

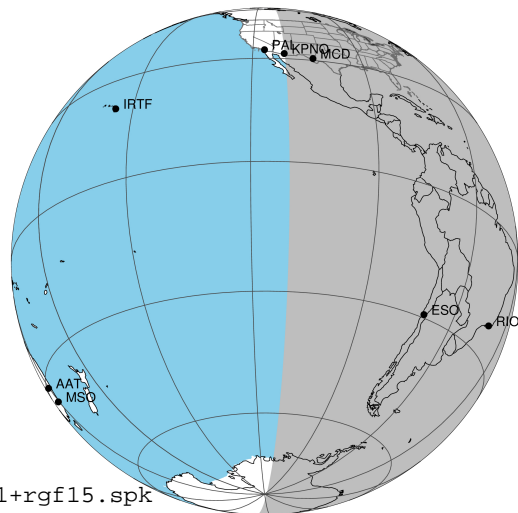
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-09-24T01:16:38.080  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116526798017155328  
 2Mass ID (if available) : 17375177-2314100

Jupiter 2043-09-24T01:16:38 K8.09 G13.78 Pgt

ICRS Star Coord at Epoch: 17h 37m 51.78255s -23:14:10.14182s

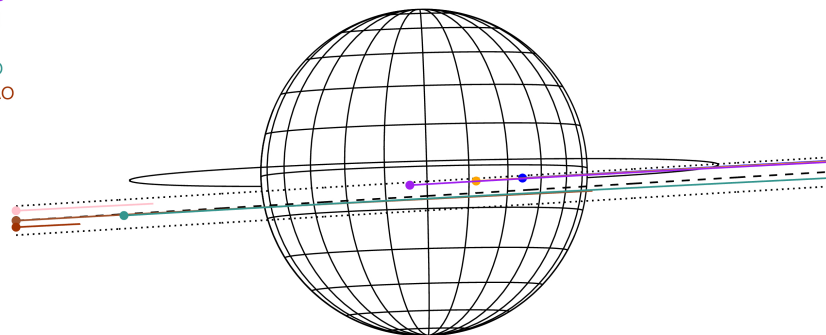
RUWE (>1.4 is poor) : 0.80  
 K magnitude : 8.094  
 G magnitude : 13.775  
 RP magnitude : 12.373  
 BP magnitude : 16.233  
 DUPflag : 0  
 Distance (au) : 5.231  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 15.87  
 Sun-Target sep (deg) : 84.62  
 Sun-Moon sep (deg) : 161.80  
 B (ring opening deg) : -2.22  
 PA of pole (deg) : 1.55  
 Pole direction: RA (deg): 268.05674  
 Dec (deg): 64.49731  
 C/A sky separation (") : 2.722  
 C/A sky separation (km) : 10328.0  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-09-24T01:16:38 K8.09 G13.78  
 Pgt



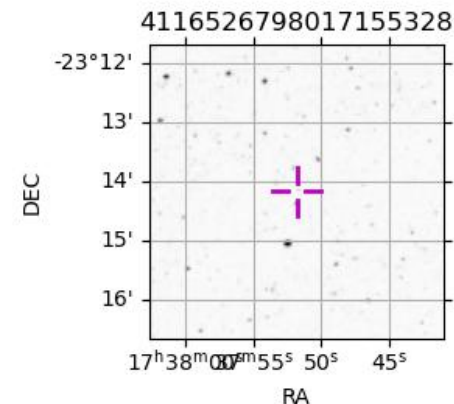
2043-09-24T01:16:38.0800 α: 17 37 51.7825 δ: -23 14 10.142 C/A 2.731" PA 3.43 deg v\_sky +15.87 km/s D 05.23 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PAL  
 KPNO  
 MCD  
 TEN  
 RIO  
 ESO  
 SAAO



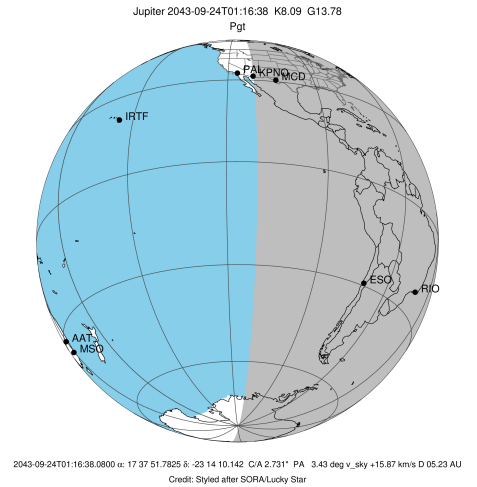
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+	SEP 24 02:32 - SEP 24 02:32	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	SEP 24 02:33 - SEP 24 02:33	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	SEP 24 02:34 - SEP 24 02:34	Pne
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+ +	SEP 24 00:07 - SEP 24 02:36	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	SEP 24 00:05 - SEP 24 02:36	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

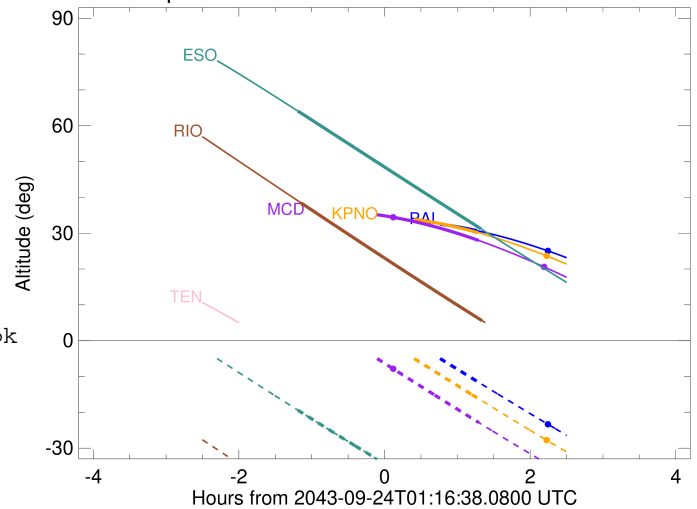


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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-09-24T01:16:19.410
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)   : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 4116526798017155328
2Mass ID (if available) : 17375177-2314100
ICRS Star Coord at Epoch: 17h 37m 51.78255s -23:14:10.14182s
RUWE (>1.4 is poor) : 0.80
K magnitude           : 8.094
G magnitude           : 13.775
RP magnitude          : 12.373
BP magnitude          : 16.233
DUPflag              : 0
Distance (au)         : 5.231
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 15.87
Sun-Target sep (deg) : 84.62
Sun-Moon sep (deg)   : 162.15
B (ring opening deg) : -2.22
PA of pole (deg)     : 1.55
Pole direction: RA (deg): 268.05674
Dec (deg): 64.49731
C/A sky separation (" ) : 1.325
C/A sky separation (km) : 5025.6
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
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Jupiter 2043-09-24T01:16:38 K8.09 G13.78

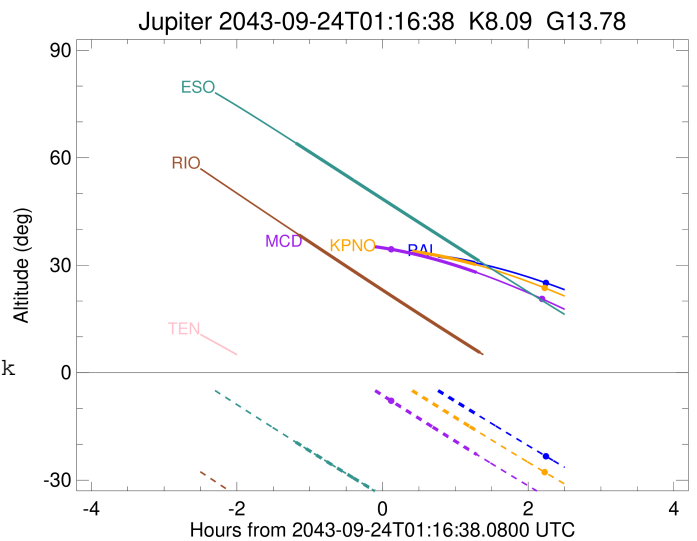
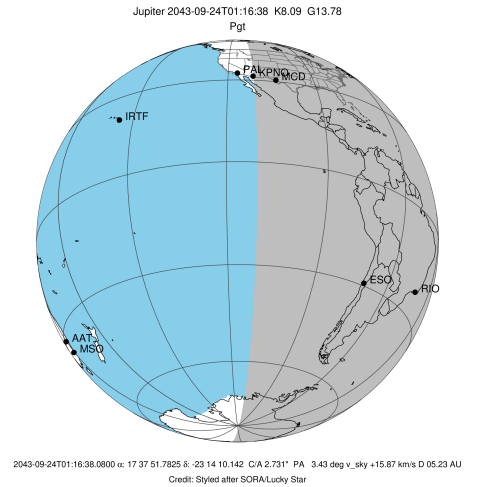


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-23T23:59:33.163	30.62	20.52x	71491.9	-6.08	-6.95
Jupiter	E	2043-09-24T02:32:58.586	30.69	-11.36	71492.0	-2.17	-2.48

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-09-24T01:16:51.500
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KPNO
Location              : Kitt Peak Natl Obs
Latitude (deg)        : 31.96333
E. Longitude (deg)    : 248.40000
Altitude (km)         : 2.120
Gaia source ID        : 4116526798017155328
2Mass ID (if available) : 17375177-2314100
ICRS Star Coord at Epoch: 17h 37m 51.78255s -23:14:10.14182s
RUWE (>1.4 is poor) : 0.80
K magnitude           : 8.094
G magnitude           : 13.775
RP magnitude          : 12.373
BP magnitude          : 16.233
DUPflag              : 0
Distance (au)         : 5.231
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 15.87
Sun-Target sep (deg)  : 84.62
Sun-Moon sep (deg)   : 162.22
B (ring opening deg) : -2.22
PA of pole (deg)     : 1.55
Pole direction: RA (deg): 268.05674
Dec (deg): 64.49731
C/A sky separation (") : 1.342
C/A sky separation (km) : 5092.8
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

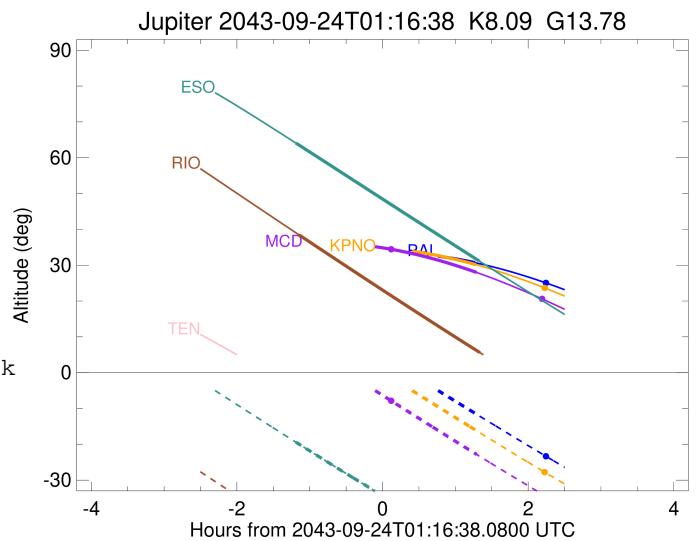
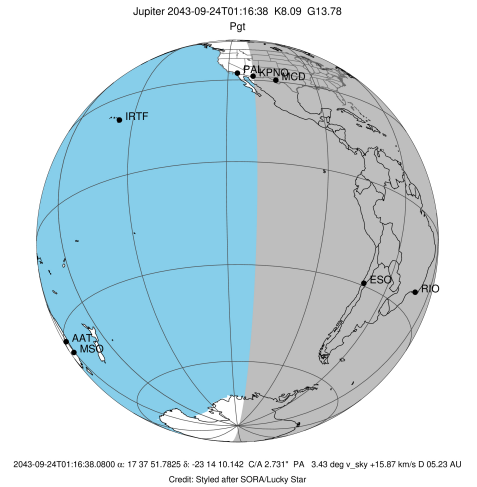


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-24T00:00:02.274	33.35	16.40x	71491.9	-6.09	-6.95
Jupiter	E	2043-09-24T02:33:29.998	30.17	-16.07	71492.0	-2.27	-2.60

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-09-24T01:17:38.170
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 4116526798017155328
2Mass ID (if available) : 17375177-2314100
ICRS Star Coord at Epoch: 17h 37m 51.78255s -23:14:10.14182s
RUWE (>1.4 is poor) : 0.80
K magnitude           : 8.094
G magnitude           : 13.775
RP magnitude          : 12.373
BP magnitude          : 16.233
DUPflag              : 0
Distance (au)        : 5.231
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 15.87
Sun-Target sep (deg) : 84.62
Sun-Moon sep (deg)   : 162.32
B (ring opening deg) : -2.22
PA of pole (deg)     : 1.55
Pole direction: RA (deg): 268.05674
Dec (deg): 64.49731
C/A sky separation ("): 1.366
C/A sky separation (km): 5181.6
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

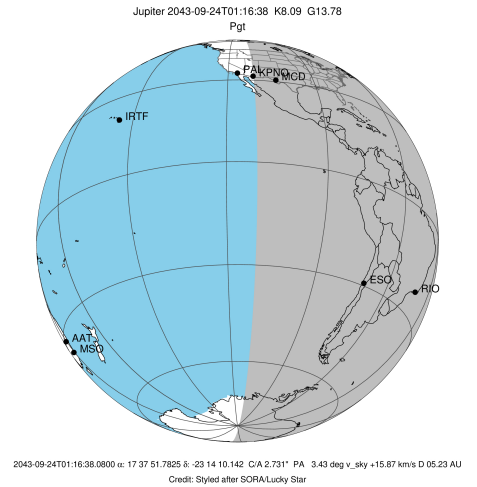


x: target alt < 5.0 deg or sun > -5.0 deg

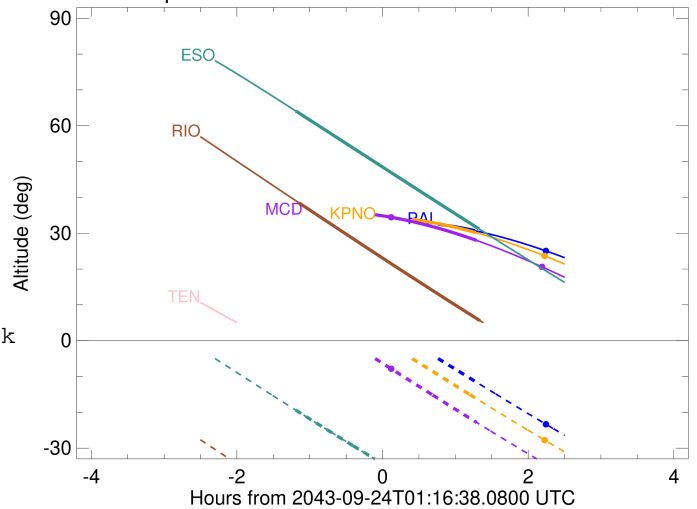
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-24T00:00:47.374	35.91	10.02x	71491.9	-6.08	-6.95
Jupiter	E	2043-09-24T02:34:12.902	27.97	-22.83	71492.0	-2.42	-2.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-09-24T01:22:33.850
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : RIO
Location            : Rio de Janeiro
Latitude (deg)      : -22.89506
E. Longitude (deg)  : 316.77708
Altitude (km)       : 0.033
Gaia source ID      : 4116526798017155328
2Mass ID (if available) : 17375177-2314100
ICRS Star Coord at Epoch: 17h 37m 51.78255s -23:14:10.14182s
RUWE (>1.4 is poor) : 0.80
K magnitude          : 8.094
G magnitude          : 13.775
RP magnitude         : 12.373
BP magnitude         : 16.233
DUPflag             : 0
Distance (au)       : 5.231
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 15.87
Sun-Target sep (deg) : 84.62
Sun-Moon sep (deg)  : 162.67
B (ring opening deg) : -2.22
PA of pole (deg)    : 1.55
Pole direction: RA (deg): 268.05674
Dec (deg): 64.49731
C/A sky separation ("): 3.079
C/A sky separation (km): 11681.0
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



Jupiter 2043-09-24T01:16:38 K8.09 G13.78

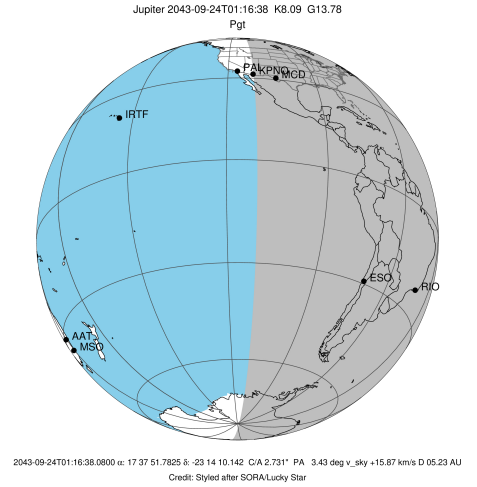


x: target alt < 5.0 deg or sun > -5.0 deg

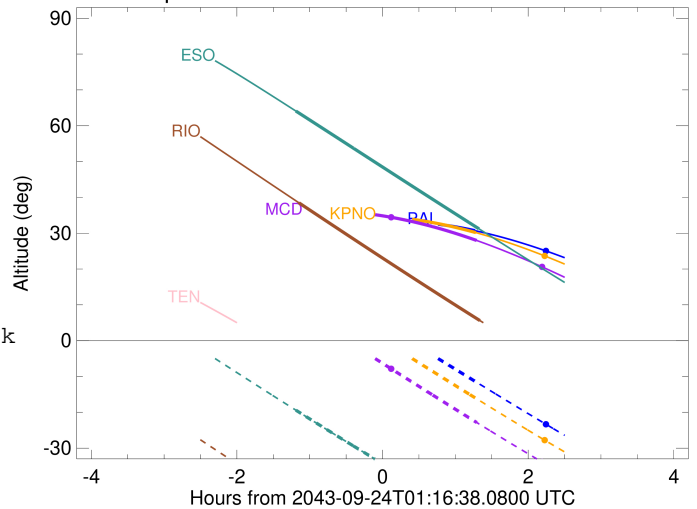
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-24T00:07:36.120	38.51	-45.29	71491.8	-10.75	-12.25
Jupiter	E	2043-09-24T02:36:46.601	5.63	-66.77	71491.9	-8.12	-9.26

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-09-24T01:20:55.030
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : ESO
Location             : European Southern Obs. (3.6m)
Latitude (deg)       : -29.26097
E. Longitude (deg)   : 289.26831
Altitude (km)        : 2.400
Gaia source ID       : 4116526798017155328
2Mass ID (if available) : 17375177-2314100
ICRS Star Coord at Epoch: 17h 37m 51.78255s -23:14:10.14182s
RUWE (>1.4 is poor) : 0.80
K magnitude          : 8.094
G magnitude          : 13.775
RP magnitude         : 12.373
BP magnitude         : 16.233
DUPflag             : 0
Distance (au)        : 5.231
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 15.87
Sun-Target sep (deg) : 84.62
Sun-Moon sep (deg)   : 162.55
B (ring opening deg) : -2.22
PA of pole (deg)     : 1.55
Pole direction: RA (deg): 268.05674
Dec (deg): 64.49731
C/A sky separation ("): 3.019
C/A sky separation (km): 11453.5
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



Jupiter 2043-09-24T01:16:38 K8.09 G13.78



x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-09-24T00:05:14.166	64.09	-19.40	71491.8	-10.80	-12.30
Jupiter	E	2043-09-24T02:36:00.751	31.24	-49.06	71491.9	-7.78	-8.87