



Radiocommunication Bureau (BR)

**Documentation on CADisplay
Compatibility Analysis Display
for Central America and Caribbean Region**

User Manual



Terrestrial Services Department

Broadcasting Division

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1. General Introduction

CADisplay is an application designed to assist the administrations in analyzing the calculations related to the compatibility analysis for Television (DTT stations recorded in the Master International Frequencies Registry (MIFR) as well as new DTT requirements and analog stations recorded in the MIFR) for the administrations involved in the multilateral frequency coordination process in the VHF/UHF bands in Central America and the Caribbean.

CADisplay is one of the tools used in the compatibility analysis process. It is intended to be used to display the compatibility analysis result files stemming from the compatibility analysis calculations carried out under [eTools](#), and provides useful features to facilitate the analysis of those results.

For more information on the methodology to seek new channels, please see [document INFO-2](#) and the relevant [presentation](#).

Please note that you will be automatically prompted to download any available updates.

2. Description of the process

The application reads the compatibility analysis database file obtained from the **CA_compat**¹ job available under [eTools](#) (eBCD web application). The compatibility analysis can involve notices (additions, modifications and suppressions) from one or several administrations, which are then “applied” to a snapshot of the current status of the MIFR. (A compatibility analysis is performed on a subset of frequency ranges, either VHF or UHF frequency bands, depending on the input data provided by the administrations).

The results of a compatibility analysis are stored in an MS Access database file (MDB format) together with the input data for the calculation, including all the relevant MIFR

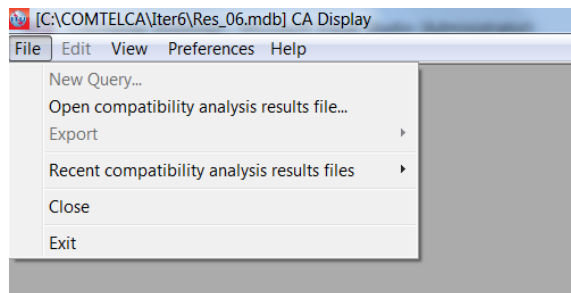
¹ **CA_compat** does not use the Digital Terrain Model. The calculations are taking into account propagation conditions along the entire path between the transmitter and the receiver (land, sea, mixed) in accordance with the IDWM as well as the effective antenna height, which represents the height of the transmitting antenna above terrain height averaged between distances of 3 to 15 km, in the direction of the receiving antenna (SRTM: <http://www.itu.int/SRTM3/index.html>).

entries and MIFR modifications in process (within a 1000km boundary) in the relevant frequency bands.

3. Description of the CADisplay functionalities

3.1. Main Menu

- **File Menu Item:** Selection of the compatibility analysis results MS Access mdb previously downloaded from *eTools*. The application keeps track of the databases previously opened.



- **Preferences Menu Item:** The user can adapt the software with regard to various options (language – colors – display formats)
- **Help Menu Item:**
 - **About CADisplay** shows the version of the software. It should correspond to the version announced on the web at <http://www.itu.int/en/ITU-R/terrestrial/broadcast/Americas/Pages/default.aspx>
 - **Release Notes** keeps you informed on the reasons for a new release (new enhancements, bug fixes etc...)

3.2. Viewing Compatibility Analysis Results

Upon selecting the MS Access database file, the Compatibility Status Selection Criteria screen is shown, from where many other functionalities become available. Most of the features are available from context menus (right-click) in tables and from the graphical display.

The selection is performed against the information present in the MDB file.

Compatibility Status

Search

Administration: HOL

Type of Analysis: Digital-to-Digital

Frequency: UHF (470-698 MHz)

Margin: Do not set a filter on Margin

The arrows represent the direction (to → , from ← , to & from ↔ , internal incompatibilities ↻). In the example above we are selecting all the DTT frequency assignments affecting the DTT stations of HOL overseas territories. Only DTT entries are displayed if the type of analysis selected is Digital-to-Digital.

If the analog stations, recorded or in the process of being recorded in the MIFR, have been considered in the compatibility exercise, the user is able to consider Digital-to-Analogue and Analogue-to-Digital incompatibilities.

The compatibility analysis is performed on a subset of frequency ranges, either VHF or UHF frequency bands.

Once the selection is confirmed, a list of affected and interfering frequency assignments/requirements is shown to the user in accordance with the selection criteria.

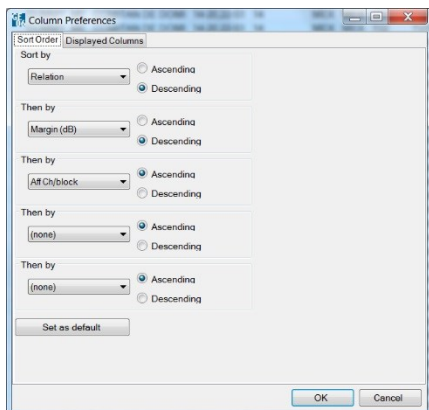
[C:\COMTELCA\Iter0\Res_06.mdb] CA Display - [Selected Compatibility Status]

Id Aff A	Aff G	Aff Not	Aff Adm RefId	Aff Site/Allot Name	Aff Ac Ch/bl	Aff Ch/block	Int A	Int G	Int Not	Int Adm RefId	Int Site/Allot Name	Int Ac Ch/bl	Int Ch/block	8BH (dBW)	8BV (dBW)	Distance (k)	CNFS (dB(u)	Margin (dB)	Relation
36974 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-47,49-51	51	MEX	MEX	T02	TVXHOPSCO	SAN CRISTOBAL D	51	51	36.3					Overlap
36975 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-47,49-51	51	MEX	MEX	T02	TVXHOPSCO	SAN CRISTOBAL D	51	51	36.3					Overlap
36976 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-47,49-51	51	MEX	MEX	T02	TVXHOPSCO	SAN CRISTOBAL D	51	51	36.3					Overlap
36977 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-21,24-42	51	MEX	MEX	T02	TVXHOPSCO	SAN CRISTOBAL D	51	51	36.3					Overlap
36978 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		80.8	84.9	46.61	Interference
36979 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		80.8	84.9	46.61	Interference
36980 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-24,26-51	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.2	80.3	42.05	Interference
36981 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-24,26-51	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.2	80.3	42.05	Interference
36982 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-24,26-51	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.2	80.3	42.05	Interference
36983 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-24,26-51	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.2	80.3	42.05	Interference
36984 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-24,26-51	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.2	80.3	42.05	Interference

As previously mentioned, most of the features are available from context menus (right-click):

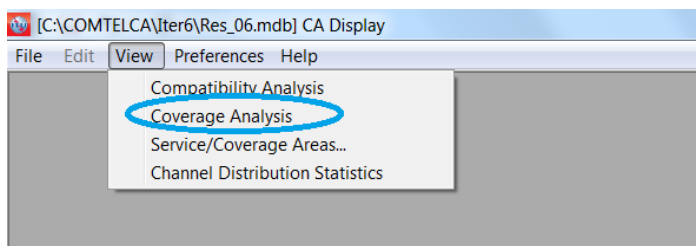
[C:\COMTELCA\Iter0\Res_06.mdb] CA Display - [Selected Compatibility Status]

Id Aff A	Aff G	Aff Not	Aff Adm RefId	Aff Site/Allot Name	Aff Ac Ch/bl	Aff Ch/block	Int A	Int G	Int Not	Int Adm RefId	Int Site/Allot Name	Int Ac Ch/bl	Int Ch/block	8BH (dBW)	8BV (dBW)	Distance (k)	CNFS (dB(u)	Margin (dB)	Relation
36979 MEX	MEX	T02	DUMMY_ME	Altamirano CHIS	14-21,24-42	51	MEX	MEX	T02	TVXHOPSCO	SAN CRISTOBAL D	51	51	36.3					Overlap
36980 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		80.8	84.9	46.61	Interference
36981 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		80.8	84.9	46.61	Interference
36982 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.2	80.3	42.05	Interference
36983 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.2	80.3	42.05	Interference
36984 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.2	80.3	42.05	Interference
36985 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36986 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36987 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36988 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36989 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36990 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36991 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36992 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36993 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36994 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36995 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36996 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36997 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36998 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
36999 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference
37000 MEX	MEX	T02	DUMMY_ME	Huehuetan CHIS	14-29,31-35	28	GTM	GTM	T02	GTM_SIT_00	CERRO IXTAJEL	28	28	30		73.3	80.3	42.04	Interference



Additional features: a left-mouse click on the columns opens a dialog for the user to select the column preferences (sort order and displayed columns). If the user wants the application to “remember” those changes, he/she should click on the button “set as default”.

3.3. How to use the Coverage Analysis screen



The Coverage Analysis screen shows the number of coverages in any given point of a geographic area, i.e. the sets of requirements whose service area covers the point.

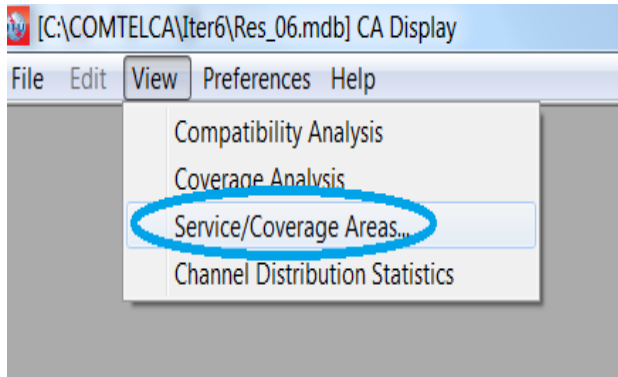
The intensity of the color in a given point corresponds to the number of coverages, i.e. a darker color means more coverages. Please note that the legend may not reflect the actual coloring in the case the actual maximum number of coverages is higher than the maximum specified value for the legend. In order for the legend to be correct, the selected maximum for the legend must be equal to or higher than the actual maximum number of coverages, which requires some experimenting on the part of the user.

It is possible to easily compare acceptable channels from input data and available/assigned channels from the analysis results by clicking on the corresponding radio button. More details on the actual coverages may be obtained by right-clicking on a given point. A pop-up list appears, showing the number of coverages at the point, as well as the following information for each coverage:

- **Adm** Administration identifier.

- **Adm Ref Id** unique identifier from the input data.
- **Acceptable or Available Channels or Assigned Channel:** The acceptable channels from input data or the available channel or assigned channel from the analysis/synthesis results (see definition further down).
-

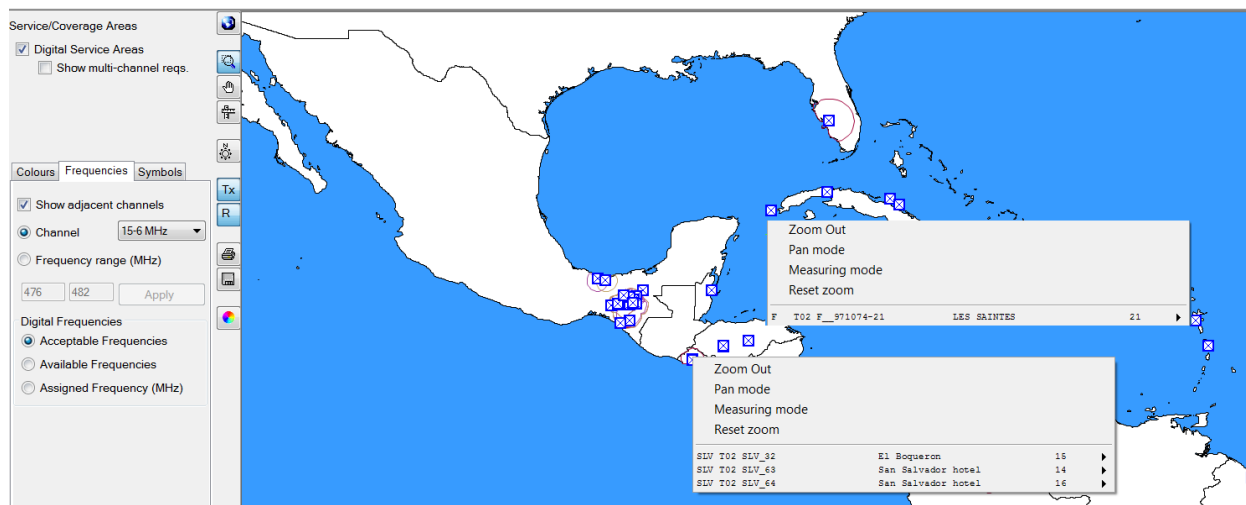
3.4. How to use the Service/Coverage Areas screen



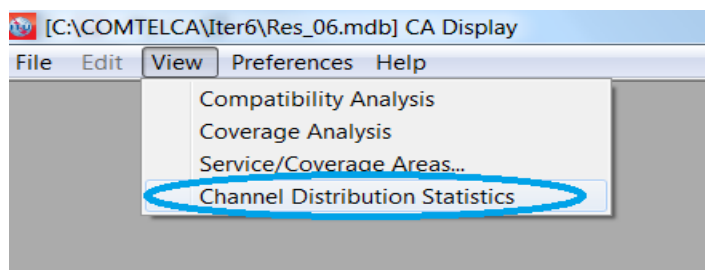
The Service/Coverage area screen shows the noise limited (for digital) or interference limited (for analogue) service areas for individual assignments/requirements, present in the database and showing incompatibilities with the notices submitted to the compatibility analysis, with filtering by channel and optional adjacent channel. Details of the requirement or compatibility analysis details can be invoked from the context menu either from the table or from right-clicking in the map.

Filtering by channel: Please note that when 6 and 8 MHz channel rasters are involved and a specific channel is selected, the service areas of the assignments having overlapping channels are shown to provide to the user with a full list of requirements and assignments having an overlapping frequency due to different channel rasters which are affected (example: if channel 15-6MHz is selected, the frequency assignments/requirements at 21-8MHz, 22-8MHz and 15-6MHz are displayed on the map).

Considering adjacent channels: In the example below (15-6MHz channel selected), considering adjacent channels has a different meaning. The channels considered are 14-6MHz, 15-6MHz, 16-6MHz together with the 8 MHz channels overlapping those 3 channels (21-8MHz, 22-8MHz, 23-8MHz), in the areas where 6 and 8 MHz channels are used.



3.5. How to use the channel distribution statistics screen

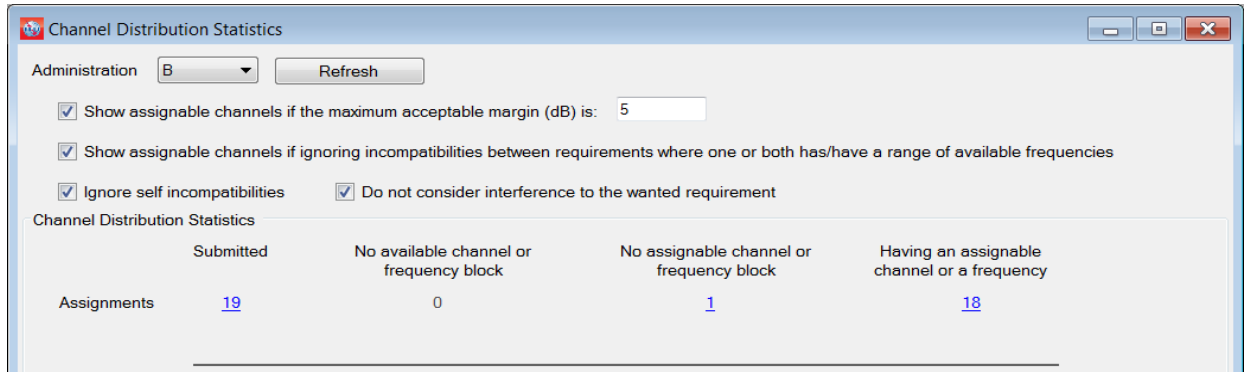


A selection criteria screen is shown, from where the statistics are calculated. The statistics are available for a specific administration, selected in the dropdown box. The list of selectable administrations is based on the requirements submitted to the compatibility analysis in **eTools**. If the user submits only one file of notices representing his/her country requirements, the selection screen will show only one administration.

Filtering option having an impact on the statistics:

- Selecting a high margin, disregarding self-incompatibilities between stations within an administration, ignoring incompatibilities have to be selected with great care.
- Selecting a limiting margin above 4 dB is not advisable as it represents a high level of interference.
- Disregarding interference received is appropriate under specific terrain conditions (e.g. if there are natural obstacles at the border between two countries). Self-incompatibilities should be resolved before bringing a frequency assignment into operation.

- Ignoring requirements with flexible channels is possible if the box “Show assignable channels if ignoring incompatibilities between requirements where one or both has/have a range of available frequencies” is selected.

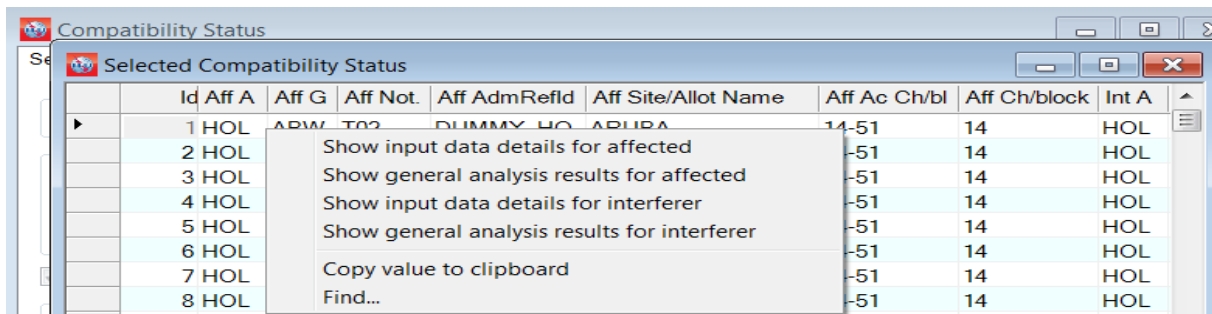


Clicking on the number of assignments will take the user to the detailed results.

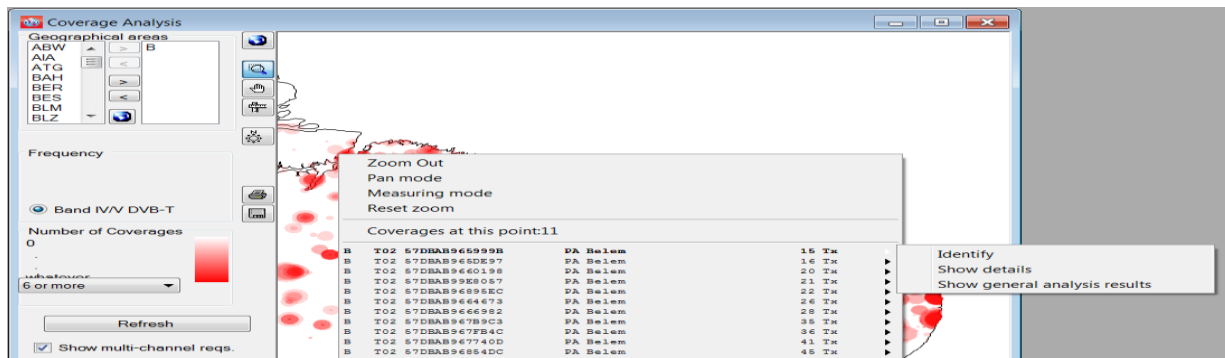
4. General analysis results (GAR)

4.1. How to get to the “General analysis results” (GAR)

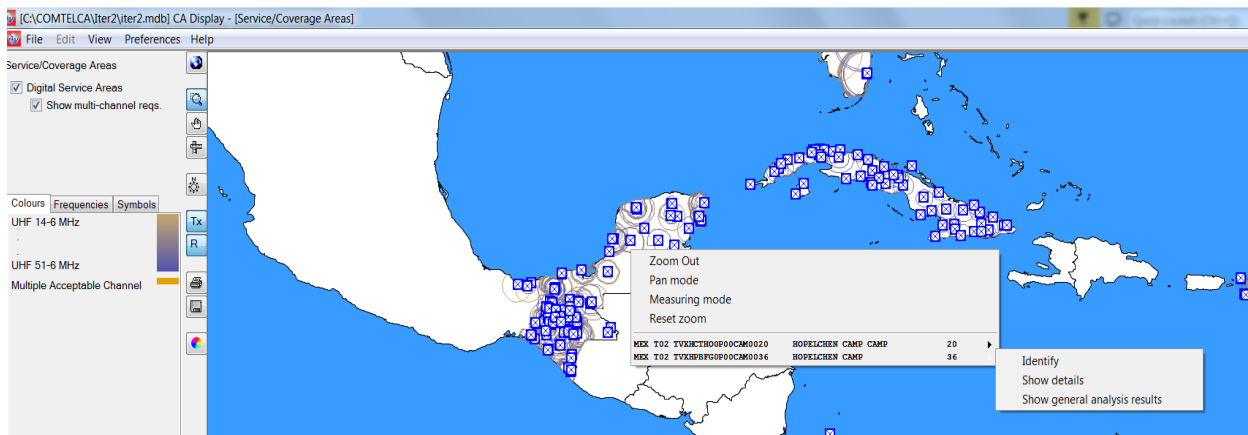
- As mentioned earlier, **Show General Analysis results** can be invoked from the context menu, no matter which selection has been made in the “View” menu.
 - a. From “Compatibility Analysis” – Right-mouse click on a table row.



- b. From “Coverage Analysis”- Right-mouse click on the map where coverages are displayed, then, right-mouse click on an entry in the list of stations covering that area:



c. From "Service/Coverage Areas": same as above.



d. From Channel Distribution Statistics:

The user can double-click on a row or click on the right mouse button.

4.2. Interpretation of the compatibility analysis results displayed in the "General analysis results" (GAR)

- When the user clicks on the figures representing the statistics based on the selection criteria, the list of relevant assignments/requirements appears on the screen.

On the example below, 19 submitted assignments have been examined:

Channel Distribution Statistics

Administration: **B** Refresh

☒ Show assignable channels or freq. blocks if the maximum acceptable margin (dB) is: 5

☒ Show assignable channels or freq. blocks if ignoring incompatibilities between requirements where one or both has have a range of available frequencies

☒ Ignore self incompatibilities ☒ Do not consider interference to the wanted requirement

Channel Distribution Statistics

	Submitted	No available channel or frequency block	No assignable channel or frequency block	Having an assignable channel or a frequency block
Assignments	19	0	1	18

Channel Distribution Details - Digital assignments

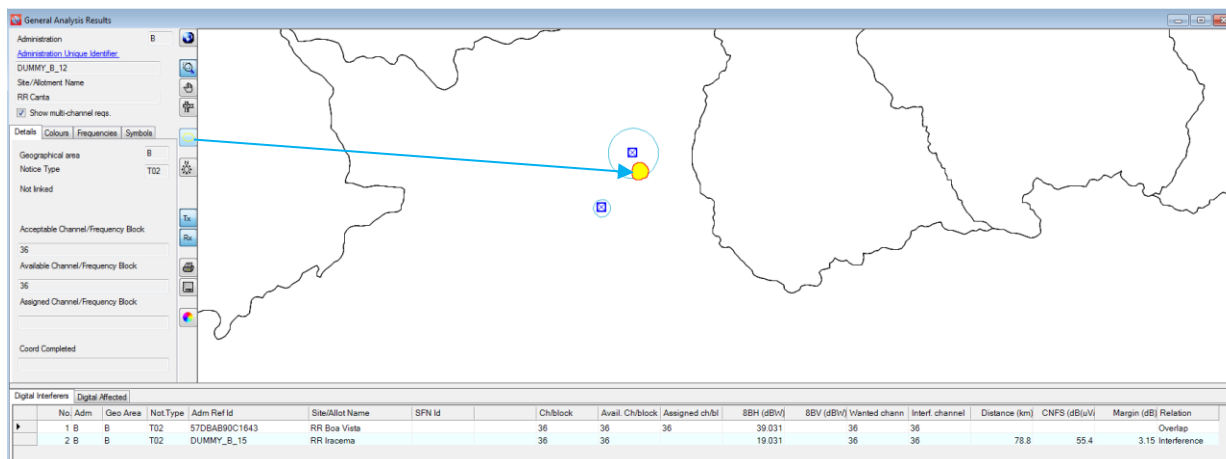
No	Adm	Geo Area	Adm Ref Id	Not.Type	Site/Allot Name	SFN Id	Ch/block	Avail. Ch/block	Assignable Ch/block
1	B	B	DUMMY_B_2	T02	AP Cutias		15	15	15
2	B	B	DUMMY_B_3	T02	AP Ferreira Gomes		14	14	14
3	B	B	DUMMY_B_4	T02	AP Ferreira Gomes		39	39	39
4	B	B	DUMMY_B_1	T02	AP Macapa		47	47	47
5	B	B	DUMMY_B_5	T02	AP Oiapoque		39	39	
6	B	B	DUMMY_B_6	T02	AP Pedra Branca do Ama		39	39	39
7	B	B	DUMMY_B_7	T02	AP Porto Grande		15	15	15
8	B	B	DUMMY_B_8	T02	AP Serra do Navio		36	36	36
9	B	B	DUMMY_B_9	T02	AP Tartarugalzinho		14	14	14
10	B	B	DUMMY_B_10	T02	RR Boa Vista		16	16	16
11	B	B	DUMMY_B_11	T02	RR Canta		21	21	21
12	B	B	DUMMY_B_12	T02	RR Canta		36	36	36
13	B	B	DUMMY_B_13	T02	RR Caracaraí		15	15	15
14	B	B	DUMMY_B_14	T02	RR Caracaraí		27	27	27
15	B	B	DUMMY_B_15	T02	RR Iracema		36	36	36
16	B	B	DUMMY_B_16	T02	RR Rorainópolis		18	18	18
17	B	B	DUMMY_B_17	T02	RR Rorainópolis		36	36	36
18	B	B	DUMMY_B_18	T02	RR São Luiz		17	17	17
19	B	B	DUMMY_B_19	T02	RR Uiramutã		36	36	36

- Double click on the row to get the results of the calculations for a specific requirement (e.g. RR Canta on channel 36 ,highlighted below)

Channel Distribution Details - Digital assignments

No	Adm	Geo Area	Adm Ref Id	Not.Type	Site/Allot Name	SFN Id	Ch/block	Avail. Ch/block	Assignable Ch/block
1	B	B	DUMMY_B_2	T02	AP Cutias		15	15	15
2	B	B	DUMMY_B_3	T02	AP Ferreira Gomes		14	14	14
3	B	B	DUMMY_B_4	T02	AP Ferreira Gomes		39	39	39
4	B	B	DUMMY_B_1	T02	AP Macapa		47	47	47
5	B	B	DUMMY_B_5	T02	AP Oiapoque		39	39	
6	B	B	DUMMY_B_6	T02	AP Pedra Branca do Ama		39	39	39
7	B	B	DUMMY_B_7	T02	AP Porto Grande		15	15	15
8	B	B	DUMMY_B_8	T02	AP Serra do Navio		36	36	36
9	B	B	DUMMY_B_9	T02	AP Tartarugalzinho		14	14	14
10	B	B	DUMMY_B_10	T02	RR Boa Vista		16	16	16
11	B	B	DUMMY_B_11	T02	RR Canta		21	21	21
12	B	B	DUMMY_B_12	T02	RR Canta		36	36	36
13	B	B	DUMMY_B_13	T02	RR Caracaraí		15	15	15
14	B	B	DUMMY_B_14	T02	RR Caracaraí		27	27	27
15	B	B	DUMMY_B_15	T02	RR Iracema		36	36	36
16	B	B	DUMMY_B_16	T02	RR Rorainópolis		18	18	18
17	B	B	DUMMY_B_17	T02	RR Rorainópolis		36	36	36
18	B	B	DUMMY_B_18	T02	RR São Luiz		17	17	17
19	B	B	DUMMY_B_19	T02	RR Uiramutã		36	36	36

- The General Analysis Results window for this assignment will appear as shown below. The digital requirement under consideration can be identified (service area flashes) by clicking on the button indicated below (identify current requirement service area button).



4.3. Analysis of the results

In most cases, the General Analysis Results contain “Digital Interferers” and “Digital Affected” tabulations, where:

- “Digital Interferers” contains the list of digital assignments, in process or recorded in the MIFR, and the digital requirements which are affecting the digital requirement under consideration (incoming interference margin > 1.25 dB);
- “Digital Affected” contains the list of digital assignments, in process or recorded in the MIFR, and the digital requirements which are affected by the digital requirement under consideration (outgoing interference margin > 1.25 dB).

One or both tabs can be missing if the digital requirement under consideration does not suffer or/and cause any interference from/to digital assignments/requirements (calculated margins below 1.25 dB) on that specific channel.

The meaning of margins as well as the concept of combined value of nuisance field strength and combined location correction (CNFS) are described in document INFO-4 (http://www.itu.int/en/ITU-R/terrestrial/broadcast/Americas/Documents/Info/INFO-4-E_margins.pdf).

In the case where digital interferers and/or digital affected are present, the analysis starts with the column “Relation”. Three relation types are possible, namely:

- “Overlap” – means that the service/coverage areas of two transmitters are overlapping. The selected channels therefore are not suitable for the digital

requirement under consideration. However, in some cases, due to terrain shielding, this can be possible after more detailed calculations involving terrain profiles.

- "Tx inside" – this case is worse than "Overlap". The transmitter site is located inside the service/coverage area of the interfering/affected assignment/requirement.
- "Interference" - in this case only, the margin is calculated and reflected in the column "Margin".

There may be 2 cases:

Case 1: Calculated margins in both directions (incoming and outgoing interference) do not exceed the maximum acceptable margin selected by the user in the "Channel Distribution Statistics".

The channel is compatible and it can be assigned to the digital requirement under consideration.

Case 2: the calculated margin in one or both directions exceeds the maximum acceptable margin. Several situations are possible:

a) Self-Interference: The interference involves the digital requirement under consideration and digital assignment/requirement of the same administration. It is the responsibility of the administration to decide on this situation.

b) The digital requirement under consideration is affecting assignment/requirement from a neighboring administration. In that case, a modification to the technical characteristics may help (reduction of maximum ERP, revision of the transmitting antenna pattern etc.) to reduce the interference in the direction of the affected assignment/requirement of another administration. Please note that such a modification cannot be made directly in **CADisplay**; the notice containing the revised notice should first be submitted to **eTools** for a new compatibility analysis. If the results are satisfactory, the notice should be retained in the file to be submitted to the BR for the next iteration. If not, the parameters can be reviewed and the calculations should re-run until the results are satisfactory.

c) The digital requirement under consideration is interfered with by recorded assignment(s) or requirement(s) of another administration. The administration seeking for this specific channel can accept this higher level of incoming interference if the terrain profile between both sites is preventing interference.

More detailed calculations, using external software packages taking into account digital terrain profiles, may be performed. Furthermore, in all the above situations, except a), bilateral/multilateral coordination may be needed to obtain the best possible results.

In some cases, the General Analysis Results may also contain "Analogue TV Interferers" and "Analogue TV Affected" tabulations, as shown on the example below, where:

- "Analogue TV Interferers" contains the list of analogue TV assignments, in process or recorded in the MIFR which are affecting the digital requirement under consideration (incoming interference margin > 1.25 dB);
- "Analogue TV Affected" contains the list of analogue TV assignments, in process or recorded in the MIFR which are affected by the digital requirement under consideration (outgoing interference margin > 0.5 dB).

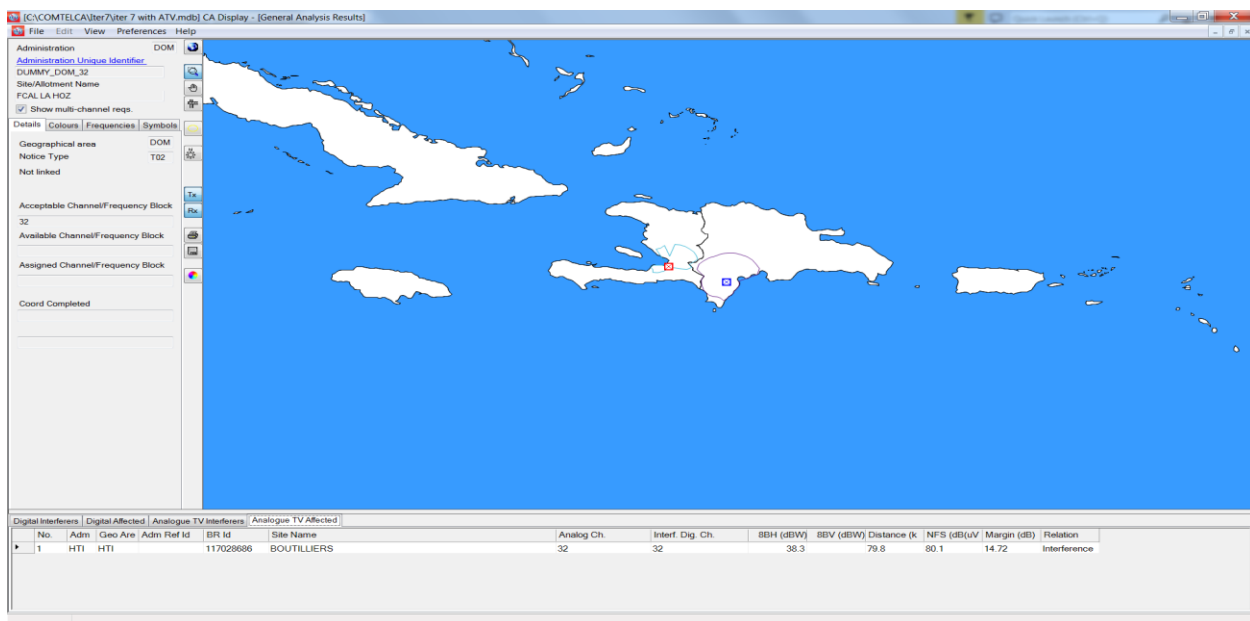
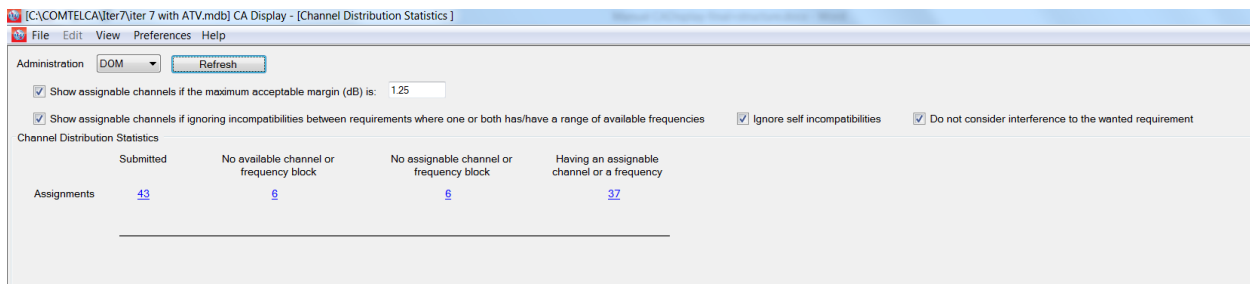
One or both tabs will not appear if the digital requirement under consideration does not suffer or/and cause any interference from/to analogue TV assignments (calculated margins below 1.25 dB/0.5 dB) on that specific channel.

In the case where analogue TV interferers and/or analogue TV Affected are present, the same analysis as described above for the digital interferers/affected has to be performed, taking into account different value of maximum acceptable margin for affected analogue TV assignments.

When considering the analogue service, the goal is to protect the analog stations in operation. Consequently, when the proposed requirement produces, on an analog station of a neighboring country, an interference margin greater than 0.5 dB on a specific channel, the channel is identified as "unavailable" to the digital requirement. In other words, the channel cannot be assigned when it is interfering with the analog frequency assignments of the neighboring administrations.

On the other hand, interference received from analog (analog interferer) as well as internal incompatibilities (analog to digital and digital to analog) are not setting the analog channel as unavailable to the digital requirement.

In the example below, the fixed channel 32 is not available for the requirement from DOM (see No available channel) because it is interfering with an analog assignment of HTI (see analog TV affected).



5. Detailed analysis results (DAR)

The value indicated in the column "Margin" represents a calculated margin for the most affected point on the edge of the service area. To see calculated margins for all affected points, where the calculated margin value is higher than 1.25 dB, it is necessary to carry out the detailed analysis of the results.

In order to see the DAR:

In the GAR window, select the assignment/requirement of interest and right-mouse click on it. In the context menu, select the "Detailed analysis results" option.

Digital Interferers		Digital Affected													
No.	Adm	Geo Area	Not Type	Adm RefId	Site/Allot Name	SPN Id	Chiblock	Avail. Chiblock	Assigned chbl	88V (dBV)	88V (dBV) Wanted chann	Interf. channel	Distance (km)	CNFS (dBuV)	Margin (dB) Relation
1	B	B	T02	57DBAB90C1643	RR Boa Vista		36	36	36	39.031	36	36			Overlap
2	B	B	T02	DUMMY_B_15	RR Iracema		36	36		19.031	36	36	78.8	55.4	3.15 Interference

The following window will appear, where the details are indicated. The worst case point of the service/coverage area of the affected digital requirement under consideration is surrounded in blue.

The same approach is being used when the digital requirement under consideration affects another digital assignment/requirement.

DetailedAnalysis

Requirement under investigation:

Digital Interferer:

RR CANTA

RR Iracema

Running directory: C:\CADisplay\planningExercise\Details\20170614_1132
command for named approach: C:\CADisplay\planningExercise\Executables\COMTELCA\d2duhf_COM.exe RR CANTA
Extracting digital requirements from database
starting req2bin_COM.exe completed in 6.5121301
starting station_name.bat completed in 1.0100101
Detailed analysis results file name: C:\CADisplay\planningExercise\Details\20170614_1132\COM_uhf_d2d_out.uhf

Adding results from C:\CADisplay\planningExercise\Details\20170614_1132\COM_uhf_d2d_out.uhf

Version 2.1.0 of EBU programme (16/05/06) to analyze the cases of potential incompatibility between UHF digital requirements
This particular programme considers the interference to an individual requirement
The input data are on a binary file and the output
data are written to two text files used as the input to read74UHF
The location variation of test points on the sea is calculated as if they were on land.

The items in the listing below have the following meanings
in the case of an interfering assignment, (erph) and (expv) relate to the maximum exps
(erp) and (effht) relate to the values on the quoted bearing (bear) from the assignment to the test point
the test point (wtplng, wtplat) is at distance (dist) from the interfering assignment
any (ang) quoted is the angle from the wanted requirement to the test point
in the case of an interfering allotment, (itplng) and (itplat) is the location of the current RN
and (bear) and (dist) are relative to this point

B RR CANTA DUMMY_B_12 pol H assignment RPC 1 FO chan 36 min med 55.1

Any potentially interfering requirements are listed

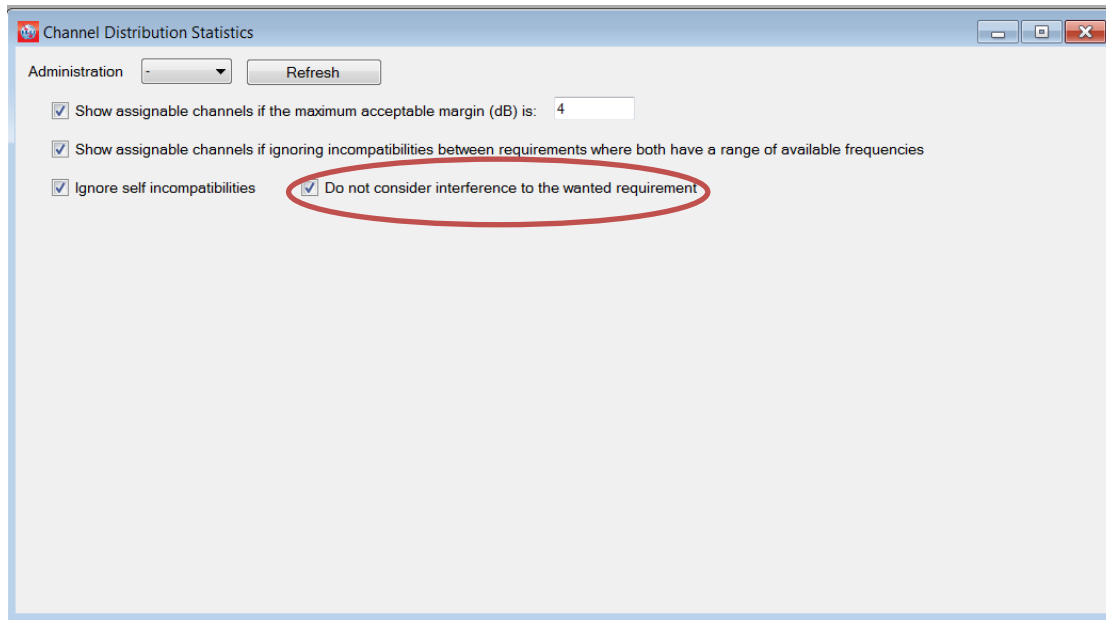
B	DUMMY_B_15	RR IRACEMA	chanU 36	chanW 36	prt	39.8 dB										
adm identifier	pol	erph	expv	erp	effht	bear	dist	cnfs	margin	ang	wtplng	wtplat				C
B DUMMY_B_15	H	19.0	-99.9	N	19.0	135.1	41.1	78.1	51.3	1.53	10.0	-60.58	2.71			
B DUMMY_B_15	H	19.0	-99.9	N	19.0	133.8	42.4	78.8	54.5	2.74	20.0	-60.56	2.70			
B DUMMY_B_15	H	19.0	-99.9	N	19.0	133.5	43.2	78.5	51.5	3.15	40.0	-60.55	2.68			
B DUMMY_B_15	H	19.0	-99.9	N	19.0	131.3	45.2	78.8	55.4	3.15	40.0	-60.54	2.68			
B DUMMY_B_15	H	19.0	-99.9	N	19.0	130.1	46.6	79.2	55.2	3.07	50.0	-60.52	2.67			
B DUMMY_B_15	H	19.0	-99.9	N	19.0	128.9	47.9	79.1	55.2	3.05	60.0	-60.51	2.66			
B DUMMY_B_15	H	19.0	-99.9	N	19.0	127.6	49.4	79.0	54.9	2.91	70.0	-60.50	2.64			
B DUMMY_B_15	H	19.0	-99.9	N	19.0	127.7	50.7	78.3	51.6	1.62	80.0	-60.49	2.63			

6. Consideration of coordination information in the requirements

Administrations participating in the *ITU Regional Frequency Coordination for Central America and Caribbean* are encouraged to submit, for the ITERATIONS, the relevant electronic notices containing the agreements obtained from affected administrations within the respective <COORD> sections. This information is to be entered using **TerRaNotices**:

The results of the compatibility analysis take into account the COORDINATION information submitted for the iterations. In other words, the algorithm to define assignable channels now disregards from the *total number of incompatibilities for the wanted requirement*, all the **affected** requirements, whether digital, analog or of other primary services, pertaining to those administrations with which an agreement has been reached.

Please note that, at this stage, the interferers are still considered (even if they belong to an administration with which an agreement has been notified). To disregard interferers (independently of the agreements obtained), **CADisplay** provides the additional check box "**Do not consider interference to the wanted requirement**" (see the screen capture on Channel Distribution Statistics below). If the latter is checked, **all** the interferers will be disregarded from the total number of incompatibilities.



The tables below explain in detail the definition of assignable channels for both scenarios relating to the new feature.

- **Scenario 1:** the Check box "Do not consider interference to the wanted requirement" is **not checked**.

Cas e	Administratio n A Requirement R1	Administratio n B Requirement R2	Coordination of R1 with B	Channel for R1
1	R1 does not interfere R2	R2 does not interfere R1	Not applicable	Assigned
2	R1 interferes R2	R2 does not interfere R1	Obtained	Assigned
3	R1 interferes R2	R2 interferes R1	Obtained	Not assigned
4	R1 interferes R2	R2 does not interfere R1	Not obtained	Not assigned
5	R1 interferes R2	R2 interferes R1	Not obtained	Not assigned
6	R1 does not interfere R2	R2 interferes R1	Not applicable	Not assigned

- **Scenario 2:** the Check box“ Do not consider interference to the wanted requirement” is **checked**.

Cas e	Administratio n A Requirement R1	Administratio n B Requirement R2	Coordination of R1 with B	Channel for R1
1	R1 does not interfere R2	R2 does not interfere R1	Not applicable	Assigned
2	R1 interferes R2	R2 does not interfere R1	Obtained	Assigned
3	R1 interferes R2	R2 interferes R1	Obtained	Assigned
4	R1 interferes R2	R2 does not interfere R1	Not obtained	Not assigned
5	R1 interferes R2	R2 interferes R1	Not obtained	Not assigned
6	R1 does not interfere R2	R2 interferes R1	Not applicable	Assigned

7. Some definitions:

Acceptable Channel

Refers to the channel/s which is/are notified by the Administration for a digital requirement.

The digital frequency channels already in the MIFR for that transmitter site are discarded from the list of acceptable channels.

Flexible Channel

In the case where the user wants to analyze the situation of a digital requirement under consideration on all the acceptable frequency channels in VHF or UHF frequency band, the requirement should contain the following information:

- For UHF: channel 83, frequency 887 MHz, for 6MHz channel raster and channel 69 frequency 858 MHz, for 8MHz channel raster

- For VHF: channel 82, frequency 881 MHz for 6MHz channel raster and channel 68 frequency 850 MHz, for 8MHz channel raster.

The compatibility analysis software will scan the band on channel-by-channel basis to assess incompatibilities. In this case, the software is calculating the service area of the digital requirement, taking into account the lowest acceptable frequency (i.e. the worst case scenario).

Available (Av) Channel

Refers to the channel(s) among the list of Acceptable channels, which are determined by the planning software to be compatible with assignments to analogue broadcasting (in that case, only the level of outgoing interference to the analogue station is considered) and other primary services in the Reference situation, hence available for assigning to a digital requirement.

Assignable Channel

Refers to the channel(s) among the list of Available channels, which are determined by the planning software to be compatible with assignments and requirements to digital and analogue broadcasting services.

Assigned (As) Channel

Refers to the frequency channel, among the list of Available Channels, which is already assigned to a digital assignment recorded in the Master Register.

Affected (Aff) channel

Refers to the channel of the digital or analogue assignments or requirements of the affected administration, which is identified by the compatibility analysis.

Interfering (Int) Channel

Refers to the channel of the interfering digital or analogue assignments or requirements of another administration (the same administration if self-incompatibility is considered), which is identified by the compatibility analysis.