

29TH WORLD RADIOCOMMUNICATION SEMINAR

30 November - 11 December 2020

Exercise on Coordination and Notification of Earth Stations

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www.itu.int/go/wrs-20

#ITUWRS



In this workshop...

- Introduction

- Capturing an E/S
 Creating Coordination contours
 Submission of E/S for Notification Submission of E/S for Notification

BR software used

- SpaceCapSpaceValIDWMGIBC AP7 SpaceCap

- GIBC AP7





Coordination Data Capture- Exercise



Exercise: Capture an E/S Coordination Request





Two-step Process





Coordination

Submission of Appendix 4 data to the affected ADM's



Notification

Submission of Appendix 4 data to BR





Coordination of Earth Stations



9.6 Administrations shall effect coordination before notifying to the BR or brings into use any frequency assignment

- 9.15 Coordination of a Specific or Typical Earth Station of non-GSO in respect of Terrestrial Stations (associated with Footnote 9.11A)
- <u>9.17</u> 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
- <u>9.17A</u> Coordination of any **Specific Earth Station** in respect of other Earth Stations operating in the **opposite direction** of transmission (**ODT**), or any **Typical Mobile** Earth Station in respect of **Specific Earth Station** (**ODT**)
- <u>9.21</u> Specific Earth Station of a service required to seek agreement of other administrations (under Footnotes)





Coordination of Earth Stations



- No. 9.29: Requests for coordination under 9.15 to 9.19 shall be sent by the requesting administration to the identified administrations, together with the appropriate information listed in Appendix 4 to the RR
- SpaceCap software can be used for the capture of information required for coordination requests with the affected Administrations and the resulting file can be sent to these affected Administrations
- When coordination is completed, the same file can be converted to a notification notice to be submitted to the Bureau including obtained coordination agreements



Notification of an Earth station



- Any frequency assignment to a transmitting station and to its associated receiving stations shall be notified to the Bureau if (No. 11.2)
 - Assignment is capable of causing harmful interference; or
 - Assignment is used for international radiocommunication; or
 - Assignment is subject to a world or regional frequency allotment or assignment plan which does not have its own notification procedure; or
 - if that assignment is subject to the coordination procedure of Article 9; or
 - It is desired to obtain international recognition; or
 - Non-conforming assignment seeking to be recorded for information purposes only
- Similar requirements for receiving earth station (No. 11.9)





Overview

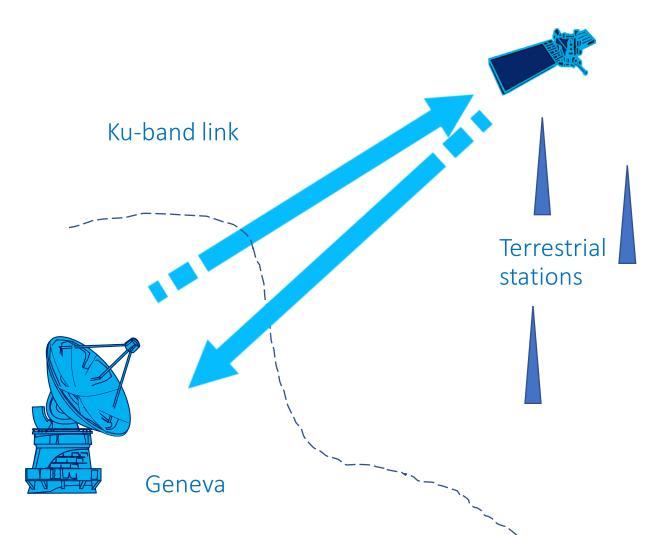


- We will be creating a new notice with sufficient data to be used for
 - Capture and analyze the coordination filing and
 - Effect the coordination process
- Capturing of:
 - Notice level data
 - Station level data
 - Beam level data
 - Group level data





EUTELSAT 3-33E



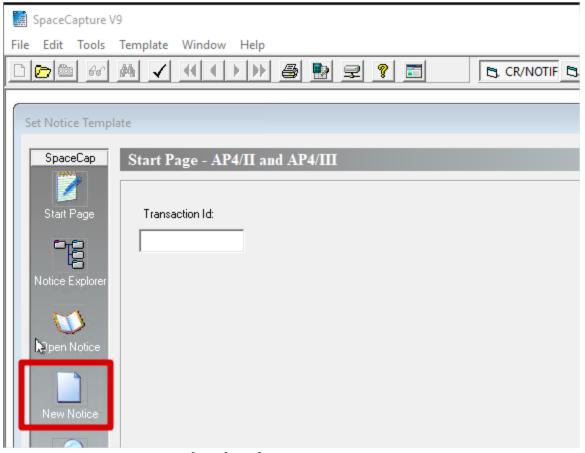
Earth Station





Create a New Notice





Launch SpaceCap and click on New Notice





Specify Notice Type



| SpaceCapture V9 | |
|-------------------|---|
| File Edit Tools V | iew Window Help |
| | API B RAST B PLAN B |
| Specific Earth St | ation Notice:1 Station Beam Attachments |
| | Notice Id: 1 AP4/II and AP4/III (Appendix 4 - Annex 2A) 12,11,2020 Status 01 |
| | |
| | Notice submitted under/for: |
| | C No. 9.6 Coordination C No. 11.2 Notification C First Notification C Resubmission |
| | □ No. 9,11A Applies □ Bands 21.4 to 22 GHz Special Procedure |
| | C Specific Earth Station Coordination under No. 9.7A C Earth Station Coordination under No. 9.21 |
| | © Earth Station Coordination between Administrations under No. 9.17 |
| | Date: DD.MM.YY 12.11.2020 Administration Serial Nbr A1f1.Notifying Administration A1f2. Notice submitted on behalf of these administrations. A1f3. Intergovernmental Satellite System Notice intended for Addition Modification Suppression BR Identification No. of Station to be modified/suppressed |
| | Type of Satellite Network or Earth Station GeoStationary Satellite Network Specific Earth Station |
| | C NonGeoStationary Satellite Network C Typical Earth Station |

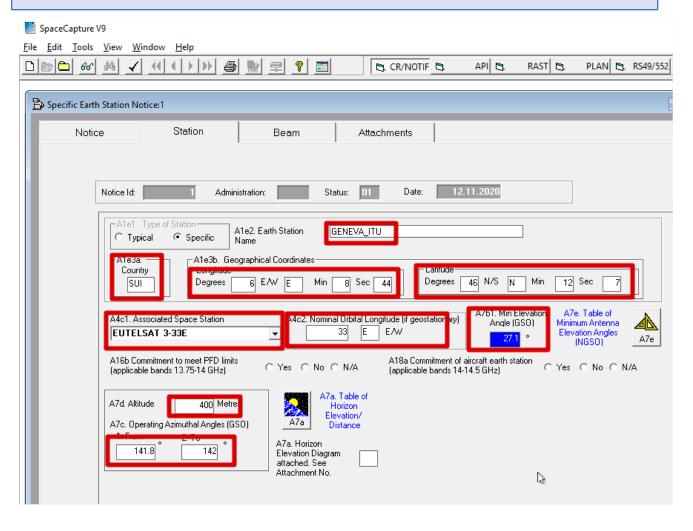


• Select No. 9.17 and Specific Earth Station



Enter Station-level Data





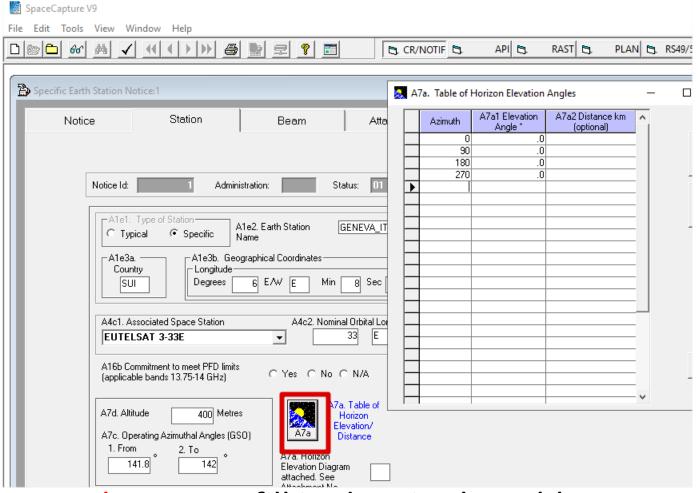


Fill in indicated fields



A7a - Horizon Elevation Data





Click on A7a button to fill in data in the table





Beam-level Data



| <u>File Edit Tools View V</u> | <u>W</u> indow <u>H</u> elp | | | | | |
|-------------------------------|---|---|--|--|------------------------|------------|
| | / (())) | P 7 E | ts. CR/NOTIF ts. | API 🖰, | RAST ኳ. | PLAN |
| Specific Earth Station Notice | | Beam Administration: B1a. Beam Designation: Old Beam Designation (if changed) haracteristics h. Reamwidth | Group Station Name: B1. Asso Satellite | GENEVA_I Deciated Receiving esignation | TU Add of the Antenna | PLAN More. |
| | A7f. Antenna Diameter (meters) (only for 13.75-14GHz) d. Dgso (meters) | Degrees 0.4 A10a. E Stn Coordination diagram. See Attachment | Pattern Id: | => APEN51806V | | |



Capture shown beam data



Group-level Data



| File Edit Tools View Wir | dow Help | | | | | | |
|----------------------------|---|--|---------------------------------|-----------------------|-------------------------------------|------------------|------------|
| | (() b) @ <u>P</u> 🗐 | ? ■ | CR/NOTIF | 3. API 5. | RAST ኳ | PLAN 🛤 | . RS49/552 |
| | | | | | | | |
| Specific Earth Station Not | ice:1 | | | | | | |
| Coordination Notice | Special Section Attach Station Be | | Group | Emissions | Fre | auencies | 1 |
| Notice | 1 Station GENEVA_ITU Name: | EAnt le | d BSRE | Group Id: 1 | • | Split Grp Id: | |
| - 3. Observ | ed Frequencies and Related Characteris | | _ | | _ | — BR | 1 |
| C Add | C Mod C Sup of the group | BR Identification of the to be modified/suppre | | | Page No. | Data | |
| Ch | aracteristics Common to | a Group of Fr | equencies | Ceneral General | Character | ristics | |
| C3a. Assi Frequenc | gned y Bandwidth 20000 (kHz) | C4a. C | Is Stn C4b. Nat S CP Station | or Type If linear, | L Linear Polar , provide ngle | ization 3.5 ° | ▼ |
| □ C2c. I | Frequency assignments are filed under N |).4.4 | | C8g | 1. Maximum Aggre | - | [3 |
| | | | | | 2. Aggregate Ban 20000 (k | | |
| | | | | | C8g3. Bandwith Aggr Bandwidth | Corresponds to | |



Capture indicated fields



Operating Agency



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| | | | | | | | | |
| B Specific | Earth Station N | otice:1 | | | | | | |
| | ordination Notice | Special Section Station | Attachments Beam | Group | Emissio | ons | Freauencies | 1 |
| | Notice | Name: | EVA_ITU | EAnt Id BSR E | ▼ Group Id | <u>:</u> 1 | Split Grp Id: | |
| | C Add | rved Frequencies and Relate | of the group BR Identific | cation of the Group ied/suppressed | | Page No. | B Da | |
| | O C | haracteristics Co | mmon to a Group | o of Frequencies | Gene | ral Chara | cteristics | |
| | | | | | | | | |
| | | Ba. Operating Administration | n or Agency ECHNIQUE FEDERALE DE | LAUSANNE | | <u> </u> | B | |
| | - | ob. Responsible Administrati FEDERAL OFFICE OF C | | | | | | |
| | ol | o apply this information to ther groups, select the eam or notice option. | Apply to group of | ocurrent Apply to all g only in this beam | roups C Apply in this | to all groups notice | | |

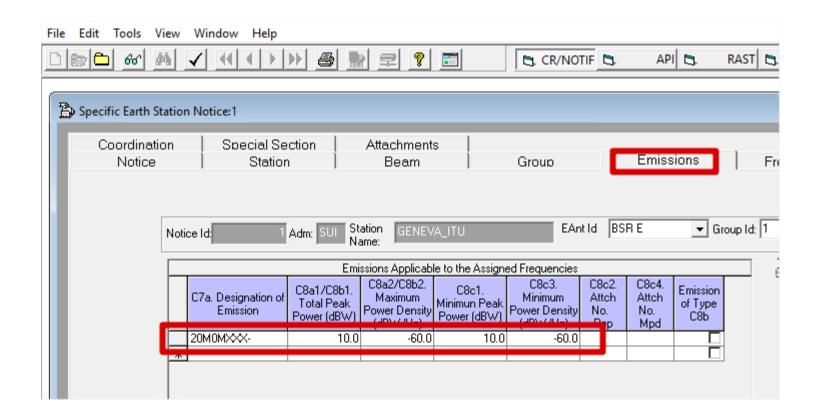
A3a and A3b are Notifying ADM specific entries





Emissions

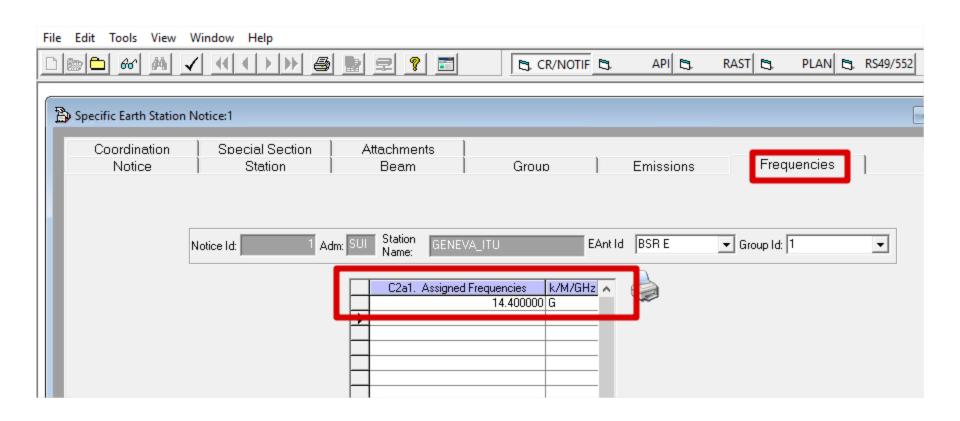








Frequencies

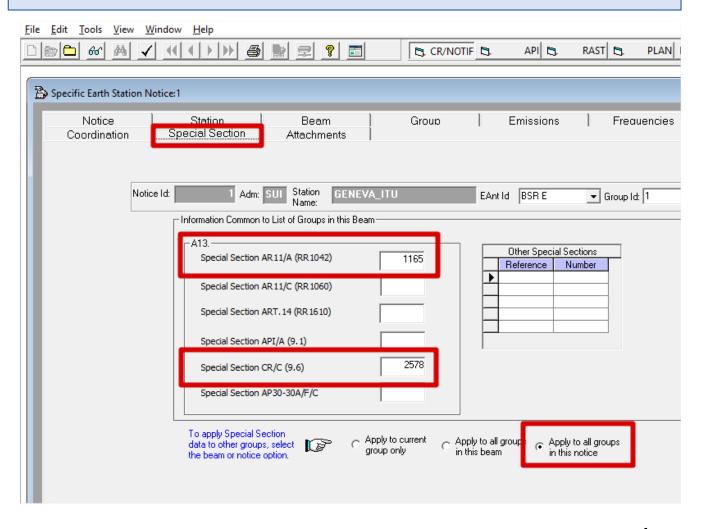






Special Sections







Apply as appropriate to this group/Beam or full notice



Creating Coordination Contours

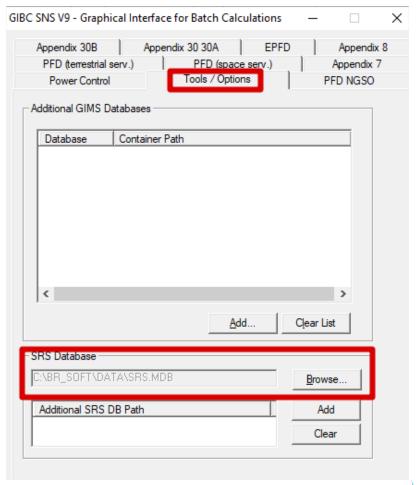




Generate coordination area diagrams with AP7 software



- Start GIBC from SAM
- Make sure that IDWM is installed
- Choose the correct location of your file







GIBC: Switch to Appendix 7



| BC SNS V9 - Graphical Interfa | ce for Batch Calculation | ons – | . 🗆 | > |
|--|--|-----------|----------------------------------|---|
| Appendix 30B App Power Control PFD (terrestrial serv.) | endix 30 30A Tools / Options PFD (space serv | EPFD | Appendia PFD NGSO Appendix | |
| Network ID: 1 | J <u> </u> | Calculate | Report | |
| ✓ Warning ✓ Error ✓ Pro | ogress 13 | | lodule | |
| | | | | |
| | | | | |
| < | | | > | |
| Calculation Output | | | > | |
| , - | | | > | |
| Calculation Output | | | > | |
| Calculation Output Aux Contours | | | > | |
| Calculation Output Aux Contours Out DB: | | | > | |
| Calculation Output Aux Contours Out DB: | (km) | | > | |



Important to use same Network ID as in captured notice



GIBC: Create Report



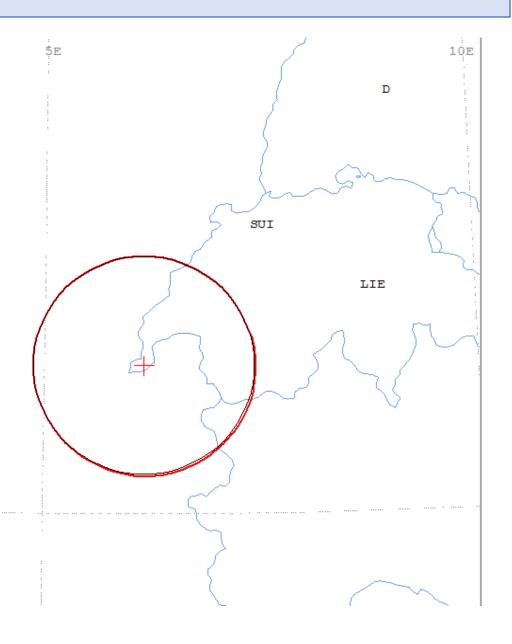
| Appendix 30B Appendix 30 30A EPFD | Appendix 8 |
|--|------------------------------|
| Power Control Tools / Options | PED NGSO |
| PFD (terrestrial serv.) PFD (space serv.) | Appendix 7 |
| V Warning | Report |
| Message | Module ^ |
| Calling batch pilot at 13:59:27 | GIBC |
| Formatting data for calculation: ntc_id = 1 Loading data from SNS for ntc_id = 1 | Progress inc Progress inc |
| Reading RefDb and defining diagrams for ntc_id = 1 | Progress inc |
| DIAGRAM 1: 2.1_TABLE7. TRANSMITTING GSO ES IN FI | |
| 1 diagram(s) generated for ntc_id = 1 Validating data for calculation and storage for ntc_id = 1 | Progress inc |
| < | > |
| Calculation Output | |
| Aux Contours | |
| Aux Contours | |
| Out DB: C:\Users\faloudin\ITU\BR_SPACE_v9.0\TEX_RES | SULTS\APP7\ > |
| RTF Report Generation | |
| C:\Users\faloudin\ITU\BR_SPACE_v9.0\TEX_RESULTS\AI | PP7\ |
| Print Auxiliary Scale (km) | |
| Version ———————————————————————————————————— | |
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Contours







45N



Affected Administrations



ANALYSIS DATE AND TIME: 2020-11-13 13:59:27 VERSION: 9.0.0.0Appendix 7/Plt-3.2.0.1/Frm-3.8.0.1/Clc-3.7.0.2/Frp-2.0.0.0/SNS-3.1.0.0/AP7F-3.1.0.0/Ref-3.8.0.0

Diagram 1: 2.1 TABLE7. TRANSMITTING GSO ES in FIXED-SATELLITE SERVICE W.R.T. RECEIVING TERRESTRIAL STATIONS. TS: fixed, mobile

ADM/GEO AREA: SUI/SUI RAIN CLIMATICAL ZONE: K SATELLITE NAME: EUTELSAT 3-33E SATELLITE ORBITAL POSITION: 33.00 DEG ANTENNA AZIMUTH: 144.95 DEG ANTENNA ELEVATION: 30.67 DEG FREQUENCY BAND: 14390.0000-14410.0000 MHZ ASSIGNED FREQUENCY: 14400.00 MHZ MAXIMUM ANTENNA GAIN: 52.50 DBI MAXIMUM POWER DENSITY: -60.00 DBW/HZ

EARTH STATION NAME:

ANTENNA PATTERN: APENST806V01 2.1 TABLE7 Model: PLM DUCTING

NOTICE ID:

PERCENTAGE OF TIME: 0.0050 % NOISE TEMPERATURE: - K

EARTH STATION POSITION: 006E084446N1207

156.0 DB (DOES NOT INCLUDE HOR, CORR, AND ANT, GAIN) TRANSMISSION LOSS MODE 1. TDANSMISSION LOSS MODE 2: 104.0 DB 35 AZIMUTH 1.0 20 25 3.0 40 4.5 50 55 60 65 70 80 85 100 105 110 134.8 131.2 127.4 123.5 119.5 115.4 111.3 107.1 102.8 98.5 94.3 90.0 85.7 81.4 77.1 72.8 68.6 64.5 60.4 56.4 52.5 48.7 45.2 OFF-AXIS HOD ELEV HOR.CORR. ANT GAIN -10.0 COORDINATION DISTANCE (KM) MODE 1 0.0 DB 98 98 98 98 98 MODE 2 0.0 DEG AZIMUTH 120 125 130 135 140 150 155 160 165 170 175 180 185 190 195 205 210 215 220 225 230 145 200 OFF-AXIS 33.8 32.1 36.1 38.8 41.9 52.6 56.5 HOR ELEV HOR.CORR. ANT.GAIN COORDINATION DISTANCE (KM) MODE 1 0.0 DB MODE 2 0.0 DEG 99 100 100 100 100 100 100 100 100 100 100 100 100 99 99 99 99 98 98 98 275 285 295 AZIMUTH 240 245 250 255 260 265 270 280 290 300 305 310 315 320 325 330 335 340 345 94.3 98.6 102.9 107.2 111.4 115.5 119.6 123.6 127.5 131.3 134.8 138.2 141.2 144.0 146.2 147.9 149.0 149.3 149.0 147.9 146.2 143.9 141.2 138.1 OFF-AXIS HOR ELEV HOR.CORR. ANT.GAIN -10.0 -COORDINATION DISTANCE (KM) MODE 1 o o db 98 98 9.8 98 9.8 MODE 2

PROBABLY AFFECTED COUNTRIES: F

98

98

0.0 DEG

Page 2/2



 This is the list of ADM to forward your coordination request



Contacting Affected Administrations



Cover Letter

- Email attachment containing:
 - ESName.mdb (the file we just captured)
 - Coordination contour diagrams generated using AP7 software
 - Any other attachments or notes in Word or PDF format





Notification of an Earth Station

- Any frequency assignment to a transmitting station and to its associated receiving stations shall be notified to the Bureau if (No. 11.2)
- Assignment is capable of causing harmful interference; or
- Assignment is used for international radiocommunication; or
- Assignment is subject to a world or regional frequency allotment or assignment plan which does not have its own notification procedure; or
- if that assignment is subject to the coordination procedure of Article 9; or
- It is desired to obtain international recognition; or
- Non-conforming assignment seeking to be recorded for information purposes only
- Similar requirements for receiving earth station (No. 11.9)





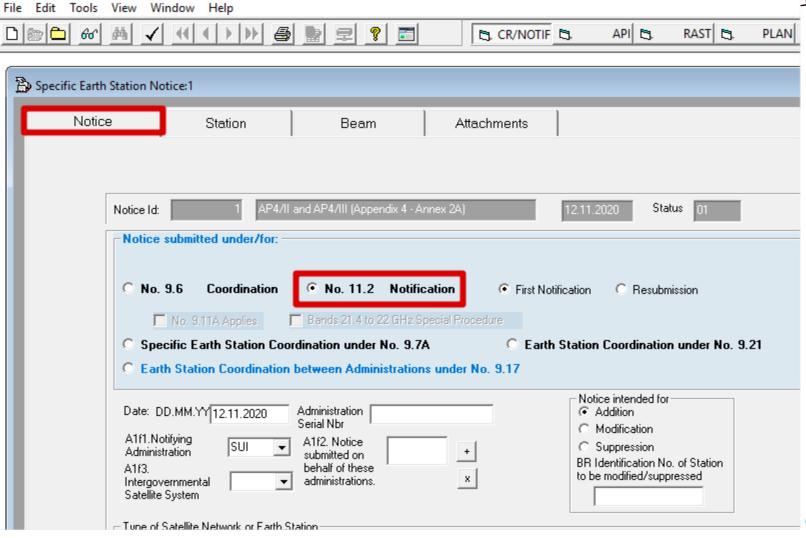
Exercise:

Capture an E/S notification request





Change Notice Type





Update Coordination Agreements



| <u>F</u> ile <u>E</u> dit <u>T</u> ool | s <u>V</u> iew | <u>W</u> indow <u>H</u> elp | p | | | | | | | | |
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| Specific Ea | rth Station | Notice:1 | | | | | | | | | |
| | tice ination | Stat | | | Beam Attachmen | ts | Grou | o | Emis | sions | F |
| | | ., | | | | | | | | | |
| | N-e tal | 4 4 1 | SI SI | ation 🕞 | ENEVA ITU | | | au Den | _ | ٦ | |
| | Notice Id: | Adn | | ame: | ENEVA_ITU | | | untld BSR | | ▼ Group Id | J: I |
| | | Provision | Status A | Adm/Org | Adm/Or | 5/A6. Coord Adm/Org | inated Obtain Adm/Org | ned or Agreer Adm/Org | ment Reques | ted Adm/Org | Adm/Or |
| | 9.17 | 1 TOVISION | Obtain F/ | | 1/ | Adilizoig | Admirolg | Adilizoig | Adilizoig | Adilizoig | Adilizon |
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| | 1 | | | | | | | | | | |
| | To apply other gro | coordination to oups, select the | (F | . o A | pply to curre | nt C App | oly to all group | рз 🕝 Ард | ly to all group | ps | |
| | beam or | notice option. | حي ال | g | roup only | in th | nis beam | in th | nis notice | | |
| | | | | | | | | | | | |
| | | | | | | | | | | 3 | |





Enter Date of Bringing into Use



| File Edit Tools View W | indow Help | | | | | | |
|---------------------------|---|----------------------------|---------------------------------------|-------------------------|--------------|------------------|----------|
| | <u> </u> | <u> </u> | ts, CR/NOT | TIF S. API S. | RAST 🐚. | PLAN [5]. | RS49/552 |
| Specific Earth Station No | otice:1 | | | | | | E |
| Coordination Notice | Special Section Station | Attachments Beam | Group | Emissions |) Frea | uencies | 1 |
| Notice | 1 Station GEN Name: | EVA_ITU | EAnt Id BSR E | Group Id: 1 | • | Split Grp Id: | |
| C Add | ved Frequencies and Relat | of the group BR Identifica | ation of the Group ed/suppressed | | Page No. | BR Data | |
| CI | haracteristics Co | mmon to a Group | of Frequenci | es 🌂 Genera | l Characteri | stics | |
| -Ad | 2a. Date Bringing into use 31.01.2021 | | | | | | |
| A3 | a. Operating Administration | n or Agency | | | | | |
| | | ECHNIQUE FEDERALE DE | LAUSANNE | • | | [2 | |
| | b. Responsible Administrati FEDERAL OFFICE OF C | | | - | | 140 | |
| To | a apply this information to her groups, select the am or notice option. | C Apply to | current Apply to a nly in this bea | all groups 🕝 Apply to a | | | |



Before submitting the notification



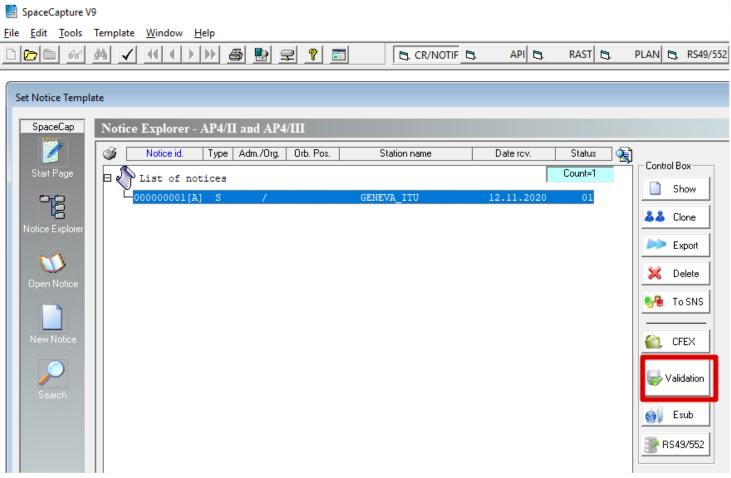
- Check the following:
 - Associated space station must be already notified
 - Provide the correct name used in BR databases
 - Check also the beam names/ if the frequency bands are covered by the bands used by the space station
- Use Spacecap to convert the notice from No. 9.17 to No. 11.2
- Use Spacecap to update the status of coordination of the earth station
- Run Spaceval to ensure that there are no fatal errors





Launch BRSIS Validation





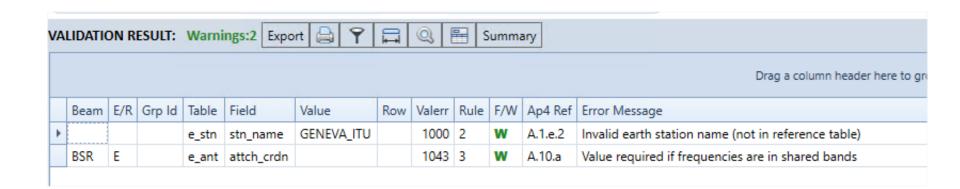


Mandatory prior to submitting to BR



Validation Results





No fatal errors





Common Errors



- Space station name, beam name, frequency band do not correspond to those of the Space Station
- Missing horizon elevation angle
- Missing minimum angle of elevation
- Missing coordination area diagram
- Missing antenna diameters when required
- Missing antenna radiation patterns
- Missing coordination agreements





Related Notification Publications



Part I-S

 When notice is found to be complete, it will be published in Part I-S, which will constitute the acknowledgement to the notifying administration of receipt of its notice (No.11.28).

Part II-S

 Assignments, after detailed technical and regulatory examination, that are found to be favourable will be published in a Part II-S and recorded in the MIFR.

Part III-S

 Assignments, after detailed technical and regulatory examination, that are found to be unfavourable will be published in a Part III-S.





Reasons for unfavorable findings Part III-S



| Notes t | for return i | of notices t | for earth | station |
|---------|--------------|--------------|------------|---------|
| NOLES | ioi ietuili | OI HOUGES | ioi eariii | Station |

| | Notes for return of notices for earth station | |
|--|--|------------------------------------|
| Provision | Examples of paragraphs | Resubmission Within 6 months |
| A N - X/9.17 X | With respect to the frequency assignment groups Nos. () of your earth station (), it is noted that the <u>coordination</u> procedure under No. 9.17 has not been shown as completed with the Administrations of () since the <u>coordination area of your earth station includes the territories of those Administrations</u> (see coordination contours attached). Thus, an unfavorable finding with respect to No. 11.32 has been reached and the notice in question is being returned to you in conformity with No. 11.37 . | |
| | Should the notice be resubmitted with the indication that coordination has been successfully completed with the Administration(s) mentioned above, a favorable finding might result. However, these being frequency assignments for reception, your Administration may be prepared to accept the interference resulting from existing and future terrestrial stations of the countries concerned. In this event, should your Administration resubmit the notice concerned and insist upon its reconsideration, the assignment will be recorded in the Master Register; symbol "H" will be inserted in Column 13B2 as well as AP5 PARA 6E(III) in the column reserved for coordination information. | Yes |
| A N - X/9.7 X No SS subject to coord.) | With regard to the frequency assignment groups Nos. () of your earth station (), it is noted that the corresponding frequency assignments of the associated space station () have not yet been communicated to the Radiocommunication Bureau for recording. Thus, these frequency assignments have been given an unfavourable finding with respect to No. 11.32 (see paragraph 2.1.2.1 of the Rules of Procedure relating to No. 11.32) and the notice in question is being returned to you in conformity with No. 11.37. Once the corresponding assignments of the associated space station have been notified and recorded in the Master Register, it will be possible to examine again your earth station notice. | Yes |
| A N - X/9.7 X Outside SA | With respect to the frequency assignments groups Nos. () of your earth station (), it is noted that the <u>station is outside the service area of the transmitting/receiving beam () of the associated space station (). Consequently, your earth station frequency assignments have been given an unfavorable finding with respect to No. 11.32 (see paragraph 2.1.3 of the Rules of Procedure relating to No. 11.32) and the notice in question is being returned to you in conformity with No. 11.37.</u> | Yes |
| N X/ROP RCV4.4 | With regard to the frequency assignments groups Nos. () of your earth station (), it is noted that the associated space station () does not have any valid publication in the Radiocommunication Bureau. As stated in paragraph 2.1.2.1 of Rules of Procedure relating to No. 11.32, starting from the principle that the leading element of a space network is the space station and that it would be misleading to record in the Master Register earth stations for which a space station (network) is not recorded, the Radio Regulation Board decided that an earth station cannot be recorded in the Master Register before its associated space station. In view of the above, according to Rules of Procedure, paragraph 4.4 of "Rules concerning the Receivability, of forms of notice generally applicable to all notified assignments submitted to the Radiocommunication Bureau in application of the Radio Regulatory Procedures relating to space services" the subject notice is not receivable. | Yes |







Submission to the Bureau



 You may submit the notification of your Earth Station through e-Submission (Resolution 908)

by uploading

- ESName.mdb
- Additional documents like Coordination contour diagrams generated using AP7 software, cover letter or any other useful information





Thank you!

ITU - Radiocommunication Bureau

Questions to brmail@itu.int or akim.falou-dine@itu.int



