

# KIC 008258160

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008258160-01	OBS	3870.01	23.627130	150.031295	8727.8	11.160	65.9	62.3	0.86	5305	13.59	23.21
008258160-02	OBS	No	23.627104	137.756486	4630.4	11.529	39.2	39.3	0.86	5305	10.38	23.21
008258160-03	OBS	No	181.685545	276.781364	3083.3	7.844	7.6	8.3	0.86	5305	5.48	1.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008258160-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS
008258160-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET
008258160-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

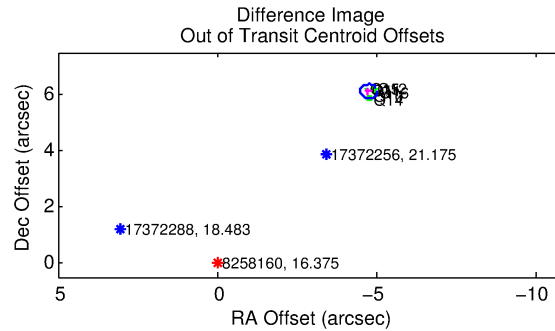
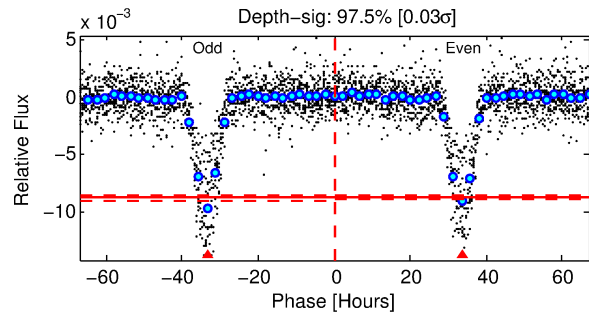
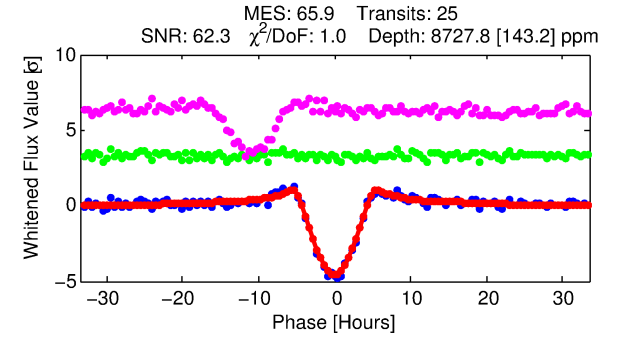
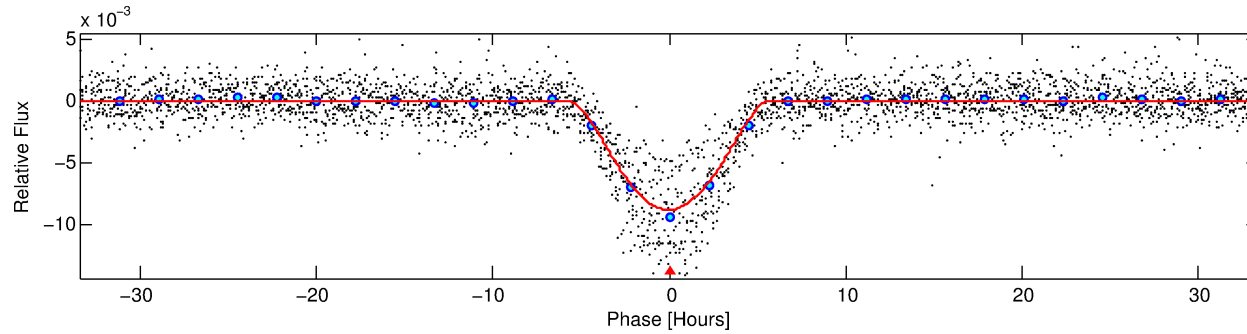
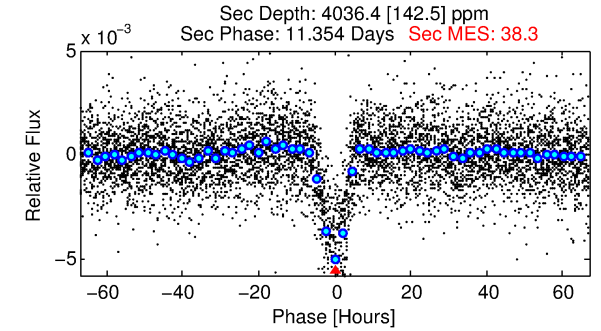
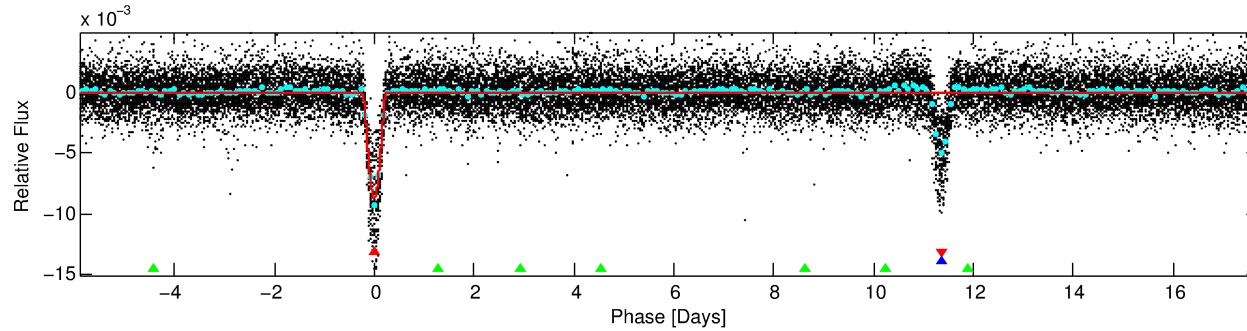
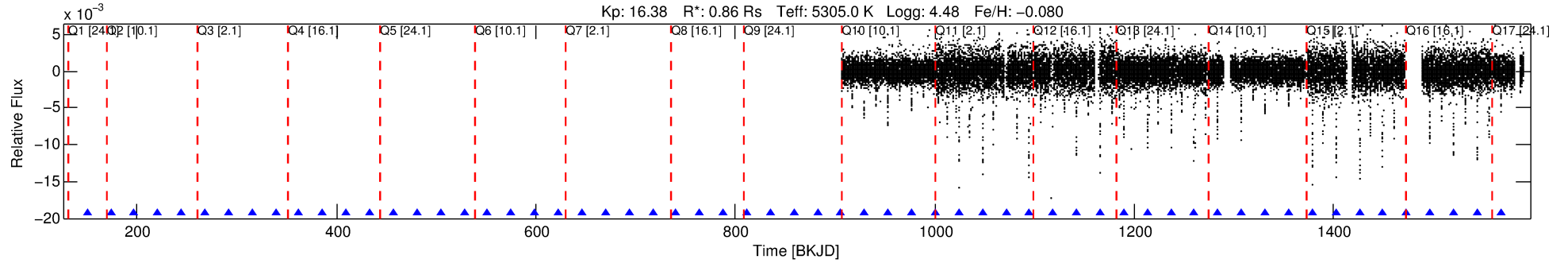
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008258160-01

No Significant Match Found

# DV One-Page Summary

KIC: 8258160 Candidate: 1 of 3 Period: 23.627 d  
KOI: K03870.01 Corr: 0.987



## DV Fit Results:

Period = 23.62713 [0.00022] d  
Epoch = 150.0313 [0.0105] BKJD  
Rp/R\* = 0.1453 [0.0597]  
a/R\* = 9.60 [0.68]  
b = 0.98 [0.09]  
Seff = 23.21 [5.94]  
Teq = 560 [36] K  
Rp = 13.59 [6.00] Re  
a = 0.1498 [0.0213] AU  
Ag = 270.11 [229.74] [1.17σ]  
Teffp = 3508 [732] K [4.02σ]

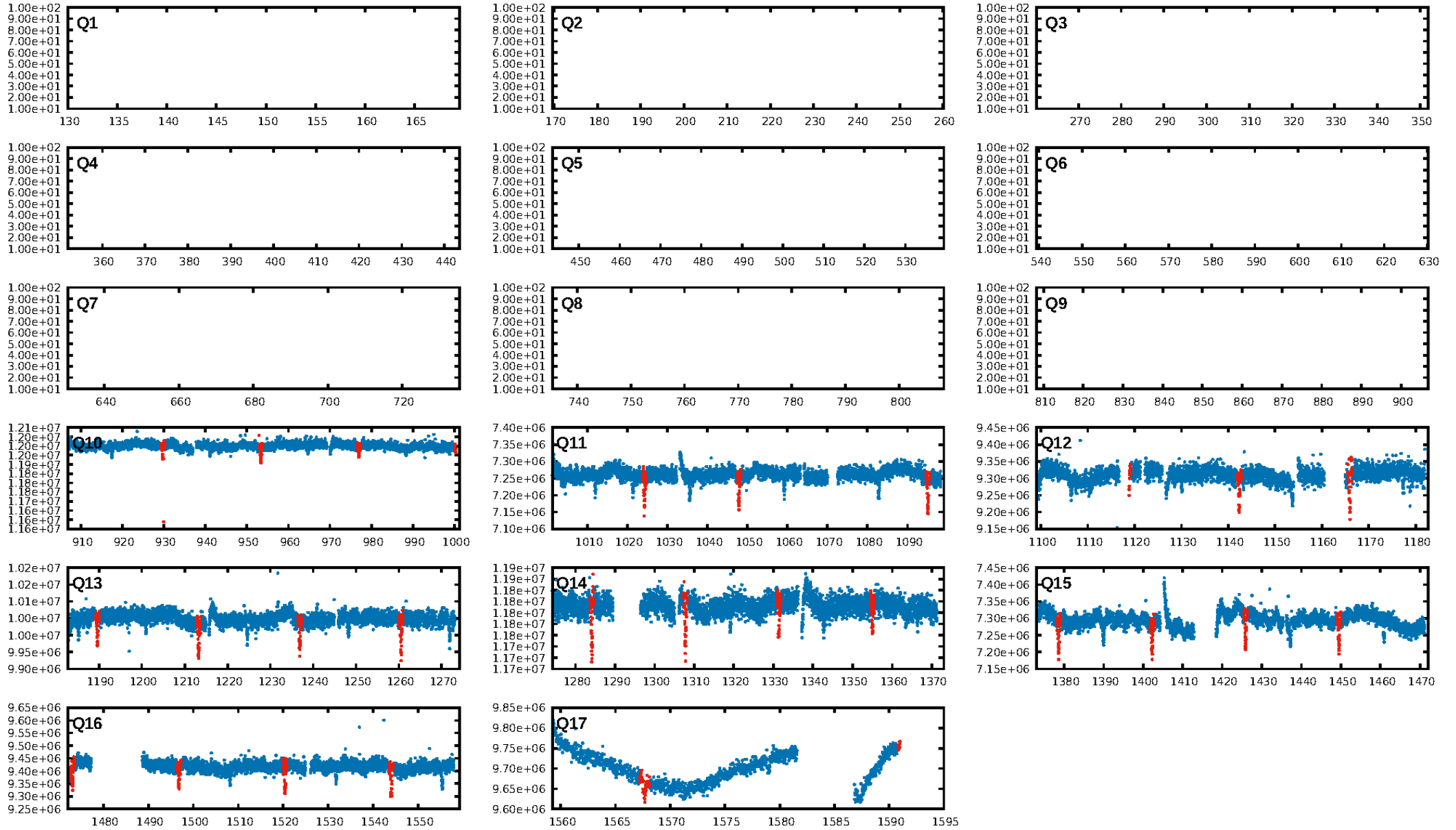
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [278.09σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [24/24]  
GhostDiagnostic-chr: 1.033  
Centroid-sig: 0.0%  
Centroid-so: 4.902 arcsec [333.61σ]  
OotOffset-rm: 7.747 arcsec [88.91σ]  
KicOffset-rm: 3.269 arcsec [38.31σ]  
OotOffset-st: 2/2/2/0 [6]  
KicOffset-st: 2/2/2/0 [8]  
DiffImageQuality-fgm: 0.75 [6/8]  
DiffImageOverlap-fno: 1.00 [8/8]

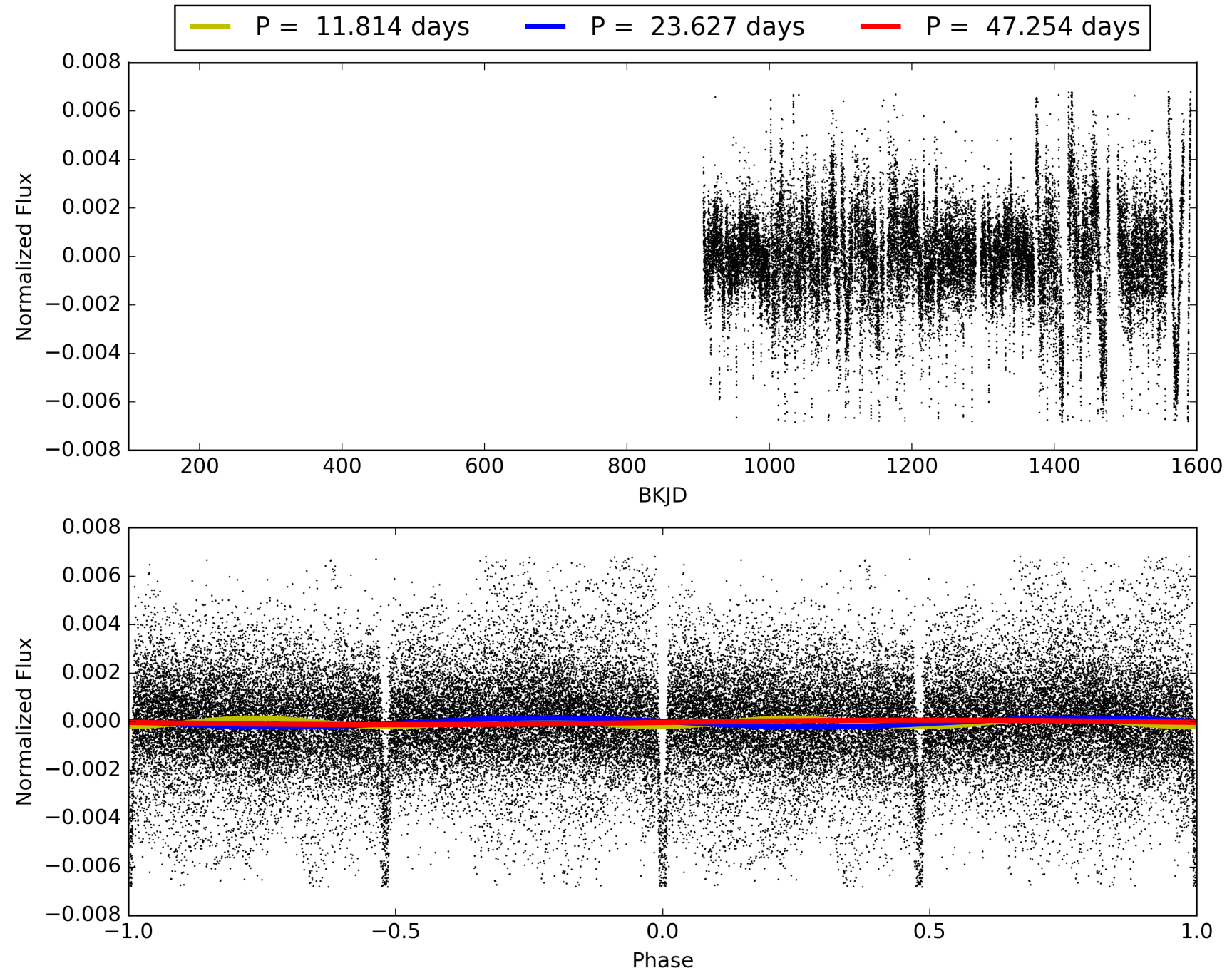
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:10:39 Z

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

# TCE 008258160-01, PDC Light Curves

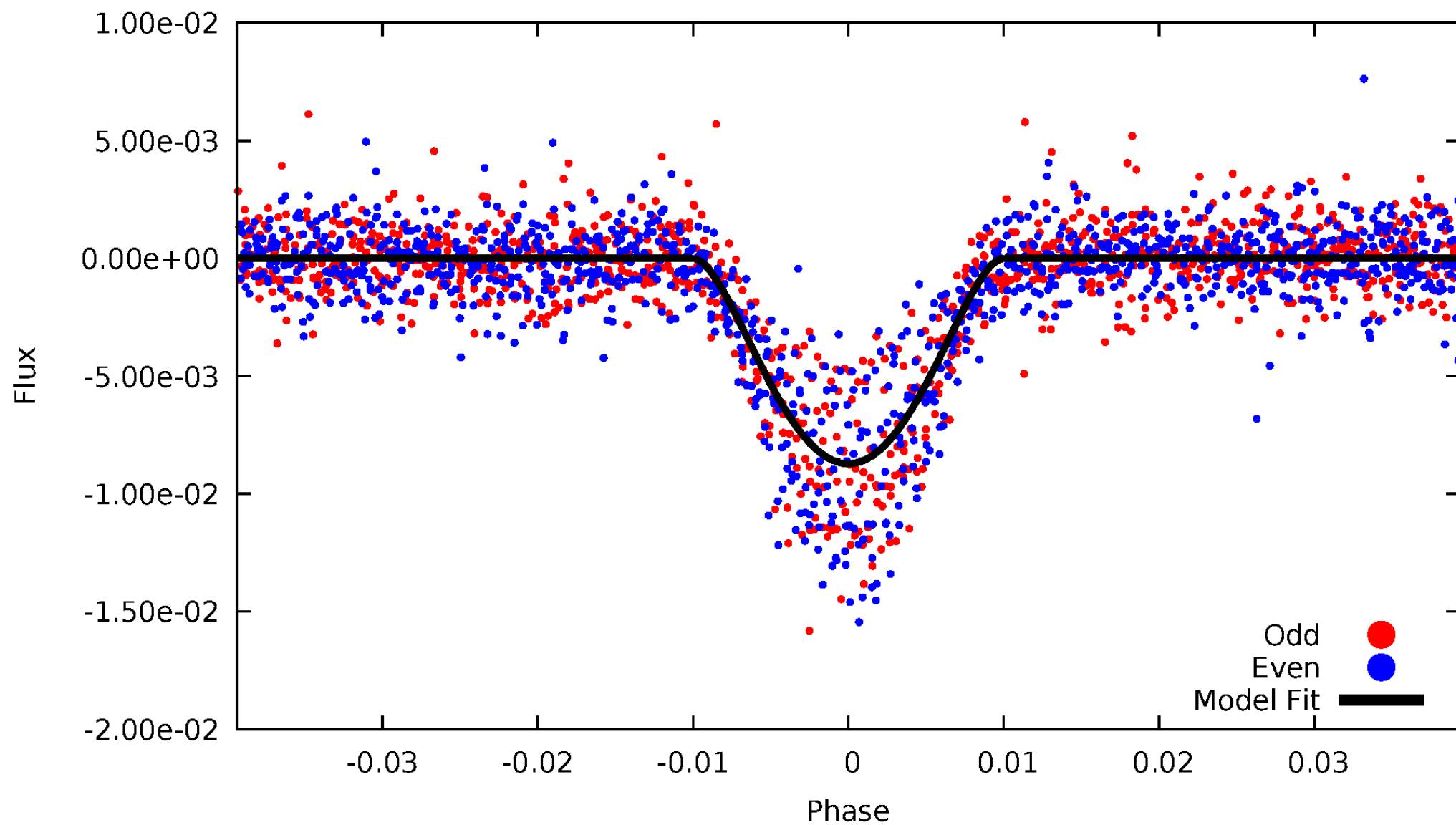


TCE 008258160-01



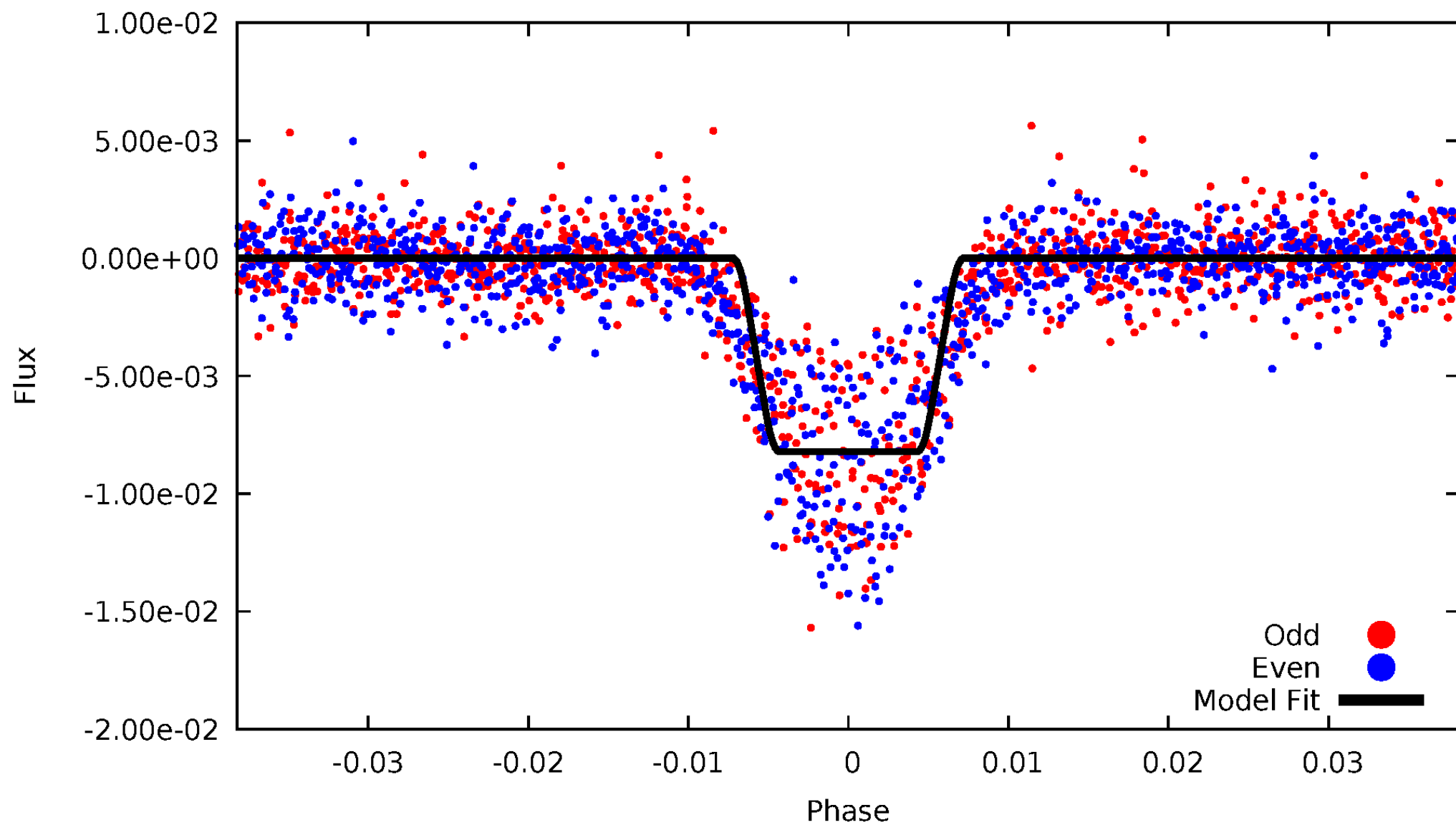
# DV Odd/Even

TCE 008258160-01



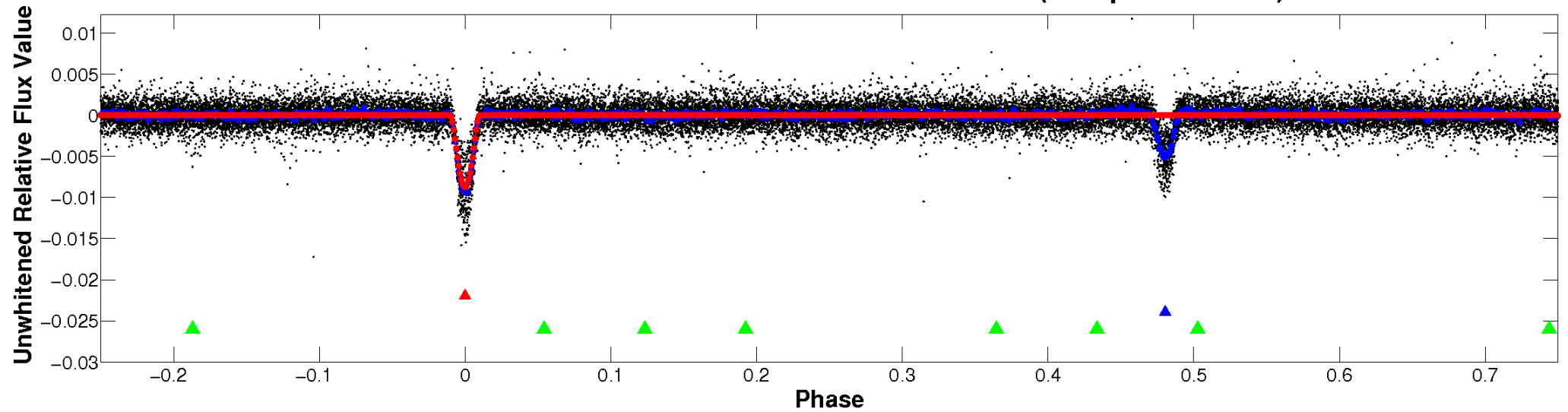
# ALT Odd/Even

TCE 008258160-01

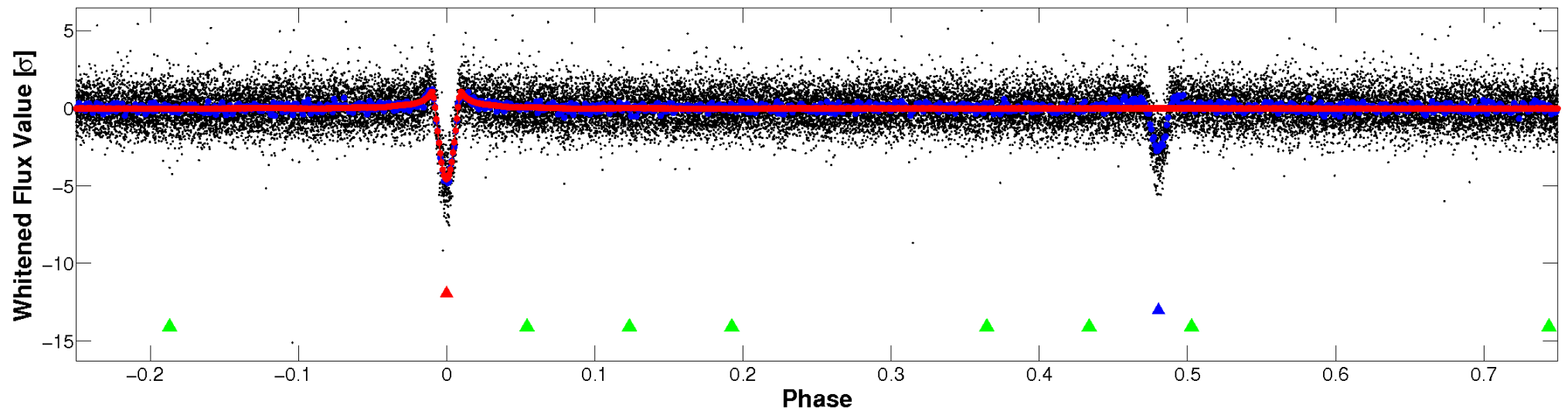


# Non-Whitened Vs. Whitened Light Curve

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



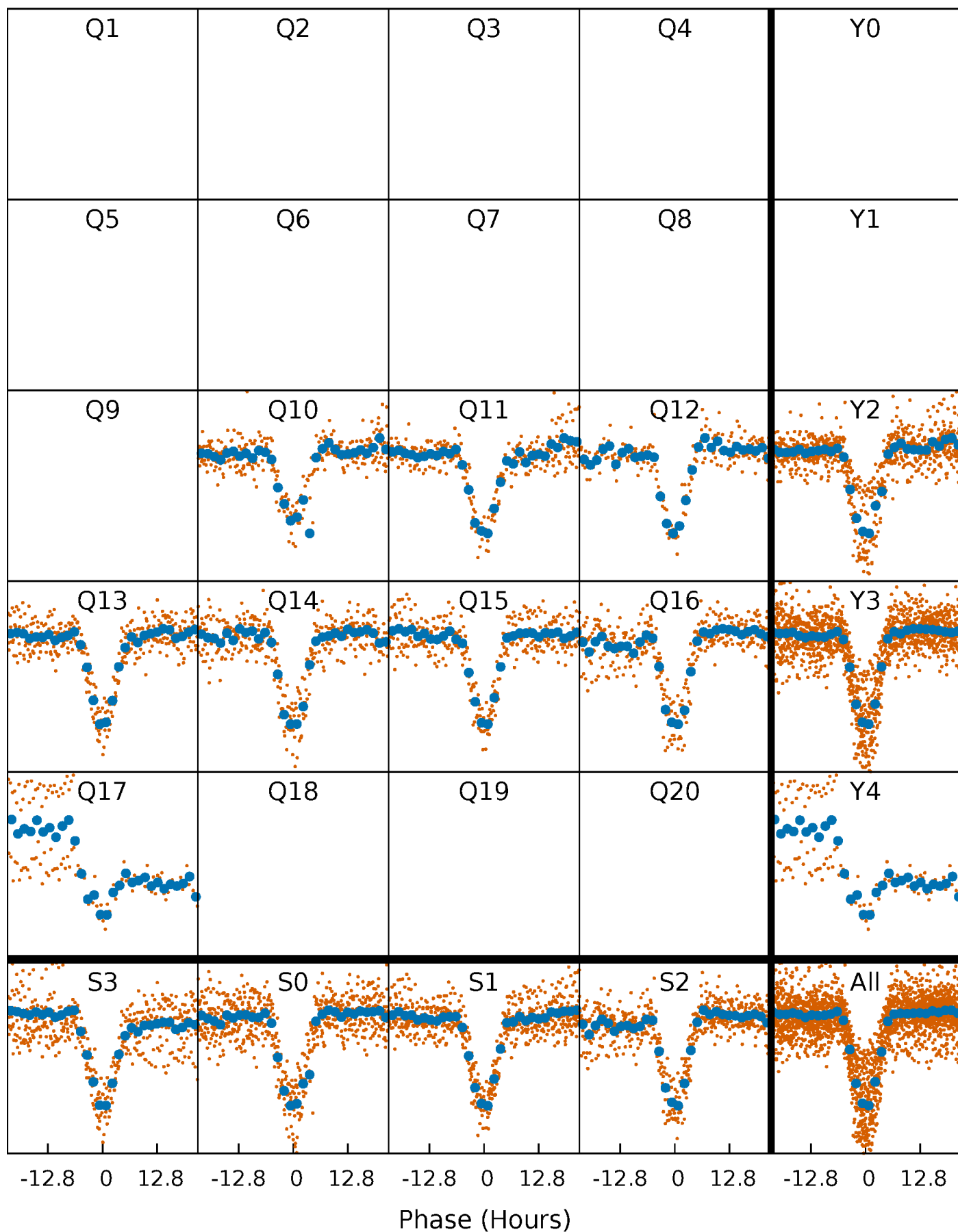
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

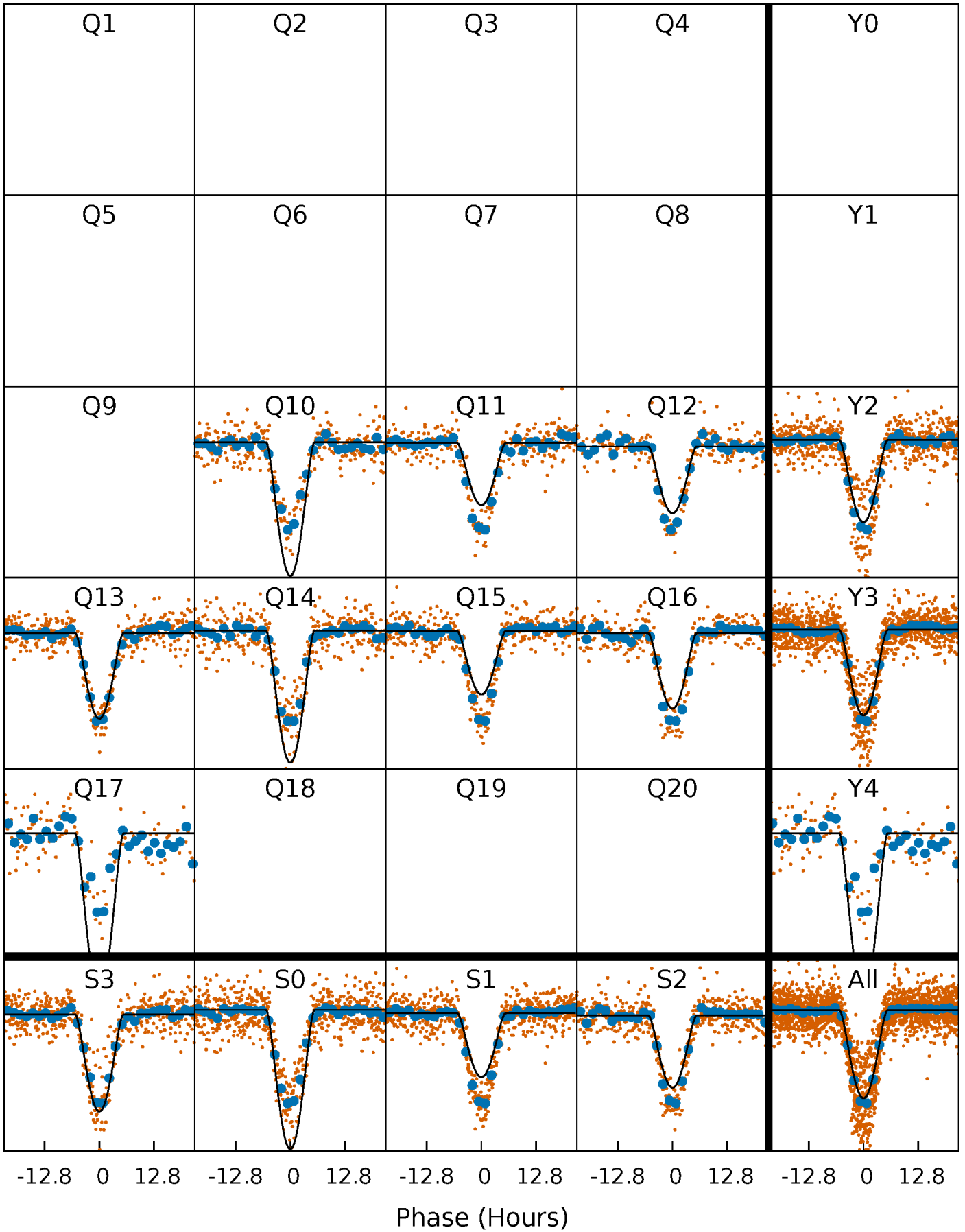
TCE 008258160-01   P= 23.627130 Days    $T_0=150.031295$  (BKJD)





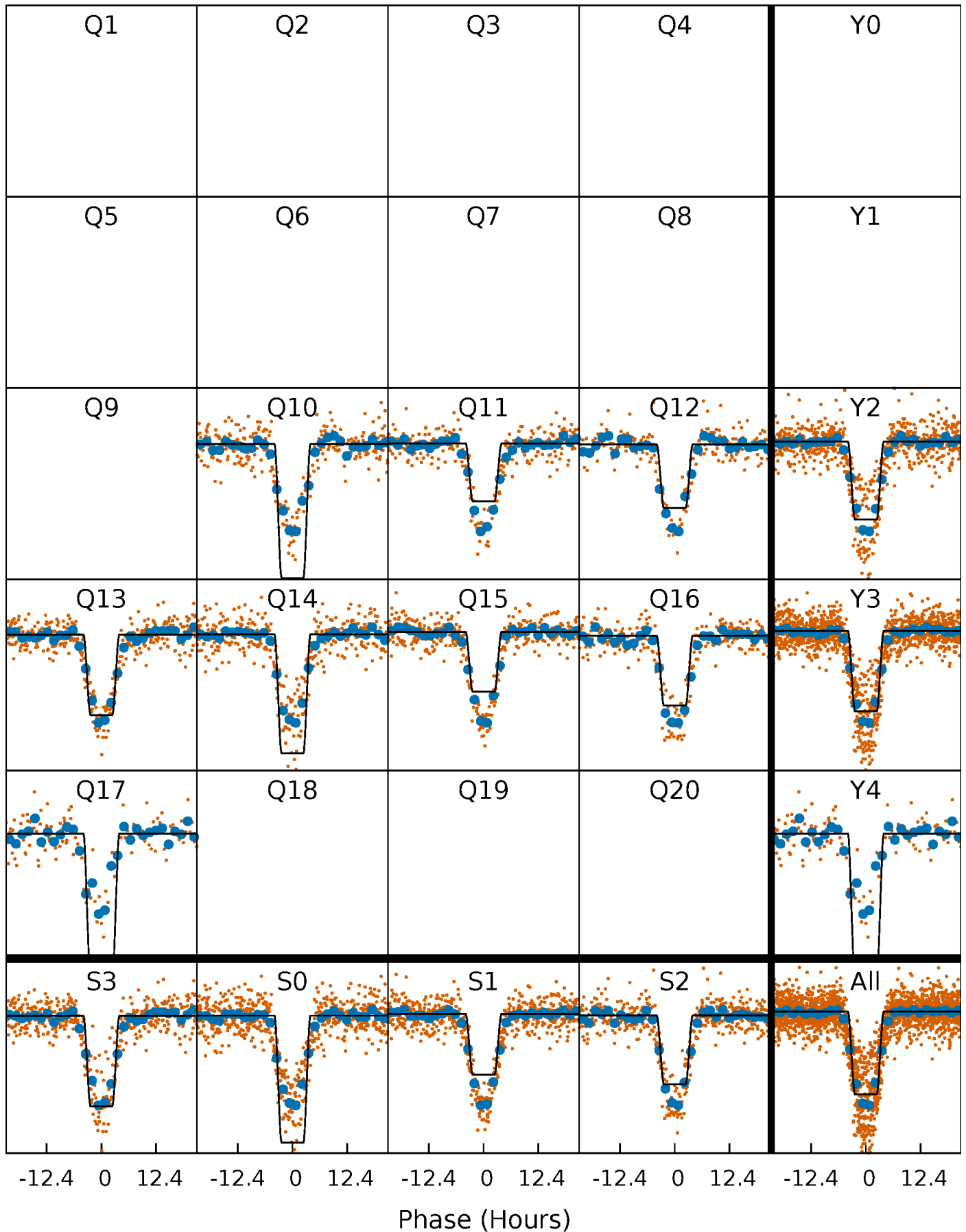
# DV Quarter-Phased Transit Curves

TCE 008258160-01   P= 23.627130 Days    $T_0=150.031295$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

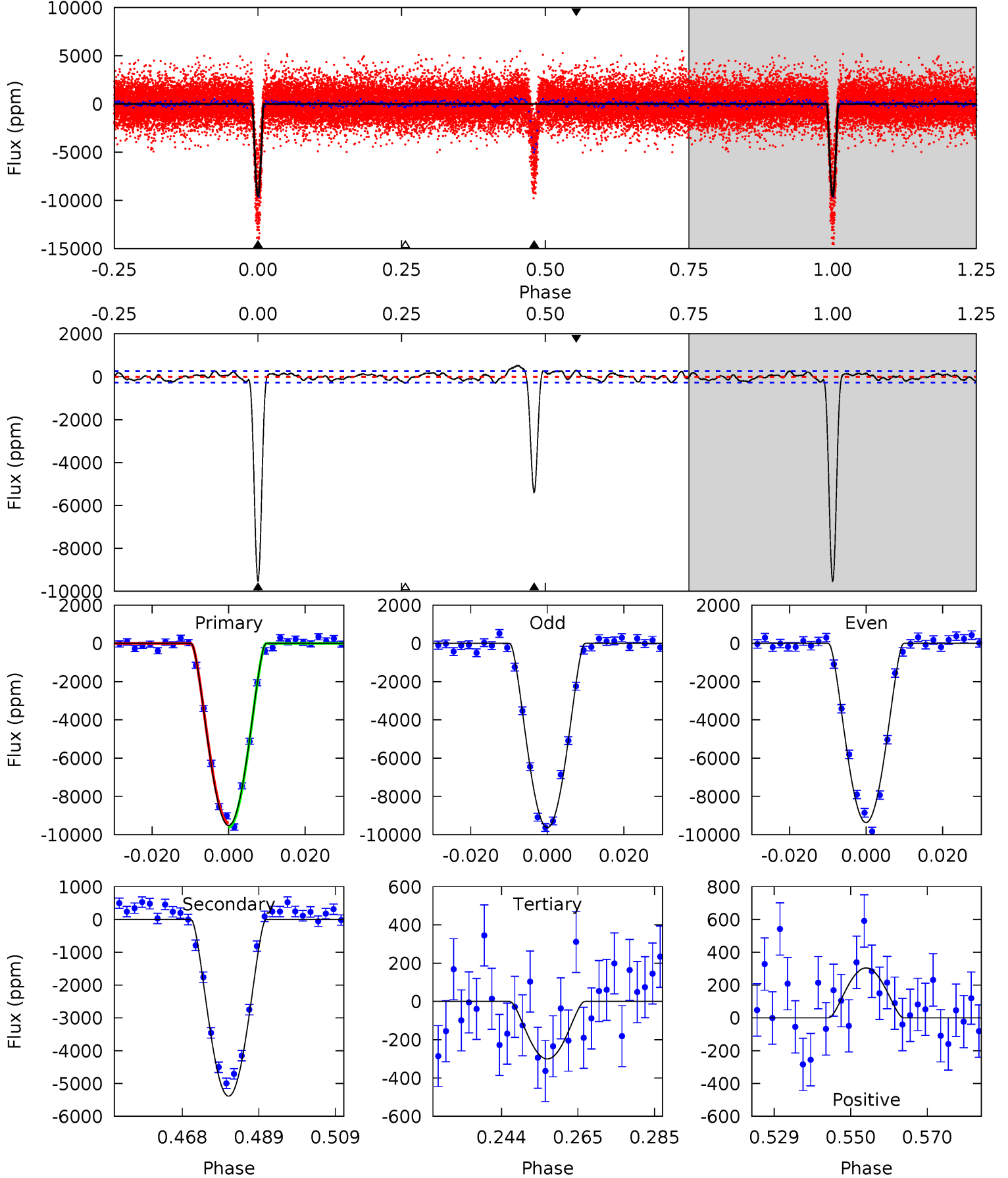
TCE 008258160-01 P= 23.627533 Days  $T_0=150.012192$  (BKJD)



# DV Model-Shift Uniqueness Test

008258160-01, P = 23.627130 Days, E = 150.031295 Days

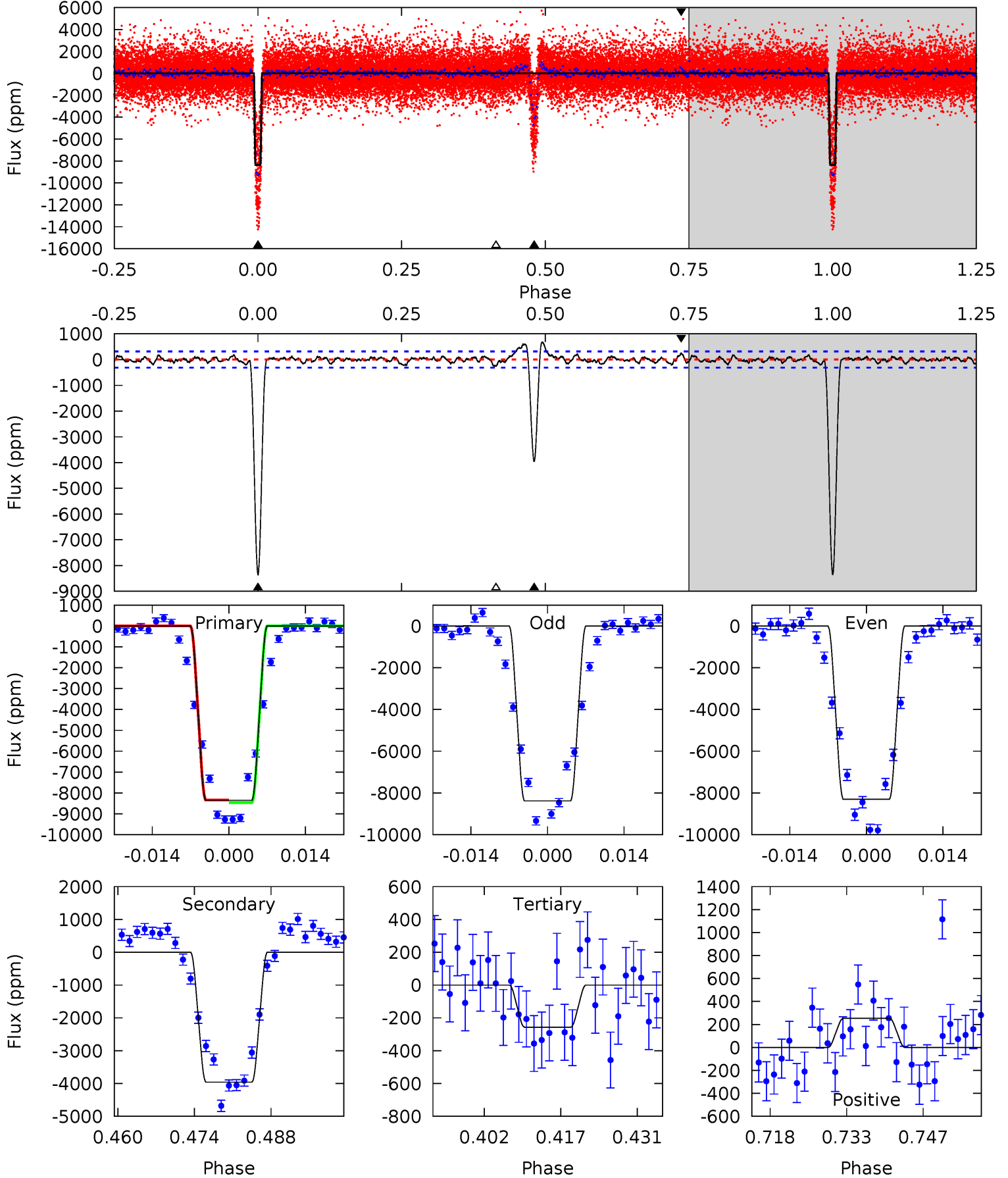
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
172.8	97.7	5.45	5.52	4.89	2.32	2.60	167.3	167.2	92.3	92.2	2.43	0.92	0.05	1.93



# Alt Model-Shift Uniqueness Test

008258160-01,  $P = 23.627533$  Days,  $E = 150.012192$  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
130.5	61.9	4.02	3.96	4.96	2.45	1.83	126.5	126.5	57.8	57.9	0.58	1.00	0.08	0.88



### Stellar Parameters For KIC 008258160

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5305^{+185}_{-185}$	$4.477^{+0.099}_{-0.121}$	$-0.080^{+0.300}_{-0.300}$	$0.857^{+0.138}_{-0.101}$	$0.805^{+0.113}_{-0.070}$	$1.799^{+0.774}_{-0.641}$
	+3%/-3%	+2%/-3%	+375%/-375%	+16%/-12%	+14%/-9%	+43%/-36%
Source	KIC0	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 008258160-01 / KOI 3870.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-5386 \pm 55$	$13.54^{+6.11}_{-5.43}$	$783^{+46}_{-37}$	$4068^{+936}_{-481}$	$360^{+688}_{-185}$
Alt.	$-3960 \pm 64$	$9.11^{+5.64}_{-4.73}$	$783^{+43}_{-37}$	$4445^{+1676}_{-710}$	$599^{+1994}_{-372}$

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

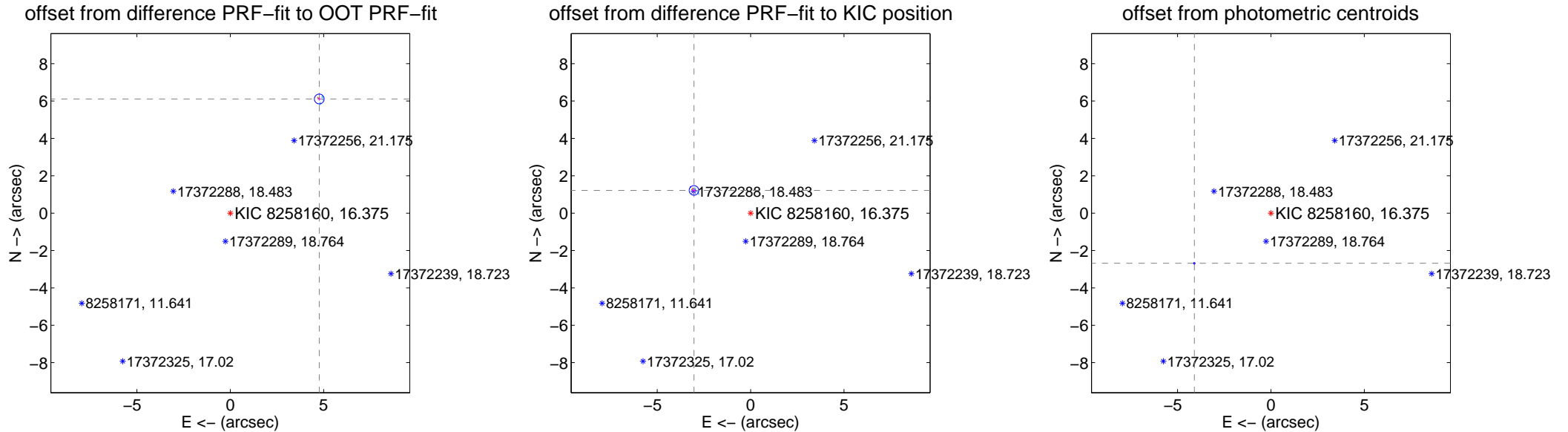
## DV Centroid Data

Supplemental centroid analysis for 008258160-01. Kepler magnitude: 16.38. Transit SNR 62.31

There are 6 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 9.31 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.747 \pm 0.087$	88.91	$-4.764 \pm 0.082$	$6.109 \pm 0.090$
PRF-fit source offset from KIC position	$3.269 \pm 0.085$	38.31	$3.034 \pm 0.087$	$1.217 \pm 0.077$
photometric centroid source offset	$4.90 \pm 0.01$	333.61	$4.10 \pm 0.02$	$-2.68 \pm 0.01$



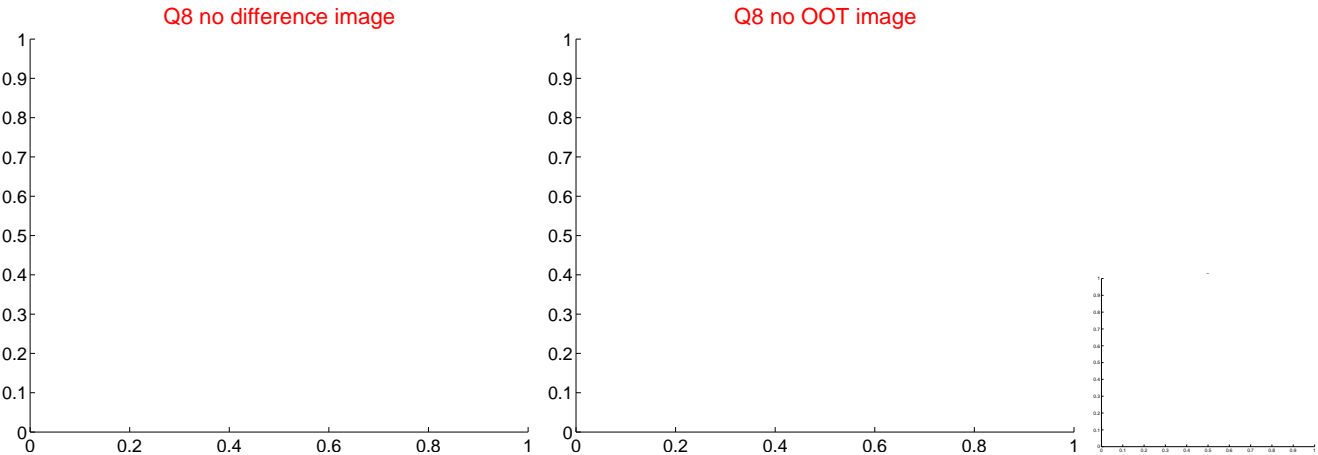
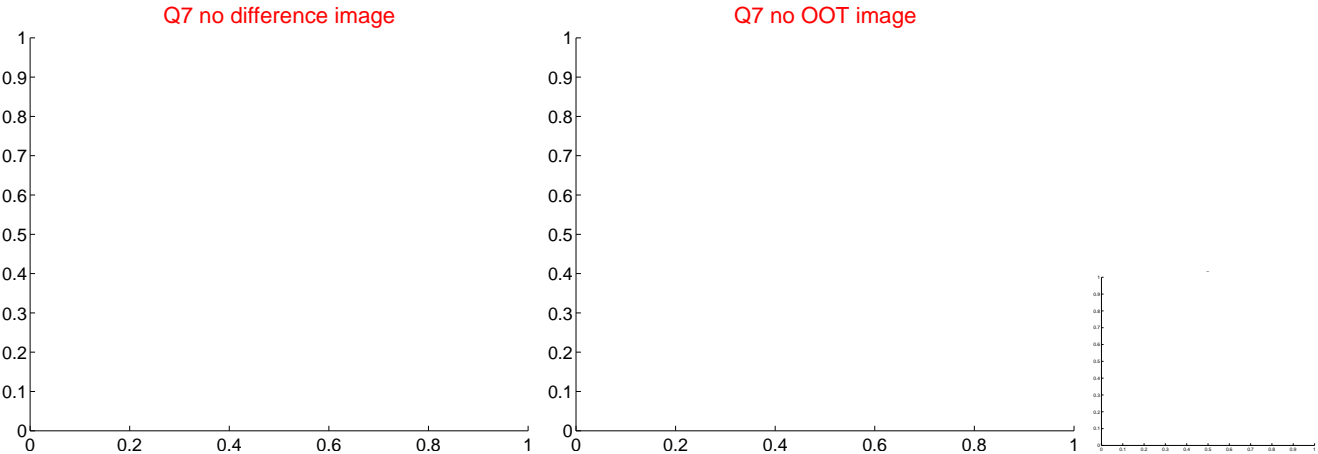
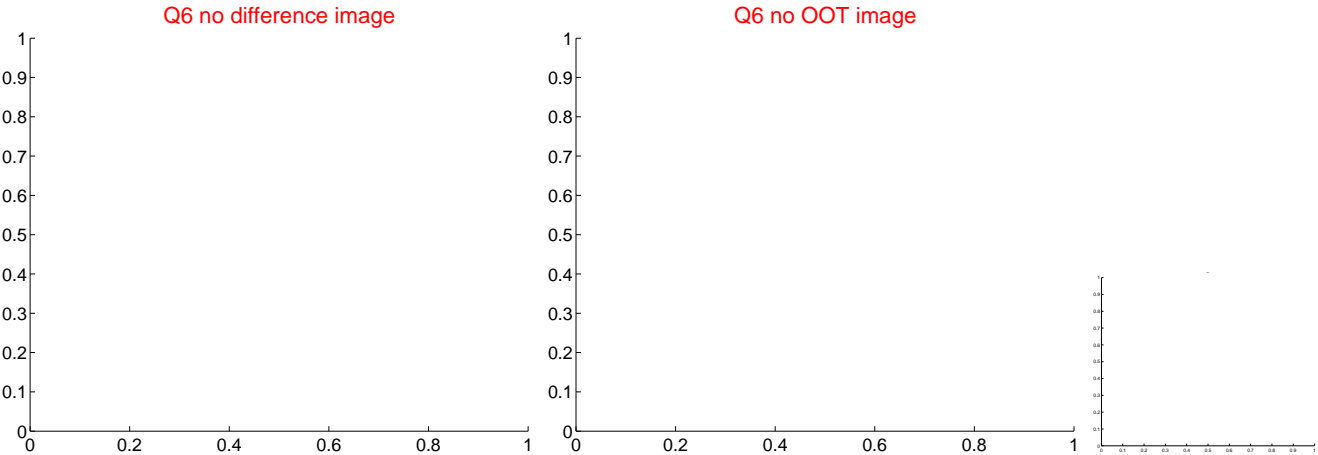
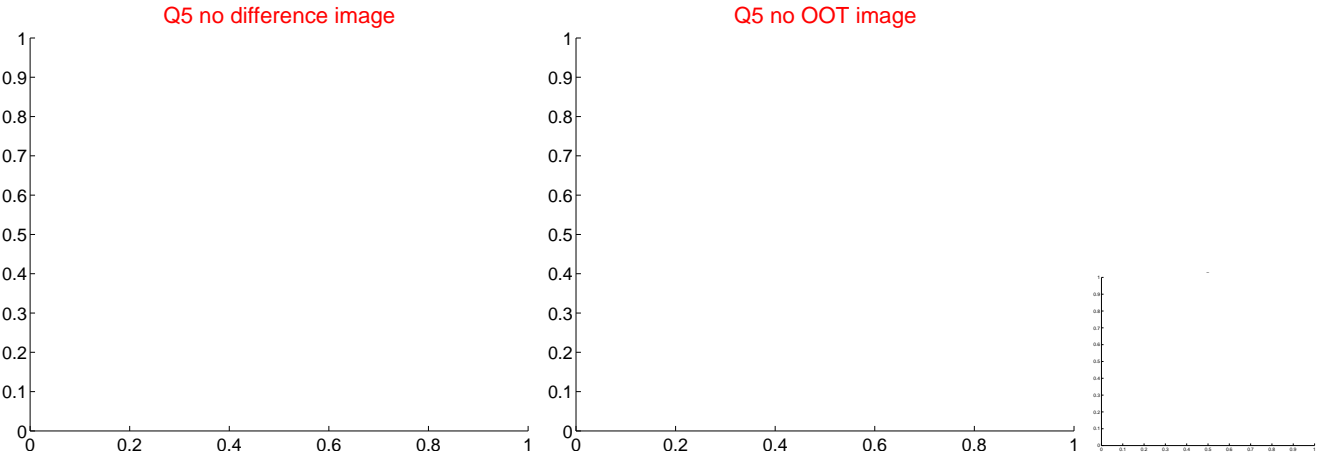
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

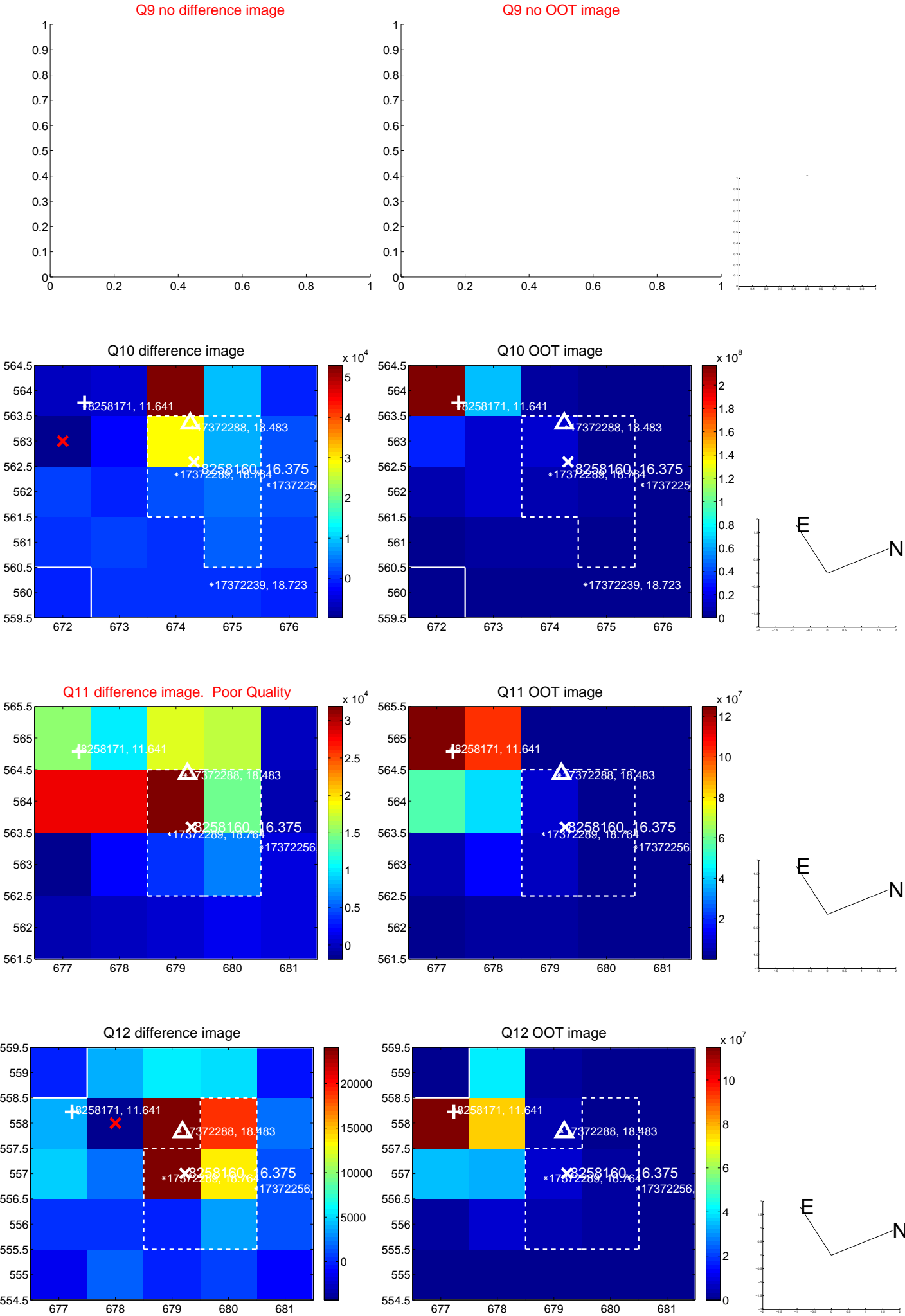




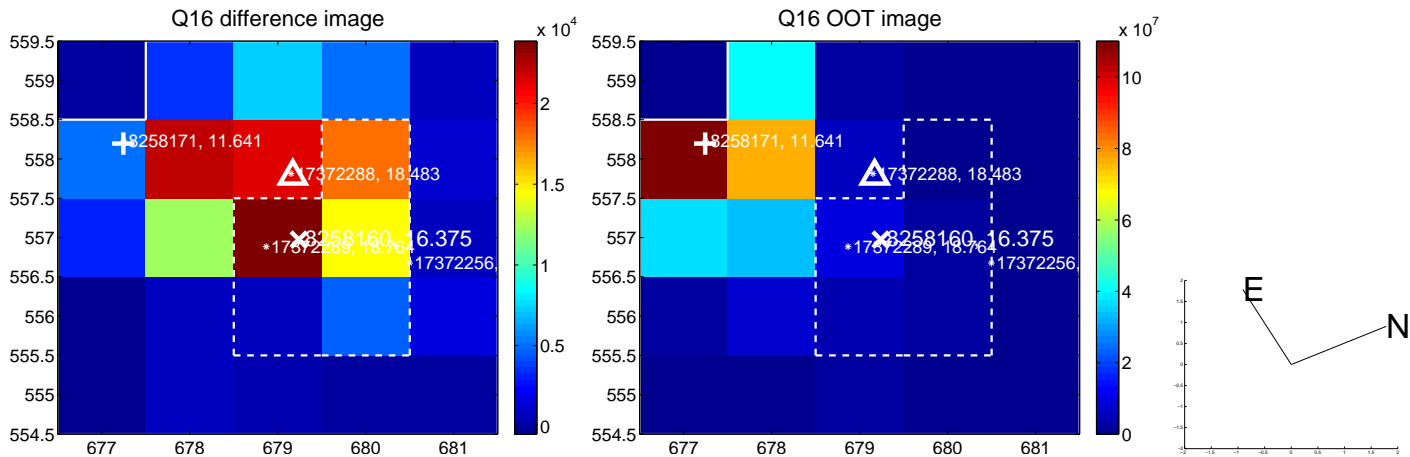
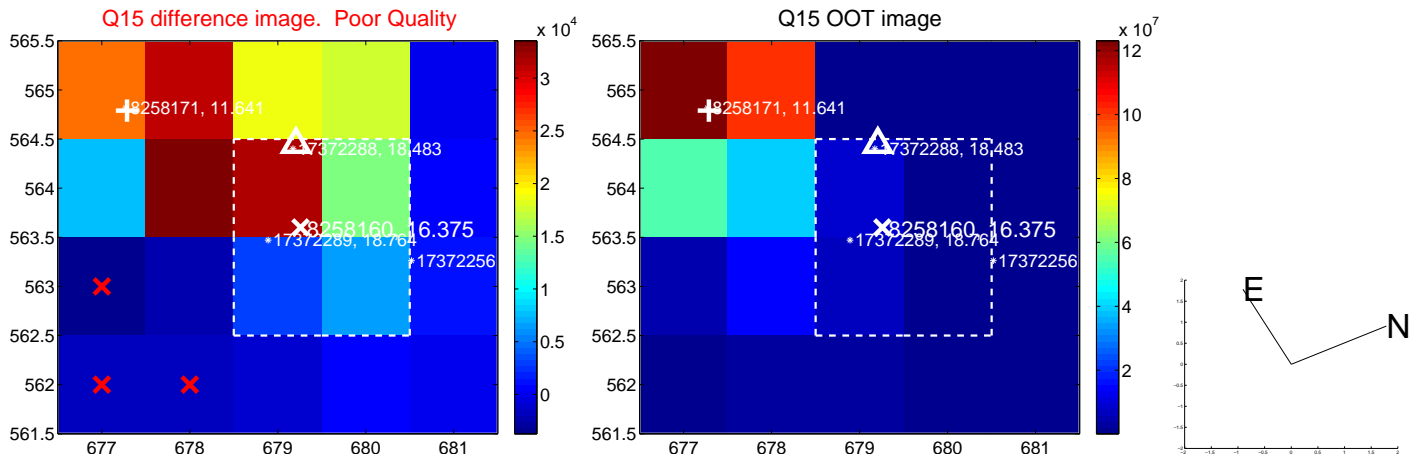
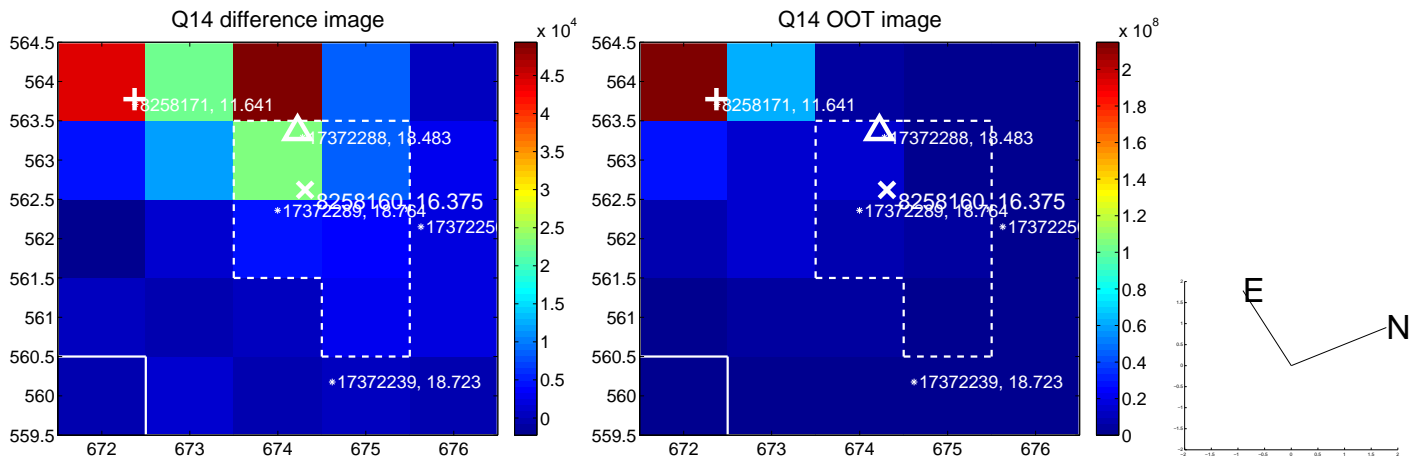
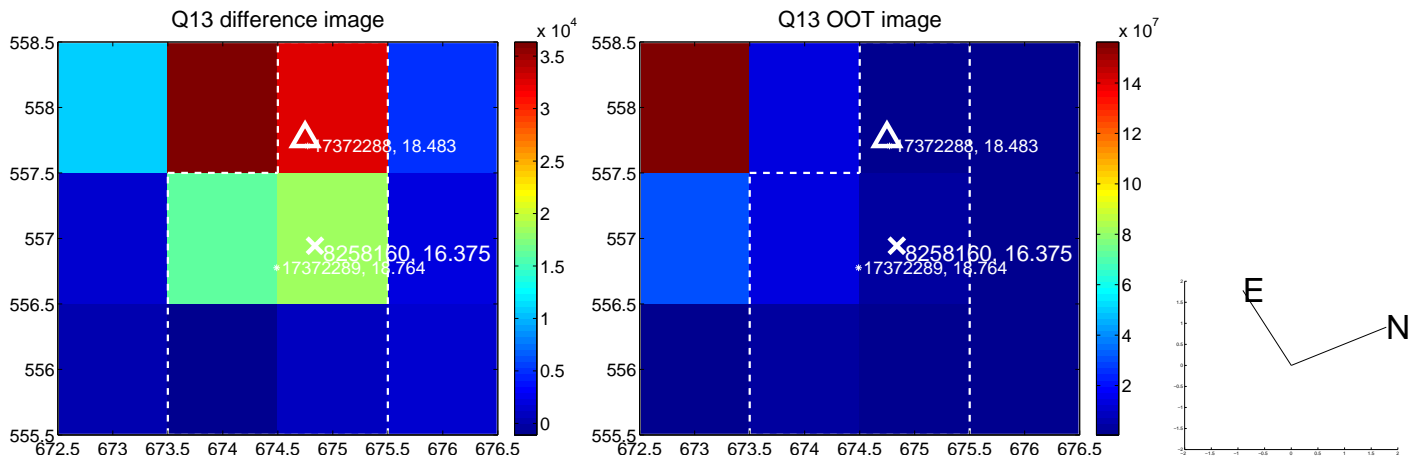
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



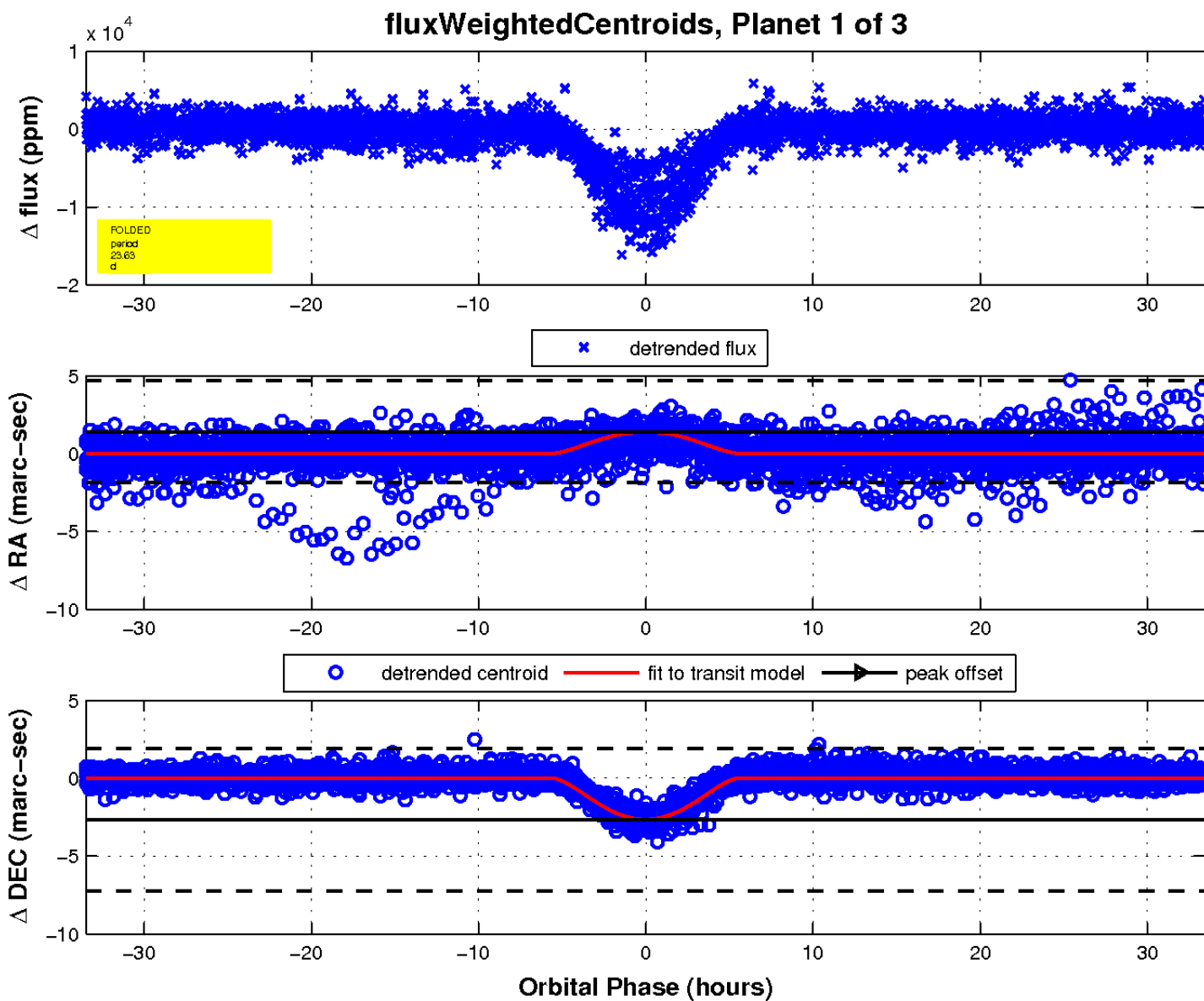
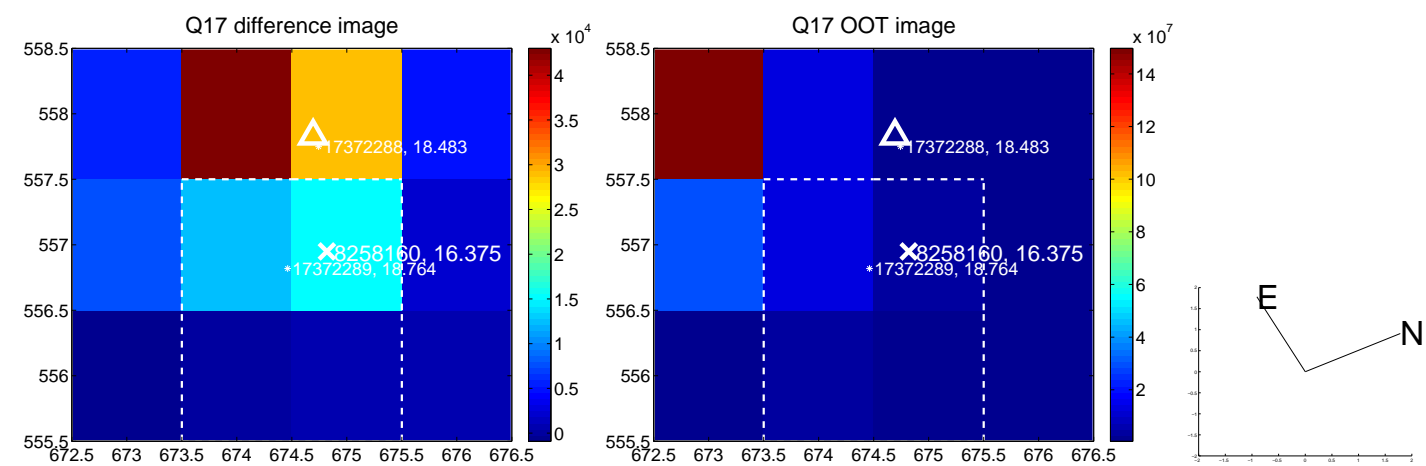
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

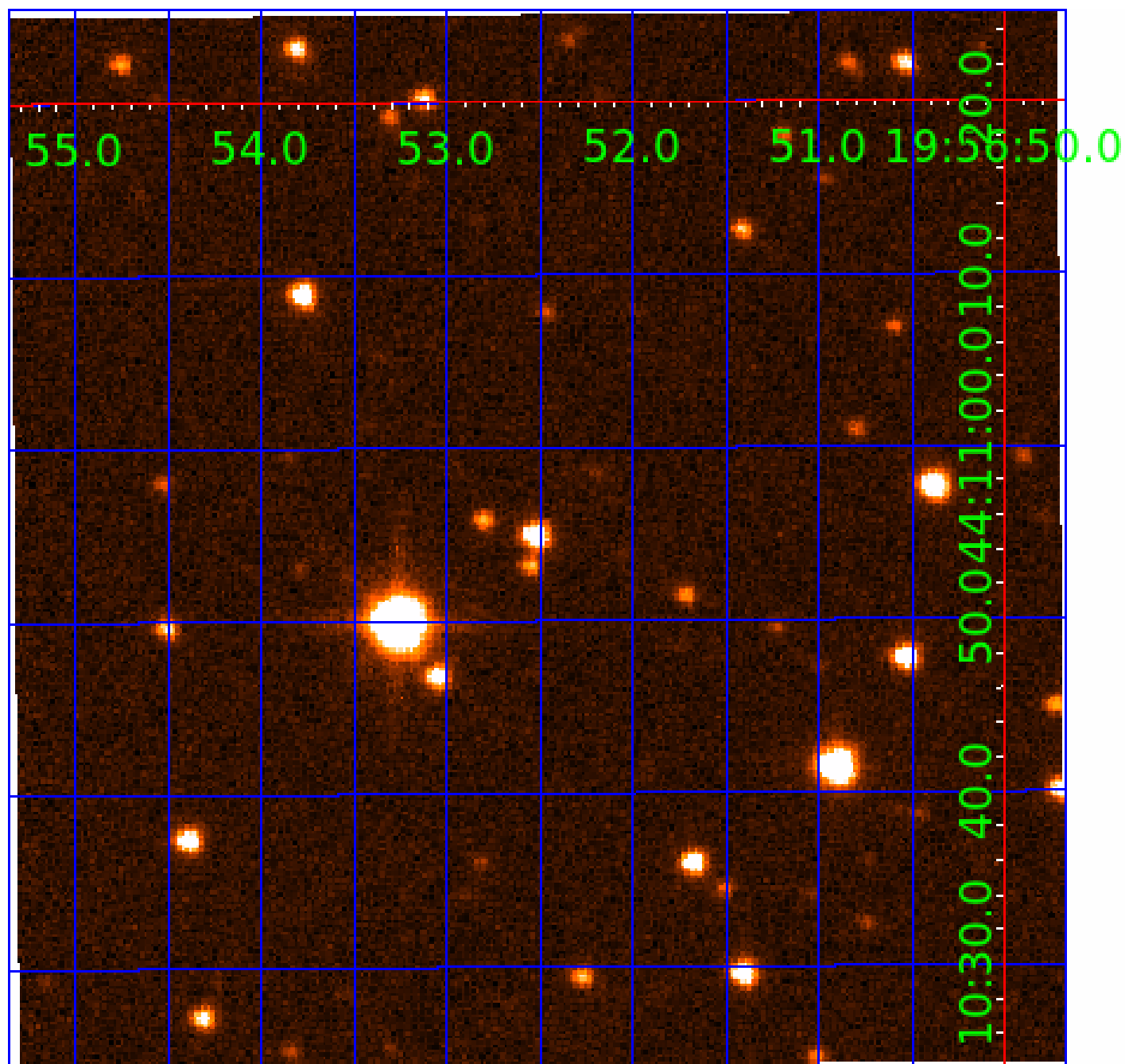


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008258160

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008258160-01	OBS	3870.01	23.627130	150.031295	8727.8	11.160	65.9	62.3	0.86	5305	13.59	23.21
008258160-02	OBS	No	23.627104	137.756486	4630.4	11.529	39.2	39.3	0.86	5305	10.38	23.21
008258160-03	OBS	No	181.685545	276.781364	3083.3	7.844	7.6	8.3	0.86	5305	5.48	1.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008258160-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS
008258160-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET
008258160-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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 008258160-02

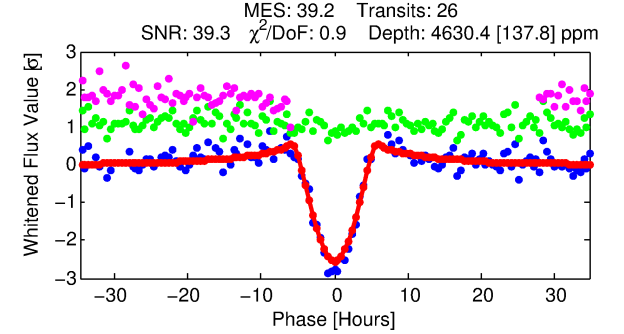
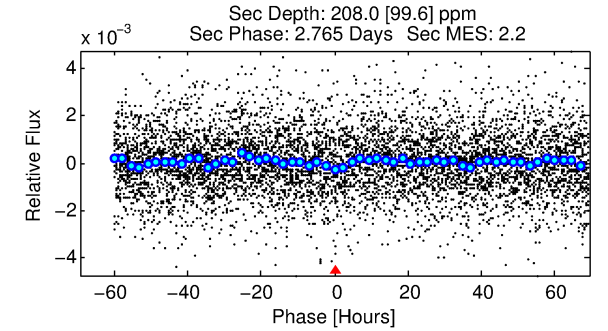
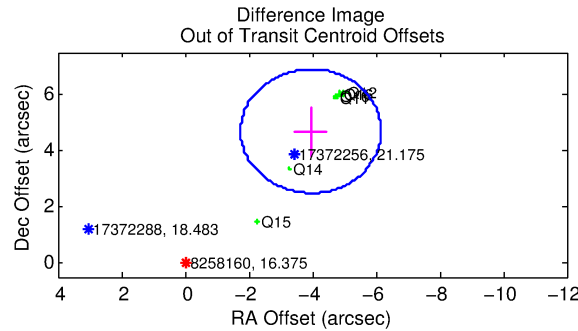
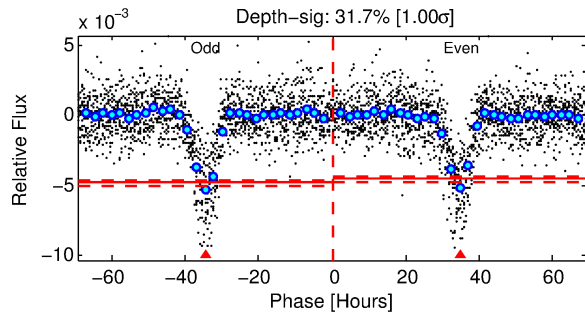
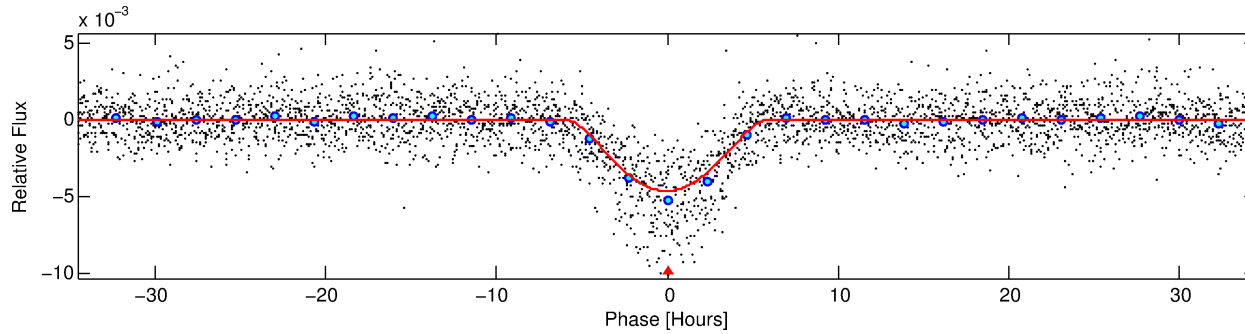
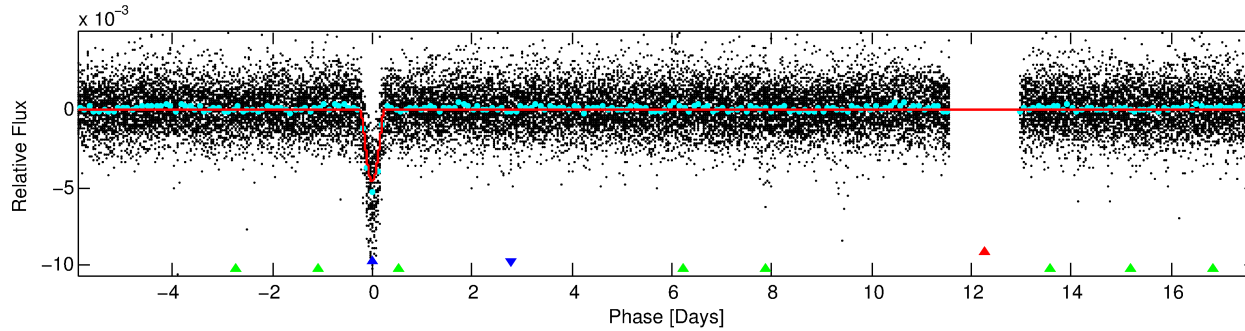
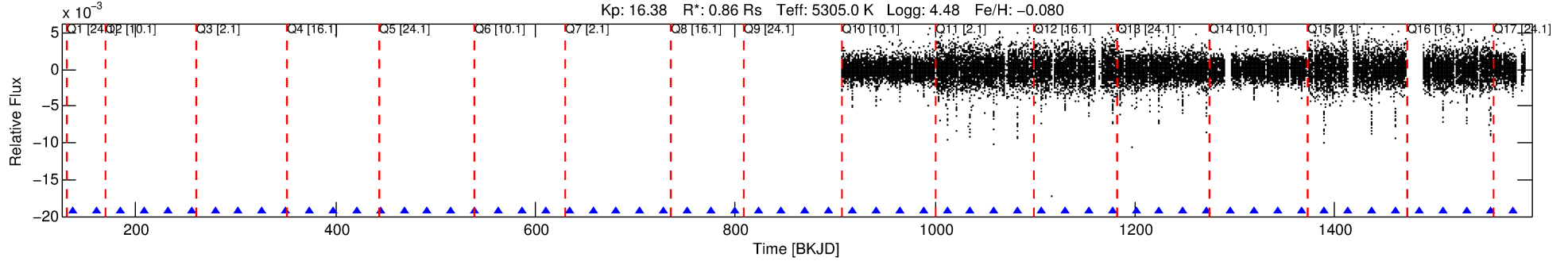
No Significant Match Found

# DV One-Page Summary

KIC: 8258160 Candidate: 2 of 3 Period: 23.627 d

KOI: K03870 Corr: No Ephemeris Match

Kp: 16.38 R\*: 0.86 Rs Teff: 5305.0 K Logg: 4.48 Fe/H: -0.080



## DV Fit Results:

Period = 23.62710 [0.00034] d  
Epoch = 137.7565 [0.0158] BKJD  
Rp/R\* = 0.1110 [0.0783]  
a/R\* = 7.96 [1.09]  
b = 0.99 [0.12]  
Seff = 23.21 [5.94]  
Teq = 560 [36] K  
Rp = 10.38 [7.51] Re  
a = 0.1498 [0.0213] AU  
Ag = 23.85 [35.89] [0.64σ]  
Teffp = 1912 [715] K [1.89σ]

## DV Diagnostic Results:

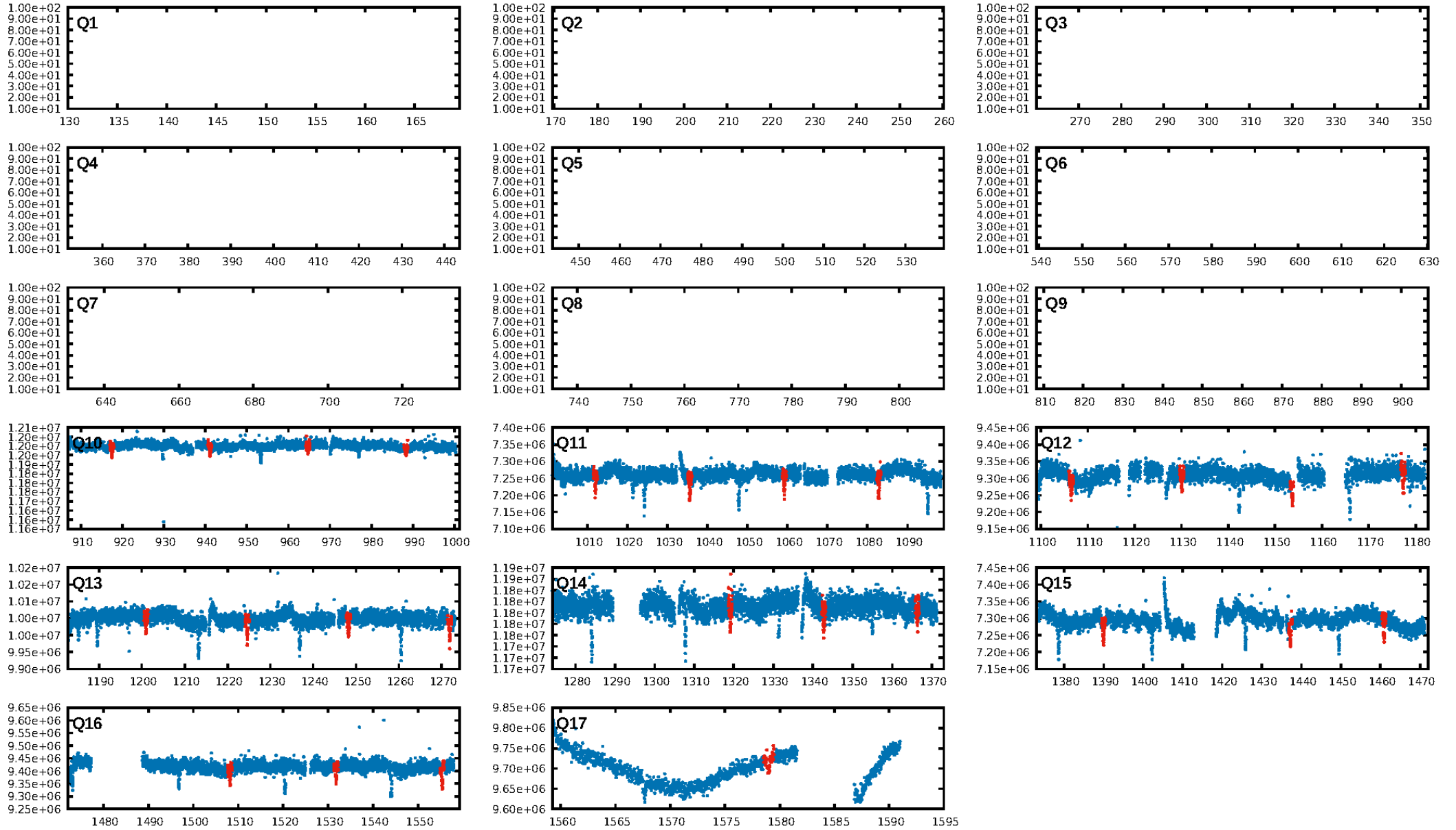
ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.15e-294  
RollingBand-fgt: 1.00 [25/25]  
GhostDiagnostic-chr: 0.6833  
Centroid-sig: 0.0%  
Centroid-so: 4.865 arcsec [180.41σ]  
OotOffset-rm: 6.135 arcsec [8.34σ]  
KicOffset-rm: 3.817 arcsec [8.96σ]  
OotOffset-st: 2/2/2/0 [6]  
KicOffset-st: 2/2/2/1 [7]  
DiffImageQuality-fgm: 1.00 [7/7]  
DiffImageOverlap-fno: 1.00 [8/8]

Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:10:44 Z

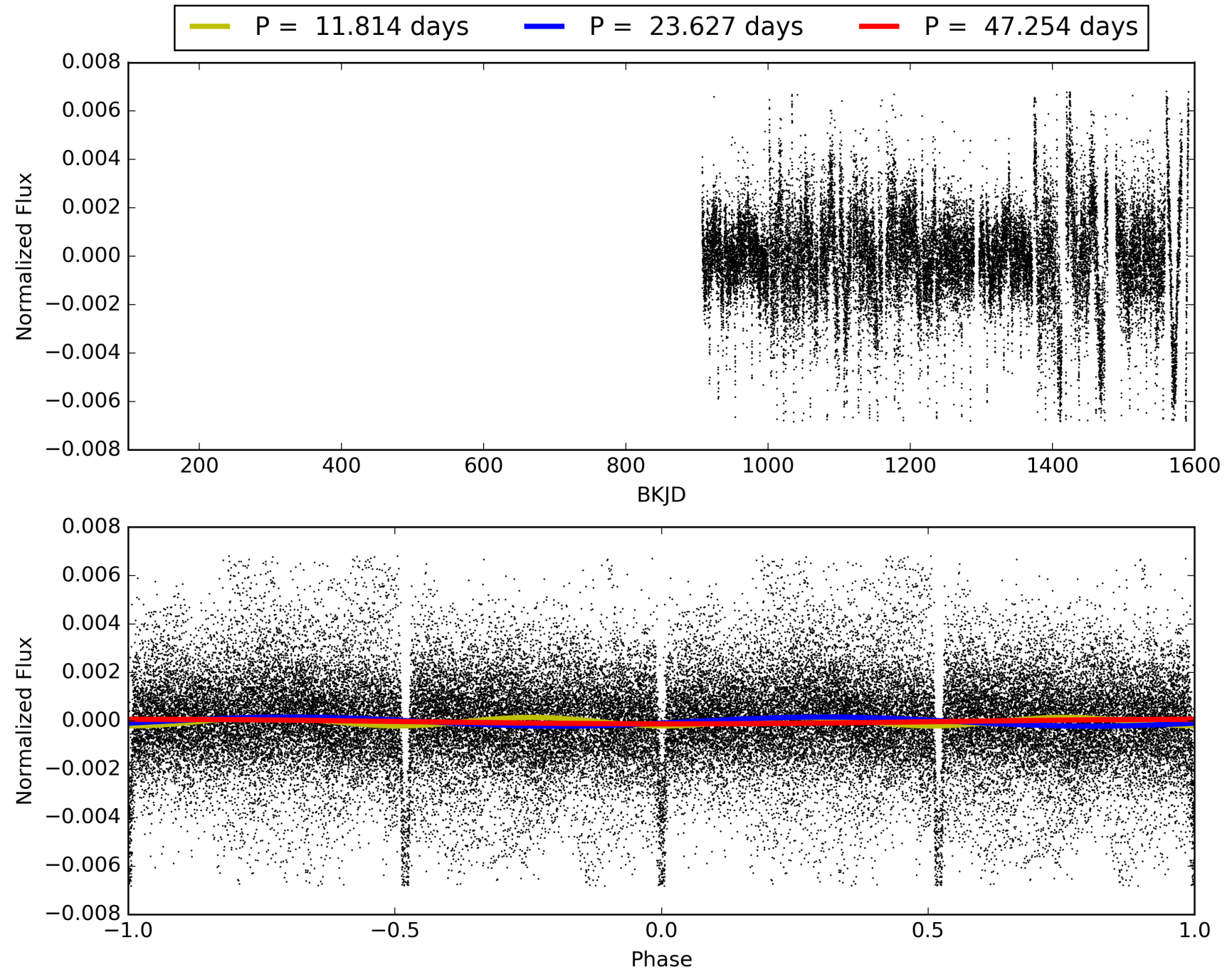
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008258160-02, PDC Light Curves

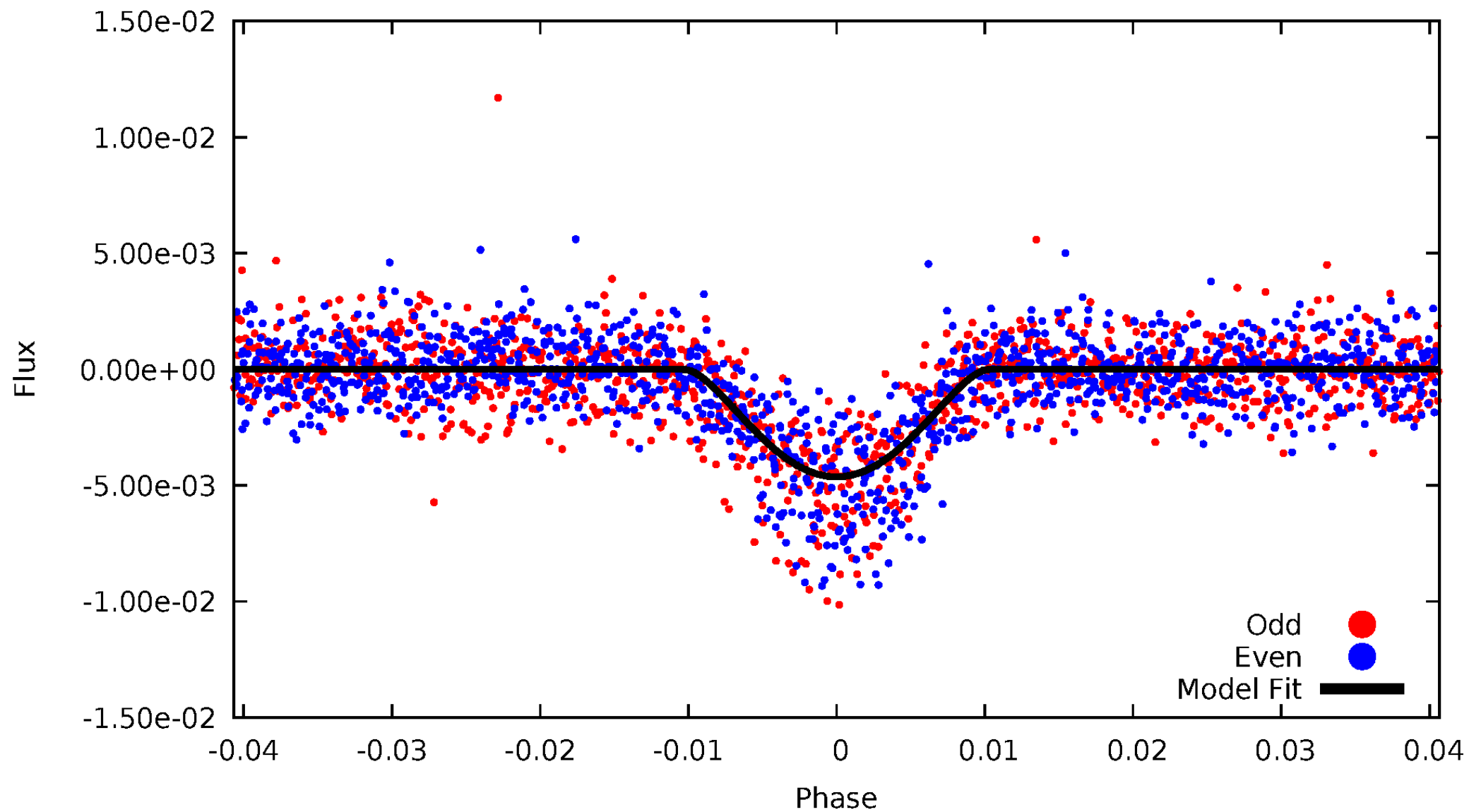


# TCE 008258160-02



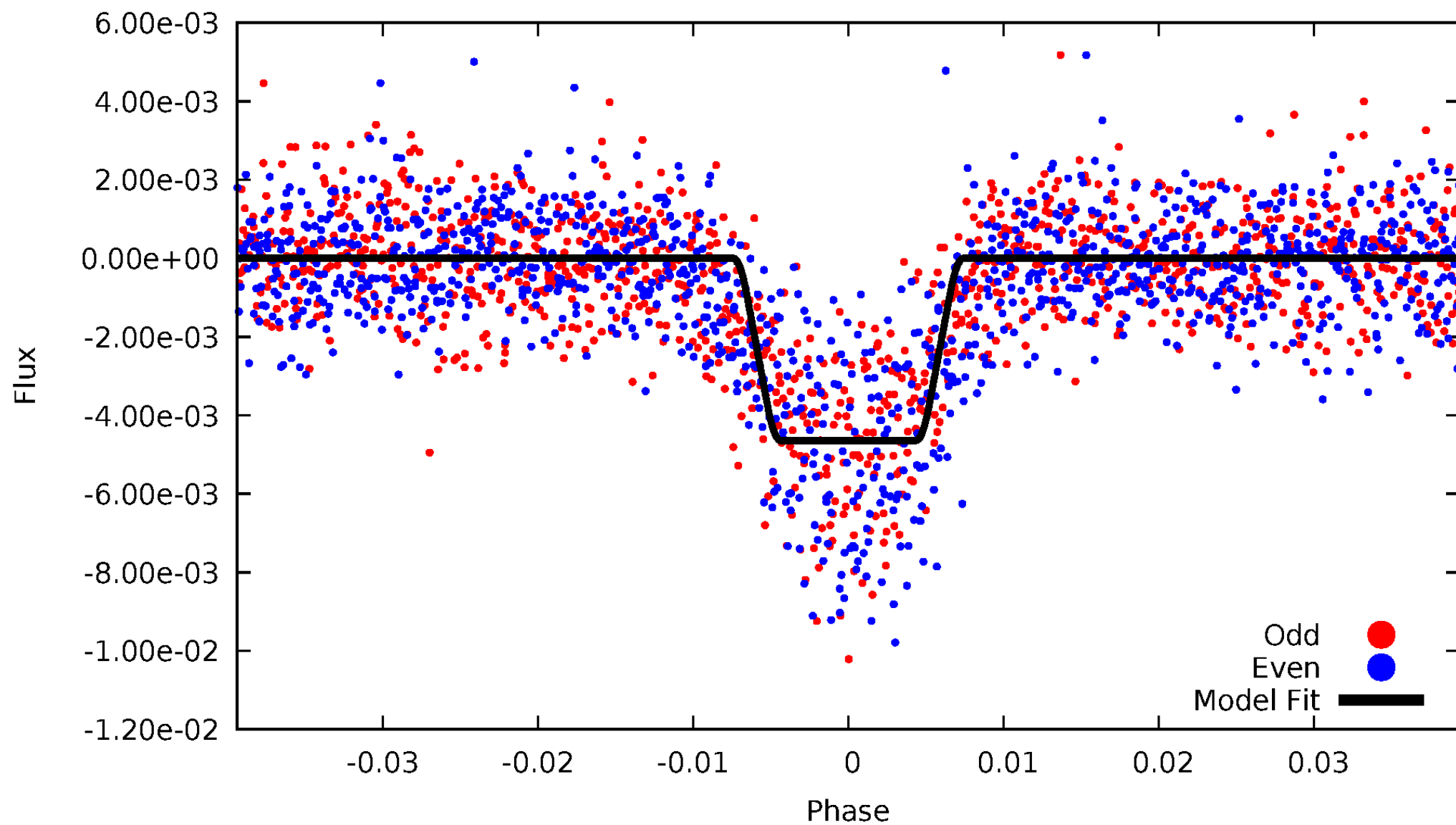
# DV Odd/Even

TCE 008258160-02



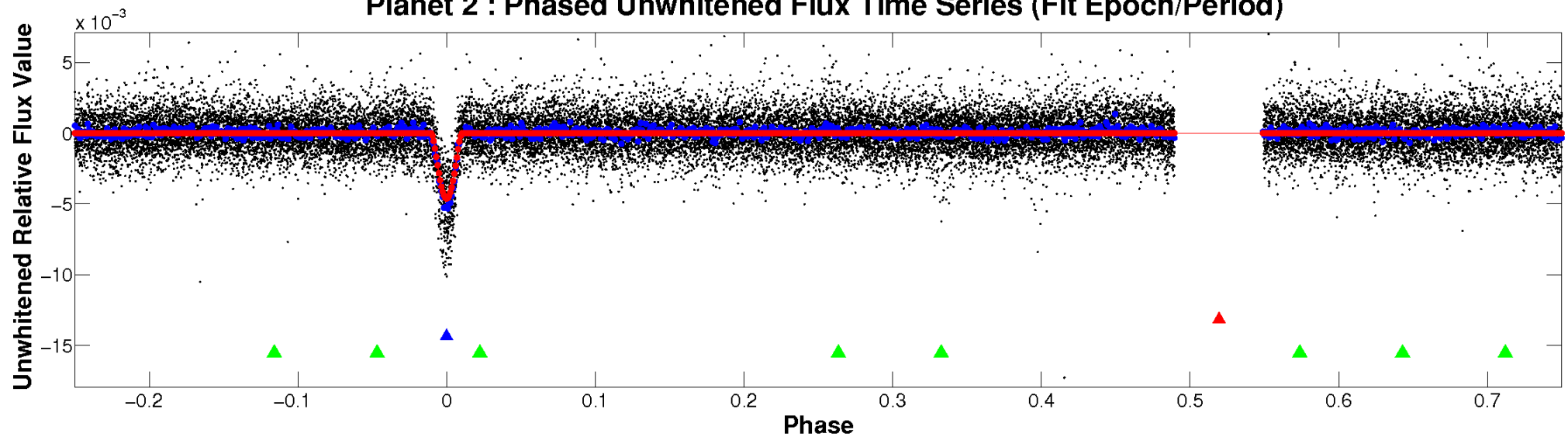
# ALT Odd/Even

TCE 008258160-02

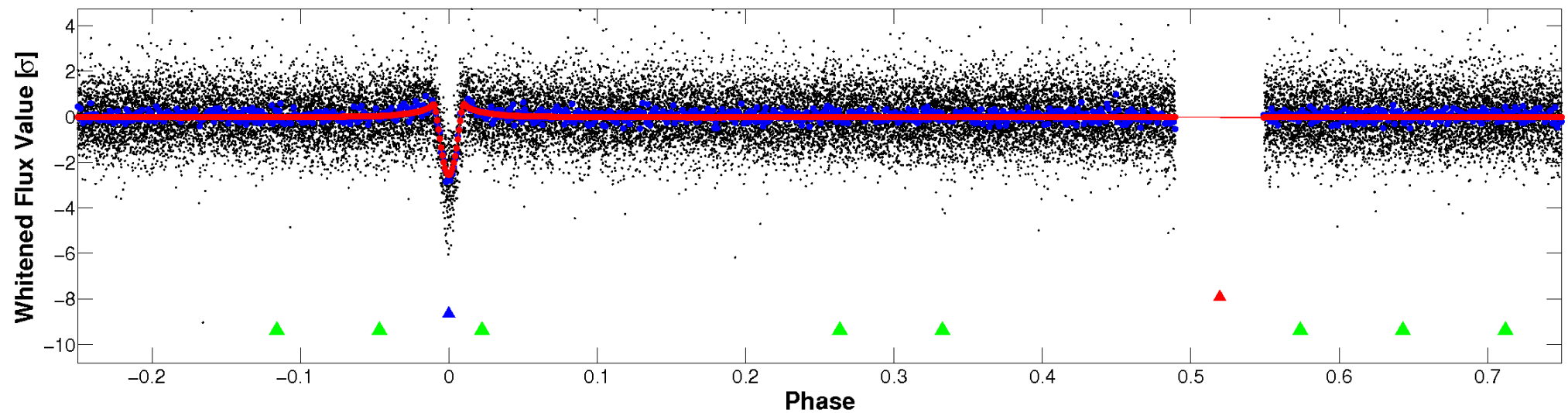


# Non-Whitened Vs. Whitened Light Curve

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

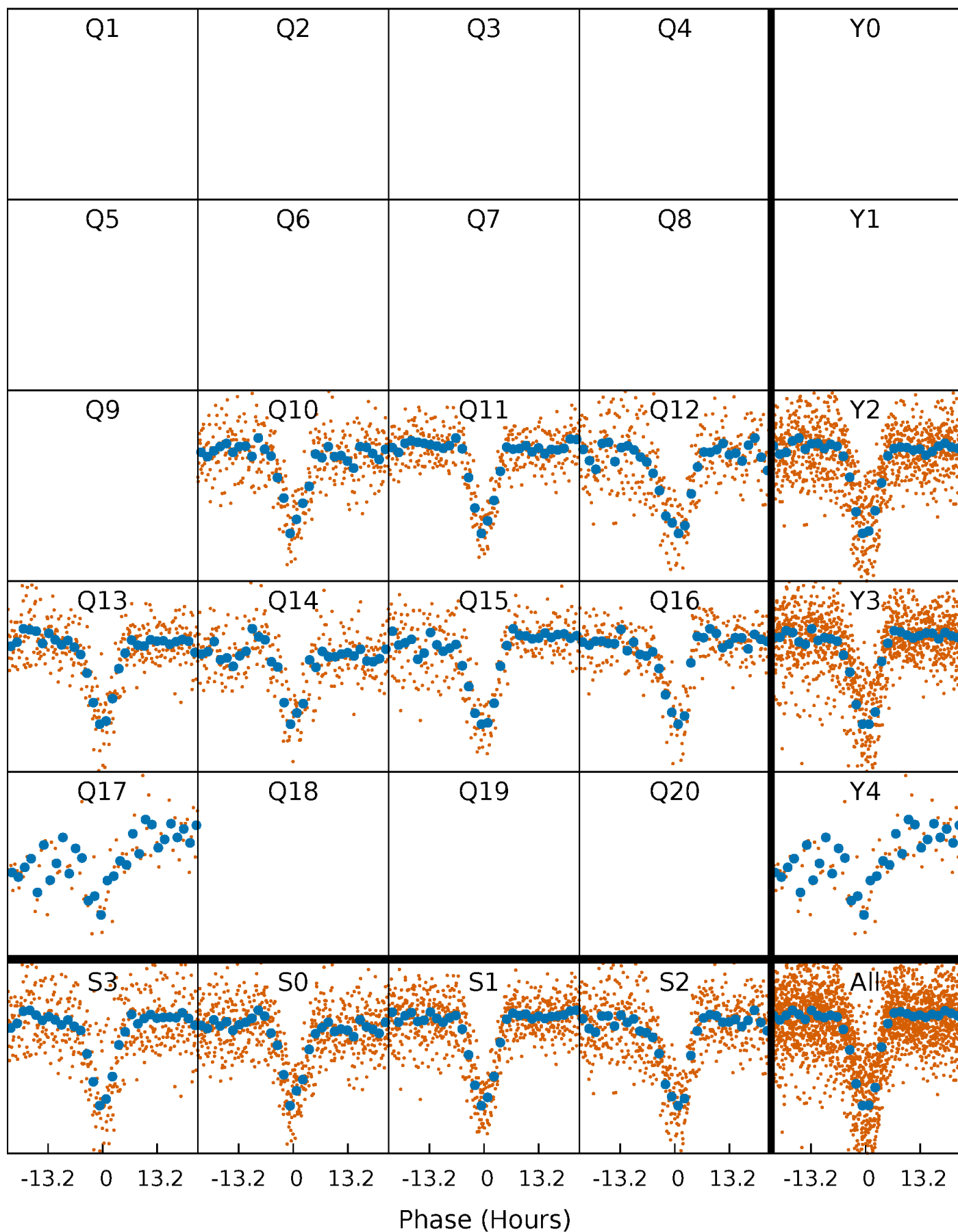


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

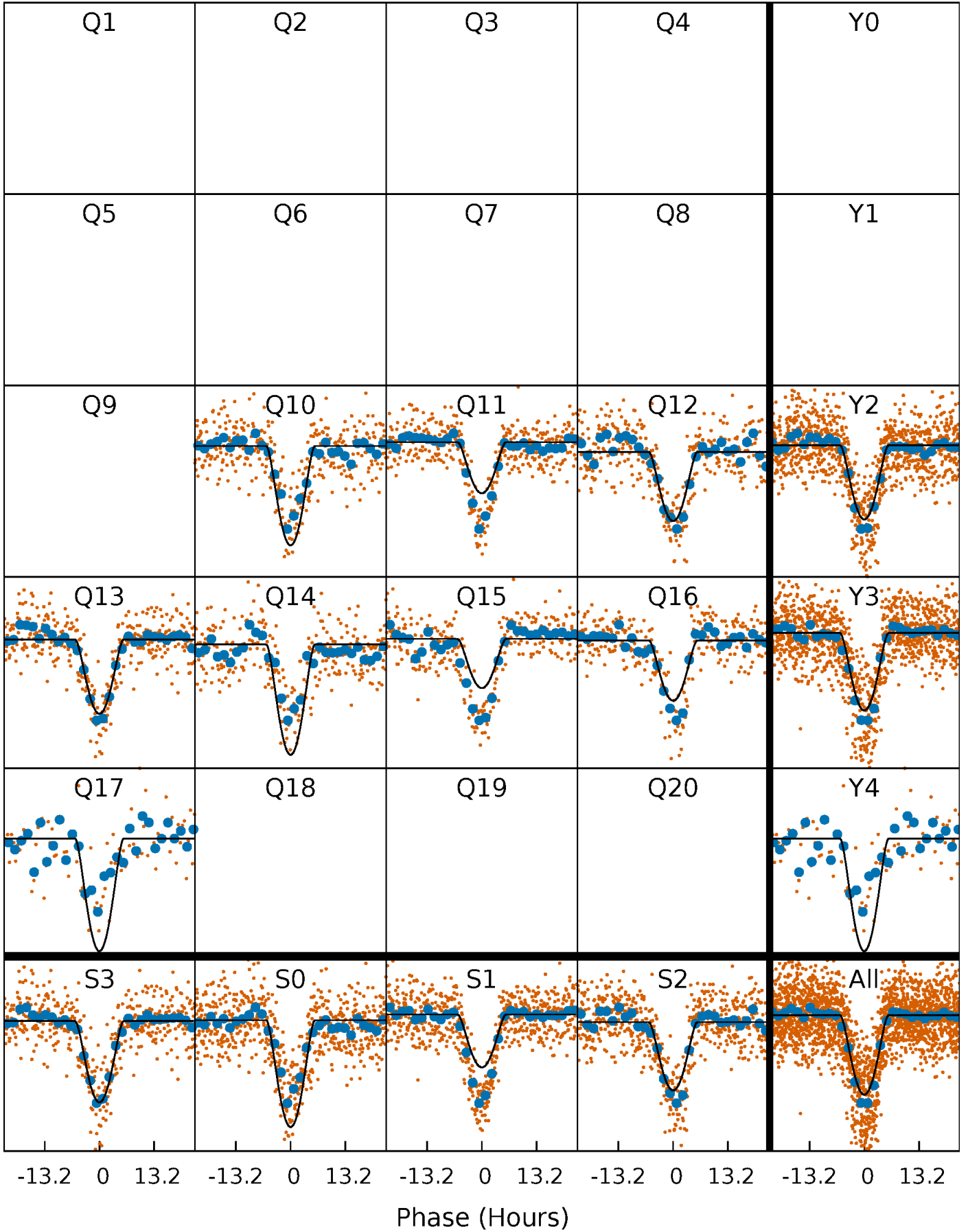
TCE 008258160-02     $P = 23.627104$  Days     $T_0 = 137.756486$  (BKJD)





# DV Quarter-Phased Transit Curves

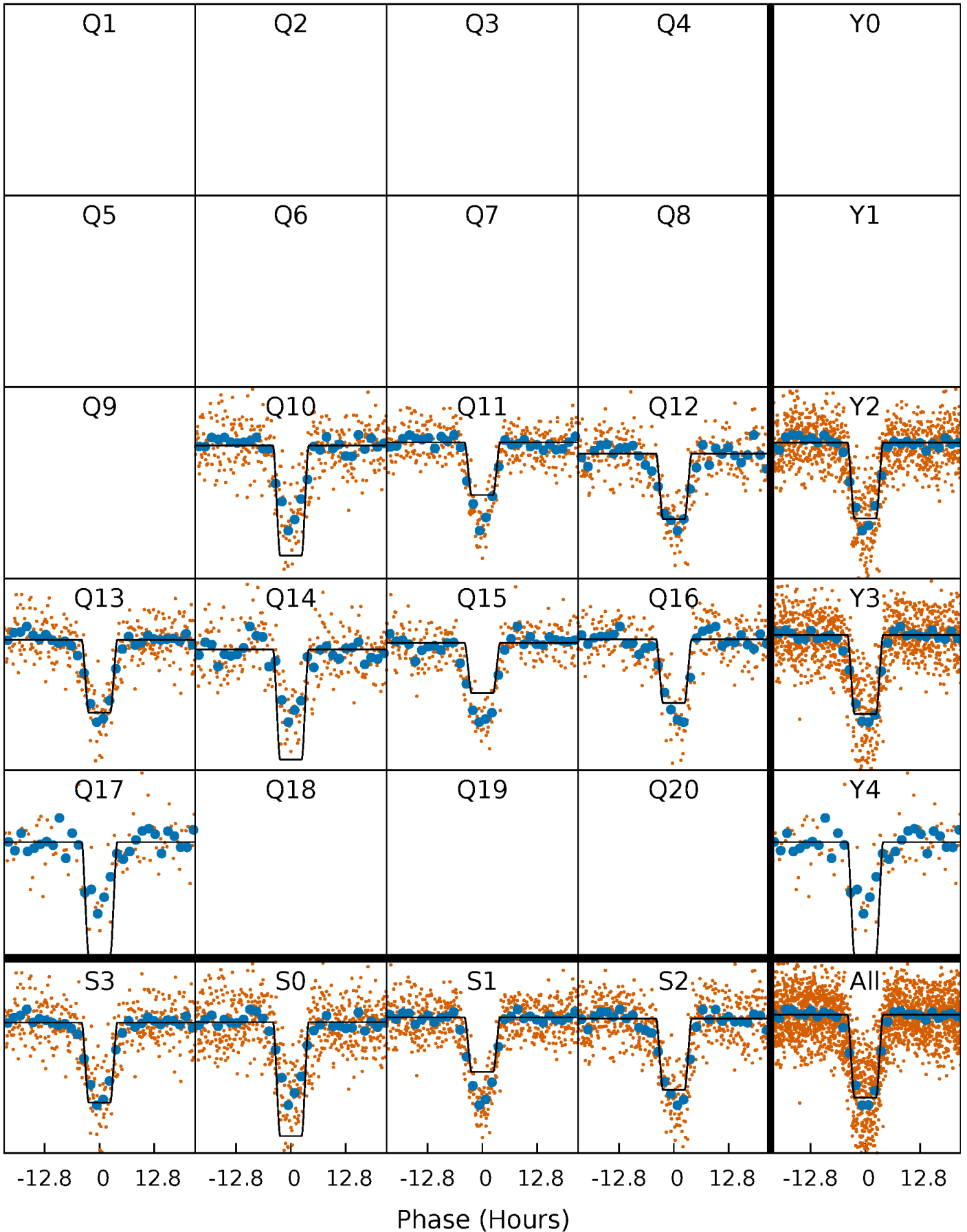
TCE 008258160-02   P= 23.627104 Days    $T_0=137.756486$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

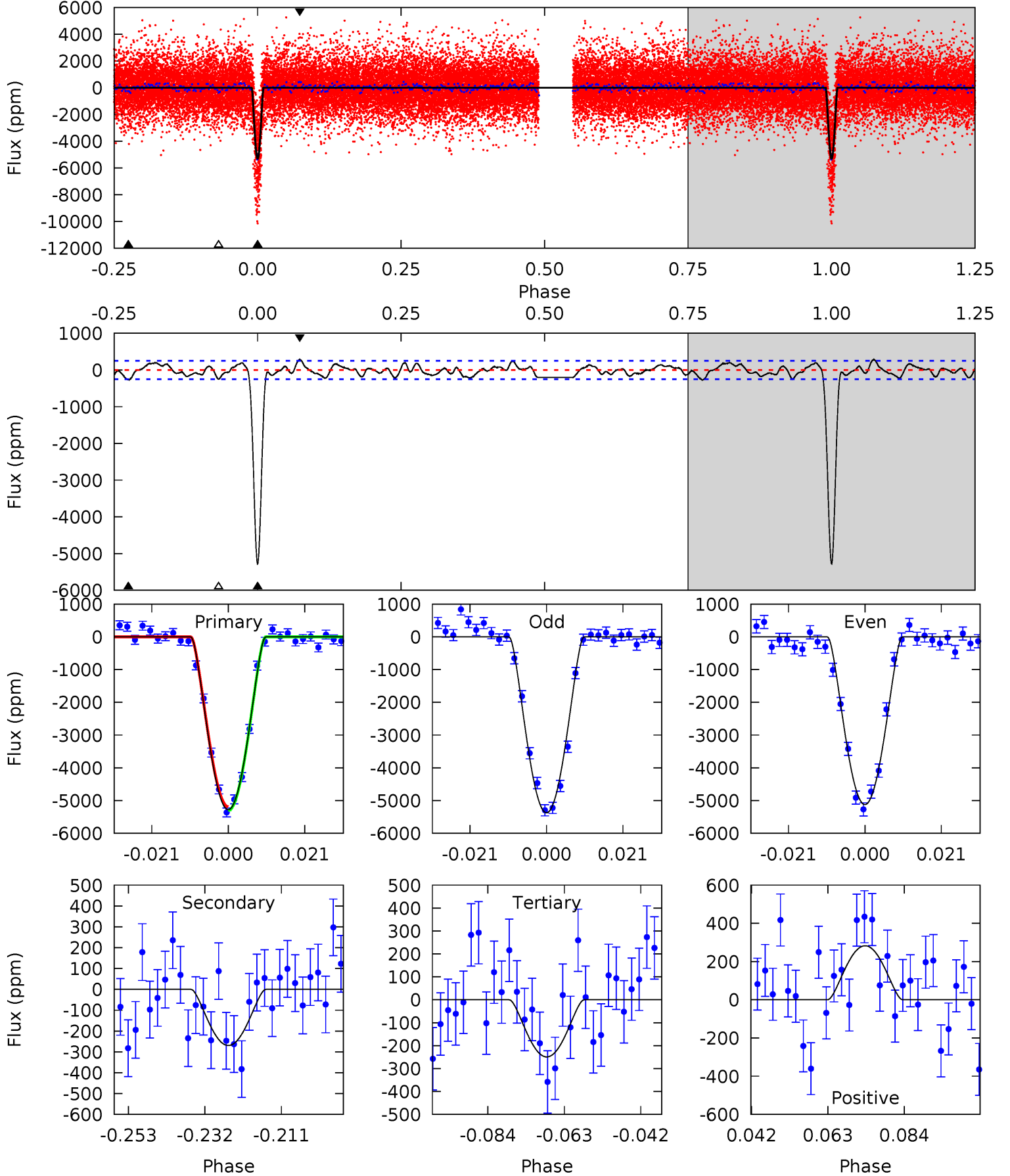
TCE 008258160-02     $P = 23.626629$  Days     $T_0 = 137.778501$  (BKJD)



# DV Model-Shift Uniqueness Test

008258160-02, P = 23.627104 Days, E = 137.756486 Days

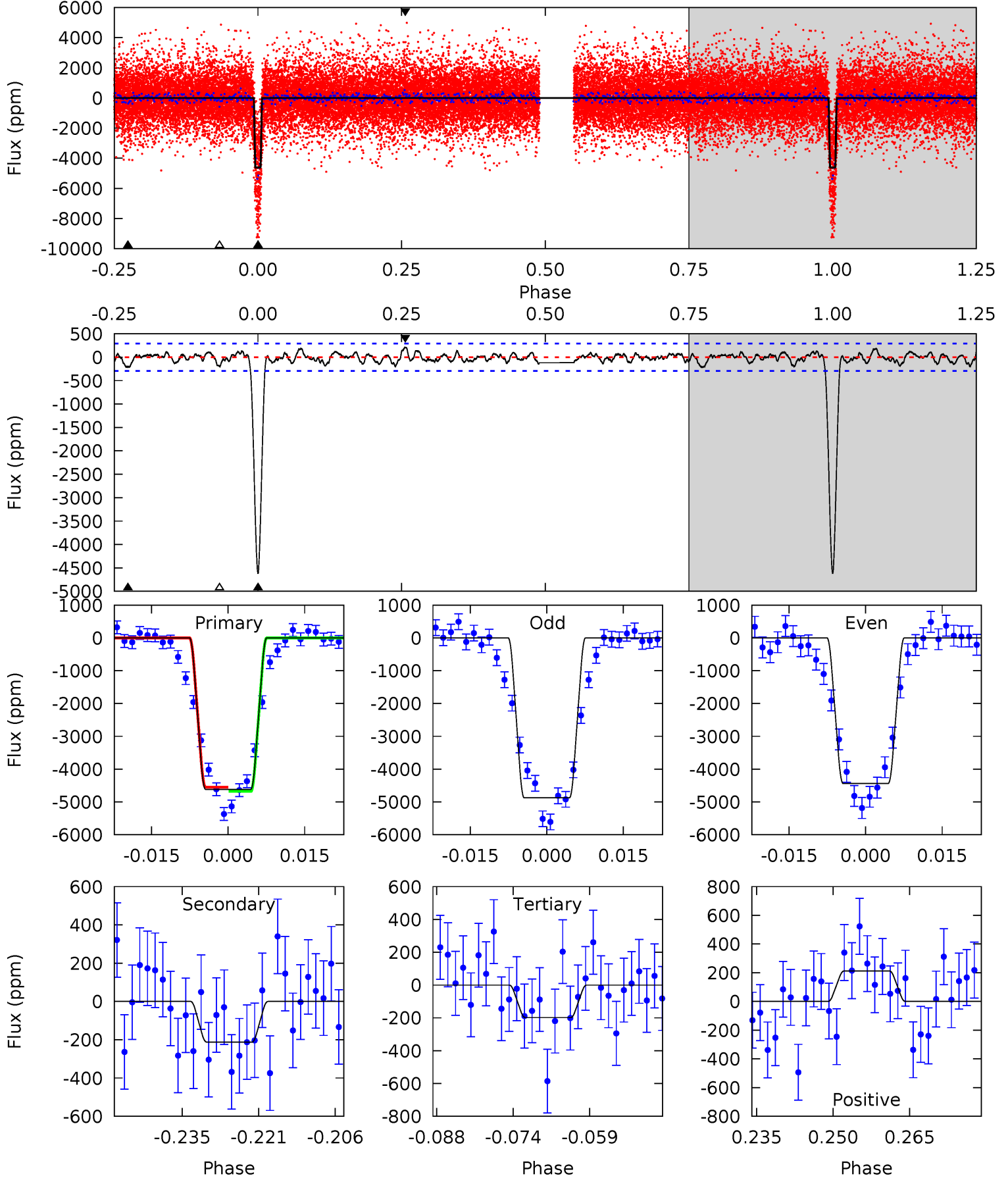
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
103.1	5.26	4.87	5.52	4.88	2.31	2.13	98.3	97.6	0.39	-0.26	2.47	1.05	0.05	1.13



# Alt Model-Shift Uniqueness Test

008258160-02, P = 23.626629 Days, E = 137.778501 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
77.9	3.58	3.35	3.59	4.95	2.44	1.20	74.5	74.3	0.24	-0.00	3.71	1.00	0.04	1.09



### Stellar Parameters For KIC 008258160

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5305^{+185}_{-185}$	$4.477^{+0.099}_{-0.121}$	$-0.080^{+0.300}_{-0.300}$	$0.857^{+0.138}_{-0.101}$	$0.805^{+0.113}_{-0.070}$	$1.799^{+0.774}_{-0.641}$
	+3%/-3%	+2%/-3%	+375%/-375%	+16%/-12%	+14%/-9%	+43%/-36%
Source	KIC0	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 008258160-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-269 \pm 51$	$11.39^{+6.52}_{-6.36}$	$785^{+41}_{-36}$	$2738^{+647}_{-328}$	$27^{+102}_{-16}$
Alt.	$-212 \pm 59$	$8.34^{+6.42}_{-5.06}$	$783^{+42}_{-42}$	$2853^{+919}_{-413}$	$37^{+214}_{-25}$

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

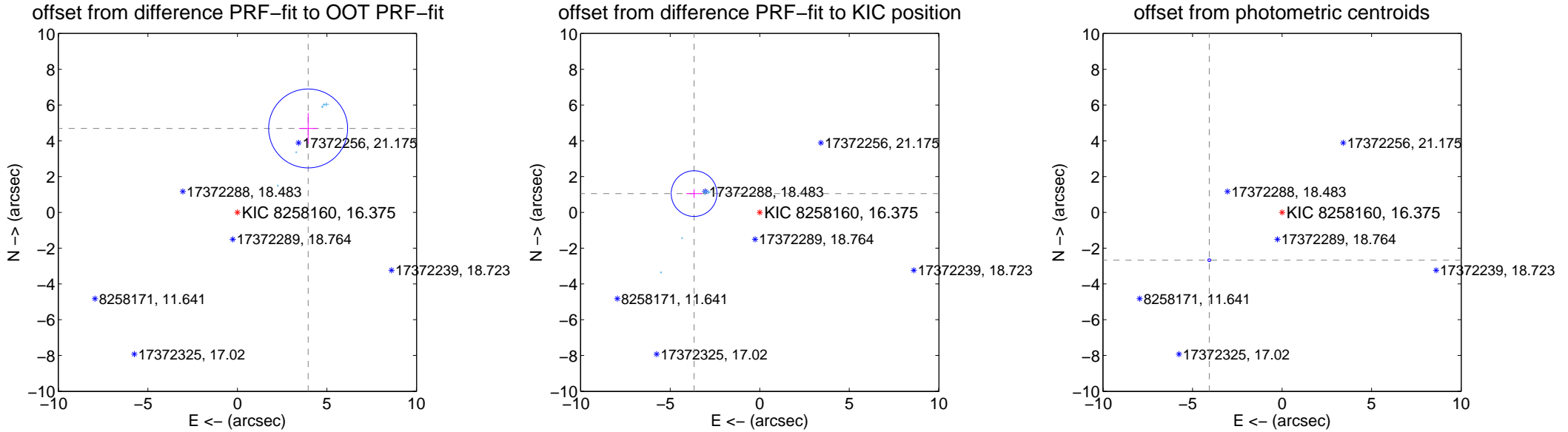
## DV Centroid Data

Supplemental centroid analysis for 008258160-02. Kepler magnitude: 16.38. Transit SNR 39.29

There are 7 quarters with good PRF difference image offsets

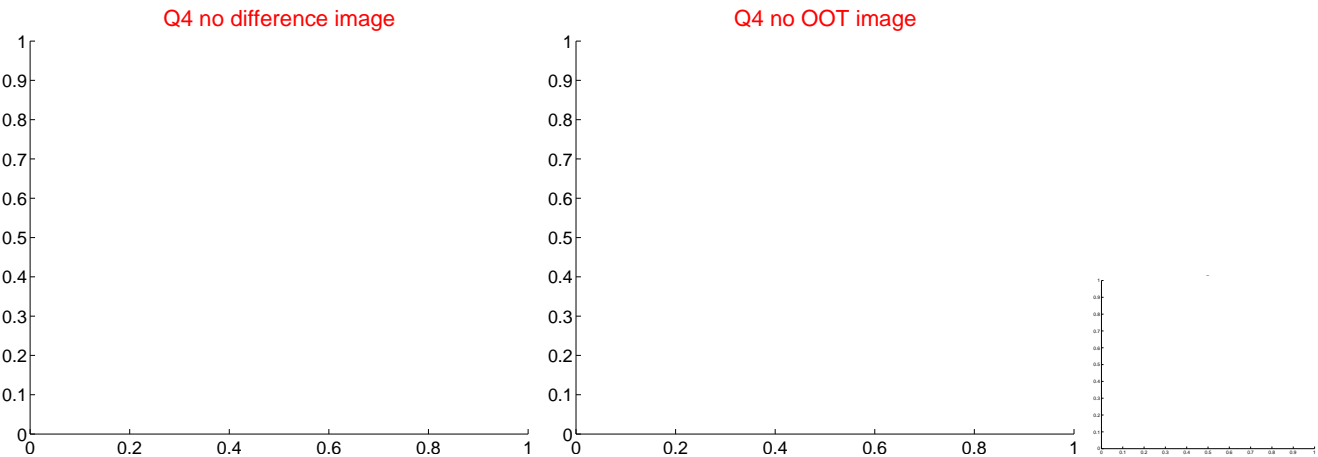
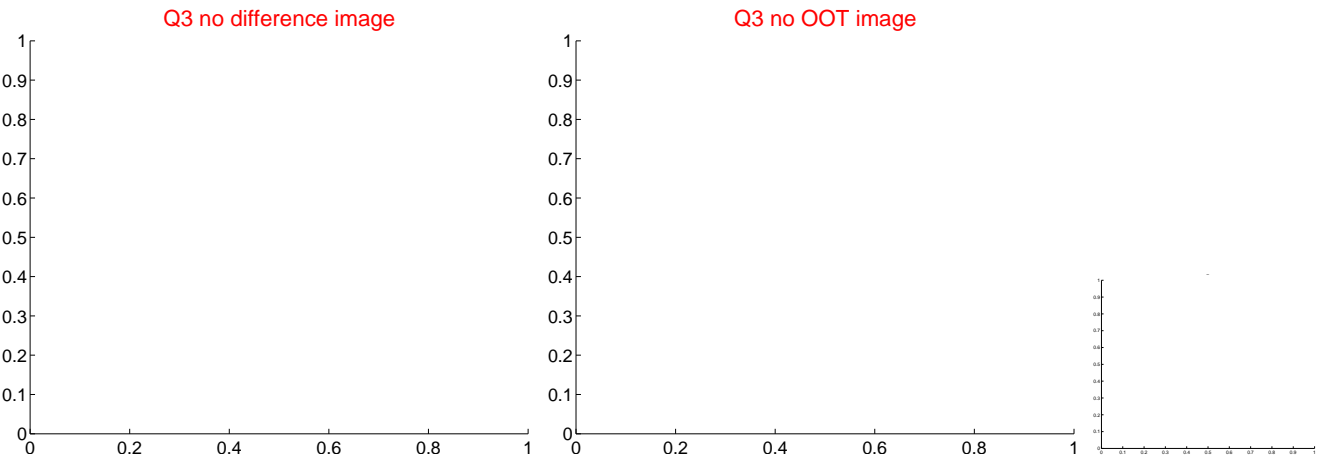
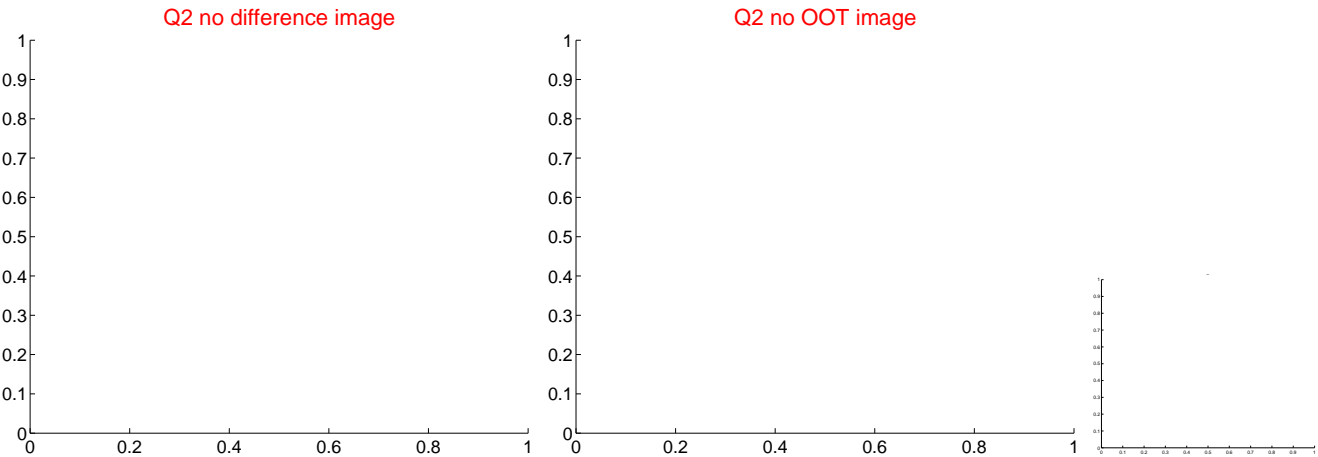
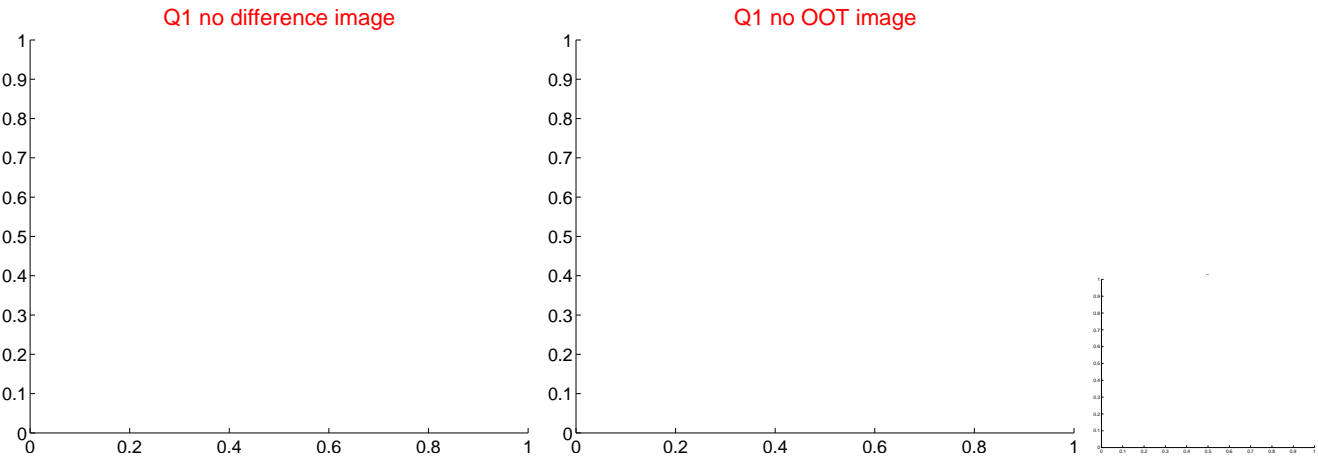
The OOT PRF centroid is offset from the target star catalog position by about 9.28 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.135 \pm 0.735$	8.34	$-3.952 \pm 0.509$	$4.693 \pm 0.860$
PRF-fit source offset from KIC position	$3.817 \pm 0.426$	8.96	$3.669 \pm 0.437$	$1.050 \pm 0.248$
photometric centroid source offset	$4.86 \pm 0.03$	180.41	$4.07 \pm 0.03$	$-2.67 \pm 0.02$

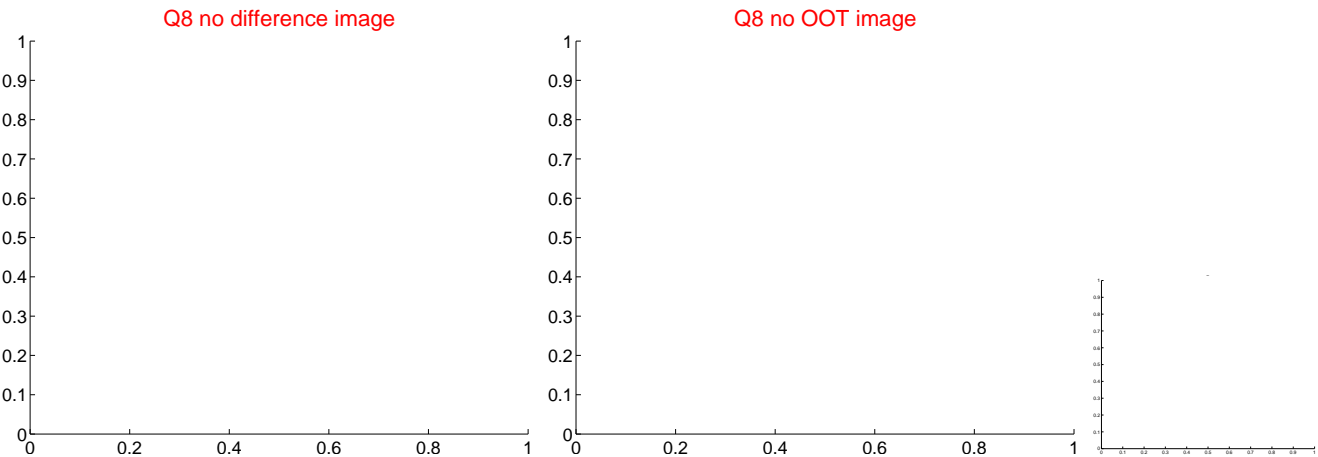
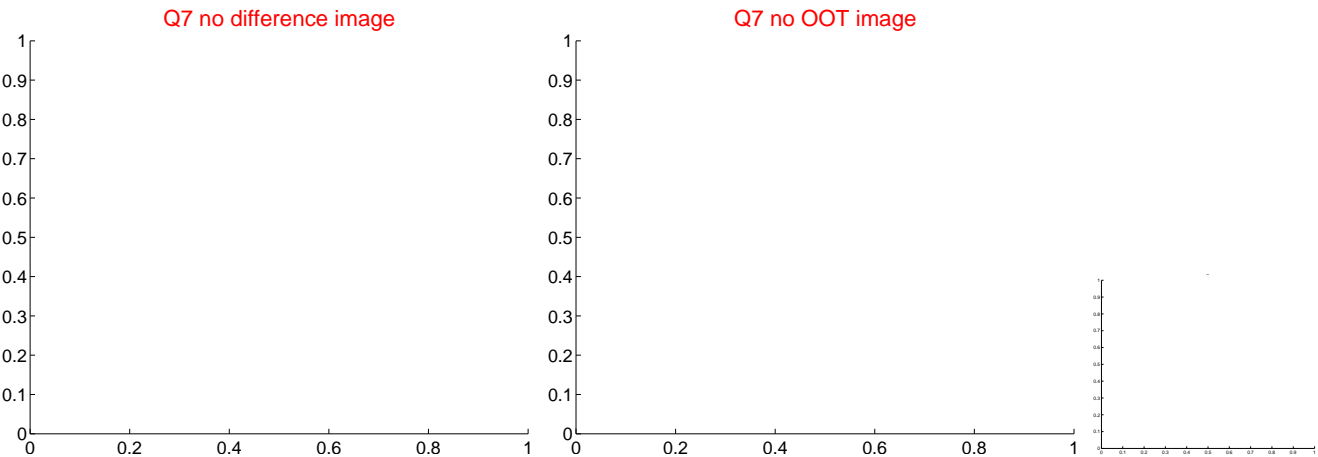
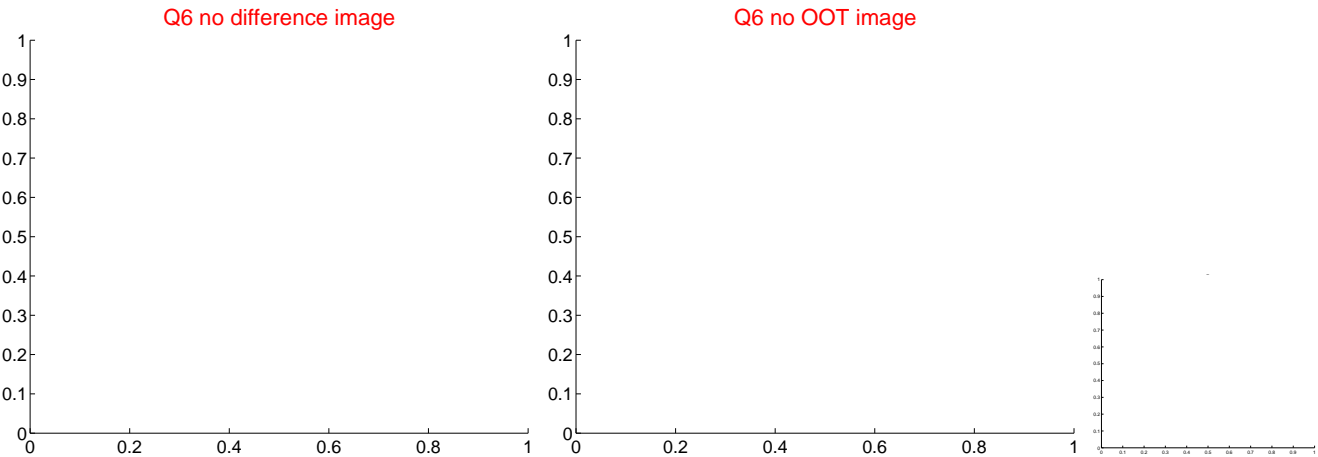
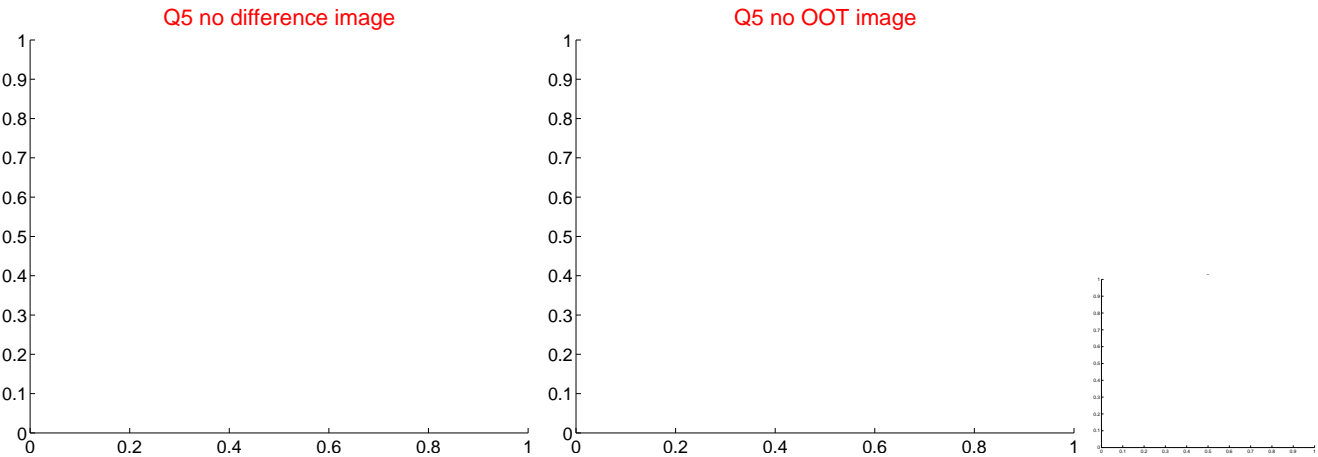


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

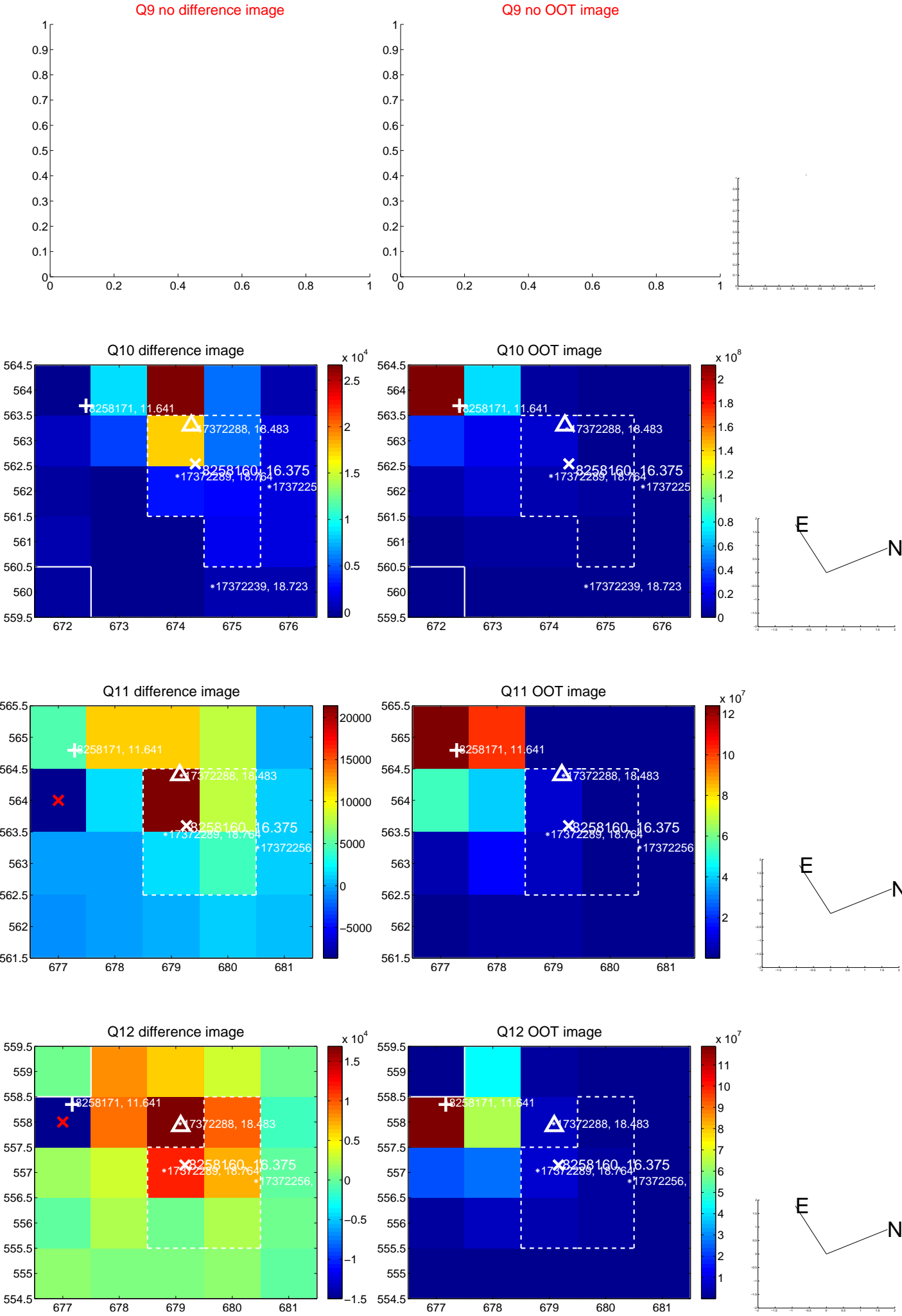


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

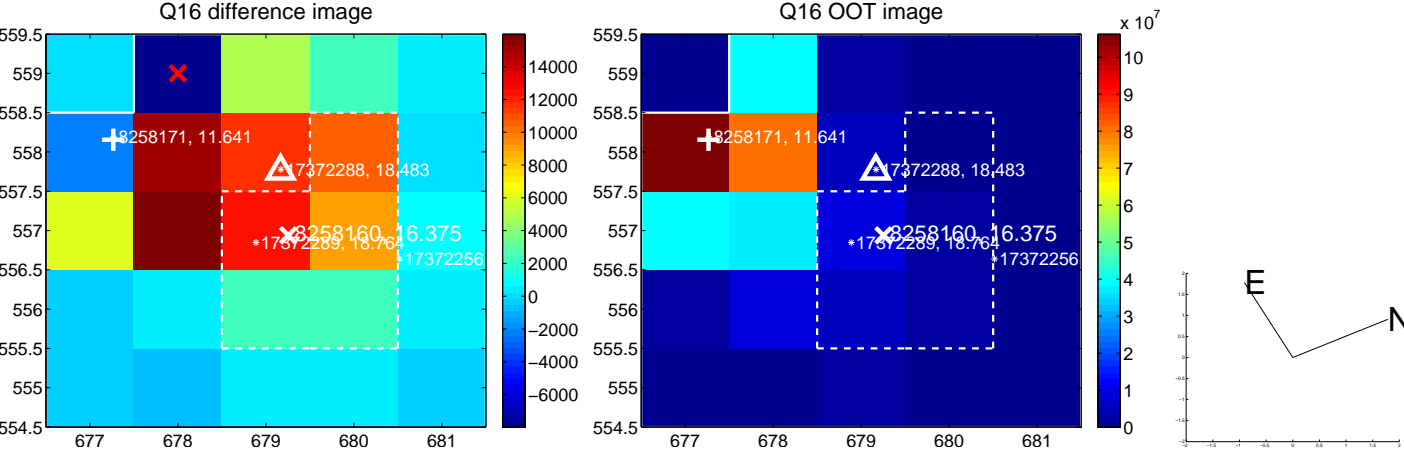
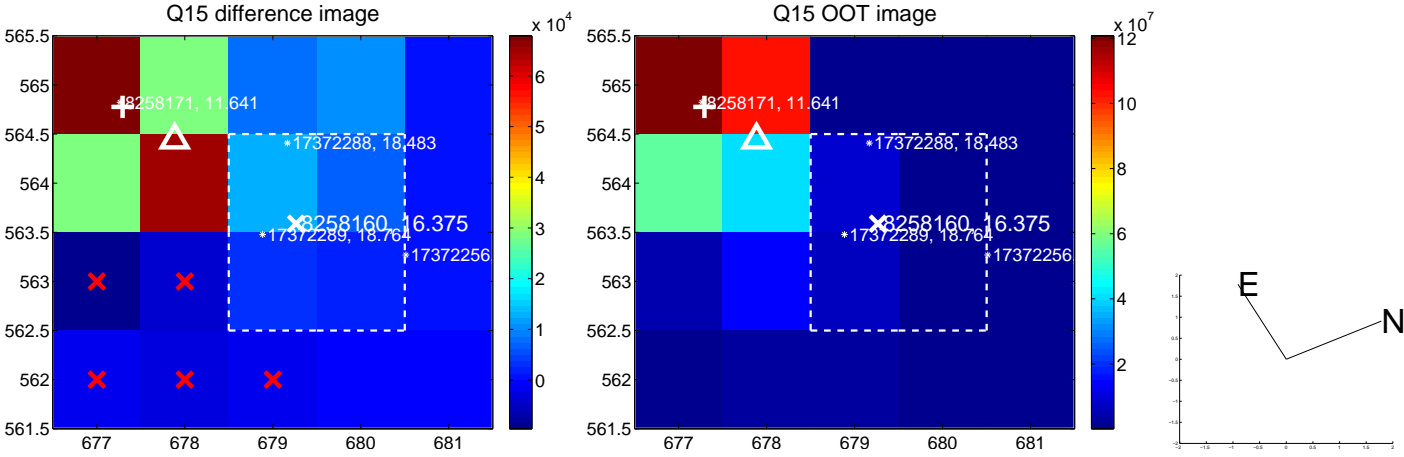
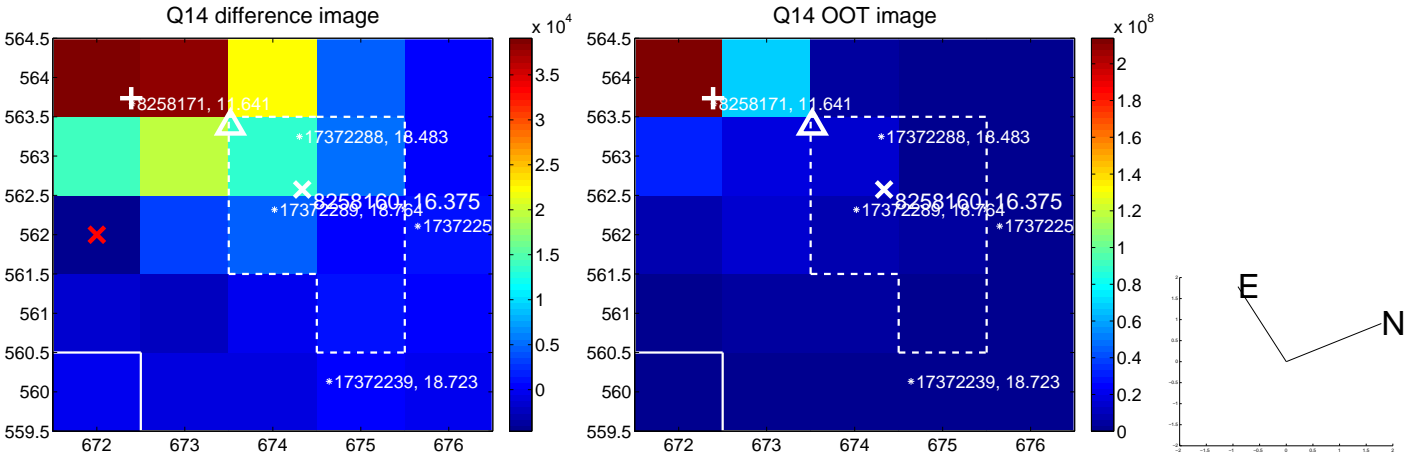
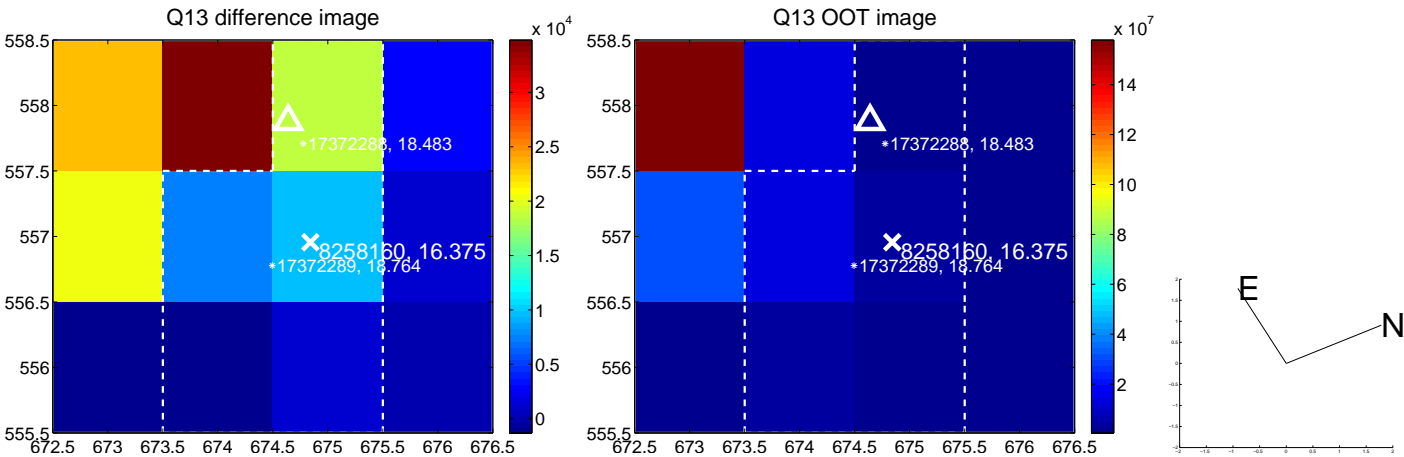




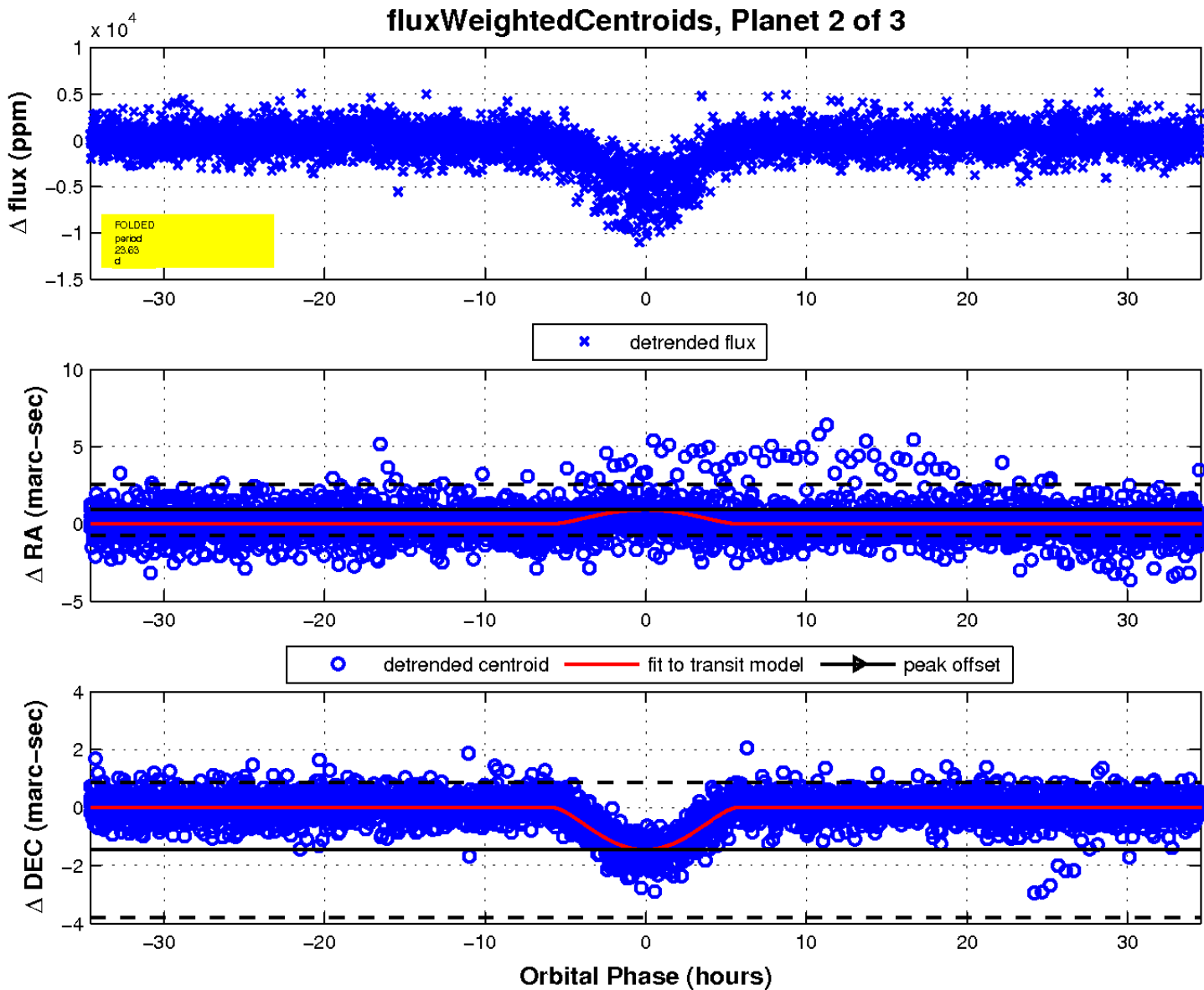
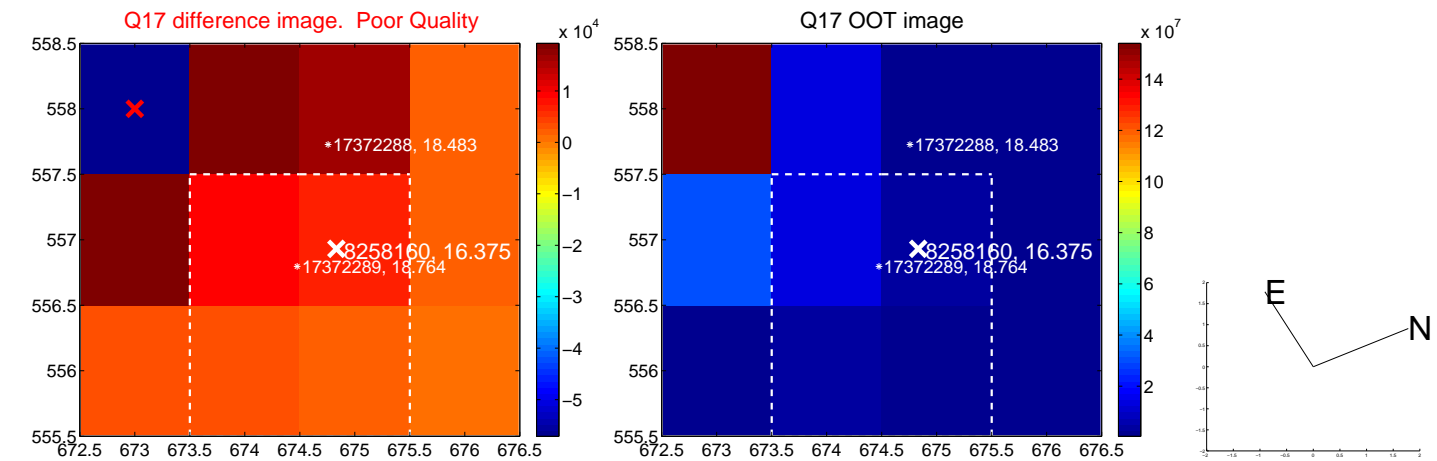
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

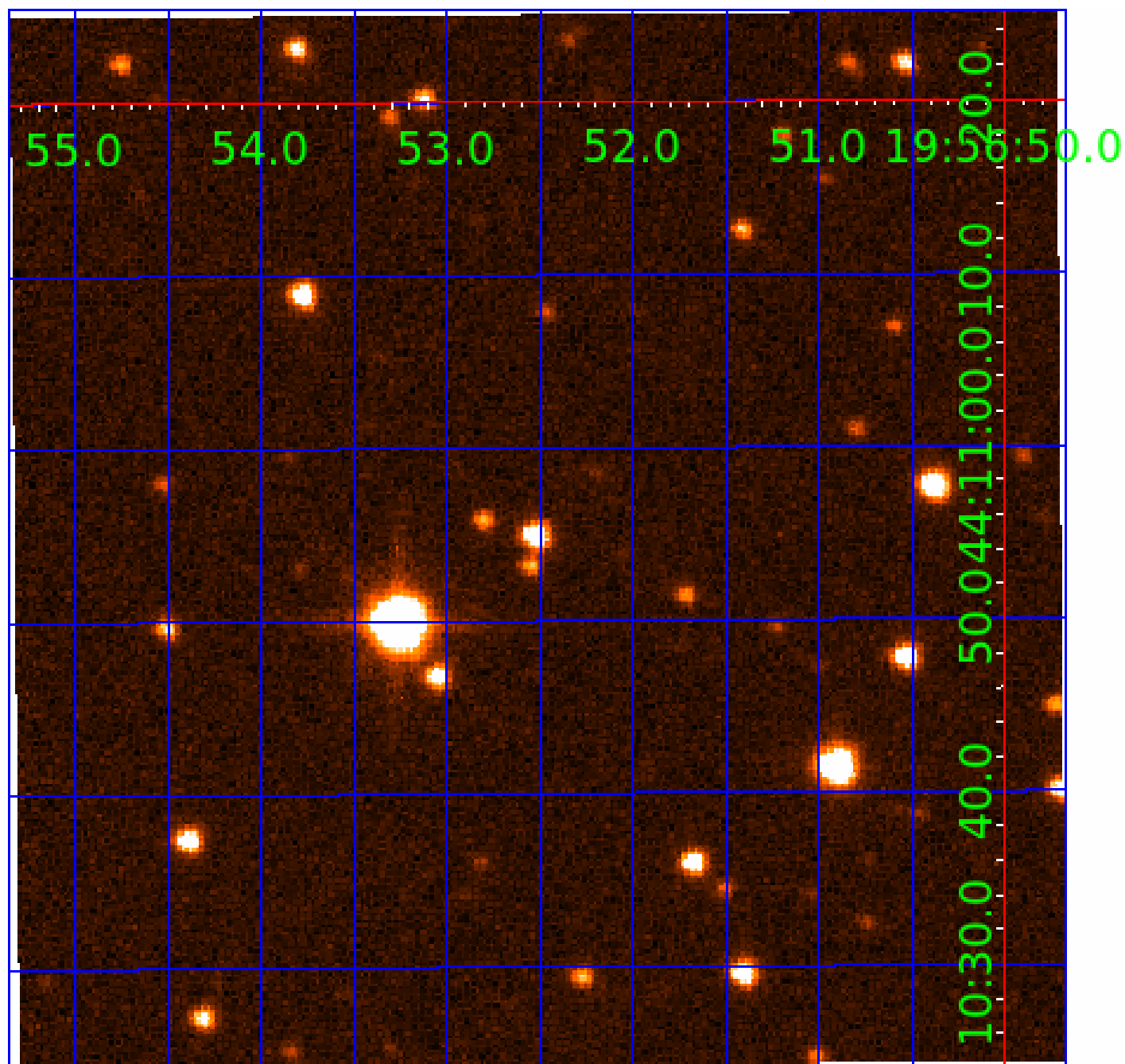


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008258160

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008258160-01	OBS	3870.01	23.627130	150.031295	8727.8	11.160	65.9	62.3	0.86	5305	13.59	23.21
008258160-02	OBS	No	23.627104	137.756486	4630.4	11.529	39.2	39.3	0.86	5305	10.38	23.21
008258160-03	OBS	No	181.685545	276.781364	3083.3	7.844	7.6	8.3	0.86	5305	5.48	1.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008258160-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS
008258160-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET
008258160-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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 008258160-03

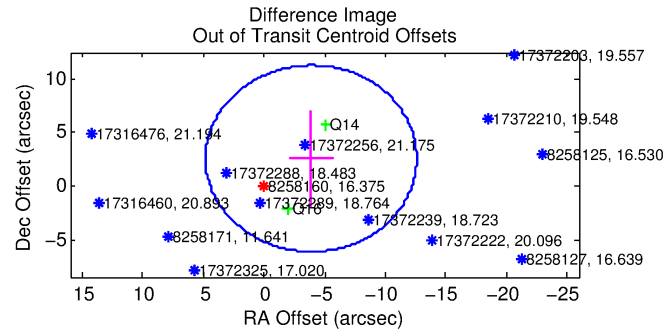
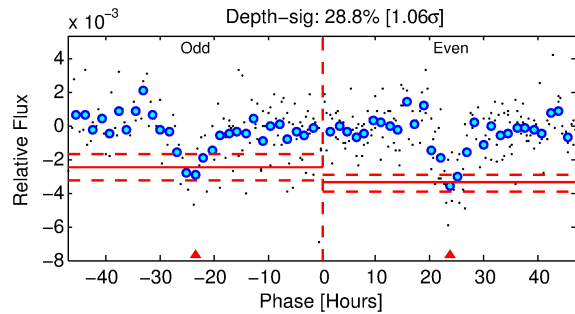
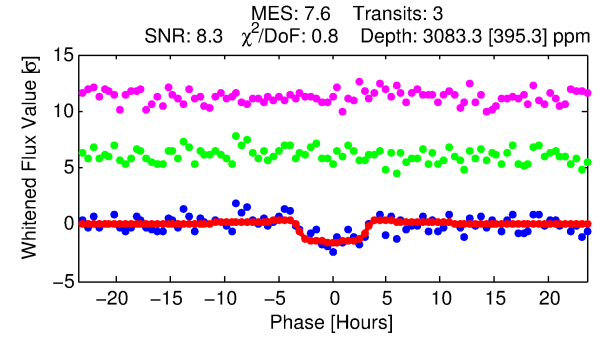
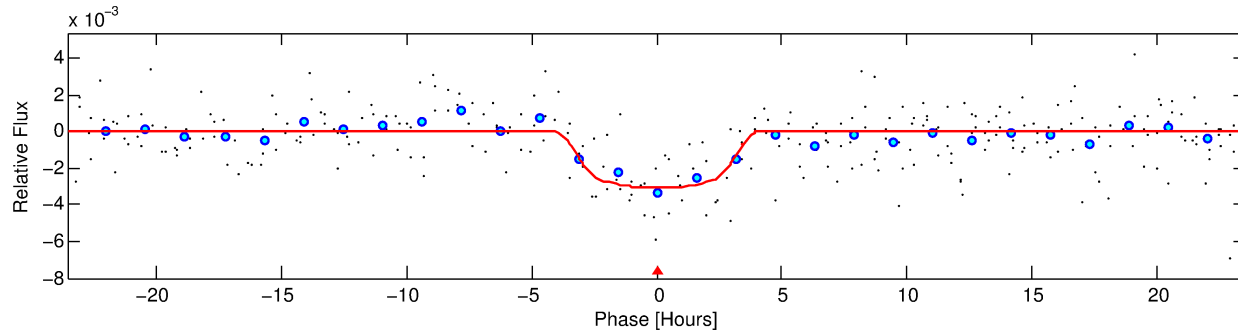
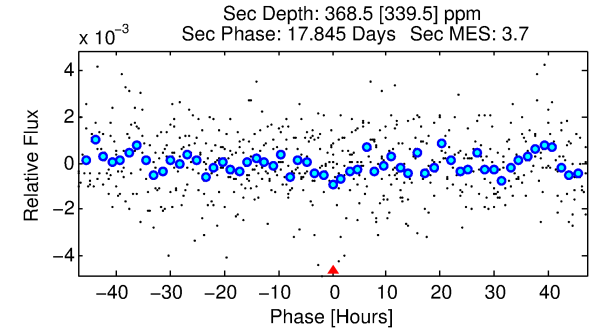
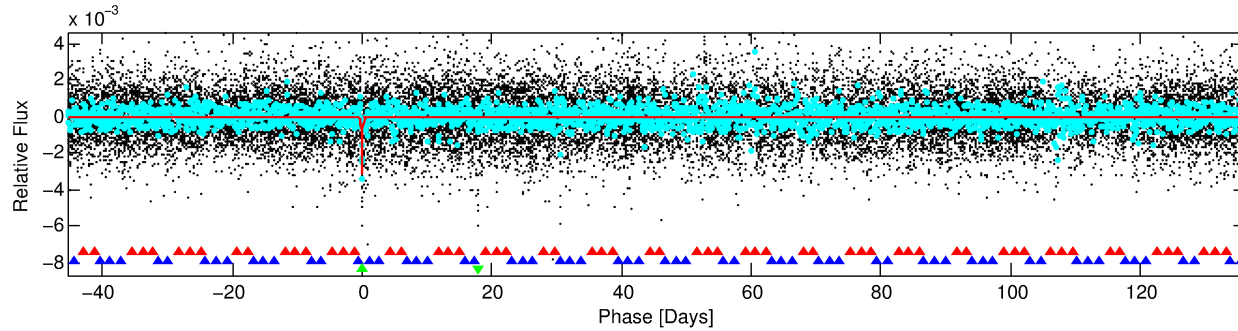
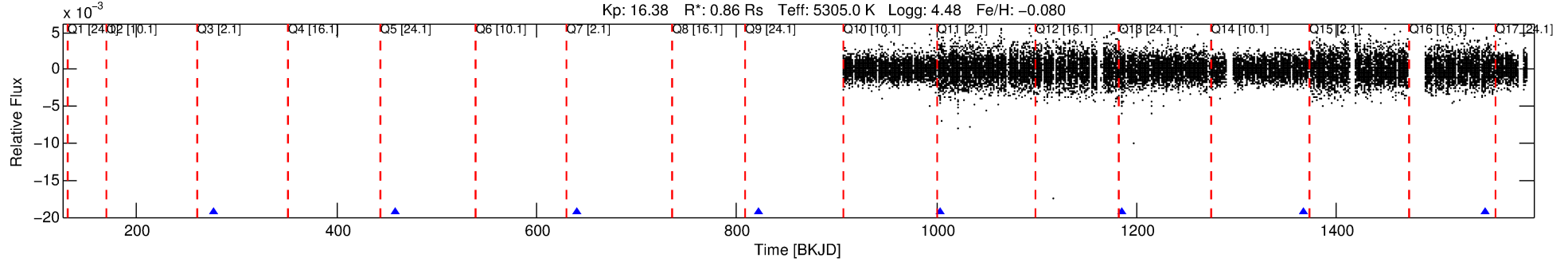
No Significant Match Found

# DV One-Page Summary

KIC: 8258160 Candidate: 3 of 3 Period: 181.686 d

KOI: K03870 Corr: No Ephemeris Match

Kp: 16.38 R\*: 0.86 Rs Teff: 5305.0 K Logg: 4.48 Fe/H: -0.080



## DV Fit Results:

Period = 181.68554 [0.00711] d  
Epoch = 276.7814 [0.0399] BKJD  
Rp/R\* = 0.0586 [0.0080]  
a/R\* = 112.18 [48.07]  
b = 0.85 [0.15]  
Seff = 1.53 [0.39]  
Teq = 284 [18] K  
Rp = 5.48 [1.16] Re  
a = 0.5838 [0.0829] AU  
Ag = 2300.95 [2266.51] [1.01σ]  
Teffp = 3037 [737] K [3.73σ]

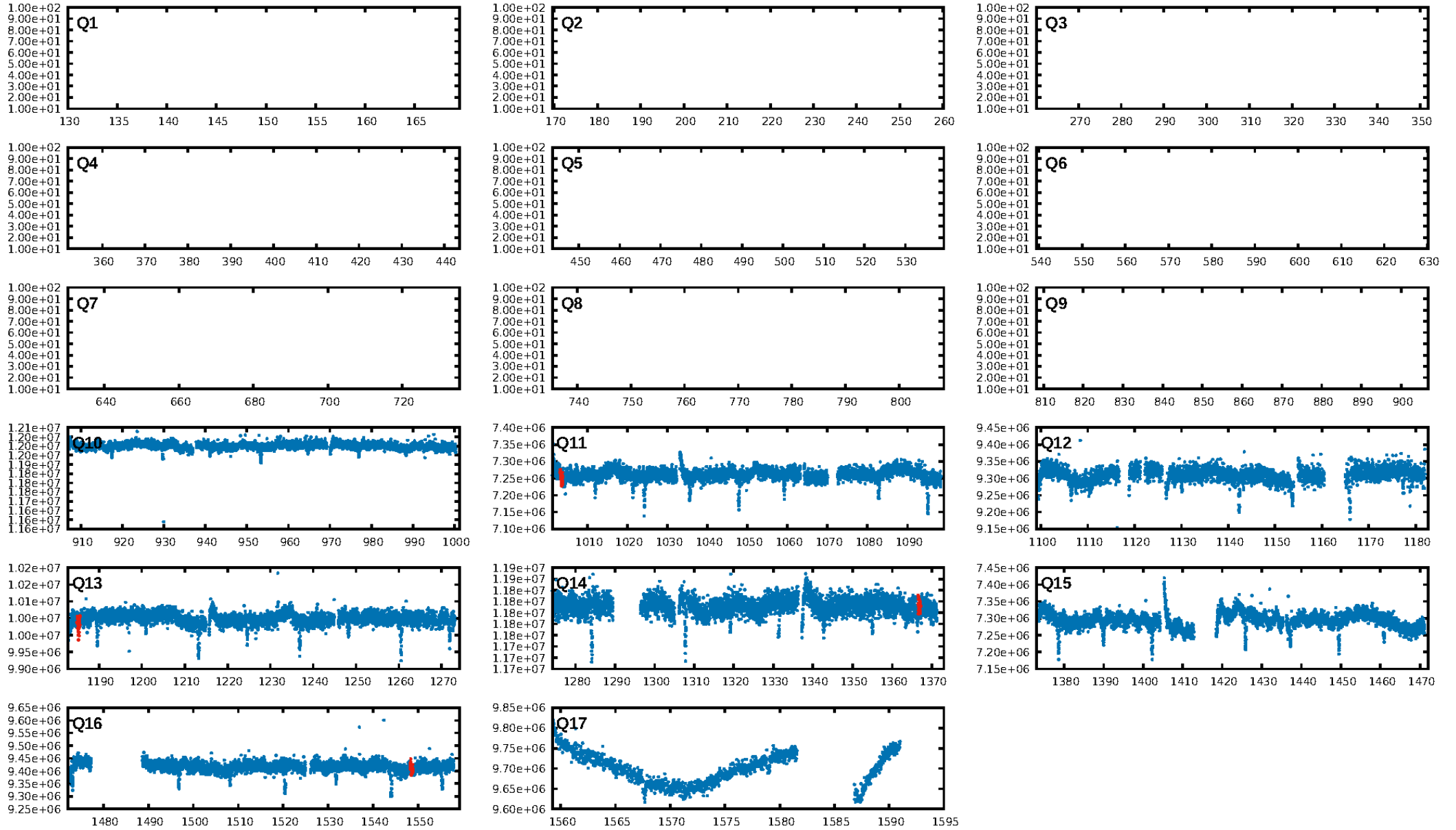
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [278.09σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 6.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 3.02e-10**  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: -0.881**  
Centroid-sig: 77.8%  
**Centroid-so: 5.154 arcsec [48.62σ]**  
OotOffset-rm: 4.660 arcsec [1.60σ]  
KicOffset-rm: 4.451 arcsec [1.56σ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 0.67 [2/3]

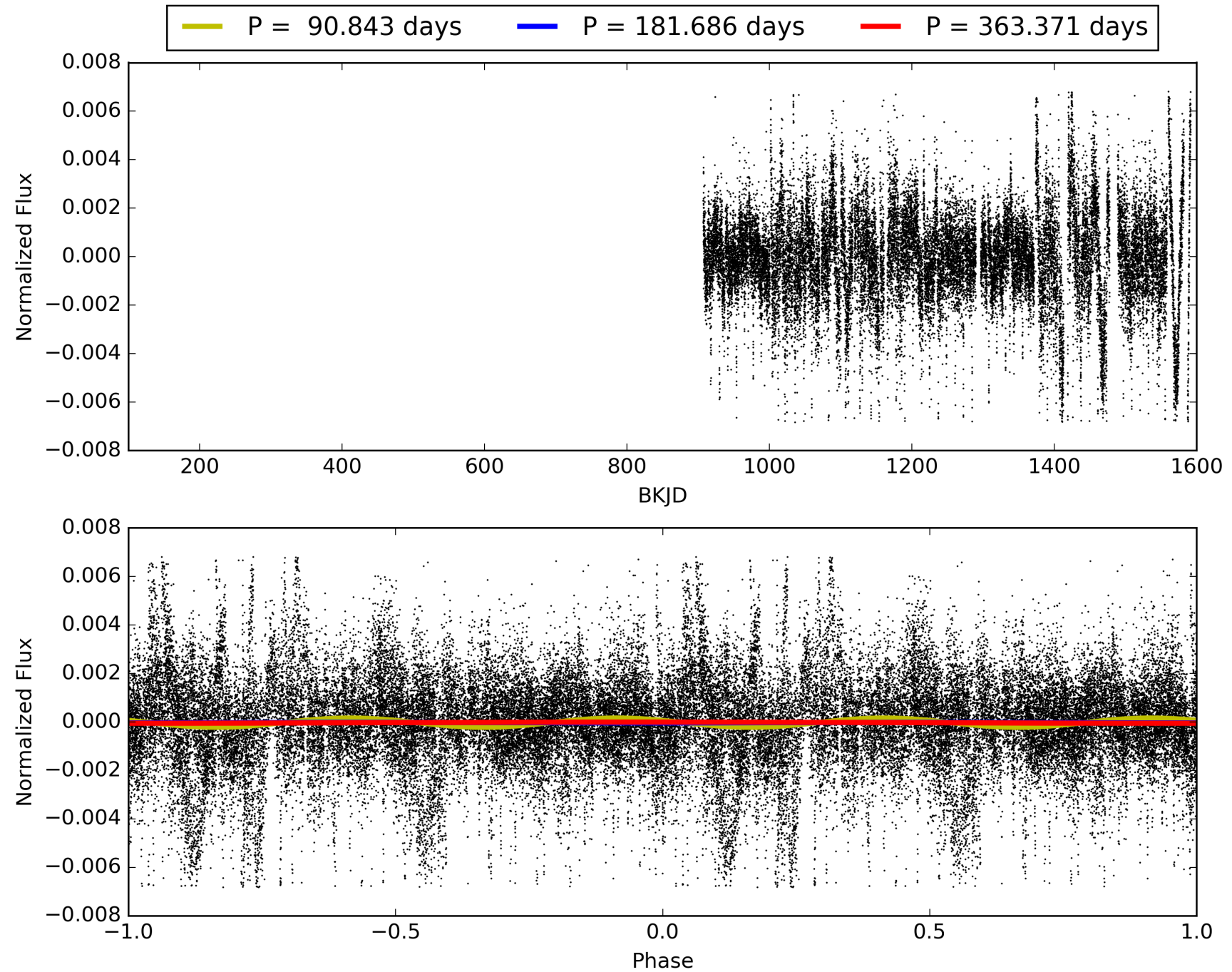
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:10:49 Z

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

# TCE 008258160-03, PDC Light Curves



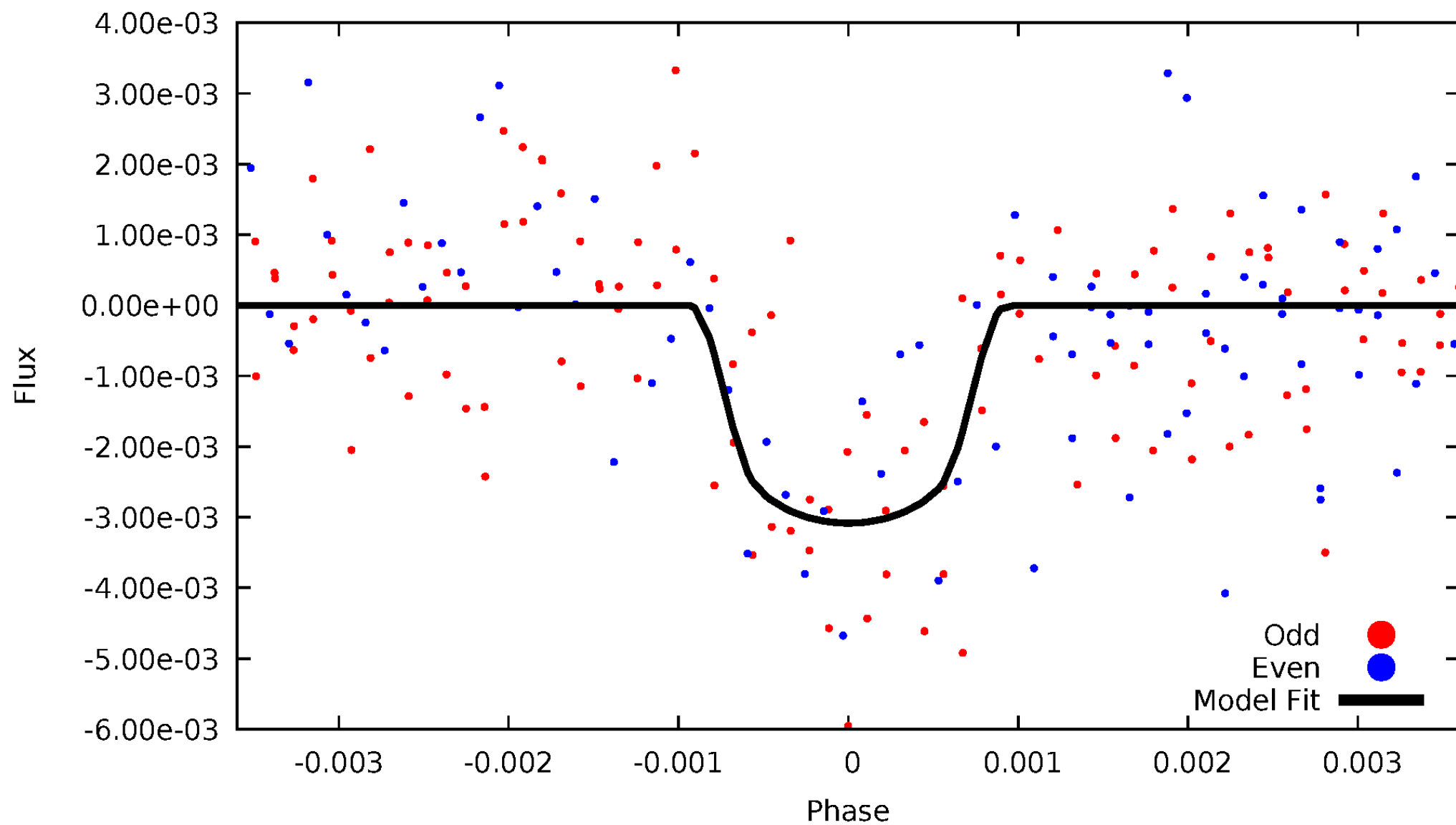
# TCE 008258160-03





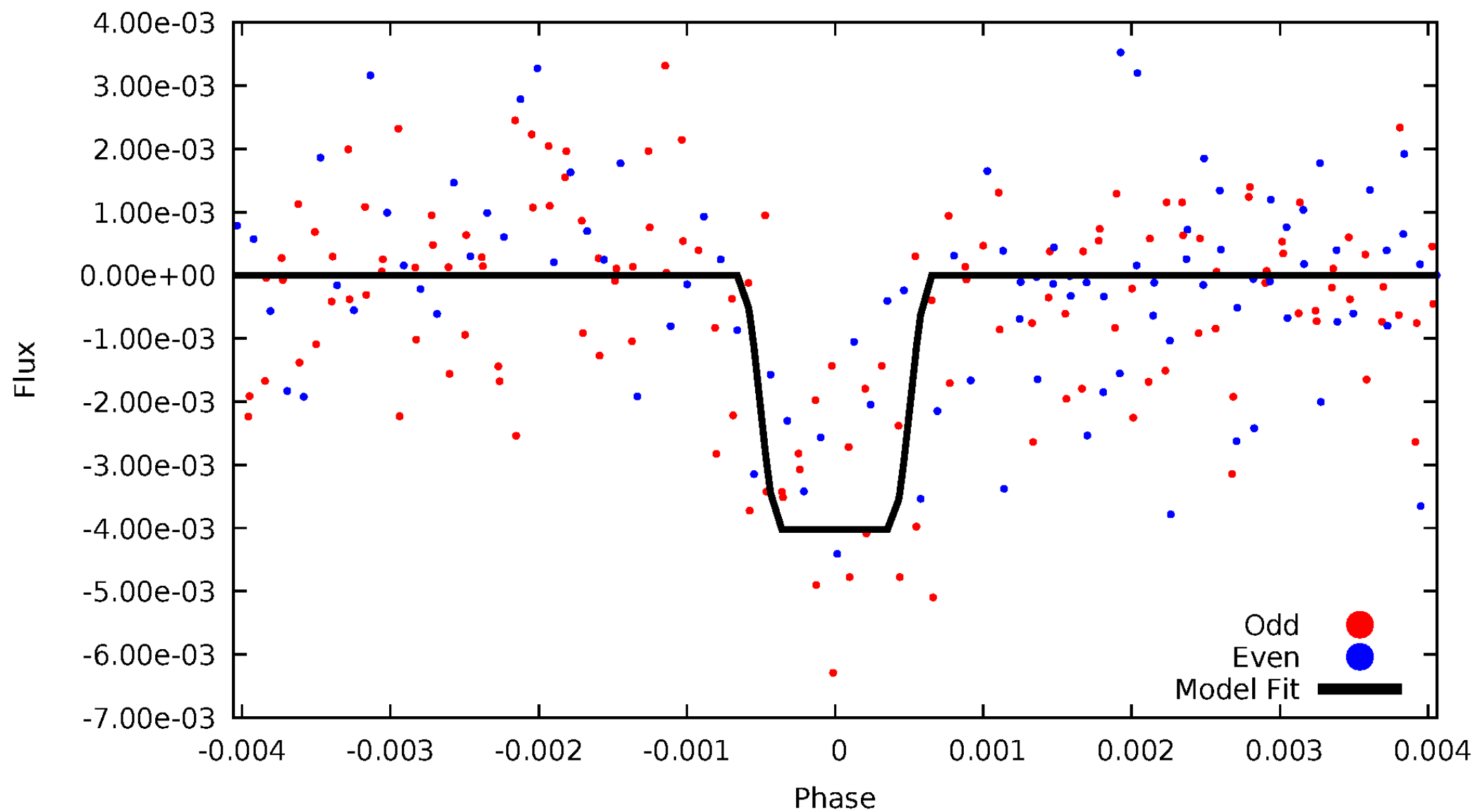
# DV Odd/Even

TCE 008258160-03

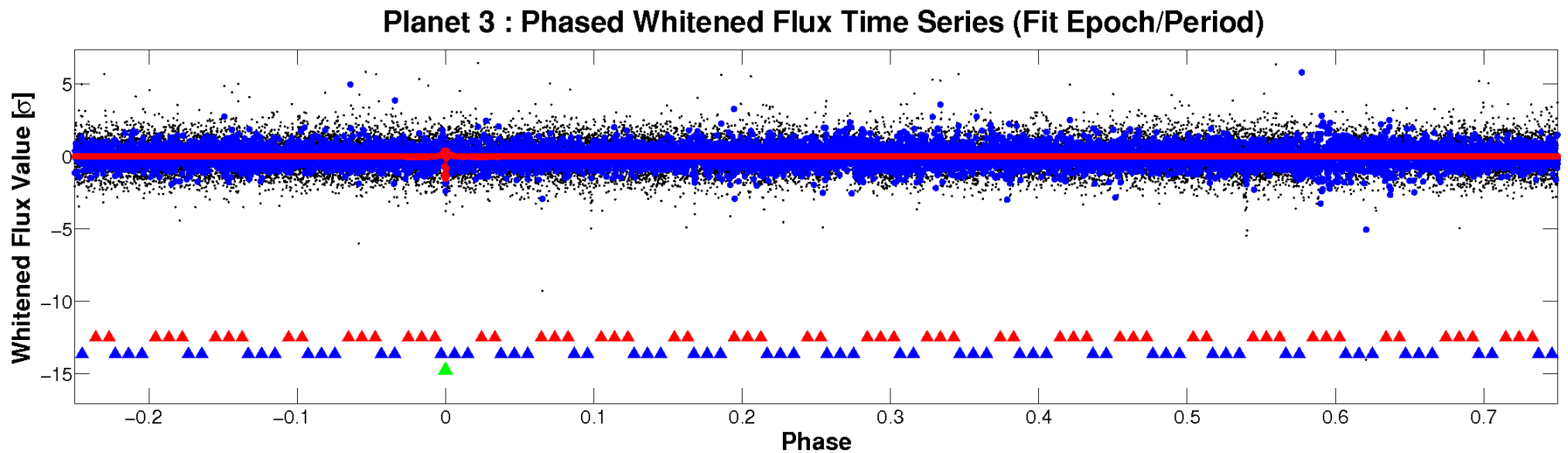
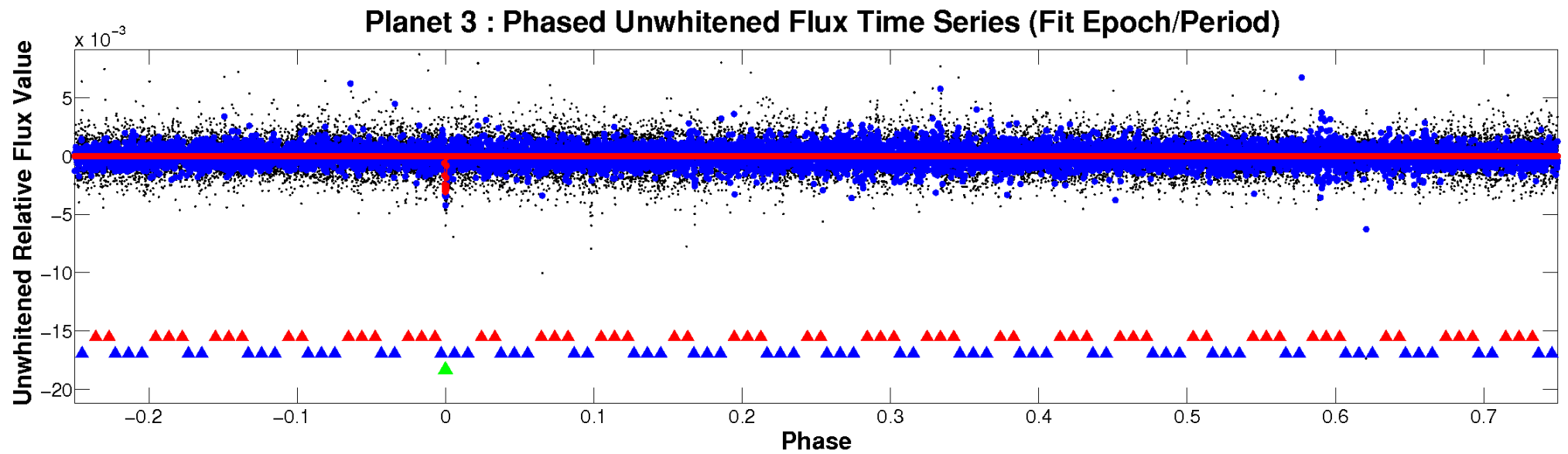


# ALT Odd/Even

TCE 008258160-03

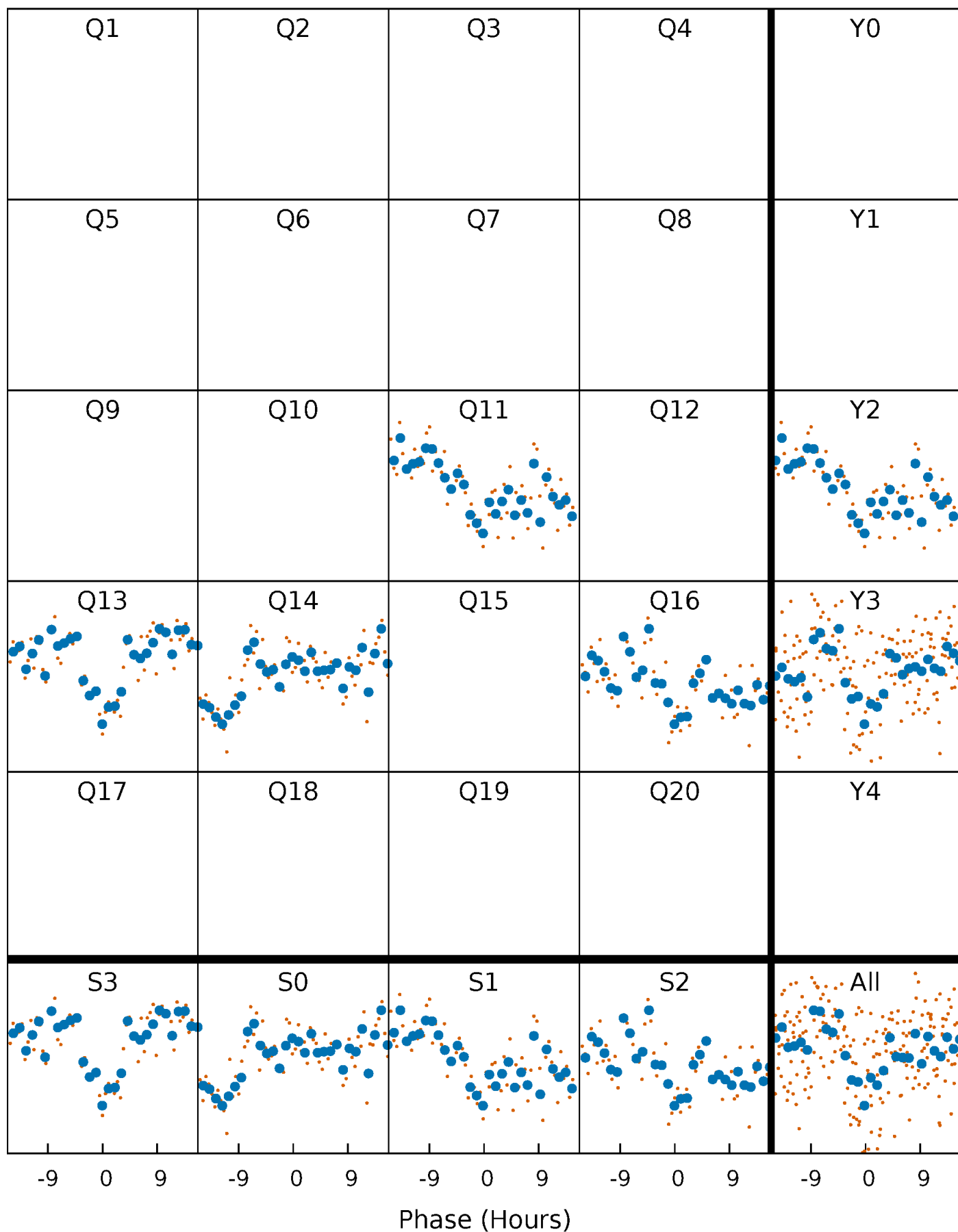


# Non-Whitened Vs. Whitened Light Curve



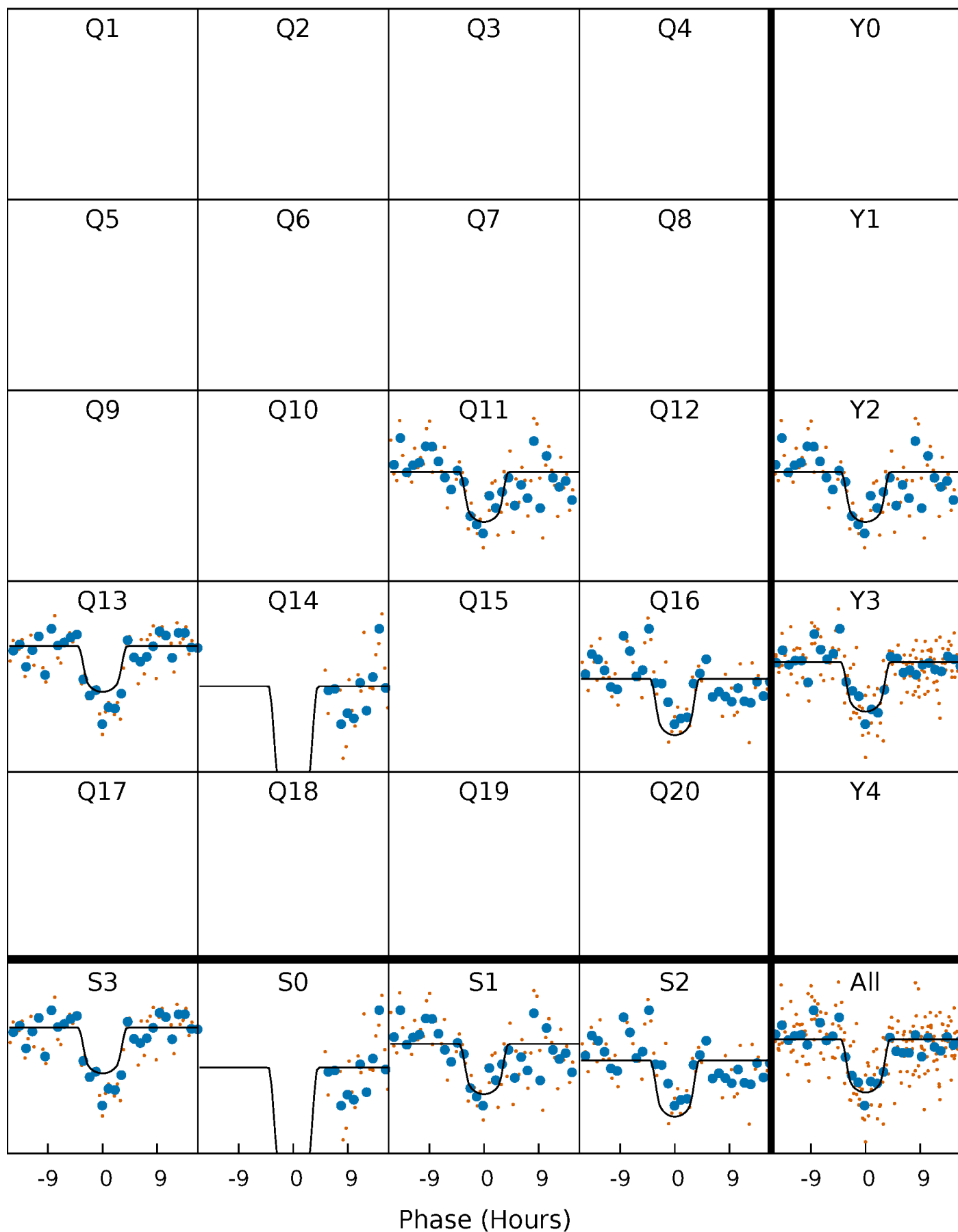
# PDC Quarter-Phased Transit Curves

TCE 008258160-03   P=181.685545 Days    $T_0=276.781364$  (BKJD)



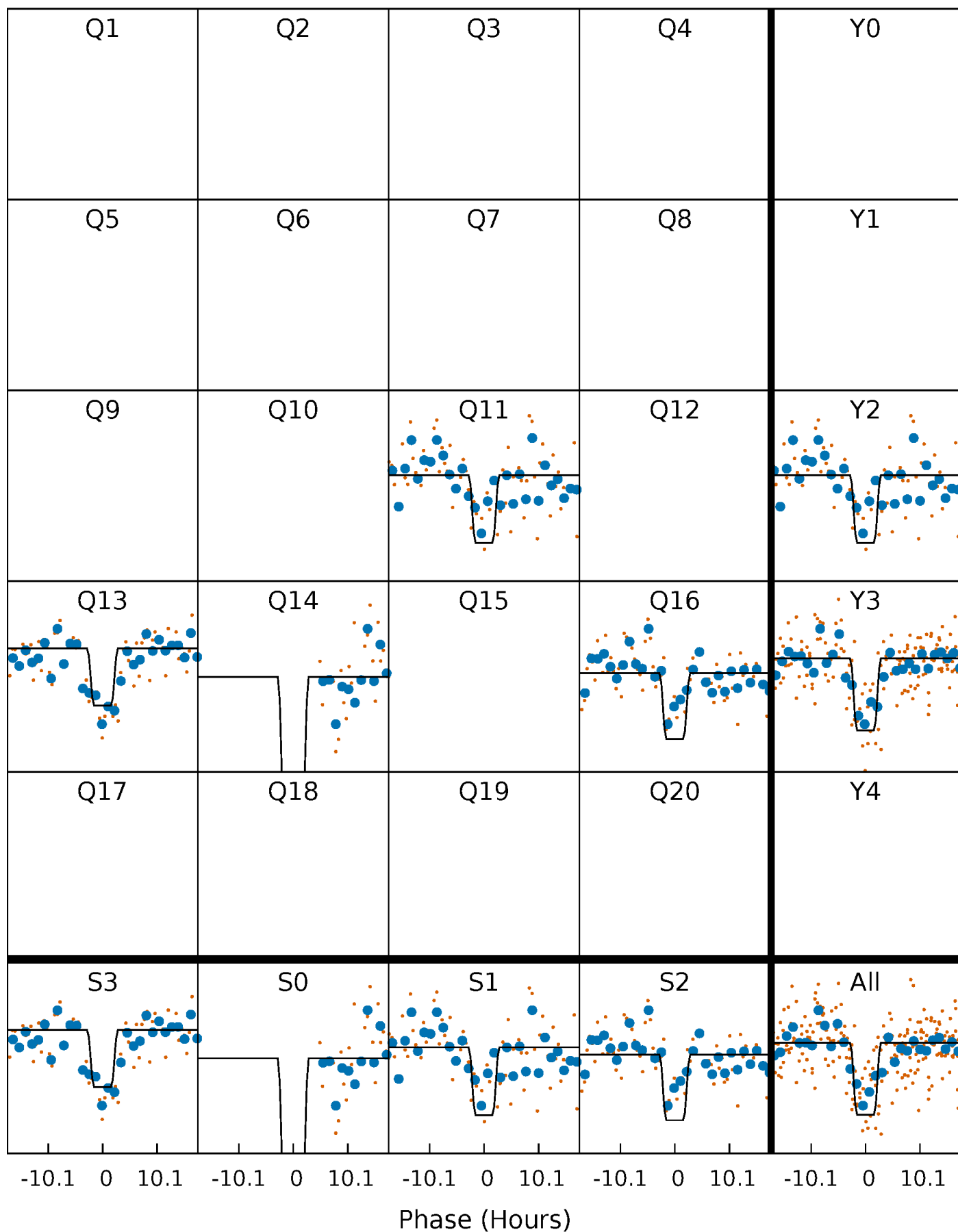
# DV Quarter-Phased Transit Curves

TCE 008258160-03     $P=181.685545$  Days     $T_0=276.781364$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

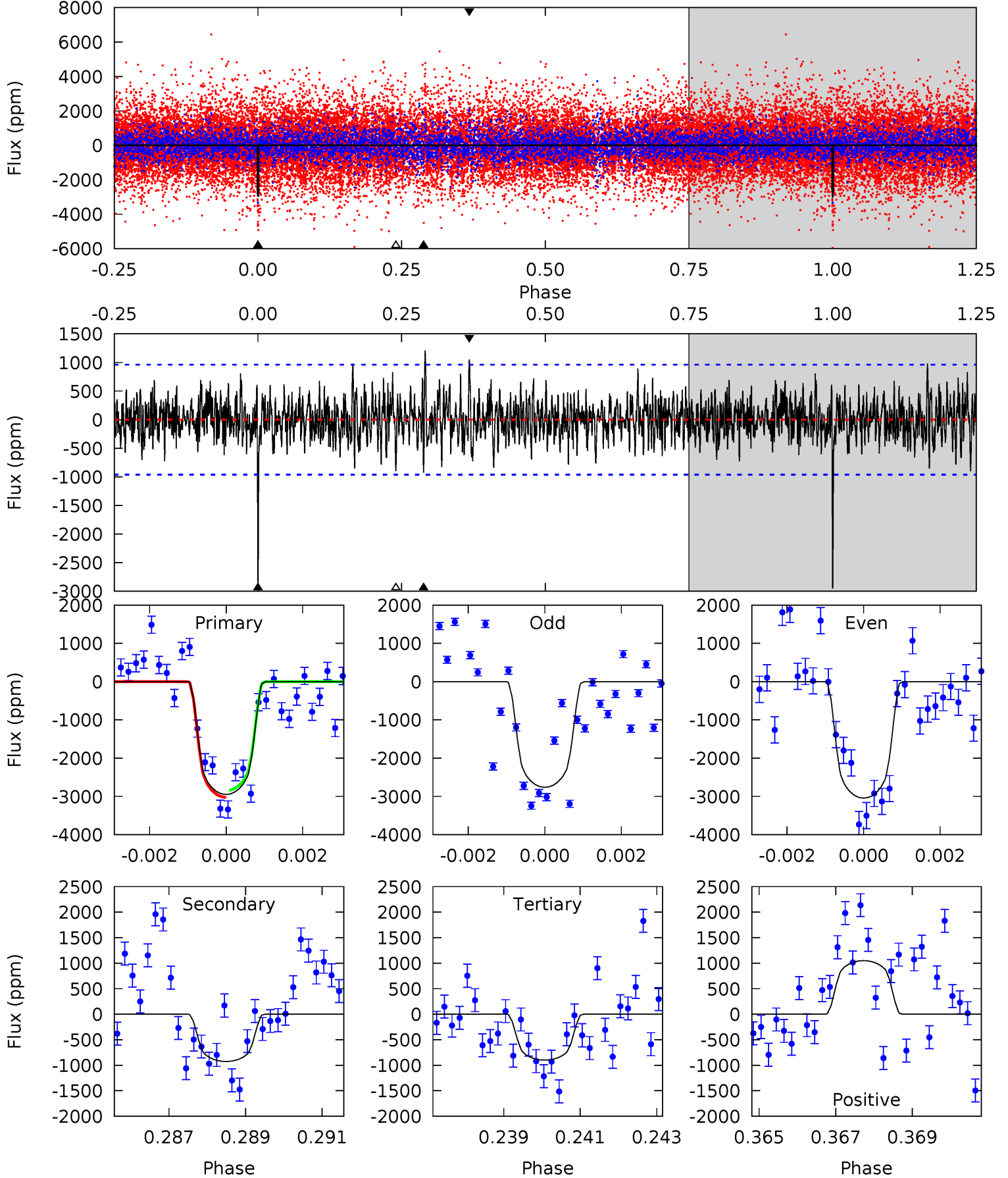
TCE 008258160-03 P=181.696195 Days  $T_0=276.730481$  (BKJD)



# DV Model-Shift Uniqueness Test

008258160-03, P = 181.685545 Days, E = 276.781364 Days

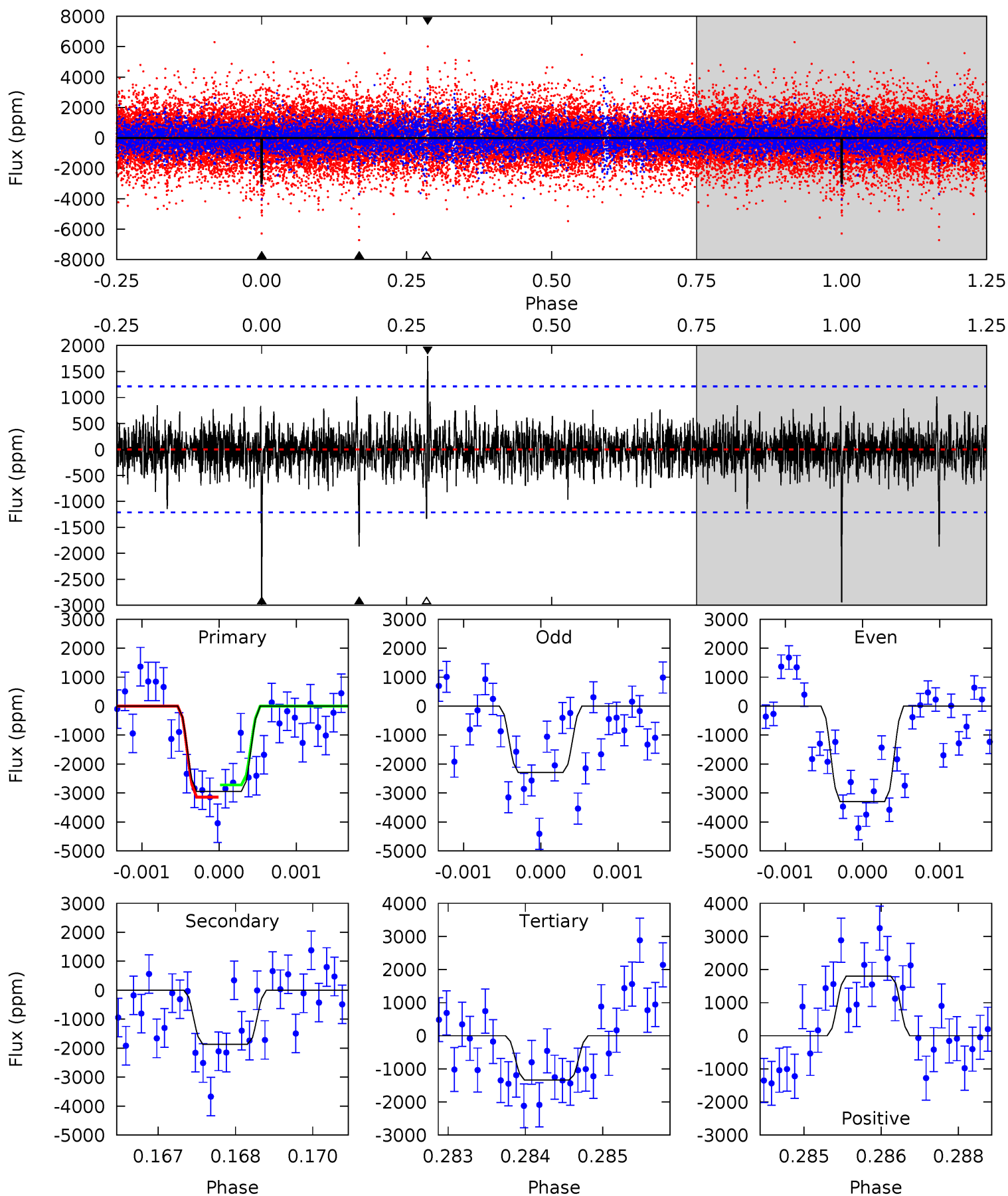
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	5.14	4.99	5.83	5.33	3.10	1.57	11.4	10.5	0.15	-0.69	0.75	1.08	0.29	0.50



# Alt Model-Shift Uniqueness Test

008258160-03, P = 181.696195 Days, E = 276.730481 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	8.34	5.97	8.03	5.41	3.23	1.23	7.18	5.12	2.37	0.31	2.18	1.32	0.38	0.93





### Stellar Parameters For KIC 008258160

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5305^{+185}_{-185}$	$4.477^{+0.099}_{-0.121}$	$-0.080^{+0.300}_{-0.300}$	$0.857^{+0.138}_{-0.101}$	$0.805^{+0.113}_{-0.070}$	$1.799^{+0.774}_{-0.641}$
	+3%/-3%	+2%/-3%	+375%/-375%	+16%/-12%	+14%/-9%	+43%/-36%
Source	KIC0	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 008258160-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-926 \pm 180$	$5.55^{+0.98}_{-0.86}$	$398^{+22}_{-20}$	$4068^{+330}_{-241}$	$5660^{+2502}_{-1864}$
Alt.	$-1867 \pm 224$	$6.04^{+0.95}_{-0.91}$	$398^{+20}_{-20}$	$4505^{+289}_{-253}$	$9614^{+3688}_{-2550}$

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

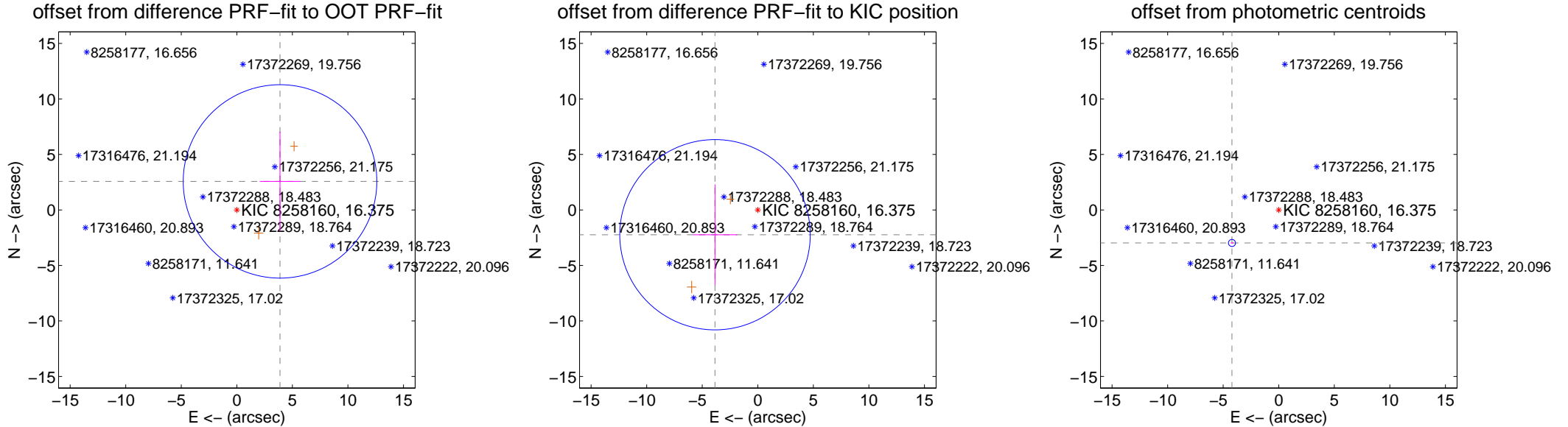
## DV Centroid Data

Supplemental centroid analysis for 008258160-03. Kepler magnitude: 16.38. Transit SNR 8.25

There are 0 quarters with good PRF difference image offsets

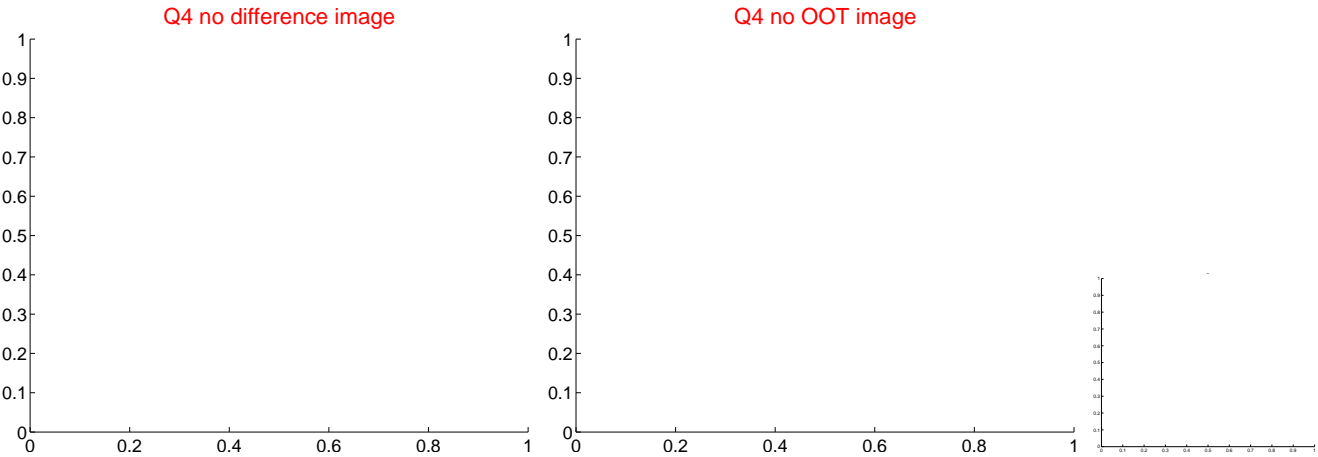
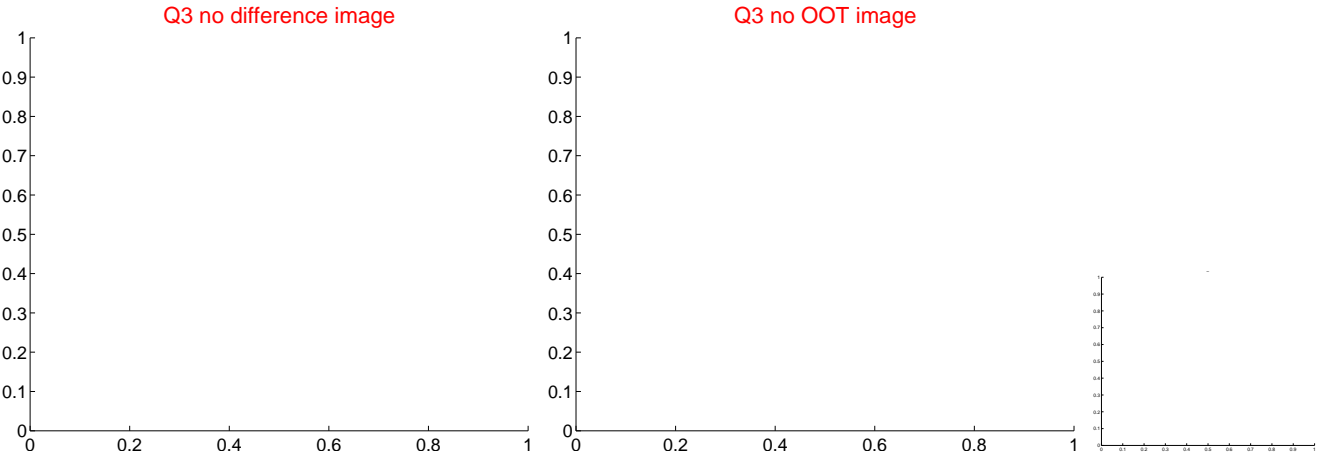
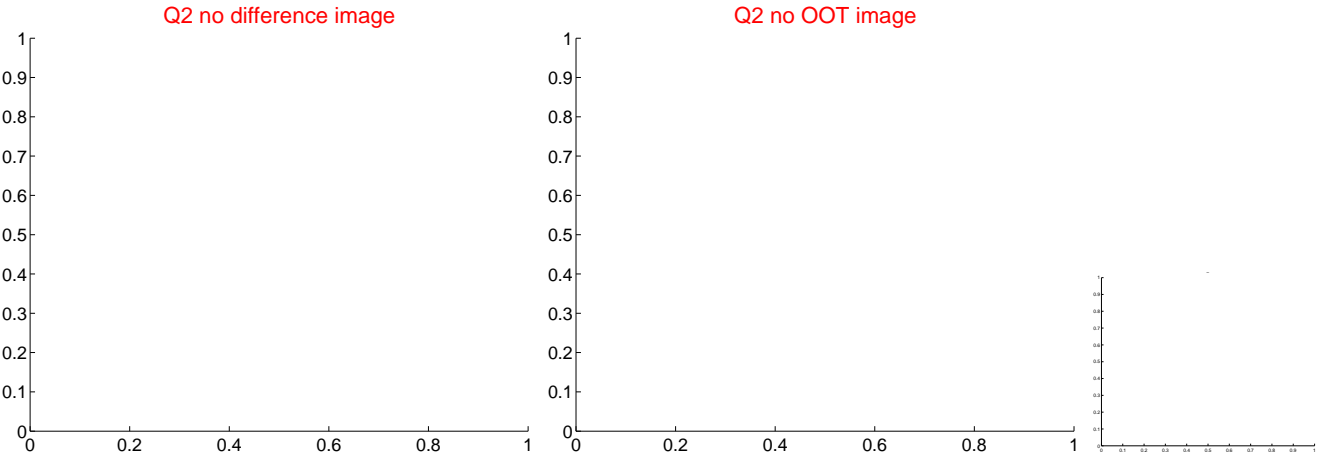
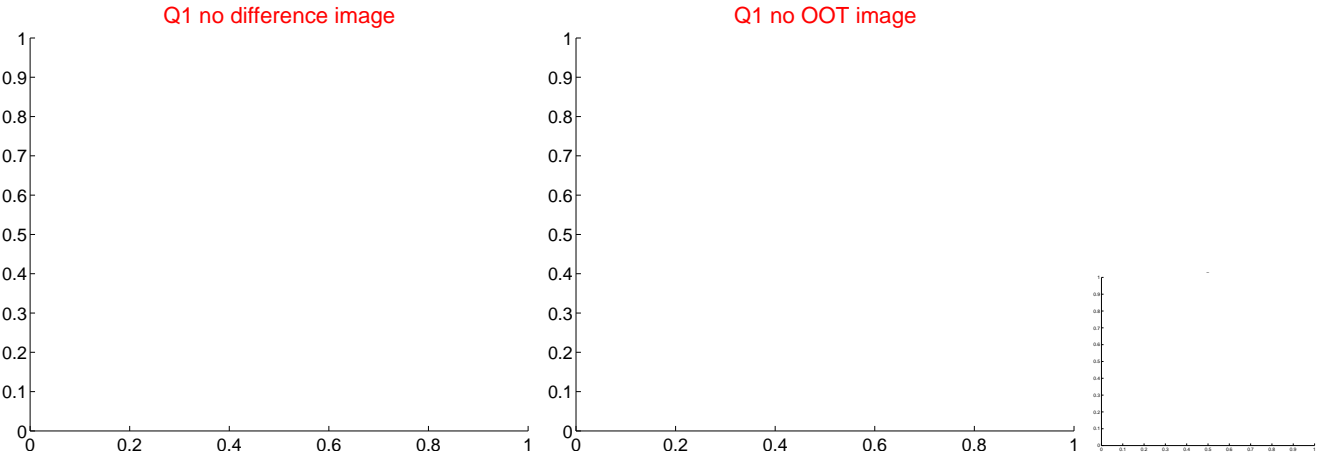
The OOT PRF centroid is offset from the target star catalog position by about 9.29 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.660 \pm 2.904$	1.60	$-3.887 \pm 1.819$	$2.570 \pm 4.489$
PRF-fit source offset from KIC position	$4.451 \pm 2.857$	1.56	$3.851 \pm 1.995$	$-2.233 \pm 4.538$
photometric centroid source offset	$5.15 \pm 0.11$	48.62	$4.21 \pm 0.12$	$-2.98 \pm 0.06$

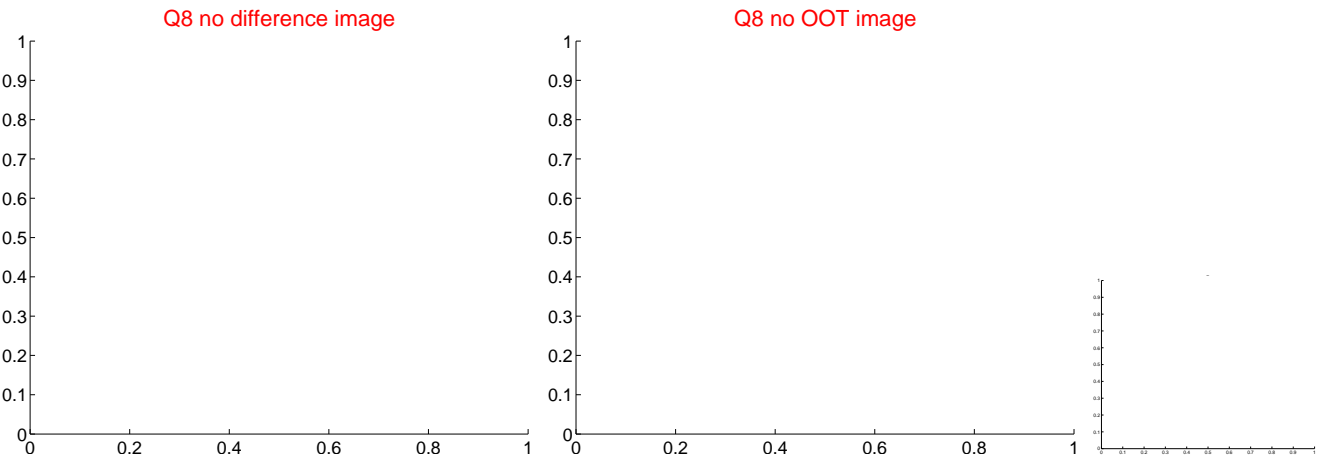
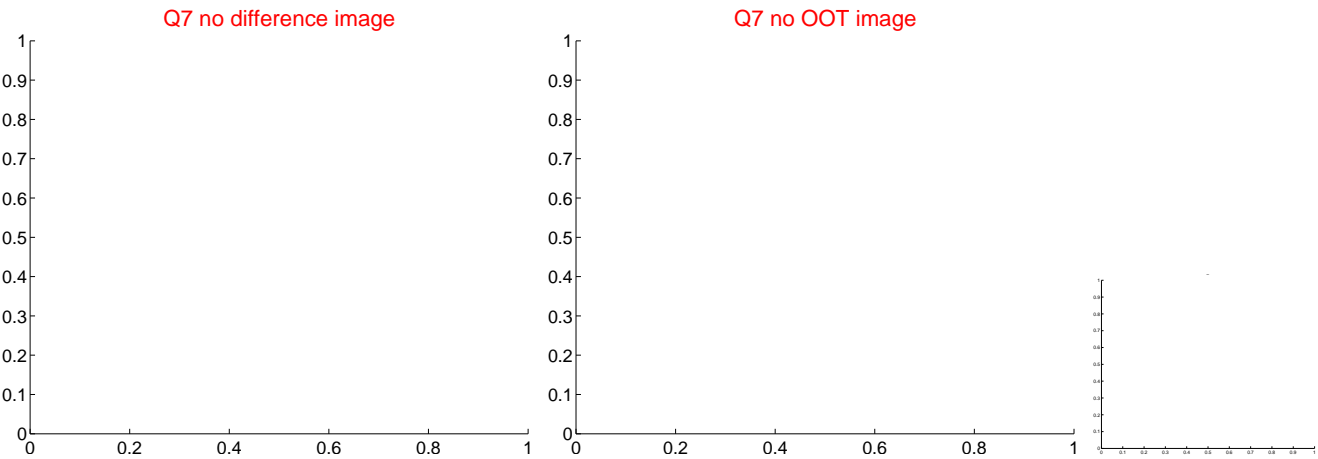
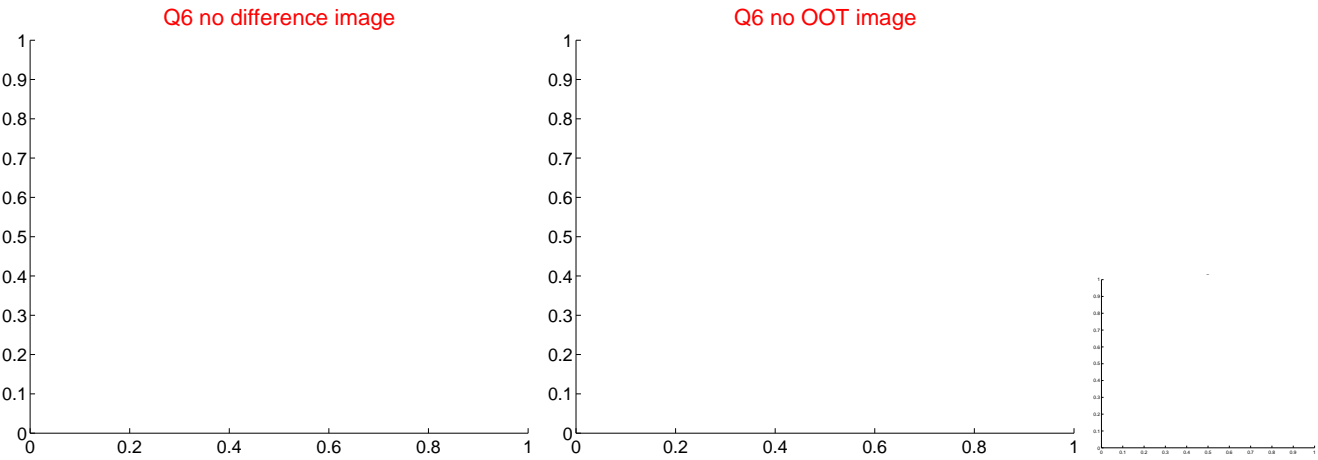
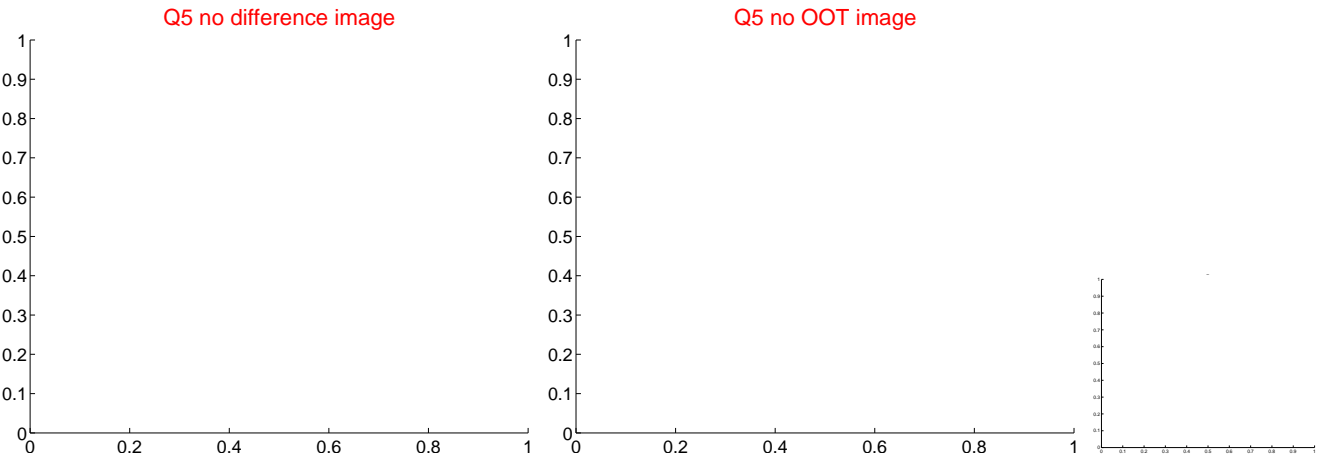


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

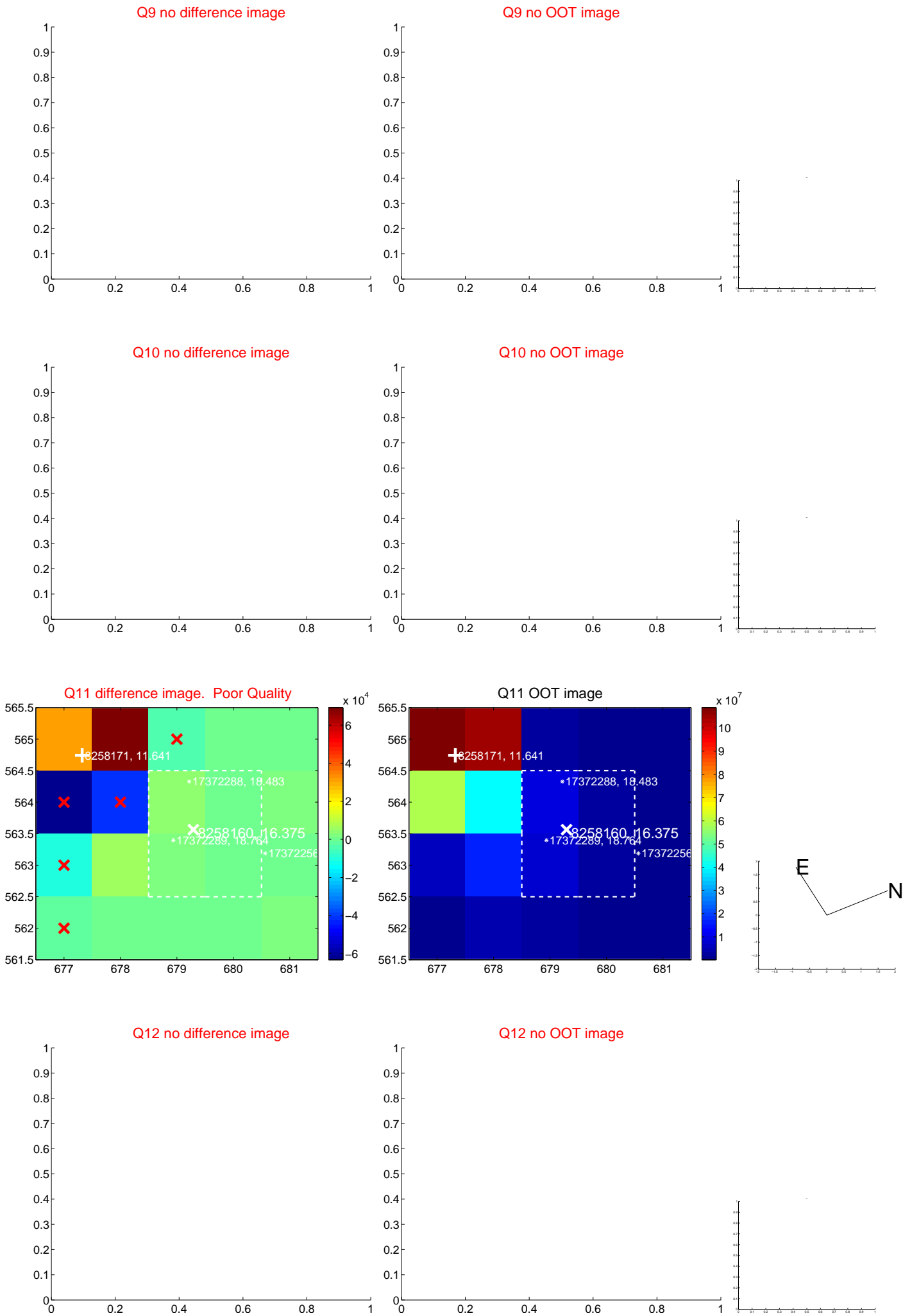
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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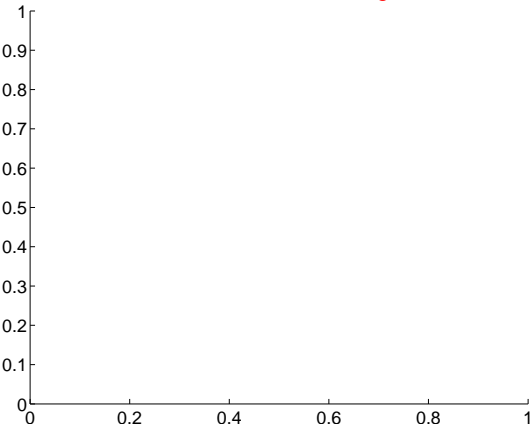


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

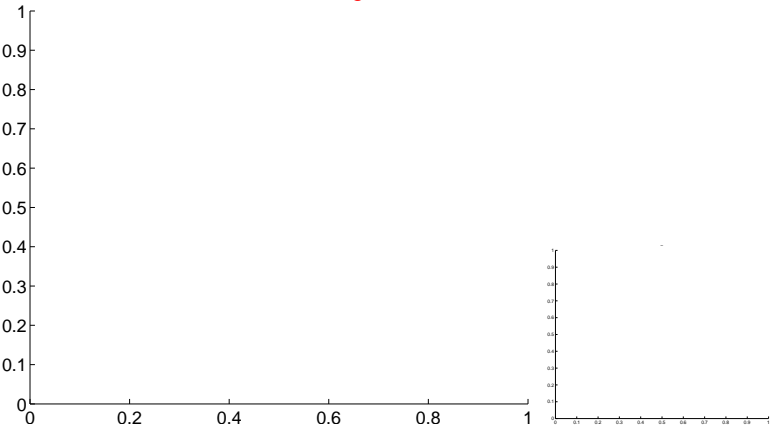


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

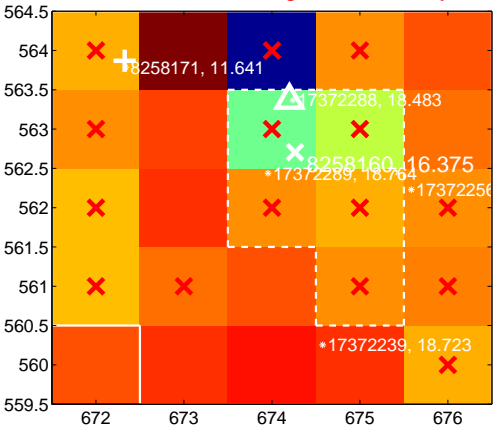
Q13 no difference image



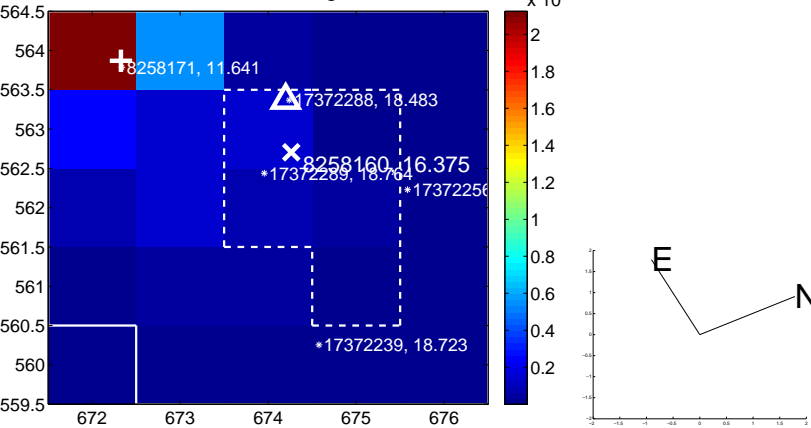
Q13 no OOT image



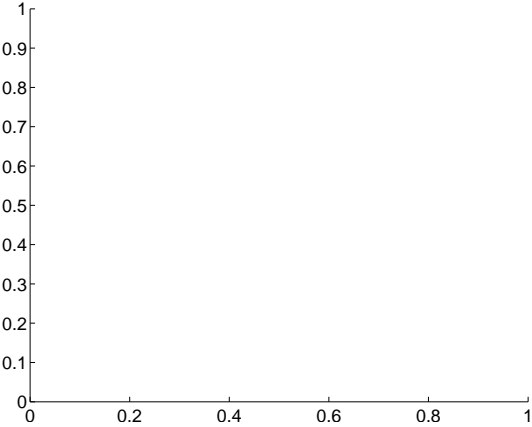
Q14 difference image. Poor Quality



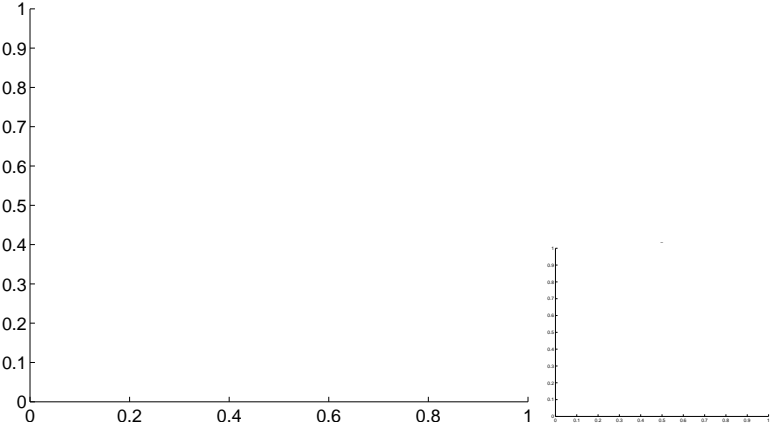
Q14 OOT image



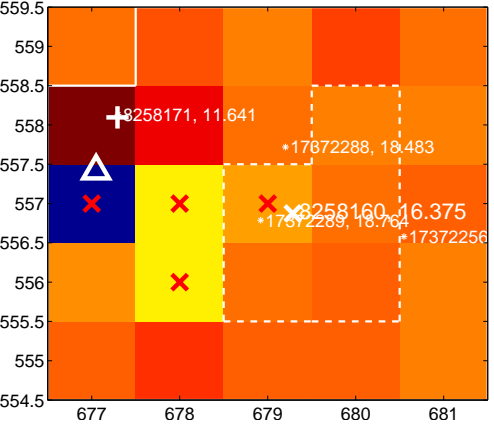
Q15 no difference image



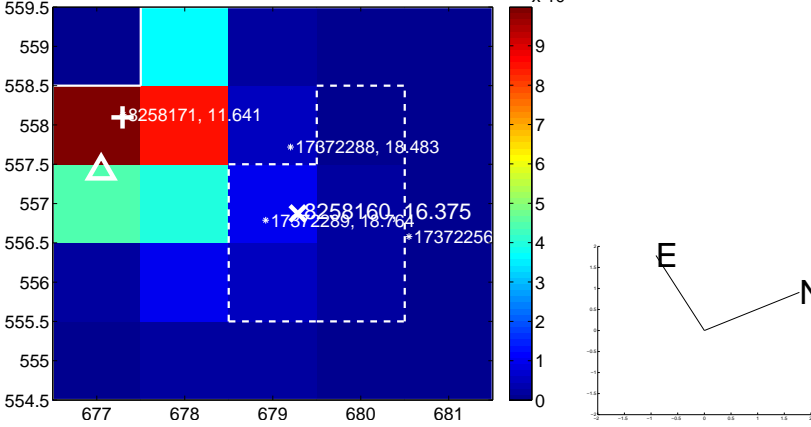
Q15 no OOT image



Q16 difference image. Poor Quality



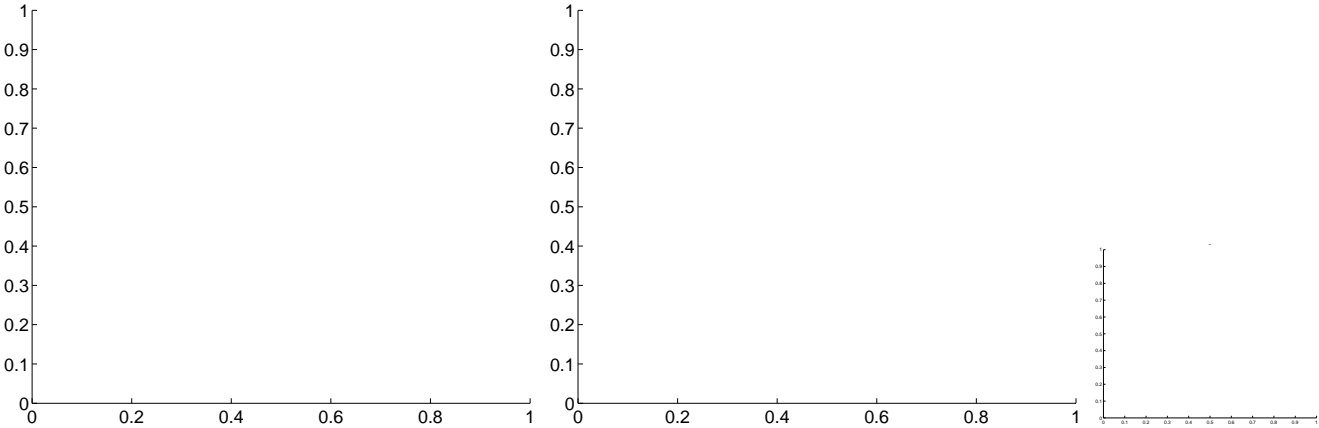
Q16 OOT image



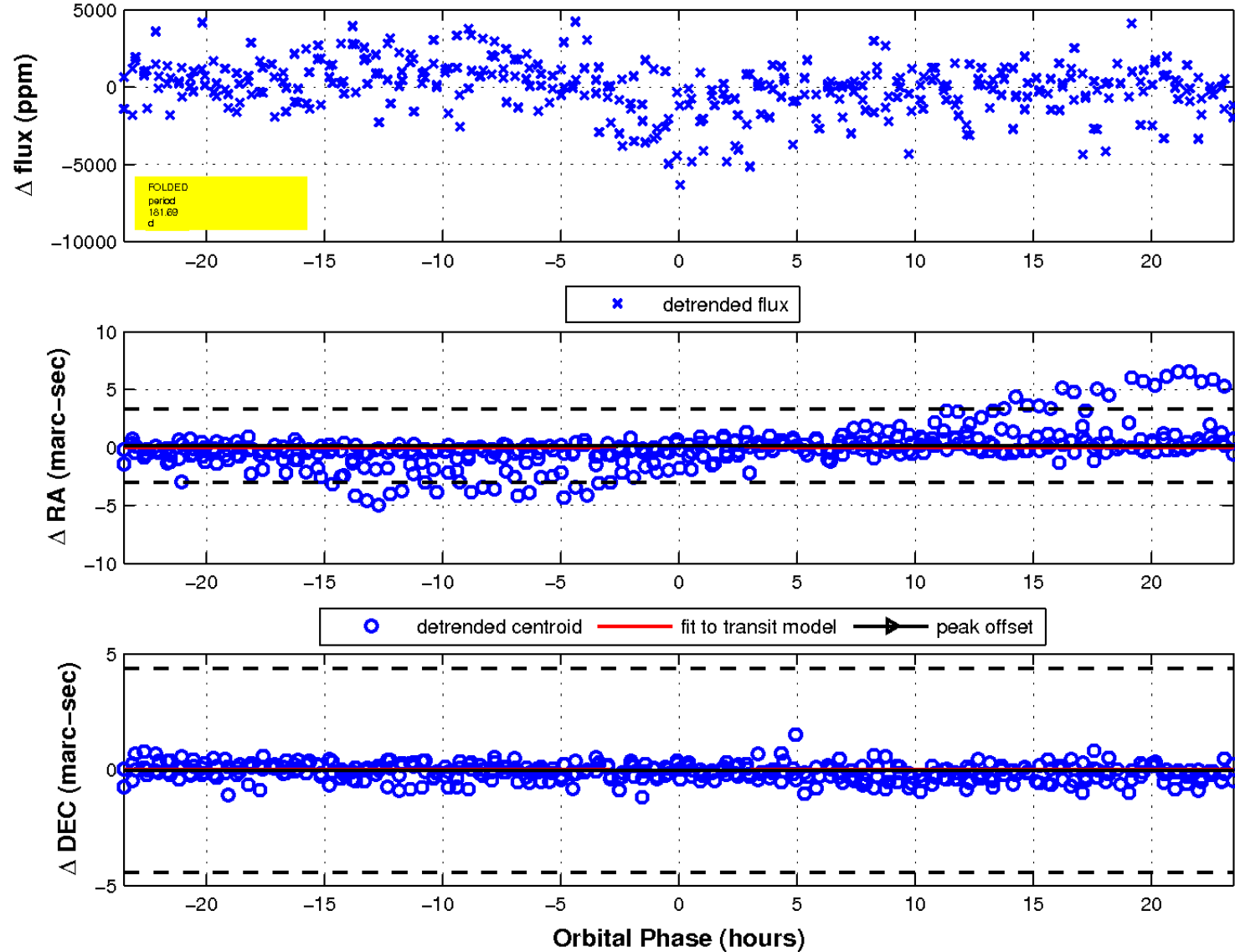
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q17 no difference image

Q17 no OOT image



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

