

Possible method for finding additional frequencies for FM sound broadcasting in the band 87.5 – 108 MHz using *GE84 Optimization software*

1. Prepare your requirements for FM sound broadcasting using T01 notice form using TerRaNotices, available on the BR IFIC.
2. If you have no preferred frequency channel and you want to instruct the software to scan the whole FM Band, the fields in your notice should be set as follows: t_station_id= FLEX and t_freq=87.7 MHz.
3. Validate your file using Online validation available www.itu.int/ITU-R/eTerrestrial.
4. Go to the online eBroadcasting portal available at www.itu.int/ITU-R/eTerrestrial/eBroadcasting, select eTools and choose *GE84, GE84 Optimization* option. A detailed documentation on GE84 Optimization software is available under “eTools documentation” at the top of the screen.
5. Upload your file(s) and submit it/them to the calculations (one file per administration).
6. When the calculations are successfully completed follow the next steps:

Step 1 Set the desired options with regards to interference with the stations of your Administration (internal interference), interference received, and acceptable nuisance field strength (NFS) level, then Click on 'Evaluate statistics'.

Step 2 If the process identified possible assignable channels for your Administration, click on 'Assignable' to view the detailed calculation results. Identify the frequencies highlighted in green as 'assignable' for the list of sites belonging to that category. These frequencies could be fixed for subsequent submissions.

Step 3 Consider the 'Non assignable' requirements for your Administration and the list of sites belonging to that category will appear. Display the detailed calculation results for each requirement present in the drop-down list.

Step 4 In the list of 'Non assignable' or in the list of 'Assignable' requirements which are not highlighted in green, identify each frequency for the site under evaluation where the incompatibilities identified (NFS received and generated) with stations of other neighbouring countries are of acceptable NFS level ($\leq 54\text{dB}(\mu\text{V}/\text{m})$). It can be assumed that the cases of internal interference are under the responsibility of your Administration and can be disregarded from the coordination process.

Step 5 If any frequency is identified under step 4, assign it to the requirement under evaluation and take note of those frequencies. For other requirements at the same location;

- This frequency should be considered as fixed for this station;
- Adjacent frequencies up to ± 300 kHz inclusive can no longer be assigned to this station;
- This frequency is no longer assignable to requirements in close distances;

- This frequency is no longer assignable to other stations requiring additional frequencies if they are incompatible with this station (identified with NFS values > acceptable NFS level).

Repeat steps 2 to 5 for all the requirements seeking additional frequencies.

If, following the previous steps, no assignable frequency could be identified, consider the possibility to update the information for the requirement:

- Ensure that the effective antenna heights, considering the terrain elevation (using SRTM3 in *TerRaNotices* or any software tool at your disposal), is correct. This could, in some cases, reduce the interference levels from/to your requirement.
- Carry out more detailed calculations using other tools, such as your own software or the BR propagation tools which include the terrain information (eTools/Propagation).
- Consider changing the technical characteristics (e.g. reducing the maximum e.r.p. of the requirement or modifying the antenna pattern) when it is affecting (interference generated) other GE84 Plan entries, TIP notices* or fixed requirements.
- Try to coordinate a selected frequency with the affected administrations concerned using other mutually agreed criteria, different from those indicated in Step 4, for example, by applying a higher acceptable NFS level.
- In the case where the interference received from another GE84 Plan entry/TIP notice/requirement is higher than the acceptable NFS level, it would be necessary to consider similar modifications to these GE84 Plan entries/TIP notices/requirements.
- Consider reducing any excessive number of requirements.

To analyse self-interference and/or received interference please use your own software or the P1812 calculations available on the GE84Opt results table by clicking on the NFS value if the calculations have been made using the GE84 propagation model.

To analyse self-interference:

- If a duplicated site/frequency (and it will show in red in the table), delete the duplication.
- If not a duplication, run your software or in case of P1812, click on the NFS value, if NFS reasonable, then keep the frequency.
- If NFS via P1812 is high, then check the technical characteristics.
- If you can make a change to reduce interference, then make the changes and keep the frequency.
- If not possible to make any change, change the frequency and repeat points above.

To analyse received interference:

- If interference is low, then keep the frequency.
- If interference is high, check if the technical criteria (on both side) can be changed in a way to reduce the received interference without affecting the relevant services and coordinate with the concerned neighboring country.
- If interference is high and it is not possible to modify technical criteria, change the frequency.

* a TIP notice is a pending notification published in Part A of a Special Section GE84.