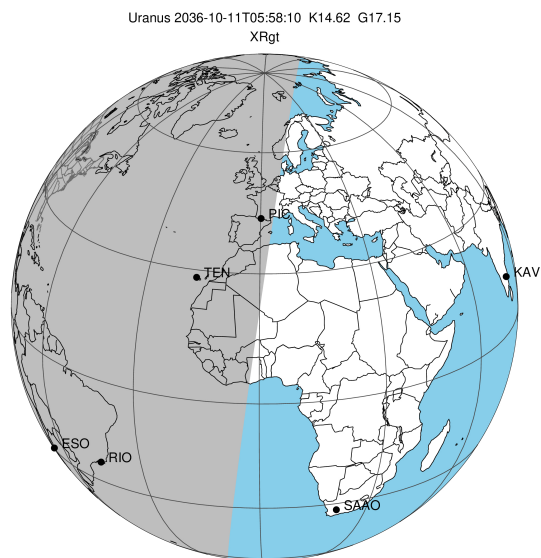


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-10-11T05:58:10.720  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 866314527310939136  
 2Mass ID (if available) : 07223690+2229376

ICRS Star Coord at Epoch: 07h 22m 36.92071s +22:29:37.17296s

RUWE (>1.4 is poor) : 1.07  
 K magnitude : 14.619  
 G magnitude : 17.153  
 RP magnitude : 16.297  
 BP magnitude : 17.934  
 DUPflag : 0  
 Distance (au) : 18.770  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 7.02  
 Sun-Target sep (deg) : 88.98  
 Sun-Moon sep (deg) : 20.77  
 B (ring opening deg) : 57.68  
 PA of pole (deg) : 82.84

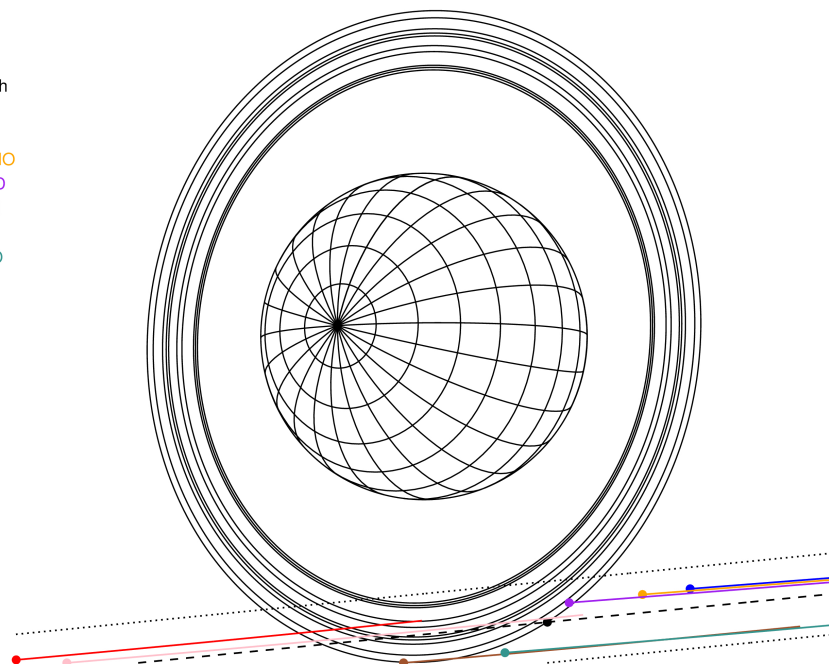
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2036-10-11T05:58:10.7200 a: 07 22 36.9207 s: +22 29 37.173 C/A 3.413° PA 5.68 deg v\_sky + 7.02 km/s D 18.77 AU  
 Credit: Styled after SORA/Lucky Star

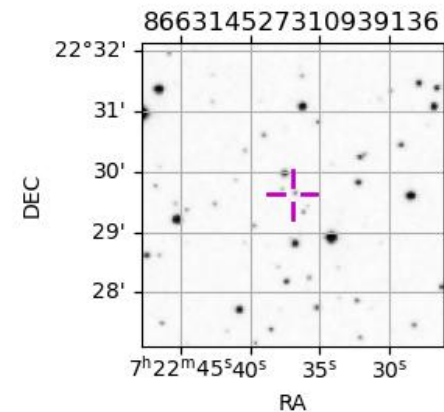
Uranus 2036-10-11T05:58:10 K14.62 G17.15 XRgt

Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 RIO  
 ESO

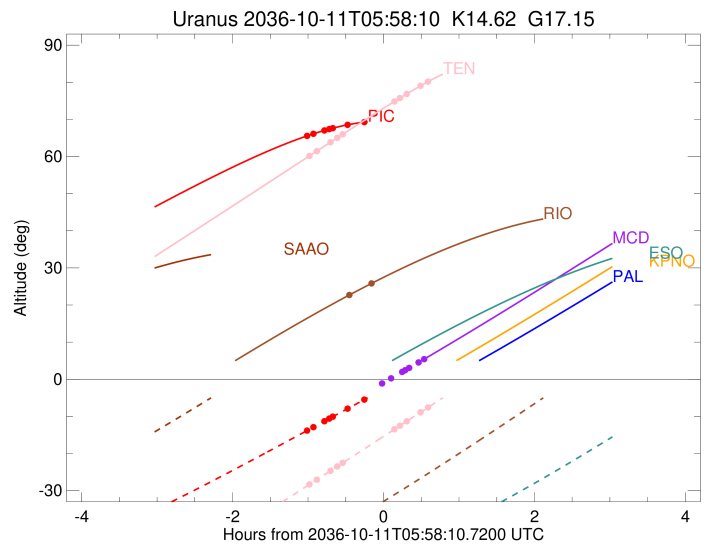
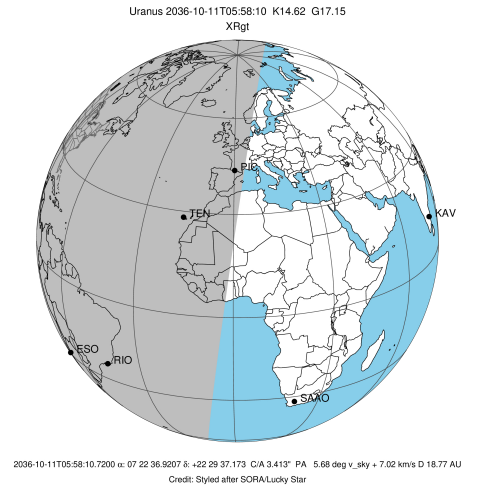


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	++++++			OCT 11 04:56 - OCT 11 05:42	PnnRin
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0			+	OCT 11 06:30 - OCT 11 06:30	PnnRne
TEN	Teide Obs./Tenerife	28.3	343.5	+++++		+++++	OCT 11 04:58 - OCT 11 06:33	PnnRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+		+	OCT 11 05:27 - OCT 11 05:50	PnnRie
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-10-11T05:57:55.550  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : PIC  
 Location : Pic du Midi  
 Latitude (deg) : 42.93656  
 E. Longitude (deg) : 0.14231  
 Altitude (km) : 2.890  
 Gaia source ID : 866314527310939136  
 2Mass ID (if available) : 07223690+2229376  
 ICRS Star Coord at Epoch: 07h 22m 36.92071s +22:29:37.17296s  
 RUWE (>1.4 is poor) : 1.07  
 K magnitude : 14.619  
 G magnitude : 17.153  
 RP magnitude : 16.297  
 BP magnitude : 17.934  
 DUPflag : 0  
 Distance (au) : 18.770  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 7.02  
 Sun-Target sep (deg) : 88.98  
 Sun-Moon sep (deg) : 21.10  
 B (ring opening deg) : 57.68  
 PA of pole (deg) : 82.84  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.250  
 C/A sky separation (km) : 44237.8  
 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

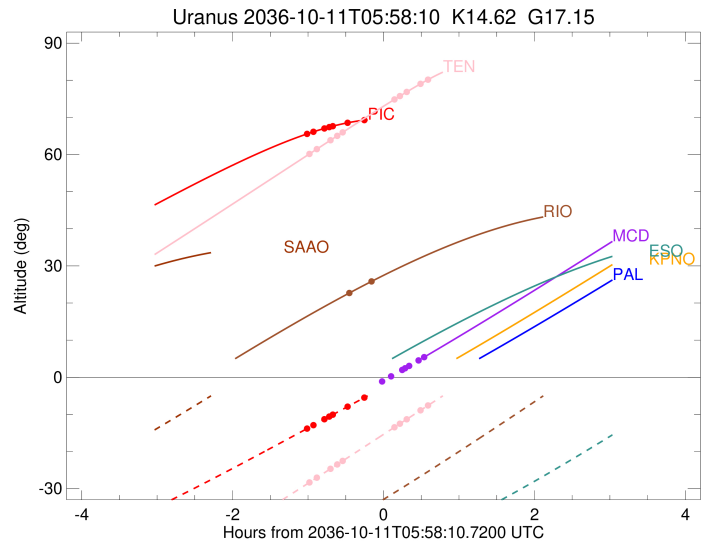
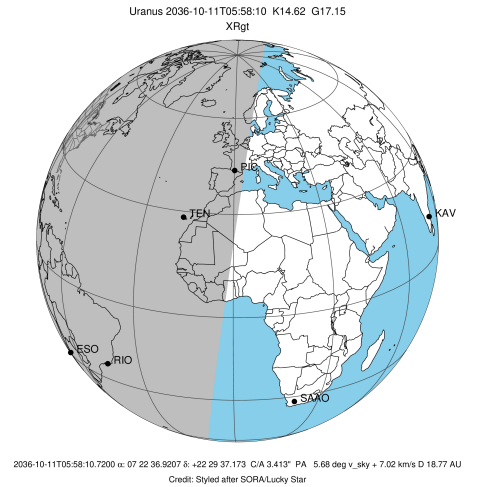


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-10-11T04:56:15.755		65.42	-14.04	51435.74	-3.88		
lambda	I	2036-10-11T05:02:32.112		66.13	-12.89	50026.71	-3.56		
delta	I	2036-10-11T05:11:15.924		67.03	-11.29	48300.35	-3.02		
gamma	I	2036-10-11T05:15:07.594		67.40	-10.58	47630.59	-2.76		
eta	I	2036-10-11T05:17:58.239		67.65	-10.06	47176.12	-2.56		
beta	I	2036-10-11T05:29:44.263		68.55	-7.90	45666.85	-1.70		
alpha	I	2036-10-11T05:42:59.208		69.27	-5.47	44733.45	-0.64		

No planet occultations

alpha	E	2036-10-11T05:58:28.600		69.66	-2.65x	44728.31	0.64		
beta	E	2036-10-11T06:11:57.794		69.58	-0.20x	45674.48	1.70		
eta	E	2036-10-11T06:23:41.709		69.20	1.91x	47176.12	2.55		
gamma	E	2036-10-11T06:26:33.398		69.07	2.43x	47631.55	2.75		
delta	E	2036-10-11T06:30:25.755		68.86	3.12x	48300.35	3.01		
lambda	E	2036-10-11T06:39:12.301		68.28	4.68x	50026.71	3.54		
epsilon	E	2036-10-11T06:43:50.253		67.92	5.50x	51048.09	3.86		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-10-11T05:42:46.440  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : MCD  
 Location : McDonald Obs. 2.7m  
 Latitude (deg) : 30.67158  
 E. Longitude (deg) : 255.97844  
 Altitude (km) : 2.075  
 Gaia source ID : 866314527310939136  
 2Mass ID (if available) : 07223690+2229376  
 ICRS Star Coord at Epoch: 07h 22m 36.92071s +22:29:37.17296s  
 RUWE (>1.4 is poor) : 1.07  
 K magnitude : 14.619  
 G magnitude : 17.153  
 RP magnitude : 16.297  
 BP magnitude : 17.934  
 DUPflag : 0  
 Distance (au) : 18.770  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 7.02  
 Sun-Target sep (deg) : 88.98  
 Sun-Moon sep (deg) : 20.04  
 B (ring opening deg) : 57.68  
 PA of pole (deg) : 82.84  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.182  
 C/A sky separation (km) : 43314.0  
 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

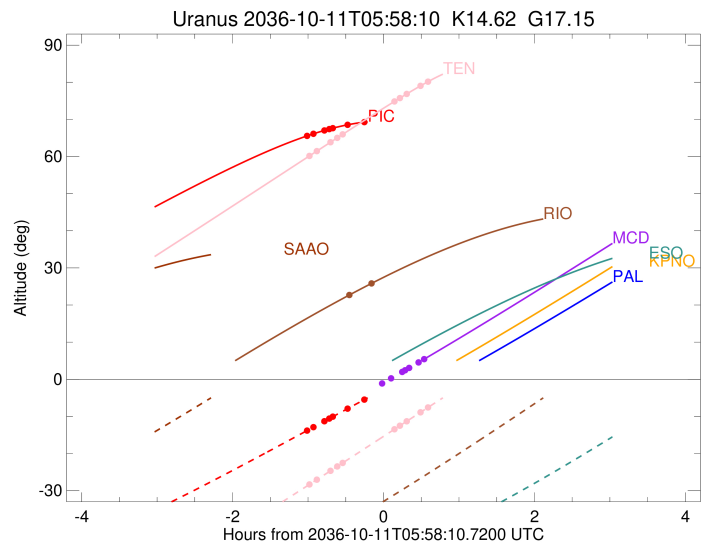
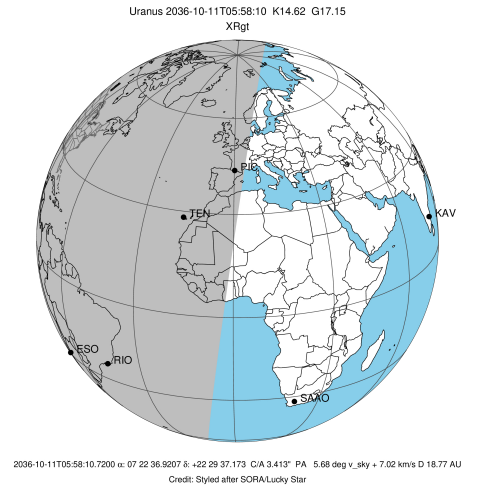


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-10-11T04:43:19.380		-14.60x	-53.64	51451.99	-4.50		
lambda	I	2036-10-11T04:48:45.604		-13.66x	-54.61	50026.71	-4.19		
delta	I	2036-10-11T04:56:04.266		-12.39x	-55.88	48300.35	-3.67		
gamma	I	2036-10-11T04:59:12.802		-11.83x	-56.41	47630.34	-3.43		
eta	I	2036-10-11T05:01:28.575		-11.43x	-56.79	47176.12	-3.26		
beta	I	2036-10-11T05:10:09.572		-9.88x	-58.21	45664.78	-2.54		
alpha	I	2036-10-11T05:17:05.711		-8.62x	-59.29	44738.30	-1.91		

No planet occultations

alpha	E	2036-10-11T05:56:57.644		-1.15x	-64.40	44724.25	1.89		
beta	E	2036-10-11T06:04:11.509		0.25x	-65.06	45675.38	2.50		
eta	E	2036-10-11T06:12:57.952		1.96x	-65.73	47176.12	3.19		
gamma	E	2036-10-11T06:15:17.006		2.41x	-65.88	47631.53	3.36		
delta	E	2036-10-11T06:18:29.558		3.04x	-66.07	48300.35	3.59		
lambda	E	2036-10-11T06:25:59.748		4.52x	-66.43	50026.71	4.07		
epsilon	E	2036-10-11T06:30:01.829		5.33	-66.57	51042.43	4.37		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-10-11T05:53:31.320  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : TEN  
 Location : Teide Obs./Tenerife  
 Latitude (deg) : 28.30050  
 E. Longitude (deg) : 343.48909  
 Altitude (km) : 2.395  
 Gaia source ID : 866314527310939136  
 2Mass ID (if available) : 07223690+2229376  
 ICRS Star Coord at Epoch: 07h 22m 36.92071s +22:29:37.17296s  
 RUWE (>1.4 is poor) : 1.07  
 K magnitude : 14.619  
 G magnitude : 17.153  
 RP magnitude : 16.297  
 BP magnitude : 17.934  
 DUPflag : 0  
 Distance (au) : 18.770  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 7.02  
 Sun-Target sep (deg) : 88.98  
 Sun-Moon sep (deg) : 20.86  
 B (ring opening deg) : 57.68  
 PA of pole (deg) : 82.84  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.369  
 C/A sky separation (km) : 45869.8  
 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

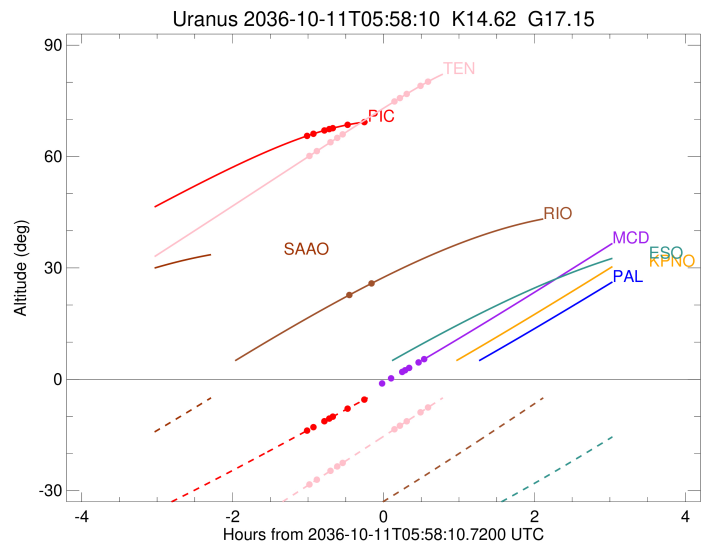
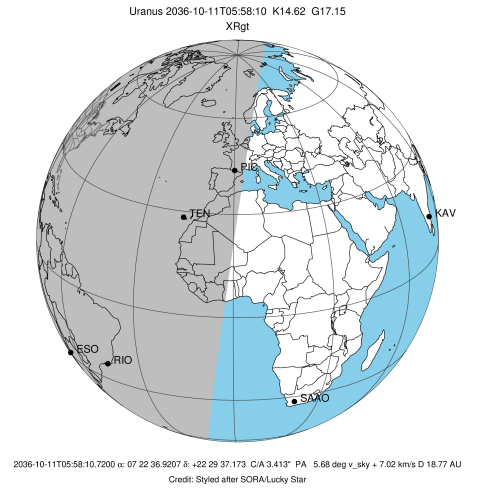


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-10-11T04:58:02.593		59.89	-28.60	51417.19	-3.39		
lambda	I	2036-10-11T05:05:14.573		61.48	-27.03	50026.71	-3.00		
delta	I	2036-10-11T05:16:08.254		63.87	-24.64	48300.35	-2.27		
gamma	I	2036-10-11T05:21:29.476		65.05	-23.46	47630.90	-1.89		
eta	I	2036-10-11T05:25:51.911		66.01	-22.50	47176.12	-1.57		

No planet occultations

eta	E	2036-10-11T06:06:43.436		74.81	-13.50	47176.12	1.56		
gamma	E	2036-10-11T06:11:07.999		75.73	-12.53	47631.58	1.88		
delta	E	2036-10-11T06:16:31.489		76.84	-11.34	48300.35	2.25		
lambda	E	2036-10-11T06:27:32.104		79.03	-8.92	50026.71	2.96		
epsilon	E	2036-10-11T06:33:08.020		80.09	-7.69	51077.29	3.35		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-10-11T05:47:19.510  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : RIO  
 Location : Rio de Janeiro  
 Latitude (deg) : -22.89506  
 E. Longitude (deg) : 316.77708  
 Altitude (km) : 0.033  
 Gaia source ID : 866314527310939136  
 2Mass ID (if available) : 07223690+2229376  
 ICRS Star Coord at Epoch: 07h 22m 36.92071s +22:29:37.17296s  
 RUWE (>1.4 is poor) : 1.07  
 K magnitude : 14.619  
 G magnitude : 17.153  
 RP magnitude : 16.297  
 BP magnitude : 17.934  
 DUPflag : 0  
 Distance (au) : 18.770  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 7.02  
 Sun-Target sep (deg) : 88.98  
 Sun-Moon sep (deg) : 20.31  
 B (ring opening deg) : 57.68  
 PA of pole (deg) : 82.84  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.721  
 C/A sky separation (km) : 50659.4  
 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\_itrf93\_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	2036-10-11T05:27:58.707		22.15	-39.04	51301.96	-0.81		

No planet occultations

epsilon	E	2036-10-11T05:50:03.896		26.06	-34.58	51221.34	0.80		
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