

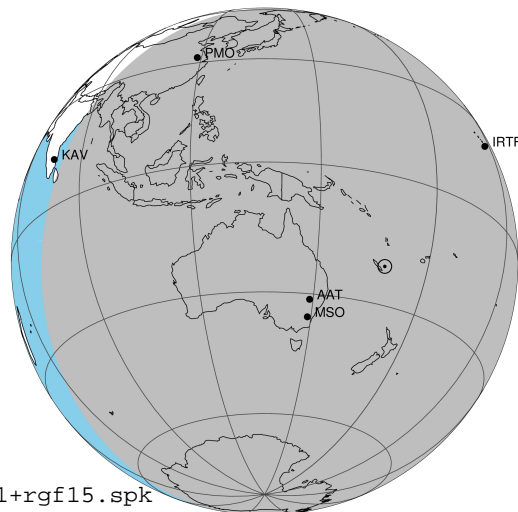
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-07-16T12:55:21.220  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116722717276925440  
 2Mass ID (if available) : 17381079-2303425

Jupiter 2043-07-16T12:55:21 K7.05 G13.11 Pgt

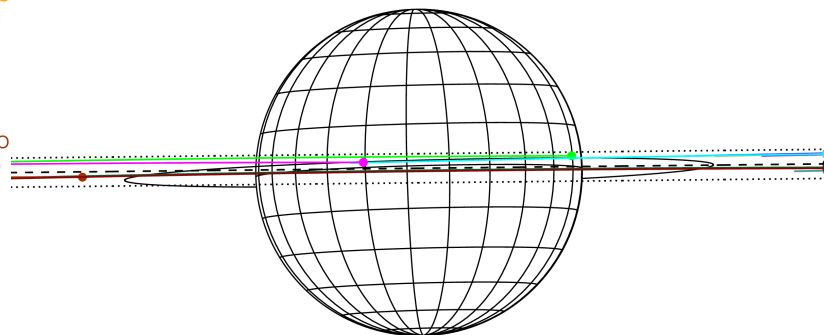
ICRS Star Coord at Epoch: 17h 38m 10.77802s -23°03'42.71791s

RUWE (>1.4 is poor) : 0.83  
 K magnitude : 7.053  
 G magnitude : 13.108  
 RP magnitude : 11.374  
 BP magnitude : 17.109  
 DUPflag : 0  
 Distance (au) : 4.341  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -12.94  
 Sun-Target sep (deg) : 151.66  
 Sun-Moon sep (deg) : 34.97  
 B (ring opening deg) : -2.40  
 PA of pole (deg) : 1.51  
 Pole direction: RA (deg): 268.05670  
 Dec (deg): 64.49732  
 C/A sky separation (") : 0.590  
 C/A sky separation (km) : 1858.7  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-07-16T12:55:21 K7.05 G13.11  
 Pgt



Earth  
 PAL  
 PMO  
 KPNO  
 MCD  
 IRTF  
 KAV  
 ESO  
 AAT  
 SAAO  
 MSO

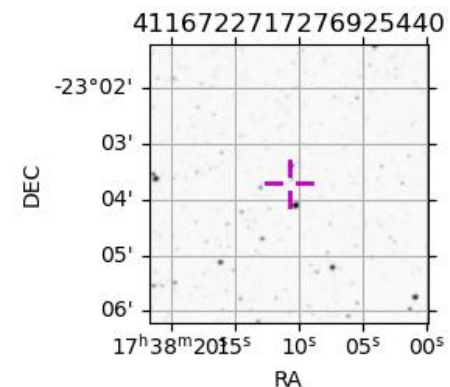


2043-07-16T12:55:21.2200 at: 17 38 10.7780 s: -23 03 42.718 C/A 0.579" PA 180.62 deg v\_sky -12.94 km/s D 04.34 AU

Credit: Styled after SORA/Lucky Star

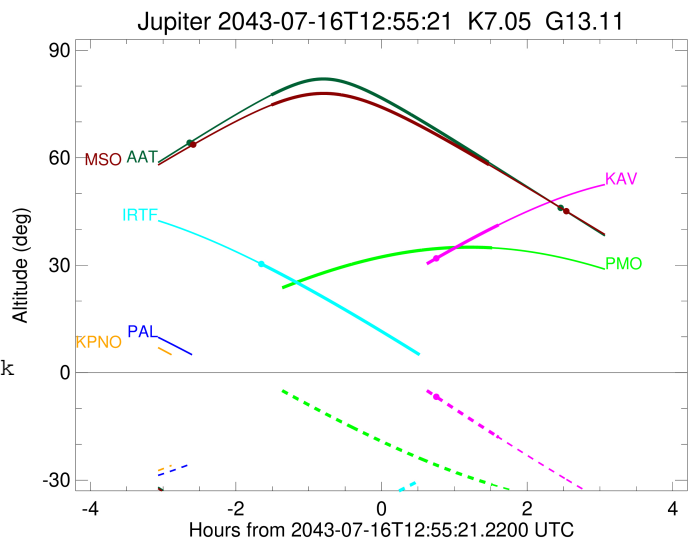
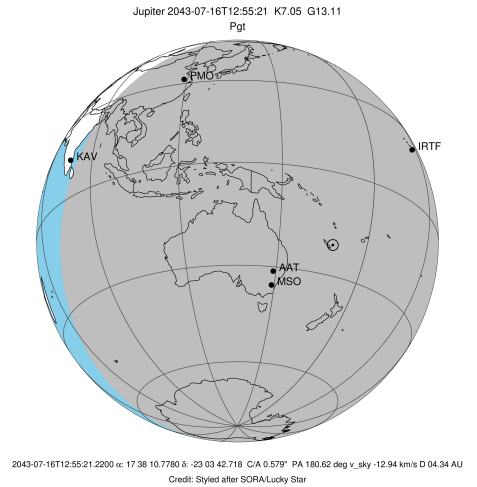
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 16 14:26 - JUL 16 14:26	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	JUL 16 11:18 - JUL 16 11:18	Pin
KAV	Kavalur Observatory	12.6	78.8	+	JUL 16 14:31 - JUL 16 14:31	Pne
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 16 11:24 - JUL 16 14:23	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 16 11:24 - JUL 16 14:23	Pie



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-16T12:57:28.950
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PMO
Location            : Purple Mtn Obs. Nanking
Latitude (deg)      : 32.06667
E. Longitude (deg)  : 118.82089
Altitude (km)       : 0.364
Gaia source ID      : 4116722717276925440
2Mass ID (if available) : 17381079-2303425
ICRS Star Coord at Epoch: 17h 38m 10.77802s -23:03:42.71791s
RUWE (>1.4 is poor) : 0.83
K magnitude          : 7.053
G magnitude          : 13.108
RP magnitude         : 11.374
BP magnitude         : 17.109
DUPflag             : 0
Distance (au)       : 4.341
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg) : 151.66
Sun-Moon sep (deg)  : 35.11
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 2.213
C/A sky separation (km) : 6966.6
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
    
```

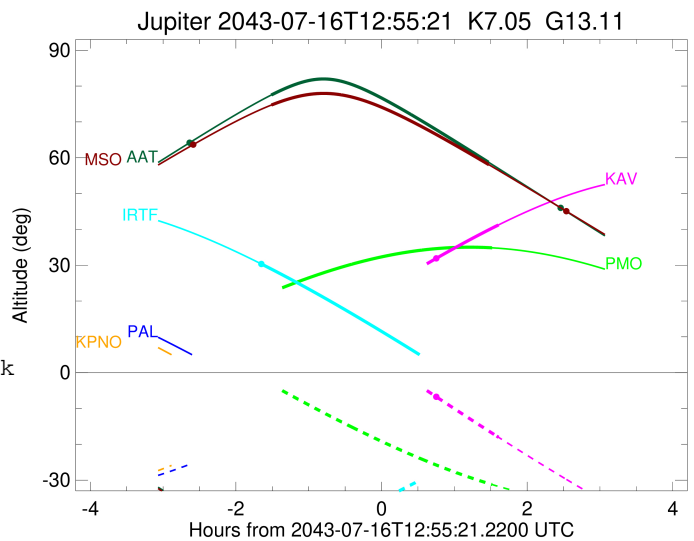
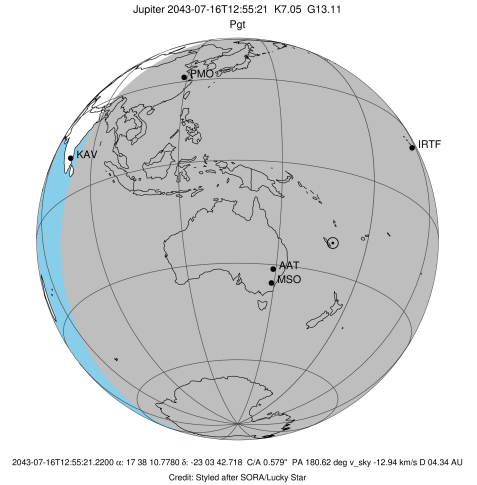


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-16T11:28:14.586	22.97	-4.02x	71492.0	4.36	4.98
Jupiter	E	2043-07-16T14:26:30.507	34.84	-31.23	71491.9	6.57	7.50

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-16T12:48:24.070
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 4116722717276925440
2Mass ID (if available) : 17381079-2303425
ICRS Star Coord at Epoch: 17h 38m 10.77802s -23:03:42.71791s
RUWE (>1.4 is poor) : 0.83
K magnitude           : 7.053
G magnitude           : 13.108
RP magnitude          : 11.374
BP magnitude          : 17.109
DUPflag              : 0
Distance (au)         : 4.341
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg) : 151.66
Sun-Moon sep (deg)   : 35.74
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 1.538
C/A sky separation (km): 4840.4
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
    
```

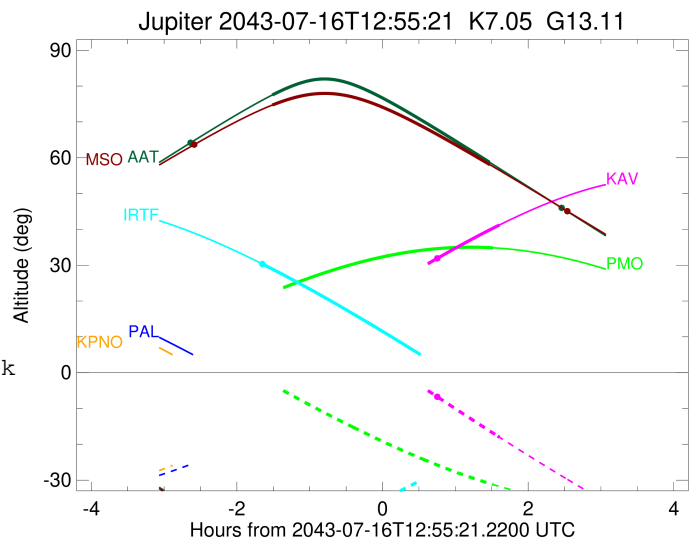
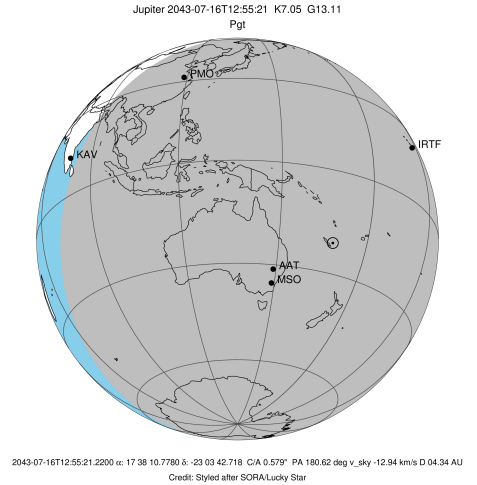


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-16T11:18:21.781	29.99	-47.16	71492.0	3.58	4.09
Jupiter	E	2043-07-16T14:19:36.784	-6.36x	-20.09	71492.0	4.05	4.63

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-16T13:02:00.180
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KAV
Location              : Kavalur Observatory
Latitude (deg)        : 12.57556
E. Longitude (deg)    : 78.83167
Altitude (km)         : 0.722
Gaia source ID        : 4116722717276925440
2Mass ID (if available) : 17381079-2303425
ICRS Star Coord at Epoch: 17h 38m 10.77802s -23:03:42.71791s
RUWE (>1.4 is poor) : 0.83
K magnitude           : 7.053
G magnitude           : 13.108
RP magnitude          : 11.374
BP magnitude          : 17.109
DUPflag              : 0
Distance (au)         : 4.341
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg) : 151.66
Sun-Moon sep (deg)   : 34.58
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 1.411
C/A sky separation (km) : 4441.1
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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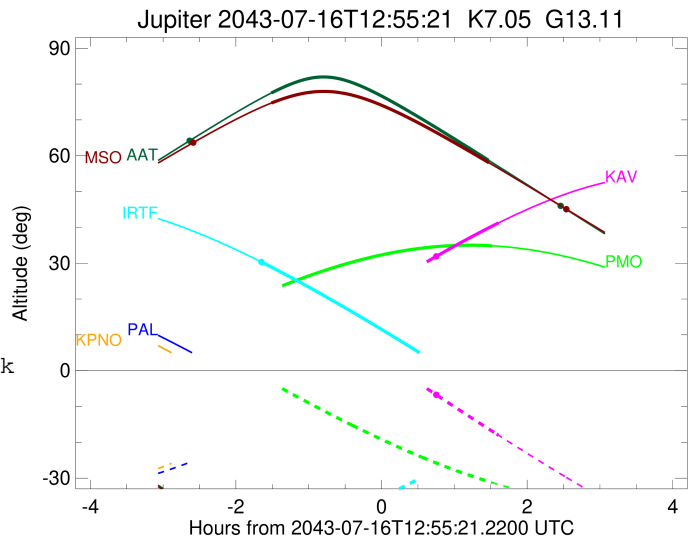
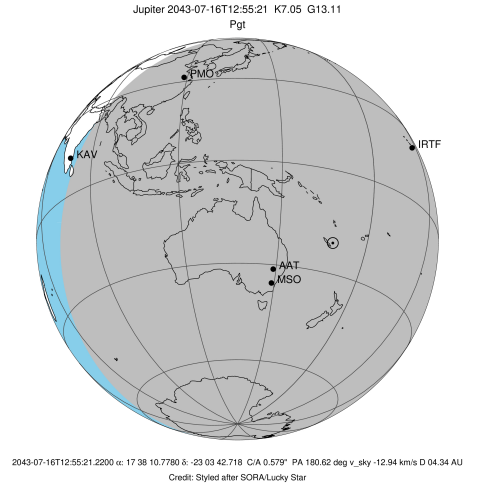


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-16T11:31:19.991	4.68x	22.80x	71492.0	1.94	2.22
Jupiter	E	2043-07-16T14:31:45.915	41.23	-18.03	71491.9	5.01	5.72

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-16T12:53:55.950
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : AAT
Location              : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 4116722717276925440
2Mass ID (if available) : 17381079-2303425
ICRS Star Coord at Epoch: 17h 38m 10.77802s -23:03:42.71791s
RUWE (>1.4 is poor) : 0.83
K magnitude           : 7.053
G magnitude           : 13.108
RP magnitude          : 11.374
BP magnitude          : 17.109
DUPflag              : 0
Distance (au)        : 4.341
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg) : 151.66
Sun-Moon sep (deg)   : 35.60
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 0.296
C/A sky separation (km) : 932.7
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
    
```

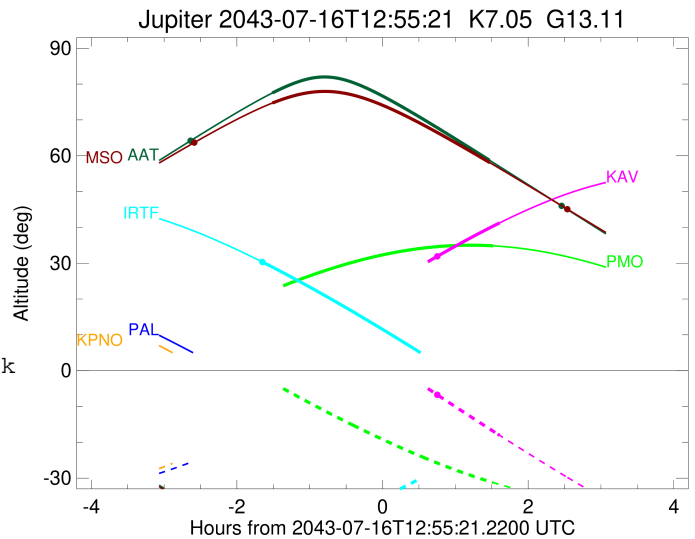
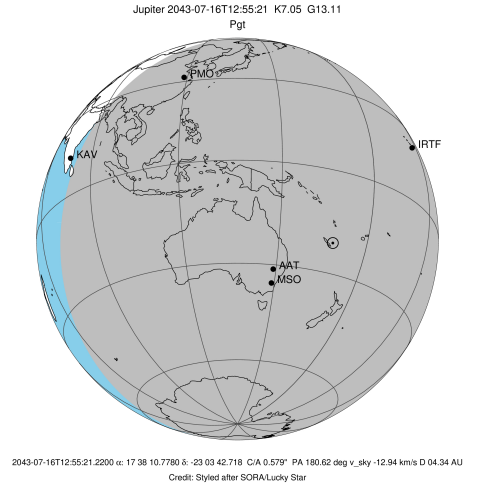


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-16T11:24:38.744	77.52	-51.92	71492.0	-0.16	-0.18
Jupiter	E	2043-07-16T14:23:31.283	58.74	-79.73	71492.0	1.39	1.59

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-16T12:53:59.790
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MSO
Location              : Mt. Stromlo Observatory
Latitude (deg)        : -35.32000
E. Longitude (deg)    : 149.00833
Altitude (km)         : 0.770
Gaia source ID        : 4116722717276925440
2Mass ID (if available) : 17381079-2303425
ICRS Star Coord at Epoch: 17h 38m 10.77802s -23:03:42.71791s
RUWE (>1.4 is poor) : 0.83
K magnitude           : 7.053
G magnitude           : 13.108
RP magnitude          : 11.374
BP magnitude          : 17.109
DUPflag              : 0
Distance (au)         : 4.341
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg)  : 151.66
Sun-Moon sep (deg)    : 35.58
B (ring opening deg)  : -2.40
PA of pole (deg)      : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 0.157
C/A sky separation (km) : 493.3
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	2043-07-16T11:24:35.152	74.70	-51.36	71492.0	-0.51	-0.58
Jupiter	E	2043-07-16T14:23:42.031	58.07	-75.85	71492.0	1.05	1.21