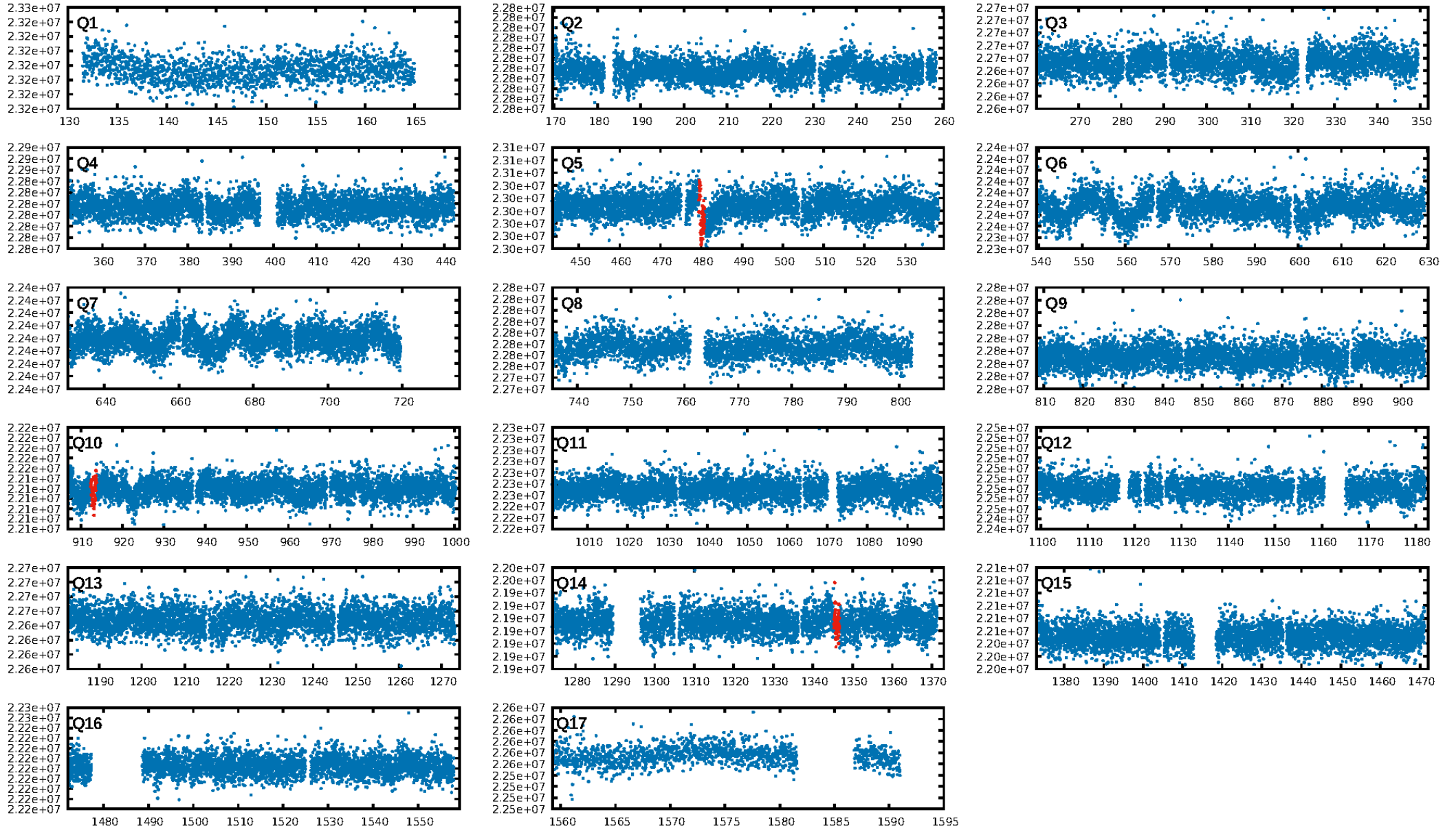
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 5.4%  
ModelChiSquareGof-sig: 99.1%  
Bootstrap-pfa: 2.47e-14  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.9725  
Centroid-sig: 32.5%  
Centroid-so: 1.120 arcsec [0.81 $\sigma$ ]  
OotOffset-rm: 1.554 arcsec [5.88 $\sigma$ ]  
KicOffset-rm: 1.527 arcsec [5.76 $\sigma$ ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [3/3]

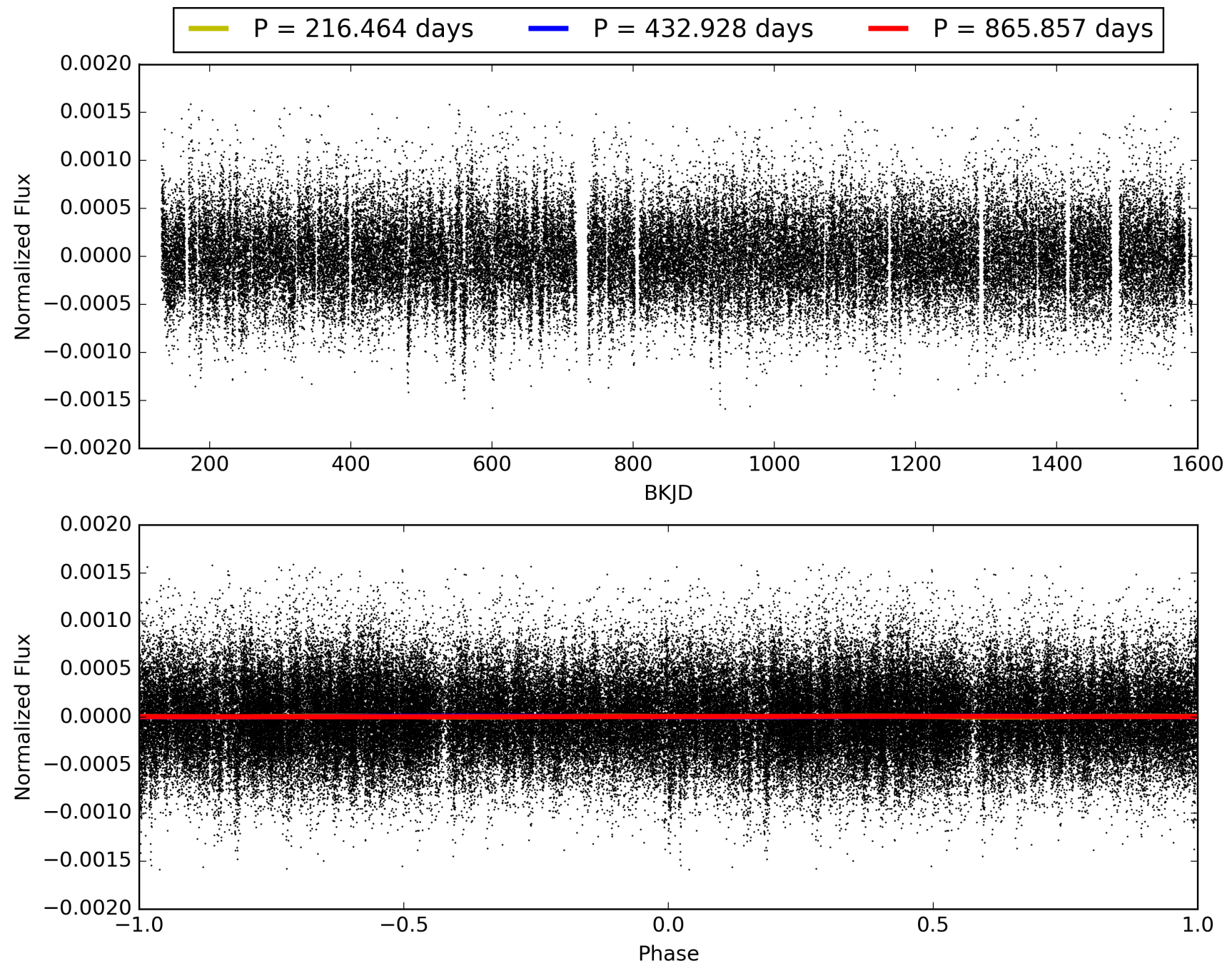
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:36:17 Z

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

# TCE 009142544-01, PDC Light Curves

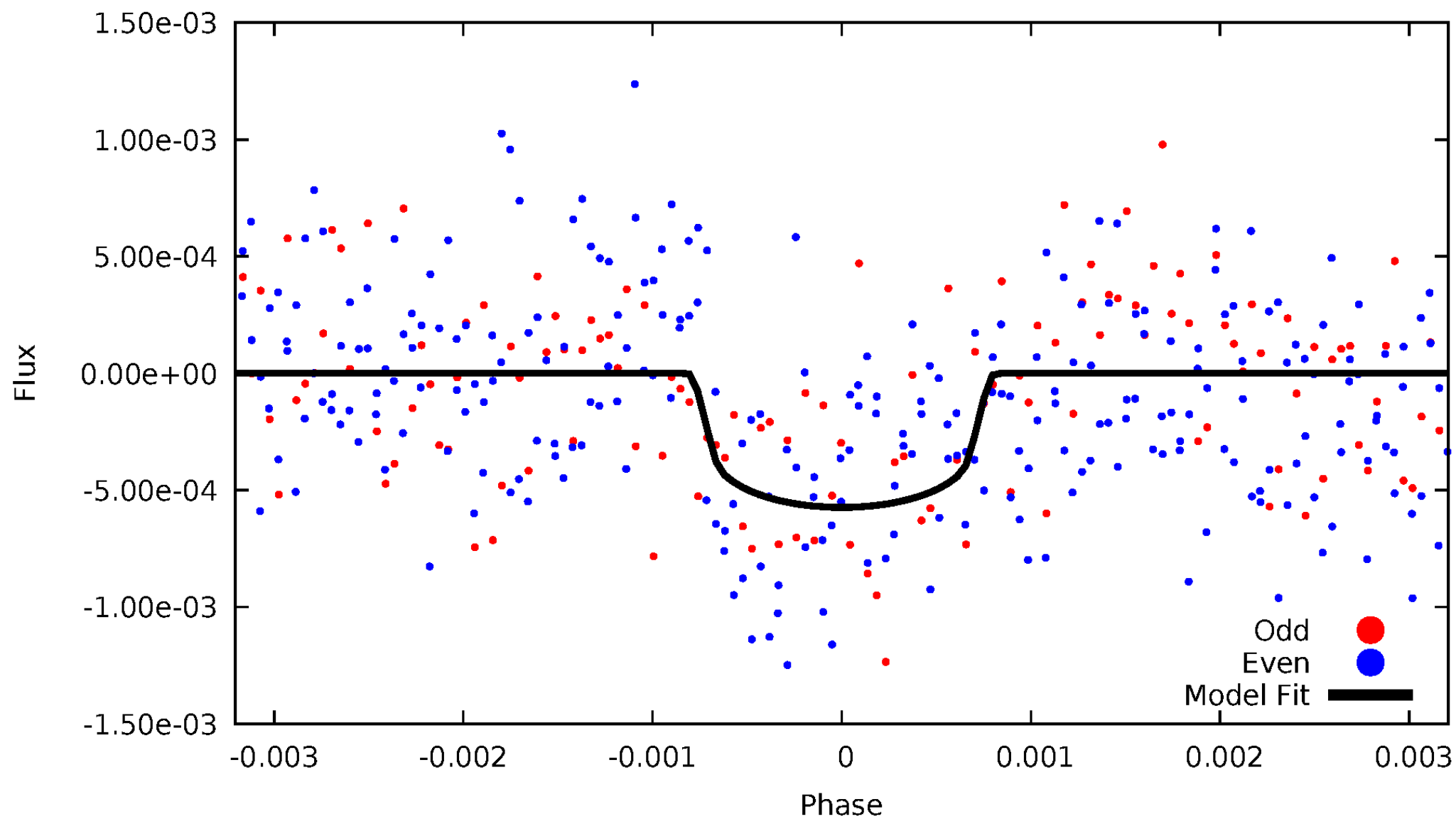


TCE 009142544-01



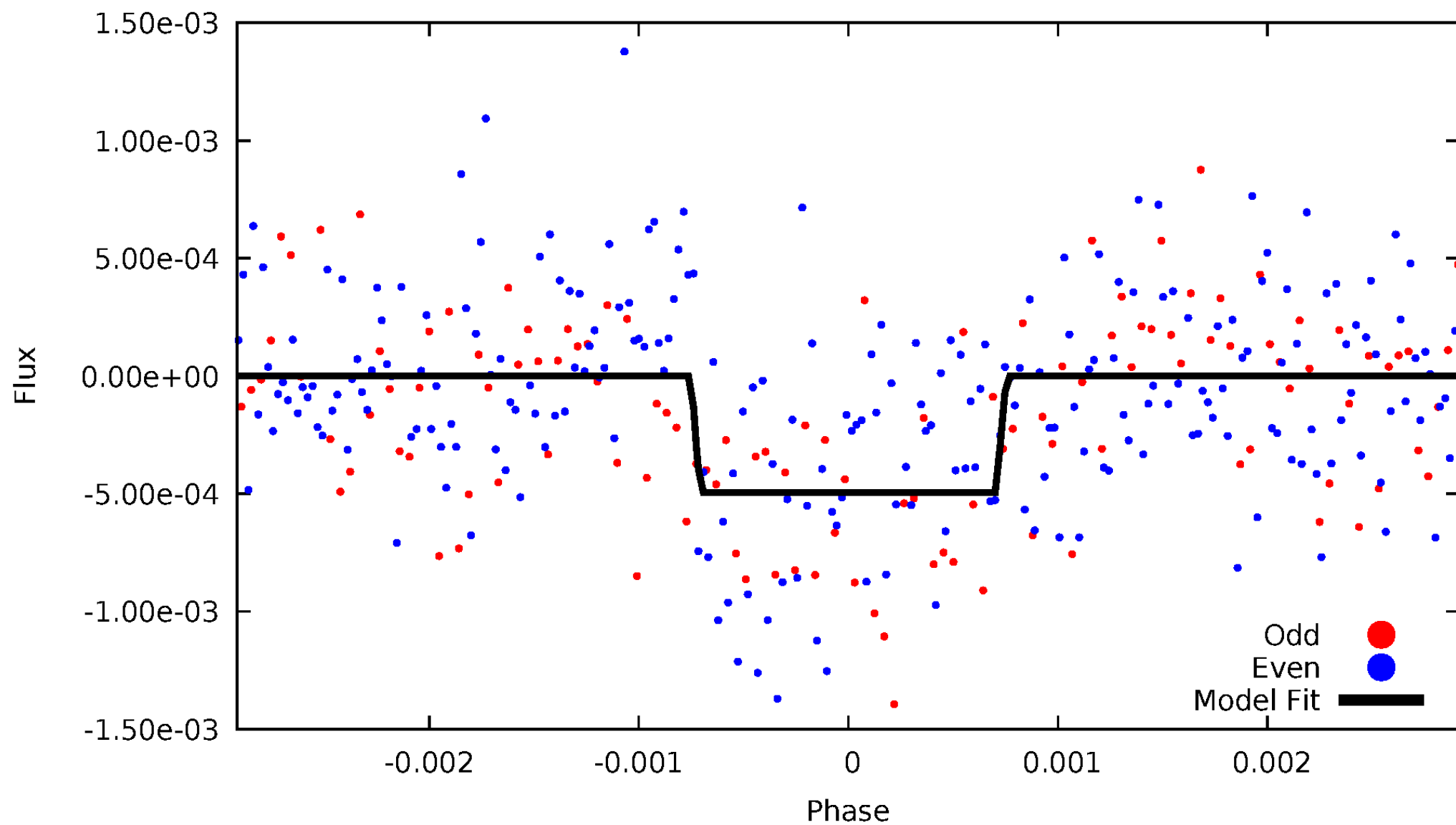
# DV Odd/Even

TCE 009142544-01



# ALT Odd/Even

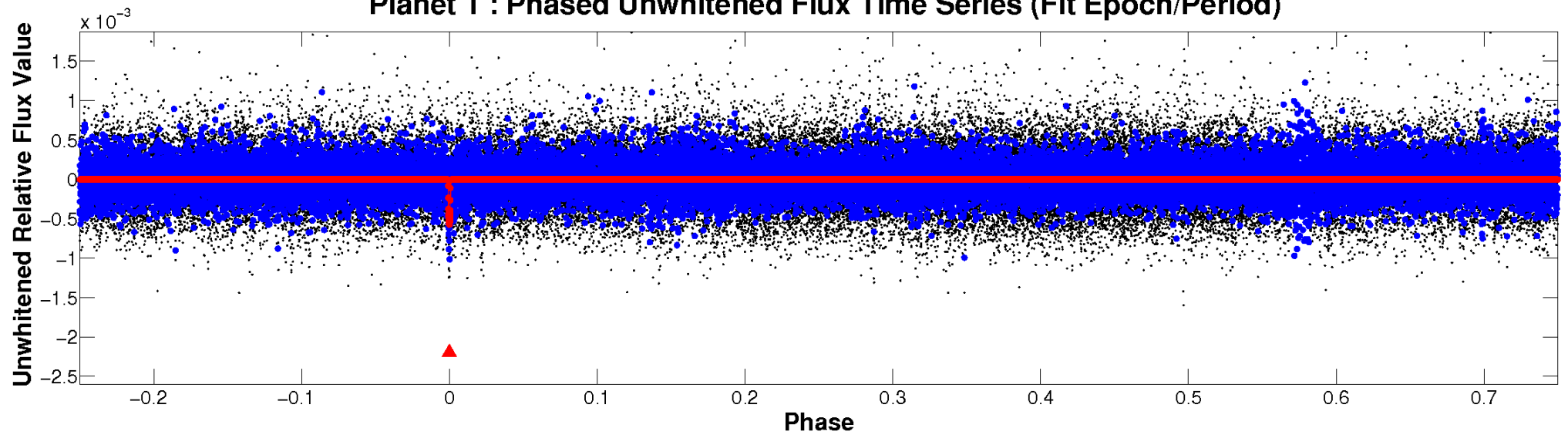
TCE 009142544-01



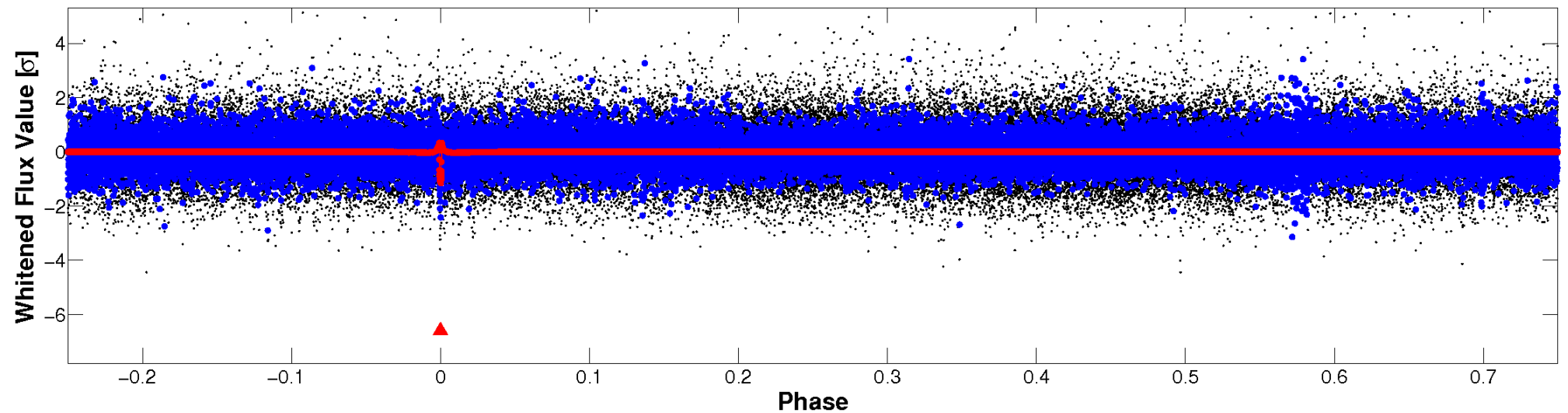


# Non-Whitened Vs. Whitened Light Curve

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

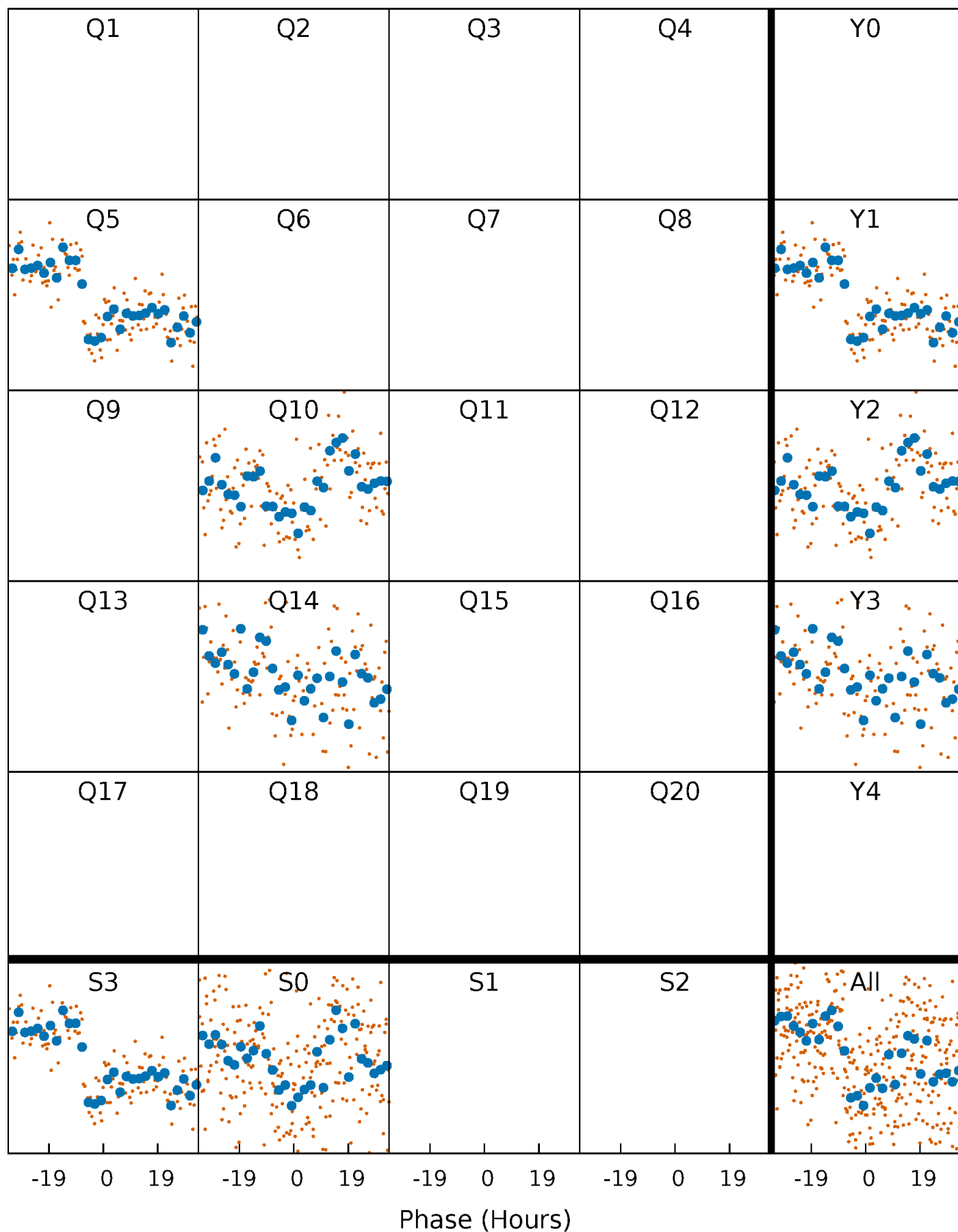


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

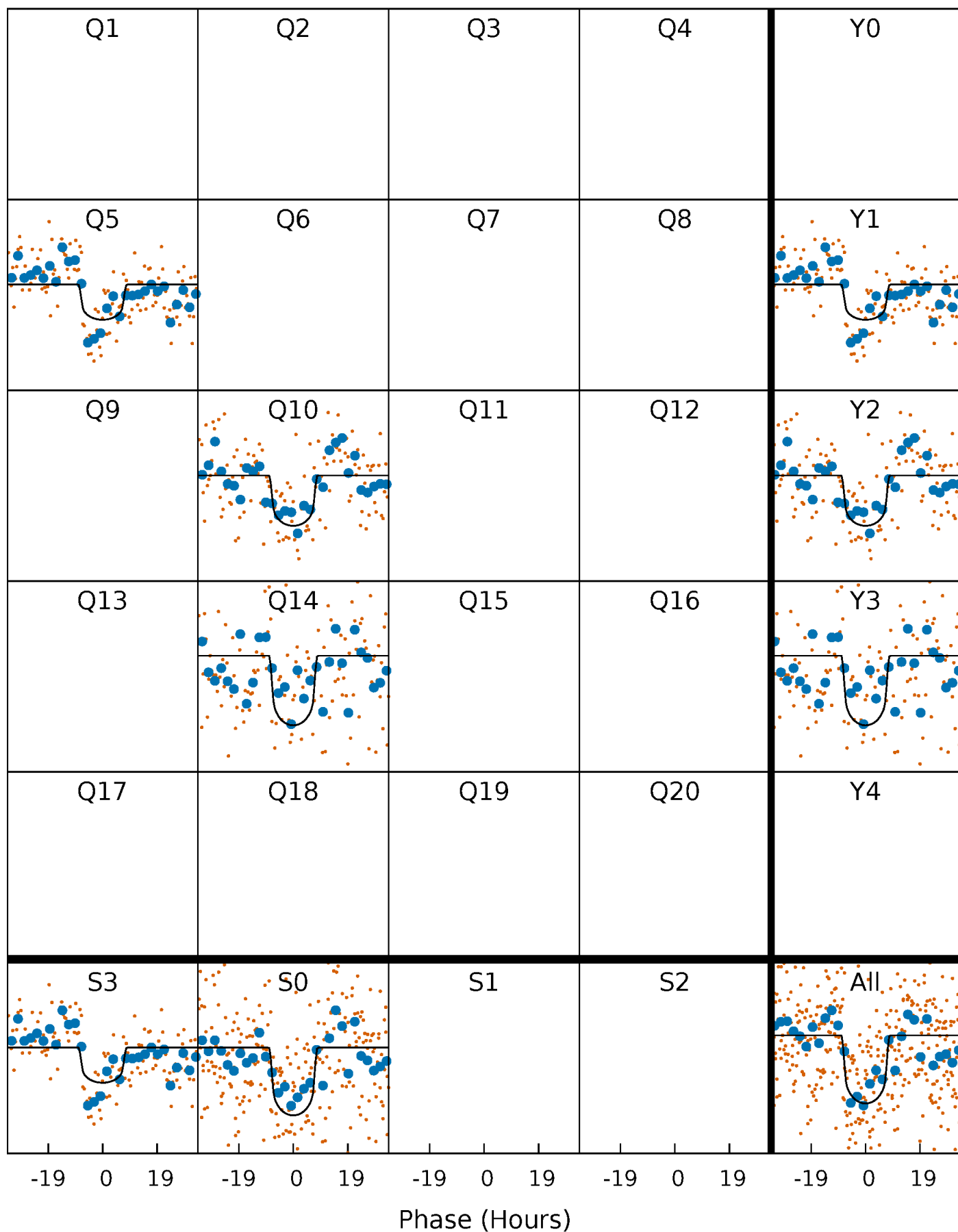
TCE 009142544-01 P=432.928430 Days  $T_0=480.110484$  (BKJD)





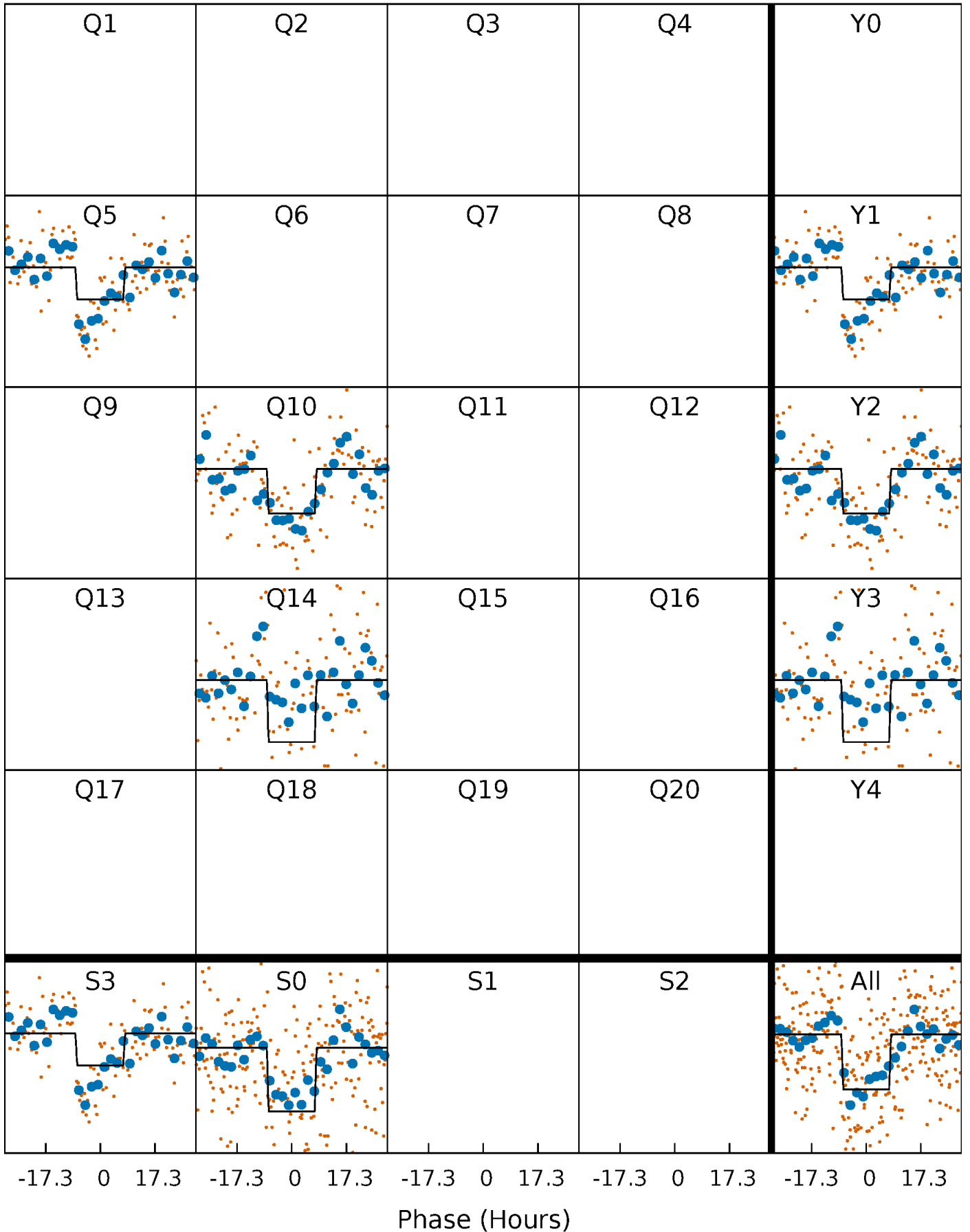
# DV Quarter-Phased Transit Curves

TCE 009142544-01 P=432.928430 Days  $T_0=480.110484$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

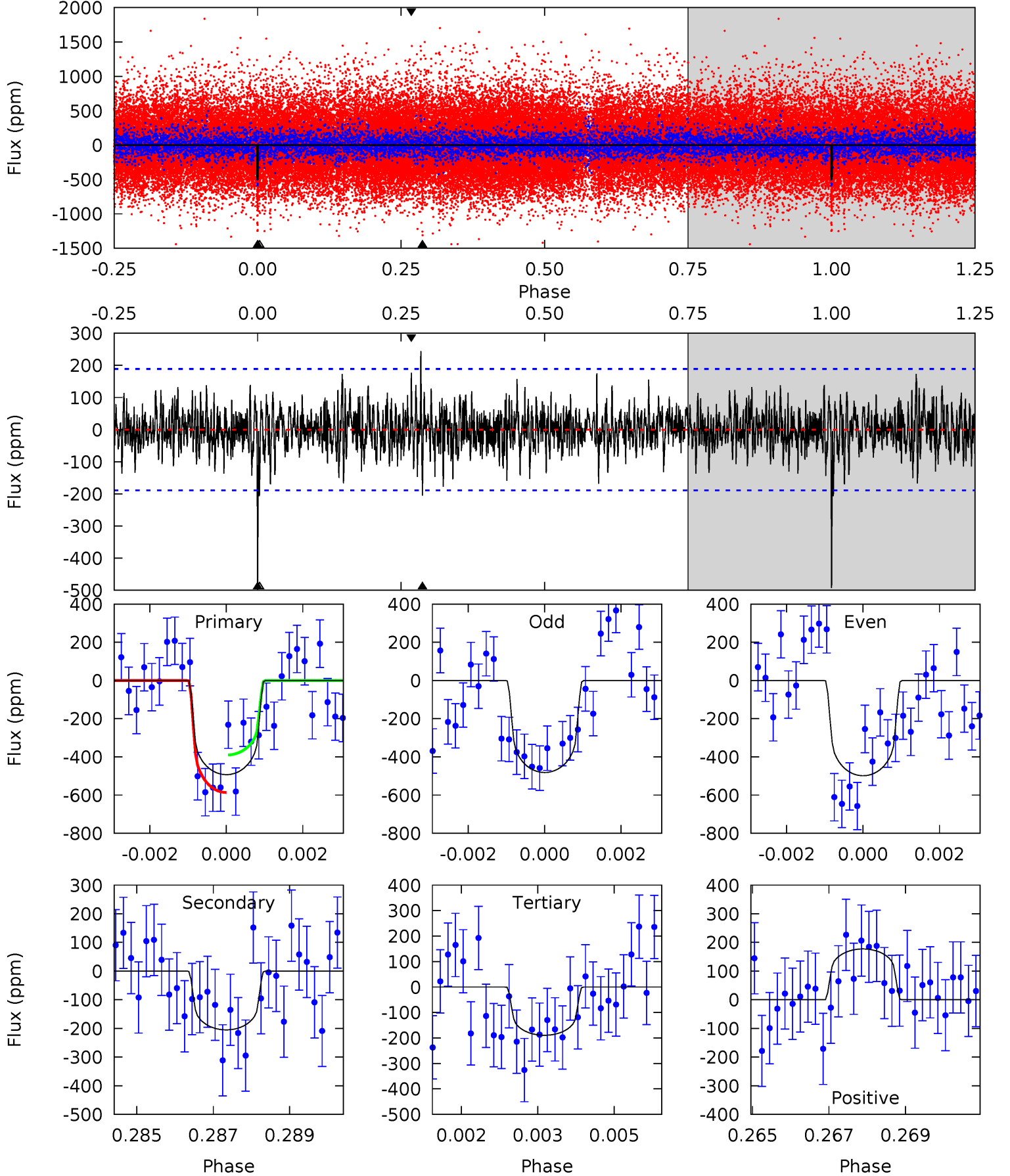
TCE 009142544-01 P=432.912213 Days  $T_0=480.132837$  (BKJD)



# DV Model-Shift Uniqueness Test

009142544-01, P = 432.928430 Days, E = 47.182054 Days

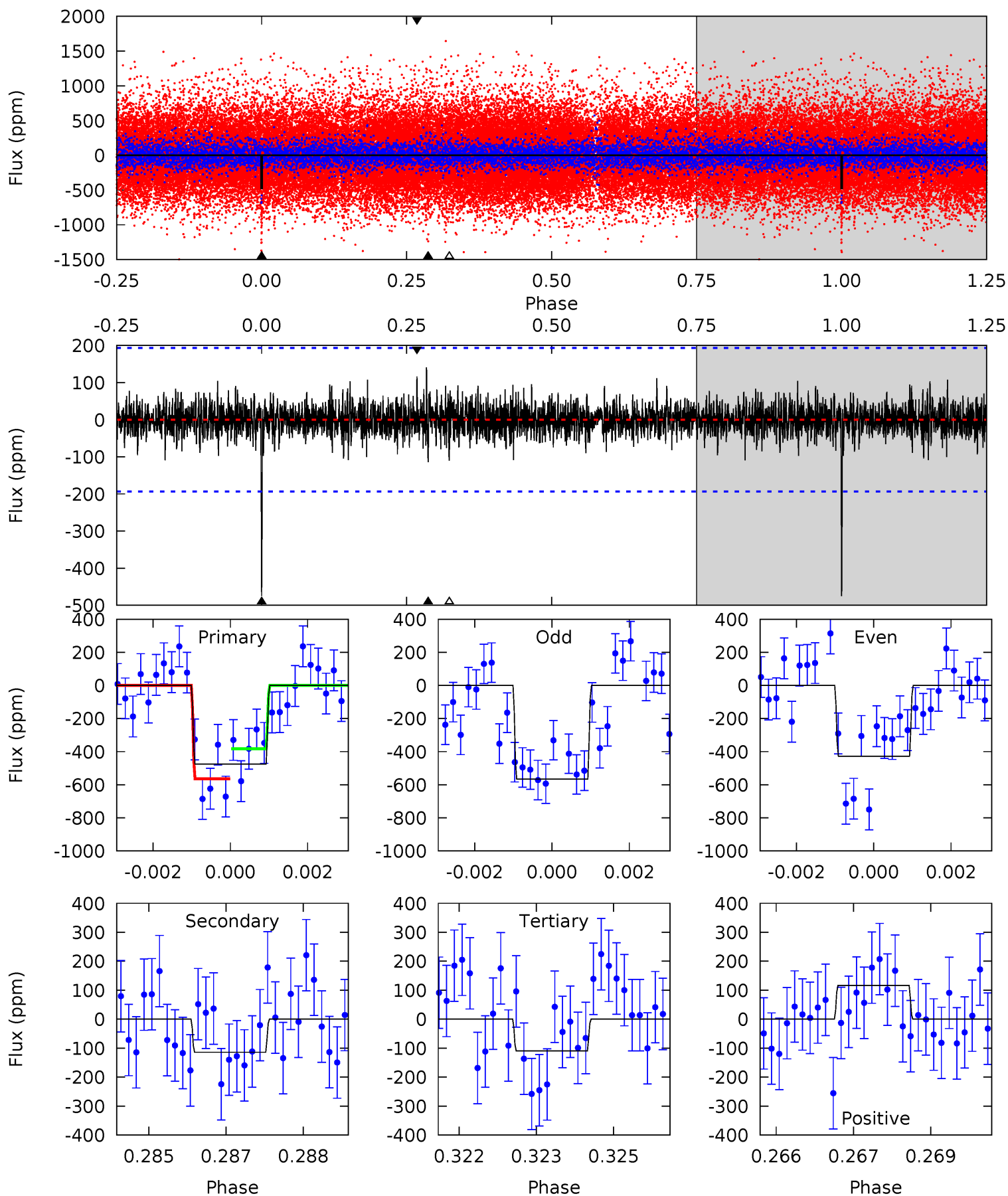
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	5.82	5.38	5.03	5.36	3.15	1.45	8.62	8.96	0.45	0.79	0.23	1.02	0.33	2.79



# Alt Model-Shift Uniqueness Test

009142544-01, P = 432.912213 Days, E = 47.220624 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
13.2	3.17	3.06	3.24	5.38	3.17	0.82	10.1	9.96	0.12	-0.06	1.81	0.83	0.23	2.53



### Stellar Parameters For KIC 009142544

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5295^{+158}_{-142}$	$4.518^{+0.104}_{-0.095}$	$-0.400^{+0.350}_{-0.300}$	$0.773^{+0.102}_{-0.092}$	$0.720^{+0.107}_{-0.046}$	$2.191^{+0.872}_{-0.571}$
	+3%/-3%	+2%/-2%	+87%/-75%	+13%/-12%	+15%/-6%	+40%/-26%
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 009142544-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-205 \pm 35$	$2.18^{+0.40}_{-0.38}$	$286^{+13}_{-12}$	$4172^{+332}_{-272}$	$24168^{+12944}_{-7992}$
Alt.	$-114 \pm 36$	$1.87^{+0.41}_{-0.35}$	$287^{+13}_{-13}$	$3966^{+388}_{-324}$	$17933^{+11197}_{-7109}$

$T_{\text{max}}$  = 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

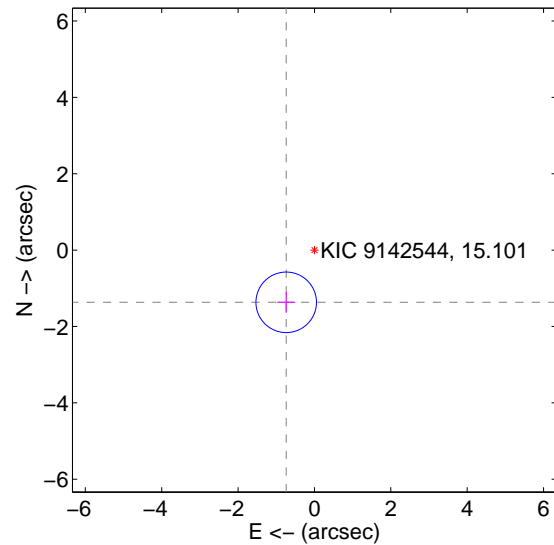
Supplemental centroid analysis for 009142544-01. Kepler magnitude: 15.10. Transit SNR 9.55

There are 1 quarters with good PRF difference image offsets

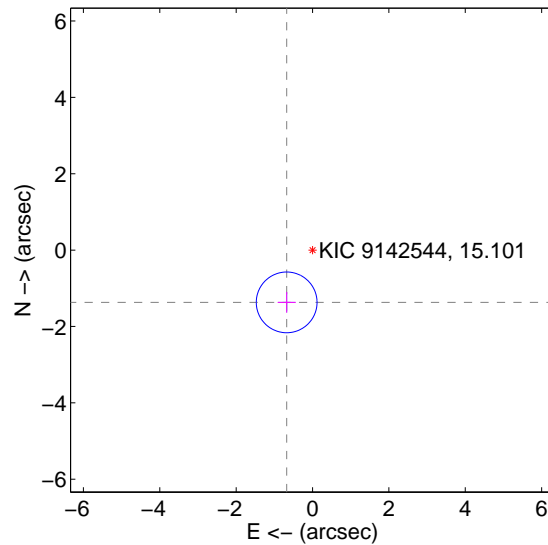
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.554 \pm 0.264$	5.88	$0.739 \pm 0.237$	$-1.367 \pm 0.271$
PRF-fit source offset from KIC position	$1.527 \pm 0.265$	5.76	$0.677 \pm 0.237$	$-1.369 \pm 0.271$
photometric centroid source offset	$1.12 \pm 1.39$	0.81	$0.58 \pm 1.44$	$-0.96 \pm 1.37$

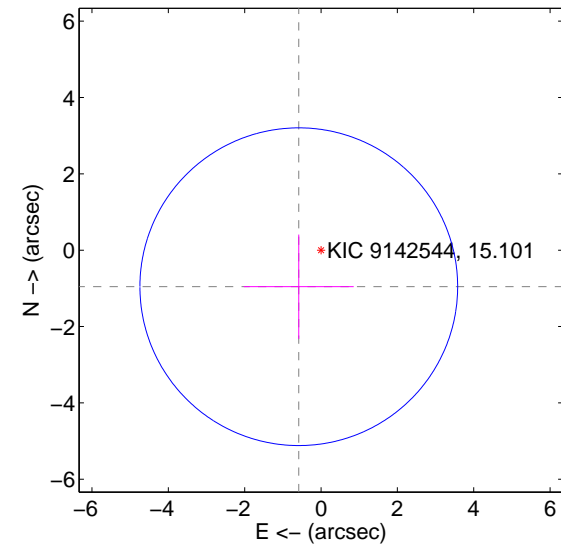
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



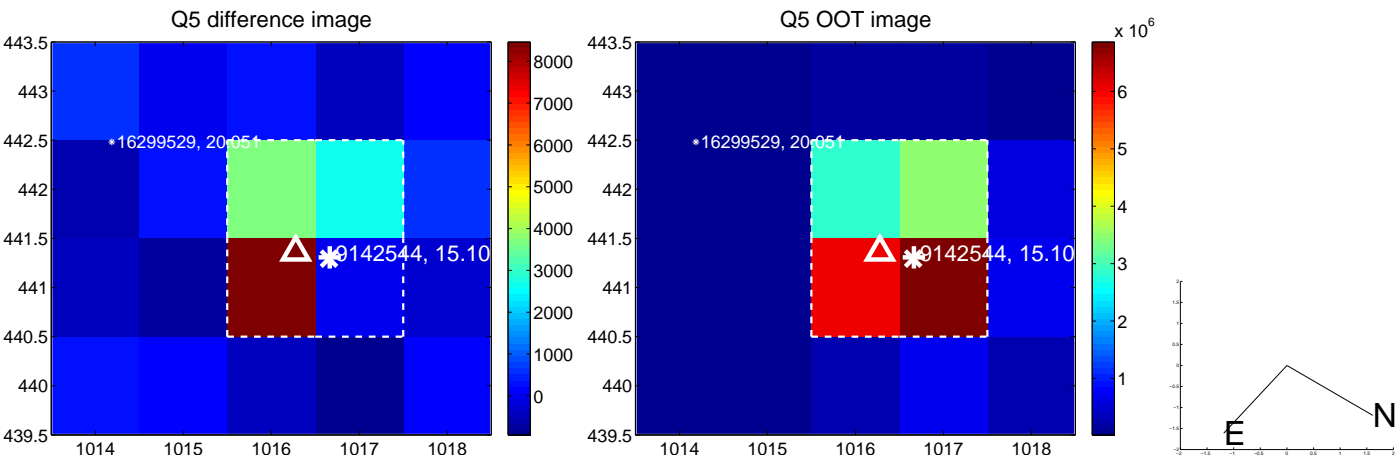
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

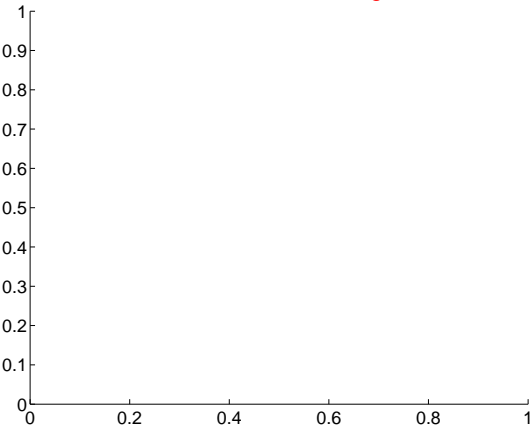




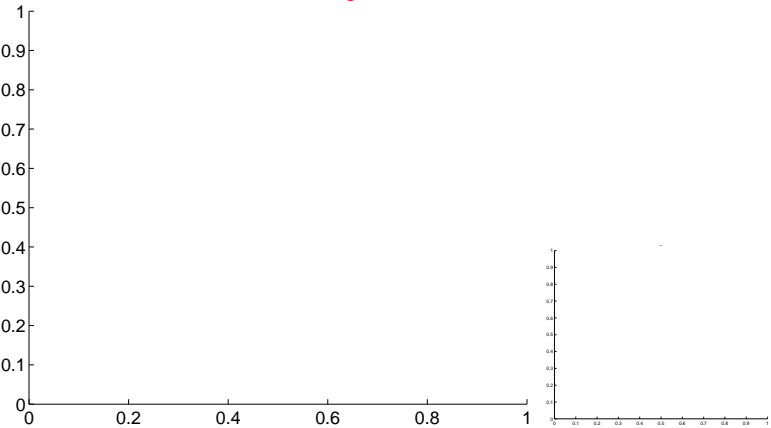
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



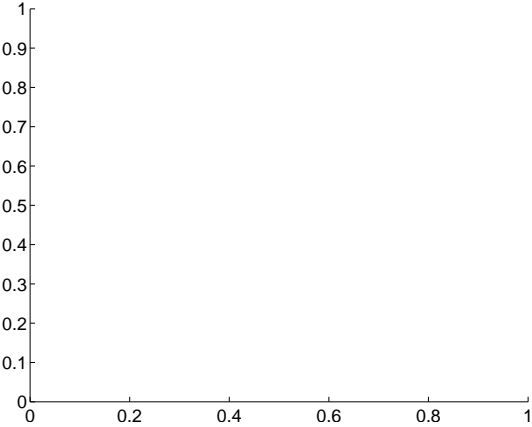
Q6 no difference image



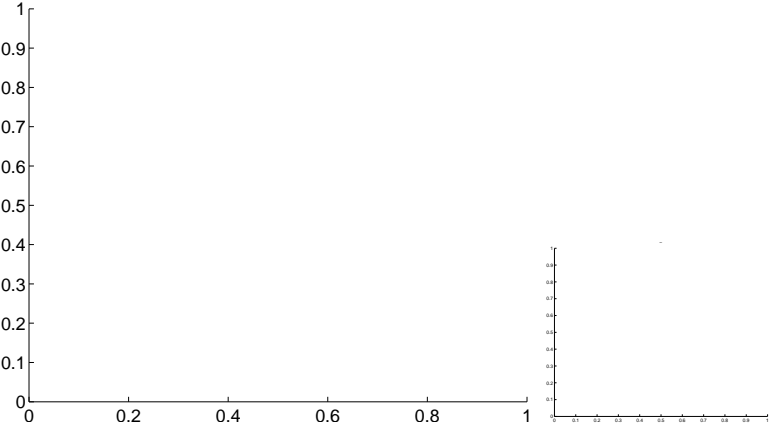
Q6 no OOT image



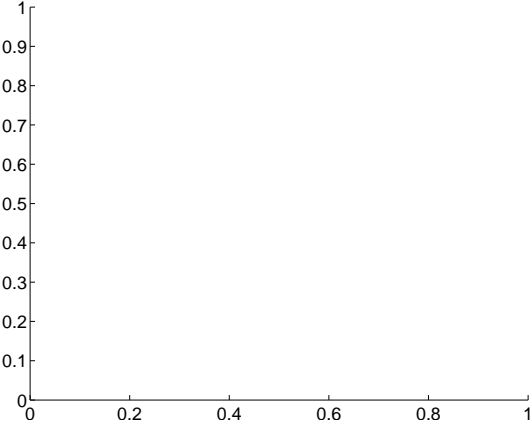
Q7 no difference image



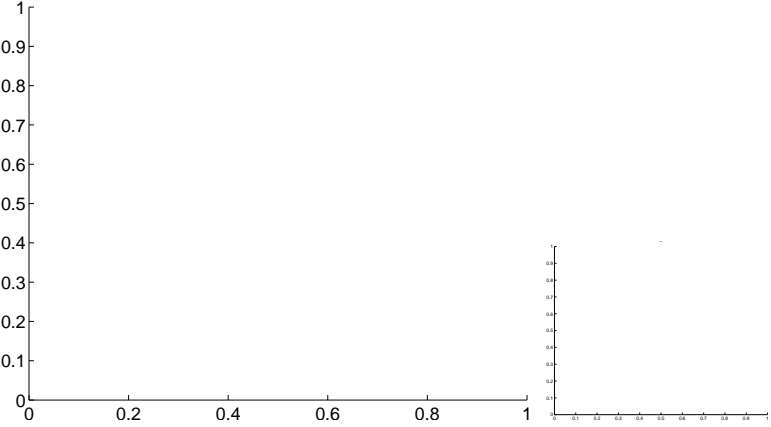
Q7 no OOT image



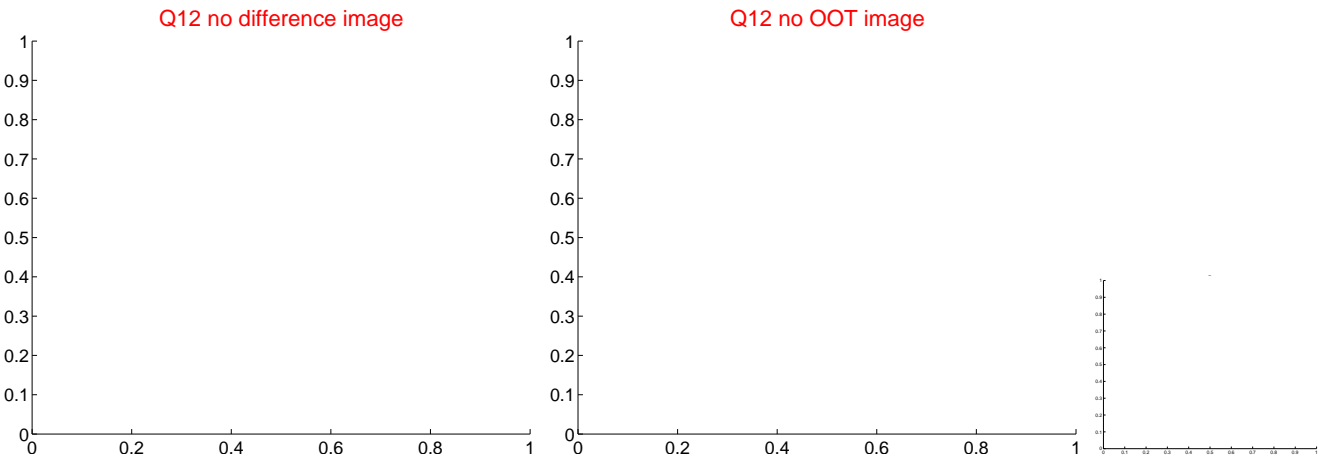
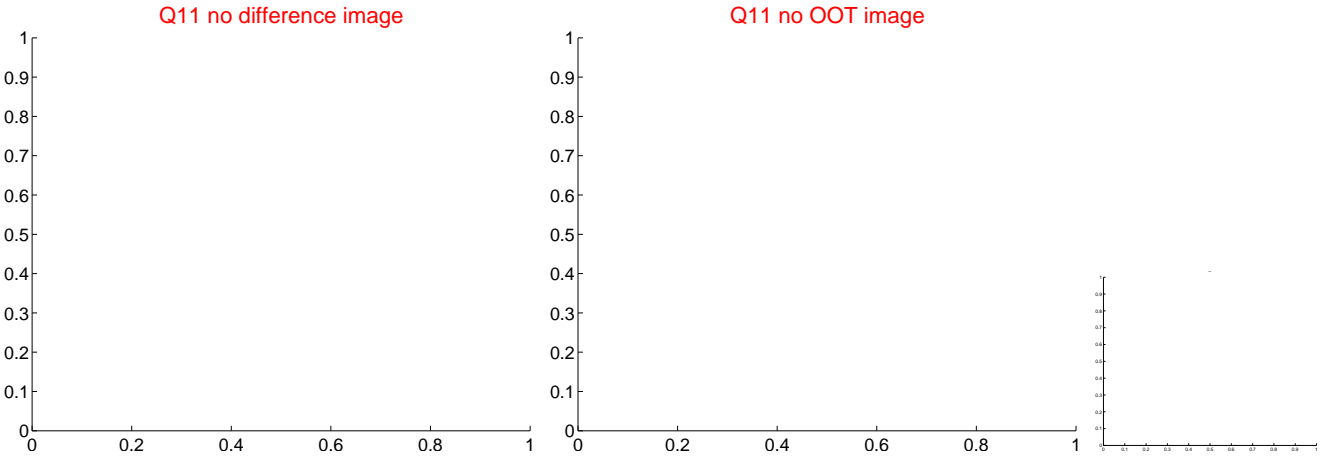
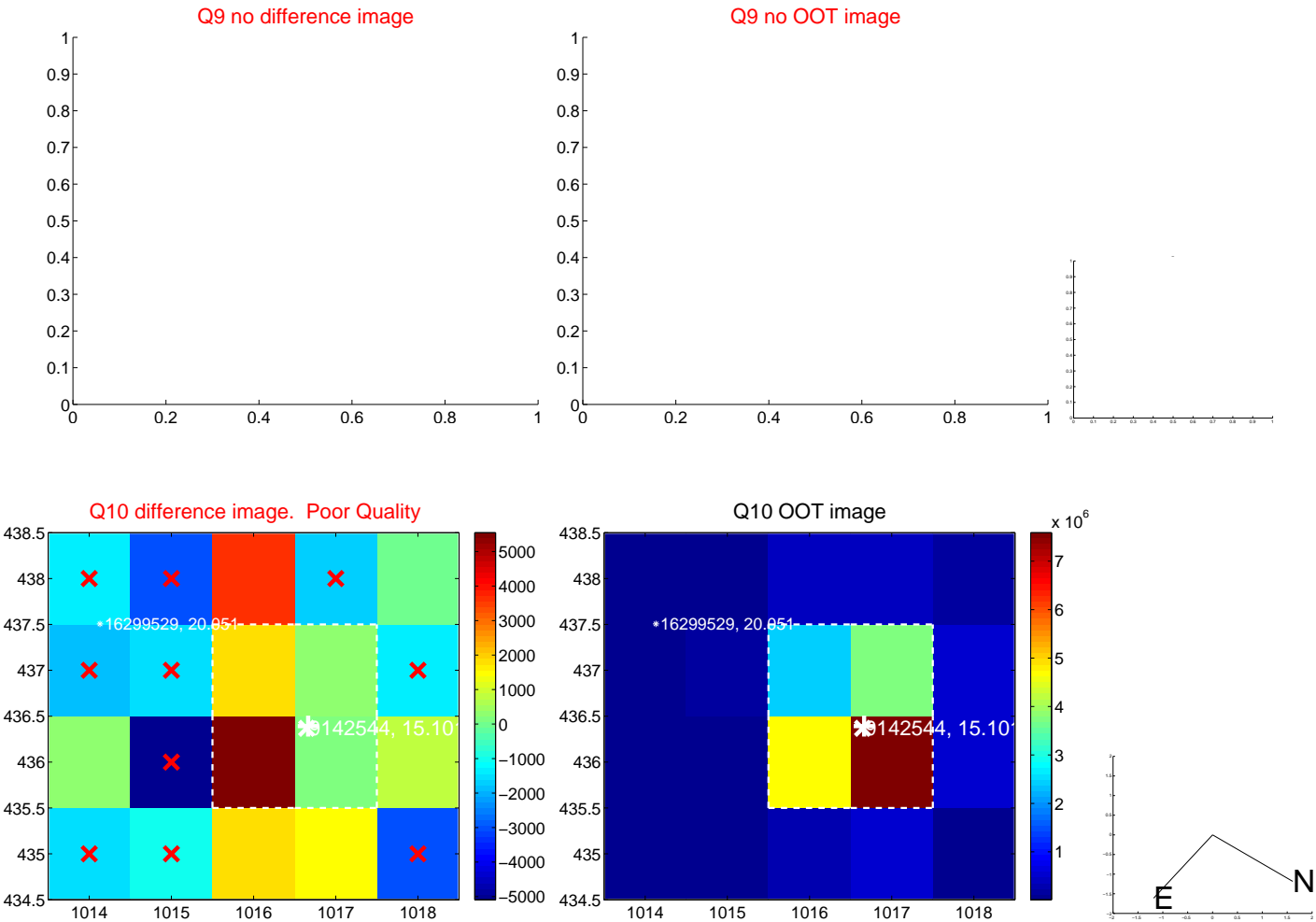
Q8 no difference image



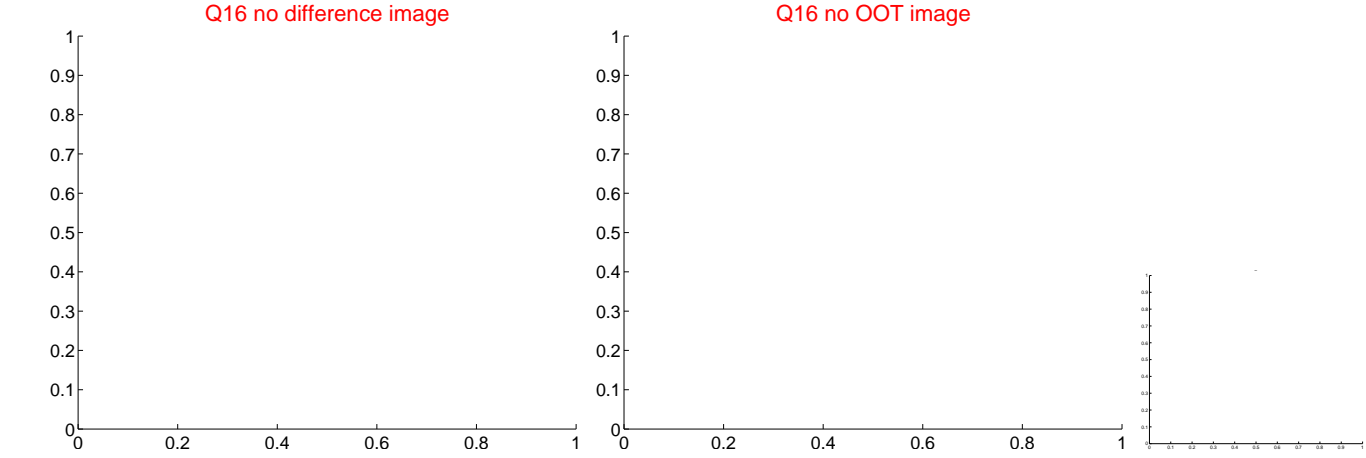
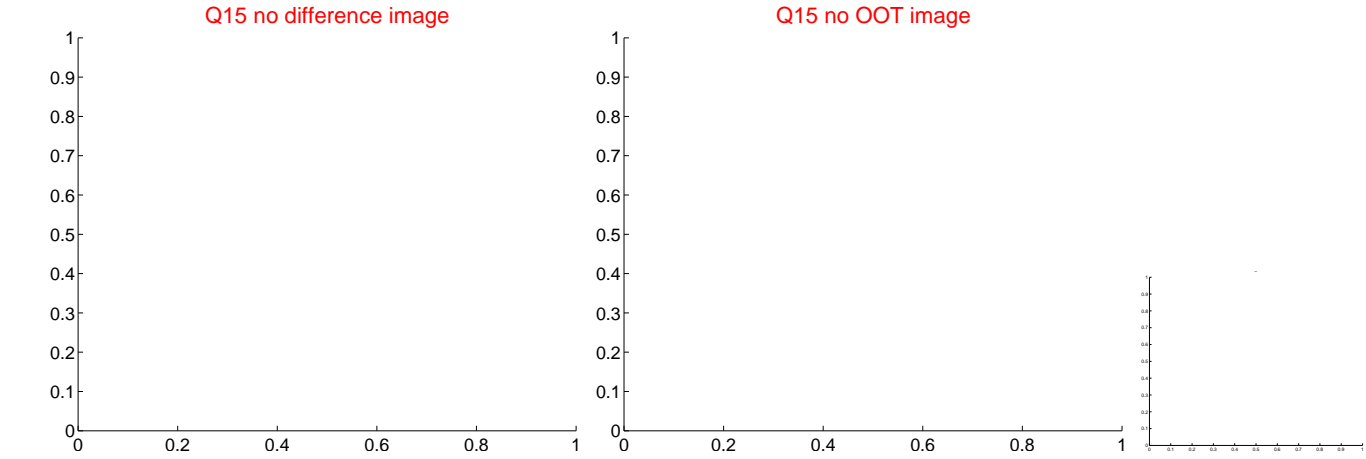
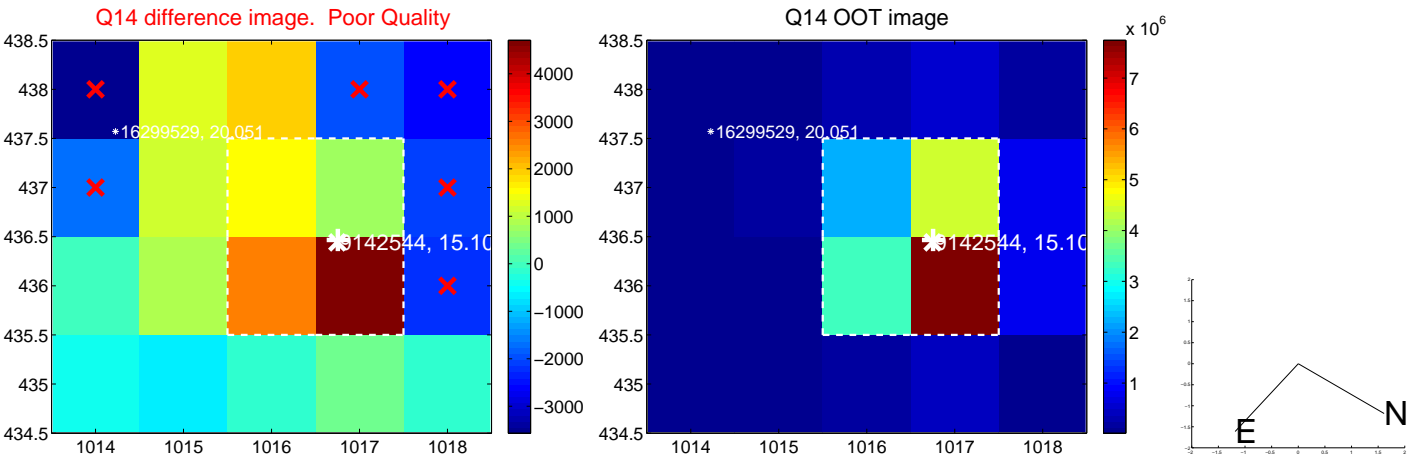
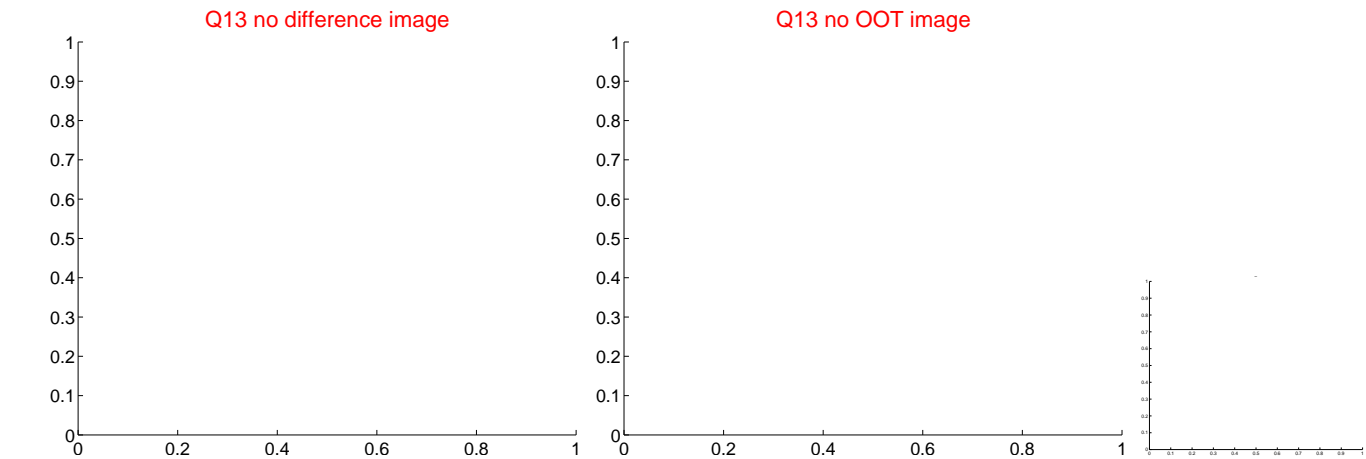
Q8 no OOT image



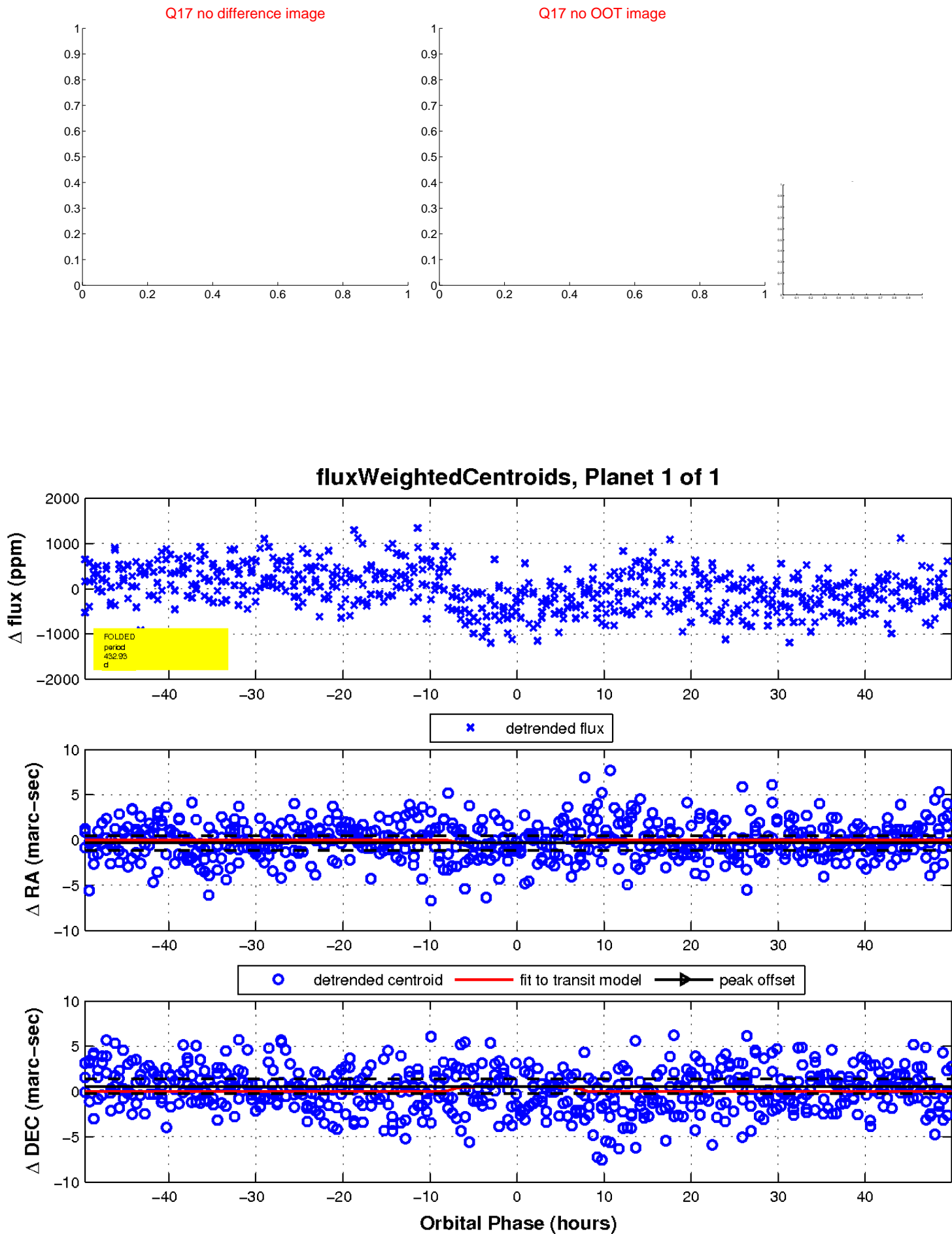
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

