Exercise 11 : Use PFD Examination Tools

Goal

Learn how to perform an interactive PFD examination

Introduction

GIMS features an interactive PFD tool that allows to view graphically the impact of a particular emission. The PFD produced by an emission is calculated and compared with a selected Article 21,Appendix 30 or 30B provision to generate an excess area. One can then produce the list of countries where an excess occurs.

The interactive PFD tool well complements the GIBC batch PFD program that analyzes all the emissions of a notice and tracks PFD excess for all applicable provisions.

Task 1: Perform an Article 21 examination

- From your *work* database, open the WZ emission beam diagram of notice 90998027
    - or use the already-open version of that diagram in which we corrected the contours.
- In the **View** menu, select **PFD Examination**.

This opens the PFD View, a new window containing the same diagram but with a different menu.

- In the **Calculation** menu, select **Article 21**.

This examination enables you to compare the PFD produced by a beam with the limits defined in Article 21 and the footnotes to Article 5 of the Radio Regulations.

- Enter the following values:
    - Lower Limit: 10950
    - Upper Limit: 11700
    - Class of station: EC
    - Bandwidth: 27
    - Power density: –50
    - Total Power: 19
    - On-axis gain: 40

You will see that the only one provision is applicable for the selected frequency band and class of station: "RR 21.16" that is intended to protect terrestrial services from interference caused by the fixed-satellite service.

- Now click on OK.

A red contour is displayed, representing the area within which there is excess PFD. To prove this for yourself,

- activate the PFD tool in the main toolbar ( )and
- click inside and outside the area.

The PFD values and the PFD limit defined by the selected provision are displayed in the status bar.

To see the list of countries experiencing excess PFD,

- select **List of affected countries** in the **Tools** menu.

A country is considered as affected if there is a PFD excess on its territory **and** if that country is in the protected area defined by the provision.

Task 2: Perform an Appendix 30B Calculation

In Task 1, we first opened a diagram window before opening a second window that allowed us to perform a PFD calculation. In this task we will see that it is possible to directly open a PFD calculation window.

- In the **Diagram** menu, click **Open PFD Examination**.
- In the database explorer, make sure you are viewing data from REFDB
- Open the gain contour diagram of the beam *SUI00_04* of the notice 90558192.

The window icon of the window that pops up as well as the **Calculation** menu tells you that this is a window for calculating PFD.

- In the context menu of the window, click **Appendix 30B (Annex 3)**.

A simple dialog box appears in which only 3 parameters are required.

An interesting feature was also added in this dialog box that allows you to retrieve the data necessary to the PFD calculation from a SNS-formatted database.

- To use that feature, click on the top right button of the dialog

If this is the first time you use this feature, the "GIMS Options" dialogue should appear to allow you to configure the paths to external databases where GIMS can find the data necessary to calculate the PFD.

In fact, the GIMS databases contain only diagrams data. All other alphanumeric data such as the gain or the power are stored in SNS formatted databases.

- In the "SPS Database Path" enter the path of an SPS/AP30B database. You can use the database sps_ap30b.mdb provided with this tutorial.

Generally this field is intended for a database containing planned bands data (Appendices 30 and 30B). While the field "SNS Database Path" is meant for a database containing unplanned bands data (typically the file srs_all.mdb distributed on the BRIFIC DVD).

- Uncheck the option "Always show Before ..." to prevent this dialog box from appearing whenever GIMS needs to access these databases. Indeed it would appear anyway if GIMS could not find the data related to the analyzed beam.
- Click OK.

The fields in the dialog box are automatically filled.

For more complex beams it is possible that a dialog box appear through which you can select the characteristics of a particular emission.

- Click OK to start the PFD calculation.

In this case no PFD excess is detected. Otherwise, as in Task 1, a contour would be created that would delimit the region where the PFD limit is exceeded.