Data Capturing Exercise

Capturing using SpaceCap to create Coordination Request of Earth Station

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How we proceed…..

- Introduction to Earth Stations Filing Process
- **Data Capturing Exercise**
  - **Coordination Request of Earth Station**

NOW!

- Coordination Contour Creation Exercise
- Submission of Notification to the Bureau

Earth Station Filing Process

1.

Frequency Study

Article 5 : Frequency Allocations
Article 9 : Coordination Provisions

2.

Collecting and Capturing Data

Appendix 4 : ES Characteristics
SpaceCap : Data Capturing

3.

Coordination Request to Admins

Appendix 7 : Coordination Area
GIBC/AP7 : Identify affected Admins

4.

Notification to BR

SpaceCap : Submission of Notices to BR

What should be captured in Coordination Request?

APPENDIX 4 (REV.WRC-23)

Consolidated list and tables of characteristics for us application of the procedures of Chapter III

ANNEX 2

Characteristics of satellite networks, earth station or radio astronomy stations[2] (Rev.WRC-12)

Information relating to the data listed in the following Tables

In many cases the data requirements involve the use of standard symbols in Radiocommunication Bureau. These standard symbols may be found in the '

Notification or coordination of an earth station (including notification under Appendices30A or 30B)

TABLE A

GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION (Rev.WRC-23)

Items in Appendix	*A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8) or for Appendix 30B ESIM in accordance with Resolution 121 (WRC-23)	Items in Appendix	Radio astronomy
A.1	**IDENTITY OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIOASTRONOMY STATION**									A.1	
A.1.a	the identity of the satellite network or system	X	X	X	X		X	X	X	A.1.a	
A.1.b	the beam identification In the case of Appendix **30** or **30A**, required only for modification, suppression or notification of Plan assignments In the case of Appendix **30B**, required only for a network derived from the Allotment Plan						+	+	+	A.1.b	
A.1.c	if different from A.1.a, the identity of the satellite network or system containing the service link frequency assignments Required only for frequency assignments to space stations in bands where the use of the allocation is limited to feeder links		+	+	+					A.1.c	
A.1.e	**Identity of the earth station or radio astronomy station:**									A.1.e	
A.1.e.1	the type of earth station (specific or typical)					X				A.1.e.1	
A.1.e.2	the name of the station					X				A.1.e.2	X
A.1.e.2*bis*	the country or geographical area in which the station is located, using the symbols from the Preface					X				A.1.e.2*bis*	X
A.1.e.3	**For a specific earth station or radio astronomy station:**									A.1.e.3	
A.1.e.3.a	**Not used**									A.1.e.3.a	
A.1.e.3.b	the geographical coordinates of each transmitting or receiving antenna site constituting the station (latitude and longitude in degrees and minutes) For a specific earth station, seconds are to be provided if the coordination area of the earth station overlaps the territory of another administration					X				A.1.e.3.b	X
A.1.f	**Administration and intergovernmental organization symbol:**									A.1.f	
A.1.f.1	the symbol of the notifying administration (see the Preface)	X	X	X	X	X	X	X	X	A.1.f.1	X
A.1.f.2	if the notice is submitted by the notifying administration in association with other administrations, the symbols of each of the administrations (see the Preface)	+	+	+	+	+	+	+	+	A.1.f.2	
A.1.f.3	if the notice is submitted on behalf of an intergovernmental satellite organization, the symbol of that organization (see the Preface)	+	+	+	+	+	+	+	+	A.1.f.3	
A.1.g	indicator showing that the non-GSO satellite system is planned to be operated in accordance with Resolution **32 (Rev.WRC-23)** Required for advance publication and notification		X		+					A.1.g	
A.1.g.1	**Not used**									A.1.g.1	
A.1.g.2	**Not used**									A.1.g.2	

"X" is Mandatory.

Check Appendix 4 Annex 2 for necessary data items to be captured.

The necessary data items in Appendix 4

- Following data items are the **mandatory** information for a coordination request of earth station.
- All necessary information shall be captured with **SpaceCap** software.

Items in Appendix		Explanation
A.1.e	**Identity of the earth station or radio astronomy station:**	
	A.1.e.1	the type of earth station (specific or typical)
	A.1.e.2	the name of the station
	A.1.e.2bis	the country or geographical area in which the station is located, using the symbols from the Preface
A.1.e.3	**For a specific earth station or radio astronomy station**	
	A.1.e.3.b	the geographical coordinates of each transmitting or receiving antenna site constituting the station (latitude and longitude in degrees and minutes) For a specific earth station, seconds are to be provided if the coordination area of the earth station overlaps the territory of another administration
A.1.f	**Administration and intergovernmental organization symbol:**	
	A.1.f.1	the symbol of the notifying administration (see the Preface)
A.3	**OPERATING ADMINISTRATION OR AGENCY**	
	A.3.a	the symbol for the operating administration or agency (see the Preface) that is in operational control of the space station, earth station or radio astronomy station
	A.3.b	the symbol for the address of the administration (see the Preface) to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the network or system or station (see Article 15)

The necessary data items in Appendix 4

- Following data items are the **mandatory** information for a coordination request of earth station.
- All necessary information shall be captured with **SpaceCap** software.

Items in Appendix		Explanation
A.4.c	**For an earth station (ORBITAL INFORMATION)**	
	A.4.c.1	the identity of the associated space station(s) with which communication is to be established
A.13	**REFERENCES TO THE PUBLISHED SPECIAL SECTIONS OF THE BUREAU'S INTERNATIONAL FREQUENCY INFORMATION CIRCULAR (see the Preface)**	
	A.13.b	the reference and number of the coordination request in accordance with No. 9.6 **For the notification of an earth station, the reference to the Special Section of the associated satellite network or system has to be provided** For the notification of an earth station coordinated under No. 9.7A, the coordination Special Section number of this earth station has to be provided
	A.13.e	the reference and number of the information in accordance with Article 6 of Appendix 30B
B.1	**IDENTIFICATION AND DIRECTION OF THE SATELLITE ANTENNA BEAM**	
	B.1.a	the designation of the satellite antenna beam For an earth station, the designation of the satellite antenna beam of the associated space station

The necessary data items in Appendix 4

- Following data items are the **mandatory** information for a coordination request of earth station.
- All necessary information shall be captured with **SpaceCap** software.

Items in Appendix		Explanation
B.5	**EARTH STATION ANTENNA CHARACTERISTICS**	
	B.5.a	the isotropic gain, in dBi, of the antenna in the direction of maximum radiation (see No. 1.160)
	B.5.c	either the measured radiation pattern of the antenna or the reference radiation pattern to be used for coordination For coordination under No. 9.7A, the reference radiation pattern is to be provided
C.2	**ASSIGNED FREQUENCY (FREQUENCIES)**	
	C.2.a.1	the assigned frequency (frequencies), as defined in No. 1.148 – in kHz up to 28 000 kHz inclusive – in MHz above 28 000 kHz to 10 500 MHz inclusive – in GHz above 10 500 MHz If the basic characteristics are identical, with the exception of the assigned frequency, a list of frequency assignments may be provided

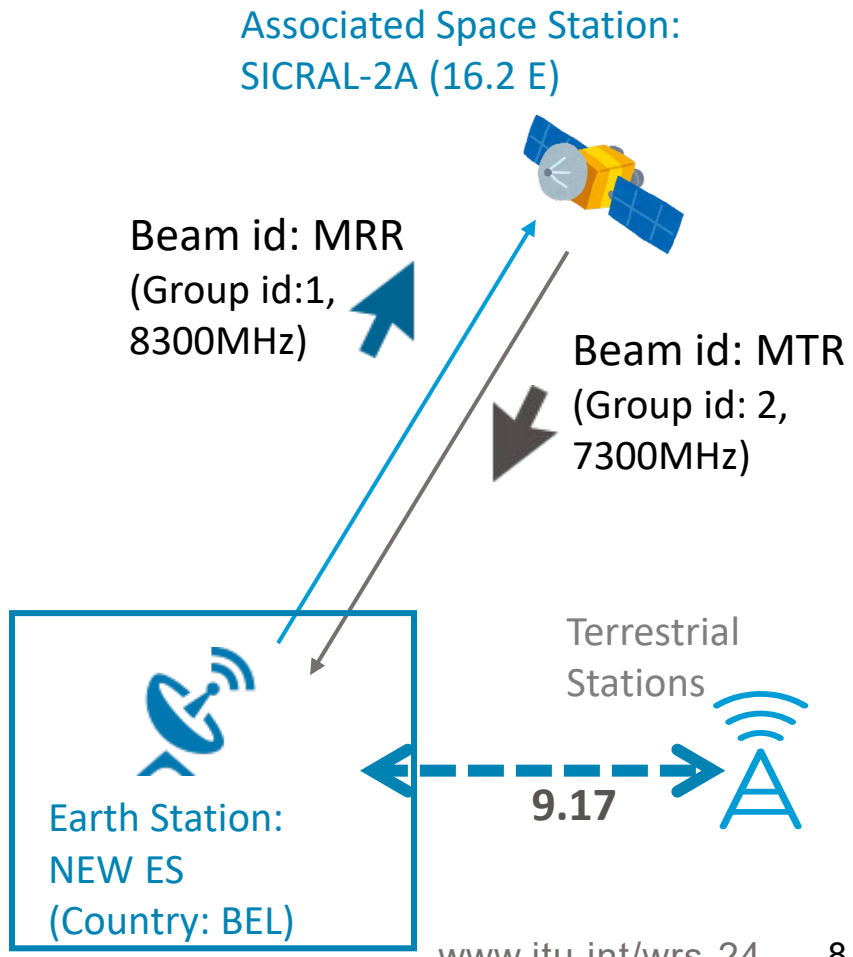
Exercise:
Capture an E/S Coordination Request

9.17 I) Coordination of any **Specific Earth Station** or **Typical Mobile Earth Station** in frequency bands above 100 MHz, in respect of **Terrestrial Stations**, *with the exception of the coordination under 9.15*

In this exercise,

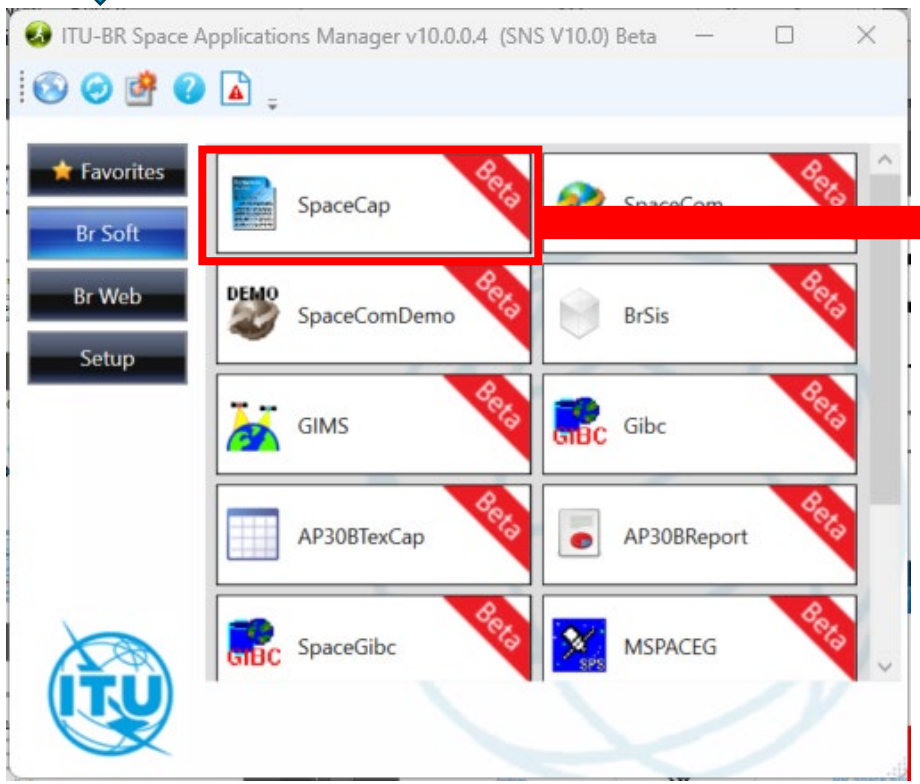
- We create a new filing of Coordination Request of E/S by capturing sufficient data of data items in AP4.
- Capturing of characteristics on
  - Notice level data
  - Station level data
  - Beam level data
  - Group level data

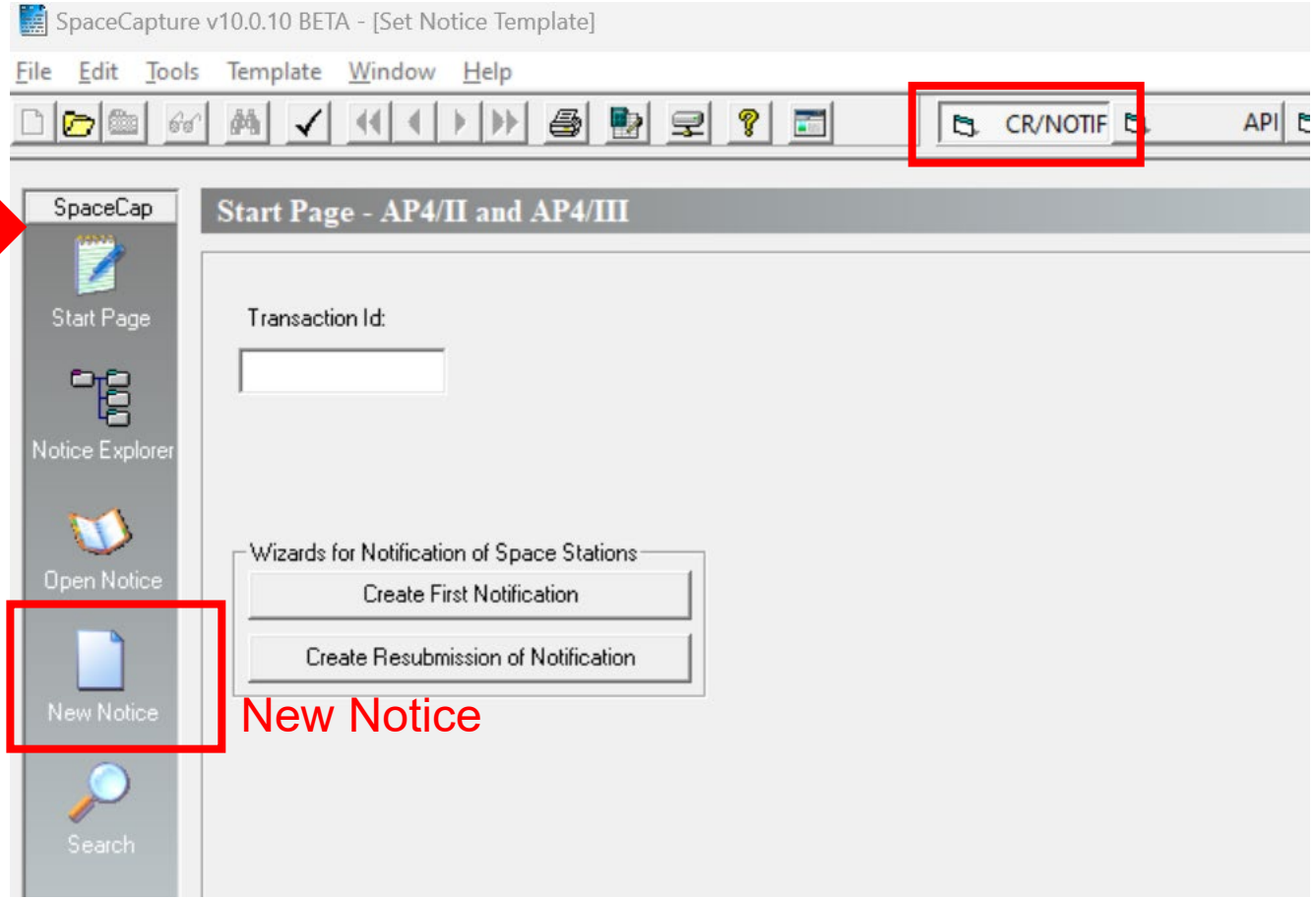
- We exercise to create “ES_WRS24_CR.mdb”.
- The parameters are listed on “WRS24_ES_Exercise_Parameter.pdf”.



1. Create a new Notice file

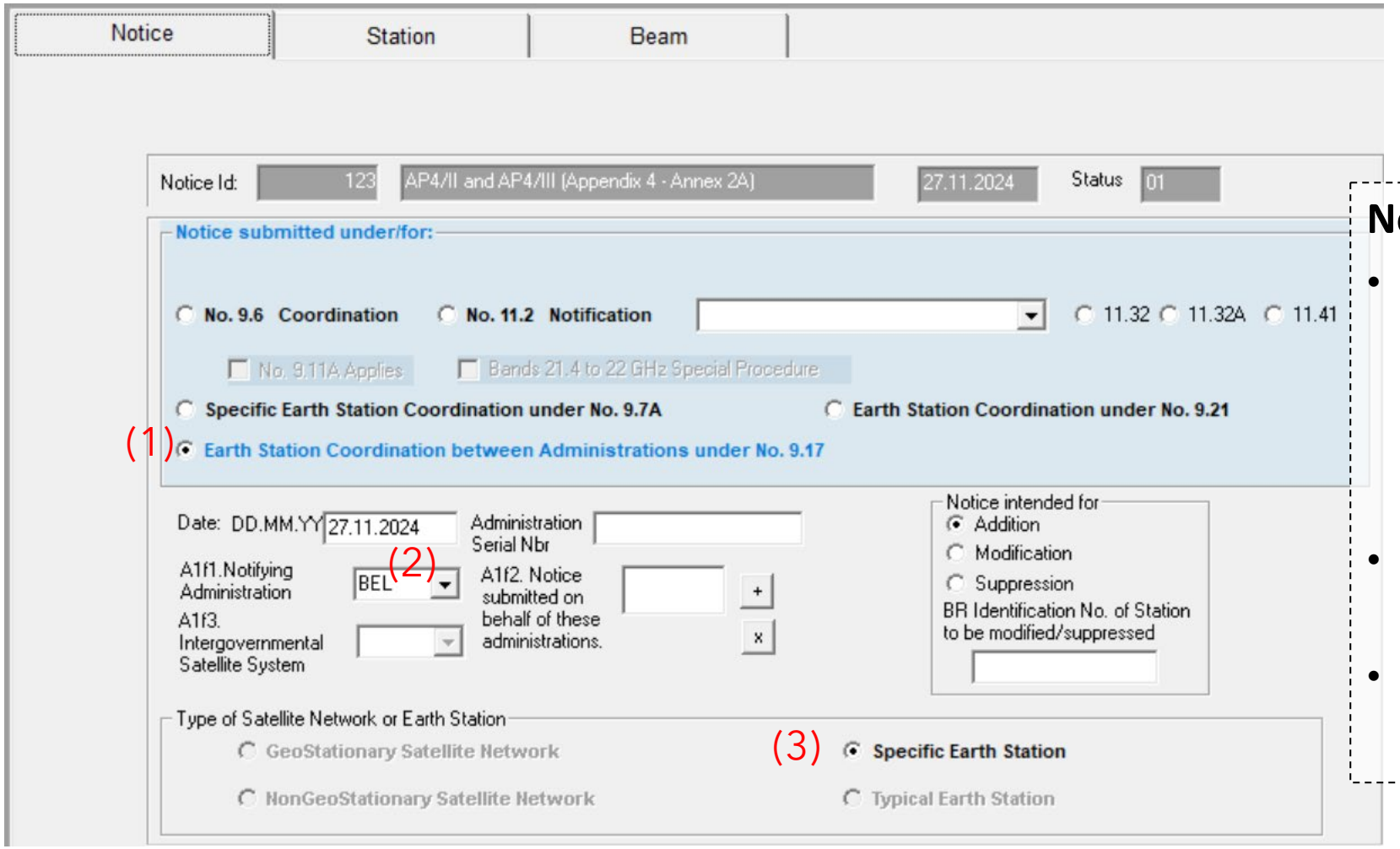
Launch **SpaceCap** and click on **New Notice**





2. Capture Notice Type

Under **Notice** tab, (1) select **No. 9.17**, (2) Notifying Administration: **BEL** and (3) Type of Earth Station: **Specific Earth Station**



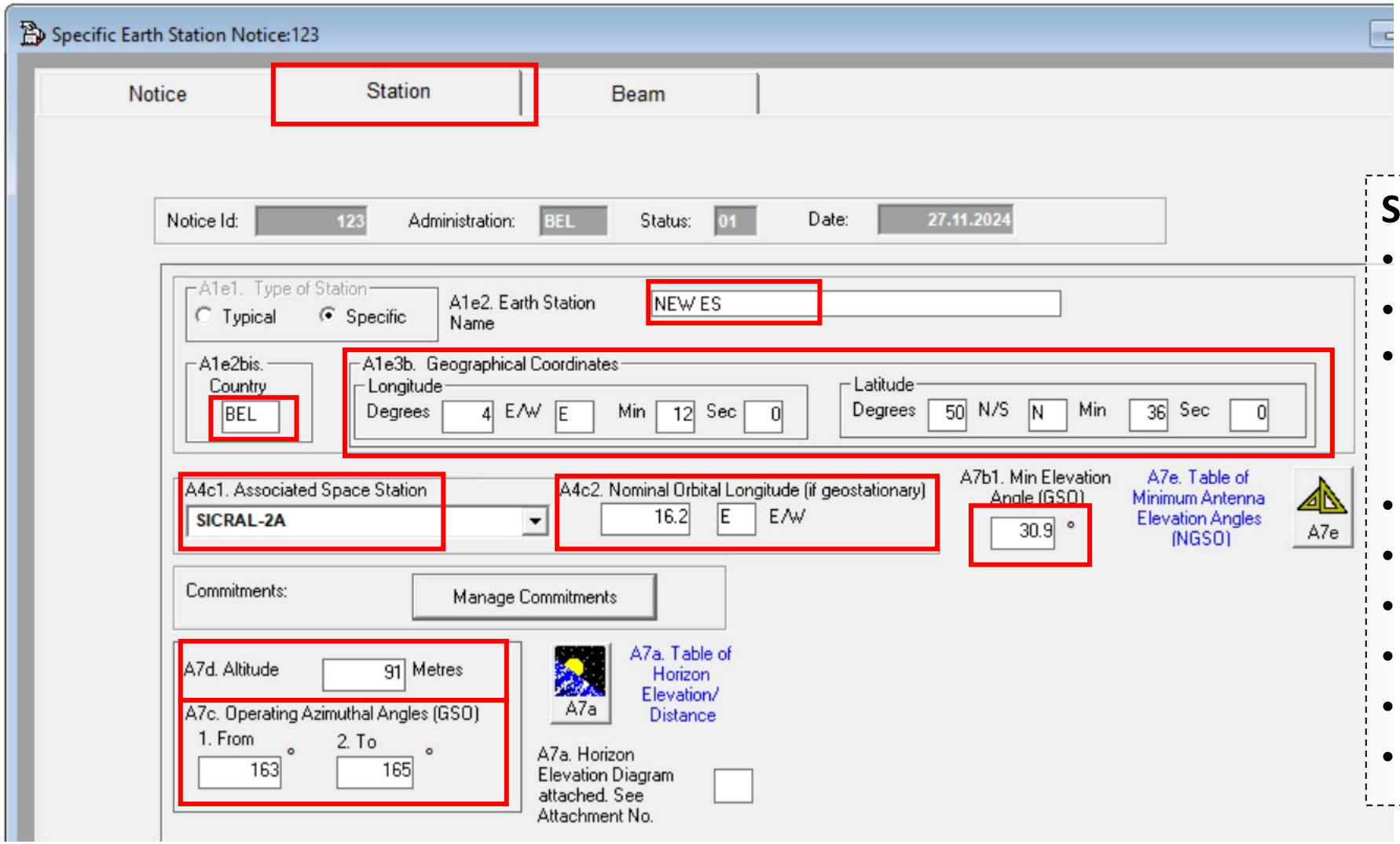
Notice Level

- Notice submitted under: Earth Station Coordination between Administrations under No. 9.17
- A1f1 Notifying Administration BEL
- Types of Earth Station

  Specific Earth Station

3. Capture Station-level Data

- Go to **Station** tab.
- Fill in indicated fields as below:

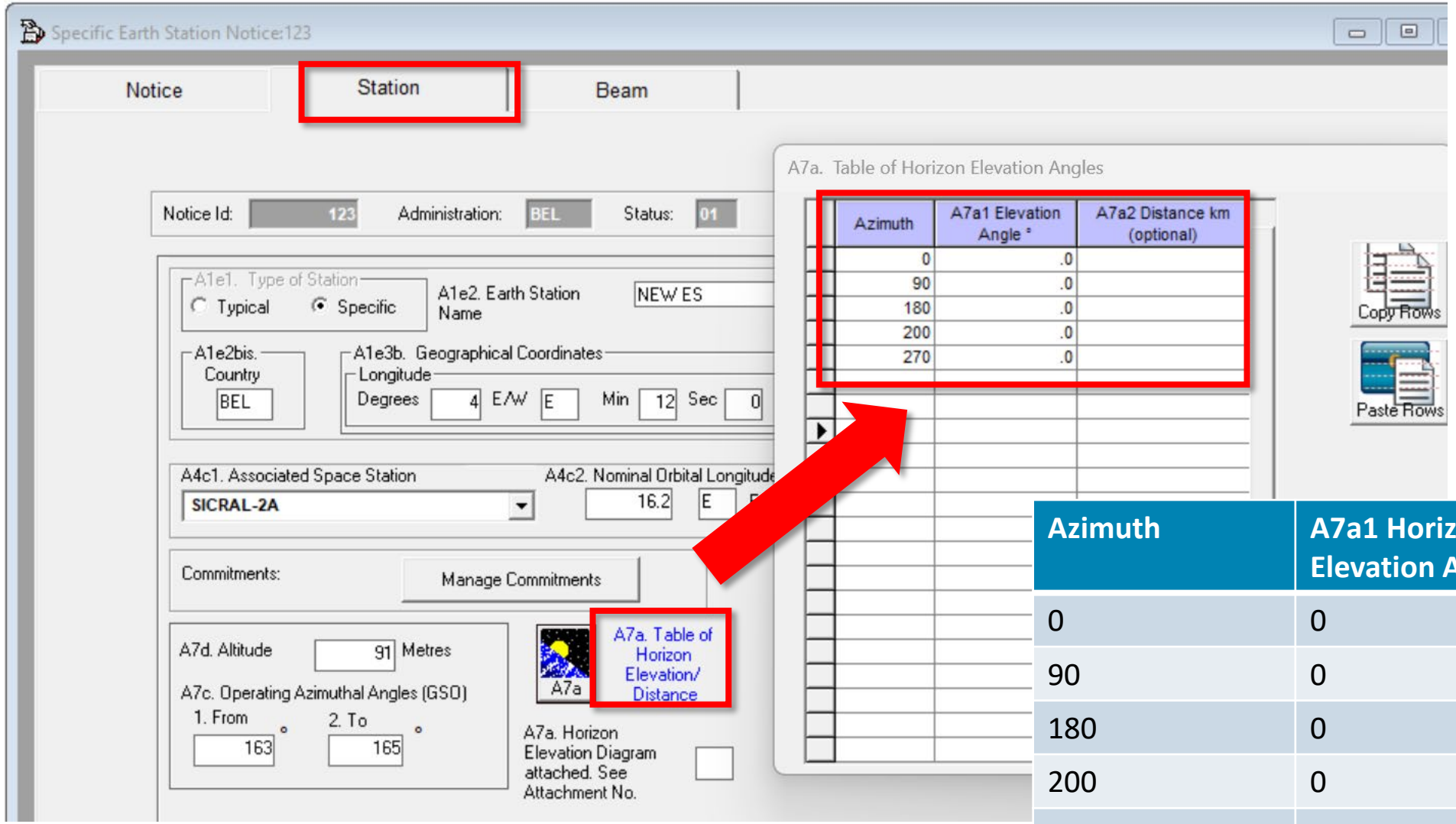


Station Level

- A1e2 Station name NEW ES
- A1e2bis Country BEL
- A1e3b Geo. coord.
  - Longitude: 4 E 12 0
  - Latitude: 50 N 36 0
- A4c1 Assoc. S/S SICRAL-2A
- A4c2 Orbital longitude 16.2 E
- A7b1 Min. elev. Angle 30.9
- A7d Altitude 91
- A7c1 Start azimuth 163
- A7c2 End azimuth 165

4. Horizon Elevation Data

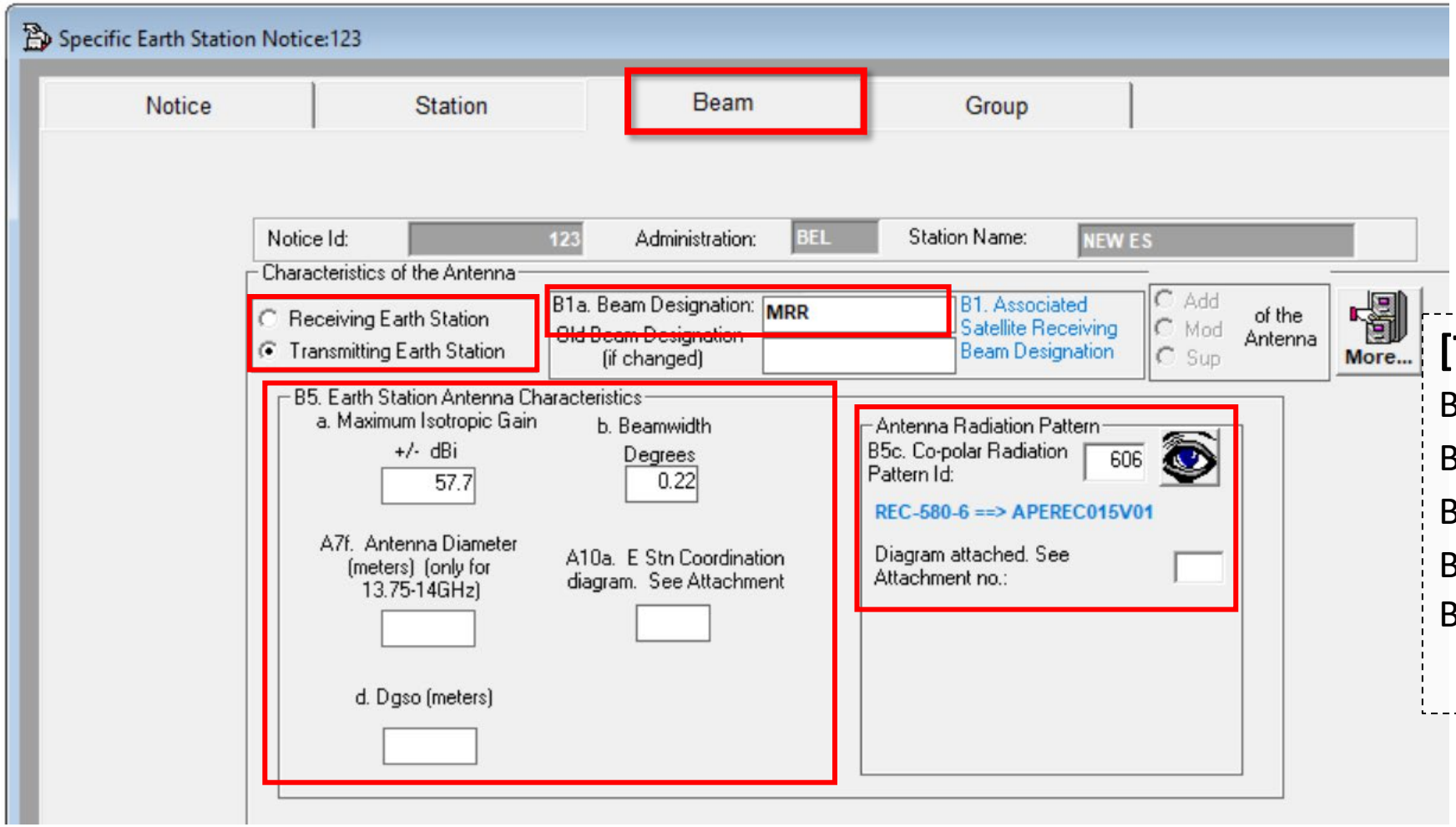
Click on A7a button to fill in data of Horizon Elevation Angles in the table



Azimuth	A7a1 Horizon Elevation Angle
0	0
90	0
180	0
200	0
270	0

5. Beam-level Data

- Go to **Beam** tab.
- Capture the data of **transmitting beam**



[Transmitting beam]

B1a Beam designation **MRR**

B2 Emi-Rcp **E (Transmitting)**

B5a Isotropic gain **57.7**

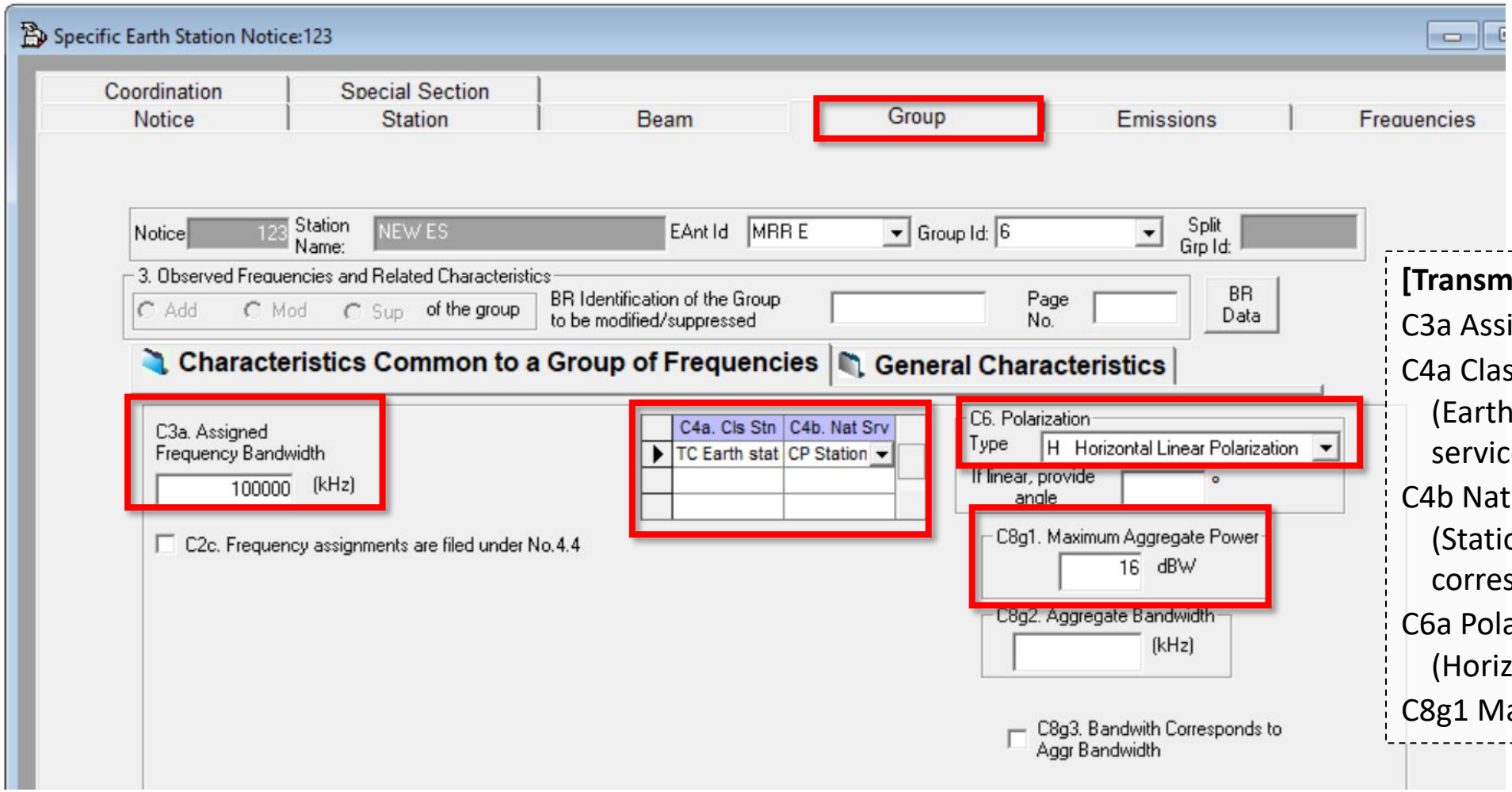
B5b Beamwidth **0.22**

B5c Co-polar antenna patterned:

606 (APEREC015V01)

6. Group-level Data

- Go to **Group** tab
- Capture the data of **transmitting beam**



[Transmitting Beam]

C3a Assigned freq. band **10000** kHz

C4a Class of station **TC**
(Earth station in the fixed-satellite service)

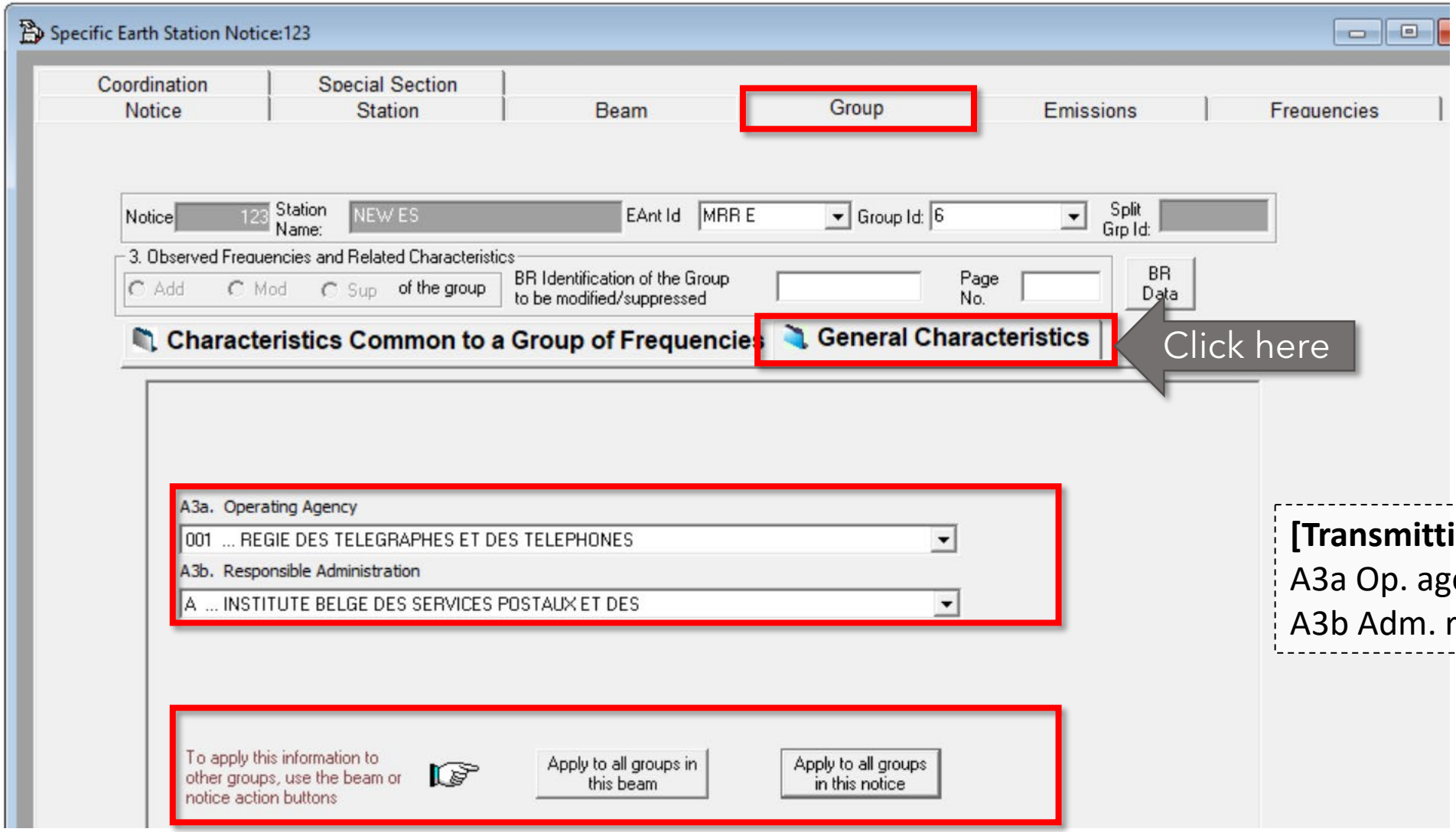
C4b Nature of service **CP**
(Station open to public correspondence)

C6a Polarization type **H**
(Horizontal Linear Polarization)

C8g1 Max. Aggregate Power **16** dbW

7. Operating Agency

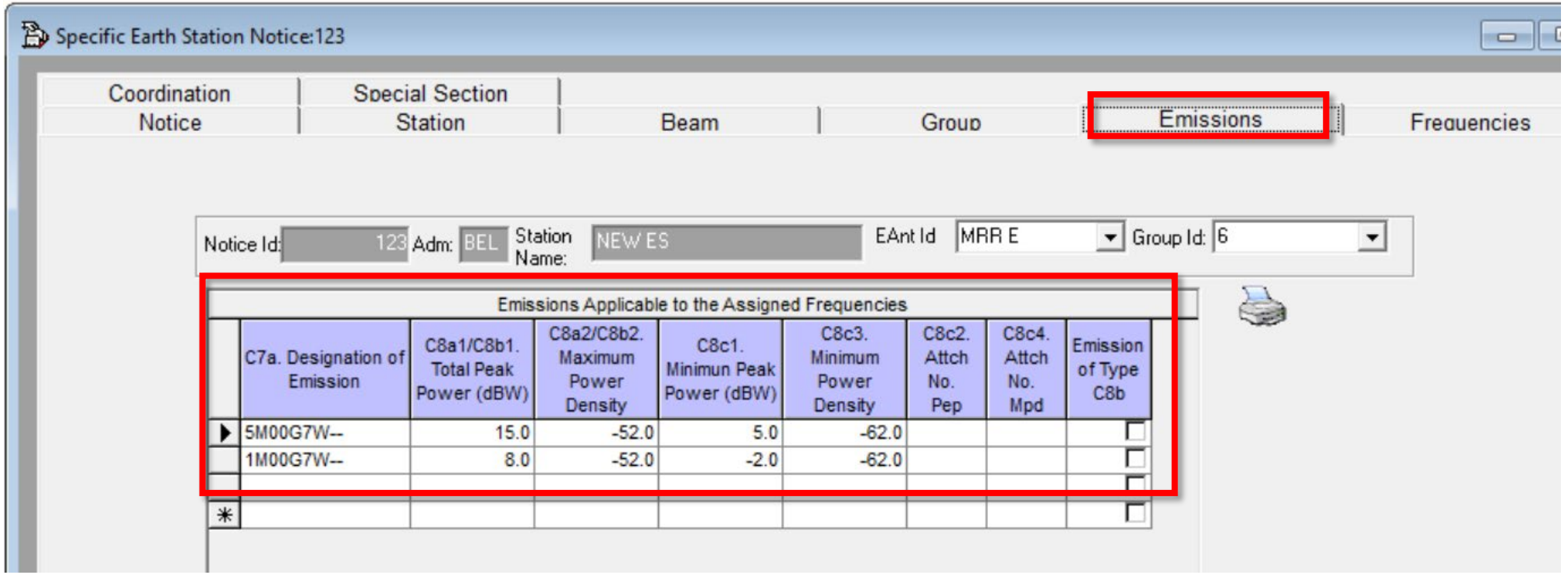
- Go to **General Characteristics** tab.
- Capture A3a (Operating Agency) and A3b (Responsible Administration).



[Transmitting Beam]
A3a Op. agency **001**
A3b Adm. resp. **A**

8. Emissions

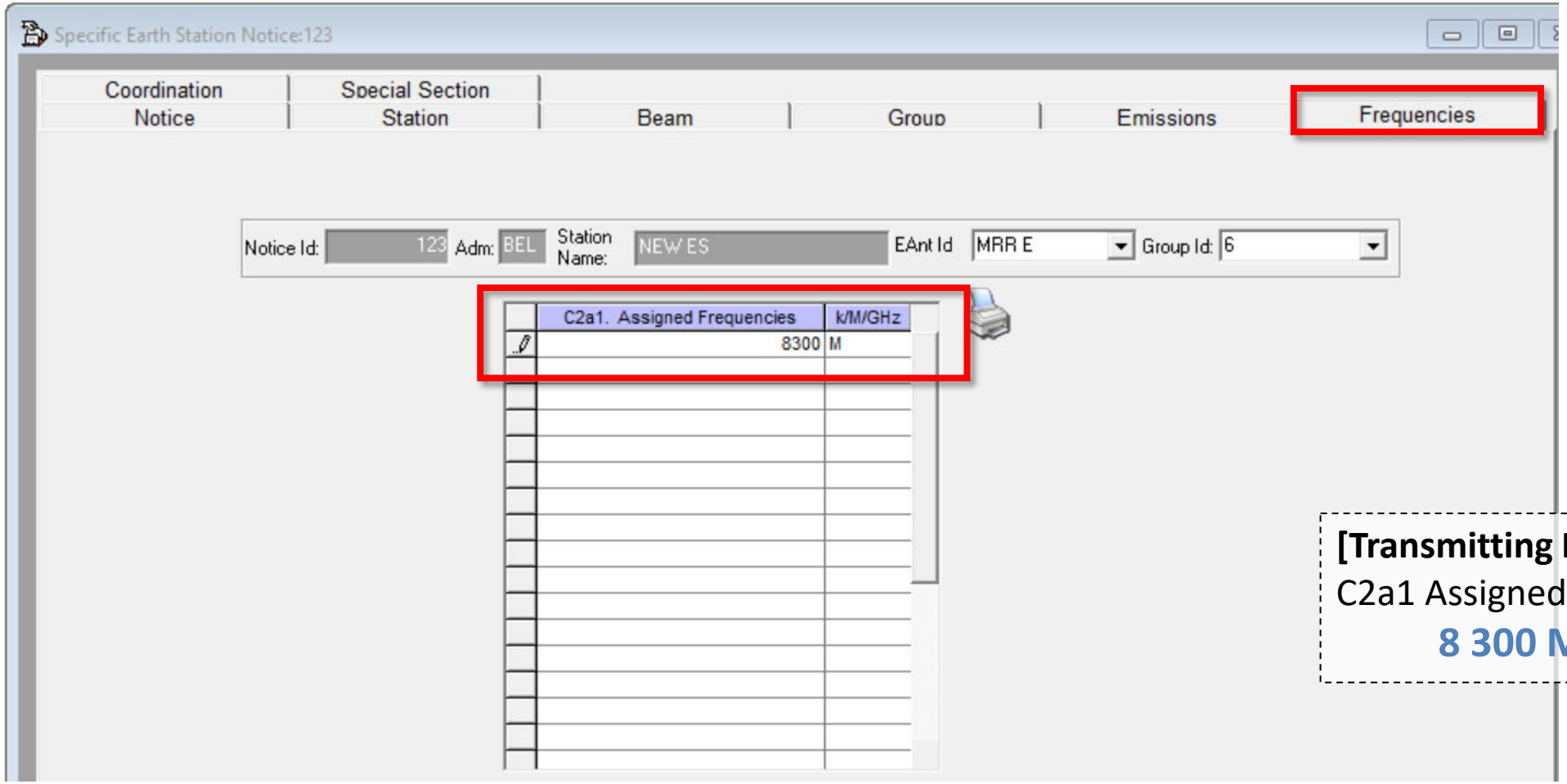
- Go to **Emissions** tab
- Capture the emission data



C7a Design. of emission	C8a1/C8b1 Total Peak Power (dBW)	C8a2/C8b2 Maximum Power Density (dbW/Hz)	C8c1 Minimum Peak Power (dBW)	C8C3 Minimum Power Density (dBW)
5M00G7W--	15.0	-52.0	5.0	-62.0
1M00G7W--	8.0	-52.0	-2.0	-62.0

9. Frequencies

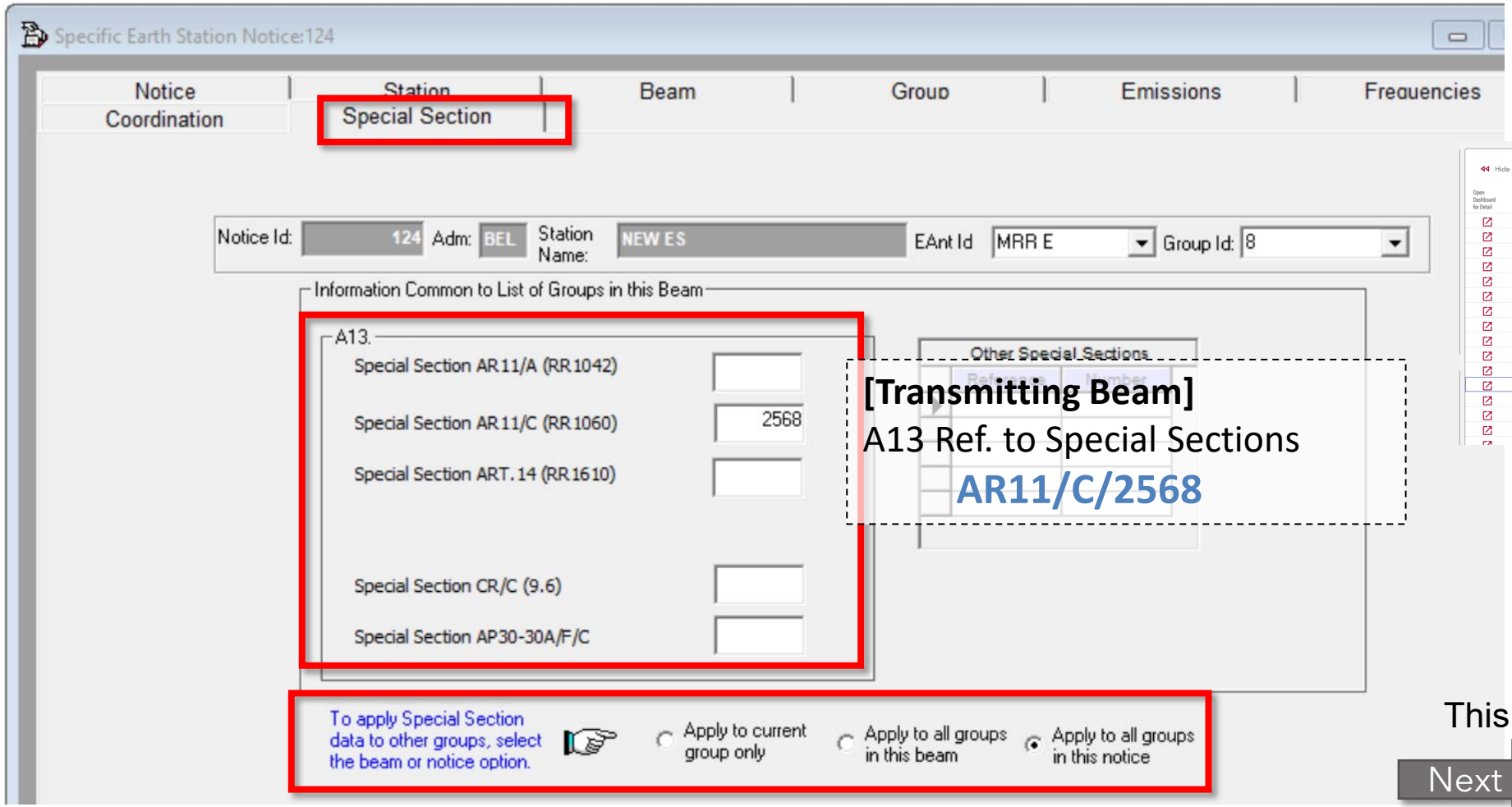
- Go to **Frequencies** tab
- Capture indicated fields under Frequencies tab



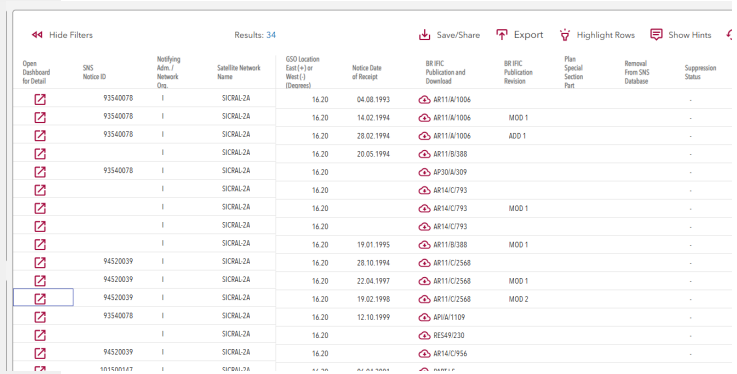
[Transmitting Beam]
C2a1 Assigned frequency
8 300 MHz

10. Special Sections

- Go to **Special Section** tab
- Fill in the special section number of the coordination request of the associated space station.
- Apply as appropriate to this group/Beam or full notice



[Transmitting Beam]
A13 Ref. to Special Sections
AR11/C/2568

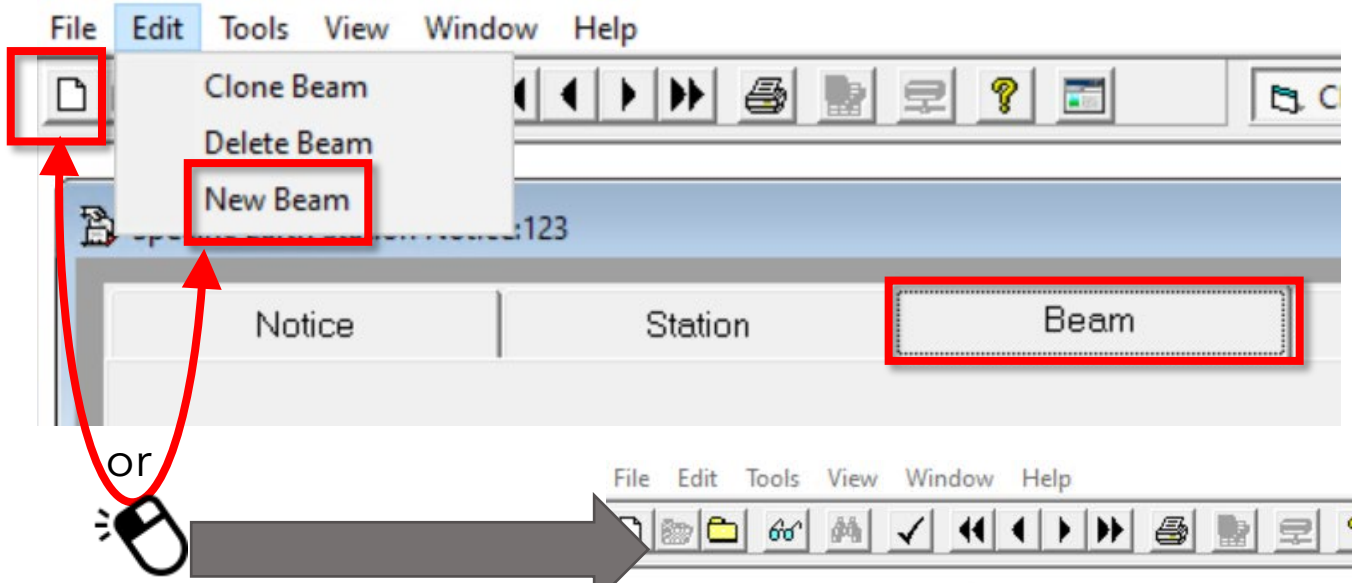


Special Section Number of the associated space station can be found at ITU Space Explorer.

This ends capturing a transmitting beam.

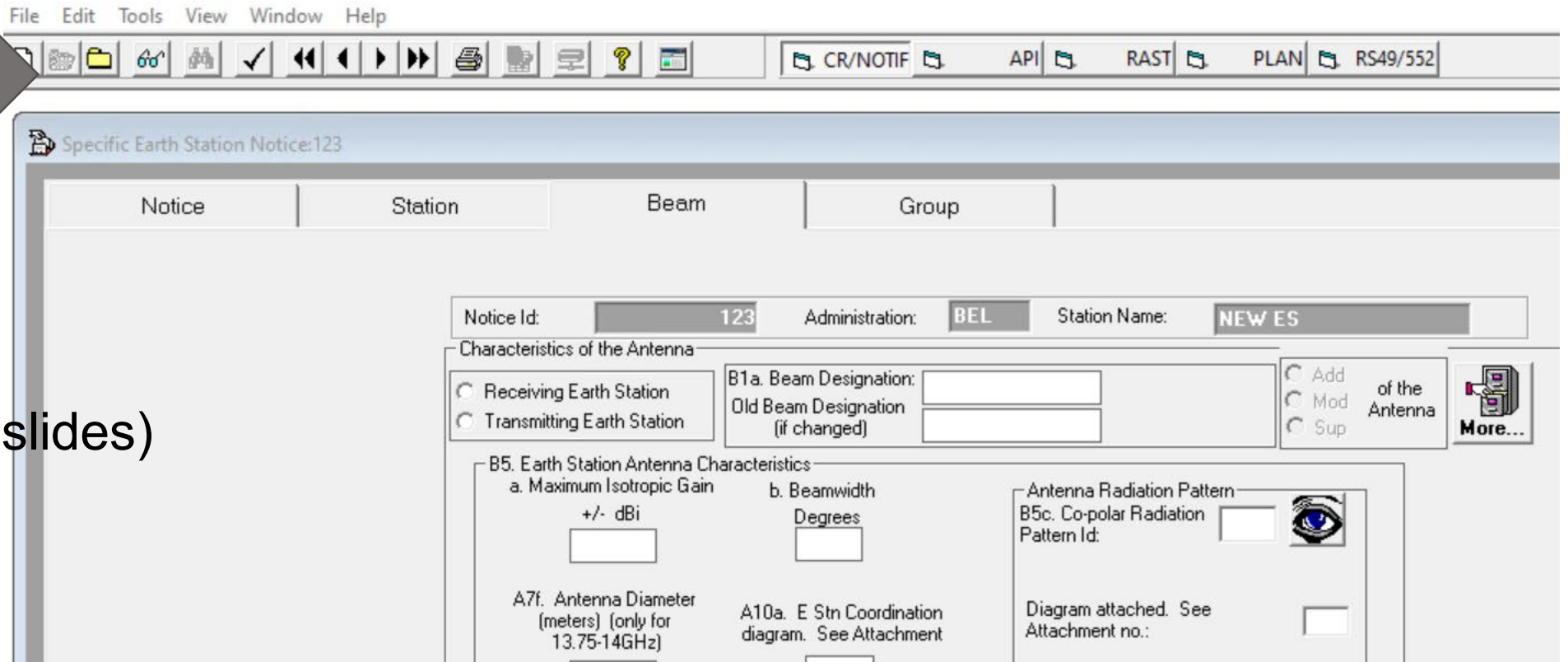
Next Capturing a **receiving beam**.

11. Create a receiving beam



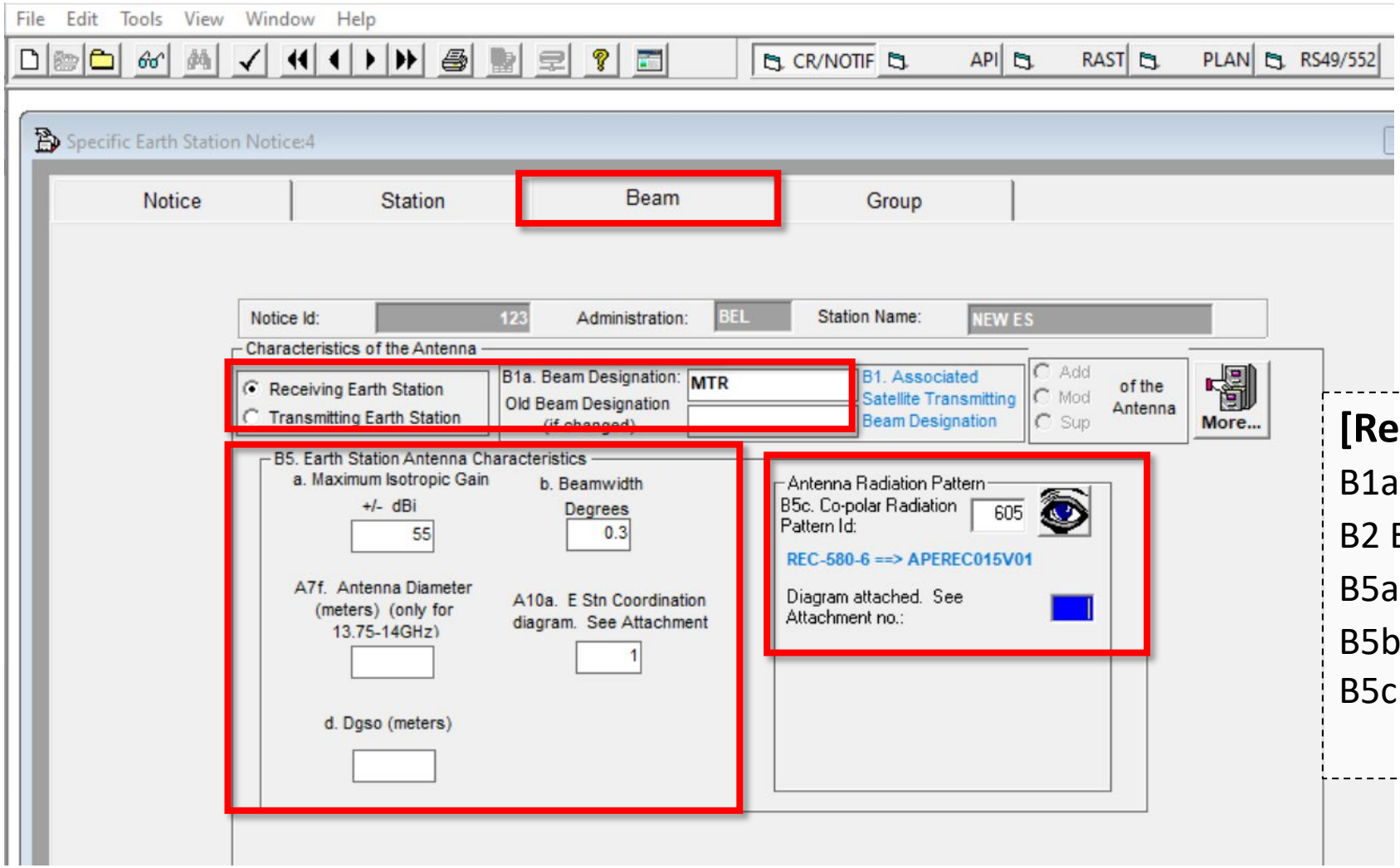
- Go to **Beam** tab.
- Click on “New Beam” or the icon to create a new beam

New beam is added.
(Captur data in next slides)



12. Beam-level Data

Capture the data of **receiving beam**



[Receiving beam]

B1a Beam designation MTR

B2 Emi-Rcp R (Receiving)

B5a Isotropic gain 55

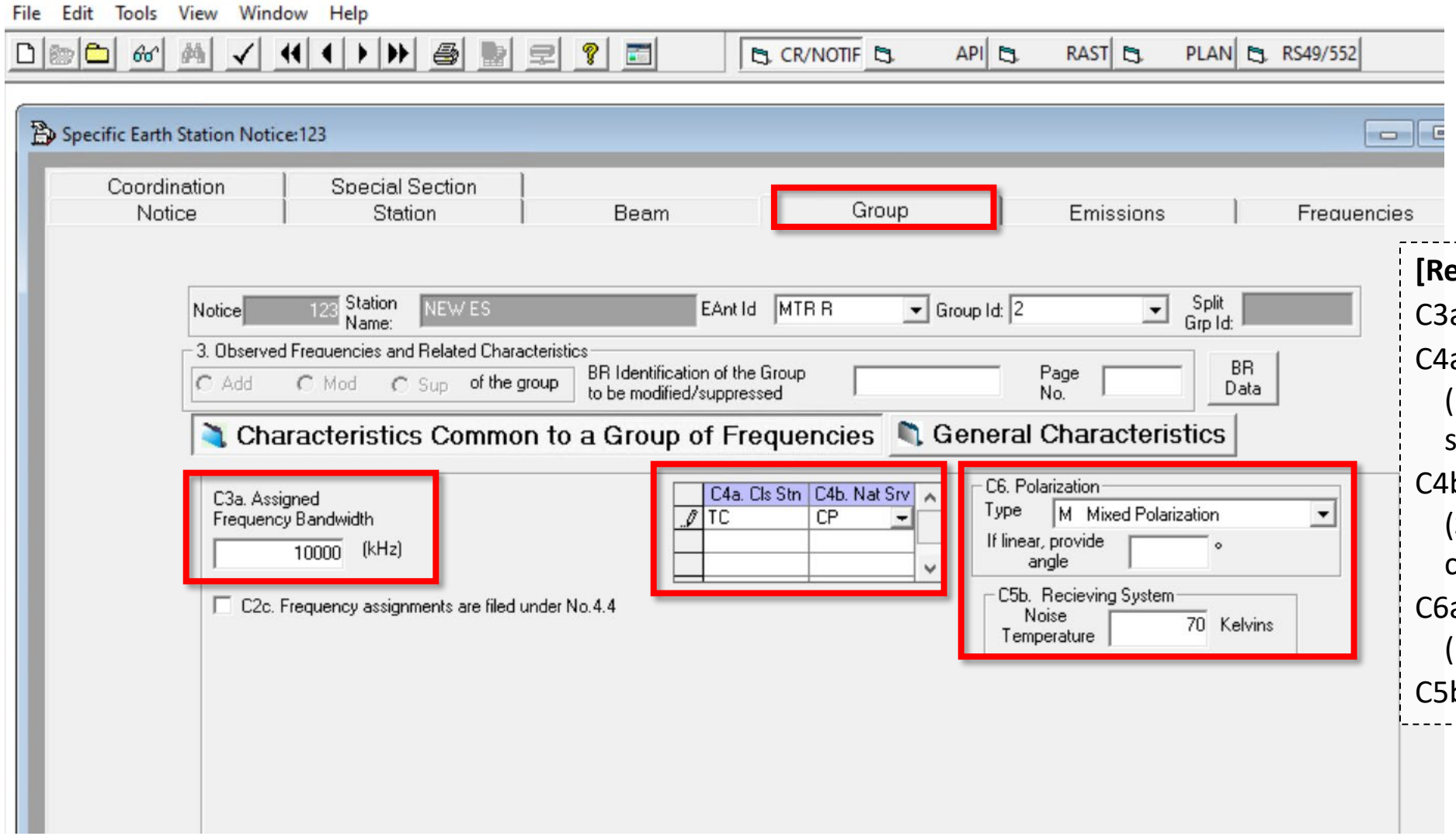
B5b Beamwidth 0.3

B5c Co-polar antenna patterned:

605 (APEREC015V01)

13. Group-level Data

- Go to **Group** tab
- Capture the data of **receiving beam**



[Receiving Beam]

C3a Assigned freq. band 10000 kHz

C4a Class of station **TC**
(Earth station in the fixed-satellite service)

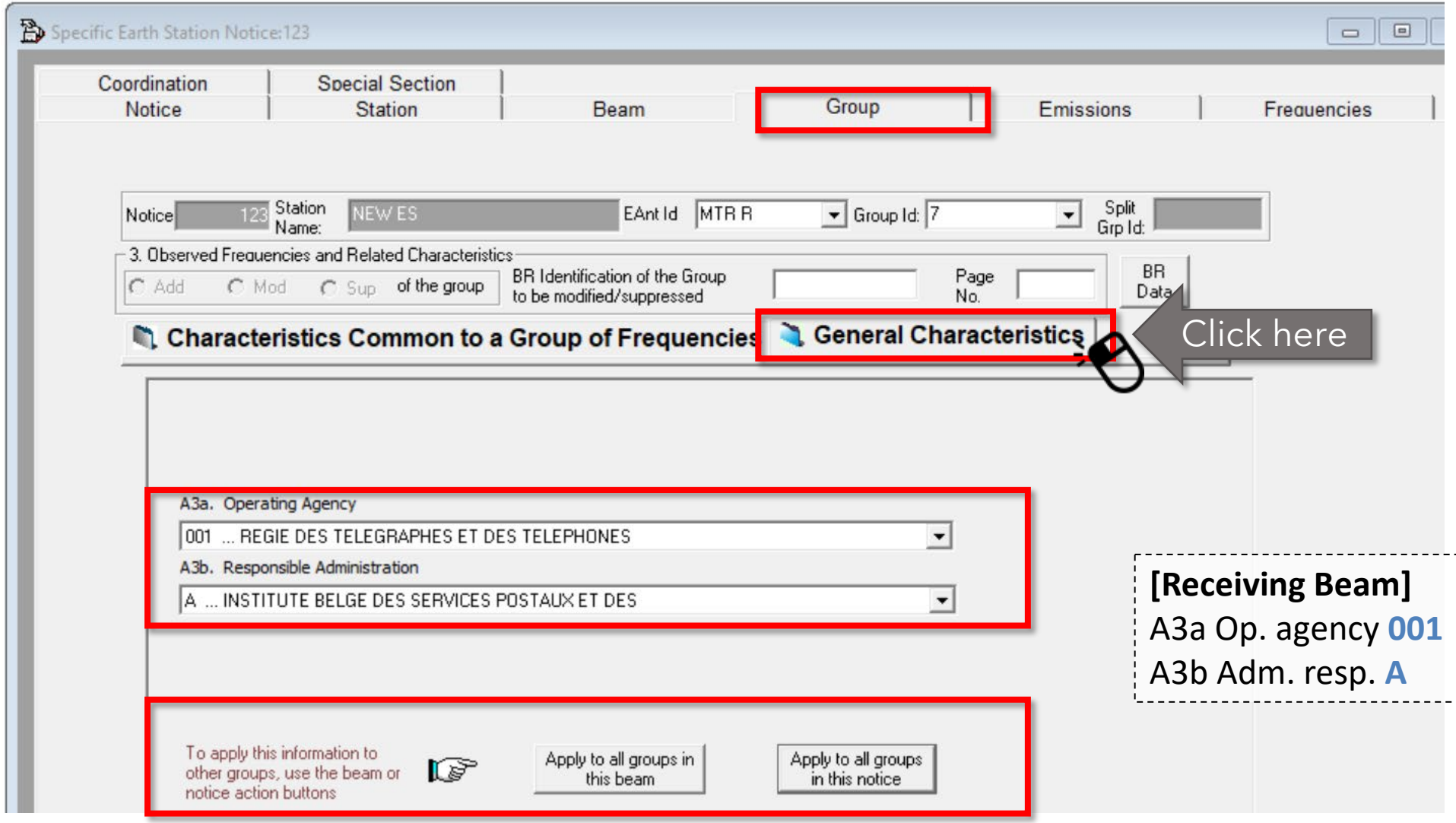
C4b Nature of service **CP**
(Station open to public correspondence)

C6a Polarization type **M**
(Mixed Polarization)

C5b Noise Temperature **70** Kelvins

14. Operating Agency

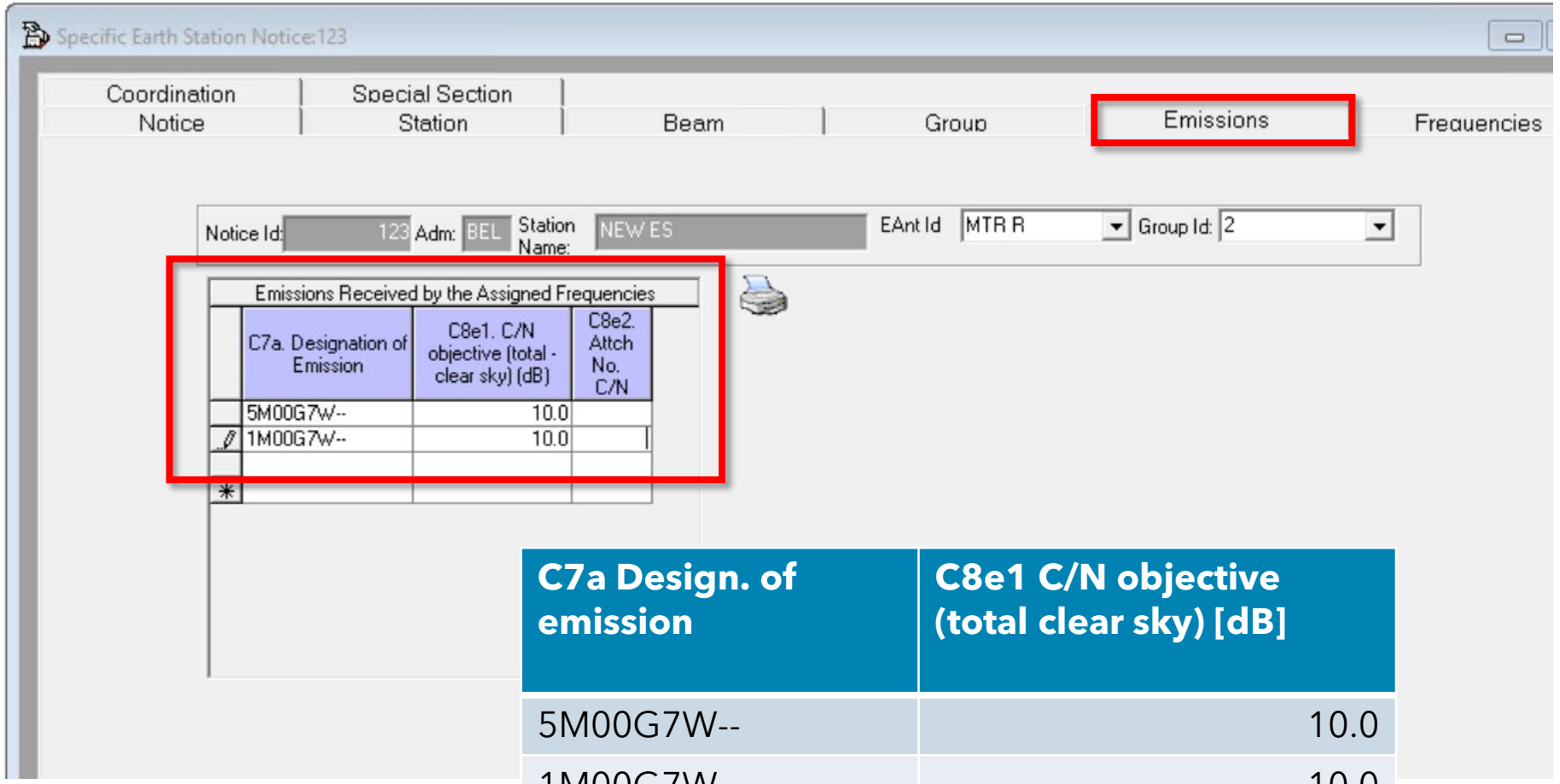
- Go to **General Characteristics** tab.
- Capture A3a (Operating Agency) and A3b (Responsible Administration).



[Receiving Beam]
A3a Op. agency **001**
A3b Adm. resp. **A**

15. Emissions

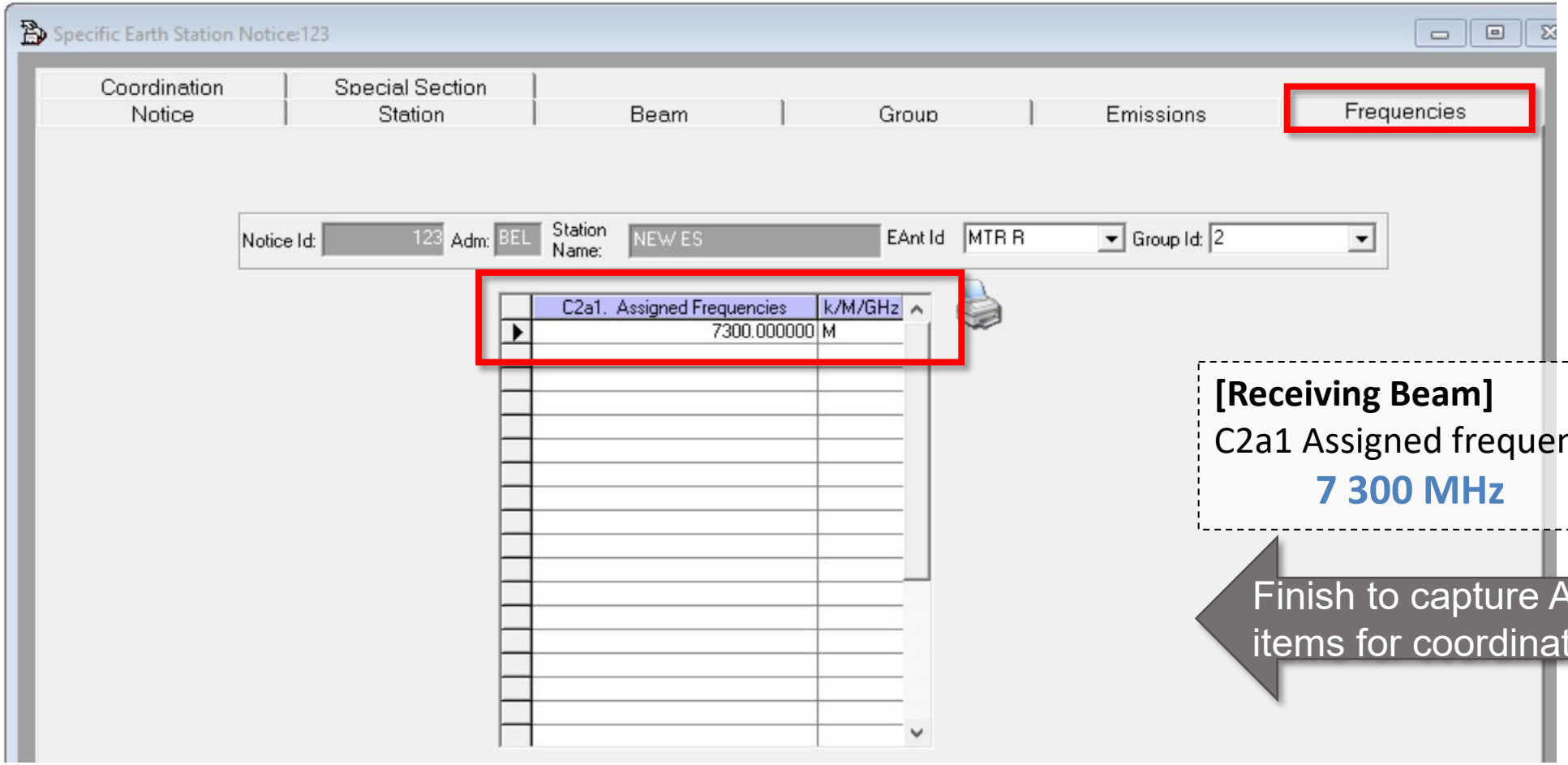
- Go to **Emissions** tab
- Capture the emission data



C7a Design. of emission	C8e1 C/N objective (total clear sky) [dB]
5M00G7W--	10.0
1M00G7W--	10.0

16. Frequencies

- Go to **Frequencies tab**
- Capture frequency data of receiving beam



[Receiving Beam]
C2a1 Assigned frequency
7 300 MHz

Finish to capture AP4 data items for coordination request

The created file of Coordination Request is stored at C:\Users\(username) \ITU\BR_SPACE_v10.0.

How we proceed…..

- Introduction to Earth Stations Filing Process
- **Data Capturing Exercise**
  - **Coordination Request of Earth Station**
- Coordination Contour Creation Exercise
- Submission of Notification to the Bureau