

**SPECIFIC INSTRUCTIONS FOR SCHEDULE S**  
**Technical and Operational Description of Space Station(s)**  
**Revised March, 2014 Pursuant to Changes in 47 C.F.R. §25.114**  
**adopted by the Commission on August 9, 2013**

**SCHEDULE S**, along with the FCC 312 Main Form, is to be completed when:

- Applying for a license for a new space station;
- Amending a pending space station application;
- Applying for a license for a replacement satellite;
- Applying for a modification of a space station authorization, other than modifications filed for fleet management purposes under Section 25.118(e) of the Commission's rules; or
- Filing a “letter of intent,” Petition for Declaratory Ruling, or an earth station application requesting new authority to serve the United States with a non-U.S.-licensed space station.

**PURPOSE OF FILING**

Schedule S is used for space station filings that do not involve Assignments of License or Transfers of Control. It collects most of the technical and operational information pertaining to the space station. Applicants must complete Schedule S and the Main Form when filing for licenses for new space stations, amendments to pending space station applications that include changes to the previously-submitted Schedule S, modifications to existing space station authorizations that include changes to the Schedule S on file, and requests for new authority to use non-U.S. licensed satellites to provide service in the United States.

Note that Schedule S does not collect all of the information required by the Commission’s rules with respect to space stations. In addition to the information required in this form, the applicant is required to provide all the other information specified in Section 25.114 of the Commission’s rules, 47 C.F.R. § 25.114. This information, as well as any other information that the applicant wishes to provide in connection with the application, may be attached as exhibits to the application.

The 2013 Part 25 Report and Order, adopted by the Commission on August 9, 2013, changed the information the Commission collects in Schedule S, significantly reducing the amount of information applicants must provide.<sup>1</sup> Until a new version of the Schedule S form is implemented, however, applicants must continue to use the Schedule S software program downloadable from the Commission’s IBFS website.<sup>2</sup> These instructions have been revised to explain which data items in Schedule S must still be provided, which may be omitted, and in a few cases, which data items require a “placeholder” or “dummy” data entry to satisfy data validity tests in the underlying software program.

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<sup>1</sup> *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, Report and Order, IB Docket No. 12-267, 28 FCC Rcd 12403 (Aug. 9, 2013) (*2013 Part 25 Report and Order*).

<sup>2</sup> Instructions for downloading and installing the Schedule S software program can be obtained on the Internet from [https://licensing.fcc.gov/prod/ib/forms/help/Schedule\\_S\\_instructions.pdf](https://licensing.fcc.gov/prod/ib/forms/help/Schedule_S_instructions.pdf). The program itself can be downloaded from [http://www.fcc.gov/ib/sand/schedule\\_s/f312s.exe](http://www.fcc.gov/ib/sand/schedule_s/f312s.exe). We note that some features of the program, for example, the ability to attach Portable Document Format (PDF) files, may only work on computers running versions of the Microsoft Windows operating system prior to Windows 7.

## **Applicant Tab**

Click on the “Add” button at the top of the form to enable data entry. Click on the “Save” button when finished entering data.

Please provide the following information, at a minimum:

- In the “Name” box, enter the name of the satellite operator.
- In the “Attention” box, enter the name of the technical point of contact that represents the applicant for this space station application. This should be a person with whom Commission staff can discuss the technical details of the application.
- In the “Phone Number” box, enter the telephone number of the technical point of contact.
- In the “E-mail” box, enter the email address of the technical point of contact.

Please do not enter any data in the “FCC Only” section of this tab unless specifically instructed to do so by FCC staff.

## **Satellite Tab**

### TABLE S1: GENERAL INFORMATION

Click on the “Add” button at the top of the form to enable data entry. Click on the “Save” button when finished entering data.

All applicants should provide the information required by Items S1.a, S1.f, S1.i, and S1.l. Applicants are not required to provide the information requested by Items S1.b, S1.c, S1.d1, S1.d2, S1.e, S1.g, S1.h, S1.j, and S1.k.

Please enter the commercial name of the GSO satellite or NGSO satellite constellation in Item S1.a. In Item S1.f, please enter the expected service life of the GSO satellite or NGSO satellites. In Item S1.i, select an answer from the drop-down list box as to whether the space station(s) will be operated on a common carrier basis. Select either GSO or NGSO for the type of satellite orbit in Item S1.l. If a satellite system includes both GSO and NGSO satellites, a separate application is required for each GSO satellite and for each NGSO satellite constellation.

## **Op. Band Tab**

### TABLE S2: OPERATING FREQUENCY BANDS

Items S2.a - S2.f: Identify the frequency bands and radio services (nature of service) in which the space station(s) will operate. Please enter on a separate row in Table S2 each frequency band that is listed on a separate row in the Non-Federal Table of Frequency Allocations in 47 C.F.R. § 2.106. For example, the frequency bands for a space station operating in the 13.75 - 14.5 GHz range must be entered using one row for 13.75 - 14.0 GHz and a second row for 14.0 - 14.5 GHz. Please enter frequency bands on separate rows when the Nature of Service or transmit/receive mode changes within a frequency band. Also enter frequency bands on separate rows when the same frequency band is allocated for different services in different ITU regions that the space station will serve, one row for each different Nature of

Service. All applicants must complete all items in this section for at least one frequency band.

Items S2.a - S2.d: Identify the frequency range according to accepted ITU methodology. Please specify frequencies less than or equal to 10.0 GHz in megahertz, and frequencies above 10.0 GHz in gigahertz. Standard unit symbols (Items S2.b and S2.d) are: "M" = megahertz, and "G" = gigahertz. (The software program also provides the symbol "K" = kilohertz, but this symbol should not be used.)

Item S2.e: T/R Mode indicates whether the space station transmits or receives in this frequency band. Identify transmit bands with "T" and receive bands with "R". When a space station both transmits and receives in the same frequency band (*e.g.*, Inter-Satellite Service, ISS), make entries on two rows for the band, one for transmit and one for receive.

Item S2.f: Nature of Service identifies all radio services that will be used by the space station (s) in each frequency band. Abbreviations or codes may be used, such as FSS for Fixed-Satellite Service, MSS for Mobile-Satellite Service, BSS for Broadcasting-Satellite Service, etc. Select the Nature of Service Codes from the following list:

**Fixed-Satellite Service**

- FSS - Fixed-Satellite Service
- DTH - Direct-to-Home in the Fixed-Satellite Service
- FBSS - Feeder Link for Broadcasting-Satellite Service in FSS
- FMSS - Feeder Link for Mobile-Satellite Service in FSS

**Mobile-Satellite Service**

- AMSS - Aeronautical Mobile-Satellite Service
- LMSS - Land Mobile-Satellite Service
- MMSS - Maritime Mobile-Satellite Service
- MSS - Mobile-Satellite Service
- MSXA - Mobile-Satellite, Except Aeronautical Mobile-Satellite

**Broadcasting-Satellite Service**

- BSSV - Broadcasting-Satellite Service - Video (includes DBS service links)
- BSSD - Broadcasting-Satellite Service - Data
- BSSS - Broadcasting-Satellite Service - Sound
- DARS - Satellite Digital Audio Radio Service

**Radionavigation-Satellite Service**

- ARNS - Aeronautical Radionavigation-Satellite Service
- MRNS - Maritime Radionavigation-Satellite Service
- RNSS - Radionavigation-Satellite Service

**Non-specific Satellite Service**

- AMAS - Amateur-Satellite Service
- EESS - Earth Exploration-Satellite Service
- METS - Meteorological-Satellite Service
- RDSS - Radiodetermination-Satellite Service
- RLSS - Radiolocation-Satellite Service
- RAS - Radio Astronomy Service
- SFTS - Standard Frequency and Time Signal-Satellite Service
- SOS - Space Operation Service
- SRS - Space Research Service
- ISS - Inter-Satellite Service
- OTHR - Other Satellite Service (please specify)

If you select “OTHR,” please enter the description of the satellite service in the “Description” column of the pop-up box provided for entering the Nature of Service Code.

After completing your last row of entries, place the cursor in another row and click to save the information you entered in the last row.

### **GSO Orbit Tab**

#### TABLE S3: ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY

Skip this table if the application is for one or more NGSO space stations.

If the application is for a GSO space station:

Click on the “Add” button at the top of the form to enable data entry.

Complete Items S3.a, S3.c, S3.d, and S3.e. GSO space station applicants are not required to provide the information requested by Item S3.b or Items S3.f - S3.h.

Click on the “Save” button when finished entering data.

### **NGSO Orbit Tab**

#### TABLE S4: ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES

Skip this section if the application is for a GSO space station.

If the application is for one or more NGSO space stations:

Click on the “Add” button at the top of the form to enable data entry.

Complete Items S4.a - S4.o. Items S4.a - S4.d apply to the entire NGSO satellite constellation and must be provided only once for the constellation. Include in-orbit spares in the total number of satellites you enter in Item S4.a.

Item S4.d is the date of the orbit epoch. This is the date to which all of the orbital parameters (Items S4.g - S4.l) are referenced. It must be specified in MM/DD/YYYY format. The orbit epoch will be assumed to be at 12:00:00AM on that date.

After entering the data in S4.a - S4.d, click on the “Save” button at the top of the frame labeled “S4. ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES ONLY” before entering data in S4.e – S4.o.

Items S4.e - S4.o apply to each orbital plane in the NGSO constellation. Use a separate row for each orbital plane in the constellation.

Items S4.m - S4.o (Active Service Arc Range) is the range of phase angles within the orbit over which the satellite(s) actively provide(s) communication. The phase angle is 0° at the ascending

node, which is the point at which the satellite crosses the Equator going from south to north. Complete Items S4.m and S4.n when the satellite(s) is (are) active in a single range of phase angles (i.e. 0° - 360° or 0° - 90°). When the satellite(s) is (are) active over multiple ranges, leave Items S4.m and S4.n blank, enter “OTHER” in Item S4.o, and describe the active service arc(s) in the narrative exhibit to the application. For example, satellites might be active only in the 0° - 90° and 180° - 270° ranges of phase angle. If the satellite(s) is (are) in-orbit spares, leave Items S4.m and S4.n blank and enter “SPARE” in Item S4.o.

After completing your last row of entries, place the cursor in another row and click to save the information.

#### TABLE S5: INITIAL SATELLITE PHASE ANGLE

Skip this section if the application is for a GSO space station. Complete Items S5.a - S5.c if the application involves one or more NGSO space stations. These items collect information about the phasing of the satellites within each orbital plane of the NGSO constellation. Complete the entries in Table S4 before entering data in Table S5.

Table S5 contains a row for each satellite in the NGSO constellation. For each satellite within each orbital plane of the NGSO satellite constellation, identify the initial phase angle within its orbital plane at the Orbit Epoch Date specified in S4.d. For example, orbital plane “1” might contain three (3) evenly spaced satellites. In this case, Table S5 would include three rows with the following data to describe plane “1”. Row 1: 1, 1, 0°; Row 2: 1, 2, 120°; and Row 3: 1, 3, 240°. Note that Item S5.a, Orbital Plane No., refers to the orbital plane(s) identified in Item S4.e above and must have been previously defined in Item S4.e.

After completing your last row of entries, place the cursor in another row and click to save the information.

### **Service Area Tab**

#### TABLE S6: SERVICE AREA CHARACTERISTICS

Complete Items S6.a, S6.b, and S6.c or S6.d for both GSO and NGSO space station applications. These items collect information about the service area(s) that will be served by the space station(s).

Please assign each service area a unique “Service Area ID” (Item S6.a). (These IDs will populate a drop-down list box in Table S7, Item S7.j, from which you will choose the service area for each space station antenna beam.) In Item S6.b, select ‘E’ or ‘S’ from the drop-down list box to indicate whether the station with which your space station(s) will be communicating in this service area will be located on Earth or in space.

You must provide a map or description of the service area of the space station(s) in one of three ways:

1. You can attach a GXT file in Item S6.c to illustrate a service area as a closed contour plotted on a map. The ITU has defined a computer file format (GXT format) for the collection of graphical data in electronic form. This file format includes a methodology for the specification of service area diagrams in Annex C to Attachment 2 of ITU Circular Letter CR/58. *See ITU Circular*

*Letter CR/58, "Notification of frequency assignments to stations in the space radiocommunications services on electronic media," 21 October 1996.* You may choose this option for both GSO and NGSO space stations;

2. You can enter a description of the service area in S6.d. You may define the service area(s) as a list of known geographic areas, such as U.S. state postal codes (NY, CA, etc.) or ITU 3-letter geographic codes (USA, CAN, MEX, etc.), or by an easily-understood geographic place name, such as "Global," "Europe," "Africa," etc.; or
3. You can attach a PDF file containing the Service Area Diagram in the last column of Table S6.

After completing your last row of entries, place the cursor in another row and click to save the information.

## **Antenna Beam Tab**

### TABLE S7: SPACE STATION ANTENNA BEAM CHARACTERISTICS

Complete the following items in Table S7 for both GSO and NGSO space station applications. These items collect information about the antenna beam characteristics for each antenna beam used by the satellite system.

All applicants must complete Items S7.a, S7.b, S7.e, S7.f, S7.j, S7.m, S7.o, and S7.p as appropriate for the type of beam (transmitting or receiving) for which the data are being entered.

Complete Item S7.g for space stations operating in the Direct Broadcasting Satellite Service, the Fixed-Satellite Service, and the 17/24 GHz Broadcasting-Satellite Service. Complete Items S7.h and S7.i for space stations operating in the Fixed-Satellite Service in the 3700 – 4200 MHz and 5925 – 6425 MHz frequency bands.

Applicants are not required to provide the information requested by Items S7.c, S7.d, S7.k, S7.l, and S7.n.

Please assign each antenna a unique "Beam ID" in Item S7.a. (These IDs will populate drop-down list boxes in Table S8, Item S8.a, from which you will choose the Beam ID for the antenna beam diagram, and Table S10, Items S10.d and S10.f, from which you will choose the Beam IDs associated with the space station receiving and transmitting channel frequencies.)

Depending upon whether the beam is used for transmission or reception (Item S7.b, T/R Mode = "T" or "R"), please provide the transmit EIRP (Item S7.m) or the receive G/T and Minimum Saturation Flux Density (the latter being applicable, however, only to transponders) (Items S7.o and S7.p).

Item S7.j (Service Area ID) identifies the service area that the beam covers. Using the drop-down list box provided, identify the service area using the unique service area ID created in Table S6 (Item S6.a).

The Schedule S application form software program requires applicants to enter a numeric value greater than zero in Item S7.q and S7.r. Applicants may enter any numeric value greater than zero (we suggest entering "1" (one)) for these items.

After completing your last row of entries, place the cursor in another row and click to save the information.

## **Beam Diagram Tab**

### TABLE S8: ANTENNA BEAM DIAGRAMS

All applicants must provide the relevant information in Items S8.a-c, S8.e or S8.f, and S8.g-l. Applicants are not required to answer Item S8.d.

Table S8 collects information about the antenna radiation pattern and power flux density characteristics for each antenna beam used by the satellite system. Table S8 allows applicants to attach antenna gain contour diagrams for both NGSO and GSO space stations. These diagrams are sometimes referred to as “footprints” and are generally provided in the form of a beam coverage map or two-dimensional graph. Each antenna beam will have a co-polarized gain contour diagram (Item S8.c = “C”) and a cross-polarized gain contour diagram (Item S8.c = “X”). Please refer to 47 C.F.R. §25.114(c)(4)(vi) and (vii), as revised by the 2013 Part 25 Report and Order, for a detailed description of the requirements for antenna gain contour diagrams that must be supplied with the space station application.

Item S8.a (Beam ID) identifies the antenna beam to which the antenna gain contours belong. Identify the beam by using the unique Beam ID created in Table S7 (Item S7.a). Identify the transmit/receive (T/R) mode of the beam in Item S8.b using the drop-down list box provided. In Item S8.c, use the drop-down list box to indicate whether the antenna gain contour diagram provided on the current row is the co-polarized pattern (“C”) or the cross-polarized pattern (“X”).

Item S8.e (NGSO Antenna Gain Contour Description). Complete this item for NGSO satellite systems. For each unique orbital plane, provide the predicted antenna gain contour(s) for each transmit and receive antenna beam for one space station if all space stations are identical in the constellation. If individual space stations in the constellation have different antenna beam configurations, specify the predicted antenna gain contours for each transmit and receive beam for each space station type and orbit or orbital plane requested. Plot the contours on an area map with the beam depicted on the surface of the earth with the space stations' peak antenna gain pointed at nadir to a latitude and longitude within the proposed service area. Plot the contour(s) at 2 dB intervals down to 10 dB below the peak gain and at 5 dB intervals between 10 dB and 20 dB below the peak gain. For intersatellite links, specify the peak antenna gain and 3 dB beamwidth. Attach a PDF file that depicts or describes the antenna gain contours.

For NGSO satellites with large numbers of identical fixed beams on each satellite, applicants may, as an alternative to submitting the information described in the preceding paragraph with respect to those beams, specify the predicted antenna gain contours for one transmit and receive beam pointed to nadir, together with an area map showing all of the spot beams depicted on the surface of the earth with the satellites' peak antenna gain pointed to a selected latitude and longitude within the service area. The area map should be attached to the narrative portion of the application.

Item S8.f (GSO Antenna Gain Contour Data). Complete this item to provide antenna gain contour diagrams for GSO space stations. Provide computer data files in the ITU GXT file format for each distinct antenna gain contour diagram. Item S8.f requires the applicant to attach the GXT file containing the antenna gain contour definition. The GXT file format has been defined by the ITU to

facilitate the collection of graphical data in electronic form. This file format includes a methodology for the specification of antenna gain contour diagrams for GSO satellites in Annex D to Attachment 2 of ITU Circular Letter CR/58. See *ITU Circular Letter CR/58, "Notification of frequency assignments to stations in the space radiocommunications services on electronic media," 21 October 1996*. Alternatively, pursuant to the 2013 Part 25 Report and Order, applicants may submit a single GIMS container file (a Microsoft Access database file readable by the ITU's GIMS software program) containing all of the antenna pattern contour diagrams for their space station(s). The GIMS container file cannot be attached to Schedule S, however. To submit a GIMS container file, first create a folder on a disk drive on your computer and call it "Narrative and GIMS File." Into this folder, place the file(s) for the narrative portion of your application and the GIMS container file. Name the files in a meaningful way, for example, "Narrative.doc" or "Narrative.pdf" for the narrative, and "GIMS Container File.mdb" for the GIMS container file. Then, compress the Narrative and GIMS File folder into a zip file. Under Windows 7, this can be done by right-clicking on the folder and selecting "Send to," followed by "Compressed (zipped) folder." Upload the compressed folder to IBFS as the attachment for Form 312, Question 43 ("Description").

For GSO space stations with large numbers of identical fixed spot beams, other than DBS space stations, applicants may, as an alternative to submitting the information described in the preceding two paragraphs, provide the predicted antenna gain contours for one transmit and receive antenna beam, together with one of the following:

1. An area map showing all of the spot beams depicted on the surface of the Earth;
2. A table identifying the maximum antenna gain point(s) in latitude and longitude to the nearest 0.1 degree; or
3. A map of the isolines formed by combining all of the spot beams into one or more composite beams.

Please attach the information you select from the choices listed in (1)-(3) above to the narrative along with a brief explanation that you have chosen one of these alternatives.

Items S8.g - S8.l (Max. Power Flux Density (PFD)). For all co-polarized transmitting beams operating in frequency bands for which maximum PFD levels at 5°, 10°, 15°, 20°, and 25° angles of arrival above horizontal are specified in 47 C.F.R. §25.208, provide the maximum PFD on the earth's surface for 5°, 10°, 15°, 20°, and 25° angles of arrival above horizontal. Do not enter data in Items S8.g - S8.l for cross-polarized beams. The angle of arrival above the horizontal is equivalent to the earth station elevation angle. Use the emission with the highest PFD. Provide the PFD at each angle of arrival in dB(W/m<sup>2</sup>) in either a 4 kHz or 1 MHz reference bandwidth. The selection of the reference bandwidth depends upon the FCC rules that apply to the subject frequency band, radio service, and type of satellite orbit. For frequency bands in which maximum PFD levels are specified for other angles of arrival, or for which regional PFD limits apply, provide the maximum PFD levels at the angles of arrival or regions specified in §25.208 in the narrative portion of your application.

After completing your last row of entries, place the cursor in another row and click to save the information.



## Transponder Tab

TABLE S9: SPACE STATION CHANNELS

All applicants must complete Items S9.a-f.

Complete Table S9 for both GSO and NGSO space station applications. Please assign each channel frequency a unique “Channel No.” (Item S9.a). (These Channel Nos. will populate drop-down list boxes in Table S10, Items S10.c and S10.e, from which you will choose the channels associated with each space station receiving and transmitting beam.) Enter data on a separate row for each non-contiguous range of frequencies in which the space station receives or transmits on the same polarization.<sup>3</sup> For telecommand signals, you may specify the frequencies within a range of 5 MHz or 2 percent of the assigned bandwidth, whichever is smaller.

Item S9.a: Enter a unique identifier of up to five alphanumeric characters for the channel.

Item S9.b: Enter the bandwidth (*i.e.*, the maximum channel frequency minus the minimum channel frequency) for the channel.

Item S9.c: From the drop-down list box provided, select “T” if the space station transmits on the channel, or “R” if the space station receives on the channel.

Item S9.d: Enter the center frequency of the channel in megahertz (MHz).

Item S9.e: From the drop-down list box provided, select one of the four options for the polarization of the channel: “H” for horizontal linear polarization, “V” for vertical linear polarization, “L” for left-hand circular polarization, or “R” for right-hand circular polarization. For linear polarization, horizontal polarization is the polarization in which the electric field of the signal is parallel to the plane of the Equator, or approximately so, and vertical polarization is the polarization sense in which the electric field of the signal is perpendicular to the plane of the Equator, or approximately so. For circular polarization, the right-hand polarization sense is when the electric field vector rotates clockwise with time, as viewed from the space station along the main axis of the antenna beam, and the left-hand polarization sense is when the electric field vector rotates counter-clockwise with time. Right-hand circular polarization is sometimes referred to as “direct” polarization, and left-hand circular polarization is sometimes referred to as “indirect” polarization.

Item S9.f: Using the drop-down list box provided, indicate whether the channel serves to provide TT&C (Item S9.f = “T”) functions or communications (Item S9.f = “C”) functions.

After completing your last row of entries, place the cursor in another row and click to save the information.

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<sup>3</sup> A frequency range is considered contiguous if the space station can transmit or receive on the same polarization at any discrete frequency within the range.

## TABLE S10: SPACE STATION TRANSPONDERS

All applicants must complete Items S10.a, S10.c and S10.d, and/or S10.e and S10.f.

Complete Table S10 for both GSO and NGSO space station applications. For each antenna beam listed in Table S7, enter data on a separate row for each channel used on that beam. For simple frequency changing (*i.e.*, “bent-pipe”) transponders, you may (but are not required to) enter the beam and channel information for both the receive (uplink) and transmit (downlink) beams and channels on the same row. If you do so, you must also enter a value greater than zero for the transponder gain, as described in more detail below.

Please assign a unique “Transponder ID” (Item S10.a) to each row in Table 10. (These Transponder IDs will populate drop-down list boxes in Table S13, Items S13.a and S13.b, from which you will select the first and last transponders in a list of transponders carrying the maximum-EIRP-density emissions.)

Applicants are not required to enter an accurate value for the transponder gain in Item S10.b. The Schedule S application form software program, however, requires applicants to enter a value greater than zero for this item. We suggest entering the value “1” (one) for this item.

If you are entering information for a simple frequency-changing transponder or for a receiving beam and channel, select the Receive Channel ID in Item S10.c and the Receive Beam ID in Item S10.d, using the drop-down list boxes provided based on what you previously entered in Tables S7 and S9.

If you are entering information for a simple frequency-changing transponder or for a transmitting beam and channel, select the Transmit Channel ID in Item S10.e and the Transmit Beam ID in Item S10.f, using the drop-down list boxes provided based on what you previously entered in Tables S7 and S9.

After completing your last row of entries, place the cursor in another row and click to save the information.

## **Modulation Tab**

### TABLE S11: DIGITAL MODULATION PARAMETERS

Complete Items S11.a-c for space stations that transmit and/or receive signals using digital modulation.

All applicants must complete Items S11.a - S11.c for the digital modulation type with the highest EIRP density for any transmitting antenna beam listed in Table S10 of the Schedule S. A list of transmitting antenna beams and the maximum-EIRP-density emissions in those beams will be collected in Table S13.

Please assign each digital modulation scheme a unique “Digital Modulation ID” of up to five alphanumeric characters, and enter this ID in Item S11.a. (These IDs will populate drop-down list boxes in Table S13 (Item S13.c), from which you will choose the Digital Modulation ID with the maximum EIRP density for a range of transponders.)

In Item S11.b, enter the emission designator for this modulation type. Use the system described in 47 C.F.R. § 2.201 to generate the full emission designator, including the necessary bandwidth, which must be coded as described in 47 C.F.R. § 2.202. Also enter the necessary bandwidth of the emission in

kilohertz (kHz) in Item S11.c.

Applicants are not required to provide the information requested by Items S11.d - S11.i.

After completing your last row of entries, place the cursor in another row and click to save the information.

#### TABLE S12: ANALOG MODULATION PARAMETERS

Complete Items S12.a-c for space stations that transmit and/or receive signals using analog modulation.

All applicants must complete Items S12.a - S12.c for the analog modulation type with the highest EIRP density for any transmitting antenna beam listed in Table S10 of the Schedule S. A list of transmitting antenna beams and the maximum-EIRP-density emissions in those beams will be collected in Table S13.

Please assign each analog modulation scheme a unique “Analog Modulation ID” of up to five alphanumeric characters, and enter this ID in Item S12.a. (These IDs will populate drop-down list boxes in Table S13 (Item S13.d), from which you will choose the Analog Modulation ID with the maximum EIRP density for a range of transponders.)

In Item S12.b, enter the emission designator for this modulation type. Use the system described in 47 C.F.R. § 2.201 to generate the full emission designator, including the necessary bandwidth, which must be coded as described in 47 C.F.R. § 2.202. Also enter the necessary bandwidth of the emission in kilohertz (kHz) in Item S12.c.

Applicants are not required to provide the information requested by Items S12.d - S12.o.

After completing your last row of entries, place the cursor in another row and click to save the information.

### **Emission Tab**

#### TABLE S13: TYPICAL EMISSIONS

Complete Table S13 for both GSO and NGSO space station applications. All applicants must complete Items S13.a, S13.b, S13.c and/or S13.d as appropriate, and Item S13.m. Applicants are not required to provide the information requested by Items S13.e - S13.l and S13.n - S13.p.

These items collect the information required to identify the digital and analog emissions with the highest EIRP density in each transponder or set of transponders.

For each set of contiguous transponders with common link parameters, identify the starting (Item S13.a) and ending (Item S13.b) transponder IDs using the unique transponder IDs created in Table S10 (Item S10.a), which will appear in the drop-down list boxes for S13.a and S13.b.

Items S13.c - S13.d: Identify either the digital (Item S13.c) or analog (Item S13.d) modulation ID from Table S11 (Item S11.a) or Table S12 (Item S12.a), as appropriate, using the unique modulation IDs created in Tables S11 and S12. These modulation IDs will appear in the drop-down list boxes for S13.c and S13.d.

After completing your last row of entries, place the cursor in another row and click to save the information.

### **Other Tab**

#### TABLE S14: REMOTE CONTROL (TT&C) LOCATION(S)

Applicants are not required to provide the information requested by any of the items in this table.

#### TABLE S15: SPACECRAFT PHYSICAL CHARACTERISTICS

Applicants are not required to provide the information requested by any of the items in this table.

#### TABLE S16: SPACECRAFT ELECTRICAL CHARACTERISTICS

Applicants are not required to provide the information requested by any of the items in this table.

#### TABLE S17: CERTIFICATIONS

Complete Items S17.a - S17.c for both GSO and NGSO space station applications.

Rev. 6k, May 14, 2014