

# KIC 002857607

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002857607-01	OBS	4659.01	41.868702	146.965105	164.0	5.676	10.9	11.5	0.84	5852	1.24	13.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002857607-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

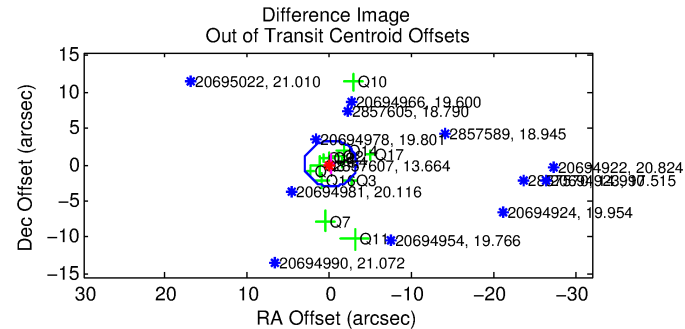
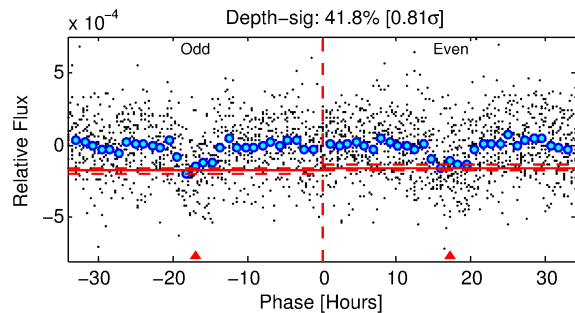
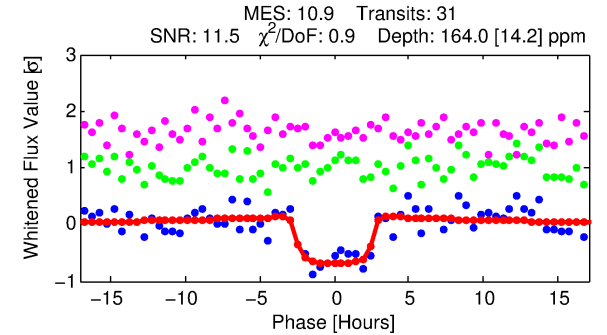
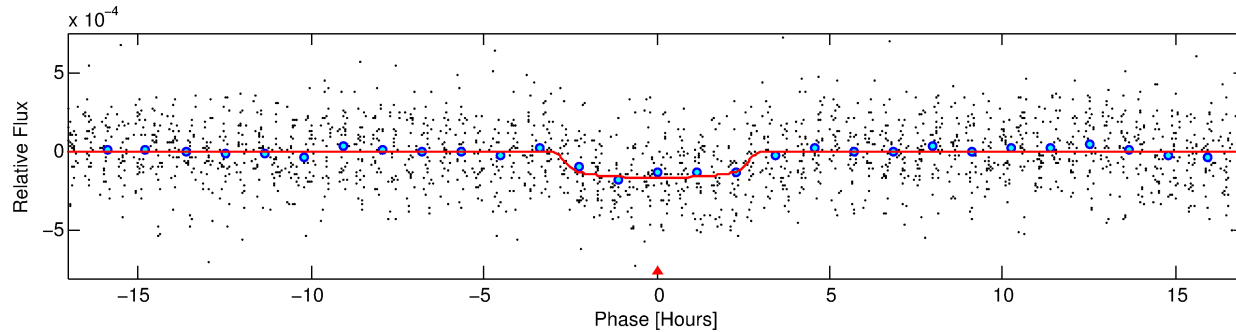
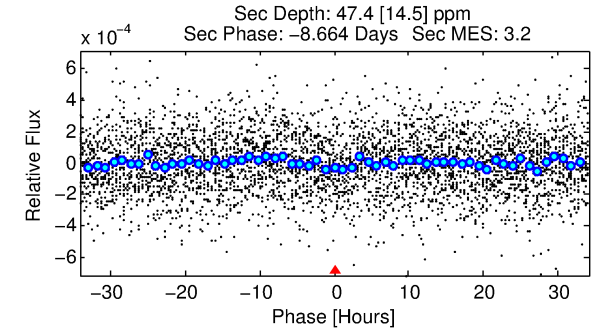
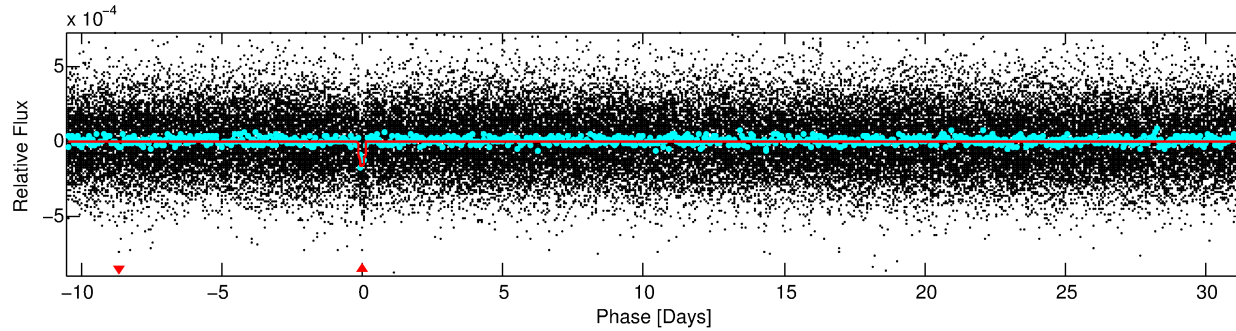
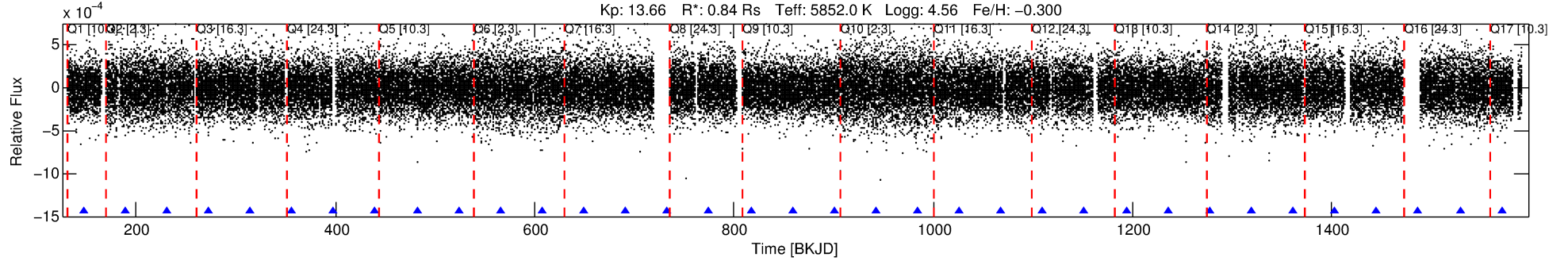
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002857607-01

No Significant Match Found

# DV One-Page Summary

KIC: 2857607 Candidate: 1 of 1 Period: 41.869 d  
KOI: K04659.01 Corr: 0.934



## DV Fit Results:

Period = 41.86870 [0.00043] d  
Epoch = 146.9651 [0.0086] BKJD  
Rp/R\* = 0.0136 [0.0065]  
a/R\* = 28.46 [67.92]  
b = 0.88 [0.63]  
Seff = 13.91 [4.88]  
Teq = 492 [43] K  
Rp = 1.24 [0.68] Re  
a = 0.2300 [0.0522] AU  
Ag = 892.19 [941.06] [0.95σ]  
Teffp = 4161 [1047] K [3.50σ]

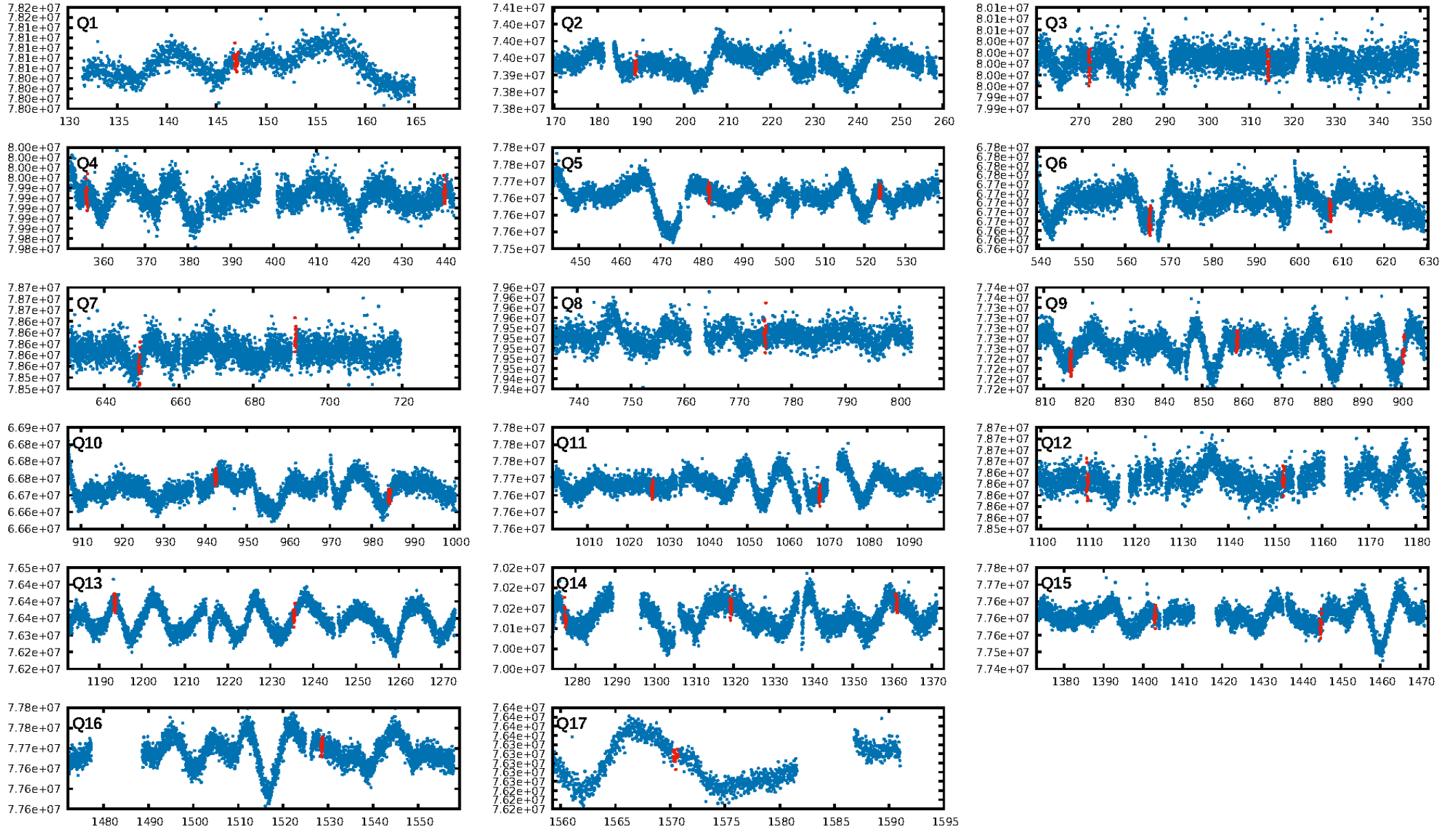
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 77.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.97e-24  
RollingBand-fgt: 1.00 [29/29]  
GhostDiagnostic-chr: -1.712  
Centroid-sig: 74.2%  
Centroid-so: 0.660 arcsec [0.70σ]  
OotOffset-rm: 0.188 arcsec [0.18σ]  
KicOffset-rm: 0.028 arcsec [0.03σ]  
OotOffset-st: 4/4/3/3 [14]  
KicOffset-st: 4/4/3/3 [14]  
DiffImageQuality-fgm: 0.50 [7/14]  
DiffImageOverlap-fno: 1.00 [17/17]

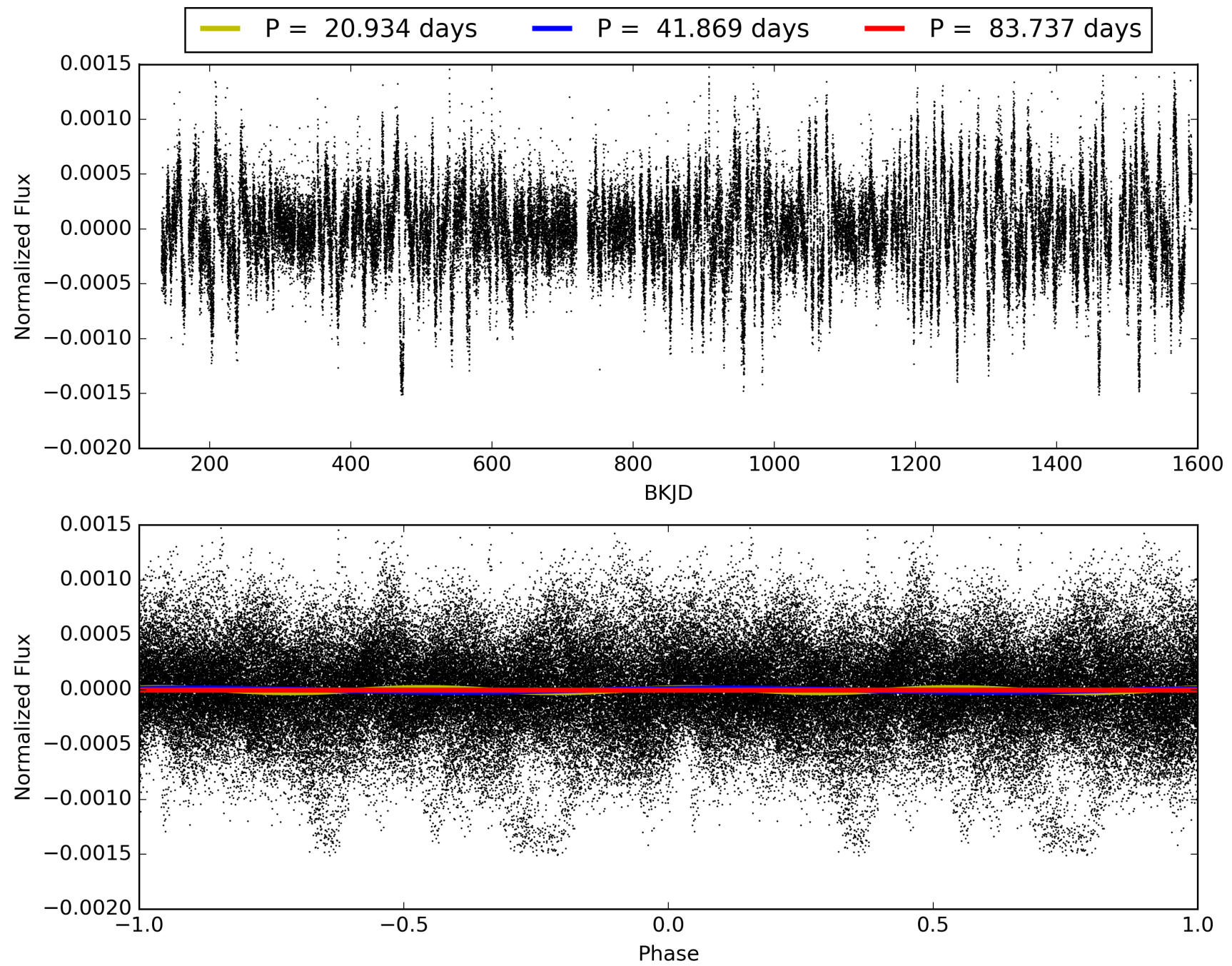
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 19:29:51 Z

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

# TCE 002857607-01, PDC Light Curves

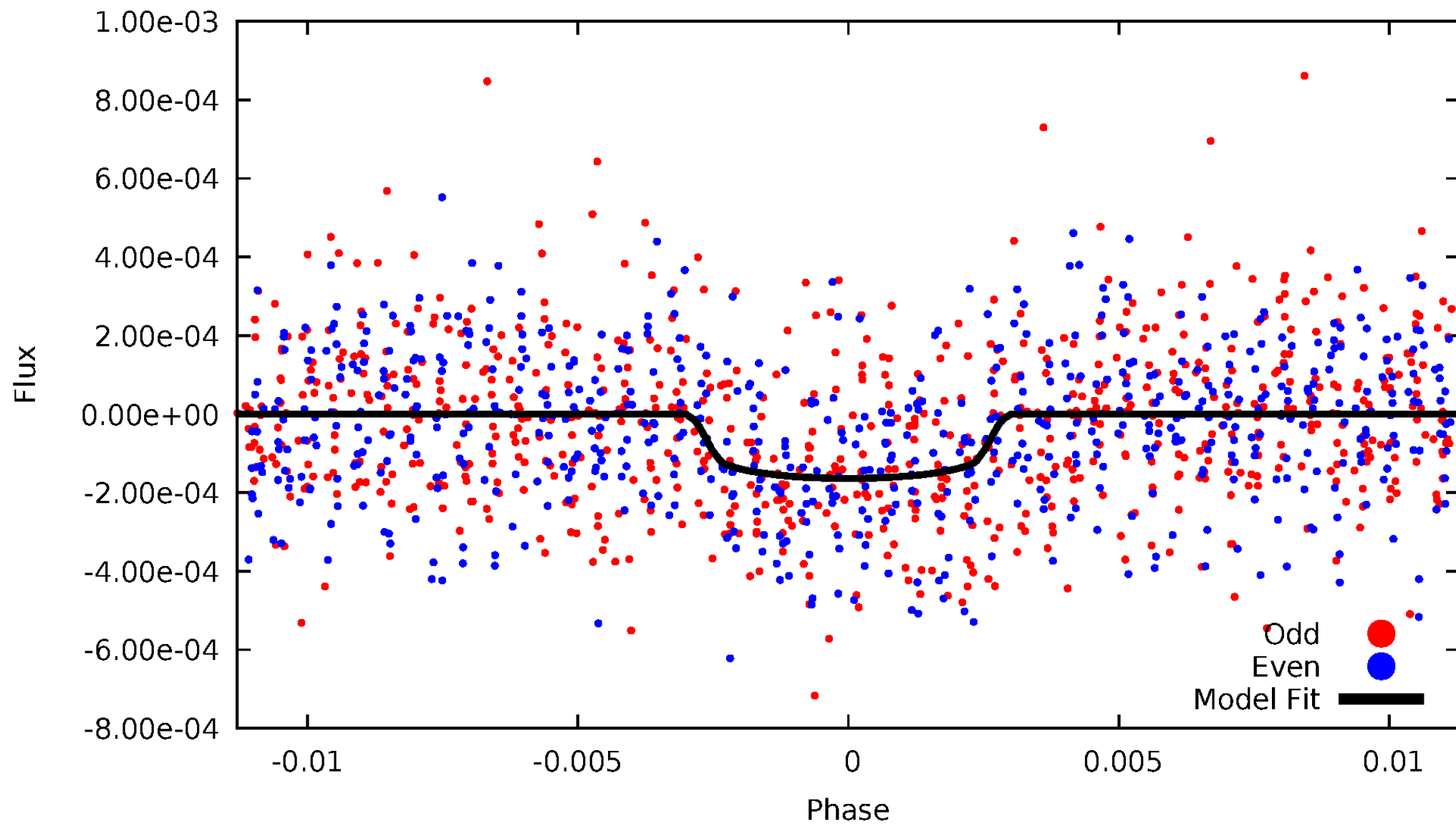


TCE 002857607-01



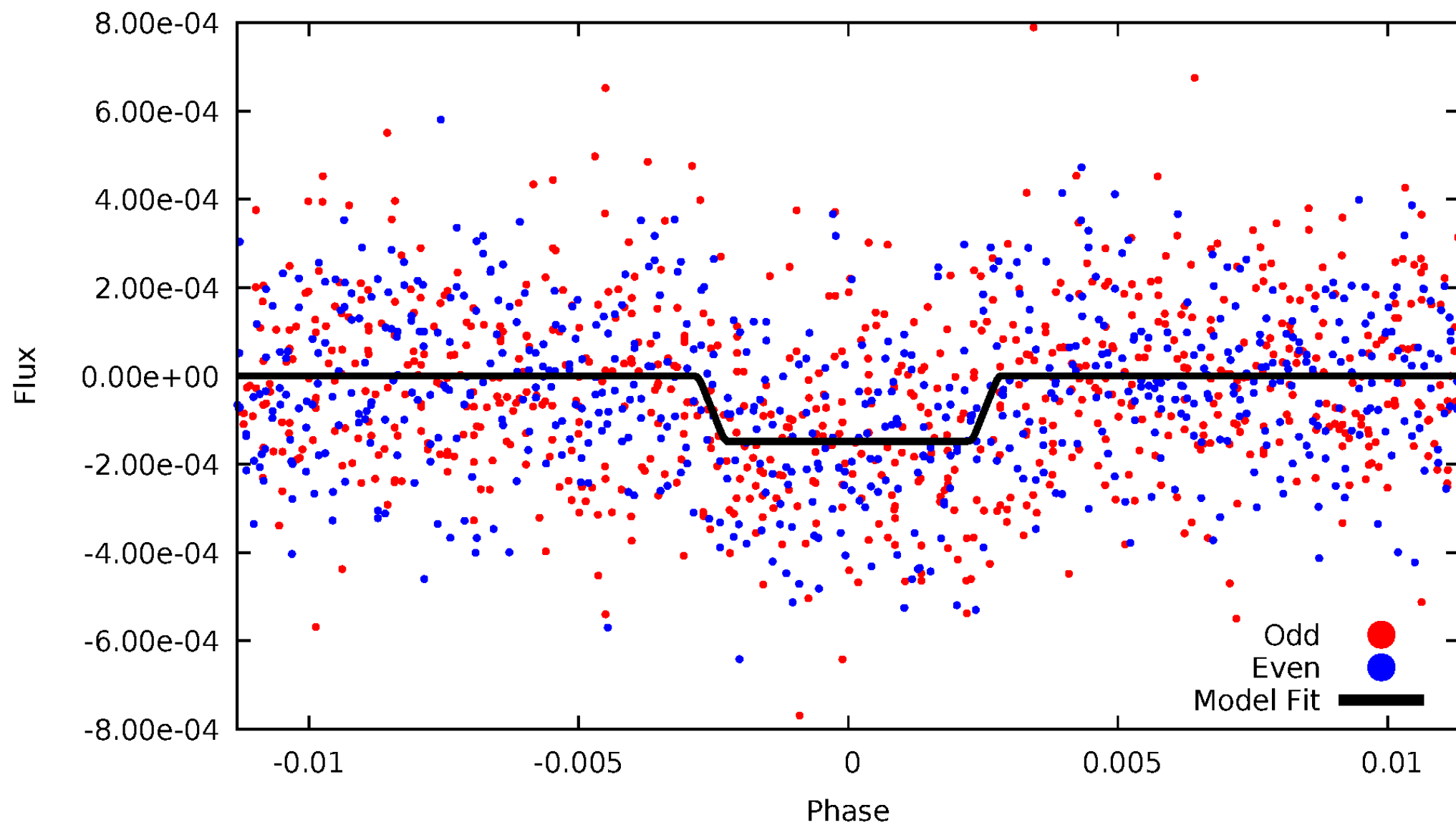
# DV Odd/Even

TCE 002857607-01



# ALT Odd/Even

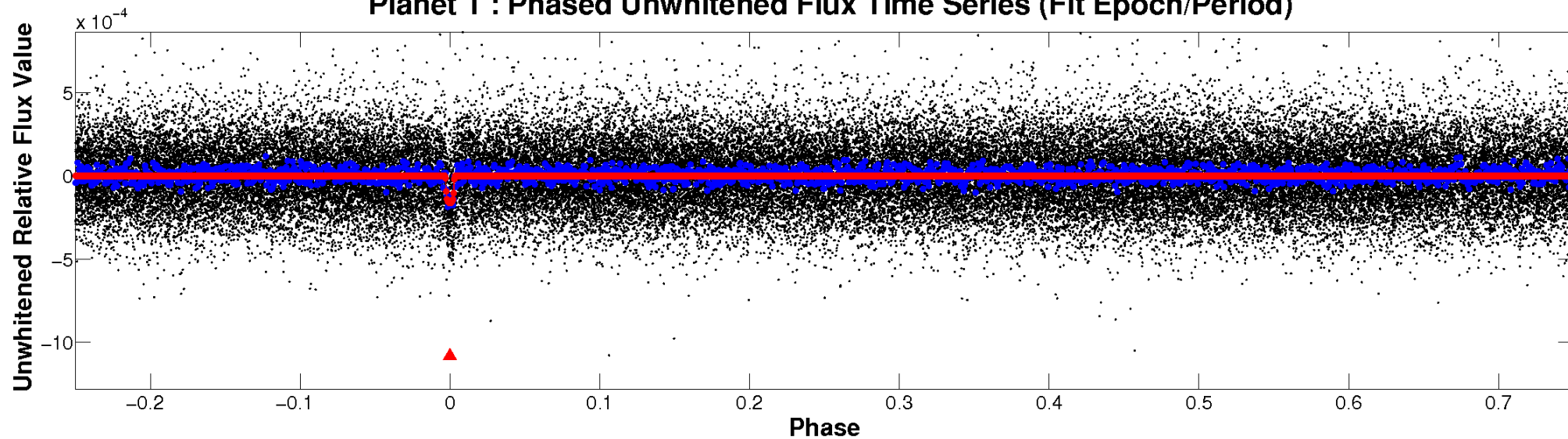
TCE 002857607-01



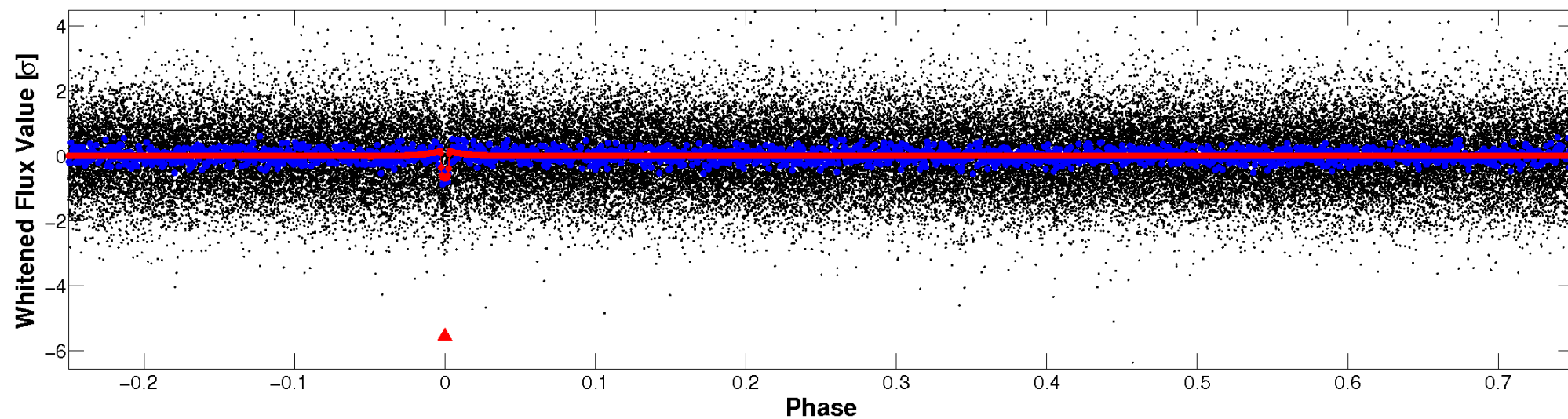


# Non-Whitened Vs. Whitened Light Curve

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

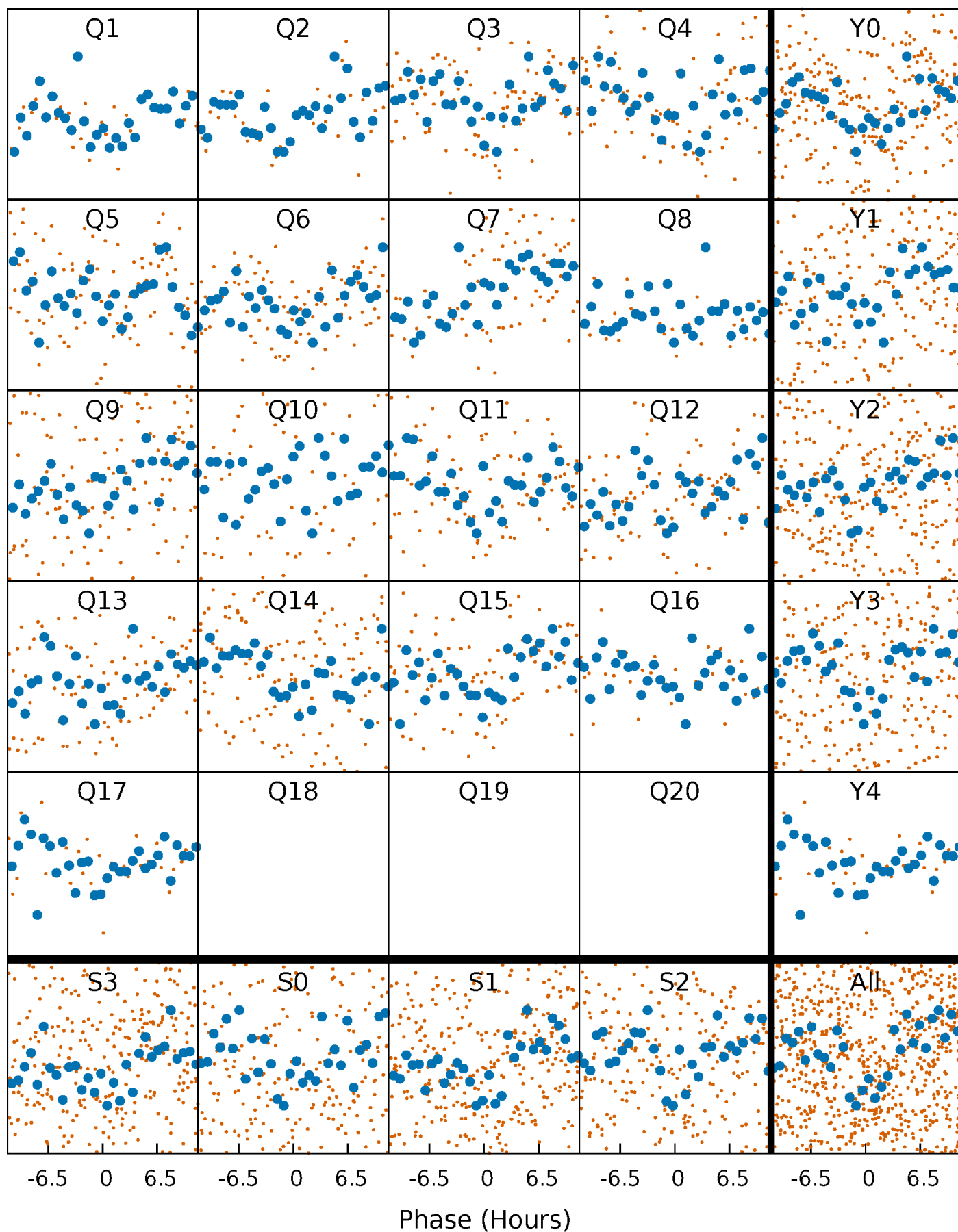


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

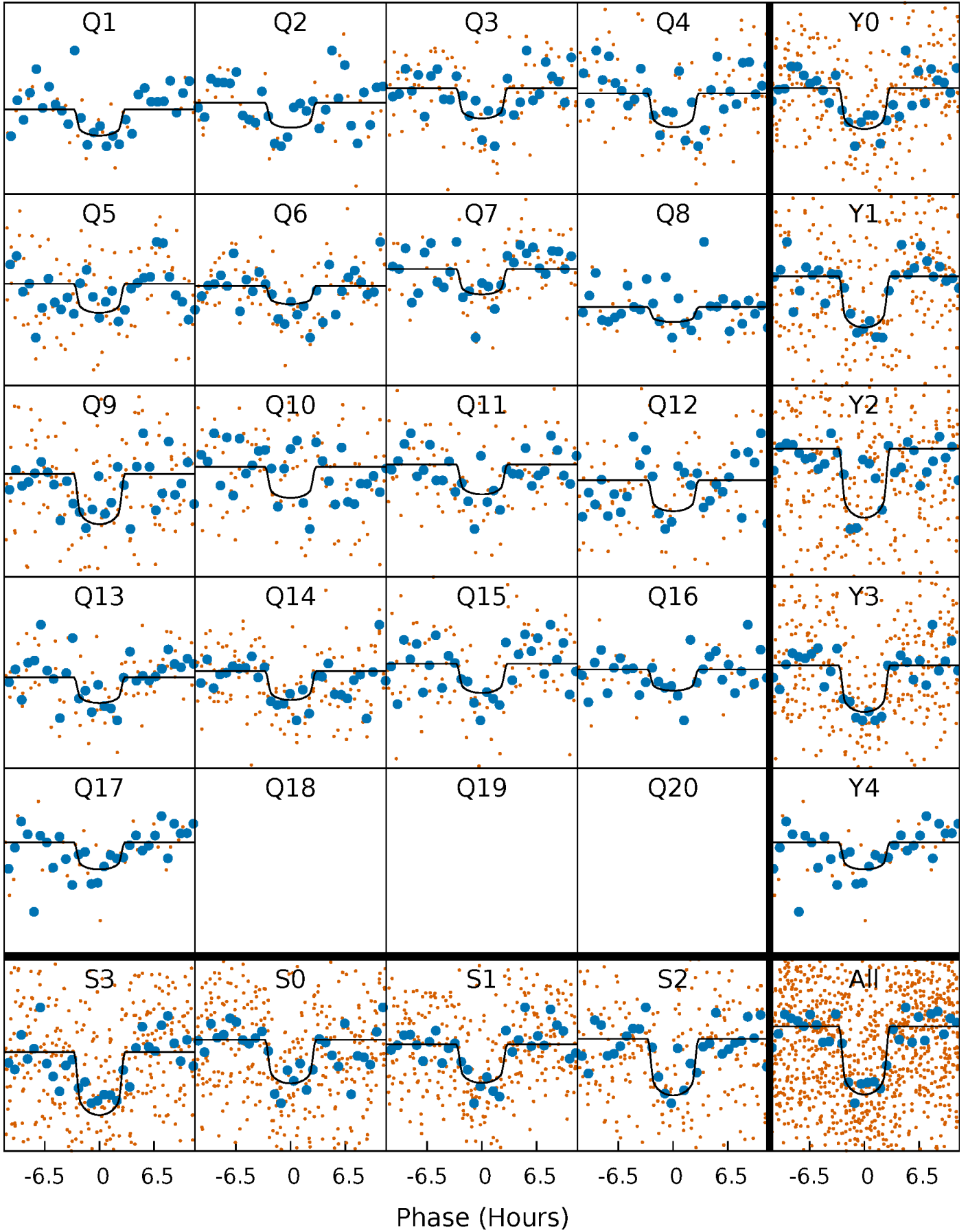
TCE 002857607-01   P= 41.868702 Days    $T_0=146.965105$  (BKJD)





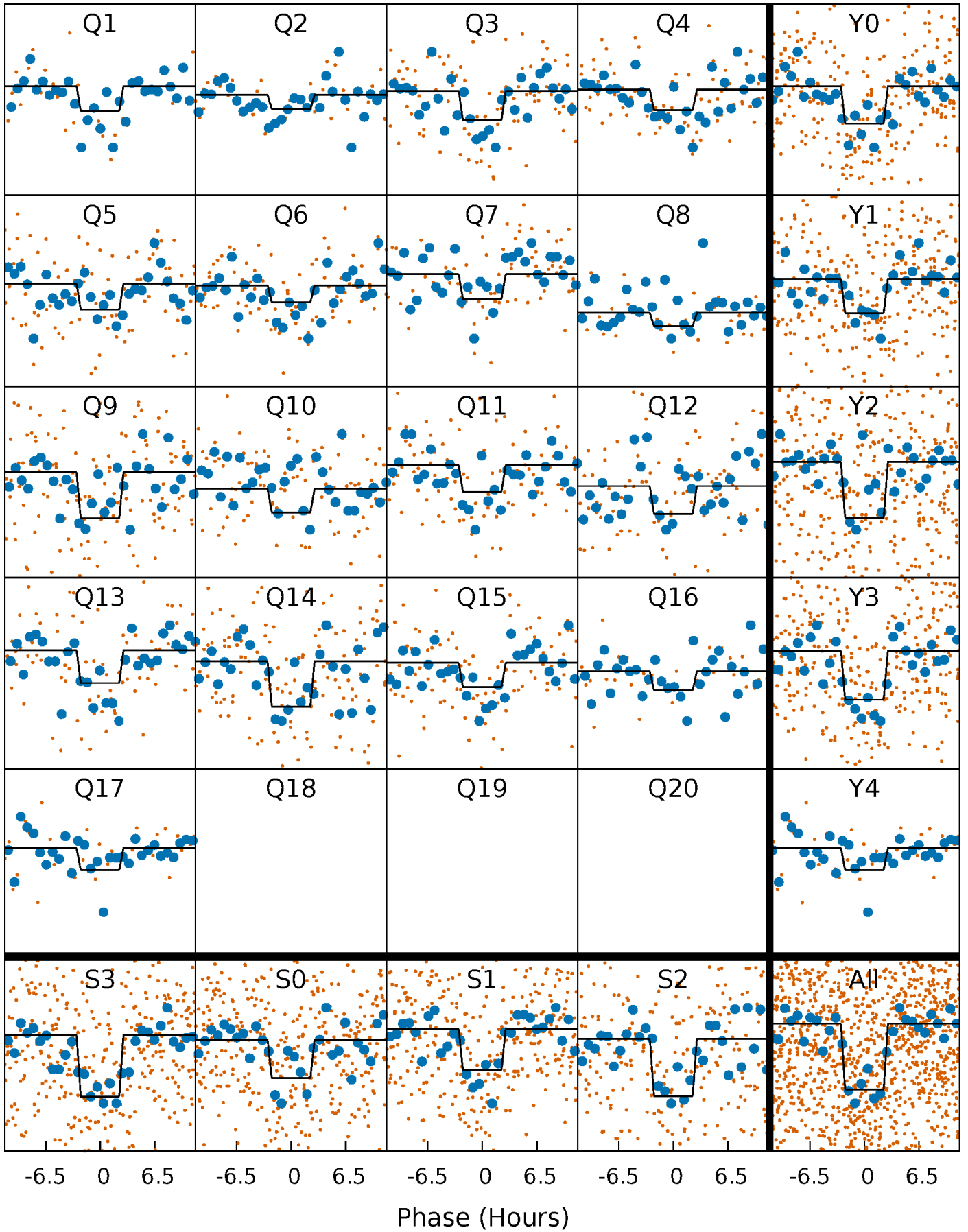
# DV Quarter-Phased Transit Curves

TCE 002857607-01   P= 41.868702 Days    $T_0=146.965105$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

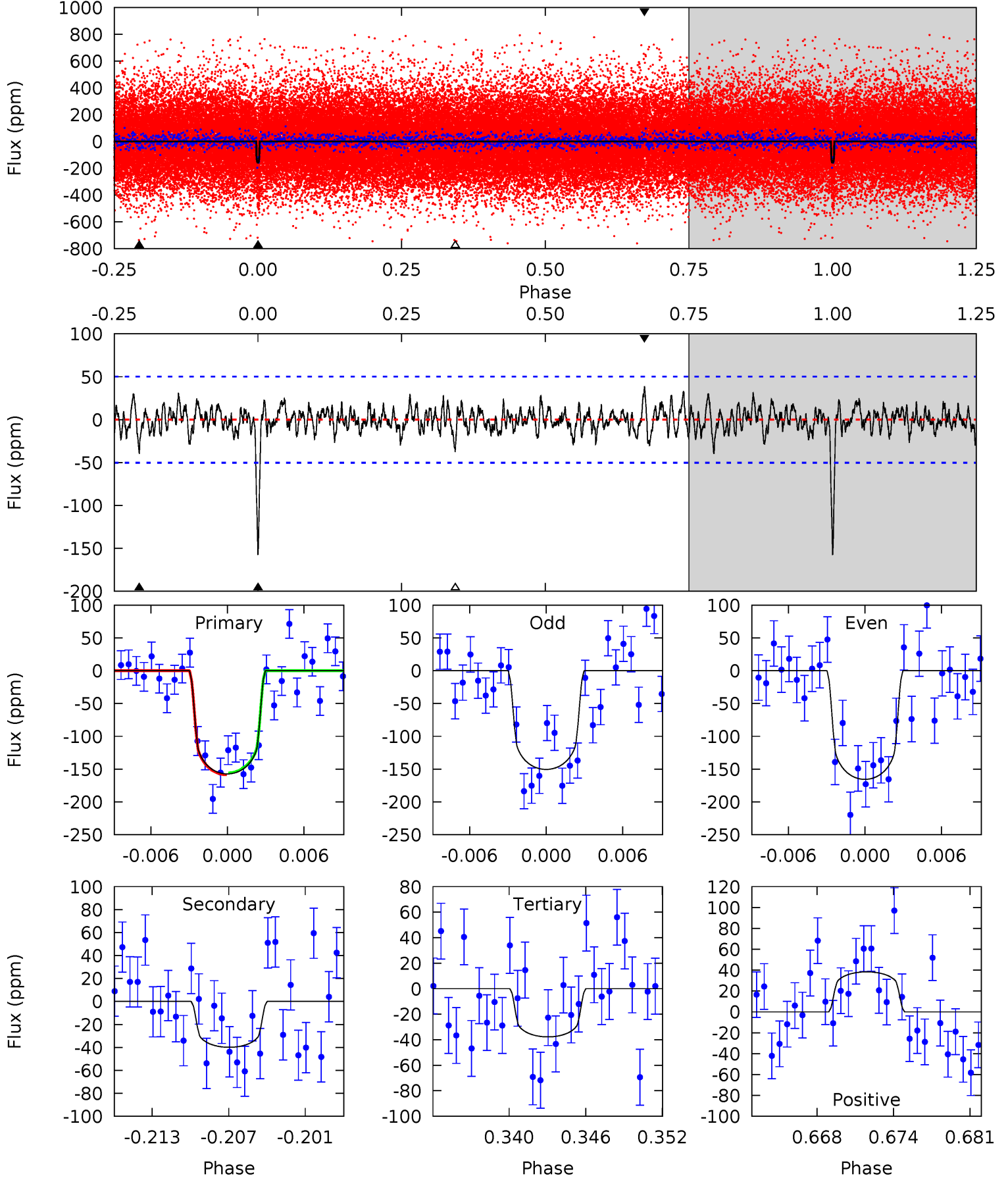
TCE 002857607-01 P= 41.867610 Days  $T_0=146.988802$  (BKJD)



# DV Model-Shift Uniqueness Test

002857607-01, P = 41.868702 Days, E = 105.096403 Days

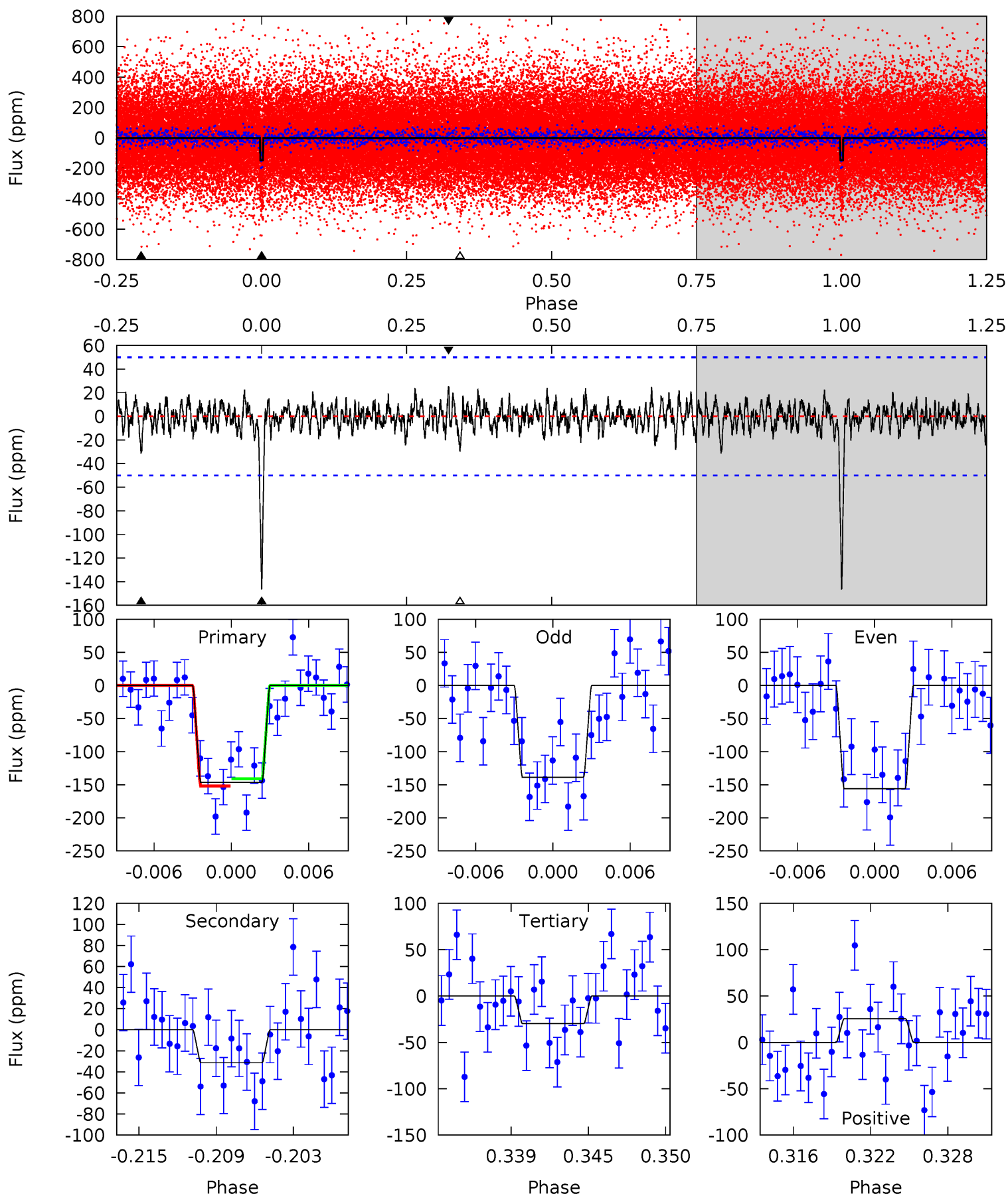
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.0	4.07	3.85	3.91	5.12	2.74	1.16	12.2	12.1	0.22	0.16	0.77	1.02	0.20	0.14



# Alt Model-Shift Uniqueness Test

002857607-01,  $P = 41.867610$  Days,  $E = 105.121192$  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
15.0	3.21	3.06	2.62	5.13	2.77	0.88	12.0	12.4	0.15	0.59	0.88	1.03	0.15	0.55



### Stellar Parameters For KIC 002857607

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5852^{+140}_{-158}$	$4.559^{+0.035}_{-0.184}$	$-0.300^{+0.300}_{-0.300}$	$0.837^{+0.223}_{-0.074}$	$0.928^{+0.099}_{-0.109}$	$2.230^{+0.406}_{-1.033}$
	+2%/-3%	+1%/-4%	+100%/-100%	+27%/-9%	+11%/-12%	+18%/-46%
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 002857607-01 / KOI 4659.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-40 \pm 10$	$1.32^{+0.66}_{-0.55}$	$702^{+46}_{-28}$	$4180^{+1127}_{-528}$	$638^{+1406}_{-356}$
Alt.	$-31 \pm 10$	$1.20^{+0.61}_{-0.60}$	$703^{+41}_{-28}$	$4163^{+1322}_{-586}$	$614^{+1785}_{-363}$

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

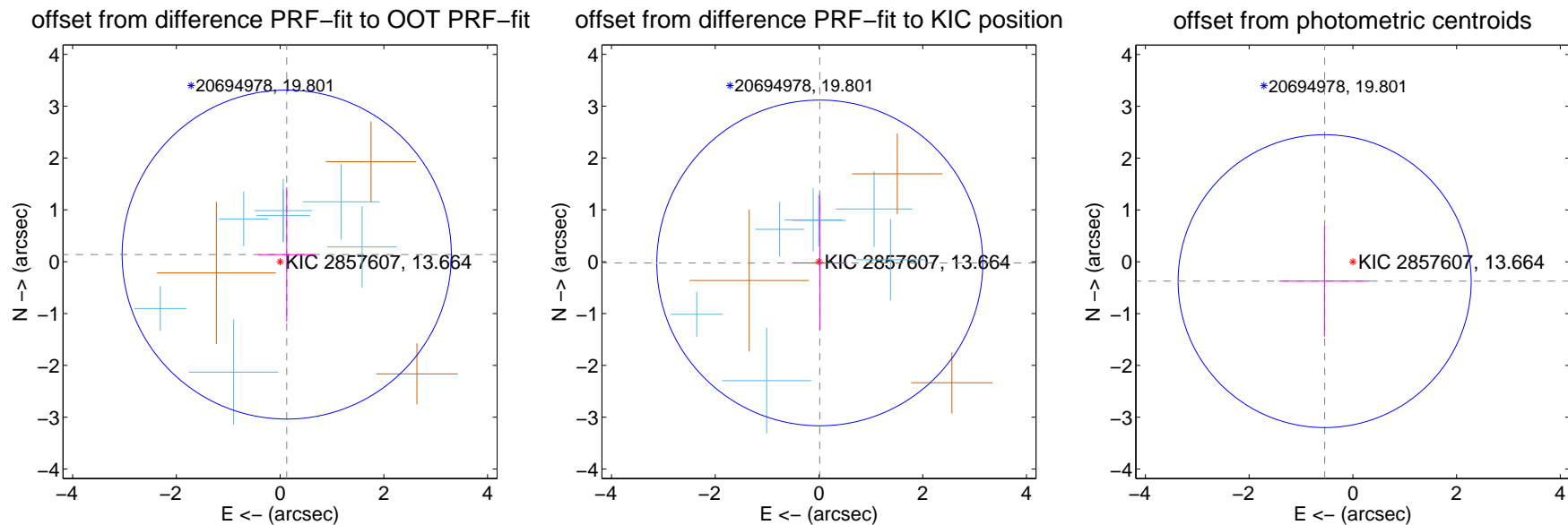
## DV Centroid Data

Supplemental centroid analysis for 002857607-01. Kepler magnitude: 13.66. Transit SNR 11.51

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

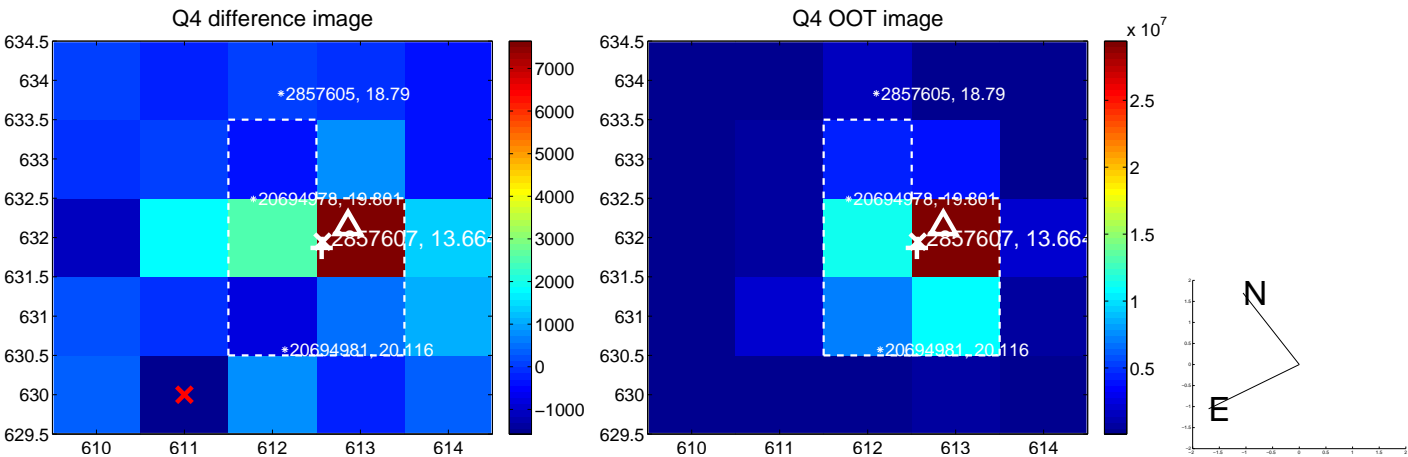
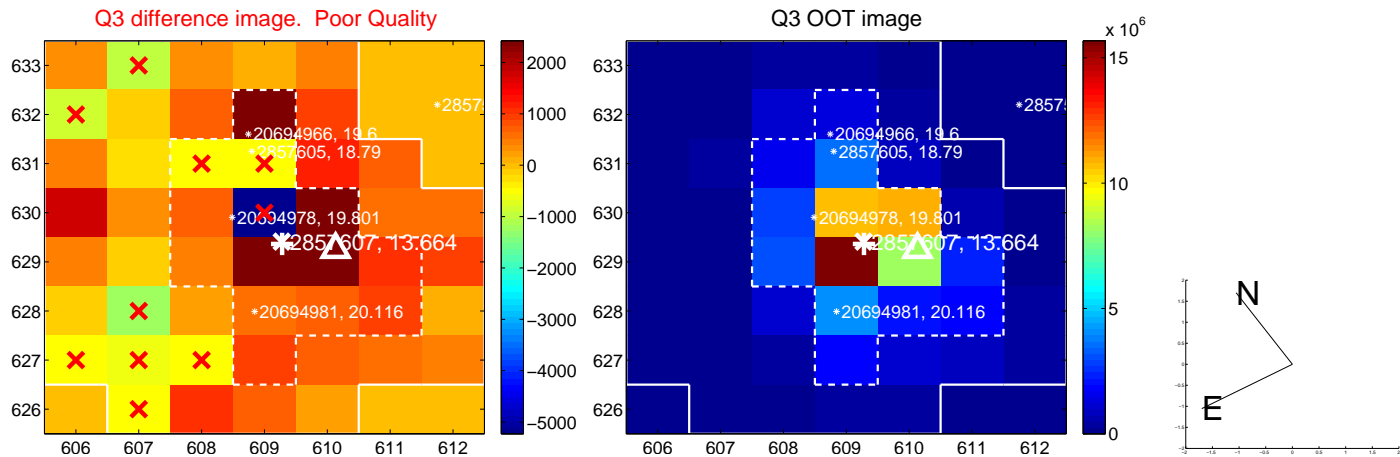
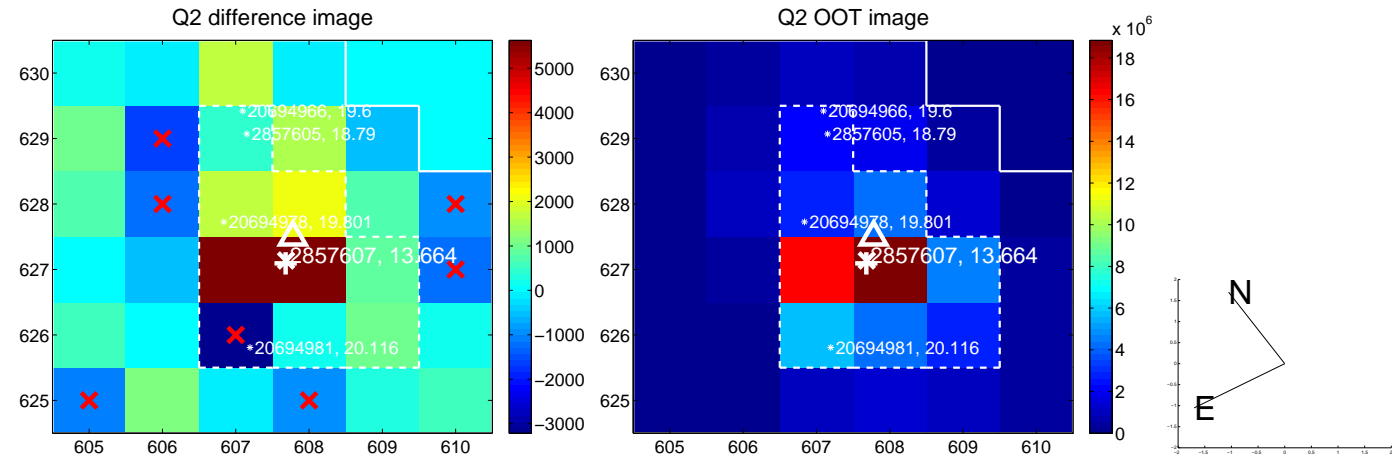
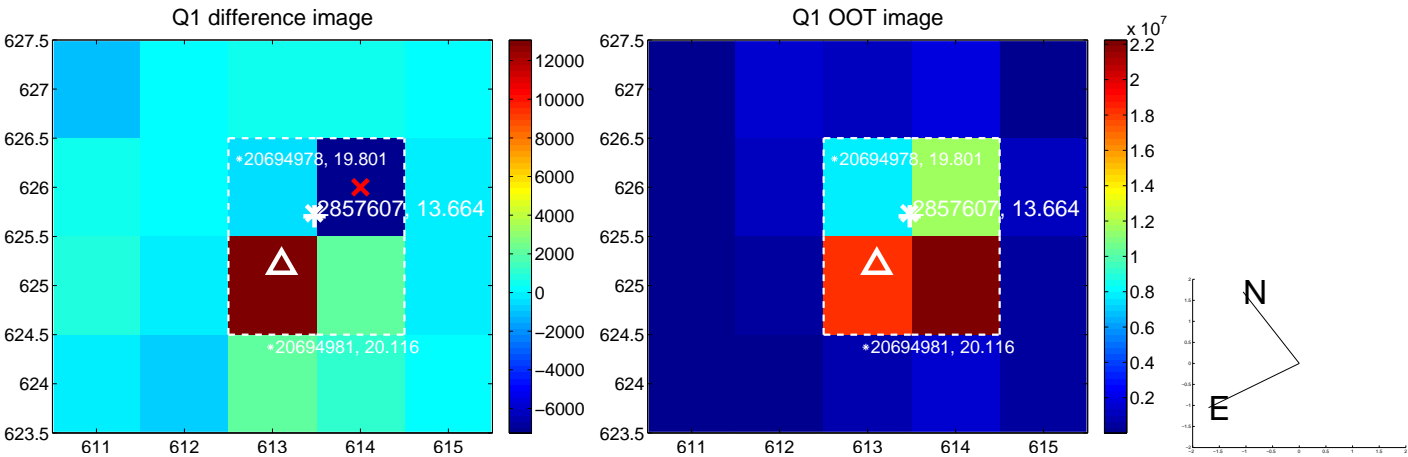
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.188 \pm 1.058$	0.18	$-0.128 \pm 0.547$	$0.137 \pm 1.293$
PRF-fit source offset from KIC position	$0.028 \pm 1.047$	0.03	$-0.016 \pm 0.519$	$-0.024 \pm 1.294$
photometric centroid source offset	$0.66 \pm 0.94$	0.70	$0.54 \pm 0.88$	$-0.37 \pm 1.07$



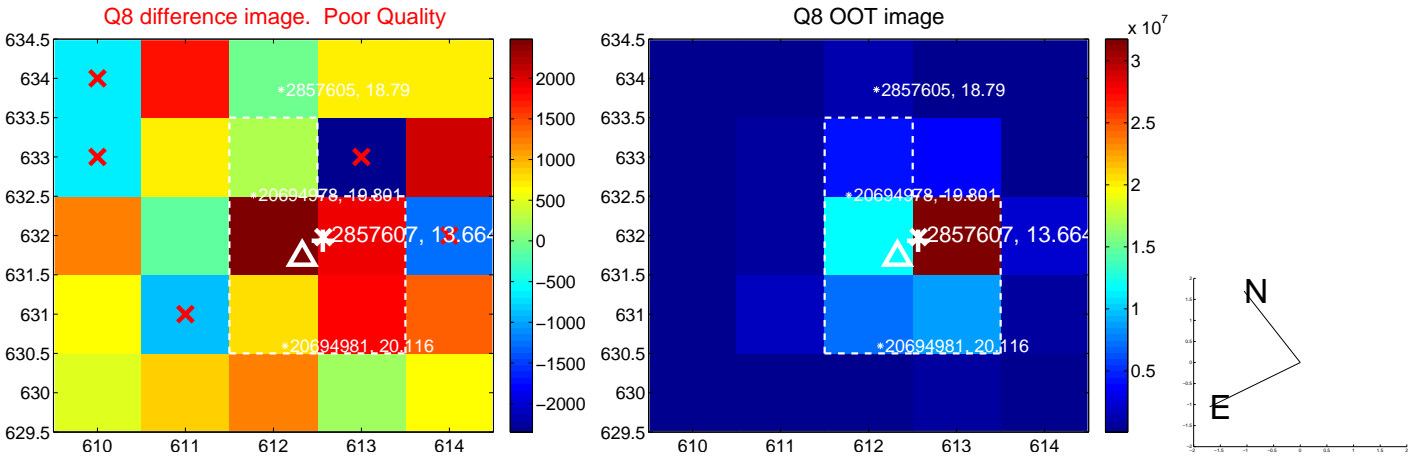
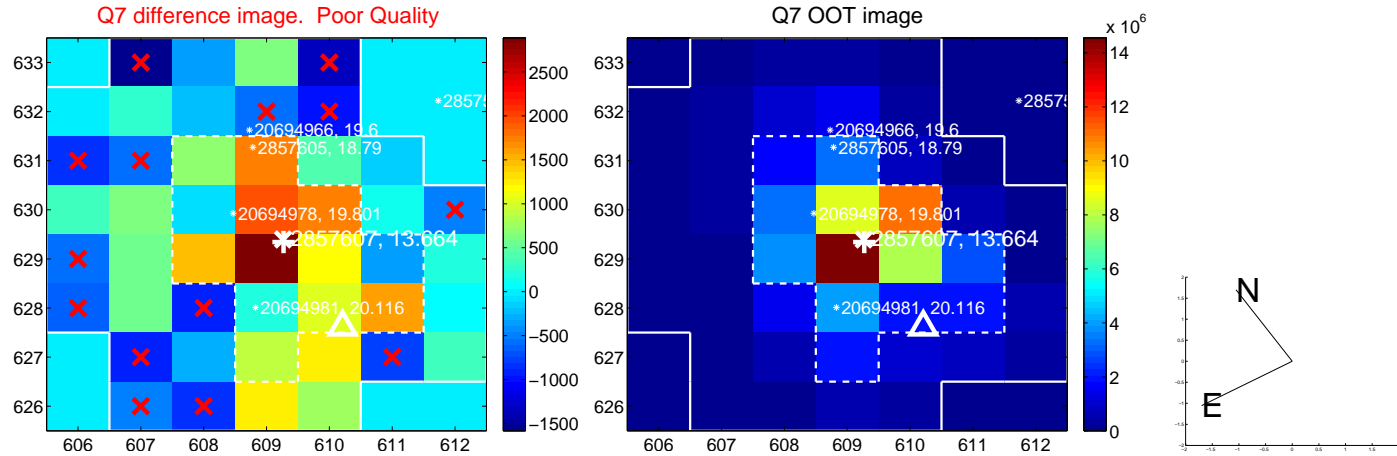
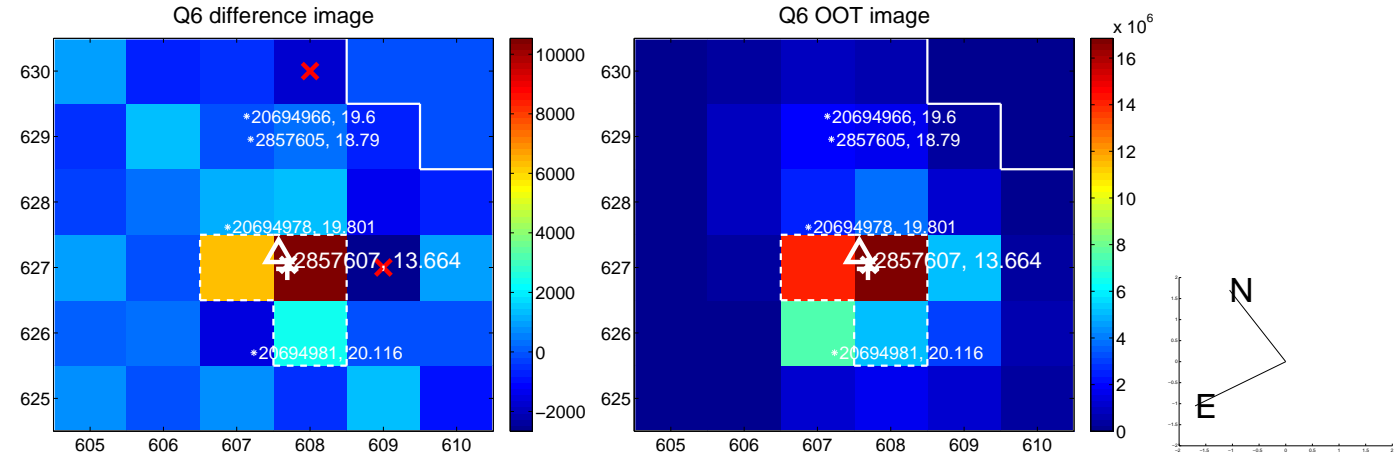
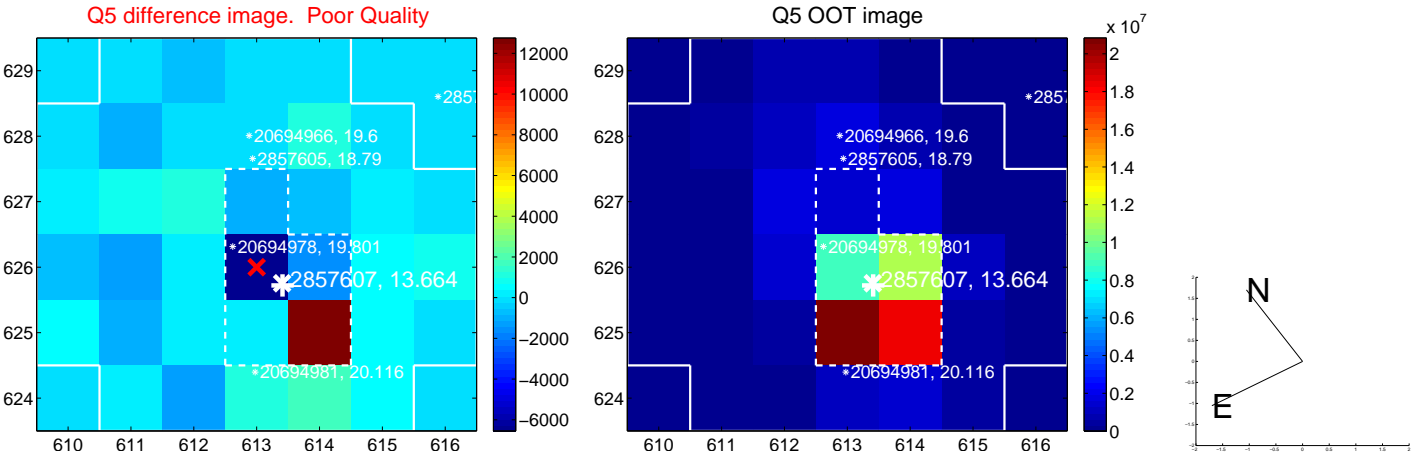
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



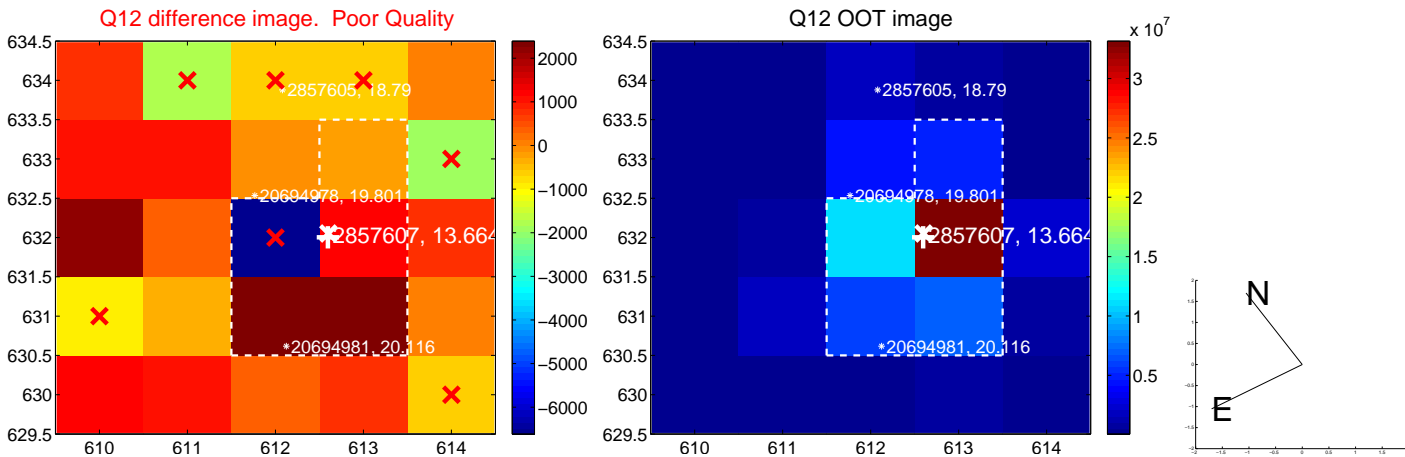
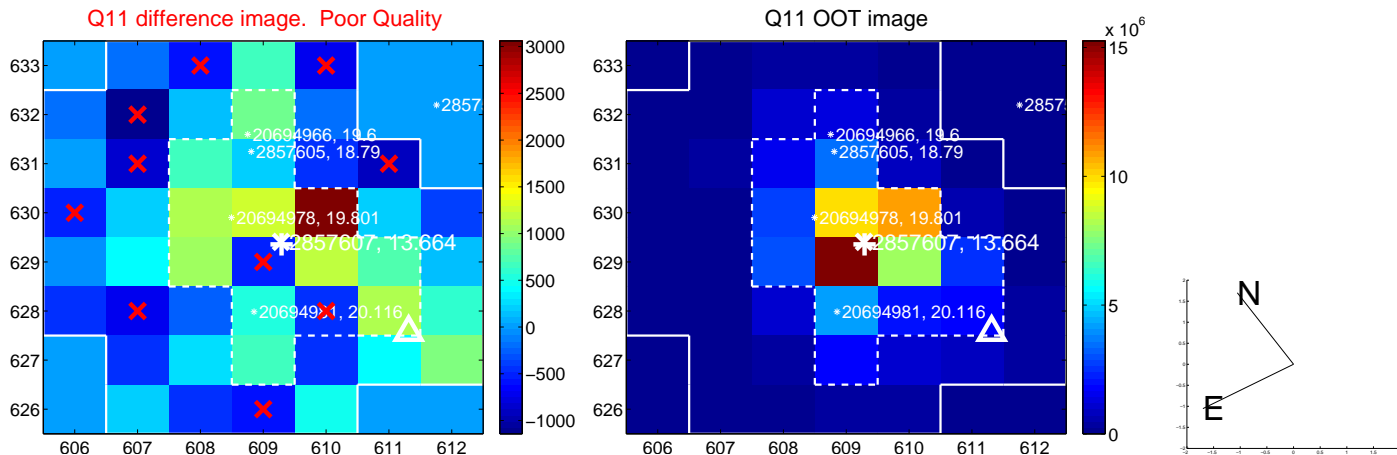
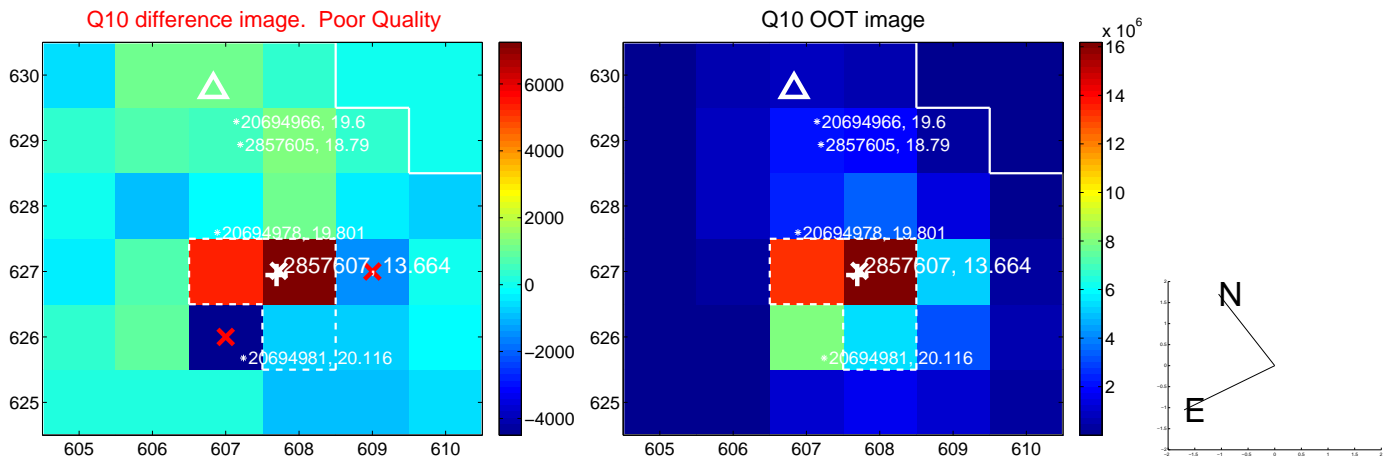
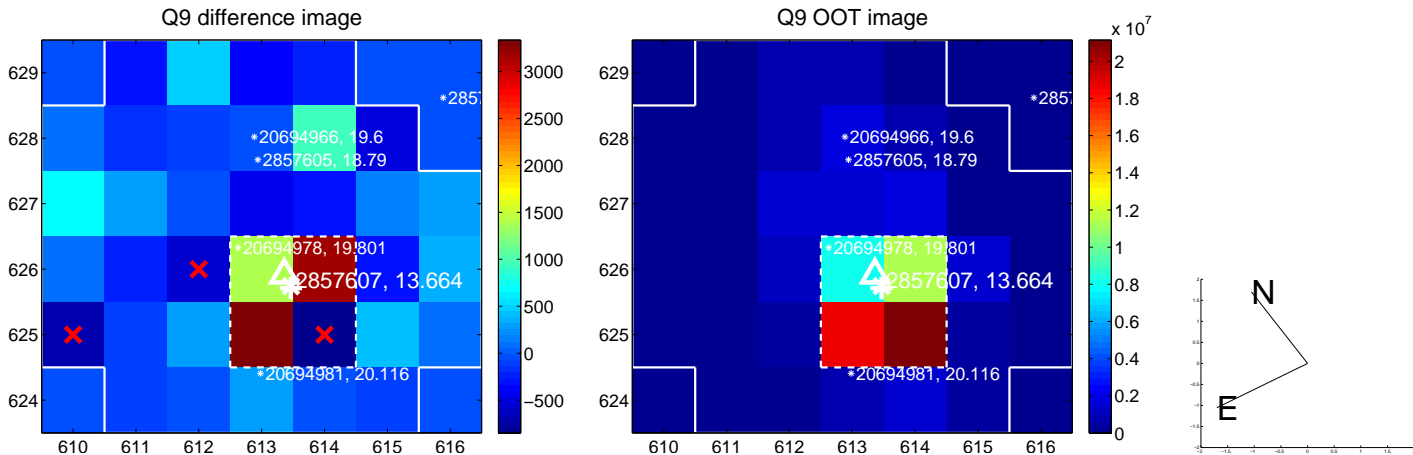
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



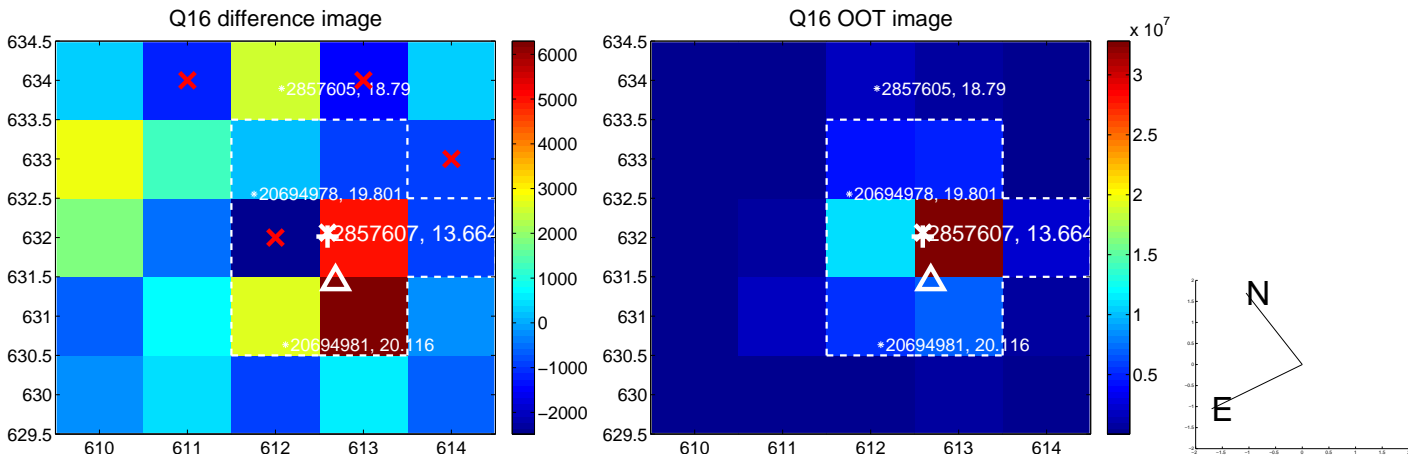
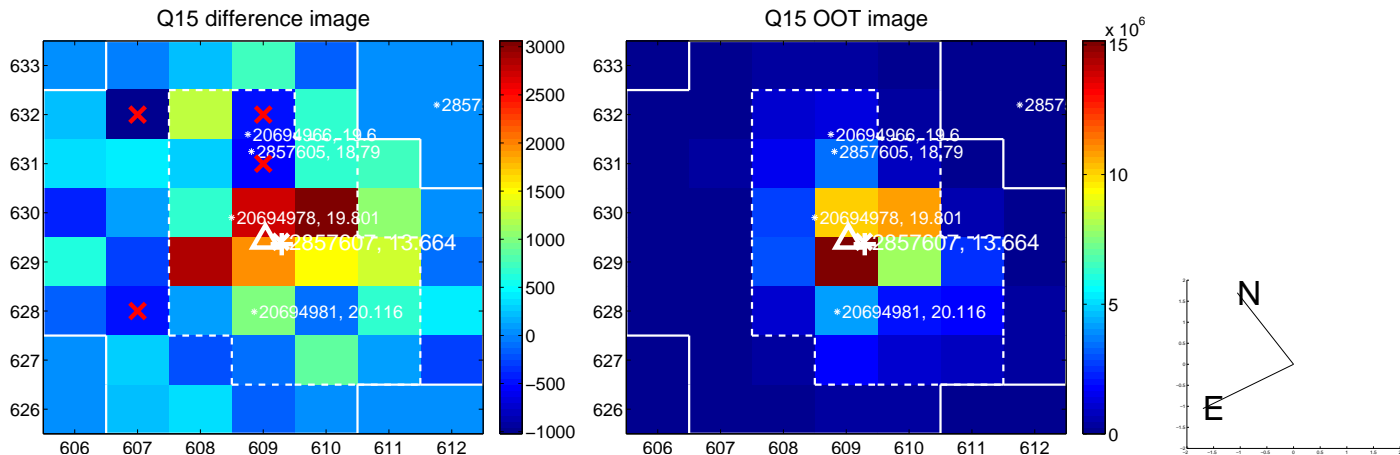
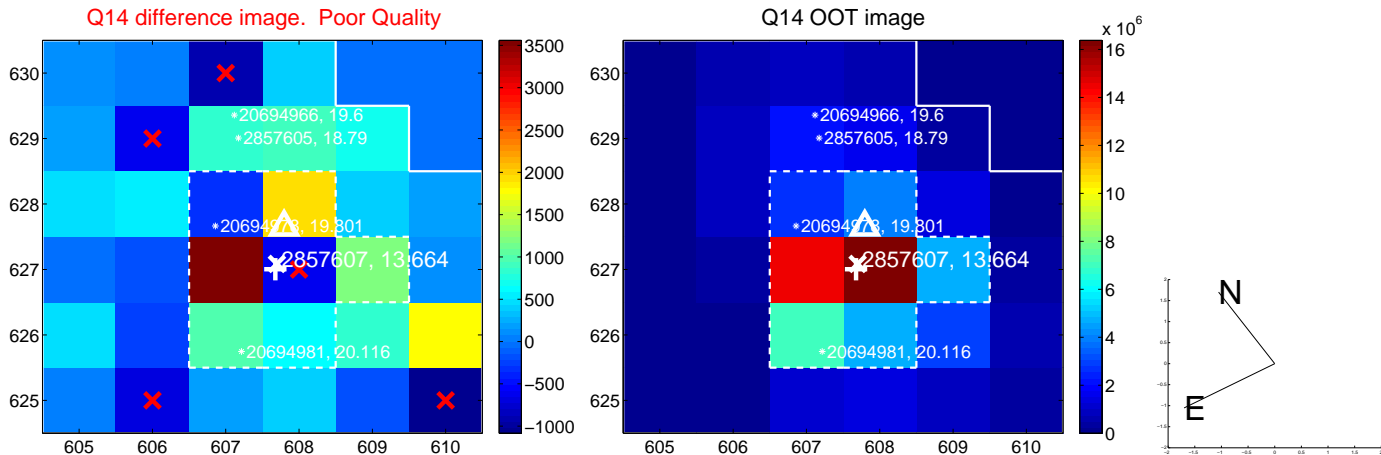
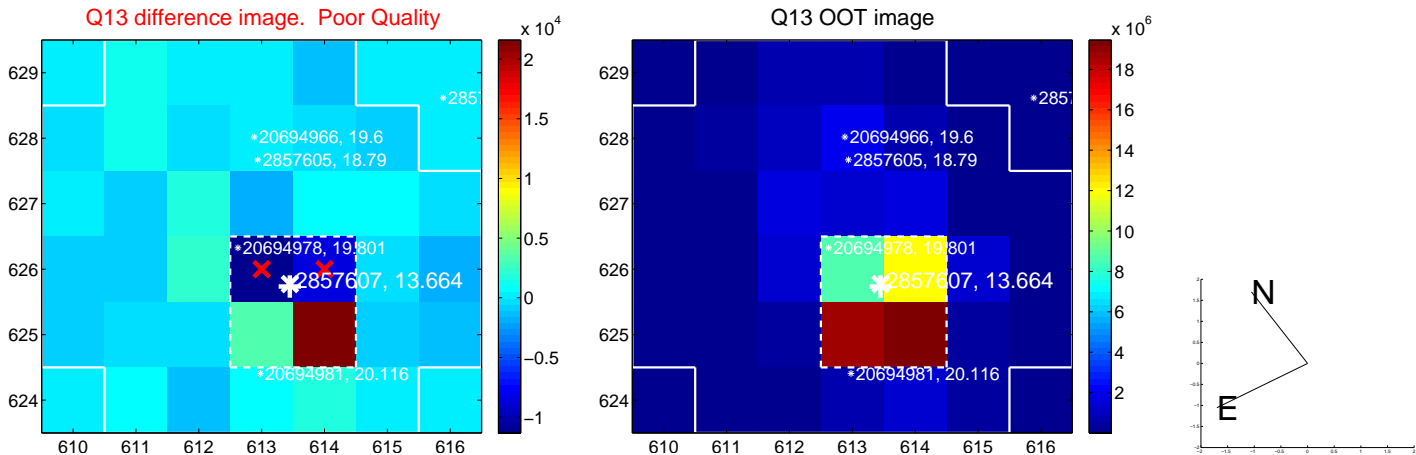
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



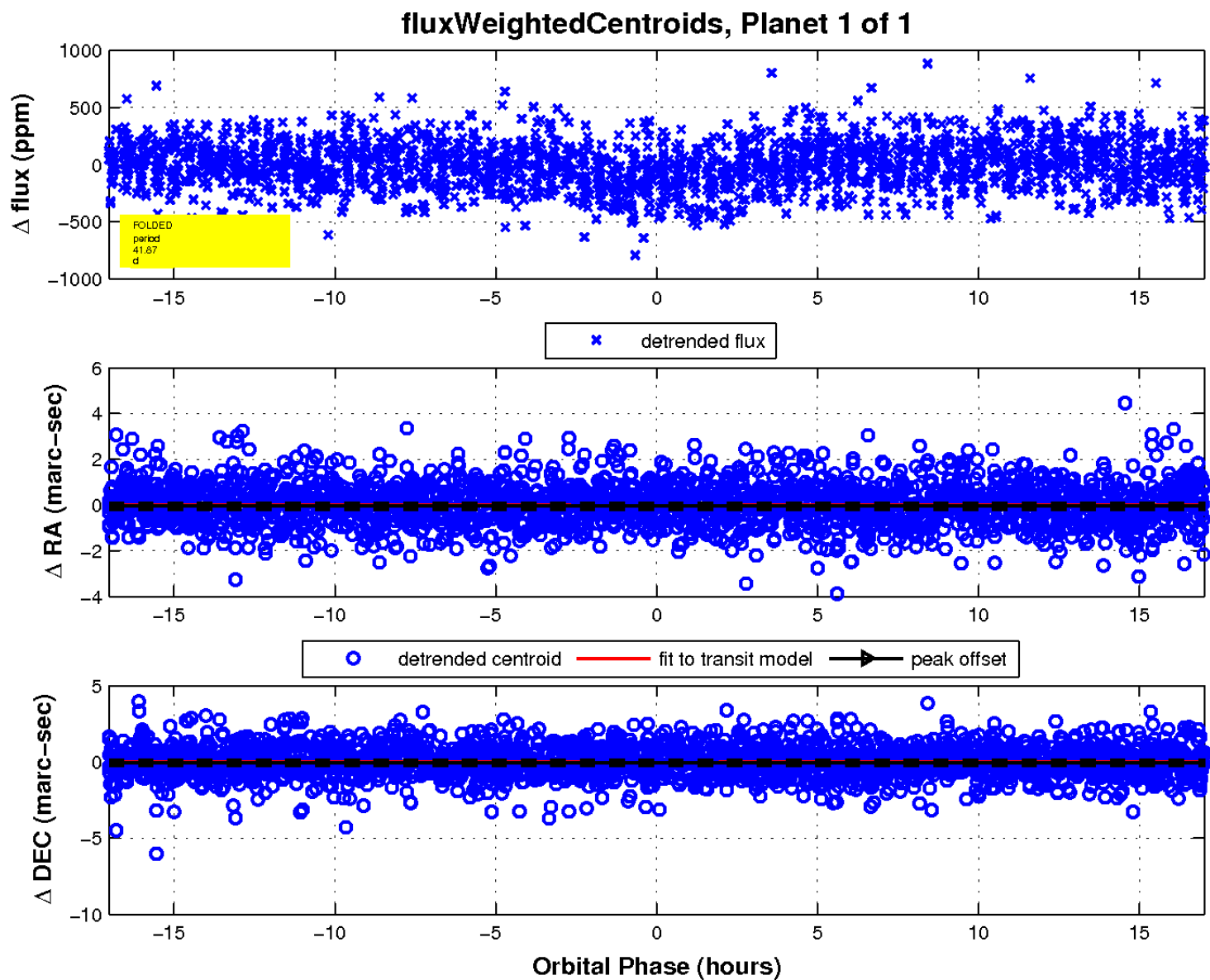
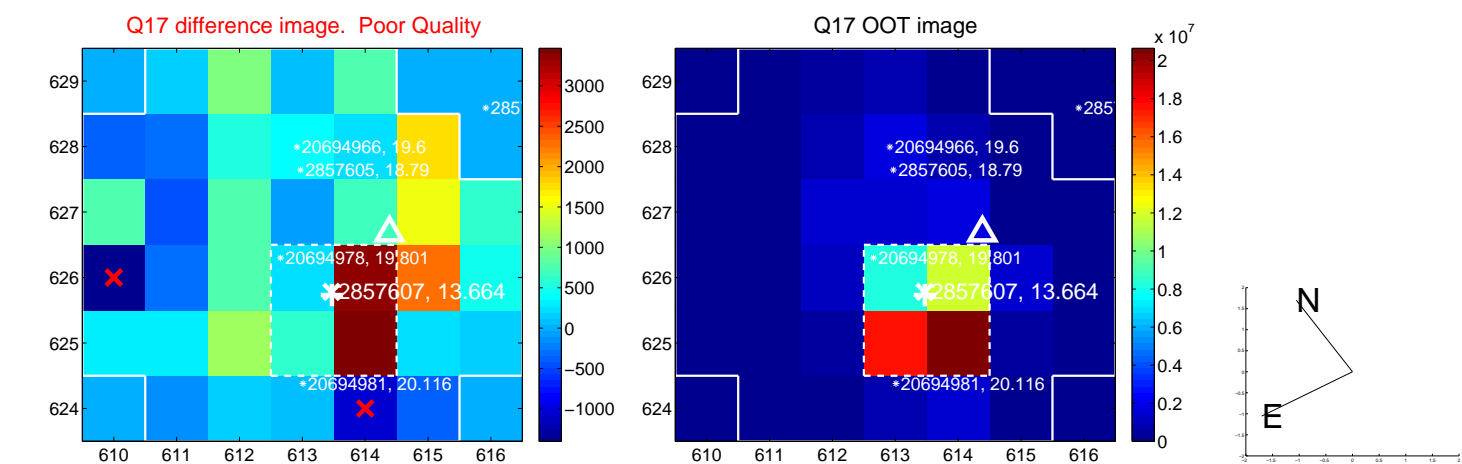
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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UKIRT Image

