

KIC 004277581

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})
004277581-01	OBS	No	0.644297	132.143852	35.3	4.681	7.7	5.6	0.85	5925	0.52	3888.63
004277581-02	OBS	No	11.663195	131.569506	565.2	1.837	8.3	8.6	0.85	5925	2.04	81.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004277581-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_RESOLVED_OFFSET
004277581-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS—HALO_GHOST

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

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

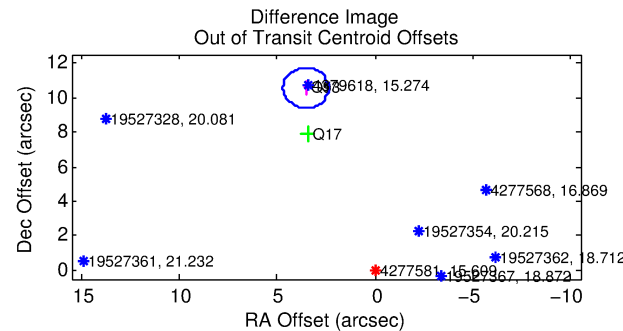
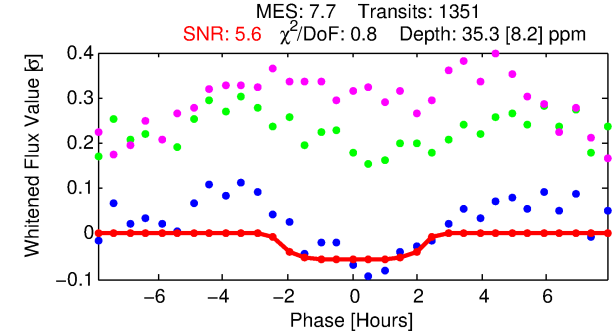
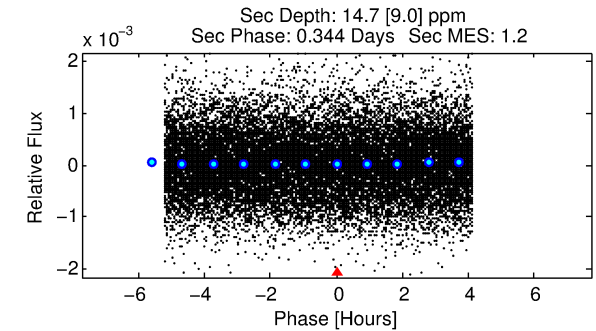
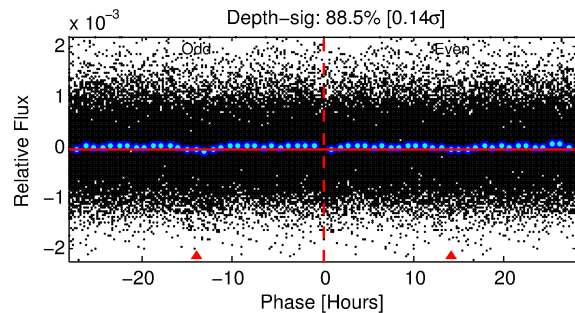
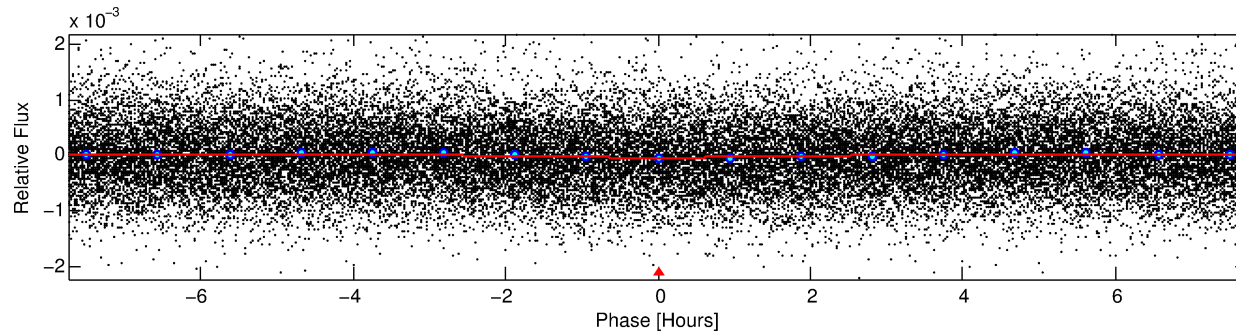
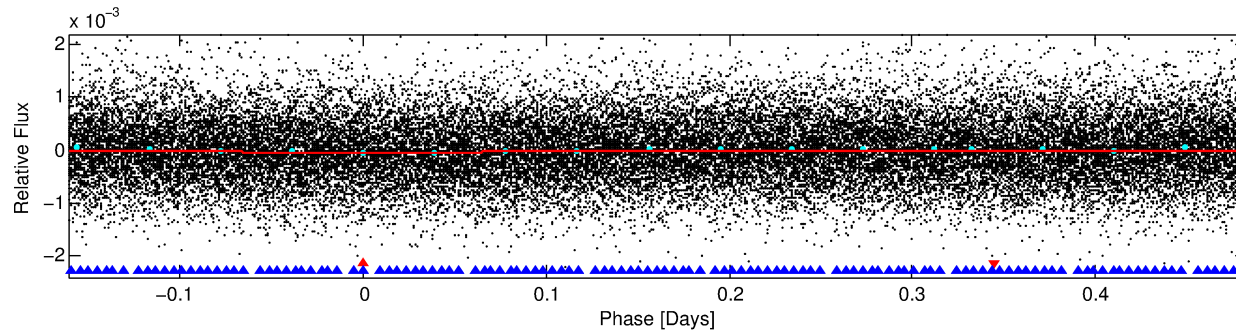
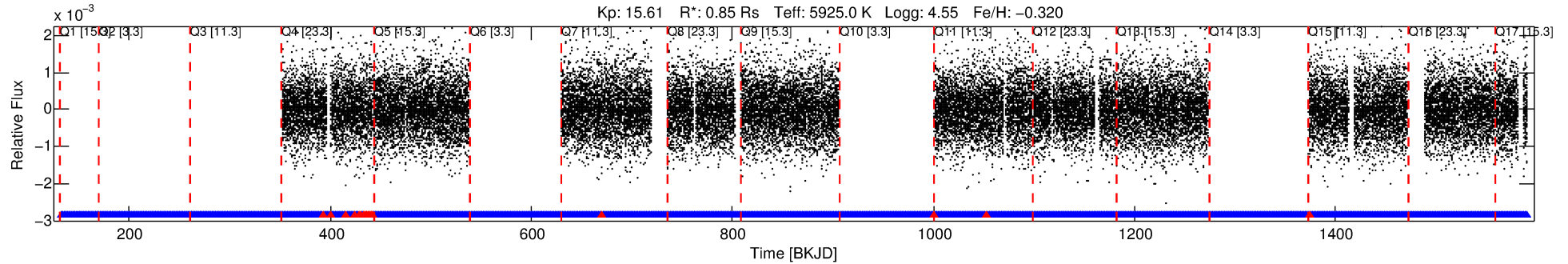
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004277581-01

No Significant Match Found

DV One-Page Summary

KIC: 4277581 Candidate: 1 of 2 Period: 0.644 d



DV Fit Results:

Period = 0.64430 [0.00002] d
Epoch = 132.1439 [0.0094] BKJD
Rp/R* = 0.0057 [0.0129]
a/R* = 1.16 [3.37]
b = 0.58 [12.91]
Seff = 3888.63 [1532.09]
Teff = 2014 [198] K
Rp = 0.52 [1.21] Re
a = 0.0143 [0.0036] AU
Ag = 6.03 [27.94] [0.18 σ]
Teffp = 4879 [5634] K [0.51 σ]

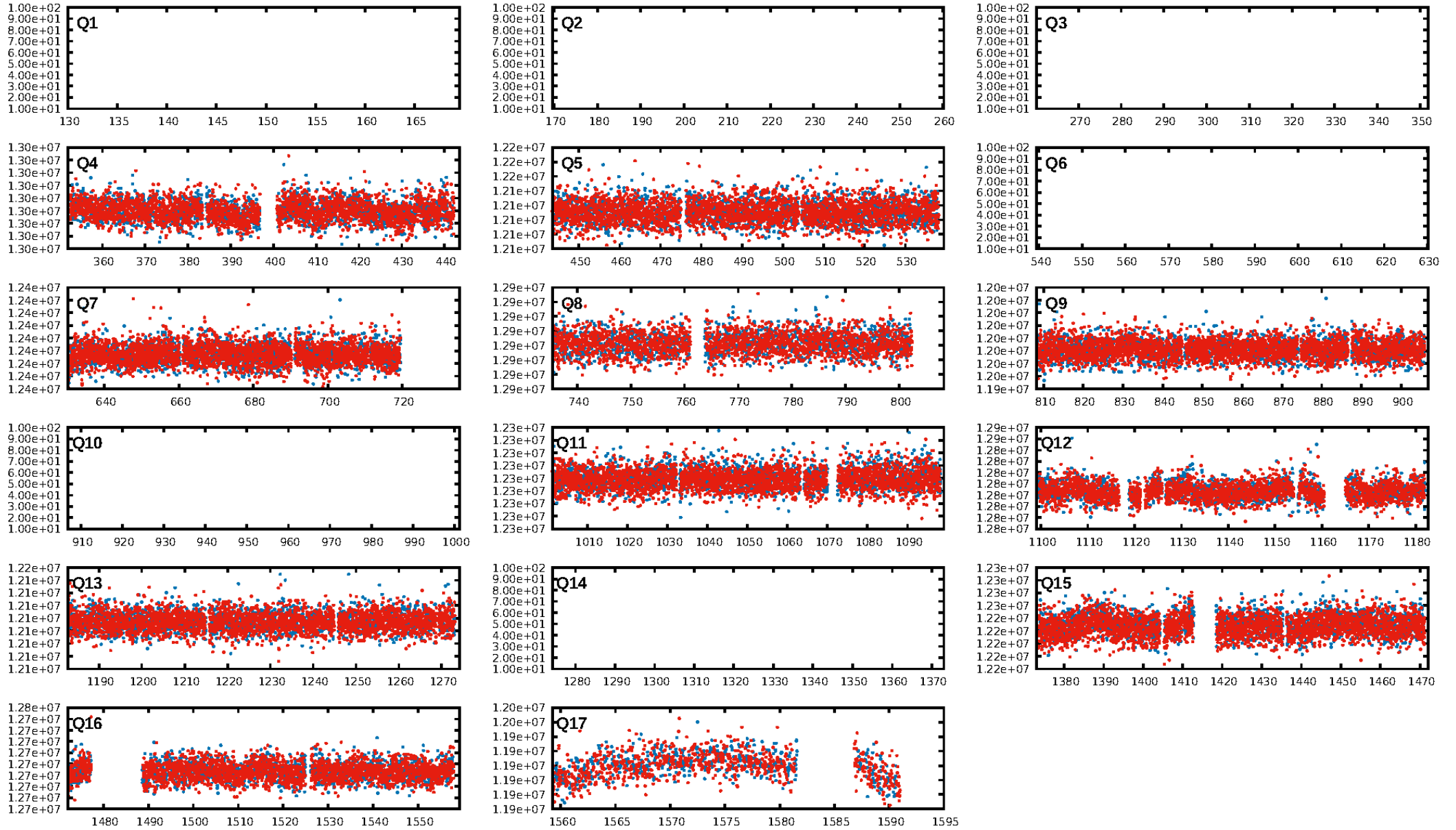
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [52.58 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.11e-10
RollingBand-fgt: 0.98 [1288/1309]
GhostDiagnostic-chr: -0.3967
Centroid-sig: 83.6%
Centroid-so: 1.646 arcsec [0.63 σ]
OotOffset-rm: 11.140 arcsec [28.72 σ]
KicOffset-rm: 11.255 arcsec [21.58 σ]
OotOffset-st: 0/0/0/4 [4]
KicOffset-st: 0/0/0/4 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [11/11]

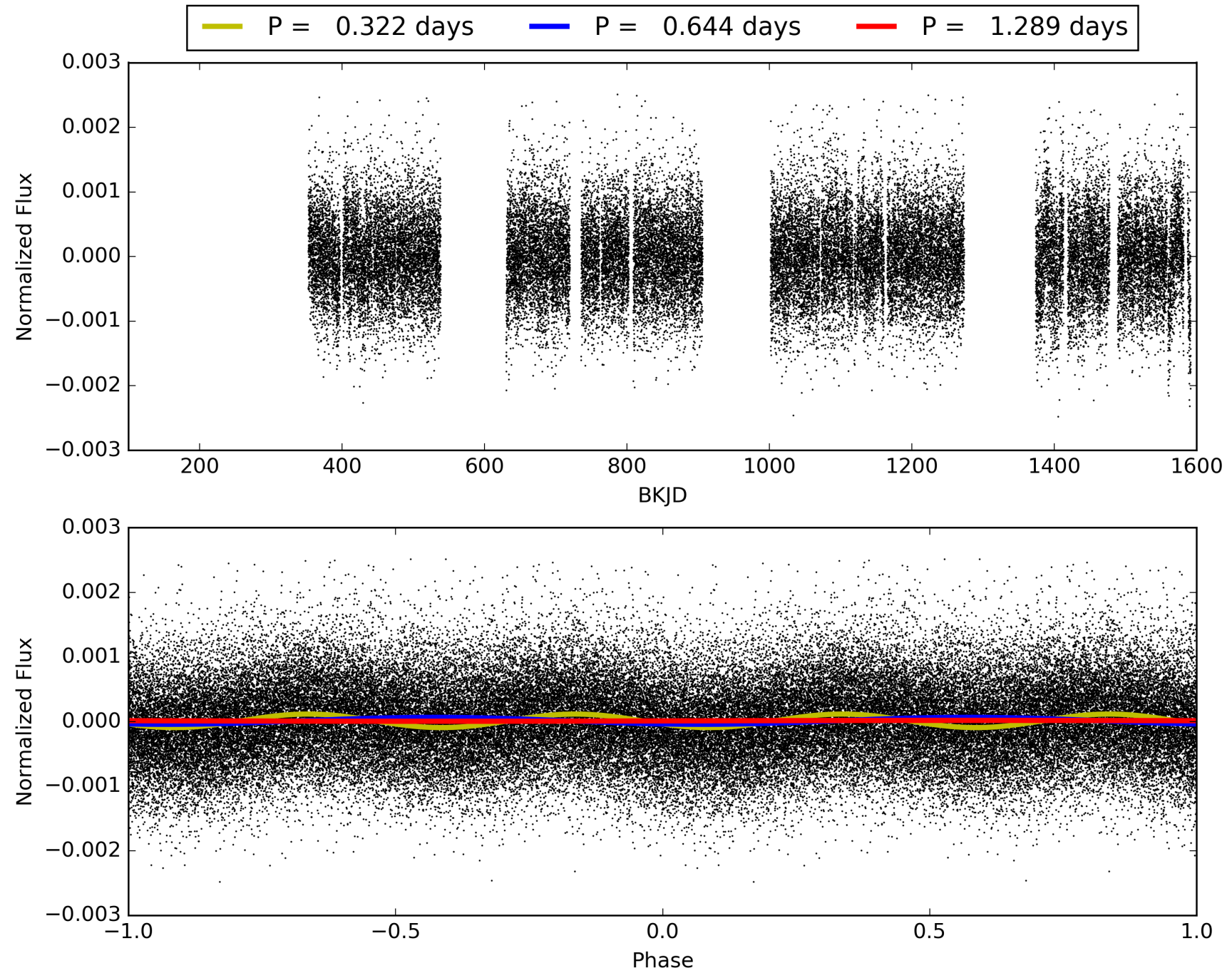
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004277581-01, PDC Light Curves

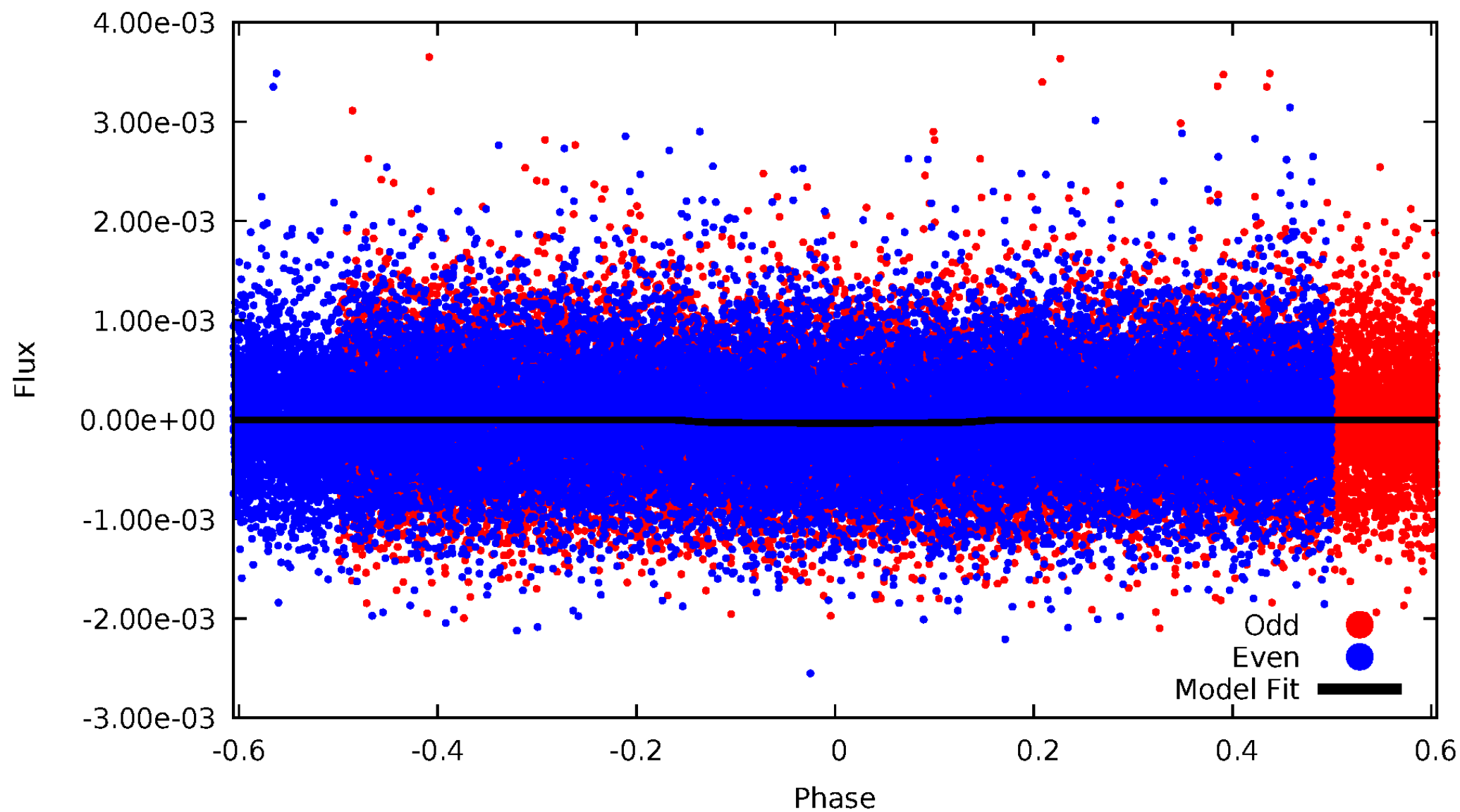


TCE 004277581-01



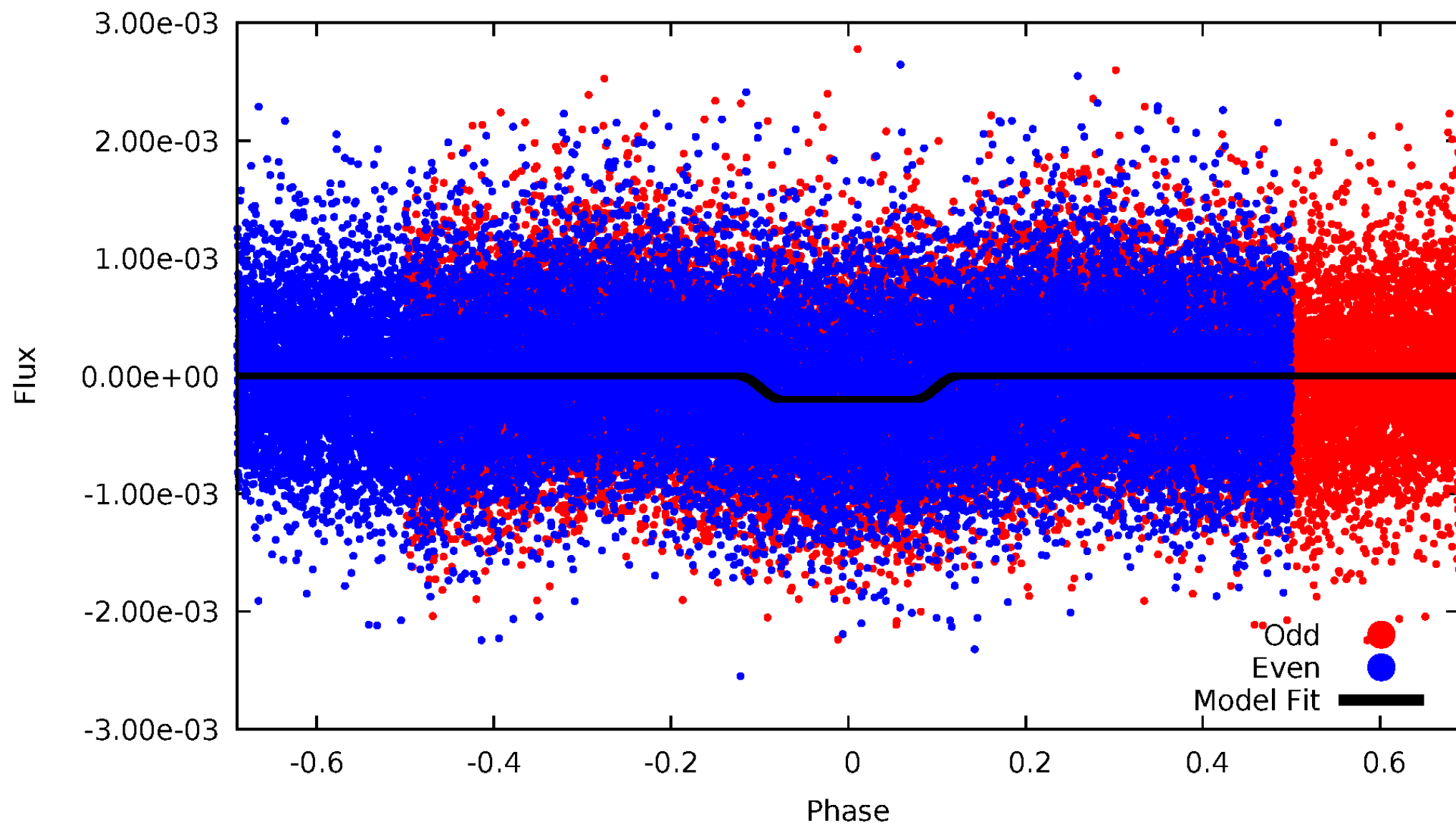
DV Odd/Even

TCE 004277581-01

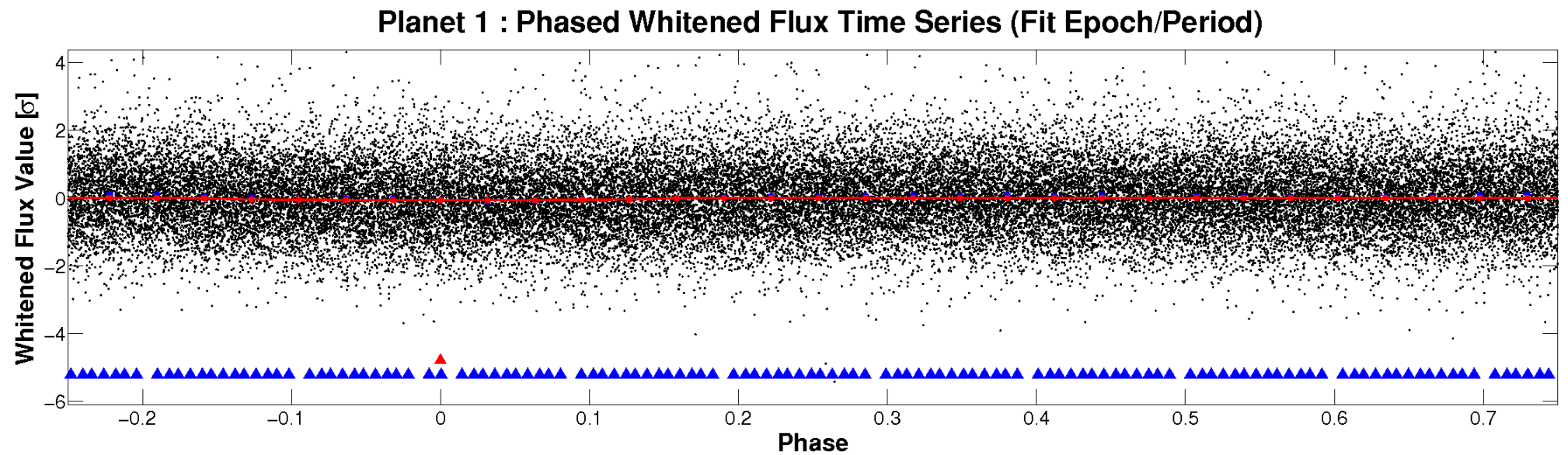
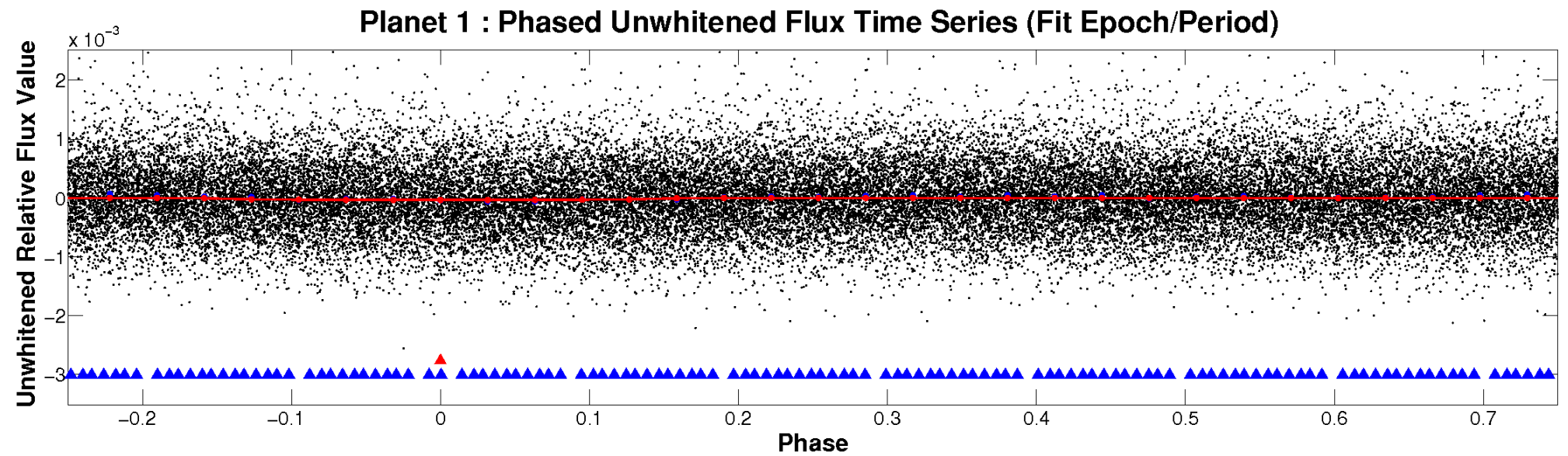


ALT Odd/Even

TCE 004277581-01

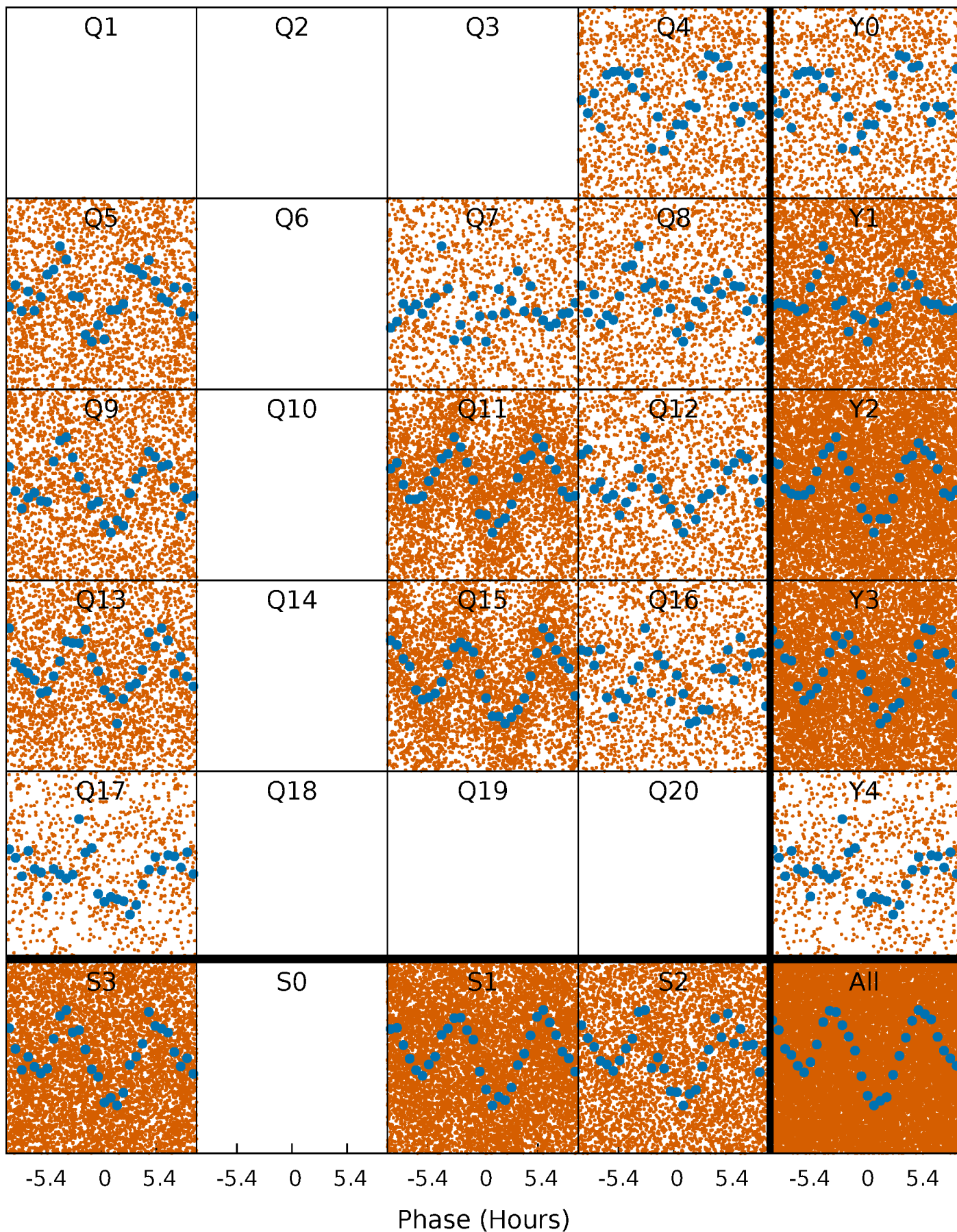


Non-Whitened Vs. Whitened Light Curve



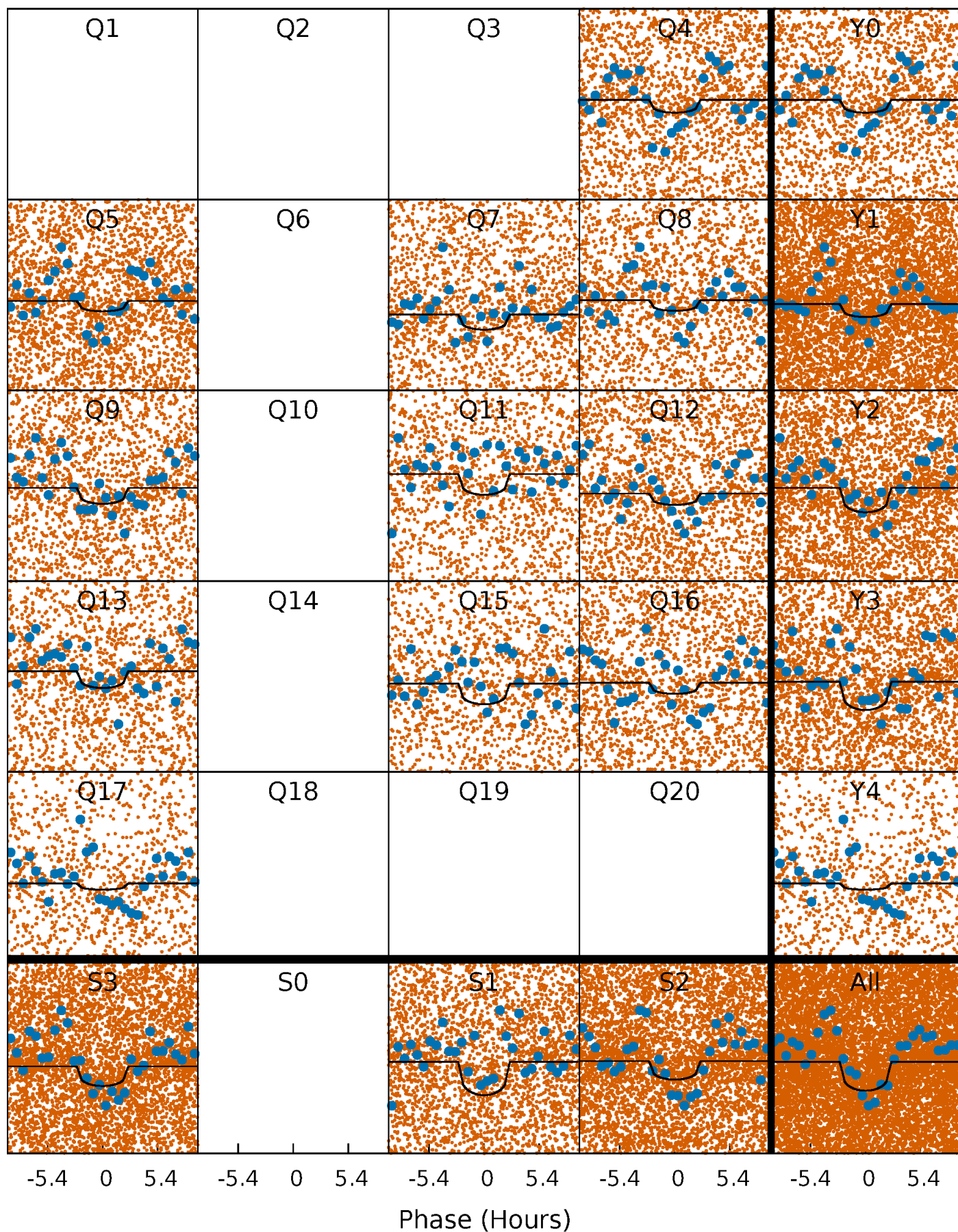
PDC Quarter-Phased Transit Curves

TCE 004277581-01 P= 0.644297 Days $T_0=132.143852$ (BKJD)



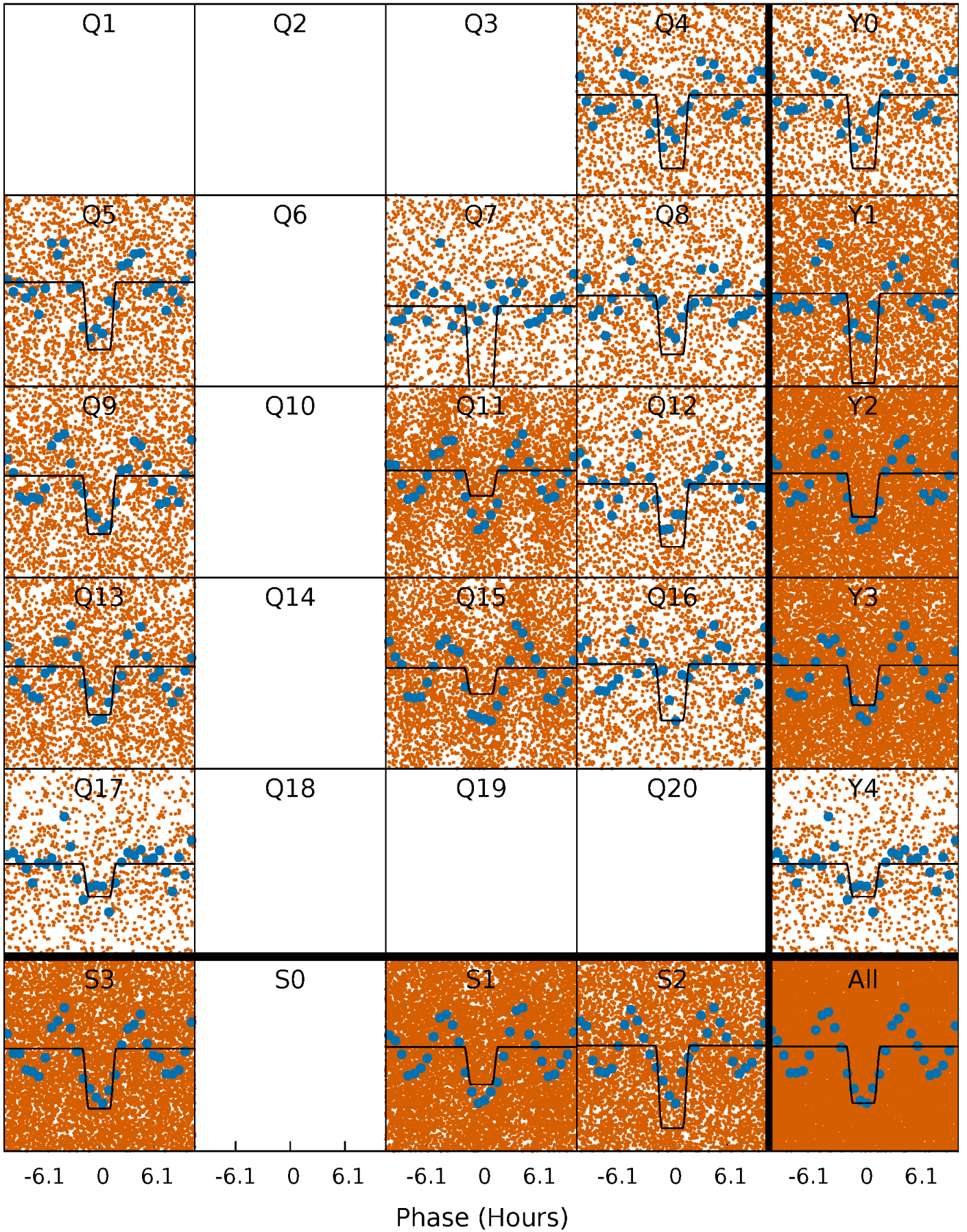
DV Quarter-Phased Transit Curves

TCE 004277581-01 P= 0.644297 Days $T_0=132.143852$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

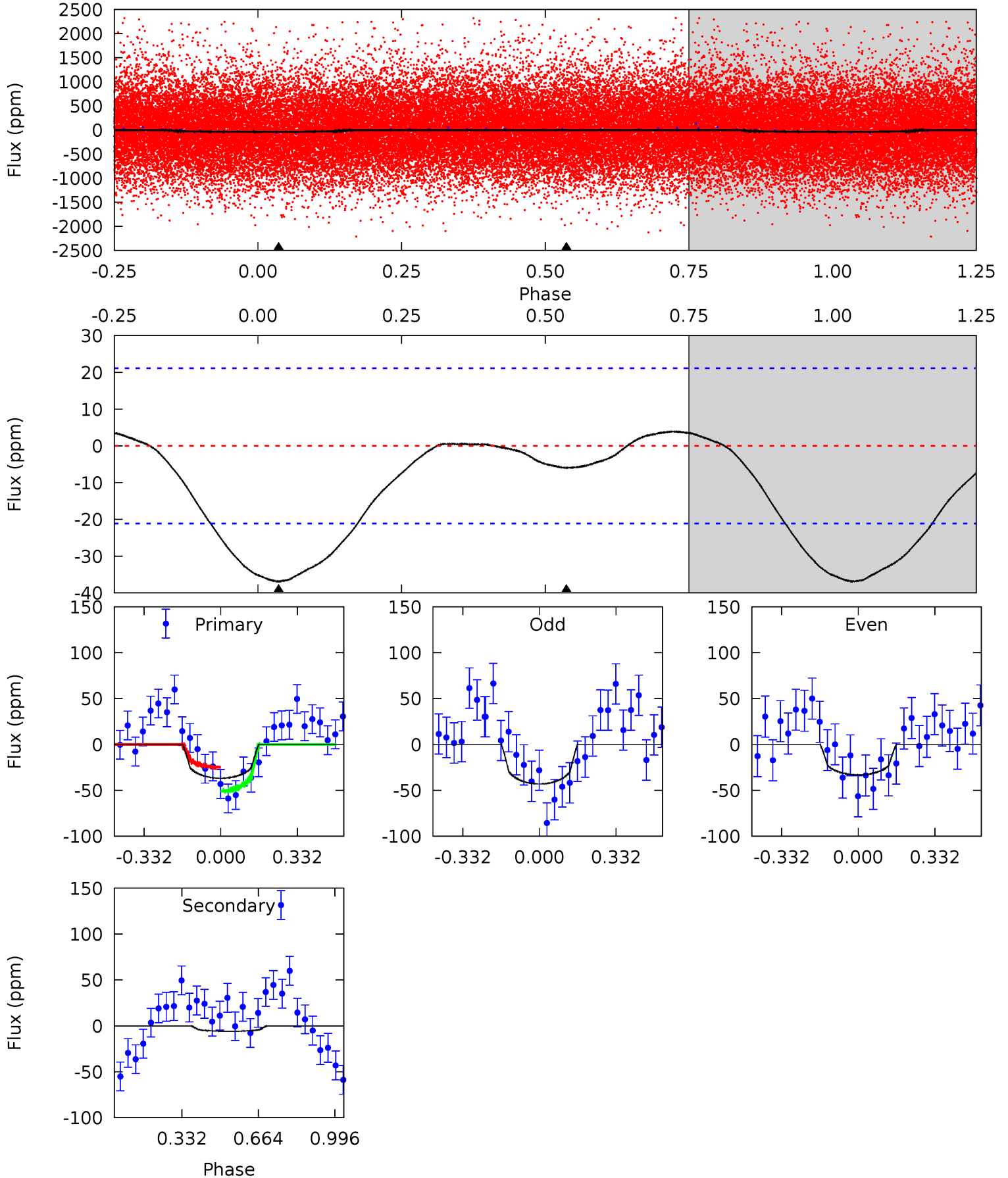
TCE 004277581-01 P= 0.644344 Days $T_0=132.126134$ (BKJD)



DV Model-Shift Uniqueness Test

004277581-01, P = 0.644297 Days, E = 132.143852 Days

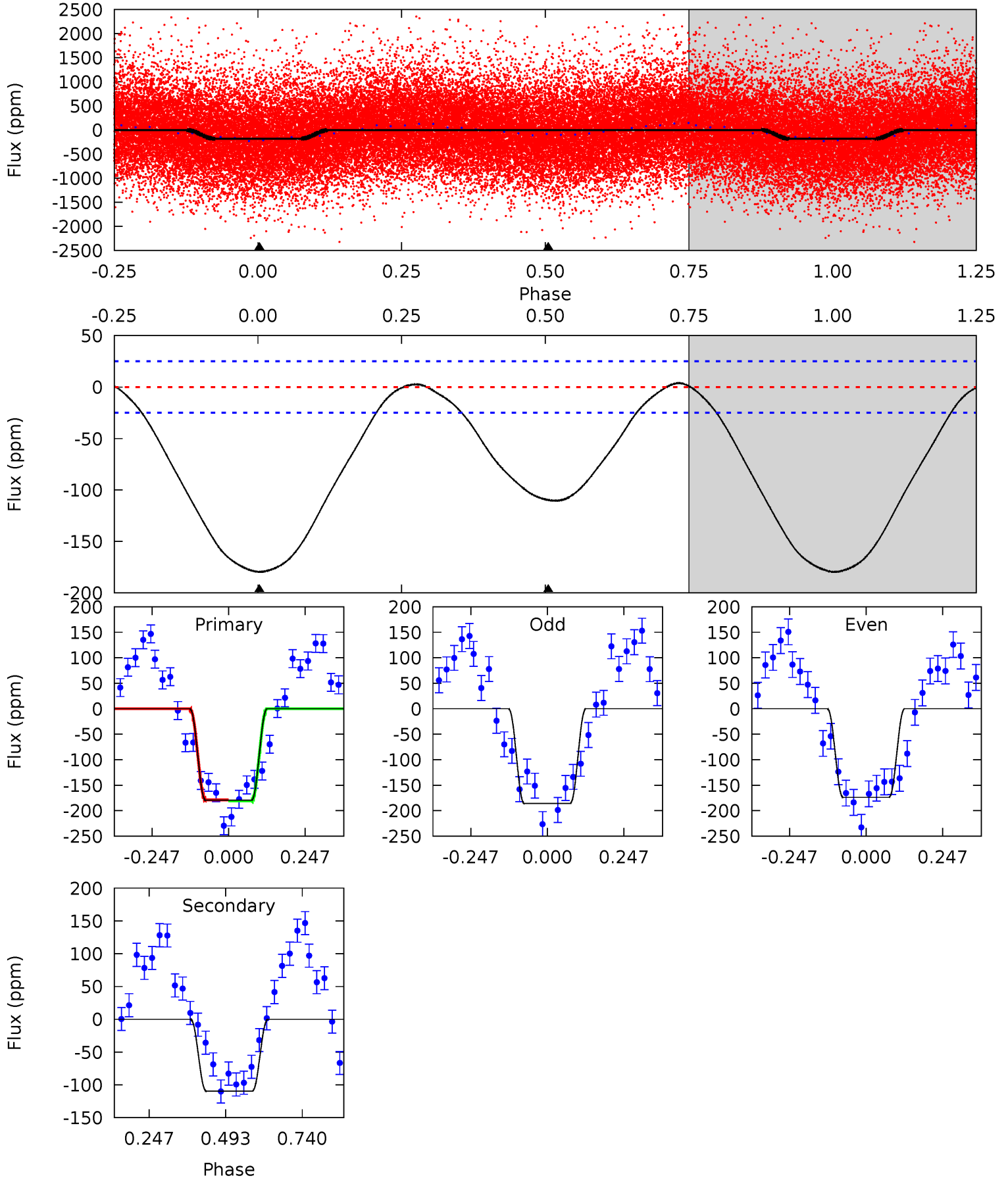
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.52	1.22	0	0	4.31	0.97	0.53	7.52	7.52	1.22	1.22	1.02	0.99	0.10	2.67



Alt Model-Shift Uniqueness Test

004277581-01, P = 0.644344 Days, E = 132.126134 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.4	19.2	0	0	4.37	1.16	0.74	31.4	31.4	19.2	19.2	1.04	1.05	0.02	0.18



Stellar Parameters For KIC 004277581

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5925^{+184}_{-205}	$4.553^{+0.036}_{-0.204}$	$-0.320^{+0.300}_{-0.300}$	$0.848^{+0.248}_{-0.083}$	$0.938^{+0.108}_{-0.119}$	$2.164^{+0.428}_{-1.114}$
	+3%/-3%	+1%/-4%	+94%/-94%	+29%/-10%	+12%/-13%	+20%/-51%
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 004277581-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-6 ± 5	$1.07^{+0.99}_{-0.72}$	2889^{+197}_{-130}	2711^{+1969}_{-5730}	$0.428^{+3.869}_{-0.397}$
Alt.	-110 ± 6	$1.59^{+1.21}_{-1.00}$	2881^{+199}_{-131}	4786^{+3336}_{-972}	$4.792^{+29.197}_{-3.256}$

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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

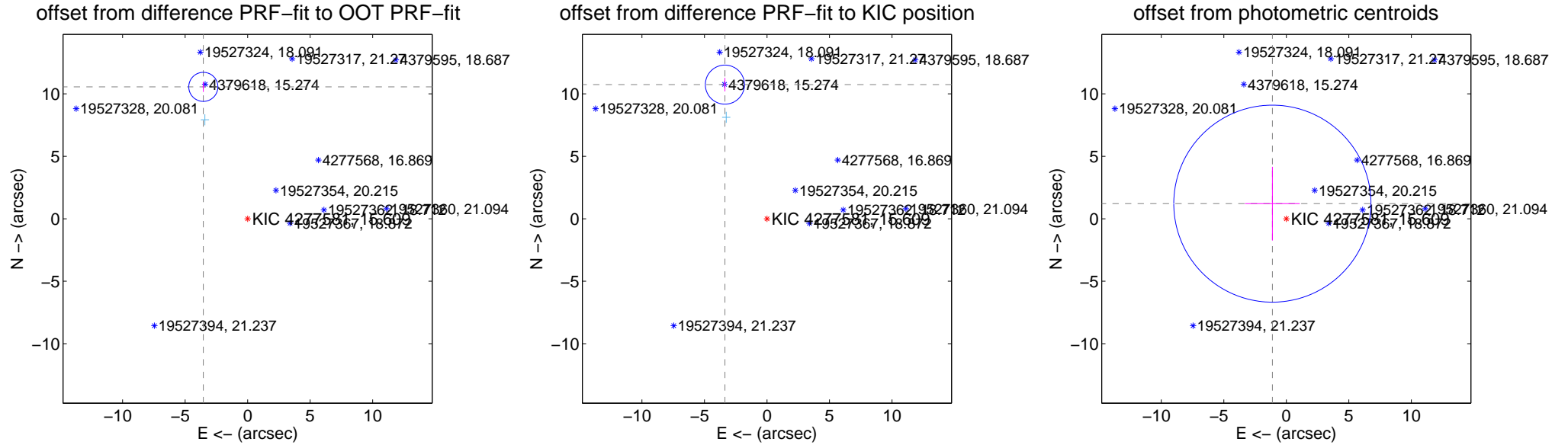
DV Centroid Data

Supplemental centroid analysis for 004277581-01. Kepler magnitude: 15.61. Transit SNR 5.57

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	11.140 \pm 0.388	28.72	3.544 \pm 0.069	10.561 \pm 0.402
PRF-fit source offset from KIC position	11.255 \pm 0.522	21.58	3.366 \pm 0.073	10.740 \pm 0.539
photometric centroid source offset	1.65 \pm 2.63	0.63	1.12 \pm 2.19	1.21 \pm 2.95



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- σ uncertainty. Blue circle: three- σ . 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.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



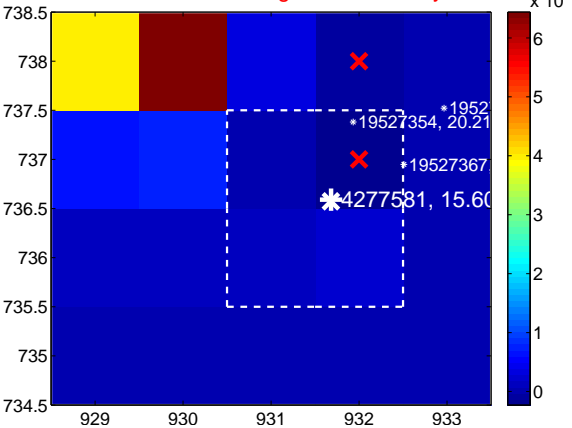
Q3 no difference image



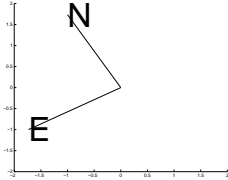
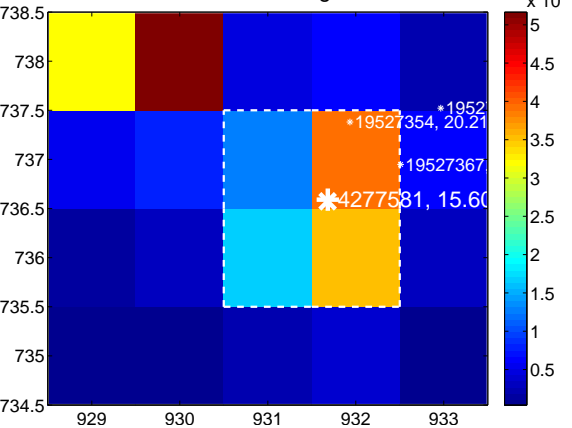
Q3 no OOT image



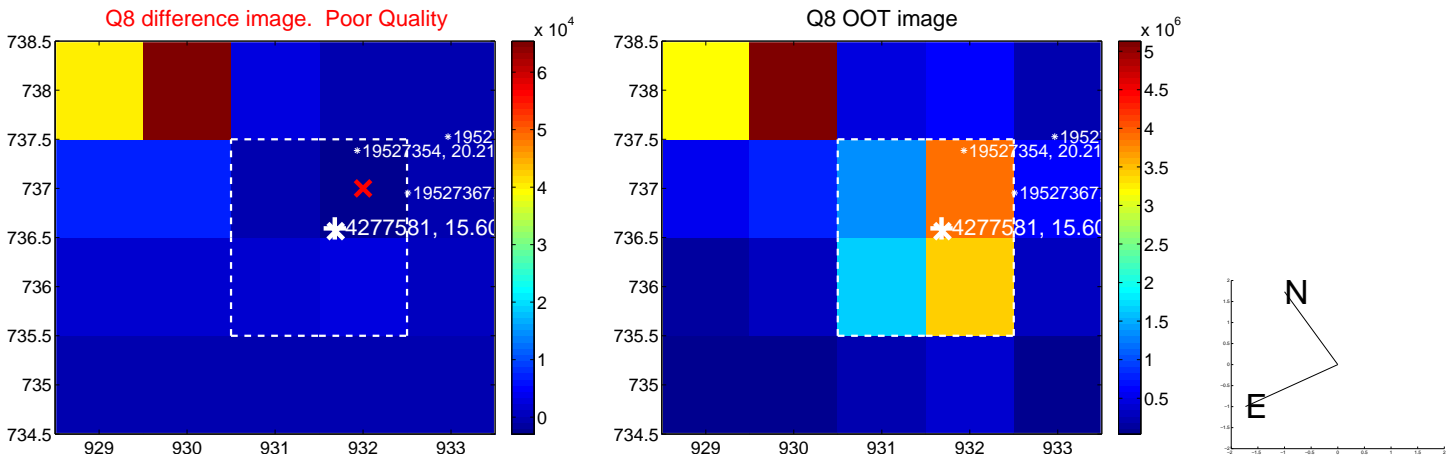
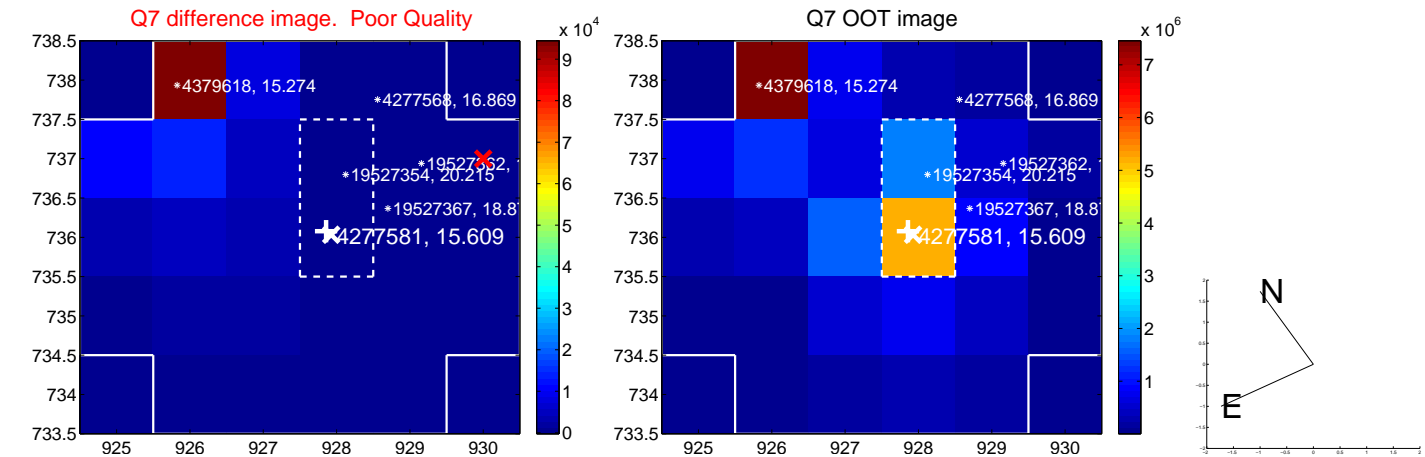
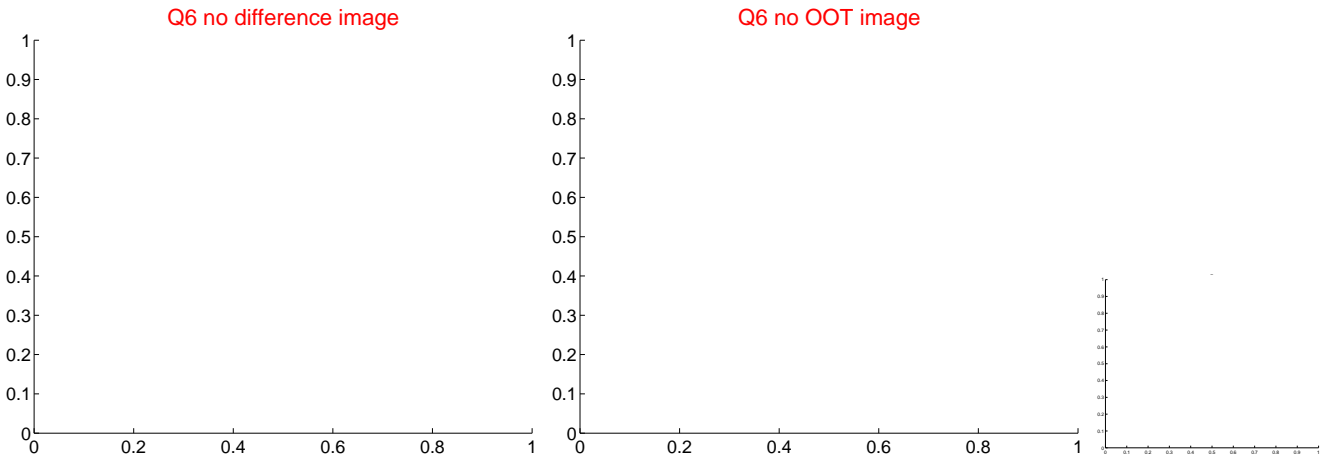
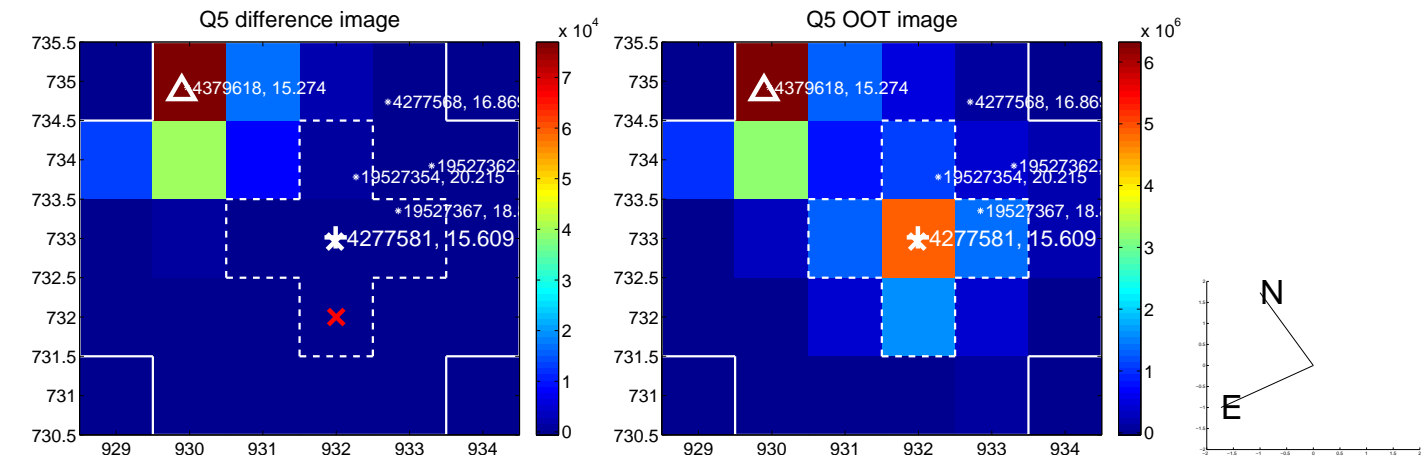
Q4 difference image. Poor Quality



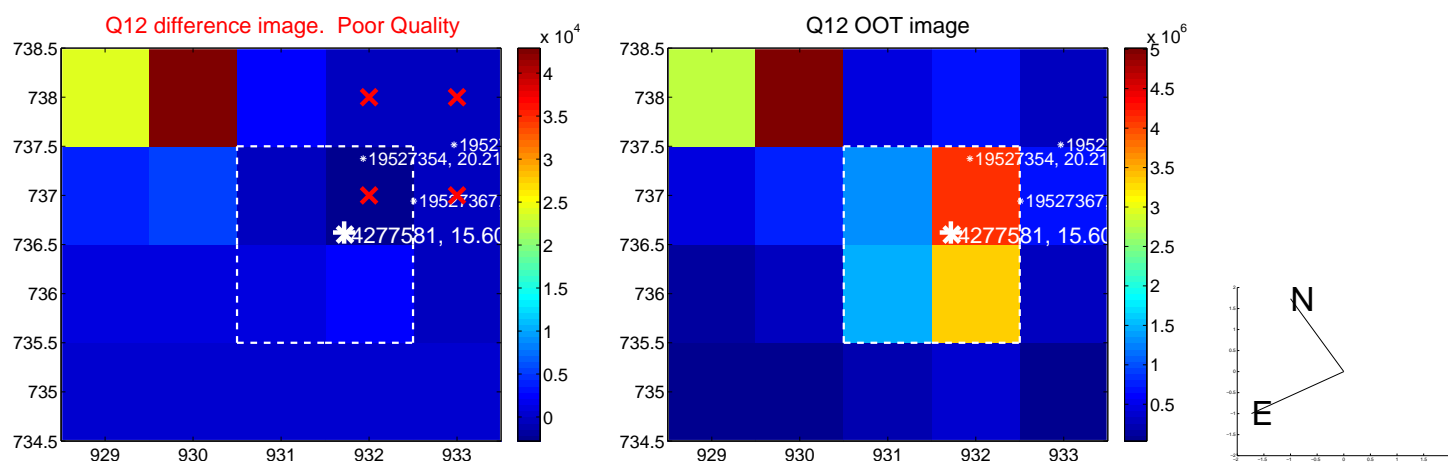
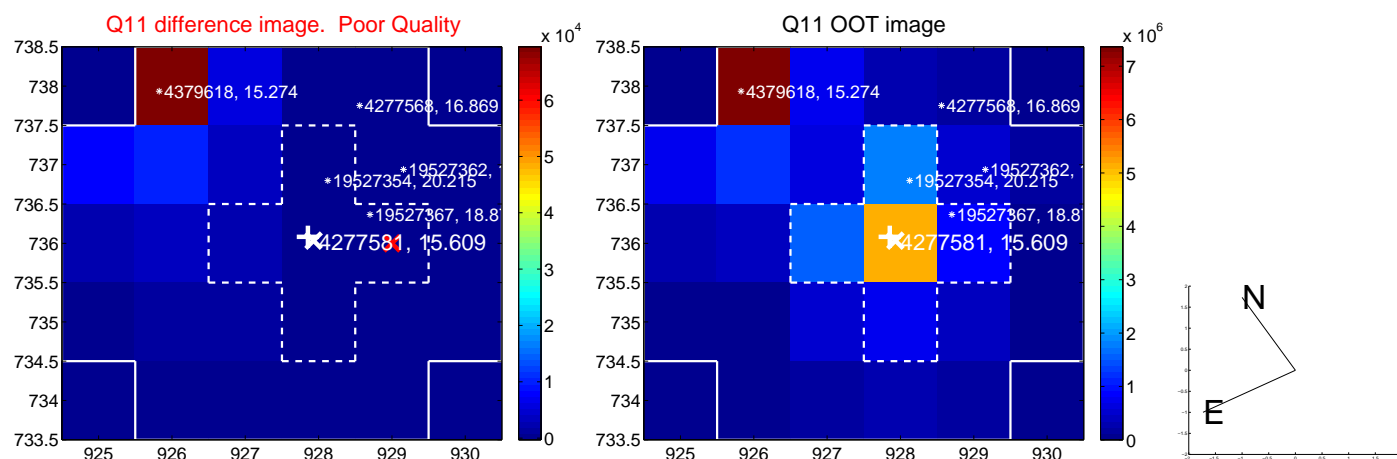
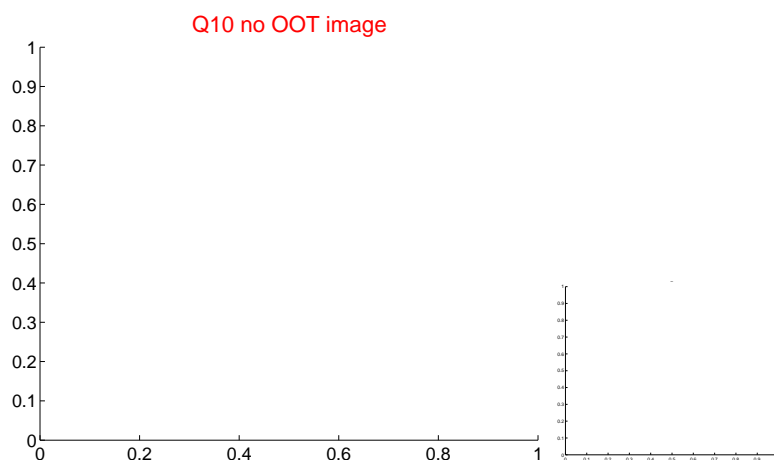
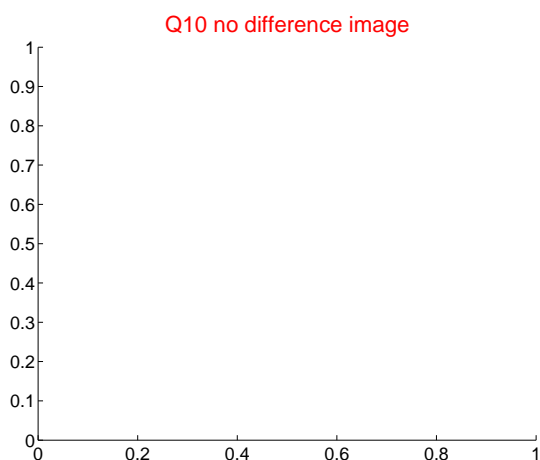
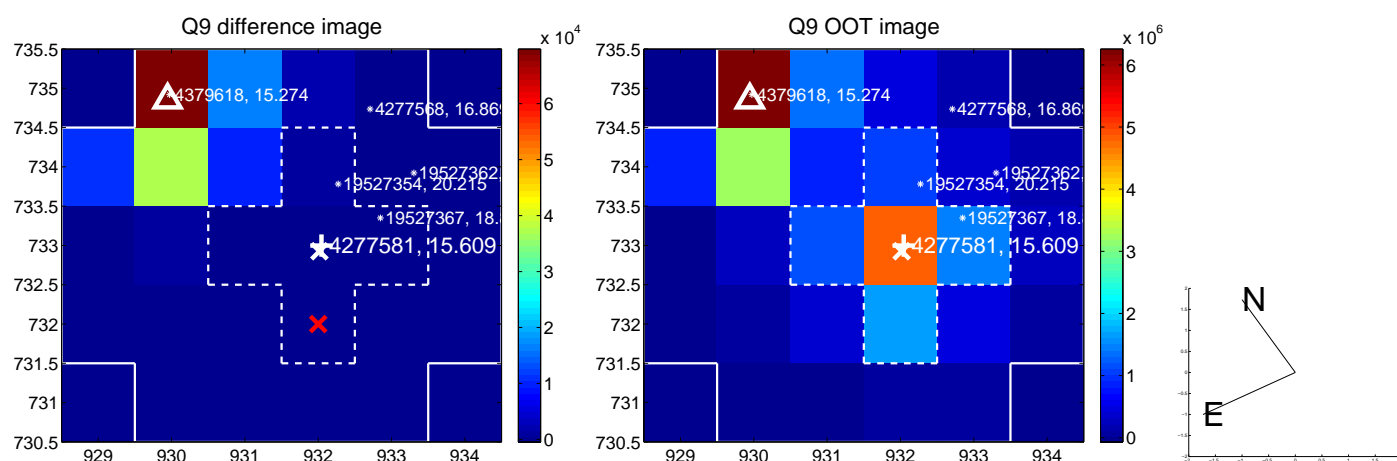
Q4 OOT image



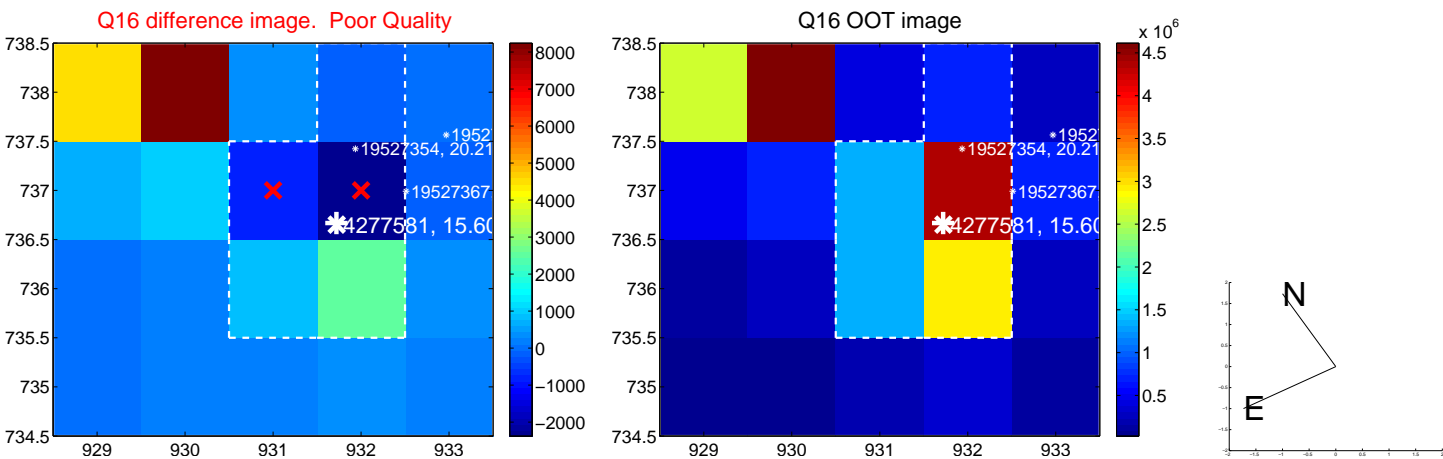
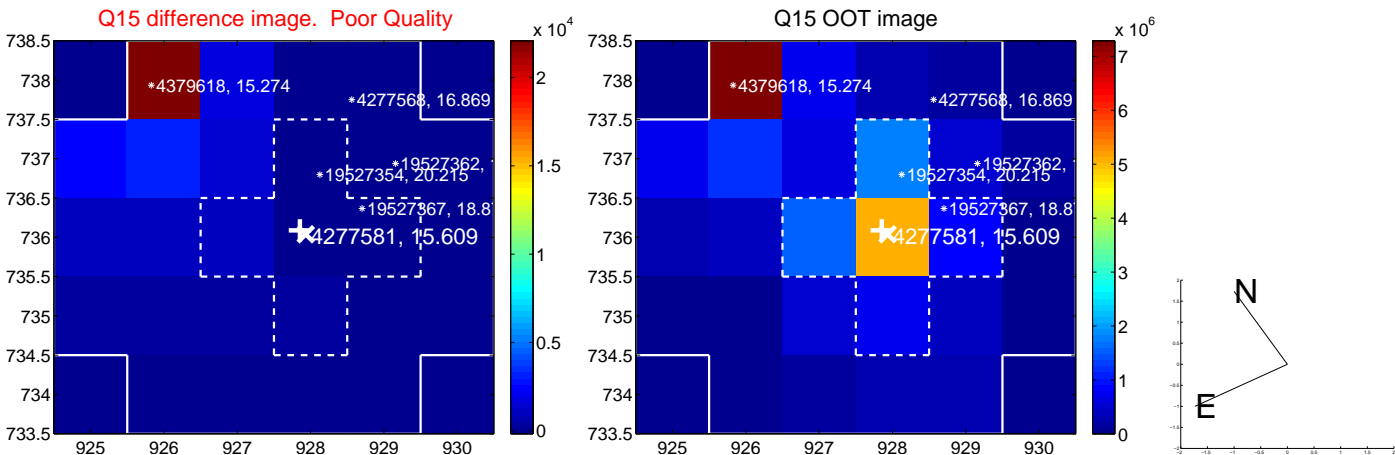
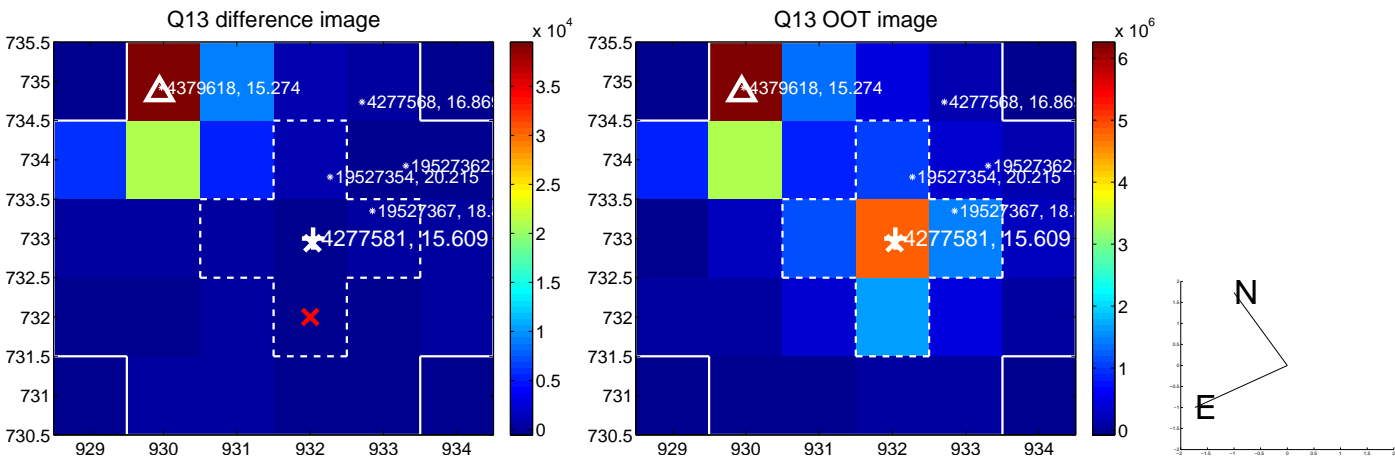
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



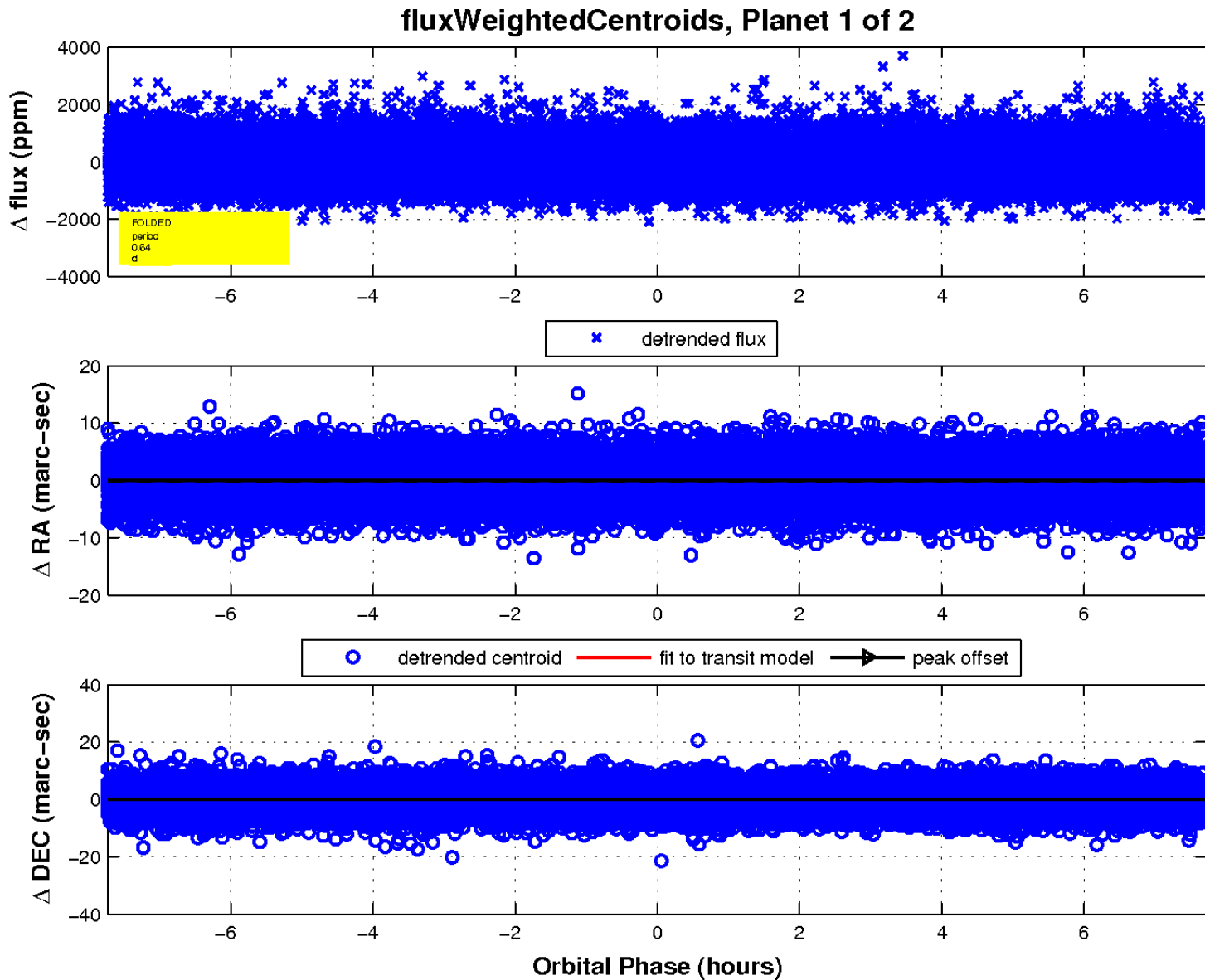
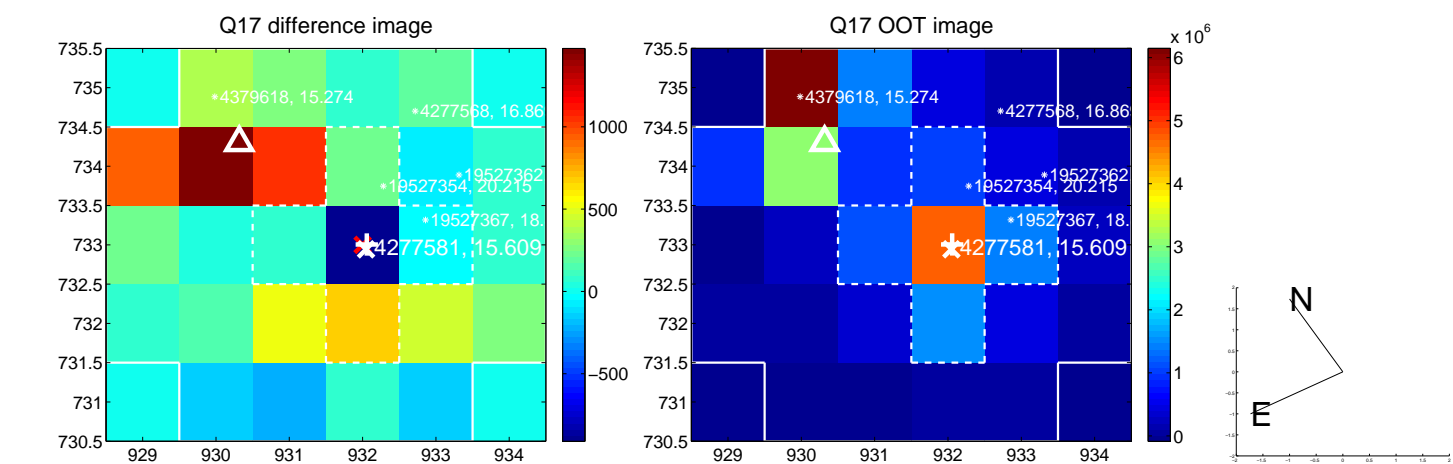
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

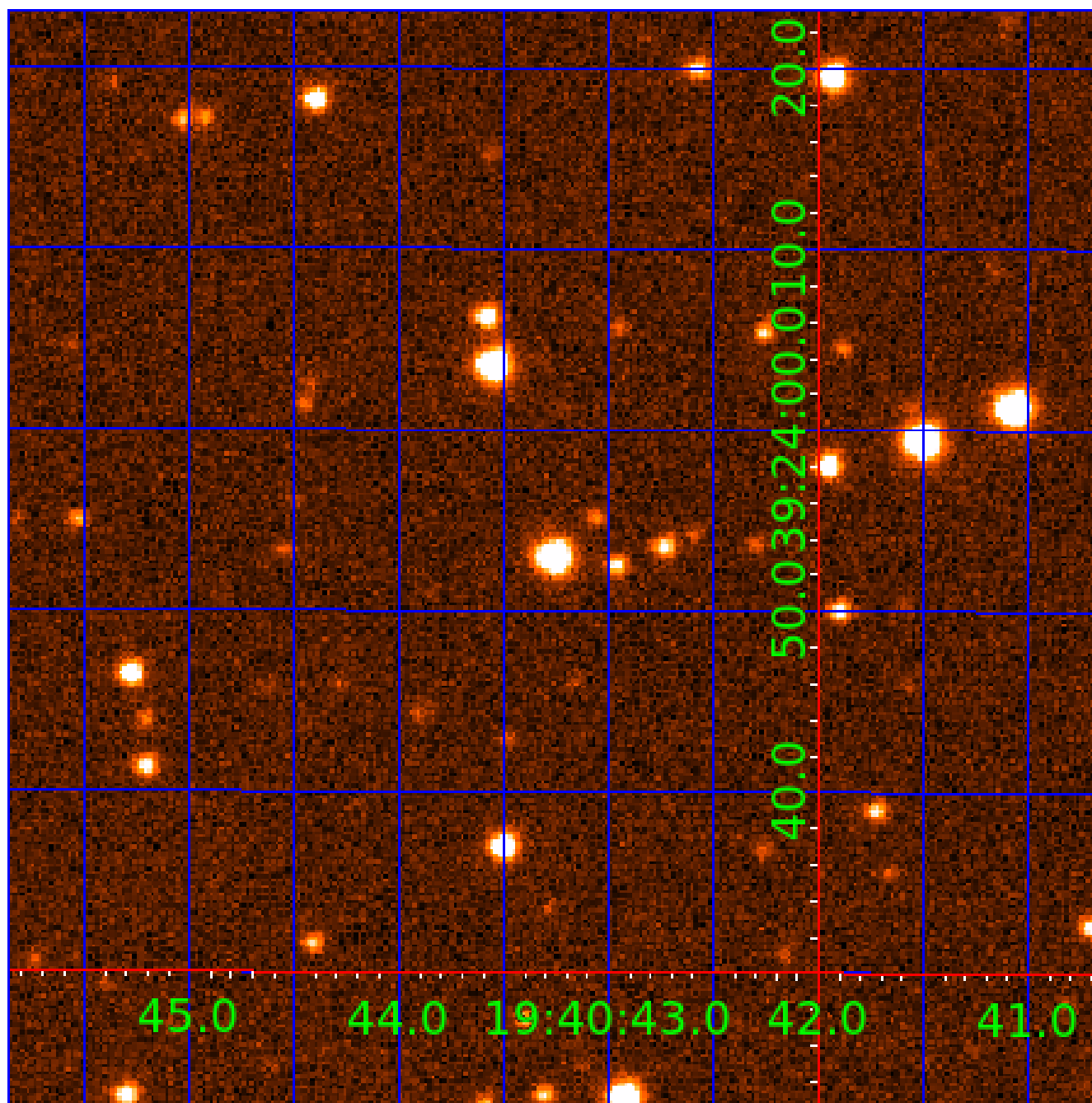


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004277581

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})
004277581-01	OBS	No	0.644297	132.143852	35.3	4.681	7.7	5.6	0.85	5925	0.52	3888.63
004277581-02	OBS	No	11.663195	131.569506	565.2	1.837	8.3	8.6	0.85	5925	2.04	81.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004277581-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_RESOLVED_OFFSET
004277581-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS—HALO_GHOST

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

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

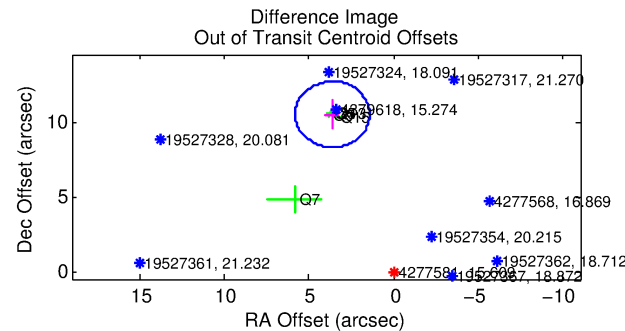
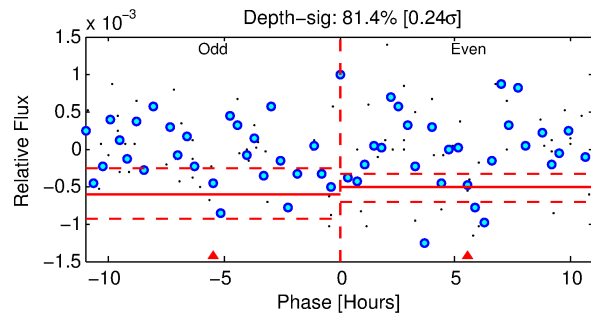
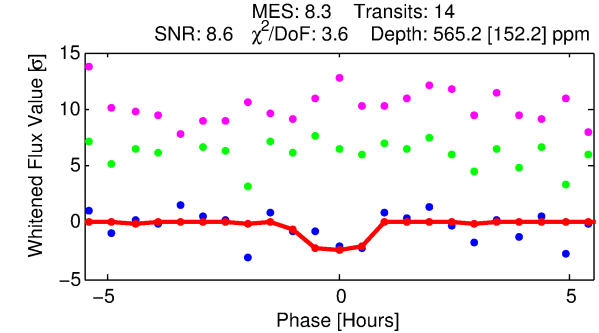
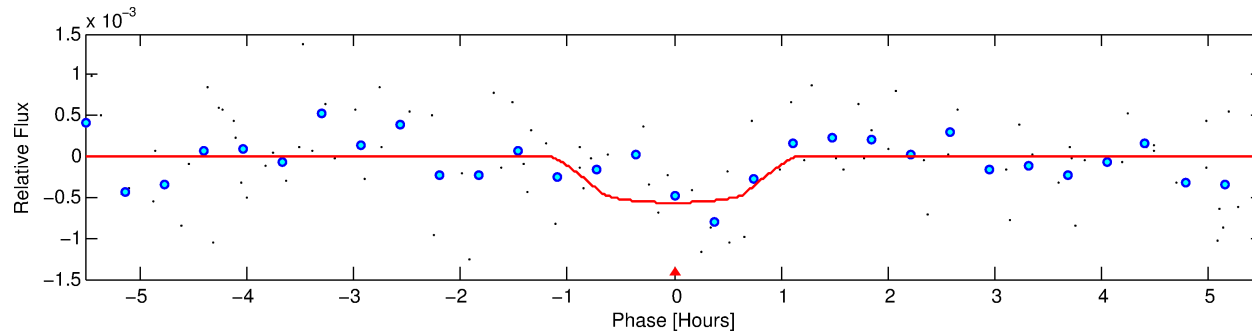
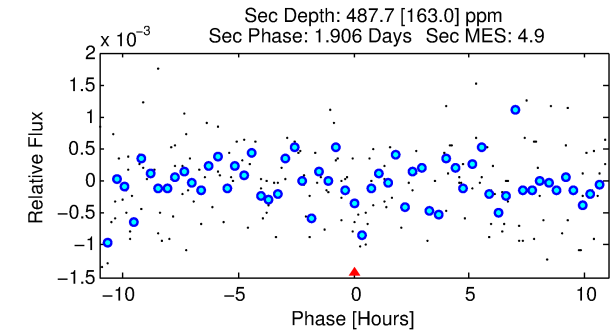
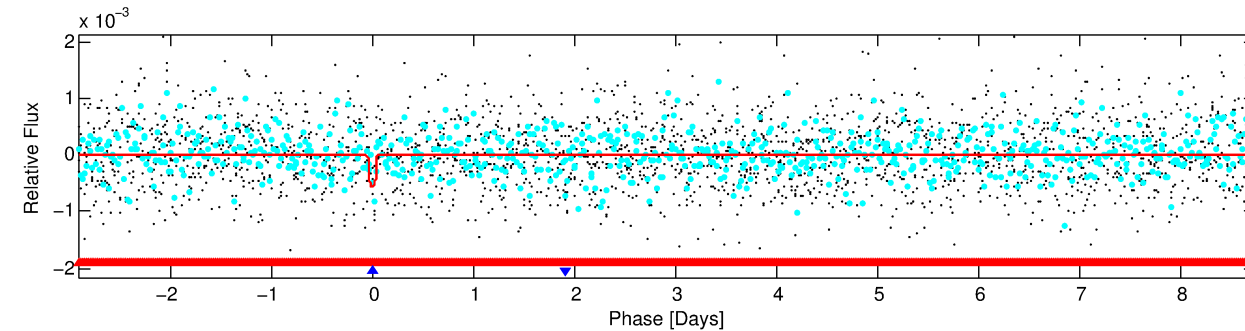
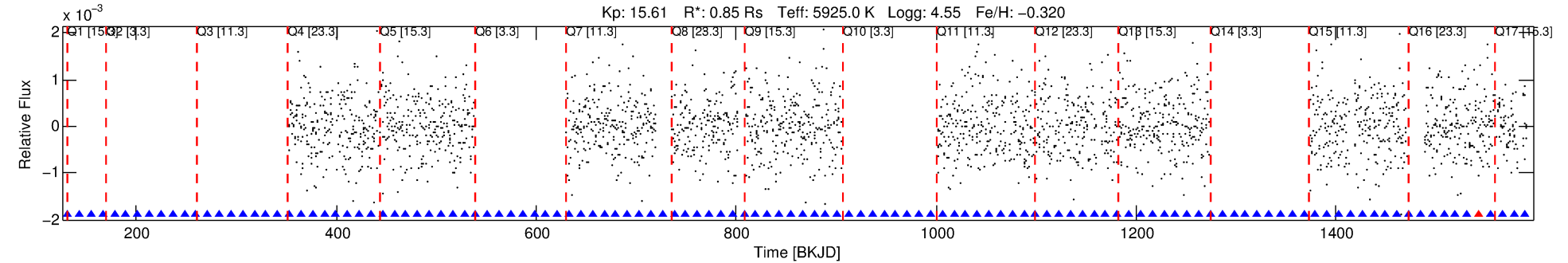
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004277581-02

No Significant Match Found

DV One-Page Summary

KIC: 4277581 Candidate: 2 of 2 Period: 11.663 d



DV Fit Results:

Period = 11.66319 [0.00019] d
Epoch = 131.5695 [0.0165] BKJD
Rp/R* = 0.0220 [0.0790]
a/R* = 46.98 [804.72]
b = 0.33 [47.56]
Seff = 81.81 [32.23]
Teq = 767 [76] K
Rp = 2.04 [7.33] Re
a = 0.0985 [0.0246] AU
Ag = 627.09 [4507.18] [0.14σ]
Teff = 5933 [10650] K [0.49σ]

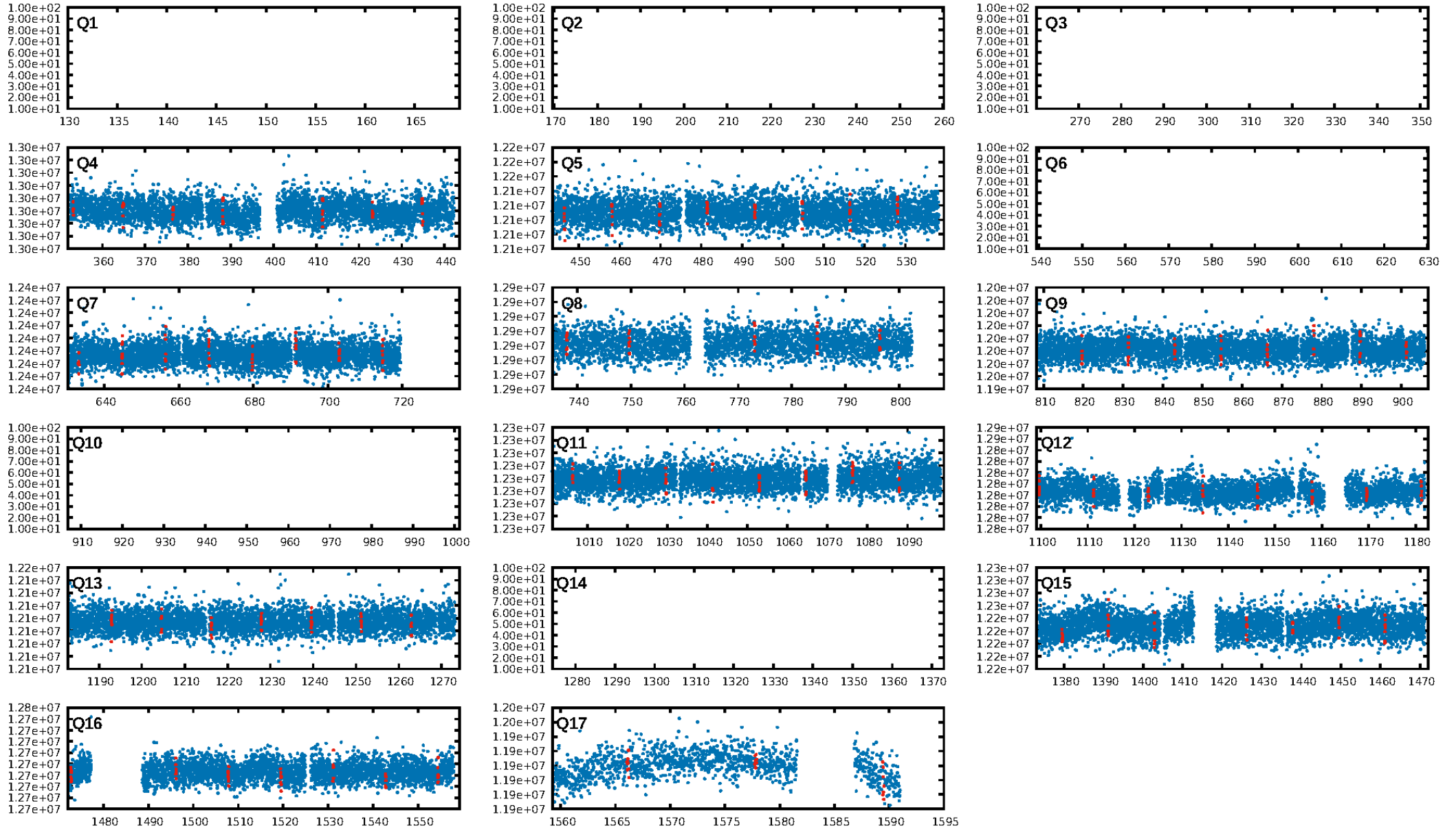
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [52.58σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 98.7%
Bootstrap-pfa: 1.80e-09
RollingBand-fgt: 0.93 [13/14]
GhostDiagnostic-chr: 0.11
Centroid-sig: 71.4%
Centroid-so: 1.538 arcsec [1.29σ]
OotOffset-rm: 11.107 arcsec [15.15σ]
KicOffset-rm: 11.270 arcsec [12.40σ]
OotOffset-st: 0/2/0/3 [5]
KicOffset-st: 0/2/0/3 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.00 [0/11]

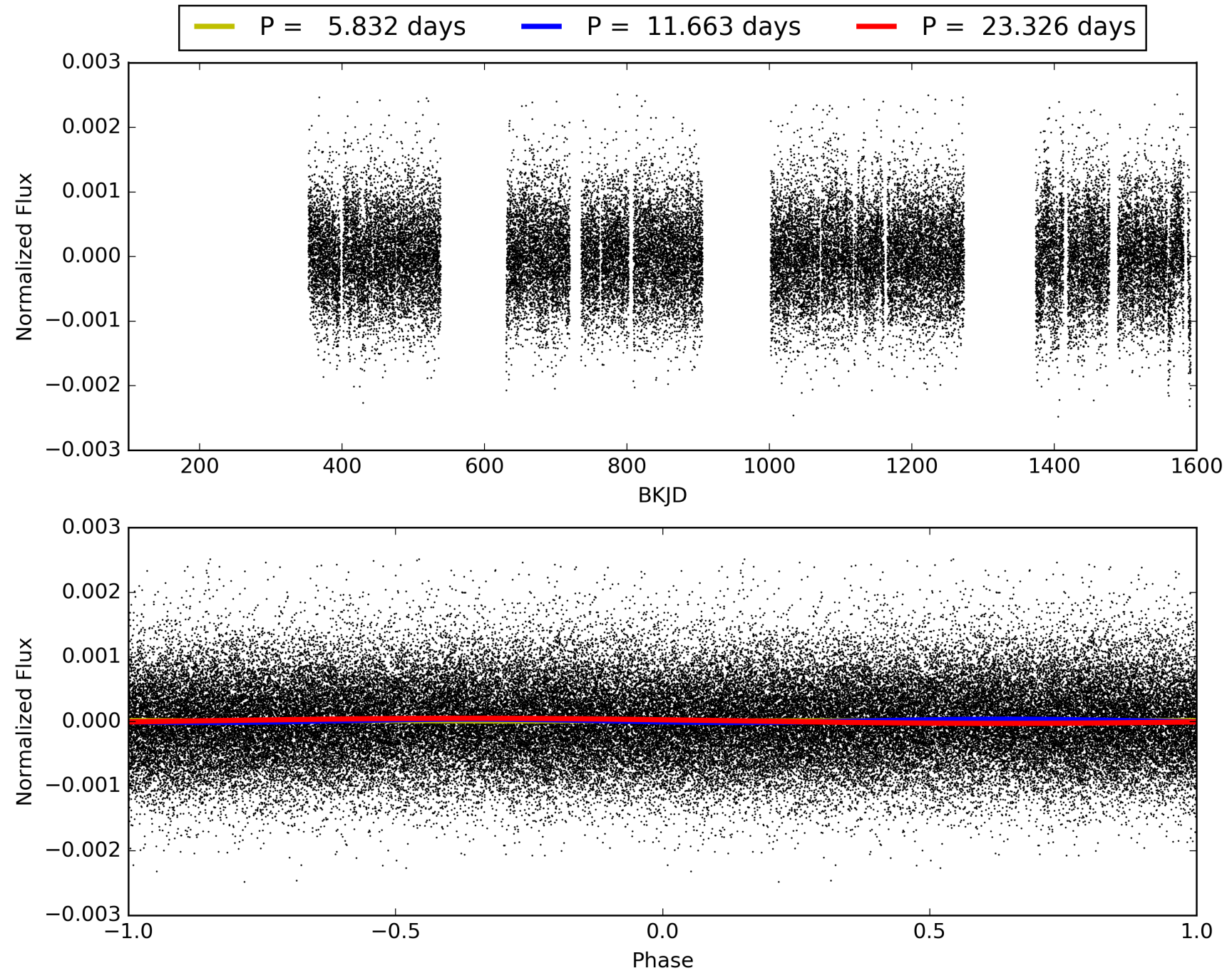
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:51:55 Z

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

TCE 004277581-02, PDC Light Curves

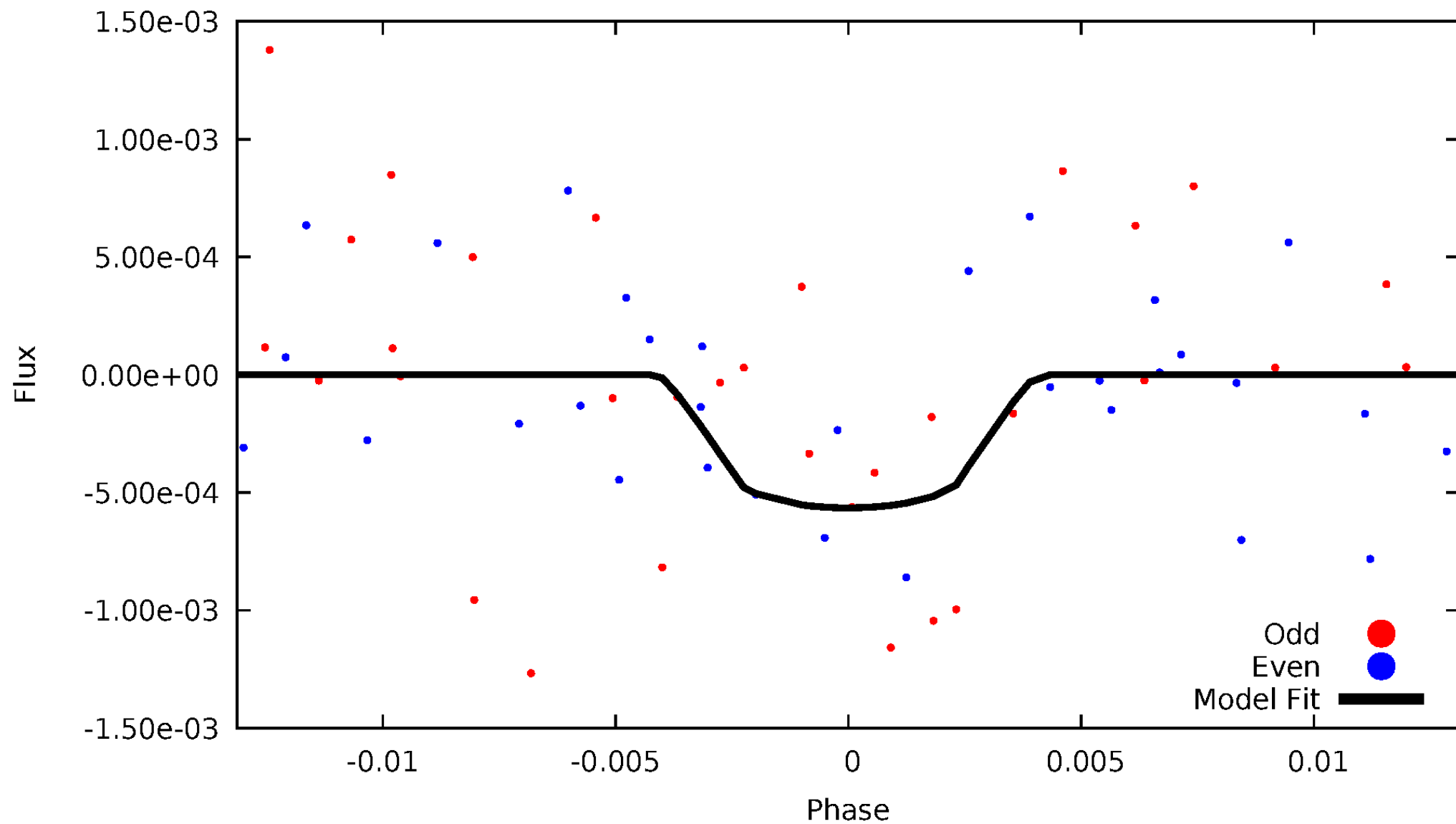


TCE 004277581-02



DV Odd/Even

TCE 004277581-02

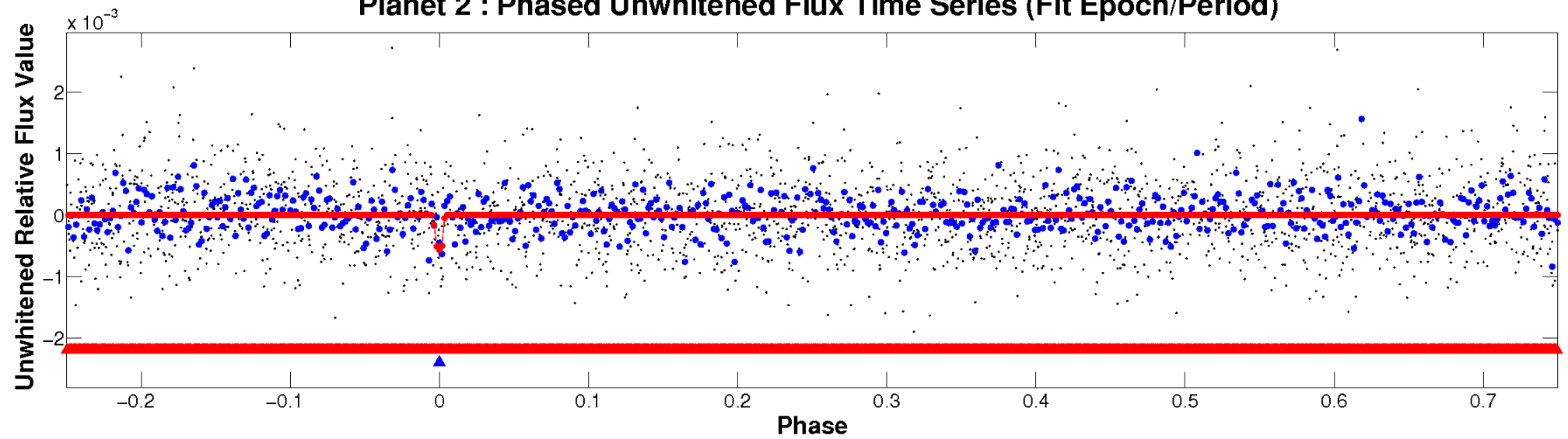


ALT Odd/Even

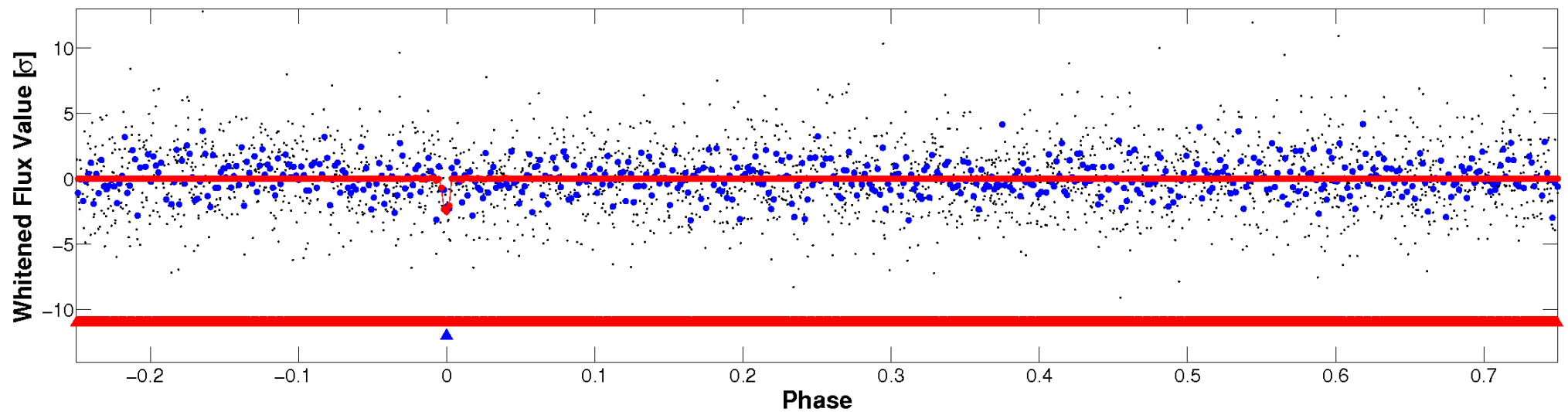
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

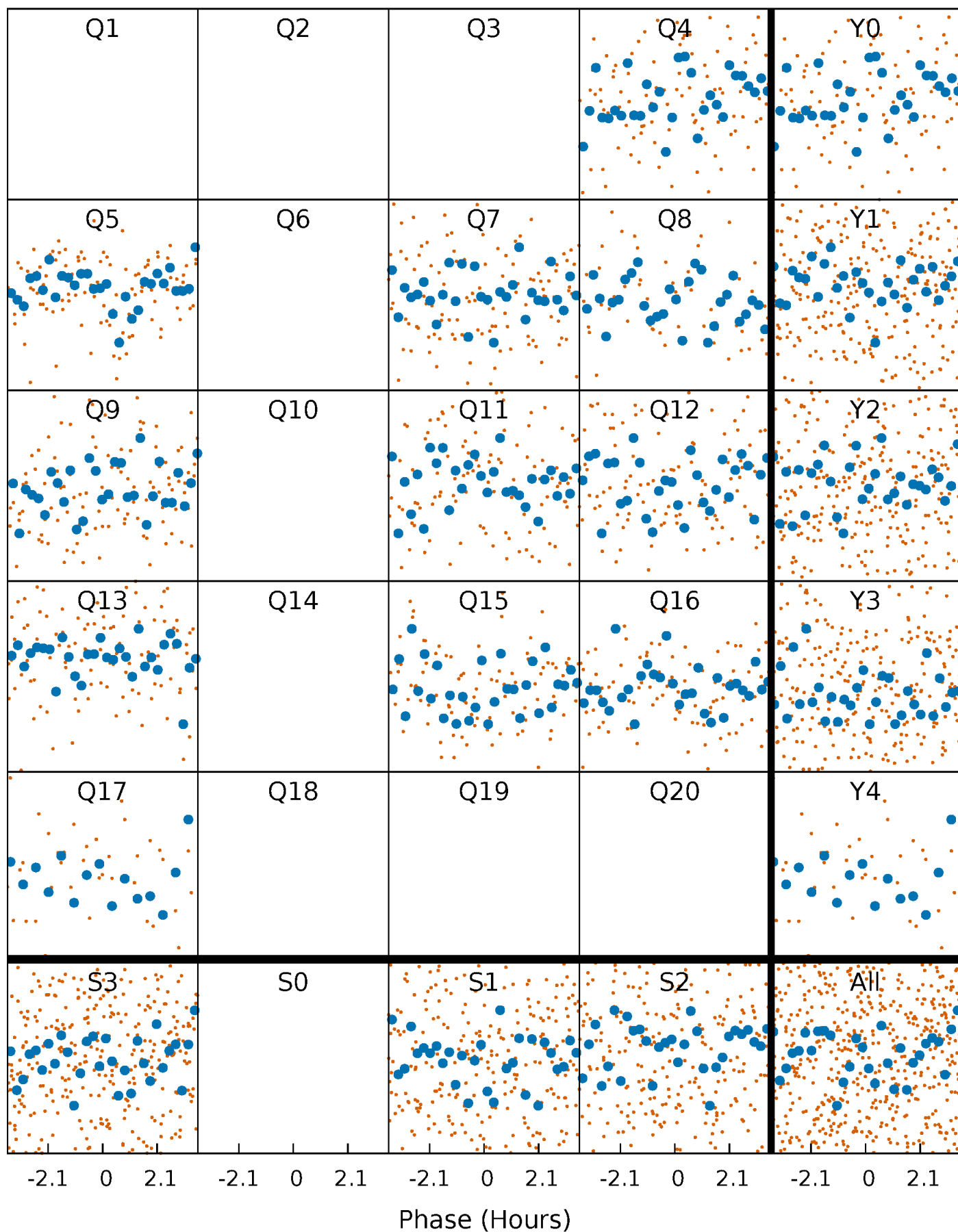


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



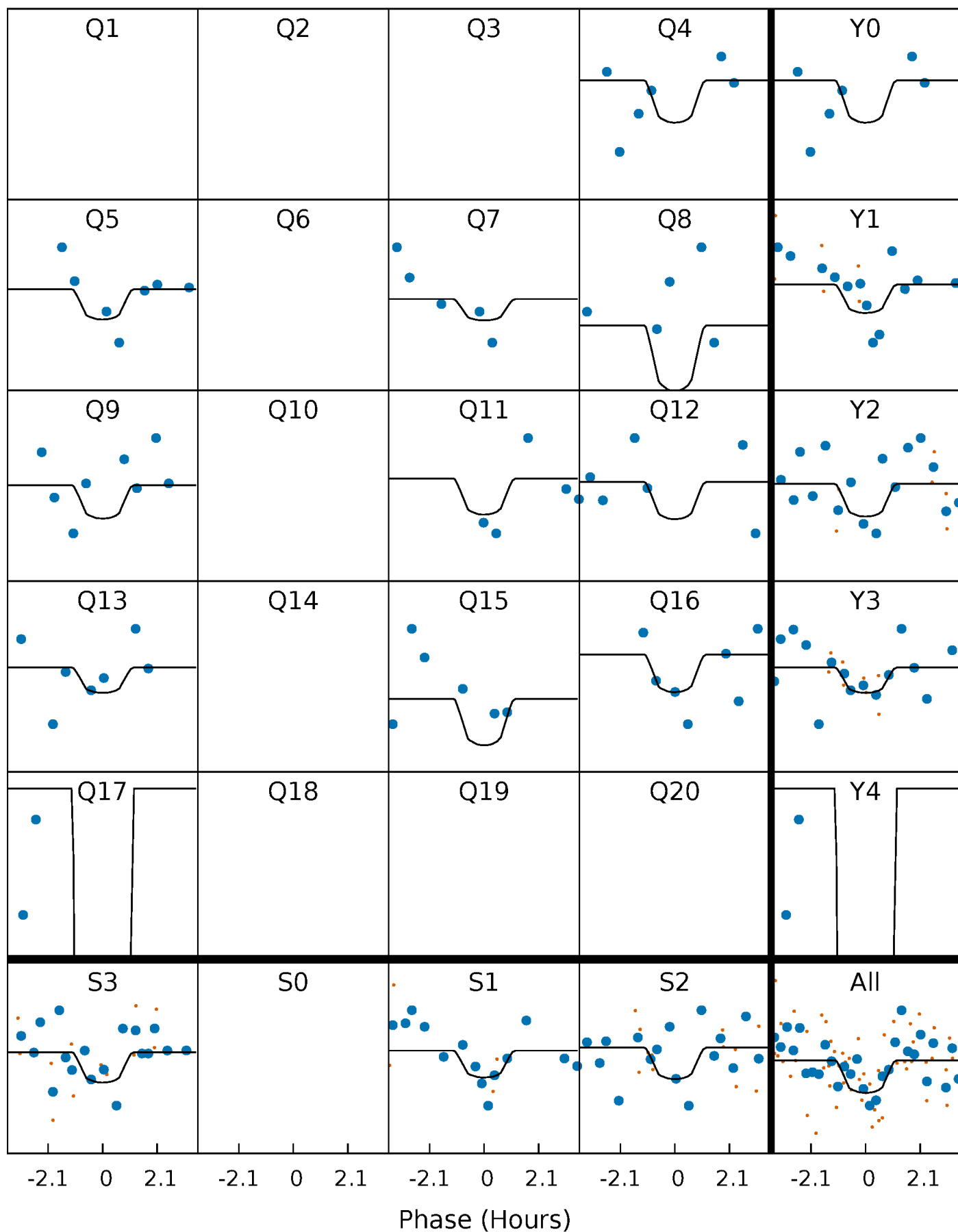
PDC Quarter-Phased Transit Curves

TCE 004277581-02 P= 11.663195 Days $T_0=131.569505$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004277581-02 P= 11.663195 Days $T_0=131.569505$ (BKJD)

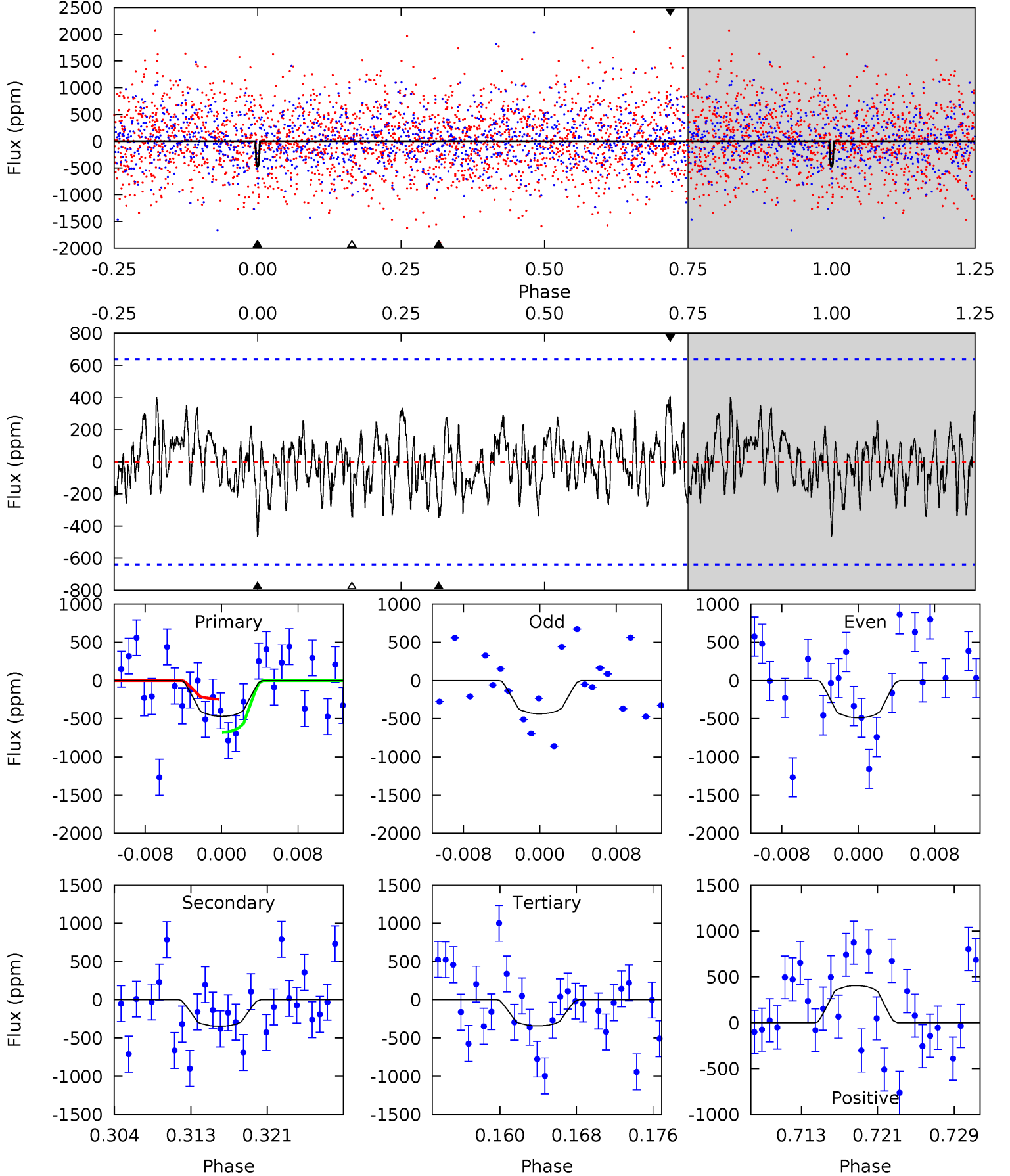


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004277581-02, $P = 11.663195$ Days, $E = 131.569505$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.72	2.75	2.71	3.21	5.07	2.65	1.14	1.01	0.51	0.04	-0.46	0.20	0.77	0.46	1.73



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004277581

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5925^{+184}_{-205}	$4.553^{+0.036}_{-0.204}$	$-0.320^{+0.300}_{-0.300}$	$0.848^{+0.248}_{-0.083}$	$0.938^{+0.108}_{-0.119}$	$2.164^{+0.428}_{-1.114}$
	+3%/-3%	+1%/-4%	+94%/-94%	+29%/-10%	+12%/-13%	+20%/-51%
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 004277581-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-346 ± 126	$6.29^{+6.29}_{-4.50}$	1100^{+78}_{-50}	3612^{+2248}_{-720}	45^{+467}_{-35}
Alt.	N/A	N/A	N/A	N/A	N/A

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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

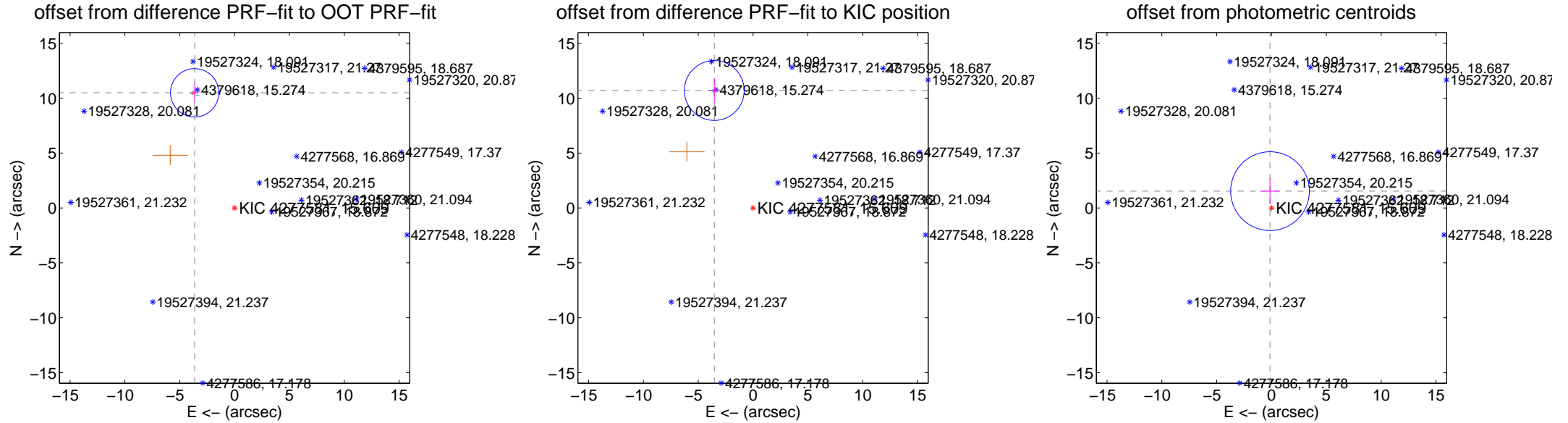
DV Centroid Data

Supplemental centroid analysis for 004277581-02. Kepler magnitude: 15.61. Transit SNR 8.62

There are 2 quarters with good PRF difference image offsets

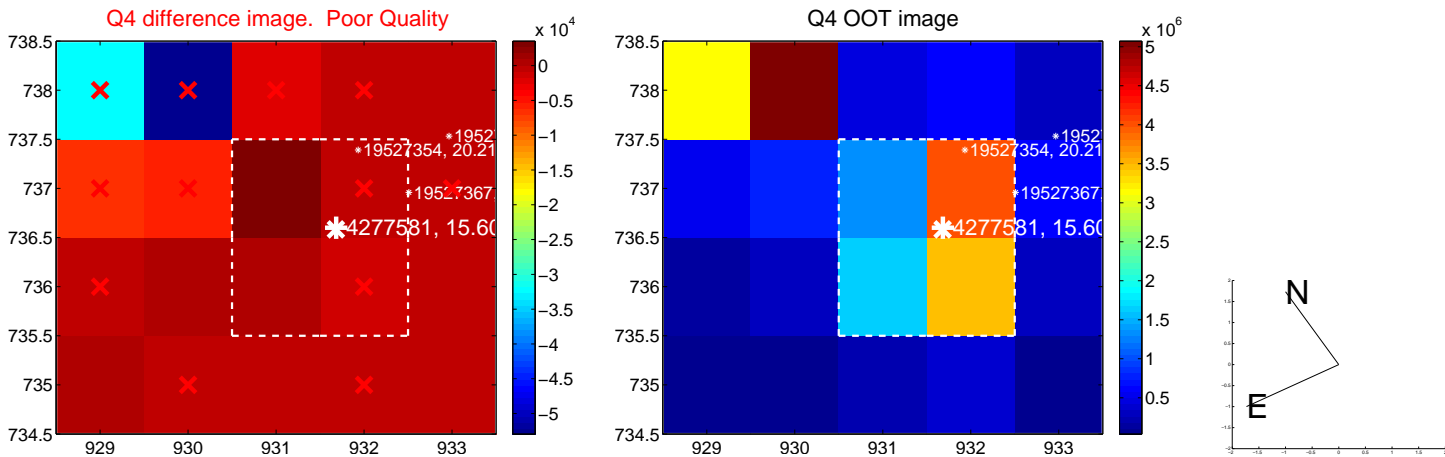
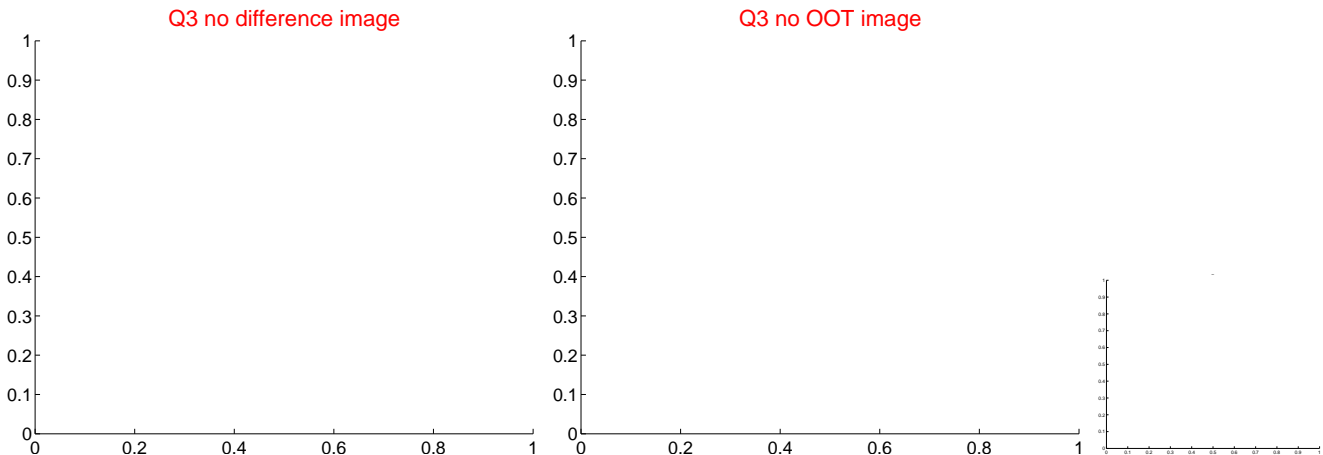
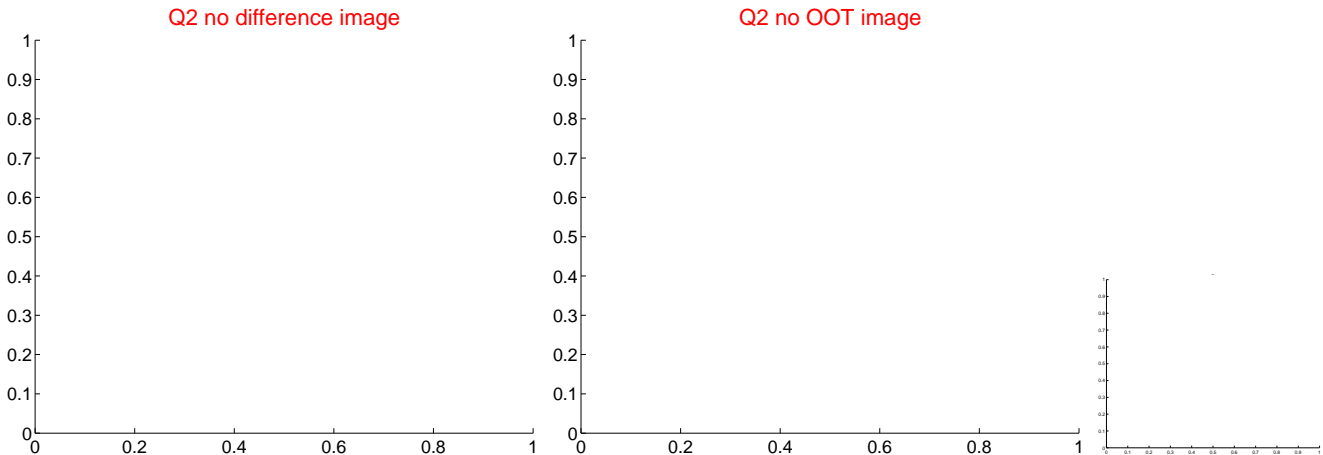
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	11.107 ± 0.733	15.15	3.641 ± 0.383	10.493 ± 0.903
PRF-fit source offset from KIC position	11.270 ± 0.909	12.40	3.535 ± 0.507	10.701 ± 1.122
photometric centroid source offset	1.54 ± 1.20	1.29	0.14 ± 0.92	1.53 ± 1.20

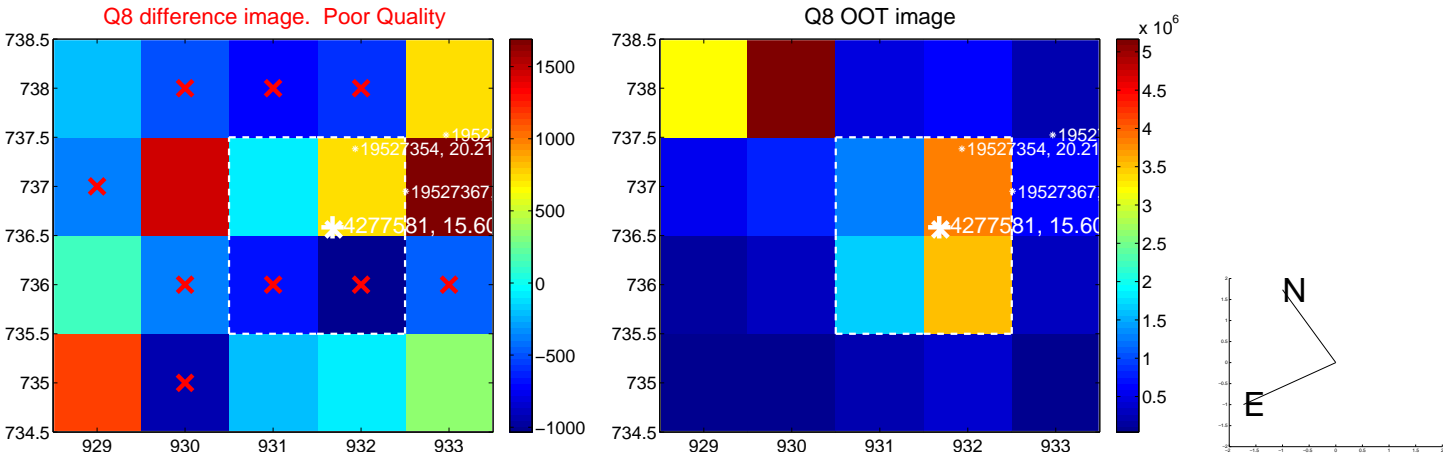
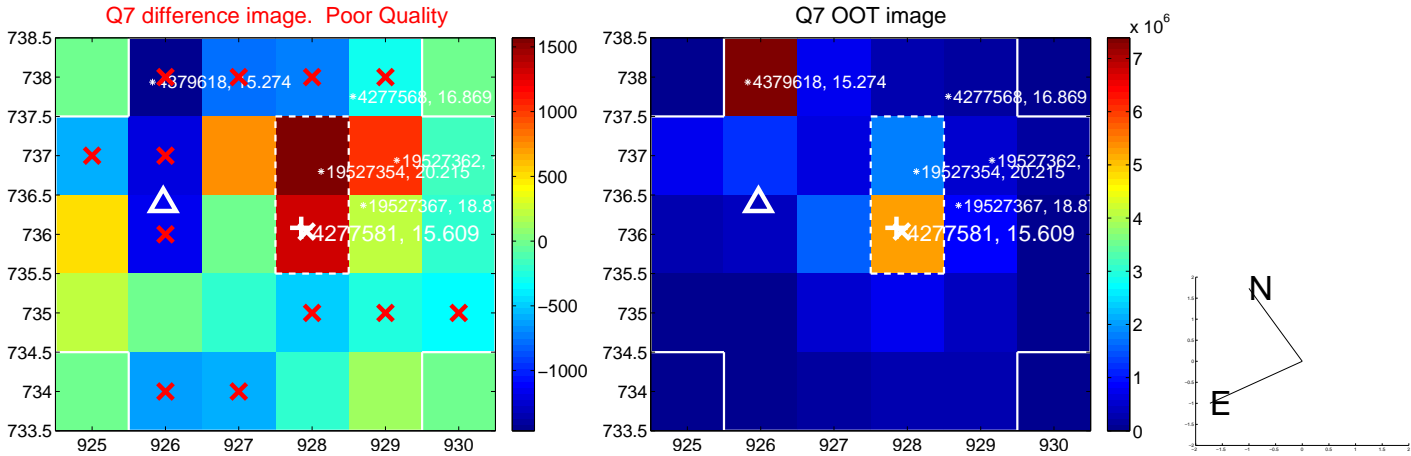
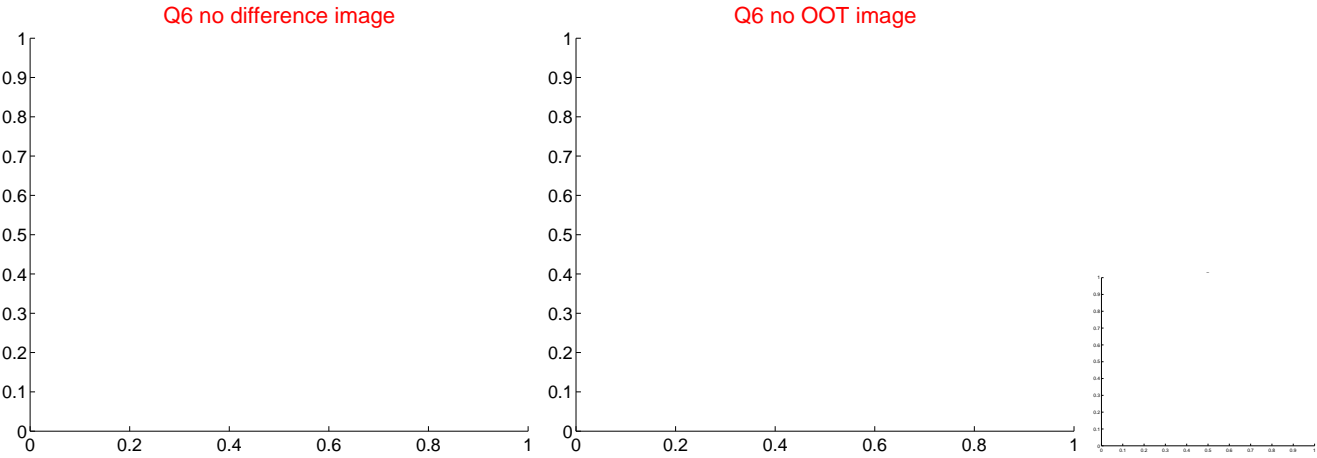
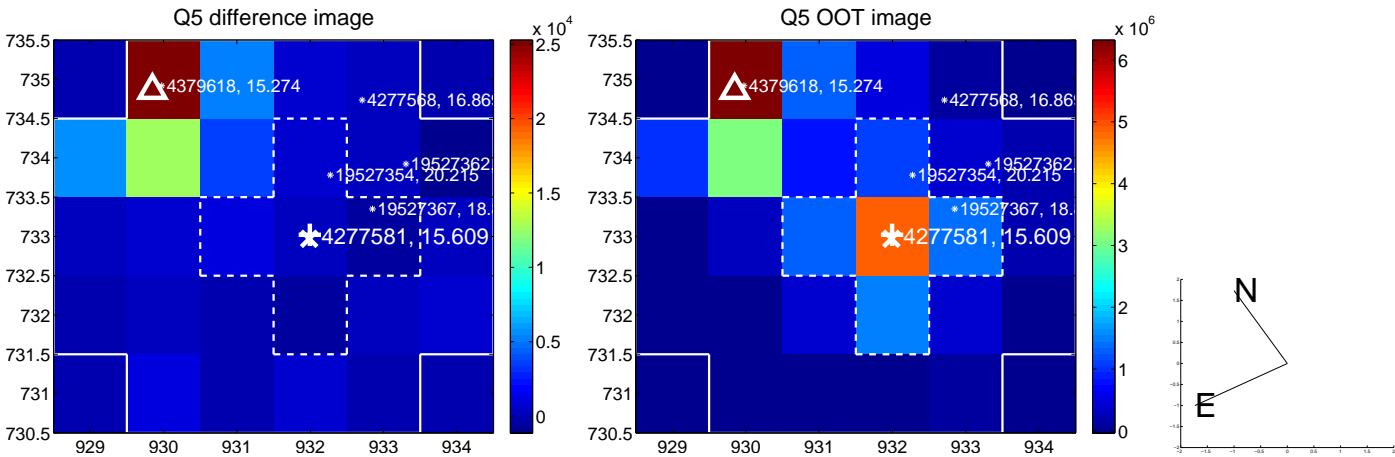


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

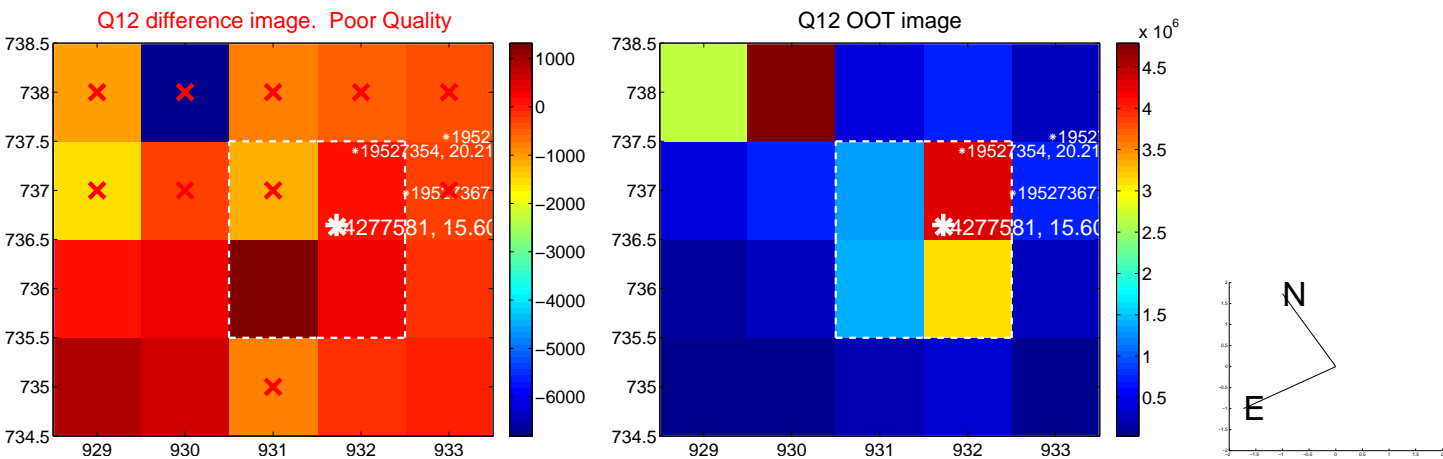
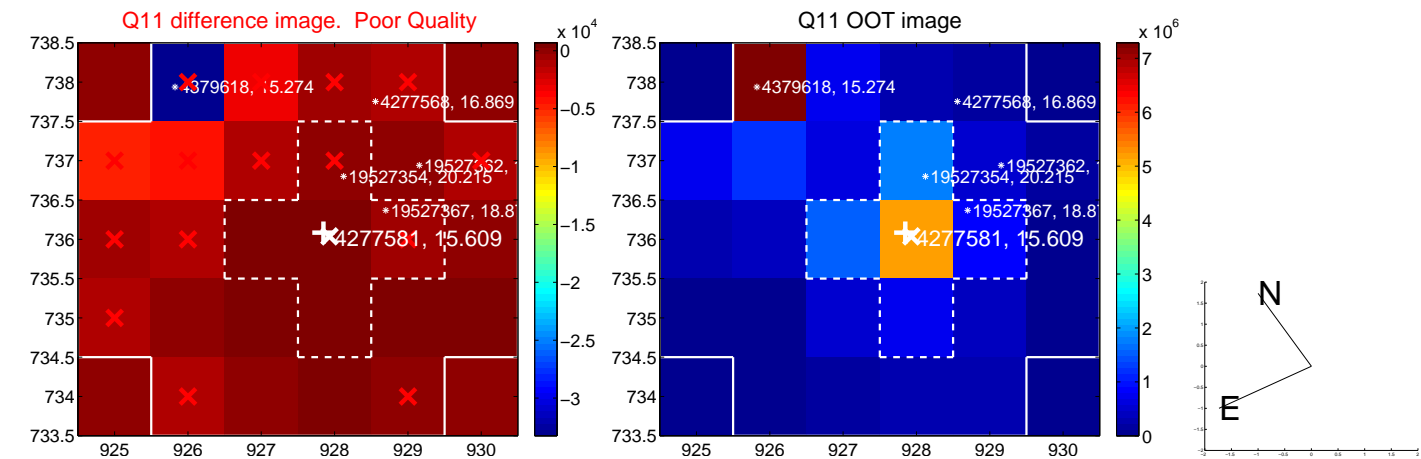
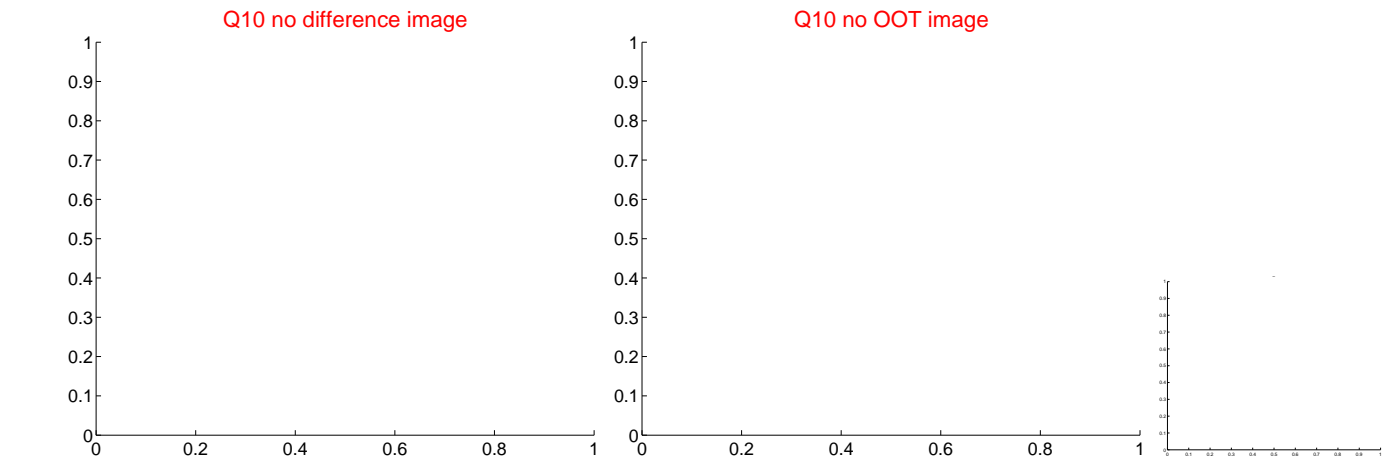
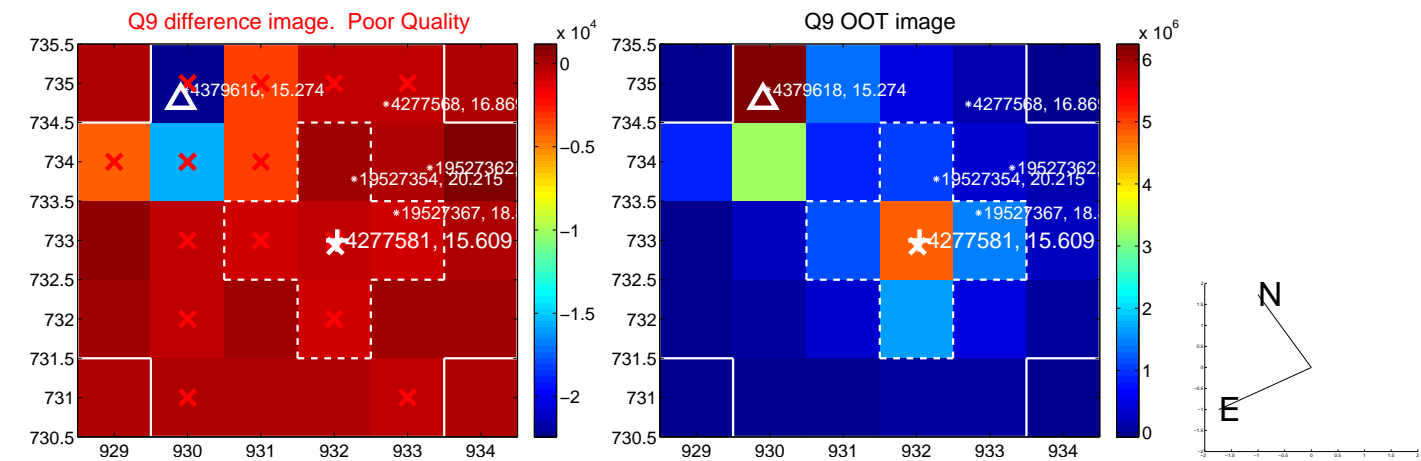
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



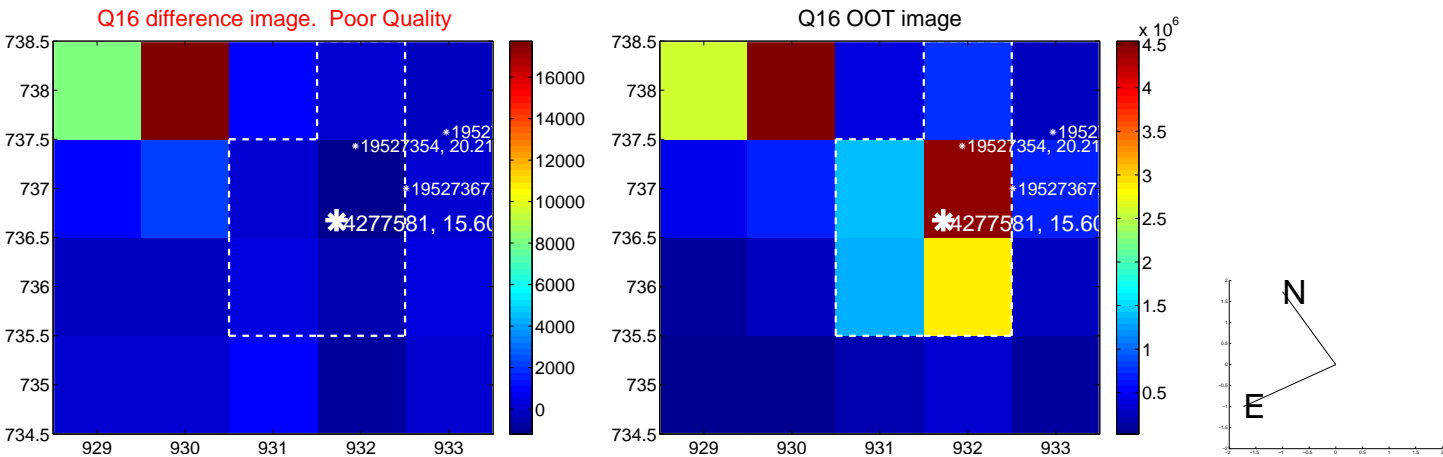
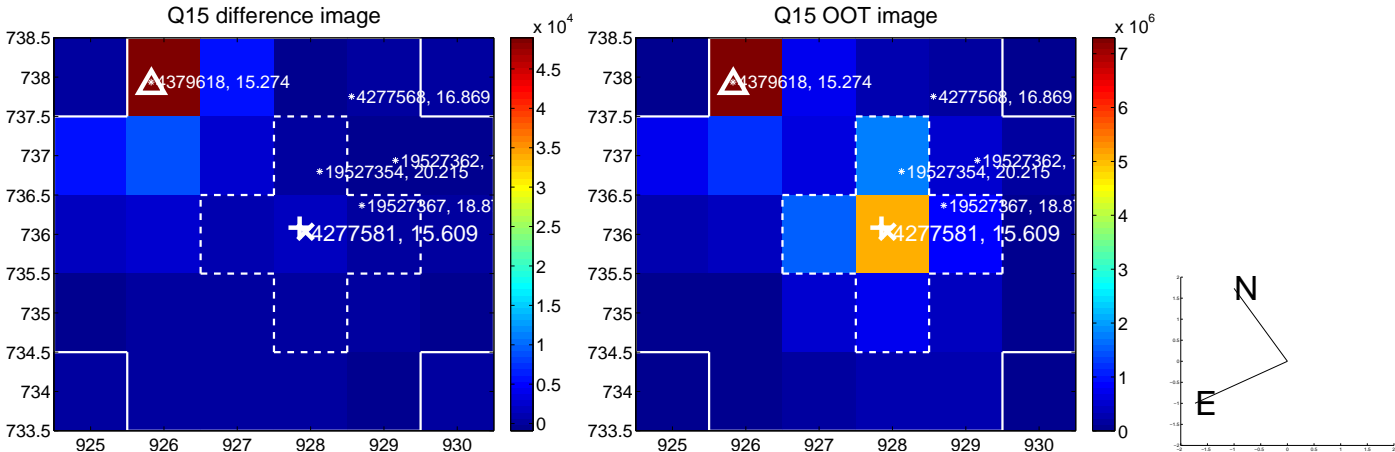
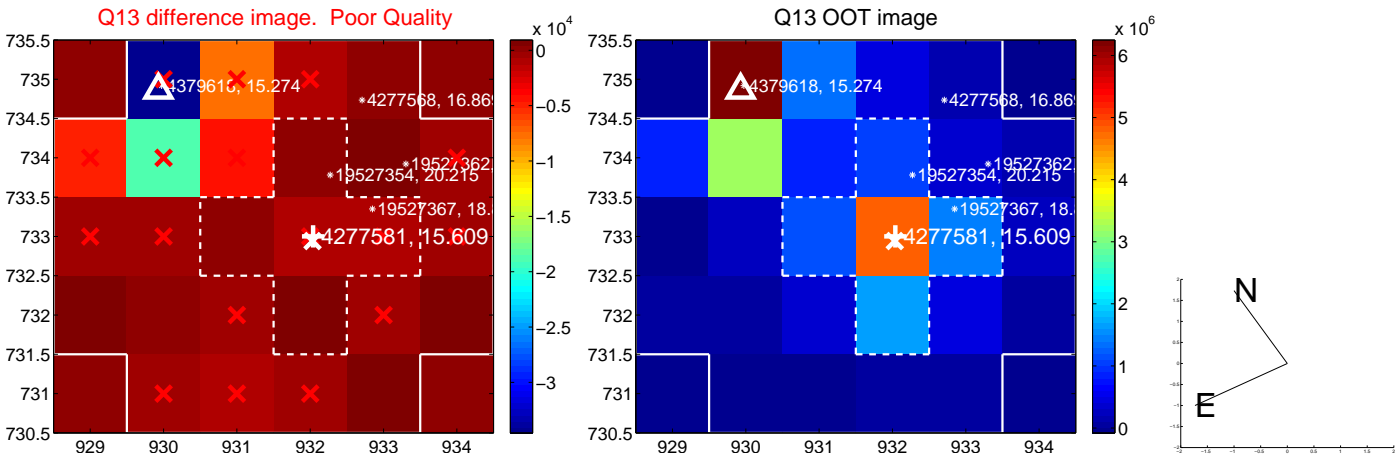
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



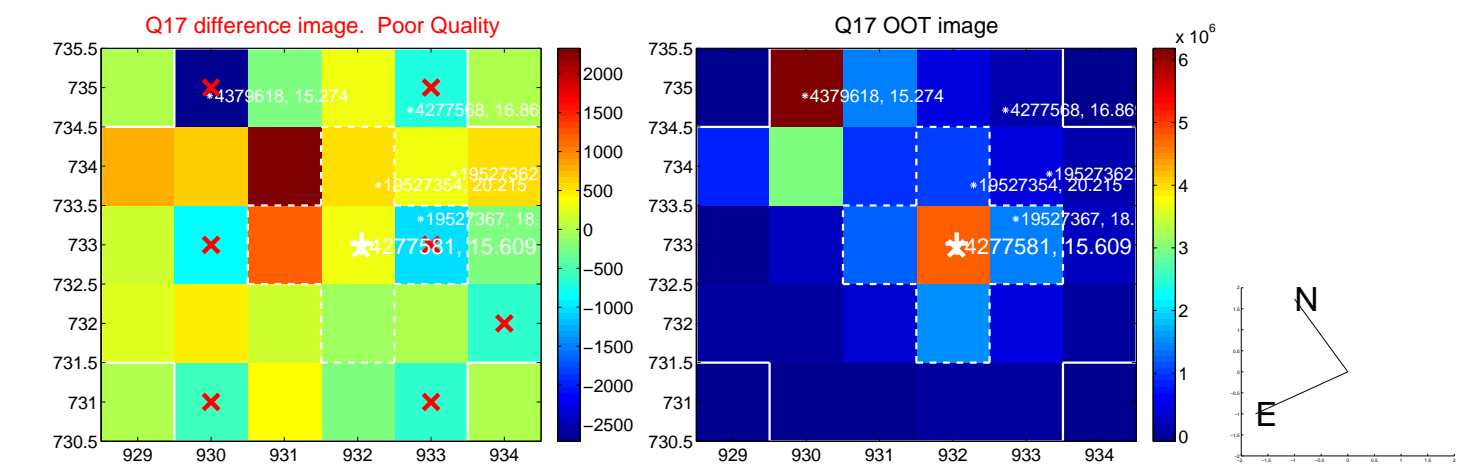
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



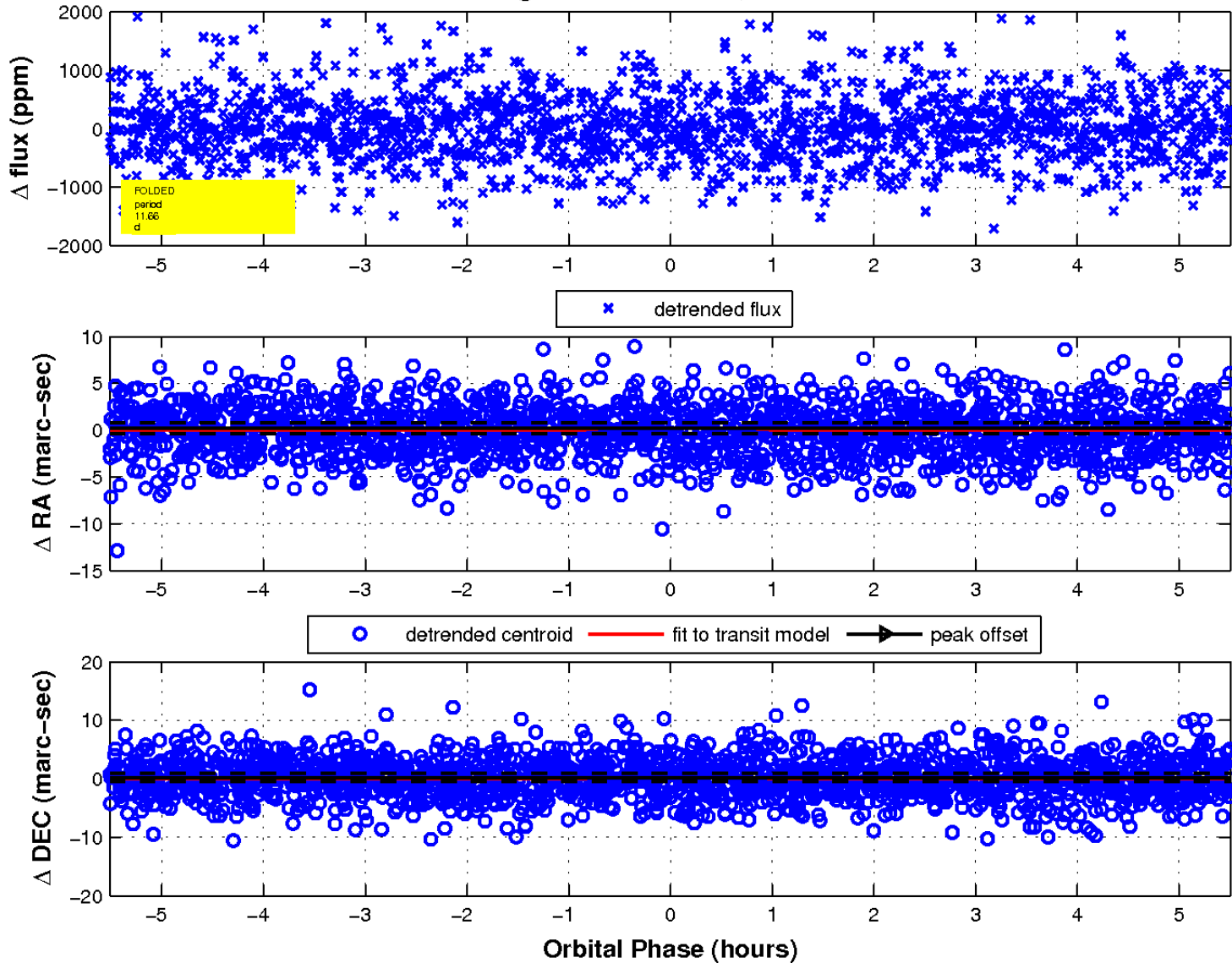
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

