

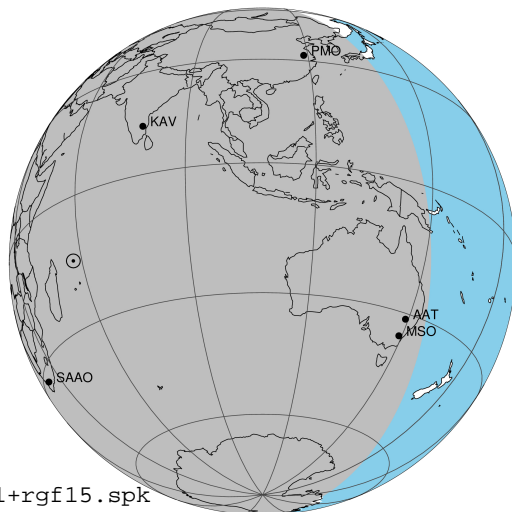
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-04-30T20:08:25.580  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068702508974726528  
 2Mass ID (if available) : 17520403-2254014

Jupiter 2031-04-30T20:08:25 K7.51 G14.87 Pgt

ICRS Star Coord at Epoch: 17h 52m 04.03940s -22:54:01.67298s

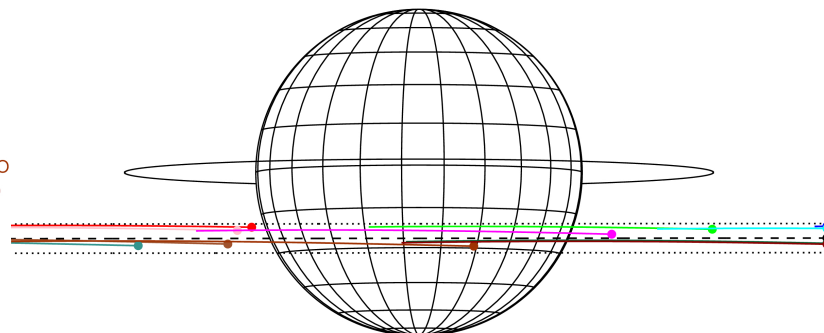
RUWE (>1.4 is poor) : 0.96  
 K magnitude : 7.510  
 G magnitude : 14.873  
 RP magnitude : 13.134  
 BP magnitude : 18.793  
 DUPflag : 0  
 Distance (au) : 4.572  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -6.57  
 Sun-Target sep (deg) : 131.68  
 Sun-Moon sep (deg) : 126.63  
 B (ring opening deg) : -2.60  
 PA of pole (deg) : 0.02  
 Pole direction: RA (deg): 268.05696  
 Dec (deg): 64.49651  
 C/A sky separation (") : 8.698  
 C/A sky separation (km) : 28844.4  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-04-30T20:08:25 K7.51 G14.87  
 Pgt



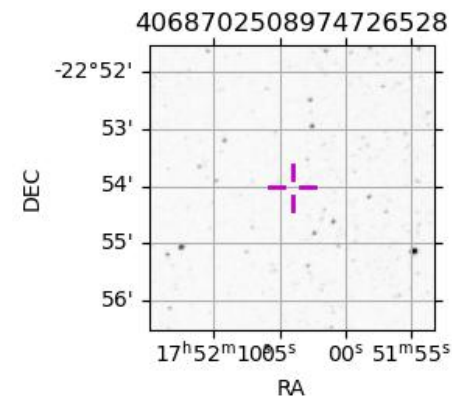
2031-04-30T20:08:25.5800 α: 17 52 04.0394 δ: -22 54 01.673 C/A 8.710" PA 0.04 deg v\_sky - 6.57 km/s D 04.57 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PIC  
 PAL  
 PMO  
 TEN  
 IRTF  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



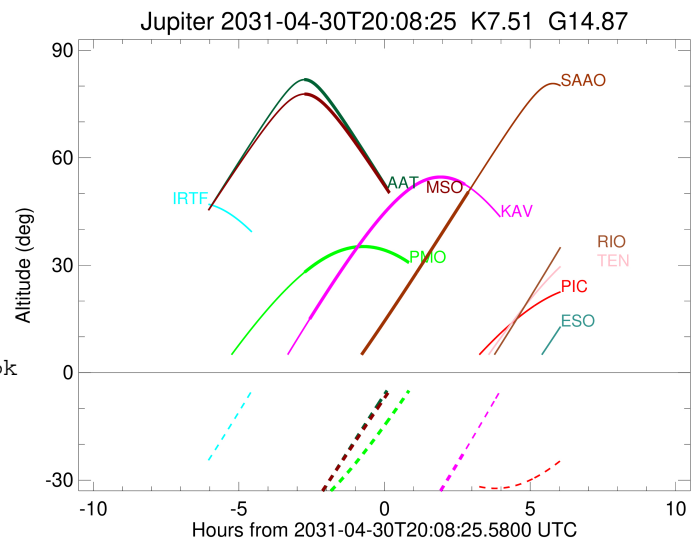
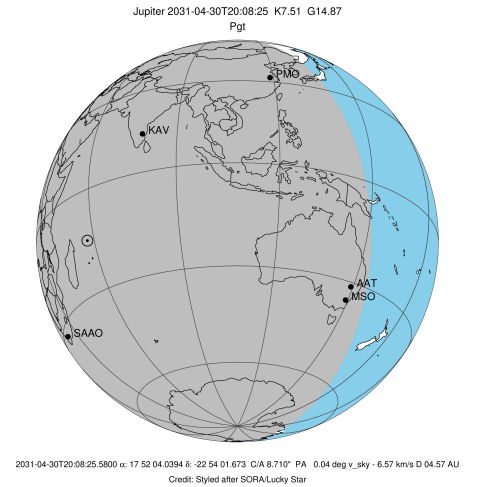
Observable events with sun below -5 deg and altitude above 5 deg

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			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	APR 30 17:23 - APR 30 17:23	Pin
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			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	APR 30 17:34 - APR 30 22:54	Pie
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	+	APR 30 17:23 - APR 30 17:23	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	APR 30 23:01 - APR 30 23:01	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	APR 30 17:23 - APR 30 17:23	Pin



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-04-30T20:05:41.150
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      : 4068702508974726528
2Mass ID (if available) : 17520403-2254014
ICRS Star Coord at Epoch: 17h 52m 04.03940s -22:54:01.67298s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 7.510
G magnitude          : 14.873
RP magnitude         : 13.134
BP magnitude         : 18.793
DUPflag             : 0
Distance (au)       : 4.572
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -6.57
Sun-Target sep (deg) : 131.68
Sun-Moon sep (deg)  : 126.91
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.02
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation ("): 7.139
C/A sky separation (km): 23674.1
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
    
```

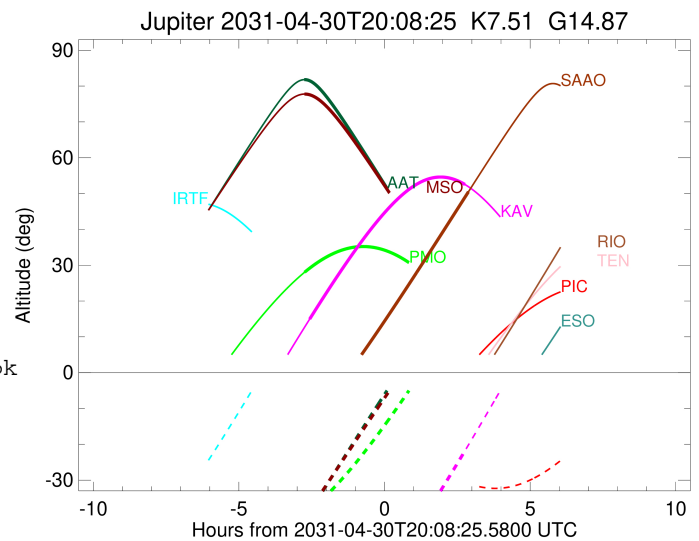
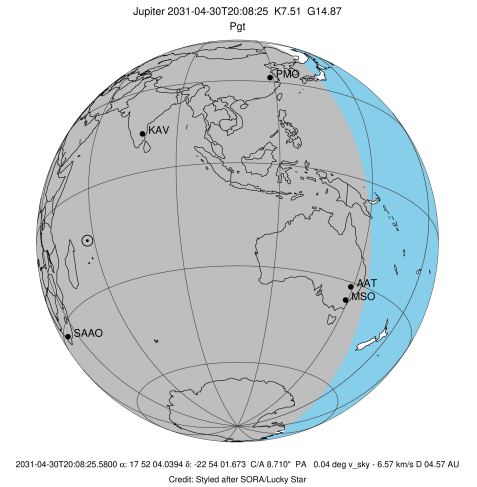


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-30T17:23:50.616	28.03	-39.29	71491.0	-19.50	-22.02
Jupiter	E	2031-04-30T22:47:42.555	16.69	17.39x	71490.9	-19.99	-22.56

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-04-30T20:16:18.450
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      : 4068702508974726528
2Mass ID (if available) : 17520403-2254014
ICRS Star Coord at Epoch: 17h 52m 04.03940s -22:54:01.67298s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 7.510
G magnitude          : 14.873
RP magnitude         : 13.134
BP magnitude         : 18.793
DUPflag             : 0
Distance (au)       : 4.572
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -6.57
Sun-Target sep (deg) : 131.68
Sun-Moon sep (deg)  : 127.38
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.02
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (") : 7.662
C/A sky separation (km) : 25408.5
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
    
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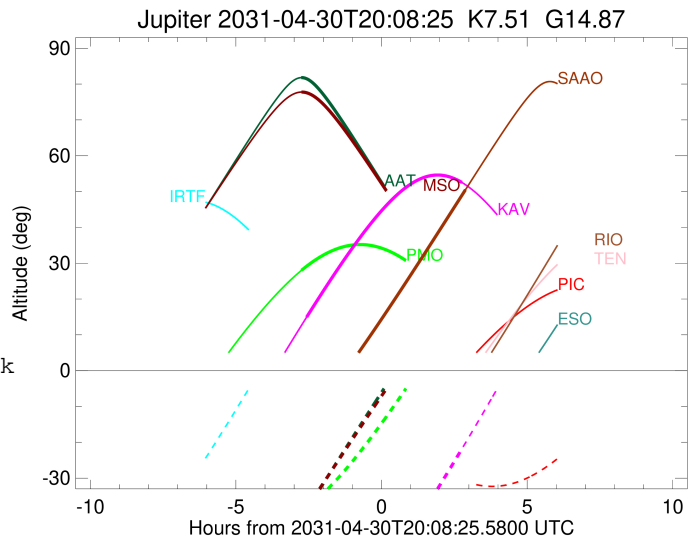
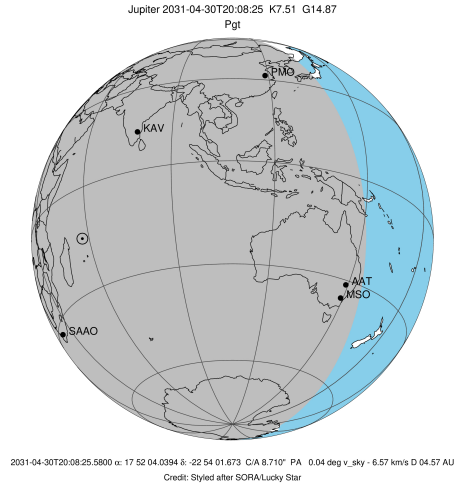


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-30T17:34:13.858	14.95	-57.91	71490.7	-21.83	-24.58
Jupiter	E	2031-04-30T22:54:09.467	52.52	-21.81	71490.8	-20.66	-23.29

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-04-30T19:58:39.880
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      : 4068702508974726528
2Mass ID (if available) : 17520403-2254014
ICRS Star Coord at Epoch: 17h 52m 04.03940s -22:54:01.67298s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 7.510
G magnitude          : 14.873
RP magnitude         : 13.134
BP magnitude         : 18.793
DUPflag             : 0
Distance (au)       : 4.572
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -6.57
Sun-Target sep (deg) : 131.68
Sun-Moon sep (deg)  : 126.92
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.02
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (") : 9.117
C/A sky separation (km) : 30234.5
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
    
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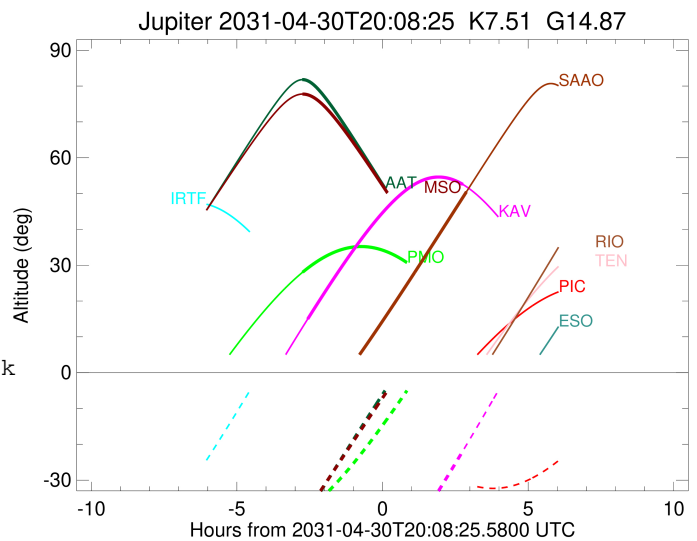
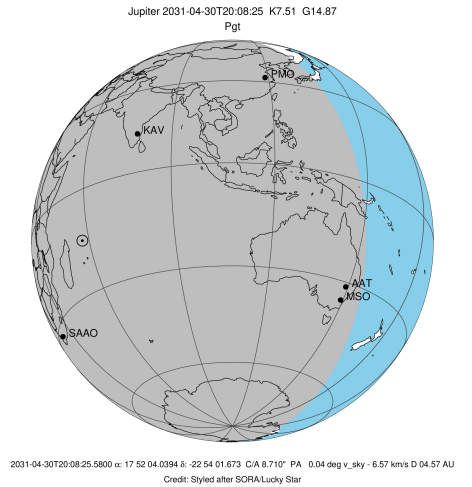


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-30T17:23:01.113	81.79	-41.21	71490.4	-24.54	-27.53
Jupiter	E	2031-04-30T22:37:17.997	20.93	22.86x	71490.2	-26.12	-29.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-04-30T20:23:52.230
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : SAAO
Location            : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)      : -32.37953
E. Longitude (deg)  : 20.81070
Altitude (km)       : 1.768
Gaia source ID      : 4068702508974726528
2Mass ID (if available) : 17520403-2254014
ICRS Star Coord at Epoch: 17h 52m 04.03940s -22:54:01.67298s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 7.510
G magnitude          : 14.873
RP magnitude         : 13.134
BP magnitude         : 18.793
DUPflag             : 0
Distance (au)       : 4.572
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -6.57
Sun-Target sep (deg) : 131.68
Sun-Moon sep (deg)  : 127.31
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.02
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (") : 9.565
C/A sky separation (km) : 31716.8
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
    
```

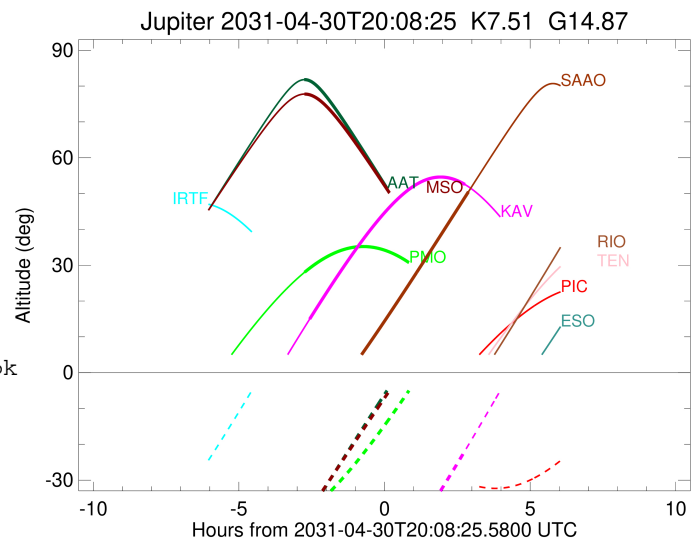
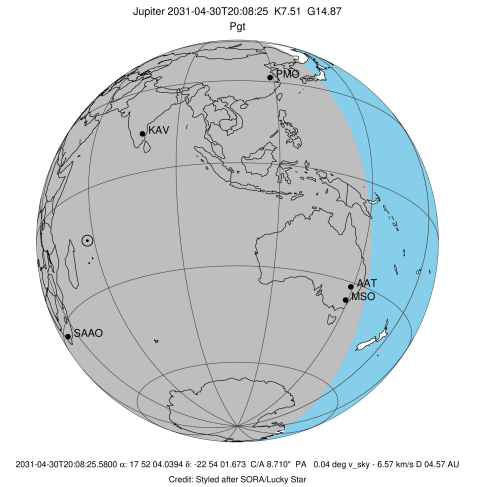


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-30T17:38:35.003	-13.58x	-21.36	71490.0	-27.57	-30.79
Jupiter	E	2031-04-30T23:01:24.381	50.50	-71.64	71490.3	-25.21	-28.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-04-30T19:59:04.950
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       : 4068702508974726528
2Mass ID (if available) : 17520403-2254014
ICRS Star Coord at Epoch: 17h 52m 04.03940s -22:54:01.67298s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 7.510
G magnitude           : 14.873
RP magnitude          : 13.134
BP magnitude          : 18.793
DUPflag              : 0
Distance (au)        : 4.572
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -6.57
Sun-Target sep (deg) : 131.68
Sun-Moon sep (deg)   : 126.93
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.02
Pole direction: RA (deg): 268.05696
Dec (deg): 64.49651
C/A sky separation (") : 9.244
C/A sky separation (km) : 30654.7
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	2031-04-30T17:23:31.406	77.76	-40.51	71490.3	-24.93	-27.95
Jupiter	E	2031-04-30T22:37:27.634	21.92	20.46x	71490.2	-26.44	-29.58