

How to fill in orbital characteristics in SpaceCap for Non-GSO satellite networks

Basic orbital parameters are set in the screen shown below (Station tab, Orbital Information (1 of 3) sub-tab):

Notice **Station** Beam Attachments

Notice Id: 121500186 Administration: SLM Status: 01 Date: 06.08.2021

A1a. Identity of the Satellite Network: SI-SAT-BILIKIKI
 A4b1. Number of Orbital Planes: 40 A4b2. Reference body: (T) Earth A4b1a. Constellation
 A4b3a. Nbr of Satellites to NH: A4b3b. Nbr of Satellites to SH:
 A1g. Short Duration Mission

Orbital Information (1 of 3) Orbital Information (2 of 3) Orbital Information (3 of 3)

A4b. Orbital Information for each Orbital Plane, where the Earth is the reference body

Orbital Plane id	4a. Incl. Angle	4b. Satellites in the plane	4c. Period ddd	4c. Period hh	4c. Period mm	4d. Apogee	4d. apog exp	4e. Perigee	4e. perig exp	4f. Minimum Altitude	4f. Min Alt exp
1	0.00	4	0	23	54	35750.00	0	35750.00	0	35750.00	0
2	0.00	4	0	23	54	35750.00	0	35750.00	0	35750.00	0
3	39.00	8	0	1	34	500.00	0	500.00	0	500.00	0
4	39.00	8	0	1	34	500.00	0	500.00	0	500.00	0
5	39.00	8	0	1	34	500.00	0	500.00	0	500.00	0

List of Available Beams:
 Beam 148RG
 Beam 137EG

A15a. Commitment to meet eprf limits (applicable bands 10.7-12.75 GHz depending on region) Yes No

A17a. Commitment to meet power-flux density limits (applicable bands 1164-1215 MHz) Yes No

A18a. Commitment of aircraft earth station (applicable bands 14-14.5 GHz) Yes No

Commitment under resolves 3 of Res 770 (applicable bands 37.5-42.5 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz) Yes No

To fill in the information concerning the sun-synchronous orbits, please scroll right as shown below:

Notice Station Beam Attachments

Notice Id: 121500186 Administration: SLM Status: 01 Date: 06.08.2021

A1a. Identity of the Satellite Network: SI-SAT-BILIKIKI
 A1g. Short Duration Mission

A4b1. Number of Orbital Planes: 40
 A4b2. Reference body: [T] Earth
 A4b1.a. Constellation
 A4b3a. Nbr of Satellites to NH:
 A4b3b. Nbr of Satellites to SH:

Orbital Information (1 of 3) | Orbital Information (2 of 3) | Orbital Information (3 of 3)

A4b. Orbital Information for each Orbital Plane, where the Earth is the reference body

	4d. apog exp	4e. Perigee	4e. perig exp	4f. Minimum Altitude	4f. Min Alt exp	4m. space station uses sun-synchronous orbit	4n. local time reference	4o. local time HH:mm:ss
▶	0	35750.00	0	35750.00	0			
	0	35750.00	0	35750.00	0			
	0	500.00	0	500.00	0			
	0	500.00	0	500.00	0			
	0	500.00	0	500.00	0			
<	0	500.00	0	500.00	0			

List of Available Beams
 Beam 148RG
 Beam 137EG

A15a. Commitment to meet epfd limits (applicable bands 10.7-12.75 GHz depending on region) Yes No

A17a. Commitment to meet power-flux density limits (applicable bands 1164-1215 MHz) Yes No

A18a. Commitment of aircraft earth station (applicable bands 14-14.5 GHz) Yes No

Additional orbital parameters such as RAAN (A.4.b.4.g), Argument of perigee (A.4.b.4.i), initial phase angles (A.4.b.4.h), are available in the next subtab “Orbital Information (2 of 3)”:

Notice Station Beam Attachments

Notice Id: 121500186 Administration: SLM Status: 01 Date: 06.08.2021

A1a. Identity of the Satellite Network
 TEST
 A1g. Short Duration Mission

A4b1. Number of Orbital Planes: 40 A4b2. Reference body: (T) Earth A4b1a. Constellation
 A4b3a. Nbr of Satellites to NH: A4b3b. Nbr of Satellites to SH:

Orbital Information (1 of 3) **Orbital Information (2 of 3)** Orbital Information (3 of 3)

A4b4. Orbital Parameters				
Orbital Plane id	4a. Inclination Angle	4b. Satellites in the plane	4g. Right Ascension (degrees)	4i. Argument of the Perigee (degrees)
1	0	4	0	0
2	0	4	45	0
3	39	8	0	0
4	39	8	22.5	0
5	39	8	45	0
6	39	8	67.5	0
7	39	8	90	0
8	39	8	112.5	0

A4b4h. Phase Data for Orbital Plane number 1	
Satellite Number	4h. Initial phase angle
1	0
2	90
3	180
4	270

In order to calculate automatically phase angles, please insert values below:
 Initial phase angle:
 Step:

To capture the phase data, you can make use of the tool on the bottom right of the window shown above, to capture the phase data of all satellites within that specific orbital plane.

To enter the value for the Longitude of the ascending node, and the date/time (A.4.b.4.k and A.4.b.4.l) at which the satellite is at the location of the Longitude of the ascending node, please go subtab “Orbital Information (3 of 3)” as shown below:

Notice Station Beam Attachments

Notice Id: 121500186 Administration: SLM Status: 01 Date: 06.08.2021

A1a. Identity of the Satellite Network: TEST
 A4b1. Number of Orbital Planes: 40 A4b2. Reference body: (T) Earth A4b1a. Constellation
 A4b3a. Nbr of Satellites to NH: A4b3b. Nbr of Satellites to SH:
 A1g. Short Duration Mission

Orbital Information (1 of 3) **Orbital Information (2 of 3)** **Orbital Information (3 of 3)**

A4b6bis. Operating parameters indicator: A4b6a. Latitude Ranges:

A4b6. Orbital Operation

Orbital Plane id	N. of sats	4a. Inclination	6c. Stn Keeping	6d. R-prd ddd	6d. R-prd d hh	6d. R-prd mm	6d. R-prd ss	6e. Precession / J2 term	6f. Precession Rate ° / day	4i. Longitude ascending node	6j. Longitude tolerance
1	4	0	n/a					n/a		0	
2	4	0	n/a					n/a		45	
3	8	39	n/a					n/a		0	
4	8	39	n/a					n/a		?? 5	

A4b4k/l. Date/time of sat location for Orbital Plane 1

Satellite Number	4k. Reference Date DD.MM.YYYY	4l. Reference Time HH:mm:ss
1	01.01.2018	13:55:24
2	01.01.2018	16:16:56
3	01.01.2018	01:58:28
4	01.01.2018	00:00:00

Select Date and Time for all satellites on Selected Orbital Plane:
 00:00:00

A4b7. Performance of the non-geostationary system
 7a. Number of Tracked Sats: 7b. Avg Number Assoc E-stn: 7c. Avg Distance:
 7d. Exclusion Zone
 Topocentric angle Satellite-based angle other method
 7d1. Type of zone:
 7d2. Width of zone: ° 7d3. Avoidance mechanism. See Attachment No.:

Subtab **Orbital Information (3 of 3)** also allows the capture of information required for satellite networks subject to No.22.5 C, D, F, L.