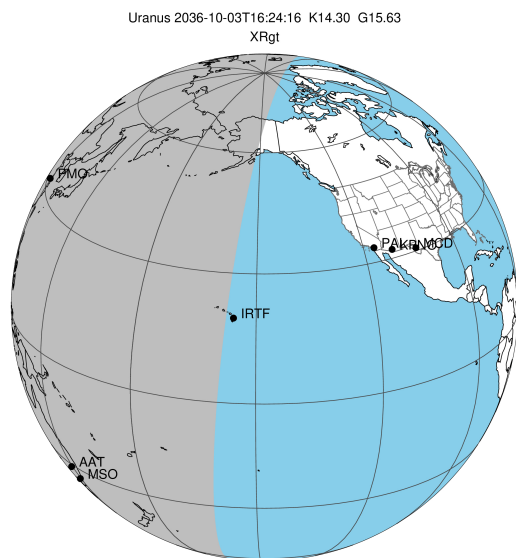


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-10-03T16:24:16.190
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 866233403968449536
 2Mass ID (if available) : 07220630+2230234

ICRS Star Coord at Epoch: 07h 22m 06.31312s +22:30:23.40420s

RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.301
 G magnitude : 15.634
 RP magnitude : 15.137
 BP magnitude : 15.954
 DUPflag : 0
 Distance (au) : 18.899
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 10.80
 Sun-Target sep (deg) : 81.64
 Sun-Moon sep (deg) : 118.14
 B (ring opening deg) : 57.80
 PA of pole (deg) : 82.75

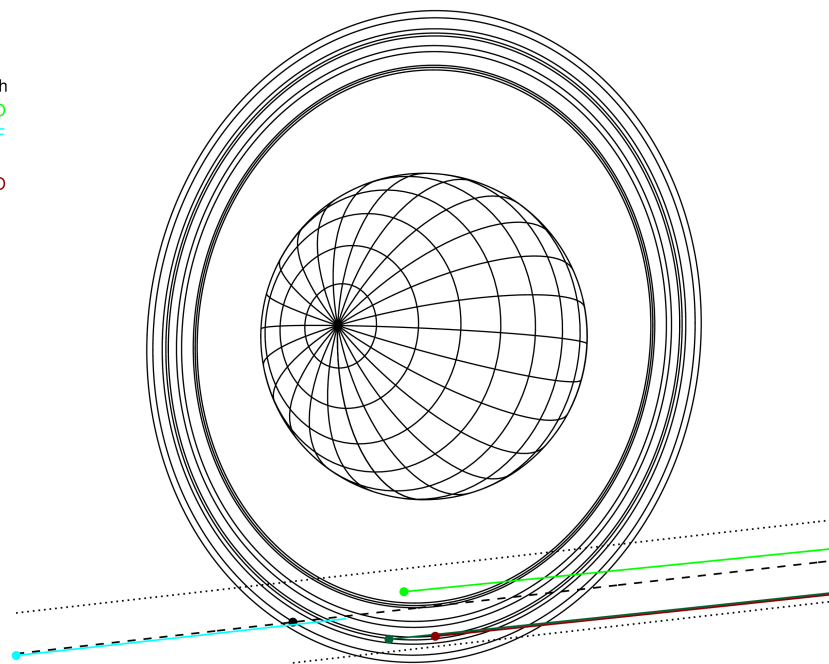
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2036-10-03T16:24:16.1900 α: 07 22 06.3131 s δ: +22 30 23.404 C/A 3.072" PA 6.50 deg v_sky +10.80 km/s D 18.90 AU
 Credit: Styled after SORA/Lucky Star

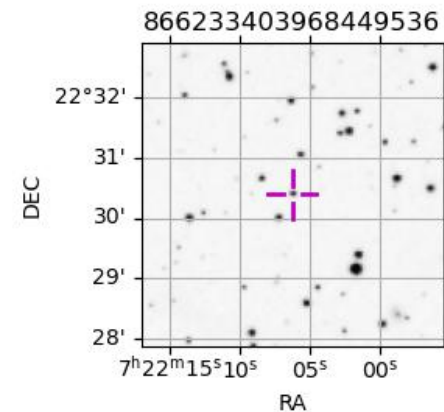
Uranus 2036-10-03T16:24:16 K14.30 G15.63 XRgt

Earth
 PMO
 IRTF
 AAT
 MSO

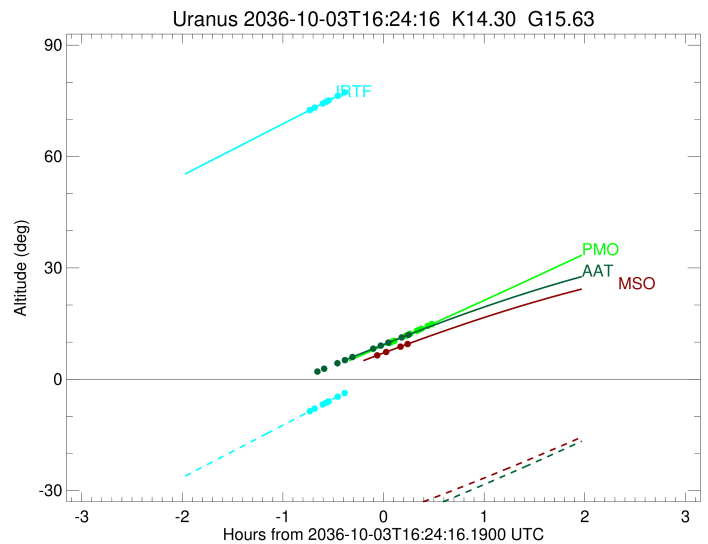
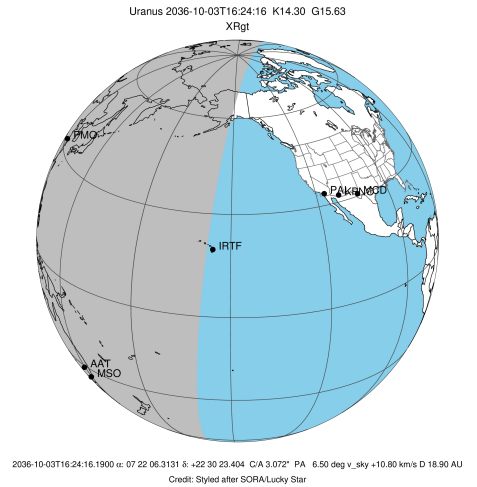


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8			+++++	OCT 03 16:27 - OCT 03 16:52	PnnRne
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++			OCT 03 15:39 - OCT 03 15:51	PnnRin
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1	++		+++++	OCT 03 16:01 - OCT 03 16:38	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0			++++	OCT 03 16:20 - OCT 03 16:38	PnnRne



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-10-03T16:14:33.770
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 866233403968449536
 2Mass ID (if available) : 07220630+2230234
 ICRS Star Coord at Epoch: 07h 22m 06.31312s +22:30:23.40420s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.301
 G magnitude : 15.634
 RP magnitude : 15.137
 BP magnitude : 15.954
 DUPflag : 0
 Distance (au) : 18.900
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 10.80
 Sun-Target sep (deg) : 81.64
 Sun-Moon sep (deg) : 118.66
 B (ring opening deg) : 57.80
 PA of pole (deg) : 82.75
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.879
 C/A sky separation (km) : 39464.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



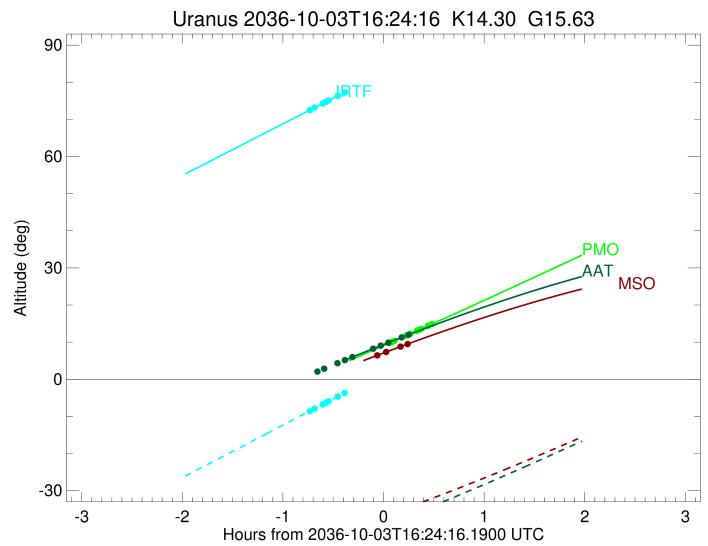
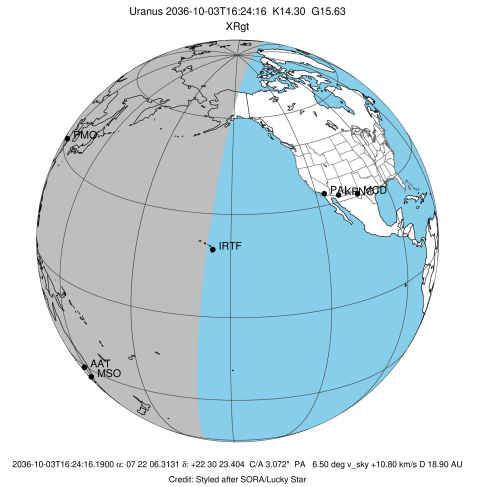
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-10-03T15:28:09.752	-1.81x	-61.83	51431.60	-8.07			
lambda	I	2036-10-03T15:31:06.400	-1.25x	-61.97	50026.71	-7.77			
delta	I	2036-10-03T15:34:55.858	-0.53x	-62.12	48300.35	-7.27			
gamma	I	2036-10-03T15:36:29.453	-0.23x	-62.18	47630.61	-7.04			
eta	I	2036-10-03T15:37:34.713	-0.03x	-62.21	47176.12	-6.88			
beta	I	2036-10-03T15:41:23.718	0.70x	-62.32	45666.28	-6.29			
alpha	I	2036-10-03T15:43:56.597	1.19x	-62.38	44736.62	-5.85			
4	I	2036-10-03T15:50:48.022	2.51x	-62.46	42586.06	-4.58			
5	I	2036-10-03T15:52:07.017	2.76x	-62.47	42237.14	-4.28			
6	I	2036-10-03T15:53:52.320	3.10x	-62.47	41800.73	-3.93			

No planet occultations

6	E	2036-10-03T16:27:41.237	9.75	-61.33	41820.39	3.91			
5	E	2036-10-03T16:29:11.617	10.05	-61.23	42186.10	4.25			
4	E	2036-10-03T16:30:48.966	10.37	-61.12	42610.91	4.54			
alpha	E	2036-10-03T16:37:35.006	11.73	-60.60	44705.75	5.79			
beta	E	2036-10-03T16:40:17.554	12.27	-60.37	45680.42	6.22			
eta	E	2036-10-03T16:44:07.264	13.04	-60.03	47176.12	6.80			
gamma	E	2036-10-03T16:45:13.416	13.27	-59.93	47630.79	6.95			
delta	E	2036-10-03T16:46:48.277	13.59	-59.78	48300.35	7.16			
lambda	E	2036-10-03T16:50:41.148	14.37	-59.39	50026.71	7.65			
epsilon	E	2036-10-03T16:52:36.513	14.76	-59.19	50922.59	7.94			

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2036-10-03T16:23:15.330
Event type          : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 866233403968449536
2Mass ID (if available) : 07220630+2230234
ICRS Star Coord at Epoch: 07h 22m 06.31312s +22:30:23.40420s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 14.301
G magnitude          : 15.634
RP magnitude         : 15.137
BP magnitude         : 15.954
DUPflag             : 0
Distance (au)       : 18.899
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 10.80
Sun-Target sep (deg) : 81.64
Sun-Moon sep (deg)  : 118.99
B (ring opening deg) : 57.80
PA of pole (deg)    : 82.75
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.101
C/A sky separation (km) : 42500.6
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```

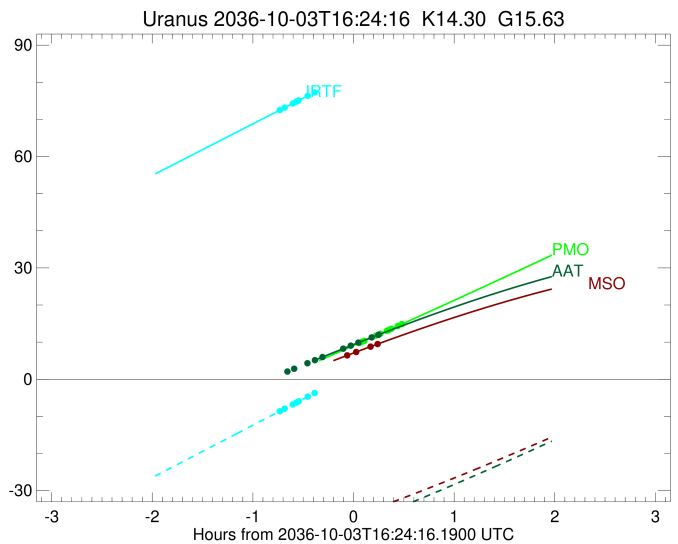
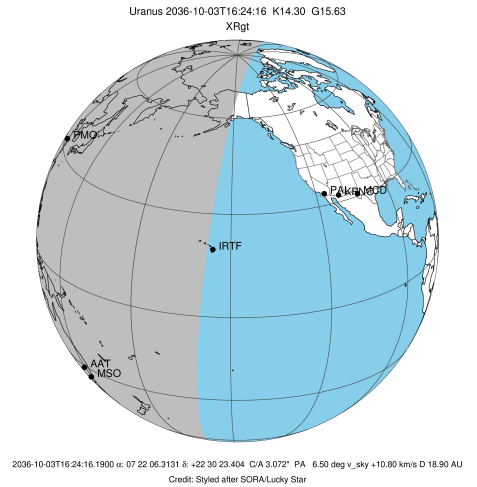


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-10-03T15:39:45.445		72.38	-8.73	51395.87	-6.65		
lambda	I	2036-10-03T15:43:16.239		73.19	-7.91	50026.71	-6.27		
delta	I	2036-10-03T15:48:06.735		74.30	-6.77	48300.35	-5.60		
gamma	I	2036-10-03T15:50:09.500		74.77	-6.29	47631.01	-5.30		
eta	I	2036-10-03T15:51:37.183		75.11	-5.94	47176.12	-5.08		
beta	I	2036-10-03T15:57:01.820		76.35	-4.67x	45669.59	-4.19		
alpha	I	2036-10-03T16:01:06.755		77.28	-3.71x	44730.57	-3.46		

No planet occultations

alpha	E	2036-10-03T16:36:04.531		84.95	4.49x	44711.31	3.45		
beta	E	2036-10-03T16:40:18.346		85.75	5.47x	45679.39	4.18		
eta	E	2036-10-03T16:45:41.738		86.62	6.73x	47176.12	5.06		
gamma	E	2036-10-03T16:47:09.722		86.81	7.08x	47631.08	5.28		
delta	E	2036-10-03T16:49:12.898		87.03	7.56x	48300.35	5.58		
lambda	E	2036-10-03T16:54:04.519		87.27	8.69x	50026.71	6.25		
epsilon	E	2036-10-03T16:56:29.309		87.22	9.25x	50953.12	6.62		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-10-03T16:16:36.960
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 866233403968449536
 2Mass ID (if available) : 07220630+2230234
 ICRS Star Coord at Epoch: 07h 22m 06.31312s +22:30:23.40420s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.301
 G magnitude : 15.634
 RP magnitude : 15.137
 BP magnitude : 15.954
 DUPflag : 0
 Distance (au) : 18.900
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 10.80
 Sun-Target sep (deg) : 81.64
 Sun-Moon sep (deg) : 118.58
 B (ring opening deg) : 57.80
 PA of pole (deg) : 82.75
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.400
 C/A sky separation (km) : 46605.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

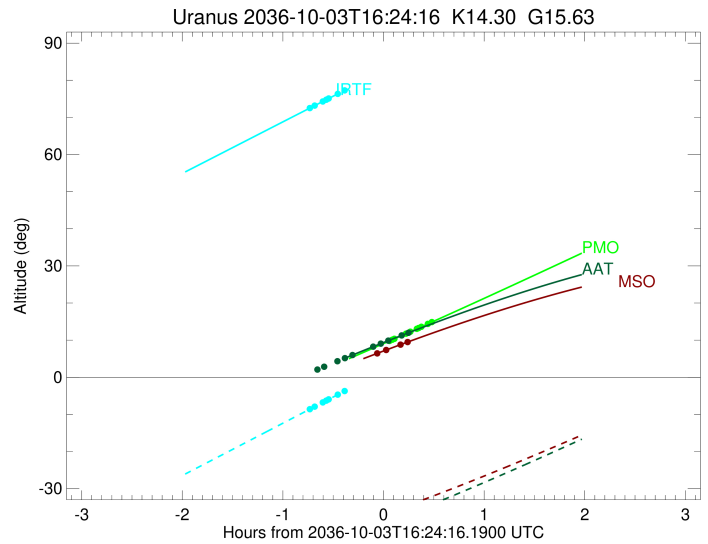
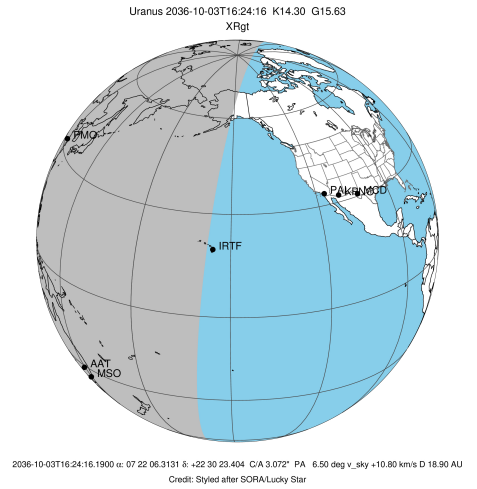


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-10-03T15:44:16.367		1.96x	-45.64	51342.02	-4.98		
lambda	I	2036-10-03T15:48:56.798		2.85x	-44.96	50026.71	-4.31		
delta	I	2036-10-03T15:56:52.912		4.34x	-43.77	48300.35	-2.92		
gamma	I	2036-10-03T16:01:20.219		5.17	-43.08	47631.48	-2.08		
eta	I	2036-10-03T16:05:59.250		6.03	-42.35	47176.12	-1.18		

No planet occultations

eta	E	2036-10-03T16:17:54.782		8.21	-40.41	47176.12	1.18		
gamma	E	2036-10-03T16:22:34.700		9.05	-39.63	47631.53	2.07		
delta	E	2036-10-03T16:27:03.267		9.85	-38.86	48300.35	2.90		
lambda	E	2036-10-03T16:35:02.774		11.26	-37.48	50026.71	4.27		
epsilon	E	2036-10-03T16:38:40.572		11.90	-36.84	51020.33	4.93		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-10-03T16:17:02.920
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 866233403968449536
 2Mass ID (if available) : 07220630+2230234
 ICRS Star Coord at Epoch: 07h 22m 06.31312s +22:30:23.40420s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.301
 G magnitude : 15.634
 RP magnitude : 15.137
 BP magnitude : 15.954
 DUPflag : 0
 Distance (au) : 18.900
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 10.80
 Sun-Target sep (deg) : 81.64
 Sun-Moon sep (deg) : 118.53
 B (ring opening deg) : 57.80
 PA of pole (deg) : 82.75
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.420
 C/A sky separation (km) : 46884.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-10-03T15:45:34.429		0.27x	-42.44	51336.78	-4.82		
lambda	I	2036-10-03T15:50:24.769		1.15x	-41.80	50026.71	-4.11		
delta	I	2036-10-03T15:58:57.436		2.67x	-40.62	48300.35	-2.59		
gamma	I	2036-10-03T16:04:17.183		3.61x	-39.86	47631.51	-1.58		

No planet occultations

gamma	E	2036-10-03T16:20:24.988		6.42	-37.45	47631.55	1.58		
delta	E	2036-10-03T16:25:45.944		7.33	-36.61	48300.35	2.58		
lambda	E	2036-10-03T16:34:21.870		8.78	-35.24	50026.71	4.08		
epsilon	E	2036-10-03T16:38:09.533		9.41	-34.62	51025.62	4.77		